1. 6:30 P.M. 09-12-2016 FINAL PLANNING BOARD PACKET AS ONE WHOLE DOCUMENT

   Documents:

   091216 FINAL PLANNING BOARD PACKET AS ONE WHOLE PACKET.PDF

Nantucket Planning Board

S T A F F R E P O R T

Date: August 30, 2016

To: Planning Board

From: Holly E. Backus
Land Use Specialist

Re: Staff Report for September 12, 2016 Planning Board Meeting

Call to Order:

Approval of the Agenda:

Minutes:

- **June 13, 2016**
- **July 11, 2016**
- **August 8, 2016**
- **August 25, 2016 Special Meeting**

ANRs:

- **#8017 David Fredericks, 7 Newtown Road (Map 55 Parcel 212)**
  ***** Re-affirm vote**
- **#8018 Mark J. Yacos & Deborah A. Yacos, 23 Woodbine Street (Map 80 Parcel 95)**
  The purpose of this plan is to combine Lot 3 and Parcels A & B into one buildable lot. Staff recommends endorsement.
- **#8019 Lori Jeanne Sherman and Gordon M. Folger, 18 York Street (Map 55.4.1 Parcel 144)**
  The purpose of this plan is to divide a single lot, on which two (2) buildings were in existence prior to the 1955 enactment of the Subdivision Control Law. Evidence is provided by a registered survey plan from 1936 showing both structures on the lot. Staff recommends endorsement.
- **#8020 Leslie A. Johnston, 48 West Chester Street (Map 41 Parcel 385)**
  The purpose of this plan is to divide a single lot into Lot 3 and Lot 4. This plan creates two (2) buildable lots with Lot 3 approximately 5,012 square feet and Lot 4 approximately 5,561 square feet. Both lots meet the intensity regulations of the R-1 zoning district. Staff recommends endorsement.
- **#8021 Mark Clausen & Mary Davis, Mark J. & Pia L. Abate, and Elizabeth & Mark Norris, 130A Main Street, 130B Main Street, and 130 Main Street (Map 42.3.3 Parcels 96.1, 96.2 & 96.3)**
  The purpose of this plan is to divide a single lot, on which three (3) buildings were in existence prior to the 1955 enactment of the Subdivision Control Law. All three (3) of the dwelling units are currently in

condominium ownership. Evidence of all three (3) dwellings is provided with property tax cards of 1950 and 1954 for the Town of Nantucket and included with the application. The Board may remember this application (previously ANR #8003) from the August meeting that was withdrawn. Per the surveyor, the owners are in agreement of the proposal in front of the Board. Staff recommends endorsement.

- **#8022 Cheryl J. Bunker, 17 East Lincoln Ave (Map 42.4.1 Parcel 5)**
  The purpose of this plan is a perimeter plan of Parcel 2 (Plan 2014-22) and Lots 16 and portion of 18. Staff recommends endorsement.
- **#8023 James F. & Diane H. Cabral, 8 South Shore (Map 80 Parcel 3)**
  The purpose of this plan is to divide a single lot into Lot 1 and Lot 2. This plan creates two (2) buildable lots with Lot 1 approximately 40,010 square feet and Lot 2 approximately 44,658 square feet. For the Board's information, a copy of a previously endorsed perimeter plan is included in the packet for an FYI. The previous plan shows where the "previously unconstructed Beach Plumb Avenue" was located. Staff recommends endorsement.

Second Dwellings:

- **Brian & Mary MacDonald, 11 Cottage Ave, Siasconset (Map 73.31 Parcel 52)** *(Held from August)*
- **Pippens Way LLC, 14 Pippens Way (Map 43 Parcel 94.7)**
- **Randy Sharp, 12R Skyline Drive (Map 79 Parcel 35)**
- **Julia Morash, 18A Gray Ave (Map 67 Parcel 183.1)**
- **Ten Pippen's Way LLC, 10 Pippens Way (Map 43 Parcel 94.6)**
- **Elizabeth Wetherell, 10 Hickory Meadow Lane (Map 41 Parcel 904)**
- **Moonlight Dance LLC, 4 Nobadeer Avenue (Map 80 Parcels 35 & 37**

Reports issued by Holly E. Backus are included in your packet.

Previous Plans:

- **#1242 Topland Properties, Off Low Beach Road,** *Form J release (Lots 5-57)*

The Applicant requests release from the covenant for all 57 lots within a subdivision that was endorsed in 1973. The Applicant has provided a letter of the specific requirements within the covenant and what has been completed to date. A copy of the outlined documents and a copy of the subdivision plan are included in the Board's packet. Staff will provide a recommendation at the meeting.

- **#6842 Nantucket Westmoor Farms, LLC, 6 & 8 Westmoor Farms Road,** *Covenant & Restriction Agreement discussion (Continued from August meeting)*

Staff has not received any additional information at this time.

- **#7640 Fisher Lane Subdivision,** *Form J release (Lot 2) & Legal Documents*

**** This item was not anticipated by the Chairman 48 hours in advance. ****
The Applicant has provided a draft escrow agreement for the Board's review along with the Form J. Staff recommends endorsement.

- **#7904 Newtown Court Subdivision,** *Form J & Covenant*

**** This item was not anticipated by the Chairman 48 hours in advance. ****
Staff will provide a recommendation at the meeting.

- **131 Main Street,** *modification to the secondary dwelling approved site plan*

The Secondary Dwelling was approved by the Board on February 9, 2015. At that time, the property was approximately 20,887 square feet in size. The following month the Board received an ANR to divide the parcel into Lot A & Lot B, with the lot in question of 10,733 square feet in area. Now the Secondary Dwelling is ready for the Certificate of Occupancy, however it was turned down by the Building Commissioner because the existing conditions do not match the approved second dwelling site plan. The

revised site plan shows two (2) required parking spaces, 24.2% ground cover (where 30% is maximum allowed), and the driveway surface and apron. Staff recommends approval of the revised plan.

- **194 Cliff Road,** *modification to the secondary dwelling approved site plan*

The Secondary Dwelling was approved by the Board on November 19, 2015. At that time, the Board approved a site plan with the proposed four (4) parking spaces across from the proposed secondary dwelling. Now the Secondary Dwelling is ready for the Certificate of Occupancy, however it was turned down by the Building Commissioner because the existing conditions do not match the approved second dwelling site plan. The proposed parking has been segregated into one area for the main dwelling and another area for the second dwelling. The Bylaw requires lots on Cliff Road to have adequate turn around areas on the premise and therefore the surveyor has provided a revised as-built plan showing how vehicles would have enough room to turn-around on site. Staff recommends approval of the revised plan.

- **18 Sleepy Hollow Road,** *modification to the secondary dwelling approved site plan*

The Secondary Dwelling was approved by the Board on August 8, 2016. At that time, the Board approved a site plan with a total of five (5) parking spaces; one (1) in front of the proposed secondary dwelling and four (4) behind the dwelling , however now the Applicant wishes to have all five (5) of the required parking spaces together on the lot. Staff recommends approval.

Public Hearings:

- **#7716 Valero Road Subdivision, 60, 62, 64, 66 & 68 Old South Road *CONTINUE TO 11-14-16***
  (This Application was not heard at the December through August meetings.)

- **#7946 Stephen M. Waterhouse, 20 Sparks Avenue**
  (This application was not discussed at the June & July meetings.)
  FROM 05-02-16 STAFF REPORT:
  The Applicant is proposing an approval of a Definitive Subdivision Plan at 20 Sparks Avenue. The Applicant is proposing a four (4) lot subdivision, three (3) of which are buildable lots. The site contains approximately 21,038 square feet and currently contains two (2) residential structures on the lot. The Applicant proposes three (3) buildable lots and a roadway lot containing a 14' wide gravel roadway with a 20' wide layout named Waterhouse Way and terminating in a *cul de sac*. The Applicant is requesting a variety of waivers, including a reduction in the roadway width and the allowance of a gravel surface. Each lot meets the minimum lot area requirements for the CMI district; however, the current plan shows a roadway layout that creates a frontage issue for Lot 3. Also, the list of waivers submitted with the application was taken from a Planning Board decision for an entirely different area, so the applicant should confirm that all of those apply and that they are seeking similar conditions. For example, the conditions that were submitted included a duplex prohibition. Staff notes that the plan in your packet does not meet the frontage requirements for the CMI district. Specifically, Lot 3 does not have 50 feet of frontage. Staff anticipates that a new plan will be provided prior to the meeting. We also note that the zoning information on the plan references the RC district, and this property was rezoned at the 2016 ATM. Although a prior sketch plan was submitted, that does not provide the zoning freeze protection that a preliminary plan provides. CORRECTION: A preliminary plan was received and approved by the Board in time to secure a zoning freeze for the RC district.

  FROM 08-01-16 STAFF REPORT:
  The Applicant has provided revised plans with detailed drainage, grading and erosion control details. The plans provide a proposed 14' wide private way with a paved apron at the intersection with Sparks Avenue. Each lot has proposed underground roof drain systems for existing or future dwelling, details of which are included in the plans. Each lot is also proposed with a street tree proposed with thin the

access and utility easement. It is important to note that at the time of this report, the Board's consultant engineer, Mr. Ed Pesce, PE has not received these revised plans. Staff questions; why the existing dwelling in the area of proposed lot 3 is not shown on the site plan. Staff recommends further discussion at the meeting.

UPDATE:
The Applicant provided the revised plans; however Mr. Ed Pesce, PE has not provided a report at this time. The Board needs to have a discussion with the Applicant about the specific uses proposed for the site. Is the plan to be mixed commercial and residential, or more of one than the other? The lot received a zoning freeze for the RC district, so roadway width and parking need to be discussed relative to the uses proposed. Also, the RC district allows a broad array of uses that aren't necessarily complimentary to the newly implemented CMI district in this area. If the applicant is willing to restrict certain uses, those should be included in any approval that may be issued.

- **#35-16 Seacliff, LLC and 142 Cliff Road, LLC 144 Cliff Road & 142 Cliff Road**

(This Application was last heard at the July meeting.)
FROM 07-01-16 STAFF REPORT:
The Applicant is requesting a Special Permit to construct a second driveway access. The Applicant proposes to extend the existing driveway in order to created a horse-shoe shaped driveway with two access fronting Cliff Road. The Applicant states that the request comes from seeking approval from the HDC with two (2) driveways. Section 139-20.1B(2)(g) requires "on-site" turnarounds for roads off Cliff Road. Both driveway accesses will be constructed with a Belgian block apron, in compliance with the Zoning Bylaw. The proposed driveways would be too close to one another, in regards to this application and the preceding application, and both properties have sufficient room to accommodate the required turnaround on the property to alleviate the need to backup onto Cliff Road, therefore staff recommends denial.

FROM 08-01-16 STAFF REPORT:
The Applicant's representative provided a revised plan for the Board's consideration. Although the Applicant moved the eastern driveway access to the west by 13' and improved the distances between all the driveways by at least 30' apart, they are still close together, traffic is heavy and vehicular speeds are high. Staff believes there are other options that should be perused.

UPDATE:
Staff does not have any additional information at this time. Staff met with attorneys for the property owners and it is our understanding that they are working on a revised proposal.

- **#36-16 Seacliff, LLC and 146 Cliff Road, LLC, 144 & 146 Cliff Road**

(This Application was last heard at the July meeting.)
FROM 07-01-16 STAFF REPORT:
The Applicant is requesting a Special Permit to construct a second driveway access. The Applicant proposes to construct a second driveway access. Currently there is a driveway on 146 Cliff Road that is used by the owner of 148 Cliff Road with an easement (in perpetuity,) however the owner of 146 Cliff Road would like to have their own driveway access. Like the previous application (File #35-16,) Section 139-20.1B(2)(g) requires "on-site" turnarounds for roads off Cliff Road. At this time, staff has not received the surveyed site plan showing the proposed driveways in relationship to one another and adjoining property lines. Based on the submitted information, the proposed driveways would be too close to one another, in regards to this application and the prior application, and both properties have sufficient room to accommodate the required turnaround on the property to alleviate the need to backup onto Cliff Road, therefore staff recommends denial.

UPDATE:
Staff does not have any additional information at this time. Staff met with attorneys for the property owners and it is our understanding that they are working on a revised proposal.

- **#37-16 Inn Partners Regatta, LLC, 78 Center Street**

FROM 07-01-16 STAFF REPORT:
The Applicant is requesting a Special Permit to alter and extend the preexisting, nonconforming transient residential facility. Specifically, the Applicant is requesting a Special Permit for a transient residential facility use. The property has been continuously been used as The Regatta Inn Guest House since prior to the adoption of Zoning. The Applicant is requesting the continued use as it is allowed by Special Permit within the ROH district. The Applicant is also requesting relief to alter the pre-existing nonconforming structure with respect to setbacks and height. The proposed addition will not increase the existing nonconformities of the structure. The Applicant is further a waiver of seventeen (17) parking spaces for "rooming, lodging, or guest house" uses. The property only provides one (1) parking space. And lastly, the Applicant is requesting Minor Site Plan review. The Applicant has received HDC approval on the proposed addition. Staff has received opposition to this request, a copy of which is included in the Board's packet. It is important for the Board to note that the public hearing will need to be kept open due to the need to properly re-advertise. Staff is supportive of this application, but does not have a recommendation at this time.

FROM 08-01-16 STAFF REPORT:
The Application has been re-advertised accordingly and new abutter's notices have been sent. Staff has met with an adjacent abutter on this request who had questions on the procedures and laws pertaining to the Planning Board's review of this request. Staff has no additional comments.

UPDATE:
At the last meeting, the Board asked the Applicant to try and move the addition back farther from Lily Street. During the meeting, there was a lot of opposition presented to the Board. Issues brought up were about the addition not complying with the required setbacks and not necessarily the addition or use. Since the last meeting the Applicant has provided additional information to the Board. This includes a letter from their legal counsel, aerial map of the area, past site plans and previous Zoning Board decisions for lots along Lily Street. The Applicant is electing to use Lily Street as their front yard setback, since the property fronts two streets. The Bylaw allows the owner of a corner property to choose which street will be treated as the front yard and which street will be treated as the side yard. To that end, the front yard setback in the ROH zoning district is zero (0) feet and therefore the proposed addition would be conforming. The Applicant argues that the neighboring / abutting properties along Lily Street are within one (1) foot of the public layout of Lily Street and therefore the proposed addition at 1.1 feet from Lily Street will be consistent with other propertied in the neighborhood. In addition, the Applicant's counsel reminds the Board that the definition of "transient residential facility" was amended at the 2015 ATM to allow guest houses within .25 miles of the Commercial Downtown District by Special Permit. Staff has no additional comments.

- **#48-16 NIR Retail LLC, 137 Old South Road**

FROM 08-01-16 STAFF REPORT:
The Applicant is requesting a MCD Special Permit to construct a 6,256 square foot structure for a laundry facility. In addition, the Applicant is seeking to construct a four (4) bedroom, 720 square foot structure on the premise for Neighborhood Employee Housing. The Applicant's existing laundry facility recently burned down at the Marine Home Center location. In addition, the Applicant is seeking relief from Open Space requirement, Off-Street Parking requirements, Traffic Study requirements, and Setback requirements for the Board to consider. The Applicant has provided the required Employee housing Management Plan for the Board's consideration. The Applicant's surveyor will be presenting and discussing a more detailed site plan at the meeting for the Board's discussion. It is important to

note that his application has not yet been reviewed by the Board's consultant engineer, Mr. Ed Pesce, PE.

UPDATE:
At the last meeting, the Applicant presented the proposed MCD for Nantucket Island Resorts to accommodate their laundry facility. The facility's operation is proposed 5 days a week with 10-11 employees per shift with hours from 6am to 6pm. There was a long discussion about the parking waiver and open space waiver. Staff recommended high quality landscaping to be provided at least in the front of the building along Old South Road. The abutting neighbors were represented with their counsel at the meeting with concerns on the proposed drainage, parking, and access to the site, as the abutters access their property in the back via an access easement over the NIR property.

As of September 8th, staff received the Hydrologic Analysis Report, Stormwater Operation and Maintenance Plan, and the revised MCD site plan. The revised plan includes the proposed below ground infiltration system for stormwater compliance, along with a proposed landscaping plan showing vegetation screening along Old South Road. The proposed landscaping includes three types of evergreen trees: Eastern Red Cedar, White Spruce and Japanese Cedar.

Staff anticipates the required Certificate of Water Quality Compliance letter from Wannacomet Water Company upon their final review. Due to the time staff received the revised site plan along with the Hydrologic Analysis Report and Stormwater / Maintenance Plan, staff will not receive a final review from Mr. Ed Pesce, PE prior to this meeting. Staff recommends the application to be held until Mr. Pesce has been able to do a full review of the MCD.

- **#49-16 Robert G. & Melanie Sabelhaus, 2 Quaise Pastures Road**
  The Applicant is seeking a Special Permit to construct a second driveway access. The existing driveway is gravel with a coble apron; however the proposed driveway is proposed to be a pervious surface with a Belgium Block or Cobblestone apron. A recommendation will be provided at the meeting.

- **#51-16 Housing Nantucket Affordable Rental Units, 75B Old South Rd**
  The Applicant is seeking a Special Permit for a waiver from the maximum allowable gross floor area of 650 square feet, in order to convert 990 square feet within a primary structure into a tertiary dwelling. The existing structure currently contains two dwellings within the 1,285 square foot structure. In addition, the applicant is requesting to have six (6) bedrooms for a lot which is 5, 119 square feet in the R-5 zoning district. The Zoning Bylaw allows a maximum of "one (1) bedroom per 1,000 square feet of lot area," and therefore the Applicant will need approval to increase the number of bedrooms from 5 maximum to 6. The Applicant has provided six (6) parking spaces, where the Bylaw requires one (1) per dwelling type. The proposal is a significant increase from what is allowed by-right, however, since adequate parking has been provided and since the property will be owned and managed by Housing Nantucket, staff recommends approval.

- **#8015 Zeke Dog LLC Subdivision Modification #1, 31 Quidnet Road**
  The Applicant is seeking a modification to the Zeke Dog LLC Definitive Subdivision Plan (File #7824). Specifically, the Applicant is requesting that condition #9 be modified to allow Lot A and Lot B2 to have a four (4) bedroom main house and a one (1) bedroom apartment in the barn. Condition #9 states, "*That the applicant agreed to one (1) dwelling unit per lot for a total of two (2) dwellings for said subdivision.*" The Applicant proposes a total of three (3) dwelling units within the subdivision; two (2) dwellings on Lot B2 and one (1) dwelling on Lot A. For information purposes, the Applicant provided copies of the proposed architectural drawings of the proposed structures for Lot B2. The main dwelling plans were approved by the HDC, while the barn is currently in the review process. The Applicant's architect provided a statement that throughout the HDC process, there have been

no objections to the structures from the neighbors. Staff does not have any recommendations at this time.

- **#8016 Gouin Village Subdivision, Vesper Lane**
  The Applicant is seeking approval of a Definitive Subdivision Plan. The Nantucket Cottage Hospital is proposing a six (6) lot subdivision, two (2) parcels 16 and 18 Vesper Lane located behind 20 Vesper Lane, that currently have no street frontage and will have frontage on the proposed way which is a twenty-nine (29) foott wide paved access road within a forty-four (44) foot wide right of way that will convey two-way traffic for the proposed subdivision from Vesper Lane. There will be a nine (9) foot wide parallel on-street lane parking within the paved road area and a four (4) foot sidewalk on the west side of the proposed way. The US Coast Guard houses will be reconfigured during a phased construction process. The Applicant submitted a Preliminary Plan in May 2016 for the Board's review.

RICHMOND GREAT POINT DEVELOPMENT, LLC APPLICATIONS:

- **#7918 – Richmond Great Point Development, LLC, owner, 42, 46, 48, 54 Skyline Drive & 20 Davkim Lane**

FROM 02-26-16 STAFF REPORT:
The Applicant is seeking approval of a Definitive Subdivision Plan for properties along Skyline Drive and Davkim Lane. The Applicant proposes to create a new roadway known as Clay Street to access one (1) new buildable lot containing portions of 42, 46, 48 and 54 Skyline Drive and to connect Skyline Drive to Davkim Lane. A reconfiguration of the 20 Davkim Lane lot to accommodate the proposed roadway will result in the creation of an additional lot with frontage on proposed Clay Street. A copy of Ed Pesce's report is included in your packet. A letter of opposition to this proposal is also included in your packet. Staff does not have a recommendation at this time. This proposal will significantly impact future development in that area, particularly relevant to the workforce housing project that the applicant has publicly committed to building. The Board should thoroughly discuss this proposal and the future potential that will be created.

FROM 07-01-16 STAFF REPORT:
The Applicant submitted a modified plan and materials for the Board to consider. The Applicant also submitted a revised list of waivers from the Subdivision Regulations and a revised Storm Water Management Plan. One of the proposed changes to the proposed subdivision plans is that the proposed Clay Street does not continue into or through any portion of the 20 Davkim Lane property. Staff does not have a recommendation at this time.

FROM 08-01-16 STAFF REPORT:
No further update.

FROM 08-18-16 STAFF REPORT:
At the last regular meeting, the Applicant did not provide any additional info. There was discussion from the Board about not allowing Clay Street to go through the rest of the development from Skyline. There was discussion on why there can't be a decision made on this application. However, there was also a point made that this plan is important to the overall proposed development. The Board was reminded that staff has not received the required traffic report yet for the Richmond Development and to wait to make a decision at the scheduled special meetings for all of Richmond's projects. The Board was also reminded of the pending litigation with Land Court regarding the ownership of Clay Street as a reason to hold this particular application. Staff does not have any further recommendations at this time.

UPDATE
This application was briefly discussed at the 08-25 meeting. Due to pending litigation between property

owners about the status and rights within Clay Street, the matter was continued.

- **#7988 Richmond Great Point Development, LLC, Nancy Ann Lane, Greglen Avenue, Davkim Lane, and Old South Road**

  FROM 07-01-16 STAFF REPORT:

  The Applicant is seeking approval of a Definitive Subdivision Plan to reconfigure certain roadway segments and reconfigure existing lots in the area comprising thirteen (13) contiguous lots and 1,270 linear feet +/- of roadway segments. The Applicant is seeking approval to improve the engineering design of Nancy Ann Lane and Greglen Avenue roadways to accommodate the future mixed-use development. No buildings are proposed to be developed as part of the proposed subdivision; however most of the vacant properties will not be reconfigured until the roadway reconfiguration improvements are completed. Staff does not have any recommendations at this time.

  FROM 08-01-16 STAFF REPORT:

  No further update.

  FROM 08-18-16 STAFF REPORT:

  No further update.

- **#39-16 Old South Road Crossing Retail "Liner" Buildings, 63, 67m 73, and 75(A) Old South Road**

  FROM 07-01-16 STAFF REPORT:

  The Applicant is requesting a Major Commercial Development Special Permit to develop a series of retail "liner" buildings that will include retail, personal services, and restaurant uses. These uses are proposed within a series of five (5) single story buildings, to be located on a combination of five (5) contiguous properties. The Applicant is further requesting waivers from Off-Street Parking; Driveway Access; and Site Plan Review. The Applicant intends to construct three (3) of the five (5) buildings first. These commercial buildings will have multiple commercial tenants in each structure, however no residential uses are proposed. One (1) structure will have outdoor display and outdoor patio area. Mr. Ed Pesce, PE provided an engineering review comments that are included in the Board's packet for consideration. One component of the proposed project is widening of Old South Road to add a center left or right turning late between the east-west Old South Road travel lanes. Should the Board consider approving this design concept, Mr. Pesce and staff recommend that additional design details be provided to the Board for their review. This would include the relocation of the drainage and electrical infrastructure on Old South Road. Recently, town staff had a coordinated review with the Applicants to discuss the proposed project. Staff understands that the Applicant would like to hear feedback from the Board on the proposed projects as the projects represent a preliminary design concept; however Mr. Pesce left the Applicant and their engineers a list of items to include in a future revision, as outlined in his July 4, 2016 review letter. Staff does not have any other recommendations at this time.

  FROM 08-01-16 STAFF REPORT:

  No further update.

  FROM 08-18-16 STAFF REPORT:

  At the last regular meeting, the Applicant requested for this application to be discussed as they have tenant commitments. The Applicant answered some past questions regarding proposed entrance lining up with the Valero's property across the street. The Board was notified that the Applicant has had discussions with the Naushop HOA about traffic and therefore the traffic study is still pending as it was redone. There was a discussion about creating a commercial village like the development across the street. There was a reminder that a sidewalk easement will be important to provide. The Board also asked the Applicant for a copy of the Landscape Plan; however the Board was notified that the HDC has only reviewed and approved a Landscape Plan for the first and second lots of the retail "liner"

building project. During the discussion, the Board heard comments from the public where the Chair of the Naushop HOA pleaded for the Board to not allow Old South Road to "look like Route 132 in Hyannis!" Also, there was a question on the hours of operation for the proposed restaurant and what could be mitigated in relationship to the impact of the restaurant. Since the last meeting, staff has received the updated HDC approved elevations of two (2) of the proposed retail buildings.

UPDATE

At the 08-25 meeting the Board's discussion mostly focused on driveway access onto Old South Road, the location of the dumpsters, and potential impacts to surrounding property owners from the proposed restaurant with patio.

- **#40-16 "Meadows II" Rental Apartment Development Project, 20 and 20R Davkim Lane**

FROM 07-01-16 STAFF REPORT:

The Applicant is requesting a Special Permit to allow the development of the "Medows II," a workforce rental community project, located on a combination of two (2) contiguous properties, comprising of two hundred and twenty-five (225) rental apartment units. The proposed project will offer a mix/range of studio, one-bedroom, two-bedroom, and three-bedroom units, with a total of three hundred and sixty-three (363) individual bedrooms. The Applicant is further requesting waivers from Major Site Plan Review; Intensity Regulations; and Site Plan Review. The Applicants will be providing a Traffic Study for a future meeting. The proposed project will need to be served by new infrastructure, which will be provided by the applicant. This includes water and sewer services, drainage, street lighting, landscaping, etc. Recently, town staff had a coordinated review with the Applicants to discuss the proposed project. Staff understands that the Applicant would like to hear feedback from the Board on the proposed projects as the projects represent a preliminary design concept. Staff does not have any recommendations at this time.

FROM 08-01-16 STAFF REPORT:

No further update.

FROM 08-18-16 STAFF REPORT:

See comments below for #43-16.

- **#43-16 "Sandpiper Place" Single Family home Development Project, Off Daffodil Lane, Mayflower Circle, Evergreen Way, and Old South Road**

FROM 07-01-16 STAFF REPORT:

The Applicant is requesting a Special Permit to develop the "Sandpiper Place" workforce homeownership housing development, comprised of one hundred (100) single family housing units on a combination of nineteen (19) contiguous properties. Also, the proposed project includes a major "community focal point" that will be located adjacent to the main entrance, designed to incorporate a series of public spaces for community use, including meeting the house/barn structure, an outdoor common area, an outdoor patio/stage area, and landscaping improvements. The Applicant has further submitted a conventional subdivision plan in support of the Special Permit in which a total of one hundred (100) individual single family lots are proposed. The proposed lots range from 4,000 square feet to 4,500 square feet. The Applicant is further seeking waivers from Residential Development Options; Intensity Regulations; and Site Plan Review. Recently, town staff had a coordinated review with the Applicants to discuss the proposed project. Staff understands that the Applicant would like to hear feedback from the Board on the proposed projects as the projects represent a preliminary design concept. Staff recommends the Applicant to provide the Board a timeline of the "Phases" proposed of the project. Staff does not have any other recommendations at this time.

FROM 08-01-16 STAFF REPORT:

No further update.

FROM 08-18-16 STAFF REPORT:
At the last meeting, the Board heard comments from the public asking for the Board to keep the existing neighbors in mind when making decisions on the proposed development. Cormac Collier reminded the Board about the meeting held October of 2015 regarding the lot size and creating a "transitionary zone" between the existing development and the proposed. Staff does not have any recommendations at this time.

UPDATE
At the 08-25 meeting, the Board mostly discussed access through the Evergreen Way/Daffodil Lane Subdivision, lot sizes backing up to Evergreen Way, and the use of the community space.

- **#8013 "Meadows II" Rental Apartment Development Project, 20 and 20(R) Davkim Lane**
  The Applicant is seeking approval of a definitive subdivision that correlates with a Special Permit (File #40-16) currently being reviewed by the Board. The plan will reconfigure the existing property which will allow the development of the Meadows II for a workforce rental community which will comprise of two hundred and twenty-five (225) rental apartment units. The proposed plans show the connection with the 50' wide Nancy Ann Lane and Davkim Lane intersection and then down to 40' wide roads proposed within the development. The plan also shows the proposed intersection with Old South Road.

- **#8014 "Sandpiper Place" Single Family Home Development Project, Off Daffodil Lane, Mayflower Circle, Evergreen Way, and Old South Road**
  The Applicant is seeking approval of a definitive subdivision that correlates with a Special Permit (File #43-16) currently being reviewed by the Board. The plan is to develop the "Sandpiper Place" workforce housing to allow a series of one hundred and six (106) proposed lots and 4,350 linear foot long roadway segments. The subdivision will be comprised of one (1) community / public use lot, three (3) open space lot, ninety-nine (99) buildable lots to be owned by Richmond Great Point Development, LLC and three (3) buildable lots to be owned by Housing Nantucket.

Warrant Articles for 2016 Special Town Meeting

- **Article 13:** Zoning Map change from Limited Use General 2 (LUG-2) to Limited Use General 1 (LUG-1) for properties at 106 and 108 Surfside Road, along with parcels 7, 8, 9, 10, and 11 as shown on Plan No. 2014-52 filed with the Nantucket Registry of Deeds;
- **Article 14:** Zoning Bylaw amendment and Map change from Country Overlay District (COD) to Town Overlay District (TOD) for properties at 4, 6 and 8 Hawthorne Lane (citizen petition);
- **Article 15:** Zoning Map change from Limited Use General 2 (LUG-2) to Limited Use General 1 (LUG-1)for properties located within Surfside West and located off of South Shore Road, Rachel Drive, Zachary Way, Tripp Drive, Correia Lane, Felcon Drive, Marilyn Lane, Masaquet Avenue, and Morgan Square (citizen petition); and
- **Article 16:** Zoning Map change from Limited Use General 2 (LUG-2) to Residential 40 (R-40) for property at 4 Daffodil Lane (citizen petition).

Staff will provide further information at the meeting.

Preliminary Plans:

- **#8024 Roy K. & Carol A. Barrett, 154 Cliff Road (Map 41 Parcel 73)**

ZBA Cases:

- **#24-16 6 Lily Street LLC & Sconset Partners LLC, 6 & 8 Lily Street (Map 73.3.1 Parcels 109 & 110)**
- **#32-16 Alan A. Shuch as Trustee of the Ann F. Shuch Qulaified Personal Residnence Trust, 45 Quidnet Road (Map 21 Parcel 21)**
- **#33-16 Susan A. Wagner, 3 Meader Street (Map 42.2.3 Parcel 39)**
- **#34-16 Polpis Harbor, LLC, 248 & 250 Polpis Road (Map 26 Parcel 27)**

Staff will provide a recommendation at the meeting.

Public Comments:

Other Business:

- **40B 106 Surfside Road,** *Comments*
- **Discuss Special Town Meeting Warrant Articles for scheduling public hearing dates**
- **Discuss future meeting times**

Adjourn:

Nantucket Planning Board

UPDATED

Nantucket Planning Board Agenda

MONDAY, SEPTEMBER 12, 2016
6:30PM
4 Fairgrounds Road
Public Safety Facility Community Room
First Floor
www.nantucket-ma.gov
Video of meeting available on Town website

(AGENDA SUBJECT TO CHANGE)

The complete text, plans, application, or other material relative to each agenda items are available for inspection at the Planning Office at 2 Fairgrounds Road between the hours of 8:30 AM and 4:30 PM

I. **Call to order:**

II. **Approval of the agenda:**

III. **Minutes:**

- **June 13, 2016**
- **July 11, 2016**
- **August 8, 2016**
- **August 25, 2016 Special Meeting**

IV. **ANRs:**

- **#8017 David Fredericks, 7 Newtown Road (Map 55 Parcel 212)** ***Re-Affirm Vote***
- **#8018 Mark J. Yacos & Deborah A. Yacos, 23 Woodbine Street (Map 80 Parcel 95)**
- **#8019 Lori Jeanne Sherman & Gordon M. Folger, 18 York Street (Map 55.4.1 Parcel 144)**
- **#8020 Leslie A. Johnson, 48 West Chester Street (Map 41 Parcel 385)**
- **#8021 Mark Clausen & Mary Davis, Mark J. & Pia L. Abate, and Elizabeth & Mark Norris, 130A**

Main Street, 130B Main Street, and 130 Main Street (Map 42.3.3 Parcels 96.1, 96.2 & 96.3)

- **#8022 Cheryl J. Bunker, 17 East Lincoln Ave (Map 42.4.1 Parcel 5)**
- **#8023 James F. & Diane H. Cabral, 8 South Shore (Map 80 Parcel 3)**

V. Second Dwellings:

- **Brian & Mary MacDonald, 11 Cottage Ave, Siasconset (Map 73.31 Parcel 52)** *(Held from August)*
- **Pippens Way LLC, 14 Pippens Way (Map 43 Parcel 94.7)**
- **Randy Sharp, 12R Skyline Drive (Map 79 Parcel 35)**
- **Julia Morash, 18A Gray Ave (Map 67 Parcel 183.1)**
- **Ten Pippen's Way LLC, 10 Pippens Way (Map 43 Parcel 94.6)**
- **Elizabeth Wetherell, 10 Hickory Meadow Lane (Map 41 Parcel 904)**
- **Moonlight Dance LLC, 4 Nobadeer Avenue (Map 80 Parcels 35 & 37)**

VI. Previous Plans:

- **#1242 Topland Properties, Off Low Beach Road,** *Form J release (Lots 5-57)*
- **#6842 Nantucket Westmoor Farms, LLC, 6 & 8 Westmoor Farms Road,** *Covenant & Restriction Agreement discussion*
- **#7640 Fisher Lane Subdivision,** *Form J release (Lot 2) & Legal Documents*
  **** This item was not anticipated by the Chairman 48 hours in advance. ****
- **#7904 Newtown Court Subdivision,** *Form J & Covenant*
  **** This item was not anticipated by the Chairman 48 hours in advance. ****
- **131 Main Street,** *modification to the secondary dwelling approved site plan*
- **194 Cliff Road,** *modification to the secondary dwelling approved site plan*
- **18 Sleepy Hollow Road,** *modification to the secondary dwelling approved site plan*

VII. Public Hearings:

- **#7716 Valero Road Subdivision, 60, 62, 64, 66 & 68 Old South Road,** *action deadline 08-31-16,* ***CONTINUE TO 11-14-16***
- **#7946 Stephen M. Waterhouse, 20 Sparks Avenue,** *action deadline 11-30-16*
- **#35-16 Seacliff, LLC and 142 Cliff Road, LLC, 144 Cliff Road & 142 Cliff Road,** *action deadline 10-31-16*
- **#36-16 Seacliff, LLC and 146 Cliff Road, LLC, 144 & 146 Cliff Road,** *action deadline 10-31-16*
- **#37-16 Inn Partners Regatta, LLC, 78 Center Street,** *action deadline 10-31-16*
- **#48-16 NIR Retail LLC, 137 Old South Road,** *action deadline 11-6-16*
- **#49-16 Robert G. & Melanie Sabelhaus, 2 Quaise Pastures Road,** *action deadline 11-10-16*
- **#50-16 Zeke Dog LLC Subdivision Modification #1, 31 Quidnet Road,** *action deadline 12-11-16*
- **#51-16 Housing Nantucket Affordable Rental Units, 75B Old South Road,** *action deadline 12-11-16*
- **#8016 Gouin Village Subdivision, Vesper Lane,** *action deadline 12-11-16*

RICHMOND GREAT POINT DEVELOPMENT, LLC APPLICATIONS:

- **#7918 Richmond Great Point Development, LLC – 42, 48, & 54 Skyline Drive & 20 Davkim Lane,** *action deadline 11-30-16*
- **#7988 Richmond Great Point Development, LLC, Nancy Ann Lane, Greglen Avenue, Davkim Lane, and Old South Road,** *11-30-16*
- **#39-16 Old South Road Crossing Retail "Liner" Buildings, 63, 67m 73, and 75(A) Old South Road,** *action deadline 11-30-16*
- **#40-16 "Meadows II" Rental Apartment Development Project, 20 and 20R Davkim Lane,** *action deadline 11-30-16*

- **#43-16 "Sandpiper Place" Single Family Home Development Project, Off Daffodil Lane, Mayflower Circle, Evergreen Way, and Old South Road,** *action deadline 11-30-16*
- **#8013 "Meadows II" Rental Apartment Development Project, 20 and 20(R) Davkim Lane**
- **#8014 "Sandpiper Place" Single Family Home Development Project, Off Daffodil Lane, Mayflower Circle, Evergreen Way, and Old South Road**

Warrant Articles for 2016 Special Town Meeting:

- **Article 13:** Zoning Map change from Limited Use General 2 (LUG-2) to Limited Use General 1 (LUG-1) for properties at 106 and 108 Surfside Road, along with parcels 7, 8, 9, 10, and 11 as shown on Plan No. 2014-52 filed with the Nantucket Registry of Deeds;
- **Article 14:** Zoning Bylaw amendment and Map change from Country Overlay District (COD) to Town Overlay District (TOD) for properties at 4, 6 and 8 Hawthorne Lane (citizen petition);
- **Article 15:** Zoning Map change from Limited Use General 2 (LUG-2) to Limited Use General 1 (LUG-1)for properties located within Surfside West and located off of South Shore Road, Rachel Drive, Zachary Way, Tripp Drive, Correia Lane, Felcon Drive, Marilyn Lane, Masaquet Avenue, and Morgan Square (citizen petition); and
- **Article 16:** Zoning Map change from Limited Use General 2 (LUG-2) to Residential 40 (R-40) for property at 4 Daffodil Lane (citizen petition).

VIII. Preliminary Plans:

- **Roy K. & Carol A. Barrett, 154 Cliff Road (Map 41 Parcel 73)**

IX. ZBA Cases:

- **#24-16 6 Lily Street LLC & Sconset Partners LLC, 6 & 8 Lily Street (Map 73.3.1 Parcels 109 & 110)**
- **#32-16 Alan A. Shuch as Trustee of the Ann F. Shuch Qulaified Personal Residnence Trust, 45 Quidnet Road (Map 21 Parcel 21)**
- **#33-16 Susan A. Wagner, 3 Meader Street (Map 42.2.3 Parcel 39)**
- **#34-16 Polpis Harbor, LLC, 248 & 250 Polpis Road (Map 26 Parcel 27)**

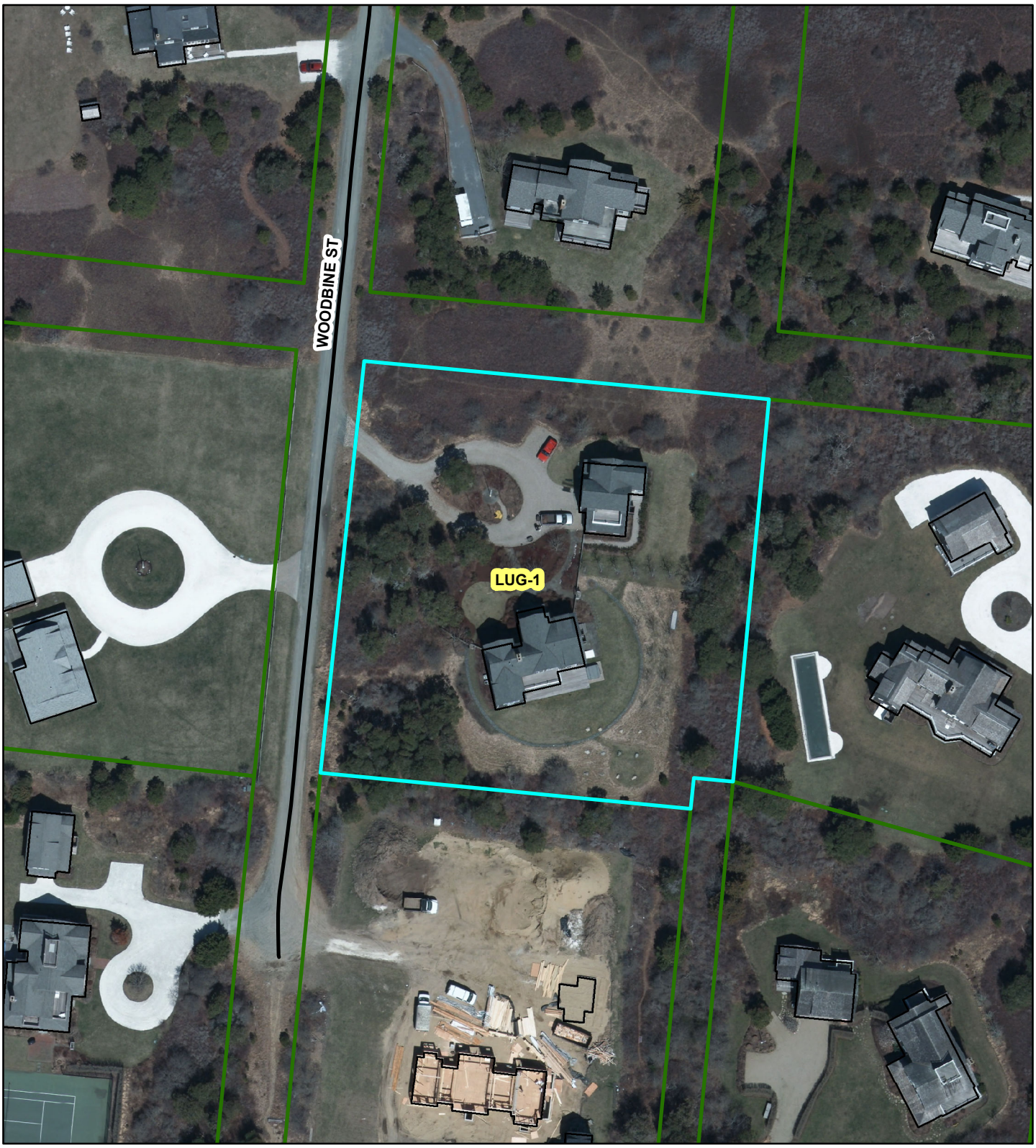
X. Public Comments:

XI. Other Business:

- **40B 106 Surfside Road,** *Comments*
- **Discuss Special Town Meeting Warrant Article for scheduling public hearing dates**
- **Discuss future meeting times**

XII. Adjourn:

#8018 ANR
Mark J. Yacos & Deborah A. Yacos
23 Woodbine Street
Map 80 Parcel 95



Nantucket Planning Board

Form A
Application for Endorsement of a Plan Believed Not to Require Approval
(ANR)

Date: SEPT. 2, 2016 *Name of Owner(s)/Applicant(s): MARK J. YACOS & DEBORAH A. YACOS

*Owner's/Applicant's address: 378 LAVELLE COURT WYCKOFF State: NJ Zip Code: 07481

Name of Owner(s)/Applicant(s): SAME
Owner's/Applicant's address: _____ State:_____Zip Code:_____

Location of Property (Street or Area): 23 WOODBINE STREET

Name of Registered Land Surveyor: ALAN M. GRADY, PLS, BRACKEN ENGINEERING, INC.
Surveyor's address: 19 OLD SOUTH ROAD NANTUCKET, MA 02554

The owner's title to the land derived under deed from OSCAR SQUARED, INC, dated 1-9-2004 and recorded at the Nantucket Registry of Deeds in Book 868 Page 344 and deed from TOWN OF NANTUCKET, dated 5-16-2014 and recorded at the Nantucket Registry of Deeds in Book 1434 Page 308 shown on Assessor's Map 80, Parcel 95.

To the Planning Board of the Town of Nantucket:

The undersigned wishes to record the accompanying plan and requests a determination and endorsement by said Board that approval by it under the Subdivision Control Law is not required. The undersigned believes that such approval is not required for the following reasons: (check all that apply)

- The accompanying plan is not a subdivision because it does not show a division of land (perimeter plan).

- The division of the tract of land shown on the accompanying plan is not a subdivision because every lot on the plan has frontage of at least such distance as is presently required by the *Nantucket Zoning By-Law* under Section 5 which requires _____feet for erection of a building on such lot; and every lot shown on the plan has such frontage on:

  A. a public way or a way which the City or Town Clerk certifies is maintained and used as a Public way, namely_____; **OR**

  B. a way shown on a plan theretofore approved and endorsed in accordance with the Subdivision Control Law, namely_____on _____(date) and Subject to the following conditions_____; **OR**

  C. a way in existence on _____(date); the date when the Subdivision Control Law became effective in the Town of Nantucket, having in the opinion of the Planning Board, sufficient

width, suitable grades, and adequate construction to provide for the need to vehicular traffic in relation to the proposed use of the land abutting thereon or served thereby, and for the installation of municipal services to serve such land and the buildings erected or to be erected thereon, namely _____.

- The division of the tract of land shown on the accompanying plan is not a subdivision because it shows a proposed conveyance or other instrument, namely_____, which adds to, takes away from or changes the size and shape of lots in such a manner so that no lot affected is left without frontage as required by the *Nantucket Zoning By-Law* under Section 5, which requires _____feet.

- The division of the tract of land shown on the accompanying plan is not a subdivision because two or more buildings, specifically_____ buildings were standing on the land prior to 1955, the date when the Subdivision Control Law went into effect in the Town of Nantucket, and one of such building remains standing on each of the lots; said buildings as shown and located on the accompanying plan. Evidence of the existence of such buildings prior to the effective date of the Subdivision Control Law is submitted as follows: _____

_____

- Other reasons or comments: (see M.G.L., Chapter 41, Section 81-L)

PERIMETER PLAN TO COMBINE SEVERAL PARCELS INTO ONE.

_____

_____

I hereby certify that the applicant(s) listed above have been authorized by me to file a plan with the Planning Board of Nantucket on property that I own.

DONALD F. BRACKEN, JR. Agent

Planning Board File #_____

Endorsement Date:_____

RESERVED FOR REGISTRY USE

I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN CONFORMANCE WITH THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

COMMONWEALTH OF MASSACHUSETTS
ALAN M. GRADY No. 37732
PROFESSIONAL LAND SURVEYOR

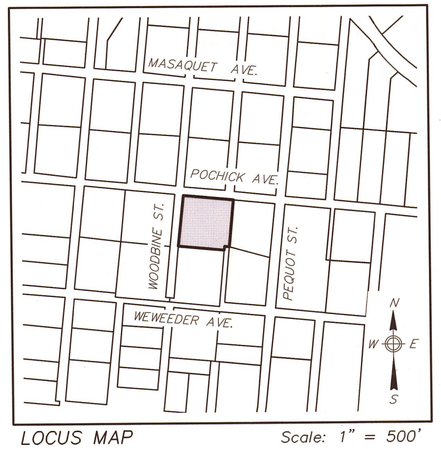
9/2/16

Alan M Grady

ALAN M. GRADY, PLS
MASSACHUSETTS REG.
No. 37732

ZONE: LUG–1

	REQUIRED
LOT AREA:	40,000 s.f.
FRONTAGE:	100'
FRONT YARD:	35'
SIDE/REAR YARD:	10'
GROUND COVER:	7% (MAX)



LOCUS MAP Scale: 1" = 500'

PARCEL "B" (PLAN No. 2013–32)

PARCEL "A" (PLAN No. 2013–32)

#25 WOODBINE STREET
MAP 80 PARCEL 275

POCHICK (40' WIDE – PRIVATE WAY) AVENUE

CB/DH/FD (TYPICAL)

S 84°32'29" E
240.00'

EX. DRIVEWAY

PORCH

EXIST. COTTAGE

DECK

EDGE OF TRAVELED WAY

LOT 3
(PLAN FILE 54–W)

MAP 80
PARCEL 95
59,700± s.f.

EX. HOUSE

4 UNITS

N 05°27'31" E
250.00'

#24 WOODBINE STREET
MAP 80 PARCEL 96

WOODBINE STREET (40' WIDE – PRIVATE WAY)

PARCEL "A" (PLAN No. 2013–14)

PARCEL "B" (PLAN No. 2013–14)

S 05°27'31" W
235.00'

18 PEQUOT STREET
MAP 80 PARCEL 94
MARGARET N. TOCE, TRUSTEE ET AL
DEED BK: 1174 PG: 146
PLAN FILE 54–L

N 84°32'29" W
20.00'

N 05°27'31" E
15.00'

S 84°32'29" E 220.00'

#22 WOODBINE AVENUE
MAP 80 PARCEL 322

21 WOODBINE AVENUE
MAP 80 PARCEL 321
21 WOODBINE LLC
DEED BK: 1342 PG: 75
PLAN FILE 54–W

PARCEL "C" (PLAN No. 2013–14)

(40' WIDE) (N.C.)

PARCEL "D" (PLAN No. 2013–14)

FORMERLY HOLLY STREET

16 PEQUOT STREET
MAP 80 PARCEL 320
CHRISTINE PETRELLA
DEED BK: 1174 PG: 141
PLAN FILE 54–L (LOT 1)

N
W E
S
MA. COORD. SYSTEM ISLAND ZONE

PLAN SCALE
0 8 16 24 32 40 60 80 120
1 inch = 40 feet

PLAN OF LAND
IN
NANTUCKET, MA

PREPARED FOR
MARK J. YACOS &
DEBORAH A. YACOS
#23 WOODBINE STREET
MAP 80 PARCEL 95

PREPARED BY

BRACKEN ENGINEERING, INC.
19 OLD SOUTH ROAD
NANTUCKET, MA 02554
tel: (508) 325–0044
fax: (508) 833–2282

SCALE: 1" = 40' SEPTEMBER 1, 2016

APPROVAL BY THE
NANTUCKET PLANNING BOARD
NOT REQUIRED

FILE NUMBER: _____

DATE APPROVED: _____

NOTES:

1. LOCUS: #23 WOODBINE STREET
   MAP 80 PARCEL 95
2. OWNER: MARK J. YACOS & DEBORAH A. YACOS
3. DEED REF: BK: 868 PG: 344
   BK: 1434 PG: 308
4. PLAN REF: PLAN FILE 54–W (LOT 3)
   PLAN NO. 2013–14 (PARCELS A & B)
5. LOCUS DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD AS SHOWN ON FEMA FLOOD INSURANCE RATE MAP No. 25019C–0152–G dated 06/09/2014.
6. PLANNING BOARD ENDORSEMENT DOES NOT CONSTITUTE A DETERMINATION OF CONFORMANCE UNDER CURRENT ZONING.
7. THE PURPOSE OF THIS PLAN IS TO COMBINE LOT "3" AS SHOWN ON PLAN FILE 54–W and PARCELS "A" & "B" AS SHOWN ON PLAN NO. 2013–14 INTO ONE LOT.

S:\Autocad Drawings\Nantucket\Woodbine Street\23 Woodbine Street\23 Woodbine Street – Merger Plan.dwg

#8019 ANR
Lori Jeanne Sherman & Gordon M. Folger
18 York Street
Map 55.4.1 Parcel 144

Nantucket Planning Board

NANTUCKET TOWN CLERK
2016 SEP -2 AM 10:51

Form A
Application for Endorsement of a Plan Believed Not to Require Approval
(ANR)

Date: September 1, 2016 *Name of Owner(s)/Applicant(s): Lori Jeanne Sherman and Gordon M. Folger

*Owner's/Applicant's address: 18 York St, Nantucket

State: MA Zip Code: 02554

*(include all names and addresses of the principals of the owner entity such as principal officer of corporation, trustees of the trust and partners of the partnership)

Location of Property (Street or Area): 18 York St

Name of Registered Land Surveyor: Frank O. Holdgate / Ackme Survey LLC

Surveyor's address: PO Box 1448, Nantucket, MA 02554

The owner's title to the land derived under deed from Phyllis E. Sherman, date June 25, 1998 And recorded in Nantucket Registry of Deed, Book _____ Page _____ or Land Court Certificate of Title # 18433, registered in Nantucket District as Doc. No. 808533 and shown on Assessor's Map# 55.4.1, Parcel # 144.

To the Planning Board of the Town of Nantucket:
The undersigned wishes to record the accompanying plan and requests a determination and endorsement by said Board that approval by it under the Subdivision Control Law is not required. The undersigned believes that such approval is not required for the following reasons: (check all that apply)

- The accompanying plan is not a subdivision because it does not show a division of land (perimeter plan).
- The division of the tract of land shown on the accompanying plan is not a subdivision because every lot on the plan has frontage of at least such distance as is presently required by the *Nantucket Zoning By-Law* under Section 5 which requires _____feet for erection of a building on such lot; and every lot shown on the plan has such frontage on:

  A. a public way or a way which the City or Town Clerk certifies is maintained and used as a Public way, namely_____; **OR**

  B. a way shown on a plan theretofore approved and endorsed in accordance with the Subdivision Control Law, namely_____on _____(date) and Subject to the following conditions_____; **OR**

  C. a way in existence on _____(date); the date when the Subdivision Control Law became effective in the Town of Nantucket, having in the opinion of the Planning Board, sufficient

2016 SEP -2 PM 12: 20

RECEIVED
SEP 06 2016
By CHK#3176

Nantucket Planning Board

Form A
Application for Endorsement of a Plan Believed Not to Require Approval
(ANR)

Date: September 1, 2016 *Name of Owner(s)/Applicant(s): Lori Jeanne Sherman and Gordon M. Folger
*Owner's/Applicant's address: 18 York St, Nantucket
State: MA Zip Code: 02554
*(include all names and addresses of the principals of the owner entity such as principal officer of corporation, trustees of the trust and partners of the partnership)

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  A. a public way or a way which the City or Town Clerk certifies is maintained and used as a Public way, namely_____; **OR**

  B. a way shown on a plan theretofore approved and endorsed in accordance with the Subdivision Control Law, namely_____on _____(date) and Subject to the following conditions_____; **OR**

  C. a way in existence on _____(date); the date when the Subdivision Control Law became effective in the Town of Nantucket, having in the opinion of the Planning Board, sufficient

width, suitable grades, and adequate construction to provide for the need to vehicular traffic in relation to the proposed use of the land abutting thereon or served thereby, and for the installation of municipal services to serve such land and the buildings erected or to be erected thereon, namely _____.

- The division of the tract of land shown on the accompanying plan is not a subdivision because it shows a proposed conveyance or other instrument, namely_____, which adds to, takes away from or changes the size and shape of lots in such a manner so that no lot affected is left without frontage as required by the *Nantucket Zoning By-Law* under Section 5, which requires _____feet.

- The division of the tract of land shown on the accompanying plan is not a subdivision because two or more buildings, specifically dwelling and garage buildings were standing on the land prior to 1955, the date when the Subdivision Control Law went into effect in the Town of Nantucket, and one of such building remains standing on each of the lots; said buildings as shown and located on the accompanying plan.Evidence of the existence of such buildings prior to the effective date of the Subdivision Control Law is submitted as follows: LC Plan No. 16158 A dated June 4, 1936

- Other reasons or comments: (see M.G.L., Chapter 41, Section 81-L)

I hereby certify that the applicant(s) listed above have been authorized by me to file a plan with the Planning Board of Nantucket on property that I own.

Atty for owners

Owner's Signature

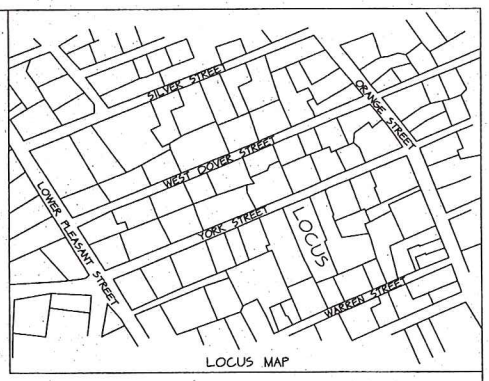
Planning Board File #_____

Endorsement Date:_____

ZONE: ROH
MIN LOT SIZE = 5,000SF
FRONTAGE = 50FT
G/C = 50%
FRONT YARD = 0FT
SIDE/REAR YARD = 5FT

TRAVERSE CLOSURE
ANGULAR ERROR: -0 00 18"
LINEAR ERROR: 0.04'
DIRECTION: S 60 49 57 W
PRECISION: 1:20,322

NORTH
STATE PLANE ISLAND ZONE NAD 83
15°01'19"
LC 16158-A



LOCUS MAP

THE PLANNING BOARD DETERMINES THAT: LOTS 1 + 2 DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS WETLANDS PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BY LAW BUT TILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BYLAWS. DETERMINATION OF APPLICABILITY MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.

YORK STREET
PUBLIC - VARIABLE WIDTH

CONCRETE BOUND FOUND
NORTH EAST CORNER HELD
UTILITY POLE

S66°40'47"W
69.11'
CONCRETE CURB
49.11'
23.0'
CONCRETE CURB HELD FACE 112.54'
S21°27'41"E
18'
10'

CONCRETE BOUND FOUND
CENTER HELD
20.00'

LOT 1
0.1 ACRES.
5315 SF

DWELLING
DWELLING
S21°00'03"E
72.84'
N67°55'43"E
6.51'
3.6'
2.4'
GARAGE
GARAGE
N27°10'20"W
35.83'
N58°50'59"E
4.82'
37.92'
S67°34'38"W

JAMES BRADLEY
TAX MAP 55.4.1 PARCEL 143
DEED BOOK 1342 PAGE 150
PLAN 2002-21

MOLLIE + DAVID BIGLEY
TAX MAP 55.4.1 PARCEL 145
DEED BOOK 1388 PAGE 109
PLAN 45-Y

RECORD ANGLE HELD 99°41'20"
RECORD DISTANCE 4.82 HELD
IRON PIPE NOT FOUND

#5 REBAR WITH PLASTIC CAP
SET 8-31-2016

N21°35'19"W
197.79'
WOOD FENCE

LOT 2
0.2 ACRES.
7904 SF

N00°14'20"W
87.49'
WOOD FENCE
CONCRETE WALL

CONCRETE BOUND FOUND
DRILL HOLE HELD
IRON PIPE NOT FOUND

STUART M. + MARY A. DUTY
TAX MAP 55.4.1 PARCEL 93
CERT. 24132
LC PLAN 23867-A
LOT 1.

CONCRETE BOUND FOUND
DRILL HOLE HELD

WOOD FENCE
51.35'
N68°57'13"E
10.67'
N70°45'47"E

CONCRETE BOUND FOUND
DRILL HOLE HELD

9 WARREN STREET NANTUCKET REALTY TRUST
TAX MAP 55.4.1 PARCEL 95
DEED BOOK 1406 PAGE 136

STANLET J. + CAROL B. TRUFFINI
TAX MAP 55.4.1 PARCEL 94
CERT. 19002
LC PLAN 15686-A

SURVEY INSTRUMENT:
LEICA VIVA GNSS GS 14
(RECEIVER ACCURACY: 5 MM + 0.5 PPM)
LEICA TS 06 PLUS 5"
EDM ACCURACY: 1.5 MM + 2 PPM

NOTES:
1. ALL MEASUREMENTS WERE MADE USING AN EDM OR RTK GPS.

2. BUILDING CORNERS WERE MEASURED TO THE CORNERBOARDS 15' UP.

NOTE:
STRUCTURES PREDATE THE TOWN OF NANTUCKET SUBDIVISION CONTROL LAW AS ADOPTED FEBRUARY 15, 1955

LOT 1 + 2 ARE CREATED PURSUANT TO CHAPTER 41 SECTION 81L

THE BUILDINGS SHOWN ON THIS PLAN ARE NOT LOCATED WITHIN A FLOOD ZONE AS DELINEATED ON THE FIRM MAP #25019C0088G, EFFECTIVE: JUNE 9, 2014 BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

PLANNING BOARD ENDORSEMENT DOES NOT CONSTITUTE A DETERMINATION OF CONFORMANCE UNDER ZONING.

NANTUCKET PLANNING BOARD
APPROVAL UNDER THE
SUBDIVISION CONTROL LAW
NOT REQUIRED

DATE APPROVED _____
DATE SIGNED _____
FILE # _____

SUBDIVISION PLAN OF LAND
18 YORK STREET
TAX MAP 55.4.1 PARCEL 144
SCALE 1" = 20' 4-18-2016
ACKME SURVEY LLC
PO BOX 1448
NANTUCKET, MASS. 02554

PREPARED FOR:
LORI JEANNE SHERMAN + GORDON M. FOLGER
18 YORK STREET
TAX MAP 55.4.1 PARCEL 144
CERT. 18433
LC PLAN 16158-A

0 20 40 100

9-1-2016

FRANK D. HOLDGATE No. 23867 REGISTERED PROFESSIONAL LAND SURVEYOR

I CERTIFY THAT THIS PLAN WAS DRAWN FROM AN ACTUAL SURVEY MADE ON THE GROUND IN ACCORDANCE WITH THE LAND COURT INSTRUCTIONS OF 2006 ON OR BETWEEN JANUARY 1, 2016 AND AUGUST 8, 2016.

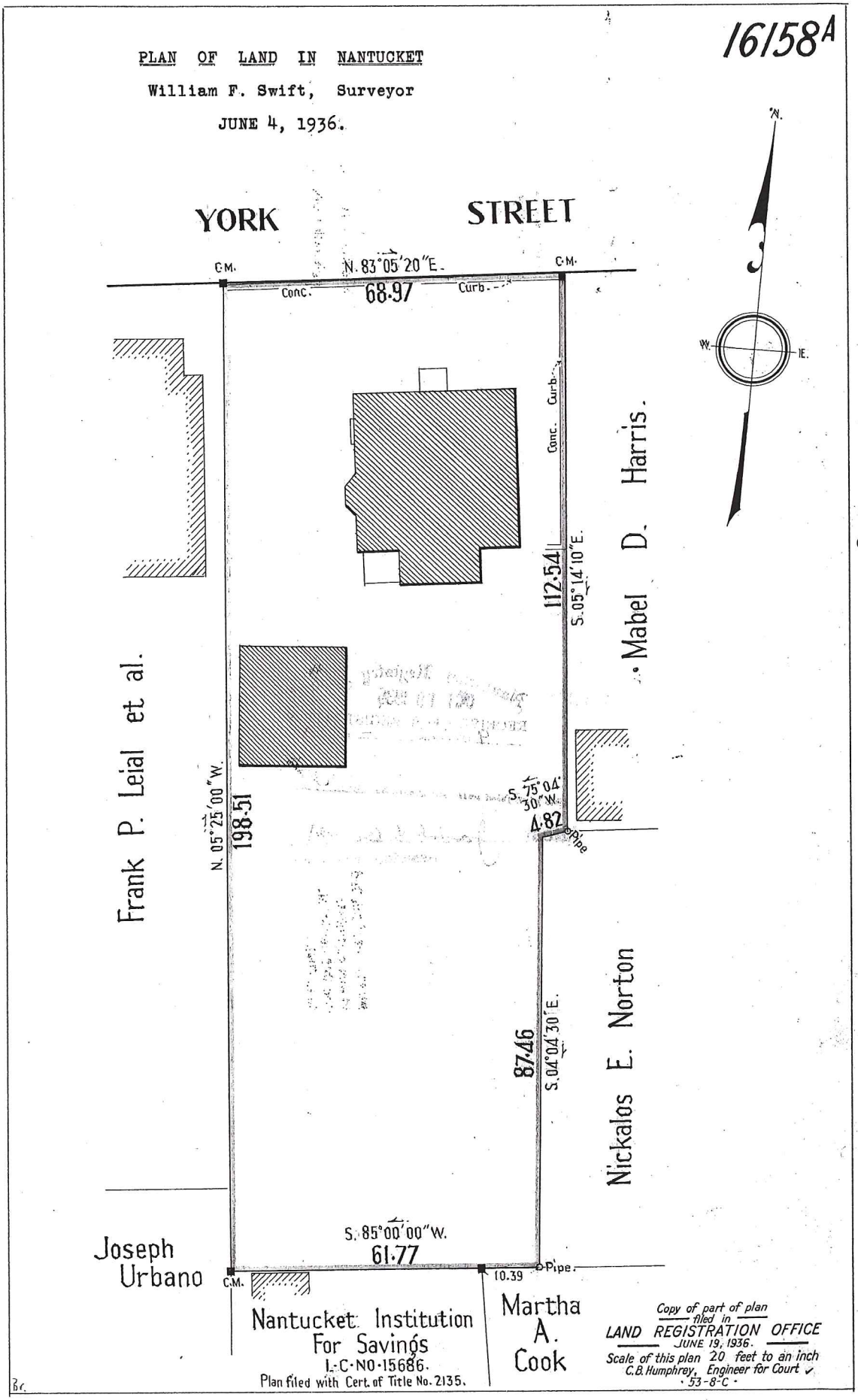
9-1-2016
PROFESSIONAL LAND SURVEYOR DATE

16158A

PLAN OF LAND IN NANTUCKET

William F. Swift, Surveyor

JUNE 4, 1936.



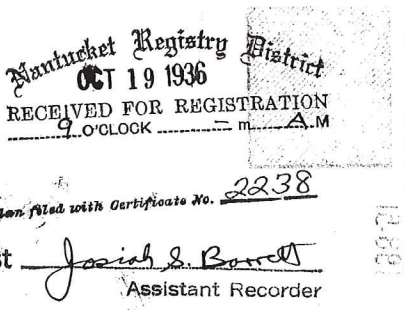
Copy of part of plan filed in LAND REGISTRATION OFFICE JUNE 19, 1936.

Scale of this plan 20 feet to an inch

C.B. Humphrey, Engineer for Court

·53-8-C·

This plan filed with Certificate No. 2238



Nantucket Registry District
OCT 19 1936
RECEIVED FOR REGISTRATION
9 O'CLOCK ---- m. A.M

This plan filed with Certificate No. 2238

Attest Josiah S. Barrett
Assistant Recorder

#8020 ANR
Leslie A. Johnston
48 West Chester Street
Map 41 Parcel 385

#8021 ANR
Mark Clausen & Mary Davis
130 Main Street
Map 42.3.3 Parcels 96.1, 96.2, 96.3

RECEIVED
SEP 6 2016
#8021

NANTUCKET
TOWN CLERK
2016 AUG -1 PM 12:56

NANTUCKET
TOWN CLERK
2016 SEP -6 PM 2:30

Nantucket Planning Board

Form A
Application for Endorsement of a Plan Believed Not to Require Approval
(ANR)

9-6-16

Date: 8-1-16 *Name of Owner(s)/Applicant(s): MARK CLAUSEN & MARY DAVIS

*Owner's/Applicant's address: 4334 LELAND ST CHEVY CHASE
State: MD Zip Code: 20815
*(include all names and addresses of the principals of the owner entity such as principal officer of corporation, trustees of the trust and partners of the partnership)

Location of Property (Street or Area): 130 A MAIN ST.

Name of Registered Land Surveyor: JEFFREY BLACKWELL
Surveyor's address: 20 TEASDALE CR. NANTUCKET MA

The owner's title to the land derived under deed from EVAN MANDERY, TR, date 12-10-2012
And recorded in Nantucket Registry of Deed, Book 1358 Page 33 or Land Court Certificate of Title #_____, registered in Nantucket District Book_____, Page_____ and shown on Assessor's Map# 42.3.3, Parcel # 96.1.
To the Planning Board of the Town of Nantucket:

The undersigned wishes to record the accompanying plan and requests a determination and endorsement by said Board that approval by it under the Subdivision Control Law is not required. The undersigned believes that such approval is not required for the following reasons: (check all that apply)

- The accompanying plan is not a subdivision because it does not show a division of land (perimeter plan).
- The division of the tract of land shown on the accompanying plan is not a subdivision because every lot on the plan has frontage of at least such distance as is presently required by the *Nantucket Zoning By-Law* under Section 5 which requires _____feet for erection of a building on such lot; and every lot shown on the plan has such frontage on:

  A. a public way or a way which the City or Town Clerk certifies is maintained and used as a Public way, namely_____; **OR**

  B. a way shown on a plan theretofore approved and endorsed in accordance with the Subdivision Control Law, namely_____on _____(date) and Subject to the following conditions_____; **OR**

  C. a way in existence on _____(date); the date when the Subdivision Control Law became effective in the Town of Nantucket, having in the opinion of the Planning Board, sufficient

width, suitable grades, and adequate construction to provide for the need to vehicular traffic in relation to the proposed use of the land abutting thereon or served thereby, and for the installation of municipal services to serve such land and the buildings erected or to be erected thereon, namely _____.

- The division of the tract of land shown on the accompanying plan is not a subdivision because it shows a proposed conveyance or other instrument, namely_____, which adds to, takes away from or changes the size and shape of lots in such a manner so that no lot affected is left without frontage as required by the *Nantucket Zoning By-Law* under Section 5, which requires _____feet.

- The division of the tract of land shown on the accompanying plan is not a subdivision because two or more buildings, specifically 3 buildings were standing on the land prior to 1955, the date when the Subdivision Control Law went into effect in the Town of Nantucket, and one of such building remains standing on each of the lots; said buildings as shown and located on the accompanying plan.Evidence of the existence of such buildings prior to the effective date of the Subdivision Control Law is submitted as follows: HISTORIC INFORMATION SUBMITTED WITH APPLICATION.

- Other reasons or comments: (see M.G.L., Chapter 41, Section 81-L)

I hereby certify that the applicant(s) listed above have been authorized by me to file a plan with the Planning Board of Nantucket on property that I own.

Owner's Signature

Planning Board File # 8024

Endorsement Date:_____

Nantucket Planning Board

Form A
Application for Endorsement of a Plan Believed Not to Require Approval
(ANR)

9-6-16

Date: AUG. 3, 2016 *Name of Owner(s)/Applicant(s): MARK J. ABATE & PIA L. ABATE
A.K.A. PIA C. LICCIARDI
*Owner's/Applicant's address: 138 LAKE DR MOUNTAIN LAKE
State: NJ Zip Code: 07048
*(include all names and addresses of the principals of the owner entity such as principal officer of corporation, trustees of the trust and partners of the partnership)

Location of Property (Street or Area): 130 B MAIN ST.

Name of Registered Land Surveyor: JEFFREY L. BLACKWELL
Surveyor's address: 20 TEASDALE CR. NANTUCKET, MA

The owner's title to the land derived under deed from CHARLES KULMANN et ux, date 4/10/2006
And recorded in Nantucket Registry of Deed, Book 1016 Page 53 or Land Court Certificate of Title #_____, registered in Nantucket District Book_____, Page_____ and shown on Assessor's Map# 42.3.3, Parcel # 96.2.
To the Planning Board of the Town of Nantucket:

The undersigned wishes to record the accompanying plan and requests a determination and endorsement by said Board that approval by it under the Subdivision Control Law is not required. The undersigned believes that such approval is not required for the following reasons: (check all that apply)

- The accompanying plan is not a subdivision because it does not show a division of land (perimeter plan).

- The division of the tract of land shown on the accompanying plan is not a subdivision because every lot on the plan has frontage of at least such distance as is presently required by the *Nantucket Zoning By-Law* under Section 5 which requires _____feet for erection of a building on such lot; and every lot shown on the plan has such frontage on:

  A. a public way or a way which the City or Town Clerk certifies is maintained and used as a Public way, namely_____; **OR**

  B. a way shown on a plan theretofore approved and endorsed in accordance with the Subdivision Control Law, namely_____on _____(date) and Subject to the following conditions_____; **OR**

  C. a way in existence on _____(date); the date when the Subdivision Control Law became effective in the Town of Nantucket, having in the opinion of the Planning Board, sufficient

width, suitable grades, and adequate construction to provide for the need to vehicular traffic in relation to the proposed use of the land abutting thereon or served thereby, and for the installation of municipal services to serve such land and the buildings erected or to be erected thereon, namely _____.

- The division of the tract of land shown on the accompanying plan is not a subdivision because it shows a proposed conveyance or other instrument, namely_____, which adds to, takes away from or changes the size and shape of lots in such a manner so that no lot affected is left without frontage as required by the *Nantucket Zoning By-Law* under Section 5, which requires _____feet.

(•) The division of the tract of land shown on the accompanying plan is not a subdivision because two or more buildings, specifically 3 buildings were standing on the land prior to 1955, the date when the Subdivision Control Law went into effect in the Town of Nantucket, and one of such building remains standing on each of the lots; said buildings as shown and located on the accompanying plan.Evidence of the existence of such buildings prior to the effective date of the Subdivision Control Law is submitted as follows: HISTORIC INFORMATION SUBMITTED WITH APPLICATION.

(•) Other reasons or comments: (see M.G.L., Chapter 41, Section 81-L)

I hereby certify that the applicant(s) listed above have been authorized by me to file a plan with the Planning Board of Nantucket on property that I own.

_____
Owner's Signature

Planning Board File #_____

Endorsement Date:_____

NANTUCKET
TOWN CLERK

2016 AUG -1 PM 12:57

Nantucket Planning Board

Form A
Application for Endorsement of a Plan Believed Not to Require Approval
(ANR)

9-6-16

Date: 8-1-16 *Name of Owner(s)/Applicant(s): Elizabeth & Mark Norris

*Owner's/Applicant's address: PO BOX 3362 NANTUCKET
State: MA Zip Code: 02584
*(include all names and addresses of the principals of the owner entity such as principal officer of corporation, trustees of the trust and partners of the partnership)

Location of Property (Street or Area): 130 MAIN ST.

Name of Registered Land Surveyor: JEFFREY BLACKWELL
Surveyor's address: 26 TEASDALE CIRCLE NANTUCKET

The owner's title to the land derived under deed from LESLIE HEIDEN, date 04-24-2015
And recorded in Nantucket Registry of Deed, Book 1480 Page 174 or Land Court Certificate of Title #_____, registered in Nantucket District Book_____, Page_____ and shown on Assessor's Map# 42.3.3, Parcel # 96.3.
To the Planning Board of the Town of Nantucket:

The undersigned wishes to record the accompanying plan and requests a determination and endorsement by said Board that approval by it under the Subdivision Control Law is not required. The undersigned believes that such approval is not required for the following reasons: (check all that apply)

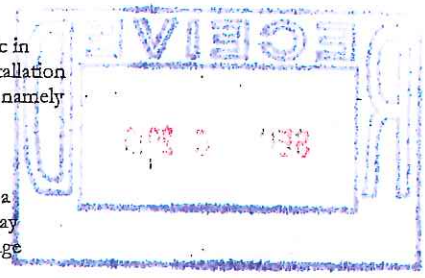
- The accompanying plan is not a subdivision because it does not show a division of land (perimeter plan).
- The division of the tract of land shown on the accompanying plan is not a subdivision because every lot on the plan has frontage of at least such distance as is presently required by the *Nantucket Zoning By-Law* under Section 5 which requires _____feet for erection of a building on such lot; and every lot shown on the plan has such frontage on:

  A. a public way or a way which the City or Town Clerk certifies is maintained and used as a Public way, namely_____; **OR**

  B. a way shown on a plan theretofore approved and endorsed in accordance with the Subdivision Control Law, namely_____on _____(date) and Subject to the following conditions_____; **OR**

  C. a way in existence on _____(date); the date when the Subdivision Control Law became effective in the Town of Nantucket, having in the opinion of the Planning Board, sufficient

width, suitable grades, and adequate construction to provide for the need to vehicular traffic in relation to the proposed use of the land abutting thereon or served thereby, and for the installation of municipal services to serve such land and the buildings erected or to be erected thereon, namely _____.



- The division of the tract of land shown on the accompanying plan is not a subdivision because it shows a proposed conveyance or other instrument, namely _____, which adds to, takes away from or changes the size and shape of lots in such a manner so that no lot affected is left without frontage as required by the *Nantucket Zoning By-Law* under Section 5, which requires _____ feet.

- The division of the tract of land shown on the accompanying plan is not a subdivision because two or more buildings, specifically 3 buildings were standing on the land prior to 1955, the date when the Subdivision Control Law went into effect in the Town of Nantucket, and one of such building remains standing on each of the lots; said buildings as shown and located on the accompanying plan.Evidence of the existence of such buildings prior to the effective date of the Subdivision Control Law is submitted as follows: HISTORIC INFORMATION SUBMITTED WITH APPLICATION.

- Other reasons or comments: (see M.G.L., Chapter 41, Section 81-L)

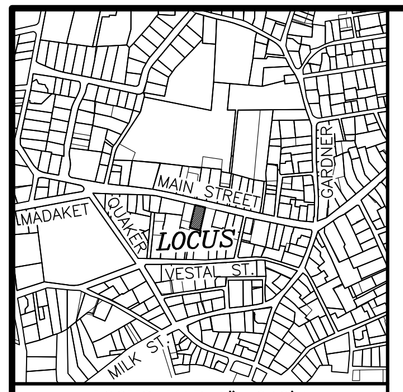
I hereby certify that the applicant(s) listed above have been authorized by me to file a plan with the Planning Board of Nantucket on property that I own.

Mary Davis

Owner's Signature

Planning Board File #_____

Endorsement Date:_____



LOCUS MAP 1"=640'±

THE PLANNING BOARD DETERMINES THAT:

(b) LOT(S) 1-3 DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS WETLANDS PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BY-LAW BUT STILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BY-LAWS. DETERMINATION OF APPLICABILITY MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.

CURRENT ZONING CLASSIFICATION:
Residential Old Historic (R-OH)

MINIMUM LOT SIZE: 5000 S.F.
MINIMUM FRONTAGE: 50 FT.
FRONT YARD SETBACK: none
REAR/SIDE SETBACK: 5 FT.
GROUND COVER % : 50%

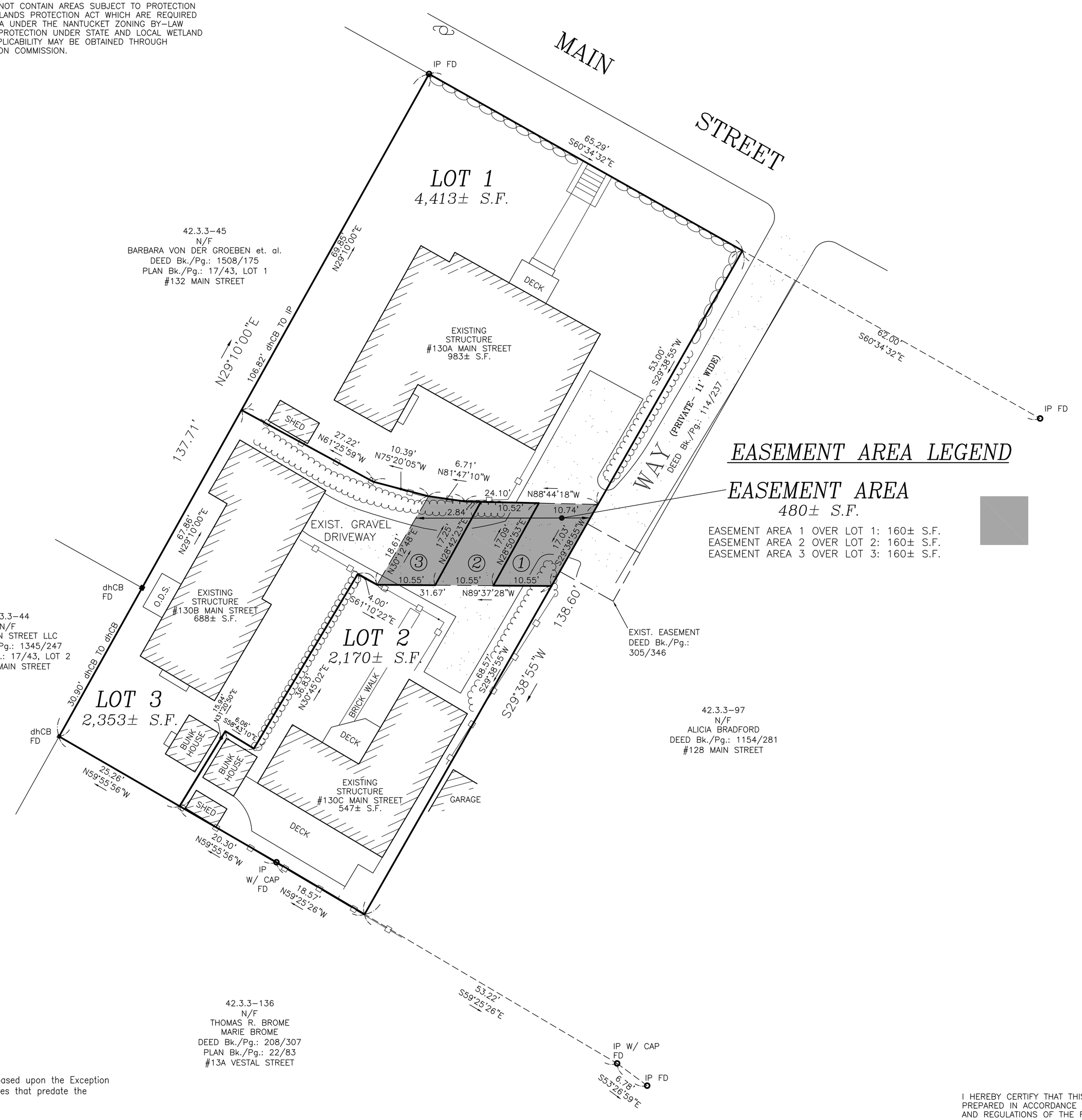
OWNER INFORMATION

THE 130 MAIN STREET CONDOMINIUM
MASTER DEED Bk./Pg.: 306/287
MASTER DEED SITE PLAN Bk./Pg.: 24/82

UNIT 1
ELIZABETH NORRIS
MARK NORRIS
UNIT DEED Bk./Pg.: 1480/174
ASSESSOR MAP 42.3.3 PARCEL 96.1
#130A MAIN STREET

UNIT 2
MARK CLAUSEN
MARY DAVIS
UNIT DEED Bk./Pg.: 1358/33
ASSESSOR MAP 42.3.3 PARCEL 96.2
#130C MAIN STREET

UNIT 3
MARK J. ABATE
PIA L. LICCIARDI (a.k.a. PIA C. LICCIARDI)
UNIT DEED Bk./Pg.: 1016/53
ASSESSOR MAP 42.3.3 PARCEL 96.3
#130B MAIN STREET



EASEMENT AREA LEGEND

EASEMENT AREA
480± S.F.

EASEMENT AREA 1 OVER LOT 1: 160± S.F.
EASEMENT AREA 2 OVER LOT 2: 160± S.F.
EASEMENT AREA 3 OVER LOT 3: 160± S.F.

Note: Lots 1-3 are being created pursuant to MGL c. 41, s81 P, based upon the Exception Clause of MGL c.41, s81 L for lots containing two or more structures that predate the adoption of Subdivision Control in Nantucket.

NANTUCKET REGISTRY OF DEEDS

Date: _____

Time: _____

Plan No.: _____

Attest: _____ Register

SHEET 1 OF 1

RESERVED FOR REGISTRY USE

Plan Bk./Pg.: 24/82

DEED REFERENCE

DEED BK. 306/287
DEED BK. 278/162
DEED BK. 114/237
DEED BK. 111/358

PLAN REFERENCE

PLAN Bk./Pg.: 24/82
PLAN Bk./Pg.: 13/13

LEGEND

dhCB FND ■ *DENOTES CONCRETE BOUND WITH DRILL HOLE FOUND*

IP FND ○ *DENOTES IRON PIPE FOUND*

BEING A DIVISION OF LAND SHOWN IN PLAN
BOOK 24 PAGE 82.
REFERENCE PLAN BOOK 13 PAGE 13

Division Plan of Land in Nantucket, MA Prepared for

130 MAIN STREET CONDOMINIUM

Scale: 1"= 10' SEPTEMBER 01, 2016

BLACKWELL & ASSOCIATES, Inc.
Professional Land Surveyors
20 TEASDALE CIRCLE
NANTUCKET, MASS. 02554
(508) 228-9026

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

NOTE: PLANNING BOARD ENDORSEMENT IS NOT A CERTIFICATION OF ZONING COMPLIANCE.

Nantucket Planning Board
APPROVAL UNDER THE
SUBDIVISION CONTROL LAW
NOT REQUIRED

_____
Barry Rector, Chairman

_____
Linda Williams, Vice Chairman

_____
Nathaniel Lowell

_____
Joseph Marcklinger

_____
John Trudel III

DATE SIGNED: _____

FILE No.: _____

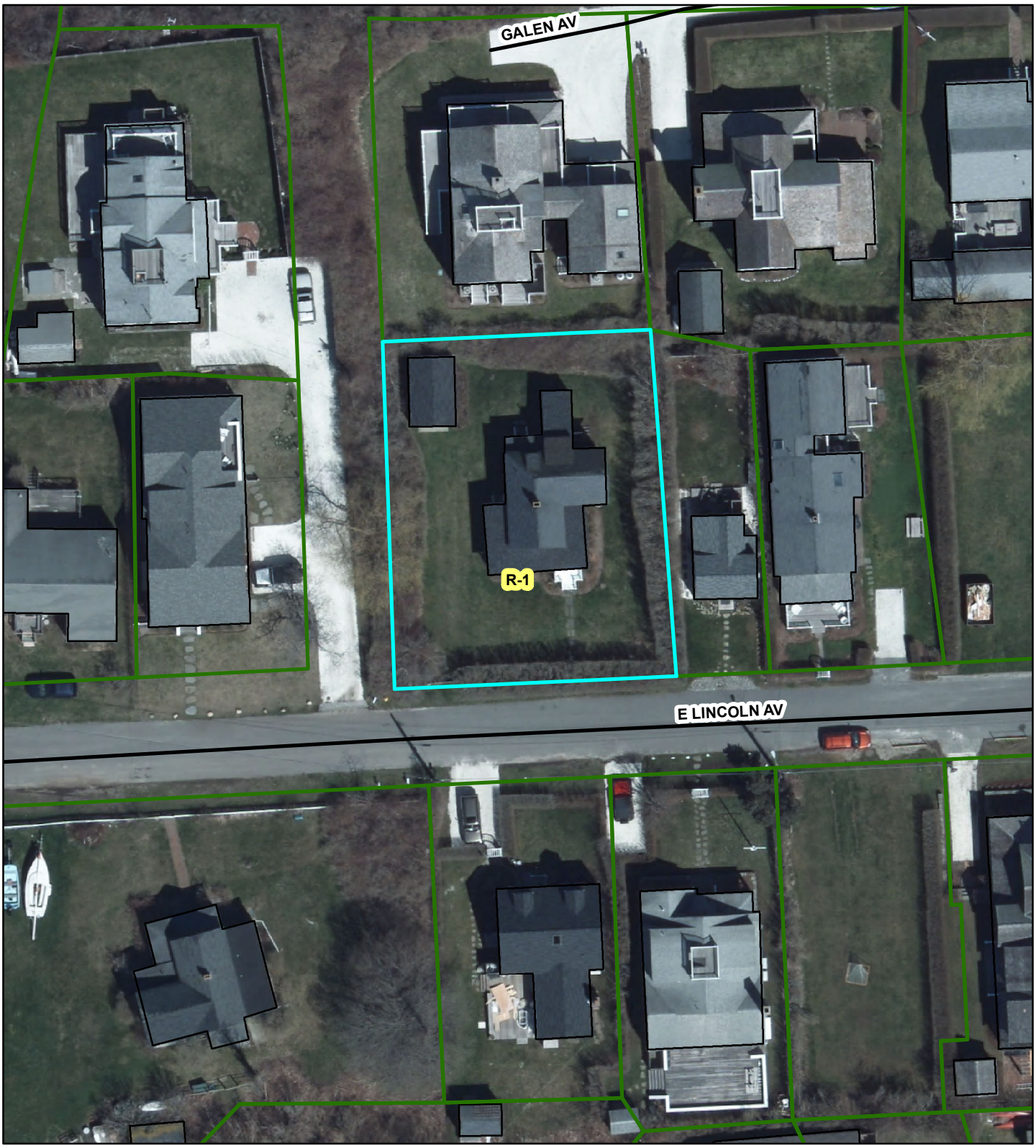
B8300

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

_____ _____
PROFESSIONAL LAND SURVEYOR DATE

T:\CHRIS 1 JOB 85
V:\DRAWFILES\B8300\81-L.dwg 9/6/2016 11:45:59 AM EDT

#8022 ANR
Cheryl J. Bunker
17 East Lincoln Ave
Map 42.4.1 Parcel 5



PLANNING BOARD

FILE # 8022

Nantucket Planning Board

2016 SEP -6 PM 1:00
NANTUCKET
TOWN CLERK

Form A
Application for Endorsement of a Plan Believed Not to Require Approval
(ANR)

Date: 9/6/2016 *Name of Owner(s)/Applicant(s): CHERYL J. BUNKER

*Owner's/Applicant's address: 41 WINDERMERE ROAD, AUBURNDALE,
State: MA Zip Code: 02466
*(include all names and addresses of the principals of the owner entity such as principal officer of corporation, trustees of the trust and partners of the partnership)

Location of Property (Street or Area): _____

Name of Registered Land Surveyor: EDWARD F. KING JR.
Surveyor's address: BOX 1197 NANTUCKET MA 02554

The owner's title to the land derived under deed from ERIC & SUSAN SCHNAPPER, date 10/1/1993
And recorded in Nantucket Registry of Deed, Book 279 Page 201 or Land Court Certificate of Title #_____, registered in Nantucket District Book_____, Page_____ and shown on Assessor's Map# 42.4.1, Parcel # 5.
To the Planning Board of the Town of Nantucket:

The undersigned wishes to record the accompanying plan and requests a determination and endorsement by said Board that approval by it under the Subdivision Control Law is not required. The undersigned believes that such approval is not required for the following reasons: (check all that apply)

- (C) The accompanying plan is not a subdivision because it does not show a division of land (perimeter plan).

- The division of the tract of land shown on the accompanying plan is not a subdivision because every lot on the plan has frontage of at least such distance as is presently required by the *Nantucket Zoning By-Law* under Section 5 which requires _____feet for erection of a building on such lot; and every lot shown on the plan has such frontage on:

  A. a public way or a way which the City or Town Clerk certifies is maintained and used as a Public way, namely_____; **OR**

  B. a way shown on a plan theretofore approved and endorsed in accordance with the Subdivision Control Law, namely_____on _____(date) and Subject to the following conditions_____; **OR**

  C. a way in existence on _____(date); the date when the Subdivision Control Law became effective in the Town of Nantucket, having in the opinion of the Planning Board, sufficient

width, suitable grades, and adequate construction to provide for the need to vehicular traffic in relation to the proposed use of the land abutting thereon or served thereby, and for the installation of municipal services to serve such land and the buildings erected or to be erected thereon, namely _____.

- The division of the tract of land shown on the accompanying plan is not a subdivision because it shows a proposed conveyance or other instrument, namely_____, which adds to, takes away from or changes the size and shape of lots in such a manner so that no lot affected is left without frontage as required by the *Nantucket Zoning By-Law* under Section 5, which requires _____feet.

- The division of the tract of land shown on the accompanying plan is not a subdivision because two or more buildings, specifically_____ buildings were standing on the land prior to 1955, the date when the Subdivision Control Law went into effect in the Town of Nantucket, and one of such building remains standing on each of the lots; said buildings as shown and located on the accompanying plan.Evidence of the existence of such buildings prior to the effective date of the Subdivision Control Law is submitted as follows: _____

_____

- Other reasons or comments: (see M.G.L., Chapter 41, Section 81-L)

_____

_____

I hereby certify that the applicant(s) listed above have been authorized by me to file a plan with the Planning Board of Nantucket on property that I own.

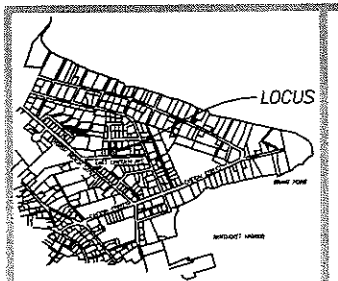
Edward Grieb AGENT

_____
Owner's Signature

Planning Board File # 8022

Endorsement Date:_____

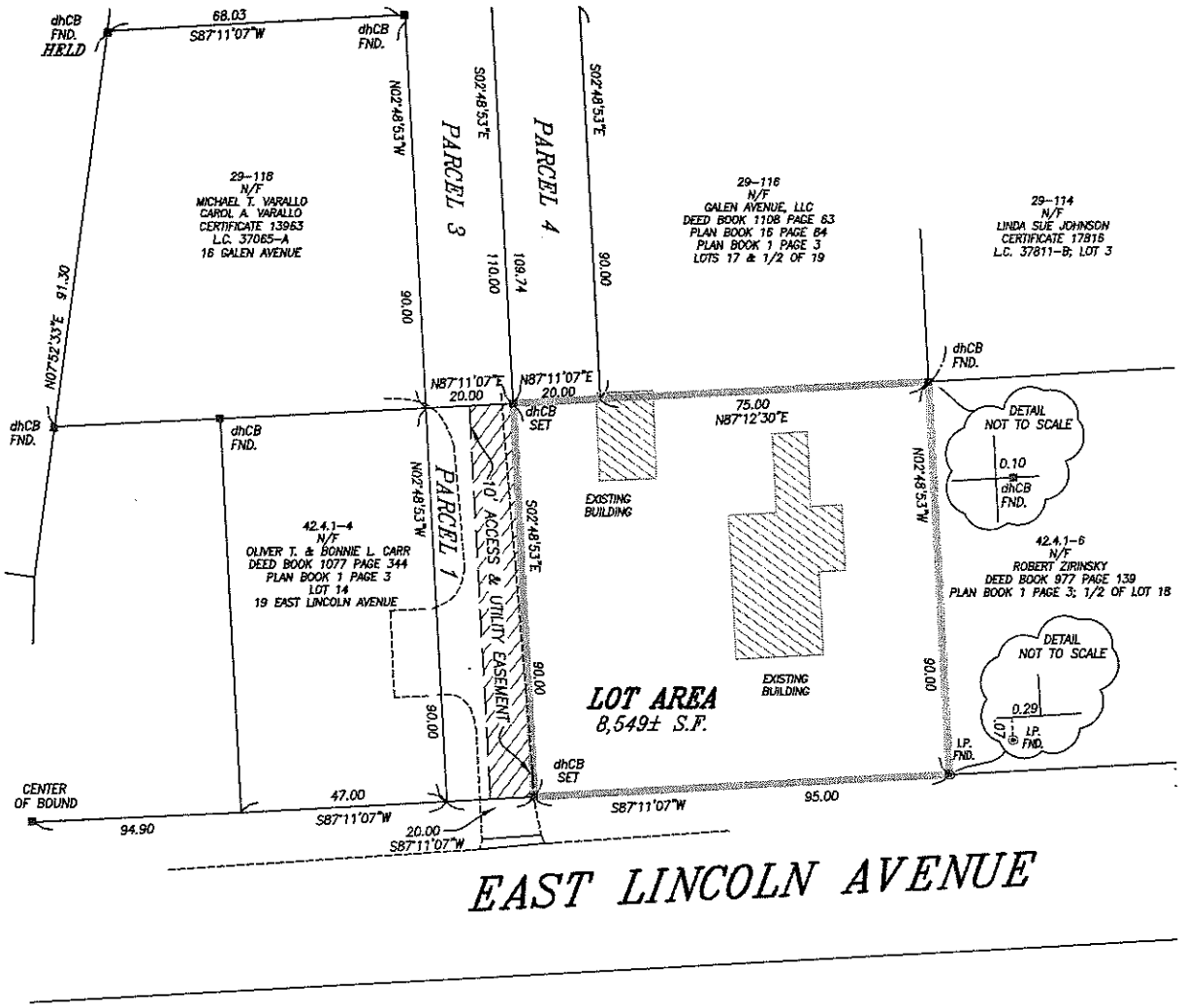
THE EXISTING STRUCTURES AS SHOWN HEREON DOES NOT REPRESENT OR IMPLY CONFORMANCE WITH THE NANTUCKET ZONING BYLAW.

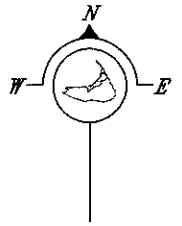


LOCUS MAP 1" = 2000'

CURRENT ZONING CLASSIFICATION:
Residential 1 (R-1)

MINIMUM LOT SIZE:	5000 S.F.
MINIMUM FRONTAGE:	50 FT.
FRONT YARD SETBACK:	10 FT.
REAR/SIDE SETBACK:	5 FT.
GROUND COVER % :	30 %





PERIMETER PLAN OF LAND IN NANTUCKET, MASS.

PREPARED FOR

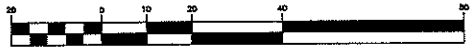
CHERYL J. BUNKER

DEED BOOK 427 PAGE 97
DEED BOOK 1486 PAGE 25

SCALE: 1"=20' DATE: JUNE 15, 2016

ISLAND SURVEYORS, LLC
Professional Land Surveyors
90 OLD SOUTH ROAD
NANTUCKET, MASS. 02554
(508) 228-2720

GRAPHIC SCALE



(IN FEET)
1 inch = 20 ft.

Nantucket Planning Board
Approval Under the
SUBDIVISION CONTROL LAW
NOT REQUIRED

_____
_____
_____
_____
_____

DATE SIGNED: _____

FILE No.: _____

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

_____ _____
PROFESSIONAL LAND SURVEYOR DATE

LEGEND

dhCB FND. ⊠ DENOTES DRILL HOLE IN CONCRETE BOUND FOUND

I.P. FND. ⊕ DENOTES IRON PIPE FOUND

PLAN REFERENCE

PLAN 2014-22; PARCEL 2
PLAN BOOK 1 PAGE 3; LOTS 16 & 1/2 OF 18

ASSESSORS MAP 42.4.1 PARCEL 5

K-571

D:\SC\K571\SP
C.R.

#8023 ANR
James F. & Diane H. Cabral
8 South Shore Road
Map 80 Parcel 3

PLANNING BOARD

FILE # 8023

Nantucket Planning Board

2016 SEP -6 PM 12:59

NANTUCKET TOWN CLERK

Form A
Application for Endorsement of a Plan Believed Not to Require Approval
(ANR)

Date: 9/6/2016 *Name of Owner(s)/Applicant(s): JAMES F. & DIANE H. CABRAL

*Owner's/Applicant's address: 8 SOUTH SHORE ROAD, NANTUCKET

State: MA Zip Code: 02554

*(include all names and addresses of the principals of the owner entity such as principal officer of corporation, trustees of the trust and partners of the partnership)

Location of Property (Street or Area): 8 SOUTH SHORE ROAD

Name of Registered Land Surveyor: EDWARD F. KING JR.

Surveyor's address: BOX 1197 NANTUCKET MA

The owner's title to the land derived under deed from DIANE H. CRABRAL, date 5/6/2014 And recorded in Nantucket Registry of Deed, Book 1455 Page 179 or Land Court Certificate of Title #_____, registered in Nantucket District Book_____, Page_____ and shown on Assessor's Map# 80, Parcel # 3.

To the Planning Board of the Town of Nantucket:

The undersigned wishes to record the accompanying plan and requests a determination and endorsement by said Board that approval by it under the Subdivision Control Law is not required. The undersigned believes that such approval is not required for the following reasons: (check all that apply)

- The accompanying plan is not a subdivision because it does not show a division of land (perimeter plan).
- The division of the tract of land shown on the accompanying plan is not a subdivision because every lot on the plan has frontage of at least such distance as is presently required by the *Nantucket Zoning By-Law* under Section 5 which requires 75 feet for erection of a building on such lot; and every lot shown on the plan has such frontage on:

A. a public way or a way which the City or Town Clerk certifies is maintained and used as a Public way, namely SOUTH SHORE RD.; **OR**

B. a way shown on a plan theretofore approved and endorsed in accordance with the Subdivision Control Law, namely_____on _____(date) and Subject to the following conditions_____; **OR**

C. a way in existence on _____(date); the date when the Subdivision Control Law became effective in the Town of Nantucket, having in the opinion of the Planning Board, sufficient

width, suitable grades, and adequate construction to provide for the need to vehicular traffic in relation to the proposed use of the land abutting thereon or served thereby, and for the installation of municipal services to serve such land and the buildings erected or to be erected thereon, namely _____.

- The division of the tract of land shown on the accompanying plan is not a subdivision because it shows a proposed conveyance or other instrument, namely_____, which adds to, takes away from or changes the size and shape of lots in such a manner so that no lot affected is left without frontage as required by the *Nantucket Zoning By-Law* under Section 5, which requires _____feet.

- The division of the tract of land shown on the accompanying plan is not a subdivision because two or more buildings, specifically_____ buildings were standing on the land prior to 1955, the date when the Subdivision Control Law went into effect in the Town of Nantucket, and one of such building remains standing on each of the lots; said buildings as shown and located on the accompanying plan.Evidence of the existence of such buildings prior to the effective date of the Subdivision Control Law is submitted as follows: _____

_____

- Other reasons or comments: (see M.G.L., Chapter 41, Section 81-L)

_____

_____

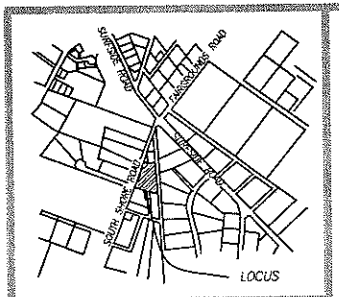
I hereby certify that the applicant(s) listed above have been authorized by me to file a plan with the Planning Board of Nantucket on property that I own.

Edward F. Hyde AGENT

Owner's Signature

Planning Board File # 8023

Endorsement Date:_____



LOCUS MAP SCALE: 1"=1200'±

CURRENT ZONING CLASSIFICATION:
Residential 40 (R-40)

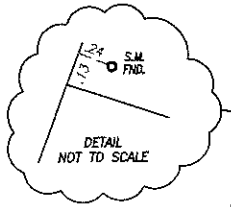
MINIMUM LOT SIZE:	40,000 S.F.
MINIMUM FRONTAGE:	75 FT.
FRONT YARD SETBACK:	30 FT.
REAR/SIDE SETBACK:	10 FT.
GROUND COVER % :	10%

42 of 1520

LEGEND

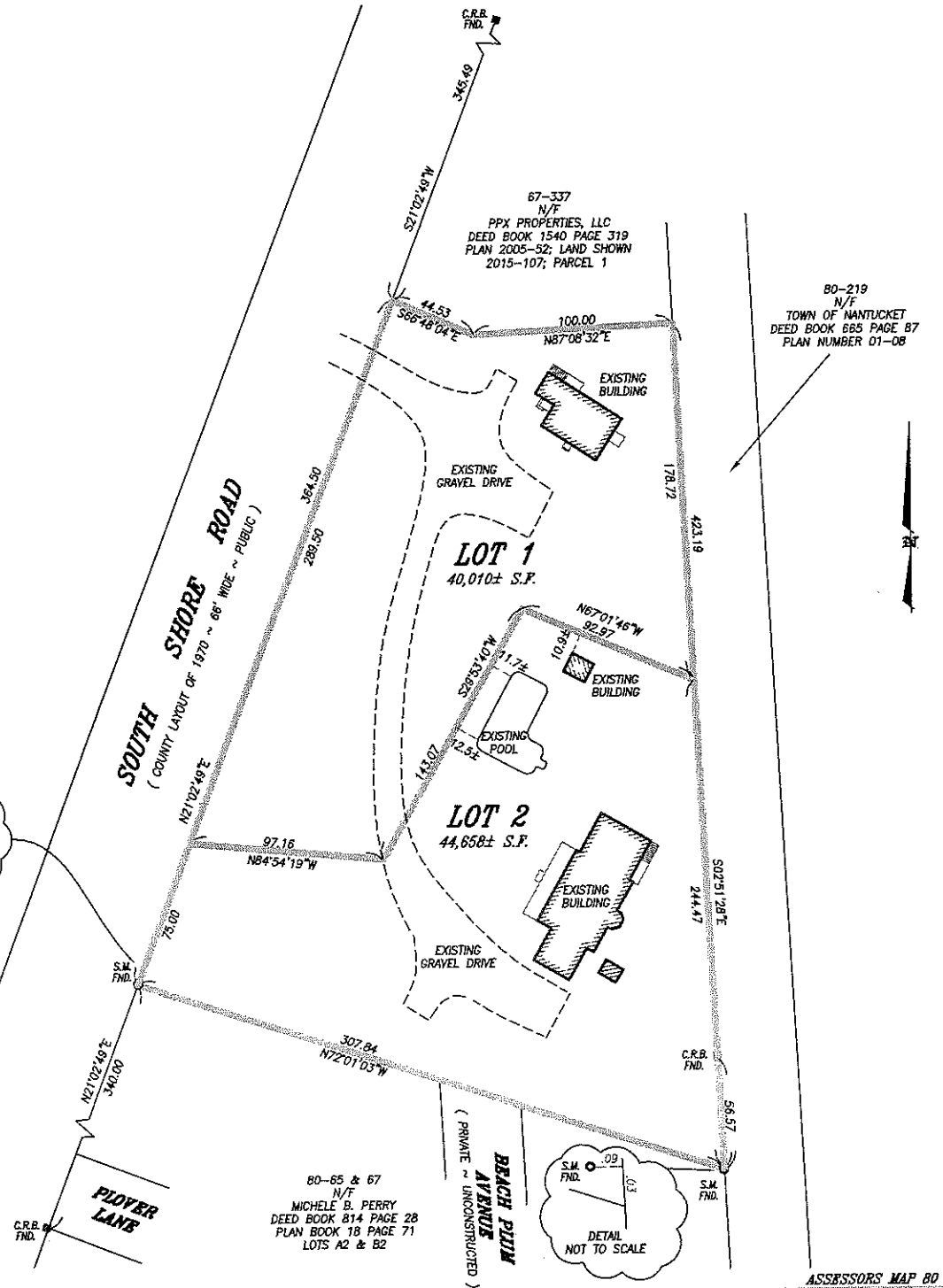
C.R.B. FND. ⊗ DENOTES COUNTY ROAD BOUND FOUND

S.M. FND. DENOTES STEEL MARKER FOUND



I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

PROFESSIONAL LAND SURVEYOR DATE



BEING A SUBDIVISION OF LAND SHOWN ON PLAN 2003-20

PLAN OF LAND
IN
NANTUCKET, MASS.

PREPARED FOR

JAMES F. CABRAL
AND
DIANE H. CABRAL

#8 SOUTH SHORE ROAD

DEED BOOK 1515 PAGE 290

SCALE: 1"= 40' DATE: SEPTEMBER 6, 2016

ISLAND SURVEYORS, LLC
Professional Land Surveyors
90 OLD SOUTH ROAD
NANTUCKET, MASS. 02554
(508) 228-2720

GRAPHIC SCALE

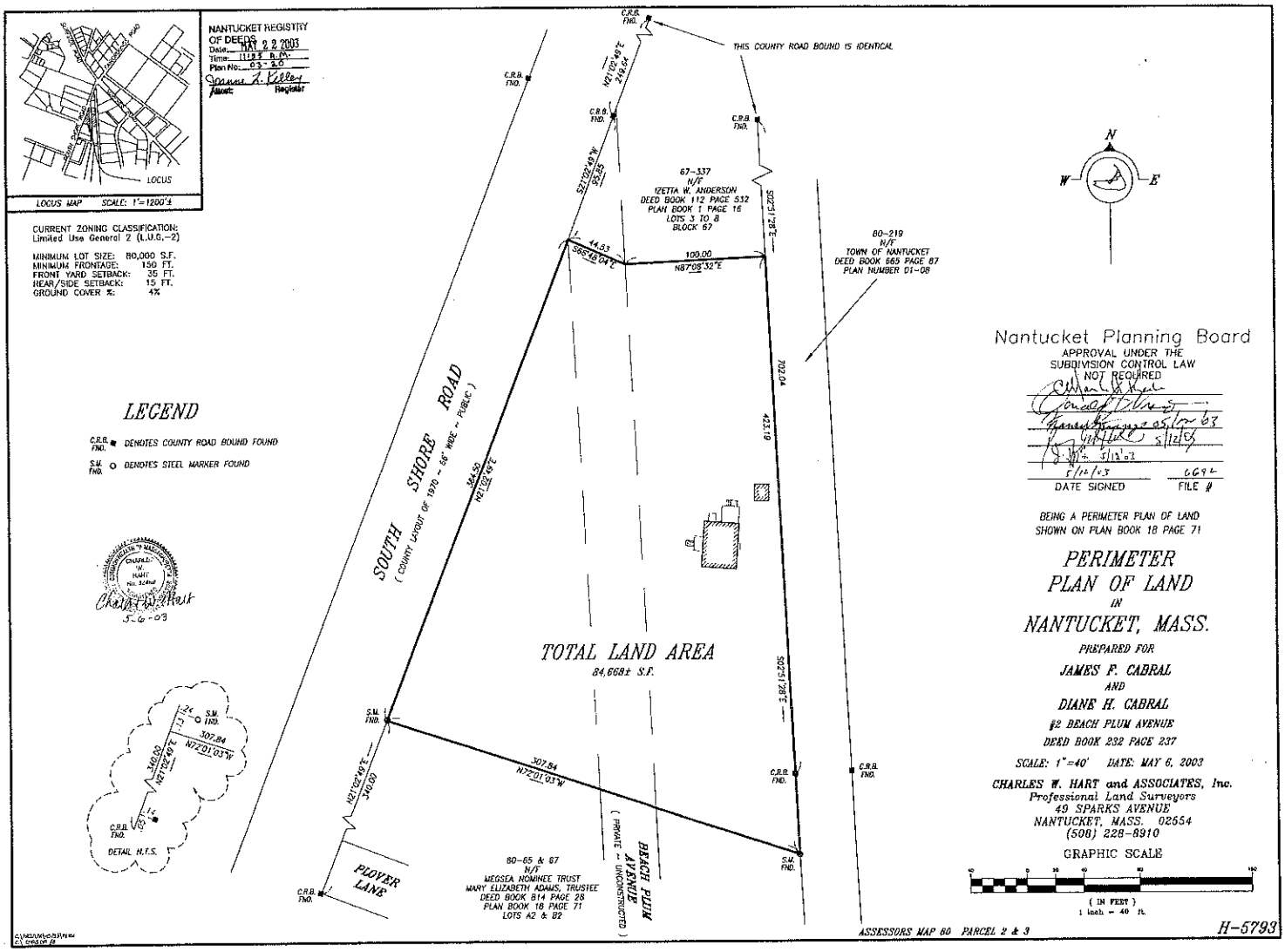
(IN FEET)
1 inch = 40 ft.

Nantucket Planning Board
APPROVAL UNDER THE
SUBDIVISION CONTROL LAW
NOT REQUIRED

DATE SIGNED FILE #

ASSESSORS MAP 80 PARCEL 3

K-614


NANTUCKET REGISTRY OF DEEDS
Date: MAY 22 2003
Time: 11:25 A.M.
Plan No.: 03-20
Attest: Register
LOCUS
LOCUS MAP SCALE: 1"=1200'±
CURRENT ZONING CLASSIFICATION:
Limited Use General 2 (L.U.G.-2)
MINIMUM LOT SIZE: 80,000 S.F.
MINIMUM FRONTAGE: 150 FT.
FRONT YARD SETBACK: 35 FT.
REAR/SIDE SETBACK: 15 FT.
GROUND COVER %: 4%
LEGEND
C.R.B. FND. DENOTES COUNTY ROAD BOUND FOUND
S.M. FND. DENOTES STEEL MARKER FOUND
THIS COUNTY ROAD BOUND IS IDENTICAL
N21°02'49"E 218.64
S21°02'49"W 75.25
67-337
N/F
IZETTA W. ANDERSON
DEED BOOK 112 PAGE 532
PLAN BOOK 1 PAGE 16
LOTS 3 TO 8
BLOCK 67
S02°51'28"E 3.82
14.53
S86°40'04"E
100.00
N87°08'32"E
80-219
N/F
TOWN OF NANTUCKET
DEED BOOK 665 PAGE 87
PLAN NUMBER 01-08
702.04
423.19
S02°51'28"E 3.82
SOUTH SHORE ROAD
(COUNTY LAYOUT OF 1970 - 66' WIDE - PUBLIC)
N21°02'49"E 94.50
TOTAL LAND AREA
84,668± S.F.
S.M. FND.
307.84
N72°01'03"W
340.00
N21°02'49"E
C.R.B. FND.
DETAIL N.T.S.
PLOVER LANE
80-65 & 67
N/F
WEGSEA NOMINEE TRUST
MARY ELIZABETH ADAMS, TRUSTEE
DEED BOOK 814 PAGE 28
PLAN BOOK 18 PAGE 71
LOTS A2 & B2
BEACH PLUM AVENUE
(PRIVATE - UNACCEPTED)
ASSESSORS MAP 80 PARCEL 2 & 3
N
W
E
Nantucket Planning Board
APPROVAL UNDER THE
SUBDIVISION CONTROL LAW
NOT REQUIRED
5/12/03
DATE SIGNED
6694
FILE #
BEING A PERIMETER PLAN OF LAND
SHOWN ON PLAN BOOK 18 PAGE 71
PERIMETER
PLAN OF LAND
IN
NANTUCKET, MASS.
PREPARED FOR
JAMES F. CABRAL
AND
DIANE H. CABRAL
#2 BEACH PLUM AVENUE
DEED BOOK 232 PAGE 237
SCALE: 1"=40' DATE: MAY 6, 2003
CHARLES W. HART and ASSOCIATES, Inc.
Professional Land Surveyors
49 SPARKS AVENUE
NANTUCKET, MASS. 02554
(508) 228-8910
GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.
H-5793

Nantucket Planning Board

SECONDARY DWELLING REPORT

Prepared by: Holly E. Backus, Land Use Specialist **Meeting Date:** September 12, 2016

11 Cottage Avenue
Assessors Map #**73.3.1** Parcel #**52, 52.1 & 52.2**

Applicant	**Owner**
Brian & Mary MacDonald	**Same**

The applicant is proposing to construct an 879 square foot three (3) bedroom secondary dwelling. The proposed secondary dwelling will be located on the south side of the site, which has approximately 28,748 square feet of lot area and is zoned SOH.

The dwelling will be accessed by a shared shelled driveway off Cottage Avenue, which is a private paved road. The site will contain two (2) exterior parking spaces. The site plan, as submitted meets the requirements of Zoning Bylaw Sections 139-18 and 139-20.1.

Planning staff recommends approval of this application with the following conditions:

(1) Although the owner has entered into a Lot Merger Covenant for Lot 9 and Lot 10 on Land Court Plan 12533-D and 12533-E, in the event that Lot 11 (shown on Land Court Plan 12533-E), is conveyed into separate ownership, this Secondary Dwelling approval will automatically lapse 30 days after the deed is filed with the Nantucket Registry of Deeds, unless there is a designation of an easement submitted to the Planning Board for review and approval;
(2) That an apron at the driveway entrance shall be constructed with a minimum depth of ten (10) feet and a maximum width of fifteen (15) feet, flared to a width not to exceed nineteen (19) feet;
(3) That any future landscaping at the driveway entrances be limited to low growing plant material not to exceed three (3) feet in height;
(4) That the driveways be cleared free of vegetation and obstruction to a width of twelve (12) feet and a height of thirteen (13) feet; and
(5) That the applicant shall submit an As-Built prior to the final inspection by staff which shall take place prior to the issuance of a Certificate of Occupancy.

PAID #2230 AUG 01 2016 BY:

2016 AUG -1 PM 4:12

Nantucket Planning Board

Nantucket Planning Board

Application for a Secondary Dwelling Permit

Applicant: Brian and Mary MacDonald

Mailing address: 54 Cathlow Drive Court, Riverside, CT 06878

Daytime phone number: 512.468.5940 **Fax:** 508.257.4264

E-mail Address: echurchillarch@gmail.com

Owner (if other than applicant): N/A

Mailing address:

Location of proposed secondary dwelling:

Street Address: 11 Cottage Avenue, Siasconset, MA

Assessors Tax Map #: 73.3.1 **Parcel #:** 52

Size of Parcel: .42 acres **Zoning District:** SOH

Secondary Dwelling # of Bedrooms: 3 **Primary Dwelling # of Bedrooms:** 5

*****Submission Requirements:**

See attached checklist dated January 15, 2015.

CURRENT ZONING CLASSIFICATION:
Residential Old Historic (S-OH) *EXISTING:*

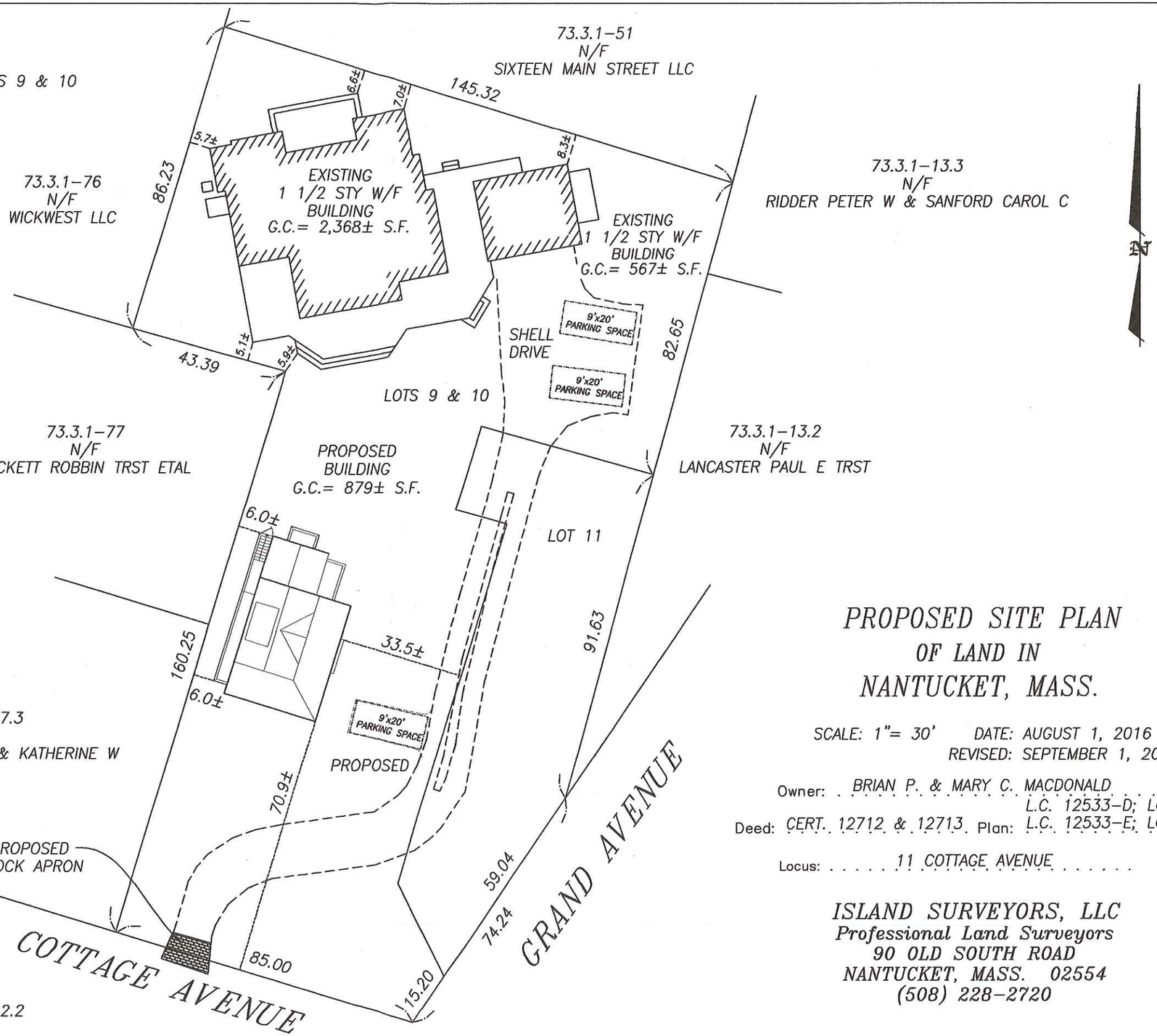
MINIMUM LOT SIZE:	5000 S.F.	23,748± S.F. LOTS 9 & 10
MINIMUM FRONTAGE:	50 FT.	SEE PLAN
FRONT YARD SETBACK:	none	SEE PLAN
REAR/SIDE SETBACK:	5 FT.	SEE PLAN
GROUND COVER % :	50%	SEE PLAN

I CERTIFY, AS OF : . . . . . , THAT THE BUILDING(S) IS/ARE LOCATED ON THE GROUND AS SHOWN HEREON.

COMMONWEALTH OF MASSACHUSETTS
EDWARD F. KING, JR. No. 15711 PROFESSIONAL LAND SURVEYOR

PROFESSIONAL LAND SURVEYOR

THIS PLOT PLAN WAS PREPARED FOR THE TOWN OF NANTUCKET BUILDING DEPARTMENT ONLY AND SHOULD NOT BE CONSIDERED A PROPERTY LINE SURVEY. THIS PLAN SHOULD NOT BE USED TO ESTABLISH PROPERTY LINES, FENCES, HEDGES OR ANY ANCILLARY STRUCTURES ON THE PREMISES. THE PROPERTY LINES SHOWN RELY ON CURRENT DEEDS AND PLANS OF RECORD.
THIS PLOT PLAN IS NOT A CERTIFICATION AS TO TITLE OR OWNERSHIP OF THE PROPERTY SHOWN. OWNERS OF ADJOINING PROPERTIES ARE SHOWN ACCORDING TO CURRENT ASSESSOR RECORDS.



PROPOSED SITE PLAN
OF LAND IN
NANTUCKET, MASS.

SCALE: 1"= 30' *DATE: AUGUST 1, 2016*
REVISED: SEPTEMBER 1, 2016

Owner: *BRIAN P. & MARY C. MACDONALD*
Deed: *CERT. 12712 & 12713* Plan: *L.C. 12533-D; LOT 9*
L.C. 12533-E; LOT 10 & 11

Locus: *11 COTTAGE AVENUE*

ISLAND SURVEYORS, LLC
Professional Land Surveyors
90 OLD SOUTH ROAD
NANTUCKET, MASS. 02554
(508) 228-2720

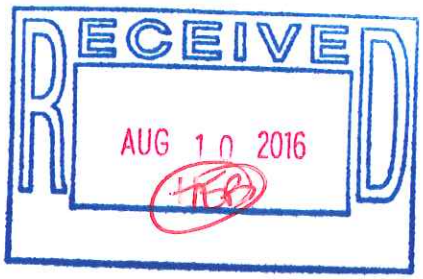
ASSESSOR MAP: . 73.3.1. , PARCEL: 52, 52.1 & 52.2

K-594

READE, GULLICKSEN, HANLEY & GIFFORD, LLP
SIX YOUNG'S WAY
NANTUCKET, MASSACHUSETTS 02554
(508) 228-3128
FAX: (508) 228-5630

ARTHUR I. READE, JR., P.C.
KENNETH A. GULLICKSEN
MARIANNE HANLEY
WHITNEY A. GIFFORD

MAILING ADDRESS
POST OFFICE BOX 2669
NANTUCKET, MASS. 02584



August 9, 2016

HAND DELIVERY
Holly E. Backus
Land Use Specialist
Planning & Land Use Services
2 Fairgrounds Road
Nantucket, Massachusetts 02554

Re: 11 Cottage Avenue, Siasconset
Secondary Dwelling Application

Dear Holly:

Enclosed please find recorded copies of the Deed for Lot 9 on Land Court Plan 12533-D to Brian MacDonald, as Trustee of Grand Cottage Realty Trust and the Lot Merger Covenant for Lot 9 on Land Court Plan 12533-D and Lot 10 on Land Court Plan 12533-E. Please add these documents to the secondary dwelling application that you have at the Planning Board.

Please let me know if you have any questions or need anything further.

Sincerely,

Carrie Phillip, Legal Assistant
READE, GULLICKSEN, HANLEY
& GIFFORD, LLP

/cap

Enclosures

2016 00152397
Cert: 26147 Doc: MERG
Registered: 08/08/2016 02:56 PM

LOT MERGER COVENANT

I, BRIAN MacDONALD, as Trustee of GRAND COTTAGE REALTY TRUST under Declaration of Trust dated October 20, 1986, registered as Document No. 37624 at Nantucket Registry District, amended and restated as of October 20, 2006, as set forth in a Certificate of Amendment registered as Document No. 152395 at Nantucket Registry District, being the owner of certain contiguous lands in Nantucket, Nantucket County, Massachusetts, now known and numbered as 9 and 11 Cottage Avenue, Siasconset, consisting of (a) Lot 9 on Land Court Plan 12533-D, held by virtue of Certificate of Title No. 26147 at Nantucket Registry District ("Lot 9"), and (b) Lot 10 on Land Court Plan 12533-E, held by virtue of Certificate of Title No. 12714 at Nantucket Registry District ("Lot 10"), in consideration of the assessment by the Town of Nantucket of Lots 9 and 10 as a single lot and the issuance by the Town of Nantucket Building Department of a building permit, hereby covenants and agrees with the INHABITANTS OF THE TOWN OF NANTUCKET that Lots 9 and 10 shall permanently constitute a single lot for all purposes in connection with applicable building and zoning requirements, and shall not be conveyed into separate ownership from each other.

Nothing herein shall prohibit the conveyance of any portion of the combined Lots 9 and 10 pursuant to and in accordance with the provisions set forth upon any plan hereafter endorsed under the Subdivision Control Law by the Nantucket Planning Board, provided that the effect of any such conveyance shall not be to create any new zoning nonconformity nor to increase any existing nonconformity.

I hereby certify that I am the sole present trustee of Grand Cottage Realty Trust, which is in full force and effect, has not been amended nor revoked, and has not terminated; and that I have been duly authorized to execute and deliver this instrument

according to its terms and content by the holders of all of the beneficial interest in said Trust, none of the holders being under any disability to act, and none of the holders being a corporation (or limited liability company which has elected to be taxed as a corporation) which is disposing of all or substantially all of its property situated in Massachusetts; and that no individual beneficiary of said Trust has died within ten years prior to the date of this instrument.

Executed and sealed as of August 2, 2016.

Brian MacDonald, as Trustee of
Grand Cottage Realty Trust

COMMONWEALTH
OF
MASSACHUSETTS

Nantucket County, ss. August 8, 2016

Then personally appeared the above-named Brian MacDonald, and acknowledged the foregoing instrument to be his free act and deed, before me,

Notary Public

My commission expires:

CARRIE A. PHILLIP
Notary Public
Commonwealth of Massachusetts
My Commission Expires
March 6, 2020

F:\WpM\MacDonald\Brian and Mary\Lot merger certificate.docx

2016 00152396
Cert: 26147 Doc: DD
Registered: 08/08/2016 02:56 PM

DEED

We, BRIAN P. MacDONALD and MARY C. MacDONALD, of Riverside, Connecticut, for consideration paid, grant to BRIAN MacDONALD, as Trustee of GRAND COTTAGE REALTY TRUST under Declaration of Trust dated October 20, 1986, registered as Document No. 37624 at Nantucket Registry District, amended and restated as of October 20, 2006, as set forth in a Certificate of Amendment registered as Document No. 152395 at Nantucket Registry District, with a mailing address of 54 Cathlow Drive, Riverside, Connecticut 06878, with QUITCLAIM COVENANTS,

That certain parcel of land, together with the buildings thereon, located in Nantucket, Nantucket County, Massachusetts, now known and numbered as 11 Cottage Avenue, Siasconset, consisting of Lot 9 on Land Court Plan 12533-D, filed with Certificate of Title No. 12144 at Nantucket Registry District.

Said land is conveyed subject to real estate taxes assessed by the Town of Nantucket for the fiscal years 2017 and 2018.

For title, see Certificate of Title No. 12712 at Nantucket Registry District.

Executed and sealed as of August 2, 2016.

Brian P. MacDonald

Mary C. MacDonald

F:\shared\MpM\MacDonald\Brian and Mary\Deed of Lot 9 to trust.docx

COMMONWEALTH OF MASSACHUSETTS

Nantucket, ss. August 6, 2016

Then personally appeared the above-named Mary C. MacDonald, and acknowledged the foregoing instrument to be her free act and deed, before me,

Notary Public

My commission expires:

CARRIE A. PHILLIP
Notary Public
Commonwealth of Massachusetts
My Commission Expires
March 6, 2020

NANTUCKET LAND BANK
CERTIFICATE
Paid $
Exempt D
37650 8/8/16
Authorization MW

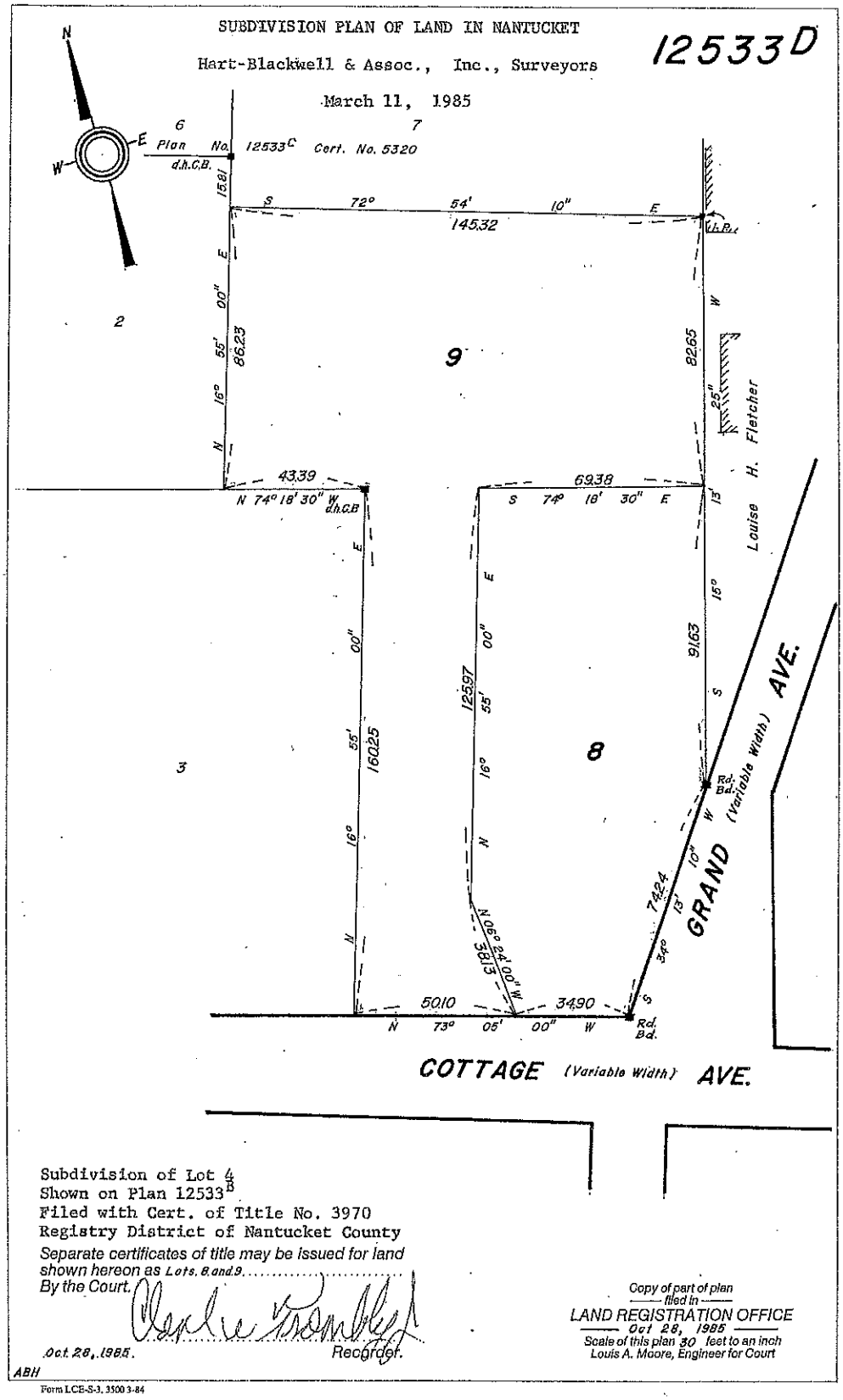
F:\shared\WpM\MacDonald\Brian and Mary\Deed of Lot 9 to trust.docx

SUBDIVISION PLAN OF LAND IN NANTUCKET

Hart-Blackwell & Assoc., Inc., Surveyors

March 11, 1985

12533D



Subdivision of Lot 4
Shown on Plan 12533B
Filed with Cert. of Title No. 3970
Registry District of Nantucket County

Separate certificates of title may be issued for land shown hereon as Lots 8 and 9

By the Court.

Oct 28, 1985. Recorder.

Copy of part of plan filed in LAND REGISTRATION OFFICE Oct 28, 1985

Scale of this plan 30 feet to an inch

Louis A. Moore, Engineer for Court

ABH

Form LCE-S-3, 3500 3-84

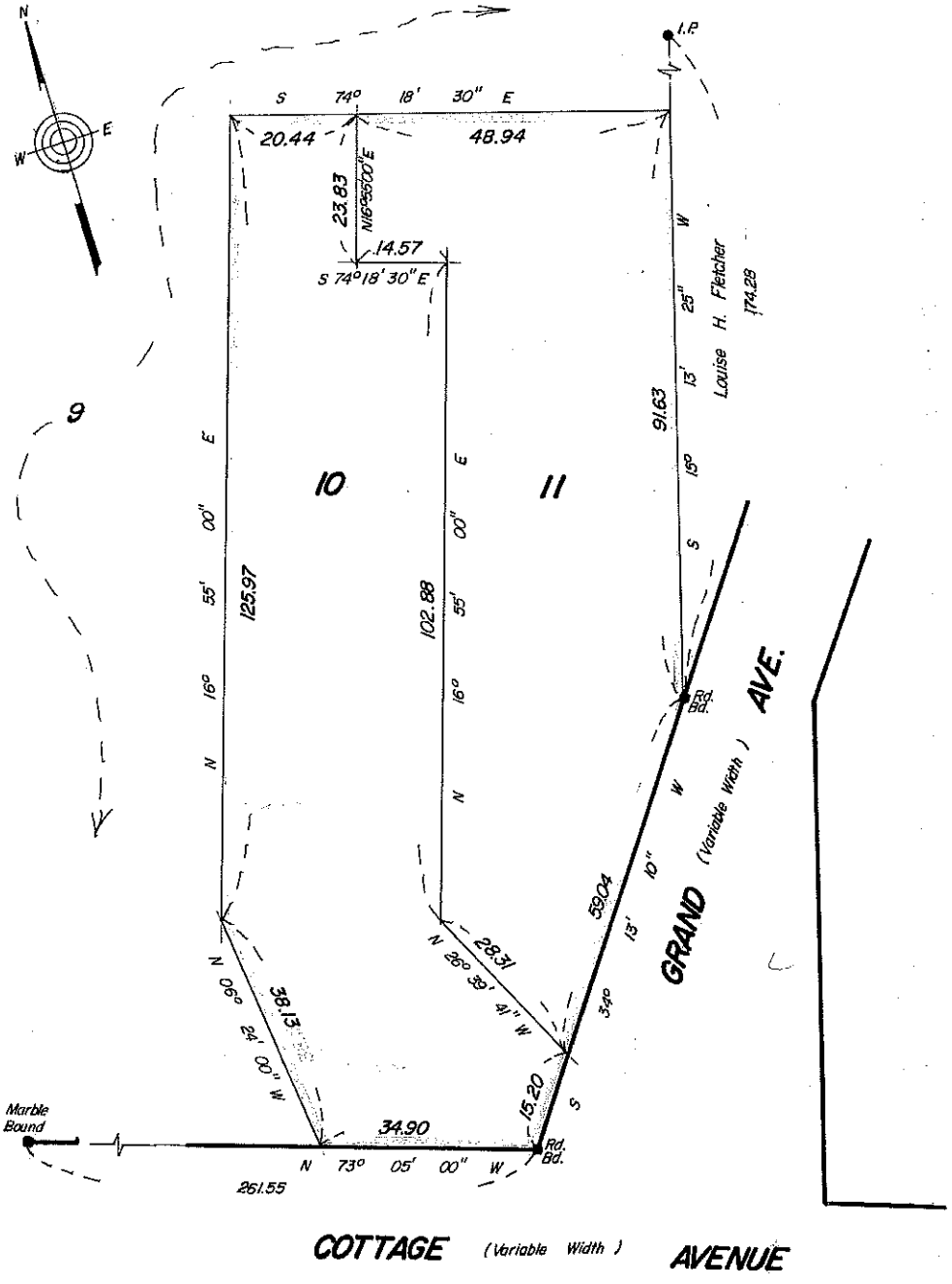
THIS PLAN FILED WITH CERTIFICATE NO. 12,144

SUBDIVISION PLAN OF LAND IN NANTUCKET

Hart-Blackwell & Associates, Inc., Surveyors

March 21, 1986

12533E



THIS PLAN FILED WITH CERTIFICATE NO. 12,713

Subdivision of Lot 8
Shown on Plan 12533D
Filed with Cert of Title No. 12144
Registry District of Nantucket County

Separate certificates of title may be issued for land shown hereon as Lots 10 & 11
By the Court.

Recorder.

SEPT. 25, 1986

V.J.M.

Copy of part of plan filed in
LAND REGISTRATION OFFICE
SEPT 25, 1986
Scale of this plan 20 feet to an inch
Louis A. Moore, Engineer for Court

Form LCE-S-3. 3500 3-84

Nantucket Planning Board

SECONDARY DWELLING REPORT

Prepared by: Holly E. Backus, Land Use Specialist **Meeting Date:** September 12, 2016

14 Pippen's Way
Assessors Map #**43** Parcel #**94.7**

Applicant	**Owner**
Pippens Way LLC	**Same**

The applicant is proposing to construct a 550 square foot one (1) bedroom garage apartment as a secondary dwelling. The proposed secondary dwelling will be located on the north side of the site, which has approximately 42,253 square feet of lot area and is zoned LUG-1. There is also a proposed 2,350 square foot primary structure, proposed pool and proposed cabana for the lot.

The dwelling will be accessed by a shared shelled driveway off Pippen's Way, which is a private shelled road. (The Board should note: pursuant to the Definitive Subdivision (AR) approval for Pippen's Way Subdivision - Planning Board File #6992, an apron is required at the intersection of the proposed driveway and Pippen's Way.) The site will contain three (3) exterior parking spaces. The site plan, as submitted meets the requirements of Zoning Bylaw Sections 139-18 and 139-20.1.

Planning staff recommends approval of this application with the following conditions:

(1) That an apron at the driveway entrance shall be constructed with a minimum depth of ten (10) feet and a maximum width of fifteen (15) feet, flared to a width not to exceed nineteen (19) feet;
(2) That the surface of the driveway shall be a minimum of ten (10) feet in width and a maximum of fifteen (15) feet in width, excluding corner rounding which may have a maximum radius of two (2) feet;
(3) That any future landscaping at the driveway entrances be limited to low growing plant material not to exceed three (3) feet in height;
(4) That the driveways be cleared free of vegetation and obstruction to a width of twelve (12) feet and a height of thirteen (13) feet; and
(5) That the applicant shall submit an As-Built prior to the final inspection by staff which shall take place prior to the issuance of a Certificate of Occupancy.

2016 AUG 30 AM 9:37

Nantucket Planning Board

APPLICATION FOR A SECONDARY (2ND) DWELLING PERMIT

Date Submitted: 8-29-2016 Fee Amount: $100.00

Applicant: PIPPENS WAY LLC

Mailing address: P.O. BOX 5967 MARLBOROUGH, MA 01752

Daytime phone number: 508-228-9026 Fax: _____

E-mail Address: ROB@WELLENBUILDERS.COM

Owner (if other than applicant): SAME

Mailing address: _____

Signature of Property Owner(s) Jeff Re..., AGENT FOR ROBERT WELLEN

Location of proposed secondary(2ND) dwelling:

Street Address: 14 PIPPENS WAY

Assessors Tax Map #: 43 Parcel #: 94.7

Size of Parcel: 41,797 S.F. Zoning District: LUG-1

Secondary Dwelling # of Bedrooms: 1

Primary Dwelling # of Bedrooms: 5

Number of Parking Spaces required (*See Chapter 139-18 of the Bylaw*): 4

Number of Parking Spaces provided: 4

Please provide a brief description of the proposed second dwelling:
***PLEASE DO NOT WRITE "SEE ATTACHED."

THE PROPOSED DWELLING WILL BE ABOVE THE GARAGE.

GARAGE APARTMENT (1163)

CURRENT ZONING CLASSIFICATION:
Limited Use General 1 (L.U.G.-1)

MINIMUM LOT SIZE:	40,000 S.F.
MINIMUM FRONTAGE:	100 FT.
FRONT YARD SETBACK:	35 FT.
REAR/SIDE SETBACK:	10 FT.
GROUND COVER %:	7%

43-94.5
N/F
PIPPENS WAY LLC

43-94.6
N/F
TEN PIPPENS WAY LLC

43-14.2
N/F
KATHLEEN McGRADY
64 POLPIS ROAD

43-14
N/F
N.I.L.B.

APPROVED WETLAND BY CONSERVATION COMMISSION PERMIT SE48-2034

PIPPEN'S WAY

R=180.00
L=11.48'

R=320.00
L=84.59'

10' WIDE UTILITY, SLOPE, AND CONSTRUCTION EASEMENT

321.47'

ZONING SETBACK

ZONING SETBACK

PROPOSED GARAGE APARTMENT
A=550 S.F.±

DECK

APPROX. PROPOSED HOUSE LOCATION
A=2,350 S.F.±

PORCH

DECK

APPROX. PROPOSED CABANA LOCATION

APPROX. PROPOSED POOL LOCATION

20' DRAINAGE EASEMENT

PROPOSED SHELL DRIVEWAY
12' MIN WIDTH

PROPOSED DRAINAGE EASEMENT

R=25.00'
L=36.69'

R=60.00'
L=39.96'

ZONING SETBACK

20' DRAINAGE EASEMENT

173.96'

110.41'

43-94.2
N/F
PIPPENS WAY LLC

43-94.8
N/F
RICHARD A. &
KIM D. FRANCO

43-94.9
N/F
PIPPENS WAY LLC

43-94.3
N/F
RONALD M. &
NANCY S. LINDSAY

43-301
N/F
N.I.L.B.

43-302
N/F
TIMOTHY J. RUSSERT
MARITAL TRUST

LEGEND

15 — — — *DENOTES EXISTING GRADE CONTOUR*

DENOTES EXISTING WETLAND DELINEATION

① *DENOTES PROPOSED PARKING SPACE 9'x20'*

COMMONWEALTH OF MASSACHUSETTS
JEFFREY L. BLACKWELL
No. 35388
PROFESSIONAL LAND SURVEYOR

Site Plan To Accompany
A Second Dwelling Application
in Nantucket, MA
Prepared for
PIPPENS WAY LLC

ASSESSOR MAP 43, PARCEL 94.7
#14 PIPPENS WAY
Scale: 1"= 30' AUGUST 26, 2016

BLACKWELL & ASSOCIATES, Inc.
Professional Land Surveyors
20 TEASDALE CIRCLE
NANTUCKET, MASS. 02554
(508) 228-9026

B7873.15

OWNER INFORMATION
PIPPENS WAY LLC
CERT. OF TITLE #25225
L.C.C. 12268-D, LOT 15
ASSESSOR'S MAP 43, PARCEL 94.7
#14 PIPPEN'S WAY

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

LOT 15
SHEET 1 OF 1

LOT AREA: 41,797 S.F.±

T:\LEO 25 JOB 45
V:\DRAWFILES\B7873.15\2nd Dwelling.dwg 8/26/2016 1:40:16 PM EDT

Nantucket Planning Board

APPROVAL OF A DEFINITIVE SUBDIVISION PLAN (AR)

See Terrier Farms Trust, Pippen's Way Subdivision
Planning Board File #6992

Applicants: See Terrier Farms Trust, Diane Halm, Trustee, c/o Daniel J. Bailey, III, Rackemann, Sawyer, & Brewster, One Financial Center, Boston, MA 02111-2659

Owners: See Terrier Farms Trust, Diane Halm, Trustee, 11809 Piney Meeting House Road, Potomac, MD 20854

Property recorded at Nantucket Registry District of the Land Court, Certificate of Title # 21215

Parcels 94.2 as shown on Nantucket Tax Assessors Map 43

August 27, 2007

The applicant is proposing a standard Approval Required (AR) subdivision on twenty (20) acres of land with average lot size of 43,000 square feet and two lots greatly exceeding that of 176,000 and 432,000 square feet respectively, all with frontage on the proposed roadway.

Based on the Preliminary Plan Approval of February 13, 2006 the site utilizes Limited Use General 1 (LUG 1) zoning which is 40,000 square foot lot area with 100 feet of frontage and is also within the Nantucket Harbor Watershed Protection Overlay District. There are five (5) existing structures on site. The applicant is proposing eight (8) building lots with the roadway shown as lot 8.

The roadway for the proposed development is a dead-end roadway terminating with a cul-de-sac, approximately 830 feet long. In addition the applicant will improve approximately 1000 feet of Gardner Road. The traveled surface of the roadways will be twenty (20) feet in width with Cape Cod berms for Gardner Road with appropriate side slopes provided to allow for pervious paver road construction of the interior roadway. Stormwater runoff from the proposed interior roadway will be collected by deep sump catch basins which will discharge to subsurface infiltration systems. Individual dry wells will be installed for the collection of roof runoff for each lot. All lots within the proposed subdivision will be serviced by on-site wells and wastewater will be treated through individual on-site septic systems.

The applicant agreed to make infrastructure improvements to Gardner Road, which is a private way. The infrastructure improvements proposed for Gardner Road include reconstructing and paving the road to a width of twenty (20) feet, designing and installing drainage structures or swales for the collection and treatment of stormwater runoff, and re-landscaping/re-vegetating areas to maintain slopes in accordance with the Subdivision Rules and Regulations. Final plans for the road will be reviewed by the consulting engineer for the Planning Board with the Planning Board prior to construction.

1 East Chestnut Street Nantucket Massachusetts 02554
508.228.7233 telephone 508.228.7298 facsimile

The Nantucket Planning Board, at it meeting of *August 27, 2007* voted *5-0* to close the public hearing and voted *5-0* to approve the Definitive Subdivision Plan (AR) for property located at 12 Gardner Road. The application for approval of this definitive subdivision plan was received by the Planning Board on November 13, 2006 and approval of this subdivision was based on the following documents:

- Plans entitled "Definitive Subdivision Plan, Pippen's Way Subdivision, 12 Gardner Road, Nantucket, MA" being a subdivision of lot 2 shown on Land Court Plan 12268-B, tax map 43, parcel 94.2, prepared for See Terrier Farms Trust, sheets 1 through 11, scale as noted, prepared by Site Design Engineering, LLC., 11 Cushman Street, Middleboro, MA 02346, dated November 3, 2006 as revised through July 5, 2007 along with two separate sheets by same engineer for same lot 2 on LCP 12268-B, one dated August 8, 2007, scale 1" = 60' entitled "Proposed Conservation Restriction Plan" and the other dated August 16, 2007, scale 1" = 20' entitled "Gardner Road Detail Plan";
- Hydraulic/Hydrologic Analysis, Pippen's Way Subdivision, 12 Gardner Road, Nantucket, Massachusetts, November 10, 2006, prepared for See Terrier Farms Trust by Site Design Engineering, LLC., 11 Cushman Street, Middleboro, MA 02346;
- Site Analysis Report, Pippen's Way Subdivision, 12 Gardner Road, Nantucket, Massachusetts, November 3, 2006, prepared for: See Terrier Farms Trust by Site Design Engineering, LLC., 11 Cushman Street, Middleboro, MA 02346;
- A list of waivers to the Subdivision Rules and Regulations from Site Design Engineering, LLC dated November 13, 2006;
- Engineering Review Reports from Pesce Engineering & Associates, Inc., engineering consultant to the Planning Board dated March 23 and August 8, 2007;
- Engineering Review Response Letters to Abutters Comments and to Pesce Engineering Review from Site Design Engineering, LLC., all dated May 9, 2007;
- A letter concerning "Community Benefits" from Attorney Daniel J. Bailey, III of Rackemann, Sawyer & Brewster, PC, One Financial Center, Boston, MA;
- A Preliminary Plan approval letter dated February 13, 2006;
- Assorted documents (including correspondence from abutting property owners) on file with the Planning Board;
- Representation and testimony received in connection with the public hearings/continuances held on 12/11/06, 1/8/07, 1/22/07, 2/12/07; 2/26/07, 3/12/07, 3/26/07, 4/23/07, 5/14/07, 5/31/07, 6/11/07, 6/25/07, 7/9/07, 7/23/07, 8/13/07 and 8/27/07. Minutes of these meetings are on file with the Planning Board; and
- Other assorted documents (including correspondence from abutting property owners) that are on file with the Planning Board.

Approval of this Subdivision is granted conditionally upon the aforementioned documents, compliance with the Planning Board's *Rules and Regulations Governing the Subdivision of Land* (as amended through December 20, 1999), and on the following additional requirements and agreements:

1. That the applicant shall be granted the following waivers from the *Rules and Regulations Governing the Subdivision of Land:*

   2.06e – STAKING OF SUBDIVISION: there is sufficient information on the plans and on site to enable the Board and public to determine location of the proposed way;

   4.03a(1) –STREETS: in order to fit the required improvements within the available right-of-way of Gardner Road an 8-inch cape cod berm rather than a 12-inch berm and allow a 1:1 side slope rather than a 2:1 side slope;

4.09-SHOULDERS: allow use of 2-foot shoulders rather than 4-foot shoulders on Pippen's Way and variable width shoulders of 1-foot to 2-foot shoulders in Gardner Road to allow for reduced site disturbance;

4.18-SIDEWALKS: waive requirement for sidewalk as there are no sidewalks in Gardner Road to connect an interior road sidewalk;

4.19-BICYCLE PATHS: waive requirement for a bicycle path. Note that applicant has agreed to contribute to the Town Bicycle Path fund;

4.20- STREET LIGHTS: waive requirement for street lights to assist in maintaining the rural nature of the neighborhood;

5.04- ON SITE DISPOSAL OF BRUSH AND TREES: waive requirement of on-site disposal area as all debris will be chipped; and

5.06-DRAINAGE: allow for use of HDPE pipe in drainage structures as allowed in recent development projects on the Island.

2. That the applicant agree to alter and improve the traveled surface of Gardner Road to twenty (20) feet in width and perform infrastructure improvements to include relocating portions of the road that encroach on private property to a location within the roadway layout; reconstructing, paving, designing and installing drainage structures or swales for the collection and treatment of stormwater runoff, and re-landscaping/re-vegetating disturbed areas;

3. That the applicant shall provide for final plans for improvements presented to the Planning Board within six (6) months from the date of the final decision with the proposed improvements in accordance with the *Rules and Regulations Governing the Subdivision of Land*. The final plans should be reviewed by the consulting engineer for the Planning Board and the Planning Board prior to construction. Review and approval of these plans should not require additional public hearings, as they will have been adequately discussed during the subdivision review. The interior roadway and associated infrastructure improvements should not commence until the definitive plans have been endorsed by the Planning Board. The definitive plans should be presented to the Planning Board within six (6) months of the date of the final decision. Recorded copies of all legal documents (Homeowners Association, if any, documents, Statement of Conditions, Grant of Right of Enforcement, Grant of Easements for Utilities and Drainage, and Covenant) should be presented to the Planning Board prior to the release of any lot from the Covenant or within six (6) months from the date of the final decision;

4. In the event the improvements cannot be completed as represented by the applicant and agreed to by the Planning Board, a modification to the subdivision may be required and additional conditions may be imposed;

5. That the applicant shall be responsible for the establishment of a Road Maintenance Endowment Fund for the maintenance in perpetuity of all required improvements to the interior roadway including the drainage structures, grading, utilities, etc., initially endowed at $2000 per buildable lot. This fund shall be administered by the applicant and/or Homeowners Association if any, and with the Planning Board named as a third party enforcing agent;

6. That the roadway layout for the interior roadway be transferred to a Homeowners Association with evidence of that conveyance presented to the Planning Board prior to the release of any lot;

7. That no further division of land will occur without modification to the approved plan but minor lot line adjustments may be approved through the Approval Not Required (ANR) plan process;

8. That in the event Gardner Road is paved prior to the construction of the interior roadway, a gravel tracking pad with a minimum depth of 100 feet of dense gravel or stone shall be installed at the entrance to the site during the construction period to remove construction debris from the tires of construction vehicles prior to entering Gardner Road;

9. That all required infrastructure improvements be completed within two (2) years from the date of definitive plan endorsement;

10. That individual dry wells be installed for the collection of roof runoff for each lot as shown on the definitive plans;

11. That the Planning Board may grant extensions of deadlines stated herein without holding a public hearing;

12. That the applicant resolve the requirements of the Massachusetts Natural Heritage Endangered Species Program prior to the start of construction. The Board notes that the applicant has filed the required applications as of August 13, 2007 and expects a report in the Fall of 2007;

13. That the applicant has agreed to grant to the Town/County of Nantucket sewer easements within the layout of the interior roadway through the site to South Valley Road. The applicant has also agreed to the extent they have the authority to grant sewer easements to the Town/County of Nantucket within the layout of Gardner Road, to provide such easements necessary to accommodate sewer service in the future;

14. In the even the site is included in the Sewer District in the future, the applicant shall extend the sewer to the site and each of the lots shall be 'hooked up' to the sewer system, in the alternative that Town installation of sewer hookups is requested, such work will be completed within two (2) years of the date such sewer hookups are available and that easements relating to such installation shall dissolve if such hookups are not completed by the year 2020;

15. That the Estimated Seasonal High Groundwater elevations (ESHGW) be submitted by the applicant and confirmed by the Planning Board's consulting engineer during construction;

16. That the applicant provide for additional soils and groundwater inspections along the proposed roadway to ensure compliance with Section 4.06a of the *Rules and Regulation for the Subdivision of Land*;

17. That prior to the issuance of roadway construction, a pre-construction meeting shall take place at the site which shall include, at a minimum, the following: Planning Board staff, consulting engineers for the Planning Board, the contractor, the applicant or their representative, engineers for the applicant, utility company representatives, and staff from other Town departments;

18. That each driveway shall have an apron ten (10) feet in depth and maximum fifteen (15) feet in width off the proposed interior roadway; and

19. That the applicant shall establish a permanent Conservation Restriction prohibiting destruction of wildlife habitat on at least 5.4 acres of the subdivision property. The exact location of the Conservation Restriction shall be determined by the applicant in consultation with the Massachusetts Natural Heritage and Endangered Species Program. A copy of the Conservation Restriction shall be provided to the Planning Board.

The Nantucket Planning Board at its August 27, 2007 meeting voted 5-0 to close the public hearing and voted 5-0 to APPROVE the Definitive Subdivision Plan (AR) for property located at 12 Gardner Lane and to endorse this decision.

Francis T. Spriggs APPROVE

Barry G. Rector APPROVE

Sylvia Howard APPROVE

John McLaughlin DIS-APPROVE

COMMONWEALTH OF MASSACHUSETTS

Nantucket, SS September 6, 2007

On the 6th day of September, 2007, before me, the undersigned ~~notary public,~~

personally appeared Francis T. Spriggs, one of the above-named members of the Planning Board of Nantucket, Massachusetts, personally known to me to be the person whose name is signed on the preceding document, and acknowledged that he/she signed the foregoing instrument voluntarily for the purposes therein expressed.

ANDREW VINCENT VORCE
Notary Public
Commonwealth of Massachusetts
My Commission Expires
~~January 28, 2012~~

Notary Public

My Commission Expires

The Nantucket Planning Board at its August 27, 2007 meeting voted 5-0 to close the public hearing and voted 5-0 to APPROVE the Definitive Subdivision Plan (AR) for property located at 12 Gardner Lane and to endorse this decision.

Francis T. Spriggs APPROVE

Barry C. Rector APPROVE

Sylvia Howard APPROVE

John McLaughlin DIS-APPROVE

COMMONWEALTH OF MASSACHUSETTS

Nantucket, SS September 6, 2007

On the 6th day of September, 2007, before me, the undersigned ~~notary public,~~ personally appeared Francis T. Spriggs, one of the above-named members of the Planning Board of Nantucket, Massachusetts, personally known to me to be the person whose name is signed on the preceding document, and acknowledged that he/she signed the foregoing instrument voluntarily for the purposes therein expressed.

ANDREW VINCENT VORCE
Notary Public
Commonwealth of Massachusetts
My Commission Expires
January 26, 2012

Notary Public My Commission Expires

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2014 APR 29 AM 10 45
NANTUCKET TOWN CLERK

Nantucket Planning Board

MODIFICATION TO A DEFINITIVE SUBDIVISION PLAN (AR)

Modification #1

Pippen's Way Subdivision
Planning Board File #7662

Applicant: Pippen's Way, LLC, a Massachusetts limited liability company
Owner: John Bruno, as Trustee of See Terrier Farms Trust under Declaration of Trust dated April 12, 2004, registered with Nantucket Registry District as Document No. 106936, as amended of record

Decision: Approval of a Definitive Subdivision Plan (AR), See Terrier Farms Trust, Pippen's Way Subdivision, dated August 27, 2007, Planning Board File #6992

Nantucket Registry District of the Land Court
Certificate of Title #21215

Lots 12 through 20, inclusive, Land Court Plan No. 12268-D

Nantucket Tax Assessors Map 43, Parcel 94.2

April 14, 2014

The applicant is requesting modifications to the Approval Required (AR) subdivision decision in File No. 6992, "Pippen's Way Subdivision," dated August 27, 2007, as follows:

1. Change the construction of the subdivision roadway, Pippen's Way, from the currently approved pervious paver surface or asphalt to a twenty-foot wide pervious shell surface and, in consideration for this change, restrict the number of bedrooms allowed in the second dwellings on Lots 12 through 16, inclusive, on Land Court Plan No. 12268-D to a maximum of two (2) bedrooms each to limit the amount of potential vehicular traffic on the shell roadway. The overall number of bedrooms allowed per lot under Title 5 would remain unchanged. The pervious shell surface was previously approved by the Nantucket Conservation Commission.

2. Eliminate Condition 14 in its entirety from the Approval. Condition 14 reads as follows:

> "In the event the site is included in the Sewer District in the future, the applicant shall extend the sewer to the site and each of the lots shall be 'hooked up' to the sewer system, in the alternative that Town installation of sewer hookups is requested, such work will be completed within two (2) years of the date such sewer hookups are available and that easements relating to such installation shall dissolve if such hookups are not completed by the year 2020."

Condition 14 is not clear and appears to require the applicant to extend sewer to the site if the property is added to the sewer district at any time prior to 2020, but the condition does not specify the origin of the sewer, there is no sewer line in reasonable proximity to the site, the property has not been added to the sewer district, the condition imposes an undue burden on the applicant who may not own the property in 2020, and Town priorities have changed since the Approval was granted such that the extension of sewer to the property is no longer under immediate consideration.

The Nantucket Planning Board at its April 14, 2014 meeting voted 5-0 to close the public hearing and voted 5-0 to **APPROVE** the Definitive Subdivision Plan Modification. The application for approval of this modification was received by the Planning Board on March 17, 2014 and approval of the subdivision modification was based on the following documents:

- The Planning Board's Approval Required subdivision decision in File 6992 dated August 27, 2007;
- The Application (Form B1) and accompanying materials;
- Plan of Pippen's Way Roadway Apron, drawn by Site Design Engineering, LLC, dated April 21, 2014;
- Plan of Pippen's Way Roadway Cross-Section, drawn by Site Design Engineering, LLC, dated April 21, 2014;
- Representation and testimony received in connection with the public hearing held April 14, 2014. Minutes of this meeting is on file with the Planning Board; and
- Other assorted documents that are on file with the Planning Board.

Approval of this modification is granted upon the following conditions:

1. That the number of bedrooms allowed in any second dwellings on Lots 12 through 16, inclusive, on Land Court Plan No. 12268-D, is limited to a maximum of two (2) bedrooms each, with the total overall number of bedrooms allowed per lot under Title 5 remaining unchanged;

2. That the construction of Pippen's Way be done in accordance with the plan of Pippen's Way Roadway Apron and the plan of Pippen's Way Roadway Cross-Section, both drawn by Site Design Engineering, LLC, dated April 21, 2014, as approved by the Board's consulting engineer, Edward Pesce, and;

3. That all other conditions of the Approval Required subdivision decision in File 6992 dated August 27, 2007, shall remain in full force and effect.

SIGNATURE PAGE TO FOLLOW

On April 14, 2014, the Planning Board voted 5-0 to **APPROVE** this modification (#1) to the Pippen's Way Subdivision and to **ENDORSE** this decision.

Barry G. Rector APPROVE

Linda F. Williams APPROVE

Nathaniel Lowell APPROVE

Sylvia Howard APPROVE

John McLaughlin APPROVE

COMMONWEALTH OF MASSACHUSETTS

Nantucket, SS April 28th, 2014

On the 28th day of April, 2014, before me, the undersigned notary public, personally appeared John McLaughlin, one of the above-named members of the Planning Board of Nantucket, Massachusetts, personally known to me to be the person whose name is signed on the preceding document, and acknowledged that he/~~she~~ signed the foregoing instrument voluntarily for the purposes therein expressed.

Notary Public

My Commission Expires

KAREN L. E. BRADFORD
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
December 18, 2020

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2014 MAY 22 AM 11 25
NANTUCKET TOWN CLERK

Nantucket Planning Board

MODIFICATION TO A DEFINITIVE SUBDIVISION PLAN (AR)

Modification #2

Pippen's Way Subdivision
Planning Board File #7684

Applicant: Pippen's Way, LLC, a Massachusetts limited liability company
Owner: John Bruno, as Trustee of See Terrier Farms Trust under Declaration of Trust dated April 12, 2004, registered with Nantucket Registry District as Document No. 106936, as amended of record

Decision: Approval of a Definitive Subdivision Plan (AR), See Terrier Farms Trust, Pippen's Way Subdivision, dated August 27, 2007, Planning Board File #6992
Modification #1, dated April 14, 2014, Planning Board File #7662

Nantucket Registry District of the Land Court
Certificate of Title #21215

Lots 12 through 20, inclusive, Land Court Plan No. 12268-D

Nantucket Tax Assessors Map 43, Parcel 94.2

May 12, 2014

Applicant requests that the Board modify the Approval of a Definitive Subdivision Plan in File No. 6992, dated August 27, 2007, "Pippen's Way Subdivision" (the "Approval") by modifying the limit and extent of required improvements as follows:

1. Center the proposed roadway improvements to Gardner Road within the thirty-three foot (33') wide easement.
2. Reduce the required pavement width of Gardner Road from twenty feet (20') to sixteen feet (16').
3. Reduce the traveled surface of the subdivision roadway, Pippens Way, to sixteen feet (16').

The Nantucket Planning Board at its May 12, 2014 meeting voted 4-0 to close the public hearing and voted 4-0 to **APPROVE** the Definitive Subdivision Plan Modification. The application for approval of this modification was received by the Planning Board on April 15, 2014 and approval of the subdivision modification was based on the following documents:

- The Planning Board's Approval Required subdivision decision in File 6992 dated August 27, 2007 and Modification #1, dated April 14, 2014, Planning Board File #7662;
- The Application (Form B1) and accompanying materials;
- Gardner Road Detail Plan, drawn by Site Design Engineering, LLC, dated May 6, 2014;

- Gardner Road Roadway Cross-Section, drawn by Site Design Engineering, LLC, dated May 6, 2014;
- Gardner Road Vehicle Passing Section View, drawn by Site Design Engineering, LLC, dated May 6, 2014;
- Representation and testimony received in connection with the public hearing held May 12, 2014. Minutes of this meeting is on file with the Planning Board; and
- Other assorted documents that are on file with the Planning Board.

Approval of this modification is granted upon the following conditions:

1. That the number of bedrooms allowed in any second dwellings on Lots 12 through 16, inclusive, on Land Court Plan No. 12268-D, is limited to a maximum of one (1) bedrooms each, with the total overall number of bedrooms allowed per lot under Title 5 remaining unchanged;

2. That the construction of Gardner Road be done in accordance with the Gardner Road Detail Plan and the Gardner Road Roadway Cross-Section, both drawn by Site Design Engineering, LLC, dated May 6, 2014, as approved by the Board's consulting engineer, Edward Pesce, and;

3. That all other conditions of the Approval Required subdivision decision in File 6992 dated August 27, 2007, and Modification #1, dated April 14, 2014, Planning Board File #7662 shall remain in full force and effect.

On May 12, 2014, the Planning Board voted unanimously (4-0) to **APPROVE** this modification and to **ENDORSE** this decision.

Barry G. Rector APPROVE

Linda F. Williams APPROVE

Nathaniel Lowell APPROVE

Sylvia Howard APPROVE

COMMONWEALTH OF MASSACHUSETTS

Nantucket, SS May 20, 2014

On the 20th day of May, 2014, before me, the undersigned notary public, personally appeared Barry Rector, one of the above-named members of the Planning Board of Nantucket, Massachusetts, personally known to me to be the person whose name is signed on the preceding document, and acknowledged that he/she signed the foregoing instrument voluntarily for the purposes therein expressed.

Notary Public

KAREN L. E. BRADFORD
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
December 18, 2020

My Commission Expires

Nantucket Planning Board

SECONDARY DWELLING REPORT

Prepared by: Holly E. Backus, Land Use Specialist **Meeting Date:** September 12, 2016

12R Skyline Drive
Assessors Map #**79** Parcel #**35**

Applicant	**Owner**
Randy Sharp	**Same**

The applicant is proposing to construct a 772 square foot one (1) bedroom secondary dwelling. The proposed secondary dwelling will be located on the north side of the site, which has approximately 124,895 square feet of lot area and is zoned LUG-2. There is also a proposed 2,156 square foot primary structure proposed for the lot.

The dwelling will be accessed by a shared shelled driveway with a Belgian block apron off Skyline Drive, which is a private paved road. The site will contain four (4) exterior parking spaces. The site plan, as submitted meets the requirements of Zoning Bylaw Sections 139-18 and 139-20.1.

Planning staff recommends approval of this application with the following conditions:

(1) That an apron at the driveway entrance shall be constructed with a minimum depth of ten (10) feet and a maximum width of fifteen (15) feet, flared to a width not to exceed nineteen (19) feet;
(2) That the surface of the driveway shall be a minimum of ten (10) feet in width and a maximum of fifteen (15) feet in width, excluding corner rounding which may have a maximum radius of two (2) feet;
(3) That any future landscaping at the driveway entrances be limited to low growing plant material not to exceed three (3) feet in height;
(4) That the driveways be cleared free of vegetation and obstruction to a width of twelve (12) feet and a height of thirteen (13) feet; and
(5) That the applicant shall submit an As-Built prior to the final inspection by staff which shall take place prior to the issuance of a Certificate of Occupancy.

RECEIVED
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By

Nantucket Planning Board

APPLICATION FOR A SECONDARY (2ND) DWELLING PERMIT

Date Submitted: 8-11-2016 Fee Amount: $100

Applicant: RANDY SHARP (RANDOLPH G. SHARP, JR)

Mailing address: 92 MIACOMET AVENUE, NANTUCKET, MA 02554

Daytime phone number: 508-560-2080 Fax: _____

E-mail Address: RandySharp@comcast.net

Owner (if other than applicant): —

Mailing address: —

Signature of Property Owner(s) _____

Location of proposed secondary(2ND) dwelling:

Street Address: 12R SKYLINE DRIVE

Assessors Tax Map #: 79 Parcel #: 35

Size of Parcel: 124,895 SQ FT Zoning District: LUG 2

Secondary Dwelling # of Bedrooms: 1

Primary Dwelling # of Bedrooms: 4 (+2 FUTURE)

Number of Parking Spaces required (*See Chapter 139-18 of the Bylaw*): 4

Number of Parking Spaces provided: 4+

Please provide a brief description of the proposed second dwelling:
***PLEASE DO NOT WRITE "SEE ATTACHED."

BUILD A 772 SQ FT ONE BEDROOM COTTAGE. WILL ALSO BE USED AS A POOL CABANA TO BE LOCATED ON THE NORTH SIDE OF THE POOL AND MAIN HOUSE.

2013 00002809
Bk: 1402 Pg: 340 Page: 1 of 5
Doc: EASE 09/13/2013 03:03 PM

COMMONWEALTH OF MASSACHUSETTS

Nantucket, ss

GRANT OF EASEMENT

NANCY J. SHUGRUE, having a mailing address of P. O. Box 1811, Nantucket, MA 02554 (hereinafter called the Grantor), being the owner of 12 Skyline Drive, being shown as Lot 38A in Plan Book 22, Page 43, filed with the Nantucket Registry of Deeds, my ownership evidenced by Deed recorded in Book 211, Page 100 at the Nantucket Registry of Deeds, for valuable consideration received, do hereby grant to RANDOLPH G. SHARP, JR., TRUSTEE OF THE RANDOLPH G. SHARP, JR. TRUST, u/d/t dated June 9, 2006, for which a Certificate of Trustee is recorded herewith in Book 1402, Page 338, with a mailing address of 92 Miacomet Avenue, Nantucket, MA 02554 (hereinafter "Grantee"), being the owner of 12R Skyline Drive, being shown as Block 103 on Plan of Lands, Surfside, Nantucket, MA; dated September 1972, filed with Nantucket Registry of Deeds in Plan File 3-D, my ownership evidenced by Deed recorded in Book 1402, Page 336 at the Nantucket Registry of Deeds, a thirty (30) foot wide driveway access easement across the property on 12 Skyline Drive. Said Easement Area shown on a plan attached hereto as Exhibit "A" and referred to thereon as "30 Foot Easement."

Grantor hereby grants Grantee a non-exclusive driveway access easement as set out in Exhibit "A". Said easement shall allow the Grantee the use of said Easement Area for the purpose of accessing the property at 12R Skyline Drive, installing utilities, and for all other purposes for which driveways are used in the Town and County of Nantucket;

provided however, that no structures may be placed or erected within said Easement Area and there shall be no parking of vehicles allowed within said Easement Area. The surface of said Easement Area is currently dirt. Grantee shall be entitled to improve the surface of the Easement Area to provide driveway access acceptable to the Town of Nantucket in order to support building upon 12R Skyline Drive. Grantor and Grantee shall mutually agree upon the materials to be used for such improvement, provided that such materials shall also satisfy the requirements of the Town of Nantucket. Further, the cost of improving, maintaining, and or repairing said Easement Area shall be the responsibility of the Grantee. Once improved, the surface shall not be changed without prior written consent of Grantor and Grantee.

By the acceptance hereof, the Grantee, for itself and its successors and assigns, and for all mortgagees, occupants and any other persons having an interest in the land of Grantee, hereby agrees (i) to construct, use and maintain such Easement Area in a safe and reasonably prudent manner, and to be solely responsible for all maintenance of such Easement Area; and (ii) to indemnify, release and hold harmless the Grantors, successors and assigns, from and against any and all claims, liabilities, damages, losses, actions, causes of action, costs and expenses (including without limitation attorneys' fees), whether for damage to property or personal injury, however caused and by whomever asserted, arising from this grant of easement or from the use of the driveway existing within the area of this easement.

This Easement shall run with the respective properties and be binding upon and inure to the benefit of the parties, their heirs, successors, and assigns.

- REMAINDER OF PAGE INTENTIONALLY LEFT BLANK -

SIGNATURE PAGE TO FOLLOW

Signed and Sealed this 9th day of September, 2013.

Nancy J. Shugrue
NANCY SHUGRUE

COMMONWEALTH OF MASSACHUSETTS

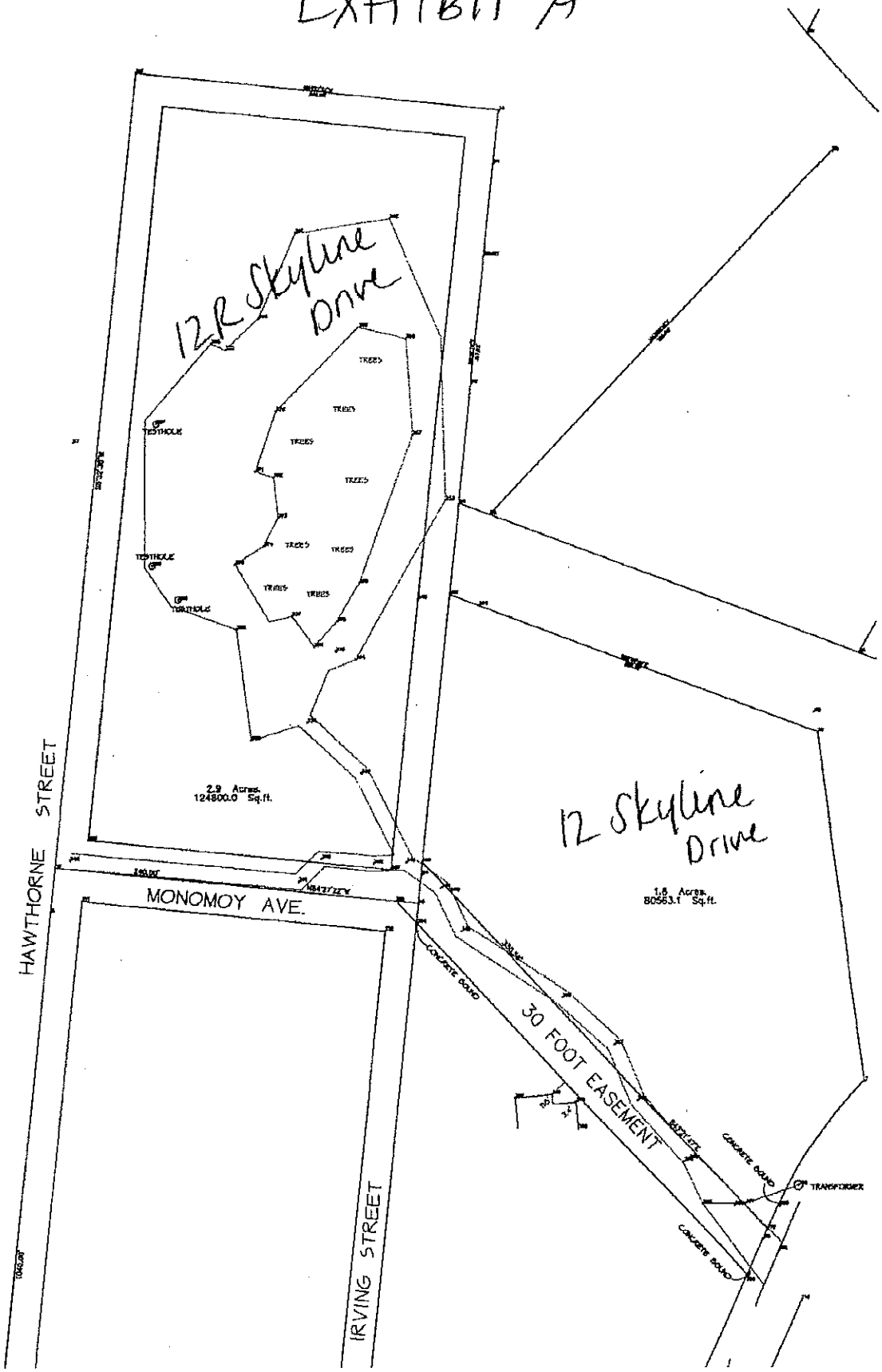
County of Nantucket

On this 9 day of Sept, 2013, before me, the undersigned notary public, personally appeared Nancy Shugrue(a) S personally known to me, or (b) ____ proved to me through satisfactory evidence of identification, which was Passport, (type of identification) to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

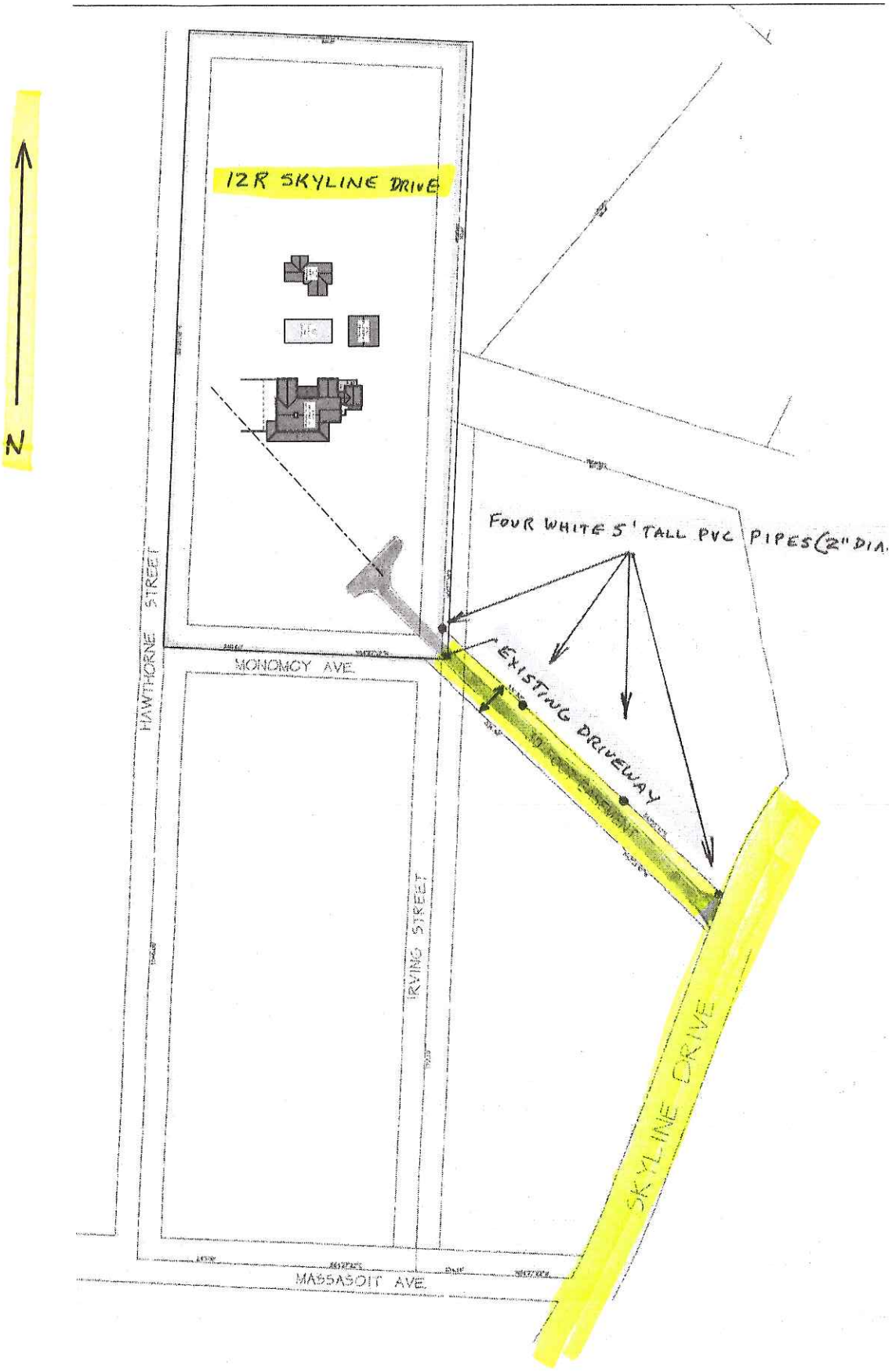
Official Signature and Seal of Notary Public
My Commission expires:

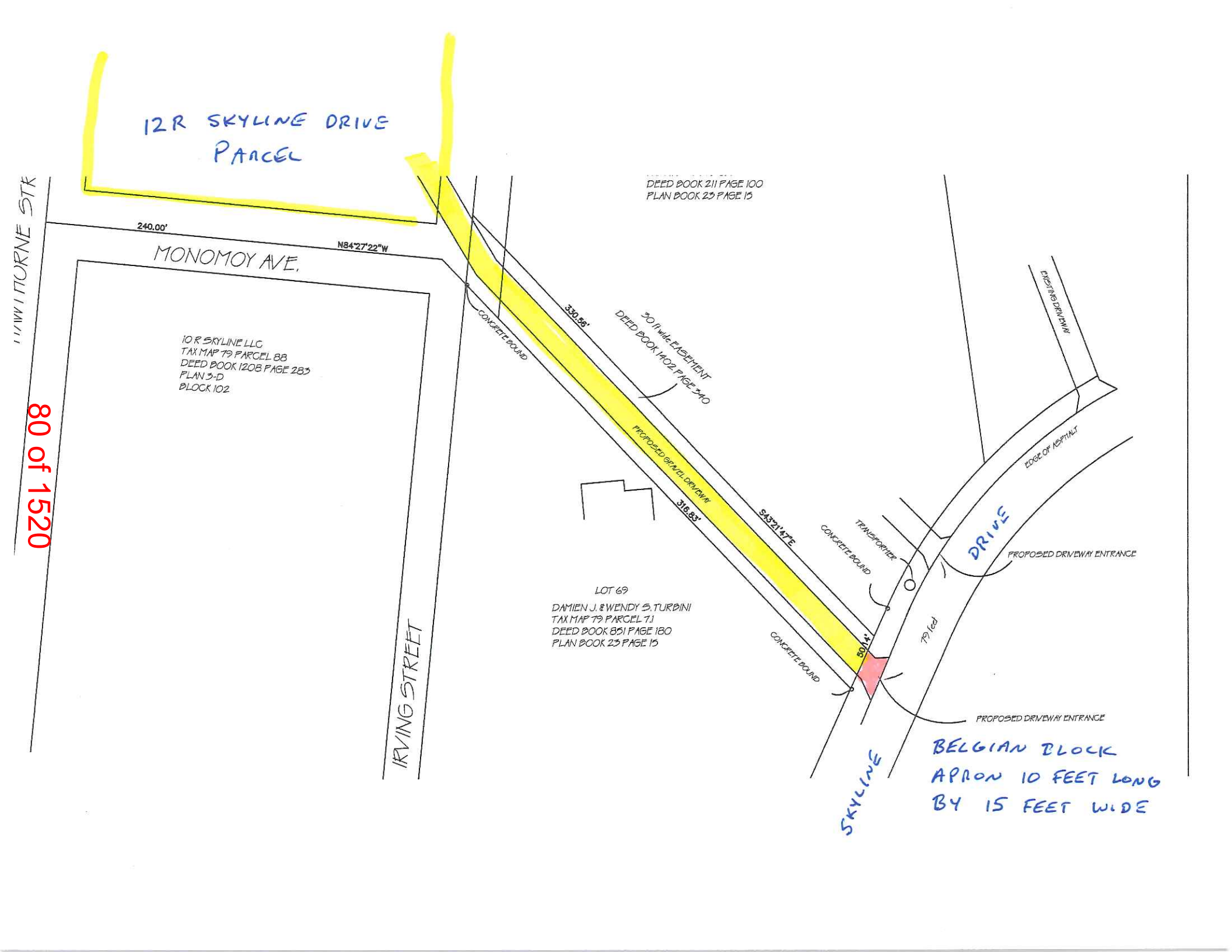
JESSIE M. GLIDDEN
MY COMM. EXPIRES OCT. 10, 2014
COMMONWEALTH OF MASSACHUSETTS
NOTARY PUBLIC

EXHIBIT A



NANTUCKET COUNTY Received & Entered
Attest: Jennifer H. Ferrarini Register of Deeds


N
12R SKYLINE DRIVE
FOUR WHITE 5' TALL PVC PIPES (2" DIA.
EXISTING DRIVEWAY
HAWTHORNE STREET
MONOMOY AVE.
IRVING STREET
MASSASOIT AVE.
SKYLINE DRIVE


12R SKYLINE DRIVE
PARCEL
WHITTORNE STR
240.00'
N84°27'22"W
MONOMOY AVE.
10 R SKYLINE LLC
TAX MAP 79 PARCEL 88
DEED BOOK 1208 PAGE 283
PLAN 3-D
BLOCK 102
80 of 1520
IRVING STREET
CONCRETE BOUND
330.56'
30 ft wide EASEMENT
DEED BOOK 1402 PAGE 340
DEED BOOK 211 PAGE 100
PLAN BOOK 23 PAGE 15
PROPOSED GRAVEL DRIVEWAY
316.83'
S43°21'47"E
LOT 69
DAMIEN J. & WENDY S. TURBINI
TAX MAP 79 PARCEL 71
DEED BOOK 851 PAGE 180
PLAN BOOK 23 PAGE 15
CONCRETE BOUND
50.4'
EXISTING DRIVEWAY
EDGE OF ASPHALT
TRANSFORMER
CONCRETE BOUND
DRIVE
PROPOSED DRIVEWAY ENTRANCE
79 feet
PROPOSED DRIVEWAY ENTRANCE
SKYLINE
BELGIAN BLOCK
APRON 10 FEET LONG
BY 15 FEET WIDE

520.0'

35'

15'

240.0'

"BLUEBERRY PATCH"

SIGHTLINE

WHITE SHELLS

DRIVEWAY

12'

30'

"GARDEN WELL"

PROPOSED 2-STORY
W.F. STRUCTURE
2156 SF

WELL

DECK

PROPOSED
POOL
(20 X 40)
(UNDER SEPARATE APPLICATION)

PROPOSED
CABANA
(UNDER SEPARATE APPLICATION)

← SECOND DWELLING
772 SQ. FT.

2 NEW SPACES
BOTH 9' X 20'

SIGHTLINE

DRIVEWAY

EXISTING DRIVEWAY

PROPOSED
GARAGE/
576 SF

IZR SKYLINE DRIVE

2 NEW SPACES
BOTH 9' X 20'

Nantucket Planning Board

SECONDARY DWELLING REPORT

Prepared by: Holly E. Backus, Land Use Specialist **Meeting Date:** September 12, 2016

18A Gray Ave
Assessors Map #**67** Parcel #**183.1**

Applicant	**Owner**
Julia Morash	**Same**

The applicant is proposing to construct a 704 square foot three (3) bedroom secondary dwelling. The proposed secondary dwelling will be located on the south side of the site, which has approximately 16,300 square feet of lot area and is zoned R-10. There is also a proposed 1,360 square foot primary structure proposed for the lot.

The dwelling will be accessed by a shared shelled driveway with a cobblestone apron off Gray Avenue, which is a public paved road. The site will contain five exterior parking spaces. The site plan, as submitted meets the requirements of Zoning Bylaw Sections 139-18 and 139-20.1.

Planning staff recommends approval of this application with the following conditions:

(1) That an apron at the driveway entrance shall be constructed with a minimum depth of ten (10) feet and a maximum width of fifteen (15) feet, flared to a width not to exceed nineteen (19) feet;
(2) That the surface of the driveway shall be a minimum of ten (10) feet in width and a maximum of fifteen (15) feet in width, excluding corner rounding which may have a maximum radius of two (2) feet;
(3) That any future landscaping at the driveway entrances be limited to low growing plant material not to exceed three (3) feet in height;
(4) That the driveways be cleared free of vegetation and obstruction to a width of twelve (12) feet and a height of thirteen (13) feet; and
(5) That the applicant shall submit an As-Built prior to the final inspection by staff which shall take place prior to the issuance of a Certificate of Occupancy.

2016 AUG 31 PM 2:28

Nantucket Planning Board

APPLICATION FOR A SECONDARY (2ND) DWELLING PERMIT

Date Submitted: _____ Fee Amount: $100

Applicant: JULIA MORATH

Mailing address: 2 GREGLEN AVE PMB # 311

Daytime phone number: 508-479-9381 Fax: _____

E-mail Address: juliareyes@comcast.net

Owner (if other than applicant): _____

Mailing address: 15B Witherspoon Dr. Nantucket MA 02554

Signature of Property Owner(s) Julia Morath

Location of proposed secondary(2ND) dwelling:

Street Address: 18 1/2 GRAY AVE

Assessors Tax Map #: 67 Parcel #: 183.1

Size of Parcel: 16,300 Zoning District: R-10

Secondary Dwelling # of Bedrooms: 3

Primary Dwelling # of Bedrooms: 4

Number of Parking Spaces required (*See Chapter 139-18 of the Bylaw*): 5 ✓

Number of Parking Spaces provided: 5

Please provide a brief description of the proposed second dwelling:
***PLEASE DO NOT WRITE "SEE ATTACHED."

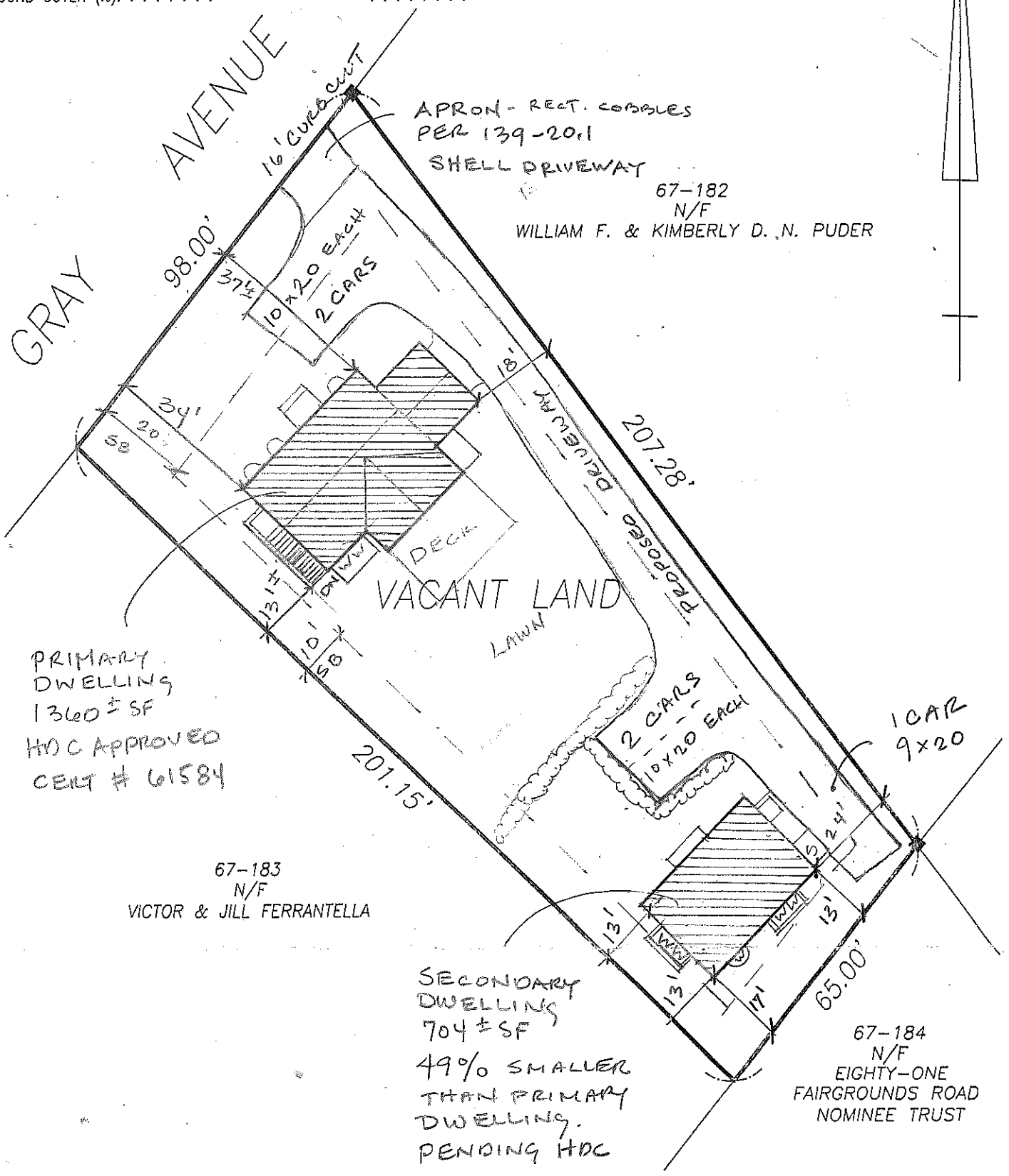
1 1/2 STORY (22'-6") 704 SF G.C

Dwelling of 2 bedrooms, 2nd floor 1 in basement.

Contact - Carrie Thornewill
508 325 6027

ZONING CLASSIFICATION: R-10

		EXISTING:
MIN. AREA:	10,000 S.F.	16,300 S.F.
MIN. FRONTAGE:	75 FT.	98.00'
FRONT YARD S.B.:	20 FT.	SEE PLAN
REAR & SIDE S.B.:	10 FT.	SEE PLAN
GROUND COVER (%):	25 %	SEE PLAN



TO: JULIA MORASH . . . . . AND NO OTHERS.

I CERTIFY, TO THE BEST OF MY KNOWLEDGE, THAT THE PREMISES SHOWN ARE LOCATED IN FLOOD HAZARD ZONE: . . X. . . , DELINEATED ON F.I.R.M. / COMMUNITY PANEL NUMBER: 250230-00 . 12 D. . , BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY. EFFECTIVE DATE OF MAPS: NOVEMBER 6, 1996 AND AS PERIODICALLY REVISED.

THIS INSPECTION PLAN WAS PREPARED FOR MORTGAGE PURPOSES ONLY AND IS NOT TO BE CONSIDERED A FULL INSTRUMENT SURVEY. THIS PLAN SHOULD NOT BE USED TO ESTABLISH PROPERTY LINES, FENCES, HEDGES OR ANY ANCILLARY STRUCTURES ON THE PREMISES. THE PROPERTY LINES SHOWN RELY ON CURRENT DEEDS AND PLANS OF RECORD.
THIS INSPECTION PLAN IS NOT A CERTIFICATION AS TO THE TITLE OR OWNERSHIP OF THE PROPERTY SHOWN. OWNERS OF ADJOINING PROPERTIES ARE SHOWN ACCORDING TO CURRENT TOWN OF NANTUCKET ASSESSOR'S RECORDS.
THIS PLAN SHALL NOT BE USED FOR ANY OTHER PURPOSE OTHER THAN ITS INTENDED USE STATED ABOVE.

©Connolly & Associates Inc. NOT TO BE RECORDED FBK.:

MORTGAGE PLOT PLAN
OF LAND IN
NANTUCKET, MA.

SCALE: 1' = 30' DATE: OCT. 15, 2013

Owner: NICHOLAS & LINDA B. FERRANTELLA

Deed/Cert.: 23,957 . . Plan: L.C. 34507-14. LOT. 137

Tax Map: 67-183.1 . Locus: . 18A GRAY AVENUE . .

MICHAEL CONNOLLY & ASSOC. INC.
PROFESSIONAL LAND SURVEYORS
149 SURFSIDE ROAD
NANTUCKET, MASSACHUSETTS 02554
508-228-8910

C-7551

Nantucket Planning Board

SECONDARY DWELLING REPORT

Prepared by: Holly E. Backus, Land Use Specialist **Meeting Date:** September 12, 2016

10 Hickory Meadow Lane
Assessors Map #**41** Parcel #**904**

Applicant	**Owner**
Emeritus Development	**Elizabeth Wetherell**

The applicant is proposing to construct a two (2) story, 950 square foot, two (2) bedroom secondary dwelling. The proposed secondary dwelling will be located on the south side of the site, which has approximately 96,318 square feet of lot area and is LUG-2.

The dwelling will be accessed by a shared Pea Stone driveway with a cobblestone apron off Hickory Meadow Lane (see attached easement information), a portion of which is a paved roadway. The site will contain four (4) exterior parking spaces. The Board should note that page 1 of the "Declaration of Restrictions" (Book 1344 Page 218 – 230 Recorded with the Nantucket Registry of Deeds) regarding Lots 3 through 7 upon Land Court Plan #12325-B, an "*access and utility easement*" was created to provide adequate and primary access to and from the lots from Crooked Lane. Also, per page 2 of the "Declaration of Restrictions," that the driveway access "*shall not be located and constructed from and to West Chester Street to said Buildings Lots*", but "*shall, however*" be used as "*occasional secondary vehicular access to the Building Lots to accommodate boats, construction vehicles, recreational vehicles and special occasions*." It is important for the Board to note that the Applicant previously showed interest in an additional curb-cut off West Chester Street, which has since been removed from the submitted plan. The site plan, as a submitted, meets the requirements of Zoning Bylaw Sections 139-18 and 139-20.1.

Planning staff recommends approval of this application with the following conditions:

(1) That an apron at the driveway entrance and Hickory Meadow Lane shall be constructed with a minimum depth of ten (10) feet and a maximum width of fifteen (15) feet, flared to a width not to exceed nineteen (19) feet;
(2) That any future landscaping at the driveway entrances be limited to low growing plant material and in compliance with the driveway easement restrictions(Book 1344 Page 218 – 230 Recorded with the Nantucket Registry of Deeds;
(3) That the driveways be cleared free of vegetation and obstruction to a width of twelve (12) feet and a height of thirteen (13) feet; and
(4) That the applicant shall submit an As-Built prior to the final inspection by staff which shall take place prior to the issuance of a Certificate of Occupancy.

Nantucket Planning Board

APPLICATION FOR A SECONDARY (2ND) DWELLING PERMIT

Date Submitted: 09/05/16 **Fee Amount:** $ 100.00

Applicant: Emeritus Development

Mailing address: 8 Williams Ln, Nantucket, MA, 02554

Daytime phone number: /508/ 325 4995 **Fax:** /508/ 325 8960

E-mail Address: office@emeritusdevelopment.com

Owner (if other than applicant): Elizabeth Wetherell

Mailing address: 10 Hickory Meadow Ln

Signature of Property Owner(s) Elizabeth Wetherell

Location of proposed secondary(2ND) dwelling:

Street Address: 10 Hickory Meadow Ln

Assessors Tax Map #: 41 **Parcel #:** 904

Size of Parcel: 96, 318 SF **Zoning District:** LUG-2

Secondary Dwelling # of Bedrooms: 2

Primary Dwelling # of Bedrooms: 3

Number of Parking Spaces required (*See Chapter 139-18 of the Bylaw*): 4

Number of Parking Spaces provided: 4

Please provide a brief description of the proposed second dwelling:
*****PLEASE DO NOT WRITE "SEE ATTACHED."**

2 Story Dwelling with Full Basement/ Garage - 950 SF ground cover.

Wetherell Residence

10 Hickory Meadow Ln
Nantucket, Ma. 02554

1 Locus
not to scale

Driveway Native
Pea Stone

LOT 5

LOT 6

LOT 7

MAP 41
PARCEL 904
96,318± s.f. (TOTAL)
73,061± s.f. (UPLAND)
24,388± s.f. (BLDG. ENVELOPE)

222.77'
S 89°02'00" W

OPEN SPACE BOUNDARY

100' WETLAND BUFFER

N 29°35'43" W
192.91'

26x6

9'

20'

28x2

PROPERTY SETBACK (TYP.)

PROPERTY LINE (TYP.)

N 00°13'04" E
160.00'

291.94'
S 88°02'16" W

20.00'
N 89°46'56" W

Primary Dwelling /connected underground/
2,753 sq.ft.

Proposed Shed
198 sq.ft.

Proposed Pool
15' 0" x 73' 0"

Proposed Second Dwelling
950 sq.ft.

Reinforced Lawn

2 Site Plan
1" = 40'-0"

1517

Zoning Information

Map & Parcel	41/904	Min. Lot Size	80,000 sq. ft.*
Current Zoning	LUG 1	Allowable G.C.	4% or 3,853 sq. ft.
Minimum Frontage	150 ft.	Lot Size	+/- 96,318 sq.ft.
Front Setback	35 ft.		
Side Setback	15 ft.		
Rear Setback	15 ft.		

Planning Board

Secondary Dwelling Application
09/05/16

emeritus Development Ltd.
8 Williams Lane Nantucket, MA 02554
P. 508.325.4995
F. 508.325.8960
www.emeritusdevelopment.com

138288

2012 00002823
Bk: 1344 Pg: 218 Page: 1 of 12
Doc: DD 09/20/2012 03:42 PM

RECEIVED
SEP 06 2016
By

LAND COURT, BOSTON. The land herein ~~described~~ will be shown on our approved plan to follow as
REFERRED TO
SEP 12 2012
Plan 12325-B Lots 1+7
(EXAMINED AS DESCRIPTION ONLY)
T.C. PONTBRIAND
ACTING CHIEF ENGINEER

2012 00138288
Cert: 24402 Doc: DD
Registered: 09/20/2012 03:40 PM

STATUTORY QUITCLAIM DEED

NOTE. JAN
THE EASEMENTS HERE IN REFERRED TO WILL NOT BE SHOWN ON OUR APPROVED PLAN.

MASSACHUSETTS SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS, a duly organized Massachusetts charitable and not for profit corporation having its principal place of business at 350 South Huntington Avenue, Boston, Massachusetts 02130 for consideration paid and in full consideration of ONE MILLION SEVEN HUNDRED TWENTY-FIVE THOUSAND and 00/100 ($1,725,000.00) DOLLARS, as authorized and directed by the Executive Committee of the Board of Directors of the Massachusetts Society for the Prevention of Cruelty to Animals pursuant to the provisions of a certain Secretary's Certificate dated ~~August 30~~ September 19, 2012 and registered as Document No. 138284 at the Nantucket Registry District for the Land Court, grant to VIA VAI, LLC, a duly formed Connecticut Limited Liability Company with QUITCLAIM COVENANTS,

PARCEL ONE

The improved real estate located at 11 Crooked Lane, Nantucket Town and County, Commonwealth of Massachusetts 02554, and shown as Lot 1 on Land Court Plan No. 12325-B filed with Certificate of Title No. 24143 at the Nantucket Registry District for the Land Court.

PARCEL TWO

The vacant land located at 11 Crooked Lane, Nantucket Town and County, Commonwealth of Massachusetts 02554, and shown as Lot 7 on Land Court Plan No. 12325-B filed with Certificate of Title No. 24143 at the Nantucket Registry District for the Land Court.

Said Lots 1 and 7 are subject to, and has the benefit of, the provisions of a Decision issued by the Nantucket Board of Appeals registered as Document No. 71391 and noted on Certificate of Title No. 4910 at said Registry District; the provisions of an Order of Conditions issued by the Nantucket Conservation Commission registered as Document No. 72206, as affected by Certificate of Compliance registered as Document No. 137046 at said Registry District; a Grant of Rights by Sydney B. Fee et. al., registered as Document No. 74976 at said Registry District and recorded in Book 527, Page 68 at the Nantucket Registry of Deeds; a Grant of Rights to Martin McKerrow and Toni B. McKerrow registered as Document No. 75400 at said Registry District and recorded in Book 530, Page 212 at the Nantucket Registry of Deeds; and a Grant of Rights to Thomas Chadie, Trustee of Perikles Realty Trust registered as Document No. 132435 at said Registry District and recorded in Book 1260, Page 329 at the Nantucket Registry of Deeds; a Grant of Rights in Sewer Line and Sewer Line Agreement recorded in Book 1325, Page 186 at the Nantucket Registry of Deeds; a non-exclusive and permanent vehicular and pedestrian access easement over and under a portion of Lot 2 on Land Court Plan No. 12325-B and a non-exclusive and permanent sewer and utility easement under a portion of Lot 2 on said Plan as more particularly set forth in Document No. 137257 noted on Certificate of Title No. 24271 at the Nantucket Registry District for the Land Court and recorded in Book 1329, Page 343 at the Nantucket Registry of Deeds.

The Grantor hereby grants to the Grantee, its successors and assigns, a one-quarter (1/4) interest as a Tenant-in-Common in and to that certain existing sewer line situated in Crooked Lane and West Chester Street, Town and County of Nantucket, Commonwealth of Massachusetts. For Grantor's ownership rights in said sewer line, see Grant of Rights in Sewer

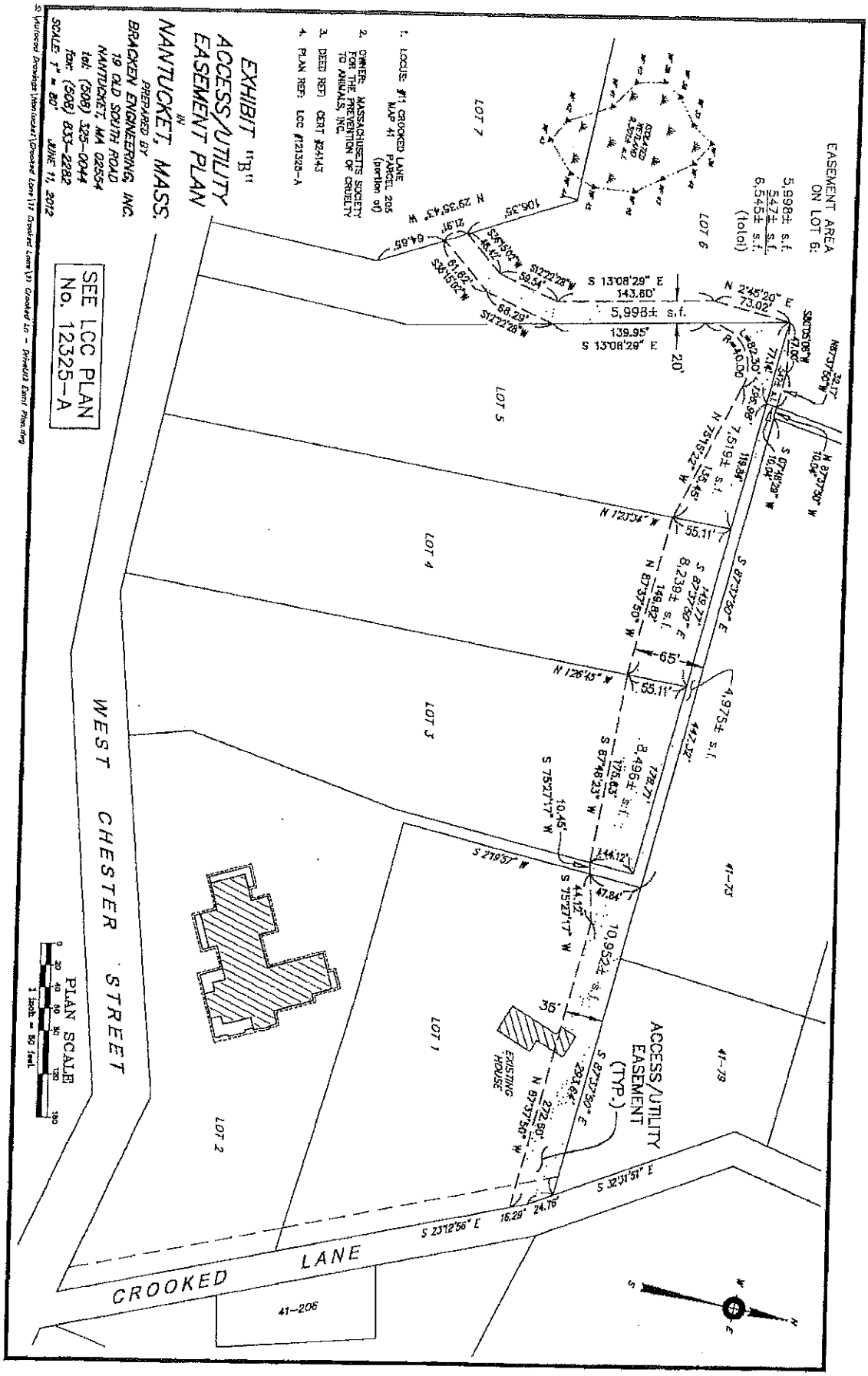


EXHIBIT "B"
ACCESS/UTILITY EASEMENT PLAN
IN
NANTUCKET, MASS.
PREPARED BY
BRACKEN ENGINEERING, INC.
19 OLD SOUTH ROAD
NANTUCKET, MA 02554
tel: (508) 325-0044
fax: (508) 833-2282
SCALE 1" = 80' JUNE 11, 2012
1. LOCUS: #1 CROOKED LANE PLAN 41 PARCEL 205 (portion of)
2. OWNER: MASSACHUSETTS SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS, INC.
3. DEED REF: CERT #26143
4. PLAN REF: LCC #12325-A
SEE LCC PLAN No. 12325-A
EASEMENT AREA ON LOT 6:
5,998± s.f.
547± s.f.
6,545± s.f. (total)
LOT 7
LOT 6
LOT 5
LOT 4
LOT 3
LOT 2
LOT 1
5,998± s.f.
S 13°08'29" E 143.80'
139.95' S 13°08'29" E
20'
106.35'
N 29°35'43" W
64.65'
21.97'
S36°15'02"W 45.42'
S36°15'02"W 61.82'
S12°22'28"W 59.54'
S12°22'28"W 68.29'
N 73°51'31" W 73.92'
S 30°05'06" W 17.00'
R=40.00'
82.30'
N 87°37'30" W 32.17'
N 87°37'30" W 10.04'
S 02°22'30" W 10.04'
N 75°15'22" W 135.45'
7,519± s.f.
118.94'
N 12°33'4" W 55.11'
S 87°37'30" E 148.27'
8,239± s.f.
N 87°37'30" W 149.82'
6.5'
N 12°33'4" W 55.11'
4,975± s.f.
S 87°37'30" E 148.27'
8,496± s.f.
S 87°48'23" W 178.63'
S 75°27'17" W 10.46'
S 27°37'57" W 144.12'
S 75°27'17" W 44.12'
47.84'
10,952± s.f.
36'
EXISTING HOUSE
ACCESS/UTILITY EASEMENT (TYP.)
S 27°37'57" E 272.84'
N 67°37'30" W 272.84'
S 32°31'51" E
S 23°12'56" E 16.28'
24.76'
CROOKED LANE
WEST CHESTER STREET
41-206
41-73
41-78
PLAN SCALE
0 20 40 80 120 160
1 inch = 80 feet.

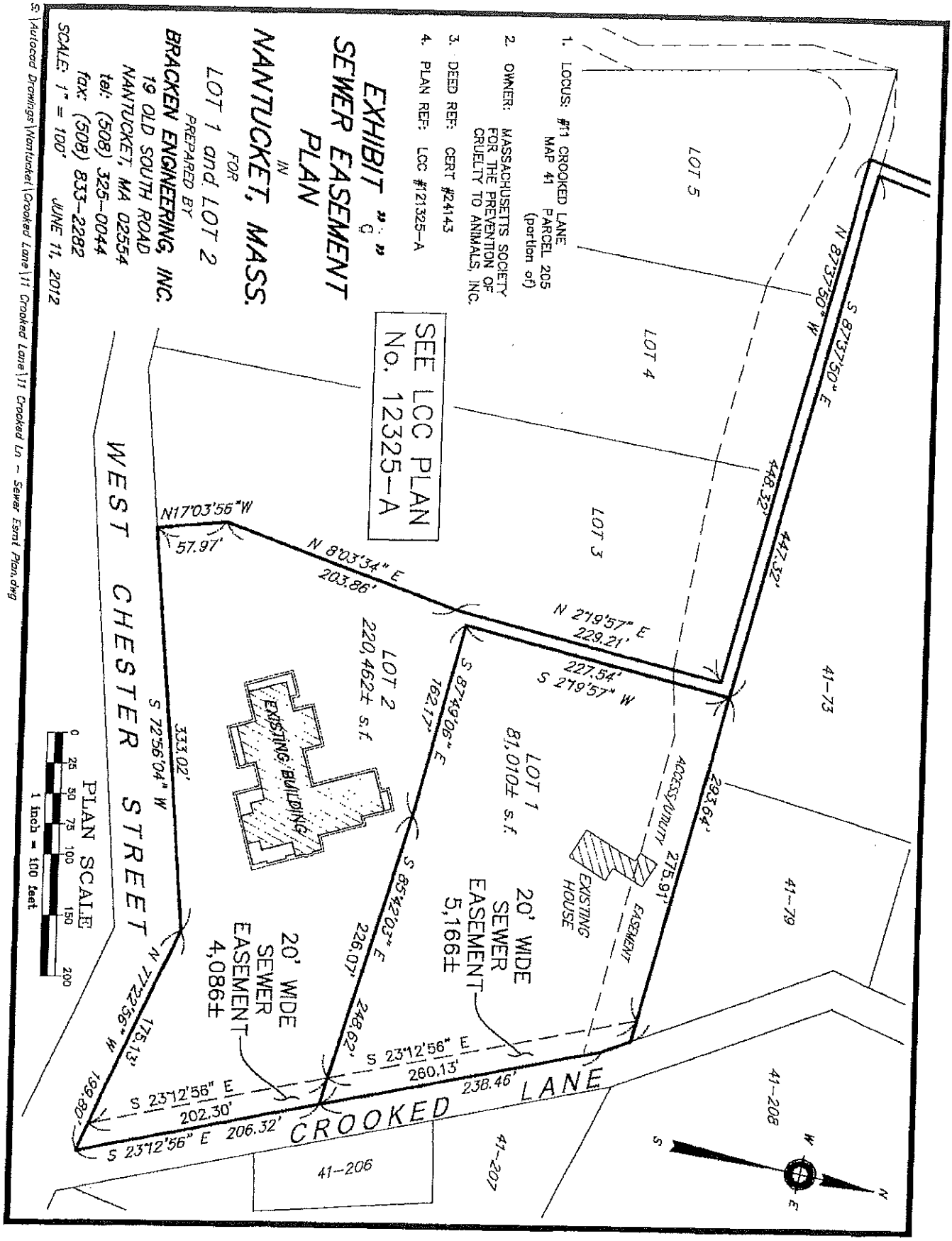


EXHIBIT "A"
SEWER EASEMENT PLAN
IN
NANTUCKET, MASS.
FOR
LOT 1 and LOT 2
PREPARED BY
BRACKEN ENGINEERING, INC.
19 OLD SOUTH ROAD
NANTUCKET, MA 02554
tel: (508) 325-0044
fax: (508) 833-2282
SCALE: 1" = 100'
JUNE 11, 2012
1. LOCUS: #11 CROOKED LANE MAP 41 PARCEL 205 (portion of)
2. OWNER: MASSACHUSETTS SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS, INC.
3. DEED REF: CERT #24143
4. PLAN REF: LCC #121325-A
SEE LCC PLAN No. 12325-A
LOT 5
LOT 4
LOT 3
41-73
41-79
41-208
41-207
41-206
N 87°37'50" E
S 87°37'50" W
448.32'
447.32'
N17°03'56"W
57.97'
N 8°03'34" E
203.86'
N 27°57" E
229.21'
227.54'
S 27°57" W
LOT 2
220,462± s.f.
LOT 1
81,010± s.f.
EXISTING BUILDING
EXISTING HOUSE
ACCESS/UTILITY EASEMENT
283.64'
275.91'
S 87°49'06" E
162.17'
S 85°42'03" E
226.07'
248.92'
20' WIDE SEWER EASEMENT 5,166±
20' WIDE SEWER EASEMENT 4,086±
S 72°56'04" W
333.02'
N 77°22'56" W
175.13'
S 23°12'56" E
202.30'
S 23°12'56" E
260.13'
238.46'
S 23°12'56" E
206.32'
WEST CHESTER STREET
CROOKED LANE
PLAN SCALE
0 25 50 75 100 150 200
1 inch = 100 feet
N
S
W
E
S:\Autocad Drawings\Nantucket\Crooked Lane\11 Crooked Lane\11 Crooked Ln - Sewer Esmt Plan.dwg

Line and Sewer Line Agreement recorded in Book 1325, Page 186 at the Nantucket Registry of Deeds.

The Grantor for itself and its successors and assigns hereby reserves for the benefit of Lots 3, 4, 5, 6 and 7 on Land Court Plan No. 12325-B and hereby grants for the benefit of Lot 1 and 7 the following appurtenant, non-exclusive common driveway and underground utility easements over, under and upon Lots 1, 3, 4, 5, 6 and 7 on Land Court Plan No. 12325-B at the Nantucket Registry District for the Land Court:

1. Common Driveway Easement. The right in common with others entitled thereto to use the area marked "EASEMENT AREA" on the Easement Sketch Plan dated March 9, 2012 (2 pages) prepared by Bracken Engineering, Inc. attached hereto as Exhibit "A" running between Crooked Lane and the northwesterly boundary of Lot 5 as shown on Land Court Plan No. 12325-B, for all purposes for which ways are commonly used in the Town and County of Nantucket, including but not limited to the right to construct, improve, repair and maintain any and all utilities in, upon or under such easement, and to enter upon said easement for the aforesaid purposes.

2. Underground Utility Easement. The right in common with others entitled thereto to install, repair, use and maintain underground sewer and water pipes, telephone, cable, television and digital serve lines under the common driveway area shown on said Easement Sketch Plan attached hereto as Exhibit "B", and to install, repair, use and maintain underground sewer and water pipes under the 20' wide sewer easement area along the eastern sides of Lots 1 and 2 on Land Court Plan No. 12325-B as shown on the SEWER EASEMENT PLAN dated June 11, 2012 annexed hereto as Exhibit "C".

By accepting this Deed, the Grantee, their successors and assigns, shall be responsible for one-third (1/3rd) of the costs and expenses to maintain and repair the common driveway and underground utility pipes and lines. The surface of the easement area shall be returned to its prior condition as soon as the easement maintenance and repair work is completed.

The easements hereby reserved and created shall not be exclusive but shall burden and be appurtenant to, and for the benefit of, Lots 1, 3, 4, 5, 6 and 7 on Land Court Plan No. 12325-B at the Nantucket Registry District for the Land Court, and shall be binding in perpetuity upon the owners of said Lots, their successors and assigns, and all persons acquiring an interest thereunder, and shall be deemed covenants running with said Lots.

Said Lot 7 shall have the benefit of a permanent and non-exclusive vehicular access easement and underground utility easement over, under and upon the proposed driveway on land of the Grantor shown as Lot 6 on Land Court Plan No. 12325-B at the Nantucket Registry District for the Land Court as shown on the Driveway Easement Sketch Plan annexed hereto as Exhibit "D". By accepting this deed and easements, the Grantee, its successors and assigns shall be responsible for the construction of the driveway to Lot 7 and shall have the right to landscape a five (5') foot wide border on both sides of the constructed driveway within the twenty (20') foot wide driveway layout shown on Exhibit "D" with indigenous vegetation which shall be limited to a height of five (5') feet from existing grade on the condition that the Grantee, its successors and assigns, maintains said vegetation in a good and healthy condition at its sole cost and expense. The non-exclusive vehicular access easement and underground utility easement shall be appurtenant to said Lot 7, shall burden said Lot 6, and shall be binding in perpetuity upon the owners of Lots 6 and 7, their successors and assigns, and all persons acquiring an interest thereunder, and shall be deemed covenants running with said Lots 6 and 7.

EASEMENT DESCRIPTION

The Grantor hereby registers notice of the reduction of frontage of Lots 1, 2, 3, 4, 5, 6 and 7 on Land Court Plan No. 12325-B at the Nantucket Registry District for the Land Court through the use of frontage averaging in accordance with the provisions of Section 139-16B(3)(d) of the Town of Nantucket Code, as amended.

For title, see Certificate of Title No. 24143 at the Nantucket Registry District for the Land Court, and Grant of Rights in Sewer Line and Sewer Line Agreement recorded in Book 1325, Page 186 at the Nantucket Registry of Deeds.

IN WITNESS WHEREOF, the Massachusetts Society for the Prevention of Cruelty to Animals has caused this Quitclaim Deed to be signed in its name and behalf by Amy Fredericks, Chief Financial Officer, this 4th day of September 2012.

MASSACHUSETTS SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS

By: Amy Fredericks

AMY FREDERICKS, Chief Financial Officer, duly authorized
Massachusetts Society for the Prevention of Cruelty to Animals
(DOC # 138284)

COMMONWEALTH OF MASSACHUSETTS

Nantucket, ss. September 4th, 2012

On this 4th day of September 2012, before me, the undersigned Notary Public, personally appeared Amy Fredericks, President of the Massachusetts Society for the Prevention of Cruelty to Animals and proved to me through satisfactory evidence of identification, which was personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that she signed it voluntarily for its stated purpose.

K. F. Dale

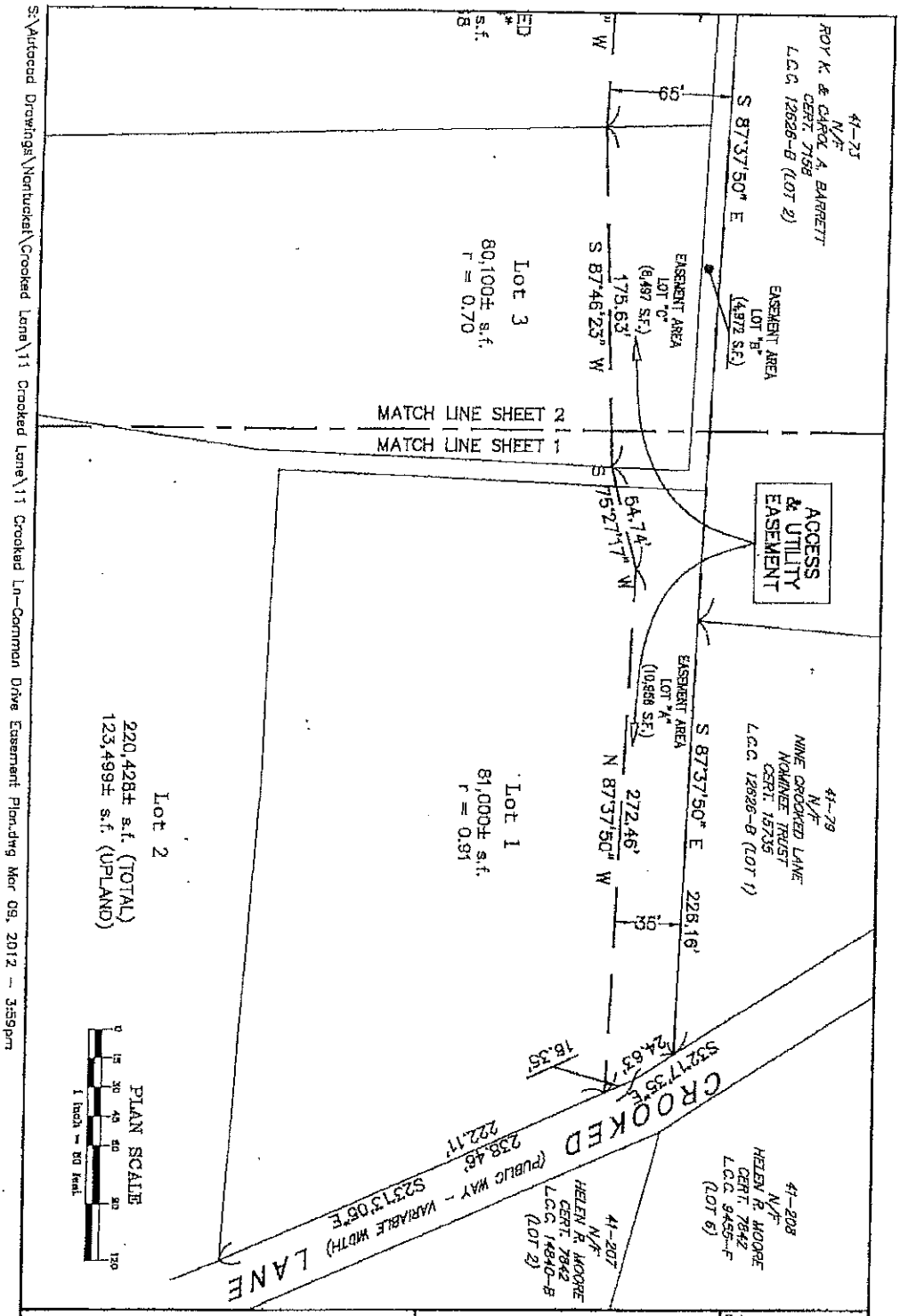
NOTARY PUBLIC

My Commission Expires:

KEVIN F. DALE
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
January 25, 2018

MASSACHUSETTS EXCISE TAX KAC
Nantucket County ROD #16 001
Date: 09/20/2012 03:40 PM
Ctrl# 460188 01978 Doc# 00138288
Fee: $7,866.00 Cons: $1,725,000.00

X 34,500.00
33054 9/20/12



RACKEN ENGINEERING, INC.

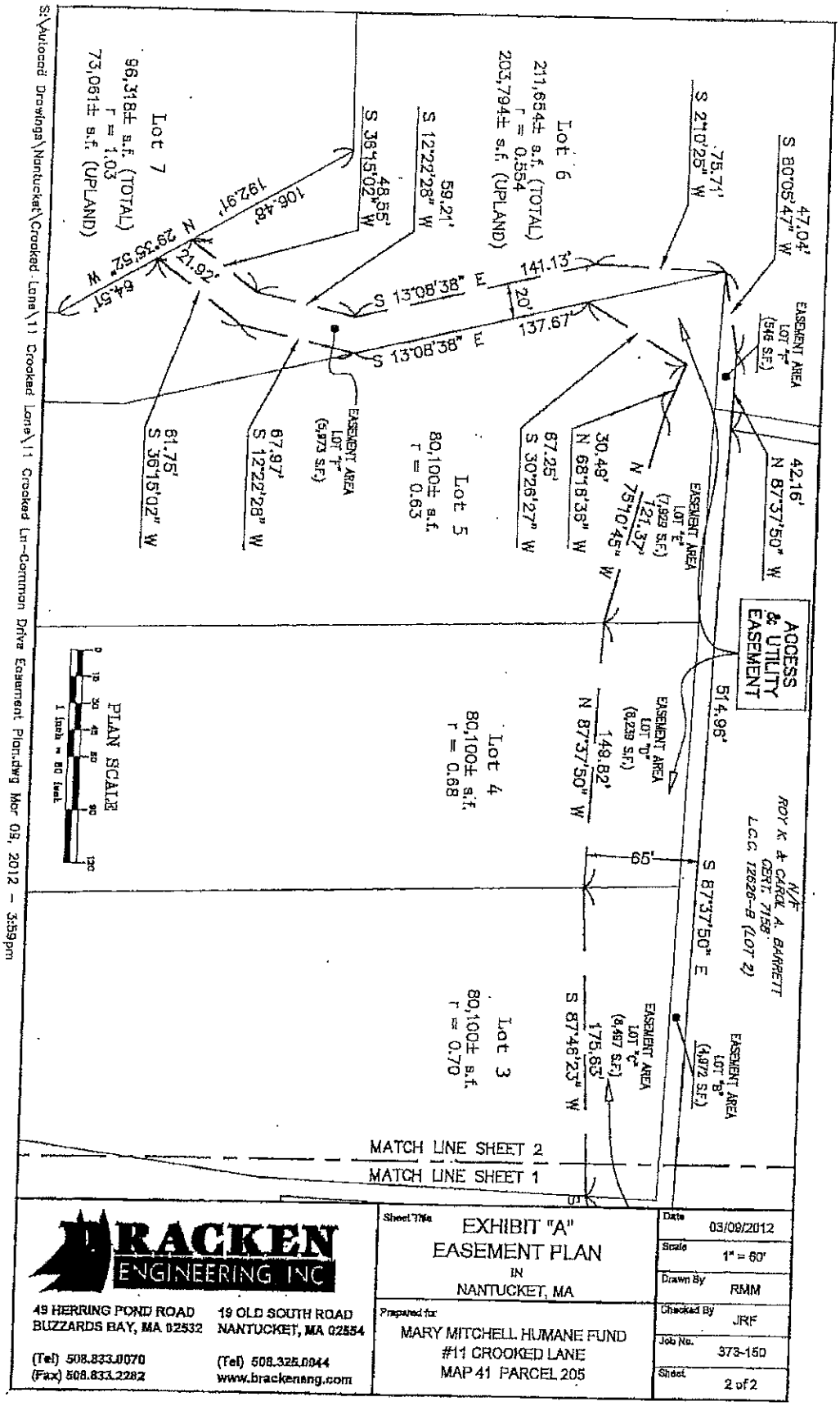
49 HERRING POND ROAD
BUZZARDS BAY, MA 02532
(Tel) 508.833.0070
(Fax) 508.833.2282

19 OLD SOUTH ROAD
NANTUCKET, MA 02554
(Tel) 508.325.0044
www.brackeneng.com

Sheet Title: EXHIBIT "A" EASEMENT PLAN IN NANTUCKET, MA

Prepared for: MARY MITCHELL HUMANE FUND
#11 CROOKED LANE
MAP 41 PARCEL 205

Date	03/09/2012
Scale	1" = 60'
Drawn By	RMM
Checked By	JRF
Job No.	373-150
Sheet	1 of 2



S:\Autocad Drawings\Nantucket\Crooked Lane\11 Crooked Lane\11 Crooked Ln-Common Drive Easement Plan.dwg Mar 09, 2012 - 3:59pm

BRACKEN ENGINEERING INC

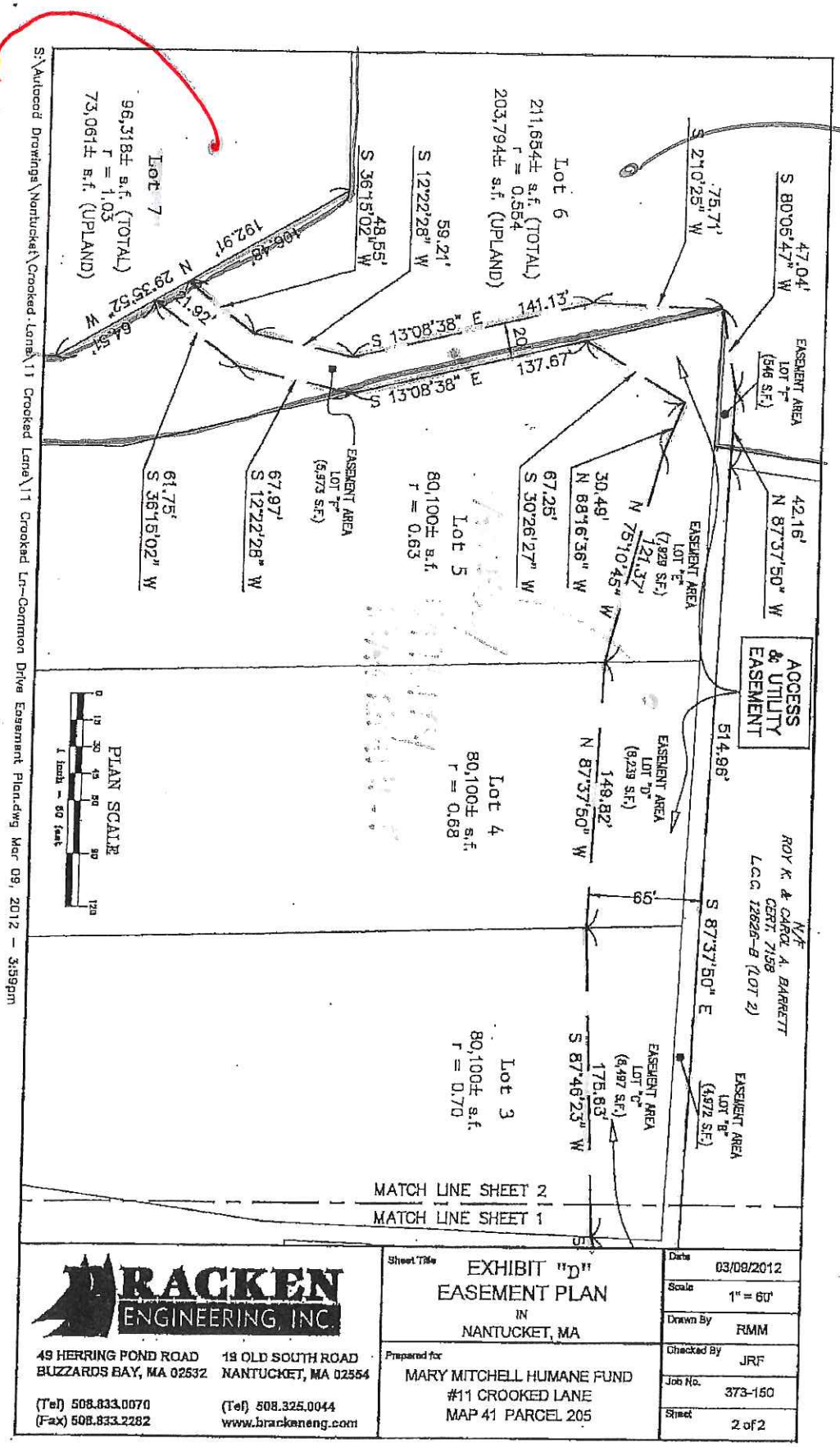
49 HERRING POND ROAD
BUZZARDS BAY, MA 02532
(Tel) 508.833.0070
(Fax) 508.833.2282

19 OLD SOUTH ROAD
NANTUCKET, MA 02554
(Tel) 508.325.0044
www.brackeneng.com

Sheet Title: EXHIBIT "A" EASEMENT PLAN IN NANTUCKET, MA

Prepared for: MARY MITCHELL HUMANE FUND
#11 CROOKED LANE
MAP 41 PARCEL 205

Date	03/09/2012
Scale	1" = 60'
Drawn By	RMM
Checked By	JRF
Job No.	373-150
Sheet	2 of 2



BRACKEN ENGINEERING, INC.

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(Tel) 508.833.0070
(Fax) 508.833.2282

19 OLD SOUTH ROAD
NANTUCKET, MA 02554
(Tel) 508.325.0044
www.brackeneng.com

Sheet Title: EXHIBIT "D" EASEMENT PLAN IN NANTUCKET, MA

Prepared for: MARY MITCHELL HUMANE FUND
#11 CROOKED LANE
MAP 41 PARCEL 205

Date	03/09/2012
Scale	1" = 60'
Drawn By	RMM
Checked By	JRF
Job No.	373-150
Sheet	2 of 2

DOC No: 00138288

NANTUCKET COUNTY LAND COURT

REGISTRY DISTRICT

** RECEIVED FOR REGISTRATION **

On: Sep 20,2012 at 03:40P

Document Fee: 125.00 Rec Total:$12,673

.00

CERTIFICATE No: 24402

Also noted on CERT 24143

NANTUCKET COUNTY Received & Entered
Attest: Jennifer H. Ferreira, Register of Deeds

137307

2012 00137307
Cert: 24143 Doc: DECL OF
Registered: 06/06/2012 02:42 PM

LAND COURT, BOSTON. The land herein ~~described~~ will be shown on our approved plan to follow as
REFERRED TO
JUN 05 2012
Plan 12325 B Lots 3,4,5,6+7
(EXAMINED AS DESCRIPTION ONLY)
T.C. PONTBRIAND
ACTING CHIEF ENGINEER
JAV

DECLARATION OF RESTRICTIONS

The Massachusetts Society for the Prevention of Cruelty to Animals, a duly organized not for profit charitable corporation having its principal place of business at 350 South Huntington Avenue, Boston, Massachusetts 02130 ("MSPCA"), being the registered owner of two (2) parcels of contiguous land located at 11 Crooked Lane and 11R Crooked Lane in the Town and County of Nantucket, Commonwealth of Massachusetts, shown on Land Court Plan No. 12325-A filed with Certificate of Title No. 1475 at said Registry District by virtue of Owner's Certificate of Title No. 24143 and shown as Lot 3 on Land Court Plan No. 12626-B filed with Certificate of Title No. 4393 at said Registry District by virtue of Owner's Certificate of Title No. 7532 ("MSPCA Land"), in consideration of One Dollar ($1.00) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, hereby imposes, for the benefit of the Inhabitants of the Town of Nantucket (the "Town"), acting by and through the Nantucket Planning Board ("Planning Board"), upon the MSPCA Land, the following restrictions (sometimes hereinafter referred to herein as the "Restrictions" or "this Declaration"):

1. Construction of Common Driveway. The MSPCA, its successors and assigns, shall not erect or place any permanent building upon that portion of the MSPCA Land shown as Lots 3, 4, 5, 6 and 7 ("Building Lots") on a plan entitled "PLAN OF LAND IN NANTUCKET, MA owned by MASSACHUSETTS SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS prepared by BRACKEN ENGINEERING, INC., dated December 11, 2011, rev. April 23, 2012, to be filed as Land Court Plan No. 12325-B with Certificate of Title No. 24143 at the Nantucket Registry District of the Land Court, a copy of which is annexed hereto as Exhibit "A" ("ANR Plan"), until the construction of the common driveway (the "Common Driveway") within the area shown as "Access & Utility Easement" on a Sketch Plan, a copy of which is annexed hereto as Exhibit "B", has been completed in a good and workmanlike manner in accordance with the road specifications annexed hereto as Exhibit "C" to provide adequate and primary access by vehicle, foot, bicycle, and emergency vehicles to and from said Building Lots from and to Crooked Lane as shown on said Sketch Plan. All Building Lots shall be released from the provisions of Paragraph 1 of this Declaration upon the filing for registration at the Nantucket Registry District of the Land Court of a Certificate of Release signed by a majority of the members of the Planning Board.

2. Access. The MSPCA, its successors and assigns, agree that the primary individual driveway access (as defined in the Nantucket Zoning By-Law) to each of said Building Lots shall be located and constructed from and to the Common Driveway as shown on said Sketch Plan, and shall not be located and constructed from and to West Chester Street to said Building Lots. The MSPCA, its successors and assigns, shall, however, have the right to use West Chester Street, a public way, as shown on the ANR Plan for pedestrian, bicycle and occasional secondary vehicular access to the Building Lots to accommodate boats, construction vehicles, recreational vehicles and special occasions.

3. Term. The Restrictions contained herein shall run with the land and bind the MSPCA, its successors and assigns, and any person or entity holding any interest in or to the MSPCA Land and/or the Building Lots or any part thereof. The MSPCA acknowledges and agrees that the Restrictions granted herein are for the benefit of and enforceable by the Town and its successors and assigns in perpetuity or for at least a period of ninety-nine (99) years, and that the Restrictions, as they are held by the Town, constitute restrictions held by a governmental body, as those terms are defined in G.L. c.184, §26, and are thus not subject to G.L. c.184, §§27-30. Notwithstanding the foregoing, the Town is authorized to record or file any notices or instruments appropriate to assuring the perpetual enforceability of this Declaration, and the MSPCA, on behalf of itself and its successors and assigns, appoints the Town as its attorney-in-fact to execute, acknowledge and deliver any such instruments on its behalf and that of its successors and assigns. Without limiting the foregoing, the MSPCA, on behalf of itself and its successors and assigns, agree to execute any such instruments upon request.

4. Enforcement. The rights hereby granted include the right to enforce the Restrictions contained herein by appropriate legal proceedings and to obtain injunctive and other equitable relief against any violation, including, without limitation, relief requiring restoration of the MSPCA Land, the Building Lots, the Common Driveway, West Chester Street or any part thereof to their respective condition prior to the time of the injury complained of (it being agreed that the Town has no adequate remedy at law), and shall be in addition to, and not in limitation of, any other rights and remedies available to the Town. The Town shall have the option to enforce the terms hereof, but does not have the obligation to do so. By its acceptance of this Declaration, the Town does not undertake any liability or obligation relating to the condition of the MSPCA Land, the Building Lots, the Common Driveway, West Chester Street or any part thereof, nor does the Town's acceptance of this Declaration operate as a waiver of the requirements of any state or local law applicable to the use of the MSPCA Land, the Building Lots, or any part thereof.

5. No Waiver. Any forbearance with respect to any violation of the Restrictions contained herein, or failure to enforce such Restrictions, for however long such forbearance or failure to enforce shall continue, shall not preclude enforcement at a later

time with respect to the same violation or a subsequent violation. Any election by the Town as to the manner and timing of its right to enforce the Restrictions or otherwise exercise its rights hereunder shall not be deemed or construed to be a waiver of such rights.

6. Incorporation into Deeds, Mortgages, Leases and Instruments of Transfer. The MSPCA hereby agrees to incorporate this Declaration, in full or by reference, into all deeds, easements, mortgages, leases, licenses, occupancy agreements or any other instrument of transfer by which an interest in and/or a right to use the MSCPA Land, the Building Lots or any portion thereof, is conveyed, but the failure to incorporate or reference this Declaration shall not impair or limit the validity hereof.

7. Severability. If any court of other tribunal determines that any provision of this Declaration is invalid or unenforceable, such provision shall be deemed to have been modified automatically to conform to the requirements for validity and enforceability as determined by such court or tribunal. In the event the provision invalidated is of such nature that it cannot be so modified, the provision shall be deemed deleted from this Declaration as though it had never been included herein. In either case, the remaining provisions of this Declaration shall remain in full force and effect.

8. No Contest. The MSPCA on behalf of itself and its successors and assigns, hereby forever waives any and all rights to, and does hereby forego, any action at law or equity attempting to contest the validity of any provision of the covenants contained herein, and shall not, in any enforcement action, raise the invalidity of any provision of this Declaration as a defense. If any provision of this Declaration shall nevertheless to any extent be held invalid, the remainder shall not be affected.

9. Reimbursement of Cost of Enforcement. The MSPCA on behalf of itself and its successors and assigns, covenant and agree to reimburse the Town for all reasonable costs and expenses (including without limitation attorneys' fees and costs) incurred in enforcing this Declaration or in remedying or abating any violation thereof.

10. Amendment and Release. This Declaration shall not be amended or terminated without the prior written consent of the Town, nor shall this Declaration be altered so as to be contrary to the purposes stated herein.

11. Governing Law. The Restrictions and covenants contained herein shall be governed by the laws of The Commonwealth of Massachusetts.

12. Counterparts. This Declaration may be executed in one or more separate counterparts, each of which when so executed shall be deemed to be an original. Such counterparts together shall constitute one and the same instrument.

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK]

MSPCA Declaration of Restrictions

WITNESS our hand(s) and seal(s) this 2nd day of March 2012.

MASSACHUSETTS SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS, a Massachusetts not-for-profit corporation

By: _____
CARTER LUKE, President
Hereunto duly authorized

By: _____
AMY FREDERICKS, Vice-President,
Chief Financial Officer,
Hereunto duly authorized

COMMONWEALTH OF MASSACHUSETTS

Suffolk, ss.

On this 2 day of ~~February~~ March, 2012, before me, the undersigned notary public, personally appeared Carter Luke and proved to me through satisfactory evidence of identification, which were personal knowledge to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purpose, in his capacity as President of the Massachusetts Society for the Prevention of Cruelty to Animals.

_____
NOTARY PUBLIC
My Commission Expires: 3/26/2015

COMMONWEALTH OF MASSACHUSETTS

Suffolk, ss.

On this 2 day of ~~February,~~ March, 2012, before me, the undersigned notary public, personally appeared Carter Luke and proved to me through satisfactory evidence of identification, which were personal knowledge to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purpose, in his capacity as President of the Massachusetts Society for the Prevention of Cruelty to Animals.

_____
NOTARY PUBLIC
My Commission Expires: 3/26/2015

5

MSPCA Declaration of Restrictions

ACCEPTANCE OF DECLARATION OF RESTRICTIONS

The Town of Nantucket, acting by and through its Planning Board pursuant to the authority granted under G.L. c. 41, §§81K-81GG and G.L. c. 184, §26, hereby accepts the foregoing Declaration of Restrictions from The Massachusetts Society for the Prevention of Cruelty to Animals on this 12 day of March, 2012.

NANTUCKET PLANNING BOARD

By: _____
BARRY RECTOR, CHAIRMAN

By: _____
SYLVIA HOWARD

By: _____
NATHANIEL LOWELL

By: _____
JOHN McLAUGHLIN

By: _____
LINDA WILLIAMS

COMMONWEALTH OF MASSACHUSETTS

Nantucket, ss.

On this 12 day of ~~February~~ March, 2012, before me, the undersigned notary public, personally appeared Sylvia Howard and proved to me through satisfactory evidence of identification, which were known to me to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

_____
NOTARY PUBLIC
My Commission Expires:

LESLIE WOODSON SNELL
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS
My Comm. Expires Sept. 28, 2018

EXHIBIT A

ANR PLAN

(See attached)

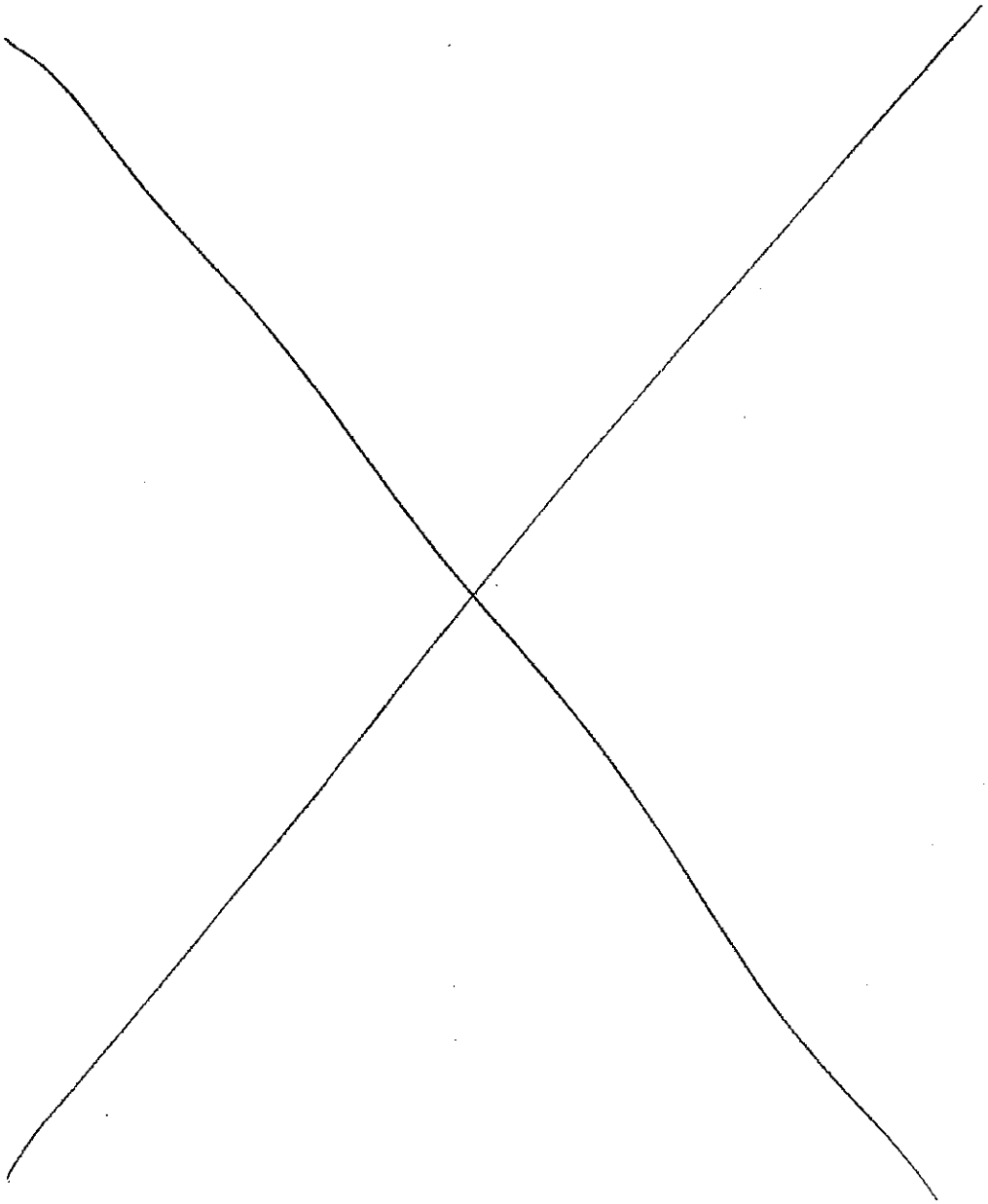
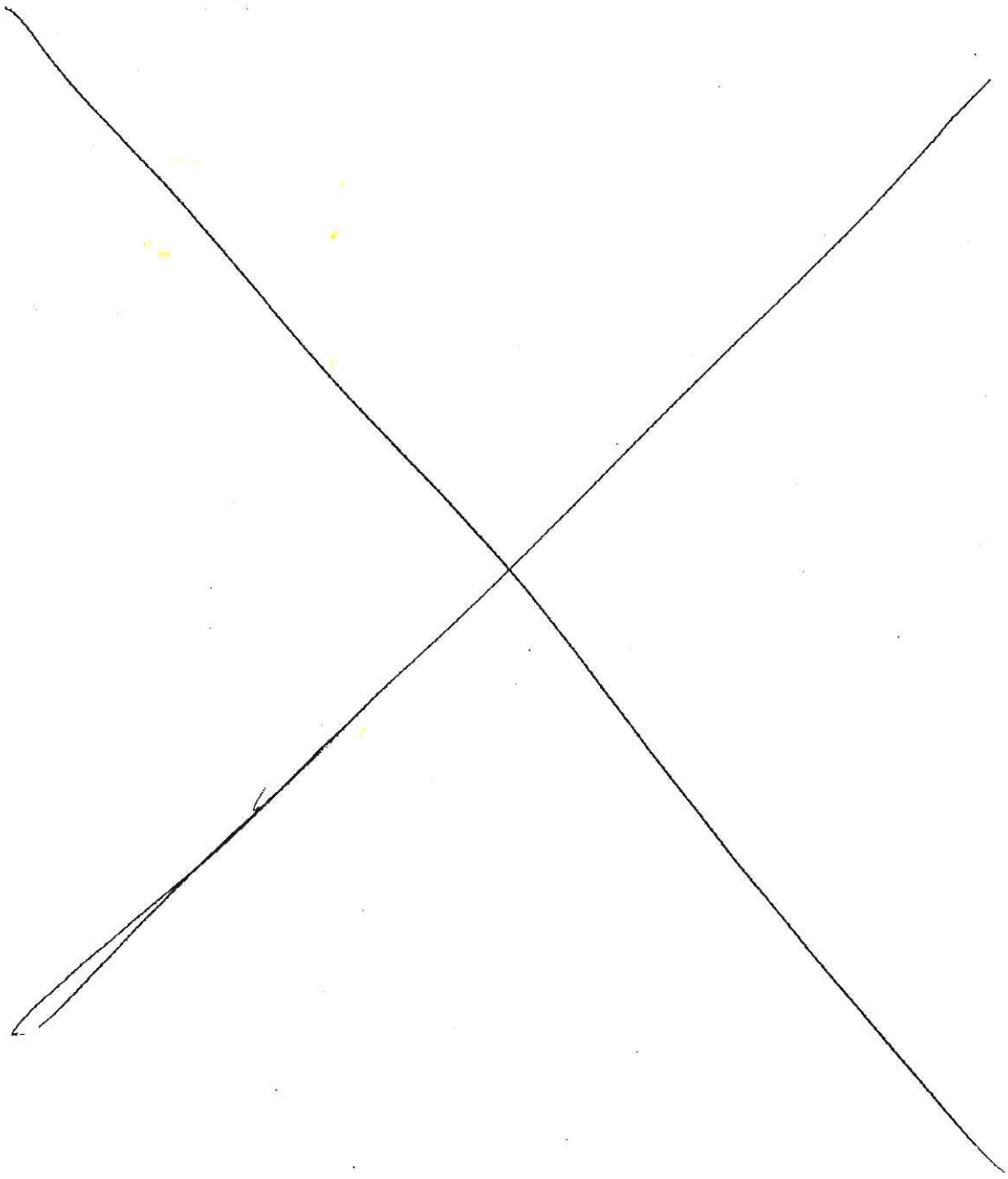
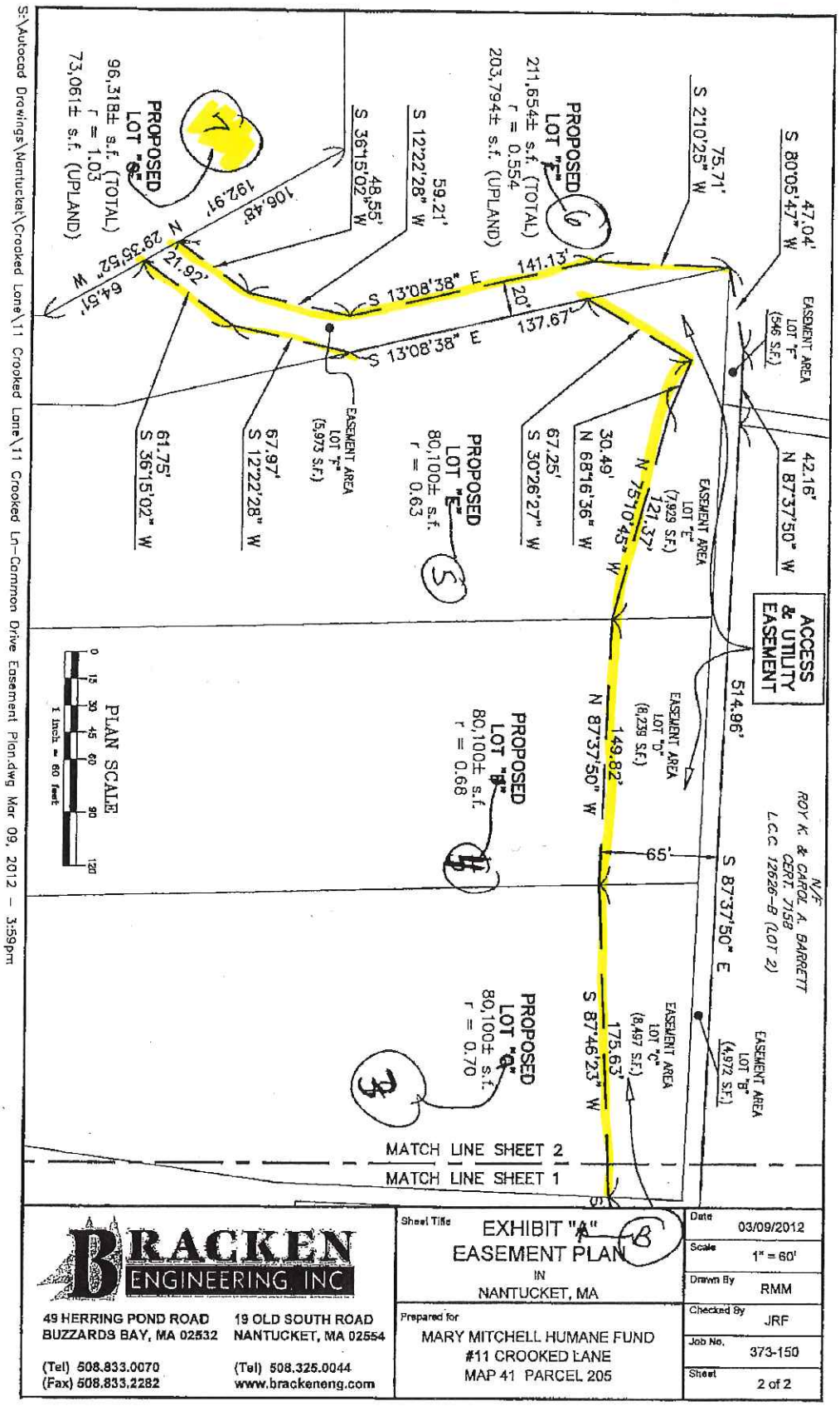


EXHIBIT B

Sketch Plan showing MSPCA Land, the Building Lots and the Common Driveway

(See attached)





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BRACKEN ENGINEERING, INC

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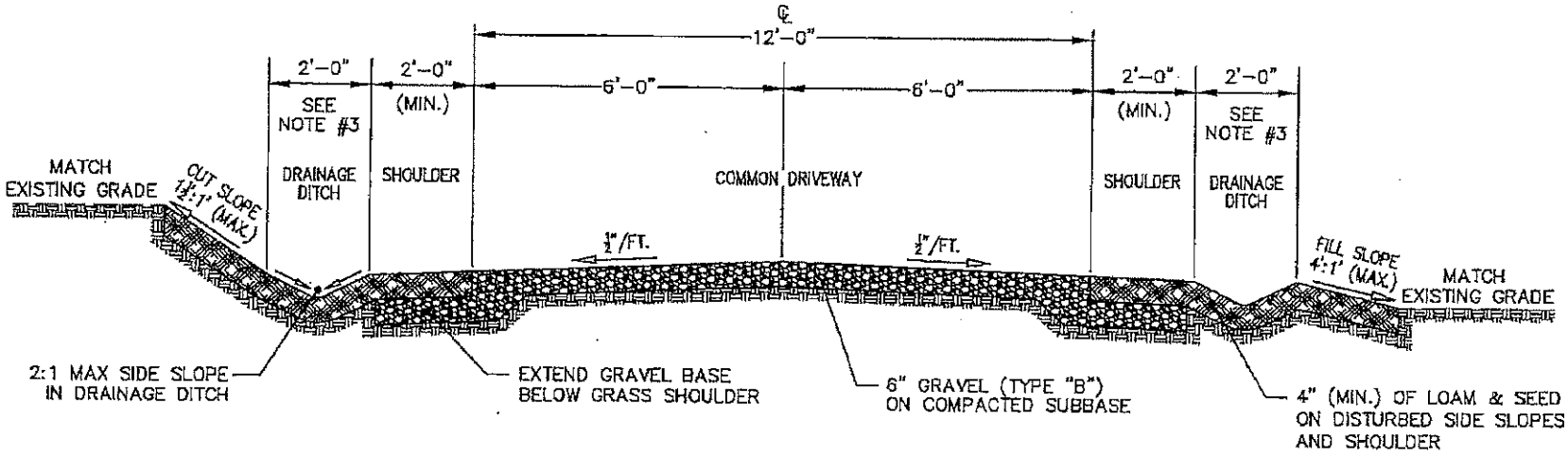
Sheet Title: EXHIBIT "A" EASEMENT PLAN
IN
NANTUCKET, MA

Prepared for
MARY MITCHELL HUMANE FUND
#11 CROOKED LANE
MAP 41 PARCEL 205

Date	03/09/2012
Scale	1" = 60'
Drawn By	RMM
Checked By	JRF
Job No.	373-150
Sheet	2 of 2

EXHIBIT "C"



TYPICAL SECTION
STABILIZED COMMON DRIVEWAY
FOR LOTS C, D, E, F & G
#11 CROOKED LANE

NOTES:

1. ALL TOP SOIL, SUB-SOIL AND DELITERIOUS MATERIAL TO BE REMOVED BELOW GRAVEL SURFACE.
2. ALL PROPOSED UTILITIES WITHIN DRIVEWAY AREA TO BE LOCATED UNDERGROUND.
3. ALL DRAINAGE FROM DRIVEWAY TO BE CONTAINED WITHIN THE COMMON DRIVEWAY EASEMENT AREA AS DIRECTED BY A PROFESSIONAL CIVIL ENGINEER.

137307

DOC No: 00137307

NANTUCKET COUNTY LAND COURT

REGISTRY DISTRICT

** RECEIVED FOR REGISTRATION **

On: Jun 06,2012 at 02:42P

Document Fee: 75.00 Rec Total:$75.00

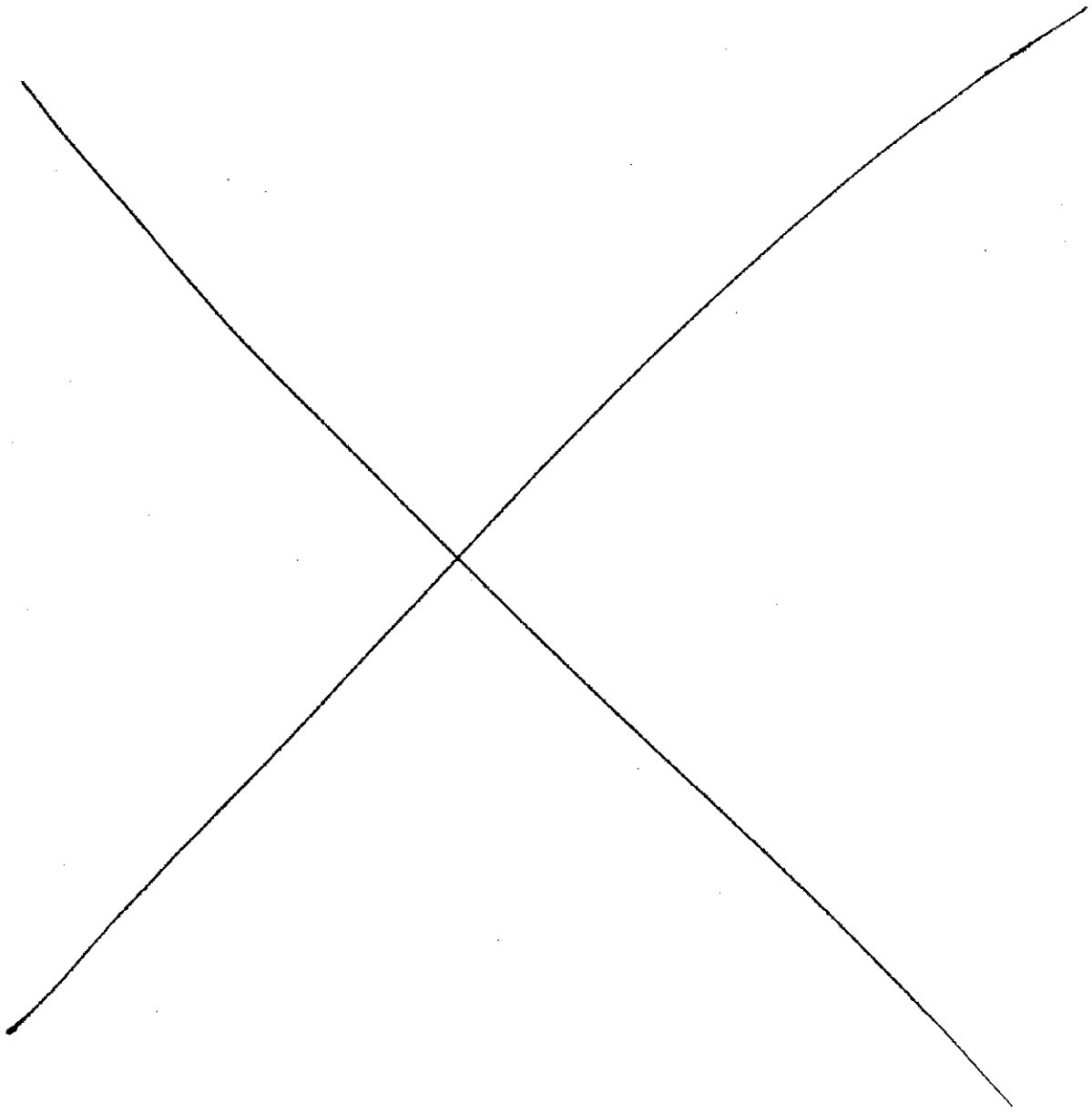
CERTIFICATE No: 24143

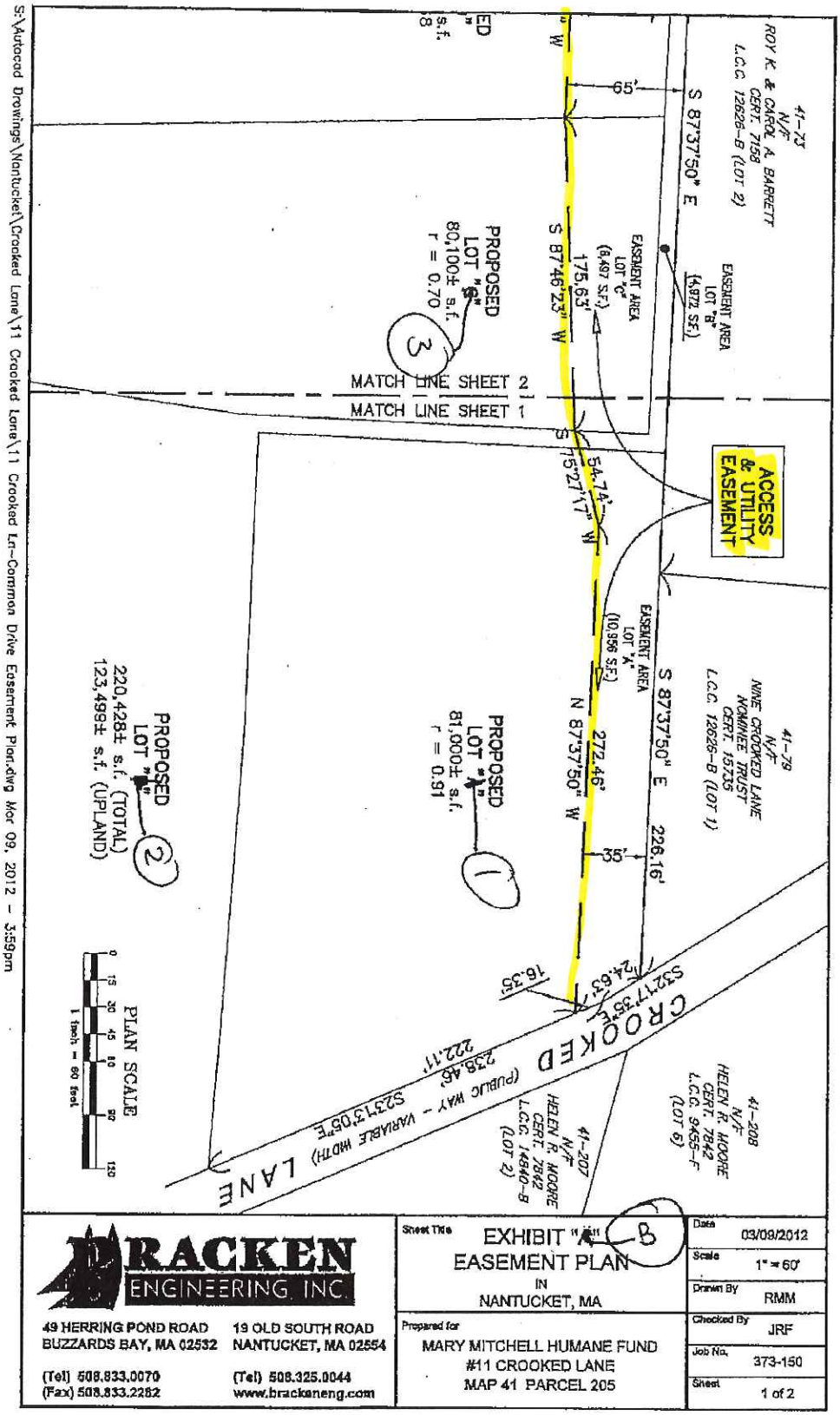
also noted on Cert 7532

EXHIBIT C

Common Driveway Road Specifications

(See attached)




S:\Autocad Drawings\Nantucket\Crooked Lane\11 Crooked Lane\11 Crooked Ln-Common Drive Easement Plan.dwg Mar 09, 2012 - 3:59pm
41-73
N/F
ROY K. & CAROL A. BARRETT
CERT. 7158
L.C.C. 12626-B (LOT 2)
S 87°37'50" E
65'
EASEMENT AREA
LOT "B"
(4,972 S.F.)
EASEMENT AREA
LOT "C"
(6,497 S.F.)
S 87°46'23" W
175.63'
PROPOSED
LOT "C"
80,100± s.f.
r = 0.70
3
MATCH LINE SHEET 2
MATCH LINE SHEET 1
S 75°27'17" W
54.74'
ACCESS
& UTILITY
EASEMENT
EASEMENT AREA
LOT "A"
(10,956 S.F.)
41-79
N/F
NINE CROOKED LANE
NOMINEE TRUST
CERT. 15335
L.C.C. 12626-B (LOT 1)
S 87°37'50" E
226.16'
35'
N 87°37'50" W
272.46'
PROPOSED
LOT "B"
81,900± s.f.
r = 0.91
1
PROPOSED
LOT "A"
220,428± s.f. (TOTAL)
123,499± s.f. (UPLAND)
2
PLAN SCALE
1 inch = 60 feet
16.35'
S32°17'35"E
24.65'
CROOKED LANE
(PUBLIC WAY - VARIABLE WIDTH)
S32°13'05"E
238.46'
222.11'
41-207
N/F
HELEN P. MOORE
CERT. 7842
L.C.C. 14840-B
(LOT 2)
41-208
N/F
HELEN P. MOORE
CERT. 7842
L.C.C. 9455-F
(LOT 6)
B
BRACKEN
ENGINEERING, INC.
49 HERRING POND ROAD
BUZZARDS BAY, MA 02532
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Sheet Title
EXHIBIT "A"
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MARY MITCHELL HUMANE FUND
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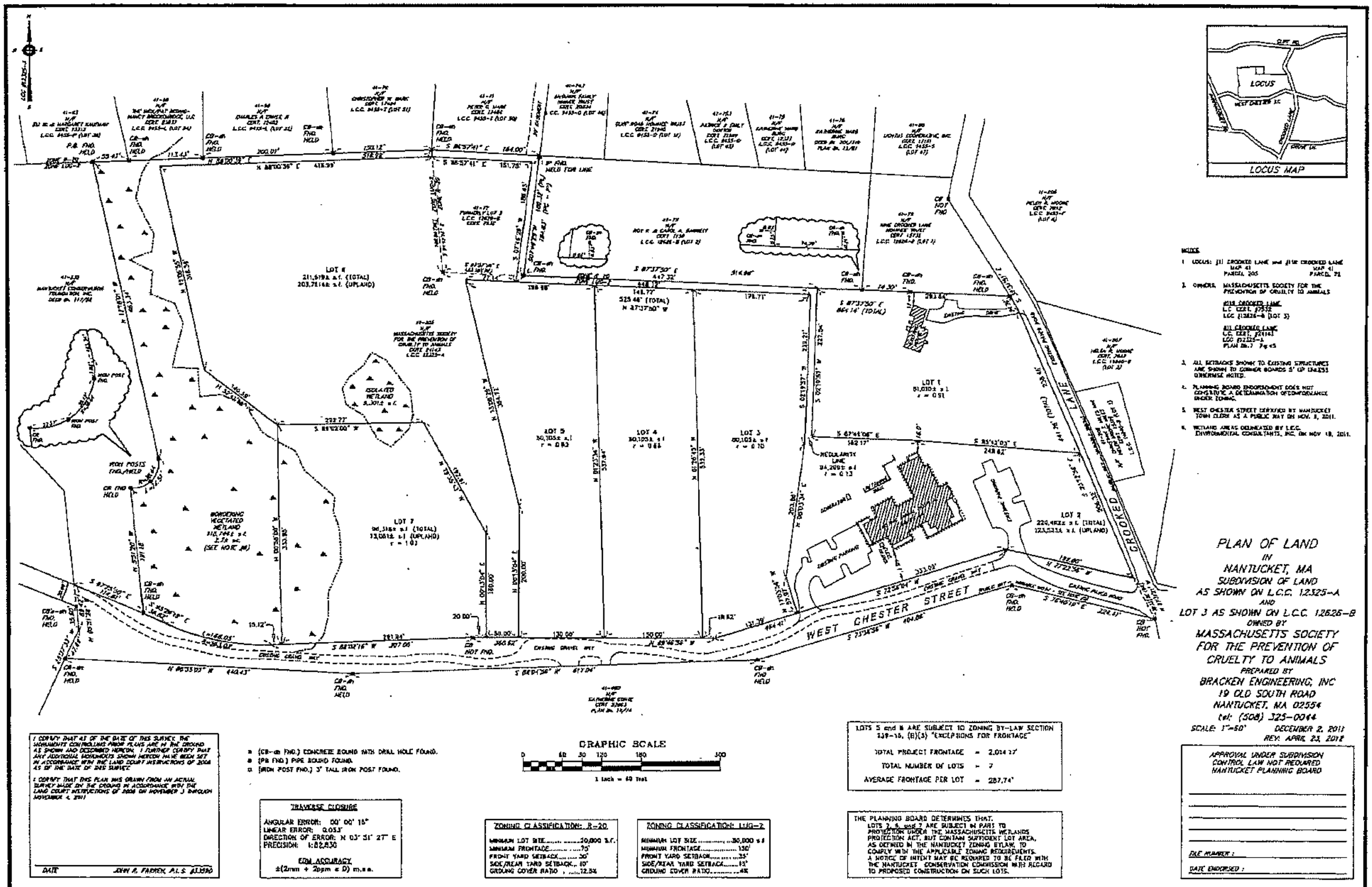


PLAN OF LAND
IN
NANTUCKET, MA
SUBDIVISION OF LAND
AS SHOWN ON L.C.C. 12325-A
AND
LOT 3 AS SHOWN ON L.C.C. 12626-B
OWNED BY
MASSACHUSETTS SOCIETY
FOR THE PREVENTION OF
CRUELTY TO ANIMALS
PREPARED BY
BRACKEN ENGINEERING, INC
19 OLD SOUTH ROAD
NANTUCKET, MA 02554
tel: (508) 325-0044
SCALE: 1"=60'
DECEMBER 2, 2011
REV. APRIL 23, 2012
LOCUS MAP
LOCUS
WEST CHESTER ST
CROOKED LANE
WEST CHESTER STREET
LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
LOT 6
LOT 7
ISOLATED WETLAND
BORDERING VEGETATED WETLAND
GRAPHIC SCALE
1 inch = 60 feet
TRAVERSE CLOSURE
ANGULAR ERROR: 00° 00' 15"
LINEAR ERROR: 0.053'
DIRECTION OF ERROR: N 03° 51' 27" E
PRECISION: 1:82,830
EDM ACCURACY
±(2mm + 2ppm x D) m.s.e.
ZONING CLASSIFICATION: R-20
MINIMUM LOT SIZE..........20,000 S.F.
MINIMUM FRONTAGE..........75'
FRONT YARD SETBACK..........20'
SIDE/REAR YARD SETBACK..........10'
GROUND COVER RATIO..........12.5%
ZONING CLASSIFICATION: LUG-2
MINIMUM LOT SIZE..........80,000 S.F.
MINIMUM FRONTAGE..........150'
FRONT YARD SETBACK..........35'
SIDE/REAR YARD SETBACK..........15'
GROUND COVER RATIO..........4%
LOTS 5 and 6 ARE SUBJECT TO ZONING BY-LAW SECTION 139-16, (B)(3) "EXCEPTIONS FOR FRONTAGE"
TOTAL PROJECT FRONTAGE = 2,014.17'
TOTAL NUMBER OF LOTS = 7
AVERAGE FRONTAGE PER LOT = 287.74'
THE PLANNING BOARD DETERMINES THAT: LOTS 2, 6, and 7 ARE SUBJECT IN PART TO PROTECTION UNDER THE MASSACHUSETTS WETLANDS PROTECTION ACT, BUT CONTAIN SUFFICIENT LOT AREA, AS DEFINED IN THE NANTUCKET ZONING BYLAW, TO COMPLY WITH THE APPLICABLE ZONING REQUIREMENTS. A NOTICE OF INTENT MAY BE REQUIRED TO BE FILED WITH THE NANTUCKET CONSERVATION COMMISSION WITH REGARD TO PROPOSED CONSTRUCTION ON SUCH LOTS.
APPROVAL UNDER SUBDIVISION CONTROL LAW NOT REQUIRED NANTUCKET PLANNING BOARD
FILE NUMBER :
DATE ENDORSED :
(CB-dh FND.) CONCRETE BOUND WITH DRILL HOLE FOUND.
(PB FND.) PIPE BOUND FOUND.
(IRON POST FND.) 3' TALL IRON POST FOUND.
DATE
JOHN R. FARDEN, P.L.S. #33590

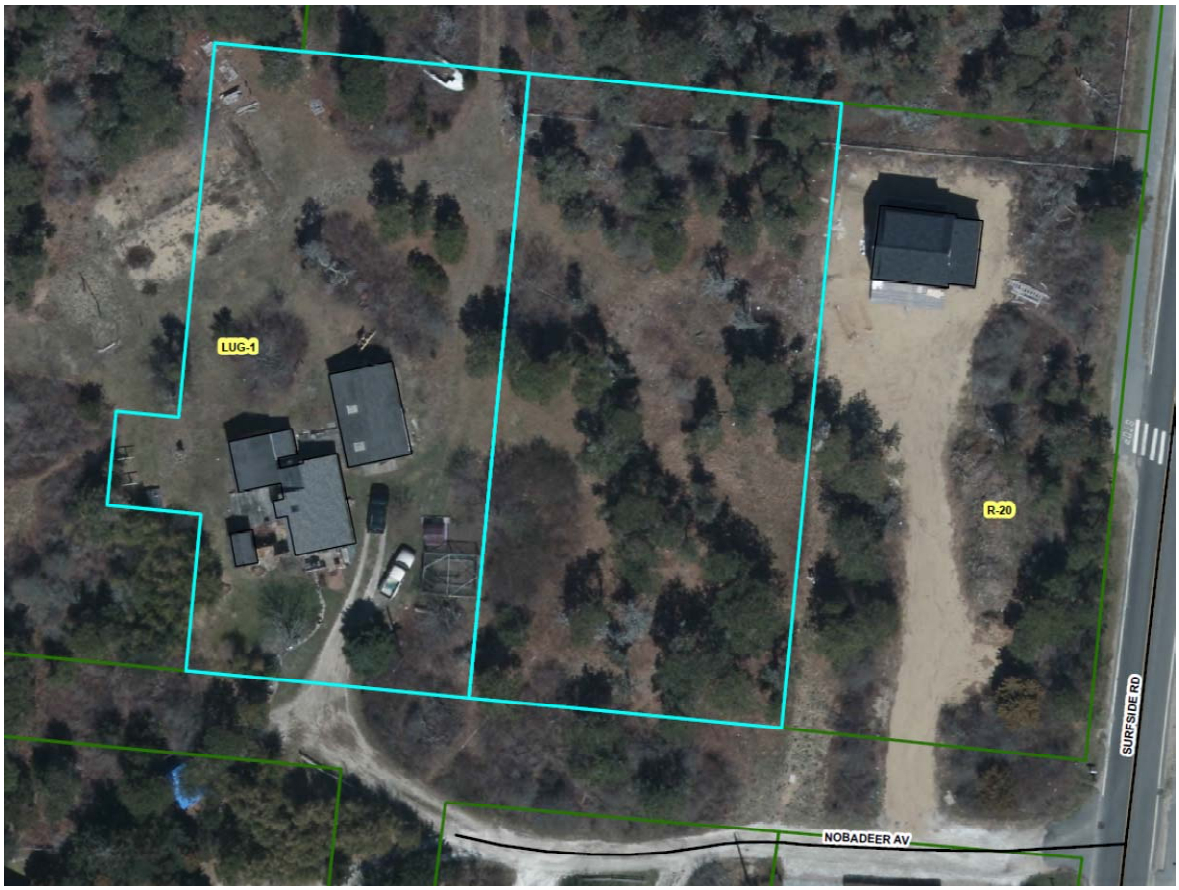
Nantucket Planning Board

SECONDARY DWELLING REPORT

Prepared by: Holly E. Backus, Land Use Specialist **Meeting Date:** September 12, 2016

8 Nobadeer Ave
Assessors Map #**80** Parcel #**35 & 37**

Applicant	**Owner**
Moonlight Dance LLC	**Same**



The applicant is proposing to construct a 576square foot one (1) bedroom secondary dwelling. The proposed secondary dwelling will be located on the northwest side of the site, which has approximately 40,100 square feet of lot area and is zoned LUG-1. There is also a proposed 2,188square foot primary structure proposed for the lot.

The dwelling will be accessed by a shared shelled driveway off Nobadeer Avenue, which is a private dirt road. Nobadeer Avenue is located off Surfisde Road with an existing asphalt apron. The site will contain four (4) exterior parking spaces. The site plan, as submitted meets the requirements of Zoning Bylaw Sections 139-18 and 139-20.1.

Planning staff recommends approval of this application with the following conditions:

(1) That the surface of the driveway shall be a minimum of ten (10) feet in width and a maximum of fifteen (15) feet in width, excluding corner rounding which may have a maximum radius of two (2) feet;
(2) That any future landscaping at the driveway entrances be limited to low growing plant material not to exceed three (3) feet in height;
(3) That the driveways be cleared free of vegetation and obstruction to a width of twelve (12) feet and a height of thirteen (13) feet; and
(4) That the applicant shall submit an As-Built prior to the final inspection by staff which shall take place prior to the issuance of a Certificate of Occupancy.

2016 SEP -7 PM 12:17

PAID SEP 07 2016 BY: √#3015

Nantucket Planning Board

APPLICATION FOR A SECONDARY (2ND) DWELLING PERMIT

Date Submitted: 09/06/16 Fee Amount: _____

Applicant: Moonlight Dance LLC

Mailing address: 15 main street Unit 301 Watertown, Ma

Daytime phone number: 617.823.2838 Fax: _____

E-mail Address: Office@MarcelloBuildingCo.com

Owner (if other than applicant): _____

Mailing address: _____

Signature of Property Owner(s) _____

Location of proposed secondary(2ND) dwelling:

Street Address: 4-8 Nobadeer Ave

Assessors Tax Map #: 80 Parcel #: 35+37

Size of Parcel: 40,100 S.F. Zoning District: LUG-1

Secondary Dwelling # of Bedrooms: 1

Primary Dwelling # of Bedrooms: 5

Number of Parking Spaces required (*See Chapter 139-18 of the Bylaw*): 4

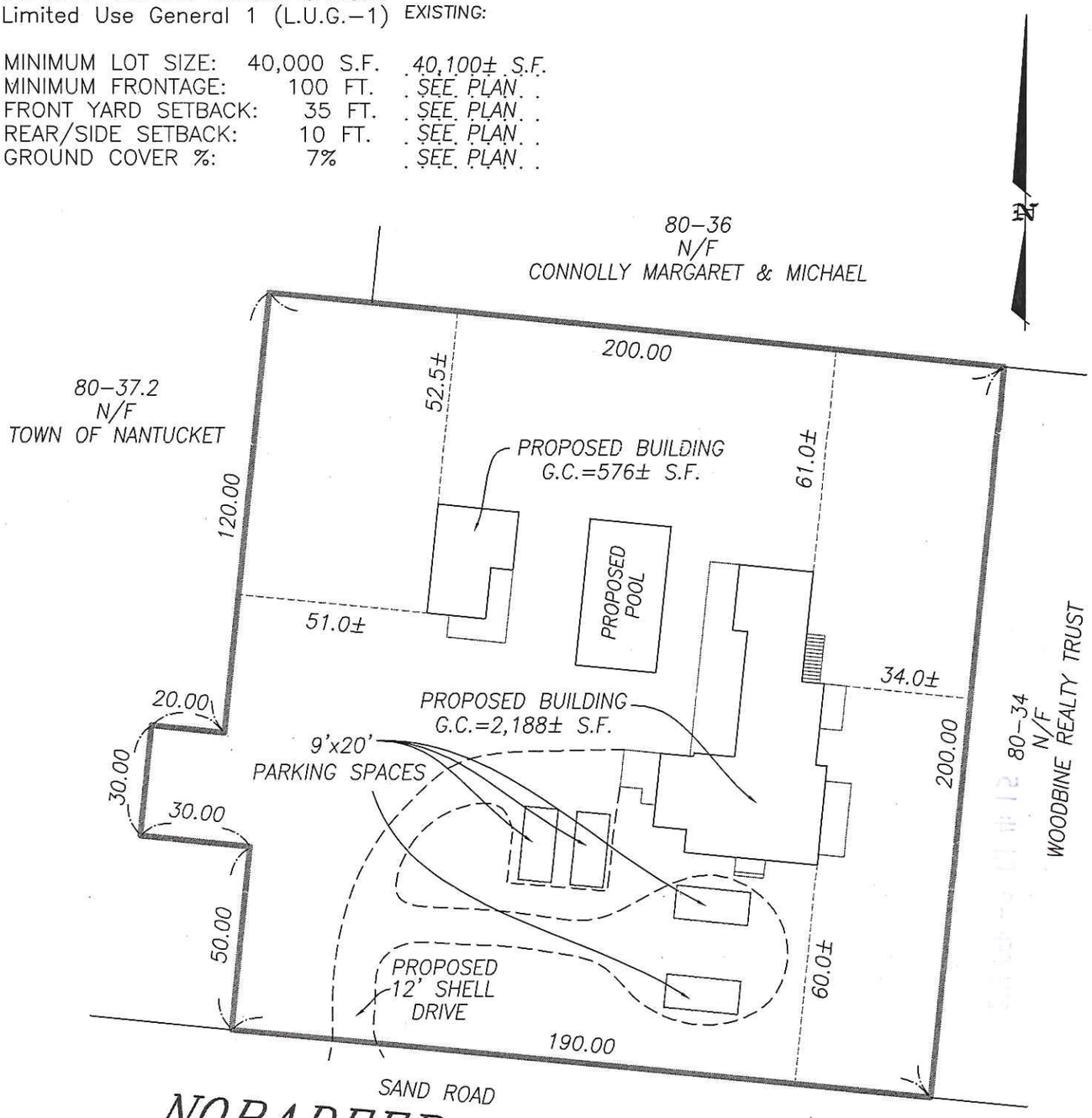
Number of Parking Spaces provided: 4

Please provide a brief description of the proposed second dwelling:
***PLEASE DO NOT WRITE "SEE ATTACHED."

Construct 2 story (930 sqft) 1 Bed, 2½ Bath, 2nd dwelling pool equipment to be located in basement.

CURRENT ZONING CLASSIFICATION:
Limited Use General 1 (L.U.G.–1)

		EXISTING:
MINIMUM LOT SIZE:	40,000 S.F.	40,100± S.F.
MINIMUM FRONTAGE:	100 FT.	SEE PLAN
FRONT YARD SETBACK:	35 FT.	SEE PLAN
REAR/SIDE SETBACK:	10 FT.	SEE PLAN
GROUND COVER %:	7%	SEE PLAN



PROPOSED SITE PLAN
OF LAND IN
NANTUCKET, MASS.

SCALE: 1"= 40' DATE: AUGUST 31, 2016

Owner: . . . . MOONLIGHT DANCE, LLC . . . . . .

CERT. 25946
Deed: DEED 1520–72 Plan: PLAN 2011–21; PARCELS C & G
L.C. 17745–A; LOT 1
L.C. 17745–M; LOT 50

Locus: . . . . . 4 NOBADEER AVENUE . . . . .

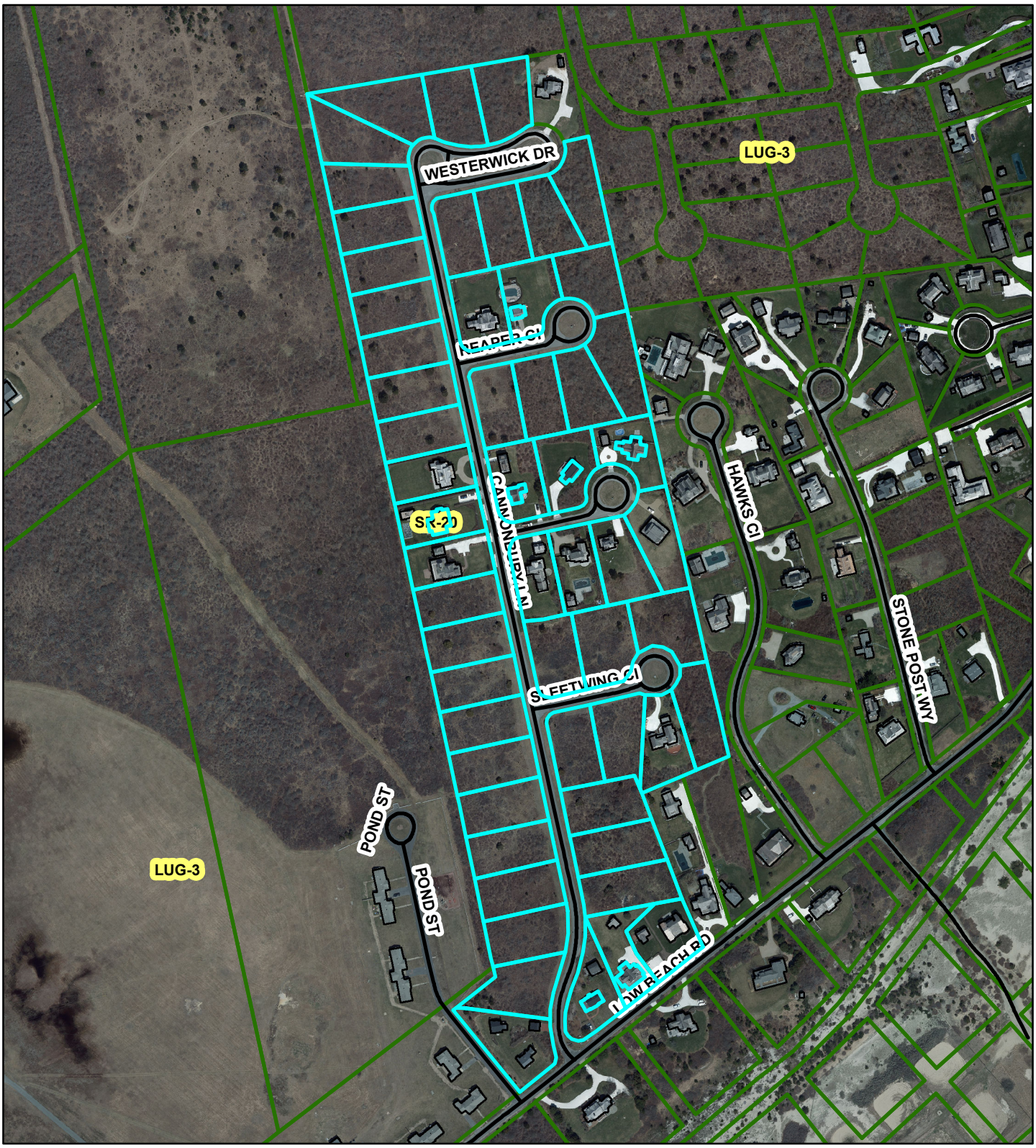
COMMONWEALTH OF MASSACHUSETTS
EDWARD F. KING, JR.
No. 45711
PROFESSIONAL LAND SURVEYOR

ISLAND SURVEYORS, LLC
Professional Land Surveyors
90 OLD SOUTH ROAD
NANTUCKET, MASS. 02554
(508) 228–2720

ASSESSOR MAP: . . .80 . , PARCEL: 35 & 37

K–625

#1242 Topland Properties
Form J Release



COPY

Nantucket Planning Board

Form J
Certificate of Completion and
Release of Municipal Interest in
Subdivision Performance Security

Date: August 2016 Planning Board File # 1242

Subdivision Name: Topland Properties

Owner: RIMAR 1 LLC and RIMAR 2 LLC

Owner's Address: _____

Phone number: 508-228-0771 Fax number: 508-228-6205 E-mail: richard@gliddenandglidden.com

Applicant, (if other than owner): Same

Applicant's Address: _____

Phone number: _____ Fax number: _____ E-mail: _____

Date of Subdivision Plan: September 17, 1973

Land Location: Off Low Beach Road

Plan Recorded: Nantucket Registry of Deeds Plan Book 5-B Page _____

Plan Registered: Nantucket Land Registry, Land Court Plan Number_____

Type of Performance Security:

☒ Covenant dated: October 15, 1973 as amended December 18, 1990
Covenant recorded: Nantucket Registry of Deeds, Book 147 Page 140.
Or and Book 359, Page 222
Covenant registered: Nantucket Land Registry District as Document #_____ and noted on
Certificate of Title #_____ in Registration Book _____ Page _____.

○ Deposit of money, agreement dated: _____
Bank (if bank passbook): _____
Address of Bank:_____

○ Other Security , agreement dated:_____

○ Letter of credit, agreement dated:_____

Bank: _____

Address of Bank: _____

The undersigned, being a majority of the Planning Board of Nantucket, have determined that the construction of ways and installation of municipal services in the subdivision referred to above have been ☐ completed ☐ partially completed by the applicant in accordance with the Board's rules and regulations to adequately serve the following enumerated lots:

Lots 5 thru 57 being all lots in the subdivision.

Pursuant to Section 81.U of Chapter 41, M.G.L. and in consideration of said construction and installation, the Town of Nantucket, a Massachusetts corporation, acting through its Planning Board, hereby releases its interest in the Performance Security referred to above, as to the lots enumerated in the preceding paragraph only.

Duly executed as a sealed instrument this _____ (Date) day of September (Month), 2016 (Year).

Barry G. Rector

Nat Lowell

Linda Williams

John McLaughlin

Joseph Marcklinger

Signed by a Majority of the Town of Nantucket Planning Board

COMMONWEALTH OF MASSACHUSETTS

Nantucket, SS _____, 2016

On the _____ day of September, 2016, before me, the undersigned notary public,

Personally appeared _____, one of the above-named members of the Planning Board of Nantucket, Massachusetts, personally known to me to be the person whose name is signed on the preceding document, and acknowledge that he/she signed the foregoing instrument voluntarily for the purposes therein expressed.

Notary Public

My commission expires:

COPY

GLIDDEN & GLIDDEN, P.C.
ATTORNEYS AT LAW
P. O. BOX 1079
37 CENTRE STREET
NANTUCKET, MASSACHUSETTS 02554
508-228-0771
FAX 508-228-6205
OFFICE@GLIDDENANDGLIDDEN.COM

RICHARD J. GLIDDEN
JESSIE M. GLIDDEN BRESCHER
JOHN B. BRESCHER

JAMES K. GLIDDEN
(1917 – 2009)

August 10, 2016

Via Hand Delivery
Holly Backus
Nantucket Planning Board

Re: Heath Subdivision
Off Low Beach Road
Nantucket, Massachusetts 02554

Dear Holly:

I represent Richard and Marion Graham who own the remaining lots in the "Heath Subdivision". This has quite a history and my clients have now decided to market the remaining lots for residential use.

Without going through the fascinating history, the immediate issue is the release of the lots from the covenant. There was an original covenant and then an amended covenant. My reading of the documents indicates the following requirements:

1. Conform to the plans as submitted to the Nantucket Planning Board – This has been done.

2. Install one fire alarm box at approximately station 17 and 50 and extend wire to existing fire alarm system on Low Beach Road – This has been done.

3. Install eight (8) street lights approximately 400 square feet apart and at the end of each cul-de-sac. All the wires are in and Graham will have lights installed this summer. There is a question as to whether this really should be done. The people in the area seem to object to the idea of street lights.

4. Install street signs at all road intersections. They have been destroyed or stolen so Grahams are putting up five new signs.

5. Provide one lot for a public park, Lot 25 as shown on said plan. If, however, developer provides an alternative public park within one mile of the planned subdivision, Lot 25 will be released. This was done. See deed to Nantucket Islands Land Bank recorded at Book 534, Page 212 (copy attached hereto).

6. Paragraph 6 of the original covenant was replaced by new Paragraph 6 in amended covenant recorded at Book 359, Page 222.

6 (a) Developer shall limit the use of Lots 5 through 57 in the subdivision to one single family dwelling per lot by the imposition of an appropriate restrictive covenant, such covenant to be part of the deed to each such lot and to run with the title to each such lot. This was done by Restrictive Covenant recorded at Book 426, Page 285 (copy attached).

6 (b) Developer shall prohibit the use of temporary on-site septic systems on Lots 5 through 57 by imposition of appropriate restrictive covenant. This was done by Restrictive Covenant recorded at Book 426, Page 285.

6 (c) The Planning Board shall not require inspection or testing of the gravity sewer, however, lacking such testing, developer acknowledges no obligation on the part of the Town to accept the sewer as part of the public waste water system. The system has been inspected and accepted by the Town.

6 (d) The Planning Board will accept all roads as having been built to current Town specifications. Nothing more to be done.

6 (e) The name of Westerwick Way will be changed so as not to duplicate the name of an existing street. Developer was going to change the name to Gideon's Way but it was never done.

6 (f) Prior to the release of any lot, and as a condition precedent thereto, developer shall furnish the Planning Board with evidence that a restriction with respect to such lot complying with paragraph 6 (a) has been duly recorded at the Nantucket Registry of Deeds. This has been done.

Now back to original covenant:

7. No shade trees are required to be planted in subdivision. Nothing needs to be done.

8. No curbing or sidewalks are required to be constructed in said subdivision. Nothing needs to be done.

9. The subdivision agrees with the Nantucket Planning Board not to ask for the release of more than:

   10 Lots in Calendar Year 1973
   20 Additional Lots in Calendar Year 1974
   20 Additional Lots in Calendar Year 1975
   7 Additional Lots in Calendar Year 1976

   Any lots not released according to the above schedule will be released in subsequent years, provided the total cumulative lots released does not exceed the totals specified. To date the Board has released the following lots:

   1, 2, 3, 4, 15, 16, 17, 28, 29, 30, 33, 34, 35, 36, 40, 41, 42, 43, 44, 45, 46, 47, 50, 51, 52 and 54

My clients would like to request the release of all the lots not previously released (see attached Form J).

I thank you for your time and consideration and please let me know if you need any additional information in order to place this matter on the Planning Board agenda.

Very truly yours,

Richard J. Glidden

RJG/jlr

QUITCLAIM DEED

TOPLAND PROPERTIES, a Massachusetts General Partnership, of 1323, S.E. 17th Street, Ft. Lauderdale, FL 33316, in consideration of $1.00 paid grant to NANTUCKET ISLANDS LAND BANK, a body politic incorporate, of 22 Broad Street, Nantucket, Massachusetts 02554, with QUITCLAIM COVENANTS, the land situate at Low Beach Road, Nantucket Town and County, Massachusetts, bounded and described as follows:

Block A, 1, 2 and 28 as shown on plan entitled "Low Beach, Siasconset, Nantucket, Mass. Scale 200 ft to 1 inch Surveyed by Wm. F. Codd", dated May 23, 1895, which plan was duly recorded with the Nantucket Registry of Deeds in Plan Book 3, Page 3.

Grantor also conveys all of its right, title and interest in the ways abutting the premises, as shown on said plan, being Myrick Street, Beach Street, Pine Street and Pochick Avenue, subject to rights, if any, of other owners of land on said plan to use private ways in common with others lawfully entitled thereto.

For Grantor's title see Deed at said Registry in Book 170, Page 249.

The undersigned partners jointly and severally certify that they constitute all of the members (whether living or deceased) of the partnership known as Topland Properties.

WITNESS our hands and seals this 23rd day of April, 1997.

TOPLAND PROPERTIES

Richard Graham by

Richard Graham, Partner

Marion Graham by

Marion Graham, Partner

COMMONWEALTH OF MASSACHUSETTS

Nantucket, ss April 23, 1997

Then personally appeared the above-named Richard J. Glidden under power of attorney dated March 26, 1997 for Richard Graham and Marion Graham, Partners as aforesaid and acknowledged the foregoing instrument to be their free act and deed, before me,

Notary Public

My Commission Expires: 4/24/98

NANTUCKET LAND BANK CERTIFICATE
☐ Paid $
☒ Exempt A
☐ Not applicable
15549 4-23-97
No. Date
Authorization DD

AFFIDAVIT REGARDING POWER OF ATTORNEY

I, RICHARD J. GLIDDEN, do under oath depose and say that I am the attorney in fact or agent named in Power of Attorney dated MARCH 26, 1997, executed by my principals, RICHARD GRAHAM and MARION GRAHAM, PARTNERS of TOPLAND PROPERTIES, A MASSACHUSETTS GENERAL PARTNERSHIP and at the time of the execution, pursuant to said Power of Attorney, of certain documents, dated April 23, 1997, I did not have actual knowledge of any revocation or of any termination of said Power of Attorney by death, mental illness or other disability.

Signed under the penalties of perjury this 23rd day of April, 1997.

Richard J. Glidden

COMMONWEALTH OF MASSACHUSETTS

Nantucket, ss April 23, 1997

Then personally appeared the above-named Richard J. Glidden and made oath that the foregoing statements are true to the best of his knowledge and belief, before me

Notary Public

My Commission Expires: 4/24/98

APR 23 1997 3:10PM
NANTUCKET COUNTY REC'D ENTERED
SANDRA M CHADWICK ATTEST REGISTER

End of Instrument

See Restrictive Covenant BK 426 PG 285

AMENDMENT TO PLANNING BOARD COVENANT

WHEREAS, RICHARD GRAHAM, as general partner of Topland Properties and Trustee of Cannonbury Lane Realty Trust, Packett Drive Realty Trust and Westerwick Drive Realty Trust, is the owner of Lots 5 through 57 on a subdivision (hereinafter "subdivision") shown on a plan recorded at Nantucket Registry of Deeds in Plan File 5B (hereinafter "plan"); and

WHEREAS, said subdivision is subject to a covenant recorded at Nantucket Registry of Deeds in Book 147, Pages 140, 141 and 142; and

WHEREAS, at Paragraph 6 of the "Additions to Item 1 of Form I Covenant" on Page 142, the developer of said subdivision agreed to seek permission to brush and grade Proprietor's Road from Lot 24 north to Milestone Road in order to obtain the release of in excess of 38 lots from the covenant; and

WHEREAS, the developer has sought appropriate permission and will be unable to brush and grade said way because of its proximity to the Siasconset well fields; and

WHEREAS, the developer and the Planning Board wish to amend the existing language in Paragraph 6;

NOW, THEREFORE, the parties agree as follows:

1. Paragraph 6 of the original covenant shall be deleted and of no further force and effect and the requirements of said original ¶6 are hereby waived.

2. Paragraph 6 shall read hereafter as follows:

Received January 15, 1991
Leanne M. Holdgate, Clerk

6(a) Developer shall limit the use of Lots 5 through 57 in the subdivision to one single-family dwelling per lot by the imposition of an appropriate restrictive covenant, such covenant to be part of the deed with respect to each such lot and to run with the title to each such lot.

(b) Developer shall prohibit the use of temporary on-site septic systems on Lots 5 through 57 by imposition of appropriate restrictive covenant.

(c) The planning board shall not require inspection or testing of the gravity sewer. However, lacking such testing, developer acknowledges no obligation on the part of the Town to accept the sewer as part of the public waste water system.

(d) The planning board will accept all roads as having been built to current town specifications.

(e) The name of Westerwick Way will be changed so as not to duplicate the name of an existing street.

(f) Prior to the release of any lot, and as a condition precedent thereto, developer shall furnish the planning board with evidence that a restriction with respect to such lot complying with Paragraph 6(a), above, has been duly recorded in the Nantucket Registry of Deeds.

The modifications set forth above apply only to Paragraph 6 of the "Additions to Item 1 of Form I Covenant", and the remainder of said Additions and the original Covenant remain in full force and effect.

Signed on this 18 day of December, 1990

Nancy Master
NOTARY PUBLIC, STATE OF FLORIDA.
MY COMMISSION EXPIRES: DEC. 12, 1994.
BONDED THRU NOTARY PUBLIC UNDERWRITERS.

NOTARY PUBLIC

Richard Graham
Richard Graham, Trustee of:
Cannonbury Realty Trust
Packet Drive Realty Trust
Westerwick Drive Realty Trust
General Partner of Topland Properties

This covenant is acknowledged and agreed to by the Planning Board of Nantucket, Massachusetts.

Walter S Barrett

C. Marshall Beal

COMMONWEALTH OF MASSACHUSETTS

BROWARD
~~Nantucket~~, ss DECEMBER 21, 1990

Then appeared the above-named RICHARD GRAHAM as Trustee of Cannonbury, Packett Drive and Westerwick Realty Trusts and as General Partner of Topland Properties and acknowledged his signature to be his free act and deed before me,

Notary Public
My commission expires:

COMMONWEALTH OF MASSACHUSETTS

Nantucket, ss January 14, 1991

Then appeared the above-named Stephen J. Butler as Chairman of the Planning Board of Nantucket and acknowledged (his)/her signature to be (his)/her free act and deed before me,

Notary Public
My commission expires: October 5, 1995

NANTUCKET COUNTY
Received and Entered
FEB 06 1991 8:52 AM
Attest Sandra M. Chadwick
Register

egm/D/ToplandAgt

RESTRICTIVE COVENANT

RICHARD GRAHAM, of 1323 S.E.17th Street, Suite 335, Ft. Lauderdale, Florida 33316, as he is Trustee of CANNONBURY LANE REALTY TRUST, established by written Declaration of Trust dated December 31, 1987, recorded in Nantucket Deeds, Book 292, Page 223, as he is the Trustee of WESTERWICK DRIVE REALTY TRUST, established by written Declaration of Trust dated December 31, 1987, recorded in Nantucket Deeds, Book 292, Page 236, as he is Trustee of PACKET DRIVE REALTY TRUST, established by written Declaration of Trust dated December 31, 1987, recorded in Nantucket Deeds, Book 292, Page 246, and as he is General Partner of TOPLAND PROPERTIES, a Massachusetts partnership with offices at 35 Center Street, Nantucket, Massachusetts, 02554, being the Owner of LOTS 5 through 57, inclusive (the "Lots") as shown on a plan entitled in part: "A Subdivision Plan of Land in Nantucket (Siasconset), Mass., Scale 1 inch = 50 feet, Schofield Brothers, Inc., Prof. Eng. and Reg. Land Surv., 14 Federal Street, Nantucket, Mass., Subdivider: Edward B. Heath, 195 Lake Street, New Britain, Conn., 06050", dated September 17, 1973 and recorded with the Nantucket Registry of Deeds in Plan Book 5-B, hereby imposes the following restrictive covenant on Lots 5 through 57, inclusive, on said plan:

1. The use of Lots 5 through 57 shown on said plan shall be limited to one single-family dwelling per lot and no additional dwellings shall be constructed or maintained on the lots.

2. The use of temporary on-site septic systems on Lots 5 through 57 on said plan is prohibited.

The restrictions imposed hereby shall be an appurtenant right enforceable by each owner of the Lots and all the Lots shall be deemed to be benefitted hereby.

The Town of Nantucket, acting by and through the Planning Board and/or Building Inspector, shall have the right to enforce any or all of said restrictions and no amendments hereof shall be effective without the consent of the Planning Board.

The restrictions imposed hereby shall be deemed to be imposed as part of a common scheme applicable to all the Lots and shall run with the title to each of the Lots.

I, Richard Graham, hereby certify that I am the sole Trustee of CANNONBURY LANE REALTY TRUST, of WESTERWICK DRIVE REALTY TRUST, and of PACKET DRIVE REALTY TRUST, that said Trusts have not been revoked, terminated or amended and remain

in full force and effect as recorded and that I have been directed in writing by all of the beneficiaries of said Trusts to execute and deliver this restrictive covenant.

I, Richard Graham, further certify that I am a member of TOPLAND PROPERTIES, a Massachusetts partnership, and that this instrument is given in the usual course of business and does not involve anything which may not be done by less than all the partners pursuant to Mass. G.L. c.108A, §9.

For Grantor's title, see deeds recorded in said Registry in Book 170, Page 249; Book 292, Page 282; Book 292, Page 211 and Book 292, Page 253.

EXECUTED as a sealed instrument this 21st day of September, 1993.

TOPLAND PROPERTIES

Richard Graham, General Partner

CANNONBURY REALTY TRUST

Richard Graham, Trustee

WESTERWICK DRIVE REALTY TRUST

Richard Graham, Trustee

PACKET DRIVE REALTY TRUST

Richard Graham, Trustee

COMMONWEALTH OF MASSACHUSETTS

Nantucket, ss September 21, 1993

Then personally appeared the above-named RICHARD GRAHAM General Partner of TOPLAND PROPERTIES, Trustee of CANNONBURY REALTY TRUST, Trustee of WESTERWICK DRIVE REALTY TRUST, and Trustee of PACKET DRIVE REALTY TRUST, and acknowledged the foregoing instrument to be his free act and deed, before me,

Susan D. Bramish
Notary Public
My commission expires

Susan D. Bramish
Notary Public
My Commission Expires August 3, 1995

APPROVED by a majority of the Planning Board as satisfying Conditions No. 6a & 6f of the Amended Covenant dated January 15, 1991 recorded in the Nantucket Registry of Deeds in Book 359, Page 222.

COMMONWEALTH OF MASSACHUSETTS

Nantucket, ss September 27, 1993

On this 27th day of September, 1993, before me personally appeared Joan S. Barnes being a majority of the Nantucket Planning Board and acknowledged the foregoing to be their free and duly authorized act and deed.

Margaret R. Pang
Notary Public
My commission expires 10/5/95

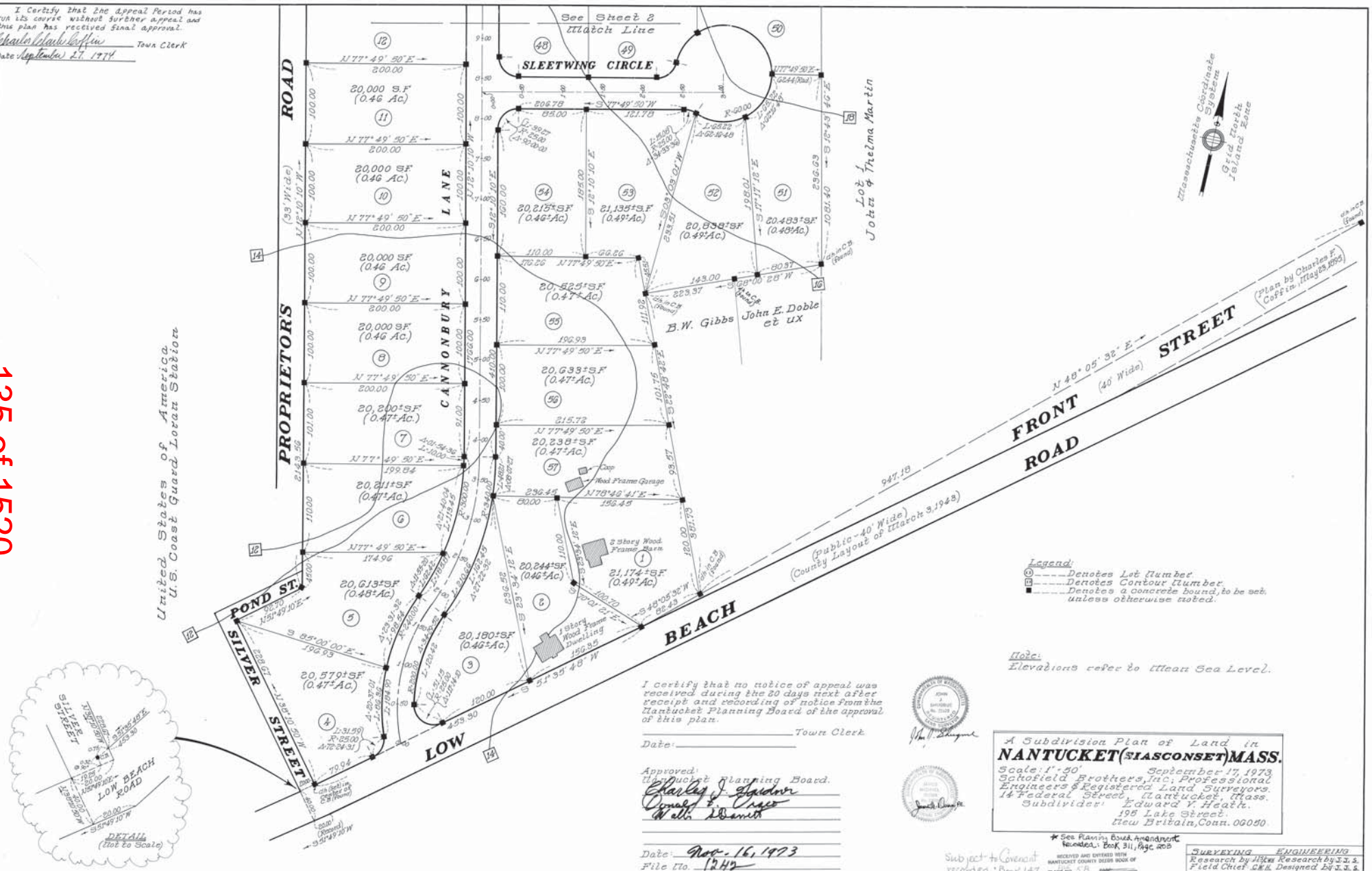
SEP 29 1993
NANTUCKET COUNTY
REC'D ENTERED

3:21 PM
SANDRA M CHADWICK
ATTEST REGISTER

F17230Cov 09/17/1993 14:42:33

135 of 1520

I Certify that the appeal Period has run its course without further appeal and this plan has received final approval.
Charles Clark Coffin Town Clerk
Date September 27, 1974



Legend:
(11) ——— Denotes Lot Number.
(5) ——— Denotes Contour Number.
■ ——— Denotes a concrete bound, to be set, unless otherwise noted.

Note:
Elevations refer to Mean Sea Level.

I certify that no notice of appeal was received during the 20 days next after receipt and recording of notice from the Nantucket Planning Board of the approval of this plan.

Town Clerk
Date:

Approved:
Nantucket Planning Board.
Charles J. Gardner
Ormond F. Cross
Wells Bennett

Date: Nov. 16, 1973
File No. 1242

A Subdivision Plan of Land in
NANTUCKET (SIASCONSET) MASS.
Scale: 1"=50' September 17, 1973
Schofield Brothers, Inc.; Professional Engineers & Registered Land Surveyors.
14 Federal Street, Nantucket, Mass.
Subdivider: Edward Y. Heath.
196 Lake Street.
New Britain, Conn. 06050.

* See Planning Board Amendment Recorded: Book 311, Page 208

Subject to Covenant recorded: Book 147, Page 146

RECEIVED AND ENTERED WITH NANTUCKET COUNTY DEEDS BOOK OF PLANS NO. 15 PAGE
ATTEST REGISTER
SEP 30 1974 10:00 AM

SURVEYING	ENGINEERING
Research by ABW	Research by J.J.S.
Field Chief C.W.H.	Designed by J.J.S.
Computed by C.W.H.	Computed by J.J.S.
Drafted by E.A.M.	Topography by B.K.H.
Checked by J.J.S.	Checked by J.M.D.
Approved by J.J.S.	Approved by J.M.P. P.E. R.L.S.

Sheet 1 of 6 Sheets

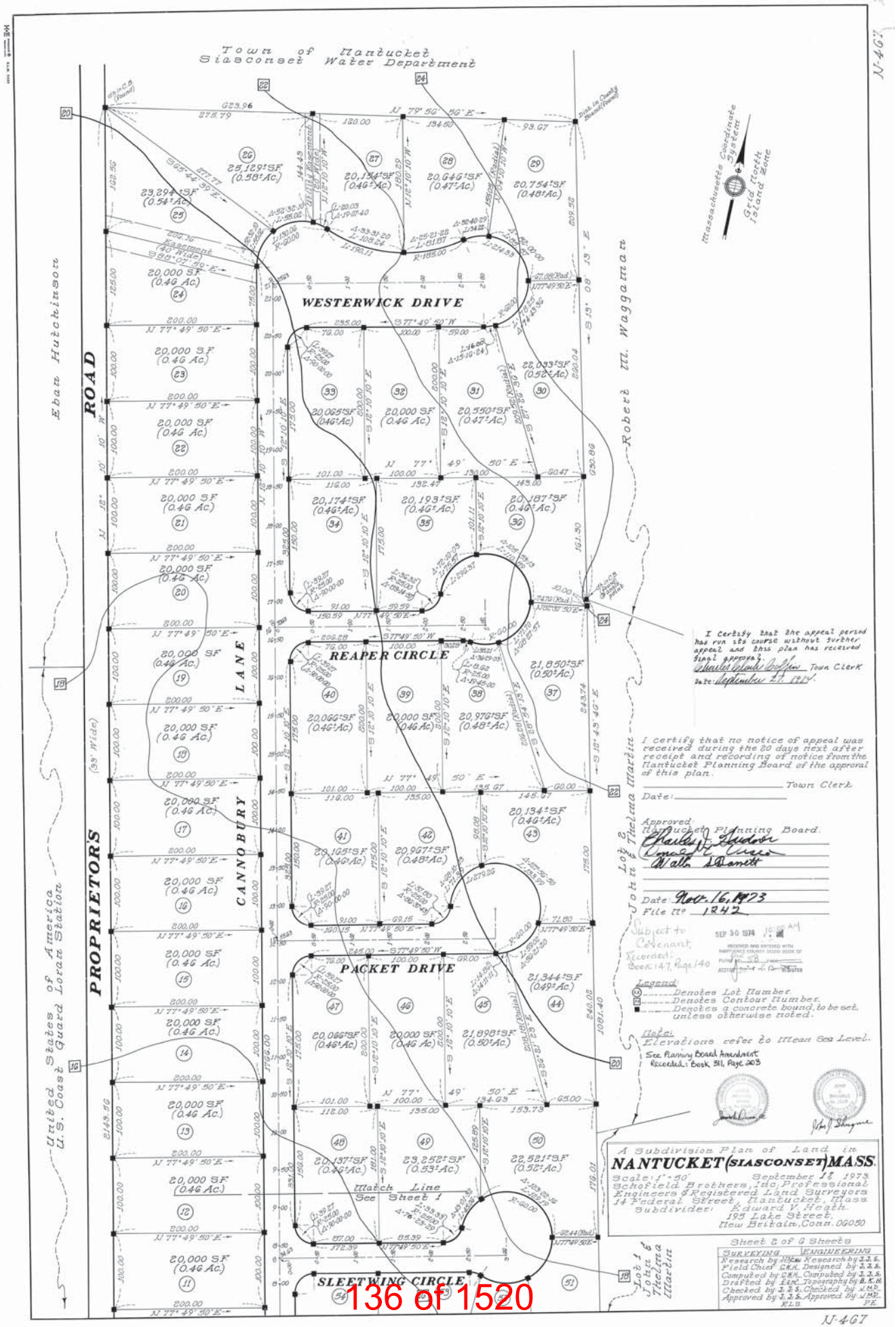
N 467

N 467

Edward Heath

Sheet 2

5B



I Certify that the appeal period has run its course without further appeal and this plan has received final approval.
Charles Gladwin Coffin Town Clerk
Date: September 27, 1974

I certify that no notice of appeal was received during the 20 days next after receipt and recording of notice from the Nantucket Planning Board of the approval of this plan.
Town Clerk
Date:

Approved:
Nantucket Planning Board.
Charles J. Tudor
Vincent R. Cruz
Walter S. Barnett
Date: Nov. 16, 1973
File No. 1842

Subject to Covenant, Recorded: Book 147, Page 140

SEP 30 1974 10:00 AM
RECEIVED AND ENTERED WITH NANTUCKET COUNTY DEEDS BOOK OF PLANS 58
ATTEST: Clerk of the Registers

Legend:
Denotes Lot Number.
Denotes Contour Number.
Denotes a concrete bound, to be set, unless otherwise noted.

Note:
Elevations refer to Mean Sea Level.
See Planning Board Amendment Recorded: Book 311, Page 303

A Subdivision Plan of Land in
NANTUCKET (SIASCONSET) MASS.
Scale: 1"=50' September 17, 1973
Schofield Brothers, Inc. Professional Engineers & Registered Land Surveyors
14 Federal Street, Nantucket, Mass.
Subdivider: Edward V. Heath.
195 Lake Street,
New Britain, Conn. 06050

Sheet 2 of 6 Sheets

SURVEYING	ENGINEERING
Research by JHW	Research by J.J.S.
Field Chief C.E.K.	Designed by J.J.S.
Computed by C.E.K.	Computed by J.J.S.
Drafted by J.M.P.	Topography by B.K.H.
Checked by J.J.S.	Checked by J.M.P.
Approved by J.J.S.	Approved by J.M.P.
K.L.S.	P.E.

N-467

RECEIVED
JUL 12 2016
By

VAUGHAN, DALE, HUNTER AND BEAUDETTE
PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
WHALER'S LANE
P.O. BOX 659
NANTUCKET, MASSACHUSETTS 02554

TEL: (508) 228-4455
FAX: (508) 228-3070

EDWARD FOLEY VAUGHAN
KEVIN F. DALE
RICHARD P. BEAUDETTE

LORI D'ELIA

WILLIAM F. HUNTER
OF COUNSEL

July 11, 2016

2016 JUL 12 AM 10:40

HAND DELIVERY & FAX
Barry Rector, Chairman
Nantucket Planning Board
2 Fairgrounds Road
Nantucket, MA 02554

RE: Nantucket Westmoor Farms, LLC – Discussion
6 and 8 Old Westmoor Farm Road, Nantucket, MA

Dear Chairman Rector:

My client, Nantucket Westmoor Farms, LLC ("NWF") asks the Nantucket Planning Board to continue its hearing on the above matter from July 11, 2016 to September 12, 2016.

As grounds for its request, NWF has modified the language on its Web page and lease to emphasize the residential character of its properties at 6 and 8 Old Westmoor Farm Road and intends to meet with members of the Nantucket Westmoor Farms Homeowner's Association to discuss and enact guidelines for "special events" that take place on Association properties. There have been no complaints about the limited number of "special events" held at 6 and 8 Old Westmoor Farm Road this year. This requested continuance will afford NWF time to discuss their guidelines with neighborhood owners and then modify the existing

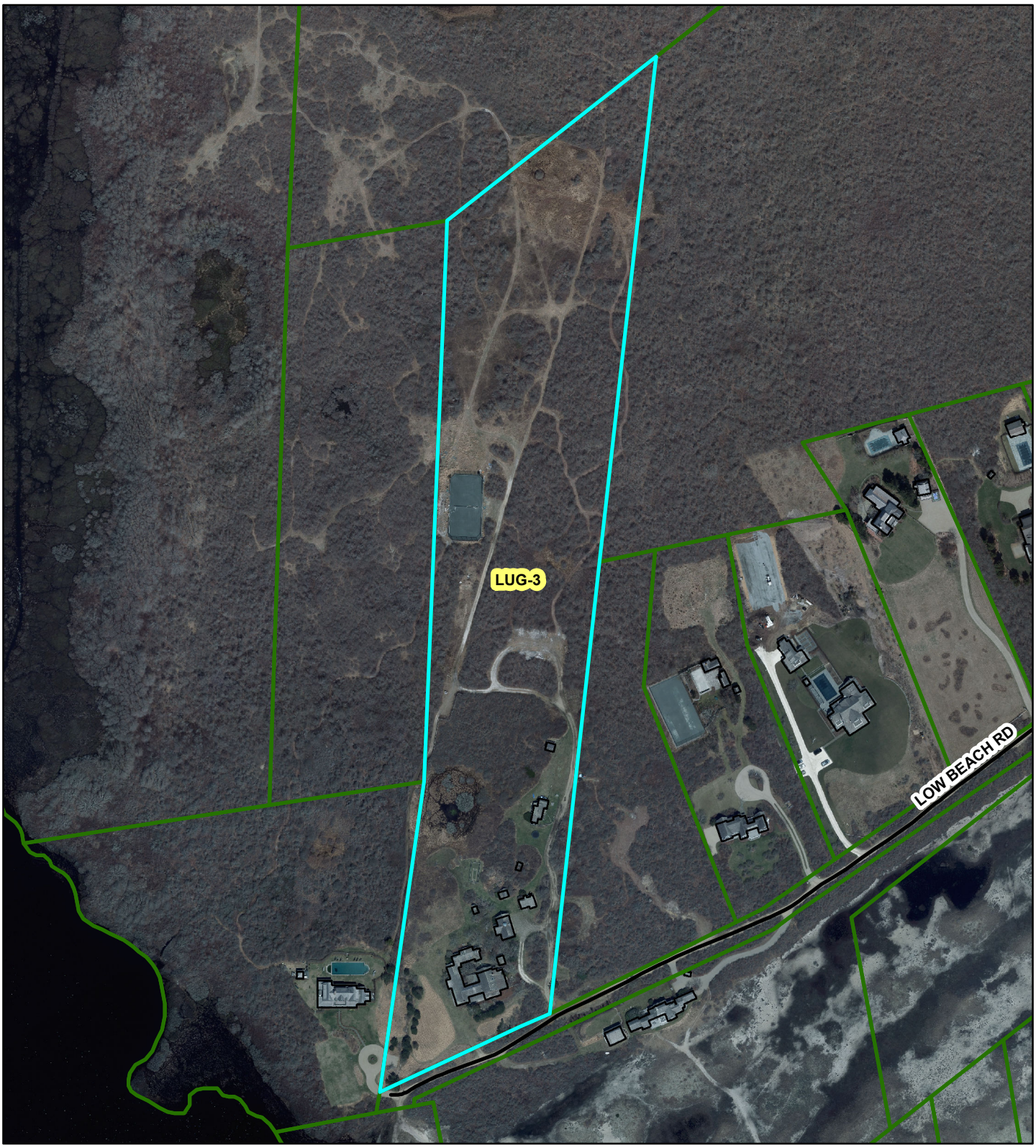
Westmoor Farms Homeowner's Association Declaration of Covenants and Restrictions to incorporate these guidelines.

Thank you for your attention to this matter,

Sincerely,

KFD/kw
Cc: Andrew Vorce, Planning Director
Leslie Woodson Snell, Deputy Director of Planning
Marcus Silverstein, Zoning Enforcement Officer
John Pyles

#7640 Fisher Lane Subdivision
Form J Release & Legal Documents



GLIDDEN & GLIDDEN, P.C.

ATTORNEYS AT LAW
P. O. BOX 1079
37 CENTRE STREET
NANTUCKET, MASSACHUSETTS 02554
508-228-0771
FAX 508-228-6205
OFFICE@GLIDDENANDGLIDDEN.COM

RICHARD J. GLIDDEN
JESSIE M. GLIDDEN BRESCHER
JOHN B. BRESCHER

JAMES K. GLIDDEN
(1917 – 2009)

August 31, 2016

Via Email (lwsnell@nantucket-ma.gov)
Leslie Snell
Nantucket Planning Department
2 Fairgrounds Road
Nantucket, MA 02554

RE: Fisher Lane
Form J Release
Nantucket, Massachusetts

My client has contracted to sell Lot 2 (vacant lot) at Fisher Lane. The closing is scheduled for September 16, 2016. I would request that the Planning Board sign Form J Release at their September 12th meeting. I propose the following:

1. I have an estimate from Dan Mulloy that the total cost of utilities, road construction and engineering will be $175,000.00 (letter attached).

2. At the time of the sale I will deduct $225,000.00 from the Seller's proceeds and deliver same to Planning Board to hold as security for the road work.

3. I attach a draft escrow agreement for your review.

4. Upon delivery of the escrow funds and a signed escrow agreement the Board will release the Form J for me to record at the Registry of Deeds.

Thanking you for your time and consideration, I remain.

Very truly yours,

Richard J. Glidden

RJG:jlr
attachments

cc: William H. Hunter (via email, wmfhunter@hotmail.com)

Richard Glidden

From: Dan Mulloy <dmulloy@sde-ldec.com>
Sent: Tuesday, August 30, 2016 3:40 PM
To: Richard Glidden (richard@gliddenandglidden.com)
Subject: FW: 101 Low Beach Road utilities

From: Dan Mulloy
Sent: Tuesday, August 16, 2016 10:45 AM
To: Richard Glidden (richard@gliddenandglidden.com) <richard@gliddenandglidden.com>
Subject: 101 Low Beach Road utilities

I spoke with Dave Fredericks, formerly NGRID/Nantucket Electric, who now works with KOBO installing utilities on Nantucket. We reviewed the project and developed the following estimate to bring services from Low Beach Road to the end of Fisher Lane/Lot 2.

1,000+/- feet of conduit with wire installed, electric, cable, telephone Work with NGRID on transformer installation NGRID fees Estimated cost for above is $30,000.

I would recommend budgeting $45,000 to cover it. Holdgate estimated $35,000 and Toscana was also carrying the trenching work but didn't give a line item cost. Holdgates total is $102, 605 and Toscana is $96,728.84 which are basically the same. I would think carrying a roadway construction cost of $150,000 with another $25,000 available for layout, inspections and other unknowns for a total budget of $175,000.00

*please note my new email address.....dmulloy@sde-ldec.com

Daniel C. Mulloy, PE.
Site Design Engineering, LLC
11 Cushman Street
Middleboro, MA 02346
Main: (508) 967-0673 x110
Direct: (508) 503-3500
Mobile: (508) 468-0679
Fax: (508) 967-0674
dmulloy@sde-ldec.com<mailto:dmulloy@sde-ldec.com>
www.sde-ldec.com<http://www.sde-ldec.com/>

ESCROW AGREEMENT

This Escrow Agreement entered into on September_____, 2012 by and among the NANTUCKET PLANNING BOARD (hereinafter "the Board") , CLARA R. URBAHN (hereinafter "the Applicant/Seller") and ADAM ROSS , (hereinafter "the Buyer"), in connection with the Buyer's purchase of Lot 1022 upon plan numbered 5004-104, drawn by Site Design Engineering, dated January 13, 2014 and filed with Certificate of Title No. 25924 at the Nantucket Registry District and also shown as Lot #2 upon plan titled Fisher Lane Definitive Subdivision Plan, 101 Low Beach Road, Assessor's Map 75, Parcel 32 Nantucket, MA, drawn by Site Design Engineering, dated January 13, 2014, approved July 14, 2016 and endorsed by the Nantucket Planning Board on September 8, 2016, P.B. File No.: 7640 (hereinafter "the Premises").

WITNESSETH:

WHEREAS, the Premises is subject to and encumbered by that certain FORM 1 COVENANT, registered as Document 152105 with the Nantucket Registry District, wherein the Applicant agrees and covenants with the Board not to sell or convey the Premises until the construction of ways and installation of municipal services necessary to adequately serve such Premises have been completed in accordance with conditions, terms and provisions specified in the Fisher Lane Definitive Subdivision Plan approved and endorsed in P.B. File No. 7640 as first describer hereinabove; and,

WHEREAS, the Applicant/Seller now wishes to sell and the Buyer wishes to purchase the Premises and have agreed to purchase terms setting a closing date in advance of the completion of the construction of ways and municipal services described hereinabove; and,

WHEREAS, the Applicant / Seller, in consideration of the Board issuing a FORM J Covenant Release in advance of the construction of the ways and installation of services, has agreed to escrow and deposit $262,500.00 with the Board, or one and one half times the amount needed to complete such construction as evidenced by the estimate received from Daniel C. Mulloy, P.E., (hereinafter "the Mulloy Estimate" attached hereto) such escrow to guarantee Applicant / Seller's performance under the terms of the subdivision approval described hereinabove.

NOW, THEREFORE, in consideration of $1.00 and other good and valuable consideration, the receipt of which is hereby acknowledged, the parties hereto agree as follows:

1. The Seller agrees to deposit the sum of $262,500.00 from the sale proceeds for the Premises in an interest bearing escrow account. The parties authorize Attorney Richard P. Beaudette and Attorney Richard J. Glidden to act as Co-Escrow Agents to hold the escrow sum, $262,500.00, in an interest bearing escrow account at the Nantucket Bank for the purposes set forth herein. The parties acknowledge that Co-Escrow Agents are not acting as agents for their respective clients alone, notwithstanding the fact that the Attorney Beaudette is counsel to the Buyer and Attorney Glidden is counsel to the Applicant / Seller. All such interest earned on the Escrow Account shall be paid to the Applicant / Seller. The parties hereby agree to indemnify and hold the Co-Escrow Agents harmless against any and all losses, damages, costs and expenses that may be incurred by them by reason of their compliance in good faith with the terms of this Agreement.

2. In the event that on or before March 1, 2017, the Applicant / Seller has failed to perform fully her obligations under this agreement, then, in that event, the Co-Escrow Agents are authorized to use said escrow funds, or any portions thereof, to complete the work and said

obligations. After the work has been certified by the Board as completed, any surplus escrow funds shall be paid to the Applicant /Seller. Provided however, should the escrow funds prove insufficient to complete the construction of the way and installation of municipal services Applicant / Seller hereby covenants and agrees to escrow further funds in amounts necessary to complete the work as described.

This Escrow Agreement shall be binding upon an inure to the benefit of the parties hereto and their respective heirs, representatives, successors and assigns. This agreement shall be governed by the laws of the Commonwealth of Massachusetts.

IN WITNESS WHEREOF, the parties have hereunto set their hands and seals this _____ day of September 2016.

APPLICANT / SELLER:

_____
CLARA R. URBAHN

BUYER:

_____
ADAM ROSS

NANTUCKET PLANNING BOARD:

_____

_____

_____

_____

_____

_____
RICHARD P. BEAUDETTE, CO-ESCROW AGENT

_____
RICHARD J. GLIDDEN, CO-ESCROW AGENT

Nantucket Planning Board

Form J
Certificate of Completion and
Release of Municipal Interest in
Subdivision Performance Security

Date: 9/6/2016 Planning Board File # 7640

Subdivision Name: Fisher Lane

Owner: Clara R. Urbahn

Owner's Address: 101 Low Beach Road, Siasconset, MA 02564

Phone number: 508-228-0771 Fax number: 508-228-6205 E-mail: richard@gliddenandglidden.com

Applicant, (if other than owner): _____

Applicant's Address: _____

Phone number: _____ Fax number: _____ E-mail: _____

Date of Subdivision Plan: January 24, 2014

Land Location: off Low Beach Road, Siasconset, MA

Plan Recorded: Nantucket Registry of Deeds Plan Book _____ Page _____

Plan Registered: Nantucket Land Registry, Land Court Plan Number 5004-104

Type of Performance Security:

- ❍ Covenant dated: _____

  Covenant recorded: Nantucket Registry of Deeds, Book _____ Page _____.

  or

  Covenant registered: Nantucket Land Registry District as Document # 152105 and noted on Certificate of Title # 25924 in Registration Book _____ Page _____.

- ❍ Deposit of money, agreement dated: _____

  Bank (if bank passbook): _____

  Address of Bank: _____

- ❍ Other Security , agreement dated: _____

O Letter of credit, agreement dated:_____

Bank: _____

Address of Bank:_____

The undersigned, being a majority of the Planning Board of Nantucket, have determined that the construction of ways and installation of municipal services in the subdivision referred to above have been X completed ☐ partially completed by the applicant in accordance with the Board's rules and regulations to adequately serve the following enumerated lots:

Lot 1022, LCPL 5004-104

Pursuant to Section 81.U of Chapter 41, M.G.L. and in consideration of said construction and installation, the Town of Nantucket, a Massachusetts corporation, acting through its Planning Board, hereby releases its interest in the Performance Security referred to above, as to the lots enumerated in the preceding paragraph only.

Duly executed as a sealed instrument this _____ day of _____, _____.
(Date) (Month) (Year)

_____ _____
Barry G. Rector Nat Lowell

_____ _____
Linda Williams John Trudel, III

_____
Joseph Marcklinger

Signed by a Majority of the Town of Nantucket Planning Board

COMMONWEALTH OF MASSACHUSETTS

Nantucket, SS _____, 2016

On the _____day of _____, 2016, before me, the undersigned notary public,

Personally appeared _____, one of the above-named members of the Planning Board of Nantucket, Massachusetts, personally known to me to be the person whose name is signed on the preceding document, and acknowledge that he/she signed the foregoing instrument voluntarily for the purposes therein expressed.

_____
Notary Public

_____
My commission expires:

Nantucket Planning Board

RECEIVED
2014 AUG 27 AM 10 22
NANTUCKET TOWN CLERK

APPROVAL OF A DEFINITIVE SUBDIVISION PLAN (AR)

FISHER LANE SUBDIVISION

Planning Board File #7640

Owner: Clara Urbahn

Applicant: Clara Urbahn

101 Low Beach Road
Nantucket Tax Assessors Map 75 Parcel 32
Registered in the Nantucket Registry District of the Land Court, Certificate of Title #24149

JULY 14, 2014

The Nantucket Planning Board at its July 14, 2014 meeting voted 4-0 to approve the three (3) lot (two (2) buildable) Definitive Subdivision Plan (AR) for property located at 101 Low Beach Road at Assessors Map 75 Parcel 32 An application for this definitive subdivision plan was received by the Planning Board on January 14, 2014.

Approval of the subdivision was based on the following documents:

- An Application for Approval of a Definitive Subdivision Plan (AR) dated January 14, 2014;
- A letter dated January 13, 2014 to the Planning Board from Daniel C. Mulloy, P.E. of Site Design Engineering, LLC;
- A list of waivers from the *Rules and Regulations Governing the Subdivision of Land* dated January 13, 2014;
- A set of plans entitled "Definitive Subdivision Plans for Fisher Lane Subdivision, 101 Low Beach Road, Nantucket, Massachusetts" consisting of sheets 1 through 5, scale 'as noted', dated January 13, 2014 prepared by Site Design Engineering, LLC.;
- Representation and testimony received in connection with the public hearings February 10, 2014, March 10, 2014, April 14, 2014, May 12, 2014, July 14, 2014. Minutes of these meetings are on file with the Planning Board; and
- Other assorted documents that are on file with the Planning Board.

The Planning Board closed the public hearing on July 14, 2014.

Approval of the subdivision is granted conditionally upon the aforementioned documents, compliance with the Planning Board's *Rules and Regulations Governing the Subdivision of Land* (as amended through December 20, 1999), and on the following additional requirements and agreements:

1. Requested waivers from the *Rules and Regulations Governing the Subdivision of Land:*

2.06a(10)	Submission Requirements Waiver Granted – to provide storm drainage runoff flow calculations;
2.06a(11)	Submission Requirements Waiver Granted – the subdivision application materials contain sufficient information so as to negate the need for a standalone site analysis report;
2.06b(14)	Contents of the Definitive Plan Waiver Granted – to provide landscape plan;
4.03a(1)	Streets Waiver Granted – to allow a twelve (12) foot wide gravel roadway;
4.03e	Minimum Design Standards Waiver Granted – to allow the use of a variable width right-of-way;
4.03e	Minimum Design Standards Waiver Granted – to allow the use of a twelve (12) roadway;
4.04b	Dead-end Street Waivers Granted – to allow a forty (40) foot layout radius and a twenty-four (24) foot landscape island in the center of the cul-de-sac;
4.05a(3)	Street Construction Rural Road Alternative Waivers Granted – to allow the roadway to be constructed as a rural road alternative with a twelve (12) foot roadway;
4.06	Storm Drainage Waivers Granted – the requirement for a storm drain system;
4.09	Shoulders Waiver Granted – the requirement of shoulders;
4.16	Landscaping – Waiver Granted – the requirement of a landscape plan;
4.18	Sidewalks Waiver Granted – the requirement of sidewalks;
4.19	Bicycle Paths Waiver Granted – the requirement of bicycle paths;
4.22	Curbing and Berms Waiver Granted – the requirement for curbing.

2. That the final definitive plans shall be presented to the Planning Board within six (6) months from the date of this decision (July 14, 2014). These plans shall include any outstanding revisions as required by Pesce Engineering & Associates, Inc. as well as any revisions discussed at the public hearings. The Planning Board may grant extensions of this deadline without holding a public hearing;
3. That recorded copies of all legal documents (Homeowners Association documents, Statement of Conditions, Grant of Right of Enforcement, Grant of Easements for Utilities, Drainage, and Covenant) shall be presented to the Planning Board prior to the release of the second lot from the Covenant and within six (6) months from the date of this decision (August 10, 2014). The Planning Board may grant extensions of this deadline without holding a public hearing;
4. That the applicant agrees to install a split rail fence between the boundary of the subdivision and the land owned by the 'Sconset Trust and the land owned by the Nantucket Conservation Foundation, or as otherwise required through review pursuant to the Natural Heritage and Endangered Species Program;
5. That the roadway shall be constructed as shown on the referenced definitive subdivision plans as revised per condition #2 above;
6. That one lot shall be released from the Covenant as of the date of this decision. The second lot shall be held in the Covenant until all conditions of this decision have been met.
7. That all lots shall be prohibited from further subdivision. Minor lot line adjustments which do not result in the creation of any additional buildable lots shall be permitted through the Approval Not Required (ANR) process;

8. That Planning Staff shall be notified prior to any roadway construction. A pre-construction meeting with Planning Staff and other town staff, the applicant, and applicable construction/engineering personnel may be required;
9. That all required infrastructure improvements shall be completed within two (2) years from the date of definitive plan endorsement;

On July 14, 2014 the Planning Board voted 4-0 to **APPROVE** this Approval Required (AR) Subdivision and to endorse this decision.

Barry G. Rector APPROVED

Linda Williams APPROVED

John McLaughlin APPROVED

Nat Lowell APPROVED

COMMONWEALTH OF MASSACHUSETTS

Nantucket, SS August 26, 2014

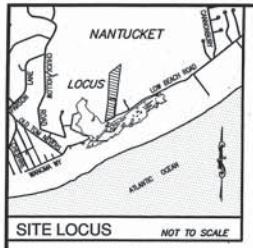
On the 26 day of August, 2014, before me, the undersigned notary public,

personally appeared Barry Rector, one of the above-named members of the Planning Board of Nantucket, Massachusetts, personally known to me to be the person whose name is signed on the preceding document, and acknowledged that he/she signed the foregoing instrument voluntarily for the purposes therein expressed.

Notary Public

My Commission Expires

LESLIE WOODSON SNELL
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS
My Comm. Expires Sept. 28, 2018



SITE LOCUS NOT TO SCALE

NOTES:

1. THIS PLAN REPRESENTS A SUBDIVISION OF MAP 75, PARCEL 32 AS SHOWN ON THE OFFICIAL TAX MAPS OF THE TOWN OF NANTUCKET.
2. THIS PLAN REPRESENTS A SUBDIVISION OF LOT 715 SHOWN ON LAND COURT CASE PLAN #5004-41.
3. THE SITE IS LOCATED WITHIN FLOOD ZONE X (AREAS OF 500-YEAR FLOOD; AREAS OF 100-YEAR FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT) AS DETERMINED FROM THE TOWN OF NANTUCKET FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NUMBER 250230 0007 D (MAP REVISED NOVEMBER 6, 1996).
4. WETLAND RESOURCE AREAS WERE DELINEATED BY BRIAN MADDEN OF LEC ENVIRONMENTAL CONSULTANTS, INC. AND WERE APPROVED BY THE NANTUCKET CONSERVATION COMMISSION.
5. THIS PLAN AND THE ACCOMPANYING CERTIFICATIONS DO NOT CONSTITUTE A CERTIFICATION OF TITLE TO THE PROPERTY DISPLAYED HEREON. THE OWNER OF LOCUS AND ABUTTING PROPERTIES ARE SHOWN ACCORDING TO CURRENT TOWN ASSESSORS RECORDS.

OWNER/APPLICANT

CLARA URBAHN
101 LOW BEACH ROAD
P.O. BOX 109
NANTUCKET, MA 02564

TITLE REFERENCE:
L.C. CERTIFICATE #24149

PLAN REFERENCE:
L.C.C. PLAN #5004-41 (LOT 715)

SITE LOCATION:
101 LOW BEACH ROAD
NANTUCKET, MASSACHUSETTS

ASSESSORS REFERENCE:
MAP 75, LOT 32

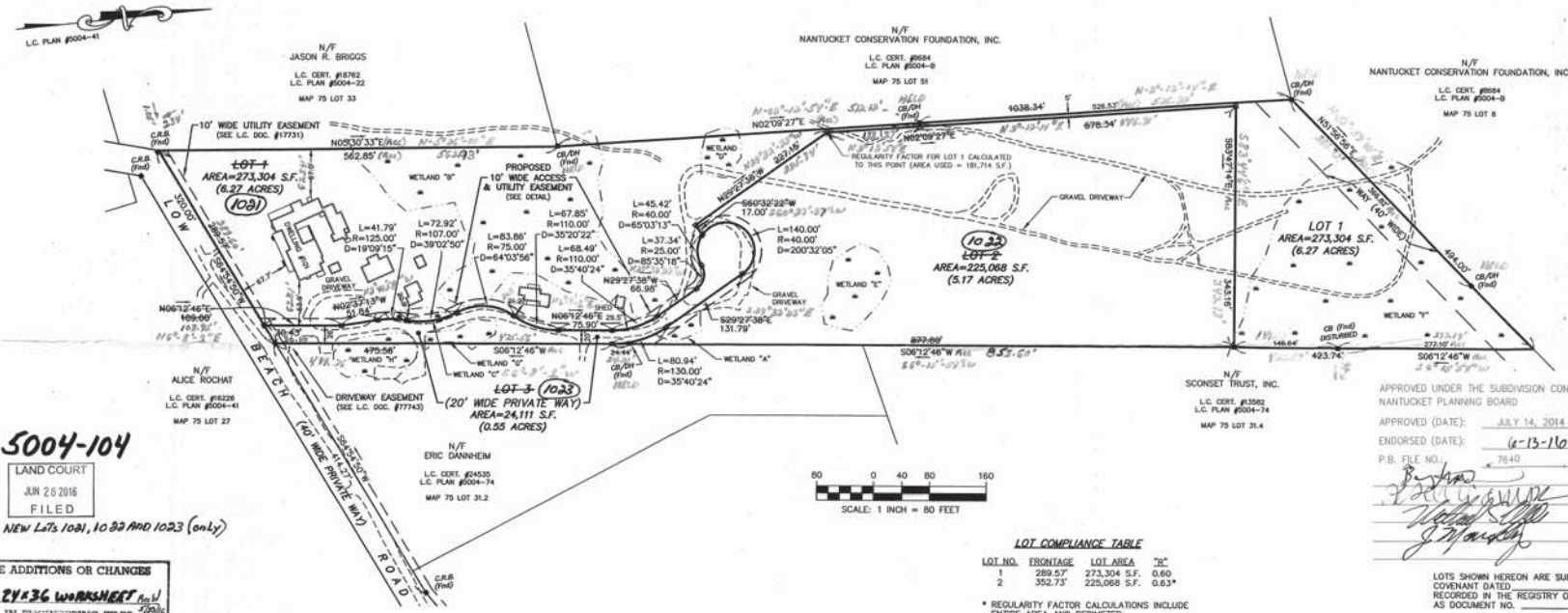
OVERLAY DISTRICT APPLICABILITY	
DORMITORY	–
EMPLOYEE HOUSING	–
FLOOD HAZARD	PART
HARBOR WATERSHED PROTECTION ZONE	–
HDC OLD HISTORIC	–
HUMMOCK POND WATERSHED OVERLAY ZONE	–
MID-ISLAND PLANNED	–
MULTI-FAMILY	–
SIASCONSET SEWER	–
TOWN	–
TOWN SEWER	–
WATERCRAFT	–
WELLHEAD PROTECTION	–
MA DEP ZONE II	–

* LOCATED PARTIALLY IN ZONE

ZONING REQUIREMENTS	
THE SITE IS LIMITED USE 3 (LUG3)	
	REQUIRED
LOT AREA	120,000 S.F.
LOT FRONTAGE	200 FT.
LOT FRONTAGE ON CUL-DE-SAC	140 FT.
FRONT YARD SETBACK	35 FT.
REAR YARD SETBACK	20 FT.
SIDE YARD SETBACK	20 FT.
MAX. GROUND COVER RATIO	3 %

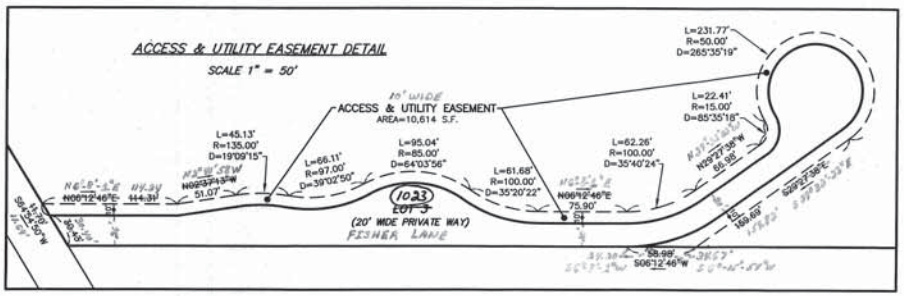
LEGEND

- CB/DH CONCRETE BOUND W/DRILL HOLE
- CONCRETE BOUND TO BE SET
- C.R.B. COUNTY ROAD BOUND
- WETLANDS



5004-104
LAND COURT
JUN 28 2016
FILED
FOR NEW LOTS 1021, 1022 AND 1023 (only)

SEE ADDITIONS OR CHANGES ON 24x36 WORKSHEET dated 7/30/14 IN ENGINEERING FILES (714)



LOT COMPLIANCE TABLE

LOT NO.	FRONTAGE	LOT AREA	"R"
1	289.57'	273,304 S.F.	0.60
2	352.73'	225,068 S.F.	0.63*

* REGULARITY FACTOR CALCULATIONS INCLUDE ENTIRE AREA AND PERIMETER.

DISPOSITION OF LOTS

- LOTS 1 AND 2 ARE BUILDABLE LOTS.
- LOT 3 IS A ROADWAY LOT FOR FUTURE CONVEYANCE TO THE SUBDIVISION HOMEOWNER'S ASSOCIATION.

THE PLANNING BOARD DETERMINES THAT:

LOTS 1, 2 AND 3 ARE SUBJECT IN PART TO PROTECTION UNDER THE MASSACHUSETTS WETLANDS PROTECTION ACT, BUT CONTAIN SUFFICIENT LOT AREA, AS DEFINED IN THE NANTUCKET ZONING BYLAW, TO COMPLY WITH APPLICABLE ZONING REQUIREMENTS. A NOTICE OF INTENT MAY BE REQUIRED TO BE FILED WITH THE NANTUCKET CONSERVATION COMMISSION WITH REGARD TO PROPOSED CONSTRUCTION ON SUCH LOTS.

I CERTIFY THAT AS OF THE DATE OF THIS SURVEY, THE MONUMENTS CONTROLLING PRIOR PLANS ARE IN THE GROUND AS SHOWN AND DESCRIBED HEREON. I FURTHER CERTIFY THAT ANY ADDITIONAL MONUMENTS SHOWN HEREON HAVE BEEN SET IN ACCORDANCE WITH THE LAND COURT INSTRUCTIONS OF 2006 AS OF THE DATE OF THIS SURVEY.

I FURTHER CERTIFY THAT THIS PLAN WAS DRAWN FROM AN ACTUAL SURVEY MADE ON THE GROUND IN ACCORDANCE WITH THE LAND COURT INSTRUCTIONS OF 2006 ON OR BETWEEN 10/3/13 AND 1/13/14.

PROFESSIONAL LAND SURVEYOR — DATE 9/1/14

APPROVED UNDER THE SUBDIVISION CONTROL LAW REQUIRED NANTUCKET PLANNING BOARD

APPROVED (DATE): JULY 14, 2014
ENDORSED (DATE): 6-13-16
P.B. FILE NO.: 7640

LOTS SHOWN HEREON ARE SUBJECT TO A COVENANT DATED _____ AND RECORDED IN THE REGISTRY OF DEEDS AS DOCUMENT NO. _____

"I HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE NANTUCKET PLANNING BOARD WAS RECEIVED AND RECORDED August 27, 2014 AT THIS OFFICE, AND NO APPEAL WAS RECEIVED DURING THE TWENTY (20) DAYS NEXT AFTER SUCH RECEIPT OF RECORDING OF SAID NOTICE."

TOWN CLERK, NANTUCKET, MA — DATE 9-17-2014

NANTUCKET PLANNING BOARD
APPROVAL UNDER THE SUBDIVISION CONTROL LAW REQUIRED

APPROVED (DATE): JULY 14, 2014
ENDORSED (DATE): 9-8-14
P.B. FILE NUMBER: ~~7640~~ 7640

SITE DESIGN ENGINEERING, LLC.
11 CUSHMAN STREET
MIDDLEBORO, MA 02346
T: 508-967-0673 F: 508-967-0674
WWW.SITEDESIGNENG.COM

NO.	DATE	DESCRIPTION	DCM/TWH APPROVED
1	8/1/14	REVISED PER PLANNING BOARD COMMENTS	

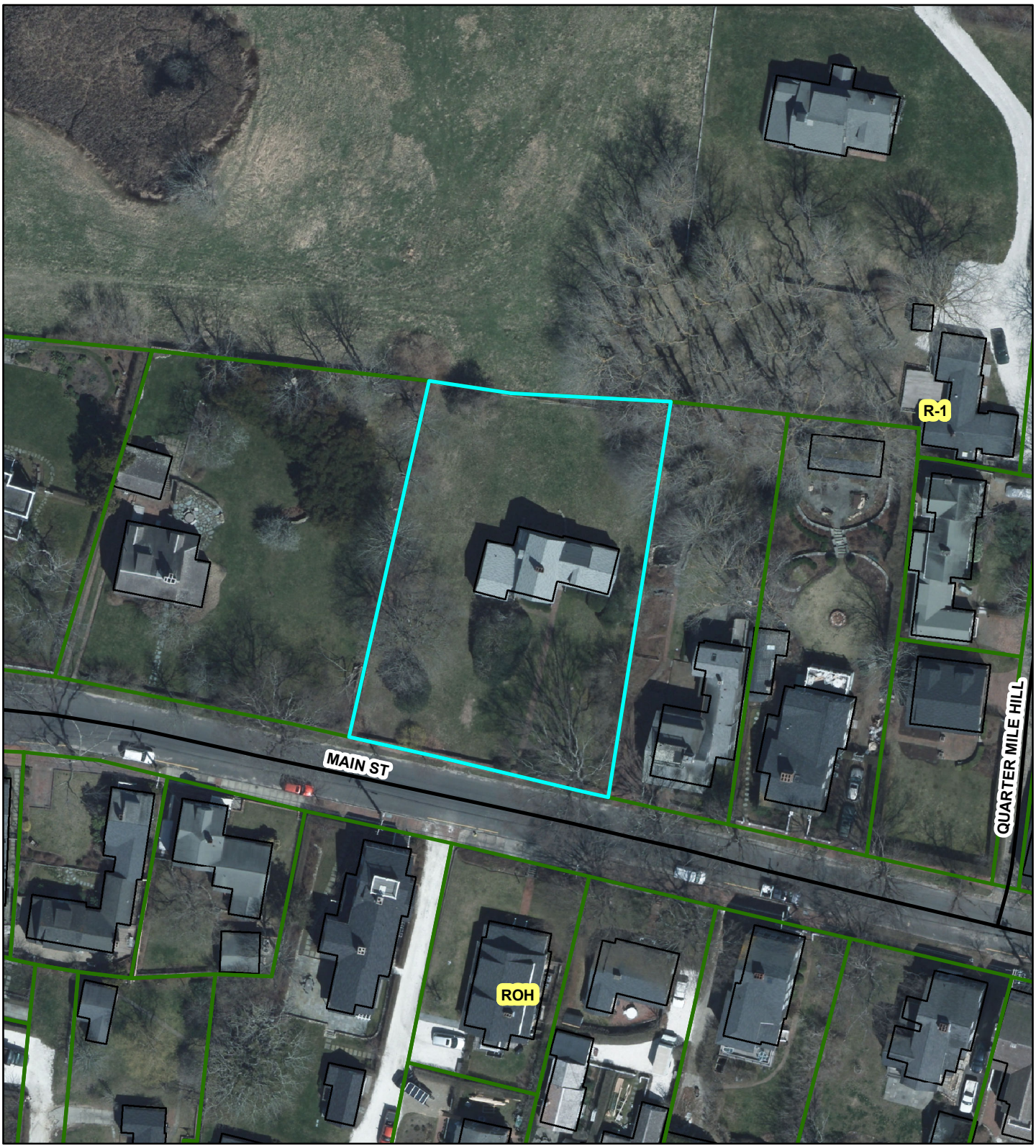
PLAN REVISIONS

DATE: JANUARY 13, 2014
DRAWN BY: RLM/SKD | DESIGN BY: SKD | CHECK BY: DCM/TWH
PROJECT NO. 13049
ISSUED FOR: APPROVAL

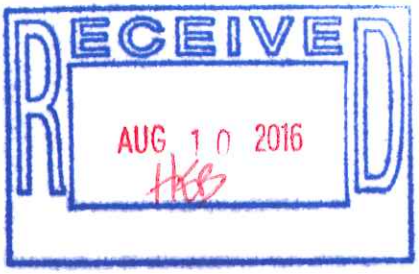
DEFINITIVE SUBDIVISION PLAN
FISHER LANE SUBDIVISION
101 LOW BEACH ROAD, NANTUCKET, MA
BEING A SUBDIVISION OF LOT 715 SHOWN ON LAND COURT PLAN 5004-41
TAX MAP 75, PARCEL 32
PREPARED FOR CLARA URBAHN

DRAWING TITLE: LOTTING PLAN
SCALE: 1"=80'
SHEET NO. 3 OF 5

131 Main Street
Map 42.3.3 Parcel 46
Secondary Dwelling Modification



GLIDDEN & GLIDDEN, P.C.
ATTORNEYS AT LAW
P. O. BOX 1079
37 CENTRE STREET
NANTUCKET, MASSACHUSETTS 02554
508-228-0771
FAX 508-228-6205
OFFICE@GLIDDENANDGLIDDEN.COM



RICHARD J. GLIDDEN
JESSIE M. GLIDDEN BRESCHER
JOHN B. BRESCHER

JAMES K. GLIDDEN
(1917 – 2009)

August 9, 2016

Via Hand Delivery
Leslie Snell
Nantucket Planning Department

RE: Barclay, LLC
131 Main Street
Nantucket, Massachusetts

Dear Leslie,

Steve Butler denied my clients request for a CO (see enclosed e-mail from Mr. Butler). The reason for the denial is that after the Planning Board approval letter of February 12, 2015 (copy enclosed) my clients subdivided the property into two lots (see enclosed subdivision plan).

As a result, the site plan approved by the Planning Board changed. I enclose a current as-built plan prepared by Bracken Engineering which details the lot with all structures. This needs to be substituted in the place of the old site plan and endorsed by the chairman. Once this is done I can deliver the amended and approved site plan to Mr. Butler and he will issue the CO for the cottage.

Please let me know if you need additional documentation to place this on the Planning Board agenda.

Very truly yours,

Richard J. Glidden

RJG:jlr
enclosures

cc: Peter Dupont (via email only, peter@nantucketrealestate.com)
Chris O'Connell (via email only, cjocack@gmail.com)
Eleanor Antonetti (via email only, eantonietti@nantucket-ma.gov)

Richard Glidden

From: Peter DuPont <peter@nantucketrealestate.com>
Sent: Saturday, August 06, 2016 9:24 AM
To: 'Richard Glidden (richard@gliddenandglidden.com)'; 'Chris Oconnell (cjocack@gmail.com)'
Cc: 'Kate Glidden (kate@gliddenandglidden.com)'
Subject: FW: 131 Main St

Please advise..

Peter DuPont
Sales/Rental Associate
Mobile 508-932-2535
Office 508-228-7707
Licensed in MA
peter@nantucketrealestate.com

ATLANTIC EAST
NANTUCKET REAL ESTATE

PO Box 1407, 82 Easton Street
Nantucket, MA 02554
T: 508-228-7707 F: 508-228-7780
www.NantucketRealEstate.com

From: cjocack@gmail.com [mailto:cjocack@gmail.com]
Sent: Saturday, August 06, 2016 9:08 AM
To: Peter DuPont
Subject: Fwd: 131 Main St

Chris OConnell
(508) 566 4712

Begin forwarded message:

> **From:** Steve Butler <SButler@nantucket-ma.gov>
> **Date:** August 5, 2016 at 10:35:08 AM EDT
> **To:** "Chris OConnell (cjocack@gmail.com)" <cjocack@gmail.com>
> **Cc:** Holly Backus <hbackus@nantucket-ma.gov>
> **Subject: 131 Main St**
>
> Good morning,
>
> Your request for a certificate of occupancy for the cottage built pursuant to permit 392-15 is for the following reasons DENIED; As a result of the division of land creating two lots, the site is not in compliance with the Planning Board approval. (See attached)

Please be advised that if you are aggrieved by this decision you may appeal pursuant to 139-29E of the Code of Nantucket.

Stephen Butler
Building Commissioner
Town of Nantucket
2 Fairgrounds Rd
Nantucket, MA 02554
508.325.7587

Nantucket Planning Board

February 12, 2015

Mr. Steve Butler, Building Commissioner
2 Fairgrounds Road
Nantucket, MA 02554

Re: Barclay LLC – 131 Main Street (Map 42.3.3 Parcel 46)

Dear Mr. Butler:

Please be advised that the Planning Board, at its meeting on February 9, 2015, considered the above application for adequate access, as per §139-20.1 of the *Nantucket Code*, and granted a secondary dwelling approval, conditional upon the following:

Planning staff recommends approval of this application with the following conditions:

(1) That an apron at the driveway entrance shall be constructed to a minimum depth of depth of ten (10) feet and a maximum width of fifteen (15) feet and shall be constructed to the requirements of Nantucket Zoning Bylaw Section 139-20.1B.(2)(d);
(2) That the driveway be cleared free of vegetation and obstruction to a width of twelve (12) feet and a height of thirteen (13) feet;
(3) That any landscaping at the driveway entrance be limited to low growing plant material not to exceed three (3) feet in height; and,
(4) That the applicant shall submit an As-Built prior to the final inspection by staff which shall take place prior to the issuance of a Certificate of Occupancy.

The approval is also **conditional** upon adherence to the site plan submitted by the applicant and endorsed by the Chairman, showing the relative locations of proposed or existing dwellings and driveways or parking areas.

As per Section 139-2 of the *Nantucket Zoning Code*, the approval referenced herein is valid for a period of two years only, calculated from the date of site plan endorsement by the Planning Board. If you have any questions regarding this approval, please contact the Planning Office at 508-325-7587.

Sincerely,

Barry Rector,
Chairman

cc: Barclay LLC
Marcus Silverstein - Zoning Enforcement Officer

NOTE TO APPLICANTS: Please note that a copy of the plan you submitted to the Board, which has been endorsed by the Chairman, is enclosed and must be presented to the Building Department when applying for a building permit. There will be a $25 administrative fee to re-issue an endorsed site plan.

2015 00002013
Bk: Pg: 0 Page: 0
Doc: PLAN 03/27/2015 03:26 PM

NANTUCKET REGISTRY OF DEEDS
Date: 3/27/2015
Time: 3:26 PM
Plan No: 2015-13
Attest: Jennifer H. Ferreira
Register
Sheet 1 of 1

RESERVED FOR REGISTRY USE

I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN CONFORMANCE WITH THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

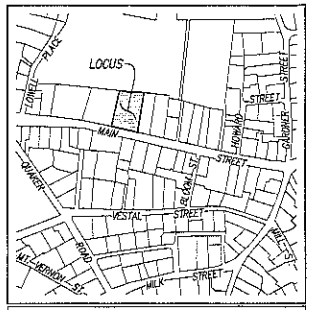
COMMONWEALTH OF MASSACHUSETTS ALAN M. GRADY No. 37732 PROFESSIONAL LAND SURVEYOR

2/27/15

ALAN M. GRADY, PLS
MASSACHUSETTS REG.
No. 37732

THE PLANNING BOARD DETERMINES THAT:

(b) PARCELS "A" and "B" DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS WETLANDS PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BYLAW, BUT STILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BYLAWS. DETERMINATION OF APPLICABILITY MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.



LOCUS MAP Scale: 1" = 400'

#4 QUARTER MILE HILL
MAP 42.3.3 PARCEL 3
N/F
QUARTER MILE HILL NOMINEE TRUST

N 80°53'15" W 3.81'
S 80°53'15" E 37.00'
I.P. FND.
CBDH FND.
76.89'
19.72'
S 81°43'21" E 57.17'
N 08°45'05" E 9.50'
CBDH FND.
I.P. FND.
S 82°25'31" E 52.68'
I.P. FND.
S 83°18'18" E 63.87'
I.P. FND.

MAP 42.3.3
PARCEL 46
20,887± s.f.

S 11°08'04" W
59.0'

#139 MAIN STREET
MAP 41 PARCEL 455
N/F
MAINWOOD REALTY TRUST
N 12°35'49" E 171.02'

7.4'
178.45'
5.8'

#131
EXISTING HOUSE
(under construction)

#129 MAIN STREET
MAP 42.3.3 PARCEL 47
N/F
WARNER FAMILY NOMINEE TRUST

#127 MAIN STREET
MAP 42.3.3 PARCEL 48
N/F
127 MAIN STREET NOMINEE TRUST

LOT "B"
10,154± s.f.
r=0.76

LOT "A"
10,733± s.f.
r=0.76

174.31'
54.5'
S 09°43'04" W

N
W E
S
Plan File: 31-J

61.05'
N 77°51'36" W 125.68'
64.63'
S 76°55'45" E 124.96'

MAIN STREET
(PUBLIC WAY - VARIABLE WIDTH)

NOTES:

1. LOCUS: #131 MAIN STREET
   MAP 42.3.3 PARCEL 46
2. OWNER: BARCLAY, LLC
   12 BLUEBIRD LANE
   NANTUCKET, MA 02554
3. DEED REF: Bk: 1456 Pg: 311
4. PLAN REF: Bk: 12 Pg: 49
   Bk: 13 Pg: 54
   Bk: 14 Pg: 24
   Plan File: 31-J
5. LOCUS DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD ZONE AS SHOWN ON FEMA FLOOD INSURANCE RATE MAP No. 25019C-0086-G dated 06/09/2014.
6. PLANNING BOARD ENDORSEMENT DOES NOT CONSTITUTE A DETERMINATION OF CONFORMANCE UNDER CURRENT ZONING.

PLAN SCALE
0 4 8 12 16 20 30 40 60
1 inch = 20 feet

ZONE: R-1

	REQUIRED
LOT AREA:	5,000 s.f.
LOT FRONTAGE:	50'
FRONT YARD:	10'
SIDE/REAR YARD:	5'
GROUND COVER RATIO:	30%
REG. FACTOR:	> .55

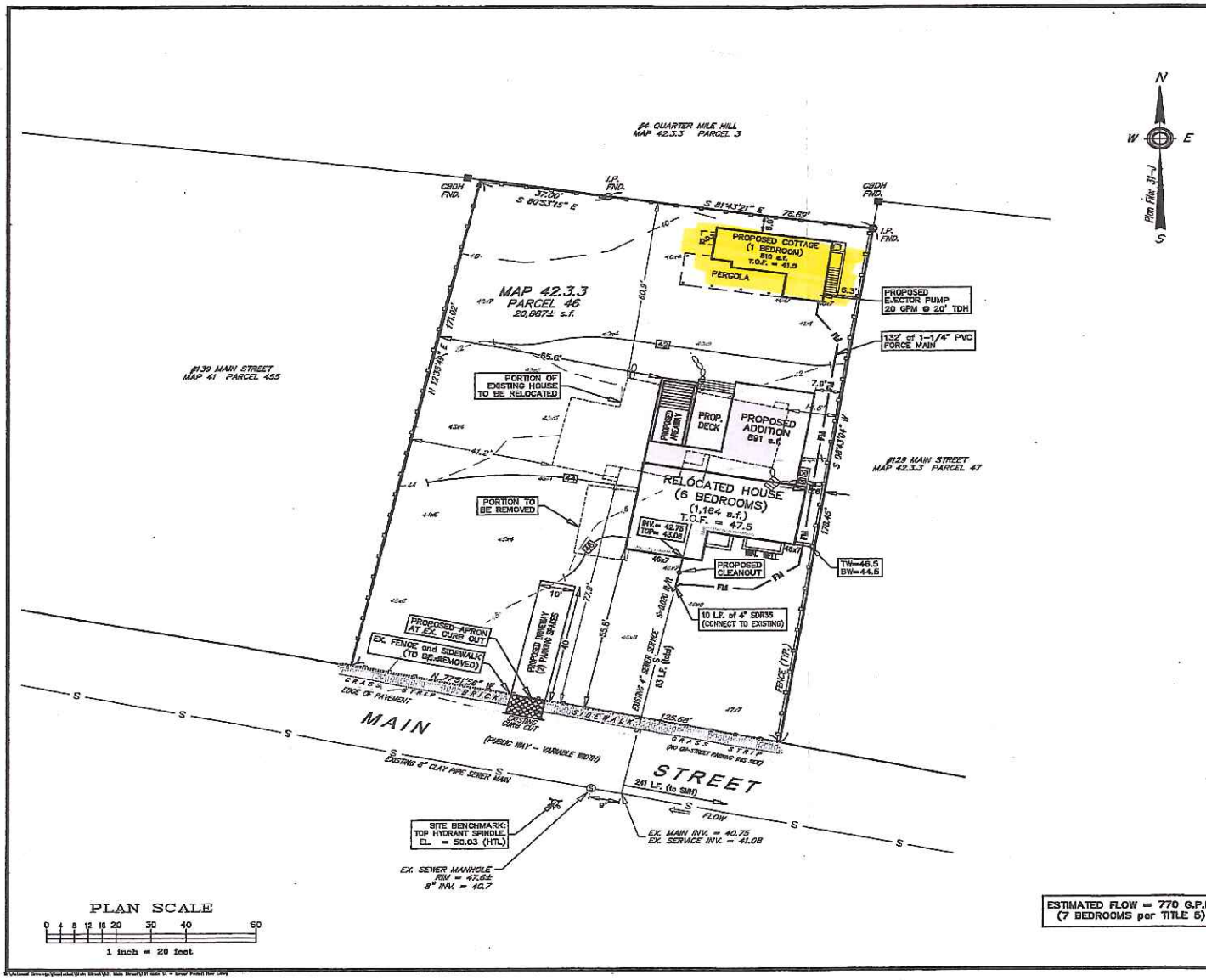
PLAN OF LAND
IN
NANTUCKET, MASS.

PREPARED FOR
BARCLAY, LLC
PREPARED BY
BRACKEN ENGINEERING, INC.
19 OLD SOUTH ROAD
NANTUCKET, MA 02554
tel: (508) 325-0044
fax: (508) 833-2282
FEBRUARY 27, 2015

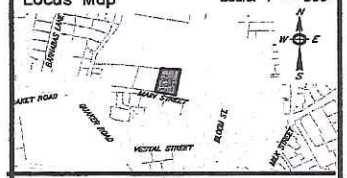
APPROVAL UNDER SUBDIVISION CONTROL LAW NOT REQUIRED
NANTUCKET PLANNING BOARD

FILE NUMBER : 7804
DATE ENDORSED : 03-09-15

457 of 1520



Locus Map Scale: 1" = 500'



Notes

1. LOCUS: #131 MAIN STREET MAP 42.3.3 PARCEL 46
2. OWNER: BARCLAY, LLC 12 BLUEBIRD LANE NANTUCKET, MA 02554
3. DEED REF: Bk 1456 Pg: 311
4. PLAN REF: Bk 14 Pg: 27 Bk 13 Pg: 54 PLAN FILE 31-J
5. LOCUS DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD ZONE AS SHOWN ON FEMA FLOOD INSURANCE RATE MAP No. 25019C-0089-G dated 05/09/2014.
6. LOCUS DOES NOT FALL WITHIN THE NATURAL HERITAGE and ENDANGERED SPECIES PROGRAM (NHESP) AREAS OF ESTIMATED HABITATS OF RARE WILDLIFE and PRIORITY HABITATS OF RARE SPECIES.
7. UTILITIES SHOWN ARE APPROXIMATE AND ARE ONLY TO BE USED FOR DESIGN PURPOSES. LOCATIONS ARE TO BE CONFIRMED PRIOR TO CONSTRUCTION AND CONNECTIONS ARE TO BE COORDINATED WITH THE RESPECTIVE UTILITY COMPANY.
8. ALL METHODS OF CONSTRUCTION ARE TO CONFORM TO THE TOWN OF NANTUCKET STANDARDS AND SPECIFICATIONS FOR SANITARY SEWER, SECTION 200, ARTICLE VI.

ZONE: R-1	REQUIRED	EXISTING	PROPOSED
LOT AREA:	5,000 s.f.	20,887± s.f.	20,887± s.f.
FRONTAGE:	50'	125.68'	125.68'
FRONT YARD:	10'	77.8'	55.5'
SIDE YARD:	5'	14.6'	5.8'
REAR YARD:	5'	60.9'	5.5'
GROUND COVER:	30% (MAX) (6,266 s.f.)	7.2% (1,507 s.f.)	12.3% (2,565 s.f.)

Prepared By:

BRACKEN ENGINEERING INC
40 HERRING POND ROAD
BUZZARDS BAY, MA 02532
(tel) 508.833.0070
(fax) 508.833.2282
19 OLD SOUTH ROAD
NANTUCKET, MA 02554
(tel) 508.325.0044
www.brackeneng.com

PROPOSED SITE PLAN
and
SEWER PERMIT APPLICATION PLAN
IN NANTUCKET, MASSACHUSETTS

Prepared for:
BARCLAY, LLC
#131 MAIN STREET
MAP 42.3.3 PARCEL 46

No.	Date	Revision Description	By
1	1-13-2015	ADD COTTAGE AND FORCE MAIN	ERC

Date: NOVEMBER 20, 2014 | Drawn: RNM/ERC/DLH | Checked: DFB/AMG | Sheet: 1 of 1

Nantucket Planning Board

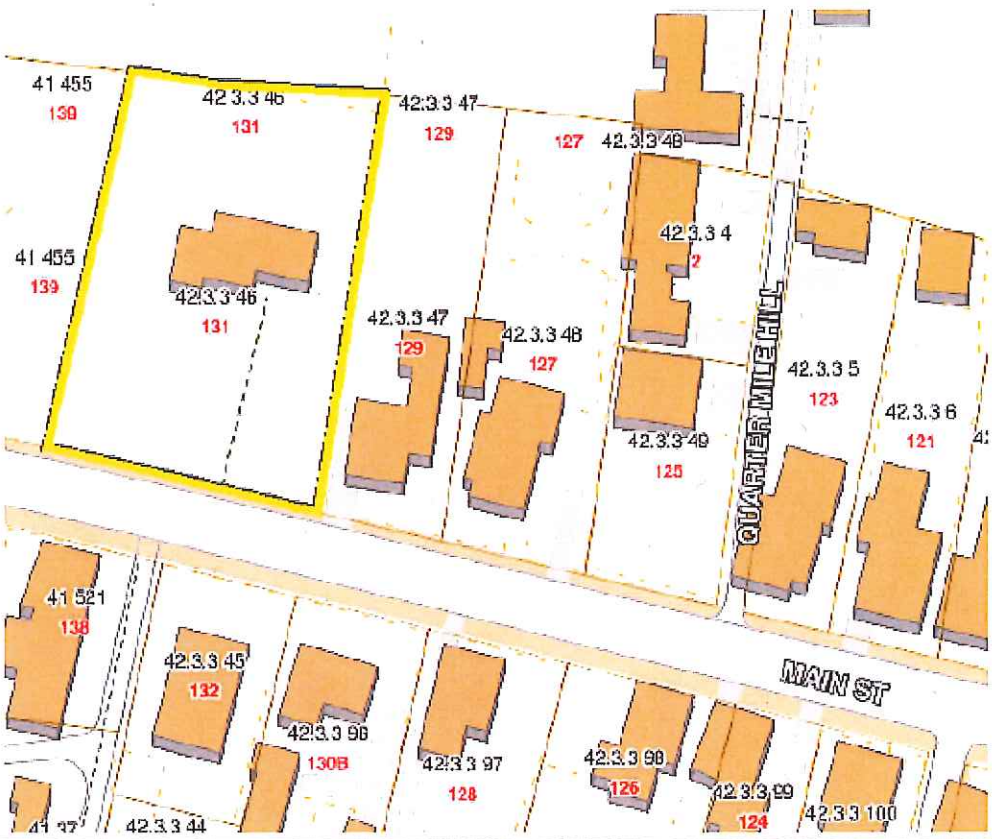
SECONDARY DWELLING REPORT

Prepared by: Catherine Ancero, Administrative Specialist **Meeting Date:** February 9, 2015

131 Main Street

Assessors Map #: 42.3.3 Parcel #: 46

Applicant	Owner
Barclay LLC	SAME



The applicant is proposing to construct a secondary dwelling at 131 Main Street. The proposed dwelling will be located on the northeast of the site, which has approximately 20,887 square feet in area and is zoned R-1.

Access to the site is from Main Street, a brick-paved roadway. An apron will be installed at the existing curb cut. The driveway will be 10 feet in width and will contain two (2) tandem parking spaces. The site plan, as submitted, meets the requirements of Zoning Bylaw Sections 139-18 and 139-20.1.

Planning staff recommends approval of this application with the following conditions:

(1) That an apron at the driveway entrance shall be constructed to a minimum depth of depth of ten (10) feet and a maximum width of fifteen (15) feet and shall be constructed to the requirements of Nantucket Zoning Bylaw Section 139-20.1B.(2)(d);
(2) That the driveway be cleared free of vegetation and obstruction to a width of twelve (12) feet and a height of thirteen (13) feet;
(3) That any landscaping at the driveway entrance be limited to low growing plant material not to exceed three (3) feet in height; and,
(4) That the applicant shall submit an As-Built prior to the final inspection by staff which shall take place prior to the issuance of a Certificate of Occupancy.

PAID
JAN 14 20
CHK # 257
PAID

Nantucket Planning Board

Application for a Secondary Dwelling Permit

Applicant: BARCLAY LLC

Mailing address: P.O. Box 2992, Nantucket MA. 02584

Daytime phone number: 508 566 4712 Fax: _____

E-mail Address: CJOCACK@GMAIL.COM

Owner (if other than applicant): SAME

Mailing address: SAME

Location of proposed secondary dwelling:

Street Address 131 MAIN ST.

Assessors Tax Map # 42.3.3 Parcel # 46

Size of Parcel 20887 Zoning District R1

Secondary Dwelling # of Bedrooms 1 Primary Dwelling # of Bedrooms 6

Holly Backus

From: Holly Backus
Sent: Thursday, August 11, 2016 10:04 AM
To: 'Don'; Alan Grady
Cc: Catherine Ancero; Richard Glidden
Subject: 131 Main Street - Secondary Dwelling

Good Morning Don and Alan,

As you may be aware, the owners at 131 Main Street submitted a Secondary Dwelling Permit Application to the Planning Board for their February 9, 2015 meeting, at which time it was approved. At that time, the property was approximately 20,887 square feet in size. The following month, the Planning Board received an ANR application from your office to divide the parcel into Lot A & Lot B (approximately 10,000 square foot lots).

Now, the owners are trying to receive their CO for the secondary dwelling, however it was turned down by the Building Commissioner because the existing site conditions did not match the Planning Board's approved second dwelling site plan. I understand the as-built done in March of this year, however in order for the Planning Board to approve a revised second dwelling permit on the newly created lot, we will need a revised site plan showing the applicable second dwelling requirements from the Zoning Bylaw (required # of parking spaces, ground cover, apron etc). If you could please provide a revised second dwelling site plan, staff will make sure it is on the Planning Board's September 12th meeting agenda.

As always, please let me know if you have any questions or if I can be of further assistance.
Thank you,

Holly E. Backus
Land Use Specialist

Town of Nantucket
Planning & Land Use Services
2 Fairgrounds Road
Nantucket, MA 02554

Tel: 508-325-7587 X 7026
Fax: 508-228-7298
hbackus@nantucket-ma.gov
http://www.nantucket-ma.gov

Holly Backus

From: Don [Don@brackeneng.com]
Sent: Tuesday, August 23, 2016 1:10 PM
To: Holly Backus; Catherine Ancero
Cc: 'Richard (richard@gliddenandglidden.com)'
Subject: FW: 131 Main St
Attachments: 131 Main St Secondary Dwelling Site Plan.pdf

Holly/Catherine:

Here is the updated site plan. Let me know if you have any questions.

Thanks,

Don Bracken, PE
President

Bracken Engineering, Inc.
49 Herring Pond Road
Buzzards Bay, MA 02532
(t) 508-833-0070
(f) 508-833-2282

19 Old South Road
Nantucket, MA 02584
(t) 508-325-0044

http://www.brackeneng.com

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-----Original Message-----
From: Earl Chartier
Sent: Tuesday, August 23, 2016 10:04 AM
To: Don
Subject: 131 Main St

Hi Don:

Please see attached Secondary Dwelling Site Plan.

Regards,
Earl Chartier, III
Engineering Technician

Bracken Engineering, Inc.
49 Herring Pond Road
Buzzards Bay, MA 02532
(t) 508-833-0070

COMMONWEALTH OF MASSACHUSETTS
ALAN M GRADY
No. 37732
PROFESSIONAL LAND SURVEYOR

8/23/16

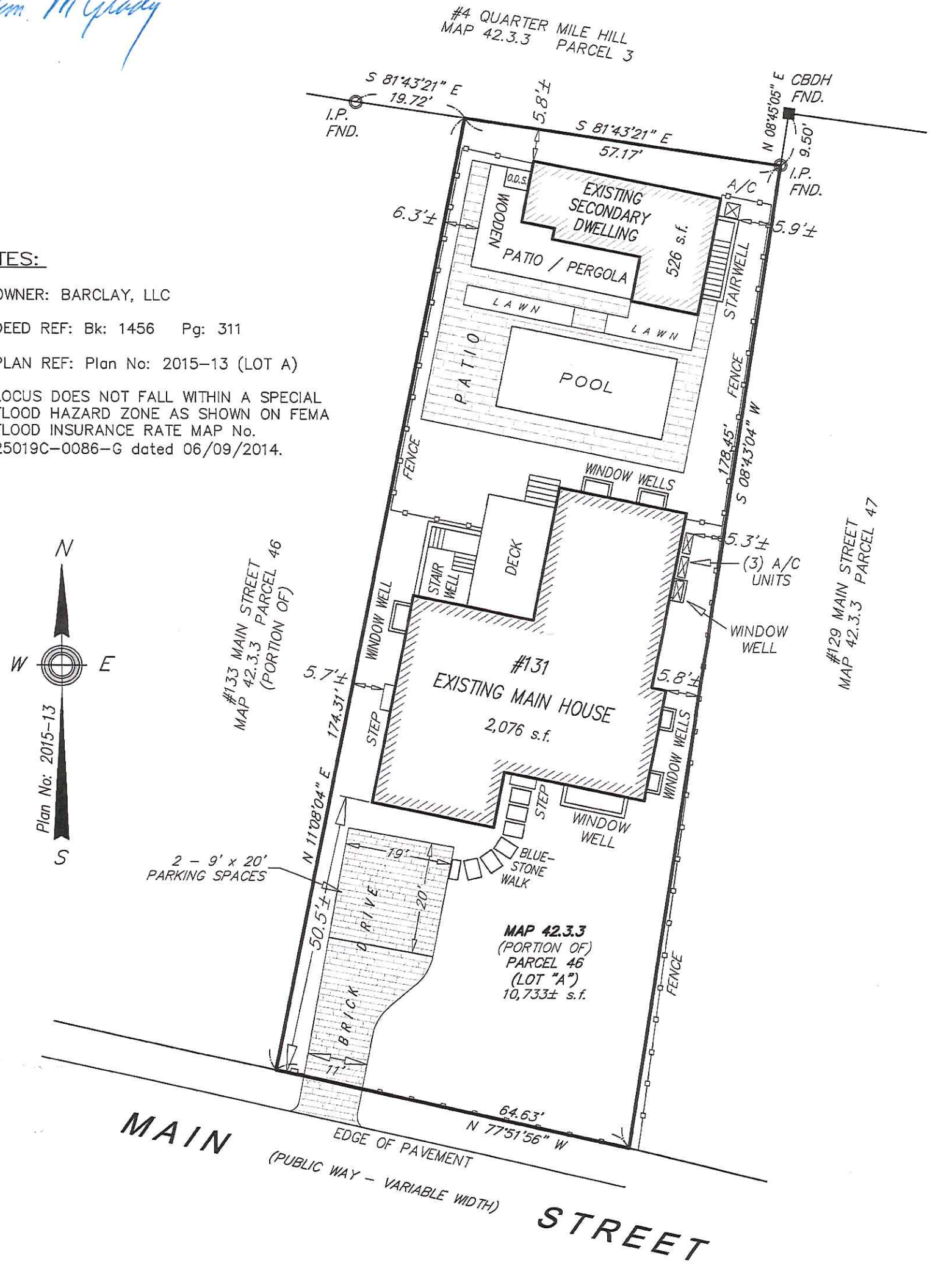
Alan M. Grady

ZONE: R–1

	REQUIRED	EXISTING
LOT AREA:	5,000 s.f.	10,733± s.f.
FRONTAGE:	50'	64.63'
FRONT YARD:	10'	50.5'
SIDE YARD:	5'	5.3'
REAR YARD:	5'	5.8'
GROUND COVER:	30% (MAX)	24.2%

NOTES:

1. OWNER: BARCLAY, LLC
2. DEED REF: Bk: 1456 Pg: 311
3. PLAN REF: Plan No: 2015–13 (LOT A)
4. LOCUS DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD ZONE AS SHOWN ON FEMA FLOOD INSURANCE RATE MAP No. 25019C–0086–G dated 06/09/2014.



BRACKEN ENGINEERING, INC.

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(Fax) 508.833.2282

19 OLD SOUTH ROAD
NANTUCKET, MA 02554
(Tel) 508.325.0044
www.brackeneng.com

SECONDARY DWELLING SITE PLAN

IN NANTUCKET, MASSACHUSETTS

Prepared for

BARCLAY, LLC
#131 MAIN STREET
MAP 42.3.3 PARCEL 46

PLAN SCALE

0 4 8 12 16 20 30 40 60

1 inch = 20 feet

Date:	Drawn:	Checked:
AUGUST 23, 2016	ERC/BEI	AMG

S:\Autocad Drawings\Nantucket\Main Street\131 – 133 Main Street\131 Main St – Secondary Dwelling Site.dwg

131 Main Street
Map 40 Parcel 25.3
Secondary Dwelling Modification

Holly Backus

From: Don [Don@brackeneng.com]
Sent: Friday, September 09, 2016 2:55 PM
To: Holly Backus
Cc: Larry Maury
Subject: 194 Cliff Road
Attachments: 194 Cliff Rd - Turning Exhibit.pdf

Hi Holly,

Larry asked me to send you this diagram which demonstrates that vehicles can turn around on site. This is predicated on using 2 tandem spaces to have 4 spaces total and a turn out area.

Let me know if you have any questions.

Thanks,

Don Bracken, PE
President

Bracken Engineering, Inc.
49 Herring Pond Road
Buzzards Bay, MA 02532
(t) 508-833-0070
(f) 508-833-2282

19 Old South Road
Nantucket, MA 02584
(t) 508-325-0044

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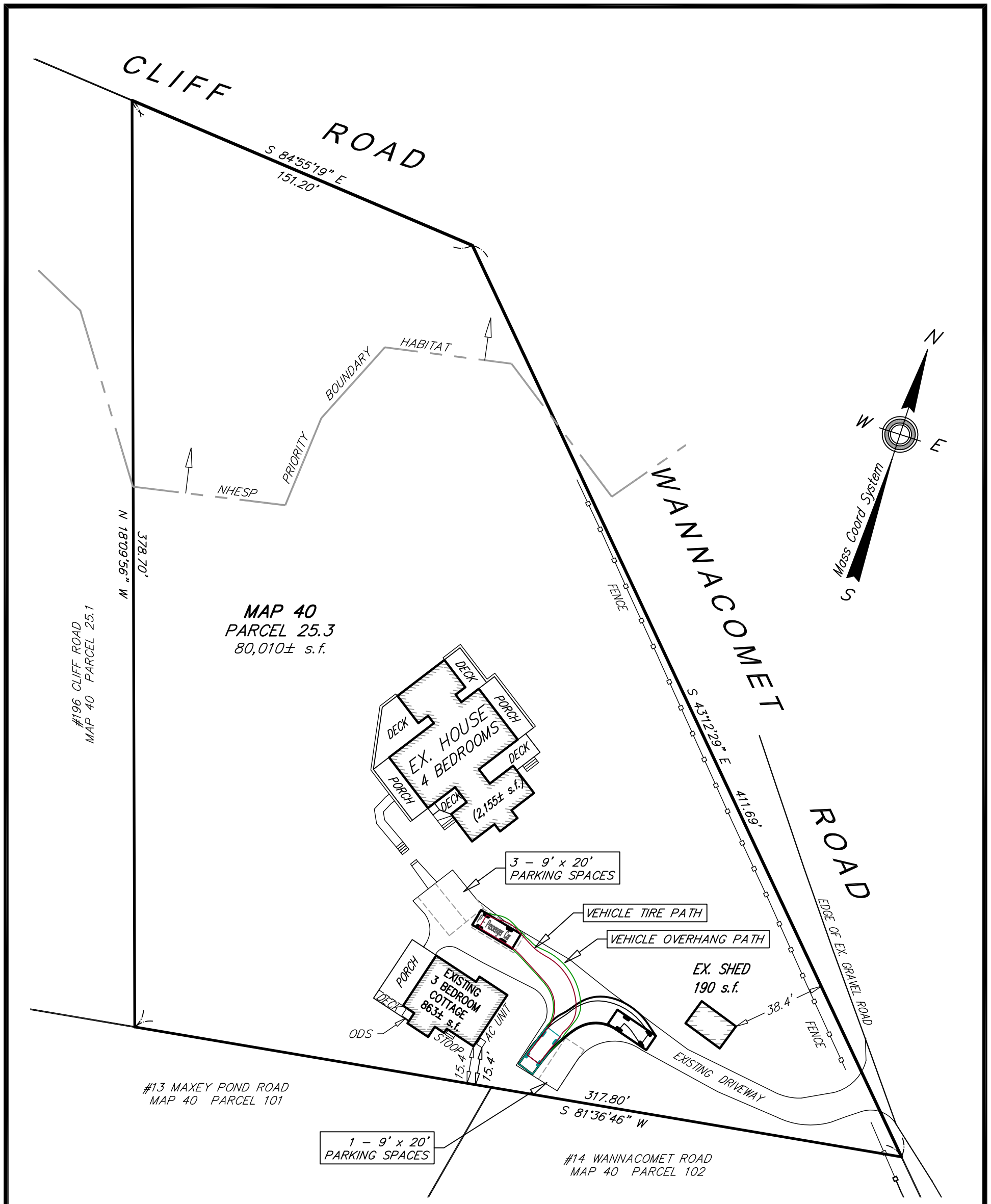

NOTES:

1. OWNER: SALLY V. SIEBOLD
   P.O. BOX 8159
   ENGLEWOOD, NJ 07631
2. DEED REF: Cert. #16329
3. PLAN REF: LCC #8852–S (LOTS 31 & 32)
4. LOCUS DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD ZONE AS SHOWN ON FEMA FLOOD INSURANCE RATE MAP No. 25019C–0067–G dated 06/09/2014.

ZONE: LUG–2	REQUIRED	EXISTING
LOT AREA:	80,000 s.f.	80,010± s.f.
FRONTAGE:	150.0'	563'±
FRONT YARD:	35.0'	38.4'±
SIDE/REAR YARD:	15.0'	15.4'±
GROUND COVER:	4%	3.8%
	(3,200 s.f.)	*(3,018 s.f.)*

BRACKEN ENGINEERING, INC.

49 HERRING POND ROAD
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(fax) 508.833.2282

19 OLD SOUTH ROAD
NANTUCKET, MA 02554
(tel) 508.325.0044
www.brackeneng.com

VEHICLE TURNING EXHIBIT
IN NANTUCKET, MASSACHUSETTS

Prepared for:

SALLY V. SIEBOLD
#194 CLIFF ROAD
MAP 40 PARCEL 25.3

PLAN SCALE

0 8 16 24 32 40 60 80 120

1 inch = 40 feet

Date:	Drawn:	Checked:
AUGUST 26, 2016	PCM/ERC/BEI	AMG

S:\Autocad Drawings\Nantucket\Cliff Road\194 Cliff Rd\194 Cliff Rd – Turning Exhibit.dwg

Holly Backus

From: Holly Backus
Sent: Tuesday, August 30, 2016 1:14 PM
To: 'Lawrence Maury'; Steve Butler
Cc: Alan Grady; 'Val'; Catherine Ancero
Subject: RE: 194 Cliff Road

Hi Larry,

Thank you for the revised plan. Any changes to the approved site plan for the Secondary Dwelling Permit from the Planning Board requires approval from the Board.

In this case, Cliff Road requires a turn-around, per Section 139-20.1(B)(2)(g) of the Zoning Bylaw. The previous plan (for the most part) addressed that requirement. However, the as-built does not. A revised plan showing the proper turn-around should be submitted to the Board for consideration or ask the Board for a waiver from the requirement. Either way, the changes will need to be re-approved by the Board.

For your convenience, I have copied Mr. Alan Grady from Bracken Engineering. The deadline for non-public hearing items for the September 12th Planning Board agenda is September 6th.

Please let me know if you have any questions or if I can be of further assistance.
Thank you,

Holly E. Backus
Land Use Specialist
Town of Nantucket

From: Lawrence Maury [mailto:larrymaury@gmail.com]
Sent: Monday, August 29, 2016 4:03 PM
To: Holly Backus; Steve Butler
Subject: Fwd: 194 Cliff Road

Hi Holly,

Attached is the updated as-built for Sally Siebold(194 Cliff Rd) that you spoke with Val about on Friday. It has the drive layout corrected, the 4 parking spaces labeled and the cottage labeled correctly. Do you need anything further?

Regards,

Larry

Lawrence Maury
Maury Associates, Inc.
General Contracting Since 1979
Construction Supervisor License #CS-032126
54 Old South Rd.
Nantucket, Ma. 02554
508-228-2193
Cell 508-654-2072

---------- Forwarded message ----------
From: **Alan Grady** <Alan@brackeneng.com>

Date: Mon, Aug 29, 2016 at 2:22 PM
Subject: 194 Cliff Road
To: Lawrence Maury <larrymaury@gmail.com>
Cc: Zac <Zac@brackeneng.com>

Larry,

Attached is a pdf of the revised Final As-Built Plan showing 4 parking spaces and labeling the "Exist. 3 Bedroom Cottage".

Call or email us if you have any questions.

Thanks,

Alan M. Grady, PLS

Survey Project Manager

Bracken Engineering, Inc.

49 Herring Pond Road

Buzzards Bay, MA 02532

(508) 833-0070

alan@brackeneng.com

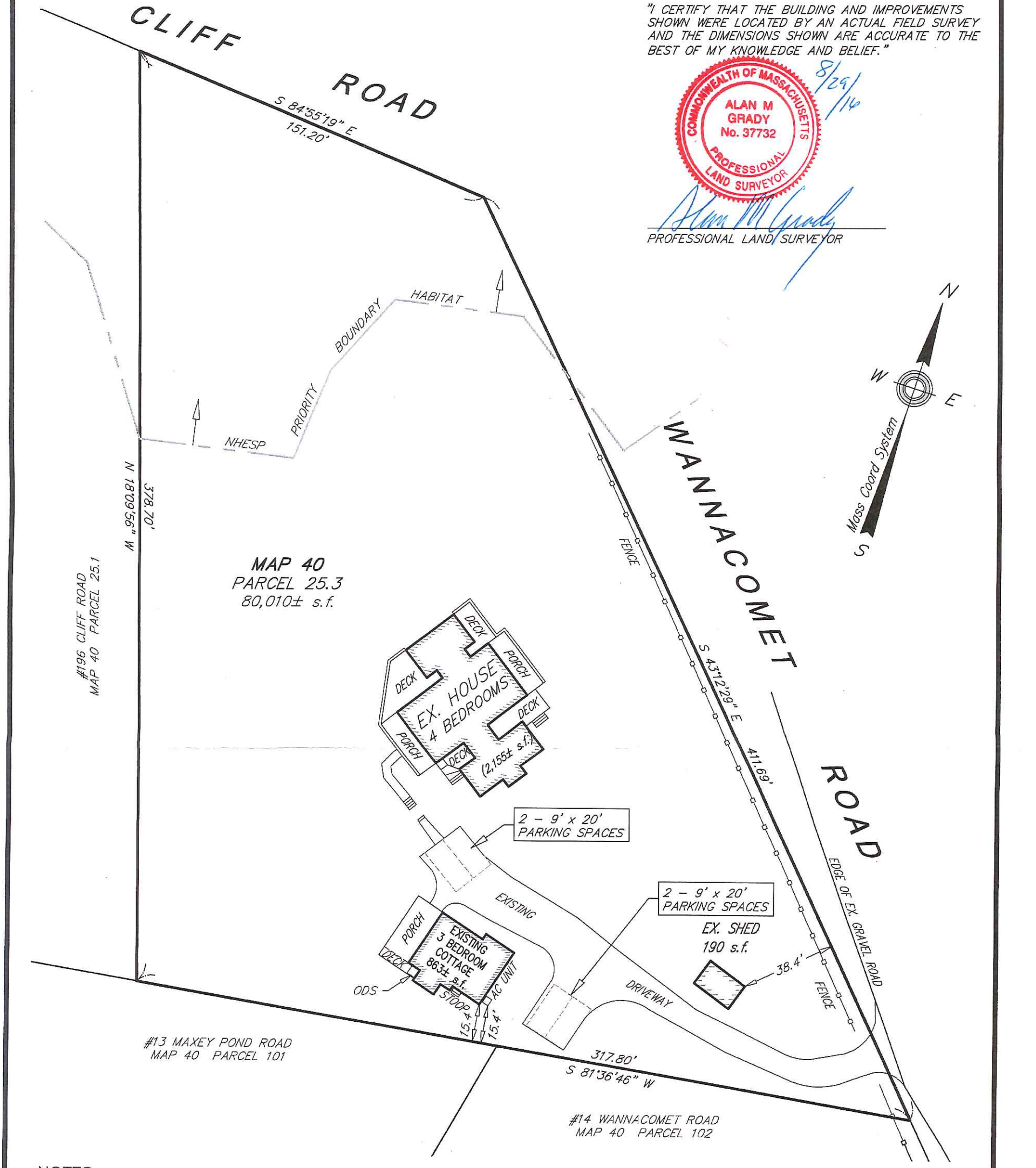
TO THE TOWN OF NANTUCKET:

"I CERTIFY THAT THE BUILDING AND IMPROVEMENTS SHOWN WERE LOCATED BY AN ACTUAL FIELD SURVEY AND THE DIMENSIONS SHOWN ARE ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF."

COMMONWEALTH OF MASSACHUSETTS
ALAN M GRADY
No. 37732
PROFESSIONAL LAND SURVEYOR

8/29/16

PROFESSIONAL LAND SURVEYOR



NOTES:

1. OWNER: SALLY V. SIEBOLD
   P.O. BOX 8159
   ENGLEWOOD, NJ 07631
2. DEED REF: Cert. #16329
3. PLAN REF: LCC #8852–S (LOTS 31 & 32)
4. LOCUS DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD ZONE AS SHOWN ON FEMA FLOOD INSURANCE RATE MAP No. 25019C–0067–G dated 06/09/2014.

ZONE: LUG–2	REQUIRED	EXISTING
LOT AREA:	80,000 s.f.	80,010± s.f.
FRONTAGE:	150.0'	563'±
FRONT YARD:	35.0'	38.4'±
SIDE/REAR YARD:	15.0'	15.4'±
GROUND COVER:	4%	3.8%
	(3,200 s.f.)	*(3,018 s.f.)*

BRACKEN ENGINEERING, INC.

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BUZZARDS BAY, MA 02532
(tel) 508.833.0070
(fax) 508.833.2282

19 OLD SOUTH ROAD
NANTUCKET, MA 02554
(tel) 508.325.0044
www.brackeneng.com

FINAL AS–BUILT PLAN
IN NANTUCKET, MASSACHUSETTS

Prepared for:

SALLY V. SIEBOLD
#194 CLIFF ROAD
MAP 40 PARCEL 25.3

PLAN SCALE

0 8 16 24 32 40 60 80 120

1 inch = 40 feet

Date:	Drawn:	Checked:
AUGUST 26, 2016	PCM/ERC/BEI	AMG

S:\Autocad Drawings\Nantucket\Cliff Road\194 Cliff Rd\194 Cliff Rd – FAB rev 1.dwg

Nantucket Planning Board

November 20, 2015

Mr. Steve Butler, Building Commissioner
2 Fairgrounds Road
Nantucket, MA 02554

Re: 194 Cliff Road (Map 40 Parcel 25.3)

Dear Mr. Butler:

Please be advised that the Planning Board, at its meeting on November 19, 2015 Planning Board Special Meeting, considered the above application for adequate access, as per §139-20.1 of the *Nantucket Code*, and granted a secondary dwelling approval, conditional upon the following:

Planning staff recommends approval of this application with the following conditions:

(1) That the vegetation be cut back a minimum of twenty (20) feet to allow for adequate sight distance;
(2) That the driveway be cleared free of vegetation and obstruction to a width of twelve (12) feet and a height of thirteen (13) feet;
(3) That any future landscaping at the driveway entrance be limited to low growing plant material not to exceed three (3) feet in height; and
(4) That the applicant shall submit an As-Built prior to the final inspection by staff which shall take place prior to the issuance of a Certificate of Occupancy.

The approval is also **conditional** upon adherence to the site plan submitted by the applicant and endorsed by the Chairman, showing the relative locations of proposed or existing dwellings and driveways or parking areas.

As per Section 139-2 of the *Nantucket Zoning Code*, the approval referenced herein is valid for a period of **two years only**, calculated from the date of site plan endorsement by the Planning Board. If you have any questions regarding this approval, please contact the Planning Office at 508-325-7587.

Sincerely,

Linda Williams
Vice-Chairman

cc: **Sally Siebold**
Marcus Silverstein - Zoning Enforcement Officer

NOTE TO APPLICANTS: Please note that a copy of the plan you submitted to the Board, which has been endorsed by the Chairman, is enclosed and must be presented to the Building Department when applying for a building permit. There will be a $25 administrative fee to re-issue an endorsed site plan.

APPROVED

BY THE NANTUCKET PLANNING BOARD
FOR ADEQUATE ACCESS PURSUANT TO
SECTION 139-20.1 OF THE
NANTUCKET ZONING BYLAW

Chairman Linda F. Williams Date 11/27/2015

NOTES:

1. LOCUS: #194 CLIFF ROAD
   MAP 40 PARCEL 25.3
2. OWNER: SALLY V. SIEBOLD
   P.O. BOX 8159
   ENGLEWOOD, NJ 07631
3. DEED REF: Cert. #16329
4. PLAN REF: LCC #8852-S (LOTS 31 & 32)
5. LOCUS FALLS WITHIN THE LUG-2 ZONING DISTRICT.

CLIFF ROAD

S 84°55'19" E
151.20'

MAP 40
PARCEL 25.3
80,010± s.f.

PARKING CALCULATIONS	
SINGLE FAMILY DWELLING	2 SPACES
SECONDARY DWELLING	2 SPACES
TOTAL	4 SPACES
4 SPACES REQUIRED – 4 SPACES PROVIDED	

#196 CLIFF ROAD
MAP 40 PARCEL 25.1

S 18°09'56" E
378.70'

N
W E
S
Mass Coord System

WANNACOMET ROAD

S 43°12'29" E 411.69'

EDGE OF EX. GRAVEL ROAD

EXISTING MAIN HOUSE

PARKING SPACE (TYP.)

EXPAND GRAVEL DRIVEWAY

① ② ③ ④

20'

9'

PROPOSED SECONDARY DWELLING
MAIN HOUSE = 2,155 s.f.
SECONDARY DWELLING = 866 s.f.
MAIN HOUSE >20% LARGER

EDGE OF PROP. DRIVEWAY

EXIST. GARAGE

EXISTING GRAVEL DRIVEWAY

PROPOSED ADDITION

317.80'
S 81°36'46" W

#13 WASHING POND ROAD
MAP 40 PARCEL 101

#14 WASHING POND ROAD
MAP 40 PARCEL 102

COMMONWEALTH OF MASSACHUSETTS
ALAN M. GRADY
No. 37732
REGISTERED
PROFESSIONAL LAND SURVEYOR

10/19/15

BRACKEN ENGINEERING, INC.

49 HERRING POND ROAD
BUZZARDS BAY, MA 02532
(tel) 508.833.0070
(fax) 508.833.2282

19 OLD SOUTH ROAD
NANTUCKET, MA 02554
(tel) 508.325.0044
www.brackeneng.com

SECONDARY DWELLING PERMIT PLAN
IN NANTUCKET, MASSACHUSETTS

Prepared for:

SALLY V. SIEBOLD
#194 CLIFF ROAD
MAP 40 PARCEL 25.3

PLAN SCALE

0 8 16 24 32 40 60 80 120

1 inch = 40 feet

Date:	Drawn:	Checked:
OCTOBER 19, 2015	RMM/ERC/DLH	DFB/AMG

S:\Autocad Drawings\Nantucket\Cliff Road\194 Cliff Rd\194 Cliff Rd.dwg

#7946 AR
Stephen M. Waterhouse
20 Sparks Avenue
Map 55 Parcel 307
RC **pending ATM Article 34 to CMI**

DEFINITIVE SUBDIVISION PLANS

- for -

WATERHOUSE WAY SUBDIVISION

20 SPARKS , AVENUE

NANTUCKET, MASSACHUSETTS

NANTUCKET ISLAND

NOT TO SCALE

PLAN INDEX

TITLE	SHEET NO.
COVER SHEET	1
LOTTING PLAN	2
SITE LAYOUT & UTILITY PLAN	3
DRAINAGE , GRADING & EROSION CONTROL PLAN	4
CONSTRUCTION DETAILS	5

SURVEYOR OF RECORD

ISLAND SURVEYORS, LLC.
90 OLD SOUTH ROAD
NANTUCKET, MASS. 02554
(508) 228-2720

ENGINEER OF RECORD

SITE DESIGN ENGINEERING, LLC.
11 CUSHMAN STREET
MIDDLEBORO, MA 02346
(508) 967-0673

"I HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE NANTUCKET PLANNING BOARD WAS RECEIVED AND RECORDED _____ AT THIS OFFICE, AND NO APPEAL WAS RECEIVED DURING THE TWENTY (20) DAYS NEXT AFTER SUCH RECEIPT OF RECORDING OF SAID NOTICE."

_____ _____

TOWN CLERK, NANTUCKET, MA DATE

APPROVED UNDER THE SUBDIVISION CONTROL LAW REQUIRED NANTUCKET PLANNING BOARD

APPROVED (DATE): _____

ENDORSED (DATE): _____

P.B. FILE NO.: _____

ISLAND SURVEYORS, LLC.
PROFESSIONAL LAND SURVEYORS
90 OLD SOUTH ROAD
NANTUCKET, MA. 02554
508-228-2720

SITE DESIGN ENGINEERING, LLC.
11 CUSHMAN STREET
MIDDLEBORO, MA 02346
T: 508-967-0673 F: 508-967-0674
WWW.SITEDESIGNENG.COM

NO.	DATE	DESCRIPTION	APPROVED

PLAN REVISIONS

DATE: JUNE 30, 2016

DRAWN BY:	DESIGN BY:	CHECK BY:
RT/DCM	RT/DCM	DCM

PROJECT NO. 16010

ISSUED FOR: APPROVAL

DEFINITIVE SUBDIVISION

WATERHOUSE WAY

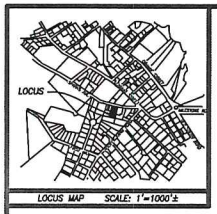
20 SPARKS AVENUE
ASSESSOR'S MAP 55, PARCELS 307
NANTUCKET, MA

PREPARED FOR STEPHEN M. WAREHOUSE

DRAWING TITLE: COVER

SCALE: NTS

SHEET NO. 1 OF 5



CURRENT ZONING CLASSIFICATION:
Commercial Mid Island (CMI)

MINIMUM LOT SIZE: 5000 S.F.
MINIMUM FRONTAGE: 50 FT.
FRONT YARD SETBACK: none
REAR/SIDE SETBACK: none
GROUND COVER % : 50%

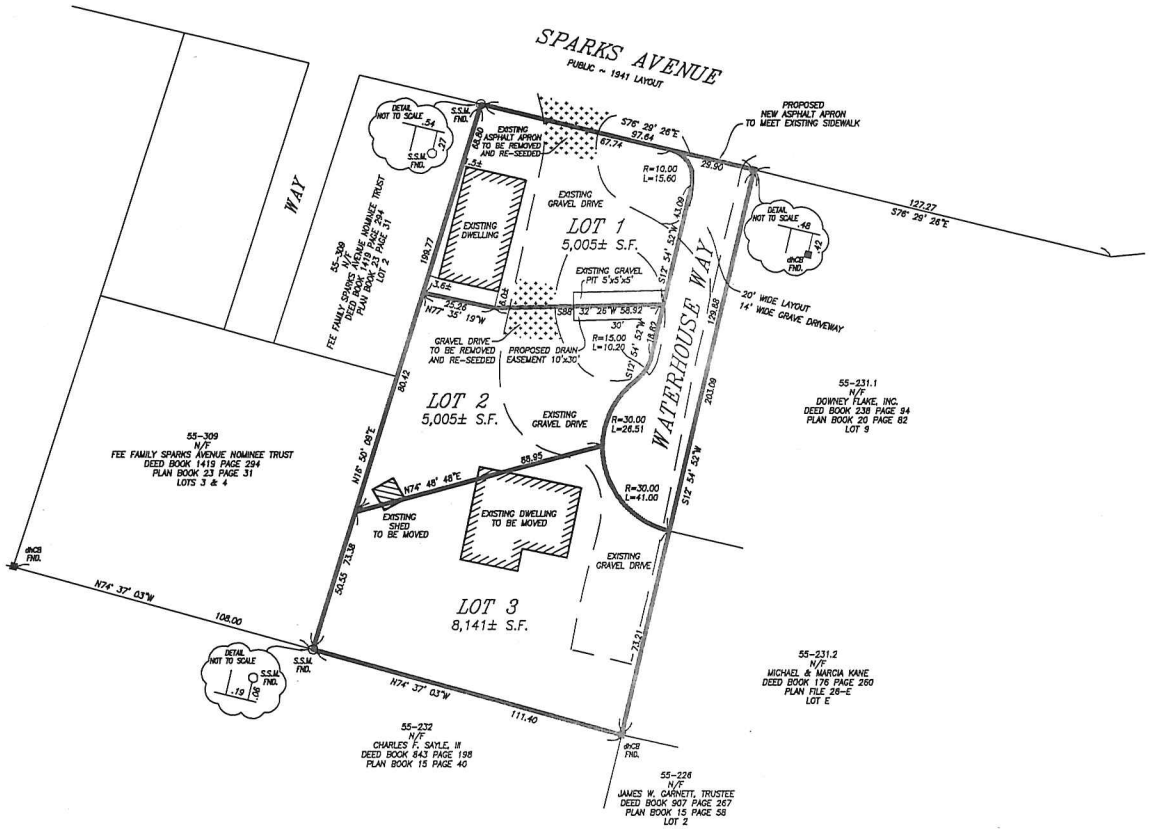
ZONING CLASSIFICATION AT TIME OF SUBMISSION OF DEFINITIVE PLAN:
Residential Commercial (R.C.)

MINIMUM LOT SIZE: 5000 S.F.
MINIMUM FRONTAGE: 40 FT.
FRONT YARD SETBACK: none
REAR/SIDE SETBACK: 5 FT.
GROUND COVER % : 50%

LEGEND

dhCB FND. ■ DENOTES DRILL HOLE IN CONCRETE BOUND FOUND

S.S.M. FND. ○ DENOTES STEEL SURVEY MARKER FOUND



N
W E

BEING A SUBDIVISION OF LOT 5
SHOWN ON PLAN BOOK 23 PAGE 31

REVISED DEFINITIVE PLAN OF LAND IN NANTUCKET, MASS.

PREPARED FOR
STEPHEN M. WATERHOUSE
DEED BOOK 1169 PAGE 89

SCALE: 1" = 20' DATE: MARCH 14, 2016
REVISED: JUNE 1, 2016

ISLAND SURVEYORS, LLC
Professional Land Surveyors
90 OLD SOUTH ROAD
NANTUCKET, MASS. 02554
(508) 228-2720

Nantucket Planning Board
APPROVAL UNDER THE SUBDIVISION CONTROL LAW REQUIRED

DATE APPROVED: _____
DATE ENDORSED: _____
PLANNING BD. FILE No. _____

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

_____ _____
PROFESSIONAL LAND SURVEYOR DATE

"I, CATHERINE STOVER, CLERK OF THE TOWN OF NANTUCKET, HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO NOTICE OF APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE."

_____ DATE: _____
TOWN CLERK

ASSESSORS MAP 55 PARCEL 307

K-541

175 of 1520

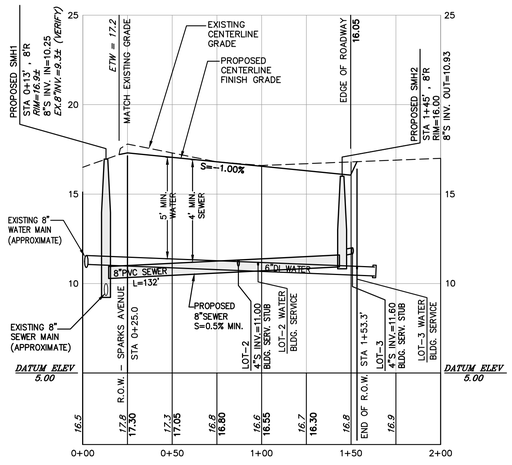
LEGEND

EXISTING

- AIR CONDITIONING UNIT
- BUSH/SHRUB
- CLEAN OUT
- CONCRETE BOUND/DRILL HOLE FOUND
- ELECTRIC METER
- FENCE (POST & RAIL)
- FENCE (STOCKADE)
- IRRIGATION CONTROL VALVE
- LANDSCAPED AREA
- MAILBOX
- PROPANE TANK
- PROPERTY LINE
- SEWER MANHOLE
- SEWER MAIN
- SPOT ELEVATION
- SPRINKLER HEAD
- TREE LINE
- UTILITY POLE
- WATER MAIN
- WATER SHUT OFF
- WATER SERVICE

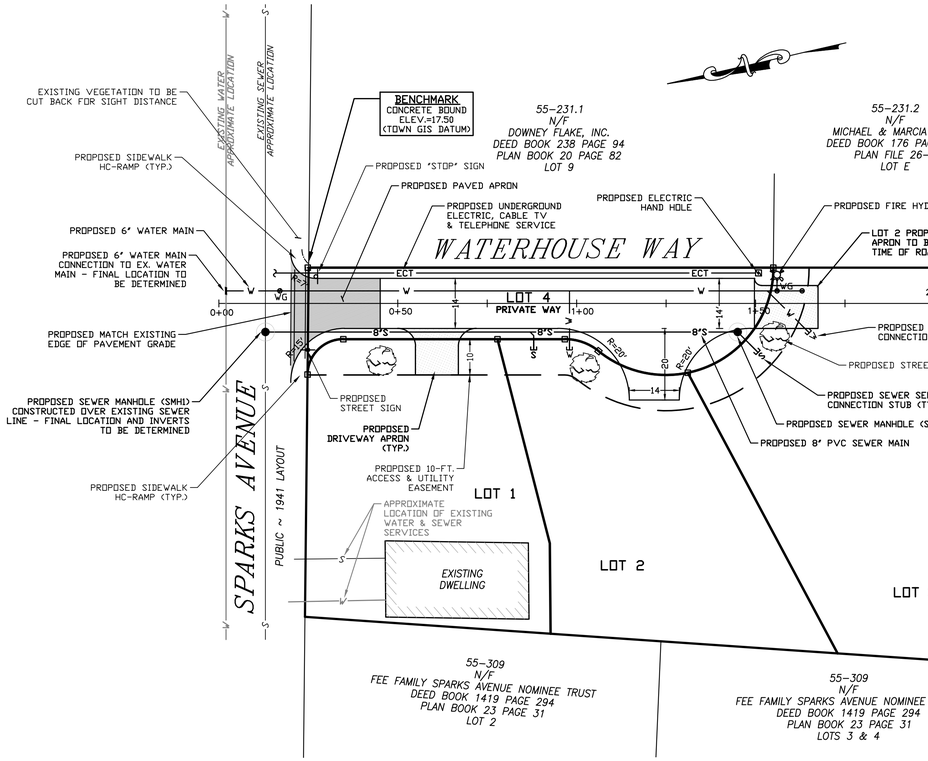
PROPOSED

- ELECTRIC/CABLE TV/TELEPHONE SERVICE
- HYDRANT
- PROPERTY LINE
- SEWER MANHOLE
- SEWER MAIN
- WATER MAIN
- WATER GATE



SEWER & WATER PROFILE

SCALE: HOR. 1" = 40'
VER. 1" = 4'



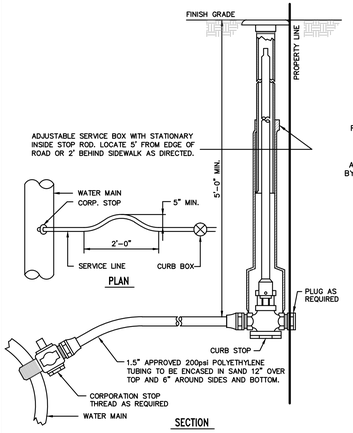
SITE PLAN

20 0 10 20 40

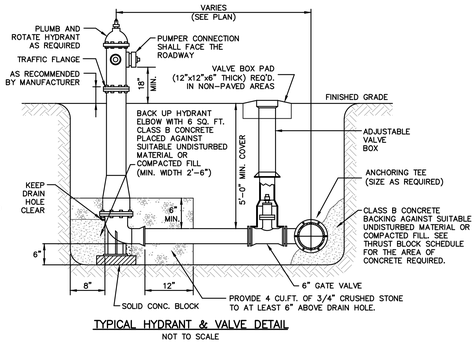
SCALE: 1 INCH = 20 FEET

WATER MAIN CONSTRUCTION NOTES

1. THE WATER SUPPLY SYSTEM SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SPECIFICATIONS OF THE TOWN'S WATER DEPARTMENT. CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH APPLICABLE PERMITS (TO BE OBTAINED BY THE CONTRACTOR). UNLESS OTHERWISE DIRECTED, ALL WATER PIPES SHALL BE INSTALLED 4'-0" BELOW GRADE. APPROPRIATE THRUST BLOCKING SHALL BE INSTALLED.
2. THE CONTRACTOR SHALL MAINTAIN CLEARANCE BETWEEN THE NEW WATER MAIN AND OTHER EXISTING UTILITIES OF AT LEAST (12) TWELVE INCHES OR AS DETERMINED BY THE TOWN'S WATER DEPARTMENT IN THE FIELD.
3. ALL CONSTRUCTION METHODS AND MATERIALS, AS WELL AS ALL MATERIAL SHOP DRAWINGS AND MANUFACTURERS DATA SHALL RECEIVE THE WRITTEN APPROVAL OF THE TOWN'S WATER DEPARTMENT AND THE PROJECT ENGINEER PRIOR TO FABRICATION AND INSTALLATION.
4. ALL COMPLETED SECTIONS OF THE PROPOSED SYSTEM SHALL BE PRESSURE TESTED AND DISINFECTED IN ACCORDANCE WITH THE TOWN'S WATER DEPARTMENT SPECIFICATIONS. ANY PORTION OF THE WORK NOT MEETING THE REQUIRED TESTING STANDARDS SHALL BE CORRECTED BY THE CONTRACTOR AT HIS OWN EXPENSE.
5. THE TOWN'S WATER SUPERINTENDENT AND THE PROJECT ENGINEER SHALL APPROVE ALL FIELD CHANGES IN THE WORK PRIOR TO IMPLEMENTATION. NO FIELD CHANGES SHALL BE MADE IN ANY SPECIFIED SITE WORK OR ANY MATERIALS FOR WHICH SHOP DRAWINGS HAVE BEEN SUBMITTED AND APPROVED WITHOUT PRIOR CONSULTATION OF THE WATER SUPERINTENDENT AND THE PROJECT ENGINEER. ANY CHANGES SO MADE WITHOUT THE CONSENT OF THE WATER SUPERINTENDENT AND THE PROJECT ENGINEER SHALL, IF DEEMED UNACCEPTABLE BY EITHER PARTY, BE PROMPTLY REMOVED FROM THE WORK AT NO EXPENSE TO THE OWNER OF THE PROJECT.
6. THE CONTRACTOR SHALL INTERRUPT WATER SERVICE AND DISRUPT THE NORMAL FUNCTIONING OF THE DISTRIBUTION SYSTEM AS LITTLE AS POSSIBLE. THE CONTRACTOR SHALL NOTIFY THE WATER DEPARTMENT 72 HOURS IN ADVANCE OF ANY REQUIREMENT FOR UNWATERING OF ISOLATING A SECTION OF THE MAIN.
7. IN THE EVENT THAT NORMAL WATER SERVICE WILL BE INTERRUPTED FOR AN EXTENDED PERIOD, THE CONTRACTOR SHALL PROVIDE TEMPORARY SERVICE LINES.
8. THE CONTRACTOR SHALL NOT OPERATE WATER DISTRIBUTION SYSTEM VALVES WITHOUT THE SUPERVISION OF THE WATER DEPARTMENT. IF SUCH SUPERVISION IS PROVIDED BY THE OWNER, AT TIMES OTHER THAN DURING REGULAR WORKING HOURS OF THE WATER DEPARTMENT, THE CONTRACTOR SHALL REIMBURSE THE WATER DEPARTMENT FOR ALL SALARY EXPENSES INCURRED BY THE WATER DEPARTMENT IN PROVIDING SUCH SUPERVISION.

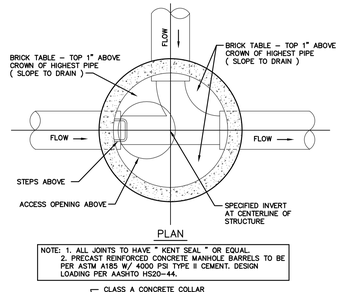


TYPICAL SERVICE CONNECTION
NOT TO SCALE



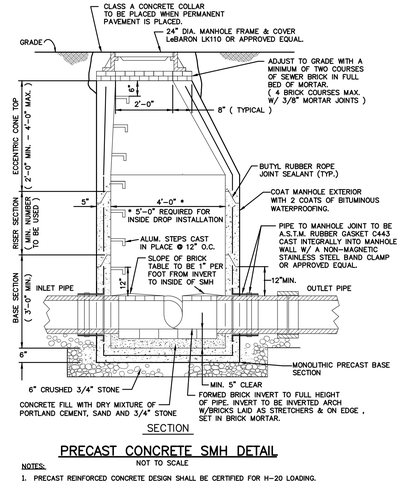
TYPICAL HYDRANT & VALVE DETAIL
NOT TO SCALE

NOTE: HYDRANT AND GATE VALVE TO BE RODDED TO ANCHOR TEE.



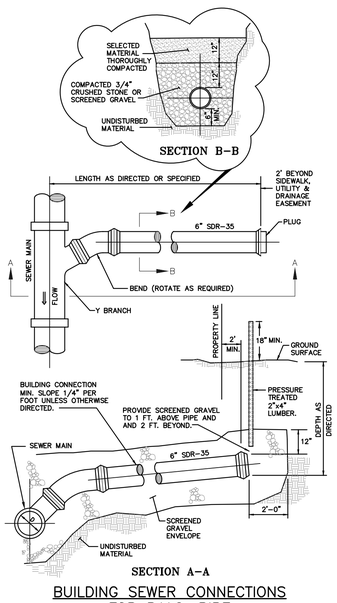
SEWER, WATER & DRAIN CROSSING DETAIL
NOT TO SCALE

NOTE: 1. ALL JOINTS TO HAVE " KENT SEAL " OR EQUAL.
2. PRECAST REINFORCED CONCRETE MANHOLE BARRELS TO BE PER ASTM A185 W/ 4000 PSI TYPE II CEMENT. DESIGN LOADING PER AASHTO H20-44.

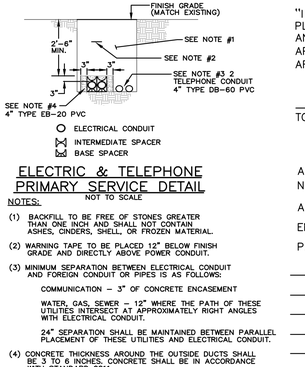


PRECAST CONCRETE SMH DETAIL
NOT TO SCALE

NOTES:
1. PRECAST REINFORCED CONCRETE DESIGN SHALL BE CERTIFIED FOR H-20 LOADING.
2. USE FLAT TOP H20 LOADING SLAB WHEN HEIGHT OF CONE SECTION IS LESS THAN 2'-0".
3. FILL OUTSIDE FACE OF ALL MANHOLE JOINTS WITH NON-SHRINK MORTAR.
4. ALL JOINTS TO HAVE "KENT SEAL" OR EQUAL.



BUILDING SEWER CONNECTIONS FOR P.V.C. PIPE
NOT TO SCALE



ELECTRIC & TELEPHONE PRIMARY SERVICE DETAIL
NOT TO SCALE

NOTES:
(1) BACKFILL TO BE FREE OF STONES GREATER THAN ONE INCH AND SHALL NOT CONTAIN ASHES, CINDERS, SHELL, OR FROZEN MATERIAL.
(2) WARNING TAPE TO BE PLACED 12" BELOW FINISH GRADE AND DIRECTLY ABOVE POWER CONDUIT.
(3) MINIMUM SEPARATION BETWEEN ELECTRICAL CONDUIT AND FOREIGN CONDUIT OR PIPES IS AS FOLLOWS:
COMMUNICATION - 3" OF CONCRETE ENCASEMENT
WATER, GAS, SEWER - 12" WHERE THE PATH OF THESE UTILITIES INTERSECT AT APPROXIMATELY RIGHT ANGLES WITH ELECTRICAL CONDUIT.
24" SEPARATION SHALL BE MAINTAINED BETWEEN PARALLEL PLACEMENT OF THESE UTILITIES AND ELECTRICAL CONDUIT.
(4) CONCRETE THICKNESS AROUND THE OUTSIDE DUCTS SHALL BE 3 TO 6 INCHES. CONCRETE SHALL BE IN ACCORDANCE WITH STANDARD 0211.

"I HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE NANTUCKET PLANNING BOARD WAS RECEIVED AND RECORDED _____ AT THIS OFFICE, AND NO APPEAL WAS RECEIVED DURING THE TWENTY (20) DAYS NEXT AFTER SUCH RECEIPT OF RECORDING OF SAID NOTICE."

TOWN CLERK, NANTUCKET, MA _____ DATE

APPROVED UNDER THE SUBDIVISION CONTROL LAW REQUIRED NANTUCKET PLANNING BOARD

APPROVED (DATE): _____

ENDORSED (DATE): _____

P.B. FILE NO.: _____

ISLAND SURVEYORS, LLC.
PROFESSIONAL LAND SURVEYORS
90 OLD SOUTH ROAD
NANTUCKET, MA. 02554
508-228-2720

SITE DESIGN ENGINEERING, LLC.
11 CUSHMAN STREET
MIDDLEBORO, MA 02346
T: 508-967-0673 F: 508-967-0674
WWW.SITEDESIGNENG.COM

NO.	DESCRIPTION	DATE	APPROVED

PLAN REVISIONS

DATE: JUNE 30, 2016

DRAWN BY:	DESIGN BY:	CHECK BY:
RT/DCM	RT/DCM	DCM

PROJECT NO. 16010

ISSUED FOR: APPROVAL

DEFINITIVE SUBDIVISION
WATERHOUSE WAY
20 SPARKS AVENUE
ASSESSOR'S MAP 55, PARCELS 307
NANTUCKET, MA
PREPARED FOR STEPHEN M. WAREHOUSE

DRAWING TITLE:
SITE LAYOUT & UTILITY PLAN & PROFILE

SCALE: 1" = 20'

SHEET NO.
3 OF 5

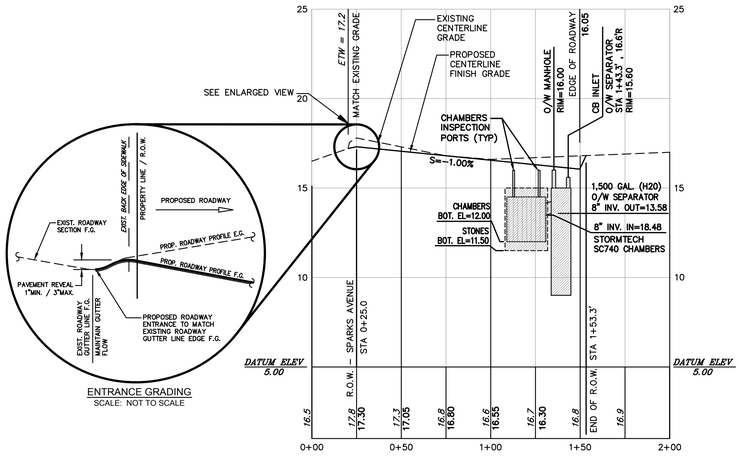
LEGEND

EXISTING

- AIR CONDITIONING UNIT (AC)
- BUSH/SHRUB
- CONCRETE BOUND/DRILL HOLE FOUND (CB/DH)
- FENCE (POST & RAIL)
- FENCE (STOCKADE)
- LANDSCAPED AREA
- PROPERTY LINE
- SPOT ELEVATION (98.4)
- TOPOGRAPHIC CONTOUR (99)
- TREE LINE

PROPOSED

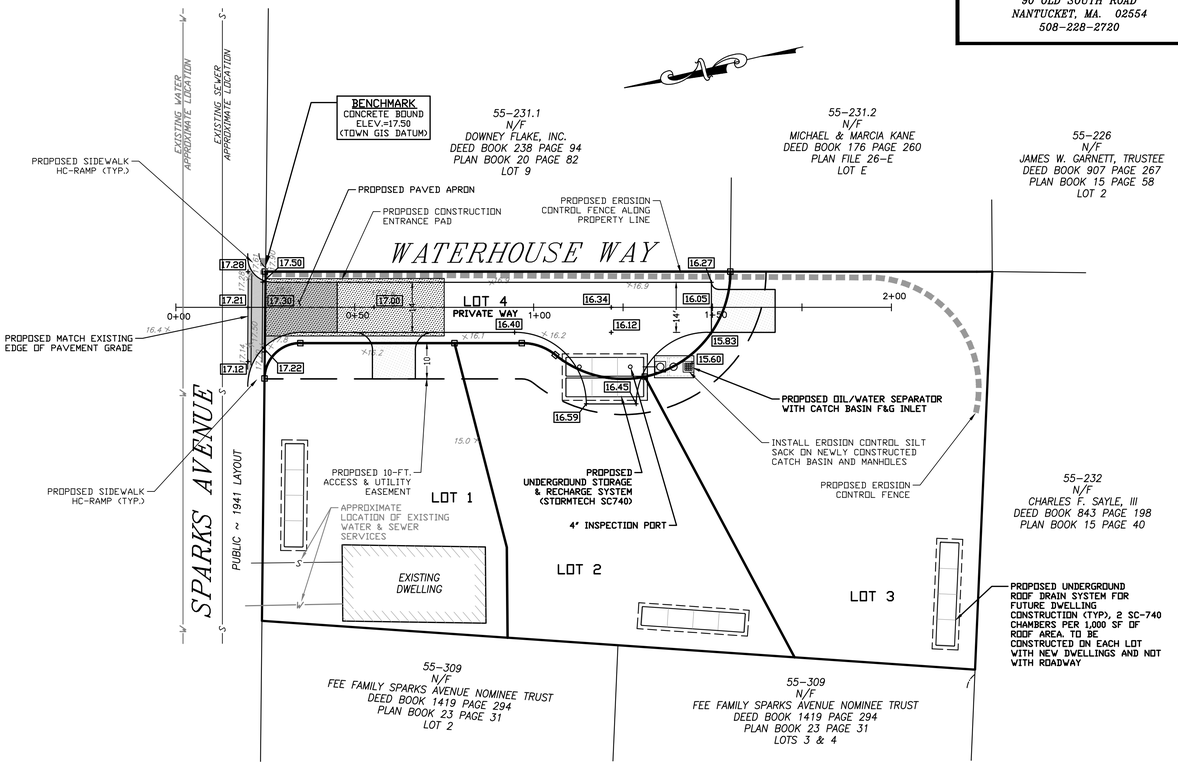
- PROPERTY LINE
- SPOT ELEVATION (97.7+)
- TOPOGRAPHIC CONTOUR (98)



ENTRANCE GRADING
SCALE: NOT TO SCALE

GRADING & DRAINAGE PROFILE

SCALE: HOR. 1" = 40'
VER. 1" = 4'

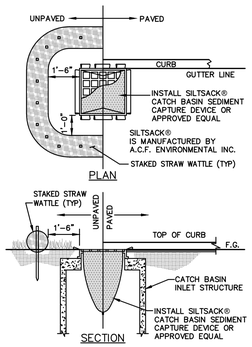


SITE PLAN

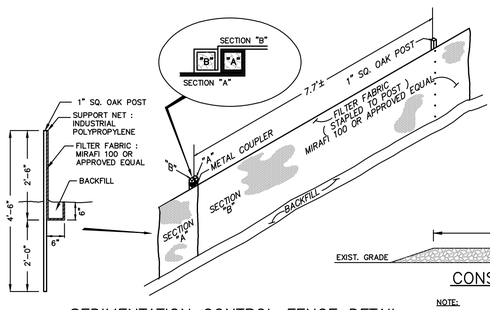
20 0 10 20 40
SCALE: 1 INCH = 20 FEET

NOTE

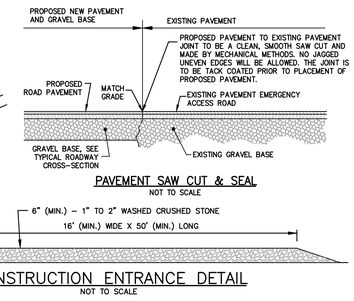
ALL DWELLINGS ARE TO UTILIZE ROOF DRAIN COLLECTION SYSTEMS TO CAPTURE ROOF TOP RUNOFF. THIS RUNOFF IS TO BE DIRECTED TO SUBSURFACE STORAGE AND INFILTRATION SYSTEMS ON THE RESPECTIVE LOT.



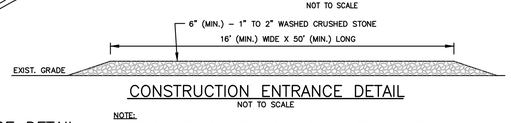
INLET SEDIMENTATION CONTROL DETAIL
NOT TO SCALE



SEDIMENTATION CONTROL FENCE DETAIL
NOT TO SCALE



PAVEMENT SAW CUT & SEAL
NOT TO SCALE



CONSTRUCTION ENTRANCE DETAIL
NOT TO SCALE

NOTE:
CONSTRUCTION ENTRANCE IS A TEMPORARY STONE - STABILIZED PAD LOCATED AT POINTS OF VEHICULAR INGRESS AND EGRESS ON THE CONSTRUCTION SITE TO AND FROM A PAVED PUBLIC ROAD OR OTHER PAVED AREAS.

STORMWATER FACILITY OPERATION AND MAINTENANCE

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER INSPECTION AND MAINTENANCE OF ALL STORMWATER FACILITIES UNTIL SUCH TIME AS THE ROADWAYS AND ASSOCIATED UTILITIES ARE ACCEPTED BY THE OWNER.
2. ALL STORMWATER FACILITIES SHOULD BE INSPECTED AFTER EVERY MAJOR RAINFALL EVENT FOR THE FIRST 3 MONTHS AFTER CONSTRUCTION TO ENSURE PROPER STABILIZATION AND CONSTRUCTION.
3. THE CONTRACTOR SHALL INSPECT AND CLEAN ALL FACILITIES OF SEDIMENT AND DEBRIS PRIOR TO THE OWNER'S ACCEPTANCE.
4. ACCUMULATED SILT AND SEDIMENT SHOULD BE REMOVED FROM ALL FACILITIES AT LEAST ONCE A YEAR OR MORE FREQUENTLY IF ACCUMULATED DEPTH OF SEDIMENT EXCEEDS THREE INCHES.
5. THE SIDE SLOPES AND BOTTOMS OF ALL DRAINAGE SWALES SHOULD BE MOWED TO A MINIMUM HEIGHT OF FOUR INCHES AT LEAST TWICE A YEAR. ALL GRASS CLIPPINGS AND ORGANIC MATTER SHOULD BE REMOVED FROM ALL DRAINAGE WAYS AND WETLAND BUFFER ZONES.
6. ALL REMOVED SEDIMENTS ARE TO BE PROPERLY DISPOSED AT A LOCATION TO BE APPROVED BY THE BOARD OF HEALTH. TRANSPORTATION AND DISPOSAL OF SEDIMENTS SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.
7. ANY DEFICIENCIES NOTED DURING MAINTENANCE SHALL BE REPORTED TO THE OWNER AND CORRECTED IMMEDIATELY.

SOIL EROSION AND SEDIMENTATION CONTROL NOTES

1. PRIOR TO INITIATING CONSTRUCTION, ALL SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS, AS DIRECTED BY THE ENGINEER AND/OR AS NECESSITATED BY FIELD CONDITIONS. THE CONTRACTOR SHALL MAINTAIN THESE MEASURES UNTIL ALL WORK IS COMPLETED AND ALL AREAS HAVE BEEN STABILIZED.

   INSTALLATION SEQUENCE
   A. INSTALL SILT FENCE AND HAYBALES AS SHOWN ON PLAN.
   B. CLEAR AND GRUB SITE.
   C. CONSTRUCT SITE INFRASTRUCTURE AS SHOWN ON PLANS.
   D. THE FOLLOWING ACTIVITIES SHALL TAKE PLACE IMMEDIATELY FOLLOWING CONSTRUCTION OF EMBANKMENTS AND FILL SLOPES: PLACEMENT OF LOAM AND GRASS SEED, INSTALLATION OF GEOWEB SLOPE STABILIZATION.
   E. THE CONTRACTOR SHALL INSPECT ALL FILL SLOPES AND EMBANKMENTS ON A WEEKLY BASIS AND FOLLOWING ALL RAINFALL EVENTS UNTIL A MINIMUM 75% GRASS COVER IS ESTABLISHED SUFFICIENT TO PREVENT EROSION FROM OCCURRING.
2. ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR OR AS DIRECTED BY THE ENGINEER.
3. AFTER THE INSTALLATION OF DRAINAGE STRUCTURES, HAYBALES OR OTHER APPROVED MATERIALS SHALL BE PLACED TO PROTECT THE INTEGRITY OF THE STRUCTURES.
4. DISTURBED AREAS SHALL BE STABILIZED WITH THE APPLICATION OF A MINIMUM OF FOUR INCHES (4) OF LOAM AND SHALL BE SEEDED WITH AN APPROVED GRASS MIX OR SHALL BE RIPRAPPED AS SOON AS POSSIBLE AFTER THE FINISHED GRADE HAS BEEN MET. IF FINAL GRADING DOES NOT OCCUR DURING THE GROWING SEASON, THESE AREAS SHALL BE MULCHED WITH HAY AND SECURED BY JUTE NETTING WITH STAPLES. SLOPES EXCEEDING 2:1 SHALL BE LOAMED AND STABILIZED WITH PEGGED SOD OR APPROVED EROSION CONTROL BLANKETS UNLESS OTHERWISE NOTED.
5. THE MOUTHS OF ALL CATCH BASINS SHALL BE FITTED WITH FILTER FABRIC DURING THE ENTIRE CONSTRUCTION PROCESS TO RETARD SILTATION.
6. WHERE APPLICABLE, PROPER DUST CONTROL MEASURES SHALL APPLY TO REDUCE THE SURFACE AND AIR TRANSPORT OF DUST GENERATED DURING CONSTRUCTION. THE FOLLOWING METHODS SHALL BE USED:
   - WET SUPPRESSION WITHOUT WETTING AGENT SHALL BE APPLIED DURING LOAD IN / LOAD OUT AND EARTH MOVING CONSTRUCTION ACTIVITIES, SPECIALLY ON STOCKPILES.
   - INACTIVE STOCKPILES SHALL BE STABILIZED THROUGH APPLICATION OF SOIL STABILIZERS OR SEEDING.
   - WIND SCREENS OR BARRIERS AND PLASTIC TARP COVERS SHALL BE SECURED TO PREVENT WIND DISLODGE AND DAMAGE. ANY DAMAGES SHALL BE REPAIRED OR REPLACED IMMEDIATELY.
7. CONTRACTOR SHALL CONSTRUCT A TEMPORARY CRUSHED STONE CONSTRUCTION ENTRANCE APPROXIMATELY FOR USE DURING CONSTRUCTION ACTIVITIES AS NECESSARY TO REMOVE SEDIMENT FROM VEHICLES. THE CONSTRUCTION ENTRANCE IS TO BE LOCATED AT THE ENTRANCE TO THE SITE FROM CLIFF ROAD.
8. CONTRACTOR SHALL COMPLETE STREET SWEEPING OF THE ADJACENT SECTION OF CLIFF ROAD ON AN APPROXIMATELY WEEKLY BASIS OR AS NEEDED.

"I HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE NANTUCKET PLANNING BOARD WAS RECEIVED AND RECORDED _____ AT THIS OFFICE, AND NO APPEAL WAS RECEIVED DURING THE TWENTY (20) DAYS NEXT AFTER SUCH RECEIPT OF RECORDING OF SAID NOTICE."

_____ _____
TOWN CLERK, NANTUCKET, MA DATE

APPROVED UNDER THE SUBDIVISION CONTROL LAW REQUIRED
NANTUCKET PLANNING BOARD

APPROVED (DATE): _____
ENDORSED (DATE): _____
P.B. FILE NO.: _____

ISLAND SURVEYORS, LLC.
PROFESSIONAL LAND SURVEYORS
90 OLD SOUTH ROAD
NANTUCKET, MA. 02554
508-228-2720

SITE DESIGN ENGINEERING, LLC.
11 CUSHMAN STREET
MIDDLEBORO, MA 02346
T: 508-967-0673 F: 508-967-0674
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NO.	DESCRIPTION	DATE	APPROVED

PLAN REVISIONS

DATE: JUNE 30, 2016

DRAWN BY:	DESIGN BY:	CHECK BY:
RT/DCM	RT/DCM	DCM

PROJECT NO. 16010

ISSUED FOR: APPROVAL

DEFINITIVE SUBDIVISION
WATERHOUSE WAY
20 SPARKS AVENUE
ASSESSOR'S MAP 55, PARCELS 307
NANTUCKET, MA
PREPARED FOR STEPHEN M. WAREHOUSE

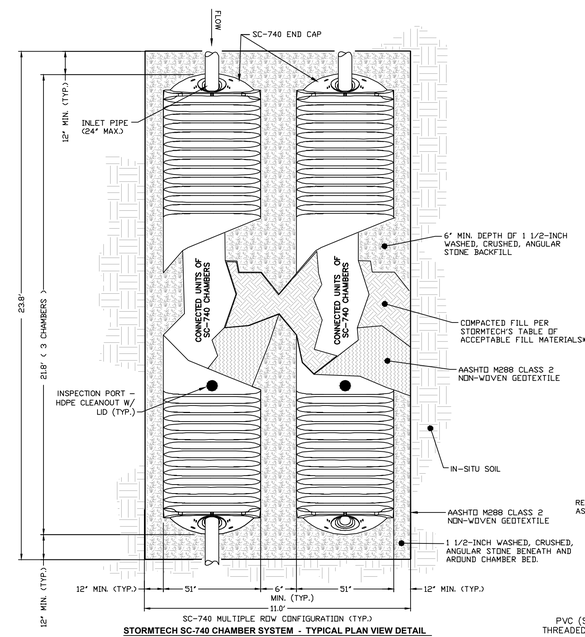
DRAWING TITLE:
DRAINAGE , GRADING & EROSION CONTROL PLAN & PROFILE

SCALE: 1" = 20'

SHEET NO.
4 OF 5

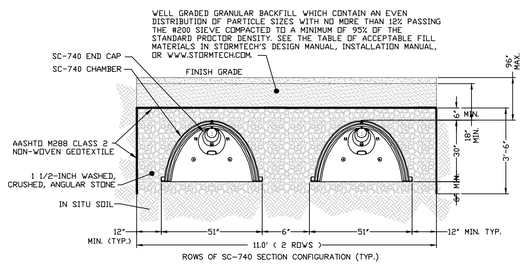
CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL MAKE APPLICATIONS FOR AND PAY ALL FEES FOR PERMITS REQUIRED TO CONSTRUCT THIS PROJECT.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SITE PREPARATION NECESSARY FOR THE COMPLETE INSTALLATION OF THE PROJECT FACILITIES DURING CONSTRUCTION.
3. THE LOCATION OF UNDERGROUND UTILITIES AND STRUCTURES ARE APPROXIMATE ONLY. THE ENGINEER DOES NOT GUARANTEE THEIR ACCURACY OR THAT ALL UTILITIES AND SUBSURFACE STRUCTURES ARE SHOWN. THE CONTRACTOR SHALL VERIFY SIZE, LOCATION AND INVERT ELEVATIONS OF THE UTILITIES AND STRUCTURES, AS REQUIRED PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES WITH RECORD DATA SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY. THE CONTRACTOR IS CAUTIONED TO CONTACT DIG SAFE (1-888-344-7233) 72 HOURS BEFORE DIGGING.
4. ALL MATERIALS AND CONSTRUCTION PRACTICES SHALL BE IN CONFORMANCE WITH THE MOST CURRENT EDITIONS OF THE TOWN OF NANTUCKET STANDARD SPECIFICATIONS, PLANNING BOARD RULES AND REGULATIONS, THE LATEST EDITION OF THE MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS (MDPW) CONSTRUCTION STANDARDS, AND THE MDPW STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, UNLESS OTHERWISE SPECIFIED BY LOCAL AUTHORITY OR THE ENGINEER. ALL MATERIALS AND WORK NOT MEETING THESE SPECIFICATIONS SHALL BE IMMEDIATELY REMOVED FROM THE SITE AT THE FULL EXPENSE OF THE CONTRACTOR.
5. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE HIS WORK WITH THE APPROPRIATE HIGHWAY & UTILITY DEPARTMENTS.
6. CONTRACTOR SHALL MAINTAIN ALL EXISTING AND NEWLY INSTALLED UTILITIES IN GOOD WORKING ORDER AND SHALL PROTECT THEM FROM DAMAGE AT ALL TIMES UNTIL THE WORK IS COMPLETED AND ACCEPTED BY THE OWNER.
7. THE WATER SUPPLY SYSTEM SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SPECIFICATIONS OF THE TOWN'S WATER DEPARTMENT. CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH APPLICABLE PERMITS (TO BE OBTAINED BY THE CONTRACTOR). UNLESS DIRECTED OTHERWISE, ALL WATER PIPES SHALL BE INSTALLED 5' - 0" BELOW GRADE. APPROPRIATE THRUST BLOCKING SHALL BE INSTALLED.
8. THE SANITARY SEWER SYSTEM SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SPECIFICATIONS OF THE TOWN'S SEWER DEPARTMENT. CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH APPLICABLE PERMITS (TO BE OBTAINED BY THE CONTRACTOR).
9. ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION UTILITY CONNECTIONS AND SERVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE RESPECTIVE UTILITY.
10. THE CONTRACTOR SHALL UTILIZE ALL MEASURES AND MATERIALS NECESSARY TO ENSURE THE SAFETY OF ALL PERSONS AND PROPERTIES AT THE SITE DURING CONSTRUCTION. ALL EXCAVATIONS SHALL CONFORM TO CURRENT OSHA STANDARDS.
11. DEWATERING OPERATIONS SHALL BE PROVIDED, IF REQUIRED; ALL DISCHARGE SHALL PASS THROUGH SEDIMENTATION CONTROL DEVICES TO PREVENT IMPACTS UPON WATER BODIES, BORDERING VEGETATED WETLANDS, DRAINAGE SYSTEMS AND ABUTTING PROPERTIES.
12. UNLESS OTHERWISE NOTED, ALL DISTURBED AREAS SHALL BE DRESSED WITH A MINIMUM OF FOUR INCHES (4) OF LOAM AND SHALL BE SEEDED WITH AN APPROVED GRASS MIX. SLOPES EXCEEDING 2:1 SHALL BE LOAMED AND STABILIZED WITH PEGGED SOD OR APPROVED EROSION CONTROL BLANKETS UNLESS OTHERWISE NOTED.
13. IT IS THE RESPONSIBILITY OF THE CONTRACTOR(S) TO RECORD IN NOTE FORM (PREFERABLY IN A SURVEY FIELD NOTEBOOK) THE LOCATION OF ALL UTILITIES INSTALLED WHEN SURVEYORS ARE NOT AT JOB SITE. THESE NOTES WILL BE UTILIZED FOR THE PREPARATION OF REQUIRED AS-BUILT PLANS.
14. THE CONTRACTOR SHALL NOTIFY THE PLANNING BOARD FOR REQUIRED INSPECTIONS AS PER SECTION OF THE PLANNING BOARD RULES AND REGULATIONS, LATEST EDITION.
15. THE CONTRACTOR(S) SHALL NOTIFY THE DESIGN ENGINEER AND OR SURVEYOR FOR PROPER LOCATION OF PROPOSED UTILITIES AND IMPROVEMENTS PRIOR TO CONSTRUCTION.
16. THE CONTRACTOR MUST PRESERVE ALL GRADE STAKES SET BY SURVEYORS. GRADE STAKES WILL BE USED BY SURVEYORS AND TOWN OF NANTUCKET ROADWAY ENGINEERS FOR FINAL GRADE INSPECTIONS.
17. THE CONTRACTOR SHALL CONTACT THE LOCAL ELECTRIC COMPANY FOR CONSTRUCTION SPECIFICATIONS, STANDARDS AND RESPONSIBILITIES.
18. ALL PROPOSED UTILITY CONNECTIONS (WATER, SEWER, ELECTRIC, ETC.) TO SERVICE ALL LOTS SHALL BE EXTENDED A MINIMUM OF 5' BEYOND ALL OTHER INFRASTRUCTURE TO AVOID UNNECESSARY DAMAGE TO EXISTING IMPROVEMENTS UPON CONSTRUCTION OF INDIVIDUAL LOTS.
19. ALL DRAINAGE PIPES ARE TO BE 8-INCH AND 12-INCH DIAMETER WITH SMOOTH INTERIOR WALL. MODEL N-12 AS MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS, INC. (ADS) OR APPROVED EQUAL. REFER TO PLAN AND PROFILE DRAWINGS.



SC-740 MULTIPLE ROW CONFIGURATION (TYP.)

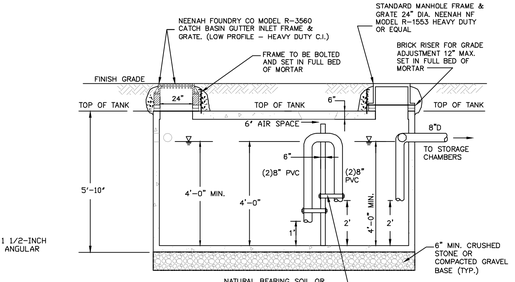
STORMTECH SC-740 CHAMBER SYSTEM - TYPICAL PLAN VIEW DETAIL



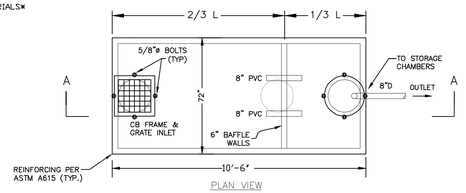
STORMTECH SC-740 CHAMBER SYSTEM
TYPICAL CROSS SECTION DETAIL

STORMTECH STORAGE & INFILTRATION SYSTEM

NOT TO SCALE



SECTION A-A



PLAN VIEW

OIL/WATER & SEDIMENT SEPARATOR DETAIL WITH CATCH BASIN FRAME & GRATE INLET

NOT TO SCALE

NOTES:
1. USE 1,500 GAL. H-20 TWO COMPARTMENT TANK AS MANUFACTURED BY SHEA CONCRETE PRODUCTS OR APPROVED EQUAL.

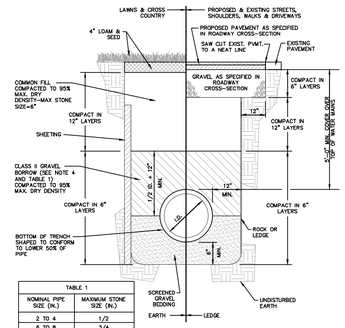
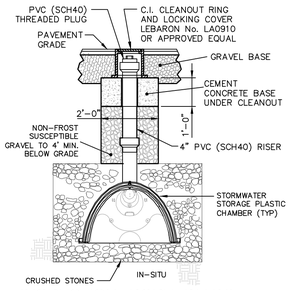


TABLE 1	
NOMINAL PIPE SIZE (IN.)	MAXIMUM STONE SIZE (IN.)
2 TO 4	1/2
6 TO 8	3/4
10 TO 16	1
18 AND LARGER	1-1/2

TYPICAL PLASTIC PIPE TRENCH DETAIL

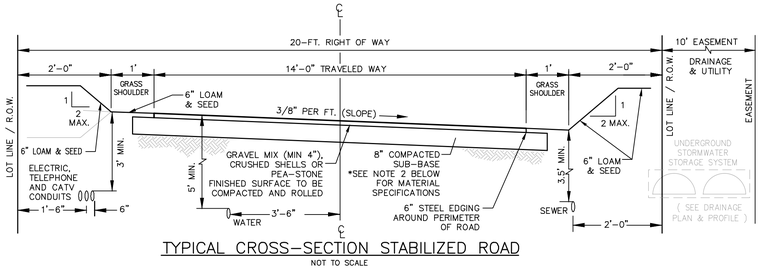
NOT TO SCALE

NOTES:
1. SHEETING IF USED, IN ALL CASES SHALL BE LEFT INPLACE BELOW A LINE 1'-0" ABOVE THE TOP OF THE PIPE, UNLESS OTHERWISE INDICATED OR DIRECTED.
2. "COVER" AT ANY POINT SHALL BE DEFINED AS THE VERTICAL DISTANCE FROM THE UNDERMOST POINT OF THE PIPE TO A LINE WHICH CONNECTS THE SURFACE OF UNDISTURBED GROUND AT EITHER SIDE OF THE TRENCH AND IS AT RIGHT ANGLES TO THE DIRECTION OF THE PIPE.
3. SCREENED GRAVEL SHALL BE HARD, DURABLE, ROUNDED PARTICLES, FREE FROM SAND, LOAM, CLAY, EXCESS FINES AND DELETERIOUS MATERIAL, UNIFORMLY GRADED SUCH THAT NOT LESS THAN 95% WILL PASS A 1/2 INCH SIEVE AND NOT MORE THAN 5% PASS A NO. 4 SIEVE.
4. CLASS II GRAVEL BORROW SHALL BE A CLEAN, COARSE GRAINED GRAVEL-SAND MIXTURE. THE MIXTURE SHOULD CONTAIN LESS THEN 5% PASSING THE #200 SIEVE AS WELL AS COMPLYING TO THE REQUIREMENTS OF TABLE 1.
5. WHERE FUTURE EXTENSION OF A PLUGGED PIPE OR A PLUGGED BRANCH WILL ENTAIL ROCK EXCAVATION, TRENCH EXCAVATION IN ROCK SHALL BE EXTENDED FOR A DISTANCE OF 5'-0" BEYOND THE PLUG.



INSPECTION PORT DETAIL

NOT TO SCALE



TYPICAL CROSS-SECTION STABILIZED ROAD

NOT TO SCALE

TYPICAL ROADWAY CONSTRUCTION MATERIAL NOTES

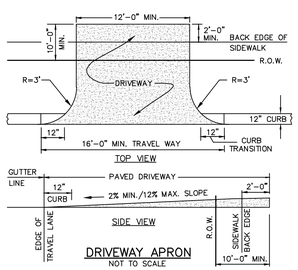
NOTES:

1. GRAVEL MIX: SHALL CONSIST OF INERT MATERIAL THAT IS HARD, DURABLE STONE AND COARSE SAND, FREE FROM LOAM AND CLAY, SURFACE COATINGS AND DELETERIOUS MATERIALS.. MATERIAL SHALL CONFORM TO THE FOLLOWING GRADING REQUIREMENTS:

SIEVE DESIGNATION	PERCENT PASSING
1/2 IN	50-85
NO. 4	40-75
NO. 50	8-28
NO. 200	0-10

2. COMPACTED SUB-BASE: DENSE GRADED CRUSHED STONE, M.D.P.W. SPEC. M2.01.7 COARSE AGGREGATE SHALL CONSIST OF HARD, DURABLE PARTICLES OF FRAGMENTS OF STONE WITH A MAXIMUM STONE SIZE OF 2 INCHES. MATERIALS THAT BREAK UP WHEN ALTERNATIVELY FROZEN AND THAWED OR WETTED AND DRIED SHALL NOT BE USED. COARSE AGGREGATE SHALL HAVE A PERCENTAGE OF WEAR, BY THE LOS ANGELES TEST, OF NOT MORE THAN 45. FINE AGGREGATE SHALL CONSIST OF NATURAL OR CRUSHED SAND. GRADATION REQUIREMENTS FOR GRAVEL SHALL BE DETERMINED BY AASHTO-T11 AND T27. THE COMPOSITE MATERIAL SHALL BE FREE FROM CLAY, LOAM OR OTHER PLASTIC MATERIAL, AND SHALL CONFORM TO THE FOLLOWING GRADING REQUIREMENTS:

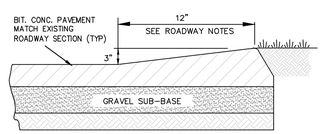
SIEVE DESIGNATION	PERCENT PASSING
2 in.	100
1-1/2 in.	70-100
3/4 in.	50-85
NO. 4	30-55
NO. 50	8-24
NO. 200	3-10



DRIVEWAY APRON

NOT TO SCALE

NOTES: 1. DRIVEWAY APRONS TO BE CONSTRUCTED WITH SAME MATERIALS AS THE ROADWAY.



1. SEE TYP. CROSS SECTION NOTES FOR MATERIAL SPECIFICATION REFERENCES

BITUMINOUS CONCRETE CAPE COD BERM DETAIL

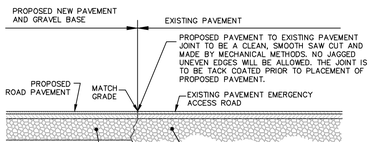
NOT TO SCALE

TYPICAL BITUMINOUS ROADWAY - SIDEWALK & CURB CONSTRUCTION MATERIAL NOTES

1. BITUMINOUS CONCRETE SHALL CONFORM TO MASSACHUSETTS HIGHWAY DEPARTMENT SPECIFICATION M3.11.00.
2. 6" GRAVEL BORROW TYPE C SHALL CONFORM TO MASSACHUSETTS HIGHWAY DEPARTMENT SPECIFICATION M1.03.00 AS LISTED BELOW:

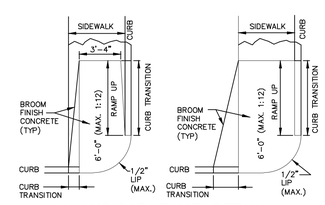
   GRAVEL BORROW SHALL CONSIST OF INERT MATERIAL THAT IS HARD, DURABLE STONE AND COARSE SAND, FREE FROM LOAM AND CLAY, SURFACE COATINGS AND DELETERIOUS MATERIALS. GRADATION REQUIREMENTS FOR GRAVEL SHALL BE DETERMINED BY AASHTO-T11 AND T27 AND SHALL CONFORM TO THE FOLLOWING:

SIEVE DESIGNATION	PERCENT PASSING	
1/2 IN	50-85	MAXIMUM SIZE OF STONE IN GRAVEL SHALL BE 2 INCHES LARGEST DIMENSION
NO. 4	40-75	
NO. 50	8-28	
NO. 200	0-10	



PAVEMENT SAW CUT & SEAL

NOT TO SCALE



HANDICAP RAMP DETAIL

NOT TO SCALE

TREE LISTED IN THE NANTUCKET PLANNING BOARD REGULATIONS

Recommended tree species for new plantings
d = deciduous
e = evergreen

Open Areas
- d Plane tree (Platanus occidentalis)
- d Gingko (Gingko biloba)
- d Sycamore maple (Acer pseudoplatanus)
- d Thornless honey locust (Gleditsia triacanthus)
- d Japanese Pagoda tree (Sophora japonica)
- d Seedless Ash (Fraxinus pennsylvatica lanceolata)
- e Red cedar (Juniperus viginiana)
- e Japanese black pine (Pinus thunbergii)
- e Pitch pine (Pinus rigida)
- e Spruce varieties (Picea sp.)
- e White fir (Abies consolor)
- e Arbor vitae (Thuja orientalis)
- e Holly (Ilex opaca)
- e Cryptomeria (Cryptomeria japonica)
- e Sawara false cypress (Chamecyparis)

Sheltered Areas
Any of the above species, and, in addition:
- d Black tupelo (Nyssa sylvatica)
- d Elms (Ulmus carpinifolia, U chinensis, U americana)
- d Sweet Gum (Liquidambar styraciflua)
- d Flowering ash (Fraxinus ornus)
- d Linden (Tilia Americana)
- d Gray birch (Betula populifolia)
- d Washington thorn (Cratagaeus phaenopyrum)
- e Holly (Ilex opaca)
- d Crabapple (Malus sp.)
- d White poplar (Populus alba)
- d Niobe weeping willow (Salix niobe hort.)
- d Oaks (Quercus rubra, Q. alba, Q. stellata)
- d Black locust (Robinia pseudoacacia)
- d Honeylocust (Gleditsia triacanthos)

NOTES:
1. REMOVE ALL CONTAINERS, BASKETS, BURLAP, ETC., FROM ROOT BALL.
2. STAKING AND FLAGGING AS REQUIRED
3. PLANT SO THAT TOP OF ROOT BALL IS EVEN WITH THE FINISHED GRADE.
4. LARGE-GROWING 4" TRUNK DIAMETER, CALIPER 1' ABOVE GROUND
5. TREE SPECIES ARE TO COMPLY WITH THOSE LISTED IN THE NANTUCKET PLANNING BOARD REGULATIONS.

TREE PLANTING - GUYING DETAIL

NOT TO SCALE

"I HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE NANTUCKET PLANNING BOARD WAS RECEIVED AND RECORDED _____ AT THIS OFFICE, AND NO APPEAL WAS RECEIVED DURING THE TWENTY (20) DAYS NEXT AFTER SUCH RECEIPT OF RECORDING OF SAID NOTICE."

_____ _____
TOWN CLERK, NANTUCKET, MA DATE

APPROVED UNDER THE SUBDIVISION CONTROL LAW REQUIRED NANTUCKET PLANNING BOARD

APPROVED (DATE): _____
ENDORSED (DATE): _____
P.B. FILE NO.: _____

ISLAND SURVEYORS, LLC.
PROFESSIONAL LAND SURVEYORS
90 OLD SOUTH ROAD
NANTUCKET, MA. 02554
508-228-2720

SITE DESIGN ENGINEERING, LLC.
11 CUSHMAN STREET
MIDDLEBORO, MA 02346
T: 508-967-0673 F: 508-967-0674
WWW.SITEDESIGNENG.COM

NO.	DATE	DESCRIPTION	APPROVED

PLAN REVISIONS

DATE: JUNE 30, 2016

DRAWN BY:	DESIGN BY:	CHECK BY:
RT/DCM	RT/DCM	DCM

PROJECT NO. 16010

ISSUED FOR:
APPROVAL

DEFINITIVE SUBDIVISION
WATERHOUSE WAY
20 SPARKS AVENUE
ASSESSOR'S MAP 55, PARCELS 307
NANTUCKET, MA
PREPARED FOR STEPHEN M. WAREHOUSE

DRAWING TITLE:
CONSTRUCTION DETAILS

SCALE: NOT TO SCALE

SHEET NO.
5 OF 5

PB

Nantucket Planning Board

Extension of Action Deadline

NANTUCKET TOWN CLERK
2016 JUL 25 PM 2:00

Date: 07/19/2016

To: Nantucket Planning Board

Re: File # 7946

Applicant(s)/Owner(s): Stephen M. Waterhouse

Special Permit Name: Stephen M. Waterhouse

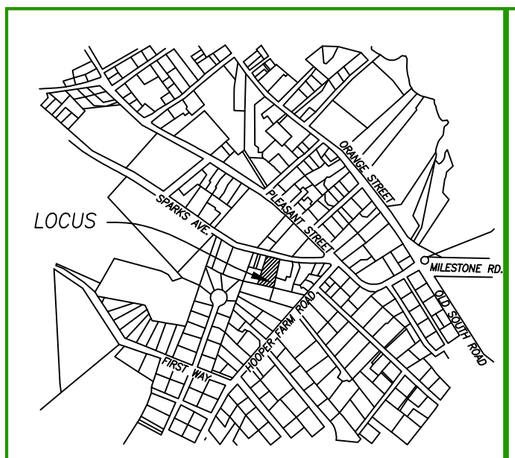
Property Address: 20 Sparks Avenue

Please consider this a voluntary extension of the Planning Board's action deadline to take final action on the above-referenced application from 07-27-16, to 09-30-16.

Edward Grubb AGENT

Owner/Applicant or Applicant's Representative

Town Clerk's Stamp



LOCUS MAP SCALE: 1"=1000'±

CURRENT ZONING CLASSIFICATION:
Commercial Mid Island (CMI)

MINIMUM LOT SIZE: 5000 S.F.
MINIMUM FRONTAGE: 50 FT.
FRONT YARD SETBACK: none
REAR/SIDE SETBACK: none
GROUND COVER % : 50%

SPARKS AVENUE
PUBLIC ~ 1941 LAYOUT

WAY

55-309
N/F
FEE FAMILY SPARKS AVENUE NOMINEE TRUST
DEED BOOK 1419 PAGE 294
PLAN BOOK 23 PAGE 31
LOT 2

DETAIL NOT TO SCALE .54 .27 S.S.M. FND.

S.S.M. FND.

68.80 GRAVEL DRIVE TO BE ALTERED 67.74

GUTTER LINE 17.14
FRONT SIDEWALK 17.50
BACK SIDEWALK 17.70

S76° 29' 26"E 97.64

PROPOSED NEW CURB CUT FOR COMMON DRIVEWAY

16.4 x 16.2 x 17.8 x 29.90 18.0 x

GUTTER LINE 17.28
FRONT SIDEWALK 17.61
BACK SIDEWALK 17.90

R=10.00
L=15.60

127.27
S76° 29' 26"E

1.5±

EXISTING DWELLING

EXISTING GRAVEL DRIVE

LOT 1
5,005± S.F.

199.77

43.09

16.2 x

S12° 54' 52"W

DETAIL NOT TO SCALE .48 .42 dhCB FND.

BENCHMARK: CONCRETE BOUND
ELEV.= 17.50 TOWN GIS DATUM

3.6±

6.0±

EXISTING GRAVEL PIT 5'x5'x5'

x 15.0

25.26
N77° 35' 19"W

S88° 32' 26"W 58.92

30'

16.1 x

20' WIDE LAYOUT
14' WIDE GRAVE DRIVEWAY

129.88

x 16.9

55-231.1
N/F
DOWNEY FLAKE, INC.
DEED BOOK 238 PAGE 94
PLAN BOOK 20 PAGE 82
LOT 9

GRAVEL DRIVE TO BE ALTERED

PROPOSED DRAIN EASEMENT 10'x30'

57.59

LOT 2
5,005± S.F.

EXISTING GRAVEL DRIVE

S12° 54' 52"W 66.00

16.2 x

WATERHOUSE WAY

203.09

S12° 54' 52"W

16.9 x

N

W E

55-309
N/F
FEE FAMILY SPARKS AVENUE NOMINEE TRUST
DEED BOOK 1419 PAGE 294
PLAN BOOK 23 PAGE 31
LOTS 3 & 4

N16° 50' 09"E

N81° 15' 55"W 86.51

EXISTING SHED

EXISTING DWELLING

73.38

S12° 54' 52"W 50.00

EXISTING GRAVEL DRIVE

dhCB FND.

N74° 37' 03"W 108.00

DETAIL NOT TO SCALE .19 .06 S.S.M. FND.

S.S.M. FND.

LOT 3
7,148± S.F.

R=5.00
L=7.85

S12° 54' 52"W 15.00

73.21

N74° 37' 03"W 111.40

S12° 54' 52"W 15.00

N77° 05' 08"W 25.00

14.31

dhCB FND.

55-232
N/F
CHARLES F. SAYLE, III
DEED BOOK 843 PAGE 198
PLAN BOOK 15 PAGE 40

55-231.2
N/F
MICHAEL & MARCIA KANE
DEED BOOK 176 PAGE 260
PLAN FILE 26-E
LOT E

55-226
N/F
JAMES W. GARNETT, TRUSTEE
DEED BOOK 907 PAGE 267
PLAN BOOK 15 PAGE 58
LOT 2

BEING A SUBDIVISION OF LOT 5
SHOWN ON PLAN BOOK 23 PAGE 31

DEFINITIVE PLAN OF LAND IN NANTUCKET, MASS.

PREPARED FOR
STEPHEN M. WATERHOUSE
DEED BOOK 1169 PAGE 89

SCALE: 1"= 20' DATE: MAY 6, 2016

LEGEND

dhCB FND. ■ DENOTES DRILL HOLE IN CONCRETE BOUND FOUND

S.S.M. FND. ○ DENOTES STEEL SURVEY MARKER FOUND

16.2 x DENOTES EXISTING SPOT ELEVATION

ISLAND SURVEYORS, LLC
Professional Land Surveyors
90 OLD SOUTH ROAD
NANTUCKET, MASS. 02554
(508) 228-2720

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

PROFESSIONAL LAND SURVEYOR DATE

"I, CATHERINE STOVER, CLERK OF THE TOWN OF NANTUCKET, HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO NOTICE OF APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE."

TOWN CLERK DATE:

Nantucket Planning Board
APPROVAL UNDER THE
SUBDIVISION CONTROL LAW
REQUIRED

DATE APPROVED:

DATE ENDORSED:

PLANNING BD. FILE No.

ASSESSORS MAP 55 PARCEL 307

K-541

PLANNING BOARD

FILE # 7946

RECEIVED
MAR 14 2016
BY

Nantucket Planning Board

Form B
Application for Approval of a Definitive Subdivision Plan
(AR)

File one completed form with the Planning Board and one copy with the Town Clerk.

Date: 3/14/2016

To the Planning Board of Nantucket:

The undersigned, being the applicant as defined under Chapter 41, Section 81-L, for approval of a proposed subdivision shown on a plan entitled DEFINITIVE PLAN OF LAND designed by ISLAND SURVEYORS, INC dated 3/14/2016, and described as follows: located on 20 SPARKS AVENUE, number of lots proposed 4, total acreage of tract 21,038 S.F., hereby submits said plan as a **definitive** plan in accordance with the *Rules and Regulations Governing the Subdivision of Land* of the Nantucket Planning Board and makes application to the Board for approval of said plan.

The undersigned's title to said land is derived from DAMIEL M. D. WATERHOUSE by deed dated 2/5/2009 and recorded in the Nantucket Registry of Deeds Book 1169, Page 89, registered in the Nantucket Registry District of the Land Court, Certificate of Title # _____ and shown on Nantucket Assessor's Map # 55, Parcel 307, and said land is free of encumbrances except for the following: _____

Said plan ❍ has ✓ has not evolved from a preliminary plan submitted to the Board on _____(date) and ❍ approved ❍ disapproved on _____ (date).

The undersigned hereby applies for the approval of said **definitive** plan by the Board, in belief that the plan conforms to the Board's *Rules and Regulations*.

Name(s) and address(es) of the Applicant(s):
(to include all the names and addresses of the principals of the owner entity such as principal officers of the corporation, trustees of a trust or partners of a partnership)

STEPHEN M. WATERHOUSE 20 SPARK'S AVE.

Contact Phone #: (508) 294-4646 Fax #: (___)_____ E-mail: _____

Name of owner(s): STEPHEN M. WATERHOUSE

Address of owner(s): 20 SPARK'S AVENUE

I hereby certify that the applicant(s) listed above have been authorized by me to file a subdivision plan with the Planning Board on property that I own.

Edward Zhryl AGENT
Owner's signature
508-228-2720

Received by Town Clerk:

Date: _____

Time: _____

Received by Board of Health:

Date: _____

Time: _____

Planning Board File # 7946

Approval of the subdivision is granted conditionally upon the aforementioned documents, compliance with the Planning Board's *Rules and Regulations Governing the Subdivision of Land* (as amended through December 20, 1999), and on the following additional requirements and agreements:

1. Requested waivers from the *Rules and Regulations Governing the Subdivision of Land:*

2.06a(2)	Street Network Plan Waiver Granted – the proposed subdivision does not warrant such plan for the scale of this subdivision;
2.06a(5)	Master Plan Waiver Granted – the proposed subdivision does not warrant such plan, as the owners do not own any property adjacent to said property;
2.06a(10)	Storm Water Calculations Waiver Granted – the proposed subdivision will not create any significant changes to the exiting drainage conditions;
2.06a(11)	Site Analysis Report and Map Waiver Granted – the proposed project consists of a small three-lot subdivision, only two of which are buildable. Only one new building lot is being created and the proposed subdivision plan set contains sufficient information to address the interests of this section for this subdivision;
2.06a(12)	Traffic Study Waiver Granted – only one additional building lot is being created and therefore the traffic impact along Quidnet Road will be minimal and adequate for the scale of this subdivision;
2.06b(6)	Bounds Waiver Granted – the proposed project is of small scale and providing all the roads and ways on the plan is unnecessary for the scale of this subdivision;
2.06b(10)	Topography Waiver Granted – the site of the proposed subdivision does not contain sufficient elevation changes to depict this contour interval and therefore are no proposed changes to the site that would require detailed elevation information due to the scale of the subdivision;
2.06b(13)	Utility Plan Waiver Granted – the proposed subdivision is only for two (2) lots and therefore does not warrant a Utility Plan;
2.06b(14)	Landscape Plan Waiver Granted – existing vegetation and landscape buffers will be maintained as shown on the subdivision plans;
2.06b(16)	Location of Curbs and Gutters Waiver Granted – the proposed subdivision will provide a rural road alternative that is better suited for the scale of this subdivision;
2.06b(17)	Roadway Cross-section Waiver Granted – the proposed project is of small scale and providing a roadway cross-section is unnecessary for the sale of this subdivision;

2.06b(18)	One-Site Brush Disposal Waiver Granted – there will be little brush cutting as part of the installation of this small subdivision;
2.06b(19)	Storm Drainage Waiver Granted – the proposed subdivision will not create any significant changes to the exiting drainage conditions;
2.06b(20)	Profiles of Street and Utilities Waiver Granted – the proposed subdivision is of a small scale and providing street and utility profiles is unnecessary for the scale of this subdivision;
2.06b(21)	Erosion Control Plan Waiver Granted – the proposed subdivision is of a small scale and providing the plan is unnecessary for the scale of this subdivision;
3.02	Public Open Space Waiver Granted – the proposed subdivision is of a small scale and providing public open space is unnecessary for the scale of this subdivision;
4.03a(1)	Streets Waiver Granted – the proposed subdivision will keep the existing 10-12 foot gravel roadway due to the scale of this subdivision;
4.04(b)	Dead-End Street Waiver Granted – the proposed subdivision will not provide access to the rear lot and therefore will not require the sixty (60) foot radius;
4.05	Street Construction Waiver Granted – the proposed subdivision is of a small scale and the rural road alternative is better suited for a subdivision of this size;
4.06	Storm Drainage Waiver Granted – the proposed subdivision is of a small scale and is providing only one (1) new building lot where the changes to the existing drainage conditions will be insubstantial;
4.16	Landscaping Waiver Granted – the existing vegetation and landscape buffers will be maintained as shown on the subdivision plans;
4.18	Sidewalks Waiver Granted – the proposed subdivision is of a small scale and sidewalks are unnecessary for the scale of this project;
4.19	Bicycle Paths Waiver Granted – the proposed subdivision is of a small scale and a bike bath is unnecessary for the scale of this project;
4.20	Street Lights Waiver Granted – the proposed subdivision is of a small scale and street lights are unnecessary for the scale of this project;
4.22	Curbing & Berms Waiver Granted – the proposed subdivision will have a rural road alternative is proposed, therefore, curbing and berms are unnecessary;

4.23 Soil Surveys

Waivers Granted – the proposed subdivision is of a small scale and soil surveys are unnecessary for the scale of this project;

4.24 Driveway Aprons

Waivers Granted – the proposed subdivision will be created off an existing driveway off Quidnet Road and will only be servicing two (2) lots.

2. That recorded copies of all legal documents (Homeowners Association documents, Statement of Conditions, Grant of Right of Enforcement, Grant of Easements for Utilities, Drainage, and Covenant) shall be presented to the Planning Board prior to the release of the second lot from the Covenant and within six (6) months from the date of this decision (June 18, 2015). The Planning Board may grant extensions of this deadline without holding a public hearing;
3. That the roadway shall be constructed and maintained, as shown on the referenced definitive subdivision plans;
4. That frontage and access utilizing the interior roadway shall be limited to lots within this subdivision. This restriction is based upon the significant waivers granted for interior roadway improvements. Any future modification of this condition shall require a public hearing;
5. ~~That all lots shall be connected to the municipal sewer and water system;~~[1]
6. That all lots shall be prohibited from further subdivision. Minor lot line adjustments which do not result in the creation of any additional buildable lots shall be permitted through the Approval Not Required (ANR) process;
7. That duplexes shall be a prohibited use upon any lot within the subdivision;
8. That the applicant agreed to provide the Town of Nantucket an easement for the proposed drive QUIDNET PRESERVE DRIVE and utility easement;
9. That the applicant agreed to one (1) dwelling unit per lot for a total of two (2) dwellings for said subdivision.

SIGNATURE PAGE TO FOLLOW

[1] *This condition was included by inadvertent error. There is no municipal water or sewer in the vicinity and there are no plans to extend it.*

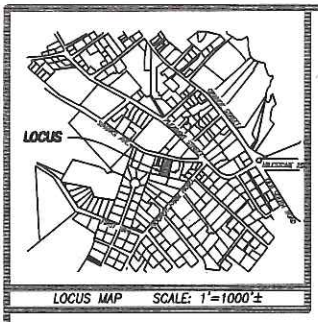
Property Information

Property ID	55 307
Location	20 SPARKS AV
Owner	WATERHOUSE STEPHEN M

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town and County of Nantucket, MA makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Parcels updated December, 2014
Properties updated January, 2015



LOCUS MAP SCALE: 1"=1000'±

CURRENT ZONING CLASSIFICATION:
Residential Commercial (R.C.)

MINIMUM LOT SIZE: 5000 S.F.
MINIMUM FRONTAGE: 40 FT.
FRONT YARD SETBACK: none
REAR/SIDE SETBACK: 5 FT.
GROUND COVER % : 50%

RECEIVED
MAR 21 2016

SPARKS AVENUE
PUBLIC ~ 1941 LAYOUT

WATERHOUSE WAY

WAY

PROPOSED NEW CURB CUT FOR COMMON DRIVEWAY

20' WIDE LAYOUT
14' WIDE GRAVE DRIVEWAY

GRAVEL DRIVE TO BE ALTERED

EXISTING GRAVEL DRIVE

EXISTING DWELLING

EXISTING DWELLING TO BE MOVED

LOT 1
5,005± S.F.

LOT 2
5,005± S.F.

LOT 3
8,301± S.F.

55-309
N/F
FEE FAMILY SPARKS AVENUE NOMINEE TRUST
DEED BOOK 1419 PAGE 294
PLAN BOOK 23 PAGE 31
LOTS 3 & 4

55-309
N/F
FEE FAMILY SPARKS AVENUE NOMINEE TRUST
DEED BOOK 1419 PAGE 294
PLAN BOOK 23 PAGE 31
LOT 2

55-231.1
N/F
DOWNEY FLAKE, INC.
DEED BOOK 238 PAGE 94
PLAN BOOK 20 PAGE 82
LOT 9

55-231.2
N/F
MICHAEL & MARCIA KANE
DEED BOOK 176 PAGE 260
PLAN FILE 26-E
LOT E

55-232
N/F
CHARLES F. SAYLE, III
DEED BOOK 843 PAGE 198
PLAN BOOK 15 PAGE 40

55-226
N/F
JAMES W. GARNETT, TRUSTEE
DEED BOOK 907 PAGE 267
PLAN BOOK 15 PAGE 58
LOT 2

S76° 29' 26"E 97.64
67.74
29.90
127.27
S76° 29' 26"E
R=10.00
L=15.60
43.09
S12° 54' 52"W
199.77
3.6±
6.0±
S88° 32' 26"W 58.92
N77° 35' 19"W 25.28
52.10
129.88
203.09
S12° 54' 52"W
R=5.00
L=7.85
N88° 00' 51"W 83.17
N16° 50' 09"E 63.17
67.80
15.00
N77° 05' 08"W 25.00
73.21
N74° 37' 03"W 108.00
N74° 37' 03"W 111.40

DETAIL NOT TO SCALE
S.S.M. FND.
.54
.27
.48
.42
.19
.56
dhCB FND.

N
W
E

BEING A SUBDIVISION OF LOT 5
SHOWN ON PLAN BOOK 23 PAGE 31

DEFINITIVE PLAN OF LAND IN NANTUCKET, MASS.

PREPARED FOR
STEPHEN M. WATERHOUSE
DEED BOOK 1169 PAGE 89

SCALE: 1"= 20' DATE: MARCH 14, 2016

ISLAND SURVEYORS, LLC
Professional Land Surveyors
90 OLD SOUTH ROAD
NANTUCKET, MASS. 02554
(508) 228-2720

LEGEND

dhCB FND. ■ DENOTES DRILL HOLE IN CONCRETE BOUND FOUND

S.S.M. FND. ○ DENOTES STEEL SURVEY MARKER FOUND

Nantucket Planning Board
APPROVAL UNDER THE SUBDIVISION CONTROL LAW REQUIRED

DATE APPROVED: _____
DATE ENDORSED: _____
PLANNING BD. FILE No. _____

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

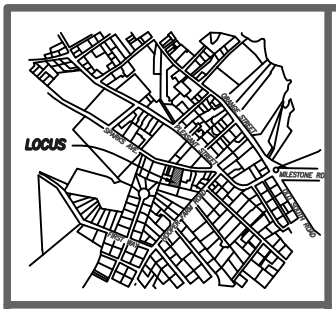
_____ _____
PROFESSIONAL LAND SURVEYOR DATE

"I, CATHERINE STOVER, CLERK OF THE TOWN OF NANTUCKET, HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO NOTICE OF APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE."

_____ DATE: _____
TOWN CLERK

ASSESSORS MAP 55 PARCEL 307

K-541



LOCUS MAP SCALE: 1"=1000'±

CURRENT ZONING CLASSIFICATION:
Residential Commercial (R.C.)

MINIMUM LOT SIZE: 5000 S.F.
MINIMUM FRONTAGE: 40 FT.
FRONT YARD SETBACK: none
REAR/SIDE SETBACK: 5 FT.
GROUND COVER % : 50%

REVISION
RECEIVED 4-26-16

SPARKS AVENUE
PUBLIC ~ 1941 LAYOUT

WAY

WATERHOUSE WAY

GUTTER LINE 17.14
FRONT SIDEWALK 17.50
BACK SIDEWALK 17.70

PROPOSED
NEW CURB CUT FOR
COMMON DRIVEWAY

GUTTER LINE 17.28
FRONT SIDEWALK 17.61
BACK SIDEWALK 17.90

DETAIL
NOT TO SCALE
.54
.27
S.S.M. FND.

DETAIL
NOT TO SCALE
.48
.42
dhCB FND.

BENCHMARK: CONCRETE BOUND
ELEV.= 17.50 TOWN GIS DATUM

20' WIDE LAYOUT
14' WIDE GRAVE DRIVEWAY

GRAVEL DRIVE
TO BE ALTERED

EXISTING
DWELLING

EXISTING
GRAVEL DRIVE

EXISTING GRAVEL
PIT 5'x5'x5'

PROPOSED DRAIN
EASEMENT 10'x30'

EXISTING
SHED

EXISTING
DWELLING

EXISTING
GRAVEL DRIVE

LOT 1
5,005± S.F.

LOT 2
5,005± S.F.

LOT 3
7,348± S.F.

55-309
N/F
FEE FAMILY SPARKS AVENUE NOMINEE TRUST
DEED BOOK 1419 PAGE 294
PLAN BOOK 23 PAGE 31
LOT 2

55-309
N/F
FEE FAMILY SPARKS AVENUE NOMINEE TRUST
DEED BOOK 1419 PAGE 294
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LOTS 3 & 4

55-231.1
N/F
DOWNEY FLAKE, INC.
DEED BOOK 238 PAGE 94
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LOT 9

55-231.2
N/F
MICHAEL & MARCIA KANE
DEED BOOK 176 PAGE 260
PLAN FILE 26-E
LOT E

55-232
N/F
CHARLES F. SAYLE, III
DEED BOOK 843 PAGE 198
PLAN BOOK 15 PAGE 40

55-226
N/F
JAMES W. GARNETT, TRUSTEE
DEED BOOK 907 PAGE 267
PLAN BOOK 15 PAGE 58
LOT 2

S76° 29' 26"E 97.64
S76° 29' 26"E 127.27
N77° 35' 19"W 25.26
S88° 32' 26"W 58.92
N81° 15' 55"W 86.51
N16° 50' 09"E 57.59
N74° 37' 03"W 108.00
N74° 37' 03"W 111.40
S12° 54' 52"W 43.09
S12° 54' 52"W 129.88
S12° 54' 52"W 66.00
S12° 54' 52"W 203.09
S12° 54' 52"W 40.00
S12° 54' 52"W 15.00
N77° 05' 08"W 25.00
198.77
73.38
73.21
68.80
67.74
29.90
30'
R=10.00
L=15.60
R=5.00
L=7.85

BEING A SUBDIVISION OF LOT 5
SHOWN ON PLAN BOOK 23 PAGE 31

DEFINITIVE PLAN OF LAND IN NANTUCKET, MASS.

PREPARED FOR
STEPHEN M. WATERHOUSE
DEED BOOK 1169 PAGE 89

SCALE: 1" = 20' DATE: APRIL 25, 2016

ISLAND SURVEYORS, LLC
Professional Land Surveyors
90 OLD SOUTH ROAD
NANTUCKET, MASS. 02554
(508) 228-2720

LEGEND

dhCB FND. ■ DENOTES DRILL HOLE IN CONCRETE BOUND FOUND

S.S.M. FND. ◎ DENOTES STEEL SURVEY MARKER FOUND

16.2 x DENOTES EXISTING SPOT ELEVATION

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

PROFESSIONAL LAND SURVEYOR DATE

"I, CATHERINE STOVER, CLERK OF THE TOWN OF NANTUCKET, HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO NOTICE OF APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE."

TOWN CLERK DATE:

Nantucket Planning Board
APPROVAL UNDER THE
SUBDIVISION CONTROL LAW
REQUIRED

DATE APPROVED:
DATE ENDORSED:
PLANNING BD. FILE No.

ASSESSORS MAP 55 PARCEL 307

K-541

Holly Backus

From: Holly Backus
Sent: Thursday, May 05, 2016 8:14 AM
To: 'Ed Pesce'; 'Teddy'
Cc: Leslie Snell
Subject: RE: 20 Sparks Ave.

Thanks Ed. We will make sure the board is aware of your comments.

Thanks!

Holly E. Backus
Land Use Specialist
Town of Nantucket

From: Ed Pesce [mailto:epesce@comcast.net]
Sent: Wednesday, May 04, 2016 4:00 PM
To: Holly Backus; 'Teddy'
Cc: Leslie Snell
Subject: RE: 20 Sparks Ave.

OK Holly – got it!

This appears to address Leslie's original comments, but my comments below from earlier today still stand, and should be addressed.

Thanks,

ED

Edward L. Pesce, P.E., LEED® AP
Pesce Engineering & Associates, Inc.
451 Raymond Road
Plymouth, MA 02360

Office: 508-743-9206
Fax: 508-743-0211
Cell: 508-333-7630
epesce@comcast.net

From: Holly Backus [mailto:hbackus@nantucket-ma.gov]
Sent: Wednesday, May 04, 2016 10:36 AM
To: Ed Pesce; 'Teddy'
Cc: Leslie Snell
Subject: RE: 20 Sparks Ave.

Hi Ed,

Teddy sent me a revision on April 26th. My apologies, I thought you had received it already. Sorry for assuming. I have attached it for you.

Thanks,

Holly E. Backus
Land Use Specialist
Town of Nantucket

From: Ed Pesce [mailto:epesce@comcast.net]
Sent: Wednesday, May 04, 2016 10:30 AM
To: 'Teddy'
Cc: Leslie Snell; Holly Backus
Subject: RE: 20 Sparks Ave.

Hi Teddy,

Sorry for the delay – I've been away on Military duty and am now catching up.

Regarding 20 Sparks Ave – I recall seeing the attached message from Leslie regarding an issue with the Lot Frontage for Lot 3. Did that ever get addressed?

I was actually thinking you were working on a solution, and would be providing a revised plan, along with additional drainage details. The Drainage Plan you sent me (attached) is not adequate to make a determination of adequacy. The additional information needed/present preliminary comments:

1. Proposed grading
2. Any proposed drainage structures? Collection system or overland flow (super-elevate the roadway) to the cul-de-sac island?
3. Adequacy of the proposed drainage system to handle at least the 25-yr. storm
4. Stormwater Operations & maintenance Plan for long term maintenance & use
5. Gravel Drive cross-section detail for construction, showing compliance with the Subdivision Rules & Regs
6. Curb cut & paved apron detail at Sparks Ave.
7. Proposed new monumentation for new lots (to comply with Subdivision R&R)
8. Recommend a new stop sign at end of road
9. Proposed landscaping in road layout (any screening plantings on east side?)

Thanks Teddy – I'll be on Island tomorrow if you want to discuss,

ED

_____

Edward L. Pesce, P.E., LEED® AP
Pesce Engineering & Associates, Inc.
451 Raymond Road
Plymouth, MA 02360

Office: 508-743-9206
Fax: 508-743-0211
Cell: 508-333-7630
epesce@comcast.net

From: Teddy [mailto:acksurvey@hotmail.com]
Sent: Tuesday, May 03, 2016 10:57 AM
To: Ed Pesce
Subject: 20 Sparks ave.

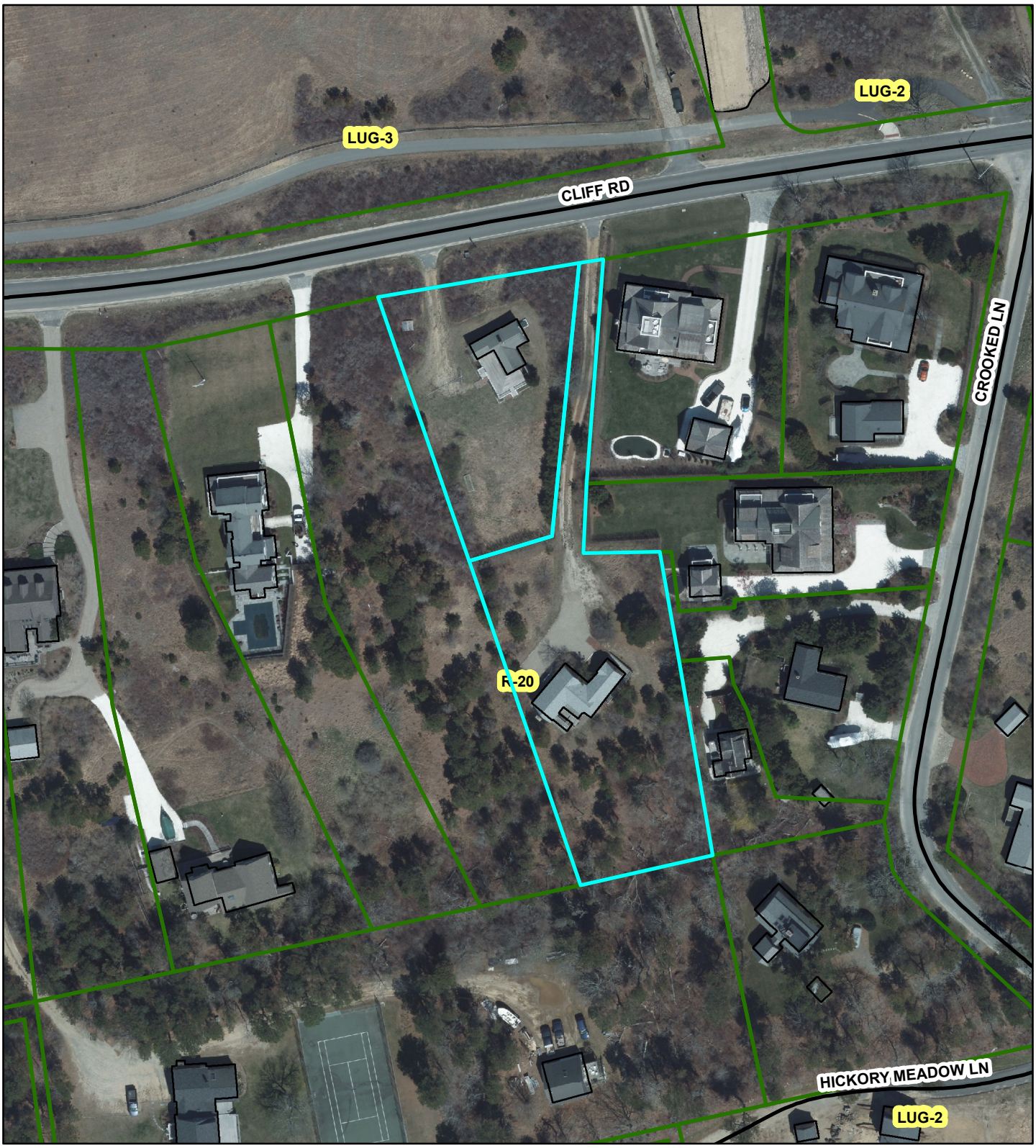
Hi Ed,

I was checking to see if you have reviewed the plan for 20 Sparks avenue.

Thanks

Teddy

#35-16 Seacliff, LLC & 142 Cliff Road, LLC
144 Cliff Road & 142 Cliff Road
Map 41 Parcels 76 & 78
Driveway Access Special Permit



VAUGHAN, DALE, HUNTER AND BEAUDETTE
PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
WHALER'S LANE
P.O. BOX 659
NANTUCKET, MASSACHUSETTS 02554

TEL: (508) 228-4455
FAX: (508) 228-3070

EDWARD FOLEY VAUGHAN
KEVIN F. DALE
RICHARD P. BEAUDETTE

LORI D'ELIA
BRYAN J. SWAIN

WILLIAM F. HUNTER
OF COUNSEL

May 27, 2016

RECEIVED
JUN 10 2016
By 15904 chk

TOWN CLERK
NANTUCKET

Tue 10AM11:31:10

Leslie Snell, Deputy Director of Planning
Nantucket Planning Office
2 Fairgrounds Road
Nantucket, MA 02554

Re: *Request for Special Permit Relief*
144 Cliff Road
Nantucket, Massachusetts 02554

Dear Leslie:

Our client, Seacliff, LLC, is seeking Special Permit Relief under Section 139-21.C of the By-Law to waive the limitation of one driveway access with respect to the property located at 144 Cliff Road, Nantucket, MA 02554.

To that end, enclosed please find an Application for a Special Permit, stamped by the Town Clerk, with supporting documentation attached. Please also find abutter's lists and mailing labels prepared by the Nantucket Tax Assessor's Office, the filing fee in the amount of $250.00 made payable to the Town of Nantucket, and the abutter's notice fee in the amount of $148.28 made payable to Pitney Bowes Reserved Funds.

Please mark this matter for hearing by the Nantucket Planning Board at its July 11, 2016 Public Hearing. Thank you for your help, if you have any questions or concerns please do not hesitate to call me at 508-228-4455.

Sincerely,

Richard Beaudette

RPB/lld
Encs.
cc: Seacliff, LLC
142 Cliff Road LLC

June 10AM11:31:02 7836

NANTUCKET
TOWN CLERK

Nantucket Planning Board

Application for a Special Permit

Date: 6-10-16 File #: 35-16

Name of development: _____

Owner(s) name(s): Seacliff, LLC and 142 Cliff Road, LLC

Mailing address: c/o Vaughan, Dale, Hunter & Beaudette, P.C., PO Box 659, 2 Whaler's Lane, Nantucket, Ma 02554
Phone number: 508-228-4455 Fax number: 508-228-3070 E-mail: rick@vdhlaw.com; lori@vdhlaw.com

Applicant's name: same

Mailing address: same
Phone number: same Fax number: same E-mail: same

Engineer / surveyor's name: Nantucket Surveyors, LLC

Mailing address: 5 Windy Way, Nantucket, MA 02554
Phone number: 508-228-0240 Fax number: 508-228-9856 E-mail: _____

Location of lot(s):

☐Street address 144 Cliff Road, 142 Cliff Road

☐Tax Assessors Map 41 Parcel 76 and 78 (Lots 24A and 25A)

☐Nantucket Registry of Deed: Plan Book 19 and Page 81 **OR**

Plan File # _____ **OR** Land Court Plan # 9455-N (Lots 31 and 32) at Certificate # 23646 and 25761 Book 1499, Page 104 and Book 1245, Page 221

Size of parcel: 21,220 square feet sq. ft. Zoning District: Residential - 20
31,732 square feet

Special Permit sought: (check one)

- ○ Cluster subdivision
- ○ Commercial WECS
- ⊗ Driveway Access/Curb Cut Special Permit
- ○ Harbor Overlay District (HOD)
- ○ Major Commercial Development (MCD)

- ○ Multi-family Special Permit
- ○ Moorlands Management District Subdivision or Construction (MMD)
- ○ NEHOD (Neighborhood Employee Housing Overlay District)
- ○ MRD (Major Residential Development)
- ○ MIPOD (Mid-Island Planned Overlay District)
- ○ Other Uses Requiring a Special Permit (specify all uses and *Nantucket Code* sections)

Section	Description
139-20.1B.(1)	
and 139-20.1C	Applicant seeks a Special Permit to allow two driveway accesses

Specify all associated Zoning Code relief sought:

Section	Description
same as above	

Only the zoning relief expressly requested above will be considered as part of this application.

If applying for a Major Commercial Development, specify how the application will comply with Section 139-11 (J) of the *Zoning Code of the Town of Nantucket*, also known as the Town's Affordable Housing Effort:

Planning Board filing fee due: $ $250.00

Engineering Inspection Escrow Deposit due: $_____

I/ we hereby certify that the applicant(s) cited above have been authorized by me/ us to file a Special Permit application with the Planning Board on property that I/ we own.

Seacliff, LLC,
By: _____
Owner(s)' Signature(s) Mary Bachrach, Manager

142 Cliff Road LLC
By: Lisa Quattrocchi, Manager

Seacliff, LLC,
By: _____
Applicant's Signature Mary Bachrach, Manager

I/we Seacliff, LLC and 142 Cliff Road LLC, the undersigned, hereby authorize Vaughan, Dale, Hunter & Beaudette, P.C. to act as agent(s) on my/our behalf and to make any necessary revisions on this filed application as they may be requested by the Board to meet its governing rules and guidelines.

Seacliff, LLC

By: _____
Owner(s)' signature(s)
Mary Bachrach, Manager

142 Cliff Road LLC

By: _____
Lisa Quattrocchi, Manager

Check List:

- ☐ Planning Board Special Permit abutters list – to be obtained at the Tax Assessor's office
- ☐ Completed application form entitled "Application to the Planning Board for a Special Permit"
- ☐ Application fee of $250.00 payable to Town of Nantucket
- ☐ Abutters fee of $6.11 per abutters payable to Pitney Bowes Reserved Funds
- ☐ Four (4) sets of mailing labels with each abutter's name and address
  - 1" x 2 5/8" size, typed labels, are preferred
  - duplicate labels are not necessary if the same owner is listed for more than one abutting property
- ☐ Completed application form
- ☐ Town Clerk's stamped application (provide 2 copies-one for Town Clerk and one for Planning Board)

ADDENDUM

144 Cliff Road

The Applicant, Seacliff, LLC, requests Special Permit Relief pursuant to §139-20.1 C of the Nantucket By-Law with respect to the property located at 144 Cliff Road, Nantucket, MA 02554 (the "Premises") and more specifically is seeking relief from the limitation of 139-20.1 B (1) to allow two driveway accesses on the Premises. The Premises is located in the Residential-20 (R-20) zoning district.

Applicant proposes to extend the existing driveway located on the Premises in order to create a horse shoe shaped driveway with two accesses fronting Cliff Road. The proposed driveway is shown on the plan prepared by Atlantic Landscaping, Inc., attached hereto as Exhibit "A" (the "proposed driveway"). A small portion of the proposed driveway will be located on 142 Cliff Road (see the plan recorded in Plan Book 19, Page 81, attached hereto as Exhibit "B"). The Applicant is therefore in the process of obtaining an easement from the owner, Lisa Quatrocchi, Manager of 142 Cliff Road, LLC, who has joined in on this request as evidenced by her signature on the attached Application.

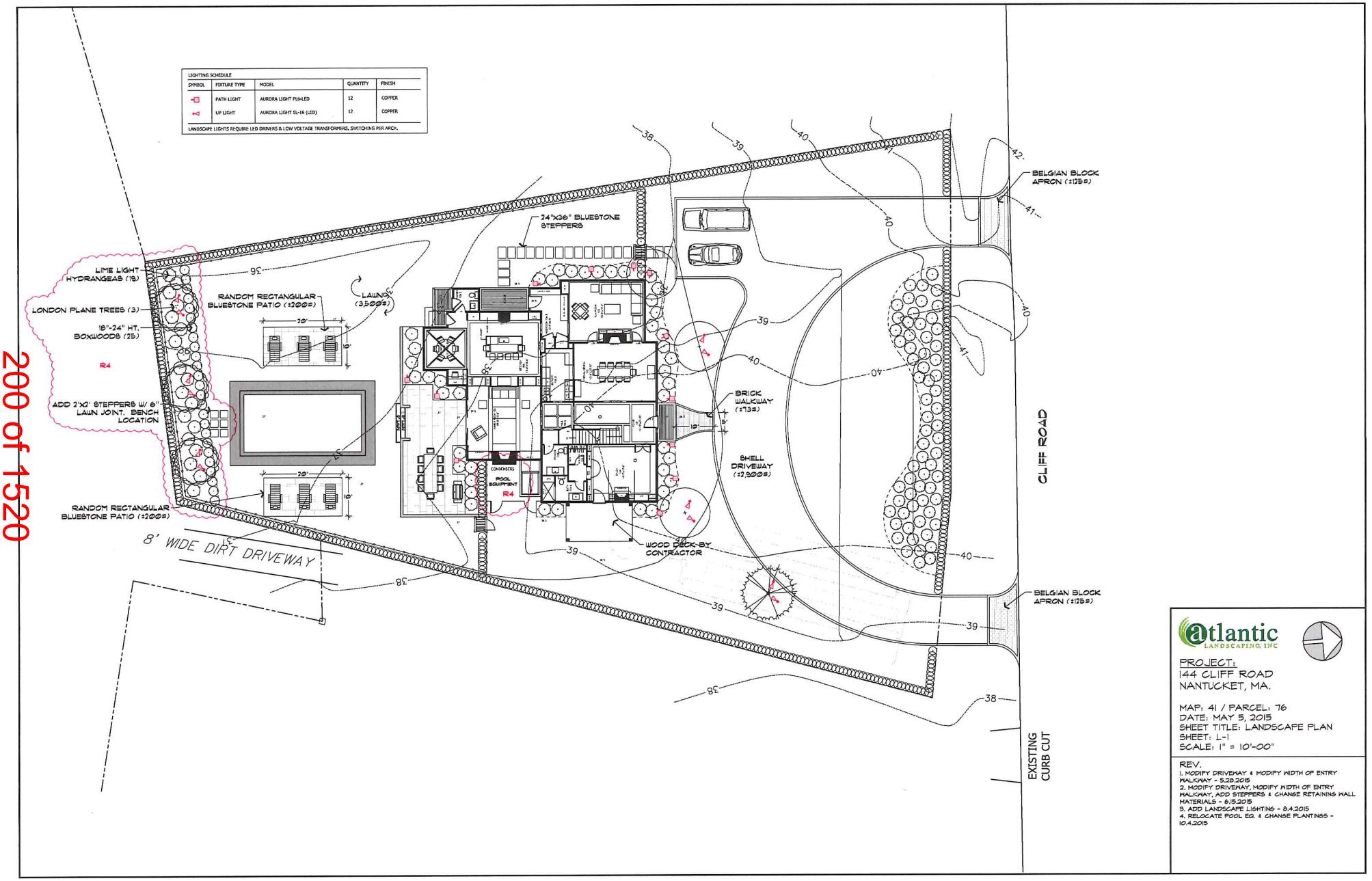
By way of background, the Applicant originally presented an application to the Nantucket Historic District Commission (the "HDC") seeking permission for a proposed plan depicting one driveway access. The HDC did not approve the plan and expressed a preference for a horse shoe shaped driveway. As a result, the Applicant submitted a revised plan to the HDC showing the proposed driveway (Exhibit A), which was subsequently approved by the HDC.

It is also important to note that the proposed driveway provides safer egress from the Premises. The horse shoe shape provides an easy forward exit onto Cliff Road allowing drivers to see clearly the oncoming traffic travelling in both directions at speeds of at least 40 miles per hour. While a standard size vehicle may be able to maneuver a turn around with one driveway access, an emergency vehicle may have difficulty doing so, slowing down the response time in the event of an emergency. The proposed horse shoe shaped driveway, therefore, helps to ensure safe and efficient egress for standard as well as emergency vehicles.

As evidenced by the HDC's approval, the proposed driveway will not have an adverse effect on the scenic or historic integrity of the neighborhood. Further, for the reasons noted above, the proposed driveway is not contrary to sound traffic and safety considerations. Therefore, on behalf of the Applicant, we respectfully request that the Board grant the Special Permit.

EXHIBIT A

200 of 1520



atlantic LANDSCAPING, INC

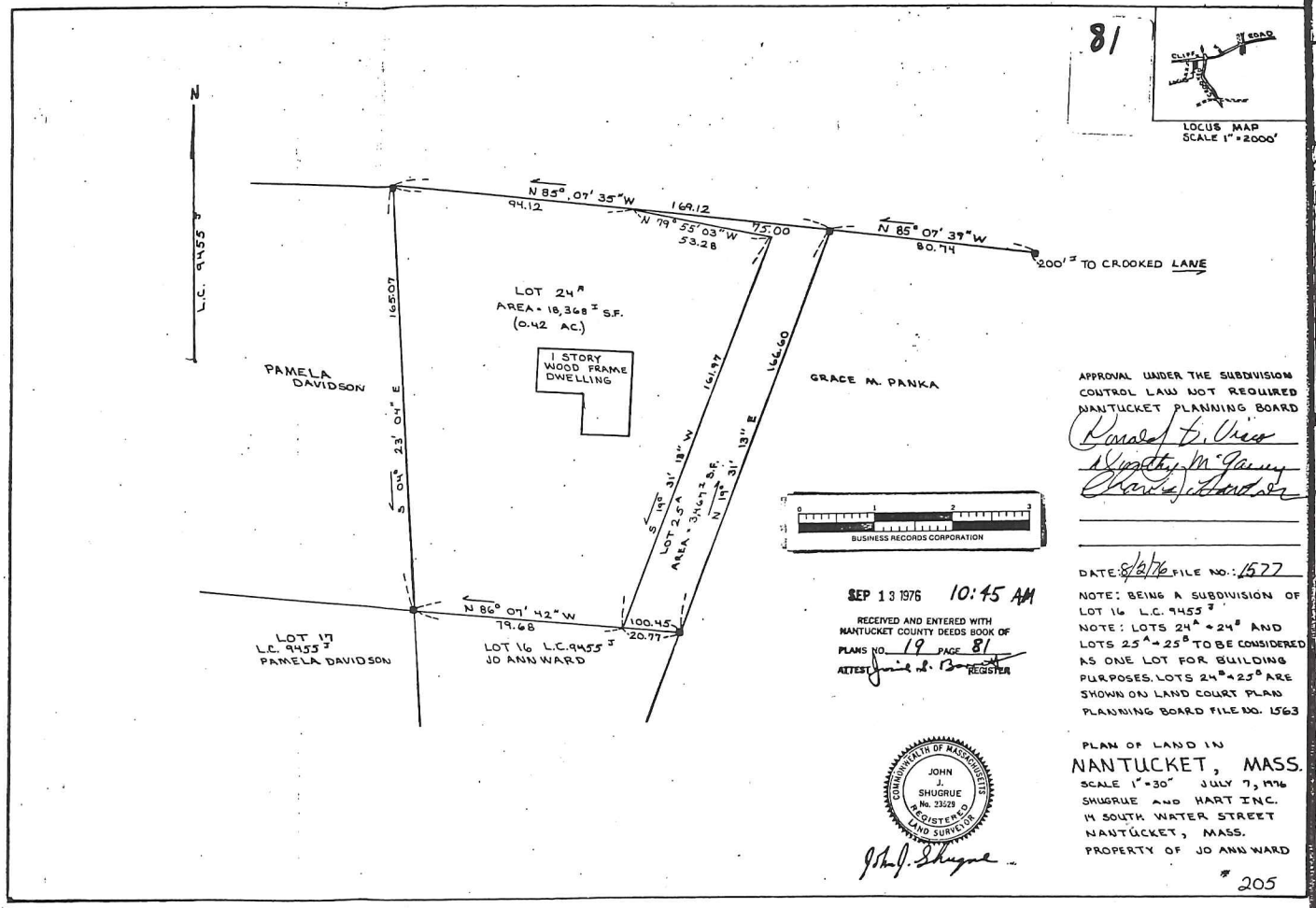
PROJECT:
144 CLIFF ROAD
NANTUCKET, MA.

MAP: 41 / PARCEL: 76
DATE: MAY 5, 2015
SHEET TITLE: LANDSCAPE PLAN
SHEET: L-1
SCALE: 1" = 10'-00"

REV.
1. MODIFY DRIVEWAY & MODIFY WIDTH OF ENTRY WALKWAY - 5.28.2015
2. MODIFY DRIVEWAY, MODIFY WIDTH OF ENTRY WALKWAY, ADD STEPPERS & CHANGE RETAINING WALL MATERIALS - 6.15.2015
3. ADD LANDSCAPE LIGHTING - 8.4.2015
4. RELOCATE POOL EQ. & CHANGE PLANTINGS - 10.4.2015

EXHIBIT B

81



202 of 1520

VAUGHAN, DALE, HUNTER AND BEAUDETTE
PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
WHALER'S LANE
P.O. BOX 659
NANTUCKET, MASSACHUSETTS 02554
TEL: (508) 228-4455
FAX: (508) 228-3070

EDWARD FOLEY VAUGHAN
KEVIN F. DALE
RICHARD P. BEAUDETTE

LORI D'ELIA
BRYAN J. SWAIN

WILLIAM F. HUNTER
OF COUNSEL

August 3, 2016

Leslie Snell, Deputy Director of Planning
Nantucket Planning Office
2 Fairgrounds Road
Nantucket, MA 02554

Re: *Request for Special Permit Relief*
144 Cliff Road
Nantucket, Massachusetts 02554
Revised Site Plan

Dear Leslie:

As you know, I presented an Application before the Planning Board at its July 11, 2016 meeting for Seacliff, LLC, requesting a Special Permit under Section 139-21.C of the By-Law to waive the limitation of one driveway access with respect to the property located at 144 Cliff Road, Nantucket, MA 02554 (the "Premises").

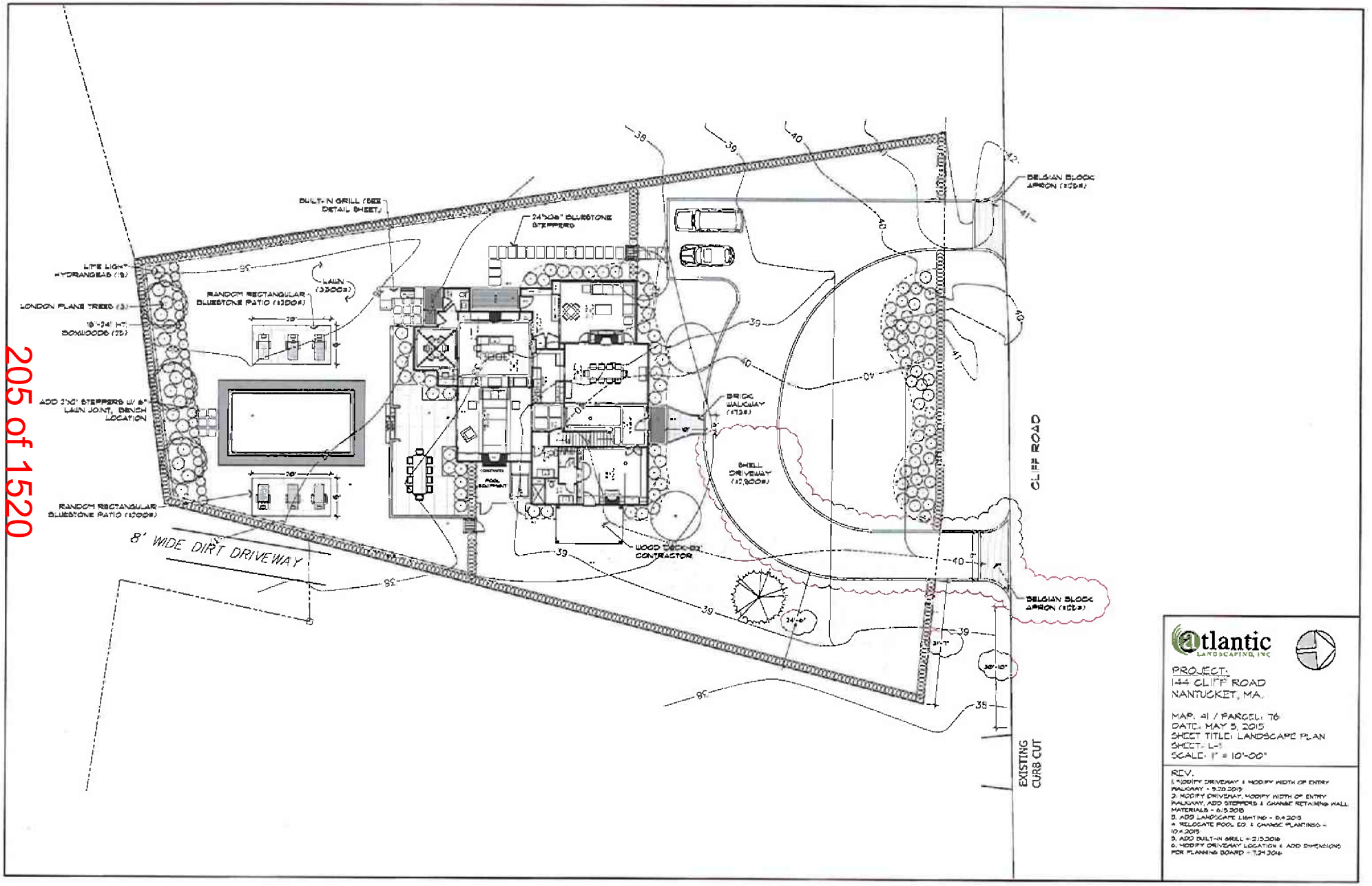
In response to the Board's comments regarding the proposed driveway at the Premises, attached please find a revised Site Plan prepared by Atlantic Landscaping, dated May 5, 2016. The Applicant moved the eastern driveway access on the Premises thirteen (13) feet to the west. As shown on the revised Site Plan, the eastern access will be thirty (30) feet at its closest point from the neighbor's existing curb cut. The Applicant plans to use the westerly curb cut as an entrance while the easterly curb cut will be limited to an exit in order maintain a consistent one-way flow of traffic on the Premises.

We look forward to discussing this matter further with the Planning Board at its August 8, 2016 meeting. Thank you for your help, should you have any questions or concerns please do not hesitate to call me at 508-228-4455.

Sincerely,

Richard Beaudette

RPB/lld
Encs.
cc: Seacliff, LLC
142 Cliff Road LLC

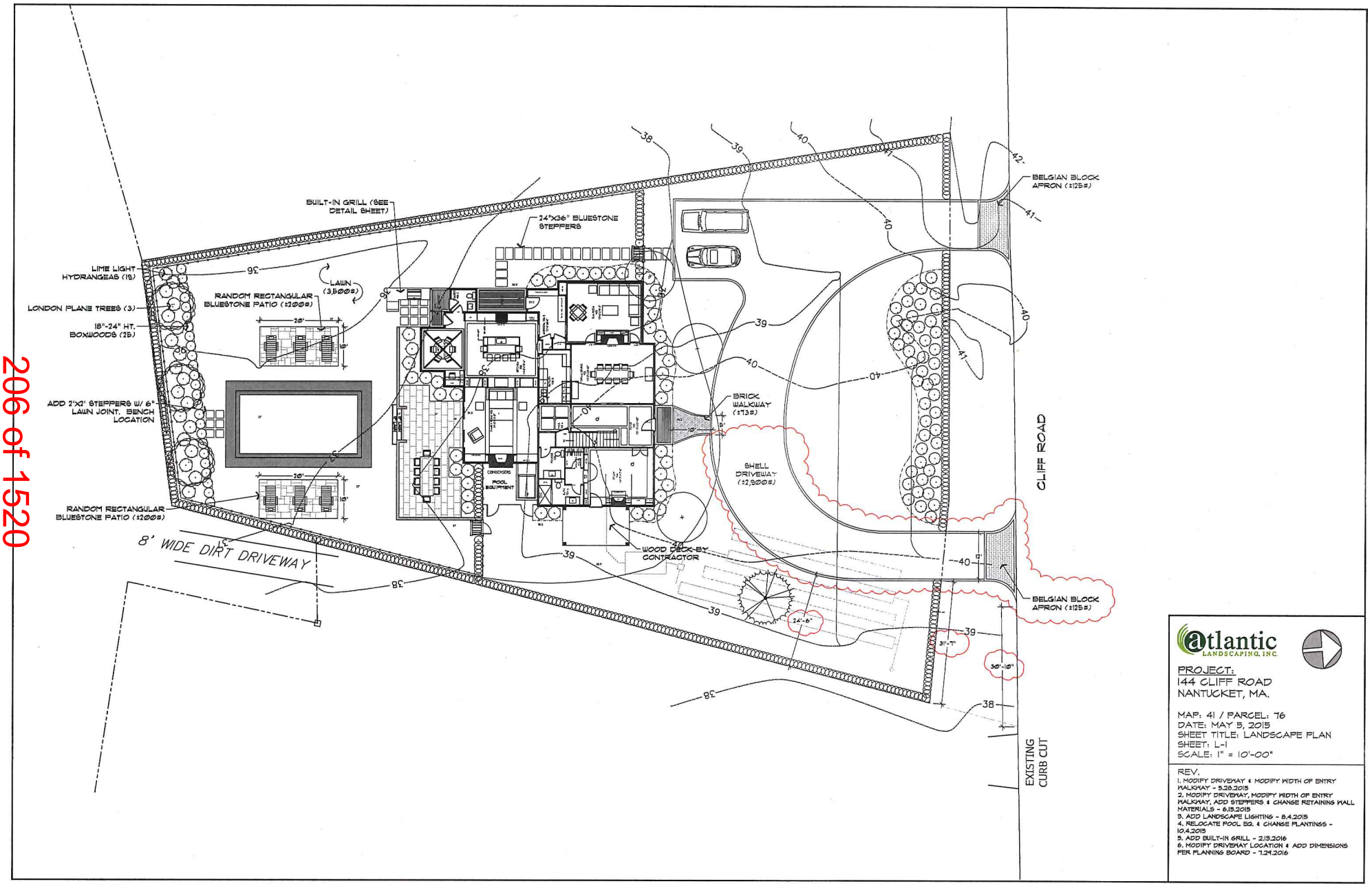


atlantic LANDSCAPING, INC

PROJECT:
144 CLIFF ROAD
NANTUCKET, MA.

MAP: 41 / PARCEL: 76
DATE: MAY 5, 2015
SHEET TITLE: LANDSCAPE PLAN
SHEET: L-1
SCALE: 1" = 10'-00"

REV.
1. MODIFY DRIVEWAY & MODIFY WIDTH OF ENTRY WALKWAY - 5.28.2015
2. MODIFY DRIVEWAY, MODIFY WIDTH OF ENTRY WALKWAY, ADD STEPPERS & CHANGE RETAINING WALL MATERIALS - 6.15.2015
3. ADD LANDSCAPE LIGHTING - 8.4.2015
4. RELOCATE POOL EQ & CHANGE PLANTINGS - 10.6.2015
5. ADD BUILT-IN GRILL - 2.15.2016
6. MODIFY DRIVEWAY LOCATION & ADD DIMENSIONS PER PLANNING BOARD - 7.24.2016



atlantic LANDSCAPING, INC.

PROJECT:
144 CLIFF ROAD
NANTUCKET, MA.

MAP: 41 / PARCEL: 76
DATE: MAY 5, 2015
SHEET TITLE: LANDSCAPE PLAN
SHEET: L-1
SCALE: 1" = 10'-00"

REV.
1. MODIFY DRIVEWAY & MODIFY WIDTH OF ENTRY WALKWAY - 5.28.2015
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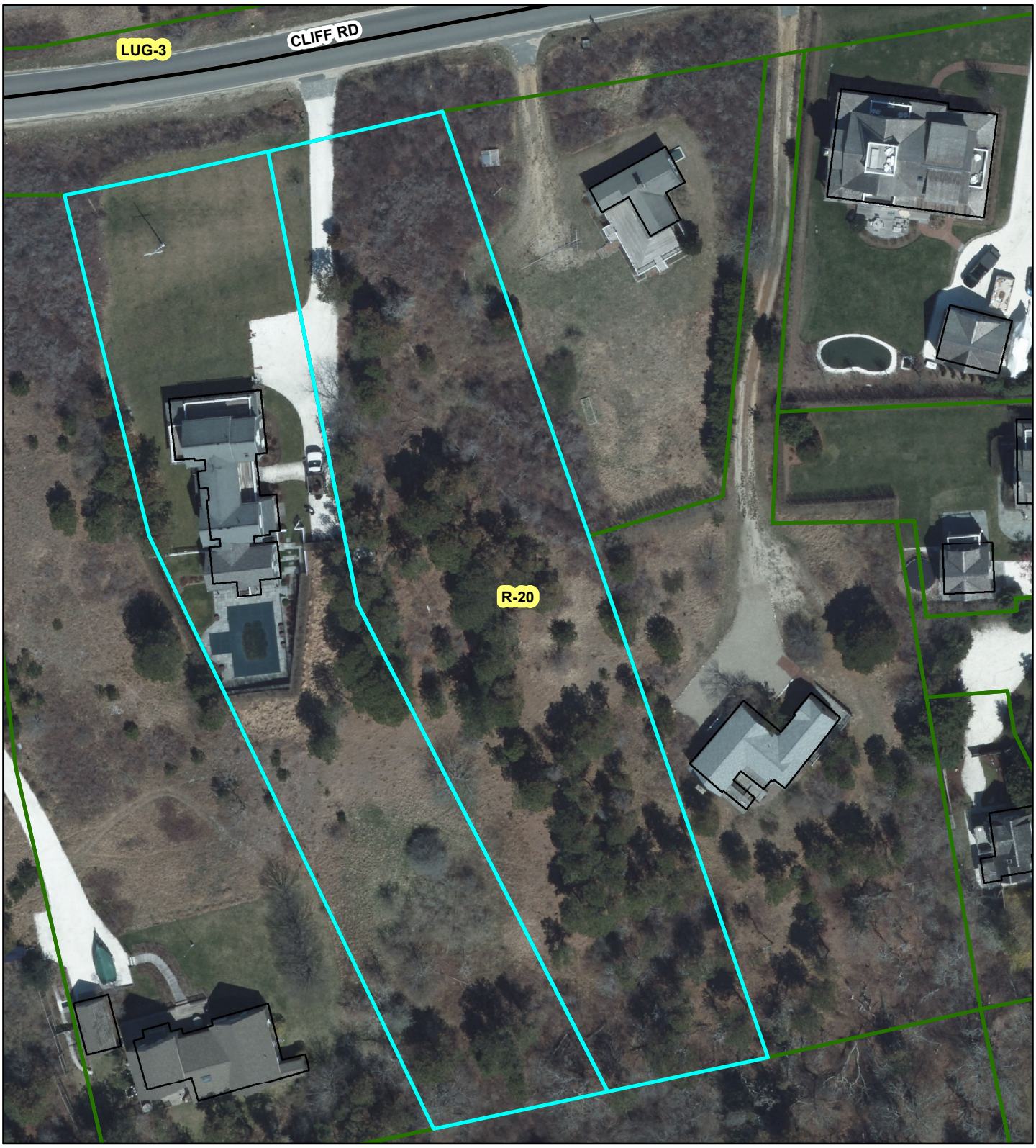
3. ADD LANDSCAPE LIGHTING - 8.4.2015
4. RELOCATE POOL EQ. & CHANGE PLANTINGS - 10.4.2015
5. ADD BUILT-IN GRILL - 2.13.2016
6. MODIFY DRIVEWAY LOCATION & ADD DIMENSIONS PER PLANNING BOARD - 7.29.2016

#36-16 Seacliff, LLC & 146 Cliff Road, LLC
144 Cliff Road & 14 Cliff Road
Map 41 Parcels 75 & 75.1
Driveway Access Special Permit



Town Clerk
Town & County Building
16 Broad St
Nantucket, MA 02554

JUN 14 2016

Nantucket Planning Board

CHK# 29484

Application for a Special Permit

Date: 6-14-16 File #: 36-16

Name of development: _____

Owner(s) name(s): Sea Cliff LLC and 146 Cliff Road LLC

Mailing address: c/o Glidden + Glidden, PC - 37 Centre St, Nantucket, MA 02554

Phone number: 508.228.0771 Fax number: 508.228.6205 E-mail: jessie@gliddenandglidden.com

Applicant's name: See above

Mailing address: _____

Phone number: _____ Fax number: _____ E-mail: _____

Engineer / surveyor's name: _____

Mailing address: _____

Phone number: _____ Fax number: _____ E-mail: _____

Location of lot(s):

☐ Street address 144 + 146 Cliff Road

☐ Tax Assessors Map 41 Parcel 76 and 75

☐ Nantucket Registry of Deed: Plan Book See Attached and Page _____ OR

Plan File # _____ OR Land Court Plan # _____ at Certificate # _____

Size of parcel: See attached sq.ft. Zoning District: _____

Special Permit sought: (check one)

- ○ Cluster subdivision
- ○ Commercial WECS
- ⊗ Driveway Access/Curb Cut Special Permit
- ○ Harbor Overlay District (HOD)
- ○ Major Commercial Development (MCD)

- ❍ Multi-family Special Permit
- ❍ Moorlands Management District Subdivision or Construction (MMD)
- ❍ NEHOD (Neighborhood Employee Housing Overlay District)
- ❍ MRD (Major Residential Development)
- ❍ MIPOD (Mid-Island Planned Overlay District)
- ❍ Other Uses Requiring a Special Permit (specify all uses and *Nantucket Code* sections)

Section	Description
139-20.1B(1)	
and 139-20.1C	Applicant requests a Special Permit to allow two driveway accesses

Specify all associated Zoning Code relief sought:

Section	Description
see above	

Only the zoning relief expressly requested above will be considered as part of this application.

If applying for a Major Commercial Development, specify how the application will comply with Section 139-11 (J) of the *Zoning Code of the Town of Nantucket*, also known as the Town's Affordable Housing Effort:

Planning Board filing fee due: $_____

Engineering Inspection Escrow Deposit due: $_____

I/ we hereby certify that the applicant(s) cited above have been authorized by me/ us to file a Special Permit application with the Planning Board on property that I/ we own.

Lisa Quattrocchi
Lisa Quattrocchi, Manager - 146 Cliff Road LLC

Owner(s)' Signature(s) Mary Bachrach, Manager - Seacliff, LLC

Lisa Quattrocchi
Applicant's Signature Lisa Quattrocchi, Manager - 146 Cliff Road LLC

I/we 146 Cliff Road LLC and Seacliff, LLC, the undersigned, hereby authorize Glidden + Glidden, PC to act as agent(s) on my/our behalf and to make any necessary revisions on this filed application as they may be requested by the Board to meet its governing rules and guidelines.

Lisa Quattrocchi
Lisa Quattrocchi, Manager - 146 Cliff Road LLC

Owner(s)' signature(s) Mary Bachrach, Manager - Seacliff, LLC

Check List:

- ❑ Planning Board Special Permit abutters list – to be obtained at the Tax Assessor's office
- ❑ Completed application form entitled "Application to the Planning Board for a Special Permit"
- ❑ Application fee of $250.00 payable to Town of Nantucket
- ❑ Abutters fee of $6.11 per abutters payable to Pitney Bowes Reserved Funds
- ❑ Four (4) sets of mailing labels with each abutter's name and address
  - 1" x 2 5/8" size, typed labels, are preferred
  - duplicate labels are not necessary if the same owner is listed for more than one abutting property
- ❑ Completed application form
- ❑ Town Clerk's stamped application (provide 2 copies-one for Town Clerk and one for Planning Board)

Lisa Quattrocchi
Lisa Quattrocchi, Manager - 146 Cliff Road LLC

Owner(s)' Signature(s) Mary Bachrach, Manager - Seacliff, LLC

Lisa Quattrocchi
Applicant's Signature Lisa Quattrocchi, Manager - 146 Cliff Road LLC

I/we 146 Cliff Road LLC and Seacliff, LLC, the undersigned, hereby authorize Glidden + Glidden, PC to act as agent(s) on my/our behalf and to make any necessary revisions on this filed application as they may be requested by the Board to meet its governing rules and guidelines.

Lisa Quattrocchi
Lisa Quattrocchi, Manager - 146 Cliff Road LLC
Mary Bachrach
Owner(s) signature(s) Mary Bachrach, Manager - Seacliff, LLC

Check List:

- ☐ Planning Board Special Permit abutters list – to be obtained at the Tax Assessor's office
- ☐ Completed application form entitled "Application to the Planning Board for a Special Permit"
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- ☐ Abutters fee of $6.11 per abutters payable to Pitney Bowes Reserved Funds
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  - 1" x 2 5/8" size, typed labels, are preferred
  - duplicate labels are not necessary if the same owner is listed for more than one abutting property
- ☐ Completed application form
- ☐ Town Clerk's stamped application (provide 2 copies-one for Town Clerk and one for Planning Board)

Nantucket Planning Board
Application for Special Permit
Attachment

Street Address	Assessor's Map / Parcel	Property Description	Zoning District / Size of Parcel
144 Cliff Road	41 / 76	Lots 24A and 25A in Plan Book 19, Page 81	Residential 20; 21,220
146 Cliff Road	41 / 75	Lot 44 on Land Court Plan No. 9455-Q and Lot 4A in Plan Book 23, Page 74	Residential 20; 31,732

Applicant requests a Special Permit pursuant to Nantucket By-Laws 139-20.1B(1) and 139-20.1C for a second driveway access for the benefit of 146 Cliff Road.

The existing driveway on Applicant's property at 146 Cliff Road is used by the owner of 148 Cliff Road, pursuant to Declaration of Easements and Restrictions running with the land dated March 20, 1986, recorded in Book 246, Page 133 and registered as Document No. 35180, as amended by Amendment to Declaration of Easements and Restrictions dated May 10, 2005, recorded in Book 1009, Page 48 and registered as Document No. 115464. Pursuant to the terms of such easement, such driveway may be shared by 146 Cliff Road and 148 Cliff Road. It is currently used by 148 Cliff Road.

Applicant wishes to obtain driveway access specific to 146 Cliff Road, as shown on the attached plan.

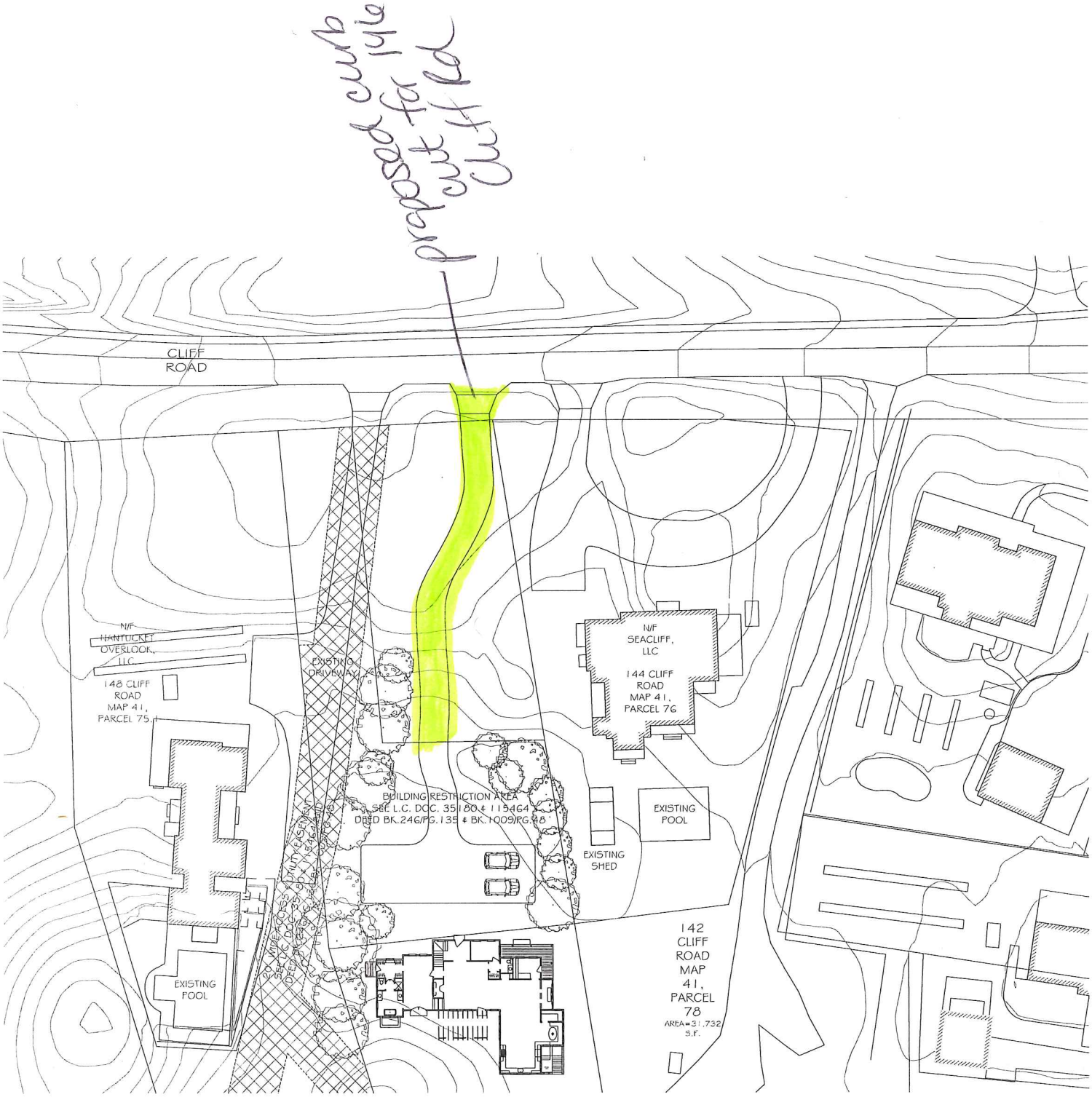
Further, Applicant and the owner of 144 Cliff Road (Sea Cliff, LLC) have reached an agreement regarding an easement for utility, driveway, and landscaping purposes, which enables Applicant to place the driveway to access 146 Cliff Road within the easement area located on 144 Cliff Road, as shown on the attached plan.

Applicant proposes to place the driveway for use by 146 Cliff Road approximately equidistant between the easterly side of the existing driveway used to access 148 Cliff Road and the westerly side of the horseshoe driveway proposed by 144 Cliff Road (2nd curb cut application pending at the time of this application). At the time of this application, Applicant does not have a surveyed plot plan indicating the exact location of the proposed driveway, but will submit said plan to the Board prior to the next regularly scheduled hearing (July 11, 2016).

Because a portion of Applicant's proposed driveway may be located within the easement area belonging to 144 Cliff Road for the benefit of 146 Cliff Road, it is necessary for the Special Permit relief to include 144 Cliff Road inasmuch as 144 Cliff Road already has an existing curb cut (as amended by the pending Special Permit request filed herewith regarding 142 Cliff Road and 144 Cliff Road).

The goal of the pending applications for 142, 144, and 146 Cliff Road is to provide separate and distinct driveway access for each of 142, 144, 146, and 148 Cliff Road.

Applicant suggests that the proposed second curb cut application is not contrary to sound traffic and safety considerations and will not have an adverse effect on the scenic or historic integrity of the neighborhood. As such, Applicant requests Special Permit relief as outlined above for the benefit of 146 Cliff Road.


proposed curb cut for 144
CLIFF ROAD
N/F HANTUCKET OVERLOOK, LLC
148 CLIFF ROAD MAP 41, PARCEL 75
EXISTING DRIVEWAY
N/F SEACLIFF, LLC
144 CLIFF ROAD MAP 41, PARCEL 76
BUILDING RESTRICTION AREA SEE L.C. DOC. 351180 & 115464 DEED BK.246/PG.135 & BK.1009/PG.98
EXISTING POOL
EXISTING SHED
EXISTING POOL
142 CLIFF ROAD MAP 41, PARCEL 78
AREA=31,732 S.F.

Town and County of Nantucket, MA

June 9, 2016

existing curb cut @ 146 utilized by 148 Cliff Rd

proposed curb cut for 146 Cliff because portion of 144 Cliff will become curb cut

proposed curb cut for 144 Cliff because it crosses 142 Cliff

curb cut for 142 Cliff

Plan Not to Scale - For information purposes only

Property Information

Property ID 41 75

Location 146 CLIFF RD

Owner NANTUCKET CONSERVATION FND INC

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town and County of Nantucket, MA makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Parcels updated December, 2014
Properties updated January, 2015

Catherine Ancero

From: Holly Backus
Sent: Thursday, June 30, 2016 10:50 AM
To: Steindler, Tom; Catherine Ancero
Cc: Jay Hanley; Jessie Glidden; Dan Mulloy; Sophie; jnsteindler@cox.net
Subject: RE: #36-16 Seacliff, LLC and 146 Cliff Road LLC, 144 & 146 Cliff Road

Good Morning Mr. & Mrs. Steindler,

Planning Staff will provide your comments to the Board for their consideration.

Please let me know if you have any questions or if I can be of further assistance.
Take care,

Holly E. Backus
Land Use Specialist
Town of Nantucket

From: Steindler, Tom [mailto:tsteindler@mwe.com]
Sent: Wednesday, June 29, 2016 4:18 PM
To: Holly Backus; Catherine Ancero
Cc: Jay Hanley; Jessie Glidden; Dan Mulloy; Sophie; jnsteindler@cox.net
Subject: #36-16 Seacliff, LLC and 146 Cliff Road LLC, 144 & 146 Cliff Road

Dear Ms. Backus and Ms. Cancero:

My wife, Julie, and I are the Managers of Nantucket Overlook LLC, the Owner of 148 Cliff Road. We are the abutters to the west of the property located at 146 Cliff Road. We write in support of the above-referenced request of Seacliff LLC and 146 Cliff Road, LLC for a Special Permit to construct a second driveway access for the benefit of 146 Cliff Road, for the reasons set out in the application. We would be grateful if you would include our support for this request in the file for this application, which we understand is scheduled to be addressed at a public hearing at 5:30 p.m., Monday, July 11, 2016.

Thank you in advance for your kind attention to this matter.

Sincerely,

Tom and Julie Steindler

Thomas P. Steindler
Partner

McDermott Will & Emery LLP | The McDermott Building | 500 North Capitol Street, N.W. | Washington, DC 20001
Tel +1 202 756 8254 | Mobile +1 202 251 0478 | Fax +1 202 756 8087

Biography | Website | vCard | Email | Twitter | LinkedIn | Blog

****
This message is a PRIVILEGED AND CONFIDENTIAL communication. This message and all attachments are a private communication sent by a law firm and may be confidential or protected by privilege. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution or use of the information contained in or attached to this

#37-16 Inn Partners Regatta, LLC
78 Center Street
Map 42.4.3 Parcel 98
Transient Residential Facility Use - Special Permit

GLIDDEN & GLIDDEN, P.C.
ATTORNEYS AT LAW
P. O. BOX 1079
37 CENTRE STREET
NANTUCKET, MASSACHUSETTS 02554
508-228-0771
FAX 508-228-6205
OFFICE@GLIDDENANDGLIDDEN.COM

RICHARD J. GLIDDEN
JESSIE M. GLIDDEN BRESCHER
JOHN B. BRESCHER

JAMES K. GLIDDEN
(1917 – 2009)

September 2, 2016

Ms. Leslie Snell
Deputy Director of Planning
Planning and Land Use Services
2 Fairgrounds Road
Nantucket, MA 02554

RE: Special Permit Request
File No. 37-16, Inn Partners Regatta, LLC, 78 Centre Street, Nantucket

Dear Leslie,

At the August 8, 2016 Planning Board meeting, the Planning Board asked for additional information relative to the Special Permit request File No. 37-16, Inn Partners Regatta, LLC. Specifically, the Board asked the owner to explore the possibility of shifting the proposed addition further from Lily Street. After further review with my client's team and the revisions that will need to be made to accomplish such a request, the owner has concluded that altering the plans to make such an accommodation is not feasible.

To that end, the owner is electing to use Lily Street as their front yard setback, which is permissible under the Nantucket Zoning Bylaw because the Locus abuts two streets: Lily Street and Centre Street. After consulting with Staff, it was determined that the Zoning Bylaw permits a homeowner to choose their front yard setback when their property abuts two or more streets or ways and they have adequate frontage on each street or way. In this instance, the Locus has adequate frontage on both Lily Street and Centre Street. By electing to use Lily Street as the front yard, the front yard setback in the Residential Old Historic (ROH) district is zero (0) feet and the proposed addition meets the setback requirements and therefore would not be in violation of any zoning intensity regulations.

The analysis, therefore, that the Board must apply is determining whether or not the proposed addition/alteration is substantially more detrimental to the neighborhood than the existing nonconformity. In this instance, by electing to use Lily Street for the front

yard setback, the only nonconformity that exists is along Centre Street because the structure is 3.7 feet from the side yard lot line and the stoop is 0.4 feet over the lot line. The proposed addition to the structure, therefore, is entirely within the allowed setbacks and the addition would be allowed as a matter of right if not for the encroachment along Centre Street. The Zoning Board of Appeals and the Zoning Administrator (and previously, the Zoning Enforcement Officer) have routinely allowed such relief when the additions/alterations are entirely within the allowable buildable footprint of the Locus. I have attached sample Zoning Administrator and Zoning Board of Appeals decisions for other properties along Lily Street that have received relief for similar work.

Furthermore, I have enclosed, for reference, site plans from the Building Department for 31 Lily Street, 29 Lily Street, 22 Lily Street, 74 & 76 Centre Street, 27 Lily Street, 25 Lily Street, and 32 Lily Street, as well as an aerial GIS map to show the proximity of the neighboring structures to Lily Street. As one can see from these site plans (which were the only plans on file for the abutting properties on Lily Street), nearly all of the properties (except 22 Lily Street) are within one (1) foot of the public layout of Lily Street. Therefore, by having an alteration that is 1.1 feet from the layout of Lily Street, this alteration would not be substantially more detrimental neighborhood because by using Lily Street as the front yard setback, the alteration conforms to the zoning requirements of the ROH and many neighboring properties are just as close (if not closer) to the layout of Lily Street than this property.

With respect to the use of the premises as a transient residential facility, the standard the Planning Board must use is determining whether or not this proposed use is in harmony with the general purpose and intent of the Bylaw. Because the definition of transient residential facility was changed at 2015 Annual Town Meeting to allow those guest houses within 0.25 miles of the Commercial Downtown District to be allowed by Special Permit relief, it would seem as though this situation is what the Bylaw contemplated when that revision was made and approved by Town Meeting. Rather than having a preexisting nonconforming use, the owner has the ability to have the existing use allowed by Special Permit relief.

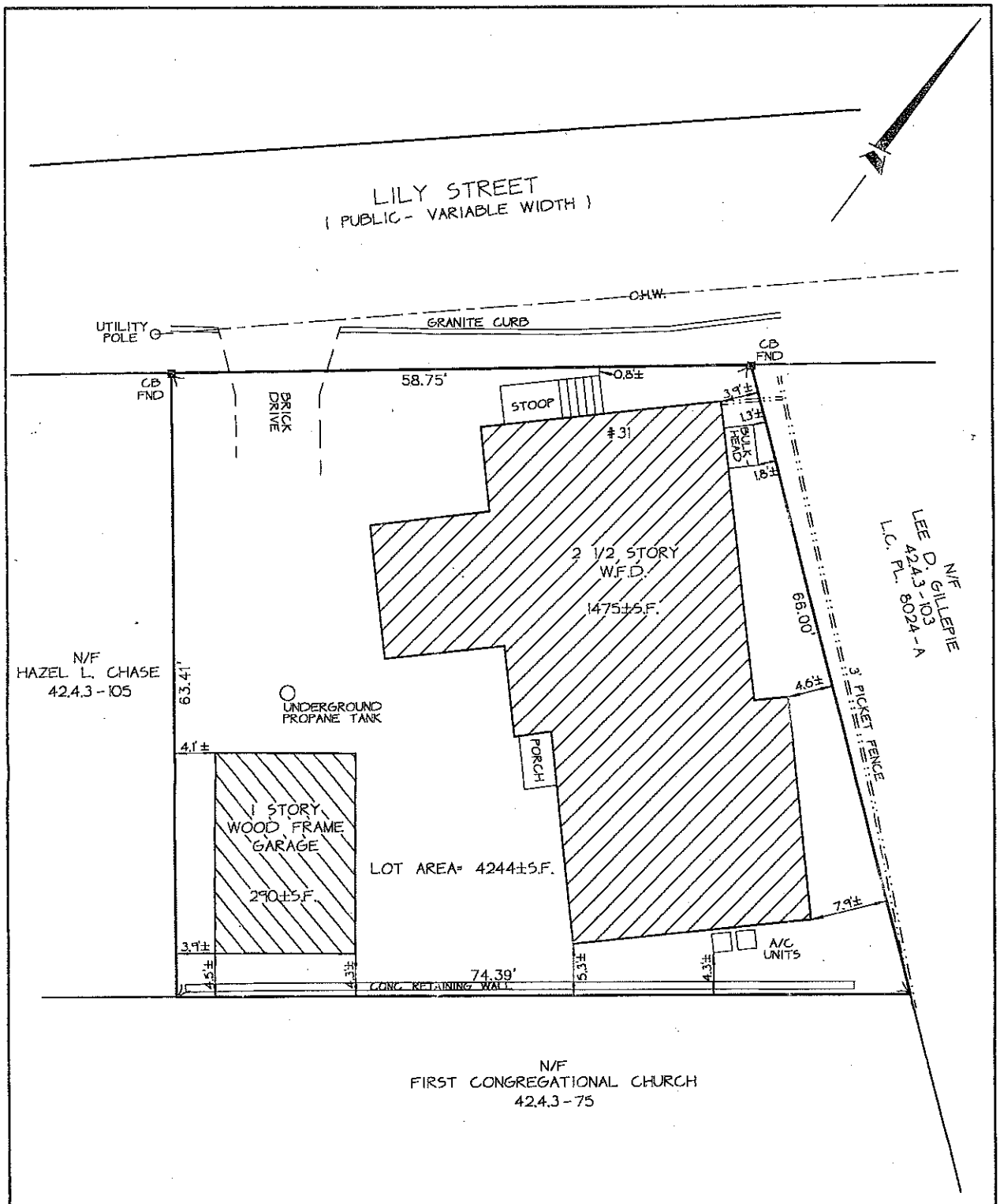
I hope the Board finds this information helpful in better understanding the proposal as it relates to the neighborhood. As discussed at the hearing, there was a lengthy and thoughtful hearing before the Historic District Commission and the owner has tried to balance the concerns of the neighborhood, the Zoning Bylaw, and his desired alterations.

If you have any questions, please do not hesitate to contact me. Trusting you find everything in order, I remain,

Very Truly Yours,

John B. Brescher, Esq.

Enclosure(s)
Cc:



NOTE:
SEE Z.B.A. DECISION RECORDED
IN L.C. DOC. #88953

CURRENT ZONING: RO-H
MINIMUM LOT SIZE: 5000 S.F.
MINIMUM FRONTAGE: 50 FT.
FRONTYARD SETBACK: NONE
SIDE AND REAR SETBACK: 5 FT.
ALLOWABLE G.C.R.: 50% (30% FOR LOTS UNDER 5000S.F.)
EXISTING G.C.R.: 41.6% ±

FOR PROPERTY LINE DETERMINATION THIS PLOT PLAN RELIES ON CURRENT DEEDS AND PLANS OF RECORD, VERIFIED BY FIELD MEASUREMENTS AS SHOWN HEREON. THIS PLAN IS NOT REPRESENTED TO BE A TITLE EXAMINATION OR A RECORDABLE SURVEY.

N.B.254/130

COMMONWEALTH OF MASSACHUSETTS
RICHARD K. EARLE
No. 29416
REGISTERED
PROFESSIONAL LAND SURVEYOR

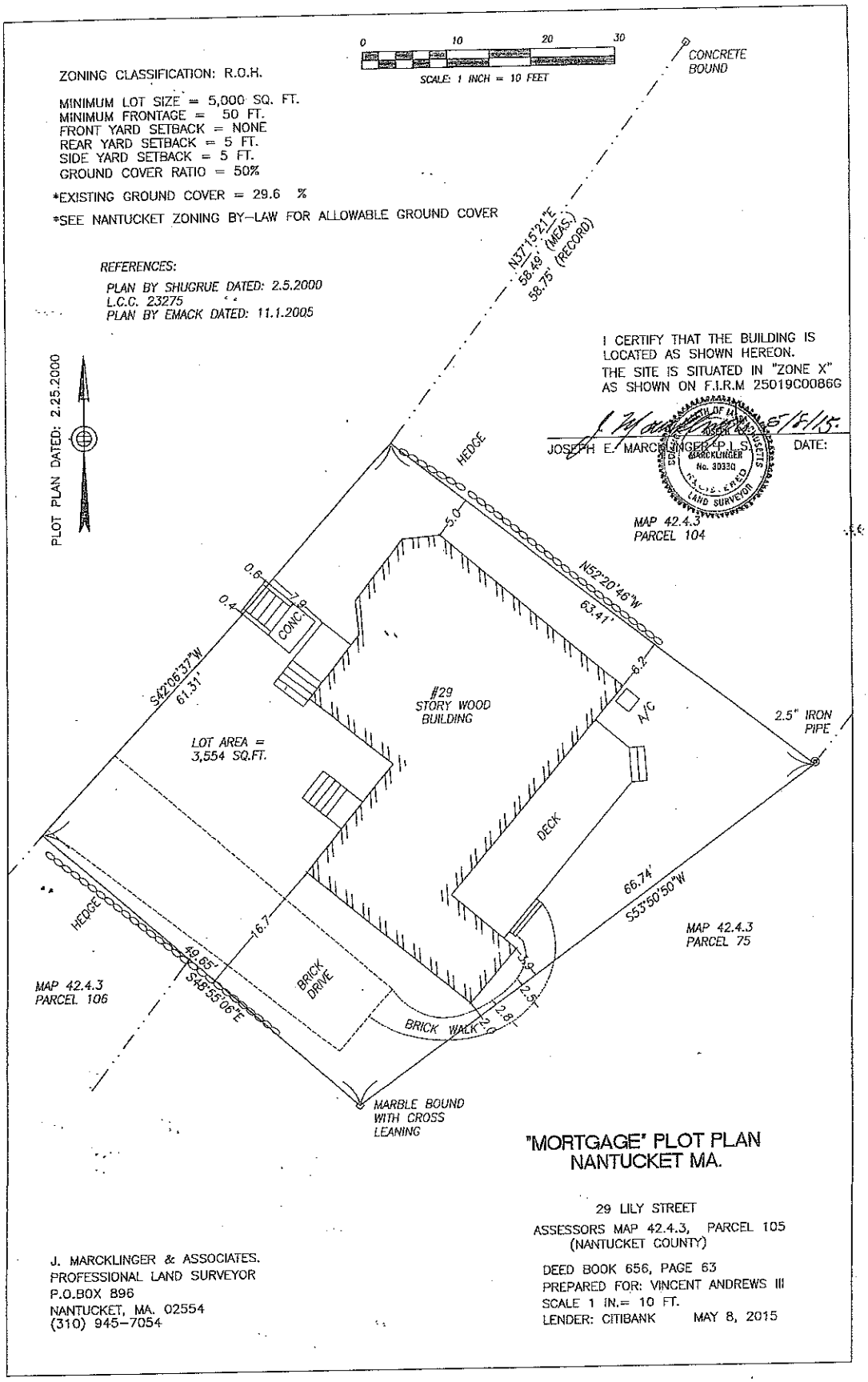
AS-BUILT PLOT PLAN
IN
NANTUCKET, MASSACHUSETTS
SCALE: 1"=10' DATE: JAN. 28, 2002

DEED REFERENCE: CERT. 19359
PLAN REFERENCE: LC.PL.23275-A
ASSESSOR'S REFERENCE:
MAP: 42.4.3 PARCEL: 104
PREPARED FOR:

ELEANOR CONSTANCE BISCHOF

NANTUCKET SURVEYORS INC.
5 WINDY WAY
NANTUCKET, MA. 02554

N-5677



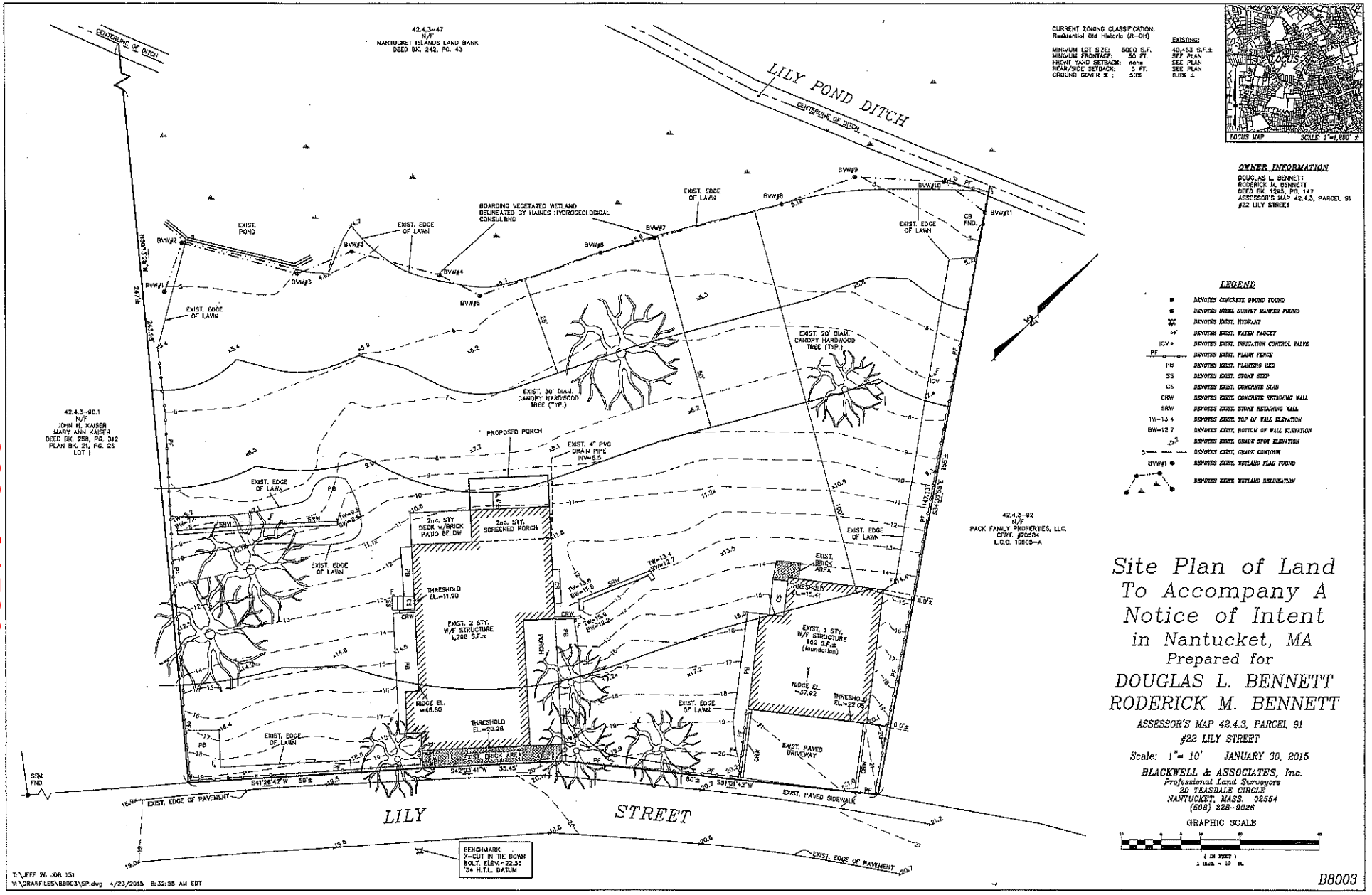
"MORTGAGE" PLOT PLAN
NANTUCKET MA.

29 LILY STREET

ASSESSORS MAP 42.4.3, PARCEL 105
(NANTUCKET COUNTY)

DEED BOOK 656, PAGE 63
PREPARED FOR: VINCENT ANDREWS III
SCALE 1 IN.= 10 FT.
LENDER: CITIBANK MAY 8, 2015

J. MARCKLINGER & ASSOCIATES.
PROFESSIONAL LAND SURVEYOR
P.O.BOX 896
NANTUCKET, MA. 02554
(310) 945-7054



CURRENT ZONING CLASSIFICATION:
Residential Old Historic (R-OH)

		EXISTING:
MINIMUM LOT SIZE:	5000 S.F.	40,453 S.F.±
MINIMUM FRONTAGE:	50 FT.	SEE PLAN
FRONT YARD SETBACK:	none	SEE PLAN
REAR/SIDE SETBACK:	5 FT.	SEE PLAN
GROUND COVER ≤ :	50%	8.8% ±

OWNER INFORMATION

DOUGLAS L. BENNETT
RODERICK M. BENNETT
DEED BK. 1295, PG. 147
ASSESSOR'S MAP 42.4.3, PARCEL 91
#22 LILY STREET

LEGEND

- DENOTES CONCRETE BOUND FOUND
- DENOTES STEEL SURVEY MARKER FOUND
- DENOTES EXIST. HYDRANT
- DENOTES EXIST. WATER FAUCET
- ICV DENOTES EXIST. IRRIGATION CONTROL VALVE
- PF DENOTES EXIST. PLANK FENCE
- PB DENOTES EXIST. PLANTING BED
- SS DENOTES EXIST. STONE STEP
- CS DENOTES EXIST. CONCRETE SLAB
- CRW DENOTES EXIST. CONCRETE RETAINING WALL
- SRW DENOTES EXIST. STONE RETAINING WALL
- TW=13.4 DENOTES EXIST. TOP OF WALL ELEVATION
- BW=12.7 DENOTES EXIST. BOTTOM OF WALL ELEVATION
- x5.5 DENOTES EXIST. GRADE SPOT ELEVATION
- 5 DENOTES EXIST. GRADE CONTOUR
- BVW#1 DENOTES EXIST. WETLAND FLAG FOUND
- DENOTES EXIST. WETLAND DELINEATION

Site Plan of Land To Accompany A Notice of Intent in Nantucket, MA

Prepared for

DOUGLAS L. BENNETT
RODERICK M. BENNETT

ASSESSOR'S MAP 42.4.3, PARCEL 91
#22 LILY STREET

Scale: 1"= 10' JANUARY 30, 2015

BLACKWELL & ASSOCIATES, Inc.
Professional Land Surveyors
20 TEASDALE CIRCLE
NANTUCKET, MASS. 02554
(508) 228-9026

GRAPHIC SCALE

(IN FEET)
1 inch = 10 ft.

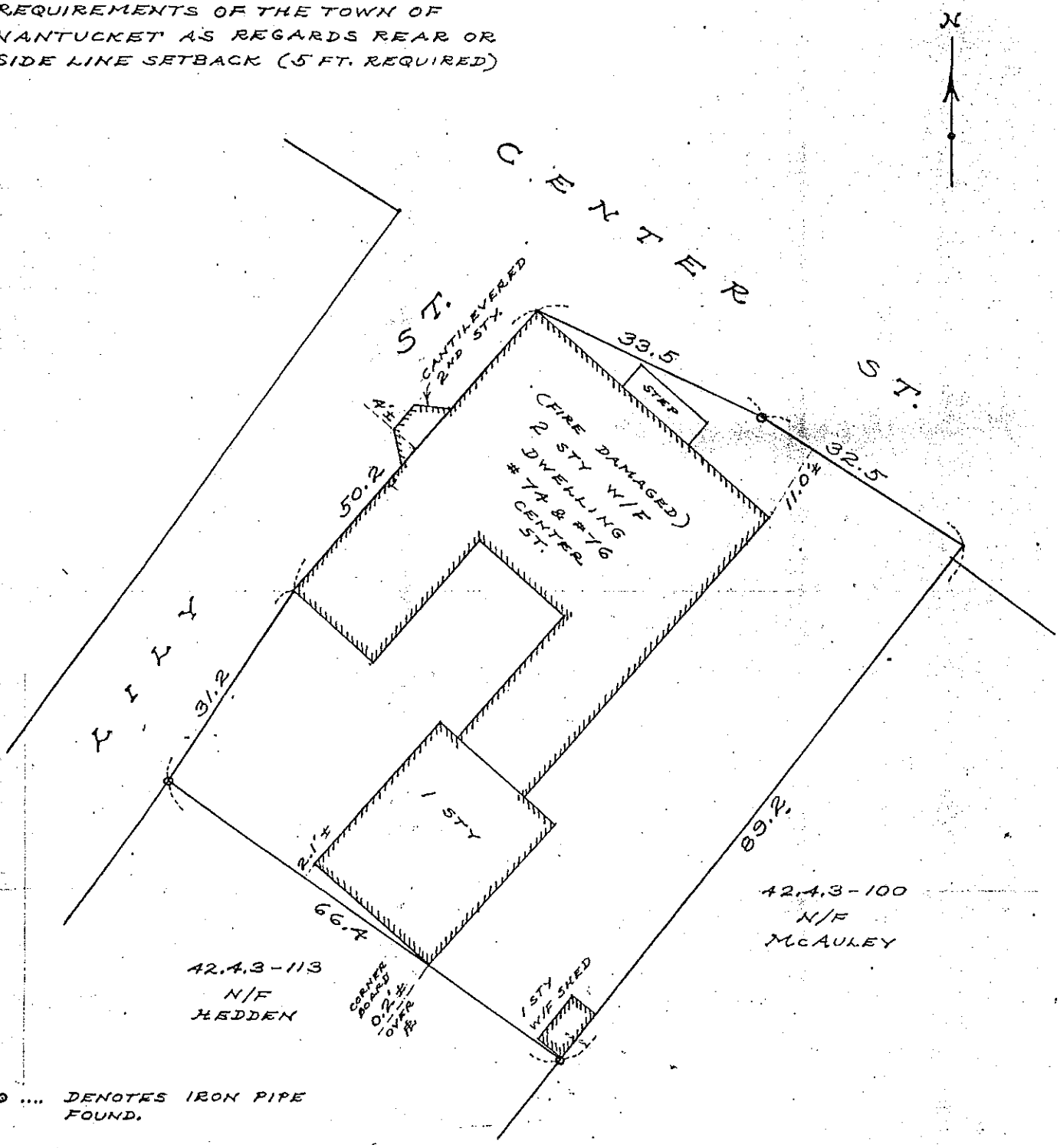
T:\JEFF 26 JOB 151
V:\DRAWFILES\B8003\SP.dwg 4/23/2015 8:32:55 AM EDT

B8003

222 of 1520

ZONING: R-OH

NOTE: THE BUILDINGS SHOWN HEREON DO NOT CONFORM TO CURRENT ZONING REQUIREMENTS OF THE TOWN OF NANTUCKET AS REGARDS REAR OR SIDE LINE SETBACK (5 FT. REQUIRED)



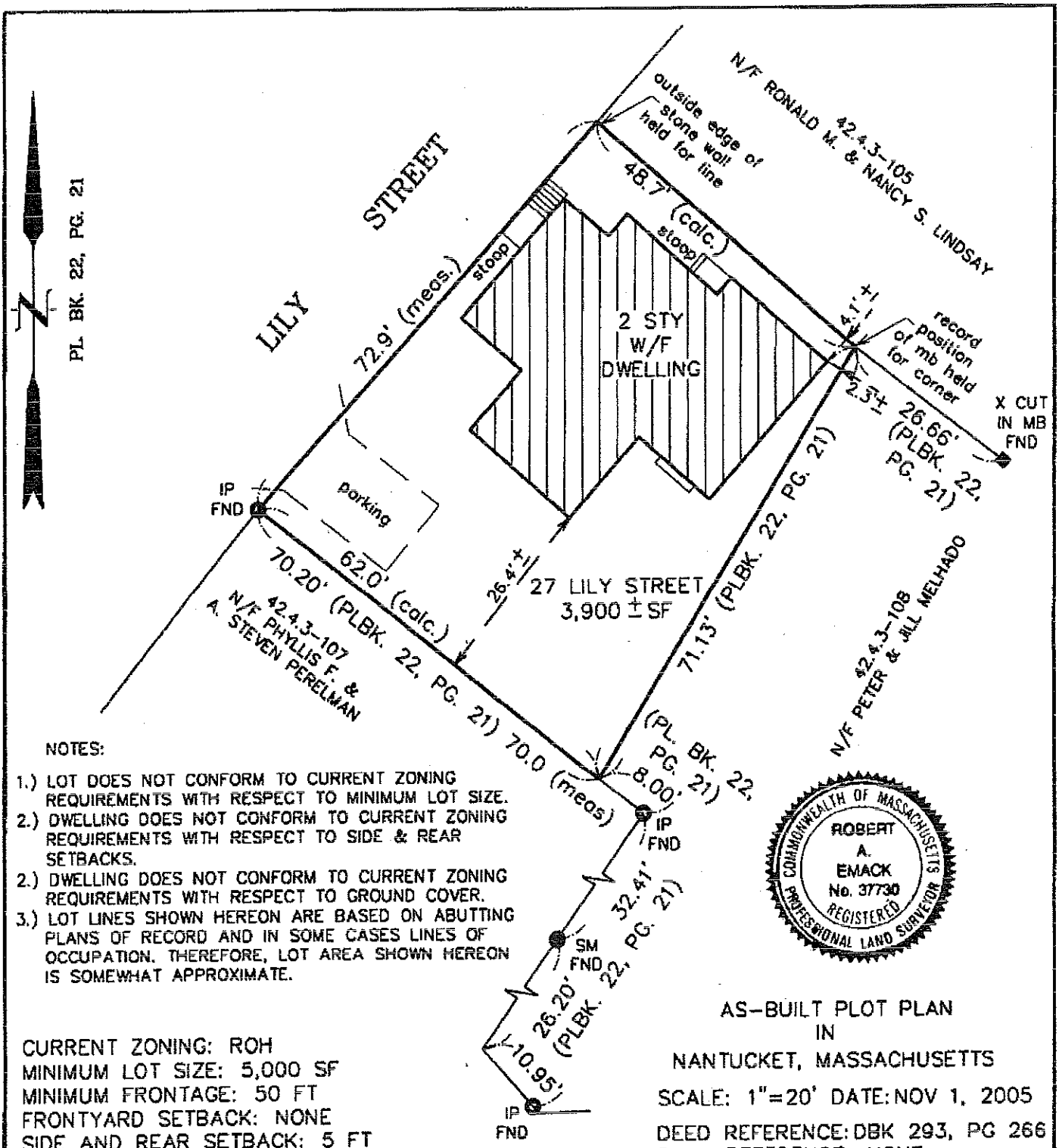
·⊙ .... DENOTES IRON PIPE FOUND.

COMMONWEALTH OF MASSACHUSETTS
CHARLES W. HART #32489
PROFESSIONAL LAND SURVEYOR

Charles W. Hart

TO: UNIVERSITY FINANCIAL SERVICES CORP.

I HEREBY CERTIFY THAT I HAVE EXAMINED THE PREMISES AND THAT ALL EASEMENTS, ENCROACHMENTS AND BUILDINGS ARE LOCATED ON THE GROUND AS SHOWN TO THE BEST OF MY KNOWLEDGE AND ABILITY.



NOTES:

1.) LOT DOES NOT CONFORM TO CURRENT ZONING REQUIREMENTS WITH RESPECT TO MINIMUM LOT SIZE.
2.) DWELLING DOES NOT CONFORM TO CURRENT ZONING REQUIREMENTS WITH RESPECT TO SIDE & REAR SETBACKS.
2.) DWELLING DOES NOT CONFORM TO CURRENT ZONING REQUIREMENTS WITH RESPECT TO GROUND COVER.
3.) LOT LINES SHOWN HEREON ARE BASED ON ABUTTING PLANS OF RECORD AND IN SOME CASES LINES OF OCCUPATION. THEREFORE, LOT AREA SHOWN HEREON IS SOMEWHAT APPROXIMATE.

COMMONWEALTH OF MASSACHUSETTS
ROBERT A. EMACK
No. 37730
REGISTERED PROFESSIONAL LAND SURVEYOR

CURRENT ZONING: ROH
MINIMUM LOT SIZE: 5,000 SF
MINIMUM FRONTAGE: 50 FT
FRONTYARD SETBACK: NONE
SIDE AND REAR SETBACK: 5 FT
ALLOWABLE G.C.R.: 50%
(OR 30% FOR LOT WITH AREA < 5000 SF)
EXISTING G.C.R.: 33.7% ±
EXISTING G.C.: 1340 ± SF

FOR PROPERTY LINE DETERMINATION THIS PLOT PLAN RELIES ON CURRENT DEEDS AND PLANS OF RECORD, VERIFIED BY FIELD MEASUREMENTS AS SHOWN HEREON. THIS PLAN IS NOT REPRESENTED TO BE A TITLE EXAMINATION OR A RECORDABLE SURVEY.

N.B. 16/93

AS-BUILT PLOT PLAN
IN
NANTUCKET, MASSACHUSETTS

SCALE: 1"=20' DATE: NOV 1, 2005

DEED REFERENCE: DBK 293, PG 266
PLAN REFERENCE: NONE
ASSESSOR'S REFERENCE:
MAP: 42.4.3 PARCEL: 106
PREPARED FOR:
ABIGAIL CAMP MURPHY

EMACK SURVEYING
2 WASHAMAN AVENUE
NANTUCKET, MA. 02554
(508) 325-0940

J-772

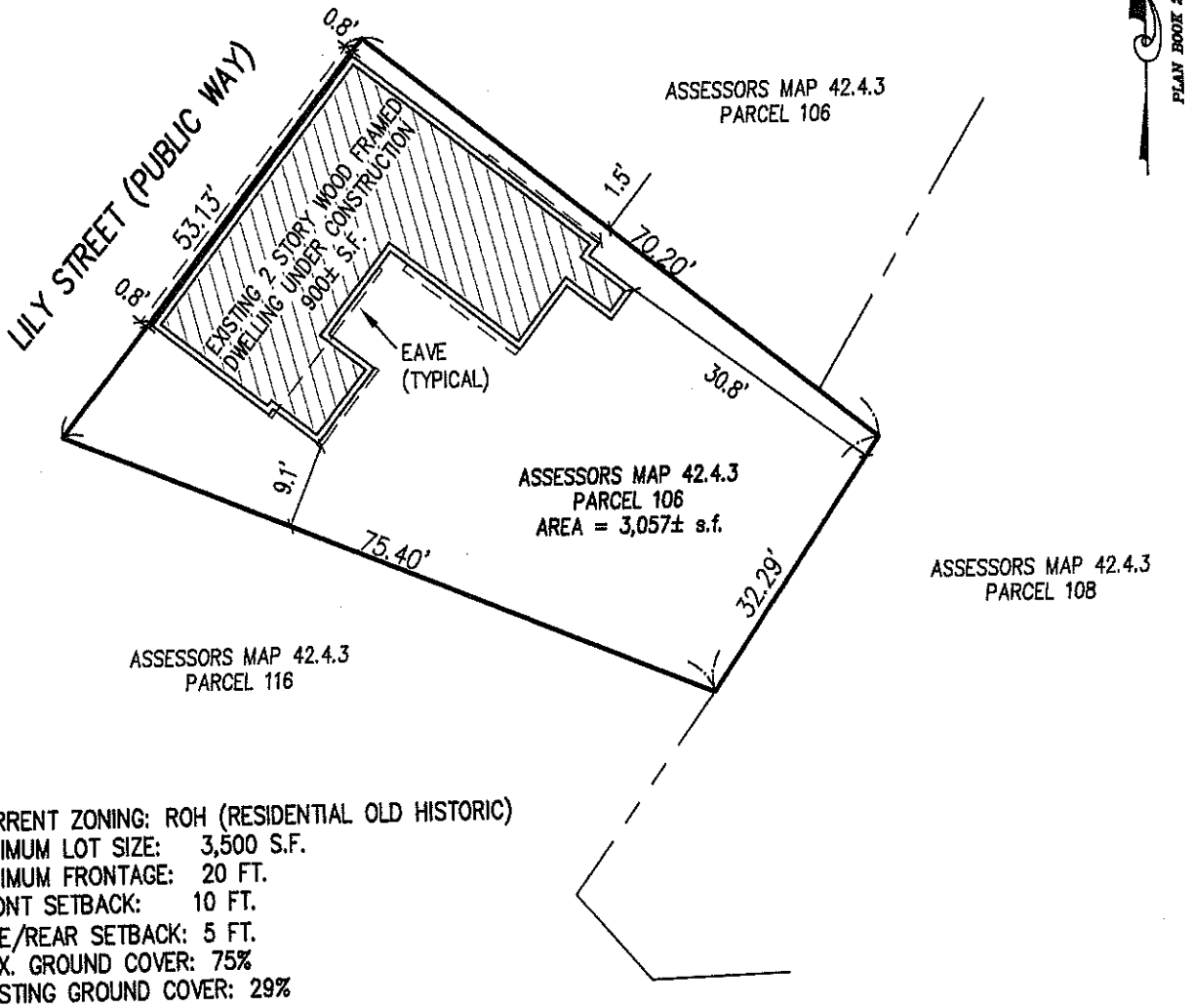
F:\SDSKPROJ\C16000\c16722\c16722.dwg Sep 18, 2007 - 7:26am

PLAN REFERENCES:

ASSESSORS MAP 42.4.3, PARCEL 107

PLAN BOOK 15, PAGE 106

PLAN BOOK 27, PAGE 21



CURRENT ZONING: ROH (RESIDENTIAL OLD HISTORIC)
MINIMUM LOT SIZE: 3,500 S.F.
MINIMUM FRONTAGE: 20 FT.
FRONT SETBACK: 10 FT.
SIDE/REAR SETBACK: 5 FT.
MAX. GROUND COVER: 75%
EXISTING GROUND COVER: 29%

COMMONWEALTH OF MASSACHUSETTS
DAVID R. ENBERG
No. 47142
PROFESSIONAL LAND SURVEYOR

PLAN

SCALE: 1"= 20'

I HEREBY CERTIFY THAT THE EXISTING DWELLING SHOWN HEREON IS LOCATED AS IT EXISTED ON THE GROUND AS OF 9-13-07.

DATE 9-17-07 PLS

DRAWN BY: MAP
C16722.dwg

Coastal Engineering Co., Inc. © 2007

COASTAL ENGINEERING COMPANY, INC.
260 Cranberry Hwy. Orleans, MA 02653
508.255.6511 Fax: 508.255.6700

PLOT PLAN OF LAND
FOR
WORKSHOP APD
NANTUCKET, MA
25 LILY STREET

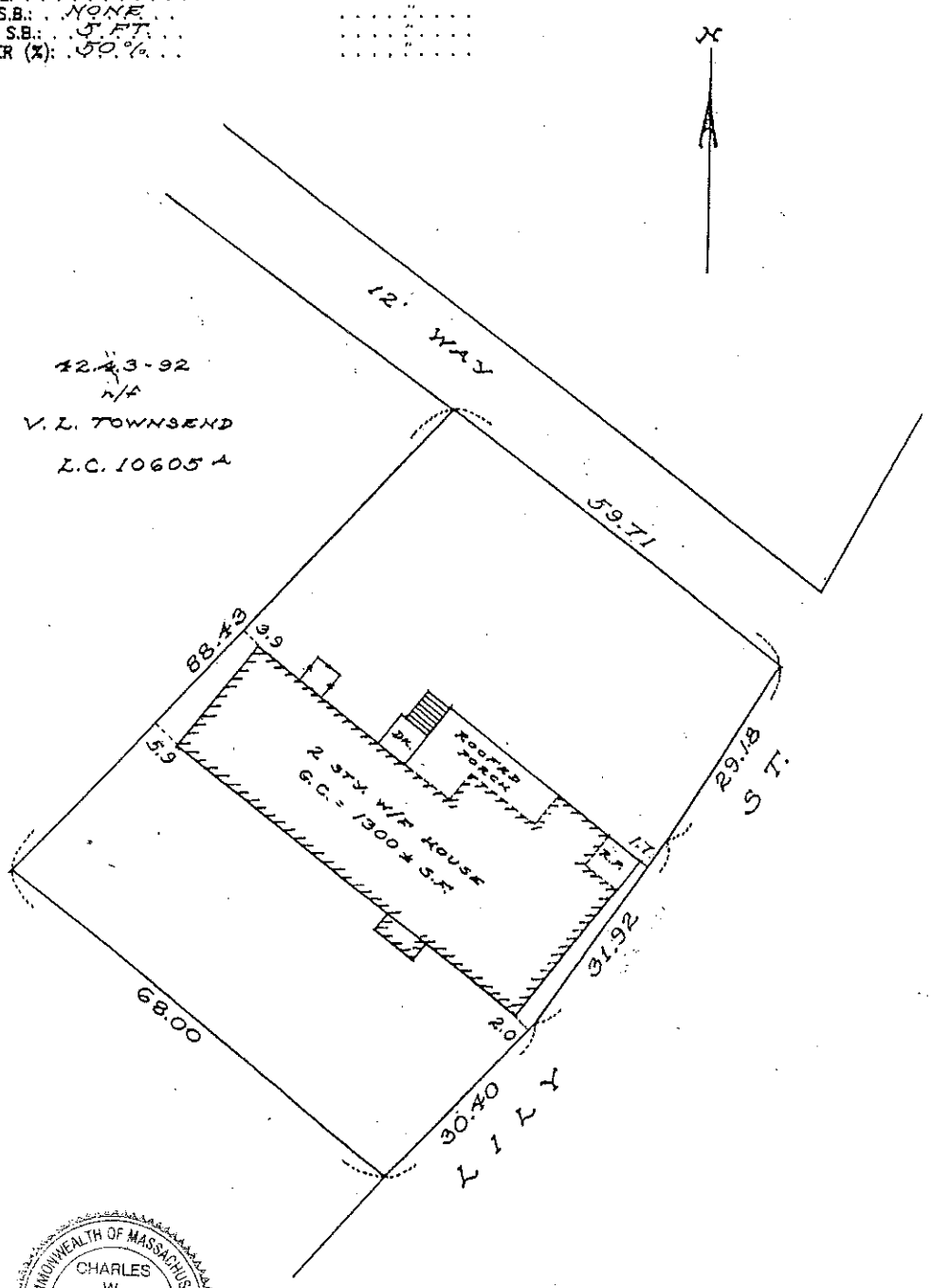
SHEET NO. C1.4.1

PROJECT NO. C16722.00

SCALE AS NOTED

DATE 9-17-07

ZONING CLASSIFICATION: R-10H	EXISTING:
MIN. AREA:	5000 S.F.	5916± S.F.
MIN. FRONTAGE:	50 FT.	SEE PLAN
FRONT YARD S.B.:	NONE	
REAR & SIDE S.B.:	5 FT.	
GROUND COVER (%):	50%	



COMMONWEALTH OF MASSACHUSETTS
CHARLES W. HART
No. 32489
REGISTERED PROFESSIONAL LAND SURVEYOR

I CERTIFY, AS OF 8-1-02, THAT THE BUILDING(S) IS/ARE LOCATED ON THE GROUND AS SHOWN HEREON.

Charles W. Hart

PROFESSIONAL LAND SURVEYOR

THIS PLOT PLAN WAS PREPARED FOR THE TOWN OF NANTUCKET BUILDING DEPARTMENT ONLY AND SHOULD NOT BE CONSIDERED A PROPERTY LINE SURVEY. THIS PLAN SHOULD NOT BE USED TO ESTABLISH PROPERTY LINES, FENCES, HEDGES, OR ANY ANCILLARY STRUCTURES ON THE PREMISES. THE PROPERTY LINES SHOWN RELY ON CURRENT DEEDS AND PLANS OF RECORD. THIS PLOT PLAN IS NOT A CERTIFICATION AS TO TITLE OR OWNERSHIP OF THE PROPERTY SHOWN. OWNERS OF ADJOINING PROPERTIES ARE SHOWN ACCORDING TO CURRENT ASSESSOR RECORDS.

ASSESSOR MAP: 42.4.3, PARCEL: 40 NOT TO BE RECORDED.

BUILDING LOCATION PLAN
OF LAND IN
NANTUCKET, MASS.

SCALE: 1" = 20' DATE: 8-1-02

Owner: JOANNE T. LAWRENCE GRAY

Deed: 449-99 Plan CWH PLAN TO BE RECORDED

Locus 32 LILY ST.

CHARLES W. HART & ASSOCIATES, Inc.
SANFORD BOAT BUILDING
49 SPARKS AVENUE
NANTUCKET, MASS. 02554
(508) 228-8910

H-4424

C:\JOBS\CWH\BLP

2015 00001417
Bk: 1484 Pg: 161 Page: 1 of 4
Doc: DECISIO 05/26/2015 02:21

TOWN OF NANTUCKET
ZONING ADMINISTRATOR
NANTUCKET, MASSACHUSETTS 02554

Date: April 24, 2015

To: Parties in Interest and Others concerned with the Decision of The Zoning Administrator in the Application of the following:

Application No: ZA 09-15 *

Owner/Applicant: Joan M. Parkos Moran, as Trustee of the Joan M. Parkos Moran 1994 Revocable Declaration of Trust & Timothy J. Moran, as Trustee of the Timothy J. Moran Revocable Declaration of Trust

* PLEASE MARGINALLY NOTE THIS DECISION in Book 1463, Page 145

Enclosed is the Decision of the Zoning Administrator which has this day been filed with the office of the Nantucket Town Clerk.

An Appeal from this Decision to the Zoning Board of Appeals may be taken pursuant to Nantucket Zoning Bylaw Section 139-29.C.(3)

Any action appealing the Decision must be brought by filing a notice of appeal, specifying the grounds thereof, with the Town Clerk, pursuant to Nantucket Zoning Bylaw Section 139-29.C.(6)

Eleanor Weller Antonietti,
Zoning Administrator

cc: Town Clerk
Building Commissioner/Zoning Enforcement Officer

TOWN OF NANTUCKET
NANTUCKET ZONING ADMINISTRATOR
2 Fairgrounds Road
Nantucket, Massachusetts 02554

1A Lily Street
Assessor's Map 42.3.4 Parcel 90
Residential Old Historic (ROH)

Book 1410, Page 272
Plan Book 12, Page 50

DECISION:

1. Upon review of the Application submitted by the Applicant, the Zoning Administrator determined pursuant to Nantucket Zoning By-Law § 139-33.A(1)(b) that the proposed alteration, extension, and structural change to the pre-existing non-conforming structure do not increase its non-conforming nature.

2. The Applicant proposes to alter previously granted administrative relief in order to allow demolition and re-construction of a portion of the pre-existing nonconforming dwelling within the existing footprint. Prior relief, granted in ZA Decision No. 18-14, recorded in Book 1463, Page 145 with the Nantucket Registry of Deeds, granted approval to elevate the entire structure, remove and replace a failed foundation, and set the structure back down on the new foundation without any change to the footprint. The proposed and approved work included an approximate three (3) foot increase in roof ridge height of the southern mass, resulting in a vertical extension of the southerly side yard setback intrusion which will be no closer to the side yard lot lines than the existing structure. The structure is sited within the side and rear yard setbacks. The proposed alterations have been granted Historic District Commission approval by virtue of Certificate of Appropriateness No. 62106.

3. In the process of performing the approved work, the walls of the southern mass, which were to be vertically extended, proved to be structurally insufficient to support the load due to rotten load-bearing studs, previously concealed by interior and exterior sheathing. This unforeseen circumstance led to the unavoidable demolition of the structurally unsound walls to allow for reconstructed walls which would adequately support the additional height of this portion of the dwelling. The overall result of the reconstruction remains unchanged from that approved in the prior decision. However, the relief granted requires modification to reflect the partial demolition and reconstruction as it pertains specifically to the southern mass of the dwelling.

4. The Locus, as shown on plot plan entitled, "Mortgage Plot Plan; Nantucket, MA.; 1A Lily Street", prepared by J. Marcklinger & Associates, Inc., dated September 17, 2013, a reduced copy of which is attached herewith as "Exhibit A", is an undersized lot of record in the Residential Old Historic zoning district. It is pre-

existing nonconforming with respect to lot area, having a lot size of 2,619 square feet where the minimum required lot size is 5,000 square feet, and with respect to frontage, having 18.65 feet of frontage where fifty (50) feet of frontage is required. It contains a 516 square foot dwelling with a total ground cover ratio of about 19.7%, where 50% is allowed. The dwelling is sited as close as 1.9 feet from the southwestern side yard lot line, 1.6 feet from the northern side yard lot line, and 2.2 feet from the easterly rear yard lot line where the required side and rear yard setbacks are five (5) feet. The premises contain one parking space where one (1) is required. These nonconformities pre-exist the 1972 adoption of Nantucket's Zoning By-law.

5. Although the height of the southern mass of the structure would increase within the required five (5) foot setback area, it would come no closer to the southern side yard lot line than the existing structure. Therefore, because the proposed alterations, including demolition and reconstruction of a portion of the southern mass, will not result in an increase to the pre-existing non-conforming side yard setback, the Zoning Administrator finds that the proposed work will not increase the pre-existing nonconforming nature of the Locus.

Eleanor Weller Antonietti
Zoning Administrator

ATTEST: A TRUE COPY
NANTUCKET TOWN CLERK

COMMONWEALTH OF MASSACHUSETTS

Nantucket, ss
On the 24 day of April, 2015, before me, the undersigned notary public, personally appeared Eleanor Weller Antonietti, the above-named Zoning Administrator of Nantucket, Massachusetts, personally known to me to be the person whose name is signed on the preceding document, and acknowledged that she signed the foregoing instrument voluntarily for the purposes therein expressed.

Notary Public:
My Commission Expires:

DORIS C. STRANG
Notary Public
Massachusetts
Commission Expires Oct 9, 2020

I CERTIFY THAT 20 DAYS HAVE ELAPSED AFTER THE DECISION WAS FILED IN THE OFFICE OF THE TOWN CLERK, AND THAT NO APPEAL HAS BEEN FILED PURSUANT TO GENERAL LAWS 40A, SECTION 11

TOWN CLERK

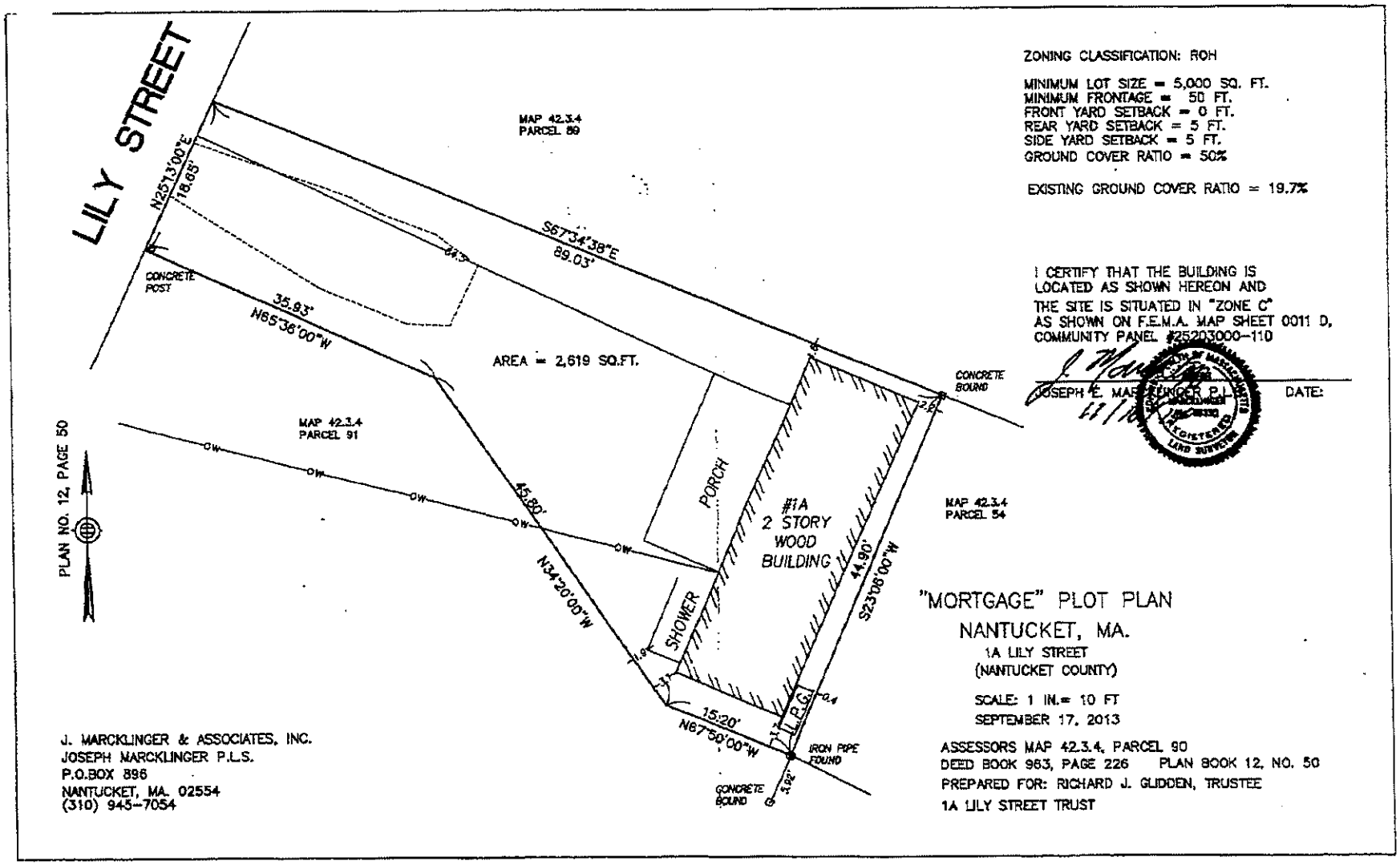
MAY 26 2015

"EXHIBIT A"

NANTUCKET COUNTY Received & Entered
Attest: Jennifer H. Ferreira, Register of Deeds

Bk: 01484 Pg: 164

230 of 1520



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Bk: 1463 Pg: 145 Page: 1 of 8
Doc: DECISIO 12/11/2014 10:26

TOWN OF NANTUCKET
ZONING ADMINISTRATOR
NANTUCKET, MASSACHUSETTS 02554

Date: November 10, 2014

To: Parties in Interest and Others concerned with the Decision of The Zoning Administrator in the Application of the following:

Application No: ZA 18-14

Owner/Applicant: Joan M. Parkos Moran, as Trustee of the Joan M. Parkos Moran 1994 Revocable Declaration of Trust & Timothy J. Moran, as Trustee of the Timothy J. Moran Revocable Declaration of Trust

---

Enclosed is the Decision of the Zoning Administrator which has this day been filed with the office of the Nantucket Town Clerk.

An Appeal from this Decision to the Zoning Board of Appeals may be taken pursuant to Nantucket Zoning Bylaw Section 139-29.C.(3)

Any action appealing the Decision must be brought by filing a notice of appeal, specifying the grounds thereof, with the Town Clerk, pursuant to Nantucket Zoning Bylaw Section 139-29.C.(6)

Eleanor Weller Antonietti,
Zoning Administrator

cc: Town Clerk
Building Commissioner/Zoning Enforcement Officer

TOWN OF NANTUCKET
NANTUCKET ZONING ADMINISTRATOR
2 Fairgrounds Road
Nantucket, Massachusetts 02554

1A Lily Street
Assessor's Map 42.3.4 Parcel 90
Residential Old Historic (ROH)

Book 1410, Page 272
Plan Book 12, Page 50

DECISION:

1. Upon review of the Application submitted by the Applicant, the Zoning Administrator determined pursuant to Nantucket Zoning By-Law § 139-33.A(1)(b) that the proposed alteration, extension, and structural change to the pre-existing non-conforming structure do not increase its non-conforming nature.

2. The Applicant proposes to alter the pre-existing nonconforming dwelling within the existing footprint. The structure is sited within the side and rear yard setbacks. The work consists of raising the structure to remove and replace a failed foundation. The structure will be set back down on the new foundation without any change to the footprint. The roof ridge height of the southern mass of the structure will be raised by approximately three (3) feet. This alteration, while resulting in a vertical extension of the southerly side yard setback intrusion, will be no closer to the side yard lot lines than the existing structure. The proposed alterations have been granted Historic District Commission approval by virtue of Certificate of Appropriateness No. 62106.

3. The Locus, as shown on plot plan entitled, "Mortgage Plot Plan; Nantucket, MA.; 1A Lily Street", prepared by J. Marcklinger & Associates, Inc., dated September 17, 2013, a reduced copy of which is attached herewith as "Exhibit A", is an undersized lot of record in the Residential Old Historic zoning district. It is pre-existing nonconforming with respect to lot area, having a lot size of 2,619 square feet where the minimum required lot size is 5,000 square feet, and with respect to frontage, having 18.65 feet of frontage where fifty (50) feet of frontage is required. It contains a 516 square foot dwelling with a total ground cover ratio of about 19.7%, where 50% is allowed. The dwelling is sited as close as 1.9 feet from the southwestern side yard lot line, 1.6 feet from the northern side yard lot line, and 2.2 feet from the easterly rear yard lot line where the required side and rear yard setbacks are five (5) feet. The premises contain one parking space where one (1) is required. These nonconformities pre-exist the 1972 adoption of Nantucket's Zoning By-law.

4. Although the height of the southern mass of the structure would increase within the required five (5) foot setback area, it would come no closer to the southern side yard lot line than the existing structure. Therefore, because the proposed

alterations, as shown on four sheets of the proposed site plans approved by the Historic District Commission with Certificate of Appropriateness No. 62106 entitled, "Moran Residence; 1A Lily St.", a reduced copy of which is attached herewith as "Exhibit B", will not result in an increase to the pre-existing non-conforming side yard setback, the Zoning Administrator finds that the proposed work will not increase the pre-existing nonconforming nature of the Locus.

Eleanor Weller Antonietti
Zoning Administrator

COMMONWEALTH OF MASSACHUSETTS

Nantucket, ss
On the 10th day of November, 2014, before me, the undersigned notary public, personally appeared Eleanor Weller Antonietti, the above-named Zoning Administrator of Nantucket, Massachusetts, personally known to me to be the person whose name is signed on the preceding document, and acknowledged that she signed the foregoing instrument voluntarily for the purposes therein expressed.

Notary Public:
My Commission Expires: 10/09/2020

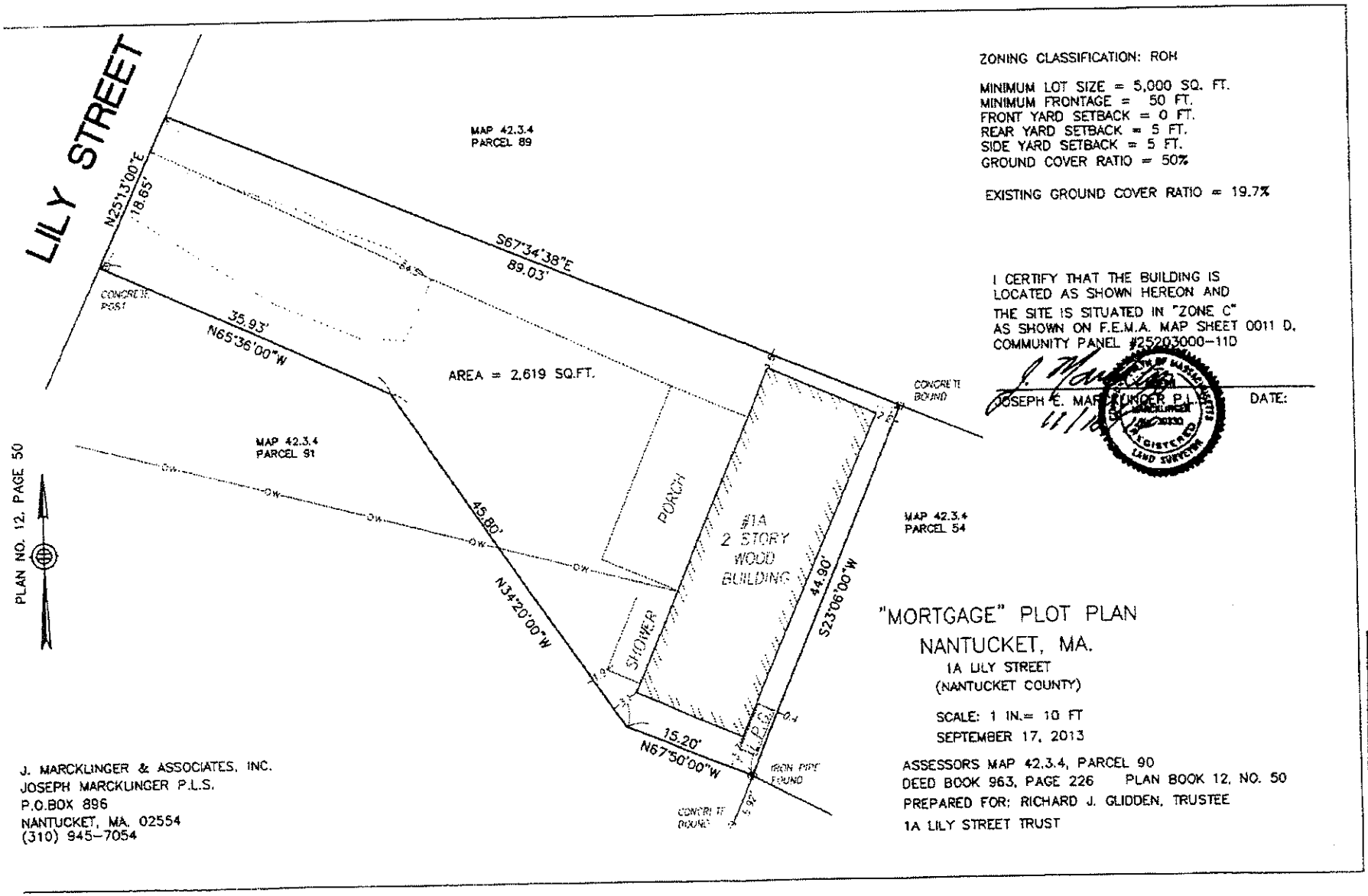
DEC 1 1 2014

I CERTIFY THAT 20 DAYS HAVE ELAPSED AFTER THE DECISION WAS FILED IN THE OFFICE OF THE TOWN CLERK, AND THAT NO APPEAL HAS BEEN FILED, PURSUANT TO GENERAL LAWS 40A, SECTION 11

TOWN CLERK

DORIS C. STRANG
Notary Public
Massachusetts
Commission Expires Oct 9, 2020

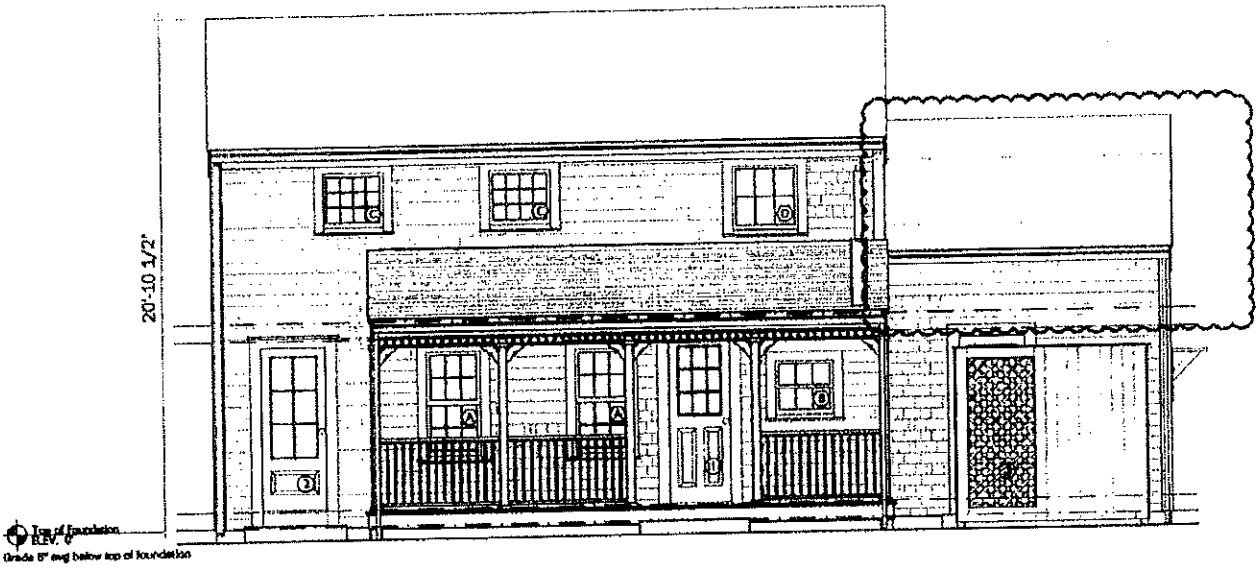
ATTEST: A TRUE COPY
NANTUCKET TOWN CLERK



234 of 1520
Bk: 01463 Pg: 148

EXHIBIT A

"EXHIBIT B

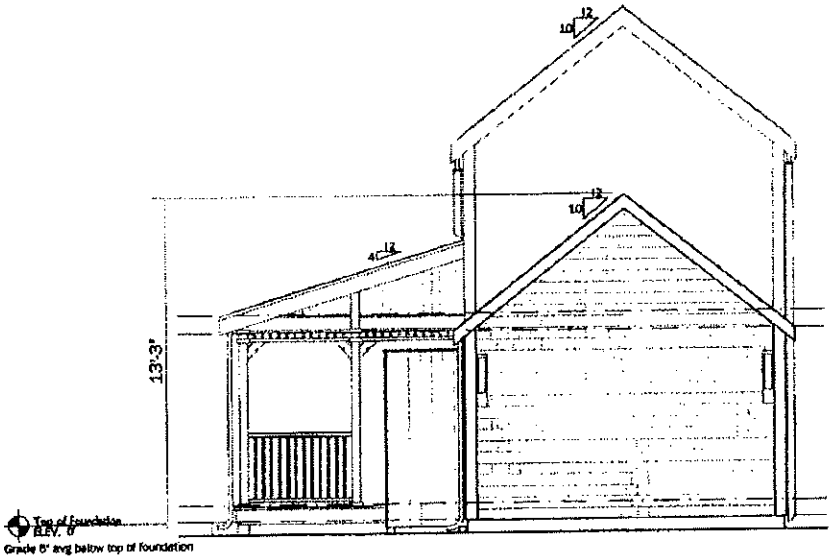


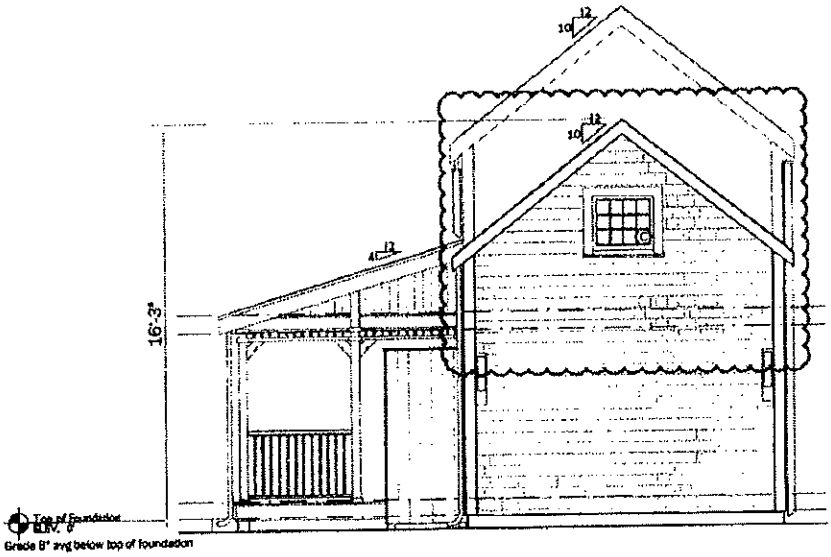
Moran Residence
1A Lily St
Nantucket, MA 02554

West Elevation
existing and proposed

HDC New Business
8-6-2014

"EXHIBIT B"(2



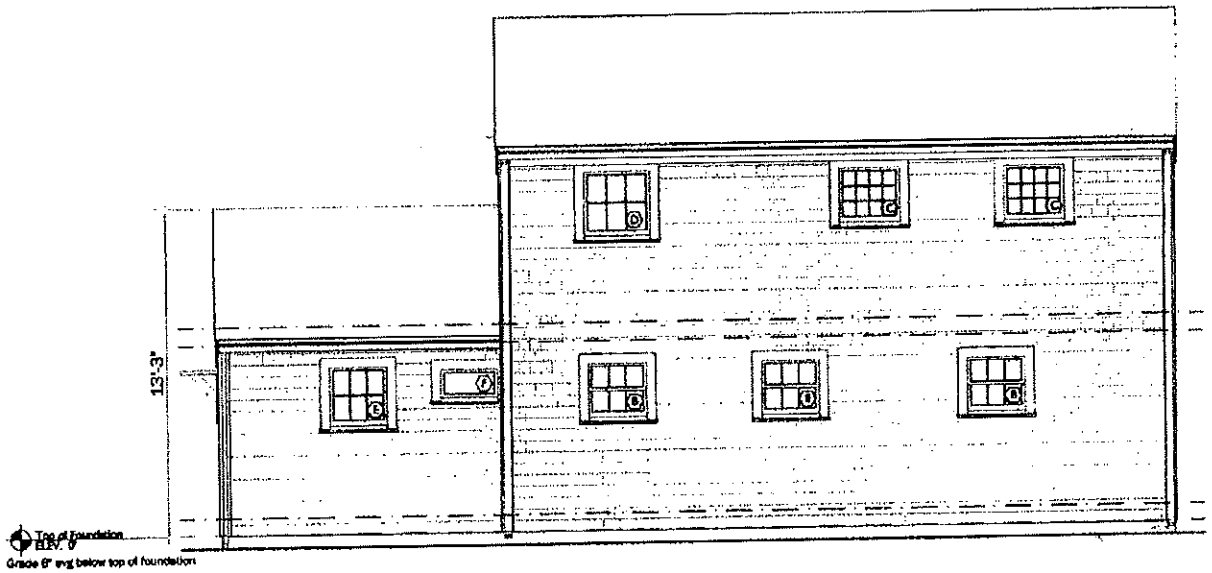


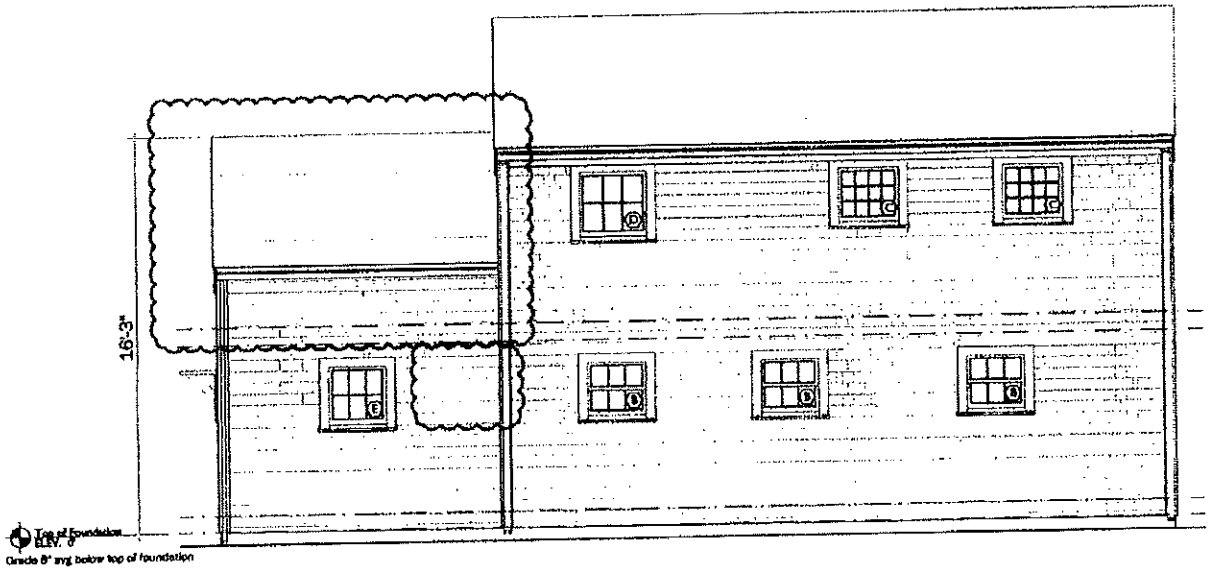
Moran Residence
1A Lily St
Nantucket, MA 02554

South Elevation
existing and proposed

HDC New Business
8-6-2014

"EXHIBIT B"



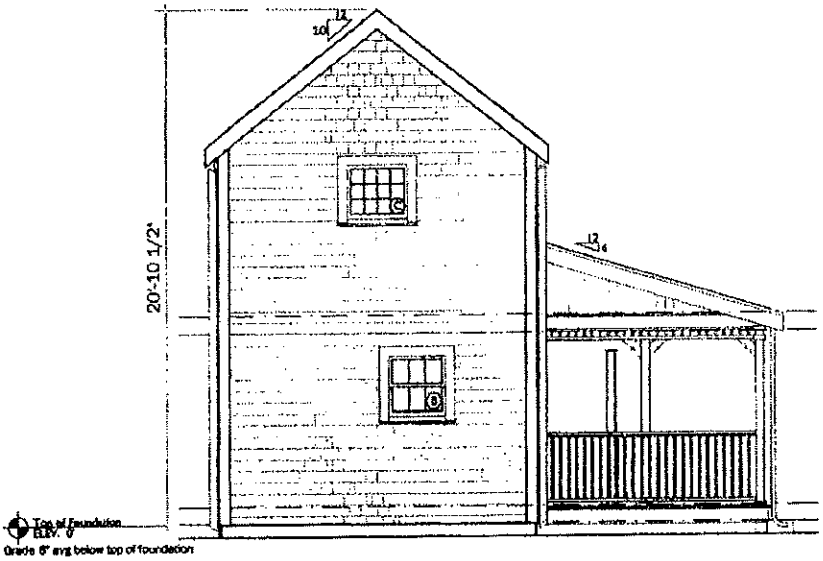


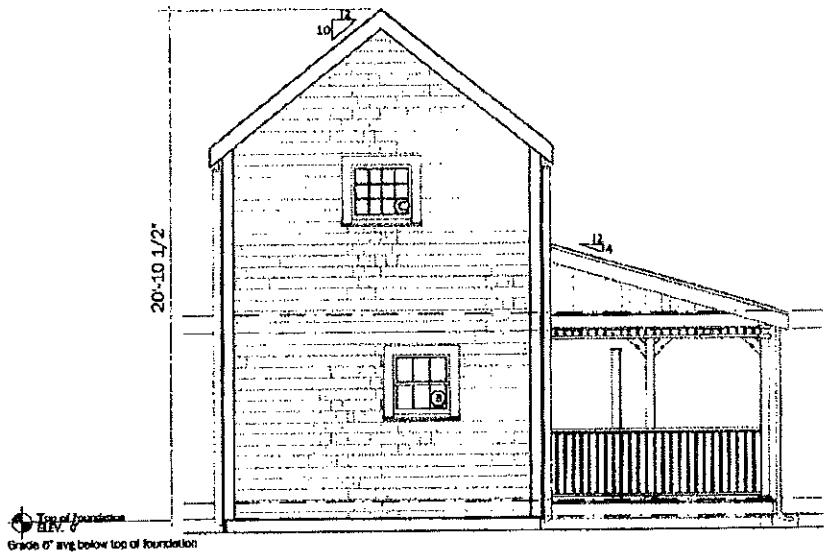
Moran Residence
1A Lily St
Nantucket, MA 02554

East Elevation
existing and proposed

HDC New Business
8-6-2014

"EXHIBIT B"





NANTUCKET COUNTY Received & Entered
Attest: Jennifer H. Ferreira, Register of Deeds

Moran Residence
1A Lily St
Nantucket, MA 02554

North Elevation
existing and proposed

HDC New Business
8-6-2014

BOOK 0384 PAGE 275

TOWN OF NANTUCKET

BOARD OF APPEALS

NANTUCKET, MASSACHUSETTS 02554

Date: March 11, 1992

CERTIFICATE OF GRANTING OF ~~XXXXXXXXXXXXXXX~~ SPECIAL PERMIT
(Massachusetts General Laws, Chapter 40A, Section 11)

The BOARD OF APPEALS of the TOWN OF NANTUCKET, hereby certifies that a ~~XXXXXXXXXXXXXXX~~ SPECIAL PERMIT has been GRANTED:

To:(Owner/Applicant) CHARLES DOUGLAS (009-92)

Address: Apartment 7J 320 Central Park West, NYC, NY 10025

affecting the rights of the Owner/Applicant with respect to land or building at: 13 Lily Street, Assessor's Map 42.3.4, Parcel 9,

Deed Reference: 133, 436

And the BOARD OF APPEALS further certifies that the attached Decision is a true and correct copy of its Decision GRANTING the ~~XXXXXXXXXXXXXXX~~ SPECIAL PERMIT and that copies of the Decision and of all plans referred to in the Decision have been filed with the Planning Board and the Town Clerk.

The BOARD OF APPEALS calls to the attention of the Owner/Applicant that General Laws, Chapter 40A, Section 11 (last paragraph) provides that no ~~XXXXXXXXXXXXXXX~~ SPECIAL PERMIT, or any EXTENSION, MODIFICATION or RENEWAL thereof, shall take effect until (a) a copy of the Decision is certified by the Town Clerk that TWENTY (20) days have elapsed after the Decision has been filed in the office of the Town Clerk and no appeal has been filed (or, if such appeal has been filed, that it has been dismissed or denied) and (b) the certified copy is recorded in the Registry of Deeds for the County of Nantucket and indexed in the grantor index under the name of the Owner of Record or is recorded and noted on the Owner's Certificate of Title. The fee for such recording or registering shall be paid by the Owner/Applicant.

Chairman

Ann Bales
Clerk

ZONING BOARD OF APPEALS
14 South Water Street
Nantucket, Mass. 02554

Map 42.3.4
parcel 9
ROH

13 Lily Street
133/436

At a Public Hearing of the ZONING BOARD OF APPEALS held at 1:00 P.M., Friday, February 7, 1992, in the Town and County Building, Broad Street, Nantucket, Massachusetts, on the Application of CHARLES DOUGLAS, Apt. TJ, 320 Central Park West, New York, NY 10025, Board of Appeals File No. 009-92, the Board made the following Decision:

1. Applicant is seeking relief by Special Permit under §139-33A to allow alteration or extension of a structure said to be pre-existing and nonconforming on a lot nonconforming as to lot area. The structure is nonconforming as to side yard setback being 2.0± feet from the lot line abutting Snake Alley; a 5 foot side yard setback is required in the district. The lot contains 4,650± S.F.; the minimum lot area allowed in the district is 5,000 S.F. The proposed addition is 396± S.F., to be located on the site of an existing porch, which will be removed, and will not come closer to the lot line than the existing structure. The premises are located at 13 LILY STREET, Assessor's Map 42.3.4, parcel 9. The property is zoned ROH.

2. The Decision is based on the Application and materials submitted with it, the testimony and evidence presented at the hearing, a letter in support of the Application, and a favorable recommendation from the Planning Board.

3. Applicant presented evidence that the structure on the lot is pre-existing nonconforming structure on a nonconforming undersized lot, and that the structure encroaches on the required side yard setback abutting Sunset Pass a/k/a Snake Alley as specified in paragraph 1. The Applicant plans to enclose an area now occupied by a patio with lattice covering.

4. By unanimous vote (Williams, Waine, O'Mara, Dooley, and Mitchell in favor) the Board finds that the structure and uses are valid pre-existing nonconforming structures and uses and that the proposed alteration will not further encroach on the setback and will not be substantially more detrimental to the neighborhood than the existing structure and uses, and the Board GRANTS the Special Permit requested under §139-33A to allow the proposed alteration substantially in compliance with the plans in the file, marked Exhibit A, which were submitted by the Applicant, upon the following condition:

A. The alteration shall not further encroach on the setback abutting Sunset Pass of 2.0± feet.

Decision

Application No. 009-92

Date: March 11, 1992

Dale Waine

Linda F. Williams

Michael O'Mara

Kate Mitchell

Peter Dooley

Rec'd 3-11-92 KJZ Asst Town Clerk

I CERTIFY THAT 20 DAYS HAVE ELAPSED AFTER THE DECISION WAS FILED IN THE OFFICE OF THE TOWN CLERK, AND THAT NO APPEAL HAS BEEN FILED, PERSUANT TO GENERAL LAWS 40 A, SECTION 11

TOWN CLERK
April 2, 1992

NANTUCKET COUNTY
Received and Entered
APR 02 1992 11:55AM
Attest Sandra M. Chadwick
Register

BOOK 0438 PAGE 072

TOWN OF NANTUCKET

BOARD OF APPEALS

NANTUCKET, MASSACHUSETTS 02554

Date: January 14 , 1994

CERTIFICATE OF GRANTING OF ~~VARIANCE~~ SPECIAL PERMIT
(Massachusetts General Laws, Chapter 40A, Section 11)

The BOARD OF APPEALS of the TOWN OF NANTUCKET, hereby certifies that a ~~VARIANCE~~ SPECIAL PERMIT has been GRANTED:

To:(Owner/Applicant) CATHERINE CONOVER (113-93)

Address: 1666 Connecticut Avenue, N.W., Suite 300, Washington, D.C. 20009

affecting the rights of the Owner/Applicant with respect to land or building at:
14 Lily Street, Assessor's Map 42.4.3, Parcel 45, as shown in Plan Book 35, Page 16, Lot 2

Deed Reference: 374/308

And the BOARD OF APPEALS further certifies that the attached Decision is a true and correct copy of its Decision GRANTING the ~~VARIANCE~~ SPECIAL PERMIT and that copies of the Decision and of all plans referred to in the Decision have been filed with the Planning Board and the Town Clerk.

The BOARD OF APPEALS calls to the attention of the Owner/Applicant that General Laws, Chapter 40A, Section 11 (last paragraph) provides that no ~~VARIANCE~~ SPECIAL PERMIT, or any EXTENSION, MODIFICATION or RENEWAL thereof, shall take effect until (a) a copy of the Decision is certified by the Town Clerk that TWENTY (20) days have elapsed after the Decision has been filed in the office of the Town Clerk and no appeal has been filed (or, if such appeal has been filed, that it has been dismissed or denied) and (b) the certified copy is recorded in the Registry of Deeds for the County of Nantucket and indexed in the grantor index under the name of the Owner of Record or is recorded and noted on the Owner's Certificate of Title. The fee for such recording or registering shall be paid by the Owner/Applicant.

Chairman

Clerk

BOOK 0438 PAGE 073

TOWN OF NANTUCKET

BOARD OF APPEALS

NANTUCKET, MASSACHUSETTS 02554

Date: January 14 , 1994

To: Parties in Interest and Others concerned with the Decision of the BOARD OF APPEALS in the Application of the following:

Application No.: 113-93

Owner/Applicant: CATHERINE CONOVER

Enclosed is the Decision of the BOARD OF APPEALS which has this day been filed in the office of the Nantucket Town Clerk.

An Appeal from this Decision may be taken pursuant to Section 17 of Chapter 40A, Massachusetts General Laws.

Any action appealing the Decision must be brought by filing an complaint in court within TWENTY (20) days after this day's date. Notice of the action with a copy of the complaint and certified copy of the Decision must be given to the Town Clerk so as to be received within such TWENTY (20) days.

Dale W. Waine Chairman

cc: Town Clerk
Planning Board
Building Commissioner

Map 42.4.3
Parcel 45
ROH District

14 Lily Street
Deed Book 374, Page 308;
Plan Book 35, Page 16

NANTUCKET ZONING BOARD OF APPEALS

NANTUCKET, MASSACHUSETTS

DECISION:

The Board of Appeals, at a public hearing held on Friday, December 10, 1993, at 12:00 P.M. in the Town and County Building, Nantucket, Massachusetts, made the following DECISION on the application (113-93) of CATHERINE CONOVER, of 1666 Connecticut Avenue, N.W., Suite 300, Washington, D.C. 20009.

1. Applicant seeks a Variance under Nantucket Zoning By-Law Section 139-16A to validate the citing of an existing deck. The deck is cited 4.1± feet from the side yard lot line, at its closest point, in a district that requires a 5 foot side yard setback. In the alternative, Applicant seeks a Special Permit under Nantucket Zoning By-Law Section 139-33A.5 to allow the deck to be reconfigured so as to come no closer to the side yard lot line than the pre-existing non-conforming dwelling, which is located 4.4± feet from the side yard lot line at its closest point, in a district that requires a 5 foot setback. The premises are located at 14 LILY STREET, Assessor's Map 42.3.1, Parcel 45, and shown in Plan Book 35, Page 16 as Lot 2. The property is zoned RESIDENTIAL-OLD HISTORIC.

2. Our findings are based upon the application papers, plans, and representations, and testimony received at the Hearing

on December 10, 1993. The Planning Staff made an unfavorable recommendation in connection with the Variance request and no recommendation in connection with the alternative Special Permit relief. The one concern expressed by an abutter was, in fact, relating to an entirely different property. No neighbors, therefore, came forward in support or in opposition to the project.

3. The Applicant states that the siting of the historic single-family residence in a manner that is not parallel to the property line with the result that the deck constructed in line with the pre-existing dwelling intrudes further into the setback area than the house itself, the topography of the lot sloping toward the Lily Pond which makes this deck a second floor deck at the rear of the house, and the de minimis nature of the intrusion into the setback (less than 1 foot) justifies the variance request. The Board finds that the statutory requirements for variance relief are not met on these facts. Accordingly, by unanimous vote, the Board hereby DENIES the requested Variance to validate the deck as presently constructed.

4. Turning to the alternative relief requested, a Special Permit under Section 139-33A.5 would allow the deck to be erected in the side yard setback area provided it is constructed no closer to the side property line than the validly grandfathered pre-existing dwelling upon a finding that the deck is not substantially more detrimental to the neighborhood than the pre-existing non-conformities. The deck operates as a natural extension of the house and it appears that it will have no

detrimental effect on the neighborhood. The Applicant recognizes that relief by Special Permit will necessitate reconfiguring the deck so that no part of it is closer to the side property line than the existing house.

5. For the reasons set herein, the Board, by unanimous vote hereby finds that the deck shown on the plan, even reconfigured to be no closer to the side property line than the existing residential structure, is an intensification of the pre-existing non-conformity. The Board, by a vote of 4 in favor (Waine, Williams, Hourihan, and O'Mara) and one against (Angelastro), hereby GRANTS a SPECIAL PERMIT under 139-33A.5, finding that the deck (once reconfigured to be no closer to the side property line than the residential structure) is not substantially more detrimental to the neighborhood than the pre-existing non-conforming dwelling.

Dale W. Waine

Linda F. Williams

William P. Hourihan, Jr

Michael O'Mara

Michael Angelastro

I CERTIFY THAT 20 DAYS HAVE ELAPSED AND NO APPEAL HAS BEEN FILED IN THIS OFFICE WITHIN THE TIME PRESCRIBED BY LAW. Rebecca J. Coleman TOWN CLERK FEB 0 4 1994

Dated: January 14, 1994

RECEIVED
TOWN CLERK'S OFFICE
NANTUCKET, MA 02554
JAN 14 1994
TIME:
ASST. CLERK

wpc/dec93/mdpzbalily

FEB 0 4 1994 10:41 AM
NANTUCKET COUNTY REC'D ENTERED
SANDRA M CHADWICK ATTEST REGISTER

End of Instrument

TOWN OF NANTUCKET

BOARD OF APPEALS

NANTUCKET, MASSACHUSETTS 02554

Date: March 19, 1997

CERTIFICATE OF GRANTING OF ~~VARIANCE AND/OR~~ SPECIAL PERMIT
(Massachusetts General Laws, Chapter 40A, Section 11)

The BOARD OF APPEALS of the TOWN OF NANTUCKET, hereby certifie that a ~~VARIANCE and/or~~ SPECIAL PERMIT has been GRANTED:

To:(Owner/Applicant) Edward J. Meehan and Warren J. Meehan, Trustees of Meehan Family Trust (012-97)

Address: c/o Reade and Alger, Box 2669, Nantucket, MA 02584

affecting the rights of the Owner/Applicant with respect to land or building at: 21 Lily Street, Assessor's Map 42.4.3, Parcel 89, Plan Book 15, Page 13, Lot B

Deed Reference: 235/49

And the BOARD OF APPEALS further certifies that the attached Decision is a true and correct copy of its Decision GRANTING the ~~VARIANCE and/or~~ SPECIAL PERMIT and that copies of the Decision and of all plans referred to in the Decision have been filed with the Planni Board and the Town Clerk.

The BOARD OF APPEALS calls to the attention of the Owner/ Applicant that General Laws, Chapter 40A, Section 11 (last paragraph) provides that no ~~VARIANCE and/or~~ SPECIAL PERMIT, or any EXTENSION, MODIFICATION or RENEWAL thereof, shall take effect until (a) a copy o the Decision is certified by the Town Clerk that TWENTY (20) days hav elapsed after the Decision has been filed in the office of the Town Clerk and no appeal has been filed (or, if such appeal has been filed that it has been dismissed or denied) and (b) the certified copy is recorded in the Registry of Deeds for the County of Nantucket and indexed in the grantor index under the name of the Owner of Record or is recorded and noted on the Owner's Certificate of Title. The fee fc such recording or registering shall be paid by the Owner/Applicant.

Clerk

NANTUCKET ZONING BOARD OF APPEALS
37 Washington Street
Nantucket, Massachusetts 02554

Assessor's Map 4243, Parcel 89 — Lot B
Deed Book 235, Page 49 — Plan Book 15, Page 13
Residential Old Historic — 21 Lily Street

DECISION:

1. At a public hearing of the Nantucket Zoning Board of Appeals, on Friday, February 14, 1997, at 1:00 P.M., in the Selectmen's Meeting Room, in the Town and County Building, Broad Street, Nantucket, Massachusetts, the Board made the following decision on the application of Edward J. Meehan and Warren J. Meehan, Trustees of Meehan Family Trust, under Declaration of Trust dated August 20, 1985, recorded with Nantucket Deeds in Book 235, Page 45, Owner, and Patricia Harrington Schreiber and Phillippe S. Schreiber, Applicant, c/o Reade & Alger Professional Corporation, Post Office Box 2669, Nantucket, Massachusetts 02584, File No. 012-97:

2. Applicant requests a FINDING, pursuant to Mass. Gen. Laws c. 40A, §6, and Nantucket Zoning By-law (the "By-law") §139-33.A, that the addition of a full second story within the footprint of a structure, said to pre-exist the 1972 effective date of the By-law, will not be substantially more detrimental to the neighborhood than the existing structure. The locus is non-conforming as to ground cover, having a ground cover ratio of about 32.34%, in a district that allows a maximum ground cover ratio of 30% for this 3,540± square-foot lot, non-conforming as to lot area, where a minimum lot area of 5,000 square feet is required. In the alternative, Applicant requests a SPECIAL PERMIT under By-law §139-33.A, to allow construction of said addition, which will not increase the non-conforming nature of said lot.

The subject property (the "Locus") is located at 21 Lily Street, Assessor's Map 4243, Parcel 089, Plan Book 15, Page 13, Lot B. The property is zoned Residential Old Historic.

3. Our decision is based upon the application and accompanying materials, and representations and testimony received at our public hearing. There was no Planning Board recommendation. One neighbor, through a representative present at the hearing and two letters to the Board, voiced a concern over the effect of the height of the proposed addition on the view from the first floor of his dwelling.

4. Applicant represents that the dwelling upon the Locus has existed since a time prior to the 1972 effective date of the By-law. The height of the existing dwelling is 19± feet above grade; the height of the dwelling after the construction of the proposed addition will be 29± feet above grade. Under the By-

law, height of up to 30 feet is permissible. The Applicant presented photographic evidence that most, if not all of the properties surrounding the Locus are improved by two-story residential structures.

5. Based upon the foregoing, the Board finds that the dwelling upon the Locus pre-exists the By-law; and that the proposed addition of a second story to the existing dwelling, within the existing footprint, will intensify the zoning non-conformity of the Locus in that the existing dwelling exceeds the permitted ground cover ratio of 30%. The Board further finds that the proposed addition of a second story to the existing dwelling, within the existing footprint, will not be substantially more detrimental than the existing non-conforming structure to the neighborhood and that it is in harmony with the general purpose and intent of the By-Law.

6. Accordingly, by UNANIMOUS vote, the Board votes to GRANT the requested relief by SPECIAL PERMIT under By-law §139-33.A to allow the proposed second-story addition to the existing dwelling, within the existing footprint, upon the following condition that the addition shall be performed in substantial conformity with the plans approved by the HDC in its Certificate of Appropriateness No. 23799, or such other plans as may hereafter be approved by the HDC; provided that the height of such dwelling after the addition shall not exceed 29 feet above finished grade.

Dated: March 19, 1997

Michael J. O'Mara

Linda F. Williams

Edward S. Applegate

Dale W. Waine

Nancy Sevrens

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I CERTIFY THAT 20 DAYS HAVE ELAPSED AFTER THE DECISION WAS FILED IN THE OFFICE OF THE TOWN CLERK, AND NO APPEAL HAS BEEN FILED PURSUANT TO GENERAL LAWS 40A, SECTION 11
Rebecca J. Cottingham
TOWN CLERK

APR 09 1997

RECEIVED
TOWN CLERK'S OFFICE
NANTUCKET, MA 02554
MAR 19 1997
Time 3:30 PM
ASST
CLERK:

APR 09 1997
NANTUCKET COUNTY
REC'D ENTERED

1:45 PM
SANDRA M CHADWICK
ATTEST REGISTER

End of Instrument

BOOK 0662 PAGE 108

TOWN OF NANTUCKET

BOARD OF APPEALS

NANTUCKET, MASSACHUSETTS 02554

Date: March 15, 2000

To: Parties in Interest and Others concerned with the Decision of the BOARD OF APPEALS in the Application of the following:

Application No.: 017-00

Owner/Applicant: GARRETT HEHER, TRUSTEE OF EIGHT LELY NOMINEE TRUST

Enclosed is the Decision of the BOARD OF APPEALS which has this day been filed in the office of the Nantucket Town Clerk.

An Appeal from this Decision may be taken pursuant to Section 17 of Chapter 40A, Massachusetts General Laws.

Any action appealing the Decision must be brought by filing an complaint in court within TWENTY (20) days after this day's date. Notice of the action with a copy of the complaint and certified copy of the Decision must be given to the Town Clerk so as to be received within such TWENTY (20) days.

William P. Hourihane JrChairman

cc: Town Clerk
Planning Board
Building Commissioner

PLEASE NOTE: MOST SPECIAL PERMITS AND VARIANCES HAVE A TIME LIMIT AND WILL EXPIRE IF NOT ACTED UPON ACCORDING TO NANTUCKET ZONING BY-LAW §139-30I (SPECIAL PERMITS); §139-32I (VARIANCES) ANY QUESTIONS, PLEASE CALL THE NANTUCKET ZONING BOARD OF APPEALS.

TOWN OF NANTUCKET
ZONING BOARD OF APPEALS
37 WASHINGTON STREET
NANTUCKET, MA 02554

Assessors Map: 42.3.4
Parcel: 08
Residential Old-Historic

8 Lily Street
Deed Book 636, Page 338

At a Public Hearing of the NANTUCKET ZONING BOARD OF APPEALS held at 1:00 p.m., Friday, February 11, 2000 in the Conference Room, Town Annex Building, 37 Washington Street, Nantucket, Massachusetts on the Application of Bruce I. Bartlett, 8 Lily Street, Nantucket, MA 02554, Owner and for GARRETT HEHER, TRUSTEE OF EIGHT LILY NOMINEE TRUST, c/o Vaughan, Dale and Hunter, P.C., Whalers Lane, Nantucket, MA 02554, Contract Purchaser of 8 Lily Street, Nantucket, Massachusetts 02554, Board of Appeals No. 017-00, the Board made the following decision:

1. Applicant (Heher) is seeking relief by Special Permit under Nantucket Zoning By-Laws Section 139-33A(4)(a) and (b) (Alteration/expansion of a pre-existing non-conforming structure/use). Applicant proposes to renovate the secondary dwelling by reconstructing the roofline, a portion of which is located within the northerly 5 foot required side yard set back area. There would be no increase in footprint and the new roofline would come no closer to that lot line than the existing structure. The alteration would result in a structure no higher at its highest point than the existing, non-conforming structure. In addition the single story dwelling, the Lot also contains a two-story primary structure. The locus is non-conforming as to side yard set back with the subject dwelling being sited about 1.4 feet at its closest point from the northerly side yard lot line in a district that requires a minimum of five (5) feet.

The Premises is located at EIGHT LILY STREET, Assessors Map 42.3.4, Parcel 8, Deed reference 636/338. The property is owned residential old historic.

2. The Decision is based upon the Application and the material submitted with it and the testimony and evidence presented at the Hearing. The Planning Board made no recommendation, as the matter was not of planning concern. There were no letters on file from abutters in favor of or opposed to the Application. One member of the public present at the Public Hearing told the Board that it was her recollection that the renovation as proposed by the Applicant closely resembled the subject dwelling prior to an earlier renovation.

3. Applicant proposes to renovate the secondary dwelling by reconstructing the roof line, a portion of which is located within the northerly side yard setback area. Applicant's counsel explained that the Premises consists of a lot of land approximately 13,712± square feet in size as improved by a two-story, wood-framed primary dwelling and a single-story, wood-framed secondary dwelling. The lot of land is dimensionally conforming in all respects. The second dwelling is non-conforming as to side yard setback being 1.4± feet, at its closest point, from the northernmost property line in a zoning district with a minimum side yard setback requirement of five (5) feet.

The Applicant, through counsel, proposes to renovate the secondary dwelling by reconstructing the roofline, a portion of which is located within the northerly side yard setback area. All of the work proposed during the renovation to the existing secondary dwelling will be done within the existing footprint and will result in a structure no higher at its highest point than the existing, non-conforming structure. The structure will remain a one (1) single story in nature.

Applicant's counsel stated that the proposed change in the roofline to the pre-existing non-conforming structure resulting in a structure no higher than the existing structure with all the work done within the existing footprint is consistent with other secondary dwellings in the neighborhood.

Applicant submitted, for consideration by the Board, elevations representing the subject cottage as it presently exists, as well as elevations depicting the cottage when renovated as proposed. Additionally, Applicant submitted to the Board color photographs of the subject cottage depicting its present configuration from all four (4) sides.

4. Therefore, the Board finds that the alteration and expansion of the structure as proposed would be an increase in the non-conforming nature of the setback intrusion in that it is increasing the height of that portion of the structure that pre-exists within the setback. In addition, the Board finds that said increase would not be substantially more detrimental to the neighborhood than the existing non-conformity by the renovation of the subject dwelling by reconstructing the roofline and north face elevation as proposed by the Applicant as it has virtually no impact on the surrounding neighborhood given there is no increase in footprint of the structure and a de-minimus change to the roofline.

5. Accordingly, by a UNANIMOUS vote, the Board GRANTS the requested Special Permit under Nantucket Zoning By-law, Section 139-33A(4)(a) and (b) to renovate the subject cottage as proposed upon the following condition:

(a) The dwelling shall be no higher than about 15 feet 6 inches after renovation.

Dated: March 15, 2000
Nantucket, MA

D. NEIL PARENT

EDWARD SANFORD

DALE W. WAINE

EDWARD MURPHY

NANCY SEVRENS

MAY 30 2000

I CERTIFY THAT 20 DAYS HAVE ELAPSED AFTER THE DECISION WAS FILED IN THE OFFICE OF THE TOWN CLERK, AND THAT NO APPEAL HAS BEEN FILED, PURSUANT TO GENERAL LAWS 40A, SECTION 11

TOWN CLERK

RECEIVED
TOWN CLERK'S OFFICE
NANTUCKET, MA 02554

MAR 15 2000
TIME 3:00 pm
ASST. CLERK: XL Carpenter

Nantucket County Received & Entered
Date: MAY 31 2000 Time: 10 35 am
Attest: Register of Deeds

End of Instrument

TOWN OF NANTUCKET

BOARD OF APPEALS

NANTUCKET, MASSACHUSETTS 02554

2006 00003899
Bk: 1052 Pg: 68 Page: 1 of 5
Doc: SP 11/28/2006 09:55 AM

Date: November 7, 2006

To: Parties in Interest and Others concerned with the Decision of the BOARD OF APPEALS in the Application of the following:

Application No.: 094-06

Owner/Applicant: A. Steven Perelman

Enclosed is the Decision of the BOARD OF APPEALS which has this day been filed in the office of the Nantucket Town Clerk.

An Appeal from this Decision may be taken pursuant to Section 17 of Chapter 40A, Massachusetts General Laws.

Any action appealing the Decision must be brought by filing an complaint in court within TWENTY (20) days after this day's date. Notice of the action with a copy of the complaint and certified copy of the Decision must be given to the Town Clerk so as to be received within such TWENTY (20) days.

Nancy P. Stevens, Chairman

cc: Town Clerk
Planning Board
Building Commissioner

PLEASE NOTE: MOST SPECIAL PERMITS AND VARIANCES HAVE A TIME LIMIT AND WILL EXPIRE IF NOT ACTED UPON ACCORDING TO NANTUCKET ZONING BY-LAW §139-30I (SPECIAL PERMITS); §139-32I (VARIANCES) ANY QUESTIONS, PLEASE CALL THE NANTUCKET ZONING BOARD OF APPEALS.

TOWN OF NANTUCKET
ZONING BOARD OF APPEALS
2 FAIRGROUNDS ROAD
NANTUCKET, MA 02554

Assessor's Map 42.4.3/107
25 Lily Street
ROH

Plan Book 15, Page 106

Deed Ref: Book 1018, Page 322

DECISION:

1. At a Public Hearing of the Nantucket Zoning Board of Appeals held at 1:00 P.M., Friday, November 3, 2006, in the Conference Room, 2 Fairgrounds Road, Nantucket, MA on the Application of **A. STEVEN PERELMAN,** with a mailing address of 2 Hawthorne Way, Avon, CT 06001, Board of Appeals File No. **094-06**, the Board made the following Decision:

2. Applicant is seeking relief by SPECIAL PERMIT under Nantucket Zoning By-law Section 139-33A (alteration/expansion of a pre-existing, nonconforming structure/use). Applicant proposes to expand the interior living space of the existing single-family dwelling by constructing a shed dormer within the existing footprint and within the required northeasterly five-foot side yard setback area, but without coming any closer to the lot line than the existing structure. There would be other alterations made to the structure and about 62 square feet of new ground cover added that would be conforming as to ground cover and setback requirements and would not need relief from this Board. To the extent necessary, Applicant is seeking relief under the aforementioned section to allow the existing structure to be lifted off the foundation and be replaced on substantially the same location on a new foundation without making the nonconforming setback distance more nonconforming and would possibly entail a minimal height increase within the required northeasterly side yard setback area of not more than one foot due to the placement of a new foundation under the structure. The Locus is nonconforming as to lot size with the lot containing about 3,057 square feet of area in a district that requires a minimum lot size of 5,000 square feet; and as to side yard setback with the structure being sited as close as about 2'1" from the northeasterly side yard lot line in a district that requires a minimum setback of five feet.

The Premises is located at **25 LILY STREET**, Assessor's Map 42.4.3, Parcel 107, Plan Book 15, Page 106. The property is zoned Residential-Old-Historic.

2. Our Decision is based upon the application and accompanying materials, and representations and testimony received at our public hearing. There was no Planning Board recommendation, as the matter did not present any issues of planning concern. There were no letters received regarding this matter on file.

Except for the presentation of the Applicant's representative, there was no support or opposition presented at the public hearing.

3. Applicants, through counsel, stated that as part of the overall renovation of the pre-existing nonconforming single-family dwelling, it is proposed that a shed dormer be added to the second floor of the northeasterly side of the building to increase the second floor interior living space. The dormer would be placed within the existing footprint of the dwelling without coming any closer to the northeasterly side yard lot line and without raising the existing ridge height of the structure as a result of the inclusion of the dormer. The structure is clearly visible on the 1938 and 1957 aerial photographs in the Town records substantially in its present configuration and siting and is thus validly grandfathered as to siting. The other proposed renovations and addition of approximately 62 square feet of new ground cover would not create any new nonconformity and be conforming as to ground cover and setback requirements. The house would be raised up off of the foundation and a new foundation constructed under it with the house being placed back down in its current location. Applicant represented that the building elevation plans were still pending before the Historic District Commission for approval. Applicant also proposes to construct a new parking space as the lot currently provides no parking space.

4. Therefore, based upon the foregoing, the Board of Appeals finds that the addition of a shed dormer on the northeasterly side of the building as proposed would increase the nonconforming massing of the structure within the required northeasterly five-foot side yard setback area. However, the Board further finds that said increase would be de minimis in nature and would not be substantially more detrimental to the neighborhood than the existing nonconforming structure. The Board further finds that a grant of special permit relief for the proposed raising of the structure and placement back on a new foundation substantially in the same location and with substantially the same height would be consistent with previous relief granted by this Board in the same district, and would be in harmony with the general purpose and intent of the Zoning By-law, and would not be substantially more detrimental to the neighborhood that the pre-existing nonconformity. The Board expressed concern about changes in maximum height within the required northeasterly required side yard setback area due to the construction of the new foundation under the house and establishment of a benchmark for the existing height prior to the work commencing. The Applicant stated that there was no intention of raising the height and the structure was currently not in violation of the maximum ridge height allowed of 30 feet. Nevertheless, the Board felt that allowing a ridge height increase of no more than three inches to allow for the adjustment to the foundation would be appropriate and determined that such an alteration would not be substantially more detrimental to the neighborhood than the existing nonconforming structure.

5. Accordingly, by UNANIMOUS vote, the Board GRANTS relief by Special Permit pursuant to Nantucket Zoning By-law Section 139-33A(5) to allow the extension/expansion of the dwelling unit as proposed by addition of the shed dormer within the northeasterly roof plane and to place a new foundation under the dwelling, along with other alterations and expansion of the dwelling that do

not require relief from this Board as part of the overall renovation of the structure, subject to the following conditions:

a. The shed dormer approved hereunder shall not be larger than twelve feet in length and be of a shed dormer design;

b. The ridge height of the dwelling unit shall not be increased more than three (3") inches above the existing ridge height as a result of the placement of the new foundation under the dwelling;

c. There shall be no exterior construction related to this project between May 15 to September 15 of any given year;

d. The owner shall take reasonable steps to protect the boundary line area along the northeasterly lot line during construction so as to not negatively impact the immediate abutter's property; and

e. The re-siting of the structure shall be done in substantial conformity with the "Plan", dated October 26, 2006, prepared by Coastal Engineering Company, Inc., a reduced copy of which is attached hereto as Exhibit A.

Dated: November 7, 2006

Nancy J. Sevrens

Michael J. O'Mara

Edward S. Toole

David Wiley

Burr Tupper

I CERTIFY THAT 20 DAYS HAVE ELAPSED AFTER THE DECISION WAS FILED IN THE OFFICE OF THE TOWN CLERK, AND THAT NO APPEAL HAS BEEN FILED, PURSUANT TO GENERAL LAWS 40A, SECTION 11

TOWN CLERK

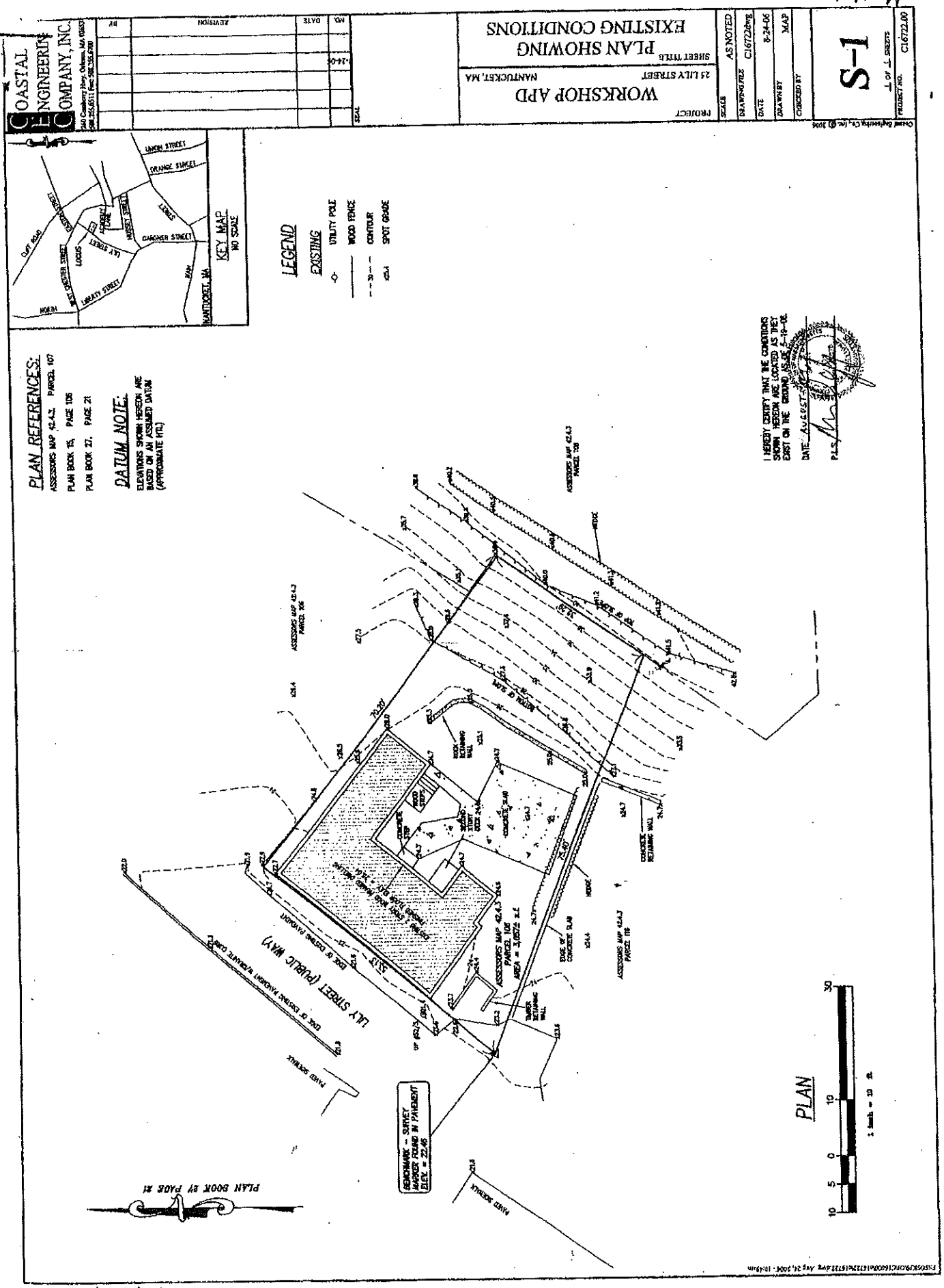
TOWN OF NANTUCKET
A TRUE COPY ATTEST
TOWN CLERK
NANTUCKET, MASS.
INCORPORATED 1671
NOV 28 2006

TOWN CLERK
NANTUCKET

06 NOV -7 P3:27

RECEIVED

CKH. 14


COASTAL ENGINEERING COMPANY, INC.
WORKSHOP APD
23 LILY STREET
NANTUCKET, MA
PLAN SHOWING EXISTING CONDITIONS
AS NOTED
C1672dwg
8-24-06
S-1
C1672.00
KEY MAP
NO SCALE
LEGEND
EXISTING
UTILITY POLE
WOOD FENCE
CONTOUR
SPOT GRADE
PLAN REFERENCES:
ASSESSORS MAP 42-4-3, PARCEL 107
PLAN BOOK 15, PAGE 105
PLAN BOOK 27, PAGE 21
DATUM NOTE:
ELEVATIONS SHOWN HEREON ARE BASED ON AN ASSUMED DATUM (APPROXIMATE HTL)
I HEREBY CERTIFY THAT THE CONDITIONS SHOWN HEREON ARE LOCATED AS THEY EXIST ON THE GROUND AS OF 8-19-06
DATE: AUGUST 24, 2006
P.L.S.
LILY STREET (PUBLIC WAY)
EDGE OF PAVEMENT
EDGE OF CONCRETE SIDEWALK
EDGE OF CONCRETE SIDEWALK
SITE
ASSESSORS MAP 42-4-3 PARCEL 106 AREA = 3,022± s.f.
ASSESSORS MAP 42-4-3 PARCEL 108
ASSESSORS MAP 42-4-3 PARCEL 109
ASSESSORS MAP 42-4-3 PARCEL 105
BENCHMARK - SURVEY MARKER FOUND IN PAVEMENT ELEV. = 22.46
PLAN
PLAN BOOK 27 PAGE 21
NANTUCKET COUNTY Received & Entered
Attest: Jennifer H. Ferreira, Register of Deeds

Property Information

Property ID	42.4.3 98
Location	78 CENTER ST
Owner	REGATTA CENTERBOARD HOLDINGS LLC

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town and County of Nantucket, MA makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Parcels updated December, 2014
Properties updated January, 2015

PB Check # 29481

GLIDDEN & GLIDDEN, P.C.
ATTORNEYS AT LAW
P. O. BOX 1079
37 CENTRE STREET
NANTUCKET, MASSACHUSETTS 02554
508-228-0771
FAX 508-228-6205
OFFICE@GLIDDENANDGLIDDEN.COM

RECEIVED
JUN 15 2016
By

RICHARD J. GLIDDEN
JESSIE M. GLIDDEN BRESCHER
JOHN B. BRESCHER

JAMES K. GLIDDEN
(1917 – 2009)

June 13, 2016

Ms. Leslie Snell
Deputy Director of Planning
Planning and Land Use Services
2 Fairgrounds Road
Nantucket, MA 02554

RE: Special Permit Request
Regatta Inn, 78 Centre Street, Nantucket

Dear Leslie,

Enclosed on behalf of Inn Partners Regatta, LLC, the owner/applicant of the Locus situated at 78 Centre Street, is a request for a Special Permit relief from the Planning Board. The Applicant hereby requests the following:

1. Special Permit relief pursuant to Nantucket Zoning Bylaw Section 139-30 for uses allowed by Special Permit (139-7a). Specifically, the applicant is requesting Special Permit relief for a transient residential facility use. The Regatta Inn Guest House has been continuously in use since before the adoption of the Zoning Bylaw. However, as it is a grandfathered use, it has never received any planning or zoning board of appeals relief. Furthermore, pursuant to Nantucket Zoning Bylaw Section 139-2 – Definitions – Transient Residential Facilities are allowed by Special Permit in the Residential Old Historic (ROH) district if the Locus is 0.25 miles from the Commercial Downtown District. As such, the applicant is requesting Special Permit relief for this permitted use in the ROH.

2. Pursuant to Section 139-33, the applicant is requesting Special Permit relief in order to alter and expand the pre-existing nonconforming structure upon the Locus per the attached plans. The existing structure is preexisting nonconforming with respect to setbacks and height, being as close as 0.4 feet from the southeasterly side yard lot line and having steps approximately 0.4

feet over the front yard lot line in a zoning district that require a side yard setback of five (5) feet and a front yard setback of zero (0) feet, respectively. The structure also has a roof peak elevation of 45.7 feet in a district that that allows for a maximum height of thirty (30) feet. Said alterations to the structure will not increase the nonconforming nature of the structure because the proposed addition will be no closer to the lot lines than the existing structure, as shown on the plan enclosed as part of this application.

3. Pursuant to Section 139-18.D, relief from the requirements of the Section 139-18 (parking) of the Town Code. Specifically, the applicant is requesting a waiver of seventeen (17) spaces. Per the Section 139-18.B., the parking requirement for a "rooming, lodging, or guest house" is for 3 spaces + 1 space for every rental unit over 2. Because there are 16 rental units, 18 parking spaces are required and only one (1) is provided.

4. Minor Site Plan review pursuant to 139-23.B.

I have also enclosed the filing fee of $250.00 made payable to the Town of Nantucket and two (2) copies of the application and supporting documentation.

Please prepare public notice for public hearing on the application at the Planning Board's July 11, 2016 meeting.

Also please note that I reserve the right to supplement this application with further materials at a later time.

If you have any questions, please do not hesitate to contact me. Trusting you find everything in order, I remain,

Very Truly Yours,

John B. Brescher, Esq.

Enclosure(s)
Cc:

Town Clerk
Town & County Building
16 Broad St
Nantucket, MA 02554

JUN 14 2016

Nantucket Planning Board

RECEIVED
JUN 15 2016
By CHK # 29481

Application for a Special Permit

Date: 6-14-16 File #: 37-16

Name of development: _____

Owner(s) name(s): Inn Partners Regatta, LLC

Mailing address: 359 Main Street, Chatham, MA
Phone number: 228-0771 Fax number: _____ E-mail: john@gliddenandglidden.com

Applicant's name: Same

Mailing address: _____
Phone number: _____ Fax number: _____ E-mail: _____

Engineer / surveyor's name: Bracken Engineering, Inc.

Mailing address: 19 Old South Road, Nantucket, MA 02554
Phone number: 508-325-0044 Fax number: _____ E-mail: don@brackeneng.com

Location of lot(s):

☐ Street address 78 Center Street

☐ Tax Assessors Map 42.4.3 Parcel 98

☐ Nantucket Registry of Deed: Plan Book 14 and Page 13 **OR**

Plan File # _____ **OR** Land Court Plan # _____ at Certificate # _____

Size of parcel: 5,557 +/- sq. ft. Zoning District: ROH

Special Permit sought: (check one)

- ❍ Cluster subdivision
- ❍ Commercial WECS
- ❍ Driveway Access/Curb Cut Special Permit
- ❍ Harbor Overlay District (HOD)
- ❍ Major Commercial Development (MCD)

- ❍ Multi-family Special Permit
- ❍ Moorlands Management District Subdivision or Construction (MMD)
- ❍ NEHOD (Neighborhood Employee Housing Overlay District)
- ❍ MRD (Major Residential Development)
- ❍ MIPOD (Mid-Island Planned Overlay District)
- ⊗ Other Uses Requiring a Special Permit (specify all uses and *Nantucket Code* sections)

Section	Description
139-7	Transient Residential Facility Use
139-33	Expansion of pre-existing nonconforming structure
139-18(D)	Parking waiver
139-23.B	Minor site plan review

Specify all associated Zoning Code relief sought:

Section	Description
see attached	

Only the zoning relief expressly requested above will be considered as part of this application.

If applying for a Major Commercial Development, specify how the application will comply with Section 139-11 (J) of the *Zoning Code of the Town of Nantucket*, also known as the Town's Affordable Housing Effort:

Planning Board filing fee due: $_____

Engineering Inspection Escrow Deposit due: $_____

I/ we hereby certify that the applicant(s) cited above have been authorized by me/ us to file a Special Permit application with the Planning Board on property that I/ we own.

Owner(s)' Signature(s)

Applicant's Signature

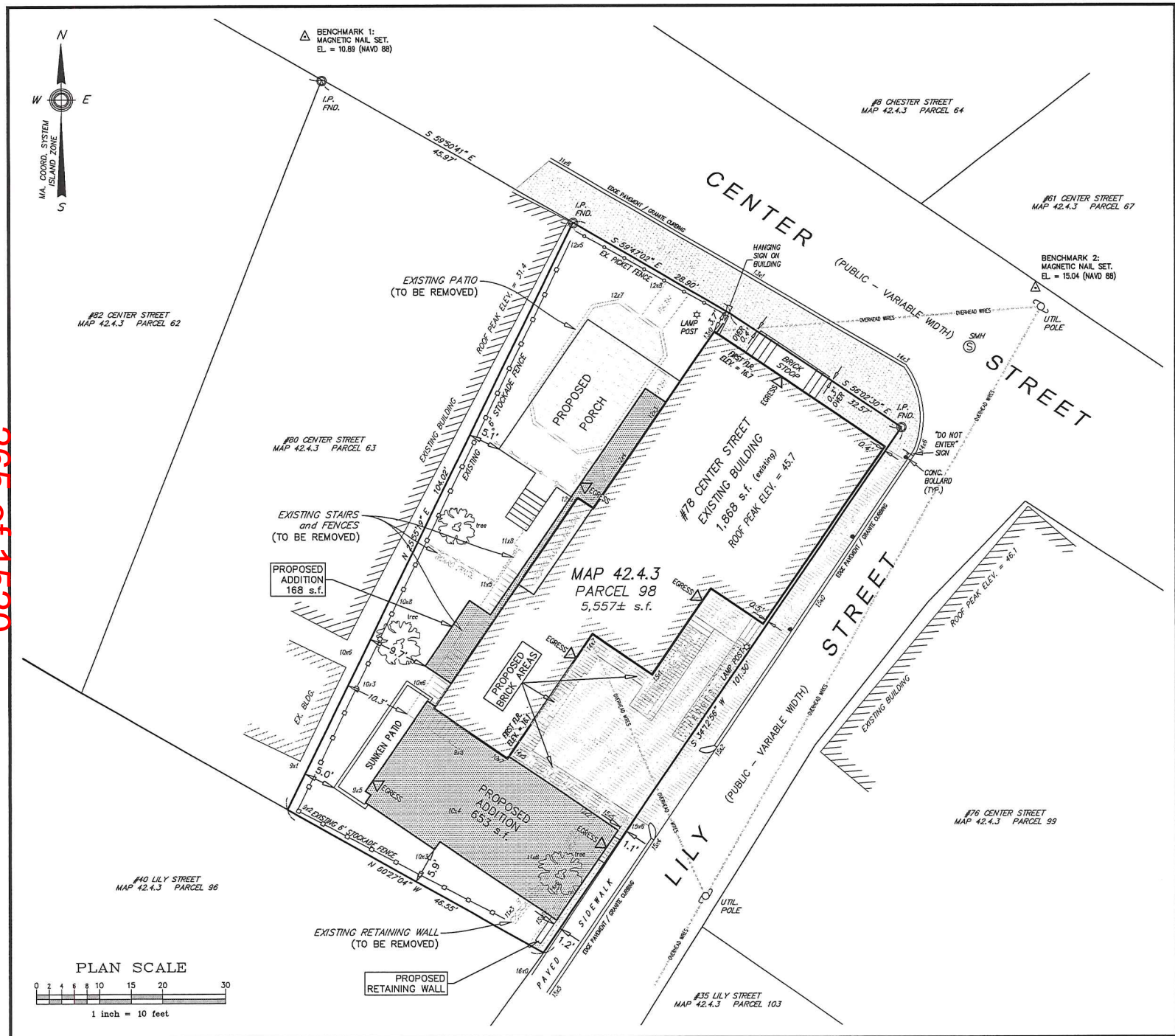
I/we Jeff Ippoliti, the undersigned, hereby authorize John B Brescher to act as agent(s) on my/our behalf and to make any necessary revisions on this filed application as they may be requested by the Board to meet its governing rules and guidelines.

Owner(s)' Signature(s)

Check List:

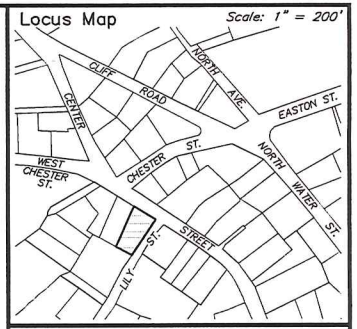
- ☐ Planning Board Special Permit abutters list – to be obtained at the Tax Assessor's office
- ☐ Completed application form entitled "Application to the Planning Board for a Special Permit"
- ☐ Application fee of $250.00 payable to Town of Nantucket
- ☐ Abutters fee of $6.11 per abutters payable to Pitney Bowes Reserved Funds
- ☐ Four (4) sets of mailing labels with each abutter's name and address
  - 1" x 2 5/8" size, typed labels, are preferred
  - duplicate labels are not necessary if the same owner is listed for more than one abutting property
- ☐ Completed application form
- ☐ Town Clerk's stamped application (provide 2 copies-one for Town Clerk and one for Planning Board)

265 of 1520



Locus Map

Scale: 1" = 200'



Notes

1. LOCUS: #78 CENTER STREET
   MAP 42.4.3 PARCEL 98
2. OWNER: 78 CENTRE STREET, LLC
   c/o PAUL BENK
   34 OYSTER POINT
   WARREN, RHODE ISLAND 02885
3. DEED REF: Bk:1352 Pg:228
4. PLAN REF: Bk:14 Pg:13
5. LOCUS DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD ZONE AS SHOWN ON FEMA FLOOD INSURANCE RATE MAP No. 25019C–0086–G dated 06/09/2014.
6. LOCUS DOES NOT FALL WITHIN THE NATURAL HERITAGE and ENDANGERED SPECIES PROGRAM (NHESP) AREAS OF ESTIMATED HABITATS OF RARE WILDLIFE and PRIORITY HABITATS OF RARE SPECIES.
7. BUILDING WAS CONSTRUCTED CIRCA 1850 PER ASSESSORS RECORDS.
8. LOT SUBJECT TO PROTECTION UNDER ZONING BYLAW 139–33.

ZONE: ROH	REQUIRED	EXISTING	PROPOSED
LOT AREA:	5,000 s.f.	5,557± s.f.	5,557± s.f.
FRONTAGE:	50'	60'+	60'+
FRONT YARD:	0'	0.4' OVER	0.4' OVER
SIDE/REAR YARD:	5'	0.4'	0.4'
GROUND COVER:	50% (MAX) (2,778 s.f. MAX)	33.6% (1,868 s.f.)	48.4% (2,689 s.f.)
OPEN SPACE:	20% (MIN) (1,111 s.f. MIN)	55% (3,085 s.f.)	33.9% (1,885 s.f.)

Prepared By:
BRACKEN ENGINEERING, INC
49 HERRING POND ROAD
BUZZARDS BAY, MA 02532
(tel) 508.833.0070
(fax) 508.833.2282
19 OLD SOUTH ROAD
NANTUCKET, MA 02554
(tel) 508.325.0044
www.brackeneng.com

PROPOSED SITE PLAN
IN NANTUCKET, MASSACHUSETTS

Prepared For:

78 CENTRE STREET, LLC

#78 CENTER STREET
MAP 42.4.3 PARCEL 98

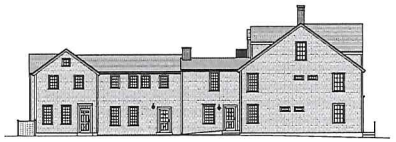
No.	Date	Revision Description	By
–	–	–	–

Date:	Drawn:	Checked:	Sheet:
JUNE 13, 2016	RMM/ERC/DLH	DFB/AMG	1 of 1

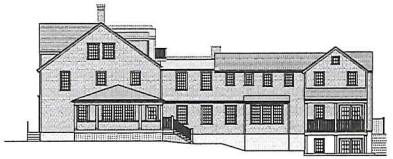
S:\Autocad Drawings\Nantucket\Center Street\78 Center Street\78 Center Street - pr SITE (rev1).dwg

The Regatta Inn

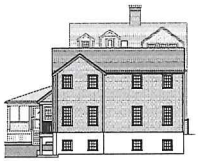
78 Centre Street
Nantucket, MA 02554



Proposed East Elevation
1/16" = 1'-0"



Proposed West Elevation
1/16" = 1'-0"

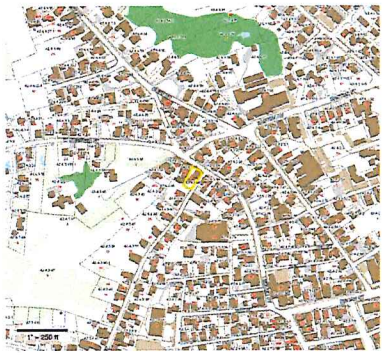


Proposed South Elevation
1/16" = 1'-0"

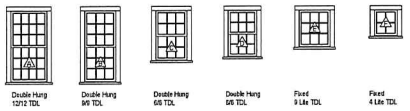
Proposed North Elevation
1/16" = 1'-0"

H. D. C. Approval Through Staff 05.02.16

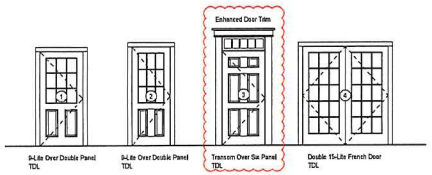
266 of 1520



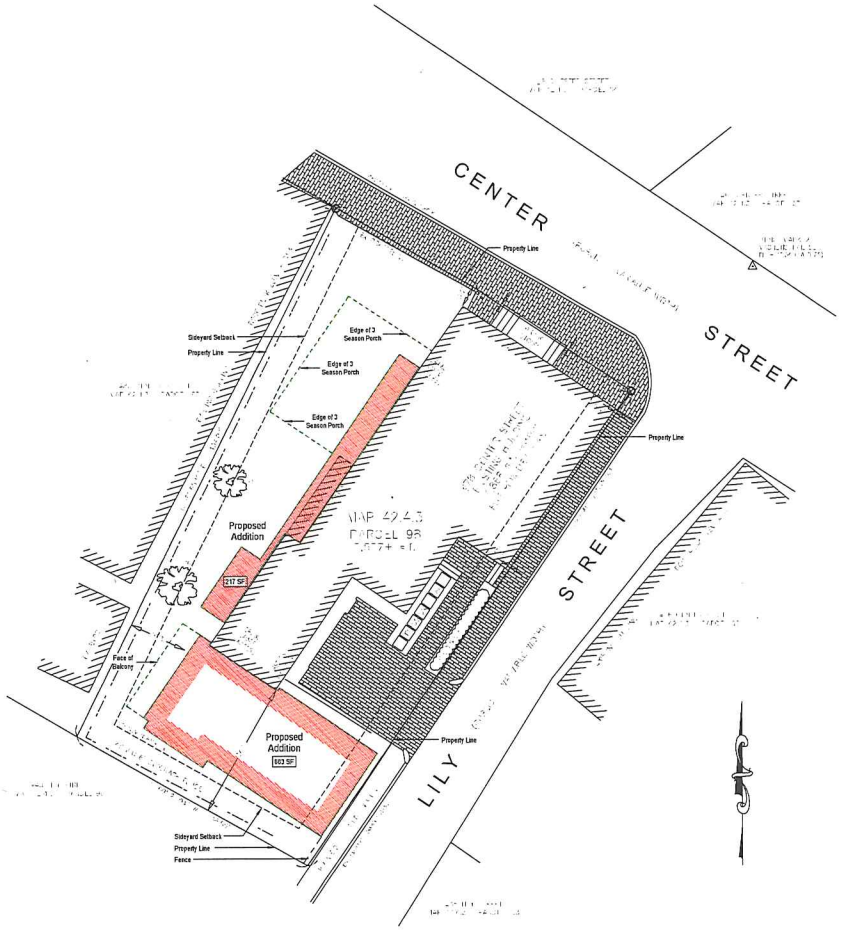
1 Locus Map
3/4" = 1'-0"



2 Window Types
1/4" = 1'-0"



3 Door Types
1/4" = 1'-0"



4 Proposed Site Plan
1" = 10'-0"

1435
The Regatta Inn
78 Centre Street
Nantucket, MA 02554

emeritus development ltd.

Site Plan, Locus Map

Site Information

Map & Parcel	42.4.3 98
Current Zoning:	ROH
Minimum Frontage:	50 ft.
Front Setback:	0 ft.
Side/Rear Setback:	5 ft.
Lot Size:	5,557 sq. ft.
Min. Lot Size:	5,000 sq. ft.
Allowable G.C.:	50% or 2,778.5 sq. ft.
Existing G.C.:	1,868 sq. ft.
Proposed G.C.:	692 sq. ft.
Total Proposed G.C.:	2,739 sq. ft.

Information for this site plan was taken from the Nantucket G.I.S. This drawing does not constitute a registered survey. All site work should be verified by a Registered Land Surveyor prior to and during construction.

SHEET INDEX

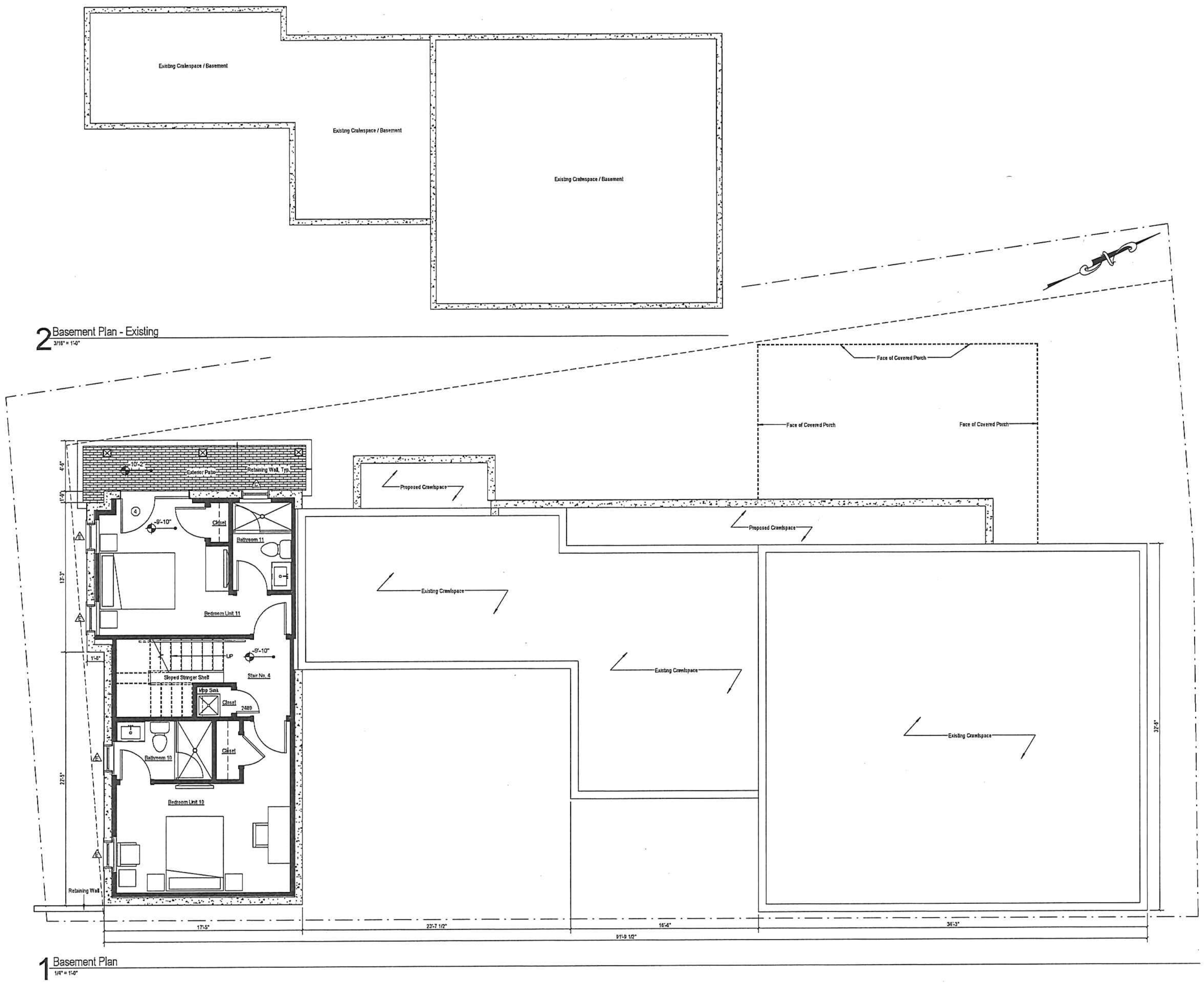
G.1.1	Site Plan, Locus Map
A.1.0	Basement Level Floor Plans
A.1.1	First Floor Plans
A.1.2	Second Floor Plans
A.1.3	Third Floor Plans
A.2.1	Elevations
A.2.2	Elevations
A.2.3	Building Sections

Revisions

G.1.1
1435

H . D . C . Approval Through Staff

05.02.16



1435

The Regatta Inn
78 Centre Street
Nantucket, MA 02554

emeritus

Basement Level Floor Plans

Site Information

Map & Parcel:	42.4.3 98
Current Zoning:	ROH
Minimum Frontage:	50 ft.
Front Setback:	0 ft.
Side/Rear Setback:	5 ft.
Lot Size:	5,557 sq. ft.
Min. Lot Size:	5,000 sq. ft.
Allowable G.C.:	50% or 2,778.5 sq. ft.
Existing G.C.:	1,868 sq. ft.
Proposed G.C.:	862 sq. ft.
Total Proposed G.C.:	2,730 sq. ft.

Information for this site plan was taken from the Nantucket G.I.S. This drawing does not constitute a registered survey. All site work should be verified by a Registered Land Surveyor prior to and during construction.

SHEET INDEX

G.1.1 Site Plan, Locus Map
A.1.0 Basement Level Floor Plans
A.1.1 First Floor Plans
A.1.2 Second Floor Plans
A.1.3 Third Floor Plans
A.2.1 Elevations
A.2.2 Elevations
A.2.3 Building Sections

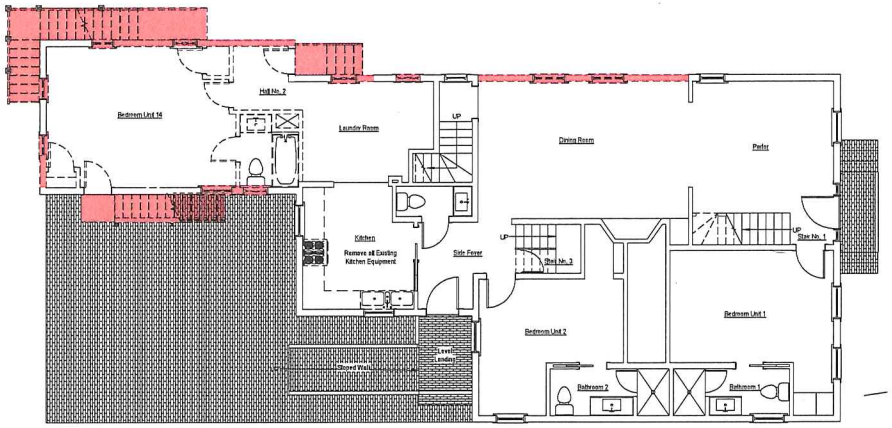
Revisions

A.1.0

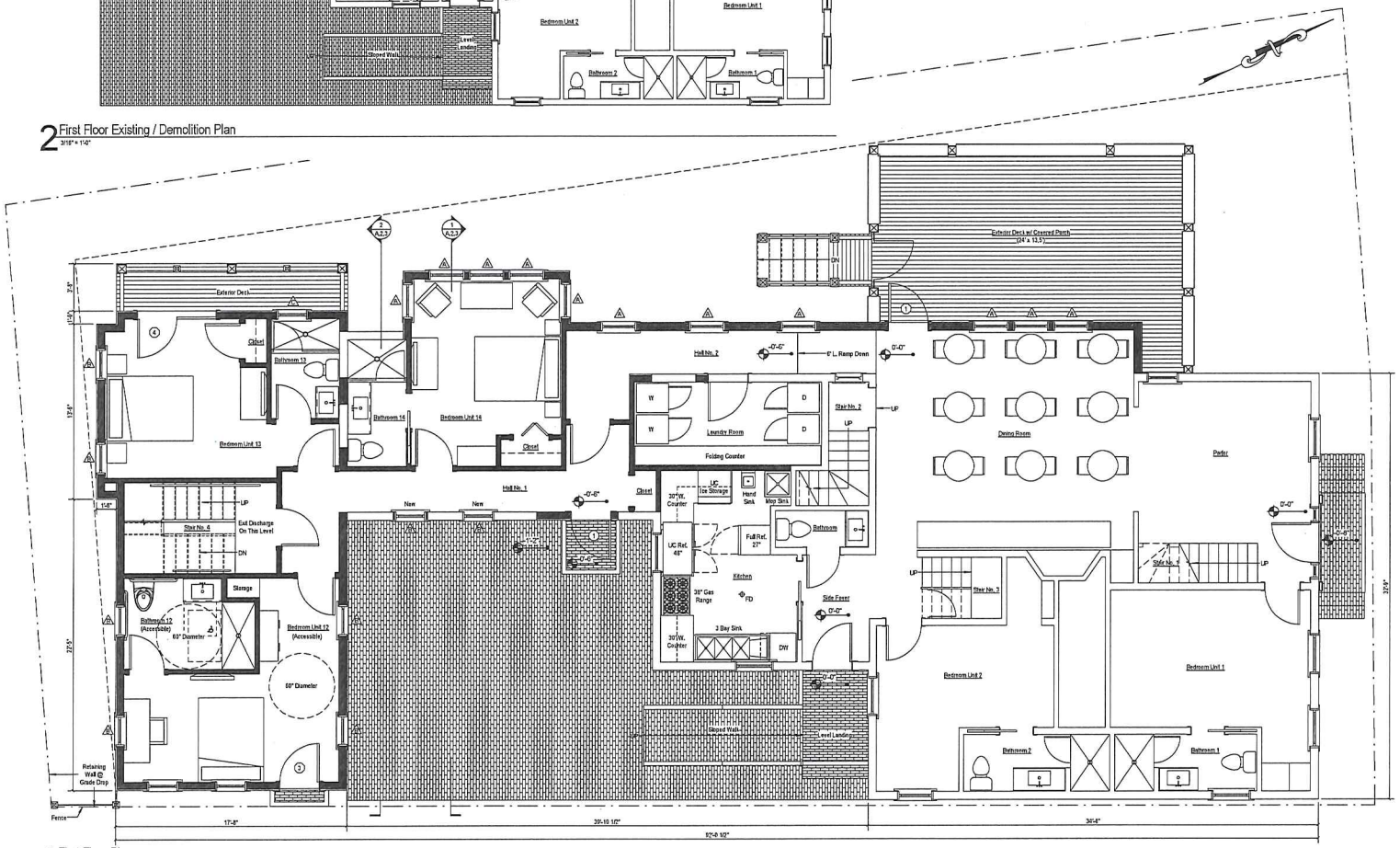
1435

H. D. C. Approval Through Staff 05.02.16

268 of 1520



2 First Floor Existing / Demolition Plan
3/16" = 1'-0"



1 First Floor Plan
1/4" = 1'-0"

1435

The Regatta Inn
78 Centre Street
Nantucket, MA 02554

emeritus development llc

First Floor Plans

Site Information

Map & Parcel:	42.4.3 88
Current Zoning:	RCH
Minimum Frontage:	50 ft.
Front Setback:	0 ft.
Side/Rear Setback:	5 ft.
Lot Size:	5,557 sq. ft.
Min. Lot Size:	5,000 sq. ft.
Allowable G.C.:	50% or 2,778.5 sq. ft.
Existing G.C.:	1,808 sq. ft.
Proposed G.C.:	892 sq. ft.
Total Proposed G.C.:	2,730 sq. ft.

Information for this site plan was taken from the Nantucket G.I.S. This drawing does not constitute a registered survey. All site work should be verified by a Registered Land Surveyor prior to and during construction.

SHEET INDEX

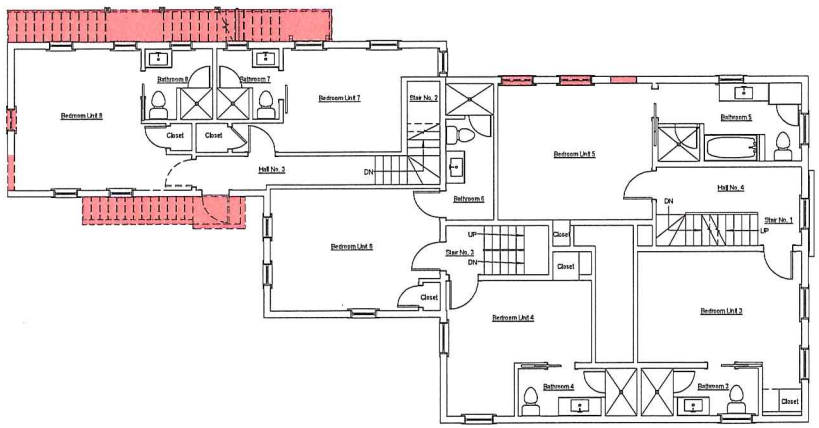
G.1.1	Site Plan, Locus Map
A.1.0	Basement Level Floor Plans
A.1.1	First Floor Plans
A.1.2	Second Floor Plans
A.1.3	Third Floor Plans
A.2.1	Elevations
A.2.2	Elevations
A.2.3	Building Sections

Revisions

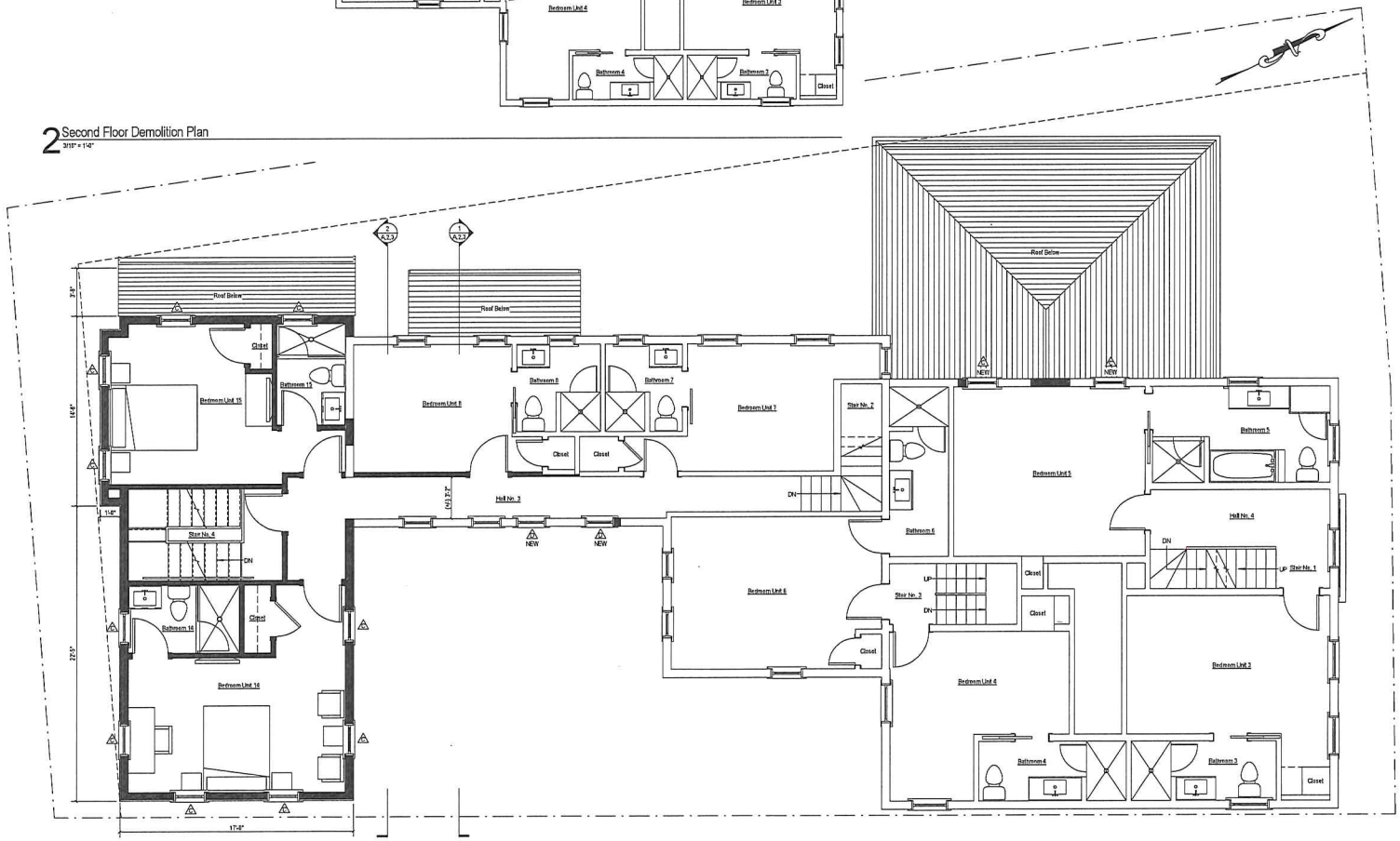
A.1.1
1435

H. D. C. Approval Through Staff 05.02.16

269 of 1520



2 Second Floor Demolition Plan
3/16" = 1'-0"



1 Second Floor Plan
1/4" = 1'-0"

1435

The Regatta Inn
78 Centre Street
Nantucket, MA 02554

emeritus development llc
6 S Beach Lane Nantucket, MA 02554
P. 508.325.3040
F. 508.325.3040
www.emeritusdevelopment.com

Second Floor Plans

Site Information

Map & Parcel:	42,4.3 98
Current Zoning:	ROH
Minimum Frontage:	50 ft.
Front Setback:	0 ft.
Side/Rear Setback:	5 ft.
Lot Size:	5,557 sq. ft.
Min. Lot Size:	5,000 sq. ft.
Allowable G.C.:	50% or 2,778.5 sq. ft.
Existing G.C.:	1,859 sq. ft.
Proposed G.C.:	862 sq. ft.
Total Proposed G.C.:	2,720 sq. ft.

Information for this site plan was taken from the Nantucket G.I.S. This drawing does not constitute a registered survey. All site work should be verified by a Registered Land Surveyor prior to and during construction.

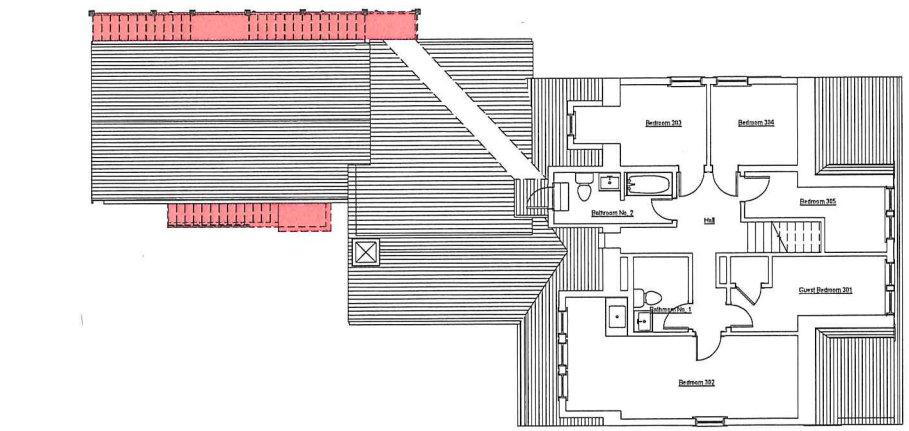
SHEET INDEX

G.1.1	Site Plan, Locus Map
A.1.0	Basement Level Floor Plans
A.1.1	First Floor Plans
A.1.2	Second Floor Plans
A.1.3	Third Floor Plans
A.2.1	Elevations
A.2.2	Elevations
A.2.3	Building Sections

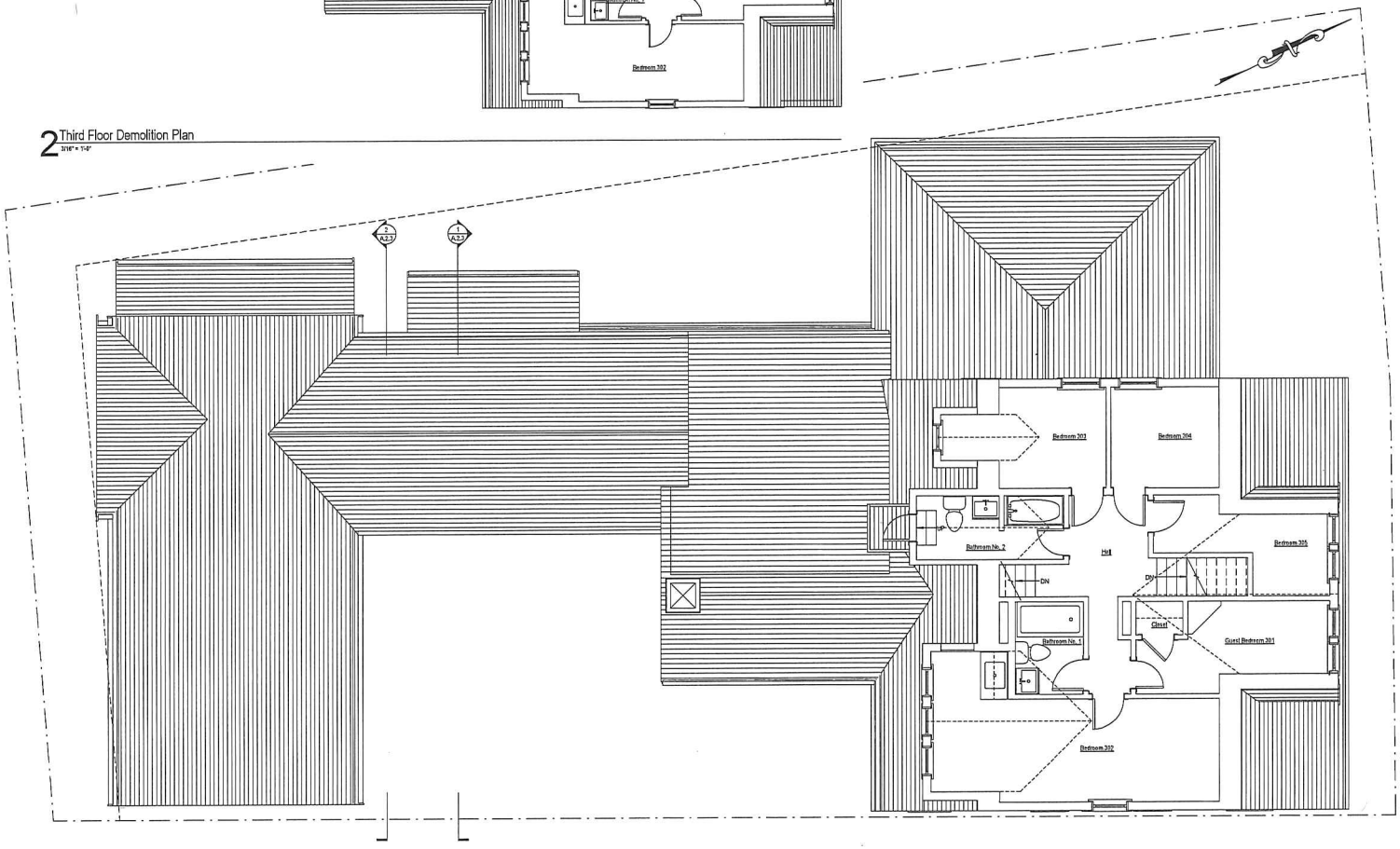
Revisions

A.1.2

1435



2 Third Floor Demolition Plan
3/16" = 1'-0"



1 Third Floor Plan
1/4" = 1'-0"

05.02.16

H. D. C. Approval Through Staff

270 of 1520

1435

The Regatta Inn
78 Centre Street
Nantucket, MA 02554

emeritus development, LLC

Third Floor Plans

Site Information

Map & Parcel:	42,4,7 98
Current Zoning:	RCH
Minimum Frontage:	50 ft.
Front Setback:	0 ft.
Side/Rear Setback:	5 ft.
Lot Size:	5,557 sq. ft.
Min. Lot Size:	5,000 sq. ft.
Allowable G.C.:	50% or 2,778.5 sq. ft.
Existing G.C.:	1,860 sq. ft.
Proposed G.C.:	862 sq. ft.
Total Proposed G.C.:	2,720 sq. ft.

Information for this site plan was taken from the Nantucket G.I.S. This drawing does not constitute a registered survey. All site work should be verified by a Registered Land Surveyor prior to and during construction.

SHEET INDEX

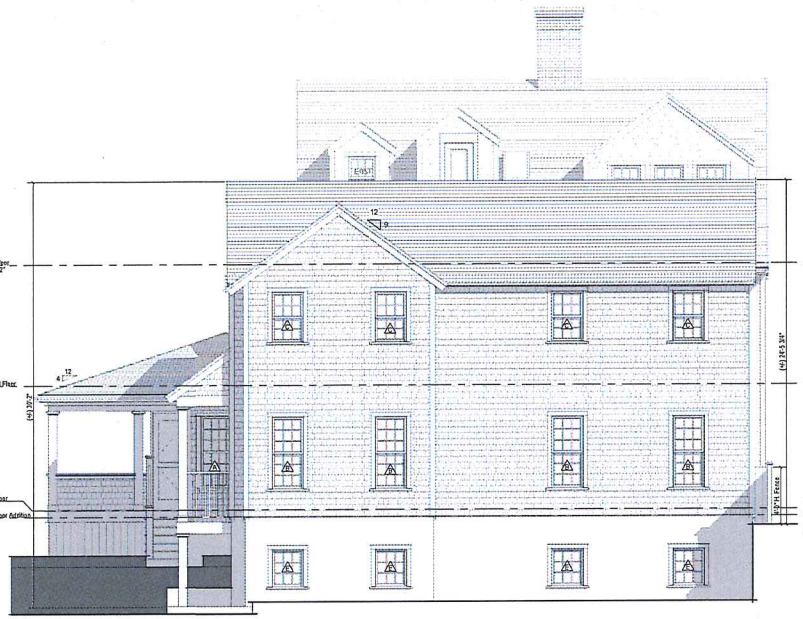
G.1.1 Site Plan, Locus Map
A.1.0 Basement Level Floor Plans
A.1.1 First Floor Plans
A.1.2 Second Floor Plans
A.1.3 Third Floor Plans
A.2.1 Elevations
A.2.2 Elevations
A.2.3 Building Sections

Revisions

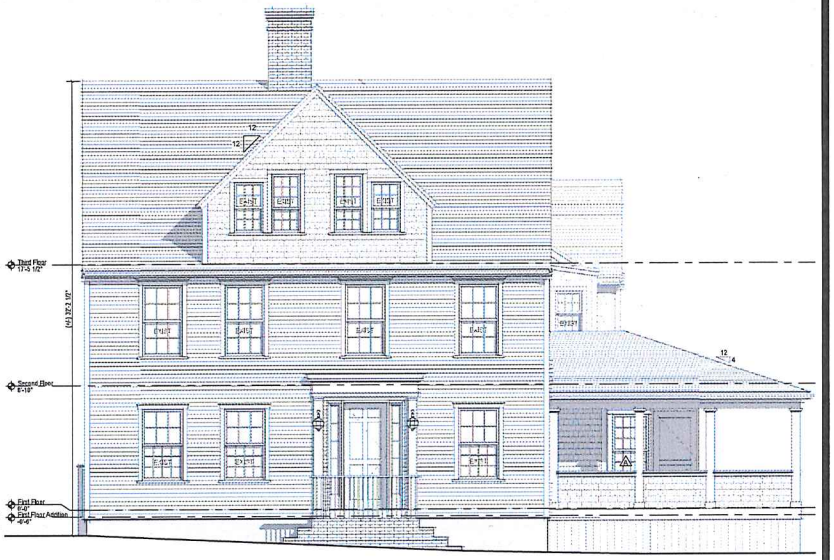
A.1.3
1435

H. D. C. Approval Through Staff 05.02.16

271 of 1520



1 South Elevation
1/4" = 1'-0"



2 North Elevation
1/4" = 1'-0"

1435

The Regatta Inn
78 Centre Street
Nantucket, MA 02554

emeritus development s.a.

Elevations

Site Information

Map & Parcel:	42,4.3 98
Current Zoning:	RDH
Minimum Frontage:	50 ft.
Front Setback:	0 ft.
Side/Rear Setback:	5 ft.
Lot Size:	5,557 sq. ft.
Min. Lot Size:	5,000 sq. ft.
Allowable G.C.:	50% or 2,778.5 sq. ft.
Existing G.C.:	1,868 sq. ft.
Proposed G.C.:	862 sq. ft.
Total Proposed G.C.:	2,730 sq. ft.

Information for this site plan was taken from the Nantucket G.I.S. This drawing does not constitute a registered survey. All site work should be verified by a Registered Land Surveyor prior to and during construction.

SHEET INDEX

G.1.1 Site Plan, Locus Map
A.1.0 Basement Level Floor Plans
A.1.1 First Floor Plans
A.1.2 Second Floor Plans
A.1.3 Third Floor Plans
A.2.1 Elevations
A.2.2 Elevations
A.2.3 Building Sections

Revisions

ALL DRAWINGS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF SERVICE, ARE AND SHALL REMAIN THE PROPERTY OF EMERITUS DEVELOPMENT S.A. AND SHALL NOT BE USED IN WHOLE OR IN PART FOR ANY PURPOSE WHATSOEVER WITHOUT THE WRITTEN PERMISSION OF EMERITUS DEVELOPMENT S.A.

A.2.1
1435

H. D. C. Approval Through Staff 05.02.16

272 of 1520

1 West Elevation
1/8" = 1'-0"

2 East Elevation
1/8" = 1'-0"

1435

The Regatta Inn
78 Centre Street
Nantucket, MA 02554

emeritus development ltd.
11 Ellentra Lane Nantucket, MA 02554
T. (508) 325-4040
F. (508) 325-0940
www.emeritusdevelopment.com

Elevations

Site Information

Map & Parcel:	42,4-3 98
Current Zoning:	RDH
Minimum Frontage:	50 ft.
Front Setback:	0 ft.
Side/Rear Setback:	5 ft.
Lot Size:	5,557 sq. ft.
Min. Lot Size:	5,000 sq. ft.
Allowable G.C.:	50% or 2,778.5 sq. ft.
Existing G.C.:	1,838 sq. ft.
Proposed G.C.:	882 sq. ft.
Total Proposed G.C.:	2,720 sq. ft.

Information for this site plan was taken from the Nantucket G.I.S. This drawing does not constitute a registered survey. All site work should be verified by a Registered Land Surveyor prior to and during construction.

SHEET INDEX

G.1.1	Site Plan, Locus Map
A.1.0	Basement Level Floor Plans
A.1.1	First Floor Plans
A.1.2	Second Floor Plans
A.1.3	Third Floor Plans
A.2.1	Elevations
A.2.2	Elevations
A.2.3	Building Sections

Revisions

THESE DRAWINGS AND DESIGN CONCEPTS ARE THE PROPERTY OF EMERITUS DEVELOPMENT LTD. AND ARE NOT TO BE USED IN WHOLE OR IN PART WITHOUT THE EXPRESS PERMISSION OF EMERITUS DEVELOPMENT LTD.

A.2.2
1435

H. D. C. Approval Through Staff 05.02.16

273 of 1520

1 Building Section Facing North
1/4" = 1'-0"

2 Building Section Facing South
1/4" = 1'-0"

1435

The Regatta Inn
78 Centre Street
Nantucket, MA 02554

emeritus development ltd.

Building Sections

Site Information

Map & Parcel	42,4,3 III
Current Zoning:	ROH
Minimum Frontage:	50 ft.
Front Setback:	0 ft.
Side/Rear Setback:	5 ft.
Lot Size:	5,557 sq. ft.
Min. Lot Size:	5,000 sq. ft.
Allowable G.C.:	50% or 2,778.5 sq. ft.
Existing G.C.:	1,868 sq. ft.
Proposed G.C.:	862 sq. ft.
Total Proposed G.C.:	2,730 sq. ft.

Information for this site plan was taken from the Nantucket G.I.S. This drawing does not constitute a registered survey. All site work should be verified by a Registered Land Surveyor prior to and during construction.

SHEET INDEX

G.1.1 Site Plan, Locus Map
A.1.0 Basement Level Floor Plans
A.1.1 First Floor Plans
A.1.2 Second Floor Plans
A.1.3 Third Floor Plans
A.2.1 Elevations
A.2.2 Elevations
A.2.3 Building Sections

Revisions

THE DRAWINGS AND THE DESIGN INCORPORATED THEREIN ARE THE PROPERTY OF EMERITUS DEVELOPMENT LTD. AND MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN AUTHORIZATION OF EMERITUS DEVELOPMENT LTD. THEY ARE NOT TO BE USED FOR ANY PROJECT OTHER THAN THE ONE FOR WHICH THEY WERE PREPARED AND DELIVERED. THEY ARE NOT TO BE LOANED, COPIED OR DISCLOSED TO ANY UNAUTHORIZED PERSON WITHOUT THE PRIOR WRITTEN CONSENT OF EMERITUS DEVELOPMENT LTD. ©2017

A.2.3
1435

CERTIFICATE NO: 6571 | DATE ISSUED: 4/12/16

Application to the HISTORIC DISTRICT COMMISSION, Nantucket, Massachusetts, for a

CERTIFICATE OF APPROPRIATENESS

for structural work.

All blanks must be filled in using BLUE OR BLACK INK (no pencil) or marked N/A.

NOTE: It is strongly recommended that the applicant be familiar with the HDC guidelines, *Building with Nantucket in Mind*, prior to submittal of application. Please see other side for submittal requirements. Incomplete applications will not be reviewed by the HDC.

This is a contractual agreement and must be filled out in ink. An application is hereby made for issuance of a Certificate of Appropriateness under Chapter 395 of the Acts and Resolves of Mass., 1970, for proposed work as described herein and on plans, drawings and photographs accompanying this application and made a part hereof by reference.

The certificate is valid for three years from date of issuance. No structure may differ from the approved application. Violation may impede issuance of Certificate of Occupancy.

PROPERTY DESCRIPTION

TAX MAP N°: 42.4.3 PARCEL N°. 98

Street & Number of Proposed Work: 78 CENTER STREET

Owner of record: Paul Benk

Mailing Address: 34 Oyster Point
Warren, RI 02885

Contact Phone #: 908-938-2220 E-mail: pbenk@att.net

AGENT INFORMATION (if applicable)

Name: Emeritus Development

Mailing Address: 8 Williams Ln
Nantucket, MA 02554

Contact Phone #: 508 325 4995 E-mail: matt@emeritus-development.com

FOR OFFICE USE ONLY

CK#2401 $1,000
CK#2462 $52.40

Date application received: 2/24/16 Fee Paid: $1052.40

Must be acted on by: 4/21/16

Extended to: 6/22/16

Approved: ✓ Disapproved:

Chairman:

Member:

Member:

Member:

Member:

Notes - Comments - Restrictions - Conditions

Bed with Rum room
New door on South new
addition on Lily St

DESCRIPTION OF WORK TO BE PERFORMED

See reverse for required documentation.

☐ New Dwelling ☑ Addition ☐ Garage ☐ Driveway/Apron ☑ Commercial ☐ Historical Renovation ☐ Deck/Patio ☐ Steps ☐ Shed
☐ Color Change ☑ Fence ☐ Gate ☐ Hardscaping ☐ Move Building ☑ Demolition ☐ Revisions to previous Cert. No. Alteration
☐ Pool (Zoning District ____) ☐ Roof ☑ Other 3 story Addition, 3 Season Porch, Conercial Kitchen Renovation,

Size of Structure or Addition: Length: 41'4" Sq. Footage 1st floor: 869 Decks/Patio: Size: ____ ☐ 1st floor ☐ 2nd floor
Width: 17'8" Sq. footage 2nd floor: 655 Size: ____ ☐ 1st floor ☐ 2nd floor
Sq. footage 3rd floor: 0

Difference between existing grade and proposed finish grade: North N/A South 3' East N/A West 3'
Height of ridge above final finish grade: North ±15'0" South ±33'7" East ±31'7" West ±33'7"

Additional Remarks

Historic Name: 78 CENTER ST.
Original Date: 1800s (describe)
Original Builder: UNKNOWN
(Is there an HDC survey form for this building attached? ☑ Yes ☐ N/A

REVISIONS* 1. East Elevation
2. South Elevation
3. West Elevation
4. North Elevation

*Cloud on drawings and submit photographs of existing elevations.

DETAIL OF WORK TO BE PERFORMED

Foundation: Height Exposed Varies ☐ Block ☐ Block Parged ☐ Brick (type) ____ ☑ Poured Concrete ☐ Piers
Masonry Chimney: ☐ Block Parged ☐ Brick (type) ____ ☐ Other ____
Roof Pitch: Main Mass 9 /12 Secondary Mass 4 /12 Dormer N/A /12 Other ____
Roofing material: ☑ Asphalt: ☑ 3-Tab ☐ Architectural
☐ Wood (Type: Red Cedar, White Cedar, Shakes, etc.) ____

Fence: Height: ____ Type: ____ Length: ____

Skylights (flat only): Manufacturer ____ Rough Opening ____ Size ____ Location ____
Manufacturer ____ Rough Opening ____ Size ____ Location ____

Gutters: ☑ Wood ☐ Aluminum ☐ Copper ☐ Leaders (material) ____
Leaders (material and size): ____
Sidewall: ☑ White cedar shingles ____ ☐ Clapboard (exposure: 3.5 inches) Front ☐ ____ Side ☐ ____
☐ Other ____

Trim: A. Wood ☐ Pine ☐ Redwood ☑ Cedar ☐ Other ____
B. Treatment ☑ Paint ☐ Natural to weather ☐ Other ____
C. Dimensions: Fascia 1x8 Rake 1x6 Soffit (Overhang) N/A Corner boards 5 1/2 Frieze N/A
Window Casing 3 1/2 Door Frame 5 1/2 Columns/Posts: Round N/A Square 8"

Windows*: ☑ Double Hung ☐ Casement ☐ All Wood ☑ Other FIXED
☑ True Divided Lights(muntins), single pane ☐ SDL's (Simulated Divided Lights) Manufacturer Boston Sash

Doors* (type and material): ☑ TDL ☐ SDL Front Boston Sash Rear Boston Sash Side Boston Sash
Garage Door(s): Type N/A Material ____

Hardscape materials: Driveways N/A Walkways N/A Walls N/A

* Note: Complete door and window schedules are required.

COLORS

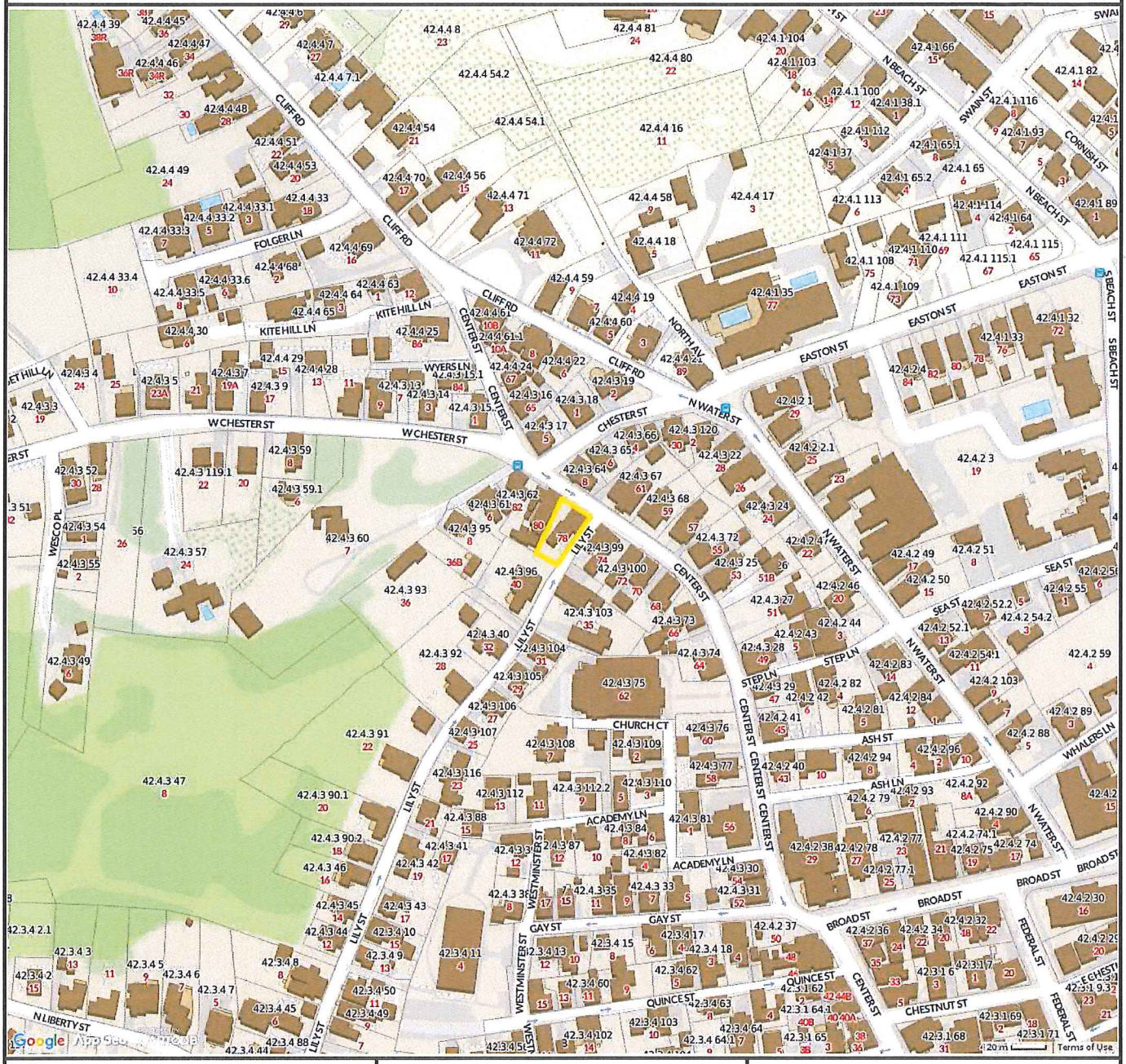
Sidewall NATURAL Clapboard (if applicable) EXISTING GRAY Roof BLACK
Trim WHITE Sash WHITE Doors WHITE
Deck NATURAL Foundation NATURAL Fence WHITE Shutters N/A

* Attach manufacturer's color samples if color is not from HDC approval list.

I hereby authorize the agent named above to act on my behalf to make changes in the specifications or the plans contained in this application in order to bring the application into compliance with the HDC guidelines. I hereby agree to abide by and comply with the terms and conditions of this application. I hereby agree that the submission of any revisions to this application will initiate a new sixty-day review period.

Date 02/24/16 Signature of owner of record ____ Signed under penalties of perjury

78 Centre Street



Property Information

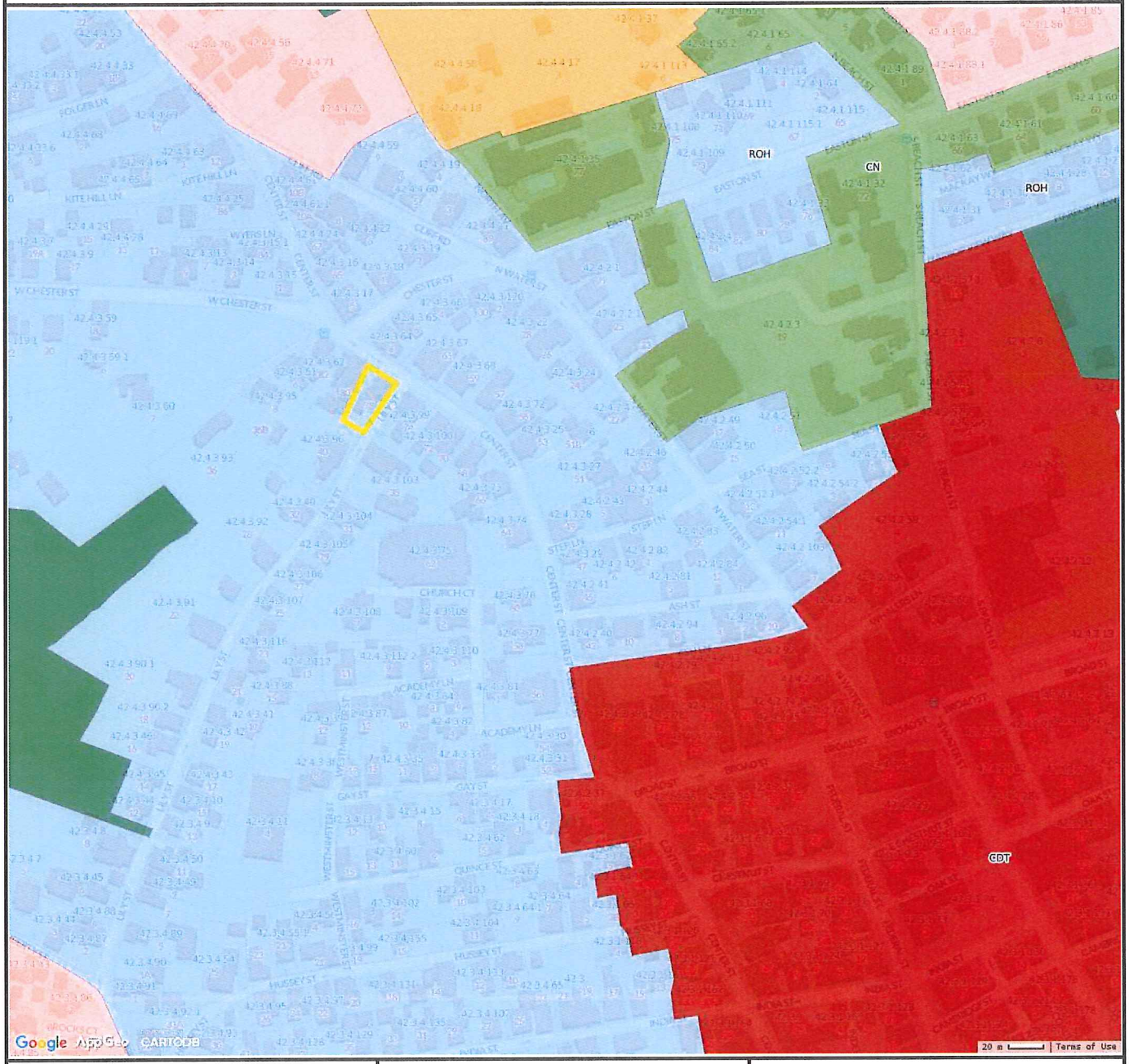
Property ID	42.4.3 98
Location	78 CENTER ST
Owner	78 CENTRE STREET LLC

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town and County of Nantucket, MA makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Parcels updated December, 2014
Properties updated January, 2015

Zoning Districts



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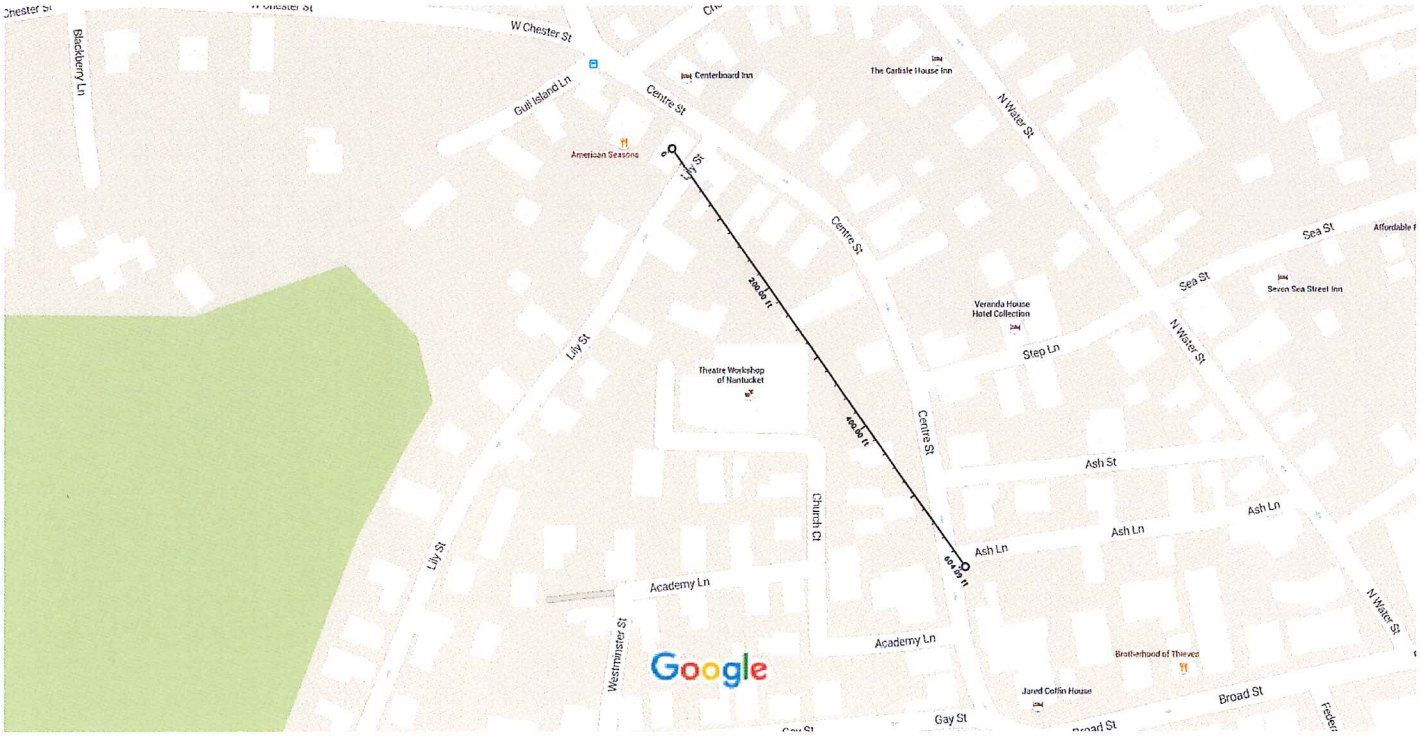


Measure distance
Total distance: 604.09 ft (184.13 m)

Holly Backus

From: Holly Backus
Sent: Tuesday, July 05, 2016 11:29 AM
To: 'Thomas Lowy'
Cc: Catherine Ancero
Subject: RE: #37-16 Inn Partners Regatta,LLC 78 Centre St

Good Morning Mr. Lowy,

Thank you for your email. It will be provided to the Planning Board prior to the meeting for their consideration. The meeting will be next Monday, July 11th at 5:30PM in the Public Safety Facility Community Room.

Please let me know if you have any questions or if I can be of further assistance.
Take care,

Holly E. Backus
Land Use Specialist
Town of Nantucket

From: Thomas Lowy [mailto:graciesmansion@gmail.com]
Sent: Sunday, July 03, 2016 2:16 PM
To: Holly Backus
Subject: FW: #37-16 Inn Partners Regatta,LLC 78 Centre St

From: Thomas Lowy <graciesmansion@gmail.com>
Date: Sunday, July 3, 2016 at 2:08 PM
To: <hbackus@nantucketma.gov>
Cc: Whitney Gifford <wag@readelaw.com>
Subject: #37-16 Inn Partners Regatta,LLC 78 Centre St

Dear Sirs,

My wife and I are the direct abutters of the Regatta Inn on Centre St. We have been informed that the Inn has submitted plans for a large extension and that you will be hearing their application on the 12th of this month at 5:30. We would like to share with you our objections to the scale and style of the proposed extension.

We believe that the applicants are adding too many rooms and too tall a building on an already crowded lot. The addition of so many more people and cars, with no additional parking or sunlight will be a detriment to our quality of life. If the Inn is already in violation of the parking rules, why in the world would the Board want to exacerbate the situation.The current design will be a blight on Lily Street. As far as we can see, from the plans, some of the rooms are below grade and it is not very clear what the rooms in the attic will be used for. More guest rooms? Staff rooms?

On the south elevation, the plans that have been revealed to us seem to be about as charming as a penitentiary in some Eastern European ex Soviet bloc republic.The shear mass of the south facing wall

will be oppressive to us and block our current views significantly. Not to mention the lovely trees that will have to come down to make way for the new construction.The west side of the new extension looks like a retirement community by Marriott . None of it seems to have “Nantucket in Mind”. Recent changes to the plans have not gone very far to address our objections and in some ways have exacerbated the inappropriate massing on the south side. Moreover the plans indicate that the applicants plan to take down the fence that is currently dividing our properties and annex part of our land. I hope the Board is not capable of giving anyone permission to take our land.

The plans that we have seen do not include any provisions for air conditioning or heating units nor do they show any details for storm windows or screens. Multiple window unit air conditioners will be deafening to us. We are already oppressed by the noise of 2 giant and very visible and odiferous exhaust fans from the roof of the American Seasons restaurant. If central air is proposed for the Inn, where will the compressors be sited? In our faces on south facing land that can’t be built on or on the Lily Street side to oppress pedestrians? I don’t imagine that they want them in front of the ticky tacky balconies which are practically in our master bedroom.

Please feel free to contact us by phone or email for any clarification of our position.

Sincerely yours,

Thomas and Beth Lowy

40 Lily Street

Nantucket

228 2422

CC: Whitney Gifford Esq.

Holly Backus

From: John Brescher [john@gliddenandglidden.com]
Sent: Tuesday, August 02, 2016 9:24 AM
To: Holly Backus
Subject: FW: 78 Centre Street

John B. Brescher, Esquire
Glidden & Glidden, P.C.
37 Centre Street / PO Box 1079
Nantucket, Massachusetts 02554
508-228-0771
508-228-6205 (fax)
john@gliddenandglidden.com

From: John Brescher
Sent: Tuesday, August 02, 2016 9:09 AM
To: 'graciesmansion@gmail.com' <graciesmansion@gmail.com>
Cc: 'Holly Visco' <hjv@sfapc.com>; 'Leslie Snell' <LSnell@nantucket-ma.gov>; 'Don' <Don@brackeneng.com>
Subject: FW: 78 Centre Street

Good morning Mr. Lowy:

Please see below from Don Bracken of Bracken Engineering regarding the location of the lot line. Don confirmed that their survey is accurate and set points at each lot corner. The Bracken Engineering team would be happy to review this information with you or your surveyor.

Thanks.

Best,
John

John B. Brescher, Esquire
Glidden & Glidden, P.C.
37 Centre Street / PO Box 1079
Nantucket, Massachusetts 02554
508-228-0771
508-228-6205 (fax)
john@gliddenandglidden.com

From: Don [mailto:Don@brackeneng.com]
Sent: Monday, August 01, 2016 3:39 PM
To: John Brescher <john@gliddenandglidden.com>; Jeff Ippoliti <jeff@359main.com>
Cc: Paul Benk <p.benk@att.net>; Dmitri Kapalis <DKapalis@emeritusdevelopment.com>; Matthew MacEachern <Matt@emeritusdevelopment.com>
Subject: RE: 78 Centre Street

Hello All:

After the last Planning Board meeting we checked our research and survey calculations for the lot line the neighbor questioned. We set a point at each end of the lot line. At the street there is a nail in the top of a fence post and in the back there is a bean pole.

John- do you want to reach out to the neighbor and let them know? If he wants to hire his own surveyor we are obligated to share our information.

Don Bracken, PE
President

Bracken Engineering, Inc.
49 Herring Pond Road
Buzzards Bay, MA 02532
(t) 508-833-0070
(f) 508-833-2282

19 Old South Road
Nantucket, MA 02584
(t) 508-325-0044

http://www.brackeneng.com

This Electronic Message contains information
From Bracken Engineering, Inc.,
which may be privileged. The information is intended
to be for the use of the addressee only. If you are not
the addressee, note that any disclosure, copy, distribution
or use of the contents of this message is prohibited.

Catherine Ancero

From: Holly Backus
Sent: Monday, August 08, 2016 2:05 PM
To: (barry.rector@verizon.net); (CZARINALINDA@COMCAST.NET); (johnft3@yahoo.com); (natlowell@comcast.net); Carl Borchert (grounds987@outlook.com); David Callahan ; Joseph Marcklinger (jomarck@yahoo.com)
Cc: Catherine Ancero
Subject: FW: re. Public Hearing #37-16 16, Inn Partners Regatta, LLC, 78 Center Street

For your consideration.

Holly E. Backus
Land Use Specialist
Town of Nantucket

From: Ian Golding [mailto:almac1@comcast.net]
Sent: Monday, August 08, 2016 1:53 PM
To: Holly Backus
Subject: Fwd: re. Public Hearing #37-16 16, Inn Partners Regatta, LLC, 78 Center Street

Begin forwarded message:

From: Ian Golding <almac1@comcast.net>
Subject: re. Public Hearing #37-16 16, Inn Partners Regatta, LLC, 78 Center Street
Date: August 8, 2016 at 1:50:38 PM EDT
To: lwsnell@nantucket-ma.gov
Cc: Barry Rector <barry.rector@verizon.net>, Laura Wasserman <laurajwasserman@hotmail.com>

Dear Chairman Rector,

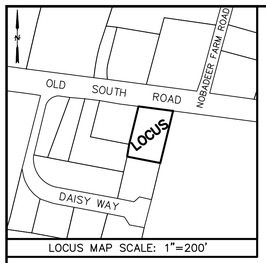
As persons holding the legal power of attorney to represent the Nantucket Home Nom Trust, owner of #6 74 Center St and an abutter to the Regatta Inn at 78 Center Street, we would like to register our opposition to the request for a Special Permit that the above applicant has made to your Board, specifically, the special permit relief for a transient residential facility use and relief to alter and extend the preexisting use.
Apart from altering, in our opinion in detrimental fashion, the character of the surrounding area by greatly adding to the size of the building, we are also worried that having a monolithic structure opposite our own property will reduce the value of our property.
We therefore respectfully ask the Nantucket Planning Board to deny this application if it has the legal means to do so.

Sincerely,

Ian Golding
Laura Wasserman

on behalf of the Ann Marcia Wasserman Trust
Nantucket Home Nom Trust

#48-16 NIR Retail LLC
137 Old South Road
Map 69 Parcel 50
Major Commercial Development Special Permit



LOCUS MAP SCALE: 1"=200'

MAP 69 PARCEL 50
LOT AREA=14,910±S.F.

REFERENCES:
OWNER: NIR RETAIL LLC

DEED REFERENCE: (PARCEL TWENTY–THREE) LC CERT. NO. 21819

PLAN REFERENCE: PLAN FILE NO. 14342–L

ASSESSORS REFERENCE:
MAP: 69 PARCEL: 50

ZONING CLASSIFICATION:
DISTRICT: RC–2
MINIMUM LOT SIZE =5,000 S.F.
MINIMUM FRONTAGE =40'
FRONT YARD SETBACK =10'
SIDE YARD SETBACK =5'
REAR YARD SETBACK =5'
MAX. GROUND COVER RATIO =50%

OVERLAY DISTRICTS:
1. NANTUCKET WELLHEAD PROTECTION DISTRICT (DEP ZONE II)
2. TOWN OVERLAY DISTRICT

UTILITY PERMITS REQUIRED:
1. SEWER APPLICATION AND PERMIT–DPW.
2. APPLICATION FOR WATER AND FIRE SERVICE–WWC.
3. CONTRACTOR TO COORDINATE SERVICES WITH NATIONAL GRID, COMCAST AND VERIZON.
4. CERTIFICATE OF WATER QUALITY COMPLIANCE–WANNACOMET WATER COMPANY.

NOTES:
1. FLOOD HAZARD ZONE X (AREA OF MINIMAL FLOODING) FIRM PANEL NO. 25019C0089G EFFECTIVE DATE: JUNE 9, 2014.
2. PORTION OF SITE MAPPED NHESP PRIORITY HABITAT OF RARE SPECIES.

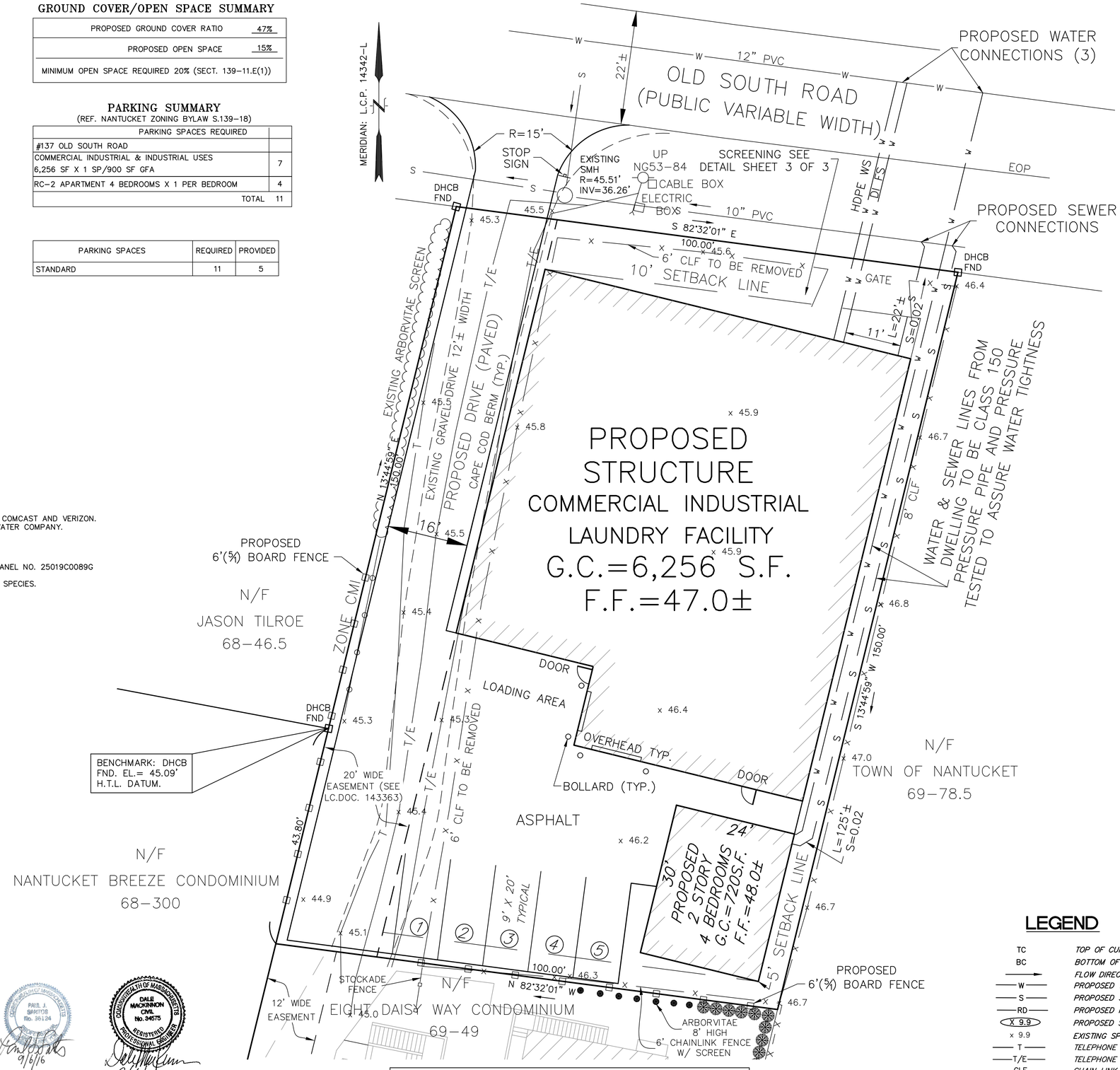
GROUND COVER/OPEN SPACE SUMMARY

PROPOSED GROUND COVER RATIO	47%
PROPOSED OPEN SPACE	15%
MINIMUM OPEN SPACE REQUIRED 20% (SECT. 139–11.E(1))	

PARKING SUMMARY
(REF. NANTUCKET ZONING BYLAW S.139–18)

PARKING SPACES REQUIRED	
#137 OLD SOUTH ROAD	
COMMERCIAL INDUSTRIAL & INDUSTRIAL USES 6,256 SF X 1 SP/900 SF GFA	7
RC–2 APARTMENT 4 BEDROOMS X 1 PER BEDROOM	4
TOTAL	11

PARKING SPACES	REQUIRED	PROVIDED
STANDARD	11	5



SOIL EROSION SEDIMENT CONTROL NOTES

1. LAND DISTURBANCE WILL BE KEPT TO A MINIMUM NECESSARY FOR CONSTRUCTION OPERATIONS; RESTABILIZATION WILL BE SCHEDULED AS SOON AS PRACTICAL.
2. CATCH BASINS WILL BE PROTECTED WITH PRODUCT KNOWN AS "SILT SACK" THROUGHOUT THE CONSTRUCTION PERIOD AND UNTIL ALL DISTURBED AREAS ARE THOROUGHLY STABILIZED.
3. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED PRIOR TO CONSTRUCTION.
4. ALL CONTROL MEASURES WILL BE MAINTAINED IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.
5. ADDITIONAL CONTROL MEASURES WILL BE INSTALLED DURING THE CONSTRUCTION PERIOD IF NECESSARY OR REQUIRED.
6. SEDIMENT REMOVED FROM CONTROL STRUCTURES WILL BE DISPOSED OF IN A MANNER WHICH IS CONSISTENT WITH THE INTENT OF THE PLAN.
7. NIR RETAIL LLC, AS THE OWNER IS ASSIGNED THE RESPONSIBILITY FOR IMPLEMENTING THIS EROSION AND SEDIMENT CONTROL PLAN. THIS RESPONSIBILITY INCLUDES THE INSTALLATION AND MAINTENANCE OF CONTROL MEASURES, INFORMING ALL PARTIES ENGAGED ON THE CONSTRUCTION SITE OF THE REQUIREMENTS AND OBJECTIVES OF THE PLAN, NOTIFYING THE NANTUCKET PLANNING BOARD OF ANY TRANSFER OF THIS RESPONSIBILITY AND FOR CONVEYING A COPY OF THE EROSION AND SEDIMENT PLAN IF THE TITLE TO THE LAND IS TRANSFERRED.

CONSTRUCTION AND STABILIZATION SEQUENCE NARRATIVE

PRE–CONSTRUCTION MEETING WITH TOWN DEPARTMENTS, APPLICANT, CONTRACTOR AND SITE ENGINEER.

PHASE I SITE CLEARING
1. INSTALL ANTI–TRACKING PAD AT CONSTRUCTION ENTRANCE.
2. INSTALL SEDIMENT CONTROL BARRIER AS DIRECTED BY THE ENGINEER. PROTECT ALL CATCH BASINS WITH SEDIMENTATION CONTROL UNITS UNTIL PROJECT IS COMPLETED.

PHASE II SITE CONSTRUCTION
1. PROCEED WITH EXCAVATION FOR FOUNDATION.
2. PROTECT ALL CATCH BASINS WITH SEDIMENTATION CONTROL UNITS UNTIL PROJECT IS COMPLETED.
3. PLACE FOOTING.
4. POUR FOUNDATION WALL.
5. INSTALL DRAIN SYSTEM.
6. INSTALL UTILITIES.
7. BACKFILL SITE, GRADE AS REQUIRED.
8. INSTALL LANDSCAPING.
9. LOAM AND SEED, STABALIZE SITE.

PHASE III SITE STABILIZATION
1. REMOVE ALL CONSTRUCTION DEBRIS.
2. MAINTAIN ALL EROSION CONTROL UNTIL DISTURBED AREAS HAVE BEEN STABILIZED WITH NEW GROWTH FOR A PERIOD OF 60 DAYS.
3. REMOVE ALL EROSION CONTROL AND CLEAN UP SITE.

ZONING RELIEF REQUESTED

SECTION 139–11. MAJOR COMMERCIAL DEVELOPMENT
SECTION 139–11.E(1) OPEN SPACE (20% TO 15%)
SECTION 139–18.D PARKING SPACES (11 TO 5)
SECTION 139–23.B(2)(b) TRAFFIC STUDY REQUIREMENT PURSUANT TO 139–23.C

LEGEND

TC	TOP OF CURB
BC	BOTTOM OF CURB
→	FLOW DIRECTION ARROW
W	PROPOSED WATER SERVICE
S	PROPOSED SEWER LINE
RD	PROPOSED ROOF DRAIN
X 9.9	PROPOSED SPOT GRADES
x 9.9	EXISTING SPOT GRADE
T	TELEPHONE LINE
T/E	TELEPHONE & ELECTRIC LINE
CLF	CHAIN LINK FENCE
EOP	EDGE OF PAVEMENT
-○- UP	UTILITY POLE
	POST & RAIL FENCE

NANTUCKET PLANNING BOARD
MAJOR COMMERCIAL DEVELOPMENT
SPECIAL PERMIT

BARRY RECTOR, CHAIRMAN

LINDA WILLIAMS, VICE–CHAIRWOMAN

NATHANIEL LOWELL

JOSEPH MARCKLINGER

JOHN TRUDEL

DATE APPROVED

DATE SIGNED

FILE NO. #39–16

MAJOR COMMERCIAL DEVELOPMENT
SITE DEVELOPMENT PLAN
#137 OLD SOUTH ROAD
IN
NANTUCKET, MASSACHUSETTS
SCALE: 1"=10' DATE: JULY 11, 2016
REVISED: SEPTEMBER 6, 2016 SITE DESIGN

PREPARED FOR:
NIR RETAIL LLC
NANTUCKET SURVEYORS, LLC
5 WINDY WAY
NANTUCKET, MA 02554
(508) 228–0240

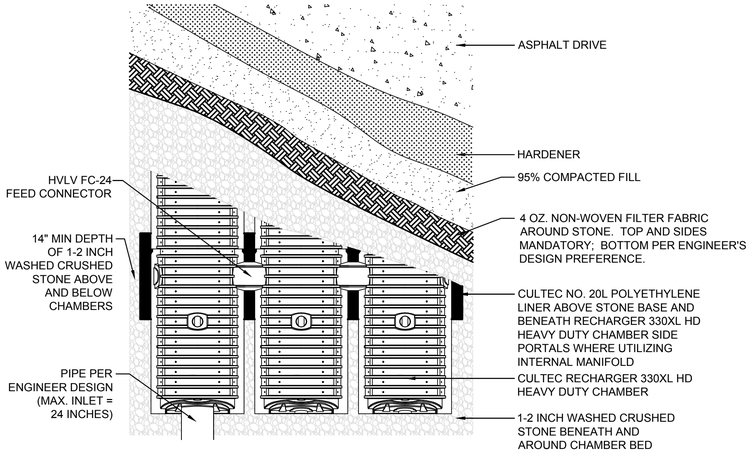
GRAPHIC SCALE
1"=10'
0 10 20 30 40

COMMONWEALTH OF MASSACHUSETTS PAUL J. SAKOSH No. 38124 REGISTERED PROFESSIONAL ENGINEER
9/6/16

COMMONWEALTH OF MASSACHUSETTS DALE MACKINNON CIVIL No. 34575 REGISTERED PROFESSIONAL ENGINEER
9/6/2016

NOTE:
THIS PLAN IS INTENDED FOR PERMITTING PURPOSES ONLY AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNTIL ISSUED FOR CONSTRUCTION BY NANTUCKET SURVEYORS, LLC.

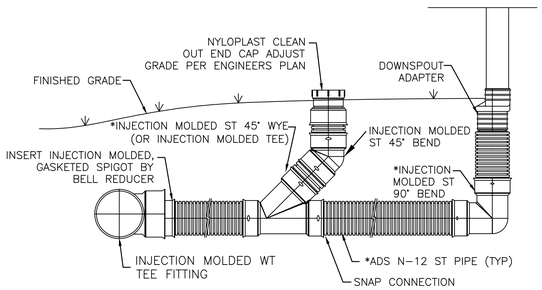
SHEET 1 OF 3 N–10767



QUANTITY AND LAYOUT OF CHAMBER ARRANGEMENT ARE FOR DETAIL PURPOSES AND DO NOT NECESSARILY DEPICT THE LAYOUT THAT HAS BEEN DESIGNED

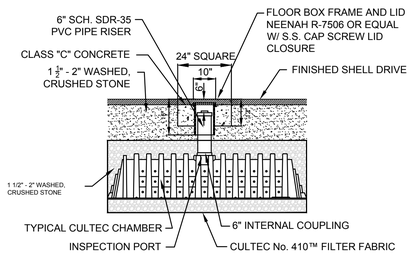
CULTEC DRAINAGE INFILTRATION SYSTEM DETAILS

N.T.S.



ROOF DRAIN DETAIL WITH CLEANOUT

N.T.S.



TYPICAL H20 INSPECTION PORT DETAIL

N.T.S.

MAJOR COMMERCIAL DEVELOPMENT
SITE DRAINAGE PLAN

#137 OLD SOUTH ROAD
IN
NANTUCKET, MASSACHUSETTS
SCALE: 1"=10' DATE: JULY 11, 2016
REVISED: SEPTEMBER 6, 2016 SITE DESIGN

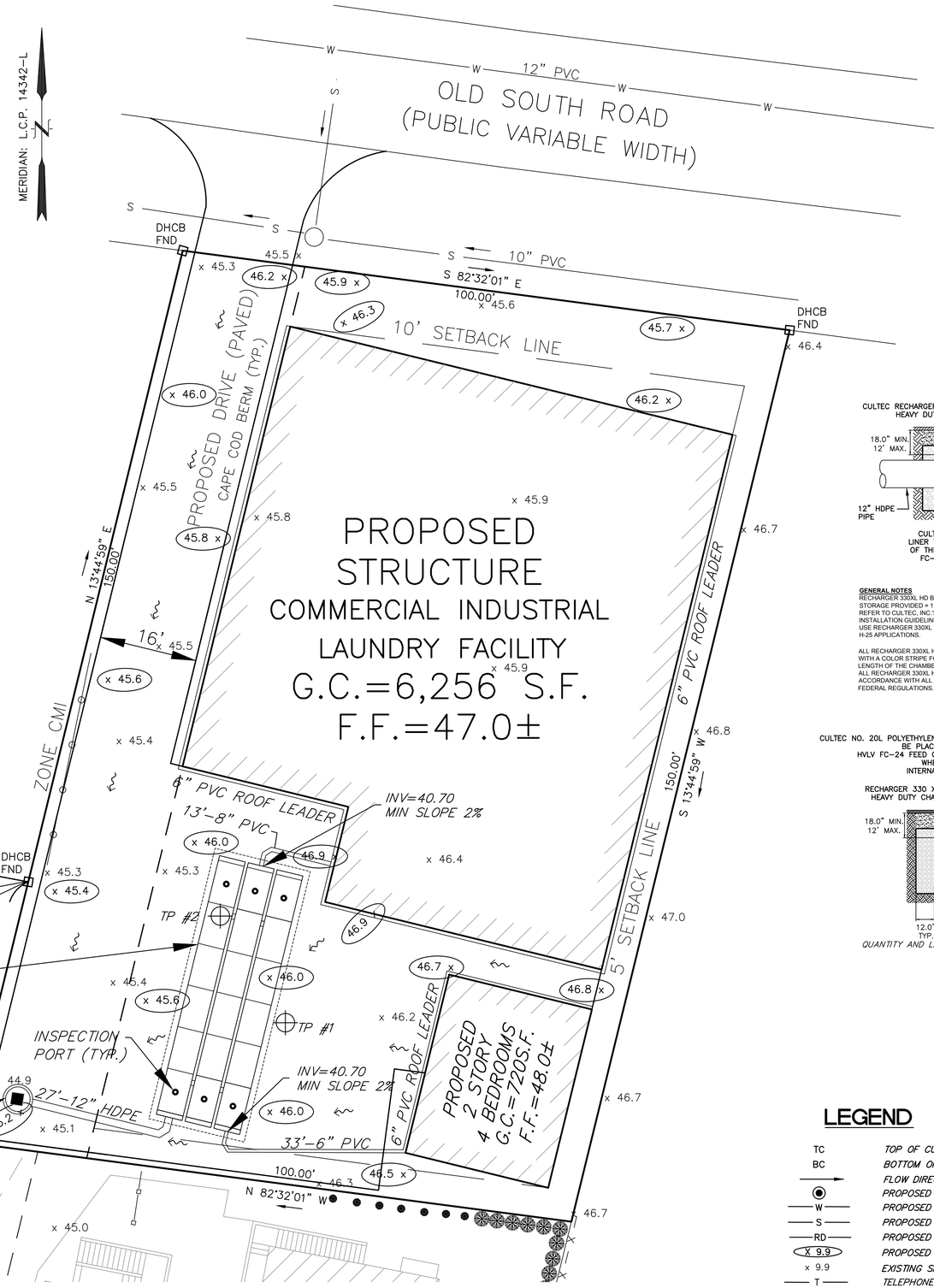
PREPARED FOR:
NIR RETAIL LLC

NANTUCKET SURVEYORS, LLC
5 WINDY WAY
NANTUCKET, MA 02554
(508) 228-0240

GRAPHIC SCALE
1"=10'
0 10 20 30 40

COMMONWEALTH OF MASSACHUSETTS
CHAS MACKINNON
CIVIL
No. 34575
REGISTERED PROFESSIONAL ENGINEER
9/6/2016

PAUL J. SANTOS
No. 36124
REGISTERED PROFESSIONAL SURVEYOR
9/6/16



BENCHMARK: DHCB FND. EL.= 45.09' H.T.L. DATUM.

PROPOSED INFILTRATION SYSTEM
18 - CULTEC 330 XLHD UNITS AND WASHED STONE
INVERT IN = 40.70(12")
BOTTOM OF CHAMBERS=39.60
BOTTOM OF STONE=37.10

4 - CULTEC HVLV F-24 FEED CONNECTORS BETWEEN UNITS (TYP.)

STORMCEPTOR STC 450i RIM GRATE=45.20 INV.=41.20

NOTE:
THIS PLAN IS INTENDED FOR PERMITTING PURPOSES ONLY AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNTIL ISSUED FOR CONSTRUCTION BY NANTUCKET SURVEYORS, LLC.

TEST PIT LOGS

DATE: 8/31/16
PERFORMED BY: PAUL J SANTOS, PLS, SE 2142

TP #1 EL.= 46.0

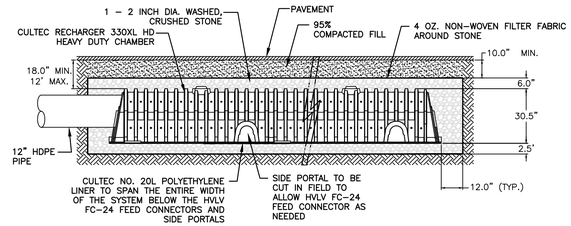
	0" (46.0)
ORGANIC	4" (45.7)
SANDY LOAM	12" (45.0)
LOAMY SAND	24" (44.0)
LOAMY SAND	48" (42.0)
FINE SAND	120" (36.0)

RESTRICTIVE LAYER @ 84"
EST. SEAS. HGW EL.= 7.0±'
(HWH MAP #2)

TP #2 EL.= 45.6'

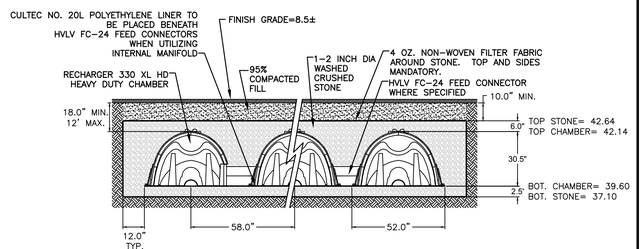
	0" (45.6)
SANDY LOAM	10" (44.8)
LOAMY SAND	24" (43.6)
M-C SAND W/ TRACE GRAVEL	84" (38.6)
FINE SAND	120" (35.6)

RESTRICTIVE LAYER @ 84"
EST. SEAS. HGW EL.= 7.0±'
(HWH MAP #2)



GENERAL NOTES
RECHARGER 330XL HD BY CULTEC, INC. OF BROOKFIELD, CT.
STORAGE PROVIDED = 11.32 CF/FT PER DESIGN UNIT.
REFER TO CULTEC, INC.'S CURRENT RECOMMENDED INSTALLATION GUIDELINES.
USE RECHARGER 330XL HD HEAVY DUTY FOR TRAFFIC AND/OR H-25 APPLICATIONS.

ALL RECHARGER 330XL HD HEAVY DUTY UNITS ARE MARKED WITH A COLOR STRIPE FORMED INTO THE PART ALONG THE LENGTH OF THE CHAMBER.
ALL RECHARGER 330XL HD CHAMBERS MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.



QUANTITY AND LAYOUT OF CHAMBER ARRANGEMENT ARE FOR DETAIL PURPOSES AND DO NOT NECESSARILY DEPICT THE LAYOUT THAT HAS BEEN DESIGNED

LEGEND

TC	TOP OF CURB
BC	BOTTOM OF CURB
→	FLOW DIRECTION ARROW
◉	PROPOSED SEWER MANHOLE
W	PROPOSED WATER SERVICE
S	PROPOSED SEWER LINE
RD	PROPOSED ROOF DRAIN
X 9.9	PROPOSED SPOT GRADES
x 9.9	EXISTING SPOT GRADE
T	TELEPHONE LINE
T/E	PROPOSED CONTOUR
CLF	CHAIN LINK FENCE
EOP	EDGE OF PAVEMENT
UP	UTILITY POLE
	POST & RAIL FENCE

NANTUCKET PLANNING BOARD

MAJOR COMMERCIAL DEVELOPMENT
SPECIAL PERMIT

BARRY RECTOR, CHAIRMAN

LINDA WILLIAMS, VICE-CHAIRWOMAN

NATHANIEL LOWELL

JOSEPH MARCKLINGER

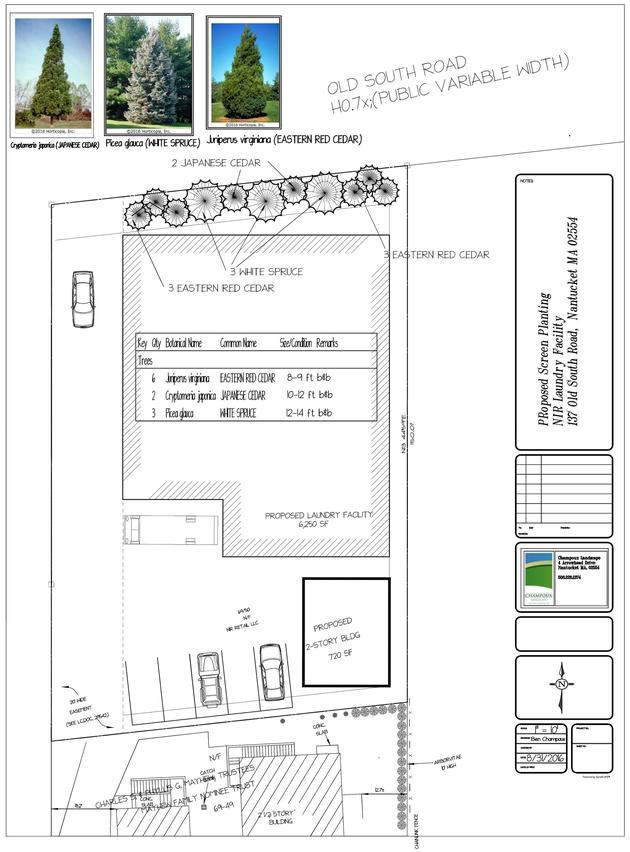
JOHN TRUDEL

DATE APPROVED

DATE SIGNED

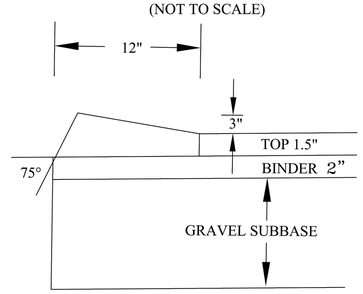
FILE NO. #39-16

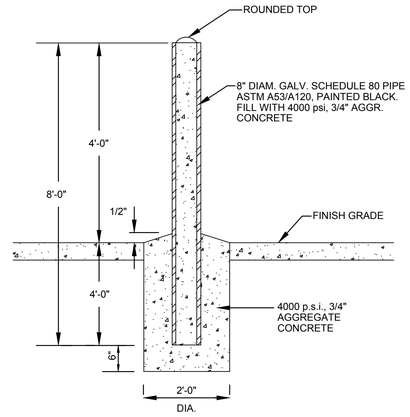
Cryptomeria japonica (JAPANESE CEDAR) Picea glauca (WHITE SPRUCE) Juniperus virginiana (EASTERN RED CEDAR)



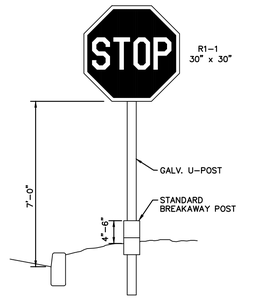
OLD SOUTH ROAD SCREENING DETAIL

CAPE COD BERM DETAIL
(NOT TO SCALE)





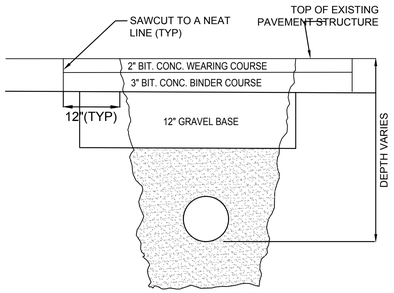
BOLLARD
N.T.S.



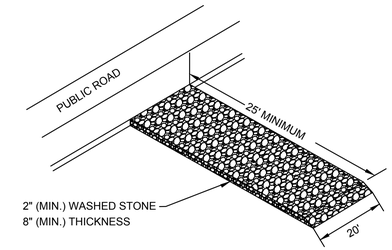
INSTALLATION, DIMENSIONS, COLORS AND DETAILS OF VARIOUS SIZE SIGNS, SHIELDS AND ACCESSORY PANELS TO FOLLOW STANDARDS IN THE CURRENT "STANDARD HIGHWAY SIGNS PUBLICATION" AND THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS".

NOTE: ALL SIGNS SHALL BE IN ACCORDANCE WITH DEPT. OF TRANSPORTATION STANDARDS.

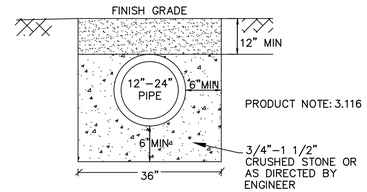
STOP SIGN LOCATION DETAIL
N.T.S.



PERMANENT TRENCH PATCH DETAIL
(NOT TO SCALE)

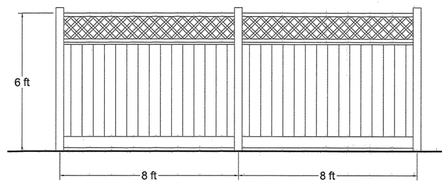


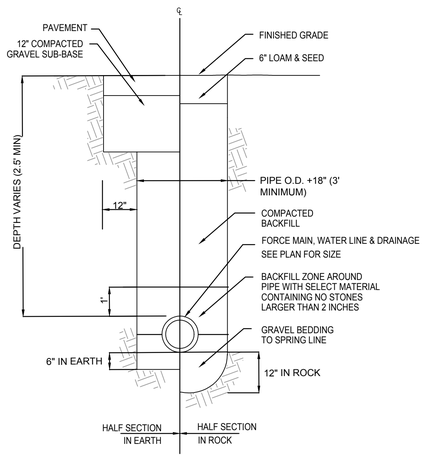
CONSTRUCTION ENTRANCE DETAIL
NOT TO SCALE



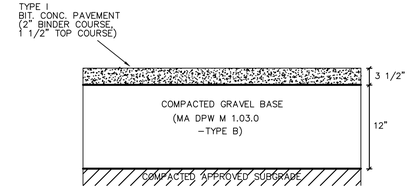
HDPE DRAINAGE PIPE DETAIL
N.T.S.

FENCE DETAIL
(NOT TO SCALE)

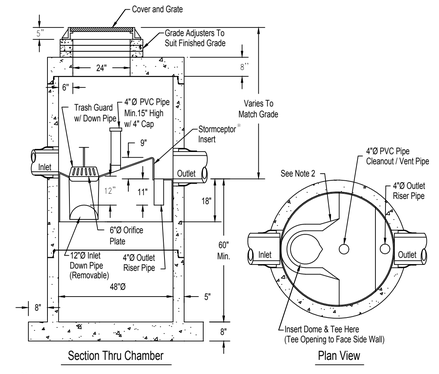




TRENCH DETAIL
(NOT TO SCALE)



ACCESS DRIVE CROSS-SECTION
N.T.S.



Notes:
1. The use of a Flexible Connection is recommended at The Inlet and Outlet Pipe.
2. The Cover should be positioned over The Inlet Drop Pipe and The Vent Pipe.
3. The Stormceptor System is protected by one or more of the following U.S. Patents: #4985148, #5498331, #5725760, #5753115, #5849181, #6068765, #6371690.
4. Contact a Rinker Materials representative for Double Grate Top Slab details and further details not listed on this sheet.

STC 450i PRECAST CONCRETE STORMCEPTOR
N.T.S.

MAJOR COMMERCIAL DEVELOPMENT
CONSTRUCTION DETAILS & NOTES

#137 OLD SOUTH ROAD
IN
NANTUCKET, MASSACHUSETTS
SCALE: 1"=10' DATE: JULY 11, 2016
REVISED: SEPTEMBER 6, 2016 SITE DESIGN

PREPARED FOR:
NIR RETAIL LLC
NANTUCKET SURVEYORS, LLC
5 WINDY WAY
NANTUCKET, MA 02554
(508) 228-0240

GRAPHIC SCALE
1"=10'
0 10 20 30 40

COMMONWEALTH OF MASSACHUSETTS
DALE MACKINNON
CIVIL
No. 34575
REGISTERED PROFESSIONAL ENGINEER
9/6/2016

NOTE:
THIS PLAN IS INTENDED FOR PERMITTING PURPOSES ONLY AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNTIL ISSUED FOR CONSTRUCTION BY NANTUCKET SURVEYORS, LLC.

NANTUCKET PLANNING BOARD
MAJOR COMMERCIAL DEVELOPMENT
SPECIAL PERMIT

BARRY RECTOR, CHAIRMAN
LINDA WILLIAMS, VICE-CHAIRWOMAN
NATHANIEL LOWELL
JOSEPH MARCKLINGER
JOHN TRUDEL
DATE APPROVED
DATE SIGNED
FILE NO. #39-16

RECEIVED
JUL 14 2016
By

VAUGHAN, DALE, HUNTER AND BEAUDETTE
PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
WHALER'S LANE
P.O. BOX 659
NANTUCKET, MASSACHUSETTS 02554

TEL: (508) 228-4455
FAX: (508) 228-3070

EDWARD FOLEY VAUGHAN
KEVIN F. DALE
RICHARD P. BEAUDETTE

LORI D'ELIA
BRYAN J. SWAIN

WILLIAM F. HUNTER
OF COUNSEL

2016 JUL 14 PM 12:40
NANTUCKET
TOWN CLERK

July 14, 2016

Catherine Ancero
Administrative Specialist
Nantucket Planning Board
2 Fairgrounds Road
Nantucket, Massachusetts 02554

PLANNING BOARD
FILE # 48-16

Re: Major Commercial Development, Special Permit Application; NIR Retail LLC; 137 Old South Road, Nantucket

Dear Catherine:

Enclosed please find an original application for a Major Commercial Development Special Permit submitted on behalf of NIR Retail LLC (the "Applicant"), with respect to the vacant property located at 137 Old South Road, Nantucket, MA 02554 (the "Premises").

A. Background:

As you may be aware, the Applicant's existing laundry facility recently burned down and the Applicant is therefore in need of an alternative location. The proposed conditions for the Premises are shown on a plan entitled "Major Commercial Development Site Development Plan 137 Old South Road in Nantucket, Massachusetts", dated July 11, 2016, prepared for NIR Retail LLC by Nantucket Surveyors, LLC (the "Site Plan"). As shown on the Site Plan, Applicant's proposal includes the construction of 6,256+/- square foot structure for the purpose of a laundry facility on the Premises (the "Laundry Facilities"). The Applicant also seeks a Special Permit to construct a four bedroom 720+/- square foot structure on the Premises for neighborhood employee housing (the "Employee Housing").

RECEIVED
JUL 14 2016
BY:

B. Existing Zoning/Requested Relief:

The Premises is currently located in the RC-2 Zoning district. In order to construct the Laundry Facility and the Employee Housing, the Applicant is seeking the following relief:

139-11	Special Permit Relief for Major Commercial Development
139-11.E.(1)	Special Permit Relief to reduce open space requirement
139-18.D	Special Permit Relief to reduce the number of required parking spaces
139-23.C	Waiver for the traffic study requirement under 139-23B.(2)(b)
139-11.G	Special Permit to waive side and rear set back requirements
139-7(A)	Special Permit Relief for neighborhood employee housing

The Applicant believes the requested relief is consistent with the requirements of the Zoning By-Law and is eligible for approval by the Planning Board, pursuant to the standards in the By-Law, all as more fully discussed in the Addendum, as the same will be supplemented.

Further to this application, enclosed please find the following documents:

1. The Application for a MCD Special Permit with one addendum attached, Addendum "A", identifying the zoning code relief sought.

2. A proposed Site Plan entitled "Major Commercial Development Site Development Plan 137 Old South Road in Nantucket, Massachusetts", dated July 11, 2016, prepared for NIR Retail LLC by Nantucket Surveyors, LLC showing the proposed conditions for the Premises.

3. Proposed design/layout Plan prepared by Arco Murray, Laundry Division.

4. A submittal fee calculation table. Enclosed please find one check in the amount of $161.76 made payable to Pitney Bowes Reserved Funds, and two checks totaling $8,653 representing the MCD Submittal Fee and the Inspection Escrow Account Fee.

5. Certified Lists of the Parties in Interest (Abutters) to the project and four sets of mailing labels.

Please note that the Applicant plans to supplement this application with additional supporting materials and information (including a Stormwater Report, and supporting Department Head letters) as soon as possible. Please mark this matter for hearing by the Planning Board at its meeting scheduled for August 8, 2016. Please feel free to call me should you or any of the Staff or Board members have questions or concerns.

Sincerely,

Richard P. Beaudette

RPB/lld
Enclosures
cc: NIR Retail LLC
John E. Twohig, Esq.
Town Clerk
Board of Health

NANTUCKET
TOWN CLERK
2016 JUL 14 PM 12:40

Nantucket Planning Board

Application for a Special Permit

Date: _____ File #: _____

Name of development: _____

Owner(s) name(s): NIR Retail LLC

Mailing address: c/o PO Box 659, 2 Whalers Lane, Nantucket, MA 02554
Phone number: 508-228-4455 Fax number: 508-228-3070 E-mail: rick@vdhlaw.com; lori@vdhlaw.com

Applicant's name: same

Mailing address: same
Phone number: same Fax number: same E-mail: same

Engineer / surveyor's name: Nantucket Surveyors LLC

Mailing address: 5 Windy Way, Nantucket, MA 02554
Phone number: 508-228-0240 Fax number: 508-228-9856 E-mail: _____

Location of lot(s):

☐Street address 137 Old South Road

☐Tax Assessors Map 69 Parcel 50

☐Nantucket Registry of Deed: Plan Book _____ and Page _____ **OR**

Plan File #_____ **OR** Land Court Plan # 14342-L, Lot 35 at Certificate # _____

Size of parcel: 15,000 sq. ft. Zoning District: RC-2

Special Permit sought: (check one)

- ○ Cluster subdivision
- ○ Commercial WECS
- ○ Driveway Access/Curb Cut Special Permit
- ○ Harbor Overlay District (HOD)
- ⊗ Major Commercial Development (MCD)

- ○ Multi-family Special Permit
- ○ Moorlands Management District Subdivision or Construction (MMD)
- ○ NEHOD (Neighborhood Employee Housing Overlay District)
- ○ MRD (Major Residential Development)
- ○ MIPOD (Mid-Island Planned Overlay District)
- ⊗ Other Uses Requiring a Special Permit (specify all uses and *Nantucket Code* sections)

Section	Description
139-11	Special Permit Relief for Major Commercial Development
139-11.E.(1)	Special Permit Relief to reduce open space requirement
139-11.G	Special Permit to waive side and rear set back requirements
139-7(a)	Special Permit Relief for neighborhood employee housing
139-18.D	Special Permit Relief to reduce the number of required parking spaces
139-23.C	Waiver for the traffic study requirement under 139-23B.(2)(b)

Specify all associated Zoning Code relief sought: *Please also see Addendum "A", attached hereto

Section	Description
same as above	

Only the zoning relief expressly requested above will be considered as part of this application.

If applying for a Major Commercial Development, specify how the application will comply with Section 139-11 (J) of the *Zoning Code of the Town of Nantucket*, also known as the Town's Affordable Housing Effort:

Planning Board filing fee due: $ 3,653.00

Engineering Inspection Escrow Deposit due: $ 5,000

I/ we hereby certify that the applicant(s) cited above have been authorized by me/ us to file a Special Permit application with the Planning Board on property that I/ we own.

Owner(s)' Signature(s)

NIR Retail LLC, Owner / Applicant

Applicant's Signature

I/we NIR Retail LLC, the undersigned, hereby authorize _____ to act as agent(s) on my/our behalf and to make any necessary revisions on this filed application as they may be requested by the Board to meet its governing rules and guidelines.

Owner(s)' signature(s)

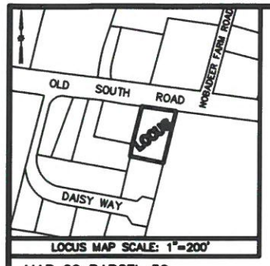
Check List:

- ❑ Planning Board Special Permit abutters list – to be obtained at the Tax Assessor's office
- ❑ Completed application form entitled "Application to the Planning Board for a Special Permit"
- ❑ Application fee of $250.00 payable to Town of Nantucket
- ❑ Abutters fee of $6.11 per abutters payable to Pitney Bowes Reserved Funds
- ❑ Four (4) sets of mailing labels with each abutter's name and address
  - 1" x 2 5/8" size, typed labels, are preferred
  - duplicate labels are not necessary if the same owner is listed for more than one abutting property
- ❑ Completed application form
- ❑ Town Clerk's stamped application (provide 2 copies-one for Town Clerk and one for Planning Board)

ADDENDUM "A"

Specify All Associated Zoning Code Relief Sought:

Section	Description
139-11 Major Commercial Development	Applicant requests Special Permit Relief for a Major Commercial Development
139-11.E.(1) Open Area	Applicant requests Special Permit Relief to reduce the open space requirement under Section 139-11.E. (1) of the By-Law from 20% to 15%.
139-11.G Setbacks	Applicant requests Special Permit Relief to waive the side and rear lot line set back requirements under the By-Law.
139-7(A) Neighborhood Employee Housing	Applicant requests Special Permit Relief for Neighborhood Employee Housing to house its employees for the laundry facility on the Premises.
139-18.D Parking	Applicant is able to provide four parking spaces where eleven is required under the By-Law. Applicant therefore requests Special Permit Relief to reduce the number of parking spaces required under the By-Law.
139-23.C Site Plan Review	Applicant requests a waiver from the requirement to provide a traffic study under 139-23.B.(2)(b).



MAP 69 PARCEL 50
LOT AREA=14,910±S.F.

REFERENCES:
OWNER: NIR RETAIL LLC

DEED REFERENCE: (PARCEL TWENTY-THREE) LC CERT. NO. 21819

PLAN REFERENCE: PLAN FILE NO. 14342-L

ASSESSORS REFERENCE:
MAP: 69 PARCEL: 50

ZONING CLASSIFICATION:
DISTRICT: RC-2
MINIMUM LOT SIZE =5,000 S.F.
MINIMUM FRONTAGE =40'
FRONT YARD SETBACK =10'
SIDE YARD SETBACK =5'
REAR YARD SETBACK =5'
MAX. GROUND COVER RATIO =50%

OVERLAY DISTRICTS:
1. NANTUCKET WELLHEAD PROTECTION DISTRICT (DEP ZONE II)
2. TOWN OVERLAY DISTRICT

UTILITY PERMITS REQUIRED:
1. SEWER APPLICATION AND PERMIT-DPW.
2. APPLICATION FOR WATER AND FIRE SERVICE-NWC.
3. CONTRACTOR TO COORDINATE SERVICES WITH NATIONAL GRID, COMCAST AND VERIZON.
4. CERTIFICATE OF WATER QUALITY COMPLIANCE-WANNACOMET WATER COMPANY.

NOTES:
1. FLOOD HAZARD ZONE X (AREA OF MINIMAL FLOODING) FIRM PANEL NO. 25019C0089G EFFECTIVE DATE: JUNE 9, 2014.
2. PORTION OF SITE MAPPED NHESP PRIORITY HABITAT OF RARE SPECIES.

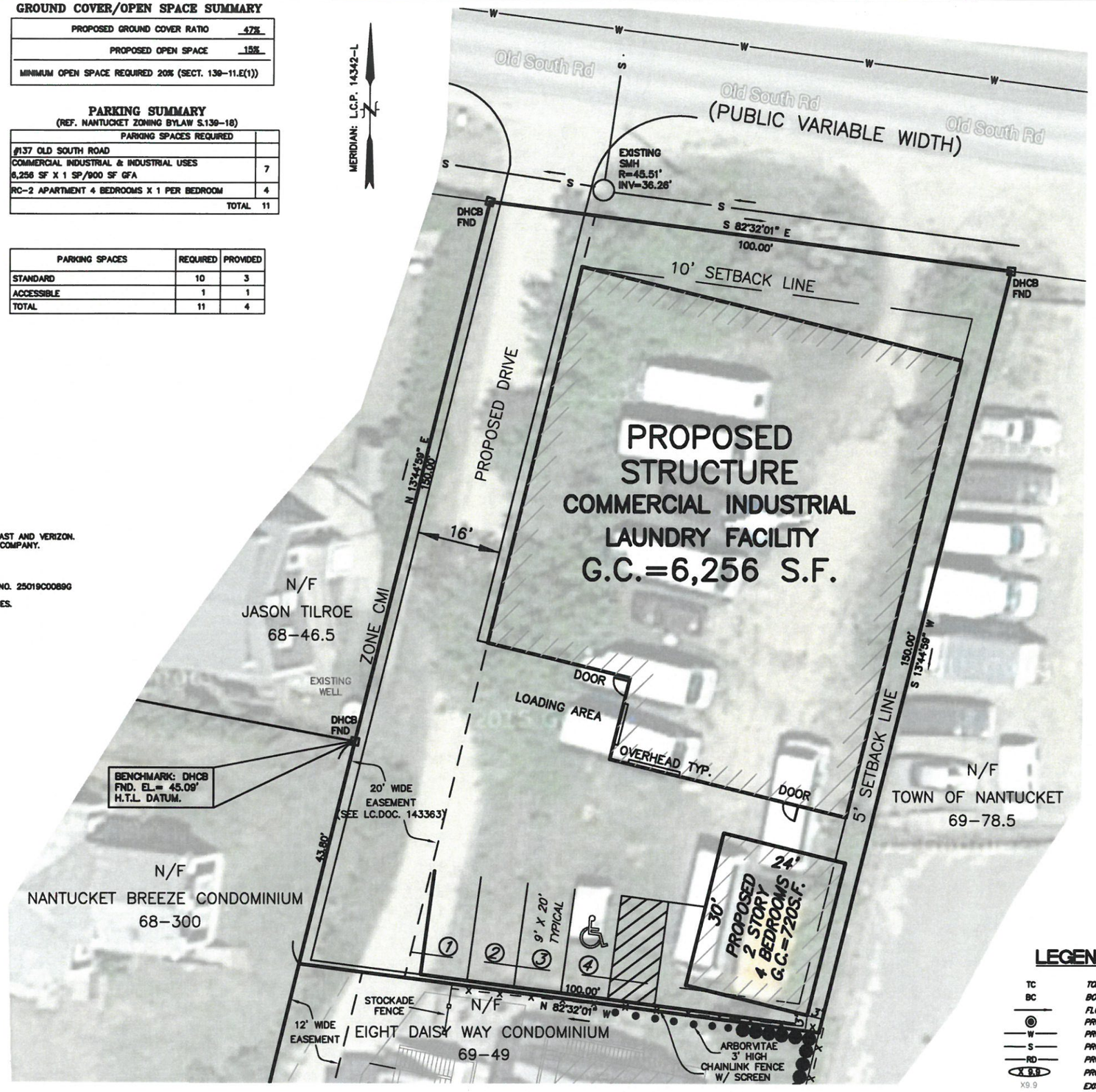
GROUND COVER/OPEN SPACE SUMMARY

PROPOSED GROUND COVER RATIO	47%
PROPOSED OPEN SPACE	15%
MINIMUM OPEN SPACE REQUIRED 20% (SECT. 139-11.E(1))	

PARKING SUMMARY
(REF. NANTUCKET ZONING BYLAW S.139-18)

PARKING SPACES REQUIRED	
#137 OLD SOUTH ROAD	
COMMERCIAL INDUSTRIAL & INDUSTRIAL USES 6,256 SF X 1 SP/900 SF GFA	7
RC-2 APARTMENT 4 BEDROOMS X 1 PER BEDROOM	4
TOTAL	11

PARKING SPACES	REQUIRED	PROVIDED
STANDARD	10	3
ACCESSIBLE	1	1
TOTAL	11	4



SOIL EROSION SEDIMENT CONTROL NOTES

1. LAND DISTURBANCE WILL BE KEPT TO A MINIMUM NECESSARY FOR CONSTRUCTION OPERATIONS; RESTABILIZATION WILL BE SCHEDULED AS SOON AS PRACTICAL.
2. CATCH BASINS WILL BE PROTECTED WITH PRODUCT KNOWN AS "SILT SACK" THROUGHOUT THE CONSTRUCTION PERIOD AND UNTIL ALL DISTURBED AREAS ARE THOROUGHLY STABILIZED.
3. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED PRIOR TO CONSTRUCTION.
4. ALL CONTROL MEASURES WILL BE MAINTAINED IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.
5. ADDITIONAL CONTROL MEASURES WILL BE INSTALLED DURING THE CONSTRUCTION PERIOD IF NECESSARY OR REQUIRED.
6. SEDIMENT REMOVED FROM CONTROL STRUCTURES WILL BE DISPOSED OF IN A MANNER WHICH IS CONSISTENT WITH THE INTENT OF THE PLAN.
7. NIR RETAIL LLC, AS THE OWNER IS ASSIGNED THE RESPONSIBILITY FOR IMPLEMENTING THIS EROSION AND SEDIMENT CONTROL PLAN. THIS RESPONSIBILITY INCLUDES THE INSTALLATION AND MAINTENANCE OF CONTROL MEASURES, INFORMING ALL PARTIES ENGAGED ON THE CONSTRUCTION SITE OF THE REQUIREMENTS AND OBJECTIVES OF THE PLAN, NOTIFYING THE NANTUCKET PLANNING BOARD OF ANY TRANSFER OF THIS RESPONSIBILITY AND FOR CONVEYING A COPY OF THE EROSION AND SEDIMENT PLAN IF THE TITLE TO THE LAND IS TRANSFERRED.

CONSTRUCTION AND STABILIZATION SEQUENCE NARRATIVE

PRE-CONSTRUCTION MEETING WITH TOWN DEPARTMENTS, APPLICANT, CONTRACTOR AND SITE ENGINEER.

PHASE I SITE CLEARING
1. INSTALL ANTI-TRACKING PAD AT CONSTRUCTION ENTRANCE.
2. INSTALL SEDIMENT CONTROL BARRIER AS DIRECTED BY THE ENGINEER. PROTECT ALL CATCH BASINS WITH SEDIMENTATION CONTROL UNITS UNTIL PROJECT IS COMPLETED.

PHASE II SITE CONSTRUCTION
1. PROCEED WITH EXCAVATION FOR FOUNDATION.
2. PROTECT ALL CATCH BASINS WITH SEDIMENTATION CONTROL UNITS UNTIL PROJECT IS COMPLETED.
3. PLACE FOOTING.
4. POUR FOUNDATION WALL.
5. INSTALL DRAIN SYSTEM.
6. INSTALL UTILITIES.
7. BACKFILL SITE, GRADE AS REQUIRED.
8. INSTALL LANDSCAPING.
9. LOAM AND SEED, STABALIZE SITE.

PHASE III SITE STABILIZATION
1. REMOVE ALL CONSTRUCTION DEBRIS.
2. MAINTAIN ALL EROSION CONTROL UNTIL DISTURBED AREAS HAVE BEEN STABILIZED WITH NEW GROWTH FOR A PERIOD OF 60 DAYS.
3. REMOVE ALL EROSION CONTROL AND CLEAN UP SITE.

ZONING RELIEF REQUESTED

SECTION 139-11. MAJOR COMMERCIAL DEVELOPMENT
SECTION 139-11.E(1) OPEN SPACE (20% TO 15%)
SECTION 139-11.G SIDE/REAR YARD SETBACK (5' TO 3')
SECTION 139-18.D PARKING SPACES (11 TO 4)
SECTION 139-23.B(2)(b) TRAFFIC STUDY REQUIREMENT PURSUANT TO 139-23.C

LEGEND

TC	TOP OF CURB
BC	BOTTOM OF CURB
	FLOW DIRECTION ARROW
	PROPOSED SEWER MANHOLE
W	PROPOSED WATER SERVICE
S	PROPOSED SEWER LINE
RD	PROPOSED ROOF DRAIN
X 9.9	PROPOSED SPOT GRADES
X9.9	EXISTING SPOT GRADE
17	EXISTING CONTOUR
17	PROPOSED CONTOUR

NANTUCKET PLANNING BOARD
MAJOR COMMERCIAL DEVELOPMENT
SPECIAL PERMIT

BARRY RECTOR, CHAIRMAN

LINDA WILLIAMS, VICE-CHAIRWOMAN

NATHANIEL LOWELL

JOSEPH MAROCLINGER

JOHN TRUDEL

DATE APPROVED

DATE SIGNED

FILE NO.

COMMONWEALTH OF MASSACHUSETTS
PAUL J. SANTOS
No. 36124
PROFESSIONAL LAND SURVEYOR
7/11/16

MAJOR COMMERCIAL DEVELOPMENT
SITE DEVELOPMENT PLAN

#137 OLD SOUTH ROAD
IN
NANTUCKET, MASSACHUSETTS
SCALE: 1"=10' DATE: JULY 11, 2016

PREPARED FOR:
NIR RETAIL LLC

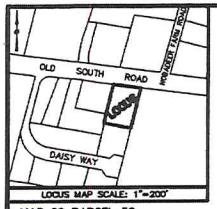
NANTUCKET SURVEYORS, LLC
5 WINDY WAY
NANTUCKET, MA 02554
(508) 228-0240

GRAPHIC SCALE
1"=10'
0 10 20 30 40

NOTE:
THIS PLAN IS INTENDED FOR PERMITTING PURPOSES ONLY AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNTIL ISSUED FOR CONSTRUCTION BY NANTUCKET SURVEYORS, LLC.

SHEET 1 OF 1 N-10767

I:\JOBS 9632-10999\10000's\10700's\10760's\10767\AUTOCAD\N10767 SITE PLAN REV 7-14-16.dwg, SITE PLAN



MAP 69 PARCEL 50
LOT AREA=14,910±S.F.

REFERENCES:
OWNER: NIR RETAIL LLC

DEED REFERENCE:(PARCEL TWENTY-THREE) LC CERT. NO. 21819

PLAN REFERENCE:PLAN FILE NO. 14342-L

ASSESSORS REFERENCE:
MAP:69 PARCEL:50

ZONING CLASSIFICATION:
DISTRICT: RC-2
MINIMUM LOT SIZE =5,000 S.F.
MINIMUM FRONTAGE =40'
FRONT YARD SETBACK =10'
SIDE YARD SETBACK =5'
REAR YARD SETBACK =5'
MAX. GROUND COVER RATIO =50%

OVERLAY DISTRICTS:
1. NANTUCKET WELLHEAD PROTECTION DISTRICT (DEP ZONE II)
2. TOWN OVERLAY DISTRICT

UTILITY PERMITS REQUIRED:
1. SEWER APPLICATION AND PERMIT-DPW.
2. APPLICATION FOR WATER AND FIRE SERVICE-NWC.
3. CONTRACTOR TO COORDINATE SERVICES WITH NATIONAL GRID, COMCAST AND VERIZON.
4. CERTIFICATE OF WATER QUALITY COMPLIANCE-WANNACOMET WATER COMPANY.

NOTES:
1. FLOOD HAZARD ZONE X (AREA OF MINIMAL FLOODING) FIRM PANEL NO. 25019C0089G EFFECTIVE DATE: JUNE 9, 2014.
2. PORTION OF SITE MAPPED NHESP PRIORITY HABITAT OF RARE SPECIES.

COMMONWEALTH OF MASSACHUSETTS
PAUL J. SANTOS
No. 36124
PROFESSIONAL LAND SURVEYOR
7/11/16

MAJOR COMMERCIAL DEVELOPMENT
SITE DEVELOPMENT PLAN
#137 OLD SOUTH ROAD
IN
NANTUCKET, MASSACHUSETTS
SCALE:1"=10' DATE: JULY 11, 2016
PREPARED FOR:
NIR RETAIL LLC
NANTUCKET SURVEYORS, LLC
5 WINDY WAY
NANTUCKET, MA 02554
(508) 228-0240
GRAPHIC SCALE
1"=10'
0 10 20 30 40

GROUND COVER/OPEN SPACE SUMMARY

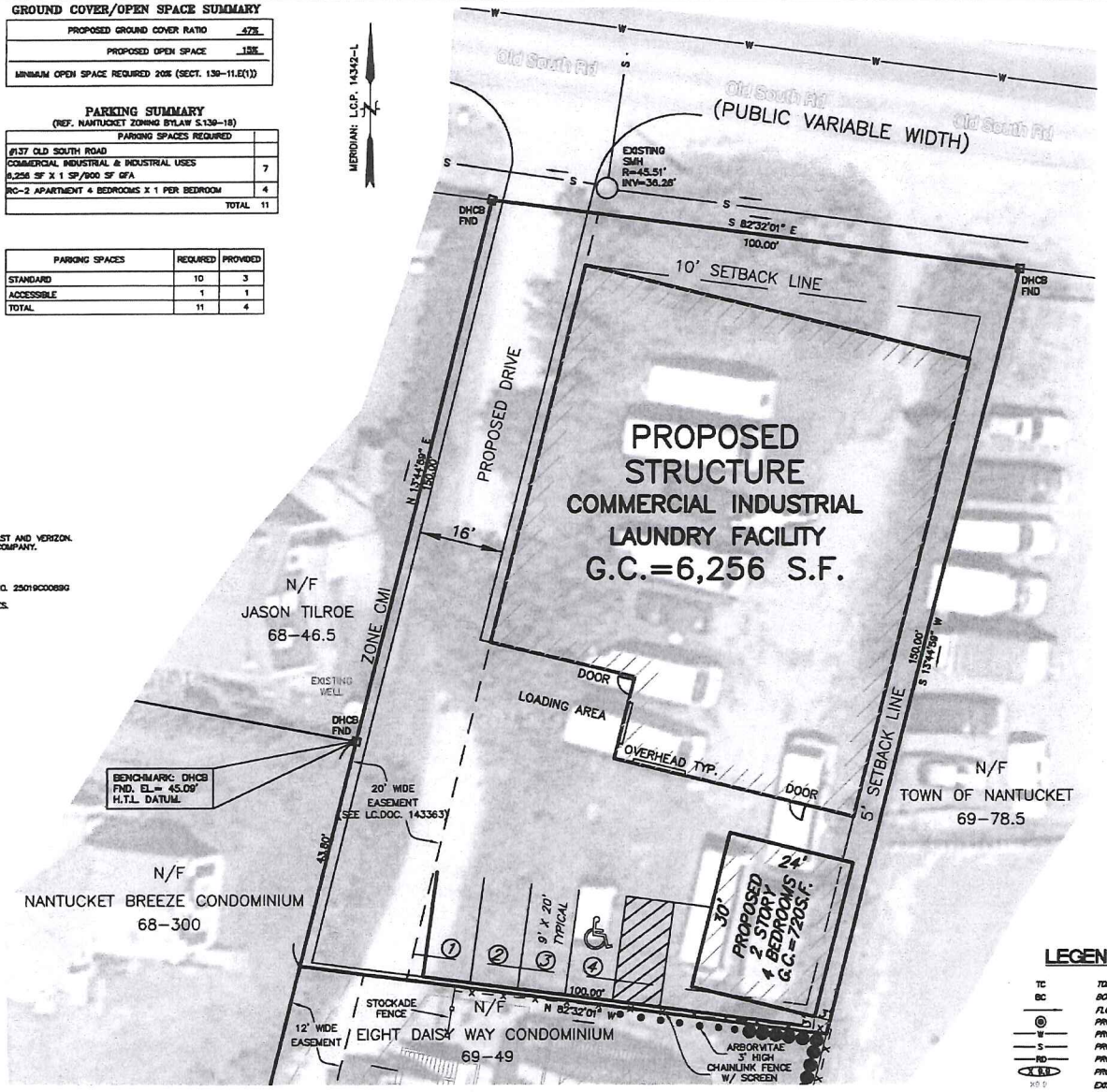
PROPOSED GROUND COVER RATIO	47%
PROPOSED OPEN SPACE	15%
MINIMUM OPEN SPACE REQUIRED 20% (SECT. 139-11.E(1))	

PARKING SUMMARY
(REF. NANTUCKET ZONING BYLAW S.139-18)

PARKING SPACES REQUIRED	
#137 OLD SOUTH ROAD	
COMMERCIAL INDUSTRIAL & INDUSTRIAL USES 6,256 SF X 1 SP/800 SF GFA	7
RC-2 APARTMENT 4 BEDROOMS X 1 PER BEDROOM	4
TOTAL	11

PARKING SPACES	REQUIRED	PROVIDED
STANDARD	10	3
ACCESSIBLE	1	1
TOTAL	11	4

MERIDIAN: L.C.P. 14342-L



NOTE:
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SOIL EROSION SEDIMENT CONTROL NOTES

1. LAND DISTURBANCE WILL BE KEPT TO A MINIMUM NECESSARY FOR CONSTRUCTION OPERATIONS; RESTABILIZATION WILL BE SCHEDULED AS SOON AS PRACTICAL.
2. CATCH BASINS WILL BE PROTECTED WITH PRODUCT KNOWN AS "SILT SACK" THROUGHOUT THE CONSTRUCTION PERIOD AND UNTIL ALL DISTURBED AREAS ARE THOROUGHLY STABILIZED.
3. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED PRIOR TO CONSTRUCTION.
4. ALL CONTROL MEASURES WILL BE MAINTAINED IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.
5. ADDITIONAL CONTROL MEASURES WILL BE INSTALLED DURING THE CONSTRUCTION PERIOD IF NECESSARY OR REQUIRED.
6. SEDIMENT REMOVED FROM CONTROL STRUCTURES WILL BE DISPOSED OF IN A MANNER WHICH IS CONSISTENT WITH THE INTENT OF THE PLAN.
7. NIR RETAIL LLC, AS THE OWNER IS ASSIGNED THE RESPONSIBILITY FOR IMPLEMENTING THIS EROSION AND SEDIMENT CONTROL PLAN. THIS RESPONSIBILITY INCLUDES THE INSTALLATION AND MAINTENANCE OF CONTROL MEASURES, INFORMING ALL PARTIES ENGAGED ON THE CONSTRUCTION SITE OF THE REQUIREMENTS AND OBJECTIVES OF THE PLAN, NOTIFYING THE NANTUCKET PLANNING BOARD OF ANY TRANSFER OF THIS RESPONSIBILITY AND FOR CONVEYING A COPY OF THE EROSION AND SEDIMENT PLAN IF THE TITLE TO THE LAND IS TRANSFERRED.

CONSTRUCTION AND STABILIZATION SEQUENCE NARRATIVE

PRE-CONSTRUCTION MEETING WITH TOWN DEPARTMENTS, APPLICANT, CONTRACTOR AND SITE ENGINEER.

PHASE I SITE CLEARING
1. INSTALL ANTI-TRACKING PAD AT CONSTRUCTION ENTRANCE.
2. INSTALL SEDIMENT CONTROL BARRIER AS DIRECTED BY THE ENGINEER. PROTECT ALL CATCH BASINS WITH SEDIMENTATION CONTROL UNITS UNTIL PROJECT IS COMPLETED.

PHASE II SITE CONSTRUCTION
1. PROCEED WITH EXCAVATION FOR FOUNDATION.
2. PROTECT ALL CATCH BASINS WITH SEDIMENTATION CONTROL UNITS UNTIL PROJECT IS COMPLETED.
3. PLACE FOOTING.
4. POUR FOUNDATION WALL.
5. INSTALL DRAIN SYSTEM.
6. INSTALL UTILITIES.
7. BACKFILL SITE, GRADE AS REQUIRED.
8. INSTALL LANDSCAPING.
9. LOAM AND SEED, STABALIZE SITE.

PHASE III SITE STABILIZATION
1. REMOVE ALL CONSTRUCTION DEBRIS.
2. MAINTAIN ALL EROSION CONTROL UNTIL DISTURBED AREAS HAVE BEEN STABILIZED WITH NEW GROWTH FOR A PERIOD OF 60 DAYS.
3. REMOVE ALL EROSION CONTROL AND CLEAN UP SITE.

ZONING RELIEF REQUESTED

SECTION 139-11. MAJOR COMMERCIAL DEVELOPMENT
SECTION 139-11.E(1) OPEN SPACE (20% TO 15%)
SECTION 139-11.G SIDE/REAR YARD SETBACK (5' TO 3')
SECTION 139-18.D PARKING SPACES (11 TO 4)
SECTION 139-23.B(2)(b) TRAFFIC STUDY REQUIREMENT PURSUANT TO 139-23.C

LEGEND

TC	TOP OF CURB
BC	BOTTOM OF CURB
	FLOW DIRECTION ARROW
	PROPOSED SEWER MANHOLE
W	PROPOSED WATER SERVICE
S	PROPOSED SEWER LINE
RD	PROPOSED ROOF DRAIN
X 6.0	PROPOSED SPOT GRADES
10.0	EXISTING SPOT GRADE
17	EXISTING CONTOUR
17	PROPOSED CONTOUR

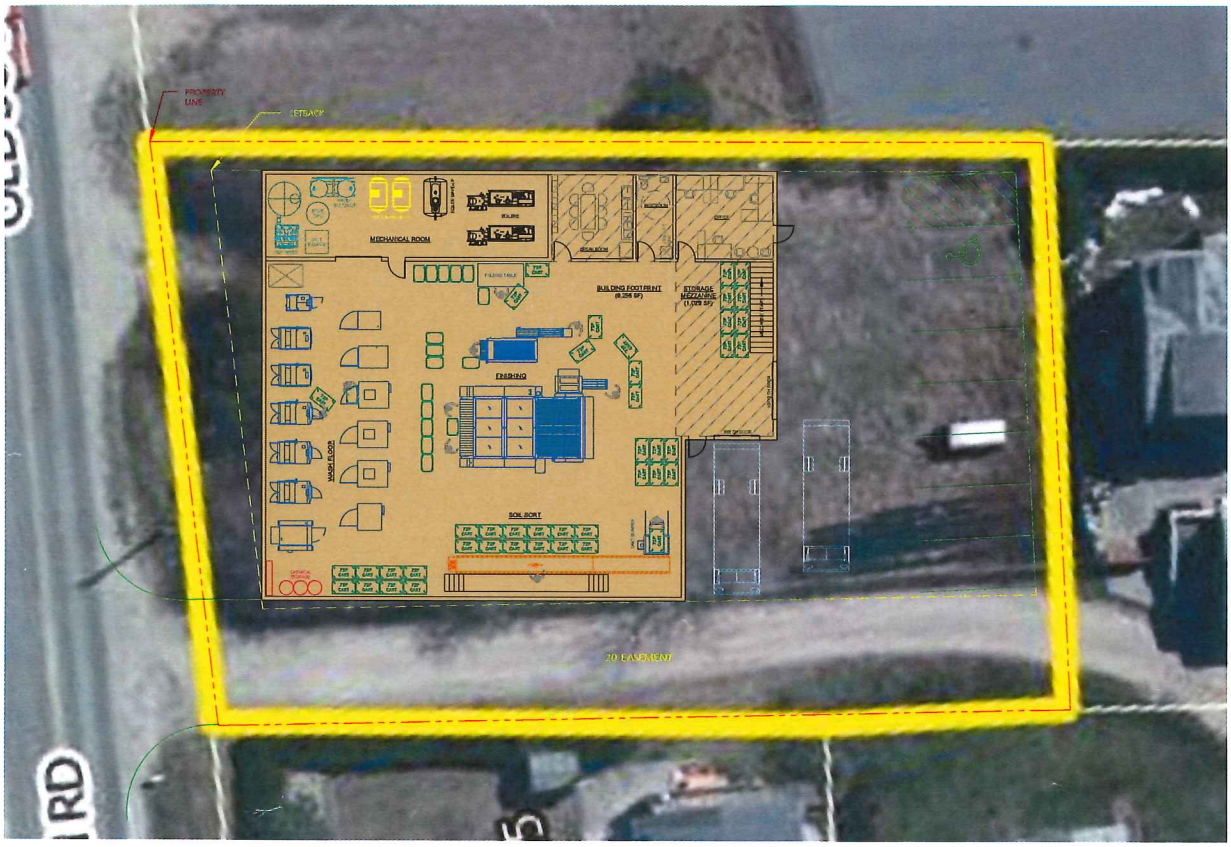
NANTUCKET PLANNING BOARD
MAJOR COMMERCIAL DEVELOPMENT
SPECIAL PERMIT

BARRY RECTOR, CHAIRMAN
LINDA WILLIAMS, VICE-CHAIRWOMAN
NATHANIEL LOWELL
JOSEPH MARDILOVICH
JOHN TRUDEL
DATE APPROVED
DATE SIGNED
FILE NO.

SHEET 1 OF 1 N-10767

295 of 1520

I:\JOBS 9832-10999\10000's\10700's\10760's\10767\AUTOCAD\N10767 SITE PLAN REV 7-6-16\N10767 SITE PLAN



CONCEPTUAL DRAFT ONLY

DISCLAIMER
THE PLAN IS FOR CONCEPTUAL PURPOSES ONLY. SITE PROPERTY LINES AND/OR EXISTING SITE/BUILDING CONDITIONS WERE DRAWN FROM EXISTING PLANS AND POSSIBLY INCOMPLETE SITE INFORMATION. ARCO MURRAY NATIONAL CONSTRUCTION COMPANY, INC. AND GMA ARCHITECTS INC. ARE NOT TO BE HELD ACCOUNTABLE FOR ACCURACY OF DIMENSIONS.

NANTUCKET ISLAND RESORT

NEW LAUNDRY - CONCEPT #2

NANTUCKET, MA

SCALE : 1/32"=1'-0" (11X17)
CP02 06.21.2016

ARCO MURRAY
LAUNDRY DIVISION

Phyllis G Mayhew
Charles S Mayhew
PO Box 161
Pocasset, Massachusetts 02559

2016 JUL 29 PM 2:17

July 26, 2016

Dear Chairman Rector,

Having recently received notice from the Planning Board of a hearing for a Major Commercial Development for 137 Old South Road (#48-16) I would like to state my concerns. With 6976 square feet of building footprint and over 1000 square feet of parking and loading area there will be significant storm water runoff. Storm water will flow to the south and west. I will have flooding issues at 6 Daisy Way, 8 Daisy Way and 10 Daisy Way. 133 Old South Road has a low area behind the building that will have flooding issues also. 135 Old South Road is a low area that will be impacted by storm water runoff. Catch basins may control some of the runoff, but may impact the water wells in the immediate area with pollution from motor vehicles and laundry chemicals.

Other important issues are hours of operation, late night traffic, and machinery noise are of concern. There are 12 residences within 100 feet of the proposed buildings.

The lack of parking for a 6256 square foot industrial laundry is worrysome as many employee will be needed to operate the laundry and trucks to deliver and pick up the laundry. The employee housing will also need parking.

It would seem to me that a traffic study is necessary as the intersection of Old South Road and Nobadeer Farm Road is very busy and conjested.

Finally the size of the buildings, lack of open space and 5 foot setbacks are not in keeping with the neighborhood and RC2 zoning.

Respectfully,

Charlie Mayhew

Charlie Mayhew

NIR RETAIL LLC
137 OLD SOUTH ROAD
MCD SUBMITTAL FEES
7/6/2016

MCD SUBMITTAL FEE CALCULATION			
	Cost	Quantity	Total
Base Fee	$250.00	1	$250.00
Cost per square foot of commercial floor space including roofed over areas	$0.50	6256	$3,128.00
Cost per square foot of outdoor storage, display, and recreation areas	$0.05	0	$0.00
Cost per required parking space	$25.00	11	$275.00
Cost per gallon of wastewater over 10,000 gal/day	$0.50	0	$0.00
Cost per foot of wharf and or pier	$0.50	0	$0.00
CHECK #1		**Total fees**	**$3,653.00**
Check to be made payable to the Town of Nantucket			

Cost per abutters notice	$6.74	24	$161.76
CHECK #2		**Total fees**	**$161.76**
Check to be made payable to the Pitney Bowes Reserved Funds			

INSPECTION ESCROW ACCOUNT FEE CALCULATION			
	Cost	Quantity	Total
Base Fee for 1st 5,000 s.f. commercial space	$5,000.00	1	$5,000.00
$1,000 for each additional 2500 s.f. over 5,000 s.f.		0	$0.00
CHECK #3		**Total fees**	**$5,000.00**
Check to be made payable to the Town of Nantucket			

#55.00

RECEIVED
JUL 14 2016
By CHK# 16011

RECEIVED
BOARD OF ASSESSORS
JUN 14 2016
TOWN OF
NANTUCKET, MA

TOWN OF NANTUCKET

PLANNING BOARD

(Special Permit)

PLANNING BOARD
FILE # 48-16

LIST OF PARTIES IN INTEREST IN THE MATTER OF THE PETITION OF:

PROPERTY OWNER..NIR Retail LLC.....

MAILING ADDRESS..c/o VDHS & B Box 659..2 Whalers Lane..Nantucket, Ma. 02554

PROPERTY LOCATION..137 Old South Road.....

ASSESSOR MAP/PARCEL..Map 69 Parcel 50.....

SUBMITTED BY..NIR Retail LLC; c/o Vaughan, Dale, Hunter.....
and Beaudette, PC

SEE ATTACHED PAGES

I certify that the foregoing is a list of persons who are owners of abutting property, owners of land directly opposite on any public or private street or way; and abutters of the abutters and all other land owners within 300 feet of the property line of owner's property, all as they appear on the most recent applicable tax list (M.G.L. c. 40A, Section 11 Zoning Code Chapter 139, Section 139-29B) (2).

June 16, 2016
DATE

Patricia Giles
ASSESSOR'S OFFICE
TOWN OF NANTUCKET

ABBUTTERS LISTING
NANTUCKET, MA

Map	Block	Lot	Unit	Owner~s Name	Co Owner~s Name	Address	City	ST Zip	Parcel Location
68		46	2	NANTUCKET TOWN OF		16 BROAD STREET	NANTUCKET	MA 02554	127 OLD SOUTH RD
68		46	3	NANTUCKET TOWN OF		16 BROAD STREET	NANTUCKET	MA 02554	129 OLD SOUTH RD
68		46	5	TILROE JASON	C/O BARBER CALLIE	PO BOX 255	NANTUCKET	MA 02554	135B OLD SOUTH RD
68		46	6	TILROE JASON	C/O BARBER CALLIE	P O BOX 255	NANTUCKET	MA 02554	135A OLD SOUTH RD
68		46	7	NANTUCKET AIRPORT COMMISSION	TOWN OF NANTUCKET	16 BROAD ST	NANTUCKET	MA 02554	5 DAISY WY
68		46	8	NANTUCKET AIRPORT COMMISSION	TOWN OF NANTUCKET	16 BROAD ST	NANTUCKET	MA 02554	7 DAISY WY
68		46	9	NANTUCKET AIRPORT COMMISSION	TOWN OF NANTUCKET	16 BROAD ST	NANTUCKET	MA 02554	9 DAISY WY
68		240		NANTUCKET AIRPORT COMMISSION	TOWN OF NANTUCKET	16 BROAD ST	NANTUCKET	MA 02554	11 DAISY WY
68		241		MAYHEW CHARLES S TRUSTEE	SIX DAISY WAY NOMINEE TRUST	P O BOX 161	POCASSET	MA 02559	6 DAISY WY
68		249		NANTUCKET TOWN OF		16 BROAD ST	NANTUCKET	MA 02554	123 OLD SOUTH RD
68		300	1	FIELD CHRISTOPHER		PO BOX 943	SIASCONSET	MA 02564	133B OLD SOUTH RD
68		300	2	GRAY ANGELA KAY		133C OLD SOUTH ROAD	NANTUCKET	MA 02554	133C OLD SOUTH RD
68		300	3	WILLS MATTHEW P		605 41ST STREET APT R	BROOKLYN	NY 11232	133D OLD SOUTH RD
68		300	4	PIERONI MICHAEL J & PAIGE M		21 LADDS WAY	SCITUATE	MA 02066	133E OLD SOUTH RD
68		300	5	GORHAM ALLISON L		1 HOOPER FARM ROAD	NANTUCKET	MA 02554	133F OLD SOUTH RD
68		300	6	WALTON THOMAS E		32 CLIFF ROAD	NANTUCKET	MA 02554	133G OLD SOUTH RD
68		300	7	CARUSO GARRY A		2 GREGLEN AVE PMB 381	NANTUCKET	MA 02554	133H OLD SOUTH RD
68		300	8	MCKENNA KAREN A		530 ATLANTIC AVE	BOSTON	MA 02210	133A OLD SOUTH RD
68		966		CANDLEWICK CORNER VTT ACK LLC		100 CONCORD ST	FRAMINGHAM	MA 01701	1 WAMPANOAG WY
68		967		CANDLEWICK CORNER VTT ACK LLC		100 CONCORD ST	FRAMINGHAM	MA 01701	3 HANABEA LN
68		968		CANDLEWICK CORNER VTT ACK LLC		100 CONCORD ST	FRAMINGHAM	MA 01701	118 OLD SOUTH RD
68		969		CANDLEWICK CORNER VTT ACK LLC		100 CONCORD ST	FRAMINGHAM	MA 02459	124 OLD SOUTH RD
68		300	42						133 133A OLD SOUTH RD
69		14		130 OLD SOUTH RD LLC		6 ARROWHEAD DR	NANTUCKET	MA 02554	130 OLD SOUTH RD
69		35		CROWLEY SEAMUS M & GENNARO ELIZABET		18 DAFFODIL LANE	NANTUCKET	MA 02554	46 NOBADEER FARM RD
69		35	1	CROWLEY SEAMUS M & GENNARO ELIZABET		18 DAFFODIL LN	NANTUCKET	MA 02554	46 A NOBADEER FARM RD #1
69		35	2	CROWLEY SEAMUS M & GENNARO ELIZABET		46 NOBADEER FARM RD	NANTUCKET	MA 02554	46 B NOBADEER FARM RD #2
69		35	3	CROWLEY SEAMUS M & GENNARO ELIZABET		18 DAFFODIL LN	NANTUCKET	MA 02554	46 C NOBADEER FARM RD #3
69		36		AJ GARAGE LLC		133 ORANGE STREET	NANTUCKET	MA 02554	48 NOBADEER FARM RD
69		37		WELCH WOOD REALTY TRUST INC		PO BOX 759	VINEYARD HAVEN	MA 02568	132 OLD SOUTH RD
69		38		TUTTLE E SANFORD III ETAL TRS	T & R REALTY TRUST	2 GREGLEN AVE 399	NANTUCKET	MA 02554-2830	134 OLD SOUTH RD
69		49		MAYHEW CHARLES & PHYLLIS TRS	MAYHEW FAMILY NOMINEE TR	8 DAISY WAY	NANTUCKET	MA 02554	8 DAISY WY
69		49	1	MAYHEW CHARLES & PHYLLIS TRST	MAYHEW FAMILY NOM TRUST	P O BOX 161	POCASSET	MA 02559	8 A DAISY WY
69		49	2	MAYHEW CHARLES & PHYLLIS TRST	MAYHEW FAMILY NOM TRUST	P O BOX 161	POCASSET	MA 02559	8 B DAISY WY
69		49	3	MAYHEW CHARLES & PHYLLIS TRST	MAYHEW FAMILY NOM TRUST	P O BOX 161	POCASSET	MA 02559	10 A DAISY WY
69		49	4	MAYHEW CHARLES & PHYLLIS TRST	MAYHEW FAMILY NOM TRUST	P O BOX 161	POCASSET	MA 02559	10 B DAISY WY
69		78	5	NANTUCKET TOWN OF		16 BROAD ST	NANTUCKET	MA 02554	NANTUCKET AP
69		100		NORTH ATLANTIC DEV LLC		6 ARROWHEAD DR	NANTUCKET	MA 02554	51 NOBADEER FARM RD
69		101		LEWIS DURVAN C & MARIA S HENRY		6 MARY ANN DR	NANTUCKET	MA 02554	49 NOBADEER FARM RD
69		102		OAK HILL INVESTMENTS LLC		2 ANGELL ST UNIT 3	PROVIDENCE	RI 02903	47 NOBADEER FARM RD
69		102	1	PRAMILA KC		PO BOX 2544	NANTUCKET	MA 02584	47A NOBADEER FARM RD #A
69		102	2	PAUDEL NIKHIL KUMAR & YASHUDA KC		47 B NOBADEER FARM RD	NANTUCKET	MA 02554	47 B NOBADEER FARM RD #B
69		102	3	COHEN STEVEN L TRST	47C NFR TRUST	PO BOX 786	NANTUCKET	MA 02554	47C NOBADEER FARM RD #C
69		271		CANDLEWICK CORNER VTT ACK LLC		100 CONCORD ST	FRAMINGHAM	MA 01701	5 HANABEA LN
69		272		CANDLEWICK CORNER VTT ACK LLC		100 CONCORD ST	FRAMINGHAM	MA 01701	7 HANABEA LN
69		273		CANDLEWICK CORNER VTT ACK		100 CONCORD ST	FRAMINGHAM	MA 01701	126 OLD SOUTH RD

ABBUTTERS LISTING
NANTUCKET, MA

Map	Block	Lot	Unit	Owner~s Name	Co Owner~s Name	Address	City	ST Zip	Parcel Location
69		274		CANDLEWICK CORNER VTT ACK LLC		100 CONCORD ST	FRAMINGHAM	MA 01701	128 OLD SOUTH RD
78		1		NANTUCKET TOWN OF	NANTUCKET AIRPORT	16 BROAD ST	NANTUCKET	MA 02554	14 AIRPORT RD
78		1	1	NANTUCKET MEMORIAL AIRPORT COMMISSI	C/O UNITED STATES POST OFFICE	OLD SOUTH RD	NANTUCKET	MA 02554	143 OLD SOUTH RD

68
NANTUCKET TOWN OF
16 BROAD STREET
NANTUCKET, MA 02554

68
FIELD CHRISTOPHER
PO BOX 943
SIASCONSET, MA 02564

68
CANDLEWICK CORNER VTT ACK LLC
100 CONCORD ST
FRAMINGHAM, MA 01701

68
NANTUCKET TOWN OF
16 BROAD STREET
NANTUCKET, MA 02554

68
GRAY ANGELA KAY
133C OLD SOUTH ROAD
NANTUCKET, MA 02554

68
CANDLEWICK CORNER VTT ACK LLC
100 CONCORD ST
FRAMINGHAM, MA 02459

68
TILROE JASON
C/O BARBER CALLIE
PO BOX 255
NANTUCKET, MA 02554

68
WILLS MATTHEW P
605 41ST STREET APT R
BROOKLYN, NY 11232

68
,

68
TILROE JASON
C/O BARBER CALLIE
P O BOX 255
NANTUCKET, MA 02554

68
PIERONI MICHAEL J & PAIGE M
21 LADDS WAY
SCITUATE, MA 02066

69
130 OLD SOUTH RD LLC
6 ARROWHEAD DR
NANTUCKET, MA 02554

68
NANTUCKET AIRPORT COMMISSION
TOWN OF NANTUCKET
16 BROAD ST
NANTUCKET, MA 02554

68
GORHAM ALLISON L
1 HOOPER FARM ROAD
NANTUCKET, MA 02554

69
CROWLEY SEAMUS M & GENNARO ELIZ/
18 DAFFODIL LANE
NANTUCKET, MA 02554

68
NANTUCKET AIRPORT COMMISSION
TOWN OF NANTUCKET
16 BROAD ST
NANTUCKET, MA 02554

68
WALTON THOMAS E
32 CLIFF ROAD
NANTUCKET, MA 02554

69
CROWLEY SEAMUS M & GENNARO ELIZ/
18 DAFFODIL LN
NANTUCKET, MA 02554

68
NANTUCKET AIRPORT COMMISSION
TOWN OF NANTUCKET
16 BROAD ST
NANTUCKET, MA 02554

68
CARUSO GARRY A
2 GREGLEN AVE PMB 381
NANTUCKET, MA 02554

69
CROWLEY SEAMUS M & GENNARO ELIZ/
46 NOBADEER FARM RD
NANTUCKET, MA 02554

68
NANTUCKET AIRPORT COMMISSION
TOWN OF NANTUCKET
16 BROAD ST
NANTUCKET, MA 02554

68
MCKENNA KAREN A
530 ATLANTIC AVE
BOSTON, MA 02210

69
CROWLEY SEAMUS M & GENNARO ELIZ/
18 DAFFODIL LN
NANTUCKET, MA 02554

68
MAYHEW CHARLES S TRUSTEE
SIX DAISY WAY NOMINEE TRUST
P O BOX 161
POCASSET, MA 02559

68
CANDLEWICK CORNER VTT ACK LLC
100 CONCORD ST
FRAMINGHAM, MA 01701

69
AJ GARAGE LLC
133 ORANGE STREET
NANTUCKET, MA 02554

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NANTUCKET TOWN OF
16 BROAD ST
NANTUCKET, MA 02554

68
CANDLEWICK CORNER VTT ACK LLC
100 CONCORD ST
FRAMINGHAM, MA 01701

69
WELCH WOOD REALTY TRUST INC
PO BOX 759
VINEYARD HAVEN, MA 02568

69
TUTTLE E SANFORD III ETAL TRS
T & R REALTY TRUST
2 GREGLEN AVE 399
NANTUCKET, MA 02554-2830

69
PRAMILA KC
PO BOX 2544
NANTUCKET, MA 02584

69
MAYHEW CHARLES & PHYLLIS TRS
MAYHEW FAMILY NOMINEE TR
8 DAISY WAY
NANTUCKET, MA 02554

69
PAUDEL NIKHIL KUMAR & YASHUDA KC
47 B NOBADEER FARM RD
NANTUCKET, MA 02554

69
MAYHEW CHARLES & PHYLLIS TRST
MAYHEW FAMILY NOM TRUST
P O BOX 161
POCASSET, MA 02559

69
COHEN STEVEN L TRST
47C NFR TRUST
PO BOX 786
NANTUCKET, MA 02554

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MAYHEW CHARLES & PHYLLIS TRST
MAYHEW FAMILY NOM TRUST
P O BOX 161
POCASSET, MA 02559

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CANDLEWICK CORNER VTT ACK LLC
100 CONCORD ST
FRAMINGHAM, MA 01701

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MAYHEW CHARLES & PHYLLIS TRST
MAYHEW FAMILY NOM TRUST
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FRAMINGHAM, MA 01701

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MAYHEW CHARLES & PHYLLIS TRST
MAYHEW FAMILY NOM TRUST
P O BOX 161
POCASSET, MA 02559

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CANDLEWICK CORNER VTT ACK
100 CONCORD ST
FRAMINGHAM, MA 01701

69
NANTUCKET TOWN OF
16 BROAD ST
NANTUCKET, MA 02554

69
CANDLEWICK CORNER VTT ACK LLC
100 CONCORD ST
FRAMINGHAM, MA 01701

69
NORTH ATLANTIC DEV LLC
6 ARROWHEAD DR
NANTUCKET, MA 02554

78
NANTUCKET TOWN OF
NANTUCKET AIRPORT
16 BROAD ST
NANTUCKET, MA 02554

69
LEWIS DURVAN C & MARIA S HENRY
6 MARY ANN DR
NANTUCKET, MA 02554

78
NANTUCKET MEMORIAL AIRPORT COMM
C/O UNITED STATES POST OFFICE
OLD SOUTH RD
NANTUCKET, MA 02554

69
OAK HILL INVESTMENTS LLC
2 ANGELL ST UNIT 3
PROVIDENCE, RI 02903

Phyllis G Mayhew
Charles S Mayhew
PO Box 161
Pocasset, Massachusetts 02559

2016 JUL 29 PM 2:17

July 26, 2016

Dear Chairman Rector,

Having recently received notice from the Planning Board of a hearing for a Major Commercial Development for 137 Old South Road (#48-16) I would like to state my concerns. With 6976 square feet of building footprint and over 1000 square feet of parking and loading area there will be significant storm water runoff. Storm water will flow to the south and west. I will have flooding issues at 6 Daisy Way, 8 Daisy Way and 10 Daisy Way. 133 Old South Road has a low area behind the building that will have flooding issues also. 135 Old South Road is a low area that will be impacted by storm water runoff. Catch basins may control some of the runoff, but may impact the water wells in the immediate area with pollution from motor vehicles and laundry chemicals.

Other important issues are hours of operation, late night traffic, and machinery noise are of concern. There are 12 residences within 100 feet of the proposed buildings.

The lack of parking for a 6256 square foot industrial laundry is worrysome as many employee will be needed to operate the laundry and trucks to deliver and pick up the laundry. The employee housing will also need parking.

It would seem to me that a traffic study is necessary as the intersection of Old South Road and Nobadeer Farm Road is very busy and conjested.

Finally the size of the buildings, lack of open space and 5 foot setbacks are not in keeping with the neighborhood and RC2 zoning.

Respectfully,

Charlie Mayhew

Charlie Mayhew

VAUGHAN, DALE, HUNTER AND BEAUDETTE
PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
WHALER'S LANE
P.O. BOX 659
NANTUCKET, MASSACHUSETTS 02554

TEL: (508) 228-4455
FAX: (508) 228-3070

EDWARD FOLEY VAUGHAN
KEVIN F. DALE
RICHARD P. BEAUDETTE

LORI D'ELIA
BRYAN J. SWAIN

WILLIAM F. HUNTER
OF COUNSEL

RECEIVED
AUG 02 2016
By

August 2, 2016

BY HAND DELIVERY

Mr. Barry Rector, Chairman
Nantucket Planning Board
2 Fairgrounds Road
Nantucket, MA 02554

Re: NIR Retail – 137 Old South Road, Nantucket, MA 02554

Dear Chairman Rector:

As you are aware, our office represent NIR Retail, LLC in its application for a Major Commercial Development Special Permit. Enclosed please find the following supplementary materials:

- The Employee Housing Management Plan;
- An Addendum to the Application, and
- A report from Nantucket Surveyors.

Please note that we reserve the right to supplement this application with further materials at a later time. Thank you for your help and if you have any question, please do not hesitate to call me at 508-228-4455.

Sincerely,

Richard P. Beaudette, Esq.

RPB/BJS
Encl:
cc: NIR RETAIL, LLC
John Twohig

ADDENDUM

The Applicant, NIR Retail LLC, is the owner of the vacant property located at 137 Old South Road, Nantucket, Massachusetts 02554 (the "Premises"). Applicant hereby seeks a Major Commercial Development ("MCD") Special Permit for the Premises pursuant to Section 139-11 of the Nantucket Zoning By-Law (the "By-Law"), as well as related relief from the By-Law more specifically described below. The Premises consists of a 14,910+/- square foot lot, identified as Parcel 50 on Town of Nantucket Assessor's Map 69, currently located in the Residential Commercial 2 (RC-2) zoning district.

The Applicant is seeking an MCD Special Permit to develop a new laundry facility together with neighborhood employee housing at the Premises. The Applicant's request stems from the loss of its existing laundry facility as a result of a fire. While a more detailed Site Plan will be presented by the Applicant at the hearing before the Planning Board, the proposed conditions for the Premises are shown on a plan entitled "Major Commercial Development Site Development Plan 137 Old South Road in Nantucket, Massachusetts," dated July 11, 2016, prepared for NIR Retail LLC by Nantucket Surveyors, LLC (the "Site Plan"), a copy of which is attached hereto as Exhibit "A". As shown on the Site Plan, Applicant's proposal includes the construction of 6,256+/- square foot structure for a laundry facility (the "Laundry Facility") as well as a four bedroom 720+/- square foot structure for neighborhood employee housing (the "Employee Housing").

I. Existing Zoning/Requested Relief.

The Premises are currently located in the RC-2 zoning district. As described in more detail below, in order to construct the Laundry Facility and the Employee Housing, the Applicant is seeking the following relief:

1.	139-11	Special Permit Relief for Major Commercial Development
2.	139-11.E.(1)	Special Permit Relief to reduce open space requirement
3.	139-18.D	Special Permit Relief to reduce the number of required parking spaces
4.	139-23.C	Waiver for the traffic study requirement under 139-23B.(2)(b)
5.	139-11.G	Special Permit to waive side and rear set back requirements
6.	139-7(A)	Special Permit Relief for neighborhood employee housing

II. Support for requested Zoning Relief under the By-Law.

The Applicant respectfully submits that the proposal satisfies the standards for approval under the By-Law for the following reasons:

(1.) Special Permit for Major Commercial Development ("MCD") under Section 139-11 of the By-Law:

The Applicant seeks an MCD Special Permit from the Planning Board under Section 139-11 of the By-Law to construct a 6,256+/- square foot structure for a Laundry Facility and a 720+/- square foot structure for Employee Housing at the Premises.

The proposal comprises more than 5,000 square feet of gross floor area of commercial space, and, therefore, qualifies as an MCD under the By-Law. Accordingly, the Applicant's proposed project requires an MCD Special Permit from the Planning Board under Section 139-11 of the By-Law as well as Site Plan Review under Section 139-23.

The Planning Board may grant a MCD Special Permit where the Applicant's request is in accordance with the submission requirements adopted by the Planning Board and is consistent with the general purpose and intent of the By-Law.

The proposed uses are consistent with the general purpose and intent of the By-Law, which include promoting the health, safety, convenience, morals and general welfare of the Town's inhabitants, lessening the danger from fire and congestion, and improving the Town. As addressed in this Addendum, the proposed Laundry Facility and Employee Housing structures are similar in nature to the many commercial and related uses that abut the Premises, have been designed to provide adequate fire protection and separation from adjacent structures, and will further the convenience and general welfare of the Town by, among other things, allowing the Applicant to continue providing laundry services for its resort operations, providing laundry services for other guest accommodations on Nantucket and constructing much-needed additional inclusionary housing for the Applicant's employees.

Further, the application complies with the requirements for plan submissions pursuant to the Planning Board's *Requirements and Guidelines for Major Commercial Developments,* as addressed below.

A. Site Inventory and Resource Analysis.

As required by Section 4.A of the *Requirements and Guidelines for Major Commercial Developments*, the Applicant's MCD application provides a map of the Premises at a suitable scale showing the following:

1. Existing topography shown at 2 foot contours:

   The existing topography will be shown on a more detailed Site Plan prepared by Nantucket Surveyors, LLC to be presented at the hearing.

2. The location of predominant natural features such as ponds, estuaries, beaches, dune areas, wetlands, natural drainage areas, and heavily wooded areas: *N/A*

3. Areas subject to periodic flooding, as shown on the US Federal Emergency Management Agency's Flood Hazard Maps for Nantucket County: *N/A*

B. Site Development Plan.

As required by Section 4.B of *Requirements and Guidelines for Major Commercial Developments*, the Applicant's MCD application provides a map of the proposed development at a suitable scale showing the following:

1. Lot Lines as surveyed with bearings, distances, north point, scale, etc.

   The Site Plan shows property lines and dimensions of the site, north arrow, and scale of drawing.

2. Abutting Streets and Intersections indicating type of surface, showing rights of way lines, and the location of the traveled way including type of surface:

   The abutting streets and intersections, all of which are paved, consist of Nobadeer Farm Road, Wampanoag Road, Daisy Way and Macy's Lane.

3. Lot coverage and gross floor area of existing / proposed structures indicating uses for each:

As shown on the Site Plan, the project consists of a 6,256+/- square foot structure for laundry machines, equipment and storage. The Applicant also proposes to construct a four bedroom 720+/- square foot structure for the purpose of Employee Housing.

4. Interior roadways, driveways and parking areas indicating what type of surfacing and indicating areas to be curbed and what type of curbing to be used:

As noted in the report prepared by Nantucket Surveyors, LLC, a copy of which is attached hereto as Exhibit "B", the proposed driveways and parking area will be bituminous asphalt and the curbing will be Cape Cod berm.

5. Sidewalks, trails, and bicycle paths, indicating types of surface: *N/A*

6. Storm drainage plan and facilities, including drainage swales and gutters, catch basins and storm sewers, as applicable, certified by a professional engineer to accommodate a five year rainstorm:

Please see the attached report prepared by Nantucket Surveyors, LLC.

7. Sewage Disposal Facilities, including onsite, public and pre-treatment facilities, as applicable, and sewage flow design data:

Please see the attached report prepared by Nantucket Surveyors, LLC.

8. Water supply system, both public and onsite, as applicable:

As noted in the attached report prepared by Nantucket Surveyors, LLC, the water service will be supplied by Wannacomet Water Company.

9. Outdoor recreational facilities, including but not limited to swimming pools, tennis courts, and terraces: *N/A*

10. Fencing, indicating type:

As noted in the attached report prepared by Nantucket Surveyors, LLC, the Premises have an existing chain link fence which will remain but may be relocated.

11. Outdoor lighting, indicating type:

Please see the attached report by Nantucket Surveyors, LLC.

12. Shoreline Protection devices: N/A

13. Fuel Storage:

Please see the attached report prepared by Nantucket Surveyors, LLC.

14. Electrical Services, both in-ground and existing overhead:

Please see the attached report prepared by Nantucket Surveyors, LLC.

15. Outdoor signs, type, size:

To be determined.

16. Fire Protection:

Please see the attached report prepared by Nantucket Surveyors LLC.

17. Landscape and planting proposed on the site including grassed areas and all shrubs and trees located by species:

Please see the attached report prepared by Nantucket Surveyors LLC.

18. Designated 20% open space area:

As shown on the Site Plan, the project provides an open space area of 15%.

19. Grading Plan showing final contour at 2 foot intervals:

This information will be shown on a more detailed Site Plan prepared by Nantucket Surveyors, LLC to be presented at the hearing.

C. Detailed Drawings.

The following detailed drawings will be provided by Nantucket Surveyors, LLC, as required by Section 4.C of the *Requirements and Guidelines for Major Commercial Developments*:

1. Typical drawings for all exterior lighting to be installed onsite.

2. Typical cross section of driveways access roads, parking areas, sidewalks, bicycle paths and curbing.

3. Typical cross section of all drainage facilities, including catch basins and storm sewers. N/A

4. Typical cross section of all sewage facilities.

5. Typical cross section of all water system components.

For the reasons set forth above, the Applicant's request for an MCD Special Permit under Section 139-11 of the By-Law is consistent with the general purpose and intent of the By-Law and complies with the submission requirements adopted by the Planning Board. Accordingly, the Applicant respectfully requests that the Planning Board grant the requested MCD Special Permit, together with the related relief more particularly described below.

(2.) Special Permit to reduce open space requirement under Section 139-11.E.(1).

Under Section 139-11.E.(3) of the By-Law, the Applicant requests a Special Permit for a reduction of the open area requirement for an MCD stated in Section 139-11.E.(1). The Applicant proposes an open area of 15% for the proposed MCD, whereas 20% is required under the By-Law.

Under Section 139.11.E.(3) of the By-Law, the Planning Board may grant a Special Permit to reduce the open area required for an MCD under the By-Law if it finds that (i) sufficient and appropriate landscaping is provided, and (ii) the benefits to the community and the neighborhood from the reduction of open area, as conditioned by the decision granting the Special Permit, outweigh the benefits that would be derived from the provision of the open area requirements as would otherwise be required.

Approximately 15% of the Premises will be set aside as open area, some of which will consist of grassed area. In addition, the Premises will be appropriately screened from abutting residential lots. While the Premises are currently fenced, the chain link fence along the drive may be relocated.

A 5% reduction in the open area required by the By-Law is needed to allow the Applicant to construct a laundry facility of an adequate size to service its existing resort operations on Nantucket, while also allowing the Applicant to construct much-needed inclusionary housing, a significant public benefit. Absent this minimal reduction, the project would not be economically viable. Further, because sufficient and appropriate landscaping will be provided along the Premises' boundary with adjoining residential uses, the open area reduction will not have a detrimental effect on the neighborhood.

Because the community will benefit from the construction of the project, both through reliance on the Applicant's laundry operation and from the proposed construction of additional inclusionary housing, and because these benefits will not accrue to the community unless the requested reduction is approved, the benefits of the requested open area reduction outweigh any potential benefits that may be derived from strict adherence to the 20% open area requirement. Therefore, the Applicant requests that the Planning Board grant the Special Permit approving the requested open area reduction.

(3.) Special Permit to reduce the number of required parking spaces under Section 139-18.D. of the By-Law

The Applicant requests a Special Permit under Section 139-18.D of the By-Law to reduce the number of parking spaces required under the By-Law for the proposed MCD. The Applicant is able to provide four (4) parking spaces of the eleven (11) required under the By-Law.

Under Section 139-18.D. of the By-Law, the Planning Board may grant relief from the By-Law's parking requirements by Special Permit if the Planning Board finds that (a) the granting of such relief is in harmony with the general purpose and intent of the By-Law, and (b) that full compliance is physically impossible for the Applicant to provide, or, if physically possible, would have a significant adverse effect upon the scenic or historic integrity of the neighborhood.

It is physically impossible for the Applicant to provide the required number of parking spaces for the proposed MCD under the By-Law. As proposed, the 14,910+/- square foot lot will include a 6,256+/- square foot Laundry Facility and a 720+/- square foot structure on the Premises for Employee Housing. The proposed size of the Laundry Facility is the minimum necessary to accommodate the laundry machines, related equipment, and storage required to adequately manage the Applicant's laundry demand from its resort operations in Nantucket. Strict adherence to the minimum parking requirements would require a significant reduction in the size of the Laundry Facility structure, rendering the project infeasible. Even if it were possible to provide the required number of parking spaces, eleven (11) parking spaces would overwhelm the lot and therefore create an adverse effect on the

scenic and historic integrity of the Premises. Further, the proposed Employee Housing structure will house eight (8) employees of the Laundry Facility, eliminating the need for employee parking. To mitigate any potential detriments, the Applicant will provide a bike rack and bus passes for its employees.

The Applicant therefore requests the Planning Board grant a Special Permit for a reduction of the parking requirements under the By-Law.

(4.) Waiver from the requirement of a traffic study under Section 139-23.B.(2)(B).

Pursuant to Section 139-23.C. of the By-Law, Applicant requests a waiver from the requirement of a traffic study for the proposed MCD.

The Applicant does not anticipate an increase in traffic as a result of the proposed conditions for the Premises. The Premises is located off of Old South Road, an existing public road in an industrial area. Because the Applicant is replacing its existing laundry facility located on Orange Street, the proposed Laundry Facility and Employee Housing on Old South Road will not create an increase in traffic, but rather, may relocate the existing traffic created by the use of the Premises to a less congested area. Further, because the Applicant proposes to provide onsite Employee Housing, the amount of employee traffic will be reduced. Therefore, the Applicant requests that the Planning Board grant the waiver for traffic study under Section 139-23.B.(2)(b).

(5.) Special Permit to waive side and rear set back requirements under Section 139-11.G.

The Applicant requests a Special Permit under Section 139-11.G. of the By-Law to waive the side and rear yard setback requirements as they relate to the proposed structure for Employee Housing. The Premises is located in the RC-2 zoning district where a side and rear yard setback of five (5) feet is required. As shown on the Site Plan, the proposed four bedroom structure for Employee Housing marginally encroaches into the side and year set back on the Premises by two (2) feet.

Under Section 139-11.G. of the By-Law, the Planning Board may waive all or part of the required side or rear lot setbacks if it finds that such a reduction will preserve the integrity of adjacent uses of the neighborhood and will promote the purposes and intent of the By-Law. The project satisfies these criteria.

Many of the uses abutting the Premises consist of commercial developments, including the Nantucket Memorial Airport, which adjoins the Premises to the east. These adjacent establishments and uses thereon are similar in nature to the proposed uses and will not be disrupted in any way as a result of the Employee Housing structure's minimal encroachment into the required side and rear yards. Further, the Employee Housing structure will be constructed at the southeast corner of the Premises, away from abutting residential uses and toward a large, undeveloped open space area owned by the Nantucket Memorial Airport. While the proposed Employee Housing structure will not technically conform to the required five-foot side and rear yard setback requirement, it will be adequately separated from adjacent structures, satisfying the purpose and intent of the setback requirement. Further, allowing this minimal intrusion into the side and rear yard setback will enable the Applicant to provide affordable housing for its employees, fulfilling the By-Law's inclusionary housing requirement.

Because the proposed conditions are consistent with the purpose and intent of the provisions of By-Law, the Applicant respectfully requests that the Planning Board approve the requested reduction to the five-foot side and rear yard setback requirement for the proposed four-bedroom Employee Housing structure.

(6.) Special Permit for Neighborhood Employee Housing under Section 139-7.(a) of the By-Law

The Applicant requests a Special Permit for Neighborhood Employee Housing under Section 139-7(a) of the By-Law with respect to the proposed Employee Housing structure for up to eight (8) employees.

The Planning Board may grant a Special Permit where the proposed structures and uses are in harmony with the general purpose and intent of the By-Law. The proposed uses are consistent with the general purpose and intent of the By-Law, which include promoting the health, safety, convenience, morals and general welfare of the Town's inhabitants, lessening the danger from fire and congestion, and improving the Town. Constructing the Employee Housing structure on the same lot as the Laundry Facility will allow the employees of the Laundry Facility to live but a few feet from their jobs, thereby reducing traffic and congestion on neighboring streets, lessening housing demands on other areas of the Town, and promoting the convenience and general welfare of the Town's inhabitants. Further, the proposed Employee Housing structure will conform to all zoning regulations, except for a minimal encroachment into the required side and rear yard, and will be constructed and situated so as to provide adequate fire protection and separation from adjacent structures. In addition, the Applicant's proposed onsite Employee Housing fulfills the By-Law's inclusionary housing requirement, a significant public benefit.

The Applicant respectfully submits that the proposed Neighborhood Employee Housing use is in harmony with the general purpose and intent of the By-Law, and requests the Planning Board grant the requested Special Permit.

III. Conclusion.

For the reasons provided in this Addendum, and for such other reasons as may be brought to the Board's attention, the Applicant submits that the requested relief is consistent with the requirements, purposes, and intent of the Zoning By-Law, and respectfully requests that the Board grant the requested MCD Special Permit together with the related relief described above and such other relief as the Board may deem necessary and proper.

Nantucket SURVEYORS LLC

P.O. Box 3627, Nantucket, Massachusetts 02584-3627
Tel. (508) 228-0240 Fax (508) 228-9856
www.nantucketsurveyors.com
nsllcinfo@nantucketsurveyors.com

Project Scope

This report presents a summary of the proposed site development project at 137 Old South Road, Nantucket, Massachusetts. The proposed project is a mixed-use commercial development of a 14,910± sf parcel. The site will be developed as a 1 story 6,256 sf commercial industrial laundry facility building, with an additional 2 story, 4 bedroom, accessory apartment containing a ground cover of 720 sf. Access to the Site will be through the existing drive and the site will contain a total of 4 parking spaces. The proposed site is located within the RC-2 Zoning District within the Public Wellhead Recharge District which requires that a system for artificial recharge of 95% of Annual Precipitation is provided that will not result in the degradation of groundwater quality.

Pre-Development Site Conditions

The project locus is an undeveloped lot (currently used for bus storage) located on the South of Old South Road near the intersection of Nobadeer Farm Road. The ground cover is a grass/gravel surface with minimal vegetation. The site is nearly level with areas sloping slightly to the south corner. Elevations on the site range from 45.0± to 46.0±. (Half Tide Datum of 1934).

Drainage

Under this development plan the site will be improved with resulting changes to on-site hydrological characteristics. Design elements will attenuate any increases in stormwater runoff rates to pre-development levels to a minimum for a 100-year storm event and implement pollutant removal via Best Management Practice's (BMP's) in accordance with all applicable regulatory requirements. This will minimize the potential for adverse impacts to adjoining and downstream properties as well as the surrounding natural environment. Underground infiltration will be utilized using Cultec chambers and associated Stormceptors to intercept runoff. The paved areas onsite will be bituminous asphalt and the curbing will be cape cod berm.

Sewer

Due to the nature of the specified use, the facility will use approximately 24,300 gallons of water during peak days, and a total of 3,200,000 gallons of water a year. Due to the large amount of waste water being produced Nantucket Surveyors LLC is working with Nantucket DPW to determine the best solution to manage these high flows. It is anticipated that there will be underground storage on-site for said waste water that will be discharged at off peak hours to accommodate the current public sewers capabilities.

Utilities

All electrical service will be provided by National Grid and is anticipated to be underground. Both water and fire service will be provided by Wannacomet Water Company. The site will utilize wall mounted lighting and will be designed in accordance with Town By-Law Chapter 102. All trash and solid waste will be stored inside the building. The apartment will have a designated bin for trash barrels. The site is anticipated to utilize propane gas.

Landscaping

Due to the commercial nature of the site, there will be minimal landscaping. There will be grassed areas within the open space and the site will be appropriately screened from abutting residential lots. The existing site is currently fenced, although the chainlink fence along the drive may be relocated.

EMPLOYEE HOUSING MANAGEMENT PLAN
NIR RETAIL, LLC
137 OLD SOUTH ROAD
NANTUCKET, MASSACHUSETTS 02554

1. The property owner shall be responsible for maintaining the grounds in a neat and clean manner and shall police the property on a weekly basis and pick-up and properly dispose of debris and/or litter.

2. All exterior lighting shall be directed generally downward and placed so as to not be directed at any neighboring parcels.

3. The premises shall be serviced by a commercial trash removal service, with trash to be removed at regular, frequent intervals year-round, as needed.

4. No exterior storage of furniture (except lawn furniture), refuse, mechanical components, debris, unregistered or inoperable vehicles, or other materials constituting a nuisance, shall be permitted on the premises.

5. The name and telephone numbers of the Owner's housing manager shall be delivered to each direct abutter of the premises. This information shall be updated at the time of any change. It shall further be filed with the Nantucket Police Department, the Nantucket Building Department and the Nantucket Health Department.

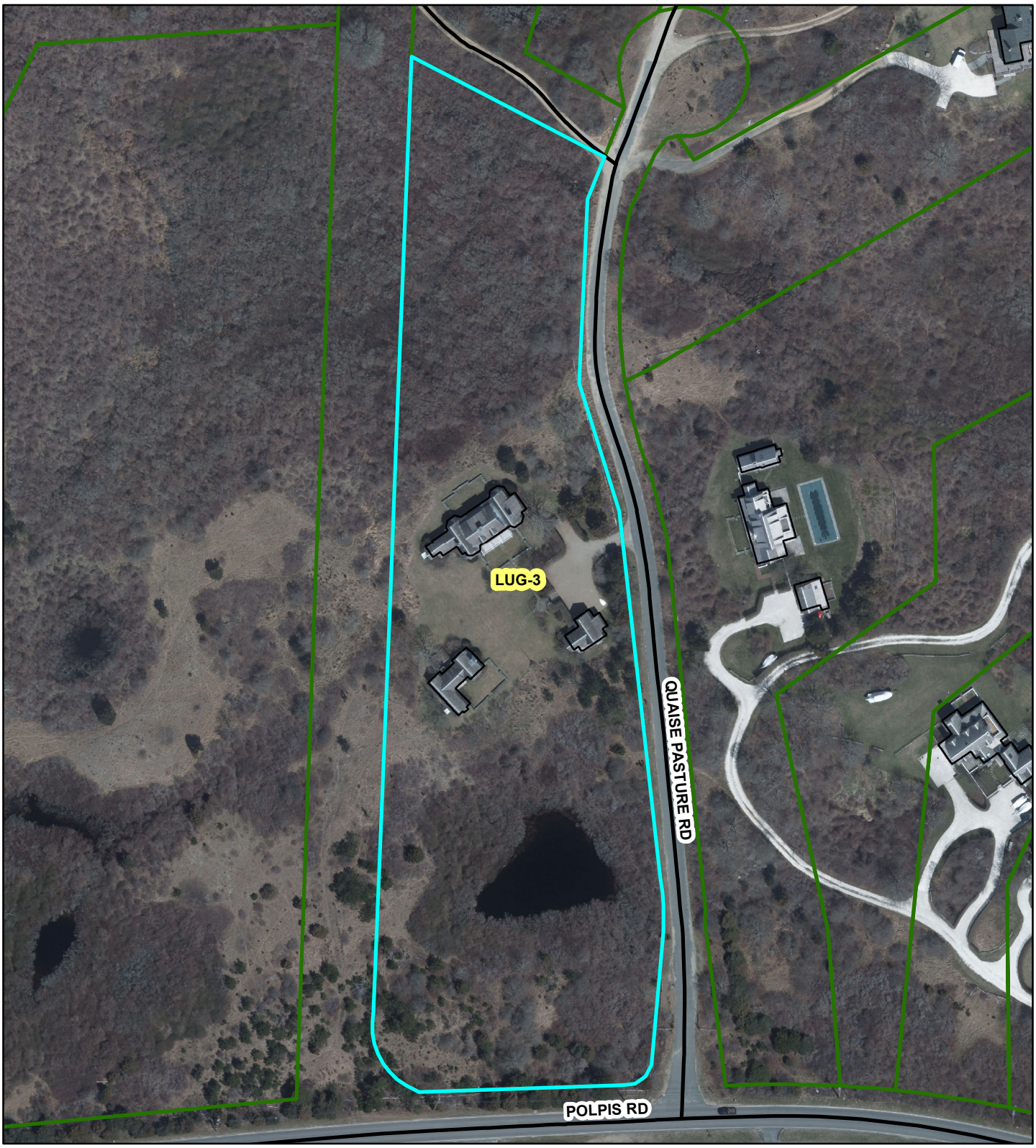
6. Overnight guests in the housing shall be prohibited, and no nonresidents shall be permitted upon the premises between the hours of 11:00 PM and 6:00 AM on any day.

7. The premises and grounds of the premises shall be kept neat and clean at all times. The premises shall be maintained and occupied in compliance with the provisions of the Nantucket Noise By-Law, Chapter 101 of the Code of the Town of Nantucket. The property owner shall make all efforts to keep the premises quiet and free from any and all loud or offensive noise.

8. The total number of motor vehicles to be kept upon the premises shall not exceed the number of on-site parking spaces provided upon the lot. No employee shall keep a motor vehicle upon the lot without the consent of the property owner.

9. The property owner shall be required to install and maintain bike racks on the premises, in a location convenient for use by the employee residents.

#49-16 Special Permit - Second Driveway
Robert G. & Melanie Sabelhaus
2 Quaise Pastures Road
Map 26 Parcel 20.6



PLANNING BOARD

FILE # 49-16

2016 AUG 12 AM 8:43
NANTUCKET TOWN CLERK

Nantucket Planning Board

Application for a Special Permit

Date: August 12, 2016 File #: _____

Name of development: 2 Quaise Pastures Road

Owner(s) name(s): Robert G. & Melanie Sabelhaus

Mailing address: 2777 Gulf Shore Boulevard, Apt 8W, Naples, FL 34103
Phone number: _____ Fax number: _____ E-mail: _____

Applicant's name: Robert G. & Melanie Sabelhaus

Mailing address: 277 Gulf Shore Boulevard, Apt 8W, Naples, FL 34103
Phone number: _____ Fax number: _____ E-mail: _____

Engineer / surveyor's name: Bracken Engineering, Inc.

Mailing address: 49 Herring Pond Road, Buzzards Bay, MA 02532
Phone number: 508-833-0070 Fax number: 508-833-2282 E-mail: don@brackeneng.com

Location of lot(s):

- [x] Street address 2 Quaise Pastures Road
- [x] Tax Assessors Map 26 Parcel 20.6
- [x] Nantucket Registry of Deed: Plan Book _____ and Page _____ **OR**
  Plan File # _____ **OR** Land Court Plan # 11647-N at Certificate # 25876

Size of parcel: 186,267+/- sq. ft. Zoning District: LUG3

Special Permit sought: (check one)

- ○ Cluster subdivision
- ○ Commercial WECS
- [x] Driveway Access/Curb Cut Special Permit
- ○ Harbor Overlay District (HOD)
- ○ Major Commercial Development (MCD)

- ❍ Multi-family Special Permit
- ❍ Moorlands Management District Subdivision or Construction (MMD)
- ❍ NEHOD (Neighborhood Employee Housing Overlay District)
- ❍ MRD (Major Residential Development)
- ❍ MIPOD (Mid-Island Planned Overlay District)
- ❍ Other Uses Requiring a Special Permit (specify all uses and *Nantucket Code* sections)

Section	Description
139-20.1	Driveway Access

Specify all associated Zoning Code relief sought:

Section	Description
139-20.1 B(1)	Waiver required to add second driveway access through the granting of a special permit.

Only the zoning relief expressly requested above will be considered as part of this application.

If applying for a Major Commercial Development, specify how the application will comply with Section 139-11 (J) of the *Zoning Code of the Town of Nantucket*, also known as the Town's Affordable Housing Effort:

Planning Board filing fee due: $ 250.00

Engineering Inspection Escrow Deposit due: $ n/a

I/ we hereby certify that the applicant(s) cited above have been authorized by me/ us to file a Special Permit application with the Planning Board on property that I/ we own.

Owner(s)' Signature(s)

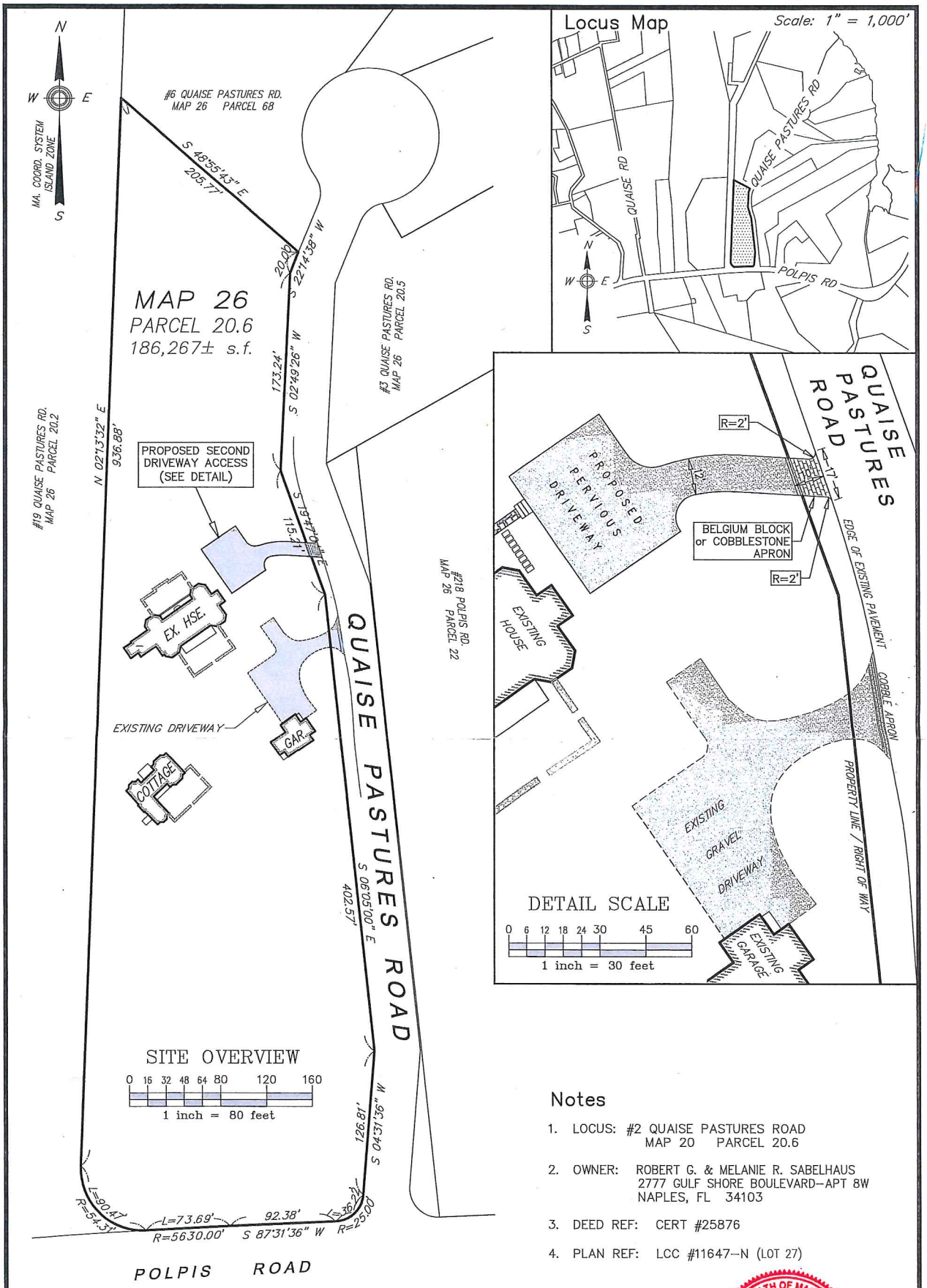
Applicant's Signature

I/we ROBERT G & MELANIE SABELHAUS, the undersigned, hereby authorize BRACKEN ENGINEERING INC. to act as agent(s) on my/our behalf and to make any necessary revisions on this filed application as they may be requested by the Board to meet its governing rules and guidelines.

Owner(s)' signature(s)

Check List:

- ❑ Planning Board Special Permit abutters list – to be obtained at the Tax Assessor's office
- ❑ Completed application form entitled "Application to the Planning Board for a Special Permit"
- ❑ Application fee of $250.00 payable to Town of Nantucket
- ❑ Abutters fee of $6.11 per abutters payable to Pitney Bowes Reserved Funds
- ❑ Four (4) sets of mailing labels with each abutter's name and address
  - 1" x 2 5/8" size, typed labels, are preferred
  - duplicate labels are not necessary if the same owner is listed for more than one abutting property
- ❑ Completed application form
- ❑ Town Clerk's stamped application (provide 2 copies-one for Town Clerk and one for Planning Board)



Notes

1. LOCUS: #2 QUAISE PASTURES ROAD
   MAP 20 PARCEL 20.6
2. OWNER: ROBERT G. & MELANIE R. SABELHAUS
   2777 GULF SHORE BOULEVARD–APT 8W
   NAPLES, FL 34103
3. DEED REF: CERT #25876
4. PLAN REF: LCC #11647–N (LOT 27)

COMMONWEALTH OF MASSACHUSETTS
DONALD F. BRACKEN, JR.
CIVIL
No. 37071
REGISTERED PROFESSIONAL ENGINEER

8-11-16

PLANNING BOARD
FILE # 49-16

BRACKEN ENGINEERING, INC.

49 HERRING POND ROAD
BUZZARDS BAY, MA 02532
(tel) 508.833.0070
(fax) 508.833.2282

19 OLD SOUTH ROAD
NANTUCKET, MA 02554
(tel) 508.325.0044
www.brackeneng.com

PROPOSED SITE PLAN
IN NANTUCKET, MASSACHUSETTS

Prepared for:
ROBERT & MELANIE SABELHAUS
#2 QUAISE PASTURES ROAD
MAP 26 PARCEL 20.6

Date:	Drawn:	Checked:
AUGUST 11, 2016	RMM/ERC/BEI	DFB/AMG

S:\Autocad Drawings\Nantucket\Quaise Pastures Road\2 Quaise Pastures\2 Quaise Pastures Road – Curb Cut Plan.dwg

PLANNING BOARD

FILE # 49-16

RECEIVED
BOARD OF ASSESSORS
AUG 02 2016
TOWN OF
NANTUCKET, MA

TOWN OF NANTUCKET

PLANNING BOARD

(Special Permit)

LIST OF PARTIES IN INTEREST IN THE MATTER OF THE PETITION OF:

PROPERTY OWNER..... ROBERT G & MELANIE R SABELHAUS

MAILING ADDRESS..... 2777 GULF SHORE BLVD APT 8W, NAPLES, FL 34103

PROPERTY LOCATION..... 2 QUAISE PASTURES RD

ASSESSOR MAP/PARCEL..... Map 26, Parcel 20.6

SUBMITTED BY..... Penni Pomeroy, Bracken Engineering, Inc.

49 Herring Pond Road

Buzzards Bay, MA 02532

SEE ATTACHED PAGES

I certify that the foregoing is a list of persons who are owners of abutting property, owners of land directly opposite on any public or private street or way; and abutters of the abutters and all other land owners within 300 feet of the property line of owner's property, all as they appear on the most recent applicable tax list (M.G.L. c. 40A, Section 11 Zoning Code Chapter 139, Section 139-29B) (2).

August 2, 2016
DATE

Robert M. Hanaeyan
ASSESSOR'S OFFICE
TOWN OF NANTUCKET

ABBUTTERS LISTING
NANTUCKET, MA

Map	Block	Lot	Unit	Owner~s Name	Co Owner~s Name	Address	City	ST	Zip	Parcel Location
26		17	2	OLD RED GATE LIMITED PTR	C/O EQUITY GROUP HOLDINGS	2200 PENNSYLVANIA AV NW	WASHINGTON	DC	20037	208 POLPIS RD
26		17	3	OLD RED GATE LIMITED PTR	SUITE 800 W	2200 PENNSYLVANIA AV NW	WASHINGTON	DC	20037	210 POLPIS RD
26		20	5	DETMER CHRISTOPHER J & KYRA L		4717 FULTON STREET NW	WASHINGTON	DC	20007-1024	3 QUAISE PASTURES RD
26		20	6	SABELHAUS ROBERT G & MELANIE R		2777 GULF SHORE BLVD AP	NAPLES	FL	34103	2 QUAISE PASTURES RD
26		20	7	SOLBERT CHRISTOPHER O A TRST ETAL	SOLBERT FAMILY TRUST	86 SPEAR STREET	CHARLOTTE	VT	05445	7 QUAISE PASTURES RD
26		21		5 QUAISE LLC		1 MONARCH PL STE 1300	SPRINGFIELD	MA	01144	5 QUAISE PASTURES RD
26		22		JONES EDWARD C		14 PINECROFT RD	GREENWICH	CT	06830	218 POLPIS RD
26		22	1	MCATEE JOHN J JR TRUSTEE	FIRST CAST NOMINEE TRUST	209 BANYAN ROAD	PALM BEACH	FL	33480	220 POLPIS RD
26		22	2	SHERWOOD JOHN R III ETAL		51 SOUTHGATE AVENUE	ANNAPOLIS	MD	21401	222 POLPIS RD
26		30		P & G NANTUCKET LLC	C/O KENEALLY GERARD	215 POLPIS RD	NANTUCKET	MA	02554	215 POLPIS RD
26		31		GIBBS MAURICE E & MILLICENT TR		PO BOX 567	NANTUCKET	MA	02554	211 POLPIS RD
26		32	2	GRACE NICK		41 SOUTH PARADE	LONDON ENGLAND		W47JS	209 POLPIS RD
26		68		BILLS EYE LLC		4 NORTH WATER STREET	NANTUCKET	MA	02554	6 QUAISE PASTURES RD
26		69		WEINBERG RONALD E TR	FOUR QUAISE PASTURE NOMINEE TRUST	C/O 982 CHESTNUT RUN	GATES MILLS	OH	44040	4 QUAISE PASTURES RD

322 of 1520

#50-16 Special Permit for Tertiary Dwelling
Housing Nantucket Affordable Rental Units
75B Old South Road
Map 68 Parcels 248 & 248.1

PLANNING BOARD

FILE # 50-16

NANTUCKET TOWN CLERK

2016 AUG 17 PM 1:13

PAID AUG 17 2016 BY: CASH $250

Nantucket Planning Board

Application for a Special Permit

Date: August 15, 2016 File #:

Name of development: Housing Nantucket Affordable Rental Units: 75B Old South Rd

Owner(s) name(s): NHA Properties, Inc d/b/a Housing Nantucket

Mailing address: P.O. Box 3149 Nantucket, MA 02584

Phone number: 508-228-4422 Fax number: 508-228-4195 E-mail: anne@housingnantucket.org

Applicant's name: Anne Kuszpa, Executive Director

Mailing address: (same as above)

Phone number: Fax number: E-mail:

Engineer / surveyor's name: Earle & Sullivan

Mailing address: 6 Young's Way Nantucket, MA 02584

Phone number: 508-332-4808 Fax number: E-mail: sullivan.esisurvey@gmail.com

Location of lot(s):

- ☑ Street address 75B Old South Road
- ☑ Tax Assessors Map 68 Parcel 248 & 248.1
- ☑ Nantucket Registry of Deed: Plan Book and Page **OR** Lots 852 & 859

Plan File # **OR** Land Court Plan #16514-100 at Certificate # 25524

16514-97 23591

Size of parcel: 10,109 +/- sq. ft. Zoning District: R5

Special Permit sought: (check one)

- ○ Cluster subdivision
- ○ Commercial WECS
- ○ Driveway Access/Curb Cut Special Permit
- ○ Harbor Overlay District (HOD)
- ○ Major Commercial Development (MCD)

- ○ Multi-family Special Permit
- ○ Moorlands Management District Subdivision or Construction (MMD)
- ○ NEHOD (Neighborhood Employee Housing Overlay District)
- ○ MRD (Major Residential Development)
- ○ MIPOD (Mid-Island Planned Overlay District)
- ✓ Other Uses Requiring a Special Permit (specify all uses and *Nantucket Code* sections)

Section	Description
139-2 A	Tertiary Dwelling

Specify all associated Zoning Code relief sought:

Section	Description
	The applicant requests a special permit as provided in clause (4) of the tertiary dwelling definition:
(2)(b)	-The dwelling unit shall not contain more than 650 square feet of gross floor area. Applicant requests approval for basement apartment of +/- 990 sqft.
(3)(a)	- R-5: 1 bedroom per each 1,000 square feet of lot area; Applicant requests approval to have 6 bedrooms permitted on Lot 852, which is 5,119 +/- sqft.

Only the zoning relief expressly requested above will be considered as part of this application.

If applying for a Major Commercial Development, specify how the application will comply with Section 139-11 (J) of the *Zoning Code of the Town of Nantucket*, also known as the Town's Affordable Housing Effort:

Planning Board filing fee due: $ 250

Engineering Inspection Escrow Deposit due: $_____

I/ we hereby certify that the applicant(s) cited above have been authorized by me/ us to file a Special Permit application with the Planning Board on property that I/ we own.

Owner(s)' Signature(s)

Anne Kuszpa

Applicant's Signature

I/we _____, the undersigned, hereby authorize _____ to act as agent(s) on my/our behalf and to make any necessary revisions on this filed application as they may be requested by the Board to meet its governing rules and guidelines.

_____

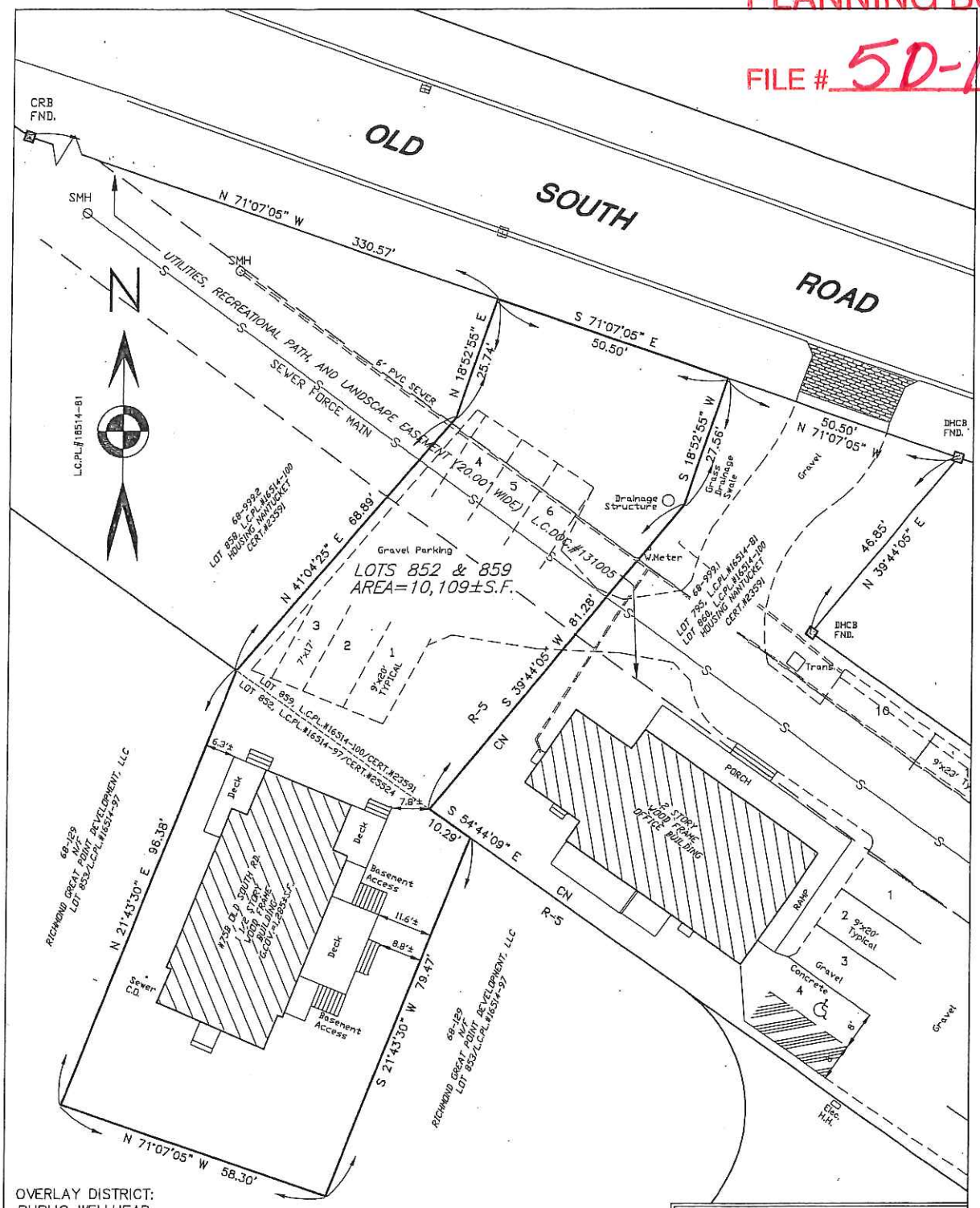
Owner(s)' signature(s)

Check List:

- ☑ Planning Board Special Permit abutters list – to be obtained at the Tax Assessor's office
- ☑ Completed application form entitled "Application to the Planning Board for a Special Permit"
- ☑ Application fee of $250.00 payable to Town of Nantucket
- ☑ Abutters fee of $6.11 per abutters payable to Pitney Bowes Reserved Funds
- ☑ Four (4) sets of mailing labels with each abutter's name and address
  - 1" x 2 5/8" size, typed labels, are preferred
  - duplicate labels are not necessary if the same owner is listed for more than one abutting property
- ☑ Completed application form
- ☐ Town Clerk's stamped application (provide 2 copies-one for Town Clerk and one for Planning Board)

PLANNING BOARD

FILE # 5D-16



OVERLAY DISTRICT:
PUBLIC WELLHEAD

CURRENT ZONING:	R-5
MINIMUM LOT SIZE:	5,000 S.F.
MINIMUM FRONTAGE:	50 FT.
FRONTYARD SETBACK:	10 FT.
SIDE AND REAR SETBACK:	10 FT. min. on one side, 5 FT. thereafter Rear: 5 FT.
ALLOWABLE G.C.R.:	40%
EXISTING G.C.R.:	12.7% ±

FOR PROPERTY LINE DETERMINATION THIS PLOT PLAN RELIES ON CURRENT DEEDS AND PLANS OF RECORD, VERIFIED BY FIELD MEASUREMENTS AS SHOWN HEREON. THIS PLAN IS NOT REPRESENTED TO BE A TITLE EXAMINATION OR A RECORDABLE SURVEY.

SITE PLAN FOR
75B OLD SOUTH ROAD
IN
NANTUCKET, MASSACHUSETTS

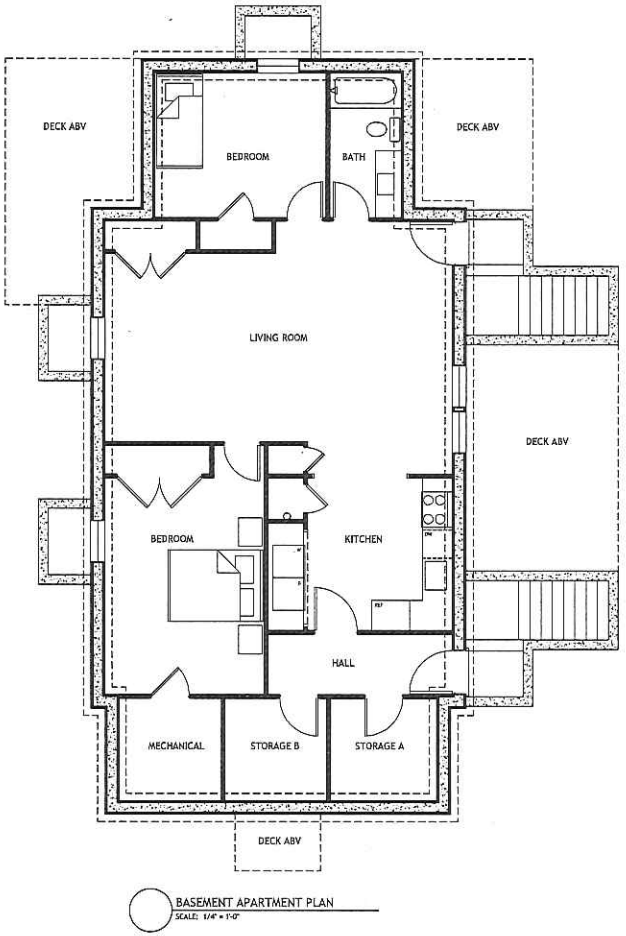
SCALE: 1"=20' | DATE: AUG. 10, 2016

DEED REFERENCE: CERTS.#23591&25524
PLAN REFERENCE: L.C.PL.#16514-97&100
ASSESSOR'S REFERENCE:
MAP: 68 PARCELS: 248 & 248.1

PREPARED FOR:
HOUSING NANTUCKET

EARLE & SULLIVAN, INC.
PROFESSIONAL LAND SURVEYORS
6 YOUNGS WAY
NANTUCKET, MA. 02554
508-332-4808

ES-275



BASEMENT APARTMENT PLAN
SCALE: 1/4" = 1'-0"

PLANNING BOARD
FILE # 50/16

bpc ARCHITECTURE
2 BROAD STREET
NANTUCKET, MA 02554
P 508 228 2722
F 508 374 8498

HOUSING NANTUCKET
75A OLD SOUTH ROAD
NANTUCKET, MA 02554
MAP: 68 PARCEL: 999.2

PRELIMINARY

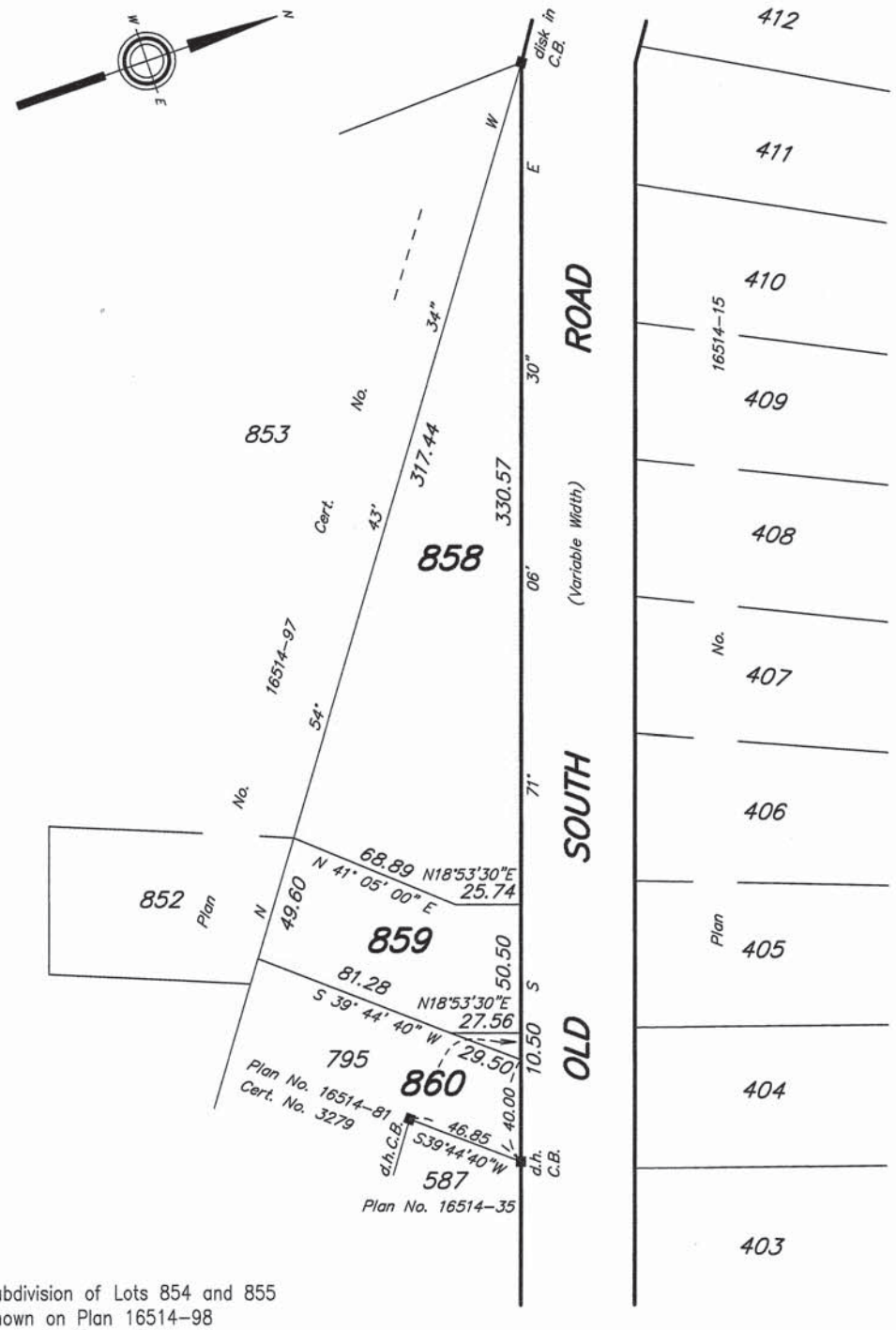
BASEMENT | A1.1
1 OCTOBER 2015

SUBDIVISION PLAN OF LAND IN NANTUCKET

Hayes Engineering, Inc., Surveyors

December 4, 2014

16514-100



Subdivision of Lots 854 and 855
Shown on Plan 16514-98
Filed with Cert. of Title No. _ _ _ _ _
Registry District of Nantucket County

Separate certificates of title may be issued for land shown hereon as Lots 858, 859 and 860 By the Court.

Deborah J. Patterson
Recorder

DEC. 18, 2014

ABH-OBBD

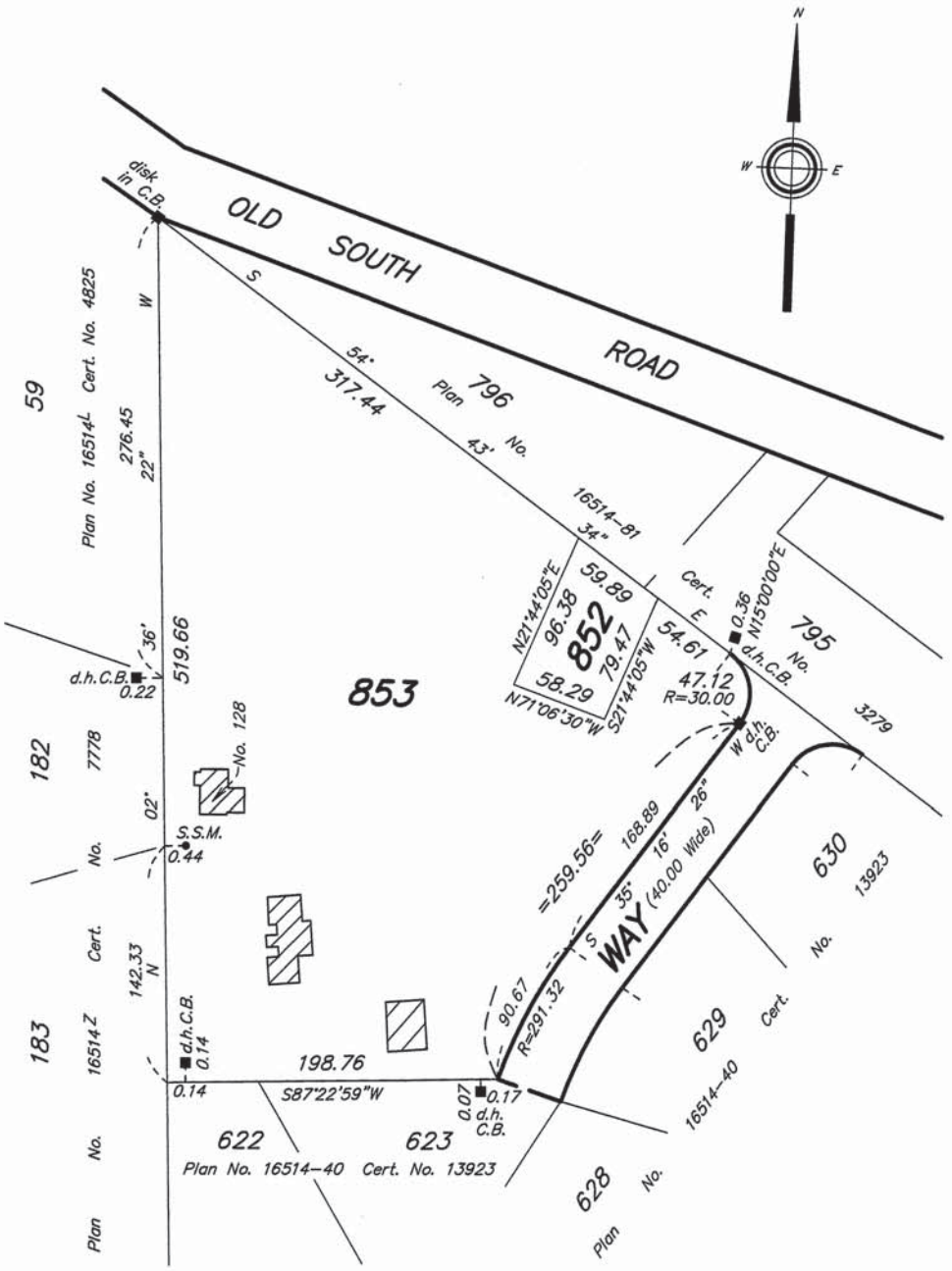
Copy of part of plan filed in
LAND REGISTRATION OFFICE
DEC. 18, 2014
Scale of this plan 50 feet to an inch
T.C. Pontbriand, Engineer for Court

SUBDIVISION PLAN OF LAND IN NANTUCKET

Hayes Engineering, Inc., Surveyors

October 7, 2014

16514-97



Subdivision of Lot 47
Shown on Plan 16514-G Sh. 2
Filed with Cert. of Title No. 4357
Registry District of Nantucket County

Separate certificates of title may be issued for land shown hereon as Lots 852 and 853 By the Court.

Deborah J. Patterson
Recorder

OCT. 30, 2014

ABH-OATY

Copy of part of plan filed in
LAND REGISTRATION OFFICE
OCT. 30, 2014
Scale of this plan 80 feet to an inch
T.C. Pontbriand, Engineer for Court

#8015 Subdivision Modification #1
#7824 Definitive Subdivision - Zeke Dog LLC
31 Quidnet Road
Map 21 Parcel 27.1

PAID
AUG 15 2016
BY: DS CK# 29573 $250-

PLANNING BOARD
FILE # 8015

2016 AUG 15 AM 9:51
NANTUCKET TOWN CLERK

GLIDDEN & GLIDDEN, P.C.
ATTORNEYS AT LAW
P. O. BOX 1079
37 CENTRE STREET
NANTUCKET, MASSACHUSETTS 02554
508-228-0771
FAX 508-228-6205
OFFICE@GLIDDENANDGLIDDEN.COM

RICHARD J. GLIDDEN
JESSIE M. GLIDDEN BRESCHER
JOHN B. BRESCHER

JAMES K. GLIDDEN
(1917 – 2009)

August 15, 2016

Nantucket Planning Board
2 Fairgrounds Road
Nantucket, MA 02554

RE: Definitive Subdivision Plan Modification
31 Quidnet Road, Nantucket, MA 02554

Dear Members of the Board:

Enclosed, on behalf of Zeke Dog, LLC, the owner/applicant of the Locus situated at 31 Quidnet Road, is a modification to the approval of a definitive subdivision.

In June of 2015, the applicant received approval to subdivide the existing vacant 65,615 +/- square foot parcel into two (2) building lots and one (1) roadway lot. The property is zoned Residential – 20 (R-20) with a minimum lot size of 20,000 square feet.

Condition #9 of said decision states: "That the applicant agreed to one (1) dwelling unit per lot for a total of two (2) dwellings for said subdivision."

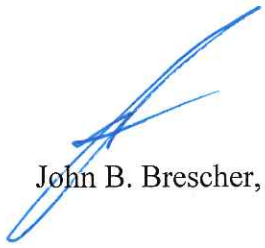
The applicant is requesting this condition be modified so that there can be one house on the Lot A and Lot B2 cam have a four-bedroom main house and a one-bedroom apartment in the barn. The number of bedrooms are restricted by the maximum number of bedrooms allowed per the size of the septic system, so there cannot be more than five (5) bedrooms on the back lot. Accordingly, there will be three (3) dwelling units total, with two on Lot B2 and one on Lot A.

Please prepare public notice for public hearing on the application at the Planning Board's September 12, 2016 meeting.

Also please note that I reserve the right to supplement this application with further materials at a later time.

If you have any questions, please do not hesitate to contact me. Trusting you find everything in order, I remain,

Very Truly Yours,



John B. Brescher, Esq.

Enclosure(s)
Cc: Zeke Dog, LLC

PLANNING BOARD

FILE # 8015

2016 AUG 15 AM 9:54

NANTUCKET TOWN CLERK

Nantucket Planning Board

Form B1
Application for Approval of a Definitive Subdivision Modification

File one completed form with the Planning Board and one copy with the Town Clerk.

Date: _____ File #: 7824

To the Planning Board of Nantucket:

The undersigned, being the applicant as defined under Chapter 41, Section 81-L, for approval of a proposed subdivision *modification* shown on a plan entitled Definitive Plan of Land designed by Island Surveyors, LLC dated April 14, 2015, and described as follows: located on 31 Quidnet Road, number of lots proposed 3, total acreage of tract 65,615, hereby submits said plan as a **definitive plan modification** in accordance with the *Rules and Regulations Governing the Subdivision of Land* of the Nantucket Planning Board and makes application to the Board for approval of said modification.

The undersigned's title to said land is derived from Tawanda R. Eger by deed dated 10/31/13 and recorded in the Nantucket Registry of Deeds Book _____, Page _____, registered in the Nantucket Registry District of the Land Court, Certificate of Title # 25,032 and shown on Nantucket Assessor's Map # 21, Parcel 27.1, and said land is free of encumbrances except for the following: Order of Taking (Doc. 16518); Easement to Nantucket Electric Co. (Doc. 14465)

Said plan ○ has ☒ has not evolved from a preliminary plan submitted to the Board on _____(date) and ○ approved ○ disapproved on _____ (date).

The undersigned hereby applies for the approval of said **definitive** plan *modification* by the Board, in belief that the plan conforms to the Board's *Rules and Regulations*.

Name(s) and address(es) of the Applicant(s):
(to include all the names and addresses of the principals of the owner entity such as principal officers of the corporation, trustees

of a trust or partners of a partnership)

Zeke Dog, LLC
PO Box 852, Nantucket, MA 02554

Contact Phone #: (508)367-2595 Contact Fax #: _____

Name of owner(s): Gloria Grimshaw, Manager of Zeke Dog, LLC

Address of owner(s): PO Box 852, Nantucket, MA 02554

I hereby certify that the applicant(s) listed above have been authorized by me to file a subdivision plan *modification* with the Planning Board on property that I own.

Owner's signature

Received by Town Clerk:

Date: _____

Time: _____

Received by Board of Health:

Date: _____

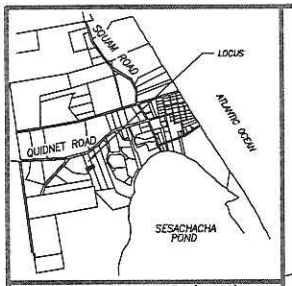
Time: _____

Planning Board File #: 8015

PLANNING BOARD

FILE # 8015

336 of 1520



LOCUS MAP SCALE: 1"=1600'±

QUIDNET ROAD

LEGEND

- ■ dhCB FND. DENOTES DRILL HOLE IN CONCRETE BOUND FOUND
- ⊕ MAG FND. DENOTES MAG NAIL FOUND

N

W E

CURRENT ZONING CLASSIFICATION:
Residential 20 (R-20)

MINIMUM LOT SIZE:	20,000 S.F.
MINIMUM FRONTAGE:	75 FT.
FRONT YARD SETBACK:	30 FT.
REAR/SIDE SETBACK:	10 FT.
GROUND COVER % :	12.5%

SURVEY PRECISION : 1:42,827
LINEAR ERROR OF CLOSURE : 0.02
DIRECTIONAL ERROR OF CLOSURE : N38°22'37.8"E
INSTRUMENT/ACCURACY : WILD TC800 ±(3mm+2ppm)

" I CERTIFY THAT THIS PLAN WAS DRAWN FROM AN ACTUAL SURVEY MADE ON THE GROUND IN ACCORDANCE WITH THE LAND COURT INSTRUCTIONS OF 2006 ON OR BETWEEN 11-23-2014 AND 4-6-2015"

DATE: _____

_____
PROFESSIONAL LAND SURVEYOR

I CERTIFY THAT THE CONDITIONS ON THE GROUND ARE THE SAME NOW AS AT THE TIME OF THE ORIGINAL SURVEY _____ WITH THE EXCEPTION OF _____.

_____
PROFESSIONAL LAND SURVEYOR DATE

LOT 9 CONTAINS INADEQUATE LOT AREA AS DEFINED IN THE NANTUCKET ZONING BYLAW TO COMPLY WITH THE MINIMUM AREA REQUIREMENTS APPLICABLE UNDER SUCH BYLAW.

LOT 9 IS NOT TO BE USED AS A SEPARATE BUILDING LOT.

LOT 9 IS TO BE CONVEYED TO AND COMBINED WITH LOT 6.

PLANNING BOARD ENDORSEMENT DOES NOT CONSTITUTE A DETERMINATION OF CONFORMANCE UNDER ZONING

N53°08'55"E 5.00
dhCB FND.
N76°46'55"E 115.61
dhCB FND.
95.44
MAG NAIL FOUND
EXISTING 10-12' GRAVEL DRIVE
PROPOSED 10' ACCESS & UTILITY EASEMENT
N20°33'56"W 199.14
199.26
EXISTING DRIVE & UTILITY EASEMENT
QUIDNET RESERVE DRIVE
LOT 6
20,010± S.F.
86.05
25'
35'
N75°29'59"E 103.17
S21°27'57"E 135.00
LOT 8
5,440± S.F.
R=15.00
L=10.20
62.55
LOT 9
6,659± S.F.
81.40
N59°13'16"W
PROPOSED DRIVE & UTILITY EASEMENT
1,029± S.F.
21-29.3
N/F
ROBERT E. LANDRETH
CERTIFICATE 10428
L.C. 36506-B; LOT 2
R=30.00
L=67.51
98.26
N54°35'50"W
524.46
EXISTING 10-12' GRAVEL DRIVE
21-27.2
N/F
TINA EGER McGOLDRICK, TRUSTEE
CERTIFICATE 21942
L.C. 36582-B; LOT 2
N20°33'56"W
539.77
190.20
LOT 10
33,506± S.F.
279.77
21-29.4
N/F
ROBERT E. LANDRETH
CERTIFICATE 10428
L.C. 36506-B; LOT 3
dhCB FND.
127.71
S68°32'22"W
dhCB FND.
21-27.4
N/F
TINA EGER McGOLDRICK, TRUSTEE
CERTIFICATE 23953
L.C. 36582-C; LOT 5
21-28
N/F
MASSACHUSETTS AUDUBON SOCIETY
CERTIFICATE 7447
L.C. 38540-A; LOT 7

BEING A SUBDIVISION OF LOT 7
SHOWN ON LAND COURT PLAN 36582-D

PLAN OF LAND
IN
NANTUCKET, MASS.

PREPARED FOR

ZEKE DOG, LLC
CERTIFICATE 25092
L.C. 36582-C; LOT 4
31 QUIDNET ROAD

SCALE: 1"= 40' DATE: AUGUST 5, 2016

ISLAND SURVEYORS, LLC
Professional Land Surveyors
90 OLD SOUTH ROAD
NANTUCKET, MASS. 02554
(508) 228-2720

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

Nantucket Planning Board
Approval Under the
SUBDIVISION CONTROL LAW
NOT REQUIRED

_____
_____
_____
_____
_____

DATE SIGNED: _____

FILE No.: _____

ASSESSORS MAP 21 PARCEL 27.1

K-408

FEB 3 2016 PM3:30

Town Clerk
Town & County Building
16 Broad St
Nantucket, MA 02554

PLANNING BOARD

FILE # 8015

Nantucket Planning Board

MEMORANDUM

Date: **February 3, 2016**

To: **Town Clerk**

From: **Eleanor Weller Antonietti, Zoning Administrator**

Re: **Planning Board File #7824** –CORRECTED DECISION

The above referenced Planning Board Decision granting APPROVAL OF A DEFINITIVE SUBDIVISION PLAN (AR) for a three (3) lot subdivision at 31 Quidnet Road, granted to Zeke Dog LLC on June 18, 2015, was filed with the Town Clerk on December 18, 2015 and contained certain clerical errors. A corrected decision is filed herewith.

Eleanor W. Antonietti,
Zoning Administrator

COMMONWEALTH OF MASSACHUSETTS

Nantucket, ss
On the 3 day of February, 2016, before me, the undersigned notary public, personally appeared Eleanor Weller Antonietti, the above-named Zoning Administrator of Nantucket, Massachusetts, personally known to me to be the person whose name is signed on the preceding document, and acknowledged that she signed the foregoing instrument voluntarily for the purposes therein expressed.

Doris C. Strang
Notary Public:
My Commission Expires: 10/09/2020

DORIS C. STRANG
Notary Public
Massachusetts
Commission Expires Oct 9, 2020

TOWN CLERK
NANTUCKET
18PM 3:37:45
DEC 18 2015

Nantucket Planning Board

APPROVAL OF A DEFINITIVE SUBDIVISION PLAN (AR)

ZEKE DOG LLC SUBDIVISION

Planning Board File #7824

Owner/Applicant: Zeke Dog LLC, Bruce Poor, manager

31 Quidnet Road
Nantucket Tax Assessors Map 21 Parcel 27.1
Lot 4 of Land Court Plan 36582-C
Certificates of Title #17029 on file in the Nantucket Registry District of the Land Court

June 18, 2015

At the Nantucket Planning Board hearings on May 11, 2015 and June 18, 2015, the Applicant requested a definitive subdivision plan. The Planning Board voted 5-0 to approve the three (3) lot (two (2) buildable and one driveway lot) Definitive Subdivision Plan (AR) for property located on Quidnet Road at Assessors Map 21 Parcel 27.1 An application for this definitive subdivision plan was received by the Planning Board on April 14, 2014.

Approval of the subdivision was based on the following documents:

- An Application for Approval of a Definitive Subdivision Plan (AR) dated April 14, 2014;
- A list of waivers from the *Rules and Regulations Governing the Subdivision of Land* dated April 13, 2014;
- A plan entitled "Definitive Plan of Land in, Nantucket, MA prepared for Zeke Dog LLC" consisting of 1 sheet scale 'as noted', dated April 14, 2015 prepared by Site Design Engineering, LLC.;
- Representation and testimony received in connection with the public hearing held on May 11, 201 and June 18, 2015. Minutes of these meetings are on file with the Planning Board; and
- Other assorted documents that are on file with the Planning Board.

The Planning Board closed the public hearing on June 18, 2015.

Approval of the subdivision is granted conditionally upon the aforementioned documents, compliance with the Planning Board's *Rules and Regulations Governing the Subdivision of Land* (as amended through December 20, 1999), and on the following additional requirements and agreements:

1. Requested waivers from the *Rules and Regulations Governing the Subdivision of Land:*

2.06a(2)	Street Network Plan Waiver Granted – the proposed subdivision does not warrant such plan for the scale of this subdivision;
2.06a(5)	Master Plan Waiver Granted – the proposed subdivision does not warrant such plan, as the owners do not own any property adjacent to said property;
2.06a(10)	Storm Water Calculations Waiver Granted – the proposed subdivision will not create any significant changes to the exiting drainage conditions;
2.06a(11)	Site Analysis Report and Map Waiver Granted – the proposed project consists of a small three-lot subdivision, only two of which are buildable. Only one new building lot is being created and the proposed subdivision plan set contains sufficient information to address the interests of this section for this subdivision;
2.06a(12)	Traffic Study Waiver Granted – only one additional building lot is being created and therefore the traffic impact along Quidnet Road will be minimal and adequate for the scale of this subdivision;
2.06b(6)	Bounds Waiver Granted – the proposed project is of small scale and providing all the roads and ways on the plan is unnecessary for the scale of this subdivision;
2.06b(10)	Topography Waiver Granted – the site of the proposed subdivision does not contain sufficient elevation changes to depict this contour interval and therefore are no proposed changes to the site that would require detailed elevation information due to the scale of the subdivision;
2.06b(13)	Utility Plan Waiver Granted – the proposed subdivision is only for two (2) lots and therefore does not warrant a Utility Plan;
2.06b(14)	Landscape Plan Waiver Granted – existing vegetation and landscape buffers will be maintained as shown on the subdivision plans;
2.06b(16)	Location of Curbs and Gutters Waiver Granted – the proposed subdivision will provide a rural road alternative that is better suited for the scale of this subdivision;
2.06b(17)	Roadway Cross-section Waiver Granted – the proposed project is of small scale and providing a roadway cross-section is unnecessary for the sale of this subdivision;

2.06b(18)	One-Site Brush Disposal Waiver Granted – there will be little brush cutting as part of the installation of this small subdivision;
2.06b(19)	Storm Drainage Waiver Granted – the proposed subdivision will not create any significant changes to the exiting drainage conditions;
2.06b(20)	Profiles of Street and Utilities Waiver Granted – the proposed subdivision is of a small scale and providing street and utility profiles is unnecessary for the scale of this subdivision;
2.06b(21)	Erosion Control Plan Waiver Granted – the proposed subdivision is of a small scale and providing the plan is unnecessary for the scale of this subdivision;
3.02	Public Open Space Waiver Granted – the proposed subdivision is of a small scale and providing public open space is unnecessary for the scale of this subdivision;
4.03a(1)	Streets Waiver Granted – the proposed subdivision will keep the existing 10-12 foot gravel roadway due to the scale of this subdivision;
4.04(b)	Dead-End Street Waiver Granted – the proposed subdivision will not provide access to the rear lot and therefore will not require the sixty (60) foot radius;
4.05	Street Construction Waiver Granted – the proposed subdivision is of a small scale and the rural road alternative is better suited for a subdivision of this size;
4.06	Storm Drainage Waiver Granted – the proposed subdivision is of a small scale and is providing only one (1) new building lot where the changes to the existing drainage conditions will be insubstantial;
4.16	Landscaping Waiver Granted – the existing vegetation and landscape buffers will be maintained as shown on the subdivision plans;
4.18	Sidewalks Waiver Granted – the proposed subdivision is of a small scale and sidewalks are unnecessary for the scale of this project;
4.19	Bicycle Paths Waiver Granted – the proposed subdivision is of a small scale and a bike bath is unnecessary for the scale of this project;
4.20	Street Lights Waiver Granted – the proposed subdivision is of a small scale and street lights are unnecessary for the scale of this project;
4.22	Curbing & Berms Waiver Granted – the proposed subdivision will have a rural road alternative is proposed, therefore, curbing and berms are unnecessary;

4.23 Soil Surveys

Waivers Granted – the proposed subdivision is of a small scale and soil surveys are unnecessary for the scale of this project;

4.24 Driveway Aprons

Waivers Granted – the proposed subdivision will be created off an existing driveway off Quidnet Road and will only be servicing two (2) lots.

2. That recorded copies of all legal documents (Homeowners Association documents, Statement of Conditions, Grant of Right of Enforcement, Grant of Easements for Utilities, Drainage, and Covenant) shall be presented to the Planning Board prior to the release of the second lot from the Covenant and within six (6) months from the date of this decision (June 18, 2015). The Planning Board may grant extensions of this deadline without holding a public hearing;
3. That the roadway shall be constructed and maintained, as shown on the referenced definitive subdivision plans;
4. That frontage and access utilizing the interior roadway shall be limited to lots within this subdivision. This restriction is based upon the significant waivers granted for interior roadway improvements. Any future modification of this condition shall require a public hearing;
5. ~~That all lots shall be connected to the municipal sewer and water system;~~[1]
6. That all lots shall be prohibited from further subdivision. Minor lot line adjustments which do not result in the creation of any additional buildable lots shall be permitted through the Approval Not Required (ANR) process;
7. That duplexes shall be a prohibited use upon any lot within the subdivision;
8. That the applicant agreed to provide the Town of Nantucket an easement for the proposed drive QUIDNET PRESERVE DRIVE and utility easement;
9. That the applicant agreed to one (1) dwelling unit per lot for a total of two (2) dwellings for said subdivision.

SIGNATURE PAGE TO FOLLOW

[1] *This condition was included by inadvertent error. There is no municipal water or sewer in the vicinity and there are no plans to extend it.*

On June 18, 2015 the Planning Board voted 5-0 to **APPROVE** the Zeke Dog LLC Approval Required (AR) Subdivision and to endorse this decision.

Barry G. Rector APPROVED

Linda F. Williams APPROVED

John McLaughlin APPROVED

Nathaniel Lowell APPROVED

Joseph Marcklinger APPROVED

COMMONWEALTH OF MASSACHUSETTS

Nantucket, SS

12/15, 2015

On the 15th day of December, 2015, before me, the undersigned notary public, personally appeared Linda F. Williams, one of the above-named members of the Planning Board of Nantucket, Massachusetts, personally known to me to be the person whose name is signed on the preceding document, and acknowledged that he/she signed the foregoing instrument voluntarily for the purposes therein expressed.

Doris C. Strang
Notary Public

October 9, 2020
My Commission Expires

DORIS C. STRANG
Notary Public
Massachusetts
Commission Expires Oct 9, 2020

I CERTIFY THAT 20 DAYS HAVE ELAPSED AFTER THE DECISION WAS FILED IN THE OFFICE OF THE TOWN CLERK, AND THAT NO APPEAL HAS BEEN FILED, PURSUANT TO GENERAL LAWS 40A, SECTION 11

TOWN CLERK

MAR 24 2016

ATTEST: A TRUE COPY
NANTUCKET TOWN CLERK

JORDAN
REAL ESTATE

Sept. 9, 2016

Dear Andrew -

This might be helpful for the Planning Board meeting on 9/12/16.

Let me know if you have any questions.

Sincerely,

Gloria Jimenez

emeritus
Development Ltd.

8 Williams Lane Nantucket, MA 02554
P. 508.325.4995
F. 508.325.6980
www.emeritusdevelopment.com

Transmittal

31 Quidnet Rd, Nantucket, MA 02554 | Proposed Main Dwelling & Barn

September 7, 2016

RECEIVED
SEP 9 2016
HDC

Nantucket Planning Board
2 Fairgrounds Road
Nantucket, MA 02554

CC: Gloria Grimshaw

To whom it may concern,

Attached, please find two sets of drawings – one for the main dwelling and one for the barn. The main dwelling was approved at HDC meeting on August 23, 2016 (COA # 66389) and the barn is very close to get HDC approval and will be reviewed next time by HDC on September 13, 2016.

During the entire HDC hearing process – there were no single objection from any neighbors and/or abutters of the property.

Please feel free to contact me directly with any questions or comments at 617-529-8410.

Sincerely,

Matthew R. MacEachern

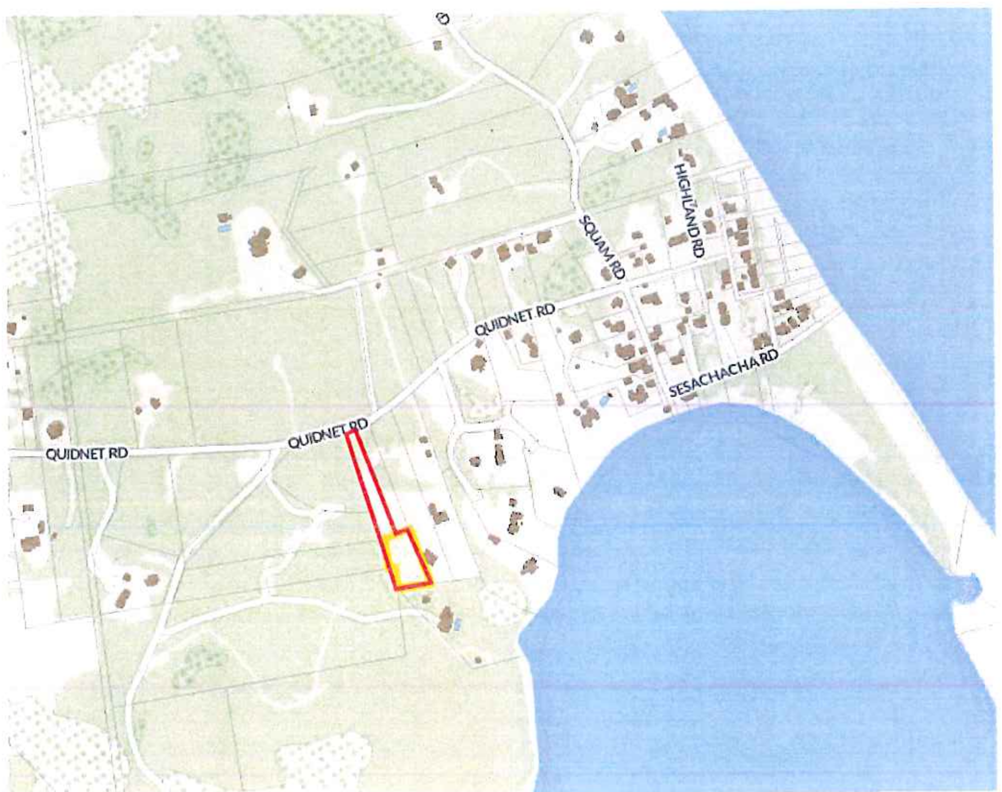
Principal, Emeritus Development, Ltd

Grimshaw Residence

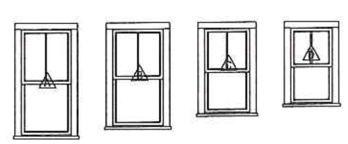
31 Quidnet Rd.
Nantucket, MA 02554

08.04.16

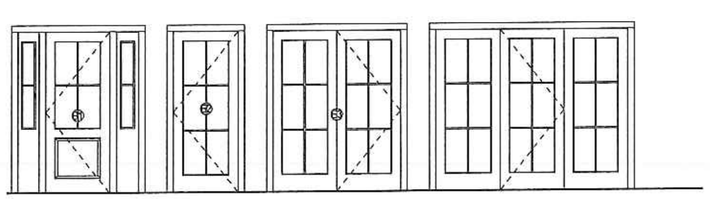
HDC Submission



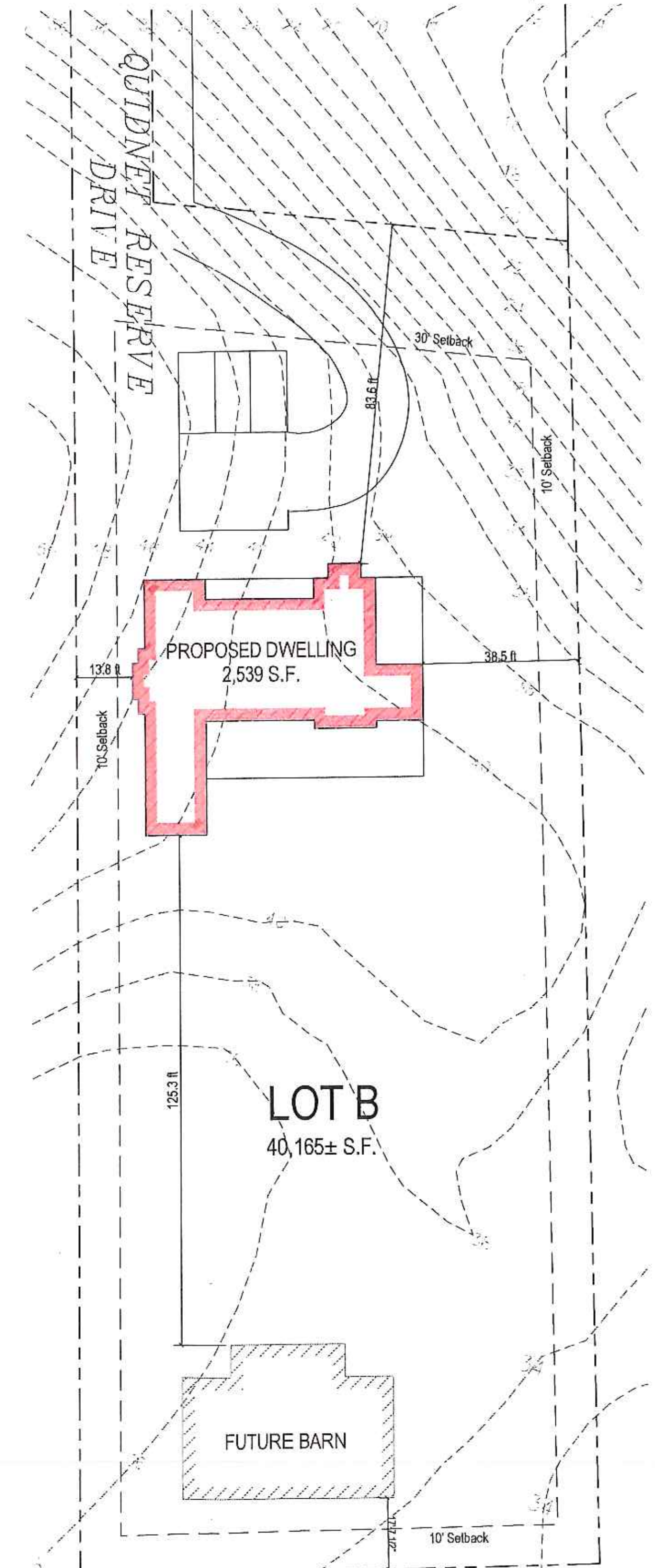
1 Locus Map
Locus Map



2 Window Legend
1/4" = 1'-0"

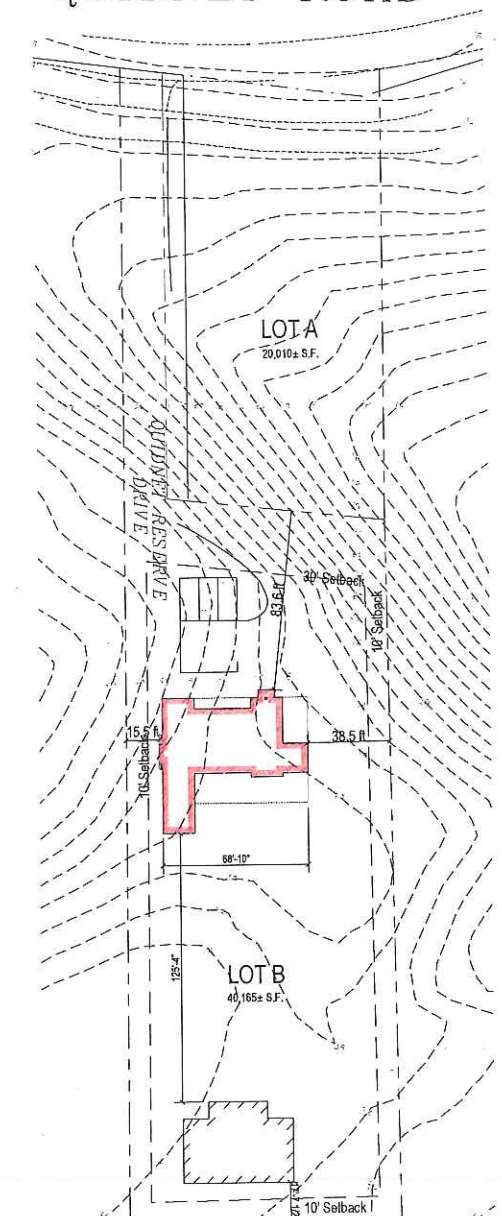


3 Door Legend
1/4" = 1'-0"



4 Site Plan
1" = 20'-0"

RECEIVED
SEP 9 2016



5 Subdivision Plan
1" = 40'-0"

1608

Grimshaw Residence
31 Quidnet Rd.
Nantucket, MA 02554

emeritus Development Ltd.

Site Plan, Locus Map

Site Information

Map & Parcel:	21 / 27.4
Current Zoning:	R-20
Minimum Frontage:	75 ft.
Front Setback:	30 ft.
Side/Rear Setback:	10 ft.
Lot Size:	40,165 S.F.
Min. Lot Size:	20,000 S.F.
Allowable G.C.:	5,021 S.F. or 12.5%
Existing G.C.:	Existing G.C.
Proposed G.C.:	2,539 S.F. + 1,784
Total Proposed G.C.:	4,323 S.F.

Information for this site plan was taken from the Nantucket G.I.S. This drawing does not constitute a registered survey. All site work should be verified by a Registered Land Surveyor prior to and during construction.

SHEET INDEX

A.204	Unnamed
A.205	Unnamed
A.206	Unnamed
A.207	Unnamed
A.208	Unnamed
A.209	Unnamed
A.210	Unnamed
A.211	Unnamed
G.103	Unnamed
G.104	Unnamed
G.105	Unnamed
G.106	Unnamed
A.101	First Floor Plan
A.102	Second Floor Plan
A.201	Exterior Elevations
A.202	Exterior Elevations
G.101	Site Plan, Locus Map
D.1.1	Interior Details
D.2.1	Exterior Details
F.1.1	Foundation Plan
S.1.1	Framing Plans

Revisions

G.101
1608

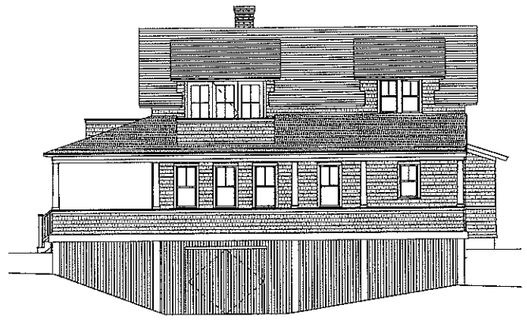
08.04.16

1 North Elevation
1/4" = 1'-0"

3 Previous HDC Subm. North El.
1/8" = 1'-0"

HDC Submission

2 East Elevation
1/4" = 1'-0"



4 Previous HDC Subm. East El.
1/8" = 1'-0"

1608

Grimshaw Residence
31 Quidnet Rd.
Nantucket, MA 02554

emeritus development brd.
8 Pilkens Lane Nantucket, MA 02554
P. 508.325.5355
F. 508.325.5485
www.emeritusdevelopment.com

Exterior Elevations

Site Information

Map & Parcel:	21/27.4
Current Zoning:	R-20
Minimum Frontage:	75 ft.
Front Setback:	30 ft.
Side/Rear Setback:	10 ft.
Lot Size:	40,165 S.F.
Min. Lot Size:	20,000 S.F.
Allowable G.C.:	5,021 S.F. or 12.5%
Existing G.C.:	Existing G.C.
Proposed G.C.:	2,539 S.F. + 1,784
Total Proposed G.C.:	4,323 S.F.

Information for this site plan was taken from the Nantucket G.I.S. This drawing does not constitute a registered survey. All site work should be verified by a Registered Land Surveyor prior to and during construction.

Revisions

THESE DRAWINGS AND THE DESIGNS INCORPORATED THEREIN ARE THE PROPERTY OF EMERITUS AND MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN PERMISSION OF EMERITUS. THEY ARE NOT TO BE LOANED, COPIED OR DISCLOSED TO ANY UNAUTHORIZED PERSON OR ENTITY WITHOUT THE WRITTEN CONSENT OF EMERITUS. VISUAL CONTACT WITH THESE DRAWINGS SHALL CONSTITUTE PRIMA FACIE EVIDENCE OF ACCEPTANCE OF THESE RESTRICTIONS.

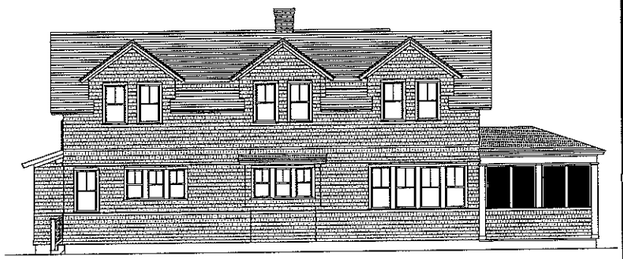
A.201
1608

08.04.16

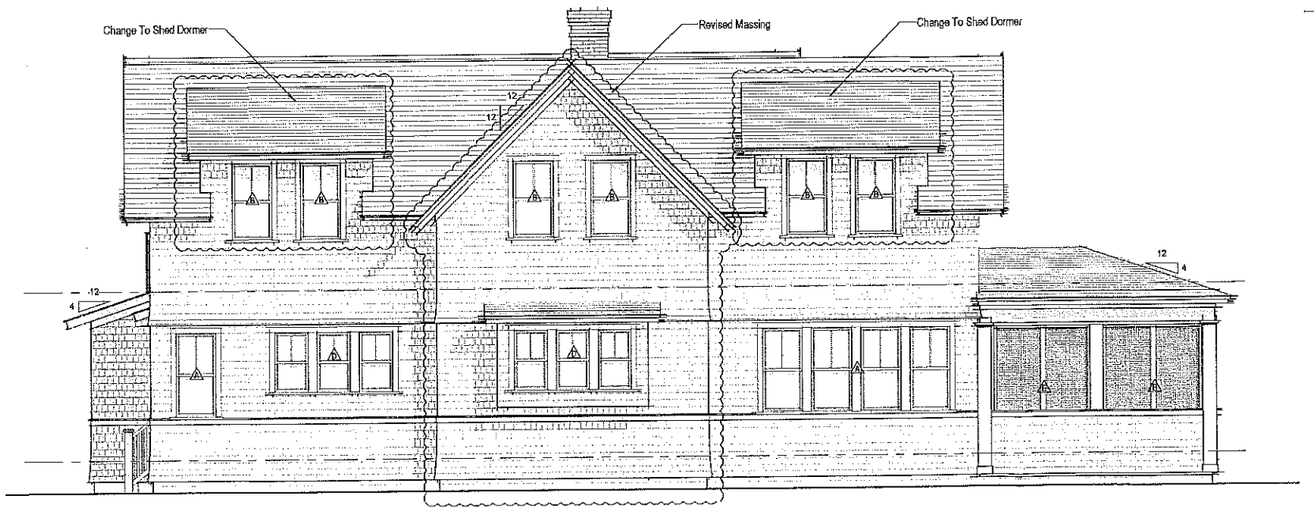
HDC Submission

1 South Elevation
1/4" = 1'-0"

3 Previous HDC Subm. South El.
1/8" = 1'-0"



4 Previous HDC Subm. West El.
1/8" = 1'-0"



2 West Elevation
1/4" = 1'-0"

1608

Grimshaw Residence
31 Quidnet Rd.
Nantucket, MA 02554

emeritus development LLC
8 Williams Lane Nantucket, MA 02554
P. 508.325.4998
F. 508.325.5168
www.emeritusdevelopment.com

Exterior Elevations

Site Information

Map & Parcel:	21 / 27.4
Current Zoning:	R-20
Minimum Frontage:	75 ft.
Front Setback:	30 ft.
Side/Rear Setback:	10 ft.
Lot Size:	40,165 S.F.
Min. Lot Size:	20,000 S.F.
Allowable G.C.:	5,021 S.F. or 12.5%
Existing G.C.:	Existing G.C.
Proposed G.C.:	2,539 S.F. = 1,784
Total Proposed G.C.:	4,323 S.F.

Information for this site plan was taken from the Nantucket G.I.S. This drawing does not constitute a registered survey. All site work should be verified by a Registered Land Surveyor prior to and during construction.

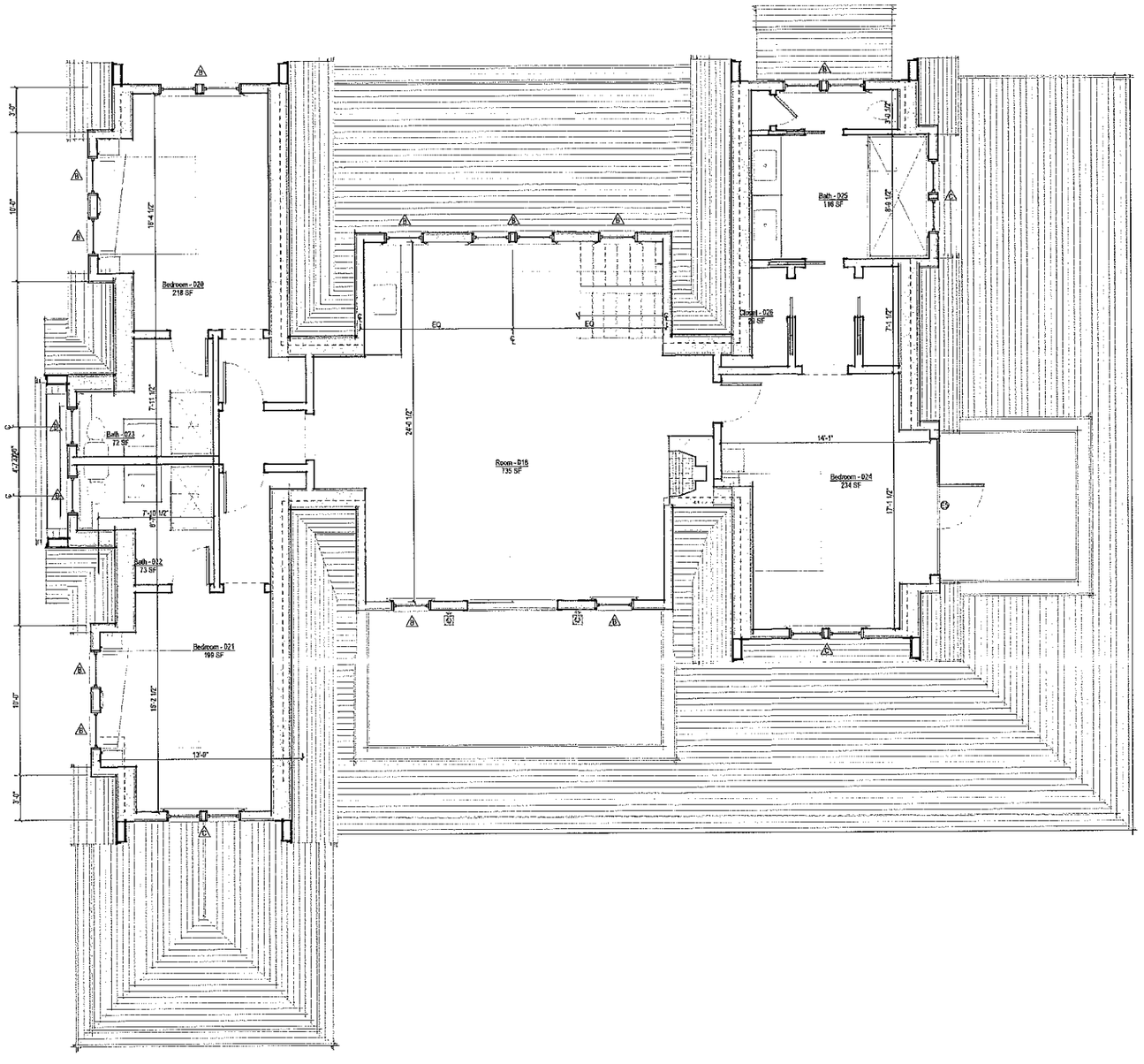
Revisions

THESE DRAWINGS AND THE DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF SERVICE, ARE AND SHALL REMAIN THE PROPERTY OF EMERITUS DEVELOPMENT LLC. THEY ARE NOT TO BE USED IN WHOLE OR IN PART FOR ANY PURPOSE OR PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF EMERITUS DEVELOPMENT LLC. THEY ARE NOT TO BE CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER. ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING COPYRIGHT, ARE HEREBY EXPRESSLY RESERVED.

A.202
1608

08.04.16

HDC Submission



1 Second Floor Plan
1/4" = 1'-0"

1608

Grimshaw Residence
31 Quidnet Rd.
Nantucket, MA 02554

emeritus development ltd.

Second Floor Plan

Site Information

Map & Parcel:	21 / 27.4
Current Zoning:	R-20
Minimum Frontage:	75 ft.
Front Setback:	30 ft.
Side/Rear Setback:	10 ft.
Lot Size:	40,165 S.F.
Min. Lot Size:	20,000 S.F.
Allowable G.C.:	5,021 S.F. or 12.5%
Existing G.C.:	Existing G.C.
Proposed G.C.:	2,539 S.F. = 1,784
Total Proposed G.C.:	4,323 S.F.

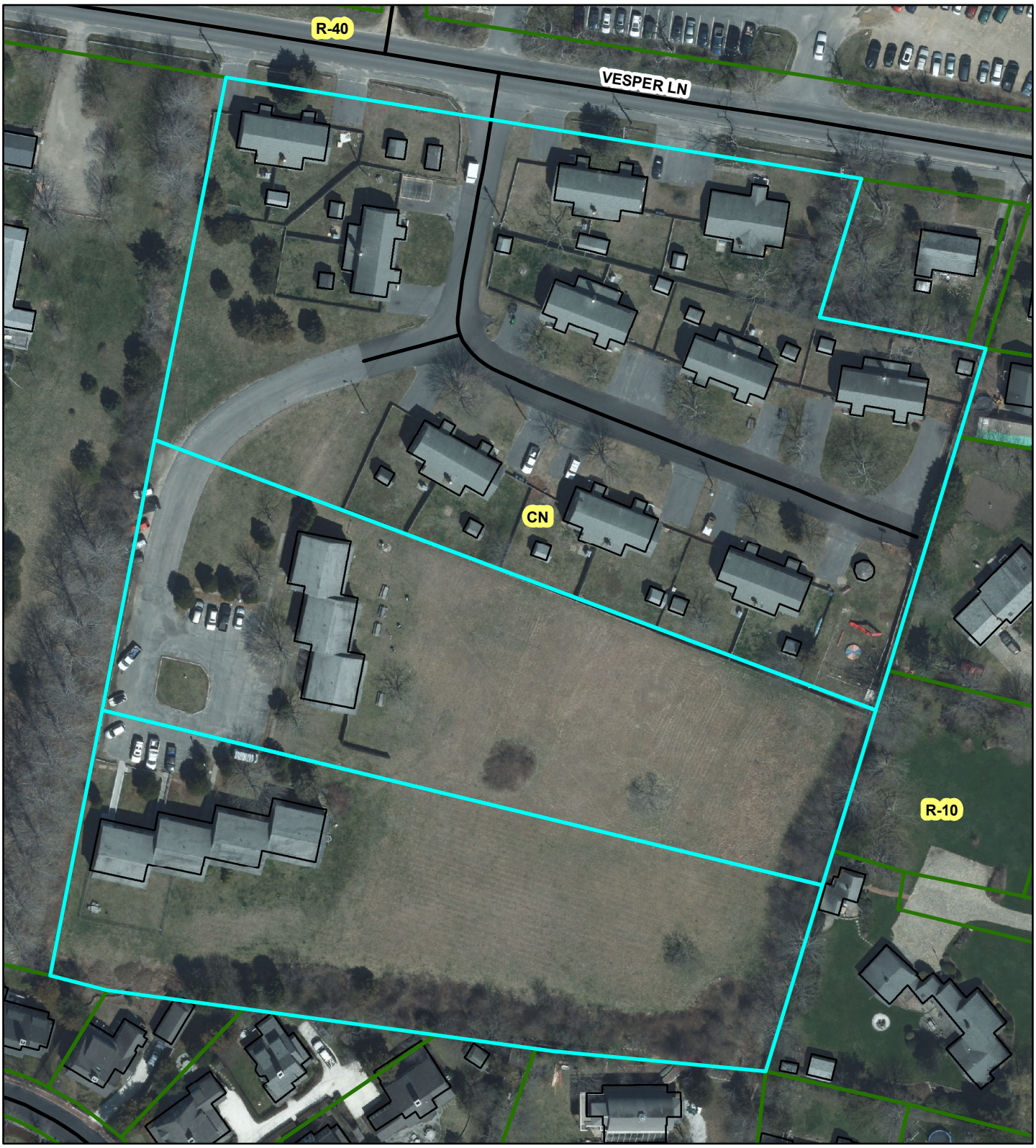
Information for this site plan was taken from the Nantucket G.I.S. This drawing does not constitute a registered survey. All site work should be verified by a Registered Land Surveyor prior to and during construction.

Revisions

A.102

1608

#8016 Gouin Village Subdivision - Definitive Subdivision
Nantucket Cottage Hospital & United States Coast Guard
16, 18 & 20 Vesper Lane
Map 55 Parcels 247, 247.1 & 248



August 11, 2016

VIA CERTIFIED MAIL

Mr. Barry Rector, Chairman
Nantucket Planning Board
2 Fairgrounds Road
Nantucket, MA 02554

Re: Gouin Village – Definitive Subdivision Plan Filing

Dear Chairman Rector:

We have reviewed the Rules and Regulations Governing the Subdivision of Land on Nantucket Island (the "**Rules**"). Pursuant to Section 2.06 of the Rules, enclosed please find Nantucket Cottage Hospital's (the "**Applicant**") complete and duly executed definitive subdivision plan filing for the proposed subdivision named "New Access Area."

In accordance with M.G.L. c. 40A, § 6 and Sections 2.05(c) and 2.06 of the Rules, this definitive subdivision plan application substantially conforms to, and is being filed within seven months of, the Applicant's preliminary subdivision plan, which was filed on April 28, 2016, and received Planning Board approval at a hearing held on June 13, 2016.

The following are enclosed for your review:

- One (1) original duly executed Application for Approval of a Definitive Subdivision Plan (Form B), and twelve (12) copies of the same;
- Twelve (12) contact prints of the plan sets entitled "Definitive Plan for the Subdivision of Land, Gouin Village, Nantucket, MA," dated August 11, 2016 and prepared in accordance with Section 2.06(b) of the Rules (the "**Definitive Subdivision Plan**");
- Twelve (12) copies of the report entitled "Site Analysis Report, Gouin Village, Nantucket, MA," together with the attached Site Analysis Map, dated August 11 2016, prepared by R.J. O'Connell & Associates, Inc.;

- Twelve (12) copies of the report entitled "Gouin Village Subdivision, Nantucket, Massachusetts, Stormwater Drainage Report" dated August 11, 2016, prepared by R.J. O'Connell & Associates, Inc.;

- One (1) compact disk containing PDFs of the Definitive Subdivision Plan and the accompanying reports;

- An Abutter's List certified by the Town of Nantucket Assessor, three (3) sets of mailing labels, and a check payable to the Pitney Bowes Reserved Fund in the amount of $303.30 (45 abutters x $6.74);

- A check made payable to the Town of Nantucket representing the base filing fee of $250.00, plus additional linear foot fee of $238.00 (476 feet x $0.50) and per lot fee of $300 (4 lots x $75.00), for a total fee of $788.00; and

- A check made payable to the Town of Nantucket in the amount of $952.00, representing the required Engineering Escrow.

Following this submission, (i) two (2) contact prints of the Definitive Subdivision Plan will be filed with the Nantucket Board of Health, as required under Section 2.06(c) of the Rules and (ii) written notice, accompanied by a copy of this application, will be delivered to the Nantucket Town Clerk, as required under Section 2.06 of the Rules, certifying that the Definitive Subdivision Plan was filed.

In accordance with Sections 2.06(a)(8) and 2.06(f) of the Rules, following this submission, the Applicant will review the appropriate performance guarantee mechanisms with the Planning Board.

Kindly acknowledge receipt of the enclosed submission by signing the duplicate copy of this letter. Do not hesitate to contact me if you require any further documentation or information regarding this submission.

Sincerely,

RJ O'CONNELL & ASSOCIATES

Stephen Glowacki
Associate Principal

cc: Frank Kovac – Nantucket Cottage Hospital
John Twohig – Goulston & Storrs
Joseph Sheridan - Goulston & Storrs
Rich O'Connell – RJ O'Connell & Associates

ACKNOWLEDGED:

TOWN OF NANTUCKET:

By:_____
Name:
Title:
Duly authorized

Application for Approval of a Definitive Subdivision Plan (Form B)

Form B

Application for Approval of a Definitive Subdivision Plan (AR)

File one completed form with the Planning Board and one copy with the Town Clerk.

Date: August 11, 2016

To the Planning Board of Nantucket:

The undersigned, being the applicant as defined under Chapter 41, Section 81-L, for approval of a proposed subdivision shown on a plan entitled Definitive Plan for the Subdivision of Land: Gouin Village designed by RJ O'Connell & Associates, Inc. dated August 11, 2016, and described as follows: located on Vesper Lane _____, number of lots proposed 4, total acreage of tract +/- 6.80 Ac., hereby submits said plan as a **definitive** plan in accordance with the *Rules and Regulations Governing the Subdivision of Land* of the Nantucket Planning Board and makes application to the Board for approval of said plan.

The undersigned's title to said land is derived from US of America c/o US Coast Guard by deed dated July 14, 1981 and recorded in the Nantucket Registry of Deeds Book see attached, Page _____, registered in the Nantucket Registry District of the Land Court, Certificate of Title # _____ and shown on Nantucket Assessor's Map # 55, Parcel 247,247.1 & 248, and said land is free of encumbrances except for the following: (See attached)

Said plan ⊗ has ❍ has not evolved from a preliminary plan submitted to the Board on April 27, 2016 (date) and ❍ approved ❍ disapproved on _____ (date).

The undersigned hereby applies for the approval of said **definitive** plan by the Board, in belief that the plan conforms to the Board's *Rules and Regulations*.

Name(s) and address(es) of the Applicant(s):
(to include all the names and addresses of the principals of the owner entity such as principal officers of the corporation, trustees of a trust or partners of a partnership)

Nantucket Cottage Hospital, 57 Prospect Street, Nantucket, MA 02554

Name of owner(s): Nantucket Cottage Hospital - Frank Kovac

Address of owner(s): 57 Prospect Street, Nantucket, MA 02554

I hereby certify that the applicant(s) listed above have been authorized by me to file a subdivision plan with the Planning Board on property that I own.

Owner's signature

Received by Town Clerk:

Date: _____

Time: _____

Received by Board of Health:

Date: _____

Time: _____

Planning Board File #_____

Parcel 55-248
United States Coast Guard
Deed Bk. 118, Pg. 448

Parcel 55-247
University of Massachusetts
Deed Bk. 186, Pg. 317

Parcel 55-247.1
Nantucket Cottage Hospital
Deed Bk. 184, Pg. 112

DEED

KNOW ALL MEN BY THESE PRESENTS: That the UNITED STATES OF AMERICA acting by and through the Secretary of Health and Human Services by the Principal Regional Official of the Department of Health and Human Services, Region I, under and pursuant to the powers and authorities contained in the Federal Property and Administrative Services Act of 1949 (63 Stat. 377), as amended, the Civil Rights Act of 1964, and the regulations promulgated thereunder and the Department of Health and Human Services statements of Organization and Delegation of Authority, for and in consideration of the observance and performance by the Nantucket Cottage Hospital, So. Prospect Street, Nantucket, Massachusetts, of the covenants, conditions, reservations, and restrictions hereinafter contained and for other valuable consideration less than $100.00 grants to the said Grantee, its successors and assigns, subject to the covenants, conditions, reservations, and restrictions hereinafter set forth a certain parcel of real estate on Nantucket Island, in the Commonwealth of Massachusetts, said parcel being described more particularly as follows:

A certain parcel of land with the buildings and improvements thereon, situated in the Town of Nantucket, Commonwealth of Massachusetts, and more particularly described as follows:

Beginning at the most northerly point of the parcel described as Lot 1 on a May 5, 1978 plan prepared by Shugrue and Hart, Inc.,

thence running S°74 36'57" E for a distance of 500.05 feet;
thence running S°17 19'13" W for a distance of 120.92 feet;
thence running N°81 29'00" W for a distance of 491.00 feet;
thence running N°12 40'43" E for a distance of 179.76 feet;
to the point of beginning.

Said parcel containing approximately 1.70 acres, more or less.

Together with a permanent right of way for ingress and egress over established roads situated on retained Government property.

Together, also, with a permanent right of way for ingress and egress over established roads situated on the parcel of land described as Lot 2 on the aforesaid May 5, 1978 plan by Shugrue and Hart, Inc.

Together, also, with permanent easements for utility companies to operate, maintain, repair and replace certain of the existing electric and water lines located on both land retained by the Government as well as land formerly owned by the Government so that continuous and uninterrupted utility service may be furnished to said parcel.

Together, also, with permanent easements for utility companies to operate, maintain, repair and replace certain of the existing electric and water lines located on Lot 2 on the aforesaid May 5, 1978 plan by Shugrue and Hart, Inc. so that continuous and uninterrupted utility service may be provided to Lot 1.

Together, also, with an easement in common with the owner of Lot 2 on the aforesaid May 5, 1978 plan by Shugrue and Hart, Inc., for the operation, use maintenance, repair, and replacement

of those sewage lines and facilities extending from Lot 1 and Lot 2 on the aforesaid Shugrue and Hart plan to a certain manhole on land retained by the Government as shown on a plan entitled "Utility Plan, Family Housing Naval Facility, Nantucket, Massachusetts (SIC)" bearing drawing number U-1,69-616. (The remainder of the sewage system is retained by the Government.)

In conjunction with the above described sewage easement, the Grantee is covenanted the right of continued and uninterrupted transmission of sewage through the sewage system located on Government retained land subject to the following conditions:

A) The Grantee shall bear sole responsibility for compliance with standards established by local sewage authorities and for any charges or assessments imposed by such authorities with respect to the quantity and quality of sewage which it generates. The Grantee shall also comply with standards or regulations of cognizant agencies of the Federal, State and Local Governments relating to sewage disposal and treatment.

B) Such covenant shall only cover sewage service to existing structures. No connection of any additional structures to the sewage system shall be made without the prior written approval of the Government. Such approval shall not be granted where quantities to be discharged would be in excess of existing or planned system capabilities as determined by the Government.

Said property conveyed hereby was declared surplus and was assigned to the Department of Health and Human Services for public health purposes pursuant to the provisions of the aforementioned Federal Property and Administrative Services Act of 1949, and of applicable rules, regulations and orders.

This Deed is executed and delivered to the Grantee, its successors and assigns, without covenants or warranties by or on behalf of the UNITED STATES OF AMERICA whatsoever, either express or implied.

And this Deed is made and accepted upon each of the following conditions subsequent which shall be binding upon and enforceable against the Grantee, its successors and assigns, each of them as follows:

1. That for a period of thirty (30) years from the date of this Deed the above described property herein conveyed shall be utilized continuously in the manner and for the public health purposes set forth in the approved program and plan contained in the application of the Grantee, dated April 18, 1978 and any amendments thereto and for no other purpose.

2. That during the aforesaid period of thirty (30) years the Grantee will resell, lease, mortgage or encumber or otherwise dispose of the above described property, or any part thereof or interest therein only as the Department of Health and Human Services, or its successor in function, in accordance with its existing regulations, may authorize in writing.

3. That one year from the date of this Deed and annually thereafter for the aforesaid period of thirty (30) years unless the Department of Health and Human Services or its successor in function, otherwise directs, the Grantee will file with the Department of Health and Human Services or its successor in function, reports on the operation and maintenance of the above described property and will furnish as requested such other pertinent data evidencing such continuous use of the property herein conveyed for the purpose specified in the above identified application.

4. That during the aforesaid period of thirty (30) years the Grantee will at all times be and remain a tax-supported organization or non-profit institution, organization, or association exempt from taxation under Section 101(6) of the Internal Revenue Code of 1939 or Section 501(c)(3) of the Internal Revenue Code of 1954.

5. That for the period during which the above described property is used for a purpose for which the Federal financial assistance is extended by the Department or for another purpose involving the provision of similar services or benefits, the Grantee hereby agrees that it will comply with the requirements of Title VI of the Civil Rights Act of 1964 (P.L. 88-352), Section 606 of the Federal Property and Administrative Services Act of 1949, as added by P.L. 94-519, Title IX of the Education Amendments of 1972 (P.L. 92-318), and Section 844 of the Education Amendments of 1974 (P.L. 93-380), and Section 504 Of the Rehabilitation Act of 1973 (P.L. 93-112) and all requirements imposed by or pursuant to the Regulations of the Department of Health and Human Services (45 C.F.R. Parts 80, 84, and 86) issued pursuant to said Acts and as in effect on the date of this Deed, to the end that, in accordance with said Act and Regulations, no person in the United States shall, on the basis of race, color, national origin, sex, or handicap, be excluded from participation in, be denied the benefits of , or otherwise be subjected to discrimination under the program and plan referred to in condition numbered 1 above or under any other program or activity of the Grantee, its successors or assigns, to which such Act and Regulations apply by reason of this conveyance.

In the event of breach of any of the conditions set forth above, whether caused by the legal or other inability of the Grantee, its successor or assigns, to perform any of the obligations herein set forth, all right, title and interest in and to the above described property shall, at the option of the United States of America revert to and become the property of the UNITED STATES OF AMERICA, which shall have an immediate right of entry thereon, and the Grantee, its

successors and assigns, shall forfeit all right, title and interest in and to the above described property and in any and all tenements, hereditaments, and appurtenances thereunto belonging: PROVIDED, HOWEVER, that the failure of the Department of Health and Human Services or its successor in function, to insist in any one or more instances upon complete performance of any of said conditions shall not be construed as a waiver or a relinquishment of the future performance of any such conditions, but the obligations of the Grantee with respect to such future performance shall continue in full force and effect, PROVIDED FURTHER, that in the event the UNITED STATES OF AMERICA fails to exercise its option to reenter the premises for any such breach of conditions subsequent numbered 1,2,3, or 4, herein within 31 years from the date of this conveyance, conditions numbered 1,2,3, or 4 herein, together with all rights of the UNITED STATES OF AMERICA to reenter in this paragraph provided with respect to conditions numbered 1,2,3, or 4 herein, shall, as of that date, terminate and be extinguished: PROVIDED FURTHER, that the expiration of conditions 1,2,3, and 4, and the right to reenter shall not affect the obligation of the Grantee, its successor and assigns with respect to condition numbered 5 herein or the right reserved to the UNITED STATES OF AMERICA to reenter for breach of said conditions.

Further in the event of a breach of conditions 1-5, the Grantor or its successor in function will, at its option, (1) have the right to assess and collect the unamortized portion of the then current market value of the property for the period during which said property is not used in the program and plan of use approved by the Grantor: or (2) have the right to extend the restrictions period for the conditions subsequent in this instrument equal to each period the property is not used in the program and plan of use approved by the Grantor.

In the event title to the above described premises is reverted to the UNITED STATES OF AMERICA for noncompliance or voluntarily reconveyed in lieu of reverter, the Grantee, its successors and assigns, at the option of the Department of Health and Human Services, or its successor in function, shall be responsible and shall be required to reimburse the UNITED STATES OF AMERICA for the decreased value of the above described property not due to reasonable wear and tear, acts of God and alterations and conversions made by the Grantee to adapt the property to the public health use for which the property was acquired. UNITED STATES OF AMERICA shall, in addition thereto, be reimbursed for such damages including such costs as may be incurred in recovering title to or possession of the above described property, as it may sustain as a result of the noncompliance. The Grantee, by the acceptance of this Deed covenants and agrees for itself, and its successors and assigns that in the event the UNITED STATES OF AMERICA exercises its option to revert all right, title and interest in the property to it, then the Grantee shall provide protection and maintenance

of said property at all times until such time as the title is actually reverted to the United States of America, including the period of any notice of intent to revert. Such protection and maintenance shall, at a minimum conform to the standards prescribed by General Services Administration in its regulations FPMR 10147.4913 (41 C.F.R. Part 101) in effect as of the date of this Deed, a copy of which is attached to the Grantee's application dated April 18, 1978, previously incorporated herein.

The Grantee may secure abrogation of the conditions subsequent numbered 1, 2, 3, and 4 herein by:

a. Obtaining the consent of the Department of Health and Human Services or its successor in function; and

b. Payment to the United States of America of 1/360th of the percentage public benefit allowance granted of the fair market value, as of the date of such requested abrogation, of that portion of the property to be released for each month of the period to be abrogated.

The Grantee, by acceptance of this Deed covenants and agrees for itself, its successors and assigns, and every successor in interest to the property herein conveyed or any part thereof--which covenant shall attach to and run with the land for so long as the property herein conveyed is used for a purpose for which the Federal financial assistance is extended by the Department or for another purpose involving the provisions of similar services or benefits and which covenant shall in any event, and without regard to technical classification or designation, legal or otherwise, be binding to the fullest extent permitted by law and equity, for the benefit and in favor of and enforceable by the UNITED STATES OF AMERICA and its successors against the Grantee, its successors and assigns, and every successor in interest to the property, or any part thereof--that it will comply with Title VI of the Civil Rights Act of 1964 (P.L. 88-352), Section 606 of the Federal Property and Administrative Services Act of 1949, as added by P.L. 94-519, Title IX of the Education Amendments of 1972 (P.L. 92-318) and Section 844 of the Education Amendments of 1974 (P.L. 93-380) in relation to education, and Section 504 of the Rehabilitation Act of 1973 (P.L. 93-112) and all requirements imposed by or pursuant to said Acts and as in effect on the date of this Deed, to the end that, in accordance with said Acts and Regulations, no person in the United States shall, on the basis of race,

color, national origin, sex, or handicap be excluded from participation in, be denied benefits of, or be otherwise subjected to discrimination under the program and plan referred to in condition 1 above or under any other program or activity of the Grantee, its successors or assigns, to which said Acts and Regulations apply by reason of this conveyance.

The Grantee, by the acceptance of this Deed, covenants and agrees for itself, its successors and assigns, that in the event the property hereby conveyed is sold, leased, mortgaged, encumbered, or otherwise disposed of, or is used for purposes other than those set forth in the above identified program and plan without the consent of the Department of Health and Human Services, all revenues or the reasonable value, as determined by said Department or benefits to the Grantee deriving directly or indirectly from such sale, lease, mortgage, encumbrance, disposal, or use (or the reasonable value as determined by said Department or any other unauthorized use) shall be considered to have been received and held in trust by the Grantee for the UNITED STATES OF AMERICA and shall be subject to the direction and control of said Department.

IN WITNESS WHEREOF, the UNITED STATES OF AMERICA has caused these present to be executed this 14th day of July , 1981.

UNITED STATES OF AMERICA
Acting by and through the Secretary
of Health and Human Services

WITNESSES:

Warren M. Myers
John P. Foster

BY: Claire P. Monier
Claire P. Monier
Director, Intergovernmental Affairs
Department of Health and Human Services

BOOK 184 PAGE 118

ACKNOWLEDGEMENT

COMM. OF MASSACHUSETTS)
COUNTY OF NANTUCKET) DATE: JULY 14, 1981

Before me a Notary Public in and for the Commonwealth of Massachusetts then and there personally appeared Claire P. Manier duly empowered, authorized and delegated by the Secretary of Health and Human Services pursuant to a Delegation of Authority, who signed the foregoing instrument on behalf of the UNITED STATES OF AMERICA and acknowledged the same to be her free act and deed in said capacity and the free act and deed of the UNITED STATES OF AMERICA.

Notary Public
My Commission Expires: WAYNE F. HOLMES NOTARY PUBLIC My Commission Expires February 28, 1986

ACCEPTANCE

The Nantucket Cottage Hospital by acceptance of this Deed hereby accepts and agrees to all the terms, covenants, conditions, reservations, and restrictions contained herein.

BY: Paul I. McNamara
Paul I. McNamara
Administrator
Nantucket Cottage Hospital

WITNESSES:

ACKNOWLEDGEMENT

COMM. OF MASSACHUSETTS)
COUNTY OF NANTUCKET) DATE: JULY 14, 1981

Before me a Notary Public in and for the COMM. OF MASSACHUSETTS then and there personally appeared said Paul I. McNamara duly empowered and authorized, who signed the foregoing instrument on behalf of the Nantucket Cottage Hospital and acknowledged the same to be his free act and deed in his said capacity and the free act and deed of the

Notary Public
My Commission Expires:
WAYNE F. HOLMES NOTARY PUBLIC My Commission Expires February 28, 1986

NANTUCKET COUNTY
Received and Entered
Attest Josiah L. Barnes
JUL 29 1981
8:51 AM Register

List of Encumbrances

1. Lease from the United States of America, lessor to Nantucket NF Quarters, Inc. (now known as Navy Capehart Quarters, Inc., but no certificate of merger/name change is recorded), lessee, dated and recorded August 29, 1961, recorded at Book 121, Page 506 (affects easement area only).

2. Grant of Easement from United States of America to Nantucket Electric Company, dated April; 4, 1979, recorded at Book 170, Page 109 (affects easement area only)

3. Grant of Easement from United States of America to Wannacomet Water Company, dated April; 4, 1979, recorded at Book 170, Page 317, as assigned by the Wannacomet Water Company to the Town of Nantucket, by Assignment dated March 31, 1988, recorded at Book 300, Page 272 (plan not attached to the recorded document).

4. Grant of Easement from United States of America to the County of Nantucket, dated February 23, 1981, recorded at Book 181, Page 69.

5. Terms and provisions of Grant of Easement from the United States of America, dated February 23, 1981, recorded at Book 184, Page 119.

6. Terms and conditions, including a right of reverter, restrictions, and easements set forth deed to Nantucket Cottage Hospital, dated July 14, 1981, recorded at Book 184, Page 112.

7. Rights of others in and to the 30' Way shown on the plan recorded at Plan Book 21, Page 61.

Definitive Plan for the Subdivision of Land, Gouin Village, Nantucket, MA

(Under Separate Cover)

Site Analysis Report, Gouin Village, Nantucket, MA

Site Analysis Report
Gouin Village
Nantucket, MA

Applicant/Owner:
Nantucket Cottage Hospital
57 S. Prospect Street
Nantucket, MA 02554

Prepared by (Engineer):
R.J. O'Connell & Associates, Inc.
80 Montvale Ave., Suite 201
Stoneham, MA 02180

Surveyor:
Blackwell & Associates, Inc.
20 Teasdale Circle
Nantucket, MA 02554

Date: August 11, 2016

Date: August 11, 2016

To: Nantucket Planning Department
2 Fairgrounds Road
Nantucket, MA 02554
Attn: Leslie Woodson Snell

Regarding: Definitive Subdivision Plan – Gouin Village

Site Analysis Report
Gouin Village Subdivision

Overview

RJ O'Connell & Associates, Inc. has prepared this Site Analysis Report for the proposed Gouin Village subdivision located at 16, 18 & 20 Vesper Lane. The three properties are collectively bordered on the north by Vesper Lane, on the south, east and west by residential properties. 16 Vesper Lane is a +/-1.73 acre property currently occupied by Nantucket Cottage Hospital's Community Drop-In Center (one two story, wood building). 18 Vesper Lane is a +/- 1.71 acre property currently occupied by UMass researcher housing (one two story, wood building). 20 Vesper Lane is a +/- 3.35 acre parcel currently occupied by US Coast Guard housing (ten two story, wood buildings and associated garages).

Two of the parcels, 16 and 18 Vesper Lane are located behind 20 Vesper Lane and currently have no street frontage. Access to these two rear properties is provided by Gouin Village Way, a private easement through 20 Vesper Lane. The three parcels will remain under the subdivision process, however the 2 rear parcels will now have frontage on the proposed way. Each lot will reduce in size due to the new right of way lot. The proposed way is a 29 ft. wide paved access road within a 44 ft. wide right-of-way which will convey two-way traffic through the proposed subdivision from Vesper Lane using a tear-drop cul-de-sac layout. The proposed cul-de-sac will be located where a turn-around area exists today on 16 & 18 Vesper Lane. 9' wide street parking will be provided within the paved road area. A 4' sidewalk will be provided on the east side of the proposed way. The redevelopment program will consist of relocating one of the US Coast Guard houses to another location on the 20 Vesper Lane property to accommodate the proposed way.

There are approximately 22 existing unstriped parking spaces in the turn-around area serving 16 & 18 Vesper Lane. The proposed plan provides 17 spaces in this area as well as 17 parallel parking spaces along the west side of the proposed way.

See the attached Site Analysis Map.

Surface Water Resources:

There are no surface water resources or wetlands on or near the three properties. The properties are not located within any flood zones. Best management practices described below will be used during the construction of the proposed way to minimize adverse impacts to the stormwater runoff.

Erosion and sediment control measures, as shown on sheet C-1 of the plan set, will be installed. Measures include a perimeter line of wattles, sediment filter bags in all existing catch basins located on-site and in adjacent streets, and a construction tracking pad (if necessary) to remove sediment from construction vehicles exiting the site. Actions will be taken to control fugitive dust during construction including the use of a watering truck. Please refer to the erosion control notes on sheet C-1 for additional information regarding the prevention of the loss of topsoil during construction.

Ground Water Resources:

The site is located in a Zone II Groundwater Protection Overlay Zone. The hydrologic objective of the site will continue to have no increase in the peak flow from the site area for the 2-year and 25-year return frequency, 24-hour duration rainfalls. This will be achieved by capturing storm runoff from the new subdivision road in a catch basin that will discharge to drywells and infiltrate into the ground. The catch basin and drywell locations are shown on the site plans. As indicated in the Storm Drainage Report, an infiltration rate of 13.9 inches per hour was assumed for the on-site soil based on soil testing conducted for the Nantucket Cottage Hospital project located across Vesper Lane from the site. There will be no on-site subsurface disposal of sewage. The three properties will continue to connect to the municipal sewerage system in Vesper Lane.

Flood Hazard:

As indicated on the attached site analysis map, the project site is not located in any areas subject to flooding.

Vegetative Cover:

The portion of the site occupied by Gouin Village consists of two-story, duplex houses surrounded by manicured lawns, trees and asphalt paved driveways and road. The remainder of the area consists of six, single story buildings surrounded by trees and lawn accessed by a paved roadway. Manicured lawn is the predominant vegetative ground cover on the site.

Traffic Safety and Convenience:

The proposed subdivision has been designed to provide for safe vehicular, bicycle and pedestrian travel and complies with the applicable requirements for emergency vehicle access. The surrounding asphalt paved public roads are of adequate width to ensure the flow and safety of traffic in the area around the new subdivision. The applicant will not tie into the island wide bicycle path system. In lieu of tying in, the applicant will make a contribution, as discussed with Town officials.

A performance guaranty for public improvements will be provided in the form of a covenant pursuant to Form I.

The adjacent Vesper Lane is an existing paved road of variable width (approximately 23' wide) with a closed drainage system consisting of catch basins, manholes and associated piping. The proposed way is a relocation of the existing access currently being provided to Gouin Village and therefore is not anticipated to result in any increase in traffic flow to or from the site.

Development Phasing:

The proposed subdivision road and associated relocated dwelling on the US Coast Guard property (20 Vesper Lane) will be constructed in a single phase. Required infrastructure improvements will be completed concurrently with construction of proposed way.

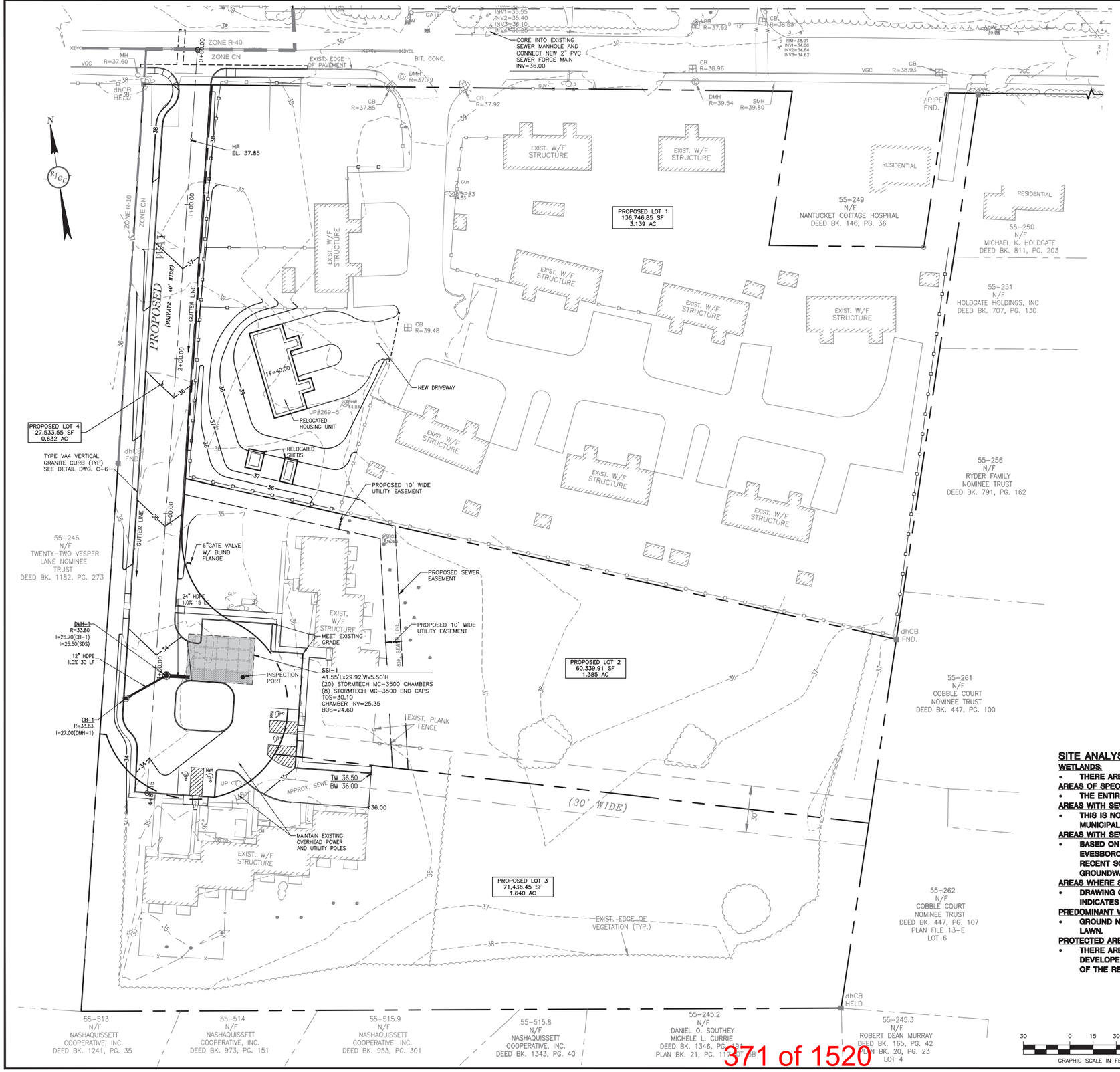
Common Open Spaces:

There will be no common open spaces associated with the project.

Waiver Requests:

The following waivers are being requested for the proposed subdivision:

- No Bicycle Path is proposed and therefore requires a waiver.
- Only one sidewalk is proposed and two are required and therefore requires a waiver.
- No soil testing has been complete at the time of the definitive subdivision submission. The applicant would agree to have soil testing occur and be approved by a peer reviewer prior to the start of construction.
- Portions of existing parking will exist in the cul-de-sac area of the right of way.



SITE ANALYSIS MAP NOTES:

WETLANDS:
- THERE ARE NO WETLANDS OR WETLAND BUFFER ZONES LOCATED ON THE PROJECT SITE.

AREAS OF SPECIAL FLOOD HAZARD:
- THE ENTIRE PROJECT SITE IS LOCATED OUTSIDE ANY AREAS SUBJECT TO FLOODING.

AREAS WITH SEVERE LIMITATIONS FOR ON-SITE SEWAGE SYSTEMS:
- THIS IS NOT APPLICABLE TO THE SITE. THE EXISTING BUILDINGS WILL BE CONNECTED TO THE MUNICIPAL SEWER SYSTEM.

AREAS WITH SEVERE LIMITATIONS TO SEASONAL HIGH WATER TABLE:
- BASED ON THE USDA SOIL SURVEY OF NANTUCKET COUNTY, THE ENTIRE SITE CONSISTS OF EVESBORO SOIL WITH A DEPTH TO HIGH WATER TABLE GREATER THAN 6 FEET BASED ON RECENT SOILS INVESTIGATIONS PERFORMED IN THE AREA INDICATING THAT DEPTH TO GROUNDWATER IS OVER 20 FEET.

AREAS WHERE SPECIAL DRAINAGE, EROSION AND SEDIMENTATION MEASURES WILL BE UNDERTAKEN:
- DRAWING C-1 INDICATES WHERE EROSION CONTROLS ARE TO BE INSTALLED. DRAWING C-2A INDICATES WHERE DRAINAGE MEASURES WILL BE INSTALLED.

PREDOMINANT VEGETATIVE COVER TYPE:
- GROUND NOT COVERED BY EXISTING BUILDINGS AND PAVEMENT CONSISTS OF MANICURED LAWN.

PROTECTED AREAS:
- THERE ARE NO PROTECTED AREAS ON SITE THAT ARE PERMANENTLY KEPT FROM BEING DEVELOPED. EXISTING TREES AND VEGETATION WITHIN THE PROPOSED WAY AND IN THE AREA OF THE RELOCATED HOUSING UNIT WILL BE REMOVED AS REQUIRED FOR CONSTRUCTION.

No.	Revision	Date
1	ISSUED FOR DEFINITIVE SUBDIVISION APPROVAL	08/11/2016

Seal:

Designed by:	SPG
Drawn by:	AKC
Checked by:	JJS
Scale:	1"=30'
Date:	08/11/2016

Prepared for:

NANTUCKET COTTAGE HOSPITAL

57 SOUTH PROSPECT STREET
NANTUCKET, MA 02554
(508) 825-8100

Prepared by:

RJO'CONNELL & ASSOCIATES, INC.
CIVIL ENGINEERS, SURVEYORS & LAND PLANNERS
80 MONTVALE AVE
STONEHAM, MA 02180
781-279-0180
FAX: 781-279-0173

Project Name:

DEFINITIVE SUBDIVISON PLAN FOR THE GOUIN VILLAGE PROPERTIES LOCATED AT 16, 18 & 20 VESPER LANE

Drawing Name:

SITE ANALYSIS MAP

Drawing No.:

C-0

Project No.: 13081

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Drawing name: G:\MA\Nantucket\NED\Nantucket Cottage Hospital\Main\Definitive Subdivision\13081_C-0 Site Analysis Map.dwg
Aug 09, 2016 - 10:39am

Gouin Village Subdivision, Nantucket, Massachusetts, Stormwater Drainage Report

Gouin Village Subdivision
Nantucket, Massachusetts
Storm Drainage Report

Prepared For:

Nantucket Cottage Hospital
57 South Prospect Street
Nantucket, MA 02554

Prepared By:

R.J. O'Connell & Associates
80 Montvale Avenue, Suite 201
Stoneham, MA 02180
Phone: 781-279-0180

Date:

August 11, 2016

RJ O'Connell & Associates, Inc. has prepared a drainage analysis to size the proposed stormwater management system for the proposed roadway for Gouin Village Subdivision in Nantucket, Massachusetts.

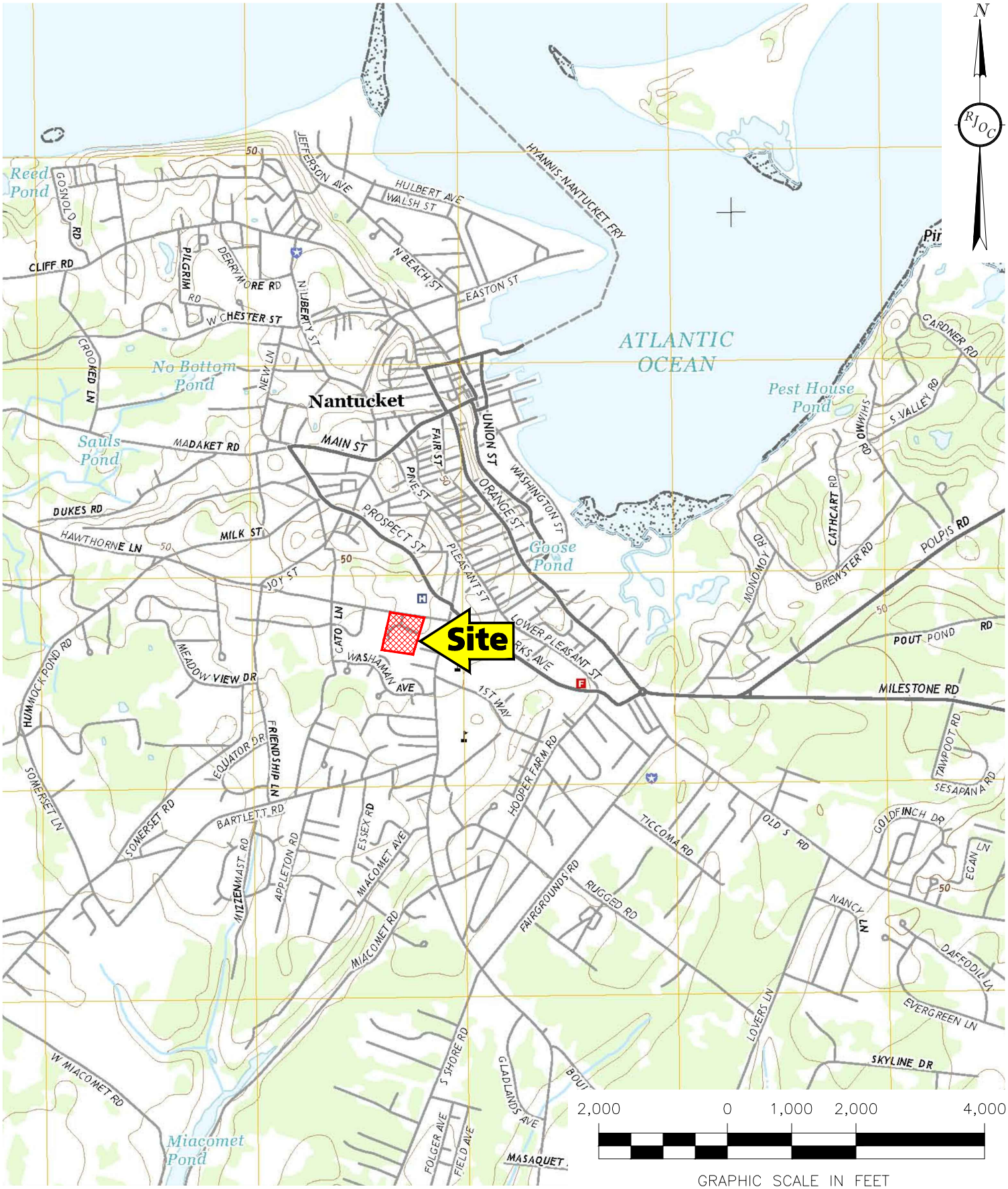
The proposed subdivision is located off Vesper Lane and consists of three parcels; 16, 18 and 20 Vesper Lane (see Figure 1, USGS Map). The three parcels are collectively bordered by Vesper Lane on the north and residential properties on the east, west and south. Two of the parcels, 16 and 18 Vesper Lane are located behind 20 Vesper Lane and currently have no street frontage. Access to these two rear parcels is provided by Gouin Village Way, a private easement through 20 Vesper Lane. The proposed subdivision road will be a 29 ft. wide two-way, bituminous concrete paved road within a 44 ft right-of-way. The road will terminate in a "tear-drop" cul-de-sac located where a turnaround area currently exists on 16 and 18 Vesper Lane. Nine (9) ft. wide parallel street parking and a 4 ft. concrete sidewalk will be provided along the west side of the proposed roadway. As indicated on the June 9, 2014, FEMA Flood Insurance Rate Map, Panel 25019C0088G, Figure 3, the subdivision site is located outside the 100-year flood zone. The Natural Resources Conservation Service (NRCS) determined the predominant soil type on the site as Evesboro sand belonging to Hydrologic Soil Group A (see Figure 2, NRCS Soil Survey Map).

Stormwater runoff from the proposed subdivision roadway and a portion of the abutting lots will be collected in a catch basin located at the low point of the road and discharge to a subsurface infiltration system where it will be infiltrated into the ground. The system is designed to hold and infiltrate storm runoff from the 25 year, 24-hour, Type III rainfall of 5.8 inches. The computer program HydroCAD version 10.00, based on NRCS Technical Release 20 (TR 20) methodology, was used to determine the runoff hydrograph and peak discharge from the roadway and route the hydrograph through the subsurface infiltration system to determine its required size.

ADS Stormtech MC-3500 chambers are utilized to hold and infiltrate stormwater runoff from the 25-year storm. The subsurface infiltration system consists of several rows of corrugated thermoplastic Stormtech chambers surrounded by crushed stone. The chambers and surrounding stone provide storage of stormwater runoff until it can infiltrate into the surrounding soil. An infiltration rate of 13.9 inches per hour was assumed for the on-site soil based on soil testing conducted for the Nantucket Cottage Hospital project located across Vesper Lane from the site. The HydroCAD analysis results in 4 rows of 5 chambers, which, when combined with the voids in the surrounding stone, provide 0.095 acre-feet storage capacity for storm runoff. The overall field dimensions, including the surrounding crushed stone are, 41.55' long by 29.92' wide by 5.5' high. This system, consisting of the proposed catch basin, isolator row and Stormtech chambers, will intercept and provide treatment, storage and groundwater recharge of stormwater runoff from the proposed subdivision roadway and contributory portions of adjacent lots in accordance with the Nantucket Rules and Regulations Governing the Subdivision of Land.

APPENDIX A

Figures



No.	REVISION	DATE

Designed by:	CNM
Drawn by:	CNM
Checked by:	SPG
Scale:	1"=2,000'
Date:	07/19/2016

Prepared by:

RJO'CONNELL & ASSOCIATES, INC.
CIVIL ENGINEERS, SURVEYORS & LAND PLANNERS
80 MONTVALE AVE
STONEHAM, MA 02180
PHONE: 781-279-0180
FAX: 781-279-0173

Project Name:
DEFINITIVE SUBDIVISION PLAN FOR THE GOUIN VILLAGE PROPERTIES LOCATED AT 16, 18 & 20 VESPER LANE NANTUCKET, MA

Drawing Name:
USGS MAP

Drawing No.:
FIG-1

Project No.: 13081

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Drawing name: G:\MA\Nantucket\NED\Nantucket Cottage Hospital\Reports\Stormwater Report - Definitive Subdivision\Figures\13081_FIG-1 USGS Map.dwg
Jul 26, 2016 – 9:30am

HYDROLOGIC SOIL GROUP		
MAP UNIT SYMBOL	MAP UNIT NAME	RATING
294A	EVESBORO SAND 0-3% SLOPES	A
294B	EVESBORO SAND 3-8% SLOPES	A
295A	KLEJ AND POMPTON SOILS 0-3% SLOPES	A/D

	Date
	Revision
	No.

Designed by:	CNM
Drawn by:	CNM
Checked by:	SPG
Scale:	N.T.S.
Date:	07/19/2016

Prepared For:

NANTUCKET COTTAGE HOSPITAL

57 SOUTH PROSPECT STREET
NANTUCKET, MA 02554
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Prepared By:

RJO'CONNELL & ASSOCIATES, INC.
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PHONE: (781) 279-0180
FAX: (781) 279-0173

Project Name:

DEFINITIVE SUBDIVISION PLAN FOR THE GOUIN VILLAGE PROPERTIES LOCATED AT 16, 18 & 20 VESPER LANE NANTUCKET, MA

Drawing Name:

FEMA FLOOD INSURANCE RATE MAP

Drawing No.:

FIG-2

Project No.: 13081

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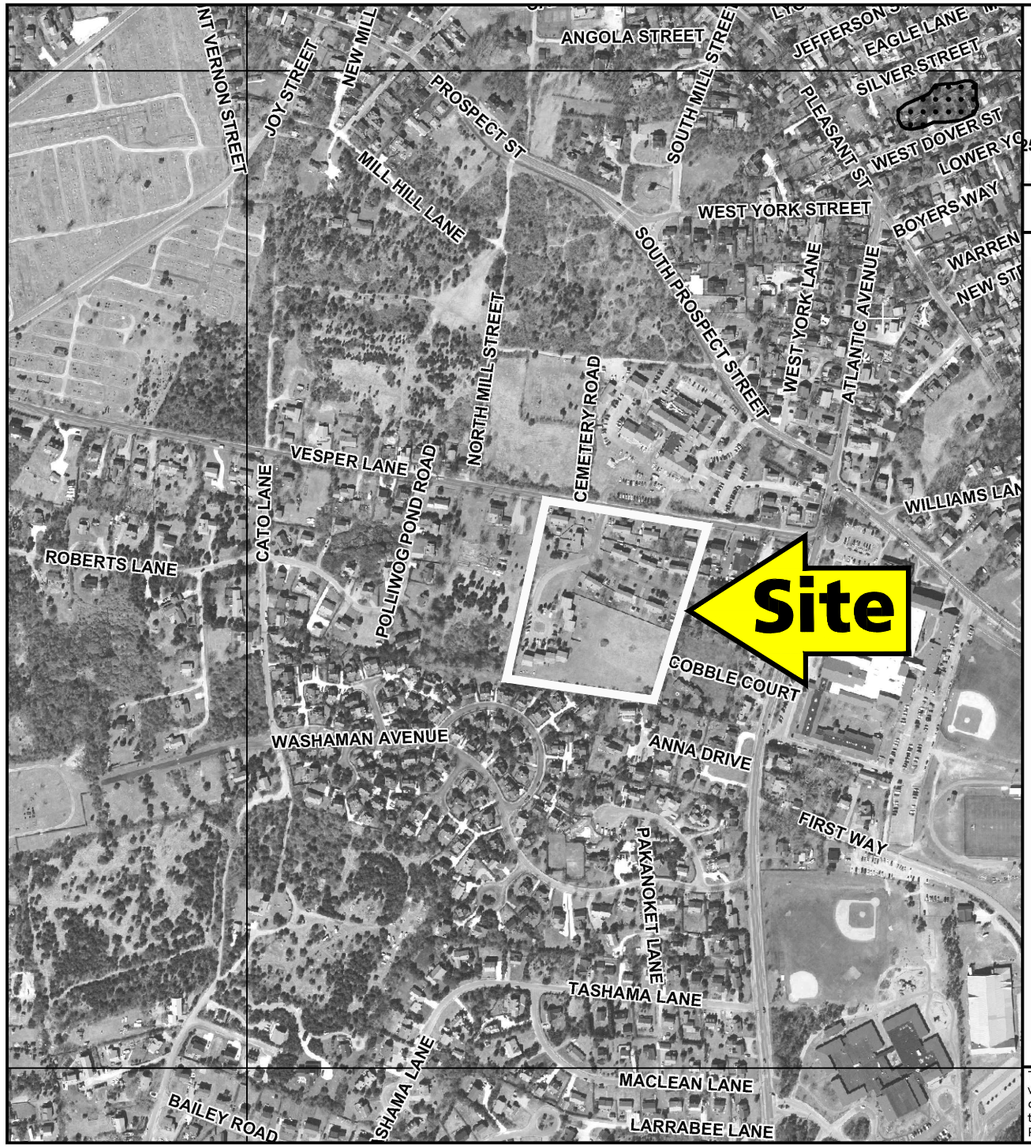
Drawing name: G:\MA\Nantucket\NED\Nantucket Cottage Hospital\Reports\Stormwater Report - Definitive Subdivision\Figures\13081_FIG-2 Soils Map.dwg
Jul 26, 2016 - 9:33am



MAP SCALE 1" = 500'

250 0 500 1000 FEET

NFIP

PANEL 0088G

FIRM

FLOOD INSURANCE RATE MAP

NANTUCKET COUNTY, MASSACHUSETTS
(ALL JURISDICTIONS)

PANEL 88 OF 177
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
NANTUCKET, TOWN OF	250230	0088	G

-NOTE-
THIS MAP INCLUDES BOUNDARIES OF THE COASTAL BARRIER RESOURCES SYSTEM ESTABLISHED UNDER THE COASTAL BARRIER RESOURCES ACT OF 1982 AND/OR SUBSEQUENT ENABLING LEGISLATION.

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
25019C0088G

EFFECTIVE DATE
JUNE 9, 2014

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

N

RJOC

No.	Revision	Date

Designed by:	CNM
Drawn by:	CNM
Checked by:	SPG
Scale:	AS SHOWN
Date:	07/19/2016

Prepared For:

NANTUCKET COTTAGE HOSPITAL
57 SOUTH PROSPECT STREET
NANTUCKET, MA 02554
PHONE: (508) 825-8100

Prepared By:

RJO'CONNELL & ASSOCIATES, INC.
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FAX: (781) 279-0173

Project Name:

DEFINITIVE SUBDIVISION PLAN FOR THE GOUIN VILLAGE PROPERTIES LOCATED AT 16, 18 & 20 VESPER LANE NANTUCKET, MA

Drawing Name:

FEMA FLOOD INSURANCE RATE MAP

Drawing No.:

FIG-3

Project No.: 13081

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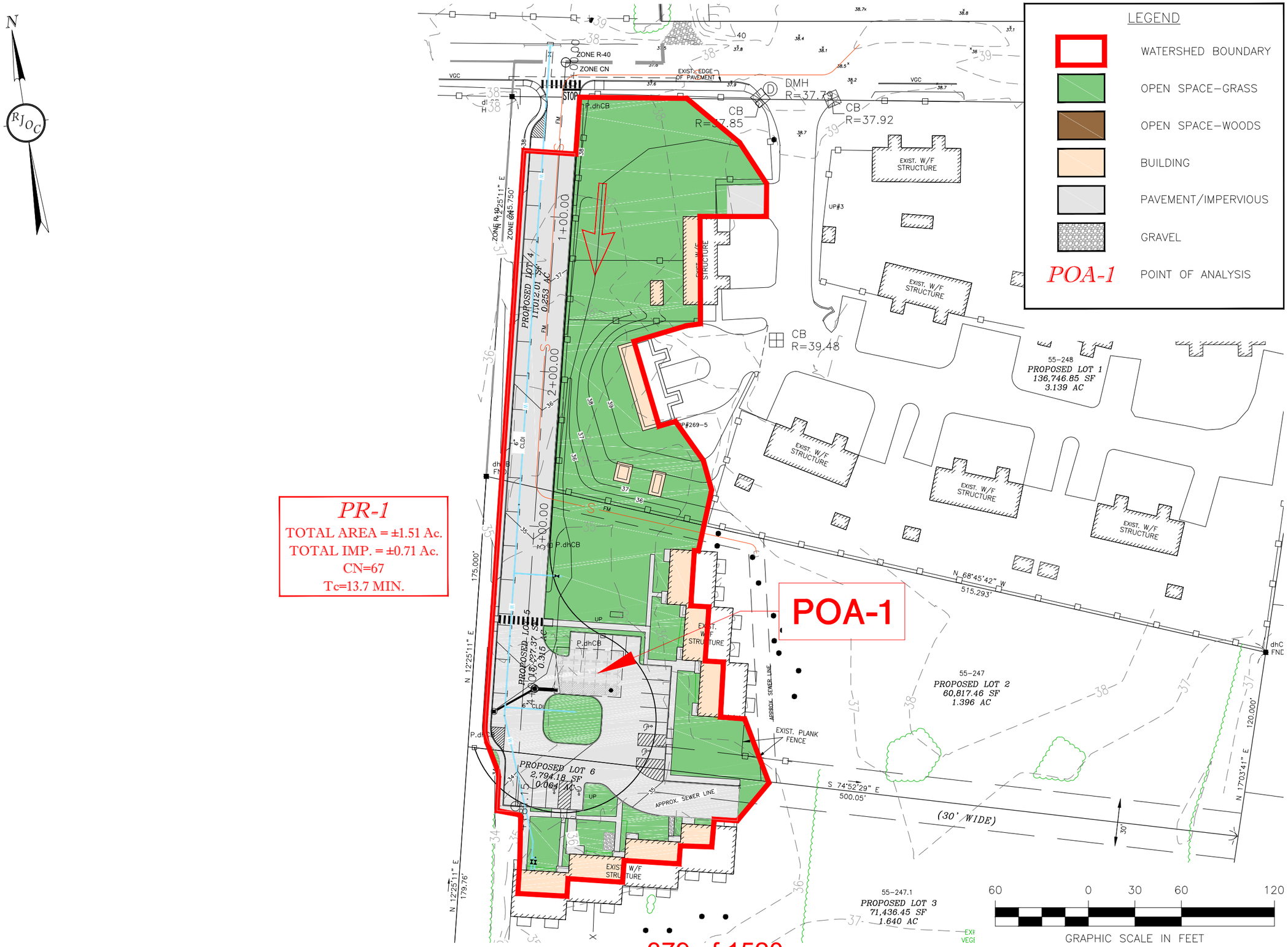
Drawing name: G:\MA\Nantucket\NED\Nantucket Cottage Hospital\Reports\Stormwater Report - Definitive Subdivision\Figures\13081_FIG-3 FEMA Map.dwg
Jul 26, 2016 - 9:39am



No.	Revision	Date

Designed by:	CNM
Drawn by:	CNM
Checked by:	SPG
Scale:	1"=60'
Date:	07/19/2016

Prepared For:

NANTUCKET COTTAGE HOSPITAL
57 SOUTH PROSPECT STREET
NANTUCKET, MA 02554
PHONE: (508) 825-8100

Prepared By:

RJO'CONNELL & ASSOCIATES, INC.
CIVIL ENGINEERS, SURVEYORS & LAND PLANNERS
80 MONTVALE AVE
STONEHAM, MA 02180
PHONE: (781) 279-0180
FAX: (781) 279-0173

Project Name:

DEFINITIVE SUBDIVISION PLAN FOR THE GOUIN VILLAGE PROPERTIES LOCATED AT 16, 18 & 20 VESPER LANE NANTUCKET, MA

Drawing Name:

PROPOSED WATERSHED PLAN

Drawing No.:

FIG-4

Project No.: 13081

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Drawing name: G:\MA\Nantucket\NED\Nantucket Cottage Hospital\Reports\Stormwater Report - Definitive Subdivision\Figures\13081_FIG-4 Proposed Watershed.dwg
Jul 19, 2016 - 14:54pm

APPENDIX B

Computations

Summary for Subcatchment 1S: PR-Area-1

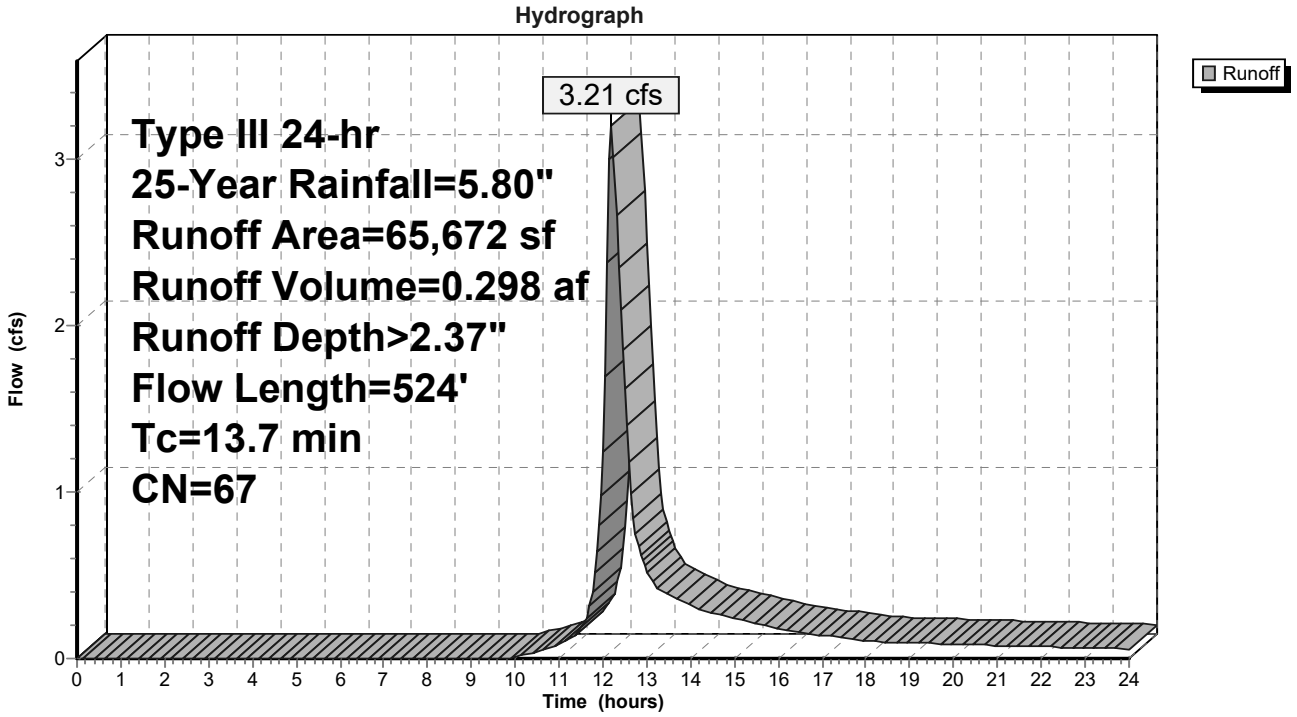
Runoff = 3.21 cfs @ 12.20 hrs, Volume= 0.298 af, Depth> 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
30,955	98	Paved parking, HSG A
0	30	Woods, Good, HSG A
125	76	Gravel roads, HSG A
34,592	39	>75% Grass cover, Good, HSG A
65,672	67	Weighted Average
34,717		52.86% Pervious Area
30,955		47.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	50	0.0230	0.17		**Sheet Flow, Flow over grass** Grass: Short n= 0.150 P2= 3.60"
7.9	354	0.0115	0.75		**Shallow Concentrated Flow, Flow over grass** Short Grass Pasture Kv= 7.0 fps
0.7	56	0.0046	1.38		**Shallow Concentrated Flow, Flow over pavement** Paved Kv= 20.3 fps
0.1	40	0.0100	5.90	4.63	**Pipe Channel, 12" PVC** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
0.0	24	0.0100	9.36	29.41	**Pipe Channel, 24" PVC** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010 PVC, smooth interior
13.7	524	Total			

Subcatchment 1S: PR-Area-1



Summary for Pond 3P: Stormtech 3500

Inflow Area = 1.508 ac, 47.14% Impervious, Inflow Depth > 2.37" for 25-Year event
Inflow = 3.21 cfs @ 12.20 hrs, Volume= 0.298 af
Outflow = 0.74 cfs @ 12.76 hrs, Volume= 0.298 af, Atten= 77%, Lag= 33.3 min
Discarded = 0.74 cfs @ 12.76 hrs, Volume= 0.298 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 29.72' @ 12.76 hrs Surf.Area= 0.029 ac Storage= 0.090 af

Plug-Flow detention time= 46.9 min calculated for 0.298 af (100% of inflow)
Center-of-Mass det. time= 46.8 min (899.3 - 852.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	24.60'	0.041 af	**29.92'W x 41.55'L x 5.50'H Field A** 0.157 af Overall - 0.053 af Embedded = 0.104 af x 40.0% Voids
#2A	25.35'	0.053 af	**ADS_StormTech MC-3500 d +Cap** x 20 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.34 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 4 Rows of 5 Chambers Cap Storage= +14.9 cf x 2 x 4 rows = 119.2 cf
		0.095 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.60'	**13.900 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=0.74 cfs @ 12.76 hrs HW=29.72' (Free Discharge)
↑**1=Exfiltration** (Controls 0.74 cfs)

Pond 3P: Stormtech 3500 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap storage)
Effective Size= 70.4"W x 45.0"H => 15.34 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 4 rows = 119.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

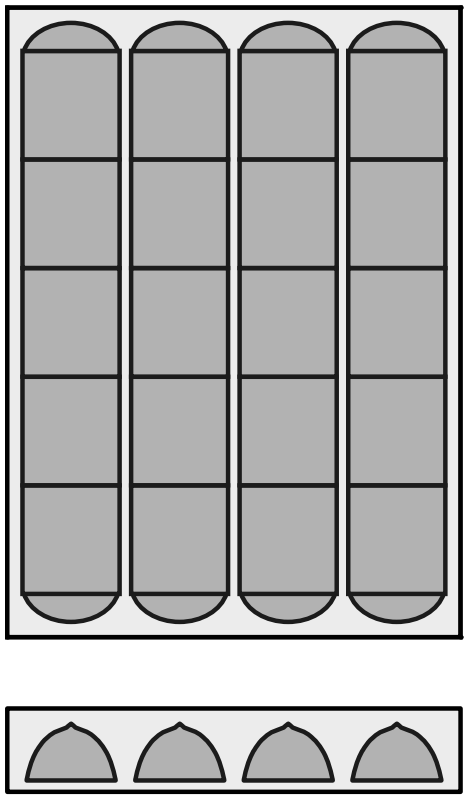
5 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 39.55' Row Length +12.0" End Stone x 2 = 41.55' Base Length
4 Rows x 77.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 29.92' Base Width
9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

20 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 4 Rows = 2,318.2 cf Chamber Storage

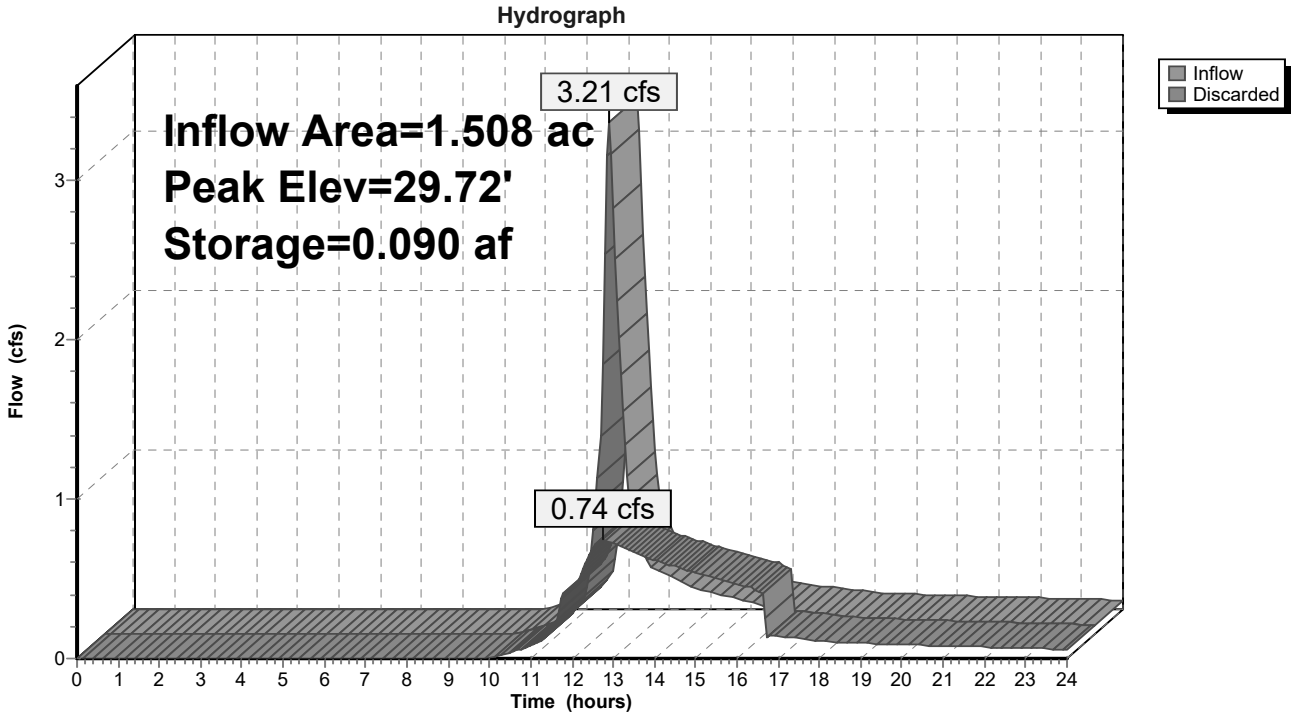
6,836.7 cf Field - 2,318.2 cf Chambers = 4,518.5 cf Stone x 40.0% Voids = 1,807.4 cf Stone Storage

Chamber Storage + Stone Storage = 4,125.6 cf = 0.095 af
Overall Storage Efficiency = 60.3%

20 Chambers
253.2 cy Field
167.4 cy Stone



Pond 3P: Stormtech 3500



Town of Nantucket, Assessor's Office, Abutters Listing

RECEIVED
BOARD OF ASSESSORS

JUL 19 2016

TOWN OF
NANTUCKET, MA

TOWN OF NANTUCKET

PLANNING BOARD

(Subdivision)

LIST OF PARTIES IN INTEREST IN THE MATTER OF THE PETITION OF:

PROPERTY OWNER. NANTUCKET COTTAGE HOSPITAL

MAILING ADDRESS. 57 PROSPECT ST, NANTUCKET, MA 02554

PROPERTY LOCATION. 16 VESPER LANE

ASSESSOR MAP/PARCEL. 65/247.1

SUBMITTED BY. JOSEPH SHERIDAN

SEE ATTACHED PAGES

I certify that the foregoing is a list of persons who are owners immediately abutting, landowners abutting the immediate abutters, and those landowners located directly across all streets and ways bordering the property line of owner's property as they appear on the most recent applicable tax list (pursuant to 2.06a (4) of the Planning Board Subdivision Requirements).

7-20-2016
DATE

Robert M. Hanavan
ASSESSOR'S OFFICE
TOWN OF NANTUCKET

ABBUTTERS LISTING
NANTUCKET, MA

Map	Block	Lot	Unit	Owner~s Name	Co Owner~s Name	Address	City	ST Zip	Parcel Location
55		1	6	SARVIS ROBERT H		11 VESPER LN	NANTUCKET	MA 02554	11 VESPER LN
55		245		MCMEEKIN JOHN C & ANDREW TRS		11 WEST BELLS MILL ROAD	PHILADELPHIA	PA 19118	4 ANNA DR
55		245	2	SOUTHEY DANIEL O & CURRIE MICHELE L		PO BOX 824	NANTUCKET	MA 02554	7 ANNA DR
55		245	3	MURRAY ROBERT DEAN		5 ANNA DR	NANTUCKET	MA 02554	5 ANNA DR
55		245	4	BEAUDETTE RICHELLE		3 ANNA DR	NANTUCKET	MA 02554	3 ANNA DR
55		245	6	MEYER ROBERT W JR		8 ANNA DR	NANTUCKET	MA 02554	8 ANNA DR
55		245	7	FLEMING JOHN & PATRICIA ETAL		6 ANNA DRIVE	NANTUCKET	MA 02584	6 ANNA DR
55		246		SEVRENS NANCY J TRST		PO BOX 428	NANTUCKET	MA 02554	22 VESPER LN
55		247		UNIVERSITY OF MASS	C/O DEPT ENVIRONMENTAL MANAGEM	100 CAMBRIDGE ST	BOSTON	MA 02202	18 VESPER LN
55		247	1	NANTUCKET COTTAGE HOSPITAL		57 PROSPECT ST	NANTUCKET	MA 02554	16 VESPER LN
55		248		U S OF AMERICA	C/O U S COAST GUARD	2 EASTON ST	NANTUCKET	MA 02554	20 VESPER LN
55		256		RYDER RICHARD C & NANCY G TRS	RYDER FAMILY NOMINEE TRUST	15 SURFSIDE RD	NANTUCKET	MA 02554	15 SURFSIDE RD
55		260		OTTISON KARL & SUSAN TRST	RANDOM WINDS REALTY TRUST	170 ORANGE ST	NANTUCKET	MA 02554	3 COBBLE CT
55		261		CHASE NANCY & MINSTRELL NORMA TRST	C/O RAPP STUART W TR	749 MAIN STREET	OSTERVILLE	MA 02655	5 COBBLE CT
55		262		CHASE NANCY & MINSTRELL NORMA	TRUSTEES	6 COBBLE CT	NANTUCKET	MA 02554	8 COBBLE CT
55		265		AUSTIN SALLYANNE		19 SURFSIDE RD	NANTUCKET	MA 02554	19 SURFSIDE RD
55		320		NANTUCKET ISLANDS LAND BANK		22 BROAD STREET	NANTUCKET	MA 02554	9 VESPER LN
55		420		AMARAL PEDRO & JONI		PO BOX 2839	NANTUCKET	MA 02584	28 VESPER LN
55		423	2	DOOLEY DEBORAH A & JOHN P TR		12 POLLIWOG POND RD	NANTUCKET	MA 02554	12 POLLIWOG POND RD
55		423	4	GIBBONS AMANDA LILE		309 STANWICH RD	GREENWICH	CT 06830	10 POLLIWOG POND RD
55		423	5	DAWSON PAUL L & KATHLEEN SALAY		1743 GREAT FALLS STREET	MCLEAN	VA 22101	8 POLLIWOG POND RD
55		423	6	JENNINGS PATRICK & JANE L		55 SMITH DR	WESTWOOD	MA 02090	6 POLLIWOG POND RD
55		423	7	GIERKE VERA I TRST	GOERKE VERA I REV LIV TRST	23 BENFIT STREET	PROVIDENCE	RI 02904	4 POLLIWOG POND RD
55		510	8	NASHAQUISSET COOPERATIVE INC	C/O SEEMAN WILLIAM H & ELLEN V	8 DARROWS RIDGE RD	EAST LYME	CT 06333	43 AUTOPSCOT CI
55		510	9	NASHAQUISSET COOPERATIVE INC	LOOMOS NICHOLAS & PENNY	16 SALEM RD	WELLESLEY	MA 02481	41 AUTOPSCOT CI
55		511		NASHAQUISSET COOPERATIVE INC	C/O DZIAMA JEFFREY R & KIMBERLY N	11 LONGMEADOW RD	WELLESLEY	MA 02482	37 AUTOPSCOT CI
55		512		NASHAQUISSET COOPERATIVE INC	C/O VACEK WILLIAM & MARGARET	94 TALL TIMBERS LANE	GLASTONBURY	CT 06033	33 AUTOPSCOT CI
55		513		NASHAQUISSET COOPERATIVE INC	C/O PICINICH JAMES K & ELENA F	800 WEST END AVE APT 7B	NEW YORK	NY 10025	31 AUTOPSCOT CI
55		514		NASHAQUISSET COOPERATIVE INC	C/O WARMS MARK E	620 LOGANS LN	AUSTIN	TX 78746	29 AUTOPSCOT CI
55		515	8	NASHAQUISSET COOPERATIVE INC	C/O UNDERWOOD SARA M TRST	21 DEERWOOD RD	WELLESLEY	MA 02481	25 AUTOPSCOT CI
55		515	9	NASHAQUISSET COOPERATIVE INC	C/O PEAC FAMILY PARTNERSHIP LLLC	820 FALLS POINT CIRCLE	ALPHARETTA	GA 30022	23 AUTOPSCOT CI
55		516	8	NASHAQUISSET COOPERATIVE INC	C/O LETOSKY TINA M & TULLY KENNETH	75-36 W SHORE ROAD	PT WASHINGTON	NY 11050	19 AUTOPSCOT CI
55		516	9	NASHAQUISSET COOPERATIVE INC	C/O HOLLISTER THOMAS J & DIANE	50 BEACON ST APT #1	BOSTON	MA 02108	21 AUTOPSCOT CI
55		524		NASHAQUISSET COOPERATIVE INC	C/O REYES PROTACIO A & PHYLLIS	177 SOUTH AVE #1	NEW CANAAN	CT 06840	16 AUTOPSCOT CI
55		526	1	NASHAQUISSET COOPERATIVE INC	C/O WOOLLEY NANCY JANE TRST ETAL	32 AUTOPSCOT CIRCLE	NANTUCKET	MA 02554	32 AUTOPSCOT CI
55		526	8	NASHAQUISSET COOPERATIVE INC	C/O WILSON KEITH M & BETSY M	50 MAHOGANY RUN	PITTSFORD	NY 14534	40 AUTOPSCOT CI
55		526	9	NASHAQUISSET COOPERATIVE INC	C/O SUNG-A PARK TRST	41 PHILLIPS ST APT 13	BOSTON	MA 02114	21 WASHAMAN AV
55		527		NASHAQUISSET COOPERATIVE INC	C/O RAHAL RANDALL L & RUTH ANNE	24 AUTOPSCOT CIRCLE	NANTUCKET	MA 02554	24 AUTOPSCOT CI
55		579	9	NASHAQUISSET COOPERATIVE INC	C/O FALCONE KATHERINE B	7100 ARLINGTON CIRCLE #4	NAPLES	FL 34113	4 NETOWA LN

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TOWN OF
NANTUCKET, MA

TOWN OF NANTUCKET

PLANNING BOARD

(Subdivision)

LIST OF PARTIES IN INTEREST IN THE MATTER OF THE PETITION OF:

PROPERTY OWNER UNIVERSITY OF MASSACHUSETTS

MAILING ADDRESS 100 CAMBRIDGE ST, BOSTON, MA 02202

PROPERTY LOCATION 18 VESPER LANE

ASSESSOR MAP/PARCEL 55/247

SUBMITTED BY JOSEPH SHERIDAN

SEE ATTACHED PAGES

I certify that the foregoing is a list of persons who are owners immediately abutting, landowners abutting the immediate abutters, and those landowners located directly across all streets and ways bordering the property line of owner's property as they appear on the most recent applicable tax list (pursuant to 2.06a (4) of the Planning Board Subdivision Requirements).

7-20-2016
DATE

Judith M. Hannayan
ASSESSOR'S OFFICE
TOWN OF NANTUCKET

ABBUTTERS LISTING
NANTUCKET, MA

Map	Block	Lot	Unit	Owner~s Name	Co Owner~s Name	Address	City	ST Zip	Parcel Location
55		3		NANTUCKET COTTAGE HOSPITAL		57 PROSPECT ST	NANTUCKET	MA 02554	57 PROSPECT ST
55		245	2	SOUTHEY DANIEL O & CURRIE MICHELE L		PO BOX 824	NANTUCKET	MA 02554	7 ANNA DR
55		245	3	MURRAY ROBERT DEAN		5 ANNA DR	NANTUCKET	MA 02554	5 ANNA DR
55		246		SEVRENS NANCY J TRST		PO BOX 428	NANTUCKET	MA 02554	22 VESPER LN
55		247		UNIVERSITY OF MASS	C/O DEPT ENVIRONMENTAL MANAGEM	100 CAMBRIDGE ST	BOSTON	MA 02202	18 VESPER LN
55		247	1	NANTUCKET COTTAGE HOSPITAL		57 PROSPECT ST	NANTUCKET	MA 02554	16 VESPER LN
55		248		U S OF AMERICA	C/O U S COAST GUARD	2 EASTON ST	NANTUCKET	MA 02554	20 VESPER LN
55		249		NANTUCKET COTTAGE HOSPITAL		57 PROSPECT ST	NANTUCKET	MA 02554	10 VESPER LN
55		250		HOLDGATE MICHAEL K		PO BOX 869	NANTUCKET	MA 02554	8 VESPER LN
55		251		HOLDGATE HOLDINGS INC		PO BOX 869	NANTUCKET	MA 02554	4 VESPER LN
55		256		RYDER RICHARD C & NANCY G TRS	RYDER FAMILY NOMINEE TRUST	15 SURFSIDE RD	NANTUCKET	MA 02554	15 SURFSIDE RD
55		261		CHASE NANCY & MINSTRELL NORMA TRST	C/O RAPP STUART W TR	749 MAIN STREET	OSTERVILLE	MA 02655	5 COBBLE CT
55		262		CHASE NANCY & MINSTRELL NORMA	TRUSTEES	6 COBBLE CT	NANTUCKET	MA 02554	8 COBBLE CT
55		320		NANTUCKET ISLANDS LAND BANK		22 BROAD STREET	NANTUCKET	MA 02554	9 VESPER LN
55		420		AMARAL PEDRO & JONI		PO BOX 2839	NANTUCKET	MA 02584	28 VESPER LN
55		423	2	DOOLEY DEBORAH A & JOHN P TR		12 POLLIWOG POND RD	NANTUCKET	MA 02554	12 POLLIWOG POND RD
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55		423	6	JENNINGS PATRICK & JANE L		55 SMITH DR	WESTWOOD	MA 02090	6 POLLIWOG POND RD
55		423	7	GIERKE VERA I TRST	GOERKE VERA I REV LIV TRST	23 BENFIT STREET	PROVIDENCE	RI 02904	4 POLLIWOG POND RD
55		510	8	NASHAQUISSET COOPERATIVE INC	C/O SEEMAN WILLIAM H & ELLEN V	8 DARROWS RIDGE RD	EAST LYME	CT 06333	43 AUTOPSCOT CI
55		510	9	NASHAQUISSET COOPERATIVE INC	LOOMOS NICHOLAS & PENNY	16 SALEM RD	WELLESLEY	MA 02481	41 AUTOPSCOT CI
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NANTUCKET, MA

TOWN OF NANTUCKET

PLANNING BOARD

(Subdivision)

LIST OF PARTIES IN INTEREST IN THE MATTER OF THE PETITION OF:

PROPERTY OWNER UNITED STATES OF AMERICA C/O US COAST GUARD

MAILING ADDRESS 2 EASTON ST, NANTUCKET, MA 02554

PROPERTY LOCATION 20 VESPER LANE

ASSESSOR MAP/PARCEL 55/248

SUBMITTED BY JOSEPH SHERIDAN

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7-20-2016
DATE

Gabriel M. Hamayan
ASSESSOR'S OFFICE
TOWN OF NANTUCKET

ABBUTTERS LISTING
NANTUCKET, MA

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55		247		UNIVERSITY OF MASS	C/O DEPT ENVIRONMENTAL MANAGEM	100 CAMBRIDGE ST	BOSTON	MA	02202	18 VESPER LN
55		247	1	NANTUCKET COTTAGE HOSPITAL		57 PROSPECT ST	NANTUCKET	MA	02554	16 VESPER LN
55		248		U S OF AMERICA	C/O U S COAST GUARD	2 EASTON ST	NANTUCKET	MA	02554	20 VESPER LN
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55		252		HOLDGATE HOLDINGS INC		PO BOX 869	NANTUCKET	MA	02554	2 VESPER LN
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55		257		RYDER RICHARD C & KIMBERLEY A TRST		15 SURFSIDE RD	NANTUCKET	MA	02554	13 SURFSIDE RD
55		260		OTTISON KARL & SUSAN TRST	RANDOM WINDS REALTY TRUST	170 ORANGE ST	NANTUCKET	MA	02554	3 COBBLE CT
55		261		CHASE NANCY & MINSTRELL NORMA TRST	C/O RAPP STUART W TR	749 MAIN STREET	OSTERVILLE	MA	02655	5 COBBLE CT
55		262		CHASE NANCY & MINSTRELL NORMA	TRUSTEES	6 COBBLE CT	NANTUCKET	MA	02554	8 COBBLE CT
55		275		U S OF AMERICA		2 EASTON ST	NANTUCKET	MA	02554	VESPER LN
55		320		NANTUCKET ISLANDS LAND BANK		22 BROAD STREET	NANTUCKET	MA	02554	9 VESPER LN
55		420		AMARAL PEDRO & JONI		PO BOX 2839	NANTUCKET	MA	02584	28 VESPER LN
55		423	2	DOOLEY DEBORAH A & JOHN P TR		12 POLLIWOG POND RD	NANTUCKET	MA	02554	12 POLLIWOG POND RD
55		423	4	GIBBONS AMANDA LILE		309 STANWICH RD	GREENWICH	CT	06830	10 POLLIWOG POND RD
55		423	5	DAWSON PAUL L & KATHLEEN SALAY		1743 GREAT FALLS STREET	MCLEAN	VA	22101	8 POLLIWOG POND RD
55		423	6	JENNINGS PATRICK & JANE L		55 SMITH DR	WESTWOOD	MA	02090	6 POLLIWOG POND RD
55		423	7	GIERKE VERA I TRST	GOERKE VERA I REV LIV TRST	23 BENFIT STREET	PROVIDENCE	RI	02904	4 POLLIWOG POND RD

Notice to Nantucket Board of Health

RJ O'CONNELL & ASSOCIATES, INC.
CIVIL ENGINEERS, SURVEYORS & LAND PLANNERS
80 Montvale Ave., Suite 201 Stoneham, MA 02180
phone 781-279-0180 fax 781-279-0173

August 11, 2016

VIA CERTIFIED MAIL

Roberto Santamaria, Health Director
Nantucket Board of Health
3 East Chestnut Street
Nantucket, MA 02554

Re: Gouin Village – Definitive Subdivision Plan Filing

Dear Mr. Santamaria:

As required by Section 2.06(a) of the Rules and Regulations Governing the Subdivision of Land on Nantucket Island, enclosed please find two (2) copies of the Definitive Subdivision Plan for Gouin Village, filed today with the Nantucket Planning Board.

Please do not hesitate to contact me should you require any further documentation or information regarding this submission.

Sincerely,

RJ O'CONNELL & ASSOCIATES

Stephen Glowacki
Associate Principal

cc: Frank Kovac – Nantucket Cottage Hospital
John Twohig – Goulston & Storrs
Joseph Sheridan - Goulston & Storrs
Rich O'Connell – RJ O'Connell & Associates

Notice to Nantucket Town and County Clerk

RJ O'CONNELL & ASSOCIATES, INC.
CIVIL ENGINEERS, SURVEYORS & LAND PLANNERS
80 Montvale Ave., Suite 201 Stoneham, MA 02180
phone 781-279-0180 fax 781-279-0173

August 11, 2016

VIA CERTIFIED MAIL

Catherine Flanagan Stover
Nantucket Town and County Clerk
16 Broad Street
Nantucket, MA 02554

Re: Gouin Village – Notice of Definitive Subdivision Plan Filing

Dear Catherine:

As required by Section 2.06(a)(9) of the Rules and Regulations Governing the Subdivision of Land on Nantucket Island and M.G.L. c. 41, § 81T, I hereby provide notice that a definitive subdivision plan for Gouin Village (16, 18, and 20 Vesper Lane, such properties being owned by Nantucket Cottage Hospital, the University of Massachusetts, and the United States of America, respectively) was sent to the Planning Board for approval earlier today, August 11, 2016, and that copies of the same were contemporaneously provided to the Board of Health.

Enclosed please find copies of the letters submitted to both the Planning Board and the Board of Health for your records.

Please do not hesitate to contact me should you require any further documentation or information regarding this submission.

Sincerely,

RJ O'CONNELL & ASSOCIATES

Stephen Glowacki
Associate Principal

cc: Frank Kovac – Nantucket Cottage Hospital
John Twohig – Goulston & Storrs
Joseph Sheridan - Goulston & Storrs
Rich O'Connell – RJ O'Connell & Associates

Subdivision Filing Fee

Subdivision Filing Fee (payable to the Town of Nantucket)

	$250.00 (Application Fee)
$0.50/lf x 476 lf =	$238.00
$75.00/Lot x 4 Lots =	$300.00
Total Filing Fee =	**$788.00**

Abutter Notification Fee (payable to the Pitney Bowes Reserved Fund)

$6.74/Abutter x 45 Abutters = **$303.30**

Road Inspection Escrow Account (payable to the Town of Nantucket)

$2.00/lf of roadway x 476 lf = **$952.00**

DATE					CHECK NO
08/11/2016					0005538318
VOUCHER INVOICE NUMBER	INVOICE DATE PO NUMBER	GROSS AMOUNT	DISCOUNT	NET AMOUNT	
23225538 081116.303.30 GOUIN VILLAGE	08/11/2016	303.30	0.00	303.30	
MM Client Services (617) 726-2142	AP 1200 MG2369 717104	TOTAL AMOUNT	DISCOUNT	NET AMOUNT	
		303.30	0.00	303.30	

To Remove Document Fold and Tear Along This Perforation

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PARTNERS HealthCare

Bank of America, N.A.
South Portland,ME

52-153
112 ME

DATE
08/11/2016

0005538318

AMOUNT
$303.30

PAY **Three Hundred Three and 30/100 Dollars**

TO THE ORDER OF **PITNEY BOWES INC**
2225 AMERICAN DRIVE
NEENAH WI

AUTHORIZED SIGNATURE
VOID IF NOT CASHED WITHIN 90 DAYS

⑈0005538318⑈ ⑆011201539⑆ 0000800569 78⑈

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PARTNERS P.O. Box 9127
Boston, MA 02129-9127

PITNEY BOWES INC
2225 AMERICAN DRIVE
NEENAH WI 54956-1005

DATE					CHECK NO
08/11/2016					0005538324
VOUCHER INVOICE NUMBER	INVOICE DATE	PO NUMBER	GROSS AMOUNT	DISCOUNT	NET AMOUNT
23225543 081116.952.00 GOUIN VILLAGE	08/11/2016		952.00	0.00	952.00

MM Client Services (617) 726-2142	AP	1200	MG2369	717104	TOTAL AMOUNT		DISCOUNT		NET AMOUNT
					952.00		0.00		952.00

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PARTNERS. HealthCare

Bank of America, N.A.
South Portland,ME

52-153
112 ME

DATE
08/11/2016

0005538324

AMOUNT
$952.00

PAY **Nine Hundred Fifty-Two and 00/100 Dollars**

TO THE ORDER OF **TOWN OF NANTUCKET**
16 BROAD STREET
TOWN CLERK
NANTUCKET **MA**

AUTHORIZED SIGNATURE
VOID IF NOT CASHED WITHIN 90 DAYS

⑈0005538324⑈ ⑆011201539⑆ 0000800569 78⑈

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Boston, MA 02129-9127

TOWN OF NANTUCKET
16 BROAD STREET
TOWN CLERK
NANTUCKET MA 02554

DATE					CHECK NO
08/11/2016					0005538323
VOUCHER INVOICE NUMBER	INVOICE DATE PO NUMBER	GROSS AMOUNT	DISCOUNT	NET AMOUNT	
23225541 081116.788.00 GOUIN VILLAGE	08/11/2016	788.00	0.00	788.00	
MM Client Services (617) 726-2142	AP 1200 MG2369 717104	TOTAL AMOUNT	DISCOUNT	NET AMOUNT	
		788.00	0.00	788.00	

FOLD FOLD

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COPYSAFE CAPTURE® ANTI-FRAUD PROTECTION

PARTNERS. HealthCare

Bank of America, N.A.
South Portland,ME

52-153
112 ME

DATE
08/11/2016

0005538323

AMOUNT
$788.00

PAY **Seven Hundred Eighty-Eight and 00/100 Dollars**

TO THE ORDER OF **TOWN OF NANTUCKET**
16 BROAD STREET
TOWN CLERK
NANTUCKET MA

Peter K. Markell

AUTHORIZED SIGNATURE

VOID IF NOT CASHED WITHIN 90 DAYS

⑈0005538323⑈ ⑆011201539⑆ 00008005697 8⑈

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PARTNERS. P.O. Box 9127
Boston, MA 02129-9127

TOWN OF NANTUCKET
16 BROAD STREET
TOWN CLERK
NANTUCKET MA 02554

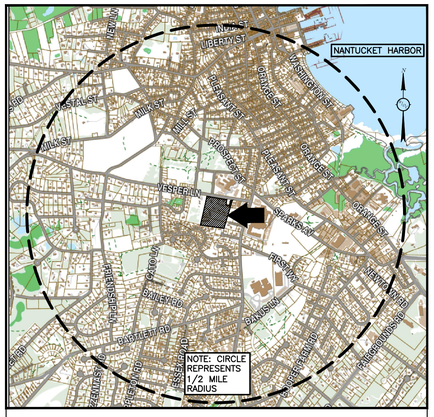
DEFINITIVE PLAN FOR THE SUBDIVISION OF LAND

GOUIN VILLAGE

NANTUCKET, MA

AUGUST 11, 2016

Drawing Index			
Drawing Date	Last Revision	Drawing	Drawing Description
08/11/2016	-	-	COVER SHEET
08/11/2016	-	N-1	NOTES SHEET
08/11/2016	-		DEFINITIVE PLAN OF LAND (PREPARED BY BLACKWELL & ASSOCIATES)
08/11/2016	-	C-1	EROSION AND SEDIMENT CONTROL PLAN
08/11/2016	-	C-2A	GRADING, DRAINAGE AND UTILITY PLAN
08/11/2016	-	C-2B	UTILITY PLAN AND PROFILE
08/11/2016	-	C-3	SITE PLAN
08/11/2016	-	L-1	LANDSCAPE PLAN (BY WILLIAM FLEMING & ASSOCIATES)
08/11/2016	-	C-4	DETAILS - SHEET 1
08/11/2016	-	C-5	DETAILS - SHEET 2
08/11/2016	-	C-6	DETAILS - SHEET 3
08/11/2016	-	C-7	DETAILS - SHEET 4



LOCUS MAP
(Assessors Map 55, Parcels 247, 247-1, 248)
1"=1000'

APPLICANT:

NEW NANTUCKET COTTAGE HOSITAL
C/O NEW ENGLAND DEVELOPMENT
ONE WELLS AVENUE
NEWTON, MA 02459

OWNER(S):

PARCEL 55-248
UNITED STATES COAST GUARD
c/o US COAST GUARD
2 EASTON STREET
NANTUCKET, MA 02554

PARCEL 55-247
UNIVERSITY OF MASSACHUSETTS
c/o DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
100 CAMBRIDGE STREET
BOSTON, MA 02202

PARCEL 55-247-1
NANTUCKET COTTAGE HOSPITAL
57 PROSPECT STREET
NANTUCKET, MA 02554

CONSULTANTS:

OWNER'S LEGAL COUNSEL
GOULSTON & STORRS
400 ATLANTIC AVENUE
BOSTON, MA 02110
(617) 574-6595
ATTN: JOHN TWOHIG

CIVIL ENGINEER
RJ O'CONNELL & ASSOCIATES, INC.
80 MONTVALE AVENUE
STONEHAM, MA 02180
(781) 279-0180
ATTN: STEVE GLOWACKI

SURVEYOR
BLACKWELL & ASSOCIATES, INC.
20 TEASDALE CIRCLE
NANTUCKET, MA 02554
(508) 228-9026
ATTN: JEFF BLACKWELL

LANDSCAPING
WILLIAM FLEMING & ASSOCIATES
5 CENTRAL SQUARE
THIRD FLOOR
STONEHAM, MA 02180
(781) 438-3088
ATTN: WILLIAM F. FLEMING

ISSUED FOR DEFINITIVE SUBDIVISION APPROVAL 08/11/2016

- ☐ NOTICE OF INTENT
- ☐ NOT FOR CONSTRUCTION
- ☐ ISSUED FOR REVIEW
- ☒ ISSUED FOR PERMIT
- ☐ ISSUED FOR BID/PRICING
- ☐ ISSUED FOR CONSTRUCTION

Nantucket Planning Board
APPROVAL UNDER THE SUBDIVISION CONTROL LAW REQUIRED

_____ *Chairman*
_____ *Vice Chairman*
_____ *Board Member*
_____ *Board Member*
_____ *Board Member*

DATE APPROVED: _____
DATE ENDORSED: _____
PLANNING BD. FILE NO.: _____

Drawing name: G:\MA Nantucket\NED\Nantucket Cottage Hospital\Main\Definitive Subdivision\13081_C-0 COVER SHEET.dwg
Aug 10, 2016 - 9:12am

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DEMOLITION NOTES:

1. EXISTING BITUMINOUS CONCRETE PAVEMENT WITHIN THE LIMIT OF WORK SHALL BE PULVERIZED AND STOCKPILED TO BE REUSED AND BLENDED WITH IMPORTED, GRAVEL BASE COURSE MATERIAL IN PAVEMENT AREAS. REUSED BITUMINOUS CONCRETE MATERIAL SHALL MEET THE MATERIAL SPECIFICATION M1.11.0, RECLAIMED PAVEMENT BORROW MATERIAL FOR BASE COURSE, OF THE MassDOT STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AND PROTECTING ALL EXISTING AND NEW SITE DRAINAGE AND UTILITIES WHICH ARE TO REMAIN AND/OR BE CONSTRUCTED.
3. DISPOSAL OF ALL DEMOLISHED MATERIAL MUST BE OFF-ISLAND BY THE CONTRACTOR AND IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REQUIREMENTS.
4. DEMOLITION ACTIVITY ON SITE SHALL BE DONE IN A MANNER SUCH THAT RUNOFF IS DIRECTED TO THE APPROPRIATE SEDIMENT CONTROL MEASURES.
5. THE OWNER TO COMPLETE ABATEMENT OF INDIVIDUAL BUILDINGS PRIOR TO DEMOLITION.
6. PRIOR TO ANY BUILDING DEMOLITION, ALL UTILITIES SERVING THE BUILDING SHALL BE SHUT OFF, CAPPED AND MADE SAFE.
7. DURING DEMOLITION, EXISTING FIRE HYDRANTS ARE TO REMAIN OPERATIONAL.
8. CRUSH ALL BRICK PAVERS AND GRANITE CURBING ON ISLAND AND REUSE AS BASE COURSE MATERIAL.
9. EXISTING DRAIN AND WATER MAIN PIPES TO BE ABANDONED SHALL BE CAPPED AND/OR PLUGGED BY USING BRICKS AND MORTAR, OR PLUGS/CAPS AVAILABLE FROM PIPE SUPPLIERS.
10. WORK INVOLVED IN THE ABANDONMENT OF EXISTING MANHOLES AND CATCH BASINS SHALL BE AS FOLLOWS:
    A. REMOVE EXISTING CASTINGS
    B. REMOVE A MINIMUM OF THE TOP THREE FEET OF THE STRUCTURE.
    C. PLUG ALL PIPES
    D. BACKFILL THE STRUCTURE WITH COMPACTED GRANULAR FILL UP
    E. TO THE BOTTOM OF REQUIRED SURFACE MATERIALS.
12. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY, AND "CALL DIGSAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES AND THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLAN.
13. PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION ACTIVITIES, THE ON-SITE EROSION CONTROL MEASURES MUST BE INSTALLED AND APPROVED BY THE OWNER AND/OR OWNERS REPRESENTATIVE.

EROSION AND SEDIMENT CONTROL NOTES:

1. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY GOVERNING AUTHORITIES.
2. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE CONSTRUCTION PERIOD POLLUTION PREVENTION PLAN (CPPPP) DURING CONSTRUCTION OPERATIONS.
3. PRIOR TO ANY LAND DISTURBANCE ACTIVITIES COMMENCING ON THE SITE, THE CONTRACTOR SHALL PHYSICALLY MARK LIMITS OF WORK (NO LAND DISTURBANCE) ON THE SITE WITH TAPE, SIGNS, OR ORANGE CONSTRUCTION FENCE, SO THAT WORKERS CAN SEE THE AREA TO BE PROTECTED.
4. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL PERIMETER SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED.
5. ALL EXPOSED AREAS SHALL BE STABILIZED OR SEEDED IMMEDIATELY WHEN GRADING OR EXCAVATING ACTIVITIES HAVE PERMANENTLY CEASED.
6. SHOULD GRADING OR EXCAVATION CONSTRUCTION STOP FOR LONGER THAN 14 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.
7. SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF 0.25 INCHES RAINFALL OR GREATER DURING A 24-HOUR PERIOD OR MORE FREQUENTLY IF REQUIRED BY GOVERNING NPDES GENERAL PERMIT. ALL MAINTENANCE REQUIRED BY INSPECTION SHALL COMMENCE WITHIN 24 HOURS AND BE COMPLETED WITHIN 48 HOURS OF REPORT.
8. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE IT SHALL BE THE GENERAL CONTRACTOR'S RESPONSIBILITY TO TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
9. GENERAL CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL REGULATIONS THAT APPLY.
10. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED AS DEEMED NECESSARY BY SITE INSPECTIONS.
11. THE CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
12. SEDIMENT SHALL BE REMOVED FROM FIILTER BAGS AND SILTATION FENCE/WATTLE WHEN IT IS 25% FULL.
13. EROSION CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL SURFACE RESTORATION IS COMPLETE AND SHALL BE MAINTAINED IN GOOD CONDITION AT ALL TIMES.
14. THE CONTRACTOR SHALL PROTECT ADJACENT PROPERTIES FROM ON-SITE CONSTRUCTION ACTIVITIES AND REMOVE ANY SEDIMENT OR DEBRIS DEPOSITED THEREON IMMEDIATELY.
15. STOCKPILES SHALL BE SURROUNDED ON THEIR PERIMETERS WITH STAKED SILT FENCES OR WATTLES TO PREVENT AND/OR CONTROL SILTATION AND EROSION.
16. TOPS OF STOCKPILES SHALL BE COVERED IN SUCH A MANNER THAT STORMWATER DOES NOT INFILTRATE THE MATERIALS AND THEREBY RENDER THE SAME UNSUITABLE FOR FILL USE.
17. THE CONTRACTOR SHALL KEEP ON SITE AT ALL TIMES ADDITIONAL WATTLES AND SILT FENCING FOR INSTALLATION AT THE DIRECTION OF THE ENGINEER TO MITIGATE ANY EMERGENCY CONDITION.
18. THE AREA OR AREAS OF ENTRANCE AND EXIT TO AND FROM THE SITE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. ALL SEDIMENT OR DEBRIS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY. SWEEPING SHALL BE PERFORMED ON AN AS NEEDED BASIS IN ORDER TO KEEP ROADWAY CLEAR OF SEDIMENT.
19. THE CONTRACTOR SHALL ANTICIPATE AND MODIFY EROSION CONTROL MEASURES BASED ON PAST AND CURRENT WEATHER CONDITIONS, SEASON AND EXPECTED FUTURE CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL MINIMIZE THE AREA OF DISTURBED SOIL. EFFORTS SHALL BE MADE TO LIMIT THE TIME OF EXPOSURE OF DISTURBED AREAS.
21. ANY DEWATERING OF EXCAVATIONS NECESSARY DURING CONSTRUCTION SHALL BE COMPLETED IN A MANNER SUCH THAT NO SEDIMENT-LADEN RUNOFF IS DISCHARGED FROM THE PROJECT SITE. PUMP INTAKES SHALL BE ADEQUATELY PROTECTED AND FLOATED ABOVE THE BOTTOM OF THE EXCAVATION TO MINIMIZE CAPTURED SEDIMENT. ALL PUMPED WATER SHALL BE DISCHARGED TO A TEMPORARY STILLING BASIN. THE BASIN SHALL BE OF ADEQUATE SIZE AND CONFIGURATION TO PROVIDE FOR THE COMPLETE REMOVAL OF SEDIMENT FROM THE PUMPED WATER PRIOR TO DISCHARGE FROM THE SITE.
22. IN THE EVENT THAT EXCAVATION DEWATERING IS REQUIRED WITHIN ANY AREA SUBJECT TO JURISDICTION OF THE WETLANDS PROTECTION ACT THE APPLICANT SHALL NOTIFY THE CONSERVATION COMMISSION IN ADVANCE OF SUCH WORK, AND SHALL BE RESPONSIBLE TO ENSURE THAT SUCH WATER IS FREE OF SUSPENDED SOLIDS BEFORE BEING DISCHARGED INTO EITHER A WETLAND RESOURCE AREA OR INTO ANY STORM WATER DRAINAGE SYSTEM. THIS CONDITION APPLIES TO ALL FORMS OF DEWATERING, INCLUDING PUMPING AND TRENCHING.
23. SOIL AND OTHER MATERIALS SHALL NOT BE STOCKPILED OR REDISTRIBUTED, EITHER TEMPORARILY OR PERMANENTLY, IN LOCATIONS OR IN SUCH A MANNER AS WOULD CAUSE SUFFOCATION OF TREE ROOT SYSTEMS.
24. PERMANENT SEEDING SHOULD BE UNDERTAKEN IN THE SPRING FROM MARCH THROUGH MAY, AND IN LATE SUMMER AND EARLY FALL FROM AUGUST TO OCTOBER 15. WHEN SEEDING IS FOUND TO BE IMPRACTICAL, AN APPROPRIATE TEMPORARY MULCH SHALL BE APPLIED. PERMANENT SEEDING MAY BE UNDERTAKEN DURING THE SUMMER IF PLANS PROVIDE FOR ADEQUATE MULCHING AND WATERING.
25. THE CONTRACTOR SHALL USE APPROPRIATE MEASURES TO CONTROL FUGITIVE DUST DURING CONSTRUCTION.

SITE UTILITY NOTES:

1. THE CONTRACTOR IS SPECIFICALLY ADVISED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES, PARTICULARLY WHERE NEW UTILITIES CONNECT TO OR CROSS EXISTING, SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY, AND "DIG SAFE" (1-800-344-7233) AT LEAST TWO (2) WEEKS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES AND THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
2. EXISTING CONDITIONS INFORMATION COMPILED FROM THE FOLLOWING:
    - PLAN OF LAND IN NANTUCKET, MASS., PREPARED BY BLACKWELL & ASSOCIATES, INC., DATED MARCH 25, 2016.
    - ON THE GROUND SURVEY PERFORMED BY R.J. O'CONNELL & ASSOCIATES, INC. BETWEEN AND .
3. ELEVATIONS SHOWN ARE BASED UPON THE NORTH AMERICAN VERTICAL DATUM (NAVD) 1988.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL HORIZONTAL CONTROL POINTS AND VERTICAL BENCH MARKS NECESSARY FOR THE WORK.
5. ALL WATER MAINS SHALL BE INSTALLED WITH A MINIMUM OF 5'-0" FEET OF COVER. GREATER DEPTHS ARE PERMITTED WHERE REQUIRED TO AVOID CONFLICTS WITH OTHER UTILITIES.
6. GENERALLY, WATER MAIN FITTINGS IDENTIFIED ON THIS DRAWING ARE SHOWN FOR INSTALLATION LOCATION PURPOSES. THE CONTRACTOR SHALL NOTE THAT NOT ALL FITTINGS ARE NOTED, SHOWN, OR INDICATED.
7. A MINIMUM OF 10 FEET CLEAR HORIZONTALLY SHALL BE MAINTAINED BETWEEN SANITARY SEWER MAINS AND WATER MAINS. WHENEVER CONDITIONS PREVENT A LATERAL SEPARATION OF 10 FEET TO A WATER MAIN, THE WATER MAIN SHALL BE LAID IN A SEPARATE TRENCH AND THE ELEVATION OF THE CROWN OF THE SEWER SHALL BE AT LEAST 18 INCHES BELOW THE INVERT OF THE WATER MAIN.
8. DOMESTIC WATER SERVICES 2.5" AND SMALLER SHALL BE TYPE K COPPER TUBING AND SHALL BE INSTALLED WITH APPROPRIATELY SIZED CORPORATION STOP WITH APPROVED SADDLE, CURB STOP, AND BOX.
9. ALL WATER MAINS 3" AND LARGER SHALL BE CEMENT LINED DUCTILE IRON – CLASS 52, AND SHALL BE INSTALLED WITH APPROPRIATELY SIZED FITTINGS AND GATE VALVES.
10. DOMESTIC WATER SERVICES SHALL BE INSTALLED WITH APPROPRIATELY SIZED GATE, BOX AND TEE FITTINGS.
11. ALL WATER MAIN APPURTENANCES, MATERIALS, METHODS OF INSTALLATION AND TESTING REQUIREMENTS SHALL MEET OR EXCEED ALL LOCAL MUNICIPAL REQUIREMENTS.
12. PRESSURE AND LEAKAGE TEST, DISINFECTION AND FLUSHING SHALL BE IN ACCORDANCE WITH THE WANNACOMET WATER COMPANY STANDARDS AND REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS IN CONNECTION WITH UTILITY TESTS, FLUSHING AND INSPECTIONS AS REQUIRED BY THE WANNACOMET WATER COMPANY.
13. SEWER FORCE MAIN PIPE SHALL BE POLYVINYL CHLORIDE PIPE (P.V.C.), SDR 21 AND SHALL CONFORM WITH ASTM-D2244 UNLESS NOTED OTHERWISE.
14. DETECTABLE WARNING TAPE SHALL BE INSTALLED A MINIMUM OF ONE (1) FT. ABOVE THE SEWER PIPE.
15. A MINIMUM OF 18" VERTICAL CLEARANCE SHALL BE MAINTAINED WHERE WATER MAINS CROSS STORM DRAIN LINES.
16. WHERE SANITARY SEWERS CROSS WATER MAINS, THE SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE CROWN OF THE SEWER IS AT LEAST EIGHTEEN INCHES BELOW THE INVERT OF THE WATER MAIN. IF THE ELEVATION OF THE SEWER CANNOT BE VARIED TO MEET THIS REQUIREMENT, THE WATER MAIN SHALL BE RELOCATED TO PROVIDE THIS SEPARATION OR CONSTRUCTED WITH MECHANICAL JOINT PIPE FOR A DISTANCE OF TEN FEET ON EACH SIDE OF THE SEWER. ONE FULL LENGTH OF WATER MAIN SHALL BE CENTERED OVER THE SEWER SO THAT BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE. IF MECHANICAL JOINT PIPE IS NOT USED THEN BOTH THE WATER MAIN AND SANITARY SEWER SHALL BE ENCASED IN CONCRETE FOR A MINIMUM DISTANCE OF 10 FEET FROM THE CROSSING POINT OF THE OTHER PIPE AS MEASURED NORMALLY FROM ALL POINTS ALONG THE PIPE.
17. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL TAP AND TIE IN FEES REQUIRED, AS WELL AS THE COST OF UNDERGROUND SERVICE CONNECTIONS TO THE BUILDINGS.
18. THRUST BLOCKS SHALL BE PROVIDED AT ALL BENDS, TEES, AND FIRE HYDRANTS.
19. DIMENSIONS SHOWN ARE TO CENTERLINE OF PIPE OR FITTING.
20. ALL FIRE HYDRANTS SHALL BE PROVIDED WITH AN APPROVED GATE VALVE A MAXIMUM OF 5'-0" FROM HYDRANT.
21. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.
22. THE CONTRACTOR SHALL OBTAIN APPROVAL OF ALL GOVERNING AGENCIES HAVING JURISDICTION OVER EACH UTILITY PRIOR TO INSTALLATION.
23. ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY THE TOWN OF NANTUCKET AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORM PRIOR TO THE FINAL CONNECTION AND BACKFILLING OF SERVICES.

GRADING & DRAINAGE NOTES:

1. THE CONTRACTOR IS SPECIFICALLY ADVISED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES, PARTICULARLY WHERE NEW UTILITIES CONNECT TO OR CROSS EXISTING, SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY, AND "DIG SAFE" (1-800-344-7233) AT LEAST TWO (2) WEEKS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES AND THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
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    - ON THE GROUND SURVEY PERFORMED BY R.J. O'CONNELL & ASSOCIATES, INC. BETWEEN AND .
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL HORIZONTAL CONTROL POINTS AND VERTICAL BENCH MARKS NECESSARY FOR THE WORK.
4. ALL CATCH BASINS SHALL BE EQUIPPED WITH GAS/OIL HOODS AND SHALL HAVE 4 FOOT SUMPS.
5. CORRUGATED POLYETHYLENE PIPE SHALL CONFORM WITH ASTM 2648 AND ASTM F477, SHALL BE MANUFACTURED WITH HIGH DENSITY POLYETHYLENE PLASTIC AND SHALL BE ADS N-12 "MEGA GREEN" PIPE AS MANUFACTURED BY ADVANCE DRAINAGE SYSTEM, INC. OR APPROVED EQUAL UNLESS OTHERWISE NOTED OR DETAILED.
6. A MINIMUM OF 18" VERTICAL CLEARANCE SHALL BE MAINTAINED WHERE WATER SERVICES CROSS STORM DRAIN LINES.
7. ALL EXISTING STRUCTURES, UNLESS OTHERWISE NOTED TO REMAIN, FENCING, TREES, & ETC., WITHIN CONSTRUCTION AREA SHALL BE REMOVED & DISPOSED OF OFF SITE. ANY BURNING ON SITE SHALL BE SUBJECT TO LOCAL ORDINANCES.
8. ALL STORM DRAINAGE PIPES AND STRUCTURES SHALL MEET HEAVY DUTY TRAFFIC (H20) LOADING AND BE INSTALLED ACCORDINGLY.
9. THE CONTRACTOR SHALL NOTIFY DIG-SAFE AND ALL UTILITY COMPANIES HAVING UNDERGROUND UTILITIES ON SITE OR IN RIGHT-OF-WAY PRIOR TO EXCAVATION.
10. SITE GRADING SHALL NOT PROCEED UNTIL APPROPRIATE SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED.
11. DETECTABLE WARNING TAPE SHALL BE INSTALLED A MINIMUM OF ONE (1) FT. ABOVE THE DRAINAGE PIPE.

GENERAL NOTE:

1. WITH RESPECT TO PROPOSED LOT 4, TO THE EXTENT NECESSARY, A SEPARATE AGREEMENT WILL BE ENTERED INTO TO PROVIDE THE RELEVANT PARTIES WITH THE LEGAL RIGHT TO PASS AND REPASS OVER PROPOSED LOT 4 AND THE LEGAL RIGHT TO INSTALL UNDERGROUND UTILITIES THEREIN AS REQUIRED PURSUANT TO SECTION 4.08(C) OF THE NANTUCKET PLANNING BOARD'S RULES AND REGULATIONS GOVERING THE SUBDIVISION OF LAND.

Nantucket Planning Board
APPROVAL UNDER THE SUBDIVISION CONTROL LAW REQUIRED

_____ *Chairman*
_____ *Vice Chairman*
_____ *Board Member*
_____ *Board Member*
_____ *Board Member*
DATE APPROVED: _____
DATE ENDORSED: _____
PLANNING BD. FILE NO.: _____

OWNERS OF RECORD: U.S. COASTGUARD, UNIVERSITY OF MASSACHUSETTS, & NANTUCKET COTTAGE HOSPITAL
ENGINEER OF RECORD: R.J. O'CONNELL & ASSOCIATES, INC.
SURVEYOR OF RECORD: BLACKWELL & ASSOCIATES, INC..

No.	Revision	Date
1	ISSUED FOR DEFINITIVE SUBDIVISION APPROVAL	08/11/2016

Seal: COMMONWEALTH OF MASSACHUSETTS — JOHN J. STOY — CIVIL — No. 42797 — REGISTERED PROFESSIONAL ENGINEER — 8-11-16

Designed by:	SPG
Drawn by:	AKC
Checked by:	SPG
Scale:	1"=40'
Date:	08/11/2016

Prepared for:
NANTUCKET COTTAGE HOSPITAL
57 SOUTH PROSPECT STREET
NANTUCKET, MA 02554
(508) 825-8100

Prepared by:
RJO'CONNELL & ASSOCIATES, INC.
CIVIL ENGINEERS, SURVEYORS & LAND PLANNERS
80 MONTVALE AVE
STONEHAM, MA 02180
781-279-0180
FAX: 781-279-0173

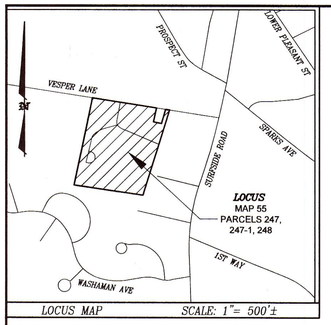
Project Name:
DEFINITIVE SUBDIVISON PLAN FOR THE GOUIN VILLAGE PROPERTIES LOCATED AT 16, 18 & 20 VESPER LANE

Drawing Name:
NOTES

Drawing No.:
N-1
Project No.: 13081

Copyright © 2016 by R.J. O'Connell & Associates, Inc.

Drawing name: G:\MA\Nantucket\NED\Nantucket Cottage Hospital\Main\Definitive Subdivision\13081_N-1 NOTES.dwg
Aug 09, 2016 - 10:23am



LOCUS MAP SCALE: 1"= 500'±

CURRENT ZONING CLASSIFICATION:
COMMERCIAL–NEIGHBORHOOD (CN)
TOWN OVERLAY HOSPITAL SUB–DISTRICT

MINIMUM LOT SIZE:	7,500 S.F.
MINIMUM FRONTAGE:	50 FT.
FRONT YARD SETBACK:	10 FT.
REAR/SIDE SETBACK:	10 FT, 5 FT.
GROUND COVER%	40%(1)

(1)50% ALLOWED IN THE HOSPITAL SUB–DISTRICT WITH A MAJOR SITE PLAN.

ENGINEER OF RECORD
R.J. O'CONNELL & ASSOCIATES, INC.
80 MONTVALE AVENUE, SUITE 201
STONEHAM, MA 02180
781.279.0180

LEGEND

SSM ●	DENOTES STEEL SURVEY MARKER FOUND
dhCB ■	DENOTES CONCRETE BOUND WITH DRILLHOLE FOUND
dh ◉	DENOTES DRILLHOLE IN CURB FOUND
I–PIPE ○	DENOTES IRON PIPE FOUND
R+C ◉	DENOTES REBAR AND CAP FOUND
SRF	DENOTES EXIST. SPLIT RAIL FENCE
PF	DENOTES EXIST. PICKET FENCE
	DENOTES EXIST. STONEWALL
	DENOTES EXIST. VERTICAL GRANITE CURB
⊛	DENOTES EXIST. SHRUB
○	DENOTES EXIST. POLE
P.dhCB ■	DENOTES PROPOSED DRILL HOLE CONCRETE BOUND

OWNER INFORMATION

PARCEL 55–248
UNITED STATES COAST GUARD
DEED BK. 118, PG. 448
#20 VESPER LANE
PLAN BK. 15, PG. 115

PARCEL 55–247
UNIVERSITY OF MASSACHUSETTS
DEED BK. 186, PG. 317
#18 VESPER LANE
PLAN BK. 21, PG. 61

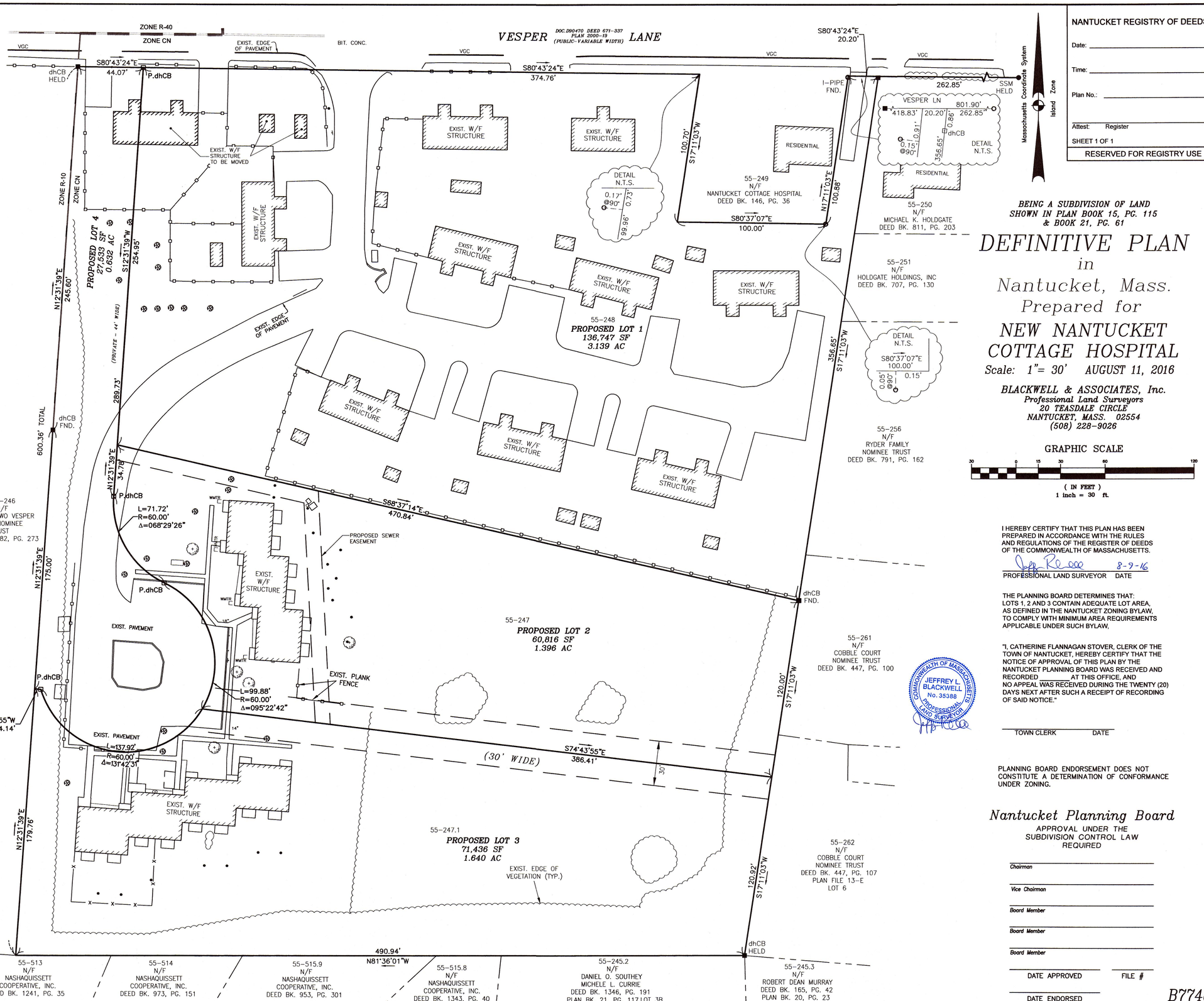
PARCEL 55–247.1
NANTUCKET COTTAGE HOSPITAL
DEED BK. 184, PG. 112
#16 VESPER LANE
PLAN BK. 21, PG. 61

DISPOSITION OF LOTS
LOTS 1 THROUGH 3 ARE BUILDABLE LOTS
LOT 4 WILL BE USED FOR ROADWAY PURPOSES

NOTE

LOTS 1, 2, 3, AND 4 DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS WETLANDS PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BYLAW BUT STILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BYLAW. DETERMINATION OF APPLICABILITY MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.

T:\LEO25JOB133



NANTUCKET REGISTRY OF DEEDS

Date: _____

Time: _____

Plan No.: _____

Attest: Register

SHEET 1 OF 1

RESERVED FOR REGISTRY USE

BEING A SUBDIVISION OF LAND SHOWN IN PLAN BOOK 15, PG. 115 & BOOK 21, PG. 61

DEFINITIVE PLAN

in

Nantucket, Mass.

Prepared for

NEW NANTUCKET COTTAGE HOSPITAL

Scale: 1"= 30' AUGUST 11, 2016

BLACKWELL & ASSOCIATES, Inc.
Professional Land Surveyors
20 TEASDALE CIRCLE
NANTUCKET, MASS. 02554
(508) 228–9026

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

Jeffrey L Blackwell 8-9-16

PROFESSIONAL LAND SURVEYOR DATE

THE PLANNING BOARD DETERMINES THAT:
LOTS 1, 2 AND 3 CONTAIN ADEQUATE LOT AREA, AS DEFINED IN THE NANTUCKET ZONING BYLAW, TO COMPLY WITH MINIMUM AREA REQUIREMENTS APPLICABLE UNDER SUCH BYLAW,

"I, CATHERINE FLANNAGAN STOVER, CLERK OF THE TOWN OF NANTUCKET, HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE NANTUCKET PLANNING BOARD WAS RECEIVED AND RECORDED _____ AT THIS OFFICE, AND NO APPEAL WAS RECEIVED DURING THE TWENTY (20) DAYS NEXT AFTER SUCH A RECEIPT OF RECORDING OF SAID NOTICE."

COMMONWEALTH OF MASSACHUSETTS JEFFREY L BLACKWELL No. 35388 PROFESSIONAL LAND SURVEYOR

TOWN CLERK DATE

PLANNING BOARD ENDORSEMENT DOES NOT CONSTITUTE A DETERMINATION OF CONFORMANCE UNDER ZONING.

Nantucket Planning Board

APPROVAL UNDER THE SUBDIVISION CONTROL LAW REQUIRED

Chairman

Vice Chairman

Board Member

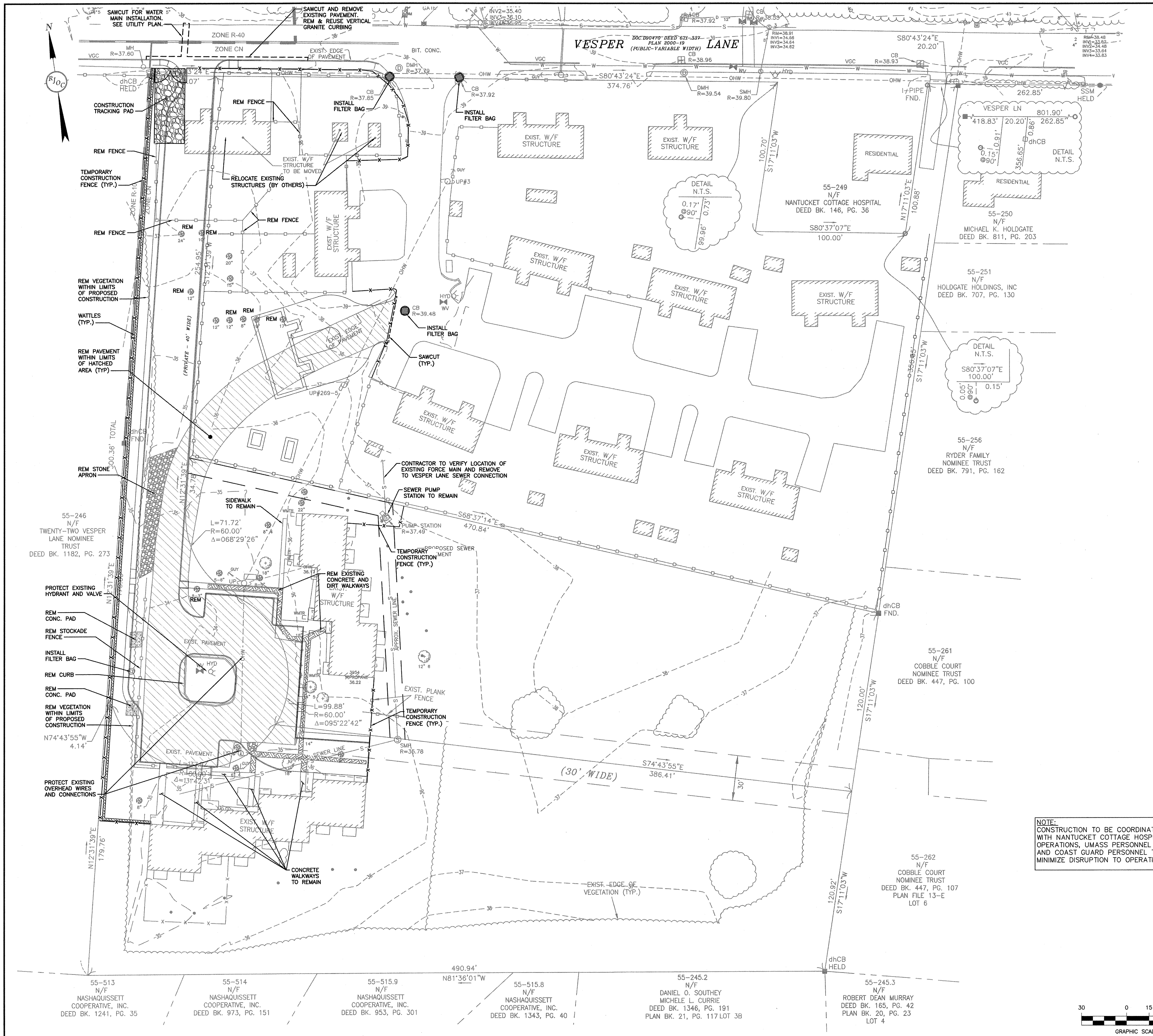
Board Member

Board Member

DATE APPROVED FILE #

DATE ENDORSED

B7748



LEGEND

EXISTING		PROPOSED
dhCB	CONCRETE BOUND WITH DRILLHOLE FOUND	
dh	DRILLHOLE IN CURB FOUND	
I-PIPE	IRON PIPE FOUND	
R+C	REBAR AND CAP FOUND	
	CATCHBASIN	
	DRAIN MANHOLE	
—D—	DRAINAGE LINE	
SRF	SPLIT RAIL FENCE	
PF	PICKET FENCE	
	STONEWALL	
VGC	VERTICAL GRANITE CURB	
TC=8.1	TOP OF CURB ELEVATION	
BC=7.9	BOTTOM OF CURB ELEVATION	
B.W.	BAY WINDOW	
x5.8	GRADE SPOT ELEVATION	
5	GRADE CONTOUR LINE	
	HYDRANT	
WV	WATER VALVE	
	WATER METER	
	WATER SHUTOFF	
—W—	WATER LINE	
—S—	SEWER LINE	
	SEWER MANHOLE	
EHH	ELECTRIC HANDHOLE	
TEL	TELEPHONE PEDESTAL	
	UTILITY POLE	
OHW	OVERHEAD WIRES	
	SIGN	
	LINE OF CONSTRUCTION FENCE	—x—x—
	STRAW WATTLE	
	FILTER BAG	
	CONSTRUCTION TRACKING PAD	
	APPROXIMATE LIMITS OF EXIST. SIDEWALK TO BE REMOVED	

OWNERS OF RECORD: U.S. COASTGUARD, UNIVERSITY OF MASSACHUSETTS, & NANTUCKET COTTAGE HOSPITAL
ENGINEER OF RECORD: R.J. O'CONNELL & ASSOCIATES, INC.
SURVEYOR OF RECORD: BLACKWELL & ASSOCIATES, INC..

ZONING TABLE

ZONING DISTRICT – COMMERCIAL-NEIGHBORHOOD (CN)
TOWN OVERLAY HOSPITAL SUB-DISTRICT

	REQUIRED
MIN. FRONTAGE	50'
MIN. FRONT YARD	10'
MIN. SIDE YARD	5'
MIN. REAR YARD	10'
GROUND COVER RATIO	40% MAX.(1)
MAX. BLDG. HEIGHT	50'
L.C. OPEN AREA	20% MIN.
MIN. LOT SIZE	7,500 SF

(1) 50% ALLOWED IN THE HOSPITAL SUB-DISTRICT WITH A MAJOR SITE PLAN.

NOTE:
CONSTRUCTION TO BE COORDINATED WITH NANTUCKET COTTAGE HOSPITAL OPERATIONS, UMASS PERSONNEL AND COAST GUARD PERSONNEL TO MINIMIZE DISRUPTION TO OPERATION.

Nantucket Planning Board
APPROVAL UNDER THE SUBDIVISION CONTROL LAW REQUIRED

Chairman

Vice Chairman

Board Member

Board Member

Board Member

DATE APPROVED:

DATE ENDORSED:

PLANNING BD. FILE NO.:

30 0 15 30 60
GRAPHIC SCALE IN FEET

No.	Revision	Date
1	ISSUED FOR DEFINITIVE SUBDIVISION APPROVAL	08/11/2016

Seal: COMMONWEALTH OF MASSACHUSETTS — JOHN J. STOY CIVIL No. 43797 — REGISTERED PROFESSIONAL ENGINEER
8-11-16

Designed by:	SPG
Drawn by:	AKC
Checked by:	SPG
Scale:	1"=30'
Date:	08/11/2016

Prepared for:
NANTUCKET COTTAGE HOSPITAL
57 SOUTH PROSPECT STREET
NANTUCKET, MA 02554
(508) 825-8100

Prepared by:
RJ O'CONNELL & ASSOCIATES, INC.
CIVIL ENGINEERS, SURVEYORS & LAND PLANNERS
80 MONTVALE AVE
STONEHAM, MA 02180
781-279-0180
FAX: 781-279-0173

Project Name:
DEFINITIVE SUBDIVISON PLAN FOR THE GOUIN VILLAGE PROPERTIES LOCATED AT 16, 18 & 20 VESPER LANE

Drawing Name:
DEMOLITION & EROSION CONTROL PLAN

Drawing No.:
C-1

Project No.: 13081

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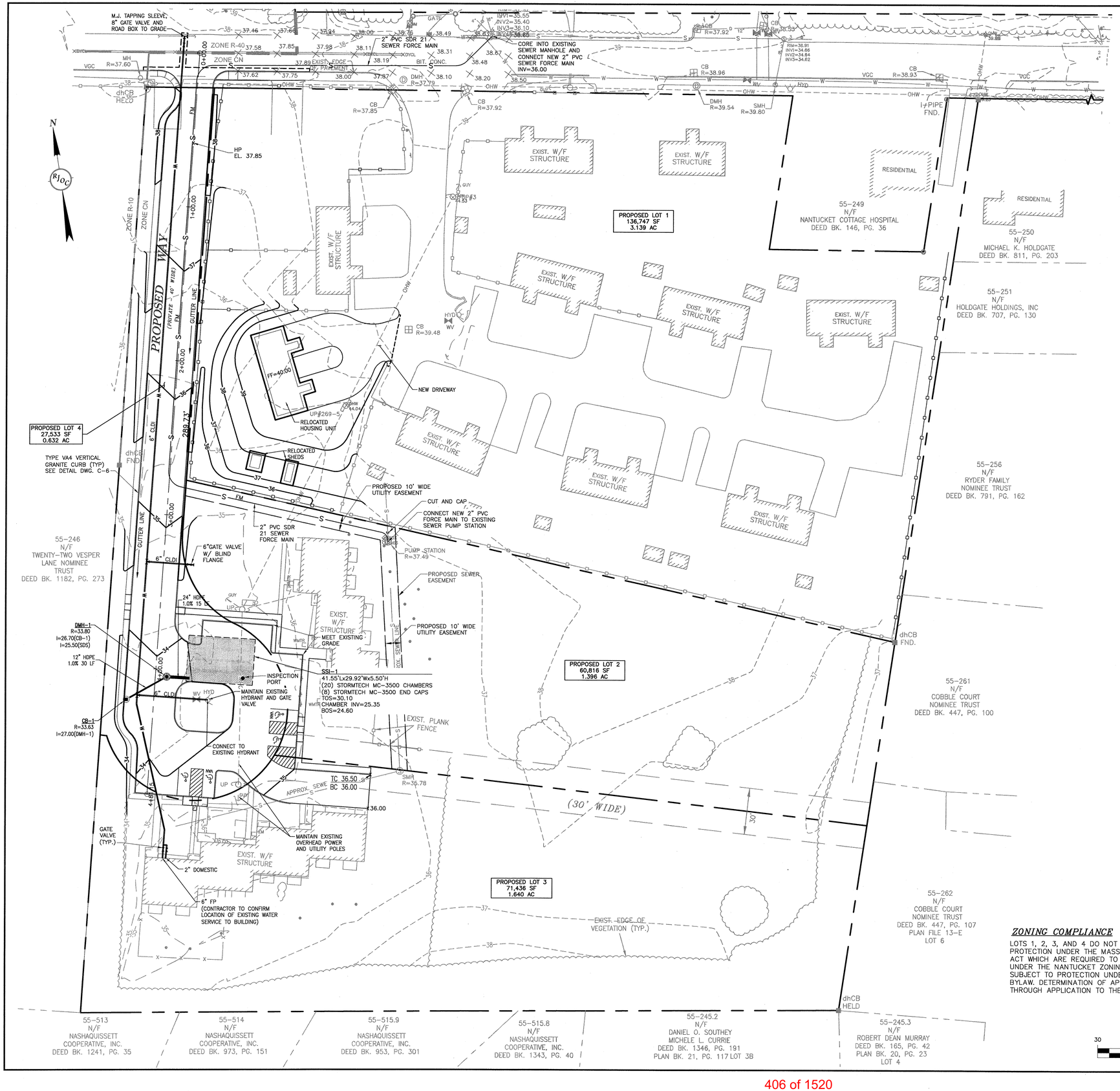
Drawing name: G:\MA\Nantucket\NED\Nantucket Cottage Hospital\Main\Definitive Subdivision\13081_C-1 DEM.dwg Aug 09, 2016 - 10:54am



LEGEND

EXISTING		PROPOSED
dhCB	CONCRETE BOUND WITH DRILLHOLE FOUND	
dh	DRILLHOLE IN CURB FOUND	
I-PIPE	IRON PIPE FOUND	
R+C	REBAR AND CAP FOUND	
	CATCHBASIN	CB
	DRAIN MANHOLE	DMH
—D—	DRAINAGE LINE	
SRF	SPLIT RAIL FENCE	
PF	PICKET FENCE	
	STONEWALL	
VGC	VERTICAL GRANITE CURB	
TC=8.1	TOP OF CURB ELEVATION	TC=5.25 BC=5.75
BC=7.9	BOTTOM OF CURB ELEVATION	
B.W.	BAY WINDOW	
x5.8	GRADE SPOT ELEVATION	+ 5.60
5	GRADE CONTOUR LINE	7
	HYDRANT	
WV	WATER VALVE	
	WATER METER	
	WATER SHUTOFF	
—W—	WATER LINE	W
—S—	SEWER LINE	S
S	SEWER MANHOLE	SMH
EHH	ELECTRIC HANDHOLE	
TEL	TELEPHONE PEDESTAL	
	UTILITY POLE	
OHW	OVERHEAD WIRES	
	SIGN	
	CONCRETE LINED DUCTILE IRON	CLDI
	HIGH DENSITY POLYETHELENE	HDPE
	POLY VINYL CHLORIDE	PVC

OWNERS OF RECORD: U.S. COASTGUARD, UNIVERSITY OF MASSACHUSETTS, & NANTUCKET COTTAGE HOSPITAL
ENGINEER OF RECORD: R.J. O'CONNELL & ASSOCIATES, INC.
SURVEYOR OF RECORD: BLACKWELL & ASSOCIATES, INC..

ZONING TABLE

ZONING DISTRICT – COMMERCIAL–NEIGHBORHOOD (CN)
TOWN OVERLAY HOSPITAL SUB–DISTRICT

	REQUIRED
MIN. FRONTAGE	50'
MIN. FRONT YARD	10'
MIN. SIDE YARD	5'
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GROUND COVER RATIO	40% MAX.(1)
MAX. BLDG. HEIGHT	50'
L.C. OPEN AREA	20% MIN.
MIN. LOT SIZE	7,500 SF

(1) 50% ALLOWED IN THE HOSPITAL SUB–DISTRICT WITH A MAJOR SITE PLAN.

ZONING COMPLIANCE

LOTS 1, 2, 3, AND 4 DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS WETLANDS PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BYLAW BUT STILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BYLAW. DETERMINATION OF APPLICABILITY MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.

Nantucket Planning Board
APPROVAL UNDER THE SUBDIVISION CONTROL LAW REQUIRED

Chairman _____
Vice Chairman _____
Board Member _____
Board Member _____
Board Member _____
DATE APPROVED: _____
DATE ENDORSED: _____
PLANNING BD. FILE NO.: _____

No.	Revision	Date
1	ISSUED FOR DEFINITIVE SUBDIVISION APPROVAL	08/11/2016

Seal: JOHN J. STOY CIVIL No. 42797 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
8-11-16

Designed by:	SPG
Drawn by:	AKC/CNM
Checked by:	JJS
Scale:	1"=30'
Date:	08/11/2016

Prepared for:
NANTUCKET COTTAGE HOSPITAL
57 SOUTH PROSPECT STREET
NANTUCKET, MA 02554
(508) 825-8100

Prepared by:
RJO'CONNELL & ASSOCIATES, INC.
CIVIL ENGINEERS, SURVEYORS & LAND PLANNERS
80 MONTVALE AVE
STONEHAM, MA 02180
781-279-0180
FAX: 781-279-0173

Project Name:
DEFINITIVE SUBDIVISON PLAN FOR THE GOUIN VILLAGE PROPERTIES LOCATED AT 16, 18 & 20 VESPER LANE

Drawing Name:
GRADING, DRAINAGE AND UTILITY PLAN

Drawing No.: **C-2A**
Project No.: 13081

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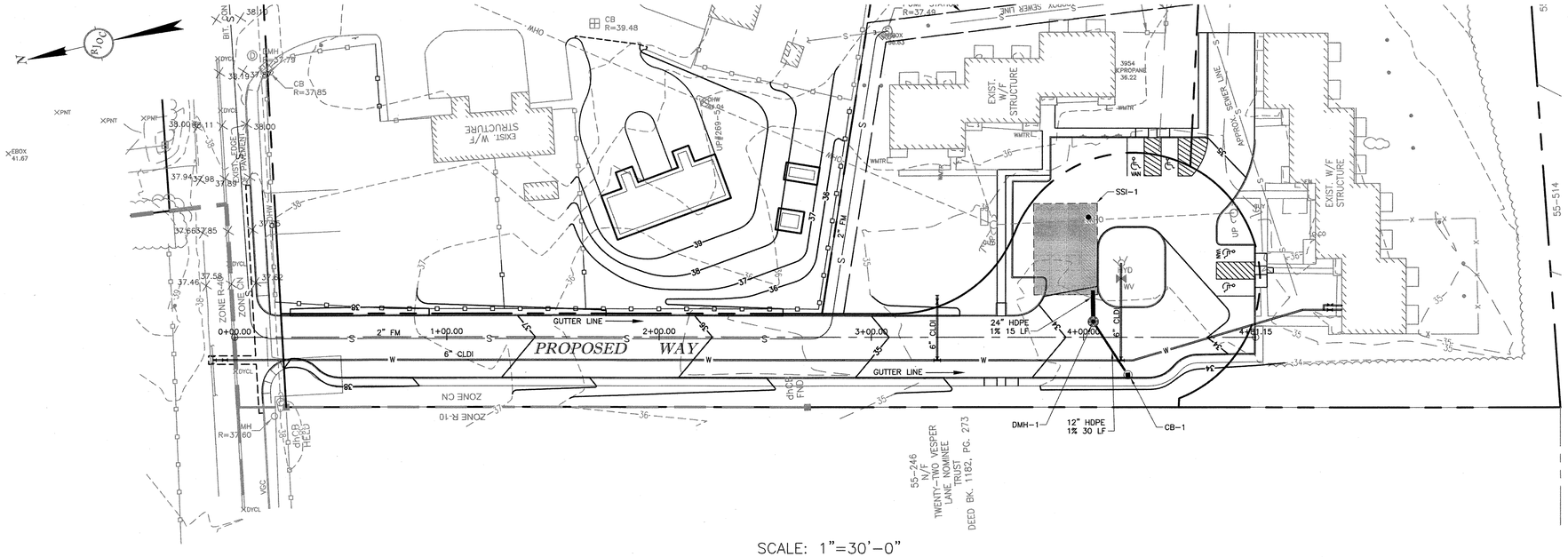
Drawing name: G:\MA\Nantucket\NED\Nantucket Cottage Hospital\Main\Definitive Subdivision\13081_C-2 GRD-UTIL.dwg
Aug 10, 2016 - 9:17am



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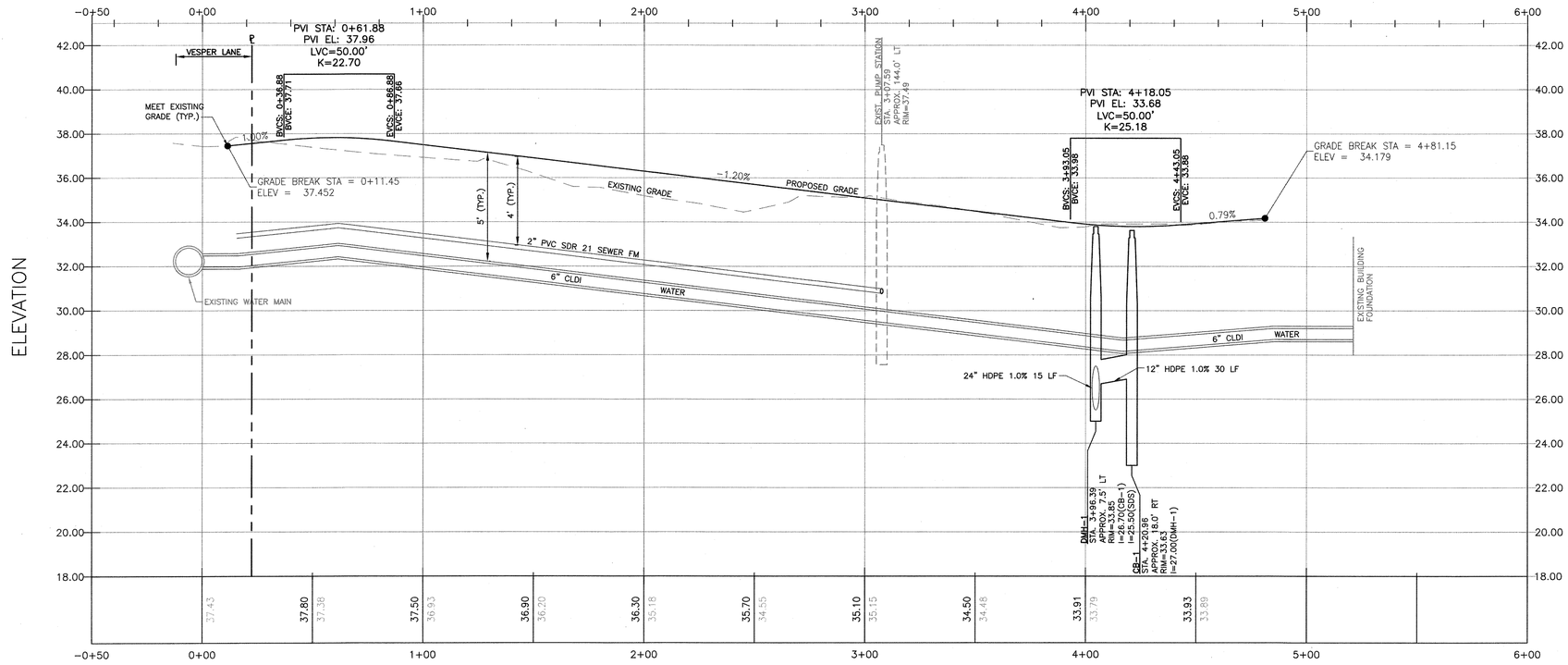

SCALE: 1"=30'-0" HOR.
1"=3'-0" VER.

LEGEND

EXISTING		PROPOSED
dhCB	CONCRETE BOUND WITH DRILLHOLE FOUND	
dh	DRILLHOLE IN CURB FOUND	
I-PIPE	IRON PIPE FOUND	
R+C	REBAR AND CAP FOUND	
	CATCHBASIN	CB
	DRAIN MANHOLE	DMH
—D—	DRAINAGE LINE	
SRF	SPLIT RAIL FENCE	
PF	PICKET FENCE	
	STONEWALL	
VGC	VERTICAL GRANITE CURB	
TC=8.1	TOP OF CURB ELEVATION	TC=6.25 BC=5.75
BC=7.9	BOTTOM OF CURB ELEVATION	
B.W.	BAY WINDOW	
x5.8	GRADE SPOT ELEVATION	5.60
5	GRADE CONTOUR LINE	7
	HYDRANT	
WV	WATER VALVE	
	WATER METER	
	WATER SHUTOFF	
—W—	WATER LINE	W
—S—	SEWER LINE	S
S	SEWER MANHOLE	SMH
EH	ELECTRIC HANDHOLE	
TEL	TELEPHONE PEDESTAL	
	UTILITY POLE	
OHW	OVERHEAD WIRES	
	SIGN	
	CONCRETE LINED DUCTILE IRON	CLDI
	HIGH DENSITY POLYETHELENE	HDPE
	POLY VINYL CHLORIDE	PVC

OWNERS OF RECORD: U.S. COASTGUARD, UNIVERSITY OF MASSACHUSETTS, & NANTUCKET COTTAGE HOSPITAL.
ENGINEER OF RECORD: R.J. O'CONNELL & ASSOCIATES, INC.
SURVEYOR OF RECORD: BLACKWELL & ASSOCIATES, INC..

ZONING TABLE

ZONING DISTRICT – COMMERCIAL–NEIGHBORHOOD (CN)
TOWN OVERLAY HOSPITAL SUB–DISTRICT

	REQUIRED
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MIN. FRONT YARD	10'
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MAX. BLDG. HEIGHT	50'
L.C. OPEN AREA	20% MIN.
MIN. LOT SIZE	7,500 SF

(1) 50% ALLOWED IN THE HOSPITAL SUB–DISTRICT WITH A MAJOR SITE PLAN.

Nantucket Planning Board
APPROVAL UNDER THE SUBDIVISION CONTROL LAW REQUIRED

Chairman

Vice Chairman

Board Member

Board Member

Board Member

DATE APPROVED:

DATE ENDORSED:

PLANNING BD. FILE NO.:

No.	Revision	Date
1	ISSUED FOR DEFINITIVE SUBDIVISION APPROVAL	08/11/2016

Seal: COMMONWEALTH OF MASSACHUSETTS JOHN J. STOY CIVIL No. 42781 REGISTERED PROFESSIONAL ENGINEER 8-11-16

Designed by:	SPG
Drawn by:	AKC/CNM
Checked by:	JJS
Scale:	AS NOTED
Date:	08/11/2016

Prepared for:
NANTUCKET COTTAGE HOSPITAL
57 SOUTH PROSPECT STREET
NANTUCKET, MA 02554
(508) 825-8100

Prepared by:
RJO'CONNELL & ASSOCIATES, INC.
CIVIL ENGINEERS, SURVEYORS & LAND PLANNERS
80 MONTVALE AVE
STONEHAM, MA 02180
781-279-0180
FAX: 781-279-0173

Project Name:
DEFINITIVE SUBDIVISON PLAN FOR THE GOUIN VILLAGE PROPERTIES LOCATED AT 16, 18 & 20 VESPER LANE

Drawing Name:
PLAN AND PROFILE

Drawing No.:
C-2B
Project No.: 13081

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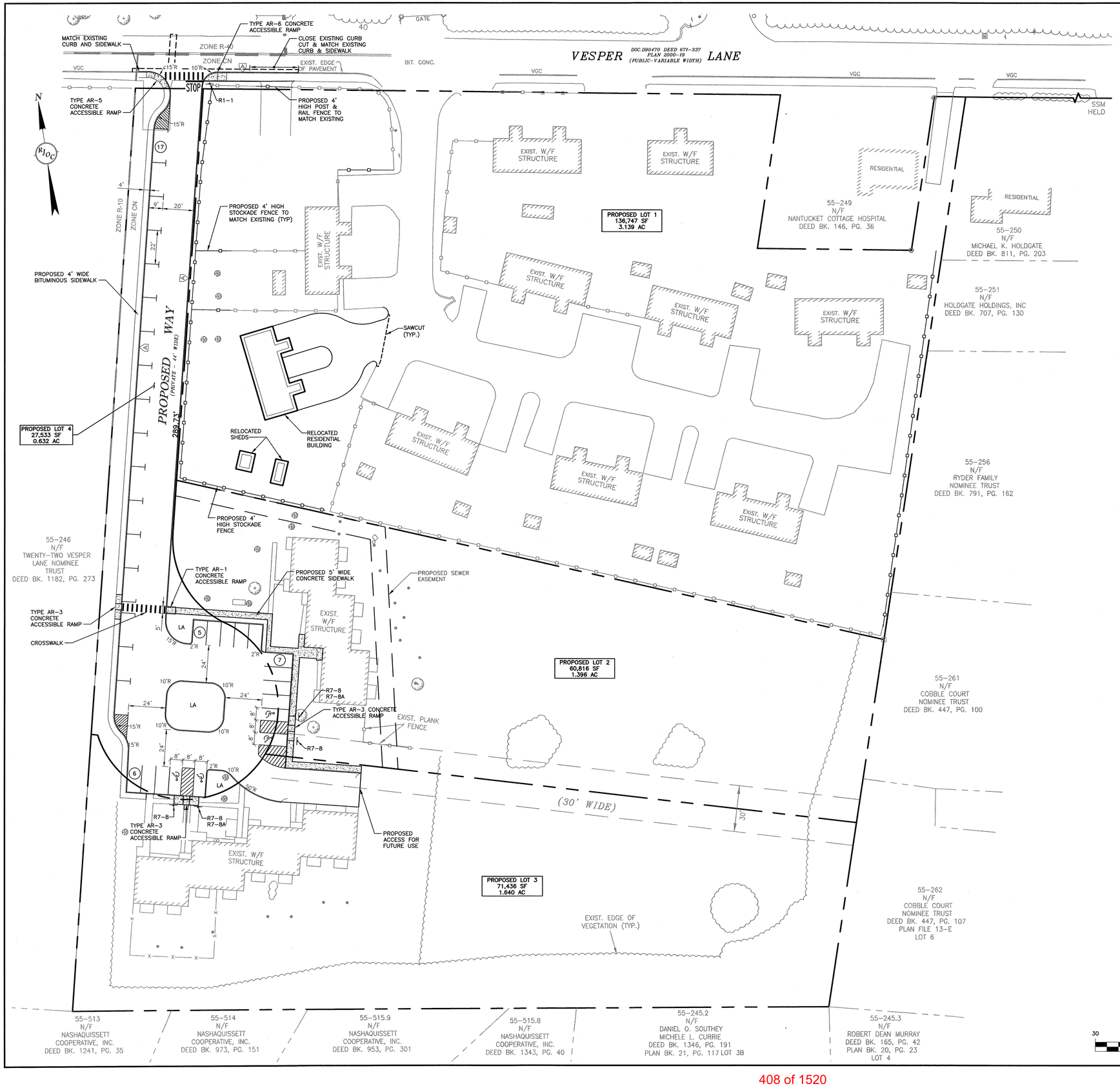
Drawing name: G:\MA\Nantucket\NED\Nantucket Cottage Hospital\Main\Definitive Subdivision\13081_C-2 GRD-UTIL.dwg
Aug 09, 2016 - 11:00am



LAYOUT & TRAFFIC CONTROL PLAN NOTES:

1. HANDICAP ACCESSIBLE PARKING SPACES SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (A.D.A.) ACCESSIBILITY GUIDELINES AND THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD REGULATION, 521 CMR, LATEST EDITIONS UNLESS OTHERWISE NOTED.
2. VAN ACCESSIBLE HANDICAP PARKING SPACES SHALL BE SIGNED AS "VAN ACCESSIBLE" PER 521CMR23.4.7B.
3. ALL PROPOSED CURBING SHALL BE VERTICAL GRANITE CURBING UNLESS OTHERWISE NOTED.
4. ALL PAVEMENT STRIPING SHALL BE PAINTED WITH 2 COATS OF PAINT.
5. PARKING AND TRAFFIC CONTROL PLAN IS SCHEMATIC AND FOR LOCATION OF MARKINGS ONLY. SPECIFIC DETAILS OF PAVEMENT MARKINGS ARE PROVIDED AS PART OF THIS PLAN SET.
6. ALL EXISTING CURBING TO BE REMOVED WILL BE DISPOSED OF OFF-SITE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.
7. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL/BUILDING PLANS FOR EXACT BUILDING LOCATIONS, BUILDING DIMENSIONS, EXACT UTILITY ENTRANCE LOCATIONS, TRUCK DOCKS, BUILDING SIDEWALKS AND DOOR LOCATIONS.
8. FOR PAVEMENT SECTION SEE DETAIL SHEET C-5.
9. ALL LIMITS OF PAVEMENT SHALL BE CURBED UNLESS NOTED OR INDICATED OTHERWISE.

CONCRETE SIDEWALK

GRANITE CURB (GC)

ZONING TABLE

ZONING DISTRICT - COMMERCIAL-NEIGHBORHOOD (CN)
TOWN OVERLAY HOSPITAL SUB-DISTRICT

	REQUIRED
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MIN. FRONT YARD	10'
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(1) 50% ALLOWED IN THE HOSPITAL SUB-DISTRICT WITH A MAJOR SITE PLAN.

OWNERS OF RECORD: U.S. COASTGUARD, UNIVERSITY OF MASSACHUSETTS, & NANTUCKET COTTAGE HOSPITAL
ENGINEER OF RECORD: R.J. O'CONNELL & ASSOCIATES, INC.
SURVEYOR OF RECORD: BLACKWELL & ASSOCIATES, INC..

30 0 15 30 60
GRAPHIC SCALE IN FEET

Nantucket Planning Board
APPROVAL UNDER THE SUBDIVISION CONTROL LAW REQUIRED

Chairman

Vice Chairman

Board Member

Board Member

Board Member

DATE APPROVED:

DATE ENDORSED:

PLANNING BD. FILE NO.:

No.	Revision	Date
1	ISSUED FOR DEFINITIVE SUBDIVISION APPROVAL	08/11/2016

Seal: JOHN J. STOY CIVIL No. 42797 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
8-11-16

Designed by:	SPG
Drawn by:	AKC
Checked by:	JJS
Scale:	1"=30'
Date:	08/11/2016

Prepared for:
NANTUCKET COTTAGE HOSPITAL
57 SOUTH PROSPECT STREET
NANTUCKET, MA 02554
(508) 825-8100

Prepared by:
RJO'CONNELL & ASSOCIATES, INC.
CIVIL ENGINEERS, SURVEYORS & LAND PLANNERS
80 MONTVALE AVE
STONEHAM, MA 02180
781-279-0180
FAX: 781-279-0173

Project Name:
DEFINITIVE SUBDIVISON PLAN FOR THE GOUIN VILLAGE PROPERTIES LOCATED AT 16, 18 & 20 VESPER LANE

Drawing Name:
SITE PLAN

Drawing No.:
C-3
Project No.: 13081

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Drawing name: G:\MA\Nantucket\NED\Nantucket Cottage Hospital\Main\Definitive Subdivision\13081_C-3 PTC.dwg
Aug 10, 2016 - 9:21am

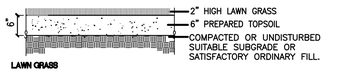
GENERAL NOTES:

1. CONTRACTOR SHALL MAKE A SITE VISIT PRIOR TO BIDDING TO EXAMINE EXISTING CONDITIONS FOR THEMSELVES. CONTRACTOR TO FAMILIARIZE THEMSELVES W/ DESIGN DOCUMENTS NOTES & DETAILS AND THE MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, CURRENT EDITION.
2. CONTRACTOR SHALL NOTIFY / COORDINATE WITH THE TOWN OF NANTUCKET. PRIOR TO PLANT MATERIAL INSTALLATION.
3. CONTRACTOR SHALL COORDINATE WITH THE TOWN OF NANTUCKET.
4. PRIOR TO THE PRE-CONSTRUCTION MEETING THE CONTRACTOR SHALL CONTACT DIG SAFE @ 1-888-344-7233 TO HAVE THE EXISTING UTILITIES MARKED.
5. All contractors shall inspect site prior to bidding to verify existing conditions for themselves.
6. The Contractor shall supply all plant material in quantities sufficient to complete the planting shown on the drawings. See specification.
7. All plant material shall conform to the guidelines established by "The American Standard for Nursery Stock", published by the American Association of Nurserymen, Inc. ANSI Z60.1-Current Edition.
8. All plants to be balled in burlap or container grown. No plastic burlap.
9. All plants to be approved by the Landscape Architect.
10. Stake location of all proposed plant material for approval of Landscape Architect prior to commencement of planting.
11. The landscape contractor shall guarantee all plant materials for one (1) full year from date of acceptance.
12. Heal all construction scars with naturalized grass, lawn or mulch as indicated by drawings and/ or as directed by Landscape Architect.
13. "Dry Roots" shall be added to all new tree planting pits. All new loam shall be tested and amended as stated in the loam report. Provided by loam supplier.
14. Landscape Contractor shall submit a watering schedule program for the (60) day maintenance period for review by the Landscape Architect & to Owner for all proposed plant material.
15. Protect existing plant material within construction limits. Provide watering program for all proposed plant material during construction.

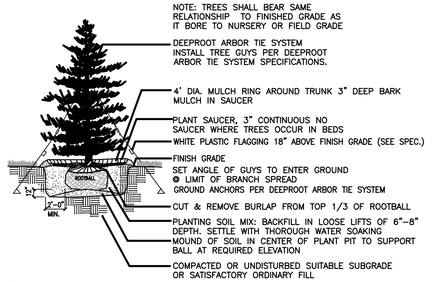
LANDSCAPE NOTES;

LOAM DEPTHS SHALL BE AS FOLLOWS:
A. LAWN AREAS - 6" ROLLED THICKNESS
B. PLANT BEDS - 1 -0" LOAM DEPTH IN THE PLANTED AREA WITH 2" MULCH.

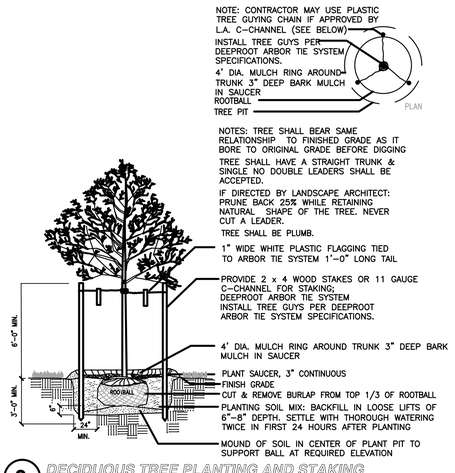
LAWN GRASS
(PACIFIC NORTHWEST SEED, LTD. WILMINGTON, MA.)
LANDSCAPE/UTILITY MIXTURE FOR SUN/SHADE:
40% ENCHANTED PERENNIAL RYEGRASS
40% CREEPING RED FESCUE
20% GOLDRUSH KENTUCKY BLUEGRASS



1 LAWN GRASS
SCALE: N.T.S.



2 EVERGREEN TREE PLANTING
SCALE: N.T.S.



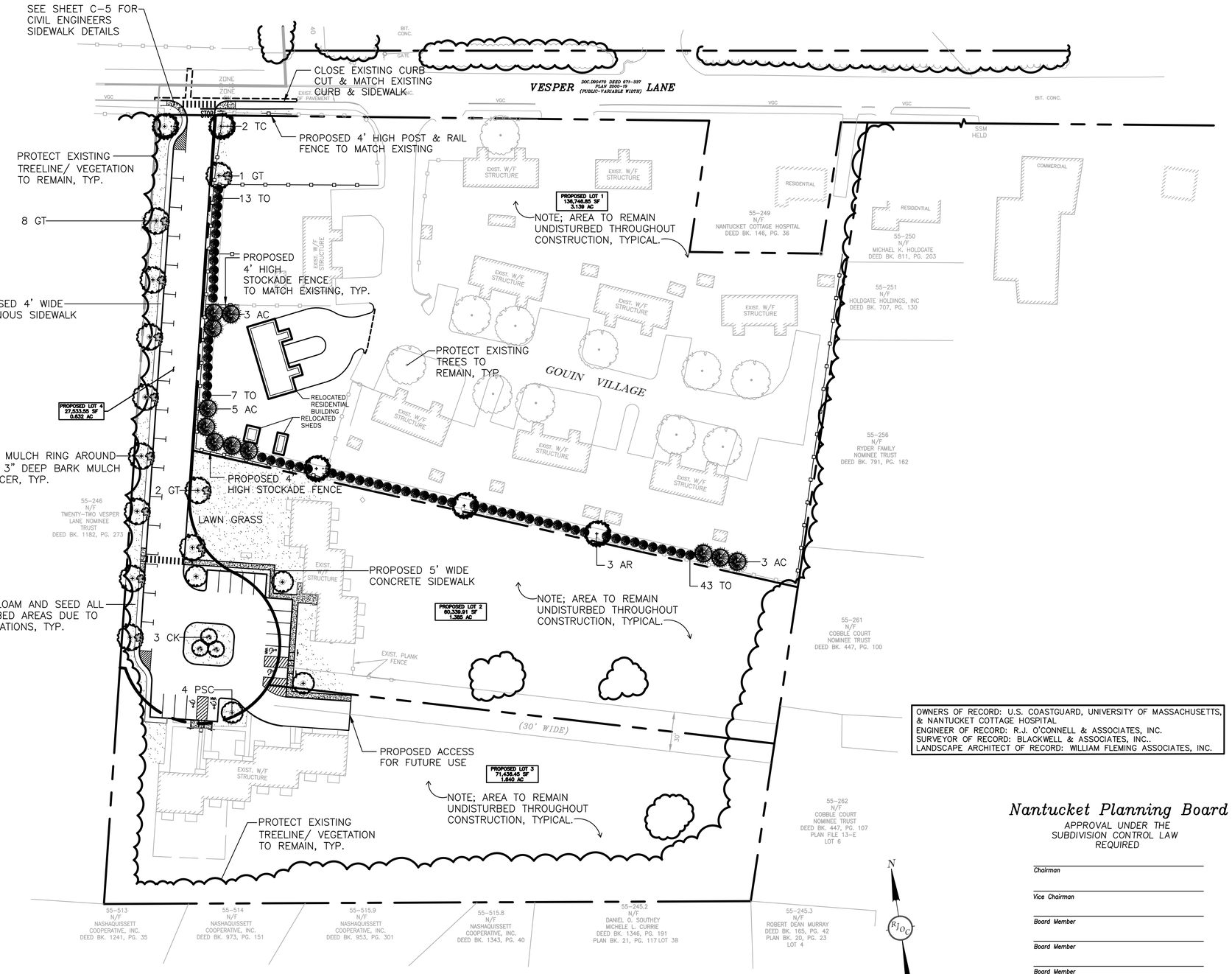
3 DECIDUOUS TREE PLANTING AND STAKING
SCALE: N.T.S.

GRAPHIC LEGEND

PROTECT EXISTING TREELINE / VEGETATION TO REMAIN, TYP.
PROTECT EXISTING TREES TO REMAIN, TYP.
EVERGREEN TREES
DECIDUOUS SHADE TREES
SEEDED LAWN

PLANT MATERIAL LIST - GOUIN VILLAGE, NANTUCKET, MA.

SYM.	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	REMARKS
EVERGREEN TREES						
TO	63	THUJA O. 'SMARAGD'	EMERALD GREEN ARBORVITAE	7 -8'	B&B	NATURAL SHAPE, UNSHEARED
AC	11	ABIES CONCOLOR	WHITE FIR	7 -8'	B&B	NATURAL SHAPE, UNSHEARED
DECIDUOUS AND ORNAMENTAL TREES						
GT	11	GLEDITSIA T. 'SKYLINE'	SKYLINE HONEYLOCUST	4 -4 1/2"	B&B	6' HIGH BRANCHING
PSC	4	PRUNUS SARGNETII 'COLUMNARIS'	COLUMNAR SARGENT CHERRY	3 1/2-4"	B&B	
TC	2	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLELEAF LINDEN	4 -4 1/2"	B&B	6' HIGH BRANCHING
AR	3	ACER RUBRUM	RED MAPLE	4 -4 1/2"	B&B	6' HIGH BRANCHING
CK	3	CORNUS x 'STELLAR PINK'	STELLAR PINK DOGWOOD	3-3 1/2"	B&B	SINGLE-STEM SPECIMEN



OWNERS OF RECORD: U.S. COASTGUARD, UNIVERSITY OF MASSACHUSETTS, & NANTUCKET COTTAGE HOSPITAL
ENGINEER OF RECORD: R.J. O'CONNELL & ASSOCIATES, INC.
SURVEYOR OF RECORD: BLACKWELL & ASSOCIATES, INC..
LANDSCAPE ARCHITECT OF RECORD: WILLIAM FLEMING ASSOCIATES, INC.

Nantucket Planning Board
APPROVAL UNDER THE SUBDIVISION CONTROL LAW REQUIRED

Chairman _____
Vice Chairman _____
Board Member _____
Board Member _____
Board Member _____
DATE APPROVED: _____
DATE ENDORSED: _____
PLANNING BD. FILE NO.: _____

No.	Revision	Date
-	ISSUED FOR DEFINITIVE SUBDIVISION APPROVAL	08/11/2016

Seal: COMMONWEALTH OF MASSACHUSETTS WILLIAM JOSEPH FLEMING No. 7551 REGISTERED LANDSCAPE ARCHITECT

Designed by:	WFF
Drawn by:	WFF
Checked by:	WJF
Scale:	1"=40'
Date:	08/11/2016

Prepared for:
NANTUCKET COTTAGE HOSPITAL
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NANTUCKET, MA 02554
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Prepared by:
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LANDSCAPE ARCHITECTURE PLANNING
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Project Name:
DEFINITIVE SUBDIVISON PLAN FOR THE GOUIN VILLAGE PROPERTIES LOCATED AT 16, 18 & 20 VESPER LANE
Drawing Name:
LANDSCAPE PLAN

Drawing No.:
L-1
Project No.: 13081

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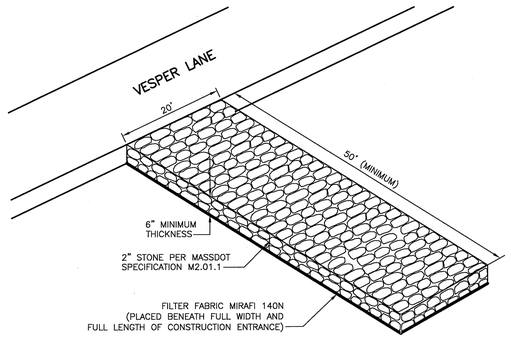
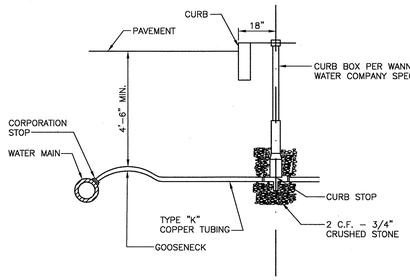


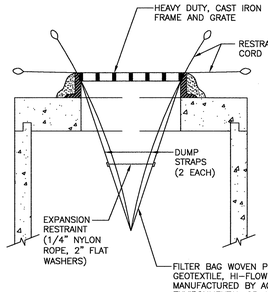
PERSPECTIVE VIEW

CONSTRUCTION TRACKING PAD
SCALE: N.T.S.



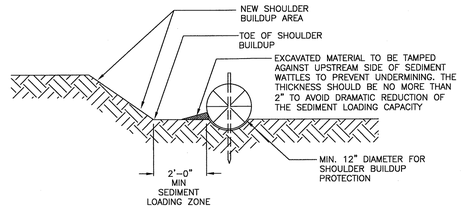
NOTE:
1. WATER SERVICES LARGER THAN 1" ARE TO BE RESTRAINED TO MAIN WITH APPROVED SADDLE.
2. INSTALLATION AND MATERIALS TO BE IN ACCORDANCE WITH THE TOWN OF NANTUCKET'S WANNACOMET WATER COMPANY STANDARDS.

TYPICAL WATER SERVICE CONNECTION DETAIL
SCALE: N.T.S.



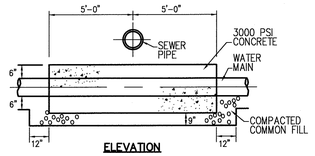
NOTES:
1. INSTALL FILTER BAG IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. WHEN EXPANSION RESTRAINT CORD IS NO LONGER VISIBLE, THE FILTER BAG IS FULL AND SHOULD BE EMPTIED.
3. REMOVE FILTER BAG PER MANUFACTURER'S INSTRUCTIONS.

TYPICAL FILTER BAG DETAIL
SCALE: N.T.S.

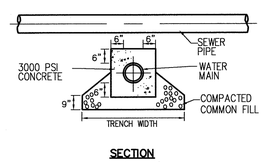


NOTES
1. WATTLES TO BE INSTALLED AS SLOPES ARE CONSTRUCTED TO GRADE OR AS DIRECTED BY THE ENGINEER. THEY SHALL BE SELECTED, INSTALLED AND MAINTAINED IN CONFORMANCE WITH MANUFACTURERS' SPECIFICATIONS TO MEET SITE CONDITIONS FOR SLOPE, SWALE, AND PERIMETER PROTECTION AND IN ACCORDANCE WITH SITE MANAGEMENT PRACTICES.
2. TRENCHES TO BE CONSTRUCTED ALONG AND PARALLEL TO THE CONTOURS. TRENCH DEPTH TO BE ⅓ THE THICKNESS OF THE SEDIMENT WATTLE. PLACE EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH.
3. LOCATE WATTLES AS INDICATED ON PLANS OR AS DIRECTED BY THE ENGINEER.
4. WATTLES TO BE IN CONTINUOUS CONTACT WITH TRENCH BOTTOM AND SIDES. NO DAYLIGHT SHOULD BE SEEN UNDER THE WATTLE. DO NOT OVERLAP THE ENDS ON TOP OF EACH OTHER.
5. STAKES TO PENETRATE SOIL OF TRENCH BOTTOM 12" MINIMUM. STAKES TO BE EXPOSED 3" MAXIMUM ABOVE THE TOP OF WATTLE. SPACE STAKES 4'-0" O.C. MAX., 1'-0" MAX. AT WATTLE ENDS. A 20" DIAMETER WATTLE MAY NEED TO BE MADE FROM 2-3 ROLLED EXCELSIOR OR STRAW BLANKETS.
6. REPAIR ANY RILLS OR GULLIES PROMPTLY.
7. THE INSTALLATION AND MAINTENANCE OF WATTLES SHALL NOT NEGATIVELY IMPACT TRAFFIC SAFETY, AS WELL AS THE DESIGNED FUNCTION OF ROADWAY FACILITIES.

STRAW WATTLE EROSION AND SILTATION BARRIER
SCALE: N.T.S.

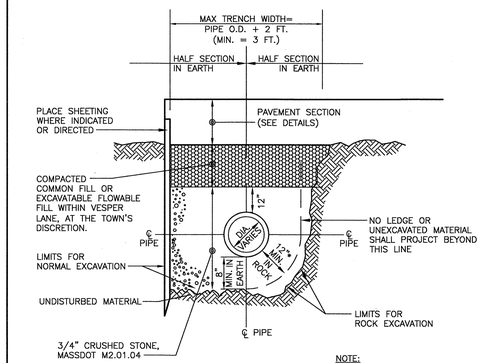


ELEVATION



SECTION

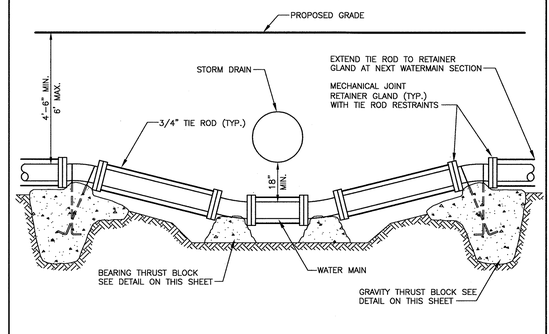
CONCRETE ENCASEMENT DETAIL
SCALE: N.T.S.



NOTE:
METHODS OF INSTALLATION TO MEET OR EXCEED THE TOWN'S PUBLIC WORKS DEPARTMENT AND PIPE MANUFACTURER'S SPECIFICATIONS.

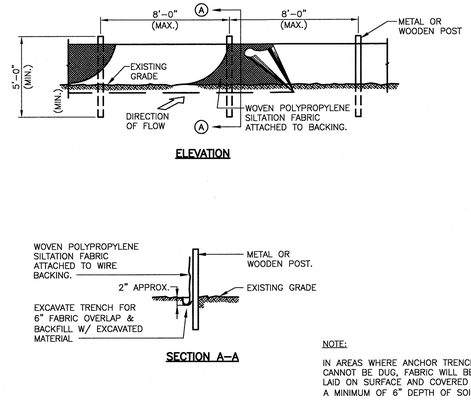
* AS PER TOWN SPECIFICATIONS

TYPICAL SEWER TRENCH DETAIL
SCALE: N.T.S.



NOTE:
WATER MATERIALS AND METHOD OF INSTALLATION MUST MEET OR EXCEED THE TOWN SPECIFICATIONS.

TYPICAL WATER MAIN OFFSET DETAIL
SCALE: N.T.S.

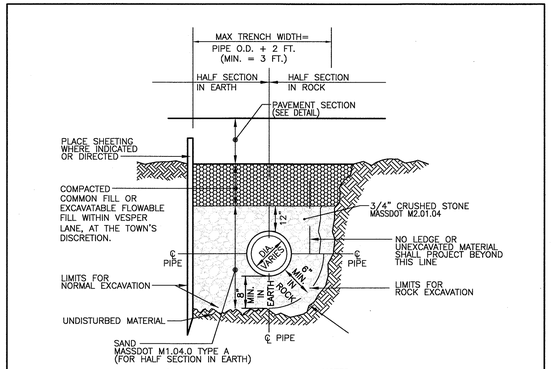


ELEVATION

SECTION A-A

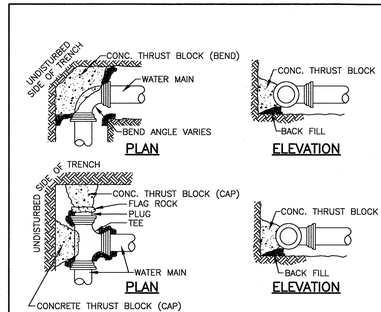
NOTE:
IN AREAS WHERE ANCHOR TRENCH CANNOT BE DUG, FABRIC WILL BE LAID ON SURFACE AND COVERED WITH A MINIMUM OF 6" DEPTH OF SOIL.

TYPICAL SILTATION FENCE DETAIL
SCALE: N.T.S.



NOTES:
1. WATER MATERIALS AND METHOD OF INSTALLATION MUST MEET OR EXCEED THE TOWN OF NANTUCKET'S WANNACOMET WATER COMPANY REQUIREMENTS.
2. MAINTAIN A MINIMUM OF 5' OF COVER OVER THE TOP OF ALL WATER LINES.

TYPICAL WATER TRENCH DETAIL
SCALE: N.T.S.



NOTES:
1. ALL WATER MAIN FITTINGS, BENDS, TEES, PLUGS ETC. SHALL BE RESTRAINED W/ THRUST BLOCKS EXCEPT WHERE NOTED.
2. ALL THRUST BLOCKS & COLLARS SHALL BE INSTALLED SO THAT THEY BEAR AGAINST UNDISTURBED EARTH.
3. SIZE OF CONCRETE THRUST BLOCKS AS NOTED BELOW.
4. MINIMUM COMPRESSIVE STRENGTH OF THRUST BLOCK CONCRETE SHALL BE 4,000 P.S.I.
5. MINIMUM BEARING AREA BASED ON 2000 LB/SF ALLOWABLE SOIL BEARING PRESSURE WITH A 1.5 SAFETY FACTOR.
6. A MINIMUM OF 1/3 CUBIC YARD OF CONCRETE MUST BE USED FOR THRUST BLOCKS
7. MATERIALS, METHOD INSTALLATION SHALL CONFORM TO THE TOWN OF NANTUCKET'S WANNACOMET WATER COMPANY SPECIFICATIONS.

MINIMUM THRUST BLOCKING BEARING AREAS IN SQUARE FEET

PIPE DIA.	TEES/CAP/HYD	90° BEND	45° BEND	22.5° BEND	11.25° BEND
4"	2	2	2	2	1
6"	4	5	3	2	1
8"	6	8	5	2	1
10"	9	13	7	3	2
12"	13	18	10	4	3
14"	18	25	14	6	4
16"	23	32	18	8	6

TYPICAL THRUST BLOCK DETAIL
SCALE: N.T.S.

Nantucket Planning Board
APPROVAL UNDER THE SUBDIVISION CONTROL LAW REQUIRED

Chairman

Vice Chairman

Board Member

Board Member

Board Member

DATE APPROVED:

DATE ENDORSED:

PLANNING BD. FILE NO.:

No.	Revision	Date
1	ISSUED FOR DEFINITIVE SUBDIVISION APPROVAL	08/11/2016

Seal: COMMONWEALTH OF MASSACHUSETTS — JOHN J. STOY — CIVIL — No. 42791 — REGISTERED PROFESSIONAL ENGINEER — 8-11-16

Designed by:	SPG
Drawn by:	AKC
Checked by:	JJS
Scale:	N.T.S.
Date:	08/11/2016

Prepared for:
NANTUCKET COTTAGE HOSPITAL
57 SOUTH PROSPECT STREET
NANTUCKET, MA 02554
(508) 825-8100

Prepared by:
RJO'CONNELL & ASSOCIATES, INC.
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FAX: 781-279-0173

Project Name:
DEFINITIVE SUBDIVISON PLAN FOR THE GOUIN VILLAGE PROPERTIES LOCATED AT 16, 18 & 20 VESPER LANE

Drawing Name:
DETAILS - SHEET 1

Drawing No.:
C-4
Project No.: 13081

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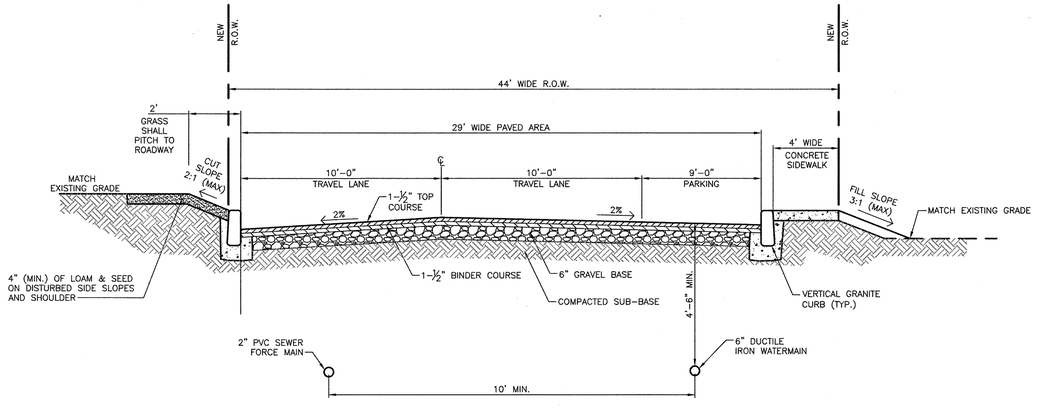
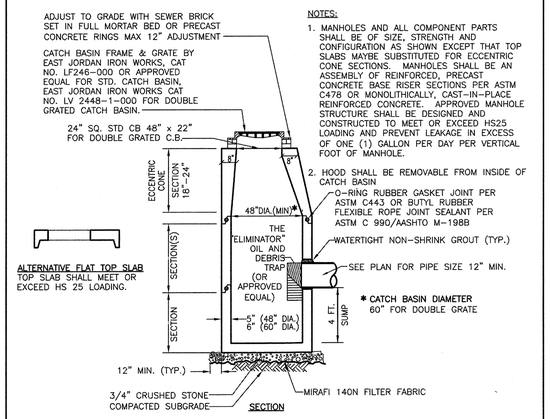


NOTES:
1. BITUMINOUS TOP COURSE SHALL MEET MassDOT ITEM M3.11.03 TABLE A, TOP COURSE JOB MIX FORMULA
2. BITUMINOUS BINDER COURSE SHALL MEET MassDOT ITEM M3.11.03 TABLE A, BINDER COURSE JOB MIX FORMULA
3. GRAVEL BASE COURSE SHALL CONFORM TO MassDOT ITEM M1.03.0, GRAVEL BORROW, TYPE B.

PROPOSED WAY CROSS-SECTION
SCALE: N.T.S.

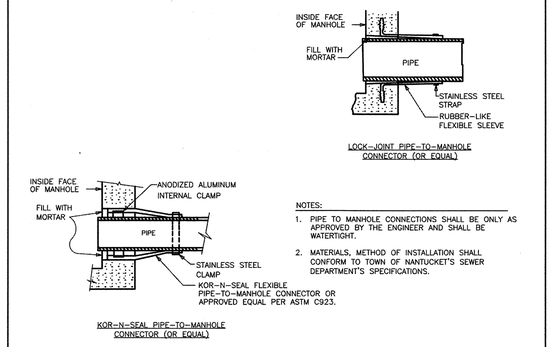


NOTES:
1. MANHOLES AND ALL COMPONENT PARTS SHALL BE OF SIZE, STRENGTH AND CONFIGURATION AS SHOWN EXCEPT THAT TOP SLABS MAYBE SUBSTITUTED FOR ECCENTRIC CONE SECTIONS. MANHOLES SHALL BE AN ASSEMBLY OF REINFORCED, PRECAST CONCRETE BASE RISER SECTIONS PER ASTM C478 OR MONOLITHICALLY, CAST-IN-PLACE REINFORCED CONCRETE. APPROVED MANHOLE STRUCTURE SHALL BE DESIGNED AND CONSTRUCTED TO MEET OR EXCEED H525 LOADING AND PREVENT LEAKAGE IN EXCESS OF ONE (1) GALLON PER DAY PER VERTICAL FOOT OF MANHOLE.
2. HOOD SHALL BE REMOVABLE FROM INSIDE OF CATCH BASIN

O-RING RUBBER GASKET JOINT PER ASTM C443 OR BUTYL RUBBER FLEXIBLE ROPE JOINT SEALANT PER ASTM C 990/AASHTO M-198B
WATERTIGHT NON-SHRINK GROUT (TYP.)
SEE PLAN FOR PIPE SIZE 12" MIN.

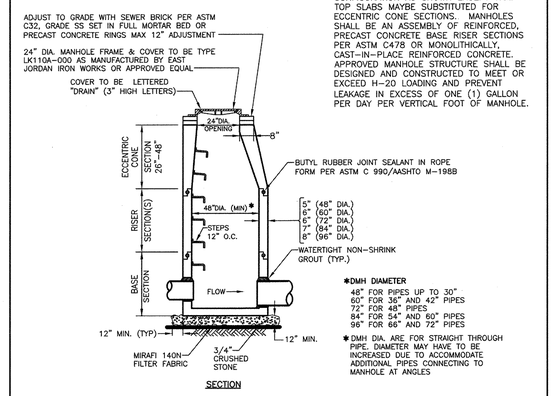
* CATCH BASIN DIAMETER
60" FOR DOUBLE GRATE

CATCH BASIN WITH HOOD
SCALE: N.T.S.



NOTES:
1. PIPE TO MANHOLE CONNECTIONS SHALL BE ONLY AS APPROVED BY THE ENGINEER AND SHALL BE WATERTIGHT.
2. MATERIALS, METHOD OF INSTALLATION SHALL CONFORM TO TOWN OF NANTUCKET'S SEWER DEPARTMENT'S SPECIFICATIONS.

PIPE CONNECTIONS TO SEWER MANHOLE DETAIL
SCALE: N.T.S.



* DMH DIA. ARE FOR STRAIGHT THROUGH PIPE. DIAMETER MAY HAVE TO BE INCREASED DUE TO ACCOMMODATE ADDITIONAL PIPES CONNECTING TO MANHOLE AT ANGLES

NOTES:
1. MANHOLES AND ALL COMPONENT PARTS SHALL BE OF SIZE, STRENGTH AND CONFIGURATION AS SHOWN EXCEPT THAT TOP SLABS MAYBE SUBSTITUTED FOR ECCENTRIC CONE SECTIONS. MANHOLES SHALL BE AN ASSEMBLY OF REINFORCED, PRECAST CONCRETE BASE RISER SECTIONS PER ASTM C478 OR MONOLITHICALLY, CAST-IN-PLACE REINFORCED CONCRETE. APPROVED MANHOLE STRUCTURE SHALL BE DESIGNED AND CONSTRUCTED TO MEET OR EXCEED H-20 LOADING AND PREVENT LEAKAGE IN EXCESS OF ONE (1) GALLON PER DAY PER VERTICAL FOOT OF MANHOLE.

TYPICAL PRECAST CONCRETE DRAIN MANHOLE (DMH)
SCALE: N.T.S.

Nantucket Planning Board
APPROVAL UNDER THE SUBDIVISION CONTROL LAW REQUIRED

_____ Chairman
_____ Vice Chairman
_____ Board Member
_____ Board Member
_____ Board Member

DATE APPROVED: _____
DATE ENDORSED: _____
PLANNING BD. FILE NO.: _____

No.	Revision	Date
1	ISSUED FOR DEFINITIVE SUBDIVISION APPROVAL	08/11/2016

Seal: COMMONWEALTH OF MASSACHUSETTS — JOHN J. STOY, CIVIL, No. 43787, REGISTERED PROFESSIONAL ENGINEER — 8-11-16

Designed by:	SPG
Drawn by:	AKC
Checked by:	JJS
Scale:	N.T.S.
Date:	08/11/2016

Prepared for:
NANTUCKET COTTAGE HOSPITAL
57 SOUTH PROSPECT STREET
NANTUCKET, MA 02554
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FAX: 781-279-0173

Project Name:
DEFINITIVE SUBDIVISON PLAN FOR THE GOUIN VILLAGE PROPERTIES LOCATED AT 16, 18 & 20 VESPER LANE

Drawing Name:
DETAILS - SHEET 2

Drawing No.: **C-5**
Project No.: 13081

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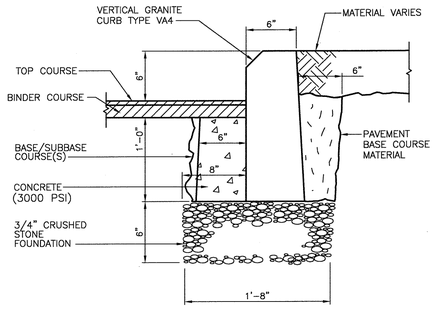
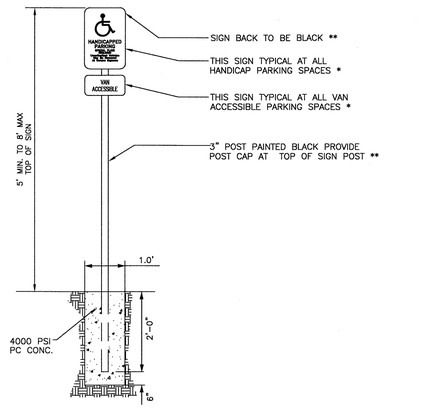
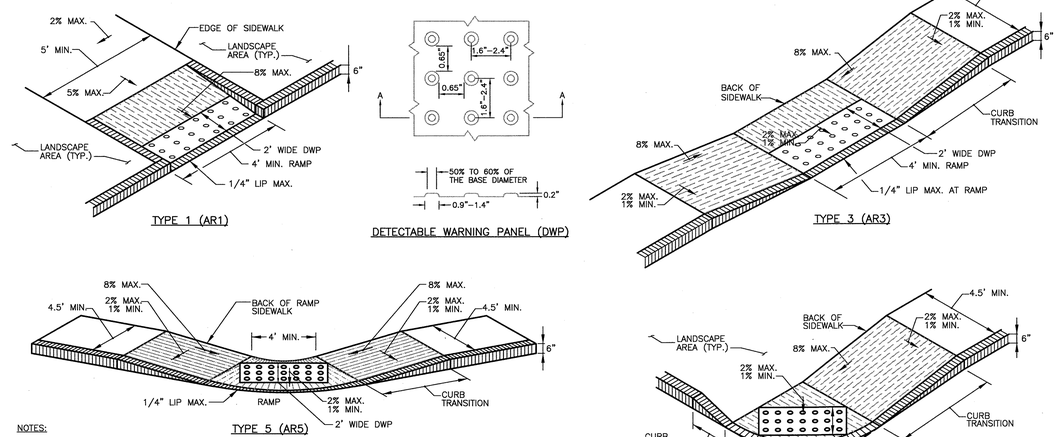


TYPICAL VERTICAL GRANITE DETAIL
SCALE: N.T.S.



*ALL SIGNS ARE TO BE AFFIXED TO POST WITH RUST RESISTANT HARDWARE.
** OR: TO CONFORM TO ARCHITECTURAL DESIGN CRITERIA FOR A SPECIFIC PROJECT OR PROPERTY.

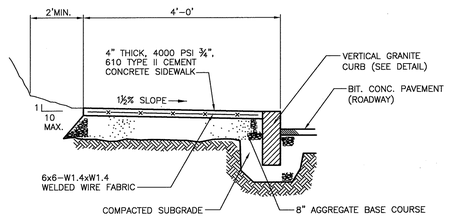
ACCESSIBLE SIGN ASSEMBLY WITHOUT BOLLARD
SCALE: N.T.S.



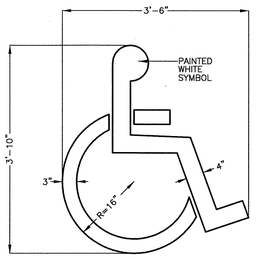
NOTES:

1. SEE PLANS FOR CURB TYPE.
2. CURBS AND WALKS ALONG ACCESSIBLE ROUTES SHALL MEET OR EXCEED THE APPLICABLE MA REGULATIONS AND ADA.
3. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 2% (1% MIN).
4. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
5. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE CURB RAMPS SHALL BE 8%.
6. MAINTAIN A MINIMUM OF 3 FEET CLEAR AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS ETC.)
7. GRADE BASE OF RAMP TO PREVENT PONDING.
8. RAMP CONSTRUCTION SHALL CONFORM TO TYPICAL SIDEWALK SECTION.
9. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5'X5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
10. ALL CURBING AT RAMPS SHALL BE VERTICAL CURBING SET FLUSH WHERE IT ABUTS ROADWAY.
11. ALL RAMPS SHALL BE CEMENT CONCRETE WITH BROOM NON-SLIP SURFACE.
12. ALL RAMPS SHALL HAVE A 24" WIDE DETECTABLE WARNING PANEL EXTENDING THE FULL WIDTH OF THE FLUSH RAMP EDGE.

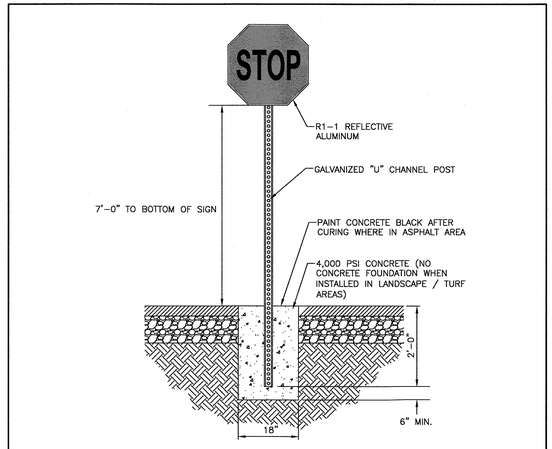
ACCESSIBLE CURB RAMPS (AR)
SCALE: N.T.S.



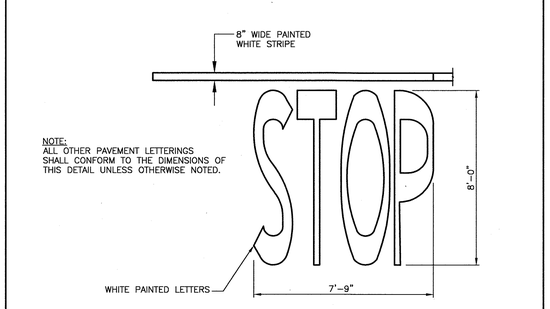
TYPICAL BITUMINOUS CONCRETE SIDEWALK DETAIL
SCALE: N.T.S.



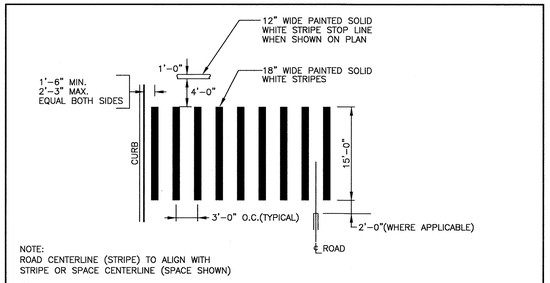
TYPICAL PAINTED ACCESSIBLE SYMBOL DETAIL
SCALE: N.T.S.



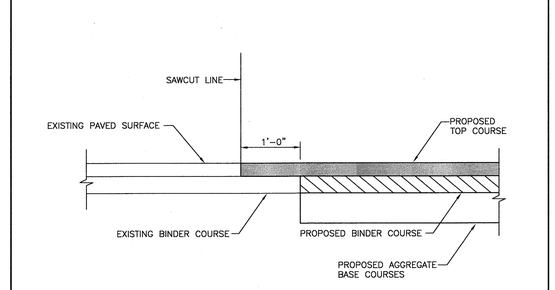
STOP SIGN DETAIL
SCALE: N.T.S.



TYPICAL PAINTED "STOP" DETAIL
SCALE: N.T.S.



TYPICAL 18" WIDE 90° PAINTED CROSSWALK DETAIL
SCALE: N.T.S.



TYPICAL MATCH EXISTING PAVEMENT DETAIL
SCALE: N.T.S.

Nantucket Planning Board
APPROVAL UNDER THE SUBDIVISION CONTROL LAW REQUIRED

Chairman

Vice Chairman

Board Member

Board Member

Board Member

DATE APPROVED:

DATE ENDORSED:

PLANNING BD. FILE NO.:

No.	Revision	Date
1	ISSUED FOR DEFINITIVE SUBDIVISION APPROVAL	08/11/2016

Seal:
COMMONWEALTH OF MASSACHUSETTS
JOHN J. STOY
CIVIL
No. 42797
REGISTERED PROFESSIONAL ENGINEER
8-11-16

Designed by:	SPG
Drawn by:	AKC
Checked by:	JJS
Scale:	N.T.S.
Date:	08/11/2016

Prepared for:
NANTUCKET COTTAGE HOSPITAL
57 SOUTH PROSPECT STREET
NANTUCKET, MA 02554
(508) 825-8100

Prepared by:
RJO'CONNELL & ASSOCIATES, INC.
CIVIL ENGINEERS, SURVEYORS & LAND PLANNERS
80 MONTVALE AVE
STONEHAM, MA 02180
781-279-0180
FAX: 781-279-0173

Project Name:
DEFINITIVE SUBDIVISON PLAN FOR THE GOUIN VILLAGE PROPERTIES LOCATED AT 16, 18 & 20 VESPER LANE

Drawing Name:
DETAILS - SHEET 3

Drawing No.:
C-6
Project No.: 13081

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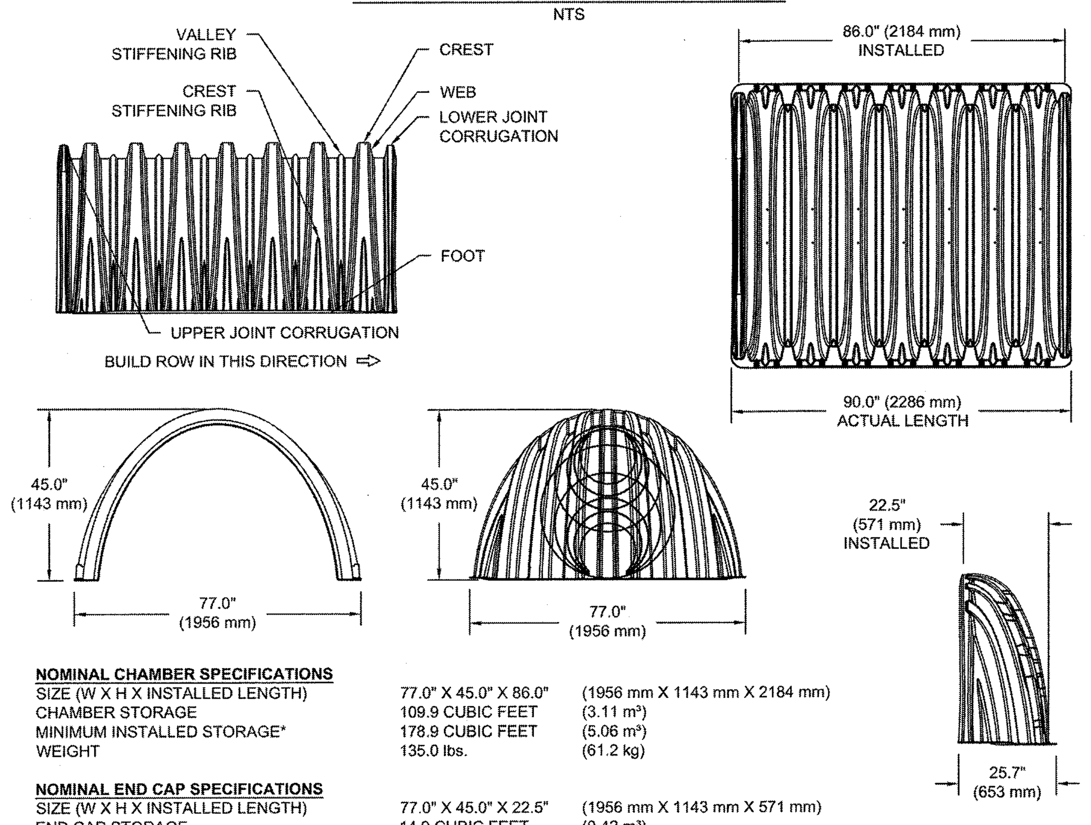
MC-3500 TECHNICAL SPECIFICATION
NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 86.0"	(1956 mm X 1143 mm X 2184 mm)
CHAMBER STORAGE	109.9 CUBIC FEET	($3.11\ m^3$)
MINIMUM INSTALLED STORAGE*	178.9 CUBIC FEET	($5.06\ m^3$)
WEIGHT	135.0 lbs.	(61.2 kg)

NOMINAL END CAP SPECIFICATIONS

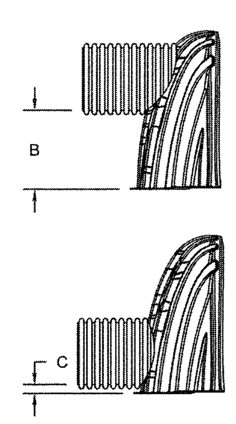
SIZE (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 22.5"	(1956 mm X 1143 mm X 571 mm)
END CAP STORAGE	14.9 CUBIC FEET	($0.42\ m^3$)
MINIMUM INSTALLED STORAGE*	46.0 CUBIC FEET	($1.30\ m^3$)
WEIGHT	50.0 lbs.	(22.7 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY

STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART #	STUB	B	C
MC3500IEPP06T	6" (150 mm)	33.21" (844 mm)	---
MC3500IEPP06B		---	0.66" (17 mm)
MC3500IEPP08T	8" (200 mm)	31.16" (791 mm)	---
MC3500IEPP08B		---	0.81" (21 mm)
MC3500IEPP10T	10" (250 mm)	29.04" (738 mm)	---
MC3500IEPP10B		---	0.93" (24 mm)
MC3500IEPP12T	12" (300 mm)	26.36" (670 mm)	---
MC3500IEPP12B		---	1.35" (34 mm)
MC3500IEPP15T	15" (375 mm)	23.39" (594 mm)	---
MC3500IEPP15B		---	1.50" (38 mm)
MC3500IEPP18TC	18" (450 mm)	20.03" (509 mm)	---
MC3500IEPP18BC		---	1.77" (45 mm)
MC3500IEPP24TC	24" (600 mm)	14.48" (368 mm)	---
MC3500IEPP24BC		---	2.06" (52 mm)
MC3500IEPP30BC	30" (750 mm)	---	

NOTE: ALL DIMENSIONS ARE NOMINAL

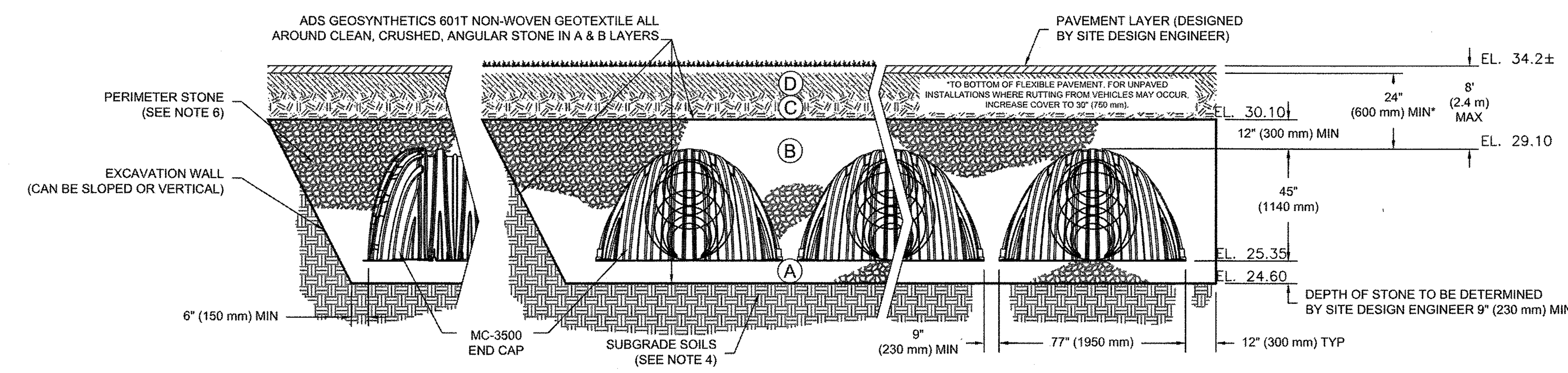


CUSTOM PRECORED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS.
CUSTOM INVERT LOCATIONS ON THE MC-3500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm)
THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. [2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



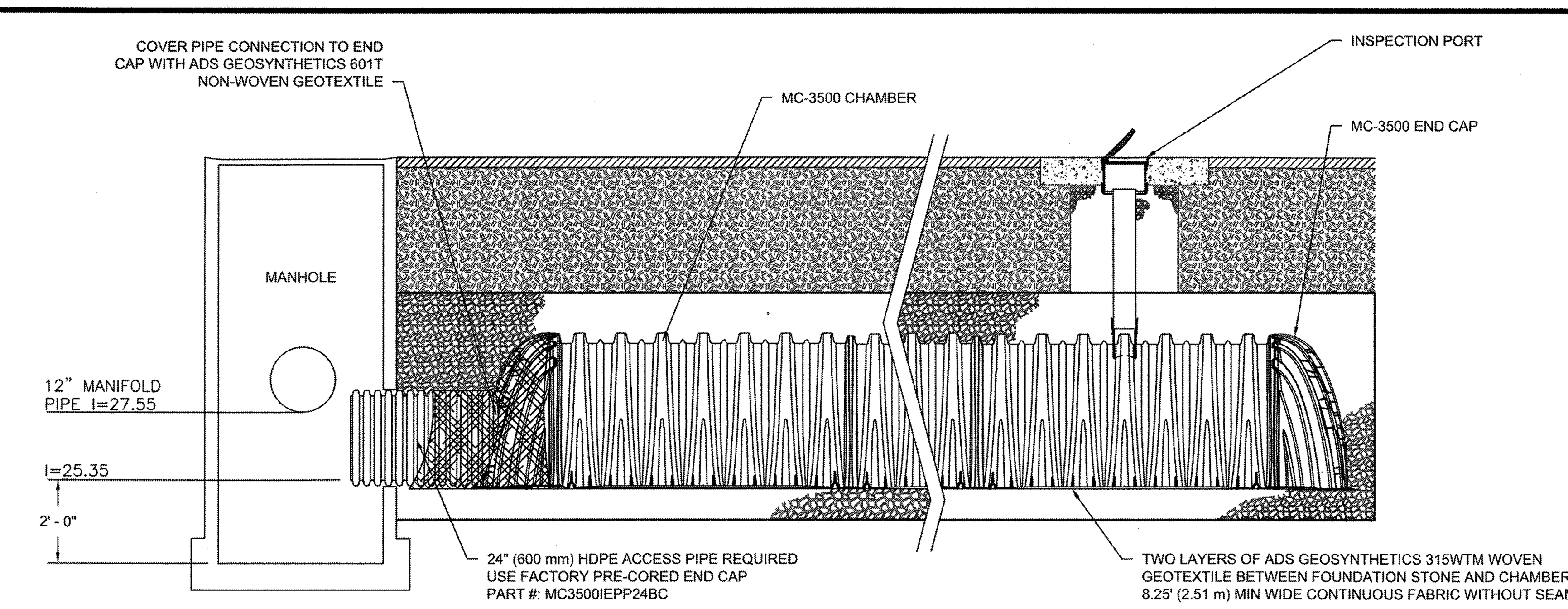
NOTES:

1. MC-3500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
6. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.

StormTech
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

DRAWN: CHECKED: DATE: PROJECT #: REV DRW CHK DESCRIPTION

SHEET 6 OF



MC-3500 ISOLATOR ROW DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

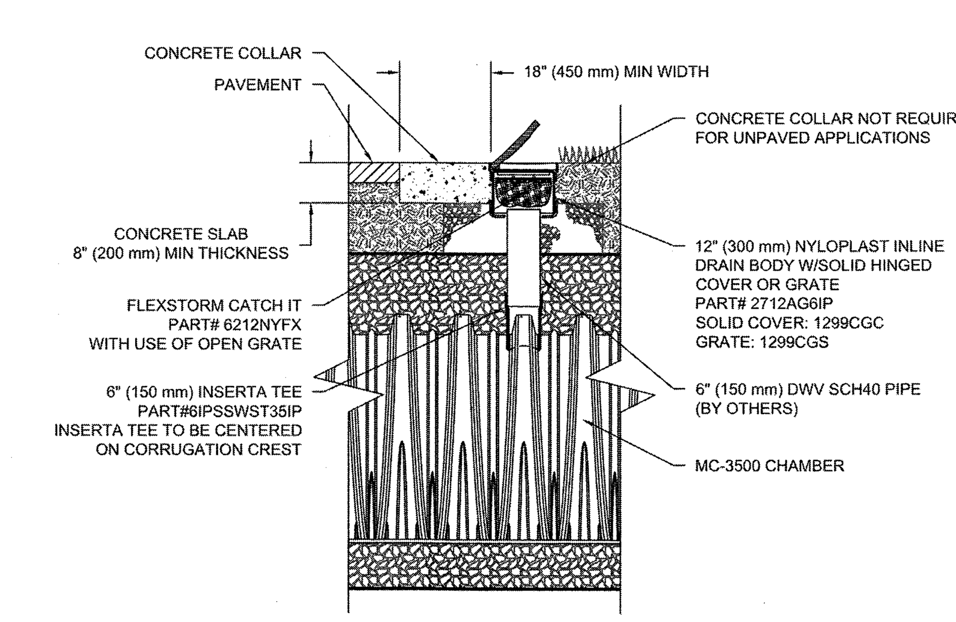
STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



MC-3500 6" INSPECTION PORT DETAIL
NTS

StormTech
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

DRAWN: CHECKED: DATE: PROJECT #: REV DRW CHK DESCRIPTION

SHEET 7 OF

PROPOSED LAYOUT SYSTEM SS1-1
(21) STORMTECH MC-3500 CHAMBERS
(14) STORMTECH MC-3500 END CAPS
INSTALLED WITH 12" COVER STONE, 9" BASE STONE, 40% STONE
VOID AREA OF SYSTEM: 1,619 FT^2
PERIMETER OF SYSTEM: 166 FT

PROPOSED LAYOUT SYSTEM SS1-2
(97) STORMTECH MC-3500 CHAMBERS
(22) STORMTECH MC-3500 END CAPS
INSTALLED WITH 12" COVER STONE, 9" BASE STONE, 40% STONE
INSTALLED SYSTEM VOLUME: 19,886 CF (PERIMETER STONE INCLUDED)
AREA OF SYSTEM: 6,041 FT^2
PERIMETER OF SYSTEM: 338 FT

PROPOSED LAYOUT SYSTEM SS1-3
(28) STORMTECH MC-3500 CHAMBERS
(9) STORMTECH MC-3500 END CAPS
INSTALLED WITH 12" COVER STONE, 9" BASE STONE, 40% STONE
AREA OF SYSTEM: 1,800 FT^2
PERIMETER OF SYSTEM: 180 FT

Nantucket Planning Board
APPROVAL UNDER THE SUBDIVISION CONTROL LAW REQUIRED

Chairman ______
Vice Chairman ______
Board Member ______
Board Member ______
Board Member ______
DATE APPROVED: ______
DATE ENDORSED: ______
PLANNING BD. FILE NO.: ______

No.	Revision	Date
1	ISSUED FOR DEFINITIVE SUBDIVISION APPROVAL	08/11/2016

Seal: COMMONWEALTH OF MASSACHUSETTS — JOHN J. STOY CIVIL No. 42797 REGISTERED PROFESSIONAL ENGINEER — 8-11-16

Designed by:	SPG
Drawn by:	MCR
Checked by:	SPG
Scale:	N.T.S.
Date:	08/11/2016

Prepared for:
NANTUCKET COTTAGE HOSPITAL
57 SOUTH PROSPECT STREET
NANTUCKET, MA 02554
(508) 825-8100

Prepared by:
RJO'CONNELL & ASSOCIATES, INC.
CIVIL ENGINEERS, SURVEYORS & LAND PLANNERS
80 MONTVALE AVE
STONEHAM, MA 02180
781-279-0180
FAX: 781-279-0173

Project Name:
DEFINITIVE SUBDIVISON PLAN FOR THE GOUIN VILLAGE PROPERTIES LOCATED AT 16, 18 & 20 VESPER LANE

Drawing Name:
DETAILS - SHEET 4

Drawing No.: **C-7**
Project No.: 13081

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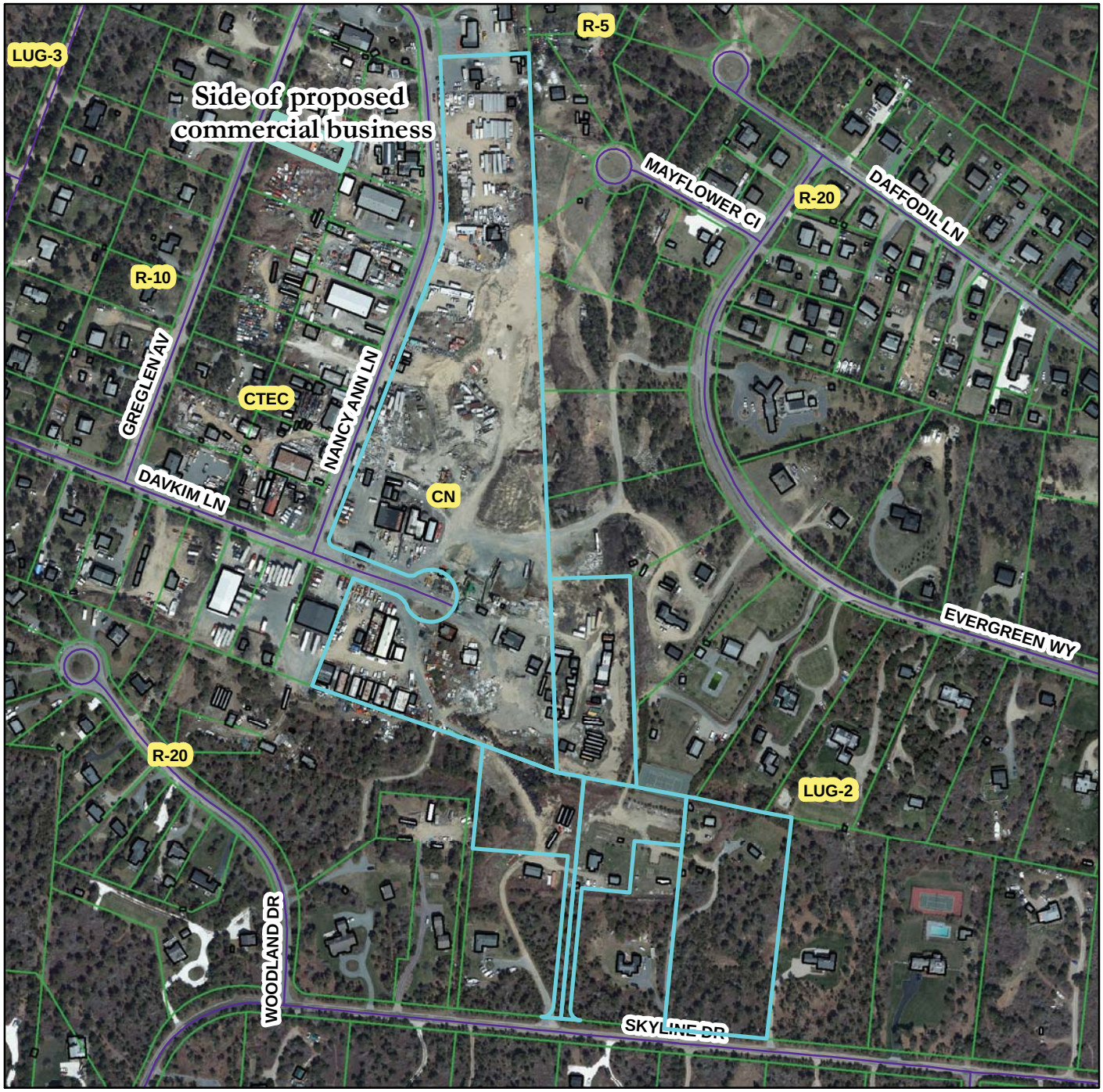
#7918 Richmond Great Point Development, LLC
Definitive Subdivision
42B, 48R, 54R Skyline Drive & 20 Davkim Lane
Map 79 Parcels 44.1, 45.1, 46
Map 68 Parcels 56.1, 57



The Richmond Company, Inc.
23 Concord Street
Wilmington, Massachusetts 01887
(979) 988-3900

January 6, 2016

TOWN OF NANTUCKET
PLANNING BOARD
2 Fairgrounds Road
Nantucket, Massachusetts 02554

Attention: Leslie Woodson Snell, AICP, LEED AP, Deputy Director of Planning

Subject: Submittal of Application for Approval of a Definitive Subdivision Plan
42 (Rear) 48 (Rear) and 54 (Rear) Skyline Drive Properties and 20 Davkim Lane Property

Dear Ms. Snell:

The purpose of this correspondence, issued in our capacity as the applicant and development manager, on behalf of the owner of the subject properties (Richmond Great Point Development LLC) is to submit the enclosed completed application (Form B) and associated materials (plans, storm water management report, deeds, etc.) comprising a Definitive Subdivision Plan for the series of adjoining properties located at 42 (Rear), 48 (Rear), and 54 (Rear) Skyline Drive, and 20 Davkim Lane.

The submittal is being made in accordance with and conforms to the provisions of Section 2.06 of "*The Rules and Regulations Governing the Subdivision of Land, Nantucket, Massachusetts*" as well as "*The Subdivision Control Law of Massachusetts*" (M.G.L. Chapter 41, Sections 81K-81GG, inclusive).

The primary intent of the subdivision is to consolidate the +/-1 acre (rear) portions of both of the 48 Skyline Drive property and the 54 Skyline Drive property, which have been previously subdivided out from the front portions of these properties, by way of approval not required plans that were previously endorsed by the Town of Nantucket Planning Board, into a single +/- 2 acre conforming / buildable lot. This lot will take access from and derive its frontage off a new roadway, also comprising part of this subdivision, whose layout matches the layout of the previously laid out "paper street" known as Clay Street. This road will intersect with Skyline Drive, at the south, will run north, past the 42 (Front) and 48 (Front) Skyline Drive properties and past the (new) 48 (Rear) / 54 (Rear) Skyline Drive property, and will then turn northwest, running through the southern edge of the 20 Davkim Lane property, and intersecting with the existing portion of Davkim Lane, due east of its existing intersection with Nancy Ann Lane.

The entirety of the 48 (Rear), and 54 (Rear) Skyline Drive properties, which will be consolidated to create the buildable lot upon approval of this subdivision (show as Lot # 1 on the plan), are designated within the Limited Use General 2 (LUG-2) zoning district. The buildable lot resulting from the proposed action will meet or exceed the relevant dimensional criteria and related requirements for such as established in the local zoning bylaw for the above-referenced district, including but not limited to the following:

- Minimum Lot Area (Not Less than 80,000 Square Feet) – Proposed 89,219 Square Feet
- Minimum Lot Frontage (Not Less than 150 Linear Feet – Proposed 302.48 Linear Feet
- Minimum Lot Regularity Factor (Not Less than 0.55) – Proposed 0.568

It is further noted that the land area comprising the entirety of the 48 (Rear), and 54 (Rear) Skyline Drive properties, which will be consolidated to create the buildable lot upon approval of this subdivision (shown as Lot # 1 on the plan), is subject to a covenant in favor of the Nantucket Land Council, Inc. (NLC), dated as of January 15, 1982, recorded at Book 481, Page 314 in the Nantucket County Registry of Deeds. This covenant provides that certain land in this area, including the subject properties, "*shall not be resubdivided, or combined and resubdivided, in such a manner as to create or leave any lot containing less than 80,000 square feet of land*". As described herein and as a review of the proposed subdivision plan will confirm, the current proposal, which resubdivides portions of two lots and consolidates them into a single lot, which is comprised of 89,219 square feet of land area, exceeds and complies with the (applicable) restriction in this covenant.

With respect to access and vehicular circulation, as part of this application, we are respectfully requesting that the Planning Board allow for a "phased" improvement of the new roadway, based on the anticipated progression of development of the (new) 48 (rear) / 54 (Rear) Skyline Drive property, and the other surrounding properties. To this end, our intent is to sell and to provide for the development of the (new) 48 (rear) / 54 (Rear) Skyline Drive property immediately. Our proposal is to initially improve the first +/- 450 linear feet of this roadway to driveway standards, including all required drainage, terminating at a "turnaround", but not to improve it to full roadway standards and not to improve the remaining +/- 800 linear foot long segment running further north which intersects into the existing portion of Davkim Lane until such time as is necessary, based on the future development and improvement of the adjacent (20 Davkim Lane) property. The rationale and underlying basis for this "phasing" request is as follows.

As you are aware and as the Planning Board is aware, the 20 Davkim Lane property, which is +/- 15 acres in size, was recently the subject of zoning warrant articles which were approved at the Nantucket Special Town Meeting which was held on November 9, 2015, which is ultimately expected to result in the development of this property as a multi-family rental apartment residential community. We are currently in the initial phases of the site planning specific to this property, which will take several months to work through and will then be subject to substantial review / approval by the Planning Board, including a special permit, major site plan review, and a subsequent definitive subdivision. Because the precise path and layout of the roadway that will be expected to run through this property is still subject to this planning and permitting process, we would respectfully request the phasing and improvement flexibility described herein relative to the roadway that will serve the current subdivision, in order to improve the segment which is required to allow for the release and development of the 48 (Rear) and 54 (Rear) Skyline Drive properties as a single residential lot as a driveway immediately, while deferring the improvement of the remaining segment of the roadway until such time as the specific development plan for the (much larger) surrounding property is finalized, and reviewed / approved by the Planning Board.

In addition to the completed (Form B) application, we have submitted the following plans and technical materials that are required to be submitted to provide for the processing and approval of the proposed subdivision, including: (1) the *Definitive Plan, Clay Street, Nantucket, Mass* as prepared by Hayes Engineering, Inc., dated December 11, 2015, depicting the subdivision of the lots along with the applicable / customary notes and details (totaling 9 sheets), (2) the *Storm Water Management Report*, as prepared by Hayes Engineering, Inc., dated December 11, 2015, (3) the *Site Analysis Report*, as prepared by Hayes Engineering, Inc., dated December 2015, (4) the *Street Network Plan*, as prepared by Hayes Engineering, Inc., dated December 11, 2015, and (5) the *Requested Waivers*, as prepared by Hayes Engineering, Inc., dated December 2015.

We have also attached Attachment # 1 to the Form B application form, detailing the derivation of the title to the land comprising the proposed subdivision, given that the land includes multiple parcels, and that title to several of the parcels has been derived from different sellers / grantors.

We trust that this submittal conforms to the applicable requirements for such a Definitive Subdivision Plan (AR) and we look forward to the completion of your review and the subsequent review and approval of the plan by the Town of Nantucket Planning Board.

If you any immediate questions with respect to either the application or the enclosed materials, please feel free to contact me at 978-988-3900, Extension # 12.

Very truly yours,

David J. Armanetti, Director of Real Estate Development
The Richmond Company, Inc. (Applicant / Development Manager)
On Behalf of Richmond Great Point Development LLC (Owner)

Cc: Philip Pastan, TRC
Kathryn Fossa, TRC
Patricia Roggeveen, RGPDLLC
Shane Valero, RGPDLLC
John Ogren, Hayes Engineering
Andrew Burek, Esq., TRC
Arthur Reade, Esq.

JAN 11 2016 PM1:19
Town Clerk
Town & County Building
16 Broad St
Nantucket, MA 02554

Nantucket Planning Board

RECEIVED
JAN 11 2016
By

Form B
Application for Approval of a Definitive Subdivision Plan
(AR)

File one completed form with the Planning Board and one copy with the Town Clerk.

Date: JANUARY 6, 2016

To the Planning Board of Nantucket:

The undersigned, being the applicant as defined under Chapter 41, Section 81-L, for approval of a proposed subdivision shown on a plan entitled SUBDIVISION PLAN OF LAND IN NANTUCKET, MASS designed by HAYES ENGINEERING, INC. dated _____, and described as follows: located on 42B/48R/54R SKYLINE DRIVE AND 20 DAWKIN LANE, number of lots proposed THREE (3) total acreage of tract 17.044 ACRES, hereby submits said plan as a **definitive** plan in accordance with the *Rules and Regulations Governing the Subdivision of Land* of the Nantucket Planning Board and makes application to the Board for approval of said plan.

The undersigned's title to said land is derived from SEE ATTACHMENT #1 FOR DETAILS by deed dated _____ and recorded in the Nantucket Registry of Deeds Book _____, Page _____, registered in the Nantucket Registry District of the Land Court, Certificate of Title # _____ and shown on Nantucket Assessor's Map # _____, Parcel _____, and said land is free of encumbrances except for the following: CUSTOMARY UTILITY EASEMENTS AND ONE COVENANT IN FAVOR OF NANTUCKET LAND COUNCIL (ATTACHED)

Said plan ○ has ☒ has not evolved from a preliminary plan submitted to the Board on N/A (date) and ○ approved ○ disapproved on N/A (date).

The undersigned hereby applies for the approval of said **definitive** plan by the Board, in belief that the plan conforms to the Board's *Rules and Regulations*.

Name(s) and address(es) of the Applicant(s):
(to include all the names and addresses of the principals of the owner entity such as principal officers of the corporation, trustees of a trust or partners of a partnership)

RICHMOND GREAT POINT DEVELOPMENT LLC
PHILIP PASTAN, ITS MANAGER

Contact Phone #: (978) 988-3900 x16 Fax #: (978) 988-3450 E-mail: ppastan@richmondco.com

Name of owner(s): RICHMOND GREAT POINT DEVELOPMENT LLC

Address of owner(s): 23 CONCORD ST., WILMINGTON MA 01887

I hereby certify that the applicant(s) listed above have been authorized by me to file a subdivision plan with the Planning Board on property that I own.

Owner's signature PHILIP PASTAN, ITS MANAGER 12/14/15

Received by Town Clerk:

Date: Jan. 11, 2016

Time: 1:19 p.m.

Received by Board of Health:

Date: 1-11-2016 AB

Time: 1:15 pm

Planning Board File #_____

Attachment 1 to Form B / Application for Approval of a Definitive Subdivision Plan (AR)

Additional Space Needed to Provide Derivation of Title to Land

"Definitive Plan, Clay Street, Nantucket Mass"
42 (Rear), 48 (Rear), and 54 (Rear) Skyline Drive and 20 Davkim Lane

The title to the land included in the Application for Approval of a Definitive Subdivision Plan is derived as follows:

As to the Owner of One Hundred Percent (100%) of the 42 (Rear) Skyline Drive Property
RICHMOND GREAT POINT DEVELOPMENT LLC

"*Deed*" dated August 7, 2013, recorded at the Nantucket County Registry of Deeds, in Book # 01397, Page # 312, recorded on August 8, 2013 (referred to as "Recorded Land – Parcel Seventy" on Page 14 of the "*Deed*").

As to the Owner of One Hundred Percent (100%) of the 48 (Rear) Skyline Drive Property
RICHMOND GREAT POINT DEVELOPMENT LLC

"*Deed*" dated July 25, 2014, recorded at the Nantucket County Registry of Deeds, in Book # 1443, Page # 213, recorded on July 25, 2014.

As to the Owner of the One Hundred Percent (100%) of the 54 (Rear) Skyline Drive Property
RICHMOND GREAT POINT DEVELOPMENT LLC

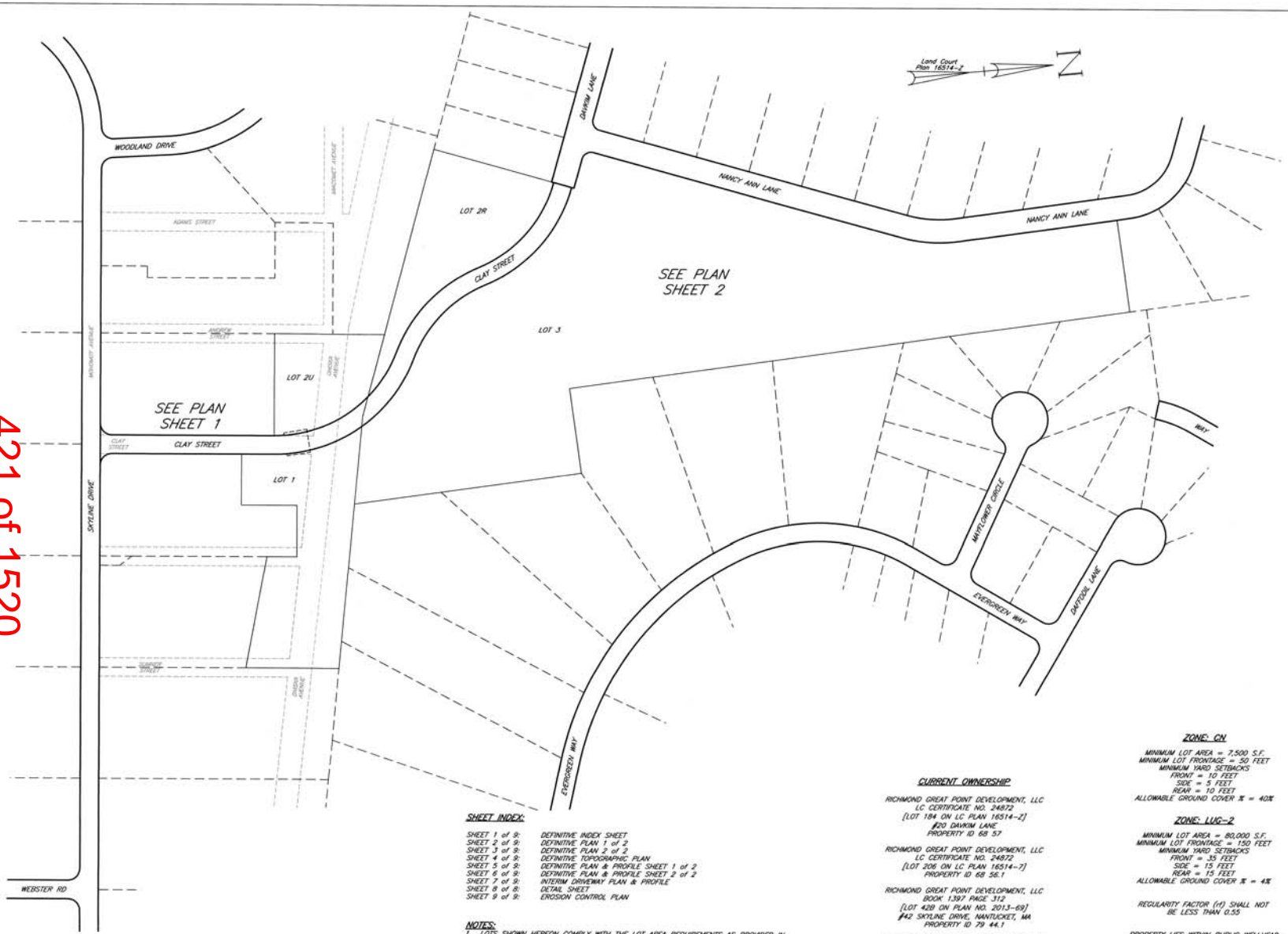
"Quitclaim Deed" recorded as Document # 00002834, recorded on October 10, 2014 at the Nantucket Registry of Deeds (as to a 25% interest in the property).

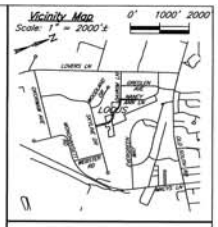
"*Deed*" dated December 11, 2015, recorded at the Nantucket County Registry of Deeds, in Book # 1515, Page # 1, recorded on December 14, 2015 (as to a 50% interest in the property).

"*Deed*" dated November 30, 2015, recorded at the Nantucket County Registry of Deeds, in Book # 1514, Page # 343, recorded on December 14, 2015 (as to a 25% interest in the property).

As to the Owner of One Hundred Percent (100%) of the 20 Davkim Lane Property
RICHMOND GREAT POINT DEVELOPMENT LLC

"*Deed*" dated August 7, 2013, recorded at the Nantucket County Registry District, as Certificate # 24872, recorded on August 8, 2013 (referred to as "Registered Land – Parcel Thirty-Two" on Page 7 of the "*Deed*").





421 of 1520

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

SHEET INDEX:

SHEET 1 of 9:	DEFINITIVE INDEX SHEET
SHEET 2 of 9:	DEFINITIVE PLAN 1 of 2
SHEET 3 of 9:	DEFINITIVE PLAN 2 of 2
SHEET 4 of 9:	DEFINITIVE TOPOGRAPHIC PLAN
SHEET 5 of 9:	DEFINITIVE PLAN & PROFILE SHEET 1 of 2
SHEET 6 of 9:	DEFINITIVE PLAN & PROFILE SHEET 2 of 2
SHEET 7 of 9:	INTERIM DRIVEWAY PLAN & PROFILE
SHEET 8 of 8:	DETAIL SHEET
SHEET 9 of 9:	EROSION CONTROL PLAN

NOTES:

1. LOTS SHOWN HEREON COMPLY WITH THE LOT AREA REQUIREMENTS AS PROVIDED IN THE NANTUCKET ZONING BYLAW, CHAPTER 139 ss 2A AND 16A.
2. THE PLANNING BOARD DETERMINES THAT LOTS 1, 2U, 2R & 3 DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BY-LAW, BUT STILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BYLAWS. DETERMINATION MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.
3. LOT 2U IS NOT TO BE CONSIDERED A SEPARATE BUILDING LOT BUT IS TO BE HELD IN COMMON OWNERSHIP WITH ADJOINING LOT 2R TO FORM ONE BUILDING LOT. (TOTAL PARCEL AREA = 112,466 S.F., OR 2.581 ACRES)

CURRENT OWNERSHIP

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
(LOT 1B4 ON LC PLAN 16514-2)
#20 DAVKIM LANE
PROPERTY ID 68 57

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
(LOT 208 ON LC PLAN 16514-7)
PROPERTY ID 68 56.1

RICHMOND GREAT POINT DEVELOPMENT, LLC
BOOK 1397 PAGE 312
(LOT 428 ON PLAN NO. 2013-69)
#42 SKYLINE DRIVE, NANTUCKET, MA
PROPERTY ID 79 44.1

RICHMOND GREAT POINT DEVELOPMENT, LLC
BOOK 1443 PAGE 213
(LOT 488 ON PLAN NO. 2013-69)
#48 SKYLINE DRIVE, NANTUCKET, MA
PROPERTY ID 79 45.1

RICHMOND 54 SKYLINE REALTY TRUST
BOOK 1442 PAGE 111 & BOOK 1442 PAGE 114
(LOT 55 ON PLAN FILE 11-4)
#54 SKYLINE DRIVE, NANTUCKET, MA
PROPERTY ID 79 46 PART

ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET
MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET
ALLOWABLE GROUND COVER % = 40%

ZONE: LUG-2

MINIMUM LOT AREA = 80,000 S.F.
MINIMUM LOT FRONTAGE = 150 FEET
MINIMUM YARD SETBACKS
FRONT = 35 FEET
SIDE = 15 FEET
REAR = 15 FEET
ALLOWABLE GROUND COVER % = 4%

REGULARITY FACTOR (rf) SHALL NOT BE LESS THAN 0.55

PROPERTY LIES WITHIN PUBLIC WELLHEAD RECHARGE DISTRICT.

I CERTIFY THAT I HAVE CONFORMED WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS IN PREPARING THIS PLAN.

HAYES ENGINEERING, INC.

Coordinate System

N 92,823.98
E 1,761,414.97
Massachusetts State Plane Coordinates, Island Zone in US Survey feet based upon Nantucket Primary Airport Control Station designation ACK ARP (PID – AB3245) NAD 83(2011) position.

LEGEND

CBDH – CONCRETE BOUND WITH DRILL HOLE

(FD) – FOUND

LC – LAND COURT

rf – REGULARITY FACTOR

⊡ – PROPOSED CONCRETE BOUND WITH DRILL HOLE TO BE SET BY OWNER UNLESS OTHERWISE NOTED

Seal
THOMAS P. WINSLOW #30320
12-14-2015

Hayes
0' 50' 100' 200' 300'

DEFINITIVE INDEX SHEET
CLAY STREET
NANTUCKET, MASS.

OWNERS:
RICHMOND GREAT POINT DEVELOPMENT, LLC
& RICHMOND 54 SKYLINE REALTY TRUST
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer
Hayes Engineering, Inc.
603 Salem Street
Wakefield, Mass. 01880
www.hayeseng.com

Scale: 1"=100'

December 11, 2015

No.	Revision	Date
10		
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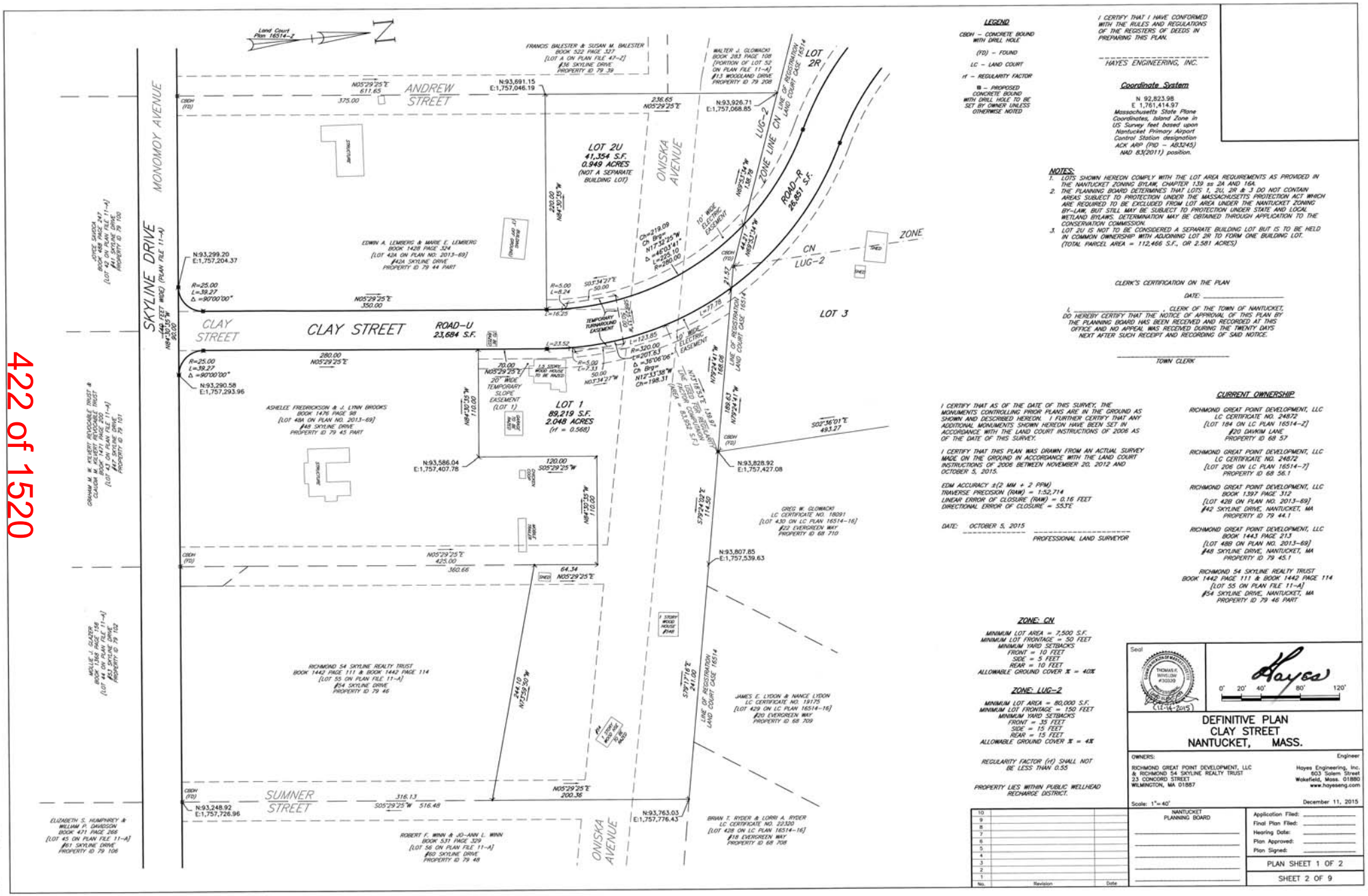
NANTUCKET PLANNING BOARD

Application Filed: _____
Final Plan Filed: _____
Hearing Date: _____
Plan Approved: _____
Plan Signed: _____

INDEX SHEET

SHEET 1 OF 9



LEGEND

CBDH – CONCRETE BOUND WITH DRILL HOLE

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■ – PROPOSED CONCRETE BOUND WITH DRILL HOLE TO BE SET BY OWNER UNLESS OTHERWISE NOTED

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NOTES:

1. LOTS SHOWN HEREON COMPLY WITH THE LOT AREA REQUIREMENTS AS PROVIDED IN THE NANTUCKET ZONING BYLAW, CHAPTER 139 ss 2A AND 16A.
2. THE PLANNING BOARD DETERMINES THAT LOTS 1, 2U, 2R & 3 DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BY-LAW, BUT STILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BYLAWS. DETERMINATION MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.
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(TOTAL PARCEL AREA = 112,466 S.F., OR 2.581 ACRES)

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

I CERTIFY THAT AS OF THE DATE OF THIS SURVEY, THE MONUMENTS CONTROLLING PRIOR PLANS ARE IN THE GROUND AS SHOWN AND DESCRIBED HEREON. I FURTHER CERTIFY THAT ANY ADDITIONAL MONUMENTS SHOWN HEREON HAVE BEEN SET IN ACCORDANCE WITH THE LAND COURT INSTRUCTIONS OF 2006 AS OF THE DATE OF THIS SURVEY.

I CERTIFY THAT THIS PLAN WAS DRAWN FROM AN ACTUAL SURVEY MADE ON THE GROUND IN ACCORDANCE WITH THE LAND COURT INSTRUCTIONS OF 2006 BETWEEN NOVEMBER 20, 2012 AND OCTOBER 5, 2015.

EDM ACCURACY ±(2 MM + 2 PPM)
TRAVERSE PRECISION (RAW) = 1:52,714
LINEAR ERROR OF CLOSURE (RAW) = 0.16 FEET
DIRECTIONAL ERROR OF CLOSURE = 53.3"E

DATE: OCTOBER 5, 2015

_____
PROFESSIONAL LAND SURVEYOR

CURRENT OWNERSHIP

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 184 ON LC PLAN 16514-Z]
#20 DAYKIM LANE
PROPERTY ID 68 57

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 206 ON LC PLAN 16514-7]
PROPERTY ID 68 58.1

RICHMOND GREAT POINT DEVELOPMENT, LLC
BOOK 1397 PAGE 312
[LOT 42B ON PLAN NO. 2013-69]
#42 SKYLINE DRIVE, NANTUCKET, MA
PROPERTY ID 79 44.1

RICHMOND GREAT POINT DEVELOPMENT, LLC
BOOK 1443 PAGE 213
[LOT 48B ON PLAN NO. 2013-69]
#48 SKYLINE DRIVE, NANTUCKET, MA
PROPERTY ID 79 45.1

RICHMOND 54 SKYLINE REALTY TRUST
BOOK 1442 PAGE 111 & BOOK 1442 PAGE 114
[LOT 55 ON PLAN FILE 11-A]
#54 SKYLINE DRIVE, NANTUCKET, MA
PROPERTY ID 79 46 PART

ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET
MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET
ALLOWABLE GROUND COVER % = 40%

ZONE: LUG-2

MINIMUM LOT AREA = 80,000 S.F.
MINIMUM LOT FRONTAGE = 150 FEET
MINIMUM YARD SETBACKS
FRONT = 35 FEET
SIDE = 15 FEET
REAR = 15 FEET
ALLOWABLE GROUND COVER % = 4%

REGULARITY FACTOR (rf) SHALL NOT BE LESS THAN 0.55

PROPERTY LIES WITHIN PUBLIC WELLHEAD RECHARGE DISTRICT.

Seal: THOMAS E. WINSLOW #30329 (12-14-2015)

Hayes

0' 20' 40' 80' 120'

DEFINITIVE PLAN
CLAY STREET
NANTUCKET, MASS.

OWNERS:
RICHMOND GREAT POINT DEVELOPMENT, LLC
& RICHMOND 54 SKYLINE REALTY TRUST
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer
Hayes Engineering, Inc.
603 Salem Street
Wakefield, Mass. 01880
www.hayeseng.com

Scale: 1"=40'

December 11, 2015

No.	Revision	Date
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NANTUCKET PLANNING BOARD

Application Filed: _____
Final Plan Filed: _____
Hearing Date: _____
Plan Approved: _____
Plan Signed: _____

PLAN SHEET 1 OF 2

SHEET 2 OF 9

422 of 1520

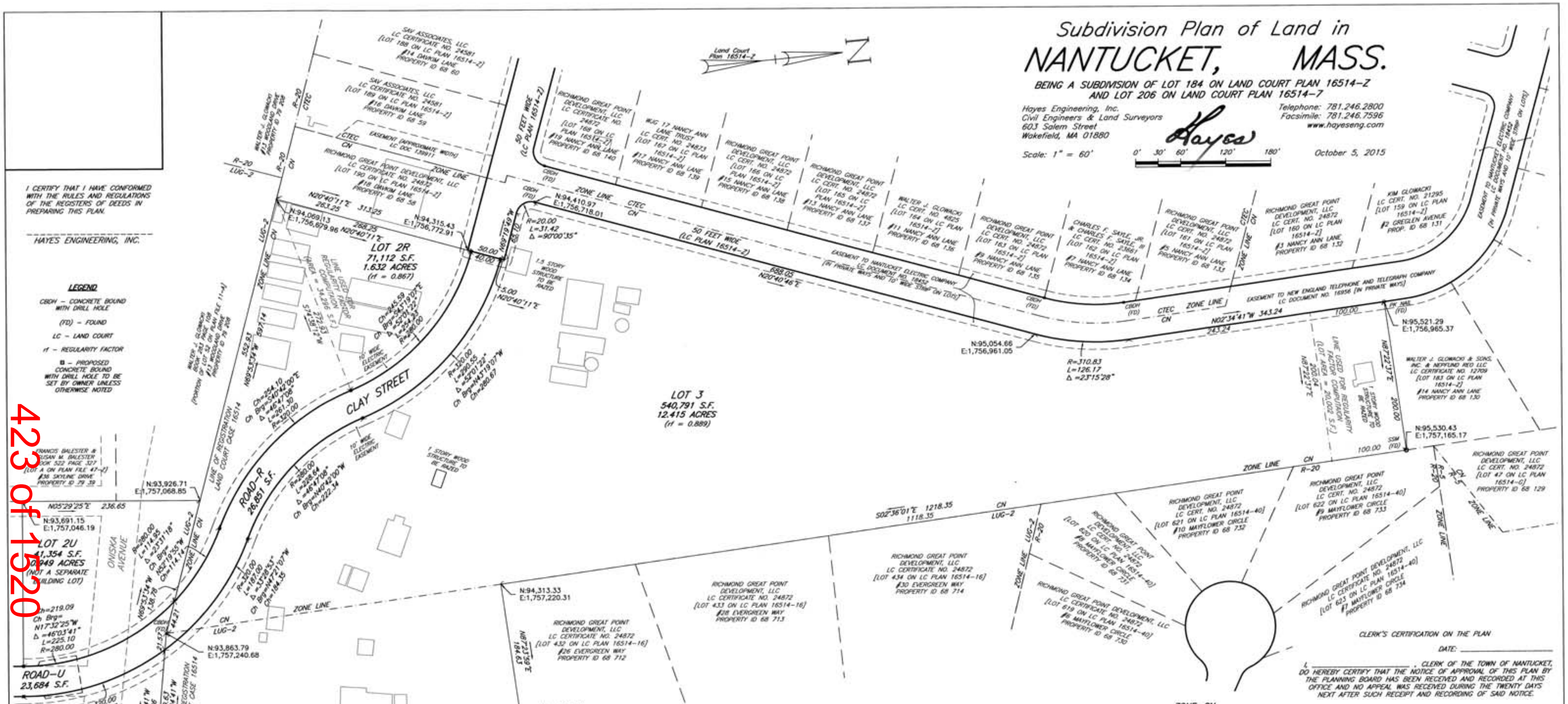
Subdivision Plan of Land in NANTUCKET, MASS.

BEING A SUBDIVISION OF LOT 184 ON LAND COURT PLAN 16514-Z AND LOT 206 ON LAND COURT PLAN 16514-7

Hayes Engineering, Inc.
Civil Engineers & Land Surveyors
603 Salem Street
Wakefield, MA 01880
Telephone: 781.246.2800
Facsimile: 781.246.7596
www.hayeseng.com

Scale: 1" = 60'

October 5, 2015



I CERTIFY THAT I HAVE CONFORMED WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS IN PREPARING THIS PLAN.

HAYES ENGINEERING, INC.

LEGEND

CBDH – CONCRETE BOUND WITH DRILL HOLE
(FD) – FOUND
LC – LAND COURT
rf – REGULARITY FACTOR
▣ – PROPOSED CONCRETE BOUND WITH DRILL HOLE TO BE SET BY OWNER UNLESS OTHERWISE NOTED

NOTES:

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2. THE PLANNING BOARD DETERMINES THAT LOTS 1, 2U, 2R & 3 DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BY-LAW, BUT STILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BYLAWS. DETERMINATION MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.
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Coordinate System

N 92,823.98
E 1,761,414.97
Massachusetts State Plane Coordinates, Island Zone in US Survey feet based upon Nantucket Primary Airport Control Station designation ACK ARP (PID – AB3245) NAD 83(2011) position.

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EDM ACCURACY ±(2 MM + 2 PPM)
TRAVERSE PRECISION (RAW) = 1:52,714
LINEAR ERROR OF CLOSURE (RAW) = 0.16 FEET
DIRECTIONAL ERROR OF CLOSURE = S53°E

DATE: OCTOBER 5, 2015

PROFESSIONAL LAND SURVEYOR

CURRENT OWNERSHIP

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 184 ON LC PLAN 16514-Z]
#20 DAVKIM LANE
PROPERTY ID 68 57

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 206 ON LC PLAN 16514-7]
PROPERTY ID 68 56.1

RICHMOND GREAT POINT DEVELOPMENT, LLC
BOOK 1397 PAGE 312
[LOT 42B ON PLAN NO. 2013-69]
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PROPERTY ID 79 44.1

RICHMOND GREAT POINT DEVELOPMENT, LLC
BOOK 1443 PAGE 213
[LOT 48B ON PLAN NO. 2013-69]
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PROPERTY ID 79 45.1

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FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET
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MINIMUM YARD SETBACKS
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ALLOWABLE GROUND COVER % = 4%

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PROPERTY LIES WITHIN PUBLIC WELLHEAD RECHARGE DISTRICT.

CLERK'S CERTIFICATION ON THE PLAN

DATE: ____________

I, ____________, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

____
TOWN CLERK

No.	Revision	Date
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Seal: THOMAS F. WINSLOW #35870 PROFESSIONAL LAND SURVEYOR (12-14-2015)

0' 30' 60' 120' 180'

DEFINITIVE PLAN
CLAY STREET
NANTUCKET, MASS.

OWNERS:
RICHMOND GREAT POINT DEVELOPMENT, LLC
& RICHMOND 54 SKYLINE REALTY TRUST
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer
Hayes Engineering, Inc.
603 Salem Street
Wakefield, Mass. 01880
www.hayeseng.com

Scale: 1"=60'

December 11, 2015

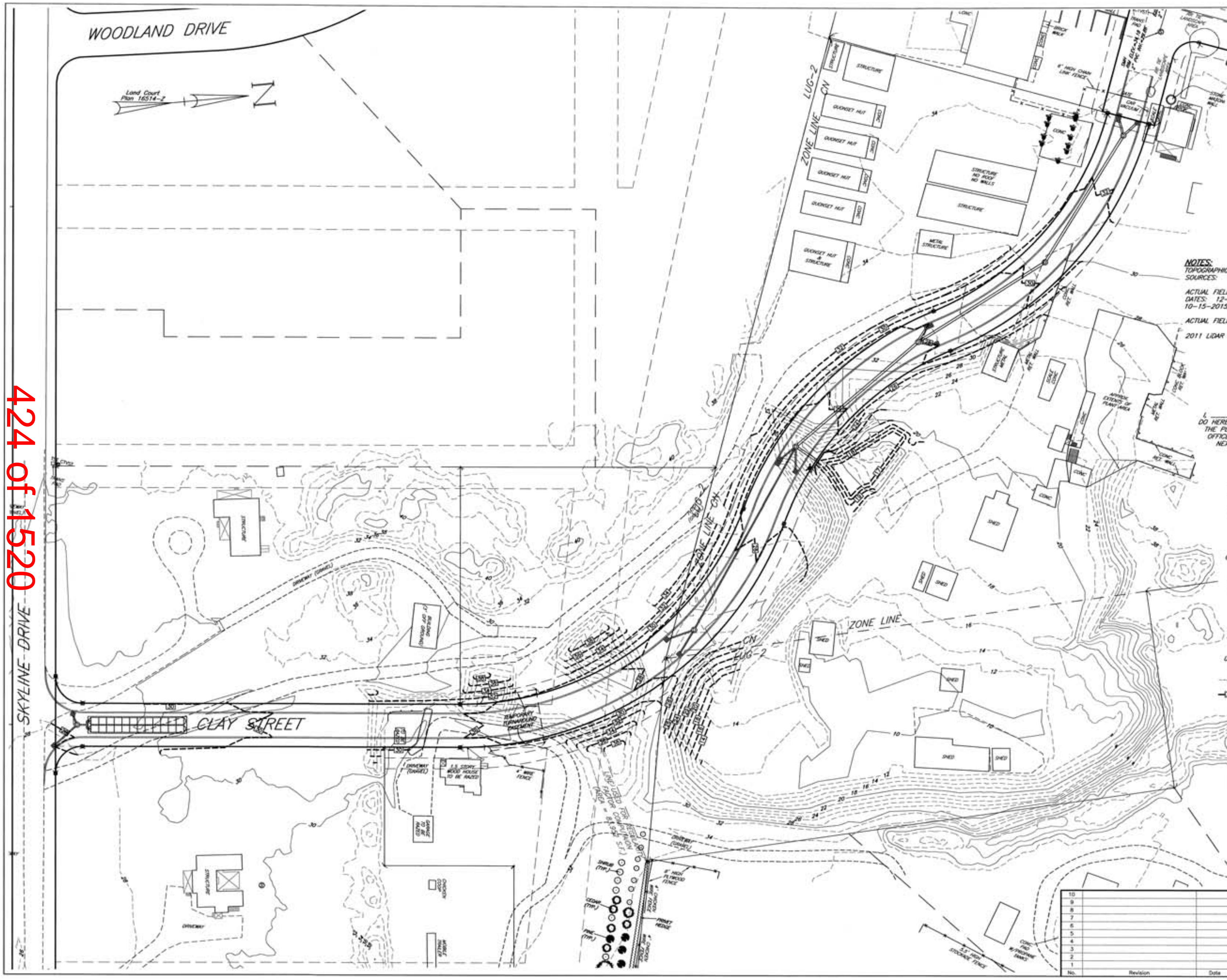
NANTUCKET PLANNING BOARD

Application Filed: ____
Final Plan Filed: ____
Hearing Date: ____
Plan Approved: ____
Plan Signed: ____

PLAN SHEET 2 OF 2

SHEET 3 OF 9

N:\NAN60\Dskyline-davkim.dwg, 12/14/2015 10:46:48 AM, TC



I CERTIFY THAT I HAVE CONFORMED WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS IN PREPARING THIS PLAN.

HAYES ENGINEERING, INC.

NOTES:
TOPOGRAPHIC INFORMATION DEPICTED ON THIS PLAN COMPILED FROM THE FOLLOWING SOURCES:

ACTUAL FIELD SURVEY BY HAYES ENGINEERING, INC. PERFORMED ON THE FOLLOWING DATES: 12-6-2012, 12-11-2012, 7-18-2013, 7-26-2013, 7-18-2014, 9-22-2014, 10-15-2015, 6-16-2015 and 10-27-2015.

ACTUAL FIELD SURVEY PERFORMED BY xxxxx ON xxxxxx

2011 LIDAR SURVEY OF THE NORTHEAST (MASSGIS) FOR OFF SITE INFORMATION

CLERK'S CERTIFICATION ON THE PLAN

DATE: ____________

I, ____________, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

TOWN CLERK

LEGEND OF SYMBOLS AND ABBREVIATIONS

BIT BERM – BITUMINOUS BERM
BW – BARBED WIRE
▦ – CATCH BASIN
CCB – CAPE COD BERM
CLF – CHAIN LINK FENCE
CONC. – CONCRETE
CTVST – CABLE TELEVISION STAND
Ⓓ – DRAIN MANHOLE
ELEC – ELECTRIC
FF – FIRST FLOOR ELEVATION
GF – GARAGE FLOOR ELEVATION
INV. – INVERT
P&R – POST AND RAIL
RET. – RETAINING
RR TIE – RAILROAD TIE
Ⓢ – SEWER MANHOLE
T-POLE – TELEPHONE POLE
TRANS PAD – TRANSFORMER PAD
TST – TELEPHONE STAND
UG – UNDERGROUND
UP 175/30 – UTILITY POLE & NO.
VGC – VERTICAL GRANITE CURB

--42-- – EXISTING CONTOUR LINE
—38— – PROPOSED CONTOUR LINE

ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET
MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET
ALLOWABLE GROUND COVER % = 40%

ZONE: LUG-2

MINIMUM LOT AREA = 80,000 S.F.
MINIMUM LOT FRONTAGE = 150 FEET
MINIMUM YARD SETBACKS
FRONT = 35 FEET
SIDE = 15 FEET
REAR = 15 FEET
ALLOWABLE GROUND COVER % = 4%

REGULARITY FACTOR (rf) SHALL NOT BE LESS THAN 0.55

PROPERTY LIES WITHIN PUBLIC WELLHEAD RECHARGE DISTRICT.

Seal: PETER J. OGREN, CIVIL No. 37115, REGISTERED PROFESSIONAL ENGINEER, COMMONWEALTH OF MASSACHUSETTS
Dec. 14, 2015

0' 20' 40' 80' 120'

DEFINITIVE TOPOGRAPHIC PLAN
CLAY STREET
NANTUCKET, MASS.

OWNERS:
RICHMOND GREAT POINT DEVELOPMENT, LLC
& RICHMOND 54 SKYLINE REALTY TRUST
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer
Hayes Engineering, Inc.
603 Salem Street
Wakefield, Mass. 01880
www.hayeseng.com

Scale: 1"=40'

December 11, 2015

No.	Revision	Date
10		
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NANTUCKET PLANNING BOARD

Application Filed: ____
Final Plan Filed: ____
Hearing Date: ____
Plan Approved: ____
Plan Signed: ____

TOPOGRAPHIC SHEET 1 OF 1

SHEET 4 OF 9

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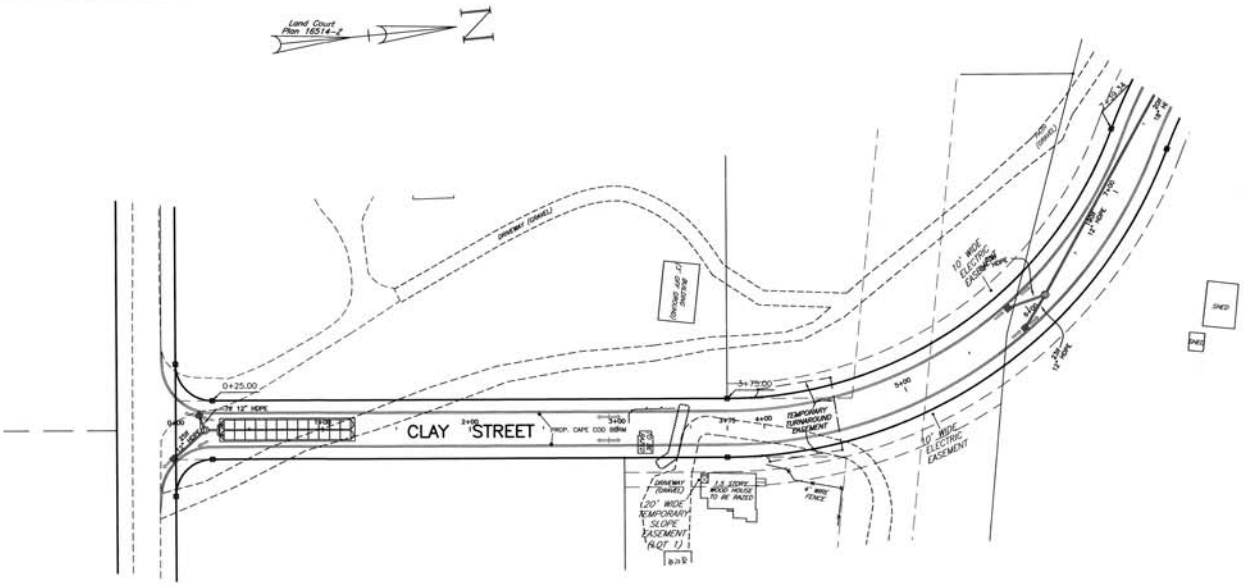

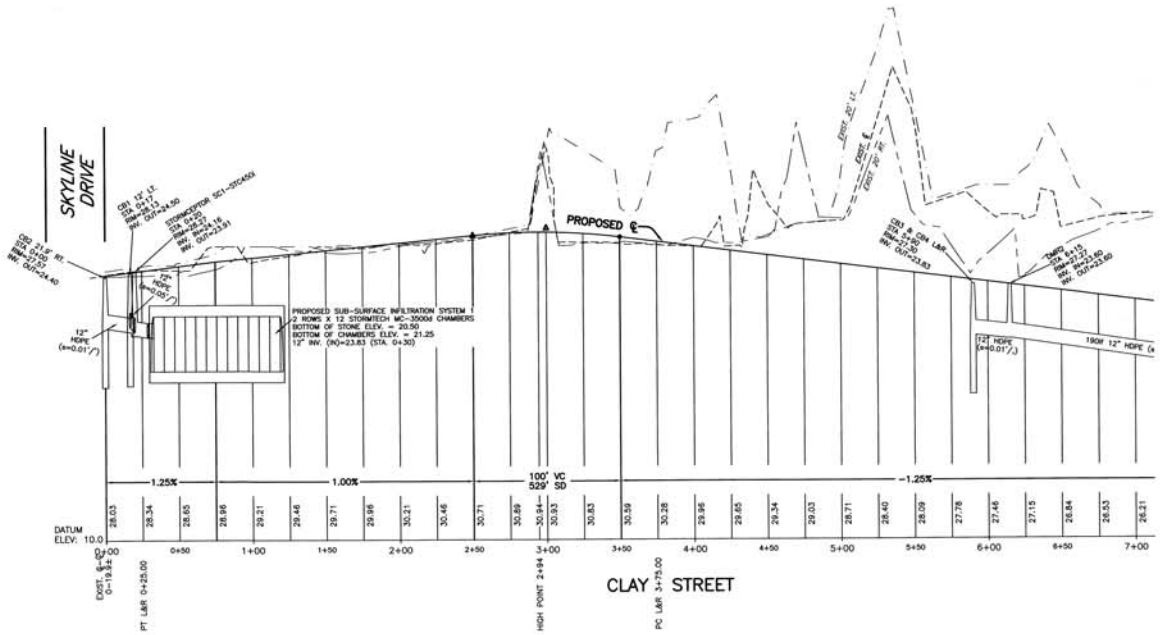

LEGEND

CBDH – CONCRETE BOUND WITH DRILL HOLE

(FD) – FOUND

LC – LAND COURT

rf – REGULARITY FACTOR

■ – PROPOSED CONCRETE BOUND WITH DRILL HOLE TO BE SET BY OWNER UNLESS OTHERWISE NOTED

I CERTIFY THAT I HAVE CONFORMED WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS IN PREPARING THIS PLAN.

HAYES ENGINEERING, INC.

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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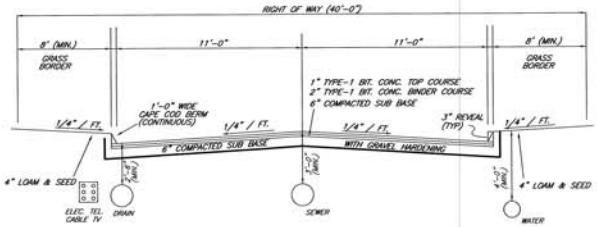
_____
TOWN CLERK



TYPICAL ROADWAY CROSS SECTION

NOT TO SCALE

ZONE: ON

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET
MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET
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PROPERTY LIES WITHIN PUBLIC WELLHEAD RECHARGE DISTRICT.

Seal

Hayes
0' 20' 40' 80' 120'

DEFINITIVE PLAN & PROFILE
CLAY STREET
NANTUCKET, MASS.

OWNERS:
RICHMOND GREAT POINT DEVELOPMENT, LLC
& RICHMOND 54 SKYLINE REALTY TRUST
23 CONCORD STREET
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NANTUCKET PLANNING BOARD

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Plan Approved: _____
Plan Signed: _____

PROFILE SHEET 1 OF 2

SHEET 5 OF 9

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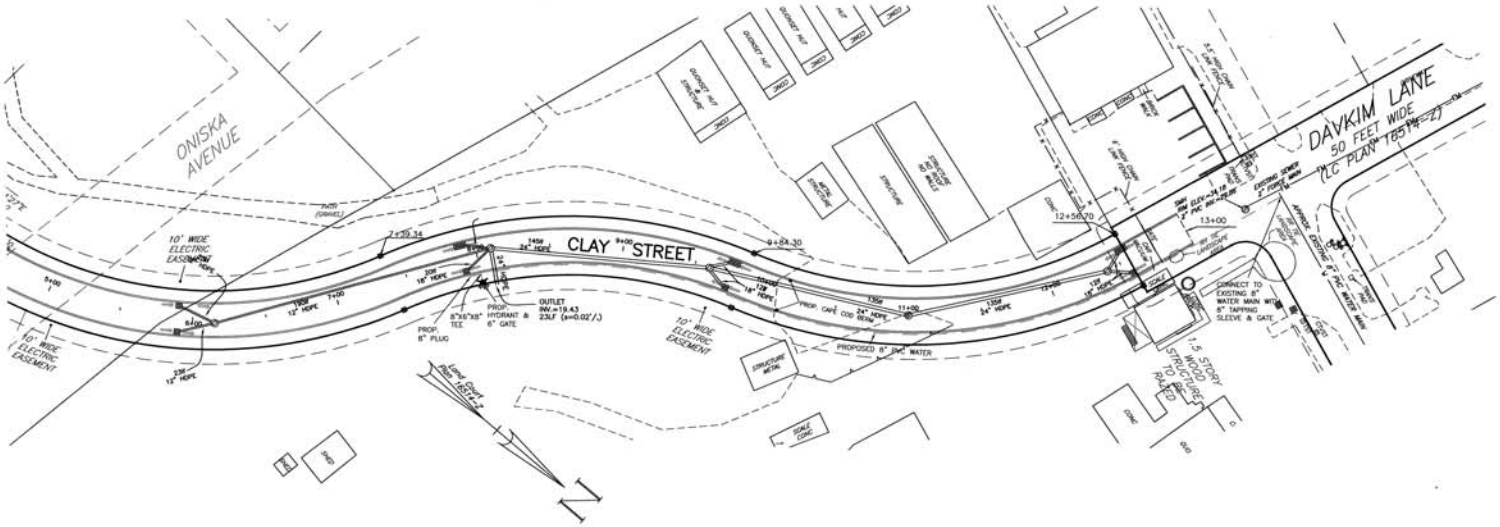

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HAYES ENGINEERING, INC.

CLERK'S CERTIFICATION ON THE PLAN

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_____
TOWN CLERK

LEGEND

CBDH – CONCRETE BOUND WITH DRILL HOLE

(FD) – FOUND

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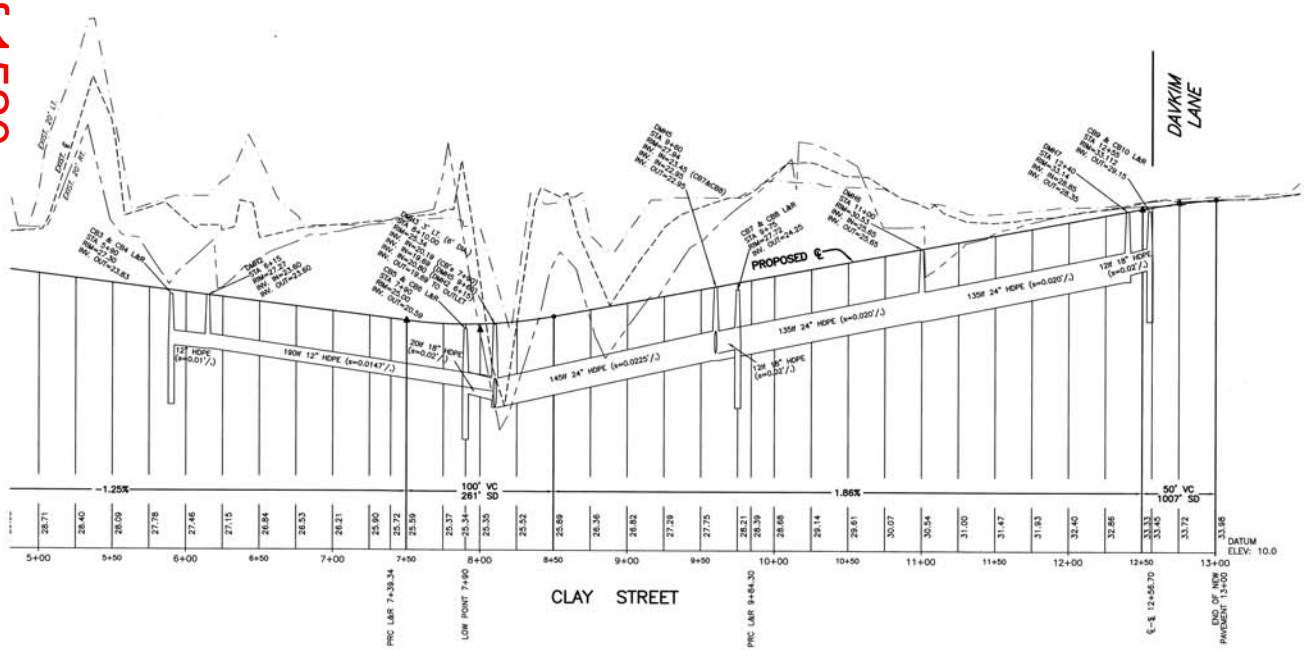
■ – PROPOSED CONCRETE BOUND WITH DRILL HOLE TO BE SET BY OWNER UNLESS OTHERWISE NOTED



ZONE: CN

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MINIMUM YARD SETBACKS
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SIDE = 5 FEET
REAR = 10 FEET
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FRONT = 35 FEET
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REAR = 15 FEET
ALLOWABLE GROUND COVER % = 4%

REGULARITY FACTOR (rf) SHALL NOT BE LESS THAN 0.55

PROPERTY LIES WITHIN PUBLIC WELLHEAD RECHARGE DISTRICT.

Seal: PETER J. COHEN, CIVIL, No. 37149, REGISTERED PROFESSIONAL ENGINEER, COMMONWEALTH OF MASSACHUSETTS, Dec 14, 2015

Hayes 0' 20' 40' 80' 120'

DEFINITIVE PLAN & PROFILE
CLAY STREET
NANTUCKET, MASS.

OWNERS:
RICHMOND GREAT POINT DEVELOPMENT, LLC
& RICHMOND 54 SKYLINE REALTY TRUST
23 CONCORD STREET
WILMINGTON, MA 01887

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December 11, 2015

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NANTUCKET PLANNING BOARD

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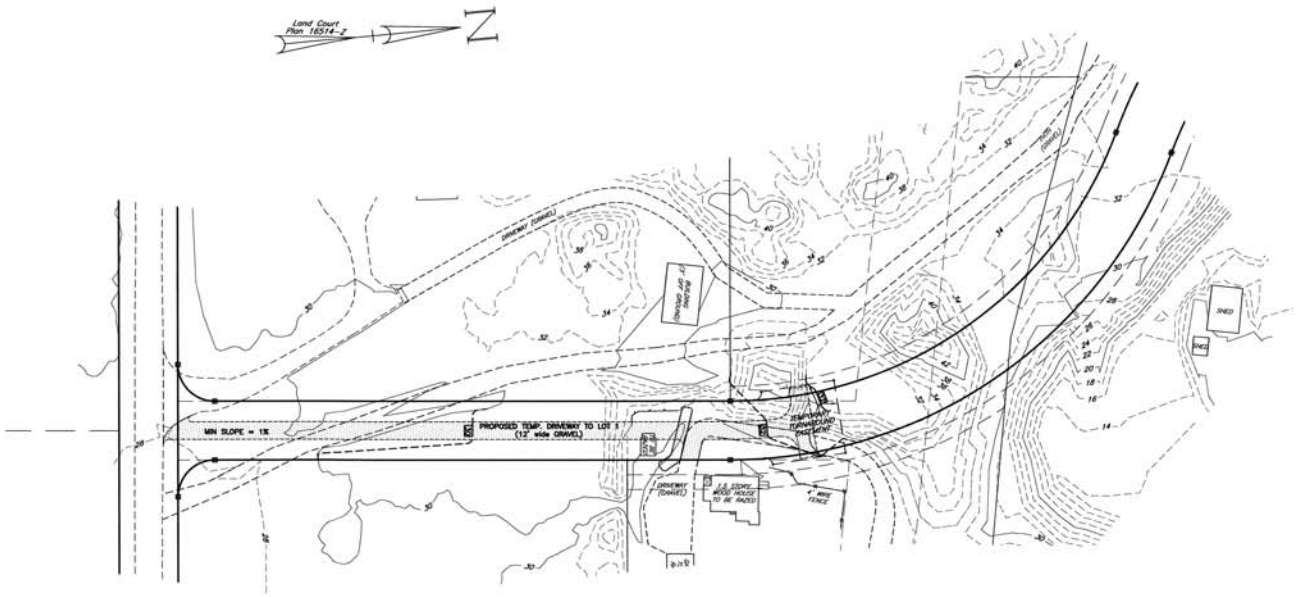
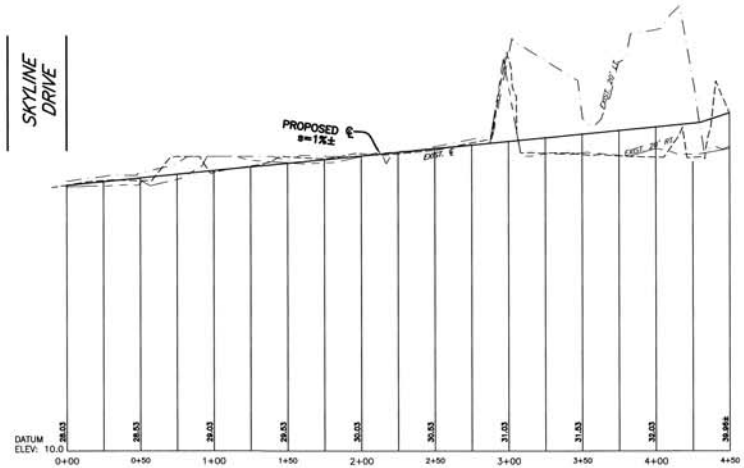
Plan Signed: _____

PROFILE SHEET 2 OF 2

SHEET 6 OF 9

426 of 1520





TEMPORARY ACCESS DRIVE

I CERTIFY THAT I HAVE CONFORMED WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS IN PREPARING THIS PLAN.

HAYES ENGINEERING, INC.

CLERK'S CERTIFICATION ON THE PLAN

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TOWN CLERK

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ZONE: LUG-2

MINIMUM LOT AREA = 80,000 S.F.
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REAR = 15 FEET
ALLOWABLE GROUND COVER % = 4%

REGULARITY FACTOR (rf) SHALL NOT BE LESS THAN 0.55

PROPERTY LIES WITHIN PUBLIC WELLHEAD RECHARGE DISTRICT.

Seal

Hayes

0' 20' 40' 80' 120'

INTERIM DRIVEWAY PLAN & PROFILE
CLAY STREET
NANTUCKET, MASS.

OWNERS:
RICHMOND GREAT POINT DEVELOPMENT, LLC
& RICHMOND 54 SKYLINE REALTY TRUST
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer
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603 Salem Street
Wakefield, Mass. 01880
www.hayeseng.com

Scale: 1"=40'(HOR.) & 4'(VER.) December 11, 2015

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NANTUCKET PLANNING BOARD

Application Filed: _____
Final Plan Filed: _____
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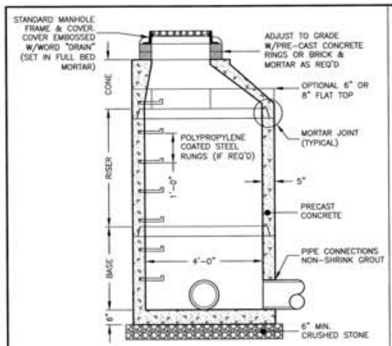
Plan Approved: _____
Plan Signed: _____

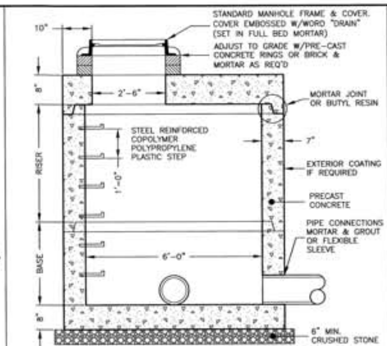
PLAN SHEET 1 OF 1

SHEET 7 OF 9



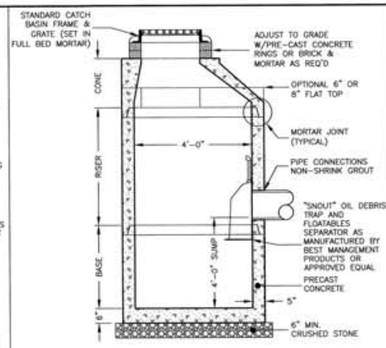
PRE-CAST DRAIN MANHOLE
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."



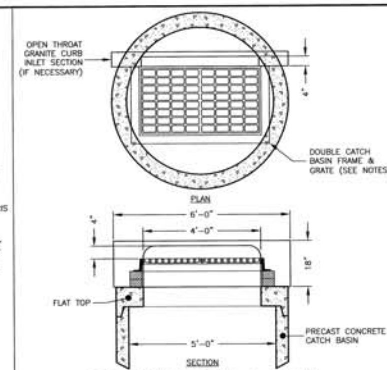
PRE-CAST DRAIN MANHOLE 6' I.D.
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.18 SQ. IN./LINEAL FT. AND 0.18 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."
4. BUTYL RESIN SECTION JOINT CONFORMS TO LATEST ASTM C443 SPEC.



PRE-CAST CATCH BASIN
NOT TO SCALE

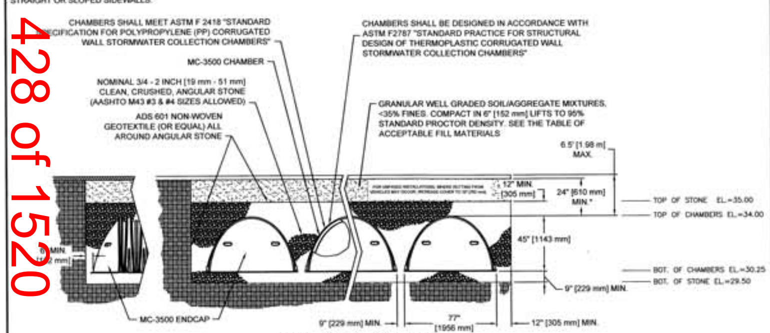
NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."



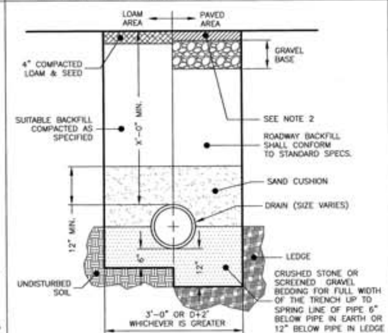
DOUBLE FRAME & GRATE
NOT TO SCALE

NOTES:
1. ON SLOPES USE LEBARON LV2448-2-000 FRAME W/LEBARON LK120D-300 3 FLANGE CASCADE GRATE OR APPROVED EQUAL.
2. AT LOW POINTS USE LEBARON LV2448-2-000 FRAME W/LEBARON LF248-2-000 3 FLANGE GRATE OR APPROVED EQUAL.

PERIMETER STONE MUST ALWAYS BE BROUGHT UP EVENLY WITH BACKFILL OF BED. PERIMETER STONE MUST EXTEND HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH STRAIGHT OR SLOPED SIDEWALLS.



MC-3500 TYPICAL CROSS-SECTION
NOT TO SCALE

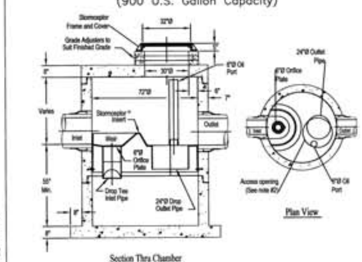


DRAIN TRENCH
NOT TO SCALE

NOTES:
1. ALL MATERIAL SHALL CONFORM TO CITY/TOWN OF DEPARTMENT OF PUBLIC WORKS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO CITY/TOWN SPECIFICATIONS.
3. IN LIEU OF THE 12" GRAVEL COURSE AND 9" OF CRUSHED GRAVEL, 18" OF CRUSHED GRAVEL OR RECLAIMED STABILIZED BASE MAY BE USED AS A BASE FOR THE PAVEMENT REPAIR.
4. MATERIAL SHALL BE REPLACED IN KIND WHENEVER POSSIBLE.
5. A MINIMUM 2' CUTBACK IS REQUIRED AT THE TOP OF THE TRENCH WALL OVER UNDISTURBED MATERIAL.

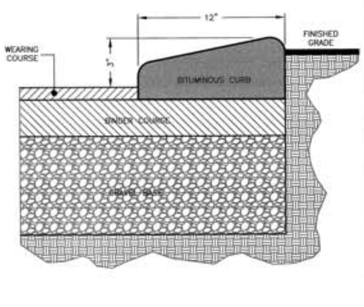
Rinker

STC 900 Precast Concrete Stormceptor (900 U.S. Gallon Capacity)

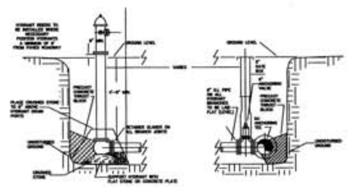


Notes:
1. The Use Of Flexible Connection is Recommended at The Inlet and Outlet Where Applicable.
2. The Cover Should be Positioned Over The Outlet Drop Pipe and The Oil Port.
3. The Stormceptor System is protected by one or more of the following U.S. Patents: #4985148, #5498331, #5725760, #5753115, #5849181, #6068765, #6371690.
4. Contact a Concrete Pipe Division representative for further details not listed on this drawing.

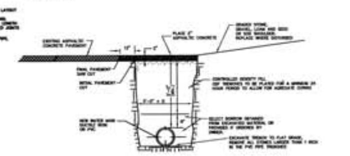
STORMCEPTOR STC 900
NOT TO SCALE



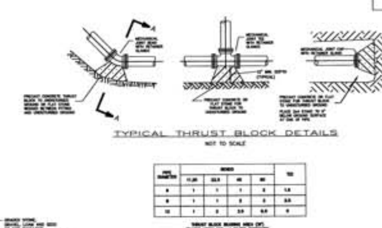
CAPE COD CURB
NOT TO SCALE



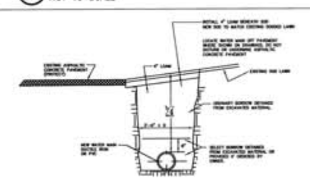
TYPICAL HYDRANT ASSEMBLY INSTALLATION
NOT TO SCALE



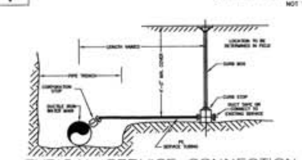
TYPICAL CROSS TRENCH IN ROADWAY SURFACE
(SHOWN RIGHT SIDE INSTALLATION LEFT SIDE SIMILAR)
NOT TO SCALE



TYPICAL THRUST BLOCK DETAILS
NOT TO SCALE



TYPICAL TRENCH IN SHOULDER (SOD)
(SHOWN RIGHT SIDE INSTALLATION LEFT SIDE SIMILAR)
NOT TO SCALE



TYPICAL SERVICE CONNECTION
NOT TO SCALE

I CERTIFY THAT I HAVE CONFORMED WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS IN PREPARING THIS PLAN.

HAYES ENGINEERING, INC.

CLERK'S CERTIFICATION ON THE PLAN

DATE: ______________

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____
TOWN CLERK

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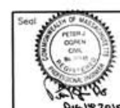
Seal



0' 20' 40' 80' 120'

DETAIL SHEET
CLAY STREET
NANTUCKET, MASS.

OWNERS:
RICHMOND GREAT POINT DEVELOPMENT, LLC
& RICHMOND 54 SKYLINE REALTY TRUST
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer
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Scale: 1"=N.T.S.

December 11, 2015

NANTUCKET PLANNING BOARD

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DETAIL SHEET 1 OF 1

SHEET 8 OF 9

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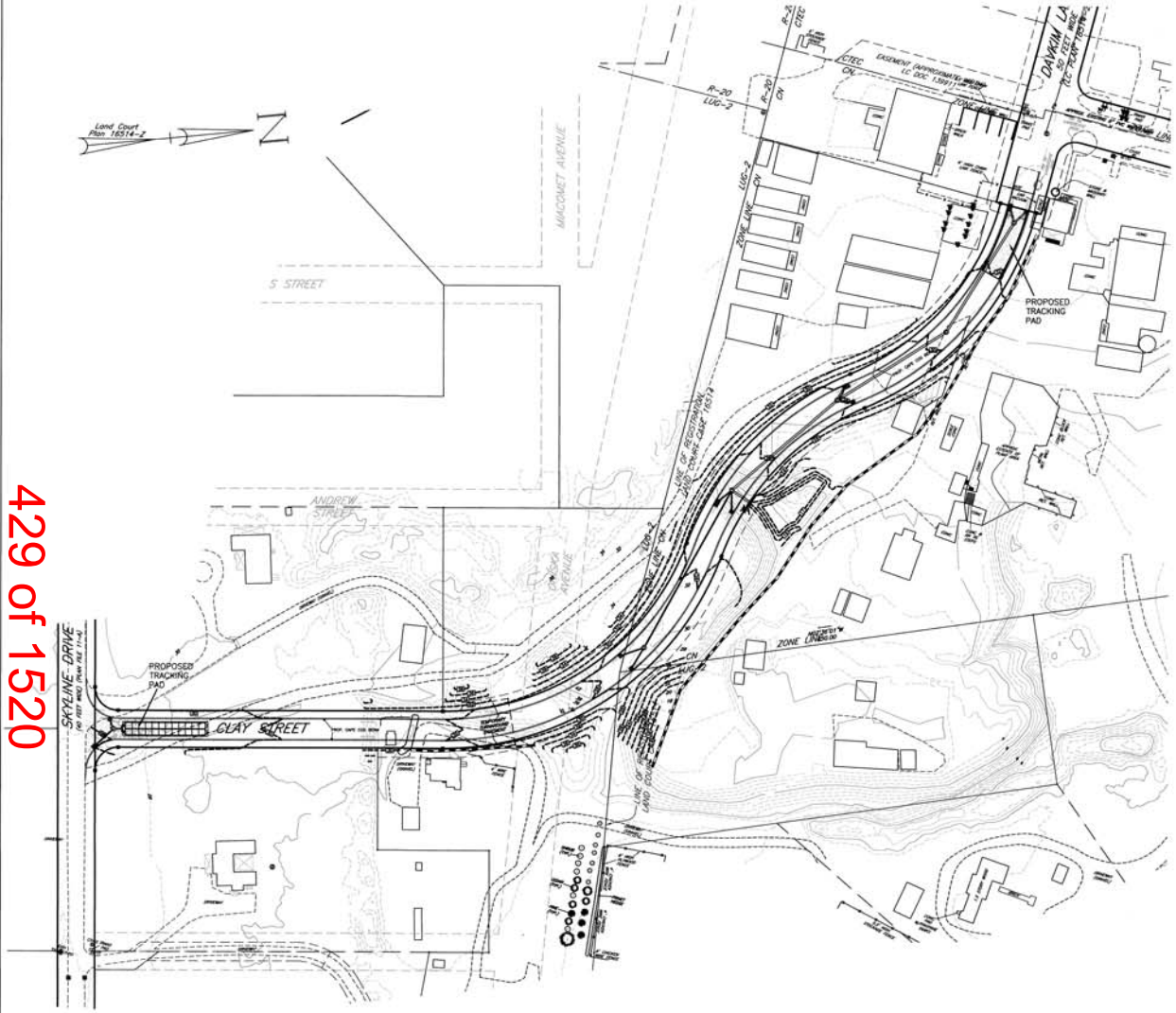

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HAYES ENGINEERING, INC.

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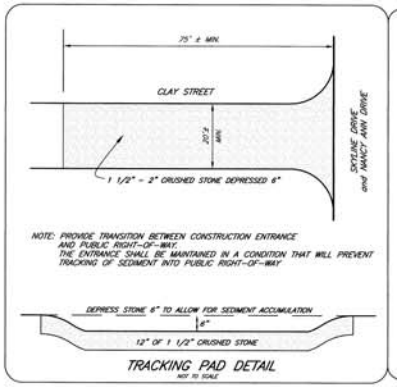
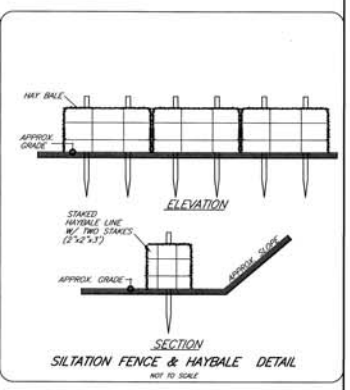
TOWN CLERK



TRACKING PAD DETAIL
NOT TO SCALE



SILTATION FENCE & HAYBALE DETAIL
NOT TO SCALE

EROSION CONTROL NOTES:

1) EROSION AND SEDIMENTATION CONTROLS TO BE INSTALLED IN ACCORDANCE WITH, AS UPDATED FROM TIME TO TIME, THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS, A GUIDE FOR PLANNERS, DESIGNERS AND MUNICIPAL OFFICIALS", PREPARED FOR FRANKLIN, HAPDEN, HAMPSHIRE CONSERVATION DISTRICTS DATED MARCH 1997 REPRINTED MAY 2003.

2) A "SILT SACK", OR ITS APPROVED EQUIVALENT SHALL BE INSTALLED AND MAINTAINED AT NEW CATCH BASINS STRUCTURES DURING CONSTRUCTION.

3) DURING CONSTRUCTION ON DRY AND WINDY DAYS WHEN POTENTIAL DUST CONDITIONS MAY BE OF CONCERN, EXPOSED SOIL TO BE SPRAYED WITH WATER TO CONTROL DUST.

4) DURING CONSTRUCTION SKYLINE DRIVE AND DAYKIM LANE TO BE MONITORED FOR SEDIMENT AND SHOULD BE SWEPT AS NECESSARY.

EROSION CONTROL LEGEND OF SYMBOLS & ABBREVIATIONS

STACKED HAYBALES

TRACKING PAD

Seal

Hayes
0' 30' 60' 120' 180'

EROSION CONTROL PLAN
CLAY STREET
NANTUCKET, MASS.

OWNERS:
RICHMOND GREAT POINT DEVELOPMENT, LLC
& RICHMOND 54 SKYLINE REALTY TRUST
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer
Hayes Engineering, Inc.
603 Salem Street
Wakefield, Mass. 01880
www.hayeseng.com

Scale: 1"= 60'

December 11, 2015

No.	Revision	Date
10		
9		
8		
7		
6		
5		
4		
3		
2		
1		

NANTUCKET PLANNING BOARD

Application Filed: _____
Final Plan Filed: _____
Hearing Date: _____
Plan Approved: _____
Plan Signed: _____

ECP SHEET 1 OF 1

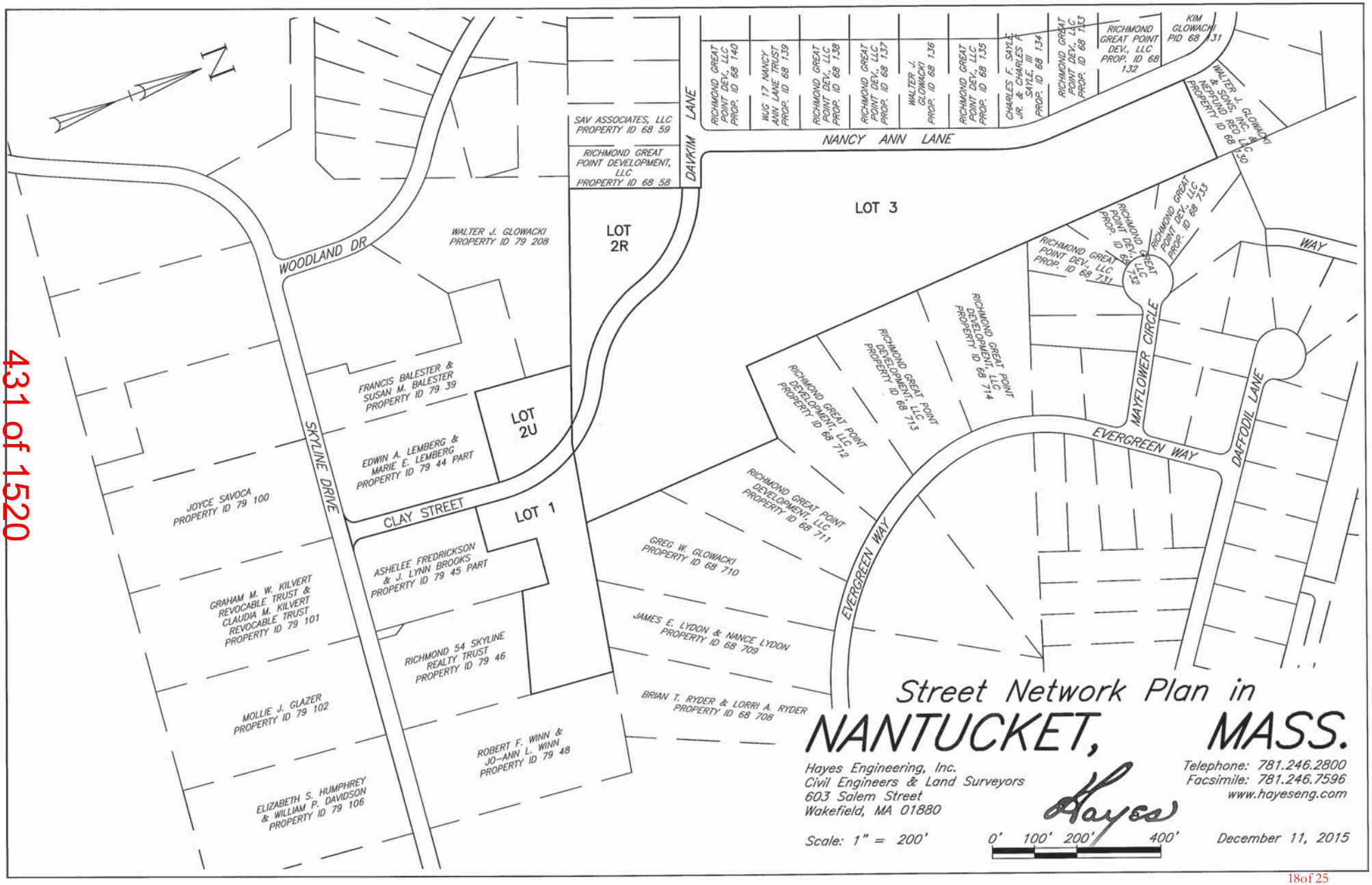
SHEET 9 OF 9

REQUESTED WAIVERS
CLAY STREET
NANTUCKET, MASSACHUSETTS

December 2015

Town of Nantucket Rules and Regulations

Section 2.06b(10)	The elevations shown on the plan are NAVD88 rather than half-tide datum.
Section 2.06b(14)(a)	Landscape Plan to be provided prior to Planning Board approval.
Section 2.06b(14)(b)	Existing trees to be saved will be decided during construction.
Section 4.06(b)(3)	Stormtech® MC-3500 stormwater chambers to be substituted for the leaching basin (Appendix A, Plate No. 12)
Section 4.13	Dry sewer lines are not proposed to be installed.
Section 4.16	Same as Section 2.06b(14)(a) & (b) above.
Section 4.18	No sidewalks are proposed along the sides of the proposed roadway Clay Street. There are no sidewalks on the adjacent streets, Skyline Drive and Davkim Lane.
Section 4.23	Soil tests will be provided prior to Planning Board approval.


N
WOODLAND DR
SKYLINE DRIVE
CLAY STREET
DAVKIM LANE
NANCY ANN LANE
EVERGREEN WAY
MAYFLOWER CIRCLE
DAFFODIL LANE
WAY
LOT 1
LOT 2R
LOT 2U
LOT 3
SAV ASSOCIATES, LLC PROPERTY ID 68 59
RICHMOND GREAT POINT DEVELOPMENT, LLC PROPERTY ID 68 58
RICHMOND GREAT POINT DEV., LLC PROP. ID 68 140
WUG 17 NANCY ANN LANE TRUST PROP. ID 68 139
RICHMOND GREAT POINT DEV., LLC PROP. ID 68 138
RICHMOND GREAT POINT DEV., LLC PROP. ID 68 137
WALTER J. GLOWACKI PROP. ID 68 136
RICHMOND GREAT POINT DEV., LLC PROP. ID 68 135
CHARLES F. SAYLE, JR. & CHARLES F. SAYLE, III PROP. ID 68 134
RICHMOND GREAT POINT DEV., LLC PROP. ID 68 133
RICHMOND GREAT POINT DEV., LLC PROP. ID 68 132
KIM GLOWACKI PID 68 131
WALTER J. GLOWACKI & SONS, INC. & REPPUND REALTY TRUST PROPERTY ID 68 LLC 130
RICHMOND GREAT POINT DEV., LLC PROP. ID 68 731
RICHMOND GREAT POINT DEV., LLC PROP. ID 68 732
RICHMOND GREAT POINT DEV., LLC PROP. ID 68 733
RICHMOND GREAT POINT DEVELOPMENT, LLC PROPERTY ID 68 712
RICHMOND GREAT POINT DEVELOPMENT, LLC PROPERTY ID 68 713
RICHMOND GREAT POINT DEVELOPMENT, LLC PROPERTY ID 68 714
RICHMOND GREAT POINT DEVELOPMENT, LLC PROPERTY ID 68 711
GREG W. GLOWACKI PROPERTY ID 68 710
JAMES E. LYDON & NANCE LYDON PROPERTY ID 68 709
BRIAN T. RYDER & LORRI A. RYDER PROPERTY ID 68 708
WALTER J. GLOWACKI PROPERTY ID 79 208
FRANCIS BALESTER & SUSAN M. BALESTER PROPERTY ID 79 39
EDWIN A. LEMBERG & MARIE E. LEMBERG PROPERTY ID 79 44 PART
ASHELEE FREDRICKSON & J. LYNN BROOKS PROPERTY ID 79 45 PART
JOYCE SAVOCA PROPERTY ID 79 100
GRAHAM M. W. KILVERT REVOCABLE TRUST & CLAUDIA M. KILVERT REVOCABLE TRUST PROPERTY ID 79 101
MOLLIE J. GLAZER PROPERTY ID 79 102
ELIZABETH S. HUMPHREY & WILLIAM P. DAVIDSON PROPERTY ID 79 106
RICHMOND 54 SKYLINE REALTY TRUST PROPERTY ID 79 46
ROBERT F. WINN & JO-ANN L. WINN PROPERTY ID 79 48
Street Network Plan in
NANTUCKET, MASS.
Hayes Engineering, Inc.
Civil Engineers & Land Surveyors
603 Salem Street
Wakefield, MA 01880
Telephone: 781.246.2800
Facsimile: 781.246.7596
www.hayeseng.com
Scale: 1" = 200'
0' 100' 200' 400'
December 11, 2015

431 of 1520

PESCE ENGINEERING & ASSOCIATES, INC.
451 Raymond Road
Plymouth, MA 02360
Phone: 508-743-9206 Cell: 508-333-7630
epesce@comcast.net

February 4, 2016

Nantucket Planning Board
Attn: Ms. Leslie Snell, AICP, LEED ® AP
Deputy Director, Planning & Land Use Services
2 Fairgrounds Road
Nantucket, MA 02554

RE: Engineering Review of the Proposed **Clay Street (Rear of Skyline Drive) Definitive Subdivision**

Dear Mrs. Snell & Members of the Board:

Pesce Engineering & Associates, Inc. is pleased to provide you this engineering review of the proposed Clay Street Definitive Subdivision, located off Skyline Drive, Nantucket, MA. We have evaluated the plans for consistency with the Town's Zoning Bylaw, the Nantucket Rules and Regulations Governing the Subdivision of Land (SR&R), and general conformance with the Massachusetts Stormwater Management Regulations.

Along with a site visit conducted on January 15, 2016, we have reviewed the following information to prepare this letter report:

- Letter from The Richmond Company to the Town of Nantucket Planning Board, Subject: Submittal of a Definitive Plan of a Subdivision Plan, 42 (Rear) 48 (Rear) and 54 (Rear) Skyline Drive Properties and 20 Davkim Lane Property, with application package and enclosures including the Form B Application for Approval of a Definitive Subdivision Plan, dated January 6, 2016, and list of requested waivers.

- Site Development Plans; Definitive Plan, Clay Street, Nantucket, MA, 9 sheets, prepared by Hayes Engineering, Inc., dated December 11, 2015.

- Site Analysis Report, Clay Street, and Street Network Plan, prepared by Hayes Engineering, Inc., dated December 2015.

- Storm Water Management Report, Definitive Subdivision, Clay Street, Nantucket, MA, prepared by Hayes Engineering, Inc., dated December 11, 2015.

The proposed development is located on approximately 18.3 acres of land (comprising multiple parcels) situated between Skyline Drive (including potions of the rear of the lots for #42, 48 & 54 Skyline Drive), and the intersection of Nancy Ann Lane & Davkim Lane.

See the Street Network Plan for an overall view of this area. The site is located in both the Land Use General 2 (LUG-2) and Commercial Neighborhood (CN) Zoning Districts and the Public Wellhead Recharge Overlay District. No wetland areas are located on the subject parcels.

Several buildings exist on the property, which is the site of the former Glowacki commercial operations. The applicant proposes to develop this parcel by creating 4 new lots (Lots 1, 2U, 2R & 3) and a roadway lot (designated as 2 roadway lots; Road-U and Road-R). The proposed subdivision road is a 22-ft. wide paved surface, with 1 ft. Cape Cod berms, within a 40-ft. layout, and with 10 ft. wide electric easements on each side. The new subdivision road is approximately 1,300 feet long. Municipal water service is planned for only part of the subdivision (an extension of a water main for the northerly 500 ft. of the road) with the remainder serviced by private wells. Title 5 septic systems are planned to be installed for the new lots.

The following are our review comments:

Definitive Plans, Utilities, and Site Layout

1. We recommend that the applicant discuss with the Board the justification and explanation for the waivers requested. From our review of these waivers, we find they do not present any major additional engineering issues or concerns.

2. While we note that a waiver for submission of a Landscaping Plan (at this time) has been requested. We recommend that when it is submitted to the Board for review, that if street lighting is proposed, that this lighting be specified as “Dark Sky Compliant” with vertical cutoff shielding to mitigate impacts to abutters.

3. The applicant is requesting that the subdivision road be built in phases, and as such is proposing to build the first approximately 450 ft. of the new subdivision road, as a 12 ft. wide gravel driveway to allow access to Lot 1. If the Board chooses to approve this request, we recommend the following conditions:

    a. All proposed drainage piping/structures and utilities should be installed up to the proposed 450 ft. length of the driveway.

    b. A paved asphalt apron should be installed at the intersection with Skyline Drive.

    c. Discussion of the “triggering” event (or date) that will require the upgrade of this driveway to subdivision standards.

4. If it has not already been received, we recommend that the applicant receive approval from the Nantucket Fire Department on the proposed fire hydrant location, with a written report (or e-mail message) to the Planning Board. We also note that only one fire hydrant is proposed (near Station 8+00) along the entire new subdivision road. This may be insufficient for the future use of this property (for fire protection) if the property is further subdivided, and future residences are located more than 300 ft. from a fire hydrant.

5. We recommend that some additional signage be added to the plans as follows:

    a. Street signs at the intersections at each end of Clay Street.

    b. Stop signs (with pavement stop line) at the intersections at Skyline Drive and after the end of Clay Street, on Davkim Lane at the intersection with Nancy Ann Lane.

6. The proposed grading appears to cut through and affect the foundation of the metal structure near Station 10+25. We recommend that the grading at this location be modified or the structure removed/relocated.

7. We recommend that proposed driveway aprons (in conceptual locations), with appropriate driveway detail, be shown on the plans.

8. The roadway cross section detail on sheet 5 indicates *"6" Compacted Sub Base With Gravel Hardening."* We recommend that this roadway base material be specified with a design sieve specification (such as MA DOT M2.01.7, M1.03.0 or similar).

9. The plans show Lots 2U & 2R labeled as "Not a Separate Building Lot" with a "paper" street, Oniska Avenue, located between them. We recommend that the applicant clarify the intent for these lots, and the intended disposition (or relevance) of the apparent paper streets labeled as Summer Street, Andrew Street and Oniska Avenue.

Stormwater Management

This project proposes to mitigate post-development runoff for the new subdivision roadway by collecting runoff flow into a series of new catch basins and drain manholes, followed by discharge to 2 locations:

- A Stormceptor® treatment unit (at the intersection with Skyline Drive), which will discharge to a subsurface infiltration area in the subdivision road.

- A sediment forebay, which overflows to the existing gravel pit area east of the proposed subdivision road, which will act as a large infiltration area.

This stormwater management system will remove the Total Suspended Solids (TSS) in the stormwater, and recharge the stormwater to the aquifer. The proposed design also reduces the peak rate of runoff as compared to the existing conditions, and is additionally designed for the 100-yr. storm.

We have the following stormwater management comments:

1. The applicant proposes to use the existing gravel pit area as a big detention basin/infiltration area – designed for the volume up to the 20 ft. contour level. While this method will work well, it is not the conventional approach, since there are multiple sheds and structures in this area. For the proper use of stormwater management area, these structures should be removed to prevent the storage of materials/contaminants in the stormwater, or a re-design of this area (with no structures in the infiltration area) should be provided.

2. We recommend that the plans (sheets 4 & 8) show the gross length and width of the proposed infiltration bed with the MC-3500 StormTech™ chambers, for clarity during construction.

3. No soil test pit data was provided to evaluate the separation distance from the bottom of the StormTech™ chambers from the estimated seasonal high groundwater elevation. Subject to the approval of the Board, we recommend that the requirement to provide test pit data be added as a condition of the Decision; to conduct these test pits and provide this information to the Board prior to the construction start.

4. We recommend that inspection ports (2 minimum, per row of chambers), with covers brought to finish grade, be added to the plans.

5. The sediment forebay should have the following design features added to the plans:

    a. A flared end section with rip-rap apron for the inlet pipe.

    b. A rip-rap overflow spillway & apron at the 18.5 ft. elevation

    c. Construction Details for the above

6. The following comment pertains to the Stormwater Report:

a. Page63 of the report in Appendix B (HydroCAD® calculations): The elevations shown for the subsurface infiltration chambers are different from those shown in the "MC-3500 Typical Cross-Section" detail on sheet 8. Please clarify and revise accordingly.

b. Page 2 of the report in Appendix D "Checklist for Stormwater Report": The Checklist should be stamped, signed, and dated by the engineer.

Thank you again for this opportunity to assist the Planning Board in their review of this project. As always, please call if you have any questions or comments.

Sincerely,

PESCE ENGINEERING & ASSOCIATES, INC.

Edward L. Pesce., P.E., LEED ® AP
Principal

David Armanetti, The Richmond Co.
John Ogren, P.E., Hayes Engineering, Inc.

2/1/16

To The Nantucket Planning Board,

I am writing this letter in regards to the proposal put forth by Richmond Great Point Development, LLC (#7918) for the approval of a defining subdivision plan regarding 42, 46, 48, 54 Skyline Drive and 20 Davkim Lane. 48 and 54 Skyline Dr. already have access to Skyline Drive. 42 and 46 appear to be entitled to driveways on Skyline as long as they comply with existing zoning laws.

The proposed new road, Clay Street, would connect Davkim Lane to Skyline Dr.. Skyline is a private road that has constant repair issues. The proposed road would connect Skyline Dr. to a large commercial tract zoned RC2. 20 Davkim already has large amounts of frontage on Nancy Ann Lane and Davkim Lane. The proposed new road would only increase traffic and wear-and-tear on a private road and entirely change the nature of the Skyline neighborhood. Every property on Skyline is zoned LUG2. There is no access to any RC2 properties on Skyline, nor should there be. The proposed road only serves the commercial interests of Richmond Great Point Development, LLC and will burden the residents of not only Skyline Drive, but Webster Rd. and Woodland Dr. as well. The road will bring to Skyline Drive much commercial traffic, traffic that does not currently exist. It will also connect the other development of Richmond Great Point Development, LLC to Skyline Drive. Richmond Great Point Development, LLC has plenty of other options for their lot on 20 Davkim Lane.

I urge you to reject the proposed road, Clay St., and help maintain the quiet neighborly feel of Skyline Drive.

Sincerely,

William P. Davidson
(Resident of 61 Skyline Drive for 21 years)

NT MARINE
ROAD STREET
MA 02554
88-8214

PLANNING BOARD

2751
ET MA

FOR MEETING ON 2/8/16

CASE # 7918

RECEIVED
FEB 01 2016
By

Town Clerk
Town & County Building
16 Broad St
Nantucket, MA 02554

JUN 15 2016

Nantucket Planning Board

Form B
Application for Approval of a Definitive Subdivision Plan
(AR)

"Old South Road Crossing" Definitive Subdivision

File one completed form with the Planning Board and one copy with the Town Clerk.

RECEIVED
JUN 15 2016
By

Date: June 13, 2016

To the Planning Board of Nantucket:

The undersigned, being the applicant as defined under Chapter 41, Section 81-L, for approval of a proposed subdivision of Land in Nantucket, Mass designed by Hayes Engineering, Inc. dated June 9, 2016, and described as follows: located on Multiple Lots on Nancy Ann Lane, Greglen Avenue, Davkim Lane, and Old South Road (See "Attachment A" for List of Individual Parcels), number of lots proposed Thirteen (13), total acreage of tract +/- 22.8 Acres, hereby submits said plan as a **definitive** plan in accordance with the *Rules and Regulations Governing the Subdivision of Land* of the Nantucket Planning Board and makes application to the Board for approval of said plan.

(See "Attachment B" for List of Individual Parcels)

The undersigned's title to said land is derived from _____ by deed dated _____ and recorded in the Nantucket Registry of Deeds Book _____, Page _____, registered in the Nantucket Registry District of the Land Court, Certificate of Title # _____ and shown on Nantucket Assessor's Map # _____, Parcel _____, and said land is free of encumbrances except for the following: (See "Attachment C" for List of Encumbrances)

Said plan ○ has ○ has not evolved from a preliminary plan submitted to the Board on _____(date) and ○ approved ○ disapproved on _____ (date).

The undersigned hereby applies for the approval of said **definitive** plan by the Board, in belief that the plan conforms to the Board's *Rules and Regulations*.

Name(s) and address(es) of the Applicant(s):
(to include all the names and addresses of the principals of the owner entity such as principal officers of the corporation, trustees of a trust or partners of a partnership)

Philip Pastan, (Sole) Manager of Richmond Great Point Development LLC

Contact Phone #: (978)988-3900 Fax #: (978)988-3950 E-mail: ppastan@richmondco.com

Name of owner(s): Richmond Great Point Development LLC

Address of owner(s): 23 Concord Street, Wilmington MA 01887

I hereby certify that the applicant(s) listed above have been authorized by me to file a subdivision plan with the Planning Board on property that I own.

Owner's signature Philip Pastan, as Manager of Richmond Great Point Development LLC

OK 6/13/16

Received by Town Clerk:

Date: _____

Time: _____

Received by Board of Health:

Date: _____ RECEIVED JUN 15 2016

Time: _____ BY: AS for Bott

Planning Board File # _____

"ATTACHMENT A"
LIST OF INDIVIDUAL PROPERTIES INCLUDED IN "FORM B" APPLICATION
"OLD SOUTH ROAD CROSSING" DEFINITIVE SUBDIVISION
RICHMOND GREAT POINT DEVELOPMENT LLC (OWNER / APPLICANT)

Index	Parcel Address	Assessor's Tax Map / Parcel ID		Land Court Plan Information	
		Map	Parcel	Plan Number	Lot
1	63 Old South Road	68	157	16514-103	872
2	67 Old South Road	68	158	16514-L	59
3	73 Old South Road	68	129	16514-97	853
4	75 (A) Old South Road	68	999.2	16514-100	858
5	3 Nancy Ann Lane	68	132	16514-Z	160
6	4 Nancy Ann Lane	68	204	16514-103	869
7	5 Nancy Ann Lane	68	133	16514-Z	161
8	6 Nancy Ann Lane	68	205	16514-Z	179
9	8 Nancy Ann Lane	68	206	16514-Z	180
10	10 Nancy Ann Lane	68	207	16514-Z	181
11	12 Nancy Ann Lane	68	176	16514-Z	182
12	14 Nancy Ann Lane	68	130	16514-Z	183
13	2 Greglen Avenue	68	131	16514-Z	159
14	4 Greglen Avenue	68	177	16514-Z	177
15	20 Davkim Lane	68	57	16514-Z	184

REQUESTED WAIVERS
OLD SOUTH ROAD CROSSING
NANTUCKET, MASSACHUSETTS

June 2016

Town of Nantucket Rules and Regulations

Section 2.06b(10)	The elevations shown on the plan are NAVD88 rather than half-tide datum.
Section 2.06b(14)(a)	Landscape Plan to be provided prior to Planning Board approval.
Section 2.06b(14)(b)	Existing trees to be saved will be decided during construction.
Section 4.03e	No Right-of-way rounding is proposed on the south side of the intersection of Road B and Greglen Avenue. However, a 28 foot curb radius is being proposed.
Section 4.06(b)(3)	Stormtech® MC-4500 stormwater chambers to be substituted for the leaching basin (Appendix A, Plate No. 12)
Section 4.13	Dry sewer lines are not proposed to be installed.
Section 4.16	Same as Section 2.06b(14)(a) & (b) above.
Section 4.18	No sidewalks are proposed along the sides of the proposed roadway Road B and one sidewalk is proposed along a portion of Road A.
Section 4.23	Soil tests will be provided prior to Planning Board approval.

"ATTACHMENT B"
LIST OF INDIVIDUAL PROPERTIES FOR DERIVATION OF TITLE FOR DEFINITIVE SUBDIVISION
RICHMOND GREAT POINT DEVELOPMENT LLC
"OLD SOUTH ROAD CROSSING" DEFINITIVE SUBDIVISION

Index	Parcel Address		Deed Recording Reference (Date, Book, Page)			Internal Reference in Deed	
			Date	Book	Page	Parcel Number	Page
1	63 Old South Road		August 8, 2013	O1397	312	Thirty-Three	7
2	67 Old South Road		August 8, 2013	O1397	312	One	1
3	73 Old South Road		August 8, 2013	O1397	312	Forty-Three	9
4	75 (A) Old South Road		February 6, 2015	Document # 00147075		n/a	n/a
5	3 Nancy Ann Lane		August 8, 2013	O1397	312	Fourteen	4
6	4 Nancy Ann Lane		August 8, 2013	O1397	312	Twenty-Seven	6
7	5 Nancy Ann Lane		August 8, 2013	O1397	312	Fifteen	4
8	6 Nancy Ann Lane		August 8, 2013	O1397	312	Twenty-Eight	6
9	8 Nancy Ann Lane		August 8, 2013	O1397	312	Twenty-Nine	6
10	10 Nancy Ann Lane		August 8, 2013	O1397	312	Thirty	6
11	12 Nancy Ann Lane		August 8, 2013	O1397	312	Thirty-One	7
12	14 Nancy Ann Lane	20% Partial Interest	August 8, 2013	O1397	312	Fifty	10
		20% Partial Interest	July 14, 2014	Document # 145051		n/a	n/a
		20% Partial Interest	October 10, 2014	Document # 145942		n/a	n/a
		20% Partial Interest	October 10, 2014	Document # 145959		n/a	n/a
		20% Partial Interest	November 7, 2014	Document # 146249		n/a	n/a
13	2 Greglen Avenue		February 17, 2015	Document # 147131		n/a	n/a
14	4 Greglen Avenue		February 17, 2015	Document # 147135		n/a	n/a
15	20 Davkim Lane		August 8, 2013	O1397	312	Thirty-Two	7

THE RICHMOND COMPANY, INC.

The Richmond Company, Inc.
23 Concord Street
Wilmington, Massachusetts 01887
(979) 988-3900

June 13, 2016

TOWN OF NANTUCKET
PLANNING BOARD
2 Fairgrounds Road
Nantucket, Massachusetts 02554

Attention: Leslie Woodson Snell, AICP, LEED AP, Deputy Director of Planning

Subject: Submittal of Application for Definitive Subdivision
Richmond Great Point Development LLC (Owner / Developer)
"Old South Road Crossing" Definitive Subdivision

Dear Ms. Snell:

The purpose of this correspondence, issued in our capacity as the applicant and development manager, on behalf of the owner of the subject properties (Richmond Great Point Development LLC) is to submit the enclosed completed application (Form B) and associated materials (plans, storm water management report, deeds, etc.) comprising a Definitive Subdivision Plan for the series of adjoining properties located at 42 (Rear), 48 (Rear), and 54 (Rear) Skyline Drive, and 20 Davkim Lane.

The purpose of this correspondence, issued in our capacity as the applicant and development manager, on behalf of the owner of the subject properties (Richmond Great Point Development LLC) is to submit the completed application (Form B) and associated materials (plans, storm water management report, deeds, etc.) to petition the Town of Nantucket Planning Board to consider the above-captioned proposal which requires the approval of a definitive subdivision of land to allow for the reconfiguration of certain roadway segments and the reconfiguration of existing lots in this area comprising a series of thirteen (13) contiguous lots and +/- 1,270 linear feet (0.24 miles) of roadway segments, totaling +/- 24.3 acres of land, located along Old South Road, Nancy Ann Lane, Greglen Avenue, and Davkim Lane.

The submittal is being made in accordance with and conforms to the provisions of Section 2.06 of "*The Rules and Regulations Governing the Subdivision of Land, Nantucket, Massachusetts*" as well as "*The Subdivision Control Law of Massachusetts*" (M.G.L. Chapter 41, Sections 81K-81GG, inclusive).

The primary objective of the subdivision is to reconfigure, re-route, and improve the engineering design, safety, and condition of portions of the existing Nancy Ann Lane and Greglen Avenue roadways in the northern center of the Richmond Great Point Development LLC portfolio, which connect into Old South Road (to the north) and Lovers Lane (to the west), to "set the table" to accommodate the mixed-use development that is being proposed on adjacent properties owned by Richmond Great Point Development LLC, primarily comprised of the +/- 15,500 gross square feet series of retail "liner" buildings that are proposed to be developed along the frontage of Old South Road, the 225 unit 'Meadows II" workforce housing rental community that is proposed to be developed on the +/- 14.5 acre 20 and 20(R) Davkim Lane properties, and the 100 lot "Sandpiper Place" workforce homeownership housing community that is proposed to be developed on the +/- 17.2 acre combination of properties located off Old South Road, Daffodil Lane, Mayflower Circle, and Evergreen Way.

The first action proposed, which is the straightening, widening, and improvement to a "boulevard" type design of the segment of Nancy Ann Lane which is located in the northern half of the portfolio, is necessary in order to allow for the development of the retail "liner" buildings and, ultimately, to allow for the enhanced access and capacity that is necessary to allow for the development of the two housing initiatives described above.

In order to develop the two easternmost retail "liner" buildings, the existing stub of Greglen Avenue that currently runs from the northern edge of the existing 'Parcel Plus" property located at 2 Greglen Avenue and connects at a stop-sign controlled "T" intersection with Old South Road, offset slightly from the intersection of Goldfinch Drive, located on the northern side of Old South Road, will be abandoned. It is noted that this existing "stub" or "roadway segment" is actually not a right of way that was laid out or approved on any plan, and does not even have status as a legal road; it was simply constructed by a predecessor owner and has been continued to be utilized for this purpose for many years.

The current condition of this "stub" or "roadway segment" creates a quirky and unsafe "S" curve that has very steep radius curves, connecting from the northern end of Nancy Ann Lane, past the "Parcel Plus" property and connecting into Old South Road.

Upon its termination, this "stub" or "roadway segment" will be replaced by a straighter, wider, significantly improved reconfigured Nancy Ann Lane, which will run straight / directly into a (proposed) ninety degree, stop sign controlled "T" intersection with Old South Road, located approximately at the mid-point (roughly equidistant) between the existing Goldfinch Drive entrance and exit intersections to the existing Naushop residential community located on the north side of Old South Road, thereby eliminating the existing unsafe "S" curve with the restricted turning radius.

This new intersection will have a substantially more generous design width, including a center median and multiple dedicated turning lanes, to provide the additional capacity and design enhancements that will be necessary to accommodate the adjacent proposed development and all existing uses and businesses in the area, including the multiple existing trucking-intensive businesses located along the southern portion of Nancy Ann Lane and along Davkim Lane (including Cape Cod Express, Coca-Cola, Pepsi-Cola, Structures Unlimited, and Sayles Seafood).

As shown on the attached plan, a new roadway segment will then also be constructed along the southern boundary of the 4 Greglen Avenue property and the 5 Nancy Ann Lane property, running east to west and connecting Nancy Ann Lane and Greglen Avenue, in order to allow continued cross-access out to Lovers Lane and Old South Road, as a second means of vehicular access and circulation to the area.

The reconfiguration of the roadways, as described herein, will require the slight reconfiguration of the series of +/- fifteen (15) existing properties in the vicinity of the proposed roadway areas, primarily located along Nancy Ann Lane and the northern portion of Greglen Avenue. Most of these properties are vacant and will not be reconfigured until the roadway reconfiguration improvements are completed.

No buildings are proposed to be developed as part of the proposed subdivision; the subdivision is only comprised of the roadway reconfiguration, re-routing, and improvement and the (slight) reconfiguration of the lots surrounding the new roadway configuration.

The current zoning of the land / lots in the area is classified in three different zoning districts; portions are classified within the Commercial Neighborhood (CN) zoning district, portions are classified within the Commercial Trade, Entrepreneurship and Craft (CTEC) zoning district, and portions are classified within the Residential-5 (R-5) zoning district.

The specific dimensional characteristics of the thirteen (13) lots that are proposed to be reconfigured as a result of the proposed subdivision, and the length and area of the proposed roadway segments, will be as follows (following the proposed reconfigurations):

Lot Number on Plan And Street Address	Lot Area (Square Footage)	Lot Area (Square Footage)	Lot Frontage (Linear Feet)	Lot Regularity Factor (rf)
Lot # 1 – 4 Road "C"	38,388	0.88	96.55	0.701
Lot # 2 – 6 Road "C"	37,107	0.85	55.00	0.628
Lot # 3 – 8 Road "C"	52,581	1.21	84.86	0.794
Lot # 4 – 4 Road "A"	47,309	1.09	274.83	0.650
Lot # 5 – 6 Road "A"	28,161	0.65	105.00	0.776
Lot # 6 – 8 Road "A"	28,159	0.65	105.53	0.770
Lot # 7 – 4 Road "A"	36,606	0.84	178.89	0.995
Lot # 8 – 2 Greglen Avenue"	29,520	0.68	178.84	0.998
Lot # 9 – 4 Greglen Avenue	16,366	0.38	75.01	0.929
Lot # 10 – 6 Road "A"	20,145	0.46	80.16	0.913
Lot # 11 – 5 Nancy Ann Lane	22,250	0.51	201.78	0.929
Lot # 12 – 73 Old South Road	102,656	2.35	566.26	0.563
Lot # 13 – 20 Davkim Lane	534,267	12.26	1,331.13	0.552
Roadways ("A" and "B")	64,900	1.49	1,270 Linear Feet	n/a
Subtotal (Average)	**1,058,415**	**24.30**	**n/a**	**0.784**

As documented in the above-table and on the attached plans, the thirteen (13) lots resulting from the proposed subdivision will meet or exceed the relevant dimensional criteria and related requirements, as such are established in Section 139-16 (A) and (D) of the Town of Nantucket Zoning Bylaw for each of the applicable zoning districts.

In addition to the completed (Form B) application, attached hereto, we have submitted the following plans and technical materials that are required to be submitted to provide for the processing and approval of the proposed subdivision, including: (1) the *Definitive Plan, Old South Road Crossing, Nantucket, Mass* as prepared by Hayes Engineering, Inc., dated June 9, 2016, depicting the subdivision of the lots along with the applicable / customary notes and details (totaling 11 sheets), (2) the *Site Analysis Report*, as prepared by Hayes Engineering, Inc., dated June 10, 2016, (3) the *Street Network Plan*, as prepared by Hayes Engineering, Inc., dated June 9, 2016, and (4) the *Requested Waivers*, as prepared by Hayes Engineering, Inc., dated June 2016. Additional detail on the drainage improvements for the proposed roadways and a full *Stormwater Management Plan* will be submitted under separate cover, at a later date, once the additional design of this system has been refined.

We have also attached "Attachment A" and "Attachment B" to the Form B application form, detailing the specifics of the fifteen (15) existing parcels that comprise the proposed subdivision and the derivation of the title to the land comprising the proposed subdivision, given that the land includes multiple parcels, and that title to several of the parcels has been derived from different sellers / grantors.

We trust that this submittal conforms to the applicable requirements for such a Definitive Subdivision Plan (AR) and we look forward to the completion of your review and the subsequent review and approval of the plan by the Town of Nantucket Planning Board.

If you any immediate questions with respect to either the application or the enclosed materials, please feel free to contact me at 978-988-3900, Extension # 12.

Very truly yours,

David J. Armanetti, Director of Real Estate Development
The Richmond Company, Inc. (Applicant / Development Manager)
On Behalf of Richmond Great Point Development LLC (Owner)

Cc: Philip Pastan, TRC
Kathryn Fossa, TRC
Patricia Roggeveen, RGPDLLC
Shane Valero, RGPDLLC
John Ogren, Hayes Engineering
Andrew Burek, Esq., TRC
Arthur Reade, Esq.

THE RICHMOND COMPANY, INC.

The Richmond Company, Inc.
23 Concord Street
Wilmington, Massachusetts 01887
(979) 988-3900

June 13, 2016

TOWN OF NANTUCKET
TOWN CLERK
16 Broad Street
Nantucket, Massachusetts 02554

Attention: Catherine Flanagan Stover, MMC, CMMC

Subject: Submittal of Application for Definitive Subdivision
Richmond Great Point Development LLC (Owner / Developer)
"Old South Road Crossing" Definitive Subdivision

Dear Mrs. Stover:

The purpose of this correspondence, issued in our capacity as the applicant and development manager, on behalf of the owner of the subject properties (Richmond Great Point Development LLC) is to document submittal of the completed application to petition the Town of Nantucket Planning Board to consider the above-captioned proposal which requires the approval of a definitive subdivision of land to allow for the reconfiguration of certain roadway segments and the reconfiguration of lots in this area comprising a series of thirteen (13) contiguous lots and several proposed roadway segments, totaling +/- 24.3 acres of land, located along Old South Road, Nancy Ann Lane, Greglen Avenue, and Davkim Lane.

The Notice (and copy of the completed (Form B) application and accompanying plan) is being submitted to your office in accordance with and conforms to the provisions of Section 2.06 of "*The Rules and Regulations Governing the Subdivision of Land, Nantucket, Massachusetts*" as well as "*The Subdivision Control Law of Massachusetts*" (M.G.L. Chapter 41, Sections 81K-81GG, inclusive).

Upon your acknowledgment of receipt of this Notice (by way of time / date stamping the application), we intend to submit the original completed (Form B) application and accompanying plan to the Town of Nantucket Planning Board to obtain its review and subsequent approval.

Should you have any questions with respect to the application and submittal, please feel free to contact me at 978-988-3900, Extension # 12.

Very truly yours,

David J. Armanetti
Director of Real Estate Development
The Richmond Company, Inc.
On Behalf of Richmond Great Point Development LLC

Cc: Andrew Burek, Esq., TRC
Arthur Reade, Jr., Esq., RGH

Hayes Engineering, Inc

603 Salem Street
Wakefield, MA 01880
Tel: (781) 246-2800
Fax: (781) 246-7596

Nantucket, MA 02554
Tel: (508) 228-7909

Refer to File No. **NAN-0107J**

SITE ANALYSIS REPORT
OLD SOUTH ROAD CROSSING
NANTUCKET, MASSACHUSETTS

June 10, 2016

This site analysis report was prepared as part of the submission requirements of a definitive subdivision plan in accordance with Section II, 2.06(a) (11) of the Rules and Regulations of the Planning Board for the Town of Nantucket, as amended. This subdivision plan proposes the creation of thirteen (13) lots, in conjunction with 1,268 linear feet of roadway, together with approximately 2,300 linear feet of improvements to Old South Road, Greglen Avenue and Nancy Ann Lane (Road C) as shown on the subdivision plans. The new roadways, known as Road A and Road B are proposed to be constructed as shown on the typical cross-sections illustrated on the profile plans, in order to provide frontage and adequate access to the lots within the parcel in a safe and convenient manner.

The site, being approximately 24.3 acres in extent, is located approximately 2.1 miles southeast of the town center, and is currently consists of undeveloped meadow, areas of interspersed scrub oak and pines (brush) and areas of developed residential and commercial lands, buildings and driveways. The topography of the site ranges from approximately 22 feet above the North American Vertical Datum of 1988 (NAVD88) to approximately elevation 43.

The area in which the project is proposed to be constructed is within the CN, R-5 and CTEC zoning districts. Zoning requirements for each district are summarized in the table below:

Criteria	CN Zoning District	R-5 Zoning District	CTEC Zoning District
Lot Area	7,500 sf.	5,000 sf.	10,000 sf.
Lot Frontage	50 feet	50 feet	50 feet
Front Yard	10 feet	10 feet	10 feet
Side Yard	5 feet	10 feet on one-side, 5 feet thereafter	5 feet
Rear Yard	10 feet	5 feet	10 feet
Ground Cover	40%	40%	40%

Lot areas of proposed lots vary from 16,000 sf. to 534,000 sf.

The property is comprised of Evesboro soils and were determined by using the Web Soil Survey from the National Cooperative Soil Survey for Nantucket County. The Evesboro sands consist of excessively-drained soil, generally found in smooth, irregular-shaped areas, as reported by the Soil Conservation Service. It is expected that the permeability of the soil is rapid in the surface layer and subsoil, and very rapid in the substratum.

Due to the granular nature and the grain size of the Evesboro soils coupled with the site topography and proposed drainage design leads us to believe that erosion is not expected to be a problem. Likewise, these soils are largely void of the small grain sizes, and do not produce excessively dusty conditions. Should dust control be required, it would be handled by wetting the surface of exposed areas during periods of activity of construction vehicles or in highly windy conditions. No other form of dust control is anticipated.

No surface water resources are present on the parcel being developed, nor are any portion of the site subject to the Wetlands Protection Act for Coastal Wetland Areas (M.G.L. Chapter 131, Section 40).

No areas of the site are represented as having severe limitations due to seasonal high water table. Similarly, no portion of the site is designated as being in a Zone A, B or V, as shown on the Flood Insurance Rate Map (FIRM), Community Panel #25019C0089G, effective date June 9, 2014.

The Evesboro sands typically provide poor potential for growth of vegetation.. The site is generally comprised of a sand and gravel pit with paved areas, numerous storage structures and gravel drives. There exists scattered clusters of vegetation on the southern end of the property of vegetation with the remained either pavement or devoid of vegetation. Any tree removal for the proposed roadways will be minimal as the majority of the area within the proposed roadway is currently gravel driveways or the sand and gravel pit.

An examination of the profile sheets submitted with the plan reveals that no major changes in watershed areas or directions are contemplated by construction of the subdivision proposed in this application. The general design approach for management of storm water is to collect the roadway drainage as well as runoff from portions of the site. This runoff is to be collected in deep sump catch basins, and then directed via a closed pipe system VortSentry treatment devices and discharge to proposed subsurface infiltration areas. The closed piping system shall be designed with sufficient capacity to accommodate the 25-year design storm and mitigation for the 100-year design storm. Stormwater entering the proposed subsurface infiltration area will provide for groundwater recharge in the proposed development. Also, the proposed deep sump catch basins and VortSentry devices will improve the water quality of the runoff from the proposed roadway.

The improvements which are contemplated for construction of the subdivision roadways include rights-of-ways with varying width as depicted on the plans. Existing roadways to be abandoned shall have pavement and infrastructure removed. Minimum pavement width for newly proposed roadways having two-way (bidirectional) traffic is 24-feet.

Sanitary sewer from the lots are proposed to be connected to municipal sanitary facilities available in Old South Road proximate to the intersection with Goldfinch Drive.

Potable water will be provided for domestic purposes by connecting to the Town water supply The proposed eight (8) inch water main through the project will be connected to an existing twelve (12) inch water main in Old South Road and existing eight (8) inch water main in Nancy Ann Lane.

The project roadways are provided to service future commercial and residential\multifamily developments within the project limits. The proposed roadway system will connect two existing roadways, Greglen Avenue and Nancy Ann Lane to Old South Road. These connection will provide for adequate site distances so as to enable vehicles to safely enter and exit the property, as well as providing adequate access for emergency vehicles.

The traffic generated by uses adjacent to the proposed roadway will add to the existing traffic volumes of the surrounding streets. Roadway improvements are proposed in Old South Road to mitigate new traffic generation. The geometry and construction of the proposed roadway system will provide for a safe and convenient alignment for vehicular traffic and access to the lots by emergency vehicles.

A sidewalk is being proposed along one side of the proposed Road A right-of-way.

It is presently anticipated that all construction related to the physical roadway and infrastructure improvements would be completed within two (2) years following the receipt of all necessary approvals.

There are no proposed common open spaces associated with this development.

N

NOTES:

1) ELEVATIONS SHOWN ON THIS PLAN ARE BASED ON N.A.V.D. 88.

2) TOPOGRAPHIC FEATURES SHOWN ON THIS PLAN ARE THE RESULT OF COMPILING ACTUAL FIELD SURVEY BY HAYES ENGINEERING, INC. AND NANTUCKET GIS INFORMATION.

LOVERS LANE
ROAD C
OLD SOUTH RD
LOT 1
LOT 2
LOT 3
GREGLEN AVENUE
LOT 9
LOT 8
LOT 10
LOT 7
LOT 11
ROAD B
LOT 6
LOT 5
LOT 4
GOLDFINCH DR
BLUEBIRD LN
ROAD A
DAVKIM LANE
NANCY ANN LANE
LOT 12
LOT 13
WAY
OLD SOUTH ROAD
MAYFLOWER CIRCLE
DAFFODIL LANE
EVERGREEN WAY

SITE ANALYSIS MAP

OLD SOUTH ROAD CROSSING

(#63, 67, 73 & 75A OLD SOUTH ROAD; #3, 4, 5, 6, 8, 10, 12 & 14 NANCY ANN LANE; #20 DAVKIM LANE; #2 & 4 GREGLEN AVENUE)

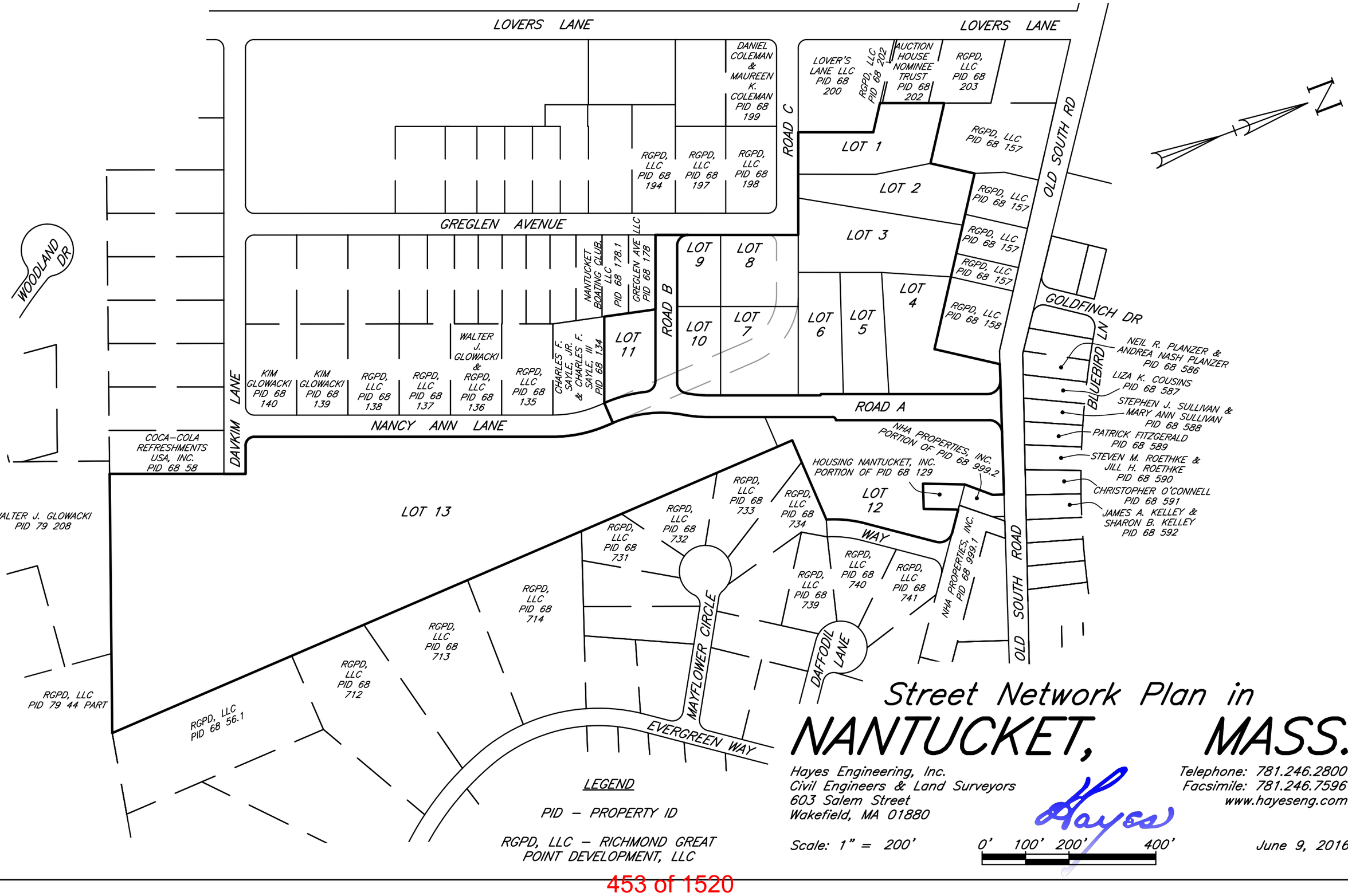
Nantucket, Mass.

Hayes Engineering, Inc.
Civil Engineers & Land Surveyors
603 Salem Street
Wakefield, Mass. 01880
Telephone: 781.246.2800
Facsimile: 781.246.7596
www.hayeseng.com

Scale: 1" = 120'

Date: June 9, 2016

Hayes Engineering, Inc.



Street Network Plan in NANTUCKET, MASS.

Hayes Engineering, Inc.
Civil Engineers & Land Surveyors
603 Salem Street
Wakefield, MA 01880

Telephone: 781.246.2800
Facsimile: 781.246.7596
www.hayeseng.com

Scale: 1" = 200'

0' 100' 200' 400'

June 9, 2016

Subdivision Plan of Land in NANTUCKET, MASS.

Being a Subdivision of Lot 59 on LC Plan 16514–L, Lots 159, 160, 161, 177, 179, 180, 181, 182, 183 & 184 on LC Plan 16514–Z, Lot 853 on LC Plan 16514–97, Lot 858 on LC Plan 16514–100, & Lots 869 & 872 on LC Plan 16514–103

Hayes Engineering, Inc.
Civil Engineers & Land Surveyors
603 Salem Street
Wakefield, MA 01880

Telephone: 781.246.2800
Facsimile: 781.246.7596
www.hayeseng.com

Scale: 1" = 100'

0' 50' 100' 200' 300'

June 9, 2016

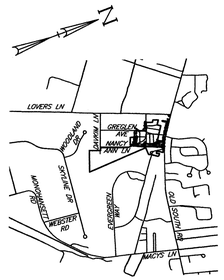
I CERTIFY THAT AS OF THE DATE OF THIS SURVEY, THE MONUMENTS CONTROLLING PRIOR PLANS ARE IN THE GROUND AS SHOWN AND DESCRIBED HEREON. I FURTHER CERTIFY THAT ANY ADDITIONAL MONUMENTS SHOWN HEREON HAVE BEEN SET IN ACCORDANCE WITH THE LAND COURT INSTRUCTIONS OF 2006 AS OF THE DATE OF THIS SURVEY.

I CERTIFY THAT THIS PLAN WAS DRAWN FROM AN ACTUAL SURVEY MADE ON THE GROUND IN ACCORDANCE WITH THE LAND COURT INSTRUCTIONS OF 2006 BETWEEN NOVEMBER 20, 2012 AND JUNE 3, 2016.

EDM ACCURACY ±(2 MM + 2 PPM)
TRAVERSE PRECISION (RAW) = 1:52,714
LINEAR ERROR OF CLOSURE (RAW) = 0.16 FEET
DIRECTIONAL ERROR OF CLOSURE = S53°E

DATE: JUNE 9, 2016

PROFESSIONAL LAND SURVEYOR



Vicinity Map
Scale: 1" = 2000'±

0' 1000' 2000'

CURRENT OWNERSHIP

RICHMOND GREAT POINT DEVELOPMENT, LLC

LAND COURT CERTIFICATE NO. 24872

[LOT 59 ON LC PLAN 16514–L]
#67 OLD SOUTH ROAD
PROPERTY ID 68 158

[LOT 160 ON LC PLAN 16514–Z]
#3 NANCY ANN LANE
PROPERTY ID 68 132

[LOT 161 ON LC PLAN 16514–Z]
#5 NANCY ANN LANE
PROPERTY ID 68 133

[LOT 179 ON LC PLAN 16514–Z]
#6 NANCY ANN LANE
PROPERTY ID 68 205

[LOT 180 ON LC PLAN 16514–Z]
#8 NANCY ANN LANE
PROPERTY ID 68 206

[LOT 181 ON LC PLAN 16514–Z]
#10 NANCY ANN LANE
PROPERTY ID 68 207

[LOT 182 ON LC PLAN 16514–Z]
#12 NANCY ANN LANE
PROPERTY ID 68 176

[LOT 184 ON LC PLAN 16514–Z]
#20 DAVKIM LANE
PROPERTY ID 68 57

[LOT 853 ON LC PLAN 16514–97]
#73 OLD SOUTH ROAD
PORTION OF PROPERTY ID 68 129

[LOT 869 ON LC PLAN 16514–103]
#4 NANCY ANN LANE
PROPERTY ID 68 204

[LOT 872 ON LC PLAN 16514–103]
#63 OLD SOUTH ROAD
PROPERTY ID 68 157

LC CERTIFICATE NOS. 12709 & 25430

[LOT 183 ON LC PLAN 16514–Z]
#14 NANCY ANN LANE
PROPERTY ID 68 130

LAND COURT CERTIFICATE NO. 25525

[LOT 858 ON LC PLAN 16514–100]
#75A OLD SOUTH ROAD
PROPERTY ID 68 999.2

LAND COURT CERTIFICATE NO. 25529

[LOT 159 ON LC PLAN 16514–Z]
#2 GREGLEN AVENUE
PROPERTY ID 68 131

LAND COURT CERTIFICATE NO. 25530

[LOT 177 ON LC PLAN 16514–Z]
#4 GREGLEN AVENUE
PROPERTY ID 68 177

Land Court Plan 16514–Z

Coordinate System

N 92,823.98
E 1,761,414.97
Massachusetts State Plane Coordinates, Island Zone in US Survey feet based upon Nantucket Primary Airport Control Station designation ACK ARP (PID – AB3245) NAD 83(2011) position.

LEGEND

CBDH – CONCRETE BOUND WITH DRILL HOLE

(FD) – FOUND

LC – LAND COURT

rf – REGULARITY FACTOR

⊡ – PROPOSED CONCRETE BOUND WITH DRILL HOLE TO BE SET BY OWNER UNLESS OTHERWISE NOTED

ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: R–5

MINIMUM LOT AREA = 5,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 10 FEET ON ONE SIDE, 5 FEET THEREAFTER
REAR = 5 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: CTEC

MINIMUM LOT AREA = 10,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

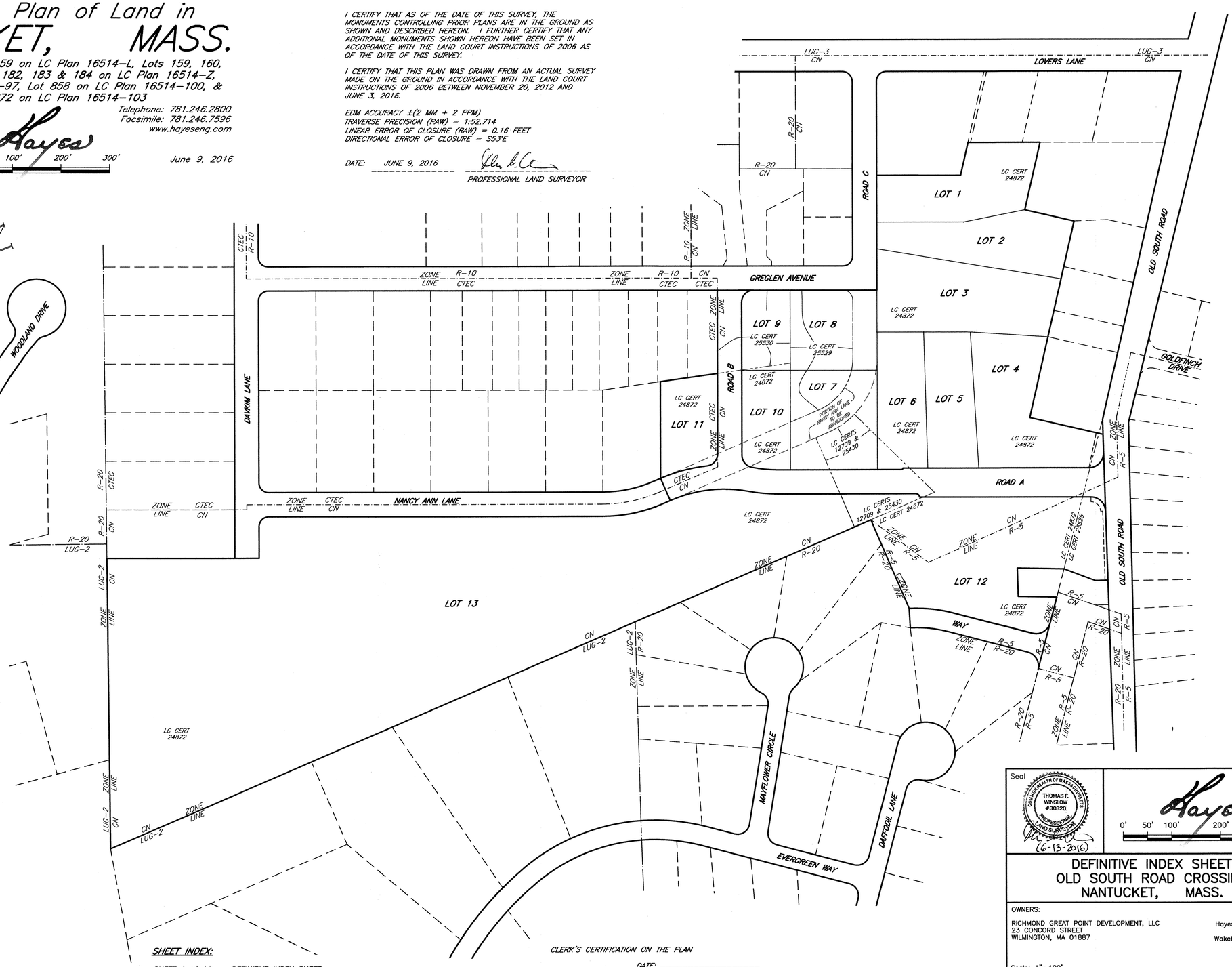
MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

REGULARITY FACTOR (rf) SHALL NOT BE LESS THAN 0.55

NOTES:

1. LOTS SHOWN HEREON COMPLY WITH THE LOT AREA REQUIREMENTS AS PROVIDED IN THE NANTUCKET ZONING BYLAW, CHAPTER 139 ss 2A AND 16A.
2. THE PLANNING BOARD DETERMINES THAT LOTS 1 THROUGH 13 DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BY–LAW, BUT STILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BYLAWS. DETERMINATION MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.



SHEET INDEX:

SHEET 1 of 11: DEFINITIVE INDEX SHEET
SHEET 2 of 11: DEFINITIVE PLAN SHEET 1 (LOTS 1–3)
SHEET 3 of 11: DEFINITIVE PLAN SHEET 2 (LOTS 4–12)
SHEET 4 of 11: DEFINITIVE PLAN SHEET 3 (LOT 13)
SHEET 5 of 11: DEFINITIVE PLAN SHEET 4 (ABANDONMENT PLAN)
SHEET 6 of 11: DEFINITIVE TOPOGRAPHIC PLAN SHEET 1
SHEET 7 of 11: DEFINITIVE PLAN & PROFILE SHEET 1
SHEET 8 of 11: DEFINITIVE PLAN & PROFILE SHEET 2
SHEET 9 of 11: ROADWAY IMPROVEMENTS & SEWER SHEET 1
SHEET 10 of 11: ROADWAY IMPROVEMENTS SHEET 2
SHEET 11 of 11: DETAIL SHEET

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

Seal

COMMONWEALTH OF MASSACHUSETTS
THOMAS F. WINSLOW #30320
PROFESSIONAL LAND SURVEYOR
(6-13-2016)

0' 50' 100' 200' 300'

DEFINITIVE INDEX SHEET
OLD SOUTH ROAD CROSSING
NANTUCKET, MASS.

OWNERS:
RICHMOND GREAT POINT DEVELOPMENT, LLC
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer
Hayes Engineering, Inc.
603 Salem Street
Wakefield, Mass. 01880
www.hayeseng.com

Scale: 1"= 100'

June 9, 2016

No.	Revision	Date
10		
9		
8		
7		
6		
5		
4		
3		
2		
1		

NANTUCKET PLANNING BOARD

Application Filed: _____
Final Plan Filed: _____
Hearing Date: _____
Plan Approved: _____
Plan Signed: _____

INDEX SHEET

SHEET 1 OF 11

N:\NAN66\Dnancyann.dwg, 6/13/2016 12:36:24 PM, TFW

Subdivision Plan of Land in
NANTUCKET, MASS.

Being a Subdivision of Lot 59 on LC Plan 16514–L, Lots 159, 160, 161, 177, 179, 180, 181, 182, 183 & 184 on LC Plan 16514–Z, Lot 853 on LC Plan 16514–97, Lot 858 on LC Plan 16514–100, & Lots 869 & 872 on LC Plan 16514–103

Hayes Engineering, Inc.
Civil Engineers & Land Surveyors
603 Salem Street
Wakefield, MA 01880

Telephone: 781.246.2800
Facsimile: 781.246.7596
www.hayeseng.com

Scale: 1" = 40'

0' 20' 40' 80' 120'

June 9, 2016

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

LOVERS LANE

ROAD C

GREGLEN AVENUE

ROAD B

(PUBLIC – VARIABLE WIDTH)
1942 COUNTY LAYOUT
ROAD PLAN #200, ROAD DRAWER #1

OLD SOUTH ROAD

LOCATION LINE OF 1942 COUNTY LAYOUT
LC DOCUMENT NO. 16561

DANIEL COLEMAN & MAUREEN K. COLEMAN
LC CERTIFICATE NO. 21078
[LOT 84 ON LC PLAN 16514–R]
#10 LOVERS LANE
PROPERTY ID 68 199

LOVER'S LANE LLC
LC CERTIFICATE NO. 26028
[LOT 870 ON LC PLAN 16514–103]
#9 LOVERS LANE
PROPERTY ID 68 200

EASEMENT TO NANTUCKET ELECTRIC COMPANY
LC DOCUMENT NO. 18452
[IN PRIVATE WAYS AND 10' WIDE STRIP ON LOTS]

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 871 ON LC PLAN 16514–103]

AUCTION HOUSE NOMINEE TRUST
LC CERTIFICATE NO. 25555
[LOT 857 ON LC PLAN 16514–99]
#4 LOVERS LANE
PROPERTY ID 68 202

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 25381
[LOT 856 ON LC PLAN 16514–99]
#2 LOVERS LANE
PROPERTY ID 68 203

PARKING EASEMENT
LC DOCUMENT NO. 136846

DECLARATION REGARDING PARKING SPACES (APPROXIMATE LOCATION)
LC DOCUMENT NO. 138263

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[PORTION OF LOT 872 ON LC PLAN 16514–103]
#63 OLD SOUTH ROAD
PROPERTY ID 68 157
[SEE LOT 1 ON ANR PLAN BY HAYES ENGINEERING, INC. DATED JUNE 1, 2016]

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[PORTION OF LOT 872 ON LC PLAN 16514–103]
#63 OLD SOUTH ROAD
PROPERTY ID 68 157
[SEE LOT 2 ON ANR PLAN BY HAYES ENGINEERING, INC. DATED JUNE 1, 2016]

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[PORTION OF LOT 872 ON LC PLAN 16514–103]
#63 OLD SOUTH ROAD
PROPERTY ID 68 157
[SEE LOT 3 ON ANR PLAN BY HAYES ENGINEERING, INC. DATED JUNE 1, 2016]

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[PORTION OF LOT 59 ON LC PLAN 16514–L & LOT 872 ON LC PLAN 16514–103]
#63 & 67 OLD SOUTH ROAD
PROPERTY ID 68 157 & 68 158
[SEE LOT 4 ON ANR PLAN BY HAYES ENGINEERING, INC. DATED JUNE 1, 2016]

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 867 ON LC PLAN 16514–102]

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 868 ON LC PLAN 16514–102]

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 866 ON LC PLAN 16514–102]

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 865 ON LC PLAN 16514–102]

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 863 ON LC PLAN 16514–102]

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 861 ON LC PLAN 16514–102]

EASEMENT TO NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY
LC DOCUMENT NO. 16956
[IN PRIVATE WAYS]

EASEMENT TO NANTUCKET ELECTRIC COMPANY
LC DOCUMENT NO. 19452
[IN PRIVATE WAYS AND 10' WIDE STRIP ON LOTS]

EASEMENT TO NANTUCKET ELECTRIC COMPANY
LC DOCUMENT NO. 18452
[IN PRIVATE WAYS AND 10' WIDE STRIP ON LOTS]
(PORTION TO BE RELOCATED)

PORTION OF NANCY ANN LANE TO BE ABANDONED

NANTUCKET BOATING CLUB, LLC
LC CERTIFICATE NO. 28815
[LOT 1 ON LC PLAN 16514–93]
#68 GREGLEN AVENUE
PROPERTY ID 68 178.1

GREGLEN AVE LLC
LC CERTIFICATE NO. 28812
[LOT 2 ON LC PLAN 16514–93]
#64 GREGLEN AVENUE
PROPERTY ID 68 178

N:95,830.69
E:1,756,504.46

N:96,168.93
E:1,756,560.42

N:96,090.20
E:1,756,679.19

N:96,176.95
E:1,756,736.69

N:95,947.54
E:1,757,082.79

N:95,747.14
E:1,756,725.61

N:95,439.49
E:1,756,609.49
SSM (FD)

N:95,378.92
E:1,756,769.80

N:95,262.75
E:1,756,743.86

N20°46'38"E 172.86

147.95 N20°40'57"E

N56°27'56"W 68.17

142.50 S56°27'56"E

N69°17'52"W 96.55

179.06 N20°46'38"E

127.95 N09°23'06"E

N33°32'04"E 104.08

N69°18'56"W 139.86

55.00 N69°18'56"W

59.82

25.04

N69°18'56"W 84.86

383.95 N30°03'34"E

S56°28'04"E 122.24

S56°28'04"E 415.27

S56°28'04"E 170.75

N33°31'56"E 154.56

140.45

74.99 N20°40'21"E

75.01 N20°40'21"E

328.84 N20°40'21"E

178.84 N20°40'21"E

P=25.00 L=39.26 Δ=89°59'47"

3+59.76

N69°18'26"W 171.37

140.00 S69°18'26"E

N69°18'26"W 336.65

N69°18'26"W 314.94

165.03 N69°18'26"W

86.48 N69°18'26"W

165.09 N69°18'56"W

283.25 N69°18'56"W

119.02 N12°35'00"E

N20°41'34"E 100.00

N20°41'34"E 178.86

N20°44'06"E 192.12

96.06 N20°44'06"E

96.06 N20°44'06"E

CBDH (FD) (6–1–2016) (BROKEN)

159.85 S24°20'51"W

LOT 1
38,388 S.F.
(rf=0.701)

LOT 2
37,107 S.F.
(rf=0.628)

LOT 3
52,581 S.F.
(rf=0.794)

LOT 4
47,309 S.F.
(rf=0.650)

LOT 5
28,161 S.F.
(rf=0.776)

LOT 6
28,159 S.F.
(rf=0.770)

LOT 7
36,606 S.F.
(rf=0.995)

LOT 8
29,520 S.F.
(rf=0.998)

LOT 9
16,366 S.F.
(rf=0.929)

LOT 10
20,145 S.F.
(rf=0.913)

LOT 11
22,250 S.F.
(rf=0.929)

Land Court Plan 16514–Z

N

Coordinate System

N 92,823.98
E 1,761,414.97
Massachusetts State Plane Coordinates, Island Zone in US Survey feet based upon Nantucket Primary Airport Control Station designation ACK ARP (PID – AB3245) NAD 83(2011) position.

LEGEND

CBDH – CONCRETE BOUND WITH DRILL HOLE

(FD) – FOUND

LC – LAND COURT

rf – REGULARITY FACTOR

■ – PROPOSED CONCRETE BOUND WITH DRILL HOLE TO BE SET BY OWNER UNLESS OTHERWISE NOTED

NOTES:

1. *LOTS SHOWN HEREON COMPLY WITH THE LOT AREA REQUIREMENTS AS PROVIDED IN THE NANTUCKET ZONING BYLAW, CHAPTER 139 ss 24 AND 164.*
2. *THE PLANNING BOARD DETERMINES THAT LOTS 1 THROUGH 13 DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BY–LAW, BUT STILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BYLAWS. DETERMINATION MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.*

I CERTIFY THAT AS OF THE DATE OF THIS SURVEY, THE MONUMENTS CONTROLLING PRIOR PLANS ARE IN THE GROUND AS SHOWN AND DESCRIBED HEREON. I FURTHER CERTIFY THAT ANY ADDITIONAL MONUMENTS SHOWN HEREON HAVE BEEN SET IN ACCORDANCE WITH THE LAND COURT INSTRUCTIONS OF 2006 AS OF THE DATE OF THIS SURVEY.

I CERTIFY THAT THIS PLAN WAS DRAWN FROM AN ACTUAL SURVEY MADE ON THE GROUND IN ACCORDANCE WITH THE LAND COURT INSTRUCTIONS OF 2006 BETWEEN NOVEMBER 20, 2012 AND JUNE 3, 2016.

EDM ACCURACY ±(2 MM + 2 PPM)
TRAVERSE PRECISION (RAW) = 1:52,714
LINEAR ERROR OF CLOSURE (RAW) = 0.16 FEET
DIRECTIONAL ERROR OF CLOSURE = S53°E

DATE: JUNE 9, 2016

_____
PROFESSIONAL LAND SURVEYOR

Seal
COMMONWEALTH OF MASSACHUSETTS
THOMAS F. WINSLOW #30320
REGISTERED PROFESSIONAL LAND SURVEYOR
(6-13-2016)

0' 20' 40' 80' 120'

DEFINITIVE PLAN
OLD SOUTH ROAD CROSSING
NANTUCKET, MASS.

OWNERS:

RICHMOND GREAT POINT DEVELOPMENT, LLC
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer

Hayes Engineering, Inc.
603 Salem Street
Wakefield, Mass. 01880
www.hayeseng.com

Scale: 1"=40'

June 9, 2016

No.	Revision	Date
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NANTUCKET
PLANNING BOARD

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Application Filed: _____
Final Plan Filed: _____
Hearing Date: _____
Plan Approved: _____
Plan Signed: _____

PLAN SHEET 1 OF 4

SHEET 2 OF 11

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Subdivision Plan of Land in NANTUCKET, MASS.

Being a Subdivision of Lot 59 on LC Plan 16514–L, Lots 159, 160, 161, 177, 179, 180, 181, 182, 183 & 184 on LC Plan 16514–Z, Lot 853 on LC Plan 16514–97, Lot 858 on LC Plan 16514–100, & Lots 869 & 872 on LC Plan 16514–103

Hayes Engineering, Inc.
Civil Engineers & Land Surveyors
603 Salem Street
Wakefield, MA 01880

Telephone: 781.246.2800
Facsimile: 781.246.7596
www.hayeseng.com

Scale: 1" = 40' — June 9, 2016

Coordinate System

N 92,823.98
E 1,761,414.97
Massachusetts State Plane Coordinates, Island Zone in US Survey feet based upon Nantucket Primary Airport Control Station designation ACK ARP (PID – AB3245) NAD 83(2011) position.

LEGEND

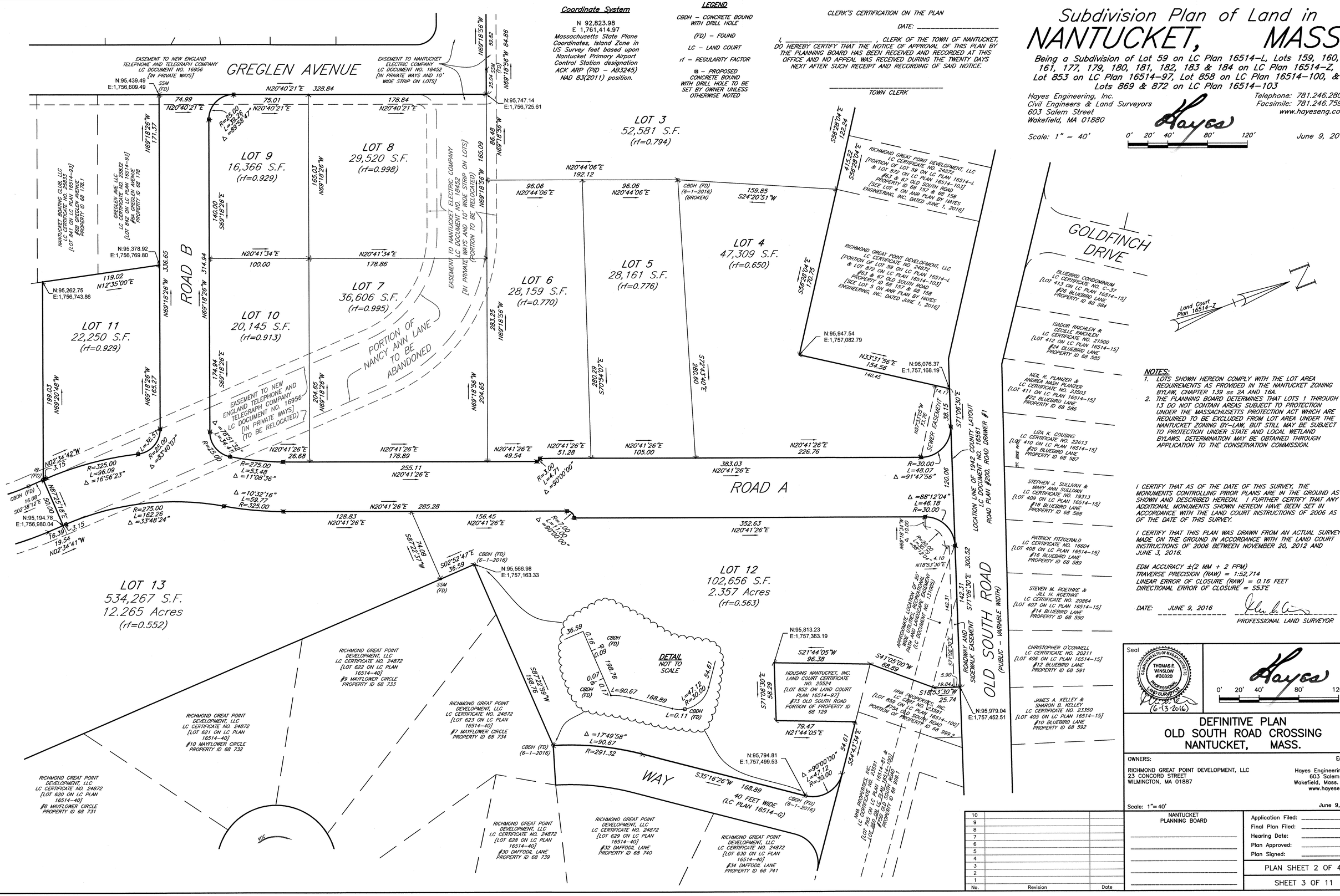
CBDH – CONCRETE BOUND WITH DRILL HOLE
(FD) – FOUND
LC – LAND COURT
rf – REGULARITY FACTOR
◘ – PROPOSED CONCRETE BOUND WITH DRILL HOLE TO BE SET BY OWNER UNLESS OTHERWISE NOTED

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK



NOTES:

1. LOTS SHOWN HEREON COMPLY WITH THE LOT AREA REQUIREMENTS AS PROVIDED IN THE NANTUCKET ZONING BYLAW, CHAPTER 139 §§ 2A AND 16A.
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EDM ACCURACY ±(2 MM + 2 PPM)
TRAVERSE PRECISION (RAW) = 1:52,714
LINEAR ERROR OF CLOSURE (RAW) = 0.16 FEET
DIRECTIONAL ERROR OF CLOSURE = S53°E

DATE: JUNE 9, 2016 _____
PROFESSIONAL LAND SURVEYOR

Seal: COMMONWEALTH OF MASSACHUSETTS — THOMAS F. WINSLOW #30320 — PROFESSIONAL LAND SURVEYOR — (6-13-2016)

0' 20' 40' 80' 120'

DEFINITIVE PLAN
OLD SOUTH ROAD CROSSING
NANTUCKET, MASS.

OWNERS:
RICHMOND GREAT POINT DEVELOPMENT, LLC
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer:
Hayes Engineering, Inc.
603 Salem Street
Wakefield, Mass. 01880
www.hayeseng.com

Scale: 1"= 40' — June 9, 2016

No.	Revision	Date
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NANTUCKET PLANNING BOARD

Application Filed: _____
Final Plan Filed: _____
Hearing Date: _____
Plan Approved: _____
Plan Signed: _____

PLAN SHEET 2 OF 4

SHEET 3 OF 11

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Subdivision Plan of Land in NANTUCKET, MASS.

Being a Subdivision of Lot 59 on LC Plan 16514–L, Lots 159, 160, 161, 177, 179, 180, 181, 182, 183 & 184 on LC Plan 16514–Z, Lot 853 on LC Plan 16514–97, Lot 858 on LC Plan 16514–100, & Lots 869 & 872 on LC Plan 16514–103

Hayes Engineering, Inc.
Civil Engineers & Land Surveyors
603 Salem Street
Wakefield, MA 01880

Telephone: 781.246.2800
Facsimile: 781.246.7596
www.hayeseng.com

Scale: 1" = 50' 0' 25' 50' 100' 150' June 9, 2016

Coordinate System

N 92,823.98
E 1,761,414.97
Massachusetts State Plane Coordinates, Island Zone in US Survey feet based upon Nantucket Primary Airport Control Station designation ACK ARP (PID – AB3245) NAD 83(2011) position.

LEGEND

CBDH – CONCRETE BOUND WITH DRILL HOLE
(FD) – FOUND
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□ – PROPOSED CONCRETE BOUND WITH DRILL HOLE TO BE SET BY OWNER UNLESS OTHERWISE NOTED

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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_____
TOWN CLERK

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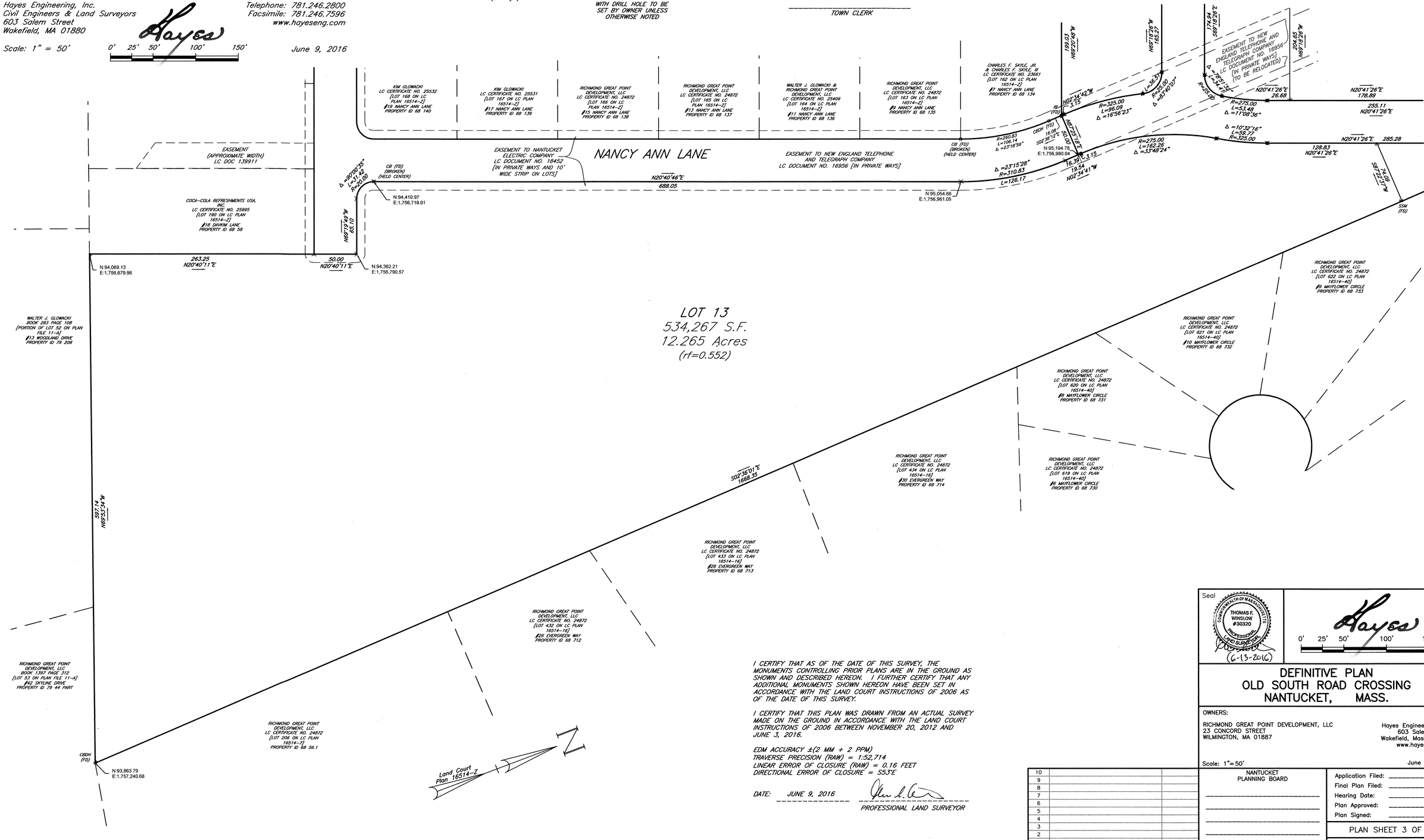

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DATE: JUNE 9, 2016

PROFESSIONAL LAND SURVEYOR

Seal: COMMONWEALTH OF MASSACHUSETTS — THOMAS F. WINSLOW #30320 — PROFESSIONAL LAND SURVEYOR — (6-13-2016)

Hayes 0' 25' 50' 100' 150'

DEFINITIVE PLAN
OLD SOUTH ROAD CROSSING
NANTUCKET, MASS.

OWNERS:
RICHMOND GREAT POINT DEVELOPMENT, LLC
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer
Hayes Engineering, Inc.
603 Salem Street
Wakefield, Mass. 01880
www.hayeseng.com

Scale: 1"=50' June 9, 2016

No.	Revision	Date
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NANTUCKET PLANNING BOARD

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Application Filed: _____
Final Plan Filed: _____
Hearing Date: _____
Plan Approved: _____
Plan Signed: _____

PLAN SHEET 3 OF 4

SHEET 4 OF 11

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Subdivision Plan of Land in
NANTUCKET, MASS.

Being a Subdivision of Lot 59 on LC Plan 16514–L, Lots 159, 160, 161, 177, 179, 180, 181, 182, 183 & 184 on LC Plan 16514–Z, Lot 853 on LC Plan 16514–97, Lot 858 on LC Plan 16514–100, & Lots 869 & 872 on LC Plan 16514–103

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Scale: 1" = 40'

0' 20' 40' 80' 120'

June 9, 2016

CLERK'S CERTIFICATION ON THE PLAN

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_____
TOWN CLERK

Coordinate System

N 92,823.98
E 1,761,414.97
Massachusetts State Plane Coordinates, Island Zone in US Survey feet based upon Nantucket Primary Airport Control Station designation ACK ARP (PID – AB3245) NAD 83(2011) position.

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(FD) – FOUND

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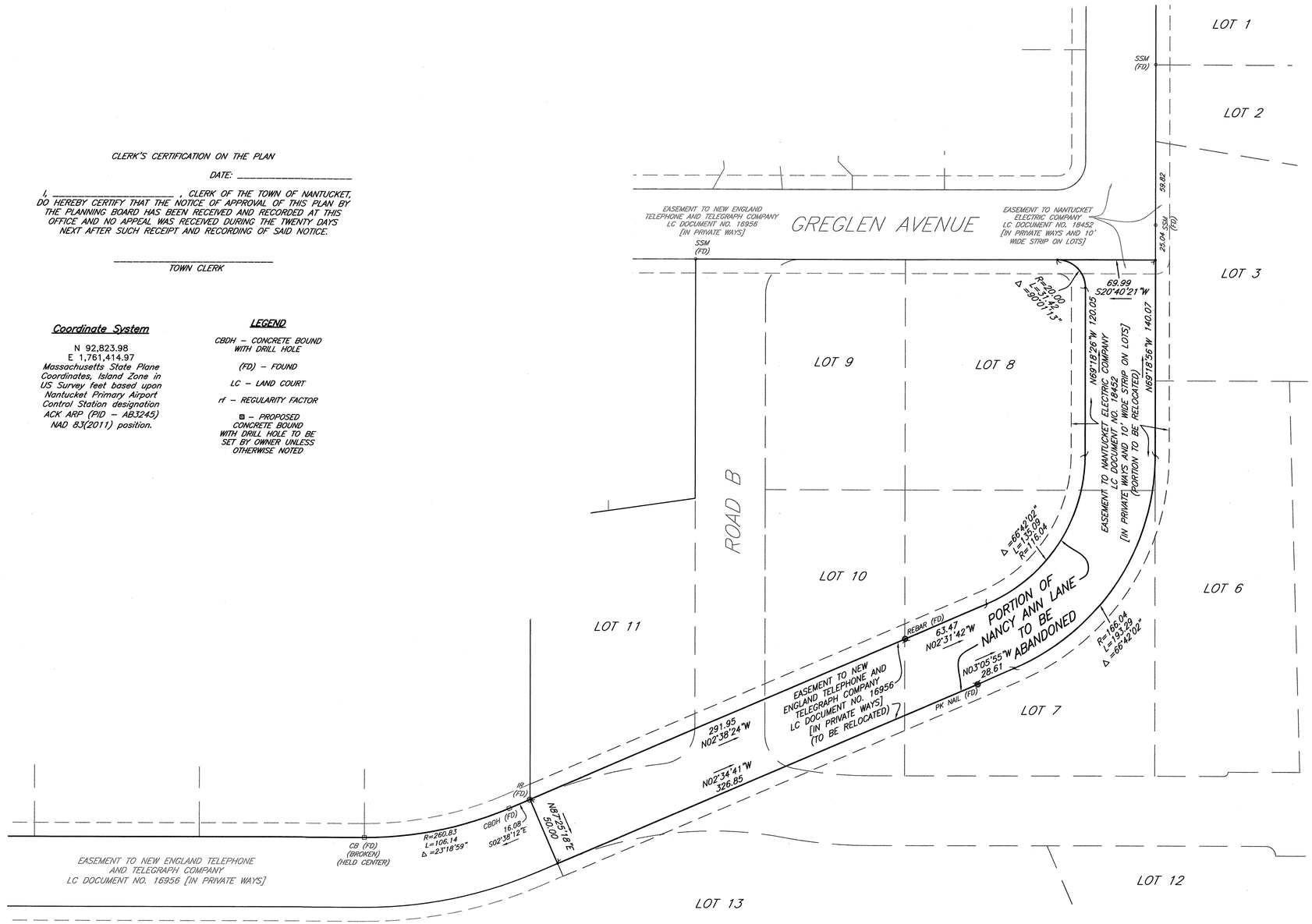
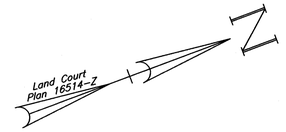
⊡ – PROPOSED CONCRETE BOUND WITH DRILL HOLE TO BE SET BY OWNER UNLESS OTHERWISE NOTED





NOTES:

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EDM ACCURACY ±(2 MM + 2 PPM)
TRAVERSE PRECISION (RAW) = 1:52,714
LINEAR ERROR OF CLOSURE (RAW) = 0.16 FEET
DIRECTIONAL ERROR OF CLOSURE = S53°E

DATE: JUNE 9, 2016

_____
PROFESSIONAL LAND SURVEYOR

Seal

COMMONWEALTH OF MASSACHUSETTS
THOMAS F. WINSLOW #30320
PROFESSIONAL LAND SURVEYOR
(6-13-2016)

0' 20' 40' 80' 120'

DEFINITIVE PLAN
OLD SOUTH ROAD CROSSING
NANTUCKET, MASS.

OWNERS:

RICHMOND GREAT POINT DEVELOPMENT, LLC
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer

Hayes Engineering, Inc.
603 Salem Street
Wakefield, Mass. 01880
www.hayeseng.com

Scale: 1"= 40'

June 9, 2016

No.	Revision	Date
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NANTUCKET PLANNING BOARD

Application Filed: _____
Final Plan Filed: _____
Hearing Date: _____
Plan Approved: _____
Plan Signed: _____

PLAN SHEET 4 OF 4

SHEET 5 OF 11

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CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

GREGLEN AVENUE

GOLDFINCH DRIVE

ROAD A

ROAD B

OLD SOUTH ROAD (PUBLIC - VARIABLE WIDTH)

WAY

PORTION OF NANCY ANN LANE TO BE ABANDONED

LOT 2
37,107 S.F.
(rf=0.628)

LOT 3
52,581 S.F.
(rf=0.794)

LOT 4
47,309 S.F.
(rf=0.650)

LOT 5
28,161 S.F.
(rf=0.776)

LOT 6
28,159 S.F.
(rf=0.770)

LOT 7
36,606 S.F.
(rf=0.995)

LOT 8
29,520 S.F.
(rf=0.998)

LOT 9
16,366 S.F.
(rf=0.929)

LOT 10
20,145 S.F.
(rf=0.913)

LOT 11
22,250 S.F.
(rf=0.929)

LOT 12
102,656 S.F.
2.357 Acres
(rf=0.563)

LOT 13
534,267 S.F.
12.265 Acres
(rf=0.552)

Land Court Plan 16514-Z

N

Seal

COMMONWEALTH OF MASSACHUSETTS
PETER J OGREN
CIVIL
No. 27145
REGISTERED PROFESSIONAL ENGINEER
6/13/16

Hayes
0' 20' 40' 80' 120'

DEFINITIVE TOPOGRAPHIC PLAN
OLD SOUTH ROAD CROSSING
NANTUCKET, MASS.

OWNERS:

RICHMOND GREAT POINT DEVELOPMENT, LLC
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer

Hayes Engineering, Inc.
603 Salem Street
Wakefield, Mass. 01880
www.hayeseng.com

Scale: 1"= 40'

June 9, 2016

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NANTUCKET
PLANNING BOARD

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Plan Signed: _____

TOPO SHEET 1 OF 1

SHEET 6 OF 11

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CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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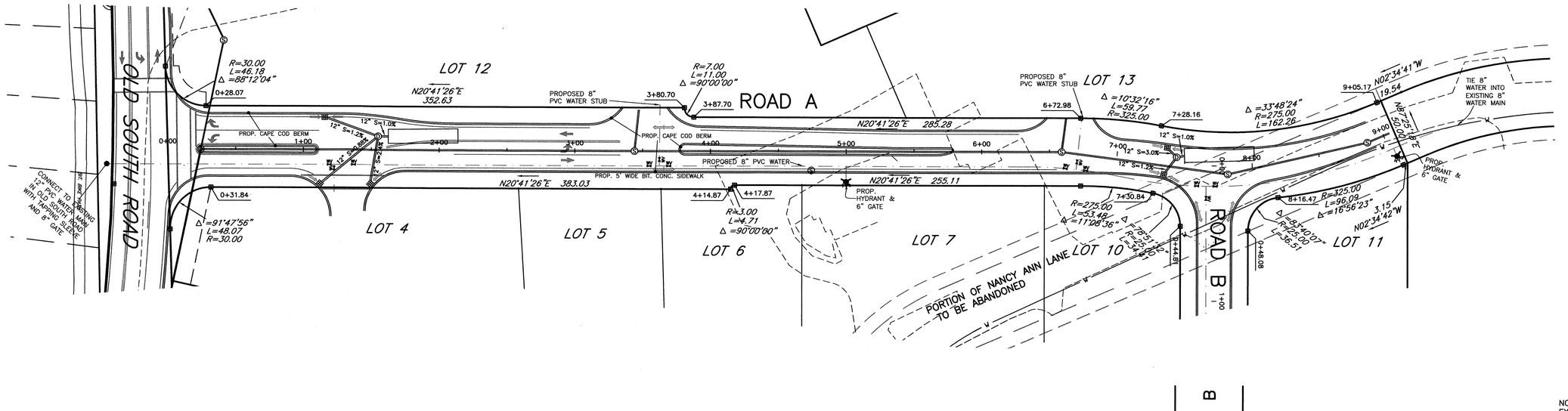
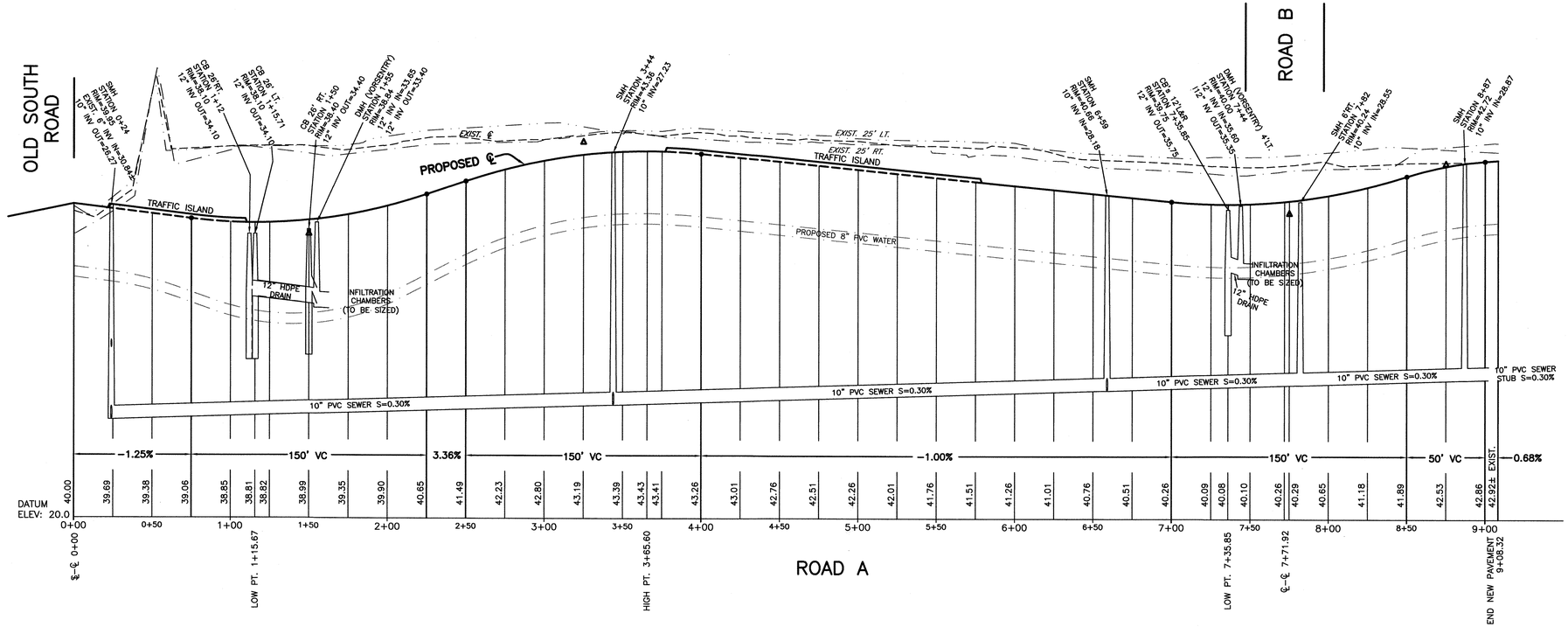


NOTE:
EXISTING UTILITIES AND PAVEMENT IN THE PORTION OF NANCY ANN LANE TO BE ABANDONED ARE TO BE REMOVED.



Seal

COMMONWEALTH OF MASSACHUSETTS
PETER J. OGREN
CIVIL
No. 27145
REGISTERED PROFESSIONAL ENGINEER
6/13/16

Hayes
0' 20' 40' 80' 120'

DEFINITIVE PLAN & PROFILE
ROAD A
NANTUCKET, MASS.

OWNERS:
RICHMOND GREAT POINT DEVELOPMENT, LLC
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer
Hayes Engineering, Inc.
603 Salem Street
Wakefield, Mass. 01880
www.hayeseng.com

Scale: 1"=40' (Hor.) & 4' (Ver.) June 9, 2016

No.	Revision	Date
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NANTUCKET PLANNING BOARD

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Plan Signed: _____

PROFILE SHEET 1 OF 2

SHEET 7 OF 11

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CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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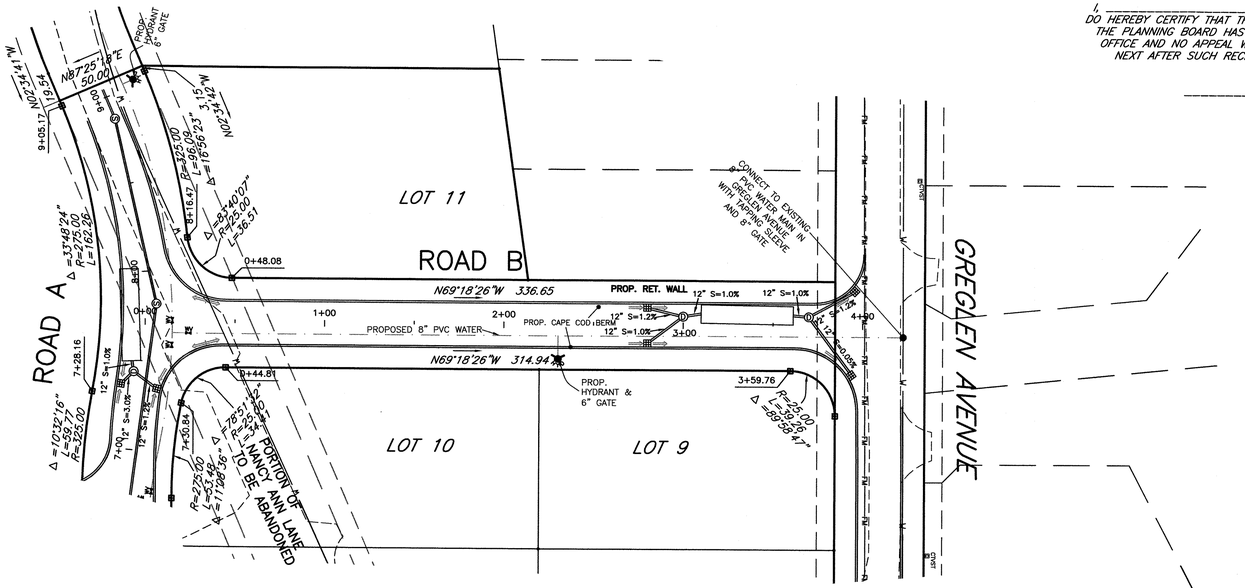
TOWN CLERK



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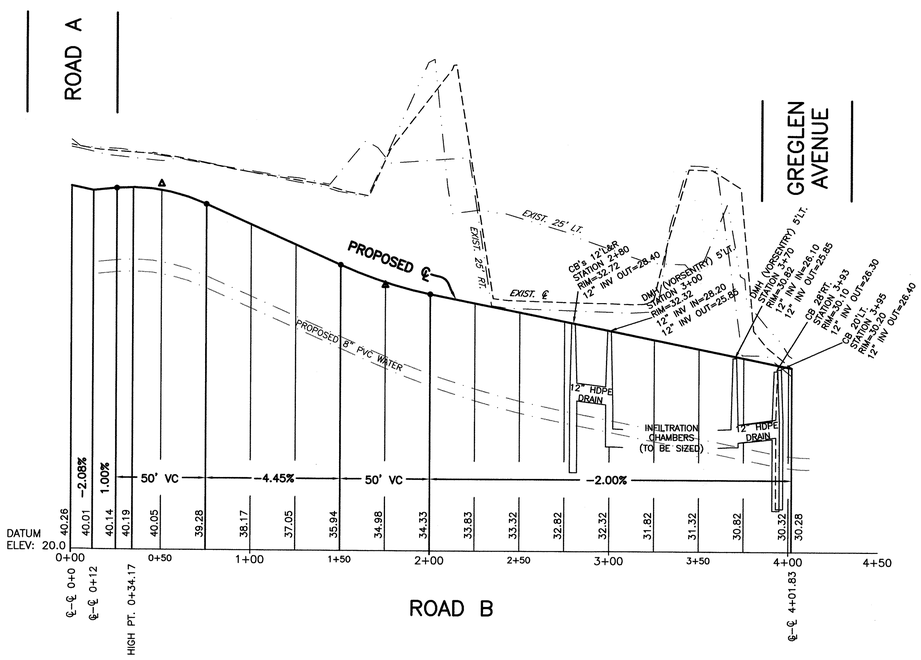
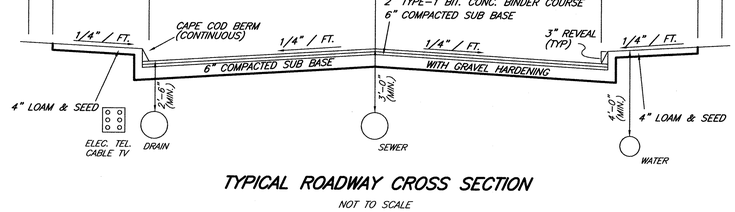
EXISTING UTILITIES AND PAVEMENT IN THE PORTION OF NANCY ANN LANE TO BE ABANDONED ARE TO BE REMOVED.





TYPICAL ROADWAY CROSS SECTION

NOT TO SCALE

Seal

COMMONWEALTH OF MASSACHUSETTS
PETER J. OGREN
CIVIL
No. 27145
REGISTERED PROFESSIONAL ENGINEER
6/13/16

Hayes
0' 20' 40' 80' 120'

DEFINITIVE PLAN & PROFILE
ROAD B
NANTUCKET, MASS.

OWNERS:
RICHMOND GREAT POINT DEVELOPMENT, LLC
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer
Hayes Engineering, Inc.
603 Salem Street
Wakefield, Mass. 01880
www.hayeseng.com

Scale: 1"=40' (Hor.) & 4' (Ver.)
June 9, 2016

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NANTUCKET
PLANNING BOARD

Application Filed: _____
Final Plan Filed: _____
Hearing Date: _____
Plan Approved: _____
Plan Signed: _____

PROFILE SHEET 2 OF 2

SHEET 8 OF 11

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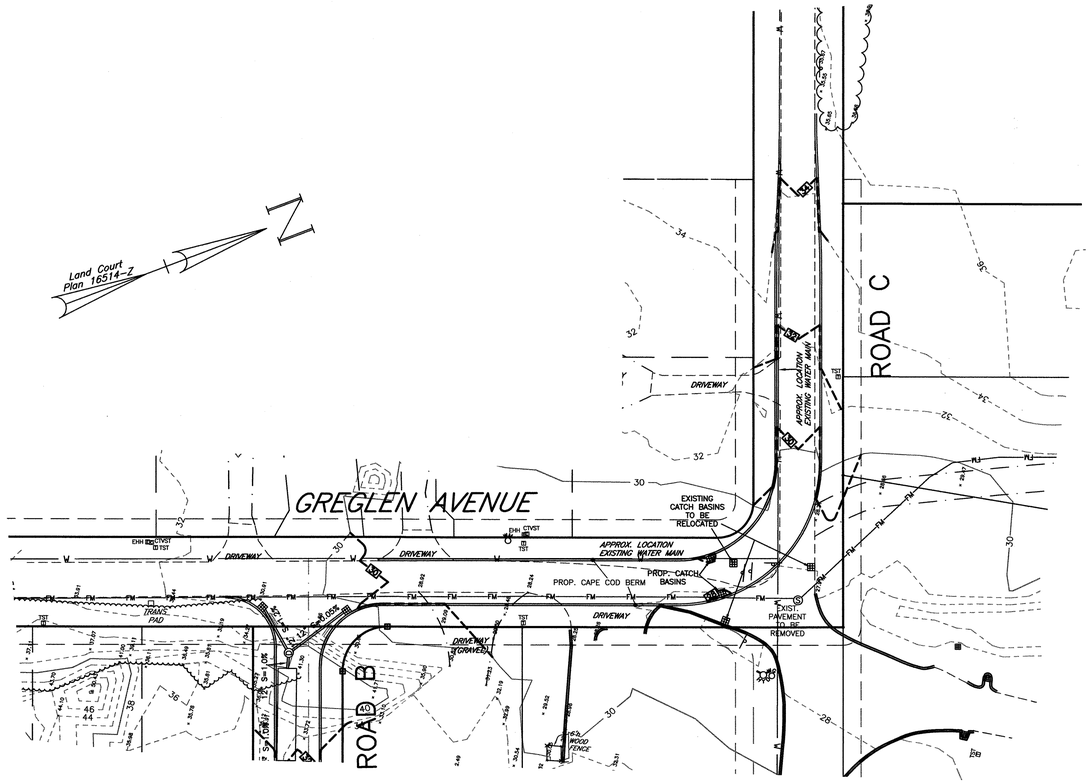
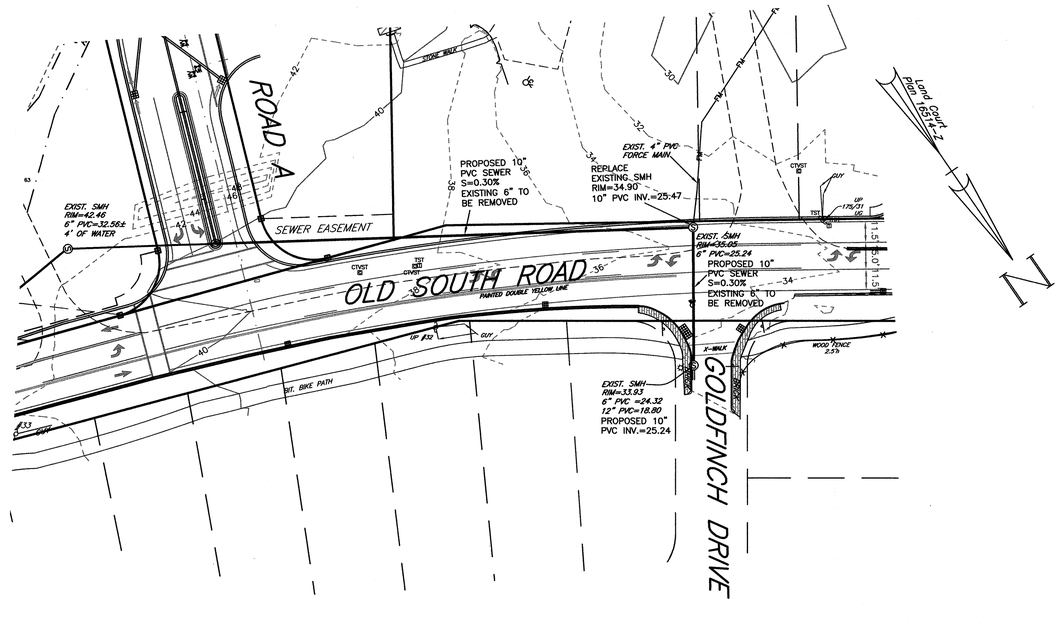


GREGLEN AVENUE & ROAD C
ROADWAY IMPROVEMENTS



PROPOSED SEWER FROM
ROAD A TO EXISTING SEWER
IN GOLDFINCH DRIVE

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

Seal: COMMONWEALTH OF MASSACHUSETTS — PETER J. OGREN — CIVIL — No. 37145 — REGISTERED PROFESSIONAL ENGINEER — 6/13/16

Hayes

0' 20' 40' 80' 120'

GREGLEN AVENUE & NANCY ANN ROADWAY IMPROVEMENTS & SEWER NANTUCKET, MASS.

OWNERS:

RICHMOND GREAT POINT DEVELOPMENT, LLC
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer

Hayes Engineering, Inc.
603 Salem Street
Wakefield, Mass. 01880
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Scale: 1"=40'

June 9, 2016

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Plan Signed: _____

IMPROVEMENT SHEET 1 OF 2

SHEET 9 OF 11

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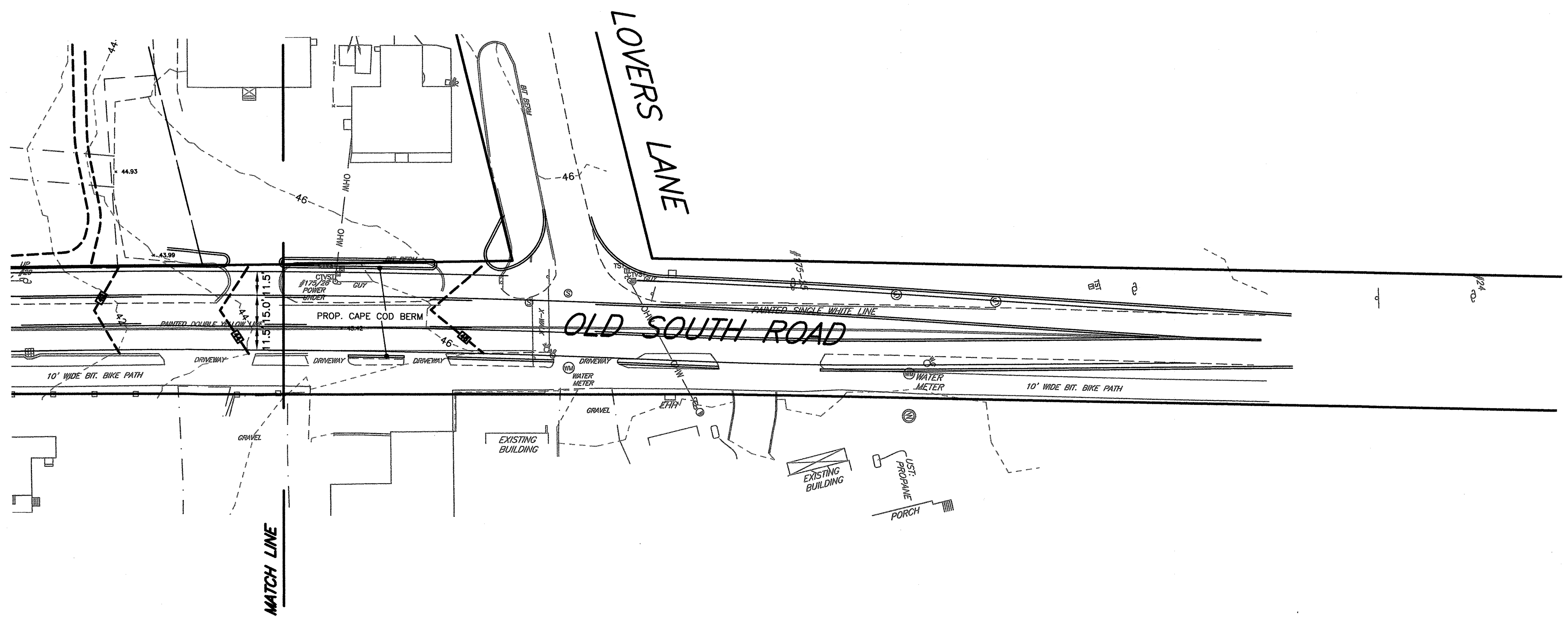
NOTE:
EXISTING UTILITY POLES ALONG THE SOUTH SIDE OF OLD SOUTH ROAD TO BE REMOVED AND UTILITIES TO BE RUN UNDERGROUND.



CLERK'S CERTIFICATION ON THE PLAN

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____
TOWN CLERK

Seal

COMMONWEALTH OF MASSACHUSETTS
PETER J. OGREN
CIVIL
No. 27145
REGISTERED
PROFESSIONAL ENGINEER
6/13/16

Hayes

0' 20' 40' 80' 120'

ROADWAY IMPROVEMENT PLAN
OLD SOUTH ROAD
NANTUCKET, MASS.

OWNERS:

RICHMOND GREAT POINT DEVELOPMENT, LLC
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer

Hayes Engineering, Inc.
603 Salem Street
Wakefield, Mass. 01880
www.hayeseng.com

Scale: 1"=40'

June 9, 2016

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NANTUCKET
PLANNING BOARD

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Application Filed: __________
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Plan Approved: __________
Plan Signed: __________

IMPROVEMENT SHEET 2 OF 2

SHEET 10 OF 11

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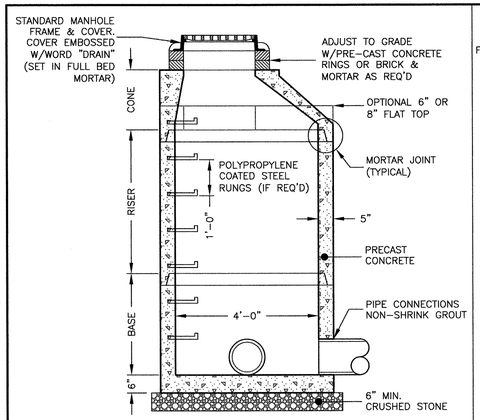
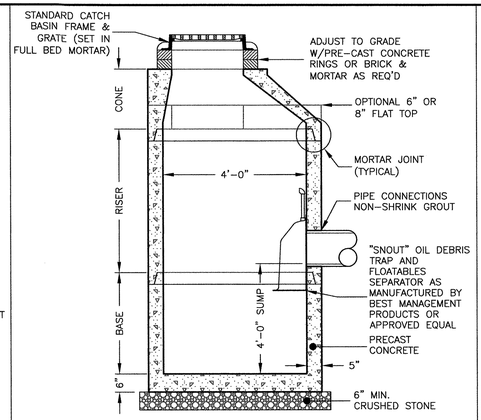


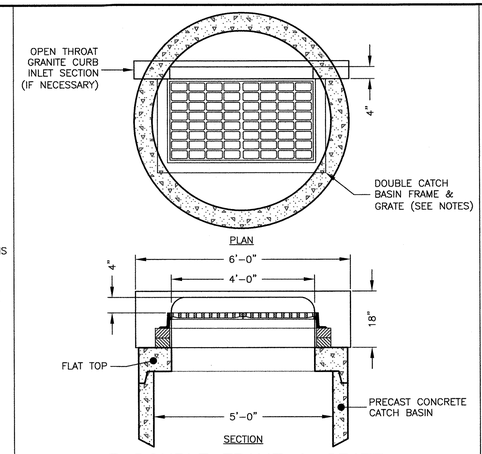
PRE-CAST DRAIN MANHOLE
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."



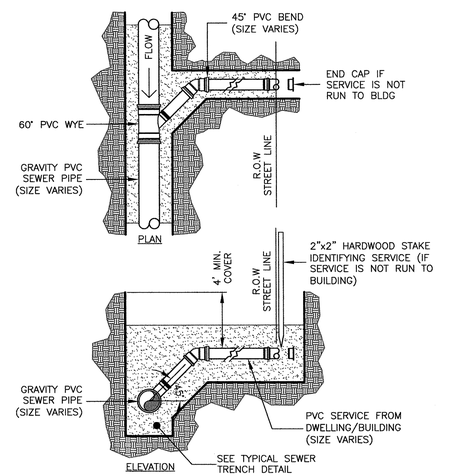
PRE-CAST CATCH BASIN
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."

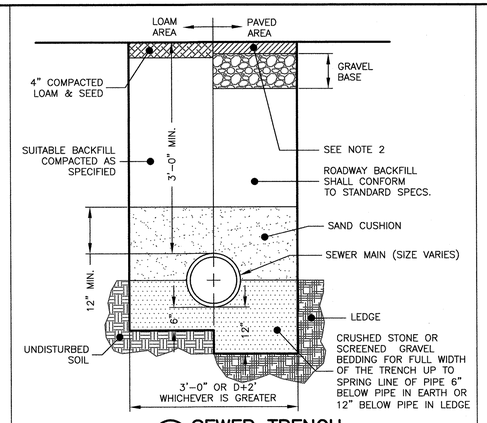


DOUBLE FRAME & GRATE
NOT TO SCALE

NOTES:
1. ON SLOPES USE LEBARON LV2448-2-000 FRAME W/LEBARON LK120D-300 3 FLANGE CASCADE GRATE OR APPROVED EQUAL.
2. AT LOW POINTS USE LEBARON LV2448-2-000 FRAME W/LEBARON LF248-2-000 3 FLANGE GRATE OR APPROVED EQUAL.

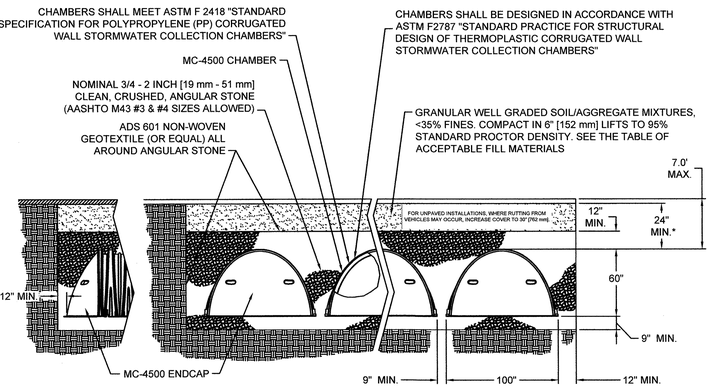


SEWER SERVICE CONNECTION
NOT TO SCALE



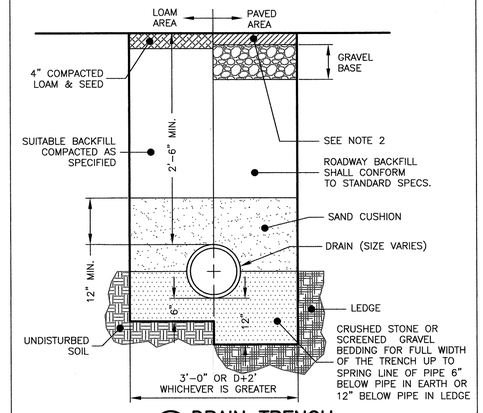
SEWER TRENCH
NOT TO SCALE

NOTES:
1. ALL MATERIAL SHALL CONFORM TO CITY/TOWN OF DEPARTMENT OF PUBLIC WORKS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO CITY/TOWN SPECIFICATIONS.
3. IN LIEU OF THE 12" GRAVEL COURSE AND 9" OF CRUSHED GRAVEL, 18" OF CRUSHED GRAVEL OR RECLAIMED STABILIZED BASE MAY BE USED AS A BASE FOR THE PAVEMENT REPAIR.
4. MATERIAL SHALL BE REPLACED IN KIND WHENEVER POSSIBLE.
5. A MINIMUM 2' CUTBACK IS REQUIRED AT THE TOP OF THE TRENCH WALL OVER UNDISTURBED MATERIAL.



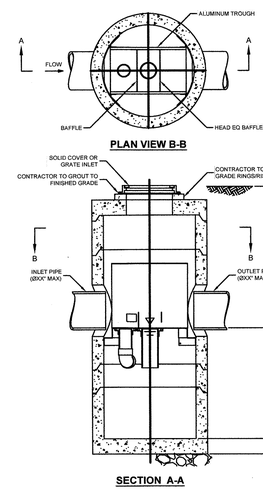
PERIMETER STONE MUST ALWAYS BE BROUGHT UP EVENLY WITH BACKFILL OF BED. PERIMETER STONE MUST EXTEND HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH STRAIGHT OR SLOPED SIDEWALLS.

5 MC-4500 TYPICAL CROSS-SECTION
NOT TO SCALE



DRAIN TRENCH
NOT TO SCALE

NOTES:
1. ALL MATERIAL SHALL CONFORM TO CITY/TOWN OF DEPARTMENT OF PUBLIC WORKS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO CITY/TOWN SPECIFICATIONS.
3. IN LIEU OF THE 12" GRAVEL COURSE AND 9" OF CRUSHED GRAVEL, 18" OF CRUSHED GRAVEL OR RECLAIMED STABILIZED BASE MAY BE USED AS A BASE FOR THE PAVEMENT REPAIR.
4. MATERIAL SHALL BE REPLACED IN KIND WHENEVER POSSIBLE.
5. A MINIMUM 2' CUTBACK IS REQUIRED AT THE TOP OF THE TRENCH WALL OVER UNDISTURBED MATERIAL.



PLAN VIEW B-B

SECTION A-A

FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. VORTSENTRY HS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.

INSTALLATION NOTES
1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTSENTRY HS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
3. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
4. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
5. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

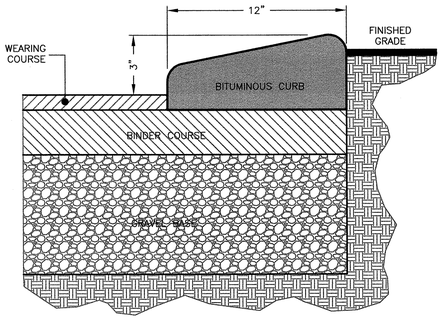
5 VORTSENTRY HS STANDARD DETAIL

CLERK'S CERTIFICATION ON THE PLAN

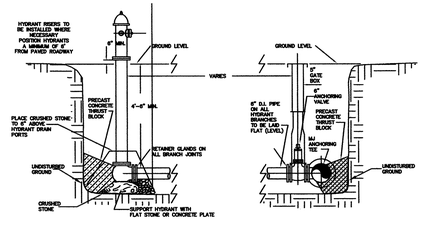
DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

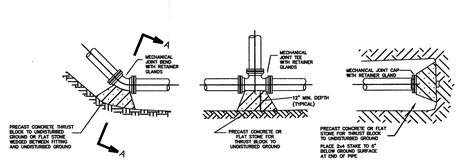


CAPE COD CURB
NOT TO SCALE



TYPICAL HYDRANT ASSEMBLY INSTALLATION
NOT TO SCALE

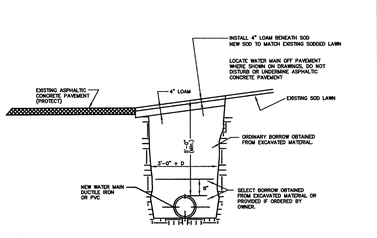
NOTES:
1. HYDRANTS ARE TO BE INSTALLED WITHIN THE ROADWAY LAYOUT
2. FOR HYDRANTS INSTALLED AT DEAD END OF WATER MAINS, INSTALL VALVE WITH RESTRAINED JOINTS AND ONE FULL LENGTH OF PIPE BETWEEN VALVE AND HYDRANT WITH RESTRAINED JOINTS
3. ALL HYDRANT BRANCH PIPING TO BE 6" DUCTILE IRON PIPE.



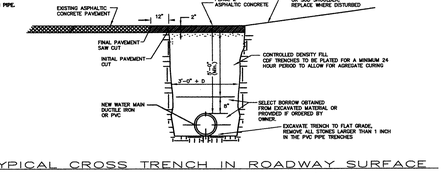
TYPICAL THRUST BLOCK DETAILS
NOT TO SCALE

PIPE DIAMETER	BENDS				TEE
	11.25	22.5	45	90	
6	1	1	1	2	1.5
8	1	1	2	3	2.5
12	1	2	3.5	6.5	5

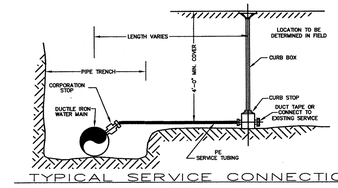
THRUST BLOCK BEARING AREA (SF)
(BASED UPON 100 psi WATER PRESSURE AND 3000 PSF BEARING LOAD CAPACITY)



TYPICAL TRENCH IN SHOULDER (SOD)
(SHOWN RIGHT SIDE INSTALLATION LEFT SIDE SIMILAR)
NOT TO SCALE



TYPICAL CROSS TRENCH IN ROADWAY SURFACE
(SHOWN RIGHT SIDE INSTALLATION LEFT SIDE SIMILAR)
NOT TO SCALE



TYPICAL SERVICE CONNECTION
NOT TO SCALE

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Seal: COMMONWEALTH OF MASSACHUSETTS — PETER J. OGREN — CIVIL — No. 27145 — REGISTERED PROFESSIONAL ENGINEER

Hayes
0' 20' 40' 80' 120'

DETAIL SHEET
OLD SOUTH ROAD CROSSING
NANTUCKET, MASS.

OWNERS:
RICHMOND GREAT POINT DEVELOPMENT, LLC
23 CONCORD STREET
WILMINGTON, MA 01887

Engineer:
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603 Salem Street
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Scale: 1"= N.T.S.
June 9, 2016

NANTUCKET PLANNING BOARD

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Plan Approved: _____
Plan Signed: _____

DETAIL SHEET 1 OF 1

SHEET 11 OF 11

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REQUESTED WAIVERS
OLD SOUTH ROAD CROSSING
NANTUCKET, MASSACHUSETTS

June 2016

Town of Nantucket Rules and Regulations

Section 2.06b(10)	The elevations shown on the plan are NAVD88 rather than half-tide datum.
Section 2.06b(14)(a)	Landscape Plan to be provided prior to Planning Board approval.
Section 2.06b(14)(b)	Existing trees to be saved will be decided during construction.
Section 4.03e	No Right-of-way rounding is proposed on the south side of the intersection of Road B and Greglen Avenue. However, a 28 foot curb radius is being proposed.
Section 4.06(b)(3)	Stormtech® MC-4500 stormwater chambers to be substituted for the leaching basin (Appendix A, Plate No. 12)
Section 4.13	Dry sewer lines are not proposed to be installed.
Section 4.16	Same as Section 2.06b(14)(a) & (b) above.
Section 4.18	No sidewalks are proposed along the sides of the proposed roadway Road B and one sidewalk is proposed along a portion of Road A.
Section 4.23	Soil tests will be provided prior to Planning Board approval.

Hayes Engineering, Inc

603 Salem Street
Wakefield, MA 01880
Tel: (781) 246-2800
Fax: (781) 246-7596

Nantucket, MA 02554
Tel: (508) 228-7909

Refer to File No. **NAN-0107J**

SITE ANALYSIS REPORT
OLD SOUTH ROAD CROSSING
NANTUCKET, MASSACHUSETTS

June 10, 2016

This site analysis report was prepared as part of the submission requirements of a definitive subdivision plan in accordance with Section II, 2.06(a) (11) of the Rules and Regulations of the Planning Board for the Town of Nantucket, as amended. This subdivision plan proposes the creation of thirteen (13) lots, in conjunction with 1,268 linear feet of roadway, together with approximately 2,300 linear feet of improvements to Old South Road, Greglen Avenue and Nancy Ann Lane (Road C) as shown on the subdivision plans. The new roadways, known as Road A and Road B are proposed to be constructed as shown on the typical cross-sections illustrated on the profile plans, in order to provide frontage and adequate access to the lots within the parcel in a safe and convenient manner.

The site, being approximately 24.3 acres in extent, is located approximately 2.1 miles southeast of the town center, and is currently consists of undeveloped meadow, areas of interspersed scrub oak and pines (brush) and areas of developed residential and commercial lands, buildings and driveways. The topography of the site ranges from approximately 22 feet above the North American Vertical Datum of 1988 (NAVD88) to approximately elevation 43.

The area in which the project is proposed to be constructed is within the CN, R-5 and CTEC zoning districts. Zoning requirements for each district are summarized in the table below:

Criteria	CN Zoning District	R-5 Zoning District	CTEC Zoning District
Lot Area	7,500 sf.	5,000 sf.	10,000 sf.
Lot Frontage	50 feet	50 feet	50 feet
Front Yard	10 feet	10 feet	10 feet
Side Yard	5 feet	10 feet on one-side, 5 feet thereafter	5 feet
Rear Yard	10 feet	5 feet	10 feet
Ground Cover	40%	40%	40%

Lot areas of proposed lots vary from 16,000 sf. to 534,000 sf.

The property is comprised of Evesboro soils and were determined by using the Web Soil Survey from the National Cooperative Soil Survey for Nantucket County. The Evesboro sands consist of excessively-drained soil, generally found in smooth, irregular-shaped areas, as reported by the Soil Conservation Service. It is expected that the permeability of the soil is rapid in the surface layer and subsoil, and very rapid in the substratum.

Due to the granular nature and the grain size of the Evesboro soils coupled with the site topography and proposed drainage design leads us to believe that erosion is not expected to be a problem. Likewise, these soils are largely void of the small grain sizes, and do not produce excessively dusty conditions. Should dust control be required, it would be handled by wetting the surface of exposed areas during periods of activity of construction vehicles or in highly windy conditions. No other form of dust control is anticipated.

No surface water resources are present on the parcel being developed, nor are any portion of the site subject to the Wetlands Protection Act for Coastal Wetland Areas (M.G.L. Chapter 131, Section 40).

No areas of the site are represented as having severe limitations due to seasonal high water table. Similarly, no portion of the site is designated as being in a Zone A, B or V, as shown on the Flood Insurance Rate Map (FIRM), Community Panel #25019C0089G, effective date June 9, 2014.

The Evesboro sands typically provide poor potential for growth of vegetation.. The site is generally comprised of a sand and gravel pit with paved areas, numerous storage structures and gravel drives. There exists scattered clusters of vegetation on the southern end of the property of vegetation with the remained either pavement or devoid of vegetation. Any tree removal for the proposed roadways will be minimal as the majority of the area within the proposed roadway is currently gravel driveways or the sand and gravel pit.

An examination of the profile sheets submitted with the plan reveals that no major changes in watershed areas or directions are contemplated by construction of the subdivision proposed in this application. The general design approach for management of storm water is to collect the roadway drainage as well as runoff from portions of the site. This runoff is to be collected in deep sump catch basins, and then directed via a closed pipe system VortSentry treatment devices and discharge to proposed subsurface infiltration areas. The closed piping system shall be designed with sufficient capacity to accommodate the 25-year design storm and mitigation for the 100-year design storm. Stormwater entering the proposed subsurface infiltration area will provide for groundwater recharge in the proposed development. Also, the proposed deep sump catch basins and VortSentry devices will improve the water quality of the runoff from the proposed roadway.

The improvements which are contemplated for construction of the subdivision roadways include rights-of-ways with varying width as depicted on the plans. Existing roadways to be abandoned shall have pavement and infrastructure removed. Minimum pavement width for newly proposed roadways having two-way (bidirectional) traffic is 24-feet.

Sanitary sewer from the lots are proposed to be connected to municipal sanitary facilities available in Old South Road proximate to the intersection with Goldfinch Drive.

Potable water will be provided for domestic purposes by connecting to the Town water supply The proposed eight (8) inch water main through the project will be connected to an existing twelve (12) inch water main in Old South Road and existing eight (8) inch water main in Nancy Ann Lane.

The project roadways are provided to service future commercial and residential\multifamily developments within the project limits. The proposed roadway system will connect two existing roadways, Greglen Avenue and Nancy Ann Lane to Old South Road. These connection will provide for adequate site distances so as to enable vehicles to safely enter and exit the property, as well as providing adequate access for emergency vehicles.

The traffic generated by uses adjacent to the proposed roadway will add to the existing traffic volumes of the surrounding streets. Roadway improvements are proposed in Old South Road to mitigate new traffic generation. The geometry and construction of the proposed roadway system will provide for a safe and convenient alignment for vehicular traffic and access to the lots by emergency vehicles.

A sidewalk is being proposed along one side of the proposed Road A right-of-way.

It is presently anticipated that all construction related to the physical roadway and infrastructure improvements would be completed within two (2) years following the receipt of all necessary approvals.

There are no proposed common open spaces associated with this development.

#39-16 Richmond Great Point Development, LLC
Old South Road Crossing Retail Liner Buildings
63, 67, 73, 75A Old South Road
Map 68 Parcels 157, 158, 129 & 999.2

THE RICHMOND COMPANY, INC.

The Richmond Company, Inc.
23 Concord Street
Wilmington, Massachusetts 01887
(979) 988-3900

June 13, 2016

TOWN OF NANTUCKET
TOWN CLERK
16 Broad Street
Nantucket, Massachusetts 02554

Attention: Catherine Flanagan Stover, MMC, CMMC

Subject: Submittal of Application for Special Permit (Retail Major Commercial Development)
Richmond Great Point Development LLC (Owner / Developer)
Old South Road Crossing Retail "Liner" Buildings Development

Dear Mrs. Stover:

The purpose of this correspondence, issued in our capacity as the applicant and development manager, on behalf of the owner of the subject properties (Richmond Great Point Development LLC) is to document submittal of the completed application to petition the Town of Nantucket Planning Board to consider the above-captioned proposal which requires the issuance of a special permit to allow for the development of the "Old South Road Crossing" retail "liner" buildings development, comprised of +/- 15,500 gross square feet of retail buildings on a series of five (5) contiguous properties totaling +/- 2.4 acres of land located on portions of the 63, 67, 73 and 75 (A) Old South Road properties.

The submittal of the application to your office is being completed as prescribed in Section 139-30(B)(1) of the Town of Nantucket Zoning Bylaw.

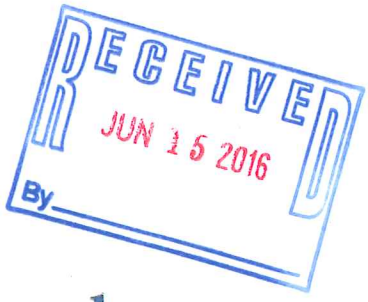
Upon your acknowledgment of receipt of the application (by way of time / date stamping the application), we will proceed to file a copy of the application (and all other required materials) forthwith to the Town of Nantucket Planning Board to obtain its review and subsequent action (as prescribed in Section 139-30(B)(2) of the Town of Nantucket Zoning Bylaw.

Should you have any questions with respect to the application and submittal, please feel free to contact me at 978-988-3900, Extension # 12.

Very truly yours,

David J. Armanetti
Director of Real Estate Development
The Richmond Company, Inc.
On Behalf of Richmond Great Point Development LLC

Cc: Andrew Burek, Esq., TRC
Arthur Reade, Jr., Esq., RGH



Nantucket Planning Board

Application for a Special Permit

Date: June 13, 2016 File #: 39-16

Name of development: Old South Road Crossing Retail "Liner" Buildings

Owner(s) name(s): Richmond Great Point Development LLC (Philip Pastan)

Mailing address: 23 Concord Street, Wilmington MA 01887
Phone number: 978-988-3900 Fax number: 978-988-3950

E-mail: ppastan@richmondco.com

Applicant's name: The Richmond Company, Inc. (David Armanetti and Patty Roggeveen)
Mailing address: 23 Concord Street, Wilmington MA 01887
Phone number: 978-988-3900 Fax number: 978-988-3950
E-mail: darmanetti@richmondco.com; proggeveen@richmondco.com

Engineer / surveyor's name: Hayes Engineering, Inc. (John Ogren)

Mailing address: 603 Salem Street, Wakefield MA 01880 Phone number: 781-246-2800 Fax number: 781-246-7596 E-mail: jogren@hayeseng.com

Location of lot(s):

Street address Portions of 63, 67, 73, and 75(A) Old South Road

Tax Assessors Map Parcel See Attachment "A" for Detail of Multiple Parcels

Nantucket Registry of Deed: See Attachment "B" for Detail of Multiple Parcels
Plan Book Page **OR**

Plan File # **OR** Land Court Plan # at Certificate #

Size of parcel: 104,109 SF (2.39 Acres) sq. ft. Zoning District: Commercial Neighborhood (CN)

Special Permit sought: (check one)

- ❍ Cluster subdivision
- ❍ Commercial WECS
- ❍ Driveway Access/Curb Cut Special Permit
- ❍ Harbor Overlay District (HOD)
- ❍ Major Commercial Development (MCD)

- ❍ Multi-family Special Permit
- ❍ Moorlands Management District Subdivision or Construction (MMD)
- ❍ NEHOD (Neighborhood Employee Housing Overlay District)
- ❍ MRD (Major Residential Development)
- ❍ MIPOD (Mid-Island Planned Overlay District)
- ❍ Other Uses Requiring a Special Permit (specify all uses and *Nantucket Code* sections)

Section	Description

Specify all associated Zoning Code relief sought:

Section	Description
139-18(B)	Required parking spaces - request a waiver for four (4) parking space deficit (93 required, 89 provided)
139-18(A)(4)	Required parking to be provided on same lot - request a waiver for several parking spaces in immediately adjacent lots to be shared in common through binding easement) .
139-20.1(B)(2)(f)[1]	Maximum driveway corning roundings - request waiver to allow driveway corner roundings with radii up to twenty-eight (28) feet, to better accomodate truck traffic and deliveries.

Only the zoning relief expressly requested above will be considered as part of this application.

If applying for a Major Commercial Development, specify how the application will comply with Section 139-11 (J) of the *Zoning Code of the Town of Nantucket*, also known as the Town's Affordable Housing Effort:
Owner / Applicant for this MCD is concurrently developing 56 statutorily affordable rental units and 26 statutorily affordable home ownership units on immediately adjacent properties.

Planning Board filing fee due: $_____

Engineering Inspection Escrow Deposit due: $_____

I/ we hereby certify that the applicant(s) cited above have been authorized by me/ us to file a Special Permit application with the Planning Board on property that I/ we own.

Owner(s)' Signature(s) Philip Pastan, as Manager of Richmond Great Point Development LLC

Applicant's Signature

6/13/16

I/we _____, the undersigned, hereby authorize _____ to act as agent(s) on my/our behalf and to make any necessary revisions on this filed application as they may be requested by the Board to meet its governing rules and guidelines.

Owner(s)' signature(s)

Check List:

- ☐ Planning Board Special Permit abutters list – to be obtained at the Tax Assessor's office
- ☐ Completed application form entitled "Application to the Planning Board for a Special Permit"
- ☐ Application fee of $250.00 payable to Town of Nantucket
- ☐ Abutters fee of $6.11 per abutters payable to Pitney Bowes Reserved Funds
- ☐ Four (4) sets of mailing labels with each abutter's name and address
  - 1" x 2 5/8" size, typed labels, are preferred
  - duplicate labels are not necessary if the same owner is listed for more than one abutting property
- ☐ Completed application form
- ☐ Town Clerk's stamped application (provide 2 copies-one for Town Clerk and one for Planning Board)

"Attachment A" to
Major Commercial Development / Special Permit Application

Old South Crossing Retail "Liner" Buildings Development
63, 67, 73, and 75(A) Old South Road, Town of Nantucket MA

ADDITIONAL SPACE NEEDED TO PROVIDE DETAILED INFORMATION FOR MULTIPLE PARCELS

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63 Old South Road (Portion of 3.41 Acre Total)

Tax Assessors Map Information: Map # 68, Parcel # 157

Registry / Plan Information; Lot # 872 on Land Court Plan # 16514-103)
(Land Court Certificate # 24872)

67 Old South Road (Portion of 1.69 Acre Total)

Tax Assessors Map Information: Map # 68, Parcel # 158

Registry / Plan Information; Lot # 59 on Land Court Plan # 16514-L)
(Land Court Certificate # 24872)

73 Old South Road (Portion of 2.92 Acre Total)

Tax Assessors Map Information: Map # 68, Parcel # 129

Registry / Plan Information; Lot # 853 on Land Court Plan # 16514-97)
(Land Court Certificate # 24872)

75(A) Old South Road (Portion of 0.35 Acre Total)

Tax Assessors Map Information: Map # 68, Parcel # 999.2

Registry / Plan Information; Lot # 858 on Land Court Plan # 16514-100)
(Land Court Certificate # 25525)

"Attachment B" to
Major Commercial Development / Special Permit Application

Old South Crossing Retail "Liner" Buildings Development
63, 67, 73, and 75(A) Old South Road, Town of Nantucket MA

The title to the land included in the above-referenced application is derived as follows:

As to the Owner of One Hundred Percent (100%) of the 63 Old South Road Property

RICHMOND GREAT POINT DEVELOPMENT LLC

"*Deed*" dated August 7, 2013, recorded at the Nantucket County Registry of Deeds, in Book # 01397, Page # 312, recorded on August 8, 2013 (referred to as "Recorded Land – Parcel Thirty-Three" on Page 7 of the "*Deed*").

As to the Owner of One Hundred Percent (100%) of the 67 Old South Road Property

RICHMOND GREAT POINT DEVELOPMENT LLC

"*Deed*" dated August 7, 2013, recorded at the Nantucket County Registry of Deeds, in Book # 01397, Page # 312, recorded on August 8, 2013 (referred to as "Recorded Land – Parcel One" on Page 1 of the "*Deed*").

As to the Owner of One Hundred Percent (100%) of the 73 Old South Road Property

RICHMOND GREAT POINT DEVELOPMENT LLC

"*Deed*" dated August 7, 2013, recorded at the Nantucket County Registry of Deeds, in Book # 01397, Page # 312, recorded on August 8, 2013 (referred to as "Recorded Land – Parcel Forty-Three" on Page 9 of the "*Deed*").

As to the Owner of One Hundred Percent (100%) of the 75(A) Old South Road Property

RICHMOND GREAT POINT DEVELOPMENT LLC

"*Deed*" dated February 5, 2015, recorded at the Nantucket County Registry of Deeds, as Certificate # 25525, Document # 00147075, recorded on February 6, 2015 (referred to as "Lot 858 on Land Court Plan numbered 16514-100").

THE RICHMOND COMPANY, INC.

The Richmond Company, Inc.
23 Concord Street
Wilmington, Massachusetts 01887
(979) 988-3900

June 10, 2016

TOWN OF NANTUCKET
PLANNING BOARD
2 Fairgrounds Road
Nantucket, Massachusetts 02554

Attention: Leslie Woodson Snell, AICP, LEED AP, Deputy Director of Planning

Subject: Submittal of Application for Major Commercial Development / Special Permit (Retail)
Old South Crossing Retail "Liner" Buildings / 63, 67, 73, and 75(A) Old South Road
Richmond Great Point Development LLC (Owner / Developer)

Dear Ms. Snell:

The purpose of this correspondence, issued in our capacity as the applicant and development manager, on behalf of the owner of the subject properties (Richmond Great Point Development LLC) is to submit the completed application form, plans, drainage reports, and related materials which are required to petition the Town of Nantucket Planning Board to consider the above-captioned proposal which requires the issuance of a master commercial development / special permit to allow for the development of the series of retail "liner" buildings which are proposed to be located on a combination of five contiguous properties comprising +/- 2.39 acres of land located on portions of 63, 67, 73, and 75(A) Old South Road, fronting on Old South Road, east of Lovers Lane, in the northwestern core of the properties which were acquired by Richmond Great Point Development LLC from Walter J. Glowacki in August of 2013.

The proposed project is comprised of a cumulative total of +/- 15,500 gross square feet of retail, personal services, and restaurant space, allocated within a series of five (5) single story buildings, running from west to east along the frontage of Old South Road, integrated with connecting walkways, parking, and vehicular access. The size of the individual buildings, running from west to east, range in size from 5,170 gross square feet, to 3,235 gross square feet, to 2,400 gross square feet, to 1,500 gross square feet, to 3,200 gross square feet (with an additional 1,200 square feet area for outdoor seating).

The uses, sizes, location, orientation (fronting on Old South Road) and the character of the buildings are expressly consistent with the objectives and recommendations set forth in the land use section of the '*Naushop Crossing Area Plan*" which was created over a two year period by the Naushop Crossing Area Plan Work Group, and was adopted by the Nantucket Planning and Economic Development Commission in March of 2014.

The entirety of the property is designated within the Commercial-Neighborhood (CN) zoning district, which permits the development of retail, personal services, and restaurant uses (small / up to 70 seats).

Because the proposed project is comprised of 5,000 gross square feet or more of commercial use, "located on contiguous tracts of land and held in common or control" in the aggregate, it is subject to the issuance of a major commercial development / special permit by the Planning Board (as set forth in Section 139-11 and Section 139-30 of the Town of Nantucket Zoning Bylaw).

The proposed project is also subject to compliance with the applicable intensity and dimensional criteria set forth in Section 139-16 of the Town of Nantucket Zoning Bylaw (including but not limited to minimum lot size, frontage, yard setbacks, ground cover ratio, and (lot) regularity factor).

Because it is subject to issuance of a major commercial development / special permit, the proposed subject is subject to major site plan review (MSPR) by the Planning Board (as set forth in Section 139-23, and specifically Section 139-23(B)(2) of the Town of Nantucket Zoning Bylaw).

Each of the five (5) individual proposed buildings is located on a separate buildable lot (the subdivision for which will be achieved by way of the processing and endorsement of an Approval Not Required (ANR) Plan) which has been submitted to and is expected to be endorsed by the Planning Board at its June 13, 2016 meeting.

The lots resulting from the proposed subdivision action (in order to accommodate the development of the proposed project) will meet or exceed the relevant dimensional criteria and related requirements, as such are established in the local zoning bylaw for the applicable zoning district, including but not limited to the following:

- Minimum Lot Area (Not Less than 7,500 Square Feet)
- Minimum Lot Frontage (Not Less than 50 Linear Feet)
- Minimum Lot Regularity Factor (Not Less than 0.55)

The specific dimensional characteristics of the five (5) lots that are proposed to be created (in order to accommodate the development of the proposed project) will be as follows:

Old South Crossing Retail Liner Buildings Project
Summary of Dimensional Characteristics (Proposed Lots / Buildings)

Lot Number on Plan	Lot Area (Square Footage)	Lot Frontage (Linear Feet)	Lot Regularity Factor (rf)
Lot # 1 / Building # 1	40,925	181.78	0.939
Lot # 2 / Building # 2	16,232	114.52	1.009
Lot # 3 / Building # 3	13,583	92.41	0.948
Lot # 4 / Building # 4	8,163	55.54	0.796
Lot # 5 / Building # 5	25,206	171.72	0.992
Subtotal (Average)	**104,109 (2.39 A)**	**123.19**	**0.937**

The proposed project meets or exceeds all of the applicable intensity and dimensional criteria set forth in the Town of Nantucket Zoning Bylaw, including the maximum ground cover and the regularity factor. A summary of the proposal for most of the relevant criteria, broken out by lot / building for each of the five (5) individual buildings, are depicted in the "Zoning Table" that is included on the cover sheet of the plan set that is included as part of this submittal.

A total of eighty-nine (89) off street parking spaces have been proposed to serve the project. A total of ninety-three (93) spaces are required, based on the minimum parking requirements set forth in Section 139-18 of the Town of Nantucket Zoning Bylaw (Off Street Parking Requirements), resulting in the project providing ninety-six percent (96%) of the total required off street parking. Based on the foregoing, a waiver is requested to allow for approval of the project with the anticipated deficit of four (4) off street parking spaces.

The basis and justification for the requested waiver is set forth herein. Because the parking, as designed, is located in adjacent, physically interconnected lots and because the nature of the retail, personal services, and restaurant uses that are anticipated often generate multiple uses by the same patrons during a single trip to the property, and because the nature and operating hours of the specific uses that generally occupy such multi-building and multi-tenant retail clusters create different peaks of operation and gaps in opening / closing times and operating hours, we believe that the four (4) parking space deficit will be deminimus and will not adversely impact the operation of the proposed project and that the parking provided will be more than sufficient.

In addition, because of the nature of the design of the vehicular circulation system and "parking islands" in order to meet the required subdivision and frontage requirements, and to allow for greater open space and a better aesthetic layout overall, the parking lots serving several of the buildings have been consolidated and interconnected as such to where some of the individual parking spaces overlap into adjacent (interior) lots. As a result, a second parking-related waiver is requested, from the requirement set forth in Section 139-18(A)(4) that "all off street parking spaces shall be provided on the same lot as the principal or accessory use they are required to serve".

Should the Planning Board approve the relief described above, the rights and conditions of the shared parking between the lots and uses will be documented in a binding easement that will be recorded and will be applicable to all of the lots, which will essentially function as a small, integrated shopping center.

We appreciate the opportunity to submit the application, plans, and supporting materials for this important development proposal for your review and for consideration by the Planning Board and we look forward to commencing with the public hearing and public review process.

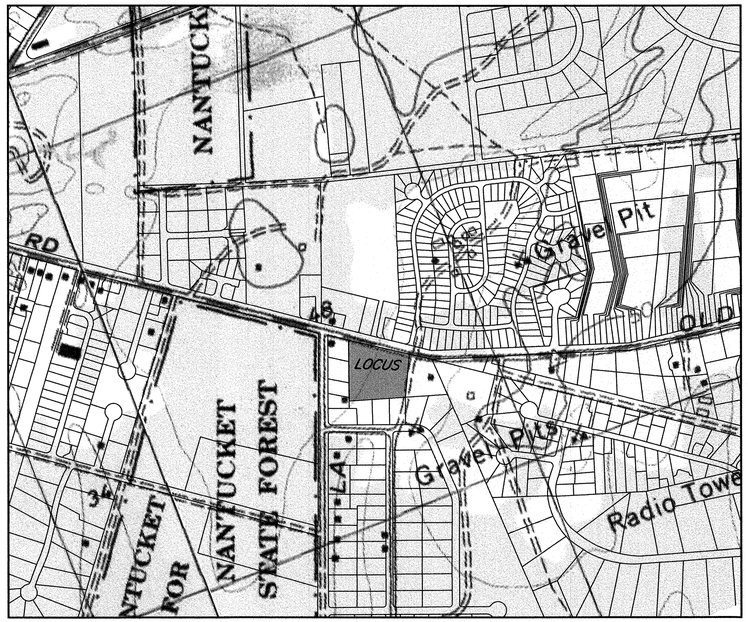
If you have any immediate questions with respect to the proposed project or any of the submittal materials, please feel free to contact me at 978-988-3900, Extension # 12.

Very truly yours,

David J. Armanetti
Director of Real Estate Development
The Richmond Company, Inc.
On Behalf of Richmond Great Point Development LLC

Cc: Philip Pastan, TRC
Kathryn Fossa, TRC
Patricia Roggeveen, RGPDLLC
Shane Valero, RGPDLLC
Andrew Burek, Esq., RGPDLLC
Arthur Reade Jr., Esq., RGH
John Ogren, Hayes Engineering

OLD SOUTH ROAD CROSSING
RETAIL "LINER BUILDINGS"
MAJOR COMMERCIAL DEVELOPMENT/
SPECIAL PERMIT SITE PLAN
AT
63, 67, 73 and 75A OLD SOUTH ROAD
NANTUCKET, MASSACHUSETTS



KEY MAP
SCALE: 1"=500'±
0' 500' 1,000'

SOURCE: USGS science for a changing world

LEGEND OF SYMBOLS & ABBREVIATIONS

EXISTING		PROPOSED
BM No.1 BM	BENCH MARK	P-BM No.1 PBM
BB	BITUMINOUS BERM	PBB
CCB	BITUMINOUS CAPE COD BERM	PCCB
	BUILDING	
CATV	UNDERGROUND CABLE	P-CATV
57	COUNTOUR (1')	P-57
60	CONTOUR (5')	P-60
EL. 57.2	ZONE A (100-YEAR FLOOD ZONE)	N/A
CONC.	CEMENT CONCRETE	CONC.
SGC	SLOPED GRANITE CURB	PSGC
VGC	VERTICAL GRANITE CURB	PVGC
EOD	EDGE OF DISTURBANCE	LOW
D	UNDERGROUND DRAIN PIPE	D
	CATCH BASIN	
	DRAIN MANHOLE	
	ROUND CATCH BASIN	
E	UNDERGROUND ELECTRIC	E
X	CHAIN LINK FENCE	X
	POST & RAIL FENCE	
	STOCKADE FENCE	
	VINYL FENCE	
FFE=60.43 GFE=57.65	FINISHED FLOOR ELEVATION	FF=60.43 GF=57.65
FDN	GARAGE FLOOR ELEVATION	
	FOUNDATION	W=119.00
G	UNDERGROUND GAS MAIN	G
GS	UNDERGROUND GAS SERVICE	GS
GRAVEL	EDGE OF GRAVEL	GRAVEL
x 57.83	SPOT GRADE	52X3
GUARD RAIL	GUARD RAIL	PR. GUARD RAIL
	HANDICAP PLACARD PARKING	
HCR	WHEEL CHAIR RAMP	HCR
	HEADWALL	
LDSCP	LANDSCAPE AREA	P-LDSCP
LEDGE	LEDGE OUTCROP	TOP ELEV.=71.00 BOT ELEV.=67.00
	BOLLARD	
OHW	OVERHEAD WIRE	P-OHW
UP No. 1	UTILITY POLE	PROP. UP
7 spaces	PAINTED PARKING & SPACE COUNT	7 spaces
PATH	PATH	PR. PATH
EP	EDGE OF PAVEMENT	PR. EP
2 : 1 RIP-RAP	BOULDER RIP-RAP & SLOPE	2:1 RIP-RAP
S	UNDERGROUND SEWER	S
SS	UNDERGROUND SEWER SERVICE	SS
	SEWER MANHOLE	
	SEWER CLEANOUT	
BIT. SIDEWALK 4'w	BITUMINOUS CONCRETE SIDEWALK	4'w BIT. SIDEWALK
SIGN	SIGN	SIGN
	EROSION & SEDIMENTATION CONTROL	
	STEPS	
BLDR	BOULDER	
	STONEWALL	
	CENTERLINE OF SWALE	SWALE
T	UNDERGROUND TELEPHONE	T
TH-1	TESTHOLE LOCATION	P-TH
MW	MONITORING WELL LOCATION	P-MW
PC-1	PERCOLATION TEST LOCATION	PC
SINGLE WHITE	PAINTED TRAFFIC LINE & TYPE	PR. SINGLE WHITE
12" MAPLE	DECIDUOUS TREE, SIZE & TYPE	2" OAK
6" PINE	CONIFEROUS TREE, SIZE & TYPE	2" PINE
ARBORVITAE	HEDGE ROW AND TYPE	PR. ARBORVITAE
BW=57.5 TW=60.5	RETAINING WALL	PBW=57.5 PTW=60.5
W	UNDERGROUND WATER MAIN	W
WS	UNDERGROUND WATER SERVICE	WS
W-PNT	PAINTED UNDERGROUND WATER	N/A
	WATER GATE VALVE BOX	
	WATER SERVICE CURB BOX	

NOTES:

1. LOT LINES DEPICTED HEREON ARE TAKEN FROM "SUBDIVISION PLAN OF LAND IN NANTUCKET, MASS." DATE JULY 16, 2015 REVISED THROUGH OCTOBER 5, 2015 PREPARED BY HAYES ENGINEERING, INC.
2. TOPOGRAPHIC INFORMATION DEPICTED HEREON IS THE RESULT OF AN ACTUAL FIELD SURVEY PERFORMED BY HAYES ENGINEERING, INC. ON THE FOLLOWING DATES:
   a. SEPTEMBER 22, 2014
   b. JUNE 16, 2015
   c. SEPTEMBER 17, 2015
3. THE DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
4. THE ENTIRE PARCEL IS LOCATED WITHIN THE WATER RESOURCE PROTECTION DISTRICT, ZONE II WELLHEAD PROTECTION AREA.
5. THE PROPERTY IS NOT LOCATED WITHIN A FLOOD HAZARD ZONE (A or V) AS DEPICTED ON FLOOD INSURANCE RATE MAP COMMUNITY PANEL NUMBER 25019C 0089G EFFECTIVE JUNE 9, 2014.
7. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN COMPILED FROM FIELD SURVEY INFORMATION AND AVAILABLE EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHER, THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES AND DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING AND VERIFYING THE LOCATIONS, SIZES, AND ELEVATIONS OF ALL EXISTING UTILITIES SHOWN OR NOT SHOWN ON THESE PLANS AND SHALL NOTIFY THE ENGINEER IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED DESIGN AND THE APPROPRIATE REMEDIAL ACTION PRIOR TO PROCEEDING WITH THE WORK.
9. THE CONTRACTORS ARE RESPONSIBLE FOR CONTACTING DIG SAFE AT (800) 322-4844 PRIOR TO THE START OF ANY CONSTRUCTION.

WAIVERS REQUESTED:

1. §139-20.1.B(2)(f)[1] MAXIMUM DRIVEWAY CORNER ROUNDINGS: ALLOW CORNER ROUNDINGS WITH RADII UP TO 28'.
2. §139-18.A(4) REQUIRED OFF STREET PARKING SHALL BE PROVIDED ON THE SAME LOT AS THE PRINCIPAL OR ACCESSORY USE THEY ARE REQUIRED TO SERVE: ALLOW CROSS ACCESS EASEMENTS FOR PARKING.
3. §139-18.B PARKING REQUIREMENTS: ALLOW 89 SPACES IN PLACE OF THE 93 SPACES REQUIRED.

PARKING CALCULATIONS

LOT NO.	REQUIRED	PROVIDED
LOT 1	RETAIL - 1 space PER 200sf OF GROSS FLOOR AREA (GFA) (5,170sf GFA)(1sp/200sf) = 25.8 spaces 1 space PER 3 employees on peak shift (6 employees)(1sp/3emp) = 2 spaces Total = 28 spaces REQUIRED HANDICAPPED ACCESSIBLE SPACES REQUIRED = 2sp	22 spaces (2 handicapped accessible)
LOT 2	RETAIL - 1 space PER 200sf OF GROSS FLOOR AREA (GFA) (3,235sf GFA)(1sp/200sf) = 16.2 spaces 1 space PER 3 employees on peak shift (3 employees)(1sp/3emp) = 1 spaces Total = 17 spaces REQUIRED HANDICAPPED ACCESSIBLE SPACES REQUIRED = 1sp	17 spaces (1 handicapped accessible)
LOT 3	RETAIL - 1 space PER 200sf OF GROSS FLOOR AREA (GFA) (2,400sf GFA)(1sp/200sf) = 12 spaces 1 space PER 3 employees on peak shift (3 employees)(1sp/3emp) = 1 spaces Total = 13 spaces REQUIRED HANDICAPPED ACCESSIBLE SPACES REQUIRED = 1sp	14 spaces (1 handicapped accessible)
LOT 4	RETAIL - 1 space PER 200sf OF GROSS FLOOR AREA (GFA) (1,500sf GFA)(1sp/200sf) = 7.5 spaces 1 space PER 3 employees on peak shift (3 employees)(1sp/3emp) = 1 spaces Total = 9 spaces REQUIRED HANDICAPPED ACCESSIBLE SPACES REQUIRED = 1sp	9 spaces (1 handicapped accessible)
LOT 5	RESTAURANT, TAVERNS AND BARS, including outside seated-service areas - 1 space PER 3 seats (70 seats)(1sp/3 seats) = 23.3 spaces 1 space PER 3 employees on peak shift (9 employees)(1sp/3emp) = 3 spaces Total = 26 spaces REQUIRED HANDICAPPED ACCESSIBLE SPACES REQUIRED = 2sp	27 spaces (2 handicapped accessible)
TOTAL	93 PARKING SPACES	89 PARKING SPACES

NOTE:

CROSS ACCESS AND PARKING EASEMENTS TO BE PROVIDED FOR ALL DRIVEWAYS AND PARKING DEPICTED HEREON.

ZONING TABLE

ZONE	CN	LOT 1	LOT 2	LOT 3	LOT 4	LOT 5
DIMENSIONAL CONTROLS	REQUIRED/ALLOWED	PROVIDED	PROVIDED	PROVIDED	PROVIDED	PROVIDED
FRONT YARD SETBACK	10 ft.	40.0 ft.	24.2 ft.	25.2 ft.	25.1 ft.	25.2 ft.
SIDE YARD SETBACK	5 ft.	39.9 ft.	14.1 ft.	10.0 ft.	8.0 ft.	42.5 ft.
REAR YARD SETBACK	10 ft.	97.4 ft.	73.2 ft.	72.2 ft.	72.1 ft.	72.2 ft.
MIN. FRONTAGE	50 ft.	181.78 ft.	114.52	92.41 ft.	55.54 ft.	171.72 ft.
MIN. LOT AREA	7,500 s.f.	40,925 sf.	16,232 sf.	13,583 sf.	8,163 sf.	25,206 sf.
MAX. GROUND COVER RATIO	40%	12.6%	19.9%	17.7%	18.4%	12.7%
MIN. OPEN AREA	30% (MCD)	41.5%	31.3%	29.9%	37.3%	39.2%

PROPERTY LIES WITHIN THE WELLHEAD PROTECTION DISTRICT.

SHEET INDEX

PLAN TITLE	SHEET DESIGNATION
INDEX	C1
EXISTING CONDITIONS	C2
LAYOUT	C3
GRADING	C4
UTILITIES	C5
DETAILS	C6
DETAILS	C7
INTERIM SITE PLAN	C8

Prepared For:

Owner / Applicant
RICHMOND GREAT POINT DEVELOPMENT, LLC
400 SYLVAN STREET
WILMINGTON, MA 01887
(978) 988-3900

Prepared By:

Hayes Engineering, Inc.
603 Salem Street
Wakefield, MA 01880
Ph: 781.246.2800
Fax: 781.246.7596
www.hayeseng.com

Design By: PJO
Drawn By: AMC
Checked By: PJO
Project File: NAN-0107T
Comp. No: NAN66
☒ Issued For Permit
☐ Issued For Review
☐ Issued For Bid
☐ Issued For Construction
☒ Not For Construction

No.	Revision	Date
10		
9		
8		
7		
6		
5		
4		
3		
2		
1		

Scale: 1"=30' (0' 15' 30' 60')
Date: June 10, 2016

Drawing Title:
OLD SOUTH ROAD CROSSING
INDEX PLAN
OLD SOUTH ROAD
NANTUCKET, MASS.

Seal: PETER J. OGNIAN CIVIL No. 27148 REGISTERED PROFESSIONAL ENGINEER 7/31/16

Drawing No.: C1

SHEET 1 OF 8

N:\NAN66\SP_OSRliner_COMPILED.dwg, 6/13/2016 9:26:59 AM, TC

LOT 6
231,579 S.F.
5.31 Acres

LOT 1
40,925 S.F.

LOT 2
16,232 S.F.

LOT 3
13,583 S.F.

LOT 4
8,163 S.F.

LOT 5
25,206 S.F.

DECLARATION REGARDING PARKING SPACES (APPROXIMATE LOCATION) LC DOCUMENT NO. 136283

PARKING EASEMENT LC DOCUMENT NO. 136283

OLD SOUTH ROAD (PUBLIC - VARIABLE WIDTH) 1942 COUNTY LAYOUT ROAD PLAN #200, ROAD DRAWER #1

LOVERS LANE (66 FEET WIDE)

GOLDFINCH DRIVE

10' WIDE BIT. BIKE PATH

PATH (DIRT)

3.5' HIGH POST & RAIL FENCE

STONE & MASONRY WALL

STONE & MASON RET. WALL

STONE WALK

WOOD FENCE 2.5'

6' STOCKADE FENCE

P&R FENCE 3' HIGH

CHAIN LINK FENCE

PAINTED DOUBLE YELLOW LINE

BIT. BERM

BIT. BIKE PATH

BROKEN PAVEMENT

DRIVEWAY (GRAVEL)

DRIVEWAY

GRAVEL

CONC. AC PAD

EXISTING BUILDING

REFRIGERATION UNITS

PLANTER

BRICK

GRANITE STEP

GATE

NEW & OLD UP #2 W/POWER UNDER

#1-1 W/POWER UNDER

ELECTRIC METER

WATER METER

SIGN: HP PARKING

SIGN: "OLD SOUTH LIQUORS" & (2) FLOODLIGHTS

OLD SOUTH LIQUORS SIGN

TRUCKS ENTERING SIGN

ENTER DO NOT ENTER SIGNS

PEDESTRIAN CROSSING SIGN

SIGN: "STOP"

SIGN: "STOP" & "DO NOT ENTER"

FFE=44.99

FFE=44.0

FFE=44.6

TF=45.45

TF=41.99

EXIST. SMH RIM=35.05 8" PVC=25.24

EXIST. SMH RIM=33.93 6" PVC =24.32 12" PVC=16.80

CB RIM=33.59 8" PVC INV.=30.79 10" CMP INV.=30.79

DMH RIM=33.38 6" IRON TOP PIPE=29.28

CB RIM=34.91 NO PIPE OBSERVED WATER DOWN +.15

DBL CB RIM=33.70

DBL CB RIM=34.12

CB RIM=34.79 12" RCP INV.=30.92 12" CMP INV.=31.39

CB RIM=33.02 10"CMP INV.=30.37 12" CMP INV.=30.17

CB RIM=32.70 8" PVC INV.=31.25

Prepared For:

Owner / Applicant

RICHMOND GREAT POINT DEVELOPMENT, LLC
23 CONCORD STREET
WILMINGTON, MA 01887
(978) 988-3900

Prepared By:

Hayes Engineering, Inc.
603 Salem Street
Phone: 781.245.1860
Wakefield, MA 01880
Fax: 781.246.7596
www.hayeseng.com

Design By:	PJO
Drawn By:	AMC
Checked By:	PJO
Project File:	NAN-0107T
Comp. No:	NAN66

- [x] Issued For Permit
- [ ] Issued For Review
- [ ] Issued For Bid
- [ ] Issued For Construction
- [x] Not For Construction

No.	Revision	Date
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Scale: 1" = 30'

0' 15' 30' 60'

Date: June 10, 2016

Drawing Title:

OLD SOUTH ROAD CROSSING
EXISTING CONDITIONS PLAN
OLD SOUTH ROAD
NANTUCKET, MASS.

Seal:

COMMONWEALTH OF MASSACHUSETTS
PETER J. OGREN
CIVIL
No. 27145
REGISTERED PROFESSIONAL ENGINEER

Drawing No.:

C2

SHEET 2 OF 8

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Prepared For:

Owner / Applicant

RICHMOND GREAT POINT DEVELOPMENT, LLC
23 CONCORD STREET
WILMINGTON, MA 01887
(978) 988-3900

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www.hayesengr.com

Design By: PJO
Drawn By: AMC
Checked By: PJO
Project File: NAN-0107T
Comp. No: NAN66

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- [x] Not For Construction

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Scale: 1"= 30'
0' 15' 30' 60'

Date: June 10, 2016

Drawing Title:

OLD SOUTH ROAD CROSSING
LAYOUT PLAN
OLD SOUTH ROAD
NANTUCKET, MASS.

Drawing No.: C3

SHEET 3 OF 8

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PROPOSED BUILDING 3,200 S.F.

PROP. OUTDOOR SEATING 1,200 S.F.

PROPOSED BUILDING 1,500 S.F.

PROPOSED BUILDING 2,400 S.F.

PROPOSED BUILDING 3,235 S.F.

PROPOSED BUILDING 5,170 S.F.

PROP. OUTDOOR DISPLAY 600 S.F.

PROPOSED BUS STOP SHELTER

DECLARATION REGARDING PARKING SPACES (APPROXIMATE LOCATION) LC DOCUMENT NO. 138283

3.5' HIGH POST & RAIL FENCE

LOVERS LANE (66' FEET WIDE)

OLD SOUTH ROAD (PUBLIC - VARIABLE WIDTH) NAGF COUNTY LAYOUT ROAD PLAN #200, ROAD DRAWER #1

GOLDFINCH DRIVE

10' WIDE BIT. BIKE PATH

BIT. BIKE PATH

BIT. CONC. SIDEWALK

PAINTED DOUBLE YELLOW LINE

STONE & MASONRY WALL

WOOD FENCE 2.5'h

P&R FENCE 3' HIGH

GRANITE STEPS

BRICK

GRAVEL

EXISTING BUILDING

REFRIGERATION UNITS

CONC. AC PAD

6' STOCKADE FENCE

PLANTER

DRIVEWAY (SHARED)

BRICK/BELGIAN PAVERS

NEW & OLD UP #2 W/POWER UNDER

ELECTRIC METER

(2) FLOODLIGHTS

WATER METER

GAS GATE

UP #32

GUY

CTVST

TST

WV

WM

WS

FM

ROOF DRAIN (TYP.)

RD

Prepared For:

Owner / Applicant

RICHMOND GREAT POINT DEVELOPMENT, LLC
410 LINCOLN STREET
WORCESTER, MA 01887
(978) 988-3900

Prepared By:

Hayes Engineering, Inc.
603 Salem Street
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Fax: 781.246.7596
www.hayeseng.com

Design By:	PJO
Drawn By:	AMC
Checked By:	PJO
Project File:	NAN-0107T
Comp. No:	NAN66
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Scale: 1"=30' (0' 15' 30' 60')

Date: June 10, 2016

Drawing Title:

OLD SOUTH ROAD CROSSING
GRADING PLAN
OLD SOUTH ROAD
NANTUCKET, MASS.

Seal: COMMONWEALTH OF MASSACHUSETTS — PETER J. OGREN — CIVIL — No. 27149 — REGISTERED PROFESSIONAL ENGINEER — 6/13/16

Drawing No.:

C4

SHEET 4 OF 8

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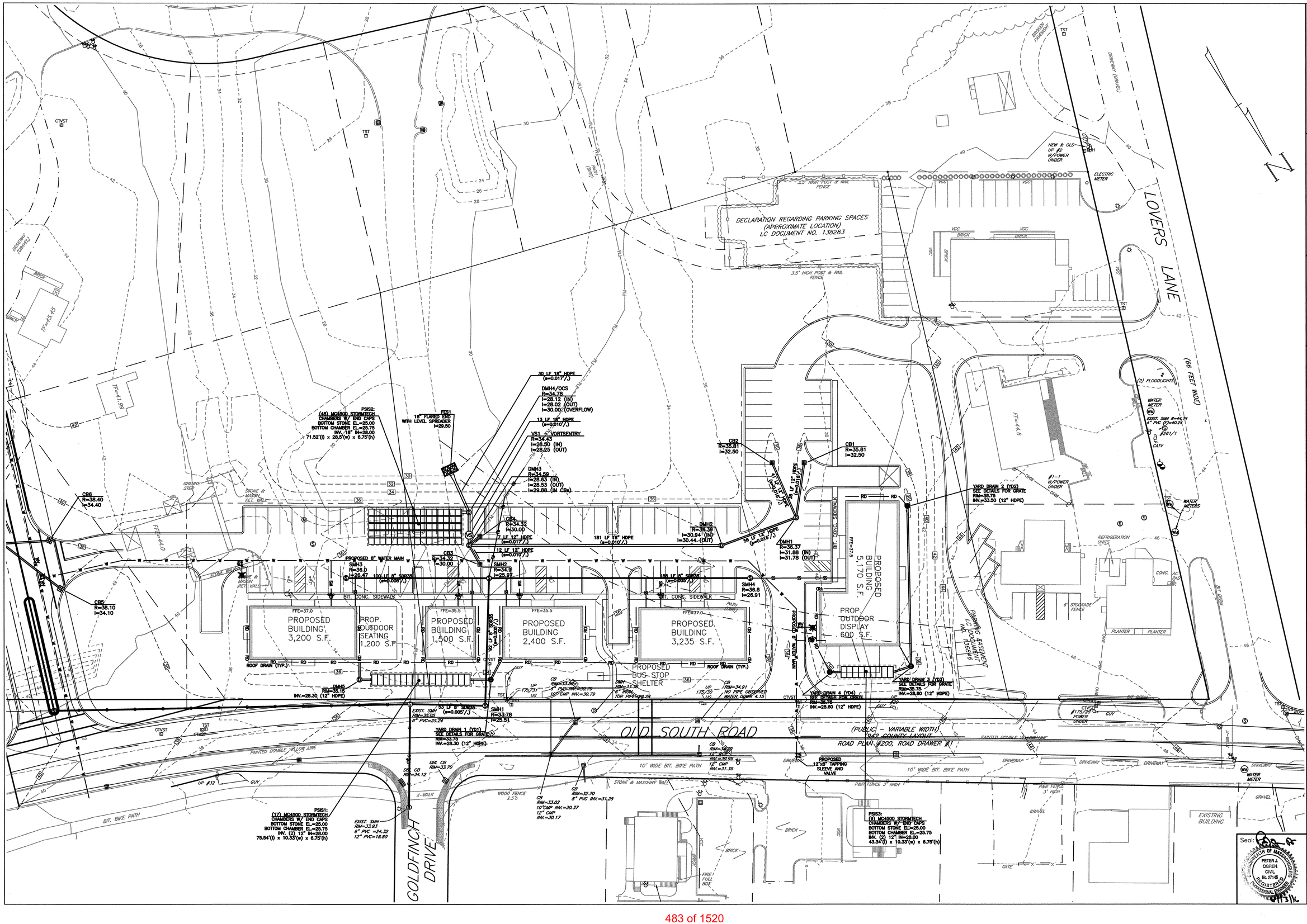

Prepared For:

Owner / Applicant

RICHMOND GREAT POINT DEVELOPMENT, LLC
23 CONCORD STREET
WILMINGTON, MA 01887
(978) 988-3800

Prepared By:

Hayes Engineering, Inc.
603 Salem Street
Wakefield, MA 01880
Phone: 781.246.3800
Fax: 781.246.7596
www.hayesengr.com

Design By:	PJO
Drawn By:	AMC
Checked By:	PJO
Project File:	NAN-0107T
Comp. No:	NAN66

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- [x] Not For Construction

No.	Revision	Date
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Scale: 1"=30'
0' 15' 30' 60'

Date: June 10, 2016

Drawing Title:

OLD SOUTH ROAD CROSSING UTILITIES PLAN OLD SOUTH ROAD NANTUCKET, MASS.

Seal:

COMMONWEALTH OF MASSACHUSETTS
PETER J. OGREN
CIVIL
No. 37145
REGISTERED PROFESSIONAL ENGINEER

Drawing No.:

C5

SHEET 5 OF 8

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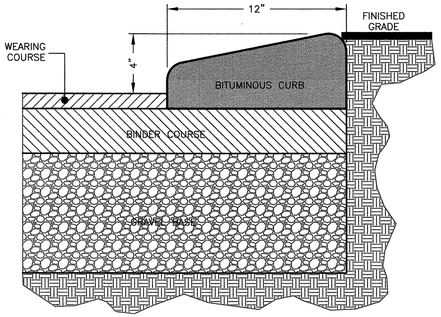
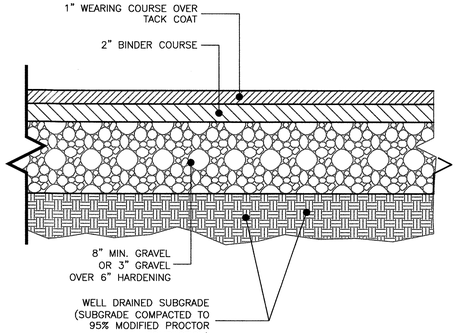
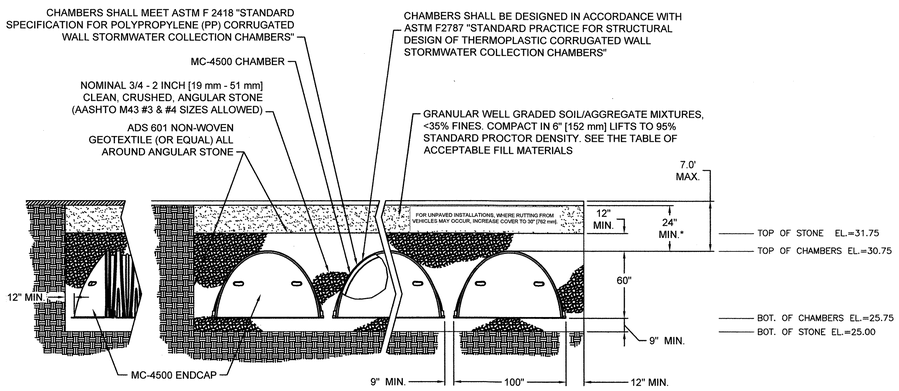




2 PAVEMENT SECTION
NOT TO SCALE

NOTE:
THIS PAVEMENT SECTION DETAIL REFLECTS MINIMUM REQUIREMENTS. ENGINEER TO DETERMINE DESIGN BASED ON GEOTECHNICAL DATA.

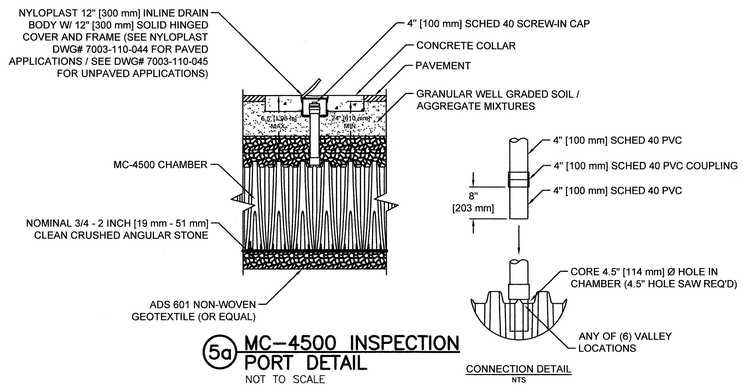
1 CAPE COD CURB
NOT TO SCALE



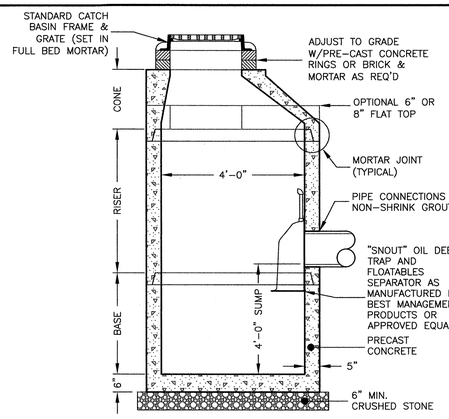
PERIMETER STONE MUST ALWAYS BE BROUGHT UP EVENLY WITH BACKFILL OF BED. PERIMETER STONE MUST EXTEND HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH STRAIGHT OR SLOPED SIDEWALLS.

5 MC-4500 TYPICAL CROSS-SECTION
NOT TO SCALE

NOTES:
1. INSPECTION PORTS MAY BE CONNECTED THROUGH ANY OF (6) CHAMBER CORRUGATION VALLEYS
2. ALL SCHEDULE 40 FITTINGS TO BE SOLVENT CEMENTED.

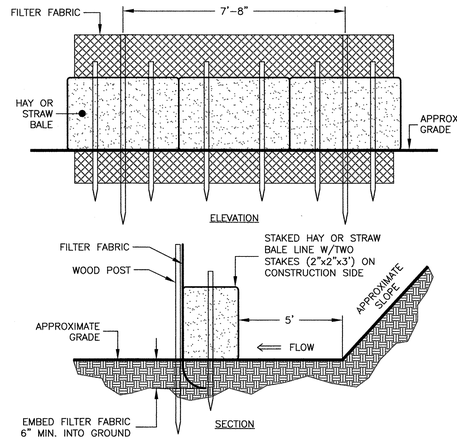


5a MC-4500 INSPECTION PORT DETAIL
NOT TO SCALE



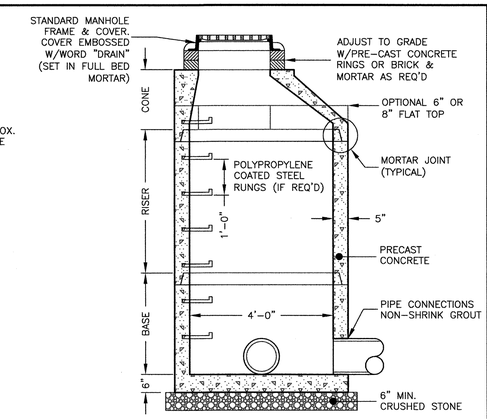
3 PRE-CAST CATCH BASIN
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."



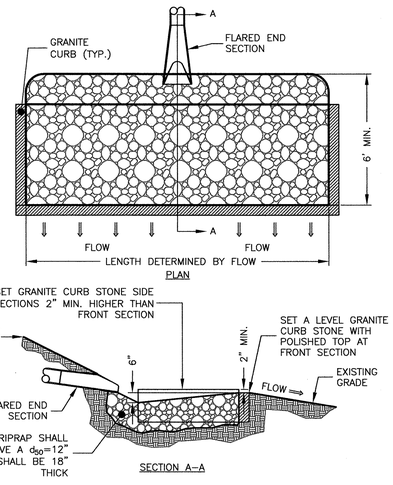
4 SILT FENCE & HAY/STRAW BALE
NOT TO SCALE

NOTE:
USE STRAW BALES ADJACENT TO WETLANDS

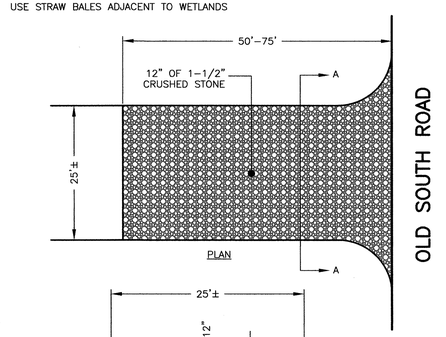


PRE-CAST DRAIN MANHOLE
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."

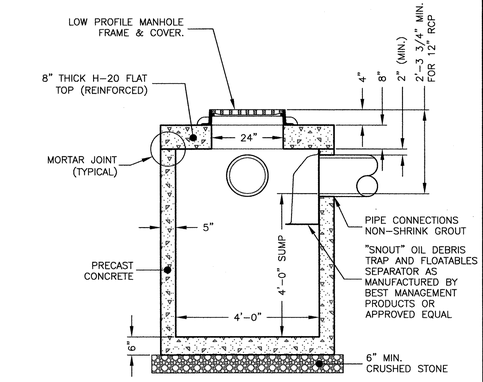


6 LEVEL SPREADER
NOT TO SCALE



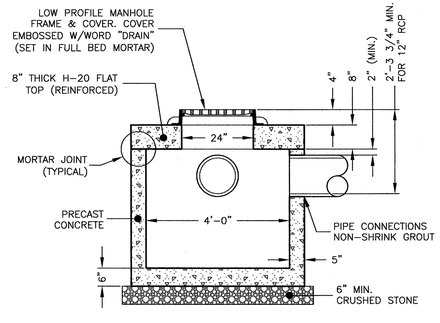
7 TIRE TRACKING PAD
NOT TO SCALE

NOTE:
PROVIDE TRANSITION BETWEEN CONSTRUCTION ENTRANCE AND PUBLIC RIGHT-OF-WAY. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT THE TRACKING OF SEDIMENT INTO PUBLIC RIGHT-OF-WAY



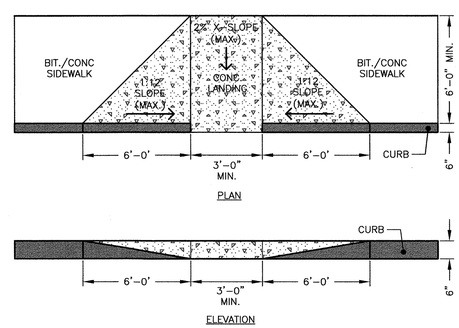
8 REDUCED COVER CATCH BASIN
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."



9 REDUCED COVER DRAIN MANHOLE
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."

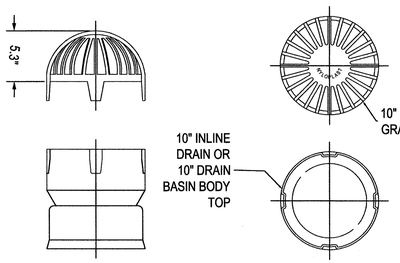


10 WHEELCHAIR RAMP
NOT TO SCALE

NOTE:
WHEELCHAIR RAMP SHALL COMPLY WITH ALL STATE AND FEDERAL RULES AND REGULATIONS.

1099CGD

APPROX. DRAIN AREA = 54.00 SQ IN
APPROX. WEIGHT = 8.36 LBS



11 NYOPLAST YARD DRAIN INLET
NOT TO SCALE

Prepared For:

Owner / Applicant
RICHMOND GREAT POINT DEVELOPMENT, LLC
23 CONCORD STREET
WILMINGTON, MA 01887
(978) 988-3900

Prepared By:

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Design By:	EES
Drawn By:	AMC
Checked By:	PJO
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Scale: 1"=NTS

Date: June 10, 2016

Drawing Title:

OLD SOUTH ROAD CROSSING
DETAIL SHEET 1
OLD SOUTH ROAD
NANTUCKET, MASS.

Seal:

COMMONWEALTH OF MASSACHUSETTS
PETER J. OGREN
CIVIL
No. 27145
REGISTERED PROFESSIONAL ENGINEER
6/13/16

Drawing No.:

C6

SHEET 6 OF 8

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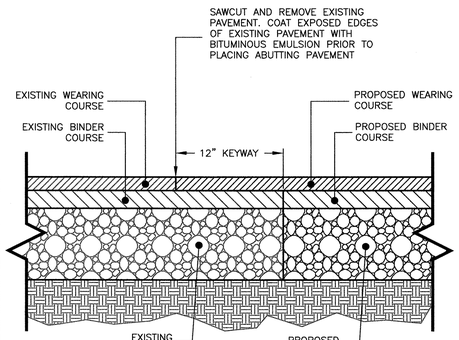
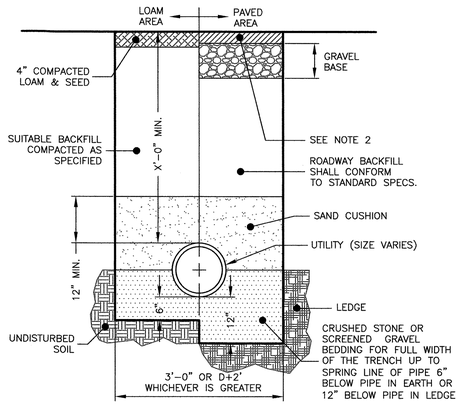


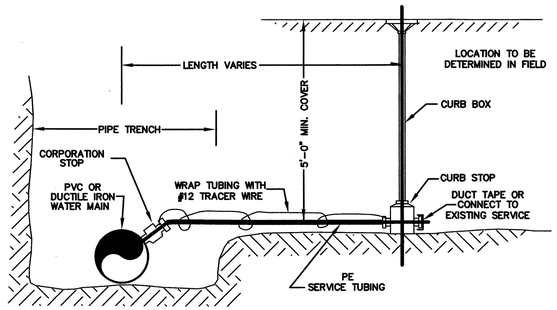
1 PAVEMENT KEYWAY
NOT TO SCALE

NOTE:
THIS PAVEMENT SECTION DETAIL REFLECTS MINIMUM REQUIREMENTS. ENGINEER TO DETERMINE DESIGN BASED ON GEOTECHNICAL DATA.

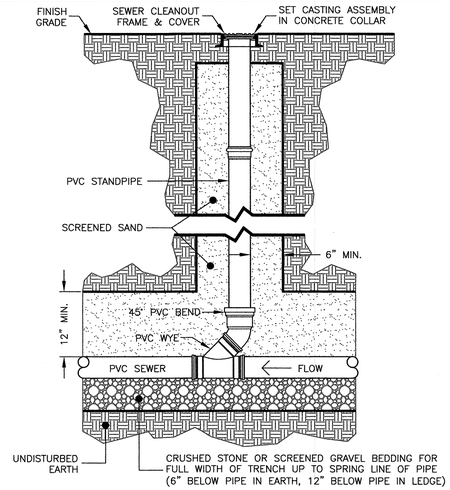


2 UTILITY TRENCH
NOT TO SCALE

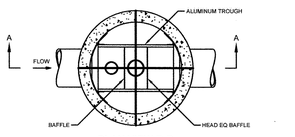
NOTES:
1. ALL MATERIAL SHALL CONFORM TO CITY/TOWN OF DEPARTMENT OF PUBLIC WORKS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO CITY/TOWN SPECIFICATIONS.
3. IN LIEU OF THE 12" GRAVEL COURSE AND 9" OF CRUSHED GRAVEL, 18" OF CRUSHED GRAVEL OR RECLAIMED STABILIZED BASE MAY BE USED AS A BASE FOR THE PAVEMENT REPAIR.
4. MATERIAL SHALL BE REPLACED IN KIND WHENEVER POSSIBLE.
5. A MINIMUM 2' CUTBACK IS REQUIRED AT THE TOP OF THE TRENCH WALL OVER UNDISTURBED MATERIAL.



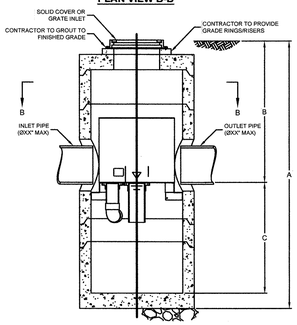
3 TYPICAL WATER SERVICE CONNECTION
NOT TO SCALE



4 SEWER SERVICE CLEANOUT
NOT TO SCALE



PLAN VIEW B-B



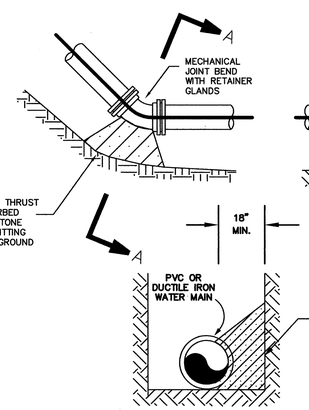
SECTION A-A

FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

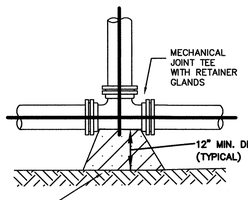
GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. VORTSENTRY HS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.

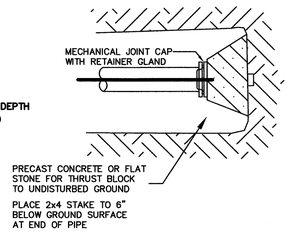
INSTALLATION NOTES
1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTSENTRY HS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
3. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
4. CONTRACTOR TO PROVIDE, INSTALL AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
5. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

5 VORTSENTRY HS
STANDARD DETAIL



SECTION A-A

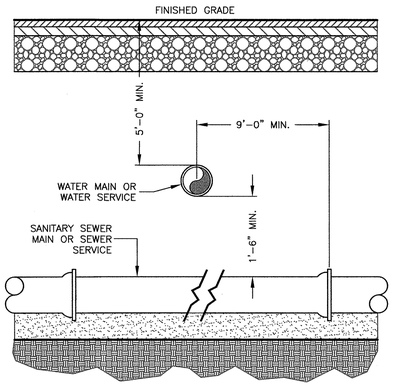




PIPE DIAMETER	BENDS				TEE
	11.25	22.5	45	90	
4 & 6	1	1	1	2	1.5
8	1	1	2	3	2.5
12	1	2	3.5	6.5	5

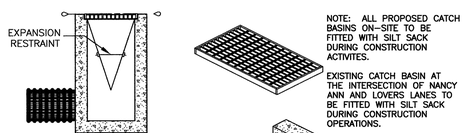
THRUST BLOCK BEARING AREA (SF)
(BASED UPON 100 psi WATER PRESSURE AND 3000 PSF BEARING LOAD CAPACITY)

6 TYPICAL THRUST BLOCK
NOT TO SCALE

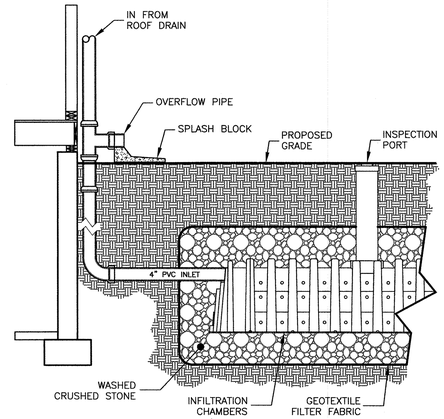


7 WATER/SEWER CROSSING
NOT TO SCALE

NOTES:
1. WHEREVER FEASIBLE, SEWERS WILL BE LAID AT A MINIMUM OF 10 FEET, HORIZONTALLY, FROM ANY EXISTING OR PROPOSED WATER MAIN. SHOULD LOCAL CONDITIONS PREVENT A LATERAL SEPARATION OF 10 FEET TO A WATER MAIN THE SEWER MAIN WILL BE LAID IN A SEPARATE TRENCH AND THE ELEVATION OF THE CROWN OF THE SEWER PLACED AT LEAST 18 INCHES BELOW THE INVERT OF THE WATER MAIN. WHENEVER SEWERS MUST CROSS UNDER WATER MAINS, THE SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE CROWN OF THE SEWER IS AT LEAST 18 INCHES BELOW THE INVERT OF THE WATER MAIN. WHEN IT IS IMPOSSIBLE TO OBTAIN HORIZONTAL OR VERTICAL SEPARATION AS STIPULATED ABOVE, BOTH THE WATER MAIN AND SEWER SHOULD BE ENCASED IN CONCRETE FOR 10 FEET EITHER SIDE OF THE CROSSING.
2. IN LOCATIONS WHERE THE SEWER MAIN DOES NOT HAVE 48" OF COVER THE MAIN WILL BE INSULATED.



9 SILTSACK®
NOT TO SCALE



8 ROOF DRAIN TO CHAMBER
NOT TO SCALE

NOTE:
1. CULTECS SHALL BE INSTALLED A MINIMUM OF 10' FROM HOUSE.

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Drawn By: AMC
Checked By: PJO
Project File: NAN-0139
Comp. No: NAN66
☒ Issued For Permit
☐ Issued For Review
☐ Issued For Bid
☐ Issued For Construction
☒ Not For Construction

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Scale: 1"=NTS
Date: June 10, 2016

Drawing Title:
OLD SOUTH ROAD CROSSING
INDEX PLAN
OLD SOUTH ROAD
NANTUCKET, MASS.

Seal:
COMMONWEALTH OF MASSACHUSETTS
PETER J. OGRIN
No. 37...
REGISTERED PROFESSIONAL ENGINEER
6/13/16

Drawing No.:
C7
SHEET 7 OF 8

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Design By:	PJO
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Checked By:	PJO
Project File:	NAN-0107T
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Date: June 10, 2016

Drawing Title:

OLD SOUTH ROAD CROSSING
INTERIM SITE PLAN
OLD SOUTH ROAD
NANTUCKET, MASS.

Seal

Drawing No.: C8

SHEET 8 OF 8

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Refer to File No. NAN-0107J

Storm Water Management Report

Major Commercial Development
Special Permit Site Plan
Old South Road Crossing
Nantucket, Massachusetts

6/13/16

June 10, 2016

Table of Contents

1.0 Introduction 1
1.1 Pre-Development Conditions 1
1.2 Post-Development Conditions 2
1.3 Ground Cover Conditions 2
2.0 Storm Water Management 3
2.1 Pre-Development Conditions 3
2.1.1 Drainage System 3
2.1.2 Watersheds 3
2.1.3 Runoff Calculations 3
2.2 Post-Development Conditions 5
2.2.1 Drainage System 5
2.2.2 Watersheds 5
2.2.3 Runoff Calculations 7
3.0 Massachusetts DEP Storm Water Management Standards 9
3.1 Standard 1: No New Untreated Discharges 9
3.2 Standard 2: Peak Rate Attenuation 9
3.3 Standard 3: Recharge 10
3.4 Standard 4: Water Quality 11
3.5 Standard 5: Land Uses with Higher Potential Pollution Loads 12
3.6 Standard 6: Critical Areas 13
3.7 Standard 7: Redevelopment Projects 13
3.8 Standard 8: Construction Period Pollution Prevention 13
3.9 Standard 9: Operation and Maintenance Plan 14
3.10 Standard 10: Illicit Discharges 14
4.0 Conclusion 14

List of Tables

Table 1 - Ground Cover Conditions....2
Table 2 - Design Storms....5
Table 3 - Pre-Development Condition Peak Rates of Runoff....5
Table 4 - Pre-Development Condition Peak Volume of Runoff....5
Table 5 - Hydrologic Soil Properties by Soil Texture (Rawls, Brakensiek & Saxton, 1982)....8
Table 6 - Post-Development Peak Rate of Runoff....8
Table 7 - Post-Development Peak Volume of Runoff....8
Table 8 - Peak Rates of Runoff Comparison....10
Table 9 - Runoff Volume Comparison....10
Table 10 - Recharge Target Depth by Hydrologic Soil Group....11

List of Figures

Figure 1- USGS Vicinity Map....1
Figure 2 - Pre-Development Watershed Map....4
Figure 3 - Post-Development Watershed Map....6

List of Appendices

Appendix A: NRCS Soil Mapping and Data
Appendix B: HydroCAD® Calculations
Appendix C: Massachusetts DEP Storm Water Checklist
Appendix D: Water Quality Calculations
Appendix E: Construction Period Pollution Prevention Plan
Appendix F: Operations and Maintenance Plan

1.0 Introduction

Richmond Great Point Development, LLC (the "Applicant") propose to construct a multi-unit retail development to be known as "Old South Road Crossing" (the "Project") proximate to the intersection of Old South Road and Lovers Lane. The Project area is depicted on Figure 1 below showing a portion of the United States Geologic Survey (USGS) topographic map. The Project is a portion of a larger project including both residential and commercial uses; this larger project will include improvements to infrastructure through the relocation, improvement and reconfiguration of portions of Old South Road, Nancy Ann Drive, and Davkim Road.

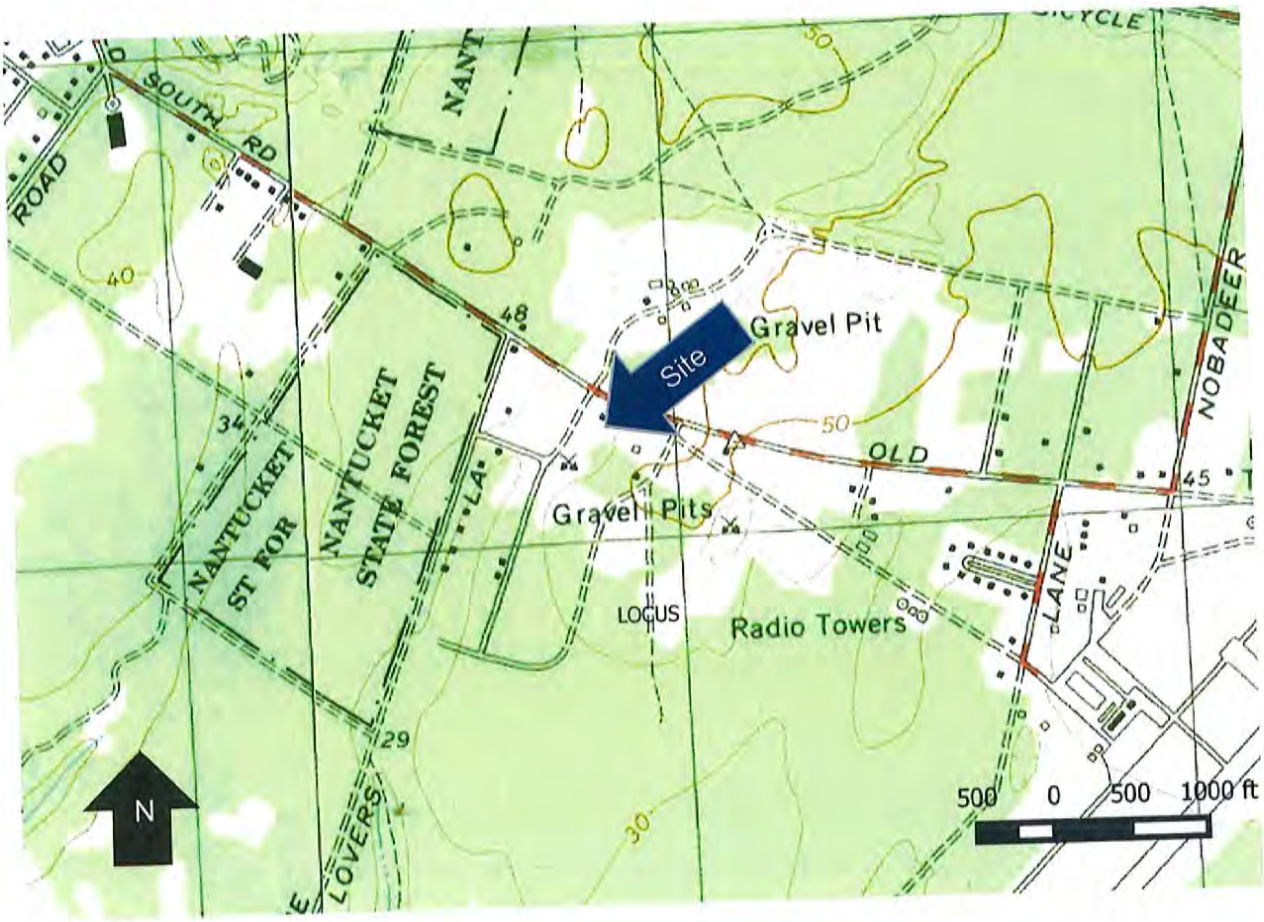

Figure 1- USGS Vicinity Map

1.1 Pre-Development Conditions

The Project site in its existing condition consists of developed and undeveloped areas near the intersection of Old South Road and Lovers Lane.

The United States Department of Agriculture Natural Resource Conservation Service (NRCS) Soil Survey mapping indicates soils representative of Evesboro sand within the Project area. This well drained soil exhibits deep ground water and is classified as Hydrologic Soil Group (HSG) "A."

The NRCS identifies the following characteristics of soils classified as Group A:

Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

NRCS Soil Survey Mapping and Soil Data accompany this report as Appendix A.

1.2 Post-Development Conditions

The Project as proposed includes the construction of a five (5) retail structures varying in size between 1,500 and 5,170 square feet, associated parking and driveways. A comprehensive storm water management and drainage system will also be constructed to capture, convey and treat runoff from the Project.

1.3 Ground Cover Conditions

The hydrologic study area consists of approximately 6.5± acres in land area. The following table summarizes the pre- and post-development ground cover conditions for the study area(s):

Table 1 - Ground Cover Conditions

Cover Type	**Existing Area (Acres)**	**Proposed Area (Acres)**	**Change (Acres)**
Impervious Surfaces	0.87	2.46	+1.59
Bare Soil	0.92	0.11	-0.81
Brush, Poor	2.00	0.00	-2.00
Meadow	0.64	0.00	-0.64
Grass, Good	2.06	4.17	+2.11
Total	**6.49**	**6.75**	**+0.26**

Note: HydroCAD® Calculations provided in Appendix B summarize cover conditions for each sub-catchment.

2.0 Storm Water Management

2.1 Pre-Development Conditions

2.1.1 Drainage System

The proposed site generates surface runoff conveyed by overland flow to the South via a broad valley that bisects the site. There is no structured drainage system in this area.

2.1.2 Watersheds

Under existing conditions, the site is divided into one (1) sub-catchment area. (See Figure 2 – Pre-Development Watershed Map).

The study point of comparison, Point of Comparison 1, is at the intersection of the above aforementioned valley and the downgradient property line of Lot 6.

Sub-catchment EX1 is tributary to Study Point of Comparison 1 (POC1). EX1 encompasses the Project area and consists of undeveloped meadow, areas of interspersed scrub oak and pines (brush) and areas of developed residential and commercial lands, buildings and driveways near the perimeter of the sub-catchment.

2.1.3 Runoff Calculations

Runoff calculations were performed in accordance with the methodology outlined in the NRCS Soil Conservation Service (SCS) methods as defined in Technical Release 55 (TR-55) and Technical Release 20 (TR-20) which are the basis for they HydroCAD® hydrologic model. Existing cover conditions and times of concentrations were used to generate runoff hydrographs for each of the three (3) sub-catchments in each of the Type III design storms in accordance with Technical Paper 40 (TP-40) as identified in Table 2.

EX1

LOVERS LANE

OLD SOUTH ROAD

GOLDFINCH DRIVE

DECLARATION REGARDING PARKING SPACES (APPROXIMATE LOCATION) LC DOCUMENT NO. 138283

PARKING EASEMENT LC DOC. NO. 138283

(PUBLIC) - VARIABLE WIDTH) 1944 COUNTY LAYOUT ROAD PLAN BOOK, ROAD DRAWER #1

Pre-Development Watershed Map in NANTUCKET, MASS.

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Scale: 1" = 80'

0' 40' 80' 160' 240'

June 10, 2016

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Table 2 - Design Storms

DESIGN STORM (RETURN FREQUENCY)	RAINFALL (INCHES/24-HOURS)
2-year	2.6
10-year	4.9
25-year	5.4
50-year	6.5
100-year	7.2

Pre-development peak rate and volumes of runoff to the Study Points of Comparison are shown in Table 3 and Table 3, below.

Table 3 - Pre-Development Condition Peak Rates of Runoff

Study Point	2-yr Storm Peak Flow (Q_p) (cfs)	10-yr Storm Peak Flow (Q_p) (cfs)	25-yr Storm Peak Flow (Q_p) (cfs)	50-yr Storm Peak Flow (Q_p) (cfs)	100-yr Storm Peak Flow (Q_p) (cfs)
POC1	0.9	3.2	5.4	7.4	9.5

Table 4 - Pre-Development Condition Peak Volume of Runoff

Study Point	2-yr Storm Peak Volume (V_p) (ac-ft.)	10-yr Storm Peak Volume (V_p) (ac-ft.)	25-yr Storm Peak Volume (V_p) (ac-ft.)	50-yr Storm Peak Volume (V_p) (ac-ft.)	100-yr Storm Peak Volume (V_p) (ac-ft.)
POC1	0.2	0.5	0.7	0.9	1.2

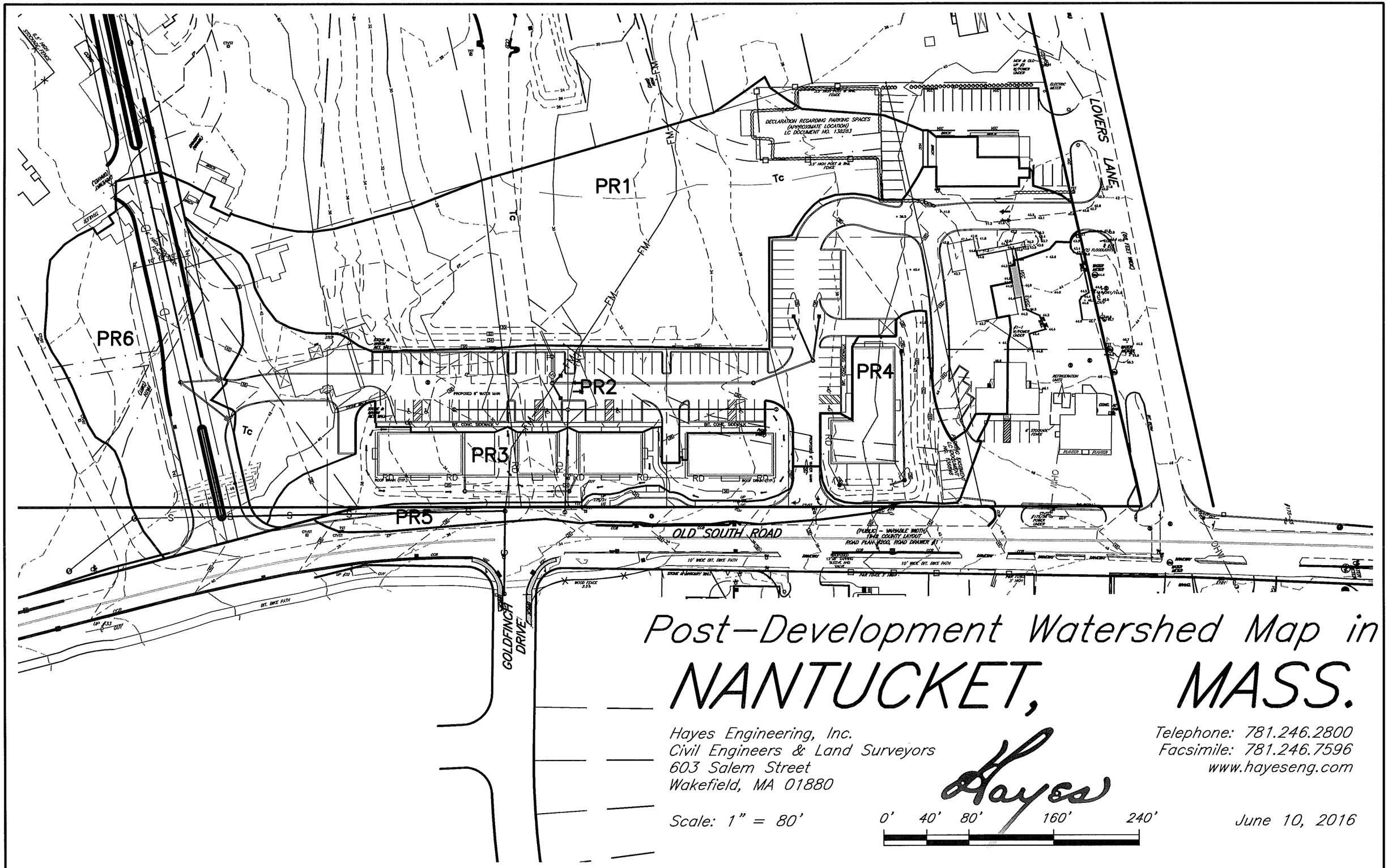
2.2 Post-Development Conditions

2.2.1 Drainage System

The proposed drainage system consists of swales, catch basins, manholes and culverts that direct runoff to treatment and infiltration best management practices (BMPs) on-site.

2.2.2 Watersheds

The Project as proposed divides the study area into six (6) sub-catchments that are ultimately tributary to the Study Point of Comparison (See Figure 3 – Post-Development Watershed Map). The Study Point of



Post–Development Watershed Map in NANTUCKET, MASS.

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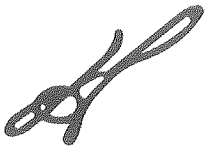
June 10, 2016



Comparison and its respective sub-catchment areas are described below:

POC1 – Existing valley at the downgradient property boundary of Lot 6:

- Sub-catchment PR1 consists of the undeveloped portions of the project area to the south including the majority of Lot 6;
- Sub-Catchment PR2 consists of the parking and driveways associated with the Project;
- Sub-catchment PR3 consists of the rooftops and rear landscaped areas for the proposed retail buildings on lots 2 through 5.
- Sub-catchment PR4 consists of the rooftop and rear landscaped area for the proposed retail building on lots 4.
- Sub-catchments PR5 and PR6 are areas of the Project site that are to be modified by the infrastructure improvements proposed as part of the overall development plan of the area. Runoff from these sub-catchments will be addressed by the infrastructure servicing the new and/or modified roadways.

Sub-catchments PR2, PR3 and PR4 are collected and directed to Proposed Sub-Surface Infiltration Systems (PSISs).

- PSIS1 to be constructed under the proposed swale in sub-catchment PR3;
- PSIS2 to be constructed under the parking lot in sub-catchment PR2. Runoff in excess of the infiltration capacity of the PSIS will flow overland to Study Point of Comparison 1.; and
- PSIS3 to be constructed adjacent to the proposed building on Lot 1 in sub-catchment PR4.

2.2.3 Runoff Calculations

As in the pre-development condition, runoff calculations were performed in accordance with the methodology outlined in the NRCS Soil Conservation Service (SCS) methods as defined in Technical Release 55 (TR-55) and Technical Release 20 (TR-20) which are the basis for they HydroCAD® hydrologic model. Proposed cover conditions and times of concentrations were used to generate runoff hydrographs for each of the six (6) sub-catchments in each of the Type III design storms in accordance with Technical Paper 40 (TP-40) as identified in Table 2.

The developed runoff hydrographs were then flood routed through the proposed sub-surface infiltration systems factoring the respective infiltration rates for the corresponding soil types as identified in the Rawls Table of Infiltration Rates (see Table 5, below).

Table 5 - Hydrologic Soil Properties by Soil Texture (Rawls, Brakensiek & Saxton, 1982)

Texture Class	Effective Water Capacity (C_w) (inch per inch)	Minimum Infiltration Rate (*f*) (inches per hour)	Hydrologic Soil Group
Sand	0.35	8.27	A
Loamy Sand	0.31	2.41	A
Sandy Loam	0.25	1.02	A
Loam	0.19	0.52	B
Silt Loam	0.17	0.27	B
Sandy Clay Loam	0.14	0.17	C
Clay Loam	0.14	0.09	D
Silty Clay Loam	0.11	0.06	D
Sandy Clay	0.09	0.05	D
Silty Clay	0.09	0.04	D
Clay	0.08	0.02	D

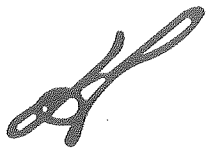
Post-development peak rate and volumes of runoff to the Study Points of Comparison are shown in Table 6 and Table 7, below.

Table 6 - Post-Development Peak Rate of Runoff

Study Point	2-yr Storm Peak Flow (Q_p) (cfs)	10-yr Storm Peak Flow (Q_p) (cfs)	25-yr Storm Peak Flow (Q_p) (cfs)	50-yr Storm Peak Flow (Q_p) (cfs)	100-yr Storm Peak Flow (Q_p) (cfs)
POC1	0.0	0.6	3.7	6.1	8.8

Table 7 - Post-Development Peak Volume of Runoff

Study Point	2-yr Storm Runoff Volume (V_p) (ac-ft.)	10-yr Storm Runoff Volume (V_p) (ac-ft.)	25-yr Storm Runoff Volume (V_p) (ac-ft.)	50-yr Storm Runoff Volume (V_p) (ac-ft.)	100-yr Storm Runoff Volume (V_p) (ac-ft.)
POC1	0.0	0.1	0.2	0.4	0.5



2.2.4 Hydraulic Calculations

The closed drainage system piping was sized for the twenty-five (25) year storm using the peak flow rates calculated for the respective post-development sub-catchments tributary to each catch-basin and Manning's Equation for each section of pipe. Please refer to Appendix C for pipe sizing calculations for the project.

3.0 Massachusetts DEP Storm Water Management Standards

Although the proposed subdivision is not located within areas under jurisdiction the Massachusetts Department of Environmental Protection's (MaDEPs) Wetlands Protection Act (WPA), the proposed storm water management system has been designed to comply with the ten (10) standards of the MaDEP Storm Water Management Policy to the maximum extent practicable. Each of the standards and the extent of Project compliance are summarized below. Please refer to Appendix D for the completed MassDEP Storm Water Checklist.

3.1 Standard 1: No New Untreated Discharges

No new storm water conveyances (e.g. outfalls) may discharge untreated storm water directly to or cause erosion in wetlands or waters of the Commonwealth.

The Project does not discharge any storm water directly to a wetland or water of the Commonwealth. Storm water quality controls are proposed with the project including: deep-sump and hooded catch basins, and sub-surface infiltration areas.

3.2 Standard 2: Peak Rate Attenuation

Storm water management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.

Storm water management controls to mitigate peak rates of runoff from the Project were developed for the 2, 10, 25, 50 and 100-year, 24-hour design storm events. As previously stated, runoff calculations were performed in accordance with the methodology outlined in the NRCS Soil Conservation Service (SCS) methods as defined in Technical Release 55 (TR-55) and Technical Release 20 (TR-20) which are the basis for they HydroCAD® hydrologic model. Calculations are provided as Appendix B to this report.

Table 8 summarizes the pre- and post-development peak rates of runoff for the Project and Table 9 summarizes the pre- and post-development volumes of runoff for the Project

Table 8 - Peak Rates of Runoff Comparison

Study Point	2y Storm Q_p (cfs)			10y Storm Q_p (cfs)			25yStorm Q_p (cfs)			50y Storm Q_p (cfs)			100yStorm Q_p (cfs)		
	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ
POC1	0.9	0.0	-0.9	3.2	0.6	-2.7	5.4	3.7	-1.7	7.4	6.1	-1.3	9.5	8.5	-1.0

Table 9 - Runoff Volume Comparison

Study Point	2y Storm Runoff Volume (V_p) (ac-ft.)			10y Storm Runoff Volume (V_p) (ac-ft.)			25yStorm Runoff Volume (V_p) (ac-ft.)			50y Storm Runoff Volume (V_p) (ac-ft.)			100yStorm Runoff Volume (V_p) (ac-ft.)		
	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ
POC1	0.2	0.0	-0.2	0.5	0.1	-0.4	0.7	0.2	-0.5	0.9	0.4	-0.5	1.2	0.5	-0.7

3.3 Standard 3: Recharge

Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration ... At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the storm water management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Storm Water Handbook.

The Project approximates the annual recharge to groundwater through the use of structural and non-structural best management practices (BMPs) including a sub-surface infiltration system and existing surface infiltration as well as through implementation of the proposed long-term operations and maintenance plan.

In accordance with the Massachusetts Storm Water Handbook the required recharge volume (R_v) for the Project equals a depth of runoff corresponding to the soil type time the impervious areas covering that soil type at the post-development site.

As previously stated and documented in Appendix A, soils on-site are best represented by hydrologic soil group A. The target depth factor (F) identified for hydrologic soil type A is identified as 0.6-inches in Table 2.3.2: Recharge Depth by Hydrologic Soil Group of the Massachusetts Storm Water Handbook (and included as Table 10, below).

Table 10 - Recharge Target Depth by Hydrologic Soil Group

NRCS HYDROLOGIC SOIL TYPE	APPROX. SOIL TEXTURE	TARGET DEPTH FACTOR (F)
A	sand	**0.6-inch**
B	loam	**0.35-inch**
C	silty loam	**0.25-inch**
D	clay	**0.1-inch**

The proposed increase in impervious area at the post-development site was listed previously as 1.59 acres in Table 1 of this report.

The required recharge volume (R_v) for the Project can be calculated as indicated below:

$$R_v = F \times Impervious\ Area$$

$$= (0.6\ inches)\left(\frac{1\ foot}{12\ inches}\right)(1.59\ acres)$$

$$= 0.08\ acre - feet = 3{,}485\ cubic\ feet$$

The Storm Water Handbook also requires that recharge facilities be constructed in soils capable of absorbing the recharge volume within 72 hours. Drawdown time (in hours) can be calculated as indicated below:

$$t_d = \frac{R_v}{(f)(A_b)}$$

Where,

t_d = Drawdown Time (hours)

R_v = Required Recharge Volume in cubic feet (Calculated above)

f = Rawls Infiltration Rate (See Table 3) in feet per hour

A_b = Bottom Area of Infiltration Systems in square feet

(from PSIS1-3, Appendix B)

$$t_d = \frac{3{,}485\ cf}{\left(\frac{8.27\ inches}{hour}\right)\left(\frac{1\ ft}{12\ inches}\right)(780 + 2{,}038 + 448\ sf)}$$

$$t_d = 1.5\ hours$$

The proposed sub-surface infiltration systems (PSIS1, PSIS2 and PSIS3) will infiltrate the required recharge volume in approximately 1.5 hours.

3.4 Standard 4: Water Quality

Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). The standard is met with pollution prevention plans, storm water best management practices sized to capture the required water quality volume, and pretreatment measures.

Runoff generated by new impervious surfaces will be collected and, when required, treated with deep sump and hooded catch basins, a proprietary swirl particle separator (VortSentry HS) and then infiltrated to achieve a presumptive removal rate of 80%. TSS Removal Calculations and VortSentry sizing tables are included as Appendix D to this report.

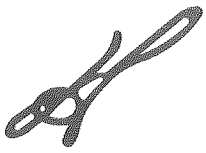
Operations and maintenance plans for construction and post-development phases of the Project are included as Appendix E and Appendix F, respectively, to this report.

3.5 Standard 5: Land Uses with Higher Potential Pollution Loads

For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Storm Water Handbook to eliminate or reduce the discharge of storm water runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and storm water runoff, the proponent shall use the specific structural storm water BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Storm Water Handbook. Storm water discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.

Standard 5 is not applicable to the Project. The Project is not associated with uses that will subject the site to higher potential pollutant loads as defined in the MaDEP Wetlands and Water Quality regulations.

Land Uses with Higher Potential Pollutant Loads (LUHPPLs) are identified in 310 CMR 22.20B(2) and C(2) a through k and m and in 310 CMR 22.21(2)(a) 1 through 8 and (b) 1 through 6; areas within a site that are the location of activities that are subject to an individual National Pollutant Discharge Elimination System (NPDES) permit or the NPRDE Multi-Sector General Permit; automotive fueling facilities, exterior fleet storage areas, exterior vehicle service and equipment cleaning areas; marinas and boatyards; parking lots with high-intensity use; confined disposal facilities and disposal sites.



3.6 Standard 6: Critical Areas

Storm water discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and storm water discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural storm water best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Storm Water Handbook.

The Project is located within the Zone II of the Town of Nantucket public water supply. As such, the Project uses structural and non-structural BMPs suitable for use within this critical area. Water calculations included in Appendix E are based upon more stringent standards for critical areas that include:

- One-inch of run-off over impervious surfaces to calculate the Required Water Quality Volume
- Achieving a minimum of 44-percent TSS removal prior to discharge into infiltration BMPs.

3.7 Standard 7: Redevelopment Projects

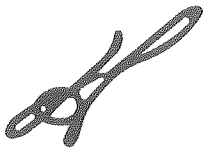
A redevelopment project is required to meet the following Storm Water Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing storm water discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Storm Water Management Standards and improve existing conditions.

Standard 7 is not applicable to the Project. The MaDEP Storm Water Management Handbook definition of a redevelopment project identifies the, *"development, rehabilitation, expansion, and phased projects on previously developed sites, provided the redevelopment results in no net increase in impervious area."*

3.8 Standard 8: Construction Period Pollution Prevention

A plan to control construction-related impacts, including erosion sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan), must be developed and implemented.

A Construction Period Pollution Prevention and Erosion Control Plan is included as Appendix F to this report. This program details the construction period operation and maintenance for best management practices employed on the project and provides sequencing for pollution prevention measures and erosion and sedimentation controls. Locations of erosion control measures are depicted on the Definitive Plan set.



3.9 Standard 9: Operation and Maintenance Plan

A long-term operation and maintenance plan must be developed and implemented to ensure that storm water management systems function as designed.

A Long Term Operation and Maintenance Plan is included as Appendix G to this report. The Operation and Maintenance program provides details and scheduled for routine and non-routine maintenance to the selected best management practices used in the Project.

3.10 Standard 10: Illicit Discharges

All illicit discharges to the storm water management system are prohibited.

Illicit discharges to the storm water management system are discharged that are not entirely comprised of storm water. Discharges to the storm water management system from the following activities or facilities are permissible:

- Firefighting
- Water Main Flushing
- Landscape Irrigation
- Uncontaminated Groundwater
- Potable Water Sources
- Foundation Drains
- Air Conditioning Condensation
- Footing Drains
- Individual Resident Car Washing
- Flows from Riparian Habitats and Wetlands
- Dechlorinated Water from Swimming Pools
- Water Used for Street Sweeping
- Water Used to Clean Residential Buildings (without detergents)

All other illicit discharges to the storm water management system are prohibited.

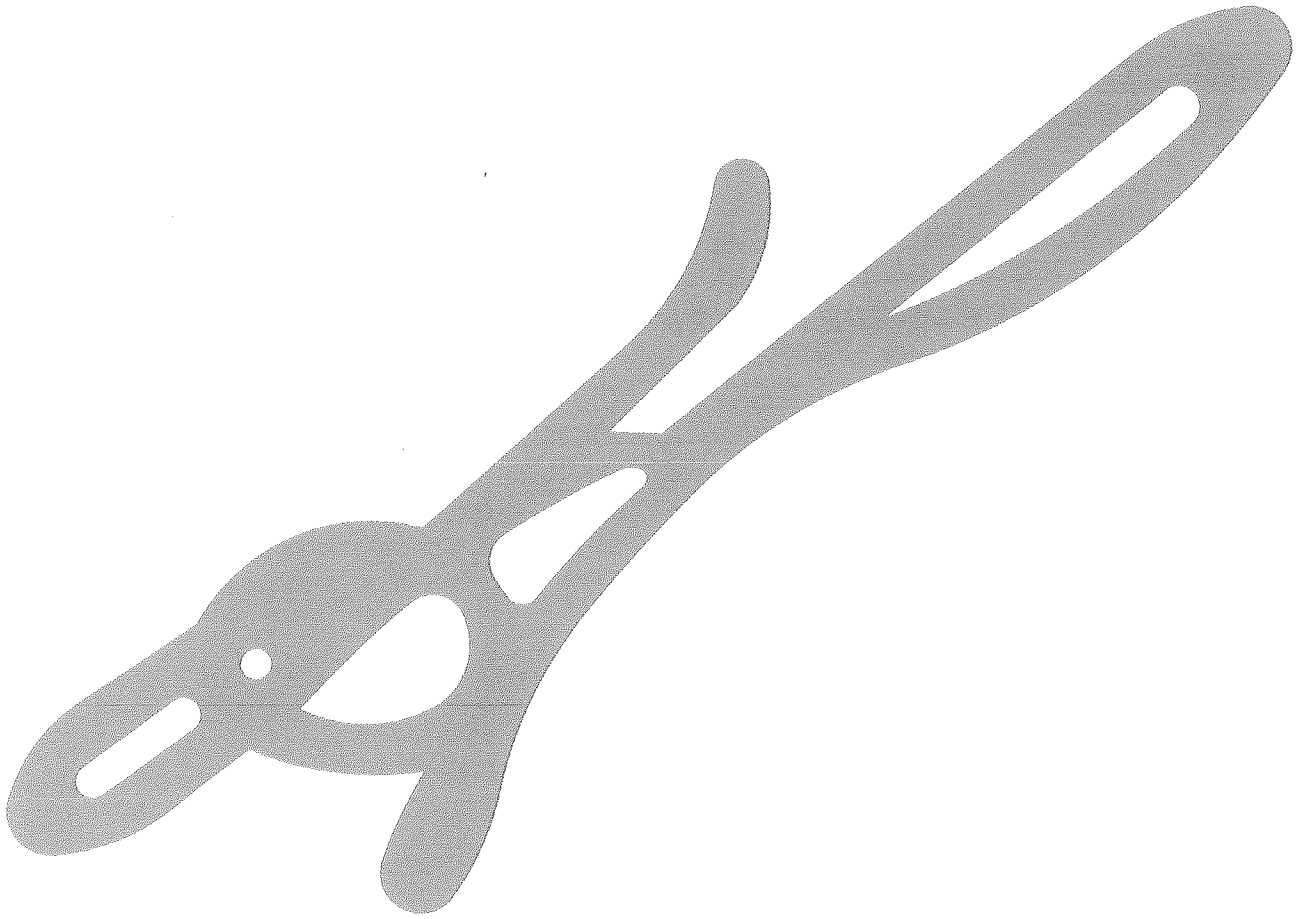
There are no known illicit discharges anticipated through the completion of this project. Post-construction prevention of illicit discharges is addressed in the Good Housekeeping Practices section of Appendix G.

4.0 Conclusion

The Project as proposed has been designed to address both the quality and quantity of storm water runoff from the site improvements. The Project is not subject to the MaDEP Storm Water Standards; however, it has been designed to meet or exceed each of the ten (10) standards to the maximum extent practicable.

APPENDIX A:

NRCS Soil Mapping and Data



Soil Map—Nantucket County, Massachusetts
(Old South Road Retail)

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Nantucket County, Massachusetts
Survey Area Data: Version 12, Sep 19, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 30, 2011—Oct 8, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

506 of 1520

Map Unit Legend

Nantucket County, Massachusetts (MA019)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
180B	Chilmark sandy loam, 3 to 8 percent slopes	1.3	4.1%
294A	Evesboro sand, 0 to 3 percent slopes	18.7	61.9%
294B	Evesboro sand, 3 to 8 percent slopes	10.3	34.0%
Totals for Area of Interest		**30.3**	**100.0%**

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of a given series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Additional information about the map units described in this report is available in other soil reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the soil reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description

Nantucket County, Massachusetts

180B—Chilmark sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 996s
Mean annual precipitation: 41 to 48 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 175 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Chilmark and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chilmark

Setting

Landform: Moraines
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Friable coarse-loamy eolian deposits over dense fine-loamy lodgment till derived from granite and gneiss

Typical profile

H1 - 0 to 10 inches: sandy loam
H2 - 10 to 31 inches: sandy loam
H3 - 31 to 60 inches: stratified sandy clay loam to clay

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Minor Components

Nantucket

Percent of map unit: 4 percent

Plymouth

Percent of map unit: 4 percent

Evesboro

Percent of map unit: 4 percent

Woodbridge variant

Percent of map unit: 3 percent

294A—Evesboro sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 996v
Elevation: 10 to 450 feet
Mean annual precipitation: 41 to 48 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 175 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Evesboro and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Evesboro

Setting

Landform: Outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loose sandy glaciofluvial deposits

Typical profile

H1 - 0 to 6 inches: sand
H2 - 6 to 20 inches: loamy sand
H3 - 20 to 60 inches: stratified sand to sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A

Minor Components

Udipsamments

Percent of map unit: 5 percent

Klej
Percent of map unit: 5 percent

Riverhead
Percent of map unit: 3 percent

Katama
Percent of map unit: 2 percent

294B—Evesboro sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 996w
Elevation: 10 to 450 feet
Mean annual precipitation: 41 to 48 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 175 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Evesboro and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Evesboro

Setting

Landform: Outwash plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loose sandy glaciofluvial deposits

Typical profile

H1 - 0 to 6 inches: sand
H2 - 6 to 26 inches: loamy sand
H3 - 26 to 60 inches: stratified sand to sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A

Minor Components

Riverhead

Percent of map unit: 5 percent

Klej

Percent of map unit: 5 percent

Udipsamments

Percent of map unit: 5 percent

Data Source Information

Soil Survey Area: Nantucket County, Massachusetts
Survey Area Data: Version 12, Sep 19, 2014

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba).

Engineering Properties–Nantucket County, Massachusetts

Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*Pct*	*Pct*					*Pct*	
180B—Chilmark sandy loam, 3 to 8 percent slopes														
Chilmark	85	C	0-10	Sandy loam	ML, SM	A-1, A-2, A-4	0- 0- 0	0- 2- 3	95-98-100	90-95-100	45-65-85	15-35-55	—	NP
			10-31	Sandy loam	SM	A-1, A-2, A-4	0- 0- 0	0- 2- 3	95-98-100	90-95-100	45-60-75	15-28-40	—	NP
			31-60	Stratified sandy clay loam to clay	CL, CL-ML, ML	A-4	0- 0- 0	0- 2- 3	95-98-100	95-98-100	90-95-100	80-88-95	12-19-26	2-6 -10
294A—Evesboro sand, 0 to 3 percent slopes														
Evesboro	85	A	0-6	Sand	SP, SP-SM	A-1, A-2, A-3	0- 0- 0	0- 0- 0	90-95-100	85-93-100	40-65-90	0- 6- 12	10-13-15	NP-2 -3
			6-20	Loamy sand	SP, SP-SM	A-1, A-2, A-3	0- 0- 0	0- 0- 0	90-95-100	85-93-100	40-65-90	0- 6- 12	10-13-15	NP-2 -3
			20-60	Stratified sand to sandy loam	SC-SM, SM, SP, SP-SM	A-1, A-2, A-3	0- 0- 0	0- 0- 0	75-88-100	65-83-100	35-65-95	0-18- 35	10-13-15	NP-3 -5

516 of 1520

Engineering Properties–Nantucket County, Massachusetts														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*Pct*	*Pct*					*Pct*	
294B—Evesboro sand, 3 to 8 percent slopes														
Evesboro	85	A	0-6	Sand	SP, SP-SM	A-1, A-2, A-3	0- 0- 0	0- 0- 0	90-95-100	85-93-100	40-65-90	0- 6- 12	10-13-15	NP-2 -3
			6-26	Loamy sand	SP, SP-SM	A-1, A-2, A-3	0- 0- 0	0- 0- 0	90-95-100	85-93-100	40-65-90	0- 6- 12	10-13-15	NP-2 -3
			26-60	Stratified sand to sandy loam	SC-SM, SM, SP, SP-SM	A-1, A-2, A-3	0- 0- 0	0- 0- 0	75-88-100	65-83-100	35-65-95	0-18- 35	10-13-15	NP-3 -5

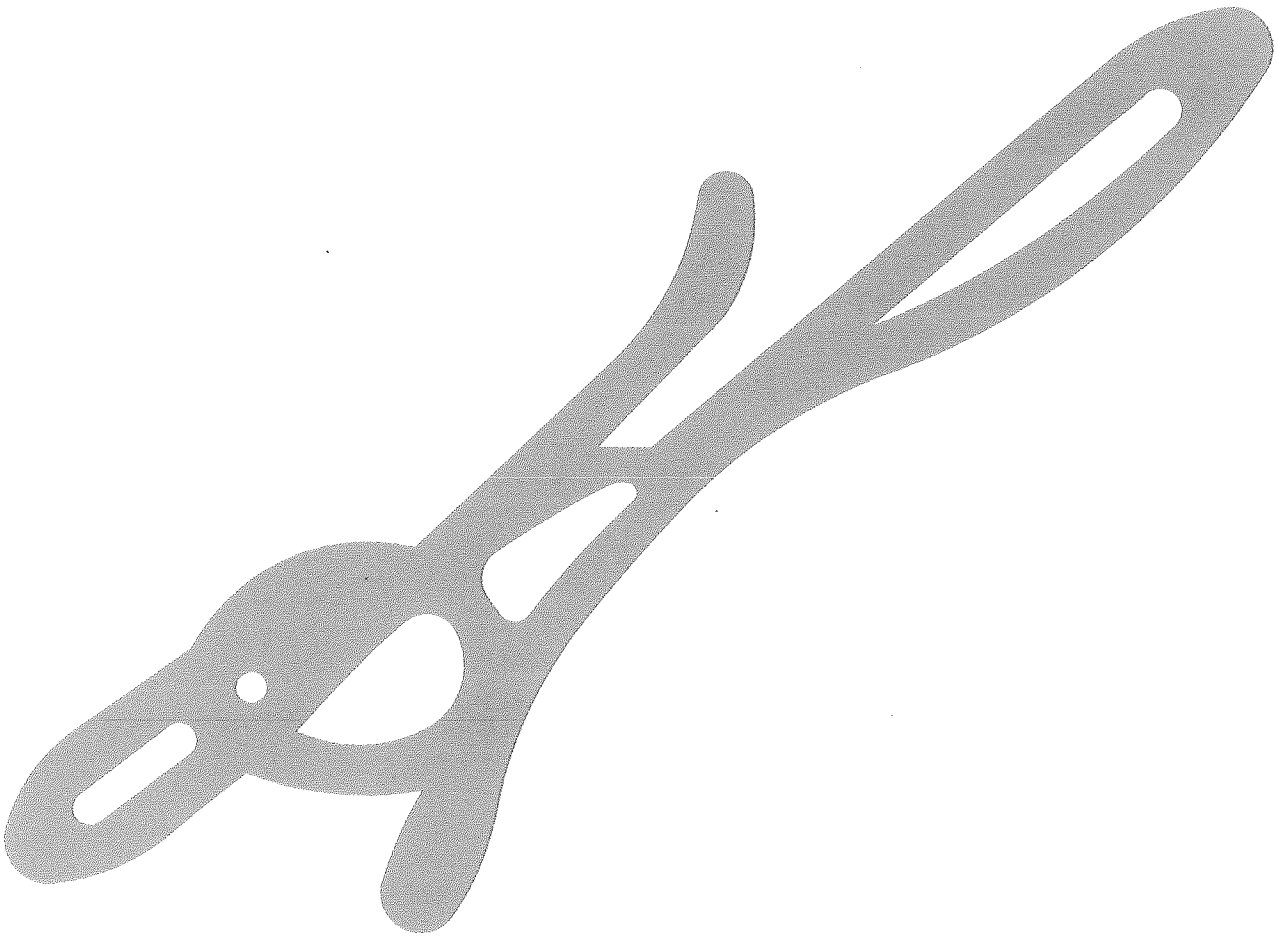
Data Source Information

Soil Survey Area: Nantucket County, Massachusetts
Survey Area Data: Version 12, Sep 19, 2014

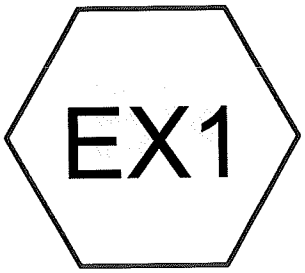
517 of 1520

APPENDIX B:

HydroCAD® Calculations



EXISTING RUNOFF



Existing Watershed

Subcat Reach Pond Link

Routing Diagram for NAN-0107J-E
Prepared by Hayes Engineering, Inc., Printed 6/13/2016
HydroCAD® 10.00-16 s/n 03206 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
89,730	39	>75% Grass cover, Good, HSG A (EX1)
87,123	48	Brush, Poor, HSG A (EX1)
28,003	30	Meadow, non-grazed, HSG A (EX1)
40,269	77	Newly graded area, HSG A (EX1)
38,088	98	Roofs, HSG A (EX1)
283,213	**54**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatchme Numbers
89,730	0	0	0	0	89,730	>75% Grass cover, Good	EX1
87,123	0	0	0	0	87,123	Brush, Poor	EX1
28,003	0	0	0	0	28,003	Meadow, non-grazed	EX1
40,269	0	0	0	0	40,269	Newly graded area	EX1
38,088	0	0	0	0	38,088	Roofs	EX1
283,213	**0**	**0**	**0**	**0**	**283,213**	**TOTAL AREA**	

Time span=0.00-40.00 hrs, dt=0.02 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX1: Existing Watershed Runoff Area=283,213 sf 13.45% Impervious Runoff Depth=0.35"
Flow Length=610' Tc=24.0 min CN=54 Runoff=0.86 cfs 8,149 cf

Total Runoff Area = 283,213 sf Runoff Volume = 8,149 cf Average Runoff Depth = 0.35"
86.55% Pervious = 245,125 sf 13.45% Impervious = 38,088 sf

Summary for Subcatchment EX1: Existing Watershed

Runoff = 0.86 cfs @ 12.56 hrs, Volume= 8,149 cf, Depth= 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Type III 24-hr 2 Year Rainfall=3.60"

Area (sf)	CN	Description
38,088	98	Roofs, HSG A
40,269	77	Newly graded area, HSG A
28,003	30	Meadow, non-grazed, HSG A
87,123	48	Brush, Poor, HSG A
89,730	39	>75% Grass cover, Good, HSG A
283,213	54	Weighted Average
245,125		86.55% Pervious Area
38,088		13.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.2	50	0.0050	0.04		**Sheet Flow, Sheet1** Woods: Light underbrush n= 0.400 P2= 3.60"
2.0	368	0.0375	3.12		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
1.8	192	0.0120	1.76		**Shallow Concentrated Flow, Shallow2** Unpaved Kv= 16.1 fps
24.0	610	Total			

Time span=0.00-40.00 hrs, dt=0.02 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX1: Existing Watershed Runoff Area=283,213 sf 13.45% Impervious Runoff Depth=0.87"
Flow Length=610' Tc=24.0 min CN=54 Runoff=3.19 cfs 20,582 cf

Total Runoff Area = 283,213 sf Runoff Volume = 20,582 cf Average Runoff Depth = 0.87"
86.55% Pervious = 245,125 sf 13.45% Impervious = 38,088 sf

Summary for Subcatchment EX1: Existing Watershed

Runoff = 3.19 cfs @ 12.42 hrs, Volume= 20,582 cf, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Type III 24-hr 10 Year Rainfall=4.90"

Area (sf)	CN	Description
38,088	98	Roofs, HSG A
40,269	77	Newly graded area, HSG A
28,003	30	Meadow, non-grazed, HSG A
87,123	48	Brush, Poor, HSG A
89,730	39	>75% Grass cover, Good, HSG A
283,213	54	Weighted Average
245,125		86.55% Pervious Area
38,088		13.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.2	50	0.0050	0.04		**Sheet Flow, Sheet1** Woods: Light underbrush n= 0.400 P2= 3.60"
2.0	368	0.0375	3.12		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
1.8	192	0.0120	1.76		**Shallow Concentrated Flow, Shallow2** Unpaved Kv= 16.1 fps
24.0	610	Total			

Time span=0.00-40.00 hrs, dt=0.02 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX1: Existing Watershed Runoff Area=283,213 sf 13.45% Impervious Runoff Depth=1.33"
Flow Length=610' Tc=24.0 min CN=54 Runoff=5.42 cfs 31,393 cf

Total Runoff Area = 283,213 sf Runoff Volume = 31,393 cf Average Runoff Depth = 1.33"
86.55% Pervious = 245,125 sf 13.45% Impervious = 38,088 sf

Summary for Subcatchment EX1: Existing Watershed

Runoff = 5.42 cfs @ 12.39 hrs, Volume= 31,393 cf, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Type III 24-hr 25 Year Rainfall=5.80"

Area (sf)	CN	Description
38,088	98	Roofs, HSG A
40,269	77	Newly graded area, HSG A
28,003	30	Meadow, non-grazed, HSG A
87,123	48	Brush, Poor, HSG A
89,730	39	>75% Grass cover, Good, HSG A
283,213	54	Weighted Average
245,125		86.55% Pervious Area
38,088		13.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.2	50	0.0050	0.04		**Sheet Flow, Sheet1** Woods: Light underbrush n= 0.400 P2= 3.60"
2.0	368	0.0375	3.12		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
1.8	192	0.0120	1.76		**Shallow Concentrated Flow, Shallow2** Unpaved Kv= 16.1 fps
24.0	610	Total			

Time span=0.00-40.00 hrs, dt=0.02 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX1: Existing Watershed Runoff Area=283,213 sf 13.45% Impervious Runoff Depth=1.73"
Flow Length=610' Tc=24.0 min CN=54 Runoff=7.37 cfs 40,776 cf

Total Runoff Area = 283,213 sf Runoff Volume = 40,776 cf Average Runoff Depth = 1.73"
86.55% Pervious = 245,125 sf 13.45% Impervious = 38,088 sf

Summary for Subcatchment EX1: Existing Watershed

Runoff = 7.37 cfs @ 12.38 hrs, Volume= 40,776 cf, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Type III 24-hr 50 Year Rainfall=6.50"

Area (sf)	CN	Description
38,088	98	Roofs, HSG A
40,269	77	Newly graded area, HSG A
28,003	30	Meadow, non-grazed, HSG A
87,123	48	Brush, Poor, HSG A
89,730	39	>75% Grass cover, Good, HSG A
283,213	54	Weighted Average
245,125		86.55% Pervious Area
38,088		13.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.2	50	0.0050	0.04		**Sheet Flow, Sheet1** Woods: Light underbrush n= 0.400 P2= 3.60"
2.0	368	0.0375	3.12		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
1.8	192	0.0120	1.76		**Shallow Concentrated Flow, Shallow2** Unpaved Kv= 16.1 fps
24.0	610	Total			

Time span=0.00-40.00 hrs, dt=0.02 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX1: Existing Watershed Runoff Area=283,213 sf 13.45% Impervious Runoff Depth=2.16"
Flow Length=610' Tc=24.0 min CN=54 Runoff=9.49 cfs 50,873 cf

Total Runoff Area = 283,213 sf Runoff Volume = 50,873 cf Average Runoff Depth = 2.16"
86.55% Pervious = 245,125 sf 13.45% Impervious = 38,088 sf

Summary for Subcatchment EX1: Existing Watershed

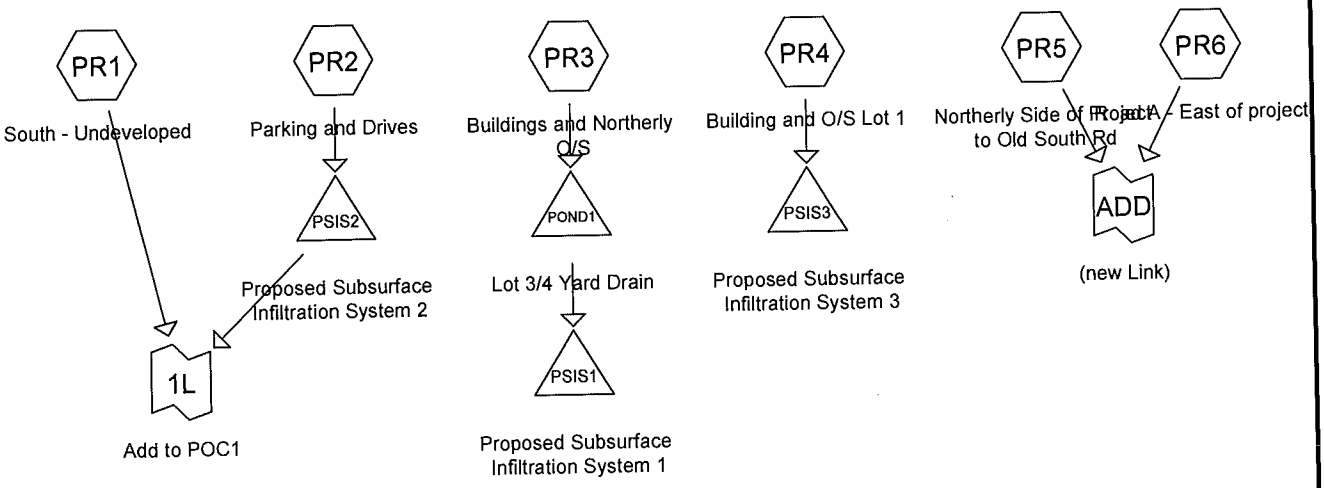
Runoff = 9.49 cfs @ 12.37 hrs, Volume= 50,873 cf, Depth= 2.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Type III 24-hr 100 Year Rainfall=7.20"

Area (sf)	CN	Description
38,088	98	Roofs, HSG A
40,269	77	Newly graded area, HSG A
28,003	30	Meadow, non-grazed, HSG A
87,123	48	Brush, Poor, HSG A
89,730	39	>75% Grass cover, Good, HSG A
283,213	54	Weighted Average
245,125		86.55% Pervious Area
38,088		13.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.2	50	0.0050	0.04		**Sheet Flow, Sheet1** Woods: Light underbrush n= 0.400 P2= 3.60"
2.0	368	0.0375	3.12		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
1.8	192	0.0120	1.76		**Shallow Concentrated Flow, Shallow2** Unpaved Kv= 16.1 fps
24.0	610	Total			

PROPOSED RUNOFF



Subcat Reach Pond Link

Routing Diagram for NAN-0107J-P
Prepared by Hayes Engineering, Inc., Printed 6/13/2016
HydroCAD® 10.00-16 s/n 03206 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
181,857	39	>75% Grass cover, Good, HSG A (PR1, PR2, PR3, PR4, PR5, PR6)
4,949	77	Newly graded area, HSG A (PR1)
59,246	98	Paved parking, HSG A (PR2)
23,968	98	Paved roads w/curbs & sewers, HSG A (PR5, PR6)
5,900	98	Roofs, HSG A (PR4)
6,075	98	Unconnected pavement, HSG A (PR1)
11,922	98	Unconnected roofs, HSG A (PR3)
293,917	**61**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subca Numbe
181,857	0	0	0	0	181,857	>75% Grass cover, Good	
4,949	0	0	0	0	4,949	Newly graded area	
59,246	0	0	0	0	59,246	Paved parking	
23,968	0	0	0	0	23,968	Paved roads w/curbs & sewers	
5,900	0	0	0	0	5,900	Roofs	
6,075	0	0	0	0	6,075	Unconnected pavement	
11,922	0	0	0	0	11,922	Unconnected roofs	
293,917	**0**	**0**	**0**	**0**	**293,917**	**TOTAL AREA**	

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PR1: South - Undeveloped Runoff Area=96,297 sf 6.31% Impervious Runoff Depth=0.06"
Flow Length=365' Tc=11.4 min UI Adjusted CN=43 Runoff=0.02 cfs 509 cf

Subcatchment PR2: Parking and Drives Runoff Area=93,320 sf 63.49% Impervious Runoff Depth=1.44"
Flow Length=392' Tc=10.1 min CN=76 Runoff=3.05 cfs 11,185 cf

Subcatchment PR3: Buildings and Northerly O/S Runoff Area=29,748 sf 40.08% Impervious Runoff Depth=0.71"
Flow Length=272' Slope=0.0100 '/' Tc=12.5 min CN=63 Runoff=0.36 cfs 1,757 cf

Subcatchment PR4: Building and O/S Lot 1 Runoff Area=17,215 sf 34.27% Impervious Runoff Depth=0.53"
Flow Length=67' Slope=0.0100 '/' Tc=10.4 min CN=59 Runoff=0.14 cfs 765 cf

Subcatchment PR5: Northerly Side of Project to Old Runoff Area=12,291 sf 74.09% Impervious Runoff Depth=1.94"
Tc=6.0 min CN=83 Runoff=0.63 cfs 1,990 cf

Subcatchment PR6: Road A - East of project Runoff Area=45,046 sf 32.99% Impervious Runoff Depth=0.49"
Tc=6.0 min CN=58 Runoff=0.36 cfs 1,850 cf

Pond POND1: Lot 3/4 Yard Drain Peak Elev=33.86' Storage=7 cf Inflow=0.36 cfs 1,757 cf
Discarded=0.02 cfs 153 cf Primary=0.34 cfs 1,604 cf Outflow=0.37 cfs 1,757 cf

Pond PSIS1: Proposed Subsurface Infiltration System 1 Peak Elev=25.65' Storage=202 cf Inflow=0.34 cfs 1,604 cf
Outflow=0.15 cfs 1,605 cf

Pond PSIS2: Proposed Subsurface Infiltration System Peak Elev=27.68' Storage=3,850 cf Inflow=3.05 cfs 11,185 cf
Discarded=0.39 cfs 11,191 cf Primary=0.00 cfs 0 cf Outflow=0.39 cfs 11,191 cf

Pond PSIS3: Proposed Subsurface Infiltration System 3 Peak Elev=25.25' Storage=45 cf Inflow=0.14 cfs 765 cf
Outflow=0.09 cfs 769 cf

Link 1L: Add to POC1 Inflow=0.02 cfs 509 cf
Primary=0.02 cfs 509 cf

Link ADD: (new Link) Inflow=0.98 cfs 3,840 cf
Primary=0.98 cfs 3,840 cf

Total Runoff Area = 293,917 sf Runoff Volume = 18,057 cf Average Runoff Depth = 0.74"
63.56% Pervious = 186,806 sf 36.44% Impervious = 107,111 sf

Summary for Subcatchment PR1: South - Undeveloped

Runoff = 0.02 cfs @ 15.17 hrs, Volume= 509 cf, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=3.60"

Area (sf)	CN	Adj	Description
6,075	98		Unconnected pavement, HSG A
4,949	77		Newly graded area, HSG A
85,273	39		>75% Grass cover, Good, HSG A
96,297	45	43	Weighted Average, UI Adjusted
90,222			93.69% Pervious Area
6,075			6.31% Impervious Area
6,075			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	50	0.0120	0.09		**Sheet Flow, Sheet1** Grass: Dense n= 0.240 P2= 3.60"
1.9	315	0.0300	2.79		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
11.4	365	Total			

Summary for Subcatchment PR2: Parking and Drives

Runoff = 3.05 cfs @ 12.15 hrs, Volume= 11,185 cf, Depth= 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=3.60"

Area (sf)	CN	Description
59,246	98	Paved parking, HSG A
34,074	39	>75% Grass cover, Good, HSG A
93,320	76	Weighted Average
34,074		36.51% Pervious Area
59,246		63.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0200	0.11		**Sheet Flow, Sheet** Grass: Dense n= 0.240 P2= 3.60"
0.6	127	0.0500	3.60		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
1.8	215	0.0100	2.03		**Shallow Concentrated Flow, Shallow2** Paved Kv= 20.3 fps
10.1	392	Total			

Summary for Subcatchment PR3: Buildings and Northerly O/S

Runoff = 0.36 cfs @ 12.21 hrs, Volume= 1,757 cf, Depth= 0.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=3.60"

Area (sf)	CN	Description
11,922	98	Unconnected roofs, HSG A
17,826	39	>75% Grass cover, Good, HSG A
29,748	63	Weighted Average
17,826		59.92% Pervious Area
11,922		40.08% Impervious Area
11,922		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.0100	0.08		**Sheet Flow, Sheet** Grass: Dense n= 0.240 P2= 3.60"
2.3	222	0.0100	1.61		**Shallow Concentrated Flow, Shallow** Unpaved Kv= 16.1 fps
12.5	272	Total			

Summary for Subcatchment PR4: Building and O/S Lot 1

Runoff = 0.14 cfs @ 12.20 hrs, Volume= 765 cf, Depth= 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=3.60"

Area (sf)	CN	Description
5,900	98	Roofs, HSG A
11,315	39	>75% Grass cover, Good, HSG A
17,215	59	Weighted Average
11,315		65.73% Pervious Area
5,900		34.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.0100	0.08		**Sheet Flow, Sheet1** Grass: Dense n= 0.240 P2= 3.60"
0.2	17	0.0100	1.61		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
10.4	67	Total			

Summary for Subcatchment PR5: Northerly Side of Project to Old South Rd

Runoff = 0.63 cfs @ 12.09 hrs, Volume= 1,990 cf, Depth= 1.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=3.60"

Area (sf)	CN	Description
9,106	98	Paved roads w/curbs & sewers, HSG A
3,185	39	>75% Grass cover, Good, HSG A
12,291	83	Weighted Average
3,185		25.91% Pervious Area
9,106		74.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc = 0.1h**

Summary for Subcatchment PR6: Road A - East of project

Runoff = 0.36 cfs @ 12.13 hrs, Volume= 1,850 cf, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=3.60"

Area (sf)	CN	Description
14,862	98	Paved roads w/curbs & sewers, HSG A
30,184	39	>75% Grass cover, Good, HSG A
45,046	58	Weighted Average
30,184		67.01% Pervious Area
14,862		32.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc = 0.1h**

Summary for Pond POND1: Lot 3/4 Yard Drain

Inflow Area = 29,748 sf, 40.08% Impervious, Inflow Depth = 0.71" for 2 Year event
Inflow = 0.36 cfs @ 12.21 hrs, Volume= 1,757 cf
Outflow = 0.37 cfs @ 12.21 hrs, Volume= 1,757 cf, Atten= 0%, Lag= 0.2 min
Discarded = 0.02 cfs @ 12.21 hrs, Volume= 153 cf
Primary = 0.34 cfs @ 12.21 hrs, Volume= 1,604 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 33.86' @ 12.21 hrs Surf.Area= 125 sf Storage= 7 cf

Plug-Flow detention time= 0.1 min calculated for 1,755 cf (100% of inflow)
Center-of-Mass det. time= 0.1 min (898.5 - 898.4)

Volume	Invert	Avail.Storage	Storage Description
#1	33.75'	1,004 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.75	4	0	0
34.00	275	35	35
34.50	750	256	291
35.00	2,100	713	1,004

Device	Routing	Invert	Outlet Devices
#1	Discarded	33.75'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	33.75'	**Nyoplast 10" Dome Grate Inlet**
			Head (feet) 0.00 0.10 0.20 1.00
			Disch. (cfs) 0.000 0.280 0.800 1.800

Discarded OutFlow Max=0.02 cfs @ 12.21 hrs HW=33.86' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.34 cfs @ 12.21 hrs HW=33.86' TW=25.19' (Dynamic Tailwater)
↑—**2=Nyoplast 10" Dome Grate Inlet** (Custom Controls 0.34 cfs)

Summary for Pond PSIS1: Proposed Subsurface Infiltration System 1

Inflow Area = 29,748 sf, 40.08% Impervious, Inflow Depth = 0.65" for 2 Year event
Inflow = 0.34 cfs @ 12.21 hrs, Volume= 1,604 cf
Outflow = 0.15 cfs @ 12.15 hrs, Volume= 1,605 cf, Atten= 56%, Lag= 0.0 min
Discarded = 0.15 cfs @ 12.15 hrs, Volume= 1,605 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 25.65' @ 12.61 hrs Surf.Area= 781 sf Storage= 202 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 6.1 min (900.8 - 894.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	25.00'	1,355 cf	**10.33'W x 75.54'L x 6.75'H Field A**
			5,269 cf Overall - 1,882 cf Embedded = 3,387 cf x 40.0% Voids
#2A	25.75'	1,882 cf	**StormTech MC-4500 +Cap** x 17 Inside #1
			Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
			Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
			Cap Storage= +35.7 cf x 2 x 1 rows = 71.4 cf
		3,237 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	**8.270 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.15 cfs @ 12.15 hrs HW=25.07' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.15 cfs)

Summary for Pond PSIS2: Proposed Subsurface Infiltration System 2

Inflow Area = 93,320 sf, 63.49% Impervious, Inflow Depth = 1.44" for 2 Year event
Inflow = 3.05 cfs @ 12.15 hrs, Volume= 11,185 cf
Outflow = 0.39 cfs @ 11.85 hrs, Volume= 11,191 cf, Atten= 87%, Lag= 0.0 min
Discarded = 0.39 cfs @ 11.85 hrs, Volume= 11,191 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 27.68' @ 13.09 hrs Surf.Area= 2,038 sf Storage= 3,850 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 83.7 min (936.4 - 852.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	25.00'	3,373 cf	**28.50'W x 71.52'L x 6.75'H Field A** 13,758 cf Overall - 5,326 cf Embedded = 8,432 cf x 40.0% Voids
#2A	25.75'	5,326 cf	**StormTech MC-4500 +Cap** x 48 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 3 Rows of 16 Chambers Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
		8,699 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	**8.270 in/hr Exfiltration over Horizontal area**
#2	Primary	30.00'	**18.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.00' / 29.50' S= 0.0167 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Discarded OutFlow Max=0.39 cfs @ 11.85 hrs HW=25.07' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.39 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=25.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.00 cfs)

Summary for Pond PSIS3: Proposed Subsurface Infiltration System 3

Inflow Area = 17,215 sf, 34.27% Impervious, Inflow Depth = 0.53" for 2 Year event
Inflow = 0.14 cfs @ 12.20 hrs, Volume= 765 cf
Outflow = 0.09 cfs @ 12.20 hrs, Volume= 769 cf, Atten= 38%, Lag= 0.0 min
Discarded = 0.09 cfs @ 12.20 hrs, Volume= 769 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 25.25' @ 12.51 hrs Surf.Area= 448 sf Storage= 45 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.0 min (916.5 - 914.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	25.00'	797 cf	**10.33'W x 43.34'L x 6.75'H Field A** 3,023 cf Overall - 1,030 cf Embedded = 1,993 cf x 40.0% Voids
#2A	25.75'	1,030 cf	**StormTech MC-4500 +Cap** x 9 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 1 rows = 71.4 cf
		1,827 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	**8.270 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.09 cfs @ 12.20 hrs HW=25.08' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Summary for Link 1L: Add to POC1

Inflow Area = 189,617 sf, 34.45% Impervious, Inflow Depth = 0.03" for 2 Year event
Inflow = 0.02 cfs @ 15.17 hrs, Volume= 509 cf
Primary = 0.02 cfs @ 15.17 hrs, Volume= 509 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Summary for Link ADD: (new Link)

Inflow Area = 57,337 sf, 41.80% Impervious, Inflow Depth = 0.80" for 2 Year event
Inflow = 0.98 cfs @ 12.11 hrs, Volume= 3,840 cf
Primary = 0.98 cfs @ 12.11 hrs, Volume= 3,840 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PR1: South - Undeveloped Runoff Area=96,297 sf 6.31% Impervious Runoff Depth=0.33"
Flow Length=365' Tc=11.4 min UI Adjusted CN=43 Runoff=0.25 cfs 2,617 cf

Subcatchment PR2: Parking and Drives Runoff Area=93,320 sf 63.49% Impervious Runoff Depth=2.45"
Flow Length=392' Tc=10.1 min CN=76 Runoff=5.30 cfs 19,079 cf

Subcatchment PR3: Buildings and Northerly O/S Runoff Area=29,748 sf 40.08% Impervious Runoff Depth=1.45"
Flow Length=272' Slope=0.0100 '/' Tc=12.5 min CN=63 Runoff=0.85 cfs 3,584 cf

Subcatchment PR4: Building and O/S Lot 1 Runoff Area=17,215 sf 34.27% Impervious Runoff Depth=1.18"
Flow Length=67' Slope=0.0100 '/' Tc=10.4 min CN=59 Runoff=0.40 cfs 1,690 cf

Subcatchment PR5: Northerly Side of Project to Old Runoff Area=12,291 sf 74.09% Impervious Runoff Depth=3.08"
Tc=6.0 min CN=83 Runoff=0.99 cfs 3,159 cf

Subcatchment PR6: Road A - East of project Runoff Area=45,046 sf 32.99% Impervious Runoff Depth=1.11"
Tc=6.0 min CN=58 Runoff=1.14 cfs 4,183 cf

Pond POND1: Lot 3/4 Yard Drain Peak Elev=33.95' Storage=23 cf Inflow=0.85 cfs 3,584 cf
Discarded=0.04 cfs 263 cf Primary=0.81 cfs 3,321 cf Outflow=0.85 cfs 3,584 cf

Pond PSIS1: Proposed Subsurface Infiltration System 1 Peak Elev=26.90' Storage=955 cf Inflow=0.81 cfs 3,321 cf
Outflow=0.15 cfs 3,325 cf

Pond PSIS2: Proposed Subsurface Infiltration System Peak Elev=30.31' Storage=7,494 cf Inflow=5.30 cfs 19,079 cf
Discarded=0.39 cfs 17,781 cf Primary=0.49 cfs 1,302 cf Outflow=0.88 cfs 19,083 cf

Pond PSIS3: Proposed Subsurface Infiltration System 3 Peak Elev=26.54' Storage=412 cf Inflow=0.40 cfs 1,690 cf
Outflow=0.09 cfs 1,694 cf

Link 1L: Add to POC1 Inflow=0.64 cfs 3,920 cf
Primary=0.64 cfs 3,920 cf

Link ADD: (new Link) Inflow=2.13 cfs 7,341 cf
Primary=2.13 cfs 7,341 cf

Total Runoff Area = 293,917 sf Runoff Volume = 34,312 cf Average Runoff Depth = 1.40"
63.56% Pervious = 186,806 sf 36.44% Impervious = 107,111 sf

Summary for Subcatchment PR1: South - Undeveloped

Runoff = 0.25 cfs @ 12.45 hrs, Volume= 2,617 cf, Depth= 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.90"

Area (sf)	CN	Adj	Description
6,075	98		Unconnected pavement, HSG A
4,949	77		Newly graded area, HSG A
85,273	39		>75% Grass cover, Good, HSG A
96,297	45	43	Weighted Average, UI Adjusted
90,222			93.69% Pervious Area
6,075			6.31% Impervious Area
6,075			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	50	0.0120	0.09		**Sheet Flow, Sheet1** Grass: Dense n= 0.240 P2= 3.60"
1.9	315	0.0300	2.79		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
11.4	365	Total			

Summary for Subcatchment PR2: Parking and Drives

Runoff = 5.30 cfs @ 12.15 hrs, Volume= 19,079 cf, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.90"

Area (sf)	CN	Description
59,246	98	Paved parking, HSG A
34,074	39	>75% Grass cover, Good, HSG A
93,320	76	Weighted Average
34,074		36.51% Pervious Area
59,246		63.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0200	0.11		**Sheet Flow, Sheet** Grass: Dense n= 0.240 P2= 3.60"
0.6	127	0.0500	3.60		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
1.8	215	0.0100	2.03		**Shallow Concentrated Flow, Shallow2** Paved Kv= 20.3 fps
10.1	392	Total			

Summary for Subcatchment PR3: Buildings and Northerly O/S

Runoff = 0.85 cfs @ 12.19 hrs, Volume= 3,584 cf, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.90"

Area (sf)	CN	Description
11,922	98	Unconnected roofs, HSG A
17,826	39	>75% Grass cover, Good, HSG A
29,748	63	Weighted Average
17,826		59.92% Pervious Area
11,922		40.08% Impervious Area
11,922		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.0100	0.08		**Sheet Flow, Sheet** Grass: Dense n= 0.240 P2= 3.60"
2.3	222	0.0100	1.61		**Shallow Concentrated Flow, Shallow** Unpaved Kv= 16.1 fps
12.5	272	Total			

Summary for Subcatchment PR4: Building and O/S Lot 1

Runoff = 0.40 cfs @ 12.17 hrs, Volume= 1,690 cf, Depth= 1.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.90"

Area (sf)	CN	Description
5,900	98	Roofs, HSG A
11,315	39	>75% Grass cover, Good, HSG A
17,215	59	Weighted Average
11,315		65.73% Pervious Area
5,900		34.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.0100	0.08		**Sheet Flow, Sheet1** Grass: Dense n= 0.240 P2= 3.60"
0.2	17	0.0100	1.61		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
10.4	67	Total			

Summary for Subcatchment PR5: Northerly Side of Project to Old South Rd

Runoff = 0.99 cfs @ 12.09 hrs, Volume= 3,159 cf, Depth= 3.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.90"

Area (sf)	CN	Description
9,106	98	Paved roads w/curbs & sewers, HSG A
3,185	39	>75% Grass cover, Good, HSG A
12,291	83	Weighted Average
3,185		25.91% Pervious Area
9,106		74.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc = 0.1h**

Summary for Subcatchment PR6: Road A - East of project

Runoff = 1.14 cfs @ 12.11 hrs, Volume= 4,183 cf, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.90"

Area (sf)	CN	Description
14,862	98	Paved roads w/curbs & sewers, HSG A
30,184	39	>75% Grass cover, Good, HSG A
45,046	58	Weighted Average
30,184		67.01% Pervious Area
14,862		32.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc = 0.1h**

Summary for Pond POND1: Lot 3/4 Yard Drain

Inflow Area = 29,748 sf, 40.08% Impervious, Inflow Depth = 1.45" for 10 Year event
Inflow = 0.85 cfs @ 12.19 hrs, Volume= 3,584 cf
Outflow = 0.85 cfs @ 12.21 hrs, Volume= 3,584 cf, Atten= 1%, Lag= 0.9 min
Discarded = 0.04 cfs @ 12.21 hrs, Volume= 263 cf
Primary = 0.81 cfs @ 12.21 hrs, Volume= 3,321 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 33.95' @ 12.21 hrs Surf.Area= 226 sf Storage= 23 cf

Plug-Flow detention time= 0.2 min calculated for 3,580 cf (100% of inflow)
Center-of-Mass det. time= 0.2 min (874.1 - 873.8)

Volume	Invert	Avail.Storage	Storage Description
#1	33.75'	1,004 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.75	4	0	0
34.00	275	35	35
34.50	750	256	291
35.00	2,100	713	1,004

Device	Routing	Invert	Outlet Devices
#1	Discarded	33.75'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	33.75'	**Nyoplast 10" Dome Grate Inlet**
			Head (feet) 0.00 0.10 0.20 1.00
			Disch. (cfs) 0.000 0.280 0.800 1.800

Discarded OutFlow Max=0.04 cfs @ 12.21 hrs HW=33.95' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.80 cfs @ 12.21 hrs HW=33.95' TW=25.90' (Dynamic Tailwater)
↑—**2=Nyoplast 10" Dome Grate Inlet** (Custom Controls 0.80 cfs)

Summary for Pond PSIS1: Proposed Subsurface Infiltration System 1

Inflow Area =	29,748 sf,	40.08% Impervious,	Inflow Depth =	1.34"	for 10 Year event
Inflow =	0.81 cfs @	12.21 hrs, Volume=	3,321 cf		
Outflow =	0.15 cfs @	12.05 hrs, Volume=	3,325 cf,	Atten= 81%,	Lag= 0.0 min
Discarded =	0.15 cfs @	12.05 hrs, Volume=	3,325 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 26.90' @ 12.96 hrs Surf.Area= 781 sf Storage= 955 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 49.4 min (920.7 - 871.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	25.00'	1,355 cf	**10.33'W x 75.54'L x 6.75'H Field A** 5,269 cf Overall - 1,882 cf Embedded = 3,387 cf x 40.0% Voids
#2A	25.75'	1,882 cf	**StormTech MC-4500 +Cap** x 17 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 1 rows = 71.4 cf
		3,237 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	**8.270 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.15 cfs @ 12.05 hrs HW=25.16' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.15 cfs)

Summary for Pond PSIS2: Proposed Subsurface Infiltration System 2

Inflow Area =	93,320 sf,	63.49% Impervious,	Inflow Depth =	2.45"	for 10 Year event
Inflow =	5.30 cfs @	12.15 hrs, Volume=	19,079 cf		
Outflow =	0.88 cfs @	12.77 hrs, Volume=	19,083 cf,	Atten= 83%,	Lag= 37.1 min
Discarded =	0.39 cfs @	11.70 hrs, Volume=	17,781 cf		
Primary =	0.49 cfs @	12.77 hrs, Volume=	1,302 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 30.31' @ 12.77 hrs Surf.Area= 2,038 sf Storage= 7,494 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 168.8 min (1,005.8 - 837.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	25.00'	3,373 cf	**28.50'W x 71.52'L x 6.75'H Field A** 13,758 cf Overall - 5,326 cf Embedded = 8,432 cf x 40.0% Voids
#2A	25.75'	5,326 cf	**StormTech MC-4500 +Cap** x 48 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 3 Rows of 16 Chambers Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
		8,699 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	**8.270 in/hr Exfiltration over Horizontal area**
#2	Primary	30.00'	**18.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.00' / 29.50' S= 0.0167 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Discarded OutFlow Max=0.39 cfs @ 11.70 hrs HW=25.09' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.39 cfs)

Primary OutFlow Max=0.49 cfs @ 12.77 hrs HW=30.31' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Inlet Controls 0.49 cfs @ 1.88 fps)

Summary for Pond PSIS3: Proposed Subsurface Infiltration System 3

Inflow Area = 17,215 sf, 34.27% Impervious, Inflow Depth = 1.18" for 10 Year event
Inflow = 0.40 cfs @ 12.17 hrs, Volume= 1,690 cf
Outflow = 0.09 cfs @ 12.05 hrs, Volume= 1,694 cf, Atten= 79%, Lag= 0.0 min
Discarded = 0.09 cfs @ 12.05 hrs, Volume= 1,694 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 26.54' @ 12.83 hrs Surf.Area= 448 sf Storage= 412 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 34.3 min (918.6 - 884.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	25.00'	797 cf	**10.33'W x 43.34'L x 6.75'H Field A** 3,023 cf Overall - 1,030 cf Embedded = 1,993 cf x 40.0% Voids
#2A	25.75'	1,030 cf	**StormTech MC-4500 +Cap** x 9 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 1 rows = 71.4 cf
		1,827 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	**8.270 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.09 cfs @ 12.05 hrs HW=25.11' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Summary for Link 1L: Add to POC1

Inflow Area = 189,617 sf, 34.45% Impervious, Inflow Depth = 0.25" for 10 Year event
Inflow = 0.64 cfs @ 12.76 hrs, Volume= 3,920 cf
Primary = 0.64 cfs @ 12.76 hrs, Volume= 3,920 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Summary for Link ADD: (new Link)

Inflow Area = 57,337 sf, 41.80% Impervious, Inflow Depth = 1.54" for 10 Year event
Inflow = 2.13 cfs @ 12.10 hrs, Volume= 7,341 cf
Primary = 2.13 cfs @ 12.10 hrs, Volume= 7,341 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PR1: South - Undeveloped Runoff Area=96,297 sf 6.31% Impervious Runoff Depth=0.60"
Flow Length=365' Tc=11.4 min UI Adjusted CN=43 Runoff=0.64 cfs 4,850 cf

Subcatchment PR2: Parking and Drives Runoff Area=93,320 sf 63.49% Impervious Runoff Depth=3.21"
Flow Length=392' Tc=10.1 min CN=76 Runoff=6.94 cfs 24,949 cf

Subcatchment PR3: Buildings and Northerly O/S Runoff Area=29,748 sf 40.08% Impervious Runoff Depth=2.04"
Flow Length=272' Slope=0.0100 '/' Tc=12.5 min CN=63 Runoff=1.25 cfs 5,052 cf

Subcatchment PR4: Building and O/S Lot 1 Runoff Area=17,215 sf 34.27% Impervious Runoff Depth=1.71"
Flow Length=67' Slope=0.0100 '/' Tc=10.4 min CN=59 Runoff=0.63 cfs 2,456 cf

Subcatchment PR5: Northerly Side of Project to Old Runoff Area=12,291 sf 74.09% Impervious Runoff Depth=3.91"
Tc=6.0 min CN=83 Runoff=1.25 cfs 4,001 cf

Subcatchment PR6: Road A - East of project Runoff Area=45,046 sf 32.99% Impervious Runoff Depth=1.63"
Tc=6.0 min CN=58 Runoff=1.79 cfs 6,132 cf

Pond POND1: Lot 3/4 Yard Drain Peak Elev=34.17' Storage=93 cf Inflow=1.25 cfs 5,052 cf
Discarded=0.08 cfs 369 cf Primary=1.07 cfs 4,683 cf Outflow=1.15 cfs 5,052 cf

Pond PSIS1: Proposed Subsurface Infiltration System 1 Peak Elev=28.11' Storage=1,673 cf Inflow=1.07 cfs 4,683 cf
Outflow=0.15 cfs 4,690 cf

Pond PSIS2: Proposed Subsurface Infiltration System Peak Elev=30.82' Storage=7,940 cf Inflow=6.94 cfs 24,949 cf
Discarded=0.39 cfs 19,678 cf Primary=3.04 cfs 5,277 cf Outflow=3.44 cfs 24,955 cf

Pond PSIS3: Proposed Subsurface Infiltration System 3 Peak Elev=27.67' Storage=799 cf Inflow=0.63 cfs 2,456 cf
Outflow=0.09 cfs 2,462 cf

Link 1L: Add to POC1 Inflow=3.67 cfs 10,128 cf
Primary=3.67 cfs 10,128 cf

Link ADD: (new Link) Inflow=3.03 cfs 10,133 cf
Primary=3.03 cfs 10,133 cf

Total Runoff Area = 293,917 sf Runoff Volume = 47,440 cf Average Runoff Depth = 1.94"
63.56% Pervious = 186,806 sf 36.44% Impervious = 107,111 sf

Summary for Subcatchment PR1: South - Undeveloped

Runoff = 0.64 cfs @ 12.34 hrs, Volume= 4,850 cf, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=5.80"

Area (sf)	CN	Adj	Description
6,075	98		Unconnected pavement, HSG A
4,949	77		Newly graded area, HSG A
85,273	39		>75% Grass cover, Good, HSG A
96,297	45	43	Weighted Average, UI Adjusted
90,222			93.69% Pervious Area
6,075			6.31% Impervious Area
6,075			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	50	0.0120	0.09		**Sheet Flow, Sheet1** Grass: Dense n= 0.240 P2= 3.60"
1.9	315	0.0300	2.79		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
11.4	365	Total			

Summary for Subcatchment PR2: Parking and Drives

Runoff = 6.94 cfs @ 12.15 hrs, Volume= 24,949 cf, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=5.80"

Area (sf)	CN	Description
59,246	98	Paved parking, HSG A
34,074	39	>75% Grass cover, Good, HSG A
93,320	76	Weighted Average
34,074		36.51% Pervious Area
59,246		63.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0200	0.11		**Sheet Flow, Sheet** Grass: Dense n= 0.240 P2= 3.60"
0.6	127	0.0500	3.60		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
1.8	215	0.0100	2.03		**Shallow Concentrated Flow, Shallow2** Paved Kv= 20.3 fps
10.1	392	Total			

Summary for Subcatchment PR3: Buildings and Northerly O/S

Runoff = 1.25 cfs @ 12.19 hrs, Volume= 5,052 cf, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=5.80"

Area (sf)	CN	Description
11,922	98	Unconnected roofs, HSG A
17,826	39	>75% Grass cover, Good, HSG A
29,748	63	Weighted Average
17,826		59.92% Pervious Area
11,922		40.08% Impervious Area
11,922		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.0100	0.08		**Sheet Flow, Sheet** Grass: Dense n= 0.240 P2= 3.60"
2.3	222	0.0100	1.61		**Shallow Concentrated Flow, Shallow** Unpaved Kv= 16.1 fps
12.5	272	Total			

Summary for Subcatchment PR4: Building and O/S Lot 1

Runoff = 0.63 cfs @ 12.16 hrs, Volume= 2,456 cf, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=5.80"

Area (sf)	CN	Description
5,900	98	Roofs, HSG A
11,315	39	>75% Grass cover, Good, HSG A
17,215	59	Weighted Average
11,315		65.73% Pervious Area
5,900		34.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.0100	0.08		**Sheet Flow, Sheet1** Grass: Dense n= 0.240 P2= 3.60"
0.2	17	0.0100	1.61		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
10.4	67	Total			

Summary for Subcatchment PR5: Northerly Side of Project to Old South Rd

Runoff = 1.25 cfs @ 12.09 hrs, Volume= 4,001 cf, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=5.80"

Area (sf)	CN	Description
9,106	98	Paved roads w/curbs & sewers, HSG A
3,185	39	>75% Grass cover, Good, HSG A
12,291	83	Weighted Average
3,185		25.91% Pervious Area
9,106		74.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc = 0.1h**

Summary for Subcatchment PR6: Road A - East of project

Runoff = 1.79 cfs @ 12.10 hrs, Volume= 6,132 cf, Depth= 1.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=5.80"

Area (sf)	CN	Description
14,862	98	Paved roads w/curbs & sewers, HSG A
30,184	39	>75% Grass cover, Good, HSG A
45,046	58	Weighted Average
30,184		67.01% Pervious Area
14,862		32.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc = 0.1h**

Summary for Pond POND1: Lot 3/4 Yard Drain

Inflow Area = 29,748 sf, 40.08% Impervious, Inflow Depth = 2.04" for 25 Year event
Inflow = 1.25 cfs @ 12.19 hrs, Volume= 5,052 cf
Outflow = 1.15 cfs @ 12.25 hrs, Volume= 5,052 cf, Atten= 8%, Lag= 3.6 min
Discarded = 0.08 cfs @ 12.25 hrs, Volume= 369 cf
Primary = 1.07 cfs @ 12.25 hrs, Volume= 4,683 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 34.17' @ 12.25 hrs Surf.Area= 432 sf Storage= 93 cf

Plug-Flow detention time= 0.4 min calculated for 5,046 cf (100% of inflow)
Center-of-Mass det. time= 0.4 min (863.5 - 863.1)

Volume	Invert	Avail.Storage	Storage Description
#1	33.75'	1,004 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.75	4	0	0
34.00	275	35	35
34.50	750	256	291
35.00	2,100	713	1,004

Device	Routing	Invert	Outlet Devices
#1	Discarded	33.75'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	33.75'	**Nyoplast 10" Dome Grate Inlet**
			Head (feet) 0.00 0.10 0.20 1.00
			Disch. (cfs) 0.000 0.280 0.800 1.800

Discarded OutFlow Max=0.08 cfs @ 12.25 hrs HW=34.16' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=1.07 cfs @ 12.25 hrs HW=34.16' TW=26.48' (Dynamic Tailwater)
↑—**2=Nyoplast 10" Dome Grate Inlet** (Custom Controls 1.07 cfs)

Summary for Pond PSIS1: Proposed Subsurface Infiltration System 1

Inflow Area = 29,748 sf, 40.08% Impervious, Inflow Depth = 1.89" for 25 Year event
Inflow = 1.07 cfs @ 12.25 hrs, Volume= 4,683 cf
Outflow = 0.15 cfs @ 11.90 hrs, Volume= 4,690 cf, Atten= 86%, Lag= 0.0 min
Discarded = 0.15 cfs @ 11.90 hrs, Volume= 4,690 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 28.11' @ 13.38 hrs Surf.Area= 781 sf Storage= 1,673 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 101.1 min (962.8 - 861.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	25.00'	1,355 cf	**10.33'W x 75.54'L x 6.75'H Field A**
			5,269 cf Overall - 1,882 cf Embedded = 3,387 cf x 40.0% Voids
#2A	25.75'	1,882 cf	**StormTech MC-4500 +Cap** x 17 Inside #1
			Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
			Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
			Cap Storage= +35.7 cf x 2 x 1 rows = 71.4 cf
		3,237 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	**8.270 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.15 cfs @ 11.90 hrs HW=25.07' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.15 cfs)

Summary for Pond PSIS2: Proposed Subsurface Infiltration System 2

Inflow Area = 93,320 sf, 63.49% Impervious, Inflow Depth = 3.21" for 25 Year event
Inflow = 6.94 cfs @ 12.15 hrs, Volume= 24,949 cf
Outflow = 3.44 cfs @ 12.41 hrs, Volume= 24,955 cf, Atten= 51%, Lag= 15.6 min
Discarded = 0.39 cfs @ 11.50 hrs, Volume= 19,678 cf
Primary = 3.04 cfs @ 12.41 hrs, Volume= 5,277 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 30.82' @ 12.41 hrs Surf.Area= 2,038 sf Storage= 7,940 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 148.1 min (977.4 - 829.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	25.00'	3,373 cf	**28.50'W x 71.52'L x 6.75'H Field A** 13,758 cf Overall - 5,326 cf Embedded = 8,432 cf x 40.0% Voids
#2A	25.75'	5,326 cf	**StormTech MC-4500 +Cap** x 48 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 3 Rows of 16 Chambers Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
		8,699 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	**8.270 in/hr Exfiltration over Horizontal area**
#2	Primary	30.00'	**18.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.00' / 29.50' S= 0.0167 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Discarded OutFlow Max=0.39 cfs @ 11.50 hrs HW=25.09' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.39 cfs)

Primary OutFlow Max=3.00 cfs @ 12.41 hrs HW=30.81' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 3.00 cfs @ 3.07 fps)

Summary for Pond PSIS3: Proposed Subsurface Infiltration System 3

Inflow Area =	17,215 sf,	34.27% Impervious,	Inflow Depth =	1.71" for 25 Year event
Inflow =	0.63 cfs @	12.16 hrs, Volume=	2,456 cf	
Outflow =	0.09 cfs @	11.95 hrs, Volume=	2,462 cf,	Atten= 86%, Lag= 0.0 min
Discarded =	0.09 cfs @	11.95 hrs, Volume=	2,462 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 27.67' @ 13.22 hrs Surf.Area= 448 sf Storage= 799 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 82.6 min (954.5 - 871.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	25.00'	797 cf	**10.33'W x 43.34'L x 6.75'H Field A** 3,023 cf Overall - 1,030 cf Embedded = 1,993 cf x 40.0% Voids
#2A	25.75'	1,030 cf	**StormTech MC-4500 +Cap** x 9 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 1 rows = 71.4 cf
		1,827 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	**8.270 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.09 cfs @ 11.95 hrs HW=25.10' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Summary for Link 1L: Add to POC1

Inflow Area = 189,617 sf, 34.45% Impervious, Inflow Depth = 0.64" for 25 Year event
Inflow = 3.67 cfs @ 12.40 hrs, Volume= 10,128 cf
Primary = 3.67 cfs @ 12.40 hrs, Volume= 10,128 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Summary for Link ADD: (new Link)

Inflow Area = 57,337 sf, 41.80% Impervious, Inflow Depth = 2.12" for 25 Year event
Inflow = 3.03 cfs @ 12.10 hrs, Volume= 10,133 cf
Primary = 3.03 cfs @ 12.10 hrs, Volume= 10,133 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PR1: South - Undeveloped Runoff Area=96,297 sf 6.31% Impervious Runoff Depth=0.87"
Flow Length=365' Tc=11.4 min UI Adjusted CN=43 Runoff=1.11 cfs 6,950 cf

Subcatchment PR2: Parking and Drives Runoff Area=93,320 sf 63.49% Impervious Runoff Depth=3.82"
Flow Length=392' Tc=10.1 min CN=76 Runoff=8.25 cfs 29,671 cf

Subcatchment PR3: Buildings and Northerly O/S Runoff Area=29,748 sf 40.08% Impervious Runoff Depth=2.53"
Flow Length=272' Slope=0.0100 '/' Tc=12.5 min CN=63 Runoff=1.58 cfs 6,278 cf

Subcatchment PR4: Building and O/S Lot 1 Runoff Area=17,215 sf 34.27% Impervious Runoff Depth=2.17"
Flow Length=67' Slope=0.0100 '/' Tc=10.4 min CN=59 Runoff=0.81 cfs 3,107 cf

Subcatchment PR5: Northerly Side of Project to Old Runoff Area=12,291 sf 74.09% Impervious Runoff Depth=4.56"
Tc=6.0 min CN=83 Runoff=1.45 cfs 4,668 cf

Subcatchment PR6: Road A - East of project Runoff Area=45,046 sf 32.99% Impervious Runoff Depth=2.08"
Tc=6.0 min CN=58 Runoff=2.34 cfs 7,793 cf

Pond POND1: Lot 3/4 Yard Drain Peak Elev=34.34' Storage=181 cf Inflow=1.58 cfs 6,278 cf
Discarded=0.11 cfs 467 cf Primary=1.28 cfs 5,811 cf Outflow=1.40 cfs 6,278 cf

Pond PSIS1: Proposed Subsurface Infiltration System 1 Peak Elev=29.33' Storage=2,337 cf Inflow=1.28 cfs 5,811 cf
Outflow=0.15 cfs 5,814 cf

Pond PSIS2: Proposed Subsurface Infiltration System Peak Elev=31.11' Storage=8,180 cf Inflow=8.25 cfs 29,671 cf
Discarded=0.39 cfs 21,037 cf Primary=5.06 cfs 8,666 cf Outflow=5.45 cfs 29,703 cf

Pond PSIS3: Proposed Subsurface Infiltration System 3 Peak Elev=28.86' Storage=1,176 cf Inflow=0.81 cfs 3,107 cf
Outflow=0.09 cfs 3,108 cf

Link 1L: Add to POC1 Inflow=6.13 cfs 15,616 cf
Primary=6.13 cfs 15,616 cf

Link ADD: (new Link) Inflow=3.79 cfs 12,461 cf
Primary=3.79 cfs 12,461 cf

Total Runoff Area = 293,917 sf Runoff Volume = 58,466 cf Average Runoff Depth = 2.39"
63.56% Pervious = 186,806 sf 36.44% Impervious = 107,111 sf

Summary for Subcatchment PR1: South - Undeveloped

Runoff = 1.11 cfs @ 12.24 hrs, Volume= 6,950 cf, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Year Rainfall=6.50"

Area (sf)	CN	Adj	Description
6,075	98		Unconnected pavement, HSG A
4,949	77		Newly graded area, HSG A
85,273	39		>75% Grass cover, Good, HSG A
96,297	45	43	Weighted Average, UI Adjusted
90,222			93.69% Pervious Area
6,075			6.31% Impervious Area
6,075			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	50	0.0120	0.09		**Sheet Flow, Sheet1** Grass: Dense n= 0.240 P2= 3.60"
1.9	315	0.0300	2.79		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
11.4	365	Total			

Summary for Subcatchment PR2: Parking and Drives

Runoff = 8.25 cfs @ 12.14 hrs, Volume= 29,671 cf, Depth= 3.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Year Rainfall=6.50"

Area (sf)	CN	Description
59,246	98	Paved parking, HSG A
34,074	39	>75% Grass cover, Good, HSG A
93,320	76	Weighted Average
34,074		36.51% Pervious Area
59,246		63.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0200	0.11		**Sheet Flow, Sheet** Grass: Dense n= 0.240 P2= 3.60"
0.6	127	0.0500	3.60		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
1.8	215	0.0100	2.03		**Shallow Concentrated Flow, Shallow2** Paved Kv= 20.3 fps
10.1	392	Total			

Summary for Subcatchment PR3: Buildings and Northerly O/S

Runoff = 1.58 cfs @ 12.18 hrs, Volume= 6,278 cf, Depth= 2.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Year Rainfall=6.50"

Area (sf)	CN	Description
11,922	98	Unconnected roofs, HSG A
17,826	39	>75% Grass cover, Good, HSG A
29,748	63	Weighted Average
17,826		59.92% Pervious Area
11,922		40.08% Impervious Area
11,922		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.0100	0.08		**Sheet Flow, Sheet** Grass: Dense n= 0.240 P2= 3.60"
2.3	222	0.0100	1.61		**Shallow Concentrated Flow, Shallow** Unpaved Kv= 16.1 fps
12.5	272	Total			

Summary for Subcatchment PR4: Building and O/S Lot 1

Runoff = 0.81 cfs @ 12.16 hrs, Volume= 3,107 cf, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Year Rainfall=6.50"

Area (sf)	CN	Description
5,900	98	Roofs, HSG A
11,315	39	>75% Grass cover, Good, HSG A
17,215	59	Weighted Average
11,315		65.73% Pervious Area
5,900		34.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.0100	0.08		**Sheet Flow, Sheet1** Grass: Dense n= 0.240 P2= 3.60"
0.2	17	0.0100	1.61		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
10.4	67	Total			

Summary for Subcatchment PR5: Northerly Side of Project to Old South Rd

Runoff = 1.45 cfs @ 12.09 hrs, Volume= 4,668 cf, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Year Rainfall=6.50"

Area (sf)	CN	Description
9,106	98	Paved roads w/curbs & sewers, HSG A
3,185	39	>75% Grass cover, Good, HSG A
12,291	83	Weighted Average
3,185		25.91% Pervious Area
9,106		74.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc = 0.1h**

Summary for Subcatchment PR6: Road A - East of project

Runoff = 2.34 cfs @ 12.10 hrs, Volume= 7,793 cf, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Year Rainfall=6.50"

Area (sf)	CN	Description
14,862	98	Paved roads w/curbs & sewers, HSG A
30,184	39	>75% Grass cover, Good, HSG A
45,046	58	Weighted Average
30,184		67.01% Pervious Area
14,862		32.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc = 0.1h**

Summary for Pond POND1: Lot 3/4 Yard Drain

Inflow Area = 29,748 sf, 40.08% Impervious, Inflow Depth = 2.53" for 50 Year event
Inflow = 1.58 cfs @ 12.18 hrs, Volume= 6,278 cf
Outflow = 1.40 cfs @ 12.26 hrs, Volume= 6,278 cf, Atten= 12%, Lag= 4.6 min
Discarded = 0.11 cfs @ 12.26 hrs, Volume= 467 cf
Primary = 1.28 cfs @ 12.26 hrs, Volume= 5,811 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 34.34' @ 12.26 hrs Surf.Area= 594 sf Storage= 181 cf

Plug-Flow detention time= 0.6 min calculated for 6,270 cf (100% of inflow)
Center-of-Mass det. time= 0.6 min (857.2 - 856.6)

Volume	Invert	Avail.Storage	Storage Description
#1	33.75'	1,004 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.75	4	0	0
34.00	275	35	35
34.50	750	256	291
35.00	2,100	713	1,004

Device	Routing	Invert	Outlet Devices
#1	Discarded	33.75'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	33.75'	**Nyoplast 10" Dome Grate Inlet**
			Head (feet) 0.00 0.10 0.20 1.00
			Disch. (cfs) 0.000 0.280 0.800 1.800

Discarded OutFlow Max=0.11 cfs @ 12.26 hrs HW=34.33' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=1.28 cfs @ 12.26 hrs HW=34.33' TW=26.93' (Dynamic Tailwater)
2=Nyoplast 10" Dome Grate Inlet (Custom Controls 1.28 cfs)

Summary for Pond PSIS1: Proposed Subsurface Infiltration System 1

Inflow Area = 29,748 sf, 40.08% Impervious, Inflow Depth = 2.34" for 50 Year event
Inflow = 1.28 cfs @ 12.26 hrs, Volume= 5,811 cf
Outflow = 0.15 cfs @ 11.85 hrs, Volume= 5,814 cf, Atten= 88%, Lag= 0.0 min
Discarded = 0.15 cfs @ 11.85 hrs, Volume= 5,814 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 29.33' @ 13.92 hrs Surf.Area= 781 sf Storage= 2,337 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 149.5 min (1,005.5 - 856.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	25.00'	1,355 cf	**10.33'W x 75.54'L x 6.75'H Field A** 5,269 cf Overall - 1,882 cf Embedded = 3,387 cf x 40.0% Voids
#2A	25.75'	1,882 cf	**StormTech MC-4500 +Cap** x 17 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 1 rows = 71.4 cf
		3,237 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	**8.270 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.15 cfs @ 11.85 hrs HW=25.10' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.15 cfs)

Summary for Pond PSIS2: Proposed Subsurface Infiltration System 2

Inflow Area = 93,320 sf, 63.49% Impervious, Inflow Depth = 3.82" for 50 Year event
Inflow = 8.25 cfs @ 12.14 hrs, Volume= 29,671 cf
Outflow = 5.45 cfs @ 12.30 hrs, Volume= 29,703 cf, Atten= 34%, Lag= 9.6 min
Discarded = 0.39 cfs @ 11.30 hrs, Volume= 21,037 cf
Primary = 5.06 cfs @ 12.30 hrs, Volume= 8,666 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 31.11' @ 12.30 hrs Surf.Area= 2,038 sf Storage= 8,180 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 135.7 min (960.1 - 824.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	25.00'	3,373 cf	**28.50'W x 71.52'L x 6.75'H Field A** 13,758 cf Overall - 5,326 cf Embedded = 8,432 cf x 40.0% Voids
#2A	25.75'	5,326 cf	**StormTech MC-4500 +Cap** x 48 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 3 Rows of 16 Chambers Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
		8,699 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	**8.270 in/hr Exfiltration over Horizontal area**
#2	Primary	30.00'	**18.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.00' / 29.50' S= 0.0167 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Discarded OutFlow Max=0.39 cfs @ 11.30 hrs HW=25.08' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.39 cfs)

Primary OutFlow Max=5.00 cfs @ 12.30 hrs HW=31.11' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 5.00 cfs @ 3.58 fps)

Summary for Pond PSIS3: Proposed Subsurface Infiltration System 3

Inflow Area = 17,215 sf, 34.27% Impervious, Inflow Depth = 2.17" for 50 Year event
Inflow = 0.81 cfs @ 12.16 hrs, Volume= 3,107 cf
Outflow = 0.09 cfs @ 11.85 hrs, Volume= 3,108 cf, Atten= 89%, Lag= 0.0 min
Discarded = 0.09 cfs @ 11.85 hrs, Volume= 3,108 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 28.86' @ 13.82 hrs Surf.Area= 448 sf Storage= 1,176 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 131.5 min (996.0 - 864.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	25.00'	797 cf	**10.33'W x 43.34'L x 6.75'H Field A** 3,023 cf Overall - 1,030 cf Embedded = 1,993 cf x 40.0% Voids
#2A	25.75'	1,030 cf	**StormTech MC-4500 +Cap** x 9 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 1 rows = 71.4 cf
		1,827 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	**8.270 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.09 cfs @ 11.85 hrs HW=25.07' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Summary for Link 1L: Add to POC1

Inflow Area = 189,617 sf, 34.45% Impervious, Inflow Depth = 0.99" for 50 Year event
Inflow = 6.13 cfs @ 12.30 hrs, Volume= 15,616 cf
Primary = 6.13 cfs @ 12.30 hrs, Volume= 15,616 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Summary for Link ADD: (new Link)

Inflow Area = 57,337 sf, 41.80% Impervious, Inflow Depth = 2.61" for 50 Year event
Inflow = 3.79 cfs @ 12.10 hrs, Volume= 12,461 cf
Primary = 3.79 cfs @ 12.10 hrs, Volume= 12,461 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PR1: South - Undeveloped Runoff Area=96,297 sf 6.31% Impervious Runoff Depth=1.16"
Flow Length=365' Tc=11.4 min UI Adjusted CN=43 Runoff=1.75 cfs 9,326 cf

Subcatchment PR2: Parking and Drives Runoff Area=93,320 sf 63.49% Impervious Runoff Depth=4.44"
Flow Length=392' Tc=10.1 min CN=76 Runoff=9.57 cfs 34,496 cf

Subcatchment PR3: Buildings and Northerly O/S Runoff Area=29,748 sf 40.08% Impervious Runoff Depth=3.05"
Flow Length=272' Slope=0.0100 '/' Tc=12.5 min CN=63 Runoff=1.92 cfs 7,564 cf

Subcatchment PR4: Building and O/S Lot 1 Runoff Area=17,215 sf 34.27% Impervious Runoff Depth=2.65"
Flow Length=67' Slope=0.0100 '/' Tc=10.4 min CN=59 Runoff=1.01 cfs 3,796 cf

Subcatchment PR5: Northerly Side of Project to Old Runoff Area=12,291 sf 74.09% Impervious Runoff Depth=5.22"
Tc=6.0 min CN=83 Runoff=1.65 cfs 5,343 cf

Subcatchment PR6: Road A - East of project Runoff Area=45,046 sf 32.99% Impervious Runoff Depth=2.55"
Tc=6.0 min CN=58 Runoff=2.92 cfs 9,558 cf

Pond POND1: Lot 3/4 Yard Drain Peak Elev=34.50' Storage=293 cf Inflow=1.92 cfs 7,564 cf
Discarded=0.14 cfs 575 cf Primary=1.49 cfs 6,989 cf Outflow=1.63 cfs 7,564 cf

Pond PSIS1: Proposed Subsurface Infiltration System 1 Peak Elev=31.24' Storage=3,077 cf Inflow=1.49 cfs 6,989 cf
Outflow=0.15 cfs 6,990 cf

Pond PSIS2: Proposed Subsurface Infiltration System Peak Elev=31.45' Storage=8,450 cf Inflow=9.57 cfs 34,496 cf
Discarded=0.39 cfs 22,242 cf Primary=7.15 cfs 12,268 cf Outflow=7.54 cfs 34,509 cf

Pond PSIS3: Proposed Subsurface Infiltration System 3 Peak Elev=30.55' Storage=1,612 cf Inflow=1.01 cfs 3,796 cf
Outflow=0.09 cfs 3,800 cf

Link 1L: Add to POC1 Inflow=8.84 cfs 21,594 cf
Primary=8.84 cfs 21,594 cf

Link ADD: (new Link) Inflow=4.57 cfs 14,901 cf
Primary=4.57 cfs 14,901 cf

Total Runoff Area = 293,917 sf Runoff Volume = 70,083 cf Average Runoff Depth = 2.86"
63.56% Pervious = 186,806 sf 36.44% Impervious = 107,111 sf

Summary for Subcatchment PR1: South - Undeveloped

Runoff = 1.75 cfs @ 12.21 hrs, Volume= 9,326 cf, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Rainfall=7.20"

Area (sf)	CN	Adj	Description
6,075	98		Unconnected pavement, HSG A
4,949	77		Newly graded area, HSG A
85,273	39		>75% Grass cover, Good, HSG A
96,297	45	43	Weighted Average, UI Adjusted
90,222			93.69% Pervious Area
6,075			6.31% Impervious Area
6,075			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	50	0.0120	0.09		**Sheet Flow, Sheet1** Grass: Dense n= 0.240 P2= 3.60"
1.9	315	0.0300	2.79		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
11.4	365	Total			

Summary for Subcatchment PR2: Parking and Drives

Runoff = 9.57 cfs @ 12.14 hrs, Volume= 34,496 cf, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Rainfall=7.20"

Area (sf)	CN	Description
59,246	98	Paved parking, HSG A
34,074	39	>75% Grass cover, Good, HSG A
93,320	76	Weighted Average
34,074		36.51% Pervious Area
59,246		63.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0200	0.11		**Sheet Flow, Sheet** Grass: Dense n= 0.240 P2= 3.60"
0.6	127	0.0500	3.60		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
1.8	215	0.0100	2.03		**Shallow Concentrated Flow, Shallow2** Paved Kv= 20.3 fps
10.1	392	Total			

Summary for Subcatchment PR3: Buildings and Northerly O/S

Runoff = 1.92 cfs @ 12.18 hrs, Volume= 7,564 cf, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Rainfall=7.20"

Area (sf)	CN	Description
11,922	98	Unconnected roofs, HSG A
17,826	39	>75% Grass cover, Good, HSG A
29,748	63	Weighted Average
17,826		59.92% Pervious Area
11,922		40.08% Impervious Area
11,922		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.0100	0.08		**Sheet Flow, Sheet** Grass: Dense n= 0.240 P2= 3.60"
2.3	222	0.0100	1.61		**Shallow Concentrated Flow, Shallow** Unpaved Kv= 16.1 fps
12.5	272	Total			

Summary for Subcatchment PR4: Building and O/S Lot 1

Runoff = 1.01 cfs @ 12.16 hrs, Volume= 3,796 cf, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Rainfall=7.20"

Area (sf)	CN	Description
5,900	98	Roofs, HSG A
11,315	39	>75% Grass cover, Good, HSG A
17,215	59	Weighted Average
11,315		65.73% Pervious Area
5,900		34.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.0100	0.08		**Sheet Flow, Sheet1** Grass: Dense n= 0.240 P2= 3.60"
0.2	17	0.0100	1.61		**Shallow Concentrated Flow, Shallow1** Unpaved Kv= 16.1 fps
10.4	67	Total			

Summary for Subcatchment PR5: Northerly Side of Project to Old South Rd

Runoff = 1.65 cfs @ 12.09 hrs, Volume= 5,343 cf, Depth= 5.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Rainfall=7.20"

Area (sf)	CN	Description
9,106	98	Paved roads w/curbs & sewers, HSG A
3,185	39	>75% Grass cover, Good, HSG A
12,291	83	Weighted Average
3,185		25.91% Pervious Area
9,106		74.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc = 0.1h**

Summary for Subcatchment PR6: Road A - East of project

Runoff = 2.92 cfs @ 12.10 hrs, Volume= 9,558 cf, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Rainfall=7.20"

Area (sf)	CN	Description
14,862	98	Paved roads w/curbs & sewers, HSG A
30,184	39	>75% Grass cover, Good, HSG A
45,046	58	Weighted Average
30,184		67.01% Pervious Area
14,862		32.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc = 0.1h**

Summary for Pond POND1: Lot 3/4 Yard Drain

Inflow Area = 29,748 sf, 40.08% Impervious, Inflow Depth = 3.05" for 100 Year event
Inflow = 1.92 cfs @ 12.18 hrs, Volume= 7,564 cf
Outflow = 1.63 cfs @ 12.27 hrs, Volume= 7,564 cf, Atten= 15%, Lag= 5.3 min
Discarded = 0.14 cfs @ 12.27 hrs, Volume= 575 cf
Primary = 1.49 cfs @ 12.27 hrs, Volume= 6,989 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 34.50' @ 12.27 hrs Surf.Area= 756 sf Storage= 293 cf

Plug-Flow detention time= 0.9 min calculated for 7,555 cf (100% of inflow)
Center-of-Mass det. time= 0.9 min (851.9 - 851.0)

Volume	Invert	Avail.Storage	Storage Description
#1	33.75'	1,004 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.75	4	0	0
34.00	275	35	35
34.50	750	256	291
35.00	2,100	713	1,004

Device	Routing	Invert	Outlet Devices
#1	Discarded	33.75'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	33.75'	**Nyoplast 10" Dome Grate Inlet**
			Head (feet) 0.00 0.10 0.20 1.00
			Disch. (cfs) 0.000 0.280 0.800 1.800

Discarded OutFlow Max=0.14 cfs @ 12.27 hrs HW=34.49' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=1.48 cfs @ 12.27 hrs HW=34.49' TW=27.41' (Dynamic Tailwater)
2=Nyoplast 10" Dome Grate Inlet (Custom Controls 1.48 cfs)

Summary for Pond PSIS1: Proposed Subsurface Infiltration System 1

Inflow Area = 29,748 sf, 40.08% Impervious, Inflow Depth = 2.82" for 100 Year event
Inflow = 1.49 cfs @ 12.27 hrs, Volume= 6,989 cf
Outflow = 0.15 cfs @ 11.80 hrs, Volume= 6,990 cf, Atten= 90%, Lag= 0.0 min
Discarded = 0.15 cfs @ 11.80 hrs, Volume= 6,990 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 31.24' @ 14.38 hrs Surf.Area= 781 sf Storage= 3,077 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 204.2 min (1,055.4 - 851.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	25.00'	1,355 cf	**10.33'W x 75.54'L x 6.75'H Field A**
			5,269 cf Overall - 1,882 cf Embedded = 3,387 cf x 40.0% Voids
#2A	25.75'	1,882 cf	**StormTech MC-4500 +Cap** x 17 Inside #1
			Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
			Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
			Cap Storage= +35.7 cf x 2 x 1 rows = 71.4 cf
		3,237 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	**8.270 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.15 cfs @ 11.80 hrs HW=25.11' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.15 cfs)

Summary for Pond PSIS2: Proposed Subsurface Infiltration System 2

Inflow Area = 93,320 sf, 63.49% Impervious, Inflow Depth = 4.44" for 100 Year event
Inflow = 9.57 cfs @ 12.14 hrs, Volume= 34,496 cf
Outflow = 7.54 cfs @ 12.24 hrs, Volume= 34,509 cf, Atten= 21%, Lag= 6.1 min
Discarded = 0.39 cfs @ 11.05 hrs, Volume= 22,242 cf
Primary = 7.15 cfs @ 12.24 hrs, Volume= 12,268 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 31.45' @ 12.25 hrs Surf.Area= 2,038 sf Storage= 8,450 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 125.2 min (945.3 - 820.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	25.00'	3,373 cf	**28.50'W x 71.52'L x 6.75'H Field A** 13,758 cf Overall - 5,326 cf Embedded = 8,432 cf x 40.0% Voids
#2A	25.75'	5,326 cf	**StormTech MC-4500 +Cap** x 48 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 3 Rows of 16 Chambers Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
		8,699 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	**8.270 in/hr Exfiltration over Horizontal area**
#2	Primary	30.00'	**18.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.00' / 29.50' S= 0.0167 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Discarded OutFlow Max=0.39 cfs @ 11.05 hrs HW=25.09' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.39 cfs)

Primary OutFlow Max=7.09 cfs @ 12.24 hrs HW=31.43' TW=0.00' (Dynamic Tailwater)
2=Culvert (Inlet Controls 7.09 cfs @ 4.08 fps)

Summary for Pond PSIS3: Proposed Subsurface Infiltration System 3

Inflow Area =	17,215 sf,	34.27% Impervious,	Inflow Depth =	2.65"	for 100 Year event
Inflow =	1.01 cfs @	12.16 hrs, Volume=	3,796 cf		
Outflow =	0.09 cfs @	11.80 hrs, Volume=	3,800 cf,	Atten= 92%,	Lag= 0.0 min
Discarded =	0.09 cfs @	11.80 hrs, Volume=	3,800 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 30.55' @ 14.31 hrs Surf.Area= 448 sf Storage= 1,612 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 189.3 min (1,047.6 - 858.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	25.00'	797 cf	**10.33'W x 43.34'L x 6.75'H Field A** 3,023 cf Overall - 1,030 cf Embedded = 1,993 cf x 40.0% Voids
#2A	25.75'	1,030 cf	**StormTech MC-4500 +Cap** x 9 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 1 rows = 71.4 cf
		1,827 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	**8.270 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.09 cfs @ 11.80 hrs HW=25.09' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.09 cfs)

Summary for Link 1L: Add to POC1

Inflow Area = 189,617 sf, 34.45% Impervious, Inflow Depth = 1.37" for 100 Year event
Inflow = 8.84 cfs @ 12.24 hrs, Volume= 21,594 cf
Primary = 8.84 cfs @ 12.24 hrs, Volume= 21,594 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

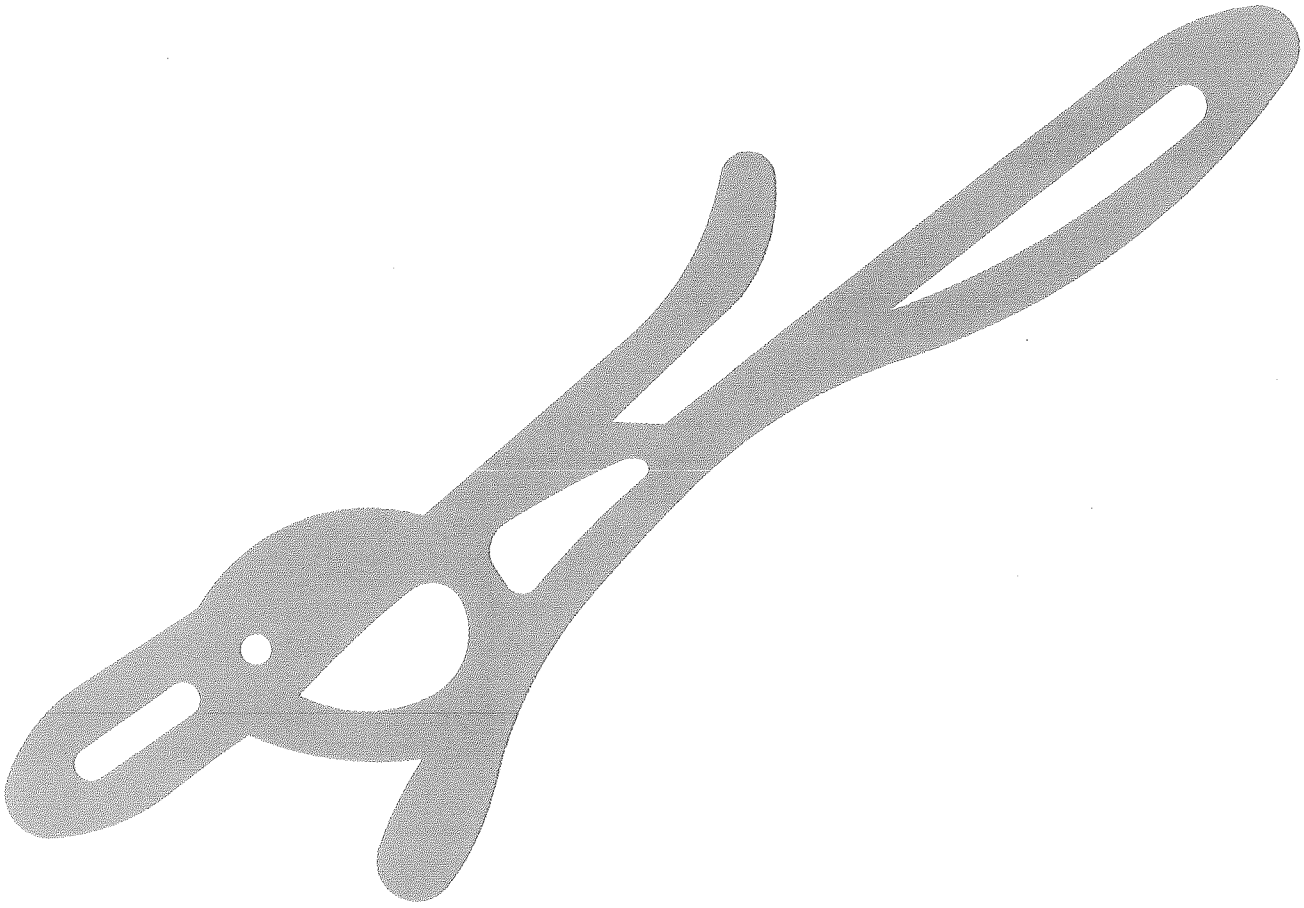
Summary for Link ADD: (new Link)

Inflow Area = 57,337 sf, 41.80% Impervious, Inflow Depth = 3.12" for 100 Year event
Inflow = 4.57 cfs @ 12.10 hrs, Volume= 14,901 cf
Primary = 4.57 cfs @ 12.10 hrs, Volume= 14,901 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

APPENDIX C:

Massachusetts DEP Storm Water Checklist



Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

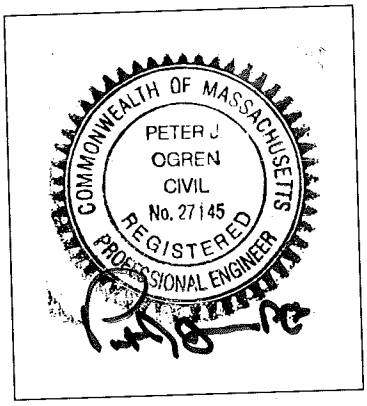
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



6/13/16

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☒ New development

☐ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☒ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☐ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☒ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☒ Simple Dynamic ☐ Dynamic Field[1]

☒ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☒ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☒ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☒ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☒ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☒ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☐ The ½" or 1" Water Quality Volume or
- ☒ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☒ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☒ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☐ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

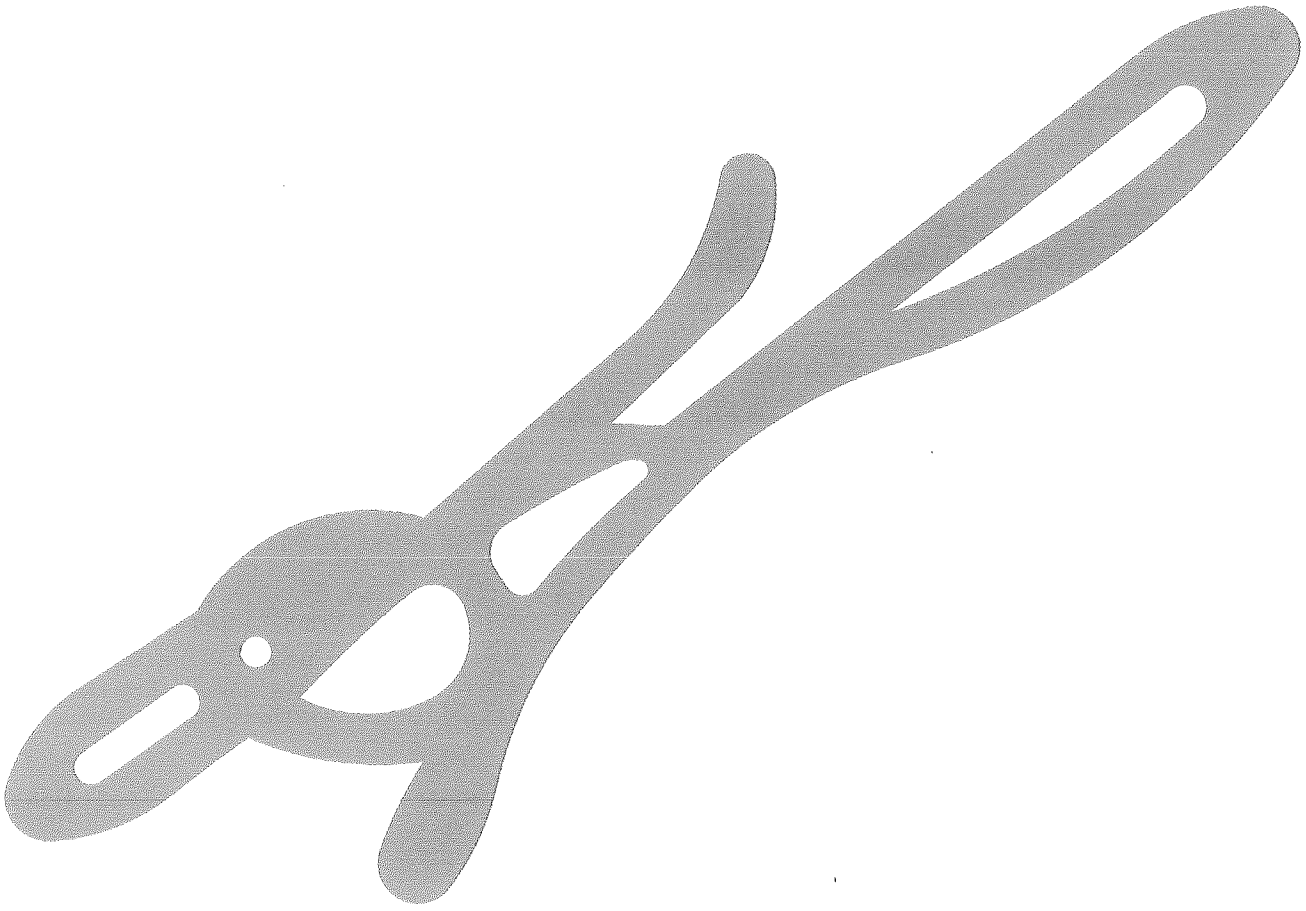
☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

☒ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

APPENDIX D:

Water Quality Calculations



To POC 1:

Water Quality Volume Calculation:

$$V_{wq} = d_{wq} \times A_{imp}$$

Where,

V_{wq} = Water Quality Volume

d_{wq} = Water Quality Depth (1.0-inch for Critical Areas, ½-inch for Non-Critical Areas)

A_{imp} = Impervious Area Directed to BMP (Sub-catchment PR2)

$$V_{wq} = (1.0") \left(\frac{1\ foot}{12\ inches}\right) (59{,}246\ sf)$$

$$V_{wq} = 4{,}937\ cf$$

PSIS2 Storage Volume = 8,576 cf

Proprietary Structure Sizing Calculation per MassDEP "Standard Method to Covert Required Water Quality Volume to a Discharge Rate (October 15, 2013):

Impervious Area to VortSentry = 59,246 sf (0.00213 sq. mi.).

Time of Concentration for Watershed PR1 = 10.1 minutes (0.17 hours)

Unit Peak Discharge (q_u) from DEP Figure 3: 700 csm/in

$$Q_{1.0"} = (q_u)(A_{imp})(d_{wq})$$

Where,

$Q_{1.0"}$ = Peak Flow Rate associated with the first 1.0-inches of runoff

q_u = Unit Peak Discharge, in Cubic Feet per Second per Square Mile per Inch (csm/in.)

A_{imp} = Impervious Area in Drainage Area in Square Miles

d_{wq} = Water Quality Depth in Inches

$$Q_{1.0"} = \left(700 \frac{csm}{in}\right) (0.00213\ sq.mi.)(1.0\ in)$$

$$Q_{1.0"} = 1.49\ cfs$$

Maximum Design Flow Rate for VortSentry HS60 = 2.2 cfs

INSTRUCTIONS:
1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: Old South Road Crossing

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
Proprietary Treatment Practice	0.75	0.75	0.56	0.19
Infiltration Basin	0.80	0.19	0.15	0.04
	0.00	0.04	0.00	0.04
	0.00	0.04	0.00	0.04

Total TSS Removal = 96%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: NAN-0107J
Prepared By: AMC
Date: 6/10/2016

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed
1. From MassDEP Stormwater Handbook Vol. 1

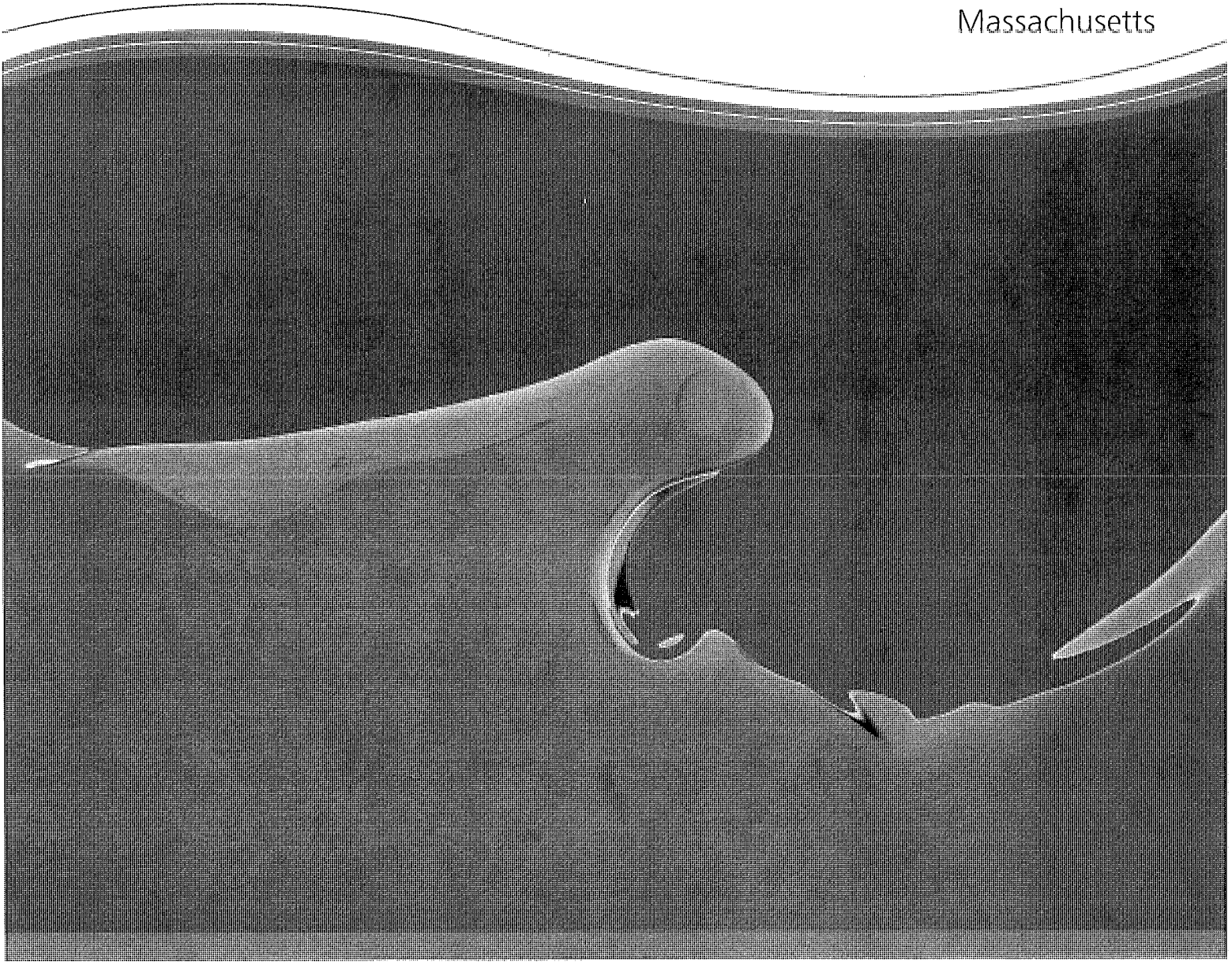
Mass. Dept. of Environmental Protection

NAN · 0107J

CONTECH®
ENGINEERED SOLUTIONS

Hydrodynamic Separation Products Overview

Massachusetts



CDS

Vortechs®

VortSentry® HS

Available Models

Vortechs Model	Swirl Chamber Diameter		Internal Length		Peak Treatment Flow[1]		Sediment Storage[2]	
	ft	m	ft	m	cfs	L/s	yd3	m3
1000	3	0.9	9	2.7	1.6	45.3	0.7	0.5
2000	4	1.2	10	3	2.8	79.3	1.2	0.9
3000	5	1.5	11	3.4	4.5	127.4	1.8	1.4
4000	6	1.8	12	3.7	6	169.9	2.4	1.8
5000	7	2.1	13	4	8.5	240.7	3.2	2.4
7000	8	2.4	14	4.3	11	311.5	4	3.1
9000	9	2.7	15	4.6	14	396.4	4.8	3.7
11000	10	3	16	4.9	17.5	495.5	5.6	4.3
16000	12	3.7	18	5.5	25	707.9	7.1	5.4

1. Peak Treatment Flow is maximum flow treated for each unit listed. This flow represents an infrequent storm event such as a 10 or 25 yr storm.
   Standard Vortechs System depth below invert is 3' for all precast models.
   Cast-in-place system are available to treat higher flows. Check with your local representatives for specifications.
2. Maintenance recommended when sediment depth has accumulated to within 12-18 inches of the dry weather water surface elevation.

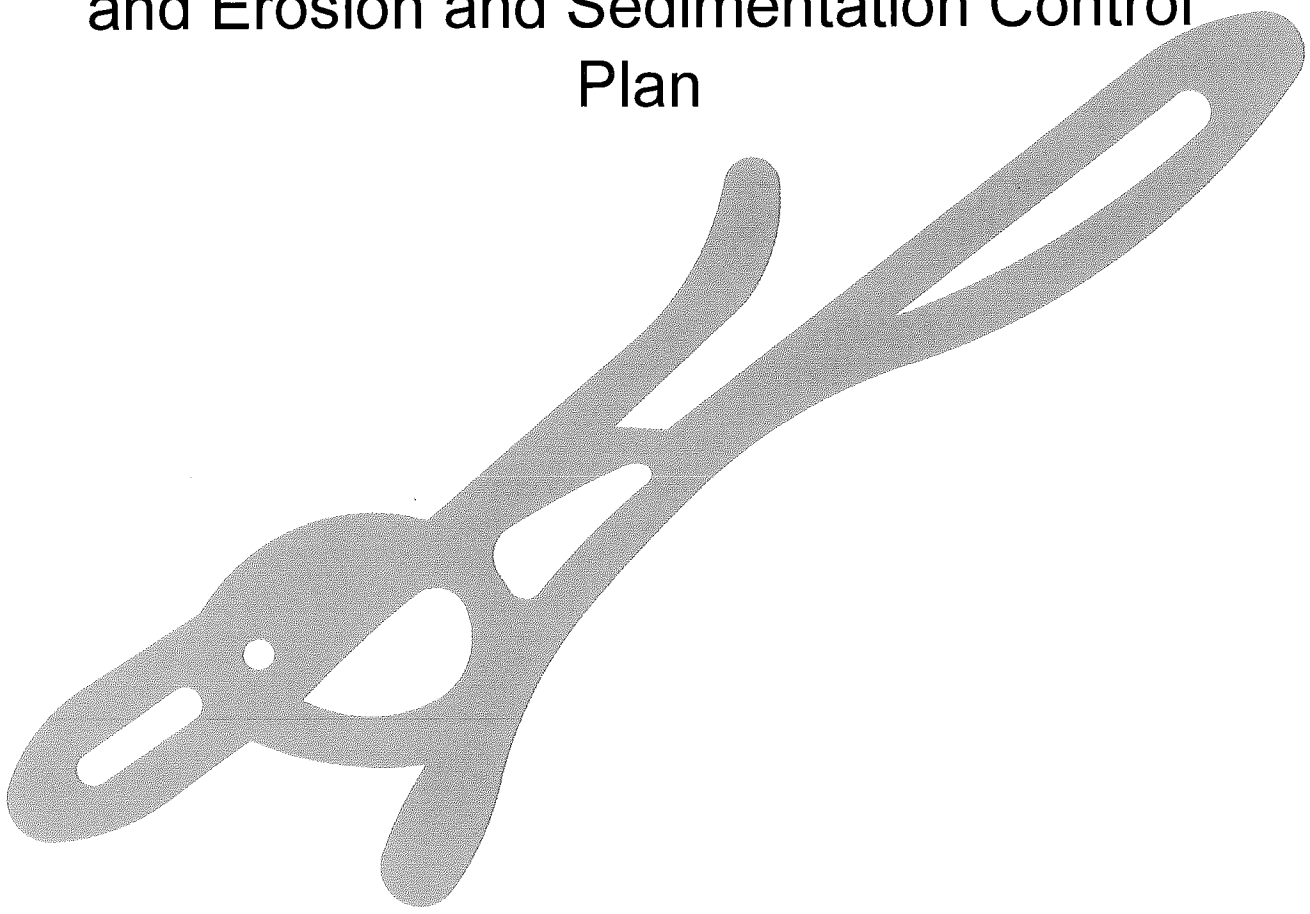
VortSentry HS Model	Swirl Chamber Diameter (ft)	Typical Depth Below Invert (ft)	Treatment Capacity (cfs)[1]	Max. Inlet/Outlet Pipe Diameter (in)	Maximum Sediment Storage Capacity (CF)
VortSentry HS36*	3	5.6	0.55	18	39
w/ 1' added sump	3	6.6	0.55	18	47
w/ 2' added sump	3	7.6	0.55	18	54
w/ 3' added sump	3	8.6	0.55	18	61
w/ 4' added sump	3	9.6	0.55	18	68
w/ 5' added sump	3	10.6	0.55	18	75
VortSentry HS48**	4	6.8	1.2	24	85
w/ 1' added sump	4	7.8	1.2	24	97
w/ 2' added sump	4	8.8	1.2	24	110
w/ 3' added sump	4	9.8	1.2	24	123
w/ 4' added sump	4	10.8	1.2	24	135
VortSentry HS60***	5	8.0	2.2	30	156
w/ 1' added sump	5	9.0	2.2	30	176
w/ 2' added sump	5	10.0	2.2	30	196
w/ 3' added sump	5	11.0	2.2	30	215

*maintenance recommended when sediment reaches a height of 3'-7" below water surface elevation in sump.
**maintenance recommended when sediment reaches a height of 4'-9" below water surface elevation in sump.
***maintenance recommended when sediment reaches a height of 6.0' below water surface elevation in sump.
1. Design Flow Rate is based on 80% removal of particle size distribution with an average particle size of 240 micron. This flow also represents the maximum flow prior to which bypass occurs.

Notes: Systems can be sized based on a water quality flow (e.g. 1 inch storm) or on a net annual basis depending on the local regulatory requirement.
When sizing based on a water quality storm, the required flow to be treated should be equal or less than the listed water quality flow for the selected system. Systems sized based on a water quality storm are generally more conservatively sized.
Additional particle size distributions are available for sizing purposes upon request.
Depth below invert is measured to the inside bottom of the system. This depth can be adjusted to meet specific storage or maintenance requirements.
Contact our support staff for the most cost effective sizing for your area.

APPENDIX E:

Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan



Construction Period Pollution Prevention Plan
Old South Road Crossing – Nantucket, MA
June 10, 2016

Project Name: Old South Road Crossing
Retail Liner Buildings
Nantucket, MA

Owner's Name: Richmond Great Point Development, LLC
23 Concord Street
Wilmington, MA

Applicant's Name: Same as above

Party Responsible for Maintenance: To be determined

Project Description:

Richmond Great Point Development, LLC (the "Applicant") propose to construct a multi-unit retail development to be known as "Old South Road Crossing" (the "Project") proximate to the intersection of Old South Road and Lovers Lane.

Erosion and Sedimentation Control Measures During Construction Activities:

Siltation Fence and Hay Bales

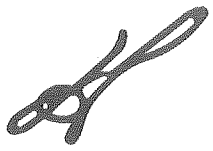
Silt fence with hay bales are to be installed as shown on Sheet 8 of 8 (Erosion Control Plan) of the Definitive Plan Set. Silt fence and hay bales are to be installed prior to the commencement of work on the site and in accordance with the design plans. An additional supply of silt fence and hay bales shall be maintained on-site for repair and/or replacement of any disturbed silt fence or hay bales. The silt fence and hay bale line(s) shall be inspected and maintained on a weekly basis. Deposited sediment shall be removed when the level of deposition reaches approximately one-third (1/3) the height of the fence.

Storm Drain Inlet Protection

A temporary storm inlet protection filter will be placed in all catch basin units. The purpose of the filter is to prevent the inflow of sediment into the closed drainage system(s). The filters shall remain in place until a permanent vegetative cover is established and the transport of sediment is no longer visibly apparent. The filter shall be inspected and maintained on a weekly basis and after significant storm events. Significant storm events are those having greater than one-quarter (1/4) inch of precipitation in a 24-hour period.

Surface Stabilization

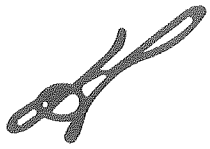
The surface of all disturbed areas shall be stabilized during and after construction. Temporary measures shall be taken during construction to prevent erosion and sedimentation. No construction sediment shall be allowed to enter infiltration areas. All disturbed slopes shall be stabilized with a permanent vegetative cover. Some or all of the following measures can be used on the Project as conditions may warrant:



- Temporary Seeding
- Temporary Mulching
- Placement of Hay
- Placement of Geo-Synthetic Fabrics
- Hydroseeding
- Permanent Seeding
- Placement of Sod

Surface and Subsurface Infiltration Facilities

No construction period runoff should be directed toward infiltration facilities. The performance of these facilities shall be checked weekly and after significant storm events throughout construction.



INSPECTION SCHEDULE and EVALUATION CHECKLIST

To be completed weekly and within 24-hours of significant rainfall events (greater than 1/4-inches in a 24-hour period).

Inspector's Name: _____ Date: _____

Qualifications: _____

_____

Days since last rainfall: _____ days Amount of last rainfall: _____inches

Stabilization Measures

Sub-Catchment	Date of Last Disturbance	Date of Next Disturbance	Stabilized (Yes or No)	Stabilized With:	Condition
PR1					
PR2					
PR3					
PR4					
PR5					
PR6					

Stabilization required: _____

_____

_____

_____

_____

_____

_____

To be performed by: _____ on or before: _____

PERIMETER CONTROLS

Date of Inspection: _____

Silt Fence and Hay Bales:

To Study Area:	Has sediment reached 1/3 height of silt fence? (Yes or No)	Depth of Silt (inches)	Is fence secure? (Yes or No)	Is there evidence of bypass or overtopping? (Yes or No)	Describe location of Problem(s), if any.
POC1					

Maintenance required for silt fence and hay bales: _____

_____

_____

To be performed by: _____ on or before: _____

Stabilized Construction Entrance:

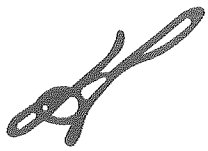
Location	Does much sediment get tracked onto roadway? (Yes or No)	Is gravel clean or full of sediment?	Is all traffic using the entrance to access/exit the site? (Yes or No)	Is the culvert beneath the entrance working? (Yes or No)
Old South Road				

Maintenance required for stabilized construction entrance: _____

_____

_____

To be performed by: _____ on or before: _____



Other Best Management Practices:

BMP	In use? (Yes or No)	Maintenance Required? (Yes or No)	Describe location of Problem(s), if any.
Sweeping of Adjacent Roads			
Catch Basin Inlet Protection			
VortSentry			
PSIS1			
PSIS2			
PSIS3			

Maintenance required: _____

_____

_____

_____

_____

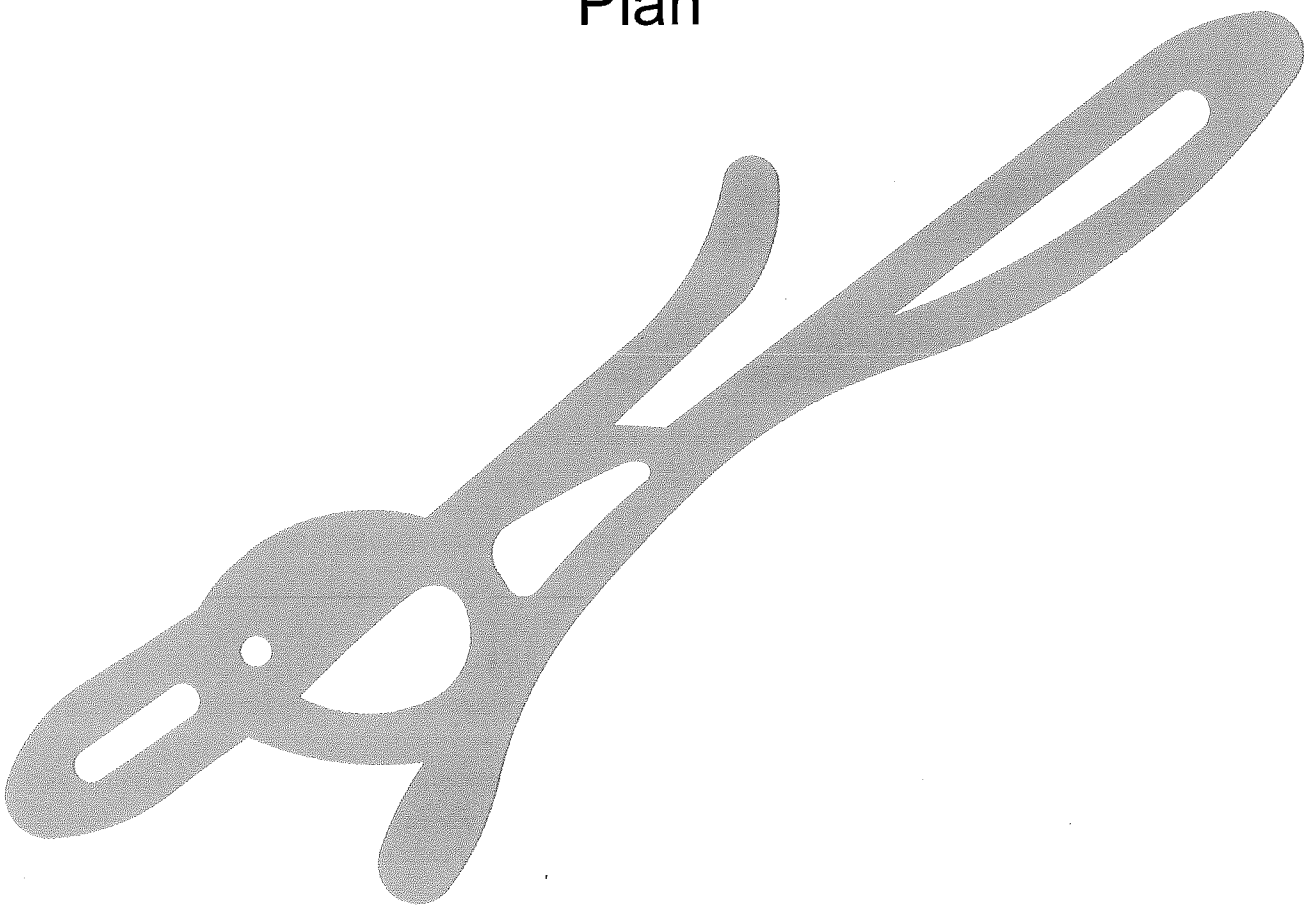
To be performed by: _____ on or before: _____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

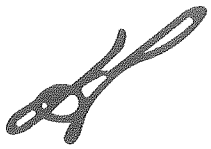
Signature: _____ Date: _____

APPENDIX F:

Long Term Operation and Maintenance Plan



Long Term Operations and Maintenance Plan
Old South Road Crossing – Nantucket, MA
June 10, 2016



Project Name: Old South Road Crossing
Retail Liner Buildings
Nantucket, MA

Owner's Name: Richmond Great Point Development, LLC and
23 Concord Street
Wilmington, MA

Applicant's Name: Same as above

Party Responsible for Maintenance: To be determined

Project Description:

Richmond Great Point Development, LLC (the "Applicant") propose to construct a multi-unit retail development to be known as "Old South Road Crossing" (the "Project") proximate to the intersection of Old South Road and Lovers Lane.

Post-Construction Inspection and Maintenance Measures:

Erosion Control

Sedimentation caused from erosion of soils can adversely affect the performance of the storm water management system. Areas that are barren and/or showing signs of erosion should be stabilized through immediate re-vegetation.

Debris and Litter Removal

Litter and other debris may collect in storm water best management practices (BMPs), potentially causing clogging of facilities. All debris and litter shall be removed as necessary, at a minimum of four (4) times per year in the spring, summer, fall and winter.

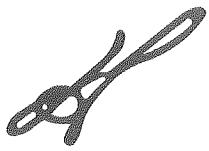
Deep Sump and Hooded Catch Basins

In accordance with Volume 2, Chapter 2 of the MaDEP Storm Water Handbook as summarized below:

Inspect or clean deep sump catch basins at least four (4) times per year and at the end of the foliage and snow-removal seasons. Sediments must also be removed four (4) times per year or whenever the depth of deposits is greater than or equal to one-half (1/2) the depth from the invert of the lowest pipe in the basin to the bottom of the basin (the sump). If handling runoff from land uses with higher potential pollutant loads (LUHPPLs) or discharging near or to a critical area, more frequent cleaning may be necessary.

Deep sump and hooded catch basins should be cleaned with vacuum trucks only. Clamshell buckets shall not be used to clean hooded catch basins. Vacuum trucks remove more sediment and supernatant, and is less likely to snap the hood within the deep sump basin.

Always consider the safety of the staff cleaning deep sump catch basins. Cleaning a deep sump catch basin within a road with active traffic or even within a parking lot is dangerous, and a police detail may be necessary to safeguard workers.



Although catch basin debris often contains concentrations of oil and hazardous materials such as petroleum hydrocarbons and metals, MassDEP classifies them as solid waste. Unless there is evidence that they have been contaminated by a spill or other means, MassDEP does not routinely require catch basin cleanings to be tested before disposal. Contaminated catch basin cleanings must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000, and handled as hazardous waste.

In the absence of evidence of contamination, catch basin cleanings may be taken to a landfill or other facility permitted by MassDEP to accept solid waste, without any prior approval by MassDEP. However, some landfills require catch basin cleanings to be tested before they are accepted.

With prior MassDEP approval, catch basin cleanings may be used as grading and shaping materials at landfills undergoing closure (see Revised Guidelines for Determining Closure Activities at Inactive Unlined Landfill Sites) or as daily cover at active landfills. MassDEP also encourages the beneficial reuse of catch basin cleanings whenever possible. A Beneficial Reuse Determination is required for such use.

MassDEP regulations prohibit landfills from accepting materials that contain free-draining liquids. One way to remove liquids is to use a hydraulic lift truck during cleaning operations so that the material can be decanted at the site. After loading material from several catch basins into a truck, elevate the truck so that any free-draining liquid can flow back into the structure. If there is no free water in the truck, the material may be deemed to be sufficiently dry. Otherwise the catch basin cleanings must undergo a Paint Filter Liquids Test. Go to www. Mass.gov/dep/recycle/laws/cafacts.doc for information on all of the MassDEP requirements pertaining to the disposal of catch basin cleanings.

VortSentry HS – Swirl Particle Seperator

In accordance with Manufacturer's recommendations, accompanying this report.

Sub-Surface Infiltration Basin

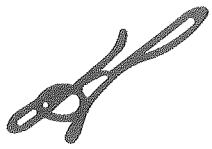
In accordance with Volume 2, Chapter 2 of the MaDEP Storm Water Handbook and Manufacturer's recommendations as summarized below:

Inspect inlets at least twice per year.

Good Housekeeping Practices:

Provisions for storing paints, cleaners, automotive waste and other potentially hazardous household waste products inside or under cover:

- All materials stored on-site shall be in a neat, orderly manner in their appropriate containers with original manufacturer's label(s);
- Only store enough material as needed; whenever possible, all of a product shall be used prior to disposing of container;
- Manufacturer, federal, state and local recommendations for proper use and disposal shall be followed.



Vehicle Washing Controls:

- Use commercial car washes whenever possible. Car washes treat and/or recycle wash water;
- Cars shall be washed on gravel, grass or other permeable surfaces to allow filtration to occur;
- Use biodegradable soaps only;
- Use hose nozzles that automatically turn off when unattended.

Routine Inspection and Maintenance of Storm Water BMPs

- Previously addressed.

Spill Prevention and Response Plans

- Spill control practices shall be in conformance with the guidelines set forth in the National Pollutant Discharge Elimination System (NPDES) Storm Water Pollution Prevention Plan (SWPPP).

Maintenance of Lawns, Gardens and Other Landscaped Areas:

- Grass shall not be cut shorter than two (2) to three (3) inches and mulch clipping should be left on lawns as a natural fertilizer;
- Use low volume water approaches for irrigation such as drip-type or sprinkler systems. Water plants only when needed to enhance root growth and avoid runoff problems;
- Mulch shall be used wherever practicable. Mulch helps retain water and prevents erosion.

Storage and Use of Fertilizers, Herbicides and Pesticides:

- Fertilizers shall be applied in the minimum amounts recommended by the manufacturer. Once applied, fertilizer shall be worked into the soil to limit exposure to storm water. Storage will be in covered areas only. Contents of partially used bags shall be transferred into sealable plastic containers to avoid spills;
- Do not fertilize before or during rain events;
- Consider the use of organic fertilizers;
- Pesticides shall be applied only when necessary and only in the minimum amounts recommended by the manufacturer.

Pet Waste Management

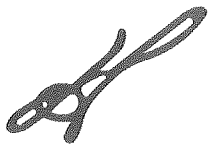
- Scoop up and seal pet waste in plastic bags. Dispose of in garbage.

Solid Waste Management

- All solid waste shall be disposed of or recycled in accordance with all federal, state and local regulations.

List of Emergency Contacts for Plan Implementation

To be determined by Owner.



POST-CONSTRUCTION
OPERATION AND MAINTENANCE LOG

Inspector's Name: _____ Date: _____

Qualifications: _____

_____

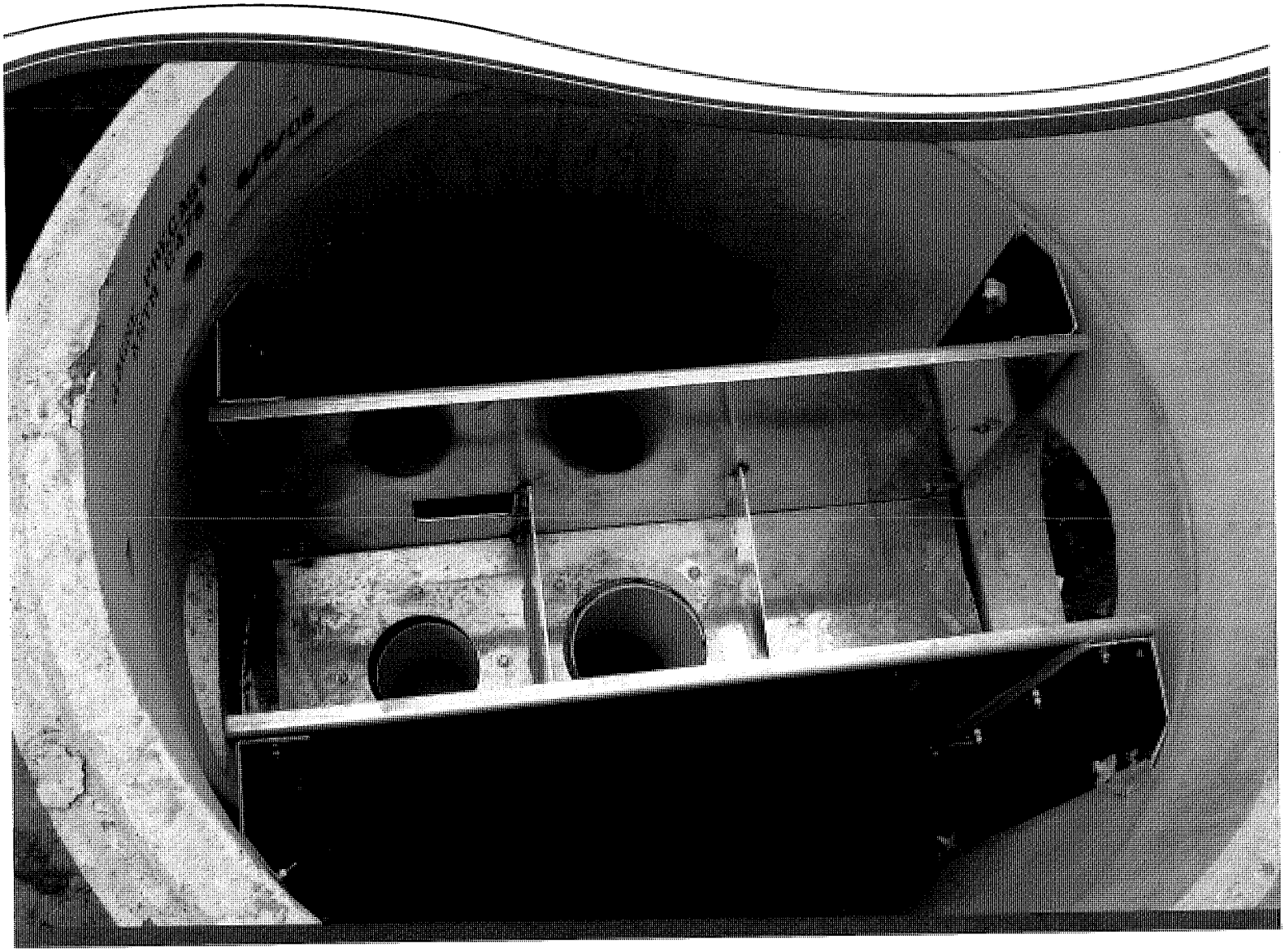
Inspection Type: ☐ Routine ☐ Spill ☐ Other: _____

☐ Post-Rainfall (Precipitation in Inches: _____)

BMP	Frequency	Date Last Performed	Comments
Litter and Debris Removal	After Significant Rain Events		
Deep Sump and Hooded Catch Basins	Inspect four (4) times per year Maintenance as necessary		
Sub-Surface Infiltration System	Inspect two (2) times per year		
Vegetated Areas	Inspect as necessary for erosion		

CONTECH®
ENGINEERED SOLUTIONS

VortSentry® HS Guide
Operation, Design, Performance and Maintenance



VortSentry® HS

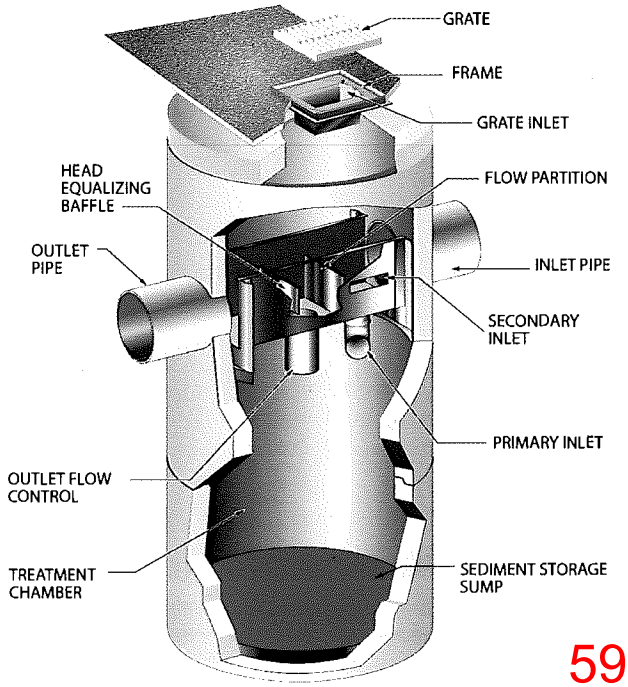
The VortSentry HS is a compact, below grade stormwater treatment system that employs helical flow technology to enhance gravitational separation of floating and settling pollutants from stormwater flows. With the ability to accept a wide range of pipe sizes, the VortSentry HS can treat and convey flows from small to large sites. A unique internal bypass design means higher flows can be diverted without the use of external bypass structures. The VortSentry HS is also available in a grate inlet configuration, which is ideal for retrofit installations.

Operation Overview

Low, frequently occurring storm flows are directed into the treatment chamber through the primary inlet. The tangentially oriented downward pipe induces a swirling motion in the treatment chamber that increases capture and containment abilities. Moderate storm flows are directed into the treatment chamber through the secondary inlet, which allows for capture of floating trash and debris. The secondary inlet also provides for treatment of higher flows without significantly increasing the velocity or turbulence in the treatment chamber. This allows for a more quiescent separation environment. Settleable solids and floating pollutants are captured and contained in the treatment chamber.

Flow exits the treatment chamber through the outlet flow control, which manages the amount of flow that is treated and helps maintain the helical flow patterns developed within the treatment chamber.

Flows exceeding the system's rated treatment flow are diverted away from the treatment chamber by the flow partition. Internal diversion of high flows eliminates the need for external bypass structures. During bypass, the head equalizing baffle applies head on the outlet flow control to limit the flow through the treatment chamber. This helps prevent re-suspension of previously captured pollutants.



Design Basics

There are two primary methods of sizing a VortSentry HS system. The Water Quality Flow Rate Method determines which model size provides the desired removal efficiency at a given flow for a defined particle size. The summation process of the Rational Rainfall Method is used when a specific removal efficiency of the net annual sediment load is required.

Typically, VortSentry HS systems are designed to achieve an 80% annual solids load reduction based on lab generated performance curves for a particle gradation with an average particle size (d_{50}) of 240-microns (μm).

Water Quality Flow Rate Method

In many cases, regulations require that a specific flow rate, often referred to as the water quality design flow (WQQ), be treated. This WQQ represents the peak flow rate from either an event with a specific recurrence interval (i.e. the six-month storm) or a water quality depth (i.e. 1/2-inch of rainfall).

The VortSentry HS is designed to treat all flows up to the WQQ. Due to its internal bypass weir configuration, flow rates in the treatment chamber only increase minimally once the WQQ is surpassed. At influent rates higher than the WQQ, the flow partition will allow most flow exceeding the treatment flow rate to bypass the treatment chamber. This allows removal efficiency to remain relatively constant in the treatment chamber and reduces the risk of washout during bypass flows regardless of influent flow rates.

Treatment flow rates are defined as the rate at which the VortSentry HS will remove a specific gradation of sediment at a specific removal efficiency. Therefore they are variable based on the gradation and removal efficiency specified by the design engineer and the unit size is scaled according to the project goal.

Rational Rainfall Method™

Differences in local climate, topography and scale make every site hydraulically unique. The Rational Rainfall Method is a sizing program Contech uses to estimate a net annual sediment load reduction for a particular VortSentry HS model based on site size, site runoff coefficient, regional rainfall intensity distribution, and anticipated pollutant characteristics. For more information on the Rational Rainfall Method, see *Vortechs Technical Bulletin 4: Modeling Long Term Load Reduction: The Rational Rainfall Method*, available at **www.ContechES.com/stormwater**

Treatment Flow Rate

The outlet flow control is sized to allow the WQQ to pass entirely through the treatment chamber at a water surface elevation equal to the crest of the flow partition. The head equalizing baffle applies head on the outlet flow control to limit the flow through the treatment chamber when bypass occurs, thus helping to prevent re-suspension or re-entrainment of previously captured particles.

Hydraulic Capacity

The VortSentry HS is available in three standard configurations: inline (with inlet and outlet pipes at 180° to each other), grated inlet, and a combination of grate and pipe inlets. All three configurations are available in 36-inch (900-mm) through 96-inch (2400-mm) diameter manholes.

The configuration of the system is determined by the suffix of the model name:

- A model name without a suffix denotes a standard pipe inlet (Example HS48).
- A "G" at the end of the model designation denotes a grate inlet (Example HS48G).
- A "GP" at the end of the model designation denotes a combination of grate and pipe inlets (Example HS48GP).

Performance

Full-Scale Laboratory Test Results

Laboratory testing of the VortSentry HS was conducted using F-55 Silica, a commercially available sand product with an average particle size of 240-μm (Table 1). This material was metered into a model HS48 VortSentry HS at an average concentration of between 250-mg/L and 300-mg/L at flow rates ranging from 0.50-cfs to 1.5-cfs (14-L/s to 56-L/s).

US Standard Sieve Size	Particle Size Micron (μm)	Cumulative Passing %
30	600	99.7%
40	425	95.7%
50	300	74.7%
70	212	33.7%
100	150	6.7%
140	106	0.7%

Table 1 : US Silica F-55 Particle Size Distribution

Removal efficiencies at each flow rate were calculated based on net sediment loads passing the influent and effluent sampling points. Results are illustrated in Figure 1.

Assuming that sediment in the inlet chamber is ideally mixed, removal rates through the system will decay according to the percentage of flow bypassed. This effect has been observed in the laboratory where the test system is designed to produce a

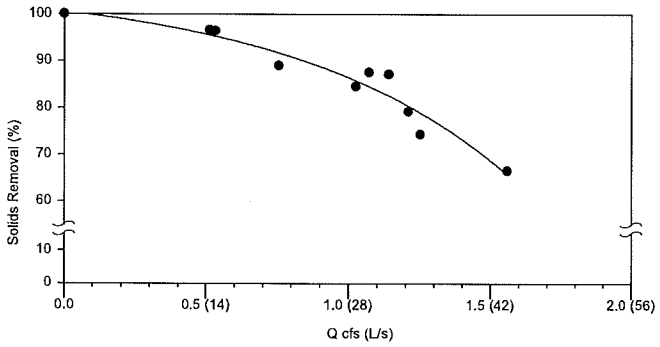


Figure 1: VortSentry HS Removal Efficiencies for 240-μm Particle Gradation

thoroughly mixed inlet stream. All VortSentry HS models have the same aspect ratio regardless of system diameter (i.e. an increase in diameter results in a corresponding increase in depth). Operating rates are expressed volumetrically.

Removal efficiency at each operating rate is calculated according to the average of volumetric and Froude scaling methods and is described by Equation 1.

Equation 1: $$\left(\frac{\text{Diameter Prototype}}{\text{Diameter Model}}\right)^{2.75} = \left(\frac{\text{Flow Rate Prototype}}{\text{Flow Rate Model}}\right)$$

Equation 1 and actual laboratory test results were used to determine the flow rate which would be required for the various VortSentry HS models to remove 80% of solids.

View report at **www.ContechES.com/stormwater**

Maintenance

The VortSentry HS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit, i.e., unstable soils or heavy winter sanding will cause the treatment chamber to fill more quickly, but regular sweeping will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant deposition and transport may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (i.e. spring and fall) however more frequent inspections may be necessary in equipment washdown areas and in climates where winter sanding operations may lead to rapid accumulations of a large volume of sediment. It is useful and often required as part of a permit to keep a record of each inspection. A simple inspection and maintenance log form for doing so is available for download at **www.ContechES.com/stormwater**

The VortSentry HS should be cleaned when the sediment has accumulated to a depth of two feet in the treatment chamber. This determination can be made by taking two measurements with a stadia rod or similar measuring device; one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the distance given in Table 2, the VortSentry HS should be maintained to ensure effective treatment.

Cleaning

Cleaning of the VortSentry HS should be done during dry weather conditions when no flow is entering the system. Cleanout of the VortSentry HS with a vacuum truck is generally the most effective and convenient method of excavating pollutants from the system. Simply remove the manhole cover and insert the vacuum hose into the sump. All pollutants can be removed from this one access point from the surface with no requirements for Confined Space Entry.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, an oil or gasoline spill should be cleaned out immediately. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use adsorbent pads, which solidify the oils. These are usually much easier to remove from the unit individually, and less expensive to dispose than the oil/water emulsion that may be

created by vacuuming the oily layer. Floating trash can be netted out if you wish to separate it from the other pollutants.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure proper safety precautions. If anyone physically enters the unit, Confined Space Entry procedures need to be followed.

Disposal of all material removed from the VortSentry HS should be done is accordance with local regulations. In many locations, disposal of evacuated sediments may be handled in the same manner as disposal of sediments removed from catch basins or deep sump manholes. Check your local regulations for specific requirements on disposal.

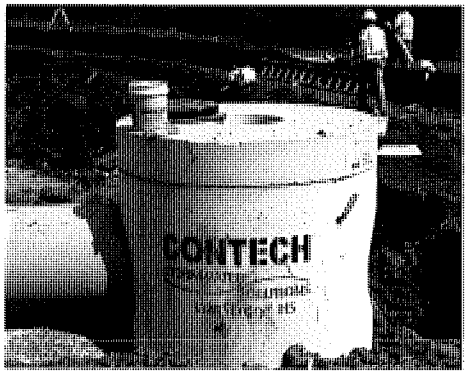
VortSentry HS Model	Diameter		Distance Between Water Surface and Top of Storage Sump		Sediment Storage		Oil Spill Storage	
	in.	m	ft.	m	yd^3	m^3	gal.	liter
HS36	36	0.9	3.6	1.1	0.5	0.4	83	314
HS48	48	1.2	4.7	1.4	0.9	0.7	158	598
HS60	60	1.5	6.0	1.8	1.5	1.1	258	978
HS72	72	1.8	7.1	2.2	2.1	1.6	372	1409
HS84	84	2.1	8.4	2.6	2.9	2.2	649	2458
HS96	96	2.4	9.5	2.9	3.7	2.8	845	3199

Table 2: VortSentry HS Maintenance Indicators and Sediment Storage Capacities.

Note: To avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile. Finer, silty particles at the top of the pile may be more difficult to feel with the measuring stick. These finer particles typically offer less resistance to the end of the rod than larger particles toward the bottom of the pile.

Logon to **www.ContechES.com/stormwater** to download the VortSentry HS Inspection and Maintenance Log.

For assistance with maintaining your VortSentry HS, contact us regarding the Contech Maintenance compliance certification program.



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Support

- Drawings and specifications are available at contechstormwater.com.
- Site-specific design support is available from our engineers.

PESCE ENGINEERING & ASSOCIATES, INC.
451 Raymond Road
Plymouth, MA 02360
Phone: 508-743-9206 Cell: 508-333-7630
epesce@comcast.net

July 4, 2016

Nantucket Planning Board
Attn: Ms. Leslie Snell, AICP, LEED ® AP
Deputy Director, Planning & Land Use Services
2 Fairgrounds Road
Nantucket, MA 02554

Subject: Engineering Review of the Proposed **Old South Road Crossing – Retail "Liner Buildings" MCD**

Dear Mrs. Snell & Members of the Board:

Pesce Engineering & Associates, Inc. is pleased to provide you this engineering review of the proposed Old South Road Crossing – Retail "Liner Buildings" Major Commercial Development, Nantucket, MA. We have evaluated the plans for consistency with the Town's Zoning Bylaw, and general conformance with the Massachusetts Stormwater Management Regulations.

We have reviewed the following documents and information to prepare this letter report:

- Letter from The Richmond Company to the Town of Nantucket Planning Board, Subject: Submittal of Application for Major Commercial Development / Special Permit (Retail), Old South Road Crossing Retail "Liner" Buildings / 62, 67, 73 and 75(A) Old South Road, Richmond Great point Development LLC (Owner Developer), dated June 10, 2016.

- Site Development Plans: "*Old South Road Crossing Retail "Liner Buildings", Major Commercial Development Special Permit Site Plan, at 62, 67, 73 and 75(A) Old South Road, Nantucket, MA*," 8 sheets, prepared by Hayes Engineering, Inc., dated June 10, 2016.

- Storm Water Management Report, Major Commercial Development Special Permit Site Plan, Old South Road Crossing, Nantucket, MA, prepared by Hayes Engineering, Inc., dated June 10, 2016.

- Application for a Special Permit, dated June 13, 2016, with description of zoning relief sought.

This project involves approximately 2.39 acres of land as part of the proposed Old South Road Crossing development of the former Glowacki property. This site is located in the Commercial-Neighborhood (CN) Zoning District, and lies within the Nantucket Sewer and Wellhead Protection Districts, as well as a Zone II of a public drinking water supply. No wetlands are located on the property, and it is not located within the 100-yr. flood plain.

The MCD site involves the development of 5 lots for new commercial/retail uses abutting Old South Road. The lots propose the construction of 5 new buildings ranging from 1,500 sf to 5,1270 sf for a total of approximately 15,000 sf, with a 1,200 sf outdoor seating area included for Lot 5 (restaurant). Municipal water and sewer services are planned for this project. The design also calls for widening of Old South Road, and the addition of a center left or right turning lane between east-west Old South road travel lanes.

The following are our review comments:

Definitive Plans, Utilities, and Site Layout

1. We recommend that the applicant discuss with the Board the justification and explanation for the waivers requested. From our review of these waivers, we find they do not present any major additional engineering issues or concerns. Furthermore, we would support the request for larger corner turning radii to better accommodate truck traffic.

2. We recommend that the applicant review this plan with the Nantucket Fire Dept., and provide the Board with their written comments for the record.

3. As mentioned above, the plans also call for widening of Old South Road to add a center left or right turning lane between the east-west Old South road travel lanes. However, no construction details were included with the plans. We have been informed that this widening is shown as conceptual, in order to discuss this with the Board and obtain comment and direction for this project. We recommend that if the Board approves of this design concept, that a condition be added to the Special Permit requiring that additional design details be provided for the Board's review, including the relocation of the drainage and electrical infrastructure on Old South Road.

4. Again, we understand that these plans may represent a preliminary design to provide discussion points with the Board. However, we recommend that the following additional information be added to the future plan revision:

a. The proposed locations for trash dumpster pads (especially for the proposed restaurant), and a pad construction detail, with screening fencing, as appropriate.

b. A Landscaping Plan and Lighting Plan.

c. An Erosion Control Plan, showing the proposed locations of silt fence erosion controls, and the locations for the details for the "Tire Tracking Pad," and "Silt Sack" shown on Sheets 6 & 7.

d. The locations for and a detail of Handicapped Parking signage.

e. A "Stop" sign (with painted stop line) at the intersections with Road "A" (the proposed Old South Road Crossing intersection), and at Lovers Lane.

f. Parking space dimensions, proposed aisle widths, and curb radii.

g. Proposed sidewalk width and a construction detail.

h. The Pavement Section detail on sheet 6 indicates *"8" Min. Gravel or 3" Gravel over 6" hardening."* We recommend that this roadway base material be specified with a design sieve specification (such as MA DOT M2.01.7, M1.03.0 or similar).

i. The line type shown for the proposed grading is nearly identical to that for the existing grading, making it difficult to follow/read. We recommend that the proposed grading lines be changed to make them easier to read (perhaps thicken them, or change the line type, or both). NOTE: The line type shown on Sheet 8 for the proposed grades were much more legible than on the other sheets.

j. Add notes with leader arrows for the proposed removal and relocation of the existing sewer Force Main (FM) shown in the vicinity of CB 4, for better clarity during construction.

k. Add notes to indicate the connection of the outlet lines for CBs 5 & 6 to a downstream drainage structure.

5. The Sheet 8 shows the proposed "Interim Site Plan" layout and grading. We recommend that the phasing for this be discussed with the Board, and additional notes added to the plan regarding the timing, and other details/notes, as appropriate, or requested by the Board.

Stormwater Management

This project proposes to mitigate post-development runoff for the project roadway by collecting runoff into a series of deep sump catch basins and drain manholes, which flow to three subsurface infiltration areas. Additionally, the subsurface system that collects runoff form the main parking area will be pre-treated through the use of a VortSentry® HS stormwater treatment unit. This stormwater management system will remove over 80% of the Total Suspended Solids (TSS) in the stormwater, and recharge the stormwater to the aquifer. The proposed design also reduces the peak rate of runoff as compared to the existing conditions, and is additionally designed for the 100-yr. storm.

We have the following stormwater management comments:

1. The proposed Nyloplast Yard Drain Inlet detail is shown on Sheet 6, however no inlet basin detail was included on the plans. We recommend that an appropriate detail be added to the plans, which includes a 4 ft. sediment sump, and outlet tee or elbow, in accordance with Stormwater Best Management Practices.

2. No soil test pit data was provided to evaluate the separation distance from the bottom of the StormTech™ chambers from the estimated seasonal high groundwater elevation. Subject to the approval of the Board, we recommend that the requirement to provide test pit data be added as a condition of the Special Permit, to conduct these test pits and provide this information to the Board prior to the construction start.

3. Sheet 6 shows details for a “Reduced Cover Drain Manhole” and “Reduced Cover Catch Basin.” We recommend that the locations for these be shown on the plans (or removed if not needed).

4. We recommend that at least 2 inspection ports be shown for PSIS#1 & PSIS#3 (at each end of the chamber line), and that least 6 inspection ports be provided for PSIS#2 (1 at each corner, and 2 in the middle of the chamber field).

5. The proposed rim elevation of the Yard Drain #1 (Lot 3/4 area) is 33.75 ft. The drainage calculations in the Storm Water Management Report indicate a peak elevation of 34.17 ft. at this site for the 25-yr. storm. We recommend the infiltration system be modified/enlarged to contain the 25-yr. storm, and consideration be given for the same for the lager storms as well.

6. The drainage calculations for PSIS#2 indicate a peak storm elevation of 30.82 ft. for the 25-yr. storm, which exceeds the BMH4/OCS overflow elevation of 30.00 ft. We

recommend the infiltration system be modified/enlarged to contain the 25-yr. storm, and consideration be given for the same for the lager storms as well.

7. The Post-Development Watershed map included in the Storm Water Management Report is difficult to read. It is difficult to see the subcatchment area boundaries, the Tc flow lines for each subcatchment area, and the POC1 location is not indicated on the map. We recommend that this map be amended.

Thank you again for this opportunity to assist the Planning Board in their review of this project. As always, please call if you have any questions or comments.

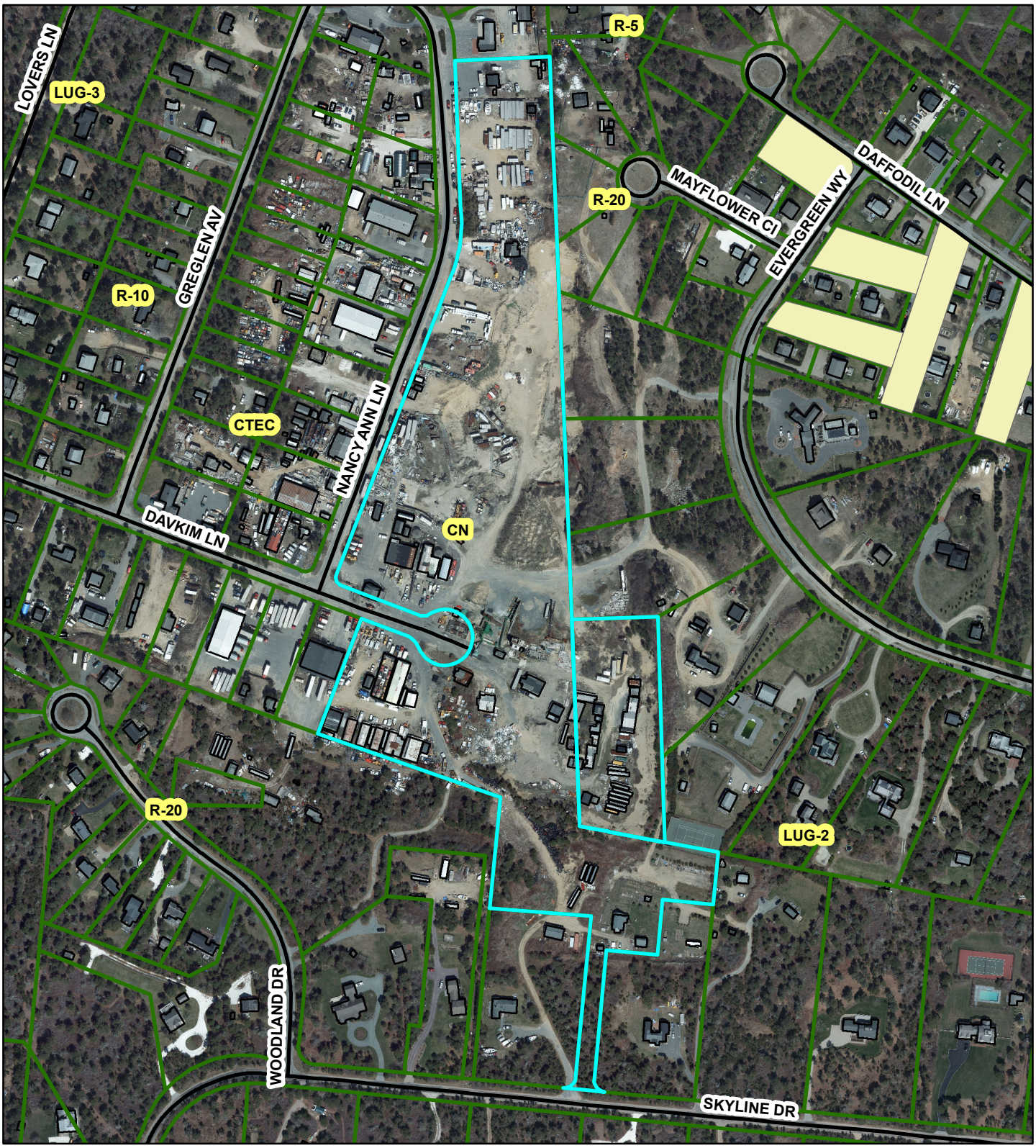
Sincerely,

PESCE ENGINEERING & ASSOCIATES, INC.

Edward L. Pesce., P.E., LEED ® AP
Principal

David Armanetti, The Richmond Co.
P. John Ogren, P.E., Hayes Engineering, Inc.

#40-16 Richmond Great Point Development, LLC
Meadows II Rental Apartment Development Project
20 & 20R Davkim Lane
Map 68 Parcels 56.1 & 57



Town Clerk
Town & County Building
16 Broad St
Nantucket, MA 02554

JUN 15 2016

Nantucket Planning Board

RECEIVED
JUN 15 2016
By

Application for a Special Permit

Date: June 13, 2016 File #:

Name of development: "Meadows II" Rental Apartment Development Project

Owner(s) name(s): Richmond Great Point Development LLC (Philip Pastan)

Mailing address: 23 Concord Street, Wilmington MA 01887
Phone number: 978-988-3900 Fax number: 978-988-3950

E-mail: ppastan@richmondco.com

Applicant's name: The Richmond Company, Inc. (David Armanetti and Patty Roggeveen)
Mailing address: 23 Concord Street, Wilmington MA 01887
Phone number: 978-988-3900 Fax number: 978-988-3950
E-mail: darmanetti@richmondco.com; proggeveen@richmondco.com

Engineer / surveyor's name: Green Seal Environmental, Inc. (Heather Twiss)

Mailing address: 114 State Road, Sagamore Beach MA 02562 Phone number: 508-888-6034 Fax number: 508-888-1506 E-mail: htwiss@gseenv.com

Location of lot(s):

Street address 20 and 20 (R) Davkim Lane

Tax Assessors Map Parcel See Attachment "A" for Detail of Multiple Parcels

Nantucket Registry of Deed: See Attachment "B" for Detail of Multiple Parcels
Book Page **OR**

Plan File # **OR** Land Court Plan # at Certificate #

Size of parcel: 631,620 SF (14.50 Acres) sq. ft. Zoning District: Commercial Neighborhood (CN)

Special Permit sought: (check one)

- ❍ Cluster subdivision
- ❍ Commercial WECS
- ❍ Driveway Access/Curb Cut Special Permit
- ❍ Harbor Overlay District (HOD)
- ❍ Major Commercial Development (MCD)

- ❍ Multi-family Special Permit
- ❍ Moorlands Management District Subdivision or Construction (MMD)
- ❍ NEHOD (Neighborhood Employee Housing Overlay District)
- ❍ MRD (Major Residential Development)
- ❍ MIPOD (Mid-Island Planned Overlay District)
- ❍ Other Uses Requiring a Special Permit (specify all uses and *Nantucket Code* sections)

Section	Description

Specify all associated Zoning Code relief sought:

Section	Description
None	

Only the zoning relief expressly requested above will be considered as part of this application.

If applying for a Major Commercial Development, specify how the application will comply with Section 139-11 (J) of the *Zoning Code of the Town of Nantucket*, also known as the Town's Affordable Housing Effort:

Not Applicable (Application is not a Major Commercial Development Project)

Planning Board filing fee due: $_____

Engineering Inspection Escrow Deposit due: $_____

I/ we hereby certify that the applicant(s) cited above have been authorized by me/ us to file a Special Permit application with the Planning Board on property that I/ we own.

Owner(s)' Signature(s) Philip Pastan, as Manager of Richmond Great Point Development LLC

Applicant's Signature

6/13/16

I/we _____, the undersigned, hereby authorize _____ to act as agent(s) on my/our behalf and to make any necessary revisions on this filed application as they may be requested by the Board to meet its governing rules and guidelines.

Owner(s)' signature(s)

Check List:

- ☐ Planning Board Special Permit abutters list – to be obtained at the Tax Assessor's office
- ☐ Completed application form entitled "Application to the Planning Board for a Special Permit"
- ☐ Application fee of $250.00 payable to Town of Nantucket
- ☐ Abutters fee of $6.11 per abutters payable to Pitney Bowes Reserved Funds
- ☐ Four (4) sets of mailing labels with each abutter's name and address
  - 1" x 2 5/8" size, typed labels, are preferred
  - duplicate labels are not necessary if the same owner is listed for more than one abutting property
- ☐ Completed application form
- ☐ Town Clerk's stamped application (provide 2 copies-one for Town Clerk and one for Planning Board)

"Attachment A" to
Special Permit Application

"Meadows II" Rental Apartments Development
20 and 20 (R) Davkim Lane, Town of Nantucket MA

ADDITIONAL SPACE NEEDED TO PROVIDE DETAILED INFORMATION FOR MULTIPLE PARCELS

---

20 Davkim Lane (Entirety of 12.5 Acre Total)

Tax Assessors Map Information:	Map # 68, Parcel # 57
Registry / Plan Information;	Lot # 184 on Land Court Plan # 16514-Z) (Land Court Certificate # 24872)

20 (R) Davkim Lane (Entirety of 2.00 Acre Total)

Tax Assessors Map Information:	Map # 68, Parcel # 56.1
Registry / Plan Information;	Lot # 206 on Land Court Plan # 16514-7) (Land Court Certificate # 24872)

"Attachment B" to
Special Permit Application

"Meadows II" Rental Apartments Development
20 and 20 (R) Davkim Lane, Town of Nantucket MA

The title to the land included in the above-referenced application is derived as follows:

As to the Owner of One Hundred Percent (100%) of the 20 Davkim Lane Property

RICHMOND GREAT POINT DEVELOPMENT LLC

"*Deed*" dated August 7, 2013, recorded at the Nantucket County Registry of Deeds, in Book # 01397, Page # 312, recorded on August 8, 2013 (referred to as "Recorded Land – Parcel Thirty-Two" on Page 7 of the "*Deed*").

As to the Owner of One Hundred Percent (100%) of the 20 (R) Davkim Lane Property

RICHMOND GREAT POINT DEVELOPMENT LLC

"*Deed*" dated August 7, 2013, recorded at the Nantucket County Registry of Deeds, in Book # 01397, Page # 312, recorded on August 8, 2013 (referred to as "Recorded Land – Parcel Forty-Two" on Page 9 of the "*Deed*").

THE RICHMOND COMPANY, INC.

The Richmond Company, Inc.
23 Concord Street
Wilmington, Massachusetts 01887
(979) 988-3900

June 10, 2016

TOWN OF NANTUCKET
PLANNING BOARD
2 Fairgrounds Road
Nantucket, Massachusetts 02554

Attention: Leslie Woodson Snell, AICP, LEED AP, Deputy Director of Planning

Subject: Submittal of Application for Special Permit (Workforce Rental Community)
Richmond Great Point Development LLC (Owner / Developer)
"Meadows II" Multi-Family Workforce Rental Community Development
20 Davkim Lane and 20 (R) Davkim Lane

Dear Ms. Snell:

The purpose of this correspondence, issued in our capacity as the applicant and development manager, on behalf of the owner of the subject properties (Richmond Great Point Development LLC) is to submit the completed application form, plans, drainage reports, and related materials which are required to petition the Town of Nantucket Planning Board to consider the above-captioned proposal which requires the issuance of a special permit to allow for the development of the "workforce rental community" project which is proposed to be located on a combination of two (2) contiguous properties comprising +/- 14.5 acres of land located at 20 Davkim Lane and 20(R) Davkim Lane (this land comprises the existing asphalt plant / gravel pit" and storage yard components of the former Glowacki property).

The proposed project is comprised of the land area that was specifically re-zoned for this purpose, to the Commercial Neighborhood (CN) zoning district and to qualify as a "workforce rental community" by the approval of Article 1 and Article 2 at the Nantucket Special Town Meeting of November 9, 2015, the provisions of which have been codified as Section 139-8(D) (Residential Development Options) of the Town of Nantucket Zoning Bylaw.

The proposed project is also expressly consistent with and complies with the terms and provisions of the "*2015 Richmond Great Point Development, LLC / Town of Nantucket Memorandum of Agreement*" dated November 9, 2015, which memorializes the specific terms under which a workforce homeownership housing community could be developed on the above-captioned properties (the "MOA").

As reflected on the attached site plan, the development program includes a total of 225 apartment units in a series of approximately forty (40) low density, two story, residential structures, designed in a "campus" style layout with interconnected walkways and bike paths and generous off street parking, well in excess of the off street parking required under Section 139-18(B) of the Town of Nantucket Zoning Bylaw, which is equal to requiring one (1) off street parking space per bedroom.

The proposed project will be served by a range of new infrastructure improvements (including water, sewer, drainage, street lighting, landscaping, etc.).

The proposed project will offer a mix / range of studio, one bedroom, two bedroom, and three bedroom units. The mix of units that are proposed to be created, are as follows (this unit mix is preliminary and is subject to change, based on further market research by the owner / developer or a change in conditions prior to the issuance of final approval for the proposed project.

"Meadows II" Workforce Rental Community Project
Summary of Preliminary Proposed Unit Mix

Unit Types	Number of Units (Per Type)	Percentage of All Units (Per Type)
Studio (S) Units	22	10 %
One (1) Bedroom Units	87	39 %
Two (2) Bedroom Units	94	42 %
Three (3) Bedroom Units	22	10 %
Subtotal	**225 Units**	**100 %**

Based on the preliminary unit mix described above, the proposed project will have a total of three hundred and sixty-three (363) individual bedrooms, which is equal to a bedroom per unit ratio of 1.61 bedrooms per unit.

Twenty-five percent of all of the proposed units, equal to fifty-six (56) units will be rented to tenants who qualify under the household income and related eligibility criteria set forth in the MOA (including the local preference and lottery provisions described therein).

This will include the rental of all of the affordable units to tenants whose household incomes are equal to or less than eighty percent (80%) of the Area Median Income (AMI) established for Nantucket County by the US Department of Housing and Urban Development (HUD). In 2015, these (80% of AMI) annual income limits were equal to $71,800 in annual income for a three person household and $79,750 in annual income for a four person household. Based on these income limits and the formulas set by the Commonwealth of Massachusetts Department of Housing and Community Development and Mass Housing under how the maximum monthly rents for the affordable units are established, the maximum monthly rent for the (80% AMI) affordable apartment units will be +/- $1,270 per month for a studio unit, +/- $1,325 per month for a one bedroom unit, +/- $1,590 per month for a two bedroom units, and +/- $1,825 per month for a three bedroom unit (all of these monthly rents excludes utilities, which must be paid by the individual tenants, in addition to the monthly rent. By the time the proposed project is approved, these maximum income and monthly rent limits will likely be tied to the 2016 income data that is issued / updated by the federal and state government, so these limits will likely change (slightly).

Per the terms of the MOA, all of the affordable units will be dispersed uniformly throughout the project and the appearance and quality of finishes of the affordable units will be directly comparable to the market rate apartment units that are also being developed within the property.

Based on the foregoing and in accordance with the MOA, all of the fifty-six (56) affordable rental units in the proposed project will quality for placement on the Town of Nantucket's Subsidized Housing Inventory List (the "SHI List") which is administered by the Commonwealth of Massachusetts Department of Housing and Community Development and is the official data base that determines whether the Town has met the provision of the statutory minimum of ten percent (10%) of its overall year round housing stock being rented or sold as qualifying affordable units which determines whether the Town is subject to development from so called "Chapter 40B" housing projects. The affordable units to be provided in the proposed project, which will be maintained as affordable in perpetuity, will significantly increase the Town's inventory of affordable units in its attempts to meet this objective.

The proposed project is also subject to compliance with the applicable intensity and dimensional criteria set forth in Section 139-16 of the Town of Nantucket Zoning Bylaw (including but not limited to minimum lot size, frontage, yard setbacks, ground cover ratio, and (lot) regularity factor, as modified by the site flexibility standards that are set forth in Section 139(8)(D) of the Town of Nantucket Zoning Bylaw for workforce rental community, which the proposed project is qualified for,

Because it is subject to issuance of a workforce rental community special permit, as specified in Section 139-8(D)(1)(a)[3] of the Town of Nantucket Zoning Bylaw, the proposed subject is subject to major site plan review (MSPR) by the Planning Board (as set forth in Section 139-23, and specifically Section 139-23(B)(2) of the Town of Nantucket Zoning Bylaw).

We appreciate the opportunity to submit the application, plans, and supporting materials for this important development proposal for your review and for consideration by the Planning Board and we look forward to commencing with the public hearing and public review process.

If you have any immediate questions with respect to the proposed project or any of the submittal materials, please feel free to contact me at 978-988-3900, Extension # 12.

Very truly yours,

David J. Armanetti
Director of Real Estate Development
The Richmond Company, Inc.
On Behalf of Richmond Great Point Development LLC

Cc: Philip Pastan, TRC
Kathryn Fossa, TRC
Patricia Roggeveen, RGPDLLC
Shane Valero, RGPDLLC
Andrew Burek, Esq., RGPDLLC
Arthur Reade Jr., Esq., RGH
John Ogren, Hayes Engineering

THE RICHMOND COMPANY, INC.

The Richmond Company, Inc.
23 Concord Street
Wilmington, Massachusetts 01887
(979) 988-3900

June 13, 2016

TOWN OF NANTUCKET
TOWN CLERK
16 Broad Street
Nantucket, Massachusetts 02554

Attention: Catherine Flanagan Stover, MMC, CMMC

Subject: Submittal of Application for Special Permit (Workforce Rental Community)
Richmond Great Point Development LLC (Owner / Developer)
"Meadows II" Multi-Family Workforce Rental Community Development

Dear Mrs. Stover:

The purpose of this correspondence, issued in our capacity as the applicant and development manager, on behalf of the owner of the subject properties (Richmond Great Point Development LLC) is to document submittal of the completed application to petition the Town of Nantucket Planning Board to consider the above-captioned proposal which requires the issuance of a special permit to allow for the development of the "Meadows II" workforce rental community development, comprised of two hundred and twenty-five (225) rental apartment units on a combination of two (2) properties totaling +/- 17.2 acres of land located at 20 Davkim Lane and 20 (R) Davkim Lane.

The submittal of the application to your office is being completed as prescribed in Section 139-30(B)(1) of the Town of Nantucket Zoning Bylaw.

Upon your acknowledgment of receipt of the application (by way of time / date stamping the application), we will proceed to file a copy of the application (and all other required materials) forthwith to the Town of Nantucket Planning Board to obtain its review and subsequent action (as prescribed in Section 139-30(B)(2) of the Town of Nantucket Zoning Bylaw.

Should you have any questions with respect to the application and submittal, please feel free to contact me at 978-988-3900, Extension # 12.

Very truly yours,

David J. Armanetti
Director of Real Estate Development
The Richmond Company, Inc.
On Behalf of Richmond Great Point Development LLC

Cc: Andrew Burek, Esq., TRC
Arthur Reade, Jr., Esq., RGH

DEVELOPMENT SUMMARY	
SINGLE FAMILY	
	PROPOSED
UNIT COUNT	100
TYPE 'A'	26
TYPE 'B'	58
TYPE 'C'	16
ROADWAY	4760 LN. FT.
MULTI FAMILY	
	PROPOSED
BUILDINGS	38
PARKING SPACES	416
RATIO	10.94 / BLDG
ROADWAY	2805 LN. FT.
ROADWAY - PARKING	2860 LN. FT.
LINEAR RETAIL	
	PROPOSED
BUILDING SQ. FT.	15,505
PARKING SPACES	89
RATIO	5/1000

100 50 25 0 100

1"= 100'

PLAN NOTES

1. THIS PLAN HAS BEEN PREPARED BASED ON REFERENCES INCLUDING:
   -GOOGLE EARTH AERIAL IMAGERY
   -MASSGIS ORTHOIMAGERY
   - CAD FILE TITLED "TOPO-PIT.DWG" PREPARED BY HAYES ENGINEERING AND PROVIDED BY RICHMOND GREAT POINT DEVELOPMENT, LLC.
   - TOWN OF NANTUCKET GIS
2. EXACT LOCATION OF PROPOSED BUILDING AND IMPROVEMENTS MUST BE CONFIRMED AND EVALUATED UPON COMPLETION OF SURVEY.
3. THIS PLAN IS INTENDED FOR CONCEPTUAL REVIEW PURPOSES ONLY. THE EXISTING CONDITIONS SHOWN HEREON IS BASED UPON INFORMATION THAT WAS SUPPLIED TO OUR OFFICE AT THE TIME OF PLAN PREPARATION AND MAY BE SUBJECT TO CHANGE AND MUST BE UPDATED UPON PERFORMANCE OF A SURVEY.

RICHMOND GREAT POINT DEVELOPMENT LLC
OLD SOUTH ROAD PROPERTIES
NANTUCKET, MA

MASTER PLAN

SCALE: 1"=100'
DATE: 06/16/2016
PROJECT □: W141196

REFERENCES:

RICHMOND GREAT POINT DEVELOPMENT LLC

PLAN NOTES

1. THIS PLAN HAS BEEN PREPARED BASED ON REFERENCES INCLUDING:
   -GOOGLE EARTH AERIAL IMAGERY
   -MASSGIS ORTHOIMAGERY
   - CAD FILE TITLED "TOPO-PIT.DWG" PREPARED BY HAYES ENGINEERING AND PROVIDED BY RICHMOND GREAT POINT DEVELOPMENT, LLC.
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RICHMOND GREAT POINT DEVELOPMENT LLC
OLD SOUTH ROAD PROPERTIES
NANTUCKET, MA

MASTER PLAN

SCALE: 1"=100'
DATE: 06/10/2016
PROJECT #: W141196

REFERENCES:

RICHMOND GREAT POINT DEVELOPMENT LLC

THE RICHMOND COMPANY, INC.

The Richmond Company, Inc.
23 Concord Street
Wilmington, Massachusetts 01887
(979) 988-3900

June 30, 2016

TOWN OF NANTUCKET
PLANNING BOARD
2 Fairgrounds Road
Nantucket, Massachusetts 02554

Attention: Leslie Woodson Snell, AICP, LEED AP, Deputy Director of Planning

Subject: Transmittal of Copy of Housing Initiatives "*Memorandum of Agreement"* (MOA)
Town of Nantucket Board of Selectmen and Richmond Great Point Development LLC

Dear Ms. Snell:

As part of the presentation that we will be making as the development manager on behalf of the applicant (Richmond Great Point Development LLC) on the two special permit applications that will be subject to consideration at the July 11, 2016 meeting of the Planning Board (the "Meadows II" Workforce Rental Housing Community and the "Sandpiper Place" Workforce Homeownership Housing) we intend to provide a summary of the status and the major provisions of the "*Memorandum of Agreement*" dated November 9, 2015 by and between the Town of Nantucket, by and through its Board of Selectmen, and Richmond Great Point Development LLC, as relates to these two major housing initiatives.

Accordingly, we have attached / submitted a PDF copy of the document herein and respectfully request that copies be provided to the respective members of the Planning Board in their agenda / meeting package for the July 11, 2016 meeting.

Should you have any questions with respect to the enclosed document or our request to provide copies to the members of the Planning Board, please feel free to contact me at 978-988-3900, Extension # 12.

Very truly yours,

David J. Armanetti
Director of Real Estate Development
The Richmond Company, Inc.
On Behalf of Richmond Great Point Development LLC

Cc: Patty Roggeveen, RGPDLLC
Andrew Burek, Esq., RGPDLLC
Arthur Reade, Jr., Esq., RGH

2015 RICHMOND GREAT POINT DEVELOPMENT, LLC/TOWN OF NANTUCKET MEMORANDUM OF AGREEMENT

This Agreement ("Agreement") is entered into by and between Richmond Great Point Development, LLC, a Delaware limited liability company, with a usual place of business at 23 Concord Street, Wilmington, MA 01887 and its successors in interest ("Richmond"), and the Town of Nantucket, a municipal corporation organized under the laws of the Commonwealth of Massachusetts, with a usual place of business at 16 Broad Street, Nantucket, MA ("Town"), acting by and through its duly elected Board of Selectmen ("Board of Selectmen"). Richmond, the Town and Board of Selectmen are collectively referred to herein as the "Parties."

WHEREAS, the Town has not yet achieved and seeks to achieve the goal of having ten percent affordable housing placed on the Subsidized Housing Inventory Lists ("SHI List") as such is inventoried by the Commonwealth of Massachusetts Department of Housing and Community Development ("DHCD") as defined under the affordable housing statute and regulations, respectively, G.L. c.40B, §§20-23 and 760 CMR 56.00;

WHEREAS, the Town has 4,896 Year Round Housing units, based upon the 2010 Census;

WHEREAS, the Town, as of December 2014, has 121 units on the SHI List equal to the ratio of 2.5% affordable housing based upon its total year round housing inventory based upon the 2010 Census.

WHEREAS, the Town needs a total of 490 SHI Units to achieve 10 percent SHI affordable housing ratio, or a total of 369 additional SHI Units.

WHEREAS, Richmond is the fee owner of property in Nantucket, Massachusetts that is shown on the attached exhibits (Exhibits A and B), which depict land fronting on Nancy Ann Lane, Old South Lane, Mayflower Circle, Daffodil Lane, Evergreen Way and on both sides of Davkim Lane (the "Property"), which includes, the following parcels:

- Properties known as the entirety of 30, 32, 34 and 35 Daffodil Lane, the entirety of 3, 4, 5, 7, 8, 9 and 10 Mayflower Circle, the entirety of 75(A) Old South Road, the entirety of 73 Old South Road and the Mayflower Circle right of way and Daffodil Lane right of way, containing approximately 9 or more acres, being, at least in part, the entirety of Lots 615, 618, 621, 622, 623, 624, 625, 628, 629, 630, 631 and Lot 663 shown on Land Court Plan 16514-40, the entirety of Lot 858 shown on Land Court Plan 16514-100 and a portion of Lot 47 shown on Land Court Plan 16514-G, all as filed and recorded with the Nantucket Registry District of the Land Court and as shown on Exhibit C attached hereto and shown as the "Proposed 40B Homeownership Project (100 Single Family Homes) on Exhibit B and as the land owned by Richmond on Exhibit A;
- 20 Davkim Lane (Southern Portion) and 20 Davkim Land (Rear), containing approximately12 or more acres, being Lots 184 and 206 shown on Land Court Plan

16514-Z and 16514-, as filed and recorded at the Nantucket Registry District of the Land Court and as shown on Exhibit D attached hereto and shown as the property "Being developed as a 40B Rental Project (150 Rental Units) on Exhibit B;

- Properties known as the entirety of 6 Mayflower Circle, 24 Evergreen Way, 26 Evergreen, 28 Evergreen Way and 30 Evergreen Way; and
- Properties that are shown on the areas shaded in gray on Exhibit A that are not already specified above. (Collectively, the above parcels and properties are referred to as the "Property".)

WHEREAS, Richmond seeks to develop the Property for multi-family rental housing and single family home ownership, with an affordability component that is defined and guaranteed as provided for hereunder.

WHEREAS, Richmond has submitted applications to MassHousing for Project Eligibility Letters for two proposed 40B projects for a portion of the Property , which would create a total of 200 residential units, with 150 rental units and 50 home ownership units;

WHEREAS, Richmond intends to develop the entire Property with a total of 325 units (225 rental units and 100 ownership units);

WHEREAS, Richmond submitted two citizen petitions for the November 2015 Nantucket Special Town Meeting to: (1) rezone portions of the Property from Residential 20 (R-20) and Limited Use General 2 (LUG-2) to Residential 5 (R-5), and portions of the Property from Residential 20 (R-20) to Commercial Neighborhood (CN); and (2) introduce density bonuses in exchange for provision of affordable workforce housing in the R-5 and CN zoning districts;

WHEREAS, Richmond has requested the November 2015 Nantucket Town Meeting to rezone the following specific parcels of land under Article 1 of the Town Meeting Warrant:

Map	Parcel	Number	Street
68	129 (a portion of)	73	Old South Road
68	999.2 (a portion of)	75A	Old South Road
68	739	30	Daffodil Lane
68	740	32	Daffodil Lane
68	741	34	Daffodil Lane
68	742	35	Daffodil Lane
68	736	3	Mayflower Circle
68	735	5	Mayflower Circle
68	729	4	Mayflower Circle
68	730	6	Mayflower Circle
68	734	7	Mayflower Circle
68	731	8	Mayflower Circle
68	733	9	Mayflower Circle

68	732	10	Mayflower Circle
68	57	20	Nancy Ann Lane
68	56.1	20R	Davkim Lane
68	711	24	Evergreen Way
68	712	26	Evergreen Way
68	713	28	Evergreen Way
68	714	30	Evergreen Way

WHEREAS, Richmond has requested the November 2015 Town Meeting to adopt zoning changes to rezone portions of the Property (Article 1) and to adopt zoning provisions to provide for density bonuses in exchange for provision of defined and guaranteed affordable housing (Article 2), so as to allow the development of 325 units (225 rental and 100 home ownership);

WHEREAS, the Planning Board voted unanimously to provide a favorable report to Town Meeting, regarding Article 1 and Article 2, with modifications (which are set forth in Exhibit E), provided a development agreement is signed by Richmond with the Town (by and through the Board of Selectmen) prior to the November 2015 Town Meeting;

WHEREAS, Richmond has agreed with the Planning Board's modifications to Article 1 and 2, which are attached hereto as Exhibit E;

WHEREAS, if Richmond designs and obtains all necessary approvals to construct and in fact constructs the 325 Units, including 225 rental Units that would all be SHI eligible under the Local Action Unit program maintained by DHCD and the 7 home ownership units that would be SHI eligible under the Local Action Unit program and 18 homeownership units that would be permanently restricted as affordable at 175% of Area Median Income ("AMI"), the Town would make significant progress toward achieving the necessary SHI Units to achieve the goal of provision of not less than a ten percent affordable housing ratio and toward providing significant additional affordable housing for Nantucket.

WHEREAS, to accomplish the above goals, Richmond is committed to designing, obtaining approval for, constructing and maintaining an affordable rental and home ownership housing project at the Property with the density and affordability and mitigation set forth below;

WHEREAS, the Board of Selectmen has supported the appropriateness of the Richmond site for issuance of Project Eligibility Letters, in comments made to Mass Housing, subject to stated concerns;

NOW THEREFORE, based upon good and valuable consideration, the receipt and value of which is hereby expressly and specifically acknowledged by the Parties, agree as follows:

I. Richmond's Undertakings

1. Richmond agrees, if Articles 1 and 2, as modified by the Planning Board and attached hereto as Exhibits A and B are adopted at the November 2015 Town Meeting, without substantive amendments, and go on to take final effect, final effect being defined as the adoption of said Articles, proper filing with the Secretary of the Commonwealth of Massachusetts and the expiration of any procedural or substantive challenge of the Office of the Attorney General, collectively referred to as perfection under MGL c. 40, §32, then Richmond shall design and then seek all necessary approvals to build and then shall build up to a total of 325 Units at the Property (up to a total of 225 rental apartments and up to a total of 100 single-family home ownership units). At least twenty-five (25%) percent of all units at the Property shall have a permanent affordability component and shall be restricted to being rented or sold as affordable Units and maintaining SHI eligibility as specified herein. A sufficient percentage of the rental units shall be restricted as affordable, so that all of the rental units shall be SHI eligible. All of the affordable rental units shall be restricted to occupancy by tenants (households) earning at or below eighty (80%) percent of the Area Median Income ("AMI") at the maximum monthly rents prescribed for this income category under DHCD's Guidelines and 760 CMR 56.00 or under the Zoning Bylaw, or Under MGL c. 40R. At least twenty-five percent of the homeownership units shall have a permanent affordability restriction. Not less than seventy-five (75%) percent of the affordable home ownership units shall be restricted to purchase by Buyers (households) earning at or below eighty (80%) of the AMI and shall be sold at the maximum initial sales prices prescribed for this income category under DHCD's Guidelines and 760 CMR 56.00 or under the Zoning Bylaw, or under MGL c. 40R. Accordingly, not less than seventy-five (75%) of the affordable homeownership units shall be SHI eligible, with the remaining twenty-five (25%) percent restricted to being sold to Buyers (households) earning at or below one hundred seventy-five (175%) percent of AMI at the maximum initial sales prices prescribed for this income category under DHCD's Guidelines and 760 CMR 56.00 or under the Zoning Bylaw, or under MGL c. 40R. For the purposes of this paragraph and as it pertains to amendments of Article 1 and Article 2 rendering them, in any way, different than as attached hereto, Richmond hereby expressly agrees that it shall state its position at Town Meeting as to each amendment, if any amendment is offered, as to whether Richmond asserts the proposed amendment is substantive and shall be bound by its stated position that an amendment is not substantive, and Articles 1 and 2, as modified and not substantively amended. Richmond shall so restrict those units and shall use all commercially reasonable efforts to comply with any requirement that is within its control that is required under DHCD's Guidelines to make all of the up to 225 rental units SHI eligible and to make twenty-five (25%) percent of the affordable homeownership Units SHI eligible and shall cooperate with any requirement that the Town needs to undertake to render those units SHI eligible.

2. Richmond agrees that there shall be a maximum of up to 325 Units (including increments of up to 225 rental and up to 100 ownership), with a maximum of 700 bedrooms at the Property, the mix and allocation of which shall be within Richmond's sole and absolute discretion, subject to the review of the Nantucket Planning Board and the requirement that the bedroom mix for any affordable unit, including those "locally affordable" home ownership units to be restricted to sales to Buyers whose households earn at a maximum one hundred seventy-five (175%) percent of AMI, shall be the same bedroom mix as the bedroom mix used for the market rate units and the restricted units shall not be distinguishable from the non-restricted units as provided for under any requirement of DHCD.

3. Richmond agrees it shall as soon as reasonably practicable apply for and diligently pursue all necessary approvals for the first phase of the development of up to 325 units following the perfection of Articles 1 and 2, and then shall begin construction as phased below within ninety (90) calendar days of obtaining all necessary approvals required to construct the Project including the expiration of all applicable appeal periods, including but not limited to a Special Permit to be issued by the Town Planning Board, Major Site Plan approval to be issued by the Town Planning Board, endorsement of a definitive subdivision (or subdivisions) to be approved by the Town Planning Board and acceptance thereof for filing by Land Court for the District of Nantucket, certificates of appropriateness to be approved by the Town of Nantucket Historic District Commission, and building permits to be issued by the Town of Nantucket Building Commissioner. For purposes of this Agreement, approvals shall be defined as the final issuance of all necessary approvals and the expiration of all applicable appeal periods thereto.

4. Upon the issuance of the necessary approvals as described above and the endorsement of the subdivision plan by the Planning Board, each of which no longer being subject to any applicable appeal, Richmond agrees all of the rental units shall be subject to a permanent deed restriction that shall be delivered to the Town and accepted and recorded before any building permit issues which shall require that all of the rental units shall remain rental units and shall not be converted to ownership units without the approval of Town Meeting to release the restriction and that the affordable rental units shall remain affordable units permanently unless released by Town Meeting. The leases to any renter of any affordable unit shall strictly prohibit subletting of the unit and this requirement prohibiting subletting of rental units shall be set forth in the permanent deed restriction and enforceable by the Town. There shall be no short term rental of any of the rental units. A short term rental shall mean a rental period with a duration of less than thirty (30) calendar days.

5. Upon the issuance of the final relief, including but not limited to a Special Permit to be issued by the Town Planning Board, Major Site Plan approval to be issued by the Town Planning Board, endorsement of a definitive subdivision (or subdivisions) to be approved

by the Town Planning Board and acceptance thereof for filing by Land Court for the District of Nantucket, certificates of appropriateness to be approved by the Town of Nantucket Historic District Commission, and building permits to be issued by the Town of Nantucket Building Commissioner each of which no longer being subject to any applicable appeal , Richmond agrees the affordable ownership units (both the twenty-five (25%) percent of affordable home ownership Units restricted at 80% AMI and the remaining seventy-five (75%) percent restricted at 175% AMI) shall be subject to a permanent deed restriction upon the terms contained in the preceding parenthetical that shall be delivered to the Town and accepted and recorded before any building permit issues for any of the 100 home ownership units, which shall not be released from the restriction without Town Meeting approval. There shall be no short term rentals of any of the home ownership units. Leases to any renter of any affordable home ownership unit shall strictly prohibit short term rentals. For the purposes of this section 5, short term rentals shall mean a rental period the duration of which is as much as or less than thirty (30) calendar days and each such home ownership unit shall contain a permanent deed restriction conforming to the terms of this Section 5 which shall be enforceable by the Town.

6. Richmond agrees that it and its successors in interest shall be bound by the new zoning provided for under Articles 1 and 2 of the November 2015 Town Meeting, should that zoning take final effect as provided for hereunder, and Richmond shall be bound by this agreement and its requirements and hereby surrenders and releases any zoning freeze and/or any and all other so-called grandfathering protections that might be otherwise available to Richmond and its successors for the Property under G.L.c.40A, §6 and to all lienholder and owners for the Property, other than Walter Glowacki, that exists or may exist when Articles 1 and 2 take final effect, provided Richmond makes no waiver, whether express or implied, to any future Zoning changes. Richmond represents that there are no lienholders of record or other owners of the Property, other than Richmond or Walter Glowacki.

7. Richmond shall provide the Board of Selectmen, Finance Committee and the relevant permit granting authority (either the Planning Board or Zoning Board of Appeals, in the case of a 40B application) with an expert Fiscal Impact Report and a Student Projection Report, regarding the total number of children projected to reside at the Project and the number of school aged children that are projected to reside at the Project and the report shall be provided to the Nantucket Public School District for informational and planning purposes during the permit granting process and the Student Projection Report shall be updated by Richmond when building permits issue for the first phase of the project and then, thereafter, each time that an additional 75 new units are sought.

Richmond shall provide the Planning Board and Board of Selectmen a detailed traffic report as required Section 139 of the Code of the Town of Nantucket, which contains updated traffic counts and an analysis of recommended mitigation measures.

8. Richmond agrees to reimburse the Town of Nantucket, within three business days of receipt of a bill for professional services rendered, itemized hourly of the legal costs to the Board of Selectmen pursuant to G.L. c. 44, §53A in order for the Town to pay for the services of Kopelman and Paige, P.C., as attorneys for the Town of Nantucket, including but not limited to professional services rendered in assisting with the costs of preparing this Agreement, attendance at Special Town Meeting and any other services or costs incidental or related thereto. In no event shall Richmond's obligation under this Section 8 require reimbursement to the Town of Nantucket in excess of Twelve Thousand and No/100 ($12,000.00) Dollars. As a separate matter, Richmond agrees to reimburse the Town of Nantucket, within three business days of receipt of a bill to fund the Town's costs of conducting the November 2015 Special Town Meeting, relating to notice and publication and other costs.

9. Whether Richmond elects to pursue the 40B projects or a Special Permit as provided for under Article 1 and 2, Richmond shall not assert to any party, any permitting authority, agency or court that the payment of any of the improvements or costs concerning any required water and sewer connection fees, as set forth in the Nantucket Code or in any duly adopted regulation or fee schedule for the Town or the Wannacomet Water Company, which causes or contributes towards causing the development of part or all of the 325 units to be uneconomic whether under G.L. c.40B or 760 CMR 56.00, et seq. or otherwise, and only provided that all of the terms of this Agreement are satisfied, including that only reasonable infrastructure upgrades shall be required. The parties to this Agreement agree and acknowledge that the provision of this Section 9 shall apply only as it relates to the above referenced water and sewer connection fees and Richmond in no way is subject to a waiver of its rights to the same as relates to any other improvements, mitigation or other costs that may be allowable by any agency with competent jurisdiction including with specificity the Zoning Board of Appeals and/or the Housing Appeals Committee. Additionally, Richmond agrees that the water bills for the 225 apartments shall be administered by and paid by Richmond to the Wannacomet Water Company and that the Wannacomet Water Company shall not be required to send individual bills to 225 rental units occupants, with Richmond, in its sole discretion, to decide whether it wishes to have one water meter per apartment building or one water for each rental unit, but with Richmond to be responsible for the cost of administration and collection of the water payments and to pay the Wannacomet Water Company the full charges due and owed for each building, regardless of how each building is metered. Nothing contained herein shall be interpreted to restrict Richmond from further sub-metering such services with a third-party provider.

10. Richmond and/or its successors shall pay all applicable water and sewer fees at the time customarily collected by the Town, including, as appropriate, when the infrastructure is permitted to be installed, but the connection fees for lateral connections to the individual homeownership units shall be paid at the time that building permits are issued. The timing of payment of the fees and the amount of fees shall be the same as that for market rate developers and Richmond agrees not to challenge the fees in any fashion, either as to the validity of the fees as adopted or the amount of the fees as imposed for any of the up to 325 units.

11. Richmond shall provide, at its sole expense, all of the necessary sewer and water infrastructure to serve the 325 units at the Property and connect them to the municipal infrastructure and shall comply with all of the rules and regulations and bylaws regarding water and sewer infrastructure design and installation. Richmond shall provide sewer and water main upgrades, as reasonably required by any Town permitting agency with jurisdiction, after consultation with the Nantucket DPW, the Nantucket Water and Sewer Commission and Wannacomet Water Company. The Town and Richmond agree that any infrastructure which is required to be funded or installed by Richmond in conjunction with the development of the Property shall be sufficiently sized to avoid multiple mains being installed in the public way.

12. Richmond agrees to, upon reasonable written request, use commercially reasonable efforts to provide the information to the relevant permit granting authority as requested in and shall address all of the concerns raised by the Board of Selectmen in Board's PEL comment letters, which were previously provided to Richmond.

13. As the 325 units at the Property receive final approval from local permitting boards, Richmond shall seek building permits based on a phased plan that shall be compatible with and allow the Town to satisfy the Town's Housing Production Plan goals on a yearly basis, but this shall not be interpreted as curtailing the provision of the affordable units as quickly as Richmond can produce them.

14. Construction of the 325 units at the Property shall be completed in accordance with a phased agreement to be completed by the Parties in the future.

15. As noted above, Richmond shall use its best efforts to satisfy all of the requirements imposed by DHCD to allow all of the 225 rental units and 19 of the 100 home ownership units to be SHI eligible and shall cooperate with the provision of all information and documents and execution of all required documents and procedures necessary for that to occur.

16. Richmond shall cooperate with the Town and shall, upon reasonable written request within 30 days provide the Town Manager with all relevant information and material to support applications by the Town to DHCD to add the eligible units to the SHI.

17. Richmond shall pay all reasonable monitoring fees as provided for under DHCD's Guidelines and under any regulatory agreement, as applicable.

18. Richmond shall place a prohibition in each lease for each and every rental unit that strictly prohibits exterior storage of personal property, including but not limited to: inoperable vehicles of any type, including mopeds, boats, bicycles, motorcycles, junk, building materials. Operable mopeds, boats, bicycles, motorcycles shall be allowed to be stored in appropriate locations at the Property. Each lease shall also provide for a maximum of number of vehicles, so that the maximum number of available parking spaces is not exceeded and so that there shall be sufficient visitor spaces in accordance with a Special Permit issued by the Town of Nantucket Planning Board or any other final approval. There shall be sufficient snow storage areas provided and excess snow shall be removed from the site if the ways are narrowed to less than 18 feet of clear, paved width following snow events for two-way access ways. Richmond shall provide for 24hour/7 day per week property management, which may consist of off-site personnel who are available by telephone or e-mail to timely respond to issues, problems and emergencies.

19. Richmond shall provide as-built plans to the Town for the water and sewer main infrastructure within 90 days of completion of the infrastructure and shall provide the remaining as-built plans within six months of completion of the Project, unless the Project is phased, in which case as-built plans for each Phase shall be provided within six (6) months of completion of each Phase or as otherwise provided by the relevant permit granting authority and any Special Permit or other final approval.

20. Richmond agrees to execute a mutually satisfactory written agreement with Housing Nantucket, subject to the Town's reasonable satisfaction within 30 days after the necessary prerequisites have been met, to complete the intent of the land exchange with Housing Nantucket to the extent the same is consistent with the Release of Restriction and Right of Reverter approved by the Town filed with the Nantucket County District of the Land Court as Document Number 146007 on October 17, 2014.

21. Richmond agrees that this agreement shall bind it and its successors in interest and that a mutually satisfactory Notice of the MOA, with approval not to be unreasonably withheld, may be recorded or filed with the Land Court, as the case may be, against the Property by the Town.

II. Town's Undertakings

1. Upon request by Richmond, the Town Manager shall review and respond to any inquiry by Richmond regarding proposed changes to the Project and the Manager shall refer any change that she deems substantial to the Board of Selectmen for action under this Agreement for a determination as to whether the proposed change would or would not

cause the Selectmen to exercise its rights to cancel this Agreement as provided for hereunder.

2. The Board of Selectmen shall support a LAU/LIP application or a 40R warrant article at a future Town Meeting, provided that the final terms and conditions of the LAU/LIP application or the 40R warrant article shall be consistent with this agreement and the final details are negotiated and mutually agreed to by the parties, with agreement not to be unreasonably withheld.

3. The Board of Selectmen shall not withdraw its PEL comment letters to MassHousing.

4. The Board of Selectmen is willing to discuss any Local Action Unit, G.L.c.40R and LIP proposal with Richmond in the future to attempt to develop a memorandum of agreement that is mutually satisfactory.

5. The Town acknowledges and agrees that should any of the affordable housing units generated by the Project be placed on the SHI List and should the Town be availed of any of the so called "safe harbor" protections set forth in G.L. c.40B or 760 CMR 56.00, et seq., as long as this Agreement shall be valid and in full force and effect, that the Town, by and through the Board of Selectmen, shall support the waiver of and/or support as consistent with local needs at any Zoning Board of Appeals or Housing Appeals Committee hearing, any such "safe harbor" protections to deny any future applications filed or processed by Richmond under G.L. c.40B or 760 CMR 56.00, et seq., on any portion of the Property, or any other land contiguous to the Property and currently owned by Richmond and located in the Town of Nantucket. This waiver and agreement of support relates only to the use of any such "safe harbor" protections and does not prevent or preclude the Town from otherwise commenting upon, opposing, or appealing any other such future applications filed or processed by Richmond under G.L. c.40B or 760 CMR 56.00, et seq., under any other grounds. The parties acknowledge that this agreement does not bind the Zoning Board of Appeals.

III. Parties' Right to Cancellation

1. In the event that Articles 1 and 2 are not adopted at the 2015 Special Town Meeting, as recommended by the Planning Board and attached hereto without any substantial amendments that Richmond does not agree to at Town Meeting, in writing, then this Agreement shall be of no further effect and shall immediately and irrevocably terminate by its own terms upon no further condition, express or implied, and neither party to this Agreement shall have any further obligation to or recourse against the other as it relates to the entire subject matter of this Agreement.

2. If the final approvals for a project proposed by Richmond for the Property are (1) denied by a decision of the Zoning Board of Appeals on the grounds that the Town has achieved

the Statutory Minima as relates to the Town having met its Housing Unit Minimum, or so-called "Safe Harbor", or (2) a Regulatory Agreement subsequently entered into by the parties under the LAU/LIP Program or a Comprehensive Permit subsequently issued to Richmond for the development of the Property under the LIP program:

(a) decrease the number of total units or total bedrooms as agreed to above; and/or

(b) increases the number of affordable units other than as agreed to above and, unless voluntarily agreed to by Richmond,

Then Richmond shall have the right for those reasons, in its unfettered discretion, to void this Agreement by providing written notice of the same to the Board of Selectmen within 30 days of the final approval becoming final or the receipt of a denial by the Zoning Board of Appeals and the Parties shall have no further recourse against one another and a release instrument upon timely receipt of the notice may be recorded.

3. If the final approvals for a project proposed by Richmond for the Property:

(a) does not include the improvements and costs required by this Agreement;

(b) increases the number of total units or total bedrooms other than as agreed to above; and/or

(c) decreases the number of affordable units as provided for herein (including the non-SHI affordable units),

then Richmond and the Board of Selectmen agree that the Board shall have the right for those reasons, in its unfettered discretion, to compel Richmond to limit the density at the Property to no more than 266 residential units, as allowed under current zoning, except under a comprehensive permit which has issued and taken final effect, provided that the Board gives notice of the exercise of this right within 20 days of the issuance of any such final permission and its filing with the Town Clerk's Office and receipt of written notice by Richmond of the issuance of the relief to the Board of Selectmen, deliverable to the Town Manager.

Notwithstanding the foregoing, the Parties to this Agreement agree and acknowledge that this Section 3 is in no way intended as a waiver or limitation of Richmond's rights under MGL c. 40B to apply for and pursue a Chapter 40B project on any portion of the Property.

IV. Miscellaneous

1. Richmond acknowledges that this Agreement impacts the terms and condition of relief that a local permitting agency may grant, but that no local permitting agency is bound by this Agreement, and a Notice of Memorandum of Agreement shall be recorded against

the Property when Articles 1 and 2 take final effect and this Agreement shall bind Richmond and its successors in interest and assigns. Richmond has provided a letter that represents and warrants that there are no other owners or lienholders of record other than Richmond and Walter Glowacki.

2. Notwithstanding any of the terms and provisions of this Agreement, nothing herein shall prohibit or prevent Richmond from continuing to pursue its current housing applications filed under G.L. c.40B or 760 CMR 56.00, et seq., or shall prohibit or prevent Richmond from pursuing future housing applications filed under G.L. c.40B or 760 CMR 56.00, et seq., at any other locations within the Property, and /or at any other locations in the Town of Nantucket.

3. Any breach of this Agreement shall be enforceable by the Parties.

4. Any amendment to this Agreement shall occur only pursuant to a written amendment that is duly voted and authorized by the Parties and then duly executed by the Parties.

5. The Parties acknowledge they had advice of counsel before executing the Agreement.

6. A mutually satisfactory Notice of this Agreement, with agreement to the notice to not be unreasonably withheld, may be recorded by either party once Articles 1 and 2 take final effect under G.L. c.40, §32, but a discharge of the Notice shall be provided and recorded if the Agreement is cancelled as provided for hereunder.

7. This Agreement may be executed in any number of counterparts which together shall constitute one instrument. An electronic signature on this Agreement shall have the same effect as an original.

8. All notices and other communications required or permitted to be given under or by reason of this Agreement shall be in writing and may be delivered by electronic mail, facsimile, US mail or overnight mail. Notices, demands, and communications will, unless another address is specified in writing, be sent to the persons and at the addresses indicated below:

To: Board of Selectmen: Ilana M. Quirk, Esq.
Kopelman and Paige, P.C.
101 Arch Street
Boston, MA 02110
iquirk@k-plaw.com

with a copy to the Town Manager and Board of Selectmen Chairman

To: Richmond: Andrew D. Burek, Esq.
The Richmond Company, Inc.
23 Concord Street

Wilmington, MA 01887
aburek@richmondco.com

with a copy to : Arthur Reade, Esq.
Reade, Gullicksen, Hanley & Gifford, LLC
6 Young's Way
Nantucket, MA 02554
air@readelaw.com

[END OF INSTRUMENT. SIGNATURE PAGE(S) TO FOLLOW]

IN WITNESS, the parties hereunto set their hands and fixed their seals as of November 9, 2015.

NANTUCKET BOARD OF SELECTMEN*
By:

Robert DeCosta, Chairman

Matthew Fee, Vice Chairman

Tobias Glidden, Member

Dawn E. Hill Holdgate, Member

Rick Atherton, Member

*Pursuant to a vote taken by the Board of Selectmen on November 9, 2015.

COMMONWEALTH OF MASSACHUSETTS

Nantucket, SS.

On this 9 day of November 2015, before me, the undersigned Notary Public, personally appeared Robert DeCosta, Chair of the Nantucket Board of Selectmen, as aforesaid, who proved to me through satisfactory evidence of identification, which was personal knowledge, to be the person whose name is signed on the preceding document, and acknowledged to me that he signed it voluntarily for its stated purpose on behalf of the Town of Nantucket.

(Official Signature and Seal of Notary)

ERIKA DAVIDSON MOONEY
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
November 17, 2017

Richmond Great Point Development, LLC
By: _____
Philip Pastan, Manager

COMMONWEALTH OF MASSACHUSETTS

Nantucket, SS.

On this 9 day of NOV., 2015, before me, the undersigned Notary Public, personally appeared Philip Pastan, as Manager of Richmond Great Point Development, LLC, who proved to me through satisfactory evidence of identification, which was personal knowledge, to be the person whose name is signed above, and acknowledged he signed it voluntarily for its stated purpose on behalf of Richmond Great Point Development, LLC and with full authority to do so.

(Official Signature and Seal of Notary)

ERIKA DAVIDSON MOONEY
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
November 17, 2017

EXHIBITS:

Exhibit A Article 1 of November 9, 2015 Special Town Meeting

Exhibit B Article 2 of November 9, 2015 Special Town Meeting

535199/NANT40B/19729-0001

Exhibit A

ARTICLE 1
(Zoning Map Change: R-20 to R-5 -- Daffodil Lane and Mayflower Circle; LUG-2 to CN -- Davkim Lane; LUG-2 to R-5 -- Evergreen Way)

To see if the Town will vote to amend the Zoning Map of the Town of Nantucket by taking the following actions:

1. By placing the following properties currently located in the Residential-20 (R-20) district in the Residential-5 (R-5) district:

Map	Lot	Number	Street
68	739	30	Daffodil Lane
68	740	32	Daffodil Lane
68	741	34	Daffodil Lane
68	742	35	Daffodil Lane
68	736	3	Mayflower Circle
68	729	4	Mayflower Circle
68	735	5	Mayflower Circle
68	730	6	Mayflower Circle
68	734	7	Mayflower Circle
68	731	8	Mayflower Circle
68	733	9	Mayflower Circle
68	732	10	Mayflower Circle
68	A Portion of Mayflower Circle, starting at a location formed by a line connecting the eastern property boundaries of the lots shown as 3 Mayflower Circle and 4 Mayflower Circle and extending in a westerly direction to include the bulb of the existing cul-de-sac of Mayflower Circle, being the westerly portion of Lot # 615 on Land Court Plan 16514-40.		
68	A Portion of Daffodil Lane, starting at a location formed by a line connecting the eastern property boundaries of the lots shown as 35 Daffodil Lane and 3 Mayflower Circle and extending in a westerly direction to include the bulb of the existing cul-de-sac of Daffodil Lane, being the westerly portion of Lot # 663 on Land Court Plan 16514-40.		

2. By placing the following property currently located in the Limited Use General-2 (LUG-2) district in the Commercial-Neighborhood (CN) district:

Map	Lot	Number	Street
68	56.1	20(R)	Davkim Lane

3. By placing the following properties currently located in the Limited Use General-2 (LUG-2) district in the Residential-5 (R-5) district:

Exhibit A

Map	Lot	Number	Street
68	711	24	Evergreen Way
68	712	26	Evergreen Way
68	713	28	Evergreen Way
68	714	30	Evergreen Way

All as shown on a map entitled "2015 Special Town Meeting Warrant Article __ R-20 to R-5: Daffodil Lane and Mayflower Circle: LUG-2 to CN –Davkim Lane: and LUG-2 to R-5: Evergreen Way" dated October 2015 and filed herewith at the Office of the Town Clerk.

Or to take any other action related thereto.

(Philip Pastan, et al)
PLANNING BOARD MOTION: Moved that the Zoning Map of the Town of Nantucket be amended by taking the following actions:

1. **By placing the following properties currently located in the Residential-20 (R-20) district in the Residential-5 (R-5) district:**

Map	Lot	Number	Street
68	739	30	Daffodil Lane
68	740	32	Daffodil Lane
68	741	34	Daffodil Lane
68	742	35	Daffodil Lane
68	736	3	Mayflower Circle
68	729	4	Mayflower Circle
68	735	5	Mayflower Circle
68	730	6	Mayflower Circle
68	734	7	Mayflower Circle
68	731	8	Mayflower Circle
68	733	9	Mayflower Circle
68	732	10	Mayflower Circle
~~68~~	~~A Portion of Mayflower Circle, starting at a location formed by a line connecting the eastern property boundaries of the lots shown as 3 Mayflower Circle and 4 Mayflower Circle and extending in a westerly direction to include the bulb of the existing cul-de-sac of Mayflower Circle, being the westerly portion of Lot # 615 on Land Court Plan 16514-40.~~		
~~68~~	~~A Portion of Daffodil Lane, starting at a location formed by a line connecting the eastern property boundaries of the lots shown as 35 Daffodil Lane and 3 Mayflower Circle and extending in a westerly direction to include the bulb of the existing cul-de-sac of Daffodil Lane, being the westerly portion of Lot # 663 on Land Court Plan 16514-40.~~		

2. By placing the following property currently located in the Limited Use General-2 (LUG-2) district in the Commercial-Neighborhood (CN) district:

Map	Lot	Number	Street
68	56.1	20(R)	Davkim Lane

3. By placing the following properties currently located in the Limited Use General-2 (LUG-2) district in the Residential-5 (R-5) district:

Map	Lot	Number	Street
68	711	24	Evergreen Way
68	712	26	Evergreen Way
68	713	28	Evergreen Way
68	714	30	Evergreen Way

All as shown on a map entitled "2015 Special Town Meeting Warrant Article 1 R-20 to R-5: Daffodil Lane and Mayflower Circle: LUG-2 to CN –Davkim Lane: and LUG-2 to R-5: Evergreen Way" dated October 2015 and filed herewith at the Office of the Town Clerk.

PLANNING BOARD COMMENT: Articles 1 and 2 are companion articles. The motion printed in the Warrant is based upon passage of Article 2 as recommended by the Planning Board. The zoning changes proposed within this article were supported based upon the representation of Richmond Great Point Development, LLC ("RGP") that a Memorandum of Agreement followed by a Developer's Agreement would be executed between RGP and the Board of Selectmen ("BOS"). This binding agreement, if approved by the BOS, will require RGP to exercise the changes approved in Articles 1 and 2 as a package, and will not allow them to simply utilize the zoning map changes independently. The production of affordable housing is imperative to make progress toward the state mandated requirement of 10% of the year-round housing stock and implementation of the zoning provisions contained within Article 2 will provide for local control of the process.

FINANCE COMMITTEE COMMENT: To be provided at Town Meeting, pending review of the Memorandum of Agreement executed between the Board of Selectmen and Richmond Great Point Development, LLC.

Exhibit B

ARTICLE 2
(Zoning Bylaw Amendment: Workforce Housing)

To see if the Town will vote to amend the Code of the Town of Nantucket, Chapter 139 (Zoning), by taking the following actions:

1. Amend section 2 (definitions) to insert a new definition of “workforce housing” and to amend the existing definitions of “apartment building”, “affordable housing”, “apartment”, “eligible household”, “Nantucket Housing Needs Ownership Form”, to the extent necessary or required, and to insert any new definition or amend any existing definition to the extent necessary or required to implement the overall objectives of this article.

2. Amend section 7A (use chart) by inserting a new use(s) related to workforce housing dwelling units as necessary or required;

3. Insert a new section 8D, and/or to amend 8C, to provide new language, the purpose of which is as follows:

    a. To incentivize the creation of workforce and affordable rental and ownership housing opportunities;

    b. To promote consistency, quality, and flexibility in the site layout and design;

    c. To mitigate traffic congestion by encouraging the creation of compact neighborhoods proximate to compatible adjacent commercial uses that reduce the need for vehicle trips to already congested areas, and;

    d. To promote economic vitality and a greater diversity of housing opportunities in compliance with objectives contained within plans adopted or accepted by the Town of Nantucket, Nantucket Planning and Economic Development Commission, or the Nantucket Housing Authority.

4. Insert a new section 8D and/or amend 8C to provide new language for the allowance of density bonuses by the issuance of a special permit granted by the Planning Board, as follows:

    a. To allow the aggregation of lots for apartment buildings for workforce housing at a density of 1 unit per 1,250 square feet of lot area in the CN district with a maximum of 20 dwelling units containing up to 40 bedrooms on a single lot;

    b. To alter or remove the minimum lot size, frontage, setback(s), ground cover ratio, and regularity formula compliance as designated in section 16 for lots within the R-5 district.

    c. To establish minimum “affordability” criteria, programmatic and design standards, including, but not limited to: establishing minimum percentages of units restricted based on income limits between 50% and 200% of the annual area median income, establishing the minimum duration of affordability

restrictions, establishing interior and exterior features/finishes to marking rate units, requiring equal disbursement among market rate units.

5. To amend sections 16 (change 33 reference to 30) and 18 (specify apartment, apartment building, workforce housing apartment), 20 (screening waived where lots are in common ownership), 23 (exempt SF and duplex from site plan review), and any other section of the Bylaw implement the overall objectives of this article.

   Or, to take any other action related thereto.

(Philip Pastan, et al)
PLANNING BOARD MOTION: Moved that Code of the Town of Nantucket, Chapter 139 (Zoning), be amended by taking the following actions:

1. Amend Section 2 (definitions) to insert two new definitions, of "workforce homeownership housing" and "workforce rental housing", in alphabetical order with existing definitions, as follows:

   WORKFORCE HOMEOWNERSHIP HOUSING
   Ownership or rental of single family dwelling units, pursuant to §139-8D, where at least 25% of the total dwelling units are restricted to occupancy by households earning at or below the percentages of area median income set forth herein. An increment of 75% of the total 25% of the restricted units shall be restricted to occupancy by households earning at or below 80% of area median income. The remaining increment of 25% of the total 25% of the restricted units shall be restricted to occupancy by households earning at or below 175% of area median income.

   WORKFORCE RENTAL HOUSING
   Rental of multi-family dwelling units, pursuant to §139-8D, where at least 25% of the total dwelling units are restricted to occupancy by households earning at or below 80% of area median income.

2. Amend Section 7A (use chart) by inserting in the "Use" column, between "Duplex" and "Elder Housing Facilities" a new use "Workforce Rental Community" to be allowed by Special Permit (SP) in the CN district only.

3. Insert a new Section 8D as follows:

D. Special permit issued by the Planning Board to create workforce homeownership housing in the R-5 zoning district through a Workforce Homeownership Housing Bonus Lots allowance and in the CN zoning district through a Workforce Rental Community. The purpose of this provision is to incentivize the creation of workforce and affordable rental and ownership housing opportunities; to promote consistency, quality, and flexibility in the site layout and design; to mitigate traffic congestion by encouraging the creation of compact neighborhoods proximate to compatible adjacent commercial uses that reduce the need for vehicle trips to already congested areas, and; to promote economic vitality and a greater diversity of housing opportunities in compliance with objectives contained within plans adopted or accepted by the Town of Nantucket, Nantucket Planning and Economic

Development Commission, or the Nantucket Housing Authority. This Bylaw, which sets a minimum size lot area, is intended to allow for aggregation of buildings, parking spaces, and open areas to improve design quality. Consistent design quality shall be applied to all dwelling units and affordable units shall be distributed evenly throughout the development.

(1) Requirements.

a. The following requirements shall apply to Workforce Homeownership Housing Bonus Lots in the R-5 zoning district and to Workforce Housing Rental Community in the CN zoning district.

i. Minimum lot requirement of 60,000 square feet;

ii. The term of affordability shall be in perpetuity or the longest term allowed by law;

iii. The application shall be subject to Major Site Plan Review;

iv. The Planning Board shall be the sole special permit granting authority for any relief pursuant to any provision of this Chapter;

v. Planning Board approval of a special permit shall not substitute for approval of a definitive subdivision or approval not required (ANR) plan.

vi. Project must be eligible for approval as Local Action Units (LAU) through the Local Initiative Program (LIP) or otherwise included on the Town's Subsidized Housing Inventory. It shall be the responsibility of the applicant to take all reasonable steps necessary to ensure the units are included, including without limitation, preparation and execution of a Regulatory Agreement in a form to be approved by the Town of Nantucket, through its Board of Selectmen, and by the Department of Housing and Community Development ("DHCD") and provision of any other documents requested by DHCD.

(2) Workforce Homeownership Housing Bonus Lots.

a. Bonus lots, subject to the requirements below, shall be based on the number of building lots which could have been created through a conventional subdivision plan. The maximum number of building lots, excluding any bonuses, shall not exceed the number which may have otherwise been created on a conventional subdivision plan meeting all dimensional and upland requirements of the Zoning Bylaw and in full conformance with (and requiring no waivers from) the "Rules and Regulations Governing the Subdivision of Land," as may be amended by the Planning Board from time to time, as demonstrated by the submission of a dimensioned lotting plan. For all density calculations that result in a fractional number, only fractions equal to or greater than 0.51 should be rounded to the next highest whole number.

i. The total number of lots shall be calculated by multiplying the number of lots allowed by-right, as described above, by a factor of 1.33.

ii. 25% of the total number of lots allowed, using the bonus provision, must be allocated and restricted to ownership by households earning at or below the area median income limits set forth in the definition of Workforce Homeownership Housing, as defined in §139-2, or, the rental dwelling units located on the lots achieved through the bonus provision must be restricted to households earning at or below 80% of area median income. Said lots shall be subject to a Nantucket

Housing Needs Covenant -Ownership Form or other instrument restricting sale or rental to households earning at or below the area median income limits set forth in the definition of Workforce Homeownership Housing, as defined in §139-2.

b. The Planning Board may reduce, by up to 100%: the front yard setback (but not the side or rear yard setbacks applied to the perimeter of the project area), internal side or rear yard setbacks (meaning setbacks between lots which are the subject of the application), side or rear yard setbacks between the lots which are the subject of the application and other land in common ownership or control of the applicant, and the required frontage, provided that the lot has sufficient vehicular access through an easement.
c. The Planning Board may allow an increase in the ground cover ratio up to 50%.
d. A minimum buffer area of at least 20 feet shall be established between the Workforce Homeownership Housing Bonus Lots and residentially zoned abutting properties. The Planning Board may require the buffer area to include plantings, fencing, walls, or other improvements to mitigate impacts to abutting properties.

(3) Workforce Rental Community

a. Rental dwelling units in one or more structures, shall be subject to the following requirements:
    i. The maximum number of dwelling units shall not exceed 32, at least 8 of which must (25% of which) be restricted to occupancy by households earning at or below 80% of area median income. An instrument, in a form approved by the Planning Board, restricting rental of at least 8 of the dwelling units to households earning at or below 80% of area median income must encumber the subject lot(s);
    ii. The maximum number of bedrooms contained within the Workforce Rental Community Lot shall not exceed 57;
    iii. At least 10% of the total dwelling units within the Workforce Housing Rental Community must contain at least 3 bedrooms, unless such requirement is reduced by a future binding directive from the Commonwealth of Massachusetts Department of Housing and Community Development which confirms that fewer than 10% three bedroom units may be included in the Workforce Rental Community while still confirming that all of the units in the Workforce Rental Community shall be eligible for inclusion on the Town's Subsidized Housing Inventory. In such an instance, the Planning Board shall have the discretion to approve fewer 3 bedroom units within the Workforce Rental Community, in conjunction with the issuance of the special permit, as long as the requirement described above with respect to confirmation of the eligibility of all of the units in the Workforce Rental Community relative to inclusion on the Town's Subsidized Housing Inventory has been met.
b. A minimum buffer area of at least 20 feet shall be established between the Workforce Rental Community and residentially zoned abutting properties.

The Planning Board may require the buffer area to include plantings, fencing, walls, or other improvements to mitigate impacts to abutting properties.

c. The Planning Board may, in addition to those requirements included in §139-23, require submission of additional documentation, including without limitation, detailed floor plans, operation and management plan for the project, including maintenance of the structure(s) and the site.

d. The Planning Board may reduce, by up to 100%, the side and rear yard setbacks where two or more Workforce Rental Community Lot projects are adjacent to each other.

4. Amend Section 18B by adding an asterisk after "Apartment" and inserting the following language under the "Notes" section:

*For interpretation purposes, apartment shall include the following uses contained within the Use Table in §7A: apartment, apartment building, garage apartment, and workforce rental community.

5. Amend Section 23A(1) as follows:

The construction or alteration of any single-family or duplex dwelling, or building accessory to such dwelling, except when such dwellings are an integral part of workforce homeownership housing bonus lots or a workforce rental community application pursuant to § 139-8 of this chapter, major commercial development application pursuant to § 139-11 of this chapter, and except where such dwellings are located in the Moorlands Management District, § 139-13 of this chapter;

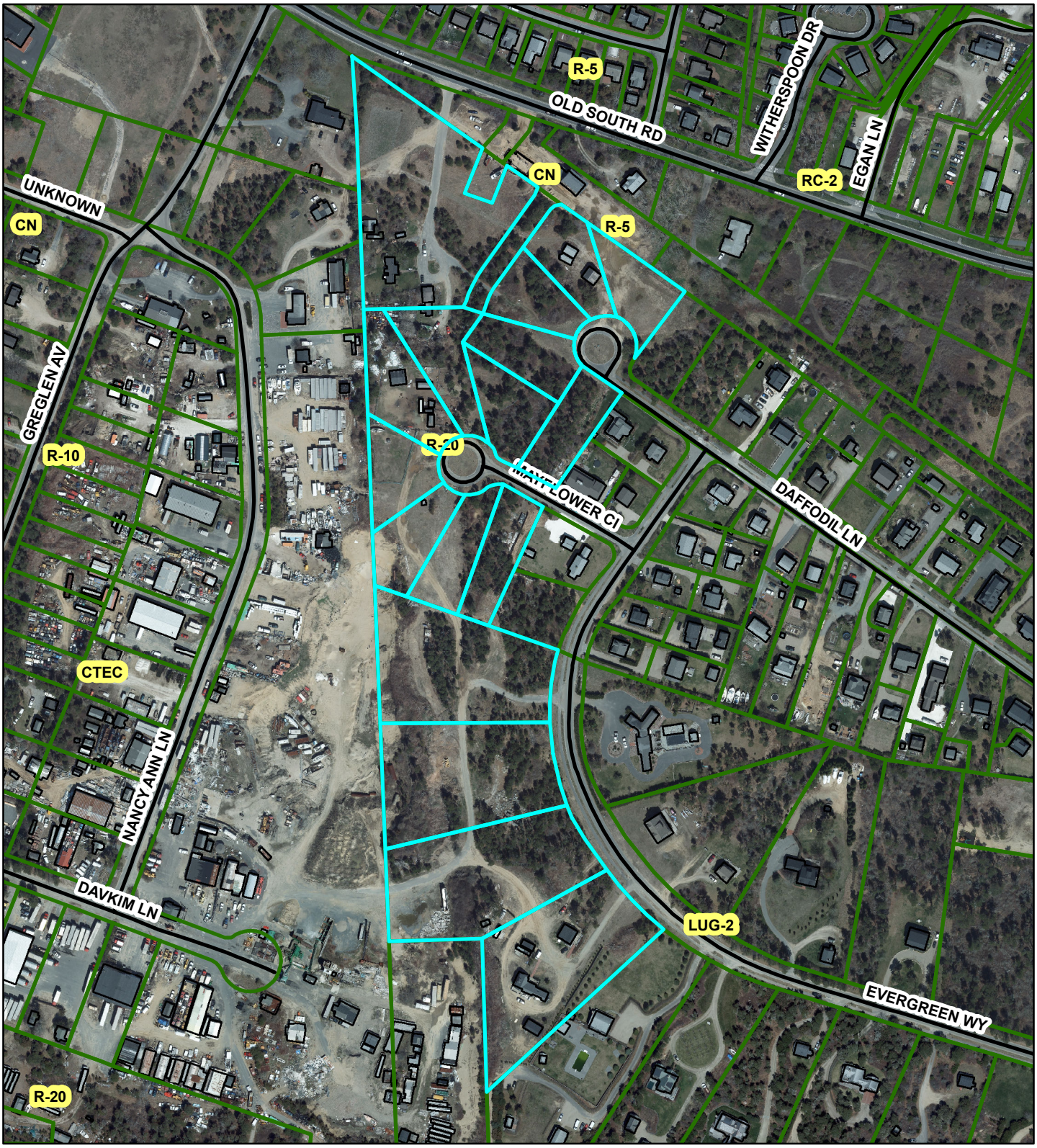
6. Amend section 16A as follows:

Except as expressly provided by § 139-330 of this chapter….

PLANNING BOARD COMMENT: A locally based process for the creation of affordable/workforce housing units, as opposed to the 40B application process that is strictly controlled by the state, will become available if this zoning amendment is passed. Local regulations, including those regulations within the purview of the Historic District Commission, will guide the process for ownership and rental housing production.

FINANCE COMMITTEE COMMENT: To be provided at Town Meeting, pending review of the Memorandum of Agreement executed between the Board of Selectmen and Richmond Great Point Development, LLC.

#43-16 Richmond Great Point Development, LLC
Sandpiper Place Single Family Home Development Project
Off Daffodil Lane, Mayflower Circle, Evergreen Way & Old South Road
Map 68 Parcels 129, 711, 712, 713, 714, 729, 730, 731, 732, 733, 734, 735, 736, 739, 740, 741, 742, 999.2



Town Clerk
Town & County Building
16 Broad St
Nantucket, MA 02554

JUN 15 2016

Nantucket Planning Board

RECEIVED
JUN 15 2016
By

Application for a Special Permit

Date: June 13, 2016 File #:

Name of development: "Sandpiper Place" Single Family Home Development Project

Owner(s) name(s): Richmond Great Point Development LLC (Philip Pastan)

Mailing address: 23 Concord Street, Wilmington MA 01887
Phone number: 978-988-3900 Fax number: 978-988-3950

E-mail: ppastan@richmondco.com

Applicant's name: The Richmond Company, Inc. (David Armanetti and Patty Roggeveen)
Mailing address: 23 Concord Street, Wilmington MA 01887
Phone number: 978-988-3900 Fax number: 978-988-3950
E-mail: darmanetti@richmondco.com; proggeveen@richmondco.com

Engineer / surveyor's name: Green Seal Environmental, Inc. (Heather Twiss)

Mailing address: 114 State Road, Sagamore Beach MA 02562 Phone number: 508-888-6034 Fax number: 508-888-1506 E-mail: htwiss@gseenv.com

Location of lot(s): Off Daffodil Lane, Maflower Circle, Evergreen Way, and Old South Road

Street address Nineteen (19) Separate Parcels / Addresses

Tax Assessors Map Parcel See Attachment "A" for Detail of Multiple Parcels

Nantucket Registry of Deed: See Attachment "B" for Detail of Multiple Parcels
Plan Book Page **OR**

Plan File # **OR** Land Court Plan # at Certificate #

Size of parcel: 749,235 SF (17.20 Acres) sq. ft. Zoning District: R-5 (Residential-5)

Special Permit sought: (check one)

- ○ Cluster subdivision
- ○ Commercial WECS
- ○ Driveway Access/Curb Cut Special Permit
- ○ Harbor Overlay District (HOD)
- ○ Major Commercial Development (MCD)

- ❍ Multi-family Special Permit
- ❍ Moorlands Management District Subdivision or Construction (MMD)
- ❍ NEHOD (Neighborhood Employee Housing Overlay District)
- ❍ MRD (Major Residential Development)
- ❍ MIPOD (Mid-Island Planned Overlay District)
- ❍ Other Uses Requiring a Special Permit (specify all uses and *Nantucket Code* sections)

Section	Description

Specify all associated Zoning Code relief sought:

Section	Description
None	

Only the zoning relief expressly requested above will be considered as part of this application.

If applying for a Major Commercial Development, specify how the application will comply with Section 139-11 (J) of the *Zoning Code of the Town of Nantucket*, also known as the Town's Affordable Housing Effort:

Not Applicable (Application is not a Major Commercial Development Project)

Planning Board filing fee due: $_____

Engineering Inspection Escrow Deposit due: $_____

I/ we hereby certify that the applicant(s) cited above have been authorized by me/ us to file a Special Permit application with the Planning Board on property that I/ we own.

Owner(s)' Signature(s) Philip Pastan, as Manager of Richmond Great Point Development LLC

Applicant's Signature

6/13/16

I/we _____, the undersigned, hereby authorize _____ to act as agent(s) on my/our behalf and to make any necessary revisions on this filed application as they may be requested by the Board to meet its governing rules and guidelines.

Owner(s)' signature(s)

Check List:

- ☐ Planning Board Special Permit abutters list – to be obtained at the Tax Assessor's office
- ☐ Completed application form entitled "Application to the Planning Board for a Special Permit"
- ☐ Application fee of $250.00 payable to Town of Nantucket
- ☐ Abutters fee of $6.11 per abutters payable to Pitney Bowes Reserved Funds
- ☐ Four (4) sets of mailing labels with each abutter's name and address
  - 1" x 2 5/8" size, typed labels, are preferred
  - duplicate labels are not necessary if the same owner is listed for more than one abutting property
- ☐ Completed application form
- ☐ Town Clerk's stamped application (provide 2 copies-one for Town Clerk and one for Planning Board)

"ATTACHMENT A"
LIST OF INDIVIDUAL PROPERTIES FOR PLANNING BOARD SPECIAL PERMIT CERTIFIED ABUTTERS LIST REQUEST
RICHMOND GREAT POINT DEVELOPMENT LLC
"SANDPIPER PLACE" SINGLE FAMILY HOME OWNERSHIP DEVELOPMENT PROJECT

Index	Parcel Address	Assessor's Tax Map / Parcel ID		Land Court Plan Information	
		Map	Parcel	Plan Number	Lot
1	30 Daffodil Lane	68	739	16514-40	628
2	32 Daffodil Lane	68	740	16514-40	629
3	34 Daffodil Lane	68	741	16514-40	630
4	35 Daffodil Lane	68	742	16514-40	631
5	3 Mayflower Circle	68	736	16514-40	625
6	4 Mayflower Circle	68	729	16514-40	618
7	5 Mayflower Circle	68	735	16514-40	624
8	6 Mayflower Circle	68	730	16514-40	619
9	7 Mayflower Circle	68	734	16514-40	623
10	8 Mayflower Circle	68	731	16514-40	620
11	9 Mayflower Circle	68	733	16514-40	622
12	10 Mayflower Circle	68	732	16514-40	621
13	24 Evergreen Way	68	711	16514-16	431
14	26 Evergreen Way	68	712	16514-16	432
15	28 Evergreen Way	68	713	16514-16	433
16	30 Evergreen Way	68	714	16514-16	434
17	73 Old South Road	68	129	16514-97	853
18	75(A) Old South Road	68	999.2	16514-100	858
19	Private Way (Adjacent to 73 Old South Road)	n/a	n/a	16514-G	"40.00 Wide Way"

"ATTACHMENT B"
LIST OF INDIVIDUAL PROPERTIES FOR DERIVATION OF TITLE FOR SPECIAL PERMIT APPLICATION
RICHMOND GREAT POINT DEVELOPMENT LLC
"SANDPIPER PLACE" SINGLE FAMILY HOME OWNERSHIP DEVELOPMENT PROJECT

Index	Parcel Address	Deed Recording Reference (Date, Book, Page)			Internal Reference in Deed	
		Date	Book	Page	Parcel Number	Page
1	30 Daffodil Lane	August 8, 2013	O1397	312	Fifty-Five	11
2	32 Daffodil Lane	August 8, 2013	O1397	312	Fifty-Six	11
3	34 Daffodil Lane	August 8, 2013	O1397	312	Fifty-Seven	11
4	35 Daffodil Lane	August 8, 2013	O1397	312	Fifty-Eight	11
5	3 Mayflower Circle	August 8, 2013	O1397	312	Fifty-Four	11
6	4 Mayflower Circle	August 8, 2013	O1397	312	Forty-Seven	9
7	5 Mayflower Circle	August 8, 2013	O1397	312	Fifty-Three	11
8	6 Mayflower Circle	August 8, 2013	O1397	312	Forty-Eight	10
9	7 Mayflower Circle	August 8, 2013	O1397	312	Fifty-Two	10
10	8 Mayflower Circle	August 8, 2013	O1397	312	Forty-Nine	10
11	9 Mayflower Circle	August 8, 2013	O1397	312	Fifty-One	10
12	10 Mayflower Circle	August 8, 2013	O1397	312	Fifty	10
13	24 Evergreen Way	August 8, 2013	O1397	312	Thirty-Seven	8
14	26 Evergreen Way	August 8, 2013	O1397	312	Thirty-Eight	8
15	28 Evergreen Way	August 8, 2013	O1397	312	Thirty-Nine	8
16	30 Evergreen Way	August 8, 2013	O1397	312	Forty	8
17	73 Old South Road	August 8, 2013	O1397	312	Forty-Three	9
18	75(A) Old South Road	February 6, 2015	Document # 00147075		n/a	n/a
19	Private Way (Adjacent to 73 Old South Road)	n/a	n/a	n/a	n/a	n/a

THE RICHMOND COMPANY, INC.

The Richmond Company, Inc.
23 Concord Street
Wilmington, Massachusetts 01887
(979) 988-3900

June 10, 2016

TOWN OF NANTUCKET
PLANNING BOARD
2 Fairgrounds Road
Nantucket, Massachusetts 02554

Attention: Leslie Woodson Snell, AICP, LEED AP, Deputy Director of Planning

Subject: Submittal of "Conventional Subdivision Plan" (Dimensioned Lotting Plan)
In Support of Application for Special Permit (Workforce Homeownership Housing)
"Sandpiper Place" Single Family (Home Ownership) Housing Development
Old South Road, Daffodil Lane, Mayflower Circle, and Evergreen Way
Richmond Great Point Development LLC (Owner / Developer)

Dear Ms. Snell:

The purpose of this correspondence, issued in our capacity as the applicant and development manager, on behalf of the owner of the subject properties (Richmond Great Point Development LLC) is to submit the enclosed "Conventional Subdivision Plan" (including the description provided herein and the attached plans) in support of the application / plans for a special permit that is being submitted (concurrently) to the Town of Nantucket Planning Board to provide for the development of the "workforce homeownership housing" project which is proposed to be located on a combination of nineteen (19) contiguous properties comprising +/- 17.2 acres of land located on portions of 73, and 75(A) Old South Road; 30, 32, 34, and 35 Daffodil Lane, 3, 4, 5, 6, 7, 8, 9, and 10 Mayflower Circle, and 24, 26, 28, and 30 Evergreen Way, and an existing "Private Way" abutting and located immediately east of the 73 Old South Road property.

As you know, the applicable zoning, eligibility criteria, and process for applying for this category of special permit (workforce homeownership housing) is set forth in Section 139(8)(D) of the Town of Nantucket Zoning Bylaw, including an explanation of the parameters by which a project's eligibility for "bonus lots" is to be determined, and a description of the methodology for calculating the "bonus lots" that the project may be eligible for.

Section 139(8)(D)(2)(a) requires that the determination of any "bonus lots" is based on an analysis of the total number of building lots that can be created on the subject property by way of:

> *"a conventional subdivision plan meeting all dimensional and upland requirements of the Zoning Bylaw and in full conformance with (and requiring no waivers from) the Rules and Regulations Governing the Subdivision of Land, as may be amended by the Planning Board from time to time, as demonstrated by the submission of a dimensioned lotting plan.*

The remainder of this correspondence briefly describes the methodology and calculations utilized to create the dimensioned lotting plan, which is attached hereto, and the conclusion that has been reached with respect to the total number of conventional building lots and bonus building lots that could be developed on the subject property, per the applicable criteria and regulations, as described above, subject to the issuance of the requisite special permit by the Town of Nantucket Planning Board.

The subject property is comprised of a total of +/- 17.2 acres of land area, encompassing a total of nineteen (19) existing lots, all of which has been designated within the Residential-5 (R-5) zoning district.

As shown in the attached "dimensioned lotting" plan, in accordance with the criteria set forth in Section 139(8)(D)(2)(a) of the Town of Nantucket Zoning Bylaw, and based on our engineering and zoning analysis, a conventional subdivision can be created on the subject property which yields a total of eighty-one (81) individual "by right" building lots.

This includes the design of building lots that all meet or exceed the (five thousand square foot) minimum lot area criteria, the fifty linear feet) minimum lot frontage criteria, and the (not less than 0.55) minimum lot regularity factor. The proposed plan also includes an access road (connecting to Old South Road) and internal roadways that are a minimum of the (forty linear feet wide) right of way width that is prescribed in the Rules and Regulations Governing the Subdivision of Land

Based on the foregoing, by applying the 1.33 "bonus lots" factor to the number of building lots allowed "by right" as set forth in Section 139(8)(D)(2)(a)[1] of the Town of Nantucket Zoning Bylaw, the subject property would be permitted to include a total of one hundred and eight (108) building lots, with the "by-right" base of eighty-one (81) building lots and an increment of twenty-seven (27) "bonus lots".

The accompanying "sub-area" plan documents how the overall subject property can be broken up into four (4) individual subdivisions of not less than 60,000 square feet of land area, and shows the total number of ("by-right") building lots that can be created in each sub-area / subdivision (see table below).

Calculations of Sub Areas (Individual Subdivisions) within Subject Property

Sub Area	Land Area (Square Feet)	Land Area (Acres)	"By-Right" Lots
Sub Area # 1	210,000 SF	4.8 Acres	38 Lots
Sub Area # 2	120,200 SF	2.8 Acres	16 Lots
Sub Area # 3	60,000 SF	1.4 Acres	9 Lots
Sub Area # 4	100,000 SF	2.3 Acres	18 Lots
Roads / Open Space	257,000 SF	5.9 Acres	n/a
Total	**747,200 SF**	**17.2 Acres**	**81 Lots**

Notwithstanding the maximum one hundred and eight (108) total building lots that can be created within the subject property, including the twenty-seven (27) "bonus lots" as described and demonstrated herein through submittal of the conventional subdivision plan, the maximum total single family building lots that were agreed to be developed on the subject property in the "*2015 Richmond Great Point Development, LLC / Town of Nantucket Memorandum of Agreement*" that was entered into on November 9, 2015, by and between Richmond Great Point Development LLC and the Town of Nantucket, acting by and through its Board of Selectmen, were limited to one hundred (100) building lots.

Based on the foregoing, the (workforce homeownership housing) special permit application that is being submitted concurrently with this correspondence, to facilitate the development of the proposed "Sandpiper Place" development on the subject property includes a total of one hundred (100) building lots, a total that is eight (8) building lots less than the maximum total that could otherwise be created on the subject property.

We look forward to the results of your review of the enclosed information / calculations and the attached plans, to confirm the accuracy and conclusions of the dimensioned lotting plan and the maximum number of building lots which could be created on the subject property.

If you have any immediate questions with respect to the information and materials submitted herein or the proposed project in general, please feel free to contact me at 978-988-3900, Extension # 12.

Very truly yours,

David J. Armanetti
Director of Real Estate Development
The Richmond Company, Inc.
On Behalf of Richmond Great Point Development LLC

Cc: Philip Pastan, TRC
Kathryn Fossa, TRC
Patricia Roggeveen, RGPDLLC
Shane Valero, RGPDLLC
Andrew Burek, Esq., RGPDLLC
Arthur Reade Jr., Esq., RGH

THE RICHMOND COMPANY, INC.

The Richmond Company, Inc.
23 Concord Street
Wilmington, Massachusetts 01887
(979) 988-3900

June 10, 2016

TOWN OF NANTUCKET
PLANNING BOARD
2 Fairgrounds Road
Nantucket, Massachusetts 02554

Attention: Leslie Woodson Snell, AICP, LEED AP, Deputy Director of Planning

Subject: Submittal of Application for Special Permit (Workforce Homeownership Housing)
"Sandpiper Place" Single Family (Home Ownership) Housing Development
Old South Road, Daffodil Lane, Mayflower Circle, and Evergreen Way
Richmond Great Point Development LLC (Owner / Developer)

Dear Ms. Snell:

The purpose of this correspondence, issued in our capacity as the applicant and development manager, on behalf of the owner of the subject properties (Richmond Great Point Development LLC) is to submit the completed application form, plans, drainage reports, and related materials which are required to petition the Town of Nantucket Planning Board to consider the above-captioned proposal which requires the issuance of a special permit to allow for the development of the "workforce homeownership housing" project which is proposed to be located on a combination of nineteen (19) contiguous properties comprising +/- 17.2 acres of land located on portions of 73, and 75(A) Old South Road; 30, 32, 34, and 35 Daffodil Lane, 3, 4, 5, 6, 7, 8, 9, and 10 Mayflower Circle, and 24, 26, 28, and 30 Evergreen Way, and an existing "Private Way" abutting and located immediately east of the 73 Old South Road property.

The proposed project is comprised of the land area that was specifically re-zoned for this purpose, to the Residential-5 (R-5) zoning district and to qualify for the "workforce homeownership housing bonus lots" by the approval of Article 1 and Article 2 at the Nantucket Special Town Meeting of November 9, 2015, the provisions of which have been codified as Section 139-8(D) (Residential Development Options) of the Town of Nantucket Zoning Bylaw.

The proposed project is also expressly consistent with and complies with the terms and provisions of the "*2015 Richmond Great Point Development, LLC / Town of Nantucket Memorandum of Agreement*" dated November 9, 2015, which memorializes the specific terms under which a workforce homeownership housing community could be developed on the above-captioned properties (the "MOA").

The proposed project is comprised of a series of one hundred (100) single family residential lots, located in a subdivision / neighborhood that incorporates roadways, pedestrian walkways / bicycle paths, street lighting, and is served by a range of new infrastructure improvements (water, sewer, drainage, etc.).

The range of lot sizes that are proposed to be created, as shown on the attached plans, are as follows:

"Sandpiper Place" Single Family Home Ownership Project
Summary of Proposed Lot Types / Sizes

Lot Number on Plan	Range in Size of Lots	Number of Each Type of Lot in Project
"A" Lots	4,500 SF (90' by 50')	26 Lots
"B" Lots	4,000 SF (80' by 50')	58 Lots
"C" Lots	4,125 SF (75' by 55')	16 Lots
Subtotal	**4,000 SF to 4,500 SF**	**100 Lots**

Twenty-five percent of all of the proposed lots / homes, equal to twenty-five (25) lots / homes, will be developed as homes that will be sold to buyers who qualify under the household income and related eligibility criteria set forth in the MOA (including the local preference and lottery provisions described therein).

This will include the sale of nineteen (19) of the homes to buyers whose household incomes are equal to or less than eighty percent (80%) of the Area Median Income (AMI) established for Nantucket County by the US Department of Housing and Urban Development (HUD). In 2015, these (80% of AMI) annual income limits were equal to $67,700 in annual income for a three person household and $75,200 in annual income for a four person household. Based on these income limits and recent thirty year fixed rate mortgage interest rates which set the formula under how the maximum sales prices are established, the maximum sales price for the (80% AMI) affordable homes will be +/- $260,000 for a two bedroom home and +/- $285,000 for a three bedroom home. By the time the proposed project is approved, these maximum income and sales price limits will likely be tied to the 2016 income data that is issued / updated by the federal government, so these limits will likely change (slightly).

Under the "local affordability" provision set forth in the MOA, the other six (6) affordable homes will be sold to buyers whose household incomes are equal to or less than eighty percent (80%) of the Area Median Income (AMI) established for Nantucket County by the US Department of Housing and Urban Development (HUD). In 2015, these (175% of AMI) annual income limits were equal to $148,000 in annual income for a three person household and $164,500 in annual income for a four person household. Based on these income limits and recent thirty year fixed rate mortgage interest rates which set the formula under how the maximum sales prices are established, the maximum sales price for the (175% AMI) affordable homes will be +/- $540,000 for a two bedroom home and +/- $598,000 for a three bedroom home. By the time the proposed project is approved, these maximum income and sales price limits will likely be tied to the 2016 income data that is issued / updated by the federal government, so these limits will likely change (slightly).

Per the terms of the MOA, all of the twenty-five (25) affordable homes will be dispersed uniformly throughout the project and the appearance and quality of finishes of the affordable homes will be directly comparable to the market rate homes that are developed within the property.

The proposed project is also subject to compliance with the applicable intensity and dimensional criteria set forth in Section 139-16 of the Town of Nantucket Zoning Bylaw (including but not limited to minimum lot size, frontage, yard setbacks, ground cover ratio, and (lot) regularity factor, as modified by the site flexibility standards that are set forth in Section 139(8)(D) of the Town of Nantucket Zoning Bylaw for workforce homeownership housing, which the proposed project is qualified for,

Because it is subject to issuance of a workforce homeownership housing special permit, as specified in Section 139-8(D)(1)(a)[3] of the Town of Nantucket Zoning Bylaw, the proposed subject is subject to major site plan review (MSPR) by the Planning Board (as set forth in Section 139-23, and specifically Section 139-23(B)(2) of the Town of Nantucket Zoning Bylaw).

The proposed project also includes a major "community focal point", which is proposed to be located at a highly visible and accessible location adjacent to the main entrance to the proposed project, immediately south of Old South Road, in the center of the 73 Old South Road property, that has been designed to incorporate a series of public spaces for community use, including a meeting house / barn structure, an outdoor common area, an outdoor patio / stage area, and landscaping improvements, all of which will be made available for public and community use for events and performance activities.

We appreciate the opportunity to submit the application, plans, and supporting materials for this important development proposal for your review and for consideration by the Planning Board and we look forward to commencing with the public hearing and public review process.

If you have any immediate questions with respect to the proposed project or any of the submittal materials, please feel free to contact me at 978-988-3900, Extension # 12.

Very truly yours,

David J. Armanetti
Director of Real Estate Development
The Richmond Company, Inc.
On Behalf of Richmond Great Point Development LLC

Cc: Philip Pastan, TRC
Kathryn Fossa, TRC
Patricia Roggeveen, RGPDLLC
Shane Valero, RGPDLLC
Andrew Burek, Esq., RGPDLLC
Arthur Reade Jr., Esq., RGH
John Ogren, Hayes Engineering

THE RICHMOND COMPANY, INC.

The Richmond Company, Inc.
23 Concord Street
Wilmington, Massachusetts 01887
(979) 988-3900

June 13, 2016

TOWN OF NANTUCKET
TOWN CLERK
16 Broad Street
Nantucket, Massachusetts 02554

Attention: Catherine Flanagan Stover, MMC, CMMC

Subject: Submittal of Application for Special Permit (Workforce Homeownership Housing)
Richmond Great Point Development LLC (Owner / Developer)
"Sandpiper Place" Single Family Homeownership Development

Dear Mrs. Stover:

The purpose of this correspondence, issued in our capacity as the applicant and development manager, on behalf of the owner of the subject properties (Richmond Great Point Development LLC) is to document submittal of the completed application to petition the Town of Nantucket Planning Board to consider the above-captioned proposal which requires the issuance of a special permit to allow for the development of the "Sandpiper Place" workforce homeownership housing development, comprised of one hundred (100) single family housing lot on a combination of nineteen (19) properties totaling +/- 17.2 acres of land located Old South Road, Daffodil Lane, Mayflower Circle, and Evergreen Way.

The submittal of the application to your office is being completed as prescribed in Section 139-30(B)(1) of the Town of Nantucket Zoning Bylaw.

Upon your acknowledgment of receipt of the application (by way of time / date stamping the application), we will proceed to file a copy of the application (and all other required materials) forthwith to the Town of Nantucket Planning Board to obtain its review and subsequent action (as prescribed in Section 139-30(B)(2) of the Town of Nantucket Zoning Bylaw.

Should you have any questions with respect to the application and submittal, please feel free to contact me at 978-988-3900, Extension # 12.

Very truly yours,

David J. Armanetti
Director of Real Estate Development
The Richmond Company, Inc.
On Behalf of Richmond Great Point Development LLC

Cc: Andrew Burek, Esq., TRC
Arthur Reade, Jr., Esq., RGH

PLAN NOTES

1. THIS PLAN HAS BEEN PREPARED BASED ON REFERENCES INCLUDING:
   -GOOGLE EARTH AERIAL IMAGERY
   -MASSGIS ORTHOIMAGERY
   - CAD FILE TITLED "TOPO-PIT.DWG" PREPARED BY HAYES ENGINEERING AND PROVIDED BY RICHMOND GREAT POINT DEVELOPMENT, LLC.
   - TOWN OF NANTUCKET GIS
2. EXACT LOCATION OF PROPOSED BUILDING AND IMPROVEMENTS MUST BE CONFIRMED AND EVALUATED UPON COMPLETION OF SURVEY.
3. THIS PLAN IS INTENDED FOR CONCEPTUAL REVIEW PURPOSES ONLY. THE EXISTING CONDITIONS SHOWN HEREON IS BASED UPON INFORMATION THAT WAS SUPPLIED TO OUR OFFICE AT THE TIME OF PLAN PREPARATION AND MAY BE SUBJECT TO CHANGE AND MUST BE UPDATED UPON PERFORMANCE OF A SURVEY.

RICHMOND GREAT POINT DEVELOPMENT LLC
OLD SOUTH ROAD PROPERTIES
NANTUCKET, MA

DIMENSIONED LOTTING PLAN

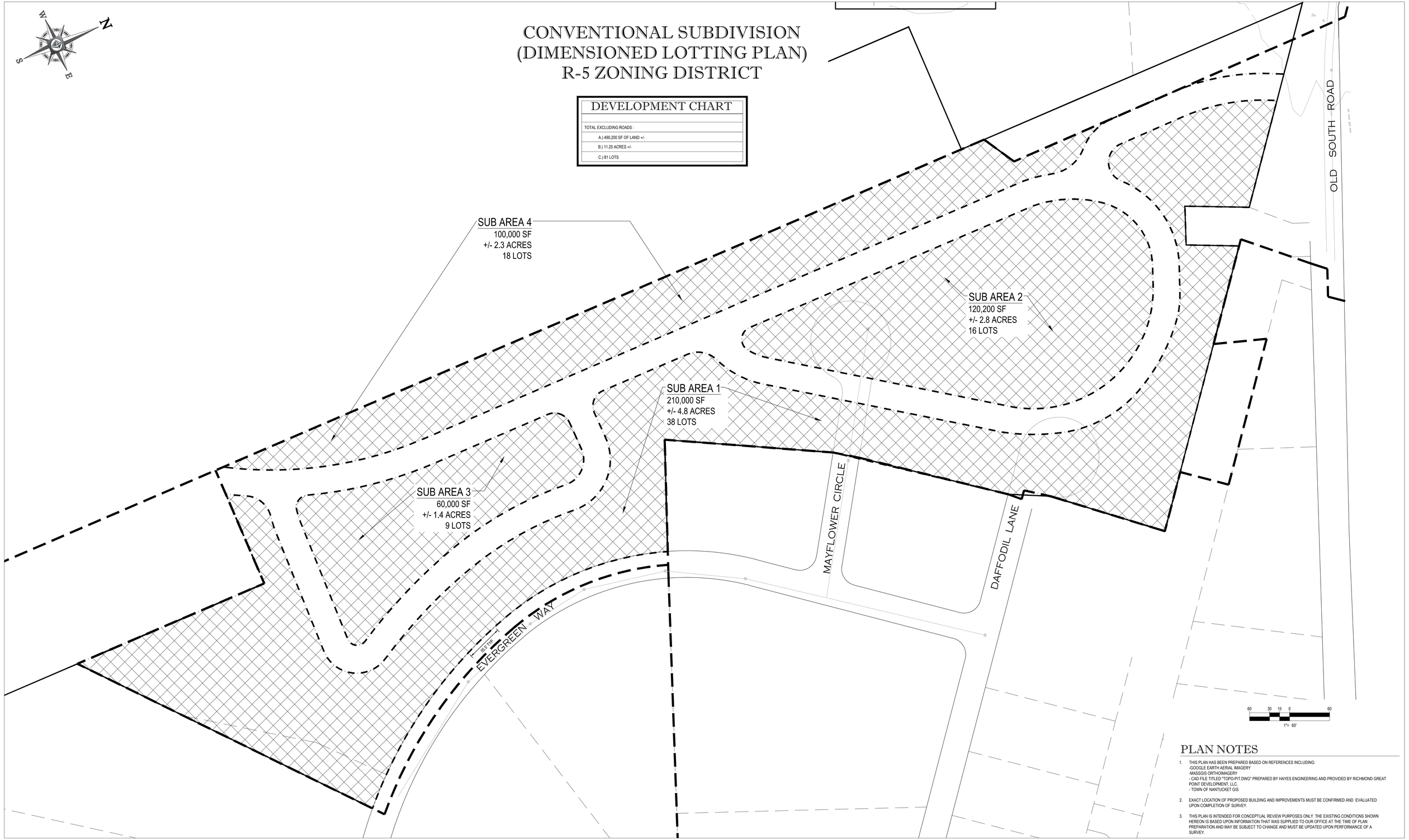
SCALE: 1"=60'
DATE: 06/10/2016
PROJECT □: W141196

REFERENCES:

RICHMOND GREAT POINT DEVELOPMENT LLC

CONVENTIONAL SUBDIVISION
(DIMENSIONED LOTTING PLAN)
R-5 ZONING DISTRICT

DEVELOPMENT CHART
TOTAL EXCLUDING ROADS :
A.) 490,200 SF OF LAND +/-
B.) 11.25 ACRES +/-
C.) 81 LOTS



PLAN NOTES

1. THIS PLAN HAS BEEN PREPARED BASED ON REFERENCES INCLUDING:
   -GOOGLE EARTH AERIAL IMAGERY
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RICHMOND GREAT POINT DEVELOPMENT LLC
OLD SOUTH ROAD PROPERTIES
NANTUCKET, MA

CONVENTIONAL SUBDIVISION
(DIMENSIONED LOTTING PLAN) R-5 ZONING DISTRICT

SCALE: 1"=60'
DATE: 06/10/2016
PROJECT □: W141196

REFERENCES:

RICHMOND GREAT POINT DEVELOPMENT LLC

HEALTH DEPARTMENT
AUG 04 2016
RECEIVED

RECEIVED
AUG 04 2016
By

2016 AUG -4 AM 10:44
NANTUCKET TOWN CLERK

Nantucket Planning Board

Form B
Application for Approval of a Definitive Subdivision Plan (AR)

"Sandpiper Place" Single Family (Homeownership) Project

File one completed form with the Planning Board and one copy with the Town Clerk.

Date: _____ August 4, 2016 _____

To the Planning Board of Nantucket:

The undersigned, being the applicant as defined under Chapter 41, Section 81-L, for approval of a proposed subdivision shown on a plan ___ Definitive Subdivision Plan _____ designed by _ Green Seal Environmental, Inc., 114 State Road, Building B, Sagamore Beach MA 02562 ___ dated ____ August 3, 2016 __, and described as follows: located on _ Multiple Lots on Old South Road, Daffodil Lane, Mayflower Circle, and Evergreen Way (See "Attachment A" for List of Individual Parcels) _____, number of lots proposed _ One Hundred and Six (106), total acreage of tract __ +/- 16.3 Acres _____, hereby submits said plan as a **definitive** plan in accordance with the *Rules and Regulations Governing the Subdivision of Land* of the Nantucket Planning Board and makes application to the Board for approval of said plan.

(See "Attachment B" for List / Derivation of Title for Individual Parcels)

The undersigned's title to said land is derived from _____ by deed dated _____ and recorded in the Nantucket Registry of Deeds Book _____, Page _____, registered in the Nantucket Registry District of the Land Court, Certificate of Title # _____ and shown on Nantucket Assessor's Map # _____, Parcel _____, and said land is free of encumbrances except for the following: (See "Attachment C" for List of Encumbrances) _____

Said plan ❍ has ❍ has not evolved from a preliminary plan submitted to the Board on _____(date) and ❍ approved ❍ disapproved on _____ (date).

The undersigned hereby applies for the approval of said **definitive** plan by the Board, in belief that the plan conforms to the Board's *Rules and Regulations*.

Name(s) and address(es) of the Applicant(s):
(to include all the names and addresses of the principals of the owner entity such as principal officers of the corporation, trustees of a trust or partners of a partnership)
Philip Pastan, (Sole) Manager of Richmond Great Point Development LLC

_____

_____

Contact Phone #: (978) 988-3900 Fax #: (978) 988-3950 E-mail: ppastan@richmondco.com

Name of owner(s): Richmond Great Point Development LLC

Address of owner(s): 23 Concord Street, Wilmington MA 01887

I hereby certify that the applicant(s) listed above have been authorized by me to file a subdivision plan with the Planning Board on property that I own.

Owner's signature Philip Pastan, as Manager of Richmond Great Point Development LLC

8/2/16

Received by Town Clerk: _____

Date: _____

Time: _____

Received by Board of Health: HEALTH DEPARTMENT

Date: AUG 04 2016

Time: RECEIVED

Planning Board File #_____

PLANNING BOARD

FILE #_____

RECEIVED
AUG 09 2016
By_____

August 3, 2016

The Richmond Company, Inc.
20 Davkim Lane
Nantucket, MA 02554

ATTN: Dave Armanetti, Director of Real Estate Development

RE: Meadows II Definitive Subdivision
Richmond Great Point Development
Nantucket, MA
Waiver List

Dave,

Pursuant to our recent discussions, Green Seal Environmental, Inc., (GSE) has prepared this letter to outline the waivers to be requested for the Meadows II definitive subdivision plans recently provided by this office.

The waiver list has been prepared using the "Rules and Regulations Governing the Subdivision of Land – Nantucket Island, Massachusetts" and "Article VI - Town of Nantucket – Sanitary Sewer Standards and Specifications" and the Nantucket Zoning Ordinance. The waivers to be requested are as follows:

Rules and Regulations Governing the Subdivision of Land – Nantucket Island, Massachusetts

Section 2.06b(10)	The elevations depicted on the plans are NAVD 88 rather than the Nantucket half tide datum.
Section 2.06b(14)(a)	Existing trees to be preserved will be decided during construction.
Section 4.03e	Right-of-way rounding is not included on Road I at the intersection with Davkim Lane.
Section 4.06(b)(3)	Cultec MC-4500 Chambers and Cultec Recharger 330XL HD Chambers are to be substituted for the leaching basin depicted in Appendix A, Plate #12.
Section 4.13(b)	Sewage Design Flows have been determined using the Article VI - Town of Nantucket – Sanitary Sewer Standards and Specifications. A design flow of 110 gallons per day per bedroom has been used and the peak conversion factors in this document.

Section 4.16	Existing trees have not been located on this project. As significant cuts and fills are required as part of the re-grading required to reach finished grades, the location of existing trees is not warranted. See Sections 2.06b,(14)(a) above.
Section 4.17	Fire Alarms are not proposed on this project
Section 4.18	This section calls for 4 ft. wide brick or concrete sidewalks on both sides of the road along each way in a subdivision. We are proposing 5' wide asphalt sidewalk on one side only. Plate No. 5 in Appendix A requires a 4-foot grass boarder between the sidewalk and traveled way. Grass strips are not proposed on this project.
Section 4.19	Bicycle Paths are not proposed as shown on plate 11 in the project. We are proposing a 5' wide sidewalk to be used also as bike path.
Section 4.20	Street Lights are not proposed on this project.

Article VI - Town of Nantucket – Sanitary Sewer Standards and Specifications

Section 6.02.2	This section requires sewer mains in the roadway to be 7-8 feet in depth. In several locations, this depth is not met.

Please review the above information and contact this office with any questions or comments.

Thank you,

GREEN SEAL ENVIRONMENTAL, INC.

Robert L. Bersin, PE
Senior Engineer Project Manager

"ATTACHMENT A"
LIST OF INDIVIDUAL PROPERTIES FOR PLANNING BOARD (FORM B) DEFINITIVE SUBDIVISION APPLICATION
RICHMOND GREAT POINT DEVELOPMENT LLC
"SANDPIPER PLACE" SINGLE FAMILY HOME OWNERSHIP DEVELOPMENT PROJECT

Index	Parcel Address	Assessor's Tax Map / Parcel ID		Land Court Plan Information	
		Map	Parcel	Plan Number	Lot
1	30 Daffodil Lane	68	739	16514-40	628
2	32 Daffodil Lane	68	740	16514-40	629
3	34 Daffodil Lane	68	741	16514-40	630
4	35 Daffodil Lane	68	742	16514-40	631
5	3 Mayflower Circle	68	736	16514-40	625
6	4 Mayflower Circle	68	729	16514-40	618
7	5 Mayflower Circle	68	735	16514-40	624
8	6 Mayflower Circle	68	730	16514-40	619
9	7 Mayflower Circle	68	734	16514-40	623
10	8 Mayflower Circle	68	731	16514-40	620
11	9 Mayflower Circle	68	733	16514-40	622
12	10 Mayflower Circle	68	732	16514-40	621
13	24 Evergreen Way	68	711	16514-16	431
14	26 Evergreen Way	68	712	16514-16	432
15	28 Evergreen Way	68	713	16514-16	433
16	30 Evergreen Way	68	714	16514-16	434
17	73 Old South Road	68	129	16514-97	853
18	75(A) Old South Road	68	999.2	16514-100	858
19	Private Way (Adjacent to 73 Old South Road)	n/a	n/a	16514-G	"40.00 Wide Way"
20	(Western Portion of) Daffodil Lane	n/a	n/a	16514-40	663
21	(Western Portion of) Mayflower Circle	n/a	n/a	16514-40	615

"ATTACHMENT B"
LIST OF INDIVIDUAL PROPERTIES FOR DERIVATION OF TITLE FOR (FORM B) DEFINITIVE SUBDIVISION APPLICATION
RICHMOND GREAT POINT DEVELOPMENT LLC
"SANDPIPER PLACE" SINGLE FAMILY HOME OWNERSHIP DEVELOPMENT PROJECT

Index	Parcel Address	Deed Recording Reference (Date, Book, Page)			Internal Reference in Deed	
		Date	Book	Page	Parcel Number	Page
1	30 Daffodil Lane	August 8, 2013	O1397	312	Fifty-Five	11
2	32 Daffodil Lane	August 8, 2013	O1397	312	Fifty-Six	11
3	34 Daffodil Lane	August 8, 2013	O1397	312	Fifty-Seven	11
4	35 Daffodil Lane	August 8, 2013	O1397	312	Fifty-Eight	11
5	3 Mayflower Circle	August 8, 2013	O1397	312	Fifty-Four	11
6	4 Mayflower Circle	August 8, 2013	O1397	312	Forty-Seven	9
7	5 Mayflower Circle	August 8, 2013	O1397	312	Fifty-Three	11
8	6 Mayflower Circle	August 8, 2013	O1397	312	Forty-Eight	10
9	7 Mayflower Circle	August 8, 2013	O1397	312	Fifty-Two	10
10	8 Mayflower Circle	August 8, 2013	O1397	312	Forty-Nine	10
11	9 Mayflower Circle	August 8, 2013	O1397	312	Fifty-One	10
12	10 Mayflower Circle	August 8, 2013	O1397	312	Fifty	10
13	24 Evergreen Way	August 8, 2013	O1397	312	Thirty-Seven	8
14	26 Evergreen Way	August 8, 2013	O1397	312	Thirty-Eight	8
15	28 Evergreen Way	August 8, 2013	O1397	312	Thirty-Nine	8
16	30 Evergreen Way	August 8, 2013	O1397	312	Forty	8
17	73 Old South Road	August 8, 2013	O1397	312	Forty-Three	9
18	75(A) Old South Road	February 6, 2015	Document # 00147075		n/a	n/a
19	Private Way (Adjacent to 73 Old South Road)	n/a	n/a	n/a	n/a	n/a
20	(Western Portion of) Daffodil Lane	August 8, 2013	O1397	312	Sixty-Three	12
21	(Western Portion of) Mayflower Circle	August 8, 2013	O1397	312	Sixty-Five	13

"Attachment C" to
(Form B) Definitive Subdivision Application

"Sandpiper Place" Single Family Homeownership Project
Multiple Properties Off Old South Road, Nancy Ann Lane, Daffodil Lane, Mayflower Circle, and Evergreen Way

ADDITIONAL SPACE NEEDED TO PROVIDE LIST OF ENCUMBRANCES UPON THE PROPERTIES

30, 32, 34 & 35 Daffodil Lane, 3, 4, 5, 6, 7, 8, 9 & 10 Mayflower Circle

1. First Mortgage and Assignment of Leases and Rents from Richmond Great Point Development LLC to WJG Sales, LLC dated August 7, 2013 and recorded on August 8, 2013 in Book 1398, Page 1 and filed as Document No. 141847 at the Nantucket Registry District of the Land Court.

2. Covenant with the Nantucket Planning Board dated May 8, 2000, registered as Document No. 91590 at the Nantucket Registry District of the Land Court, as affected by Form J Release dated September 11, 2000, registered as Document No. 91622 at the Nantucket Registry District of the Land Court; as further affected by Form J Release dated January 5, 2004, registered as Document No. 106401 at the Nantucket Registry District of the Land Court; and as further affected by Form J Release dated July 22, 2008, registered as Document No. 133314 at the Nantucket Registry District of the Land Court.

3. Provisions of the Declaration of Trust of Cedar Crest III Homeowner's Association Trust, dated May 10, 2000, registered as Document No. 91663 at the Nantucket Registry District of the Land Court.

4. Provisions of a Declaration of Restrictions and Easements dated July 24, 2000, registered as Document No. 91664 at the Nantucket Registry District of the Land Court, as affected by Grant of Right of Enforcement of Restrictions to the Nantucket Planning Board dated July 24, 2000, registered as Document No. 91665 at the Nantucket Registry District of the Land Court, and as further affected by a Modification dated May 7, 2001, registered as Document No. 93108 at the Nantucket Registry District of the Land Court.

5. Statement of Conditions of Subdivision Approval dated June 24, 2000, registered as Document No. 91666 at the Nantucket Registry District of the Land Court.

6. Grant of Easement to Nantucket Electric Company dated March 21, 2001, registered as Document No. 92622 at the Nantucket Registry District of the Land Court.

7. Grant of Easement to the Town of Nantucket, acting through its Board of Water Commissioners, dated April 23, 2001, registered as Document No. 92623 at the Nantucket Registry District of the Land Court.

8. Grant of Easement to Verizon New England Inc. dated April 25, 2001, registered as Document No. 92835 at the Nantucket Registry District of the Land Court.

9. Grant of Easement to MediaOne of Massachusetts, Inc. dated May 1, 2001, registered as Document No. 92966 at the Nantucket Registry District of the Land Court.

10. Grant of Easement to Nantucket Electric Company dated February 3, 2004, registered as Document No. 160385 at the Nantucket Registry District of the Land Court.

24, 28 & 30 Evergreen Way

1. First Mortgage and Assignment of Leases and Rents from Richmond Great Point Development LLC to WJG Sales, LLC dated August 7, 2013 and recorded on August 8, 2013 in Book 1398, Page 1 and filed as Document No. 141847 at the Nantucket Registry District of the Land Court.

2. Covenant with the Nantucket Planning Board dated August 24, 1989, registered as Document No. 47337 at the Nantucket Registry District of the Land Court; as may be affected by Form J Release dated November 23, 1992, registered as Document No. 61565 at the Nantucket Registry District of the Land Court; and as may be further affected by Form J Release dated June 27, 1994, registered as Document No. 65885 at the Nantucket Registry District of the Land Court.

3. Grant of Easement to Nantucket Electric Company dated December 30, 1991, registered as Document No. 56338 at the Nantucket Registry District of the Land Court.

4. Provisions of the Declaration of Cedar Crest I Homeowners Association Trust, dated March 10, 1994 registered as Document No. 64060 at the Nantucket Registry District of the Land Court.

5. Provisions of a Restrictive Covenant dated February 26, 1994, registered as Document No. 64062 at the Nantucket Registry District of the Land Court.

26 Evergreen Way

1. First Mortgage and Assignment of Leases and Rents from Richmond Great Point Development LLC to WJG Sales, LLC dated August 7, 2013 and recorded on August 8, 2013 in Book 1398, Page 1 and filed as Document No. 141847 at the Nantucket Registry District of the Land Court.

2. Covenant with the Nantucket Planning Board dated August 24, 1989, registered as Document No. 47337 at the Nantucket Registry District of the Land Court; as may be affected by Form J Release dated November 23, 1992, registered as Document No. 61565 at the Nantucket Registry District of the Land Court; and as may be further affected by Form J Release dated June 27, 1994, registered as Document No. 65885 at the Nantucket Registry District of the Land Court.

3. Grant of Easement to Nantucket Electric Company dated December 30, 1991, registered as Document No. 56338 at the Nantucket Registry District of the Land Court.

4. Provisions of the Declaration of Cedar Crest I Homeowners Association Trust, dated March 10, 1994 registered as Document No. 64060 at the Nantucket Registry District of the Land Court.

5. Provisions of a Restrictive Covenant dated February 26, 1994, registered as Document No. 64062 at the Nantucket Registry District of the Land Court.

6. Notice of Frontage Reduction dated March 10, 1993, registered as Document No. 64172 at the Nantucket Registry District of the Land Court.

73 Old South Road

1. First Mortgage and Assignment of Leases and Rents from Richmond Great Point Development LLC to WJG Sales, LLC dated August 7, 2013 and recorded on August 8, 2013 in Book 1398, Page 1 and filed as Document No. 141847 at the Nantucket Registry District of the Land Court.

2. Order of Taking by the County of Nantucket for the layout of Old South Road as a public highway, dated October 29, 1975, registered as Document No. 16561 at the Nantucket Registry District of the Land Court.

75A Old South Road

1. First Mortgage and Assignment of Leases and Rents from Richmond Great Point Development LLC to WJG Sales, LLC dated August 7, 2013 and recorded on August 8, 2013 in Book 1398, Page 1 and filed as Document No. 141847 at the Nantucket Registry District of the Land Court.

2. Order of Layout dated July 23, 2008, registered as Document No. 124811 at the Nantucket Registry District of the Land Court.

3. Easement in favor of Nantucket Electric Co., dated December 18, 2013, registered as Document No. 143696 at the Nantucket Registry District of the Land Court.

4. Release of right of reverter by instrument dated October 17, 2014 and registered as Document No. 146007 at the Nantucket Registry District of the Land Court.

END OF TEXT

THE RICHMOND COMPANY, INC.

The Richmond Company, Inc.
23 Concord Street
Wilmington, Massachusetts 01887
(979) 988-3900

August 4, 2016

TOWN OF NANTUCKET
PLANNING BOARD
2 Fairgrounds Road
Nantucket, Massachusetts 02554

Attention: Leslie Woodson Snell, AICP, LEED AP, Deputy Director of Planning

Subject: Submittal of Application for Definitive Subdivision
Richmond Great Point Development LLC (Owner / Developer)
"Sandpiper Place" Single Family (Homeownership) Project

Dear Ms. Snell:

The purpose of this correspondence, issued in our capacity as the applicant and development manager, on behalf of the owner of the subject properties (Richmond Great Point Development LLC) is to submit the completed application (Form B) and associated materials (plans, storm water management report, deeds, etc.) to petition the Town of Nantucket Planning Board to consider the above-captioned proposal which requires the approval of a definitive subdivision of land to allow for the subdivision of the subject properties into a series of one hundred and six (106) proposed lots and a +/- 4,350 linear foot (0.82 mile) long system of roadway segments, comprising a total of +/- 16.3 acres of land, located on a series of twenty-one (21) existing parcels located off Old South Road, Nancy Ann Lane, Mayflower Circle, Daffodil Lane, and Evergreen Way (including portions of two road parcels [being the western portions and cul-de-sac bulbs of Daffodil Lane and Mayflower Circle] and a private way located off of Old South Road.

The subject property comprises a substantial portion of the eastern area of the portfolio that Richmond Great Point Development LLC acquired from Walter Glowacki in August of 2013, including a series of twelve (12) existing lots and portions of two road parcels within the Cedar Crest III residential subdivision, which would be re-subdivided as part of this proposal.

The proposed definitive subdivision correlates with and will serve to facilitate the implementation of the application for a special permit that was submitted to your office for review and consideration by the Planning Board, dated June10, 2016, which, if approved, would provide for the use of the subject property as a single family (homeownership) workforce rental housing community. The subdivision is comprised of a combination of one (1) community / public use lot, three (3) open space lots, ninety-nine (99) buildable lots to be owned by Richmond Great Point Development LLC, and three (3) buildable lots to be owned by Housing Nantucket (resulting from the consummation of a pending land exchange with that entity).

Both this (definitive subdivision) application and the aforementioned (special permit) application have been submitted in response to and in conjunction with the workforce housing initiative zoning warrants (# 1 and # 2) that were overwhelmingly approved by local voters at the Nantucket Special Town Meeting held on November 9, 2015.

As you know, the overall objective of all of these above-described and interrelated applications is to provide for the development of a new, high quality single family (homeownership) housing community that will provide much needed single family homes to begin to mitigate the almost unanimously recognized and severe housing crisis that is extant in the community, including the provision of a twenty-five percent (25%) statutorily restricted affordable component. In addition to helping to meet this important housing need, which is primarily targeted to year round Island residents and families, approval of the proposed project will serve to assist the Town of Nantucket in obtaining both "interim" and "long-term" safe harbor, in accordance with the provisions of applicable state law, as relates to the Town's ability to discourage and / or deny Chapter 40B housing development proposals in the future.

The submittal is being made in accordance with and conforms to the provisions of Section 2.06 of "*The Rules and Regulations Governing the Subdivision of Land, Nantucket, Massachusetts*" as well as "*The Subdivision Control Law of Massachusetts*" (M.G.L. Chapter 41, Sections 81K-81GG, inclusive).

The current (underlying) zoning of the +/- 16.3 acre subject properties are classified entirely within the Residential-5 (R-5) zoning district.

As shown in the attached plans, the proposal seeks to subdivide the subject property into a series of one hundred and six (106) lots in accordance with the density and dimensional criteria set forth in Section 139-16(A) and (D) and Section 139-8(D) of the Town of Nantucket Zoning Bylaw.

It is noted that before the proposed subdivision can be fully implemented and registered, the existing (easement) rights of access and passage which have been granted to other owners and the association of the existing Cedar Crest III residential subdivision, comprising portions of the Daffodil Lane and Mayflower Circle road parcels that also comprise portions of the proposed subdivision, must be modified. The owner / applicant will continue to undertake this easement modification process as the proposed subdivision is reviewed and acted upon by the Planning Board.

The proposed roadway segments include combination sidewalks / bike paths, which are linked into the adjacent existing residential neighborhoods, as well as to the adjacent commercial, retail, and industrial development located on abutting properties that are predominantly owned and will be developed by Richmond Great Point Development LLC.

The site has also been configured with a network of drainage that meets or exceeds all applicable design requirements and is comprised of a series of underground infiltration basins that will recharge runoff back into the ground water aquifer. The site is also proposed to be improved with appropriate (underground) utilities (including sanitary sewer, water, electrical, and telephone / cable / data infrastructure) along with street lighting and streetscape landscaping.

In addition to the completed (Form B) application, attached hereto, we have submitted the following plans and technical materials that are required to be submitted to provide for the processing and approval of the proposed subdivision, including: (1) the *Definitive Subdivision Plan, "Sandpiper Place" Single Family Homeownership Project* as prepared by Green Seal Environmental, Inc., dated August 3, 2016, depicting the subdivision of the lots along with the applicable / customary notes and details (totaling 31 sheets), (2) the *Drainage Narrative (along with the customary calculations and technical attachments)*, as prepared by Green Seal Environmental, Inc., dated August 3, 2016, (3) the *Drainage "Hydro-CAD Report"*, as prepared by Green Seal Environmental, Inc., dated August 3, 2016, and (4) the *Requested Waivers*, as prepared by Green Seal Environmental, Inc., dated August 3, 2016.

We have also attached "Attachment A" and "Attachment B" to the Form B application form, detailing the specifics of the two (2) existing parcels that comprise the proposed subdivision and the derivation of the title to the land comprising the proposed subdivision, given that the land includes multiple parcels, and given that title to several of the parcels has been derived from different sellers / grantors.

We trust that this submittal conforms to the applicable requirements for such a Definitive Subdivision Plan (AR) and we look forward to the completion of your review and the subsequent review and approval of the plan by the Town of Nantucket Planning Board.

If you have any immediate questions with respect to either the application or the enclosed materials, please feel free to contact me at 978-988-3900, Extension # 12.

Very truly yours,

David J. Armanetti, Director of Real Estate Development
The Richmond Company, Inc. (Applicant / Development Manager)
On Behalf of Richmond Great Point Development LLC (Owner)

Cc: Philip Pastan, TRC
Kathryn Fossa, TRC
Patricia Roggeveen, RGPDLLC
Shane Valero, RGPDLLC
Andrew Burek, Esq., TRC
Arthur Reade, Esq.

THE RICHMOND COMPANY, INC.

The Richmond Company, Inc.
23 Concord Street
Wilmington, Massachusetts 01887
(979) 988-3900

August 4, 2016

TOWN OF NANTUCKET
TOWN CLERK
16 Broad Street
Nantucket, Massachusetts 02554

Attention: Catherine Flanagan Stover, MMC, CMMC

Subject: Submittal of Application for Definitive Subdivision
Richmond Great Point Development LLC (Owner / Developer)
"Sandpiper Place" Single Family (Homeownership) Project

Dear Mrs. Stover:

The purpose of this correspondence, issued in our capacity as the applicant and development manager, on behalf of the owner of the subject properties (Richmond Great Point Development LLC) is to document submittal of the completed application to petition the Town of Nantucket Planning Board to consider the above-captioned proposal which requires the approval of a definitive subdivision of land to allow for the subdivision of the subject properties into a series of one hundred and six (106) proposed lots and a +/- 4,350 linear foot (0.82 mile) long system of roadway segments, comprising a total of +/- 16.3 acres of land, located on a series of twenty-one (21) existing parcels located off Old South Road, Nancy Ann Lane, Mayflower Circle, Daffodil Lane, and Evergreen Way (including portions of two road parcels [being portions of Daffodil Lane and Mayflower Circle] and a private way located off of Old South Road

The Notice (and copy of the completed (Form B) application and accompanying plan) is being submitted to your office in accordance with and conforms to the provisions of Section 2.06 of "*The Rules and Regulations Governing the Subdivision of Land, Nantucket, Massachusetts*" as well as "*The Subdivision Control Law of Massachusetts*" (M.G.L. Chapter 41, Sections 81K-81GG, inclusive).

Upon your acknowledgment of receipt of this Notice (by way of time / date stamping the application), we intend to submit the original completed (Form B) application and accompanying plan to the Town of Nantucket Planning Board to obtain its review and subsequent approval.

Should you have any questions with respect to the application and submittal, please feel free to contact me at 978-988-3900, Extension # 12.

Very truly yours,

David J. Armanetti
Director of Real Estate Development
The Richmond Company, Inc.
On Behalf of Richmond Great Point Development LLC

Cc: Andrew Burek, Esq., TRC
Arthur Reade, Jr., Esq., RGH

Richmond Great Point Inc.
20 Davkim Lane
Nantucket, MA 02554

Drainage Calculations Narrative

PROJECT SUMMARY

Richmond Great Point Inc., Inc. (RGP) is proposing to reconfigure the existing property as shown on sheets C-1 to C-5. The project includes single family home development and rental apartment development.

The proposed development of "Sandpiper Place" workforce homeownership housing development, comprised of one hundred (100) single family housing lots on a combination of nineteen (19) existing lots totaling +/- 17.2 acres of land located along Old South Road, Daffodil Lane, Mayflower Circle, and Evergreen Way.

The proposed development of "Workforce Rental Community" includes a total of 225 apartment units in a series of approximately forty (40) low density, two story, residential structures on a combination of two (2) existing lots totaling +/- 14.5 acres of land located along Davkim Lane and Nancy Ann Lane.

EXISTING CONDITIONS

Currently, access to all parcels owned by RGP is via Nancy Ann Lane. The land located at 20 Davkim Lane contains a former asphalt gravel plant/gravel pit. A paved parking area is located in front of the plant along the corner of Nancy Ann Lane and Davkim lane. North of the plant comprises gravel areas with access driveways along Nancy Ann Lane and storage components of the former Glowacki property. A gravel travelway connects the eastern portion of the plant to Evergreen Way.

The easterly portion of the project along Evergreen Way is primarily wooded with residential properties on the corner of Evergreen Way and Daffodil Lane. A gravel pathway extends from the paved roadway between the asphalt gravel plant and Evergreen Way to the Mayflower Circle cul-de-sac.

In general, the property slopes from North to South and contains two large sand pits that are shown on sheets C-6 to C-8.

PROPOSED CONDITIONS

We have included a set of plans and related documents depicting the proposal for your review. The subdivision will require the construction of new roadways. For discussion purposes during the review process with the town review agencies, we have included conceptual building footprints. The Stormwater runoff generated from the buildings depicted on the plans will be Contain by individual leaching systems sized to retain and infiltrate the Type III 24-hour 100-year storm.

Pre and Post development stormwater analysis was completed for the Type III 24-hour 25-year storm event using Carlson Civil Suite Engineering and Surveying software and HydroCad Stormwater modeling software for the drainage areas identified on the property. These stormwater modeling packages were developed using TR-55 modeling protocol and are widely used in the stormwater modeling arena. The modeling addressed stormwater for this proposal under the following assumptions:

1. We have assumed that the roadways, driveways and sidewalks as depicted on the plans, are constructed.

The two existing Sand Pits will be re-graded. The proposed site generally slopes in a Southerly direction from Old South Road, Easterly from Nancy Ann lane, And Westerly from Evergreen Road.

It should be noted that runoff from the RGP property remains on –site and the proposed conditions will remain the same.

As such, we have not concentrated on the pre and post development conditions on the property as no stormwater leaves the property. Although the impervious area of the property will be increased, the existing fully developed nature of a major portion of the property, the fact that all stormwater stays on the site, and significant drainage system improvements are proposed, the need to concentrate on pre and post development conditions is reduced. The main effort in our drainage analysis for this project centered on the use of deep sump catch basins, grease/grit removal Water Quality Structures and underground infiltration Chambers designed to retain and infiltrate the Type III 24-hour 25-year as well as mitigate the flooding caused by the 100 year event.

Runoff from the post development conditions is subdivided into 15 watersheds. Stormwater Runoff is conveyed to nine underground retention / infiltration areas (refer to table below) containing ADS StormTech MC-4500 + Cap chambers. Under conditions related to large storm events, the system will surcharge and stormwater will spill out of the lowest grate, and overflow into two designated flood areas as shown on sheet C-19.

Underground Retention / Infiltration Areas for Watershed					
No.	Watershed	Pond	Storage Area	No. Storage Chambers	VortSentry Model
1	S1	1P	46.67'W x 27.24'L x 6.75'H	25	HS72
2	S2	2P	37.58'W x 43.34'L x 6.75'H	36	HS72
3	S3	3P	37.58'W x 51.39'L x 6.75'H	44	HS84
4	S4	4P	55.75'W x 35.29'L x 6.75'H	42	HS84
5	S5, S6	5P/6P	28.50'W x 43.34'L x 6.75'H	27	HS84
6	S7	7P	46.67'W x 47.37'L x 6.75'H	50	HS84
7	S8, S9	8P/9P	37.58'W x 63.47'L x 6.75'H	56	HS96
8	S10-S14	10P-14P	55.75'W x 51.39'L x 6.75'H	66	HS96
9	S15	15P	46.67'W x 59.44'L x 6.75'H	65	HS84

Stormwater Runoff from each building is conveyed to underground retention / infiltration areas (refer to table below) containing Cultec Recharger 330XL HD chambers.

Underground Retention / Infiltration Areas for Buildings		
Type*	Storage Area	No. Storage Chambers
Building A	11.83'W x 11.17'L x 3.88'H	2
Building B	11.17'W x 10.50'L x 3.54'H	2
Building C	11.17'W x 10.50'L x 3.54'H	2
Multifamily	17.00'W x 11.50'L x 3.54'H	3

*See sheets C-6 to C-8 for building type locations.

Stormwater Standards

Standard 1 - No New Untreated Discharges

Under the proposed improvements, there are no untreated discharges to or erosion of wetlands or waters of the Commonwealth. All of the runoff from this proposal are directed to and allowed to infiltrate in retention areas within the boundary of the project. There are no off-site discharges from this project.

Standard 2 - Peak Flow Rates

The pre and post-development peak discharge rate from this development is contained within the property. There is no runoff from this property. The stormwater modeling results are included in the Attachments (1 & 2) of this document.

Standard 3 - Recharge Rates

All of the runoff from the area of development on site will be directed into the retention areas depicted on the plans. The proposed drainage system will infiltrate 100% of the excess stormwater volume.

Standard 4 - TSS Removal Rates

The design provides more than 95% TSS removal utilizing the deep sump catch basins, oil/sediment separators, and subsurface leaching systems. See Attachment 3 for these computations.

Standard 5 - Land Use with Higher Potential Pollution Load

This standard is not applicable to the site.

Standard 6 - Wellhead Protection Area

This standard applies to this project as the site is located in a public wellhead protection area. Test pits indicate a minimum of 10 feet of undisturbed soil above groundwater will be maintained for the construction of this project. Improvements to the property include conveying stormwater runoff to nine underground retention / infiltration areas with each containing a grease/grit removal Water Quality Structure.

Standard 7 - Redevelopment

This standard applies to this project as significant improvements are proposed on the property. Improvements include the use of Deep Sump catch basins, the installation of a grease/grit removal Water Quality Structure and construction of nine retention / infiltration areas to eliminate severe ponding at the property. The stormwater modeling results are included in the Appendix A of this document.

As such, Stormwater Standards have been met to the maximum extent practicable.

Standard 8 - Construction Period Pollution Prevention

Although this proposal does not require a National Pollution Discharge Elimination System (NPDES) permit for construction, the proposal calls for the installation of silt fencing, hay bales, catchbasin filters, and the remediation of all disturbed areas. Sedimentation will be controlled by inspection of stormwater facilities before and after significant stormwater events.

Standard 9 - Operations and Maintenance

The Operation and Maintenance plan calls for maintaining the landscaped portion of the project as well as regular cleaning of catch basins, grease/grit chambers, and stormwater retention facilities. An Operations and Maintenance Plan is included in this report.

Standard 10- Illicit Discharge Statement

There are no known, illicit discharges associated with this project.
Please review the above information and contact this office with any questions or comments.

Robert L. Bersin, PE
Green Seal Environmental, Inc.

July 25, 2016
Date

GENERAL CONSTRUCTION SEQUENCE

1. Prior to the start of all work, the contractor shall have the Limits of Work flagged by Green Seal Environmental. Flagging shall be inspected by the Town of Nantucket designee, prior to the start of all work.
2. Contractor shall furnish and install construction silt fencing, hay bales, or wattles (as required on approved plans) along the Limits of Work line as depicted on the approved plans. Installation of said fencing shall be inspected by the Town of Nantucket designee.
3. Install Temporary Construction Access as depicted on the approved plans. Installation of said access shall be inspected by the Town of Nantucket designee.
4. Tree Removal along the proposed roadway shall be coordinated with the Nantucket Tree Warden and Planning Department. All debris, including stumps, shall be removed from the site and disposed in a MassDEP approved disposal site. Cut materials may be chipped, stockpiled, and used as mulch, as needed. Use 4-6 inches of topsoil and the seed mixture referenced above to revegetate disturbed areas along the roadway.
5. Install Retention / Infiltration Areas and Treatment units as shown on approved plans. Retention Areas shall be installed by removing all soil above the "C" Sand layer as depicted on the soil logs and backfilled with clean granular sand, free from organic matter, and other deleterious matter. Fill material shall meet the grading specifications in 310 CMR 15.255:3. Install roadway as depicted on the approved plans. Access to the work areas shall be via the proposed construction entrances shown on the Erosion and Dust Control Plan. All efforts shall be employed to prevent soil accumulation from construction vehicles onto the surface of Nancy Ann Lane Rd. If binder course is not installed immediately after cutting, grubbing, re-grading, and compaction, install temporary crushed stone construction entrance as depicted on the Erosion and Dust Control Plan. Final paving shall be after the installation of drainage components and utilities is complete.
6. In general, revegetate disturbed areas as soon as practicable.
7. After the roadway construction, start the installation of landscaping per approved plans. Coordinate installation with the Town of Nantucket designee. All attempts shall be made to avoid planting during summer droughty season, or arrangements shall be made for proper watering required to ensure proper plant growth.
8. Upon completion of the work, inspect all areas of installation. All disturbed areas shall be revegetated as described above.

STORMWATER SYSTEM MAINTENANCE
CONSTRUCTION PHASE

Best management practices (BMP) for erosion and sedimentation control are staked straw bales, filter fences, wattles, hydro seeding, and phased development. Although not all of these methods are utilized for this project, it should be noted that these are not designed to handle high concentrations of sediments typically found in construction runoff. High sediment losses are not anticipated on this project, but it is imperative that the BMP's on this site be maintained.

Pre-Construction

A. The contractor shall have a stockpile of materials required to control erosion on-site to be used to supplement or repair erosion control devices. These materials shall include, but are not limited to straw bales, silt fence, wattles, and crushed stone.

B. The site contractor is responsible for erosion control on site and shall utilize erosion control measures where needed, regardless of whether the measures are specified on the plan or in the order of conditions.

Construction Phase

A. All excavated materials should be stockpiled, separating topsoil from other materials. The topsoil shall be kept for future use on the site. Erosion control shall be utilized along the down slope side of the stockpiles and side slopes shall not exceed 2:1.

B. If intense rainfall is anticipated, the installation of supplemental straw bale dikes, silt fences, or wattles shall be considered.

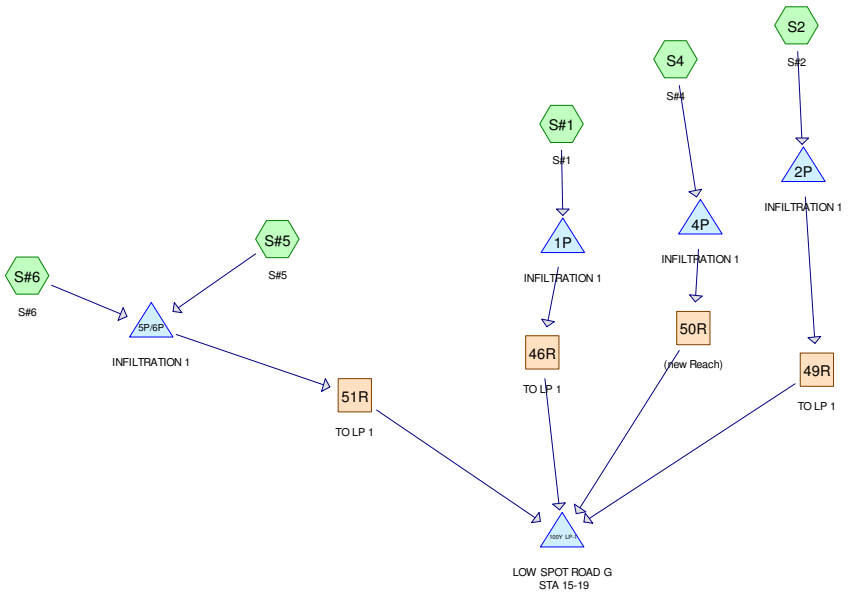
C. Unsuitable excavated material shall be removed from the site as soon as practicable.

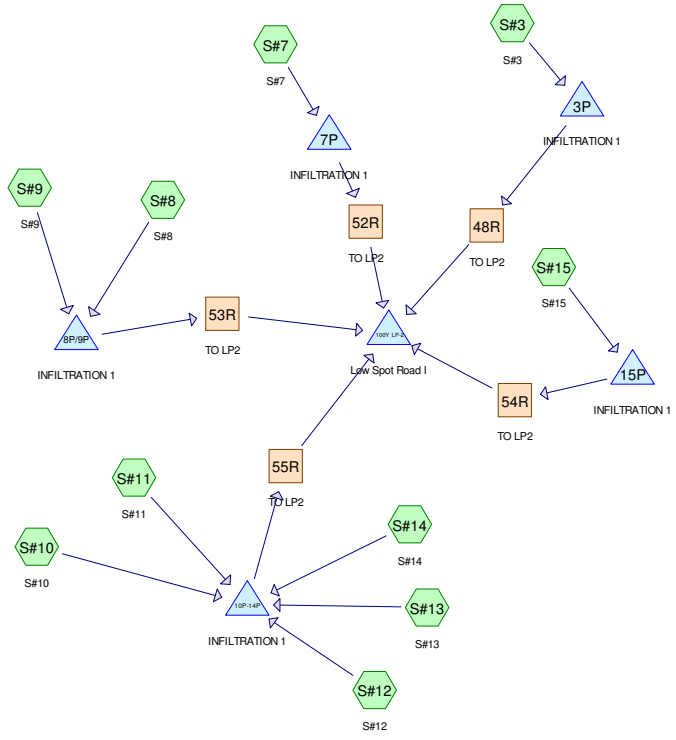
D. Construction entrance shall be installed as shown on the approved plans as outlined above.

Ongoing Site Work

1. Site work will be completed utilizing proper construction techniques. All efforts are to be employed to minimize the deposition of soil from Construction vehicles on Nancy Ann Lane Road.
2. Inspect all sediment and erosion control measures on a weekly basis, prior to, and after significant storm events (0.25 inches or greater), or as otherwise required by the Town of Nantucket designee.

3. Sediment shall be removed from sediment barriers if buildup exceeds ½ of the height of the barrier.
4. Damaged or deteriorated barriers shall be repaired immediately after the defect is identified.
5. The underside of hay bales and wattles shall be kept in close contact with exposed earth. Reset as necessary.
6. Remove vegetative and non-vegetative debris from the retention areas.
7. In general, the area shall be kept neat and litter free, to the maximum extent practicable. Trash, shipping materials, and other disposable materials shall be contained and prevented from becoming windblown litter. The site supervisor shall ensure all debris is either removed or properly contained prior to leaving the site on a daily basis.
8. Erosion control elements shall remain in place until all disturbed areas are stabilized. After removal of erosion control elements, regrade, and stabilize disturbed areas under barriers, as necessary.
9. No pesticides or herbicides are to be used on the site and only organic fertilizers shall be used.





Subcat Reach Pond Link

Routing Diagram for ALTERNATIVE WATER SHEDS
Prepared by {enter your company name here}, Printed 7/26/2016
HydroCAD® 10.00 s/n 07546 © 2013 HydroCAD Software Solutions LLC

Project Notes

CarlsonStageIncrement|1.0000|

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
16.321	39	Open Space-Good (>75% grass) HSG A (S#1, S#10, S#11, S#12, S#13, S#14, S#15, S#3, S#5, S#6, S#7, S#8, S#9, S2, S4)
0.765	61	Open Space-Good (>75% grass) HSG B (S#1, S2)
0.469	98	Paved Lots Roofs & Driveways HSG A (S#11)
0.239	98	Paved Lots Roofs & Driveways HSG B (S2)
7.875	98	Paved Streets w/Curbs & Sewers HSG A (S#1, S#10, S#12, S#13, S#14, S#15, S#3, S#5, S#6, S#7, S#8, S#9, S4)
0.239	98	Paved Streets w/Curbs & Sewers HSG B (S2)
25.907	**60**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
24.664	HSG A	S#1, S#10, S#11, S#12, S#13, S#14, S#15, S#3, S#5, S#6, S#7, S#8, S#9, S2, S4
1.243	HSG B	S#1, S2
0.000	HSG C	
0.000	HSG D	
0.000	Other	
25.907		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
16.321	0.765	0.000	0.000	0.000	17.086	Open Space-Good (>75% grass)	S#1, S#10, S#11, S#12, S#13, S#14, S#15, S#3, S#5, S#6, S#7, S#8, S#9, S2, S4
0.469	0.239	0.000	0.000	0.000	0.708	Paved Lots Roofs & Driveways	S#11, S2
7.875	0.239	0.000	0.000	0.000	8.114	Paved Streets w/Curbs & Sewers	S#1, S#10, S#12, S#13, S#14, S#15, S#3, S#5, S#6, S#7, S#8, S#9, S2, S4
24.664	**1.243**	**0.000**	**0.000**	**0.000**	**25.907**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment S#1: S#1 Runoff Area=74,645 sf 34.86% Impervious Runoff Depth=1.79"
Flow Length=173' Slope=0.0515 '/' Tc=6.0 min CN=60 Runoff=3.33 cfs 0.256 af

Subcatchment S#10: S#10 Runoff Area=36,853 sf 28.96% Impervious Runoff Depth=1.48"
Flow Length=225' Slope=0.0140 '/' Tc=15.6 min CN=56 Runoff=0.96 cfs 0.104 af

Subcatchment S#11: S#11 Runoff Area=45,317 sf 45.07% Impervious Runoff Depth=2.29"
Flow Length=405' Slope=0.0234 '/' Tc=14.9 min CN=66 Runoff=2.06 cfs 0.199 af

Subcatchment S#12: S#12 Runoff Area=35,592 sf 41.55% Impervious Runoff Depth=2.12"
Flow Length=235' Slope=0.0333 '/' Tc=8.5 min CN=64 Runoff=1.76 cfs 0.144 af

Subcatchment S#13: S#13 Runoff Area=23,644 sf 43.86% Impervious Runoff Depth=2.21"
Flow Length=117' Slope=0.0184 '/' Tc=6.4 min CN=65 Runoff=1.33 cfs 0.100 af

Subcatchment S#14: S#14 Runoff Area=32,589 sf 22.11% Impervious Runoff Depth=1.19"
Flow Length=319' Slope=0.0132 '/' Tc=23.5 min CN=52 Runoff=0.53 cfs 0.074 af

Subcatchment S#15: S#15 Runoff Area=219,043 sf 28.62% Impervious Runoff Depth=1.48"
Flow Length=1,119' Slope=0.0258 '/' Tc=41.5 min CN=56 Runoff=3.75 cfs 0.620 af

Subcatchment S#3: S#3 Runoff Area=180,213 sf 23.77% Impervious Runoff Depth=1.26"
Flow Length=300' Slope=0.0252 '/' Tc=15.8 min CN=53 Runoff=3.73 cfs 0.433 af

Subcatchment S#5: S#5 Runoff Area=31,300 sf 60.32% Impervious Runoff Depth=3.11"
Flow Length=121' Slope=0.0265 '/' Tc=5.0 min CN=75 Runoff=2.62 cfs 0.186 af

Subcatchment S#6: S#6 Runoff Area=10,705 sf 75.27% Impervious Runoff Depth=3.91"
Flow Length=121' Slope=0.0370 '/' Tc=5.0 min CN=83 Runoff=1.12 cfs 0.080 af

Subcatchment S#7: S#7 Runoff Area=75,917 sf 62.25% Impervious Runoff Depth=3.21"
Flow Length=405' Slope=0.0259 '/' Tc=10.8 min CN=76 Runoff=5.54 cfs 0.466 af

Subcatchment S#8: S#8 Runoff Area=46,691 sf 52.51% Impervious Runoff Depth=2.65"
Flow Length=269' Slope=0.0219 '/' Tc=10.0 min CN=70 Runoff=2.85 cfs 0.236 af

Subcatchment S#9: S#9 Runoff Area=48,922 sf 54.31% Impervious Runoff Depth=2.74"
Flow Length=214' Slope=0.0177 '/' Tc=9.1 min CN=71 Runoff=3.17 cfs 0.256 af

Subcatchment S2: S#2 Runoff Area=115,715 sf 17.98% Impervious Runoff Depth=1.48"
Flow Length=300' Slope=0.0283 '/' Tc=13.8 min CN=56 Runoff=3.16 cfs 0.328 af

Subcatchment S4: S#4 Runoff Area=151,367 sf 28.50% Impervious Runoff Depth=1.48"
Flow Length=300' Slope=0.0338 '/' Tc=12.6 min CN=56 Runoff=4.26 cfs 0.428 af

Reach 46R: TO LP 1 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.013 L=467.7' S=0.0082 '/' Capacity=9.55 cfs Outflow=0.00 cfs 0.000 af

Reach 48R: TO LP2 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.013 L=370.0' S=0.0053 '/' Capacity=7.64 cfs Outflow=0.00 cfs 0.000 af

Reach 49R: TO LP 1 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.013 L=190.0' S=0.0149 '/' Capacity=12.84 cfs Outflow=0.00 cfs 0.000 af

Reach 50R: (new Reach) Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach 51R: TO LP 1 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.013 L=431.0' S=0.0094 '/' Capacity=10.20 cfs Outflow=0.00 cfs 0.000 af

Reach 52R: TO LP2 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.013 L=592.0' S=0.0066 '/' Capacity=8.53 cfs Outflow=0.00 cfs 0.000 af

Reach 53R: TO LP2 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.013 L=184.0' S=0.0024 '/' Capacity=5.20 cfs Outflow=0.00 cfs 0.000 af

Reach 54R: TO LP2 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.013 L=372.0' S=0.0006 '/' Capacity=2.62 cfs Outflow=0.00 cfs 0.000 af

Reach 55R: TO LP2 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.013 L=1.0' S=0.0100 '/' Capacity=10.52 cfs Outflow=0.00 cfs 0.000 af

Pond 1P: INFILTRATION 1 Peak Elev=38.12' Storage=0.110 af Inflow=3.33 cfs 0.256 af
Discarded=0.24 cfs 0.256 af Primary=0.00 cfs 0.000 af Outflow=0.24 cfs 0.256 af

Pond 2P: INFILTRATION 1 Peak Elev=33.61' Storage=0.136 af Inflow=3.16 cfs 0.328 af
Discarded=0.31 cfs 0.328 af Primary=0.00 cfs 0.000 af Outflow=0.31 cfs 0.328 af

Pond 3P: INFILTRATION 1 Peak Elev=27.81' Storage=0.187 af Inflow=3.73 cfs 0.433 af
Discarded=0.37 cfs 0.433 af Primary=0.00 cfs 0.000 af Outflow=0.37 cfs 0.433 af

Pond 4P: INFILTRATION 1 Peak Elev=34.53' Storage=0.187 af Inflow=4.26 cfs 0.428 af
Discarded=0.38 cfs 0.428 af Primary=0.00 cfs 0.000 af Outflow=0.38 cfs 0.428 af

Pond 5P/6P: INFILTRATION 1 Peak Elev=34.25' Storage=0.119 af Inflow=3.74 cfs 0.266 af
Discarded=0.24 cfs 0.266 af Primary=0.00 cfs 0.000 af Outflow=0.24 cfs 0.266 af

Pond 7P: INFILTRATION 1 Peak Elev=31.24' Storage=0.207 af Inflow=5.54 cfs 0.466 af
Discarded=0.42 cfs 0.466 af Primary=0.00 cfs 0.000 af Outflow=0.42 cfs 0.466 af

Pond 8P/9P: INFILTRATION 1 Peak Elev=28.39' Storage=0.218 af Inflow=6.01 cfs 0.493 af
Discarded=0.46 cfs 0.493 af Primary=0.00 cfs 0.000 af Outflow=0.46 cfs 0.493 af

Pond 10P-14P: INFILTRATION 1 Peak Elev=26.71' Storage=0.273 af Inflow=5.78 cfs 0.621 af
Discarded=0.55 cfs 0.621 af Primary=0.00 cfs 0.000 af Outflow=0.55 cfs 0.621 af

Pond 15P: INFILTRATION 1 Peak Elev=26.97' Storage=0.267 af Inflow=3.75 cfs 0.620 af
Discarded=0.53 cfs 0.620 af Primary=0.00 cfs 0.000 af Outflow=0.53 cfs 0.620 af

Pond 100Y LP-1: LOW SPOT ROAD G STA 15-19 Peak Elev=36.50' Storage=0 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 100Y LP-2: Low Spot Road I Peak Elev=31.50' Storage=0 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 25.907 ac Runoff Volume = 3.912 af Average Runoff Depth = 1.81"
65.95% Pervious = 17.086 ac 34.05% Impervious = 8.821 ac

Summary for Subcatchment S#1: S#1

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CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

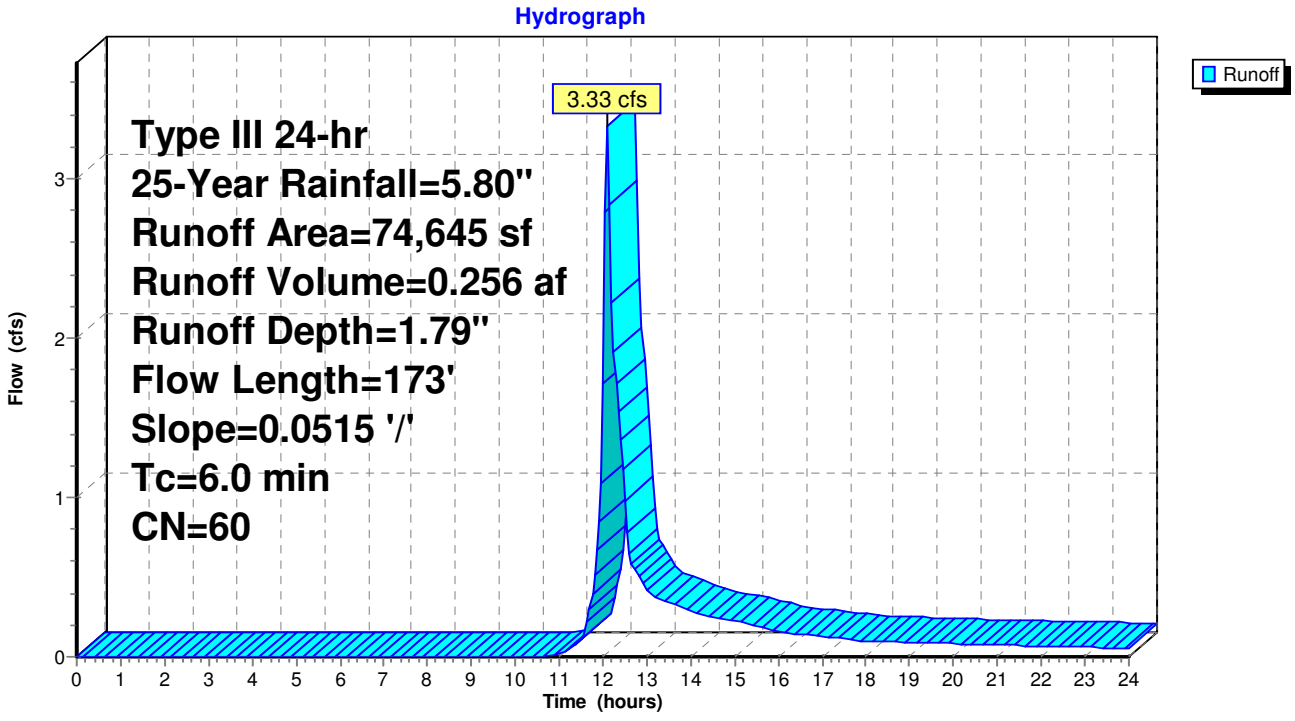
Runoff = 3.33 cfs @ 12.10 hrs, Volume= 0.256 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	26,022	98	Paved Streets w/Curbs & Sewers HSG A
*	48,593	39	Open Space-Good (>75% grass) HSG A
*	30	61	Open Space-Good (>75% grass) HSG B
	74,645	60	Weighted Average
	48,623		65.14% Pervious Area
	26,022		34.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	173	0.0515	0.48		**Lag/CN Method,**

Subcatchment S#1: S#1



Summary for Subcatchment S#10: S#10

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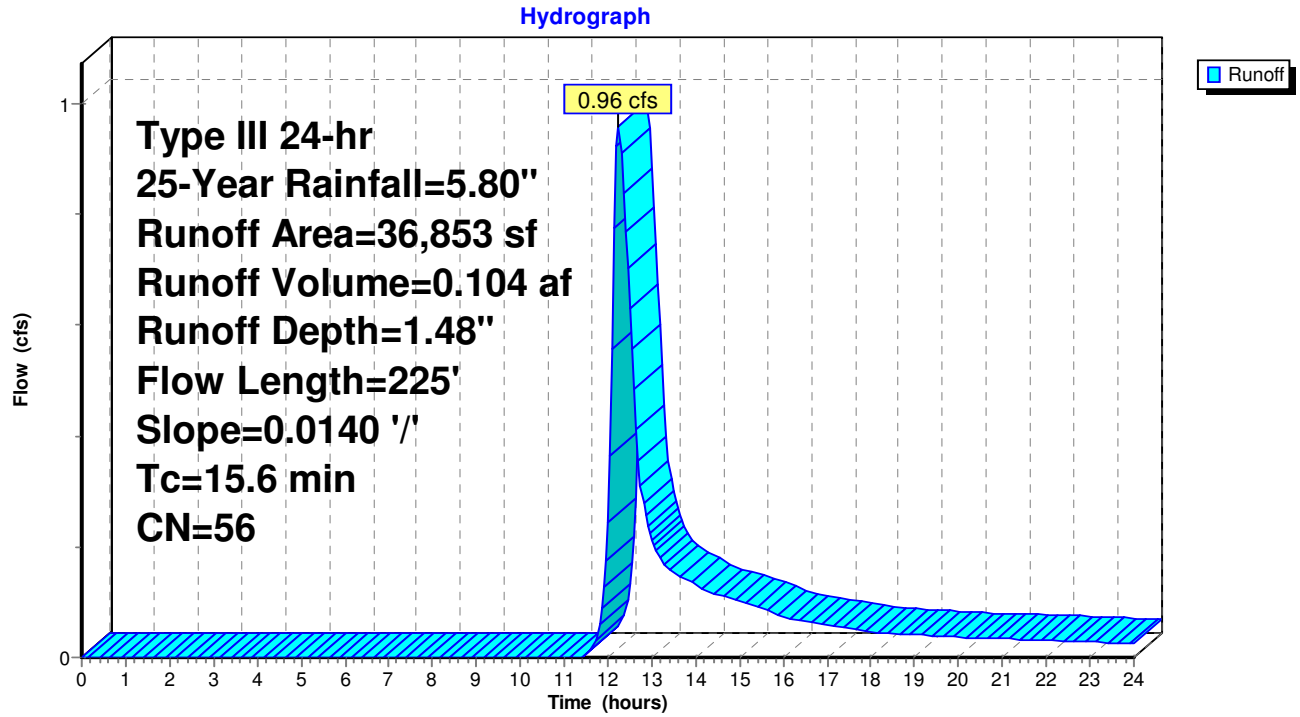
Runoff = 0.96 cfs @ 12.25 hrs, Volume= 0.104 af, Depth= 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	10,673	98	Paved Streets w/Curbs & Sewers HSG A
*	26,180	39	Open Space-Good (>75% grass) HSG A
	36,853	56	Weighted Average
	26,180		71.04% Pervious Area
	10,673		28.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	225	0.0140	0.24		**Lag/CN Method,**

Subcatchment S#10: S#10



Summary for Subcatchment S#11: S#11

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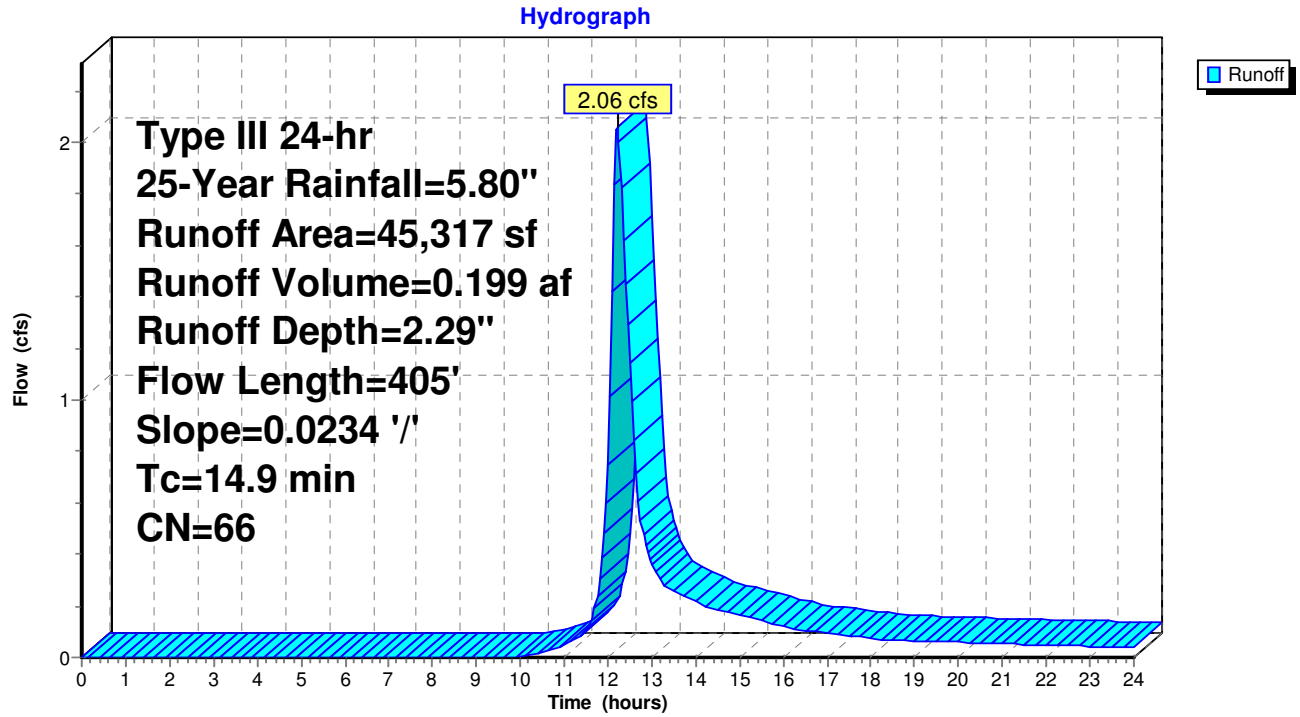
Runoff = 2.06 cfs @ 12.22 hrs, Volume= 0.199 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	20,423	98	Paved Lots Roofs & Driveways HSG A
*	24,894	39	Open Space-Good (>75% grass) HSG A
	45,317	66	Weighted Average
	24,894		54.93% Pervious Area
	20,423		45.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	405	0.0234	0.45		**Lag/CN Method,**

Subcatchment S#11: S#11



Summary for Subcatchment S#12: S#12

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CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

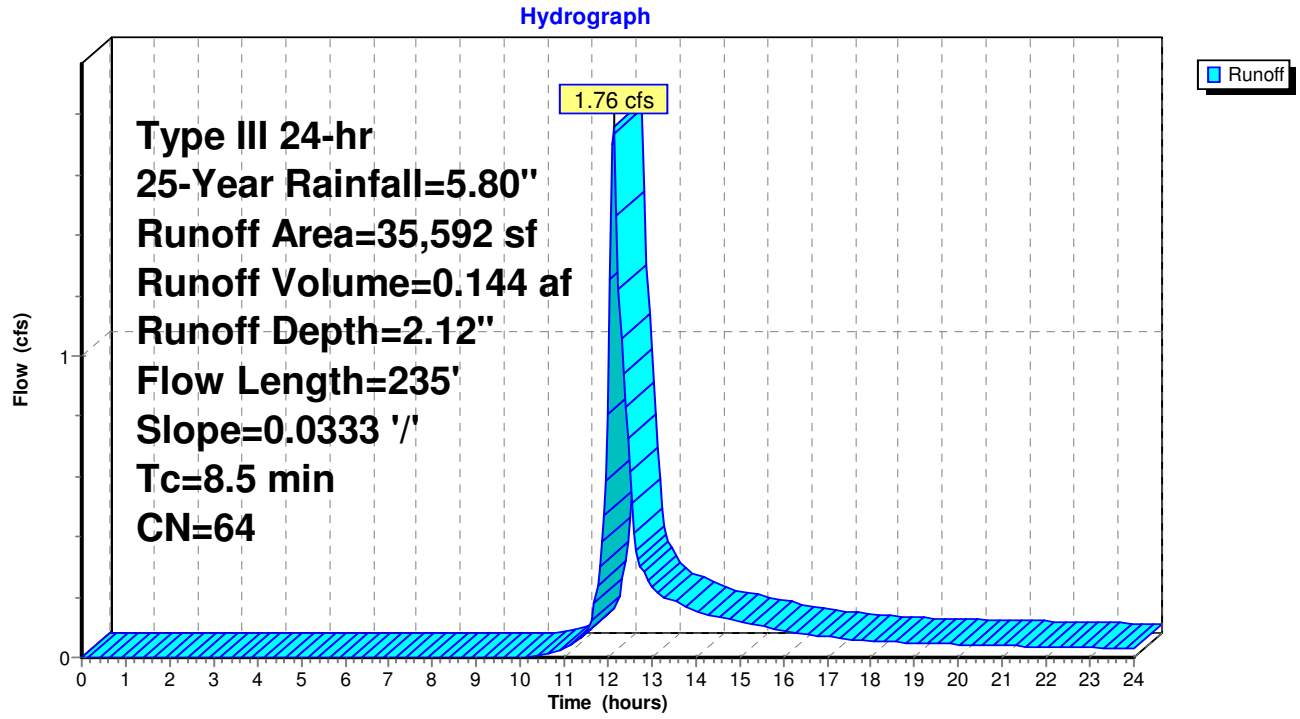
Runoff = 1.76 cfs @ 12.13 hrs, Volume= 0.144 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	14,787	98	Paved Streets w/Curbs & Sewers HSG A
*	20,805	39	Open Space-Good (>75% grass) HSG A
	35,592	64	Weighted Average
	20,805		58.45% Pervious Area
	14,787		41.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	235	0.0333	0.46		**Lag/CN Method,**

Subcatchment S#12: S#12



Summary for Subcatchment S#13: S#13

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CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

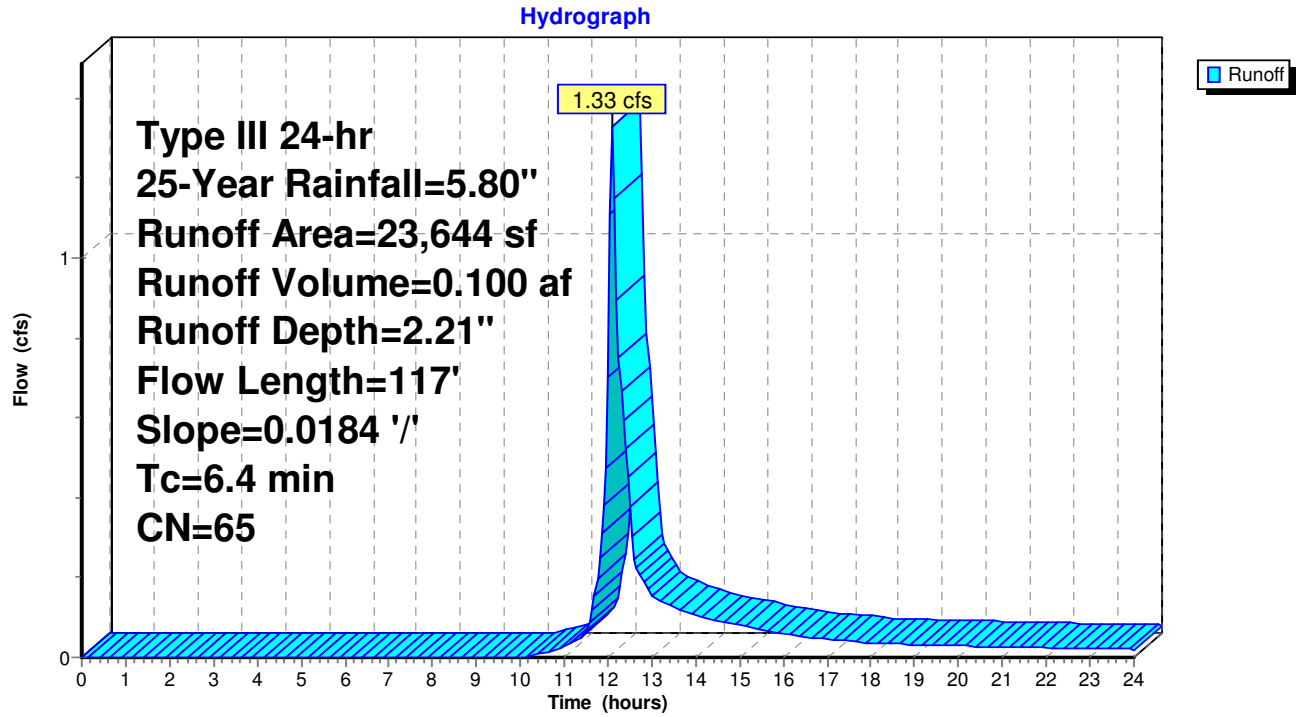
Runoff = 1.33 cfs @ 12.10 hrs, Volume= 0.100 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	10,371	98	Paved Streets w/Curbs & Sewers HSG A
*	13,273	39	Open Space-Good (>75% grass) HSG A
	23,644	65	Weighted Average
	13,273		56.14% Pervious Area
	10,371		43.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	117	0.0184	0.30		**Lag/CN Method,**

Subcatchment S#13: S#13



Summary for Subcatchment S#14: S#14

CarlsonPlanXYPos|1757004.6545|94296.5616|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

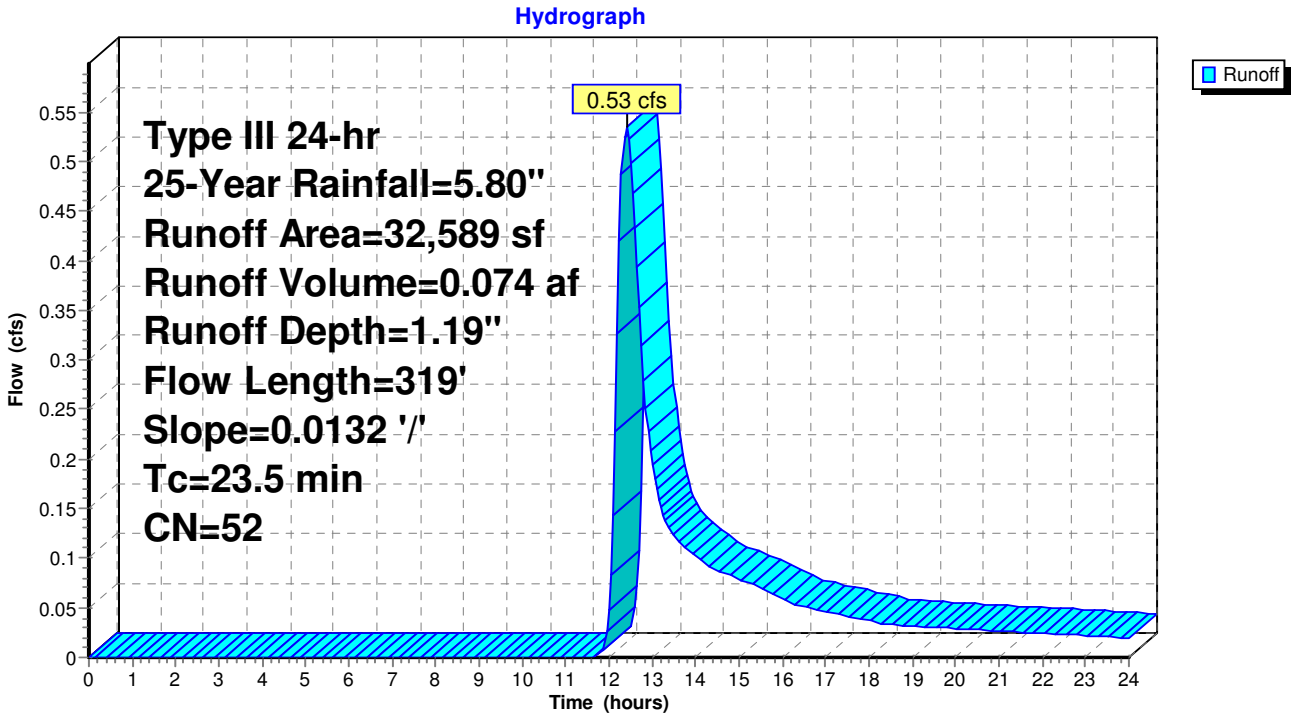
Runoff = 0.53 cfs @ 12.40 hrs, Volume= 0.074 af, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	7,204	98	Paved Streets w/Curbs & Sewers HSG A
*	25,385	39	Open Space-Good (>75% grass) HSG A
	32,589	52	Weighted Average
	25,385		77.89% Pervious Area
	7,204		22.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.5	319	0.0132	0.23		**Lag/CN Method,**

Subcatchment S#14: S#14



Summary for Subcatchment S#15: S#15

CarlsonPlanXYPos|1757436.5135|94414.7306|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

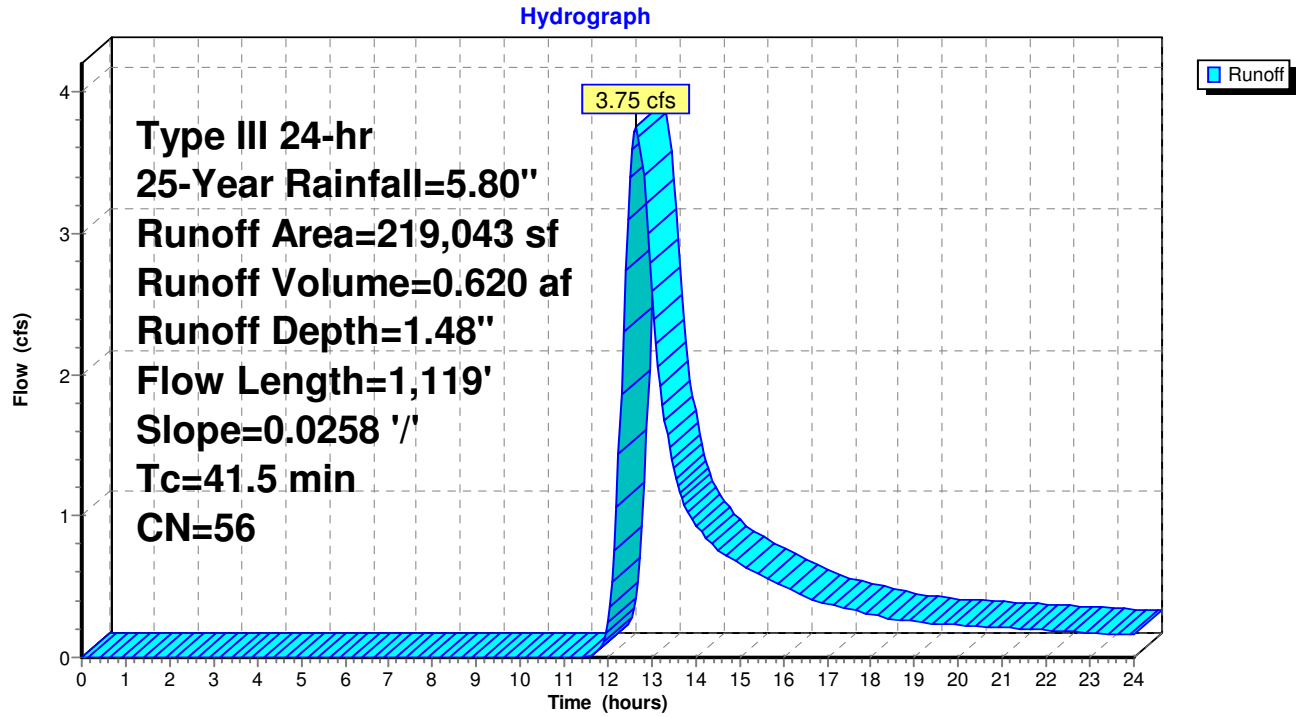
Runoff = 3.75 cfs @ 12.64 hrs, Volume= 0.620 af, Depth= 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	62,691	98	Paved Streets w/Curbs & Sewers HSG A
*	156,352	39	Open Space-Good (>75% grass) HSG A
	219,043	56	Weighted Average
	156,352		71.38% Pervious Area
	62,691		28.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
41.5	1,119	0.0258	0.45		**Lag/CN Method,**

Subcatchment S#15: S#15



Summary for Subcatchment S#3: S#3

CarlsonPlanXYPos|1757249.7579|94888.4224|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

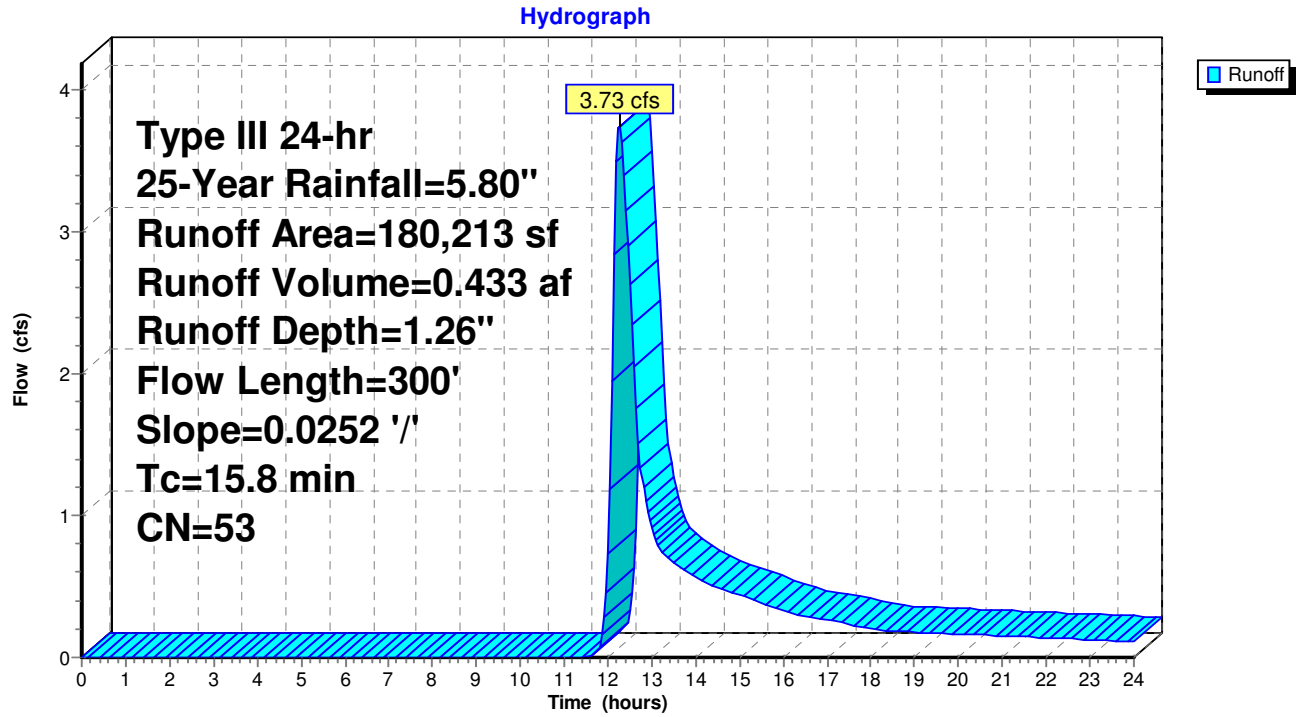
Runoff = 3.73 cfs @ 12.26 hrs, Volume= 0.433 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	42,844	98	Paved Streets w/Curbs & Sewers HSG A
*	137,369	39	Open Space-Good (>75% grass) HSG A
	180,213	53	Weighted Average
	137,369		76.23% Pervious Area
	42,844		23.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	300	0.0252	0.32		**Lag/CN Method,**

Subcatchment S#3: S#3



Summary for Subcatchment S#5: S#5

CarlsonPlanXYPos|1757027.2221|95347.9200|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

[49] Hint: Tc<2dt may require smaller dt

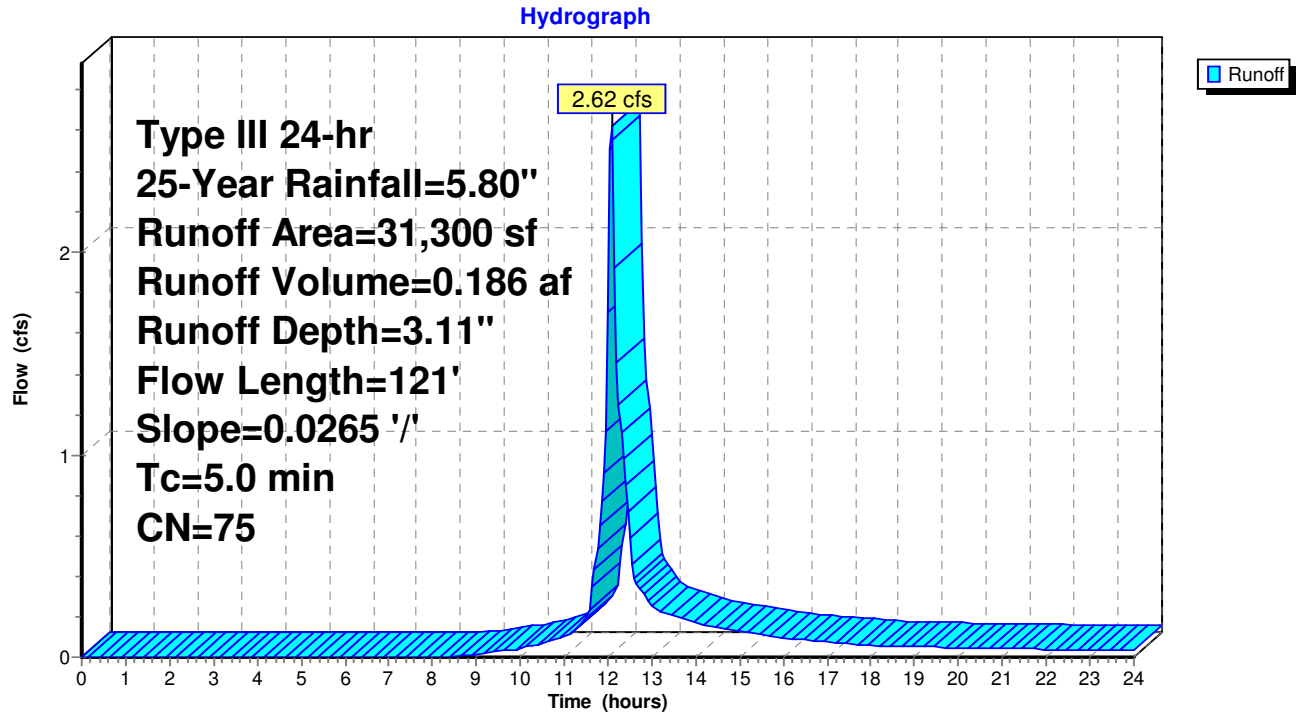
Runoff = 2.62 cfs @ 12.08 hrs, Volume= 0.186 af, Depth= 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	18,880	98	Paved Streets w/Curbs & Sewers HSG A
*	12,420	39	Open Space-Good (>75% grass) HSG A
	31,300	75	Weighted Average
	12,420		39.68% Pervious Area
	18,880		60.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	121	0.0265	0.48		**Lag/CN Method,**
4.2	121	Total, Increased to minimum Tc = 5.0 min			

Subcatchment S#5: S#5



Summary for Subcatchment S#6: S#6

CarlsonPlanXYPos|1757027.2221|95347.9200|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

[49] Hint: Tc<2dt may require smaller dt

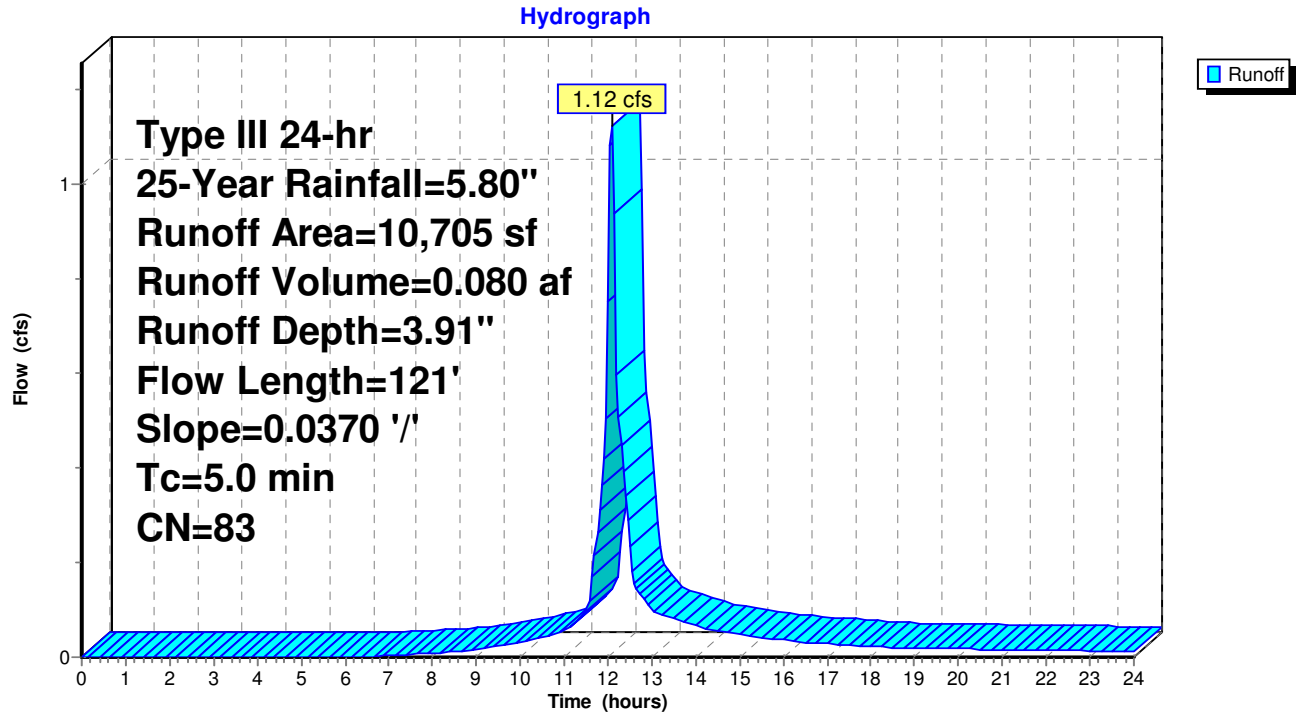
Runoff = 1.12 cfs @ 12.07 hrs, Volume= 0.080 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	8,058	98	Paved Streets w/Curbs & Sewers HSG A
*	2,647	39	Open Space-Good (>75% grass) HSG A
	10,705	83	Weighted Average
	2,647		24.73% Pervious Area
	8,058		75.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	121	0.0370	0.73		**Lag/CN Method,**
2.8	121	Total, Increased to minimum Tc = 5.0 min			

Subcatchment S#6: S#6



Summary for Subcatchment S#7: S#7

CarlsonPlanXYPos|1756915.6351|94896.6148|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

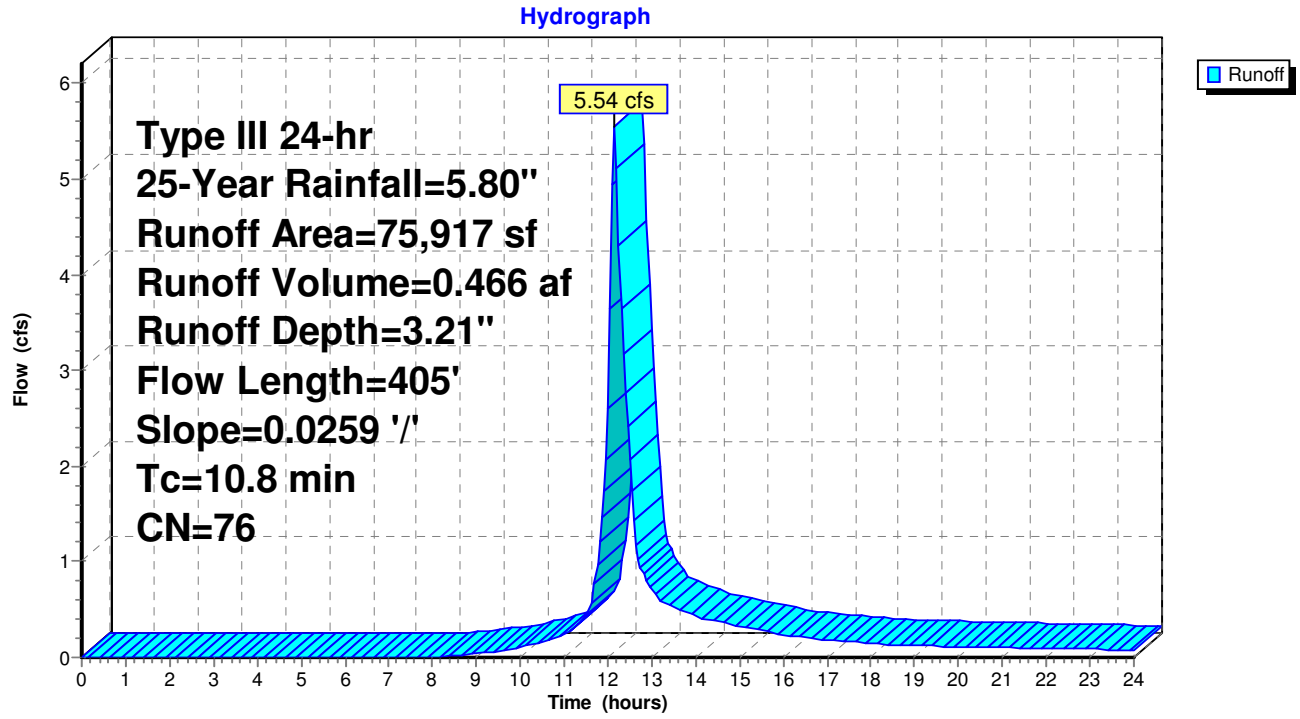
Runoff = 5.54 cfs @ 12.15 hrs, Volume= 0.466 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	47,260	98	Paved Streets w/Curbs & Sewers HSG A
*	28,657	39	Open Space-Good (>75% grass) HSG A
	75,917	76	Weighted Average
	28,657		37.75% Pervious Area
	47,260		62.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	405	0.0259	0.62		**Lag/CN Method,**

Subcatchment S#7: S#7



Summary for Subcatchment S#8: S#8

CarlsonPlanXYPos|1756872.7656|94629.7133|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

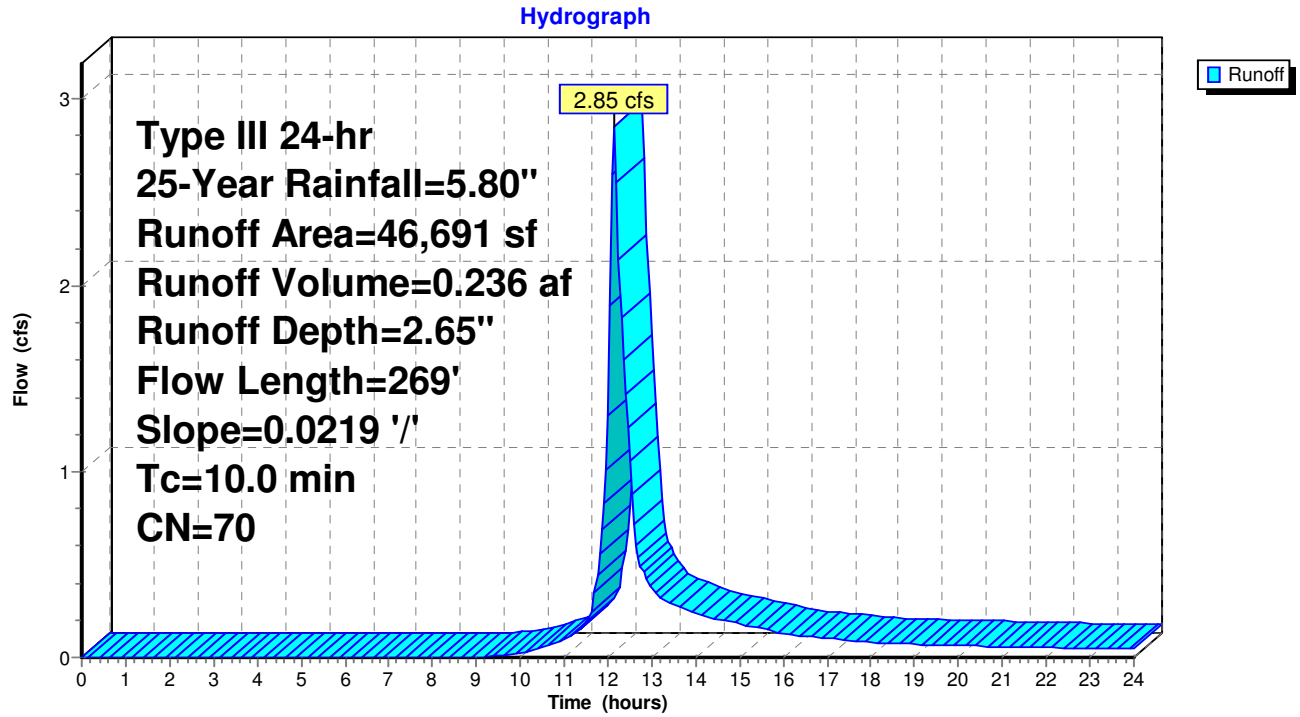
Runoff = 2.85 cfs @ 12.15 hrs, Volume= 0.236 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	24,519	98	Paved Streets w/Curbs & Sewers HSG A
*	22,172	39	Open Space-Good (>75% grass) HSG A
	46,691	70	Weighted Average
	22,172		47.49% Pervious Area
	24,519		52.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	269	0.0219	0.45		**Lag/CN Method,**

Subcatchment S#8: S#8



Summary for Subcatchment S#9: S#9

CarlsonPlanXYPos|1756830.1751|94474.8951|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

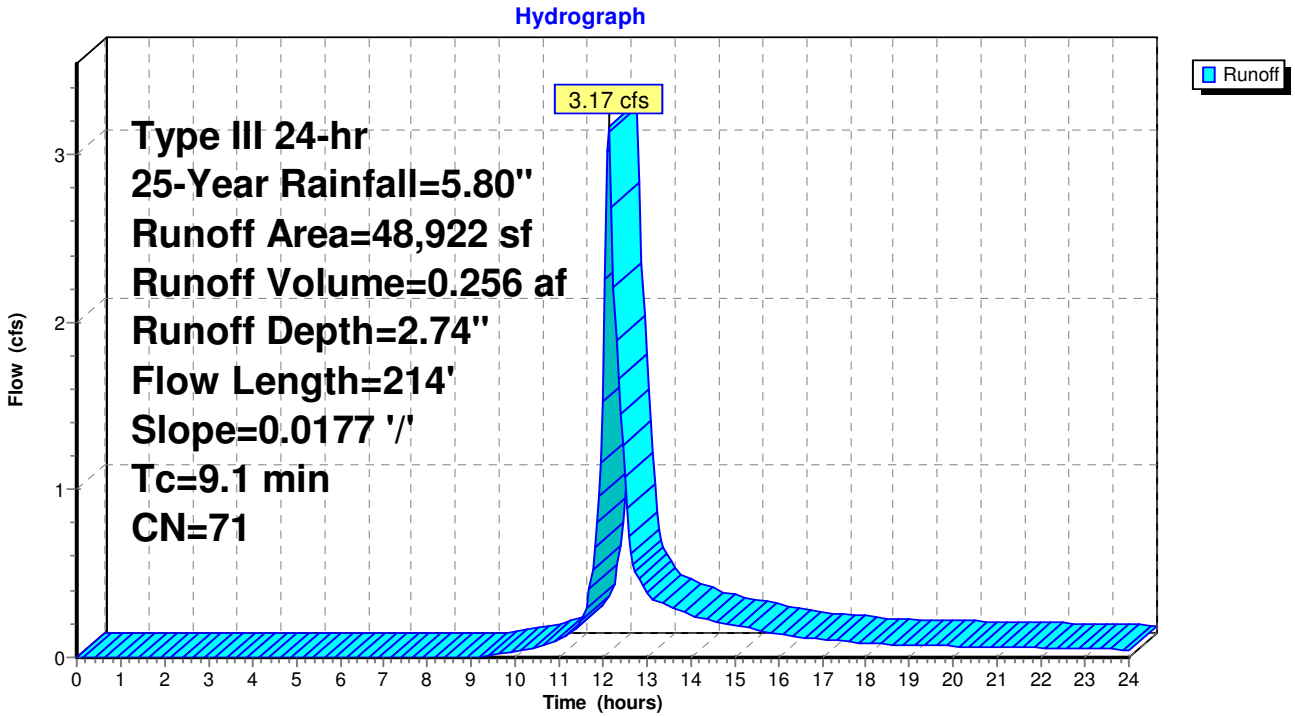
Runoff = 3.17 cfs @ 12.14 hrs, Volume= 0.256 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	26,570	98	Paved Streets w/Curbs & Sewers HSG A
*	22,352	39	Open Space-Good (>75% grass) HSG A
	48,922	71	Weighted Average
	22,352		45.69% Pervious Area
	26,570		54.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	214	0.0177	0.39		**Lag/CN Method,**

Subcatchment S#9: S#9



Summary for Subcatchment S2: S#2

CarlsonPlanXYPos|1757390.6874|95401.9110|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

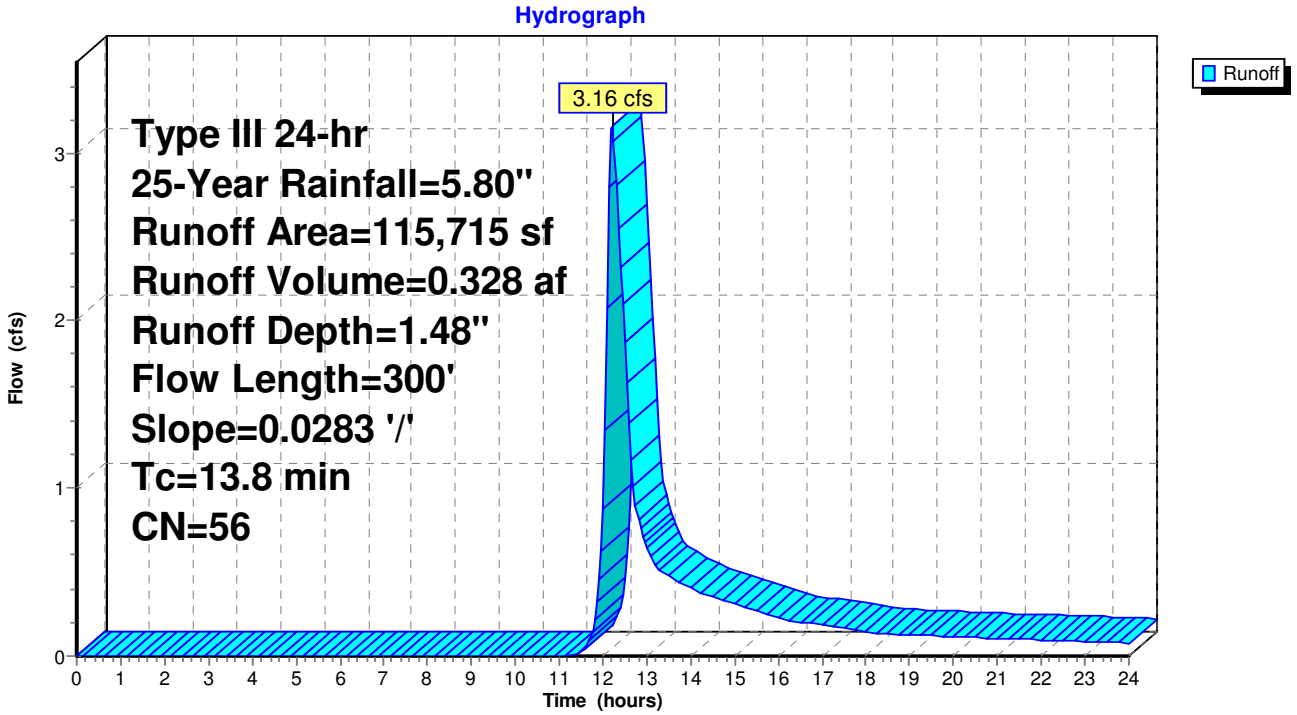
Runoff = 3.16 cfs @ 12.22 hrs, Volume= 0.328 af, Depth= 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	10,405	98	Paved Streets w/Curbs & Sewers HSG B
*	10,400	98	Paved Lots Roofs & Driveways HSG B
*	61,613	39	Open Space-Good (>75% grass) HSG A
*	33,297	61	Open Space-Good (>75% grass) HSG B
	115,715	56	Weighted Average
	94,910		82.02% Pervious Area
	20,805		17.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	300	0.0283	0.36		**Lag/CN Method,**

Subcatchment S2: S#2



Summary for Subcatchment S4: S#4

CarlsonPlanXYPos|1757146.2718|95239.2477|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

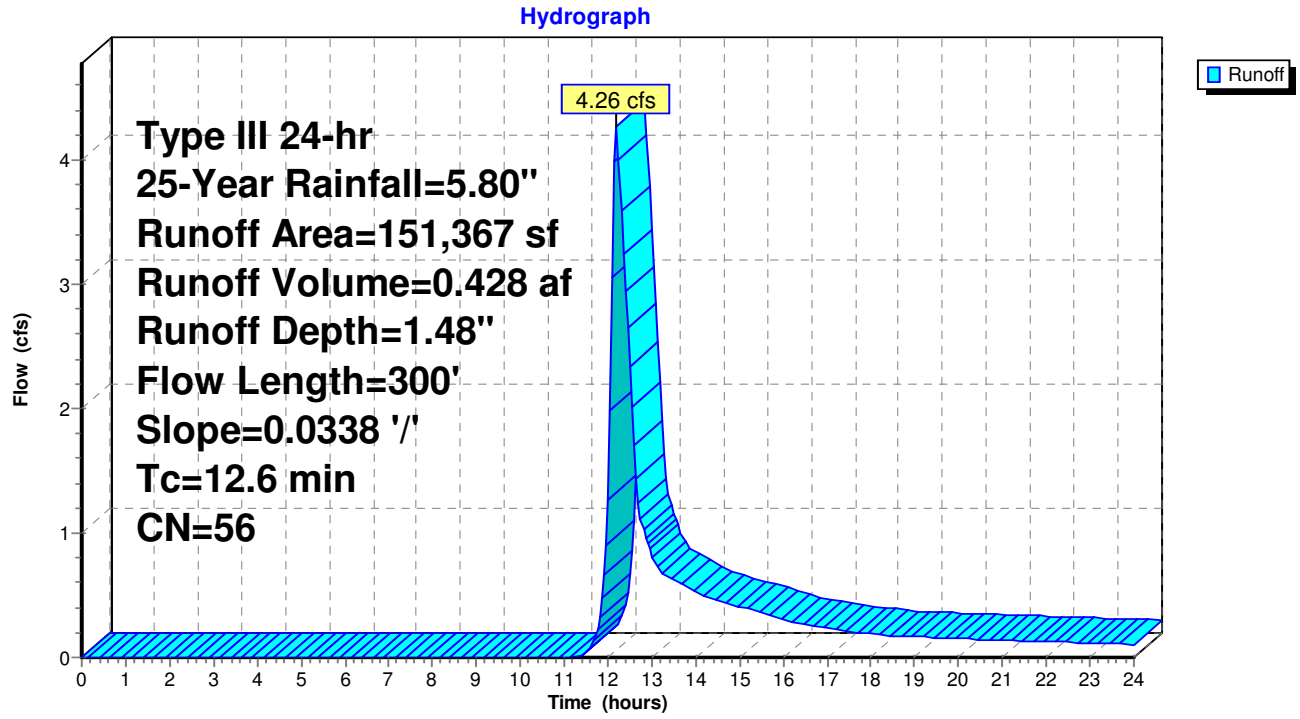
Runoff = 4.26 cfs @ 12.20 hrs, Volume= 0.428 af, Depth= 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	43,145	98	Paved Streets w/Curbs & Sewers HSG A
*	108,222	39	Open Space-Good (>75% grass) HSG A
	151,367	56	Weighted Average
	108,222		71.50% Pervious Area
	43,145		28.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	300	0.0338	0.40		**Lag/CN Method,**

Subcatchment S4: S#4



Summary for Reach 46R: TO LP 1

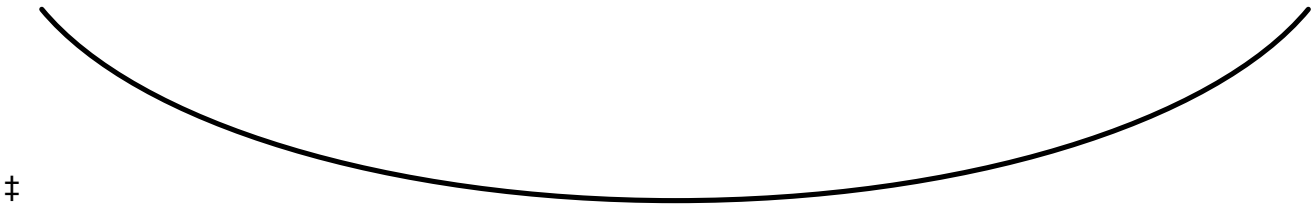
[81] Warning: Exceeded Pond 1P by 7.77' @ 0.00 hrs

Inflow Area = 1.714 ac, 34.86% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 9.55 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 467.7' Slope= 0.0082 '/'
Inlet Invert= 40.02', Outlet Invert= 36.17'



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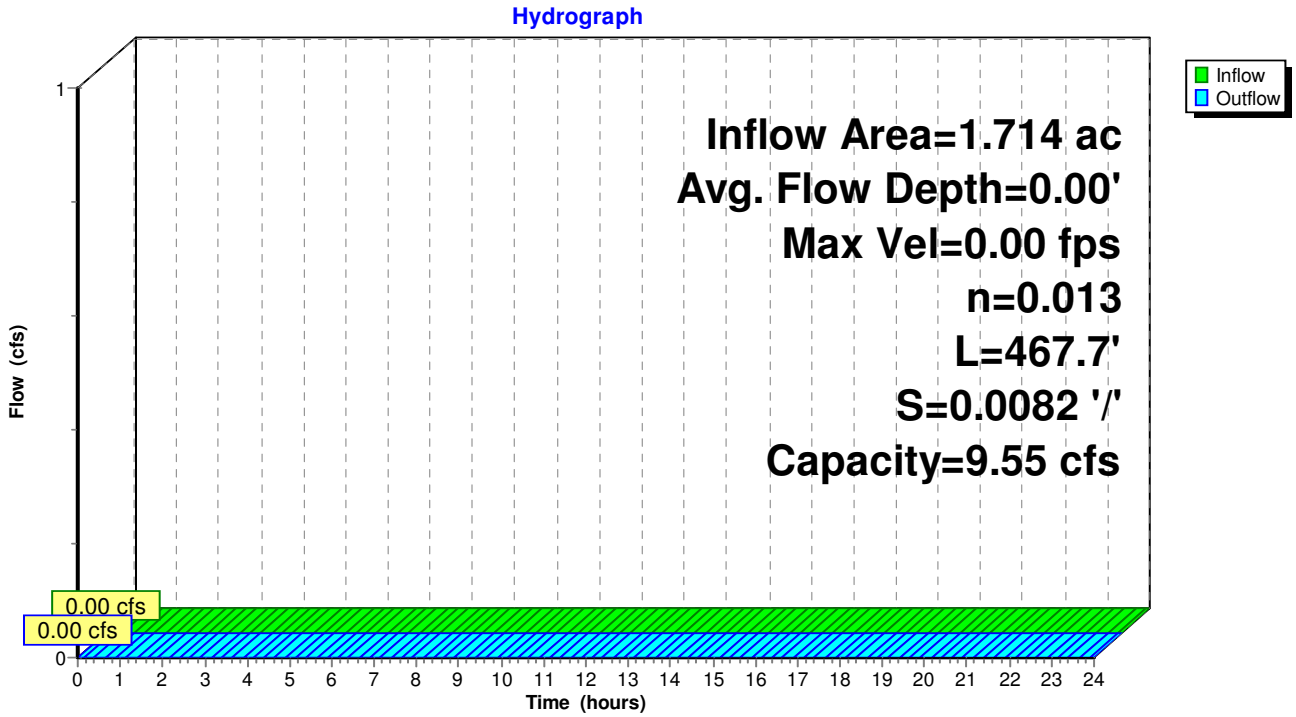
Reach 46R: TO LP 1



Summary for Reach 48R: TO LP2

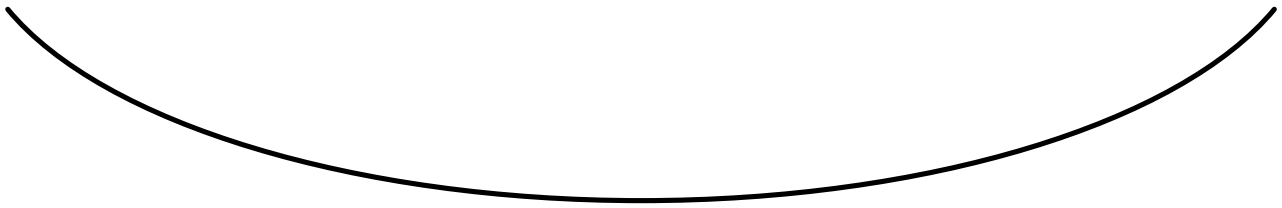
[81] Warning: Exceeded Pond 3P by 12.15' @ 0.00 hrs

Inflow Area = 4.137 ac, 23.77% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 7.64 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 370.0' Slope= 0.0053 '/'
Inlet Invert= 33.25', Outlet Invert= 31.30'



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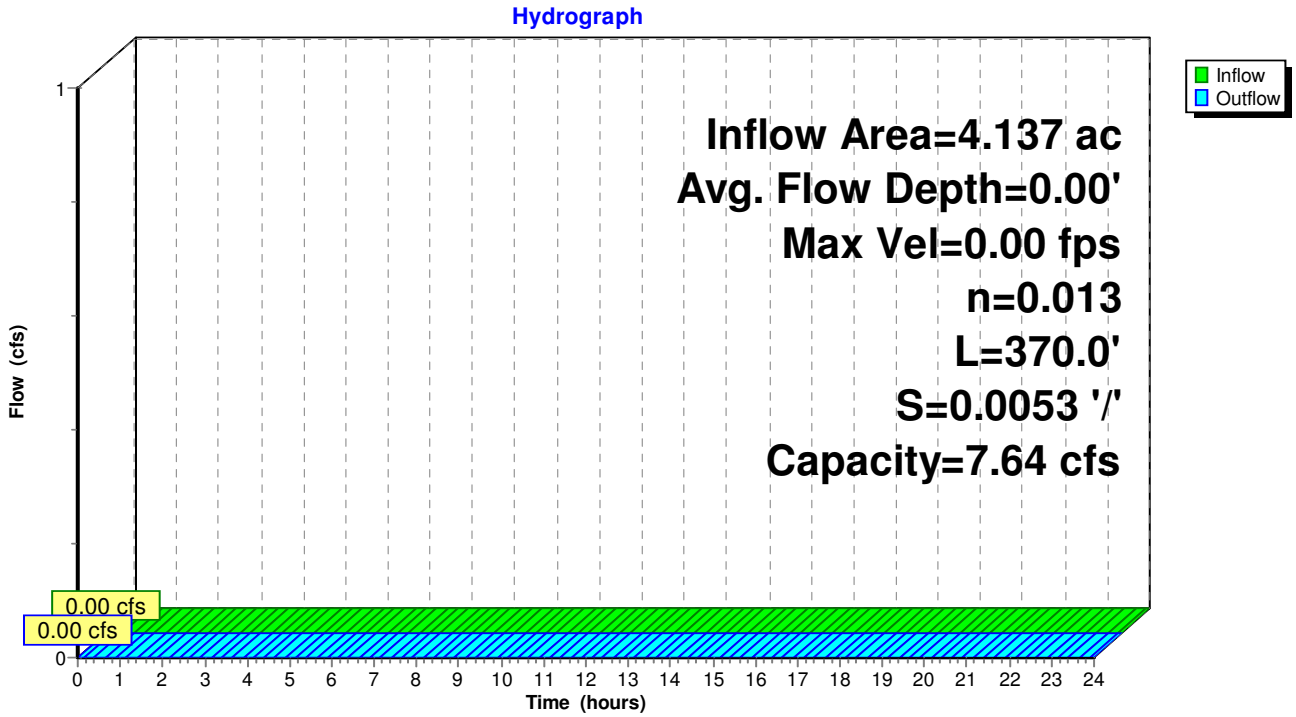
Reach 48R: TO LP2



Summary for Reach 49R: TO LP 1

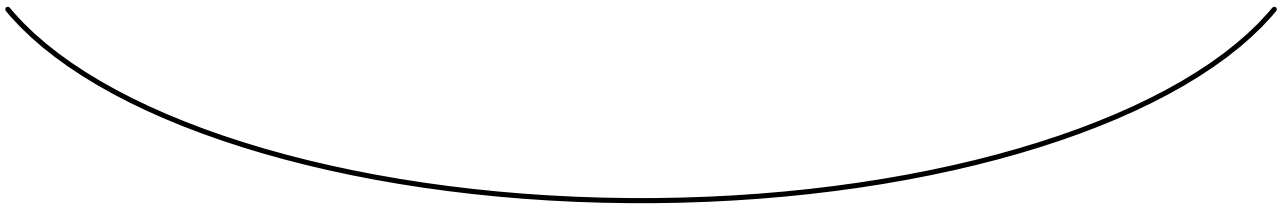
[81] Warning: Exceeded Pond 2P by 10.75' @ 0.00 hrs

Inflow Area = 2.656 ac, 17.98% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 12.84 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 190.0' Slope= 0.0149 '/'
Inlet Invert= 39.00', Outlet Invert= 36.17'



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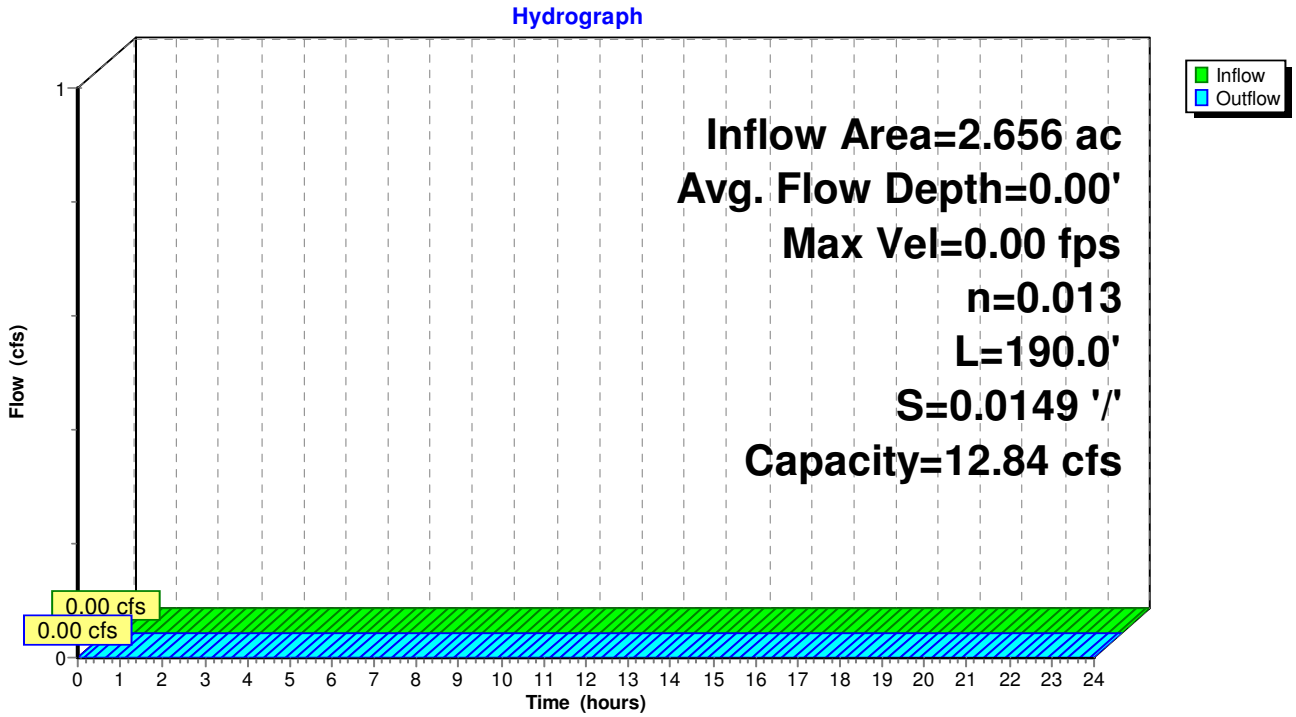
Reach 49R: TO LP 1



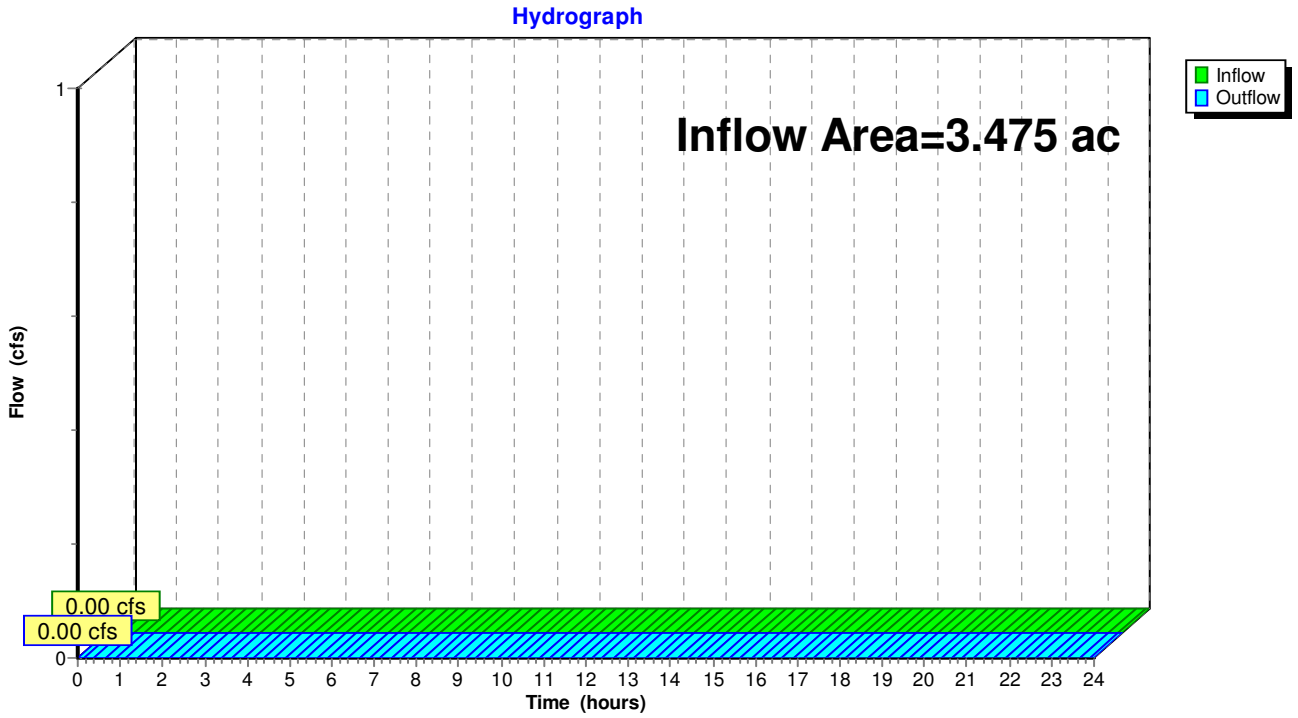
Summary for Reach 50R: (new Reach)

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.475 ac, 28.50% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Reach 50R: (new Reach)



Summary for Reach 51R: TO LP 1

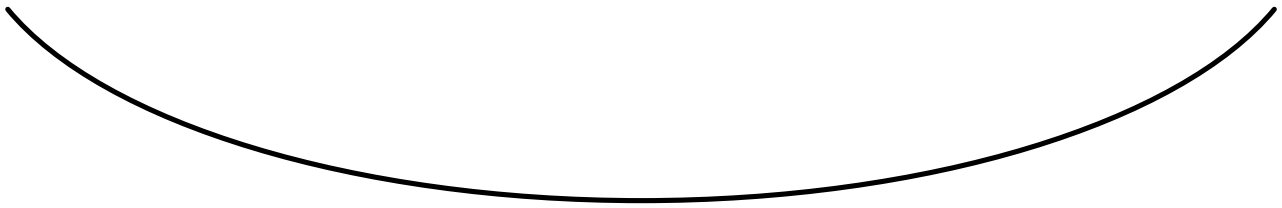
[81] Warning: Exceeded Pond 5P/6P by 12.69' @ 0.00 hrs

Inflow Area = 0.964 ac, 64.13% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 10.20 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 431.0' Slope= 0.0094 '/'
Inlet Invert= 40.22', Outlet Invert= 36.17'



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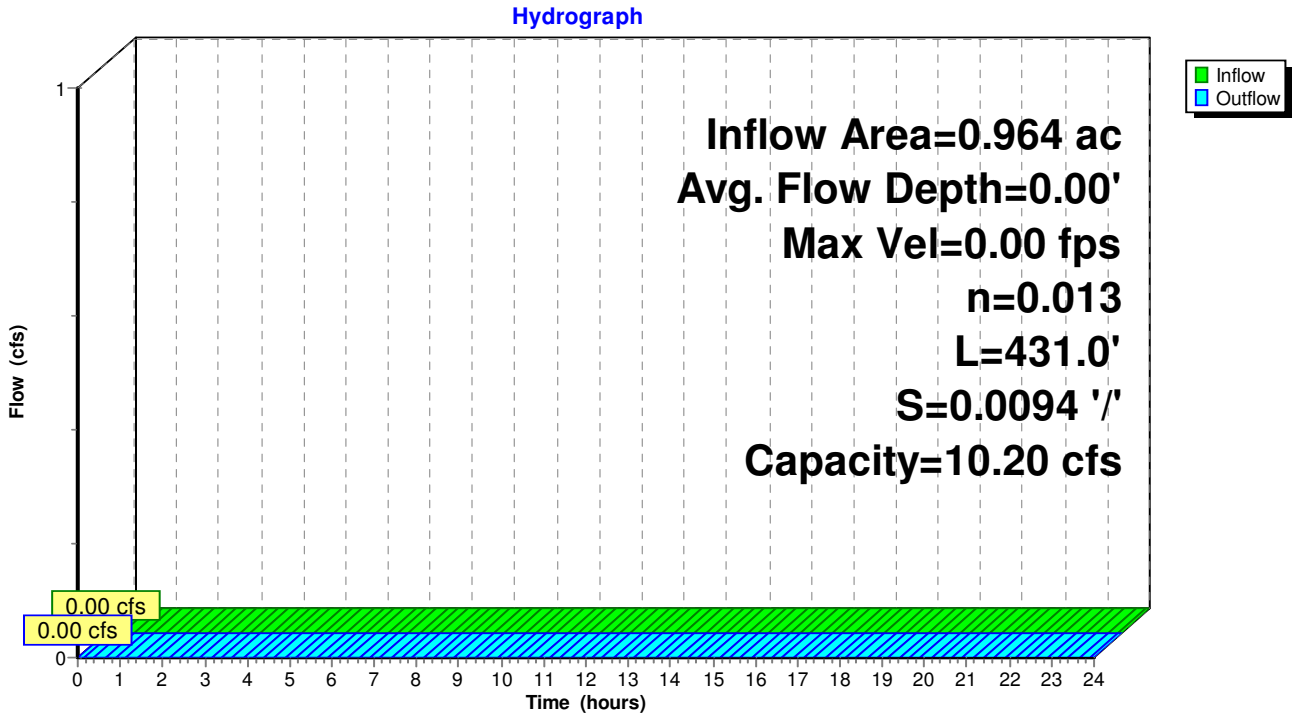
Reach 51R: TO LP 1



Summary for Reach 52R: TO LP2

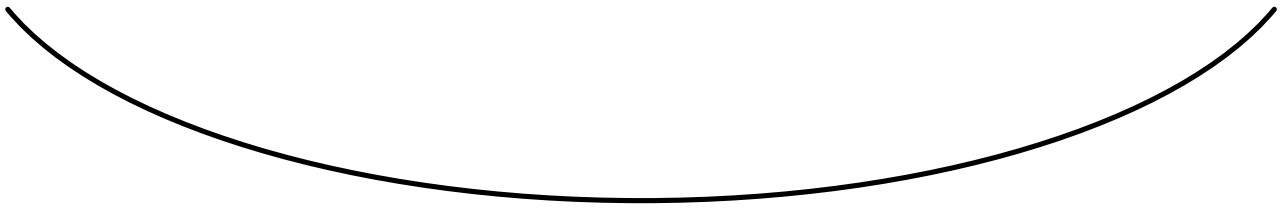
[81] Warning: Exceeded Pond 7P by 10.28' @ 0.00 hrs

Inflow Area = 1.743 ac, 62.25% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 8.53 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 592.0' Slope= 0.0066 '/'
Inlet Invert= 35.19', Outlet Invert= 31.30'



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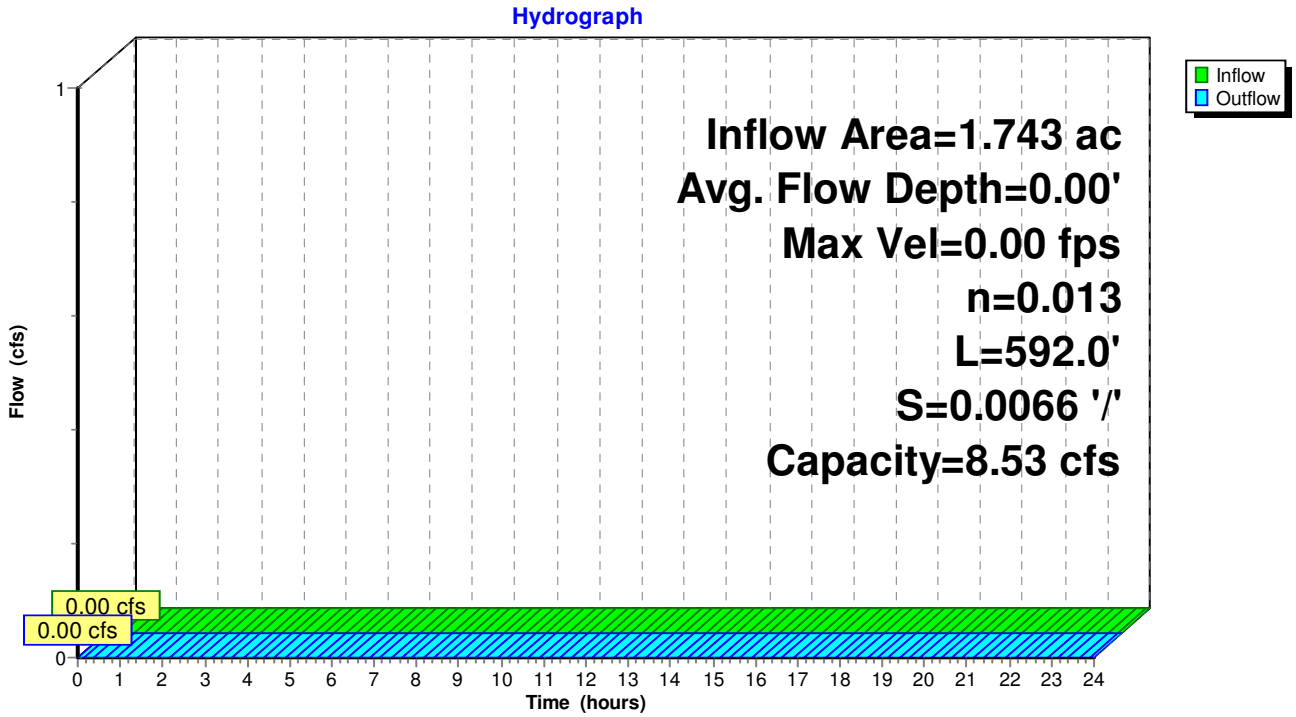
Reach 52R: TO LP2



Summary for Reach 53R: TO LP2

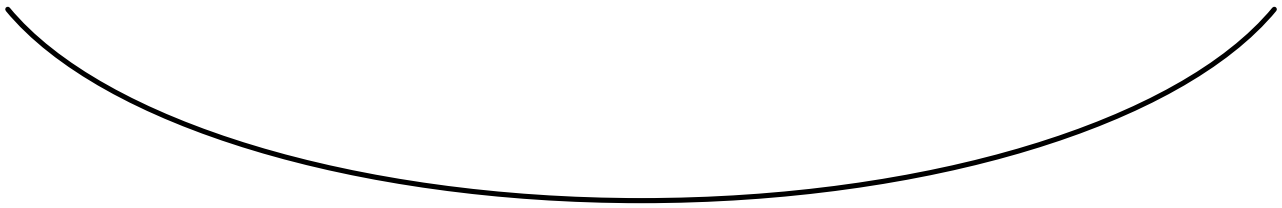
[81] Warning: Exceeded Pond 8P/9P by 9.39' @ 0.00 hrs

Inflow Area = 2.195 ac, 53.43% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 5.20 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 184.0' Slope= 0.0024 '/'
Inlet Invert= 31.75', Outlet Invert= 31.30'



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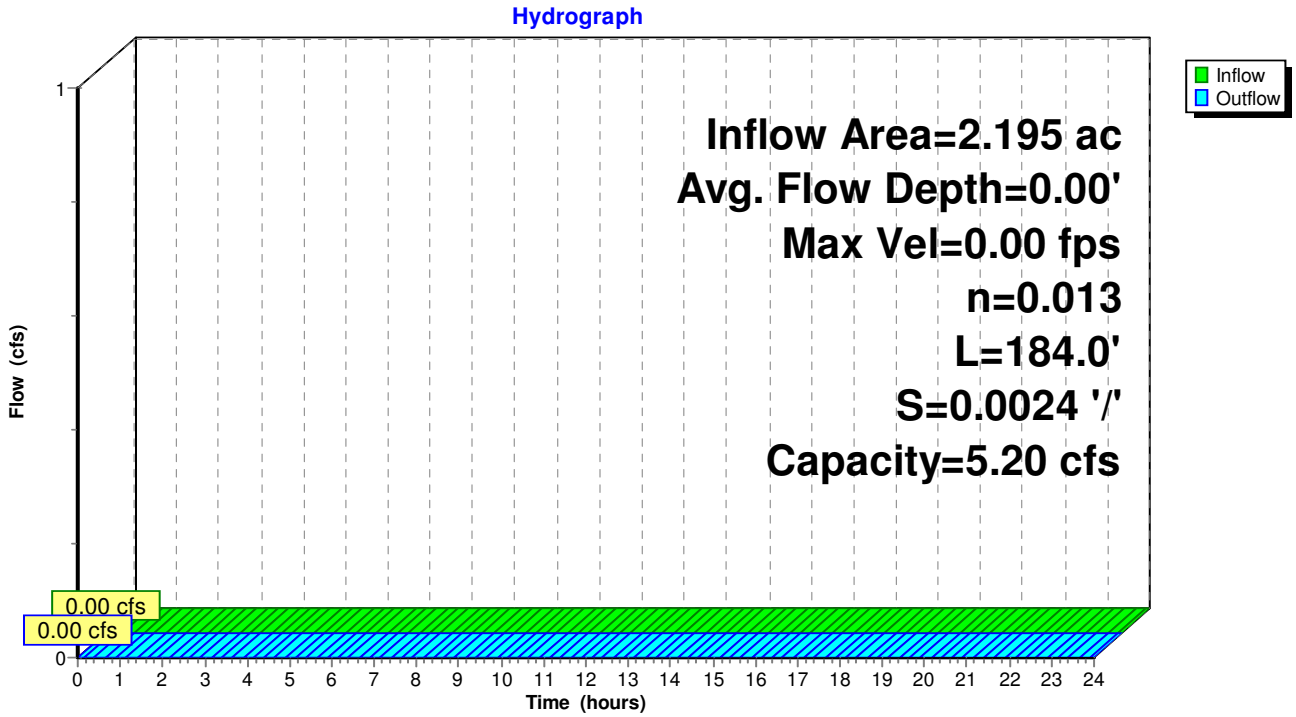


Summary for Reach 54R: TO LP2

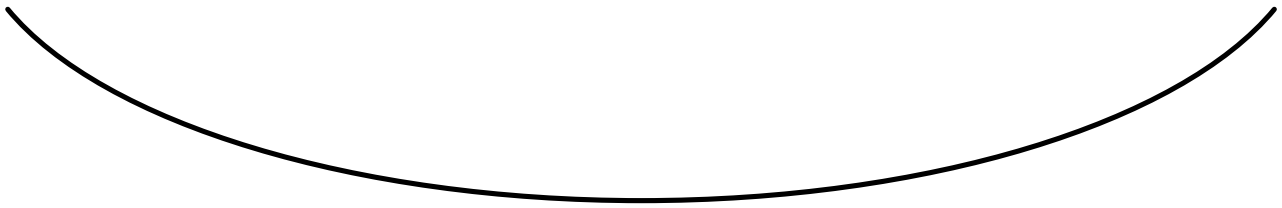
[81] Warning: Exceeded Pond 15P by 11.11' @ 0.00 hrs

Inflow Area = 5.029 ac, 28.62% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 2.62 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 372.0' Slope= 0.0006 '/'
Inlet Invert= 31.53', Outlet Invert= 31.30'



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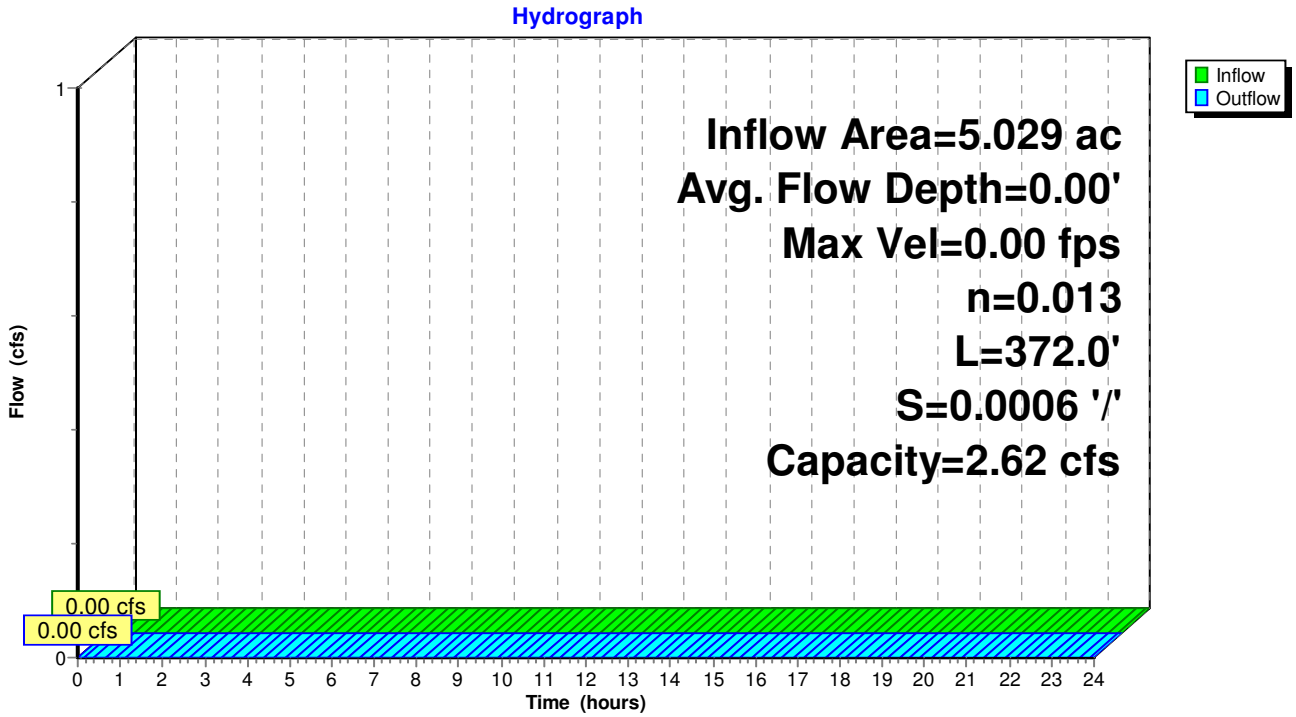


Summary for Reach 55R: TO LP2

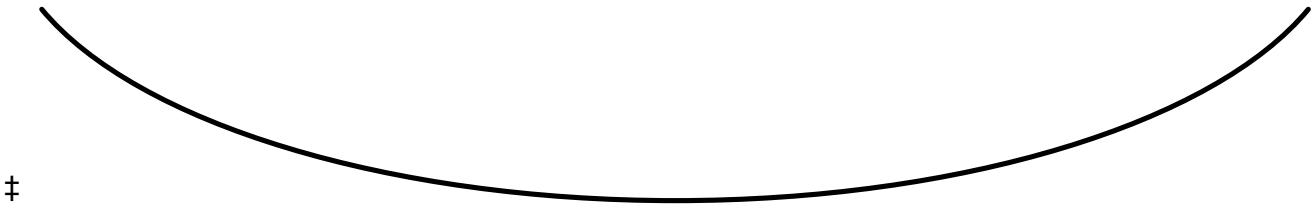
[81] Warning: Exceeded Pond 10P-14P by 11.07' @ 0.00 hrs

Inflow Area = 3.994 ac, 36.47% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 10.52 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 1.0' Slope= 0.0100 '/'
Inlet Invert= 31.30', Outlet Invert= 31.29'



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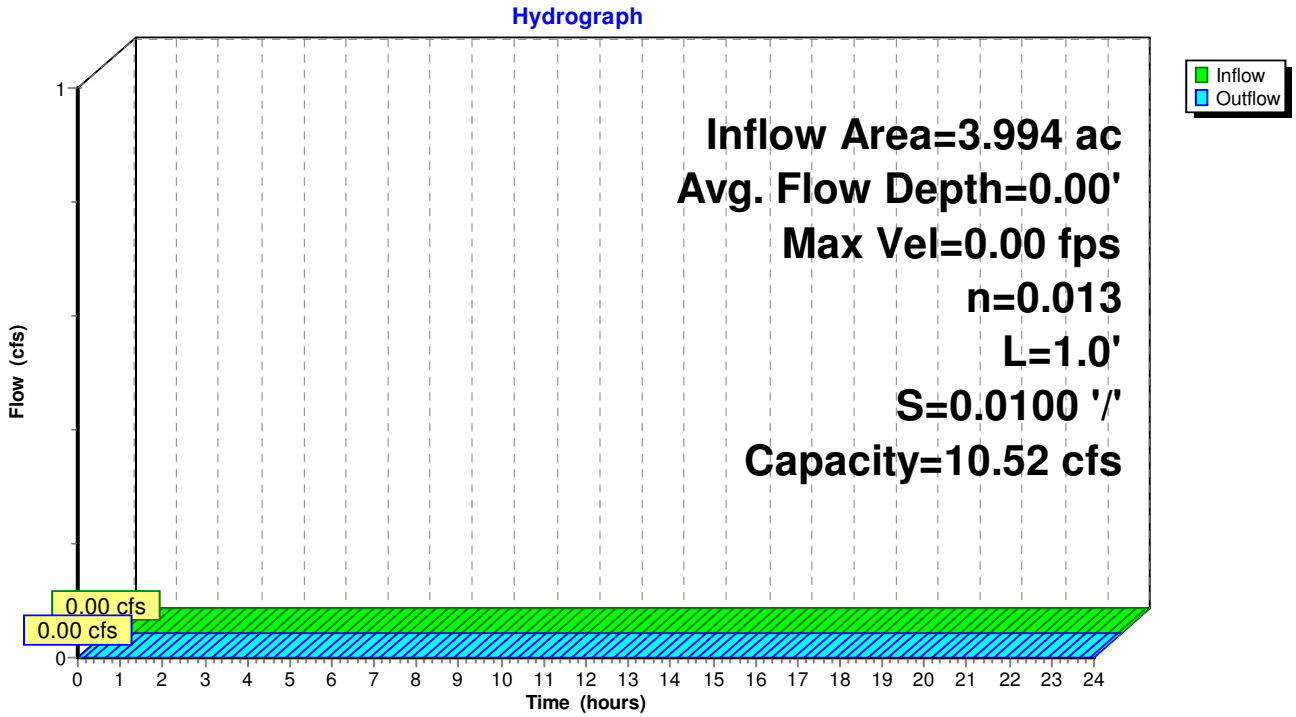
Reach 55R: TO LP2



Summary for Pond 1P: INFILTRATION 1

Inflow Area = 1.714 ac, 34.86% Impervious, Inflow Depth = 1.79" for 25-Year event
Inflow = 3.33 cfs @ 12.10 hrs, Volume= 0.256 af
Outflow = 0.24 cfs @ 11.75 hrs, Volume= 0.256 af, Atten= 93%, Lag= 0.0 min
Discarded = 0.24 cfs @ 11.75 hrs, Volume= 0.256 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 38.12' @ 14.66 hrs Surf.Area= 0.029 ac Storage= 0.110 af
Flood Elev= 42.00' Surf.Area= 0.029 ac Storage= 0.120 af

Plug-Flow detention time= 206.5 min calculated for 0.256 af (100% of inflow)
Center-of-Mass det. time= 206.4 min (1,071.5 - 865.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	32.25'	0.051 af	**46.67'W x 27.24'L x 6.75'H Field A** 0.197 af Overall - 0.069 af Embedded = 0.128 af x 40.0% Voids
#2A	33.00'	0.069 af	**ADS_StormTech MC-4500 +Cap** x 25 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf
		0.120 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	32.25'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	39.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.24 cfs @ 11.75 hrs HW=32.38' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=32.25' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 1P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

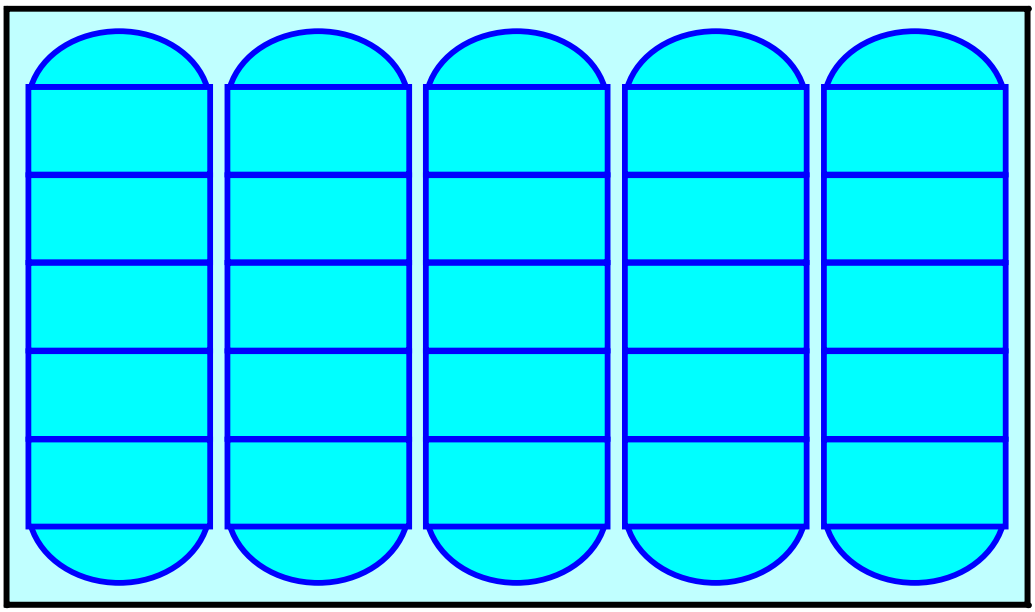
5 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 25.24' Row Length +12.0" End Stone x 2 = 27.24' Base Length
5 Rows x 100.0" Wide + 9.0" Spacing x 4 + 12.0" Side Stone x 2 = 46.67' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

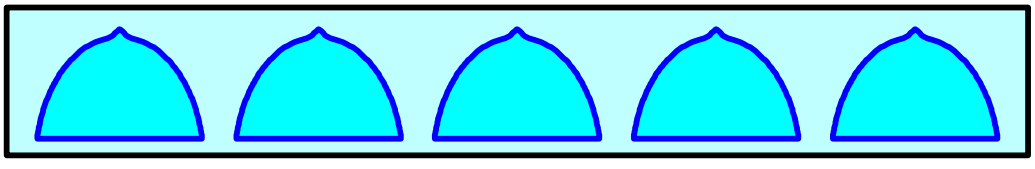
25 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 5 Rows = 3,019.3 cf Chamber Storage

8,581.1 cf Field - 3,019.3 cf Chambers = 5,561.9 cf Stone x 40.0% Voids = 2,224.7 cf Stone Storage

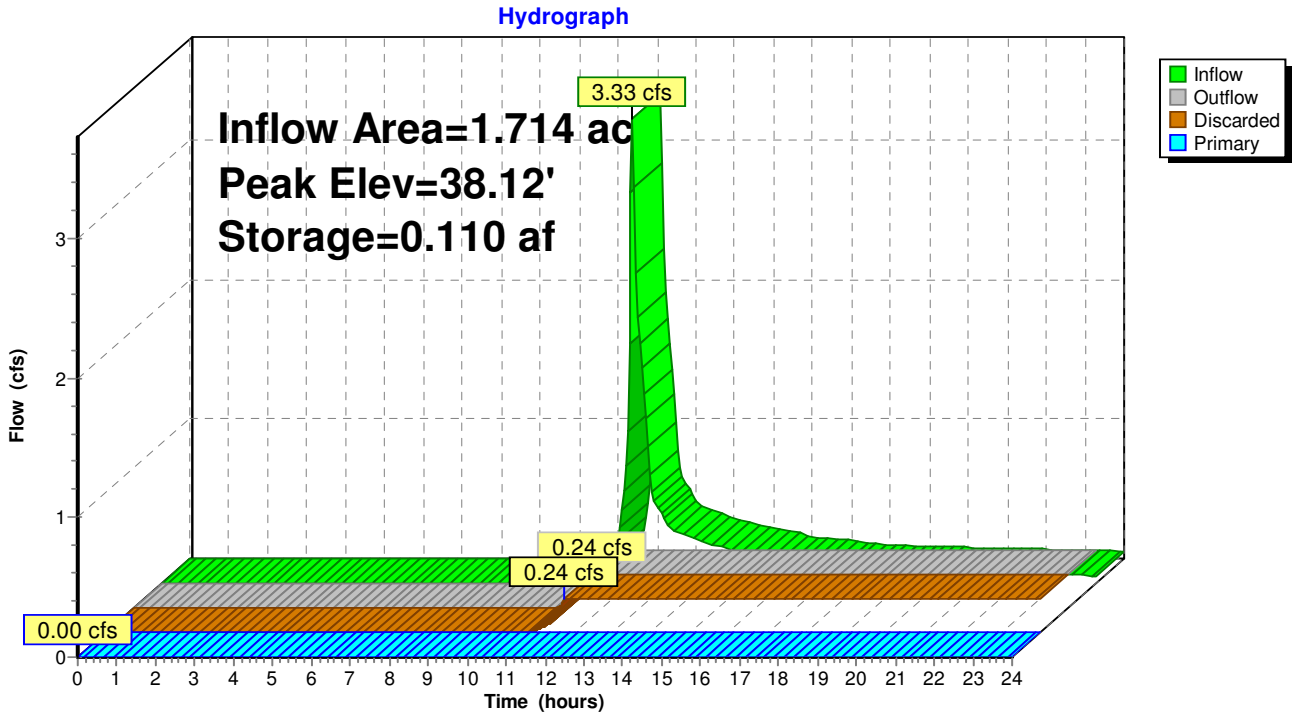
Chamber Storage + Stone Storage = 5,244.0 cf = 0.120 af
Overall Storage Efficiency = 61.1%

25 Chambers
317.8 cy Field
206.0 cy Stone





Pond 1P: INFILTRATION 1



Summary for Pond 2P: INFILTRATION 1

Inflow Area = 2.656 ac, 17.98% Impervious, Inflow Depth = 1.48" for 25-Year event
Inflow = 3.16 cfs @ 12.22 hrs, Volume= 0.328 af
Outflow = 0.31 cfs @ 11.90 hrs, Volume= 0.328 af, Atten= 90%, Lag= 0.0 min
Discarded = 0.31 cfs @ 11.90 hrs, Volume= 0.328 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 33.61' @ 15.04 hrs Surf.Area= 0.037 ac Storage= 0.136 af
Flood Elev= 35.00' Surf.Area= 0.037 ac Storage= 0.158 af

Plug-Flow detention time= 203.0 min calculated for 0.328 af (100% of inflow)
Center-of-Mass det. time= 203.0 min (1,086.8 - 883.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	28.25'	0.063 af	**37.58'W x 43.34'L x 6.75'H Field A** 0.252 af Overall - 0.095 af Embedded = 0.158 af x 40.0% Voids
#2A	29.00'	0.095 af	**ADS_StormTech MC-4500 +Cap** x 36 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf
		0.158 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	28.25'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	35.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.31 cfs @ 11.90 hrs HW=28.33' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.31 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=28.25' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

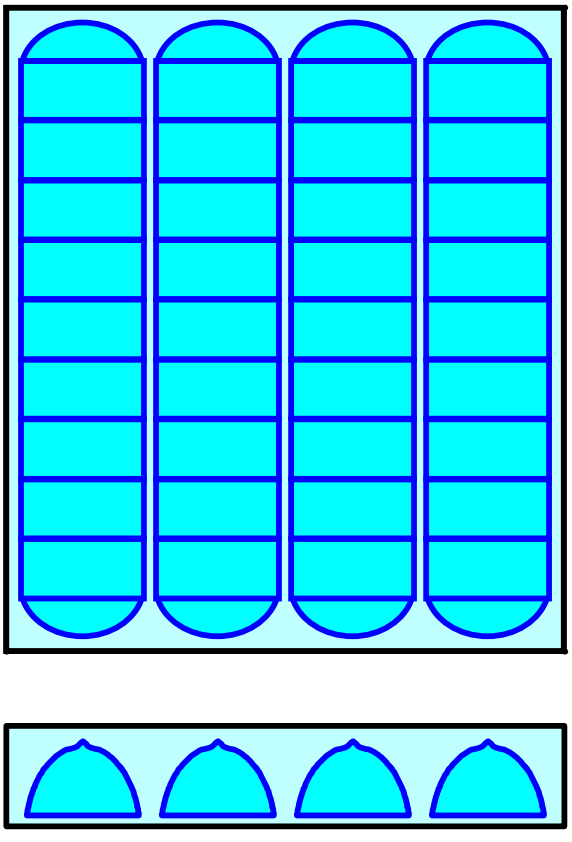
9 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 41.34' Row Length +12.0" End Stone x 2 = 43.34' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

36 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 4 Rows = 4,119.3 cf Chamber Storage

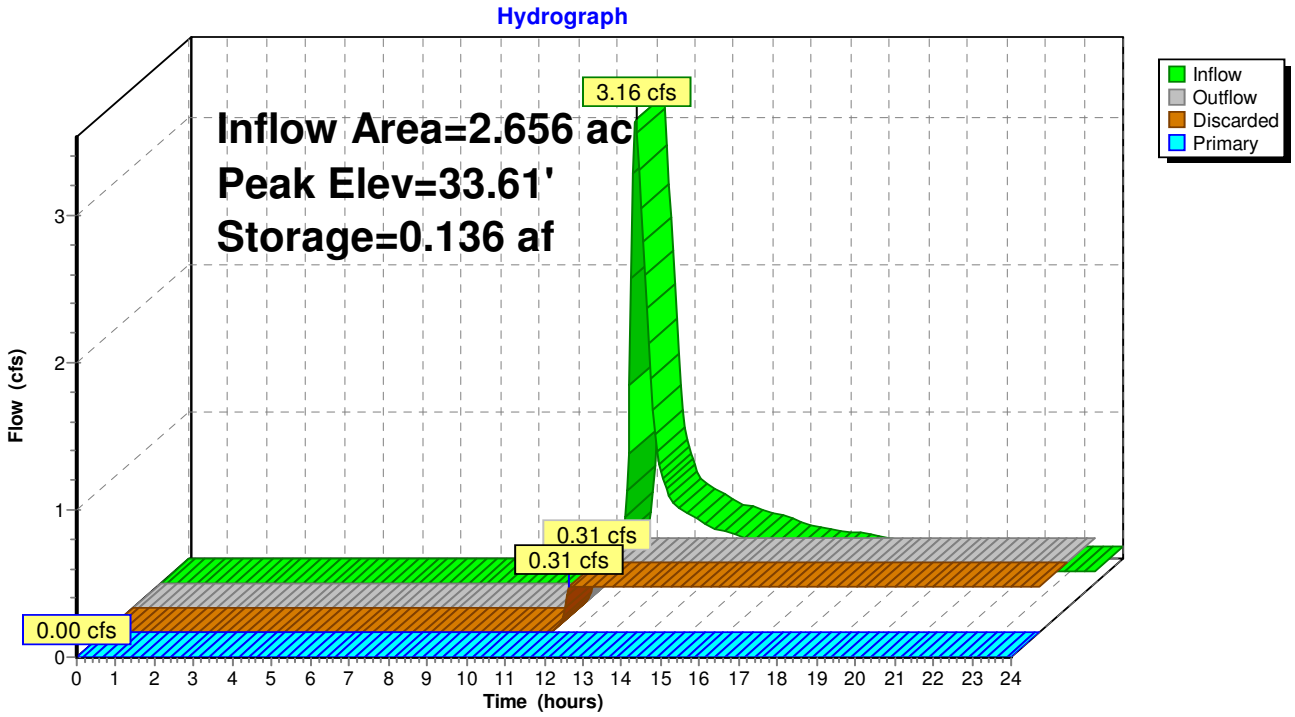
10,995.2 cf Field - 4,119.3 cf Chambers = 6,876.0 cf Stone x 40.0% Voids = 2,750.4 cf Stone Storage

Chamber Storage + Stone Storage = 6,869.6 cf = 0.158 af
Overall Storage Efficiency = 62.5%

36 Chambers
407.2 cy Field
254.7 cy Stone



Pond 2P: INFILTRATION 1



Summary for Pond 3P: INFILTRATION 1

Inflow Area = 4.137 ac, 23.77% Impervious, Inflow Depth = 1.26" for 25-Year event
Inflow = 3.73 cfs @ 12.26 hrs, Volume= 0.433 af
Outflow = 0.37 cfs @ 12.00 hrs, Volume= 0.433 af, Atten= 90%, Lag= 0.0 min
Discarded = 0.37 cfs @ 12.00 hrs, Volume= 0.433 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 27.81' @ 15.65 hrs Surf.Area= 0.044 ac Storage= 0.187 af
Flood Elev= 27.85' Surf.Area= 0.044 ac Storage= 0.188 af

Plug-Flow detention time= 242.9 min calculated for 0.433 af (100% of inflow)
Center-of-Mass det. time= 242.8 min (1,138.3 - 895.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	21.10'	0.074 af	**37.58'W x 51.39'L x 6.75'H Field A** 0.299 af Overall - 0.114 af Embedded = 0.185 af x 40.0% Voids
#2A	21.85'	0.114 af	**ADS_StormTech MC-4500 +Cap** x 44 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf
		0.188 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.10'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	27.85'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.37 cfs @ 12.00 hrs HW=21.22' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.37 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=21.10' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 3P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

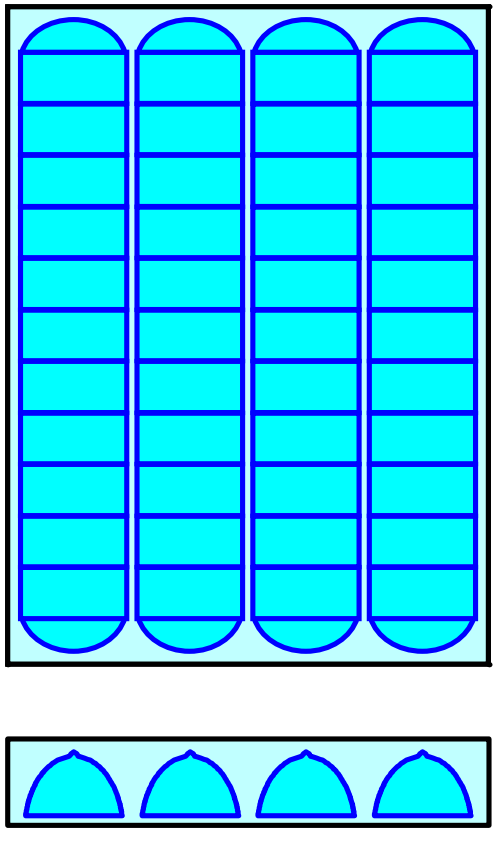
11 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 49.39' Row Length +12.0" End Stone x 2 = 51.39' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

44 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 4 Rows = 4,971.2 cf Chamber Storage

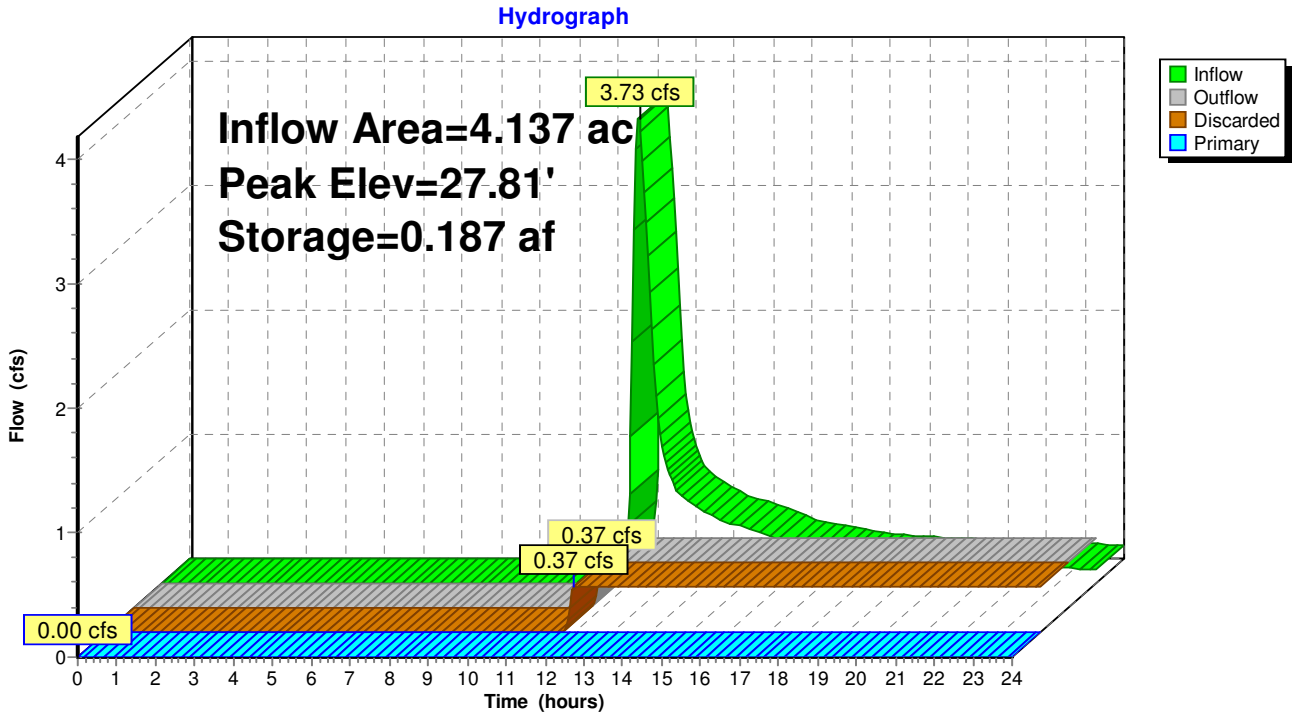
13,037.4 cf Field - 4,971.2 cf Chambers = 8,066.2 cf Stone x 40.0% Voids = 3,226.5 cf Stone Storage

Chamber Storage + Stone Storage = 8,197.7 cf = 0.188 af
Overall Storage Efficiency = 62.9%

44 Chambers
482.9 cy Field
298.7 cy Stone



Pond 3P: INFILTRATION 1



Summary for Pond 4P: INFILTRATION 1

Inflow Area = 3.475 ac, 28.50% Impervious, Inflow Depth = 1.48" for 25-Year event
Inflow = 4.26 cfs @ 12.20 hrs, Volume= 0.428 af
Outflow = 0.38 cfs @ 11.90 hrs, Volume= 0.428 af, Atten= 91%, Lag= 0.0 min
Discarded = 0.38 cfs @ 11.90 hrs, Volume= 0.428 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 34.53' @ 15.32 hrs Surf.Area= 0.045 ac Storage= 0.187 af
Flood Elev= 34.65' Surf.Area= 0.045 ac Storage= 0.189 af

Plug-Flow detention time= 234.3 min calculated for 0.428 af (100% of inflow)
Center-of-Mass det. time= 234.3 min (1,117.0 - 882.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	27.90'	0.077 af	**55.75'W x 35.29'L x 6.75'H Field A** 0.305 af Overall - 0.113 af Embedded = 0.192 af x 40.0% Voids
#2A	28.65'	0.113 af	**ADS_StormTech MC-4500 +Cap** x 42 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf
		0.189 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	27.90'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	34.65'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.38 cfs @ 11.90 hrs HW=28.01' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.38 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=27.90' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 4P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

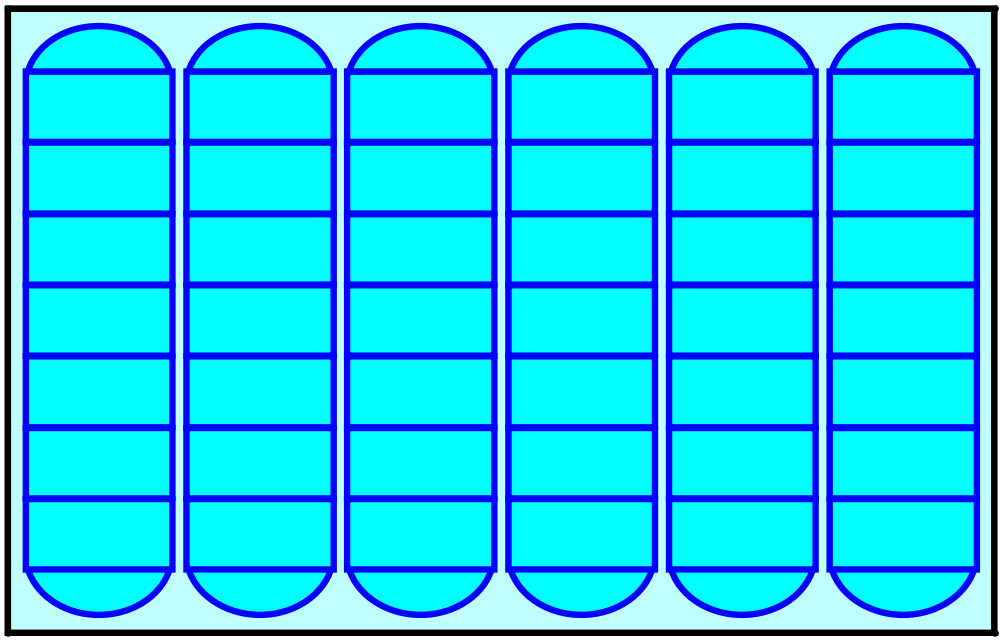
7 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 33.29' Row Length +12.0" End Stone x 2 = 35.29' Base Length
6 Rows x 100.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 55.75' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

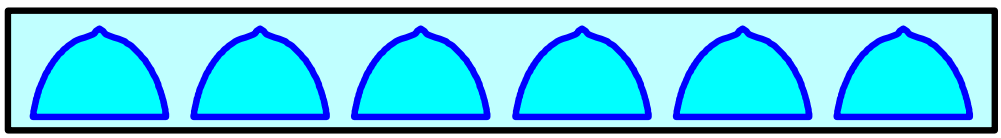
42 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 6 Rows = 4,901.0 cf Chamber Storage

13,280.7 cf Field - 4,901.0 cf Chambers = 8,379.7 cf Stone x 40.0% Voids = 3,351.9 cf Stone Storage

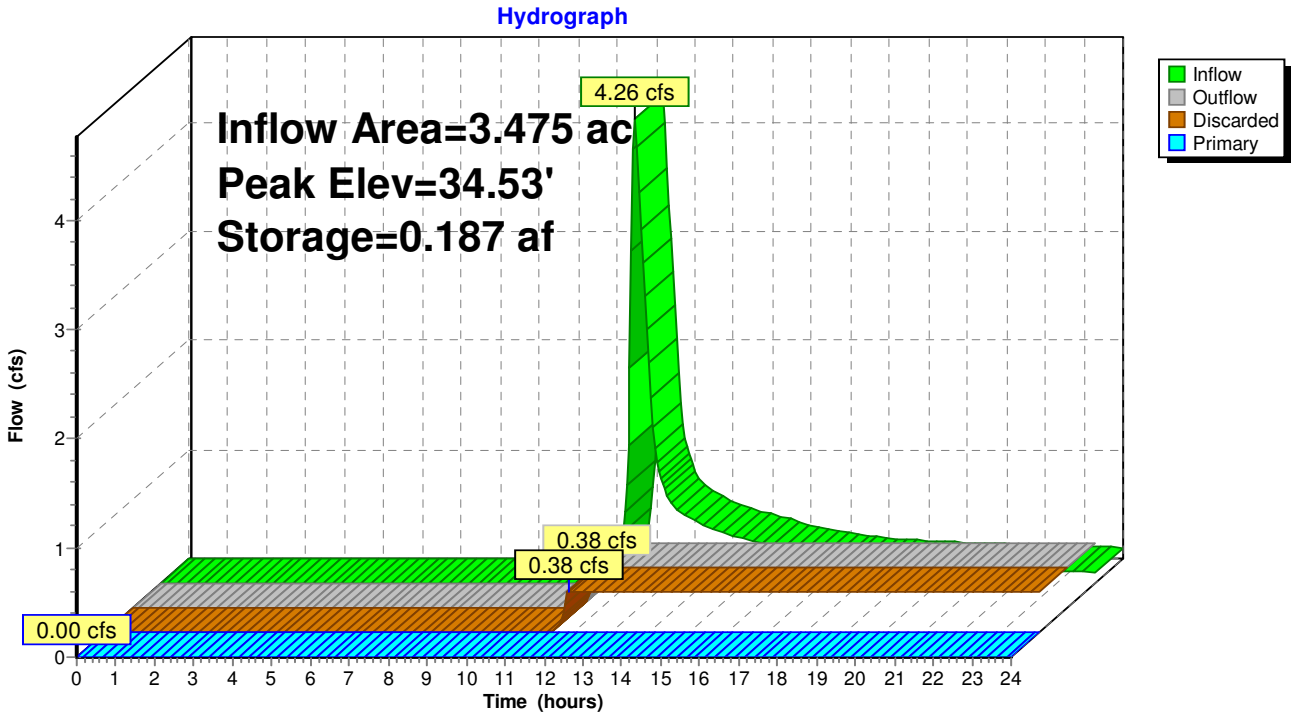
Chamber Storage + Stone Storage = 8,252.9 cf = 0.189 af
Overall Storage Efficiency = 62.1%

42 Chambers
491.9 cy Field
310.4 cy Stone





Pond 4P: INFILTRATION 1



Summary for Pond 5P/6P: INFILTRATION 1

Inflow Area = 0.964 ac, 64.13% Impervious, Inflow Depth = 3.31" for 25-Year event
Inflow = 3.74 cfs @ 12.08 hrs, Volume= 0.266 af
Outflow = 0.24 cfs @ 11.40 hrs, Volume= 0.266 af, Atten= 94%, Lag= 0.0 min
Discarded = 0.24 cfs @ 11.40 hrs, Volume= 0.266 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 34.25' @ 13.99 hrs Surf.Area= 0.028 ac Storage= 0.119 af
Flood Elev= 34.28' Surf.Area= 0.028 ac Storage= 0.119 af

Plug-Flow detention time= 205.7 min calculated for 0.266 af (100% of inflow)
Center-of-Mass det. time= 205.5 min (1,026.4 - 820.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	27.53'	0.048 af	**28.50'W x 43.34'L x 6.75'H Field A** 0.191 af Overall - 0.071 af Embedded = 0.120 af x 40.0% Voids
#2A	28.28'	0.071 af	**ADS_StormTech MC-4500 +Cap** x 27 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
		0.119 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	27.53'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	34.28'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.24 cfs @ 11.40 hrs HW=27.60' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=27.53' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 5P/6P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

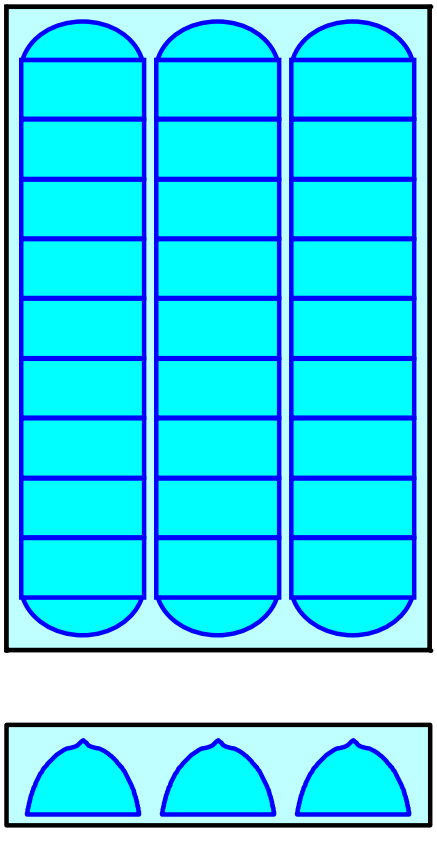
9 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 41.34' Row Length +12.0" End Stone x 2 = 43.34' Base Length
3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

27 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 3,089.4 cf Chamber Storage

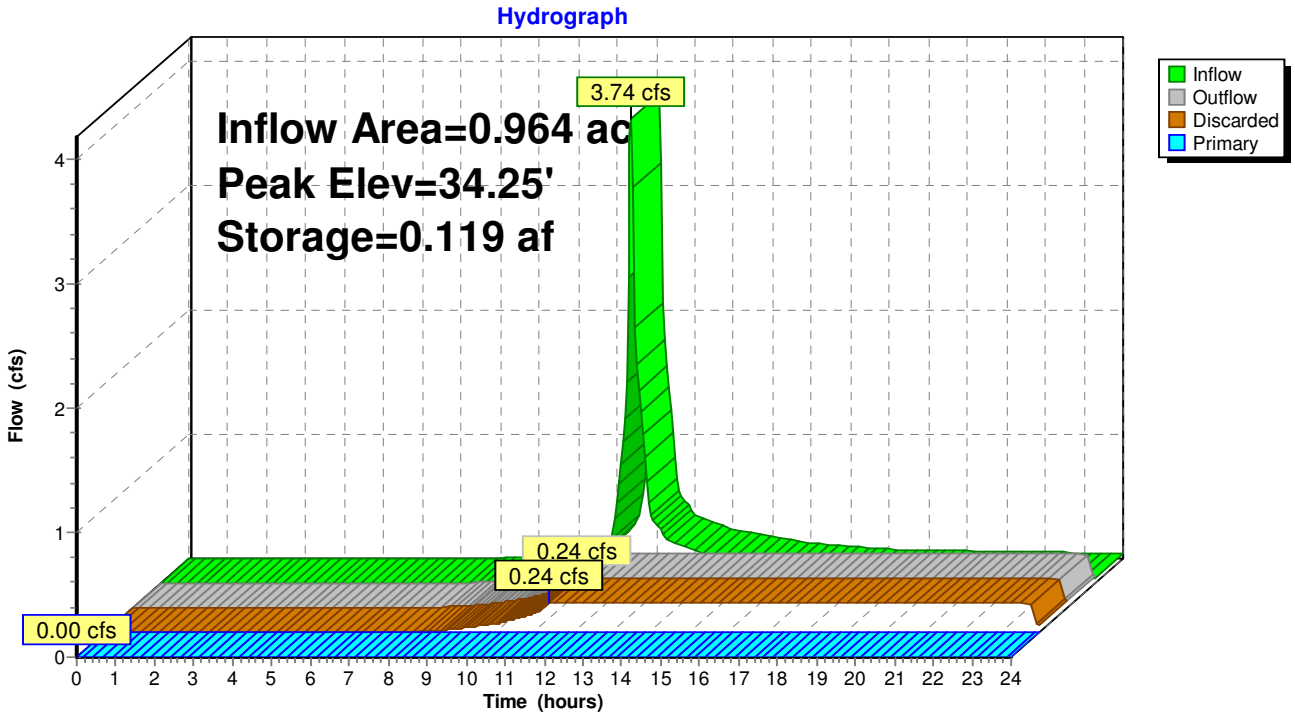
8,337.9 cf Field - 3,089.4 cf Chambers = 5,248.4 cf Stone x 40.0% Voids = 2,099.4 cf Stone Storage

Chamber Storage + Stone Storage = 5,188.8 cf = 0.119 af
Overall Storage Efficiency = 62.2%

27 Chambers
308.8 cy Field
194.4 cy Stone



Pond 5P/6P: INFILTRATION 1



Summary for Pond 7P: INFILTRATION 1

Inflow Area = 1.743 ac, 62.25% Impervious, Inflow Depth = 3.21" for 25-Year event
Inflow = 5.54 cfs @ 12.15 hrs, Volume= 0.466 af
Outflow = 0.42 cfs @ 11.50 hrs, Volume= 0.466 af, Atten= 92%, Lag= 0.0 min
Discarded = 0.42 cfs @ 11.50 hrs, Volume= 0.466 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 31.24' @ 14.07 hrs Surf.Area= 0.051 ac Storage= 0.207 af
Flood Elev= 31.66' Surf.Area= 0.051 ac Storage= 0.215 af

Plug-Flow detention time= 201.5 min calculated for 0.465 af (100% of inflow)
Center-of-Mass det. time= 201.3 min (1,031.3 - 830.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	24.91'	0.085 af	**46.67'W x 47.37'L x 6.75'H Field A** 0.343 af Overall - 0.130 af Embedded = 0.212 af x 40.0% Voids
#2A	25.66'	0.130 af	**ADS_StormTech MC-4500 +Cap** x 50 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf
		0.215 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.91'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	31.66'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.42 cfs @ 11.50 hrs HW=24.98' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.42 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=24.91' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 7P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

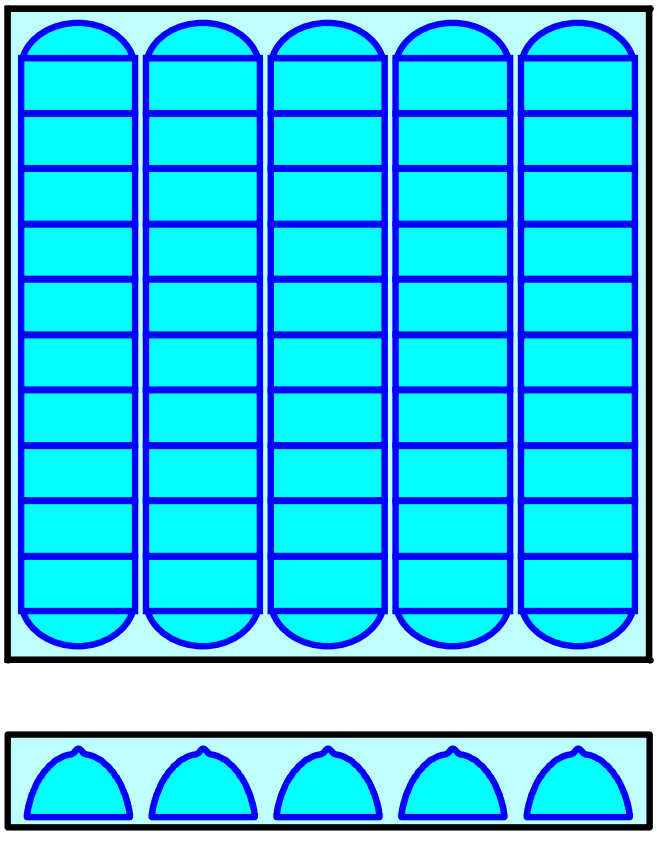
10 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 45.37' Row Length +12.0" End Stone x 2 = 47.37' Base Length
5 Rows x 100.0" Wide + 9.0" Spacing x 4 + 12.0" Side Stone x 2 = 46.67' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

50 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 5 Rows = 5,681.5 cf Chamber Storage

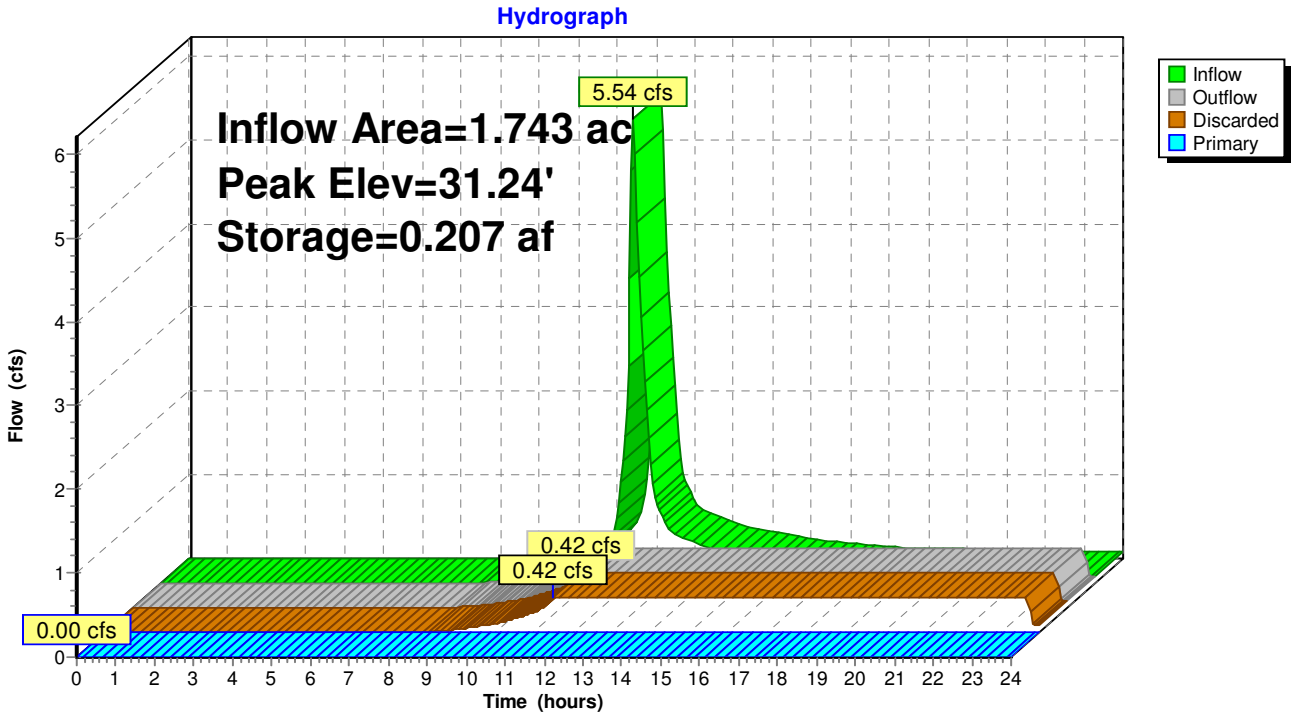
14,920.5 cf Field - 5,681.5 cf Chambers = 9,239.0 cf Stone x 40.0% Voids = 3,695.6 cf Stone Storage

Chamber Storage + Stone Storage = 9,377.1 cf = 0.215 af
Overall Storage Efficiency = 62.8%

50 Chambers
552.6 cy Field
342.2 cy Stone



Pond 7P: INFILTRATION 1



Summary for Pond 8P/9P: INFILTRATION 1

Inflow Area = 2.195 ac, 53.43% Impervious, Inflow Depth = 2.69" for 25-Year event
Inflow = 6.01 cfs @ 12.14 hrs, Volume= 0.493 af
Outflow = 0.46 cfs @ 11.65 hrs, Volume= 0.493 af, Atten= 92%, Lag= 0.0 min
Discarded = 0.46 cfs @ 11.65 hrs, Volume= 0.493 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 28.39' @ 14.19 hrs Surf.Area= 0.055 ac Storage= 0.218 af
Flood Elev= 29.11' Surf.Area= 0.055 ac Storage= 0.234 af

Plug-Flow detention time= 204.3 min calculated for 0.492 af (100% of inflow)
Center-of-Mass det. time= 204.1 min (1,046.1 - 842.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	22.36'	0.090 af	**37.58'W x 63.47'L x 6.75'H Field A** 0.370 af Overall - 0.143 af Embedded = 0.226 af x 40.0% Voids
#2A	23.11'	0.143 af	**ADS_StormTech MC-4500 +Cap** x 56 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf
		0.234 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.36'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	29.11'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.46 cfs @ 11.65 hrs HW=22.44' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.46 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.36' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 8P/9P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

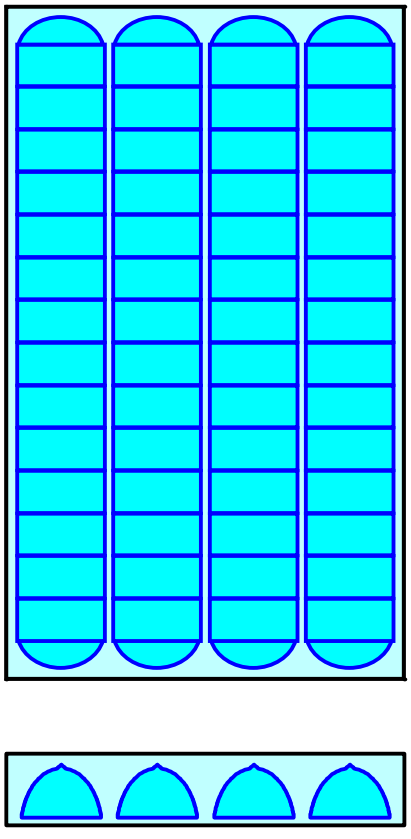
14 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 61.47' Row Length +12.0" End Stone x 2 = 63.47' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

56 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 4 Rows = 6,249.1 cf Chamber Storage

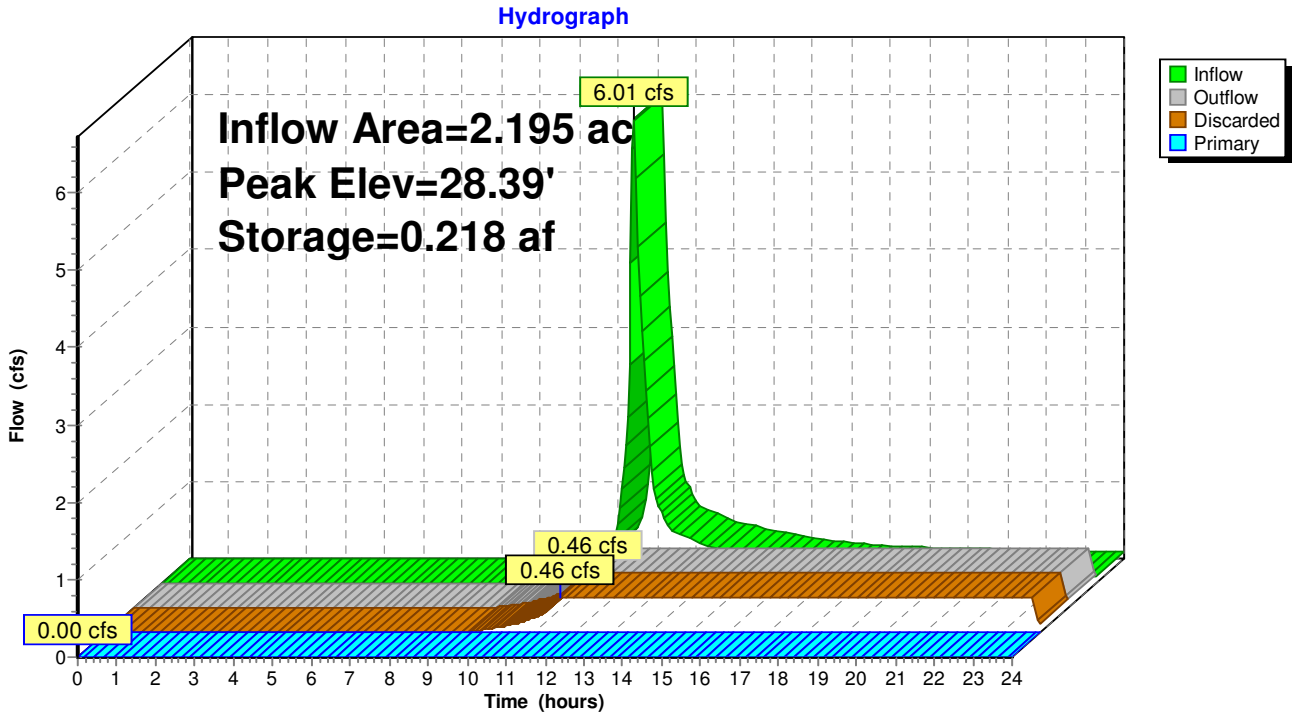
16,100.7 cf Field - 6,249.1 cf Chambers = 9,851.6 cf Stone x 40.0% Voids = 3,940.7 cf Stone Storage

Chamber Storage + Stone Storage = 10,189.7 cf = 0.234 af
Overall Storage Efficiency = 63.3%

56 Chambers
596.3 cy Field
364.9 cy Stone



Pond 8P/9P: INFILTRATION 1



Summary for Pond 10P-14P: INFILTRATION 1

Inflow Area = 3.994 ac, 36.47% Impervious, Inflow Depth = 1.87" for 25-Year event
Inflow = 5.78 cfs @ 12.17 hrs, Volume= 0.621 af
Outflow = 0.55 cfs @ 11.75 hrs, Volume= 0.621 af, Atten= 91%, Lag= 0.0 min
Discarded = 0.55 cfs @ 11.75 hrs, Volume= 0.621 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 26.71' @ 14.98 hrs Surf.Area= 0.066 ac Storage= 0.273 af
Flood Elev= 26.98' Surf.Area= 0.066 ac Storage= 0.280 af

Plug-Flow detention time= 226.3 min calculated for 0.621 af (100% of inflow)
Center-of-Mass det. time= 226.2 min (1,093.3 - 867.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	20.23'	0.109 af	**55.75'W x 51.39'L x 6.75'H Field A** 0.444 af Overall - 0.171 af Embedded = 0.273 af x 40.0% Voids
#2A	20.98'	0.171 af	**ADS_StormTech MC-4500 +Cap** x 66 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf
		0.280 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	20.23'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	26.98'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.55 cfs @ 11.75 hrs HW=20.31' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.55 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=20.23' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 10P-14P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

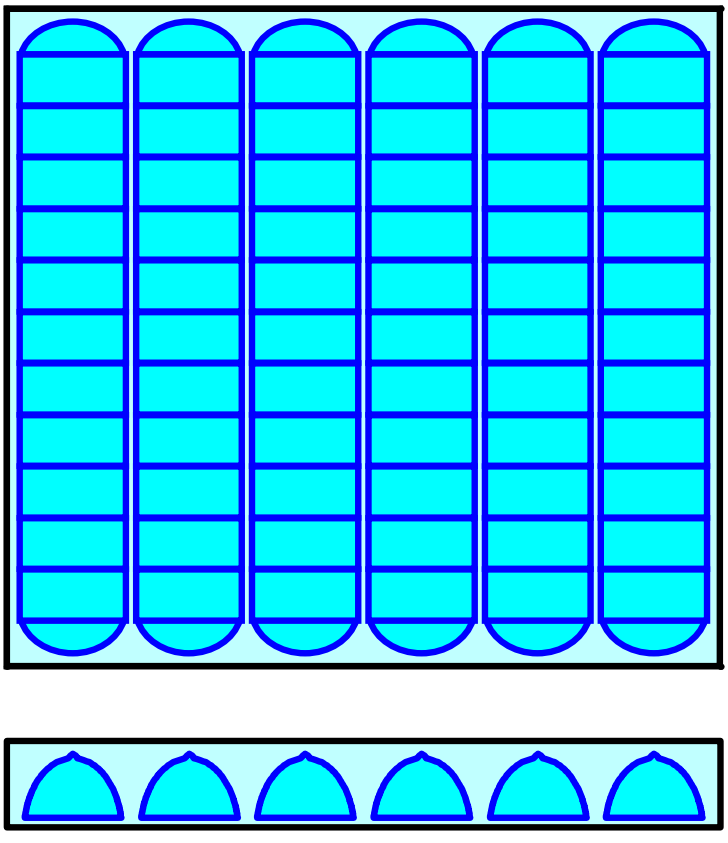
11 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 49.39' Row Length +12.0" End Stone x 2 = 51.39' Base Length
6 Rows x 100.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 55.75' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

66 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 6 Rows = 7,456.8 cf Chamber Storage

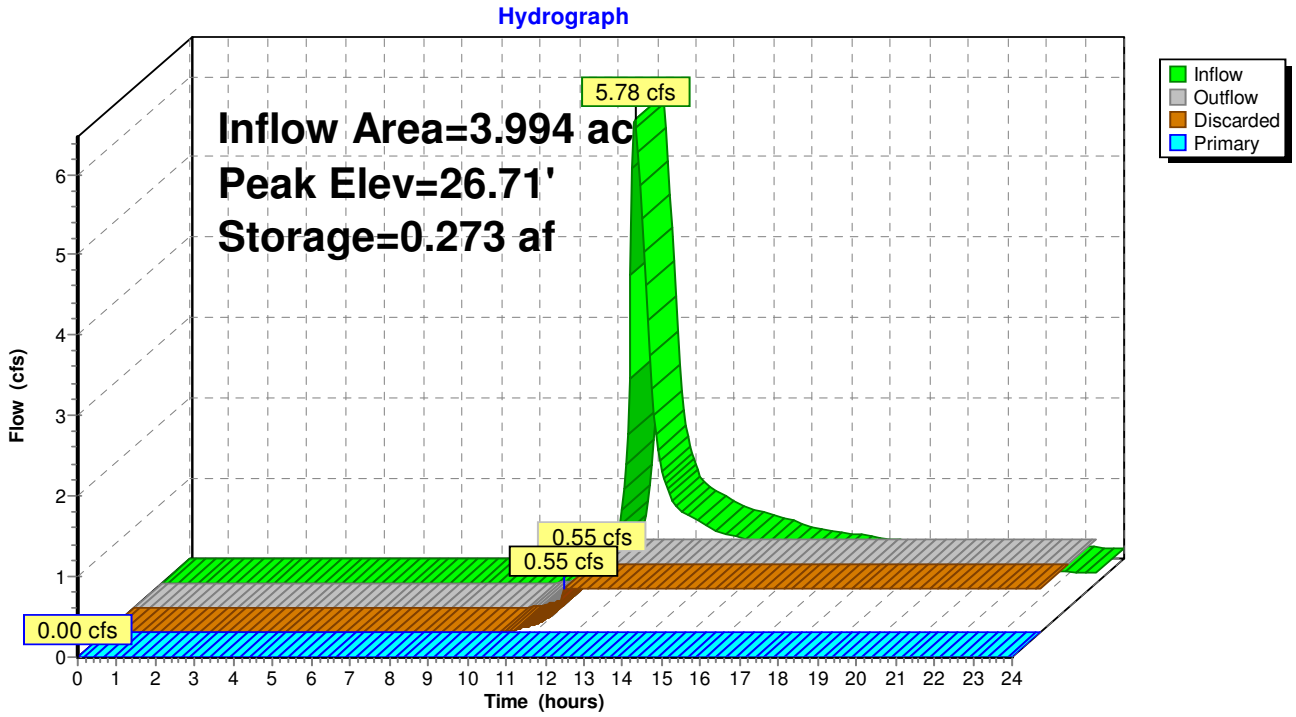
19,339.3 cf Field - 7,456.8 cf Chambers = 11,882.6 cf Stone x 40.0% Voids = 4,753.0 cf Stone Storage

Chamber Storage + Stone Storage = 12,209.8 cf = 0.280 af
Overall Storage Efficiency = 63.1%

66 Chambers
716.3 cy Field
440.1 cy Stone



Pond 10P-14P: INFILTRATION 1



Summary for Pond 15P: INFILTRATION 1

Inflow Area = 5.029 ac, 28.62% Impervious, Inflow Depth = 1.48" for 25-Year event
Inflow = 3.75 cfs @ 12.64 hrs, Volume= 0.620 af
Outflow = 0.53 cfs @ 12.15 hrs, Volume= 0.620 af, Atten= 86%, Lag= 0.0 min
Discarded = 0.53 cfs @ 12.15 hrs, Volume= 0.620 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 26.97' @ 15.85 hrs Surf.Area= 0.064 ac Storage= 0.267 af
Flood Elev= 27.17' Surf.Area= 0.064 ac Storage= 0.272 af

Plug-Flow detention time= 235.0 min calculated for 0.619 af (100% of inflow)
Center-of-Mass det. time= 234.8 min (1,144.3 - 909.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	20.42'	0.105 af	**46.67'W x 59.44'L x 6.75'H Field A** 0.430 af Overall - 0.167 af Embedded = 0.263 af x 40.0% Voids
#2A	21.17'	0.167 af	**ADS_StormTech MC-4500 +Cap** x 65 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf
		0.272 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	20.42'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	27.17'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.53 cfs @ 12.15 hrs HW=20.50' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.53 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=20.42' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 15P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

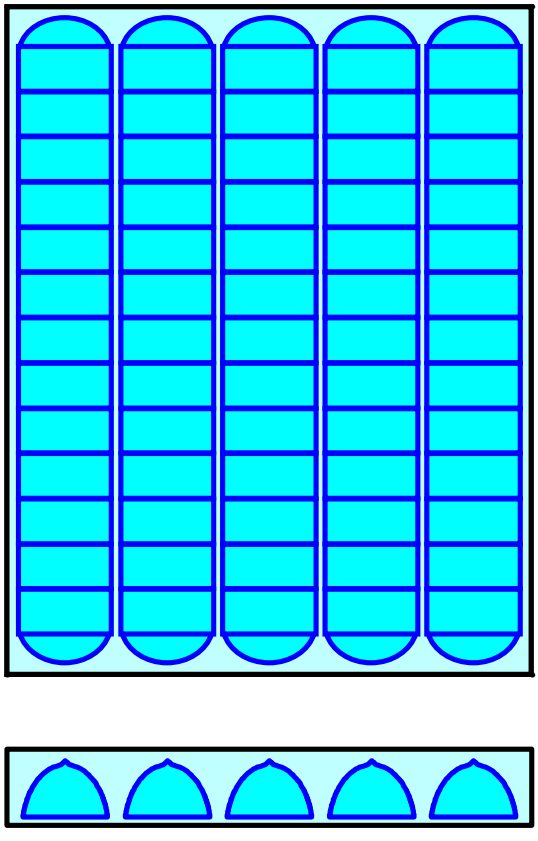
13 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 57.44' Row Length +12.0" End Stone x 2 = 59.44' Base Length
5 Rows x 100.0" Wide + 9.0" Spacing x 4 + 12.0" Side Stone x 2 = 46.67' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

65 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 5 Rows = 7,278.9 cf Chamber Storage

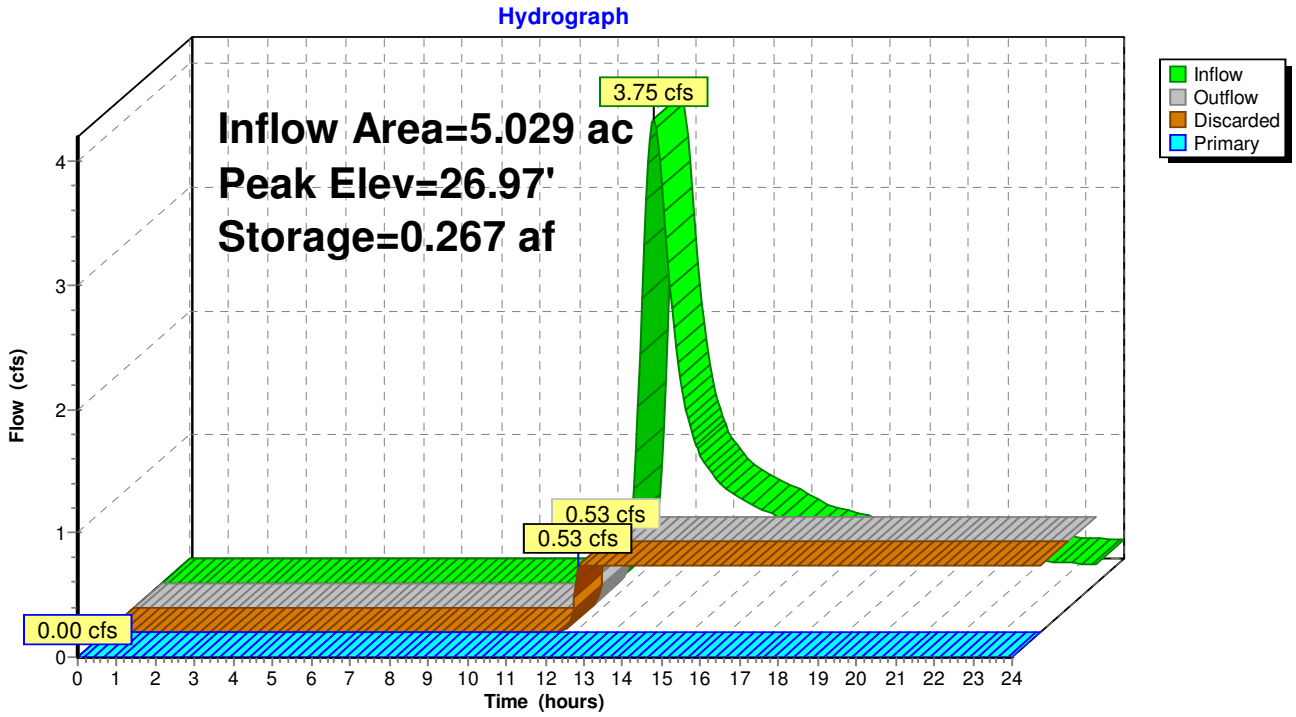
18,724.1 cf Field - 7,278.9 cf Chambers = 11,445.2 cf Stone x 40.0% Voids = 4,578.1 cf Stone Storage

Chamber Storage + Stone Storage = 11,857.0 cf = 0.272 af
Overall Storage Efficiency = 63.3%

65 Chambers
693.5 cy Field
423.9 cy Stone



Pond 15P: INFILTRATION 1



Summary for Pond 100Y LP-1: LOW SPOT ROAD G STA 15-19

[62] Hint: Exceeded Reach 46R OUTLET depth by 0.33' @ 0.00 hrs
[62] Hint: Exceeded Reach 49R OUTLET depth by 0.33' @ 0.00 hrs
[62] Hint: Exceeded Reach 51R OUTLET depth by 0.33' @ 0.00 hrs

Inflow Area = 8.809 ac, 30.47% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 36.50' @ 0.00 hrs Surf.Area= 5,746 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

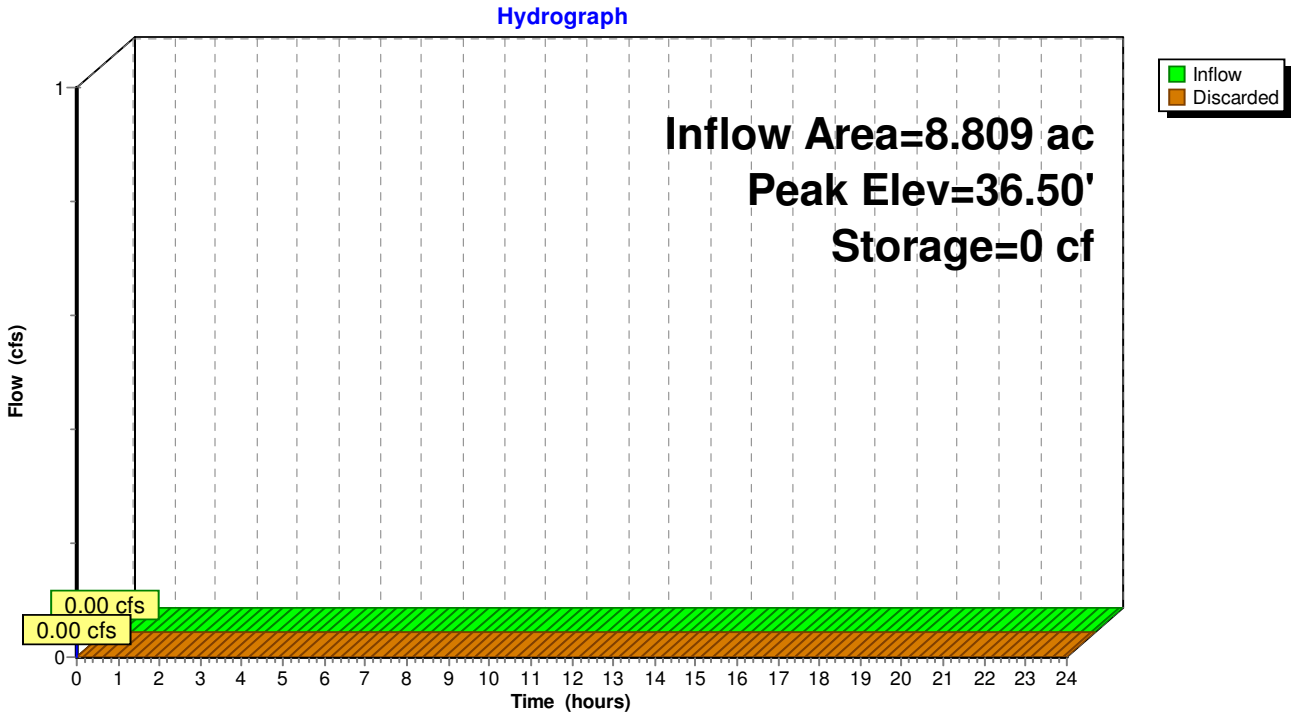
Volume	Invert	Avail.Storage	Storage Description
#1	36.50'	27,083 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
36.50	5,746	507.0	0	0	5,746
36.75	11,030	581.3	2,061	2,061	12,182
37.00	17,237	676.0	3,505	5,566	21,658
37.25	24,463	759.5	5,186	10,752	31,199
37.50	32,551	841.3	7,103	17,855	41,621
37.75	41,455	951.0	9,228	27,083	57,269

Device	Routing	Invert	Outlet Devices
#1	Discarded	36.50'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=36.50' (Free Discharge)
↳**1=Exfiltration** (Passes 0.00 cfs of 1.10 cfs potential flow)

Pond 100Y LP-1: LOW SPOT ROAD G STA 15-19



Summary for Pond 100Y LP-2: Low Spot Road I

[62] Hint: Exceeded Reach 48R OUTLET depth by 0.20' @ 0.00 hrs
[62] Hint: Exceeded Reach 52R OUTLET depth by 0.20' @ 0.00 hrs
[62] Hint: Exceeded Reach 53R OUTLET depth by 0.20' @ 0.00 hrs
[62] Hint: Exceeded Reach 54R OUTLET depth by 0.20' @ 0.00 hrs
[63] Warning: Exceeded Reach 55R INLET depth by 0.20' @ 0.00 hrs

Inflow Area = 17.098 ac, 35.90% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 31.50' @ 0.00 hrs Surf.Area= 3,929 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

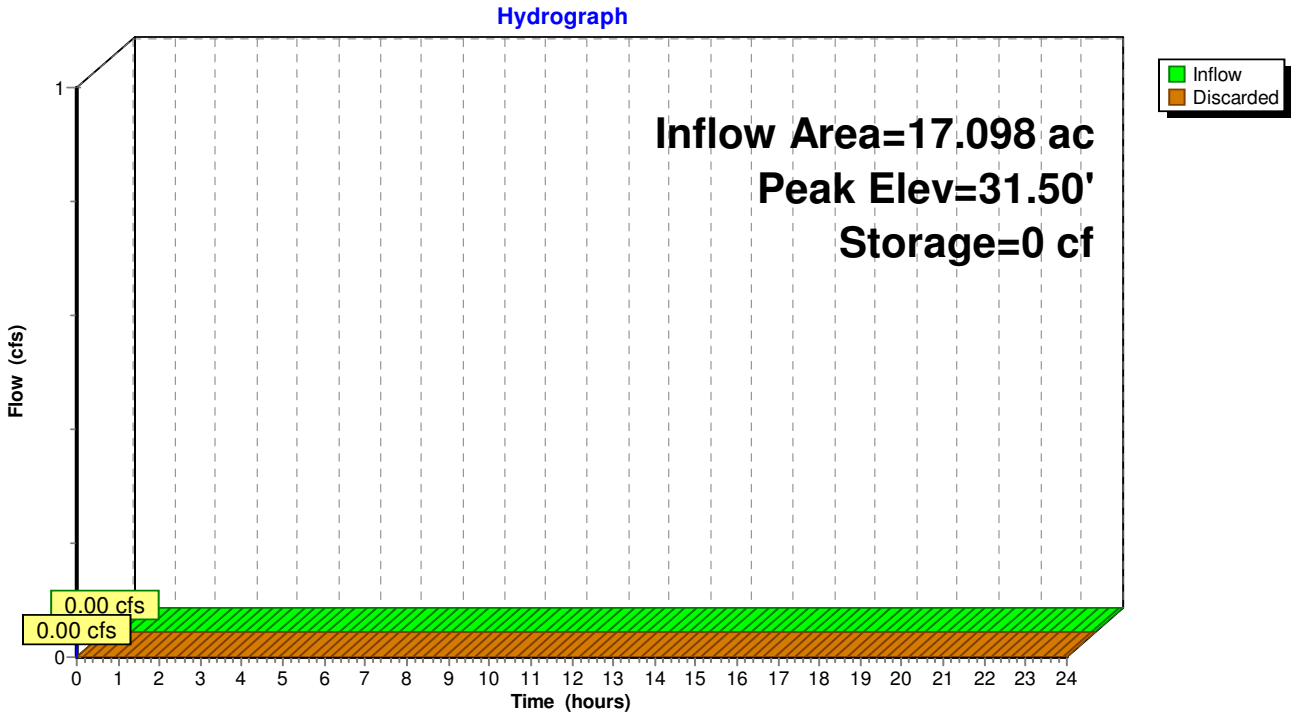
Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	70,244 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
31.50	3,929	567.0	0	0	3,929
31.75	12,215	727.0	1,923	1,923	20,406
32.00	24,089	969.0	4,455	6,377	53,067
32.25	43,398	1,543.0	8,318	14,696	167,810
32.50	63,912	1,964.0	13,331	28,027	285,302
32.75	85,235	2,322.0	18,580	46,607	407,406
33.00	104,183	2,279.9	23,638	70,244	422,834

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.50'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=31.50' (Free Discharge)
1=Exfiltration (Passes 0.00 cfs of 0.75 cfs potential flow)

Pond 100Y LP-2: Low Spot Road I



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment S#1: S#1 Runoff Area=74,645 sf 34.86% Impervious Runoff Depth=2.75"
Flow Length=173' Slope=0.0515 '/' Tc=6.0 min CN=60 Runoff=5.28 cfs 0.392 af

Subcatchment S#10: S#10 Runoff Area=36,853 sf 28.96% Impervious Runoff Depth=2.35"
Flow Length=225' Slope=0.0140 '/' Tc=15.6 min CN=56 Runoff=1.62 cfs 0.166 af

Subcatchment S#11: S#11 Runoff Area=45,317 sf 45.07% Impervious Runoff Depth=3.36"
Flow Length=405' Slope=0.0234 '/' Tc=14.9 min CN=66 Runoff=3.07 cfs 0.291 af

Subcatchment S#12: S#12 Runoff Area=35,592 sf 41.55% Impervious Runoff Depth=3.15"
Flow Length=235' Slope=0.0333 '/' Tc=8.5 min CN=64 Runoff=2.68 cfs 0.215 af

Subcatchment S#13: S#13 Runoff Area=23,644 sf 43.86% Impervious Runoff Depth=3.26"
Flow Length=117' Slope=0.0184 '/' Tc=6.4 min CN=65 Runoff=2.00 cfs 0.147 af

Subcatchment S#14: S#14 Runoff Area=32,589 sf 22.11% Impervious Runoff Depth=1.97"
Flow Length=319' Slope=0.0132 '/' Tc=23.5 min CN=52 Runoff=0.98 cfs 0.123 af

Subcatchment S#15: S#15 Runoff Area=219,043 sf 28.62% Impervious Runoff Depth=2.35"
Flow Length=1,119' Slope=0.0258 '/' Tc=41.5 min CN=56 Runoff=6.33 cfs 0.984 af

Subcatchment S#3: S#3 Runoff Area=180,213 sf 23.77% Impervious Runoff Depth=2.06"
Flow Length=300' Slope=0.0252 '/' Tc=15.8 min CN=53 Runoff=6.71 cfs 0.710 af

Subcatchment S#5: S#5 Runoff Area=31,300 sf 60.32% Impervious Runoff Depth=4.33"
Flow Length=121' Slope=0.0265 '/' Tc=5.0 min CN=75 Runoff=3.64 cfs 0.259 af

Subcatchment S#6: S#6 Runoff Area=10,705 sf 75.27% Impervious Runoff Depth=5.22"
Flow Length=121' Slope=0.0370 '/' Tc=5.0 min CN=83 Runoff=1.48 cfs 0.107 af

Subcatchment S#7: S#7 Runoff Area=75,917 sf 62.25% Impervious Runoff Depth=4.44"
Flow Length=405' Slope=0.0259 '/' Tc=10.8 min CN=76 Runoff=7.65 cfs 0.644 af

Subcatchment S#8: S#8 Runoff Area=46,691 sf 52.51% Impervious Runoff Depth=3.79"
Flow Length=269' Slope=0.0219 '/' Tc=10.0 min CN=70 Runoff=4.10 cfs 0.338 af

Subcatchment S#9: S#9 Runoff Area=48,922 sf 54.31% Impervious Runoff Depth=3.89"
Flow Length=214' Slope=0.0177 '/' Tc=9.1 min CN=71 Runoff=4.52 cfs 0.364 af

Subcatchment S2: S#2 Runoff Area=115,715 sf 17.98% Impervious Runoff Depth=2.35"
Flow Length=300' Slope=0.0283 '/' Tc=13.8 min CN=56 Runoff=5.36 cfs 0.520 af

Subcatchment S4: S#4 Runoff Area=151,367 sf 28.50% Impervious Runoff Depth=2.35"
Flow Length=300' Slope=0.0338 '/' Tc=12.6 min CN=56 Runoff=7.21 cfs 0.680 af

Reach 46R: TO LP 1 Avg. Flow Depth=0.15' Max Vel=2.26 fps Inflow=3.59 cfs 0.089 af
n=0.013 L=467.7' S=0.0082 '/' Capacity=9.55 cfs Outflow=1.81 cfs 0.089 af

Reach 48R: TO LP2 Avg. Flow Depth=0.24' Max Vel=2.41 fps Inflow=6.39 cfs 0.215 af
n=0.013 L=370.0' S=0.0053 '/' Capacity=7.64 cfs Outflow=3.68 cfs 0.215 af

Reach 49R: TO LP 1 Avg. Flow Depth=0.19' Max Vel=3.27 fps Inflow=5.05 cfs 0.122 af
n=0.013 L=190.0' S=0.0149 '/' Capacity=12.84 cfs Outflow=3.24 cfs 0.122 af

Reach 50R: (new Reach) Inflow=4.47 cfs 0.189 af
Outflow=4.47 cfs 0.189 af

Reach 51R: TO LP 1 Avg. Flow Depth=0.14' Max Vel=2.32 fps Inflow=2.12 cfs 0.066 af
n=0.013 L=431.0' S=0.0094 '/' Capacity=10.20 cfs Outflow=1.69 cfs 0.066 af

Reach 52R: TO LP2 Avg. Flow Depth=0.20' Max Vel=2.43 fps Inflow=7.12 cfs 0.110 af
n=0.013 L=592.0' S=0.0066 '/' Capacity=8.53 cfs Outflow=2.96 cfs 0.110 af

Reach 53R: TO LP2 Avg. Flow Depth=0.31' Max Vel=1.87 fps Inflow=6.87 cfs 0.128 af
n=0.013 L=184.0' S=0.0024 '/' Capacity=5.20 cfs Outflow=4.11 cfs 0.128 af

Reach 54R: TO LP2 Avg. Flow Depth=0.37' Max Vel=1.10 fps Inflow=6.20 cfs 0.276 af
n=0.013 L=372.0' S=0.0006 '/' Capacity=2.62 cfs Outflow=3.30 cfs 0.276 af

Reach 55R: TO LP2 Avg. Flow Depth=0.33' Max Vel=4.17 fps Inflow=10.66 cfs 0.228 af
n=0.013 L=1.0' S=0.0100 '/' Capacity=10.52 cfs Outflow=10.64 cfs 0.228 af

Pond 1P: INFILTRATION 1 Peak Elev=39.27' Storage=0.120 af Inflow=5.28 cfs 0.392 af
Discarded=0.24 cfs 0.304 af Primary=3.59 cfs 0.089 af Outflow=3.84 cfs 0.392 af

Pond 2P: INFILTRATION 1 Peak Elev=35.33' Storage=0.158 af Inflow=5.36 cfs 0.520 af
Discarded=0.31 cfs 0.398 af Primary=5.05 cfs 0.122 af Outflow=5.36 cfs 0.520 af

Pond 3P: INFILTRATION 1 Peak Elev=28.24' Storage=0.188 af Inflow=6.71 cfs 0.710 af
Discarded=0.37 cfs 0.495 af Primary=6.39 cfs 0.215 af Outflow=6.76 cfs 0.710 af

Pond 4P: INFILTRATION 1 Peak Elev=34.96' Storage=0.189 af Inflow=7.21 cfs 0.680 af
Discarded=0.38 cfs 0.491 af Primary=4.47 cfs 0.189 af Outflow=4.85 cfs 0.680 af

Pond 5P/6P: INFILTRATION 1 Peak Elev=34.46' Storage=0.119 af Inflow=5.11 cfs 0.366 af
Discarded=0.24 cfs 0.300 af Primary=2.12 cfs 0.066 af Outflow=2.35 cfs 0.366 af

Pond 7P: INFILTRATION 1 Peak Elev=32.08' Storage=0.215 af Inflow=7.65 cfs 0.644 af
Discarded=0.42 cfs 0.534 af Primary=7.12 cfs 0.110 af Outflow=7.55 cfs 0.644 af

Pond 8P/9P: INFILTRATION 1 Peak Elev=29.52' Storage=0.234 af Inflow=8.62 cfs 0.702 af
Discarded=0.46 cfs 0.575 af Primary=6.87 cfs 0.128 af Outflow=7.33 cfs 0.702 af

Pond 10P-14P: INFILTRATION 1 Peak Elev=27.53' Storage=0.280 af Inflow=9.07 cfs 0.942 af
Discarded=0.55 cfs 0.714 af Primary=10.66 cfs 0.228 af Outflow=11.21 cfs 0.942 af

Pond 15P: INFILTRATION 1 Peak Elev=27.55' Storage=0.272 af Inflow=6.33 cfs 0.984 af
Discarded=0.53 cfs 0.709 af Primary=6.20 cfs 0.276 af Outflow=6.73 cfs 0.984 af

Pond 100Y LP-1: LOW SPOT ROAD G STA 15-19 Peak Elev=36.98' Storage=5,172 cf Inflow=8.27 cfs 0.465 af
Outflow=3.18 cfs 0.465 af

Pond 100Y LP-2: Low Spot Road I Peak Elev=32.08' Storage=8,404 cf Inflow=17.48 cfs 0.957 af
Outflow=5.62 cfs 0.957 af

Total Runoff Area = 25.907 ac Runoff Volume = 5.941 af Average Runoff Depth = 2.75"
65.95% Pervious = 17.086 ac 34.05% Impervious = 8.821 ac

Summary for Subcatchment S#1: S#1

CarlsonPlanXYPos|1757228.0858|95778.6699|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

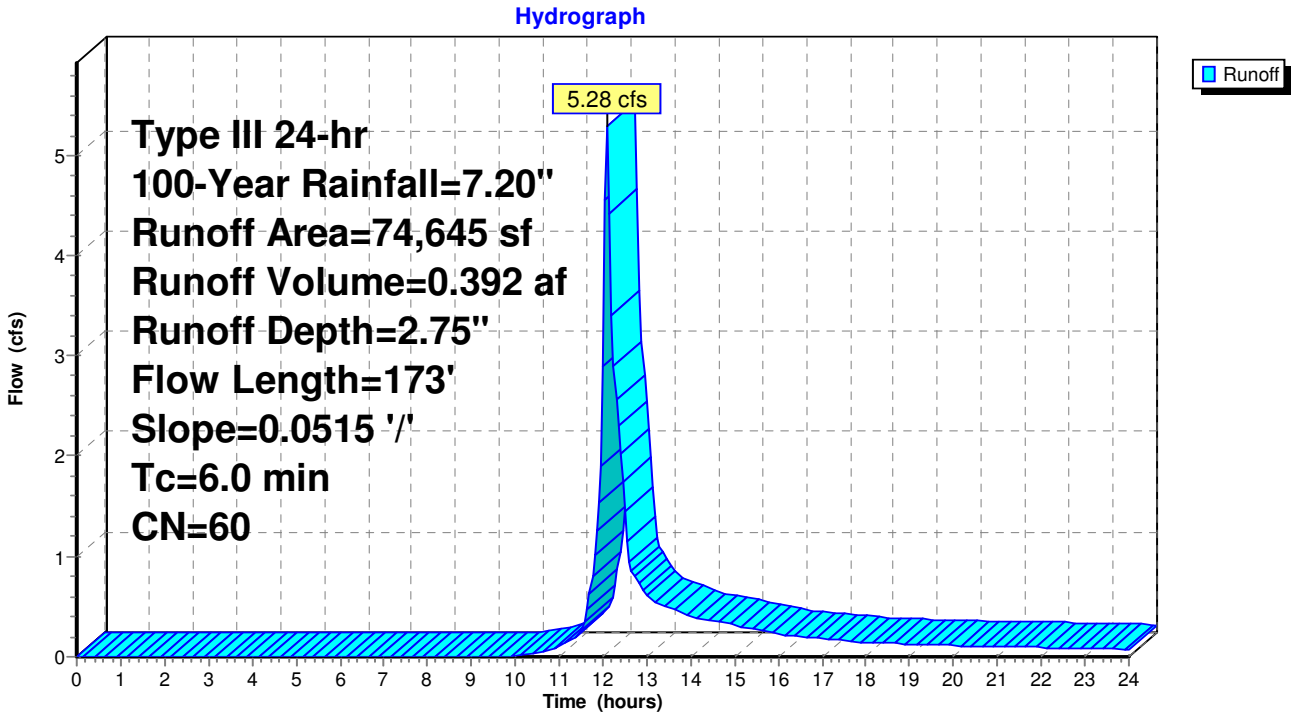
Runoff = 5.28 cfs @ 12.10 hrs, Volume= 0.392 af, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	26,022	98	Paved Streets w/Curbs & Sewers HSG A
*	48,593	39	Open Space-Good (>75% grass) HSG A
*	30	61	Open Space-Good (>75% grass) HSG B
	74,645	60	Weighted Average
	48,623		65.14% Pervious Area
	26,022		34.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	173	0.0515	0.48		**Lag/CN Method,**

Subcatchment S#1: S#1



Summary for Subcatchment S#10: S#10

CarlsonPlanXYPos|1756723.7933|94206.6253|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

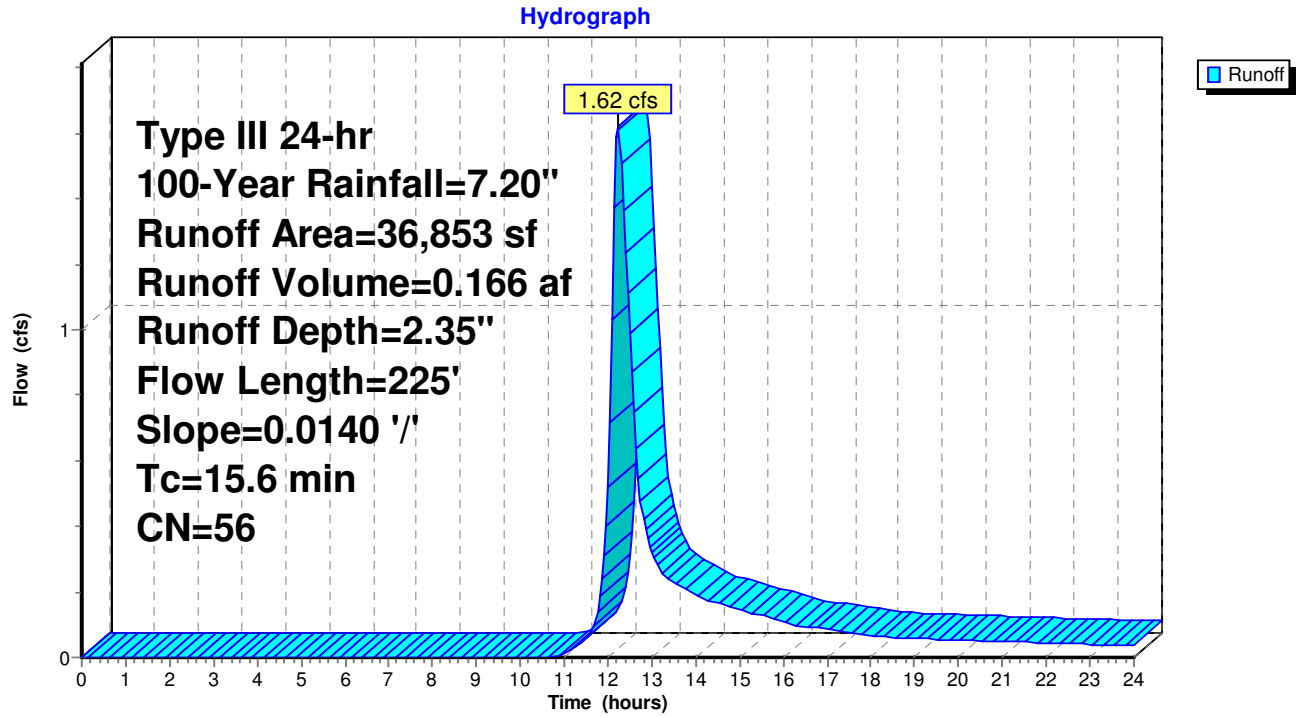
Runoff = 1.62 cfs @ 12.23 hrs, Volume= 0.166 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	10,673	98	Paved Streets w/Curbs & Sewers HSG A
*	26,180	39	Open Space-Good (>75% grass) HSG A
	36,853	56	Weighted Average
	26,180		71.04% Pervious Area
	10,673		28.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	225	0.0140	0.24		**Lag/CN Method,**

Subcatchment S#10: S#10



Summary for Subcatchment S#11: S#11

CarlsonPlanXYPos|1756919.3220|94148.5061|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

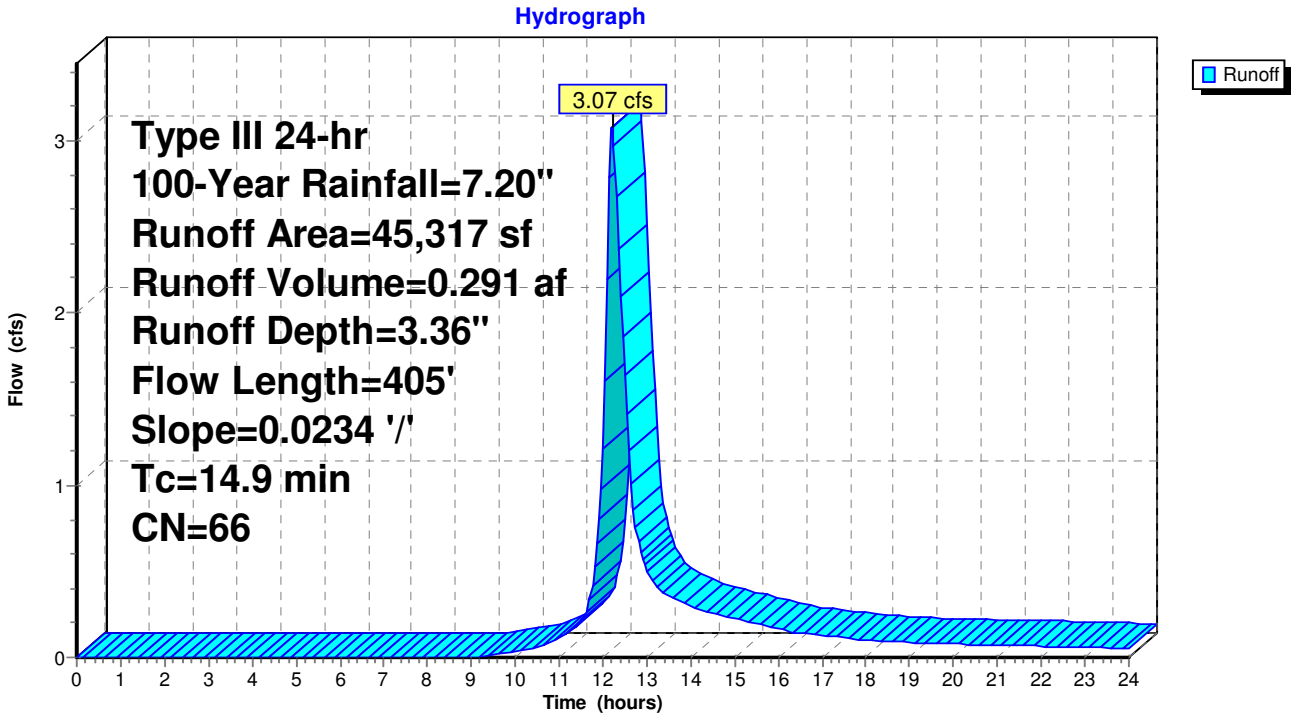
Runoff = 3.07 cfs @ 12.21 hrs, Volume= 0.291 af, Depth= 3.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	20,423	98	Paved Lots Roofs & Driveways HSG A
*	24,894	39	Open Space-Good (>75% grass) HSG A
	45,317	66	Weighted Average
	24,894		54.93% Pervious Area
	20,423		45.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	405	0.0234	0.45		**Lag/CN Method,**

Subcatchment S#11: S#11



Summary for Subcatchment S#12: S#12

CarlsonPlanXYPos|1757076.0153|93970.5069|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

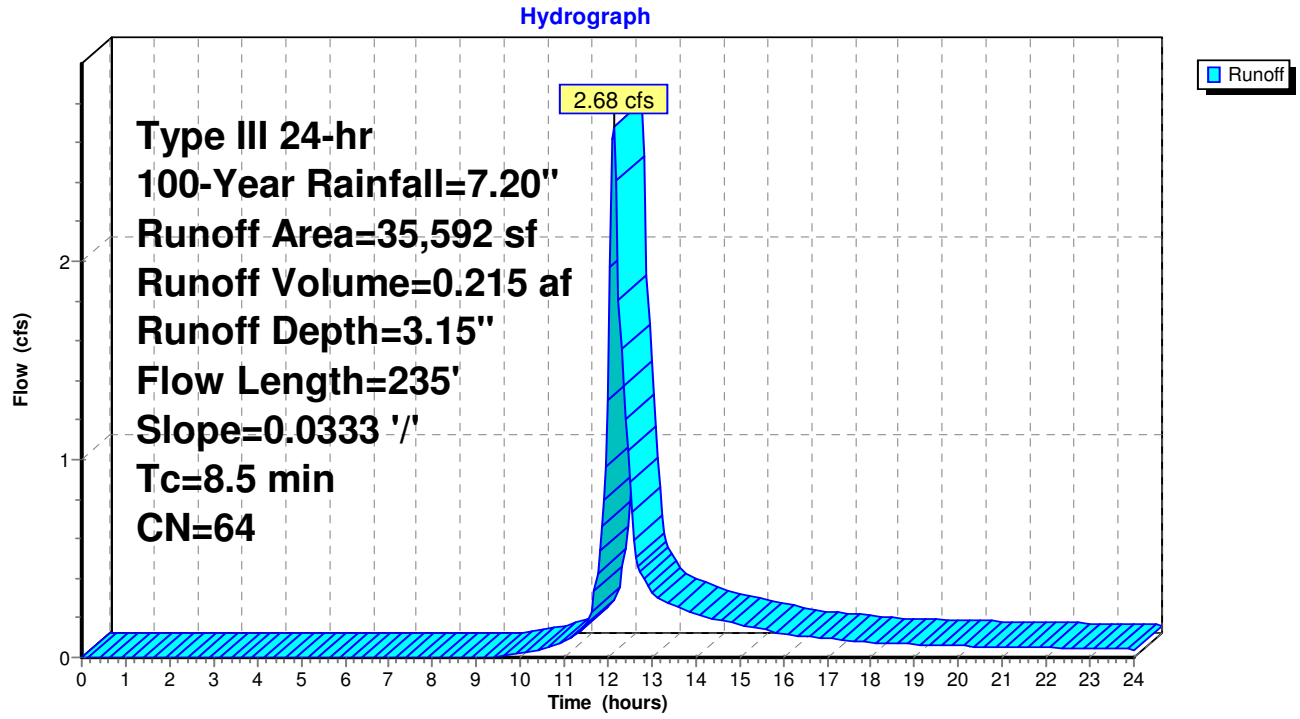
Runoff = 2.68 cfs @ 12.13 hrs, Volume= 0.215 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	14,787	98	Paved Streets w/Curbs & Sewers HSG A
*	20,805	39	Open Space-Good (>75% grass) HSG A
	35,592	64	Weighted Average
	20,805		58.45% Pervious Area
	14,787		41.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	235	0.0333	0.46		**Lag/CN Method,**

Subcatchment S#12: S#12



Summary for Subcatchment S#13: S#13

CarlsonPlanXYPos|1757188.0982|94129.7444|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

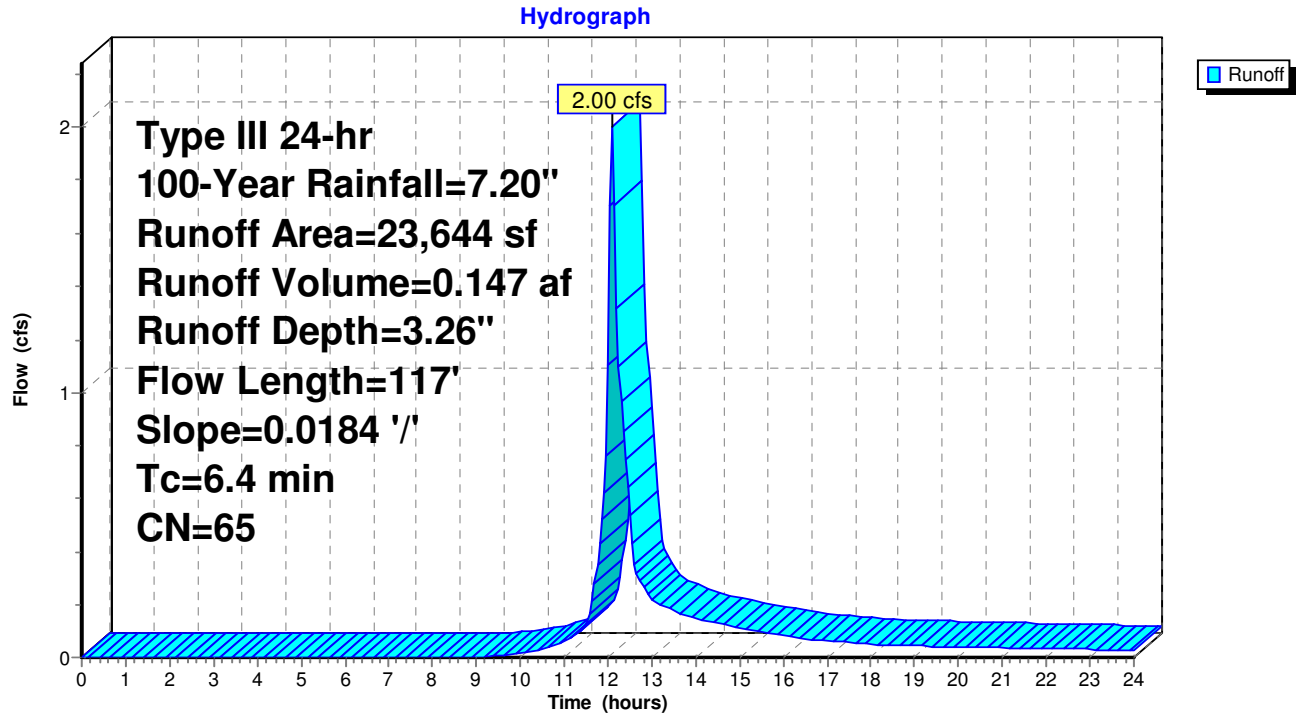
Runoff = 2.00 cfs @ 12.10 hrs, Volume= 0.147 af, Depth= 3.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	10,371	98	Paved Streets w/Curbs & Sewers HSG A
*	13,273	39	Open Space-Good (>75% grass) HSG A
	23,644	65	Weighted Average
	13,273		56.14% Pervious Area
	10,371		43.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	117	0.0184	0.30		**Lag/CN Method,**

Subcatchment S#13: S#13



Summary for Subcatchment S#14: S#14

CarlsonPlanXYPos|1757004.6545|94296.5616|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

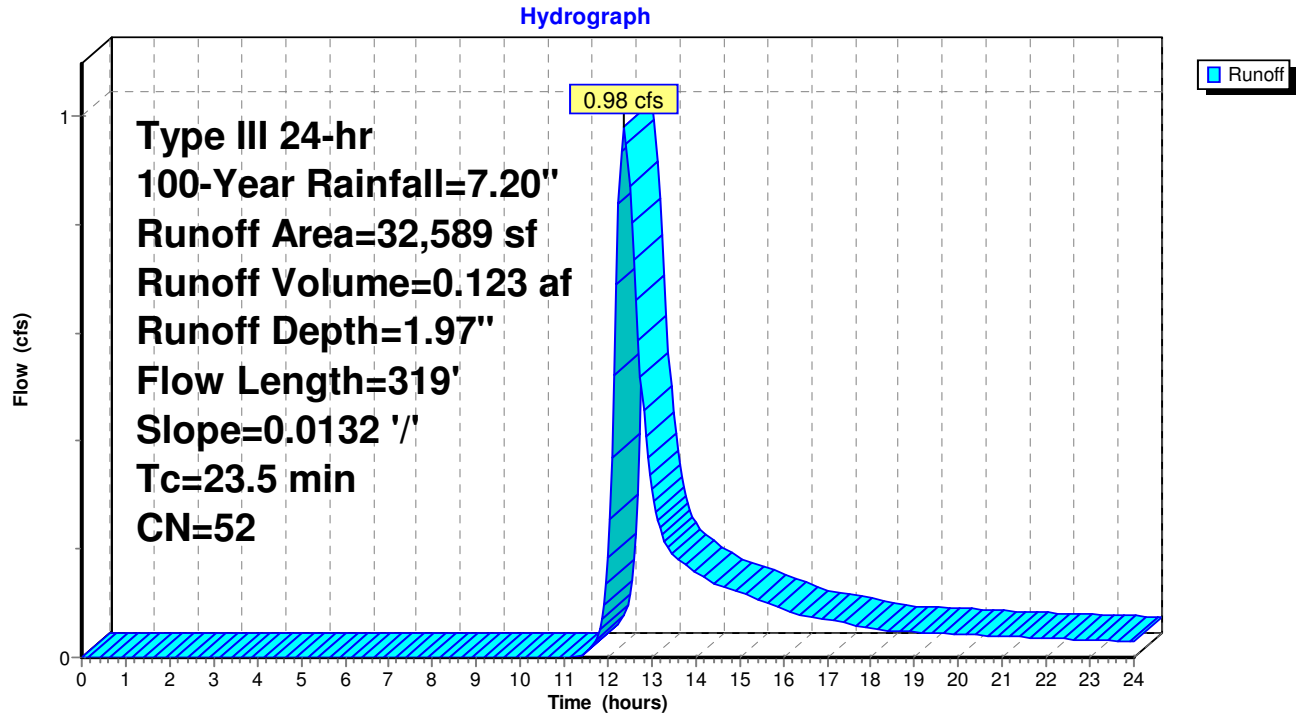
Runoff = 0.98 cfs @ 12.37 hrs, Volume= 0.123 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	7,204	98	Paved Streets w/Curbs & Sewers HSG A
*	25,385	39	Open Space-Good (>75% grass) HSG A
	32,589	52	Weighted Average
	25,385		77.89% Pervious Area
	7,204		22.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.5	319	0.0132	0.23		**Lag/CN Method,**

Subcatchment S#14: S#14



Summary for Subcatchment S#15: S#15

CarlsonPlanXYPos|1757436.5135|94414.7306|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

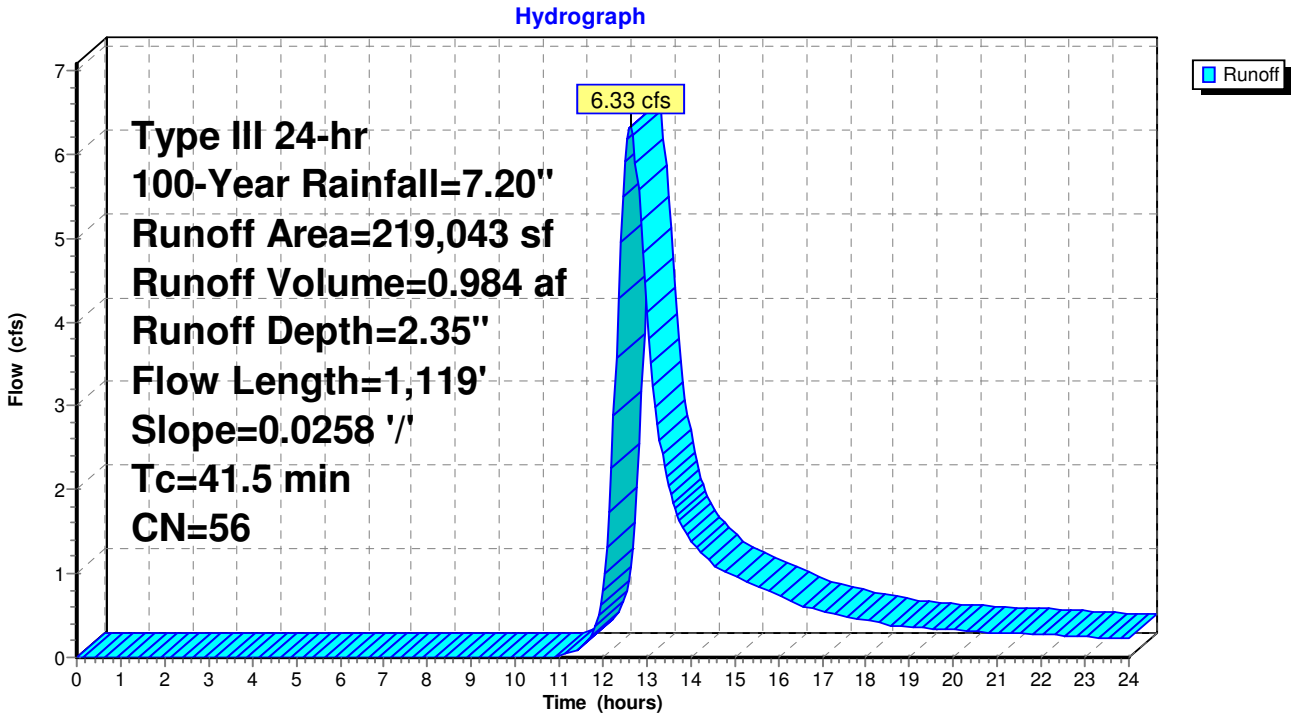
Runoff = 6.33 cfs @ 12.62 hrs, Volume= 0.984 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	62,691	98	Paved Streets w/Curbs & Sewers HSG A
*	156,352	39	Open Space-Good (>75% grass) HSG A
	219,043	56	Weighted Average
	156,352		71.38% Pervious Area
	62,691		28.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
41.5	1,119	0.0258	0.45		**Lag/CN Method,**

Subcatchment S#15: S#15



Summary for Subcatchment S#3: S#3

CarlsonPlanXYPos|1757249.7579|94888.4224|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

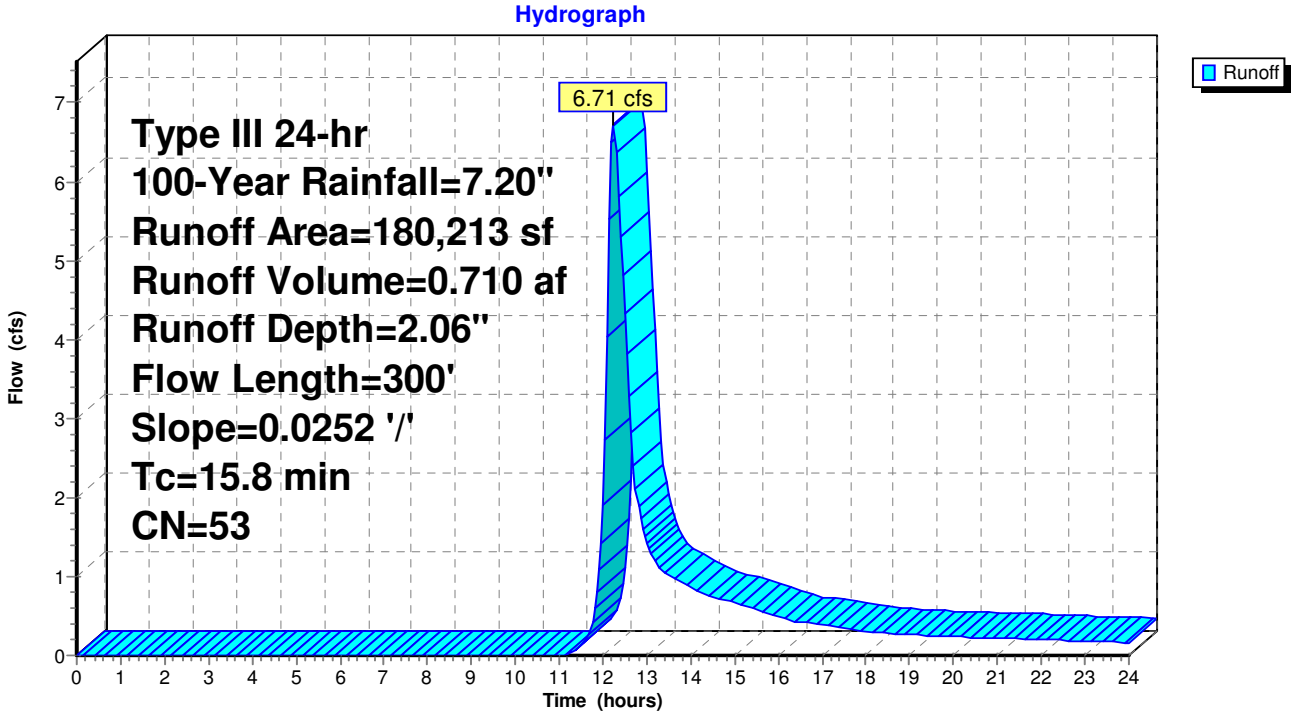
Runoff = 6.71 cfs @ 12.24 hrs, Volume= 0.710 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	42,844	98	Paved Streets w/Curbs & Sewers HSG A
*	137,369	39	Open Space-Good (>75% grass) HSG A
	180,213	53	Weighted Average
	137,369		76.23% Pervious Area
	42,844		23.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	300	0.0252	0.32		**Lag/CN Method,**

Subcatchment S#3: S#3



Summary for Subcatchment S#5: S#5

CarlsonPlanXYPos|1757027.2221|95347.9200|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

[49] Hint: Tc<2dt may require smaller dt

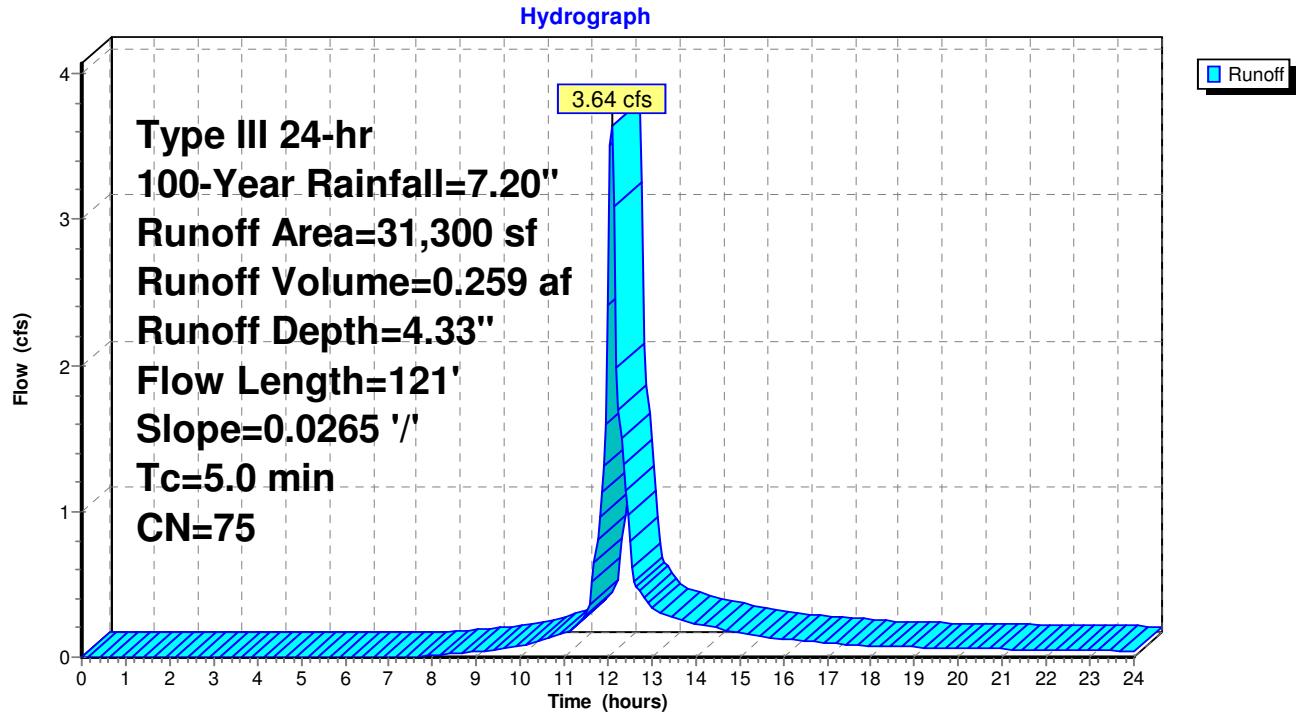
Runoff = 3.64 cfs @ 12.08 hrs, Volume= 0.259 af, Depth= 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	18,880	98	Paved Streets w/Curbs & Sewers HSG A
*	12,420	39	Open Space-Good (>75% grass) HSG A
	31,300	75	Weighted Average
	12,420		39.68% Pervious Area
	18,880		60.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	121	0.0265	0.48		**Lag/CN Method,**
4.2	121	Total, Increased to minimum Tc = 5.0 min			

Subcatchment S#5: S#5



Summary for Subcatchment S#6: S#6

CarlsonPlanXYPos|1757027.2221|95347.9200|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

[49] Hint: Tc<2dt may require smaller dt

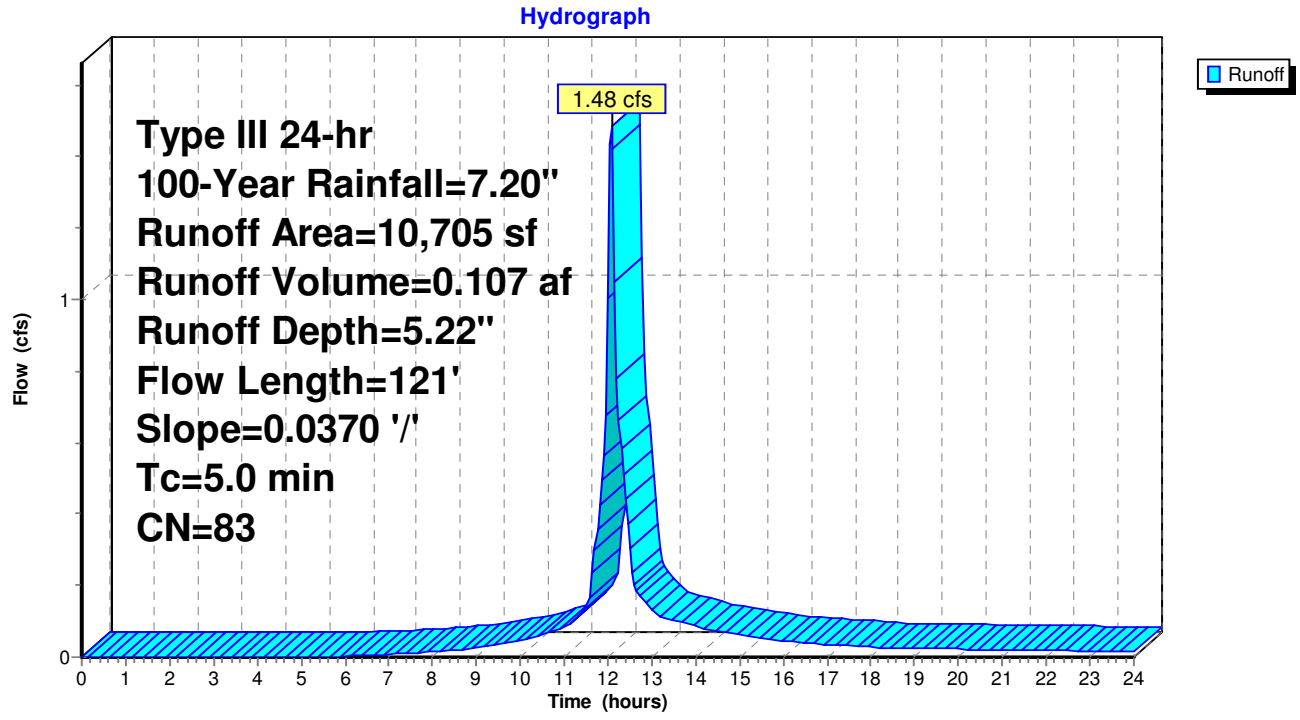
Runoff = 1.48 cfs @ 12.07 hrs, Volume= 0.107 af, Depth= 5.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	8,058	98	Paved Streets w/Curbs & Sewers HSG A
*	2,647	39	Open Space-Good (>75% grass) HSG A
	10,705	83	Weighted Average
	2,647		24.73% Pervious Area
	8,058		75.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	121	0.0370	0.73		**Lag/CN Method,**
2.8	121	Total, Increased to minimum Tc = 5.0 min			

Subcatchment S#6: S#6



Summary for Subcatchment S#7: S#7

CarlsonPlanXYPos|1756915.6351|94896.6148|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

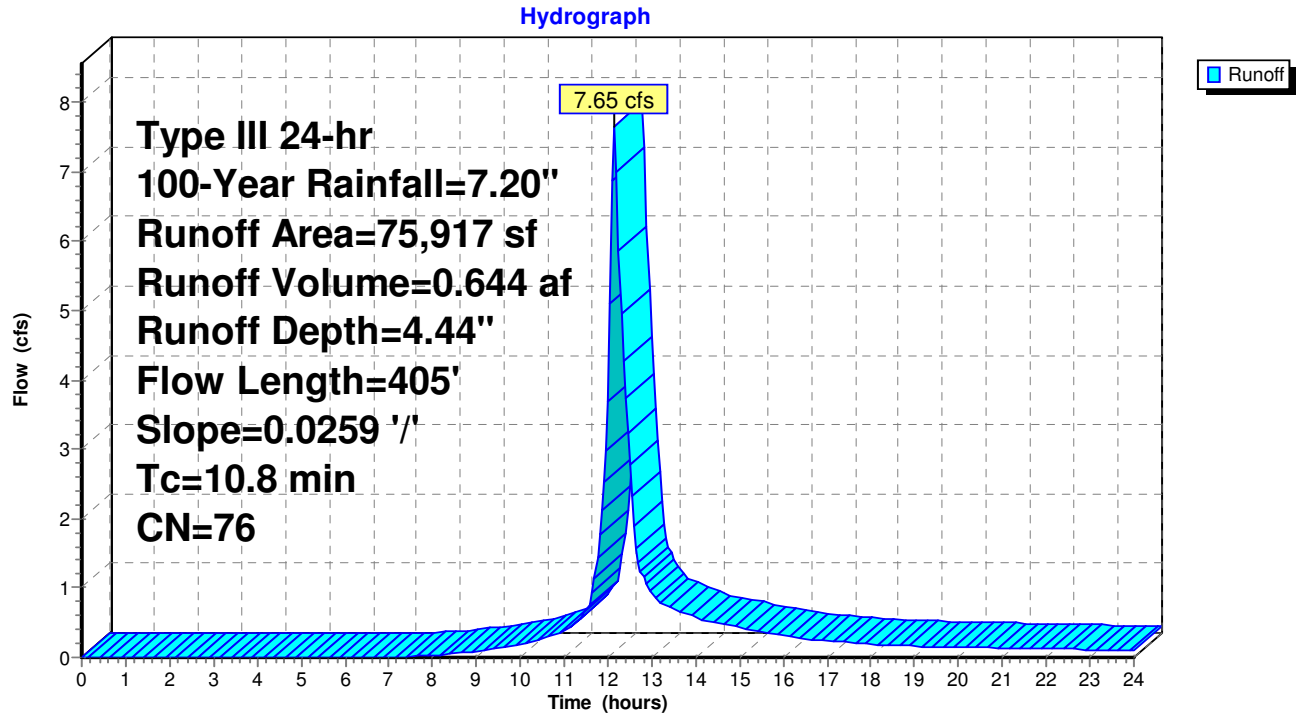
Runoff = 7.65 cfs @ 12.15 hrs, Volume= 0.644 af, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	47,260	98	Paved Streets w/Curbs & Sewers HSG A
*	28,657	39	Open Space-Good (>75% grass) HSG A
	75,917	76	Weighted Average
	28,657		37.75% Pervious Area
	47,260		62.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	405	0.0259	0.62		**Lag/CN Method,**

Subcatchment S#7: S#7



Summary for Subcatchment S#8: S#8

CarlsonPlanXYPos|1756872.7656|94629.7133|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

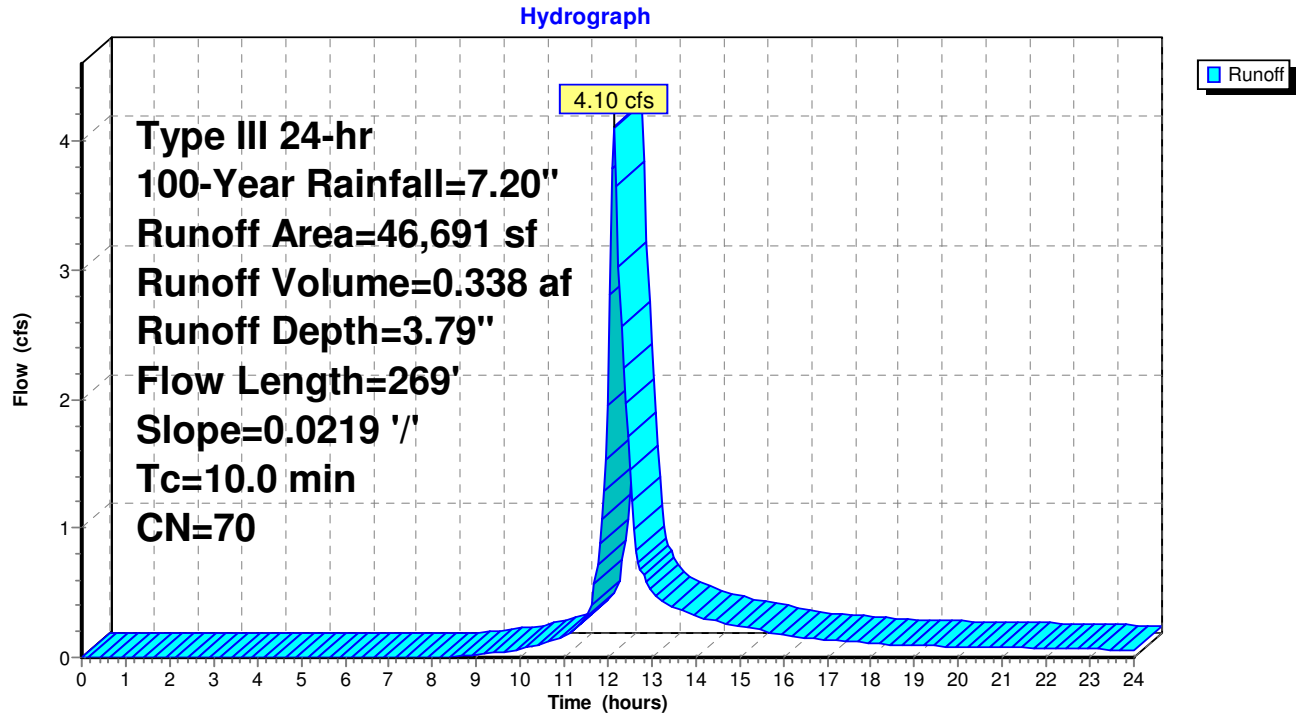
Runoff = 4.10 cfs @ 12.15 hrs, Volume= 0.338 af, Depth= 3.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	24,519	98	Paved Streets w/Curbs & Sewers HSG A
*	22,172	39	Open Space-Good (>75% grass) HSG A
	46,691	70	Weighted Average
	22,172		47.49% Pervious Area
	24,519		52.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	269	0.0219	0.45		**Lag/CN Method,**

Subcatchment S#8: S#8



Summary for Subcatchment S#9: S#9

CarlsonPlanXYPos|1756830.1751|94474.8951|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

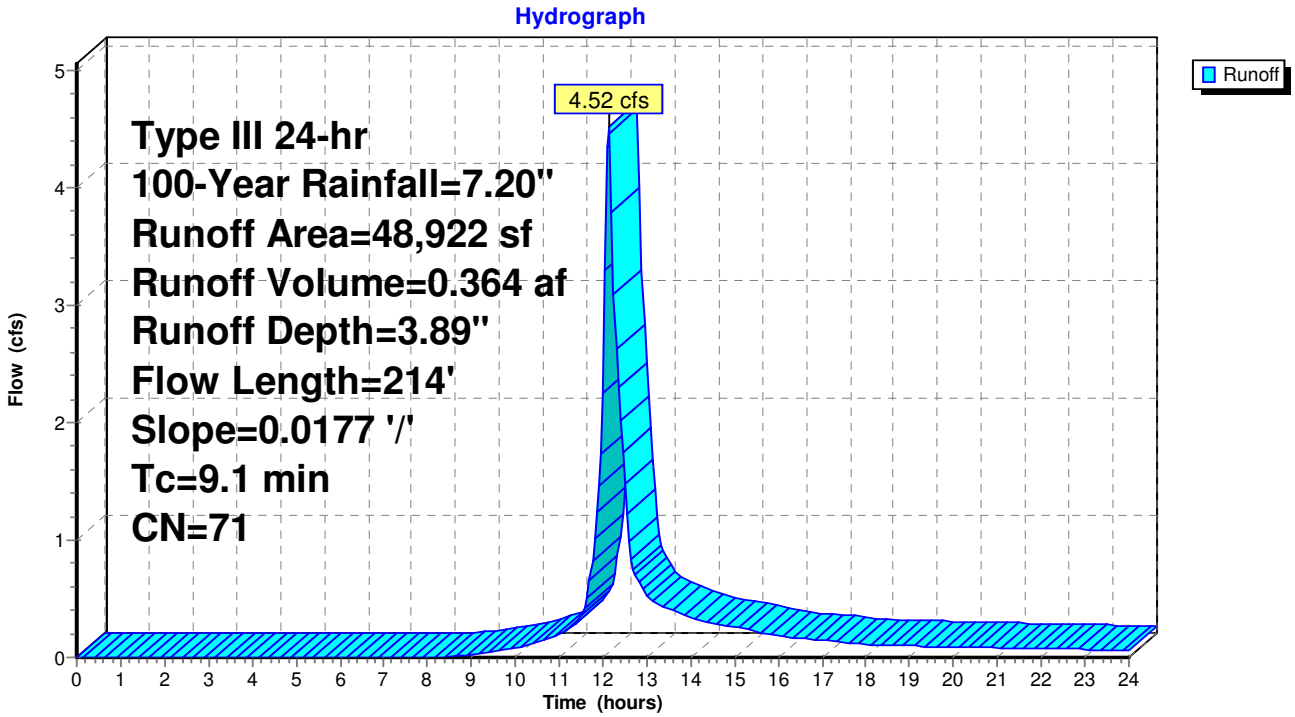
Runoff = 4.52 cfs @ 12.13 hrs, Volume= 0.364 af, Depth= 3.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	26,570	98	Paved Streets w/Curbs & Sewers HSG A
*	22,352	39	Open Space-Good (>75% grass) HSG A
	48,922	71	Weighted Average
	22,352		45.69% Pervious Area
	26,570		54.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	214	0.0177	0.39		**Lag/CN Method,**

Subcatchment S#9: S#9



Summary for Subcatchment S2: S#2

CarlsonPlanXYPos|1757390.6874|95401.9110|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

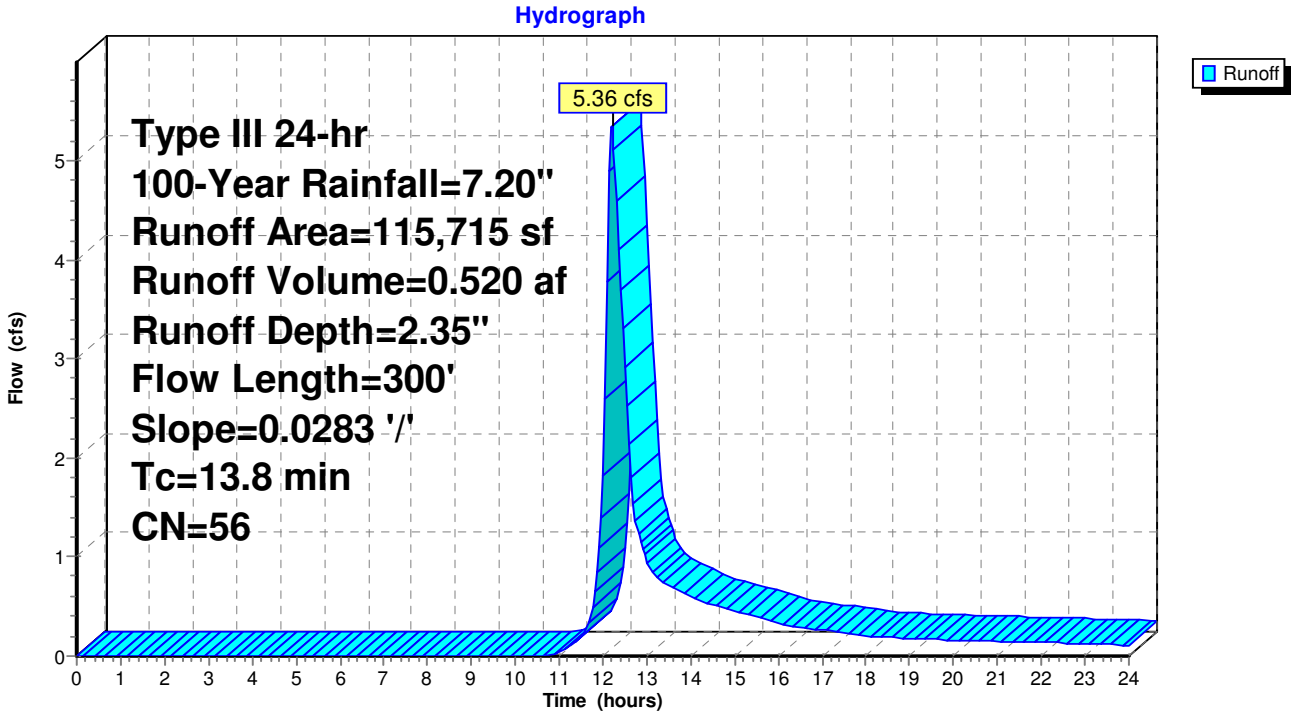
Runoff = 5.36 cfs @ 12.21 hrs, Volume= 0.520 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	10,405	98	Paved Streets w/Curbs & Sewers HSG B
*	10,400	98	Paved Lots Roofs & Driveways HSG B
*	61,613	39	Open Space-Good (>75% grass) HSG A
*	33,297	61	Open Space-Good (>75% grass) HSG B
	115,715	56	Weighted Average
	94,910		82.02% Pervious Area
	20,805		17.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	300	0.0283	0.36		**Lag/CN Method,**

Subcatchment S2: S#2



Summary for Subcatchment S4: S#4

CarlsonPlanXYPos|1757146.2718|95239.2477|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

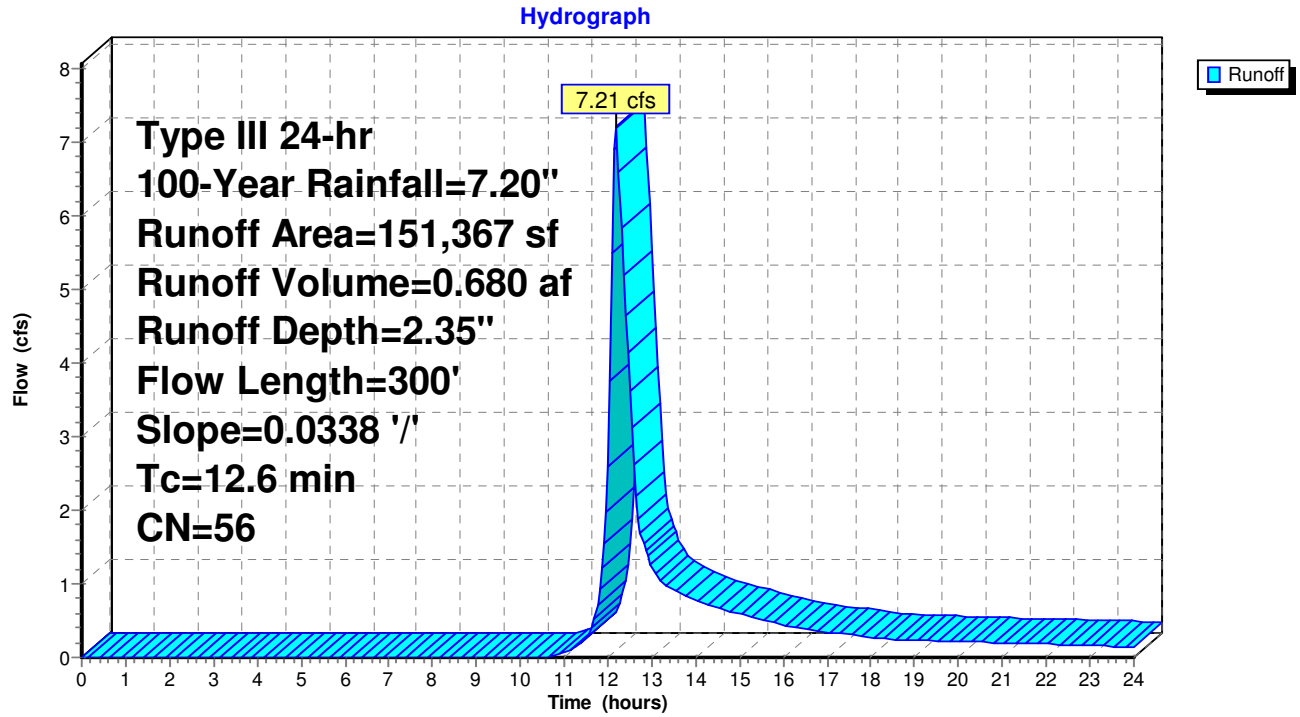
Runoff = 7.21 cfs @ 12.19 hrs, Volume= 0.680 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	43,145	98	Paved Streets w/Curbs & Sewers HSG A
*	108,222	39	Open Space-Good (>75% grass) HSG A
	151,367	56	Weighted Average
	108,222		71.50% Pervious Area
	43,145		28.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	300	0.0338	0.40		**Lag/CN Method,**

Subcatchment S4: S#4



Summary for Reach 46R: TO LP 1

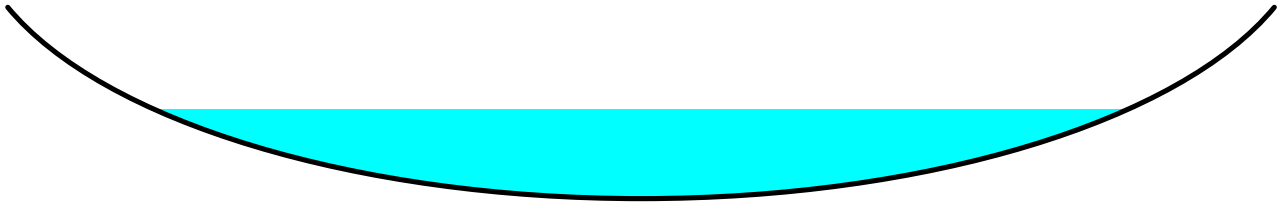
[81] Warning: Exceeded Pond 1P by 7.77' @ 27.15 hrs

Inflow Area = 1.714 ac, 34.86% Impervious, Inflow Depth = 0.62" for 100-Year event
Inflow = 3.59 cfs @ 12.35 hrs, Volume= 0.089 af
Outflow = 1.81 cfs @ 12.41 hrs, Volume= 0.089 af, Atten= 50%, Lag= 3.9 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.26 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 0.69 fps, Avg. Travel Time= 11.3 min

Peak Storage= 374 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 9.55 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 467.7' Slope= 0.0082 '/'
Inlet Invert= 40.02', Outlet Invert= 36.17'



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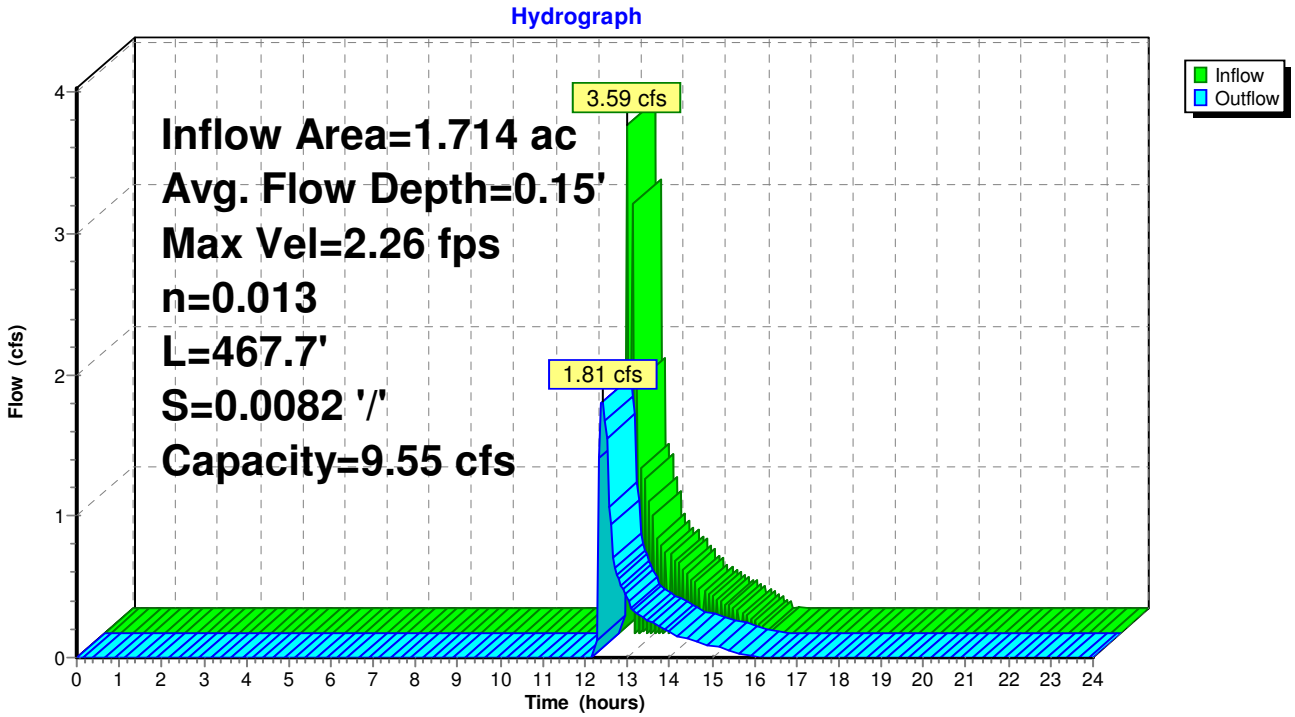
Reach 46R: TO LP 1



Summary for Reach 48R: TO LP2

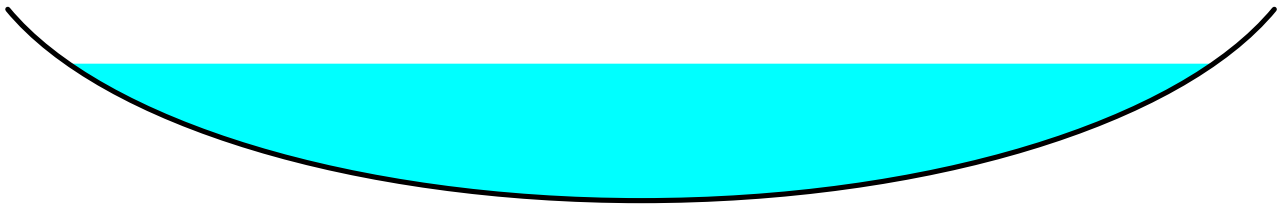
[81] Warning: Exceeded Pond 3P by 12.15' @ 28.40 hrs

Inflow Area = 4.137 ac, 23.77% Impervious, Inflow Depth = 0.62" for 100-Year event
Inflow = 6.39 cfs @ 12.50 hrs, Volume= 0.215 af
Outflow = 3.68 cfs @ 12.54 hrs, Volume= 0.215 af, Atten= 42%, Lag= 2.7 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.41 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 0.75 fps, Avg. Travel Time= 8.2 min

Peak Storage= 564 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 7.64 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 370.0' Slope= 0.0053 '/'
Inlet Invert= 33.25', Outlet Invert= 31.30'



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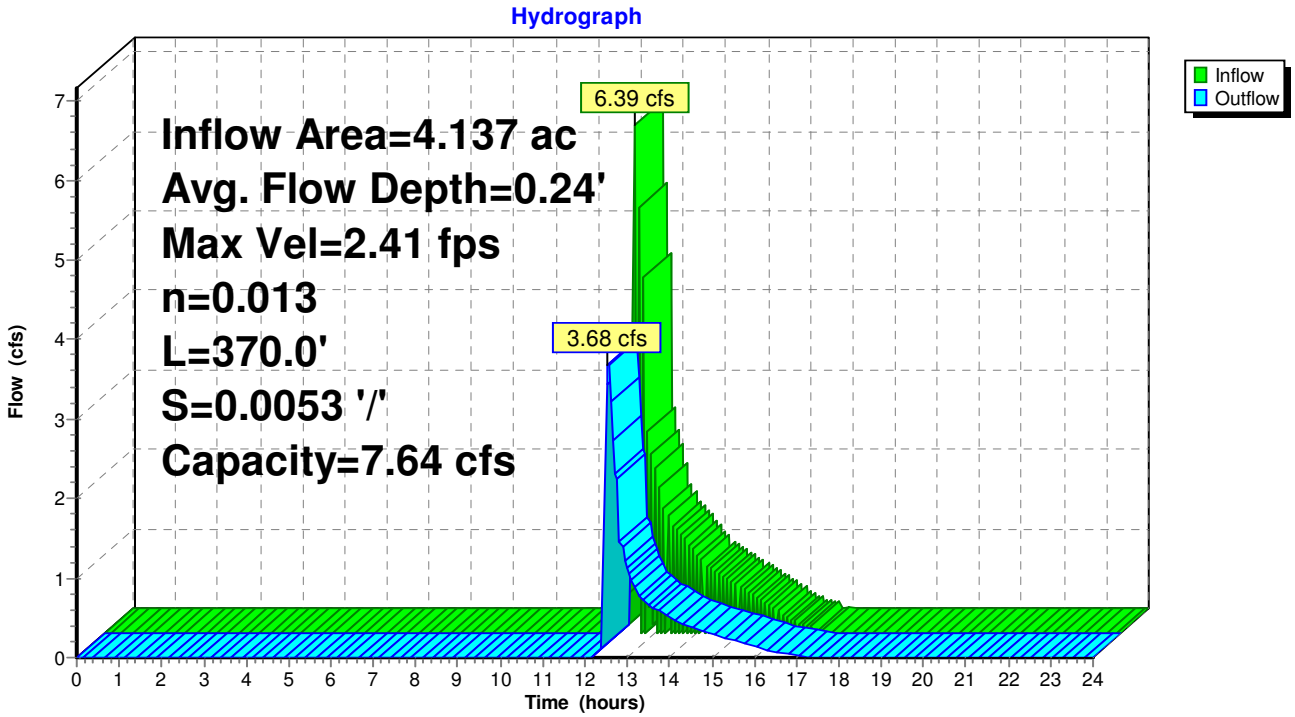


Summary for Reach 49R: TO LP 1

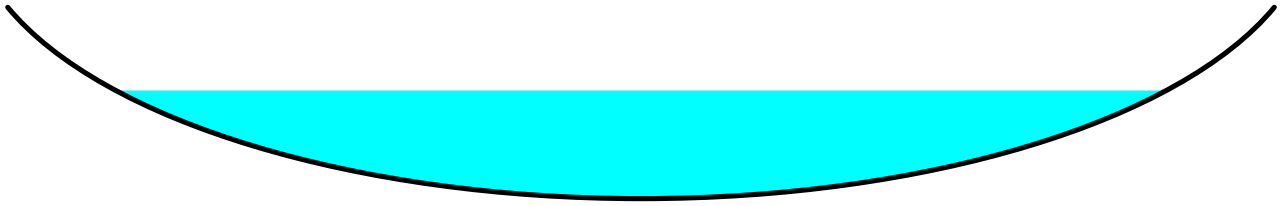
[81] Warning: Exceeded Pond 2P by 10.75' @ 0.00 hrs

Inflow Area = 2.656 ac, 17.98% Impervious, Inflow Depth = 0.55" for 100-Year event
Inflow = 5.05 cfs @ 12.50 hrs, Volume= 0.122 af
Outflow = 3.24 cfs @ 12.52 hrs, Volume= 0.122 af, Atten= 36%, Lag= 0.9 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.27 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.28 fps, Avg. Travel Time= 2.5 min

Peak Storage= 191 cf @ 12.52 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 12.84 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 190.0' Slope= 0.0149 '/'
Inlet Invert= 39.00', Outlet Invert= 36.17'



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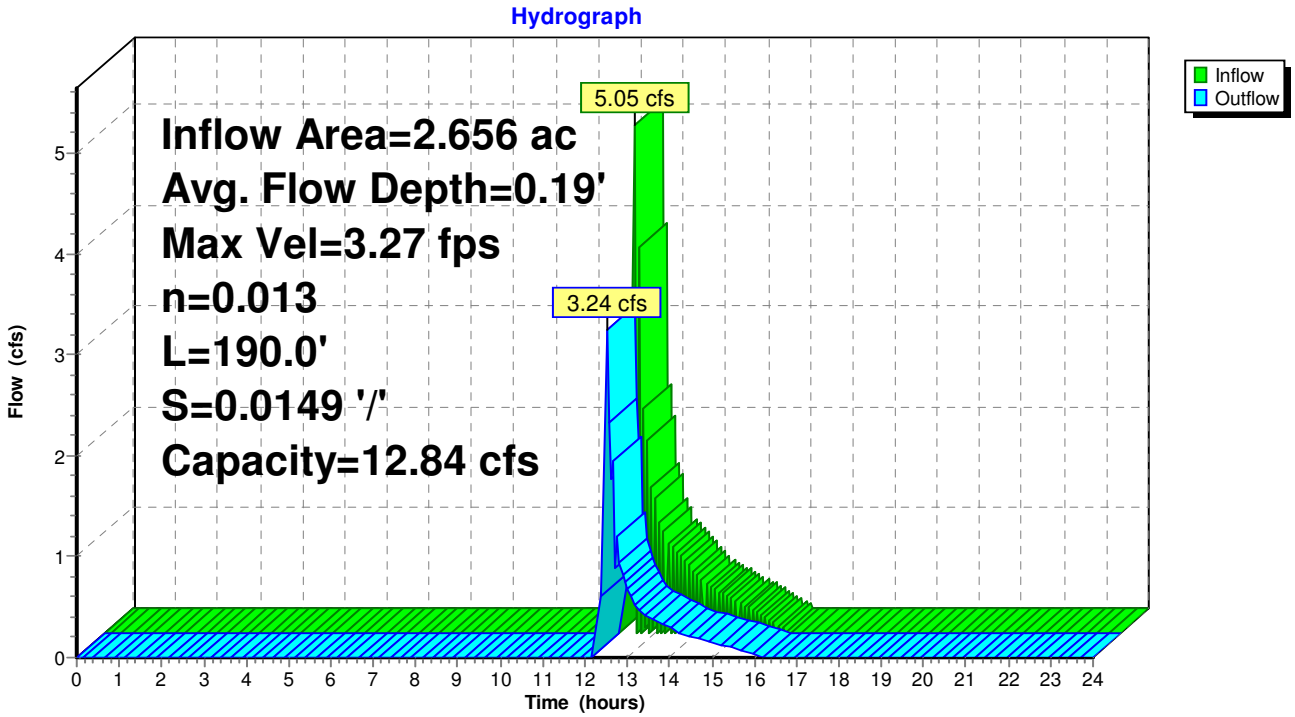


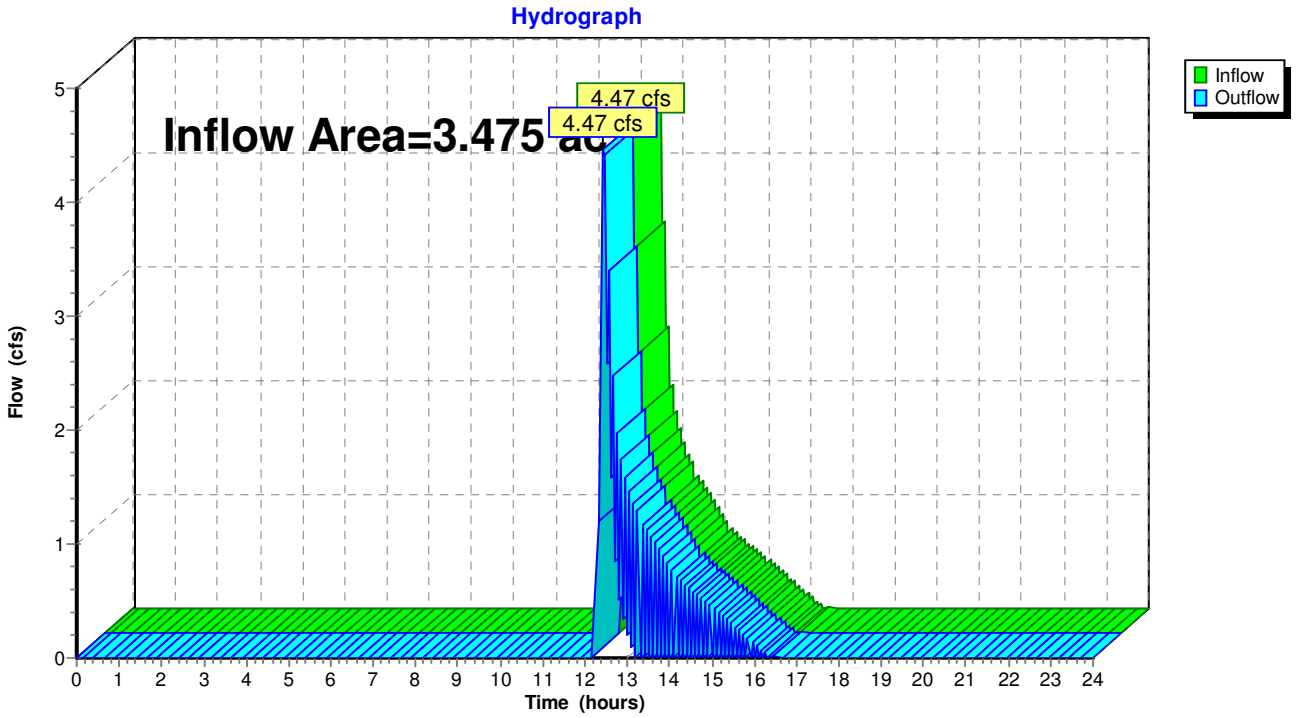
Summary for Reach 50R: (new Reach)

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.475 ac, 28.50% Impervious, Inflow Depth = 0.65" for 100-Year event
Inflow = 4.47 cfs @ 12.44 hrs, Volume= 0.189 af
Outflow = 4.47 cfs @ 12.44 hrs, Volume= 0.189 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Reach 50R: (new Reach)



Summary for Reach 51R: TO LP 1

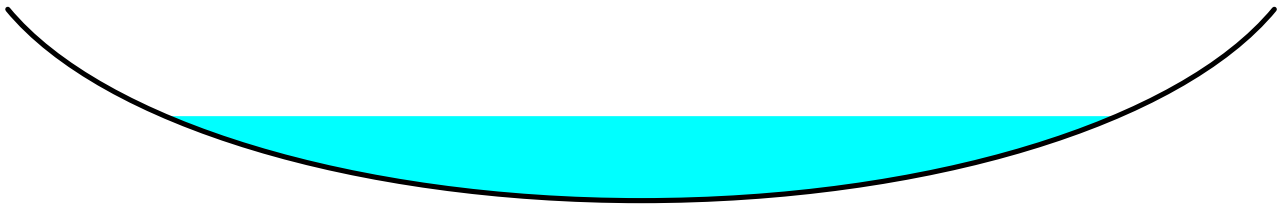
[81] Warning: Exceeded Pond 5P/6P by 12.69' @ 25.70 hrs

Inflow Area = 0.964 ac, 64.13% Impervious, Inflow Depth = 0.82" for 100-Year event
Inflow = 2.12 cfs @ 12.29 hrs, Volume= 0.066 af
Outflow = 1.69 cfs @ 12.34 hrs, Volume= 0.066 af, Atten= 20%, Lag= 3.5 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.32 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 0.67 fps, Avg. Travel Time= 10.7 min

Peak Storage= 315 cf @ 12.34 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 10.20 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 431.0' Slope= 0.0094 '/'
Inlet Invert= 40.22', Outlet Invert= 36.17'



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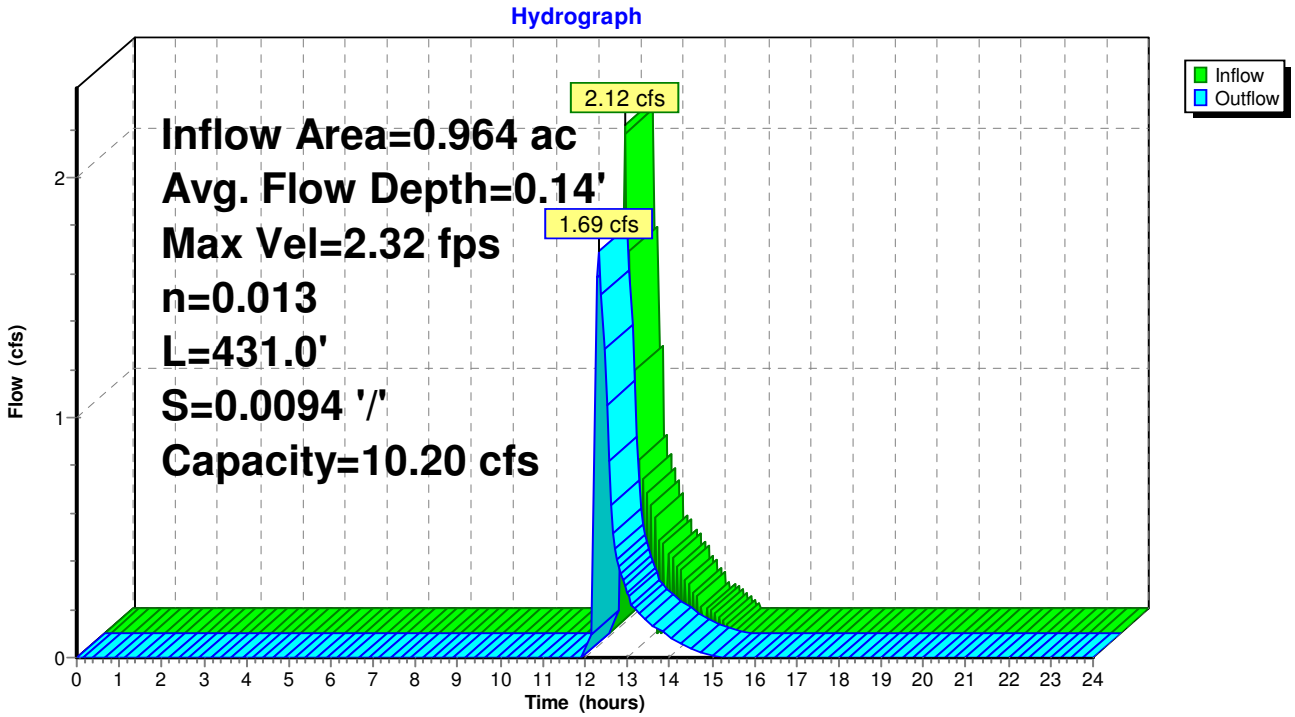


Summary for Reach 52R: TO LP2

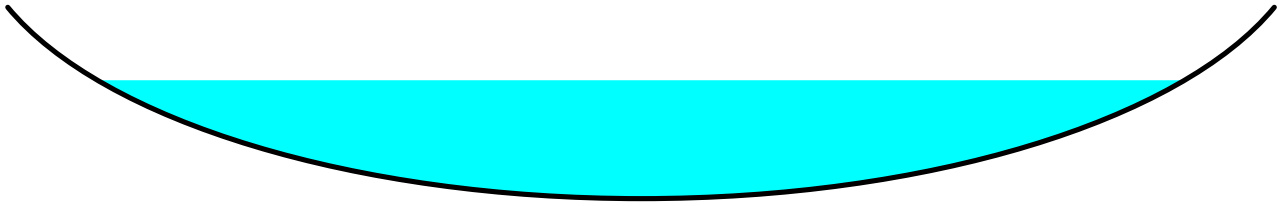
[81] Warning: Exceeded Pond 7P by 10.28' @ 25.65 hrs

Inflow Area = 1.743 ac, 62.25% Impervious, Inflow Depth = 0.76" for 100-Year event
Inflow = 7.12 cfs @ 12.40 hrs, Volume= 0.110 af
Outflow = 2.96 cfs @ 12.46 hrs, Volume= 0.110 af, Atten= 58%, Lag= 3.5 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.43 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 0.55 fps, Avg. Travel Time= 17.9 min

Peak Storage= 720 cf @ 12.46 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 8.53 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 592.0' Slope= 0.0066 '/'
Inlet Invert= 35.19', Outlet Invert= 31.30'



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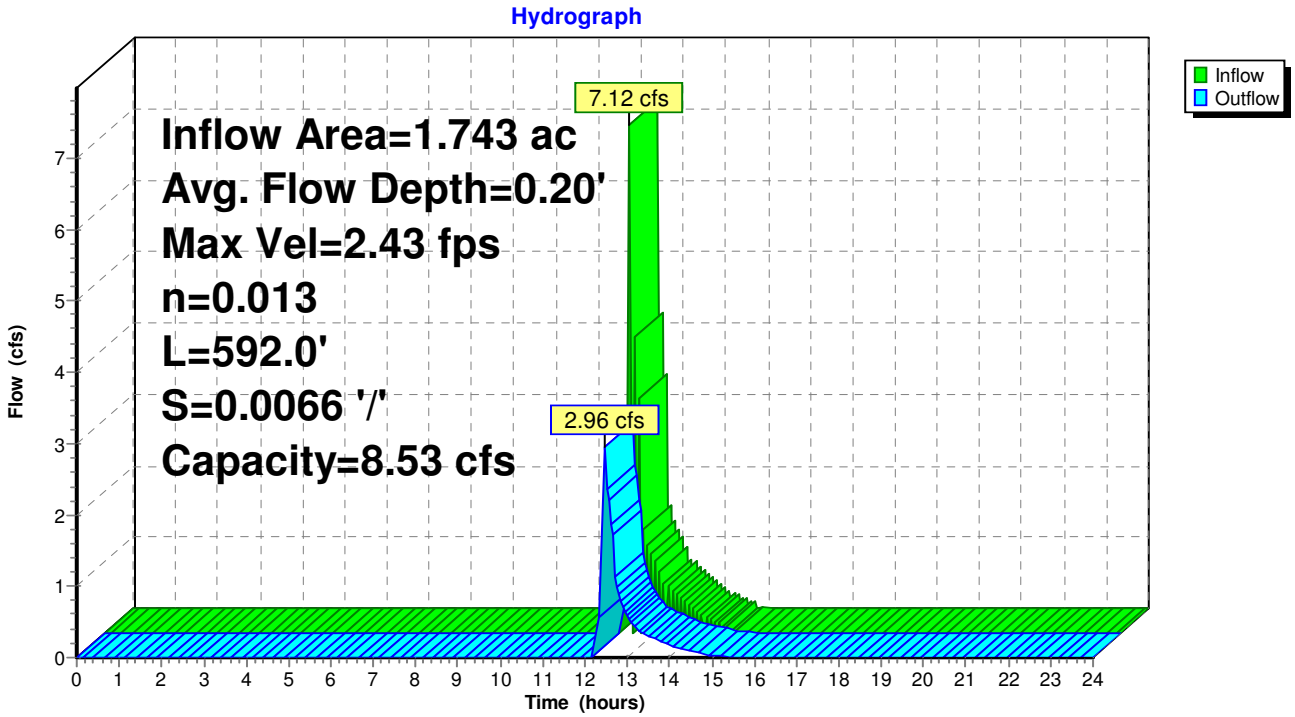


Summary for Reach 53R: TO LP2

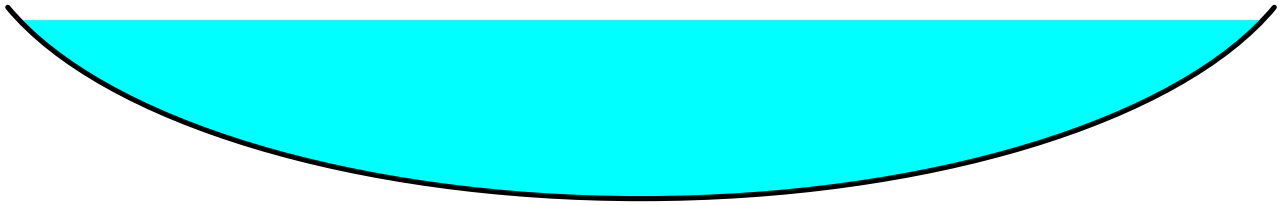
[55] Hint: Peak inflow is 132% of Manning's capacity
[81] Warning: Exceeded Pond 8P/9P by 9.39' @ 26.35 hrs

Inflow Area = 2.195 ac, 53.43% Impervious, Inflow Depth = 0.70" for 100-Year event
Inflow = 6.87 cfs @ 12.40 hrs, Volume= 0.128 af
Outflow = 4.11 cfs @ 12.42 hrs, Volume= 0.128 af, Atten= 40%, Lag= 1.3 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.87 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.52 fps, Avg. Travel Time= 5.9 min

Peak Storage= 405 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 5.20 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 184.0' Slope= 0.0024 '/'
Inlet Invert= 31.75', Outlet Invert= 31.30'



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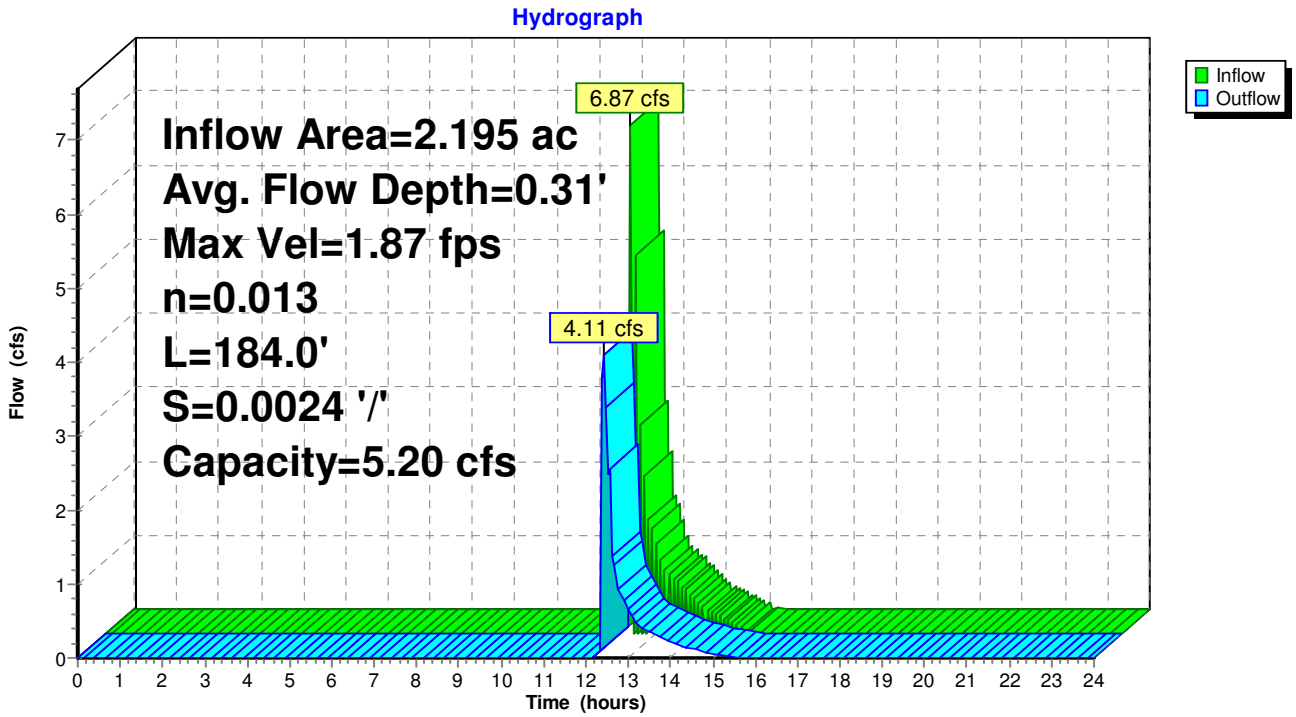


Summary for Reach 54R: TO LP2

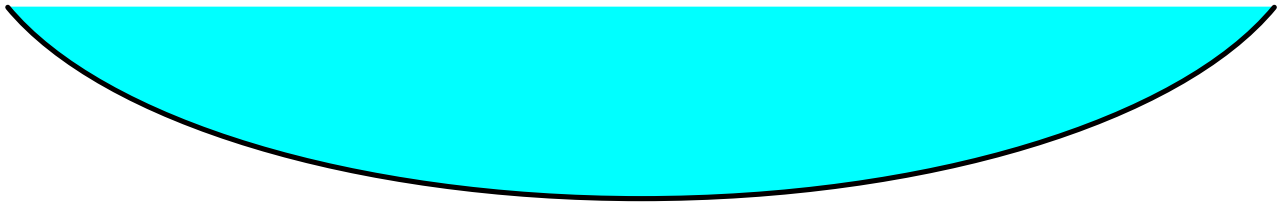
[91] Warning: Storage range exceeded by 0.04'
[55] Hint: Peak inflow is 237% of Manning's capacity
[81] Warning: Exceeded Pond 15P by 11.11' @ 28.15 hrs

Inflow Area = 5.029 ac, 28.62% Impervious, Inflow Depth = 0.66" for 100-Year event
Inflow = 6.20 cfs @ 12.91 hrs, Volume= 0.276 af
Outflow = 3.30 cfs @ 13.06 hrs, Volume= 0.276 af, Atten= 47%, Lag= 9.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.10 fps, Min. Travel Time= 5.6 min
Avg. Velocity = 0.23 fps, Avg. Travel Time= 27.0 min

Peak Storage= 1,112 cf @ 13.06 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 2.62 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 372.0' Slope= 0.0006 '/'
Inlet Invert= 31.53', Outlet Invert= 31.30'



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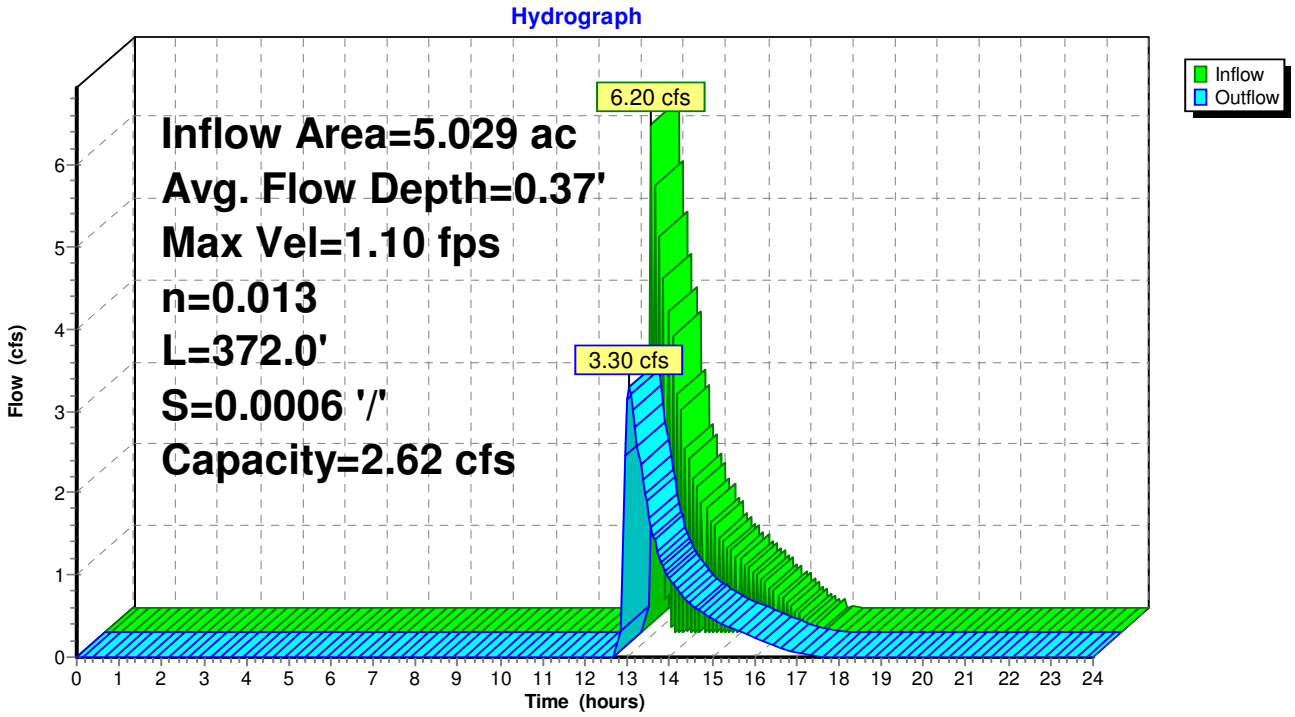
Reach 54R: TO LP2



Summary for Reach 55R: TO LP2

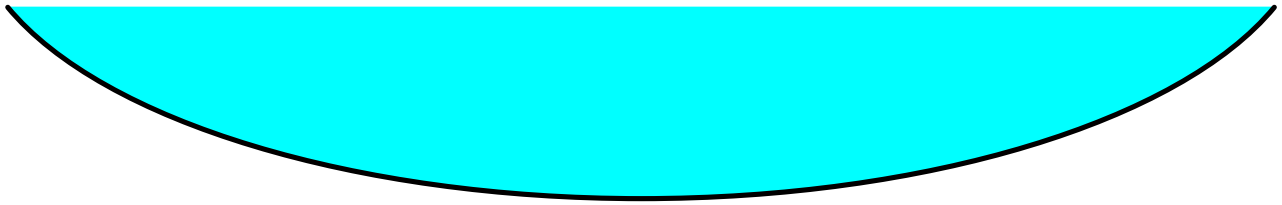
[55] Hint: Peak inflow is 101% of Manning's capacity
[81] Warning: Exceeded Pond 10P-14P by 11.07' @ 0.00 hrs

Inflow Area = 3.994 ac, 36.47% Impervious, Inflow Depth = 0.68" for 100-Year event
Inflow = 10.66 cfs @ 12.45 hrs, Volume= 0.228 af
Outflow = 10.64 cfs @ 12.45 hrs, Volume= 0.228 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.17 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 0.0 min

Peak Storage= 3 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 10.52 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 1.0' Slope= 0.0100 '/'
Inlet Invert= 31.30', Outlet Invert= 31.29'



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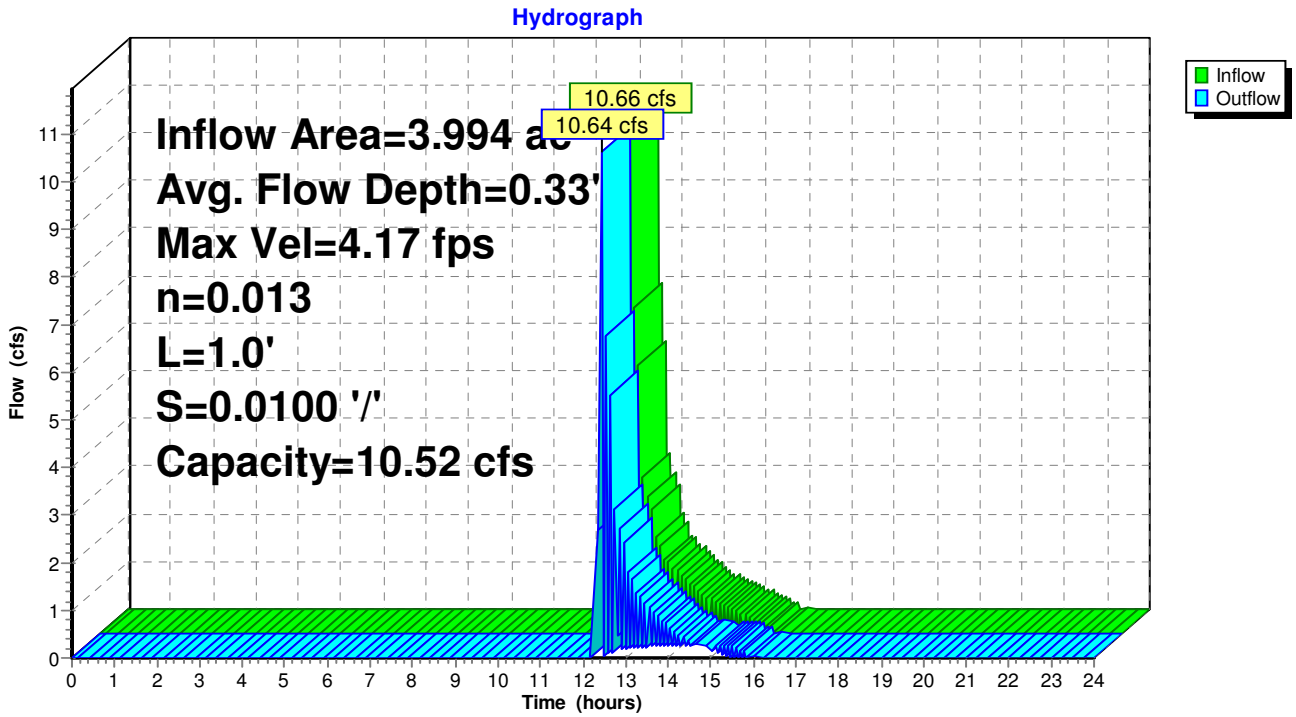
Reach 55R: TO LP2



Summary for Pond 1P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.27'
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=31)

Inflow Area = 1.714 ac, 34.86% Impervious, Inflow Depth = 2.75" for 100-Year event
Inflow = 5.28 cfs @ 12.10 hrs, Volume= 0.392 af
Outflow = 3.84 cfs @ 12.35 hrs, Volume= 0.392 af, Atten= 27%, Lag= 15.0 min
Discarded = 0.24 cfs @ 11.55 hrs, Volume= 0.304 af
Primary = 3.59 cfs @ 12.35 hrs, Volume= 0.089 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 39.27' @ 12.35 hrs Surf.Area= 0.029 ac Storage= 0.120 af
Flood Elev= 42.00' Surf.Area= 0.029 ac Storage= 0.120 af

Plug-Flow detention time= 187.5 min calculated for 0.392 af (100% of inflow)
Center-of-Mass det. time= 187.5 min (1,039.4 - 851.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	32.25'	0.051 af	**46.67'W x 27.24'L x 6.75'H Field A** 0.197 af Overall - 0.069 af Embedded = 0.128 af x 40.0% Voids
#2A	33.00'	0.069 af	**ADS_StormTech MC-4500 +Cap** x 25 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf
		0.120 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	32.25'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	39.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.24 cfs @ 11.55 hrs HW=32.36' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=3.42 cfs @ 12.35 hrs HW=39.26' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 3.42 cfs @ 1.66 fps)

Pond 1P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

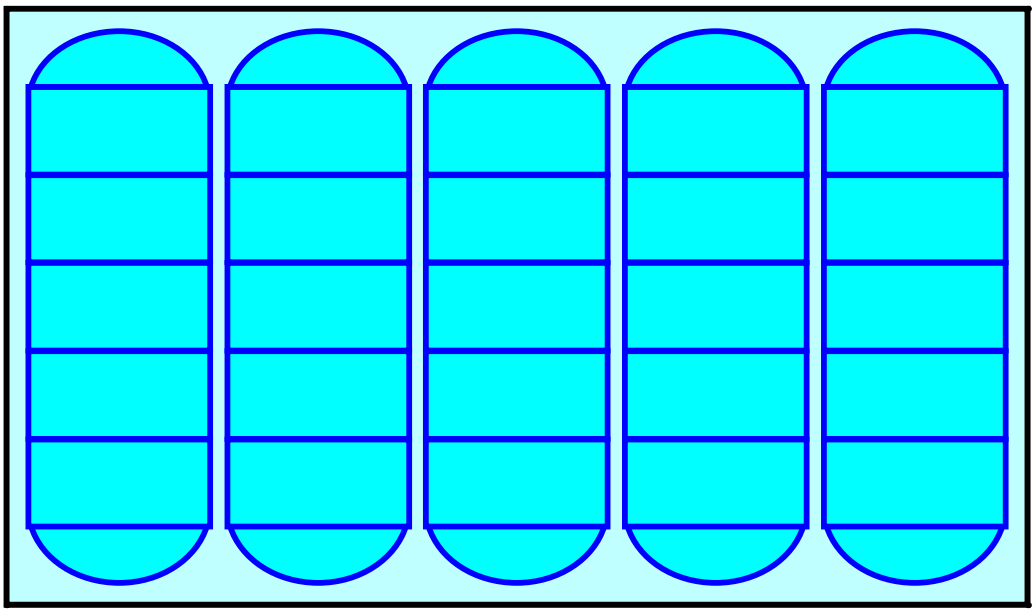
5 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 25.24' Row Length +12.0" End Stone x 2 = 27.24' Base Length
5 Rows x 100.0" Wide + 9.0" Spacing x 4 + 12.0" Side Stone x 2 = 46.67' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

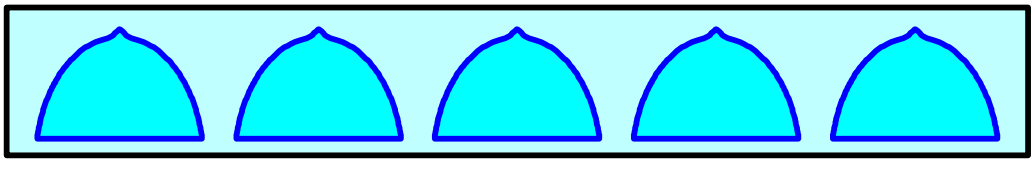
25 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 5 Rows = 3,019.3 cf Chamber Storage

8,581.1 cf Field - 3,019.3 cf Chambers = 5,561.9 cf Stone x 40.0% Voids = 2,224.7 cf Stone Storage

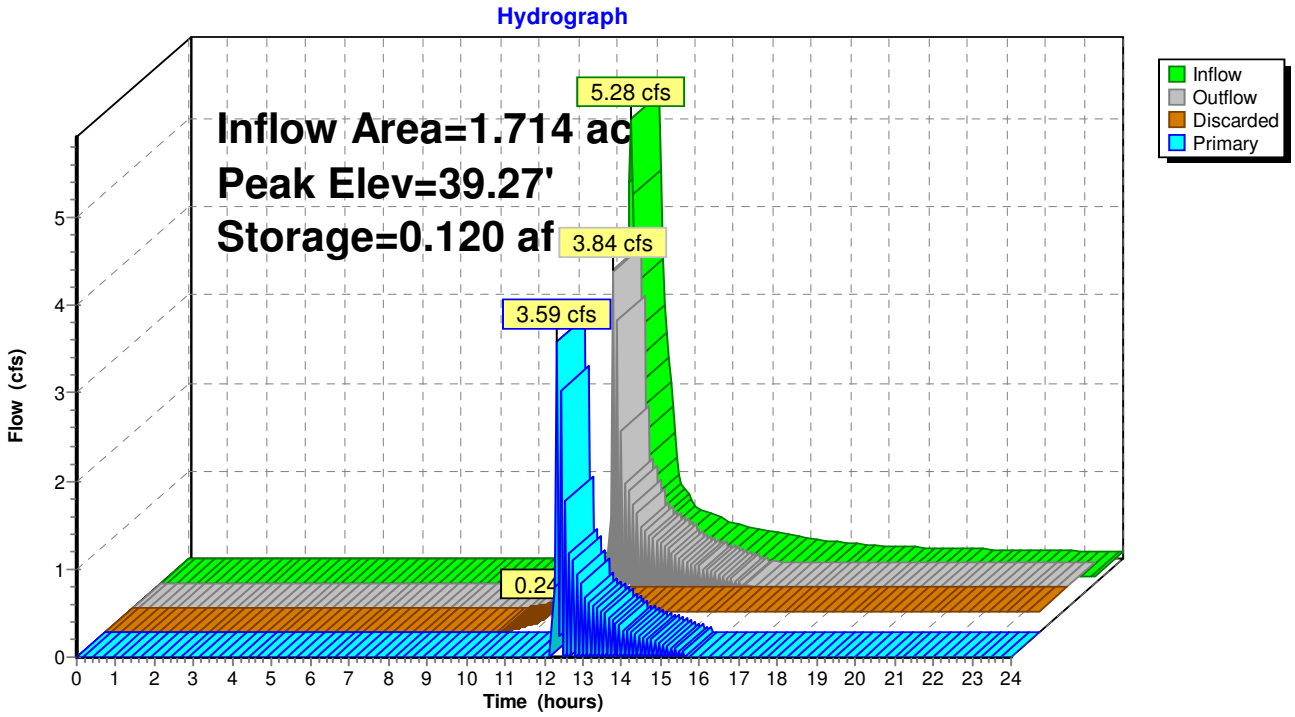
Chamber Storage + Stone Storage = 5,244.0 cf = 0.120 af
Overall Storage Efficiency = 61.1%

25 Chambers
317.8 cy Field
206.0 cy Stone





Pond 1P: INFILTRATION 1



Summary for Pond 2P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.33'
[58] Hint: Peaked 0.33' above defined flood level
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=33)

Inflow Area = 2.656 ac, 17.98% Impervious, Inflow Depth = 2.35" for 100-Year event
Inflow = 5.36 cfs @ 12.21 hrs, Volume= 0.520 af
Outflow = 5.36 cfs @ 12.50 hrs, Volume= 0.520 af, Atten= 0%, Lag= 17.5 min
Discarded = 0.31 cfs @ 11.70 hrs, Volume= 0.398 af
Primary = 5.05 cfs @ 12.50 hrs, Volume= 0.122 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 35.33' @ 12.50 hrs Surf.Area= 0.037 ac Storage= 0.158 af
Flood Elev= 35.00' Surf.Area= 0.037 ac Storage= 0.158 af

Plug-Flow detention time= 196.0 min calculated for 0.520 af (100% of inflow)
Center-of-Mass det. time= 195.9 min (1,064.8 - 868.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	28.25'	0.063 af	**37.58'W x 43.34'L x 6.75'H Field A** 0.252 af Overall - 0.095 af Embedded = 0.158 af x 40.0% Voids
#2A	29.00'	0.095 af	**ADS_StormTech MC-4500 +Cap** x 36 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf
		0.158 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	28.25'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	35.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.31 cfs @ 11.70 hrs HW=28.32' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.31 cfs)

Primary OutFlow Max=5.04 cfs @ 12.50 hrs HW=35.33' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 5.04 cfs @ 1.89 fps)

Pond 2P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

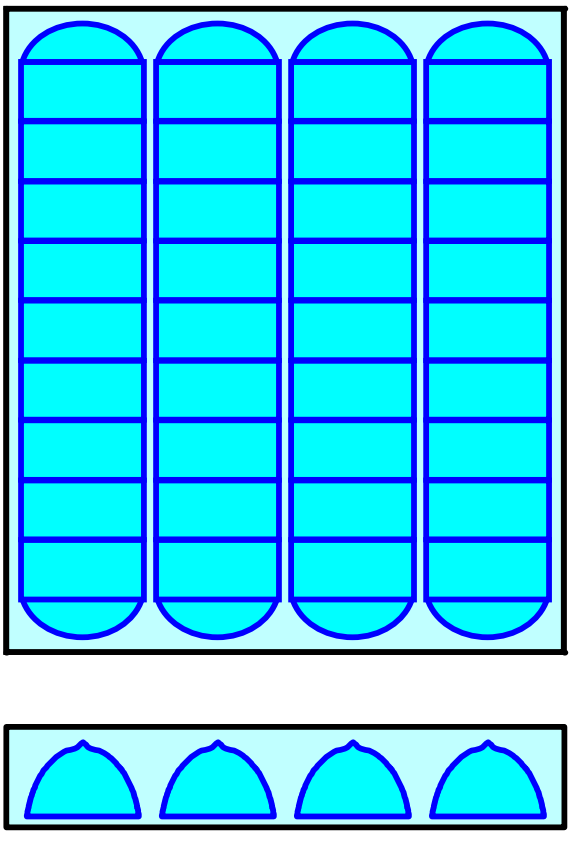
9 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 41.34' Row Length +12.0" End Stone x 2 = 43.34' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

36 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 4 Rows = 4,119.3 cf Chamber Storage

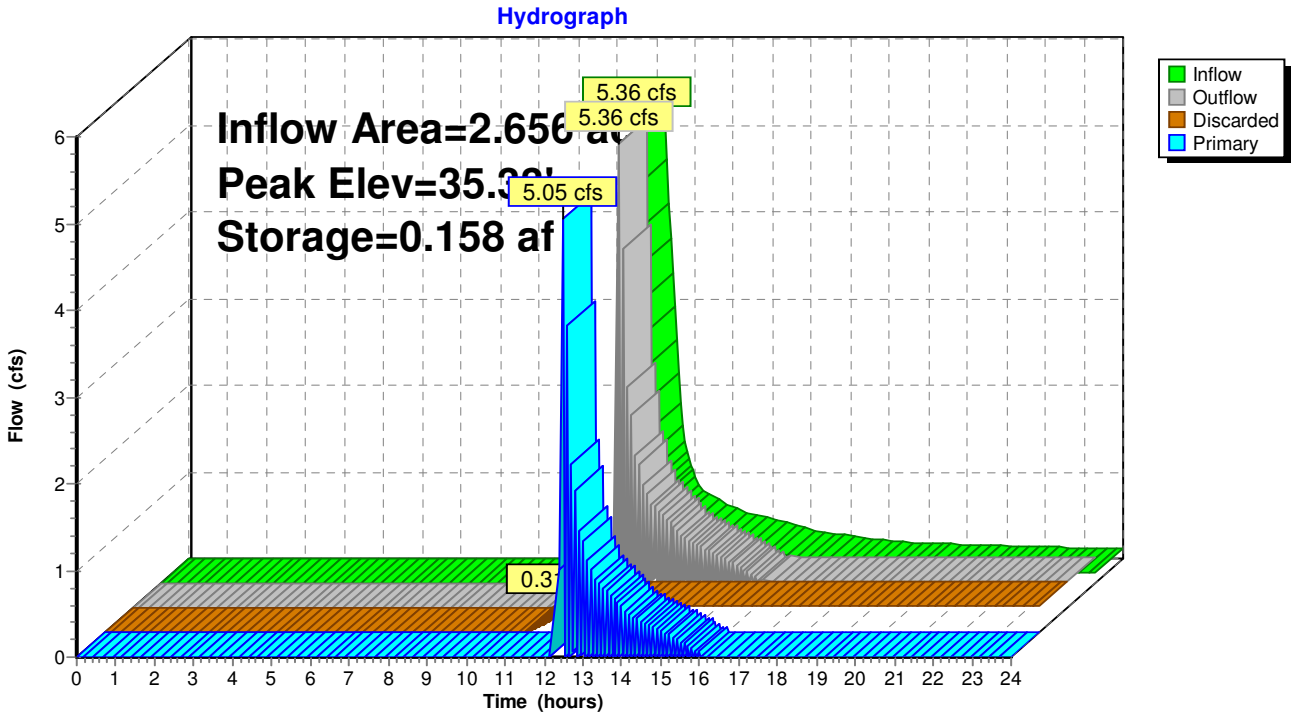
10,995.2 cf Field - 4,119.3 cf Chambers = 6,876.0 cf Stone x 40.0% Voids = 2,750.4 cf Stone Storage

Chamber Storage + Stone Storage = 6,869.6 cf = 0.158 af
Overall Storage Efficiency = 62.5%

36 Chambers
407.2 cy Field
254.7 cy Stone



Pond 2P: INFILTRATION 1



Summary for Pond 3P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.39'
[58] Hint: Peaked 0.39' above defined flood level
[88] Warning: Qout>Qin may require smaller dt or Finer Routing
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=42)

Inflow Area = 4.137 ac, 23.77% Impervious, Inflow Depth = 2.06" for 100-Year event
Inflow = 6.71 cfs @ 12.24 hrs, Volume= 0.710 af
Outflow = 6.76 cfs @ 12.50 hrs, Volume= 0.710 af, Atten= 0%, Lag= 15.2 min
Discarded = 0.37 cfs @ 11.80 hrs, Volume= 0.495 af
Primary = 6.39 cfs @ 12.50 hrs, Volume= 0.215 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 28.24' @ 12.50 hrs Surf.Area= 0.044 ac Storage= 0.188 af
Flood Elev= 27.85' Surf.Area= 0.044 ac Storage= 0.188 af

Plug-Flow detention time= 188.6 min calculated for 0.709 af (100% of inflow)
Center-of-Mass det. time= 188.7 min (1,067.4 - 878.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	21.10'	0.074 af	**37.58'W x 51.39'L x 6.75'H Field A** 0.299 af Overall - 0.114 af Embedded = 0.185 af x 40.0% Voids
#2A	21.85'	0.114 af	**ADS_StormTech MC-4500 +Cap** x 44 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf
		0.188 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.10'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	27.85'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.37 cfs @ 11.80 hrs HW=21.20' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.37 cfs)

Primary OutFlow Max=6.10 cfs @ 12.50 hrs HW=28.23' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 6.10 cfs @ 2.01 fps)

Pond 3P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

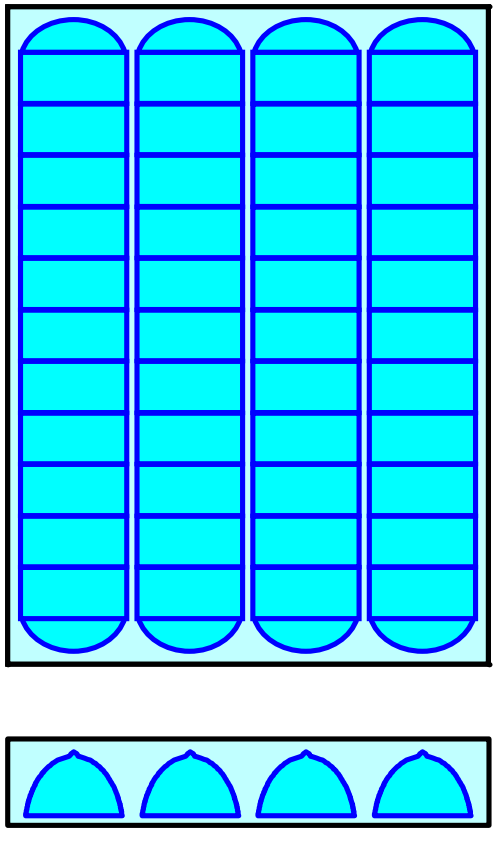
11 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 49.39' Row Length +12.0" End Stone x 2 = 51.39' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

44 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 4 Rows = 4,971.2 cf Chamber Storage

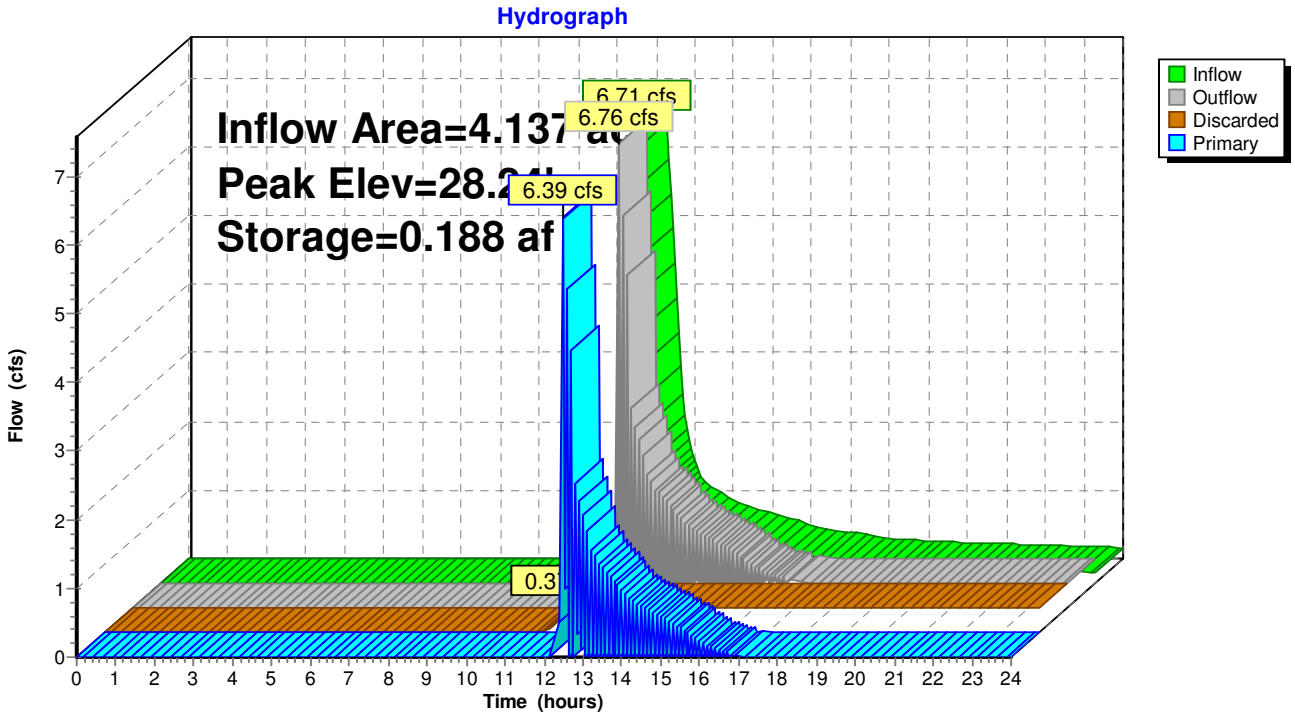
13,037.4 cf Field - 4,971.2 cf Chambers = 8,066.2 cf Stone x 40.0% Voids = 3,226.5 cf Stone Storage

Chamber Storage + Stone Storage = 8,197.7 cf = 0.188 af
Overall Storage Efficiency = 62.9%

44 Chambers
482.9 cy Field
298.7 cy Stone



Pond 3P: INFILTRATION 1



Summary for Pond 4P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.31'
[58] Hint: Peaked 0.31' above defined flood level
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=37)

Inflow Area = 3.475 ac, 28.50% Impervious, Inflow Depth = 2.35" for 100-Year event
Inflow = 7.21 cfs @ 12.19 hrs, Volume= 0.680 af
Outflow = 4.85 cfs @ 12.44 hrs, Volume= 0.680 af, Atten= 33%, Lag= 14.9 min
Discarded = 0.38 cfs @ 11.70 hrs, Volume= 0.491 af
Primary = 4.47 cfs @ 12.44 hrs, Volume= 0.189 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 34.96' @ 12.44 hrs Surf.Area= 0.045 ac Storage= 0.189 af
Flood Elev= 34.65' Surf.Area= 0.045 ac Storage= 0.189 af

Plug-Flow detention time= 187.2 min calculated for 0.680 af (100% of inflow)
Center-of-Mass det. time= 187.2 min (1,055.0 - 867.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	27.90'	0.077 af	**55.75'W x 35.29'L x 6.75'H Field A** 0.305 af Overall - 0.113 af Embedded = 0.192 af x 40.0% Voids
#2A	28.65'	0.113 af	**ADS_StormTech MC-4500 +Cap** x 42 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf
		0.189 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	27.90'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	34.65'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.38 cfs @ 11.70 hrs HW=27.99' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.38 cfs)

Primary OutFlow Max=4.24 cfs @ 12.44 hrs HW=34.95' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 4.24 cfs @ 1.78 fps)

Pond 4P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

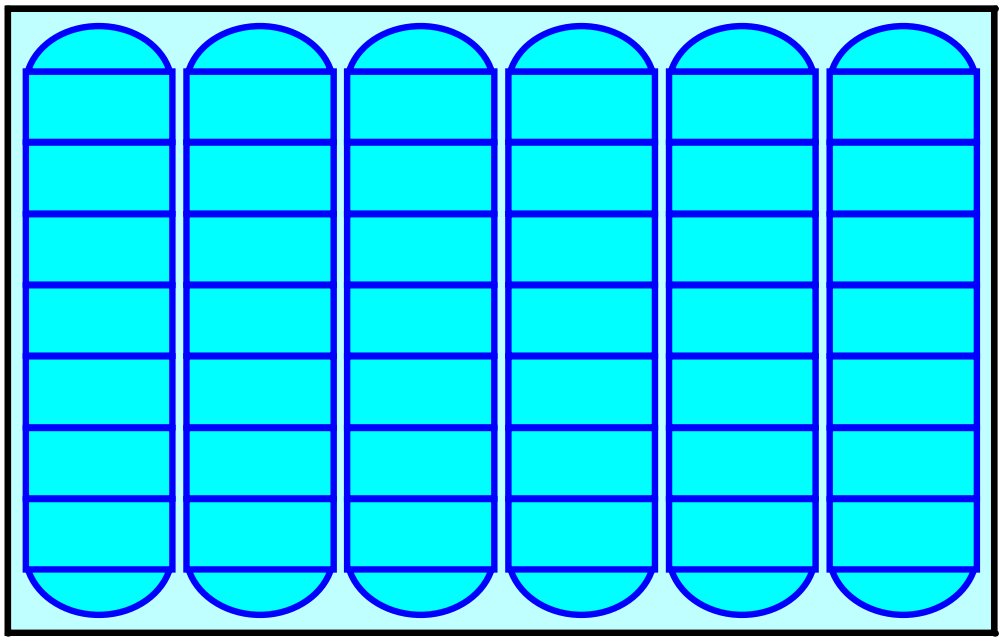
7 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 33.29' Row Length +12.0" End Stone x 2 = 35.29' Base Length
6 Rows x 100.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 55.75' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

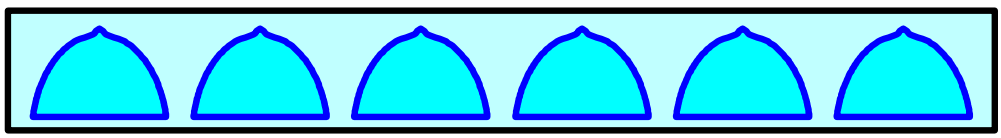
42 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 6 Rows = 4,901.0 cf Chamber Storage

13,280.7 cf Field - 4,901.0 cf Chambers = 8,379.7 cf Stone x 40.0% Voids = 3,351.9 cf Stone Storage

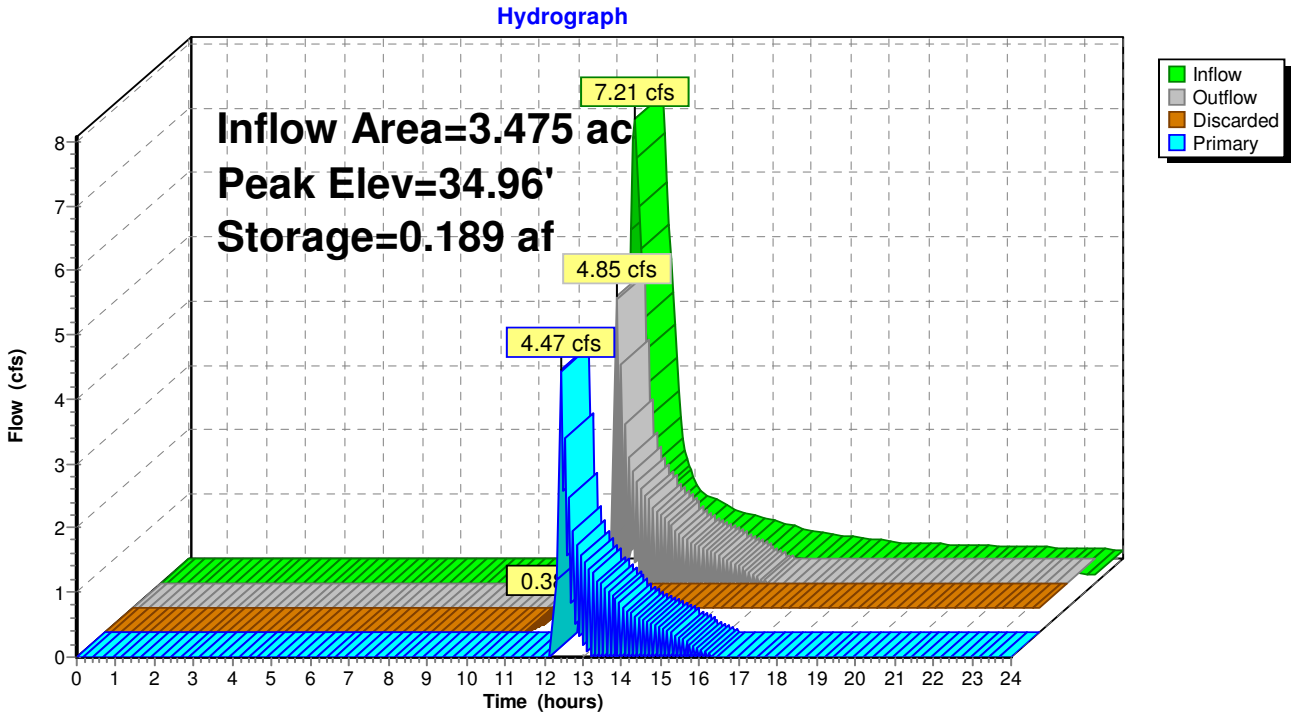
Chamber Storage + Stone Storage = 8,252.9 cf = 0.189 af
Overall Storage Efficiency = 62.1%

42 Chambers
491.9 cy Field
310.4 cy Stone





Pond 4P: INFILTRATION 1



Summary for Pond 5P/6P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.18'
[58] Hint: Peaked 0.18' above defined flood level
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=24)

Inflow Area = 0.964 ac, 64.13% Impervious, Inflow Depth = 4.55" for 100-Year event
Inflow = 5.11 cfs @ 12.08 hrs, Volume= 0.366 af
Outflow = 2.35 cfs @ 12.29 hrs, Volume= 0.366 af, Atten= 54%, Lag= 12.7 min
Discarded = 0.24 cfs @ 11.05 hrs, Volume= 0.300 af
Primary = 2.12 cfs @ 12.29 hrs, Volume= 0.066 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 34.46' @ 12.30 hrs Surf.Area= 0.028 ac Storage= 0.119 af
Flood Elev= 34.28' Surf.Area= 0.028 ac Storage= 0.119 af

Plug-Flow detention time= 175.9 min calculated for 0.366 af (100% of inflow)
Center-of-Mass det. time= 175.8 min (987.8 - 812.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	27.53'	0.048 af	**28.50'W x 43.34'L x 6.75'H Field A** 0.191 af Overall - 0.071 af Embedded = 0.120 af x 40.0% Voids
#2A	28.28'	0.071 af	**ADS_StormTech MC-4500 +Cap** x 27 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
		0.119 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	27.53'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	34.28'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.24 cfs @ 11.05 hrs HW=27.60' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=2.00 cfs @ 12.29 hrs HW=34.46' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 2.00 cfs @ 1.39 fps)

Pond 5P/6P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

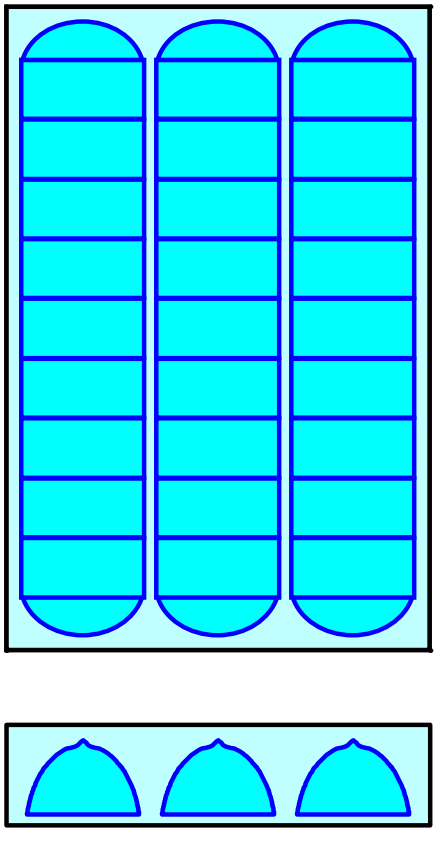
9 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 41.34' Row Length +12.0" End Stone x 2 = 43.34' Base Length
3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

27 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 3,089.4 cf Chamber Storage

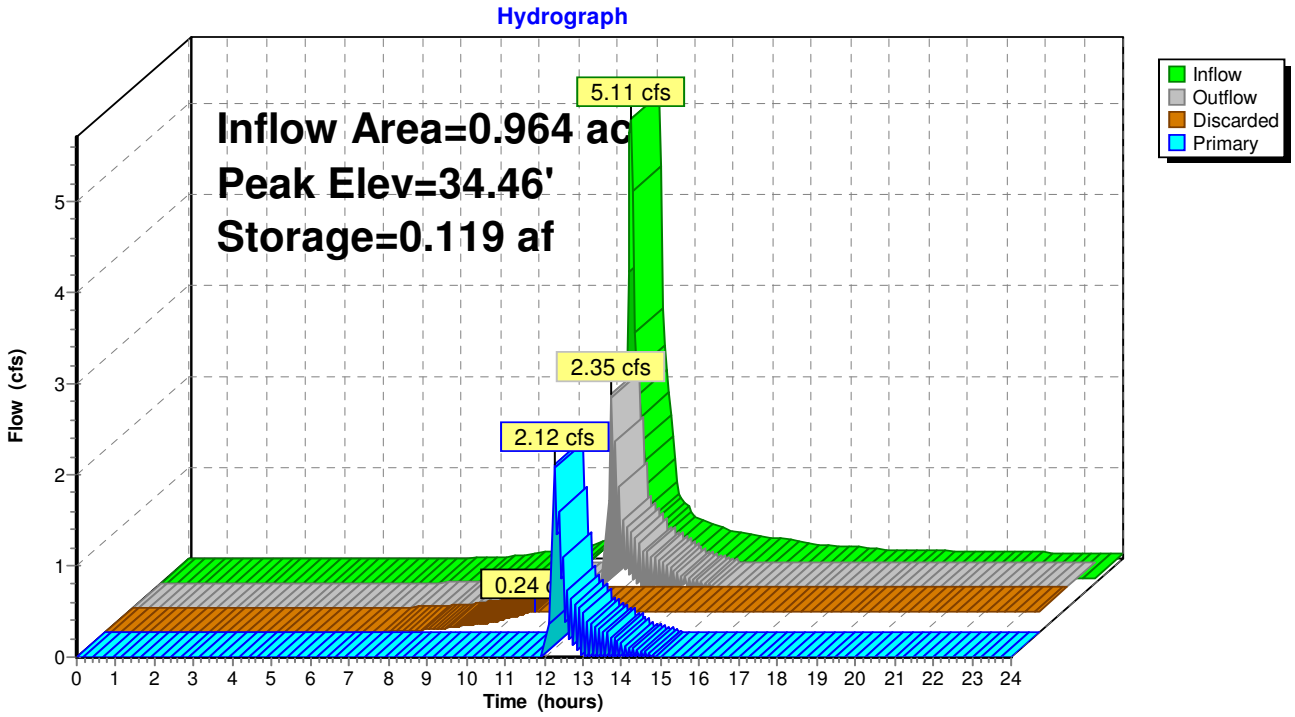
8,337.9 cf Field - 3,089.4 cf Chambers = 5,248.4 cf Stone x 40.0% Voids = 2,099.4 cf Stone Storage

Chamber Storage + Stone Storage = 5,188.8 cf = 0.119 af
Overall Storage Efficiency = 62.2%

27 Chambers
308.8 cy Field
194.4 cy Stone



Pond 5P/6P: INFILTRATION 1



Summary for Pond 7P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.42'
[58] Hint: Peaked 0.42' above defined flood level
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=23)

Inflow Area = 1.743 ac, 62.25% Impervious, Inflow Depth = 4.44" for 100-Year event
Inflow = 7.65 cfs @ 12.15 hrs, Volume= 0.644 af
Outflow = 7.55 cfs @ 12.40 hrs, Volume= 0.644 af, Atten= 1%, Lag= 14.9 min
Discarded = 0.42 cfs @ 11.20 hrs, Volume= 0.534 af
Primary = 7.12 cfs @ 12.40 hrs, Volume= 0.110 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 32.08' @ 12.40 hrs Surf.Area= 0.051 ac Storage= 0.215 af
Flood Elev= 31.66' Surf.Area= 0.051 ac Storage= 0.215 af

Plug-Flow detention time= 181.2 min calculated for 0.644 af (100% of inflow)
Center-of-Mass det. time= 181.2 min (1,001.9 - 820.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	24.91'	0.085 af	**46.67'W x 47.37'L x 6.75'H Field A** 0.343 af Overall - 0.130 af Embedded = 0.212 af x 40.0% Voids
#2A	25.66'	0.130 af	**ADS_StormTech MC-4500 +Cap** x 50 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf
		0.215 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.91'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	31.66'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.42 cfs @ 11.20 hrs HW=24.98' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.42 cfs)

Primary OutFlow Max=7.11 cfs @ 12.40 hrs HW=32.08' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 7.11 cfs @ 2.12 fps)

Pond 7P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

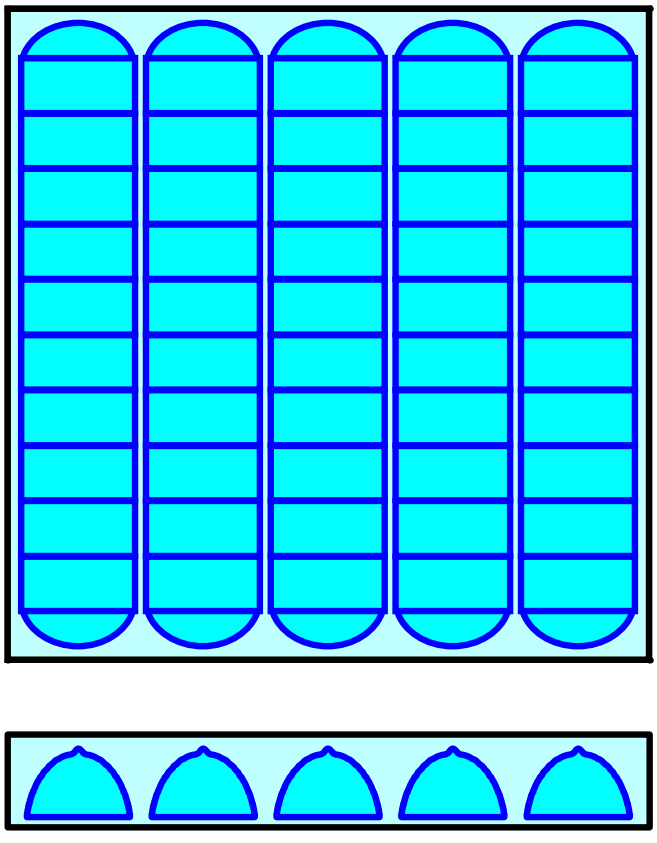
10 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 45.37' Row Length +12.0" End Stone x 2 = 47.37' Base Length
5 Rows x 100.0" Wide + 9.0" Spacing x 4 + 12.0" Side Stone x 2 = 46.67' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

50 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 5 Rows = 5,681.5 cf Chamber Storage

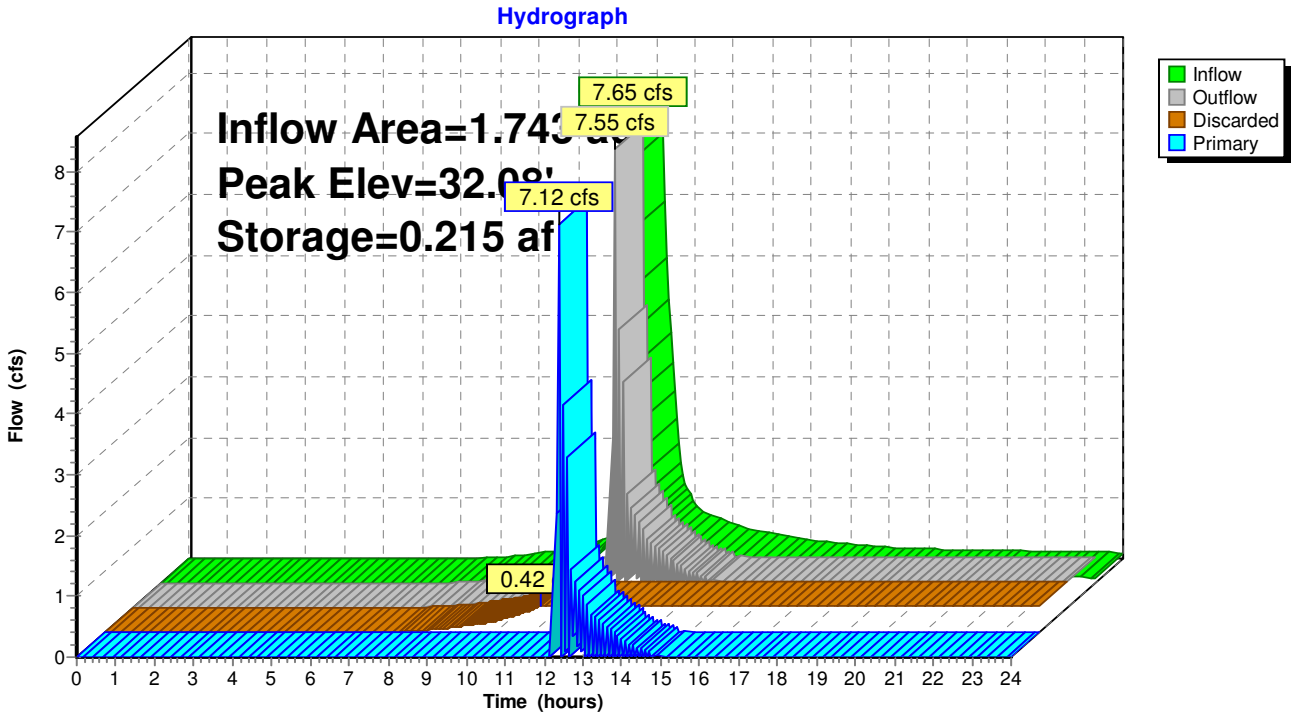
14,920.5 cf Field - 5,681.5 cf Chambers = 9,239.0 cf Stone x 40.0% Voids = 3,695.6 cf Stone Storage

Chamber Storage + Stone Storage = 9,377.1 cf = 0.215 af
Overall Storage Efficiency = 62.8%

50 Chambers
552.6 cy Field
342.2 cy Stone



Pond 7P: INFILTRATION 1



Summary for Pond 8P/9P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.41'
[58] Hint: Peaked 0.41' above defined flood level
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=25)

Inflow Area = 2.195 ac, 53.43% Impervious, Inflow Depth = 3.84" for 100-Year event
Inflow = 8.62 cfs @ 12.14 hrs, Volume= 0.702 af
Outflow = 7.33 cfs @ 12.40 hrs, Volume= 0.702 af, Atten= 15%, Lag= 15.6 min
Discarded = 0.46 cfs @ 11.30 hrs, Volume= 0.575 af
Primary = 6.87 cfs @ 12.40 hrs, Volume= 0.128 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 29.52' @ 12.40 hrs Surf.Area= 0.055 ac Storage= 0.234 af
Flood Elev= 29.11' Surf.Area= 0.055 ac Storage= 0.234 af

Plug-Flow detention time= 188.2 min calculated for 0.702 af (100% of inflow)
Center-of-Mass det. time= 188.1 min (1,019.8 - 831.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	22.36'	0.090 af	**37.58'W x 63.47'L x 6.75'H Field A** 0.370 af Overall - 0.143 af Embedded = 0.226 af x 40.0% Voids
#2A	23.11'	0.143 af	**ADS_StormTech MC-4500 +Cap** x 56 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf
		0.234 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.36'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	29.11'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.46 cfs @ 11.30 hrs HW=22.43' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.46 cfs)

Primary OutFlow Max=6.64 cfs @ 12.40 hrs HW=29.51' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 6.64 cfs @ 2.07 fps)

Pond 8P/9P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

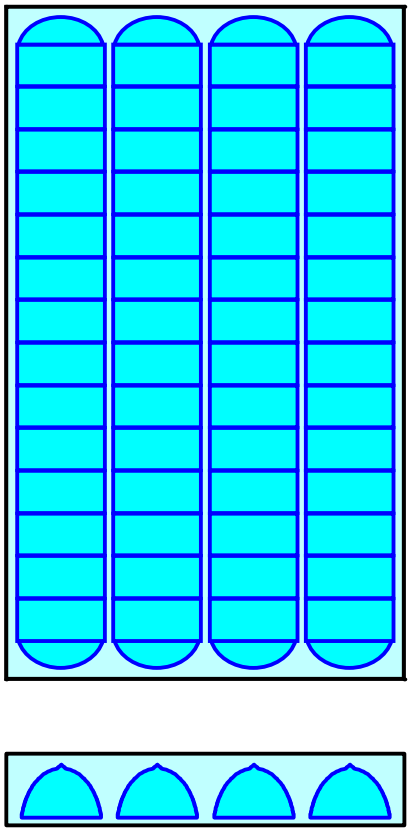
14 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 61.47' Row Length +12.0" End Stone x 2 = 63.47' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

56 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 4 Rows = 6,249.1 cf Chamber Storage

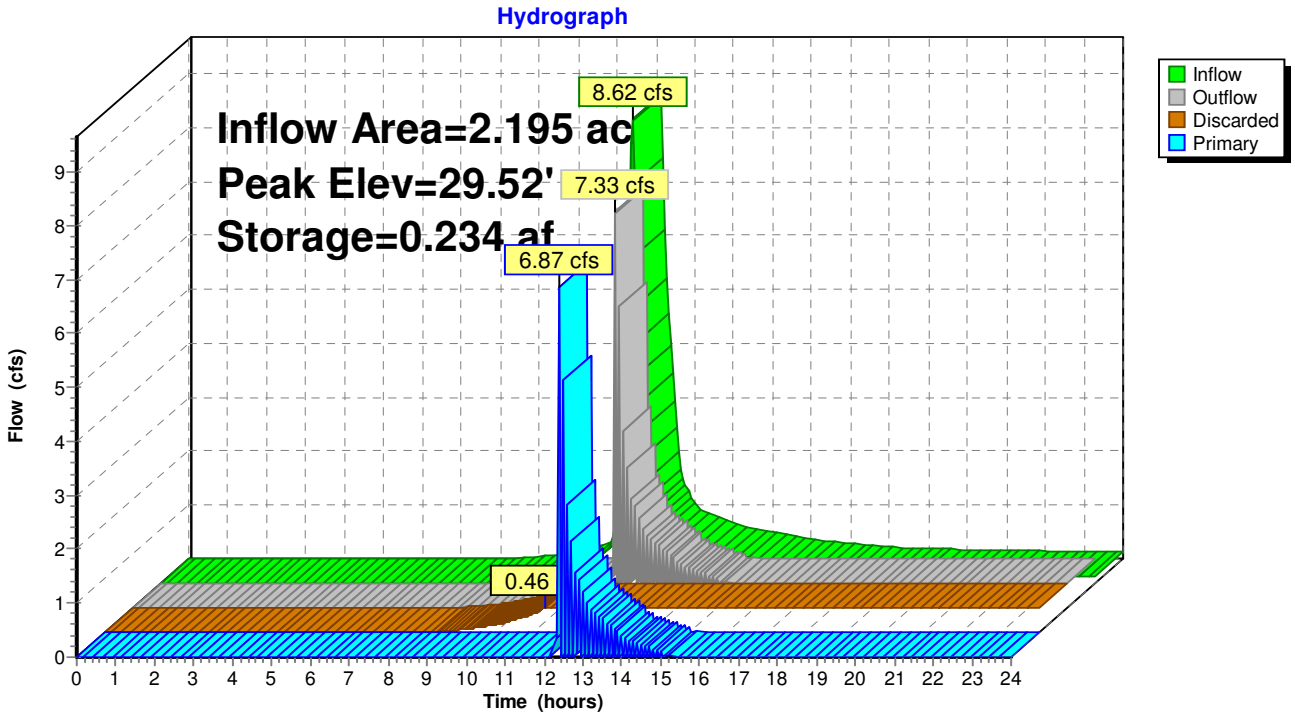
16,100.7 cf Field - 6,249.1 cf Chambers = 9,851.6 cf Stone x 40.0% Voids = 3,940.7 cf Stone Storage

Chamber Storage + Stone Storage = 10,189.7 cf = 0.234 af
Overall Storage Efficiency = 63.3%

56 Chambers
596.3 cy Field
364.9 cy Stone



Pond 8P/9P: INFILTRATION 1



Summary for Pond 10P-14P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.55'
[58] Hint: Peaked 0.55' above defined flood level
[88] Warning: Qout>Qin may require smaller dt or Finer Routing
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=32)

Inflow Area = 3.994 ac, 36.47% Impervious, Inflow Depth = 2.83" for 100-Year event
Inflow = 9.07 cfs @ 12.17 hrs, Volume= 0.942 af
Outflow = 11.21 cfs @ 12.45 hrs, Volume= 0.942 af, Atten= 0%, Lag= 17.0 min
Discarded = 0.55 cfs @ 11.55 hrs, Volume= 0.714 af
Primary = 10.66 cfs @ 12.45 hrs, Volume= 0.228 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 27.53' @ 12.45 hrs Surf.Area= 0.066 ac Storage= 0.280 af
Flood Elev= 26.98' Surf.Area= 0.066 ac Storage= 0.280 af

Plug-Flow detention time= 188.6 min calculated for 0.941 af (100% of inflow)
Center-of-Mass det. time= 188.5 min (1,043.6 - 855.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	20.23'	0.109 af	**55.75'W x 51.39'L x 6.75'H Field A** 0.444 af Overall - 0.171 af Embedded = 0.273 af x 40.0% Voids
#2A	20.98'	0.171 af	**ADS_StormTech MC-4500 +Cap** x 66 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf
		0.280 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	20.23'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	26.98'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.55 cfs @ 11.55 hrs HW=20.30' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.55 cfs)

Primary OutFlow Max=10.62 cfs @ 12.45 hrs HW=27.53' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 10.62 cfs @ 2.42 fps)

Pond 10P-14P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

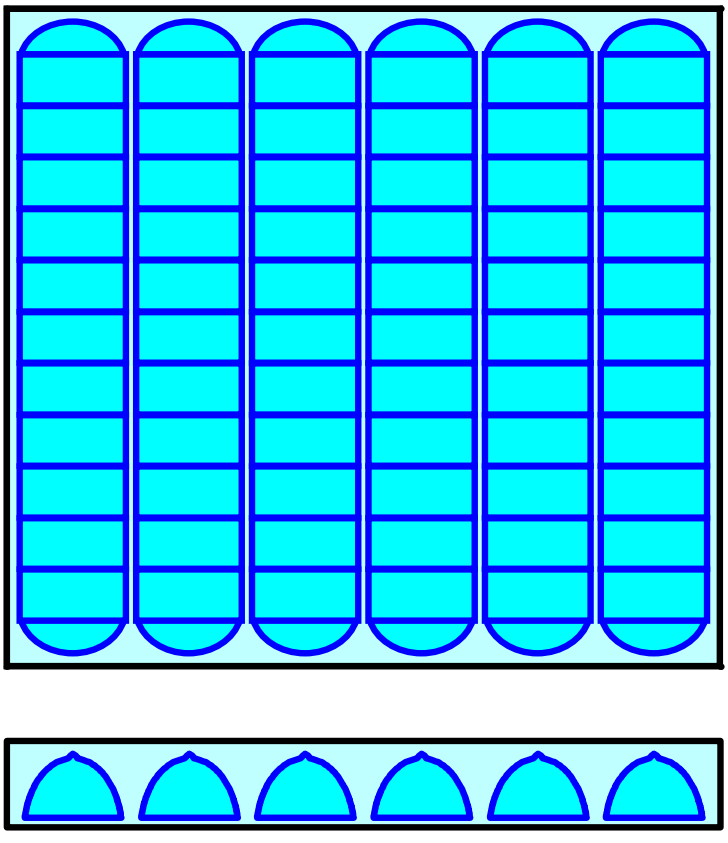
11 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 49.39' Row Length +12.0" End Stone x 2 = 51.39' Base Length
6 Rows x 100.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 55.75' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

66 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 6 Rows = 7,456.8 cf Chamber Storage

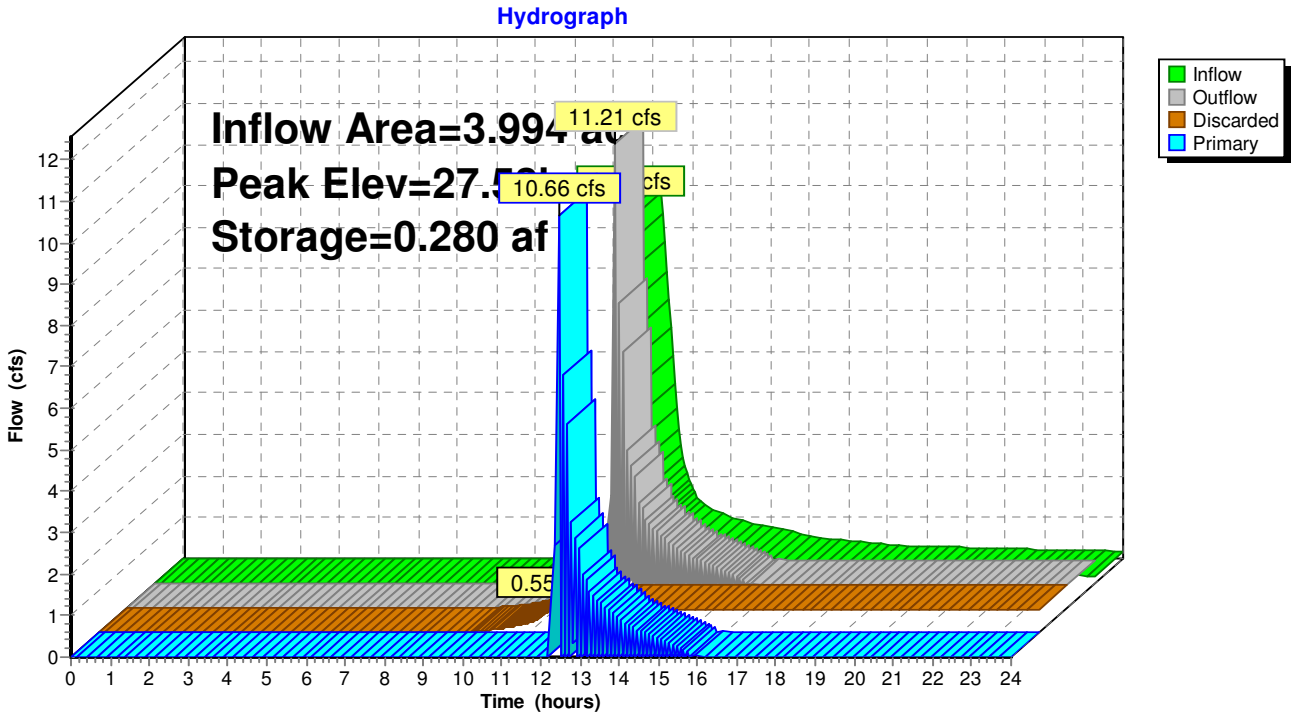
19,339.3 cf Field - 7,456.8 cf Chambers = 11,882.6 cf Stone x 40.0% Voids = 4,753.0 cf Stone Storage

Chamber Storage + Stone Storage = 12,209.8 cf = 0.280 af
Overall Storage Efficiency = 63.1%

66 Chambers
716.3 cy Field
440.1 cy Stone



Pond 10P-14P: INFILTRATION 1



Summary for Pond 15P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.38'
[58] Hint: Peaked 0.38' above defined flood level
[88] Warning: Qout>Qin may require smaller dt or Finer Routing
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=39)

Inflow Area = 5.029 ac, 28.62% Impervious, Inflow Depth = 2.35" for 100-Year event
Inflow = 6.33 cfs @ 12.62 hrs, Volume= 0.984 af
Outflow = 6.73 cfs @ 12.91 hrs, Volume= 0.984 af, Atten= 0%, Lag= 17.3 min
Discarded = 0.53 cfs @ 12.00 hrs, Volume= 0.709 af
Primary = 6.20 cfs @ 12.91 hrs, Volume= 0.276 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 27.55' @ 12.90 hrs Surf.Area= 0.064 ac Storage= 0.272 af
Flood Elev= 27.17' Surf.Area= 0.064 ac Storage= 0.272 af

Plug-Flow detention time= 190.6 min calculated for 0.983 af (100% of inflow)
Center-of-Mass det. time= 190.6 min (1,085.2 - 894.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	20.42'	0.105 af	**46.67'W x 59.44'L x 6.75'H Field A** 0.430 af Overall - 0.167 af Embedded = 0.263 af x 40.0% Voids
#2A	21.17'	0.167 af	**ADS_StormTech MC-4500 +Cap** x 65 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf
		0.272 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	20.42'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	27.17'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.53 cfs @ 12.00 hrs HW=20.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.53 cfs)

Primary OutFlow Max=5.65 cfs @ 12.91 hrs HW=27.53' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 5.65 cfs @ 1.96 fps)

Pond 15P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

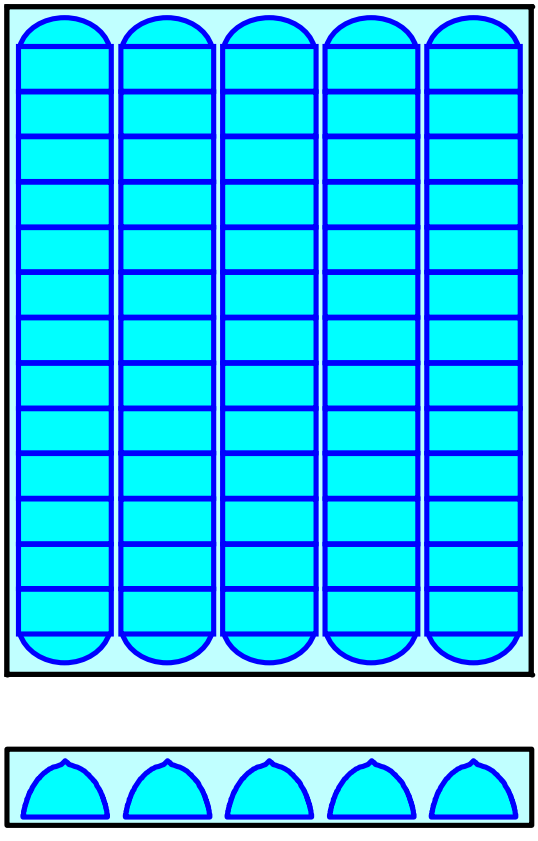
13 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 57.44' Row Length +12.0" End Stone x 2 = 59.44' Base Length
5 Rows x 100.0" Wide + 9.0" Spacing x 4 + 12.0" Side Stone x 2 = 46.67' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

65 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 5 Rows = 7,278.9 cf Chamber Storage

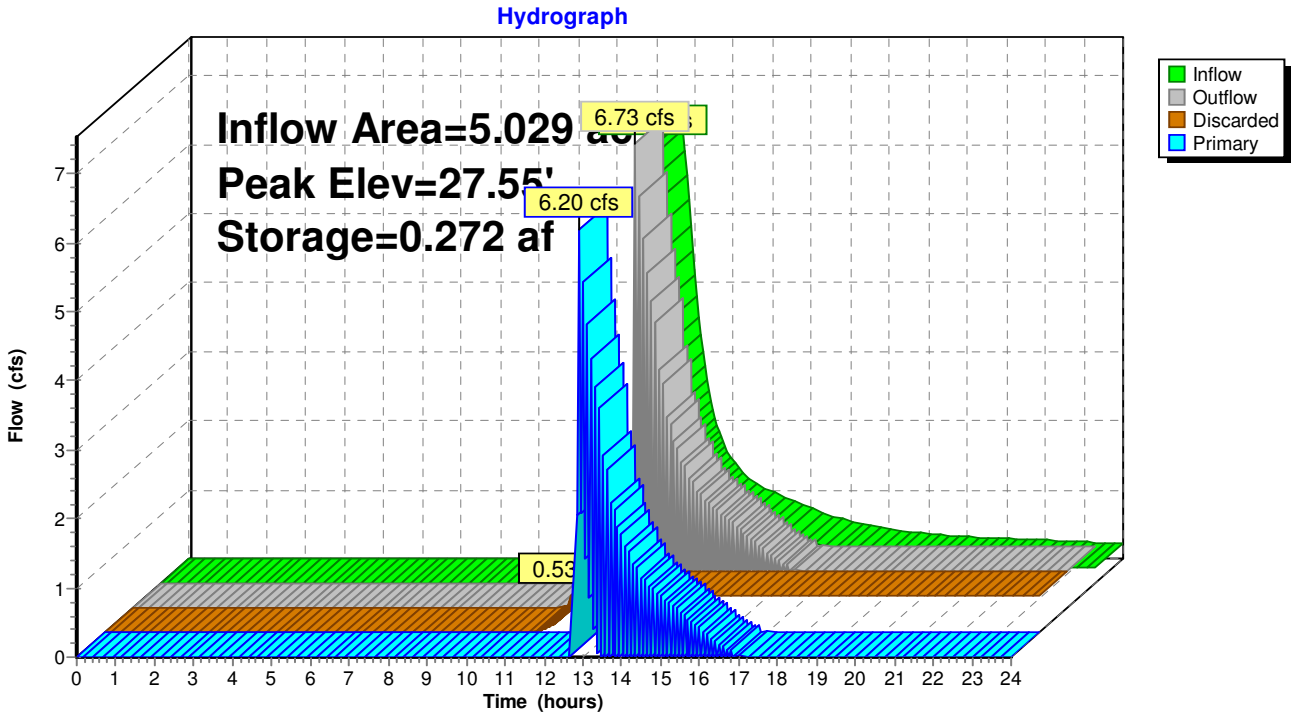
18,724.1 cf Field - 7,278.9 cf Chambers = 11,445.2 cf Stone x 40.0% Voids = 4,578.1 cf Stone Storage

Chamber Storage + Stone Storage = 11,857.0 cf = 0.272 af
Overall Storage Efficiency = 63.3%

65 Chambers
693.5 cy Field
423.9 cy Stone



Pond 15P: INFILTRATION 1



Summary for Pond 100Y LP-1: LOW SPOT ROAD G STA 15-19

[62] Hint: Exceeded Reach 46R OUTLET depth by 0.72' @ 12.85 hrs
[62] Hint: Exceeded Reach 49R OUTLET depth by 0.71' @ 12.90 hrs
[62] Hint: Exceeded Reach 51R OUTLET depth by 0.73' @ 12.85 hrs

Inflow Area = 8.809 ac, 30.47% Impervious, Inflow Depth = 0.63" for 100-Year event
Inflow = 8.27 cfs @ 12.50 hrs, Volume= 0.465 af
Outflow = 3.18 cfs @ 12.79 hrs, Volume= 0.465 af, Atten= 62%, Lag= 17.3 min
Discarded = 3.18 cfs @ 12.79 hrs, Volume= 0.465 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 36.98' @ 12.79 hrs Surf.Area= 16,600 sf Storage= 5,172 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 17.4 min (808.1 - 790.7)

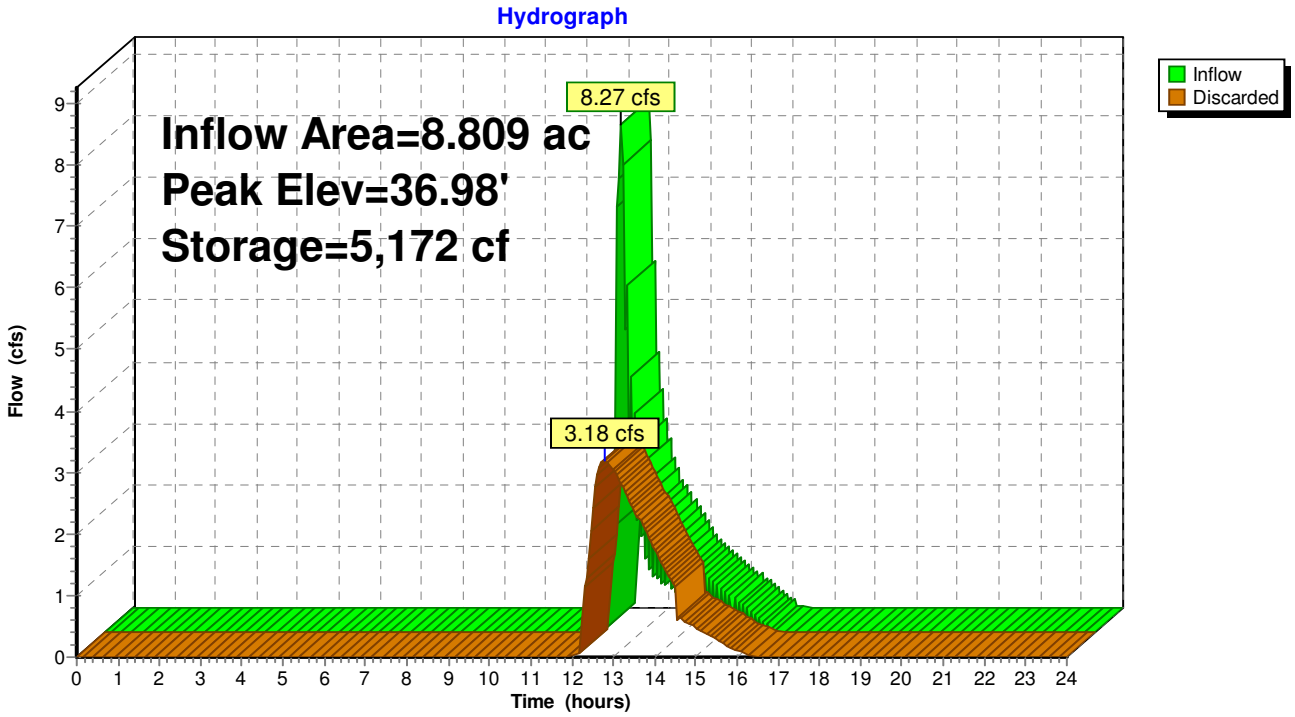
Volume	Invert	Avail.Storage	Storage Description
#1	36.50'	27,083 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
36.50	5,746	507.0	0	0	5,746
36.75	11,030	581.3	2,061	2,061	12,182
37.00	17,237	676.0	3,505	5,566	21,658
37.25	24,463	759.5	5,186	10,752	31,199
37.50	32,551	841.3	7,103	17,855	41,621
37.75	41,455	951.0	9,228	27,083	57,269

Device	Routing	Invert	Outlet Devices
#1	Discarded	36.50'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=3.18 cfs @ 12.79 hrs HW=36.98' (Free Discharge)
1=Exfiltration (Exfiltration Controls 3.18 cfs)

Pond 100Y LP-1: LOW SPOT ROAD G STA 15-19



Summary for Pond 100Y LP-2: Low Spot Road I

[62] Hint: Exceeded Reach 48R OUTLET depth by 0.66' @ 13.20 hrs
[62] Hint: Exceeded Reach 52R OUTLET depth by 0.69' @ 13.20 hrs
[63] Warning: Exceeded Reach 53R INLET depth by 0.22' @ 13.20 hrs
[63] Warning: Exceeded Reach 54R INLET depth by 0.53' @ 12.80 hrs
[63] Warning: Exceeded Reach 55R INLET depth by 0.72' @ 13.20 hrs

Inflow Area = 17.098 ac, 35.90% Impervious, Inflow Depth = 0.67" for 100-Year event
Inflow = 17.48 cfs @ 12.45 hrs, Volume= 0.957 af
Outflow = 5.62 cfs @ 13.18 hrs, Volume= 0.957 af, Atten= 68%, Lag= 43.3 min
Discarded = 5.62 cfs @ 13.18 hrs, Volume= 0.957 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 32.08' @ 13.18 hrs Surf.Area= 29,360 sf Storage= 8,404 cf

Plug-Flow detention time= 19.7 min calculated for 0.957 af (100% of inflow)
Center-of-Mass det. time= 19.7 min (823.9 - 804.2)

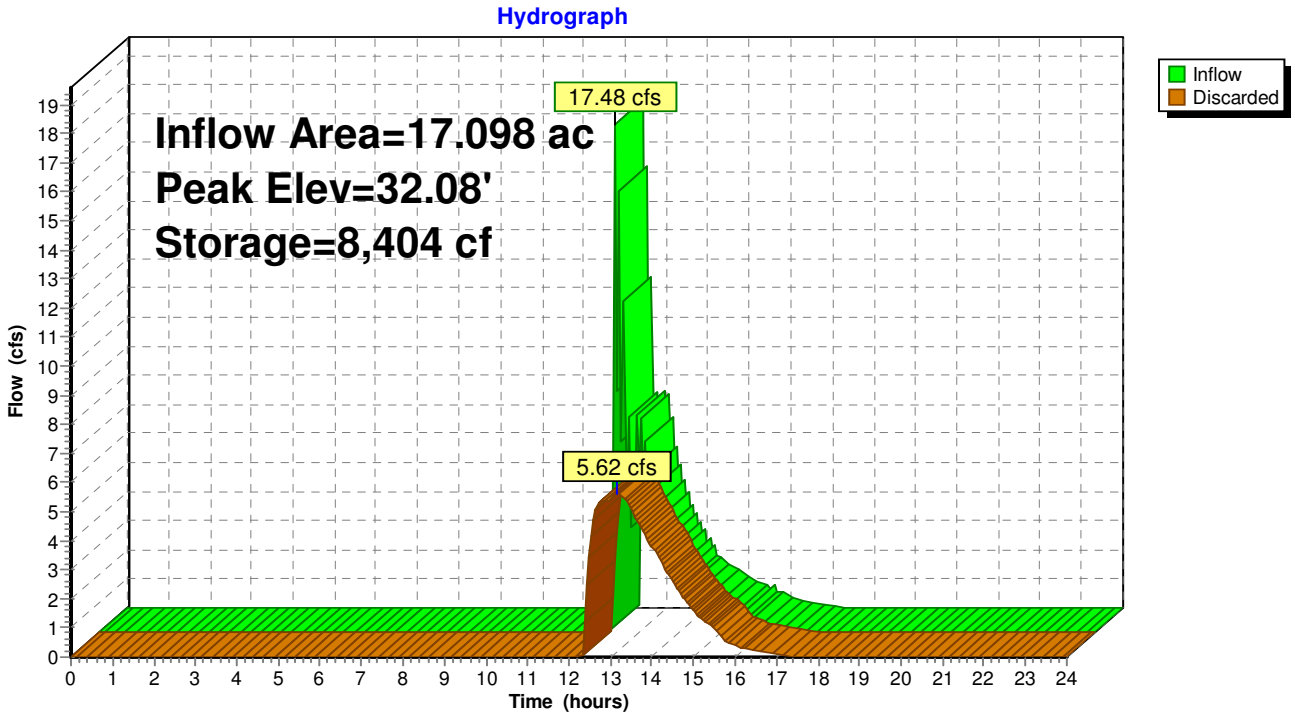
Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	70,244 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

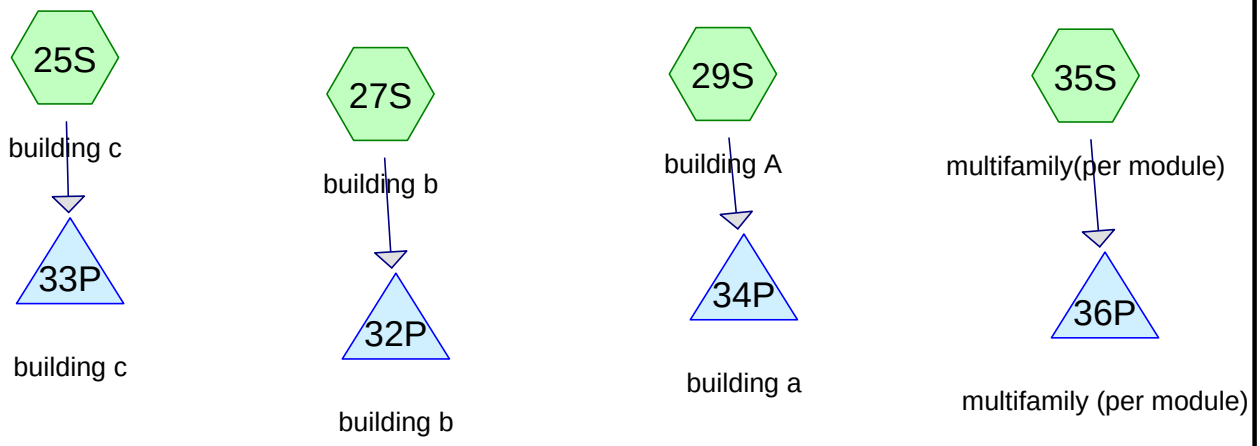
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
31.50	3,929	567.0	0	0	3,929
31.75	12,215	727.0	1,923	1,923	20,406
32.00	24,089	969.0	4,455	6,377	53,067
32.25	43,398	1,543.0	8,318	14,696	167,810
32.50	63,912	1,964.0	13,331	28,027	285,302
32.75	85,235	2,322.0	18,580	46,607	407,406
33.00	104,183	2,279.9	23,638	70,244	422,834

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.50'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=5.62 cfs @ 13.18 hrs HW=32.08' (Free Discharge)
1=Exfiltration (Exfiltration Controls 5.62 cfs)

Pond 100Y LP-2: Low Spot Road I





Subcat Reach Pond Link

Routing Diagram for ALTERNATIVE WATER SHEDS-buildings
Prepared by {enter your company name here}, Printed 7/26/2016
HydroCAD® 10.00 s/n 07546 © 2013 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.134	98	(25S, 27S, 29S, 35S)
0.134	**98**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.134	Other	25S, 27S, 29S, 35S
0.134		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.134	0.134		25S, 27S, 29S, 35S
0.000	**0.000**	**0.000**	**0.000**	**0.134**	**0.134**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 25S: building c Runoff Area=1,154 sf 100.00% Impervious Runoff Depth>5.15"
Tc=5.0 min CN=98 Runoff=0.15 cfs 0.011 af

Subcatchment 27S: building b Runoff Area=1,104 sf 100.00% Impervious Runoff Depth>5.15"
Tc=5.0 min CN=98 Runoff=0.14 cfs 0.011 af

Subcatchment 29S: building A Runoff Area=1,464 sf 100.00% Impervious Runoff Depth>5.15"
Tc=5.0 min CN=98 Runoff=0.19 cfs 0.014 af

Subcatchment 35S: multifamily(per Runoff Area=2,120 sf 100.00% Impervious Runoff Depth>5.15"
Tc=5.0 min CN=98 Runoff=0.28 cfs 0.021 af

Pond 32P: building b Peak Elev=26.66' Storage=0.003 af Inflow=0.14 cfs 0.011 af
Outflow=0.02 cfs 0.011 af

Pond 33P: building c Peak Elev=26.78' Storage=0.003 af Inflow=0.15 cfs 0.011 af
Outflow=0.02 cfs 0.011 af

Pond 34P: building a Peak Elev=27.31' Storage=0.004 af Inflow=0.19 cfs 0.014 af
Outflow=0.03 cfs 0.014 af

Pond 36P: multifamily (per module) Peak Elev=27.16' Storage=0.006 af Inflow=0.28 cfs 0.021 af
Outflow=0.04 cfs 0.021 af

Total Runoff Area = 0.134 ac Runoff Volume = 0.058 af Average Runoff Depth = 5.15"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.134 ac

Summary for Subcatchment 25S: building c

[49] Hint: Tc<2dt may require smaller dt

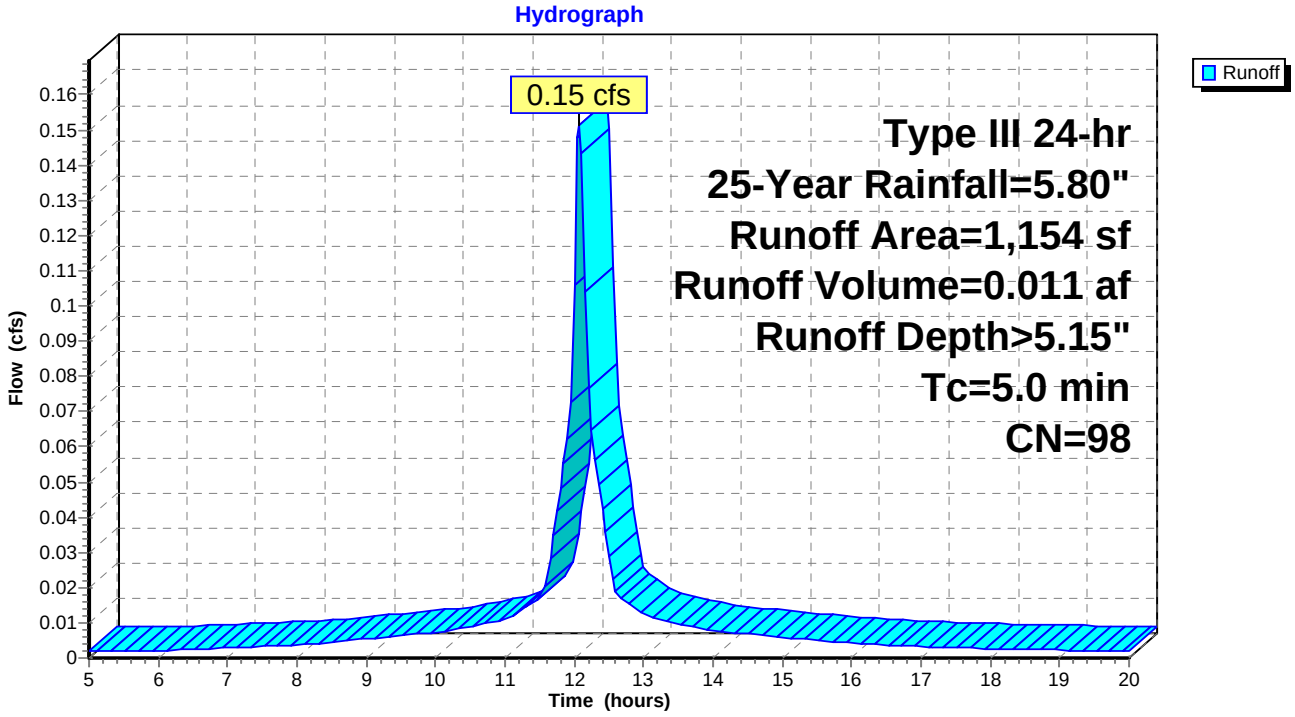
Runoff = 0.15 cfs @ 12.07 hrs, Volume= 0.011 af, Depth> 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	1,154	98	
	1,154		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 25S: building c



Summary for Subcatchment 27S: building b

[49] Hint: Tc<2dt may require smaller dt

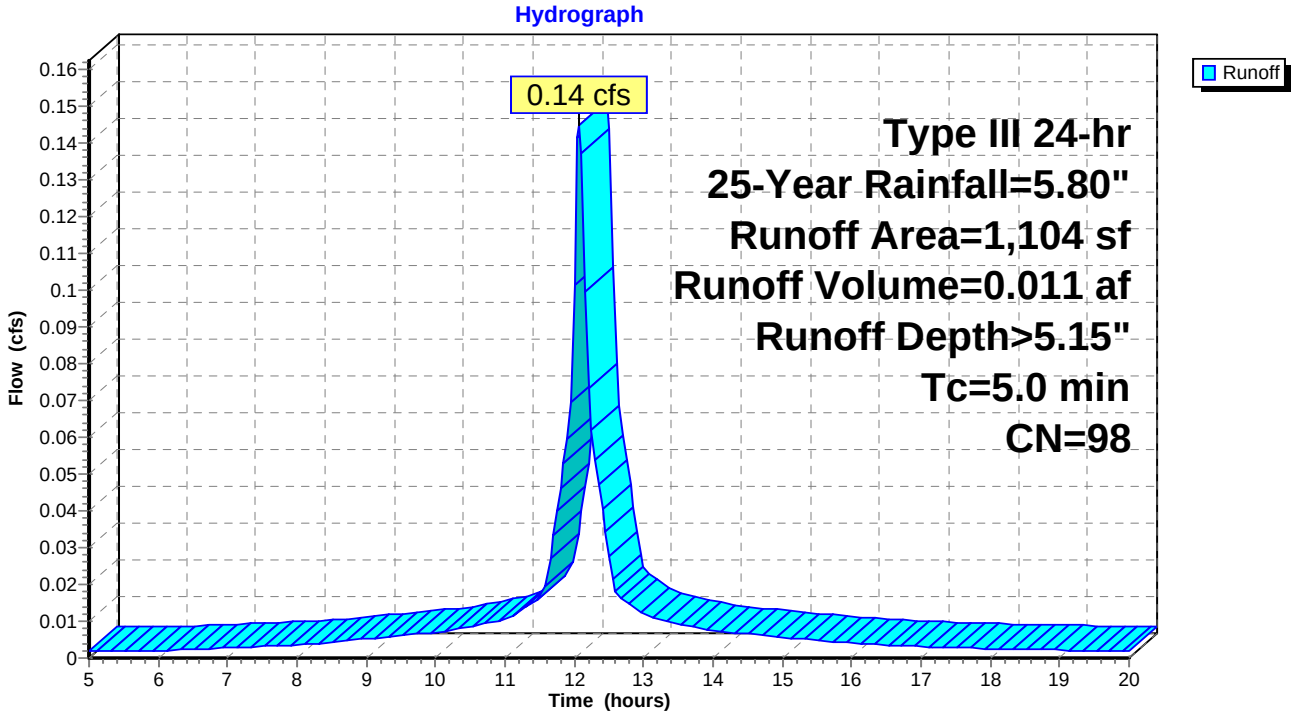
Runoff = 0.14 cfs @ 12.07 hrs, Volume= 0.011 af, Depth> 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	1,104	98	
	1,104		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 27S: building b



Summary for Subcatchment 29S: building A

[49] Hint: Tc<2dt may require smaller dt

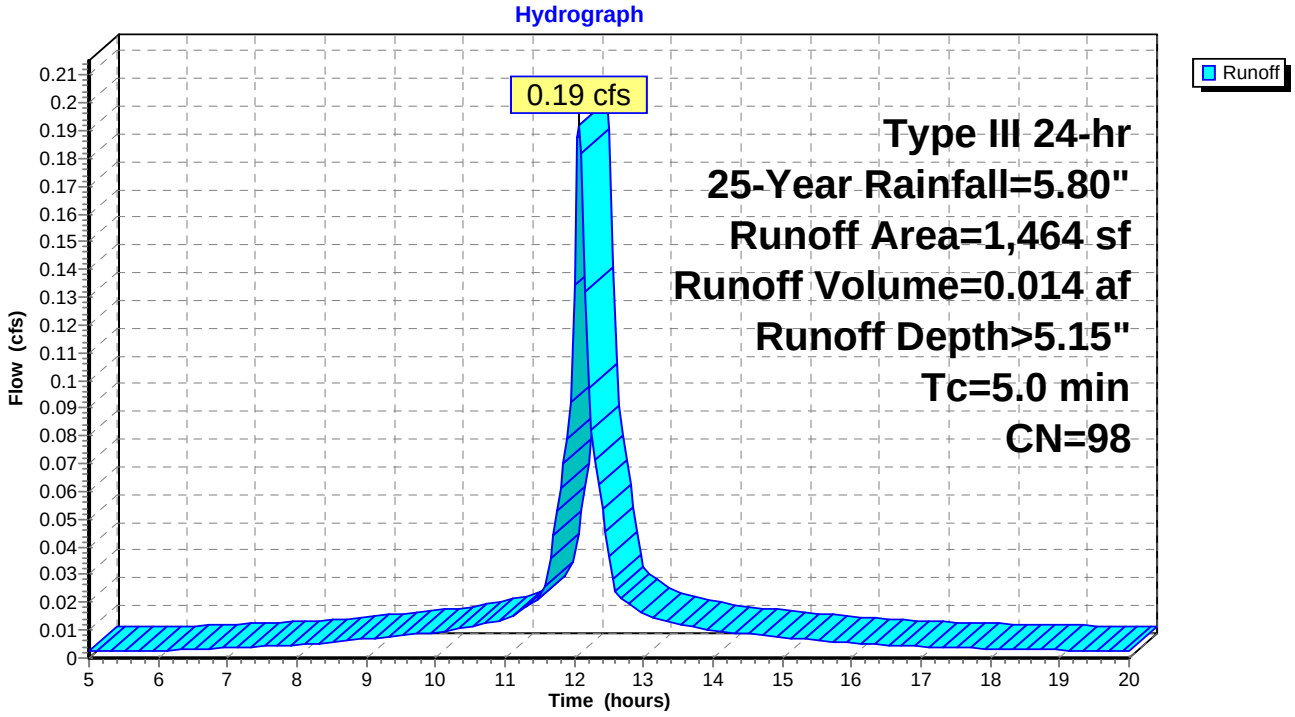
Runoff = 0.19 cfs @ 12.07 hrs, Volume= 0.014 af, Depth> 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	1,464	98	
	1,464		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 29S: building A



Summary for Subcatchment 35S: multifamily(per module)

[49] Hint: Tc<2dt may require smaller dt

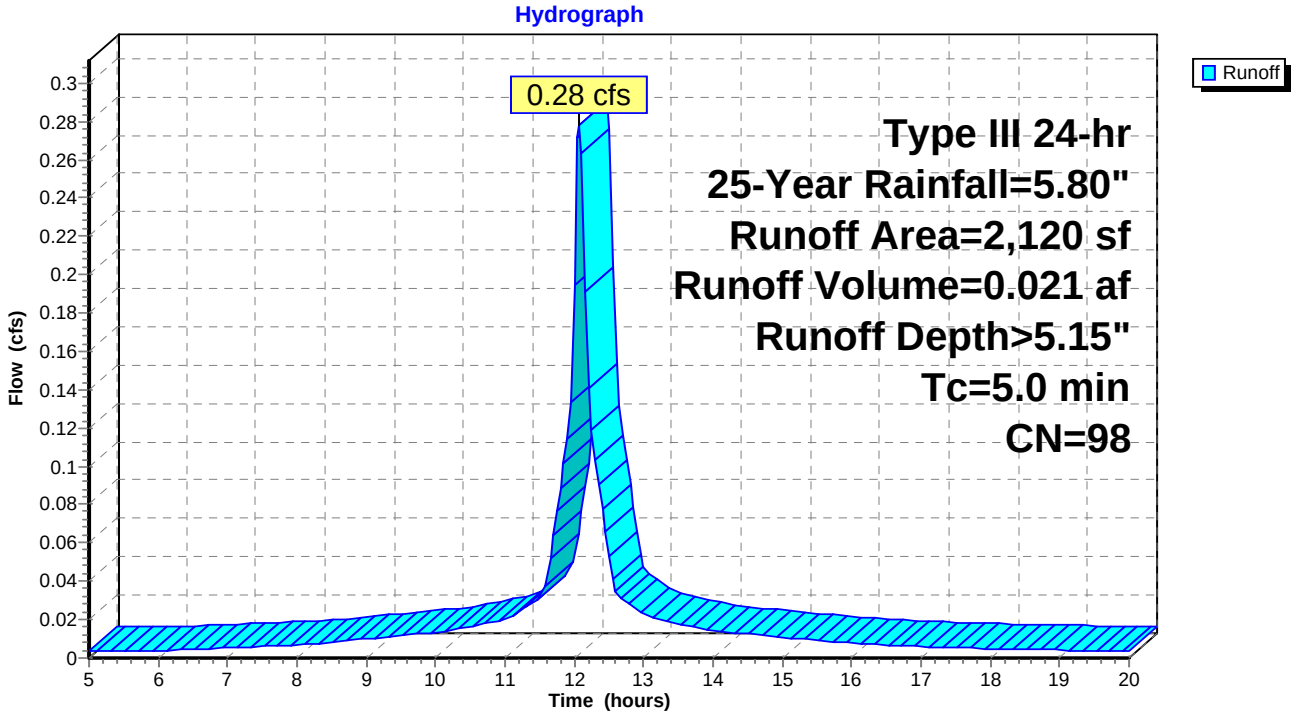
Runoff = 0.28 cfs @ 12.07 hrs, Volume= 0.021 af, Depth> 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	2,120	98	
	2,120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 35S: multifamily(per module)



Summary for Pond 32P: building b

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.025 ac,100.00% Impervious, Inflow Depth > 5.15" for 25-Year event
Inflow = 0.14 cfs @ 12.07 hrs, Volume= 0.011 af
Outflow = 0.02 cfs @ 11.65 hrs, Volume= 0.011 af, Atten= 85%, Lag= 0.0 min
Discarded = 0.02 cfs @ 11.65 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 26.66' @ 12.55 hrs Surf.Area= 0.003 ac Storage= 0.003 af
Flood Elev= 28.40' Surf.Area= 0.003 ac Storage= 0.006 af

Plug-Flow detention time= 35.5 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 35.2 min (768.8 - 733.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	24.85'	0.003 af	**11.17'W x 10.50'L x 3.54'H Field A** 0.010 af Overall - 0.003 af Embedded = 0.007 af x 40.0% Voids
#2A	25.35'	0.003 af	**Cultec R-330XLHD** x 2 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 2 rows
		0.006 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.85'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 11.65 hrs HW=24.89' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.02 cfs)

Pond 32P: building b - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 2 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

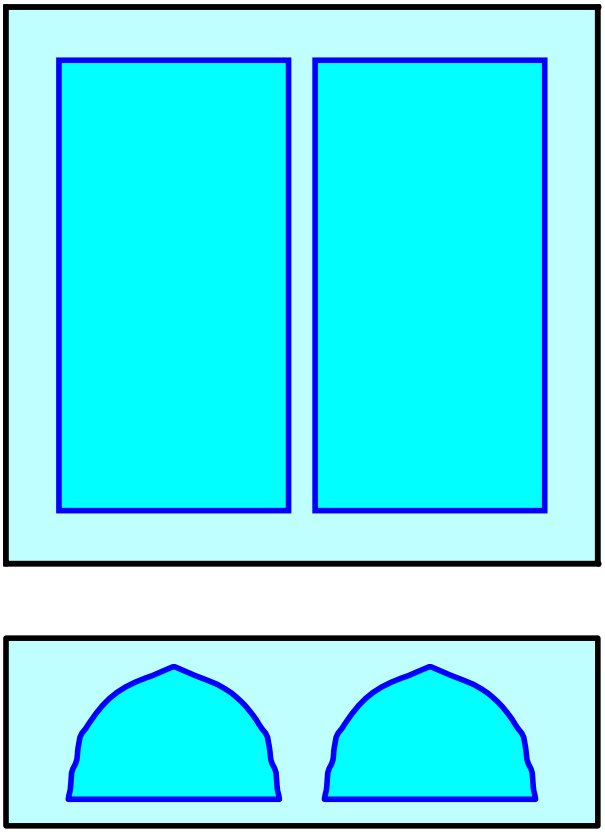
1 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
2 Rows x 52.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.17' Base Width
6.0" Base + 30.5" Chamber Height + 6.0" Cover = 3.54' Field Height

2 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 2 Rows = 126.7 cf Chamber Storage

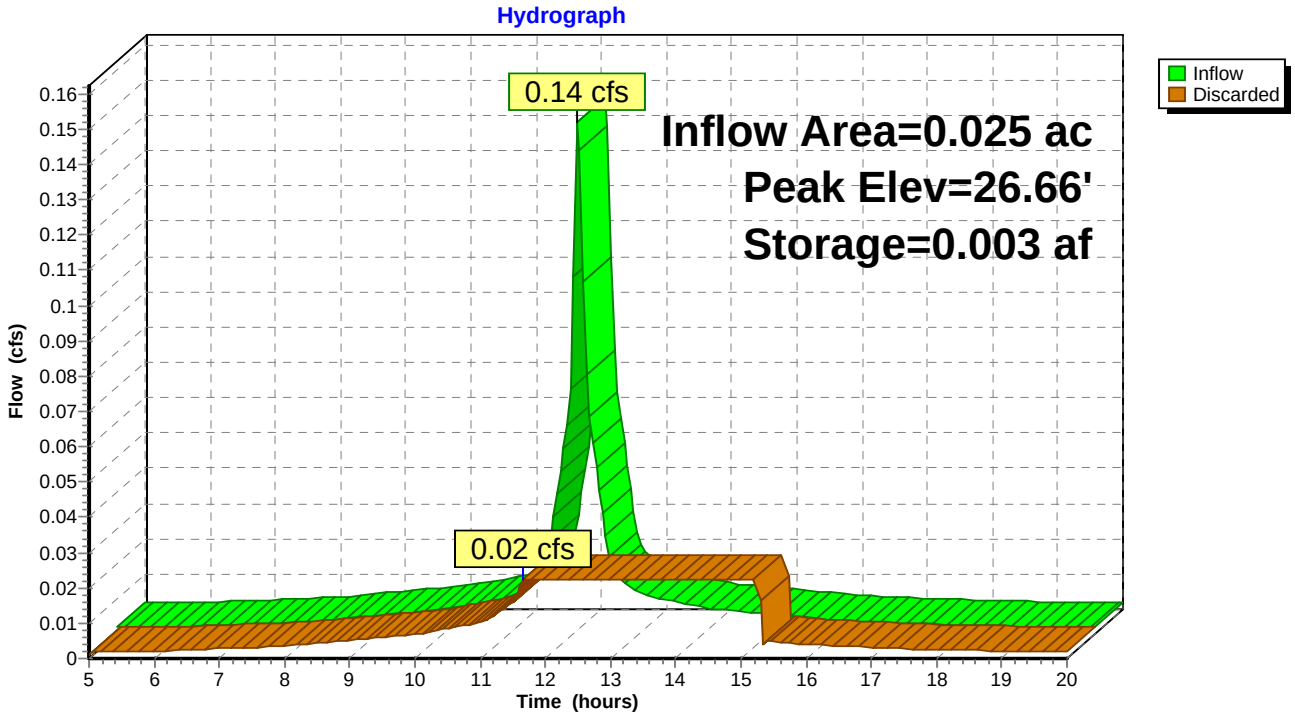
415.3 cf Field - 126.7 cf Chambers = 288.6 cf Stone x 40.0% Voids = 115.4 cf Stone Storage

Chamber Storage + Stone Storage = 242.1 cf = 0.006 af
Overall Storage Efficiency = 58.3%

2 Chambers
15.4 cy Field
10.7 cy Stone



Pond 32P: building b



Summary for Pond 33P: building c

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.026 ac,100.00% Impervious, Inflow Depth > 5.15" for 25-Year event
Inflow = 0.15 cfs @ 12.07 hrs, Volume= 0.011 af
Outflow = 0.02 cfs @ 11.65 hrs, Volume= 0.011 af, Atten= 85%, Lag= 0.0 min
Discarded = 0.02 cfs @ 11.65 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 26.78' @ 12.56 hrs Surf.Area= 0.003 ac Storage= 0.003 af
Flood Elev= 28.39' Surf.Area= 0.003 ac Storage= 0.006 af

Plug-Flow detention time= 38.7 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 38.4 min (772.0 - 733.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	24.85'	0.003 af	**11.17'W x 10.50'L x 3.54'H Field A** 0.010 af Overall - 0.003 af Embedded = 0.007 af x 40.0% Voids
#2A	25.35'	0.003 af	**Cultec R-330XLHD** x 2 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 2 rows
		0.006 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.85'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 11.65 hrs HW=24.90' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.02 cfs)

Pond 33P: building c - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 2 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

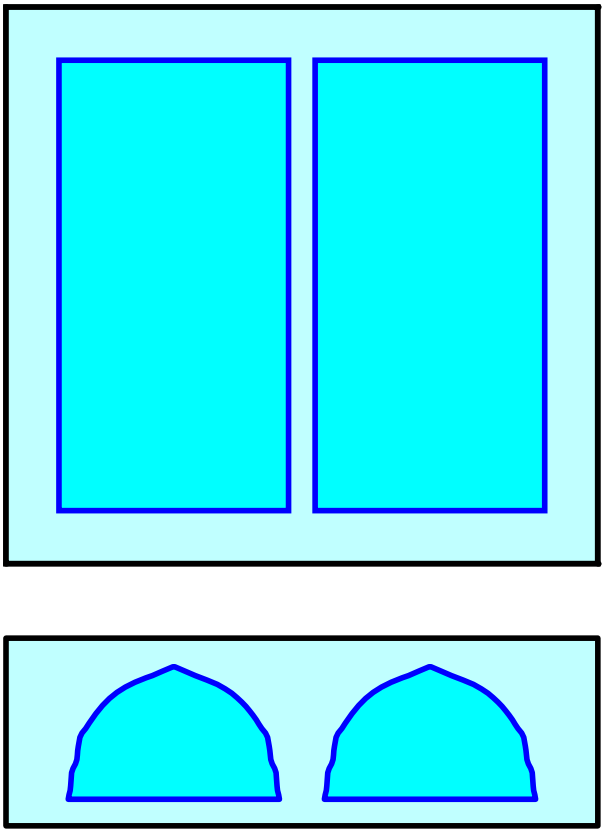
1 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
2 Rows x 52.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.17' Base Width
6.0" Base + 30.5" Chamber Height + 6.0" Cover = 3.54' Field Height

2 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 2 Rows = 126.7 cf Chamber Storage

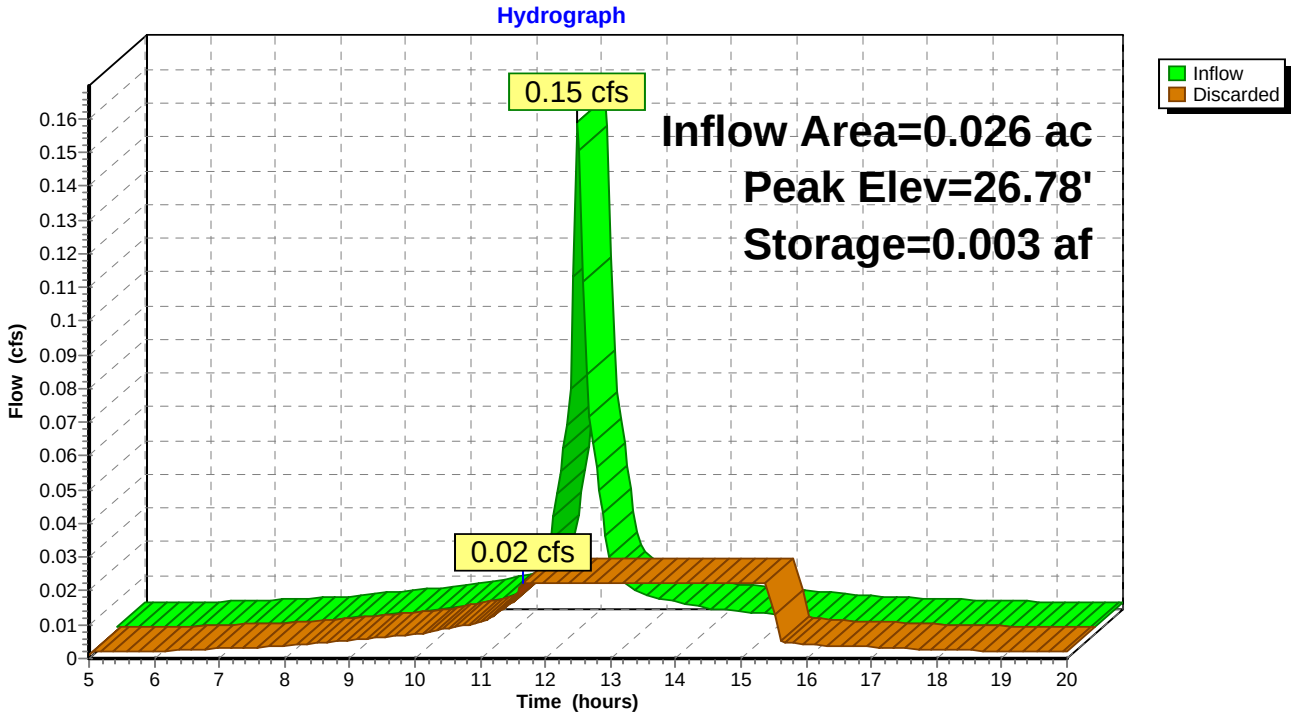
415.3 cf Field - 126.7 cf Chambers = 288.6 cf Stone x 40.0% Voids = 115.4 cf Stone Storage

Chamber Storage + Stone Storage = 242.1 cf = 0.006 af
Overall Storage Efficiency = 58.3%

2 Chambers
15.4 cy Field
10.7 cy Stone



Pond 33P: building c



Summary for Pond 34P: building a

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.034 ac,100.00% Impervious, Inflow Depth > 5.15" for 25-Year event
Inflow = 0.19 cfs @ 12.07 hrs, Volume= 0.014 af
Outflow = 0.03 cfs @ 11.60 hrs, Volume= 0.014 af, Atten= 87%, Lag= 0.0 min
Discarded = 0.03 cfs @ 11.60 hrs, Volume= 0.014 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 27.31' @ 12.59 hrs Surf.Area= 0.003 ac Storage= 0.004 af
Flood Elev= 28.73' Surf.Area= 0.003 ac Storage= 0.006 af

Plug-Flow detention time= 48.5 min calculated for 0.014 af (100% of inflow)
Center-of-Mass det. time= 48.2 min (781.8 - 733.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	24.85'	0.004 af	**11.83'W x 11.17'L x 3.88'H Field A** 0.012 af Overall - 0.003 af Embedded = 0.009 af x 40.0% Voids
#2A	25.52'	0.003 af	**Cultec R-330XLHD** x 2 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 2 rows
		0.006 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.85'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.03 cfs @ 11.60 hrs HW=24.89' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.03 cfs)

Pond 34P: building a - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 2 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

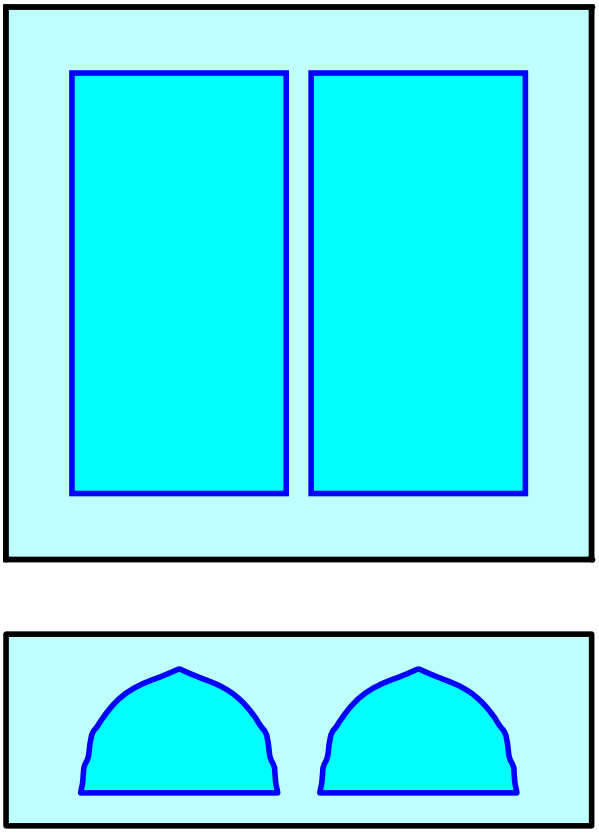
1 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 8.50' Row Length +16.0" End Stone x 2 = 11.17' Base Length
2 Rows x 52.0" Wide + 6.0" Spacing x 1 + 16.0" Side Stone x 2 = 11.83' Base Width
8.0" Base + 30.5" Chamber Height + 8.0" Cover = 3.88' Field Height

2 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 2 Rows = 126.7 cf Chamber Storage

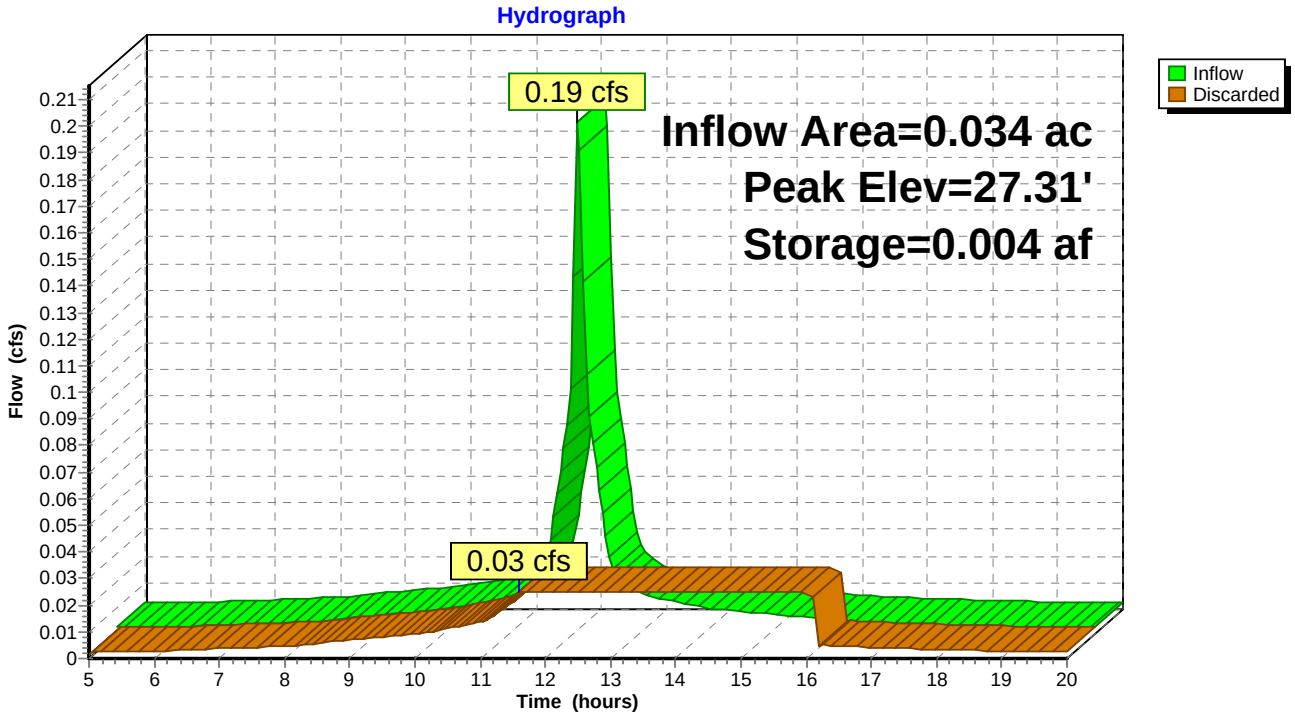
512.0 cf Field - 126.7 cf Chambers = 385.4 cf Stone x 40.0% Voids = 154.1 cf Stone Storage

Chamber Storage + Stone Storage = 280.8 cf = 0.006 af
Overall Storage Efficiency = 54.8%

2 Chambers
19.0 cy Field
14.3 cy Stone



Pond 34P: building a



Summary for Pond 36P: multifamily (per module)

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.049 ac,100.00% Impervious, Inflow Depth > 5.15" for 25-Year event
Inflow = 0.28 cfs @ 12.07 hrs, Volume= 0.021 af
Outflow = 0.04 cfs @ 11.60 hrs, Volume= 0.021 af, Atten= 87%, Lag= 0.0 min
Discarded = 0.04 cfs @ 11.60 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 27.16' @ 12.58 hrs Surf.Area= 0.004 ac Storage= 0.006 af
Flood Elev= 28.40' Surf.Area= 0.004 ac Storage= 0.009 af

Plug-Flow detention time= 46.5 min calculated for 0.021 af (100% of inflow)
Center-of-Mass det. time= 46.2 min (779.8 - 733.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	24.85'	0.005 af	**17.00'W x 11.50'L x 3.54'H Field A** 0.016 af Overall - 0.004 af Embedded = 0.012 af x 40.0% Voids
#2A	25.35'	0.004 af	**Cultec R-330XLHD** x 3 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 3 rows
		0.009 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.85'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.04 cfs @ 11.60 hrs HW=24.89' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Pond 36P: multifamily (per module) - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 3 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

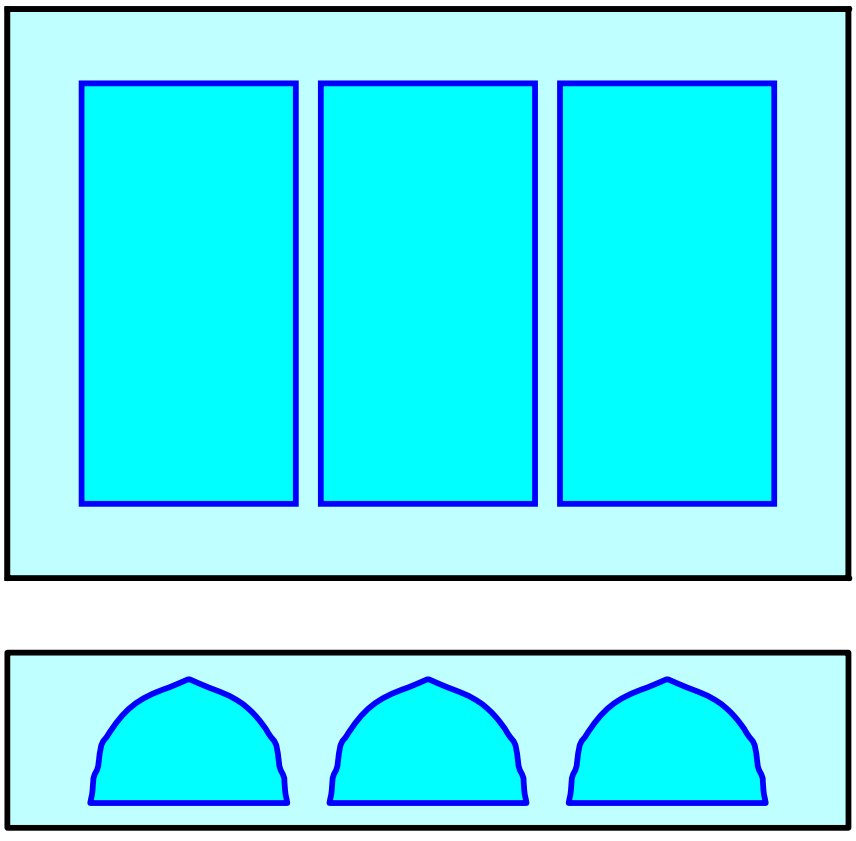
1 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 8.50' Row Length +18.0" End Stone x 2 = 11.50' Base Length
3 Rows x 52.0" Wide + 6.0" Spacing x 2 + 18.0" Side Stone x 2 = 17.00' Base Width
6.0" Base + 30.5" Chamber Height + 6.0" Cover = 3.54' Field Height

3 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 3 Rows = 190.0 cf Chamber Storage

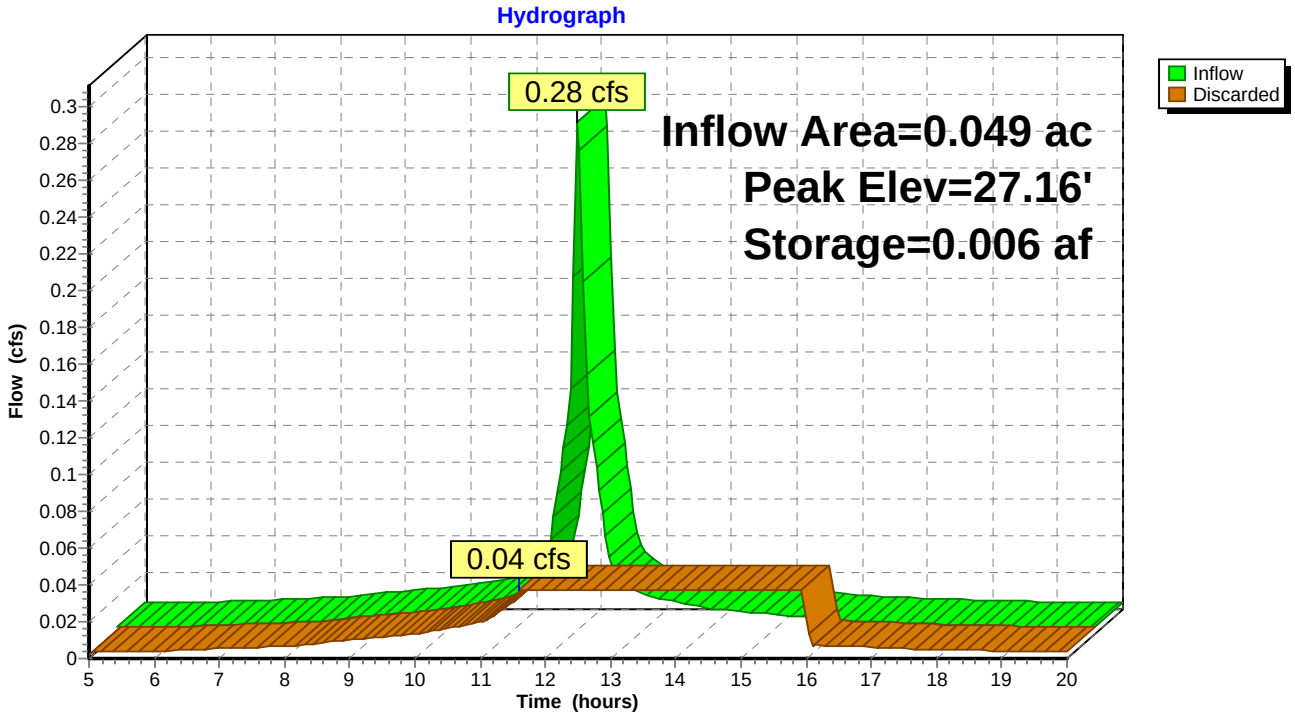
692.4 cf Field - 190.0 cf Chambers = 502.4 cf Stone x 40.0% Voids = 201.0 cf Stone Storage

Chamber Storage + Stone Storage = 391.0 cf = 0.009 af
Overall Storage Efficiency = 56.5%

3 Chambers
25.6 cy Field
18.6 cy Stone



Pond 36P: multifamily (per module)



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 25S: building c Runoff Area=1,154 sf 100.00% Impervious Runoff Depth>6.42"
Tc=5.0 min CN=98 Runoff=0.19 cfs 0.014 af

Subcatchment 27S: building b Runoff Area=1,104 sf 100.00% Impervious Runoff Depth>6.42"
Tc=5.0 min CN=98 Runoff=0.18 cfs 0.014 af

Subcatchment 29S: building A Runoff Area=1,464 sf 100.00% Impervious Runoff Depth>6.42"
Tc=5.0 min CN=98 Runoff=0.24 cfs 0.018 af

Subcatchment 35S: multifamily(per Runoff Area=2,120 sf 100.00% Impervious Runoff Depth>6.42"
Tc=5.0 min CN=98 Runoff=0.35 cfs 0.026 af

Pond 32P: building b Peak Elev=27.35' Storage=0.004 af Inflow=0.18 cfs 0.014 af
Outflow=0.02 cfs 0.014 af

Pond 33P: building c Peak Elev=27.53' Storage=0.005 af Inflow=0.19 cfs 0.014 af
Outflow=0.02 cfs 0.014 af

Pond 34P: building a Peak Elev=28.46' Storage=0.006 af Inflow=0.24 cfs 0.018 af
Outflow=0.03 cfs 0.018 af

Pond 36P: multifamily (per module) Peak Elev=28.28' Storage=0.009 af Inflow=0.35 cfs 0.026 af
Outflow=0.04 cfs 0.026 af

Total Runoff Area = 0.134 ac Runoff Volume = 0.072 af Average Runoff Depth = 6.42"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.134 ac

Summary for Subcatchment 25S: building c

[49] Hint: Tc<2dt may require smaller dt

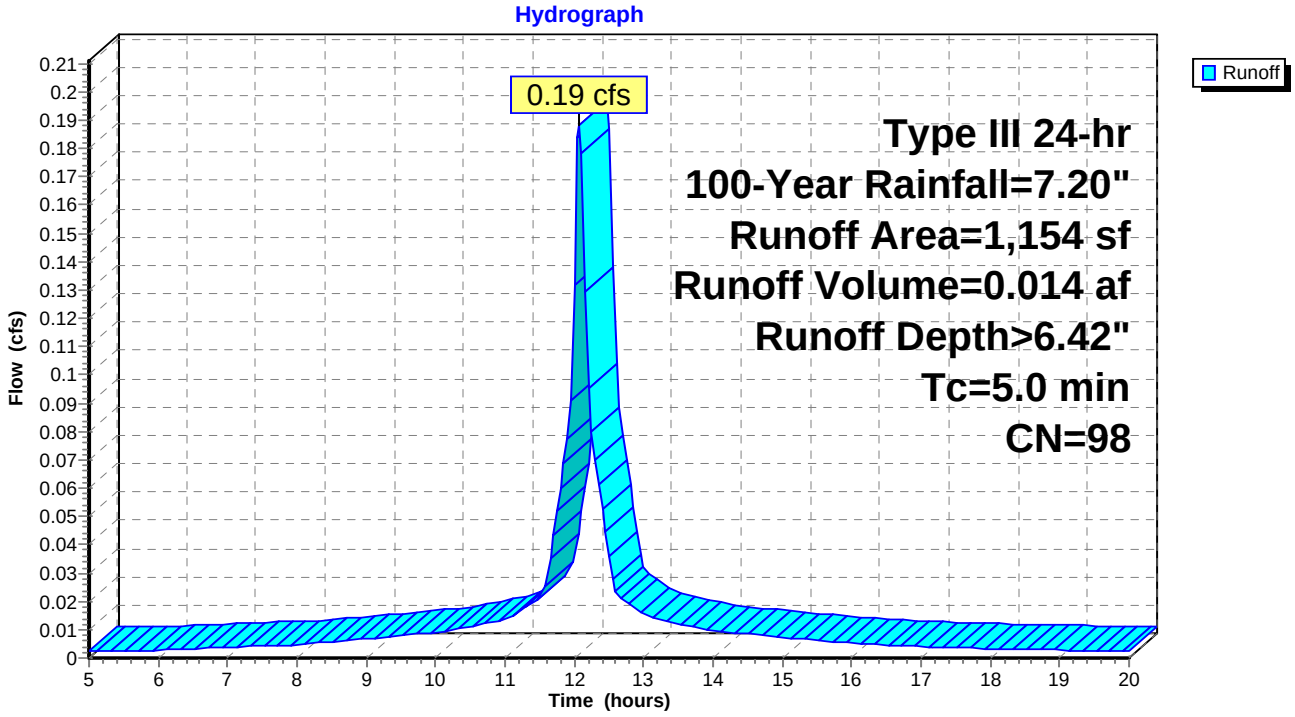
Runoff = 0.19 cfs @ 12.07 hrs, Volume= 0.014 af, Depth> 6.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	1,154	98	
	1,154		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 25S: building c



Summary for Subcatchment 27S: building b

[49] Hint: Tc<2dt may require smaller dt

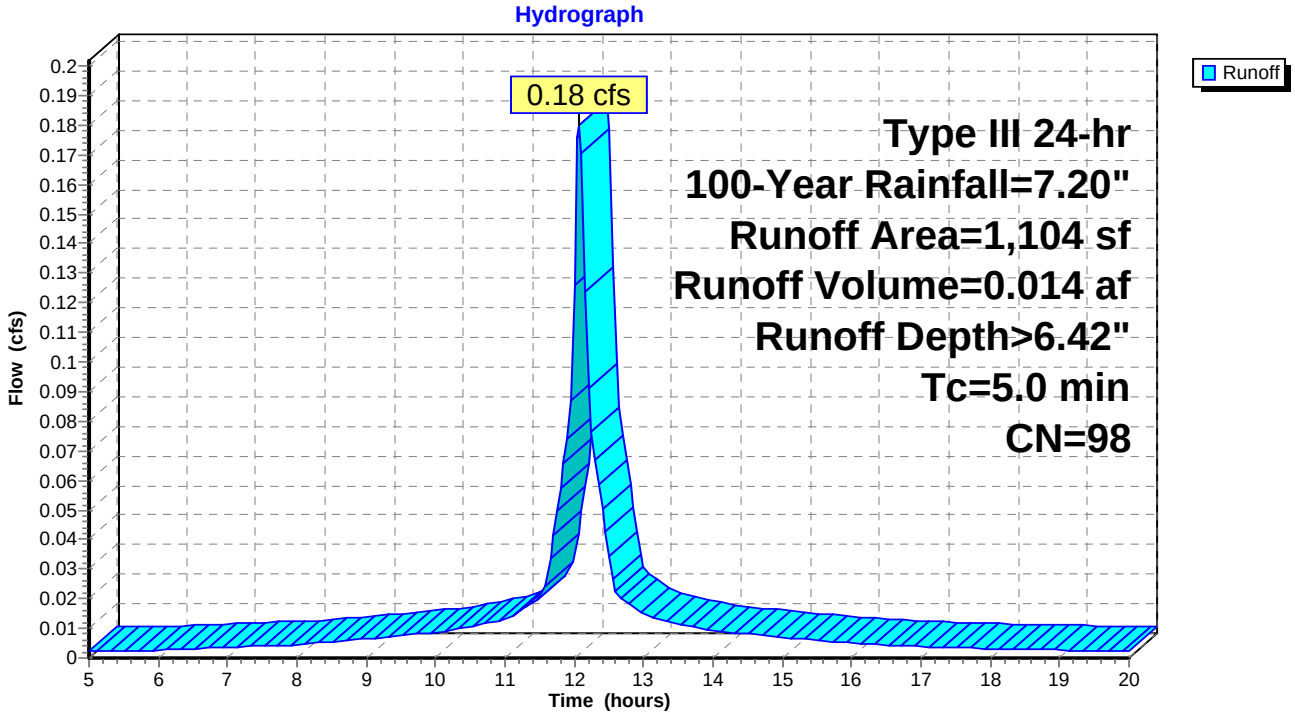
Runoff = 0.18 cfs @ 12.07 hrs, Volume= 0.014 af, Depth> 6.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	1,104	98	
	1,104		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 27S: building b



Summary for Subcatchment 29S: building A

[49] Hint: Tc<2dt may require smaller dt

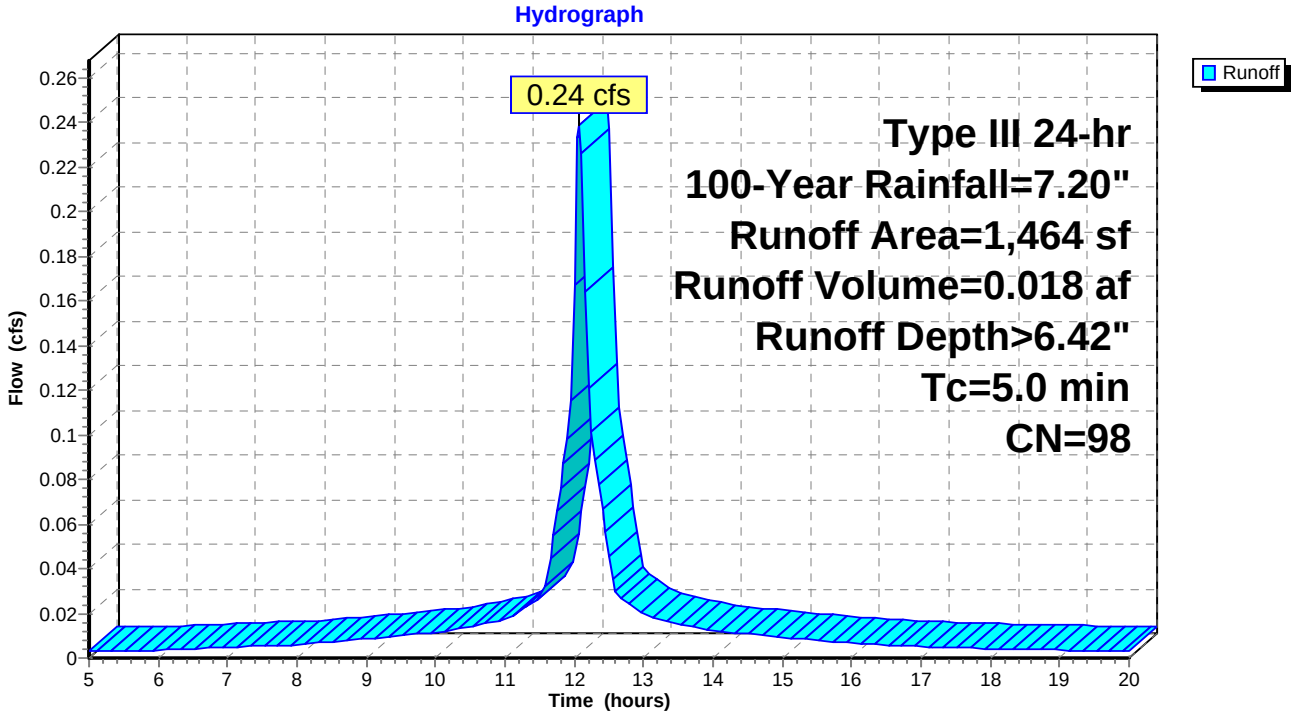
Runoff = 0.24 cfs @ 12.07 hrs, Volume= 0.018 af, Depth> 6.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	1,464	98	
	1,464		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 29S: building A



Summary for Subcatchment 35S: multifamily(per module)

[49] Hint: Tc<2dt may require smaller dt

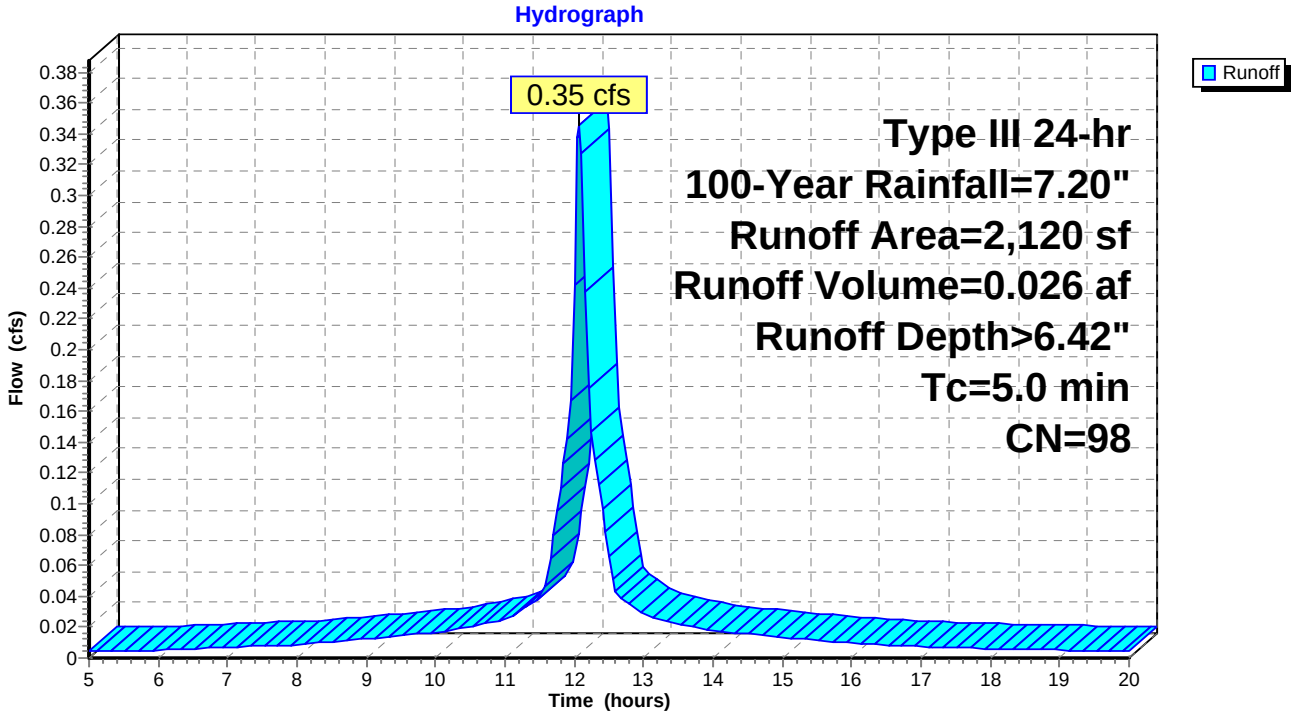
Runoff = 0.35 cfs @ 12.07 hrs, Volume= 0.026 af, Depth> 6.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	2,120	98	
	2,120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 35S: multifamily(per module)



Summary for Pond 32P: building b

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.025 ac,100.00% Impervious, Inflow Depth > 6.42" for 100-Year event
Inflow = 0.18 cfs @ 12.07 hrs, Volume= 0.014 af
Outflow = 0.02 cfs @ 11.60 hrs, Volume= 0.014 af, Atten= 88%, Lag= 0.0 min
Discarded = 0.02 cfs @ 11.60 hrs, Volume= 0.014 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 27.35' @ 12.61 hrs Surf.Area= 0.003 ac Storage= 0.004 af
Flood Elev= 28.40' Surf.Area= 0.003 ac Storage= 0.006 af

Plug-Flow detention time= 53.7 min calculated for 0.014 af (100% of inflow)
Center-of-Mass det. time= 53.2 min (785.9 - 732.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	24.85'	0.003 af	**11.17'W x 10.50'L x 3.54'H Field A** 0.010 af Overall - 0.003 af Embedded = 0.007 af x 40.0% Voids
#2A	25.35'	0.003 af	**Cultec R-330XLHD** x 2 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 2 rows
		0.006 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.85'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 11.60 hrs HW=24.89' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.02 cfs)

Pond 32P: building b - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 2 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

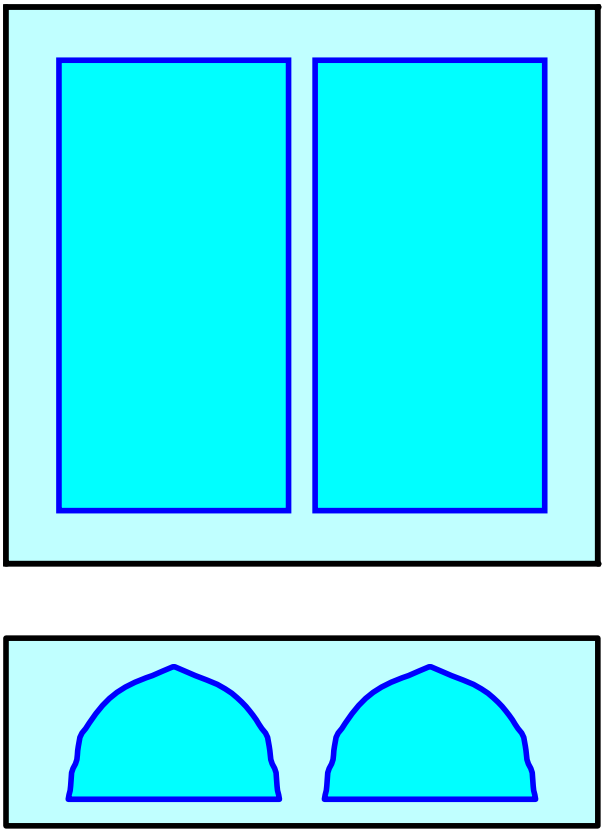
1 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
2 Rows x 52.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.17' Base Width
6.0" Base + 30.5" Chamber Height + 6.0" Cover = 3.54' Field Height

2 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 2 Rows = 126.7 cf Chamber Storage

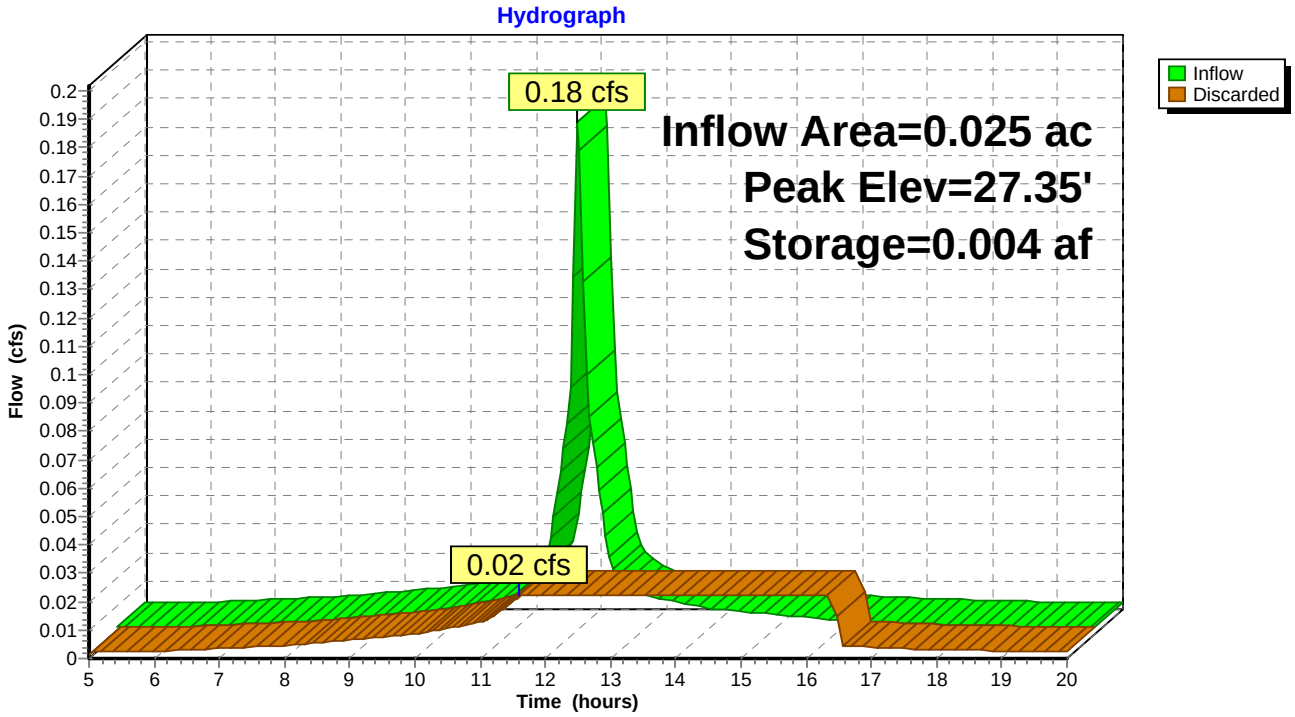
415.3 cf Field - 126.7 cf Chambers = 288.6 cf Stone x 40.0% Voids = 115.4 cf Stone Storage

Chamber Storage + Stone Storage = 242.1 cf = 0.006 af
Overall Storage Efficiency = 58.3%

2 Chambers
15.4 cy Field
10.7 cy Stone



Pond 32P: building b



Summary for Pond 33P: building c

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.026 ac,100.00% Impervious, Inflow Depth > 6.42" for 100-Year event
Inflow = 0.19 cfs @ 12.07 hrs, Volume= 0.014 af
Outflow = 0.02 cfs @ 11.60 hrs, Volume= 0.014 af, Atten= 88%, Lag= 0.0 min
Discarded = 0.02 cfs @ 11.60 hrs, Volume= 0.014 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 27.53' @ 12.63 hrs Surf.Area= 0.003 ac Storage= 0.005 af
Flood Elev= 28.39' Surf.Area= 0.003 ac Storage= 0.006 af

Plug-Flow detention time= 58.2 min calculated for 0.014 af (100% of inflow)
Center-of-Mass det. time= 57.8 min (790.4 - 732.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	24.85'	0.003 af	**11.17'W x 10.50'L x 3.54'H Field A** 0.010 af Overall - 0.003 af Embedded = 0.007 af x 40.0% Voids
#2A	25.35'	0.003 af	**Cultec R-330XLHD** x 2 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 2 rows
		0.006 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.85'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 11.60 hrs HW=24.90' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.02 cfs)

Pond 33P: building c - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 2 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

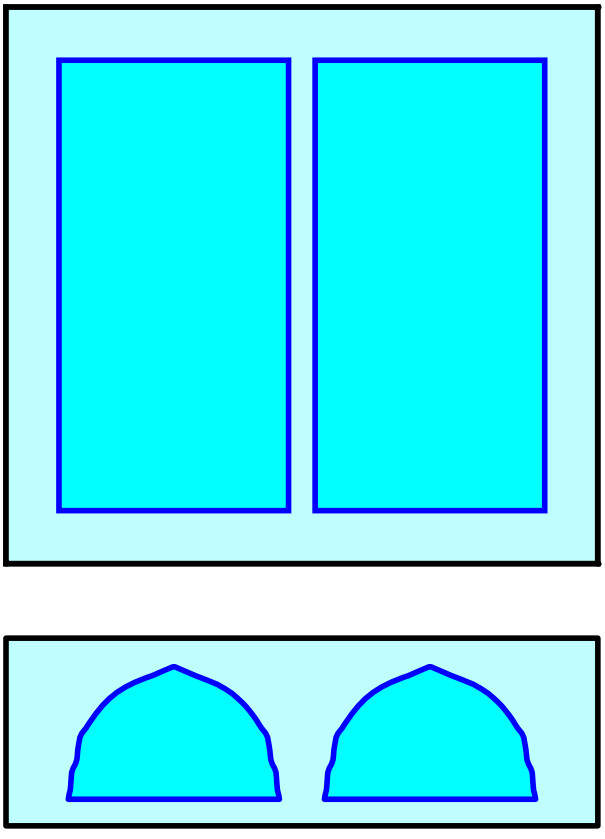
1 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 8.50' Row Length +12.0" End Stone x 2 = 10.50' Base Length
2 Rows x 52.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.17' Base Width
6.0" Base + 30.5" Chamber Height + 6.0" Cover = 3.54' Field Height

2 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 2 Rows = 126.7 cf Chamber Storage

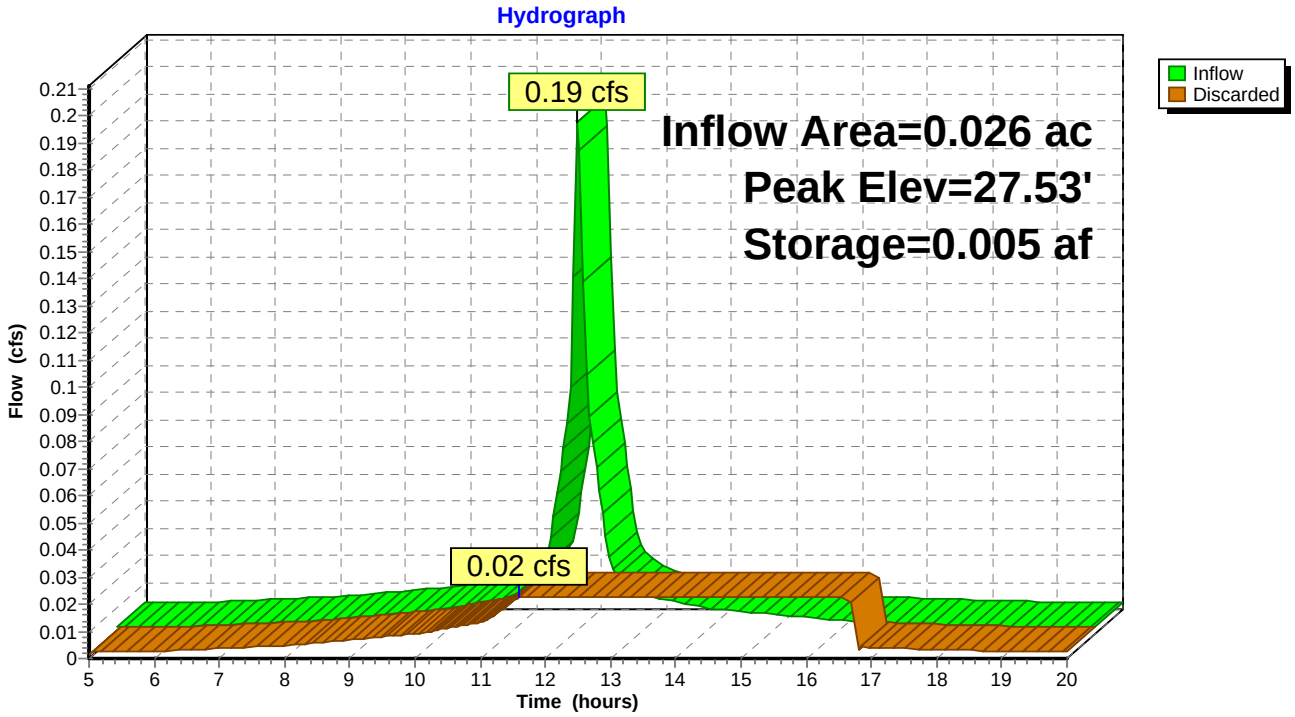
415.3 cf Field - 126.7 cf Chambers = 288.6 cf Stone x 40.0% Voids = 115.4 cf Stone Storage

Chamber Storage + Stone Storage = 242.1 cf = 0.006 af
Overall Storage Efficiency = 58.3%

2 Chambers
15.4 cy Field
10.7 cy Stone



Pond 33P: building c



Summary for Pond 34P: building a

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.034 ac,100.00% Impervious, Inflow Depth > 6.42" for 100-Year event
Inflow = 0.24 cfs @ 12.07 hrs, Volume= 0.018 af
Outflow = 0.03 cfs @ 11.45 hrs, Volume= 0.018 af, Atten= 89%, Lag= 0.0 min
Discarded = 0.03 cfs @ 11.45 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 28.46' @ 12.74 hrs Surf.Area= 0.003 ac Storage= 0.006 af
Flood Elev= 28.73' Surf.Area= 0.003 ac Storage= 0.006 af

Plug-Flow detention time= 72.4 min calculated for 0.018 af (100% of inflow)
Center-of-Mass det. time= 71.9 min (804.6 - 732.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	24.85'	0.004 af	**11.83'W x 11.17'L x 3.88'H Field A** 0.012 af Overall - 0.003 af Embedded = 0.009 af x 40.0% Voids
#2A	25.52'	0.003 af	**Cultec R-330XLHD** x 2 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 2 rows
		0.006 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.85'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.03 cfs @ 11.45 hrs HW=24.89' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.03 cfs)

Pond 34P: building a - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 2 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

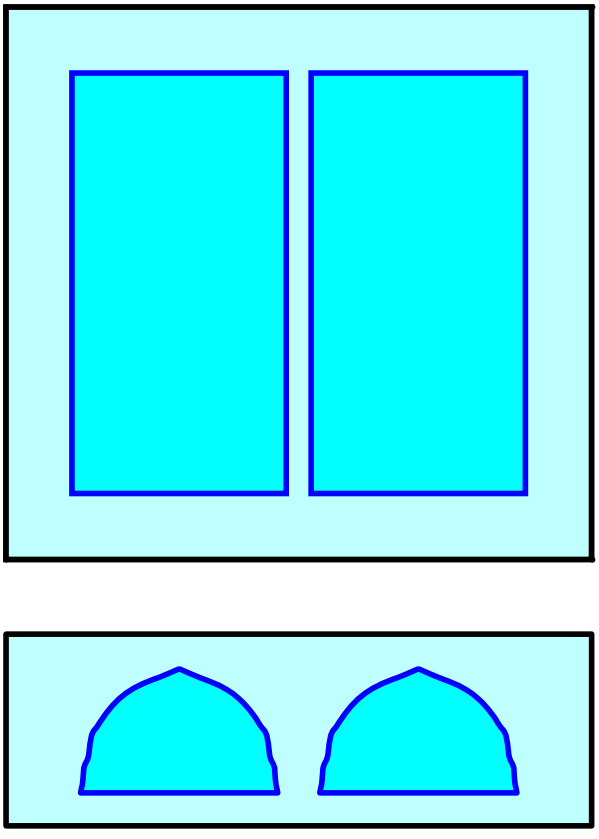
1 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 8.50' Row Length +16.0" End Stone x 2 = 11.17' Base Length
2 Rows x 52.0" Wide + 6.0" Spacing x 1 + 16.0" Side Stone x 2 = 11.83' Base Width
8.0" Base + 30.5" Chamber Height + 8.0" Cover = 3.88' Field Height

2 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 2 Rows = 126.7 cf Chamber Storage

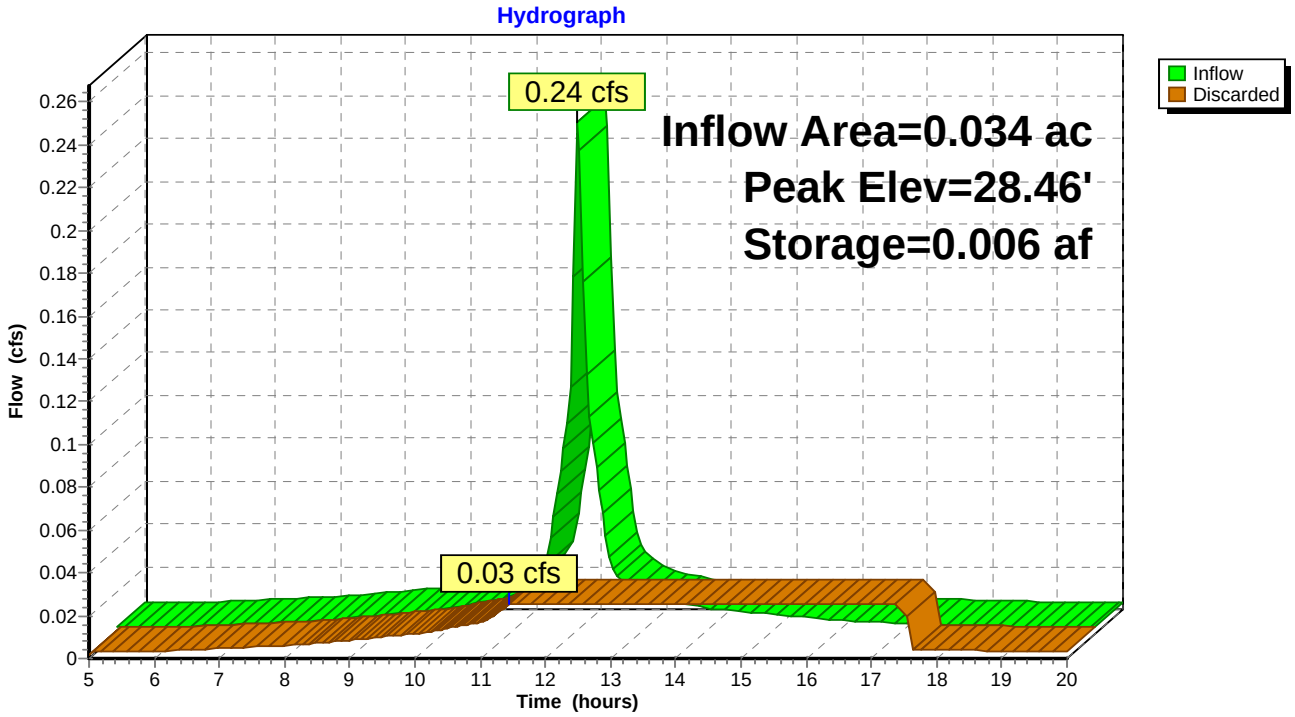
512.0 cf Field - 126.7 cf Chambers = 385.4 cf Stone x 40.0% Voids = 154.1 cf Stone Storage

Chamber Storage + Stone Storage = 280.8 cf = 0.006 af
Overall Storage Efficiency = 54.8%

2 Chambers
19.0 cy Field
14.3 cy Stone



Pond 34P: building a



Summary for Pond 36P: multifamily (per module)

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.049 ac,100.00% Impervious, Inflow Depth > 6.42" for 100-Year event
Inflow = 0.35 cfs @ 12.07 hrs, Volume= 0.026 af
Outflow = 0.04 cfs @ 11.50 hrs, Volume= 0.026 af, Atten= 89%, Lag= 0.0 min
Discarded = 0.04 cfs @ 11.50 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 28.28' @ 12.72 hrs Surf.Area= 0.004 ac Storage= 0.009 af
Flood Elev= 28.40' Surf.Area= 0.004 ac Storage= 0.009 af

Plug-Flow detention time= 69.3 min calculated for 0.026 af (100% of inflow)
Center-of-Mass det. time= 69.0 min (801.7 - 732.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	24.85'	0.005 af	**17.00'W x 11.50'L x 3.54'H Field A** 0.016 af Overall - 0.004 af Embedded = 0.012 af x 40.0% Voids
#2A	25.35'	0.004 af	**Cultec R-330XLHD** x 3 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 3 rows
		0.009 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.85'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.04 cfs @ 11.50 hrs HW=24.89' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.04 cfs)

Pond 36P: multifamily (per module) - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 3 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

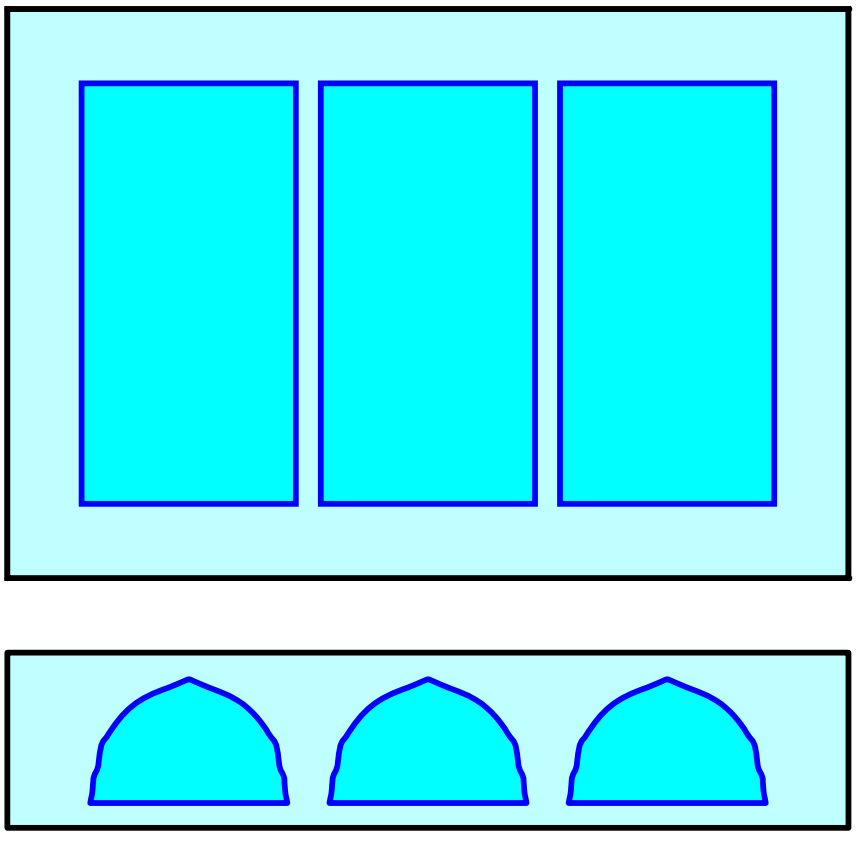
1 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 8.50' Row Length +18.0" End Stone x 2 = 11.50' Base Length
3 Rows x 52.0" Wide + 6.0" Spacing x 2 + 18.0" Side Stone x 2 = 17.00' Base Width
6.0" Base + 30.5" Chamber Height + 6.0" Cover = 3.54' Field Height

3 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 3 Rows = 190.0 cf Chamber Storage

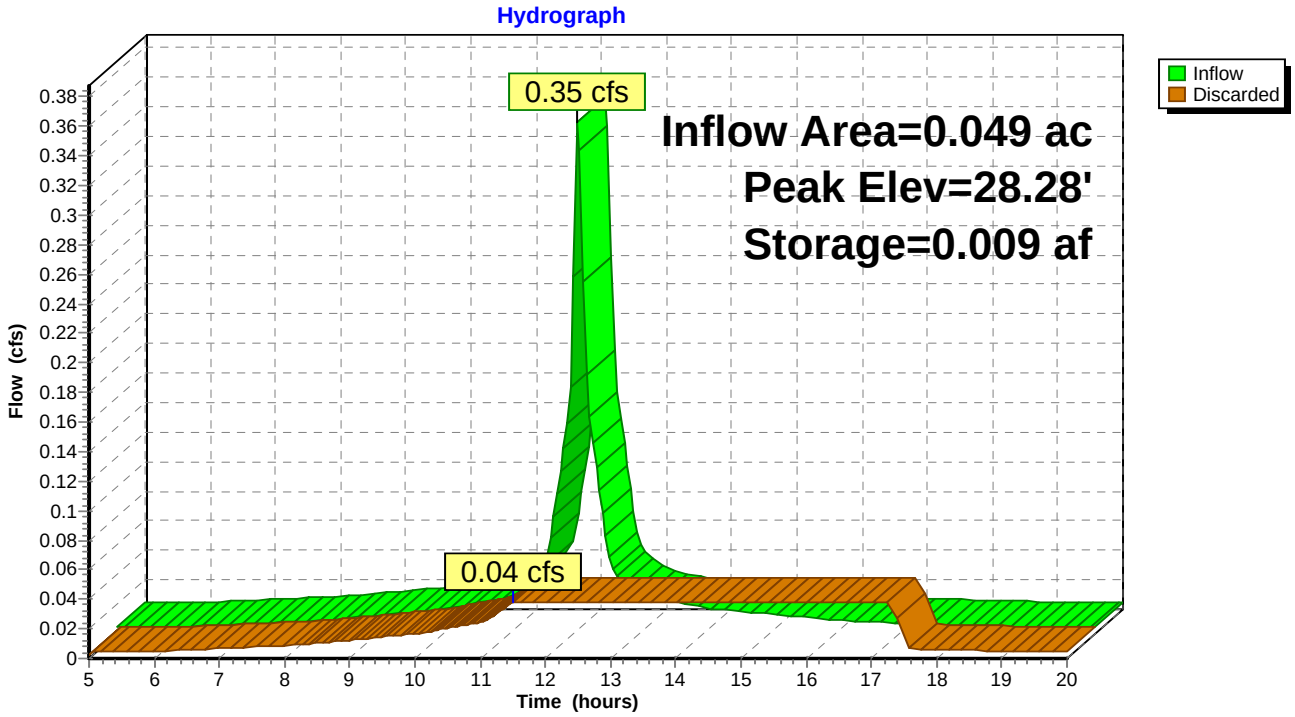
692.4 cf Field - 190.0 cf Chambers = 502.4 cf Stone x 40.0% Voids = 201.0 cf Stone Storage

Chamber Storage + Stone Storage = 391.0 cf = 0.009 af
Overall Storage Efficiency = 56.5%

3 Chambers
25.6 cy Field
18.6 cy Stone



Pond 36P: multifamily (per module)



Length (ft)	Downstream Structure	Upstream Structure	Upstream Invert (ft)	Downstream Invert (ft)	Slope (ft/ft)
115.202	DMH1	CB4	35.500	34.924	0.00500
83.523	DMH1	CB4A	35.342	34.924	0.00500
77.316	CB4	CB3	36.467	36.080	0.00500
50.190	CB3	CB2	37.131	36.877	0.00508
35.718	CB2	CB1	37.310	37.131	0.00500
118.397	DMH3	CB9	38.650	33.184	0.04617
53.741	DMH3	DMH2	33.452	33.184	0.00500
79.640	DMH2	CB6	33.850	33.452	0.00500
22.016	CB9	CB8	39.800	39.650	0.00679
119.578	CB6	CB5	36.650	36.320	0.00276
19.655	CB6	CB7	34.833	33.850	0.05000
53.992	DMH4	CB10	34.668	32.440	0.04127
64.388	DMH4	CB12	34.498	32.440	0.03196
124.706	DMH4	CB14	33.063	32.440	0.00500
70.424	DMH4	CB15	33.255	32.440	0.01157
21.961	CB14	CB13	33.173	33.063	0.00500
20.862	CB12	CB11	34.602	34.498	0.00500

Direction (DD.MMSS)	Step Up (ft)	Drop Invert (ft)	Pipe Material	Pipe Shape	Pipe Size (in)	Pipe Width (in)	Manning's n
26.3759 SE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
51.4059 NW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
67.5524 SW	0.58	0.00	HDPE	Circular	15.00	0.00	0.012
16.0922 SW	0.41	0.00	HDPE	Circular	15.00	0.00	0.012
17.2711 SW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
65.5130 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
66.5638 NW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
89.1754 SW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
69.4149 SE	1.00	0.00	HDPE	Circular	12.00	0.00	0.012
5.5721 NE	2.47	0.00	HDPE	Circular	12.00	0.00	0.012
87.2816 NW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
55.0756 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
37.0209 SW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
0.0405 NW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
15.1328 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.013
87.4303 SW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
0.4203 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012

Known Flow (cfs)	Area (Acres)	Area (SF)	Area (SqMiles)	Curve Number	Tc (min)	Barrel Numbers	Barrel Spacing (ft)
0.000	0.002	87.120	0.000	63	17.900	1	0.00
0.000	0.000	0.000	0.000	50	5.000	1	0.00
0.000	0.772	33610.896	0.001	87	471.300	1	0.00
0.000	0.010	432.185	0.000	92	81.478	1	0.00
0.000	0.012	509.652	0.000	97	78.800	1	0.00
0.000	0.028	1224.036	0.000	50	185.200	1	0.00
0.000	0.021	919.489	0.000	50	187.360	1	0.00
0.000	0.245	10689.624	0.000	50	613.200	1	0.00
0.000	0.040	1759.824	0.000	73	119.300	1	0.00
0.000	0.178	7771.104	0.000	69	569.100	1	0.00
0.000	0.790	34404.660	0.001	56	516.553	1	0.00
0.000	0.106	4613.282	0.000	50	351.803	1	0.00
0.000	0.003	148.834	0.000	50	21.882	1	0.00
0.000	0.447	19459.907	0.001	50	376.489	1	0.00
0.000	0.812	35357.652	0.001	50	486.200	1	0.00
0.000	1.679	73155.615	0.003	50	811.331	1	0.00
0.000	0.148	6468.660	0.000	50	418.100	1	0.00

Downstream Rim Elev (ft)	Upstream Rim Elev (ft)	Total Flow (cfs)	Full Flow (cfs)	Maximum Flow (cfs)	Downstream HGL (ft)
39.862	41.145	0.385	4.962	5.337	35.160
39.862	38.441	0.000	4.962	5.337	34.924
41.145	40.021	0.382	4.962	5.337	36.315
40.021	40.374	0.042	5.000	5.378	36.955
40.374	40.310	0.024	2.737	2.944	37.231
39.760	41.597	0.045	8.316	8.946	33.236
39.760	39.109	0.203	4.962	5.337	33.356
39.109	37.840	0.198	4.962	5.337	33.697
41.597	41.651	0.039	3.188	3.429	39.728
37.840	39.650	0.047	2.032	2.186	36.409
37.840	37.833	0.126	15.691	16.878	34.074
36.971	37.670	0.016	7.862	8.457	32.473
36.971	37.577	0.022	12.544	13.493	32.479
36.971	36.173	0.197	2.737	2.944	32.622
36.971	37.505	0.097	3.843	4.134	32.550
36.173	36.173	0.134	2.737	2.944	33.301
37.577	37.600	0.020	2.736	2.944	34.596

Upstream HGL (ft)	Downstream EGL (ft)	Upstream EGL (ft)	Downstream Flow Depth (in)	Upstream Flow Depth (in)
35.736	35.249	35.825	2.829	2.829
35.342	34.924	35.342	0.000	0.000
36.701	36.404	36.790	2.817	2.817
37.210	36.981	37.236	0.942	0.942
37.373	37.236	37.394	1.192	0.756
38.703	33.359	38.826	0.634	0.634
33.625	33.417	33.686	2.069	2.069
34.022	33.718	34.081	2.943	2.061
39.877	39.757	39.907	0.926	0.926
36.808	36.439	36.814	1.062	1.899
34.970	34.085	35.016	2.687	1.638
34.702	32.533	34.761	0.400	0.400
34.537	32.538	34.595	0.473	0.473
33.245	32.685	33.309	2.179	2.179
33.365	32.617	33.432	1.318	1.318
33.323	33.315	33.374	2.851	1.792
34.659	34.600	34.678	1.184	0.684

Downstream Velocity (fps)	Upstream Velocity (fps)	System
2.400	2.400	A
0.000	0.000	A
2.391	2.391	A
1.303	1.303	A
0.597	1.169	A
2.811	2.811	B
1.982	1.982	B
1.164	1.946	B
1.379	1.379	C
1.389	0.590	B
0.842	1.730	B
1.962	1.962	E
1.936	1.936	E
2.022	2.022	E
2.078	2.078	E
0.934	1.819	F
0.493	1.108	E

Length (ft)	Downstream Structure	Upstream Structure	Upstream Invert (ft)	Downstream Invert (ft)	Slope (ft/ft)
19.542	05	CB28	26.000	25.602	0.02035
242.236	CB28	CB27	30.009	26.000	0.01655
33.338	CB27	CB26	30.639	30.009	0.01890
153.586	CB26	CB25	31.443	30.639	0.00524
21.234	CB25	CB24	31.549	31.443	0.00500
50.779	CB24	CB23	31.968	31.659	0.00609
97.335	DMH10	DMH7	25.481	21.461	0.04131
146.644	DMH10	DMH8	25.172	21.461	0.02531
165.853	DMH8	CB57	26.002	25.172	0.00500
50.641	DMH8	CB58	28.695	28.442	0.00499
112.557	DMH7	CB53	26.780	25.481	0.01154
35.319	DMH7	CB54	28.677	25.481	0.09047
32.269	DMH7	CB55	26.000	25.481	0.01608
62.956	CB57	CB56	28.079	26.002	0.03300
37.925	CB57	CB63	26.191	26.002	0.00500
63.610	CB53	CB52	27.650	27.330	0.00504
22.797	CB63	CB62	26.305	26.191	0.00500
44.192	CB62	CB61	26.526	26.305	0.00500
104.277	CB61	CB60	27.048	26.526	0.00501
21.511	CB60	CB59	27.296	27.188	0.00500
105.077	O3	CB21	37.057	36.531	0.00500
34.606	O3	DMH2	38.526	36.531	0.05763
129.017	DMH2	CB18	39.173	38.526	0.00502
139.681	DMH2	CB19	39.223	38.526	0.00499
32.071	CB21	CB20	37.217	37.057	0.00500
32.968	CB20	CB20A	37.382	37.217	0.00500
49.511	O6	CB34	26.732	24.920	0.03660
231.581	O6	CB35	29.027	24.920	0.01774
57.806	CB35	CB35A	29.420	29.127	0.00506
72.150	CB35	CB35B	29.369	29.027	0.00474
107.985	CB34	CB33	27.561	26.732	0.00768
141.431	CB33	CB31	28.891	27.561	0.00940
52.446	CB33	CB33A	27.823	27.561	0.00500
273.149	CB31	CB30	30.657	28.891	0.00646
39.922	CB31	CB32	29.176	28.891	0.00713
39.144	CB30	CB29	31.211	30.657	0.01416
178.720	CB29	CB29B	32.303	31.211	0.00611
17.342	CB29B	CB29A	32.769	32.682	0.00499
101.486	O8	CB37	29.912	29.405	0.00500
31.444	CB37	DMH4	30.070	29.912	0.00500
43.488	DMH4	CB38	31.755	30.070	0.03875
33.909	DMH4	CB39	31.655	31.490	0.00487
169.462	DMH4	DMH3	30.656	30.070	0.00346
106.055	DMH3	CB36	31.186	30.656	0.00500
56.649	DMH3	CB40	31.485	30.916	0.01005
41.853	DMH3	CB42	31.335	30.916	0.01000
53.419	DMH3	CB43	31.447	30.916	0.00993
41.017	DMH3	CB45	31.325	30.916	0.00996
16.518	CB45	CB44	31.407	31.325	0.00500
15.803	CB42	CB41	31.414	31.335	0.00500
45.852	09	DHM6	27.354	27.110	0.00530
30.281	DHM6	CB49	27.650	27.503	0.00484
78.834	DHM6	CB50	28.290	27.503	0.00997
36.525	DHM6	CB51	27.868	27.683	0.00506
212.419	DHM6	DHM5	27.595	27.354	0.00114
30.460	DHM5	CB46	27.747	27.595	0.00500
31.573	DHM5	CB47	27.775	27.615	0.00507

Direction (DD.MMSS)	Step Up (ft)	Drop Invert (ft)	Pipe Material	Pipe Shape	Pipe Size (in)	Pipe Width (in)	Manning's n
78.3308 SE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
15.2930 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
86.2106 SW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
1.4205 NW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
89.2145 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
28.5309 NE	0.11	0.00	HDPE	Circular	12.00	0.00	0.012
19.5921 NW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
55.1311 SE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
42.0011 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
67.3743 SE	3.27	0.00	HDPE	Circular	12.00	0.00	0.012
2.1850 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
70.5213 SW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
89.3913 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
53.1325 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
48.0222 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
69.1512 SE	0.55	0.00	HDPE	Circular	12.00	0.00	0.012
56.2311 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
45.0245 NW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
54.4810 NW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
32.1036 SW	0.14	0.00	HDPE	Circular	12.00	0.00	0.012
9.0131 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
77.0836 SE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
34.3944 SW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
9.1048 SW	0.00	0.00	Concrete	Circular	12.00	0.00	0.013
16.5700 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
89.4707 NE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
1.0114 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
9.3223 SE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
65.2223 SW	0.10	0.00	HDPE	Circular	12.00	0.00	0.012
63.5900 NW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
87.5632 SW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
28.0747 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
16.0759 SW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
88.0441 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
25.3548 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
50.1242 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
26.2646 NW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
70.5406 SW	0.38	0.00	HDPE	Circular	12.00	0.00	0.012
39.3648 SW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
29.3728 SW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
65.2650 SW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
70.2759 SE	1.42	0.00	HDPE	Circular	12.00	0.00	0.012
2.1814 SE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
16.1951 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
57.4328 SW	0.26	0.00	HDPE	Circular	12.00	0.00	0.012
54.3843 NW	0.26	0.00	HDPE	Circular	12.00	0.00	0.012
58.5340 SE	0.26	0.00	HDPE	Circular	12.00	0.00	0.012
43.1544 NE	0.26	0.00	HDPE	Circular	12.00	0.00	0.012
74.5711 NE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
63.3701 NW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
59.5536 NW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
58.3057 NW	0.15	0.00	HDPE	Circular	12.00	0.00	0.012
60.4833 SW	0.15	0.00	HDPE	Circular	12.00	0.00	0.012
30.2432 SE	0.33	0.00	HDPE	Circular	12.00	0.00	0.012
34.5613 SW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
61.1940 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
74.5752 NW	0.02	0.00	HDPE	Circular	12.00	0.00	0.012

Known Flow (cfs)	Area (Acres)	Area (SF)	Area (SqMiles)	Curve Number	Tc (min)	Barrel Numbers	Barrel Spacing (ft)
0.000	0.088	3815.500	0.000	50	5.000	1	0.00
0.000	0.159	6909.300	0.000	50	5.000	1	0.00
0.000	0.397	17275.500	0.001	50	5.000	1	0.00
0.000	1.197	52132.608	0.002	50	5.000	1	0.00
0.000	0.042	1837.700	0.000	50	5.000	1	0.00
0.000	0.006	278.784	0.000	50	5.000	1	0.00
0.000	0.006	279.900	0.000	50	5.000	1	0.00
0.000	0.000	0.000	0.000	50	5.000	1	0.00
0.000	0.186	8084.736	0.000	50	5.000	1	0.00
0.000	0.098	4251.000	0.000	50	5.000	1	0.00
0.000	0.806	35119.800	0.001	50	5.000	1	0.00
0.000	0.343	14938.100	0.001	50	5.000	1	0.00
0.000	0.142	6203.800	0.000	50	5.000	1	0.00
0.000	0.313	13644.400	0.000	50	5.000	1	0.00
0.000	0.004	188.500	0.000	50	5.000	1	0.00
0.000	0.105	4563.500	0.000	50	5.000	1	0.00
0.000	0.005	198.300	0.000	50	5.000	1	0.00
0.000	0.006	241.000	0.000	50	5.000	1	0.00
0.000	0.012	532.600	0.000	50	5.000	1	0.00
0.000	0.409	17802.700	0.001	50	5.000	1	0.00
0.000	0.000	0.000	0.000	50	5.000	1	0.00
0.000	0.006	278.784	0.000	50	5.000	1	0.00
0.000	0.122	5296.896	0.000	50	5.000	1	0.00
0.000	0.102	4460.544	0.000	50	5.000	1	0.00
0.000	0.016	675.900	0.000	50	5.000	1	0.00
0.000	0.000	0.000	0.000	50	5.000	1	0.00
0.000	0.667	29066.500	0.001	50	5.000	1	0.00
0.000	0.000	0.000	0.000	50	5.000	1	0.00
0.000	0.000	0.000	0.000	50	5.000	1	0.00
0.000	0.000	0.000	0.000	50	5.000	1	0.00
0.000	0.015	652.000	0.000	50	5.000	1	0.00
0.000	1.030	44884.224	0.002	50	5.000	1	0.00
0.000	0.011	498.800	0.000	50	5.000	1	0.00
0.000	0.428	18661.400	0.001	50	5.000	1	0.00
0.000	0.342	14902.800	0.001	50	5.000	1	0.00
0.000	0.037	1633.300	0.000	50	5.000	1	0.00
0.000	0.581	25318.100	0.001	50	5.000	1	0.00
0.000	0.013	561.800	0.000	50	5.000	1	0.00
0.000	0.004	173.700	0.000	50	5.000	1	0.00
0.000	0.011	468.000	0.000	50	5.000	1	0.00
0.000	0.095	4131.100	0.000	50	5.000	1	0.00
0.000	0.586	25547.279	0.001	50	5.000	1	0.00
0.000	0.011	492.200	0.000	50	5.000	1	0.00
0.000	0.129	5601.100	0.000	50	5.000	1	0.00
0.000	0.147	6390.200	0.000	50	5.000	1	0.00
0.000	0.159	6933.200	0.000	50	5.000	1	0.00
0.000	0.016	704.200	0.000	50	5.000	1	0.00
0.000	0.039	1677.300	0.000	50	5.000	1	0.00
0.000	0.115	5012.700	0.000	50	5.000	1	0.00
0.000	0.504	21933.400	0.001	50	5.000	1	0.00
0.000	0.012	507.400	0.000	50	5.000	1	0.00
0.000	0.212	9224.800	0.000	50	5.000	1	0.00
0.000	0.408	17780.300	0.001	50	5.000	1	0.00
0.000	0.158	6897.200	0.000	50	5.000	1	0.00
0.000	0.044	1918.100	0.000	50	5.000	1	0.00
0.000	0.370	16107.300	0.001	50	5.000	1	0.00
0.000	0.645	28115.900	0.001	50	5.000	1	0.00

Downstream Rim Elev (ft)	Upstream Rim Elev (ft)	Total Flow (cfs)	Full Flow (cfs)	Maximum Flow (cfs)	Downstream HGL (ft)
33.453	33.251	1.662	10.010	10.768	25.947
33.251	34.500	1.561	9.027	9.710	26.948
34.500	34.809	1.386	5.321	5.724	30.711
34.809	35.641	0.997	2.801	3.013	31.327
35.641	35.620	0.057	2.737	2.944	31.903
35.620	36.298	0.008	3.020	3.249	31.659
33.770	33.167	1.321	14.261	15.341	21.718
33.770	33.321	1.065	11.163	12.009	21.722
33.321	32.062	0.950	4.962	5.337	25.973
33.321	33.111	0.112	2.733	2.940	28.579
33.167	31.649	0.811	7.537	8.108	26.638
33.167	32.806	0.344	11.641	12.522	26.637
33.167	32.449	0.159	4.907	5.279	26.636
32.062	32.079	0.318	7.031	7.563	26.512
32.062	32.205	0.430	4.963	5.338	26.514
31.649	31.650	0.119	2.747	2.955	27.471
32.205	31.360	0.425	4.960	5.335	26.575
31.360	31.856	0.419	4.962	5.338	26.665
31.856	31.298	0.413	4.965	5.341	26.884
31.298	31.296	0.398	2.736	2.943	27.446
41.736	40.304	0.018	4.962	5.337	36.583
41.736	42.136	0.219	16.845	18.121	36.631
42.136	41.109	0.137	2.742	2.949	39.004
42.136	41.113	0.074	2.524	2.715	39.003
40.304	40.217	0.018	4.962	5.338	37.129
40.217	40.381	0.000	2.736	2.943	37.217
34.227	33.500	2.813	13.423	14.440	25.309
34.227	32.027	0.000	9.345	10.052	24.920
32.027	33.670	0.000	2.754	2.962	29.127
32.027	33.619	0.000	2.664	2.866	29.027
33.500	32.706	2.218	6.149	6.614	28.198
32.706	33.257	2.187	6.805	7.320	28.466
32.706	32.482	0.013	4.961	5.337	28.443
33.257	35.000	1.006	5.642	6.069	29.662
33.257	33.000	0.343	5.927	6.375	29.655
35.000	35.650	0.592	8.348	8.981	31.162
35.650	36.824	0.547	5.483	5.899	31.632
36.824	36.831	0.015	2.735	2.942	32.732
38.774	38.620	1.827	4.962	5.337	29.930
38.620	38.805	1.823	4.961	5.337	30.702
38.805	38.542	0.109	7.618	8.195	30.820
38.805	38.197	0.536	2.701	2.906	31.792
38.805	36.844	1.165	4.128	4.441	30.831
36.844	35.186	0.145	2.736	2.943	31.251
36.844	35.798	0.163	3.879	4.173	31.253
36.844	36.157	0.649	3.870	4.162	31.278
36.844	36.296	0.019	3.856	4.148	31.251
36.844	36.151	0.176	3.863	4.156	31.254
36.151	36.567	0.130	2.737	2.944	31.553
36.157	35.822	0.474	2.736	2.943	31.785
34.033	34.417	2.563	2.817	3.031	27.797
34.417	33.810	0.979	2.692	2.896	28.402
34.417	32.927	0.398	3.865	4.157	28.393
34.417	33.631	0.175	2.754	2.962	28.392
34.417	32.416	0.998	1.305	1.404	28.402
32.416	31.747	0.366	2.737	2.944	28.561
32.416	31.775	0.579	2.756	2.965	28.563

Upstream HGL (ft)	Downstream EGL (ft)	Upstream EGL (ft)	Downstream Flow Depth (in)	Upstream Flow Depth (in)
26.345	26.514	26.912	4.135	4.135
30.504	26.986	30.689	11.381	5.945
31.137	30.797	31.332	8.427	5.980
31.863	31.374	32.021	8.261	5.036
31.903	31.903	31.904	5.515	4.241
31.968	31.659	31.968	0.000	0.000
25.738	22.538	26.558	3.086	3.086
25.433	22.232	25.944	3.131	3.131
26.384	25.993	26.523	9.607	4.595
28.831	28.626	28.878	1.639	1.639
27.133	26.646	27.259	13.885	4.236
28.919	26.640	29.004	12.000	2.903
26.636	26.636	26.637	12.000	7.630
28.312	26.522	28.394	6.127	2.791
26.521	26.527	26.564	6.152	3.951
27.791	27.519	27.840	1.693	1.693
26.580	26.603	26.650	4.607	3.293
26.778	26.697	26.866	4.317	3.019
27.298	26.915	27.385	4.289	2.995
27.554	27.542	27.650	3.096	3.096
37.108	36.600	37.125	0.617	0.617
38.626	36.984	38.979	1.200	1.200
39.325	39.006	39.377	5.736	1.818
39.334	39.004	39.371	5.730	1.333
37.269	37.135	37.286	0.870	0.617
37.382	37.217	37.382	0.000	0.000
27.121	26.470	28.282	4.664	4.664
29.027	24.920	29.027	0.000	0.000
29.420	29.127	29.420	0.000	0.000
29.369	29.027	29.369	0.000	0.000
28.294	28.248	28.431	15.000	8.795
29.482	28.548	29.710	10.860	7.085
28.443	28.443	28.443	10.587	7.441
31.051	29.687	31.194	9.253	4.733
29.655	29.658	29.665	9.167	5.750
31.511	31.187	31.617	6.060	3.600
32.591	31.667	32.692	5.047	3.460
32.819	32.749	32.836	0.599	0.599
30.438	30.147	30.654	6.303	6.303
30.709	30.779	30.838	9.471	7.678
31.889	30.821	31.935	9.007	1.616
31.957	31.903	32.069	3.626	3.626
31.082	30.865	31.237	9.137	5.107
31.342	31.253	31.395	7.142	1.867
31.651	31.261	31.708	4.044	1.984
31.670	31.378	31.793	4.341	4.029
31.502	31.251	31.521	4.017	0.670
31.497	31.262	31.556	4.048	2.060
31.565	31.568	31.607	2.739	1.893
31.786	31.815	31.835	5.404	4.468
28.131	28.106	28.369	8.235	9.326
28.412	28.429	28.448	10.778	9.148
28.551	28.398	28.643	10.678	3.130
28.393	28.393	28.395	8.504	6.290
28.532	28.427	28.558	12.000	11.241
28.563	28.564	28.567	11.591	9.783
28.567	28.572	28.579	11.376	9.501

Downstream Velocity (fps)	Upstream Velocity (fps)	System
6.040	6.040	G
1.563	3.448	G
2.352	3.544	G
1.730	3.189	G
0.162	0.230	G
0.805	0.805	G
7.263	7.263	L
5.731	5.731	L
1.144	2.981	M
1.736	1.736	M
0.684	2.849	L
0.438	2.346	L
0.202	0.301	L
0.790	2.297	M
0.907	1.665	M
1.766	1.766	L
1.328	2.123	M
1.435	2.378	M
1.426	2.368	M
2.483	2.483	M
1.051	1.051	E
4.765	4.765	E
0.371	1.833	E
0.201	1.558	E
0.632	1.051	F
0.000	0.000	F
8.646	8.646	H
0.000	0.000	H
0.000	0.000	I
0.000	0.000	I
1.807	2.965	G
2.298	3.834	G
0.015	0.022	G
1.266	3.029	H
0.437	0.795	H
1.273	2.612	H
1.509	2.557	H
1.036	1.036	H
3.734	3.734	J
2.232	2.880	J
0.172	1.724	J
2.679	2.679	J
1.488	3.161	J
0.297	1.856	J
0.701	1.918	J
2.533	2.805	J
0.082	1.099	J
0.754	1.957	J
0.967	1.645	J
1.380	1.775	J
4.461	3.916	K
1.317	1.523	K
0.539	2.443	K
0.294	0.419	K
1.270	1.304	K
0.472	0.534	K
0.753	0.869	K

Length (ft)	Downstream Structure	Upstream Structure	Upstream Invert (ft)	Downstream Invert (ft)	Slope (ft/ft)
22.015	CB49	CB48	27.760	27.650	0.00500

Direction (DD.MMSS)	Step Up (ft)	Drop Invert (ft)	Pipe Material	Pipe Shape	Pipe Size (in)	Pipe Width (in)	Manning's n
81.0510 NW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012

Known Flow (cfs)	Area (Acres)	Area (SF)	Area (SqMiles)	Curve Number	Tc (min)	Barrel Numbers	Barrel Spacing (ft)
0.000	0.897	39072.900	0.001	50	5.000	1	0.00

Downstream Rim Elev (ft)	Upstream Rim Elev (ft)	Total Flow (cfs)	Full Flow (cfs)	Maximum Flow (cfs)	Downstream HGL (ft)
33.810	32.908	0.752	2.737	2.944	28.451

Upstream HGL (ft)	Downstream EGL (ft)	Upstream EGL (ft)	Downstream Flow Depth (in)	Upstream Flow Depth (in)
28.455	28.470	28.481	9.610	8.334

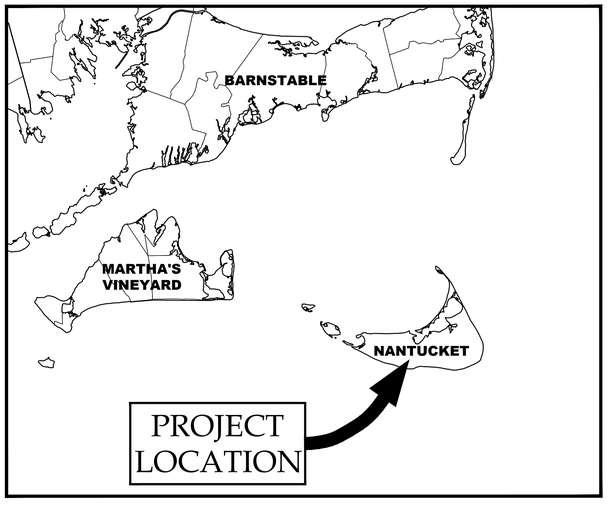
Downstream Velocity (fps)	Upstream Velocity (fps)	System
1.115	1.291	K

DEFINITIVE SUBDIVISION PLAN

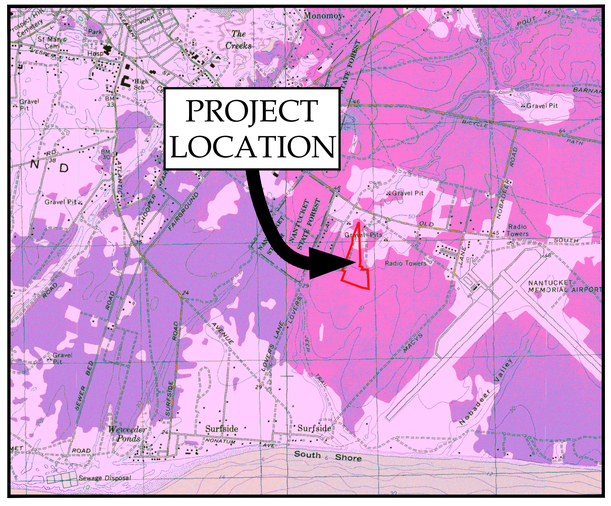
"MEADOWS II" MULTI-FAMILY (RENTAL) APARTMENT PROJECT

LOCATED AT:

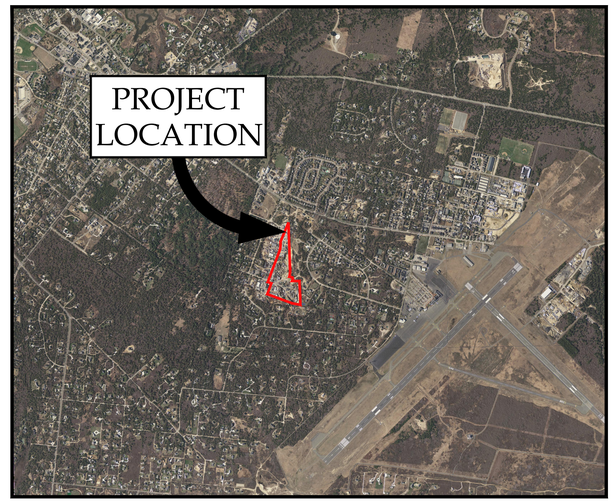
20 Davkim Lane and 20(R) Davkim Lane
Town of Nantucket MA



VICINITY MAP
NOT TO SCALE



USGS TOPOGRAPHIC MAP
1"=2000'



LOCATION MAP
1"=400'

OWNER/DEVELOPER:

RICHMOND GREAT POINT DEVELOPMENT LLC
20 Davkim Lane, Nantucket MA 02554

RICHMOND GREAT POINT DEVELOPMENT LLC

LIST OF DRAWINGS

DWG	TITLE
G-1	COVER SHEET
C-1	INDEX SHEET
C-2 TO C-5	DEFINITIVE PLAN
C-6 TO C-8	TOPOGRAPHIC PLAN
C-9 TO C-12	PLANS & PROFILES
C-13	LANDSCAPE PLAN
C-14	EROSION & DUST CONTROL PLAN
C-15 TO C-22	DETAILS
C-23	TEST PIT LOCATION
C-24	SOIL LOGS
C-25	GENERAL NOTES

PREPARED BY:

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

ROBERT L. BERSIN CIVIL NO. 37391 REGISTERED PROFESSIONAL ENGINEER 8/5/2016

ROBERT BERSIN MASSACHUSETTS P.E. LICENSE NO. 37391
GREEN SEAL ENVIRONMENTAL, INC. JOB NO. MSTR-2302-0001

TIMOTHY R. BENNETT No. 36856 REGISTERED PROFESSIONAL LAND SURVEYOR 8/5/2016

TIMOTHY BENNETT MASSACHUSETTS P.L.S. LICENSE NO. 36856
GREEN SEAL ENVIRONMENTAL, INC. JOB NO. MSTR-2302-0001

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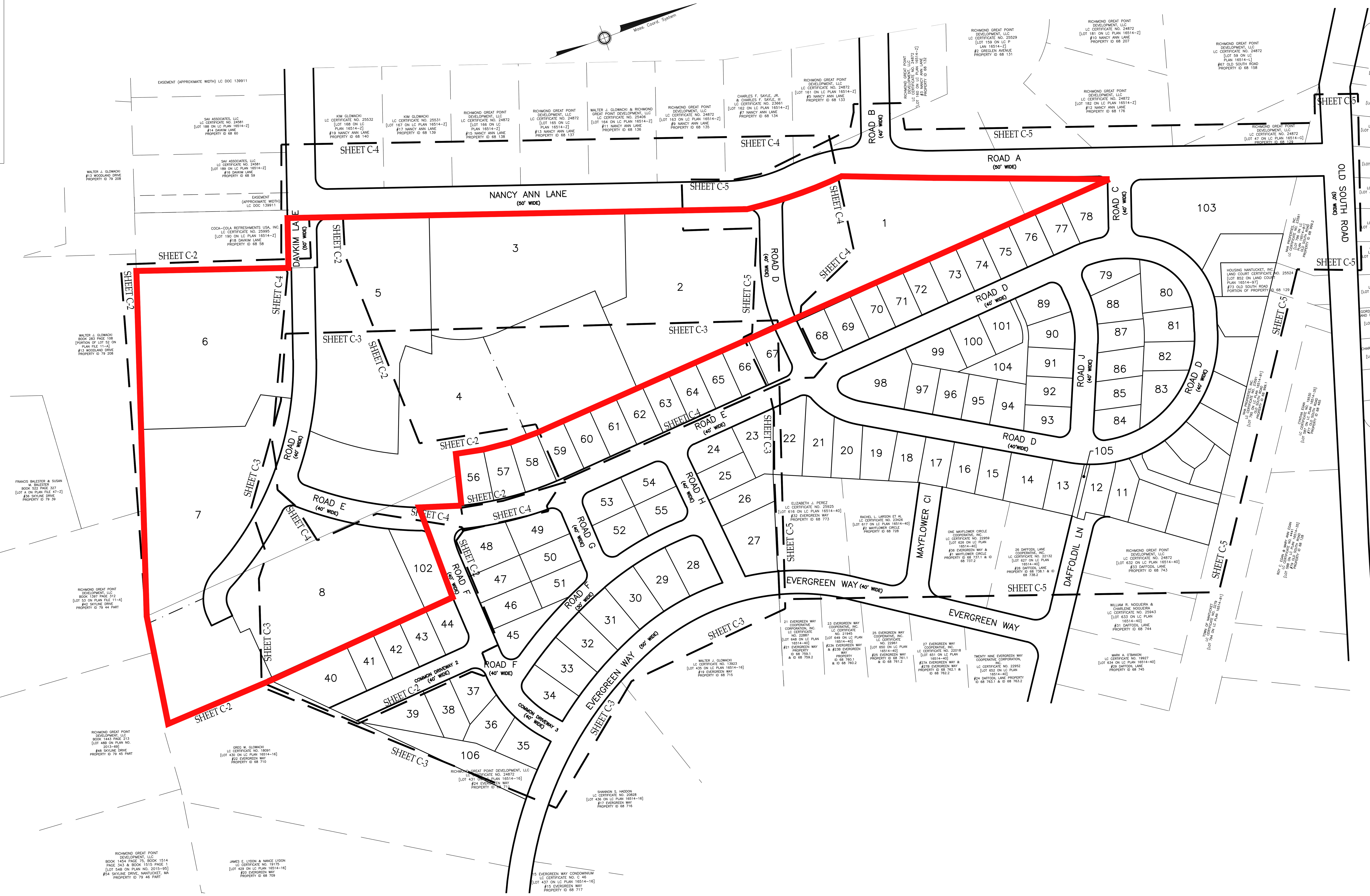
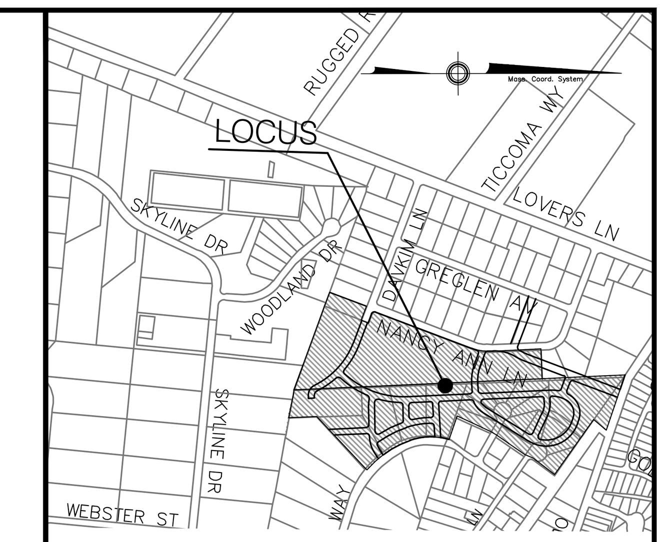
FOR REGISTRY USE ONLY





LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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REVISIONS

NO.	DATE	COMMENT

NOTES:
THE PLANNING BOARD DETERMINES THAT LOTS 1 THROUGH 8 DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS WETLAND PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BY-LAW, BUT STILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BYLAWS. DETERMINATION MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.

ZONE: R-5

MINIMUM LOT AREA = 5,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 10 FEET ON ONE SIDE, 5 FEET THEREAFTER
REAR = 5 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

SHEET INDEX:

SHEET C-1:	DEFINITIVE INDEX SHEET
SHEET C-2:	DEFINITIVE PLAN SHEET 1
SHEET C-3:	DEFINITIVE PLAN SHEET 2
SHEET C-4:	DEFINITIVE PLAN SHEET 3
SHEET C-5:	DEFINITIVE PLAN SHEET 4

LEGEND:

RIGHT OF WAY LINE
PROPOSED PROPERTY LINE
EASEMENT LINE
ABUTTER PROPERTY LINE
SHEET INDEX LINE
ZONING LIMITS
33 LOT NUMBER

Richmond Nantucket - "Meadows II" Rental Apartment Development Project
Summary of Proposed Lots (Definitive Subdivision) and Compliance with Workforce Rental Community Zoning Bylaw Requirements

Lot Number / Location	Lot / Land Area (in Sq. Feet)	Lot / Land Area (in Acres)	Regularity Factor (r) *	Proposed Number of Buildings	Maximum Number of Units Allowed	Proposed Number of Units	Max. Number of Bedrooms Allowed	Proposed Number of Bedrooms
Lot # 1 - Northernmost	70,977	1.63	0.61	4	32	20	57	32
Lot # 2 - Center Area / North Side	63,263	1.45	0.96	6	32	32	57	52
Lot # 3 - Center Area / West Side	61,212	1.41	0.86	5	32	28	57	45
Lot # 4 - Center Area / East Side	98,329	2.26	0.57 *	6	32	30	57	48
Lot # 5 - Center Area / South Side	69,689	1.60	0.78	5	32	28	57	46
Lot # 6 - Southern Area / West Side	69,501	1.60	0.60	5	32	30	57	48
Lot # 7 - Southern Area / Center	87,084	2.00	0.77 *	6	32	32	57	52
Lot # 8 - Southern Area / East Side	61,029	1.40	1.00	5	32	25	57	40
Project Total (8 Lots)	**581,084**	**13.34**	**0.77**	**42**	**256**	**225**	**456**	**363**

* **Note**: The Regularity Factor (r) for Lot # 4 and Lot # 7 was Calculated in Accordance with the Provision of the Town of Nantucket Zoning Bylaw Section 139-16(D)(2) ("Excluding the Part of the Lot Area in Excess of the Required Lot Area")

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED:____________
DATE ENDORSED:____________
DATE APPROVED:____________

TOWN OF NANTUCKET PLANNING BOARD

CLERK'S CERTIFICATION ON THE PLAN

DATE: ____________

I, ____________, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

____
TOWN CLERK

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DEFINITIVE INDEX PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-1	SCALE: 1" = 100'
	SHEET: 2 OF 26

S:\Clients\Richmond Greatpoint Development\CAD\Lots Layout-Landscaping-1.dwg, MC1-MulltyDef Index 100sc (3), 8/4/2016 6:46:17 AM

FOR REGISTRY USE ONLY

COCA-COLA REFRESHMENTS USA, INC.
LC CERTIFICATE NO. 25995
[LOT 190 ON LC PLAN 16514-Z]
#18 DAVKIM LANE
PROPERTY ID 68 58

DAVKIM LANE (50' WIDE)

A30.95'
R21.25'
Δ83°25'22"

N 69°18'26" W
65.00'

N 20°41'34" E
5.00'

PROPERTY LINE

N 20°38'54" E 262.81'

N 20°41'34" E
5.00'

Mass. Coord. System

LOT 6
69,501 S.F.
(rf=0.60)

S 69°18'26" E 158.83'

N 69°18'26" W 158.83'

N 69°53'34" W 273.80'

LOT 5
69,689 S.F.
(rf=0.78)

SHEET C-4

N 28°30'19" E
33.59'

N 42°07'01" W
66.67'

N 20°06'26" E
179.98'

Δ 28°37'13"
R530.00'
A264.74'

Δ 19°55'24"
R570.00'
A198.20'

A124.48'

ROAD I (40' WIDE)

A73.72'

S 67°33'50" E
19.18'

LOT 4M
94298.7 Sq. Feet
2.2 Acres
1601.7 Perimeter
Regularity Factor= 0.59

LOT 4
98,329 S.F.
(rf=0.57)

A156.61'
R490.54'
Δ18°17'30"

A48.02'

A47.76'

A48.33'

N 69°17'47" W
89.99'

WALTER J. GLOWACKI
BOOK 283 PAGE 108
[PORTION OF LOT 52 ON PLAN FILE 11-A]
#13 WOODLAND DRIVE
PROPERTY ID 79 208

LOT 5M
127661.4 Sq. Feet
2.9 Acres
1570.1 Perimeter
Regularity Factor= 0.83

A27.72'
R18.00'
Δ88°14'45"

S 42°22'13" W
5.30'

A269.93'
R580.00'
Δ26°39'54"

FORMER PROPERTY LINE

LOT 7
87,084 S.F.
(rf=0.77)

A26.72'
R18.00'
Δ85°03'08"

ROAD E (40' WIDE)

Δ 44° 58' 37"
R580. 00'
A455. 30'

A30.93'
R18.00'
Δ98°27'10"

A12.80'
R570.00'
Δ1°17'12"

A221.29'
R620.00'
Δ20°27'00"

A24.89'
R18.00'
Δ79°13'55"

A83. 27'

A55. 61'

N 69°53'34" W 323.24'

Δ 14° 00' 08"
R530. 00'
A130. 44'

Δ 14° 16' 06"
R570. 00'
A142. 00'

S 02°36'01" E 590.96'

S 26°35'07" E
5.09'

390.14'

A20.91'
R140.00'
Δ8°33'31"

A41.36'
R180.00'
Δ13°09'52"

S 87°23'37" W
149.60'

LOT 102
7,332 S.F.
(rf=0.79)

ROAD F (40' WIDE)

N 82°26'46" E
152.10'

44.40'

50.00'

N 88°21'46" E

A84.26'
R72.00'
Δ67°03'19"

N 26°35'07" W
5.09'

A37.45'
R32.00'
Δ67°03'19"

N 02°34'58" W 104.92'
LINE USED FOR REGULARITY FACTOR COMPUTATION (AREA = 60,000 S.F.)

S 86°21'34" W
16.48'

RICHMOND GREAT POINT DEVELOPMENT, LLC
BOOK 1397 PAGE 312
[LOT 53 ON PLAN FILE 11-A]
#42 SKYLINE DRIVE
PROPERTY ID 79 44 PART

LOT 6M
96745.7 Sq. Feet
2.2 Acres
1529.8 Perimeter
Regularity Factor= 0.66

LOT 8
61,029 S.F.
(rf=1.00)

N 86°21'34" E
16.48'

N 03°38'26" W
40.00'

S 86°21'34" W
32.50'

S 02°36'24" E
17.28'

S 87°23'36" W
91.85'

51.85'

50.01'

50.00'

50.00'

N 02°36'24" W 538.20'
146.00'

S 79°23'14" E 188.58'

N 02°34'58" W 188.15' PROPERTY LINE

RICHMOND GREAT POINT DEVELOPMENT, LLC
BOOK 1443 PAGE 213
[LOT 488 ON PLAN NO. 2013-69]
#48 SKYLINE DRIVE
PROPERTY ID 79 45 PART

GREG W. GLOWACKI
LC CERTIFICATE NO. 18091
[LOT 430 ON LC PLAN 16514-16]
#22 EVERGREEN WAY
PROPERTY ID 68 710

SHEET C-3

SHEET C-3

0 20 40 60 METERS
0 40 80 120 160 FEET
GRAPHIC SCALE 1" = 40'

LEGEND:

RIGHT OF WAY LINE
PROPOSED PROPERTY LINE

ZONE: R-5

MINIMUM LOT AREA = 5,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 10 FEET ON ONE SIDE,
5 FEET THEREAFTER
REAR = 5 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

NOTES:
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CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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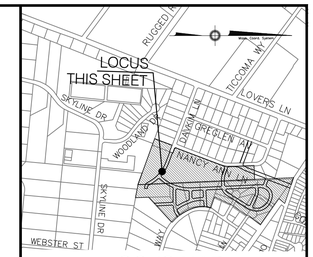
_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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REVISIONS

NO.	DATE	COMMENT

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2. Horizontal Datum is based upon Massachusetts State Coordinate System, NAD 83 in feet. Vertical Datum is based upon NAVD 88 in feet.

3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DEFINITIVE PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-2	SCALE: 1" = 40'
	SHEET: 3 OF 26

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FOR REGISTRY USE ONLY

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MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: R-5

MINIMUM LOT AREA = 5,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 10 FEET ON ONE SIDE,
5 FEET THEREAFTER
REAR = 5 FEET

ALLOWABLE GROUND COVER % = 40%

LEGEND:

RIGHT OF WAY LINE
PROPOSED PROPERTY LINE

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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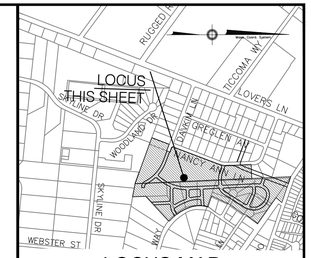
_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
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PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DEFINITIVE PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-3

SCALE: 1" = 40'

SHEET: 4 OF 26

S:\Clients\Richmond Greatpoint Development\CAD\Lots Layout\Landscaping-1.dwg, MC13-Dwt Plan 2 40scl (2), 8/4/2016 8:46:24 AM

FOR REGISTRY USE ONLY

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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TOWN CLERK

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ZONE: R-5

MINIMUM LOT AREA = 5,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 10 FEET ON ONE SIDE, 5 FEET THEREAFTER
REAR = 5 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

LEGEND:

RIGHT OF WAY LINE
PROPOSED PROPERTY LINE

SAV ASSOCIATES, LLC LC CERTIFICATE NO. 24581 [LOT 188 ON LC PLAN 16514-Z] #14 DAVKIM LANE PROPERTY ID 68 60

SAV ASSOCIATES, LLC LC CERTIFICATE NO. 24581 [LOT 189 ON LC PLAN 16514-Z] #16 DAVKIM LANE PROPERTY ID 68 59

EASEMENT (APPROXIMATE WIDTH) LC DOC 139911

COCA-COLA REFRESHMENTS USA, INC. LC CERTIFICATE NO. 25995 [LOT 190 ON LC PLAN 16514-Z] #18 DAVKIM LANE PROPERTY ID 68 58

KIM GLOWACKI LC CERTIFICATE NO. 25532 [LOT 168 ON LC PLAN 16514-Z] #19 NANCY ANN LANE PROPERTY ID 68 140

KIM GLOWACKI LC CERTIFICATE NO. 25531 [LOT 167 ON LC PLAN 16514-Z] #17 NANCY ANN LANE PROPERTY ID 68 139

RICHMOND GREAT POINT DEVELOPMENT, LLC LC CERTIFICATE NO. 24872 [LOT 166 ON LC PLAN 16514-Z] #15 NANCY ANN LANE PROPERTY ID 68 138

RICHMOND GREAT POINT DEVELOPMENT, LLC LC CERTIFICATE NO. 24872 [LOT 165 ON LC PLAN 16514-Z] #13 NANCY ANN LANE PROPERTY ID 68 137

WALTER J. GLOWACKI & RICHMOND GREAT POINT DEVELOPMENT, LLC LC CERTIFICATE NO. 25406 [LOT 164 ON LC PLAN 16514-Z] #11 NANCY ANN LANE PROPERTY ID 68 136

RICHMOND GREAT POINT DEVELOPMENT, LLC LC CERTIFICATE NO. 24872 [LOT 163 ON LC PLAN 16514-Z] #9 NANCY ANN LANE PROPERTY ID 68 135

CHARLES F. SAYLE, JR. & CHARLES F. SAYLE, III LC CERTIFICATE NO. 23661 [LOT 162 ON LC PLAN 16514-Z] #7 NANCY ANN LANE PROPERTY ID 68 134

RICHMOND GREAT POINT DEVELOPMENT, LLC LC CERTIFICATE NO. 24872 [LOT 161 ON LC PLAN 16514-Z] #5 NANCY ANN LANE PROPERTY ID 68 133

NANCY ANN LANE (50' WIDE)

DAVKIM LANE (50' WIDE)

ROAD D (40' WIDE)

ROAD E (40' WIDE)

ROAD I (40' WIDE)

LOT 2 63,263 S.F. (rf=0.96)

LOT 3 61,212 S.F. (rf=0.86)

LOT 4 98,329 S.F. (rf=0.57)

LOT 5 69,689 S.F. (rf=0.78)

LOT 56 4,718 S.F. (rf=0.93)

LOT 57 4,693 S.F. (rf=0.93)

LOT 58 4,749 S.F. (rf=0.93)

LOT 59 4,580 S.F. (rf=0.92)

LOT 60 4,500 S.F. (rf=0.92)

LOT 61 4,500 S.F. (rf=0.92)

LOT 62 4,508 S.F. (rf=0.92)

LOT 63 4,517 S.F. (rf=0.92)

LOT 64 4,520 S.F. (rf=0.92)

LOT 65 4,526 S.F. (rf=0.92)

LOT 66 4,530 S.F. (rf=0.92)

LOT 67 4,513 S.F. (rf=0.95)

FORMER PROPERTY LINE

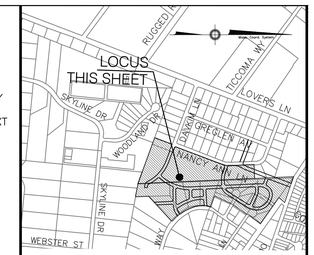
LINE USED FOR REGULARITY FACTOR COMPUTATION (NOT = ROAD C/L) S 87°52'05" W 1868.33'

SHEET C-2

SHEET C-3

SHEET C-5

0 20 40 60 METERS
0 40 80 120 160 FEET
GRAPHIC SCALE 1" = 40'



LOCUS MAP
N.T.S

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114 State Road, Building B
Sagamore Beach, MA 02562
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REVISIONS

NO.	DATE	COMMENT

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2. Horizontal Datum is based upon Massachusetts State Coordinate System, NAD 83 in feet. Vertical Datum is based upon NAVD 88 in feet.

3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DEFINITIVE PLAN

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

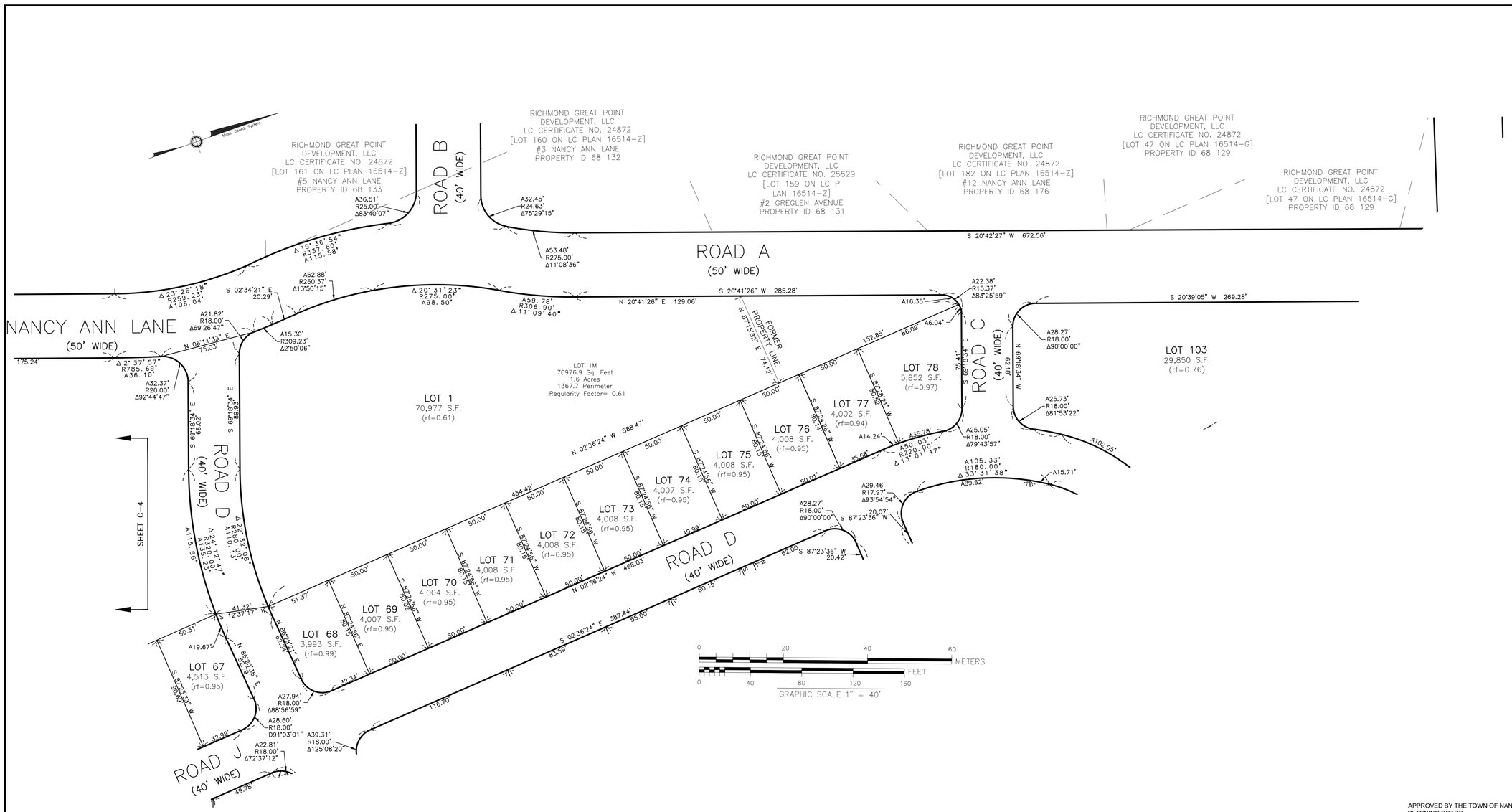
CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-4

SCALE: 1" = 40'

SHEET: 5 OF 26

S:\Clients\Richmond Greatpoint Development\CAD\Lots Layout-Landscaping-1.dwg, MC42x4 Plan 3.4(in) (2), 8/4/2016 8:46:29 AM



LEGEND:

RIGHT OF WAY LINE
PROPOSED PROPERTY LINE

NOTES:
THE PLANNING BOARD DETERMINES THAT LOTS 1 THROUGH 8 DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS WETLAND PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BY-LAW, BUT STILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BYLAWS. DETERMINATION MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.

ZONE: R-5

MINIMUM LOT AREA = 5,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 10 FEET ON ONE SIDE,
5 FEET THEREAFTER
REAR = 5 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

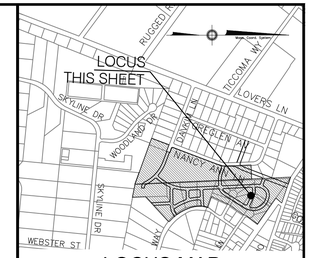
_____
TOWN OF NANTUCKET PLANNING BOARD

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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Dimensions are as indicated.

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REVISIONS

NO.	DATE	COMMENT

GENERAL NOTES:

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2. Horizontal Datum is based upon Massachusetts State Coordinate System, NAD 83 in feet. Vertical Datum is based upon NAVD 88 in feet.

3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DEFINITIVE PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-5	SCALE: 1" = 40'
	SHEET: 6 OF 26

S:\Clients\Richmond Greatpoint Development\CAD\Lots Layout\Landscaping-1.dwg, NCS Ltr Print 4 40sc (2), 8/4/2016 6:46:34 AM

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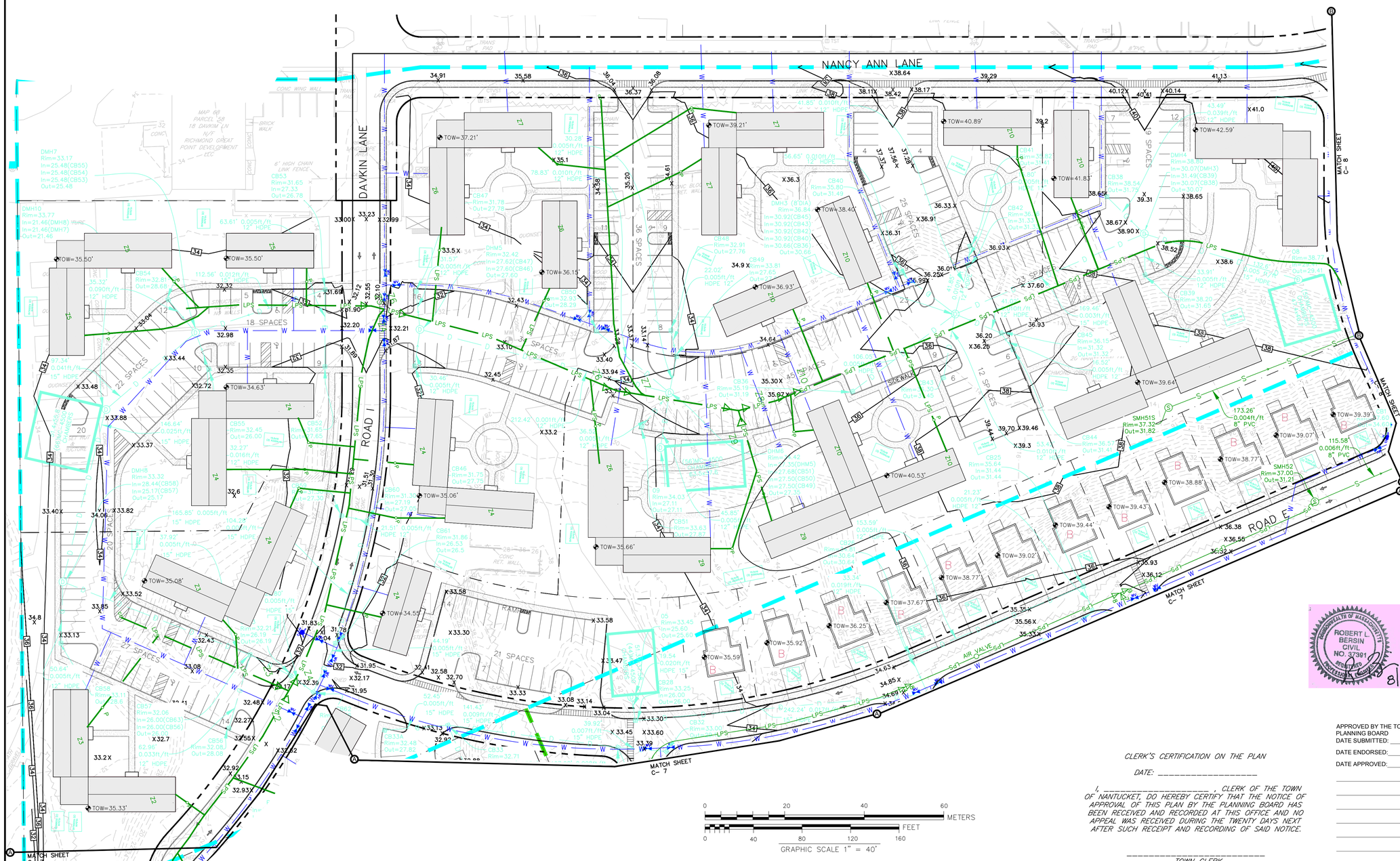

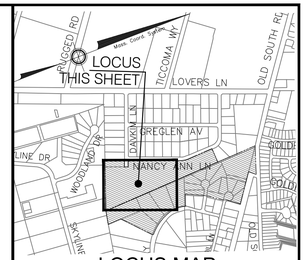

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PURPOSE:

DEFINITIVE SUBDIVISION

LOCUS:

NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIN LANE
NANTUCKET, MA 02554

DRAWING TITLE:

TOPOGRAPHIC PLAN

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-6	SCALE: 1" = 40'
	SHEET: 7 OF 26

S:\Clients\Richmond Greatpoint Development\CAD\Site Plan-Profiles-2.dwg, MC-6 TOPO (2), 8/4/2016 6:48:48 AM

FOR REGISTRY USE ONLY

0 20 40 60 METERS

0 40 80 120 160 FEET

GRAPHIC SCALE 1" = 40'

LOCUS MAP
N.T.S

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PURPOSE:

DEFINITIVE SUBDIVISION

LOCUS:

NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:

TOPOGRAPHIC PLAN

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

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_____
TOWN CLERK

TOWN OF NANTUCKET PLANNING BOARD

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-7	SCALE: 1" = 40'
	SHEET: 8 OF 26

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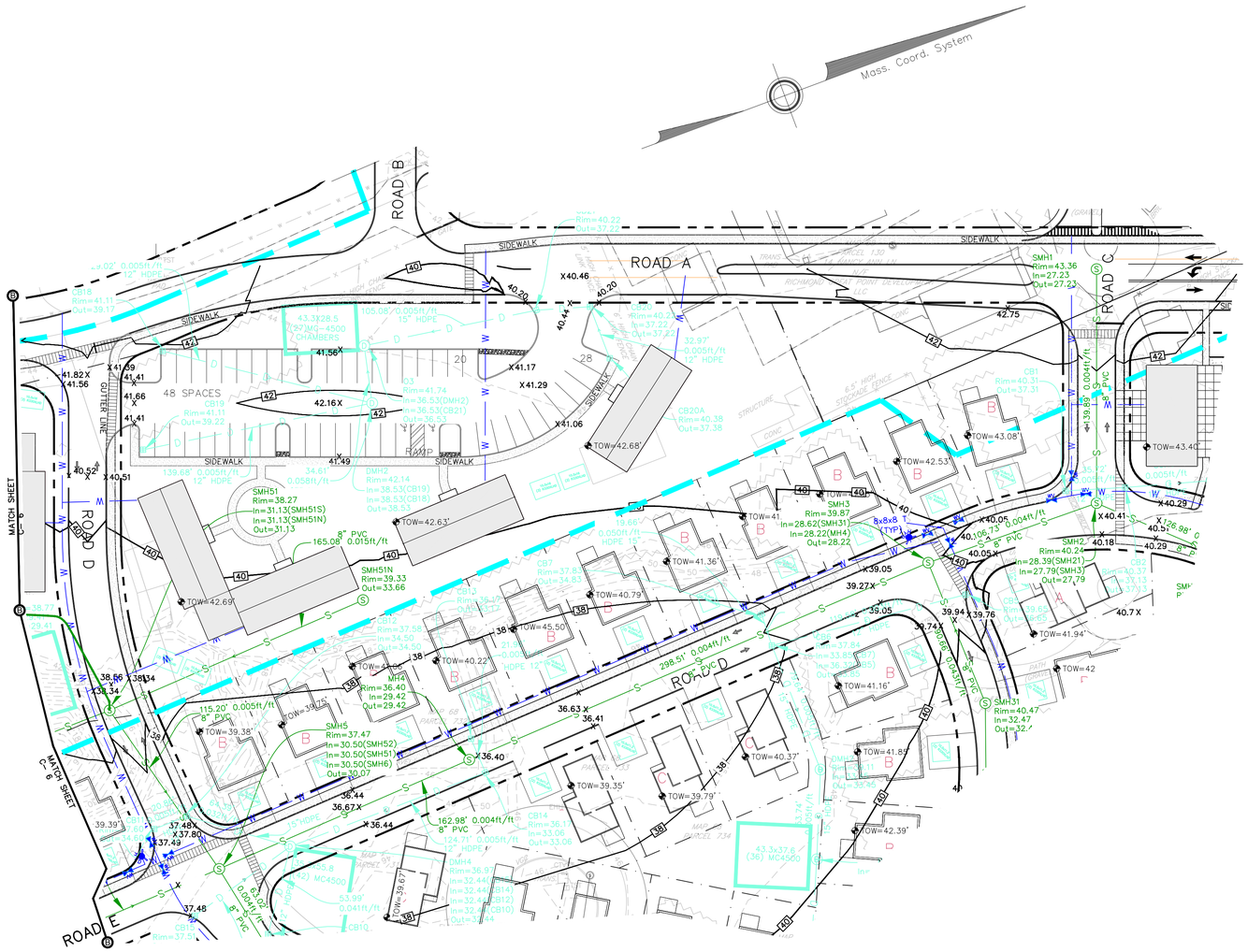

0 20 40 60 METERS
0 40 80 120 160 FEET
GRAPHIC SCALE 1" = 40'

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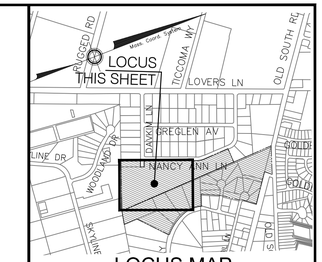

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PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
TOPOGRAPHIC PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-8	SCALE: 1" = 40'
	SHEET: 9 OF 26

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

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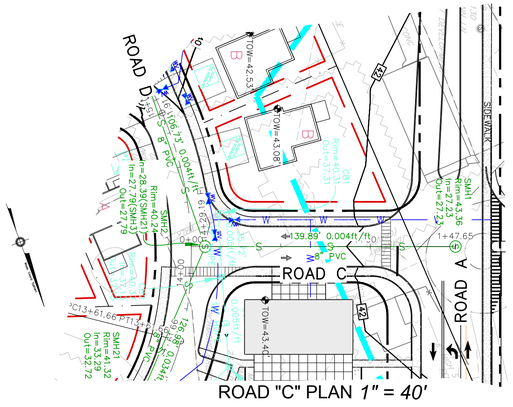

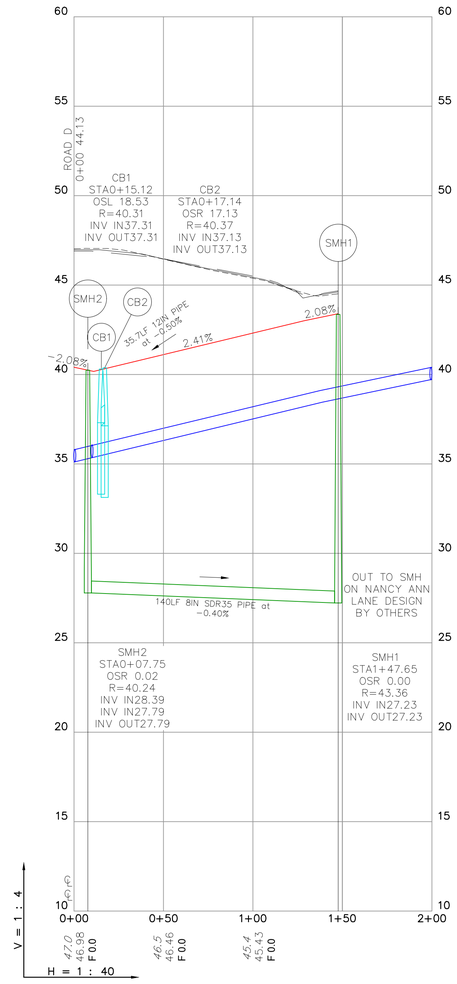

GENERAL CONSTRUCTION NOTES:

1. All construction methods and materials shall conform to the Massachusetts Department of Transportation (MassDOT) Standard Specifications for Highways and Bridges 1998 as amended.
2. All sewer pipe shall be SDR-35 Gasketed Integral Bell Gravity Sewer pipe meeting ASTM D3034 as amended. Maximum individual length of pipe shall be 20 feet. Pipe sizes shall be as shown on the plans.
3. All water mains shall be Cement Lined Ductile Iron Pipe with standard exterior coating. Pipe shall and manufactured in accordance with the latest revision of ANSI/AWWA 151/A21.51. Cement-mortar lining on the interior shall be in accordance with the latest revision of ANSI/AWWA C104/A21.4. Pipe shall be push on restrained joint meeting ANSI/AWWA C111/A21.11. Water pipe shall be installed and tested in accordance with ANSI/AWWA C600 and disinfected in accordance with the latest revision of ANSI/AWWA C651 prior to being placed in service. Pipe sizes shall be as shown on the plans.
4. All Drainage pipe shall be High Density Polyethylene pipe. Pipe sizes shall be as shown on the plans.
5. All hydrants shall be installed following the above-described protocol for water line installation. See plan details for material requirements.
6. All water connections shall be installed following the above-described protocol for water line installation. Ductile iron tees and gate valves shall be installed on all legs of tees and crossings.
7. Water services shall be ¾-inch PVC water line and installed to the property line for single-family house lots. Water service for multifamily buildings shall be six-inch cement lined ductile iron and installed to the road layout line. The ends of all pipe service laterals shall be capped, located for future use, and marked with minimum 2"x 4" lumber set six inches below finished grade.
8. Sewer services shall be as follows:
   a. Single-family house lots being fed by gravity shall be 4-inch PVC pipe.
   b. Multifamily buildings shall be fed by 6-inch PVC pipe.
   c. Single-family house lots being fed by Low Pressure Sewer shall be as depicted on the detail sheet. Pump Chambers shall be EOne DH071 simplex chambers with 4-inch PVC inlet connections and 1.25-inch SDR-11 outlet laterals to the low-pressure force main.
   d. Multifamily buildings being fed by Low Pressure Sewer shall be as depicted on the detail sheet. Pump Chambers shall be EOne DH152 duplex chambers with 6-inch PVC inlet connections and 1.5-inch SDR-11 outlet laterals to the low-pressure force main.

   The ends of all pipe service laterals shall be capped, marked with minimum 2'x4' lumber set six inches below finished grade, and located for future use.

51.5 EXISTING CL GRADE
41.92 PROPOSED FINAL GRADE
C 9.6 CUT TO REACH FINAL FINISH GRADE
F 9.6 FILL TO REACH FINAL FINISH GRADE

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

CLERK'S CERTIFICATION ON THE PLAN

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TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
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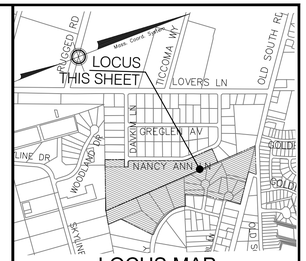
_____
TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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REVISIONS

NO.	DATE	COMMENT

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3. Field survey completed on 11/09/2015
4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
PLAN AND PROFILE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-9

SCALE: 1" = 40'

SHEET: 10 OF 26

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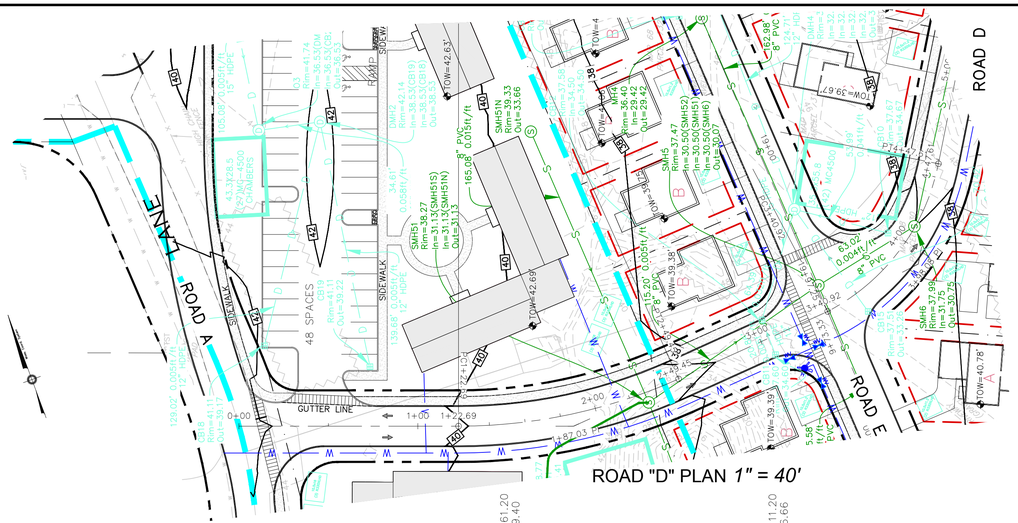
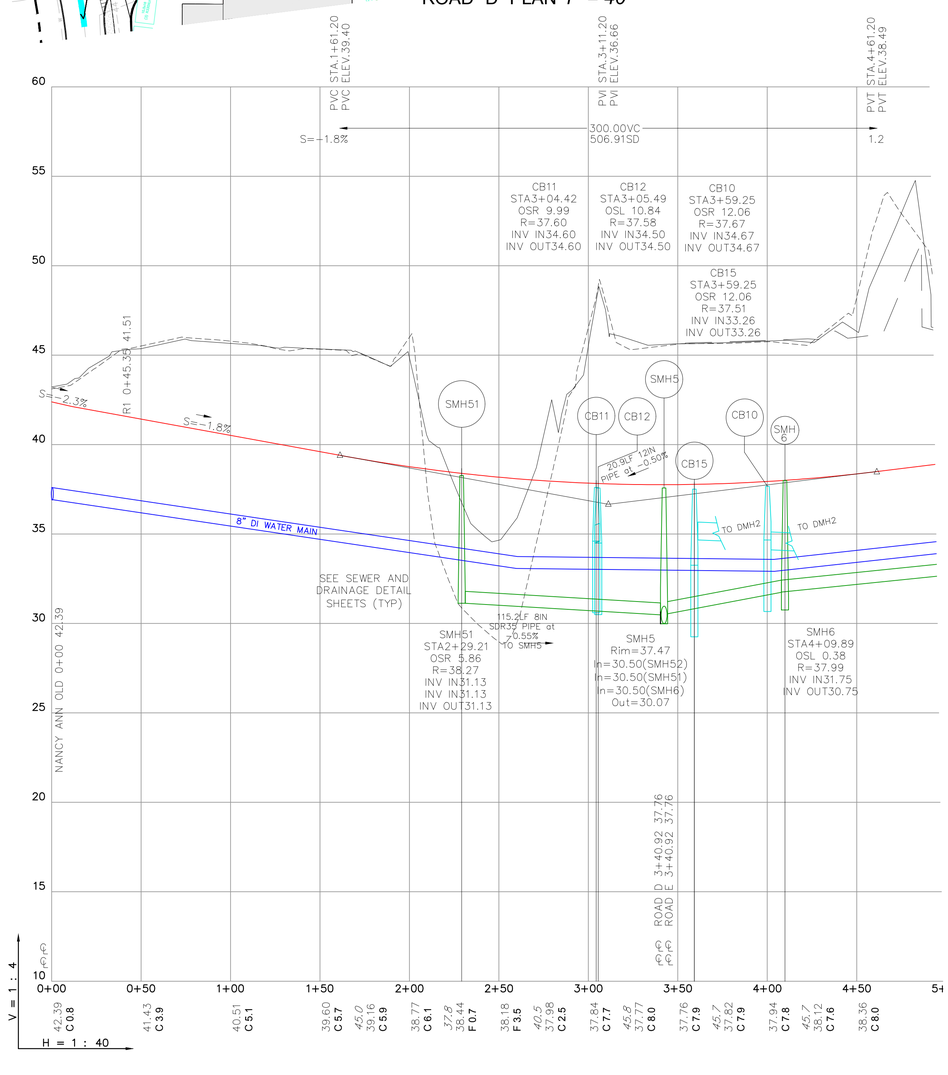
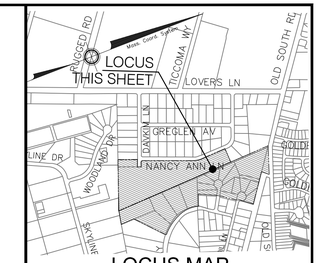


ROAD "D" PLAN *1" = 40'*





LOCUS MAP
N.T.S

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PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
PLAN AND PROFILE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-10	SCALE: 1" = 40'
	SHEET: 11 OF 26

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

51.5 *EXISTING CL GRADE*
41.92 PROPOSED FINAL GRADE
C 9.6 CUT TO REACH FINAL FINISH GRADE
F 9.6 FILL TO REACH FINAL FINISH GRADE

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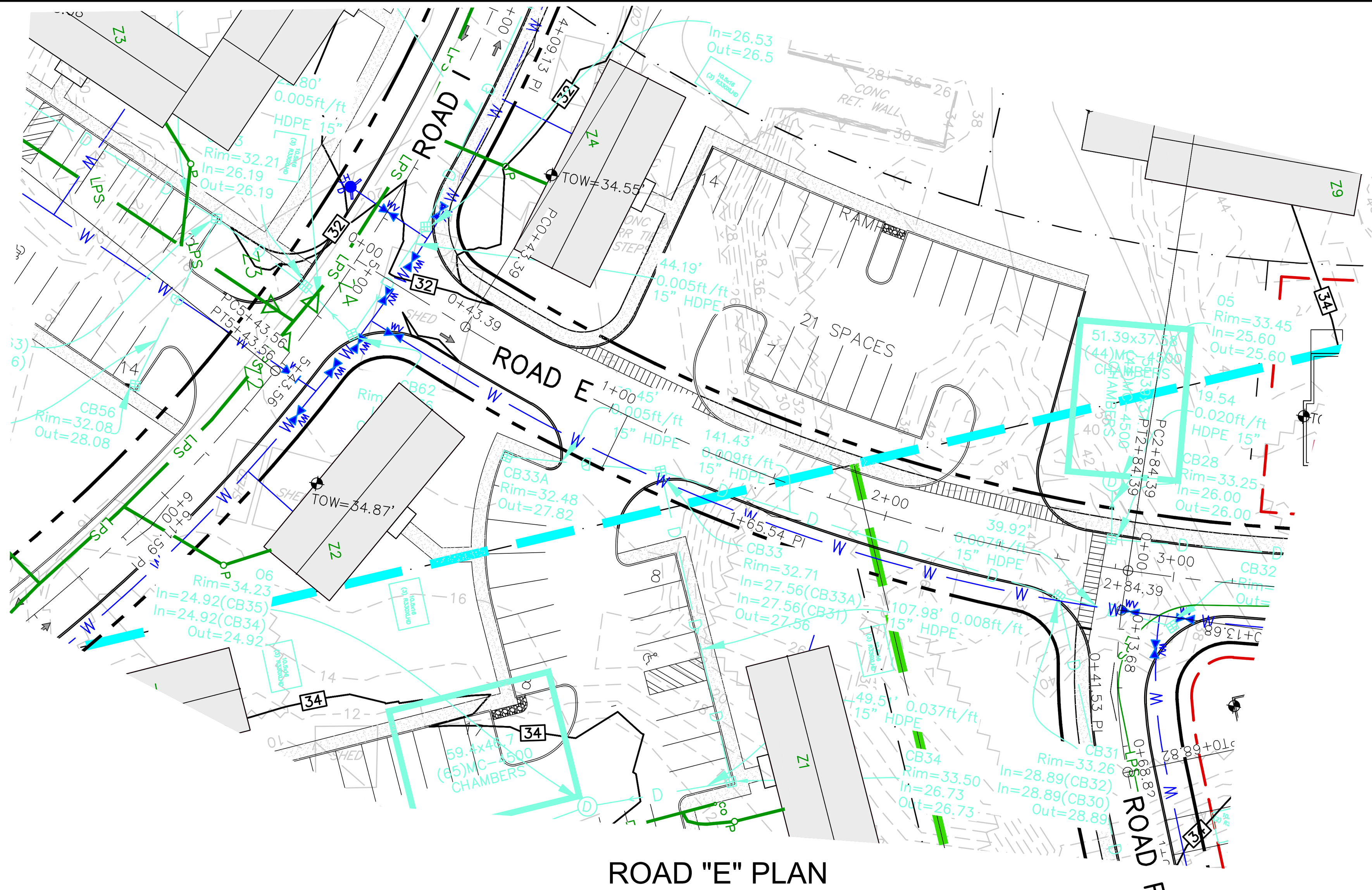
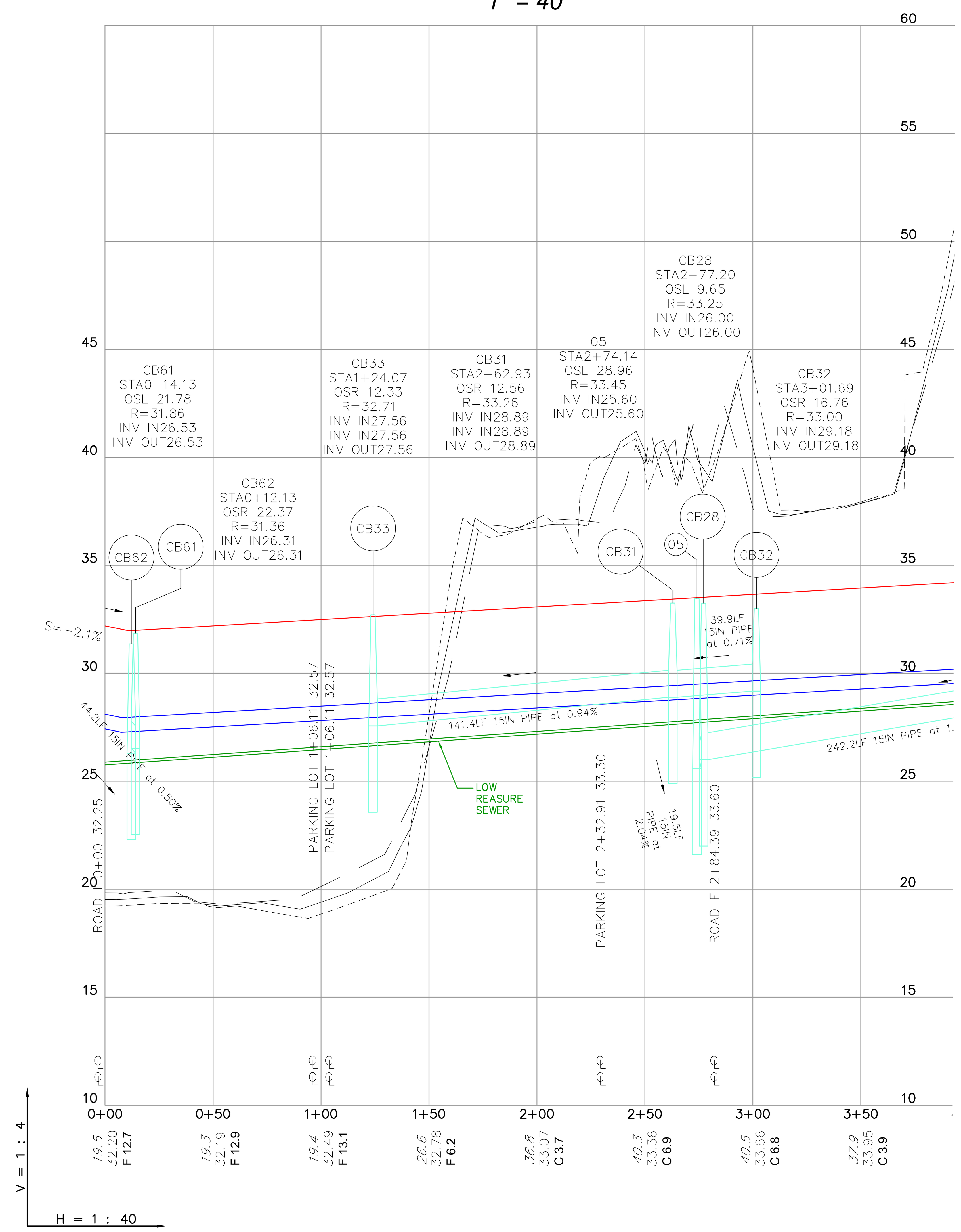


ROAD "E" PLAN
1" = 40'



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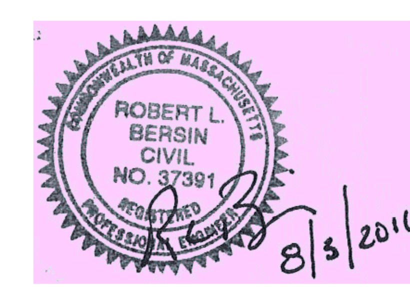
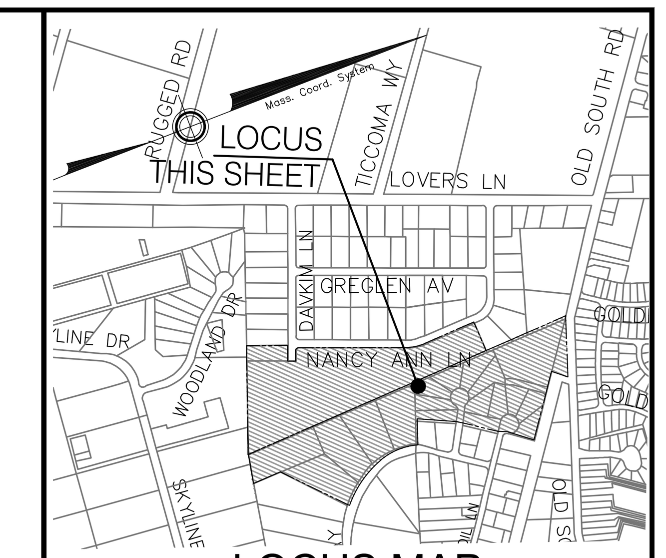
DATE ENDORSED: ____________
DATE APPROVED: ____________

TOWN OF NANTUCKET PLANNING BOARD





LOCUS MAP
N.T.S

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4. Plan Not for construction, Permitting only.

PURPOSE: DEFINITIVE SUBDIVISION

LOCUS: NANCY ANN LANE

PREPARED FOR:

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RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:

PLAN AND PROFILE

CAD TECH: JDP	CHECKED BY: TRB
ENGINEER: BLB	DATE: 08/03/2016
C-11	SCALE: 1" = 40'
	SHEET: 12 OF 26

S:\Clients\Richmond Greatpoint Development\CAD\Site Plan-Profiles-2.dwg, MC-11 PROFILE, 8/4/2016 6:47:15 AM

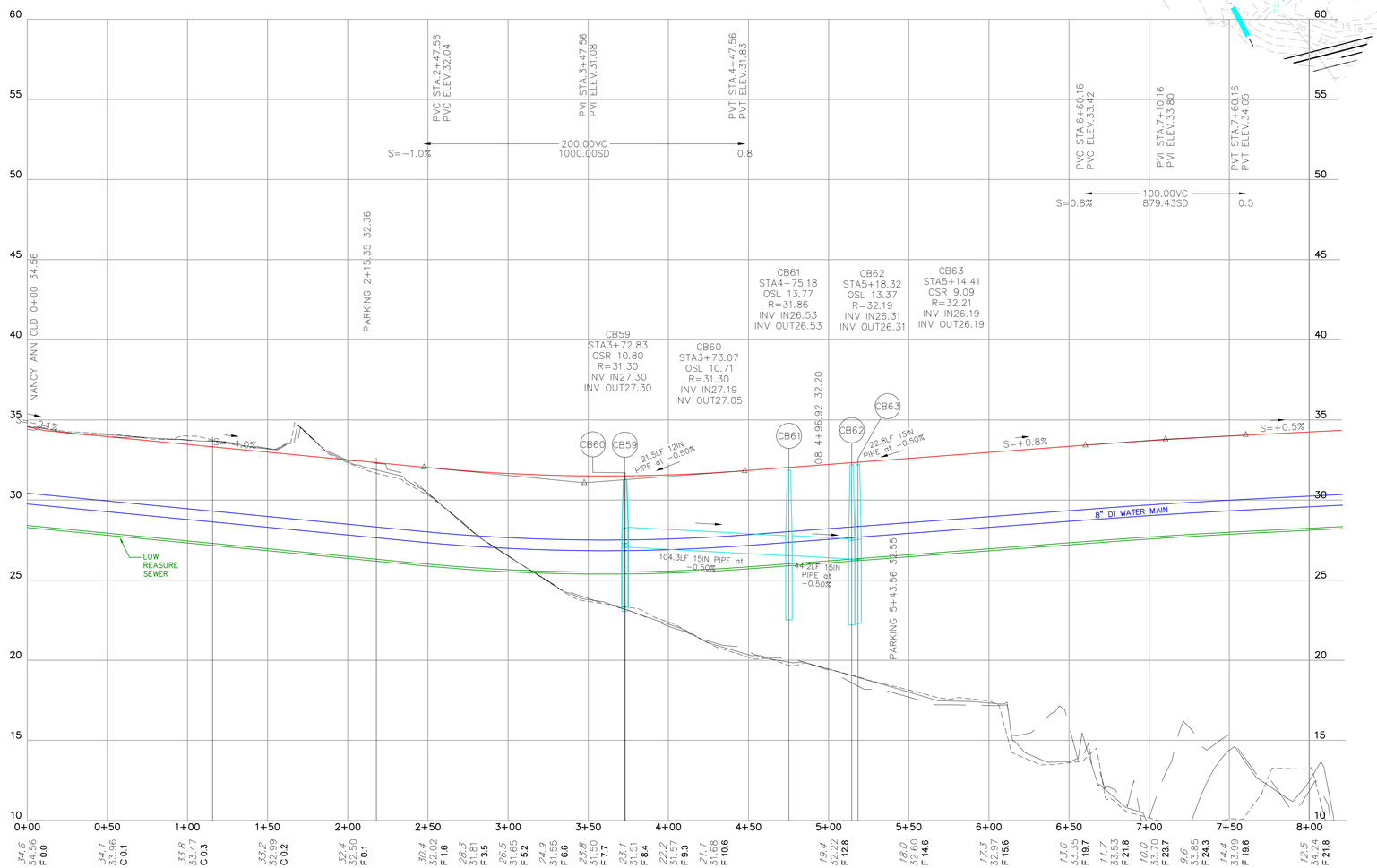
FOR REGISTRY USE ONLY

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

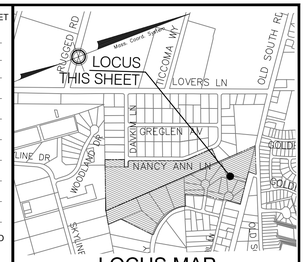


51.5	*EXISTING CL GRADE*
41.92	PROPOSED FINAL GRADE
C 9.6	CUT TO REACH FINAL FINISH GRADE
F 9.6	FILL TO REACH FINAL FINISH GRADE

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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REVISIONS

NO.	DATE	COMMENT

GENERAL NOTES:

1. Underground utilities shown on this plan are based upon visible above ground utilities and record information of below ground utilities or noted otherwise, and are approximate only. Contractor is responsible for taking all necessary precautions before beginning any excavation. (Digsafe 1-888-344-7233)

2. Horizontal Datum is based upon Massachusetts State Coordinate System, NAD 83 in feet. Vertical Datum is based upon NAVD 88 in feet.

3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
PLAN AND PROFILE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-12	SCALE: *1" = 40'*
	SHEET: 13 OF 26

S:\Clients\Richmond Greatpoint Development\CAD\Site Plan Profiles-2.dwg, NO-13 PROFILE, 8/4/2016 6:47:20 AM

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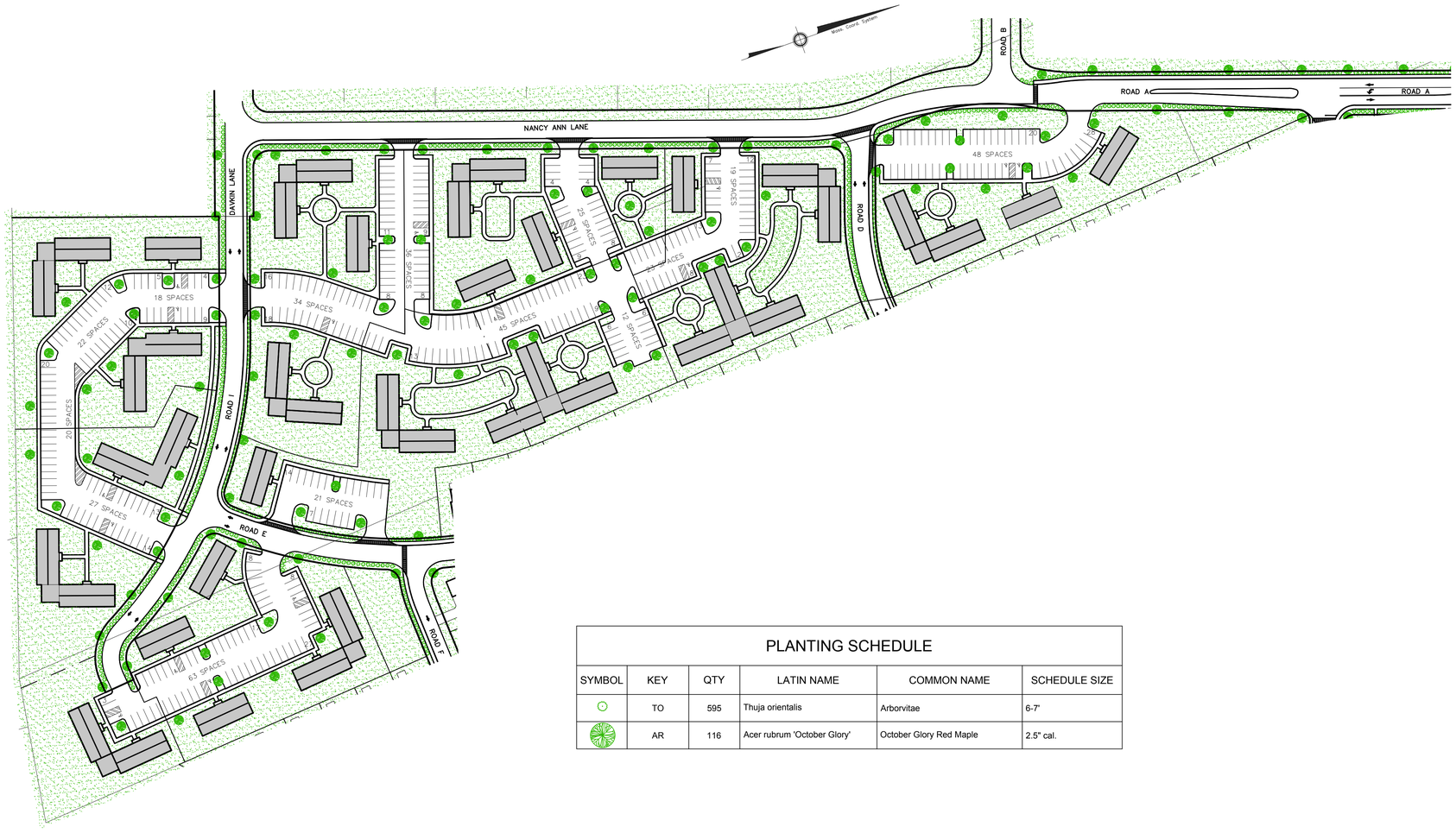

PLANTING SCHEDULE

SYMBOL	KEY	QTY	LATIN NAME	COMMON NAME	SCHEDULE SIZE
	TO	595	Thuja orientalis	Arborvitae	6-7'
	AR	116	Acer rubrum 'October Glory'	October Glory Red Maple	2.5" cal.

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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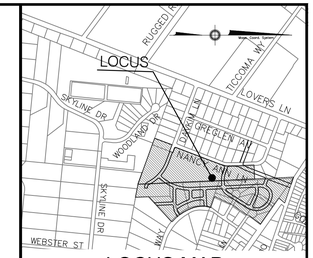
_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

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NO.	DATE	COMMENT

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3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

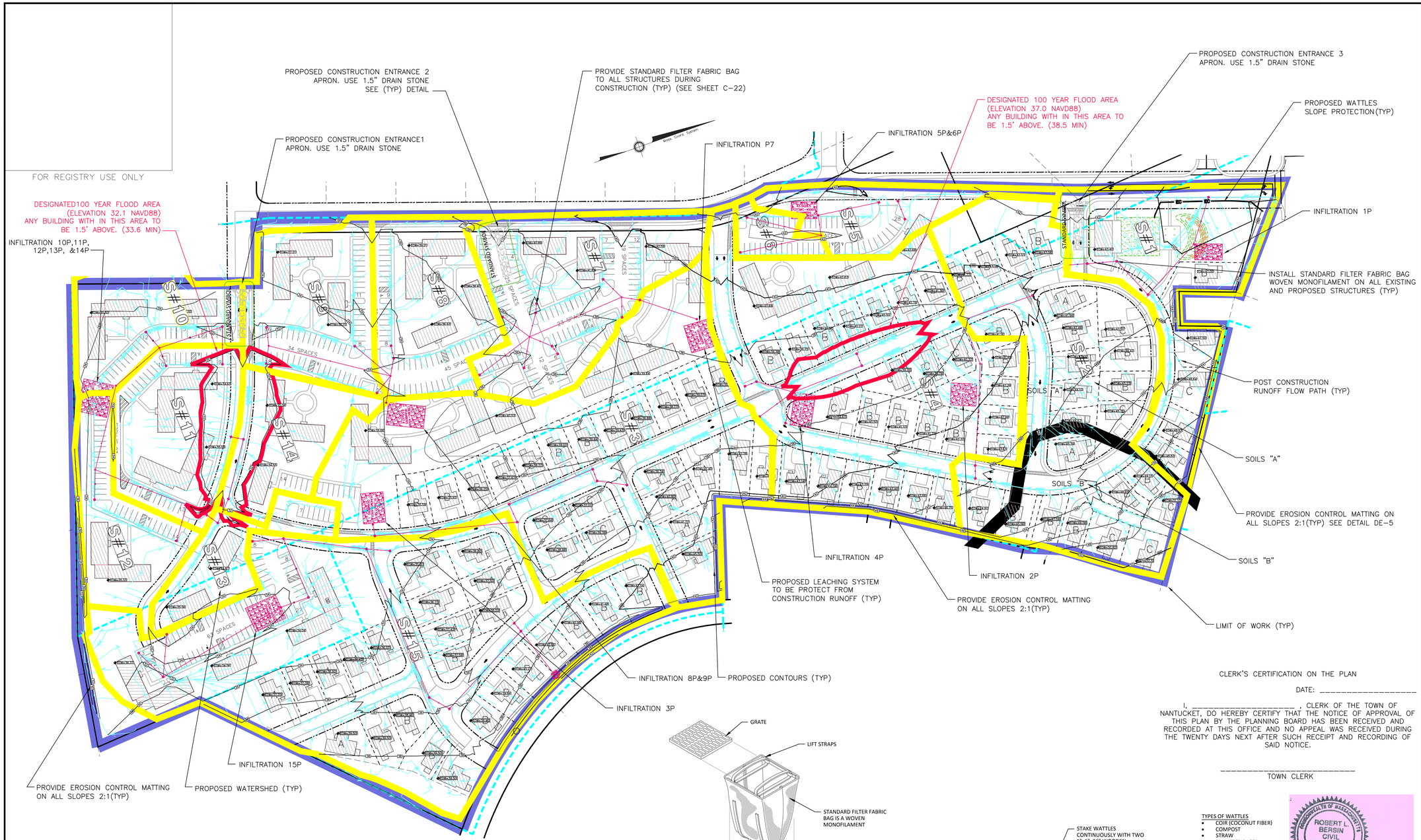
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
LANDSCAPE PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-13	SCALE: 1" = 80'
	SHEET: 14 OF 26

S:\Clients\Richmond Greatpoint Development\CAD\Lisk Layout-Landscaping-1.dwg, MC13-Landscape Plan 4 400sf, (2), 8/4/2016 6:47:27 AM

FOR REGISTRY USE ONLY

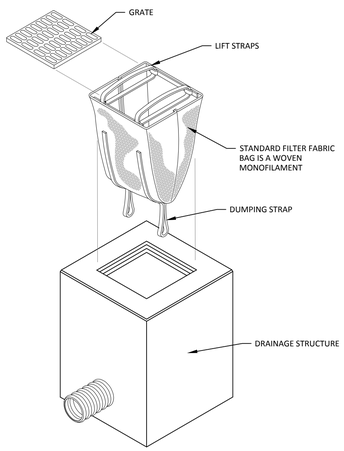


PERIMETER MONITORING

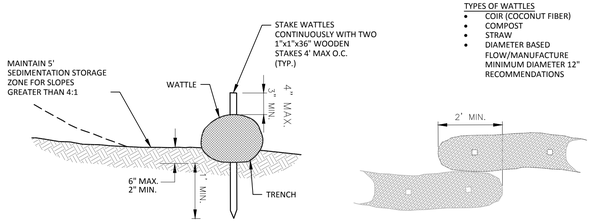
During projects that will disturb greater than 500 square feet (s.f.) of cover, the selected contractor shall provide perimeter monitoring at two downwind locations and one upwind location. The monitors shall be capable of reading PM-10 particulates on a real-time and time-weighted average (TWA) basis. The PM-10 standard includes particles with a diameter of 10 micrometers or less.
The Environmental Protection Agency (EPA) health-based national air quality standard for PM-10 is 35 micrograms per cubic meter (μg/m3) (measured as an annual mean) and 150 μg/m3 (measured as a daily concentration).
During the project duration, background levels of particulates shall be monitored at the upwind monitoring location. The air monitors shall be monitored on an hourly basis and shall be in operation during any project activities that involve the excavation, transfer, or other management of soil from the Site. Particulate concentrations from the upwind monitoring location may be subtracted from the downwind monitoring locations to obtain an accurate measurement of project related levels of particulates. The action level for the Site is 0.2 milligrams per cubic meter (mg/ m3) above background. Accordingly, if the TWA average for downwind readings is 0.2 mg/ m3 greater than background, project work must cease until operational changes are implemented that reduce dust levels to below the action level.

DUST CONTROL

DUST CONTROL
The contractor shall be responsible for controlling and limiting dust generated during the proposed project. During excavation activities, the contractor shall control dust primarily through the application of a light water spray across the project work area, as needed throughout the work day. The amount of water used to control dust shall be controlled such that no water runoff is generated from the project work area. Regular sweeping of the project work area to minimize tracking of soil is also recommended. Sweepings can be deposited into the excavation or stockpiled with excavated soil, on, and under, 6-mil polyethylene sheeting. The contractor will be responsible for providing all equipment and labor for dust control procedures.
6.1 Visible Dust
When visible dust is observed originating at the project area, all work must cease until operational changes are implemented that eliminate visible dust.
Visible Dust
When visible dust is observed originating at the project area, all work must cease until operational changes are implemented that eliminate visible dust.



EROSION CONTROL AT CATCH BASIN
NOT TO SCALE



TYPES OF WATTLES
- COIR (COCONUT FIBER)
- COMPOST
- STRAW
- DIAMETER BASED FLOW/MANUFACTURE MINIMUM DIAMETER 12" RECOMMENDATIONS

SECTION

PLAN

WATTLES-SLOPE PROTECTION
NOT TO SCALE

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

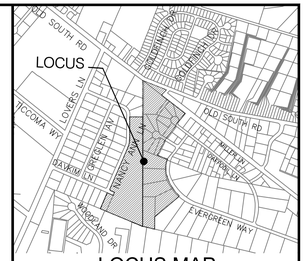
I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37301
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
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3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
EROSION & DUST CONTROL PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-14

SCALE: 1" = 80'

SHEET: 15 OF 26

S:\Clients\Richmond Grasspoint Development\CAD\Erosion control & Watershed\1.dwg, MC14, erosion, 8/4/2016 6:47:36 AM

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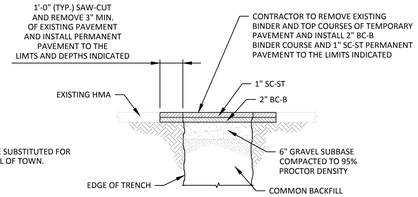
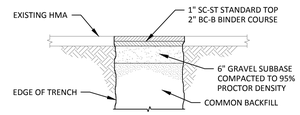
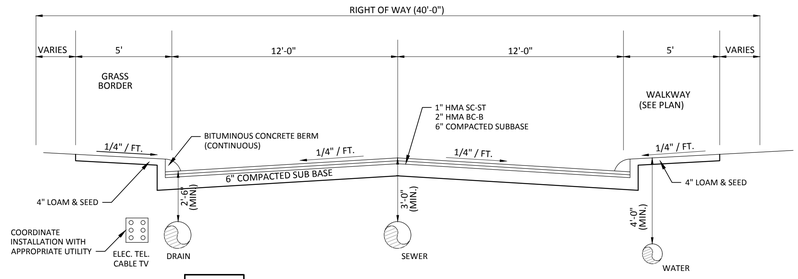


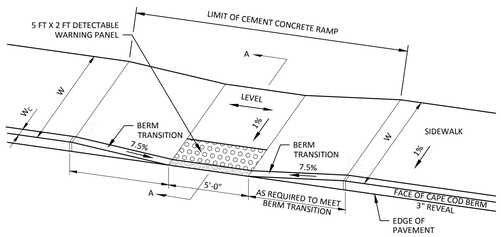
DS–1 FINAL TRENCH PAVING (TOWN ROADS)
NOT TO SCALE



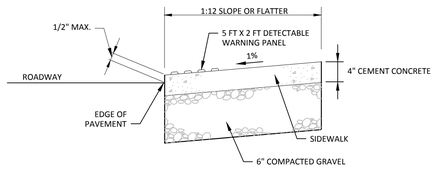
DS–2 TEMPORARY PAVING (TOWN ROADS)
NOT TO SCALE



DS–3 TYPICAL ROADWAY CROSS SECTION
NOT TO SCALE



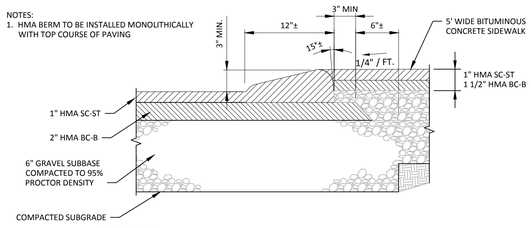
PLAN



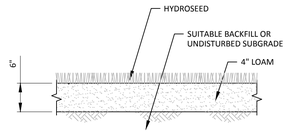
SECTION A–A

DS–4 WHEEL CHAIR RAMP (NTS)

- FOR SIDEWALKS UP TO 8' WIDE
- WHEELCHAIR RAMP SHALL MEET MASSDOT DRAWING NUMBER E 107.2.1 AS AMENDED



DS–5 BIT. BERM DETAIL
NOT TO SCALE



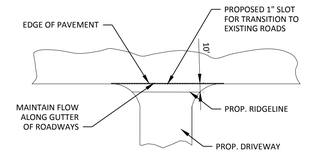
DS–6 LOAM AND SEED
NOT TO SCALE

LOAM/SEED NOTES:
ALL DISTURBED AREA SHALL BE GRADED TO A DEPTH SUITABLE FOR INSTALLING THE LOAM PER THE GRADING PLAN AND PROPERLY SEEDED.

TOPSOIL - NO STONES GREATER THAN 3/4", COMPACT WITH A HANDROLLER IN TWO DIRECTIONS & FINE RAKE PRIOR TO SEEDING

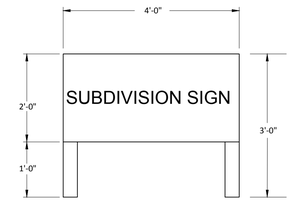
SUBSOIL - COMPACTED AT 90% MAXIMUM DENSITY

SEED - NATIVE HYDROSEED MIX.

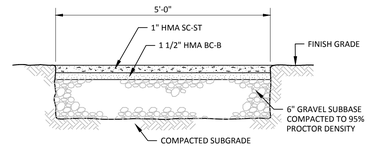


PLAN

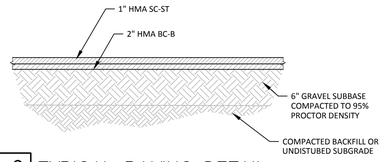
DS–7 FILLET AT INTERSECTING ROAD
NOT TO SCALE



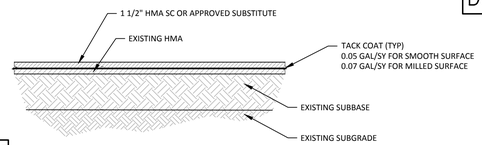
DS–8 SUBDIVISION SIGN DETAIL
NOT TO SCALE



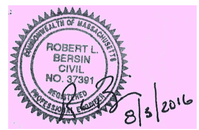
DS–11 BITUMINOUS CONCRETE WALK
NOT TO SCALE

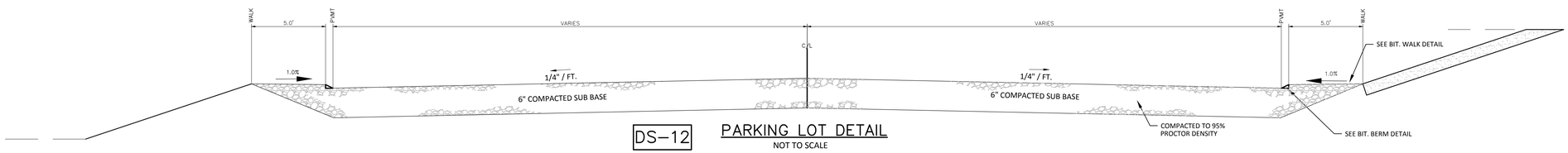


DS–9 TYPICAL PAVING DETAIL
NOT TO SCALE



DS–10 TYPICAL RESURFACING DETAIL
NOT TO SCALE





DS–12 PARKING LOT DETAIL
NOT TO SCALE

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD

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REVISIONS

NO.	DATE	COMMENT

CLERK'S CERTIFICATION ON THE PLAN

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_____
TOWN CLERK

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

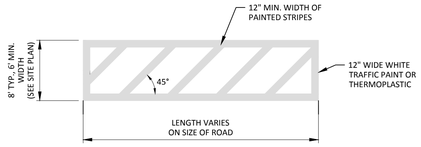
PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-SITE

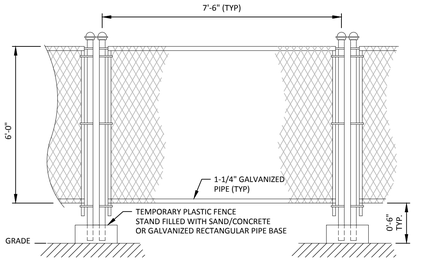
CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-15	SCALE: NOTED
	SHEET: 16 OF 26

S:\Clients\Richmond Greatpoint Development\CAD\Details1.dwg, NC-15 DETAIL-SITE (6), 8/4/2016 6:47:52 AM

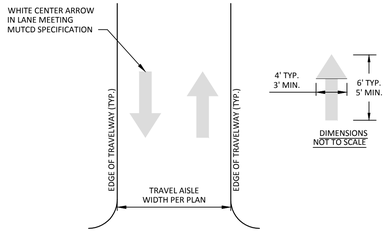
FOR REGISTRY USE ONLY



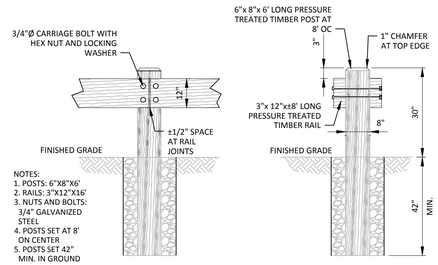
DS–15 TYPICAL PAINTED CROSSWALK SCHEMATIC
NOT TO SCALE



DS–16 TEMPORARY CONSTRUCTION FENCE
NOT TO SCALE

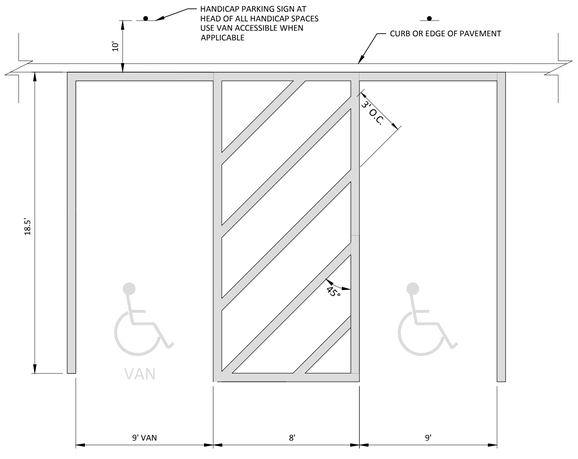


DS–13 ARROW PAVEMENT MARKING
NOT TO SCALE



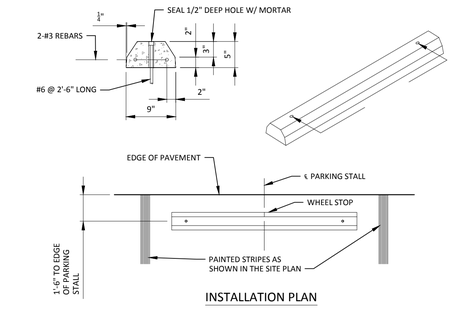
DS–17 TIMBER GUARDRAIL DETAIL
NOT TO SCALE

FOR DECORATIVE PURPOSES ONLY. NOT MEANT TO KEEP VEHICLES FROM LEAVING ROADWAY.



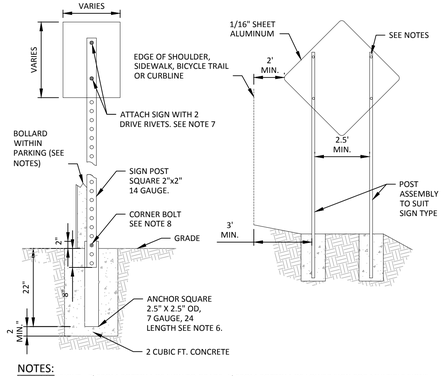
NOTE:
1. WHERE STALLS ABUT SIDEWALK, PARKING SIGNS SHOULD BE PLACED AT BACK EDGE OF SIDEWALK.
2. STRIPING SHOULD BE EPOXY RESIN AND WHITE IN COLOR

DS–18 VAN HANDICAP PARKING STALLS @ 90°
NOT TO SCALE



INSTALLATION PLAN

DS–23 PRECAST BUMPER (WHEEL STOP) DETAIL
NOT TO SCALE

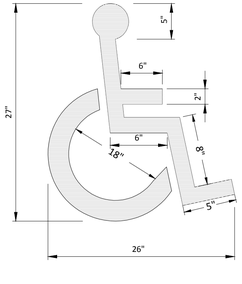


NOTES:
1. SIGN HEIGHT - 7' FROM BOTTOM OF SIGN TO GRADE. 6' FROM BOTTOM OF LOWER SIGN FOR MULTIPLE SIGNS ON ONE POST. EXCEPTIONS ONLY AS SPECIFICALLY STATED ON PLANS.
2. METAL STOP AND YIELD SIGN POSTS SHALL HAVE ALTERNATING 1' BANDS OF RED AND WHITE 3M DIAMOND GRADE SHEETING. ALL OTHER POSTS SHALL BE UNSHEETED.
3. FOR IN-SIDEWALK INSTALLATIONS, CORE 4" DIAM. HOLE. ANCHOR LENGTH MAY BE DECREASED TO 12".
4. POST SHALL BE ROLLED CARBON SHEET STEEL, ASTM A570 GRADE 50 AND BE HOT DIPPED GALVANIZED AASHTO M-120 YIELD STRENGTH 60,000 PSI MIN. POST SHALL HAVE 7/16" DIE-PUNCHED KNOCKOUTS ON 1" CENTERS FULL LENGTH, FOUR SIDES.
5. ANCHOR SHALL HAVE 4 7/16" HOLES ONE EACH SIDE 2" FROM TOP END. FINISH SHALL BE ZINC HOT DIPPED GALVANIZED MATERIAL TO MEET ASTM A500 GRADE B.
6. DRIVE RIVETS TO BE TL3806 3/8" DIA. OR EQUAL.
7. CORNER BOLTS TO BE TLCB516M OR EQUAL.
8. SIGN POSTS WITHIN PARKING AREAS (PAVEMENT) SHALL BE A BOLLARD TYPE WITH A 6 INCH DIAMETER DUCTILE IRON PIPE FILLED WITH CONCRETE EXTENDING A MIN. 4" FROM GROUND SURFACE.

DS–20 SIGN INSTALLATION DETAIL
NOT TO SCALE

GENERAL ROADWAY NOTES:
1. SANDY-LOAM AND/OR LOAMY-SAND TOPSOIL MATERIAL SHALL BE EXCAVATED FROM ALL PAVED AREAS PRIOR TO SUB-BASE INSTALLATION.
2. PAVED ACCESS WAY SUB GRADE (EXISTING MATERIAL) SHALL CONSIST OF INERT MATERIAL THAT IS HARD, DURABLE STONE AND/OR COURSE SAND, FREE FROM LOAM AND CLAY TO A DEPTH NOT LESS THAN 4-FT BELOW THE FINISH PAVEMENT SURFACE.
3. SUBGRADE FILL SHALL BE COMPACTED TO 95% COMPACTION.

DS–21 SURFACE TREATMENT DETAIL
NOT TO SCALE

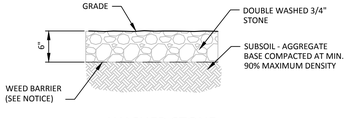


1. ALL HANDICAP PARKING AND SIGNAGE SHALL BE IN CONFORMANCE WITH THE RULES & REGULATIONS OF THE ARCHITECTURAL BARRIERS BOARD.

STRIPING SHOULD BE EPOXY RESIN AND WHITE IN COLOR

DS–22 HANDICAP PAVEMENT PARKING
NOT TO SCALE

WASHED STONE NOTES:
WEED BARRIER SHALL BE TENCATE NICOLON GROUNDCOVER FABRIC OR EQUAL.



WASHED STONE

DS–24 SURFACE TREATMENT DETAIL
NOT TO SCALE

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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REVISIONS

NO.	DATE	COMMENT

CLERK'S CERTIFICATION ON THE PLAN

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_____
TOWN CLERK

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-SITE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-16	SCALE: NOTED
	SHEET: 17 OF 26

COMMONWEALTH OF MASSACHUSETTS
ROBERT L BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

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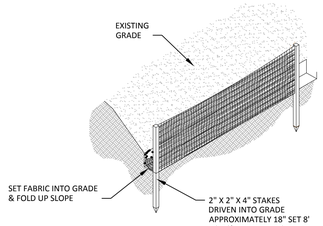
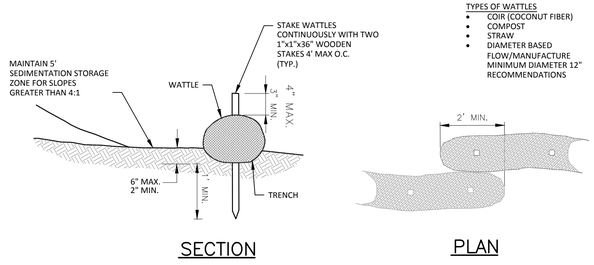
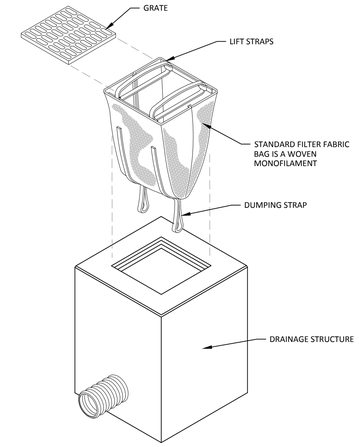


DE–1 SILT FENCE DETAIL
NOT TO SCALE

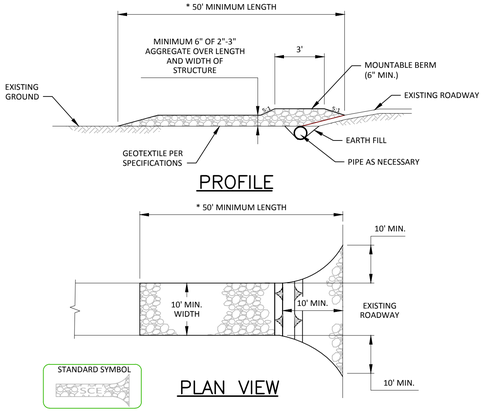


SECTION PLAN

DE–2 WATTLES–SLOPE PROTECTION
NOT TO SCALE



DE–3 EROSION CONTROL AT CATCH BASIN
NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. LENGTH - MINIMUM OF 50'.

2. WIDTH - 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.

3. GEOTEXTILE FABRIC (MIRAFI 180N OR EQUAL) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE.

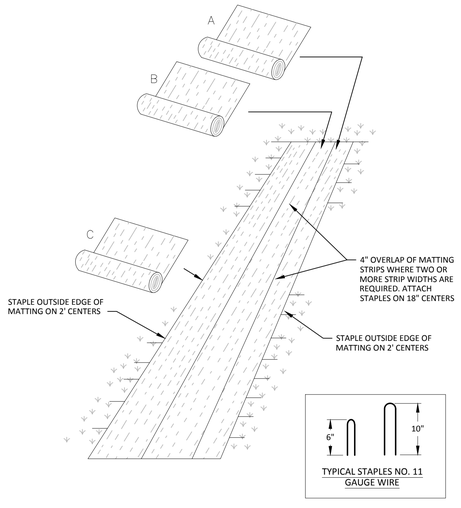
4. STONE - CRUSHED AGGREGATE (2" TO 3") OR RECLAIMED OR RECYCLED CONCRETE OR EQUIVALENT SHALL BE PLACED AT LEAST 6" DEEP OVER THE LENGTH AND WIDTH OF THE ENTRANCE.

5. SURFACE WATER - ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED THROUGH THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PIPE INSTALLED THROUGH THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROTECTED WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 6" OF STONE OVER THE PIPE. WHEN THE SCE IS LOCATED AT A HIGH SPOT ALONG THE ROADWAY, DRAINAGE PIPE WILL NOT BE NECESSARY. PIPE SHOULD BE SIZED ACCORDING TO THE AMOUNT OF RUNOFF TO BE CONVEYED. A 12" MINIMUM WILL BE REQUIRED.

6. LOCATION - A STABILIZED CONSTRUCTION ENTRANCE SHALL BE LOCATED AT EVERY POINT WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SITE. VEHICLES LEAVING THE SITE MUST TRAVEL OVER THE ENTIRE LENGTH OF THE STABILIZED CONSTRUCTION ENTRANCE.

7. ALL EFFORTS SHALL BE MADE TO REDUCE MATERIAL IN THE ROADWAY.

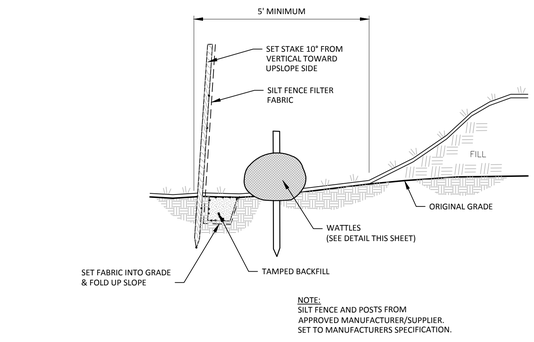
DE–4 STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



DE–5 EROSION CONRTOL MATTING
NOT TO SCALE

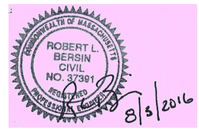
NOTES:
1. EROSION CONTROL MATS MANUFACTURED BY NORTH AMERICAN GREEN'S, MODEL S150 & SC150 AND SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

2. USE S150 EROSION CONTROL MATS ON 3:1 TO 2:1 SLOPES. USE SC150 EROSION CONTROL MATS ON 2:1 TO 1:1 SLOPES.



NOTE:
SILT FENCE AND POSTS FROM APPROVED MANUFACTURER/SUPPLIER. SET TO MANUFACTURERS SPECIFICATION.

DE–6 STRAW WATTLE / SILT FENCE INSTALLATION DETAIL
NOT TO SCALE



CLERK'S CERTIFICATION ON THE PLAN

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TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-EROSION CONTROL

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-17	SCALE: NOTED
	SHEET: 18 OF 26

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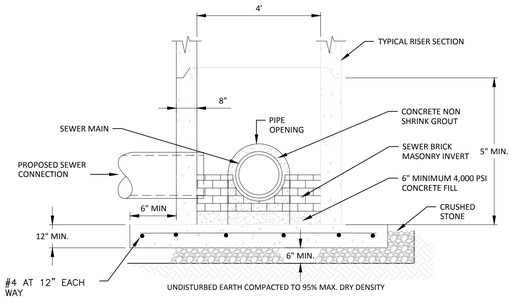
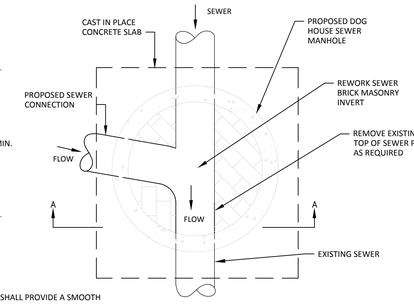


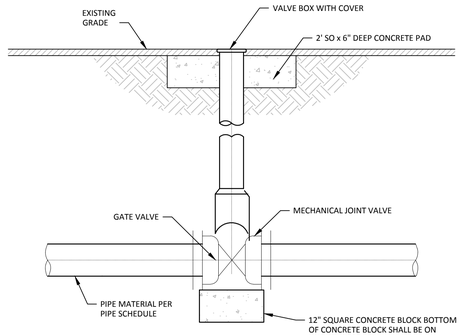
SECTION A-A



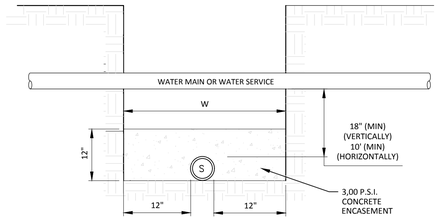
PLAN

1. BRICK MASONRY INVERT SHALL PROVIDE A SMOOTH TRANSITION THROUGH THE MANHOLE.
2. BRICK MASONRY BENCH SHALL SLOPE TOWARD SEWER RIM AT 1/2" / FT.
3. DEPTH OF TROUGH THROUGH MANHOLE SHALL EQUAL THE DIAMETER OF THE SEWER PIPE.

DSE-1 SEWER MANHOLE BASE
NOT TO SCALE

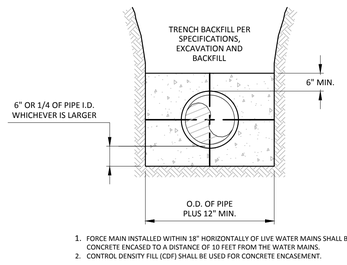


DSE-4 TYPICAL DETAIL FOR ALL BURIED VALVES CONNECTION TO PROPOSED PIPES
NOT TO SCALE



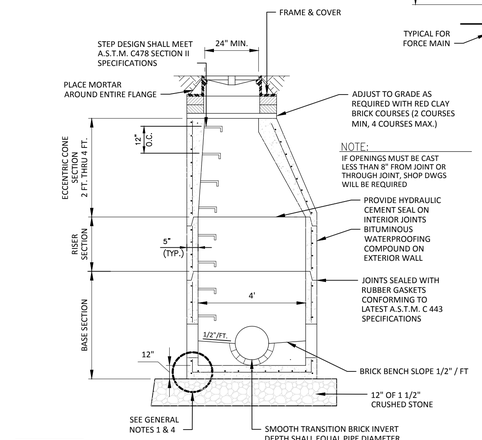
1. WIDTH OF TRENCH AS REQUIRED FOR STABLE WORK CONDITIONS.
2. IF MINIMUM CLEARANCES CANNOT BE MET, SEWER PIPE SHALL BE OF EQUIVALENT SIZE PRESSURE PIPE. ONE 20 FOOT (MIN.) LENGTH OF PRESSURE PIPE SHALL BE CENTERED ON THE WATER LINE. INSTALL ADDITIONAL SECTIONS OF PRESSURE PIPE ON EACH SIDE OF CENTERED PIPE.
3. ALL PRESSURE PIPE JOINTS SHALL BE ENCASED IN CONCRETE EXTENDING 6" ON EACH SIDE OF JOINT, INCLUDING JOINTS TO NON-PRESSURE SEWER MAIN.
4. THESE CONDITIONS APPLY TO SERVICE LATERALS AS WELL AS MAINS.

DSE-6 MINIMUM DISTANCE FOR SEWER AND WATER LINE CROSSINGS
NOT TO SCALE



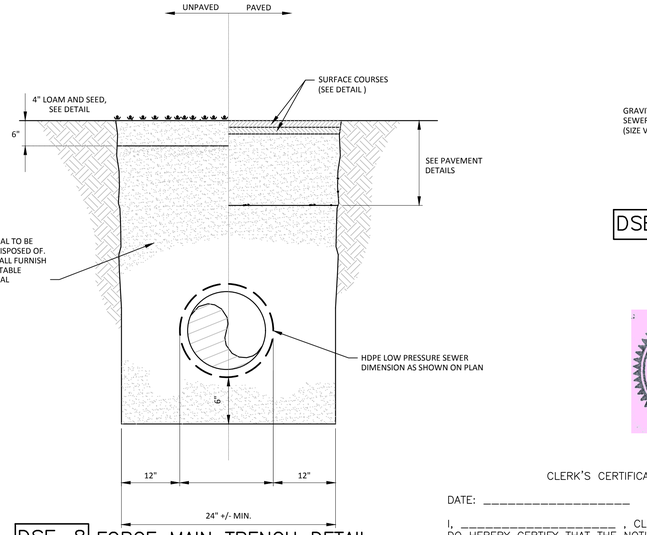
1. FORCE MAIN INSTALLED WITHIN 18" HORIZONTALLY OF LIVE WATER MAINS SHALL BE CONCRETE ENCASED TO A DISTANCE OF 10 FEET FROM THE WATER MAINS.
2. CONTROL DENSITY FILL (CDF) SHALL BE USED FOR CONCRETE ENCASEMENT.

DSE-7 TYPE VI PLAIN CONCRETE ENCASEMENT DETAIL
NOT TO SCALE

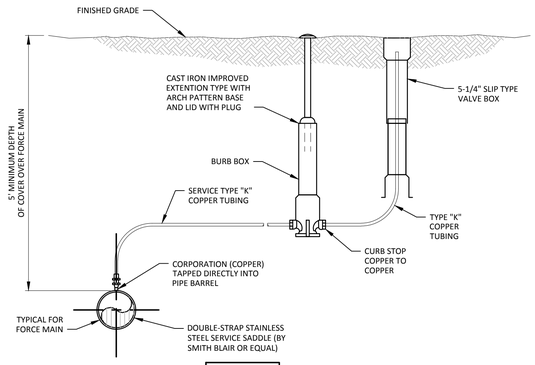


DSE-5 TYPICAL SEWER MANHOLE COVER
NOT TO SCALE

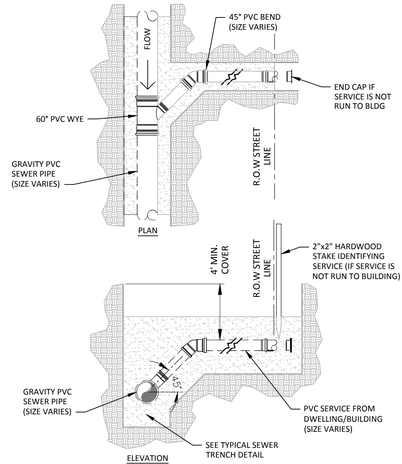
NOTES:
1 REINFORCING STEEL CONFORMS TO LATEST A.S.T.M.
2 CONC. MINIMUM COMPRESSIVE STRENGTH = 4000 PSI TYPE II CEMENT.
3 MANHOLE DESIGN SPECIFICATIONS CONFORM TO LATEST A.S.T.M. SPEC. FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS
4 ONE POUR MONOLITHIC BASE SECTION.



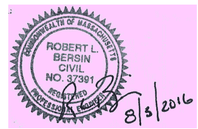
DSE-8 FORCE MAIN TRENCH DETAIL
NOT TO SCALE



DSE-2 AIR RELEASE DETAIL
NOT TO SCALE



DSE-9 SEWER SERVICE CONNECTION
NOT TO SCALE



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NO.	DATE	COMMENT

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DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-SEWER

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-18	SCALE: NOTED
	SHEET: 19 OF 26

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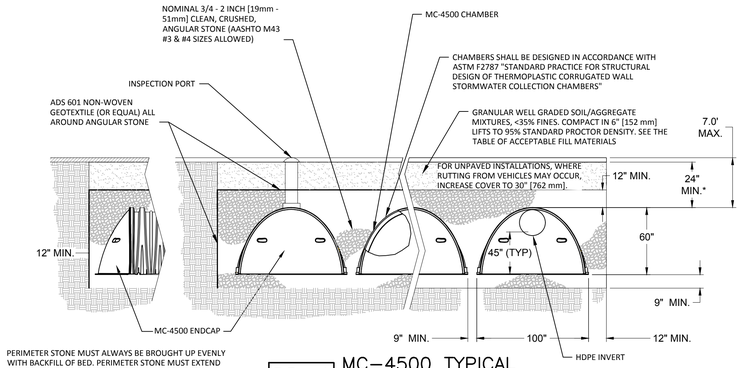
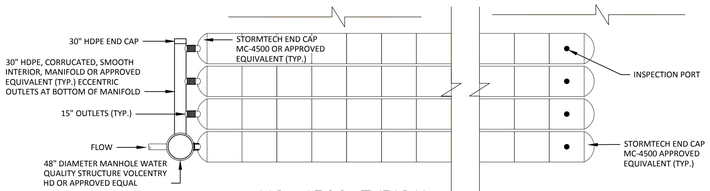
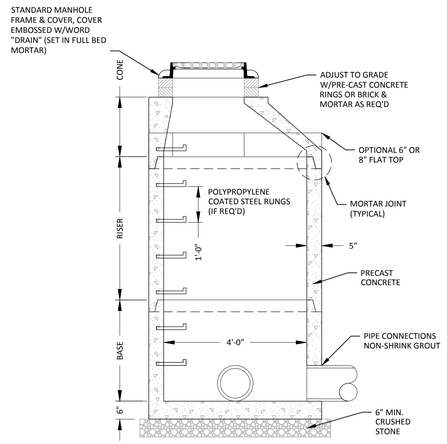


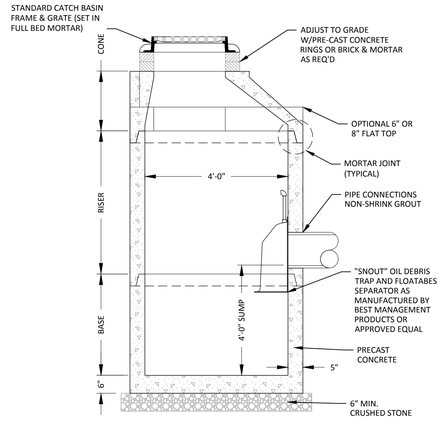
DD-4 MC-4500 TYPICAL CROSS-SECTION
NOT TO SCALE



MC-4500 TYPICAL PLAN
NOT TO SCALE



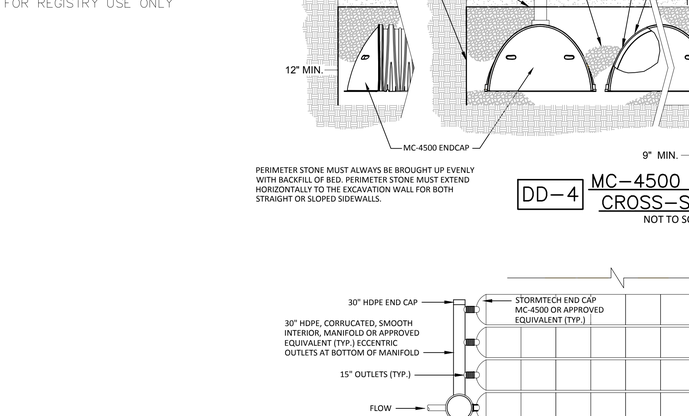
DD-1 PRE-CAST DRAIN MANHOLE
NOT TO SCALE



DD-2 PRE-CAST CATCH BASIN
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."

ALTERNATE TOP SLAB

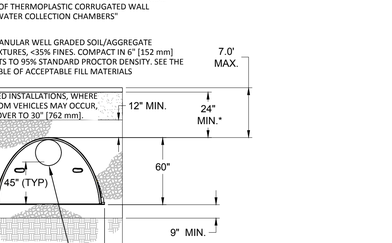


ALTERNATE ECCENTRIC CONE SECTION

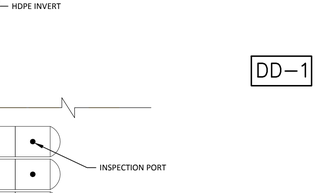
IN GRASS

DD-5 TYPICAL PRECAST CONCRETE CATCH BASIN WITH HOOD
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."



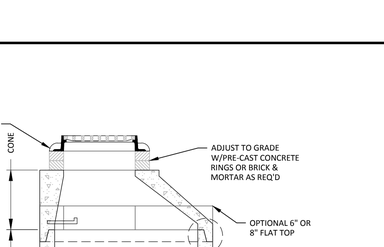
PLAN



SECTION A-A

NOTES:
1. ALL DMH FRAME AND COVERS TO BE LEBARON FOUNDRY MODEL NO. LK110A DRAIN OR EQUAL.
2. MANHOLE FRAME AND COVER TO BE H-20 LOAD RATED.

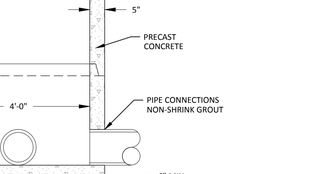
DD-6 MANHOLE FRAME AND COVER DETAIL
NOT TO SCALE



PLAN

RECTANGLES 3/4"X1-3/4" RAISED 1/8" FROM COVER TOP

2-1/2" SQUARE OPENINGS



SECTION A-A

NOTE:
ALL CATCH BASIN FRAME AND GRATES TO BE LEBARON FOUNDRY MODEL NO. LF 246 DRAIN OR EQUAL WITH 4 FLANGES UNLESS OTHERWISE SPECIFIED ON THE CONTRACT DRAWINGS.

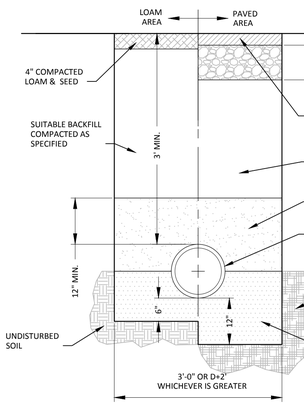
DD-7 CATCH BASIN FRAME AND GRATE DETAIL
NOT TO SCALE

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK



DD-8 DRAIN TRENCH
NOT TO SCALE

NOTES:
1. ALL MATERIAL SHALL CONFORM TO CITY/TOWN OF DEPARTMENT OF PUBLIC WORKS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO CITY/TOWN SPECIFICATIONS.
3. IN LIEU OF THE 12" GRAVEL COURSE AND 9" OF CRUSHED GRAVEL, 18" OF CRUSHED GRAVEL OR RECLAIMED STABILIZED BASE MAY BE USED AS A BASE FOR THE PAVEMENT REPAIR.
4. MATERIAL SHALL BE REPLACED IN KIND WHENEVER POSSIBLE.
5. A MINIMUM 2' CUTBACK IS REQUIRED AT THE TOP OF THE TRENCH WALL OVER UNDISTURBED MATERIAL.

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37361
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-DRAINAGE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-19

SCALE: NOTED

SHEET: 20 OF 26

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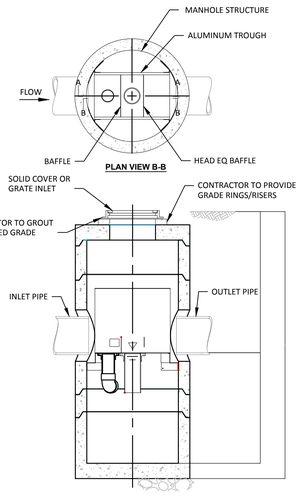


FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. VORTSENTRY HS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.

INSTALLATION NOTES
1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTSENTRY HS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
3. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
4. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
5. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

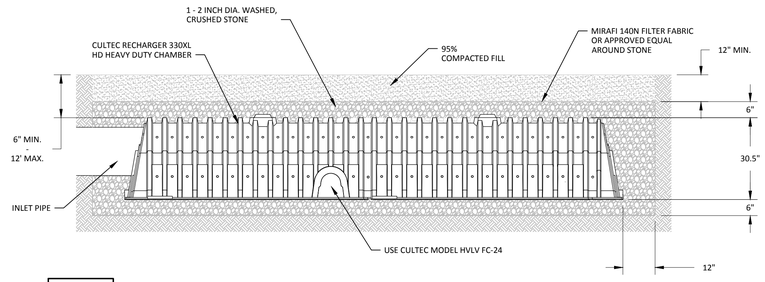
NOTES

"ANY MANUFACTURE'S NAMES AND/OR MODEL NUMBERS IDENTIFIED HEREIN ARE INTENDED TO ASSIST IN ESTABLISHING A GENERAL LEVEL OF QUALITY, CONFIGURATION, FUNCTIONALITY, AND APPEARANCE REQUIRED. THIS IS NOT A PROPRIETARY SPECIFICATION AND IT SHOULD BE NOTED THAT "OR APPROVED EQUAL" APPLIES TO ALL PRODUCTS DENOTED HEREIN. IT IS UNDERSTOOD THAT ALL MANUFACTURERS WILL HAVE MINOR VARIATIONS IN CONFIGURATION, APPEARANCE, AND PRODUCT SPECIFICATION TO ENCOURAGE OPEN AND COMPETITIVE INVOLVEMENT FROM MULTIPLE MANUFACTURERS THAT ARE ABLE TO SUPPLY SIMILAR PRODUCTS."

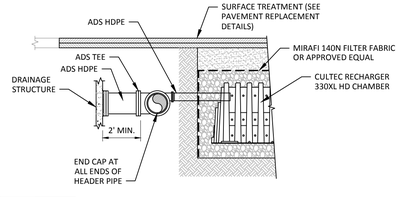
Underground Retention / Infiltration Areas for Watershed

No.	Watershed	Storage Area	No. Storage Chambers	Vortsentry Model
1	S1	46.67'W x 27.24'L x 6.75'H	25	HS72
2	S2	37.58'W x 43.34'L x 6.75'H	36	HS72
3	S3	37.58'W x 51.39'L x 6.75'H	44	HS84
4	S4	55.75'W x 35.29'L x 6.75'H	42	HS84
5	S5, S6	28.50'W x 43.34'L x 6.75'H	27	HS84
6	S7	46.67'W x 47.37'L x 6.75'H	50	HS84
7	S8, S9	37.58'W x 63.47'L x 6.75'H	56	HS96
8	S10, S11, S12, S13, S14	55.75'W x 51.39'L x 6.75'H	66	HS96
9	S15	46.67'W x 59.44'L x 6.75'H	65	HS84

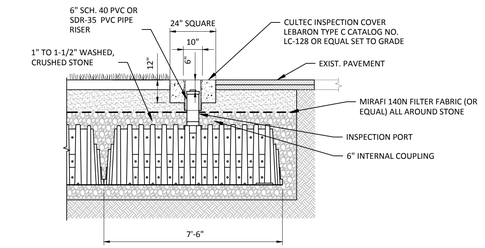
DD-14 VORTSENTRY HD STANDARD DETAIL
NOT TO SCALE



DD-9 CULTEC RECHARGER 330XL HD PROFILE
NOT TO SCALE

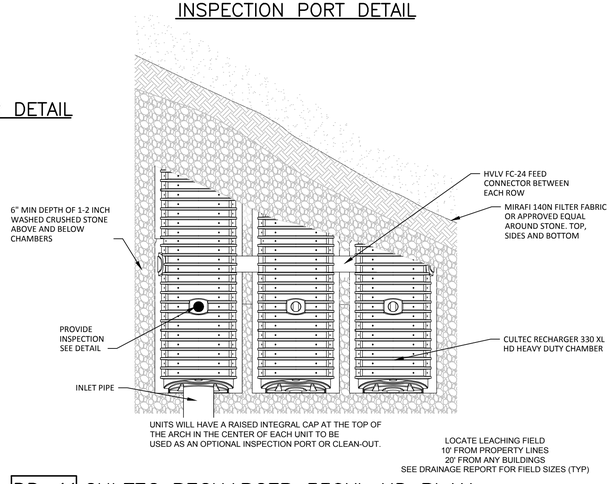


DD-10 HEADER PIPE DETAIL

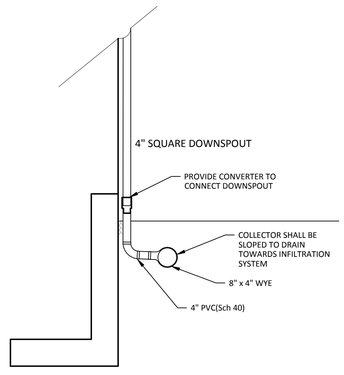


INSPECTION PORT DETAIL

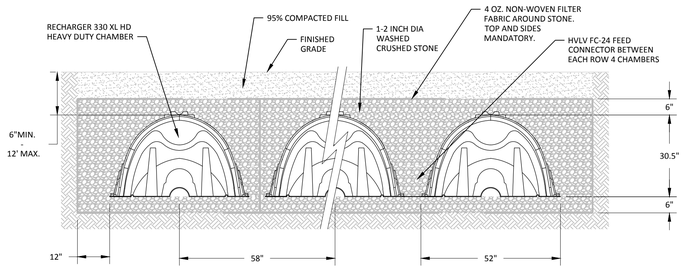
CLEANOUT ACCESS COVER DETAIL
NOT TO SCALE



DD-11 CULTEC RECHARGER 330XL HD PLAN
NOT TO SCALE



DD-12 BUILDING DOWNSPOUT ROOF DRAIN DETAIL
NOT TO SCALE



GENERAL NOTES
RECHARGER 330XL HD BY CULTEC, INC. OF BROOKFIELD, CT.
STORAGE PROVIDED = 11.32 CF/FT PER DESIGN UNIT.
REFER TO CULTEC, INC.'S CURRENT RECOMMENDED INSTALLATION GUIDELINES.
USE RECHARGER 330XL HD HEAVY DUTY FOR TRAFFIC AND/OR H-25 APPLICATIONS.

ALL RECHARGER 330XL HD HEAVY DUTY UNITS ARE MARKED WITH A COLOR STRIPE FORMED INTO THE PART ALONG THE LENGTH OF THE CHAMBER.
ALL RECHARGER 330XL HD CHAMBERS MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

DD-8 CULTEC RECHARGER 330XL HD SECTION
NOT TO SCALE

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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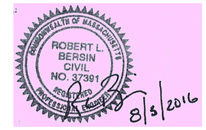
_____
TOWN CLERK



APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

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Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
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REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-DRAINAGE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-20

SCALE: NOTED

SHEET: 21 OF 26

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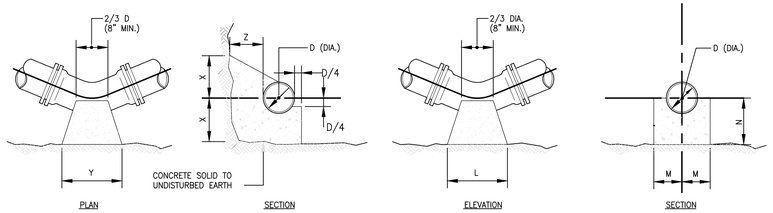
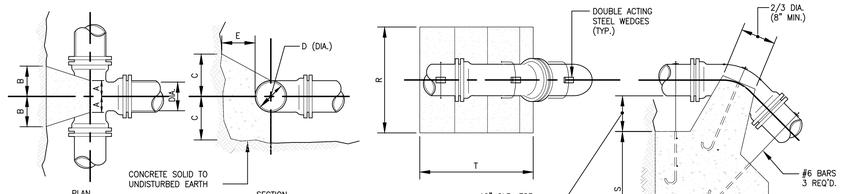


HORIZONTAL BENDS VERTICAL BENDS



TEES CONC. ANCHORAGE

NOTES:

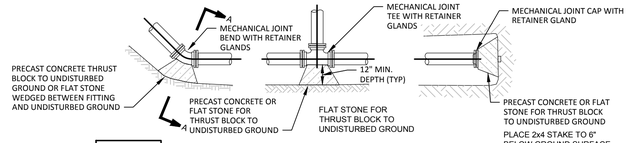
1. ALL CONCRETE SHALL BE CL. B (AE) CONCRETE AND COMPLY WITH STANDARD SPECIFICATIONS.
2. CONCRETE THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED EARTH. IN AREAS WHERE BEARINGS SOILS HAVE BEEN DISTURBED, RESTRAINED JOINTS SHALL BE USED.
3. ALL FORCE MAIN BENDS, TEES, MAIN TAPS, AND END CAPS SHALL REQUIRE A CONCRETE THRUST BLOCK.

TEES						
		PIPE SIZE-D (DIA.)				
		6"	8"	12"	16"	20"
	A	8"	10"	1'-0"	1'-3"	1'-6"
	B	8"	10"	1'-2"	1'-4"	1'-6"
	C	10"	1'-0"	1'-3"	1'-6"	1'-8"
	E	8"	10"	1'-2"	1'-6"	1'-10"

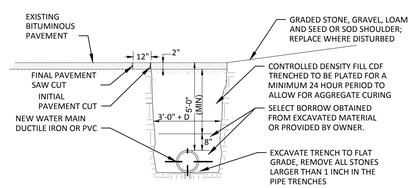
HORIZONTAL BENDS						
BEND		PIPE SIZE-D (DIA.)				
		6"	8"	12"	16"	20"
1/8	X	1'-0"	1'-0"	1'-0"	1'-3"	1'-6"
	Y	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"
	Z	8"	10"	1'-2"	1'-4"	1'-6"
1/16	X	1'-0"	1'-0"	1'-0"	1'-3"	1'-6"
	Y	1'-0"	1'-4"	1'-6"	1'-9"	2'-6"
	Z	8"	10"	1'-2"	1'-4"	1'-6"
1/32	X	1'-0"	1'-0"	1'-0"	1'-2"	1'-4"
	Y	1'-0"	1'-0"	1'-2"	1'-4"	1'-6"
	Z	8"	10"	1'-2"	1'-4"	1'-6"

VERTICAL BENDS						
BEND		PIPE SIZE-D (DIA.)				
		6"	8"	12"	16"	20"
1/8	L	1'-3"	1'-8"	2'-6"	3'-6"	4'-8"
	M	7"	8"	11"	1'-4"	1'-6"
	N	7"	8"	11"	1'-4"	1'-6"
1/16	L	9"	1'-0"	1'-9"	2'-6"	3'-0"
	M	7"	7"	10"	1'-0"	1'-2"
	N	7"	7"	8"	10"	1'-0"
1/32	L	6"	8"	1'-0"	1'-4"	1'-9"
	M	7"	7"	10"	1'-0"	1'-2"
	N	7"	7"	8"	10"	1'-0"

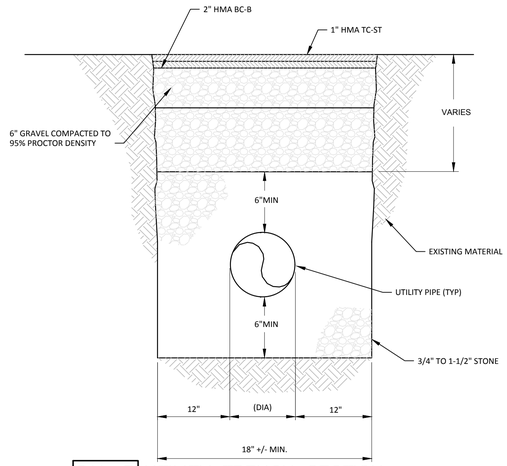
ANCHORAGES						
BEND		PIPE SIZE-D (DIA.)				
		6"	8"	12"	16"	20"
1/8	R	2'-6"	3'-0"	4'-6"	5'-4"	6'-0"
	S	2'-6"	2'-9"	3'-6"	2'-6"	5'-6"
	T	3'-0"	4'-0"	4'-9"	7'-0"	9'-6"
1/16	R	2'-0"	2'-8"	4'-0"	4'-6"	5'-0"
	S	1'-9"	2'-3"	2'-6"	3'-2"	3'-8"
	T	2'-6"	3'-4"	4'-0"	6'-0"	8'-6"
1/32	R	1'-6"	2'-0"	3'-0"	3'-8"	4'-3"
	S	1'-3"	1'-9"	2'-0"	2'-4"	2'-6"
	T	2'-0"	2'-6"	3'-0"	4'-6"	5'-9"



DU–2 TYPICAL THRUST BLOCK DETAILS
NOT TO SCALE

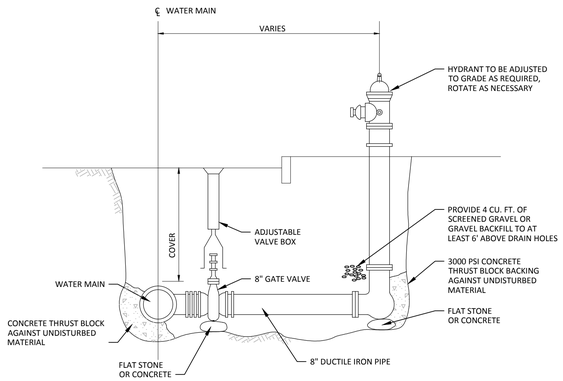


DU–1 TYPICAL TRENCH IN ROADWAY SURFACE
(RIGHT SIDE INSTALLATION LEFT SIDE SIMILAR)
NOT TO SCALE



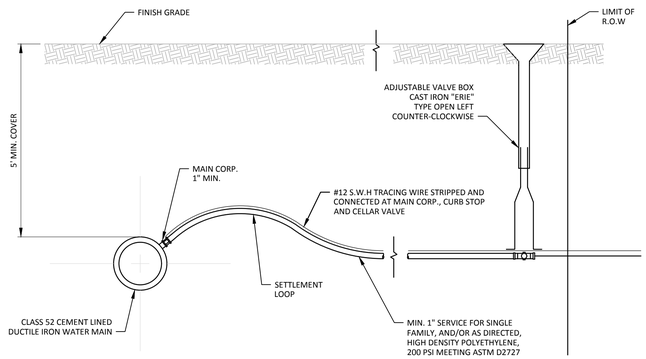
DU–3 UTILITY TRENCH SECTION
NOT TO SCALE

COORDINATE ALL UTILITY TRENCHING WITH APPROPRIATE UTILITY.

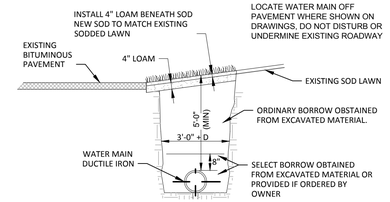


NOTES:
1. HYDRANTS ARE TO BE INSTALLED WITHIN THE ROADWAY LAYOUT
2. FOR HYDRANTS INSTALLED AT DEAD END OF WATER MAINS; INSTALL VALVE WITH RESTRAINED JOINTS AND ONE FULL LENGTH OF PIPE BETWEEN VALVE AND HYDRANT WITH RESTRAINED JOINTS
3. ALL HYDRANT BRANCH PIPING TO BE 8" DUCTILE IRON PIPE.

DU–4 FIRE HYDRANT DETAIL
NOT TO SCALE



DU–5 TYPICAL PERMANENT SERVICE CONNECTION DETAIL
NOT TO SCALE



DU–6 TYPICAL TRENCH IN SHOULDER (SOD)
(SHOWN RIGHT SIDE INSTALLATION LEFT SIDE SIMILAR)
NOT TO SCALE

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
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REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-UTILITIES

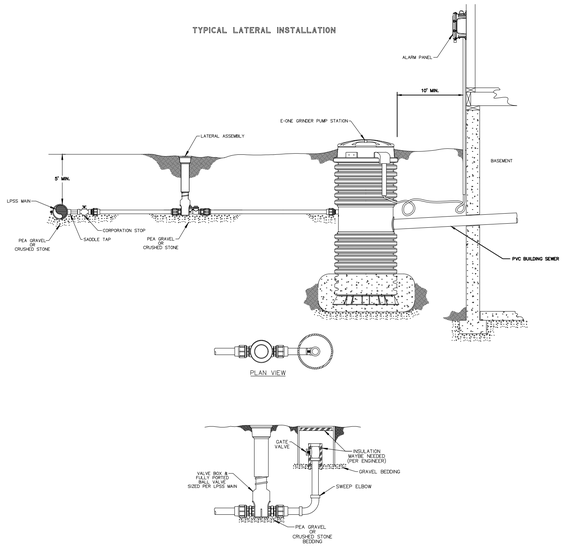
CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

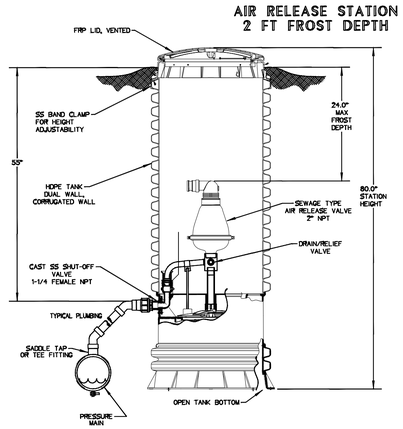
C-21

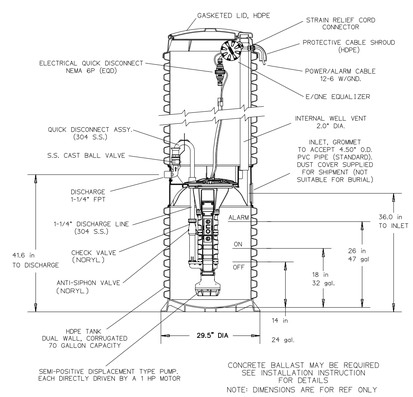
SCALE: NOTED

SHEET: 22 OF 26

S:\Clients\Richmond Grasspond Development\CAD\Details1.dwg, MC21-DETAIL-UTILITIES (2), 8/4/2016 6:46:19 AM

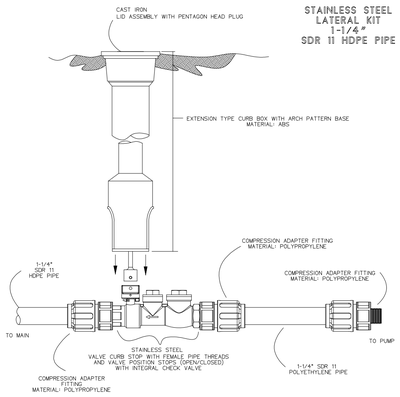






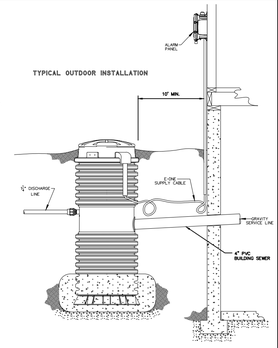
DH071

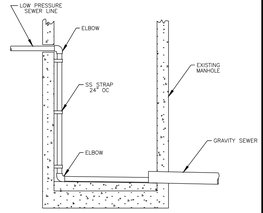
- SIMPLEX PUMP CHAMBER ASSEMBLY FOR ALL SINGLE FAMILY LOTS
- DUPLEX PUMP CHAMBER ASSEMBLY FOR NON GRAVITY MULTI-FAMILY UNITS.



NOTES:

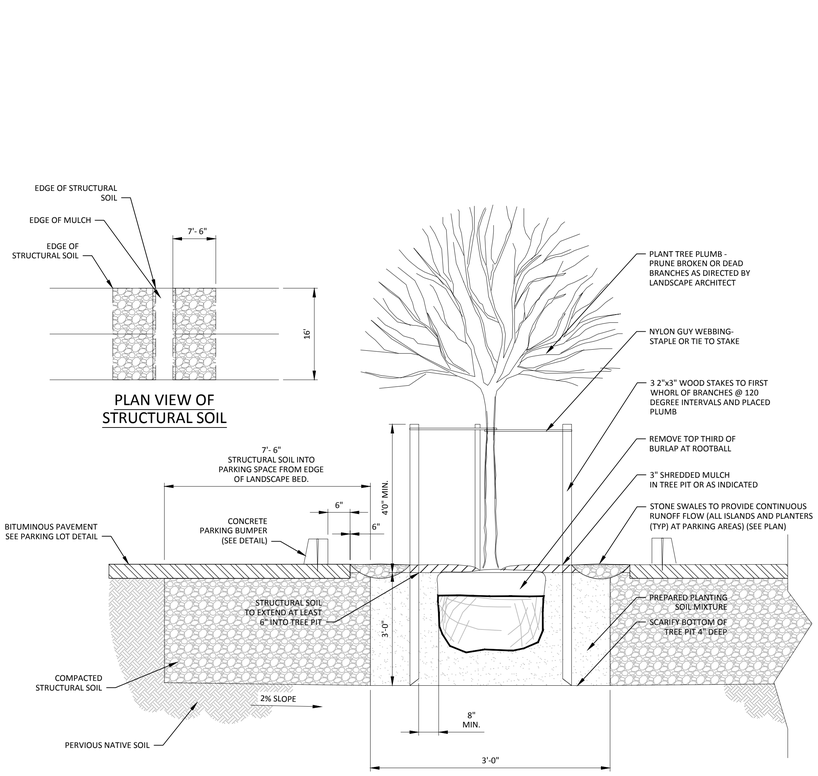
1. SS CURB STOP/CHECK VALVE AND FITTINGS ARE PROVIDED SEPARATELY, TO BE ASSEMBLED BY OTHERS
2. TO ASSEMBLE, APPLY A DOUBLE LAYER OF TEFLON TAPE, AND 1 LAYER OF PIPE DOPE (SUPPLIED BY OTHERS) TO THE THREADS ON THE PLASTIC FITTINGS AND INSTALL PER THE MANUFACTURER'S INSTRUCTIONS
3. ASSEMBLY IS TO BE PRESSURE TESTED
4. ASSEMBLY IS TO BE USED WITH SDR11 HDPE PIPE



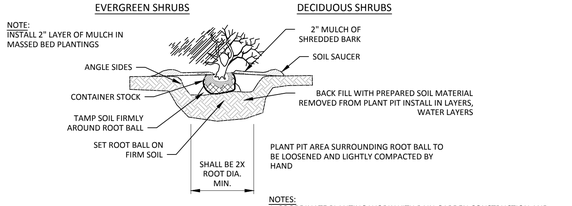


TYPICAL DROP CONNECTION LPSS IN EXISTING MANHOLE

DM-5 E ONE SEWER SYSTEM DETAILS
NOT TO SCALE

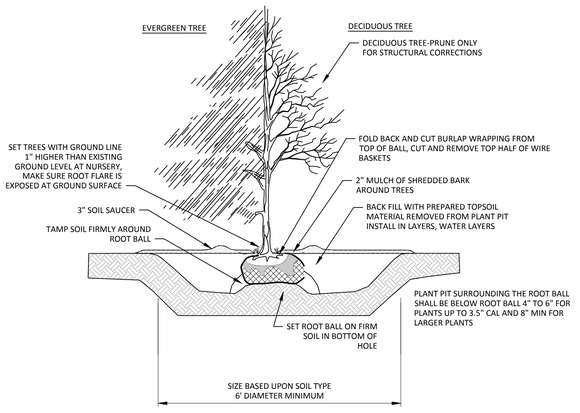


DM-3 TREE PIT WITH STRUCTURAL DETAIL
NOT TO SCALE



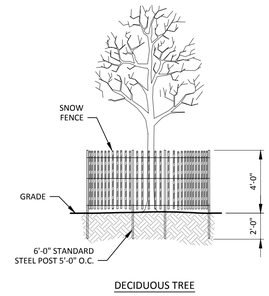
NOTES:
1. BEFORE STARTING THE PLANTING, ADD 3"-4" OF WELL COMPOSTED LEAVES OR YARD WASTE ACROSS PLANTING AREA(S) AND INCORPORATE COMPOST INTO THE TOP 6" OF SOIL.
2. EXCAVATE PLANT PIT MIXING TOPSOIL, SUBSOIL AND COMPOST INTO PREPARED TOPSOIL AND USE FOR PLANT PIT BACKFILL.

NOTES:
1. COORDINATE PLANTING WORK WITH RAIN GARDEN CONSTRUCTION AND FIT NEW TREES AND SHRUBS INTO SANDY LOAM FILTER SOIL AND INTO UPPER AREA OF FILTER TRENCH AS REQUIRED.
2. COORDINATE WORK WITH NO MOW LAWN SEEDING WORK.



DM-4 TREE AND SHRUB PLANTING DETAIL
NOT TO SCALE

NOTES:
1. FENCING SHALL BE ORANGE RESINET SM60 BARRIER FENCE "SNOW FENCE" OR APPROVED EQUIVALENT.
2. POST SHALL BE HOT ROLLED RAIL STEEL AND FORMED INTO A "T". DIMENSIONS OF "T" POST SECTION, APPROXIMATELY 1 7/16" X 1 5/16" X 1/8" X 6' (SIX FEET) LONG. THE POST SHALL BE PAINTED GREEN OR GALVANIZED.
3. THE FENCING SHALL REMAIN IN PLACE UNTIL ALL EXCAVATION WORK IS COMPLETED AND THE SURFACE HAS BEEN RE-ESTABLISHED



DM-1 TREE PROTECTION DETAIL
NOT TO SCALE

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
_____
_____
_____
_____
_____
_____
TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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Dimensions are as indicated.

Use of this plan constitutes acceptance of terms and conditions set forth in accompanying project documentation.

It is the responsibility of the user to confirm discrepancies with the Engineer prior to use.

REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-LANSCAPE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-22	SCALE: *NOTED*
	SHEET: 23 OF 26

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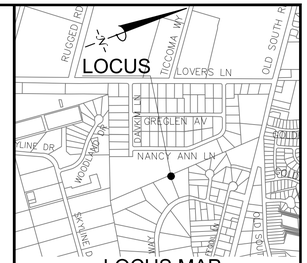

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REVISIONS

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PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
TEST PIT LOCATION

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	
C-23	SCALE: NOTED
	SHEET: 24 OF 26

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

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TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 1

DEPTH FROM SURFACE FEET INCHES TOP EL.=34.0	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–8"	FILL	MED.– SAND	7.5YR 7/8		SILTY
8–18"	C1	COARSE SAND	5YR 5/8		20% GRAVEL
18–32"	C2	COARSE SAND	10YR 8/3	PT	10% GRAVEL
32–64"	C3	COARSE SAND	10YR 7/4		CLEAN SAND
64–120"	C4	COARSE SAND	10YR8/3		CLEAN SAND

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 2

DEPTH FROM SURFACE FEET INCHES TOP EL.=11.0	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–16"	C1	LOAMY SAND	7.5YR 4/2	PT	WET
GROUND WATER FOUND @ 40"					
16–66"	C2	COARSE SAND	10YR6/3		10% GRAVEL

ESTIMATED SEASONAL HIGH GROUND WATER ELEV 7.2

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 3

DEPTH FROM SURFACE FEET INCHES TOP EL.=10.6	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–30"	C1	COARSE SAND	5YR6/8	PT	
GROUND WATER FOUND @ 35"					
30–66"	C2	COARSE SAND	10YR8/1		5% GRAVEL

ESTIMATED SEASONAL HIGH GROUND WATER ELEV 6.9

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 4

DEPTH FROM SURFACE FEET INCHES TOP EL.=31.2	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–4"	A	SANDY LOAM	10YR5/1	PT	TOPSOIL FROM ADJACENT LOAM PILE
4–120"	C	MEDIUM/ COARSE SAND IN LAYERS	2.5Y7/2		5% GRAVEL

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 5

DEPTH FROM SURFACE FEET INCHES TOP EL.=37.4	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–14"	C1	LOAMY SAND			MIXED STONE DUST/CRUSHED STONE
				LAB SAMPLE TAKEN	
14–120"	C2	LOAMY SAND			MIXED FILL CRUSHED STONE

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 6

DEPTH FROM SURFACE FEET INCHES TOP EL.=40.2	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–12"	A	SANDY LOAM	2.5Y2.5/1		DARK RICH LOAM
12–20"	B	LOAMY SAND	7.5YR6/8		ORANGE
				PT	
				LAB SAMPLE TAKEN	
20–120"	C1	MEDIUM SAND	10YR8/5		2% GRAVEL BRIGHT YELLOW

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 7

DEPTH FROM SURFACE FEET INCHES TOP EL.=42.2	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–12"	A	SANDY LOAM	10YR3/3		MEDIUM BROWN LOAM
12–26"	B	LOAMY SAND	10YR6/6		YELLOW/BROWN
				PT	LAB SAMPLE TAKEN
26–120"	C1	MEDIUM/ COARSE SAND	10YR8/4		CLEAN SAND PALE TAN

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 8

DEPTH FROM SURFACE FEET INCHES TOP EL.=45.9	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–10"	A	SANDY LOAM	2.5Y2.5/3		DARK RICH LOAM
10–20"	B	LOAMY SAND	7.5YR7/8		ORANGE
				PT	
20–120"	C1	COARSE SAND	10YR8/3		LOOSE SAND & GRAVEL TAN/LIGHT BROWN

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 9

DEPTH FROM SURFACE FEET INCHES TOP EL.=46.5	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–12"	A	SANDY LOAM	2.5Y2.4/1		DARK BROWN LOAM
12–21"	B	LOAMY SAND	10YR6/8		YELLOW/ORANGE
21–38"	C1	FINE SAND	2.5Y8/1	PT	FINE WHITE SAND
				PT	
38–120"	C2	MEDIUM/ COARSE SAND	10YR8/1		CLEAN WHITE SAND

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 10

DEPTH FROM SURFACE FEET INCHES TOP EL.=49.8	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–6"	A	SANDY LOAM	2.5Y2.4/2		
6/12"	B	SANDY LOAM	2.5Y2.7/6		
12–32"	C1	CLAY	5GY7/1		
32–60"	C2	SANDY CLAY LOAM	10YR7/8		LOOKS LIKE FILL MIXED "A"&CLAY
				PT	
60–120"	C3	MEDIUM SAND	10YR8/1		CLEAN WHITE SAND

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 11

DEPTH FROM SURFACE FEET INCHES TOP EL.=48.2	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–12"	A	LOAMY SAND	10YR2/1		DARK RICH LOAM
12–24"	B	SANDY LOAM	10YR7/8		YELLOW/ORANGE
21–48"	C1	LOAMY SAND	2.5Y7/6	PT	YELLOW SAND SOME SILT
48–120"	C2	MEDIUM/ COARSE SAND	10YR8/2		CLEAN WHITE SAND

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 12

DEPTH FROM SURFACE FEET INCHES TOP EL.=44.8	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–10"	A	SANDY LOAM	7.5YR3/3		DARK BROWN LOAM
10–28"	B	LOAMY SAND	7.5YR6/8		YELLOW/ORANGE
28–51"	C1	LOAMY SAND	7.5YR7/4	PT	TAN/LIGHT BROWN SAND SOME SILT
				LAB SAMPLE TAKEN	
51–120"	C2	COARSE SAND	10YR8/2		LIGHT TAN CLEAN SAND

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

SOIL EXAMIINATIONS PERFORMED
BY: TIM BENNETT, SE2748
ALL PERCOLATION RATES <2

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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_____
TOWN CLERK

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
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REVISIONS

NO.	DATE	COMMENT

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_____
TOWN CLERK

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
SOIL LOGS

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	
C-24	SCALE: *NOTED*
	SHEET: 25 OF 26

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GENERAL CONSTRUCTION NOTES

1. ALL SITE PREPARATION NECESSARY TO COMPLETE THIS PROJECT ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
2. THE CONTRACTOR SHALL COORDINATE ALL NECESSARY POLICE DETAILS WITHE THE LOCAL POLICE DEPARTMENT.
3. THE CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL REQUIRED CONSTRUCTION PERMITS. ALL FEES INCLUDING POLICE DETAILS AND POSTING OF BONDS, ARE TO BE PAID BY THE CONTRACTOR, AND COORDINATED WITH THE OWNER AND THE ENGINEER.
4. ALL EXISTING CONDITIONS SHOWN SHALL BE CONSIDERED APPROXIMATE AND ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED CONDITIONS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLING ANY WORK.
5. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF PREVIOUS OWNERS, VARIOUS UTILITY COMPANIES, AND WHEREVER POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS GUARANTEED AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES, ANY GOVERNING PERMITTING AUTHORITIES, AND "DIGSAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK IN PREVIOUSLY UNALTERED AREAS TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RESOLVE CONFLICTS BETWEEN THE PROPOSED UTILITIES AND FIELD-LOCATED UTILITIES AND SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED, INCOMPLETELY OR INACCURATELY SHOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ACCURATE RECORDS OF THE LOCATION AND ELEVATION OF ALL WORK INSTALLED AND EXISTING UTILITIES FOUND DURING CONSTRUCTION FOR THE PREPARATION OF THE AS-BUILT PLAN.
6. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL EXISTING UTILITIES IN WORKING ORDER AND FREE FROM DAMAGE DURING THE ENTIRE DURATION OF THE PROJECT. ALL COSTS RELATED TO THE REPAIR OF UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. EXCAVATION REQUIRED WITHIN THE PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER.
7. THE CONTRACTOR SHALL UTILIZE ALL PRECAUTIONS AND MEASURES TO ENSURE THE SAFETY OF THE PUBLIC, ALL PERSONAL AND PROPERTY DURING CONSTRUCTION IN ACCORDANCE WITH OSHA STANDARDS, INCLUDING BARRICADES, SAFETY LIGHTING, CONES, POLICE DETAIL AND/OR FLAGMEN AS DETERMINED NECESSARY BY THE ENGINEER AND/OR OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF POLICE DETAIL AND FOR COORDINATING WITH THE LOCAL OR STATE POLICE DEPARTMENT FOR ALL REQUIRED POLICE DETAIL.
8. ALL TRENCHING WORK WITHIN A PUBLIC OR PRIVATE ROADWAY SHALL BE COORDINATED WITH THE OWNER AND/OR PROPER LOCAL & STATE AGENCIES. TRENCH SAFETY AND RELATED PERMITS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THIS WORK MAY BE REQUIRED TO TAKE PLACE OUTSIDE OF NORMAL HOURS OF OPERATION FOR THE FACILITY.
9. ALL TRENCH WORK WITHIN EXISTING PAVEMENT SHALL BE NEATLY SAWCUT PER THE APPLICABLE DETAILS. TRENCH WORK BACKFILL SHALL BE PLACED AND COMPACTED IN 8-INCH LIFTS OR AS OTHERWISE INDICATED ON PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY SETTLING DUE TO INADEQUATE COMPACTION AS DETERMINED BY THE ENGINEER WITHIN THE 36 MONTH WARRANTY PERIOD.
10. THE CONTRACTOR SHALL MAKE ALL CONNECTION ARRANGEMENTS WITH UTILITY COMPANIES, AS NECESSARY.
11. ALL IMPORTED MATERIAL SHALL BE CLEAN AND FREE OF ANY HAZARDOUS WASTE OR OTHER CHEMICAL CONTAMINATION. NO MATERIAL WILL BE ACCEPTED FROM AN EXISTING OR FORMER 21E SITE AS DEFINED BY THE MASSACHUSETTS CONTINGENCY PLAN 310 CMR 40.0000.
12. SITE LAYOUT SURVEY REQUIRED FOR CONSTRUCTION WILL BE PROVIDED BY THE CONTRACTOR AND SHALL BE CONDUCTED BY A MASSACHUSETTS' REGISTERED PROFESSIONAL LAND SURVEYOR. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE SURVEYOR FOR ALL SITE SURVEY WORK. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN AS-BUILT PLAN OF THE SITE CONDUCTED BY REGISTERED PROFESSIONAL LAND SURVEYOR AND APPROVED BY THE ENGINEER.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL HORIZONTAL AND VERTICAL CONTROL POINTS DURING CONSTRUCTION INCLUDING BENCHMARK LOCATIONS AND ELEVATIONS AT CRITICAL AREAS. THE LOCATION OF ALL CONTROL POINTS AND BENCHMARKS SHALL BE COORDINATED WITH THE ENGINEER.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL GRADE STAKES AND MONUMENTATION. GRADE STAKES SHALL REMAIN IN PLACE UNTIL A FINAL INSPECTION OF THE SITE HAS BEEN COMPLETED BY THE ENGINEER. ANY RE-STAKING OF PREVIOUSLY SURVEYED SITE FEATURES SHALL BE THE RESPONSIBILITY (INCLUDING COST) OF THE CONTRACTOR.
15. UNLESS OTHERWISE SPECIFIED ON THE PLANS AND DETAILS/SPECIFICATIONS, ALL SITE CONSTRUCTION MATERIALS AND METHODOLOGIES ARE TO CONFORM TO THE MOST RECENT VERSION OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION (MASSACHUSETTS HIGHWAY DEPARTMENT) STANDARD SPECIFICATIONS (THE MASSACHUSETTS HIGHWAY DEPARTMENT 1988 STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, THE 2002 SUPPLEMENTAL SPECIFICATIONS, AND THE 2005 STANDARD SPECIAL PROVISIONS).
16. CONSTRUCTION AND/OR DEMOLITION SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS REGARDING NOISE, VIBRATION, DUST, SEDIMENTATION CONTAINMENT, HAZARDOUS WASTES AND TRENCH WORK.
17. SOLID WASTES AND/OR CONSTRUCTION OR DEMOLITION DEBRIS SHALL BE COLLECTED AND STORED IN A SECURED DUMPSTER. THE DUMPSTER SHALL MEET ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS.
18. THE CONTRACTOR SHALL RESTORE ALL SITE SURFACES OFF SCOPE EQUAL TO THEIR ORIGINAL CONDITION AFTER CONSTRUCTION IS COMPLETE. AREAS NOT DISTURBED BY CONSTRUCTION SHALL BE LEFT NATURAL. THE CONTRACTOR SHALL TAKE CARE TO PREVENT DAMAGE TO SHRUBS, TREES, OTHER LANDSCAPING AND/OR NATURAL FEATURES. IF THE PLANS FAIL TO IDENTIFY ALL LANDSCAPE FEATURES, EXISTING CONDITIONS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK.
19. UNPAVED AREAS DISTURBED BY THE WORK SHALL HAVE A MINIMUM OF 6-INCHES OF LOAM AND HYDROSEED INSTALLED AS SHOWN ON THE PLAN AND/OR DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING ANY LOAM AND SEEDED AREAS UNTIL GROWTH IS ESTABLISHED AND APPROVED BY THE ENGINEER AND/OR OWNER.
20. ALL PROPOSED STRUCTURES AND COMPONENTS SHALL BE DESIGNED BY THEIR MANUFACTURERS TO WITHSTAND AASHTO H-20 LOADING. PRECAST CONCRETE SHALL HAVE A MINIMUM 28-DAY STRENGTH OF 4,000 PSI UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
21. THE CONTRACTOR SHALL PROVIDE A UNIT PRICE COST IN CUBIC YARD MEASURE FOR LEDGE AND/OR BOULDER REMOVAL. LEDGE AND/OR BOULDERS LESS THAN 1 CUBIC YARD IN SIZE BASED ON THE AVERAGE DIMENSIONS WILL NOT BE CONSIDERED PAYABLE ROCK. UNIT PRICE SHALL BE GIVEN FOR BOTH ON AND OFF SITE DISPOSAL. COST OF REPLACEMENT MATERIAL SHALL BE INCLUDED IF ADDITIONAL FILL MATERIAL IS REQUIRED.
22. DEVIATION OR ALTERATION OF THE PROPOSED WORK IS TO BE VERIFIED BY THE ENGINEER AND OWNER PRIOR TO CONDUCTING THE WORK.
23. AT THE END OF CONSTRUCTION, THE CONTRACTOR SHALL REMOVE ALL CONSTRUCTION DEBRIS AND SURPLUS MATERIALS FROM THE SITE. A THOROUGH INSPECTION OF THE WORK SITE AND PERIMETER IS TO BE MADE AND ALL DISCARDED MATERIALS AND WIND BLOWN OR WATER CARRIED DEBRIS, SHALL BE COLLECTED, AND REMOVED FROM THE SITE.

STORMWATER FACILITY OPERATION & MAINTENANCE:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSPECTION AND MAINTENANCE OF ALL EROSION CONTROL AND STORMWATER MANAGEMENT FACILITIES UNTIL THE PROJECTS IS DEEMED AS COMPLETE BY THE OWNER AND ENGINEER.
2. THE CONTRACTOR SHALL INSPECT AND CLEAR ALL INLETS, MANHOLES, INFILTRATION BASINS AND OTHER STRUCTURES OF SEDIMENT AND DEBRIS PRIOR TO THE OWNER'S ACCEPTANCE.
3. THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL SEDIMENT AND DEBRIS IN A PRE-APPROVED LOCATION.
4. THE CONTRACTOR SHALL REFER TO THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR INFORMATION REGARDING STORMWATER FACILITY OPERATION AND MAINTENANCE REQUIREMENTS. THE CONTRACTOR SHALL MAINTAIN A WORKING COPY ON SITE AT ALL TIMES.
5. THE CONTRACTOR SHALL INSPECT ALL STORMWATER FACILITIES AFTER EVERY MAJOR RAINFALL EVENT FOR THE ENTIRE DURATION OF THE CONSTRUCTION PROJECT AND THE FIRST 3-MONTHS AFTER COMPLETION TO MONITOR SYSTEM OPERATION.
6. SPECIFIC ANNUAL MAINTENANCE SHALL BE AS FOLLOWS:
   A. DRAINAGE STRUCTURES (INLETS, MANHOLES & CATCHBASINS): ALL DRAINAGE STRUCTURES SHALL BE INSPECTED ANNUALLY TO MONITOR FOR PROPER OPERATION, COLLECTION OF LITTER OR DEBRIS, AND STRUCTURAL DETERIORATION. THE BASINS SHALL BE CLEANED OF SEDIMENT (INCLUDING SUMPS) AS NECESSARY, AND REPAIRED WHEN REQUIRED.
   B. SWALES: GENERAL INSPECTION OF THE SWALE SHALL BE CONDUCTED ANNUALLY AND AFTER MAJOR STORM EVENTS. THE WORK CONSISTS OF REMOVAL OF ANY TRASH AND/OR DEBRIS FROM THE BOTTOM OF THE SWALE, AND REMOVAL OF SEDIMENTATION IF ACCUMULATION IS GREATER THAN OR EQUAL TO 3-INCHES. SEDIMENT SHALL BE PROPERLY DISPOSED OF OFF-SITE IN A PRE-APPROVED LOCATION.
   C. ROUTINE MAINTENANCE: OTHER ROUTINE MAINTENANCE SHALL INCLUDE REMOVAL OF TRASH AND DEBRIS FROM PAVED AND PERIMETER AREAS, AND ANNUAL STREET AND PARKING LOT SWEEPING AFTER THE SPRING THAW TO AVOID EXCESSIVE ACCUMULATION OF SEDIMENT IN THE DRAINAGE SYSTEM. THE PIPES DRAINING THE PROJECT WILL BE INSPECTED ANNUALLY FOR PROPER FLOW.

BASIC CONSTRUCTION SEQUENCE

1. SURVEY AND DELINEATE THE PROPOSED LIMIT OF DISTURBANCE AND LIMIT OF SEDIMENTATION BARRIERS.
2. STAKE OUT THE LOCATIONS FOR SEDIMENTATION BARRIERS (HAYBALES, SILT FENCE, ETC.) AND INSTALL ACCORDING TO THE PLANS. IN NO CASE IS THE LIMIT OF WORK TO EXTEND BEYOND THE SEDIMENTATION BARRIERS/LIMIT OF DISTURBANCE AS SHOWN ON THE PROJECT PLANS AS APPROVED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP).
3. INSTALL TEMPORARY CONSTRUCTION ENTRANCES ONLY IN LOCATIONS INDICATED ON PLANS. NO OTHER ENTRANCES SHALL BE USED TO GAIN ACCESS TO THE SITE BY ANY CONSTRUCTION OR DELIVERY VEHICLES.
4. BEGIN NECESSARY CLEARING AND DEMOLITION WORK.
5. SURVEY AND STAKE OUT CLEARING LIMITS AND ROADWAY/ACCESS DRIVE CENTERLINE.
6. EXCAVATE AND ROUGH GRADE THE PROPOSED DRAINAGE BASINS AND ANY ADDITIONAL TEMPORARY BASINS NECESSARY TO CONTROL SITE RUNOFF AND SEDIMENTS. PERMANENT DRAINAGE BASINS SHALL BE TEMPORARILY SEEDED. PERMANENT DRAINAGE BASIN SEEDING AND PLANTING SHALL BE COMPLETED AFTER THE CONTRIBUTING AREA TO THE BASIN HAS REACHED A MINIMUM OF 80% STABILIZATION AND IS NO LONGER REQUIRED TO BE USED AS A CONSTRUCTION SEDIMENTATION BASIN.
7. BEGIN CLEARING AND GRUBBING IN AREA OF ROADWAYS/DRIVES AND DRAINAGE BASINS. TOPSOIL IS TO BE STRIPPED FROM THE AREA OF THE PROPOSED ROADWAYS AND DRAINAGE BASINS AND STOCKPILED IN APPROVED LOCATIONS. TOPSOIL STOCKPILES ARE TO BE PROTECTED BY A SEDIMENT BARRIER.
8. INSTALL TEMPORARY CONVEYANCE DEVICES (SWALES, CHECK DAMS, PIPES, ETC.) AS NECESSARY TO CONVEY RUNOFF TO TREATMENT AREAS.
9. BEGIN ROUGH GRADING AREAS FOR ROADS AND PARKING. BRING ROUGH GRADING TO PROPER ELEVATIONS AS SOON AS PRACTICABLE. WORK SHALL PROGRESS DILIGENTLY TO MINIMIZE TIME SOILS ARE UN-STABILIZED.
10. BEGIN UTILITY CONSTRUCTION. CONTRACTOR SHALL BE FREE TO INSTALL UTILITIES IN ANY ORDER HE/SHE CHOOSES. ANY EROSION CONTROL DEVICE DISTURBED DURING THE UNDERGROUND UTILITY CONSTRUCTION SHALL BE IMMEDIATELY REPAIRED OR REPLACED IN KIND AND STABILIZED. MODIFY TEMPORARY CONVEYANCE DEVICES AS NECESSARY TO CONVEY RUNOFF TO TREATMENT AREAS.
11. INSTALL DRAINAGE PIPES, DRAINAGE MANHOLES AND CATCH BASINS, AND UNDERGROUND DRAINAGE STRUCTURES. WORK SHALL BEGIN AT THE DRAINAGE BASINS AND PROGRESS UP-GRADIENT. THE DRAINAGE BASIN(S) AND DRAINAGE NETWORK ARE TO BE PROTECTED FROM SEDIMENTATION WITH SILT FENCE AND STRAWBALES UNTIL ALL UN-STABILIZED AREAS ARE STABILIZED WITH STONE SUB-BASE OR VEGETATION. INSTALL SEDIMENT BARRIERS AT ALL POINTS OF ENTRY INTO THE DRAINAGE NETWORK. PARTICULAR CARE SHALL BE TAKEN TO PROTECT THE UNDERGROUND DRAINAGE BASINS FROM SEDIMENT.
12. PERMANENTLY SEED ALL DISTURBED AREAS OUTSIDE OF THE AREA TO BE PAVED.
13. ONCE ALL UNDERGROUND UTILITIES HAVE BEEN CONSTRUCTED, PLACE COMPACTED GRAVEL FOUNDATION AND ROUGH GRADE THE ROADWAYS/PARKING AREAS IN ACCORDANCE WITH THE SITE PLANS AND IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL REGULATIONS AS SOON AS POSSIBLE.
14. BEGIN ROAD AND PARKING CONSTRUCTION PER SITE PLANS AND IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL REGULATIONS. ROADS AND PARKING AREAS ARE NOT TO BE PAVED UNTIL THE ENTIRE PERMANANENT DRAINAGE SYSTEM HAS BEEN INSTALLED AND ALL PIPE CONNECTIONS COMPLETE.
15. FINISH PERMANENT STABILIZATION. SWEEP THE ROADWAY TO REMOVE ALL SEDIMENTS. REPAIR BASINS AS REQUIRED. THE CONTRACTOR SHALL CLEAN AND FLUSH THE DRAINAGE STRUCTURES AND PIPES AT THE END OF CONSTRUCTION AND ALL ACCUMULATED SEDIMENTS IN THE DRAINAGE BASINS SHALL BE REMOVED. CONTRACTOR SHALL INSPECT THE DRAINAGE NETWORK AND REPAIR ANY DAMAGE IMMEDIATELY.
16. COMPLETE ALL REMAINING PLANTING AND SEEDING.
17. REMOVAL OF ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES FOLLOWING VEGETATIVE ESTABLISHMENT OF ALL DISTURBED AREAS SHALL BE APPROVED BY THE ENGINEER AND WHEN THE CONTRIBUTING AREA HAS REACHED A MINIMUM OF 80% STABILIZATION.

GENERAL GRADING AND DRAINAGE NOTES

1. ALL CUT AND FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.
2. CONTRACTOR SHALL ADJUST AND/OR NEATLY SAWCUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH TRANSITION AND CONTINUOUS GRADE.
3. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS UNLESS OTHERWISE DIRECTED BY ENGINEER.
4. PROPOSED ELEVATIONS ARE SHOWN TO FINISHED PAVEMENT OR GRADE UNLESS OTHERWISE SPECIFIED.
5. PARKING AREAS AND TRAVEL LANES ARE NOT TO BE PAVED UNTIL THE ENTIRE PROPOSED DRAINAGE SYSTEM HAS BEEN INSTALLED, COMPACTED PROPERLY AND ALL PIPE CONNECTIONS COMPLETE.
6. DRAINAGE PIPING SHALL BE 12" ADS UNLESS OTHERWISE NOTED.
7. BACKFILL ADJACENT TO PIPES AND STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT AS SPECIFIED. BACKFILL SHALL BE PLACED IN LIFTS NOT TO EXCEED EIGHT INCHES IN THICKNESS AND COMPACTED TO 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN +/- 2% OF OPTIMUM. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99. TESTING OF BACKFILL MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND WILL BE INSPECTED BY THE ENGINEER.
8. ALL DRAINAGE STRUCTURES AND PIPES MUST BE PROPERLY CONNECTED TO THE DRAINAGE SYSTEM PRIOR TO THE INSTALLATION OF ANY PAVEMENT. THIS INCLUDES THE STABILIZATION OF ALL DISTURBED AREAS CONTRIBUTING TO THE DRAINAGE SYSTEMS AND ANY STORMWATER BASIN FLOORS AND SIDE SLOPES.
9. AT SUBSTANTIAL COMPLETION ANY LOW LYING AREAS (NON STORMWATER FEATURES) FOUND TO CREATE PONDING SHALL HAVE LOAM OR SURFACE TREATMENT REMOVED AND THE SUBGRADE MATERIAL SHALL BE REPAIRED AND REGRADED WITH GRANULAR NATIVE BACKFILL MATERIAL. AFTER BACKFILL, LOAM SHALL BE REPLACED AND RESEEDED. NO TOP DRESSING SHALL BE ALLOWED. REGRADED AREAS SHALL BE HOSE TESTED TO ENSURE POSITIVE DRAINAGE AND THE PONDING PROBLEM TO BE ALLEVIATED.

GENERAL DEMOLITION NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR THE RELOCATION, DEMOLITION, REMOVAL AND DISPOSAL, IN A LOCATION APPROVED BY ALL GOVERNING AUTHORITIES AND ENGINEER, OF ALL EXISTING SITE ELEMENTS AND STRUCTURES.
2. THE CONTRACTOR IS RESPONSIBLE FOR THE BACKFILL OF ALL EARTH CAVITIES REMAINING FROM THE DEMOLITION OF THE EXISTING BUILDINGS, FOUNDATIONS, BURIED TANKS AND VAULTS, AND OTHER BURIED CONCRETE STRUCTURES PERFORMED BY OTHERS.
3. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL ROCK, RUBBLE, CONSTRUCTION DEBRIS AND CONCRETE TO ALLOW FOR PROPER GRADING.
4. THE CONTRACTOR HAS THE OPTION TO REUSE CRUSHED CONCRETE, STONE, DRAINAGE STRUCTURES, AND RUBBLE AS SUITABLE FILL PER SPECIFICATION ATTACHMENT A.
5. BURIED CONCRETE STRUCTURES MAY BE FILLED AND LEFT IN PLACE IF APPROVED BY NANTUCKET HEALTH DEPARTMENT.
6. ALL UNDERGROUND UTILITIES TO BE DEMOLISHED.
7. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND LEGAL/PROPER DISPOSAL OF ALL DEBRIS FROM THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THE DISPOSAL PERMIT. THE OWNER WILL OBTAIN BUILDING DEMOLITION PERMIT FROM THE STATE BUILDING DEPARTMENT.
8. THE CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO THE REMOVAL AND/OR RELOCATION OF UTILITIES. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES CONCERNING PORTIONS OF THE WORK WHICH MAY BE PERFORMED BY THE UTILITY COMPANY AND ANY FEES WHICH ARE TO BE PAID TO THE UTILITY COMPANY FOR THEIR SERVICES. THE CONTRACTOR IS RESPONSIBLE FOR PAYING ALL FEES AND CHARGES.
9. THE CONTRACTOR IS TO PROVIDE NOTICE TO ALL UTILITY COMPANIES REGARDING DESTRUCTION, RELOCATION AND REMOVAL OF ALL SERVICE LINES AND CAPPING ALL UTILITY LINES, AS REQUIRED, PRIOR TO COMMENCEMENT OF THE WORK.
10. THE CONTRACTOR SHALL MAINTAIN SAFE, PASSABLE, CONTINUOUS SITE ACCESS AND OPERATION FOR SURROUNDING FACILITIES, AS DEEMED BY THE OWNER, AT ALL TIMES DURING DEMOLITION OF THE EXISTING FACILITIES.
11. PRIOR TO COMMENCEMENT OF DEMOLITION, ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED.
12. BUILDINGS ON SITE WILL BE REMOVED BY OTHERS PRIOR TO START OF CONSTRUCTION. NOT ALL CONCRETE SLABS, CONDUITS, STRUCTURES OR OTHER FEATURES MAY BE SHOWN ON THESE PLANS. PLANS ARE INTENDED TO BE A GENERAL GUIDE OF SITE FEATURES TO BE DEMOLISHED.

ENVIRONMENTAL - EROSION & SEDIMENT CONTROL NOTES

1. THE SITE CONSTRUCTION FOREMAN SHALL BE RESPONSIBLE FOR THE DAILY INSPECTION AND MAINTENANCE OF ALL SEDIMENT AND EROSION CONTROLS AND SHALL IMPLEMENT ALL NECESSARY MEASURES TO CONTROL EROSION AND PREVENT SEDIMENT FROM LEAVING THE SITE.
2. THE CONTRACTOR SHALL INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS DETERMINED NECESSARY IN THE FIELD BY THE ENGINEER BEFORE ANY CONSTRUCTION ACTIVITIES ARE TO BEGIN. THESE MEASURES SHALL BE INSPECTED, MAINTAINED AND REPLACED AS NECESSARY DURING THE ENTIRE CONSTRUCTION PERIOD OF THE PROJECT. SUCH MEASURE SHALL REPRESENT THE LIMIT OF WORK AND ALL WORKERS SHALL BE INFORMED THAT NO CONSTRUCTION ACTIVITY IS TO OCCUR BEYOND THE LIMIT OF WORK AT ANY TIME THROUGH THE CONSTRUCTION PERIOD.
3. A MINIMUM SURPLUS OF 25-FEET OF EROSION CONTROL BARRIER (SILT FENCE, HAYBALE, &/OR SILT SOCK) SHALL BE STORED ONSITE AT ALL TIMES.
4. THE CONTRACTOR SHALL PREVENT ANY SEDIMENT TRANSPORT TO THE ADJACENT PROPERTIES DURING CONSTRUCTION AND UNTIL ACCEPTANCE BY THE OWNER/ENGINEER.
5. A CONSTRUCTION EXIT SHALL BE CONSTRUCTED AS SHOWN IN THE DETAILS TO SHED DIRT FROM CONSTRUCTION VEHICLE TIRES. THE CRUSHED STONE PAD WILL BE REPLACED/CLEANED AS NEEDED TO MAINTAIN ITS EFFECTIVENESS AND RECONSTRUCTED AS NECESSARY DURING SEPARATE PHASES OF THE PROJECT.
6. THE LIMIT OF ALL CLEARING, GRADING AND DISTURBANCE SHALL BE KEPT TO A MINIMUM WITHIN THE PROPOSED AREA OF CONSTRUCTION. THE CONTRACTOR SHALL PHASE THE SITE WORK IN A MANNER TO MINIMIZE AREAS OF EXPOSED OR UNSTABILIZED SOIL. IF TREES ARE TO BE CUT ON THE ENTIRE SITE, ONLY THOSE AREAS WHICH ARE ACTIVELY UNDER CONSTRUCTION SHALL BE GRUBBED. THE REQUIRED SEDIMENTATION CONTROL FACILITIES MUST BE PROPERLY ESTABLISHED, CLEARLY VISIBLE AND IN OPERATION PRIOR TO INITIATING ANY LAND CLEARING ACTIVITY AND/OR OTHER CONSTRUCTION RELATED WORK.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MONITOR LOCAL WEATHER REPORTS DURING CONSTRUCTION AND PRIOR TO SCHEDULING EARTHMOVING OR OTHER CONSTRUCTION ACTIVITIES WHICH WILL LEAVE LARGE DISTURBED AREAS UNSTABILIZED. IF INCLEMENT WEATHER IS FORECAST, THE CONTRACTOR SHALL USE THEIR BEST PROFESSIONAL JUDGEMENT WHEN SCHEDULING CONSTRUCTION ACTIVITIES AND SHALL BE RESPONSIBLE FOR ENSURING THE NECESSARY EROSION CONTROL DEVICES ARE INSTALLED AND FUNCTIONING PROPERLY TO MINIMIZE EROSION FROM ANY IMPENDING WEATHER EVENTS.
8. SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED ON WEEKLY BASIS AND AFTER EACH RAINFALL EVENT OF 0.25 INCH OR GREATER DURING CONSTRUCTION TO ENSURE THAT THE EROSION AND SEDIMENTATION CONTROL MEASURES ARE OPERATING/FUNCTIONING PROPERLY. IDENTIFIED DEFICIENCIES SHALL BE CORRECTED IMMEDIATELY AND NO LATER THAN 24 HOURS AFTER IDENTIFICATION.
9. SOIL STOCKPILES LEFT OVERNIGHT SHALL BE SURROUNDED ON THEIR PERIMETERS WITH SILT SOCK, SILT FENCE, HAYBALES, OR A COMBINATION OF SILT FENCE WITH HAYBALES.
10. DISTURBED AREAS AND SLOPES SHALL NOT BE LEFT UNATTENDED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME SUCH AS DURING THE INACTIVE WINTER SEASON. THE CONTRACTOR SHOULD PROVIDE APPROPRIATE STABILIZATION PRACTICES ON ALL DISTURBED AREAS AS SOON AS POSSIBLE BUT NOT MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY OR PERMANENTLY CEASED, TEMPORARY AREAS HAVING A SLOPE GREATER THAN 4:1 SHALL BE REINFORCED WITH EROSION BLANKETS OR APPROVED EQUAL UNTIL THE SITE IS PROPERLY STABILIZED. TEMPORARY SWALES MAY ALSO BE REQUIRED IF DETERMINED NECESSARY IN THE FIELD BY THE ENGINEER.
11. THE CONTRACTOR SHALL INSTALL A SILT SACK OR APPROVED EQUIVALENT IN EACH EXISTING CATCHBASIN RECEIVING RUNOFF FROM THE SITE. UPON THE INSTALLATION OF ANY NEW CATCH BASIN, THE CONTRACTOR SHALL INSTALL A SILT SACK OR APPROVED EQUIVALENT. THESE ARE TO BE INSPECTED AFTER EACH SIGNIFICANT STORM EVENT AND EMPTIED AS NEEDED DURING THE ENTIRE CONSTRUCTION PERIOD.
12. SMALL SEDIMENTATION BASINS MAY BE CONSTRUCTED ON AN AS-NEEDED BASIS DURING CONSTRUCTION TO AID IN THE CAPTURE OF SITE RUNOFF AND SEDIMENT. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR, IN CONSULTATION WITH THE ENGINEER, TO SIZE AND CONSTRUCT THESE BASINS IN APPROPRIATE LOCATIONS.
13. ALL EXITS FROM THE SITE SHALL BE SWEPT AS NECESSARY, INCLUDING ANY TRACKING TO ENSURE SEDIMENT IS CONTAINED ONSITE. PAVED AREAS SHALL BE SWEPT AS NEEDED TO REMOVE SEDIMENT OR POTENTIAL POLLUTANTS WHICH MAY ACCUMULATE DURING CONSTRUCTION ACTIVITIES.
14. ACCUMULATED SEDIMENT SHALL BE COLLECTED AND DISPOSED OF IN A PRE-APPROVED LOCATION BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.
15. THE CONTRACTOR SHALL PROVIDE ON SITE OR MAKE READILY AVAILABLE THE NECESSARY EQUIPMENT AND SITE PERSONNEL DURING CONSTRUCTION HOURS FOR THE DURATION OF THE PROJECT TO ENSURE ALL EROSION AND SEDIMENTATION CONTROL DEVICES ARE PROPERLY MAINTAINED AND REPAIRED IN A TIMELY AND RESPONSIBLE MANNER. IF SITE WORK IS SUSPENDED DURING THE WINTER MONTHS THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE PERSONNEL AND EQUIPMENT EITHER ON SITE OR MAKE READILY AVAILABLE TO ENSURE ALL EROSION AND SEDIMENTATION CONTROL DEVICES ARE PROPERLY MAINTAINED AND REPAIRED IN A TIMELY AND RESPONSIBLE MANNER
16. IF DEWATERING IS NECESSARY DURING CONSTRUCTION, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IMPLEMENT PROPER MEASURES INCLUDING DEWATERING BAGS, TEMPORARY HAYBALES, SILT FENCES, SILT SOCKS AND/OR OTHER APPROVED DEVICES. THE DEWATERING MEASURES SHALL BE APPROVED BY THE ENGINEER.
17. ALL SEDIMENT COLLECTED IN THE TEMPORARY/PARTIALLY CONSTRUCTED BIORETENTION AREAS WILL BE REMOVED AND DISPOSED OF PROPERLY PRIOR TO FILTER FABRIC AND MEDIA INSTALLATION WITHIN THE BIORETENTION AREAS. PARTIALLY CONSTRUCTED BIORETENTION AREAS WILL HAVE A SURFACE ELEVATION AT A MINIMUM 1-FOOT ABOVE THE BOTTOM OF MEDIA ELEVATION OR AS INDICATED IN THE PLANS. THIS WILL ALLOW AN OVER-DIG OF THE COLLECTED SEDIMENT FROM WITHIN THE BIORETENTION AREA PRIOR TO MEDIA/FABRIC INSTALLATION.
18. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTROL DUST, BY WATERING OR OTHER APPROVED METHODS AS NECESSARY, OR AS DIRECTED BY THE ENGINEER AT NO EXTRA COST TO THE OWNER.
19. THE CONTRACTOR SHALL ROUTINELY INSPECT THE PERIMETER OF THE SITE PROPERTY TO GATHER AND REMOVE CONSTRUCTION DEBRIS BEFORE IT LEAVES THE SITE. ALL DEMOLITION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE SITE AND PROPERLY DISPOSED OF. ALL TRUCKS AND CONTAINERS LEAVING THE SITE SHALL BE COVERED.
20. CEMENT TRUCKS SHALL NOT BE WASHED ONSITE. ANY CEMENT OR CONCRETE PRODUCTS LEAVING THE SITE OR ENTERING RESOURCE AREAS SHALL BE REMOVED BY HAND AT THE CONTRACTOR'S EXPENSE.
21. BURIAL OF ANY STUMPS, SOLID DEBRIS, AND/OR STONES/BOULDERS ONSITE IS PROHIBITED UNLESS OTHERWISE INDICATED BY THE ENGINEER. NO ROAD SALT, SAND, OR OTHER DE-ICING CHEMICALS SHALL BE USED ON THE ACCESS ROADWAYS.
22. THE CONTRACTOR IS RESPONSIBLE FOR ROUTINE INSPECTION AND MAINTENANCE DURING CONSTRUCTION OF ALL STORMWATER FACILITIES INSTALLED OR IMPACTED BY THE PROJECT. ANY SEDIMENT OR DEBRIS COLLECTED WITHIN THESE FACILITIES FROM THE PROJECT WORK SHALL BE REMOVED PRIOR TO THE OWNER'S ACCEPTANCE.

LEGEND

EXISTING / PROPOSED

- APARTMENT BUILDING
- HOUSE
- CENTERLINE
- CONTOUR – MINOR (34)
- CONTOUR – MAJOR (40)
- GRASS
- STONES OR BOULDERS
- EDGE OF PAVEMENT
- BITUMINOUS CONCRETE
- CONCRETE
- PROPERTY LINE
- ROW LINE
- DRAIN PIPE (D)
- GAS LINE (G)

SYMBOLS

- CATCH BASIN SQUARE
- DRAIN MANHOLE
- SEWER MANHOLE
- RED MAPLE
- ARBOR VITAE
- TOP OF FOUNDATION (TOW=45.23')
- HANDICAP SYMBOL

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: ____________
DATE ENDORSED: ____________
DATE APPROV ____________

TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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Dimensions are as indicated.

Use of this plan constitutes acceptance of terms and conditions set forth in accompanying project documentation.

It is the responsibility of the user to confirm discrepancies with the Engineer prior to use.

REVISIONS

NO.	DATE	COMMENT

CLERK'S CERTIFICATION ON THE PLAN

DATE: ____________

I, ____________, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

____
TOWN CLERK

PURPOSE: DEFINITIVE SUBDIVISION

LOCUS: NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE: NOTES

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-25

SCALE: NOTED

SHEET: 26 OF 26

S:\Clients\Richmond Greatpoint Development\CAD\Details\.dwg, MC25general notes (2), 8/4/2016 6:48:52 AM

Richmond Great Point Inc.
20 Davkim Lane
Nantucket, MA 02554

Drainage Calculations Narrative

PROJECT SUMMARY

Richmond Great Point Inc., Inc. (RGP) is proposing to reconfigure the existing property as shown on sheets C-1 to C-5. The project includes single family home development and rental apartment development.

The proposed development of "Sandpiper Place" workforce homeownership housing development, comprised of one hundred (100) single family housing lots on a combination of nineteen (19) existing lots totaling +/- 17.2 acres of land located along Old South Road, Daffodil Lane, Mayflower Circle, and Evergreen Way.

The proposed development of "Workforce Rental Community" includes a total of 225 apartment units in a series of approximately forty (40) low density, two story, residential structures on a combination of two (2) existing lots totaling +/- 14.5 acres of land located along Davkim Lane and Nancy Ann Lane.

EXISTING CONDITIONS

Currently, access to all parcels owned by RGP is via Nancy Ann Lane. The land located at 20 Davkim Lane contains a former asphalt gravel plant/gravel pit. A paved parking area is located in front of the plant along the corner of Nancy Ann Lane and Davkim lane. North of the plant comprises gravel areas with access driveways along Nancy Ann Lane and storage components of the former Glowacki property. A gravel travelway connects the eastern portion of the plant to Evergreen Way.

The easterly portion of the project along Evergreen Way is primarily wooded with residential properties on the corner of Evergreen Way and Daffodil Lane. A gravel pathway extends from the paved roadway between the asphalt gravel plant and Evergreen Way to the Mayflower Circle cul-de-sac.

In general, the property slopes from North to South and contains two large sand pits that are shown on sheets C-6 to C-8.

PROPOSED CONDITIONS

We have included a set of plans and related documents depicting the proposal for your review. The subdivision will require the construction of new roadways. For discussion purposes during the review process with the town review agencies, we have included conceptual building footprints. The Stormwater runoff generated from the buildings depicted on the plans will be Contain by individual leaching systems sized to retain and infiltrate the Type III 24-hour 100-year storm.

Pre and Post development stormwater analysis was completed for the Type III 24-hour 25-year storm event using Carlson Civil Suite Engineering and Surveying software and HydroCad Stormwater modeling software for the drainage areas identified on the property. These stormwater modeling packages were developed using TR-55 modeling protocol and are widely used in the stormwater modeling arena. The modeling addressed stormwater for this proposal under the following assumptions:

1. We have assumed that the roadways, driveways and sidewalks as depicted on the plans, are constructed.

The two existing Sand Pits will be re-graded. The proposed site generally slopes in a Southerly direction from Old South Road, Easterly from Nancy Ann lane, And Westerly from Evergreen Road.

It should be noted that runoff from the RGP property remains on –site and the proposed conditions will remain the same.

As such, we have not concentrated on the pre and post development conditions on the property as no stormwater leaves the property. Although the impervious area of the property will be increased, the existing fully developed nature of a major portion of the property, the fact that all stormwater stays on the site, and significant drainage system improvements are proposed, the need to concentrate on pre and post development conditions is reduced. The main effort in our drainage analysis for this project centered on the use of deep sump catch basins, grease/grit removal Water Quality Structures and underground infiltration Chambers designed to retain and infiltrate the Type III 24-hour 25-year as well as mitigate the flooding caused by the 100 year event.

Runoff from the post development conditions is subdivided into 15 watersheds. Stormwater Runoff is conveyed to nine underground retention / infiltration areas (refer to table below) containing ADS StormTech MC-4500 + Cap chambers. Under conditions related to large storm events, the system will surcharge and stormwater will spill out of the lowest grate, and overflow into two designated flood areas as shown on sheet C-19.

Underground Retention / Infiltration Areas for Watershed					
No.	Watershed	Pond	Storage Area	No. Storage Chambers	VortSentry Model
1	S1	1P	46.67'W x 27.24'L x 6.75'H	25	HS72
2	S2	2P	37.58'W x 43.34'L x 6.75'H	36	HS72
3	S3	3P	37.58'W x 51.39'L x 6.75'H	44	HS84
4	S4	4P	55.75'W x 35.29'L x 6.75'H	42	HS84
5	S5, S6	5P/6P	28.50'W x 43.34'L x 6.75'H	27	HS84
6	S7	7P	46.67'W x 47.37'L x 6.75'H	50	HS84
7	S8, S9	8P/9P	37.58'W x 63.47'L x 6.75'H	56	HS96
8	S10-S14	10P-14P	55.75'W x 51.39'L x 6.75'H	66	HS96
9	S15	15P	46.67'W x 59.44'L x 6.75'H	65	HS84

Stormwater Runoff from each building is conveyed to underground retention / infiltration areas (refer to table below) containing Cultec Recharger 330XL HD chambers.

Underground Retention / Infiltration Areas for Buildings		
Type*	Storage Area	No. Storage Chambers
Building A	11.83'W x 11.17'L x 3.88'H	2
Building B	11.17'W x 10.50'L x 3.54'H	2
Building C	11.17'W x 10.50'L x 3.54'H	2
Multifamily	17.00'W x 11.50'L x 3.54'H	3

*See sheets C-6 to C-8 for building type locations.

Stormwater Standards

Standard 1 - No New Untreated Discharges

Under the proposed improvements, there are no untreated discharges to or erosion of wetlands or waters of the Commonwealth. All of the runoff from this proposal are directed to and allowed to infiltrate in retention areas within the boundary of the project. There are no off-site discharges from this project.

Standard 2 - Peak Flow Rates

The pre and post-development peak discharge rate from this development is contained within the property. There is no runoff from this property. The stormwater modeling results are included in the Attachments (1 & 2) of this document.

Standard 3 - Recharge Rates

All of the runoff from the area of development on site will be directed into the retention areas depicted on the plans. The proposed drainage system will infiltrate 100% of the excess stormwater volume.

Standard 4 - TSS Removal Rates

The design provides more than 95% TSS removal utilizing the deep sump catch basins, oil/sediment separators, and subsurface leaching systems. See Attachment 3 for these computations.

Standard 5 - Land Use with Higher Potential Pollution Load

This standard is not applicable to the site.

Standard 6 - Wellhead Protection Area

This standard applies to this project as the site is located in a public wellhead protection area. Test pits indicate a minimum of 10 feet of undisturbed soil above groundwater will be maintained for the construction of this project. Improvements to the property include conveying stormwater runoff to nine underground retention / infiltration areas with each containing a grease/grit removal Water Quality Structure.

Standard 7 - Redevelopment

This standard applies to this project as significant improvements are proposed on the property. Improvements include the use of Deep Sump catch basins, the installation of a grease/grit removal Water Quality Structure and construction of nine retention / infiltration areas to eliminate severe ponding at the property. The stormwater modeling results are included in the Appendix A of this document.

As such, Stormwater Standards have been met to the maximum extent practicable.

Standard 8 - Construction Period Pollution Prevention

Although this proposal does not require a National Pollution Discharge Elimination System (NPDES) permit for construction, the proposal calls for the installation of silt fencing, hay bales, catchbasin filters, and the remediation of all disturbed areas. Sedimentation will be controlled by inspection of stormwater facilities before and after significant stormwater events.

Standard 9 - Operations and Maintenance

The Operation and Maintenance plan calls for maintaining the landscaped portion of the project as well as regular cleaning of catch basins, grease/grit chambers, and stormwater retention facilities. An Operations and Maintenance Plan is included in this report.

Standard 10- Illicit Discharge Statement

There are no known, illicit discharges associated with this project.
Please review the above information and contact this office with any questions or comments.

Robert L. Bersin, PE
Green Seal Environmental, Inc.

July 25, 2016
Date

GENERAL CONSTRUCTION SEQUENCE

1. Prior to the start of all work, the contractor shall have the Limits of Work flagged by Green Seal Environmental. Flagging shall be inspected by the Town of Nantucket designee, prior to the start of all work.
2. Contractor shall furnish and install construction silt fencing, hay bales, or wattles (as required on approved plans) along the Limits of Work line as depicted on the approved plans. Installation of said fencing shall be inspected by the Town of Nantucket designee.
3. Install Temporary Construction Access as depicted on the approved plans. Installation of said access shall be inspected by the Town of Nantucket designee.
4. Tree Removal along the proposed roadway shall be coordinated with the Nantucket Tree Warden and Planning Department. All debris, including stumps, shall be removed from the site and disposed in a MassDEP approved disposal site. Cut materials may be chipped, stockpiled, and used as mulch, as needed. Use 4-6 inches of topsoil and the seed mixture referenced above to revegetate disturbed areas along the roadway.
5. Install Retention / Infiltration Areas and Treatment units as shown on approved plans. Retention Areas shall be installed by removing all soil above the "C" Sand layer as depicted on the soil logs and backfilled with clean granular sand, free from organic matter, and other deleterious matter. Fill material shall meet the grading specifications in 310 CMR 15.255:3. Install roadway as depicted on the approved plans. Access to the work areas shall be via the proposed construction entrances shown on the Erosion and Dust Control Plan. All efforts shall be employed to prevent soil accumulation from construction vehicles onto the surface of Nancy Ann Lane Rd. If binder course is not installed immediately after cutting, grubbing, re-grading, and compaction, install temporary crushed stone construction entrance as depicted on the Erosion and Dust Control Plan. Final paving shall be after the installation of drainage components and utilities is complete.
6. In general, revegetate disturbed areas as soon as practicable.
7. After the roadway construction, start the installation of landscaping per approved plans. Coordinate installation with the Town of Nantucket designee. All attempts shall be made to avoid planting during summer droughty season, or arrangements shall be made for proper watering required to ensure proper plant growth.
8. Upon completion of the work, inspect all areas of installation. All disturbed areas shall be revegetated as described above.

STORMWATER SYSTEM MAINTENANCE
CONSTRUCTION PHASE

Best management practices (BMP) for erosion and sedimentation control are staked straw bales, filter fences, wattles, hydro seeding, and phased development. Although not all of these methods are utilized for this project, it should be noted that these are not designed to handle high concentrations of sediments typically found in construction runoff. High sediment losses are not anticipated on this project, but it is imperative that the BMP's on this site be maintained.

Pre-Construction

A. The contractor shall have a stockpile of materials required to control erosion on-site to be used to supplement or repair erosion control devices. These materials shall include, but are not limited to straw bales, silt fence, wattles, and crushed stone.

B. The site contractor is responsible for erosion control on site and shall utilize erosion control measures where needed, regardless of whether the measures are specified on the plan or in the order of conditions.

Construction Phase

A. All excavated materials should be stockpiled, separating topsoil from other materials. The topsoil shall be kept for future use on the site. Erosion control shall be utilized along the down slope side of the stockpiles and side slopes shall not exceed 2:1.

B. If intense rainfall is anticipated, the installation of supplemental straw bale dikes, silt fences, or wattles shall be considered.

C. Unsuitable excavated material shall be removed from the site as soon as practicable.

D. Construction entrance shall be installed as shown on the approved plans as outlined above.

Ongoing Site Work

1. Site work will be completed utilizing proper construction techniques. All efforts are to be employed to minimize the deposition of soil from Construction vehicles on Nancy Ann Lane Road.
2. Inspect all sediment and erosion control measures on a weekly basis, prior to, and after significant storm events (0.25 inches or greater), or as otherwise required by the Town of Nantucket designee.

3. Sediment shall be removed from sediment barriers if buildup exceeds ½ of the height of the barrier.
4. Damaged or deteriorated barriers shall be repaired immediately after the defect is identified.
5. The underside of hay bales and wattles shall be kept in close contact with exposed earth. Reset as necessary.
6. Remove vegetative and non-vegetative debris from the retention areas.
7. In general, the area shall be kept neat and litter free, to the maximum extent practicable. Trash, shipping materials, and other disposable materials shall be contained and prevented from becoming windblown litter. The site supervisor shall ensure all debris is either removed or properly contained prior to leaving the site on a daily basis.
8. Erosion control elements shall remain in place until all disturbed areas are stabilized. After removal of erosion control elements, regrade, and stabilize disturbed areas under barriers, as necessary.
9. No pesticides or herbicides are to be used on the site and only organic fertilizers shall be used.

Mirrione Law Group, LLC

Counselors at Law

2016 AUG 23 AM 8:54

Walter Mirrione
323 Manley Street
West Bridgewater, MA 02379
(508) 510-5727 Tel
(508) 857-0751 Fax
wmirrione@mirrionelaw.com

August 22, 2016

Via Electronic Mail to lsnell@nantucket-ma.gov
Via First Class Mail

Barry G. Rector, Chairman
Nantucket Planning Board
2 Fairgrounds Road
Nantucket, MA 02554

Re: Definitive Subdivision and Special Permit Applications of Richmond Great Point Development LLC ("Applicant") relative to Property located off Old South Road, Nantucket, MA ("Richmond Project")

Dear Chairman Rector:

This office represents the Naushop Homeowners Association Trust (hereinafter "Naushop"), a trust representing the individual owners and residents of the residential community containing approximately 196 single family homes directly across Old South Road from the Richmond Project. Our office and Naushop have reviewed the June 2016 definitive subdivision and special permit applications of the Applicant. Based upon that review, Naushop has significant concerns with the impacts of the Richmond Project on its property interests and is therefore closely monitoring the Planning Board's ("Board") review of the Richmond Project. Our client will continue to attend any and all public hearings and public meetings and will advise both the Applicant and the Board of any ongoing concerns so that both will have an opportunity to address same. Our initial review reveals the following.

Application No. 1 (Retail Buildings):

The first application that we reviewed seeks approval of a major commercial development special permit and major site plan review to allow for the construction of five "retail "line" buildings" located on five contiguous lots (± 2.39 total acres) with frontage on Old South Road beginning just east of Lovers Lane. The buildings are proposed to be one story and are integrated in the sense that the parking, travel ways, vehicular access, drainage, sewer, water, etc. are all interconnected to varying degrees. The size of the buildings are proposed as 5,170 gross square feet, 3,235 gross square feet, 2,400 gross square feet, 1,500 gross square feet and

3,200 gross square feet. Additionally, there is proposed a 1,200 square feet outdoor dining area adjacent to the 3,200 gross square feet building.

The location of the outdoor dining facility causes significant concern to Naushop due to the proximity of same in relation to the Naushop property. In order to minimize the impact, Naushop requests that the outdoor dining facility be relocated further west to the retail liner building located closest to Lovers Lane. Additionally, Naushop requests that the Board including consider the following conditions in any special permit that it may grant relative to the outdoor dining:

(a) Hours of operation be restricted as follows:

(i) *Winter Season (Defined as November 1 through March 31)*

Monday through Sunday: 11:00 AM to 9:00 PM

(ii) *Summer Season (Defined as April 1 through October 31)*

Monday through Thursday: 11:00 AM to 9:00 PM
Friday and Saturday: 11:00 AM to 10:00 PM
Sunday: 11:00 AM to 9:00 PM

(b) Prohibit live entertainment, mechanical entertainment and so-called piped out music;

(c) Limit use of the area to patrons being served food such that there is no use of the area for the consumption of alcoholic beverages outdoors;

(d) Require that any outside lighting be installed so as not to interfere with the use and enjoyment of the nearby Naushop property; and

(e) Limit the number of patrons in the area to no more than twenty-five.

Application No. 2 (Meadows II Rental Apartments):

The second application reviewed seeks approval of a special permit to create a "Workforce Rental Community" located on the southerly side of Old South Road southeast of the site referenced in Application No. 1. The project will be accessed from the "Primary Project Entrance" as shown on the Plan which is located directly across from Naushop. Specifically, the proposal includes 225 units constructed in 40 two-story structures scattered across ± 14 acres. The proposal includes on-site parking that exceeds the requirements of the Bylaw and will be serviced by new infrastructure (water, sewer, drainage, lighting, landscaping, etc.). It includes a mix of studio units (22), one bedroom units (87), two bedroom units (94) and three bedroom units (22) which creates a total of 363 bedrooms. Fifty-six of those units, or 25%, will be so

called affordable units, restricted in perpetuity, in accordance with the requirements of the Massachusetts Department of Housing and Community Development. All fifty-six of the units will qualify for Nantucket's Subsidized Housing Inventory List. These units will count towards the State requirement that 10% of the housing stock be qualified affordable housing units.

Naushop has no specific concerns with the rental apartments at this time.

Application No. 3 (Sandpipe Place – Single Family Lots):

The third application seeks a special permit and subdivision approval to create "Workforce Homeownership Housing" located on the southerly side of Old South Road immediately east of the site referenced in Application No. 2. Like the project described in Application No. 2, this project will also be accessed from the "Primary Project Entrance" which is located directly across from Naushop. This proposal seeks to create 100 single family house lots on ± 17 acres of land along with the necessary infrastructure (water, sewer, drainage, lighting, landscaping, etc.) to service the project. Lot sizes range from a small of 4,000 square feet to a large of 4,500 square feet. Twenty-five of the lots, or 25%, will contain so called affordable homes, restricted in perpetuity, in accordance with the requirements of the Massachusetts Department of Housing and Community Development. All twenty-five of the homes will qualify for Nantucket's Subsidized Housing Inventory List. These homes will count towards the State requirement that 10% of the housing stock be qualified affordable housing units. The project also include a "community focal point" adjacent to the main entrance and shown on the plan submitted as "Community Focal Point/Meeting House and Park". This will be community space including a meeting house, barn, outdoor common area with patio and stage area as well as other landscaping improvements.

The location of the Community Focal Point/Meeting House and Park, as well as the use thereof, causes significant concern to Naushop due to the proximity of same in relation to the Naushop property. In order to minimize the impacts, Naushop requests that the outdoor dining facility be relocated further south into the Richmond Project. Lastly, Naushop requests that the Board consider including the following conditions in any special permit that it grants relative to the Community Focal Point/Meeting House and Park:

(a) Hours of operation be restricted to Sunday thru Wednesday - 11:00 AM to 9:00 PM and Thursday thru Saturday - 9:00 AM to 10:00 PM;

(b) Prohibit live entertainment, mechanical entertainment and so-called piped out music;

(c) Limit use of the area to those residents and guests of Sandpiper Place. General public assembly is prohibited;

(d) Require that any outside lighting be installed so as not to interfere with the use and enjoyment of the nearby Naushop property;

(e) Limit the number of occupants in the area to the less or 100 persons or as otherwise restricted by law;

(f) Install significant live screening on the Richmond Project property to buffer the impacts of this area; and

(g) Prohibit the consumption of alcoholic beverages outdoors.

Application No. 4 (Old South Road Crossing):

The fourth application seeks definitive subdivision approval for the series of roads and lots located immediately south of the land that makes up Application No. 1. The proposal is somewhat administrative in that there is no construction of structures proposed on this area of the Richmond Property. The primary objective of the subdivision is to reconfigure, re-route, and improve the engineering design, safety, and conditions of portions of the existing Nancy Ann Lane and Greglen Avenue roadways to better accommodate the proposals set forth above. This includes straightening, widening and improving the existing roadway layouts and the slight reconfiguration of fifteen existing lots (most of which are vacant and 13 of which appear to be owned by Richmond). Naushop has no specific concerns with this application at this time.

General Comments:

In addition to the above areas of concern, Naushop has the following general but significant areas of concern with the impacts of the overall Richmond Project.

Notwithstanding, the long term proposal to mitigate traffic impacts as set forth in the Old South Road Corridor Study, Naushop is concerned that the Richmond Project will cause significant traffic issues in this area that will impact Naushop's quality of living. Any mitigation measures offered by implementation of the aforesaid Study, will not be achieved in the near future, therefore, Naushop requests that the Board and the Applicant consider short term traffic mitigation including improvements to the roadway system located south of the Richmond Project. One specific improvement Naushop believes to be necessary is the widening of Old South Road up to Naushop's entrance at Goldfinch Drive East. The agreed upon mitigation should be completed prior to the issuance of any certificate of occupancy relative to the Richmond Project.

Additionally, Naushop is concerned with the impact of the Richmond Project on the municipal sewer system. These concerns are magnified by delays in finalizing the Sewer Connection and Dedication Agreement with Richmond Great Point Development, LLC. The lack of agreement has stalled the necessary implantation of the upgrades to the South Valley lift station which serves the area, including Naushop. Notwithstanding the lack of Agreement, the Town has allowed the Applicant to connect their new sewer main to the lift station in the area thus adding additional flow to an already troubled system. Naushop requests that the Board

Barry G. Rector, Chairman
Nantucket Planning Board
August 22, 2016

include a condition in any permits issued that the aforesaid Agreement be finalized and the contemplated upgrades be performed prior to issuance of any building permits at the Richmond Project.

Our review of the Richmond Project reveals that the resulting impacts therefrom on the Naushop community will be varied and significant. Zoning regulations are designed to, amongst other things, lessen congestion in the streets, conserve health, secure safety, provide adequate light and air, prevent overcrowding of land, avoid undue concentration of land and facilitate adequate provision of water supply, drainage and sewerage facilities. It is our opinion that the proposed Richmond Project will not accomplish the aforesaid and this will have significant negative impacts on Naushop that can only be mitigated by addressing the concerns raised herein. Accordingly, Naushop requests that the Board and the Applicant give serious consideration to our client's concerns and proposals to address same so as to mitigate the impacts on the Naushop community.

Your consideration of this matter is greatly appreciated. Should you have any questions or comments, please do not hesitate to contact the undersigned. We look forward to being involved in future public meetings.

Sincerely,

MIRRIONE LAW GROUP, LLC

Walter Mirrione, Esq

cc: Ken Gentner Via Electronic Mail
kgentner@optonline.net

HEALTH DEPARTMENT

AUG 04 2016

RECEIVED

2016 AUG -4 AM 10:44

NANTUCKET TOWN CLERK

RECEIVED

AUG 04 2016

By

Nantucket Planning Board

Form B

Application for Approval of a Definitive Subdivision Plan (AR)

"Sandpiper Place" Single Family (Homeownership) Project

File one completed form with the Planning Board and one copy with the Town Clerk.

Date: _____ August 4, 2016 _____

To the Planning Board of Nantucket:

The undersigned, being the applicant as defined under Chapter 41, Section 81-L, for approval of a proposed subdivision shown on a plan ___ Definitive Subdivision Plan _____ designed by _ Green Seal Environmental, Inc., 114 State Road, Building B, Sagamore Beach MA 02562 ___ dated ____ August 3, 2016 __, and described as follows: located on _ Multiple Lots on Old South Road, Daffodil Lane, Mayflower Circle, and Evergreen Way (See "Attachment A" for List of Individual Parcels) _____, number of lots proposed _ One Hundred and Six (106), total acreage of tract __ +/- 16.3 Acres _____, hereby submits said plan as a **definitive** plan in accordance with the *Rules and Regulations Governing the Subdivision of Land* of the Nantucket Planning Board and makes application to the Board for approval of said plan.

(See "Attachment B" for List / Derivation of Title for Individual Parcels)

The undersigned's title to said land is derived from _____ by deed dated _____ and recorded in the Nantucket Registry of Deeds Book _____, Page _____, registered in the Nantucket Registry District of the Land Court, Certificate of Title # _____ and shown on Nantucket Assessor's Map # _____, Parcel _____, and said land is free of encumbrances except for the following: (See "Attachment C" for List of Encumbrances) _____

Said plan ❍ has ❍ has not evolved from a preliminary plan submitted to the Board on _____(date) and ❍ approved ❍ disapproved on _____ (date).

The undersigned hereby applies for the approval of said **definitive** plan by the Board, in belief that the plan conforms to the Board's *Rules and Regulations*.

Name(s) and address(es) of the Applicant(s):
(to include all the names and addresses of the principals of the owner entity such as principal officers of the corporation, trustees of a trust or partners of a partnership)

Philip Pastan, (Sole) Manager of Richmond Great Point Development LLC

_____

_____

Contact Phone #: (978) 988-3900 Fax #: (978) 988-3950 E-mail: ppastan@richmondco.com

Name of owner(s): Richmond Great Point Development LLC

Address of owner(s): 23 Concord Street, Wilmington MA 01887

I hereby certify that the applicant(s) listed above have been authorized by me to file a subdivision plan with the Planning Board on property that I own.

Owner's signature Philip Pastan, as Manager of Richmond Great Point Development LLC

8/2/16

Received by Town Clerk: _____

Date: _____

Time: _____

Received by Board of Health: HEALTH DEPARTMENT

Date: AUG 04 2016

Time: RECEIVED

Planning Board File #_____

RECEIVED
AUG 09 2016
By

August 3, 2016

The Richmond Company, Inc.
20 Davkim Lane
Nantucket, MA 02554

ATTN: Dave Armanetti, Director of Real Estate Development

RE: Sandpiper Definitive Subdivision
Richmond Great Point Development
Nantucket, MA
Waiver List

Dave,

Pursuant to our recent discussions, Green Seal Environmental, Inc., (GSE) has prepared this letter to outline the waivers to be requested for the plans recently provided by this office.

The waiver list has been prepared using the "Rules and Regulations Governing the Subdivision of Land – Nantucket Island, Massachusetts" and "Article VI - Town of Nantucket – Sanitary Sewer Standards and Specifications" and the Nantucket Zoning Ordinance. The waivers to be requested are as follows:

Rules and Regulations Governing the Subdivision of Land – Nantucket Island, Massachusetts

Section 2.06b(10)	The elevations depicted on the plans are NAVD 88 rather than the Nantucket half tide datum.
Section 2.06b(14)(a)	Existing trees to be preserved will be decided during construction.
Section 4.03e	Right-of-way rounding is not included at the intersections of Mayflower Circle, and at the intersection with Daffodil Lane. Note that the roadway does not extend to Mayflower Lane or Daffodil Lane. However, the layout lines in these locations are not rounded per the section cited. The road layout along a portion of Road F is reduced to 30 feet. Layout widths are required to be 40 feet. Roadway paving widths are required to be 22 feet for secondary roads and 20 feet for minor roads. Proposed roadway widths are as follows: Roads C, D, E, and I are 22 feet in paving width, Roads G, H, J, and a portion of F are 18 feet in paving width.

	A portion of Road F is proposed to be 16 feet in paving width.
Section 4.06(b)(3)	Cultec MC-4500 Chambers and Cultec Recharger 330XL HD Chambers are to be substituted for the leaching basin depicted in Appendix A, Plate #12.
Section 4.13(b)	Sewage Design Flows have been determined using the Article VI - Town of Nantucket – Sanitary Sewer Standards and Specifications. A design flow of 110 gallons per day per bedroom has been used and the peak conversion factors in this document.
Section 4.16	Existing trees have not been located on this project. As significant cuts and fills are required as part of the re-grading required to reach finished grades, the location of existing trees is not warranted. See Sections 2.06b,(14)(a) above.
Section 4.17	Fire Alarms are not proposed on this project
Section 4.18	This section calls for 4 ft. wide brick or concrete sidewalks on both sides of the road along each way in a subdivision. We are proposing a 5' wide asphalt sidewalks on one side of the road along Roads D, E, F (portion), H, and J. No sidewalks are proposed along a portion of Road F and Road G. Plate No. 5 in Appendix A requires a 4-foot grass boarder between the sidewalk and traveled way. Grass strips are not proposed on this project.
Section 4.19	Bicycle Paths are not proposed as required on plate No 11. We are proposing a 5' wide sidewalk to be used also as Bike Path.
Section 4.20	Street Lights are not proposed on this project.

<u>Article VI - Town of Nantucket – Sanitary Sewer Standards and Specifications</u>

Section 6.02.2	This section requires sewer mains in the roadway to be 7-8 feet in depth. In several locations, this depth is not met.

Zoning

Town Meeting Article	Article 2, Section (2)d - The buffer between Workforce Homeownership Housing and residentially zoned properties is required to be 20 feet. Lots along the northerly and northwesterly project property boundaries do not meet this requirement.

Please review the above information and contact this office with any questions or comments.

Thank you,

GREEN SEAL ENVIRONMENTAL, INC.

Robert L. Bersin, PE
Senior Engineer Project Manager

"ATTACHMENT A"
LIST OF INDIVIDUAL PROPERTIES FOR PLANNING BOARD (FORM B) DEFINITIVE SUBDIVISION APPLICATION
RICHMOND GREAT POINT DEVELOPMENT LLC
"SANDPIPER PLACE" SINGLE FAMILY HOME OWNERSHIP DEVELOPMENT PROJECT

Index	Parcel Address	Assessor's Tax Map / Parcel ID		Land Court Plan Information	
		Map	Parcel	Plan Number	Lot
1	30 Daffodil Lane	68	739	16514-40	628
2	32 Daffodil Lane	68	740	16514-40	629
3	34 Daffodil Lane	68	741	16514-40	630
4	35 Daffodil Lane	68	742	16514-40	631
5	3 Mayflower Circle	68	736	16514-40	625
6	4 Mayflower Circle	68	729	16514-40	618
7	5 Mayflower Circle	68	735	16514-40	624
8	6 Mayflower Circle	68	730	16514-40	619
9	7 Mayflower Circle	68	734	16514-40	623
10	8 Mayflower Circle	68	731	16514-40	620
11	9 Mayflower Circle	68	733	16514-40	622
12	10 Mayflower Circle	68	732	16514-40	621
13	24 Evergreen Way	68	711	16514-16	431
14	26 Evergreen Way	68	712	16514-16	432
15	28 Evergreen Way	68	713	16514-16	433
16	30 Evergreen Way	68	714	16514-16	434
17	73 Old South Road	68	129	16514-97	853
18	75(A) Old South Road	68	999.2	16514-100	858
19	Private Way (Adjacent to 73 Old South Road)	n/a	n/a	16514-G	"40.00 Wide Way"
20	(Western Portion of) Daffodil Lane	n/a	n/a	16514-40	663
21	(Western Portion of) Mayflower Circle	n/a	n/a	16514-40	615

"ATTACHMENT B"
LIST OF INDIVIDUAL PROPERTIES FOR DERIVATION OF TITLE FOR (FORM B) DEFINITIVE SUBDIVISION APPLICATION
RICHMOND GREAT POINT DEVELOPMENT LLC
"SANDPIPER PLACE" SINGLE FAMILY HOME OWNERSHIP DEVELOPMENT PROJECT

Index	Parcel Address	Deed Recording Reference (Date, Book, Page)			Internal Reference in Deed	
		Date	Book	Page	Parcel Number	Page
1	30 Daffodil Lane	August 8, 2013	O1397	312	Fifty-Five	11
2	32 Daffodil Lane	August 8, 2013	O1397	312	Fifty-Six	11
3	34 Daffodil Lane	August 8, 2013	O1397	312	Fifty-Seven	11
4	35 Daffodil Lane	August 8, 2013	O1397	312	Fifty-Eight	11
5	3 Mayflower Circle	August 8, 2013	O1397	312	Fifty-Four	11
6	4 Mayflower Circle	August 8, 2013	O1397	312	Forty-Seven	9
7	5 Mayflower Circle	August 8, 2013	O1397	312	Fifty-Three	11
8	6 Mayflower Circle	August 8, 2013	O1397	312	Forty-Eight	10
9	7 Mayflower Circle	August 8, 2013	O1397	312	Fifty-Two	10
10	8 Mayflower Circle	August 8, 2013	O1397	312	Forty-Nine	10
11	9 Mayflower Circle	August 8, 2013	O1397	312	Fifty-One	10
12	10 Mayflower Circle	August 8, 2013	O1397	312	Fifty	10
13	24 Evergreen Way	August 8, 2013	O1397	312	Thirty-Seven	8
14	26 Evergreen Way	August 8, 2013	O1397	312	Thirty-Eight	8
15	28 Evergreen Way	August 8, 2013	O1397	312	Thirty-Nine	8
16	30 Evergreen Way	August 8, 2013	O1397	312	Forty	8
17	73 Old South Road	August 8, 2013	O1397	312	Forty-Three	9
18	75(A) Old South Road	February 6, 2015	Document # 00147075		n/a	n/a
19	Private Way (Adjacent to 73 Old South Road)	n/a	n/a	n/a	n/a	n/a
20	(Western Portion of) Daffodil Lane	August 8, 2013	O1397	312	Sixty-Three	12
21	(Western Portion of) Mayflower Circle	August 8, 2013	O1397	312	Sixty-Five	13

"Attachment C" to
(Form B) Definitive Subdivision Application

"Sandpiper Place" Single Family Homeownership Project
Multiple Properties Off Old South Road, Nancy Ann Lane, Daffodil Lane, Mayflower Circle, and Evergreen Way

ADDITIONAL SPACE NEEDED TO PROVIDE LIST OF ENCUMBRANCES UPON THE PROPERTIES

30, 32, 34 & 35 Daffodil Lane, 3, 4, 5, 6, 7, 8, 9 & 10 Mayflower Circle

1. First Mortgage and Assignment of Leases and Rents from Richmond Great Point Development LLC to WJG Sales, LLC dated August 7, 2013 and recorded on August 8, 2013 in Book 1398, Page 1 and filed as Document No. 141847 at the Nantucket Registry District of the Land Court.

2. Covenant with the Nantucket Planning Board dated May 8, 2000, registered as Document No. 91590 at the Nantucket Registry District of the Land Court, as affected by Form J Release dated September 11, 2000, registered as Document No. 91622 at the Nantucket Registry District of the Land Court; as further affected by Form J Release dated January 5, 2004, registered as Document No. 106401 at the Nantucket Registry District of the Land Court; and as further affected by Form J Release dated July 22, 2008, registered as Document No. 133314 at the Nantucket Registry District of the Land Court.

3. Provisions of the Declaration of Trust of Cedar Crest III Homeowner's Association Trust, dated May 10, 2000, registered as Document No. 91663 at the Nantucket Registry District of the Land Court.

4. Provisions of a Declaration of Restrictions and Easements dated July 24, 2000, registered as Document No. 91664 at the Nantucket Registry District of the Land Court, as affected by Grant of Right of Enforcement of Restrictions to the Nantucket Planning Board dated July 24, 2000, registered as Document No. 91665 at the Nantucket Registry District of the Land Court, and as further affected by a Modification dated May 7, 2001, registered as Document No. 93108 at the Nantucket Registry District of the Land Court.

5. Statement of Conditions of Subdivision Approval dated June 24, 2000, registered as Document No. 91666 at the Nantucket Registry District of the Land Court.

6. Grant of Easement to Nantucket Electric Company dated March 21, 2001, registered as Document No. 92622 at the Nantucket Registry District of the Land Court.

7. Grant of Easement to the Town of Nantucket, acting through its Board of Water Commissioners, dated April 23, 2001, registered as Document No. 92623 at the Nantucket Registry District of the Land Court.

8. Grant of Easement to Verizon New England Inc. dated April 25, 2001, registered as Document No. 92835 at the Nantucket Registry District of the Land Court.

9. Grant of Easement to MediaOne of Massachusetts, Inc. dated May 1, 2001, registered as Document No. 92966 at the Nantucket Registry District of the Land Court.

10. Grant of Easement to Nantucket Electric Company dated February 3, 2004, registered as Document No. 160385 at the Nantucket Registry District of the Land Court.

24, 28 & 30 Evergreen Way

1. First Mortgage and Assignment of Leases and Rents from Richmond Great Point Development LLC to WJG Sales, LLC dated August 7, 2013 and recorded on August 8, 2013 in Book 1398, Page 1 and filed as Document No. 141847 at the Nantucket Registry District of the Land Court.

2. Covenant with the Nantucket Planning Board dated August 24, 1989, registered as Document No. 47337 at the Nantucket Registry District of the Land Court; as may be affected by Form J Release dated November 23, 1992, registered as Document No. 61565 at the Nantucket Registry District of the Land Court; and as may be further affected by Form J Release dated June 27, 1994, registered as Document No. 65885 at the Nantucket Registry District of the Land Court.

3. Grant of Easement to Nantucket Electric Company dated December 30, 1991, registered as Document No. 56338 at the Nantucket Registry District of the Land Court.

4. Provisions of the Declaration of Cedar Crest I Homeowners Association Trust, dated March 10, 1994 registered as Document No. 64060 at the Nantucket Registry District of the Land Court.

5. Provisions of a Restrictive Covenant dated February 26, 1994, registered as Document No. 64062 at the Nantucket Registry District of the Land Court.

26 Evergreen Way

1. First Mortgage and Assignment of Leases and Rents from Richmond Great Point Development LLC to WJG Sales, LLC dated August 7, 2013 and recorded on August 8, 2013 in Book 1398, Page 1 and filed as Document No. 141847 at the Nantucket Registry District of the Land Court.

2. Covenant with the Nantucket Planning Board dated August 24, 1989, registered as Document No. 47337 at the Nantucket Registry District of the Land Court; as may be affected by Form J Release dated November 23, 1992, registered as Document No. 61565 at the Nantucket Registry District of the Land Court; and as may be further affected by Form J Release dated June 27, 1994, registered as Document No. 65885 at the Nantucket Registry District of the Land Court.

3. Grant of Easement to Nantucket Electric Company dated December 30, 1991, registered as Document No. 56338 at the Nantucket Registry District of the Land Court.

4. Provisions of the Declaration of Cedar Crest I Homeowners Association Trust, dated March 10, 1994 registered as Document No. 64060 at the Nantucket Registry District of the Land Court.

5. Provisions of a Restrictive Covenant dated February 26, 1994, registered as Document No. 64062 at the Nantucket Registry District of the Land Court.

6. Notice of Frontage Reduction dated March 10, 1993, registered as Document No. 64172 at the Nantucket Registry District of the Land Court.

73 Old South Road

1. First Mortgage and Assignment of Leases and Rents from Richmond Great Point Development LLC to WJG Sales, LLC dated August 7, 2013 and recorded on August 8, 2013 in Book 1398, Page 1 and filed as Document No. 141847 at the Nantucket Registry District of the Land Court.

2. Order of Taking by the County of Nantucket for the layout of Old South Road as a public highway, dated October 29, 1975, registered as Document No. 16561 at the Nantucket Registry District of the Land Court.

75A Old South Road

1. First Mortgage and Assignment of Leases and Rents from Richmond Great Point Development LLC to WJG Sales, LLC dated August 7, 2013 and recorded on August 8, 2013 in Book 1398, Page 1 and filed as Document No. 141847 at the Nantucket Registry District of the Land Court.

2. Order of Layout dated July 23, 2008, registered as Document No. 124811 at the Nantucket Registry District of the Land Court.

3. Easement in favor of Nantucket Electric Co., dated December 18, 2013, registered as Document No. 143696 at the Nantucket Registry District of the Land Court.

4. Release of right of reverter by instrument dated October 17, 2014 and registered as Document No. 146007 at the Nantucket Registry District of the Land Court.

END OF TEXT

THE RICHMOND COMPANY, INC.

The Richmond Company, Inc.
23 Concord Street
Wilmington, Massachusetts 01887
(979) 988-3900

August 4, 2016

TOWN OF NANTUCKET
PLANNING BOARD
2 Fairgrounds Road
Nantucket, Massachusetts 02554

Attention: Leslie Woodson Snell, AICP, LEED AP, Deputy Director of Planning

Subject: Submittal of Application for Definitive Subdivision
Richmond Great Point Development LLC (Owner / Developer)
"Sandpiper Place" Single Family (Homeownership) Project

Dear Ms. Snell:

The purpose of this correspondence, issued in our capacity as the applicant and development manager, on behalf of the owner of the subject properties (Richmond Great Point Development LLC) is to submit the completed application (Form B) and associated materials (plans, storm water management report, deeds, etc.) to petition the Town of Nantucket Planning Board to consider the above-captioned proposal which requires the approval of a definitive subdivision of land to allow for the subdivision of the subject properties into a series of one hundred and six (106) proposed lots and a +/- 4,350 linear foot (0.82 mile) long system of roadway segments, comprising a total of +/- 16.3 acres of land, located on a series of twenty-one (21) existing parcels located off Old South Road, Nancy Ann Lane, Mayflower Circle, Daffodil Lane, and Evergreen Way (including portions of two road parcels [being the western portions and cul-de-sac bulbs of Daffodil Lane and Mayflower Circle] and a private way located off of Old South Road.

The subject property comprises a substantial portion of the eastern area of the portfolio that Richmond Great Point Development LLC acquired from Walter Glowacki in August of 2013, including a series of twelve (12) existing lots and portions of two road parcels within the Cedar Crest III residential subdivision, which would be re-subdivided as part of this proposal.

The proposed definitive subdivision correlates with and will serve to facilitate the implementation of the application for a special permit that was submitted to your office for review and consideration by the Planning Board, dated June10, 2016, which, if approved, would provide for the use of the subject property as a single family (homeownership) workforce rental housing community. The subdivision is comprised of a combination of one (1) community / public use lot, three (3) open space lots, ninety-nine (99) buildable lots to be owned by Richmond Great Point Development LLC, and three (3) buildable lots to be owned by Housing Nantucket (resulting from the consummation of a pending land exchange with that entity).

Both this (definitive subdivision) application and the aforementioned (special permit) application have been submitted in response to and in conjunction with the workforce housing initiative zoning warrants (# 1 and # 2) that were overwhelmingly approved by local voters at the Nantucket Special Town Meeting held on November 9, 2015.

As you know, the overall objective of all of these above-described and interrelated applications is to provide for the development of a new, high quality single family (homeownership) housing community that will provide much needed single family homes to begin to mitigate the almost unanimously recognized and severe housing crisis that is extant in the community, including the provision of a twenty-five percent (25%) statutorily restricted affordable component. In addition to helping to meet this important housing need, which is primarily targeted to year round Island residents and families, approval of the proposed project will serve to assist the Town of Nantucket in obtaining both "interim" and "long-term" safe harbor, in accordance with the provisions of applicable state law, as relates to the Town's ability to discourage and / or deny Chapter 40B housing development proposals in the future.

The submittal is being made in accordance with and conforms to the provisions of Section 2.06 of "*The Rules and Regulations Governing the Subdivision of Land, Nantucket, Massachusetts*" as well as "*The Subdivision Control Law of Massachusetts*" (M.G.L. Chapter 41, Sections 81K-81GG, inclusive).

The current (underlying) zoning of the +/- 16.3 acre subject properties are classified entirely within the Residential-5 (R-5) zoning district.

As shown in the attached plans, the proposal seeks to subdivide the subject property into a series of one hundred and six (106) lots in accordance with the density and dimensional criteria set forth in Section 139-16(A) and (D) and Section 139-8(D) of the Town of Nantucket Zoning Bylaw.

It is noted that before the proposed subdivision can be fully implemented and registered, the existing (easement) rights of access and passage which have been granted to other owners and the association of the existing Cedar Crest III residential subdivision, comprising portions of the Daffodil Lane and Mayflower Circle road parcels that also comprise portions of the proposed subdivision, must be modified. The owner / applicant will continue to undertake this easement modification process as the proposed subdivision is reviewed and acted upon by the Planning Board.

The proposed roadway segments include combination sidewalks / bike paths, which are linked into the adjacent existing residential neighborhoods, as well as to the adjacent commercial, retail, and industrial development located on abutting properties that are predominantly owned and will be developed by Richmond Great Point Development LLC.

The site has also been configured with a network of drainage that meets or exceeds all applicable design requirements and is comprised of a series of underground infiltration basins that will recharge runoff back into the ground water aquifer. The site is also proposed to be improved with appropriate (underground) utilities (including sanitary sewer, water, electrical, and telephone / cable / data infrastructure) along with street lighting and streetscape landscaping.

In addition to the completed (Form B) application, attached hereto, we have submitted the following plans and technical materials that are required to be submitted to provide for the processing and approval of the proposed subdivision, including: (1) the *Definitive Subdivision Plan, "Sandpiper Place" Single Family Homeownership Project* as prepared by Green Seal Environmental, Inc., dated August 3, 2016, depicting the subdivision of the lots along with the applicable / customary notes and details (totaling 31 sheets), (2) the *Drainage Narrative (along with the customary calculations and technical attachments)*, as prepared by Green Seal Environmental, Inc., dated August 3, 2016, (3) the *Drainage "Hydro-CAD Report"*, as prepared by Green Seal Environmental, Inc., dated August 3, 2016, and (4) the *Requested Waivers*, as prepared by Green Seal Environmental, Inc., dated August 3, 2016.

We have also attached "Attachment A" and "Attachment B" to the Form B application form, detailing the specifics of the two (2) existing parcels that comprise the proposed subdivision and the derivation of the title to the land comprising the proposed subdivision, given that the land includes multiple parcels, and given that title to several of the parcels has been derived from different sellers / grantors.

We trust that this submittal conforms to the applicable requirements for such a Definitive Subdivision Plan (AR) and we look forward to the completion of your review and the subsequent review and approval of the plan by the Town of Nantucket Planning Board.

If you have any immediate questions with respect to either the application or the enclosed materials, please feel free to contact me at 978-988-3900, Extension # 12.

Very truly yours,

David J. Armanetti, Director of Real Estate Development
The Richmond Company, Inc. (Applicant / Development Manager)
On Behalf of Richmond Great Point Development LLC (Owner)

Cc: Philip Pastan, TRC
Kathryn Fossa, TRC
Patricia Roggeveen, RGPDLLC
Shane Valero, RGPDLLC
Andrew Burek, Esq., TRC
Arthur Reade, Esq.

THE RICHMOND COMPANY, INC.

The Richmond Company, Inc.
23 Concord Street
Wilmington, Massachusetts 01887
(979) 988-3900

August 4, 2016

TOWN OF NANTUCKET
TOWN CLERK
16 Broad Street
Nantucket, Massachusetts 02554

Attention: Catherine Flanagan Stover, MMC, CMMC

Subject: Submittal of Application for Definitive Subdivision
Richmond Great Point Development LLC (Owner / Developer)
"Sandpiper Place" Single Family (Homeownership) Project

Dear Mrs. Stover:

The purpose of this correspondence, issued in our capacity as the applicant and development manager, on behalf of the owner of the subject properties (Richmond Great Point Development LLC) is to document submittal of the completed application to petition the Town of Nantucket Planning Board to consider the above-captioned proposal which requires the approval of a definitive subdivision of land to allow for the subdivision of the subject properties into a series of one hundred and six (106) proposed lots and a +/- 4,350 linear foot (0.82 mile) long system of roadway segments, comprising a total of +/- 16.3 acres of land, located on a series of twenty-one (21) existing parcels located off Old South Road, Nancy Ann Lane, Mayflower Circle, Daffodil Lane, and Evergreen Way (including portions of two road parcels [being portions of Daffodil Lane and Mayflower Circle] and a private way located off of Old South Road

The Notice (and copy of the completed (Form B) application and accompanying plan) is being submitted to your office in accordance with and conforms to the provisions of Section 2.06 of "*The Rules and Regulations Governing the Subdivision of Land, Nantucket, Massachusetts*" as well as "*The Subdivision Control Law of Massachusetts*" (M.G.L. Chapter 41, Sections 81K-81GG, inclusive).

Upon your acknowledgment of receipt of this Notice (by way of time / date stamping the application), we intend to submit the original completed (Form B) application and accompanying plan to the Town of Nantucket Planning Board to obtain its review and subsequent approval.

Should you have any questions with respect to the application and submittal, please feel free to contact me at 978-988-3900, Extension # 12.

Very truly yours,

David J. Armanetti
Director of Real Estate Development
The Richmond Company, Inc.
On Behalf of Richmond Great Point Development LLC

Cc: Andrew Burek, Esq., TRC
Arthur Reade, Jr., Esq., RGH

RECEIVED
AUG 09 2016
By

STORMWATER MANAGEMENT REPORT AND CALCULATIONS

DEFINITIVE SUBDIVISION
"SANDPIPER PLACE"
SINGLE FAMILY RESIDENTIAL DEVELOPMENT PROJECT

PREPARED BY:

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach MA 02562

TABLE OF CONTENTS

1- DRAINAGE CALCULATIONS NARRATIVE

2- HYDROCAD MODEL / REPORT (122 Pages)
(Surface Drainage from Site)

3- SEWER NETWORK PROFILE REPORT (6 Pages)
(Northern Portion of Site / North of Road "D")

4- SEWER NETWORK PROFILE REPORT (12 Pages)
(Southern Portion of Site / South of Road "D")

Richmond Great Point Inc.
20 Davkim Lane
Nantucket, MA 02554

Drainage Calculations Narrative

PROJECT SUMMARY

Richmond Great Point Inc., Inc. (RGP) is proposing to reconfigure the existing property as shown on sheets C-1 to C-5. The project includes single family home development and rental apartment development.

The proposed development of "Sandpiper Place" workforce homeownership housing development, comprised of one hundred (100) single family housing lots on a combination of nineteen (19) existing lots totaling +/- 17.2 acres of land located along Old South Road, Daffodil Lane, Mayflower Circle, and Evergreen Way.

The proposed development of "Workforce Rental Community" includes a total of 225 apartment units in a series of approximately forty (40) low density, two story, residential structures on a combination of two (2) existing lots totaling +/- 14.5 acres of land located along Davkim Lane and Nancy Ann Lane.

EXISTING CONDITIONS

Currently, access to all parcels owned by RGP is via Nancy Ann Lane. The land located at 20 Davkim Lane contains a former asphalt gravel plant/gravel pit. A paved parking area is located in front of the plant along the corner of Nancy Ann Lane and Davkim lane. North of the plant comprises gravel areas with access driveways along Nancy Ann Lane and storage components of the former Glowacki property. A gravel travelway connects the eastern portion of the plant to Evergreen Way.

The easterly portion of the project along Evergreen Way is primarily wooded with residential properties on the corner of Evergreen Way and Daffodil Lane. A gravel pathway extends from the paved roadway between the asphalt gravel plant and Evergreen Way to the Mayflower Circle cul-de-sac.

In general, the property slopes from North to South and contains two large sand pits that are shown on sheets C-6 to C-8.

PROPOSED CONDITIONS

We have included a set of plans and related documents depicting the proposal for your review. The subdivision will require the construction of new roadways. For discussion purposes during the review process with the town review agencies, we have included conceptual building footprints. The Stormwater runoff generated from the buildings depicted on the plans will be Contain by individual leaching systems sized to retain and infiltrate the Type III 24-hour 100-year storm.

Pre and Post development stormwater analysis was completed for the Type III 24-hour 25-year storm event using Carlson Civil Suite Engineering and Surveying software and HydroCad Stormwater modeling software for the drainage areas identified on the property. These stormwater modeling packages were developed using TR-55 modeling protocol and are widely used in the stormwater modeling arena. The modeling addressed stormwater for this proposal under the following assumptions:

1. We have assumed that the roadways, driveways and sidewalks as depicted on the plans, are constructed.

The two existing Sand Pits will be re-graded. The proposed site generally slopes in a Southerly direction from Old South Road, Easterly from Nancy Ann lane, And Westerly from Evergreen Road.

It should be noted that runoff from the RGP property remains on –site and the proposed conditions will remain the same.

As such, we have not concentrated on the pre and post development conditions on the property as no stormwater leaves the property. Although the impervious area of the property will be increased, the existing fully developed nature of a major portion of the property, the fact that all stormwater stays on the site, and significant drainage system improvements are proposed, the need to concentrate on pre and post development conditions is reduced. The main effort in our drainage analysis for this project centered on the use of deep sump catch basins, grease/grit removal Water Quality Structures and underground infiltration Chambers designed to retain and infiltrate the Type III 24-hour 25-year as well as mitigate the flooding caused by the 100 year event.

Runoff from the post development conditions is subdivided into 15 watersheds. Stormwater Runoff is conveyed to nine underground retention / infiltration areas (refer to table below) containing ADS StormTech MC-4500 + Cap chambers. Under conditions related to large storm events, the system will surcharge and stormwater will spill out of the lowest grate, and overflow into two designated flood areas as shown on sheet C-19.

Underground Retention / Infiltration Areas for Watershed					
No.	Watershed	Pond	Storage Area	No. Storage Chambers	VortSentry Model
1	S1	1P	46.67'W x 27.24'L x 6.75'H	25	HS72
2	S2	2P	37.58'W x 43.34'L x 6.75'H	36	HS72
3	S3	3P	37.58'W x 51.39'L x 6.75'H	44	HS84
4	S4	4P	55.75'W x 35.29'L x 6.75'H	42	HS84
5	S5, S6	5P/6P	28.50'W x 43.34'L x 6.75'H	27	HS84
6	S7	7P	46.67'W x 47.37'L x 6.75'H	50	HS84
7	S8, S9	8P/9P	37.58'W x 63.47'L x 6.75'H	56	HS96
8	S10-S14	10P-14P	55.75'W x 51.39'L x 6.75'H	66	HS96
9	S15	15P	46.67'W x 59.44'L x 6.75'H	65	HS84

Stormwater Runoff from each building is conveyed to underground retention / infiltration areas (refer to table below) containing Cultec Recharger 330XL HD chambers.

Underground Retention / Infiltration Areas for Buildings		
Type*	Storage Area	No. Storage Chambers
Building A	11.83'W x 11.17'L x 3.88'H	2
Building B	11.17'W x 10.50'L x 3.54'H	2
Building C	11.17'W x 10.50'L x 3.54'H	2
Multifamily	17.00'W x 11.50'L x 3.54'H	3

*See sheets C-6 to C-8 for building type locations.

Stormwater Standards

Standard 1 - No New Untreated Discharges

Under the proposed improvements, there are no untreated discharges to or erosion of wetlands or waters of the Commonwealth. All of the runoff from this proposal are directed to and allowed to infiltrate in retention areas within the boundary of the project. There are no off-site discharges from this project.

Standard 2 - Peak Flow Rates

The pre and post-development peak discharge rate from this development is contained within the property. There is no runoff from this property. The stormwater modeling results are included in the Attachments (1 & 2) of this document.

Standard 3 - Recharge Rates

All of the runoff from the area of development on site will be directed into the retention areas depicted on the plans. The proposed drainage system will infiltrate 100% of the excess stormwater volume.

Standard 4 - TSS Removal Rates

The design provides more than 95% TSS removal utilizing the deep sump catch basins, oil/sediment separators, and subsurface leaching systems. See Attachment 3 for these computations.

Standard 5 - Land Use with Higher Potential Pollution Load

This standard is not applicable to the site.

Standard 6 - Wellhead Protection Area

This standard applies to this project as the site is located in a public wellhead protection area. Test pits indicate a minimum of 10 feet of undisturbed soil above groundwater will be maintained for the construction of this project. Improvements to the property include conveying stormwater runoff to nine underground retention / infiltration areas with each containing a grease/grit removal Water Quality Structure.

Standard 7 - Redevelopment

This standard applies to this project as significant improvements are proposed on the property. Improvements include the use of Deep Sump catch basins, the installation of a grease/grit removal Water Quality Structure and construction of nine retention / infiltration areas to eliminate severe ponding at the property. The stormwater modeling results are included in the Appendix A of this document.

As such, Stormwater Standards have been met to the maximum extent practicable.

Standard 8 - Construction Period Pollution Prevention

Although this proposal does not require a National Pollution Discharge Elimination System (NPDES) permit for construction, the proposal calls for the installation of silt fencing, hay bales, catchbasin filters, and the remediation of all disturbed areas. Sedimentation will be controlled by inspection of stormwater facilities before and after significant stormwater events.

Standard 9 - Operations and Maintenance

The Operation and Maintenance plan calls for maintaining the landscaped portion of the project as well as regular cleaning of catch basins, grease/grit chambers, and stormwater retention facilities. An Operations and Maintenance Plan is included in this report.

Standard 10- Illicit Discharge Statement

There are no known, illicit discharges associated with this project.
Please review the above information and contact this office with any questions or comments.

Robert L. Bersin, PE
Green Seal Environmental, Inc.

July 25, 2016
Date

GENERAL CONSTRUCTION SEQUENCE

1. Prior to the start of all work, the contractor shall have the Limits of Work flagged by Green Seal Environmental. Flagging shall be inspected by the Town of Nantucket designee, prior to the start of all work.
2. Contractor shall furnish and install construction silt fencing, hay bales, or wattles (as required on approved plans) along the Limits of Work line as depicted on the approved plans. Installation of said fencing shall be inspected by the Town of Nantucket designee.
3. Install Temporary Construction Access as depicted on the approved plans. Installation of said access shall be inspected by the Town of Nantucket designee.
4. Tree Removal along the proposed roadway shall be coordinated with the Nantucket Tree Warden and Planning Department. All debris, including stumps, shall be removed from the site and disposed in a MassDEP approved disposal site. Cut materials may be chipped, stockpiled, and used as mulch, as needed. Use 4-6 inches of topsoil and the seed mixture referenced above to revegetate disturbed areas along the roadway.
5. Install Retention / Infiltration Areas and Treatment units as shown on approved plans. Retention Areas shall be installed by removing all soil above the "C" Sand layer as depicted on the soil logs and backfilled with clean granular sand, free from organic matter, and other deleterious matter. Fill material shall meet the grading specifications in 310 CMR 15.255:3. Install roadway as depicted on the approved plans. Access to the work areas shall be via the proposed construction entrances shown on the Erosion and Dust Control Plan. All efforts shall be employed to prevent soil accumulation from construction vehicles onto the surface of Nancy Ann Lane Rd. If binder course is not installed immediately after cutting, grubbing, re-grading, and compaction, install temporary crushed stone construction entrance as depicted on the Erosion and Dust Control Plan. Final paving shall be after the installation of drainage components and utilities is complete.
6. In general, revegetate disturbed areas as soon as practicable.
7. After the roadway construction, start the installation of landscaping per approved plans. Coordinate installation with the Town of Nantucket designee. All attempts shall be made to avoid planting during summer droughty season, or arrangements shall be made for proper watering required to ensure proper plant growth.
8. Upon completion of the work, inspect all areas of installation. All disturbed areas shall be revegetated as described above.

STORMWATER SYSTEM MAINTENANCE
CONSTRUCTION PHASE

Best management practices (BMP) for erosion and sedimentation control are staked straw bales, filter fences, wattles, hydro seeding, and phased development. Although not all of these methods are utilized for this project, it should be noted that these are not designed to handle high concentrations of sediments typically found in construction runoff. High sediment losses are not anticipated on this project, but it is imperative that the BMP's on this site be maintained.

Pre-Construction

A. The contractor shall have a stockpile of materials required to control erosion on-site to be used to supplement or repair erosion control devices. These materials shall include, but are not limited to straw bales, silt fence, wattles, and crushed stone.

B. The site contractor is responsible for erosion control on site and shall utilize erosion control measures where needed, regardless of whether the measures are specified on the plan or in the order of conditions.

Construction Phase

A. All excavated materials should be stockpiled, separating topsoil from other materials. The topsoil shall be kept for future use on the site. Erosion control shall be utilized along the down slope side of the stockpiles and side slopes shall not exceed 2:1.

B. If intense rainfall is anticipated, the installation of supplemental straw bale dikes, silt fences, or wattles shall be considered.

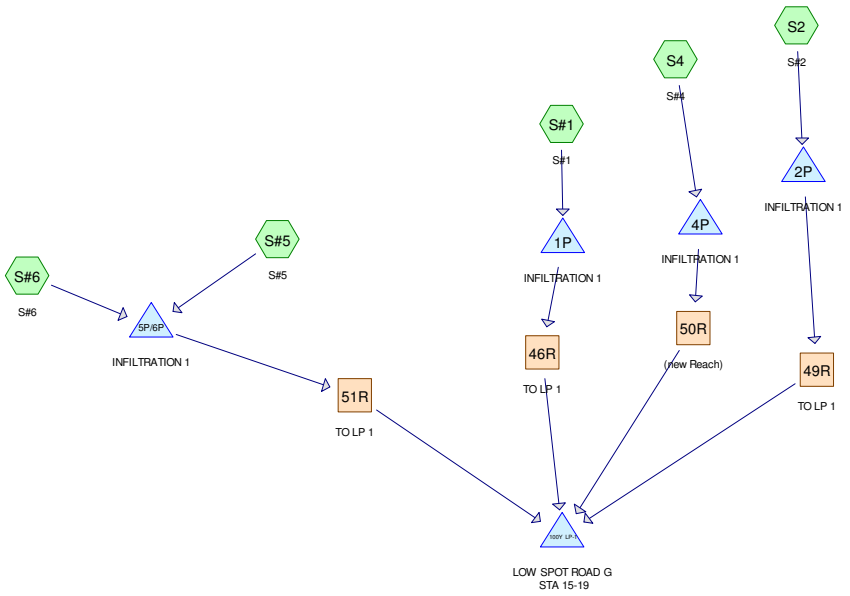
C. Unsuitable excavated material shall be removed from the site as soon as practicable.

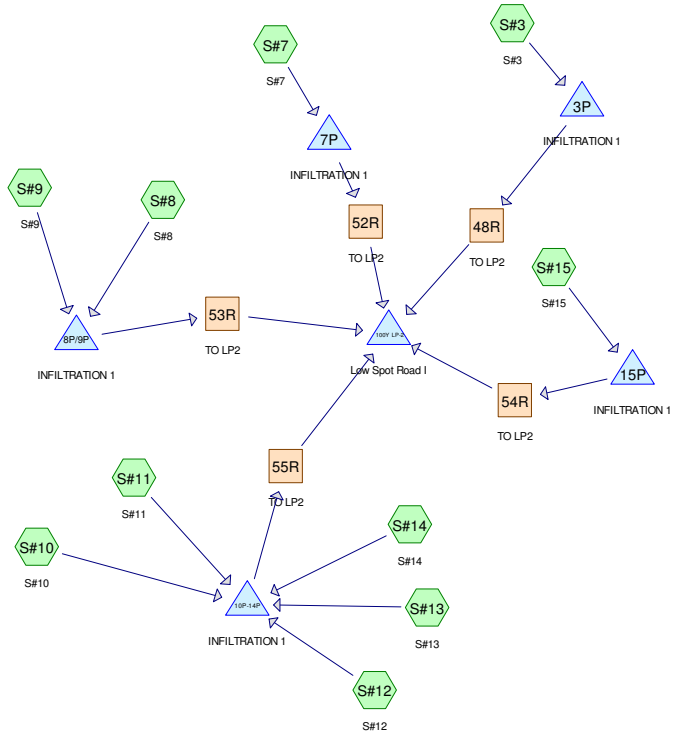
D. Construction entrance shall be installed as shown on the approved plans as outlined above.

Ongoing Site Work

1. Site work will be completed utilizing proper construction techniques. All efforts are to be employed to minimize the deposition of soil from Construction vehicles on Nancy Ann Lane Road.
2. Inspect all sediment and erosion control measures on a weekly basis, prior to, and after significant storm events (0.25 inches or greater), or as otherwise required by the Town of Nantucket designee.

3. Sediment shall be removed from sediment barriers if buildup exceeds ½ of the height of the barrier.
4. Damaged or deteriorated barriers shall be repaired immediately after the defect is identified.
5. The underside of hay bales and wattles shall be kept in close contact with exposed earth. Reset as necessary.
6. Remove vegetative and non-vegetative debris from the retention areas.
7. In general, the area shall be kept neat and litter free, to the maximum extent practicable. Trash, shipping materials, and other disposable materials shall be contained and prevented from becoming windblown litter. The site supervisor shall ensure all debris is either removed or properly contained prior to leaving the site on a daily basis.
8. Erosion control elements shall remain in place until all disturbed areas are stabilized. After removal of erosion control elements, regrade, and stabilize disturbed areas under barriers, as necessary.
9. No pesticides or herbicides are to be used on the site and only organic fertilizers shall be used.





Subcat Reach Pond Link

Routing Diagram for ALTERNATIVE WATER SHEDS
Prepared by {enter your company name here}, Printed 7/26/2016
HydroCAD® 10.00 s/n 07546 © 2013 HydroCAD Software Solutions LLC

Project Notes

CarlsonStageIncrement|1.0000|

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
16.321	39	Open Space-Good (>75% grass) HSG A (S#1, S#10, S#11, S#12, S#13, S#14, S#15, S#3, S#5, S#6, S#7, S#8, S#9, S2, S4)
0.765	61	Open Space-Good (>75% grass) HSG B (S#1, S2)
0.469	98	Paved Lots Roofs & Driveways HSG A (S#11)
0.239	98	Paved Lots Roofs & Driveways HSG B (S2)
7.875	98	Paved Streets w/Curbs & Sewers HSG A (S#1, S#10, S#12, S#13, S#14, S#15, S#3, S#5, S#6, S#7, S#8, S#9, S4)
0.239	98	Paved Streets w/Curbs & Sewers HSG B (S2)
25.907	**60**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
24.664	HSG A	S#1, S#10, S#11, S#12, S#13, S#14, S#15, S#3, S#5, S#6, S#7, S#8, S#9, S2, S4
1.243	HSG B	S#1, S2
0.000	HSG C	
0.000	HSG D	
0.000	Other	
25.907		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
16.321	0.765	0.000	0.000	0.000	17.086	Open Space-Good (>75% grass)	S#1, S#10, S#11, S#12, S#13, S#14, S#15, S#3, S#5, S#6, S#7, S#8, S#9, S2, S4
0.469	0.239	0.000	0.000	0.000	0.708	Paved Lots Roofs & Driveways	S#11, S2
7.875	0.239	0.000	0.000	0.000	8.114	Paved Streets w/Curbs & Sewers	S#1, S#10, S#12, S#13, S#14, S#15, S#3, S#5, S#6, S#7, S#8, S#9, S2, S4
24.664	**1.243**	**0.000**	**0.000**	**0.000**	**25.907**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment S#1: S#1 Runoff Area=74,645 sf 34.86% Impervious Runoff Depth=1.79"
Flow Length=173' Slope=0.0515 '/' Tc=6.0 min CN=60 Runoff=3.33 cfs 0.256 af

Subcatchment S#10: S#10 Runoff Area=36,853 sf 28.96% Impervious Runoff Depth=1.48"
Flow Length=225' Slope=0.0140 '/' Tc=15.6 min CN=56 Runoff=0.96 cfs 0.104 af

Subcatchment S#11: S#11 Runoff Area=45,317 sf 45.07% Impervious Runoff Depth=2.29"
Flow Length=405' Slope=0.0234 '/' Tc=14.9 min CN=66 Runoff=2.06 cfs 0.199 af

Subcatchment S#12: S#12 Runoff Area=35,592 sf 41.55% Impervious Runoff Depth=2.12"
Flow Length=235' Slope=0.0333 '/' Tc=8.5 min CN=64 Runoff=1.76 cfs 0.144 af

Subcatchment S#13: S#13 Runoff Area=23,644 sf 43.86% Impervious Runoff Depth=2.21"
Flow Length=117' Slope=0.0184 '/' Tc=6.4 min CN=65 Runoff=1.33 cfs 0.100 af

Subcatchment S#14: S#14 Runoff Area=32,589 sf 22.11% Impervious Runoff Depth=1.19"
Flow Length=319' Slope=0.0132 '/' Tc=23.5 min CN=52 Runoff=0.53 cfs 0.074 af

Subcatchment S#15: S#15 Runoff Area=219,043 sf 28.62% Impervious Runoff Depth=1.48"
Flow Length=1,119' Slope=0.0258 '/' Tc=41.5 min CN=56 Runoff=3.75 cfs 0.620 af

Subcatchment S#3: S#3 Runoff Area=180,213 sf 23.77% Impervious Runoff Depth=1.26"
Flow Length=300' Slope=0.0252 '/' Tc=15.8 min CN=53 Runoff=3.73 cfs 0.433 af

Subcatchment S#5: S#5 Runoff Area=31,300 sf 60.32% Impervious Runoff Depth=3.11"
Flow Length=121' Slope=0.0265 '/' Tc=5.0 min CN=75 Runoff=2.62 cfs 0.186 af

Subcatchment S#6: S#6 Runoff Area=10,705 sf 75.27% Impervious Runoff Depth=3.91"
Flow Length=121' Slope=0.0370 '/' Tc=5.0 min CN=83 Runoff=1.12 cfs 0.080 af

Subcatchment S#7: S#7 Runoff Area=75,917 sf 62.25% Impervious Runoff Depth=3.21"
Flow Length=405' Slope=0.0259 '/' Tc=10.8 min CN=76 Runoff=5.54 cfs 0.466 af

Subcatchment S#8: S#8 Runoff Area=46,691 sf 52.51% Impervious Runoff Depth=2.65"
Flow Length=269' Slope=0.0219 '/' Tc=10.0 min CN=70 Runoff=2.85 cfs 0.236 af

Subcatchment S#9: S#9 Runoff Area=48,922 sf 54.31% Impervious Runoff Depth=2.74"
Flow Length=214' Slope=0.0177 '/' Tc=9.1 min CN=71 Runoff=3.17 cfs 0.256 af

Subcatchment S2: S#2 Runoff Area=115,715 sf 17.98% Impervious Runoff Depth=1.48"
Flow Length=300' Slope=0.0283 '/' Tc=13.8 min CN=56 Runoff=3.16 cfs 0.328 af

Subcatchment S4: S#4 Runoff Area=151,367 sf 28.50% Impervious Runoff Depth=1.48"
Flow Length=300' Slope=0.0338 '/' Tc=12.6 min CN=56 Runoff=4.26 cfs 0.428 af

Reach 46R: TO LP 1 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.013 L=467.7' S=0.0082 '/' Capacity=9.55 cfs Outflow=0.00 cfs 0.000 af

Reach 48R: TO LP2 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.013 L=370.0' S=0.0053 '/' Capacity=7.64 cfs Outflow=0.00 cfs 0.000 af

Reach 49R: TO LP 1 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.013 L=190.0' S=0.0149 '/' Capacity=12.84 cfs Outflow=0.00 cfs 0.000 af

Reach 50R: (new Reach) Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach 51R: TO LP 1 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.013 L=431.0' S=0.0094 '/' Capacity=10.20 cfs Outflow=0.00 cfs 0.000 af

Reach 52R: TO LP2 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.013 L=592.0' S=0.0066 '/' Capacity=8.53 cfs Outflow=0.00 cfs 0.000 af

Reach 53R: TO LP2 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.013 L=184.0' S=0.0024 '/' Capacity=5.20 cfs Outflow=0.00 cfs 0.000 af

Reach 54R: TO LP2 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.013 L=372.0' S=0.0006 '/' Capacity=2.62 cfs Outflow=0.00 cfs 0.000 af

Reach 55R: TO LP2 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.013 L=1.0' S=0.0100 '/' Capacity=10.52 cfs Outflow=0.00 cfs 0.000 af

Pond 1P: INFILTRATION 1 Peak Elev=38.12' Storage=0.110 af Inflow=3.33 cfs 0.256 af
Discarded=0.24 cfs 0.256 af Primary=0.00 cfs 0.000 af Outflow=0.24 cfs 0.256 af

Pond 2P: INFILTRATION 1 Peak Elev=33.61' Storage=0.136 af Inflow=3.16 cfs 0.328 af
Discarded=0.31 cfs 0.328 af Primary=0.00 cfs 0.000 af Outflow=0.31 cfs 0.328 af

Pond 3P: INFILTRATION 1 Peak Elev=27.81' Storage=0.187 af Inflow=3.73 cfs 0.433 af
Discarded=0.37 cfs 0.433 af Primary=0.00 cfs 0.000 af Outflow=0.37 cfs 0.433 af

Pond 4P: INFILTRATION 1 Peak Elev=34.53' Storage=0.187 af Inflow=4.26 cfs 0.428 af
Discarded=0.38 cfs 0.428 af Primary=0.00 cfs 0.000 af Outflow=0.38 cfs 0.428 af

Pond 5P/6P: INFILTRATION 1 Peak Elev=34.25' Storage=0.119 af Inflow=3.74 cfs 0.266 af
Discarded=0.24 cfs 0.266 af Primary=0.00 cfs 0.000 af Outflow=0.24 cfs 0.266 af

Pond 7P: INFILTRATION 1 Peak Elev=31.24' Storage=0.207 af Inflow=5.54 cfs 0.466 af
Discarded=0.42 cfs 0.466 af Primary=0.00 cfs 0.000 af Outflow=0.42 cfs 0.466 af

Pond 8P/9P: INFILTRATION 1 Peak Elev=28.39' Storage=0.218 af Inflow=6.01 cfs 0.493 af
Discarded=0.46 cfs 0.493 af Primary=0.00 cfs 0.000 af Outflow=0.46 cfs 0.493 af

Pond 10P-14P: INFILTRATION 1 Peak Elev=26.71' Storage=0.273 af Inflow=5.78 cfs 0.621 af
Discarded=0.55 cfs 0.621 af Primary=0.00 cfs 0.000 af Outflow=0.55 cfs 0.621 af

Pond 15P: INFILTRATION 1 Peak Elev=26.97' Storage=0.267 af Inflow=3.75 cfs 0.620 af
Discarded=0.53 cfs 0.620 af Primary=0.00 cfs 0.000 af Outflow=0.53 cfs 0.620 af

Pond 100Y LP-1: LOW SPOT ROAD G STA 15-19 Peak Elev=36.50' Storage=0 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 100Y LP-2: Low Spot Road I Peak Elev=31.50' Storage=0 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 25.907 ac Runoff Volume = 3.912 af Average Runoff Depth = 1.81"
65.95% Pervious = 17.086 ac 34.05% Impervious = 8.821 ac

Summary for Subcatchment S#1: S#1

CarlsonPlanXYPos|1757228.0858|95778.6699|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

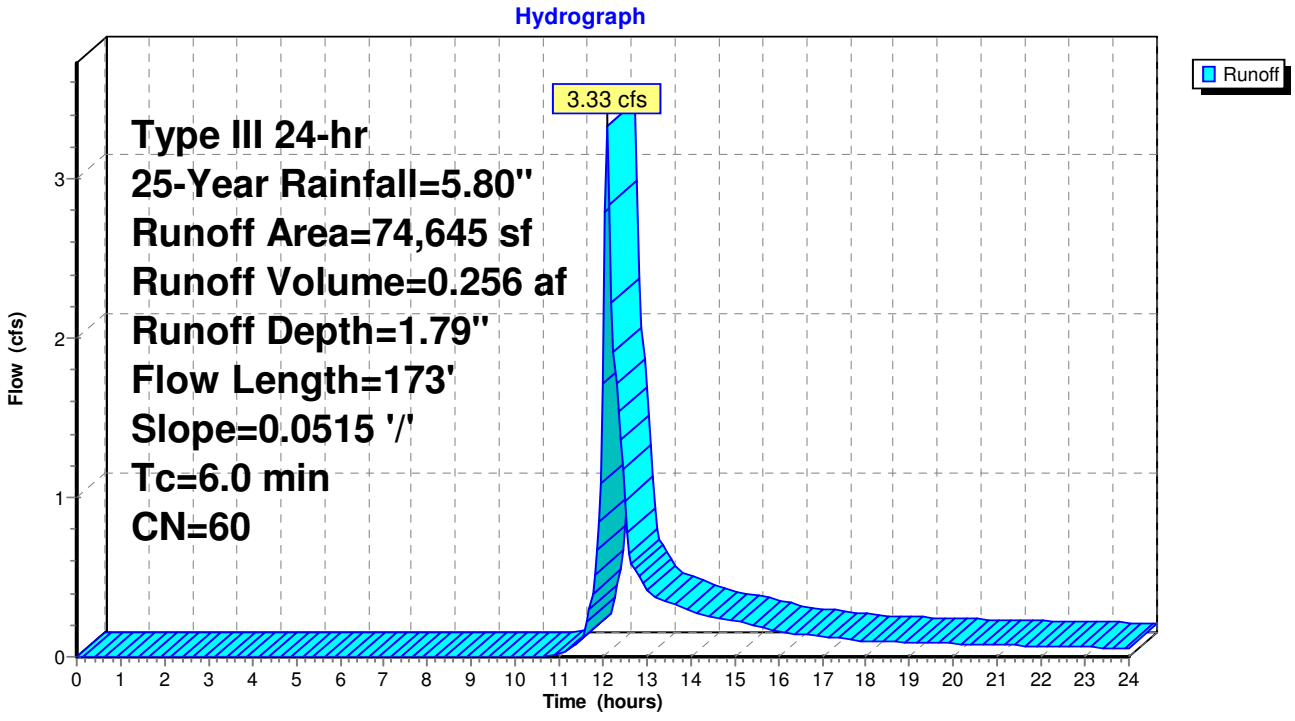
Runoff = 3.33 cfs @ 12.10 hrs, Volume= 0.256 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	26,022	98	Paved Streets w/Curbs & Sewers HSG A
*	48,593	39	Open Space-Good (>75% grass) HSG A
*	30	61	Open Space-Good (>75% grass) HSG B
	74,645	60	Weighted Average
	48,623		65.14% Pervious Area
	26,022		34.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	173	0.0515	0.48		**Lag/CN Method,**

Subcatchment S#1: S#1



Summary for Subcatchment S#10: S#10

CarlsonPlanXYPos|1756723.7933|94206.6253|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

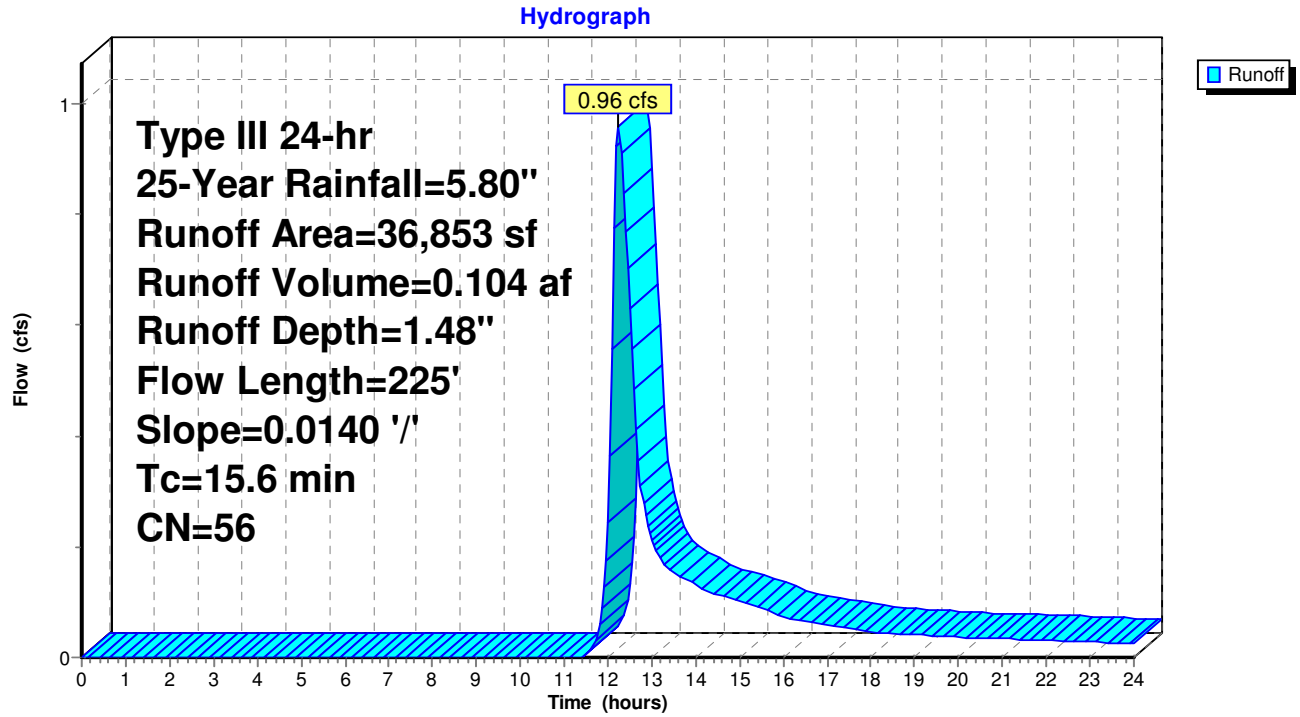
Runoff = 0.96 cfs @ 12.25 hrs, Volume= 0.104 af, Depth= 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	10,673	98	Paved Streets w/Curbs & Sewers HSG A
*	26,180	39	Open Space-Good (>75% grass) HSG A
	36,853	56	Weighted Average
	26,180		71.04% Pervious Area
	10,673		28.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	225	0.0140	0.24		**Lag/CN Method,**

Subcatchment S#10: S#10



Summary for Subcatchment S#11: S#11

CarlsonPlanXYPos|1756919.3220|94148.5061|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

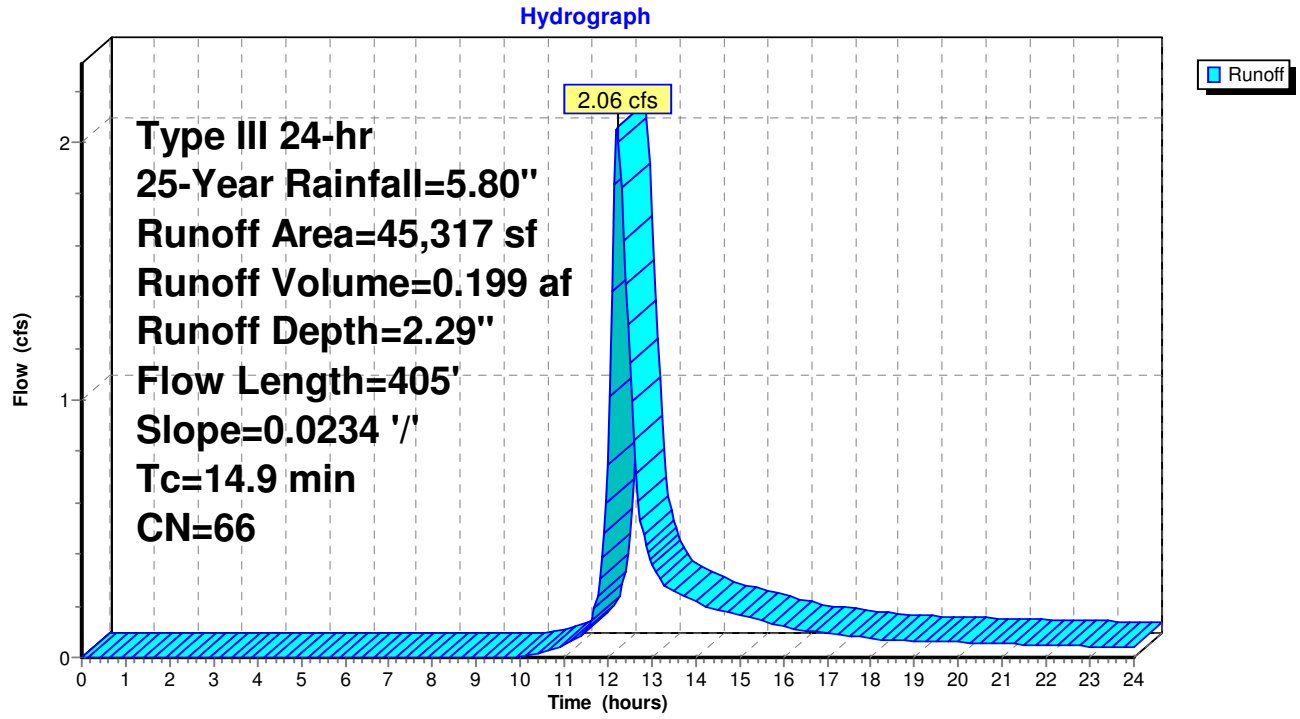
Runoff = 2.06 cfs @ 12.22 hrs, Volume= 0.199 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	20,423	98	Paved Lots Roofs & Driveways HSG A
*	24,894	39	Open Space-Good (>75% grass) HSG A
	45,317	66	Weighted Average
	24,894		54.93% Pervious Area
	20,423		45.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	405	0.0234	0.45		**Lag/CN Method,**

Subcatchment S#11: S#11



Summary for Subcatchment S#12: S#12

CarlsonPlanXYPos|1757076.0153|93970.5069|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

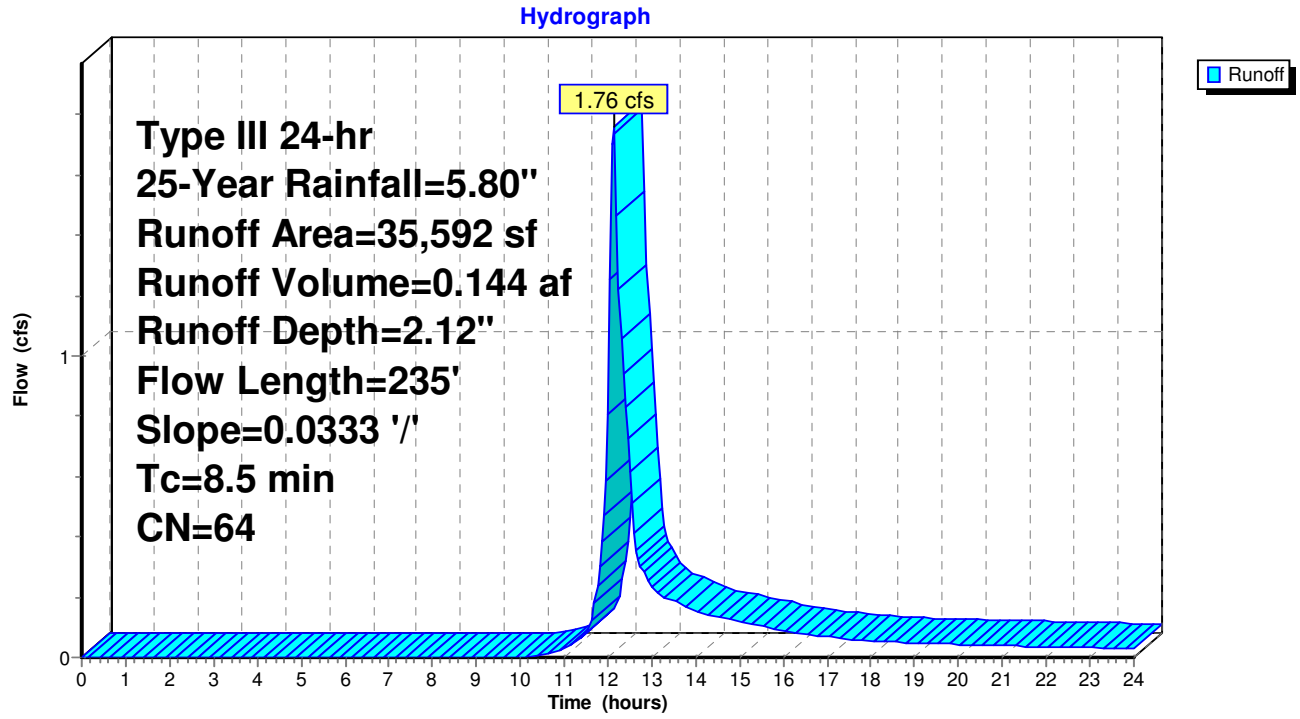
Runoff = 1.76 cfs @ 12.13 hrs, Volume= 0.144 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	14,787	98	Paved Streets w/Curbs & Sewers HSG A
*	20,805	39	Open Space-Good (>75% grass) HSG A
	35,592	64	Weighted Average
	20,805		58.45% Pervious Area
	14,787		41.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	235	0.0333	0.46		**Lag/CN Method,**

Subcatchment S#12: S#12



Summary for Subcatchment S#13: S#13

CarlsonPlanXYPos|1757188.0982|94129.7444|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

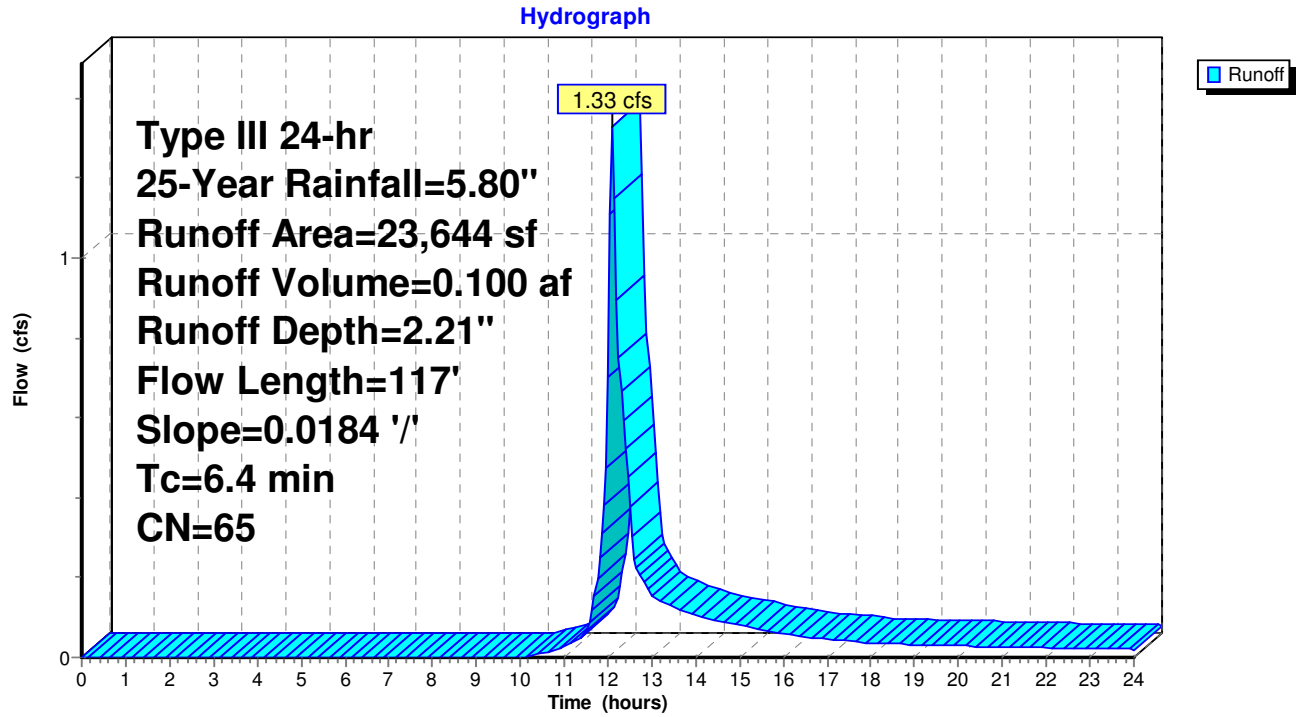
Runoff = 1.33 cfs @ 12.10 hrs, Volume= 0.100 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	10,371	98	Paved Streets w/Curbs & Sewers HSG A
*	13,273	39	Open Space-Good (>75% grass) HSG A
	23,644	65	Weighted Average
	13,273		56.14% Pervious Area
	10,371		43.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	117	0.0184	0.30		**Lag/CN Method,**

Subcatchment S#13: S#13



Summary for Subcatchment S#14: S#14

CarlsonPlanXYPos|1757004.6545|94296.5616|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

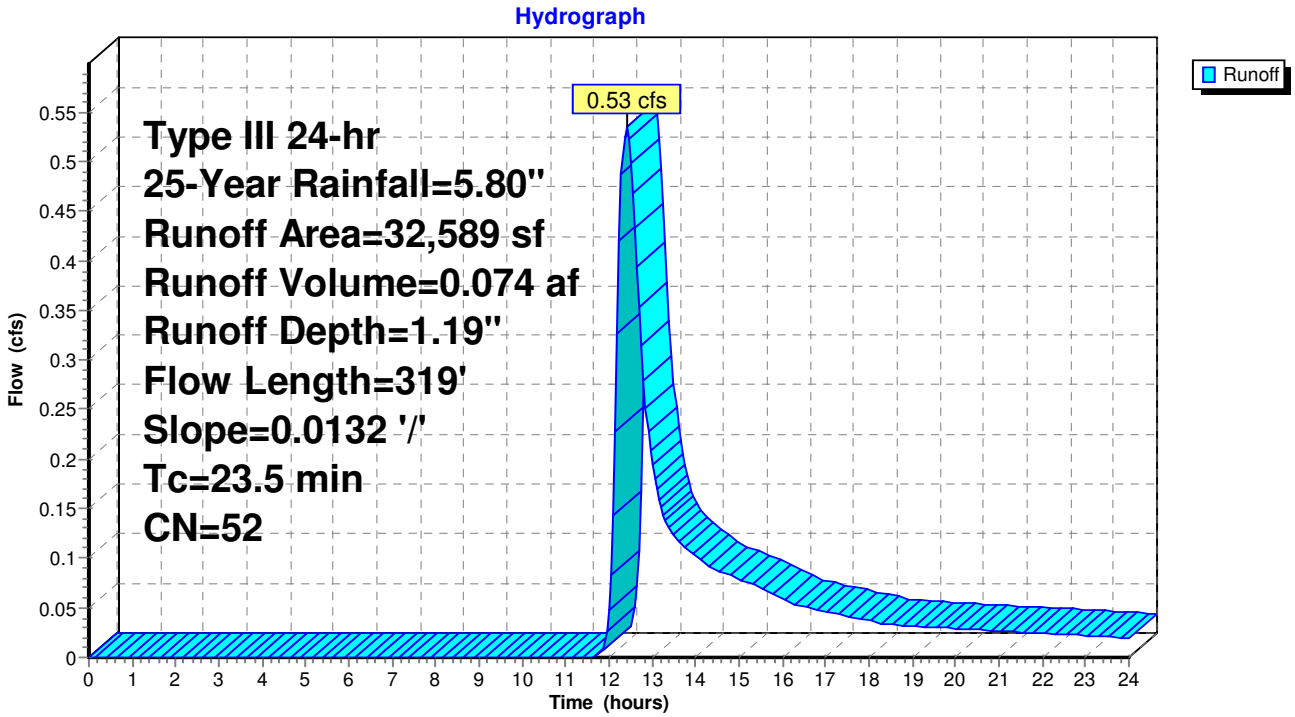
Runoff = 0.53 cfs @ 12.40 hrs, Volume= 0.074 af, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	7,204	98	Paved Streets w/Curbs & Sewers HSG A
*	25,385	39	Open Space-Good (>75% grass) HSG A
	32,589	52	Weighted Average
	25,385		77.89% Pervious Area
	7,204		22.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.5	319	0.0132	0.23		**Lag/CN Method,**

Subcatchment S#14: S#14



Summary for Subcatchment S#15: S#15

CarlsonPlanXYPos|1757436.5135|94414.7306|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

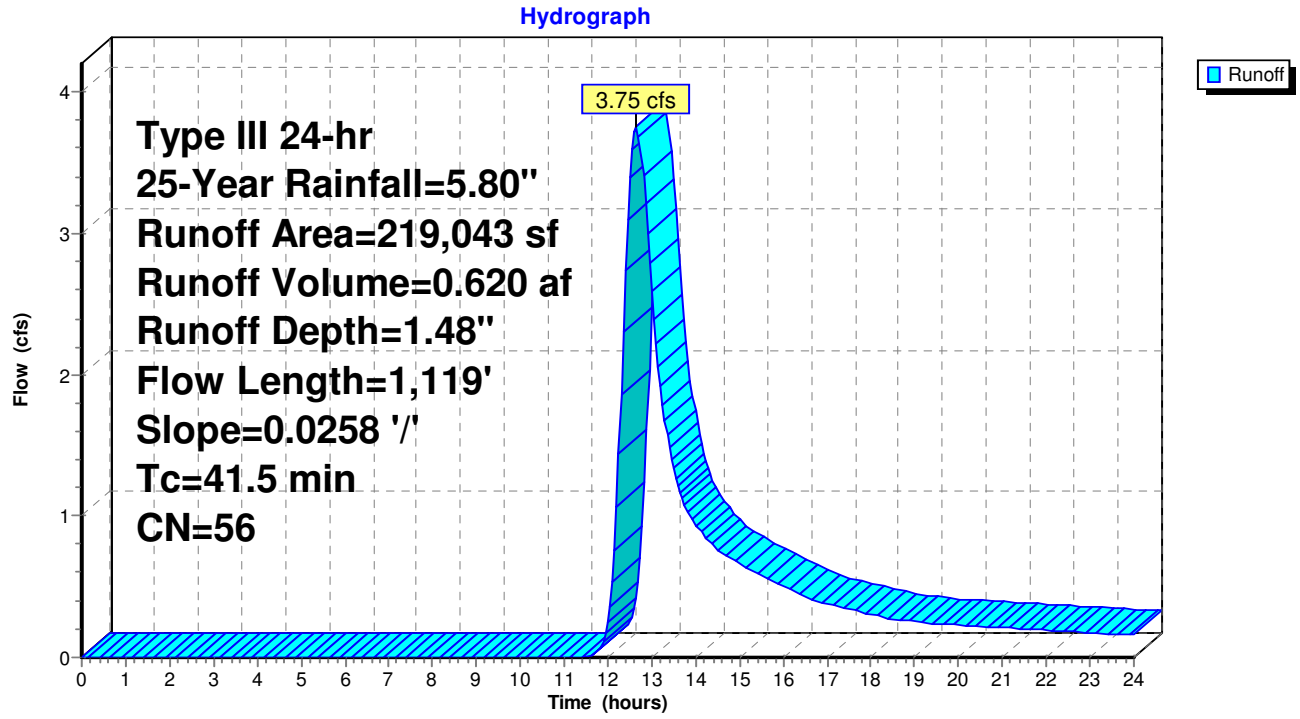
Runoff = 3.75 cfs @ 12.64 hrs, Volume= 0.620 af, Depth= 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	62,691	98	Paved Streets w/Curbs & Sewers HSG A
*	156,352	39	Open Space-Good (>75% grass) HSG A
	219,043	56	Weighted Average
	156,352		71.38% Pervious Area
	62,691		28.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
41.5	1,119	0.0258	0.45		**Lag/CN Method,**

Subcatchment S#15: S#15



Summary for Subcatchment S#3: S#3

CarlsonPlanXYPos|1757249.7579|94888.4224|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

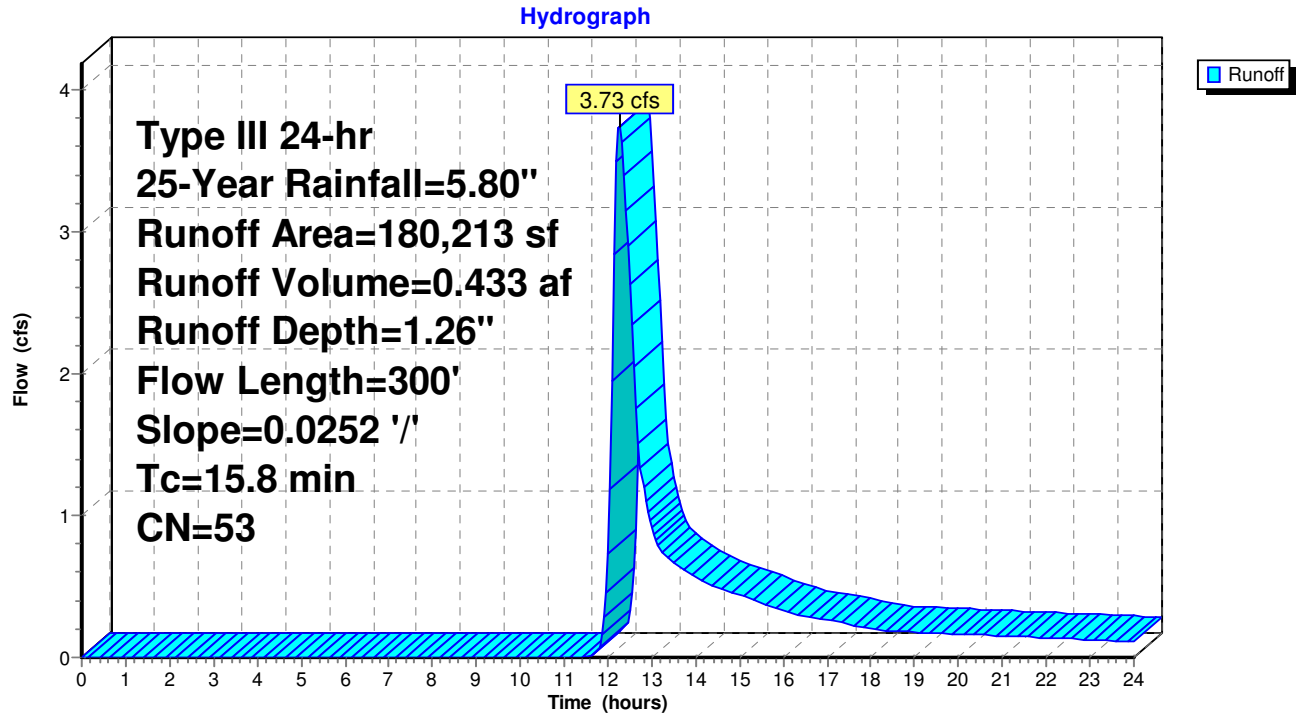
Runoff = 3.73 cfs @ 12.26 hrs, Volume= 0.433 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	42,844	98	Paved Streets w/Curbs & Sewers HSG A
*	137,369	39	Open Space-Good (>75% grass) HSG A
	180,213	53	Weighted Average
	137,369		76.23% Pervious Area
	42,844		23.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	300	0.0252	0.32		**Lag/CN Method,**

Subcatchment S#3: S#3



Summary for Subcatchment S#5: S#5

CarlsonPlanXYPos|1757027.2221|95347.9200|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

[49] Hint: Tc<2dt may require smaller dt

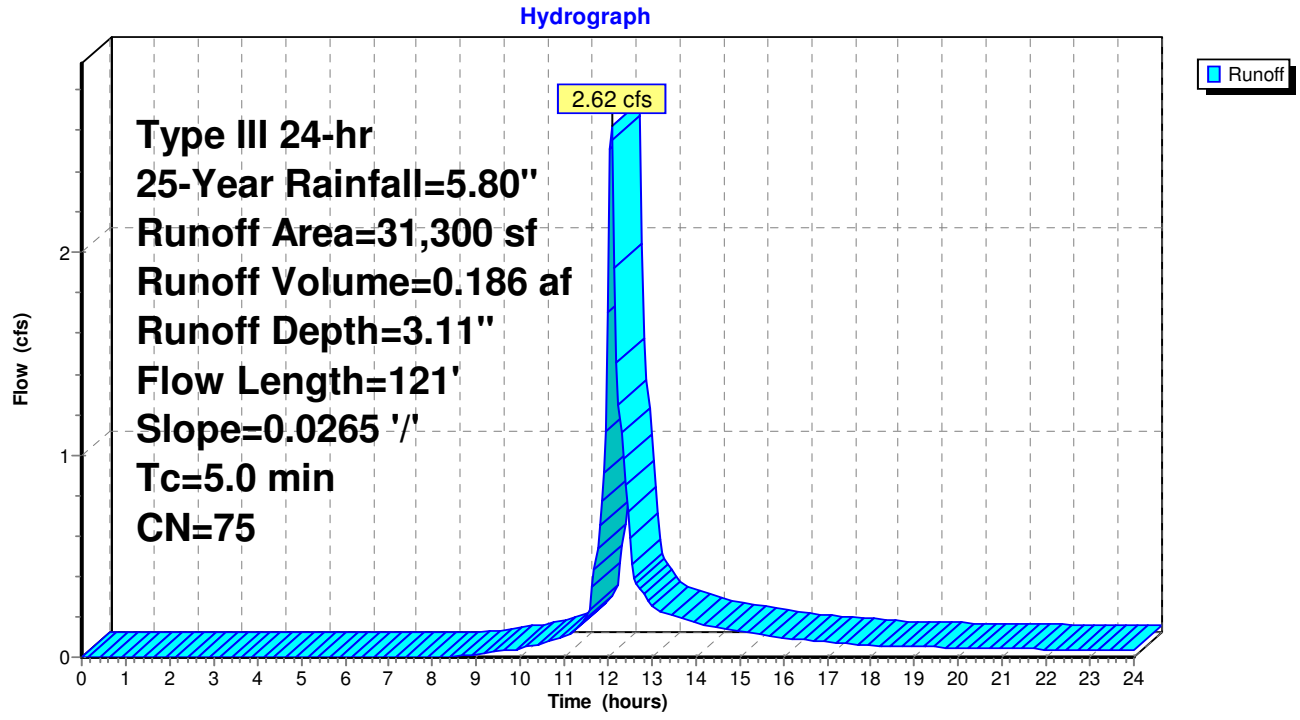
Runoff = 2.62 cfs @ 12.08 hrs, Volume= 0.186 af, Depth= 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	18,880	98	Paved Streets w/Curbs & Sewers HSG A
*	12,420	39	Open Space-Good (>75% grass) HSG A
	31,300	75	Weighted Average
	12,420		39.68% Pervious Area
	18,880		60.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	121	0.0265	0.48		**Lag/CN Method,**
4.2	121	Total, Increased to minimum Tc = 5.0 min			

Subcatchment S#5: S#5



Summary for Subcatchment S#6: S#6

CarlsonPlanXYPos|1757027.2221|95347.9200|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

[49] Hint: Tc<2dt may require smaller dt

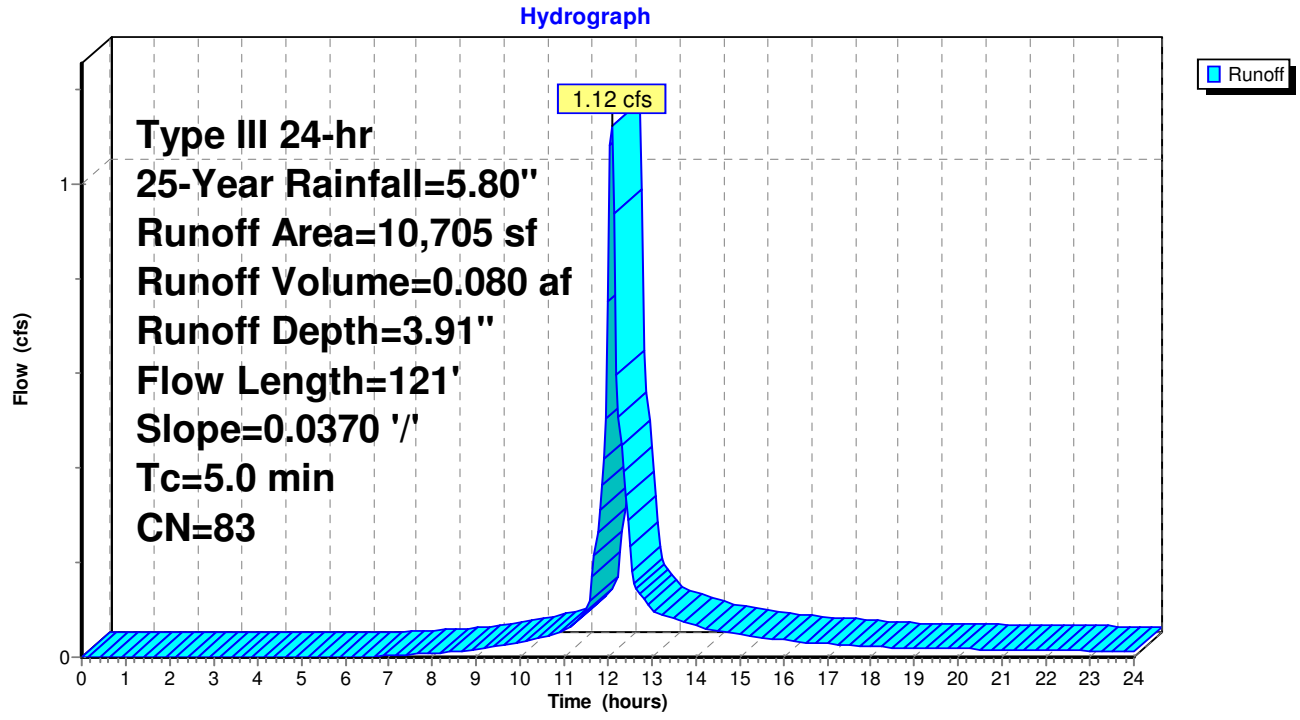
Runoff = 1.12 cfs @ 12.07 hrs, Volume= 0.080 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	8,058	98	Paved Streets w/Curbs & Sewers HSG A
*	2,647	39	Open Space-Good (>75% grass) HSG A
	10,705	83	Weighted Average
	2,647		24.73% Pervious Area
	8,058		75.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	121	0.0370	0.73		**Lag/CN Method,**
2.8	121	Total, Increased to minimum Tc = 5.0 min			

Subcatchment S#6: S#6



Summary for Subcatchment S#7: S#7

CarlsonPlanXYPos|1756915.6351|94896.6148|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

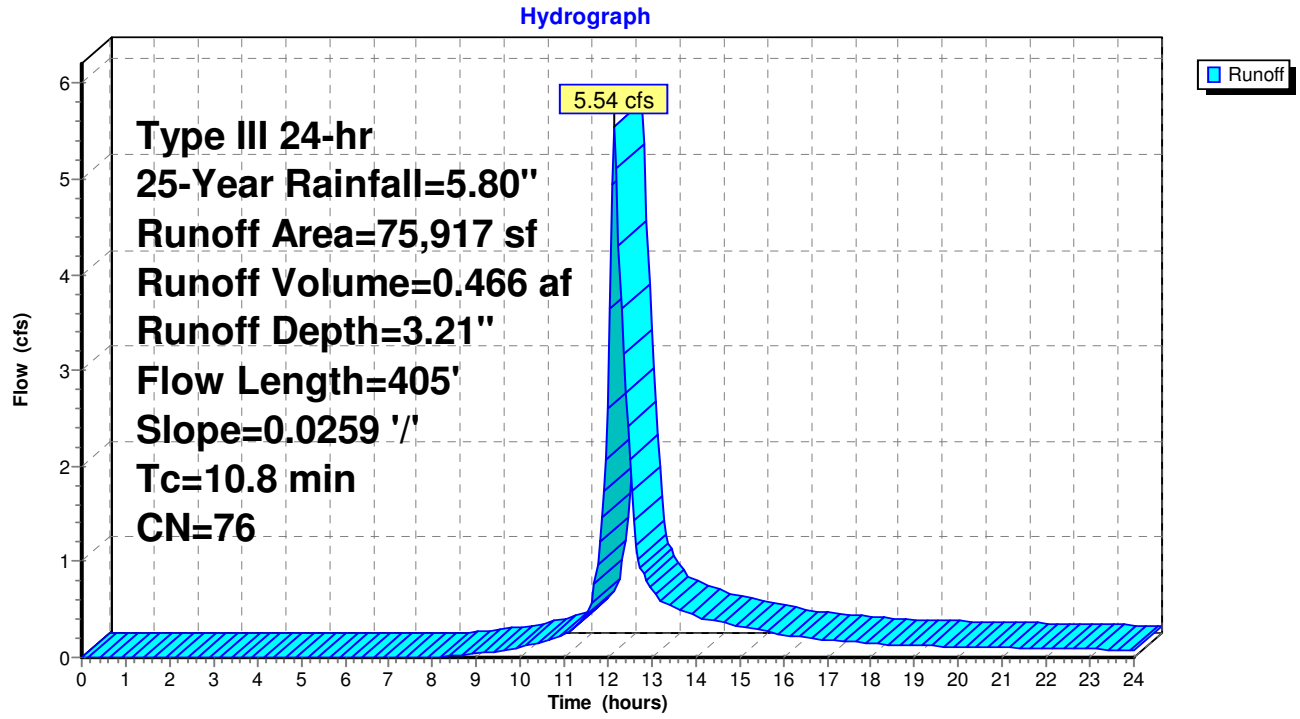
Runoff = 5.54 cfs @ 12.15 hrs, Volume= 0.466 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	47,260	98	Paved Streets w/Curbs & Sewers HSG A
*	28,657	39	Open Space-Good (>75% grass) HSG A
	75,917	76	Weighted Average
	28,657		37.75% Pervious Area
	47,260		62.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	405	0.0259	0.62		**Lag/CN Method,**

Subcatchment S#7: S#7



Summary for Subcatchment S#8: S#8

CarlsonPlanXYPos|1756872.7656|94629.7133|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

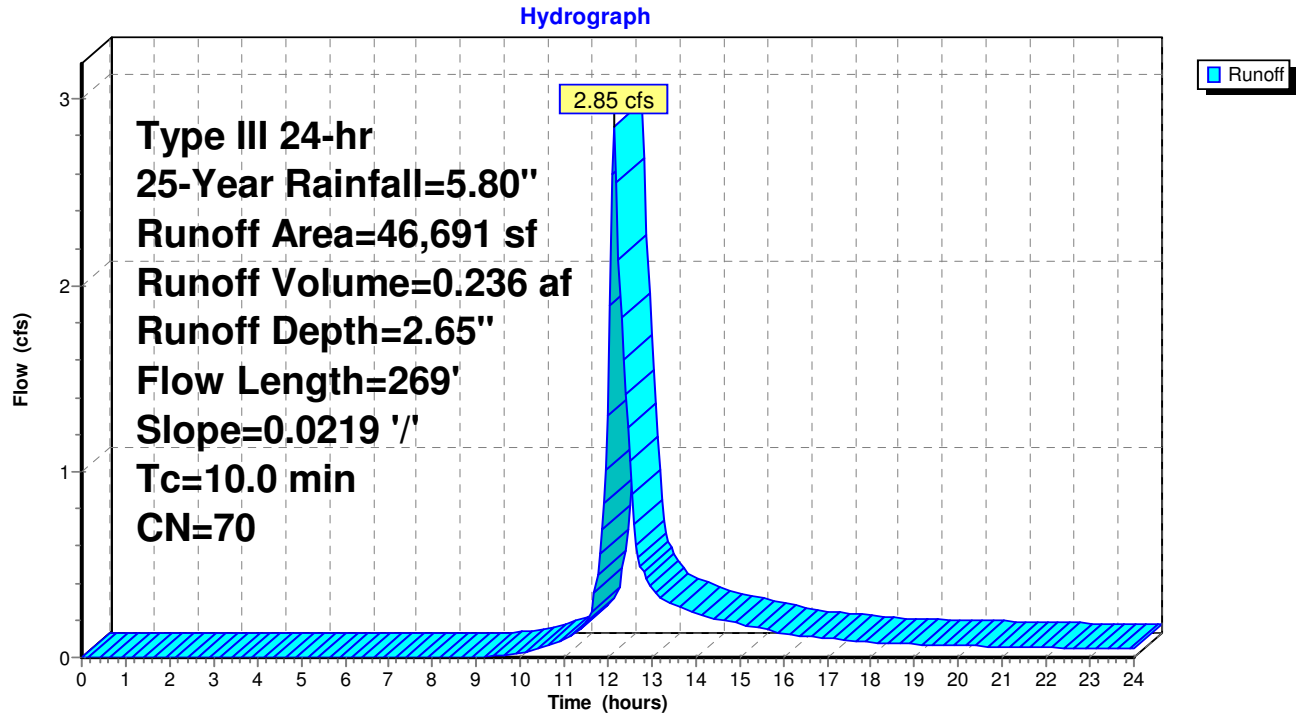
Runoff = 2.85 cfs @ 12.15 hrs, Volume= 0.236 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	24,519	98	Paved Streets w/Curbs & Sewers HSG A
*	22,172	39	Open Space-Good (>75% grass) HSG A
	46,691	70	Weighted Average
	22,172		47.49% Pervious Area
	24,519		52.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	269	0.0219	0.45		**Lag/CN Method,**

Subcatchment S#8: S#8



Summary for Subcatchment S#9: S#9

CarlsonPlanXYPos|1756830.1751|94474.8951|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

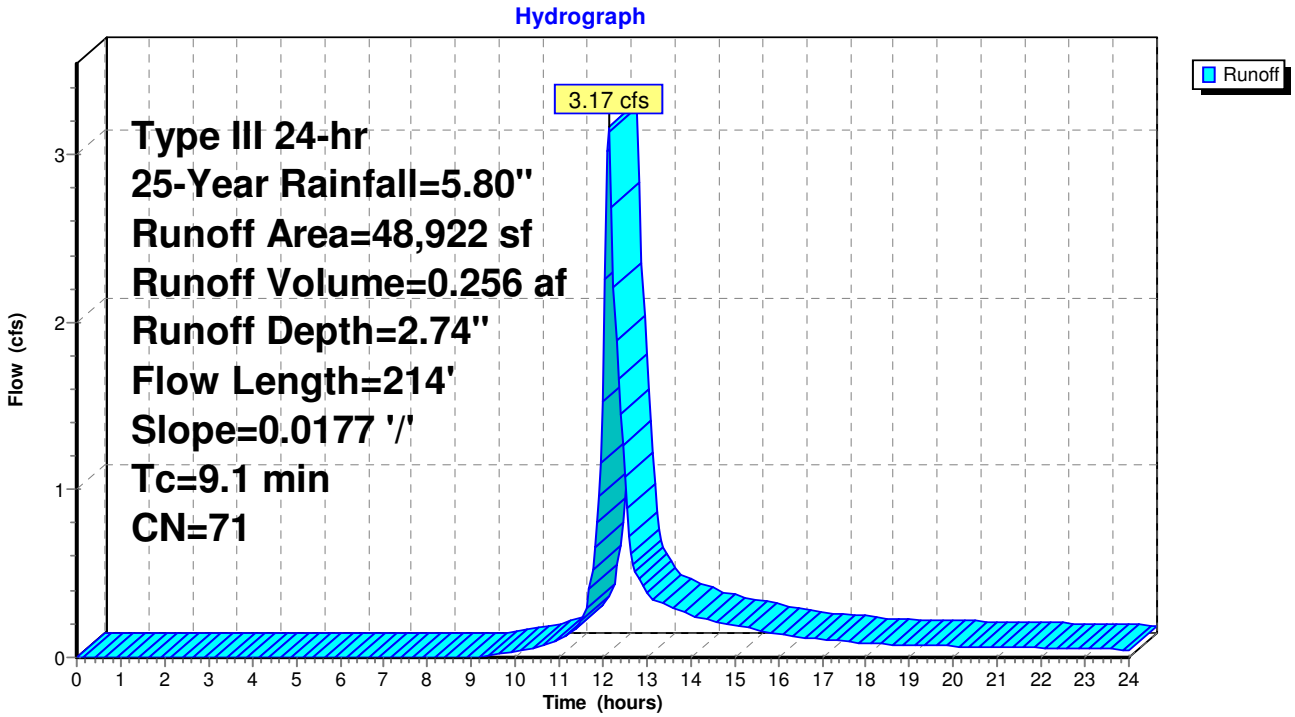
Runoff = 3.17 cfs @ 12.14 hrs, Volume= 0.256 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	26,570	98	Paved Streets w/Curbs & Sewers HSG A
*	22,352	39	Open Space-Good (>75% grass) HSG A
	48,922	71	Weighted Average
	22,352		45.69% Pervious Area
	26,570		54.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	214	0.0177	0.39		**Lag/CN Method,**

Subcatchment S#9: S#9



Summary for Subcatchment S2: S#2

CarlsonPlanXYPos|1757390.6874|95401.9110|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

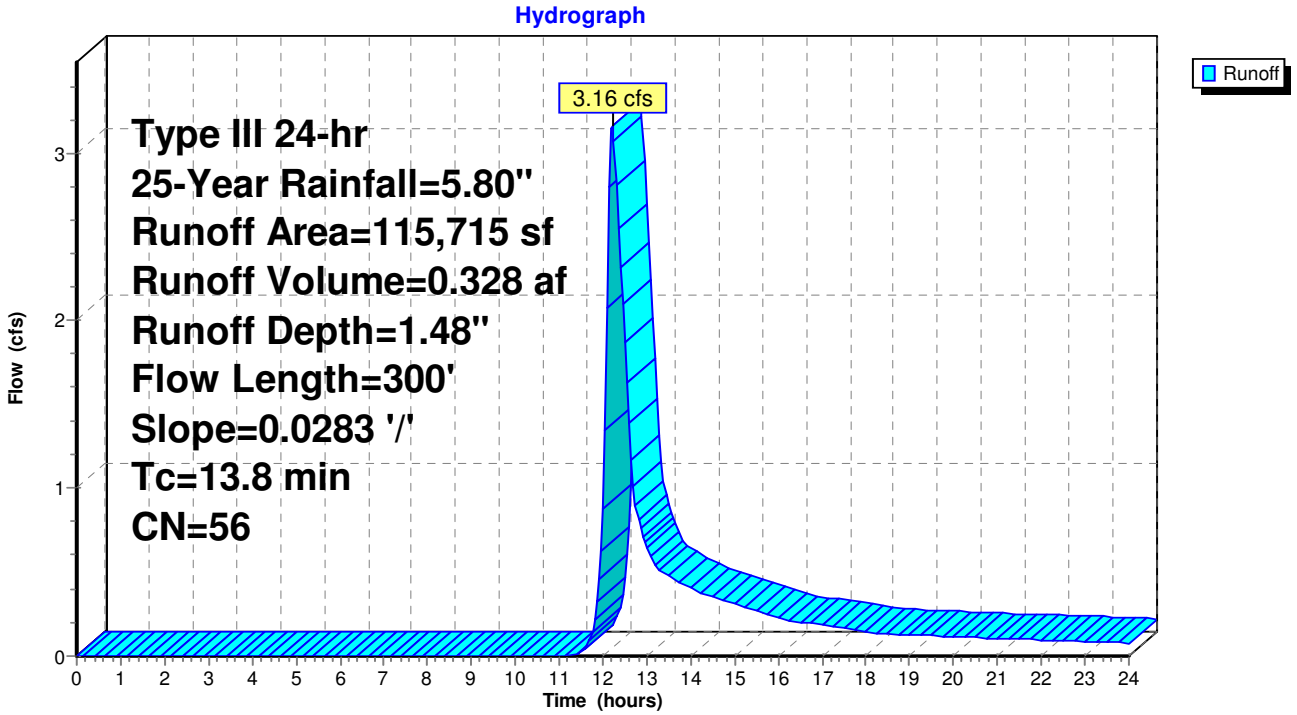
Runoff = 3.16 cfs @ 12.22 hrs, Volume= 0.328 af, Depth= 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	10,405	98	Paved Streets w/Curbs & Sewers HSG B
*	10,400	98	Paved Lots Roofs & Driveways HSG B
*	61,613	39	Open Space-Good (>75% grass) HSG A
*	33,297	61	Open Space-Good (>75% grass) HSG B
	115,715	56	Weighted Average
	94,910		82.02% Pervious Area
	20,805		17.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	300	0.0283	0.36		**Lag/CN Method,**

Subcatchment S2: S#2



Summary for Subcatchment S4: S#4

CarlsonPlanXYPos|1757146.2718|95239.2477|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

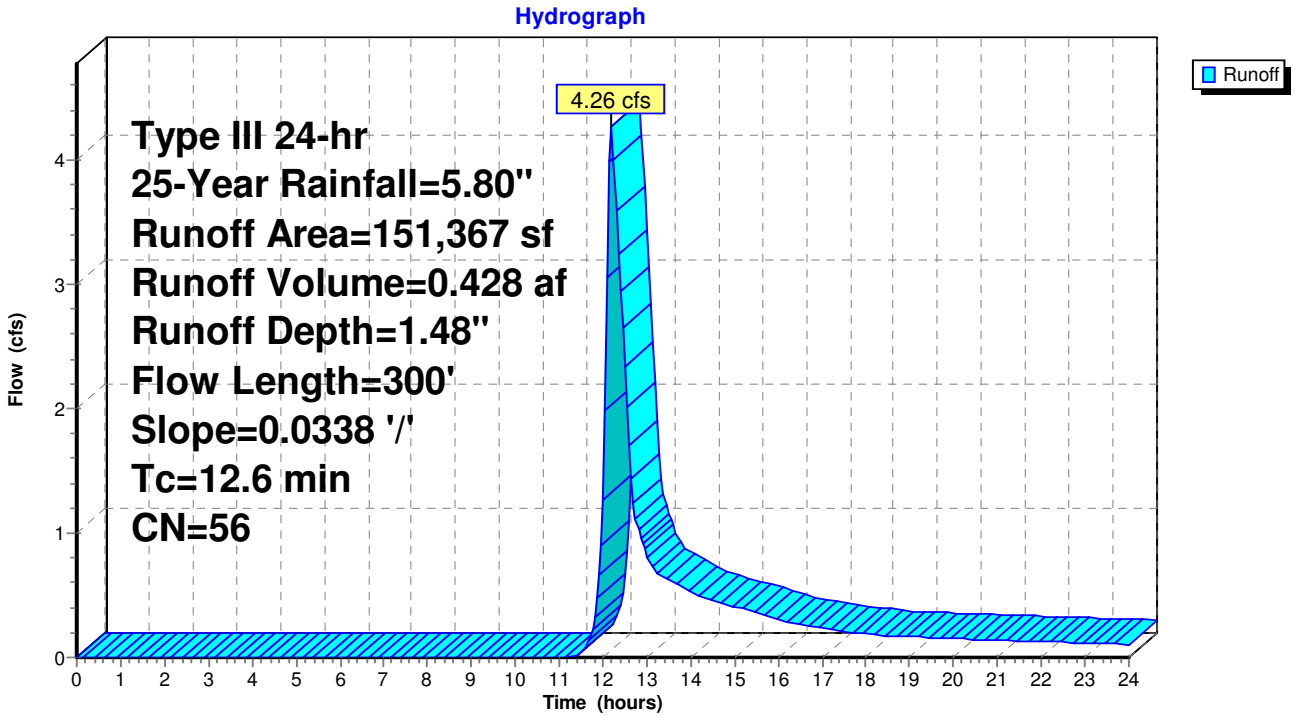
Runoff = 4.26 cfs @ 12.20 hrs, Volume= 0.428 af, Depth= 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	43,145	98	Paved Streets w/Curbs & Sewers HSG A
*	108,222	39	Open Space-Good (>75% grass) HSG A
	151,367	56	Weighted Average
	108,222		71.50% Pervious Area
	43,145		28.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	300	0.0338	0.40		**Lag/CN Method,**

Subcatchment S4: S#4



Summary for Reach 46R: TO LP 1

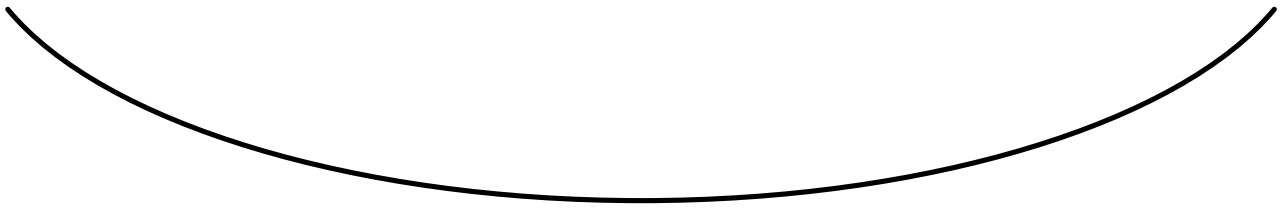
[81] Warning: Exceeded Pond 1P by 7.77' @ 0.00 hrs

Inflow Area = 1.714 ac, 34.86% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 9.55 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 467.7' Slope= 0.0082 '/'
Inlet Invert= 40.02', Outlet Invert= 36.17'



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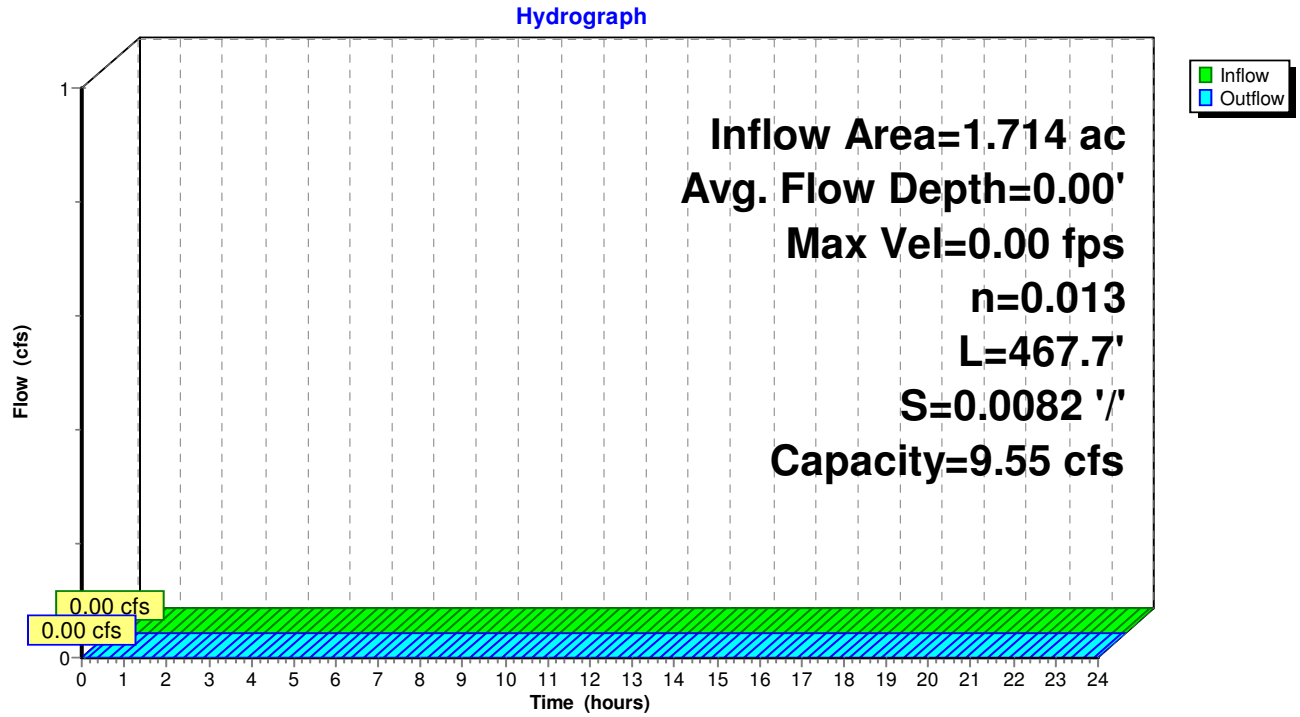


Summary for Reach 48R: TO LP2

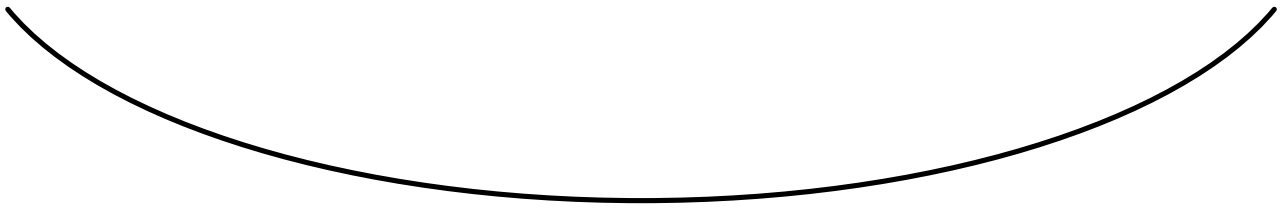
[81] Warning: Exceeded Pond 3P by 12.15' @ 0.00 hrs

Inflow Area = 4.137 ac, 23.77% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 7.64 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 370.0' Slope= 0.0053 '/'
Inlet Invert= 33.25', Outlet Invert= 31.30'



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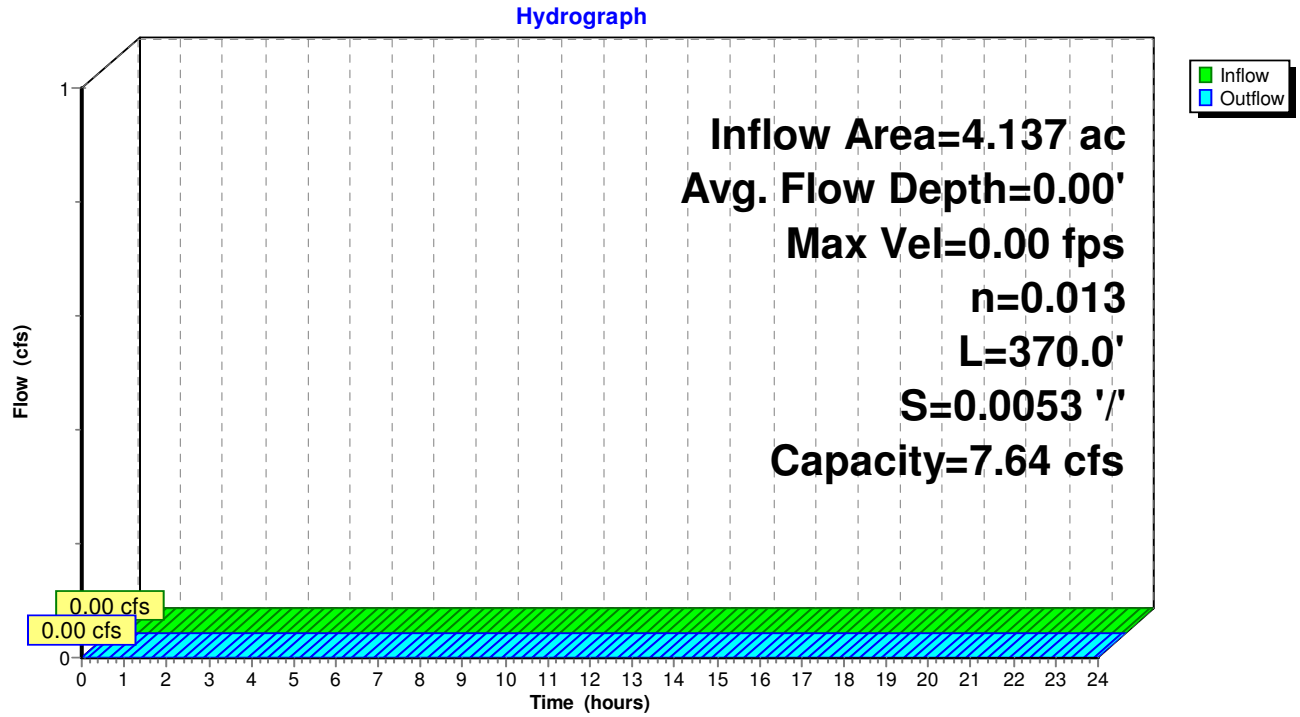


Summary for Reach 49R: TO LP 1

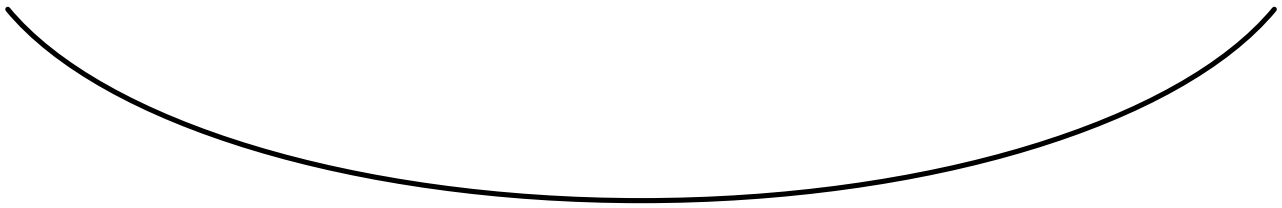
[81] Warning: Exceeded Pond 2P by 10.75' @ 0.00 hrs

Inflow Area = 2.656 ac, 17.98% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 12.84 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 190.0' Slope= 0.0149 '/'
Inlet Invert= 39.00', Outlet Invert= 36.17'



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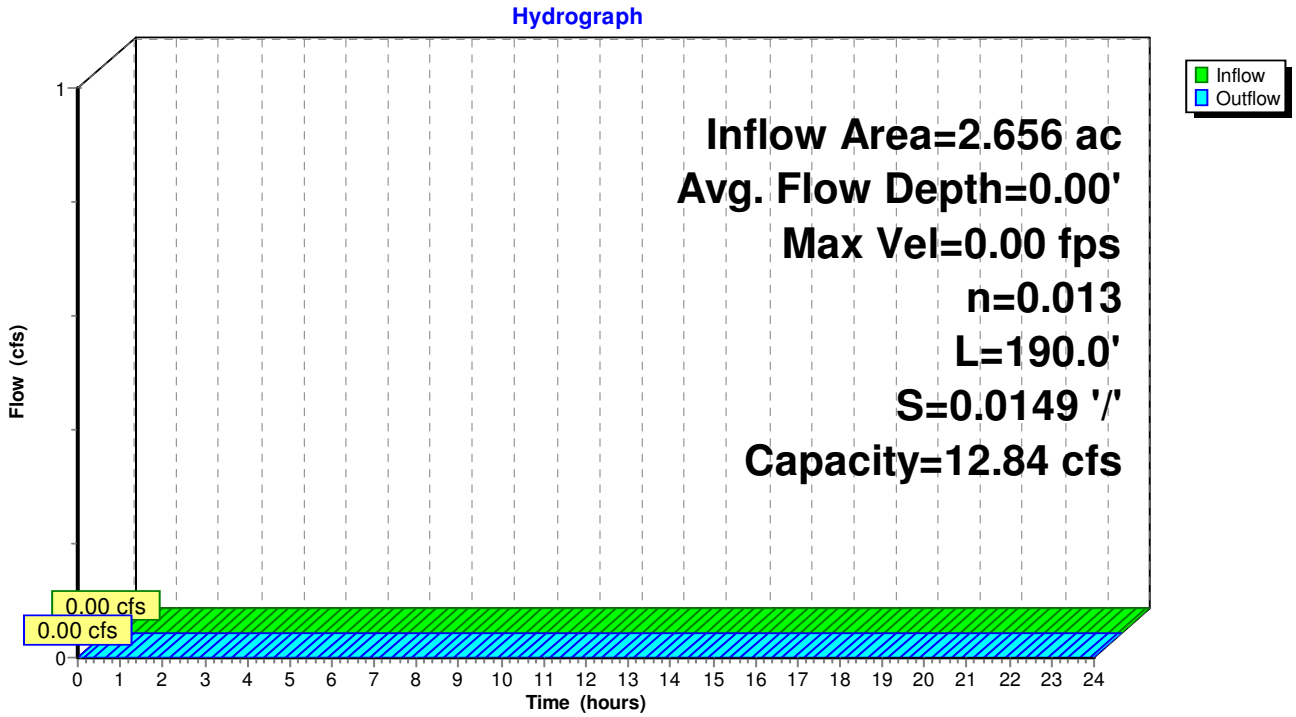
Reach 49R: TO LP 1



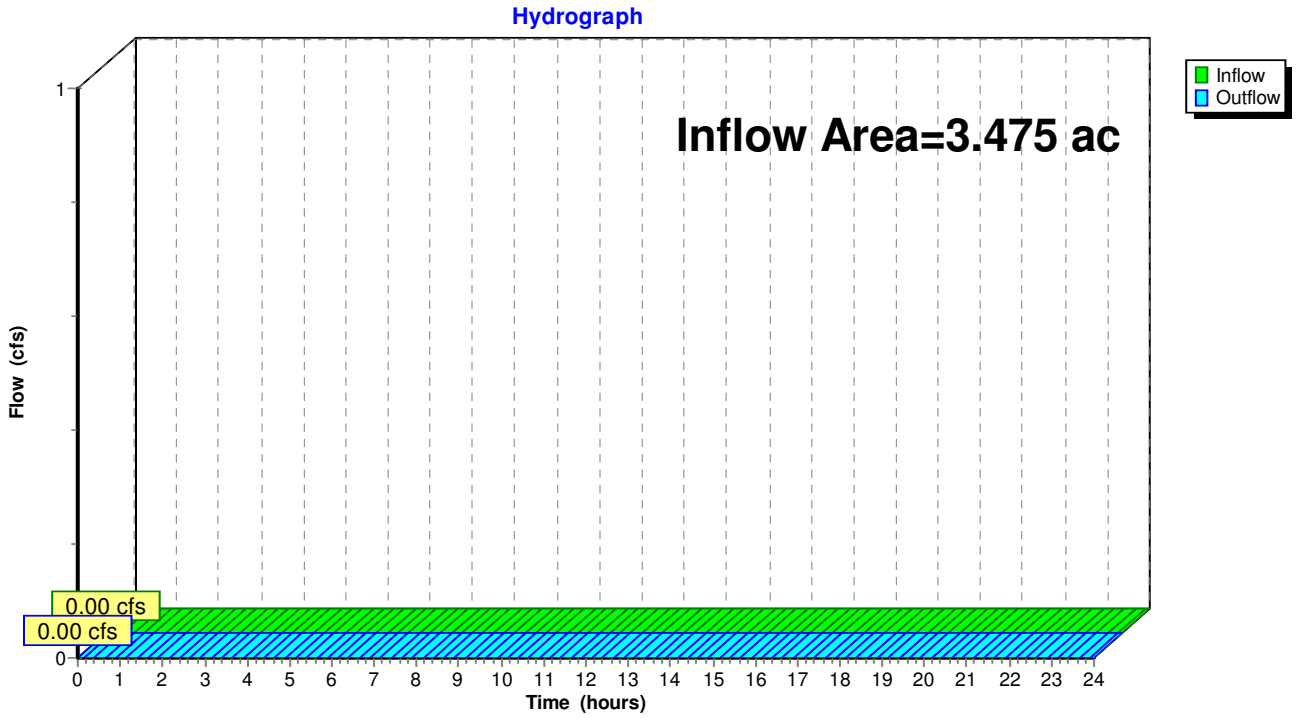
Summary for Reach 50R: (new Reach)

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.475 ac, 28.50% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Reach 50R: (new Reach)



Summary for Reach 51R: TO LP 1

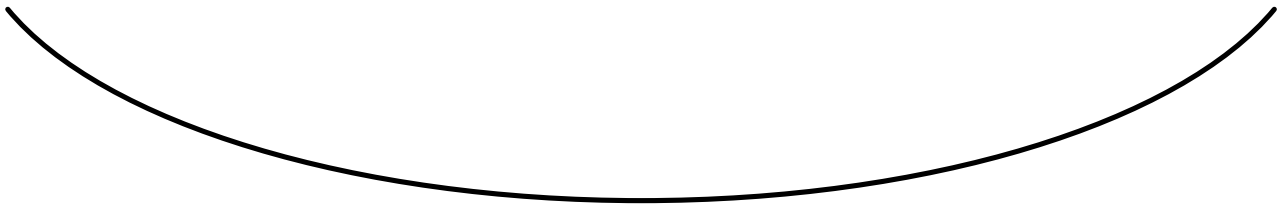
[81] Warning: Exceeded Pond 5P/6P by 12.69' @ 0.00 hrs

Inflow Area = 0.964 ac, 64.13% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 10.20 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 431.0' Slope= 0.0094 '/'
Inlet Invert= 40.22', Outlet Invert= 36.17'



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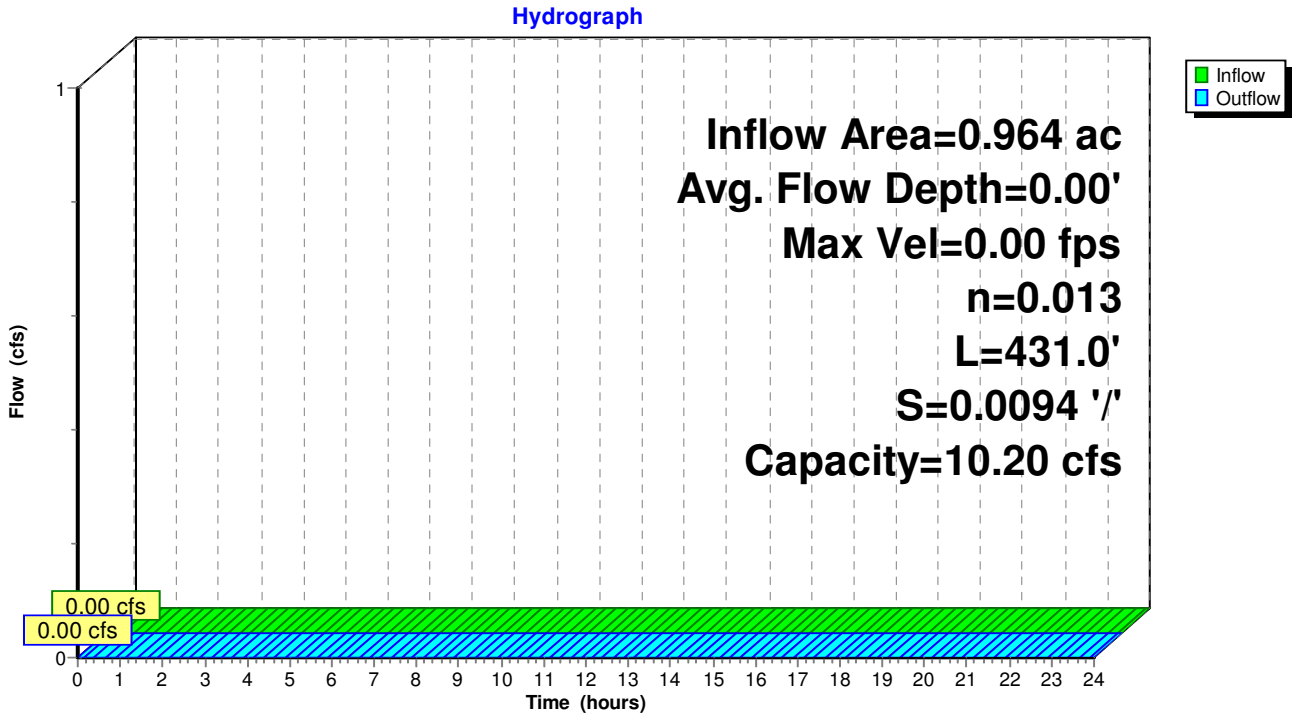
Reach 51R: TO LP 1



Summary for Reach 52R: TO LP2

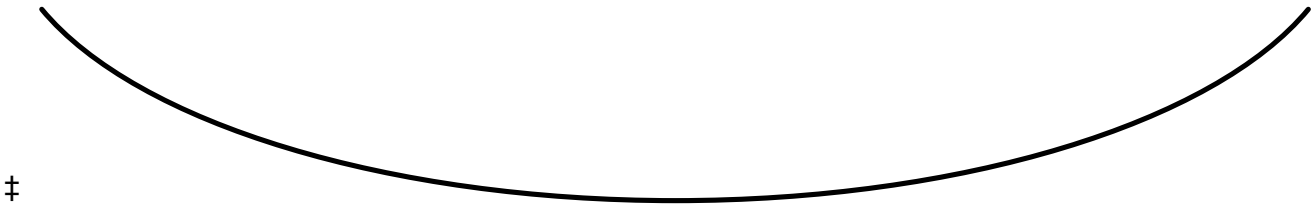
[81] Warning: Exceeded Pond 7P by 10.28' @ 0.00 hrs

Inflow Area = 1.743 ac, 62.25% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 8.53 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 592.0' Slope= 0.0066 '/'
Inlet Invert= 35.19', Outlet Invert= 31.30'



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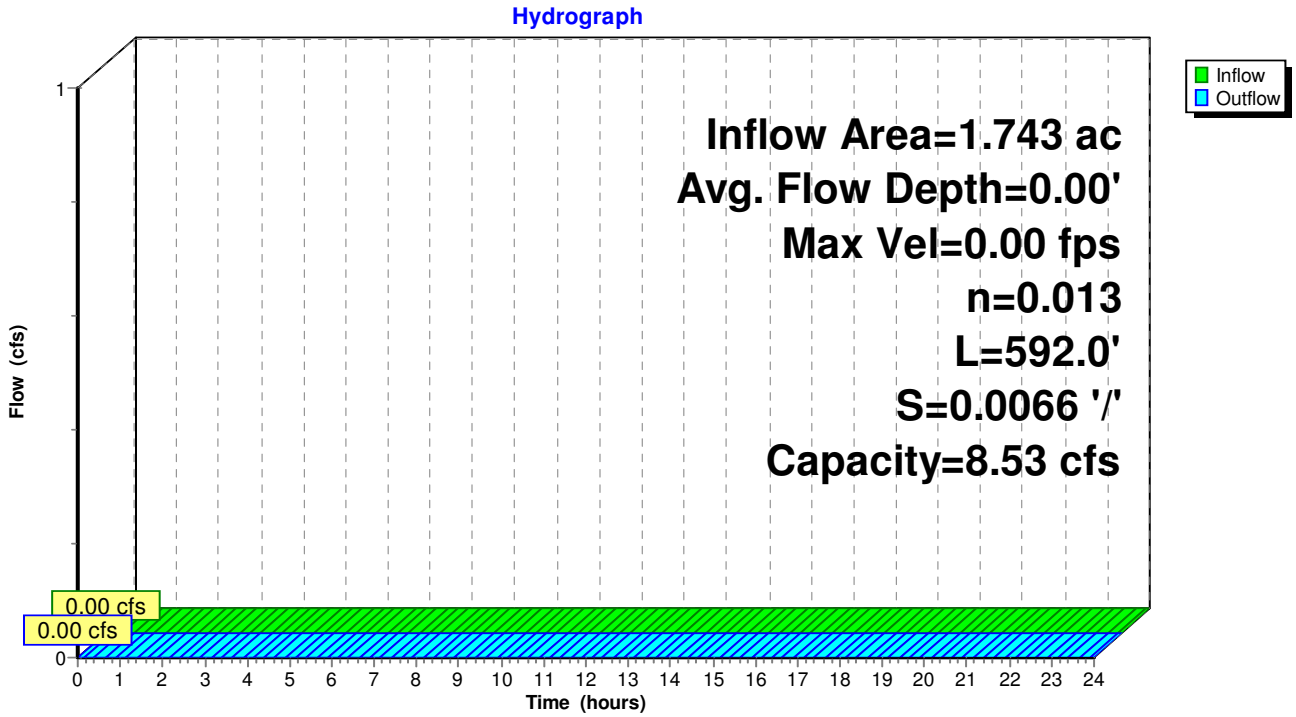
Reach 52R: TO LP2



Summary for Reach 53R: TO LP2

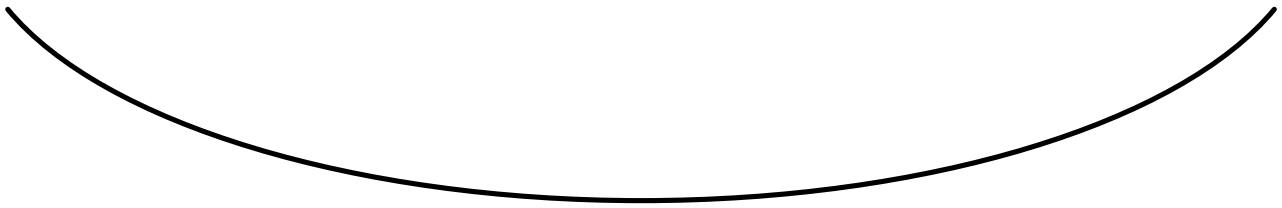
[81] Warning: Exceeded Pond 8P/9P by 9.39' @ 0.00 hrs

Inflow Area = 2.195 ac, 53.43% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 5.20 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 184.0' Slope= 0.0024 '/'
Inlet Invert= 31.75', Outlet Invert= 31.30'



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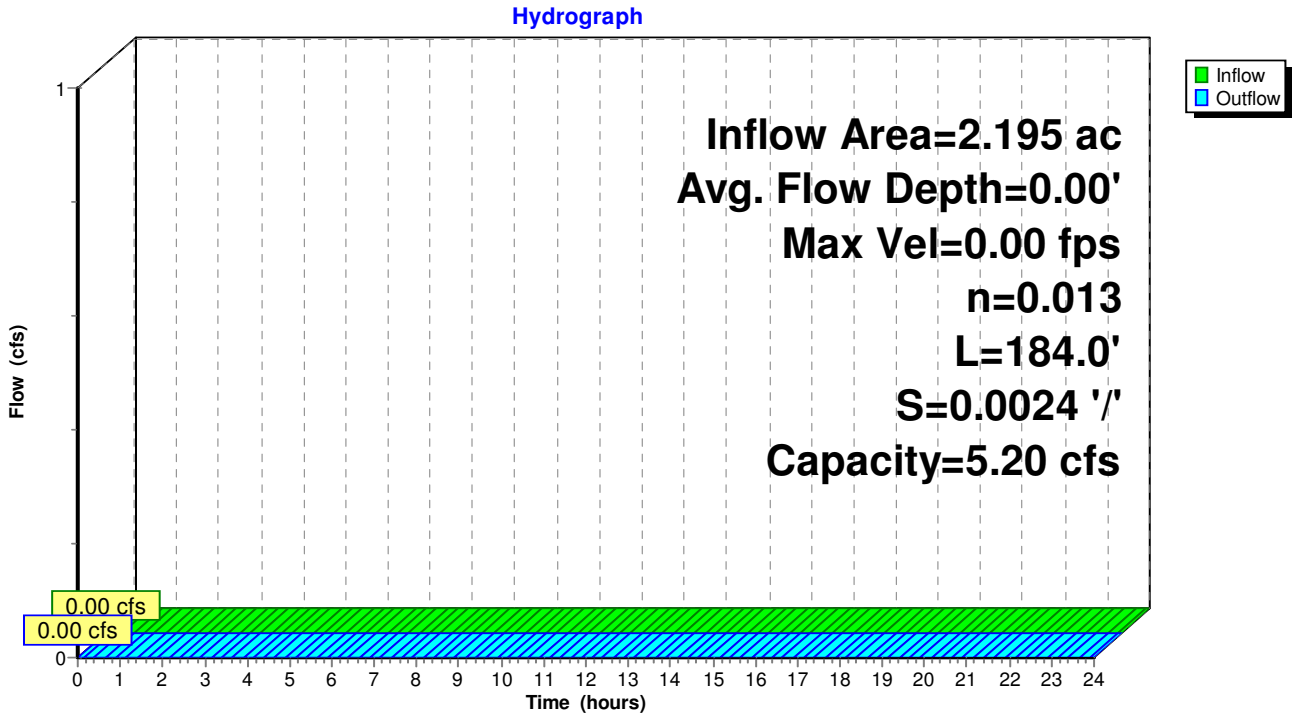


Summary for Reach 54R: TO LP2

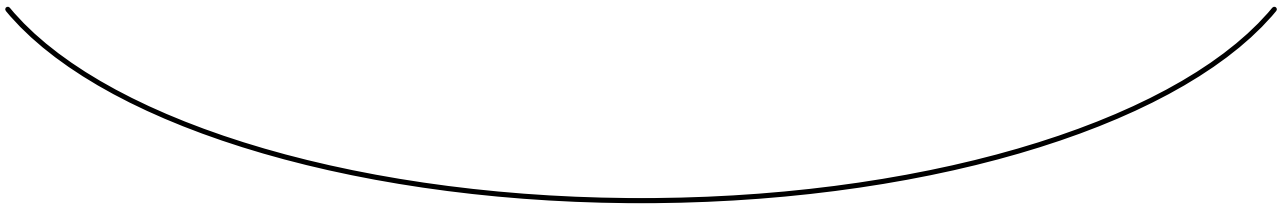
[81] Warning: Exceeded Pond 15P by 11.11' @ 0.00 hrs

Inflow Area = 5.029 ac, 28.62% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 2.62 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 372.0' Slope= 0.0006 '/'
Inlet Invert= 31.53', Outlet Invert= 31.30'



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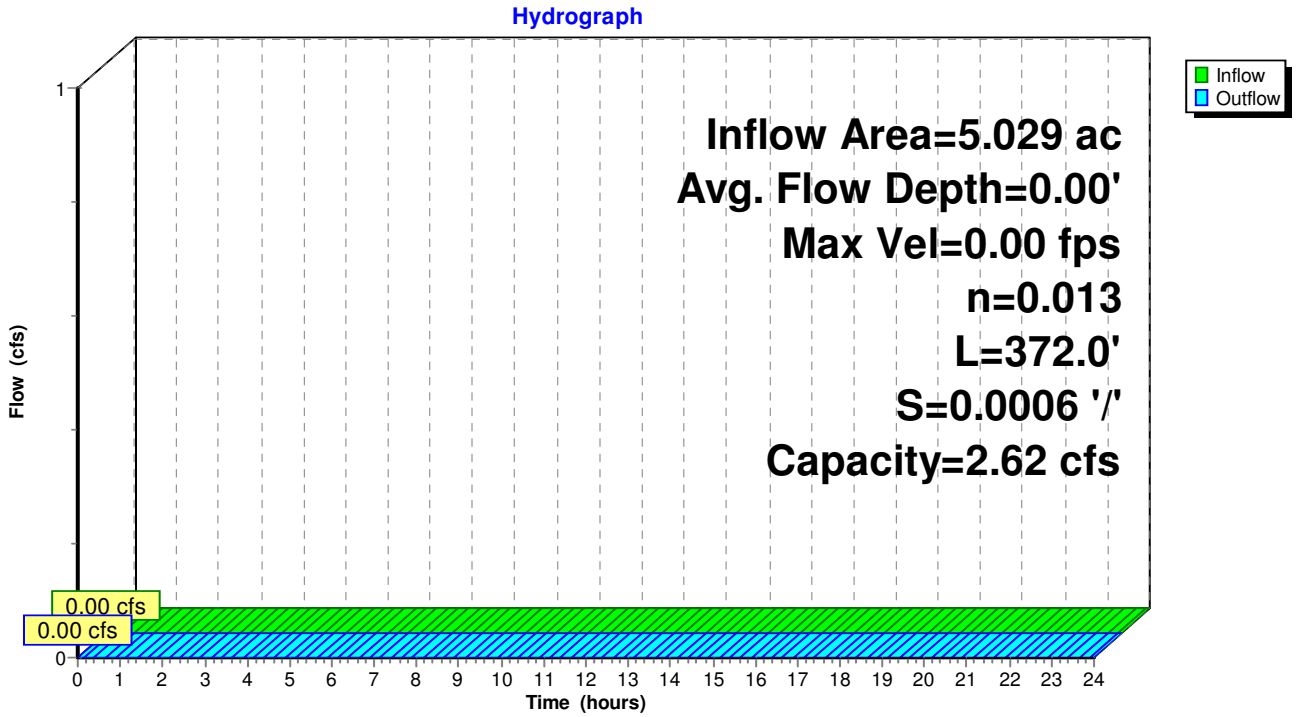


Summary for Reach 55R: TO LP2

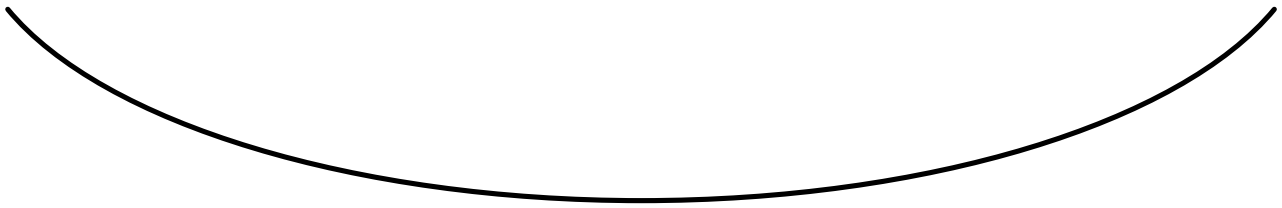
[81] Warning: Exceeded Pond 10P-14P by 11.07' @ 0.00 hrs

Inflow Area = 3.994 ac, 36.47% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 10.52 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 1.0' Slope= 0.0100 '/'
Inlet Invert= 31.30', Outlet Invert= 31.29'



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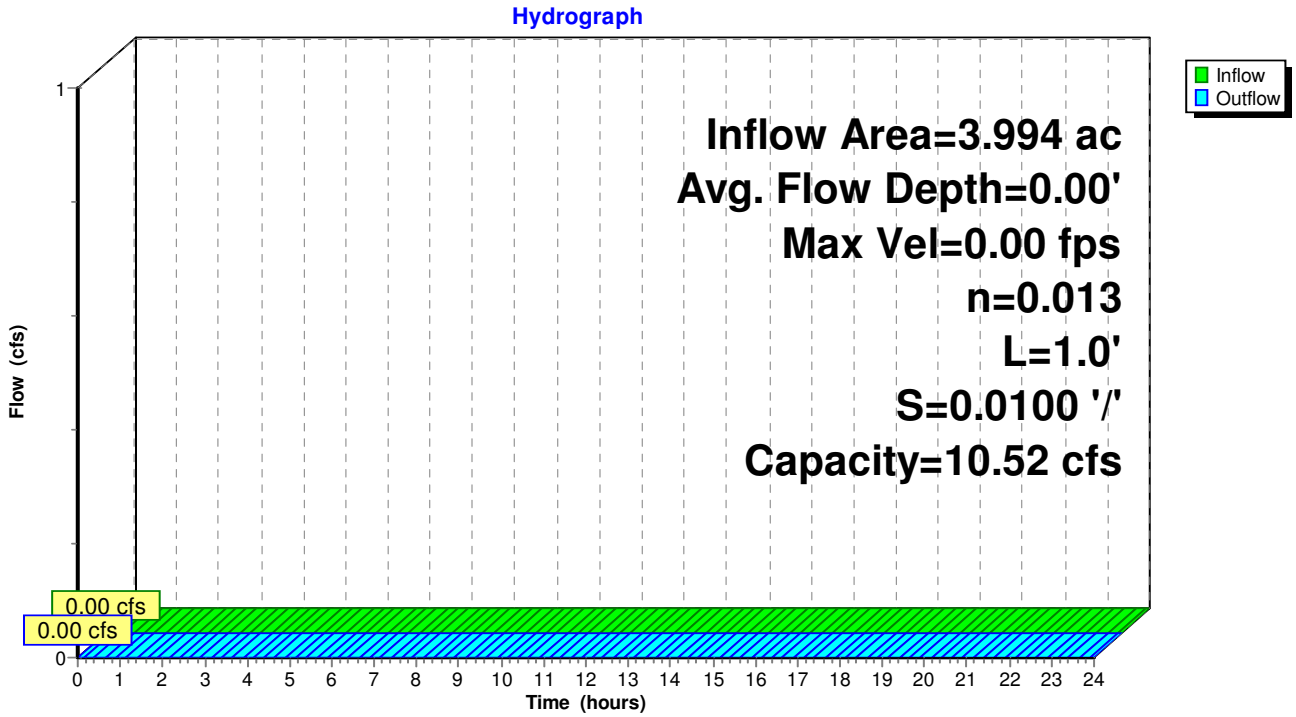
Reach 55R: TO LP2



Summary for Pond 1P: INFILTRATION 1

Inflow Area = 1.714 ac, 34.86% Impervious, Inflow Depth = 1.79" for 25-Year event
Inflow = 3.33 cfs @ 12.10 hrs, Volume= 0.256 af
Outflow = 0.24 cfs @ 11.75 hrs, Volume= 0.256 af, Atten= 93%, Lag= 0.0 min
Discarded = 0.24 cfs @ 11.75 hrs, Volume= 0.256 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 38.12' @ 14.66 hrs Surf.Area= 0.029 ac Storage= 0.110 af
Flood Elev= 42.00' Surf.Area= 0.029 ac Storage= 0.120 af

Plug-Flow detention time= 206.5 min calculated for 0.256 af (100% of inflow)
Center-of-Mass det. time= 206.4 min (1,071.5 - 865.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	32.25'	0.051 af	**46.67'W x 27.24'L x 6.75'H Field A** 0.197 af Overall - 0.069 af Embedded = 0.128 af x 40.0% Voids
#2A	33.00'	0.069 af	**ADS_StormTech MC-4500 +Cap** x 25 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf
		0.120 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	32.25'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	39.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.24 cfs @ 11.75 hrs HW=32.38' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=32.25' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 1P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

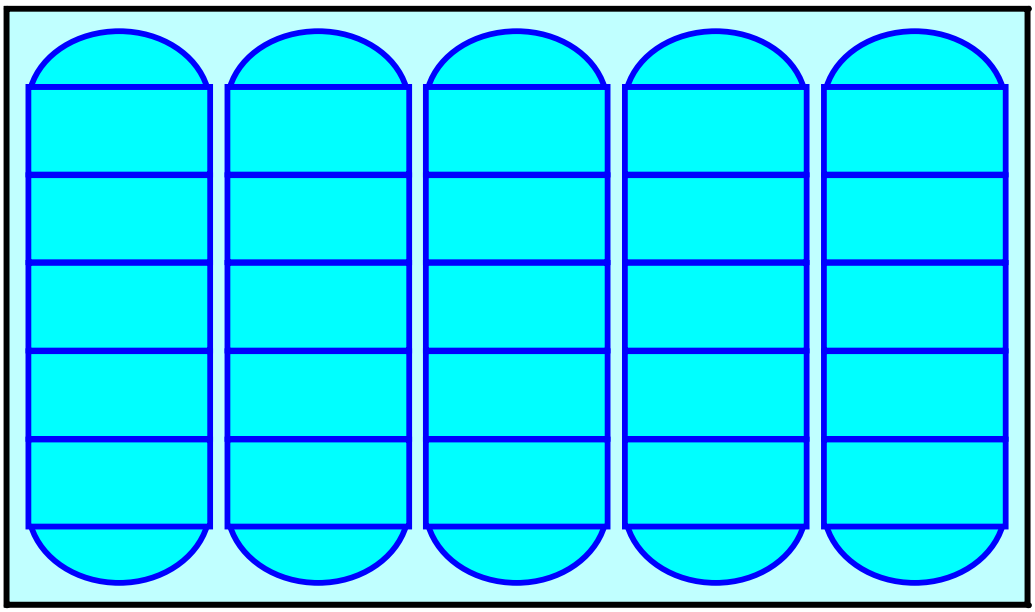
5 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 25.24' Row Length +12.0" End Stone x 2 = 27.24' Base Length
5 Rows x 100.0" Wide + 9.0" Spacing x 4 + 12.0" Side Stone x 2 = 46.67' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

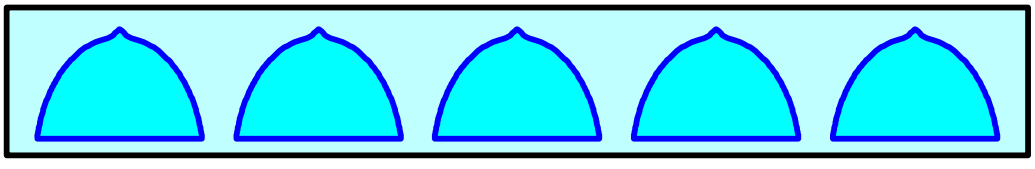
25 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 5 Rows = 3,019.3 cf Chamber Storage

8,581.1 cf Field - 3,019.3 cf Chambers = 5,561.9 cf Stone x 40.0% Voids = 2,224.7 cf Stone Storage

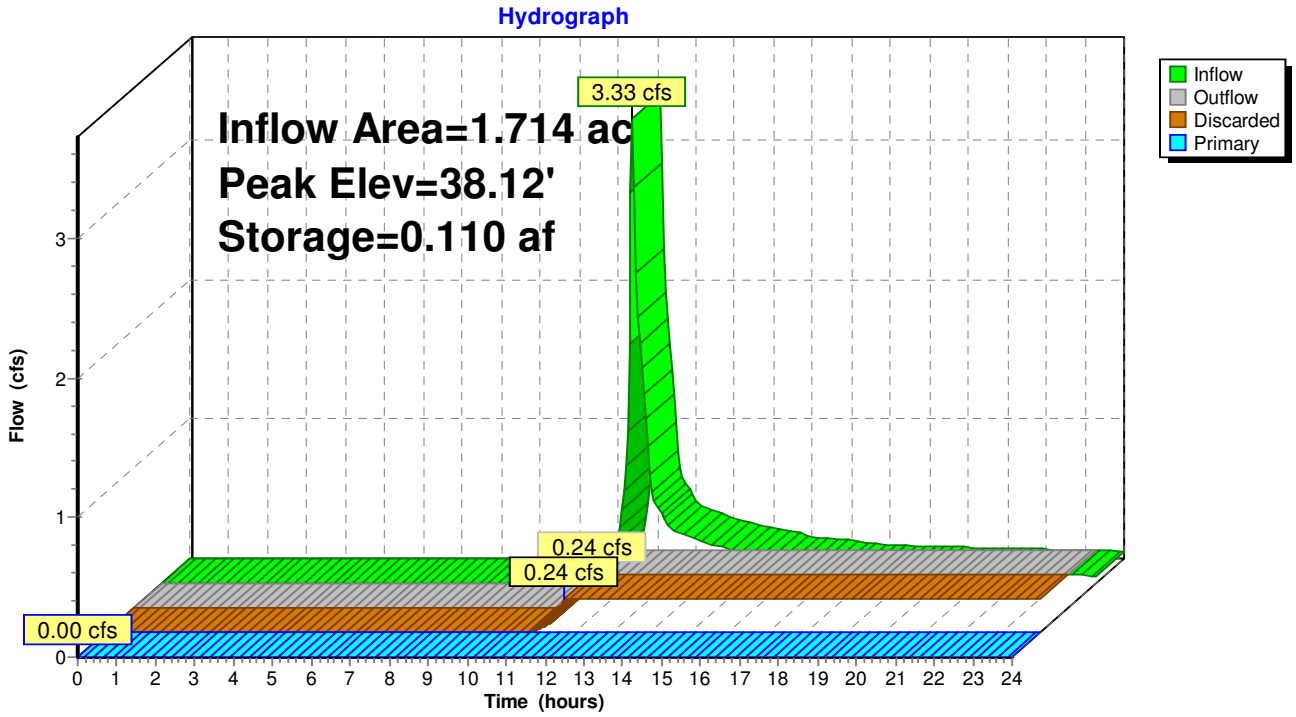
Chamber Storage + Stone Storage = 5,244.0 cf = 0.120 af
Overall Storage Efficiency = 61.1%

25 Chambers
317.8 cy Field
206.0 cy Stone





Pond 1P: INFILTRATION 1



Summary for Pond 2P: INFILTRATION 1

Inflow Area = 2.656 ac, 17.98% Impervious, Inflow Depth = 1.48" for 25-Year event
Inflow = 3.16 cfs @ 12.22 hrs, Volume= 0.328 af
Outflow = 0.31 cfs @ 11.90 hrs, Volume= 0.328 af, Atten= 90%, Lag= 0.0 min
Discarded = 0.31 cfs @ 11.90 hrs, Volume= 0.328 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 33.61' @ 15.04 hrs Surf.Area= 0.037 ac Storage= 0.136 af
Flood Elev= 35.00' Surf.Area= 0.037 ac Storage= 0.158 af

Plug-Flow detention time= 203.0 min calculated for 0.328 af (100% of inflow)
Center-of-Mass det. time= 203.0 min (1,086.8 - 883.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	28.25'	0.063 af	**37.58'W x 43.34'L x 6.75'H Field A** 0.252 af Overall - 0.095 af Embedded = 0.158 af x 40.0% Voids
#2A	29.00'	0.095 af	**ADS_StormTech MC-4500 +Cap** x 36 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf
		0.158 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	28.25'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	35.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.31 cfs @ 11.90 hrs HW=28.33' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.31 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=28.25' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

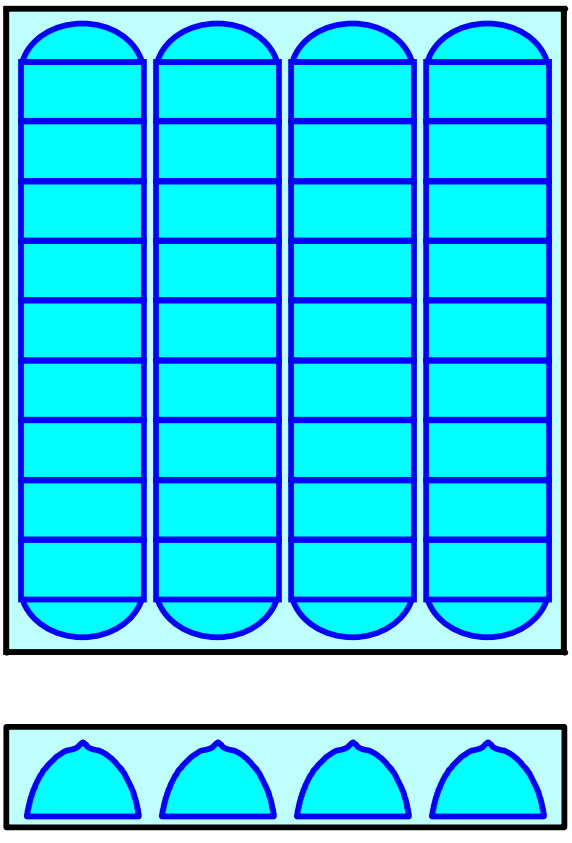
9 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 41.34' Row Length +12.0" End Stone x 2 = 43.34' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

36 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 4 Rows = 4,119.3 cf Chamber Storage

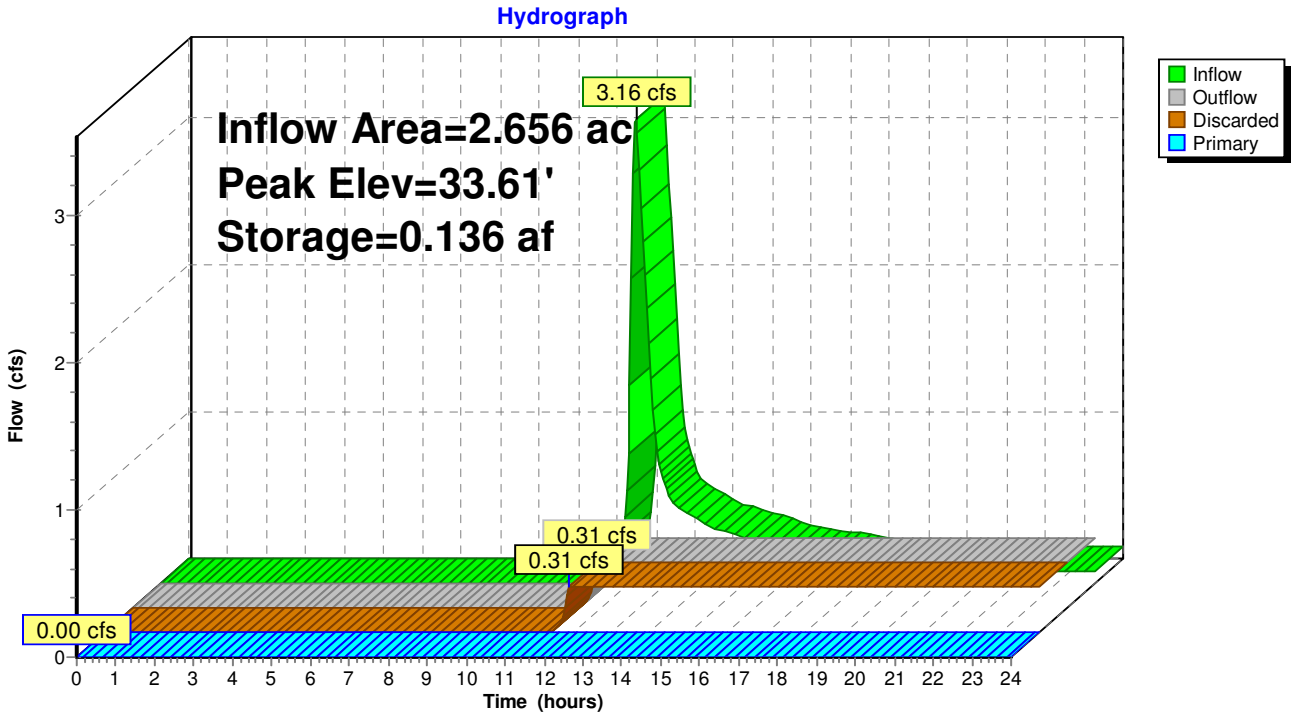
10,995.2 cf Field - 4,119.3 cf Chambers = 6,876.0 cf Stone x 40.0% Voids = 2,750.4 cf Stone Storage

Chamber Storage + Stone Storage = 6,869.6 cf = 0.158 af
Overall Storage Efficiency = 62.5%

36 Chambers
407.2 cy Field
254.7 cy Stone



Pond 2P: INFILTRATION 1



Summary for Pond 3P: INFILTRATION 1

Inflow Area = 4.137 ac, 23.77% Impervious, Inflow Depth = 1.26" for 25-Year event
Inflow = 3.73 cfs @ 12.26 hrs, Volume= 0.433 af
Outflow = 0.37 cfs @ 12.00 hrs, Volume= 0.433 af, Atten= 90%, Lag= 0.0 min
Discarded = 0.37 cfs @ 12.00 hrs, Volume= 0.433 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 27.81' @ 15.65 hrs Surf.Area= 0.044 ac Storage= 0.187 af
Flood Elev= 27.85' Surf.Area= 0.044 ac Storage= 0.188 af

Plug-Flow detention time= 242.9 min calculated for 0.433 af (100% of inflow)
Center-of-Mass det. time= 242.8 min (1,138.3 - 895.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	21.10'	0.074 af	**37.58'W x 51.39'L x 6.75'H Field A** 0.299 af Overall - 0.114 af Embedded = 0.185 af x 40.0% Voids
#2A	21.85'	0.114 af	**ADS_StormTech MC-4500 +Cap** x 44 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf
		0.188 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.10'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	27.85'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.37 cfs @ 12.00 hrs HW=21.22' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.37 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=21.10' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 3P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

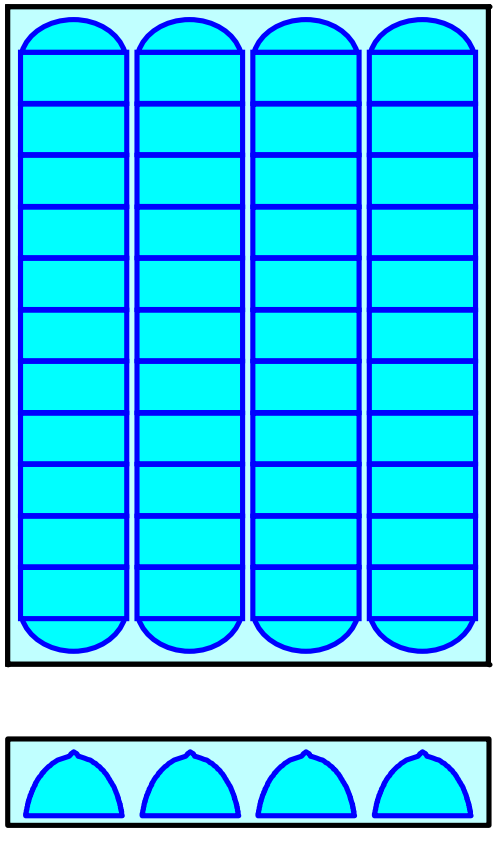
11 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 49.39' Row Length +12.0" End Stone x 2 = 51.39' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

44 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 4 Rows = 4,971.2 cf Chamber Storage

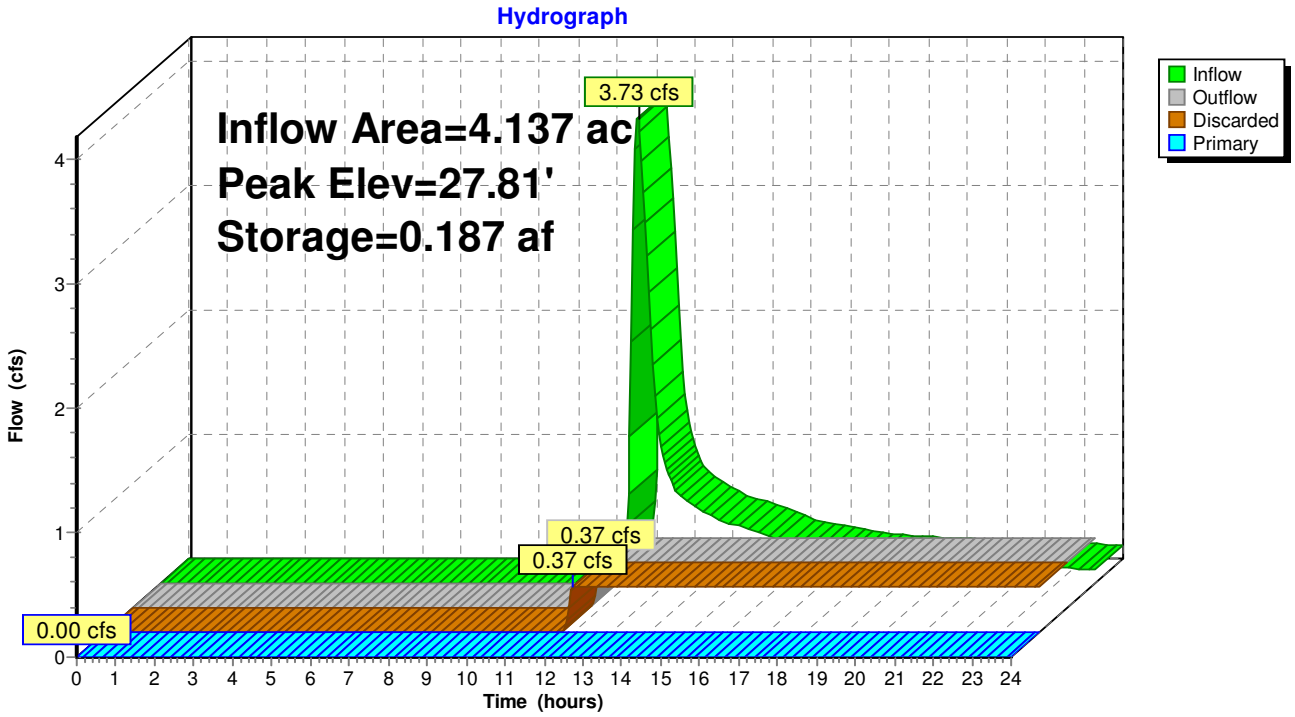
13,037.4 cf Field - 4,971.2 cf Chambers = 8,066.2 cf Stone x 40.0% Voids = 3,226.5 cf Stone Storage

Chamber Storage + Stone Storage = 8,197.7 cf = 0.188 af
Overall Storage Efficiency = 62.9%

44 Chambers
482.9 cy Field
298.7 cy Stone



Pond 3P: INFILTRATION 1



Summary for Pond 4P: INFILTRATION 1

Inflow Area = 3.475 ac, 28.50% Impervious, Inflow Depth = 1.48" for 25-Year event
Inflow = 4.26 cfs @ 12.20 hrs, Volume= 0.428 af
Outflow = 0.38 cfs @ 11.90 hrs, Volume= 0.428 af, Atten= 91%, Lag= 0.0 min
Discarded = 0.38 cfs @ 11.90 hrs, Volume= 0.428 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 34.53' @ 15.32 hrs Surf.Area= 0.045 ac Storage= 0.187 af
Flood Elev= 34.65' Surf.Area= 0.045 ac Storage= 0.189 af

Plug-Flow detention time= 234.3 min calculated for 0.428 af (100% of inflow)
Center-of-Mass det. time= 234.3 min (1,117.0 - 882.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	27.90'	0.077 af	**55.75'W x 35.29'L x 6.75'H Field A** 0.305 af Overall - 0.113 af Embedded = 0.192 af x 40.0% Voids
#2A	28.65'	0.113 af	**ADS_StormTech MC-4500 +Cap** x 42 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf
		0.189 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	27.90'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	34.65'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.38 cfs @ 11.90 hrs HW=28.01' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.38 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=27.90' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 4P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

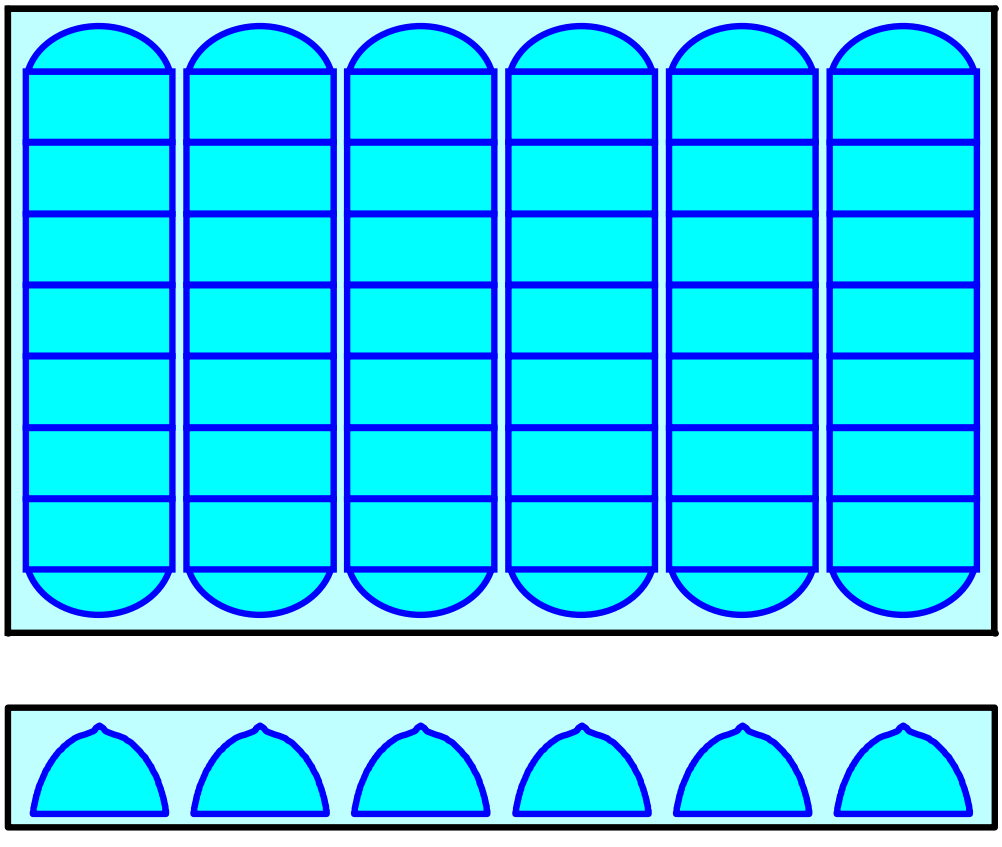
7 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 33.29' Row Length +12.0" End Stone x 2 = 35.29' Base Length
6 Rows x 100.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 55.75' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

42 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 6 Rows = 4,901.0 cf Chamber Storage

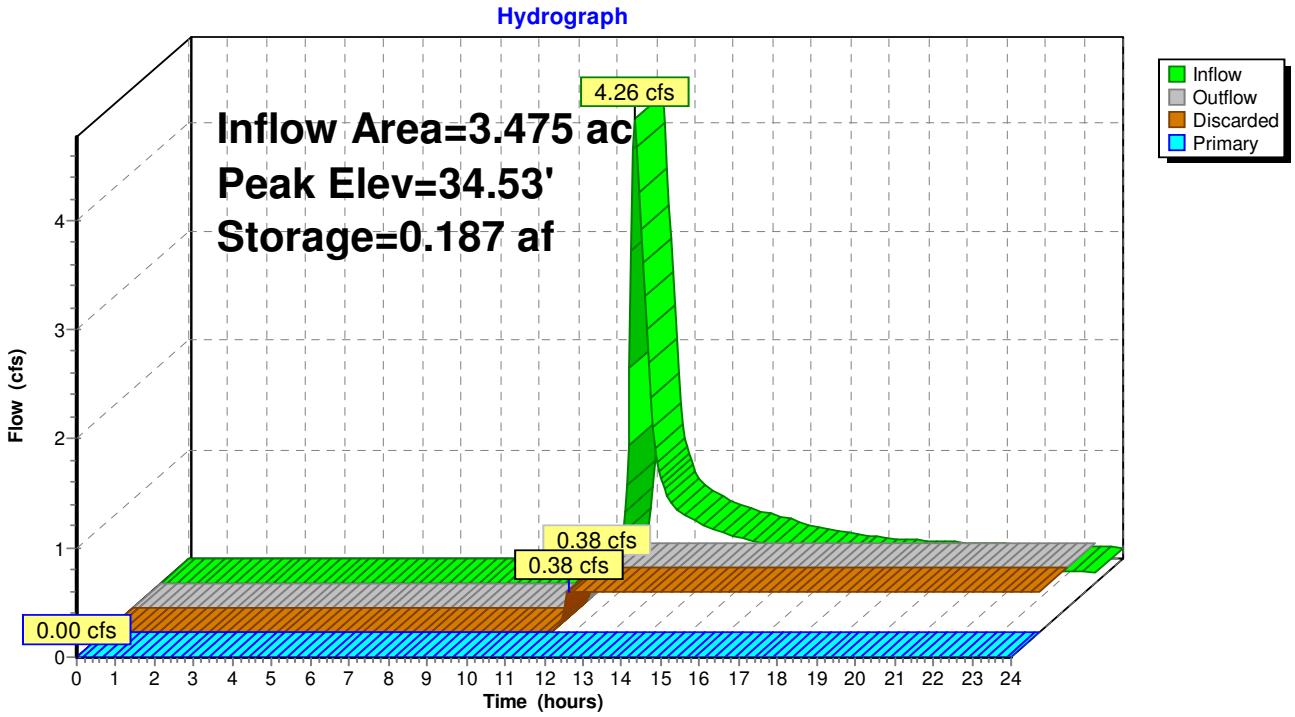
13,280.7 cf Field - 4,901.0 cf Chambers = 8,379.7 cf Stone x 40.0% Voids = 3,351.9 cf Stone Storage

Chamber Storage + Stone Storage = 8,252.9 cf = 0.189 af
Overall Storage Efficiency = 62.1%

42 Chambers
491.9 cy Field
310.4 cy Stone



Pond 4P: INFILTRATION 1



Summary for Pond 5P/6P: INFILTRATION 1

Inflow Area = 0.964 ac, 64.13% Impervious, Inflow Depth = 3.31" for 25-Year event
Inflow = 3.74 cfs @ 12.08 hrs, Volume= 0.266 af
Outflow = 0.24 cfs @ 11.40 hrs, Volume= 0.266 af, Atten= 94%, Lag= 0.0 min
Discarded = 0.24 cfs @ 11.40 hrs, Volume= 0.266 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 34.25' @ 13.99 hrs Surf.Area= 0.028 ac Storage= 0.119 af
Flood Elev= 34.28' Surf.Area= 0.028 ac Storage= 0.119 af

Plug-Flow detention time= 205.7 min calculated for 0.266 af (100% of inflow)
Center-of-Mass det. time= 205.5 min (1,026.4 - 820.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	27.53'	0.048 af	**28.50'W x 43.34'L x 6.75'H Field A** 0.191 af Overall - 0.071 af Embedded = 0.120 af x 40.0% Voids
#2A	28.28'	0.071 af	**ADS_StormTech MC-4500 +Cap** x 27 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
		0.119 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	27.53'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	34.28'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.24 cfs @ 11.40 hrs HW=27.60' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=27.53' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 5P/6P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

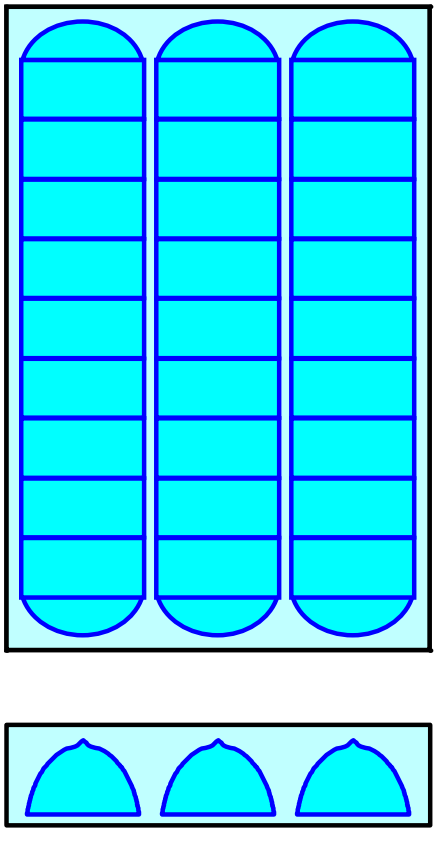
9 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 41.34' Row Length +12.0" End Stone x 2 = 43.34' Base Length
3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

27 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 3,089.4 cf Chamber Storage

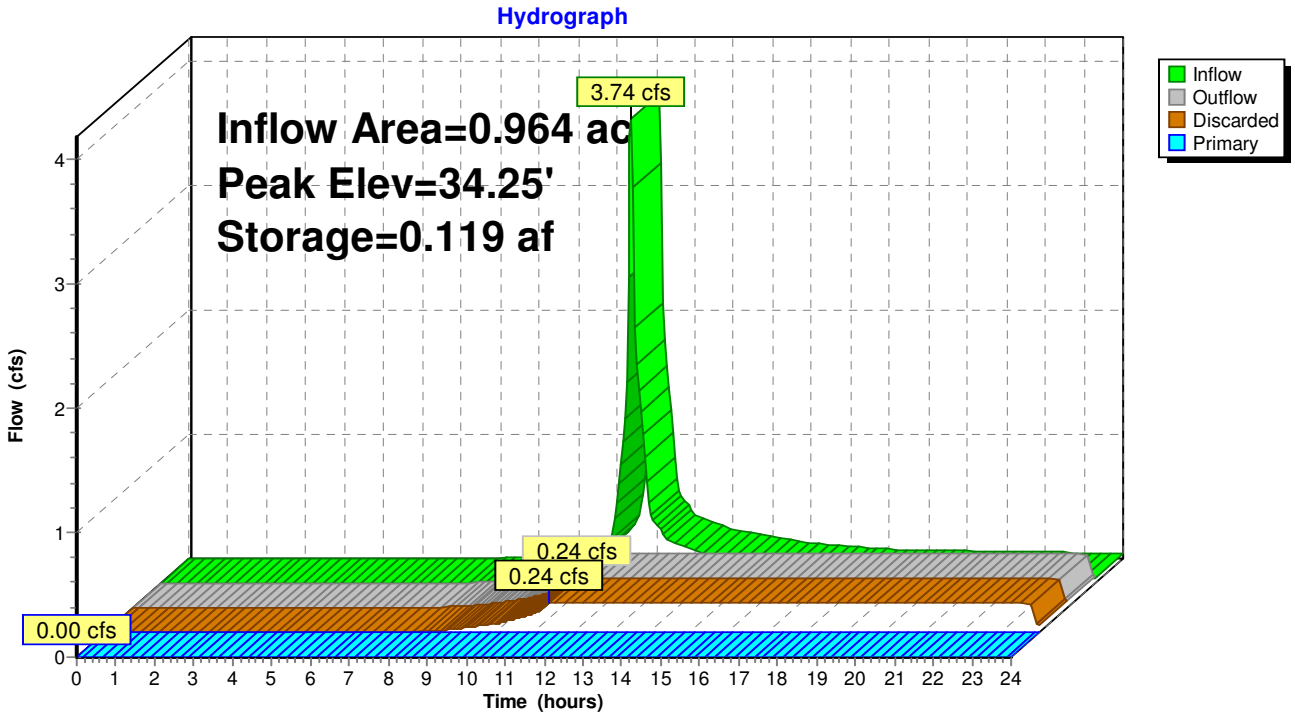
8,337.9 cf Field - 3,089.4 cf Chambers = 5,248.4 cf Stone x 40.0% Voids = 2,099.4 cf Stone Storage

Chamber Storage + Stone Storage = 5,188.8 cf = 0.119 af
Overall Storage Efficiency = 62.2%

27 Chambers
308.8 cy Field
194.4 cy Stone



Pond 5P/6P: INFILTRATION 1



Summary for Pond 7P: INFILTRATION 1

Inflow Area = 1.743 ac, 62.25% Impervious, Inflow Depth = 3.21" for 25-Year event
Inflow = 5.54 cfs @ 12.15 hrs, Volume= 0.466 af
Outflow = 0.42 cfs @ 11.50 hrs, Volume= 0.466 af, Atten= 92%, Lag= 0.0 min
Discarded = 0.42 cfs @ 11.50 hrs, Volume= 0.466 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 31.24' @ 14.07 hrs Surf.Area= 0.051 ac Storage= 0.207 af
Flood Elev= 31.66' Surf.Area= 0.051 ac Storage= 0.215 af

Plug-Flow detention time= 201.5 min calculated for 0.465 af (100% of inflow)
Center-of-Mass det. time= 201.3 min (1,031.3 - 830.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	24.91'	0.085 af	**46.67'W x 47.37'L x 6.75'H Field A** 0.343 af Overall - 0.130 af Embedded = 0.212 af x 40.0% Voids
#2A	25.66'	0.130 af	**ADS_StormTech MC-4500 +Cap** x 50 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf
		0.215 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.91'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	31.66'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.42 cfs @ 11.50 hrs HW=24.98' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.42 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=24.91' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 7P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

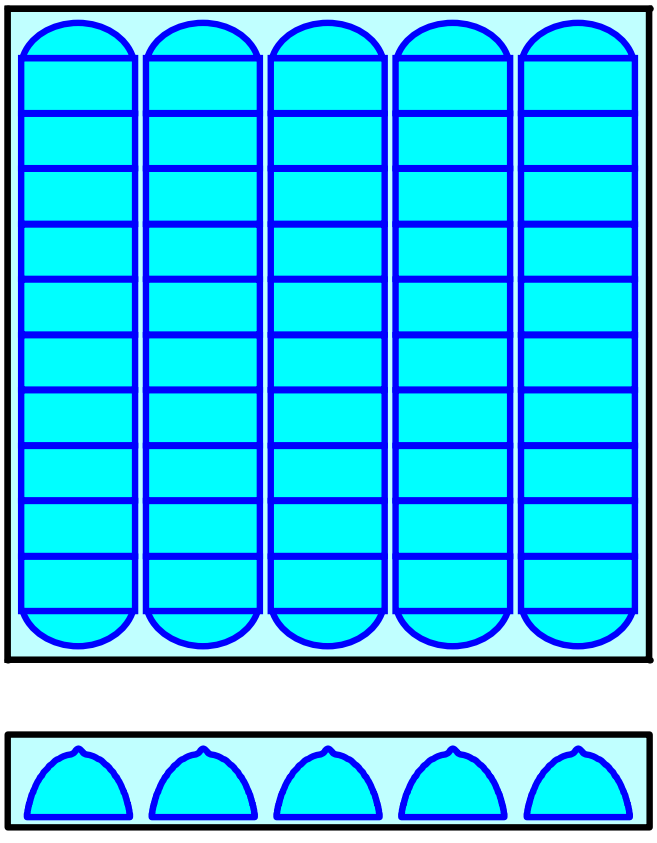
10 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 45.37' Row Length +12.0" End Stone x 2 = 47.37' Base Length
5 Rows x 100.0" Wide + 9.0" Spacing x 4 + 12.0" Side Stone x 2 = 46.67' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

50 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 5 Rows = 5,681.5 cf Chamber Storage

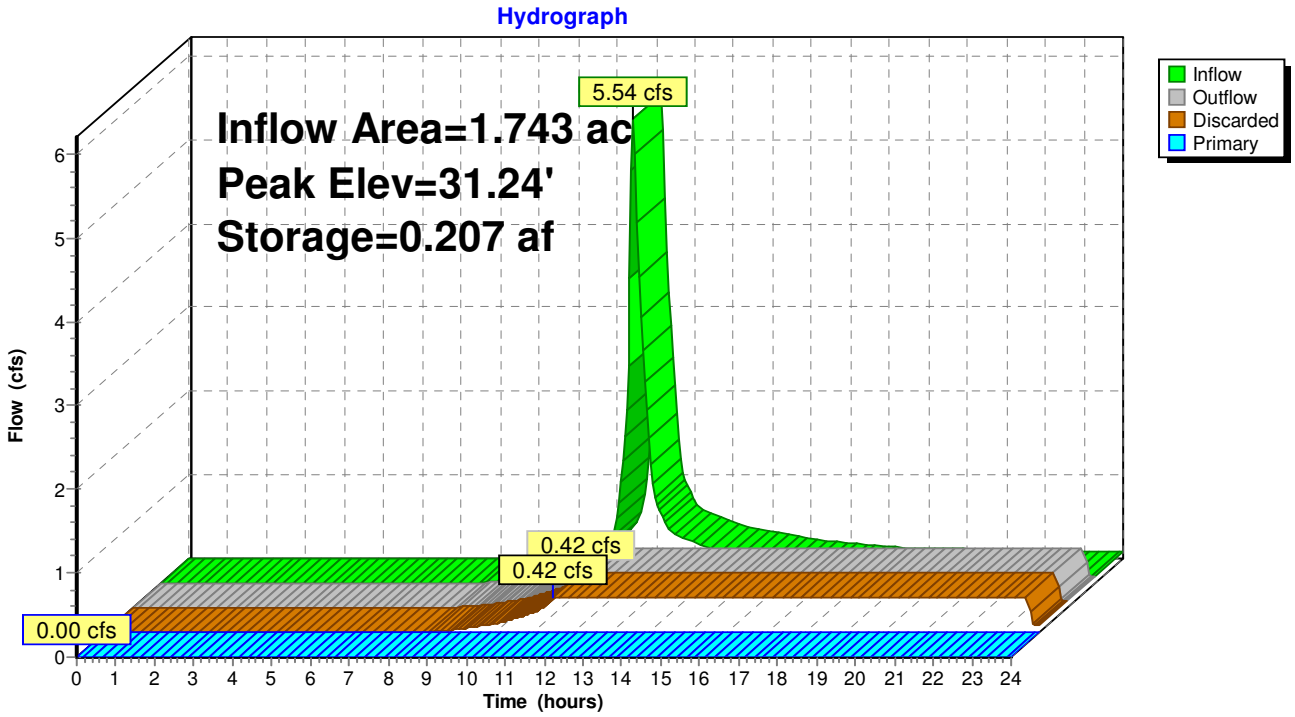
14,920.5 cf Field - 5,681.5 cf Chambers = 9,239.0 cf Stone x 40.0% Voids = 3,695.6 cf Stone Storage

Chamber Storage + Stone Storage = 9,377.1 cf = 0.215 af
Overall Storage Efficiency = 62.8%

50 Chambers
552.6 cy Field
342.2 cy Stone



Pond 7P: INFILTRATION 1



Summary for Pond 8P/9P: INFILTRATION 1

Inflow Area = 2.195 ac, 53.43% Impervious, Inflow Depth = 2.69" for 25-Year event
Inflow = 6.01 cfs @ 12.14 hrs, Volume= 0.493 af
Outflow = 0.46 cfs @ 11.65 hrs, Volume= 0.493 af, Atten= 92%, Lag= 0.0 min
Discarded = 0.46 cfs @ 11.65 hrs, Volume= 0.493 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 28.39' @ 14.19 hrs Surf.Area= 0.055 ac Storage= 0.218 af
Flood Elev= 29.11' Surf.Area= 0.055 ac Storage= 0.234 af

Plug-Flow detention time= 204.3 min calculated for 0.492 af (100% of inflow)
Center-of-Mass det. time= 204.1 min (1,046.1 - 842.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	22.36'	0.090 af	**37.58'W x 63.47'L x 6.75'H Field A** 0.370 af Overall - 0.143 af Embedded = 0.226 af x 40.0% Voids
#2A	23.11'	0.143 af	**ADS_StormTech MC-4500 +Cap** x 56 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf
		0.234 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.36'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	29.11'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.46 cfs @ 11.65 hrs HW=22.44' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.46 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.36' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 8P/9P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

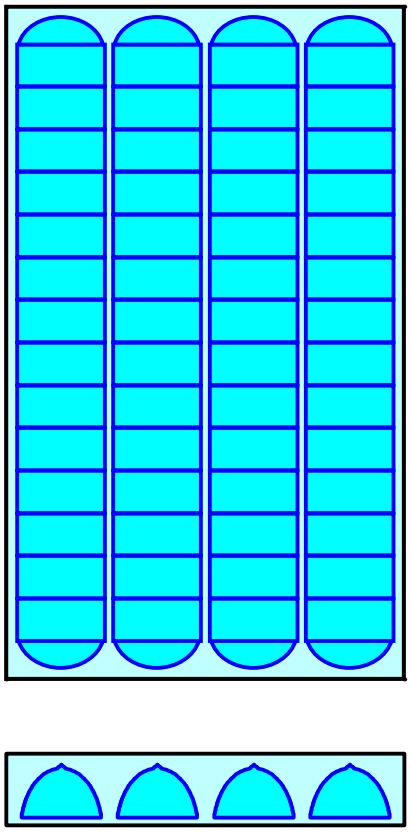
14 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 61.47' Row Length +12.0" End Stone x 2 = 63.47' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

56 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 4 Rows = 6,249.1 cf Chamber Storage

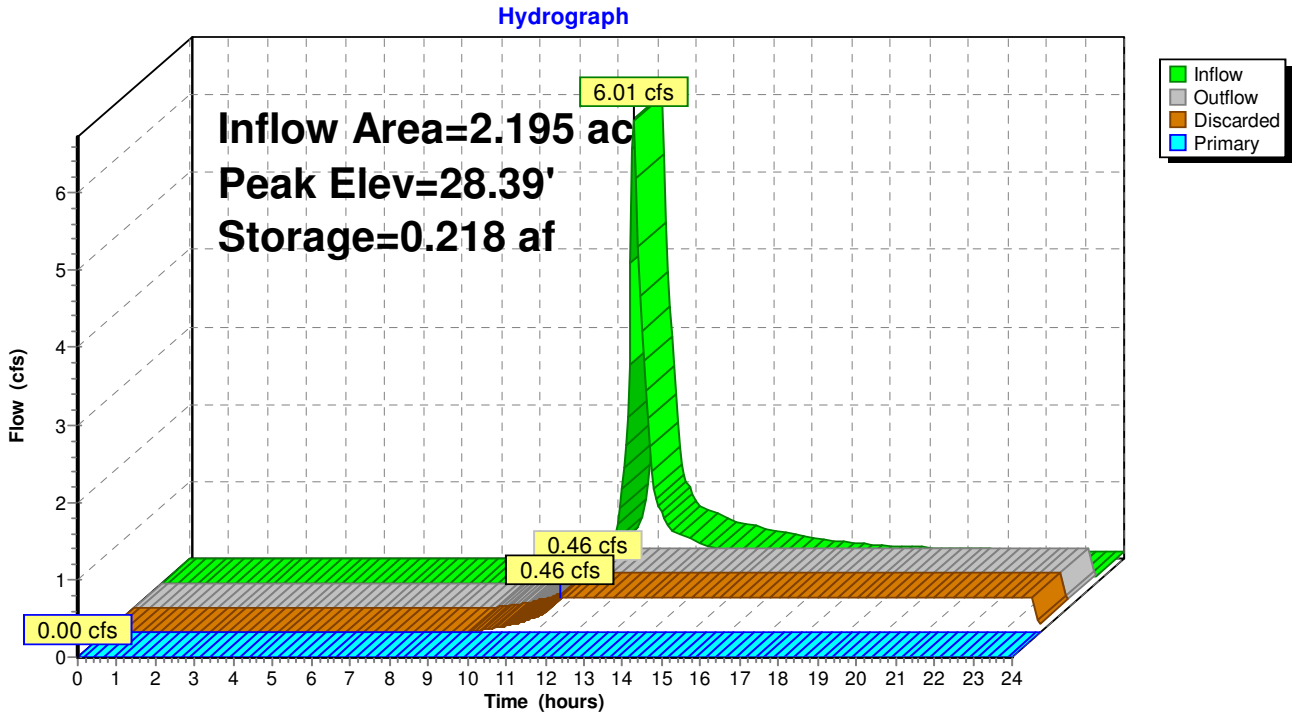
16,100.7 cf Field - 6,249.1 cf Chambers = 9,851.6 cf Stone x 40.0% Voids = 3,940.7 cf Stone Storage

Chamber Storage + Stone Storage = 10,189.7 cf = 0.234 af
Overall Storage Efficiency = 63.3%

56 Chambers
596.3 cy Field
364.9 cy Stone



Pond 8P/9P: INFILTRATION 1



Summary for Pond 10P-14P: INFILTRATION 1

Inflow Area = 3.994 ac, 36.47% Impervious, Inflow Depth = 1.87" for 25-Year event
Inflow = 5.78 cfs @ 12.17 hrs, Volume= 0.621 af
Outflow = 0.55 cfs @ 11.75 hrs, Volume= 0.621 af, Atten= 91%, Lag= 0.0 min
Discarded = 0.55 cfs @ 11.75 hrs, Volume= 0.621 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 26.71' @ 14.98 hrs Surf.Area= 0.066 ac Storage= 0.273 af
Flood Elev= 26.98' Surf.Area= 0.066 ac Storage= 0.280 af

Plug-Flow detention time= 226.3 min calculated for 0.621 af (100% of inflow)
Center-of-Mass det. time= 226.2 min (1,093.3 - 867.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	20.23'	0.109 af	**55.75'W x 51.39'L x 6.75'H Field A** 0.444 af Overall - 0.171 af Embedded = 0.273 af x 40.0% Voids
#2A	20.98'	0.171 af	**ADS_StormTech MC-4500 +Cap** x 66 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf
		0.280 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	20.23'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	26.98'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.55 cfs @ 11.75 hrs HW=20.31' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.55 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=20.23' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 10P-14P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

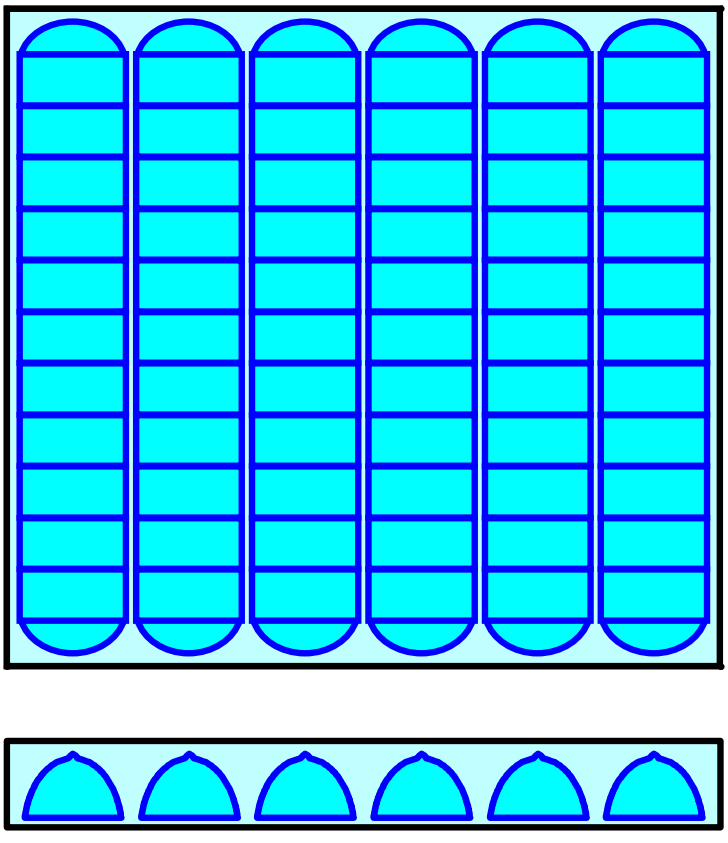
11 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 49.39' Row Length +12.0" End Stone x 2 = 51.39' Base Length
6 Rows x 100.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 55.75' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

66 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 6 Rows = 7,456.8 cf Chamber Storage

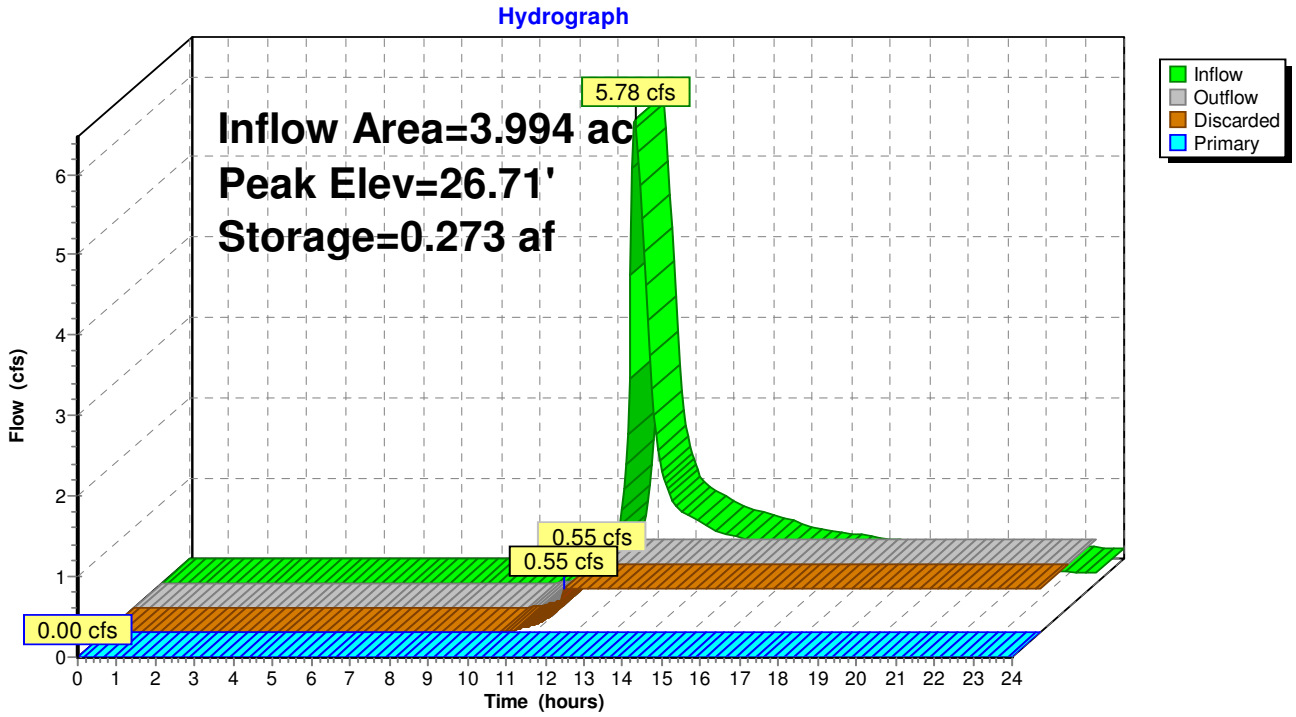
19,339.3 cf Field - 7,456.8 cf Chambers = 11,882.6 cf Stone x 40.0% Voids = 4,753.0 cf Stone Storage

Chamber Storage + Stone Storage = 12,209.8 cf = 0.280 af
Overall Storage Efficiency = 63.1%

66 Chambers
716.3 cy Field
440.1 cy Stone



Pond 10P-14P: INFILTRATION 1



Summary for Pond 15P: INFILTRATION 1

Inflow Area = 5.029 ac, 28.62% Impervious, Inflow Depth = 1.48" for 25-Year event
Inflow = 3.75 cfs @ 12.64 hrs, Volume= 0.620 af
Outflow = 0.53 cfs @ 12.15 hrs, Volume= 0.620 af, Atten= 86%, Lag= 0.0 min
Discarded = 0.53 cfs @ 12.15 hrs, Volume= 0.620 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 26.97' @ 15.85 hrs Surf.Area= 0.064 ac Storage= 0.267 af
Flood Elev= 27.17' Surf.Area= 0.064 ac Storage= 0.272 af

Plug-Flow detention time= 235.0 min calculated for 0.619 af (100% of inflow)
Center-of-Mass det. time= 234.8 min (1,144.3 - 909.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	20.42'	0.105 af	**46.67'W x 59.44'L x 6.75'H Field A** 0.430 af Overall - 0.167 af Embedded = 0.263 af x 40.0% Voids
#2A	21.17'	0.167 af	**ADS_StormTech MC-4500 +Cap** x 65 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf
		0.272 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	20.42'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	27.17'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.53 cfs @ 12.15 hrs HW=20.50' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.53 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=20.42' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 15P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

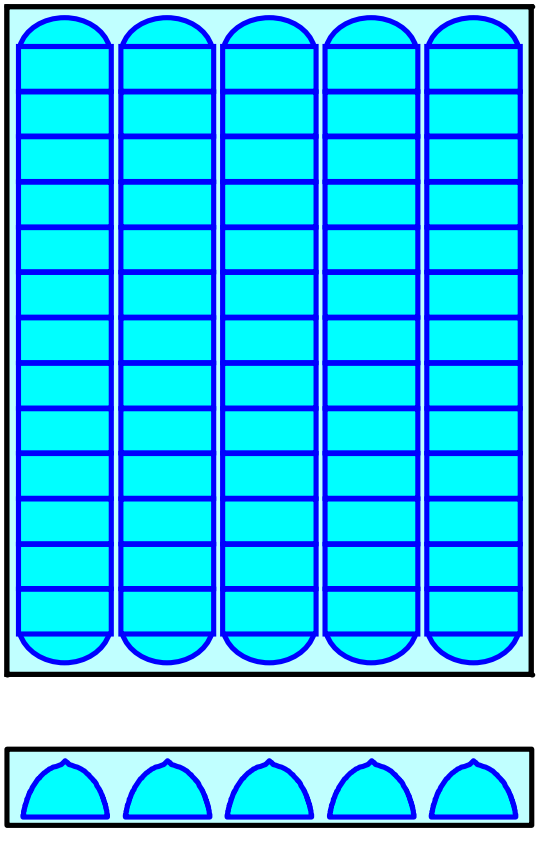
13 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 57.44' Row Length +12.0" End Stone x 2 = 59.44' Base Length
5 Rows x 100.0" Wide + 9.0" Spacing x 4 + 12.0" Side Stone x 2 = 46.67' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

65 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 5 Rows = 7,278.9 cf Chamber Storage

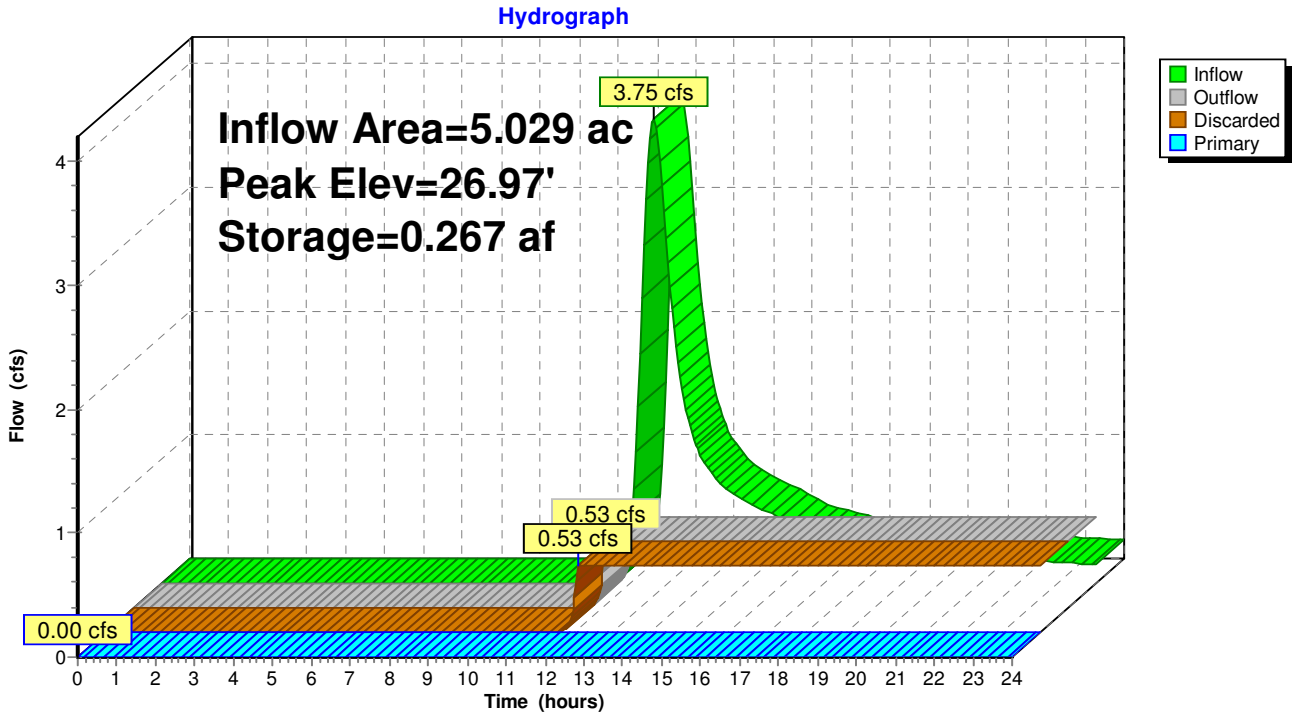
18,724.1 cf Field - 7,278.9 cf Chambers = 11,445.2 cf Stone x 40.0% Voids = 4,578.1 cf Stone Storage

Chamber Storage + Stone Storage = 11,857.0 cf = 0.272 af
Overall Storage Efficiency = 63.3%

65 Chambers
693.5 cy Field
423.9 cy Stone



Pond 15P: INFILTRATION 1



Summary for Pond 100Y LP-1: LOW SPOT ROAD G STA 15-19

[62] Hint: Exceeded Reach 46R OUTLET depth by 0.33' @ 0.00 hrs
[62] Hint: Exceeded Reach 49R OUTLET depth by 0.33' @ 0.00 hrs
[62] Hint: Exceeded Reach 51R OUTLET depth by 0.33' @ 0.00 hrs

Inflow Area = 8.809 ac, 30.47% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 36.50' @ 0.00 hrs Surf.Area= 5,746 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

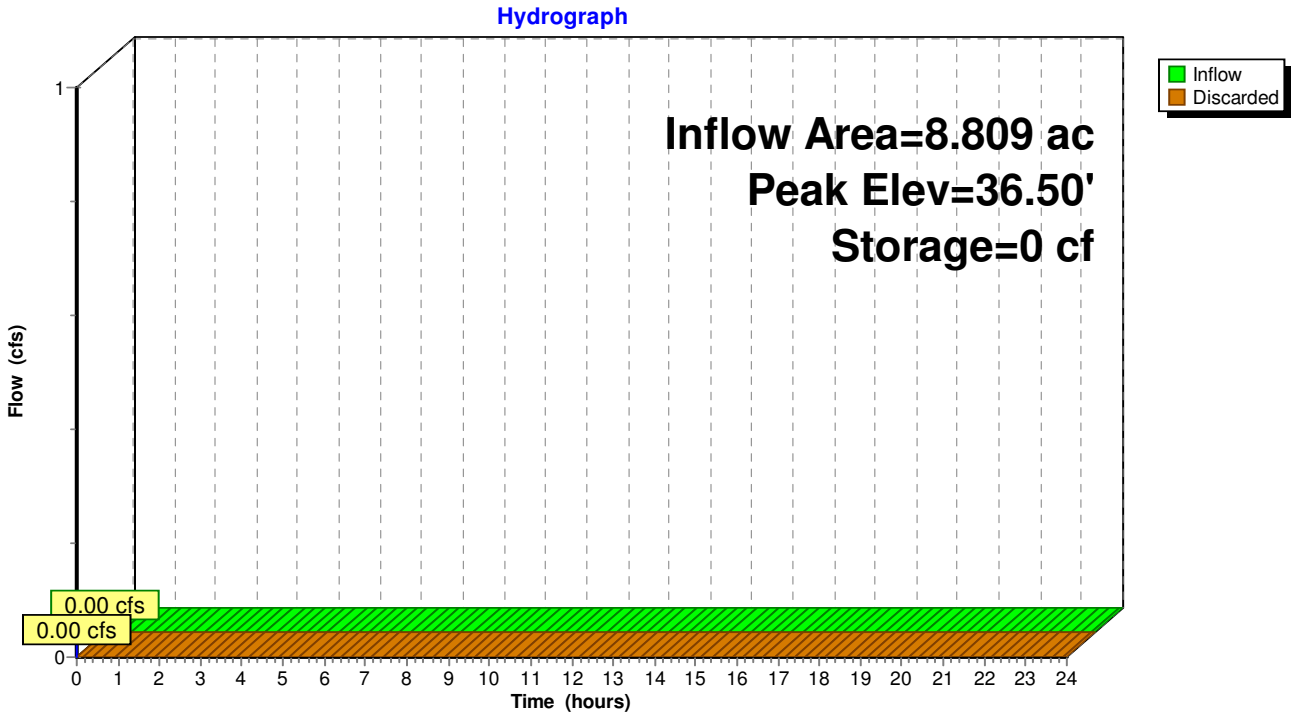
Volume	Invert	Avail.Storage	Storage Description
#1	36.50'	27,083 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
36.50	5,746	507.0	0	0	5,746
36.75	11,030	581.3	2,061	2,061	12,182
37.00	17,237	676.0	3,505	5,566	21,658
37.25	24,463	759.5	5,186	10,752	31,199
37.50	32,551	841.3	7,103	17,855	41,621
37.75	41,455	951.0	9,228	27,083	57,269

Device	Routing	Invert	Outlet Devices
#1	Discarded	36.50'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=36.50' (Free Discharge)
↳**1=Exfiltration** (Passes 0.00 cfs of 1.10 cfs potential flow)

Pond 100Y LP-1: LOW SPOT ROAD G STA 15-19



Summary for Pond 100Y LP-2: Low Spot Road I

[62] Hint: Exceeded Reach 48R OUTLET depth by 0.20' @ 0.00 hrs
[62] Hint: Exceeded Reach 52R OUTLET depth by 0.20' @ 0.00 hrs
[62] Hint: Exceeded Reach 53R OUTLET depth by 0.20' @ 0.00 hrs
[62] Hint: Exceeded Reach 54R OUTLET depth by 0.20' @ 0.00 hrs
[63] Warning: Exceeded Reach 55R INLET depth by 0.20' @ 0.00 hrs

Inflow Area = 17.098 ac, 35.90% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 31.50' @ 0.00 hrs Surf.Area= 3,929 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

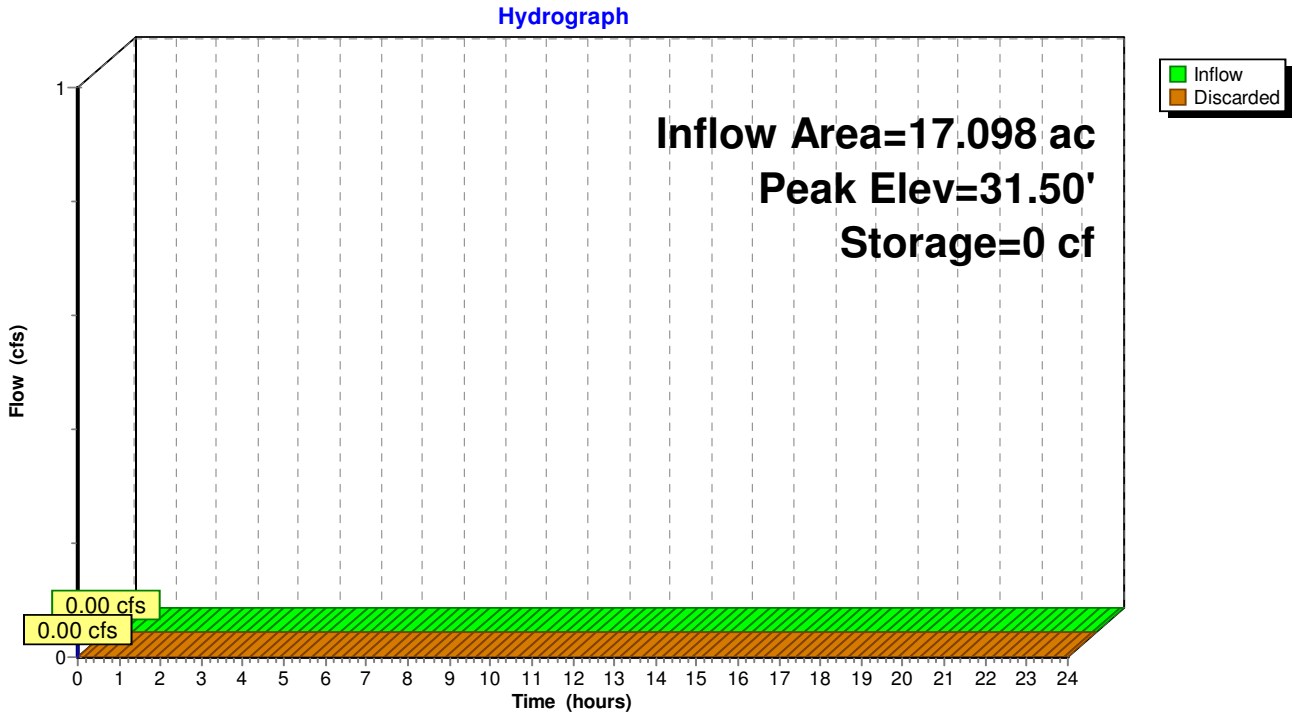
Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	70,244 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
31.50	3,929	567.0	0	0	3,929
31.75	12,215	727.0	1,923	1,923	20,406
32.00	24,089	969.0	4,455	6,377	53,067
32.25	43,398	1,543.0	8,318	14,696	167,810
32.50	63,912	1,964.0	13,331	28,027	285,302
32.75	85,235	2,322.0	18,580	46,607	407,406
33.00	104,183	2,279.9	23,638	70,244	422,834

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.50'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=31.50' (Free Discharge)
1=Exfiltration (Passes 0.00 cfs of 0.75 cfs potential flow)

Pond 100Y LP-2: Low Spot Road I



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment S#1: S#1 Runoff Area=74,645 sf 34.86% Impervious Runoff Depth=2.75"
Flow Length=173' Slope=0.0515 '/' Tc=6.0 min CN=60 Runoff=5.28 cfs 0.392 af

Subcatchment S#10: S#10 Runoff Area=36,853 sf 28.96% Impervious Runoff Depth=2.35"
Flow Length=225' Slope=0.0140 '/' Tc=15.6 min CN=56 Runoff=1.62 cfs 0.166 af

Subcatchment S#11: S#11 Runoff Area=45,317 sf 45.07% Impervious Runoff Depth=3.36"
Flow Length=405' Slope=0.0234 '/' Tc=14.9 min CN=66 Runoff=3.07 cfs 0.291 af

Subcatchment S#12: S#12 Runoff Area=35,592 sf 41.55% Impervious Runoff Depth=3.15"
Flow Length=235' Slope=0.0333 '/' Tc=8.5 min CN=64 Runoff=2.68 cfs 0.215 af

Subcatchment S#13: S#13 Runoff Area=23,644 sf 43.86% Impervious Runoff Depth=3.26"
Flow Length=117' Slope=0.0184 '/' Tc=6.4 min CN=65 Runoff=2.00 cfs 0.147 af

Subcatchment S#14: S#14 Runoff Area=32,589 sf 22.11% Impervious Runoff Depth=1.97"
Flow Length=319' Slope=0.0132 '/' Tc=23.5 min CN=52 Runoff=0.98 cfs 0.123 af

Subcatchment S#15: S#15 Runoff Area=219,043 sf 28.62% Impervious Runoff Depth=2.35"
Flow Length=1,119' Slope=0.0258 '/' Tc=41.5 min CN=56 Runoff=6.33 cfs 0.984 af

Subcatchment S#3: S#3 Runoff Area=180,213 sf 23.77% Impervious Runoff Depth=2.06"
Flow Length=300' Slope=0.0252 '/' Tc=15.8 min CN=53 Runoff=6.71 cfs 0.710 af

Subcatchment S#5: S#5 Runoff Area=31,300 sf 60.32% Impervious Runoff Depth=4.33"
Flow Length=121' Slope=0.0265 '/' Tc=5.0 min CN=75 Runoff=3.64 cfs 0.259 af

Subcatchment S#6: S#6 Runoff Area=10,705 sf 75.27% Impervious Runoff Depth=5.22"
Flow Length=121' Slope=0.0370 '/' Tc=5.0 min CN=83 Runoff=1.48 cfs 0.107 af

Subcatchment S#7: S#7 Runoff Area=75,917 sf 62.25% Impervious Runoff Depth=4.44"
Flow Length=405' Slope=0.0259 '/' Tc=10.8 min CN=76 Runoff=7.65 cfs 0.644 af

Subcatchment S#8: S#8 Runoff Area=46,691 sf 52.51% Impervious Runoff Depth=3.79"
Flow Length=269' Slope=0.0219 '/' Tc=10.0 min CN=70 Runoff=4.10 cfs 0.338 af

Subcatchment S#9: S#9 Runoff Area=48,922 sf 54.31% Impervious Runoff Depth=3.89"
Flow Length=214' Slope=0.0177 '/' Tc=9.1 min CN=71 Runoff=4.52 cfs 0.364 af

Subcatchment S2: S#2 Runoff Area=115,715 sf 17.98% Impervious Runoff Depth=2.35"
Flow Length=300' Slope=0.0283 '/' Tc=13.8 min CN=56 Runoff=5.36 cfs 0.520 af

Subcatchment S4: S#4 Runoff Area=151,367 sf 28.50% Impervious Runoff Depth=2.35"
Flow Length=300' Slope=0.0338 '/' Tc=12.6 min CN=56 Runoff=7.21 cfs 0.680 af

Reach 46R: TO LP 1 Avg. Flow Depth=0.15' Max Vel=2.26 fps Inflow=3.59 cfs 0.089 af
n=0.013 L=467.7' S=0.0082 '/' Capacity=9.55 cfs Outflow=1.81 cfs 0.089 af

Reach 48R: TO LP2 Avg. Flow Depth=0.24' Max Vel=2.41 fps Inflow=6.39 cfs 0.215 af
n=0.013 L=370.0' S=0.0053 '/' Capacity=7.64 cfs Outflow=3.68 cfs 0.215 af

Reach 49R: TO LP 1 Avg. Flow Depth=0.19' Max Vel=3.27 fps Inflow=5.05 cfs 0.122 af
n=0.013 L=190.0' S=0.0149 '/' Capacity=12.84 cfs Outflow=3.24 cfs 0.122 af

Reach 50R: (new Reach) Inflow=4.47 cfs 0.189 af
Outflow=4.47 cfs 0.189 af

Reach 51R: TO LP 1 Avg. Flow Depth=0.14' Max Vel=2.32 fps Inflow=2.12 cfs 0.066 af
n=0.013 L=431.0' S=0.0094 '/' Capacity=10.20 cfs Outflow=1.69 cfs 0.066 af

Reach 52R: TO LP2 Avg. Flow Depth=0.20' Max Vel=2.43 fps Inflow=7.12 cfs 0.110 af
n=0.013 L=592.0' S=0.0066 '/' Capacity=8.53 cfs Outflow=2.96 cfs 0.110 af

Reach 53R: TO LP2 Avg. Flow Depth=0.31' Max Vel=1.87 fps Inflow=6.87 cfs 0.128 af
n=0.013 L=184.0' S=0.0024 '/' Capacity=5.20 cfs Outflow=4.11 cfs 0.128 af

Reach 54R: TO LP2 Avg. Flow Depth=0.37' Max Vel=1.10 fps Inflow=6.20 cfs 0.276 af
n=0.013 L=372.0' S=0.0006 '/' Capacity=2.62 cfs Outflow=3.30 cfs 0.276 af

Reach 55R: TO LP2 Avg. Flow Depth=0.33' Max Vel=4.17 fps Inflow=10.66 cfs 0.228 af
n=0.013 L=1.0' S=0.0100 '/' Capacity=10.52 cfs Outflow=10.64 cfs 0.228 af

Pond 1P: INFILTRATION 1 Peak Elev=39.27' Storage=0.120 af Inflow=5.28 cfs 0.392 af
Discarded=0.24 cfs 0.304 af Primary=3.59 cfs 0.089 af Outflow=3.84 cfs 0.392 af

Pond 2P: INFILTRATION 1 Peak Elev=35.33' Storage=0.158 af Inflow=5.36 cfs 0.520 af
Discarded=0.31 cfs 0.398 af Primary=5.05 cfs 0.122 af Outflow=5.36 cfs 0.520 af

Pond 3P: INFILTRATION 1 Peak Elev=28.24' Storage=0.188 af Inflow=6.71 cfs 0.710 af
Discarded=0.37 cfs 0.495 af Primary=6.39 cfs 0.215 af Outflow=6.76 cfs 0.710 af

Pond 4P: INFILTRATION 1 Peak Elev=34.96' Storage=0.189 af Inflow=7.21 cfs 0.680 af
Discarded=0.38 cfs 0.491 af Primary=4.47 cfs 0.189 af Outflow=4.85 cfs 0.680 af

Pond 5P/6P: INFILTRATION 1 Peak Elev=34.46' Storage=0.119 af Inflow=5.11 cfs 0.366 af
Discarded=0.24 cfs 0.300 af Primary=2.12 cfs 0.066 af Outflow=2.35 cfs 0.366 af

Pond 7P: INFILTRATION 1 Peak Elev=32.08' Storage=0.215 af Inflow=7.65 cfs 0.644 af
Discarded=0.42 cfs 0.534 af Primary=7.12 cfs 0.110 af Outflow=7.55 cfs 0.644 af

Pond 8P/9P: INFILTRATION 1 Peak Elev=29.52' Storage=0.234 af Inflow=8.62 cfs 0.702 af
Discarded=0.46 cfs 0.575 af Primary=6.87 cfs 0.128 af Outflow=7.33 cfs 0.702 af

Pond 10P-14P: INFILTRATION 1 Peak Elev=27.53' Storage=0.280 af Inflow=9.07 cfs 0.942 af
Discarded=0.55 cfs 0.714 af Primary=10.66 cfs 0.228 af Outflow=11.21 cfs 0.942 af

Pond 15P: INFILTRATION 1 Peak Elev=27.55' Storage=0.272 af Inflow=6.33 cfs 0.984 af
Discarded=0.53 cfs 0.709 af Primary=6.20 cfs 0.276 af Outflow=6.73 cfs 0.984 af

Pond 100Y LP-1: LOW SPOT ROAD G STA 15-19 Peak Elev=36.98' Storage=5,172 cf Inflow=8.27 cfs 0.465 af
Outflow=3.18 cfs 0.465 af

Pond 100Y LP-2: Low Spot Road I Peak Elev=32.08' Storage=8,404 cf Inflow=17.48 cfs 0.957 af
Outflow=5.62 cfs 0.957 af

Total Runoff Area = 25.907 ac Runoff Volume = 5.941 af Average Runoff Depth = 2.75"
65.95% Pervious = 17.086 ac 34.05% Impervious = 8.821 ac

Summary for Subcatchment S#1: S#1

CarlsonPlanXYPos|1757228.0858|95778.6699|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

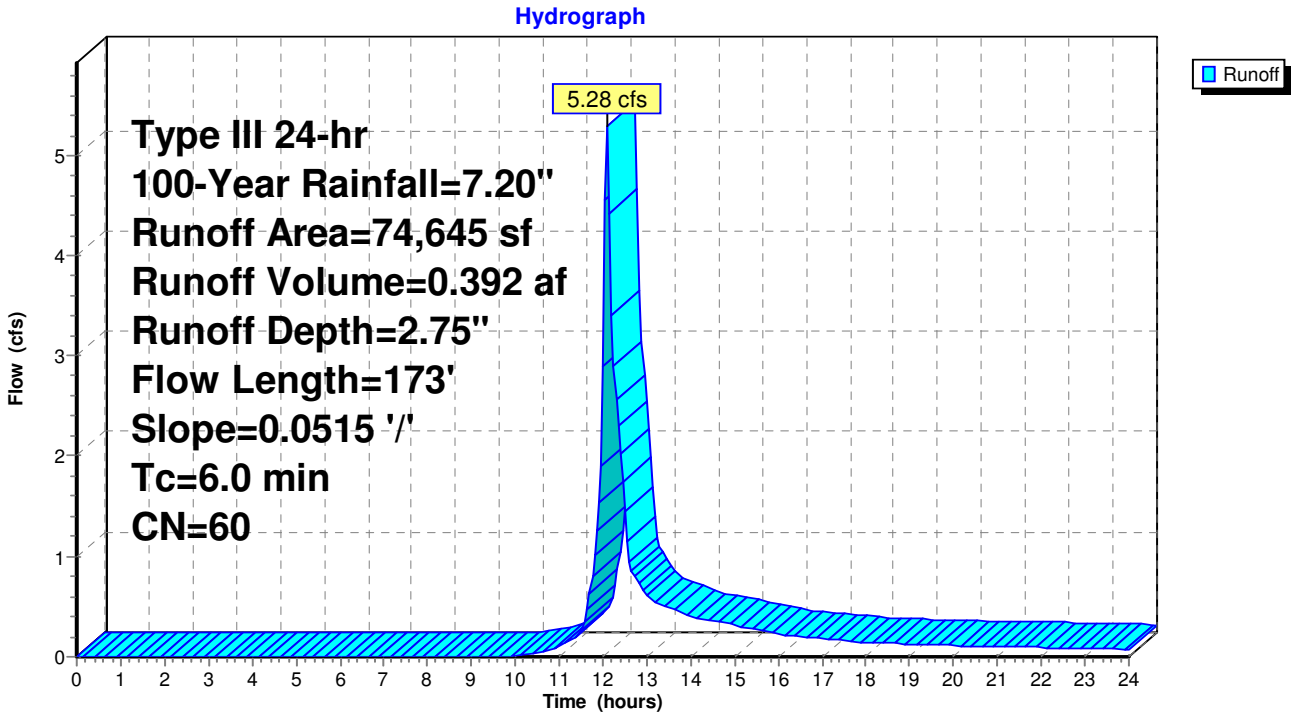
Runoff = 5.28 cfs @ 12.10 hrs, Volume= 0.392 af, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	26,022	98	Paved Streets w/Curbs & Sewers HSG A
*	48,593	39	Open Space-Good (>75% grass) HSG A
*	30	61	Open Space-Good (>75% grass) HSG B
	74,645	60	Weighted Average
	48,623		65.14% Pervious Area
	26,022		34.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	173	0.0515	0.48		**Lag/CN Method,**

Subcatchment S#1: S#1



Summary for Subcatchment S#10: S#10

CarlsonPlanXYPos|1756723.7933|94206.6253|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

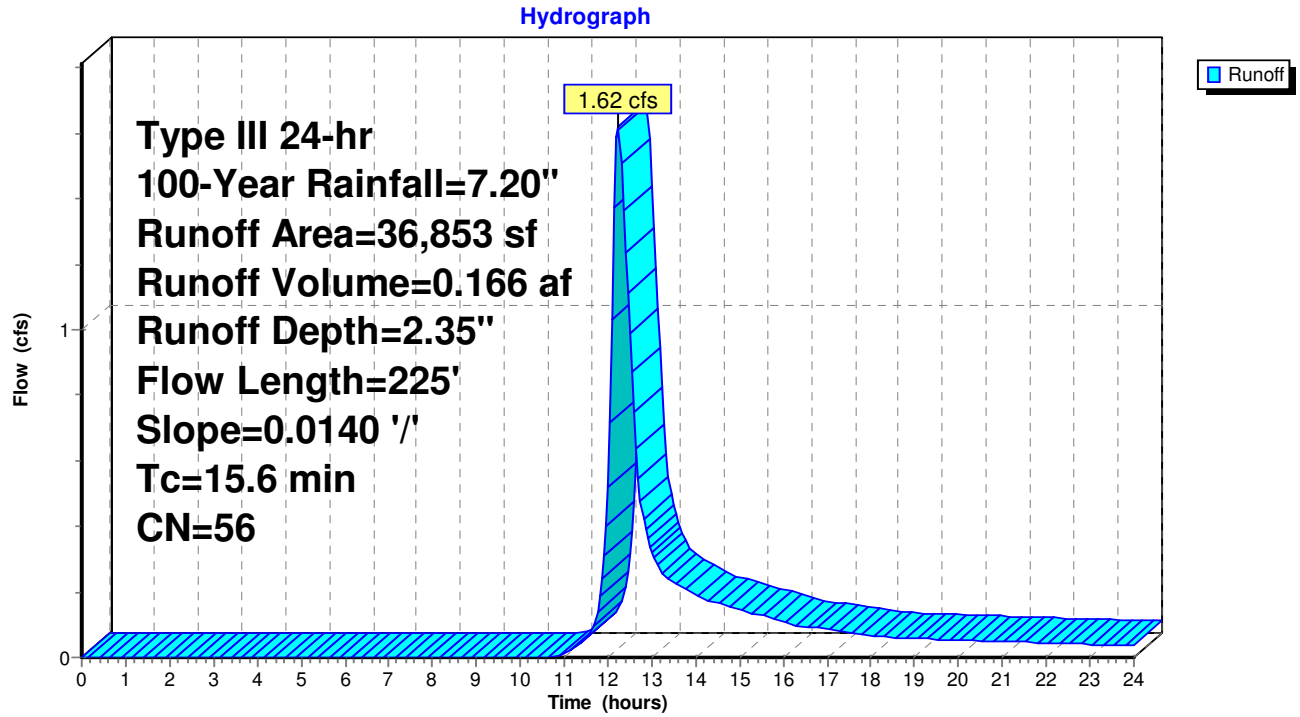
Runoff = 1.62 cfs @ 12.23 hrs, Volume= 0.166 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	10,673	98	Paved Streets w/Curbs & Sewers HSG A
*	26,180	39	Open Space-Good (>75% grass) HSG A
	36,853	56	Weighted Average
	26,180		71.04% Pervious Area
	10,673		28.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	225	0.0140	0.24		**Lag/CN Method,**

Subcatchment S#10: S#10



Summary for Subcatchment S#11: S#11

CarlsonPlanXYPos|1756919.3220|94148.5061|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

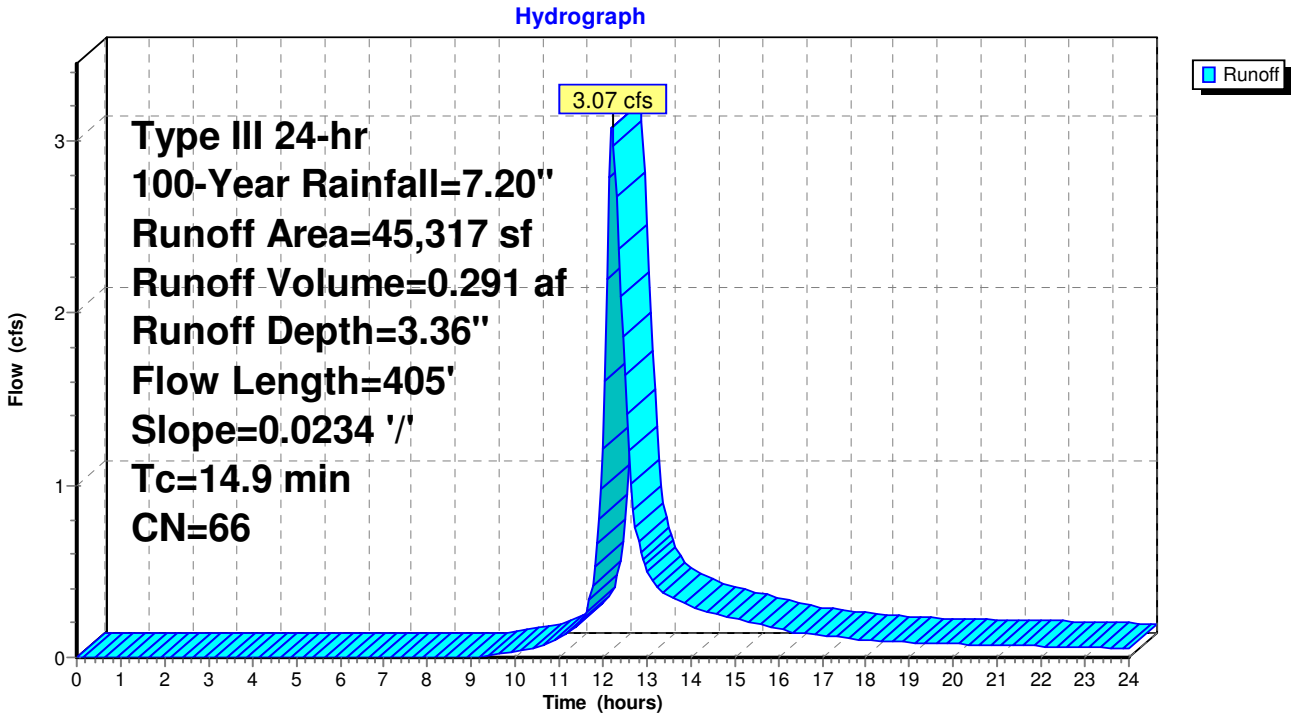
Runoff = 3.07 cfs @ 12.21 hrs, Volume= 0.291 af, Depth= 3.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	20,423	98	Paved Lots Roofs & Driveways HSG A
*	24,894	39	Open Space-Good (>75% grass) HSG A
	45,317	66	Weighted Average
	24,894		54.93% Pervious Area
	20,423		45.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	405	0.0234	0.45		**Lag/CN Method,**

Subcatchment S#11: S#11



Summary for Subcatchment S#12: S#12

CarlsonPlanXYPos|1757076.0153|93970.5069|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

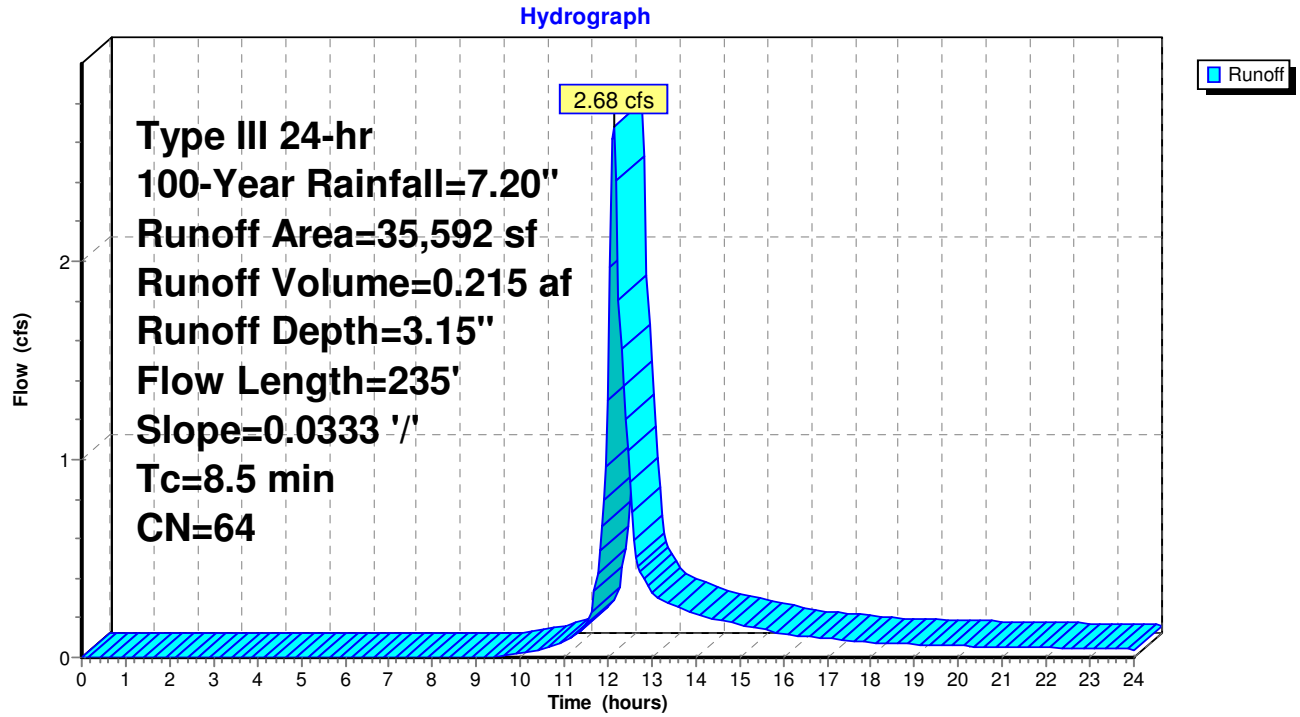
Runoff = 2.68 cfs @ 12.13 hrs, Volume= 0.215 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	14,787	98	Paved Streets w/Curbs & Sewers HSG A
*	20,805	39	Open Space-Good (>75% grass) HSG A
	35,592	64	Weighted Average
	20,805		58.45% Pervious Area
	14,787		41.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	235	0.0333	0.46		**Lag/CN Method,**

Subcatchment S#12: S#12



Summary for Subcatchment S#13: S#13

CarlsonPlanXYPos|1757188.0982|94129.7444|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

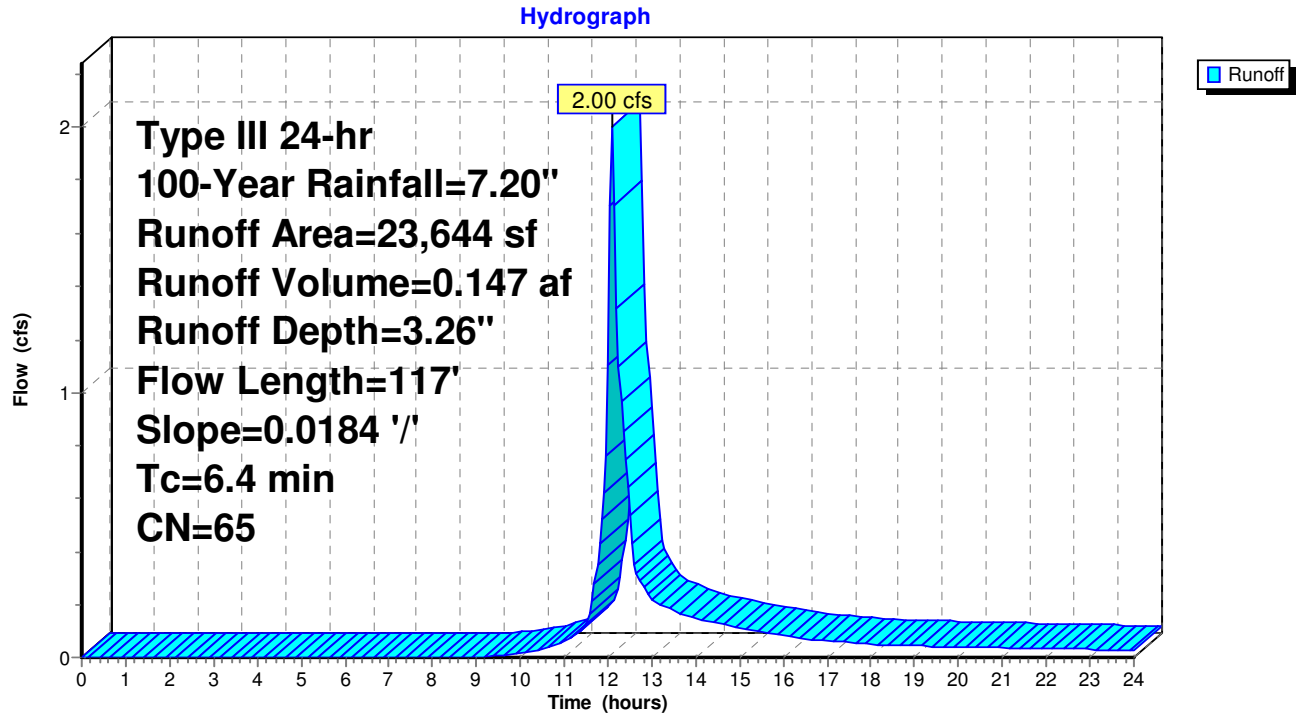
Runoff = 2.00 cfs @ 12.10 hrs, Volume= 0.147 af, Depth= 3.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	10,371	98	Paved Streets w/Curbs & Sewers HSG A
*	13,273	39	Open Space-Good (>75% grass) HSG A
	23,644	65	Weighted Average
	13,273		56.14% Pervious Area
	10,371		43.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	117	0.0184	0.30		**Lag/CN Method,**

Subcatchment S#13: S#13



Summary for Subcatchment S#14: S#14

CarlsonPlanXYPos|1757004.6545|94296.5616|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

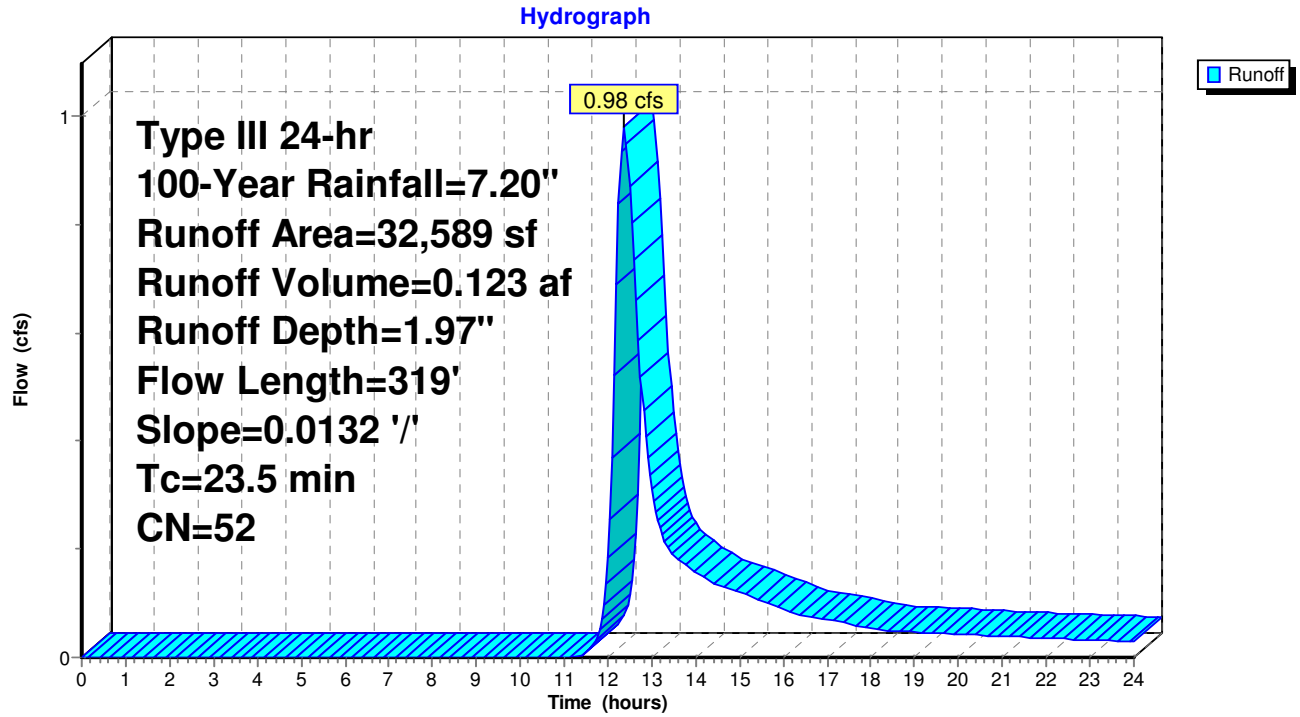
Runoff = 0.98 cfs @ 12.37 hrs, Volume= 0.123 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	7,204	98	Paved Streets w/Curbs & Sewers HSG A
*	25,385	39	Open Space-Good (>75% grass) HSG A
	32,589	52	Weighted Average
	25,385		77.89% Pervious Area
	7,204		22.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.5	319	0.0132	0.23		**Lag/CN Method,**

Subcatchment S#14: S#14



Summary for Subcatchment S#15: S#15

CarlsonPlanXYPos|1757436.5135|94414.7306|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

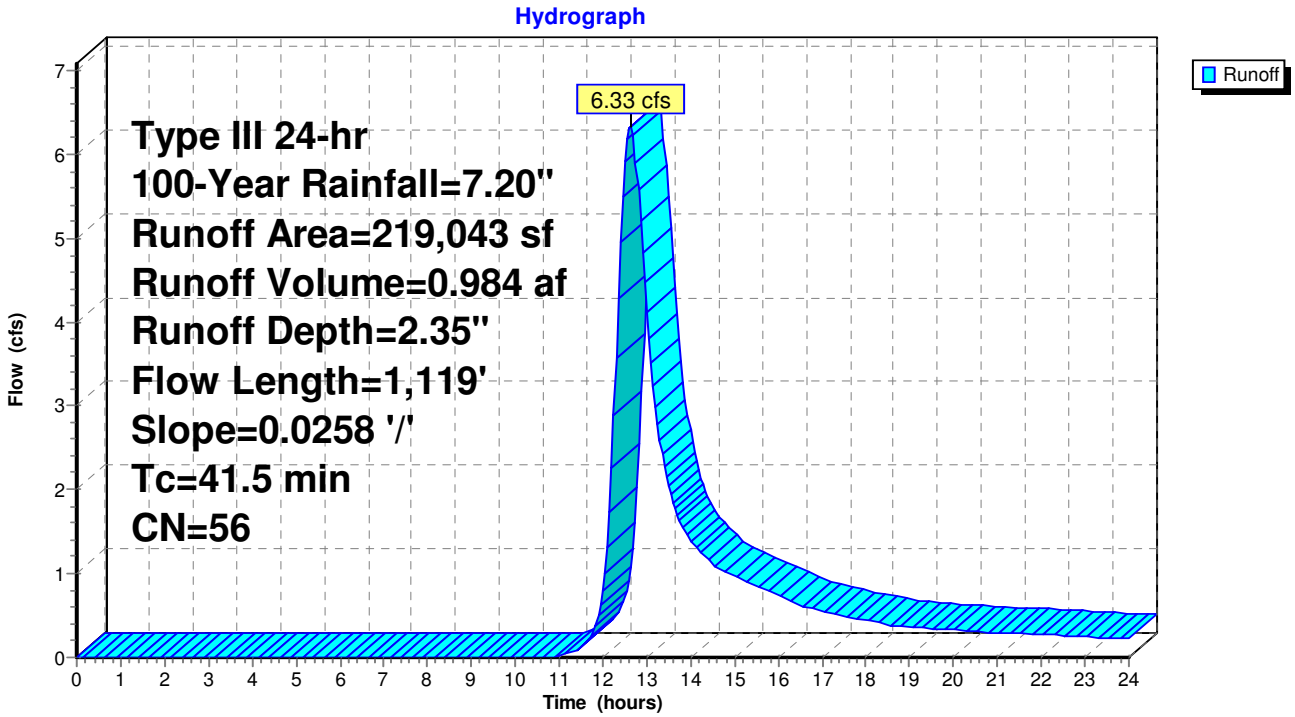
Runoff = 6.33 cfs @ 12.62 hrs, Volume= 0.984 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	62,691	98	Paved Streets w/Curbs & Sewers HSG A
*	156,352	39	Open Space-Good (>75% grass) HSG A
	219,043	56	Weighted Average
	156,352		71.38% Pervious Area
	62,691		28.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
41.5	1,119	0.0258	0.45		**Lag/CN Method,**

Subcatchment S#15: S#15



Summary for Subcatchment S#3: S#3

CarlsonPlanXYPos|1757249.7579|94888.4224|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

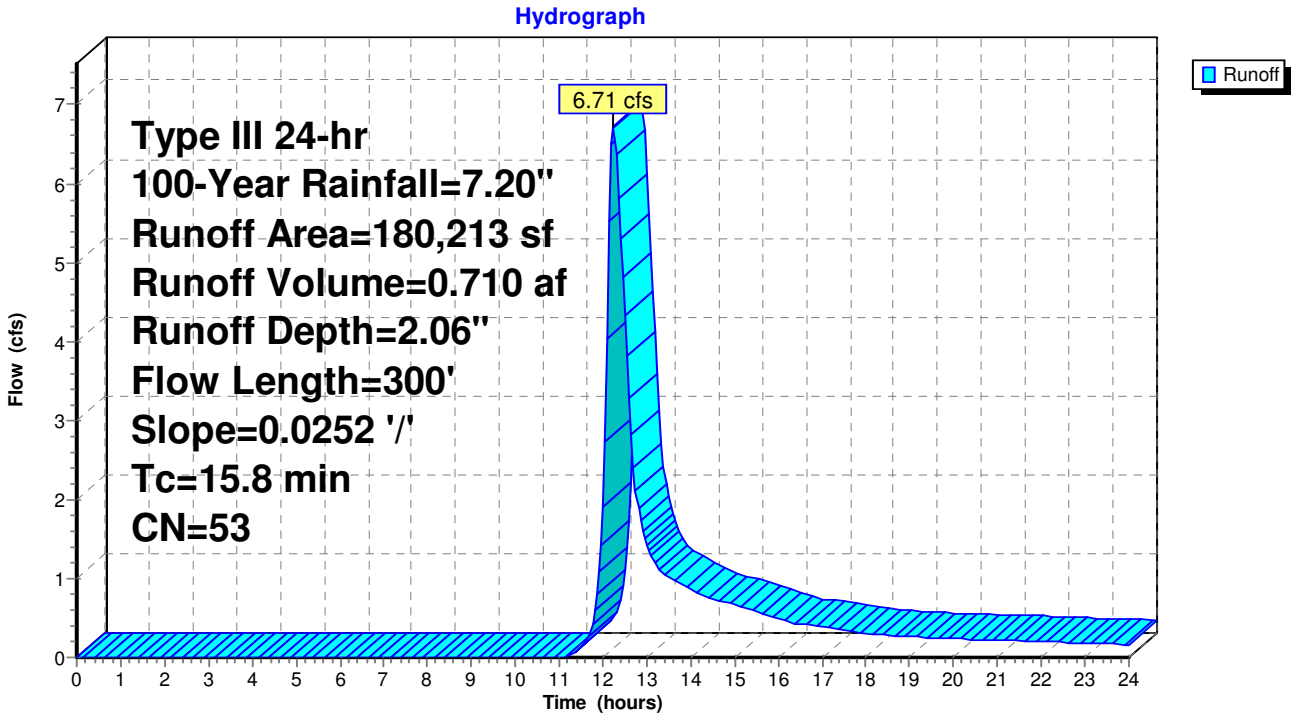
Runoff = 6.71 cfs @ 12.24 hrs, Volume= 0.710 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	42,844	98	Paved Streets w/Curbs & Sewers HSG A
*	137,369	39	Open Space-Good (>75% grass) HSG A
	180,213	53	Weighted Average
	137,369		76.23% Pervious Area
	42,844		23.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	300	0.0252	0.32		**Lag/CN Method,**

Subcatchment S#3: S#3



Summary for Subcatchment S#5: S#5

CarlsonPlanXYPos|1757027.2221|95347.9200|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

[49] Hint: Tc<2dt may require smaller dt

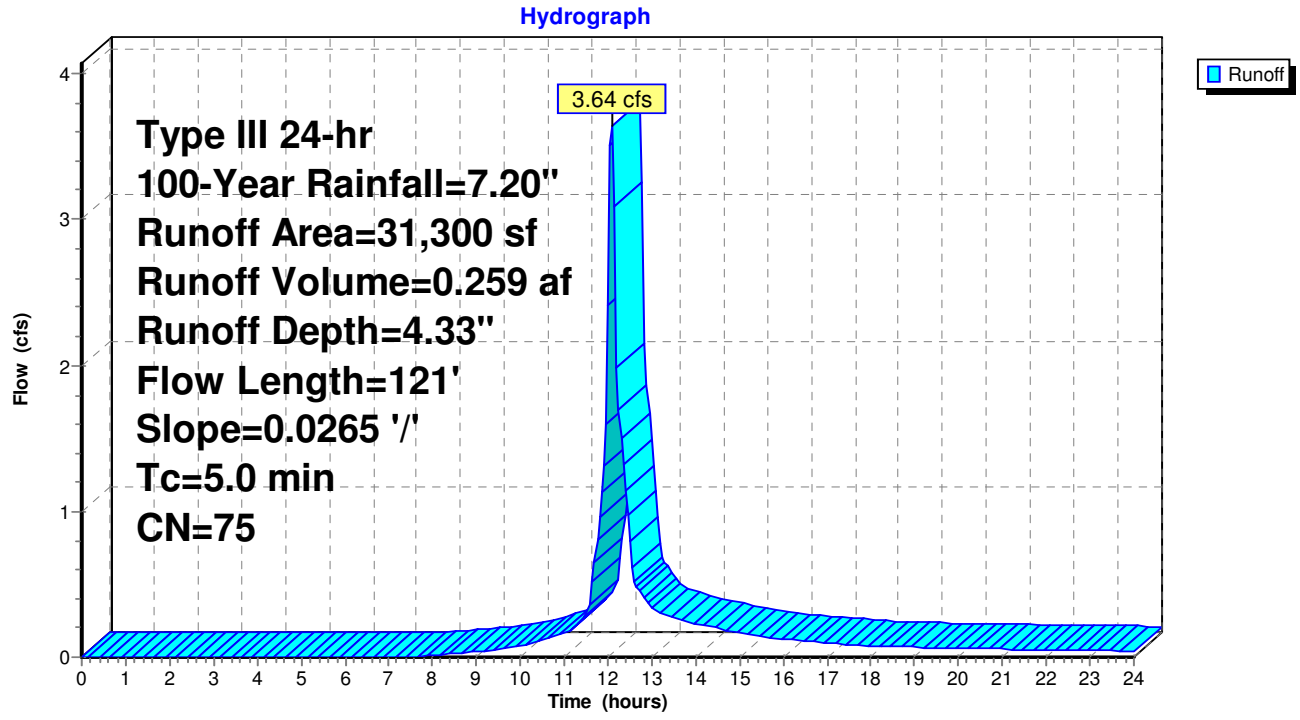
Runoff = 3.64 cfs @ 12.08 hrs, Volume= 0.259 af, Depth= 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	18,880	98	Paved Streets w/Curbs & Sewers HSG A
*	12,420	39	Open Space-Good (>75% grass) HSG A
	31,300	75	Weighted Average
	12,420		39.68% Pervious Area
	18,880		60.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	121	0.0265	0.48		**Lag/CN Method,**
4.2	121	Total, Increased to minimum Tc = 5.0 min			

Subcatchment S#5: S#5



Summary for Subcatchment S#6: S#6

CarlsonPlanXYPos|1757027.2221|95347.9200|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

[49] Hint: Tc<2dt may require smaller dt

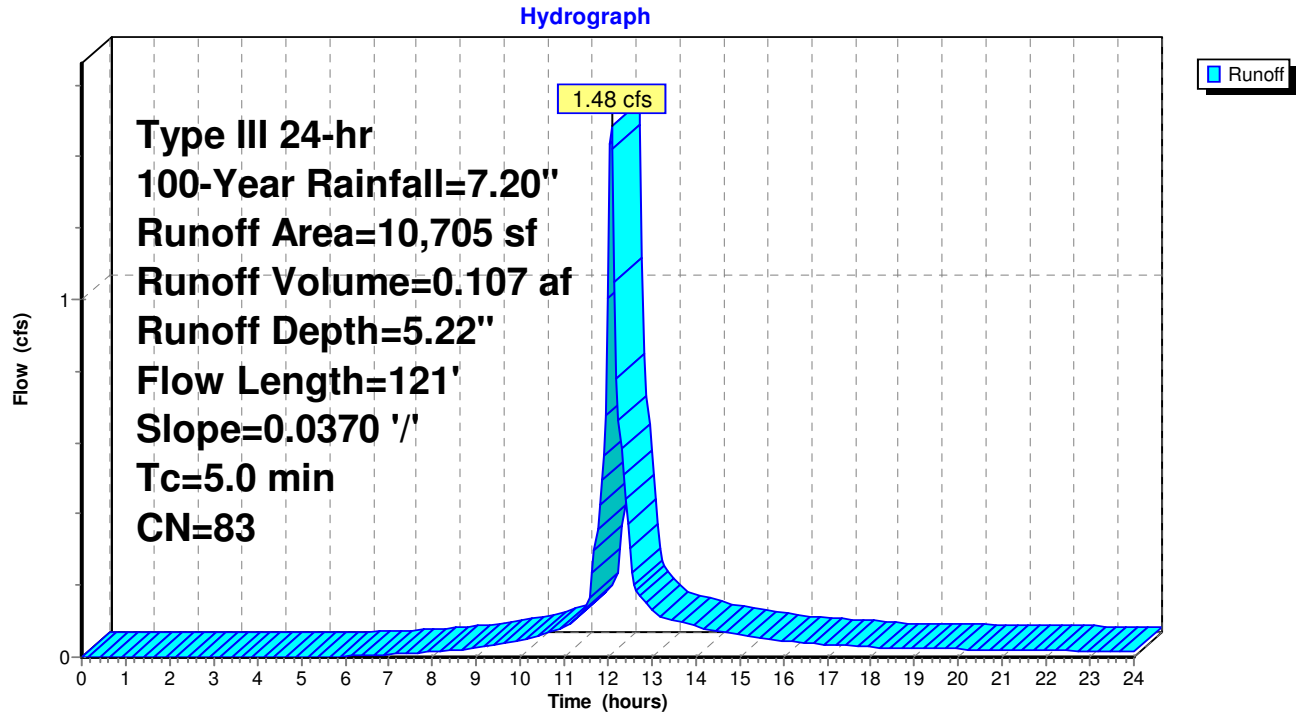
Runoff = 1.48 cfs @ 12.07 hrs, Volume= 0.107 af, Depth= 5.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	8,058	98	Paved Streets w/Curbs & Sewers HSG A
*	2,647	39	Open Space-Good (>75% grass) HSG A
	10,705	83	Weighted Average
	2,647		24.73% Pervious Area
	8,058		75.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	121	0.0370	0.73		**Lag/CN Method,**
2.8	121	Total, Increased to minimum Tc = 5.0 min			

Subcatchment S#6: S#6



Summary for Subcatchment S#7: S#7

CarlsonPlanXYPos|1756915.6351|94896.6148|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

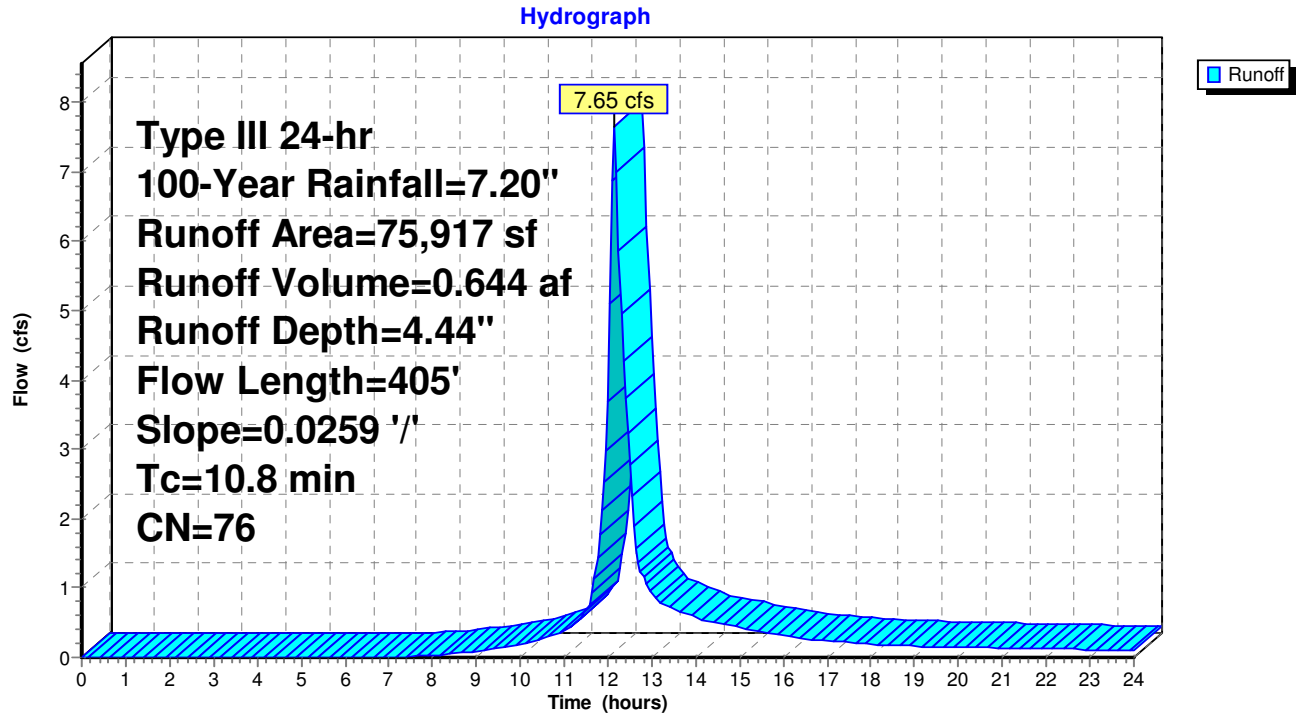
Runoff = 7.65 cfs @ 12.15 hrs, Volume= 0.644 af, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	47,260	98	Paved Streets w/Curbs & Sewers HSG A
*	28,657	39	Open Space-Good (>75% grass) HSG A
	75,917	76	Weighted Average
	28,657		37.75% Pervious Area
	47,260		62.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	405	0.0259	0.62		**Lag/CN Method,**

Subcatchment S#7: S#7



Summary for Subcatchment S#8: S#8

CarlsonPlanXYPos|1756872.7656|94629.7133|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

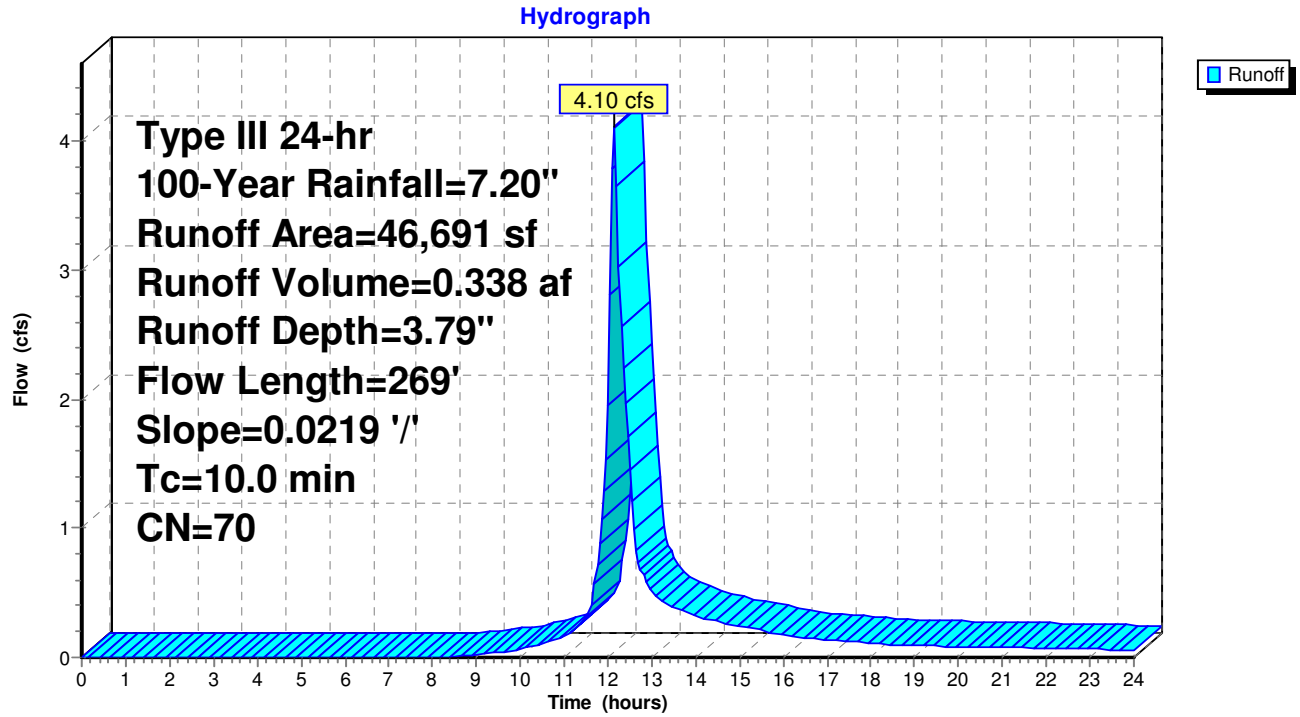
Runoff = 4.10 cfs @ 12.15 hrs, Volume= 0.338 af, Depth= 3.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	24,519	98	Paved Streets w/Curbs & Sewers HSG A
*	22,172	39	Open Space-Good (>75% grass) HSG A
	46,691	70	Weighted Average
	22,172		47.49% Pervious Area
	24,519		52.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	269	0.0219	0.45		**Lag/CN Method,**

Subcatchment S#8: S#8



Summary for Subcatchment S#9: S#9

CarlsonPlanXYPos|1756830.1751|94474.8951|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

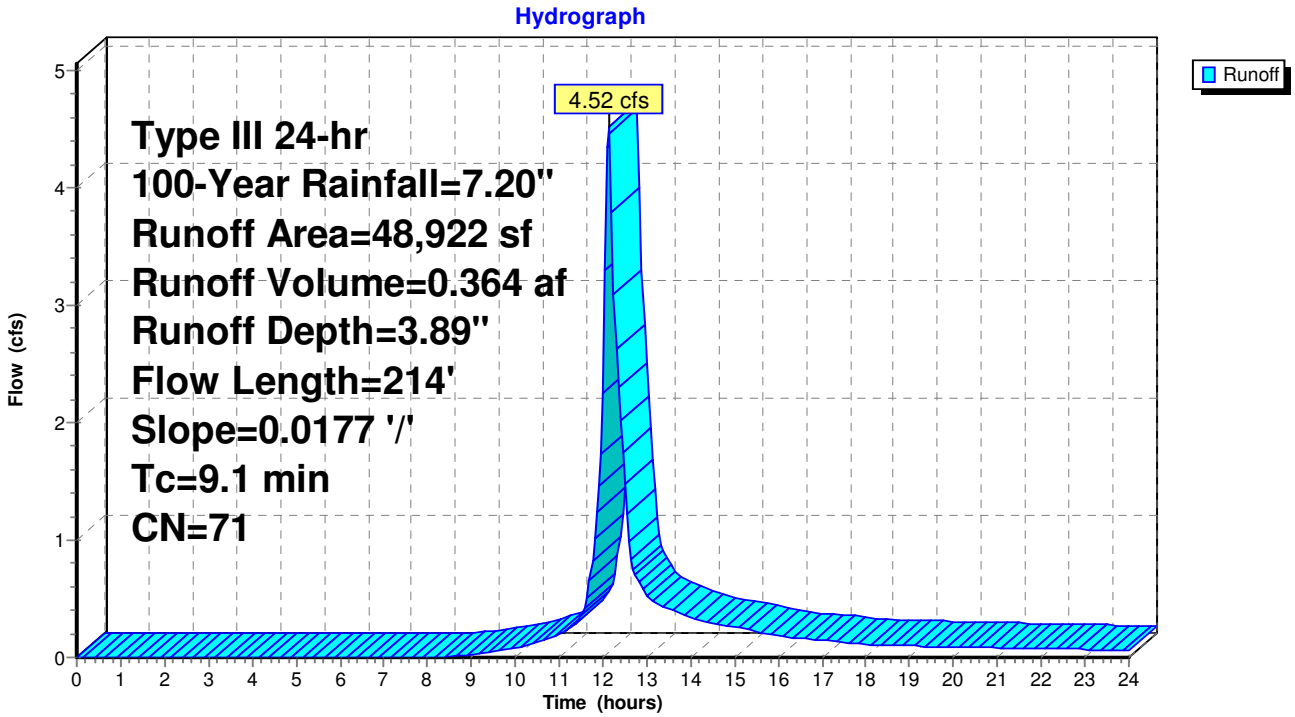
Runoff = 4.52 cfs @ 12.13 hrs, Volume= 0.364 af, Depth= 3.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	26,570	98	Paved Streets w/Curbs & Sewers HSG A
*	22,352	39	Open Space-Good (>75% grass) HSG A
	48,922	71	Weighted Average
	22,352		45.69% Pervious Area
	26,570		54.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	214	0.0177	0.39		**Lag/CN Method,**

Subcatchment S#9: S#9



Summary for Subcatchment S2: S#2

CarlsonPlanXYPos|1757390.6874|95401.9110|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

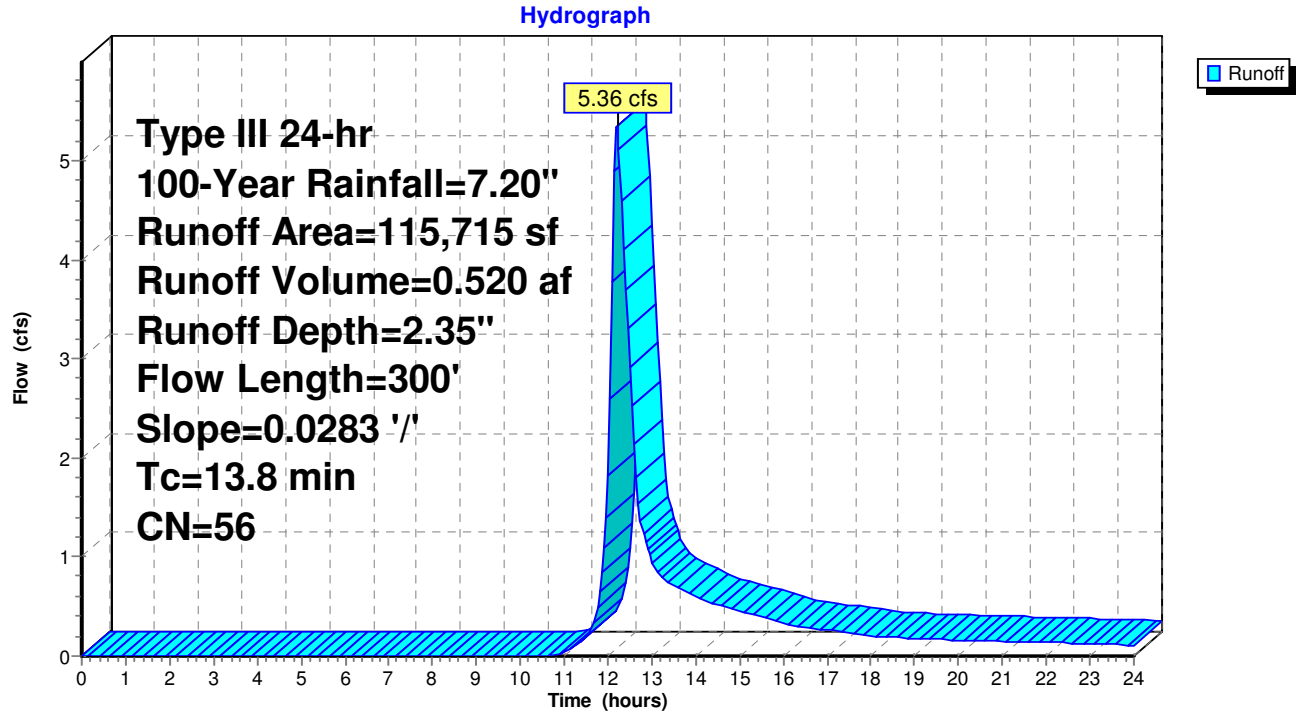
Runoff = 5.36 cfs @ 12.21 hrs, Volume= 0.520 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	10,405	98	Paved Streets w/Curbs & Sewers HSG B
*	10,400	98	Paved Lots Roofs & Driveways HSG B
*	61,613	39	Open Space-Good (>75% grass) HSG A
*	33,297	61	Open Space-Good (>75% grass) HSG B
	115,715	56	Weighted Average
	94,910		82.02% Pervious Area
	20,805		17.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	300	0.0283	0.36		**Lag/CN Method,**

Subcatchment S2: S#2



Summary for Subcatchment S4: S#4

CarlsonPlanXYPos|1757146.2718|95239.2477|
CarlsonSurface|S:\Clients\Richmond Greatpoint Development\CAD\Carlson Files\2016-06-15 RE-GRADE\2FTCONT daylight-marged-2.tin|

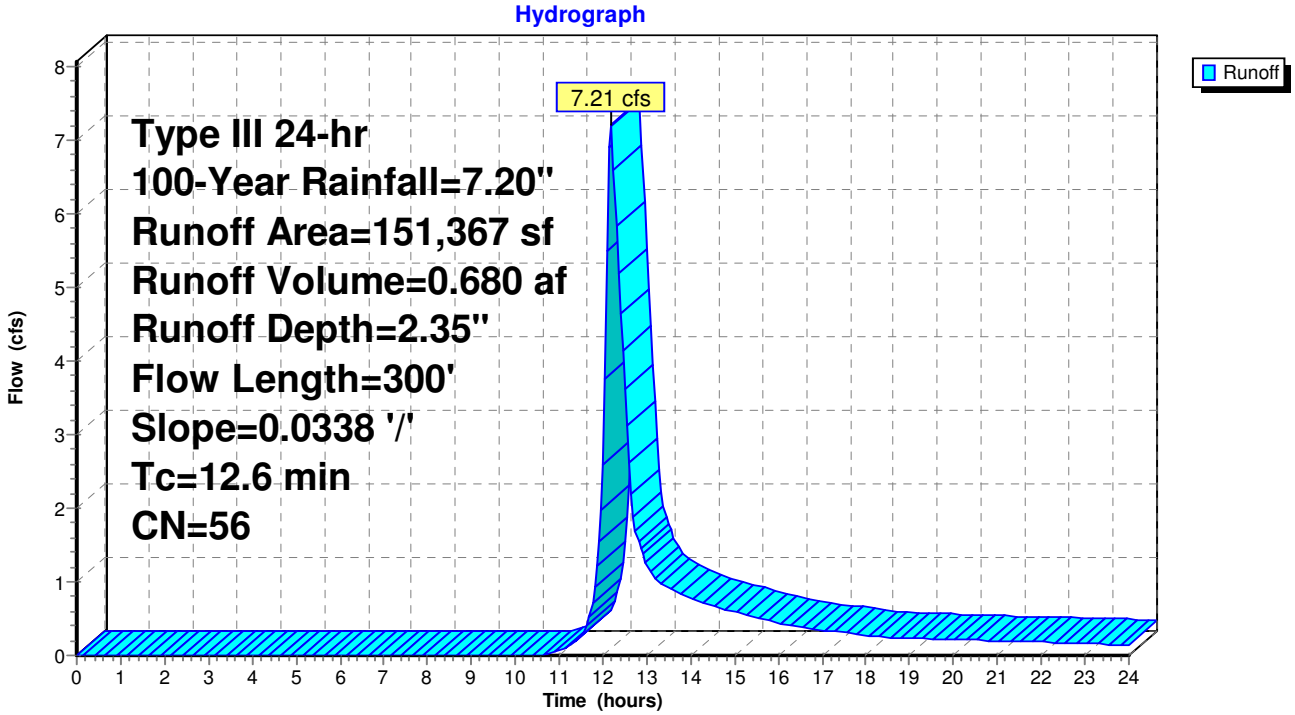
Runoff = 7.21 cfs @ 12.19 hrs, Volume= 0.680 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.20"

	Area (sf)	CN	Description
*	43,145	98	Paved Streets w/Curbs & Sewers HSG A
*	108,222	39	Open Space-Good (>75% grass) HSG A
	151,367	56	Weighted Average
	108,222		71.50% Pervious Area
	43,145		28.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	300	0.0338	0.40		**Lag/CN Method,**

Subcatchment S4: S#4



Summary for Reach 46R: TO LP 1

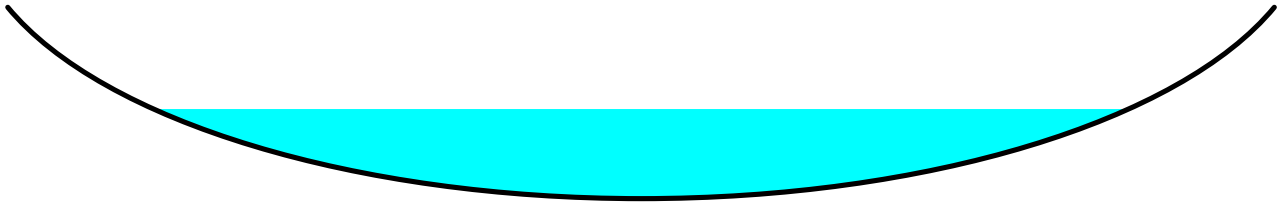
[81] Warning: Exceeded Pond 1P by 7.77' @ 27.15 hrs

Inflow Area = 1.714 ac, 34.86% Impervious, Inflow Depth = 0.62" for 100-Year event
Inflow = 3.59 cfs @ 12.35 hrs, Volume= 0.089 af
Outflow = 1.81 cfs @ 12.41 hrs, Volume= 0.089 af, Atten= 50%, Lag= 3.9 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.26 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 0.69 fps, Avg. Travel Time= 11.3 min

Peak Storage= 374 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 9.55 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 467.7' Slope= 0.0082 '/'
Inlet Invert= 40.02', Outlet Invert= 36.17'



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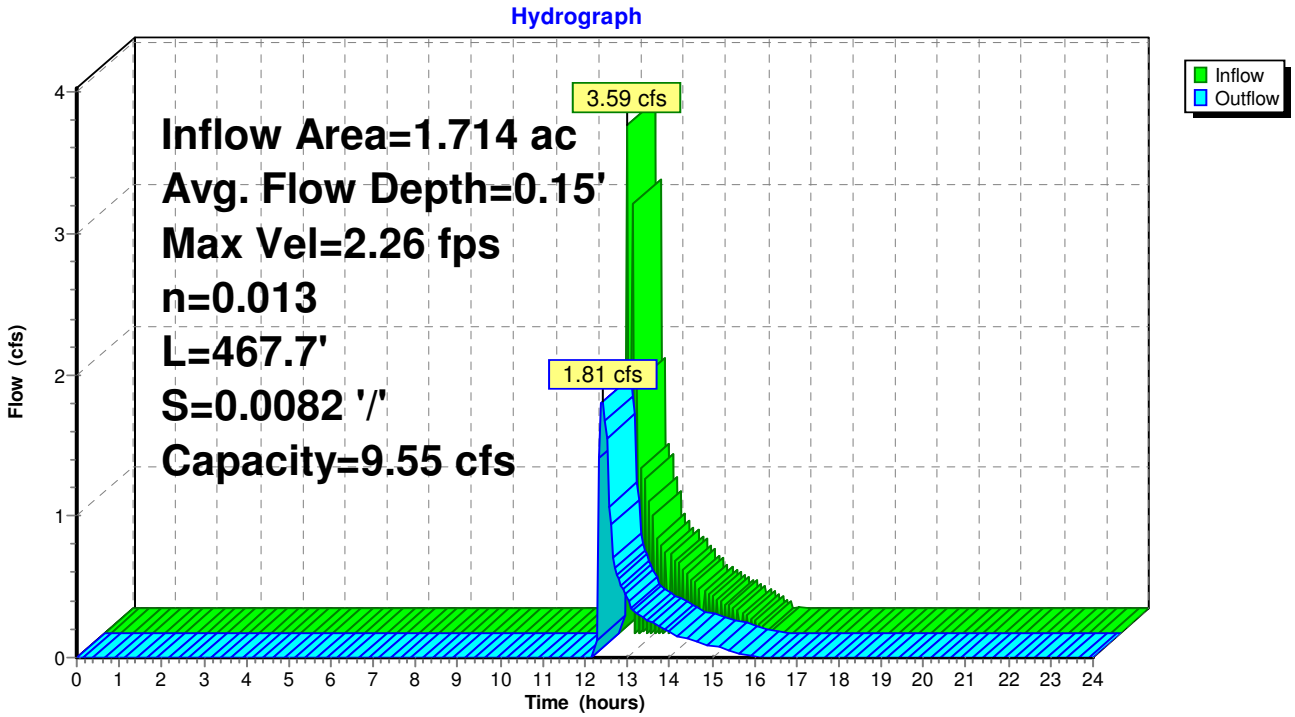
Reach 46R: TO LP 1



Summary for Reach 48R: TO LP2

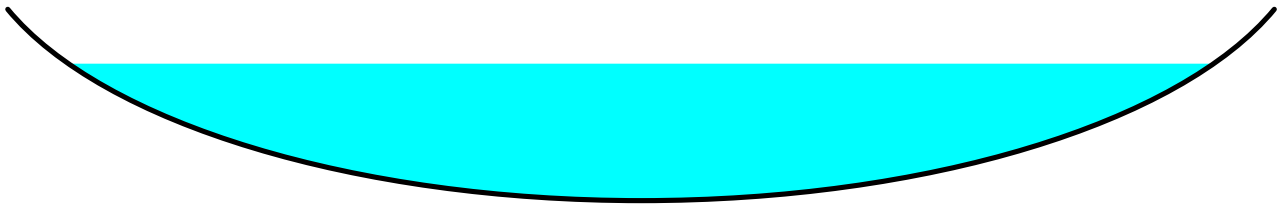
[81] Warning: Exceeded Pond 3P by 12.15' @ 28.40 hrs

Inflow Area = 4.137 ac, 23.77% Impervious, Inflow Depth = 0.62" for 100-Year event
Inflow = 6.39 cfs @ 12.50 hrs, Volume= 0.215 af
Outflow = 3.68 cfs @ 12.54 hrs, Volume= 0.215 af, Atten= 42%, Lag= 2.7 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.41 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 0.75 fps, Avg. Travel Time= 8.2 min

Peak Storage= 564 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 7.64 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 370.0' Slope= 0.0053 '/'
Inlet Invert= 33.25', Outlet Invert= 31.30'



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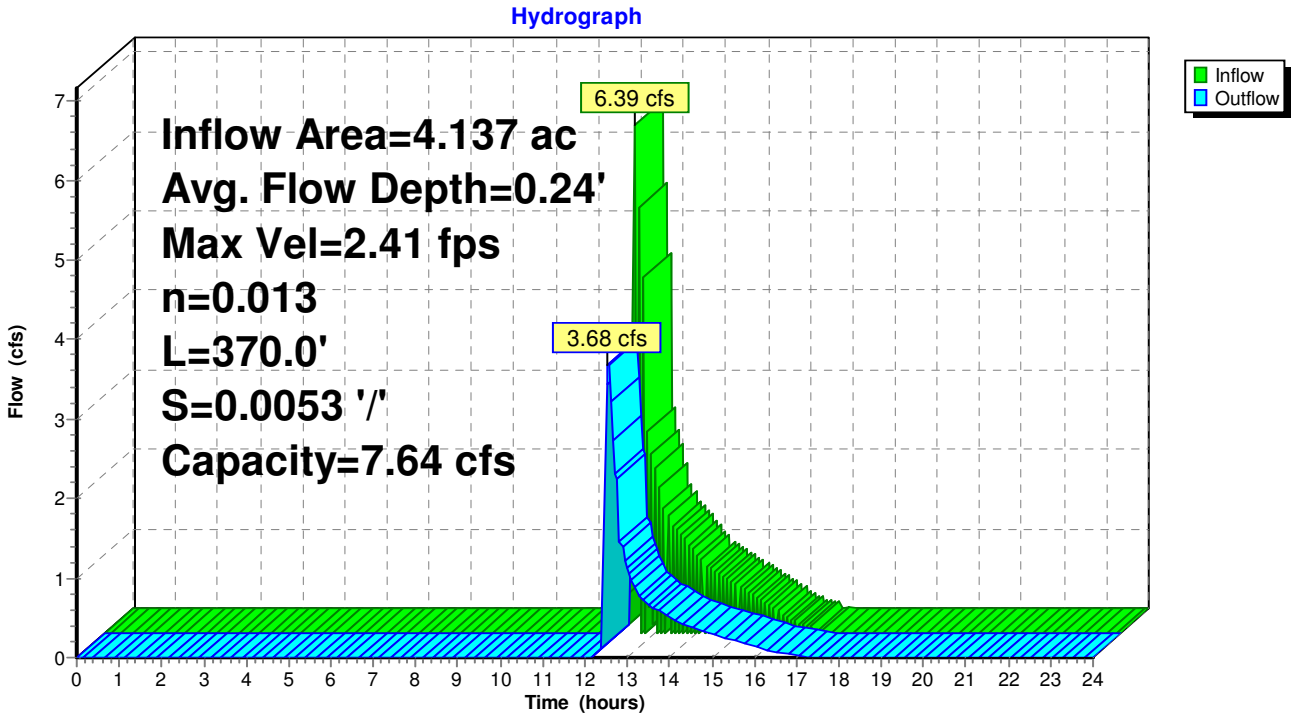


Summary for Reach 49R: TO LP 1

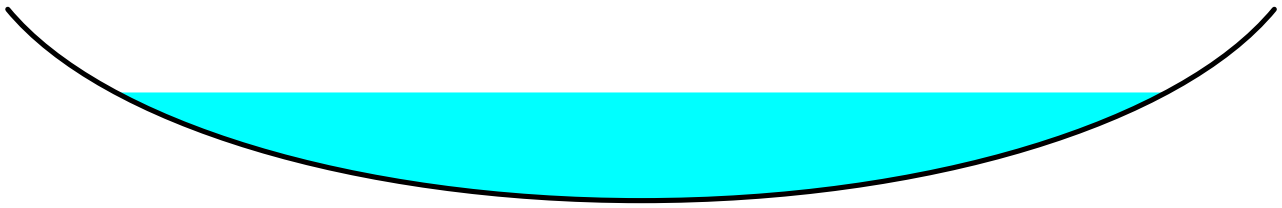
[81] Warning: Exceeded Pond 2P by 10.75' @ 0.00 hrs

Inflow Area = 2.656 ac, 17.98% Impervious, Inflow Depth = 0.55" for 100-Year event
Inflow = 5.05 cfs @ 12.50 hrs, Volume= 0.122 af
Outflow = 3.24 cfs @ 12.52 hrs, Volume= 0.122 af, Atten= 36%, Lag= 0.9 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.27 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.28 fps, Avg. Travel Time= 2.5 min

Peak Storage= 191 cf @ 12.52 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 12.84 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 190.0' Slope= 0.0149 '/'
Inlet Invert= 39.00', Outlet Invert= 36.17'



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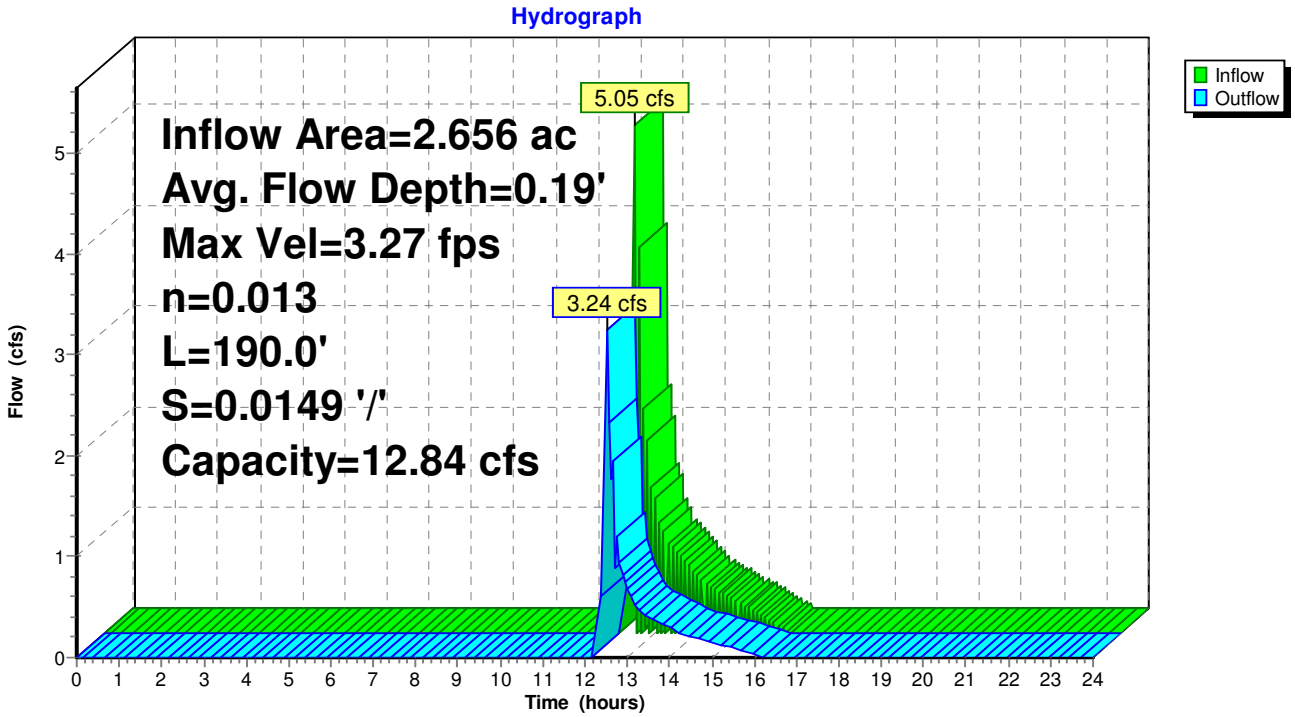


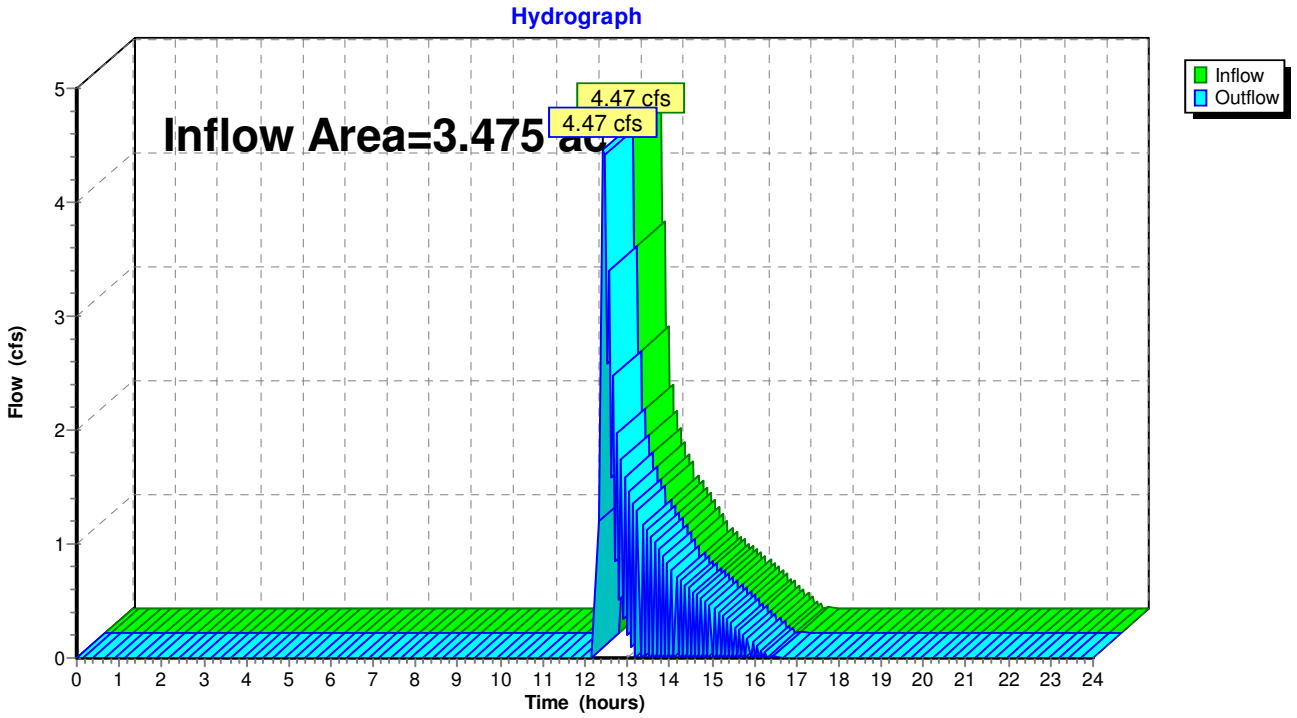
Summary for Reach 50R: (new Reach)

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.475 ac, 28.50% Impervious, Inflow Depth = 0.65" for 100-Year event
Inflow = 4.47 cfs @ 12.44 hrs, Volume= 0.189 af
Outflow = 4.47 cfs @ 12.44 hrs, Volume= 0.189 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Reach 50R: (new Reach)



Summary for Reach 51R: TO LP 1

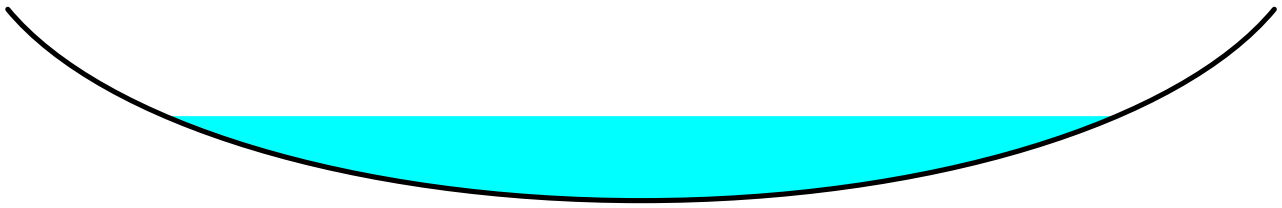
[81] Warning: Exceeded Pond 5P/6P by 12.69' @ 25.70 hrs

Inflow Area = 0.964 ac, 64.13% Impervious, Inflow Depth = 0.82" for 100-Year event
Inflow = 2.12 cfs @ 12.29 hrs, Volume= 0.066 af
Outflow = 1.69 cfs @ 12.34 hrs, Volume= 0.066 af, Atten= 20%, Lag= 3.5 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.32 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 0.67 fps, Avg. Travel Time= 10.7 min

Peak Storage= 315 cf @ 12.34 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 10.20 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 431.0' Slope= 0.0094 '/'
Inlet Invert= 40.22', Outlet Invert= 36.17'



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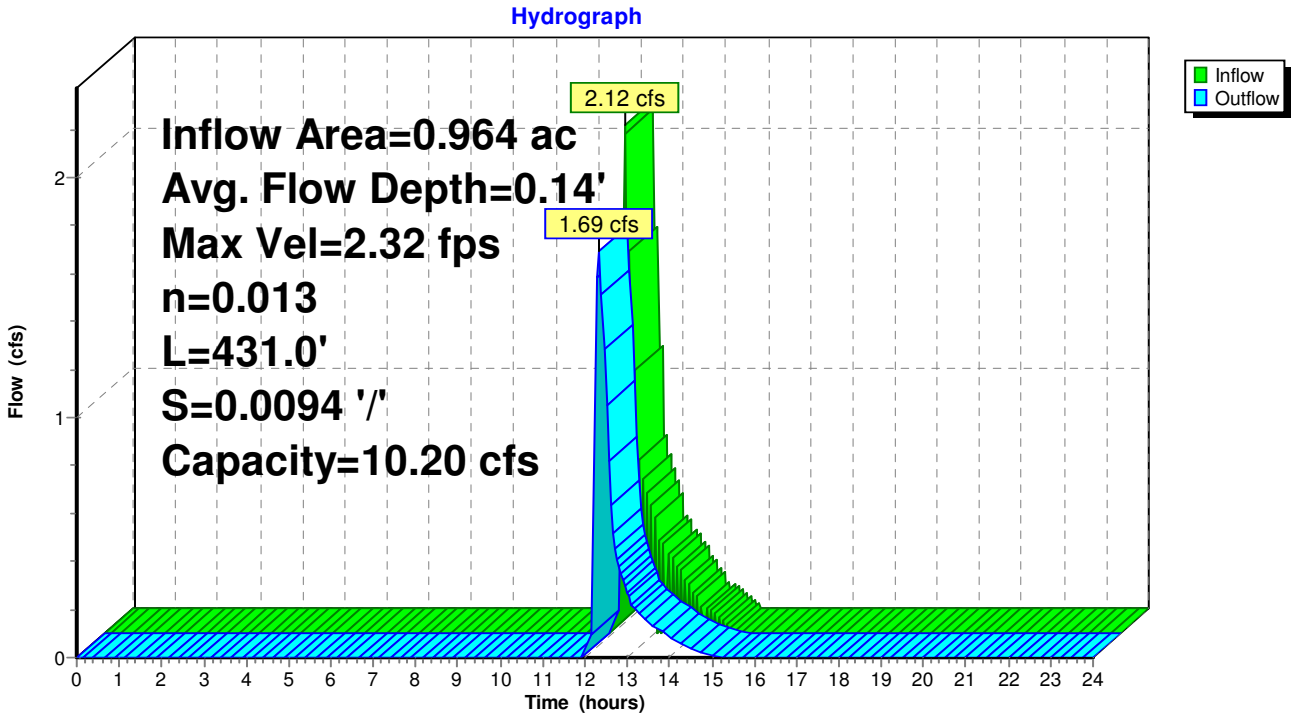


Summary for Reach 52R: TO LP2

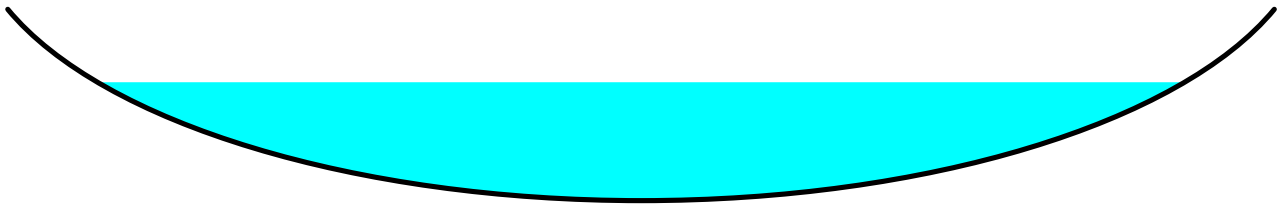
[81] Warning: Exceeded Pond 7P by 10.28' @ 25.65 hrs

Inflow Area = 1.743 ac, 62.25% Impervious, Inflow Depth = 0.76" for 100-Year event
Inflow = 7.12 cfs @ 12.40 hrs, Volume= 0.110 af
Outflow = 2.96 cfs @ 12.46 hrs, Volume= 0.110 af, Atten= 58%, Lag= 3.5 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.43 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 0.55 fps, Avg. Travel Time= 17.9 min

Peak Storage= 720 cf @ 12.46 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 8.53 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 592.0' Slope= 0.0066 '/'
Inlet Invert= 35.19', Outlet Invert= 31.30'



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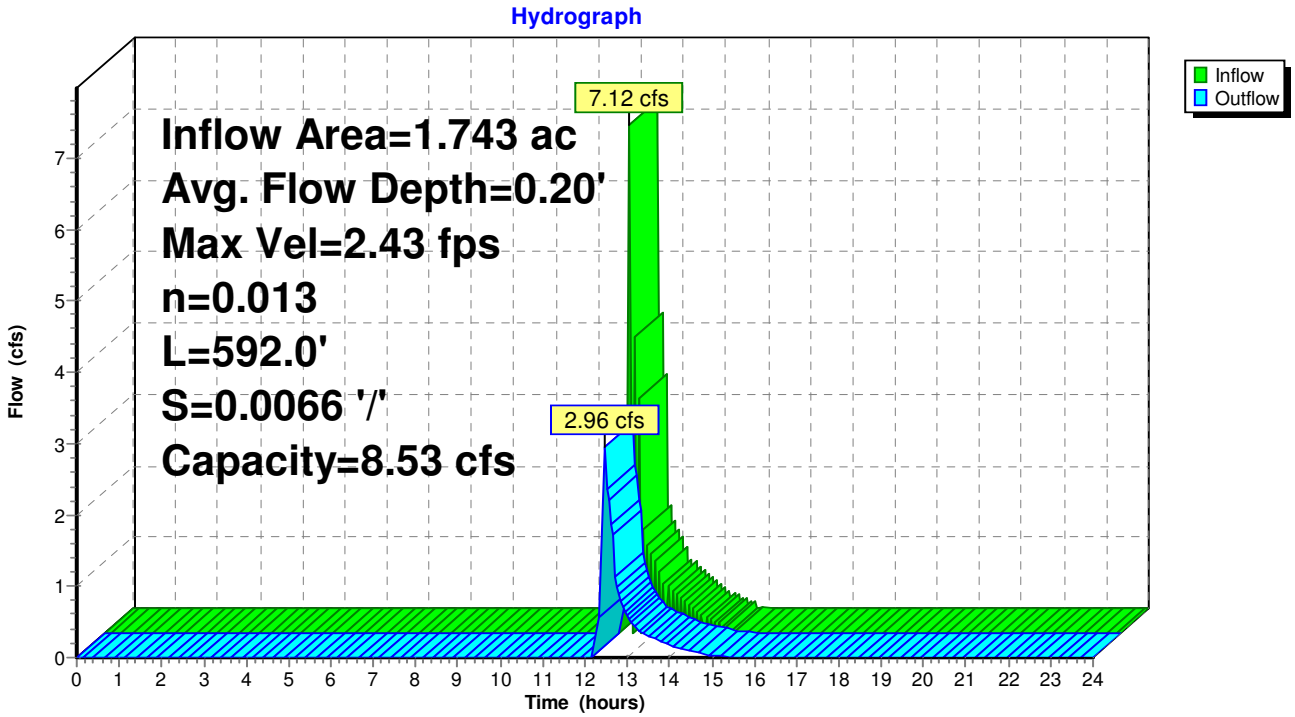


Summary for Reach 53R: TO LP2

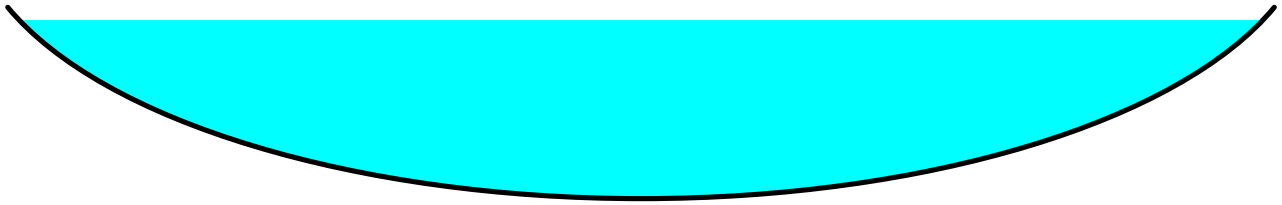
[55] Hint: Peak inflow is 132% of Manning's capacity
[81] Warning: Exceeded Pond 8P/9P by 9.39' @ 26.35 hrs

Inflow Area = 2.195 ac, 53.43% Impervious, Inflow Depth = 0.70" for 100-Year event
Inflow = 6.87 cfs @ 12.40 hrs, Volume= 0.128 af
Outflow = 4.11 cfs @ 12.42 hrs, Volume= 0.128 af, Atten= 40%, Lag= 1.3 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.87 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.52 fps, Avg. Travel Time= 5.9 min

Peak Storage= 405 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 5.20 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 184.0' Slope= 0.0024 '/'
Inlet Invert= 31.75', Outlet Invert= 31.30'



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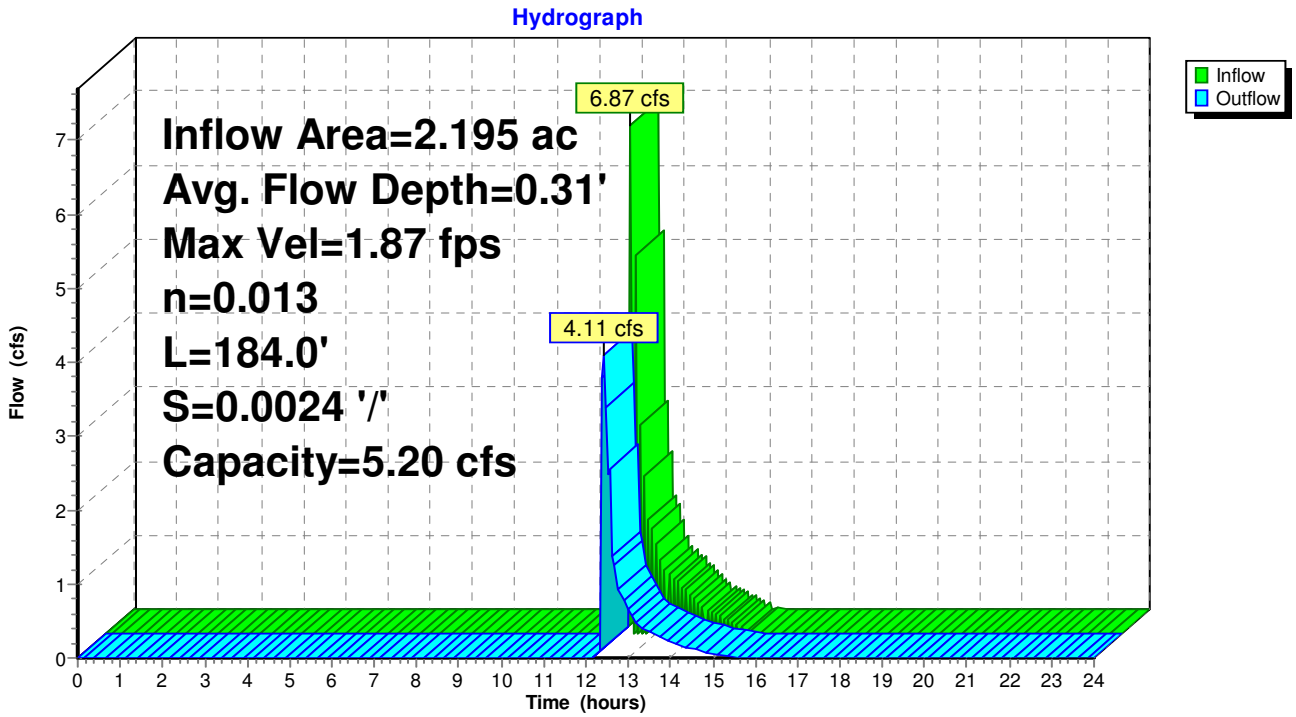
Reach 53R: TO LP2



Summary for Reach 54R: TO LP2

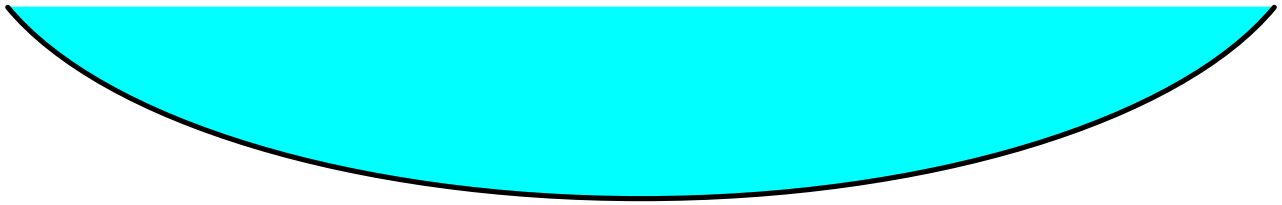
[91] Warning: Storage range exceeded by 0.04'
[55] Hint: Peak inflow is 237% of Manning's capacity
[81] Warning: Exceeded Pond 15P by 11.11' @ 28.15 hrs

Inflow Area = 5.029 ac, 28.62% Impervious, Inflow Depth = 0.66" for 100-Year event
Inflow = 6.20 cfs @ 12.91 hrs, Volume= 0.276 af
Outflow = 3.30 cfs @ 13.06 hrs, Volume= 0.276 af, Atten= 47%, Lag= 9.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.10 fps, Min. Travel Time= 5.6 min
Avg. Velocity = 0.23 fps, Avg. Travel Time= 27.0 min

Peak Storage= 1,112 cf @ 13.06 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 2.62 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 372.0' Slope= 0.0006 '/'
Inlet Invert= 31.53', Outlet Invert= 31.30'



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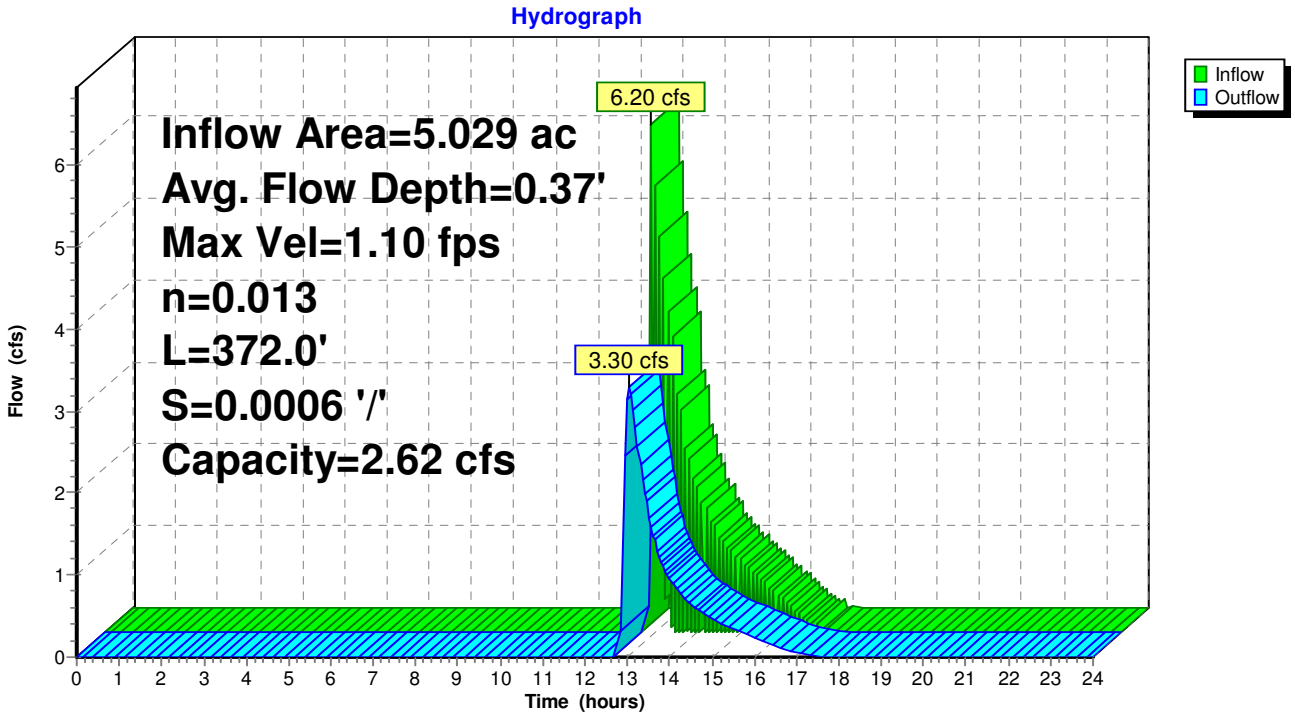
Reach 54R: TO LP2



Summary for Reach 55R: TO LP2

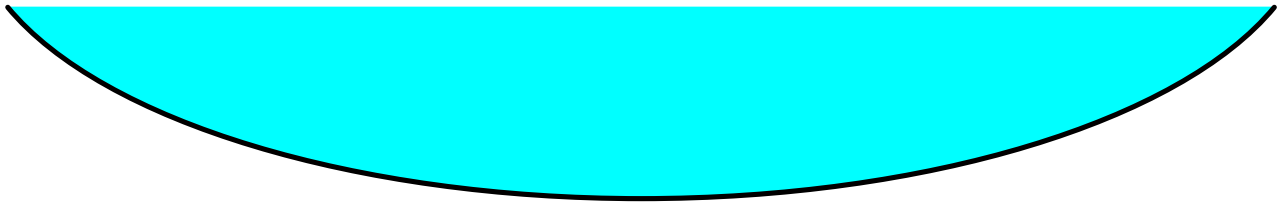
[55] Hint: Peak inflow is 101% of Manning's capacity
[81] Warning: Exceeded Pond 10P-14P by 11.07' @ 0.00 hrs

Inflow Area = 3.994 ac, 36.47% Impervious, Inflow Depth = 0.68" for 100-Year event
Inflow = 10.66 cfs @ 12.45 hrs, Volume= 0.228 af
Outflow = 10.64 cfs @ 12.45 hrs, Volume= 0.228 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.17 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 0.0 min

Peak Storage= 3 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 0.33' Flow Area= 2.5 sf, Capacity= 10.52 cfs

11.50' x 0.33' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 1.0' Slope= 0.0100 '/'
Inlet Invert= 31.30', Outlet Invert= 31.29'



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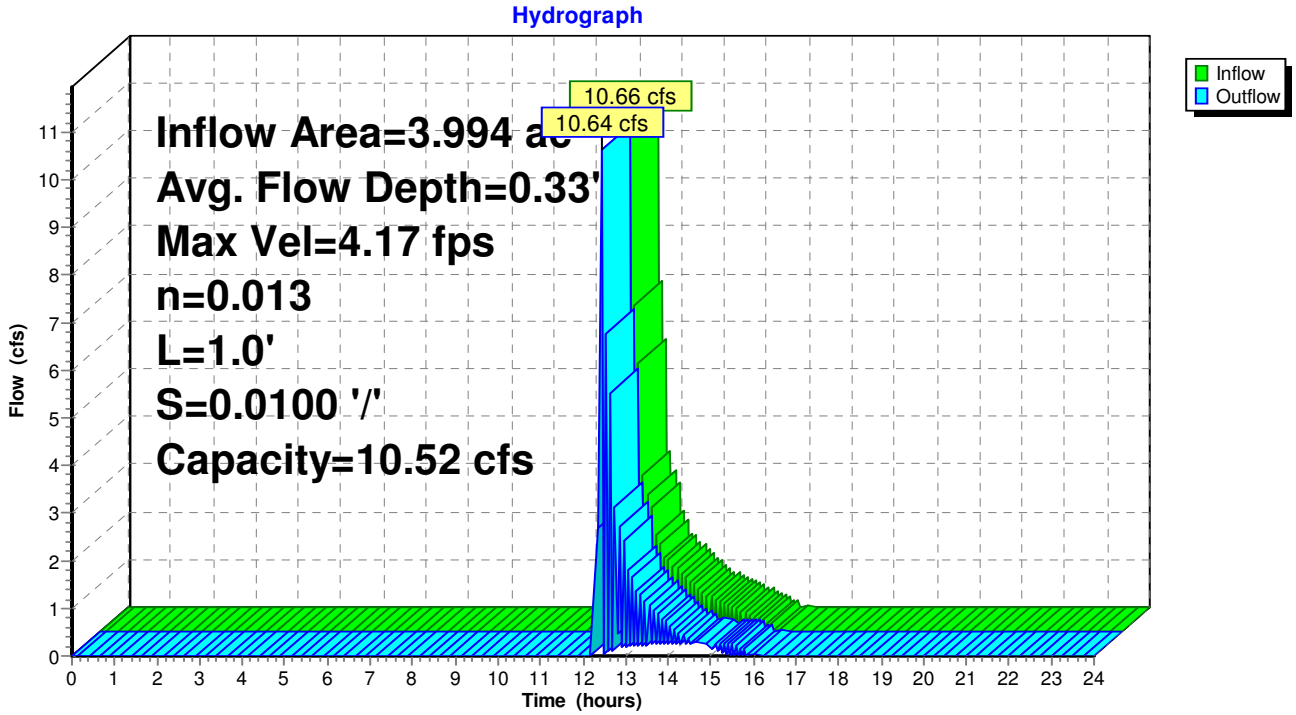
Reach 55R: TO LP2



Summary for Pond 1P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.27'
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=31)

Inflow Area = 1.714 ac, 34.86% Impervious, Inflow Depth = 2.75" for 100-Year event
Inflow = 5.28 cfs @ 12.10 hrs, Volume= 0.392 af
Outflow = 3.84 cfs @ 12.35 hrs, Volume= 0.392 af, Atten= 27%, Lag= 15.0 min
Discarded = 0.24 cfs @ 11.55 hrs, Volume= 0.304 af
Primary = 3.59 cfs @ 12.35 hrs, Volume= 0.089 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 39.27' @ 12.35 hrs Surf.Area= 0.029 ac Storage= 0.120 af
Flood Elev= 42.00' Surf.Area= 0.029 ac Storage= 0.120 af

Plug-Flow detention time= 187.5 min calculated for 0.392 af (100% of inflow)
Center-of-Mass det. time= 187.5 min (1,039.4 - 851.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	32.25'	0.051 af	**46.67'W x 27.24'L x 6.75'H Field A** 0.197 af Overall - 0.069 af Embedded = 0.128 af x 40.0% Voids
#2A	33.00'	0.069 af	**ADS_StormTech MC-4500 +Cap** x 25 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf
		0.120 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	32.25'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	39.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.24 cfs @ 11.55 hrs HW=32.36' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=3.42 cfs @ 12.35 hrs HW=39.26' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 3.42 cfs @ 1.66 fps)

Pond 1P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

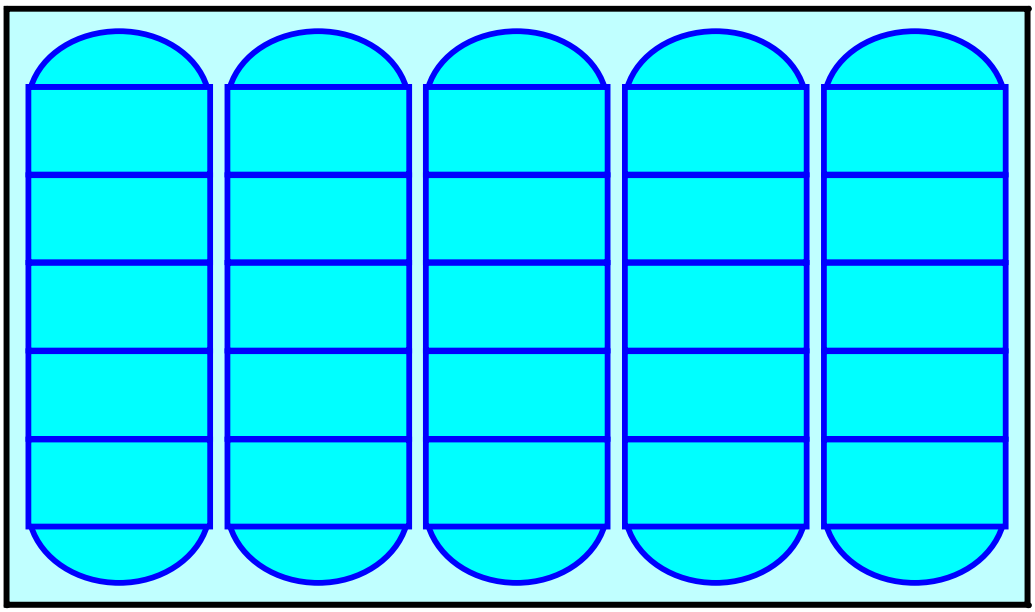
5 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 25.24' Row Length +12.0" End Stone x 2 = 27.24' Base Length
5 Rows x 100.0" Wide + 9.0" Spacing x 4 + 12.0" Side Stone x 2 = 46.67' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

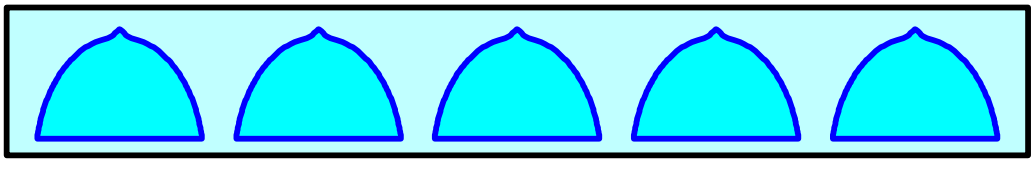
25 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 5 Rows = 3,019.3 cf Chamber Storage

8,581.1 cf Field - 3,019.3 cf Chambers = 5,561.9 cf Stone x 40.0% Voids = 2,224.7 cf Stone Storage

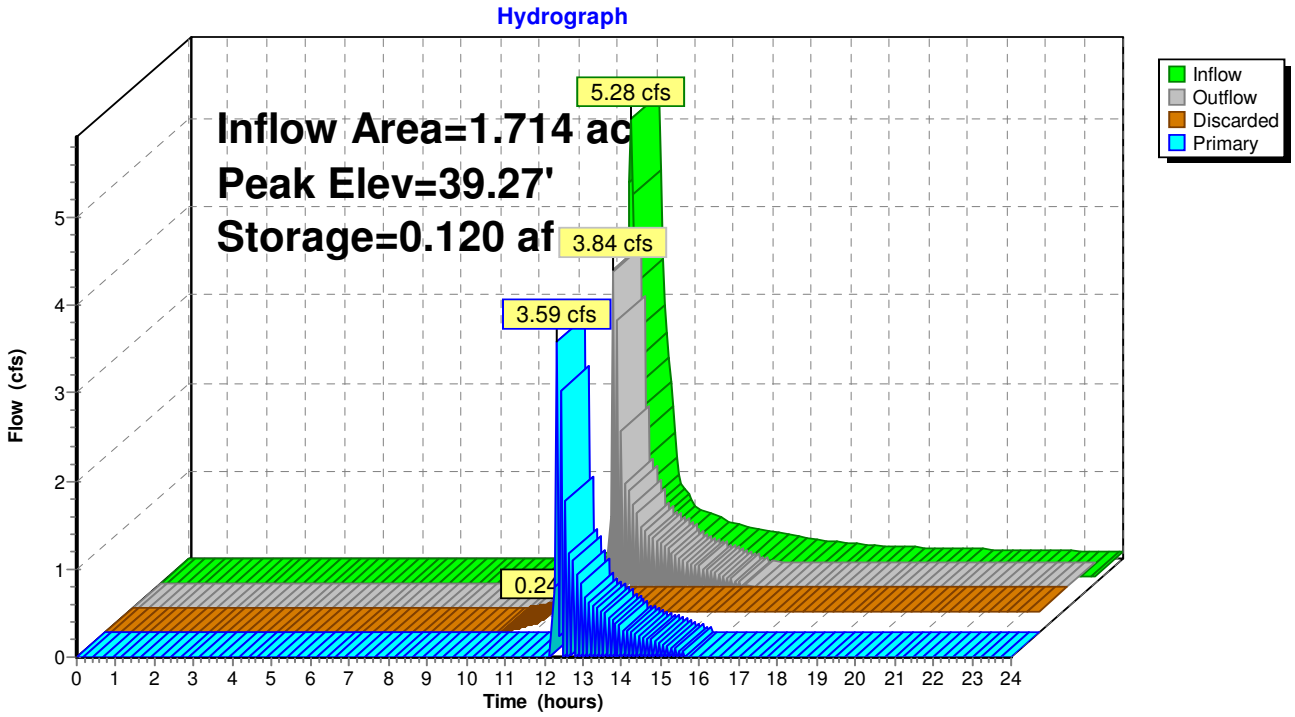
Chamber Storage + Stone Storage = 5,244.0 cf = 0.120 af
Overall Storage Efficiency = 61.1%

25 Chambers
317.8 cy Field
206.0 cy Stone





Pond 1P: INFILTRATION 1



Summary for Pond 2P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.33'
[58] Hint: Peaked 0.33' above defined flood level
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=33)

Inflow Area = 2.656 ac, 17.98% Impervious, Inflow Depth = 2.35" for 100-Year event
Inflow = 5.36 cfs @ 12.21 hrs, Volume= 0.520 af
Outflow = 5.36 cfs @ 12.50 hrs, Volume= 0.520 af, Atten= 0%, Lag= 17.5 min
Discarded = 0.31 cfs @ 11.70 hrs, Volume= 0.398 af
Primary = 5.05 cfs @ 12.50 hrs, Volume= 0.122 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 35.33' @ 12.50 hrs Surf.Area= 0.037 ac Storage= 0.158 af
Flood Elev= 35.00' Surf.Area= 0.037 ac Storage= 0.158 af

Plug-Flow detention time= 196.0 min calculated for 0.520 af (100% of inflow)
Center-of-Mass det. time= 195.9 min (1,064.8 - 868.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	28.25'	0.063 af	**37.58'W x 43.34'L x 6.75'H Field A** 0.252 af Overall - 0.095 af Embedded = 0.158 af x 40.0% Voids
#2A	29.00'	0.095 af	**ADS_StormTech MC-4500 +Cap** x 36 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf
		0.158 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	28.25'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	35.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.31 cfs @ 11.70 hrs HW=28.32' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.31 cfs)

Primary OutFlow Max=5.04 cfs @ 12.50 hrs HW=35.33' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 5.04 cfs @ 1.89 fps)

Pond 2P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

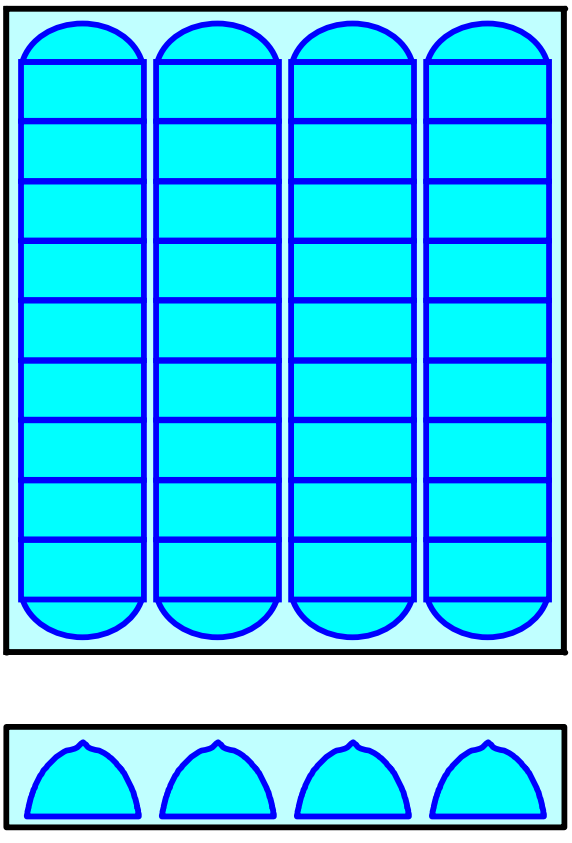
9 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 41.34' Row Length +12.0" End Stone x 2 = 43.34' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

36 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 4 Rows = 4,119.3 cf Chamber Storage

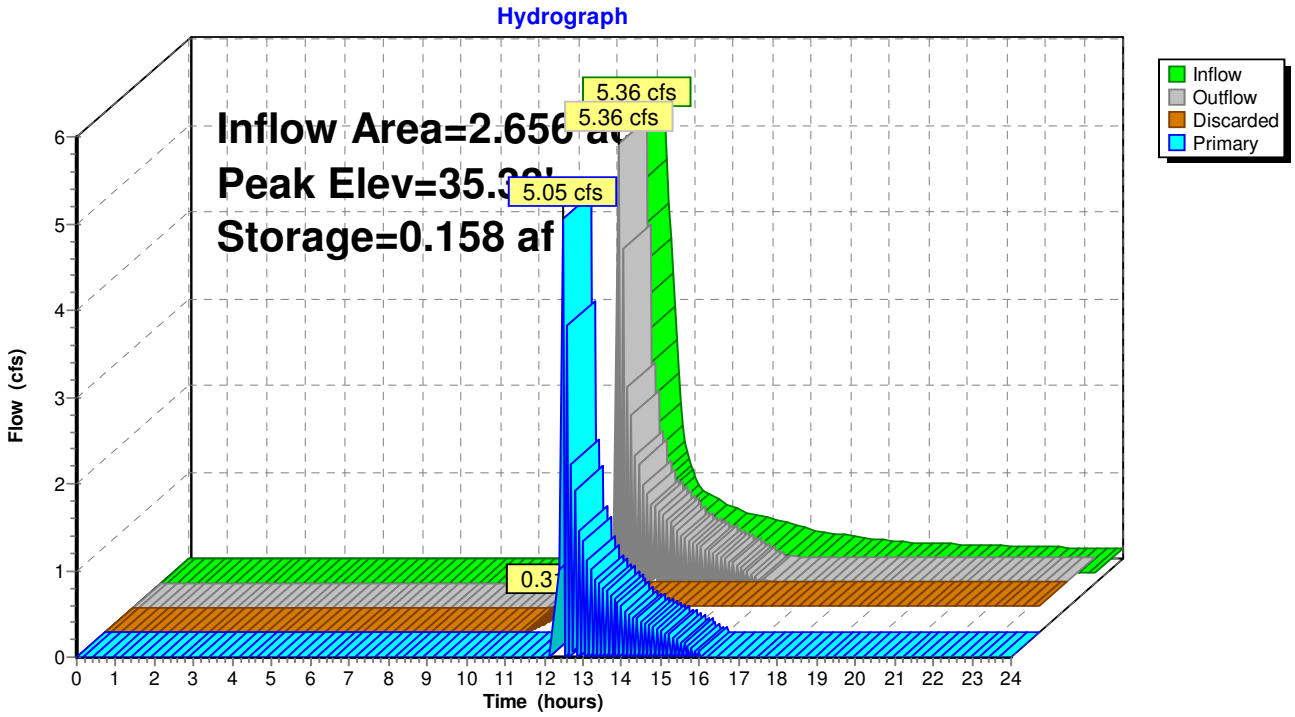
10,995.2 cf Field - 4,119.3 cf Chambers = 6,876.0 cf Stone x 40.0% Voids = 2,750.4 cf Stone Storage

Chamber Storage + Stone Storage = 6,869.6 cf = 0.158 af
Overall Storage Efficiency = 62.5%

36 Chambers
407.2 cy Field
254.7 cy Stone



Pond 2P: INFILTRATION 1



Summary for Pond 3P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.39'
[58] Hint: Peaked 0.39' above defined flood level
[88] Warning: Qout>Qin may require smaller dt or Finer Routing
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=42)

Inflow Area = 4.137 ac, 23.77% Impervious, Inflow Depth = 2.06" for 100-Year event
Inflow = 6.71 cfs @ 12.24 hrs, Volume= 0.710 af
Outflow = 6.76 cfs @ 12.50 hrs, Volume= 0.710 af, Atten= 0%, Lag= 15.2 min
Discarded = 0.37 cfs @ 11.80 hrs, Volume= 0.495 af
Primary = 6.39 cfs @ 12.50 hrs, Volume= 0.215 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 28.24' @ 12.50 hrs Surf.Area= 0.044 ac Storage= 0.188 af
Flood Elev= 27.85' Surf.Area= 0.044 ac Storage= 0.188 af

Plug-Flow detention time= 188.6 min calculated for 0.709 af (100% of inflow)
Center-of-Mass det. time= 188.7 min (1,067.4 - 878.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	21.10'	0.074 af	**37.58'W x 51.39'L x 6.75'H Field A** 0.299 af Overall - 0.114 af Embedded = 0.185 af x 40.0% Voids
#2A	21.85'	0.114 af	**ADS_StormTech MC-4500 +Cap** x 44 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf
		0.188 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.10'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	27.85'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.37 cfs @ 11.80 hrs HW=21.20' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.37 cfs)

Primary OutFlow Max=6.10 cfs @ 12.50 hrs HW=28.23' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 6.10 cfs @ 2.01 fps)

Pond 3P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

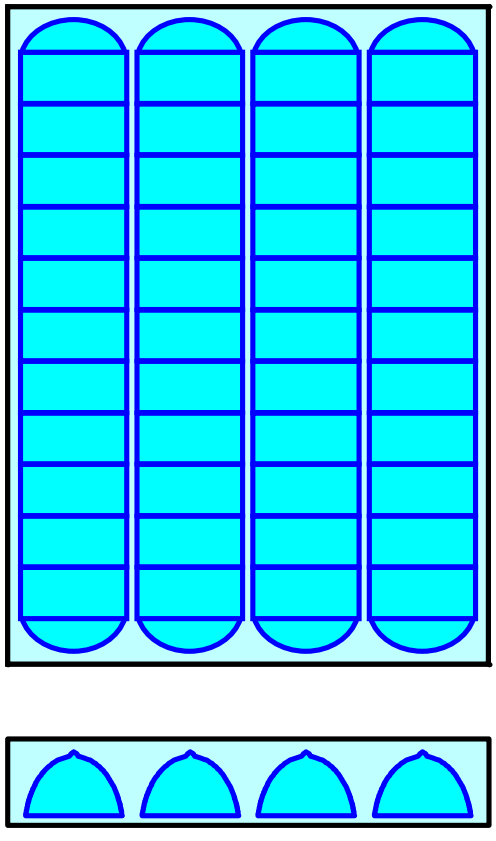
11 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 49.39' Row Length +12.0" End Stone x 2 = 51.39' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

44 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 4 Rows = 4,971.2 cf Chamber Storage

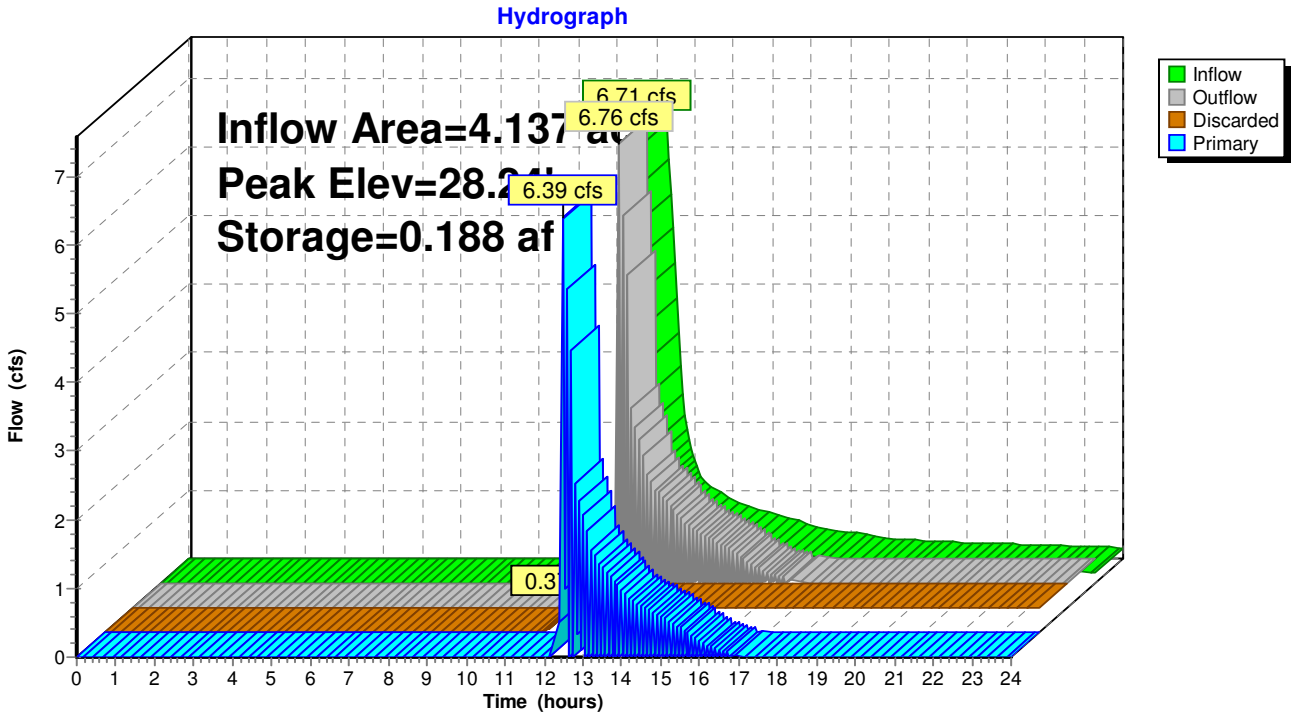
13,037.4 cf Field - 4,971.2 cf Chambers = 8,066.2 cf Stone x 40.0% Voids = 3,226.5 cf Stone Storage

Chamber Storage + Stone Storage = 8,197.7 cf = 0.188 af
Overall Storage Efficiency = 62.9%

44 Chambers
482.9 cy Field
298.7 cy Stone



Pond 3P: INFILTRATION 1



Summary for Pond 4P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.31'
[58] Hint: Peaked 0.31' above defined flood level
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=37)

Inflow Area = 3.475 ac, 28.50% Impervious, Inflow Depth = 2.35" for 100-Year event
Inflow = 7.21 cfs @ 12.19 hrs, Volume= 0.680 af
Outflow = 4.85 cfs @ 12.44 hrs, Volume= 0.680 af, Atten= 33%, Lag= 14.9 min
Discarded = 0.38 cfs @ 11.70 hrs, Volume= 0.491 af
Primary = 4.47 cfs @ 12.44 hrs, Volume= 0.189 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 34.96' @ 12.44 hrs Surf.Area= 0.045 ac Storage= 0.189 af
Flood Elev= 34.65' Surf.Area= 0.045 ac Storage= 0.189 af

Plug-Flow detention time= 187.2 min calculated for 0.680 af (100% of inflow)
Center-of-Mass det. time= 187.2 min (1,055.0 - 867.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	27.90'	0.077 af	**55.75'W x 35.29'L x 6.75'H Field A** 0.305 af Overall - 0.113 af Embedded = 0.192 af x 40.0% Voids
#2A	28.65'	0.113 af	**ADS_StormTech MC-4500 +Cap** x 42 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf
		0.189 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	27.90'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	34.65'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.38 cfs @ 11.70 hrs HW=27.99' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.38 cfs)

Primary OutFlow Max=4.24 cfs @ 12.44 hrs HW=34.95' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 4.24 cfs @ 1.78 fps)

Pond 4P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

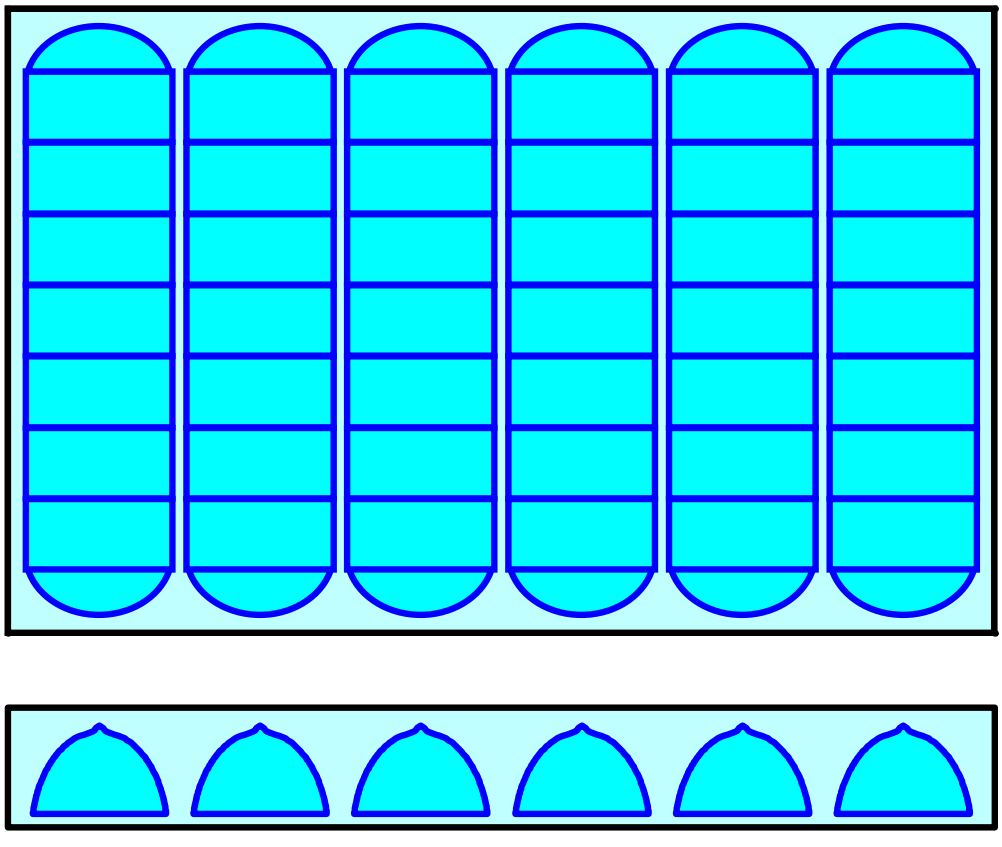
7 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 33.29' Row Length +12.0" End Stone x 2 = 35.29' Base Length
6 Rows x 100.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 55.75' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

42 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 6 Rows = 4,901.0 cf Chamber Storage

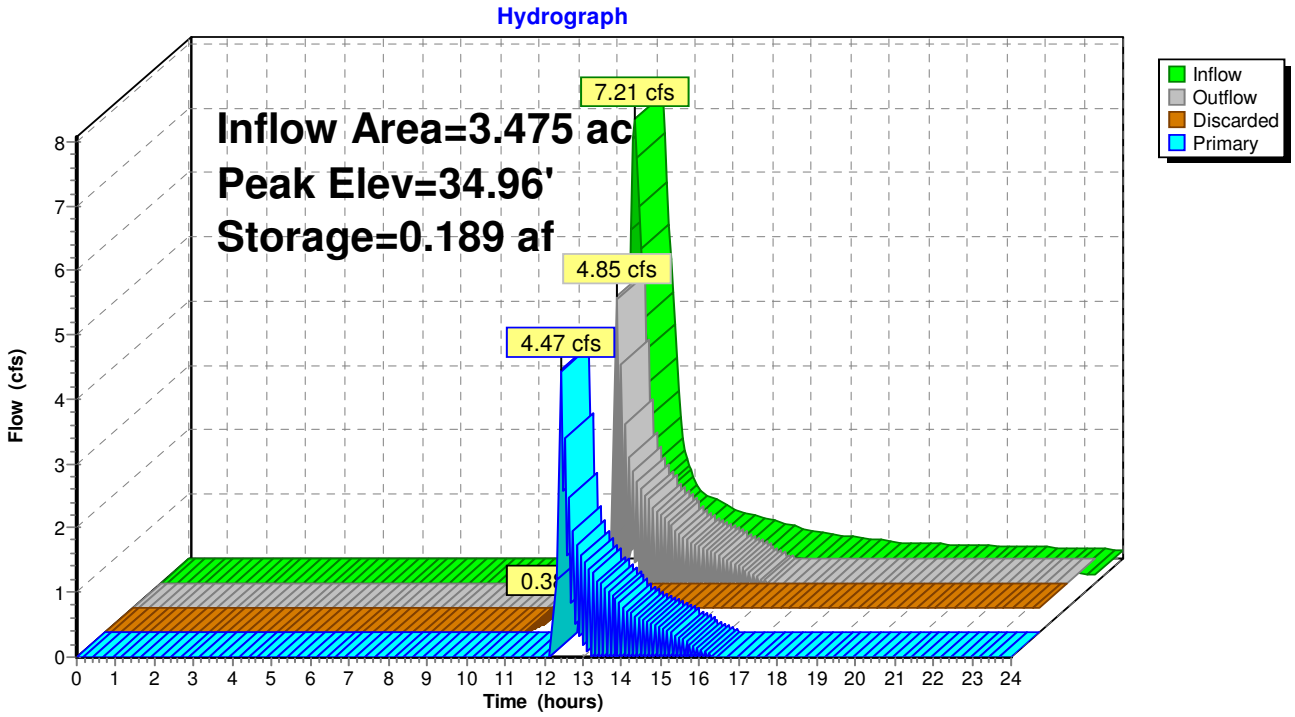
13,280.7 cf Field - 4,901.0 cf Chambers = 8,379.7 cf Stone x 40.0% Voids = 3,351.9 cf Stone Storage

Chamber Storage + Stone Storage = 8,252.9 cf = 0.189 af
Overall Storage Efficiency = 62.1%

42 Chambers
491.9 cy Field
310.4 cy Stone



Pond 4P: INFILTRATION 1



Summary for Pond 5P/6P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.18'
[58] Hint: Peaked 0.18' above defined flood level
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=24)

Inflow Area = 0.964 ac, 64.13% Impervious, Inflow Depth = 4.55" for 100-Year event
Inflow = 5.11 cfs @ 12.08 hrs, Volume= 0.366 af
Outflow = 2.35 cfs @ 12.29 hrs, Volume= 0.366 af, Atten= 54%, Lag= 12.7 min
Discarded = 0.24 cfs @ 11.05 hrs, Volume= 0.300 af
Primary = 2.12 cfs @ 12.29 hrs, Volume= 0.066 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 34.46' @ 12.30 hrs Surf.Area= 0.028 ac Storage= 0.119 af
Flood Elev= 34.28' Surf.Area= 0.028 ac Storage= 0.119 af

Plug-Flow detention time= 175.9 min calculated for 0.366 af (100% of inflow)
Center-of-Mass det. time= 175.8 min (987.8 - 812.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	27.53'	0.048 af	**28.50'W x 43.34'L x 6.75'H Field A** 0.191 af Overall - 0.071 af Embedded = 0.120 af x 40.0% Voids
#2A	28.28'	0.071 af	**ADS_StormTech MC-4500 +Cap** x 27 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
		0.119 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	27.53'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	34.28'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.24 cfs @ 11.05 hrs HW=27.60' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=2.00 cfs @ 12.29 hrs HW=34.46' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 2.00 cfs @ 1.39 fps)

Pond 5P/6P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

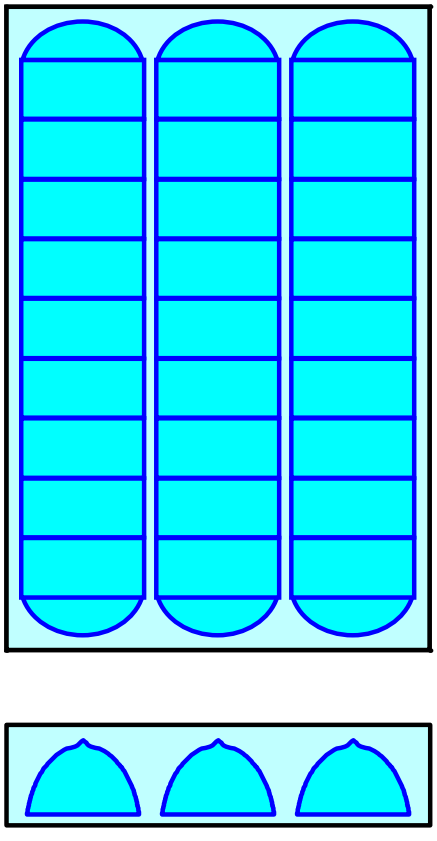
9 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 41.34' Row Length +12.0" End Stone x 2 = 43.34' Base Length
3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

27 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 3,089.4 cf Chamber Storage

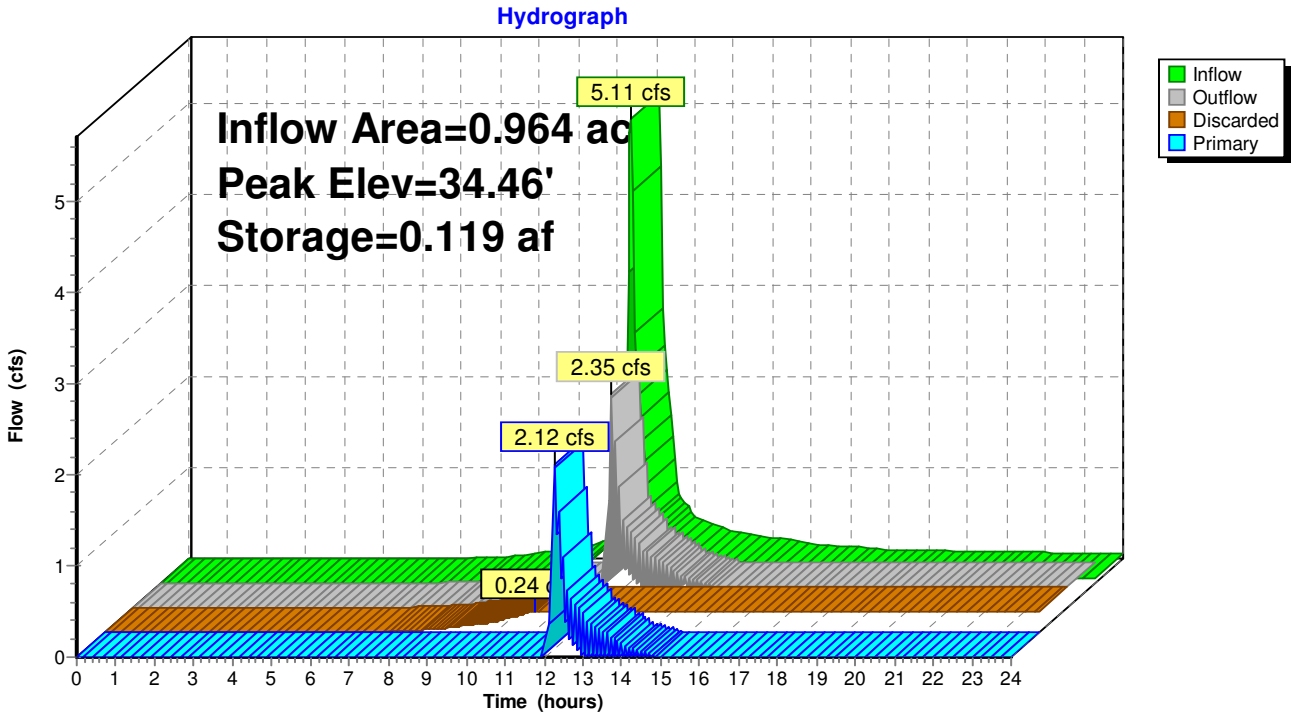
8,337.9 cf Field - 3,089.4 cf Chambers = 5,248.4 cf Stone x 40.0% Voids = 2,099.4 cf Stone Storage

Chamber Storage + Stone Storage = 5,188.8 cf = 0.119 af
Overall Storage Efficiency = 62.2%

27 Chambers
308.8 cy Field
194.4 cy Stone



Pond 5P/6P: INFILTRATION 1



Summary for Pond 7P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.42'
[58] Hint: Peaked 0.42' above defined flood level
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=23)

Inflow Area = 1.743 ac, 62.25% Impervious, Inflow Depth = 4.44" for 100-Year event
Inflow = 7.65 cfs @ 12.15 hrs, Volume= 0.644 af
Outflow = 7.55 cfs @ 12.40 hrs, Volume= 0.644 af, Atten= 1%, Lag= 14.9 min
Discarded = 0.42 cfs @ 11.20 hrs, Volume= 0.534 af
Primary = 7.12 cfs @ 12.40 hrs, Volume= 0.110 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 32.08' @ 12.40 hrs Surf.Area= 0.051 ac Storage= 0.215 af
Flood Elev= 31.66' Surf.Area= 0.051 ac Storage= 0.215 af

Plug-Flow detention time= 181.2 min calculated for 0.644 af (100% of inflow)
Center-of-Mass det. time= 181.2 min (1,001.9 - 820.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	24.91'	0.085 af	**46.67'W x 47.37'L x 6.75'H Field A** 0.343 af Overall - 0.130 af Embedded = 0.212 af x 40.0% Voids
#2A	25.66'	0.130 af	**ADS_StormTech MC-4500 +Cap** x 50 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf
		0.215 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.91'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	31.66'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.42 cfs @ 11.20 hrs HW=24.98' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.42 cfs)

Primary OutFlow Max=7.11 cfs @ 12.40 hrs HW=32.08' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 7.11 cfs @ 2.12 fps)

Pond 7P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

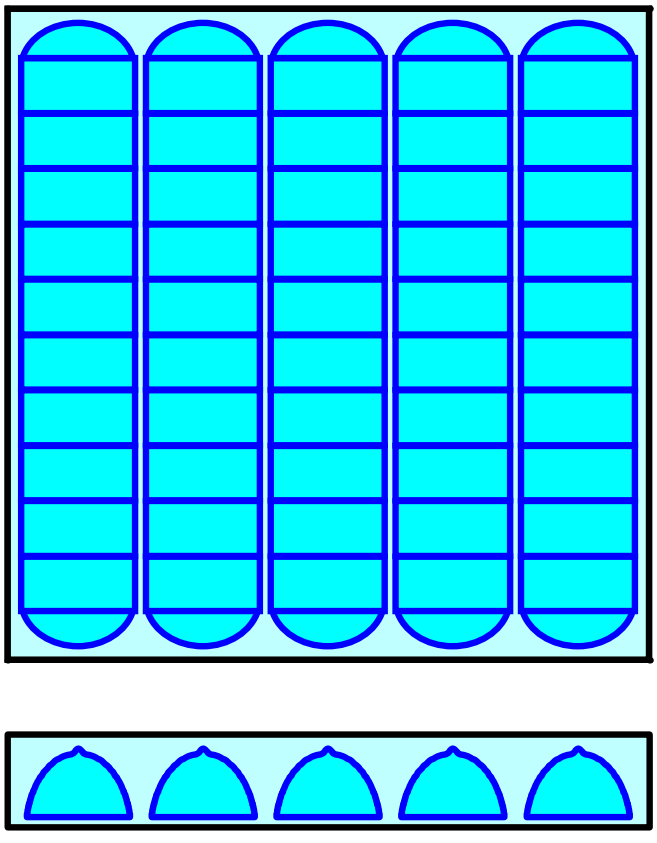
10 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 45.37' Row Length +12.0" End Stone x 2 = 47.37' Base Length
5 Rows x 100.0" Wide + 9.0" Spacing x 4 + 12.0" Side Stone x 2 = 46.67' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

50 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 5 Rows = 5,681.5 cf Chamber Storage

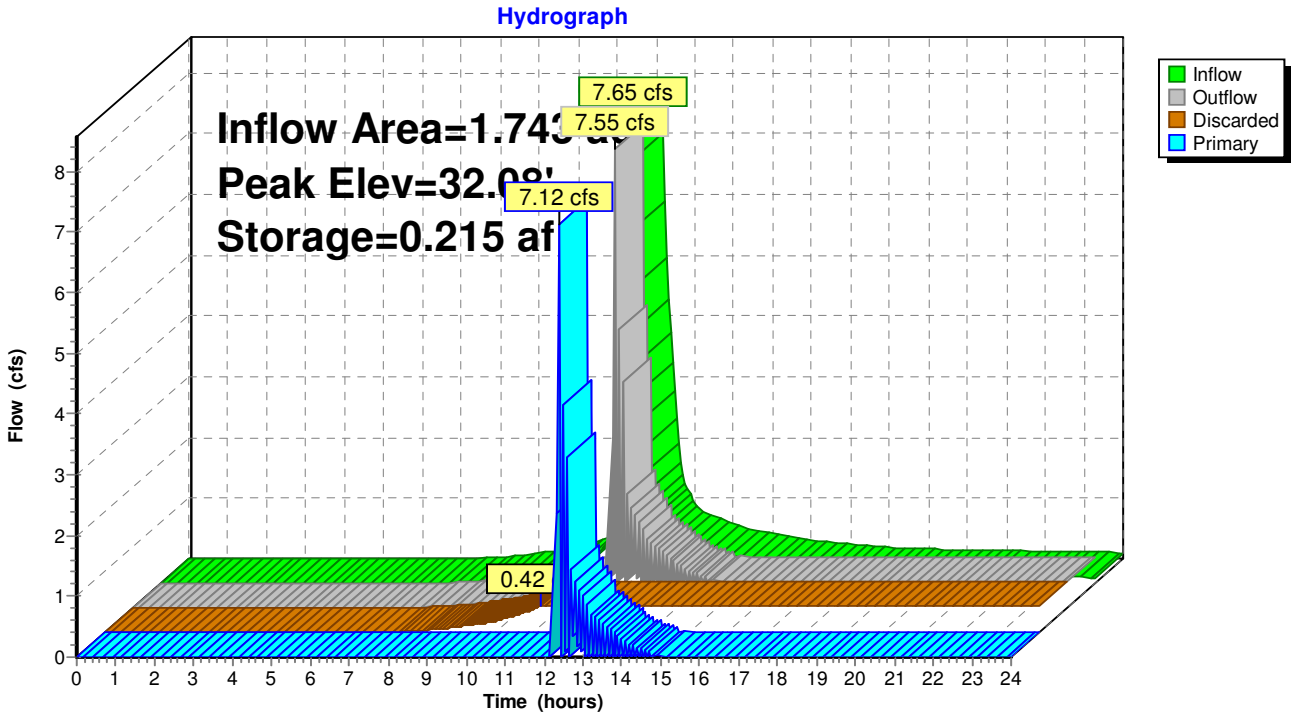
14,920.5 cf Field - 5,681.5 cf Chambers = 9,239.0 cf Stone x 40.0% Voids = 3,695.6 cf Stone Storage

Chamber Storage + Stone Storage = 9,377.1 cf = 0.215 af
Overall Storage Efficiency = 62.8%

50 Chambers
552.6 cy Field
342.2 cy Stone



Pond 7P: INFILTRATION 1



Summary for Pond 8P/9P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.41'
[58] Hint: Peaked 0.41' above defined flood level
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=25)

Inflow Area = 2.195 ac, 53.43% Impervious, Inflow Depth = 3.84" for 100-Year event
Inflow = 8.62 cfs @ 12.14 hrs, Volume= 0.702 af
Outflow = 7.33 cfs @ 12.40 hrs, Volume= 0.702 af, Atten= 15%, Lag= 15.6 min
Discarded = 0.46 cfs @ 11.30 hrs, Volume= 0.575 af
Primary = 6.87 cfs @ 12.40 hrs, Volume= 0.128 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 29.52' @ 12.40 hrs Surf.Area= 0.055 ac Storage= 0.234 af
Flood Elev= 29.11' Surf.Area= 0.055 ac Storage= 0.234 af

Plug-Flow detention time= 188.2 min calculated for 0.702 af (100% of inflow)
Center-of-Mass det. time= 188.1 min (1,019.8 - 831.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	22.36'	0.090 af	**37.58'W x 63.47'L x 6.75'H Field A** 0.370 af Overall - 0.143 af Embedded = 0.226 af x 40.0% Voids
#2A	23.11'	0.143 af	**ADS_StormTech MC-4500 +Cap** x 56 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf
		0.234 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.36'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	29.11'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.46 cfs @ 11.30 hrs HW=22.43' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.46 cfs)

Primary OutFlow Max=6.64 cfs @ 12.40 hrs HW=29.51' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 6.64 cfs @ 2.07 fps)

Pond 8P/9P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

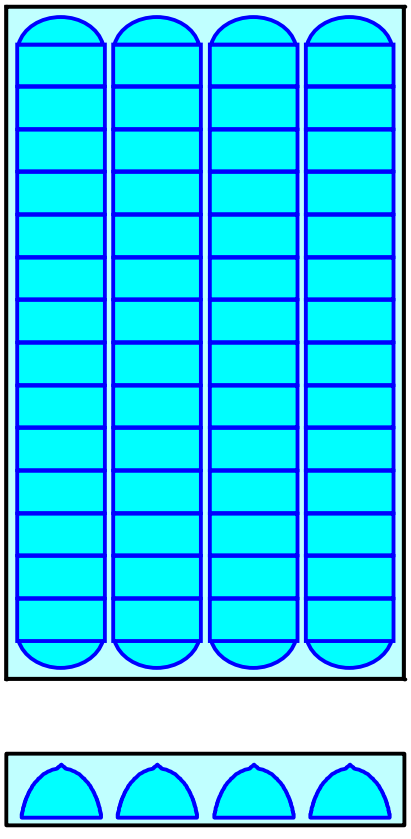
14 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 61.47' Row Length +12.0" End Stone x 2 = 63.47' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

56 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 4 Rows = 6,249.1 cf Chamber Storage

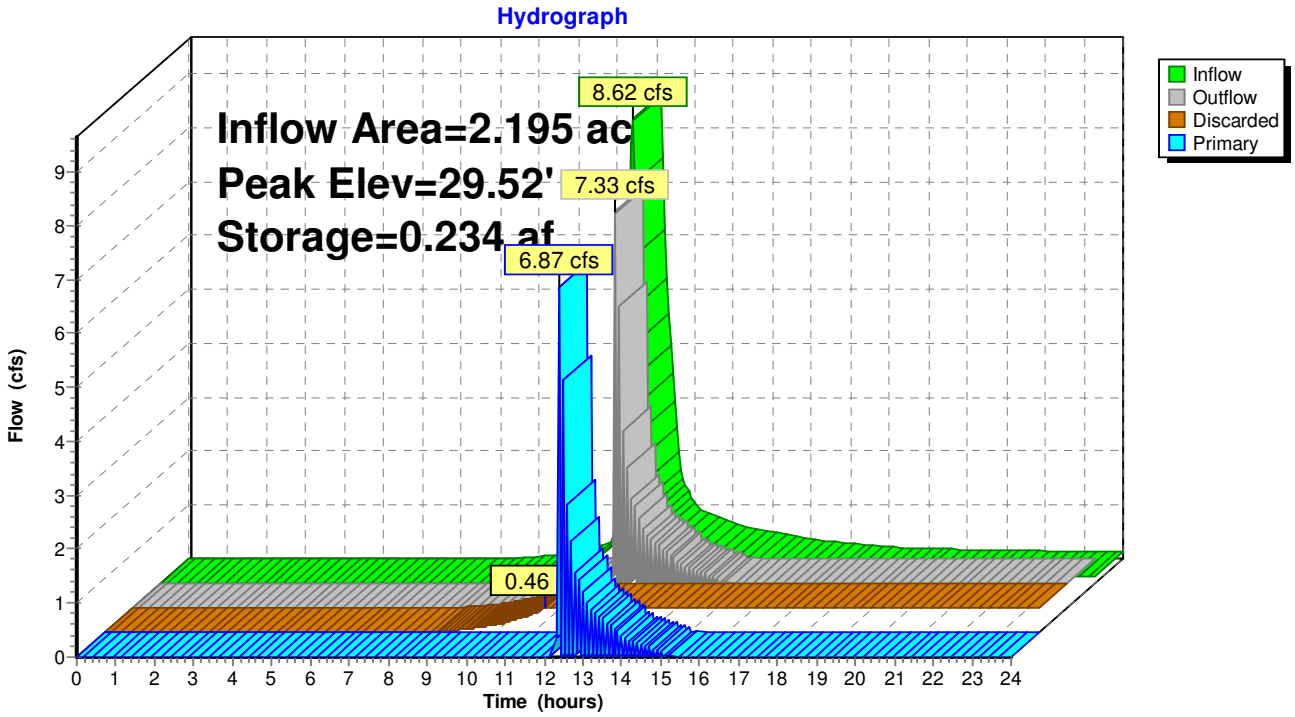
16,100.7 cf Field - 6,249.1 cf Chambers = 9,851.6 cf Stone x 40.0% Voids = 3,940.7 cf Stone Storage

Chamber Storage + Stone Storage = 10,189.7 cf = 0.234 af
Overall Storage Efficiency = 63.3%

56 Chambers
596.3 cy Field
364.9 cy Stone



Pond 8P/9P: INFILTRATION 1



Summary for Pond 10P-14P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.55'
[58] Hint: Peaked 0.55' above defined flood level
[88] Warning: Qout>Qin may require smaller dt or Finer Routing
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=32)

Inflow Area = 3.994 ac, 36.47% Impervious, Inflow Depth = 2.83" for 100-Year event
Inflow = 9.07 cfs @ 12.17 hrs, Volume= 0.942 af
Outflow = 11.21 cfs @ 12.45 hrs, Volume= 0.942 af, Atten= 0%, Lag= 17.0 min
Discarded = 0.55 cfs @ 11.55 hrs, Volume= 0.714 af
Primary = 10.66 cfs @ 12.45 hrs, Volume= 0.228 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 27.53' @ 12.45 hrs Surf.Area= 0.066 ac Storage= 0.280 af
Flood Elev= 26.98' Surf.Area= 0.066 ac Storage= 0.280 af

Plug-Flow detention time= 188.6 min calculated for 0.941 af (100% of inflow)
Center-of-Mass det. time= 188.5 min (1,043.6 - 855.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	20.23'	0.109 af	**55.75'W x 51.39'L x 6.75'H Field A** 0.444 af Overall - 0.171 af Embedded = 0.273 af x 40.0% Voids
#2A	20.98'	0.171 af	**ADS_StormTech MC-4500 +Cap** x 66 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf
		0.280 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	20.23'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	26.98'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.55 cfs @ 11.55 hrs HW=20.30' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.55 cfs)

Primary OutFlow Max=10.62 cfs @ 12.45 hrs HW=27.53' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 10.62 cfs @ 2.42 fps)

Pond 10P-14P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

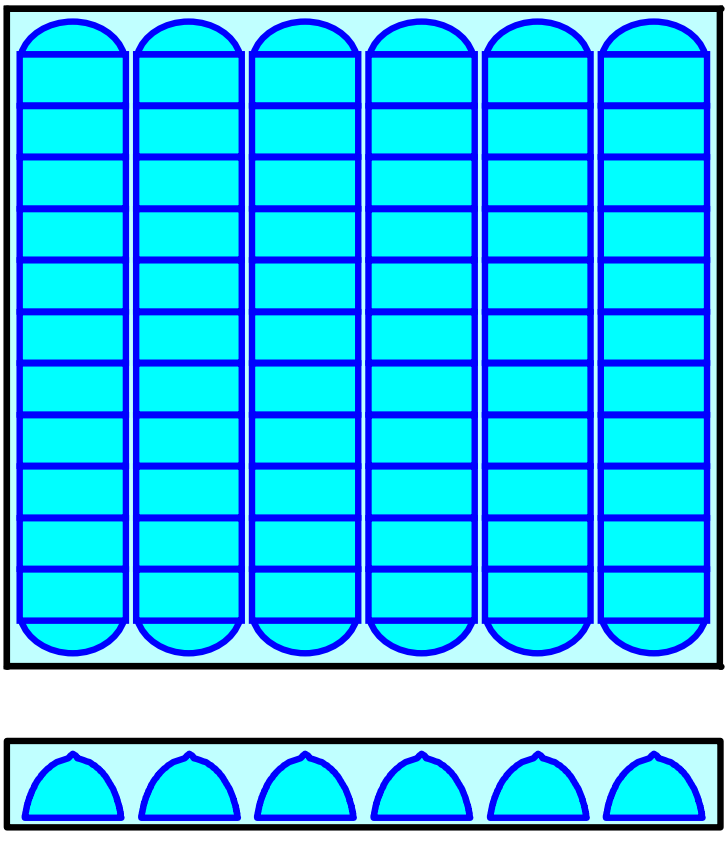
11 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 49.39' Row Length +12.0" End Stone x 2 = 51.39' Base Length
6 Rows x 100.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 55.75' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

66 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 6 Rows = 7,456.8 cf Chamber Storage

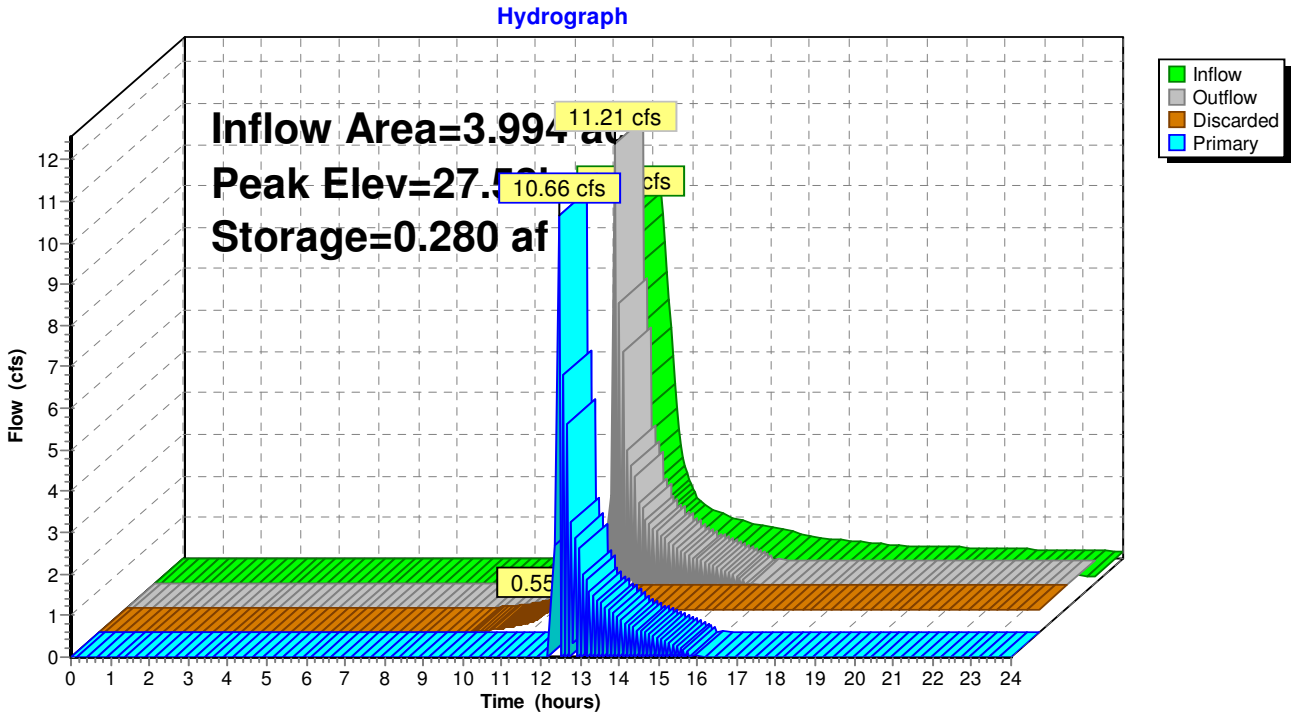
19,339.3 cf Field - 7,456.8 cf Chambers = 11,882.6 cf Stone x 40.0% Voids = 4,753.0 cf Stone Storage

Chamber Storage + Stone Storage = 12,209.8 cf = 0.280 af
Overall Storage Efficiency = 63.1%

66 Chambers
716.3 cy Field
440.1 cy Stone



Pond 10P-14P: INFILTRATION 1



Summary for Pond 15P: INFILTRATION 1

[93] Warning: Storage range exceeded by 0.38'
[58] Hint: Peaked 0.38' above defined flood level
[88] Warning: Qout>Qin may require smaller dt or Finer Routing
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=39)

Inflow Area = 5.029 ac, 28.62% Impervious, Inflow Depth = 2.35" for 100-Year event
Inflow = 6.33 cfs @ 12.62 hrs, Volume= 0.984 af
Outflow = 6.73 cfs @ 12.91 hrs, Volume= 0.984 af, Atten= 0%, Lag= 17.3 min
Discarded = 0.53 cfs @ 12.00 hrs, Volume= 0.709 af
Primary = 6.20 cfs @ 12.91 hrs, Volume= 0.276 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 27.55' @ 12.90 hrs Surf.Area= 0.064 ac Storage= 0.272 af
Flood Elev= 27.17' Surf.Area= 0.064 ac Storage= 0.272 af

Plug-Flow detention time= 190.6 min calculated for 0.983 af (100% of inflow)
Center-of-Mass det. time= 190.6 min (1,085.2 - 894.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	20.42'	0.105 af	**46.67'W x 59.44'L x 6.75'H Field A** 0.430 af Overall - 0.167 af Embedded = 0.263 af x 40.0% Voids
#2A	21.17'	0.167 af	**ADS_StormTech MC-4500 +Cap** x 65 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf
		0.272 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	20.42'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	27.17'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.53 cfs @ 12.00 hrs HW=20.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.53 cfs)

Primary OutFlow Max=5.65 cfs @ 12.91 hrs HW=27.53' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 5.65 cfs @ 1.96 fps)

Pond 15P: INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with end caps)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +35.7 cf x 2 x 5 rows = 357.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

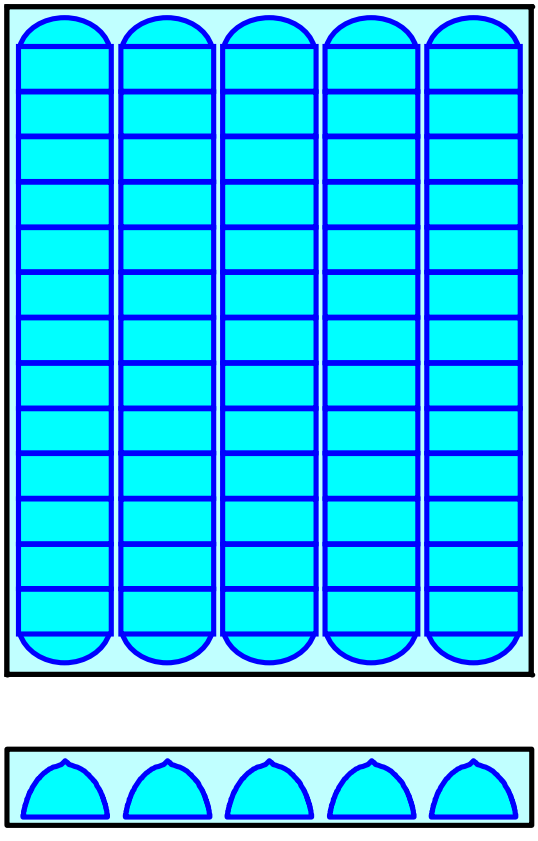
13 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 57.44' Row Length +12.0" End Stone x 2 = 59.44' Base Length
5 Rows x 100.0" Wide + 9.0" Spacing x 4 + 12.0" Side Stone x 2 = 46.67' Base Width
9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

65 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 5 Rows = 7,278.9 cf Chamber Storage

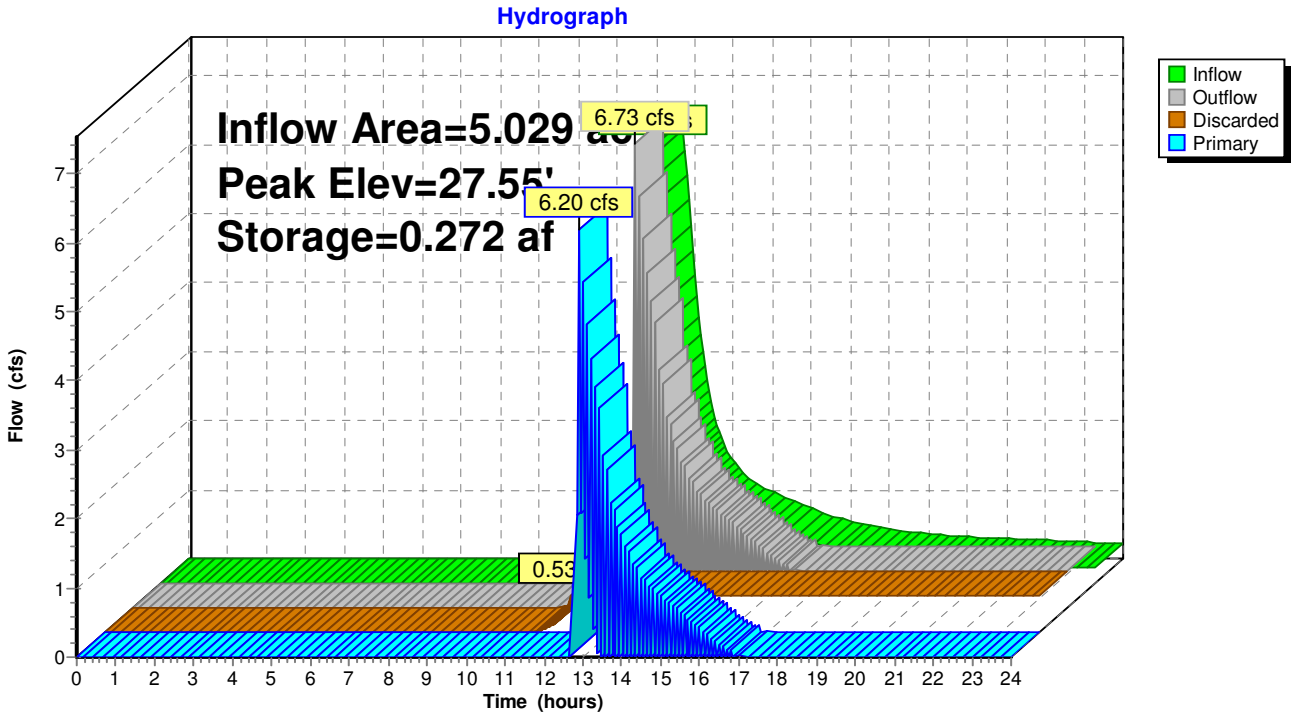
18,724.1 cf Field - 7,278.9 cf Chambers = 11,445.2 cf Stone x 40.0% Voids = 4,578.1 cf Stone Storage

Chamber Storage + Stone Storage = 11,857.0 cf = 0.272 af
Overall Storage Efficiency = 63.3%

65 Chambers
693.5 cy Field
423.9 cy Stone



Pond 15P: INFILTRATION 1



Summary for Pond 100Y LP-1: LOW SPOT ROAD G STA 15-19

[62] Hint: Exceeded Reach 46R OUTLET depth by 0.72' @ 12.85 hrs
[62] Hint: Exceeded Reach 49R OUTLET depth by 0.71' @ 12.90 hrs
[62] Hint: Exceeded Reach 51R OUTLET depth by 0.73' @ 12.85 hrs

Inflow Area = 8.809 ac, 30.47% Impervious, Inflow Depth = 0.63" for 100-Year event
Inflow = 8.27 cfs @ 12.50 hrs, Volume= 0.465 af
Outflow = 3.18 cfs @ 12.79 hrs, Volume= 0.465 af, Atten= 62%, Lag= 17.3 min
Discarded = 3.18 cfs @ 12.79 hrs, Volume= 0.465 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 36.98' @ 12.79 hrs Surf.Area= 16,600 sf Storage= 5,172 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 17.4 min (808.1 - 790.7)

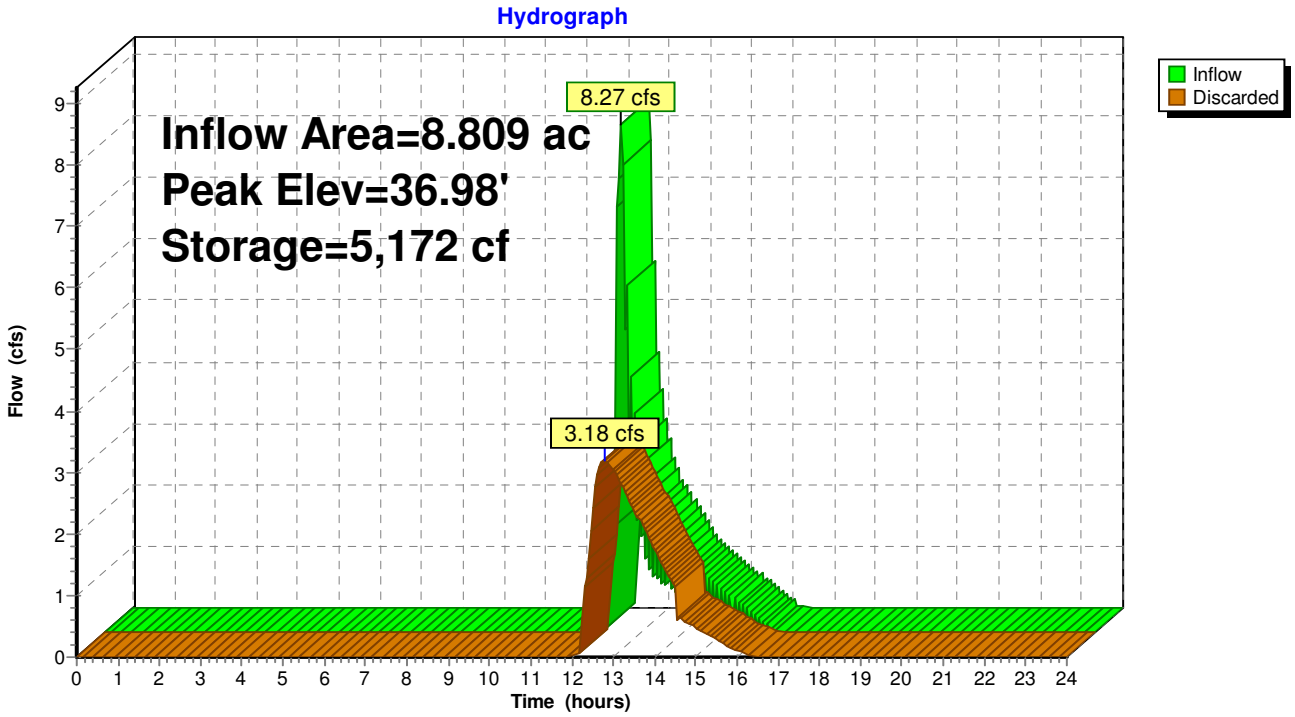
Volume	Invert	Avail.Storage	Storage Description
#1	36.50'	27,083 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
36.50	5,746	507.0	0	0	5,746
36.75	11,030	581.3	2,061	2,061	12,182
37.00	17,237	676.0	3,505	5,566	21,658
37.25	24,463	759.5	5,186	10,752	31,199
37.50	32,551	841.3	7,103	17,855	41,621
37.75	41,455	951.0	9,228	27,083	57,269

Device	Routing	Invert	Outlet Devices
#1	Discarded	36.50'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=3.18 cfs @ 12.79 hrs HW=36.98' (Free Discharge)
1=Exfiltration (Exfiltration Controls 3.18 cfs)

Pond 100Y LP-1: LOW SPOT ROAD G STA 15-19



Summary for Pond 100Y LP-2: Low Spot Road I

[62] Hint: Exceeded Reach 48R OUTLET depth by 0.66' @ 13.20 hrs
[62] Hint: Exceeded Reach 52R OUTLET depth by 0.69' @ 13.20 hrs
[63] Warning: Exceeded Reach 53R INLET depth by 0.22' @ 13.20 hrs
[63] Warning: Exceeded Reach 54R INLET depth by 0.53' @ 12.80 hrs
[63] Warning: Exceeded Reach 55R INLET depth by 0.72' @ 13.20 hrs

Inflow Area = 17.098 ac, 35.90% Impervious, Inflow Depth = 0.67" for 100-Year event
Inflow = 17.48 cfs @ 12.45 hrs, Volume= 0.957 af
Outflow = 5.62 cfs @ 13.18 hrs, Volume= 0.957 af, Atten= 68%, Lag= 43.3 min
Discarded = 5.62 cfs @ 13.18 hrs, Volume= 0.957 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 32.08' @ 13.18 hrs Surf.Area= 29,360 sf Storage= 8,404 cf

Plug-Flow detention time= 19.7 min calculated for 0.957 af (100% of inflow)
Center-of-Mass det. time= 19.7 min (823.9 - 804.2)

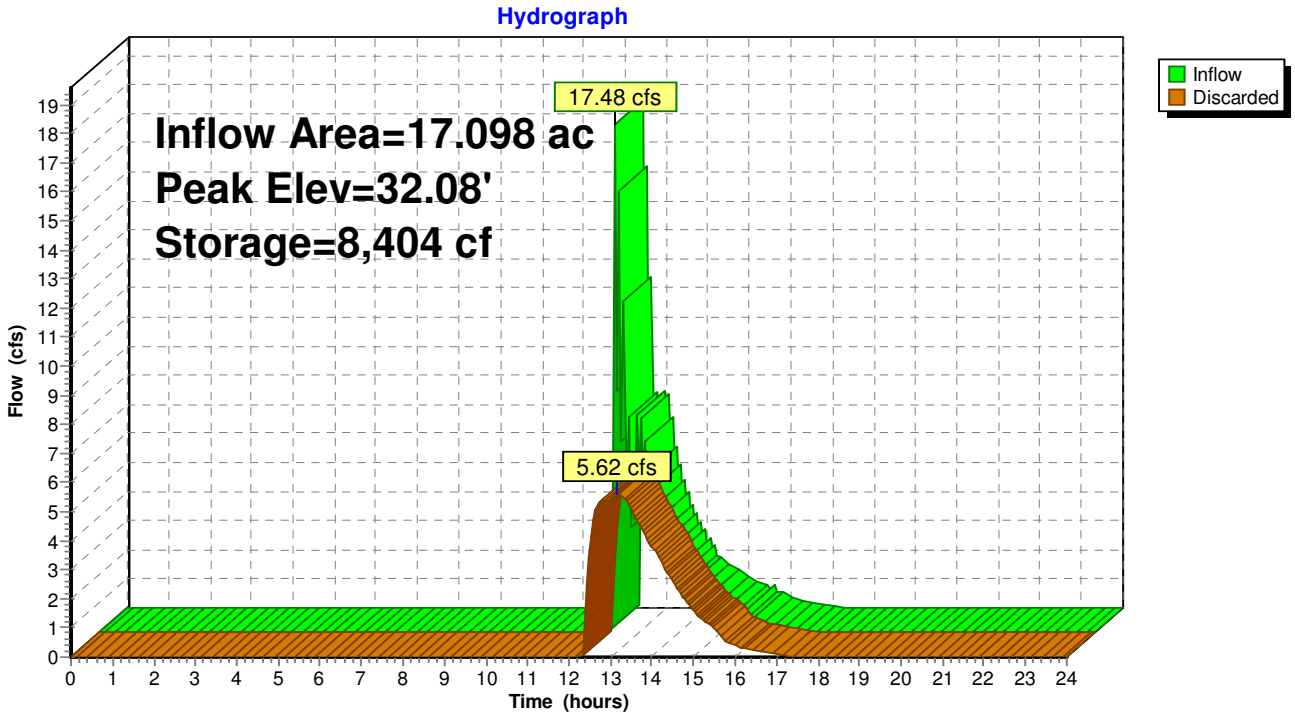
Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	70,244 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
31.50	3,929	567.0	0	0	3,929
31.75	12,215	727.0	1,923	1,923	20,406
32.00	24,089	969.0	4,455	6,377	53,067
32.25	43,398	1,543.0	8,318	14,696	167,810
32.50	63,912	1,964.0	13,331	28,027	285,302
32.75	85,235	2,322.0	18,580	46,607	407,406
33.00	104,183	2,279.9	23,638	70,244	422,834

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.50'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=5.62 cfs @ 13.18 hrs HW=32.08' (Free Discharge)
1=Exfiltration (Exfiltration Controls 5.62 cfs)

Pond 100Y LP-2: Low Spot Road I



Length (ft)	Downstream Structure	Upstream Structure	Upstream Invert (ft)	Downstream Invert (ft)	Slope (ft/ft)
115.202	DMH1	CB4	35.500	34.924	0.00500
83.523	DMH1	CB4A	35.342	34.924	0.00500
77.316	CB4	CB3	36.467	36.080	0.00500
50.190	CB3	CB2	37.131	36.877	0.00508
35.718	CB2	CB1	37.310	37.131	0.00500
118.397	DMH3	CB9	38.650	33.184	0.04617
53.741	DMH3	DMH2	33.452	33.184	0.00500
79.640	DMH2	CB6	33.850	33.452	0.00500
22.016	CB9	CB8	39.800	39.650	0.00679
119.578	CB6	CB5	36.650	36.320	0.00276
19.655	CB6	CB7	34.833	33.850	0.05000
53.992	DMH4	CB10	34.668	32.440	0.04127
64.388	DMH4	CB12	34.498	32.440	0.03196
124.706	DMH4	CB14	33.063	32.440	0.00500
70.424	DMH4	CB15	33.255	32.440	0.01157
21.961	CB14	CB13	33.173	33.063	0.00500
20.862	CB12	CB11	34.602	34.498	0.00500

Direction (DD.MMSS)	Step Up (ft)	Drop Invert (ft)	Pipe Material	Pipe Shape	Pipe Size (in)	Pipe Width (in)	Manning's n
26.3759 SE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
51.4059 NW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
67.5524 SW	0.58	0.00	HDPE	Circular	15.00	0.00	0.012
16.0922 SW	0.41	0.00	HDPE	Circular	15.00	0.00	0.012
17.2711 SW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
65.5130 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
66.5638 NW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
89.1754 SW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
69.4149 SE	1.00	0.00	HDPE	Circular	12.00	0.00	0.012
5.5721 NE	2.47	0.00	HDPE	Circular	12.00	0.00	0.012
87.2816 NW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
55.0756 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
37.0209 SW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
0.0405 NW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
15.1328 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.013
87.4303 SW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
0.4203 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012

Known Flow (cfs)	Area (Acres)	Area (SF)	Area (SqMiles)	Curve Number	Tc (min)	Barrel Numbers	Barrel Spacing (ft)
0.000	0.002	87.120	0.000	63	17.900	1	0.00
0.000	0.000	0.000	0.000	50	5.000	1	0.00
0.000	0.772	33610.896	0.001	87	471.300	1	0.00
0.000	0.010	432.185	0.000	92	81.478	1	0.00
0.000	0.012	509.652	0.000	97	78.800	1	0.00
0.000	0.028	1224.036	0.000	50	185.200	1	0.00
0.000	0.021	919.489	0.000	50	187.360	1	0.00
0.000	0.245	10689.624	0.000	50	613.200	1	0.00
0.000	0.040	1759.824	0.000	73	119.300	1	0.00
0.000	0.178	7771.104	0.000	69	569.100	1	0.00
0.000	0.790	34404.660	0.001	56	516.553	1	0.00
0.000	0.106	4613.282	0.000	50	351.803	1	0.00
0.000	0.003	148.834	0.000	50	21.882	1	0.00
0.000	0.447	19459.907	0.001	50	376.489	1	0.00
0.000	0.812	35357.652	0.001	50	486.200	1	0.00
0.000	1.679	73155.615	0.003	50	811.331	1	0.00
0.000	0.148	6468.660	0.000	50	418.100	1	0.00

Downstream Rim Elev (ft)	Upstream Rim Elev (ft)	Total Flow (cfs)	Full Flow (cfs)	Maximum Flow (cfs)	Downstream HGL (ft)
39.862	41.145	0.385	4.962	5.337	35.160
39.862	38.441	0.000	4.962	5.337	34.924
41.145	40.021	0.382	4.962	5.337	36.315
40.021	40.374	0.042	5.000	5.378	36.955
40.374	40.310	0.024	2.737	2.944	37.231
39.760	41.597	0.045	8.316	8.946	33.236
39.760	39.109	0.203	4.962	5.337	33.356
39.109	37.840	0.198	4.962	5.337	33.697
41.597	41.651	0.039	3.188	3.429	39.728
37.840	39.650	0.047	2.032	2.186	36.409
37.840	37.833	0.126	15.691	16.878	34.074
36.971	37.670	0.016	7.862	8.457	32.473
36.971	37.577	0.022	12.544	13.493	32.479
36.971	36.173	0.197	2.737	2.944	32.622
36.971	37.505	0.097	3.843	4.134	32.550
36.173	36.173	0.134	2.737	2.944	33.301
37.577	37.600	0.020	2.736	2.944	34.596

Upstream HGL (ft)	Downstream EGL (ft)	Upstream EGL (ft)	Downstream Flow Depth (in)	Upstream Flow Depth (in)
35.736	35.249	35.825	2.829	2.829
35.342	34.924	35.342	0.000	0.000
36.701	36.404	36.790	2.817	2.817
37.210	36.981	37.236	0.942	0.942
37.373	37.236	37.394	1.192	0.756
38.703	33.359	38.826	0.634	0.634
33.625	33.417	33.686	2.069	2.069
34.022	33.718	34.081	2.943	2.061
39.877	39.757	39.907	0.926	0.926
36.808	36.439	36.814	1.062	1.899
34.970	34.085	35.016	2.687	1.638
34.702	32.533	34.761	0.400	0.400
34.537	32.538	34.595	0.473	0.473
33.245	32.685	33.309	2.179	2.179
33.365	32.617	33.432	1.318	1.318
33.323	33.315	33.374	2.851	1.792
34.659	34.600	34.678	1.184	0.684

Downstream Velocity (fps)	Upstream Velocity (fps)	System
2.400	2.400	A
0.000	0.000	A
2.391	2.391	A
1.303	1.303	A
0.597	1.169	A
2.811	2.811	B
1.982	1.982	B
1.164	1.946	B
1.379	1.379	C
1.389	0.590	B
0.842	1.730	B
1.962	1.962	E
1.936	1.936	E
2.022	2.022	E
2.078	2.078	E
0.934	1.819	F
0.493	1.108	E

Length (ft)	Downstream Structure	Upstream Structure	Upstream Invert (ft)	Downstream Invert (ft)	Slope (ft/ft)
19.542	05	CB28	26.000	25.602	0.02035
242.236	CB28	CB27	30.009	26.000	0.01655
33.338	CB27	CB26	30.639	30.009	0.01890
153.586	CB26	CB25	31.443	30.639	0.00524
21.234	CB25	CB24	31.549	31.443	0.00500
50.779	CB24	CB23	31.968	31.659	0.00609
97.335	DMH10	DMH7	25.481	21.461	0.04131
146.644	DMH10	DMH8	25.172	21.461	0.02531
165.853	DMH8	CB57	26.002	25.172	0.00500
50.641	DMH8	CB58	28.695	28.442	0.00499
112.557	DMH7	CB53	26.780	25.481	0.01154
35.319	DMH7	CB54	28.677	25.481	0.09047
32.269	DMH7	CB55	26.000	25.481	0.01608
62.956	CB57	CB56	28.079	26.002	0.03300
37.925	CB57	CB63	26.191	26.002	0.00500
63.610	CB53	CB52	27.650	27.330	0.00504
22.797	CB63	CB62	26.305	26.191	0.00500
44.192	CB62	CB61	26.526	26.305	0.00500
104.277	CB61	CB60	27.048	26.526	0.00501
21.511	CB60	CB59	27.296	27.188	0.00500
105.077	O3	CB21	37.057	36.531	0.00500
34.606	O3	DMH2	38.526	36.531	0.05763
129.017	DMH2	CB18	39.173	38.526	0.00502
139.681	DMH2	CB19	39.223	38.526	0.00499
32.071	CB21	CB20	37.217	37.057	0.00500
32.968	CB20	CB20A	37.382	37.217	0.00500
49.511	O6	CB34	26.732	24.920	0.03660
231.581	O6	CB35	29.027	24.920	0.01774
57.806	CB35	CB35A	29.420	29.127	0.00506
72.150	CB35	CB35B	29.369	29.027	0.00474
107.985	CB34	CB33	27.561	26.732	0.00768
141.431	CB33	CB31	28.891	27.561	0.00940
52.446	CB33	CB33A	27.823	27.561	0.00500
273.149	CB31	CB30	30.657	28.891	0.00646
39.922	CB31	CB32	29.176	28.891	0.00713
39.144	CB30	CB29	31.211	30.657	0.01416
178.720	CB29	CB29B	32.303	31.211	0.00611
17.342	CB29B	CB29A	32.769	32.682	0.00499
101.486	O8	CB37	29.912	29.405	0.00500
31.444	CB37	DMH4	30.070	29.912	0.00500
43.488	DMH4	CB38	31.755	30.070	0.03875
33.909	DMH4	CB39	31.655	31.490	0.00487
169.462	DMH4	DMH3	30.656	30.070	0.00346
106.055	DMH3	CB36	31.186	30.656	0.00500
56.649	DMH3	CB40	31.485	30.916	0.01005
41.853	DMH3	CB42	31.335	30.916	0.01000
53.419	DMH3	CB43	31.447	30.916	0.00993
41.017	DMH3	CB45	31.325	30.916	0.00996
16.518	CB45	CB44	31.407	31.325	0.00500
15.803	CB42	CB41	31.414	31.335	0.00500
45.852	09	DHM6	27.354	27.110	0.00530
30.281	DHM6	CB49	27.650	27.503	0.00484
78.834	DHM6	CB50	28.290	27.503	0.00997
36.525	DHM6	CB51	27.868	27.683	0.00506
212.419	DHM6	DHM5	27.595	27.354	0.00114
30.460	DHM5	CB46	27.747	27.595	0.00500
31.573	DHM5	CB47	27.775	27.615	0.00507

Direction (DD.MMSS)	Step Up (ft)	Drop Invert (ft)	Pipe Material	Pipe Shape	Pipe Size (in)	Pipe Width (in)	Manning's n
78.3308 SE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
15.2930 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
86.2106 SW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
1.4205 NW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
89.2145 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
28.5309 NE	0.11	0.00	HDPE	Circular	12.00	0.00	0.012
19.5921 NW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
55.1311 SE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
42.0011 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
67.3743 SE	3.27	0.00	HDPE	Circular	12.00	0.00	0.012
2.1850 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
70.5213 SW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
89.3913 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
53.1325 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
48.0222 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
69.1512 SE	0.55	0.00	HDPE	Circular	12.00	0.00	0.012
56.2311 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
45.0245 NW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
54.4810 NW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
32.1036 SW	0.14	0.00	HDPE	Circular	12.00	0.00	0.012
9.0131 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
77.0836 SE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
34.3944 SW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
9.1048 SW	0.00	0.00	Concrete	Circular	12.00	0.00	0.013
16.5700 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
89.4707 NE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
1.0114 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
9.3223 SE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
65.2223 SW	0.10	0.00	HDPE	Circular	12.00	0.00	0.012
63.5900 NW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
87.5632 SW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
28.0747 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
16.0759 SW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
88.0441 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
25.3548 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
50.1242 NE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
26.2646 NW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
70.5406 SW	0.38	0.00	HDPE	Circular	12.00	0.00	0.012
39.3648 SW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
29.3728 SW	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
65.2650 SW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
70.2759 SE	1.42	0.00	HDPE	Circular	12.00	0.00	0.012
2.1814 SE	0.00	0.00	HDPE	Circular	15.00	0.00	0.012
16.1951 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
57.4328 SW	0.26	0.00	HDPE	Circular	12.00	0.00	0.012
54.3843 NW	0.26	0.00	HDPE	Circular	12.00	0.00	0.012
58.5340 SE	0.26	0.00	HDPE	Circular	12.00	0.00	0.012
43.1544 NE	0.26	0.00	HDPE	Circular	12.00	0.00	0.012
74.5711 NE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
63.3701 NW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
59.5536 NW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
58.3057 NW	0.15	0.00	HDPE	Circular	12.00	0.00	0.012
60.4833 SW	0.15	0.00	HDPE	Circular	12.00	0.00	0.012
30.2432 SE	0.33	0.00	HDPE	Circular	12.00	0.00	0.012
34.5613 SW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
61.1940 SE	0.00	0.00	HDPE	Circular	12.00	0.00	0.012
74.5752 NW	0.02	0.00	HDPE	Circular	12.00	0.00	0.012

Known Flow (cfs)	Area (Acres)	Area (SF)	Area (SqMiles)	Curve Number	Tc (min)	Barrel Numbers	Barrel Spacing (ft)
0.000	0.088	3815.500	0.000	50	5.000	1	0.00
0.000	0.159	6909.300	0.000	50	5.000	1	0.00
0.000	0.397	17275.500	0.001	50	5.000	1	0.00
0.000	1.197	52132.608	0.002	50	5.000	1	0.00
0.000	0.042	1837.700	0.000	50	5.000	1	0.00
0.000	0.006	278.784	0.000	50	5.000	1	0.00
0.000	0.006	279.900	0.000	50	5.000	1	0.00
0.000	0.000	0.000	0.000	50	5.000	1	0.00
0.000	0.186	8084.736	0.000	50	5.000	1	0.00
0.000	0.098	4251.000	0.000	50	5.000	1	0.00
0.000	0.806	35119.800	0.001	50	5.000	1	0.00
0.000	0.343	14938.100	0.001	50	5.000	1	0.00
0.000	0.142	6203.800	0.000	50	5.000	1	0.00
0.000	0.313	13644.400	0.000	50	5.000	1	0.00
0.000	0.004	188.500	0.000	50	5.000	1	0.00
0.000	0.105	4563.500	0.000	50	5.000	1	0.00
0.000	0.005	198.300	0.000	50	5.000	1	0.00
0.000	0.006	241.000	0.000	50	5.000	1	0.00
0.000	0.012	532.600	0.000	50	5.000	1	0.00
0.000	0.409	17802.700	0.001	50	5.000	1	0.00
0.000	0.000	0.000	0.000	50	5.000	1	0.00
0.000	0.006	278.784	0.000	50	5.000	1	0.00
0.000	0.122	5296.896	0.000	50	5.000	1	0.00
0.000	0.102	4460.544	0.000	50	5.000	1	0.00
0.000	0.016	675.900	0.000	50	5.000	1	0.00
0.000	0.000	0.000	0.000	50	5.000	1	0.00
0.000	0.667	29066.500	0.001	50	5.000	1	0.00
0.000	0.000	0.000	0.000	50	5.000	1	0.00
0.000	0.000	0.000	0.000	50	5.000	1	0.00
0.000	0.000	0.000	0.000	50	5.000	1	0.00
0.000	0.015	652.000	0.000	50	5.000	1	0.00
0.000	1.030	44884.224	0.002	50	5.000	1	0.00
0.000	0.011	498.800	0.000	50	5.000	1	0.00
0.000	0.428	18661.400	0.001	50	5.000	1	0.00
0.000	0.342	14902.800	0.001	50	5.000	1	0.00
0.000	0.037	1633.300	0.000	50	5.000	1	0.00
0.000	0.581	25318.100	0.001	50	5.000	1	0.00
0.000	0.013	561.800	0.000	50	5.000	1	0.00
0.000	0.004	173.700	0.000	50	5.000	1	0.00
0.000	0.011	468.000	0.000	50	5.000	1	0.00
0.000	0.095	4131.100	0.000	50	5.000	1	0.00
0.000	0.586	25547.279	0.001	50	5.000	1	0.00
0.000	0.011	492.200	0.000	50	5.000	1	0.00
0.000	0.129	5601.100	0.000	50	5.000	1	0.00
0.000	0.147	6390.200	0.000	50	5.000	1	0.00
0.000	0.159	6933.200	0.000	50	5.000	1	0.00
0.000	0.016	704.200	0.000	50	5.000	1	0.00
0.000	0.039	1677.300	0.000	50	5.000	1	0.00
0.000	0.115	5012.700	0.000	50	5.000	1	0.00
0.000	0.504	21933.400	0.001	50	5.000	1	0.00
0.000	0.012	507.400	0.000	50	5.000	1	0.00
0.000	0.212	9224.800	0.000	50	5.000	1	0.00
0.000	0.408	17780.300	0.001	50	5.000	1	0.00
0.000	0.158	6897.200	0.000	50	5.000	1	0.00
0.000	0.044	1918.100	0.000	50	5.000	1	0.00
0.000	0.370	16107.300	0.001	50	5.000	1	0.00
0.000	0.645	28115.900	0.001	50	5.000	1	0.00

Downstream Rim Elev (ft)	Upstream Rim Elev (ft)	Total Flow (cfs)	Full Flow (cfs)	Maximum Flow (cfs)	Downstream HGL (ft)
33.453	33.251	1.662	10.010	10.768	25.947
33.251	34.500	1.561	9.027	9.710	26.948
34.500	34.809	1.386	5.321	5.724	30.711
34.809	35.641	0.997	2.801	3.013	31.327
35.641	35.620	0.057	2.737	2.944	31.903
35.620	36.298	0.008	3.020	3.249	31.659
33.770	33.167	1.321	14.261	15.341	21.718
33.770	33.321	1.065	11.163	12.009	21.722
33.321	32.062	0.950	4.962	5.337	25.973
33.321	33.111	0.112	2.733	2.940	28.579
33.167	31.649	0.811	7.537	8.108	26.638
33.167	32.806	0.344	11.641	12.522	26.637
33.167	32.449	0.159	4.907	5.279	26.636
32.062	32.079	0.318	7.031	7.563	26.512
32.062	32.205	0.430	4.963	5.338	26.514
31.649	31.650	0.119	2.747	2.955	27.471
32.205	31.360	0.425	4.960	5.335	26.575
31.360	31.856	0.419	4.962	5.338	26.665
31.856	31.298	0.413	4.965	5.341	26.884
31.298	31.296	0.398	2.736	2.943	27.446
41.736	40.304	0.018	4.962	5.337	36.583
41.736	42.136	0.219	16.845	18.121	36.631
42.136	41.109	0.137	2.742	2.949	39.004
42.136	41.113	0.074	2.524	2.715	39.003
40.304	40.217	0.018	4.962	5.338	37.129
40.217	40.381	0.000	2.736	2.943	37.217
34.227	33.500	2.813	13.423	14.440	25.309
34.227	32.027	0.000	9.345	10.052	24.920
32.027	33.670	0.000	2.754	2.962	29.127
32.027	33.619	0.000	2.664	2.866	29.027
33.500	32.706	2.218	6.149	6.614	28.198
32.706	33.257	2.187	6.805	7.320	28.466
32.706	32.482	0.013	4.961	5.337	28.443
33.257	35.000	1.006	5.642	6.069	29.662
33.257	33.000	0.343	5.927	6.375	29.655
35.000	35.650	0.592	8.348	8.981	31.162
35.650	36.824	0.547	5.483	5.899	31.632
36.824	36.831	0.015	2.735	2.942	32.732
38.774	38.620	1.827	4.962	5.337	29.930
38.620	38.805	1.823	4.961	5.337	30.702
38.805	38.542	0.109	7.618	8.195	30.820
38.805	38.197	0.536	2.701	2.906	31.792
38.805	36.844	1.165	4.128	4.441	30.831
36.844	35.186	0.145	2.736	2.943	31.251
36.844	35.798	0.163	3.879	4.173	31.253
36.844	36.157	0.649	3.870	4.162	31.278
36.844	36.296	0.019	3.856	4.148	31.251
36.844	36.151	0.176	3.863	4.156	31.254
36.151	36.567	0.130	2.737	2.944	31.553
36.157	35.822	0.474	2.736	2.943	31.785
34.033	34.417	2.563	2.817	3.031	27.797
34.417	33.810	0.979	2.692	2.896	28.402
34.417	32.927	0.398	3.865	4.157	28.393
34.417	33.631	0.175	2.754	2.962	28.392
34.417	32.416	0.998	1.305	1.404	28.402
32.416	31.747	0.366	2.737	2.944	28.561
32.416	31.775	0.579	2.756	2.965	28.563

Upstream HGL (ft)	Downstream EGL (ft)	Upstream EGL (ft)	Downstream Flow Depth (in)	Upstream Flow Depth (in)
26.345	26.514	26.912	4.135	4.135
30.504	26.986	30.689	11.381	5.945
31.137	30.797	31.332	8.427	5.980
31.863	31.374	32.021	8.261	5.036
31.903	31.903	31.904	5.515	4.241
31.968	31.659	31.968	0.000	0.000
25.738	22.538	26.558	3.086	3.086
25.433	22.232	25.944	3.131	3.131
26.384	25.993	26.523	9.607	4.595
28.831	28.626	28.878	1.639	1.639
27.133	26.646	27.259	13.885	4.236
28.919	26.640	29.004	12.000	2.903
26.636	26.636	26.637	12.000	7.630
28.312	26.522	28.394	6.127	2.791
26.521	26.527	26.564	6.152	3.951
27.791	27.519	27.840	1.693	1.693
26.580	26.603	26.650	4.607	3.293
26.778	26.697	26.866	4.317	3.019
27.298	26.915	27.385	4.289	2.995
27.554	27.542	27.650	3.096	3.096
37.108	36.600	37.125	0.617	0.617
38.626	36.984	38.979	1.200	1.200
39.325	39.006	39.377	5.736	1.818
39.334	39.004	39.371	5.730	1.333
37.269	37.135	37.286	0.870	0.617
37.382	37.217	37.382	0.000	0.000
27.121	26.470	28.282	4.664	4.664
29.027	24.920	29.027	0.000	0.000
29.420	29.127	29.420	0.000	0.000
29.369	29.027	29.369	0.000	0.000
28.294	28.248	28.431	15.000	8.795
29.482	28.548	29.710	10.860	7.085
28.443	28.443	28.443	10.587	7.441
31.051	29.687	31.194	9.253	4.733
29.655	29.658	29.665	9.167	5.750
31.511	31.187	31.617	6.060	3.600
32.591	31.667	32.692	5.047	3.460
32.819	32.749	32.836	0.599	0.599
30.438	30.147	30.654	6.303	6.303
30.709	30.779	30.838	9.471	7.678
31.889	30.821	31.935	9.007	1.616
31.957	31.903	32.069	3.626	3.626
31.082	30.865	31.237	9.137	5.107
31.342	31.253	31.395	7.142	1.867
31.651	31.261	31.708	4.044	1.984
31.670	31.378	31.793	4.341	4.029
31.502	31.251	31.521	4.017	0.670
31.497	31.262	31.556	4.048	2.060
31.565	31.568	31.607	2.739	1.893
31.786	31.815	31.835	5.404	4.468
28.131	28.106	28.369	8.235	9.326
28.412	28.429	28.448	10.778	9.148
28.551	28.398	28.643	10.678	3.130
28.393	28.393	28.395	8.504	6.290
28.532	28.427	28.558	12.000	11.241
28.563	28.564	28.567	11.591	9.783
28.567	28.572	28.579	11.376	9.501

Downstream Velocity (fps)	Upstream Velocity (fps)	System
6.040	6.040	G
1.563	3.448	G
2.352	3.544	G
1.730	3.189	G
0.162	0.230	G
0.805	0.805	G
7.263	7.263	L
5.731	5.731	L
1.144	2.981	M
1.736	1.736	M
0.684	2.849	L
0.438	2.346	L
0.202	0.301	L
0.790	2.297	M
0.907	1.665	M
1.766	1.766	L
1.328	2.123	M
1.435	2.378	M
1.426	2.368	M
2.483	2.483	M
1.051	1.051	E
4.765	4.765	E
0.371	1.833	E
0.201	1.558	E
0.632	1.051	F
0.000	0.000	F
8.646	8.646	H
0.000	0.000	H
0.000	0.000	I
0.000	0.000	I
1.807	2.965	G
2.298	3.834	G
0.015	0.022	G
1.266	3.029	H
0.437	0.795	H
1.273	2.612	H
1.509	2.557	H
1.036	1.036	H
3.734	3.734	J
2.232	2.880	J
0.172	1.724	J
2.679	2.679	J
1.488	3.161	J
0.297	1.856	J
0.701	1.918	J
2.533	2.805	J
0.082	1.099	J
0.754	1.957	J
0.967	1.645	J
1.380	1.775	J
4.461	3.916	K
1.317	1.523	K
0.539	2.443	K
0.294	0.419	K
1.270	1.304	K
0.472	0.534	K
0.753	0.869	K

Length (ft)	Downstream Structure	Upstream Structure	Upstream Invert (ft)	Downstream Invert (ft)	Slope (ft/ft)
22.015	CB49	CB48	27.760	27.650	0.00500

Direction (DD.MMSS)	Step Up (ft)	Drop Invert (ft)	Pipe Material	Pipe Shape	Pipe Size (in)	Pipe Width (in)	Manning's n
81.0510 NW	0.00	0.00	HDPE	Circular	12.00	0.00	0.012

Known Flow (cfs)	Area (Acres)	Area (SF)	Area (SqMiles)	Curve Number	Tc (min)	Barrel Numbers	Barrel Spacing (ft)
0.000	0.897	39072.900	0.001	50	5.000	1	0.00

Downstream Rim Elev (ft)	Upstream Rim Elev (ft)	Total Flow (cfs)	Full Flow (cfs)	Maximum Flow (cfs)	Downstream HGL (ft)
33.810	32.908	0.752	2.737	2.944	28.451

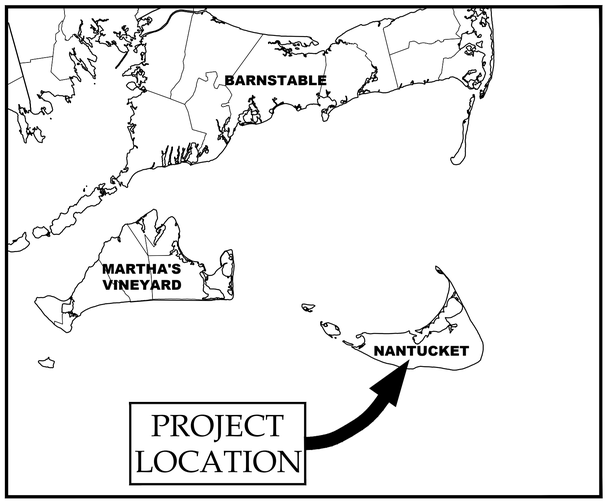
Upstream HGL (ft)	Downstream EGL (ft)	Upstream EGL (ft)	Downstream Flow Depth (in)	Upstream Flow Depth (in)
28.455	28.470	28.481	9.610	8.334

Downstream Velocity (fps)	Upstream Velocity (fps)	System
1.115	1.291	K

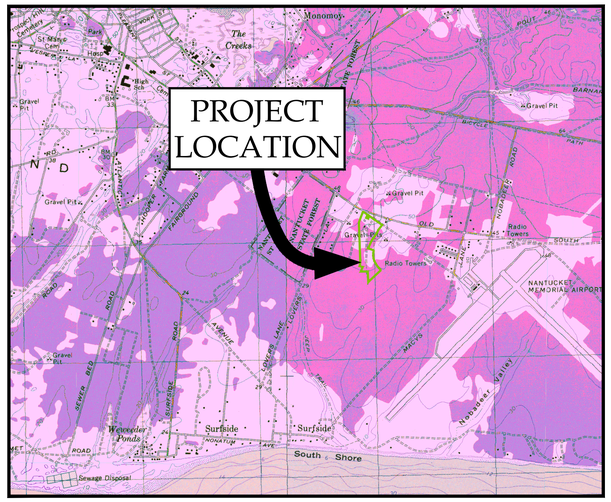
DEFINITIVE SUBDIVISION PLAN
"SANDPIPER PLACE" SINGLE FAMILY HOME OWNERSHIP PROJECT

LOCATED AT:

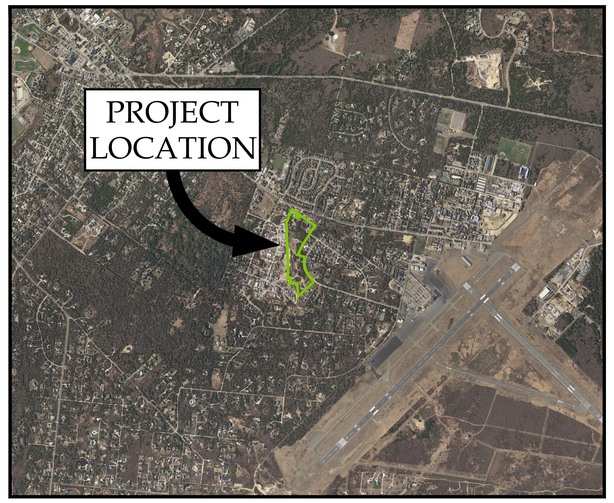
Old South Road, Nancy Ann Lane, Mayflower Circle,
Daffodil Lane and Evergreen Way - Town Nantucket MA



VICINITY MAP
NOT TO SCALE



USGS TOPOGRAPHIC MAP
1"=2000'



LOCATION MAP
1"=400'

OWNER/DEVELOPER:

RICHMOND GREAT POINT DEVELOPMENT LLC
20 Davkim Lane, Nantucket MA

RICHMOND GREAT POINT DEVELOPMENT LLC

PREPARED BY:

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

LIST OF DRAWINGS

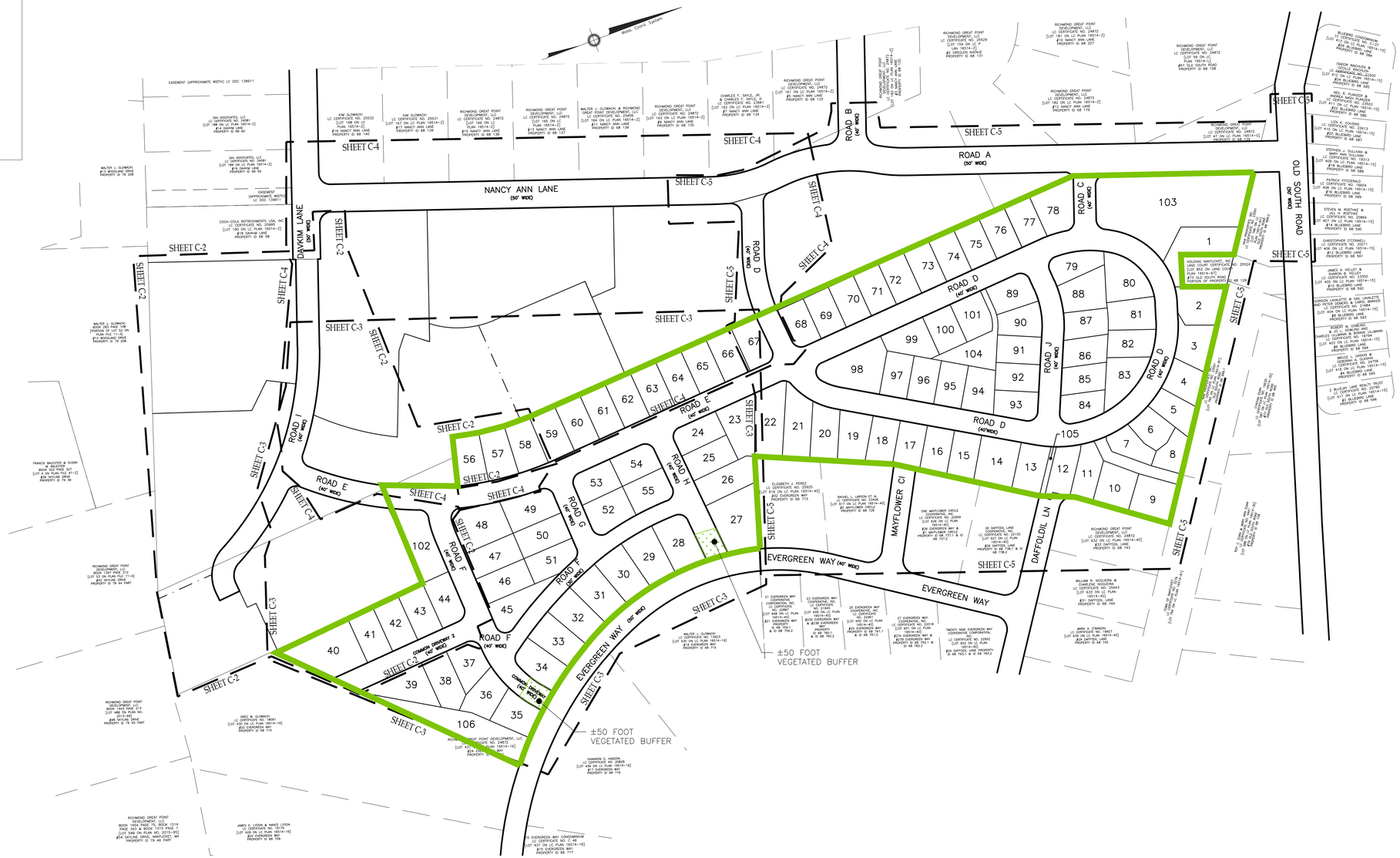
DWG	TITLE	SHT. NO.	
G-1	COVER SHEET	1 OF 31	
C-1	INDEX SHEET	2 OF 31	
C-2 TO C-5	DEFINITIVE PLAN	3 OF 31	TO 6 OF 31
C-6 TO C-8	TOPOGRAPHIC PLAN	7 OF 31	TO 9 OF 31
C-9 TO C-17	PLANS & PROFILES	10 OF 31	TO 18 OF 31
C-18	LANDSCAPE PLAN	19 OF 31	
C-19	EROSION & DUST CONTROL PLAN	20 OF 31	
C-20 TO C-27	DETAILS	21 OF 31	TO 28 OF 31
C-28	TEST PIT LOCATION	29 OF 31	
C-29	SOIL LOGS	30 OF 31	
C-30	GENERAL NOTES	31 OF 31	

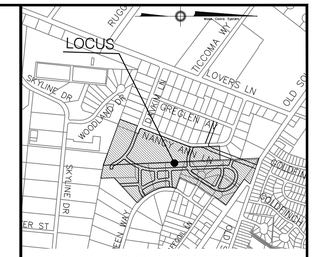
ROBERT L BERSIN CIVIL NO. 37391 REGISTERED PROFESSIONAL ENGINEER
8/5/2016
ROBERT BERSIN MASSACHUSETTS P.E. LICENSE NO. 37391
GREEN SEAL ENVIRONMENTAL, INC. JOB NO. MSTR-2302-0001

TIMOTHY R BENNETT No. 36856 REGISTERED PROFESSIONAL LAND SURVEYOR
8/5/2016
TIMOTHY BENNETT MASSACHUSETTS P.L.S. LICENSE NO. 36856
GREEN SEAL ENVIRONMENTAL, INC. JOB NO. MSTR-2302-0001

S:\Clients\Richmond Great point Development\CAD\Cover1.dwg, COVER SHEET-SANDPIPER, 8/4/2016 6:42:45 AM

FOR REGISTRY USE ONLY





LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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Dimensions are as indicated.

Use of this plan constitutes acceptance of terms and conditions set forth in accompanying project documentation.

It is the responsibility of the user to confirm discrepancies with the Engineer prior to use.

REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DEFINITIVE INDEX PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-1	SCALE: 1" = 100'
	SHEET: 2 OF 31

ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: R-5

MINIMUM LOT AREA = 5,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 10 FEET ON ONE SIDE,
5 FEET THEREAFTER
REAR = 5 FEET

ALLOWABLE GROUND COVER % = 40%

LEGEND:

- RIGHT OF WAY LINE
- PROPOSED PROPERTY LINE
- EASEMENT LINE
- ABUTTER PROPERTY LINE
- SHEET INDEX LINE
- ZONING LIMITS
- 33 LOT NUMBER

NOTES:
THE PLANNING BOARD DETERMINES THAT LOTS 1 THROUGH 106 DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS WETLAND PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BY-LAW, BUT STILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BYLAWS. DETERMINATION MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.

SHEET INDEX:

SHEET C-1:	DEFINITIVE INDEX SHEET
SHEET C-2:	DEFINITIVE PLAN SHEET 1
SHEET C-3:	DEFINITIVE PLAN SHEET 2
SHEET C-4:	DEFINITIVE PLAN SHEET 3
SHEET C-5:	DEFINITIVE PLAN SHEET 4

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
_____
_____
_____
_____
_____
_____
_____
TOWN OF NANTUCKET PLANNING BOARD

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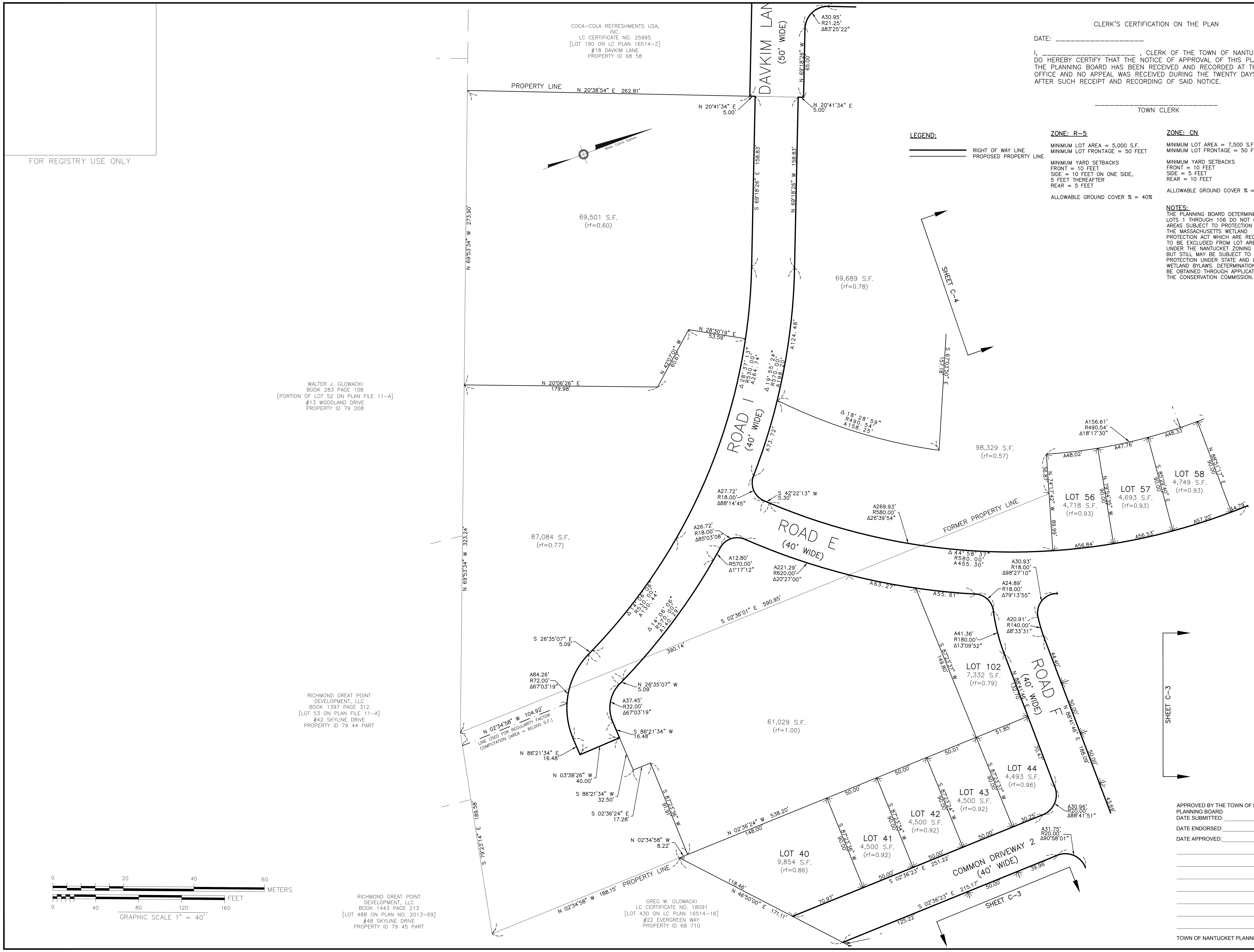


CLERK'S CERTIFICATION ON THE PLAN

DATE: ____________________

I, ____________________, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

____
TOWN CLERK

LEGEND:

RIGHT OF WAY LINE
PROPOSED PROPERTY LINE

ZONE: R-5

MINIMUM LOT AREA = 5,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 10 FEET ON ONE SIDE, 5 FEET THEREAFTER
REAR = 5 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

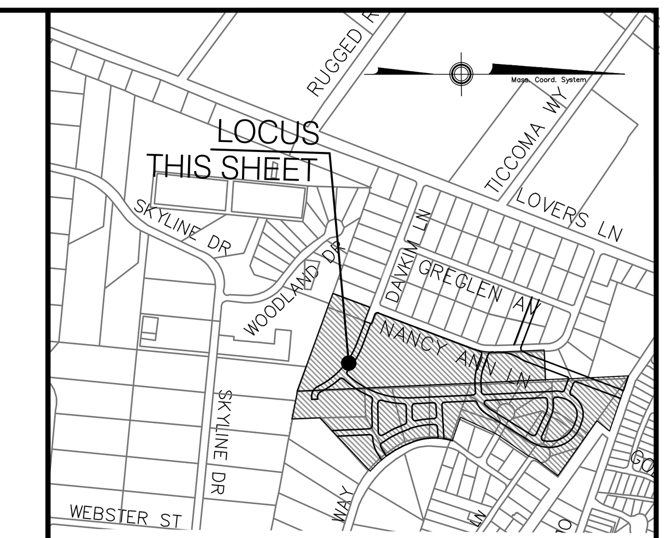
MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

NOTES:
THE PLANNING BOARD DETERMINES THAT LOTS 1 THROUGH 106 DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS WETLAND PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BY-LAW, BUT STILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BYLAWS. DETERMINATION MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: ____________
DATE ENDORSED: ____________
DATE APPROVED: ____________

TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

These drawings are the property of the Design Engineer, Green Seal Environmental, Inc. Unauthorized reproduction for any purpose is an infringement upon copyright laws. Violators will be subject to prosecution.

Dimensions are as indicated.

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REVISIONS

NO.	DATE	COMMENT

GENERAL NOTES:

1. Underground utilities shown on this plan are based upon visible above ground utilities and record information of below ground utilities or as noted otherwise, and are approximate only. Contractor is responsible for taking all necessary precautions before beginning any excavation. (Digsafe 1-888-344-7233)

2. Horizontal Datum is based upon Massachusetts State Coordinate System, NAD 83 in feet. Vertical Datum is based upon NAVD 88 in feet.

3. Field survey completed on 11/09/2015

4. Plan Not for construction, Permitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DEFINITIVE PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-2

SCALE: 1" = 40'

SHEET: 3 OF 31

FOR REGISTRY USE ONLY

SHEET C-4

SHEET C-2

SHEET C-5

ROAD I (40' WIDE)

ROAD E (40' WIDE)

ROAD H (40' WIDE)

ROAD G (40' WIDE)

ROAD F (40' WIDE)

ROAD F (30' WIDE)

EVERGREEN WAY (50' WIDE)

COMMON DRIVEWAY 2 (40' WIDE)

COMMON DRIVEWAY 3 (40' WIDE)

LOT 67 4,513 S.F. (rf=0.95)
LOT 66 4,530 S.F. (rf=0.92)
LOT 65 4,526 S.F. (rf=0.92)
LOT 64 4,520 S.F. (rf=0.92)
LOT 63 4,517 S.F. (rf=0.92)
LOT 62 4,508 S.F. (rf=0.92)
LOT 61 4,500 S.F. (rf=0.92)
LOT 60 4,500 S.F. (rf=0.92)
LOT 59 4,580 S.F. (rf=0.92)
LOT 58 4,749 S.F. (rf=0.93)
LOT 57 4,693 S.F. (rf=0.93)
LOT 56 4,718 S.F. (rf=0.93)
LOT 23 5,492 S.F. (rf=0.85)
LOT 24 4,279 S.F. (rf=0.95)
LOT 25 4,500 S.F. (rf=0.92)
LOT 26 5,534 S.F. (rf=0.87)
LOT 27 8,225 S.F. (rf=0.94)
LOT 54 4,286 S.F. (rf=1.00)
LOT 53 4,335 S.F. (rf=1.01)
LOT 55 4,554 S.F. (rf=1.01)
LOT 52 5,018 S.F. (rf=1.03)
LOT 28 5,875 S.F. (rf=0.98)
LOT 29 5,517 S.F. (rf=0.94)
LOT 30 5,404 S.F. (rf=0.94)
LOT 31 5,367 S.F. (rf=0.94)
LOT 32 5,312 S.F. (rf=0.93)
LOT 33 5,312 S.F. (rf=0.93)
LOT 34 5,019 S.F. (rf=0.98)
LOT 35 4,626 S.F. (rf=0.95)
LOT 49 5,307 S.F. (rf=0.95)
LOT 48 6,842 S.F. (rf=1.03)
LOT 50 4,750 S.F. (rf=0.90)
LOT 47 4,750 S.F. (rf=0.90)
LOT 51 4,347 S.F. (rf=0.93)
LOT 46 4,750 S.F. (rf=0.90)
LOT 45 4,862 S.F. (rf=0.60)
LOT 102 7,332 S.F. (rf=0.79)
LOT 44 4,493 S.F. (rf=0.96)
LOT 43 4,500 S.F. (rf=0.92)
LOT 42 4,500 S.F. (rf=0.92)
LOT 41 4,500 S.F. (rf=0.92)
LOT 40 9,854 S.F. (rf=0.86)
LOT 37 4,334 S.F. (rf=0.99)
LOT 39 5,655 S.F. (rf=0.67)
LOT 38 4,872 S.F. (rf=0.93)
LOT 36 4,529 S.F. (rf=0.94)
LOT 106 11,312 S.F. (rf=0.38)
69,689 S.F. (rf=0.78)
98,329 S.F. (rf=0.57)
61,029 S.F. (rf=1.00)

LINE USED FOR REQUIRED FACTOR ONE HUNDRED (AREA = 100,000 S.F.)
S 67°57'05" W 188.35'

FORMER PROPERTY LINE

Mass. County System

21 EVERGREEN WAY COOPERATIVE CORPORATION, INC.
LC CERTIFICATE NO. 22887
[LOT 648 ON LC PLAN 16514-40]
#21 EVERGREEN WAY
PROPERTY ID 68 759.1
& ID 68 759.2

WALTER J. GLOWACKI
LC CERTIFICATE NO. 13923
[LOT 435 ON LC PLAN 16514-16]
#19 EVERGREEN WAY
PROPERTY ID 68 715

SHANNON S. HADDON
LC CERTIFICATE NO. 20828
[LOT 436 ON LC PLAN 16514-16]
#17 EVERGREEN WAY
PROPERTY ID 68 716

0 20 40 60 METERS
0 40 80 120 160 FEET
GRAPHIC SCALE 1" = 40'

NOTES:
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ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: R-5

MINIMUM LOT AREA = 5,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 10 FEET ON ONE SIDE, 5 FEET THEREAFTER
REAR = 5 FEET

ALLOWABLE GROUND COVER % = 40%

LEGEND:

RIGHT OF WAY LINE
PROPOSED PROPERTY LINE

CLERK'S CERTIFICATION ON THE PLAN

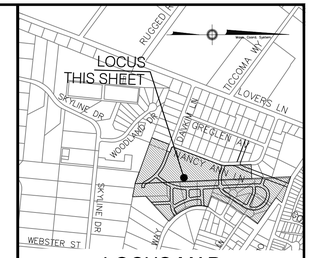
DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
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Sagamore Beach, MA 02562
Tel: (508) 888-6034
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REVISIONS

NO.	DATE	COMMENT

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2. Horizontal Datum is based upon Massachusetts State Coordinate System, NAD 83 in feet. Vertical Datum is based upon NAVD 88 in feet.

3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DEFINITIVE PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-3

SCALE: 1" = 40'

SHEET: 4 OF 31

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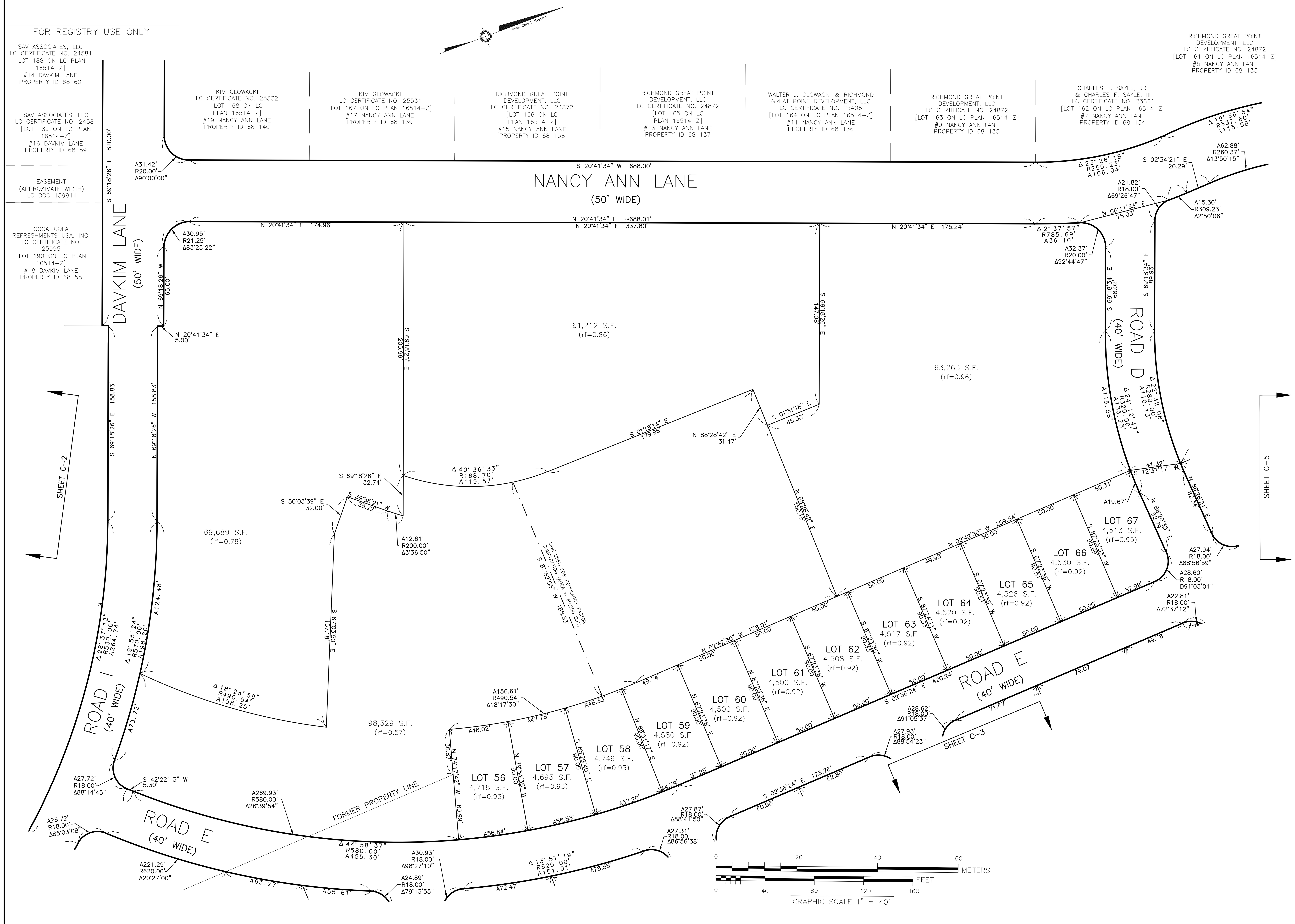

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DATE: ____________________

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TOWN CLERK

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ZONE: R-5

MINIMUM LOT AREA = 5,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 10 FEET ON ONE SIDE, 5 FEET THEREAFTER
REAR = 5 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

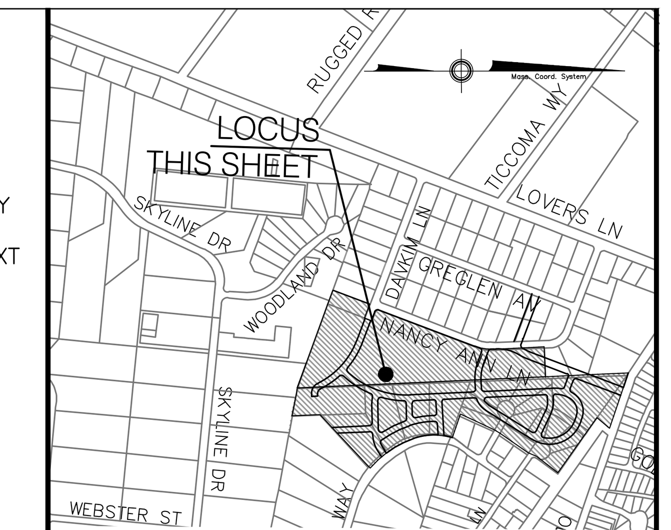
MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

LEGEND:
RIGHT OF WAY LINE
PROPOSED PROPERTY LINE

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: ____________
DATE ENDORSED: ____________
DATE APPROVED: ____________

TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

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114 State Road, Building B
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Tel: (508) 888-6034
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REVISIONS

NO.	DATE	COMMENT

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2. Horizontal Datum is based upon Massachusetts State Coordinate System, NAD 83 in feet. Vertical Datum is based upon NAVD 88 in feet.
3. Field survey completed on 11/09/2015
4. Plan Not for construction, Permitting only.

PURPOSE: DEFINITIVE SUBDIVISION

LOCUS: NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE: DEFINITIVE PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-4	SCALE: 1" = 40'
	SHEET: 5 OF 31

FOR REGISTRY USE ONLY

NANCY ANN LANE
(50' WIDE)

ROAD A
(50' WIDE)

ROAD B
(40' WIDE)

ROAD C
(40' WIDE)

ROAD D
(40' WIDE)

ROAD E
(40' WIDE)

ROAD J
(40' WIDE)

OLD SOUTH ROAD
(50' WIDE)

EVERGREEN WAY (40' WIDE)

MAYFLOWER CI

DAFFODIL LN

FORMER PROPERTY LINE

SHEET C-4

SHEET C-3

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 161 ON LC PLAN 16514-Z]
#5 NANCY ANN LANE
PROPERTY ID 68 133

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 160 ON LC PLAN 16514-Z]
#3 NANCY ANN LANE
PROPERTY ID 68 132

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 25529
[LOT 159 ON LC P LAN 16514-Z]
#2 GREGLEN AVENUE
PROPERTY ID 68 131

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 182 ON LC PLAN 16514-Z]
#12 NANCY ANN LANE
PROPERTY ID 68 176

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 47 ON LC PLAN 16514-G]
PROPERTY ID 68 129

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 47 ON LC PLAN 16514-G]
PROPERTY ID 68 129

HOUSING NANTUCKET, INC.
LAND COURT CERTIFICATE NO. 25524
[LOT 852 ON LAND COURT PLAN 16514-97]
#73 OLD SOUTH ROAD
PORTION OF PROPERTY ID 68 129

NHA PROPERTIES, INC.
LC CERTIFICATE NO. 23591
[LOT 796 ON LC PLAN 16514-81]
OLD SOUTH ROAD
PROPERTY ID 68 999.2

ELIZABETH J. PEREZ
LC CERTIFICATE NO. 25925
[LOT 616 ON LC PLAN 16514-40]
#32 EVERGREEN WAY
PROPERTY ID 68 773

RACHEL L. LARSON ET AL
LC CERTIFICATE NO. 23426
[LOT 617 ON LC PLAN 16514-40]
#2 MAYFLOWER CIRCLE
PROPERTY ID 68 728

ONE MAYFLOWER CIRCLE COOPERATIVE, INC.
LC CERTIFICATE NO. 22959
[LOT 626 ON LC PLAN 16514-40]
#36 EVERGREEN WAY &
#1 MAYFLOWER CIRCLE
PROPERTY ID 68 737.1 & ID 68 737.2

26 DAFFODIL LANE COOPERATIVE, INC.
LC CERTIFICATE NO. 22132
[LOT 627 ON LC PLAN 16514-40]
#26 DAFFODIL LANE
PROPERTY ID 68 738.1 & ID 68 738.2

RICHMOND GREAT POINT DEVELOPMENT, LLC
LC CERTIFICATE NO. 24872
[LOT 632 ON LC PLAN 16514-40]
#33 DAFFODIL LANE
PROPERTY ID 68 743

LOT 67 4,513 S.F. (rf=0.95)
LOT 68 3,993 S.F. (rf=0.99)
LOT 69 4,007 S.F. (rf=0.95)
LOT 70 4,004 S.F. (rf=0.95)
LOT 71 4,008 S.F. (rf=0.95)
LOT 72 4,008 S.F. (rf=0.95)
LOT 73 4,008 S.F. (rf=0.95)
LOT 74 4,007 S.F. (rf=0.95)
LOT 75 4,008 S.F. (rf=0.95)
LOT 76 4,008 S.F. (rf=0.95)
LOT 77 4,002 S.F. (rf=0.94)
LOT 78 5,852 S.F. (rf=0.97)
70,977 S.F. (rf=0.61)
LOT 79 4,154.8 S.F. (rf=0.91)
LOT 80 5,757.9 S.F. (rf=0.95)
LOT 81 4,794.7 S.F. (rf=0.95)
LOT 82 4,224.8 S.F. (rf=0.94)
LOT 83 5,123 S.F. (rf=0.82)
LOT 84 3,971.1 S.F. (rf=1.01)
LOT 85 4,000.0 S.F. (rf=0.93)
LOT 86 4,040.5 S.F. (rf=0.95)
LOT 87 3,903.2 S.F. (rf=0.93)
LOT 88 5,393.2 S.F. (rf=0.94)
LOT 89 4,441 S.F. (rf=1.01)
LOT 90 4,112 S.F. (rf=0.95)
LOT 91 4,000 S.F. (rf=0.95)
LOT 92 4,000 S.F. (rf=0.95)
LOT 93 3,933 S.F. (rf=1.00)
LOT 94 4,407 S.F. (rf=0.96)
LOT 95 4,000 S.F. (rf=0.95)
LOT 96 4,000 S.F. (rf=0.95)
LOT 97 4,000 S.F. (rf=0.95)
LOT 98 8,424 S.F. (rf=0.96)
LOT 99 4,769 S.F. (rf=0.93)
LOT 100 4,125 S.F. (rf=0.98)
LOT 101 4,390 S.F. (rf=1.02)
LOT 104 5,335 S.F. (rf=0.37)
LOT 105 871 S.F. (rf=0.33)
LOT 103 29,850 S.F. (rf=0.76)
LOT 1 7,151 S.F. (rf=0.56)
LOT 2 5,504 S.F. (rf=1.00)
LOT 3 4,938 S.F. (rf=0.77)
LOT 4 4,172 S.F. (rf=0.96)
LOT 5 4,058 S.F. (rf=0.88)
LOT 6 3,802 S.F. (rf=1.04)
LOT 7 3,535 S.F. (rf=0.90)
LOT 8 3,365 S.F. (rf=0.92)
LOT 9 5,584 S.F. (rf=1.00)
LOT 10 5,036 S.F. (rf=1.00)
LOT 11 4,255 S.F. (rf=0.87)
LOT 12 4,070 S.F. (rf=0.75)
LOT 13 4,737 S.F. (rf=0.93)
LOT 14 6,171 S.F. (rf=0.99)
LOT 15 4,172 S.F. (rf=0.94)
LOT 16 4,066 S.F. (rf=0.94)
LOT 17 4,007 S.F. (rf=0.94)
LOT 18 4,171 S.F. (rf=0.93)
LOT 19 4,970 S.F. (rf=0.94)
LOT 20 4,905 S.F. (rf=0.87)
LOT 21 6,087 S.F. (rf=0.77)
LOT 22 6,875 S.F. (rf=0.82)

ZONE: R-5

MINIMUM LOT AREA = 5,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 10 FEET ON ONE SIDE,
5 FEET THEREAFTER
REAR = 5 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

LEGEND:

RIGHT OF WAY LINE
PROPOSED PROPERTY LINE

NOTES:
THE PLANNING BOARD DETERMINES THAT LOTS 1 THROUGH 106 DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS WETLAND PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BY-LAW, BUT STILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BYLAWS. DETERMINATION MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

0 20 40 60 METERS
0 40 80 120 160 FEET
GRAPHIC SCALE 1" = 40'

LOCUS
THIS SHEET
SKYLINE DR
WOODLAND DR
DAISY GREGLEN AV
NANCY ANN LN
TECUMSEH WY
LOVERS LN
RUGGED RD
WEBSTER ST
MAY
ST

LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
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Sagamore Beach, MA 02562
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Fax: (508) 888-1506
www.gseenv.com

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REVISIONS

NO.	DATE	COMMENT

GENERAL NOTES:

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2. Horizontal Datum is based upon Massachusetts State Coordinate System, NAD 83 in feet. Vertical Datum is based upon NAVD 88 in feet.

3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DEFINITIVE PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-5

SCALE: 1" = 40'

SHEET: 6 OF 31

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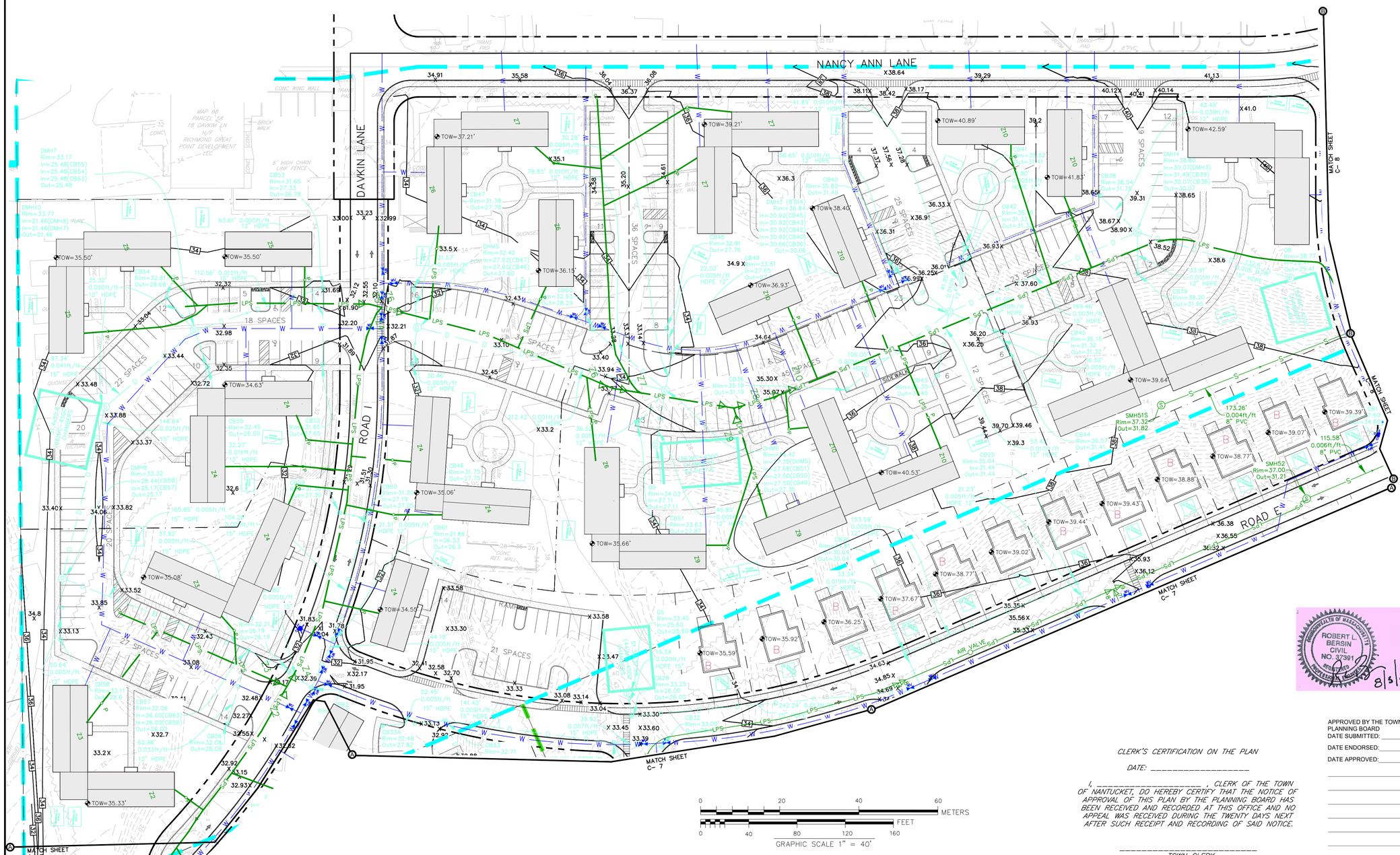
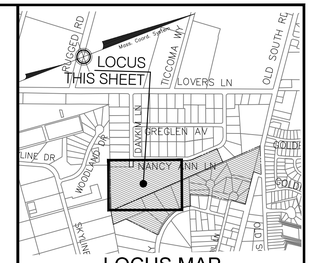
FOR REGISTRY USE ONLY





LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
TOPOGRAPHIC PLAN

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-6	SCALE: 1" = 40'
	SHEET: 7 OF 31

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FOR REGISTRY USE ONLY

NOTES

Z=ZONE FOR LPS SYSTEM.

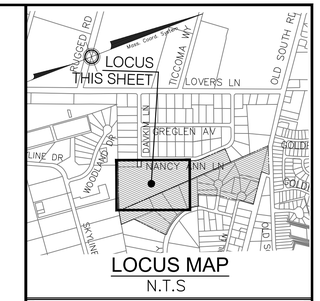
INDIVIDUAL PUMP CHAMBERS SHALL BE LOCATED AT THE TIME OF BUILDING CONSTRUCTION.

PUMP CHAMBERS SHALL BE LOCATED NO CLOSER THAN 10 FEET FROM PROPERTY LINES AND FOUNDATIONS.

CONNECT LATERALS TO LPS FORCE MAIN IN THE DESIGNATED ZONE.

PUMP CHAMBER AND APPURTENANCES, INCLUDING PUMPS, SHALL BE INSTALLED IN CONFORMANCE WITH THE MANUFACTURES REQUIREMENTS

ZONE	LENGTH	LOTS SERVED	PIPE DIAMETER
1	55'	49-40-41	1.5
2	170'	37-38-42-43-44	1.5
3	127'	34-35-36	1.5
4	450'	456-46-47-48-49-56-57-58	2.5
5	120'	31-32-33	2.5
6	220'	28-29-30-50-51-52	2.5
7	135'	24-25-26-27-55	2.5
8	192	53-54-59-60-61-62	2.5
9	176	23-63-64-65	2.5



LOCUS MAP
N.T.S

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Sagamore Beach, MA 02562
Tel: (508) 888-6034
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PURPOSE:
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PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
TOPOGRAPHIC PLAN

ROBERT L BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
8/5/2016

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-7	SCALE: 1" = 40'
	SHEET: 8 OF 31

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
_____
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TOWN OF NANTUCKET PLANNING BOARD

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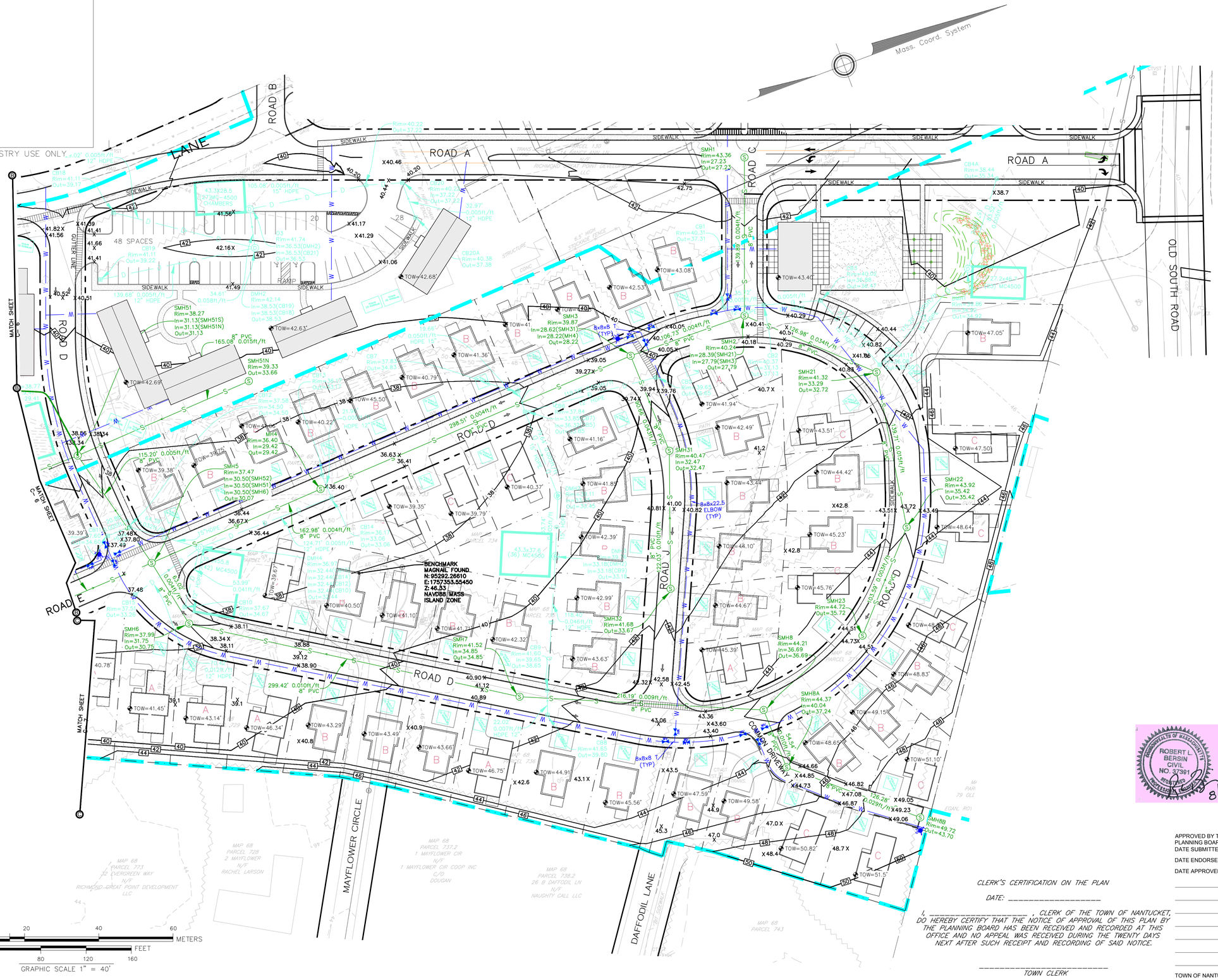

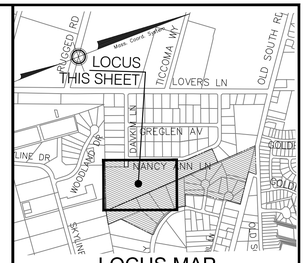

LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
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REVISIONS

NO.	DATE	COMMENT

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3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
TOPOGRAPHIC PLAN

ROBERT L BERSIN CIVIL NO. 37391 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
8/3/2016

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-8	SCALE: 1" = 40'
	SHEET: 9 OF 31

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

TOWN OF NANTUCKET PLANNING BOARD

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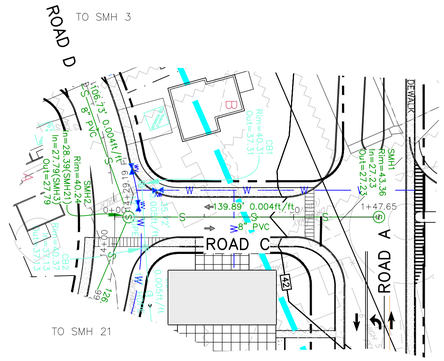
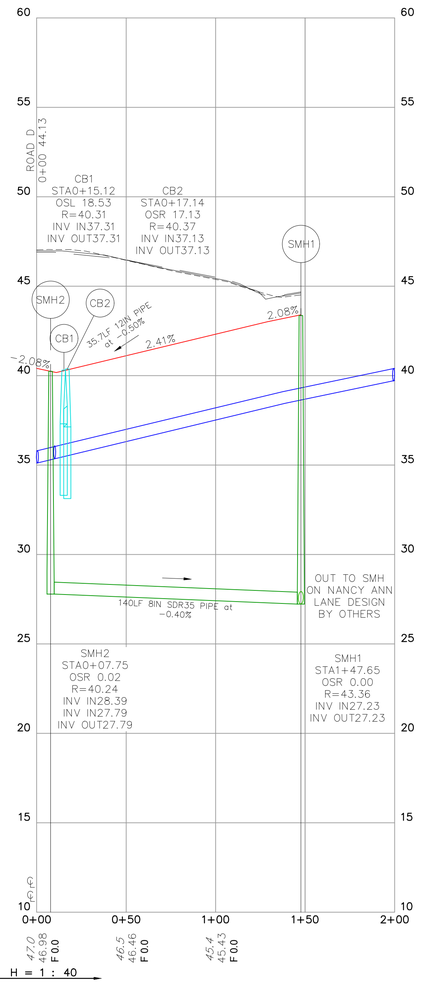


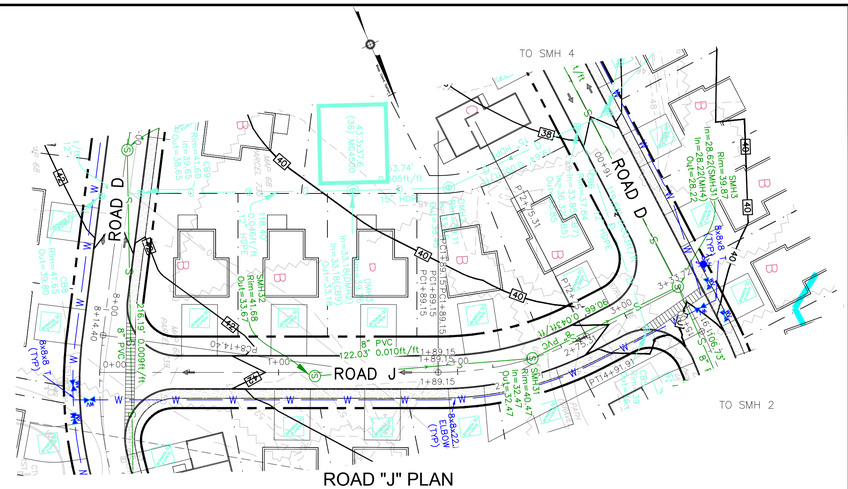
ROAD "C" PLAN
1" = 40'



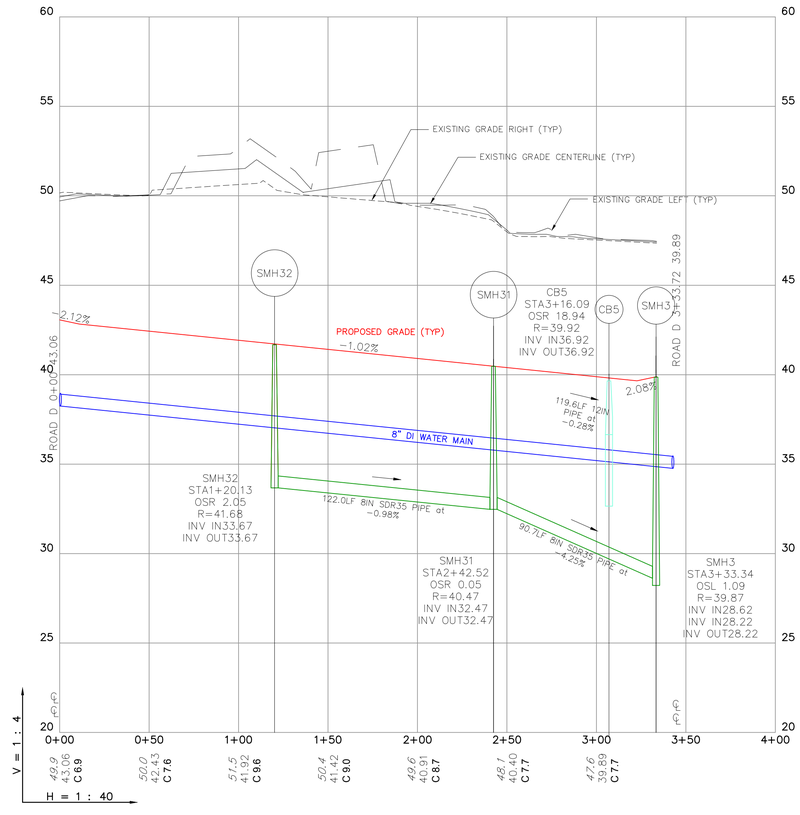
GENERAL CONSTRUCTION NOTES:

1. All construction methods and materials shall conform to the Massachusetts Department of Transportation (MassDOT) Standard Specifications for Highways and Bridges 1998 as amended.
2. All sewer pipe shall be SDR-35 Gasketed Integral Bell Gravity Sewer pipe meeting ASTM D3034 as amended. Maximum individual length of pipe shall be 20 feet. Pipe sizes shall be as shown on the plans.
3. All water mains shall be Cement Lined Ductile Iron Pipe with standard exterior coating. Pipe shall and manufactured in accordance with the latest revision of ANSI/AWWA 151/A21.51. Cement-mortar lining on the interior shall be in accordance with the latest revision of ANSI/AWWA C104/A21.4. Pipe shall be push on restrained joint meeting ANSI/AWWA C111/A21.11. Water pipe shall be installed and tested in accordance with ANSI/AWWA C600 and disinfected in accordance with the latest revision of ANSI/AWWA C651 prior to being placed in service. Pipe sizes shall be as shown on the plans.
4. All Drainage pipe shall be High Density Polyethylene pipe. Pipe sizes shall be as shown on the plans.
5. All hydrants shall be installed following the above-described protocol for water line installation. See plan details for material requirements.
6. All water connections shall be installed following the above-described protocol for water line installation. Ductile iron tees and gate valves shall be installed on all legs of tees and crossings.
7. Water services shall be ¾-inch PVC water line and installed to the property line for single-family house lots. Water service for multifamily buildings shall be six-inch cement lined ductile iron and installed to the road layout line. The ends of all pipe service laterals shall be capped, located for future use, and marked with minimum 2"x 4" lumber set six inches below finished grade.
8. Sewer services shall be as follows:
   a. Single-family house lots being fed by gravity shall be 4-inch PVC pipe.
   b. Multifamily buildings shall be fed by 6-inch PVC pipe.
   c. Single-family house lots being fed by Low Pressure Sewer shall be as depicted on the detail sheet. Pump Chambers shall be EOne DH071 simplex chambers with 4-inch PVC inlet connections and 1.25-inch SDR-11 outlet laterals to the low-pressure force main.
   d. Multifamily buildings being fed by Low Pressure Sewer shall be as depicted on the detail sheet. Pump Chambers shall be EOne DH152 duplex chambers with 6-inch PVC inlet connections and 1.5-inch SDR-11 outlet laterals to the low-pressure force main.

   The ends of all pipe service laterals shall be capped, marked with minimum 2'x4' lumber set six inches below finished grade, and located for future use.



ROAD "J" PLAN
1" = 40'

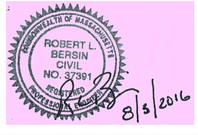


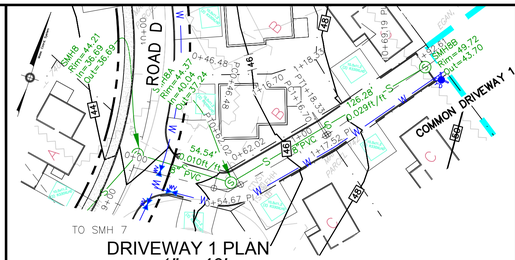
NOTES:

ALL GRAVITY SEWER SHALL BE SDR-35. PIPE SIZES AS SPECIFIED ON THE DRAWINGS

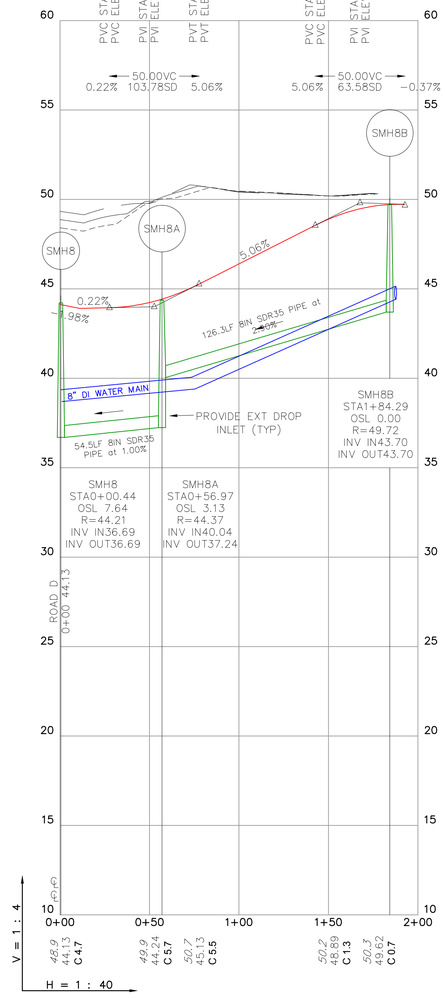
ALL DRAINAGE PIPES SHALL BE HDPE. PIPE SIZES AS SPECIFIED ON THE DRAWINGS

51.5 41.92 — EXISTING CL GRADE / PROPOSED FINAL GRADE
C 9.6 — CUT TO REACH FINAL FINISH GRADE
F 9.6 — FILL TO REACH FINAL FINISH GRADE





DRIVEWAY 1 PLAN
1" = 40'



CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECENVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECENVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

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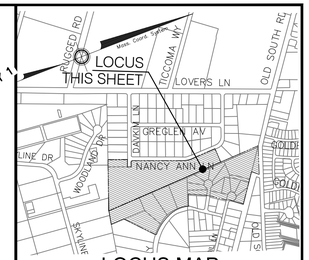
TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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NO.	DATE	COMMENT

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3. Field survey completed on 11/09/2015
4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

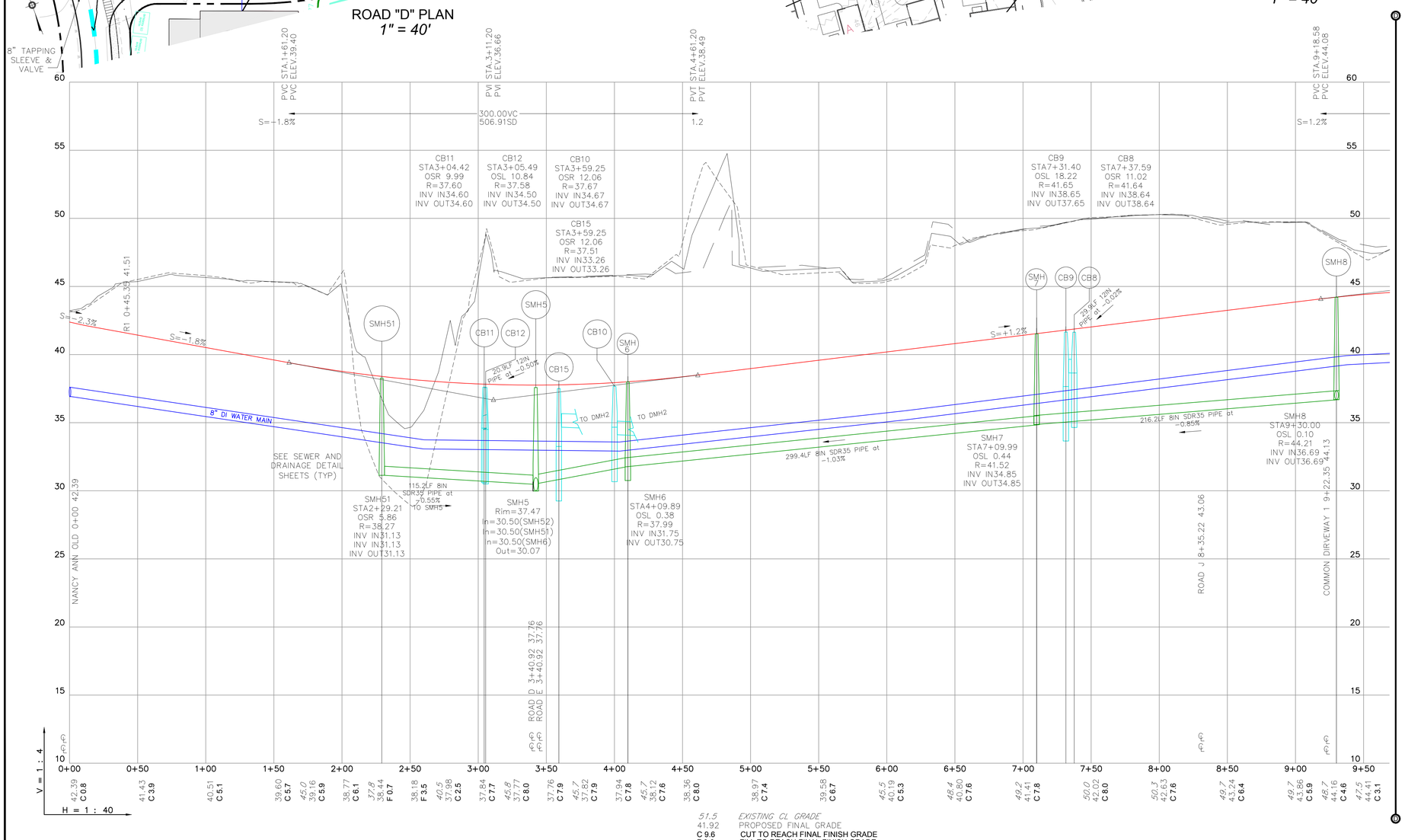
LOCUS:
NANCY ANN LANE

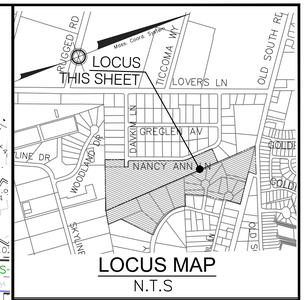
PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
PLAN AND PROFILE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-9	SCALE: 1" = 40'
	SHEET: 10 OF 31

S:\Clients\Richmond Greatpoint Development\CAD\Site Plan\Profiles-2.dwg, C-9 PROFILE, 8/4/2016 9:43:45 AM





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NANCY ANN LANE

PREPARED FOR:
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RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

DRAWING TITLE:
PLAN AND PROFILE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-10	SCALE: 1" = 40'
	SHEET: 11 OF 31

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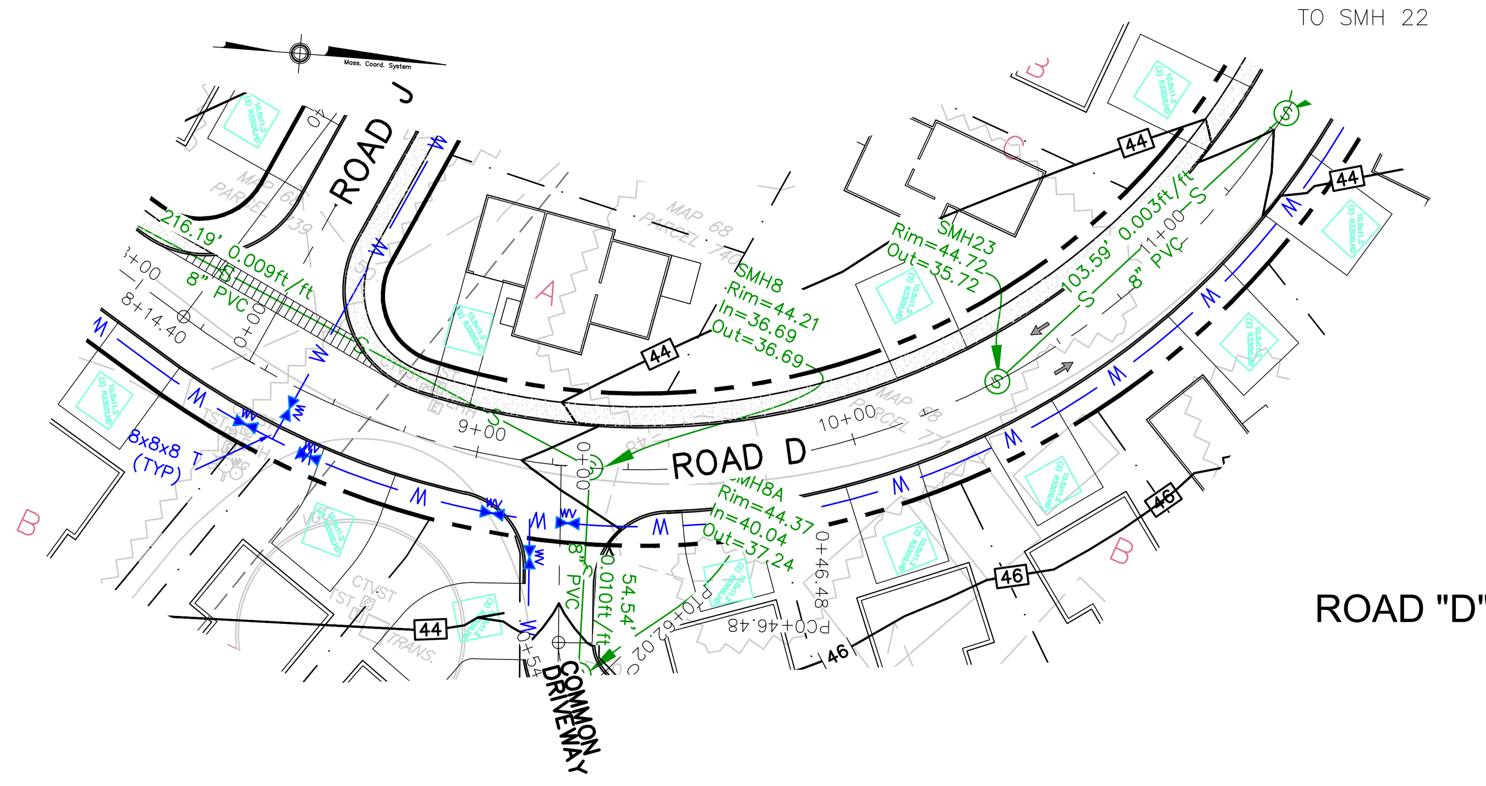
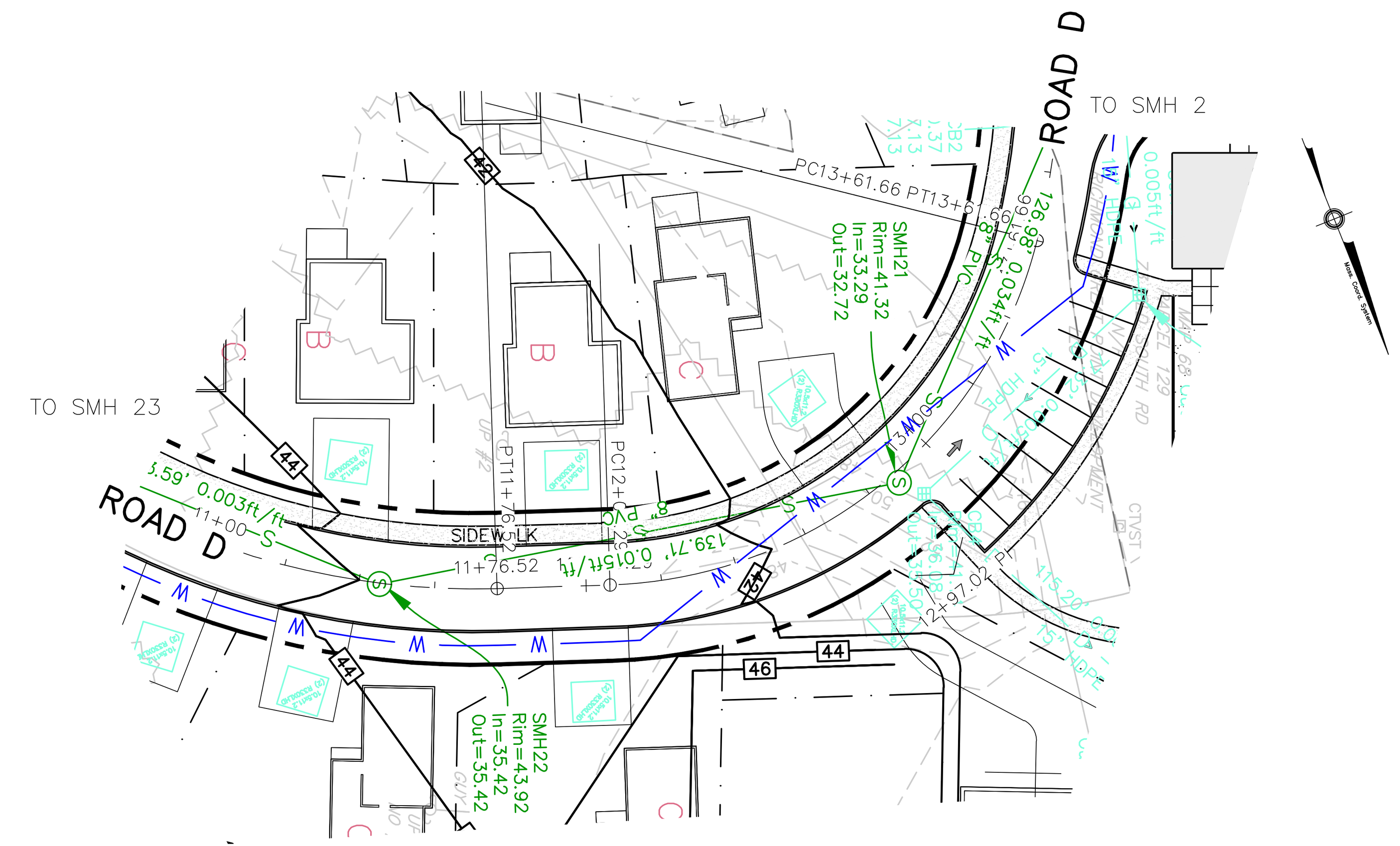
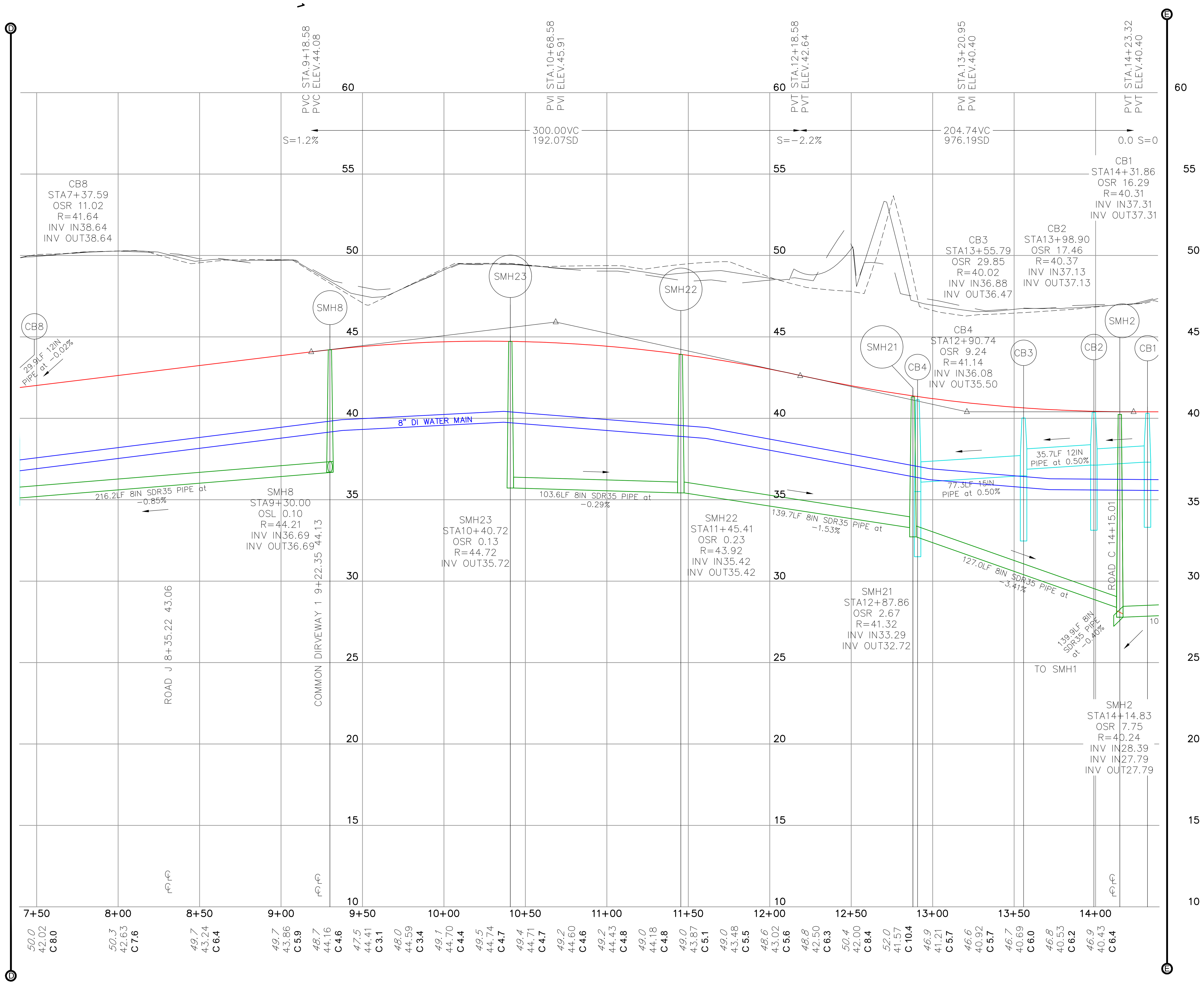
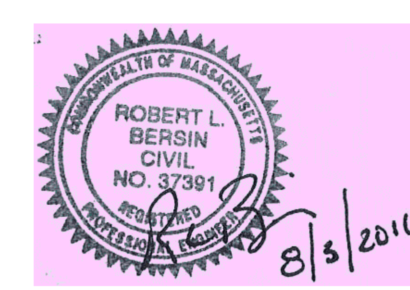


ROAD "D" PLAN 1" = 40'





51.5 EXISTING CL GRADE
41.92 PROPOSED FINAL GRADE
C 9.6 CUT TO REACH FINAL FINISH GRADE
F 9.6 FILL TO REACH FINAL FINISH GRADE



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TOWN CLERK

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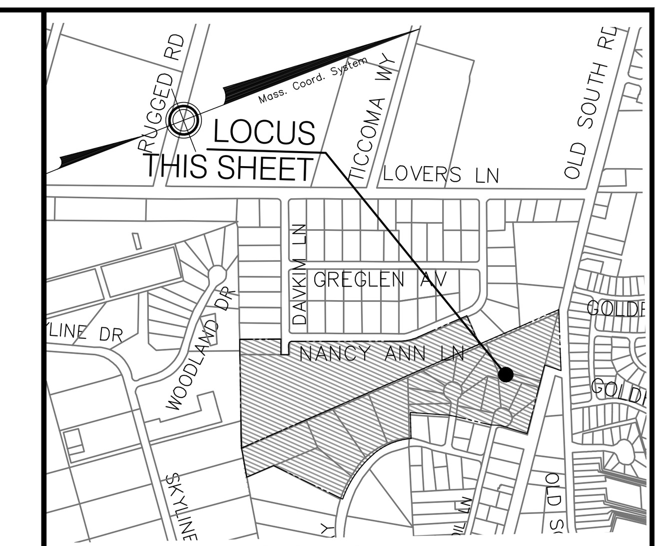
DATE ENDORSED: ____________
DATE APPROVED: ____________

TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
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114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
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REVISIONS

NO.	DATE	COMMENT

GENERAL NOTES:

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2. Horizontal Datum is based upon Massachusetts State Coordinate System, NAD 83 in feet. Vertical Datum is based upon NAVD 88 in feet.

3. Field survey completed on 11/09/2015

4. Plan Not for construction, Permitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

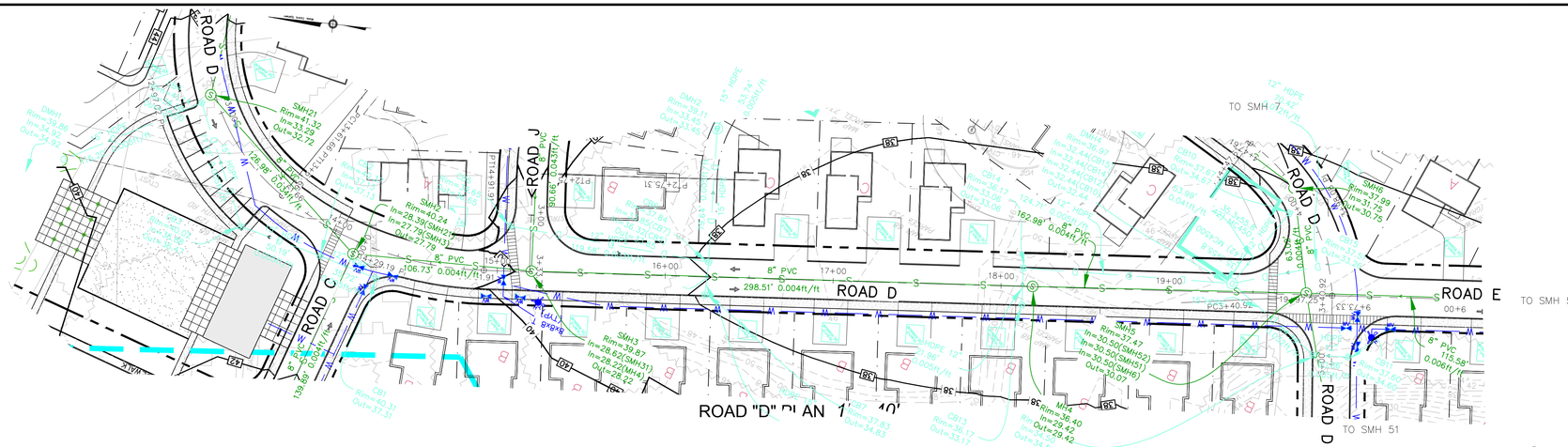
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

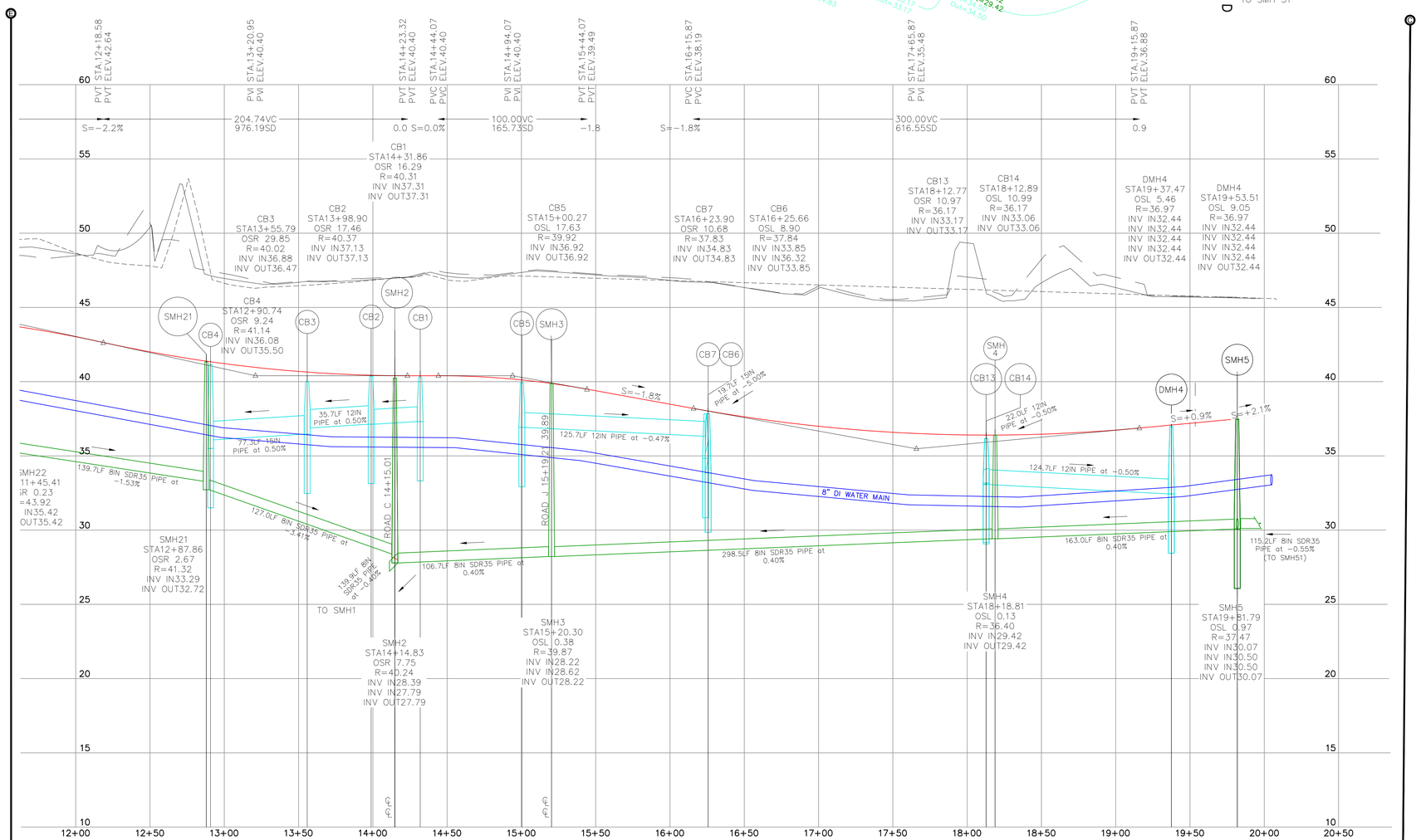
DRAWING TITLE:
PLAN AND PROFILE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER: BLB	DATE: 08/03/2016
C-11	SCALE: 1" = 40'
	SHEET: 12 OF 31

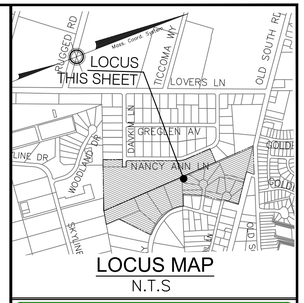
S:\Clients\Richmond Greatpoint Development\CAD\Site Plan-Profiles-2.dwg, C11-PROFILE, 8/4/2016 6:43:55 AM

FOR REGISTRY USE ONLY





51.5 *EXISTING CL GRADE*
41.92 PROPOSED FINAL GRADE
C 9.6 CUT TO REACH FINAL FINISH GRADE
F 9.6 FILL TO REACH FINAL FINISH GRADE



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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REVISIONS

NO.	DATE	COMMENT

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3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

ROBERT L. BERSIN CIVIL NO. 37391 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
8/5/2016

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ ,
CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

DRAWING TITLE:
PLAN AND PROFILE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-12	SCALE: 1" = 40'
	SHEET: 13 OF 31

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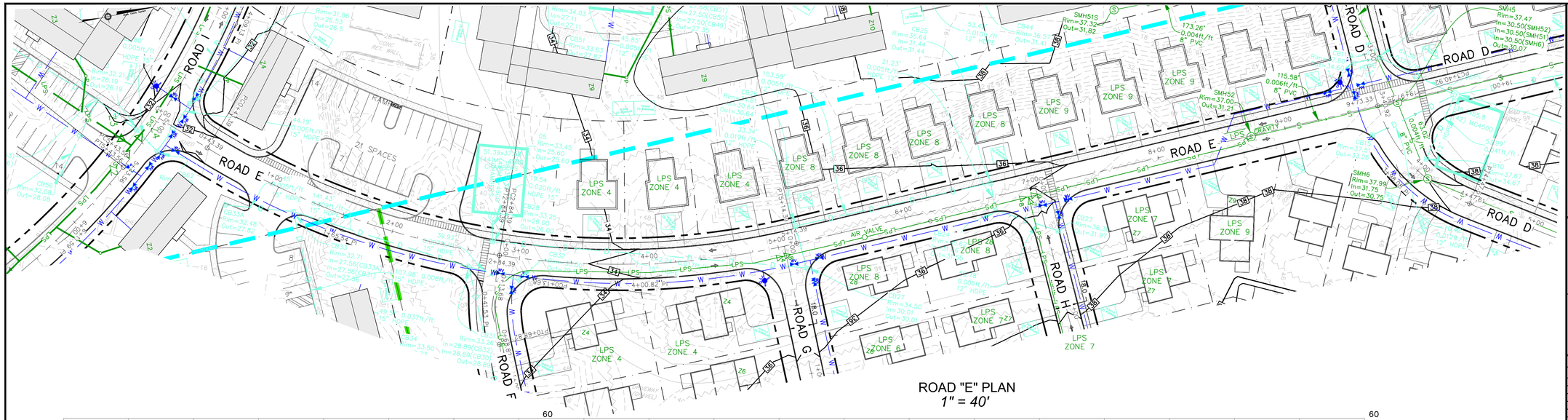
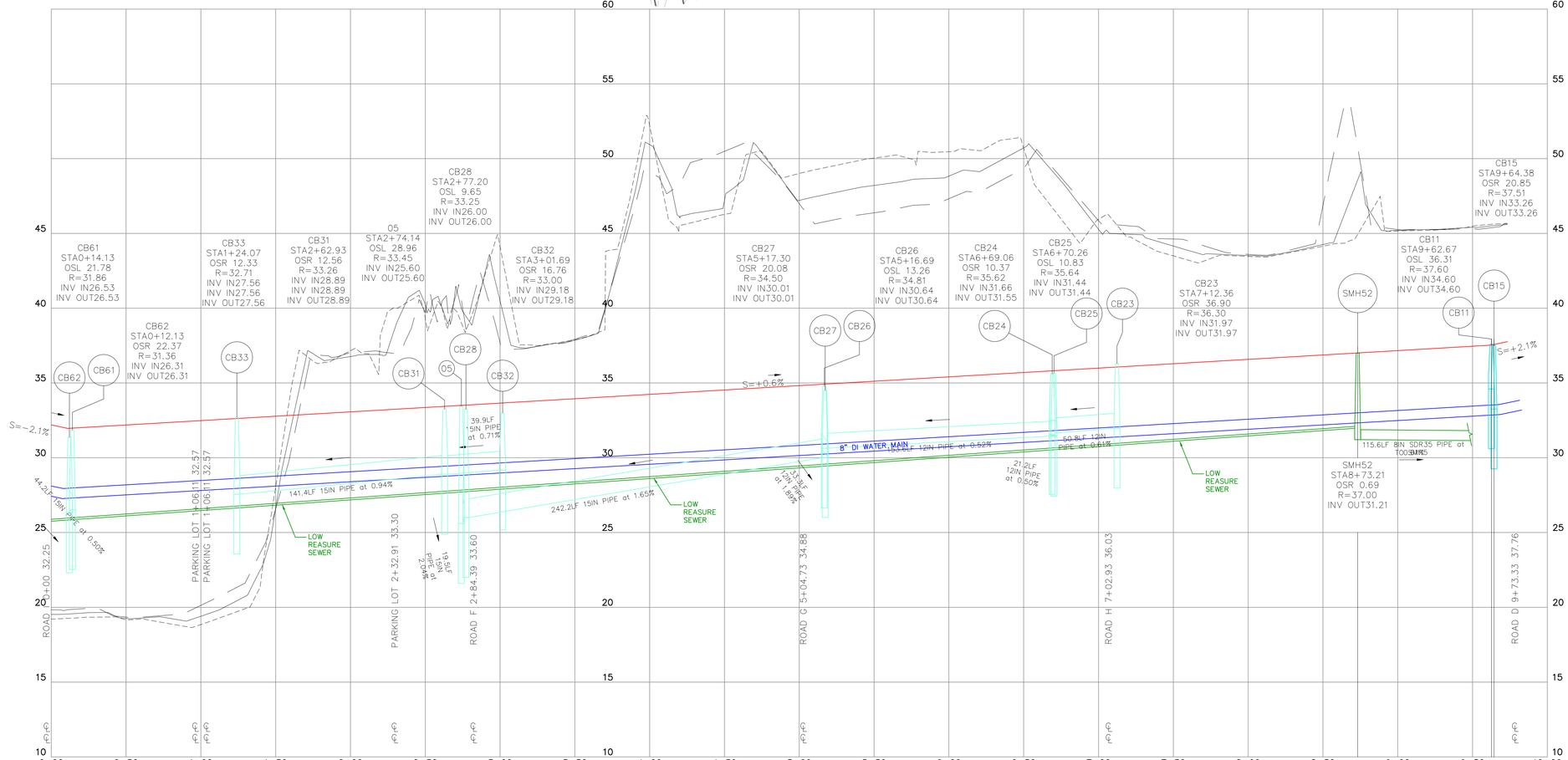


ROAD "E" PLAN
1" = 40'



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Fax: (508) 888-1506
www.gseenv.com

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NO.	DATE	COMMENT

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3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

ROBERT L. BERSIN CIVIL NO. 37391 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
8/5/2016

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD

DRAWING TITLE:
PLAN AND PROFILE

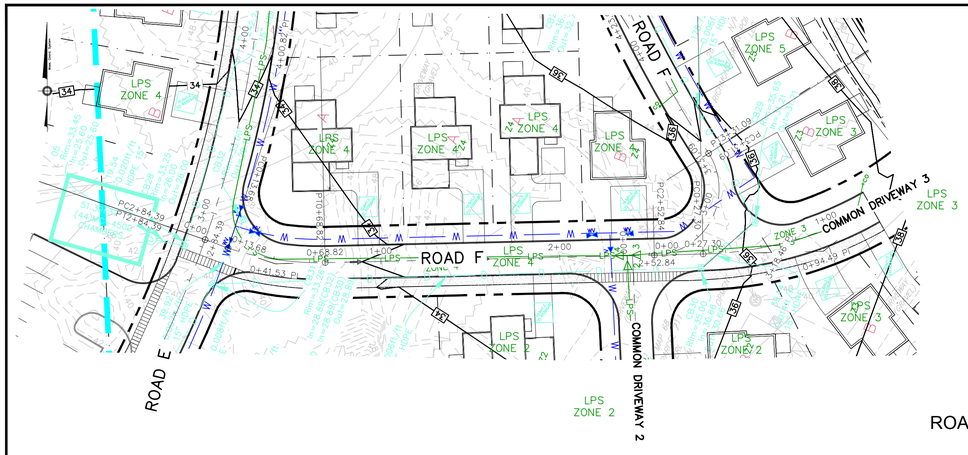
CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-13

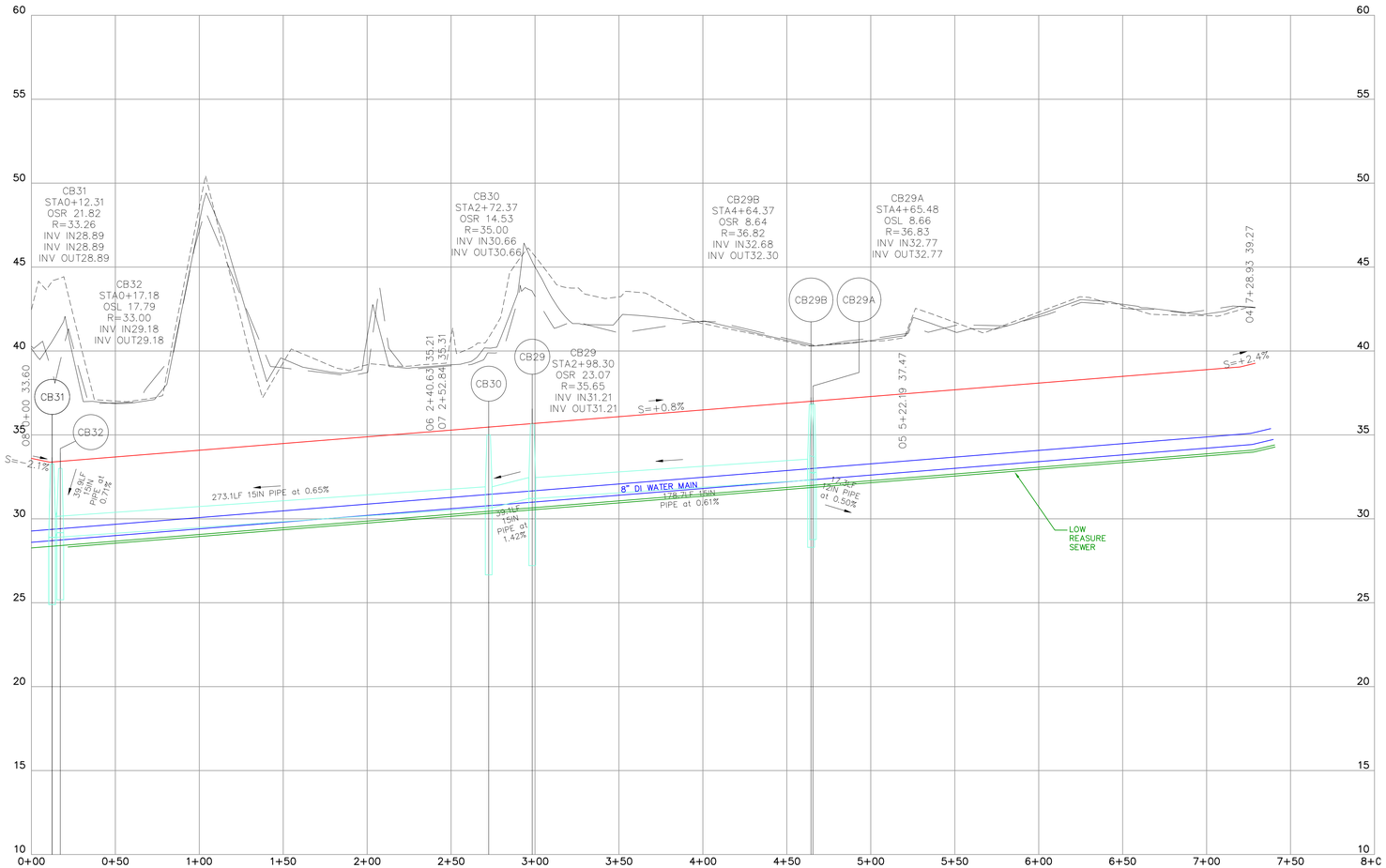
SCALE: *1" = 40'*

SHEET: 14 OF 31

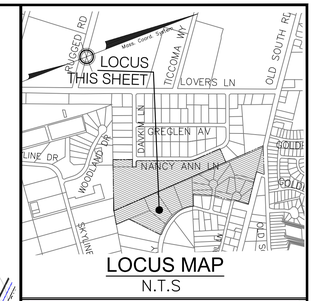
S:\Clients\Richmond Greatpoint Development\CAD\Site Plan Profiles 2.dwg, C13-PROFILE (3), 8/4/2016 8:44:05 AM



ROAD "F" PLAN *1" = 40'*



51.5 *EXISTING CL GRADE*
41.92 PROPOSED FINAL GRADE
C 9.6 CUT TO REACH FINAL FINISH GRADE
F 9.6 FILL TO REACH FINAL FINISH GRADE



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
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PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
PLAN AND PROFILE

FOR REGISTRY USE ONLY

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-14

SCALE: *1" = 40'*

SHEET: 15 OF 31

S:\Clients\Richmond Greatpoint Development\CAD\Site Plan Profiles 2.dwg, C14-PROFILE (2), 8/4/2016 6:44:10 AM

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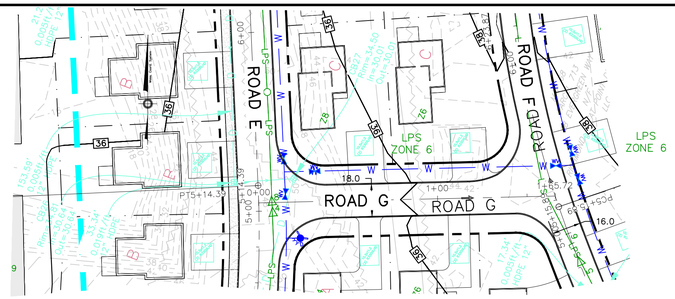
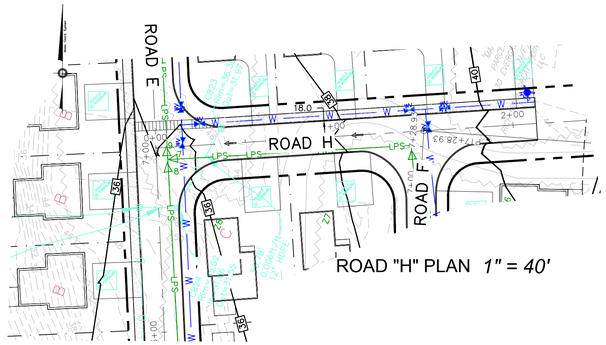
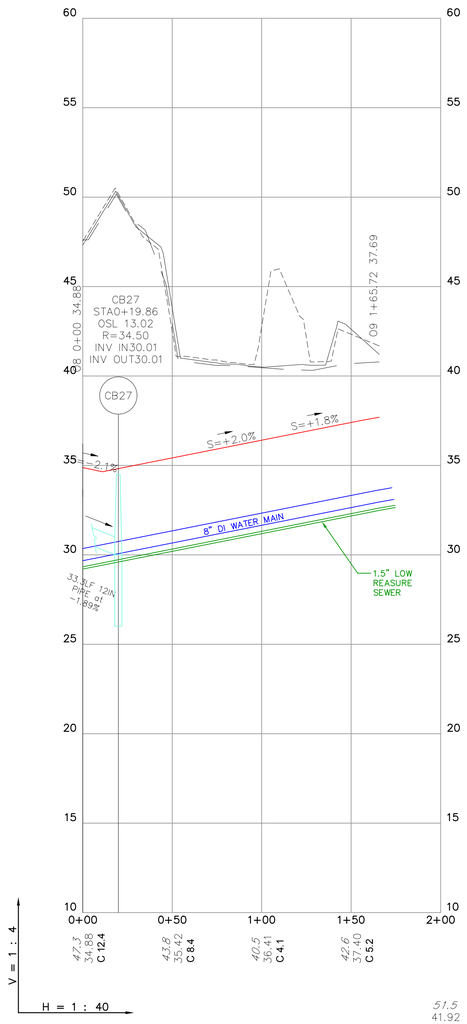
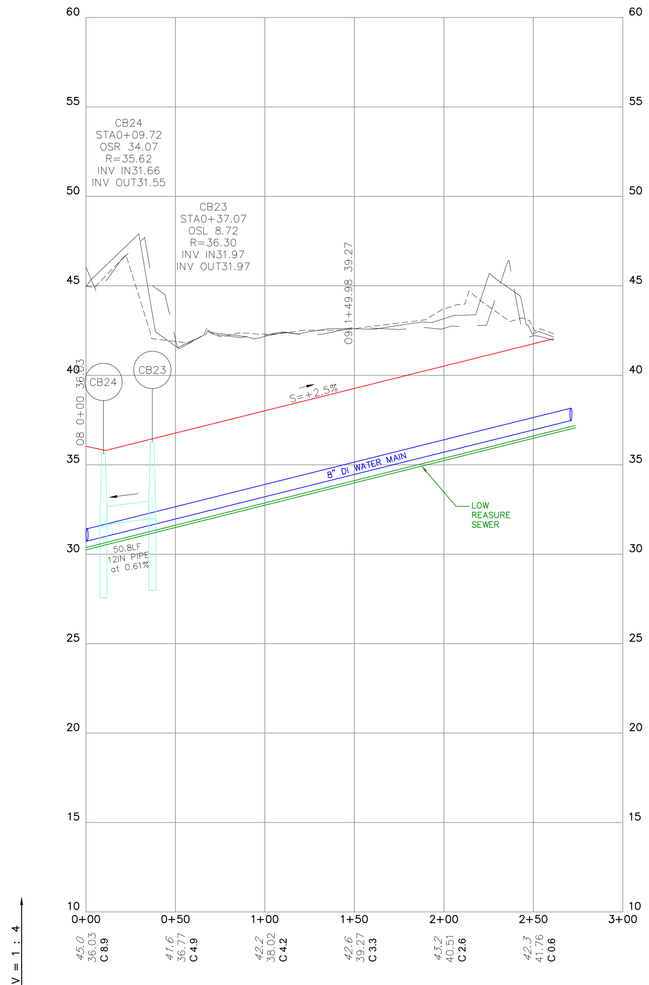
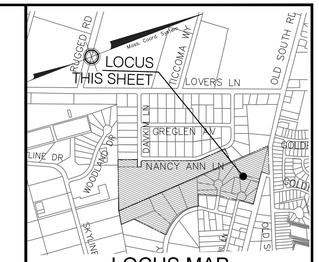








51.5 EXISTING CL GRADE
41.92 PROPOSED FINAL GRADE
C 9.6 CUT TO REACH FINAL FINISH GRADE
F 9.6 FILL TO REACH FINAL FINISH GRADE



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REVISIONS

NO.	DATE	COMMENT

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3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

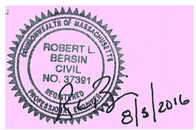
PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
PLAN AND PROFILE



CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-15	SCALE: 1" = 40'
	SHEET: 16 OF 31

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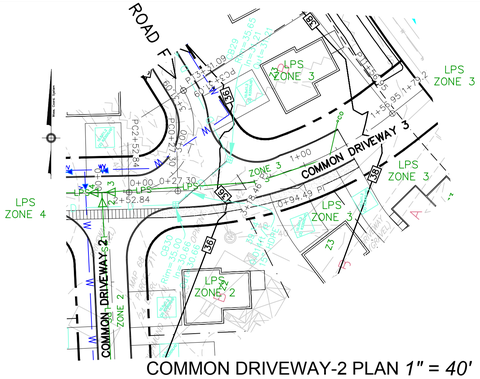
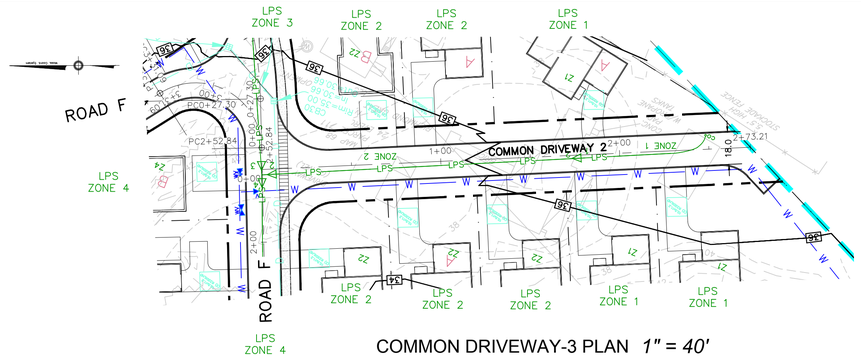
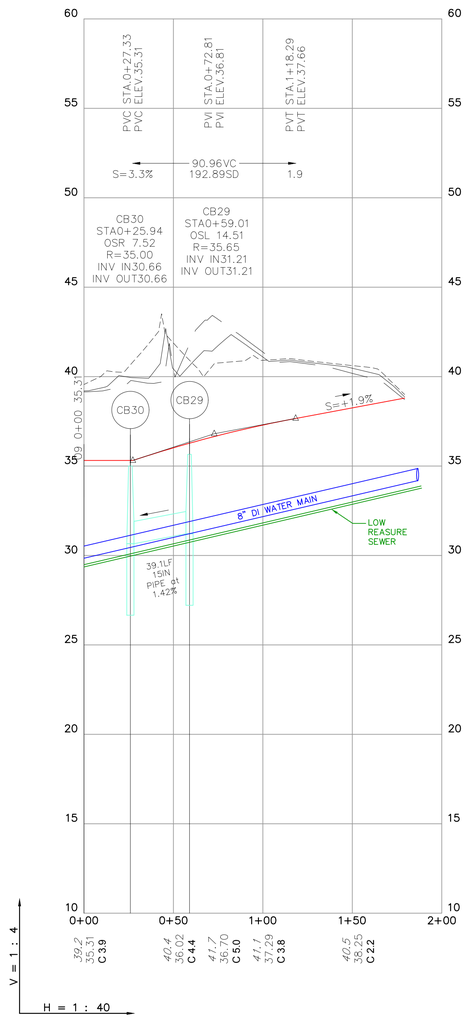
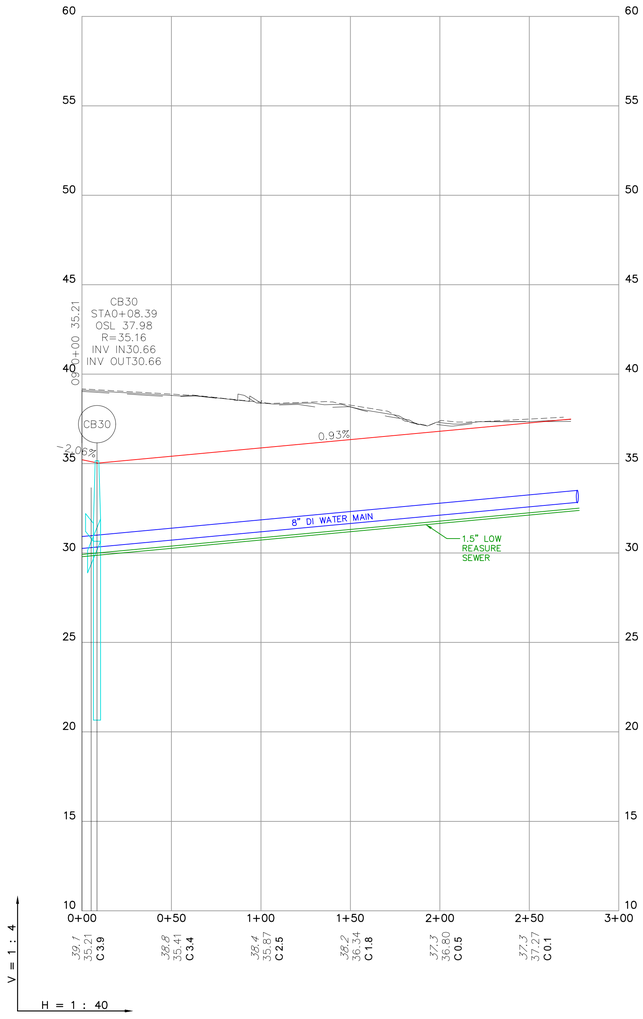


COMMON DRIVEWAY-2 PLAN *1" = 40'*

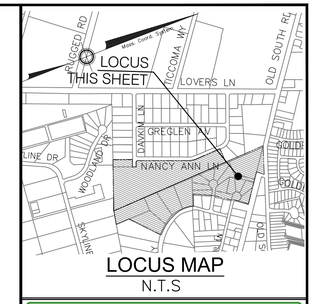


COMMON DRIVEWAY-3 PLAN *1" = 40'*





51.5 *EXISTING CL GRADE*
41.92 PROPOSED FINAL GRADE
C 9.6 CUT TO REACH FINAL FINISH GRADE
F 9.6 FILL TO REACH FINAL FINISH GRADE



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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REVISIONS

NO.	DATE	COMMENT

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3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
PLAN AND PROFILE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-16	SCALE: *1" = 40'*
	SHEET: 17 OF 31

COMMONWEALTH OF MASSACHUSETTS
ROBERT L BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

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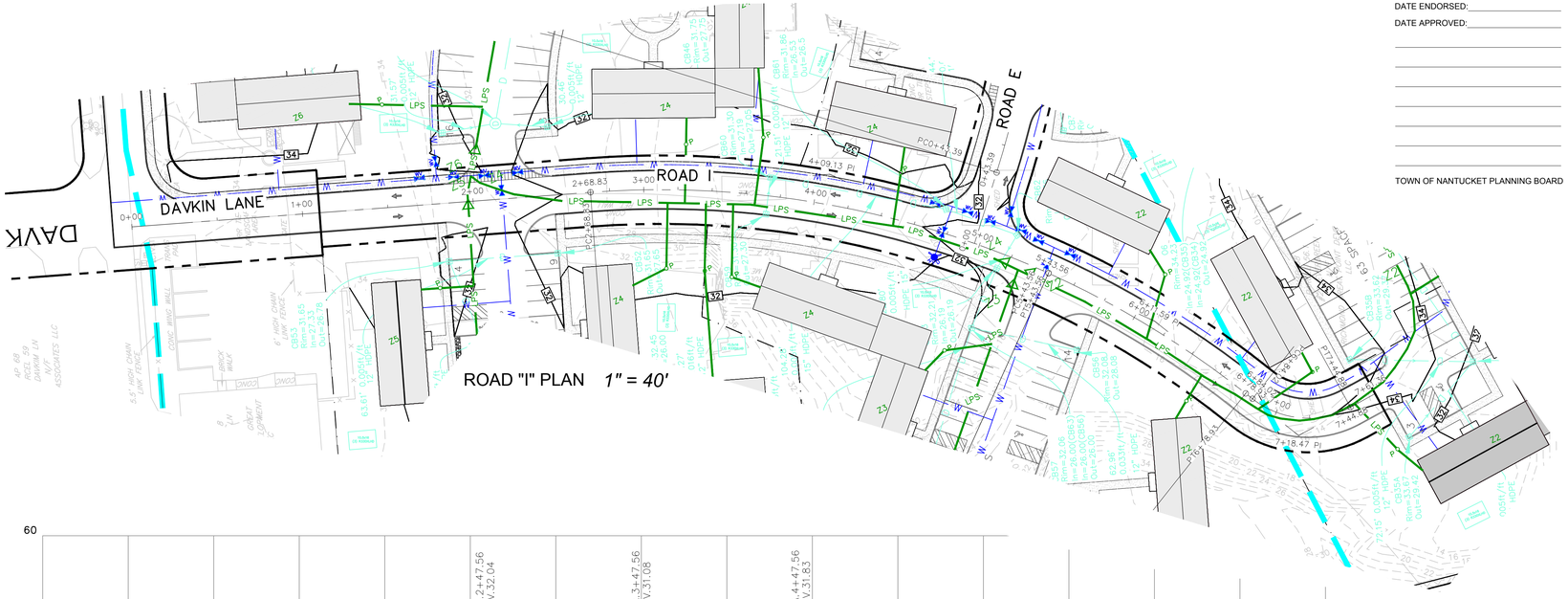
FOR REGISTRY USE ONLY

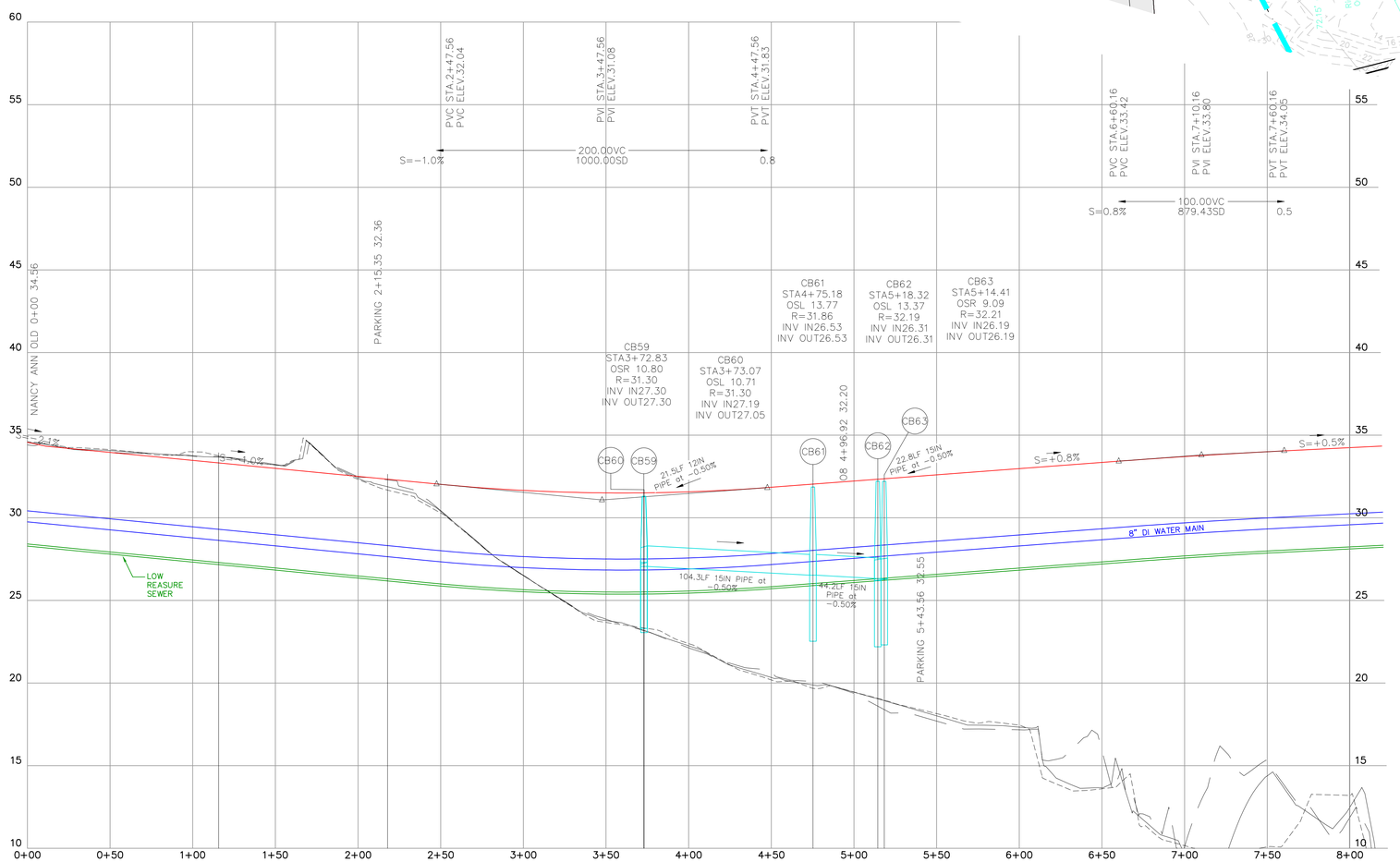
CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

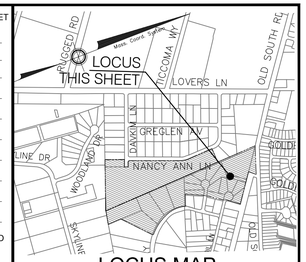




51.5 *EXISTING CL GRADE*
41.92 PROPOSED FINAL GRADE
C 9.6 CUT TO REACH FINAL FINISH GRADE
F 9.6 FILL TO REACH FINAL FINISH GRADE

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

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4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
PLAN AND PROFILE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-17	SCALE: 1" = 40'
	SHEET: 18 OF 31

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

S:\Clients\Richmond Grapoint Development\CAD\Site Plan\Profiles-2.dwg, C17-PROFILE (3), 8/4/2016 6:44:25 AM

FOR REGISTRY USE ONLY

PLANTING SCHEDULE					
SYMBOL	KEY	QTY	LATIN NAME	COMMON NAME	SCHEDULE SIZE
	TO	113	Thuja orientalis	Arborvitae	6-7'
	AR	66	Acer rubrum 'October Glory'	October Glory Red Maple	2.5" cal.

CLERK'S CERTIFICATION ON THE PLAN

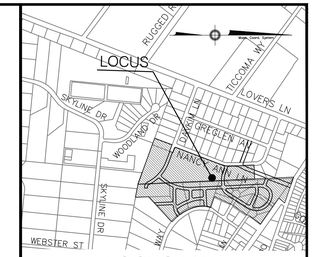
DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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Dimensions are as indicated.

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REVISIONS

NO.	DATE	COMMENT

GENERAL NOTES:

1. Underground utilities shown on this plan are based upon visible above ground utilities and record information of below ground utilities or noted other wise, and are approximate only. Contractor is responsible for taking all necessary precautions before beginning any excavation. (Digsafe 1-888-344-7233)

2. Horizontal Datum is based upon Massachusetts State Coordinate System, NAD 83 in feet. Vertical Datum is based upon NAVD 88 in feet.

3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
LANDSCAPE PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-18	SCALE: 1" = 80'
	SHEET: 19 OF 31

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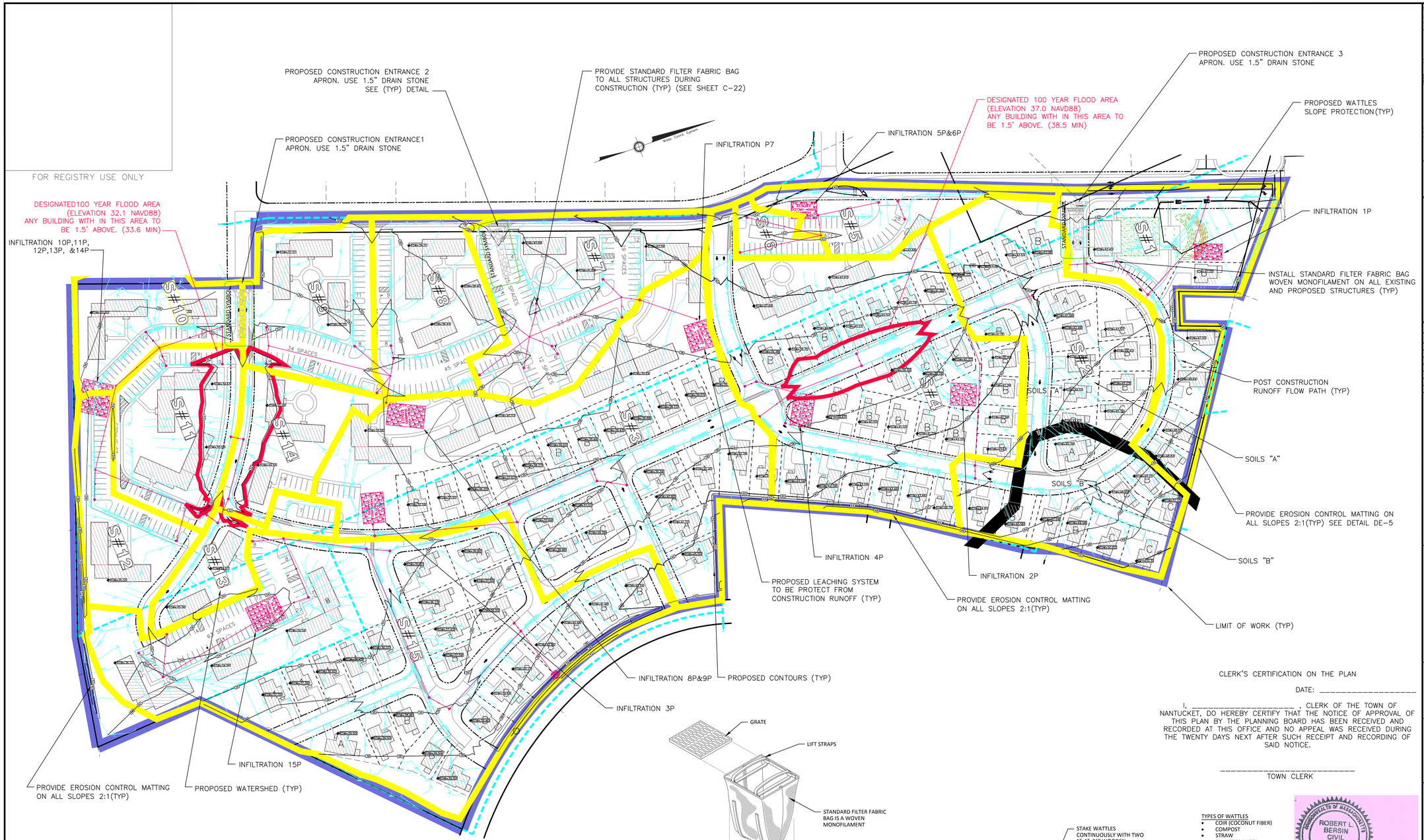
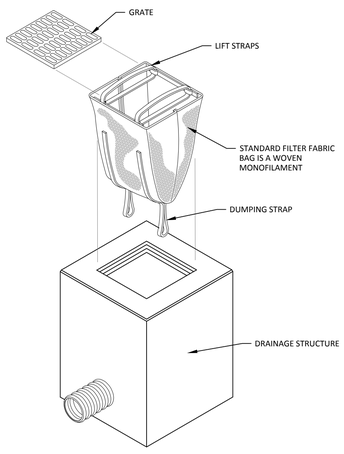


PERIMETER MONITORING

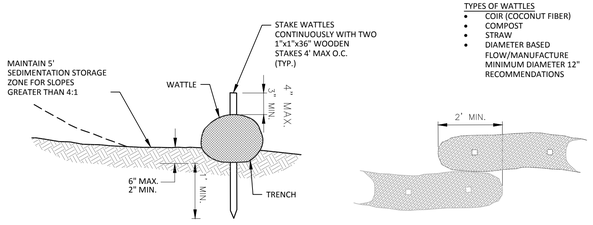
During projects that will disturb greater than 500 square feet (s.f.) of cover, the selected contractor shall provide perimeter monitoring at two downwind locations and one upwind location. The monitors shall be capable of reading PM-10 particulates on a real-time and time-weighted average (TWA) basis. The PM-10 standard includes particles with a diameter of 10 micrometers or less.
The Environmental Protection Agency (EPA) health-based national air quality standard for PM-10 is 35 micrograms per cubic meter (μg/m3) (measured as an annual mean) and 150 μg/m3 (measured as a daily concentration).
During the project duration, background levels of particulates shall be monitored at the upwind monitoring location. The air monitors shall be monitored on an hourly basis and shall be in operation during any project activities that involve the excavation, transfer, or other management of soil from the Site. Particulate concentrations from the upwind monitoring location may be subtracted from the downwind monitoring locations to obtain an accurate measurement of project related levels of particulates. The action level for the Site is 0.2 milligrams per cubic meter (mg/ m3) above background. Accordingly, if the TWA average for downwind readings is 0.2 mg/ m3 greater than background, project work must cease until operational changes are implemented that reduce dust levels to below the action level.

DUST CONTROL

DUST CONTROL
The contractor shall be responsible for controlling and limiting dust generated during the proposed project. During excavation activities, the contractor shall control dust primarily through the application of a light water spray across the project work area, as needed throughout the work day. The amount of water used to control dust shall be controlled such that no water runoff is generated from the project work area. Regular sweeping of the project work area to minimize tracking of soil is also recommended. Sweepings can be deposited into the excavation or stockpiled with excavated soil, on, and under, 6-mil polyethylene sheeting. The contractor will be responsible for providing all equipment and labor for dust control procedures.
6.1 Visible Dust
When visible dust is observed originating at the project area, all work must cease until operational changes are implemented that eliminate visible dust.
Visible Dust
When visible dust is observed originating at the project area, all work must cease until operational changes are implemented that eliminate visible dust.



EROSION CONTROL AT CATCH BASIN
NOT TO SCALE



TYPES OF WATTLES
- COIR (COCONUT FIBER)
- COMPOST
- STRAW
- DIAMETER BASED FLOW/MANUFACTURE MINIMUM DIAMETER 12" RECOMMENDATIONS

SECTION

PLAN

WATTLES-SLOPE PROTECTION
NOT TO SCALE

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

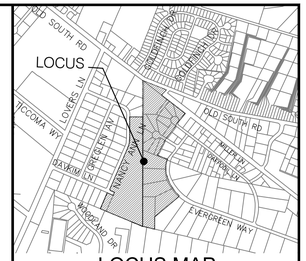
I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

ROBERT L. BERSIN CIVIL NO. 37391 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
8/5/2016

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
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REVISIONS

NO.	DATE	COMMENT

GENERAL NOTES:

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2. Horizontal Datum is based upon Massachusetts State Coordinate System, NAD 83 in feet. Vertical Datum is based upon NAVD 88 in feet.

3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
EROSION & DUST CONTROL PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-19	SCALE: 1" = 80'
	SHEET: 20 OF 31

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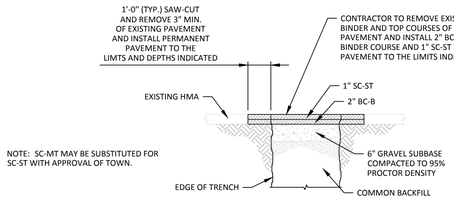
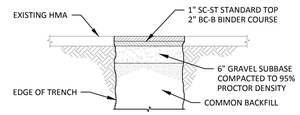
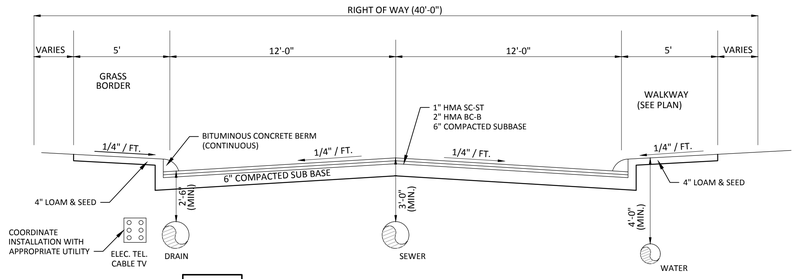


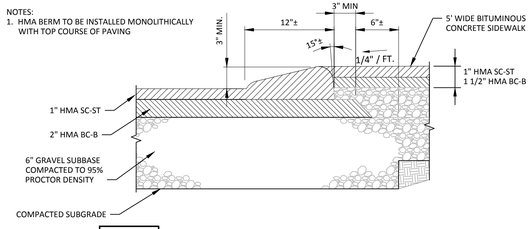
DS-1 FINAL TRENCH PAVING (TOWN ROADS)
NOT TO SCALE



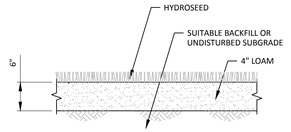
DS-2 TEMPORARY PAVING (TOWN ROADS)
NOT TO SCALE



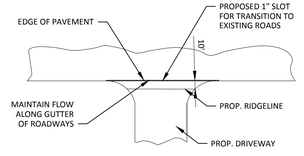
DS-3 TYPICAL ROADWAY CROSS SECTION
NOT TO SCALE



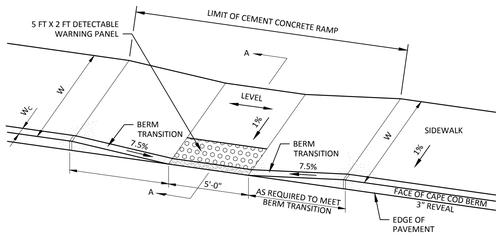
DS-5 BIT. BERM DETAIL
NOT TO SCALE



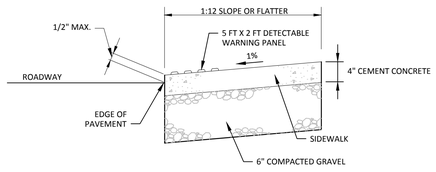
DS-6 LOAM AND SEED
NOT TO SCALE



DS-7 FILLET AT INTERSECTING ROAD
NOT TO SCALE

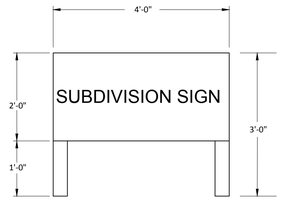


PLAN

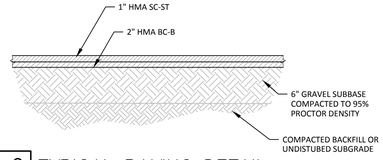


SECTION A-A

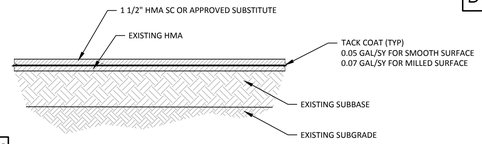
DS-4 WHEEL CHAIR RAMP (NTS)
- FOR SIDEWALKS UP TO 8' WIDE
- WHEELCHAIR RAMP SHALL MEET MASSDOT DRAWING NUMBER E 107.2.1 AS AMENDED



DS-8 SUBDIVISION SIGN DETAIL
NOT TO SCALE



DS-9 TYPICAL PAVING DETAIL
NOT TO SCALE



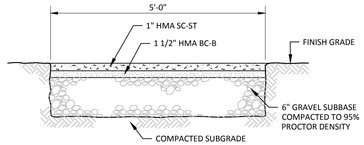
DS-10 TYPICAL RESURFACING DETAIL
NOT TO SCALE

LOAM/SEED NOTES:
ALL DISTURBED AREA SHALL BE GRADED TO A DEPTH SUITABLE FOR INSTALLING THE LOAM PER THE GRADING PLAN AND PROPERLY SEEDED.

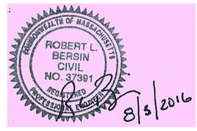
TOPSOIL - NO STONES GREATER THAN 3/4", COMPACT WITH A HANDROLLER IN TWO DIRECTIONS & FINE RAKE PRIOR TO SEEDING

SUBSOIL - COMPACTED AT 90% MAXIMUM DENSITY

SEED - NATIVE HYDROSEED MIX.



DS-11 BITUMINOUS CONCRETE WALK
NOT TO SCALE



APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
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REVISIONS

NO.	DATE	COMMENT

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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_____
TOWN CLERK

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-SITE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-20	SCALE: NOTED
	SHEET: 21 OF 31

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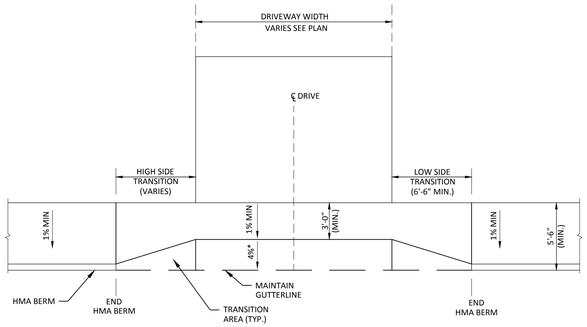
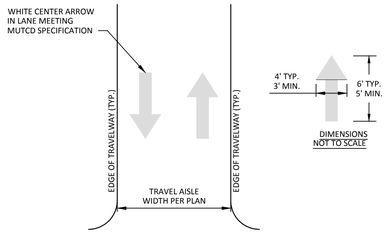


TRANSITION AREA TO BE HAND PLACED HMA, GRADED TO TRANSITION FROM HMA BERM SECTION TO DRIVEWAY SECTION. SLOPE OF TRANSITION AREA PARALLEL TO GUTTERLINE IS NOT TO EXCEED 7.5%.

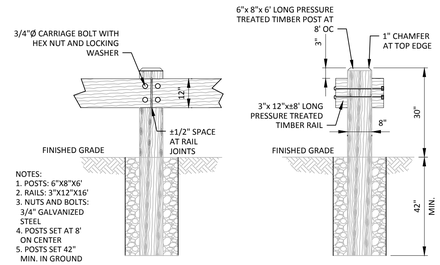
DS–14 DRIVEWAY APRON CONSTRUCTION
NOT TO SCALE

SURFACE: 3" HOT MIX ASPHALT (2" TOP COURSE MATERIAL OVER 1" BINDER COURSE MATERIAL)

SUBBASE: 6" GRAVEL BORROW (TYPE "B")



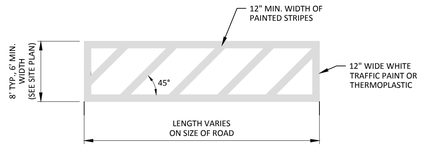
DS–13 ARROW PAVEMENT MARKING
NOT TO SCALE



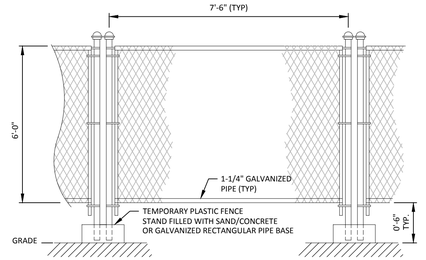
NOTES:
1. POSTS: 6"X8"X6'
2. RAILS: 3"X12"X16'
3. NUTS AND BOLTS: 3/4" GALVANIZED STEEL
4. POSTS SET AT 8' ON CENTER
5. POSTS SET 42" MIN. IN GROUND

DS–17 TIMBER GUARDRAIL DETAIL
NOT TO SCALE

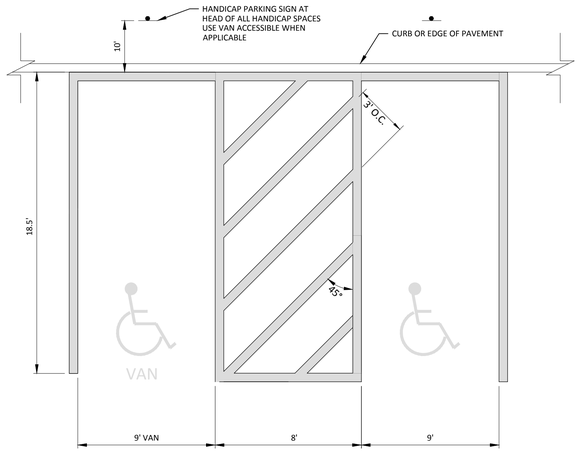
FOR DECORATIVE PURPOSES ONLY. NOT MEANT TO KEEP VEHICLES FROM LEAVING ROADWAY.



DS–15 TYPICAL PAINTED CROSSWALK SCHEMATIC
NOT TO SCALE

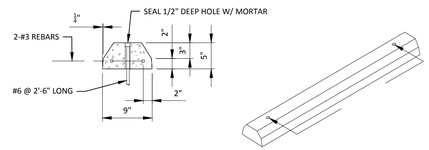


DS–16 TEMPORARY CONSTRUCTION FENCE
NOT TO SCALE



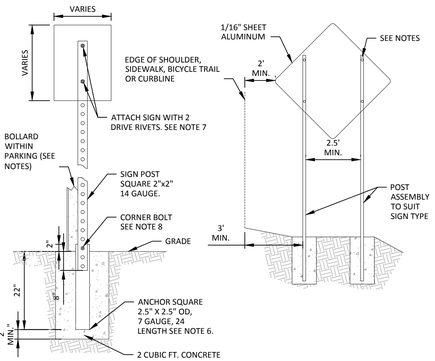
NOTE:
1. WHERE STALLS ABUT SIDEWALK, PARKING SIGNS SHOULD BE PLACED AT BACK EDGE OF SIDEWALK.
2. STRIPING SHOULD BE EPOXY RESIN AND WHITE IN COLOR

DS–18 VAN HANDICAP PARKING STALLS @ 90°
NOT TO SCALE



INSTALLATION PLAN

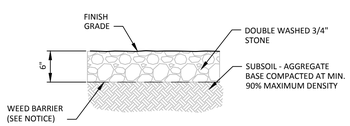
DS–23 PRECAST BUMPER (WHEEL STOP) DETAIL
NOT TO SCALE



NOTES:
1. SIGN HEIGHT - 7' FROM BOTTOM OF SIGN TO GRADE. 6' FROM BOTTOM OF LOWER SIGN FOR MULTIPLE SIGNS ON ONE POST. EXCEPTIONS ONLY AS SPECIFICALLY STATED ON PLANS.
2. METAL STOP AND YIELD SIGN POSTS SHALL HAVE ALTERNATING 1' BANDS OF RED AND WHITE 3M DIAMOND GRADE SHEETING. ALL OTHER POSTS SHALL BE UNSHEETED.
3. FOR IN-SIDEWALK INSTALLATIONS, CORE 4" DIAM. HOLE. ANCHOR LENGTH MAY BE DECREASED TO 12".
4. POST SHALL BE ROLLED CARBON SHEET STEEL, ASTM A570 GRADE 50 AND BE HOT DIPPED GALVANIZED AASHTO M-120 YIELD STRENGTH 60,000 PSI MIN. POST SHALL HAVE 7/16" DIE-PUNCHED KNOCKOUTS ON 1" CENTERS FULL LENGTH, FOUR SIDES.
5. ANCHOR SHALL HAVE 4 7/16" HOLES ONE EACH SIDE 2" FROM TOP END. FINISH SHALL BE ZINC HOT DIPPED GALVANIZED MATERIAL TO MEET ASTM A500 GRADE B.
6. DRIVE RIVETS TO BE TL3806 3/8" DIA. OR EQUAL.
7. CORNER BOLTS TO BE TLCBS16M OR EQUAL.
8. SIGN POSTS WITHIN PARKING AREAS (PAVEMENT) SHALL BE A BOLLARD TYPE WITH A 6 INCH DIAMETER DUCTILE IRON PIPE FILLED WITH CONCRETE EXTENDING A MIN. 4' FROM GROUND SURFACE.

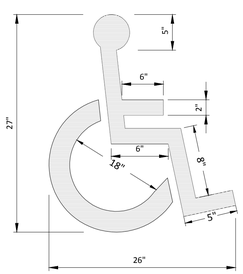
DS–20 SIGN INSTALLATION DETAIL
NOT TO SCALE

WASHED STONE NOTES:
WEED BARRIER SHALL BE TENCATE NICOLON GROUNDCOVER FABRIC OR EQUAL.



WASHED STONE

DS–24 SURFACE TREATMENT DETAIL
NOT TO SCALE



1. ALL HANDICAP PARKING AND SIGNAGE SHALL BE IN CONFORMANCE WITH THE RULES & REGULATIONS OF THE ARCHITECTURAL BARRIERS BOARD.

STRIPING SHOULD BE EPOXY RESIN AND WHITE IN COLOR

DS–22 HANDICAP PAVEMENT PARKING
NOT TO SCALE

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

TOWN OF NANTUCKET PLANNING BOARD

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REVISIONS

NO.	DATE	COMMENT

CLERK'S CERTIFICATION ON THE PLAN

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_____
TOWN CLERK

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-SITE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-21	SCALE: NOTED
	SHEET: 22 OF 31

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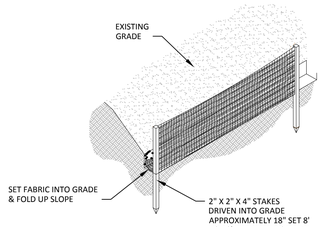
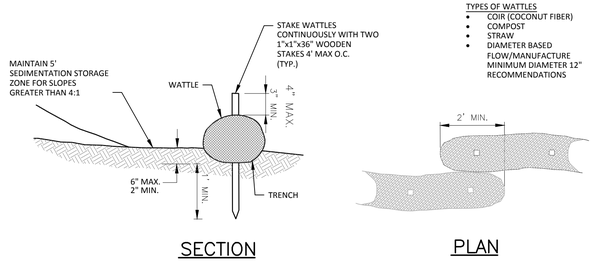
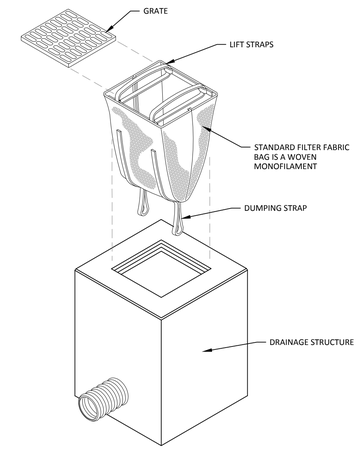


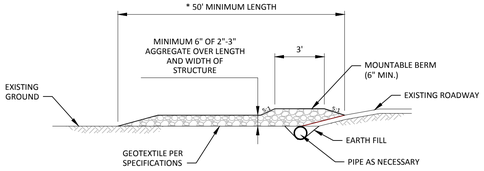
DE–1 SILT FENCE DETAIL
NOT TO SCALE

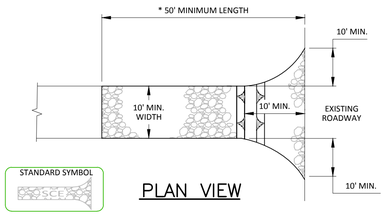


DE–2 WATTLES–SLOPE PROTECTION
NOT TO SCALE



DE–3 EROSION CONTROL AT CATCH BASIN
NOT TO SCALE





CONSTRUCTION SPECIFICATIONS

1. LENGTH - MINIMUM OF 50'.

2. WIDTH - 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.

3. GEOTEXTILE FABRIC (MIRAFI 180N OR EQUAL) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE.

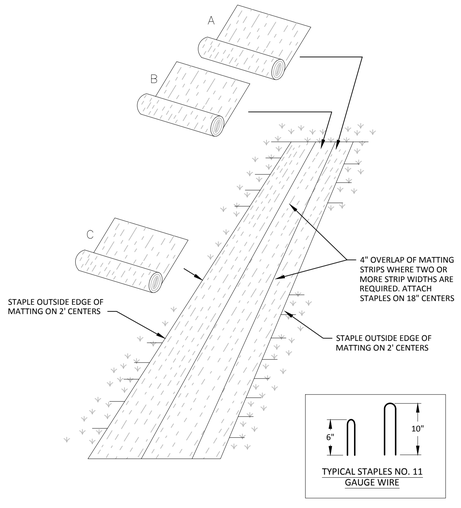
4. STONE - CRUSHED AGGREGATE (2" TO 3") OR RECLAIMED OR RECYCLED CONCRETE OR EQUIVALENT SHALL BE PLACED AT LEAST 6" DEEP OVER THE LENGTH AND WIDTH OF THE ENTRANCE.

5. SURFACE WATER - ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED THROUGH THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PIPE INSTALLED THROUGH THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROTECTED WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 6" OF STONE OVER THE PIPE. WHEN THE SCE IS LOCATED AT A HIGH SPOT ALONG THE ROADWAY, DRAINAGE PIPE WILL NOT BE NECESSARY. PIPE SHOULD BE SIZED ACCORDING TO THE AMOUNT OF RUNOFF TO BE CONVEYED. A 12" MINIMUM WILL BE REQUIRED.

6. LOCATION - A STABILIZED CONSTRUCTION ENTRANCE SHALL BE LOCATED AT EVERY POINT WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SITE. VEHICLES LEAVING THE SITE MUST TRAVEL OVER THE ENTIRE LENGTH OF THE STABILIZED CONSTRUCTION ENTRANCE.

7. ALL EFFORTS SHALL BE MADE TO REDUCE MATERIAL IN THE ROADWAY.

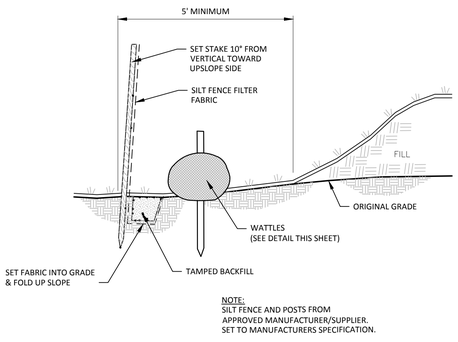
DE–4 STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



DE–5 EROSION CONRTOL MATTING
NOT TO SCALE

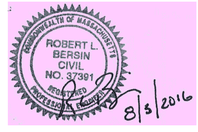
NOTES:
1. EROSION CONTROL MATS MANUFACTURED BY NORTH AMERICAN GREEN'S, MODEL S150 & SC150 AND SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

2. USE S150 EROSION CONTROL MATS ON 3:1 TO 2:1 SLOPES. USE SC150 EROSION CONTROL MATS ON 2:1 TO 1:1 SLOPES.



NOTE:
SILT FENCE AND POSTS FROM APPROVED MANUFACTURER/SUPPLIER. SET TO MANUFACTURERS SPECIFICATION.

DE–6 STRAW WATTLE / SILT FENCE INSTALLATION DETAIL
NOT TO SCALE



CLERK'S CERTIFICATION ON THE PLAN

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TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-EROSION CONTROL

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-22	SCALE: NOTED
	SHEET: 23 OF 31

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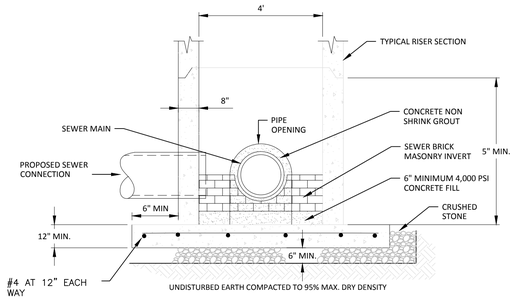
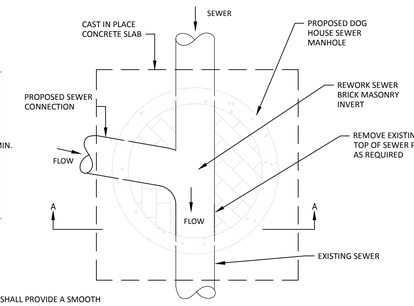


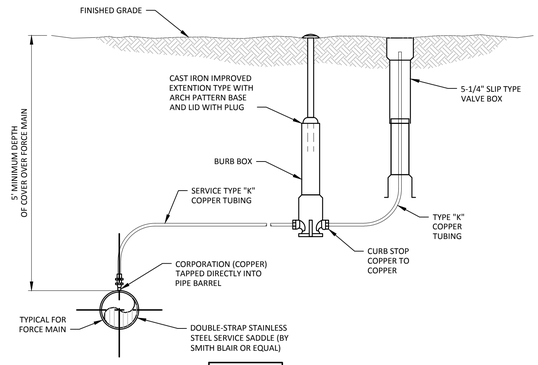
SECTION A-A



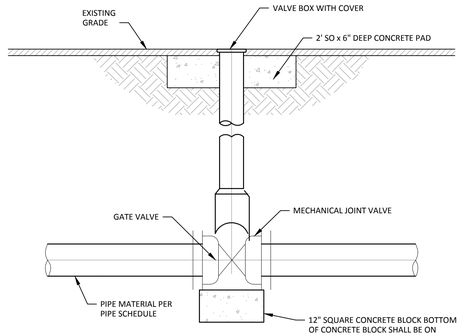
PLAN

1. BRICK MASONRY INVERT SHALL PROVIDE A SMOOTH TRANSITION THROUGH THE MANHOLE.
2. BRICK MASONRY BENCH SHALL SLOPE TOWARD SEWER RIM AT 1/2" / FT.
3. DEPTH OF TROUGH THROUGH MANHOLE SHALL EQUAL THE DIAMETER OF THE SEWER PIPE.

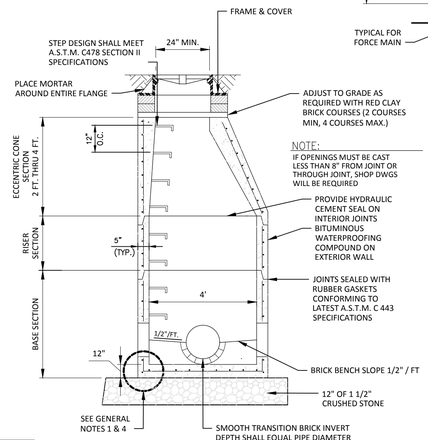
DSE-1 SEWER MANHOLE BASE
NOT TO SCALE



DSE-2 AIR RELEASE DETAIL
NOT TO SCALE

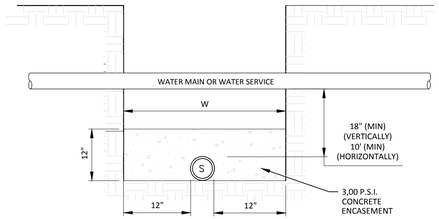


DSE-4 TYPICAL DETAIL FOR ALL BURIED VALVES CONNECTION TO PROPOSED PIPES
NOT TO SCALE



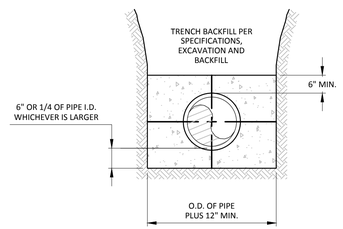
DSE-5 TYPICAL SEWER MANHOLE COVER
NOT TO SCALE

NOTES:
1. REINFORCING STEEL CONFORMS TO LATEST A.S.T.M.
2. CONC. MINIMUM COMPRESSIVE STRENGTH = 4000 PSI TYPE II CEMENT.
3. MANHOLE DESIGN SPECIFICATIONS CONFORM TO LATEST A.S.T.M. SPEC. FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS
4. ONE POUR MONOLITHIC BASE SECTION.



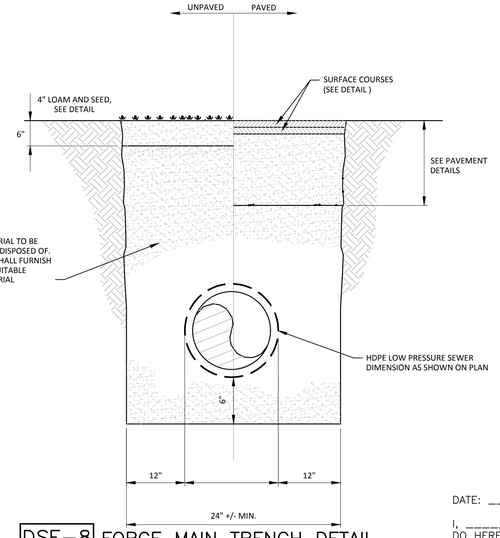
1. WIDTH OF TRENCH AS REQUIRED FOR STABLE WORK CONDITIONS.
2. IF MINIMUM CLEARANCES CANNOT BE MET, SEWER PIPE SHALL BE OF EQUIVALENT SIZE PRESSURE PIPE. ONE 20 FOOT (MIN.) LENGTH OF PRESSURE PIPE SHALL BE CENTERED ON THE WATER LINE. INSTALL ADDITIONAL SECTIONS OF PRESSURE PIPE ON EACH SIDE OF CENTERED PIPE.
3. ALL PRESSURE PIPE JOINTS SHALL BE ENCASED IN CONCRETE EXTENDING 6" ON EACH SIDE OF JOINT, INCLUDING JOINTS TO NON-PRESSURE SEWER MAIN.
4. THESE CONDITIONS APPLY TO SERVICE LATERALS AS WELL AS MAINS.

DSE-6 MINIMUM DISTANCE FOR SEWER AND WATER LINE CROSSINGS
NOT TO SCALE



1. FORCE MAIN INSTALLED WITHIN 18" HORIZONTALLY OF LIVE WATER MAINS SHALL BE CONCRETE ENCASED TO A DISTANCE OF 10 FEET FROM THE WATER MAINS.
2. CONTROL DENSITY FILL (CDF) SHALL BE USED FOR CONCRETE ENCASEMENT.

DSE-7 TYPE VI PLAIN CONCRETE ENCASEMENT DETAIL
NOT TO SCALE



DSE-8 FORCE MAIN TRENCH DETAIL
NOT TO SCALE

DSE-9 SEWER SERVICE CONNECTION
NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/3/2016

CLERK'S CERTIFICATION ON THE PLAN

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DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
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Sagamore Beach, MA 02562
Tel: (508) 888-6034
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NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-SEWER

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-23	SCALE: NOTED
	SHEET: 24 OF 31

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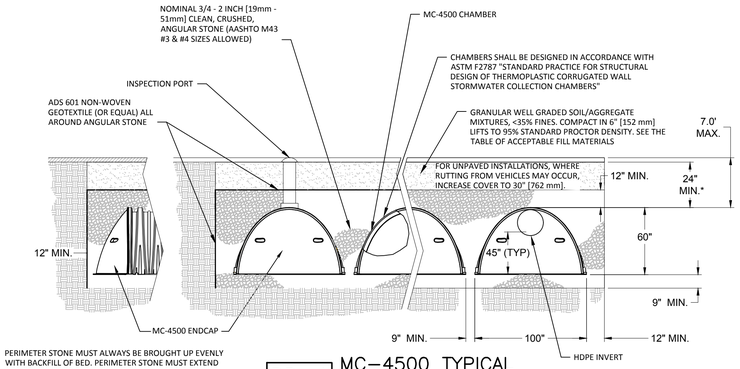
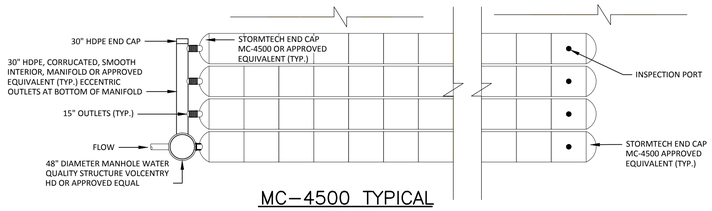
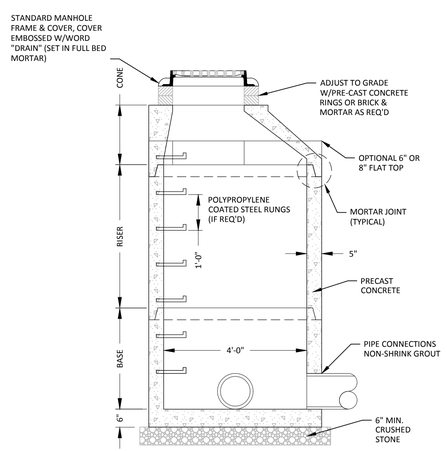


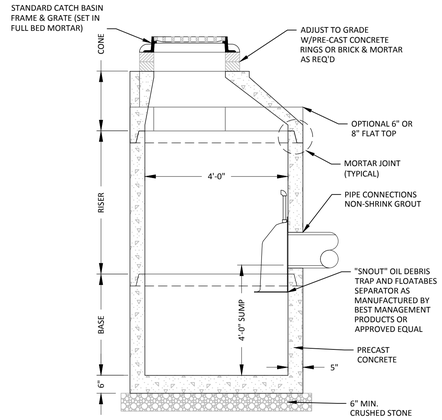
DD-4 MC-4500 TYPICAL CROSS-SECTION
NOT TO SCALE



MC-4500 TYPICAL PLAN
NOT TO SCALE

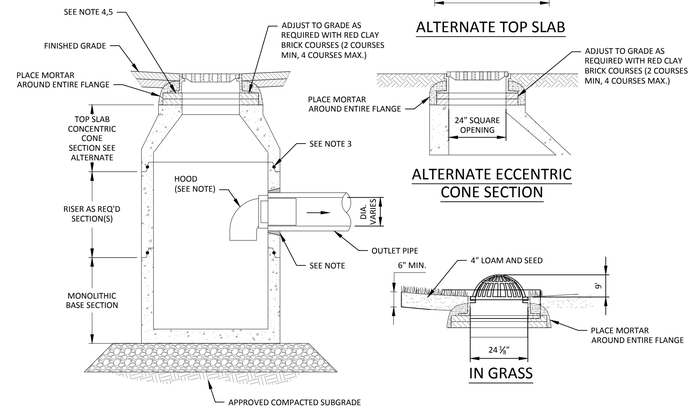


DD-1 PRE-CAST DRAIN MANHOLE
NOT TO SCALE



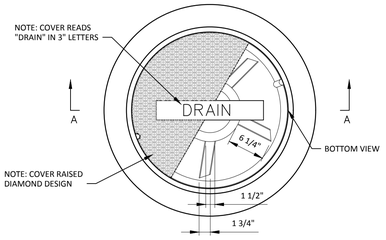
DD-2 PRE-CAST CATCH BASIN
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."

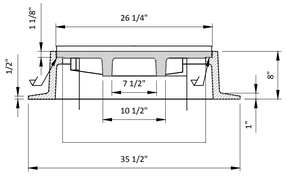


DD-5 TYPICAL PRECAST CONCRETE CATCH BASIN WITH HOOD
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."



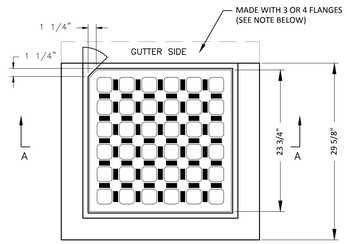
PLAN



SECTION A-A

NOTES:
1. ALL DMH FRAME AND COVERS TO BE LEBARON FOUNDRY MODEL NO. LK110A DRAIN OR EQUAL.
2. MANHOLE FRAME AND COVER TO BE H-20 LOAD RATED.

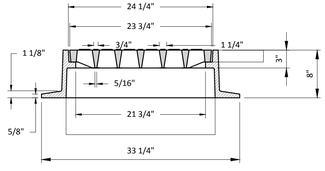
DD-6 MANHOLE FRAME AND COVER DETAIL
NOT TO SCALE



PLAN

RECTANGLES 3/4"X1-3/4" RAISED 1/8" FROM COVER TOP

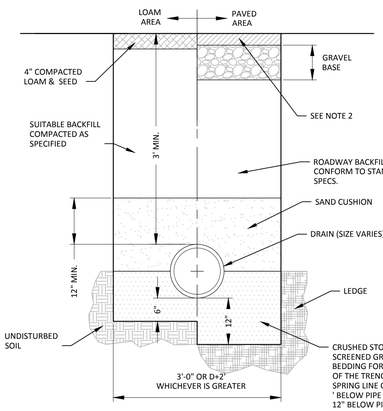
2-1/2" SQUARE OPENINGS



SECTION A-A

NOTE:
ALL CATCH BASIN FRAME AND GRATES TO BE LEBARON FOUNDRY MODEL NO. LF 246 DRAIN OR EQUAL WITH 4 FLANGES UNLESS OTHERWISE SPECIFIED ON THE CONTRACT DRAWINGS.

DD-7 CATCH BASIN FRAME AND GRATE DETAIL
NOT TO SCALE



DD-8 DRAIN TRENCH
NOT TO SCALE

NOTES:
1. ALL MATERIAL SHALL CONFORM TO CITY/TOWN OF DEPARTMENT OF PUBLIC WORKS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO CITY/TOWN SPECIFICATIONS.
3. IN LIEU OF THE 12" GRAVEL COURSE AND 9" OF CRUSHED GRAVEL, 18" OF CRUSHED GRAVEL OR RECLAIMED STABILIZED BASE MAY BE USED AS A BASE FOR THE PAVEMENT REPAIR.
4. MATERIAL SHALL BE REPLACED IN KIND WHENEVER POSSIBLE.
5. A MINIMUM 2' CUTBACK IS REQUIRED AT THE TOP OF THE TRENCH WALL OVER UNDISTURBED MATERIAL.

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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TOWN CLERK

COMMONWEALTH OF MASSACHUSETTS
ROBERT L BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

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PREPARED FOR:
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RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
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DRAWING TITLE:
DETAIL-DRAINAGE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-24

SCALE: NOTED

SHEET: 25 OF 31

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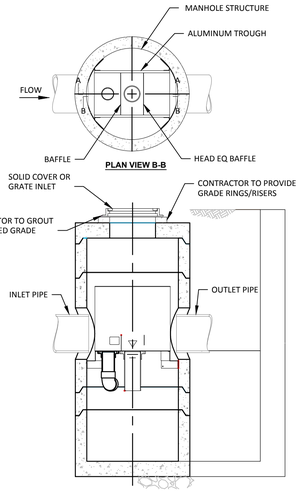


FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. VORTSENTRY HS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.

INSTALLATION NOTES
1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTSENTRY HS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
3. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
4. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
5. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

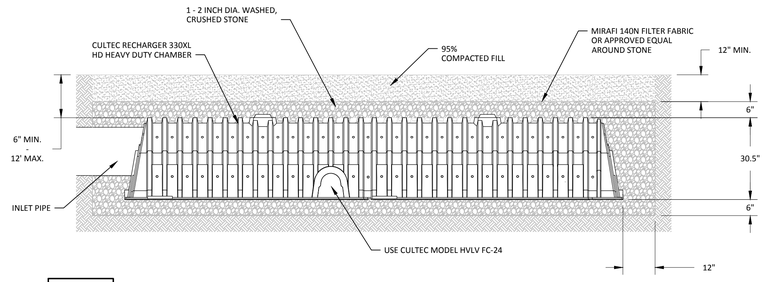
NOTES

"ANY MANUFACTURE'S NAMES AND/OR MODEL NUMBERS IDENTIFIED HEREIN ARE INTENDED TO ASSIST IN ESTABLISHING A GENERAL LEVEL OF QUALITY, CONFIGURATION, FUNCTIONALITY, AND APPEARANCE REQUIRED. THIS IS NOT A PROPRIETARY SPECIFICATION AND IT SHOULD BE NOTED THAT "OR APPROVED EQUAL" APPLIES TO ALL PRODUCTS DENOTED HEREIN. IT IS UNDERSTOOD THAT ALL MANUFACTURERS WILL HAVE MINOR VARIATIONS IN CONFIGURATION, APPEARANCE, AND PRODUCT SPECIFICATION TO ENCOURAGE OPEN AND COMPETITIVE INVOLVEMENT FROM MULTIPLE MANUFACTURERS THAT ARE ABLE TO SUPPLY SIMILAR PRODUCTS."

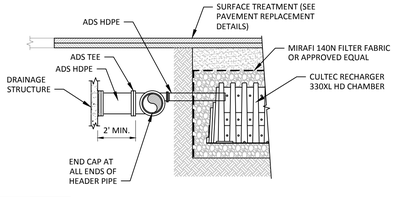
Underground Retention / Infiltration Areas for Watershed

No.	Watershed	Storage Area	No. Storage Chambers	Vortsentry Model
1	S1	46.67'W x 27.24'L x 6.75'H	25	HS72
2	S2	37.58'W x 43.34'L x 6.75'H	36	HS72
3	S3	37.58'W x 51.39'L x 6.75'H	44	HS84
4	S4	55.75'W x 35.29'L x 6.75'H	42	HS84
5	S5, S6	28.50'W x 43.34'L x 6.75'H	27	HS84
6	S7	46.67'W x 47.37'L x 6.75'H	50	HS84
7	S8, S9	37.58'W x 63.47'L x 6.75'H	56	HS96
8	S10, S11, S12, S13, S14	55.75'W x 51.39'L x 6.75'H	66	HS96
9	S15	46.67'W x 59.44'L x 6.75'H	65	HS84

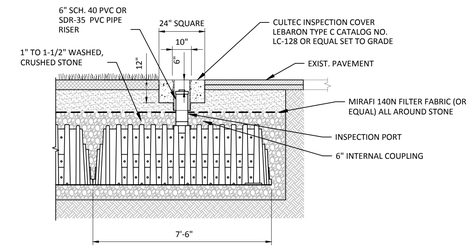
DD-14 VORTSENTRY HD STANDARD DETAIL
NOT TO SCALE



DD-9 CULTEC RECHARGER 330XL HD PROFILE
NOT TO SCALE

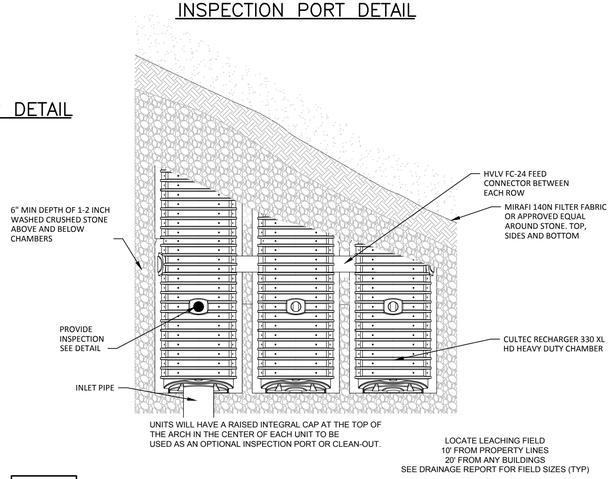


DD-10 HEADER PIPE DETAIL

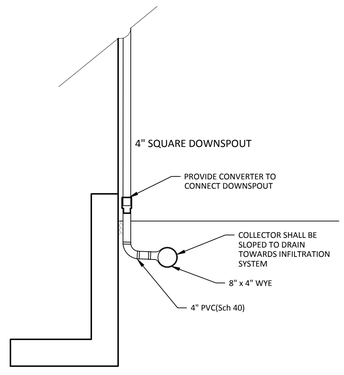


INSPECTION PORT DETAIL

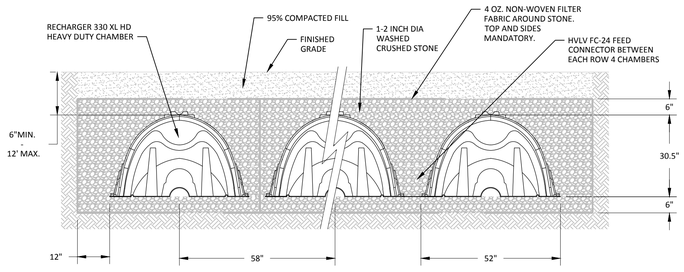
CLEANOUT ACCESS COVER DETAIL
NOT TO SCALE



DD-11 CULTEC RECHARGER 330XL HD PLAN
NOT TO SCALE



DD-12 BUILDING DOWNSPOUT ROOF DRAIN DETAIL
NOT TO SCALE



GENERAL NOTES
RECHARGER 330XL HD BY CULTEC, INC. OF BROOKFIELD, CT.
STORAGE PROVIDED = 11.32 CF/FT PER DESIGN UNIT.
REFER TO CULTEC, INC.'S CURRENT RECOMMENDED INSTALLATION GUIDELINES.
USE RECHARGER 330XL HD HEAVY DUTY FOR TRAFFIC AND/OR H-25 APPLICATIONS.

ALL RECHARGER 330XL HD HEAVY DUTY UNITS ARE MARKED WITH A COLOR STRIPE FORMED INTO THE PART ALONG THE LENGTH OF THE CHAMBER.
ALL RECHARGER 330XL HD CHAMBERS MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

DD-8 CULTEC RECHARGER 330XL HD SECTION
NOT TO SCALE

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD

FOR REGISTRY USE ONLY

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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Dimensions are as indicated.

Use of this plan constitutes acceptance of terms and conditions set forth in accompanying project documentation.

It is the responsibility of the user to confirm discrepancies with the Engineer prior to use.

REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-DRAINAGE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-25

SCALE: NOTED

SHEET: 26 OF 31

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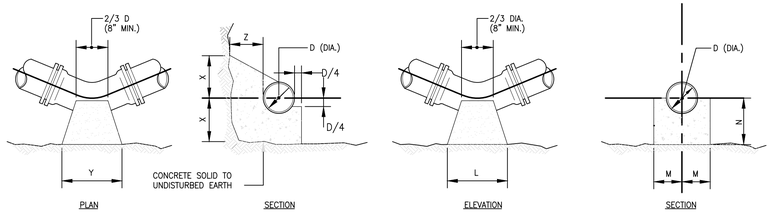
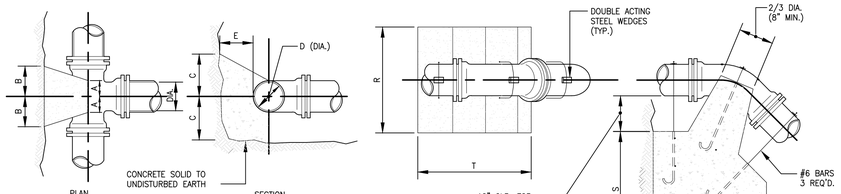
FOR REGISTRY USE ONLY



HORIZONTAL BENDS VERTICAL BENDS



TEES CONC. ANCHORAGE

NOTES:

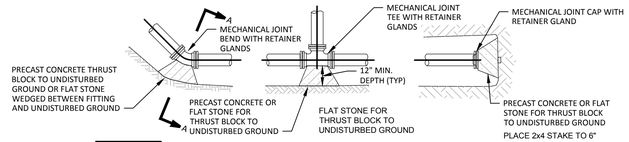
1. ALL CONCRETE SHALL BE CL. B (AE) CONCRETE AND COMPLY WITH STANDARD SPECIFICATIONS.
2. CONCRETE THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED EARTH. IN AREAS WHERE BEARINGS SOILS HAVE BEEN DISTURBED, RESTRAINED JOINTS SHALL BE USED.
3. ALL FORCE MAIN BENDS, TEES, MAIN TAPS, AND END CAPS SHALL REQUIRE A CONCRETE THRUST BLOCK.

TEES						
		PIPE SIZE-D (DIA.)				
		6"	8"	12"	16"	20"
	A	8"	10"	1'-0"	1'-3"	1'-6"
	B	8"	10"	1'-2"	1'-4"	1'-6"
	C	10"	1'-0"	1'-3"	1'-6"	1'-8"
	E	8"	10"	1'-2"	1'-6"	1'-10"

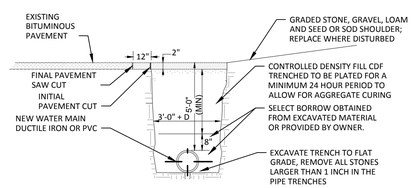
HORIZONTAL BENDS						
BEND		PIPE SIZE-D (DIA.)				
		6"	8"	12"	16"	20"
1/8	X	1'-0"	1'-0"	1'-0"	1'-3"	1'-6"
	Y	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"
	Z	8"	10"	1'-2"	1'-4"	1'-6"
1/16	X	1'-0"	1'-0"	1'-0"	1'-3"	1'-6"
	Y	1'-0"	1'-4"	1'-6"	1'-9"	2'-6"
	Z	8"	10"	1'-2"	1'-4"	1'-6"
1/32	X	1'-0"	1'-0"	1'-0"	1'-2"	1'-4"
	Y	1'-0"	1'-0"	1'-2"	1'-4"	1'-6"
	Z	8"	10"	1'-2"	1'-4"	1'-6"

VERTICAL BENDS						
BEND		PIPE SIZE-D (DIA.)				
		6"	8"	12"	16"	20"
1/8	L	1'-3"	1'-8"	2'-6"	3'-6"	4'-8"
	M	7"	8"	11"	1'-4"	1'-6"
	N	7"	8"	11"	1'-4"	1'-6"
1/16	L	9"	1'-0"	1'-9"	2'-6"	3'-0"
	M	7"	7"	10"	1'-0"	1'-2"
	N	7"	7"	8"	10"	1'-0"
1/32	L	6"	8"	1'-0"	1'-4"	1'-9"
	M	7"	7"	10"	1'-0"	1'-2"
	N	7"	7"	8"	10"	1'-0"

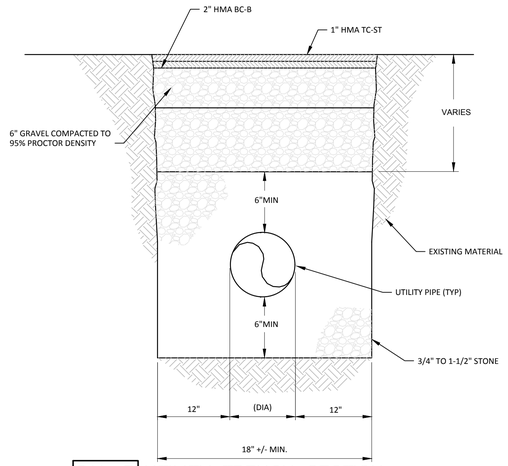
ANCHORAGES						
BEND		PIPE SIZE-D (DIA.)				
		6"	8"	12"	16"	20"
1/8	R	2'-6"	3'-0"	4'-6"	5'-4"	6'-0"
	S	2'-6"	2'-9"	3'-6"	2'-6"	5'-6"
	T	3'-0"	4'-0"	4'-9"	7'-0"	9'-6"
1/16	R	2'-0"	2'-8"	4'-0"	4'-6"	5'-0"
	S	1'-9"	2'-3"	2'-6"	3'-2"	3'-8"
	T	2'-6"	3'-4"	4'-0"	6'-0"	8'-6"
1/32	R	1'-6"	2'-0"	3'-0"	3'-8"	4'-3"
	S	1'-3"	1'-9"	2'-0"	2'-4"	2'-6"
	T	2'-0"	2'-6"	3'-0"	4'-6"	5'-9"



DU-2 TYPICAL THRUST BLOCK DETAILS
NOT TO SCALE

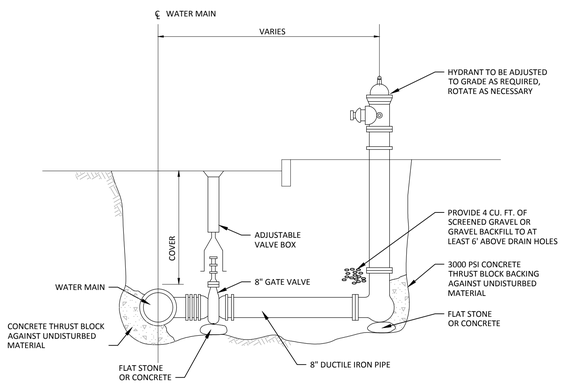


DU-1 TYPICAL TRENCH IN ROADWAY SURFACE
(RIGHT SIDE INSTALLATION LEFT SIDE SIMILAR)
NOT TO SCALE



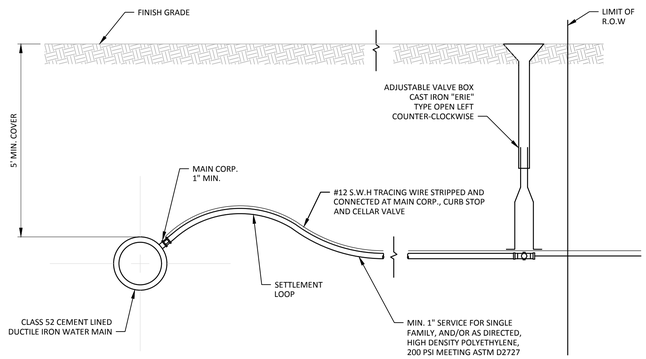
DU-3 UTILITY TRENCH SECTION
NOT TO SCALE

COORDINATE ALL UTILITY TRENCHING WITH APPROPRIATE UTILITY.

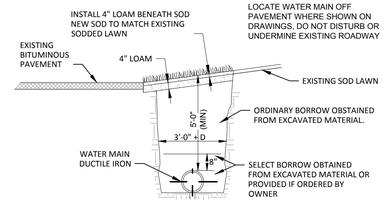


NOTES:
1. HYDRANTS ARE TO BE INSTALLED WITHIN THE ROADWAY LAYOUT
2. FOR HYDRANTS INSTALLED AT DEAD END OF WATER MAINS; INSTALL VALVE WITH RESTRAINED JOINTS AND ONE FULL LENGTH OF PIPE BETWEEN VALVE AND HYDRANT WITH RESTRAINED JOINTS
3. ALL HYDRANT BRANCH PIPING TO BE 8" DUCTILE IRON PIPE.

DU-4 FIRE HYDRANT DETAIL
NOT TO SCALE



DU-5 TYPICAL PERMANENT SERVICE CONNECTION DETAIL
NOT TO SCALE



DU-6 TYPICAL TRENCH IN SHOULDER (SOD)
(SHOWN RIGHT SIDE INSTALLATION LEFT SIDE SIMILAR)
NOT TO SCALE

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED
PROFESSIONAL ENGINEER
8/5/2016

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
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REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-UTILITIES

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-26

SCALE: NOTED

SHEET: 27 OF 31

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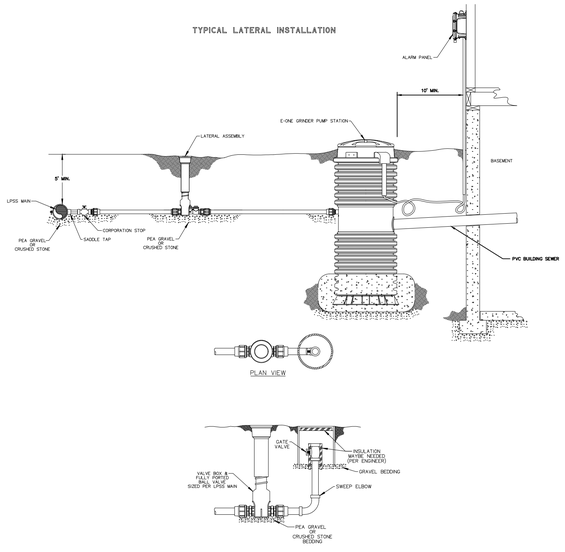
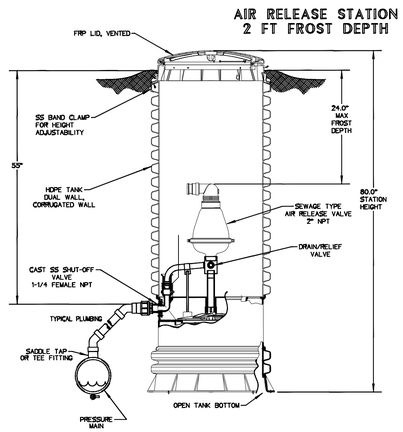
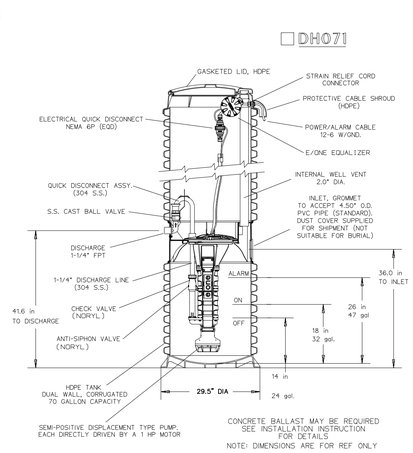
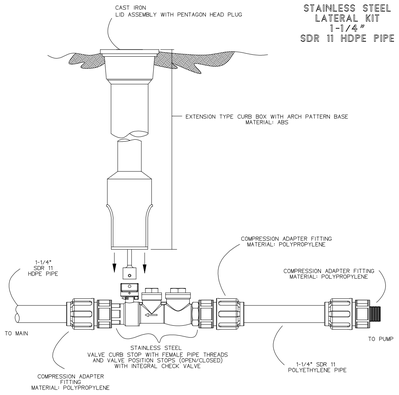






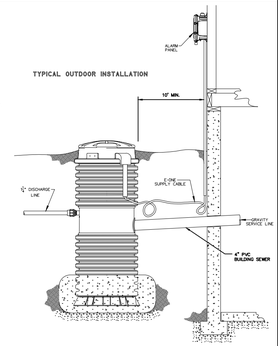
DH071

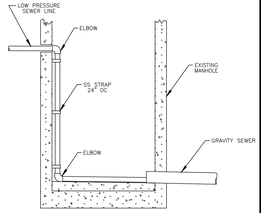
- SIMPLEX PUMP CHAMBER ASSEMBLY FOR ALL SINGLE FAMILY LOTS
- DUPLEX PUMP CHAMBER ASSEMBLY FOR NON GRAVITY MULTI-FAMILY UNITS.



NOTES:

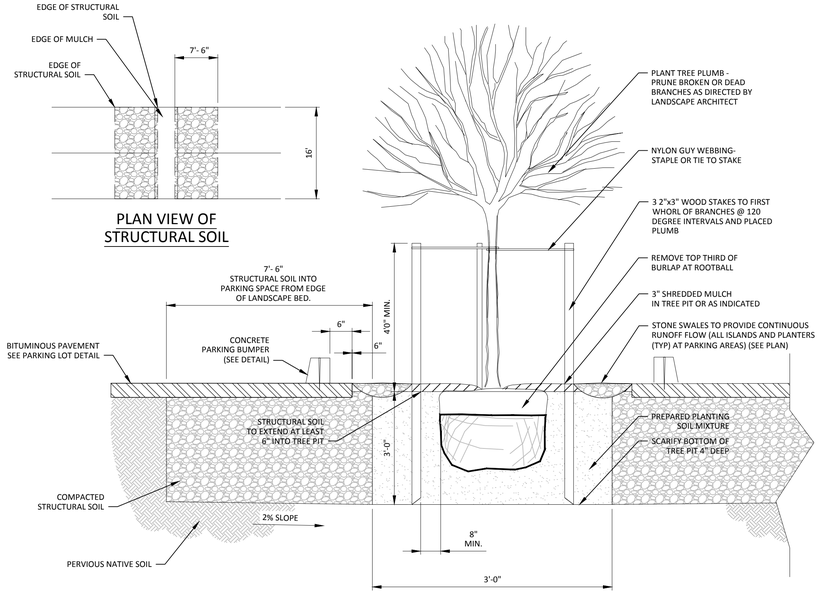
1. SS CURB STOP/CHECK VALVE AND FITTINGS ARE PROVIDED SEPARATELY, TO BE ASSEMBLED BY OTHERS
2. TO ASSEMBLE, APPLY A DOUBLE LAYER OF TEFLON TAPE, AND 1 LAYER OF PIPE DOPE (SUPPLIED BY OTHERS) TO THE THREADS ON THE PLASTIC FITTINGS AND INSTALL PER THE MANUFACTURER'S INSTRUCTIONS
3. ASSEMBLY IS TO BE PRESSURE TESTED
4. ASSEMBLY IS TO BE USED WITH SDR11 HDPE PIPE



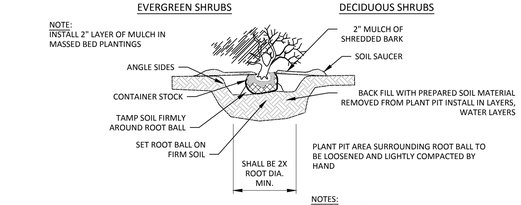


TYPICAL DROP CONNECTION LPSS IN EXISTING MANHOLE

DM-5 E ONE SEWER SYSTEM DETAILS
NOT TO SCALE

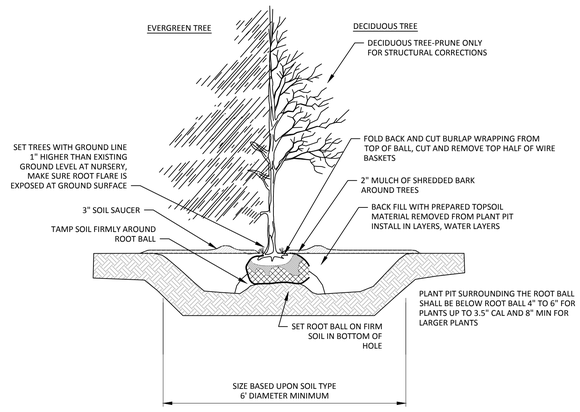


DM-3 TREE PIT WITH STRUCTURAL DETAIL
NOT TO SCALE

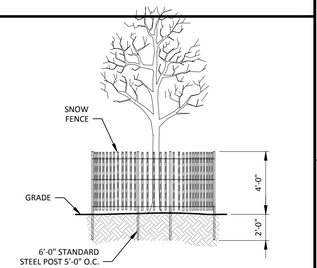


NOTES:
1. COORDINATE PLANTING WORK WITH RAIN GARDEN CONSTRUCTION AND FIT NEW TREES AND SHRUBS INTO SANDY LOAM FILTER SOIL AND INTO UPPER AREA OF FILTER TRENCH AS REQUIRED.
2. COORDINATE WORK WITH NO MOW LAWN SEEDING WORK.

NOTES:
1. BEFORE STARTING THE PLANTING, ADD 3"-4" OF WELL COMPOSTED LEAVES OR YARD WASTE ACROSS PLANTING AREA(S) AND INCORPORATE COMPOST INTO THE TOP 6" OF SOIL.
2. EXCAVATE PLANT PIT MIXING TOPSOIL, SUBSOIL AND COMPOST INTO PREPARED TOPSOIL AND USE FOR PLANT PIT BACKFILL.



DM-4 TREE AND SHRUB PLANTING DETAIL
NOT TO SCALE



NOTES:
1. FENCING SHALL BE ORANGE RESINET SM60 BARRIER FENCE "SNOW FENCE" OR APPROVED EQUIVALENT.
2. POST SHALL BE HOT ROLLED RAIL STEEL AND FORMED INTO A "T". DIMENSIONS OF "T" POST SECTION, APPROXIMATELY 1 7/16" X 1 5/16" X 1/8" X 6' (SIX FEET) LONG. THE POST SHALL BE PAINTED GREEN OR GALVANIZED.
3. THE FENCING SHALL REMAIN IN PLACE UNTIL ALL EXCAVATION WORK IS COMPLETED AND THE SURFACE HAS BEEN RE-ESTABLISHED

DECIDUOUS TREE

DM-1 TREE PROTECTION DETAIL
NOT TO SCALE

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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_____
TOWN CLERK

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37381
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD

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114 State Road, Building B
Sagamore Beach, MA 02562
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Fax: (508) 888-1506
www.gseenv.com

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REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL -MISCELLANEOUS

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-27	SCALE: NOTED
	SHEET: 28 OF 31

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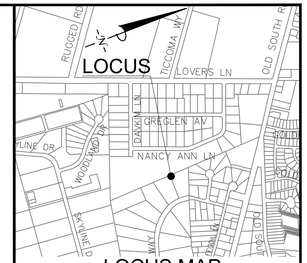

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NANTUCKET, MA 02554

DRAWING TITLE:
TEST PIT LOCATION

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	
C-28	SCALE: NOTED
	SHEET: 29 OF 31

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD

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TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 1

DEPTH FROM SURFACE FEET INCHES TOP EL.=34.0	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–8"	FILL	MED-C SAND	7.5YR 7/8		SILTY
8–18"	C1	COARSE SAND	5YR 5/8		20% GRAVEL
18–32"	C2	COARSE SAND	10YR 8/3	PT	10% GRAVEL
32–64"	C3	COARSE SAND	10YR 7/4		CLEAN SAND
64–120"	C4	COARSE SAND	10YR8/3		CLEAN SAND

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 2

DEPTH FROM SURFACE FEET INCHES TOP EL.=11.0	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–16"	C1	LOAMY SAND	7.5YR 4/2	PT	WET
GROUND WATER FOUND @ 40"					
16–66"	C2	COARSE SAND	10YR6/3		10% GRAVEL

ESTIMATED SEASONAL HIGH GROUND WATER ELEV 7.2

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 3

DEPTH FROM SURFACE FEET INCHES TOP EL.=10.6	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–30"	C1	COARSE SAND	5YR6/8	PT	
GROUND WATER FOUND @ 35"					
30–66"	C2	COARSE SAND	10YR8/1		5% GRAVEL

ESTIMATED SEASONAL HIGH GROUND WATER ELEV 6.9

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 4

DEPTH FROM SURFACE FEET INCHES TOP EL.=31.2	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–4"	A	SANDY LOAM	10YR5/1	PT	RUNOFF FROM ADJACENT LOAM PILE
4–120"	C	MEDIUM/ COARSE SAND IN LAYERS	2.5Y7/2		5% GRAVEL

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 5

DEPTH FROM SURFACE FEET INCHES TOP EL.=37.4	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–14"	C1	LOAMY SAND			MIXED STONE DUST/CRUSHED STONE
				LAB SAMPLE TAKEN	
14–120"	C2	LOAMY SAND			MIXED FILL CRUSHED STONE

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 6

DEPTH FROM SURFACE FEET INCHES TOP EL.=40.2	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–12"	A	SANDY LOAM	2.5Y2.5/1		DARK RICH LOAM
12–20"	B	LOAMY SAND	7.5YR6/8		ORANGE
				PT	
				LAB SAMPLE TAKEN	
20–120"	C1	MEDIUM SAND	10YR8/5		2% GRAVEL BRIGHT YELLOW

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 7

DEPTH FROM SURFACE FEET INCHES TOP EL.=42.2	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–12"	A	SANDY LOAM	10YR3/3		MEDIUM BROWN LOAM
12–26"	B	LOAMY SAND	10YR6/6		YELLOW/BROWN
				PT	LAB SAMPLE TAKEN
26–120"	C1	MEDIUM/ COARSE SAND	10YR8/4		CLEAN SAND PALE TAN

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 8

DEPTH FROM SURFACE FEET INCHES TOP EL.=45.9	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–10"	A	SANDY LOAM	2.5Y2.5/3		DARK RICH LOAM
10–20"	B	LOAMY SAND	7.5YR7/8		ORANGE
				PT	
20–120"	C1	COARSE SAND	10YR8/3		LOOSE SAND & GRAVEL TAN/LIGHT BROWN

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 9

DEPTH FROM SURFACE FEET INCHES TOP EL.=46.5	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–12"	A	SANDY LOAM	2.5Y2.4/1		DARK BROWN LOAM
12–21"	B	LOAMY SAND	10YR6/8		YELLOW/ORANGE
21–38"	C1	FINE SAND	2.5Y8/1	PT	FINE WHITE SAND
38–120"	C2	MEDIUM/ COARSE SAND	10YR8/1		CLEAN WHITE SAND

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 10

DEPTH FROM SURFACE FEET INCHES TOP EL.=49.8	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–6"	A	SANDY LOAM	2.5Y2.4/2		
6/12"	B	SANDY LOAM	2.5Y2.7/6		
12–32"	C1	CLAY	5GY7/1		
32–60"	C2	SANDY CLAY LOAM	10YR7/8		LOOKS LIKE FILL MIXED "A"&CLAY
				PT	
60–120"	C3	MEDIUM SAND	10YR8/1		CLEAN WHITE SAND

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 11

DEPTH FROM SURFACE FEET INCHES TOP EL.=48.2	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–12"	A	LOAMY SAND	10YR2/1		DARK RICH LOAM
12–24"	B	SANDY LOAM	10YR7/8		YELLOW/ORANGE
21–48"	C1	LOAMY SAND	2.5Y7/6	PT	YELLOW SAND SOME SILT
48–120"	C2	MEDIUM/ COARSE SAND	10YR8/2		CLEAN WHITE SAND

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 12

DEPTH FROM SURFACE FEET INCHES TOP EL.=44.8	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–10"	A	SANDY LOAM	7.5YR3/3		DARK BROWN LOAM
10–28"	B	LOAMY SAND	7.5YR6/8		YELLOW/ORANGE
28–51"	C1	LOAMY SAND	7.5YR7/4	PT LAB SAMPLE TAKEN	TAN/LIGHT BROWN SAND SOME SILT
51–120"	C2	COARSE SAND	10YR8/2		LIGHT TAN CLEAN SAND

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

SOIL EXAMIINATIONS PERFORMED
BY: TIM BENNETT, SE2748
ALL PERCOLATION RATES <2

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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_____
TOWN CLERK

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED
PROFESSIONAL ENGINEER
8/5/2016

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
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_____
_____
_____
_____
_____
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_____

TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
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TOWN CLERK

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
SOIL LOGS

CAD TECH:	CHECKED BY:
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ENGINEER:	DATE:
BLB	
C-29	SCALE: *NOTED*
	SHEET: 30 OF 31

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GENERAL CONSTRUCTION NOTES

1. ALL SITE PREPARATION NECESSARY TO COMPLETE THIS PROJECT ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
2. THE CONTRACTOR SHALL COORDINATE ALL NECESSARY POLICE DETAILS WITHE THE LOCAL POLICE DEPARTMENT.
3. THE CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL REQUIRED CONSTRUCTION PERMITS. ALL FEES INCLUDING POLICE DETAILS AND POSTING OF BONDS, ARE TO BE PAID BY THE CONTRACTOR, AND COORDINATED WITH THE OWNER AND THE ENGINEER.
4. ALL EXISTING CONDITIONS SHOWN SHALL BE CONSIDERED APPROXIMATE AND ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED CONDITIONS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLING ANY WORK.
5. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF PREVIOUS OWNERS, VARIOUS UTILITY COMPANIES, AND WHEREVER POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS GUARANTEED AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES, ANY GOVERNING PERMITTING AUTHORITIES, AND "DIGSAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK IN PREVIOUSLY UNALTERED AREAS TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RESOLVE CONFLICTS BETWEEN THE PROPOSED UTILITIES AND FIELD-LOCATED UTILITIES AND SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED, INCOMPLETELY OR INACCURATELY SHOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ACCURATE RECORDS OF THE LOCATION AND ELEVATION OF ALL WORK INSTALLED AND EXISTING UTILITIES FOUND DURING CONSTRUCTION FOR THE PREPARATION OF THE AS-BUILT PLAN.
6. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL EXISTING UTILITIES IN WORKING ORDER AND FREE FROM DAMAGE DURING THE ENTIRE DURATION OF THE PROJECT. ALL COSTS RELATED TO THE REPAIR OF UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. EXCAVATION REQUIRED WITHIN THE PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER.
7. THE CONTRACTOR SHALL UTILIZE ALL PRECAUTIONS AND MEASURES TO ENSURE THE SAFETY OF THE PUBLIC, ALL PERSONAL AND PROPERTY DURING CONSTRUCTION IN ACCORDANCE WITH OSHA STANDARDS, INCLUDING BARRICADES, SAFETY LIGHTING, CONES, POLICE DETAIL AND/OR FLAGMEN AS DETERMINED NECESSARY BY THE ENGINEER AND/OR OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF POLICE DETAIL AND FOR COORDINATING WITH THE LOCAL OR STATE POLICE DEPARTMENT FOR ALL REQUIRED POLICE DETAIL.
8. ALL TRENCHING WORK WITHIN A PUBLIC OR PRIVATE ROADWAY SHALL BE COORDINATED WITH THE OWNER AND/OR PROPER LOCAL & STATE AGENCIES. TRENCH SAFETY AND RELATED PERMITS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THIS WORK MAY BE REQUIRED TO TAKE PLACE OUTSIDE OF NORMAL HOURS OF OPERATION FOR THE FACILITY.
9. ALL TRENCH WORK WITHIN EXISTING PAVEMENT SHALL BE NEATLY SAWCUT PER THE APPLICABLE DETAILS. TRENCH WORK BACKFILL SHALL BE PLACED AND COMPACTED IN 8-INCH LIFTS OR AS OTHERWISE INDICATED ON PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY SETTLING DUE TO INADEQUATE COMPACTION AS DETERMINED BY THE ENGINEER WITHIN THE 36 MONTH WARRANTY PERIOD.
10. THE CONTRACTOR SHALL MAKE ALL CONNECTION ARRANGEMENTS WITH UTILITY COMPANIES, AS NECESSARY.
11. ALL IMPORTED MATERIAL SHALL BE CLEAN AND FREE OF ANY HAZARDOUS WASTE OR OTHER CHEMICAL CONTAMINATION. NO MATERIAL WILL BE ACCEPTED FROM AN EXISTING OR FORMER 21E SITE AS DEFINED BY THE MASSACHUSETTS CONTINGENCY PLAN 310 CMR 40.0000.
12. SITE LAYOUT SURVEY REQUIRED FOR CONSTRUCTION WILL BE PROVIDED BY THE CONTRACTOR AND SHALL BE CONDUCTED BY A MASSACHUSETTS' REGISTERED PROFESSIONAL LAND SURVEYOR. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE SURVEYOR FOR ALL SITE SURVEY WORK. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN AS-BUILT PLAN OF THE SITE CONDUCTED BY REGISTERED PROFESSIONAL LAND SURVEYOR AND APPROVED BY THE ENGINEER.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL HORIZONTAL AND VERTICAL CONTROL POINTS DURING CONSTRUCTION INCLUDING BENCHMARK LOCATIONS AND ELEVATIONS AT CRITICAL AREAS. THE LOCATION OF ALL CONTROL POINTS AND BENCHMARKS SHALL BE COORDINATED WITH THE ENGINEER.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL GRADE STAKES AND MONUMENTATION. GRADE STAKES SHALL REMAIN IN PLACE UNTIL A FINAL INSPECTION OF THE SITE HAS BEEN COMPLETED BY THE ENGINEER. ANY RE-STAKING OF PREVIOUSLY SURVEYED SITE FEATURES SHALL BE THE RESPONSIBILITY (INCLUDING COST) OF THE CONTRACTOR.
15. UNLESS OTHERWISE SPECIFIED ON THE PLANS AND DETAILS/SPECIFICATIONS, ALL SITE CONSTRUCTION MATERIALS AND METHODOLOGIES ARE TO CONFORM TO THE MOST RECENT VERSION OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION (MASSACHUSETTS HIGHWAY DEPARTMENT) STANDARD SPECIFICATIONS (THE MASSACHUSETTS HIGHWAY DEPARTMENT 1988 STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, THE 2002 SUPPLEMENTAL SPECIFICATIONS, AND THE 2005 STANDARD SPECIAL PROVISIONS).
16. CONSTRUCTION AND/OR DEMOLITION SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS REGARDING NOISE, VIBRATION, DUST, SEDIMENTATION CONTAINMENT, HAZARDOUS WASTES AND TRENCH WORK.
17. SOLID WASTES AND/OR CONSTRUCTION OR DEMOLITION DEBRIS SHALL BE COLLECTED AND STORED IN A SECURED DUMPSTER. THE DUMPSTER SHALL MEET ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS.
18. THE CONTRACTOR SHALL RESTORE ALL SITE SURFACES OFF SCOPE EQUAL TO THEIR ORIGINAL CONDITION AFTER CONSTRUCTION IS COMPLETE. AREAS NOT DISTURBED BY CONSTRUCTION SHALL BE LEFT NATURAL. THE CONTRACTOR SHALL TAKE CARE TO PREVENT DAMAGE TO SHRUBS, TREES, OTHER LANDSCAPING AND/OR NATURAL FEATURES. IF THE PLANS FAIL TO IDENTIFY ALL LANDSCAPE FEATURES, EXISTING CONDITIONS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK.
19. UNPAVED AREAS DISTURBED BY THE WORK SHALL HAVE A MINIMUM OF 6-INCHES OF LOAM AND HYDROSEED INSTALLED AS SHOWN ON THE PLAN AND/OR DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING ANY LOAM AND SEEDED AREAS UNTIL GROWTH IS ESTABLISHED AND APPROVED BY THE ENGINEER AND/OR OWNER.
20. ALL PROPOSED STRUCTURES AND COMPONENTS SHALL BE DESIGNED BY THEIR MANUFACTURERS TO WITHSTAND AASHTO H-20 LOADING. PRECAST CONCRETE SHALL HAVE A MINIMUM 28-DAY STRENGTH OF 4,000 PSI UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
21. THE CONTRACTOR SHALL PROVIDE A UNIT PRICE COST IN CUBIC YARD MEASURE FOR LEDGE AND/OR BOULDER REMOVAL. LEDGE AND/OR BOULDERS LESS THAN 1 CUBIC YARD IN SIZE BASED ON THE AVERAGE DIMENSIONS WILL NOT BE CONSIDERED PAYABLE ROCK. UNIT PRICE SHALL BE GIVEN FOR BOTH ON AND OFF SITE DISPOSAL. COST OF REPLACEMENT MATERIAL SHALL BE INCLUDED IF ADDITIONAL FILL MATERIAL IS REQUIRED.
22. DEVIATION OR ALTERATION OF THE PROPOSED WORK IS TO BE VERIFIED BY THE ENGINEER AND OWNER PRIOR TO CONDUCTING THE WORK.
23. AT THE END OF CONSTRUCTION, THE CONTRACTOR SHALL REMOVE ALL CONSTRUCTION DEBRIS AND SURPLUS MATERIALS FROM THE SITE. A THOROUGH INSPECTION OF THE WORK SITE AND PERIMETER IS TO BE MADE AND ALL DISCARDED MATERIALS AND WIND BLOWN OR WATER CARRIED DEBRIS, SHALL BE COLLECTED, AND REMOVED FROM THE SITE.

STORMWATER FACILITY OPERATION & MAINTENANCE:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSPECTION AND MAINTENANCE OF ALL EROSION CONTROL AND STORMWATER MANAGEMENT FACILITIES UNTIL THE PROJECTS IS DEEMED AS COMPLETE BY THE OWNER AND ENGINEER.
2. THE CONTRACTOR SHALL INSPECT AND CLEAR ALL INLETS, MANHOLES, INFILTRATION BASINS AND OTHER STRUCTURES OF SEDIMENT AND DEBRIS PRIOR TO THE OWNER'S ACCEPTANCE.
3. THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL SEDIMENT AND DEBRIS IN A PRE-APPROVED LOCATION.
4. THE CONTRACTOR SHALL REFER TO THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR INFORMATION REGARDING STORMWATER FACILITY OPERATION AND MAINTENANCE REQUIREMENTS. THE CONTRACTOR SHALL MAINTAIN A WORKING COPY ON SITE AT ALL TIMES.
5. THE CONTRACTOR SHALL INSPECT ALL STORMWATER FACILITIES AFTER EVERY MAJOR RAINFALL EVENT FOR THE ENTIRE DURATION OF THE CONSTRUCTION PROJECT AND THE FIRST 3-MONTHS AFTER COMPLETION TO MONITOR SYSTEM OPERATION.
6. SPECIFIC ANNUAL MAINTENANCE SHALL BE AS FOLLOWS:
   A. DRAINAGE STRUCTURES (INLETS, MANHOLES & CATCHBASINS): ALL DRAINAGE STRUCTURES SHALL BE INSPECTED ANNUALLY TO MONITOR FOR PROPER OPERATION, COLLECTION OF LITTER OR DEBRIS, AND STRUCTURAL DETERIORATION. THE BASINS SHALL BE CLEANED OF SEDIMENT (INCLUDING SUMPS) AS NECESSARY, AND REPAIRED WHEN REQUIRED.
   B. SWALES: GENERAL INSPECTION OF THE SWALE SHALL BE CONDUCTED ANNUALLY AND AFTER MAJOR STORM EVENTS. THE WORK CONSISTS OF REMOVAL OF ANY TRASH AND/OR DEBRIS FROM THE BOTTOM OF THE SWALE, AND REMOVAL OF SEDIMENTATION IF ACCUMULATION IS GREATER THAN OR EQUAL TO 3-INCHES. SEDIMENT SHALL BE PROPERLY DISPOSED OF OFF-SITE IN A PRE-APPROVED LOCATION.
   C. ROUTINE MAINTENANCE: OTHER ROUTINE MAINTENANCE SHALL INCLUDE REMOVAL OF TRASH AND DEBRIS FROM PAVED AND PERIMETER AREAS, AND ANNUAL STREET AND PARKING LOT SWEEPING AFTER THE SPRING THAW TO AVOID EXCESSIVE ACCUMULATION OF SEDIMENT IN THE DRAINAGE SYSTEM. THE PIPES DRAINING THE PROJECT WILL BE INSPECTED ANNUALLY FOR PROPER FLOW.

BASIC CONSTRUCTION SEQUENCE

1. SURVEY AND DELINEATE THE PROPOSED LIMIT OF DISTURBANCE AND LIMIT OF SEDIMENTATION BARRIERS.
2. STAKE OUT THE LOCATIONS FOR SEDIMENTATION BARRIERS (HAYBALES, SILT FENCE, ETC.) AND INSTALL ACCORDING TO THE PLANS. IN NO CASE IS THE LIMIT OF WORK TO EXTEND BEYOND THE SEDIMENTATION BARRIERS/LIMIT OF DISTURBANCE AS SHOWN ON THE PROJECT PLANS AS APPROVED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP).
3. INSTALL TEMPORARY CONSTRUCTION ENTRANCES ONLY IN LOCATIONS INDICATED ON PLANS. NO OTHER ENTRANCES SHALL BE USED TO GAIN ACCESS TO THE SITE BY ANY CONSTRUCTION OR DELIVERY VEHICLES.
4. BEGIN NECESSARY CLEARING AND DEMOLITION WORK.
5. SURVEY AND STAKE OUT CLEARING LIMITS AND ROADWAY/ACCESS DRIVE CENTERLINE.
6. EXCAVATE AND ROUGH GRADE THE PROPOSED DRAINAGE BASINS AND ANY ADDITIONAL TEMPORARY BASINS NECESSARY TO CONTROL SITE RUNOFF AND SEDIMENTS. PERMANENT DRAINAGE BASINS SHALL BE TEMPORARILY SEEDED. PERMANENT DRAINAGE BASIN SEEDING AND PLANTING SHALL BE COMPLETED AFTER THE CONTRIBUTING AREA TO THE BASIN HAS REACHED A MINIMUM OF 80% STABILIZATION AND IS NO LONGER REQUIRED TO BE USED AS A CONSTRUCTION SEDIMENTATION BASIN.
7. BEGIN CLEARING AND GRUBBING IN AREA OF ROADWAYS/DRIVES AND DRAINAGE BASINS. TOPSOIL IS TO BE STRIPPED FROM THE AREA OF THE PROPOSED ROADWAYS AND DRAINAGE BASINS AND STOCKPILED IN APPROVED LOCATIONS. TOPSOIL STOCKPILES ARE TO BE PROTECTED BY A SEDIMENT BARRIER.
8. INSTALL TEMPORARY CONVEYANCE DEVICES (SWALES, CHECK DAMS, PIPES, ETC.) AS NECESSARY TO CONVEY RUNOFF TO TREATMENT AREAS.
9. BEGIN ROUGH GRADING AREAS FOR ROADS AND PARKING. BRING ROUGH GRADING TO PROPER ELEVATIONS AS SOON AS PRACTICABLE. WORK SHALL PROGRESS DILIGENTLY TO MINIMIZE TIME SOILS ARE UN-STABILIZED.
10. BEGIN UTILITY CONSTRUCTION. CONTRACTOR SHALL BE FREE TO INSTALL UTILITIES IN ANY ORDER HE/SHE CHOOSES. ANY EROSION CONTROL DEVICE DISTURBED DURING THE UNDERGROUND UTILITY CONSTRUCTION SHALL BE IMMEDIATELY REPAIRED OR REPLACED IN KIND AND STABILIZED. MODIFY TEMPORARY CONVEYANCE DEVICES AS NECESSARY TO CONVEY RUNOFF TO TREATMENT AREAS.
11. INSTALL DRAINAGE PIPES, DRAINAGE MANHOLES AND CATCH BASINS, AND UNDERGROUND DRAINAGE STRUCTURES. WORK SHALL BEGIN AT THE DRAINAGE BASINS AND PROGRESS UP-GRADIENT. THE DRAINAGE BASIN(S) AND DRAINAGE NETWORK ARE TO BE PROTECTED FROM SEDIMENTATION WITH SILT FENCE AND STRAWBALES UNTIL ALL UN-STABILIZED AREAS ARE STABILIZED WITH STONE SUB-BASE OR VEGETATION. INSTALL SEDIMENT BARRIERS AT ALL POINTS OF ENTRY INTO THE DRAINAGE NETWORK. PARTICULAR CARE SHALL BE TAKEN TO PROTECT THE UNDERGROUND DRAINAGE BASINS FROM SEDIMENT.
12. PERMANENTLY SEED ALL DISTURBED AREAS OUTSIDE OF THE AREA TO BE PAVED.
13. ONCE ALL UNDERGROUND UTILITIES HAVE BEEN CONSTRUCTED, PLACE COMPACTED GRAVEL FOUNDATION AND ROUGH GRADE THE ROADWAYS/PARKING AREAS IN ACCORDANCE WITH THE SITE PLANS AND IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL REGULATIONS AS SOON AS POSSIBLE.
14. BEGIN ROAD AND PARKING CONSTRUCTION PER SITE PLANS AND IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL REGULATIONS. ROADS AND PARKING AREAS ARE NOT TO BE PAVED UNTIL THE ENTIRE PERMANANENT DRAINAGE SYSTEM HAS BEEN INSTALLED AND ALL PIPE CONNECTIONS COMPLETE.
15. FINISH PERMANENT STABILIZATION. SWEEP THE ROADWAY TO REMOVE ALL SEDIMENTS. REPAIR BASINS AS REQUIRED. THE CONTRACTOR SHALL CLEAN AND FLUSH THE DRAINAGE STRUCTURES AND PIPES AT THE END OF CONSTRUCTION AND ALL ACCUMULATED SEDIMENTS IN THE DRAINAGE BASINS SHALL BE REMOVED. CONTRACTOR SHALL INSPECT THE DRAINAGE NETWORK AND REPAIR ANY DAMAGE IMMEDIATELY.
16. COMPLETE ALL REMAINING PLANTING AND SEEDING.
17. REMOVAL OF ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES FOLLOWING VEGETATIVE ESTABLISHMENT OF ALL DISTURBED AREAS SHALL BE APPROVED BY THE ENGINEER AND WHEN THE CONTRIBUTING AREA HAS REACHED A MINIMUM OF 80% STABILIZATION.

GENERAL GRADING AND DRAINAGE NOTES

1. ALL CUT AND FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.
2. CONTRACTOR SHALL ADJUST AND/OR NEATLY SAWCUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH TRANSITION AND CONTINUOUS GRADE.
3. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS UNLESS OTHERWISE DIRECTED BY ENGINEER.
4. PROPOSED ELEVATIONS ARE SHOWN TO FINISHED PAVEMENT OR GRADE UNLESS OTHERWISE SPECIFIED.
5. PARKING AREAS AND TRAVEL LANES ARE NOT TO BE PAVED UNTIL THE ENTIRE PROPOSED DRAINAGE SYSTEM HAS BEEN INSTALLED, COMPACTED PROPERLY AND ALL PIPE CONNECTIONS COMPLETE.
6. DRAINAGE PIPING SHALL BE 12" ADS UNLESS OTHERWISE NOTED.
7. BACKFILL ADJACENT TO PIPES AND STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT AS SPECIFIED. BACKFILL SHALL BE PLACED IN LIFTS NOT TO EXCEED EIGHT INCHES IN THICKNESS AND COMPACTED TO 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN +/- 2% OF OPTIMUM. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99. TESTING OF BACKFILL MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND WILL BE INSPECTED BY THE ENGINEER.
8. ALL DRAINAGE STRUCTURES AND PIPES MUST BE PROPERLY CONNECTED TO THE DRAINAGE SYSTEM PRIOR TO THE INSTALLATION OF ANY PAVEMENT. THIS INCLUDES THE STABILIZATION OF ALL DISTURBED AREAS CONTRIBUTING TO THE DRAINAGE SYSTEMS AND ANY STORMWATER BASIN FLOORS AND SIDE SLOPES.
9. AT SUBSTANTIAL COMPLETION ANY LOW LYING AREAS (NON STORMWATER FEATURES) FOUND TO CREATE PONDING SHALL HAVE LOAM OR SURFACE TREATMENT REMOVED AND THE SUBGRADE MATERIAL SHALL BE REPAIRED AND REGRADED WITH GRANULAR NATIVE BACKFILL MATERIAL. AFTER BACKFILL, LOAM SHALL BE REPLACED AND RESEEDED. NO TOP DRESSING SHALL BE ALLOWED. REGRADED AREAS SHALL BE HOSE TESTED TO ENSURE POSITIVE DRAINAGE AND THE PONDING PROBLEM TO BE ALLEVIATED.

GENERAL DEMOLITION NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR THE RELOCATION, DEMOLITION, REMOVAL AND DISPOSAL, IN A LOCATION APPROVED BY ALL GOVERNING AUTHORITIES AND ENGINEER, OF ALL EXISTING SITE ELEMENTS AND STRUCTURES.
2. THE CONTRACTOR IS RESPONSIBLE FOR THE BACKFILL OF ALL EARTH CAVITIES REMAINING FROM THE DEMOLITION OF THE EXISTING BUILDINGS, FOUNDATIONS, BURIED TANKS AND VAULTS, AND OTHER BURIED CONCRETE STRUCTURES PERFORMED BY OTHERS.
3. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL ROCK, RUBBLE, CONSTRUCTION DEBRIS AND CONCRETE TO ALLOW FOR PROPER GRADING.
4. THE CONTRACTOR HAS THE OPTION TO REUSE CRUSHED CONCRETE, STONE, DRAINAGE STRUCTURES, AND RUBBLE AS SUITABLE FILL PER SPECIFICATION ATTACHMENT A.
5. BURIED CONCRETE STRUCTURES MAY BE FILLED AND LEFT IN PLACE IF APPROVED BY NANTUCKET HEALTH DEPARTMENT.
6. ALL UNDERGROUND UTILITIES TO BE DEMOLISHED.
7. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND LEGAL/PROPER DISPOSAL OF ALL DEBRIS FROM THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THE DISPOSAL PERMIT. THE OWNER WILL OBTAIN BUILDING DEMOLITION PERMIT FROM THE STATE BUILDING DEPARTMENT.
8. THE CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO THE REMOVAL AND/OR RELOCATION OF UTILITIES. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES CONCERNING PORTIONS OF THE WORK WHICH MAY BE PERFORMED BY THE UTILITY COMPANY AND ANY FEES WHICH ARE TO BE PAID TO THE UTILITY COMPANY FOR THEIR SERVICES. THE CONTRACTOR IS RESPONSIBLE FOR PAYING ALL FEES AND CHARGES.
9. THE CONTRACTOR IS TO PROVIDE NOTICE TO ALL UTILITY COMPANIES REGARDING DESTRUCTION, RELOCATION AND REMOVAL OF ALL SERVICE LINES AND CAPPING ALL UTILITY LINES, AS REQUIRED, PRIOR TO COMMENCEMENT OF THE WORK.
10. THE CONTRACTOR SHALL MAINTAIN SAFE, PASSABLE, CONTINUOUS SITE ACCESS AND OPERATION FOR SURROUNDING FACILITIES, AS DEEMED BY THE OWNER, AT ALL TIMES DURING DEMOLITION OF THE EXISTING FACILITIES.
11. PRIOR TO COMMENCEMENT OF DEMOLITION, ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED.
12. BUILDINGS ON SITE WILL BE REMOVED BY OTHERS PRIOR TO START OF CONSTRUCTION. NOT ALL CONCRETE SLABS, CONDUITS, STRUCTURES OR OTHER FEATURES MAY BE SHOWN ON THESE PLANS. PLANS ARE INTENDED TO BE A GENERAL GUIDE OF SITE FEATURES TO BE DEMOLISHED.

ENVIRONMENTAL - EROSION & SEDIMENT CONTROL NOTES

1. THE SITE CONSTRUCTION FOREMAN SHALL BE RESPONSIBLE FOR THE DAILY INSPECTION AND MAINTENANCE OF ALL SEDIMENT AND EROSION CONTROLS AND SHALL IMPLEMENT ALL NECESSARY MEASURES TO CONTROL EROSION AND PREVENT SEDIMENT FROM LEAVING THE SITE.
2. THE CONTRACTOR SHALL INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS DETERMINED NECESSARY IN THE FIELD BY THE ENGINEER BEFORE ANY CONSTRUCTION ACTIVITIES ARE TO BEGIN. THESE MEASURES SHALL BE INSPECTED, MAINTAINED AND REPLACED AS NECESSARY DURING THE ENTIRE CONSTRUCTION PERIOD OF THE PROJECT. SUCH MEASURE SHALL REPRESENT THE LIMIT OF WORK AND ALL WORKERS SHALL BE INFORMED THAT NO CONSTRUCTION ACTIVITY IS TO OCCUR BEYOND THE LIMIT OF WORK AT ANY TIME THROUGH THE CONSTRUCTION PERIOD.
3. A MINIMUM SURPLUS OF 25-FEET OF EROSION CONTROL BARRIER (SILT FENCE, HAYBALE, &/OR SILT SOCK) SHALL BE STORED ONSITE AT ALL TIMES.
4. THE CONTRACTOR SHALL PREVENT ANY SEDIMENT TRANSPORT TO THE ADJACENT PROPERTIES DURING CONSTRUCTION AND UNTIL ACCEPTANCE BY THE OWNER/ENGINEER.
5. A CONSTRUCTION EXIT SHALL BE CONSTRUCTED AS SHOWN IN THE DETAILS TO SHED DIRT FROM CONSTRUCTION VEHICLE TIRES. THE CRUSHED STONE PAD WILL BE REPLACED/CLEANED AS NEEDED TO MAINTAIN ITS EFFECTIVENESS AND RECONSTRUCTED AS NECESSARY DURING SEPARATE PHASES OF THE PROJECT.
6. THE LIMIT OF ALL CLEARING, GRADING AND DISTURBANCE SHALL BE KEPT TO A MINIMUM WITHIN THE PROPOSED AREA OF CONSTRUCTION. THE CONTRACTOR SHALL PHASE THE SITE WORK IN A MANNER TO MINIMIZE AREAS OF EXPOSED OR UNSTABILIZED SOIL. IF TREES ARE TO BE CUT ON THE ENTIRE SITE, ONLY THOSE AREAS WHICH ARE ACTIVELY UNDER CONSTRUCTION SHALL BE GRUBBED. THE REQUIRED SEDIMENTATION CONTROL FACILITIES MUST BE PROPERLY ESTABLISHED, CLEARLY VISIBLE AND IN OPERATION PRIOR TO INITIATING ANY LAND CLEARING ACTIVITY AND/OR OTHER CONSTRUCTION RELATED WORK.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MONITOR LOCAL WEATHER REPORTS DURING CONSTRUCTION AND PRIOR TO SCHEDULING EARTHMOVING OR OTHER CONSTRUCTION ACTIVITIES WHICH WILL LEAVE LARGE DISTURBED AREAS UNSTABILIZED. IF INCLEMENT WEATHER IS FORECAST, THE CONTRACTOR SHALL USE THEIR BEST PROFESSIONAL JUDGEMENT WHEN SCHEDULING CONSTRUCTION ACTIVITIES AND SHALL BE RESPONSIBLE FOR ENSURING THE NECESSARY EROSION CONTROL DEVICES ARE INSTALLED AND FUNCTIONING PROPERLY TO MINIMIZE EROSION FROM ANY IMPENDING WEATHER EVENTS.
8. SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED ON WEEKLY BASIS AND AFTER EACH RAINFALL EVENT OF 0.25 INCH OR GREATER DURING CONSTRUCTION TO ENSURE THAT THE EROSION AND SEDIMENTATION CONTROL MEASURES ARE OPERATING/FUNCTIONING PROPERLY. IDENTIFIED DEFICIENCIES SHALL BE CORRECTED IMMEDIATELY AND NO LATER THAN 24 HOURS AFTER IDENTIFICATION.
9. SOIL STOCKPILES LEFT OVERNIGHT SHALL BE SURROUNDED ON THEIR PERIMETERS WITH SILT SOCK, SILT FENCE, HAYBALES, OR A COMBINATION OF SILT FENCE WITH HAYBALES.
10. DISTURBED AREAS AND SLOPES SHALL NOT BE LEFT UNATTENDED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME SUCH AS DURING THE INACTIVE WINTER SEASON. THE CONTRACTOR SHOULD PROVIDE APPROPRIATE STABILIZATION PRACTICES ON ALL DISTURBED AREAS AS SOON AS POSSIBLE BUT NOT MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY OR PERMANENTLY CEASED, TEMPORARY AREAS HAVING A SLOPE GREATER THAN 4:1 SHALL BE REINFORCED WITH EROSION BLANKETS OR APPROVED EQUAL UNTIL THE SITE IS PROPERLY STABILIZED. TEMPORARY SWALES MAY ALSO BE REQUIRED IF DETERMINED NECESSARY IN THE FIELD BY THE ENGINEER.
11. THE CONTRACTOR SHALL INSTALL A SILT SACK OR APPROVED EQUIVALENT IN EACH EXISTING CATCHBASIN RECEIVING RUNOFF FROM THE SITE. UPON THE INSTALLATION OF ANY NEW CATCH BASIN, THE CONTRACTOR SHALL INSTALL A SILT SACK OR APPROVED EQUIVALENT. THESE ARE TO BE INSPECTED AFTER EACH SIGNIFICANT STORM EVENT AND EMPTIED AS NEEDED DURING THE ENTIRE CONSTRUCTION PERIOD.
12. SMALL SEDIMENTATION BASINS MAY BE CONSTRUCTED ON AN AS-NEEDED BASIS DURING CONSTRUCTION TO AID IN THE CAPTURE OF SITE RUNOFF AND SEDIMENT. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR, IN CONSULTATION WITH THE ENGINEER, TO SIZE AND CONSTRUCT THESE BASINS IN APPROPRIATE LOCATIONS.
13. ALL EXITS FROM THE SITE SHALL BE SWEPT AS NECESSARY, INCLUDING ANY TRACKING TO ENSURE SEDIMENT IS CONTAINED ONSITE. PAVED AREAS SHALL BE SWEPT AS NEEDED TO REMOVE SEDIMENT OR POTENTIAL POLLUTANTS WHICH MAY ACCUMULATE DURING CONSTRUCTION ACTIVITIES.
14. ACCUMULATED SEDIMENT SHALL BE COLLECTED AND DISPOSED OF IN A PRE-APPROVED LOCATION BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.
15. THE CONTRACTOR SHALL PROVIDE ON SITE OR MAKE READILY AVAILABLE THE NECESSARY EQUIPMENT AND SITE PERSONNEL DURING CONSTRUCTION HOURS FOR THE DURATION OF THE PROJECT TO ENSURE ALL EROSION AND SEDIMENTATION CONTROL DEVICES ARE PROPERLY MAINTAINED AND REPAIRED IN A TIMELY AND RESPONSIBLE MANNER. IF SITE WORK IS SUSPENDED DURING THE WINTER MONTHS THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE PERSONNEL AND EQUIPMENT EITHER ON SITE OR MAKE READILY AVAILABLE TO ENSURE ALL EROSION AND SEDIMENTATION CONTROL DEVICES ARE PROPERLY MAINTAINED AND REPAIRED IN A TIMELY AND RESPONSIBLE MANNER
16. IF DEWATERING IS NECESSARY DURING CONSTRUCTION, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IMPLEMENT PROPER MEASURES INCLUDING DEWATERING BAGS, TEMPORARY HAYBALES, SILT FENCES, SILT SOCKS AND/OR OTHER APPROVED DEVICES. THE DEWATERING MEASURES SHALL BE APPROVED BY THE ENGINEER.
17. ALL SEDIMENT COLLECTED IN THE TEMPORARY/PARTIALLY CONSTRUCTED BIORETENTION AREAS WILL BE REMOVED AND DISPOSED OF PROPERLY PRIOR TO FILTER FABRIC AND MEDIA INSTALLATION WITHIN THE BIORETENTION AREAS. PARTIALLY CONSTRUCTED BIORETENTION AREAS WILL HAVE A SURFACE ELEVATION AT A MINIMUM 1-FOOT ABOVE THE BOTTOM OF MEDIA ELEVATION OR AS INDICATED IN THE PLANS. THIS WILL ALLOW AN OVER-DIG OF THE COLLECTED SEDIMENT FROM WITHIN THE BIORETENTION AREA PRIOR TO MEDIA/FABRIC INSTALLATION.
18. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTROL DUST, BY WATERING OR OTHER APPROVED METHODS AS NECESSARY, OR AS DIRECTED BY THE ENGINEER AT NO EXTRA COST TO THE OWNER.
19. THE CONTRACTOR SHALL ROUTINELY INSPECT THE PERIMETER OF THE SITE PROPERTY TO GATHER AND REMOVE CONSTRUCTION DEBRIS BEFORE IT LEAVES THE SITE. ALL DEMOLITION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE SITE AND PROPERLY DISPOSED OF. ALL TRUCKS AND CONTAINERS LEAVING THE SITE SHALL BE COVERED.
20. CEMENT TRUCKS SHALL NOT BE WASHED ONSITE. ANY CEMENT OR CONCRETE PRODUCTS LEAVING THE SITE OR ENTERING RESOURCE AREAS SHALL BE REMOVED BY HAND AT THE CONTRACTOR'S EXPENSE.
21. BURIAL OF ANY STUMPS, SOLID DEBRIS, AND/OR STONES/BOULDERS ONSITE IS PROHIBITED UNLESS OTHERWISE INDICATED BY THE ENGINEER. NO ROAD SALT, SAND, OR OTHER DE-ICING CHEMICALS SHALL BE USED ON THE ACCESS ROADWAYS.
22. THE CONTRACTOR IS RESPONSIBLE FOR ROUTINE INSPECTION AND MAINTENANCE DURING CONSTRUCTION OF ALL STORMWATER FACILITIES INSTALLED OR IMPACTED BY THE PROJECT. ANY SEDIMENT OR DEBRIS COLLECTED WITHIN THESE FACILITIES FROM THE PROJECT WORK SHALL BE REMOVED PRIOR TO THE OWNER'S ACCEPTANCE.

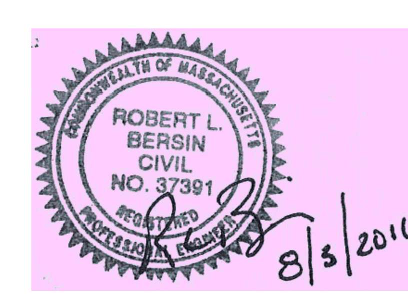
LEGEND

EXISTING | PROPOSED

- APARTMENT BUILDING
- HOUSE
- CENTERLINE
- CONTOUR – MINOR (34)
- CONTOUR – MAJOR (40)
- GRASS
- STONES OR BOULDERS
- EDGE OF PAVEMENT
- BITUMINOUS CONCRETE
- CONCRETE
- PROPERTY LINE
- ROW LINE
- DRAIN PIPE (D)
- GAS LINE (S)

SYMBOLS

- CATCH BASIN SQUARE
- DRAIN MANHOLE
- SEWER MANHOLE
- RED MAPLE
- ARBOR VITAE
- TOW=45.23' TOP OF FOUNDATION
- HANDICAP SYMBOL



APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: ______
DATE ENDORSED: ______
DATE APPROV ______

TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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It is the responsibility of the user to confirm discrepancies with the Engineer prior to use.

REVISIONS

NO.	DATE	COMMENT

CLERK'S CERTIFICATION ON THE PLAN

DATE: ______

I, ______, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

______
TOWN CLERK

PURPOSE: DEFINITIVE SUBDIVISION

LOCUS: NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE: NOTES

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-30

SCALE: NOTED

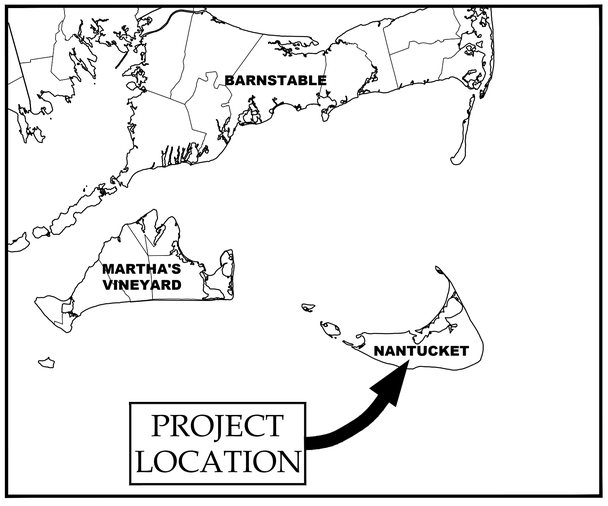
SHEET: 31 OF 31

DEFINITIVE SUBDIVISION PLAN

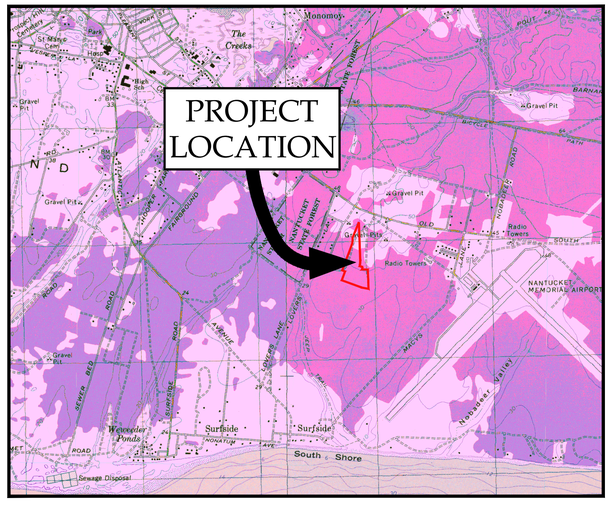
"MEADOWS II" MULTI-FAMILY (RENTAL) APARTMENT PROJECT

LOCATED AT:

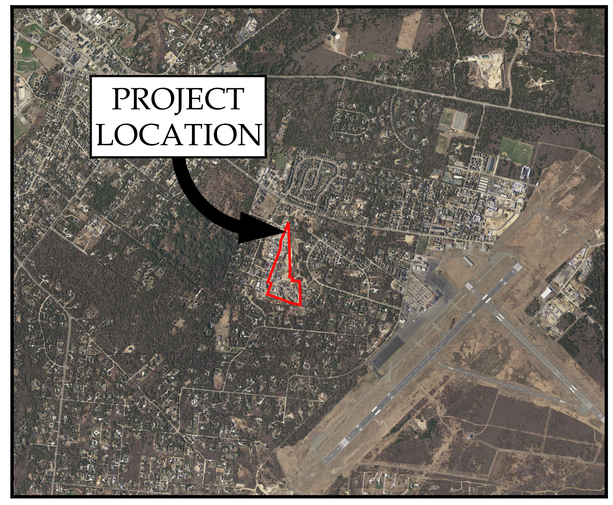
20 Davkim Lane and 20(R) Davkim Lane
Town of Nantucket MA



VICINITY MAP
NOT TO SCALE



USGS TOPOGRAPHIC MAP
1"=2000'



LOCATION MAP
1"=400'

OWNER/DEVELOPER:

RICHMOND GREAT POINT DEVELOPMENT LLC
20 Davkim Lane, Nantucket MA 02554

RICHMOND GREAT POINT DEVELOPMENT LLC

PREPARED BY:

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

LIST OF DRAWINGS

DWG	TITLE
G-1	COVER SHEET
C-1	INDEX SHEET
C-2 TO C-5	DEFINITIVE PLAN
C-6 TO C-8	TOPOGRAPHIC PLAN
C-9 TO C-12	PLANS & PROFILES
C-13	LANDSCAPE PLAN
C-14	EROSION & DUST CONTROL PLAN
C-15 TO C-22	DETAILS
C-23	TEST PIT LOCATION
C-24	SOIL LOGS
C-25	GENERAL NOTES

COMMONWEALTH OF MASSACHUSETTS — ROBERT L. BERSIN — CIVIL — NO. 37391 — REGISTERED PROFESSIONAL ENGINEER — 8/5/2016

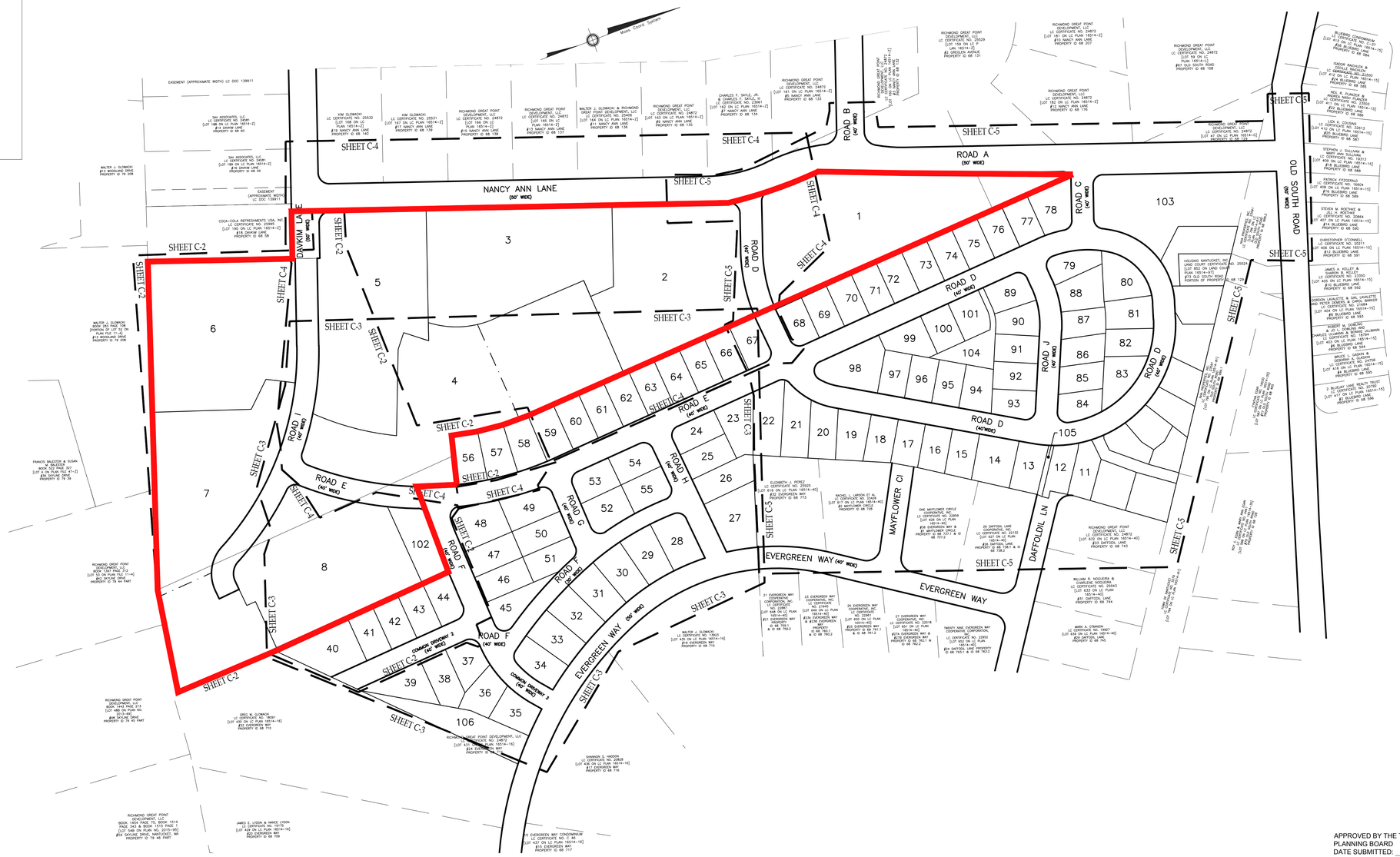
ROBERT BERSIN MASSACHUSETTS P.E. LICENSE NO. 37391
GREEN SEAL ENVIRONMENTAL, INC. JOB NO. MSTR-2302-0001

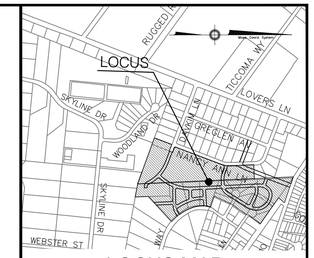
COMMONWEALTH OF MASSACHUSETTS — TIMOTHY R. BENNETT — No. 36856 — REGISTERED PROFESSIONAL LAND SURVEYOR — 8/5/2016

TIMOTHY BENNETT MASSACHUSETTS P.L.S. LICENSE NO. 36856
GREEN SEAL ENVIRONMENTAL, INC. JOB NO. MSTR-2302-0001

S:\Clients\Richmond Great Point Development\CAD\Cover1.dwg, MEADOWS TWO, 8/4/2016 6:46:05 AM

FOR REGISTRY USE ONLY





LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
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REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DEFINITIVE INDEX PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-1	SCALE: 1" = 100'
	SHEET: 2 OF 26

NOTES:
THE PLANNING BOARD DETERMINES THAT LOTS 1 THROUGH 8 DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS WETLAND PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BY-LAW, BUT STILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BYLAWS. DETERMINATION MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.

ZONE: R-5

MINIMUM LOT AREA = 5,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 10 FEET ON ONE SIDE, 5 FEET THEREAFTER
REAR = 5 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

SHEET INDEX:

SHEET C-1:	DEFINITIVE INDEX SHEET
SHEET C-2:	DEFINITIVE PLAN SHEET 1
SHEET C-3:	DEFINITIVE PLAN SHEET 2
SHEET C-4:	DEFINITIVE PLAN SHEET 3
SHEET C-5:	DEFINITIVE PLAN SHEET 4

LEGEND:

———	RIGHT OF WAY LINE
———	PROPOSED PROPERTY LINE
— — — —	EASEMENT LINE
———	ABUTTER PROPERTY LINE
— - — - —	SHEET INDEX LINE
— - — - —	ZONING LIMITS
33	LOT NUMBER

Richmond Nantucket - "Meadows II" Rental Apartment Development Project
Summary of Proposed Lots (Definitive Subdivision) and Compliance with Workforce Rental Community Zoning Bylaw Requirements

Lot Number / Location	Lot / Land Area (in Sq. Feet)	Lot / Land Area (in Acres)	Regularity Factor (r) *	Proposed Number of Buildings	Maximum Number of Units Allowed	Proposed Number of Units	Max. Number of Bedrooms Allowed	Proposed Number of Bedrooms
Lot # 1 - Northernmost	70,977	1.63	0.61	4	32	20	57	32
Lot # 2 - Center Area / North Side	63,263	1.45	0.96	6	32	32	57	52
Lot # 3 - Center Area / West Side	61,212	1.41	0.86	5	32	28	57	45
Lot # 4 - Center Area / East Side	98,329	2.26	0.57 *	6	32	30	57	48
Lot # 5 - Center Area / South Side	69,689	1.60	0.78	5	32	28	57	46
Lot # 6 - Southern Area / West Side	69,501	1.60	0.60	5	32	30	57	48
Lot # 7 - Southern Area / Center	87,084	2.00	0.77 *	6	32	32	57	52
Lot # 8 - Southern Area / East Side	61,029	1.40	1.00	5	32	25	57	40
Project Total (8 Lots)	**581,084**	**13.34**	**0.77**	**42**	**256**	**225**	**456**	**363**

* **Note**: The Regularity Factor (r) for Lot # 4 and Lot # 7 was Calculated in Accordance with the Provision of the Town of Nantucket Zoning Bylaw Section 139-16(D)(2) ("Excluding the Part of the Lot Area in Excess of the Required Lot Area")

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

S:\Clients\Richmond Grasspoint Development\CAD\Lots Layout\Landscaping-1.dwg, MC1-Multiply0ef Index 100s (3), 8/4/2016 8:48:17 AM

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COCA-COLA REFRESHMENTS USA, INC.
LC CERTIFICATE NO. 25995
[LOT 190 ON LC PLAN 16514-Z]
#18 DAVKIM LANE
PROPERTY ID 68 58

DAVKIM LANE (50' WIDE)

A30.95'
R21.25'
Δ83°25'22"

N 69°18'26" W
65.00'

PROPERTY LINE

N 20°38'54" E 262.81'

N 20°41'34" E
5.00'

N 20°41'34" E
5.00'

Mass. Coord. System

LOT 6
69,501 S.F.
(rf=0.60)

S 69°18'26" E 158.83'

N 69°18'26" W 158.83'

N 69°53'34" W 273.80'

LOT 5
69,689 S.F.
(rf=0.78)

SHEET C-4

N 28°30'19" E
33.59'

N 42°07'01" W
66.67'

N 20°06'26" E
179.98'

WALTER J. GLOWACKI
BOOK 283 PAGE 108
[PORTION OF LOT 52 ON PLAN FILE 11-A]
#13 WOODLAND DRIVE
PROPERTY ID 79 208

Δ 28°37'13"
R530.00'
A264.74'

Δ 19°55'24"
R570.00'
A198.20'

A124.48'

A73.72'

ROAD I (40' WIDE)

S 67°03'50" E
151.18'

LOT 4M
94298.7 Sq. Feet
2.2 Acres
1601.7 Perimeter
Regularity Factor= 0.59

LOT 4
98,329 S.F.
(rf=0.57)

A156.61'
R490.54'
Δ18°17'30"

A48.02'

A47.76'

A48.33'

N 71°47'47" W
89.99'

LOT 5M
127661.4 Sq. Feet
2.9 Acres
1570.1 Perimeter
Regularity Factor= 0.83

A27.72'
R18.00'
Δ88°14'45"

S 42°22'13" W
5.30'

A269.93'
R580.00'
Δ26°39'54"

FORMER PROPERTY LINE

LOT 7
87,084 S.F.
(rf=0.77)

A26.72'
R18.00'
Δ85°03'08"

ROAD E (40' WIDE)

Δ 44° 58' 37"
R580. 00'
A455. 30'

A30.93'
R18.00'
Δ98°27'10"

A12.80'
R570.00'
Δ1°17'12"

A221.29'
R620.00'
Δ20°27'00"

A24.89'
R18.00'
Δ79°13'55"

A83. 27'

A55. 61'

N 69°53'34" W 323.24'

Δ 14° 00' 08"
R530. 00'
A130. 44'

Δ 14° 16' 06"
R570. 00'
A142. 00'

S 02°36'01" E 590.96'

S 26°35'07" E
5.09'

390.14'

A20.91'
R140.00'
Δ8°33'31"

A41.36'
R180.00'
Δ13°09'52"

S 87°23'37" W
149.60'

LOT 102
7,332 S.F.
(rf=0.79)

ROAD F (40' WIDE)

N 82°26'46" E
152.10'

44.40'

50.00'

N 88°21'46" E

A84.26'
R72.00'
Δ67°03'19"

N 26°35'07" W
5.09'

A37.45'
R32.00'
Δ67°03'19"

N 02°34'58" W 104.92'
LINE USED FOR REGULARITY FACTOR COMPUTATION (AREA = 60,000 S.F.)

S 86°21'34" W
16.48'

LOT 6M
96745.7 Sq. Feet
2.2 Acres
1529.8 Perimeter
Regularity Factor= 0.66

LOT 8
61,029 S.F.
(rf=1.00)

N 86°21'34" E
16.48'

N 03°38'26" W
40.00'

S 86°21'34" W
32.50'

S 02°36'24" E
17.28'

S 87°23'36" W
51.85'

51.85'

50.01'

50.00'

50.00'

N 02°36'24" W 538.20'
146.00'

S 79°23'14" E 188.58'

N 02°34'58" W 188.15' PROPERTY LINE

SHEET C-3

SHEET C-3

RICHMOND GREAT POINT DEVELOPMENT, LLC
BOOK 1397 PAGE 312
[LOT 53 ON PLAN FILE 11-A]
#42 SKYLINE DRIVE
PROPERTY ID 79 44 PART

RICHMOND GREAT POINT DEVELOPMENT, LLC
BOOK 1443 PAGE 213
[LOT 488 ON PLAN NO. 2013-69]
#48 SKYLINE DRIVE
PROPERTY ID 79 45 PART

GREG W. GLOWACKI
LC CERTIFICATE NO. 18091
[LOT 430 ON LC PLAN 16514-16]
#22 EVERGREEN WAY
PROPERTY ID 68 710

0 20 40 60 METERS
0 40 80 120 160 FEET
GRAPHIC SCALE 1" = 40'

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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_____
TOWN CLERK

LEGEND:

RIGHT OF WAY LINE
PROPOSED PROPERTY LINE

ZONE: R-5

MINIMUM LOT AREA = 5,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 10 FEET ON ONE SIDE,
5 FEET THEREAFTER
REAR = 5 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

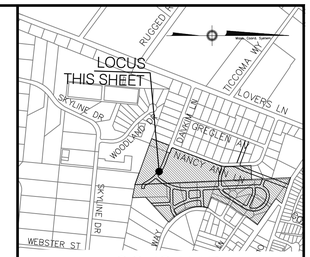
MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

NOTES:
THE PLANNING BOARD DETERMINES THAT LOTS 1 THROUGH 8 DO NOT CONTAIN AREAS SUBJECT TO PROTECTION UNDER THE MASSACHUSETTS WETLAND PROTECTION ACT WHICH ARE REQUIRED TO BE EXCLUDED FROM LOT AREA UNDER THE NANTUCKET ZONING BY-LAW, BUT STILL MAY BE SUBJECT TO PROTECTION UNDER STATE AND LOCAL WETLAND BYLAWS. DETERMINATION MAY BE OBTAINED THROUGH APPLICATION TO THE CONSERVATION COMMISSION.

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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Dimensions are as indicated.

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REVISIONS

NO.	DATE	COMMENT

GENERAL NOTES:

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2. Horizontal Datum is based upon Massachusetts State Coordinate System, NAD 83 in feet. Vertical Datum is based upon NAVD 88 in feet.

3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DEFINITIVE PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-2	SCALE: 1" = 40'
	SHEET: 3 OF 26

S:\Clients\Richmond Grasspoint Development\CAD\Lots Layout\Landscaping-1.dwg, MC3-Def Plan 1 40sc (2), 8/4/2016 8:46:19 AM

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NOTES:
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ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: R-5

MINIMUM LOT AREA = 5,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 10 FEET ON ONE SIDE,
5 FEET THEREAFTER
REAR = 5 FEET

ALLOWABLE GROUND COVER % = 40%

LEGEND:

RIGHT OF WAY LINE
PROPOSED PROPERTY LINE

CLERK'S CERTIFICATION ON THE PLAN

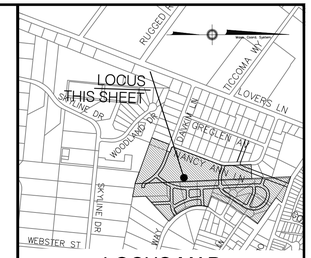
DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

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114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
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NO.	DATE	COMMENT

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3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DEFINITIVE PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

C-3

SCALE: 1" = 40'

SHEET: 4 OF 26

S:\Clients\Richmond Greatpoint Development\CAD\Lots Layout\Landscaping-1.dwg, MC13-Dwt Plan 2 40scl (2), 8/4/2016 8:46:24 AM

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CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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TOWN CLERK

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ZONE: R-5

MINIMUM LOT AREA = 5,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 10 FEET ON ONE SIDE, 5 FEET THEREAFTER
REAR = 5 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: CN

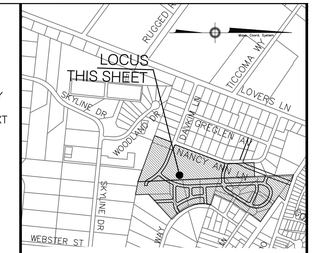
MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

LEGEND:

RIGHT OF WAY LINE
PROPOSED PROPERTY LINE



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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REVISIONS

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3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DEFINITIVE PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-4	SCALE: 1" = 40'
	SHEET: 5 OF 26

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD

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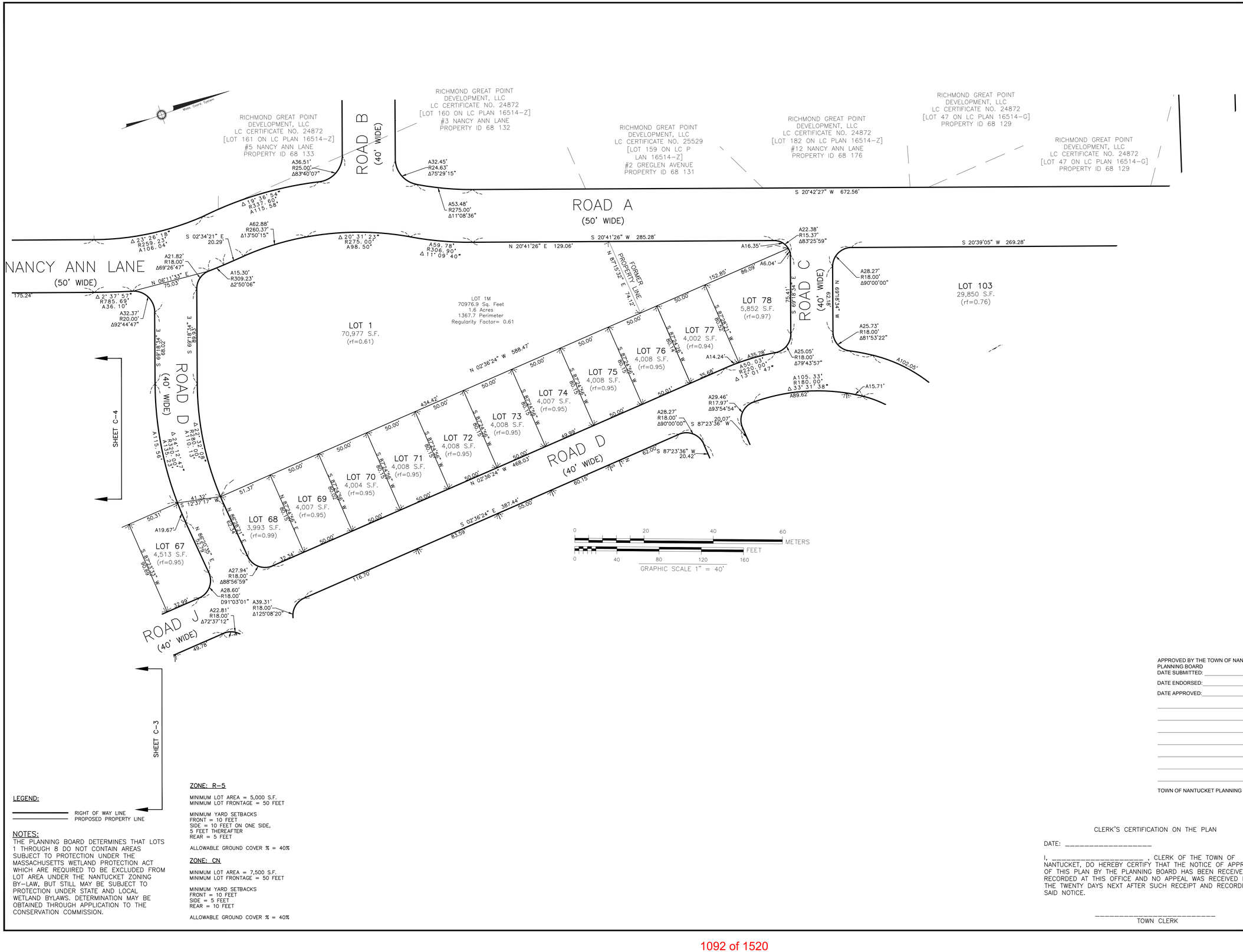

LEGEND:

RIGHT OF WAY LINE
PROPOSED PROPERTY LINE

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ZONE: R-5

MINIMUM LOT AREA = 5,000 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 10 FEET ON ONE SIDE,
5 FEET THEREAFTER
REAR = 5 FEET

ALLOWABLE GROUND COVER % = 40%

ZONE: CN

MINIMUM LOT AREA = 7,500 S.F.
MINIMUM LOT FRONTAGE = 50 FEET

MINIMUM YARD SETBACKS
FRONT = 10 FEET
SIDE = 5 FEET
REAR = 10 FEET

ALLOWABLE GROUND COVER % = 40%

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
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3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DEFINITIVE PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-5	SCALE: 1" = 40'
	SHEET: 6 OF 26

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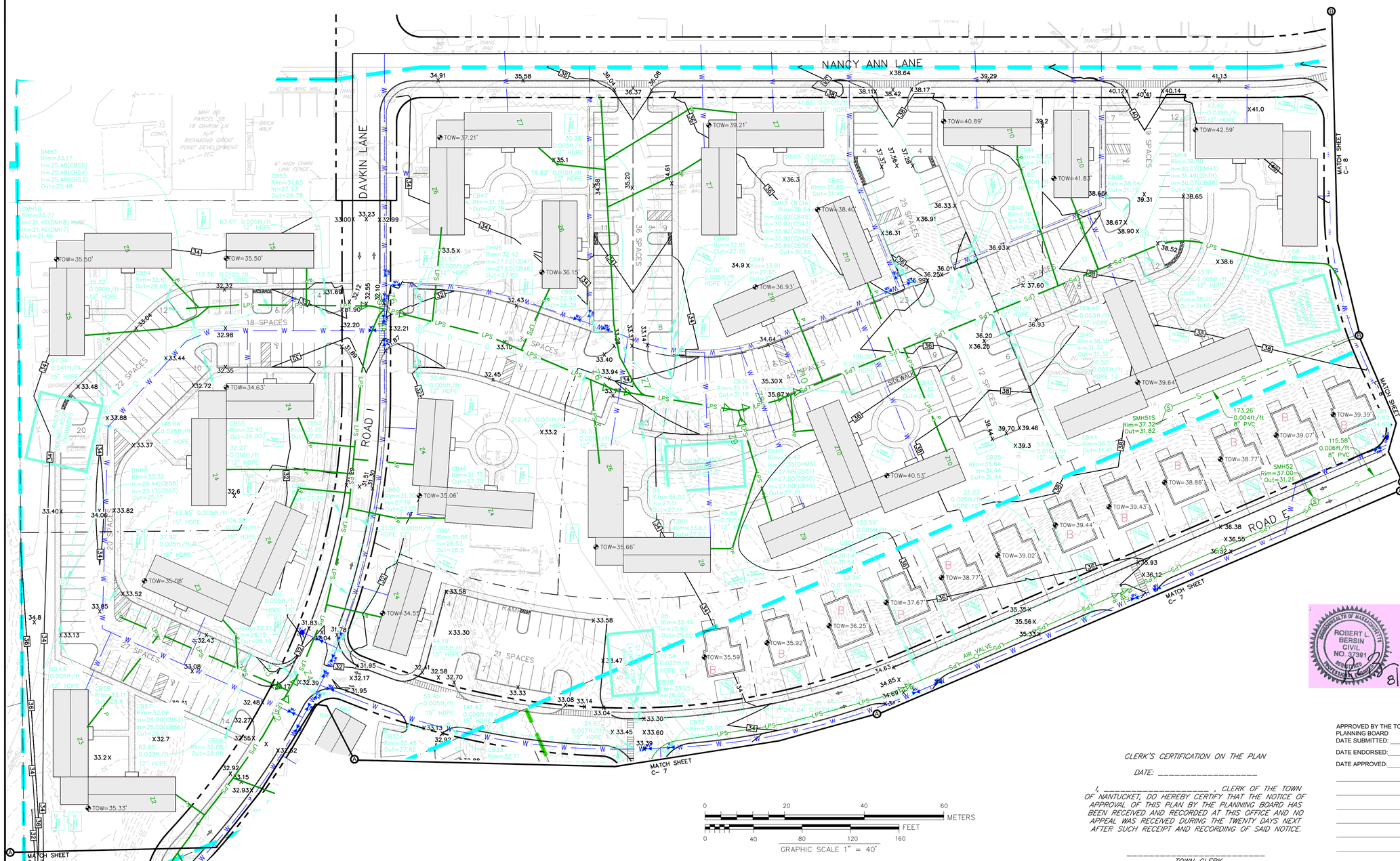

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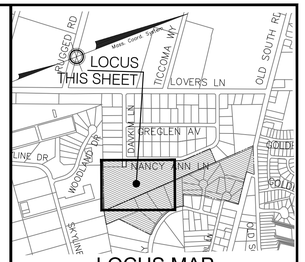
_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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REVISIONS

NO.	DATE	COMMENT

GENERAL NOTES:

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2. Horizontal Datum is based upon Massachusetts State Coordinate System, NAD 83 in feet. Vertical Datum is based upon NAVD 88 in feet.

3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

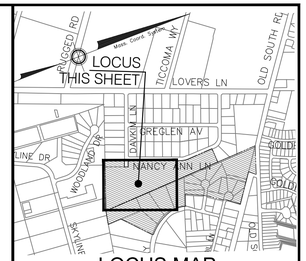
DRAWING TITLE:
TOPOGRAPHIC PLAN

ROBERT L. BERSIN CIVIL NO. 37391 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
8/5/2016

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-6	SCALE: 1" = 40'
	SHEET: 7 OF 26

S:\Clients\Richmond Greatpoint Development\CAD\Site Plan-Profiles-2.dwg, MC-6 TOPO (2), 8/4/2016 6:48:48 AM

FOR REGISTRY USE ONLY



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3. Field survey completed on 11/09/2015

4. Plan Not for construction, Permitting only.

PURPOSE:

DEFINITIVE SUBDIVISION

LOCUS:

NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:

TOPOGRAPHIC PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-7	SCALE: 1" = 40'
	SHEET: 8 OF 26

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

_____
TOWN OF NANTUCKET PLANNING BOARD

S:\Clients\Richmond Greatport Development\CAD\Site Plan-Profiles-2.dwg, MC-7 TOPO (3), 8/4/2016 6:46:55 AM

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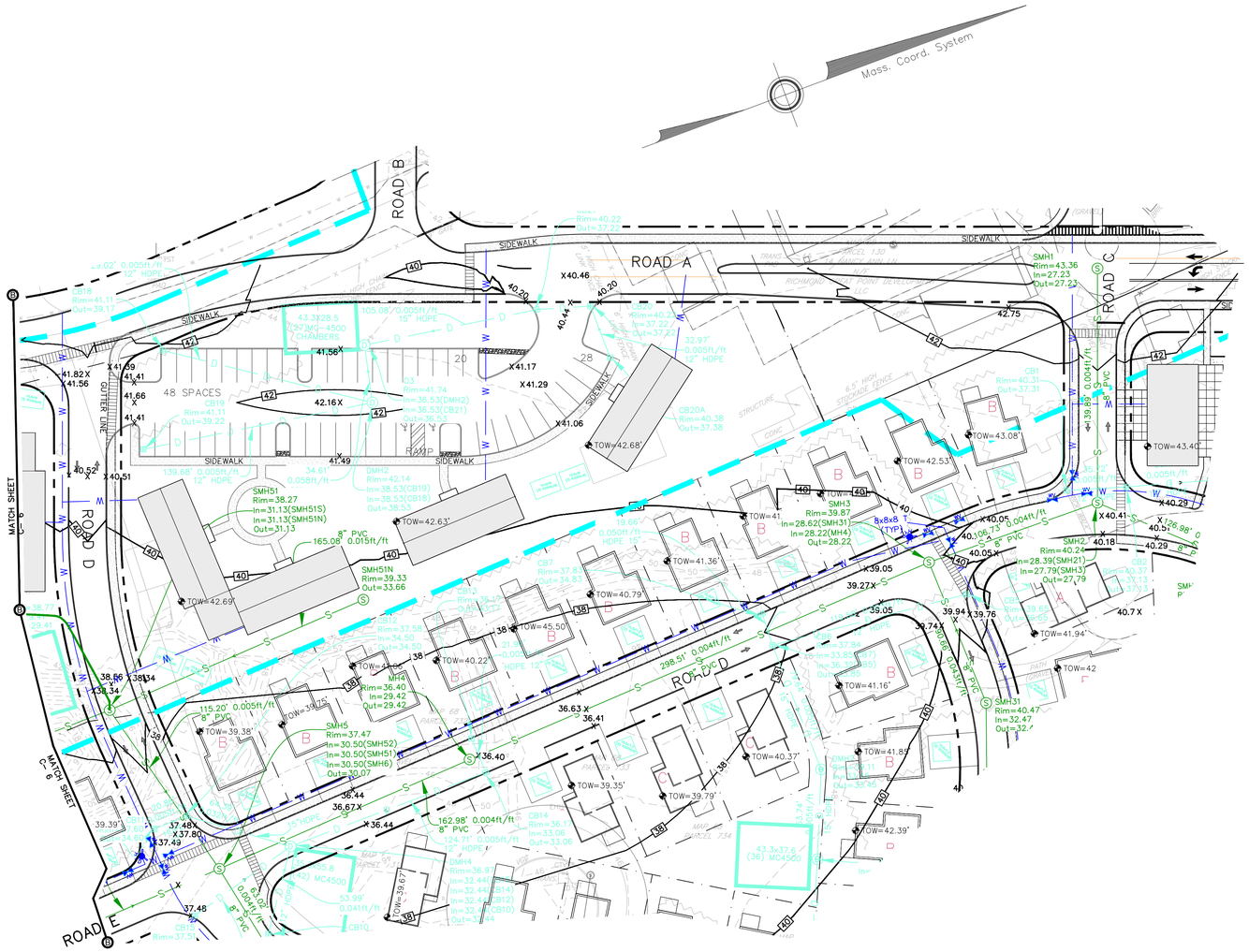
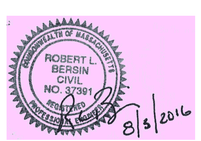


0 20 40 60 METERS
0 40 80 120 160 FEET
GRAPHIC SCALE 1" = 40'



CLERK'S CERTIFICATION ON THE PLAN

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TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

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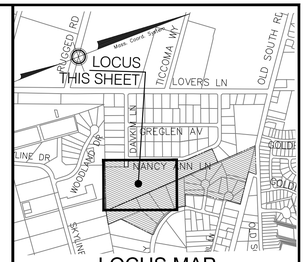
TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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Dimensions are as indicated.

Use of this plan constitutes acceptance of terms and conditions set forth in accompanying project documentation.

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REVISIONS

NO.	DATE	COMMENT

GENERAL NOTES:

1. Underground utilities shown on this plan are based upon visible above ground utilities and record information of below ground utilities or noted otherwise, and are approximate only. Contractor is responsible for taking all necessary precautions before beginning any excavation. (Digsafe 1-888-344-7233)

2. Horizontal Datum is based upon Massachusetts State Coordinate System, NAD 83 in feet. Vertical Datum is based upon NAVD 88 in feet.

3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
TOPOGRAPHIC PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-8	SCALE: 1" = 40'
	SHEET: 9 OF 26

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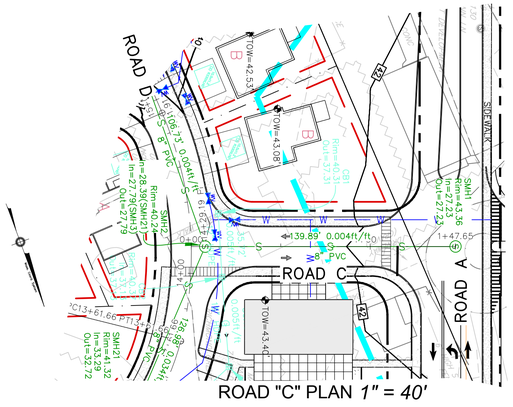
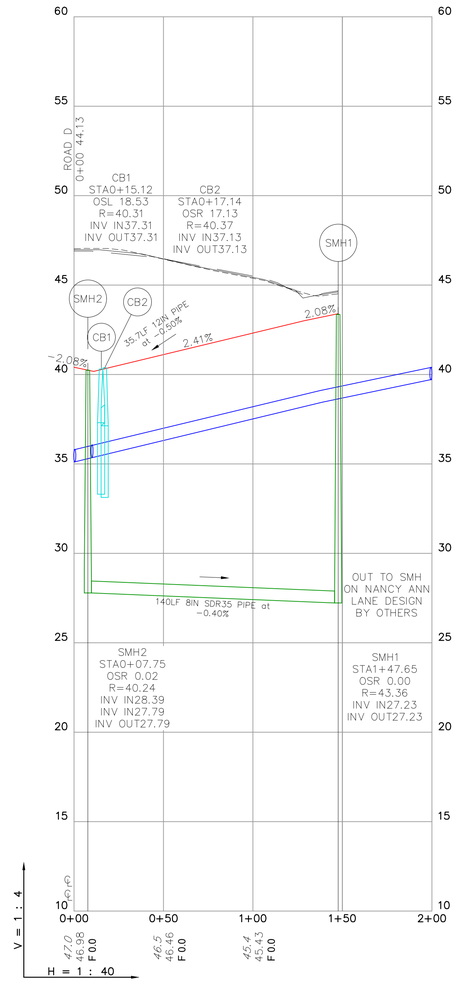


ROAD "C" PLAN *1" = 40'*



GENERAL CONSTRUCTION NOTES:

1. All construction methods and materials shall conform to the Massachusetts Department of Transportation (MassDOT) Standard Specifications for Highways and Bridges 1998 as amended.
2. All sewer pipe shall be SDR-35 Gasketed Integral Bell Gravity Sewer pipe meeting ASTM D3034 as amended. Maximum individual length of pipe shall be 20 feet. Pipe sizes shall be as shown on the plans.
3. All water mains shall be Cement Lined Ductile Iron Pipe with standard exterior coating. Pipe shall and manufactured in accordance with the latest revision of ANSI/AWWA 151/A21.51. Cement-mortar lining on the interior shall be in accordance with the latest revision of ANSI/AWWA C104/A21.4. Pipe shall be push on restrained joint meeting ANSI/AWWA C111/A21.11. Water pipe shall be installed and tested in accordance with ANSI/AWWA C600 and disinfected in accordance with the latest revision of ANSI/AWWA C651 prior to being placed in service. Pipe sizes shall be as shown on the plans.
4. All Drainage pipe shall be High Density Polyethylene pipe. Pipe sizes shall be as shown on the plans.
5. All hydrants shall be installed following the above-described protocol for water line installation. See plan details for material requirements.
6. All water connections shall be installed following the above-described protocol for water line installation. Ductile iron tees and gate valves shall be installed on all legs of tees and crossings.
7. Water services shall be ¾-inch PVC water line and installed to the property line for single-family house lots. Water service for multifamily buildings shall be six-inch cement lined ductile iron and installed to the road layout line. The ends of all pipe service laterals shall be capped, located for future use, and marked with minimum 2"x 4" lumber set six inches below finished grade.
8. Sewer services shall be as follows:
   a. Single-family house lots being fed by gravity shall be 4-inch PVC pipe.
   b. Multifamily buildings shall be fed by 6-inch PVC pipe.
   c. Single-family house lots being fed by Low Pressure Sewer shall be as depicted on the detail sheet. Pump Chambers shall be EOne DH071 simplex chambers with 4-inch PVC inlet connections and 1.25-inch SDR-11 outlet laterals to the low-pressure force main.
   d. Multifamily buildings being fed by Low Pressure Sewer shall be as depicted on the detail sheet. Pump Chambers shall be EOne DH152 duplex chambers with 6-inch PVC inlet connections and 1.5-inch SDR-11 outlet laterals to the low-pressure force main.

   The ends of all pipe service laterals shall be capped, marked with minimum 2'x4' lumber set six inches below finished grade, and located for future use.

51.5 *EXISTING GL GRADE*
41.92 PROPOSED FINAL GRADE
C 9.6 CUT TO REACH FINAL FINISH GRADE
F 9.6 FILL TO REACH FINAL FINISH GRADE

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

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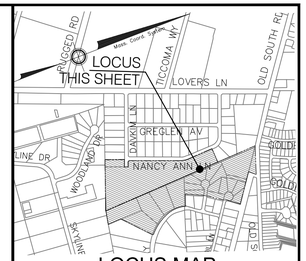
TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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REVISIONS

NO.	DATE	COMMENT

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3. Field survey completed on 11/09/2015
4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
PLAN AND PROFILE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-9	SCALE: 1" = 40'
	SHEET: 10 OF 26

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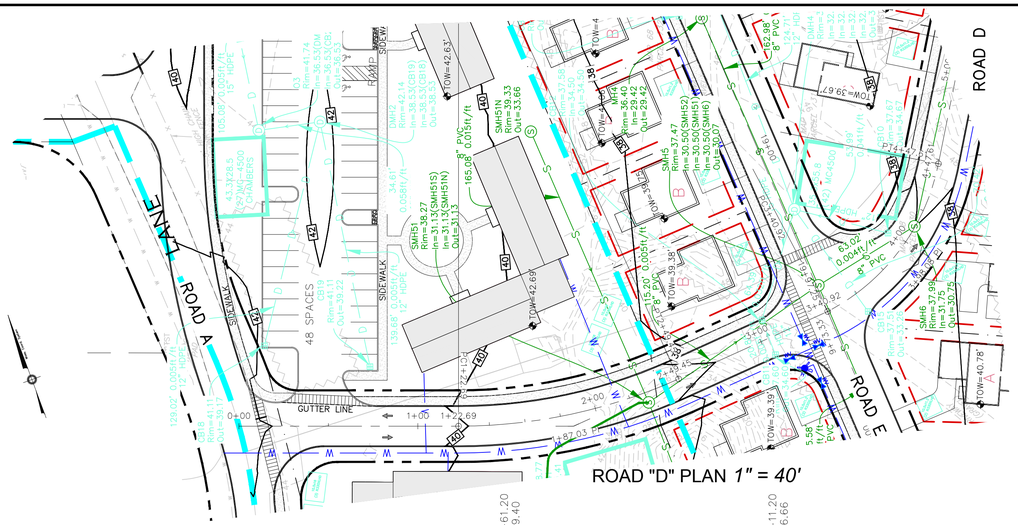
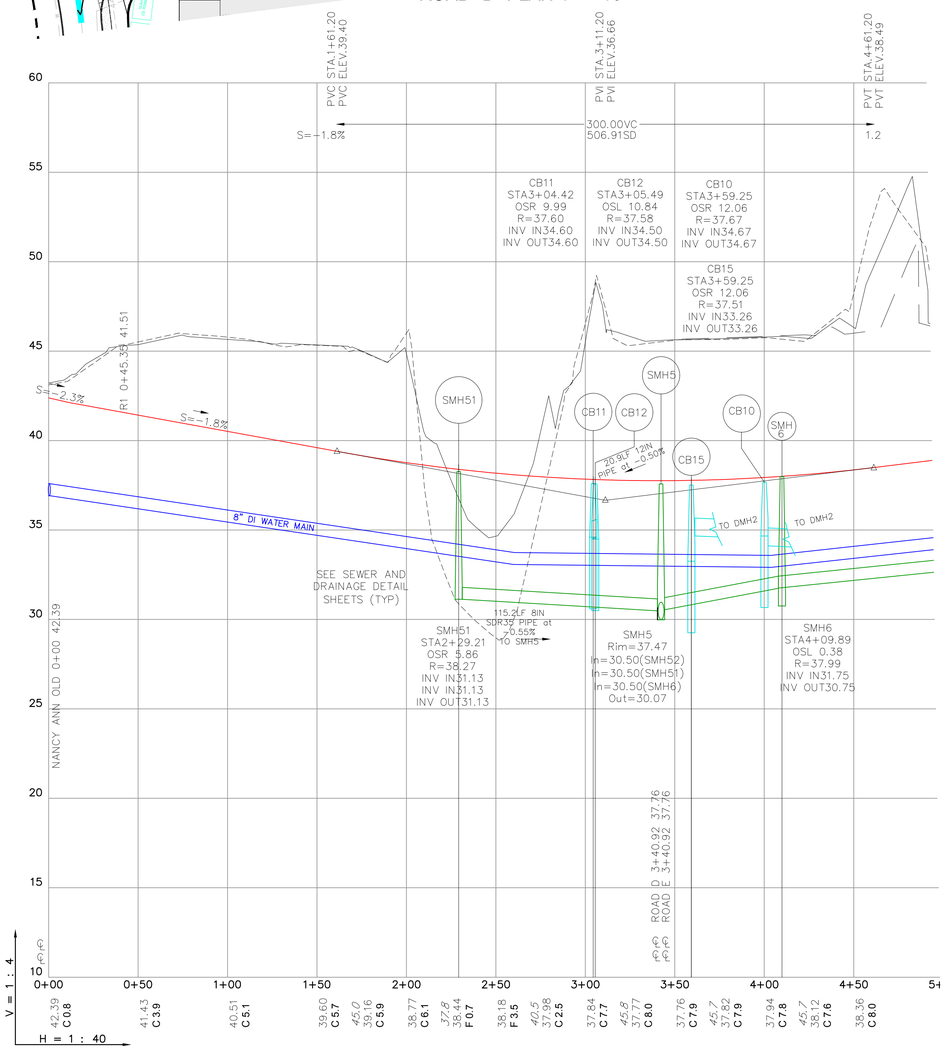


ROAD "D" PLAN *1" = 40'*



51.5 *EXISTING CL GRADE*
41.92 PROPOSED FINAL GRADE
C 9.6 CUT TO REACH FINAL FINISH GRADE
F 9.6 FILL TO REACH FINAL FINISH GRADE

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

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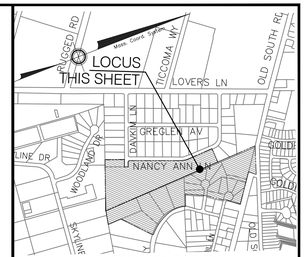
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

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114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
PLAN AND PROFILE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-10	SCALE: 1" = 40'
	SHEET: 11 OF 26

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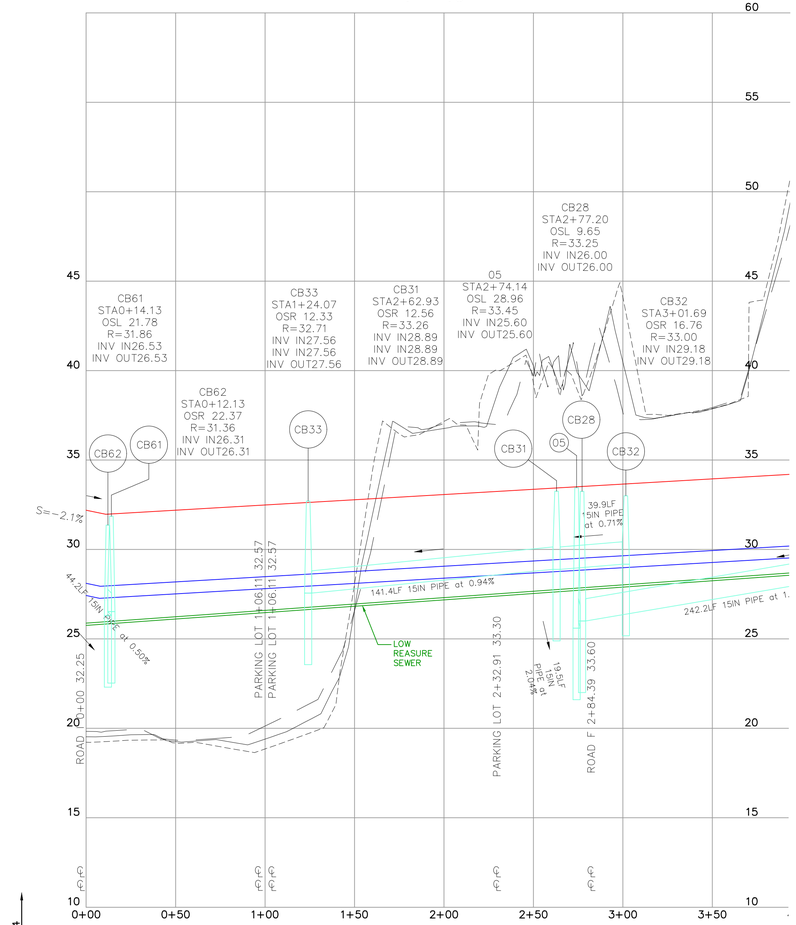
ROAD "E" PLAN
1" = 40'



51.5 *EXISTING CL GRADE*
41.92 PROPOSED FINAL GRADE
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TOWN CLERK

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DATE SUBMITTED: _____
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DATE APPROVED: _____

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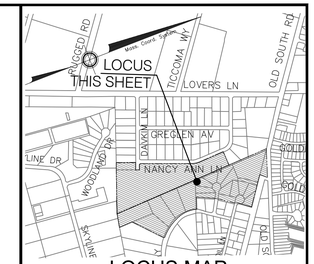
TOWN OF NANTUCKET PLANNING BOARD



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PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
PLAN AND PROFILE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-11	SCALE: 1" = 40'
	SHEET: 12 OF 26

FOR REGISTRY USE ONLY

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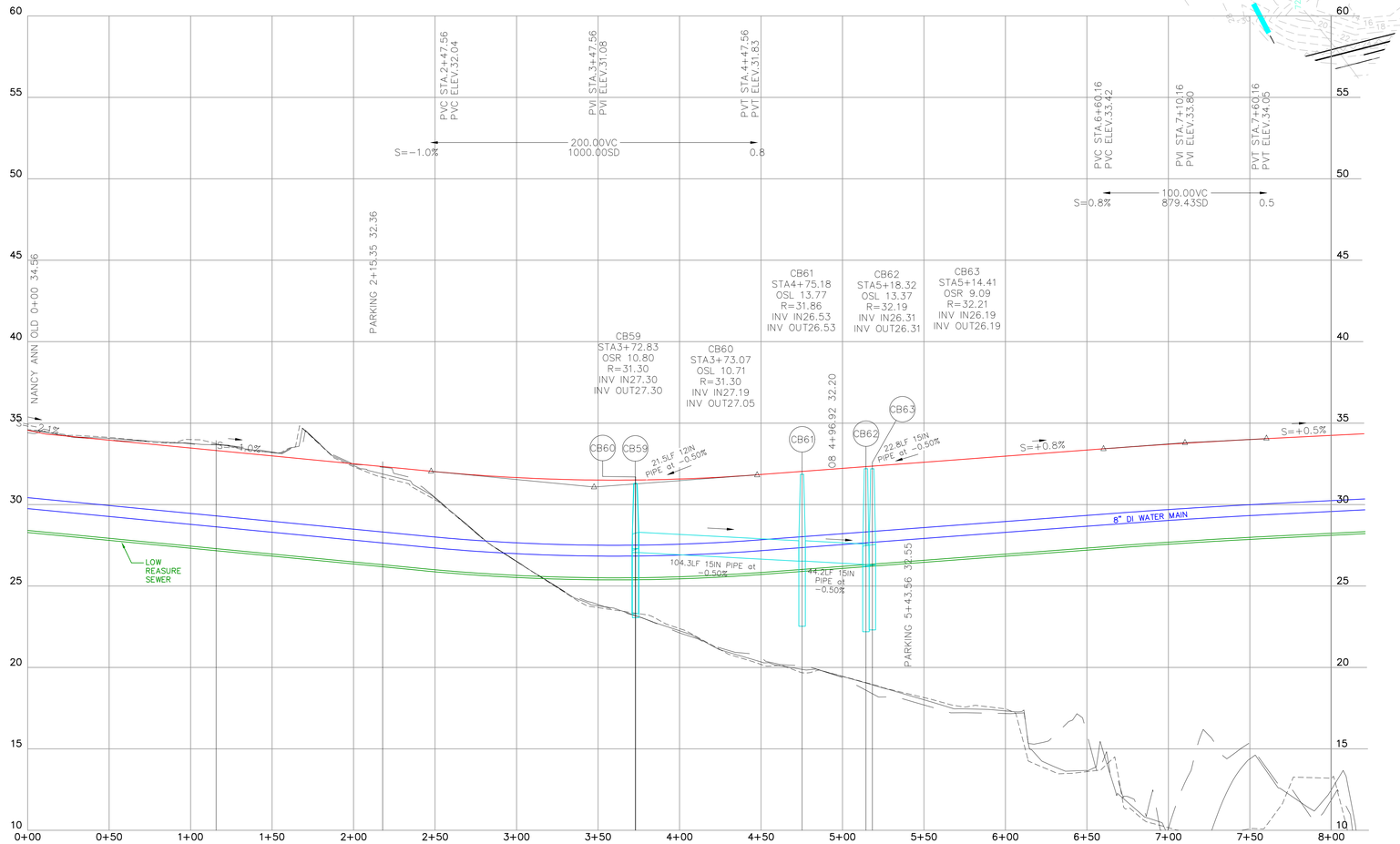
_____
TOWN CLERK



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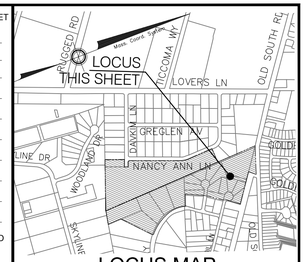
41.92 PROPOSED FINAL GRADE
C 9.6 CUT TO REACH FINAL FINISH GRADE
F 9.6 FILL TO REACH FINAL FINISH GRADE

ROBERT L. BERSIN CIVIL NO. 37391 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
8/5/2016

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
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3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
PLAN AND PROFILE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER: BLB	DATE: 08/03/2016
C-12	SCALE: 1" = 40'
	SHEET: 13 OF 26

S:\Clients\Richmond Greatpoint Development\CAD\Site Plan Profiles-2.dwg, NO-13 PROFILE, 8/4/2016 6:47:20 AM

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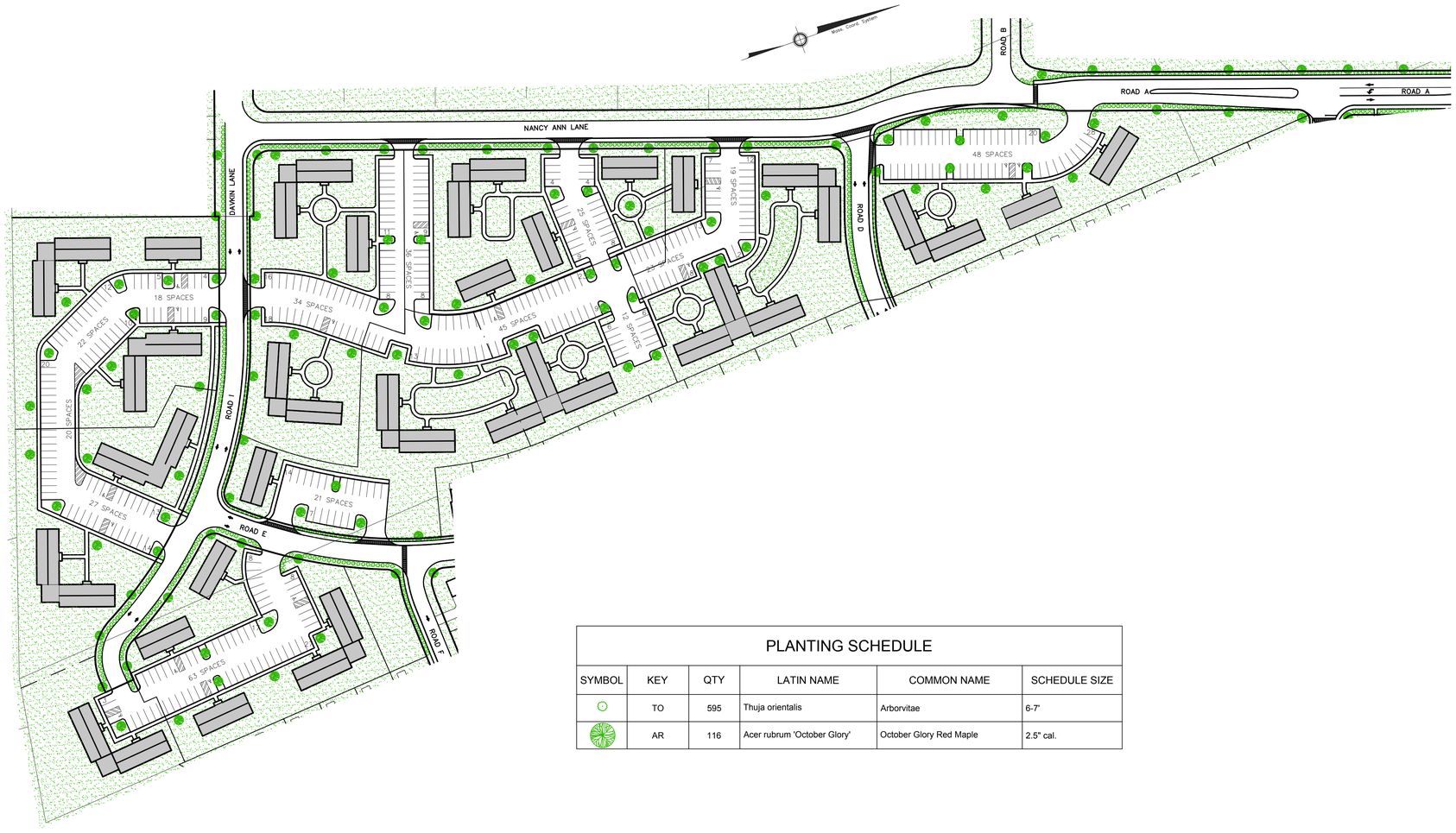

PLANTING SCHEDULE

SYMBOL	KEY	QTY	LATIN NAME	COMMON NAME	SCHEDULE SIZE
	TO	595	Thuja orientalis	Arborvitae	6-7'
	AR	116	Acer rubrum 'October Glory'	October Glory Red Maple	2.5" cal.

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

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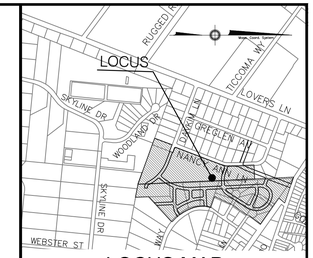
TOWN OF NANTUCKET PLANNING BOARD



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
LANDSCAPE PLAN

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-13	SCALE: 1" = 80'
	SHEET: 14 OF 26

S:\Clients\Richmond Greatpoint Development\CAD\Lisk Layout-Landscaping-1.dwg, MC13-Landscape Plan 4 400sf, (2), 8/4/2016 6:47:27 AM

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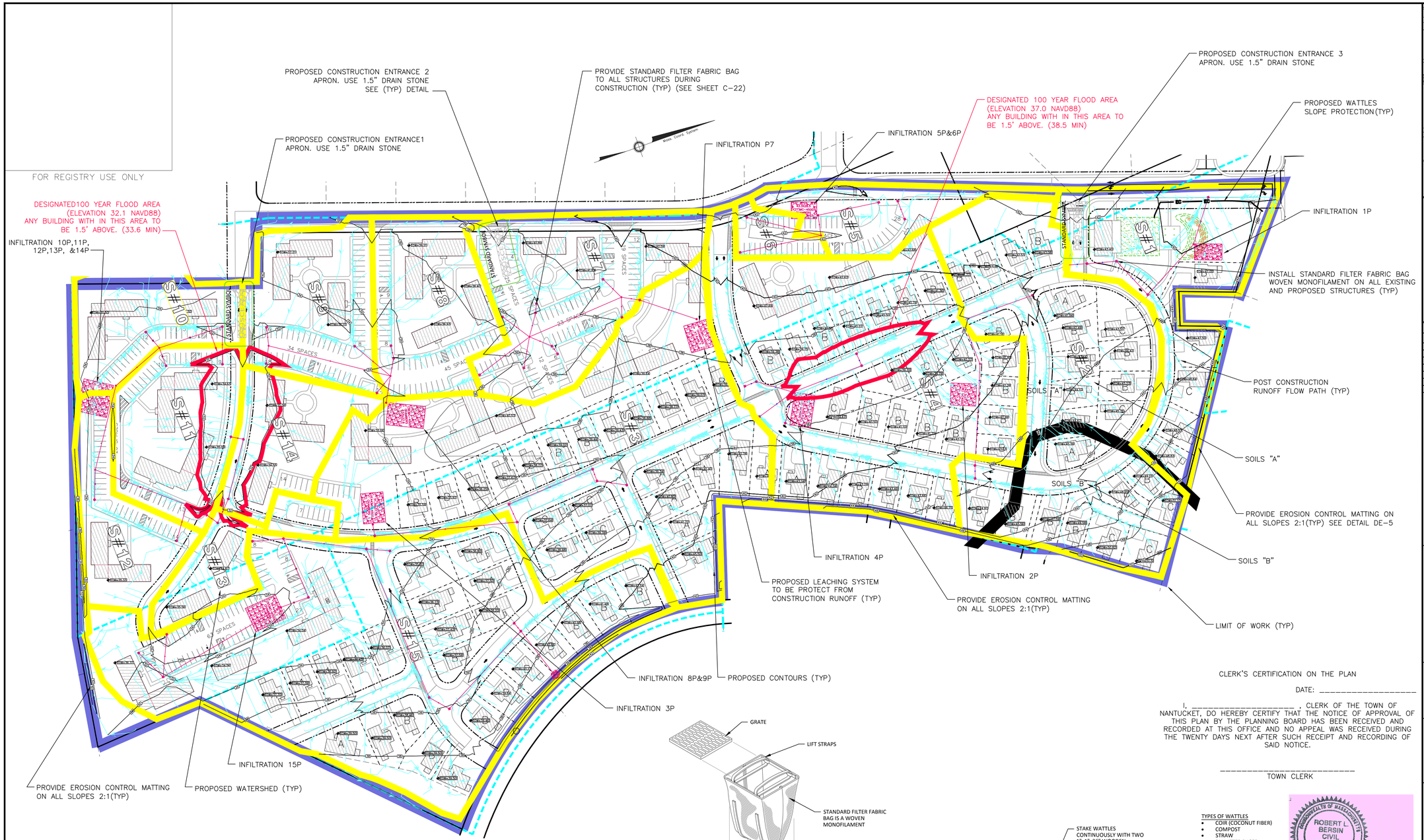
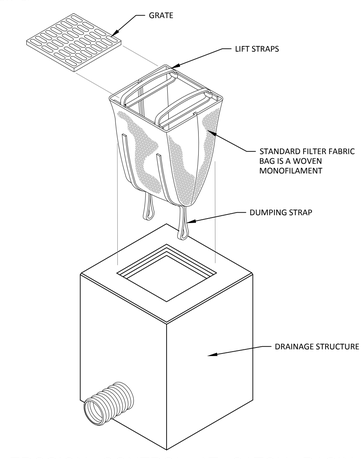


PERIMETER MONITORING

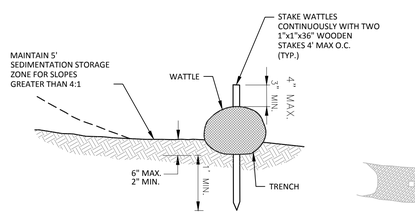
During projects that will disturb greater than 500 square feet (s.f.) of cover, the selected contractor shall provide perimeter monitoring at two downwind locations and one upwind location. The monitors shall be capable of reading PM-10 particulates on a real-time and time-weighted average (TWA) basis. The PM-10 standard includes particles with a diameter of 10 micrometers or less.
The Environmental Protection Agency (EPA) health-based national air quality standard for PM-10 is 35 micrograms per cubic meter (μg/m3) (measured as an annual mean) and 150 μg/m3 (measured as a daily concentration).
During the project duration, background levels of particulates shall be monitored at the upwind monitoring location. The air monitors shall be monitored on an hourly basis and shall be in operation during any project activities that involve the excavation, transfer, or other management of soil from the Site. Particulate concentrations from the upwind monitoring location may be subtracted from the downwind monitoring locations to obtain an accurate measurement of project related levels of particulates. The action level for the Site is 0.2 milligrams per cubic meter (mg/ m3) above background. Accordingly, if the TWA average for downwind readings is 0.2 mg/ m3 greater than background, project work must cease until operational changes are implemented that reduce dust levels to below the action level.

DUST CONTROL

DUST CONTROL
The contractor shall be responsible for controlling and limiting dust generated during the proposed project. During excavation activities, the contractor shall control dust primarily through the application of a light water spray across the project work area, as needed throughout the work day. The amount of water used to control dust shall be controlled such that no water runoff is generated from the project work area. Regular sweeping of the project work area to minimize tracking of soil is also recommended. Sweepings can be deposited into the excavation or stockpiled with excavated soil, on, and under, 6-mil polyethylene sheeting. The contractor will be responsible for providing all equipment and labor for dust control procedures.
6.1 Visible Dust
When visible dust is observed originating at the project area, all work must cease until operational changes are implemented that eliminate visible dust.
Visible Dust
When visible dust is observed originating at the project area, all work must cease until operational changes are implemented that eliminate visible dust.

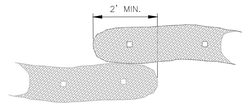


EROSION CONTROL AT CATCH BASIN
NOT TO SCALE



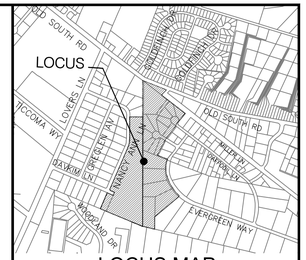
SECTION

TYPES OF WATTLES
- COIR (COCONUT FIBER)
- COMPOST
- STRAW
- DIAMETER BASED FLOW/MANUFACTURE MINIMUM DIAMETER 12" RECOMMENDATIONS



PLAN

WATTLES-SLOPE PROTECTION
NOT TO SCALE



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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Dimensions are as indicated.

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It is the responsibility of the user to confirm discrepancies with the Engineer prior to use.

REVISIONS

NO.	DATE	COMMENT

GENERAL NOTES:

1. Underground utilities shown on this plan are based upon visible above ground utilities and record information of below ground utilities or noted other wise, and are approximate only. Contractor is responsible for taking all necessary precautions before beginning any excavation. (Digsafe 1-888-344-7233)

2. Horizontal Datum is based upon Massachusetts State Coordinate System, NAD 83 in feet. Vertical Datum is based upon NAVD 88 in feet.

3. Field survey completed on 11/09/2015

4. Plan Not for construction, Pemitting only.

PURPOSE:

DEFINITIVE SUBDIVISION

LOCUS:

NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

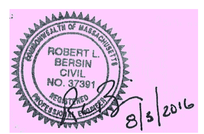
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK



APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD

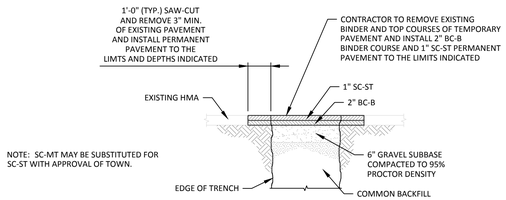
DRAWING TITLE:

EROSION & DUST CONTROL PLAN

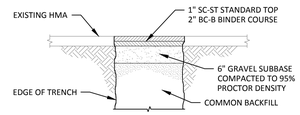
CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-14	SCALE: 1" = 80'
	SHEET: 15 OF 26

S:\Clients\Richmond Grasspoint Development\CAD\Erosion control & Watershed\1.dwg, MC14, erosion, 8/4/2016 6:47:36 AM

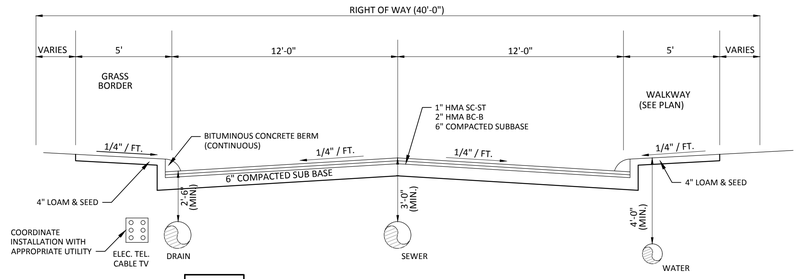
FOR REGISTRY USE ONLY



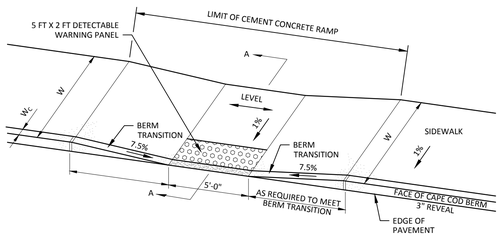
DS–1 FINAL TRENCH PAVING (TOWN ROADS)
NOT TO SCALE



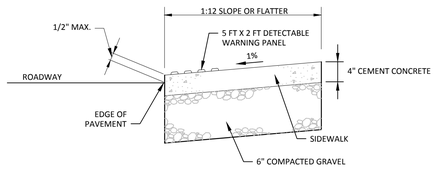
DS–2 TEMPORARY PAVING (TOWN ROADS)
NOT TO SCALE



DS–3 TYPICAL ROADWAY CROSS SECTION
NOT TO SCALE



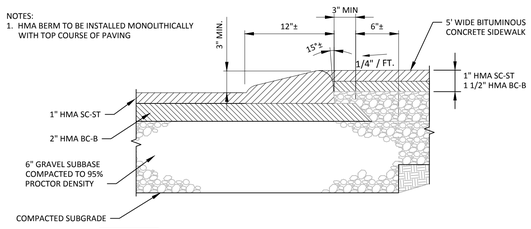
PLAN



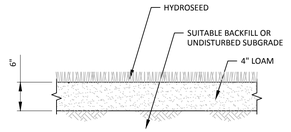
SECTION A–A

DS–4 WHEEL CHAIR RAMP (NTS)

- FOR SIDEWALKS UP TO 8' WIDE
- WHEELCHAIR RAMP SHALL MEET MASSDOT DRAWING NUMBER E 107.2.1 AS AMENDED



DS–5 BIT. BERM DETAIL
NOT TO SCALE



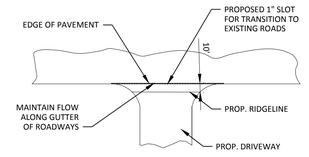
DS–6 LOAM AND SEED
NOT TO SCALE

LOAM/SEED NOTES:
ALL DISTURBED AREA SHALL BE GRADED TO A DEPTH SUITABLE FOR INSTALLING THE LOAM PER THE GRADING PLAN AND PROPERLY SEEDED.

TOPSOIL - NO STONES GREATER THAN 3/4", COMPACT WITH A HANDROLLER IN TWO DIRECTIONS & FINE RAKE PRIOR TO SEEDING

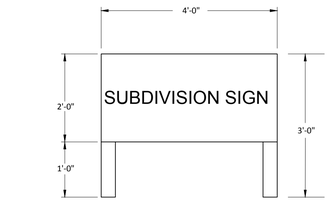
SUBSOIL - COMPACTED AT 90% MAXIMUM DENSITY

SEED - NATIVE HYDROSEED MIX.

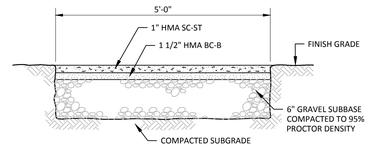


PLAN

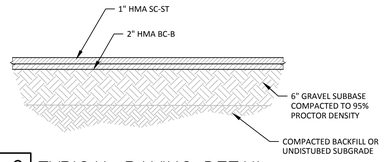
DS–7 FILLET AT INTERSECTING ROAD
NOT TO SCALE



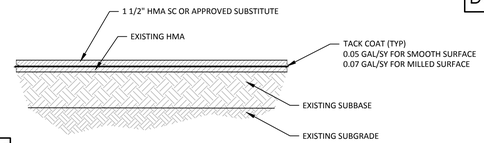
DS–8 SUBDIVISION SIGN DETAIL
NOT TO SCALE



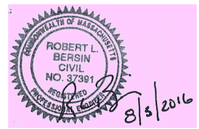
DS–11 BITUMINOUS CONCRETE WALK
NOT TO SCALE

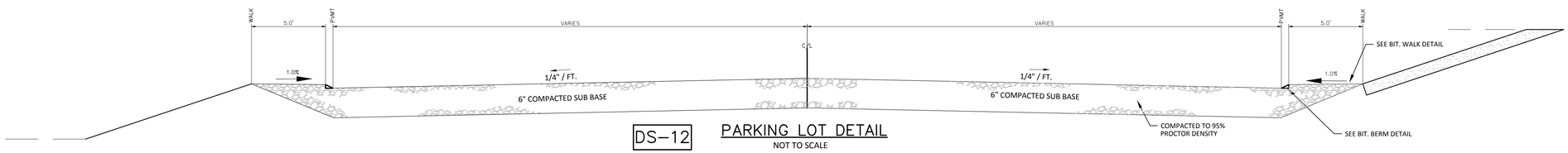


DS–9 TYPICAL PAVING DETAIL
NOT TO SCALE



DS–10 TYPICAL RESURFACING DETAIL
NOT TO SCALE





DS–12 PARKING LOT DETAIL
NOT TO SCALE

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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REVISIONS

NO.	DATE	COMMENT

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-SITE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-15	SCALE: *NOTED*
	SHEET: 16 OF 26

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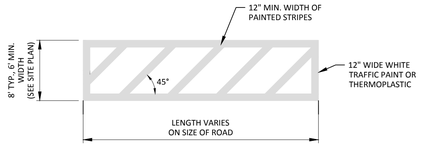
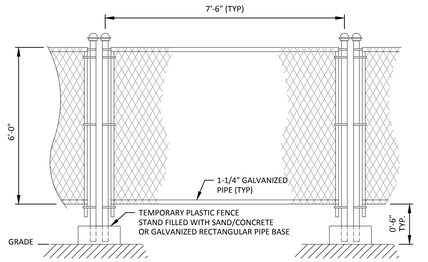
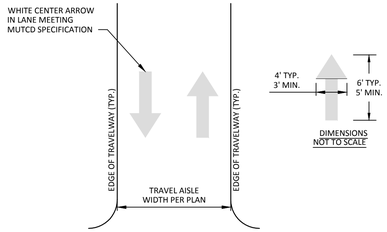


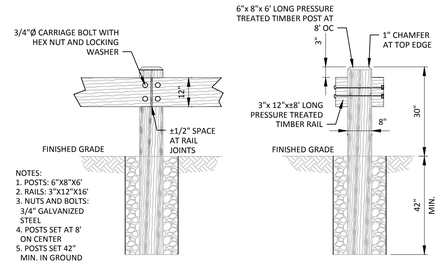
DS–15 TYPICAL PAINTED CROSSWALK SCHEMATIC
NOT TO SCALE



DS–16 TEMPORARY CONSTRUCTION FENCE
NOT TO SCALE

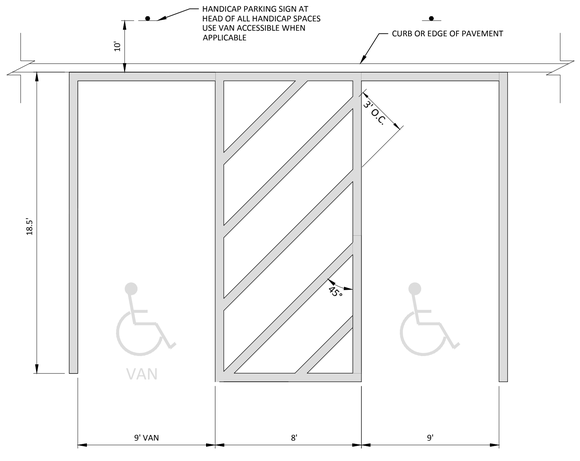


DS–13 ARROW PAVEMENT MARKING
NOT TO SCALE



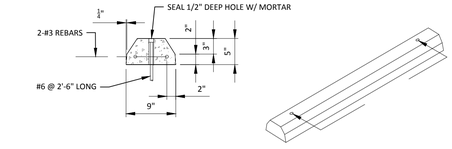
DS–17 TIMBER GUARDRAIL DETAIL
NOT TO SCALE

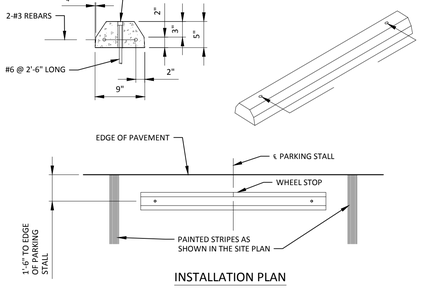
FOR DECORATIVE PURPOSES ONLY. NOT MEANT TO KEEP VEHICLES FROM LEAVING ROADWAY.



NOTE:
1. WHERE STALLS ABUT SIDEWALK, PARKING SIGNS SHOULD BE PLACED AT BACK EDGE OF SIDEWALK.
2. STRIPING SHOULD BE EPOXY RESIN AND WHITE IN COLOR

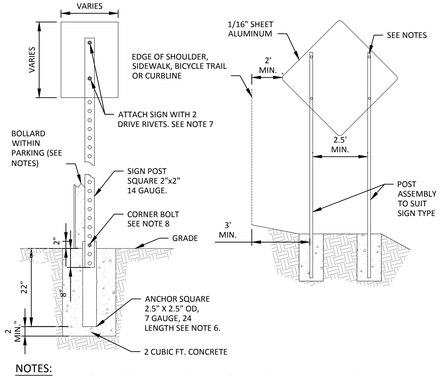
DS–18 VAN HANDICAP PARKING STALLS @ 90°
NOT TO SCALE





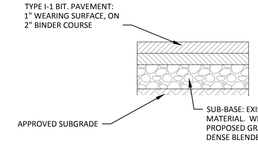
INSTALLATION PLAN

DS–23 PRECAST BUMPER (WHEEL STOP) DETAIL
NOT TO SCALE



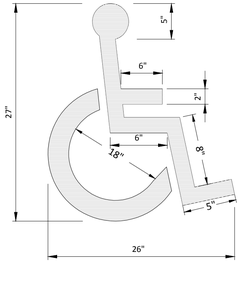
NOTES:
1. SIGN HEIGHT - 7' FROM BOTTOM OF SIGN TO GRADE. 6' FROM BOTTOM OF LOWER SIGN FOR MULTIPLE SIGNS ON ONE POST. EXCEPTIONS ONLY AS SPECIFICALLY STATED ON PLANS.
2. METAL STOP AND YIELD SIGN POSTS SHALL HAVE ALTERNATING 1' BANDS OF RED AND WHITE 3M DIAMOND GRADE SHEETING. ALL OTHER POSTS SHALL BE UNSHEETED.
3. FOR IN-SIDEWALK INSTALLATIONS, CORE 4" DIAM. HOLE. ANCHOR LENGTH MAY BE DECREASED TO 12".
4. POST SHALL BE ROLLED CARBON SHEET STEEL, ASTM A570 GRADE 50 AND BE HOT DIPPED GALVANIZED AASHTO M-120 YIELD STRENGTH 60,000 PSI MIN. POST SHALL HAVE 7/16" DIE-PUNCHED KNOCKOUTS ON 1" CENTERS FULL LENGTH, FOUR SIDES.
5. ANCHOR SHALL HAVE 4 7/16" HOLES ONE EACH SIDE 2" FROM TOP END. FINISH SHALL BE ZINC HOT DIPPED GALVANIZED MATERIAL TO MEET ASTM A500 GRADE B.
6. DRIVE RIVETS TO BE TL3806 3/8" DIA. OR EQUAL.
7. CORNER BOLTS TO BE TLCB516M OR EQUAL.
8. SIGN POSTS WITHIN PARKING AREAS (PAVEMENT) SHALL BE A BOLLARD TYPE WITH A 6 INCH DIAMETER DUCTILE IRON PIPE FILLED WITH CONCRETE EXTENDING A MIN. 4' FROM GROUND SURFACE.

DS–20 SIGN INSTALLATION DETAIL
NOT TO SCALE



GENERAL ROADWAY NOTES:
1. SANDY-LOAM AND/OR LOAMY-SAND TOPSOIL MATERIAL SHALL BE EXCAVATED FROM ALL PAVED AREAS PRIOR TO SUB-BASE INSTALLATION.
2. PAVED ACCESS WAY SUB GRADE (EXISTING MATERIAL) SHALL CONSIST OF INERT MATERIAL THAT IS HARD, DURABLE STONE AND/OR COURSE SAND, FREE FROM LOAM AND CLAY TO A DEPTH NOT LESS THAN 4-FT BELOW THE FINISH PAVEMENT SURFACE.
3. SUBGRADE FILL SHALL BE COMPACTED TO 95% COMPACTION.

DS–21 SURFACE TREATMENT DETAIL
NOT TO SCALE

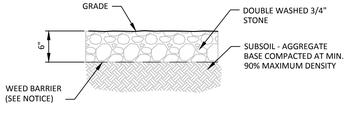


1. ALL HANDICAP PARKING AND SIGNAGE SHALL BE IN CONFORMANCE WITH THE RULES & REGULATIONS OF THE ARCHITECTURAL BARRIERS BOARD.

STRIPING SHOULD BE EPOXY RESIN AND WHITE IN COLOR

DS–22 HANDICAP PAVEMENT PARKING
NOT TO SCALE

WASHED STONE NOTES:
WEED BARRIER SHALL BE TENCATE NICOLON GROUNDCOVER FABRIC OR EQUAL.



WASHED STONE

DS–24 SURFACE TREATMENT DETAIL
NOT TO SCALE

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
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REVISIONS

NO.	DATE	COMMENT

CLERK'S CERTIFICATION ON THE PLAN

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_____
TOWN CLERK

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-SITE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
	SCALE: NOTED
C-16	SHEET: 17 OF 26

COMMONWEALTH OF MASSACHUSETTS
ROBERT L BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD

S:\Clients\Richmond Grasspoint Development\CAD\Details\ dwg, MC16 DETAIL-SITE (1), 8/4/2016 6:47:54 AM

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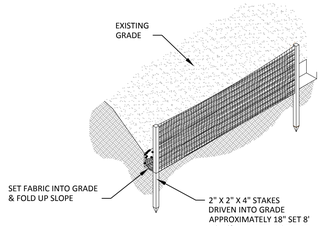
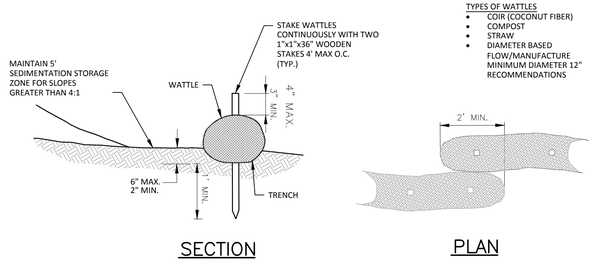
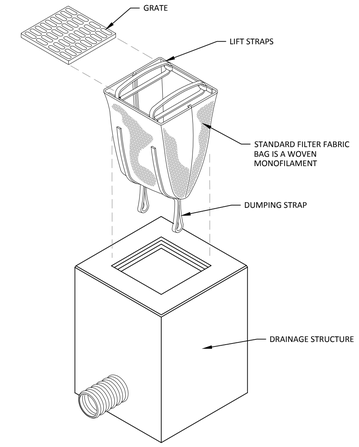


DE–1 SILT FENCE DETAIL
NOT TO SCALE

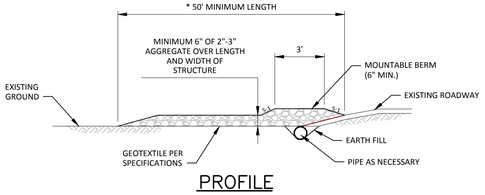


SECTION PLAN

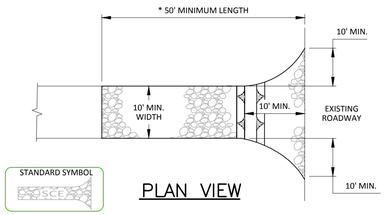
DE–2 WATTLES–SLOPE PROTECTION
NOT TO SCALE



DE–3 EROSION CONTROL AT CATCH BASIN
NOT TO SCALE



PROFILE



PLAN VIEW

CONSTRUCTION SPECIFICATIONS

1. LENGTH - MINIMUM OF 50'.

2. WIDTH - 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.

3. GEOTEXTILE FABRIC (MIRAFI 180N OR EQUAL) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE.

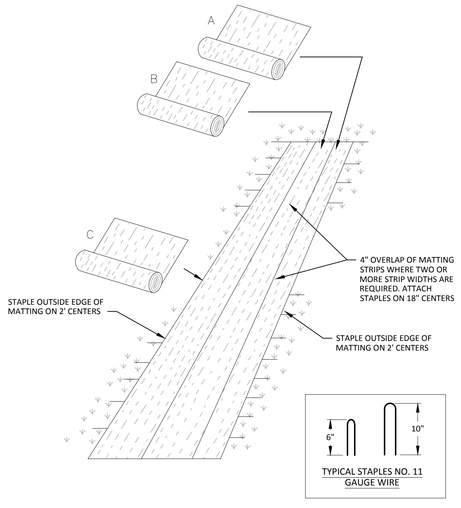
4. STONE - CRUSHED AGGREGATE (2" TO 3") OR RECLAIMED OR RECYCLED CONCRETE OR EQUIVALENT SHALL BE PLACED AT LEAST 6" DEEP OVER THE LENGTH AND WIDTH OF THE ENTRANCE.

5. SURFACE WATER - ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED THROUGH THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PIPE INSTALLED THROUGH THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROTECTED WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 6" OF STONE OVER THE PIPE. WHEN THE SCE IS LOCATED AT A HIGH SPOT ALONG THE ROADWAY, DRAINAGE PIPE WILL NOT BE NECESSARY. PIPE SHOULD BE SIZED ACCORDING TO THE AMOUNT OF RUNOFF TO BE CONVEYED. A 12" MINIMUM WILL BE REQUIRED.

6. LOCATION - A STABILIZED CONSTRUCTION ENTRANCE SHALL BE LOCATED AT EVERY POINT WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SITE. VEHICLES LEAVING THE SITE MUST TRAVEL OVER THE ENTIRE LENGTH OF THE STABILIZED CONSTRUCTION ENTRANCE.

7. ALL EFFORTS SHALL BE MADE TO REDUCE MATERIAL IN THE ROADWAY.

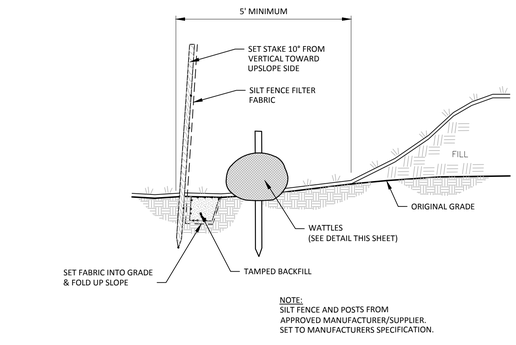
DE–4 STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



DE–5 EROSION CONRTOL MATTING
NOT TO SCALE

NOTES:
1. EROSION CONTROL MATS MANUFACTURED BY NORTH AMERICAN GREEN'S, MODEL S150 & SC150 AND SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

2. USE S150 EROSION CONTROL MATS ON 3:1 TO 2:1 SLOPES. USE SC150 EROSION CONTROL MATS ON 2:1 TO 1:1 SLOPES.



NOTE:
SILT FENCE AND POSTS FROM APPROVED MANUFACTURER/SUPPLIER. SET TO MANUFACTURERS SPECIFICATION.

DE–6 STRAW WATTLE / SILT FENCE INSTALLATION DETAIL
NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-EROSION CONTROL

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-17	SCALE: NOTED
	SHEET: 18 OF 26

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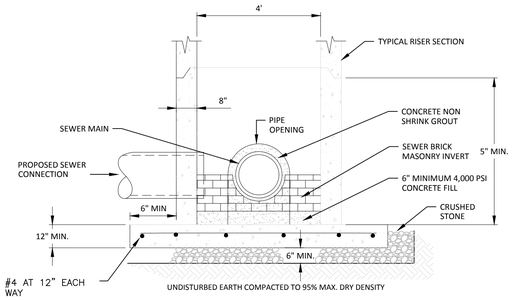
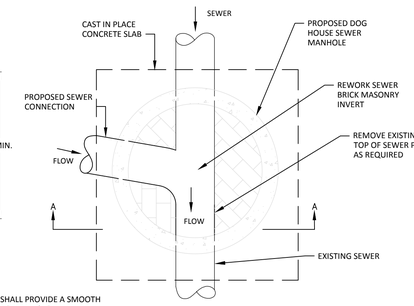
FOR REGISTRY USE ONLY



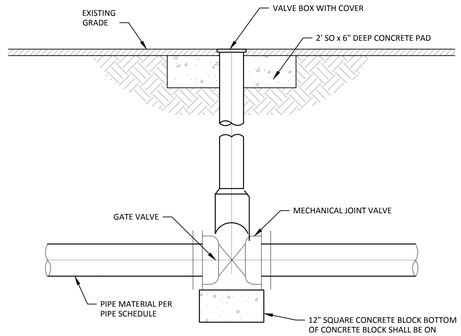
SECTION A-A



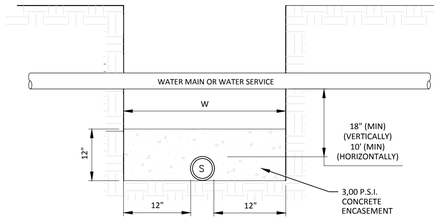
PLAN

1. BRICK MASONRY INVERT SHALL PROVIDE A SMOOTH TRANSITION THROUGH THE MANHOLE.
2. BRICK MASONRY BENCH SHALL SLOPE TOWARD SEWER RIM AT 1/2" / FT.
3. DEPTH OF TROUGH THROUGH MANHOLE SHALL EQUAL THE DIAMETER OF THE SEWER PIPE.

DSE-1 SEWER MANHOLE BASE
NOT TO SCALE

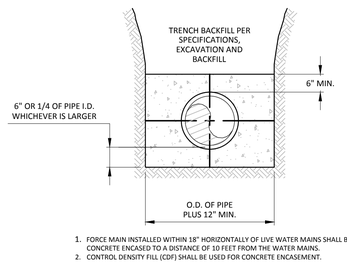


DSE-4 TYPICAL DETAIL FOR ALL BURIED VALVES CONNECTION TO PROPOSED PIPES
NOT TO SCALE



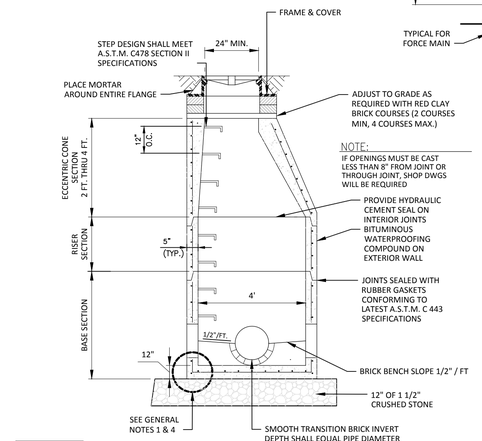
1. WIDTH OF TRENCH AS REQUIRED FOR STABLE WORK CONDITIONS.
2. IF MINIMUM CLEARANCES CANNOT BE MET, SEWER PIPE SHALL BE OF EQUIVALENT SIZE PRESSURE PIPE. ONE 20 FOOT (MIN.) LENGTH OF PRESSURE PIPE SHALL BE CENTERED ON THE WATER LINE. INSTALL ADDITIONAL SECTIONS OF PRESSURE PIPE ON EACH SIDE OF CENTERED PIPE.
3. ALL PRESSURE PIPE JOINTS SHALL BE ENCASED IN CONCRETE EXTENDING 6" ON EACH SIDE OF JOINT, INCLUDING JOINTS TO NON-PRESSURE SEWER MAIN.
4. THESE CONDITIONS APPLY TO SERVICE LATERALS AS WELL AS MAINS.

DSE-6 MINIMUM DISTANCE FOR SEWER AND WATER LINE CROSSINGS
NOT TO SCALE



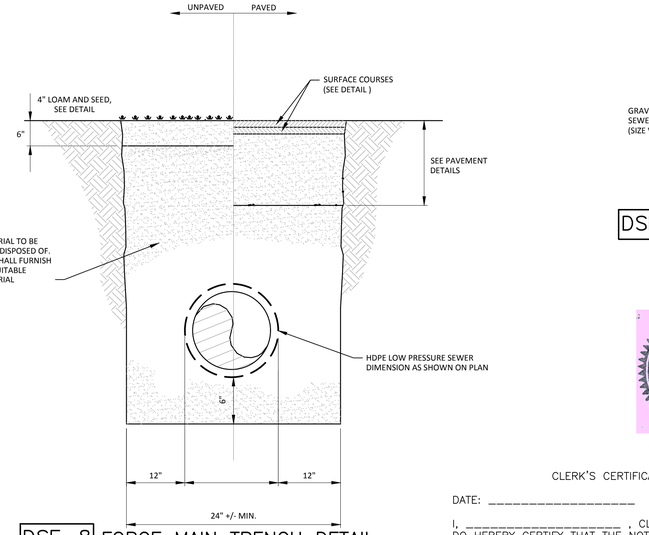
1. FORCE MAIN INSTALLED WITHIN 18" HORIZONTALLY OF LIVE WATER MAINS SHALL BE CONCRETE ENCASED TO A DISTANCE OF 10 FEET FROM THE WATER MAINS.
2. CONTROL DENSITY FILL (CDF) SHALL BE USED FOR CONCRETE ENCASEMENT.

DSE-7 TYPE VI PLAIN CONCRETE ENCASEMENT DETAIL
NOT TO SCALE

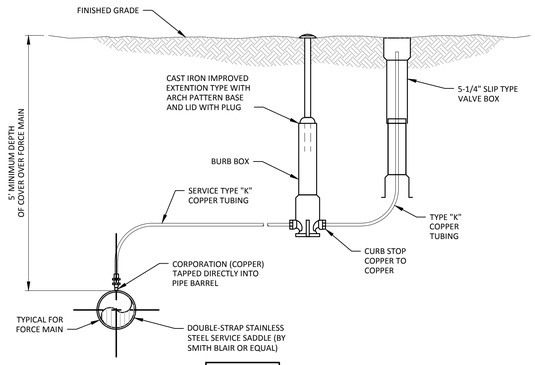


DSE-5 TYPICAL SEWER MANHOLE COVER
NOT TO SCALE

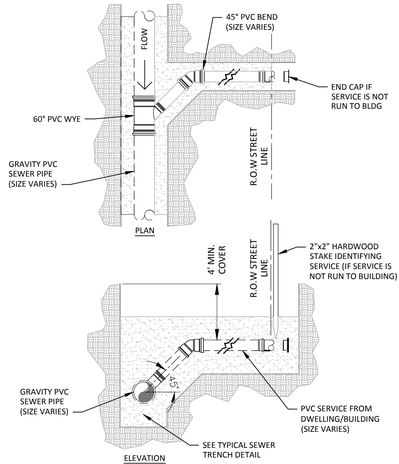
NOTES:
1 REINFORCING STEEL CONFORMS TO LATEST A.S.T.M.
2 CONC. MINIMUM COMPRESSIVE STRENGTH = 4000 PSI TYPE II CEMENT.
3 MANHOLE DESIGN SPECIFICATIONS CONFORM TO LATEST A.S.T.M. SPEC. FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS
4 ONE POUR MONOLITHIC BASE SECTION.



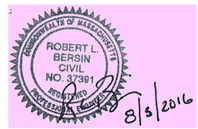
DSE-8 FORCE MAIN TRENCH DETAIL
NOT TO SCALE



DSE-2 AIR RELEASE DETAIL
NOT TO SCALE



DSE-9 SEWER SERVICE CONNECTION
NOT TO SCALE



CLERK'S CERTIFICATION ON THE PLAN

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_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
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REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-SEWER

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-18	SCALE: NOTED
	SHEET: 19 OF 26

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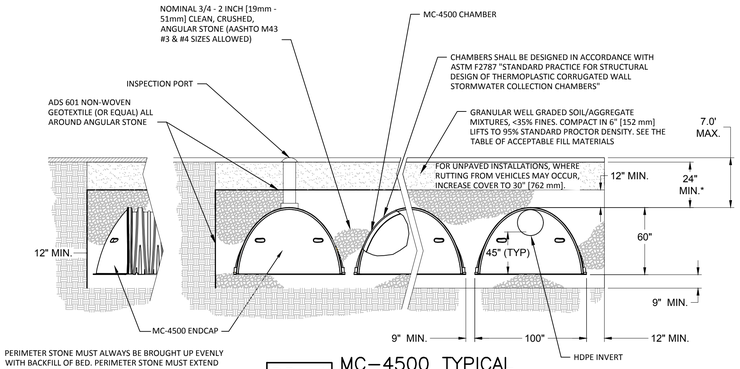
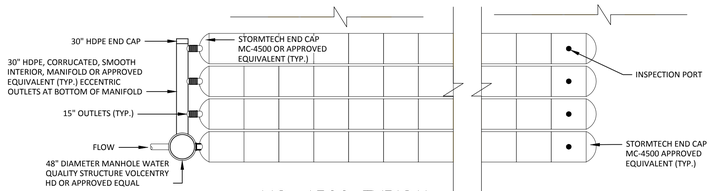
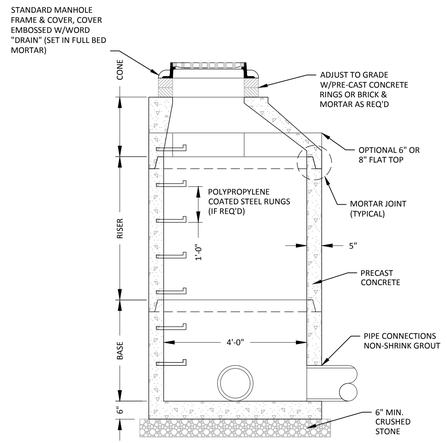


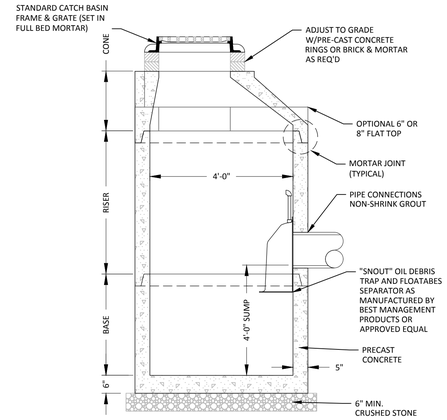
DD-4 MC-4500 TYPICAL CROSS-SECTION
NOT TO SCALE



MC-4500 TYPICAL PLAN
NOT TO SCALE

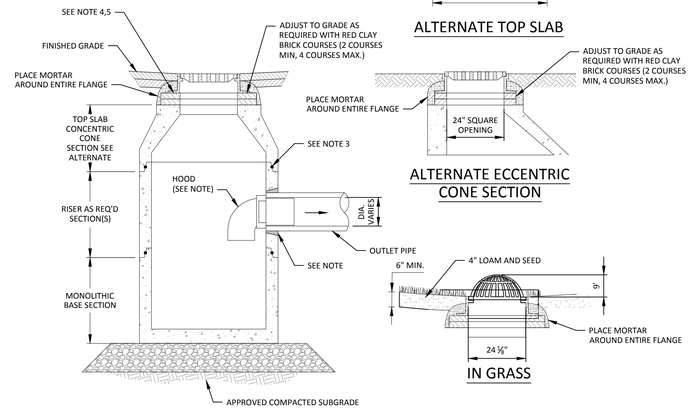


DD-1 PRE-CAST DRAIN MANHOLE
NOT TO SCALE



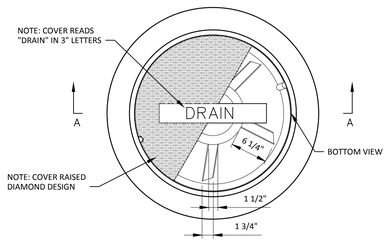
DD-2 PRE-CAST CATCH BASIN
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."

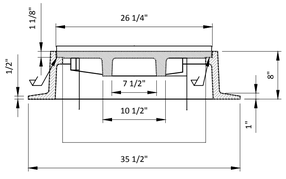


DD-5 TYPICAL PRECAST CONCRETE CATCH BASIN WITH HOOD
NOT TO SCALE

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."



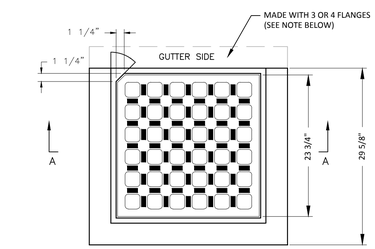
PLAN



SECTION A–A

NOTES:
1. ALL DMH FRAME AND COVERS TO BE LEBARON FOUNDRY MODEL NO. LK110A DRAIN OR EQUAL.
2. MANHOLE FRAME AND COVER TO BE H-20 LOAD RATED.

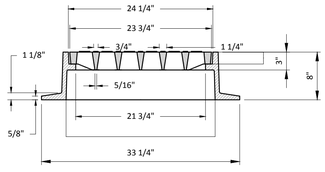
DD-6 MANHOLE FRAME AND COVER DETAIL
NOT TO SCALE



PLAN

RECTANGLES 3/4"X1-3/4" RAISED 1/8" FROM COVER TOP

2-1/2" SQUARE OPENINGS



SECTION A–A

NOTE:
ALL CATCH BASIN FRAME AND GRATES TO BE LEBARON FOUNDRY MODEL NO. LF 246 DRAIN OR EQUAL WITH 4 FLANGES UNLESS OTHERWISE SPECIFIED ON THE CONTRACT DRAWINGS.

DD-7 CATCH BASIN FRAME AND GRATE DETAIL
NOT TO SCALE

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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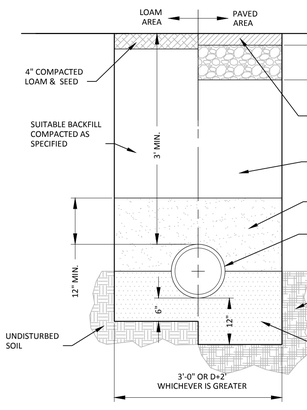
_____
TOWN CLERK



DD-8 DRAIN TRENCH
NOT TO SCALE

NOTES:
1. ALL MATERIAL SHALL CONFORM TO CITY/TOWN OF DEPARTMENT OF PUBLIC WORKS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO CITY/TOWN SPECIFICATIONS.
3. IN LIEU OF THE 12" GRAVEL COURSE AND 9" OF CRUSHED GRAVEL, 18" OF CRUSHED GRAVEL OR RECLAIMED STABILIZED BASE MAY BE USED AS A BASE FOR THE PAVEMENT REPAIR.
4. MATERIAL SHALL BE REPLACED IN KIND WHENEVER POSSIBLE.
5. A MINIMUM 2' CUTBACK IS REQUIRED AT THE TOP OF THE TRENCH WALL OVER UNDISTURBED MATERIAL.

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37361
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

TOWN OF NANTUCKET PLANNING BOARD

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REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-DRAINAGE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-19	SCALE: NOTED
	SHEET: 20 OF 26

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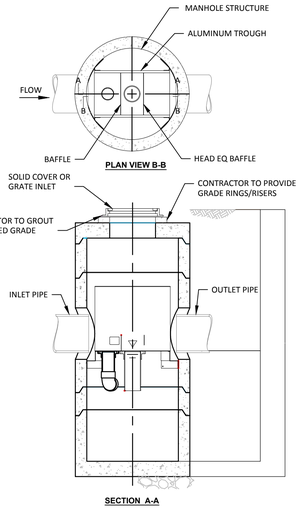


FRAME AND COVER

(DIAMETER VARIES)
N.T.S.

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. VORTSENTRY HS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.

INSTALLATION NOTES
1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTSENTRY HS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
3. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
4. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
5. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

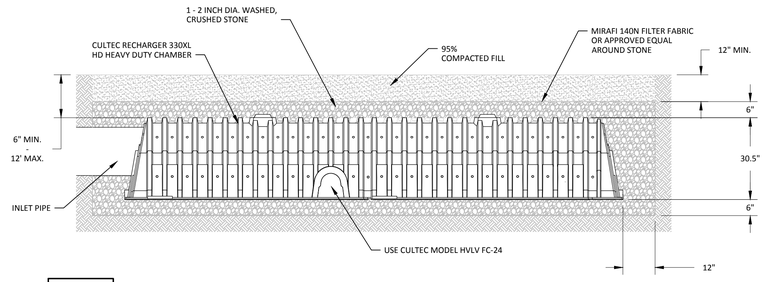
NOTES

"ANY MANUFACTURE'S NAMES AND/OR MODEL NUMBERS IDENTIFIED HEREIN ARE INTENDED TO ASSIST IN ESTABLISHING A GENERAL LEVEL OF QUALITY, CONFIGURATION, FUNCTIONALITY, AND APPEARANCE REQUIRED. THIS IS NOT A PROPRIETARY SPECIFICATION AND IT SHOULD BE NOTED THAT "OR APPROVED EQUAL" APPLIES TO ALL PRODUCTS DENOTED HEREIN. IT IS UNDERSTOOD THAT ALL MANUFACTURERS WILL HAVE MINOR VARIATIONS IN CONFIGURATION, APPEARANCE, AND PRODUCT SPECIFICATION TO ENCOURAGE OPEN AND COMPETITIVE INVOLVEMENT FROM MULTIPLE MANUFACTURERS THAT ARE ABLE TO SUPPLY SIMILAR PRODUCTS."

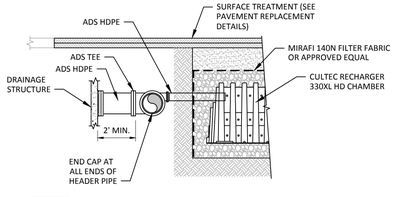
Underground Retention / Infiltration Areas for Watershed

No.	Watershed	Storage Area	No. Storage Chambers	Vortsentry Model
1	S1	46.67'W x 27.24'L x 6.75'H	25	HS72
2	S2	37.58'W x 43.34'L x 6.75'H	36	HS72
3	S3	37.58'W x 51.39'L x 6.75'H	44	HS84
4	S4	55.75'W x 35.29'L x 6.75'H	42	HS84
5	S5, S6	28.50'W x 43.34'L x 6.75'H	27	HS84
6	S7	46.67'W x 47.37'L x 6.75'H	50	HS84
7	S8, S9	37.58'W x 63.47'L x 6.75'H	56	HS96
8	S10, S11, S12, S13, S14	55.75'W x 51.39'L x 6.75'H	66	HS96
9	S15	46.67'W x 59.44'L x 6.75'H	65	HS84

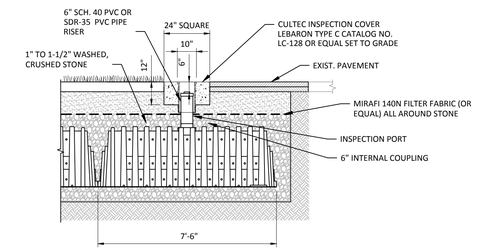
DD-14 VORTSENTRY HD STANDARD DETAIL
NOT TO SCALE



DD-9 CULTEC RECHARGER 330XL HD PROFILE
NOT TO SCALE

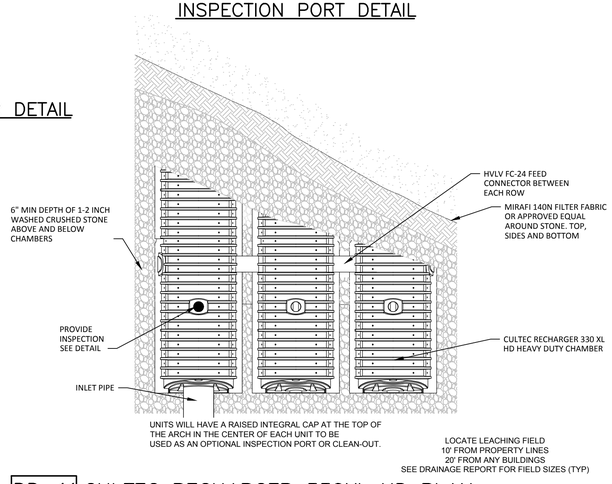


DD-10 HEADER PIPE DETAIL

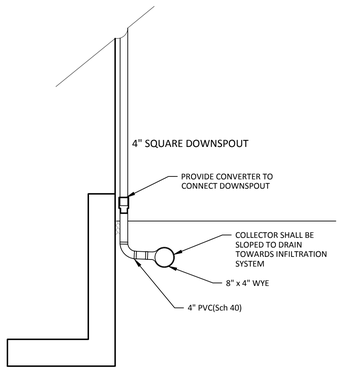


INSPECTION PORT DETAIL

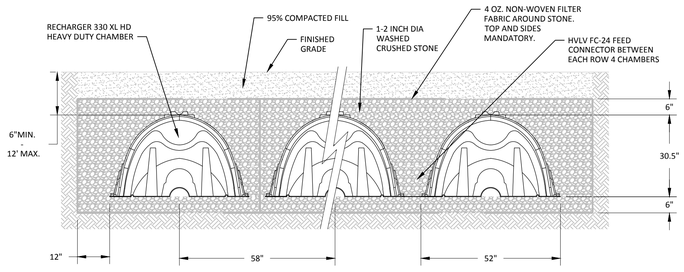
CLEANOUT ACCESS COVER DETAIL
NOT TO SCALE



DD-11 CULTEC RECHARGER 330XL HD PLAN
NOT TO SCALE



DD-12 BUILDING DOWNSPOUT ROOF DRAIN DETAIL
NOT TO SCALE



GENERAL NOTES
RECHARGER 330XL HD BY CULTEC, INC. OF BROOKFIELD, CT.
STORAGE PROVIDED = 11.32 CF/FT PER DESIGN UNIT.
REFER TO CULTEC, INC.'S CURRENT RECOMMENDED INSTALLATION GUIDELINES.
USE RECHARGER 330XL HD HEAVY DUTY FOR TRAFFIC AND/OR H-25 APPLICATIONS.

ALL RECHARGER 330XL HD HEAVY DUTY UNITS ARE MARKED WITH A COLOR STRIPE FORMED INTO THE PART ALONG THE LENGTH OF THE CHAMBER.
ALL RECHARGER 330XL HD CHAMBERS MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

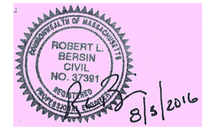
DD-8 CULTEC RECHARGER 330XL HD SECTION
NOT TO SCALE

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____ , CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK



APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

FOR REGISTRY USE ONLY

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
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REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-DRAINAGE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

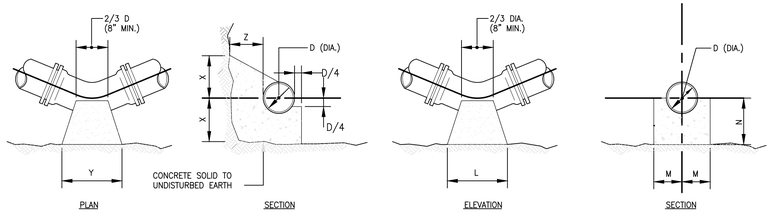
C-20

SCALE: NOTED

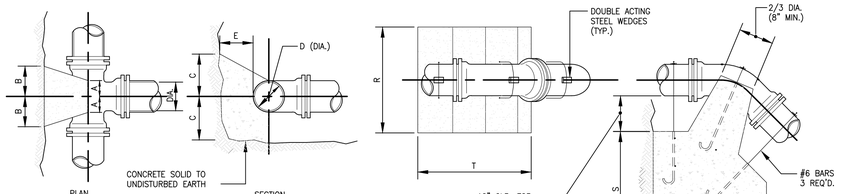
SHEET: 21 OF 26

S:\Clients\Richmond Greatpoint Development\CAD\Details\ dwg, MCD20-DRAINAGE (4), 8/4/2016 6:48:15 AM

FOR REGISTRY USE ONLY



HORIZONTAL BENDS VERTICAL BENDS



TEES CONC. ANCHORAGE

NOTES:

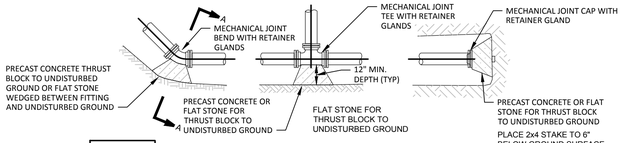
1. ALL CONCRETE SHALL BE CL. B (AE) CONCRETE AND COMPLY WITH STANDARD SPECIFICATIONS.
2. CONCRETE THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED EARTH. IN AREAS WHERE BEARINGS SOILS HAVE BEEN DISTURBED, RESTRAINED JOINTS SHALL BE USED.
3. ALL FORCE MAIN BENDS, TEES, MAIN TAPS, AND END CAPS SHALL REQUIRE A CONCRETE THRUST BLOCK.

TEES						
		PIPE SIZE-D (DIA.)				
		6"	8"	12"	16"	20"
	A	8"	10"	1'-0"	1'-3"	1'-6"
	B	8"	10"	1'-2"	1'-4"	1'-6"
	C	10"	1'-0"	1'-3"	1'-6"	1'-8"
	E	8"	10"	1'-2"	1'-6"	1'-10"

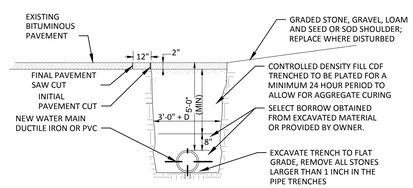
HORIZONTAL BENDS						
BEND		PIPE SIZE-D (DIA.)				
		6"	8"	12"	16"	20"
1/8	X	1'-0"	1'-0"	1'-0"	1'-3"	1'-6"
	Y	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"
	Z	8"	10"	1'-2"	1'-4"	1'-6"
1/16	X	1'-0"	1'-0"	1'-0"	1'-3"	1'-6"
	Y	1'-0"	1'-4"	1'-6"	1'-9"	2'-6"
	Z	8"	10"	1'-2"	1'-4"	1'-6"
1/32	X	1'-0"	1'-0"	1'-0"	1'-2"	1'-4"
	Y	1'-0"	1'-0"	1'-2"	1'-4"	1'-6"
	Z	8"	10"	1'-2"	1'-4"	1'-6"

VERTICAL BENDS						
BEND		PIPE SIZE-D (DIA.)				
		6"	8"	12"	16"	20"
1/8	L	1'-3"	1'-8"	2'-6"	3'-6"	4'-8"
	M	7"	8"	11"	1'-4"	1'-6"
	N	7"	8"	11"	1'-4"	1'-6"
1/16	L	9"	1'-0"	1'-9"	2'-6"	3'-0"
	M	7"	7"	10"	1'-0"	1'-2"
	N	7"	7"	8"	10"	1'-0"
1/32	L	6"	8"	1'-0"	1'-4"	1'-9"
	M	7"	7"	10"	1'-0"	1'-2"
	N	7"	7"	8"	10"	1'-0"

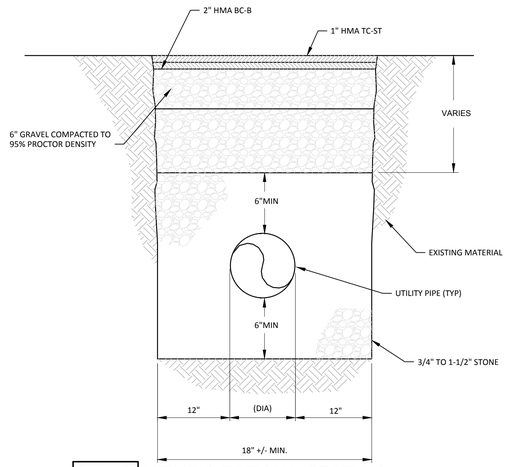
ANCHORAGES						
BEND		PIPE SIZE-D (DIA.)				
		6"	8"	12"	16"	20"
1/8	R	2'-6"	3'-0"	4'-6"	5'-4"	6'-0"
	S	2'-6"	2'-9"	3'-6"	2'-6"	5'-6"
	T	3'-0"	4'-0"	4'-9"	7'-0"	9'-6"
1/16	R	2'-0"	2'-8"	4'-0"	4'-6"	5'-0"
	S	1'-9"	2'-3"	2'-6"	3'-2"	3'-8"
	T	2'-6"	3'-4"	4'-0"	6'-0"	8'-6"
1/32	R	1'-6"	2'-0"	3'-0"	3'-8"	4'-3"
	S	1'-3"	1'-9"	2'-0"	2'-4"	2'-6"
	T	2'-0"	2'-6"	3'-0"	4'-6"	5'-9"



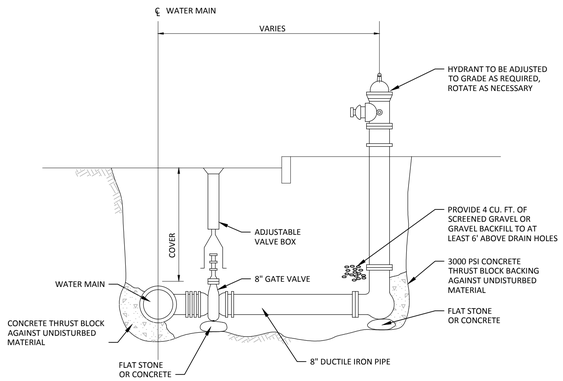
DU–2 TYPICAL THRUST BLOCK DETAILS
NOT TO SCALE



DU–1 TYPICAL TRENCH IN ROADWAY SURFACE
(RIGHT SIDE INSTALLATION LEFT SIDE SIMILAR)
NOT TO SCALE

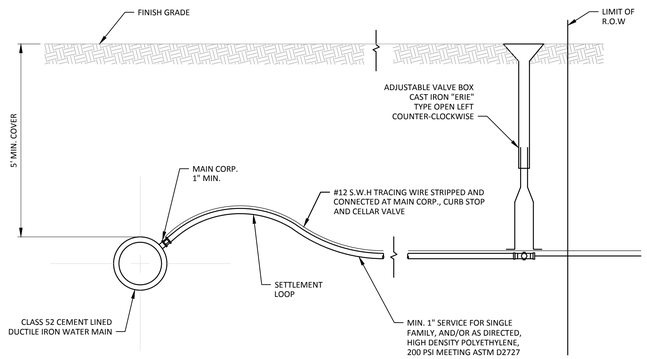


DU–3 UTILITY TRENCH SECTION
NOT TO SCALE
COORDINATE ALL UTILITY TRENCHING
WITH APPROPRIATE UTILITY.

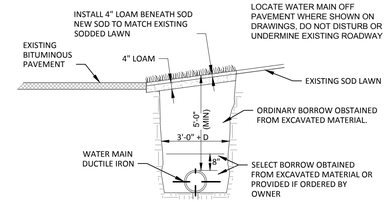


NOTES:
1. HYDRANTS ARE TO BE INSTALLED WITHIN THE ROADWAY LAYOUT
2. FOR HYDRANTS INSTALLED AT DEAD END OF WATER MAINS; INSTALL VALVE WITH RESTRAINED JOINTS AND ONE FULL LENGTH OF PIPE BETWEEN VALVE AND HYDRANT WITH RESTRAINED JOINTS
3. ALL HYDRANT BRANCH PIPING TO BE 8" DUCTILE IRON PIPE.

DU–4 FIRE HYDRANT DETAIL
NOT TO SCALE



DU–5 TYPICAL PERMANENT SERVICE CONNECTION DETAIL
NOT TO SCALE



DU–6 TYPICAL TRENCH IN SHOULDER (SOD)
(SHOWN RIGHT SIDE INSTALLATION LEFT SIDE SIMILAR)
NOT TO SCALE

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
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REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-UTILITIES

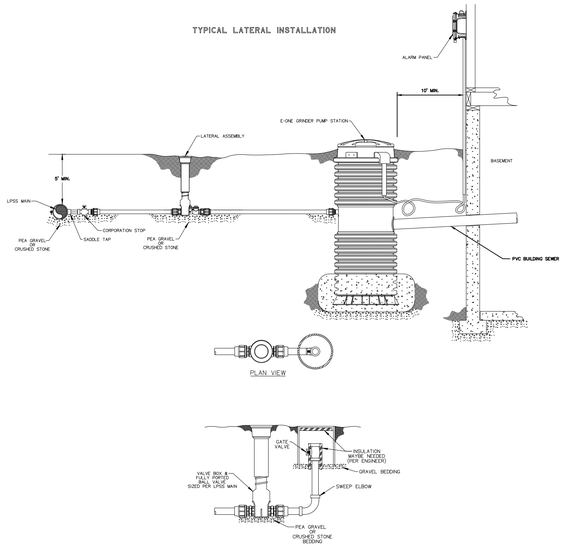
CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016

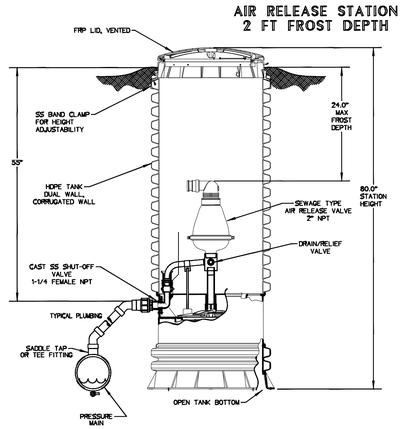
C-21

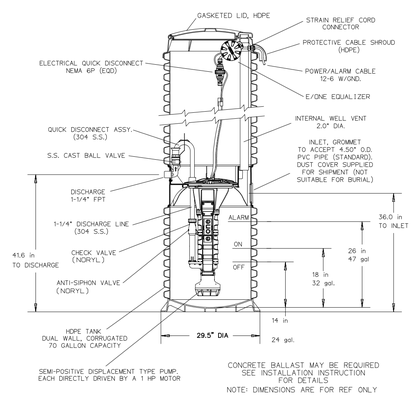
SCALE: NOTED

SHEET: 22 OF 26

S:\Clients\Richmond Grasspond Development\CAD\Details1.dwg, MC21-DETAIL-UTILITIES (2), 8/4/2016 6:46:19 AM

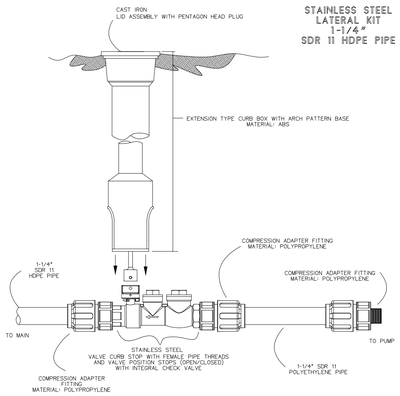






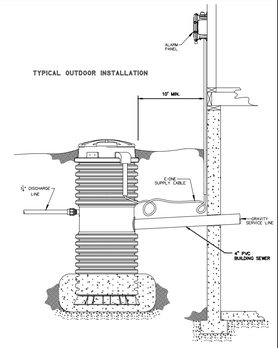
DH071

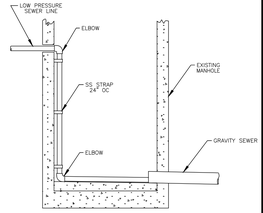
- SIMPLEX PUMP CHAMBER ASSEMBLY FOR ALL SINGLE FAMILY LOTS
- DUPLEX PUMP CHAMBER ASSEMBLY FOR NON GRAVITY MULTI-FAMILY UNITS.



NOTES:

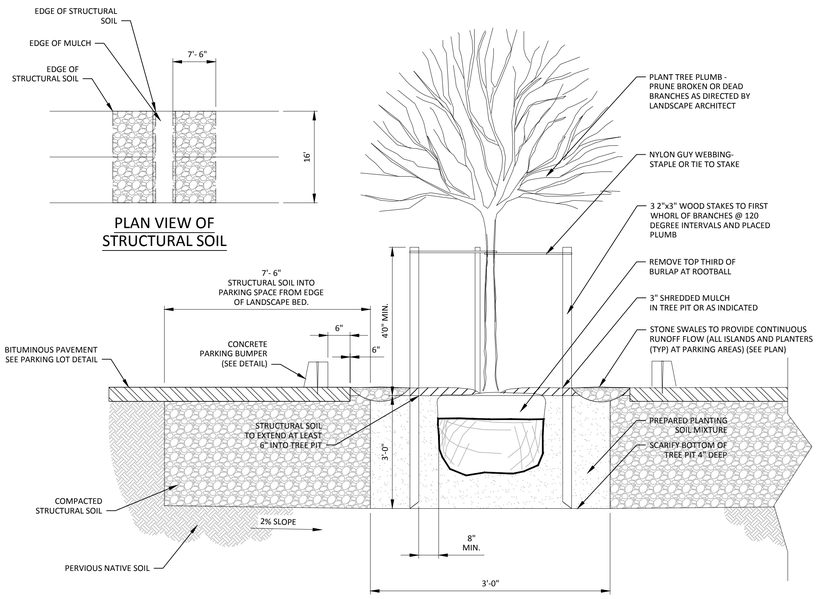
1. SS CURB STOP/CHECK VALVE AND FITTINGS ARE PROVIDED SEPARATELY, TO BE ASSEMBLED BY OTHERS
2. TO ASSEMBLE, APPLY A DOUBLE LAYER OF TEFLON TAPE, AND 1 LAYER OF PIPE DOPE (SUPPLIED BY OTHERS) TO THE THREADS ON THE PLASTIC FITTINGS AND INSTALL PER THE MANUFACTURER'S INSTRUCTIONS
3. ASSEMBLY IS TO BE PRESSURE TESTED
4. ASSEMBLY IS TO BE USED WITH SDR11 HDPE PIPE



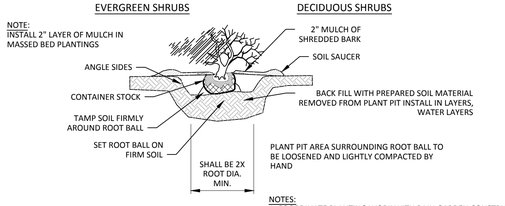


TYPICAL DROP CONNECTION LPSS IN EXISTING MANHOLE

DM-5 E ONE SEWER SYSTEM DETAILS
NOT TO SCALE

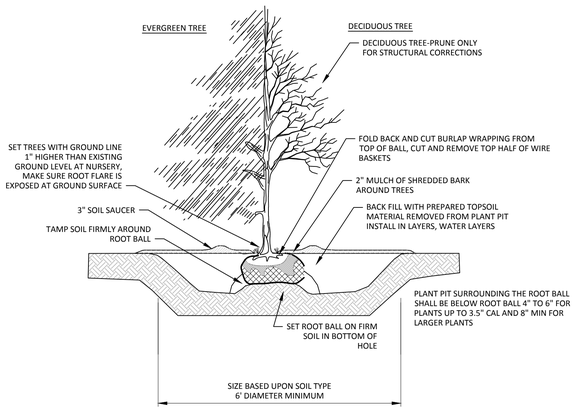


DM-3 TREE PIT WITH STRUCTURAL DETAIL
NOT TO SCALE



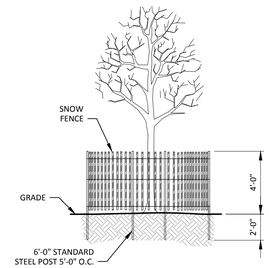
NOTES:
1. BEFORE STARTING THE PLANTING, ADD 3"-4" OF WELL COMPOSTED LEAVES OR YARD WASTE ACROSS PLANTING AREA(S) AND INCORPORATE COMPOST INTO THE TOP 6" OF SOIL.
2. EXCAVATE PLANT PIT MIXING TOPSOIL, SUBSOIL AND COMPOST INTO PREPARED TOPSOIL AND USE FOR PLANT PIT BACKFILL.

NOTES:
1. COORDINATE PLANTING WORK WITH RAIN GARDEN CONSTRUCTION AND FIT NEW TREES AND SHRUBS INTO SANDY LOAM FILTER SOIL AND INTO UPPER AREA OF FILTER TRENCH AS REQUIRED.
2. COORDINATE WORK WITH NO MOW LAWN SEEDING WORK.



DM-4 TREE AND SHRUB PLANTING DETAIL
NOT TO SCALE

NOTES:
1. FENCING SHALL BE ORANGE RESINET SM60 BARRIER FENCE "SNOW FENCE" OR APPROVED EQUIVALENT.
2. POST SHALL BE HOT ROLLED RAIL STEEL AND FORMED INTO A "T". DIMENSIONS OF "T" POST SECTION, APPROXIMATELY 1 7/16" X 1 5/16" X 1/8" X 6' (SIX FEET) LONG. THE POST SHALL BE PAINTED GREEN OR GALVANIZED.
3. THE FENCING SHALL REMAIN IN PLACE UNTIL ALL EXCAVATION WORK IS COMPLETED AND THE SURFACE HAS BEEN RE-ESTABLISHED



DM-1 TREE PROTECTION DETAIL
NOT TO SCALE

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
_____
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_____
TOWN OF NANTUCKET PLANNING BOARD

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REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC
RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
DETAIL-LANSCAPE

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
C-22	SCALE: *NOTED*
	SHEET: 23 OF 26

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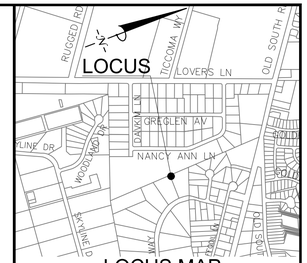
Existing Contour

Test Pit Location 7/14/2016



LOCUS MAP
N.T.S

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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Dimensions are as indicated.

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REVISIONS

NO.	DATE	COMMENT

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
TEST PIT LOCATION

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	
C-23	SCALE: NOTED
	SHEET: 24 OF 26

ROBERT L. BERSIN CIVIL NO. 37391 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
8/5/2016

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

I, _____, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

_____
TOWN CLERK

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

_____
TOWN OF NANTUCKET PLANNING BOARD

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TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 1

DEPTH FROM SURFACE FEET INCHES TOP EL.=34.0	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–8"	FILL	MED.–V. SAND	7.5YR 7/8		SILTY
8–18"	C1	COARSE SAND	5YR 5/8		20% GRAVEL
18–32"	C2	COARSE SAND	10YR 8/3	PT	10% GRAVEL
32–64"	C3	COARSE SAND	10YR 7/4		CLEAN SAND
64–120"	C4	COARSE SAND	10YR8/3		CLEAN SAND

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 2

DEPTH FROM SURFACE FEET INCHES TOP EL.=11.0	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–16"	C1	LOAMY SAND	7.5YR 4/2	PT	WET
GROUND WATER FOUND @ 40"					
16–66"	C2	COARSE SAND	10YR6/3		10% GRAVEL

ESTIMATED SEASONAL HIGH GROUND WATER ELEV 7.2

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 3

DEPTH FROM SURFACE FEET INCHES TOP EL.=10.6	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–30"	C1	COARSE SAND	5YR6/8	PT	
GROUND WATER FOUND @ 35"					
30–66"	C2	COARSE SAND	10YR8/1		5% GRAVEL

ESTIMATED SEASONAL HIGH GROUND WATER ELEV 6.9

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 4

DEPTH FROM SURFACE FEET INCHES TOP EL.=31.2	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–4"	A	SANDY LOAM	10YR5/1	PT	TOPSOIL FROM ADJACENT LOAM PILE
4–120"	C	MEDIUM/ COARSE SAND IN LAYERS	2.5Y7/2		5% GRAVEL

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 5

DEPTH FROM SURFACE FEET INCHES TOP EL.=37.4	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–14"	C1	LOAMY SAND			MIXED STONE DUST/CRUSHED STONE
				LAB SAMPLE TAKEN	
14–120"	C2	LOAMY SAND			MIXED FILL CRUSHED STONE

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 6

DEPTH FROM SURFACE FEET INCHES TOP EL.=40.2	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–12"	A	SANDY LOAM	2.5Y2.5/1		DARK RICH LOAM
12–20"	B	LOAMY SAND	7.5YR6/8		ORANGE
				PT	
				LAB SAMPLE TAKEN	
20–120"	C1	MEDIUM SAND	10YR8/5		2% GRAVEL BRIGHT YELLOW

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 7

DEPTH FROM SURFACE FEET INCHES TOP EL.=42.2	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–12"	A	SANDY LOAM	10YR3/3		MEDIUM BROWN LOAM
12–26"	B	LOAMY SAND	10YR6/6		YELLOW/BROWN
				PT	LAB SAMPLE TAKEN
26–120"	C1	MEDIUM/ COARSE SAND	10YR8/4		CLEAN SAND PALE TAN

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 8

DEPTH FROM SURFACE FEET INCHES TOP EL.=45.9	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–10"	A	SANDY LOAM	2.5Y2.5/3		DARK RICH LOAM
10–20"	B	LOAMY SAND	7.5YR7/8		ORANGE
				PT	
20–120"	C1	COARSE SAND	10YR8/3		LOOSE SAND & GRAVEL TAN/LIGHT BROWN

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 9

DEPTH FROM SURFACE FEET INCHES TOP EL.=46.5	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–12"	A	SANDY LOAM	2.5Y2.4/1		DARK BROWN LOAM
12–21"	B	LOAMY SAND	10YR6/8		YELLOW/ORANGE
21–38"	C1	FINE SAND	2.5Y8/1	PT	FINE WHITE SAND
38–120"	C2	MEDIUM/ COARSE SAND	10YR8/1		CLEAN WHITE SAND

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 10

DEPTH FROM SURFACE FEET INCHES TOP EL.=49.8	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–6"	A	SANDY LOAM	2.5Y2.4/2		
6/12"	B	SANDY LOAM	2.5Y2.7/6		
12–32"	C1	CLAY	5GY7/1		
32–60"	C2	SANDY CLAY LOAM	10YR7/8		LOOKS LIKE FILL MIXED "A"&CLAY
				PT	
60–120"	C3	MEDIUM SAND	10YR8/1		CLEAN WHITE SAND

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 11

DEPTH FROM SURFACE FEET INCHES TOP EL.=48.2	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–12"	A	LOAMY SAND	10YR2/1		DARK RICH LOAM
12–24"	B	SANDY LOAM	10YR7/8		YELLOW/ORANGE
21–48"	C1	LOAMY SAND	2.5Y7/6	PT	YELLOW SAND SOME SILT
48–120"	C2	MEDIUM/ COARSE SAND	10YR8/2		CLEAN WHITE SAND

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

TEST PIT INFORMATION

DEEP OBSERVATION HOLE LOG 12

DEPTH FROM SURFACE FEET INCHES TOP EL.=44.8	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS CONSISTENCY, % GRAVEL)
0–10"	A	SANDY LOAM	7.5YR3/3		DARK BROWN LOAM
10–28"	B	LOAMY SAND	7.5YR6/8		YELLOW/ORANGE
28–51"	C1	LOAMY SAND	7.5YR7/4	PT LAB SAMPLE TAKEN	TAN/LIGHT BROWN SAND SOME SILT
51–120"	C2	COARSE SAND	10YR8/2		LIGHT TAN CLEAN SAND

ESTIMATED SEASONAL HIGH GROUND WATER = 6.9+

SOIL EXAMIINATIONS PERFORMED
BY: TIM BENNETT, SE2748
ALL PERCOLATION RATES <2

CLERK'S CERTIFICATION ON THE PLAN

DATE: _____

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_____
TOWN CLERK

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. BERSIN
CIVIL
NO. 37391
REGISTERED PROFESSIONAL ENGINEER
8/5/2016

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: _____
DATE ENDORSED: _____
DATE APPROVED: _____

TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
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REVISIONS

NO.	DATE	COMMENT

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_____
TOWN CLERK

PURPOSE:
DEFINITIVE SUBDIVISION

LOCUS:
NANCY ANN LANE

PREPARED FOR:
RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE:
SOIL LOGS

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	
C-24	SCALE: *NOTED*
	SHEET: 25 OF 26

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GENERAL CONSTRUCTION NOTES

1. ALL SITE PREPARATION NECESSARY TO COMPLETE THIS PROJECT ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
2. THE CONTRACTOR SHALL COORDINATE ALL NECESSARY POLICE DETAILS WITHE THE LOCAL POLICE DEPARTMENT.
3. THE CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL REQUIRED CONSTRUCTION PERMITS. ALL FEES INCLUDING POLICE DETAILS AND POSTING OF BONDS, ARE TO BE PAID BY THE CONTRACTOR, AND COORDINATED WITH THE OWNER AND THE ENGINEER.
4. ALL EXISTING CONDITIONS SHOWN SHALL BE CONSIDERED APPROXIMATE AND ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED CONDITIONS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLING ANY WORK.
5. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF PREVIOUS OWNERS, VARIOUS UTILITY COMPANIES, AND WHEREVER POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS GUARANTEED AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES, ANY GOVERNING PERMITTING AUTHORITIES, AND "DIGSAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK IN PREVIOUSLY UNALTERED AREAS TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RESOLVE CONFLICTS BETWEEN THE PROPOSED UTILITIES AND FIELD-LOCATED UTILITIES AND SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED, INCOMPLETELY OR INACCURATELY SHOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ACCURATE RECORDS OF THE LOCATION AND ELEVATION OF ALL WORK INSTALLED AND EXISTING UTILITIES FOUND DURING CONSTRUCTION FOR THE PREPARATION OF THE AS-BUILT PLAN.
6. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL EXISTING UTILITIES IN WORKING ORDER AND FREE FROM DAMAGE DURING THE ENTIRE DURATION OF THE PROJECT. ALL COSTS RELATED TO THE REPAIR OF UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. EXCAVATION REQUIRED WITHIN THE PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER.
7. THE CONTRACTOR SHALL UTILIZE ALL PRECAUTIONS AND MEASURES TO ENSURE THE SAFETY OF THE PUBLIC, ALL PERSONAL AND PROPERTY DURING CONSTRUCTION IN ACCORDANCE WITH OSHA STANDARDS, INCLUDING BARRICADES, SAFETY LIGHTING, CONES, POLICE DETAIL AND/OR FLAGMEN AS DETERMINED NECESSARY BY THE ENGINEER AND/OR OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF POLICE DETAIL AND FOR COORDINATING WITH THE LOCAL OR STATE POLICE DEPARTMENT FOR ALL REQUIRED POLICE DETAIL.
8. ALL TRENCHING WORK WITHIN A PUBLIC OR PRIVATE ROADWAY SHALL BE COORDINATED WITH THE OWNER AND/OR PROPER LOCAL & STATE AGENCIES. TRENCH SAFETY AND RELATED PERMITS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THIS WORK MAY BE REQUIRED TO TAKE PLACE OUTSIDE OF NORMAL HOURS OF OPERATION FOR THE FACILITY.
9. ALL TRENCH WORK WITHIN EXISTING PAVEMENT SHALL BE NEATLY SAWCUT PER THE APPLICABLE DETAILS. TRENCH WORK BACKFILL SHALL BE PLACED AND COMPACTED IN 8-INCH LIFTS OR AS OTHERWISE INDICATED ON PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY SETTLING DUE TO INADEQUATE COMPACTION AS DETERMINED BY THE ENGINEER WITHIN THE 36 MONTH WARRANTY PERIOD.
10. THE CONTRACTOR SHALL MAKE ALL CONNECTION ARRANGEMENTS WITH UTILITY COMPANIES, AS NECESSARY.
11. ALL IMPORTED MATERIAL SHALL BE CLEAN AND FREE OF ANY HAZARDOUS WASTE OR OTHER CHEMICAL CONTAMINATION. NO MATERIAL WILL BE ACCEPTED FROM AN EXISTING OR FORMER 21E SITE AS DEFINED BY THE MASSACHUSETTS CONTINGENCY PLAN 310 CMR 40.0000.
12. SITE LAYOUT SURVEY REQUIRED FOR CONSTRUCTION WILL BE PROVIDED BY THE CONTRACTOR AND SHALL BE CONDUCTED BY A MASSACHUSETTS' REGISTERED PROFESSIONAL LAND SURVEYOR. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE SURVEYOR FOR ALL SITE SURVEY WORK. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN AS-BUILT PLAN OF THE SITE CONDUCTED BY REGISTERED PROFESSIONAL LAND SURVEYOR AND APPROVED BY THE ENGINEER.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL HORIZONTAL AND VERTICAL CONTROL POINTS DURING CONSTRUCTION INCLUDING BENCHMARK LOCATIONS AND ELEVATIONS AT CRITICAL AREAS. THE LOCATION OF ALL CONTROL POINTS AND BENCHMARKS SHALL BE COORDINATED WITH THE ENGINEER.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL GRADE STAKES AND MONUMENTATION. GRADE STAKES SHALL REMAIN IN PLACE UNTIL A FINAL INSPECTION OF THE SITE HAS BEEN COMPLETED BY THE ENGINEER. ANY RE-STAKING OF PREVIOUSLY SURVEYED SITE FEATURES SHALL BE THE RESPONSIBILITY (INCLUDING COST) OF THE CONTRACTOR.
15. UNLESS OTHERWISE SPECIFIED ON THE PLANS AND DETAILS/SPECIFICATIONS, ALL SITE CONSTRUCTION MATERIALS AND METHODOLOGIES ARE TO CONFORM TO THE MOST RECENT VERSION OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION (MASSACHUSETTS HIGHWAY DEPARTMENT) STANDARD SPECIFICATIONS (THE MASSACHUSETTS HIGHWAY DEPARTMENT 1988 STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, THE 2002 SUPPLEMENTAL SPECIFICATIONS, AND THE 2005 STANDARD SPECIAL PROVISIONS).
16. CONSTRUCTION AND/OR DEMOLITION SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS REGARDING NOISE, VIBRATION, DUST, SEDIMENTATION CONTAINMENT, HAZARDOUS WASTES AND TRENCH WORK.
17. SOLID WASTES AND/OR CONSTRUCTION OR DEMOLITION DEBRIS SHALL BE COLLECTED AND STORED IN A SECURED DUMPSTER. THE DUMPSTER SHALL MEET ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS.
18. THE CONTRACTOR SHALL RESTORE ALL SITE SURFACES OFF SCOPE EQUAL TO THEIR ORIGINAL CONDITION AFTER CONSTRUCTION IS COMPLETE. AREAS NOT DISTURBED BY CONSTRUCTION SHALL BE LEFT NATURAL. THE CONTRACTOR SHALL TAKE CARE TO PREVENT DAMAGE TO SHRUBS, TREES, OTHER LANDSCAPING AND/OR NATURAL FEATURES. IF THE PLANS FAIL TO IDENTIFY ALL LANDSCAPE FEATURES, EXISTING CONDITIONS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK.
19. UNPAVED AREAS DISTURBED BY THE WORK SHALL HAVE A MINIMUM OF 6-INCHES OF LOAM AND HYDROSEED INSTALLED AS SHOWN ON THE PLAN AND/OR DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING ANY LOAM AND SEEDED AREAS UNTIL GROWTH IS ESTABLISHED AND APPROVED BY THE ENGINEER AND/OR OWNER.
20. ALL PROPOSED STRUCTURES AND COMPONENTS SHALL BE DESIGNED BY THEIR MANUFACTURERS TO WITHSTAND AASHTO H-20 LOADING. PRECAST CONCRETE SHALL HAVE A MINIMUM 28-DAY STRENGTH OF 4,000 PSI UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
21. THE CONTRACTOR SHALL PROVIDE A UNIT PRICE COST IN CUBIC YARD MEASURE FOR LEDGE AND/OR BOULDER REMOVAL. LEDGE AND/OR BOULDERS LESS THAN 1 CUBIC YARD IN SIZE BASED ON THE AVERAGE DIMENSIONS WILL NOT BE CONSIDERED PAYABLE ROCK. UNIT PRICE SHALL BE GIVEN FOR BOTH ON AND OFF SITE DISPOSAL. COST OF REPLACEMENT MATERIAL SHALL BE INCLUDED IF ADDITIONAL FILL MATERIAL IS REQUIRED.
22. DEVIATION OR ALTERATION OF THE PROPOSED WORK IS TO BE VERIFIED BY THE ENGINEER AND OWNER PRIOR TO CONDUCTING THE WORK.
23. AT THE END OF CONSTRUCTION, THE CONTRACTOR SHALL REMOVE ALL CONSTRUCTION DEBRIS AND SURPLUS MATERIALS FROM THE SITE. A THOROUGH INSPECTION OF THE WORK SITE AND PERIMETER IS TO BE MADE AND ALL DISCARDED MATERIALS AND WIND BLOWN OR WATER CARRIED DEBRIS, SHALL BE COLLECTED, AND REMOVED FROM THE SITE.

STORMWATER FACILITY OPERATION & MAINTENANCE:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSPECTION AND MAINTENANCE OF ALL EROSION CONTROL AND STORMWATER MANAGEMENT FACILITIES UNTIL THE PROJECTS IS DEEMED AS COMPLETE BY THE OWNER AND ENGINEER.
2. THE CONTRACTOR SHALL INSPECT AND CLEAR ALL INLETS, MANHOLES, INFILTRATION BASINS AND OTHER STRUCTURES OF SEDIMENT AND DEBRIS PRIOR TO THE OWNER'S ACCEPTANCE.
3. THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL SEDIMENT AND DEBRIS IN A PRE-APPROVED LOCATION.
4. THE CONTRACTOR SHALL REFER TO THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR INFORMATION REGARDING STORMWATER FACILITY OPERATION AND MAINTENANCE REQUIREMENTS. THE CONTRACTOR SHALL MAINTAIN A WORKING COPY ON SITE AT ALL TIMES.
5. THE CONTRACTOR SHALL INSPECT ALL STORMWATER FACILITIES AFTER EVERY MAJOR RAINFALL EVENT FOR THE ENTIRE DURATION OF THE CONSTRUCTION PROJECT AND THE FIRST 3-MONTHS AFTER COMPLETION TO MONITOR SYSTEM OPERATION.
6. SPECIFIC ANNUAL MAINTENANCE SHALL BE AS FOLLOWS:
   A. DRAINAGE STRUCTURES (INLETS, MANHOLES & CATCHBASINS): ALL DRAINAGE STRUCTURES SHALL BE INSPECTED ANNUALLY TO MONITOR FOR PROPER OPERATION, COLLECTION OF LITTER OR DEBRIS, AND STRUCTURAL DETERIORATION. THE BASINS SHALL BE CLEANED OF SEDIMENT (INCLUDING SUMPS) AS NECESSARY, AND REPAIRED WHEN REQUIRED.
   B. SWALES: GENERAL INSPECTION OF THE SWALE SHALL BE CONDUCTED ANNUALLY AND AFTER MAJOR STORM EVENTS. THE WORK CONSISTS OF REMOVAL OF ANY TRASH AND/OR DEBRIS FROM THE BOTTOM OF THE SWALE, AND REMOVAL OF SEDIMENTATION IF ACCUMULATION IS GREATER THAN OR EQUAL TO 3-INCHES. SEDIMENT SHALL BE PROPERLY DISPOSED OF OFF-SITE IN A PRE-APPROVED LOCATION.
   C. ROUTINE MAINTENANCE: OTHER ROUTINE MAINTENANCE SHALL INCLUDE REMOVAL OF TRASH AND DEBRIS FROM PAVED AND PERIMETER AREAS, AND ANNUAL STREET AND PARKING LOT SWEEPING AFTER THE SPRING THAW TO AVOID EXCESSIVE ACCUMULATION OF SEDIMENT IN THE DRAINAGE SYSTEM. THE PIPES DRAINING THE PROJECT WILL BE INSPECTED ANNUALLY FOR PROPER FLOW.

BASIC CONSTRUCTION SEQUENCE

1. SURVEY AND DELINEATE THE PROPOSED LIMIT OF DISTURBANCE AND LIMIT OF SEDIMENTATION BARRIERS.
2. STAKE OUT THE LOCATIONS FOR SEDIMENTATION BARRIERS (HAYBALES, SILT FENCE, ETC.) AND INSTALL ACCORDING TO THE PLANS. IN NO CASE IS THE LIMIT OF WORK TO EXTEND BEYOND THE SEDIMENTATION BARRIERS/LIMIT OF DISTURBANCE AS SHOWN ON THE PROJECT PLANS AS APPROVED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP).
3. INSTALL TEMPORARY CONSTRUCTION ENTRANCES ONLY IN LOCATIONS INDICATED ON PLANS. NO OTHER ENTRANCES SHALL BE USED TO GAIN ACCESS TO THE SITE BY ANY CONSTRUCTION OR DELIVERY VEHICLES.
4. BEGIN NECESSARY CLEARING AND DEMOLITION WORK.
5. SURVEY AND STAKE OUT CLEARING LIMITS AND ROADWAY/ACCESS DRIVE CENTERLINE.
6. EXCAVATE AND ROUGH GRADE THE PROPOSED DRAINAGE BASINS AND ANY ADDITIONAL TEMPORARY BASINS NECESSARY TO CONTROL SITE RUNOFF AND SEDIMENTS. PERMANENT DRAINAGE BASINS SHALL BE TEMPORARILY SEEDED. PERMANENT DRAINAGE BASIN SEEDING AND PLANTING SHALL BE COMPLETED AFTER THE CONTRIBUTING AREA TO THE BASIN HAS REACHED A MINIMUM OF 80% STABILIZATION AND IS NO LONGER REQUIRED TO BE USED AS A CONSTRUCTION SEDIMENTATION BASIN.
7. BEGIN CLEARING AND GRUBBING IN AREA OF ROADWAYS/DRIVES AND DRAINAGE BASINS. TOPSOIL IS TO BE STRIPPED FROM THE AREA OF THE PROPOSED ROADWAYS AND DRAINAGE BASINS AND STOCKPILED IN APPROVED LOCATIONS. TOPSOIL STOCKPILES ARE TO BE PROTECTED BY A SEDIMENT BARRIER.
8. INSTALL TEMPORARY CONVEYANCE DEVICES (SWALES, CHECK DAMS, PIPES, ETC.) AS NECESSARY TO CONVEY RUNOFF TO TREATMENT AREAS.
9. BEGIN ROUGH GRADING AREAS FOR ROADS AND PARKING. BRING ROUGH GRADING TO PROPER ELEVATIONS AS SOON AS PRACTICABLE. WORK SHALL PROGRESS DILIGENTLY TO MINIMIZE TIME SOILS ARE UN-STABILIZED.
10. BEGIN UTILITY CONSTRUCTION. CONTRACTOR SHALL BE FREE TO INSTALL UTILITIES IN ANY ORDER HE/SHE CHOOSES. ANY EROSION CONTROL DEVICE DISTURBED DURING THE UNDERGROUND UTILITY CONSTRUCTION SHALL BE IMMEDIATELY REPAIRED OR REPLACED IN KIND AND STABILIZED. MODIFY TEMPORARY CONVEYANCE DEVICES AS NECESSARY TO CONVEY RUNOFF TO TREATMENT AREAS.
11. INSTALL DRAINAGE PIPES, DRAINAGE MANHOLES AND CATCH BASINS, AND UNDERGROUND DRAINAGE STRUCTURES. WORK SHALL BEGIN AT THE DRAINAGE BASINS AND PROGRESS UP-GRADIENT. THE DRAINAGE BASIN(S) AND DRAINAGE NETWORK ARE TO BE PROTECTED FROM SEDIMENTATION WITH SILT FENCE AND STRAWBALES UNTIL ALL UN-STABILIZED AREAS ARE STABILIZED WITH STONE SUB-BASE OR VEGETATION. INSTALL SEDIMENT BARRIERS AT ALL POINTS OF ENTRY INTO THE DRAINAGE NETWORK. PARTICULAR CARE SHALL BE TAKEN TO PROTECT THE UNDERGROUND DRAINAGE BASINS FROM SEDIMENT.
12. PERMANENTLY SEED ALL DISTURBED AREAS OUTSIDE OF THE AREA TO BE PAVED.
13. ONCE ALL UNDERGROUND UTILITIES HAVE BEEN CONSTRUCTED, PLACE COMPACTED GRAVEL FOUNDATION AND ROUGH GRADE THE ROADWAYS/PARKING AREAS IN ACCORDANCE WITH THE SITE PLANS AND IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL REGULATIONS AS SOON AS POSSIBLE.
14. BEGIN ROAD AND PARKING CONSTRUCTION PER SITE PLANS AND IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL REGULATIONS. ROADS AND PARKING AREAS ARE NOT TO BE PAVED UNTIL THE ENTIRE PERMANANENT DRAINAGE SYSTEM HAS BEEN INSTALLED AND ALL PIPE CONNECTIONS COMPLETE.
15. FINISH PERMANENT STABILIZATION. SWEEP THE ROADWAY TO REMOVE ALL SEDIMENTS. REPAIR BASINS AS REQUIRED. THE CONTRACTOR SHALL CLEAN AND FLUSH THE DRAINAGE STRUCTURES AND PIPES AT THE END OF CONSTRUCTION AND ALL ACCUMULATED SEDIMENTS IN THE DRAINAGE BASINS SHALL BE REMOVED. CONTRACTOR SHALL INSPECT THE DRAINAGE NETWORK AND REPAIR ANY DAMAGE IMMEDIATELY.
16. COMPLETE ALL REMAINING PLANTING AND SEEDING.
17. REMOVAL OF ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES FOLLOWING VEGETATIVE ESTABLISHMENT OF ALL DISTURBED AREAS SHALL BE APPROVED BY THE ENGINEER AND WHEN THE CONTRIBUTING AREA HAS REACHED A MINIMUM OF 80% STABILIZATION.

GENERAL GRADING AND DRAINAGE NOTES

1. ALL CUT AND FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.
2. CONTRACTOR SHALL ADJUST AND/OR NEATLY SAWCUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH TRANSITION AND CONTINUOUS GRADE.
3. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS UNLESS OTHERWISE DIRECTED BY ENGINEER.
4. PROPOSED ELEVATIONS ARE SHOWN TO FINISHED PAVEMENT OR GRADE UNLESS OTHERWISE SPECIFIED.
5. PARKING AREAS AND TRAVEL LANES ARE NOT TO BE PAVED UNTIL THE ENTIRE PROPOSED DRAINAGE SYSTEM HAS BEEN INSTALLED, COMPACTED PROPERLY AND ALL PIPE CONNECTIONS COMPLETE.
6. DRAINAGE PIPING SHALL BE 12" ADS UNLESS OTHERWISE NOTED.
7. BACKFILL ADJACENT TO PIPES AND STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT AS SPECIFIED. BACKFILL SHALL BE PLACED IN LIFTS NOT TO EXCEED EIGHT INCHES IN THICKNESS AND COMPACTED TO 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN +/- 2% OF OPTIMUM. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99. TESTING OF BACKFILL MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND WILL BE INSPECTED BY THE ENGINEER.
8. ALL DRAINAGE STRUCTURES AND PIPES MUST BE PROPERLY CONNECTED TO THE DRAINAGE SYSTEM PRIOR TO THE INSTALLATION OF ANY PAVEMENT. THIS INCLUDES THE STABILIZATION OF ALL DISTURBED AREAS CONTRIBUTING TO THE DRAINAGE SYSTEMS AND ANY STORMWATER BASIN FLOORS AND SIDE SLOPES.
9. AT SUBSTANTIAL COMPLETION ANY LOW LYING AREAS (NON STORMWATER FEATURES) FOUND TO CREATE PONDING SHALL HAVE LOAM OR SURFACE TREATMENT REMOVED AND THE SUBGRADE MATERIAL SHALL BE REPAIRED AND REGRADED WITH GRANULAR NATIVE BACKFILL MATERIAL. AFTER BACKFILL, LOAM SHALL BE REPLACED AND RESEEDED. NO TOP DRESSING SHALL BE ALLOWED. REGRADED AREAS SHALL BE HOSE TESTED TO ENSURE POSITIVE DRAINAGE AND THE PONDING PROBLEM TO BE ALLEVIATED.

GENERAL DEMOLITION NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR THE RELOCATION, DEMOLITION, REMOVAL AND DISPOSAL, IN A LOCATION APPROVED BY ALL GOVERNING AUTHORITIES AND ENGINEER, OF ALL EXISTING SITE ELEMENTS AND STRUCTURES.
2. THE CONTRACTOR IS RESPONSIBLE FOR THE BACKFILL OF ALL EARTH CAVITIES REMAINING FROM THE DEMOLITION OF THE EXISTING BUILDINGS, FOUNDATIONS, BURIED TANKS AND VAULTS, AND OTHER BURIED CONCRETE STRUCTURES PERFORMED BY OTHERS.
3. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL ROCK, RUBBLE, CONSTRUCTION DEBRIS AND CONCRETE TO ALLOW FOR PROPER GRADING.
4. THE CONTRACTOR HAS THE OPTION TO REUSE CRUSHED CONCRETE, STONE, DRAINAGE STRUCTURES, AND RUBBLE AS SUITABLE FILL PER SPECIFICATION ATTACHMENT A.
5. BURIED CONCRETE STRUCTURES MAY BE FILLED AND LEFT IN PLACE IF APPROVED BY NANTUCKET HEALTH DEPARTMENT.
6. ALL UNDERGROUND UTILITIES TO BE DEMOLISHED.
7. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND LEGAL/PROPER DISPOSAL OF ALL DEBRIS FROM THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THE DISPOSAL PERMIT. THE OWNER WILL OBTAIN BUILDING DEMOLITION PERMIT FROM THE STATE BUILDING DEPARTMENT.
8. THE CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO THE REMOVAL AND/OR RELOCATION OF UTILITIES. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES CONCERNING PORTIONS OF THE WORK WHICH MAY BE PERFORMED BY THE UTILITY COMPANY AND ANY FEES WHICH ARE TO BE PAID TO THE UTILITY COMPANY FOR THEIR SERVICES. THE CONTRACTOR IS RESPONSIBLE FOR PAYING ALL FEES AND CHARGES.
9. THE CONTRACTOR IS TO PROVIDE NOTICE TO ALL UTILITY COMPANIES REGARDING DESTRUCTION, RELOCATION AND REMOVAL OF ALL SERVICE LINES AND CAPPING ALL UTILITY LINES, AS REQUIRED, PRIOR TO COMMENCEMENT OF THE WORK.
10. THE CONTRACTOR SHALL MAINTAIN SAFE, PASSABLE, CONTINUOUS SITE ACCESS AND OPERATION FOR SURROUNDING FACILITIES, AS DEEMED BY THE OWNER, AT ALL TIMES DURING DEMOLITION OF THE EXISTING FACILITIES.
11. PRIOR TO COMMENCEMENT OF DEMOLITION, ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED.
12. BUILDINGS ON SITE WILL BE REMOVED BY OTHERS PRIOR TO START OF CONSTRUCTION. NOT ALL CONCRETE SLABS, CONDUITS, STRUCTURES OR OTHER FEATURES MAY BE SHOWN ON THESE PLANS. PLANS ARE INTENDED TO BE A GENERAL GUIDE OF SITE FEATURES TO BE DEMOLISHED.

ENVIRONMENTAL - EROSION & SEDIMENT CONTROL NOTES

1. THE SITE CONSTRUCTION FOREMAN SHALL BE RESPONSIBLE FOR THE DAILY INSPECTION AND MAINTENANCE OF ALL SEDIMENT AND EROSION CONTROLS AND SHALL IMPLEMENT ALL NECESSARY MEASURES TO CONTROL EROSION AND PREVENT SEDIMENT FROM LEAVING THE SITE.
2. THE CONTRACTOR SHALL INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS DETERMINED NECESSARY IN THE FIELD BY THE ENGINEER BEFORE ANY CONSTRUCTION ACTIVITIES ARE TO BEGIN. THESE MEASURES SHALL BE INSPECTED, MAINTAINED AND REPLACED AS NECESSARY DURING THE ENTIRE CONSTRUCTION PERIOD OF THE PROJECT. SUCH MEASURE SHALL REPRESENT THE LIMIT OF WORK AND ALL WORKERS SHALL BE INFORMED THAT NO CONSTRUCTION ACTIVITY IS TO OCCUR BEYOND THE LIMIT OF WORK AT ANY TIME THROUGH THE CONSTRUCTION PERIOD.
3. A MINIMUM SURPLUS OF 25-FEET OF EROSION CONTROL BARRIER (SILT FENCE, HAYBALE, &/OR SILT SOCK) SHALL BE STORED ONSITE AT ALL TIMES.
4. THE CONTRACTOR SHALL PREVENT ANY SEDIMENT TRANSPORT TO THE ADJACENT PROPERTIES DURING CONSTRUCTION AND UNTIL ACCEPTANCE BY THE OWNER/ENGINEER.
5. A CONSTRUCTION EXIT SHALL BE CONSTRUCTED AS SHOWN IN THE DETAILS TO SHED DIRT FROM CONSTRUCTION VEHICLE TIRES. THE CRUSHED STONE PAD WILL BE REPLACED/CLEANED AS NEEDED TO MAINTAIN ITS EFFECTIVENESS AND RECONSTRUCTED AS NECESSARY DURING SEPARATE PHASES OF THE PROJECT.
6. THE LIMIT OF ALL CLEARING, GRADING AND DISTURBANCE SHALL BE KEPT TO A MINIMUM WITHIN THE PROPOSED AREA OF CONSTRUCTION. THE CONTRACTOR SHALL PHASE THE SITE WORK IN A MANNER TO MINIMIZE AREAS OF EXPOSED OR UNSTABILIZED SOIL. IF TREES ARE TO BE CUT ON THE ENTIRE SITE, ONLY THOSE AREAS WHICH ARE ACTIVELY UNDER CONSTRUCTION SHALL BE GRUBBED. THE REQUIRED SEDIMENTATION CONTROL FACILITIES MUST BE PROPERLY ESTABLISHED, CLEARLY VISIBLE AND IN OPERATION PRIOR TO INITIATING ANY LAND CLEARING ACTIVITY AND/OR OTHER CONSTRUCTION RELATED WORK.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MONITOR LOCAL WEATHER REPORTS DURING CONSTRUCTION AND PRIOR TO SCHEDULING EARTHMOVING OR OTHER CONSTRUCTION ACTIVITIES WHICH WILL LEAVE LARGE DISTURBED AREAS UNSTABILIZED. IF INCLEMENT WEATHER IS FORECAST, THE CONTRACTOR SHALL USE THEIR BEST PROFESSIONAL JUDGEMENT WHEN SCHEDULING CONSTRUCTION ACTIVITIES AND SHALL BE RESPONSIBLE FOR ENSURING THE NECESSARY EROSION CONTROL DEVICES ARE INSTALLED AND FUNCTIONING PROPERLY TO MINIMIZE EROSION FROM ANY IMPENDING WEATHER EVENTS.
8. SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED ON WEEKLY BASIS AND AFTER EACH RAINFALL EVENT OF 0.25 INCH OR GREATER DURING CONSTRUCTION TO ENSURE THAT THE EROSION AND SEDIMENTATION CONTROL MEASURES ARE OPERATING/FUNCTIONING PROPERLY. IDENTIFIED DEFICIENCIES SHALL BE CORRECTED IMMEDIATELY AND NO LATER THAN 24 HOURS AFTER IDENTIFICATION.
9. SOIL STOCKPILES LEFT OVERNIGHT SHALL BE SURROUNDED ON THEIR PERIMETERS WITH SILT SOCK, SILT FENCE, HAYBALES, OR A COMBINATION OF SILT FENCE WITH HAYBALES.
10. DISTURBED AREAS AND SLOPES SHALL NOT BE LEFT UNATTENDED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME SUCH AS DURING THE INACTIVE WINTER SEASON. THE CONTRACTOR SHOULD PROVIDE APPROPRIATE STABILIZATION PRACTICES ON ALL DISTURBED AREAS AS SOON AS POSSIBLE BUT NOT MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY OR PERMANENTLY CEASED, TEMPORARY AREAS HAVING A SLOPE GREATER THAN 4:1 SHALL BE REINFORCED WITH EROSION BLANKETS OR APPROVED EQUAL UNTIL THE SITE IS PROPERLY STABILIZED. TEMPORARY SWALES MAY ALSO BE REQUIRED IF DETERMINED NECESSARY IN THE FIELD BY THE ENGINEER.
11. THE CONTRACTOR SHALL INSTALL A SILT SACK OR APPROVED EQUIVALENT IN EACH EXISTING CATCHBASIN RECEIVING RUNOFF FROM THE SITE. UPON THE INSTALLATION OF ANY NEW CATCH BASIN, THE CONTRACTOR SHALL INSTALL A SILT SACK OR APPROVED EQUIVALENT. THESE ARE TO BE INSPECTED AFTER EACH SIGNIFICANT STORM EVENT AND EMPTIED AS NEEDED DURING THE ENTIRE CONSTRUCTION PERIOD.
12. SMALL SEDIMENTATION BASINS MAY BE CONSTRUCTED ON AN AS-NEEDED BASIS DURING CONSTRUCTION TO AID IN THE CAPTURE OF SITE RUNOFF AND SEDIMENT. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR, IN CONSULTATION WITH THE ENGINEER, TO SIZE AND CONSTRUCT THESE BASINS IN APPROPRIATE LOCATIONS.
13. ALL EXITS FROM THE SITE SHALL BE SWEPT AS NECESSARY, INCLUDING ANY TRACKING TO ENSURE SEDIMENT IS CONTAINED ONSITE. PAVED AREAS SHALL BE SWEPT AS NEEDED TO REMOVE SEDIMENT OR POTENTIAL POLLUTANTS WHICH MAY ACCUMULATE DURING CONSTRUCTION ACTIVITIES.
14. ACCUMULATED SEDIMENT SHALL BE COLLECTED AND DISPOSED OF IN A PRE-APPROVED LOCATION BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.
15. THE CONTRACTOR SHALL PROVIDE ON SITE OR MAKE READILY AVAILABLE THE NECESSARY EQUIPMENT AND SITE PERSONNEL DURING CONSTRUCTION HOURS FOR THE DURATION OF THE PROJECT TO ENSURE ALL EROSION AND SEDIMENTATION CONTROL DEVICES ARE PROPERLY MAINTAINED AND REPAIRED IN A TIMELY AND RESPONSIBLE MANNER. IF SITE WORK IS SUSPENDED DURING THE WINTER MONTHS THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE PERSONNEL AND EQUIPMENT EITHER ON SITE OR MAKE READILY AVAILABLE TO ENSURE ALL EROSION AND SEDIMENTATION CONTROL DEVICES ARE PROPERLY MAINTAINED AND REPAIRED IN A TIMELY AND RESPONSIBLE MANNER
16. IF DEWATERING IS NECESSARY DURING CONSTRUCTION, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IMPLEMENT PROPER MEASURES INCLUDING DEWATERING BAGS, TEMPORARY HAYBALES, SILT FENCES, SILT SOCKS AND/OR OTHER APPROVED DEVICES. THE DEWATERING MEASURES SHALL BE APPROVED BY THE ENGINEER.
17. ALL SEDIMENT COLLECTED IN THE TEMPORARY/PARTIALLY CONSTRUCTED BIORETENTION AREAS WILL BE REMOVED AND DISPOSED OF PROPERLY PRIOR TO FILTER FABRIC AND MEDIA INSTALLATION WITHIN THE BIORETENTION AREAS. PARTIALLY CONSTRUCTED BIORETENTION AREAS WILL HAVE A SURFACE ELEVATION AT A MINIMUM 1-FOOT ABOVE THE BOTTOM OF MEDIA ELEVATION OR AS INDICATED IN THE PLANS. THIS WILL ALLOW AN OVER-DIG OF THE COLLECTED SEDIMENT FROM WITHIN THE BIORETENTION AREA PRIOR TO MEDIA/FABRIC INSTALLATION.
18. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTROL DUST, BY WATERING OR OTHER APPROVED METHODS AS NECESSARY, OR AS DIRECTED BY THE ENGINEER AT NO EXTRA COST TO THE OWNER.
19. THE CONTRACTOR SHALL ROUTINELY INSPECT THE PERIMETER OF THE SITE PROPERTY TO GATHER AND REMOVE CONSTRUCTION DEBRIS BEFORE IT LEAVES THE SITE. ALL DEMOLITION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE SITE AND PROPERLY DISPOSED OF. ALL TRUCKS AND CONTAINERS LEAVING THE SITE SHALL BE COVERED.
20. CEMENT TRUCKS SHALL NOT BE WASHED ONSITE. ANY CEMENT OR CONCRETE PRODUCTS LEAVING THE SITE OR ENTERING RESOURCE AREAS SHALL BE REMOVED BY HAND AT THE CONTRACTOR'S EXPENSE.
21. BURIAL OF ANY STUMPS, SOLID DEBRIS, AND/OR STONES/BOULDERS ONSITE IS PROHIBITED UNLESS OTHERWISE INDICATED BY THE ENGINEER. NO ROAD SALT, SAND, OR OTHER DE-ICING CHEMICALS SHALL BE USED ON THE ACCESS ROADWAYS.
22. THE CONTRACTOR IS RESPONSIBLE FOR ROUTINE INSPECTION AND MAINTENANCE DURING CONSTRUCTION OF ALL STORMWATER FACILITIES INSTALLED OR IMPACTED BY THE PROJECT. ANY SEDIMENT OR DEBRIS COLLECTED WITHIN THESE FACILITIES FROM THE PROJECT WORK SHALL BE REMOVED PRIOR TO THE OWNER'S ACCEPTANCE.

LEGEND

EXISTING / PROPOSED

- APARTMENT BUILDING
- HOUSE
- CENTERLINE
- CONTOUR – MINOR (34)
- CONTOUR – MAJOR (40)
- GRASS
- STONES OR BOULDERS
- EDGE OF PAVEMENT
- BITUMINOUS CONCRETE
- CONCRETE
- PROPERTY LINE
- ROW LINE
- DRAIN PIPE (D)
- GAS LINE (S)

SYMBOLS

- CATCH BASIN SQUARE
- DRAIN MANHOLE
- SEWER MANHOLE
- RED MAPLE
- ARBOR VITAE
- TOW=45.23' TOP OF FOUNDATION
- HANDICAP SYMBOL

APPROVED BY THE TOWN OF NANTUCKET PLANNING BOARD
DATE SUBMITTED: ____________
DATE ENDORSED: ____________
DATE APPROV ____________

TOWN OF NANTUCKET PLANNING BOARD

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

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Dimensions are as indicated.

Use of this plan constitutes acceptance of terms and conditions set forth in accompanying project documentation.

It is the responsibility of the user to confirm discrepancies with the Engineer prior to use.

REVISIONS

NO.	DATE	COMMENT

CLERK'S CERTIFICATION ON THE PLAN

DATE: ____________________

I, ____________________, CLERK OF THE TOWN OF NANTUCKET, DO HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

____
TOWN CLERK

PURPOSE: DEFINITIVE SUBDIVISION

LOCUS: NANCY ANN LANE

PREPARED FOR:

RICHMOND GREAT POINT DEVELOPMENT LLC

RICHMOND GREAT POINT DEVELOPMENT LLC
20 DAVKIM LANE
NANTUCKET, MA 02554

DRAWING TITLE: NOTES

CAD TECH:	CHECKED BY:
JDP	TRB
ENGINEER:	DATE:
BLB	08/03/2016
	SCALE: NOTED
C-25	SHEET: 26 OF 26

Richmond Great Point Inc.
20 Davkim Lane
Nantucket, MA 02554

Drainage Calculations Narrative

PROJECT SUMMARY

Richmond Great Point Inc., Inc. (RGP) is proposing to reconfigure the existing property as shown on sheets C-1 to C-5. The project includes single family home development and rental apartment development.

The proposed development of "Sandpiper Place" workforce homeownership housing development, comprised of one hundred (100) single family housing lots on a combination of nineteen (19) existing lots totaling +/- 17.2 acres of land located along Old South Road, Daffodil Lane, Mayflower Circle, and Evergreen Way.

The proposed development of "Workforce Rental Community" includes a total of 225 apartment units in a series of approximately forty (40) low density, two story, residential structures on a combination of two (2) existing lots totaling +/- 14.5 acres of land located along Davkim Lane and Nancy Ann Lane.

EXISTING CONDITIONS

Currently, access to all parcels owned by RGP is via Nancy Ann Lane. The land located at 20 Davkim Lane contains a former asphalt gravel plant/gravel pit. A paved parking area is located in front of the plant along the corner of Nancy Ann Lane and Davkim lane. North of the plant comprises gravel areas with access driveways along Nancy Ann Lane and storage components of the former Glowacki property. A gravel travelway connects the eastern portion of the plant to Evergreen Way.

The easterly portion of the project along Evergreen Way is primarily wooded with residential properties on the corner of Evergreen Way and Daffodil Lane. A gravel pathway extends from the paved roadway between the asphalt gravel plant and Evergreen Way to the Mayflower Circle cul-de-sac.

In general, the property slopes from North to South and contains two large sand pits that are shown on sheets C-6 to C-8.

PROPOSED CONDITIONS

We have included a set of plans and related documents depicting the proposal for your review. The subdivision will require the construction of new roadways. For discussion purposes during the review process with the town review agencies, we have included conceptual building footprints. The Stormwater runoff generated from the buildings depicted on the plans will be Contain by individual leaching systems sized to retain and infiltrate the Type III 24-hour 100-year storm.

Pre and Post development stormwater analysis was completed for the Type III 24-hour 25-year storm event using Carlson Civil Suite Engineering and Surveying software and HydroCad Stormwater modeling software for the drainage areas identified on the property. These stormwater modeling packages were developed using TR-55 modeling protocol and are widely used in the stormwater modeling arena. The modeling addressed stormwater for this proposal under the following assumptions:

1. We have assumed that the roadways, driveways and sidewalks as depicted on the plans, are constructed.

The two existing Sand Pits will be re-graded. The proposed site generally slopes in a Southerly direction from Old South Road, Easterly from Nancy Ann lane, And Westerly from Evergreen Road.

It should be noted that runoff from the RGP property remains on –site and the proposed conditions will remain the same.

As such, we have not concentrated on the pre and post development conditions on the property as no stormwater leaves the property. Although the impervious area of the property will be increased, the existing fully developed nature of a major portion of the property, the fact that all stormwater stays on the site, and significant drainage system improvements are proposed, the need to concentrate on pre and post development conditions is reduced. The main effort in our drainage analysis for this project centered on the use of deep sump catch basins, grease/grit removal Water Quality Structures and underground infiltration Chambers designed to retain and infiltrate the Type III 24-hour 25-year as well as mitigate the flooding caused by the 100 year event.

Runoff from the post development conditions is subdivided into 15 watersheds. Stormwater Runoff is conveyed to nine underground retention / infiltration areas (refer to table below) containing ADS StormTech MC-4500 + Cap chambers. Under conditions related to large storm events, the system will surcharge and stormwater will spill out of the lowest grate, and overflow into two designated flood areas as shown on sheet C-19.

Underground Retention / Infiltration Areas for Watershed					
No.	Watershed	Pond	Storage Area	No. Storage Chambers	VortSentry Model
1	S1	1P	46.67'W x 27.24'L x 6.75'H	25	HS72
2	S2	2P	37.58'W x 43.34'L x 6.75'H	36	HS72
3	S3	3P	37.58'W x 51.39'L x 6.75'H	44	HS84
4	S4	4P	55.75'W x 35.29'L x 6.75'H	42	HS84
5	S5, S6	5P/6P	28.50'W x 43.34'L x 6.75'H	27	HS84
6	S7	7P	46.67'W x 47.37'L x 6.75'H	50	HS84
7	S8, S9	8P/9P	37.58'W x 63.47'L x 6.75'H	56	HS96
8	S10-S14	10P-14P	55.75'W x 51.39'L x 6.75'H	66	HS96
9	S15	15P	46.67'W x 59.44'L x 6.75'H	65	HS84

Stormwater Runoff from each building is conveyed to underground retention / infiltration areas (refer to table below) containing Cultec Recharger 330XL HD chambers.

Underground Retention / Infiltration Areas for Buildings		
Type*	Storage Area	No. Storage Chambers
Building A	11.83'W x 11.17'L x 3.88'H	2
Building B	11.17'W x 10.50'L x 3.54'H	2
Building C	11.17'W x 10.50'L x 3.54'H	2
Multifamily	17.00'W x 11.50'L x 3.54'H	3

*See sheets C-6 to C-8 for building type locations.

Stormwater Standards

Standard 1 - No New Untreated Discharges

Under the proposed improvements, there are no untreated discharges to or erosion of wetlands or waters of the Commonwealth. All of the runoff from this proposal are directed to and allowed to infiltrate in retention areas within the boundary of the project. There are no off-site discharges from this project.

Standard 2 - Peak Flow Rates

The pre and post-development peak discharge rate from this development is contained within the property. There is no runoff from this property. The stormwater modeling results are included in the Attachments (1 & 2) of this document.

Standard 3 - Recharge Rates

All of the runoff from the area of development on site will be directed into the retention areas depicted on the plans. The proposed drainage system will infiltrate 100% of the excess stormwater volume.

Standard 4 - TSS Removal Rates

The design provides more than 95% TSS removal utilizing the deep sump catch basins, oil/sediment separators, and subsurface leaching systems. See Attachment 3 for these computations.

Standard 5 - Land Use with Higher Potential Pollution Load

This standard is not applicable to the site.

Standard 6 - Wellhead Protection Area

This standard applies to this project as the site is located in a public wellhead protection area. Test pits indicate a minimum of 10 feet of undisturbed soil above groundwater will be maintained for the construction of this project. Improvements to the property include conveying stormwater runoff to nine underground retention / infiltration areas with each containing a grease/grit removal Water Quality Structure.

Standard 7 - Redevelopment

This standard applies to this project as significant improvements are proposed on the property. Improvements include the use of Deep Sump catch basins, the installation of a grease/grit removal Water Quality Structure and construction of nine retention / infiltration areas to eliminate severe ponding at the property. The stormwater modeling results are included in the Appendix A of this document.

As such, Stormwater Standards have been met to the maximum extent practicable.

Standard 8 - Construction Period Pollution Prevention

Although this proposal does not require a National Pollution Discharge Elimination System (NPDES) permit for construction, the proposal calls for the installation of silt fencing, hay bales, catchbasin filters, and the remediation of all disturbed areas. Sedimentation will be controlled by inspection of stormwater facilities before and after significant stormwater events.

Standard 9 - Operations and Maintenance

The Operation and Maintenance plan calls for maintaining the landscaped portion of the project as well as regular cleaning of catch basins, grease/grit chambers, and stormwater retention facilities. An Operations and Maintenance Plan is included in this report.

Standard 10- Illicit Discharge Statement

There are no known, illicit discharges associated with this project.
Please review the above information and contact this office with any questions or comments.

Robert L. Bersin, PE
Green Seal Environmental, Inc.

July 25, 2016
Date

GENERAL CONSTRUCTION SEQUENCE

1. Prior to the start of all work, the contractor shall have the Limits of Work flagged by Green Seal Environmental. Flagging shall be inspected by the Town of Nantucket designee, prior to the start of all work.
2. Contractor shall furnish and install construction silt fencing, hay bales, or wattles (as required on approved plans) along the Limits of Work line as depicted on the approved plans. Installation of said fencing shall be inspected by the Town of Nantucket designee.
3. Install Temporary Construction Access as depicted on the approved plans. Installation of said access shall be inspected by the Town of Nantucket designee.
4. Tree Removal along the proposed roadway shall be coordinated with the Nantucket Tree Warden and Planning Department. All debris, including stumps, shall be removed from the site and disposed in a MassDEP approved disposal site. Cut materials may be chipped, stockpiled, and used as mulch, as needed. Use 4-6 inches of topsoil and the seed mixture referenced above to revegetate disturbed areas along the roadway.
5. Install Retention / Infiltration Areas and Treatment units as shown on approved plans. Retention Areas shall be installed by removing all soil above the "C" Sand layer as depicted on the soil logs and backfilled with clean granular sand, free from organic matter, and other deleterious matter. Fill material shall meet the grading specifications in 310 CMR 15.255:3. Install roadway as depicted on the approved plans. Access to the work areas shall be via the proposed construction entrances shown on the Erosion and Dust Control Plan. All efforts shall be employed to prevent soil accumulation from construction vehicles onto the surface of Nancy Ann Lane Rd. If binder course is not installed immediately after cutting, grubbing, re-grading, and compaction, install temporary crushed stone construction entrance as depicted on the Erosion and Dust Control Plan. Final paving shall be after the installation of drainage components and utilities is complete.
6. In general, revegetate disturbed areas as soon as practicable.
7. After the roadway construction, start the installation of landscaping per approved plans. Coordinate installation with the Town of Nantucket designee. All attempts shall be made to avoid planting during summer droughty season, or arrangements shall be made for proper watering required to ensure proper plant growth.
8. Upon completion of the work, inspect all areas of installation. All disturbed areas shall be revegetated as described above.

STORMWATER SYSTEM MAINTENANCE
CONSTRUCTION PHASE

Best management practices (BMP) for erosion and sedimentation control are staked straw bales, filter fences, wattles, hydro seeding, and phased development. Although not all of these methods are utilized for this project, it should be noted that these are not designed to handle high concentrations of sediments typically found in construction runoff. High sediment losses are not anticipated on this project, but it is imperative that the BMP's on this site be maintained.

Pre-Construction

A. The contractor shall have a stockpile of materials required to control erosion on-site to be used to supplement or repair erosion control devices. These materials shall include, but are not limited to straw bales, silt fence, wattles, and crushed stone.

B. The site contractor is responsible for erosion control on site and shall utilize erosion control measures where needed, regardless of whether the measures are specified on the plan or in the order of conditions.

Construction Phase

A. All excavated materials should be stockpiled, separating topsoil from other materials. The topsoil shall be kept for future use on the site. Erosion control shall be utilized along the down slope side of the stockpiles and side slopes shall not exceed 2:1.

B. If intense rainfall is anticipated, the installation of supplemental straw bale dikes, silt fences, or wattles shall be considered.

C. Unsuitable excavated material shall be removed from the site as soon as practicable.

D. Construction entrance shall be installed as shown on the approved plans as outlined above.

Ongoing Site Work

1. Site work will be completed utilizing proper construction techniques. All efforts are to be employed to minimize the deposition of soil from Construction vehicles on Nancy Ann Lane Road.
2. Inspect all sediment and erosion control measures on a weekly basis, prior to, and after significant storm events (0.25 inches or greater), or as otherwise required by the Town of Nantucket designee.

3. Sediment shall be removed from sediment barriers if buildup exceeds ½ of the height of the barrier.
4. Damaged or deteriorated barriers shall be repaired immediately after the defect is identified.
5. The underside of hay bales and wattles shall be kept in close contact with exposed earth. Reset as necessary.
6. Remove vegetative and non-vegetative debris from the retention areas.
7. In general, the area shall be kept neat and litter free, to the maximum extent practicable. Trash, shipping materials, and other disposable materials shall be contained and prevented from becoming windblown litter. The site supervisor shall ensure all debris is either removed or properly contained prior to leaving the site on a daily basis.
8. Erosion control elements shall remain in place until all disturbed areas are stabilized. After removal of erosion control elements, regrade, and stabilize disturbed areas under barriers, as necessary.
9. No pesticides or herbicides are to be used on the site and only organic fertilizers shall be used.

August 25th, 2016

Jack and Karleen Halliwell
2 Webster Road
Nantucket, Massachusetts.
02554
(508) 325 6189 Home
(401) 862 50020 Mobile
jlhalliwell@heainc.com

Nantucket Planning Board
Barry Rector, Chairman
Leslie Woodson Snell, Deputy Director of Planning

RE: Richmond Development/ Proposed Tie-in to Skyline Drive

Chairman Rector and Members of the Planning Board,

My name is Jack Halliwell and I live at 2 Webster Road with my wife Karleen and our 3 small children. We have lived here for the past 16 years. I am writing to you at this time because I am extremely concerned about the potential in increased traffic flow on Webster Road from any potential tie-in to Skyline Drive from the proposed Richmond Development.

The traffic on Webster Road has been increasing over the past few years to the point where speeding cars and delivery trucks have made it necessary to install speed bumps in order to slow them down. Some do…but many others do not…and many veer into our driveway entrance to avoid other cars/trucks.

I have had to ban my kids from the area of our driveway entrance in order to protect them from the speeding traffic…on what should otherwise be a quiet country road.

Our deep concern is currently that this situation would become much worse if the Planning Board were to allow this new mega-development to tie into Skyline Drive. At least half of that traffic would then be routed through Webster…traffic from the residents along with the increased truck traffic for deliveries.

This road was never designed to handle that volume of traffic and we want to avoid this at all costs.

In addition, the intersection of Monahassett and Webster has become another dangerous intersection with two blind corners and speeding cars. Increasing the traffic volume here would exacerbate those conditions.

Based upon our concerns for the safety of our kids and the families in this area and that use this road…Please DO NOT ALLOW THE RICHMOND GROUP TO TIE THEIR DEVELOPMENT INTO SKYLINE DRIVE.

THANK YOU!!!

Jack, Karleen, Jackson, Cliff and Cody Halliwell.

Contract Summary

Contract Name:	TetraTech, Inc.		
Purpose:	Provide professional transportation services associated with the development of a mixed-use development project located on Old South Road, approximately between Lover's Lane and Daffodil Lane (the Project). The objective of the services is to provide a peer review of the Traffic Impact and Access Study (TIAS) prepared for the Project by Ron Muller & Associates (RMA), dated August 26, 2016.		
Total Cost of Contract:	$10,000		
Cost per Year:	N/A		
Multi Year:	N/A		
Duration:	Renewal: N/A	Annual: N/A	New: 09/29/2016-09/29/2017
Cost Savings if any	N/A		
Additional Costs if any	N/A		
Prior Costs:	N/A		
Funding source	53G / Escrow Account no.8013		
Number of Bidders	N/A		
ENCUMBER FUNDS	~~YES~~ or NO		

Purchase approved by Dept Head: _____ Date: _____

Dept Procurement Review Done: _____ Date: _____

Procurement Office Review Done: _____ Date: _____

Town of Nantucket

AGREEMENT BETWEEN
THE TOWN OF NANTUCKET
AND
TETRATECH, INC.

This AGREEMENT, effective the _____, 2016, made by and between the TOWN OF NANTUCKET, acting by and through its Town Administration, (hereinafter, the "TOWN") and TETRATECH, INC., 100 Nickerson Road, Marlborough, MA 01752 (hereinafter, the "CONTRACTOR").

A. Whereas, the TOWN desires to engage the CONTRACTOR as an independent contractor to perform the services set forth on EXHIBIT A, attached hereto (the "Services");

B. Whereas, the CONTRACTOR agrees to accept the engagement by the TOWN in accordance with the terms set forth herein;

NOW, THEREFORE, the parties, in consideration of the mutual covenants contained herein, agree as follows:

1. The TOWN hereby retains the CONTRACTOR to perform the Services and the CONTRACTOR agrees to perform the Services as provided herein. Any written or other materials or intellectual property produced by the CONTRACTOR for the TOWN hereunder shall be the property of the TOWN and, upon the expiration or termination of this Agreement the CONTRACTOR shall deliver copies of the originals of all such materials, as well as notes, work papers and the like, to the TOWN.

2. The term of this Agreement will commence on September 29, 2016, and terminate on September 29, 2017, or when the performance of the Services has been completed in a manner reasonably satisfactory to the TOWN. The TOWN shall have the right to terminate this Agreement at any time and for any reason upon written notice given to the CONTRACTOR.

3. The CONTRACTOR will perform the Services in a first class, professional manner and in compliance with all applicable federal, state and local laws, regulations and ordinances. The CONTRACTOR shall be subject to the administrative supervision of the Board of Selectmen, or its designee, who shall be responsible for scheduling the work to be done by the CONTRACTOR on a daily or other basis. The CONTRACTOR shall perform the Services in cooperation with TOWN personnel as appropriate.

4. The TOWN will pay the CONTRACTOR compensation in the amount of $10,000 as payment in full for the Services. This agreement may be subject to budgetary limits and, in such case, the TOWN shall not be obligated to pay the CONTRACTOR any amount of fees or expense in excess of $10,000 without the express prior written approval of the Board of Selectmen.

5. The parties acknowledge that the CONTRACTOR is an independent contractor and not an employee of the TOWN. The CONTRACTOR shall not be entitled to any employment fringe benefits to which TOWN employees are entitled.

6. To the extent permitted by the CONTRACTOR'S professional liabilities and/or liability insurance, the CONTRACTOR agrees to indemnify and hold harmless the TOWN and its agents, officers and employees from any losses, claims or costs, of whatever kind or nature, suffered by the TOWN or any third party which result from, or are related to, the performance (or failure to perform) by the CONTRACTOR of Services pursuant to this Agreement. The CONTRACTOR shall obtain and maintain such polices of insurance, written by companies licensed to do business in Massachusetts, as may be set forth on Exhibit A and shall add the TOWN as an additional insured thereunder.

IN WITNESS THEREOF:

CONTRACTOR
NAME

_____
Christopher E. Calnan, PE
Vice President

DATE: _____

TOWN OF NANTUCKET:

_____
C. Elizabeth Gibson
Town Manager

DATE: _____

FEIN/SSN:

Department Org./Obj. Code:

Purchase Order # _____

As to the Availability of Funds:

_____
Brian E. Turbitt Finance Director or
Bob Dickinson – Assistant Town Accountant

_____
Date

EXHIBIT A

1. Description of Services:

Provide professional transportation services associated with the development of a mixed-use development project located on Old South Road, approximately between Lover's Lane and Daffodil Lane (the Project). The objective of our services is to provide a peer review of the Traffic Impact and Access Study (TIAS) prepared for the Project by Ron Muller & Associates (RMA), dated August 26, 2016.

Task 1 Technical Review and Documentation

a) Our technical review of the project will include the following:
b) Discuss project with Nantucket Planning staff to determine what transportation concerns the staff and the Planning Board may have with regards to this application. Conduct a site visit and meet with Nantucket Planning staff if determined to be necessary.
c) Conduct a review of the applicant's Traffic Impact and Access Study.
d) Conduct a review of the proposed Site Plans from a traffic, bicycle and pedestrian circulation perspective.
e) Prepare draft comments on the traffic assessment and site plans and provide copies of the draft comments to the Nantucket Planning staff, and subsequently the project applicant.
f) Meet with the applicant's consultant to review draft comments (meeting assumed to occur at TT offices in Marlborough, MA).
g) Review any supplemental information that may be prepared by the applicant in response to our draft comments and discuss with Nantucket Planning staff.
h) Conduct follow-up discussions with the applicant's consultant (if necessary).
i) Prepare Final Review letter for submittal to the Nantucket Planning Board.

Task 2 Meetings

a) Tetra Tech will prepare for and attend a Nantucket Planning Board to present the findings of our review, as directed by the Client.

2. Other payment terms: 100% payment upon completion of work, submission of CONTRACTOR'S invoice and approval of invoice by the TOWN.

3. Insurance Required (if any):

(a) Workers' Compensation, covering the obligations of the CONTRACTOR in accordance with applicable Workers' Compensation or Benefits laws.

(b) Commercial General Liability Insurance on an occurrence basis with a combined single limit of not less than $1 million. Coverage is to include premises and operations, coverage for liability of subcontractors. The policy shall contain an endorsement stating that the aggregate limits will apply separately to the work being performed under this Agreement.

(c) Automobile Liability Insurance of not less than $1 million combined single limit covering

owned, hired and non-hired vehicle use.

(d) Errors and Omissions Insurance of not less than $1 million per claim.

(e) Such additional insurance as may be required to be carried by the CONTRACTOR by law.

EXHIBIT B

TAX COMPLIANCE CERTIFICATION

Pursuant to M.G.L. 62C, §49A, I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

Federal Employer Identification Number

By: Christopher E. Calnan, PE, Vice President
TetraTech, Inc.

Date:

CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

By: Christopher E. Calnan, PE, Vice President
TetraTech, Inc.

Date:

\

Mirrione Law Group, LLC

Counselors at Law

Walter Mirrione
323 Manley Street
West Bridgewater, MA 02379
(508) 510-5727 Tel
(508) 857-0751 Fax
wmirrione@mirrionelaw.com

August 22, 2016

Via Electronic Mail to lsnell@nantucket-ma.gov
Via First Class Mail

Barry G. Rector, Chairman
Nantucket Planning Board
2 Fairgrounds Road
Nantucket, MA 02554

Re: Definitive Subdivision and Special Permit Applications of Richmond Great Point Development LLC ("Applicant") relative to Property located off Old South Road, Nantucket, MA ("Richmond Project")

Dear Chairman Rector:

This office represents the Naushop Homeowners Association Trust (hereinafter "Naushop"), a trust representing the individual owners and residents of the residential community containing approximately 196 single family homes directly across Old South Road from the Richmond Project. Our office and Naushop have reviewed the June 2016 definitive subdivision and special permit applications of the Applicant. Based upon that review, Naushop has significant concerns with the impacts of the Richmond Project on its property interests and is therefore closely monitoring the Planning Board's ("Board") review of the Richmond Project. Our client will continue to attend any and all public hearings and public meetings and will advise both the Applicant and the Board of any ongoing concerns so that both will have an opportunity to address same. Our initial review reveals the following.

Application No. 1 (Retail Buildings):

The first application that we reviewed seeks approval of a major commercial development special permit and major site plan review to allow for the construction of five "retail "line" buildings" located on five contiguous lots (± 2.39 total acres) with frontage on Old South Road beginning just east of Lovers Lane. The buildings are proposed to be one story and are integrated in the sense that the parking, travel ways, vehicular access, drainage, sewer, water, etc. are all interconnected to varying degrees. The size of the buildings are proposed as 5,170 gross square feet, 3,235 gross square feet, 2,400 gross square feet, 1,500 gross square feet and

3,200 gross square feet. Additionally, there is proposed a 1,200 square feet outdoor dining area adjacent to the 3,200 gross square feet building.

The location of the outdoor dining facility causes significant concern to Naushop due to the proximity of same in relation to the Naushop property. In order to minimize the impact, Naushop requests that the outdoor dining facility be relocated further west to the retail liner building located closest to Lovers Lane. Additionally, Naushop requests that the Board including consider the following conditions in any special permit that it may grant relative to the outdoor dining:

(a) Hours of operation be restricted as follows:

(i) *Winter Season (Defined as November 1 through March 31)*

Monday through Sunday: 11:00 AM to 9:00 PM

(ii) *Summer Season (Defined as April 1 through October 31)*

Monday through Thursday: 11:00 AM to 9:00 PM
Friday and Saturday: 11:00 AM to 10:00 PM
Sunday: 11:00 AM to 9:00 PM

(b) Prohibit live entertainment, mechanical entertainment and so-called piped out music;

(c) Limit use of the area to patrons being served food such that there is no use of the area for the consumption of alcoholic beverages outdoors;

(d) Require that any outside lighting be installed so as not to interfere with the use and enjoyment of the nearby Naushop property; and

(e) Limit the number of patrons in the area to no more than twenty-five.

Application No. 2 (Meadows II Rental Apartments):

The second application reviewed seeks approval of a special permit to create a "Workforce Rental Community" located on the southerly side of Old South Road southeast of the site referenced in Application No. 1. The project will be accessed from the "Primary Project Entrance" as shown on the Plan which is located directly across from Naushop. Specifically, the proposal includes 225 units constructed in 40 two-story structures scattered across ± 14 acres. The proposal includes on-site parking that exceeds the requirements of the Bylaw and will be serviced by new infrastructure (water, sewer, drainage, lighting, landscaping, etc.). It includes a mix of studio units (22), one bedroom units (87), two bedroom units (94) and three bedroom units (22) which creates a total of 363 bedrooms. Fifty-six of those units, or 25%, will be so

called affordable units, restricted in perpetuity, in accordance with the requirements of the Massachusetts Department of Housing and Community Development. All fifty-six of the units will qualify for Nantucket's Subsidized Housing Inventory List. These units will count towards the State requirement that 10% of the housing stock be qualified affordable housing units.

Naushop has no specific concerns with the rental apartments at this time.

Application No. 3 (Sandpipe Place – Single Family Lots):

The third application seeks a special permit and subdivision approval to create "Workforce Homeownership Housing" located on the southerly side of Old South Road immediately east of the site referenced in Application No. 2. Like the project described in Application No. 2, this project will also be accessed from the "Primary Project Entrance" which is located directly across from Naushop. This proposal seeks to create 100 single family house lots on ± 17 acres of land along with the necessary infrastructure (water, sewer, drainage, lighting, landscaping, etc.) to service the project. Lot sizes range from a small of 4,000 square feet to a large of 4,500 square feet. Twenty-five of the lots, or 25%, will contain so called affordable homes, restricted in perpetuity, in accordance with the requirements of the Massachusetts Department of Housing and Community Development. All twenty-five of the homes will qualify for Nantucket's Subsidized Housing Inventory List. These homes will count towards the State requirement that 10% of the housing stock be qualified affordable housing units. The project also include a "community focal point" adjacent to the main entrance and shown on the plan submitted as "Community Focal Point/Meeting House and Park". This will be community space including a meeting house, barn, outdoor common area with patio and stage area as well as other landscaping improvements.

The location of the Community Focal Point/Meeting House and Park, as well as the use thereof, causes significant concern to Naushop due to the proximity of same in relation to the Naushop property. In order to minimize the impacts, Naushop requests that the outdoor dining facility be relocated further south into the Richmond Project. Lastly, Naushop requests that the Board consider including the following conditions in any special permit that it grants relative to the Community Focal Point/Meeting House and Park:

(a) Hours of operation be restricted to Sunday thru Wednesday - 11:00 AM to 9:00 PM and Thursday thru Saturday - 9:00 AM to 10:00 PM;

(b) Prohibit live entertainment, mechanical entertainment and so-called piped out music;

(c) Limit use of the area to those residents and guests of Sandpiper Place. General public assembly is prohibited;

(d) Require that any outside lighting be installed so as not to interfere with the use and enjoyment of the nearby Naushop property;

(e) Limit the number of occupants in the area to the less or 100 persons or as otherwise restricted by law;

(f) Install significant live screening on the Richmond Project property to buffer the impacts of this area; and

(g) Prohibit the consumption of alcoholic beverages outdoors.

Application No. 4 (Old South Road Crossing):

The fourth application seeks definitive subdivision approval for the series of roads and lots located immediately south of the land that makes up Application No. 1. The proposal is somewhat administrative in that there is no construction of structures proposed on this area of the Richmond Property. The primary objective of the subdivision is to reconfigure, re-route, and improve the engineering design, safety, and conditions of portions of the existing Nancy Ann Lane and Greglen Avenue roadways to better accommodate the proposals set forth above. This includes straightening, widening and improving the existing roadway layouts and the slight reconfiguration of fifteen existing lots (most of which are vacant and 13 of which appear to be owned by Richmond). Naushop has no specific concerns with this application at this time.

General Comments:

In addition to the above areas of concern, Naushop has the following general but significant areas of concern with the impacts of the overall Richmond Project.

Notwithstanding, the long term proposal to mitigate traffic impacts as set forth in the Old South Road Corridor Study, Naushop is concerned that the Richmond Project will cause significant traffic issues in this area that will impact Naushop's quality of living. Any mitigation measures offered by implementation of the aforesaid Study, will not be achieved in the near future, therefore, Naushop requests that the Board and the Applicant consider short term traffic mitigation including improvements to the roadway system located south of the Richmond Project. One specific improvement Naushop believes to be necessary is the widening of Old South Road up to Naushop's entrance at Goldfinch Drive East. The agreed upon mitigation should be completed prior to the issuance of any certificate of occupancy relative to the Richmond Project.

Additionally, Naushop is concerned with the impact of the Richmond Project on the municipal sewer system. These concerns are magnified by delays in finalizing the Sewer Connection and Dedication Agreement with Richmond Great Point Development, LLC. The lack of agreement has stalled the necessary implantation of the upgrades to the South Valley lift station which serves the area, including Naushop. Notwithstanding the lack of Agreement, the Town has allowed the Applicant to connect their new sewer main to the lift station in the area thus adding additional flow to an already troubled system. Naushop requests that the Board

include a condition in any permits issued that the aforesaid Agreement be finalized and the contemplated upgrades be performed prior to issuance of any building permits at the Richmond Project.

Our review of the Richmond Project reveals that the resulting impacts therefrom on the Naushop community will be varied and significant. Zoning regulations are designed to, amongst other things, lessen congestion in the streets, conserve health, secure safety, provide adequate light and air, prevent overcrowding of land, avoid undue concentration of land and facilitate adequate provision of water supply, drainage and sewerage facilities. It is our opinion that the proposed Richmond Project will not accomplish the aforesaid and this will have significant negative impacts on Naushop that can only be mitigated by addressing the concerns raised herein. Accordingly, Naushop requests that the Board and the Applicant give serious consideration to our client's concerns and proposals to address same so as to mitigate the impacts on the Naushop community.

Your consideration of this matter is greatly appreciated. Should you have any questions or comments, please do not hesitate to contact the undersigned. We look forward to being involved in future public meetings.

Sincerely,

MIRRIONE LAW GROUP, LLC

Walter Mirrione, Esq

cc: Ken Gentner Via Electronic Mail
kgentner@optonline.net

HILL LAW

August 24, 2016

BY ELECTRONIC MAIL: CAncero@nantucket-ma.gov
AND FIRST CLASS MAIL

Nantucket Planning Board
Town of Nantucket
2 Fairgrounds Road
Nantucket, MA 02554

Re: Development Applications / Richmond Great Point Development, LLC
Off Old South Road, Nantucket

Dear Members of the Planning Board:

As you may recall, this firm represents the Cedar Crest III Homeowners Association Trust ("CCHAT"), the legal organization of homeowners within the Cedar Crest III subdivision comprised of homes on Mayflower Circle, Daffodil Lane and Evergreen Way on Nantucket, which abuts the 100-lot "Sandpiper Place" residential subdivision proposed by Richmond Great Point Development, LLC (the "Project" and the "Developer" or "Richmond").

At the Board's hearing on July 11, 2016, one of the members had asked whether the Declaration of Restrictions and Easements filed with the Nantucket Registry of Deeds as Document Number 91664, which I referenced at the hearing and in my previous letter dated July 11, 2016, was still enforceable. Certain land use restrictions expire by operation of law (G.L. c. 184, §27) thirty years after they are imposed, subject to the timely recording of extensions. The Declaration here was executed on July 24, 2000 and recorded shortly thereafter, and therefore we are still well within the thirty-year initial enforceability period. Moreover, the Declaration itself states a term of thirty years (§5.05), with the option for extensions of successive periods of twenty years, consistent with the statute. Therefore, the Declaration is currently enforceable.

I would also like to stress the importance of insisting upon the submission of a "traffic impact and access study" ("TIAS") by the Developer for the Sandpiper Place special permit application (#43-16) and the other Richmond applications pending before you (#40-16, #39-16, #7988, and #7918). Through these applications, the Developer is proposing a series of connected development projects that will result in the most significant commercial and residential growth on Nantucket in years, and which will inevitably cause a substantial increase in motor vehicle, bicycle and pedestrian traffic on Old South Road and the local roads that intersect Old South Road between downtown and the airport. This stretch of Old South Road is

already congested during peak hours of the day, and has gotten busier with recent residential development growth.

I have personally spoken to representatives of Richmond about this issue, and they have so far demurred, insisting that a traffic study will be produced at some later date, without any firm commitment. Perhaps Richmond intends to try to delay the presentation of its TIAS until after it obtains special permits for its projects. Clearly, this would be to Richmond's advantage, as any traffic study will almost certainly shine a bright light on a major infrastructure challenge that cannot be ignored. If consideration of traffic issues is postponed until after the discretionary permits are issued, Richmond will have more leverage to resist contributing to the infrastructure costs of the inevitable widening, signaling and other upgrades to Old South Road and other neighborhood streets that will be necessary to accommodate the increased traffic and new traffic patterns. It's also possible that a review of a TIAS would lead to the conclusion that the existing roadway network simply cannot be expanded or improved so as to adequately mitigate the impacts and accommodate the proposed growth at the density proposed by Richmond, in which case a smaller or less-dense set of projects may be more appropriate.

For these reasons, the Board should not close its hearing and not issue any special permits until Richmond has submitted a complete TIAS using accepted engineering practices and Massachusetts Department of Transportation (MassDOT) traffic analysis procedures. The Developer's TIAS should then be thoroughly scrutinized by an independent traffic peer review engineer retained by the Planning Board, with advice given to the Board concerning whether the existing roadways can be expanded and improved to accommodate the increased traffic, and if so, how and at what expense.

Importantly, it would be perilous for the Board to delay its consideration of these issues until the subsequent Site Plan Review process. While I recognize that Nantucket's Site Plan Review bylaw, §139-23, gives the Planning Board authority to evaluate the adequacy of town services and infrastructure, and to deny a site plan review application if traffic management arrangements are inadequate, this legal framework is at odds with the state Zoning Act and most of the decisional law that has evolved under the Act. Specifically, the Supreme Judicial Court has repeatedly emphasized the distinction between special permits and site plan review, observing that the later can only be used to shape a project, not deny it. See, Presidential Ins. Co. of Am. v. Bd. of Appeals of Westwood, 23 Mass. App. Ct. 278 (1986). Moreover, a town's site plan review authority does not extend to "issues of density," which are directly relevant here if Richmond's projects create so much traffic that no improvements to Old South Road could possibly be made to adequately accommodate the growth. See, Castle Hill Apartments Ltd. Partnership v. Planning Bd. of Holyoke, 65 Mass. App. Ct. 840, 847 (2006). See also, M. Bobrowski, *Massachusetts Land Use and Planning Law*, §9.07 (3rd Ed. 2011) (copy enclosed).

Thus, the Board risks having a site plan review decision vacated by the courts if its decisionmaking exceeds its legal authority. In contrast, the Board would be on much safer ground to impose strict conditions or to deny a special permit on traffic grounds. If the Board has any doubt as to whether to consider traffic impact issues during this special permit proceeding

versus the anticipated site plan review proceeding, I strongly recommend that it seek guidance from Town Counsel. It goes without saying that traffic is of utmost concern to the residents of the Cedar Crest III Homeowners Association.

Thank you for your attention to this matter.

Very truly yours,

Daniel C. Hill

Encs.
cc: Andrew Burek, Esq.
Clients

ASPEN PUBLISHERS

HANDBOOK OF MASSACHUSETTS LAND USE AND PLANNING LAW

Zoning, Subdivision Control, and Nonzoning Alternatives

Third Edition

Mark Bobrowski

Wolters Kluwer
Law & Business

> It is the intent of the subdivision control law that any subdivision plan filed with the planning board shall receive the approval of such board if such plan conforms to the recommendation of the board of health and to the reasonable rules and regulations of the planning board pertaining to the subdivisions of land. . . .

For a generation, the MRD model has been pervasively used to mandate cluster development or to exact affordable housing. Any municipal ordinance or bylaw *requiring* subdivisions of a certain number of lots to obtain a special permit for these purposes is suspect after *Wall Street*. However, regulations offering "increases in the permissible density of population or intensity of a particular use" by voluntary application for a special permit are unaffected by *Wall Street*.[113]

§ 9.07 SITE PLAN REVIEW

Site plan review establishes criteria for the layout, scale, appearance, safety, and environmental impacts of commercial or industrial development in an attempt to "fit" larger projects into the community.[114] The Zoning Act contains no reference to site plan review.[115] It is entirely the creature of the cities and towns and the judiciary. Because site plan review is often confused with or attached to the special permit process,[116] discussion of the device is appropriate in this chapter.

The Supreme Judicial Court defined its understanding of site plan review as "regulation of a use rather than its prohibition . . . contemplating primarily the imposition for the public protection of reasonable terms and conditions."[117] The Supreme Judicial Court has repeatedly focused on this pronouncement to distinguish site plan review from the special permit process.[118] Site plan review can only be used to shape a project.[119] On the other hand, in the special permit process, the full range of discretion is available to the granting authority.[120]

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[113] *See* § 9.06.

[114] Site plan approval usually focuses on parking, traffic, drainage, roadway construction, signage, utilities, screening, lighting, and other aspects of the proposal to arrive at the best possible design for the location. In the usual format, site plan approval must be obtained before the building or special permit is issued. For a more detailed discussion of site plan review, *see* Mark Bobrowski, *Recent Developments in Community Growth Control*, 73 Mass. L. Rev. 36 (1988).

[115] However, the concept is endorsed in the DCA Report.

[116] *See, e.g.*, Bruno v. Board of Appeals of Wrentham, 62 Mass. App. Ct. 527, 534-535 (2004).

[117] Y. D. Dugout v. Board of Appeals of Canton, 357 Mass. 25, 31 (1970).

[118] *See* Prudential Ins. Co. of Am. v. Board of Appeals of Westwood, 23 Mass. App. Ct. 278 (1986); Auburn v. Planning Bd. of Dover, 12 Mass. App. Ct. 998 (1981).

[119] However, this power does not extend to "issues of density" which were previously resolved "in a legislative sense" when the city or town enacted the ordinance or bylaw permitting a certain density by right. Castle Hill Apartments Ltd. P'ship v. Planning Bd. of Holyoke, 65 Mass. App. Ct. 840, 847 (2006).

[120] *See* § 9.04.

1139 of 1520

Conceptually, uses or structures must be authorized by either a special permit or a building permit.[121] Site plan review operates in conjunction with one of these two devices. It is important to identify the link between site plan review and one of these mechanisms because the nexus determines the procedures for appeal of adverse decisions.

Site plan review in conjunction with a special permit application is the earliest version of the device and remains quite common.[122] Generally, any use requiring a special permit also requires review of a site plan. The site plan ostensibly serves to provide detailed information to the granting authority on aspects of the proposed development. The leading case of *Y. D. Dugout v. Board of Appeals of Canton*[123] found the process "in substance, . . . equivalent to permitting any commercial building construction . . . only upon special permit."[124] In *Auburn v. Planning Board of Dover*,[125] a bylaw provision required site plan approval for all buildings to be erected in a business district through issuance of a special permit.[126] The Court held that the "requirement that a site plan be approved before the issuance of a special permit does not impose impermissible restrictions on the allowed use."[127]

Site plan review may also be attached to as-of-right uses. The process is used to impose reasonable conditions before the issuance of the building permit. In *Prudential Insurance Co. of America v. Board of Appeals of Westwood*,[128] the Court examined such a case.[129] Even though the plaintiff's proposed office buildings were a permitted use, the board of appeals denied site plan approval primarily because of traffic concerns raised by the project. The Appeals Court held that this result was contrary to *Y. D. Dugout*, which limited site plan review to "regulation of a use rather than its prohibition."[130]

The Appeals Court has ruled that, unless the local ordinance or bylaw so requires, no written decision is required of the site plan review board,[131] and the decision of the board may be made by simple majority vote, not the supermajority

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[121] *See* Mass. Gen. L. ch. 40A, §§ 7, 9. The variance procedure is not applicable, because it applies only to otherwise disallowed uses or structures. *See* Mass. Gen. L. ch. 40A, § 10.

[122] *See* Woods v. City of Newton, 351 Mass. 98 (1966); Coolidge v. Planning Bd. of North Andover, 337 Mass. 648 (1958).

[123] 357 Mass. 25 (1970).

[124] *Y. D. Dugout*, 357 Mass. at 31.

[125] 12 Mass. App. Ct. 998 (1981).

[126] *Id.* Site plan approval was required "in order to ensure the most advantageous use of all properties within the . . . district and for the reasonable protection of the legitimate interests of adjoining property owners." Submitted site plans must satisfy nine criteria that are all concerned with proper and safe use of land.

[127] *Auburn*, 12 Mass. App. Ct. at 998.

[128] 23 Mass. App. Ct. 278 (1986).

[129] *See also* Hallenborg v. Town Clerk of Billerica, 360 Mass. 513 (1971); Richardson v. Zoning Bd. of Appeals of Framingham, 351 Mass. 372 (1966); Salah v. Board of Appeals of Canton, 2 Mass. App. Ct. 488 (1974).

[130] *Prudential*, 23 Mass. App. Ct. at 282.

[131] Bowen v. Board of Appeals of Franklin, 36 Mass. App. Ct. 954, 955 (1994).

required for the issuance of a special permit.[132] The powers of site plan review board were described by the Appeals Court in *Prudential.*[133] The Court held that such boards may: (1) reject a site plan that fails to furnish adequate information required by the bylaw; (2) impose reasonable conditions in connection with site plan approval (even at the expense of the applicant); and (3) reject a site plan that, "although proper in form, may be so intrusive on the needs of the public in one regulated aspect or another that rejection by the board would be tenable."[134]

[A] Problems

Notwithstanding *Prudential's* clear statement of powers, site plan review remains a minefield for the unwary board or applicant.[135] Several problems persist and deserve the immediate attention of the Legislature.[136]

First, there has been no decision detailing minimum procedural safeguards for site plan review. Virtually every decision has involved a bylaw that described minimum procedures or incorporated special permit procedures under Mass. Gen. L. ch. 40A, § 9.[137] Communities using site plan to shape as-of-right uses have sometimes relied on an informal process roughly equivalent to preliminary plan review under the Subdivision Control Act.[138] The review board conducts plan evaluation at a regular business meeting; notice is limited to observance of the Open Meeting Law.[139] This practice is consistent with procedures under the State

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[132] Osberg v. Planning Bd. of Sturbridge, 44 Mass. App. Ct. 56, 59 (1997).

[133] *Prudential, 21* Mass. App. Ct. at 283-284 n.9. For a particularly instructive application of these standards, *see* Gutierrez v. Town of Framingham, Misc. Case No. (Land Ct. 1996).

[134] "This would typically be a case in which, despite best efforts, no form of reasonable conditions could be devised to satisfy the problem with the plan. . . ." *Id.* There has never been a case under this clause at the appellate level. However, the trial court is starting to see some action under clause (3) of *Prudential. See, e.g.*, New York Cellular v. Brugnoli, Misc. Case No. 217445 and 263705 (Land Ct. 1999).; Wolcott-Marshall, Inc. v. Town of Rutland, Misc. Case No. 246745 and 248309 (Land Ct. 1999). The Court found in either case no problem "so intractable that it could admit of no reasonable solution." A site plan may also be denied where the use is not available as of right or by special permit under the local ordinance or bylaw. Balzotti Corp. v. Baldassini, Misc. Case No.: 260128 (Land Ct. 2002).

[135] For a thorough discussion of these problems, *see* Mark Bobrowski, *Reform of the Zoning Act: An Open Letter to the Legislature*, 34 Suffolk U. L. Rev. 19 (2000).

[136] The Appeals Court has, on two occasions, suggested that the Legislature ought to address the statutory silence regarding site plan review. *See* Osberg v. Planning Bd. of Sturbridge, 44 Mass. App. Ct. 56, 59 n.5 (1997); Dufault v. Millenium Power Partners, L.P., 49 Mass. App. Ct. 137, 143 n.15 (2000).

[137] Section 9 requires special permit determinations to be made after a public hearing, duly advertised for two weeks prior to the hearing, with notice to abutters; the statute also requires a formal decision within 90 days of the hearing, with written findings.

[138] *See* Mass. Gen. L. ch. 41, § 81S, for preliminary plan procedures under the Subdivision Control Law.

[139] Interested parties make their views clear to the board through informal comments, written or oral, delivered at the meeting. The applicant interprets the site plan with the board, and notes the board's criticism and suggested modifications. The applicant and board may negotiate terms or conditions that might be imposed on the plan.

1141 of 1520

Building Code; the initial decision of the building inspector or building commissioner is not, under the regulations, the product of a formal hearing.[140]

Since site plan review has been consistently characterized as functionally less than a special permit decision,[141] the Massachusetts courts are likely to find that the same intricate procedural safeguards are unnecessary. Under *Prudential*, site plan review has been confirmed as regulation of a use, rather than its prohibition; a review board has only limited, if quasi-discretionary, powers. In effect, site plan review should not present such risks to the property rights of an applicant or abutters as to necessitate formal pre-deprivation hearings.[142]

Second, how should a court reconcile conditions imposed in the course of site plan review with those imposed by the special permit-granting authority? Where the special permit-granting authority also serves as site plan review board, this result cannot occur. But where, hypothetically, the board of appeals serves as special permit-granting authority and the planning board sits in review of site plans, there is a potential for conflict.[143] Conditions imposed in the approval of the project by one board may run counter to those attached by the other. No appellate level decision reviews such a circumstance. Since site plan review powers have been clearly delineated to include the imposition of conditions,[144] it is unlikely that the special permit decision would supersede its counterpart. Given the usual tension between these two boards, the prospects for eventual judicial review of this quagmire are quite promising.

Third, does a site plan approval vest rights in light of zoning changes subsequently adopted by Town Meeting? In *Towermarc Canton Limited Partnership v. Town of Canton*,[145] a zoning amendment set a height limitation that seriously affected plaintiff's project, shown on an approved site plan. The Land Court held that the freeze provision of Mass. Gen. L. ch. 40A, § 6 does not apply to site plan

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[140] The Supreme Judicial Court has held, in O'Donnell v. Board of Appeals of Billerica, 349 Mass. 324 (1965), that code provisions functionally equivalent to 780 CMR 114.1 are not "in performance of judicature" and are not subject to procedural due process constraints at this point in the application trail. *Id.* at 327.

[141] *See Y.D. Dugout*, 357 Mass, at 31: "The board's authority to enforce compliance with (site plan review) is only to 'assure' protection of the public interest 'to a degree consistent with a reasonable use of the site for the purposes permitted or permissible by the regulations of the district. . . . '"; *Prudential*, 23 Mass. App. Ct. at 282-283: "Thus, the judge was not required, as he would have been if a special permit had been in issue, simply to ascertain whether there was 'sufficient basis to warrant (the board's) decision.' "

[142] *See* Mathews v. Elridge, 424 U.S. 319 (1976). *See also* Massachusetts Outdoor Advertising Council v. Outdoor Advertising Bd., 9 Mass. App. Ct. 775, 789-792 (1980); American Sign & Indicator Corp. v. Town of Framingham, 9 Mass. App. Ct. 66, 71 (1980). Both decisions discuss due process concepts in decisions involving the licensing of signs.

[143] This occurs fairly often. The reason may stem from the fact that planning boards were excluded from special permit granting authority until at least 1975, when amendments to Mass. Gen. L. ch. 40A first opened this door.

[144] *See* **§ 9.07[B]** for a discussion of Prudential Ins. Co. of Am. v. Board of Appeals of Westwood, 23 Mass. App. Ct. 278 (1986).

[145] Misc. Case No. 131947 (Land Ct. 1989).

approval.[146] The absence of any reference to site plan approval in the freeze paragraphs of the statute was fatal to plaintiff's claim. Note, however, that this result is from a lower court.

Fourth, what is the effect of a constructive grant of site plan approval? Is the approval subject to modification, as in the case of a definitive subdivision plan?[147] There are no reported cases on this point.

Fifth, the lack of a clear appellate route is particularly troublesome. Mass. Gen. L. ch. 40A, § 17 establishes the appeal mechanism for all adjudicatory decisions made pursuant to the Zoning Act. Thus, the procedures for the appeal of a variance or a special permit are uniform. The spurned applicant or aggrieved person takes the matter directly to a court of competent jurisdiction, as set forth in the statute.[148]

The appeal of a site plan review decision is not so predictable.[149] Several earlier decisions—notably, *Prudential, Auburn, and Y.D. Dugout*—mention, without comment, site plan decisions appealed directly to a § 17 Court.[150] However, in *McDonald's Corp. v. Town of Seekonk*,[151] the Appeals Court reconfigured the appellate procedure for uses available as of right. The plaintiff was denied site plan approval by the planning board for a restaurant. Subsequently, the building inspector refused to issue the building permit, citing the action of the planning board. McDonald's appealed the planning board decision to the board of appeals but did not pursue that route, instead opting to appeal the site plan denial directly to Superior Court. The Appeals Court held that the proper appellate route was an appeal of the denied building permit to the board of appeals under Mass. Gen. L. ch. 40A, §§ 8 and 15, and dismissed the action for failure to exhaust administrative remedies.

In *Quincy v. Planning Board of Tewksbury*,[152] the Appeals Court attempted a reconciliation of these alternatives. The local bylaw allowed certain retail uses as of right, subject to a site plan special permit issued by the planning board. The planning board denied the site plan special permit and the decision was appealed directly to Land Court. The jurisdictional question was raised for the first time at the Appeals Court. The Court observed that

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[146] *See* **§ 5.02** for a discussion of freeze provisions.

[147] *See* **§ 5.04**.

[148] Mass. Gen L. ch. 40A, § 17 states that appeals may be filed in Land Court, Superior Court (in which the land concerned is situated), the Housing Court, if in Hampden County, or the District Court (in which the land concerned is situated), if in a county other than Hampden County, subject to the right of any party to file a claim for trial in the Superior Court within 25 days after service of the appeal is completed.

[149] The Appeals Court has ruled, however, that certiorari pursuant to Mass. Gen. L. ch. 249, § 4 was not the appropriate avenue for review when recourse was available under Mass. Gen. L. ch. § 40A, § 17. *See* Cumberland Farms, Inc. v. Planning Bd. of Bourne, 56 Mass. App. Ct. 605 (2002).

[150] Nor was the direct appeal of a site plan decision to a § 17 Court an issue in *Osberg*, decided in 1997, where the shopping center was available as of right.

[151] 12 Mass. App. Ct. 351, 353 (1981).

[152] 39 Mass. App. Ct. 17 (1995).

1143 of 1520

> [s]ince the only decisions of the planning board that are appealable to the courts directly are those in which the planning board has acted as a special permit granting authority, the planning boards disapproval of the site plan had to be run through the board of appeals.[153]

However, the Court further ruled that the "procedural framework [of the local bylaw], including the designation of the planning board as a special permit-granting authority, survived the . . . judgment intact.[154] Hence, the court ruled that the denial of [this] site plan application constitutes a decision by the special permit-granting authority, which is directly appealable under G.L. c. 40A, § 17."[155] Accordingly, where the local ordinance or bylaw makes the mistake of creating a site plan special permit, the review board should be treated as a special permit-granting authority for the purposes of appeal, and the matter should proceed to a § 17 Court. If the local ordinance or bylaw does not equate site plan review with a special permit, *Quincy* directs the appeal to the board of appeals.

The timing of this latter appeal to the board of appeals was established in *St. Botolph Citizens Committee, Inc. v. Boston Redevelopment Authority.*[156] The Supreme Judicial Court reviewed an "adequacy determination" by the Boston Redevelopment Authority, a process it equated to site plan review. The Court addressed the timing of an appeal for a use available as of right:

> An approval after site plan review, when required in connection with the issuance of a building permit, is not a final action, but only a prerequisite to the grant of the permit. The Appeals Court has said, we think correctly, that the right of an aggrieved person to appeal a local planning board's site plan decision arises only when the building permit for the proposed project is issued or denied by the building inspector.[157]

In *Dufault v. Millenium Power Partners, L.P.*,[158] the Appeals Court ruled that the logic of *St. Botolph* applied to cities and towns governed by Chapter 40A.

Unfortunately, these decisions — *Quincy, St. Botolph*, and *Dufault* — only complicate the picture.[159] *Quincy* is limited to those circumstances in which the municipality has codified its misinterpretation of site plan review by equating it

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[153] *Id.* at 20-21 (footnote omitted).

[154] *Id.* at 21.

[155] *Id.* at 22. In so ruling the Court guts the special permit granting authority. "[W]here the proposed use is one permitted by right the planning board may only apply substantive criteria consistent with *Prudential* . . . (i.e., it may impose reasonable terms and conditions on the proposed use, but it does not have discretionary power to deny the use)." *Id.* at 21. This is the same type of reduced special permit power the Appeals Court created in Willard v. Board of Appeals of Orleans, 25 Mass. App. Ct. 15, 21-22 (1987), in the review of proposed alterations to nonconforming single family homes, also with confusing results. *See* discussion in **§ 6.06**.

[156] 429 Mass. 1 (1999).

[157] *Id.* at 9.

[158] 49 Mass. App. Ct. 137, 142 (2000).

[159] For more proof of the problem, *see* Cumberland Farms, Inc. v. Planning Board of Bourne, 67 Mass. App. Ct. 67 (2006).

with special permitting. A better result would have been to establish uniform procedures for site plan review, without regard to the vagaries of local draftsmanship. In ruling, when the use is as of right, that the planning board decision is appealable to the board of appeals, *St. Botolph* and *Dufault* have invented political and practical quagmires. The appellate route does not take into account the effect it will have on the intramural relations of these boards, particularly when the planning board's superior expertise in site design and layout are considered. Moreover, if the planning board decision is only appealable when the building permit is issued or denied by the building inspector, there are consequences for all sides. The applicant whose plan is denied or unreasonably conditioned must apply for a building permit with the knowledge that it will be denied; this is an expensive exercise in frustration. The person aggrieved by the approval of a site plan must monitor the building inspectors' office for the approval of the building permit, a task the Appeals Court has already ruled unfair.[160]

The Legislature should address these deficiencies by taking, at a minimum, the following steps. First, site plan review should be defined in the Zoning Act in a manner consistent with the ruling in *Prudential*. Second, all site plan decisions should be reduced to a written form, and filed within 14 days in the office of the city or town clerk. Finally, appeals of site plan decisions should be taken, pursuant to Mass. Gen. L. ch. 40A, § 17, directly to a court of competent jurisdiction.[161]

[B] Scope of Review

In *Prudential*, the Appeals Court announced the scope of judicial review for site plan decisions for uses available as of right. Where the site plan is approved with conditions, the usual deference is granted. However, where site plan approval is denied, "[t]he judge . . . examines] the proposal to see if the . . . problem was so intractable that it could admit of no reasonable solution. Short of independently finding that, he was not obliged to give deference to the board's decision."[162]

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[160] Vokes v. Avery W. Lovell, Inc., 18 Mass. App. Ct. 471, 482 n.17 (1984):

> The problems arising out of an aggrieved party's being unaware of the issuance of a building permit still exist. The holder of a building permit has up to six months from the date of its issuance to commence work under the permit. *See* 780 Code of Mass. Regs. § 114.3 (1980) There is no public notice of the issuance of a building permit. A permit holder could keep the fact of the permit's issuance secret, refrain from beginning construction under the permit for the thirty-day period established by § 15, and thereby foreclose any further direct review of the legality of the permit's issuance.

[161] In Rehabilitative Servs., Inc. v. Planning Bd. of Sturbridge, Case No.: 03-P-233 (App. Ct. 2004), the Appeals Court ruled that where the local bylaw provided for a direct appeal to Superior Court, this result was not inconsistent with the ruling in *St. Botolph*. *See also* Castle Hill Apartments Ltd. P'ship v. Planning Bd. of Holyoke, 65 Mass. App. Ct. 840, 846 (2006).

[162] Prudential Ins. Co. of Am. v. Board of Appeals of Westwood, 23 Mass. App. Ct. 278, 283 (1986).

CHAPTER 9

SPECIAL PERMITS

§ 9.05 CONDITIONS

Page 286, add new note 72.1 after the word "conditions" in the first line of first paragraph:

. . . conditions,[72.1] safeguards and limitations . . .

[72.1] In Killoran v. Zoning Bd. of Appeals of Andover, 80 Mass. App. Ct. 655 (2011), the Appeals Court ruled that a condition placed in a variance or special permit is not a "condition or restriction" subject to the thirty-year sunset clause limit in Mass. Gen. L. c. 184, § 23.

Page 286, add at end of note 77:

However, if renewal is not automatic, extension requests must be made prior to expiration of the term. *See* Milton Legion Post No. 114 v. Alves, 10 Misc. 427658 (Land Ct. 2011).

§ 9.07 SITE PLAN REVIEW

Page 294, add before Subsection [A]:

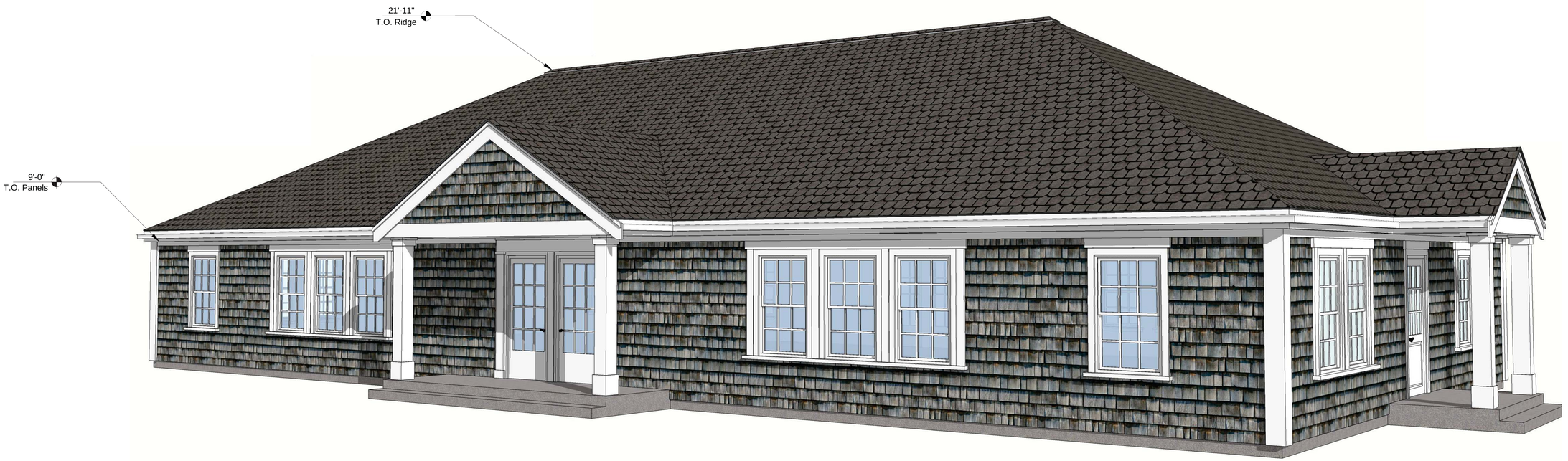
In *Jewish Cemetery Assoc. v. Board of Appeals of Wayland*, 08 MISC 386750 (Land Ct. 2010), the Land Court ushered in a new era of site plan review for religious, educational, and child care uses otherwise exempt pursuant to G.L. c. 40A, s. 3 "as long as such review is limited to reasonable regulations." A long line of appellate cases, including *Bible Speaks*, *Tufts*, and *Petrucci*, held that site plan review could not be applied against a use protected by s. 3. *See also Bay Farm Montessori Academy, Inc. v. Town of Duxbury*, 08 MISC 329566 (Land Ct. 2008).

The Land Court's position makes practical sense. If site plan review is limited to the imposition of "reasonable regulations concerning the bulk and height of structures and determining yard sizes, lot area, setbacks, open space, parking and building coverage requirements" as per s. 3, the heavy lifting otherwise required of the building inspector as initial intake officer can be shifted to a board. When the building inspector denied the s. 3 use (as so often happened), the zoning board of appeals could reverse only with a supermajority. A limited site plan review would allow the matter to proceed by simple majority vote.

[A] Problems

Page 298, add at end of note 161:

In Wildstar Farm, LLC v. Planning Board of Westwood, 81 Mass. App. Ct. 1114 (2012) (published in table format), the Appeals Court examined a local by-law providing that an appeal of a site plan decision for an as of right use "shall be appealed in accordance with G.L. c. 40A, [§] 17[,] to a court of competent jurisdiction." The court ruled this as a proper exercise of local authority because the "town has expressly instructed through its by-law that exhaustion will not be required." *See also* M&K Partners LLC v. Planning Board of Stoughton, 14 MISC 481559 (Land Ct. 2014) and Pandya v. Brushwood Nominee Trust, 14 MISC 481861 (Land Ct. 2014) (appeal directly to court); Bourne v. Sudbury Zoning Board of Appeals, 10 MISC 434334 (Land Ct. 2014) (appeal of site plan decision by Board of Selectmen directly to ZBA as per local by-law consistent with *Wildstar*.



1 P-00 3,235 SF RETAIL - SOUTHEAST PERSPECTIVE

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PRITON

RETAIL
LINER BUILDINGS

DCML 13-362

Client| The Richmond Company

Stage| SCHEMATIC DESIGN

Revision|
△ HDC COMMENTS
△
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Dwg Info|
DRAWN BY: AWH CHECK BY:

Scale| ARCH D SCALE: NA

Date| JULY 2016

Plan| 3,235 SF RETAIL

Plan No.| P-00

1
P-01

3,235 SF RETAIL - SOUTH ELEVATION

SCALE: 1/4" = 1'-0"

2
P-01

3,235 SF RETAIL - WEST ELEVATION

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Project:

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RETAIL
LINER BUILDINGS

DCML 13-362

Client: The Richmond Company

Stage: SCHEMATIC DESIGN

Revision:
△ HDC COMMENTS
△
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Dwg Info: DRAWN BY: AWH CHECK BY:

Scale: ARCH D 1/4" = 1'-0"

Date: JULY 2016

Plan: 3,235 SF RETAIL

Plan No.: P-01

1
P-02

3,235 SF RETAIL - NORTH ELEVATION

SCALE: 1/4" = 1'-0"

2
P-02

3,235 SF RETAIL - EAST ELEVATION

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Stage: SCHEMATIC DESIGN

Revision:
△ HDC COMMENTS
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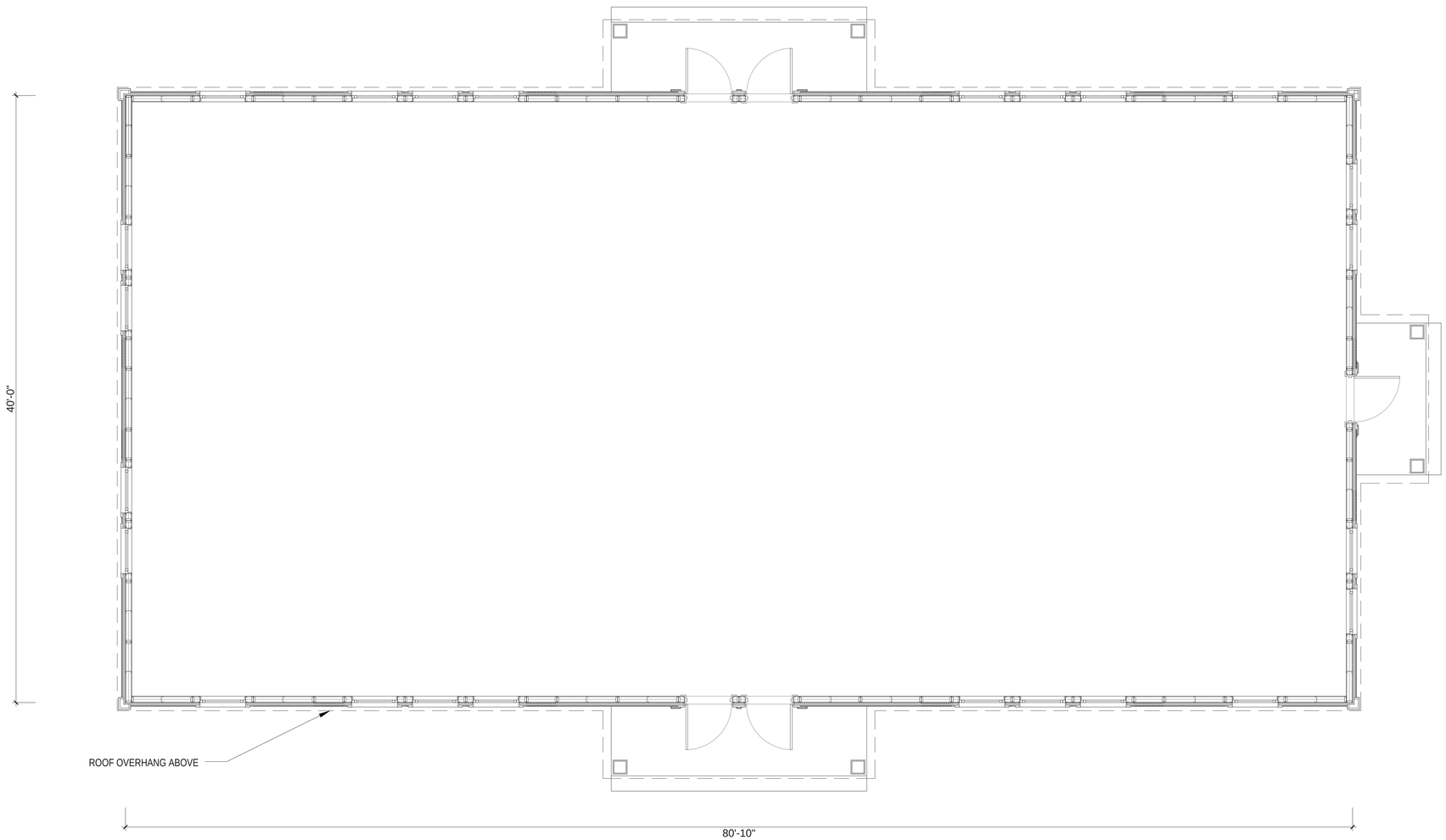
Date: JULY 2016

Plan: 3,235 SF RETAIL

Plan No.: P-02



1 A-00 3,235 SF RETAIL - PLAN

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DCML 13-362

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Stage: SCHEMATIC DESIGN

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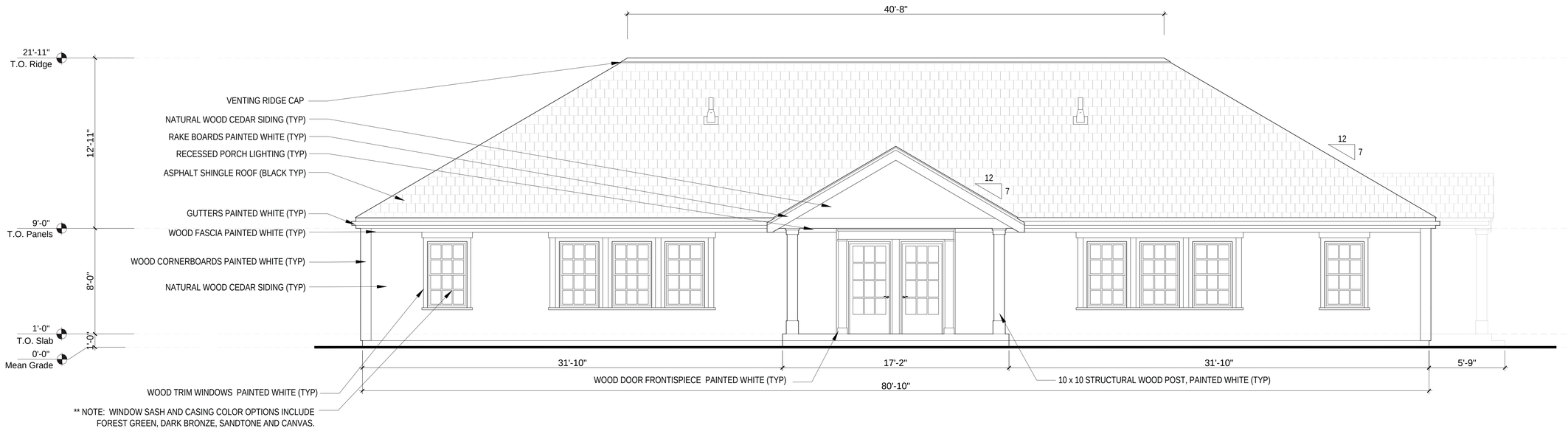

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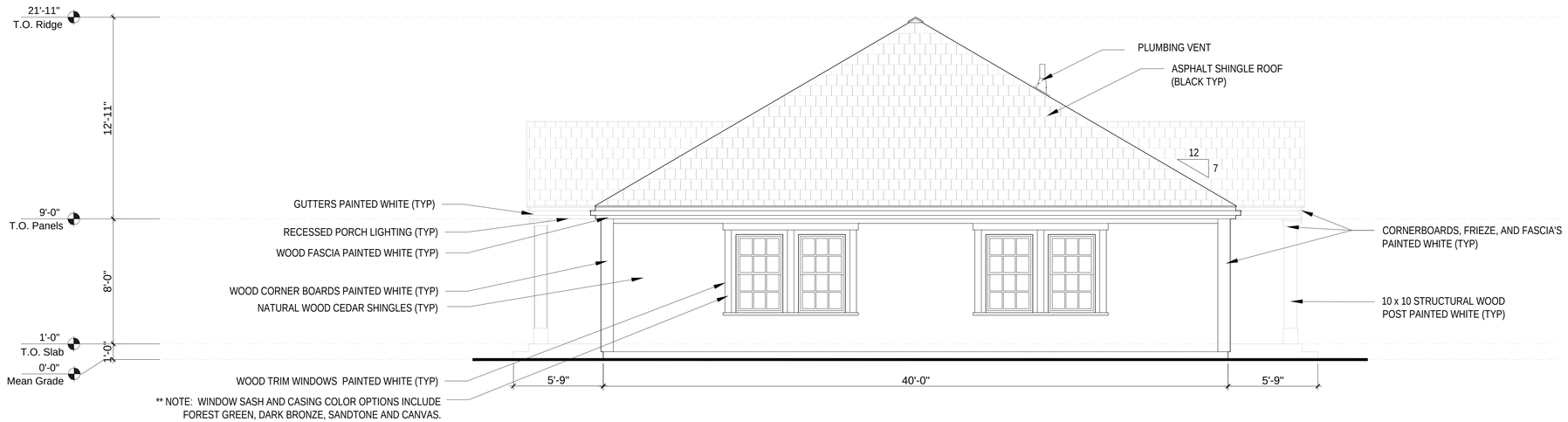

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A-01

3,235 SF RETAIL - WEST ELEVATION

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RETAIL
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DCML 13-362

Client | The Richmond Company

Stage | SCHEMATIC DESIGN

Revision | HDC COMMENTS

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Date | JULY 2016

Plan | 3,235 SF RETAIL

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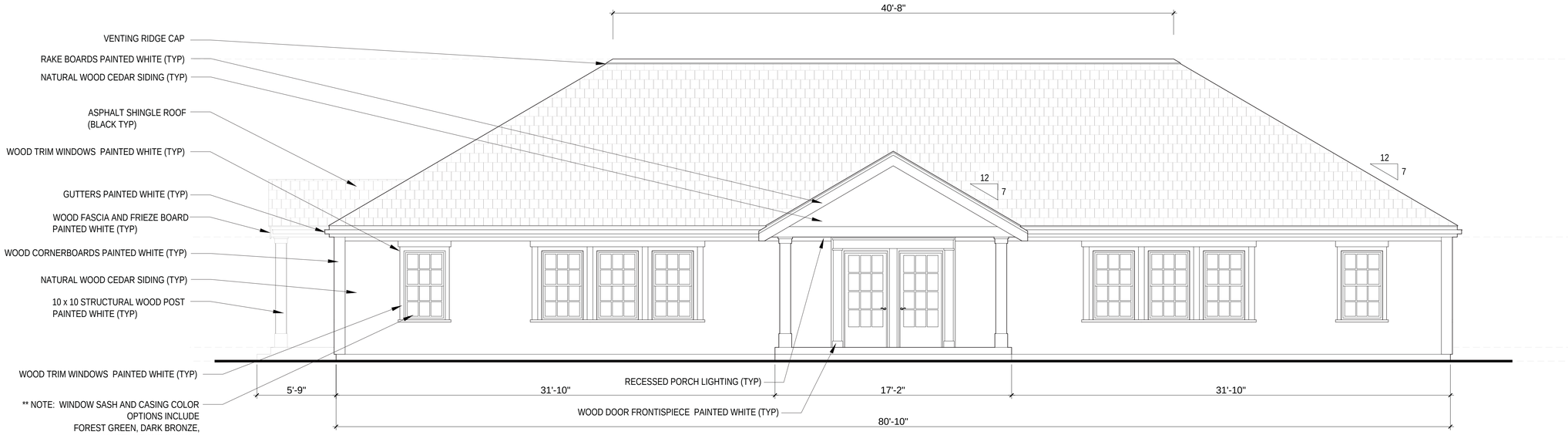

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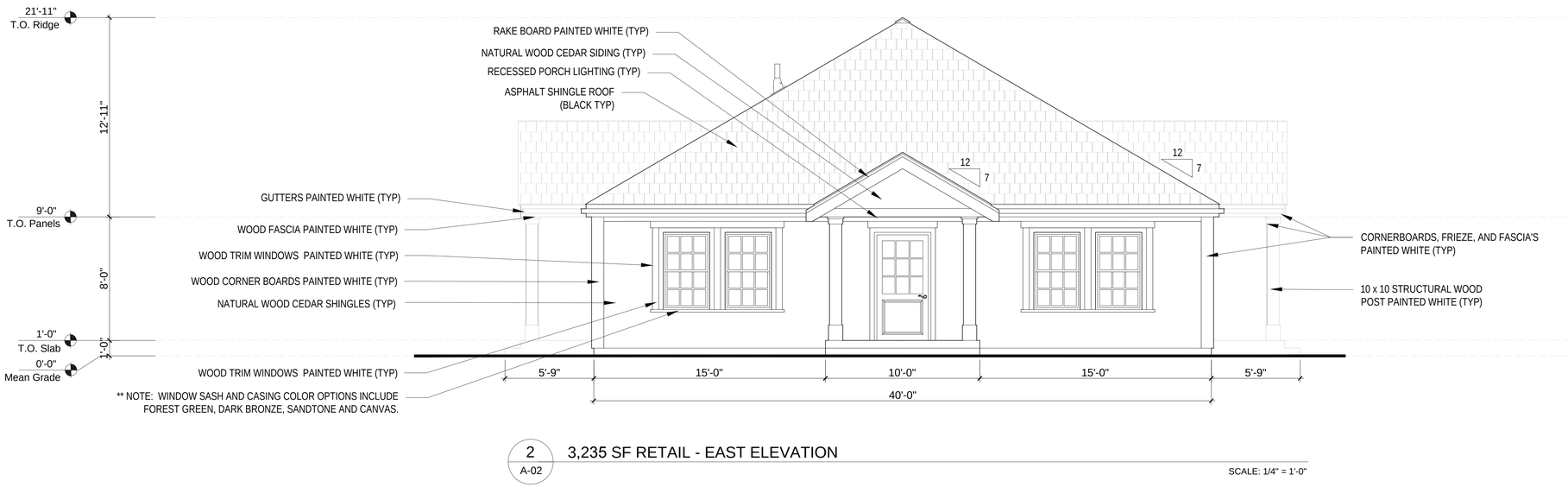

2 A-02 3,235 SF RETAIL - EAST ELEVATION

SCALE: 1/4" = 1'-0"

DCM Architecture and Engineering expressly reserves its common law copyright and other property rights to these plans. All designs, specifications and drawings are the property of DCM Architecture and Engineering which are to be used only as issued for this project. They shall not be used on any other project in full or in part, without first obtaining the expressed written approval and consent of DCM Architecture and Engineering. These documents shall not be transferred to any unauthorized third party without the same consent.

Do not scale drawings: Contractors shall verify all dimensions prior to construction, and shall bring any discrepancies to the attention of the Architect.

The Contractor shall make no structural changes or substitutions without the written approval of the Architect.

200 Federal Street, Suite 435, Camden NJ 08103

Telephone: 856.479.9101 info@dcm-ae.com
Facsimile: 856.757.0082 www.DCM-AE.com

Architect: EDUARDO GUZMAN, R.A.

Engineer: ROBERT BENSON, PE

Collaborate: Anton Levchenko
Andrew Hankermeyer

Project: PRITON

RETAIL
LINER BUILDINGS

DCML 13-362

Client: The Richmond Company

Stage: SCHEMATIC DESIGN

Revision:
- HDC COMMENTS

DRAWN BY: AWH CHECK BY:

Dwg Info: ARCH D

Scale: 1/4" = 1'-0"

Date: JULY 2016

Plan: 3,235 SF RETAIL

Plan No.: A-02

1 P-00 5,170 SF RETAIL - SOUTHEAST PERSPECTIVE

SCALE: NA

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Project| Collaborate| Engineer| Architect|

EDUARDO GUZMAN, R.A.

ROBERT BENSON, PE

Anton Levchenko
Andrew Hankermeyer

PRITON

RETAIL LINER BUILDINGS

DCML 13-362

Stage| Client|

The Richmond Company

SCHEMATIC DESIGN

Revision|

△ HDC COMMENTS
△
△
△

Dwg Info| Scale| Date| Plan|

DRAWN BY: AWH CHECK BY:

ARCH D NO SCALE

JULY 2016

5170 SF RETAIL

Plan No.|

P-00

1
P-01

5,170 SF RETAIL - EAST ELEVATION

SCALE: 1/4" = 1'-0"

2
P-01

5,170 SF RETAIL - SOUTH ELEVATION

SCALE: 1/4" = 1'-0"

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RETAIL
LINER BUILDINGS

DCML 13-362

Client: The Richmond Company

Stage: SCHEMATIC DESIGN

Revision:
△ HDC COMMENTS
△
△
△

Dwg Info: DRAWN BY: AWH CHECK BY:

Scale: ARCH D 1/4" = 1'-0"

Date: JULY 2016

Plan: 5170 SF RETAIL

Plan No.: P-01

1
P-02

5,170 SF RETAIL - WEST ELEVATION

SCALE: 1/4" = 1'-0"

2
P-02

5,170 SF RETAIL - NORTH ELEVATION

SCALE: 1/4" = 1'-0"

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Andrew Hankermeyer

Project:

PRITON

RETAIL
LINER BUILDINGS

DCML 13-362

Client: The Richmond Company

Stage: SCHEMATIC DESIGN

Revision:
- HDC COMMENTS

Dwg Info:

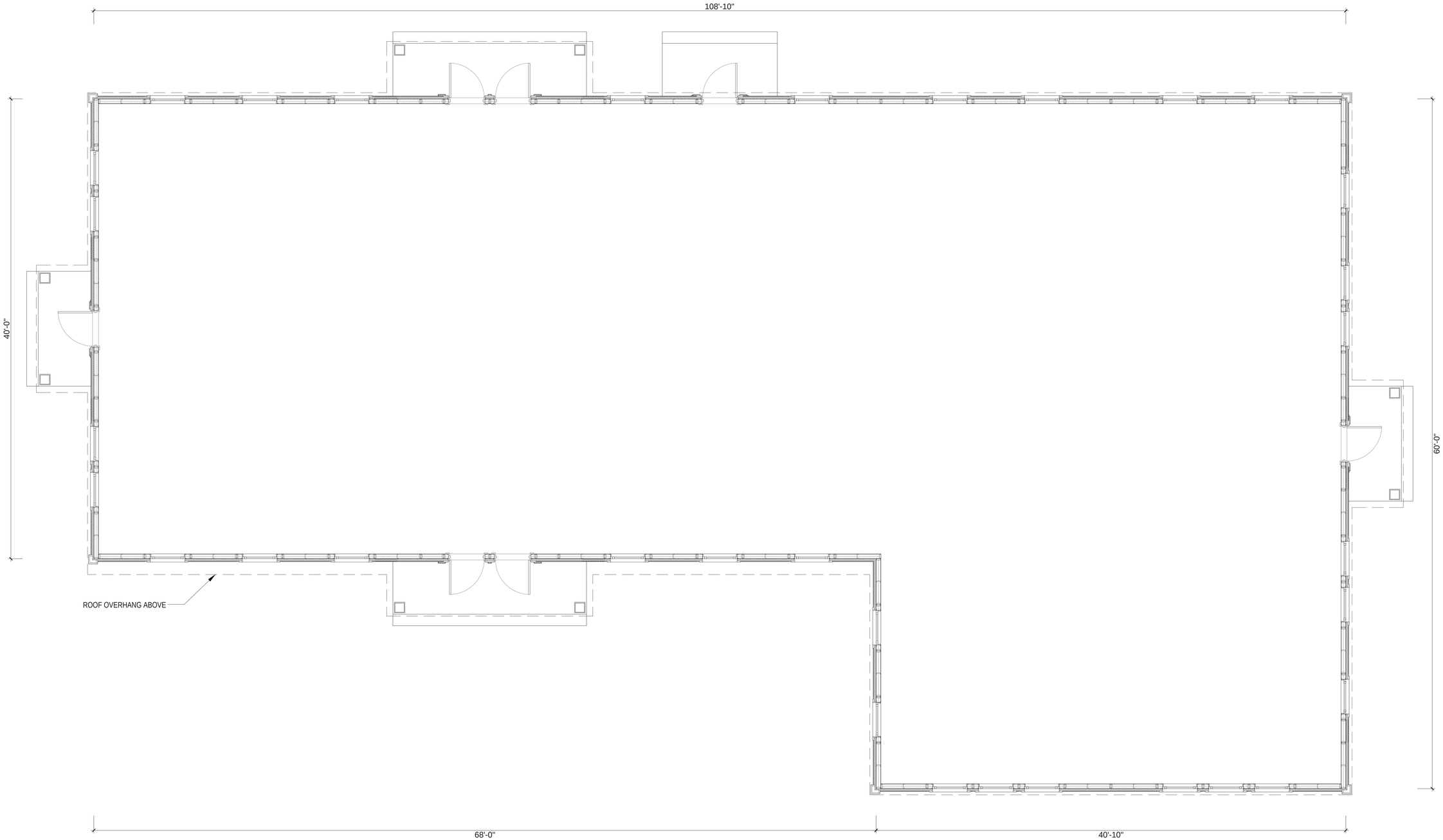
DRAWN BY: AWH CHECK BY:

Scale: ARCH D 1/4" = 1'-0"

Date: JULY 2016

Plan: 5170 SF RETAIL

Plan No.: P-02



1 A-00 5,170 SF RETAIL - PLAN

SCALE: 1/4" = 1'-0"

N

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10 YEARS DCM

200 Federal Street, Suite 435, Camden NJ 08103

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Project: Collaborate: Engineer/ Architect:

EDUARDO GUZMAN, R.A.

ROBERT BENSON, PE

Anton Levchenko
Andrew Hankermeyer

PRITON

RETAIL LINER BUILDINGS

DCML 13-362

Client: The Richmond Company

Stage: SCHEMATIC DESIGN

Revision:
△ HDC COMMENTS
△
△
△

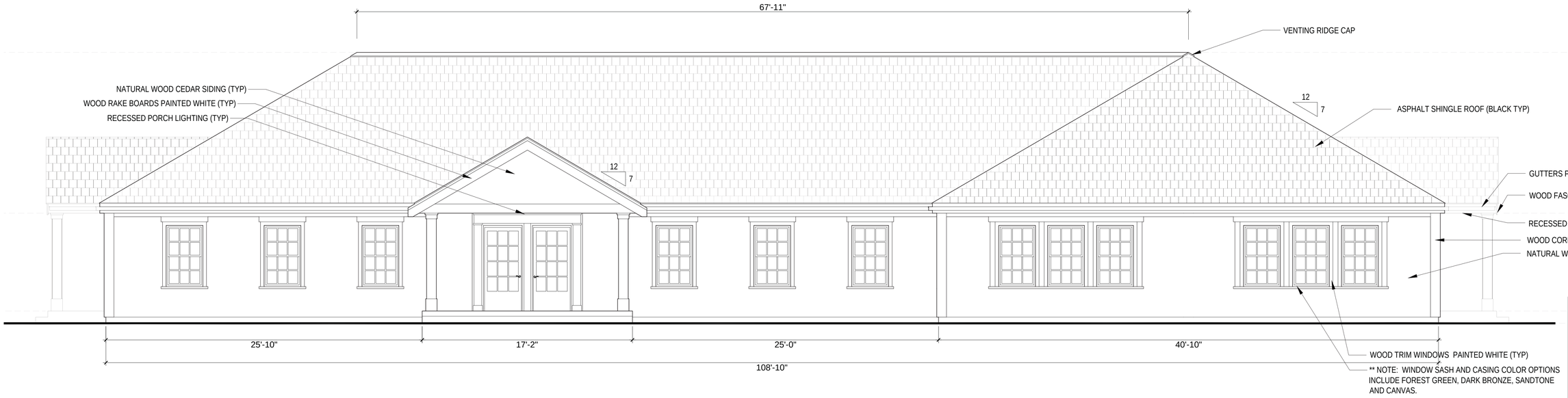
Dwg Info:
DRAWN BY: AWH CHECK BY:

Scale: ARCH D 1/4" = 1'-0"

Date: JULY 2016

Plan: 5170 SF RETAIL

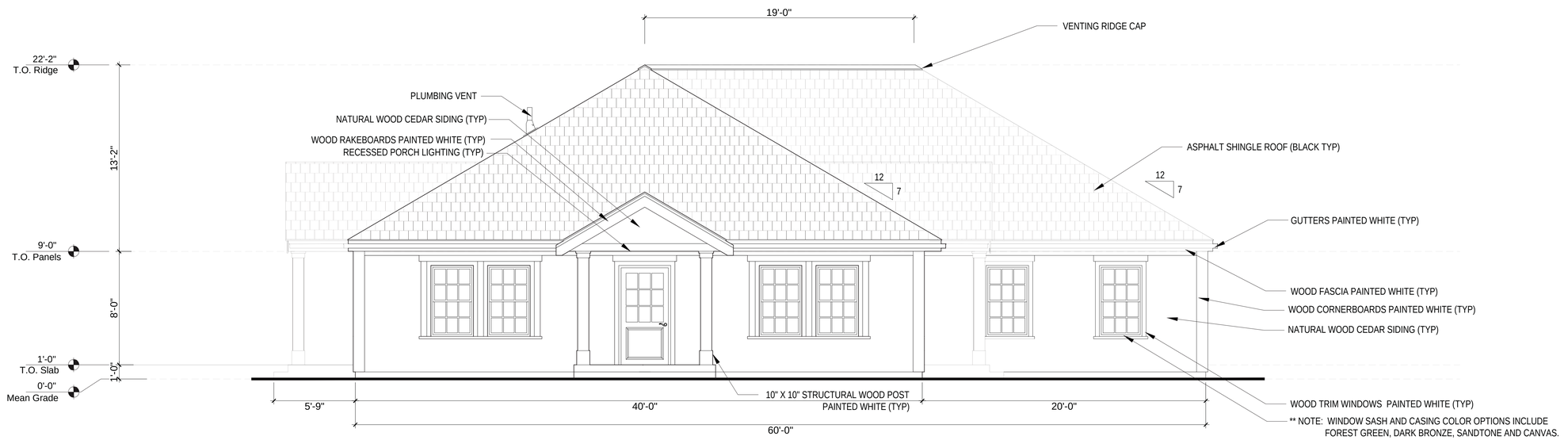
Plan No.: A-00



1
A-01

5,170 SF RETAIL - EAST ELEVATION

SCALE: 1/4" = 1'-0"



2
A-01

5,170 SF RETAIL - SOUTH ELEVATION

SCALE: 1/4" = 1'-0"

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Collaborate: Anton Levchenko
Andrew Hankermeyer

Project:

PRITON

RETAIL
LINER BUILDINGS

DCML 13-362

Client: The Richmond Company

Stage: SCHEMATIC DESIGN

Revision:
- HDC COMMENTS

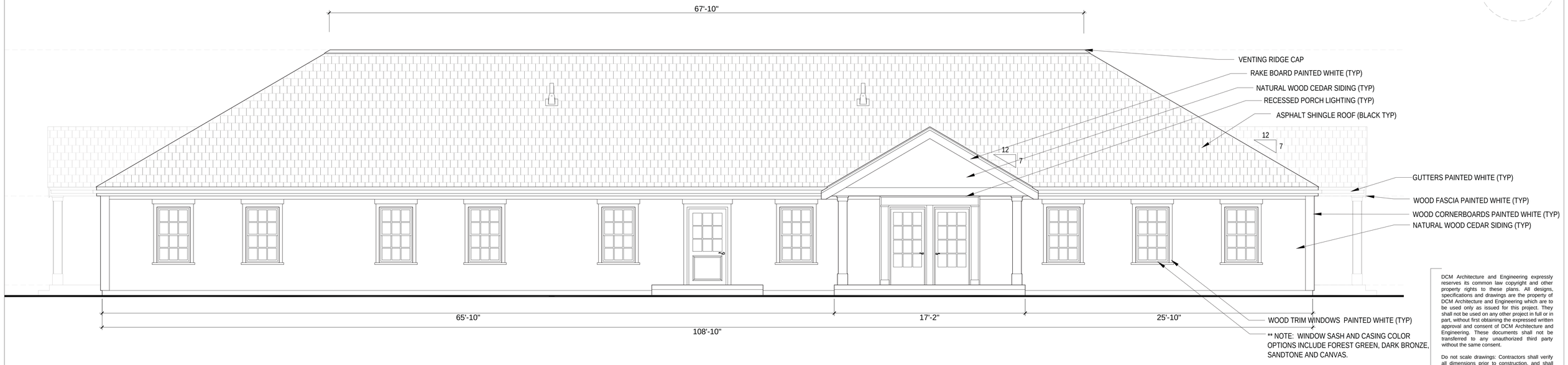
Dwg Info: DRAWN BY: AWH CHECK BY:

Scale: ARCH D 1/4" = 1'-0"

Date: JULY 2016

Plan: 5170 SF RETAIL

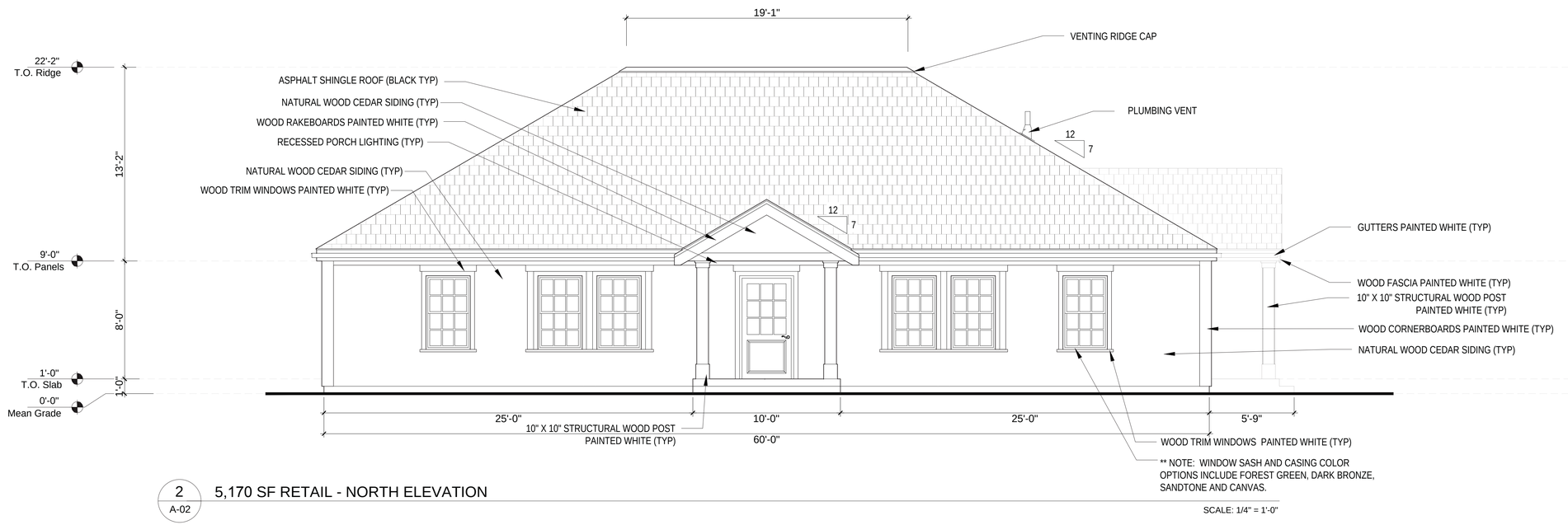
Plan No.: A-01



1
A-02

5,170 SF RETAIL - WEST ELEVATION

SCALE: 1/4" = 1'-0"



2
A-02

5,170 SF RETAIL - NORTH ELEVATION

SCALE: 1/4" = 1'-0"

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Project:
PRITON

RETAIL
LINER BUILDINGS

DCML 13-362

Client: The Richmond Company

Stage: SCHEMATIC DESIGN

Revision:
- HDC COMMENTS

DRAWN BY: AWH CHECK BY:

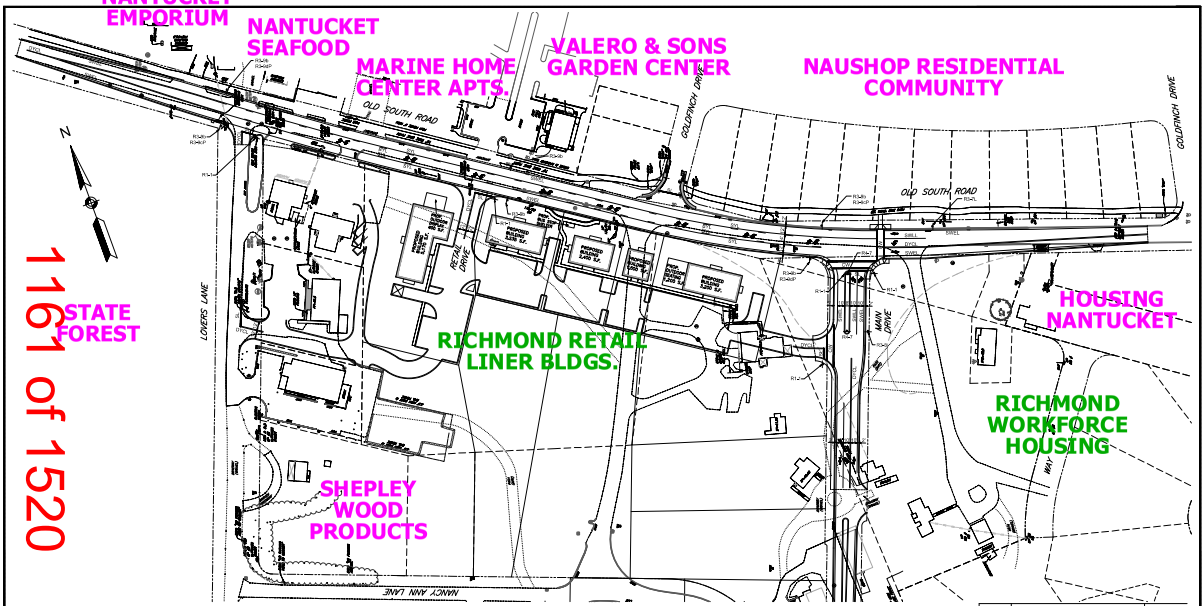
Scale: ARCH D 1/4" = 1'-0"

Date: JULY 2016

Plan: 5170 SF RETAIL

Plan No.: A-02

Figure 1
Site Location and Study Area Map



SIGN LEGEND

R1-1	STOP	R3-9b		R4-7	
R3-7L		R3-9cP	BEGIN		
R3-8		R3-9dP	END		

PAVEMENT MARKING LEGEND

DYCL	DOUBLE YELLOW CENTER LINE
SWEL	SOLID WHITE EDGE LINE
SYEL	SOLID YELLOW EDGE LINE
BYL	BROKEN YELLOW LINE
SL	STOP LINE
SWLL	SOLID WHITE LANE LINE
CW	CROSSWALK

GRAPHIC SCALE

REV. #	DESCRIPTION	DATE

Ron Muller & Associates

Traffic Engineering and Consulting Services

PROPOSED CENTER TURN LANE
OLD SOUTH ROAD
NANTUCKET,
MASSACHUSETTS

CONCEPTUAL IMPROVEMENT PLAN

DATE	FIGURE
8/18/16	FIGURE 1

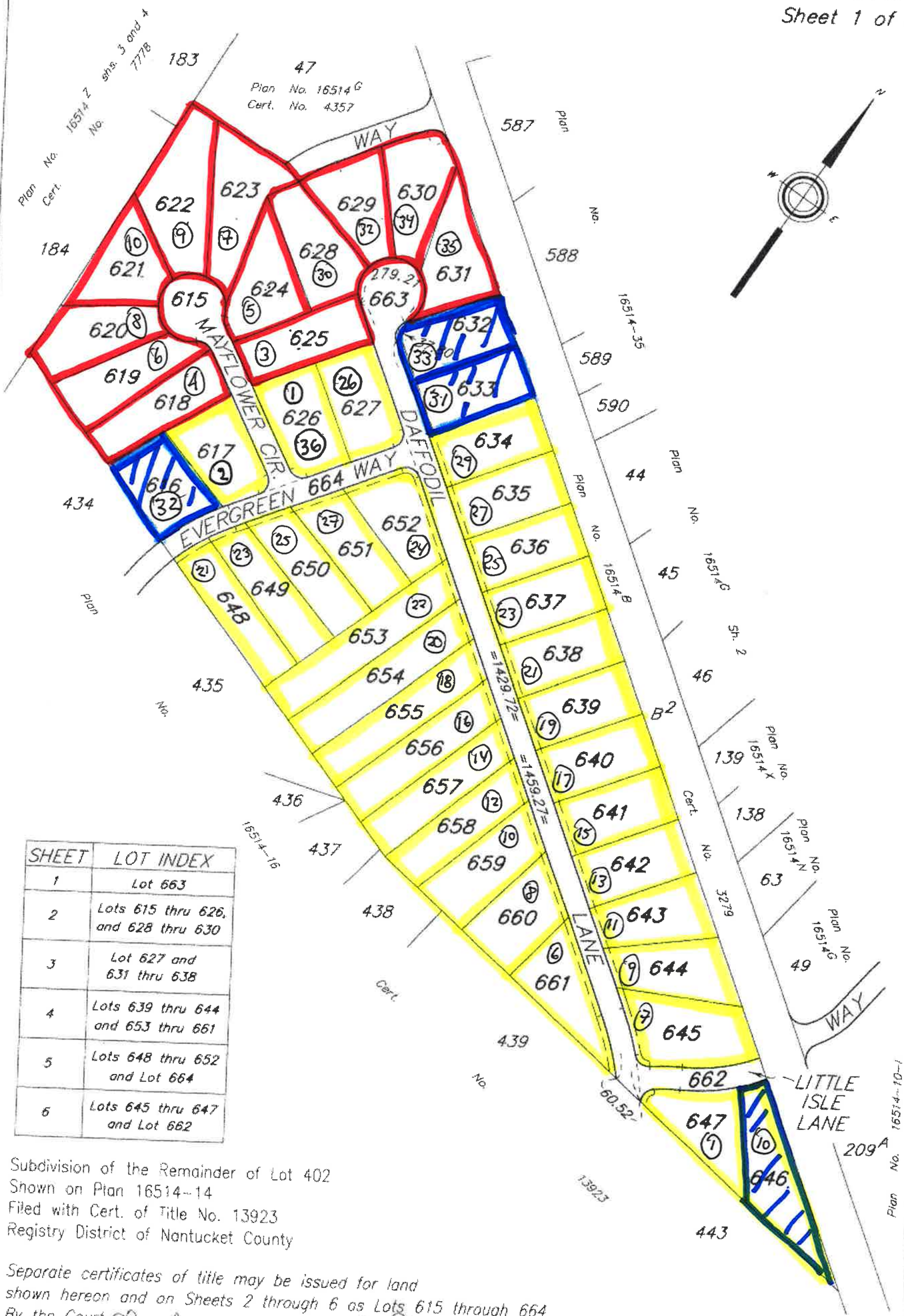
SUBDIVISION PLAN OF LAND IN NANTUCKET

John J. Shugrue, Inc., Surveyors

March 12, 1986

16514-40

KEY SHEET
Sheet 1 of 6



SHEET	LOT INDEX
1	Lot 663
2	Lots 615 thru 626, and 628 thru 630
3	Lot 627 and 631 thru 638
4	Lots 639 thru 644 and 653 thru 661
5	Lots 648 thru 652 and Lot 664
6	Lots 645 thru 647 and Lot 662

Subdivision of the Remainder of Lot 402
Shown on Plan 16514-14
Filed with Cert. of Title No. 13923
Registry District of Nantucket County

Separate certificates of title may be issued for land shown hereon and on Sheets 2 through 6 as Lots 615 through 664 By the Court.

JAN. 8, 2001

Recorder

JMF-041V

Copy of part of plan filed in
LAND REGISTRATION OFFICE
JAN. 8, 2001
Scale of this plan 200 feet to an inch
Louis A. Moore, Engineer for Court

APPENDIX

Traffic Count and Vehicle Speed Data
Crash Rate Worksheets
Sight Line Plan and Profile
Traffic Growth and Background Development Worksheets
Trip Generation Worksheets
Capacity Analysis Methodology and Worksheets
Old South Road Conceptual Improvement Plan

Traffic Count and Vehicle Speed Data

S: Nobadeer Farm Road
E/W: Milestone Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

File Name : 143955 A
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Milestone Road From East			Nobadeer Famr Road From South			Milestone Road From West			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
08:00 AM	63	18	0	32	41	0	34	55	0	243
08:15 AM	65	31	0	38	39	0	26	44	0	243
08:30 AM	84	25	0	30	52	0	36	47	0	274
08:45 AM	67	31	0	30	41	0	47	60	0	276
Total	279	105	0	130	173	0	143	206	0	1036
09:00 AM	55	24	0	36	49	0	39	49	0	252
09:15 AM	68	27	0	26	32	0	36	50	0	239
09:30 AM	60	23	0	45	36	0	22	70	0	256
09:45 AM	56	19	0	25	22	0	30	55	0	207
Total	239	93	0	132	139	0	127	224	0	954
10:00 AM	77	25	0	37	31	0	26	57	0	253
10:15 AM	69	33	0	36	36	0	22	50	0	246
10:30 AM	60	21	0	24	35	0	18	60	0	218
10:45 AM	73	24	0	25	13	0	27	67	0	229
Total	279	103	0	122	115	0	93	234	0	946
Grand Total	797	301	0	384	427	0	363	664	0	2936
Apprch %	72.6	27.4	0	47.3	52.7	0	35.3	64.7	0	
Total %	27.1	10.3	0	13.1	14.5	0	12.4	22.6	0	
Cars	731	268	0	338	383	0	338	584	0	2642
% Cars	91.7	89	0	88	89.7	0	93.1	88	0	90
Heavy Vehicles	66	33	0	46	44	0	25	80	0	294
% Heavy Vehicles	8.3	11	0	12	10.3	0	6.9	12	0	10

	Milestone Road From East				Nobadeer Famr Road From South				Milestone Road From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:15 AM													
08:15 AM	65	**31**	0	96	**38**	39	0	77	26	44	0	70	243
08:30 AM	**84**	25	0	**109**	30	**52**	0	82	36	47	0	83	274
08:45 AM	67	31	0	98	30	41	0	71	**47**	**60**	0	**107**	**276**
09:00 AM	55	24	0	79	36	49	0	**85**	39	49	0	88	252
Total Volume	271	111	0	382	134	181	0	315	148	200	0	348	1045
% App. Total	70.9	29.1	0		42.5	57.5	0		42.5	57.5	0		
PHF	.807	.895	.000	.876	.882	.870	.000	.926	.787	.833	.000	.813	.947
Cars	249	100	0	349	119	168	0	287	142	178	0	320	956
% Cars	91.9	90.1	0	91.4	88.8	92.8	0	91.1	95.9	89.0	0	92.0	91.5
Heavy Vehicles	22	11	0	33	15	13	0	28	6	22	0	28	89
% Heavy Vehicles	8.1	9.9	0	8.6	11.2	7.2	0	8.9	4.1	11.0	0	8.0	8.5

S: Nobadeer Farm Road
E/W: Milestone Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

File Name : 143955 A
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Milestone Road From East			Nobadeer Famr Road From South			Milestone Road From West			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
09:00 AM	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	0	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	3	0	0	0	3
10:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	3	0	0	0	3
Grand Total	0	0	0	0	0	3	0	0	0	3
Apprch %	0	0	0	0	0	100	0	0	0	
Total %	0	0	0	0	0	100	0	0	0	

	Milestone Road From East				Nobadeer Famr Road From South				Milestone Road From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 09:45 AM													
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	**3**	**3**	0	0	0	0	**3**
Total Volume	0	0	0	0	0	0	3	3	0	0	0	0	3
% App. Total	0	0	0		0	0	100		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.000	.000	.250

S: Nobadeer Farm Road
E/W: Milestone Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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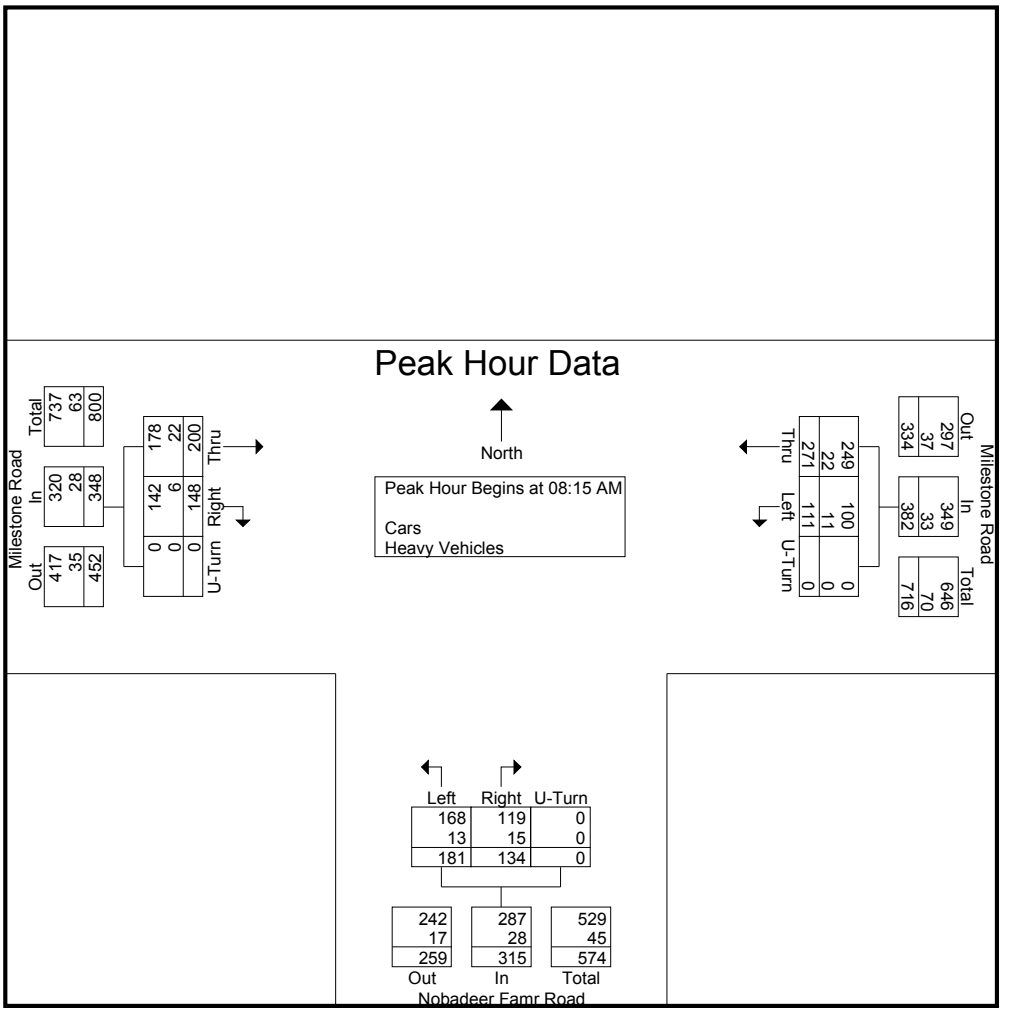
PHF	.807	.895	.000	.876	.882	.870	.000	.926	.787	.833	.000	.813	.947
Cars	249	100	0	349	119	168	0	287	142	178	0	320	956
% Cars	91.9	90.1	0	91.4	88.8	92.8	0	91.1	95.9	89.0	0	92.0	91.5
Heavy Vehicles	22	11	0	33	15	13	0	28	6	22	0	28	89
% Heavy Vehicles	8.1	9.9	0	8.6	11.2	7.2	0	8.9	4.1	11.0	0	8.0	8.5



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File Name : 143955 AA
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Groups Printed- Cars - Heavy Vehicles

	Milestone Road From East			Nobadeer Farm Road From South			Milestone Road From West			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
03:00 PM	52	29	0	43	37	0	32	55	0	248
03:15 PM	67	22	0	25	37	0	31	72	0	254
03:30 PM	84	18	0	39	27	0	28	76	0	272
03:45 PM	77	35	0	27	35	0	33	66	0	273
Total	280	104	0	134	136	0	124	269	0	1047
04:00 PM	75	20	0	40	36	0	43	63	0	277
04:15 PM	78	19	0	40	31	0	32	75	0	275
04:30 PM	67	37	0	29	41	0	37	73	0	284
04:45 PM	79	30	0	22	23	0	38	70	0	262
Total	299	106	0	131	131	0	150	281	0	1098
05:00 PM	57	26	0	29	34	0	34	81	0	261
05:15 PM	73	16	0	32	30	0	20	64	0	235
05:30 PM	68	22	0	27	12	0	15	72	0	216
05:45 PM	55	12	0	19	13	0	17	70	0	186
Total	253	76	0	107	89	0	86	287	0	898
Grand Total	832	286	0	372	356	0	360	837	0	3043
Apprch %	74.4	25.6	0	51.1	48.9	0	30.1	69.9	0	
Total %	27.3	9.4	0	12.2	11.7	0	11.8	27.5	0	
Cars	805	264	0	348	337	0	332	807	0	2893
% Cars	96.8	92.3	0	93.5	94.7	0	92.2	96.4	0	95.1
Heavy Vehicles	27	22	0	24	19	0	28	30	0	150
% Heavy Vehicles	3.2	7.7	0	6.5	5.3	0	7.8	3.6	0	4.9

	Milestone Road From East				Nobadeer Farm Road From South				Milestone Road From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:45 PM													
03:45 PM	77	35	0	**112**	27	35	0	62	33	66	0	99	273
04:00 PM	75	20	0	95	**40**	36	0	**76**	**43**	63	0	106	277
04:15 PM	**78**	19	0	97	40	31	0	71	32	**75**	0	107	275
04:30 PM	67	**37**	0	104	29	**41**	0	70	37	73	0	**110**	**284**
Total Volume	297	111	0	408	136	143	0	279	145	277	0	422	1109
% App. Total	72.8	27.2	0		48.7	51.3	0		34.4	65.6	0		
PHF	.952	.750	.000	.911	.850	.872	.000	.918	.843	.923	.000	.959	.976
Cars	293	106	0	399	131	137	0	268	133	269	0	402	1069
% Cars	98.7	95.5	0	97.8	96.3	95.8	0	96.1	91.7	97.1	0	95.3	96.4
Heavy Vehicles	4	5	0	9	5	6	0	11	12	8	0	20	40
% Heavy Vehicles	1.3	4.5	0	2.2	3.7	4.2	0	3.9	8.3	2.9	0	4.7	3.6

S: Nobadeer Farm Road
E/W: Milestone Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
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File Name : 143955 AA
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Milestone Road From East			Nobadeer Farm Road From South			Milestone Road From West			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	
Total %										

	Milestone Road From East				Nobadeer Farm Road From South				Milestone Road From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:00 PM													
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

PRECISION
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INDUSTRIES, LLC
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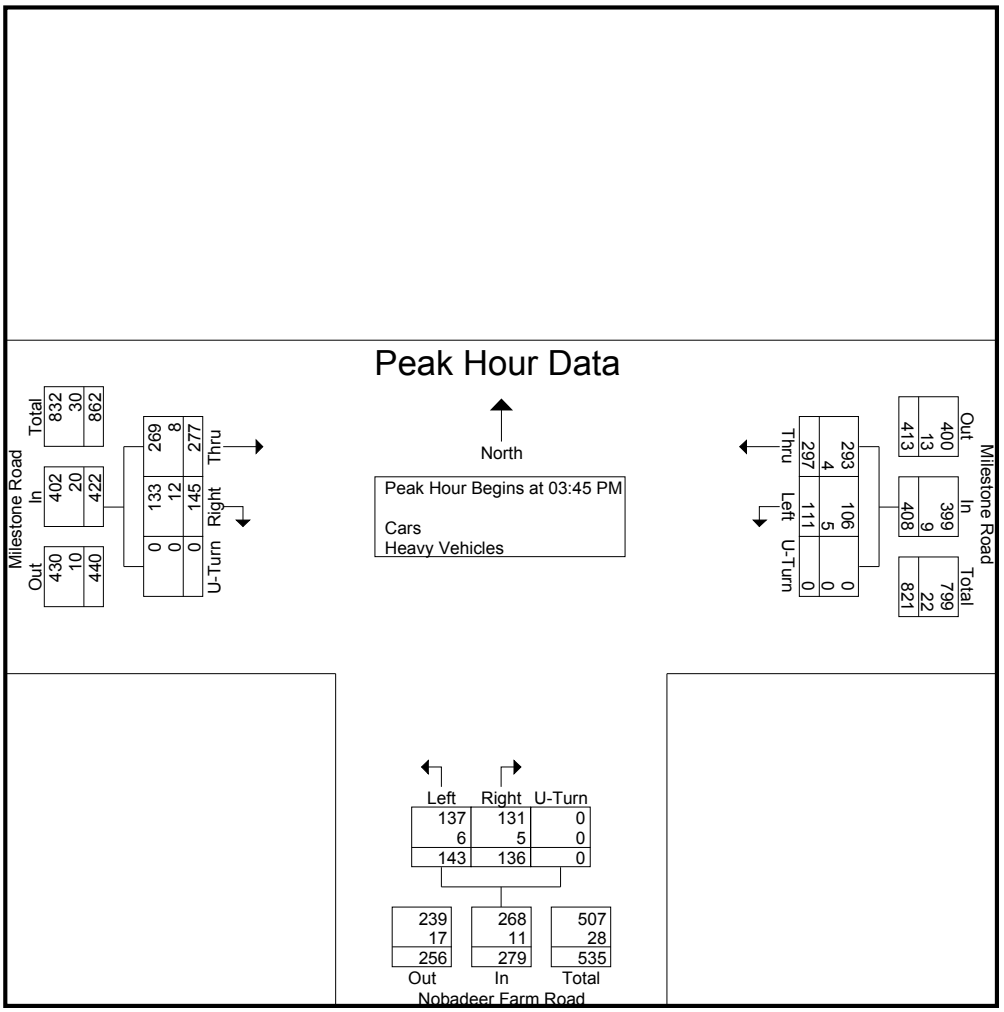
S: Nobadeer Farm Road
E/W: Milestone Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 AA
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

	Milestone Road From East				Nobadeer Farm Road From South				Milestone Road From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:45 PM													
03:45 PM	77	35	0	**112**	27	35	0	62	33	66	0	99	273
04:00 PM	75	20	0	95	**40**	36	0	**76**	**43**	63	0	106	277
04:15 PM	**78**	19	0	97	40	31	0	71	32	**75**	0	107	275
04:30 PM	67	**37**	0	104	29	**41**	0	70	37	73	0	**110**	**284**
Total Volume	297	111	0	408	136	143	0	279	145	277	0	422	1109
% App. Total	72.8	27.2	0		48.7	51.3	0		34.4	65.6	0		
PHF	.952	.750	.000	.911	.850	.872	.000	.918	.843	.923	.000	.959	.976
Cars	293	106	0	399	131	137	0	268	133	269	0	402	1069
% Cars	98.7	95.5	0	97.8	96.3	95.8	0	96.1	91.7	97.1	0	95.3	96.4
Heavy Vehicles	4	5	0	9	5	6	0	11	12	8	0	20	40
% Heavy Vehicles	1.3	4.5	0	2.2	3.7	4.2	0	3.9	8.3	2.9	0	4.7	3.6



S: Nobadeer Farm Road
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City, State: Nantucket, MA
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File Name : 143955 AAA
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Milestone Road From East			Nobadeer Farm Road From South			Milestone Road From West			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
11:00 AM	65	24	0	22	16	0	19	67	0	213
11:15 AM	83	18	0	27	21	0	17	60	0	226
11:30 AM	71	25	0	24	25	0	23	76	0	244
11:45 AM	60	22	0	19	33	0	29	90	0	253
Total	279	89	0	92	95	0	88	293	0	936
12:00 PM	93	20	0	29	29	0	21	70	0	262
12:15 PM	67	26	0	22	27	0	18	81	0	241
12:30 PM	74	22	0	28	11	0	15	71	0	221
12:45 PM	75	20	0	34	12	0	21	86	0	248
Total	309	88	0	113	79	0	75	308	0	972
01:00 PM	67	20	0	22	16	0	10	61	0	196
01:15 PM	80	25	0	15	16	0	16	73	0	225
01:30 PM	70	21	0	33	21	0	14	67	0	226
01:45 PM	55	28	0	25	15	0	16	66	0	205
Total	272	94	0	95	68	0	56	267	0	852
Grand Total	860	271	0	300	242	0	219	868	0	2760
Apprch %	76	24	0	55.4	44.6	0	20.1	79.9	0	
Total %	31.2	9.8	0	10.9	8.8	0	7.9	31.4	0	
Cars	845	261	0	290	235	0	213	853	0	2697
% Cars	98.3	96.3	0	96.7	97.1	0	97.3	98.3	0	97.7
Heavy Vehicles	15	10	0	10	7	0	6	15	0	63
% Heavy Vehicles	1.7	3.7	0	3.3	2.9	0	2.7	1.7	0	2.3

	Milestone Road From East				Nobadeer Farm Road From South				Milestone Road From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:30 AM													
11:30 AM	71	25	0	96	24	25	0	49	23	76	0	99	244
11:45 AM	60	22	0	82	19	**33**	0	52	**29**	**90**	0	**119**	253
12:00 PM	**93**	20	0	**113**	**29**	29	0	**58**	21	70	0	91	**262**
12:15 PM	67	**26**	0	93	22	27	0	49	18	81	0	99	241
Total Volume	291	93	0	384	94	114	0	208	91	317	0	408	1000
% App. Total	75.8	24.2	0		45.2	54.8	0		22.3	77.7	0		
PHF	.782	.894	.000	.850	.810	.864	.000	.897	.784	.881	.000	.857	.954
Cars	286	88	0	374	93	109	0	202	89	309	0	398	974
% Cars	98.3	94.6	0	97.4	98.9	95.6	0	97.1	97.8	97.5	0	97.5	97.4
Heavy Vehicles	5	5	0	10	1	5	0	6	2	8	0	10	26
% Heavy Vehicles	1.7	5.4	0	2.6	1.1	4.4	0	2.9	2.2	2.5	0	2.5	2.6

S: Nobadeer Farm Road
E/W: Milestone Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION
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File Name : 143955 AAA
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Milestone Road From East			Nobadeer Farm Road From South			Milestone Road From West			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
11:00 AM	0	0	0	0	0	2	0	0	0	2
11:15 AM	0	0	0	0	0	1	0	0	0	1
11:30 AM	0	0	0	0	0	1	0	0	0	1
11:45 AM	0	0	0	0	0	1	0	0	0	1
Total	0	0	0	0	0	5	0	0	0	5
12:00 PM	0	3	0	3	0	0	1	2	0	9
12:15 PM	0	0	0	1	0	0	0	6	0	7
12:30 PM	0	3	0	1	0	0	1	4	0	9
12:45 PM	0	1	0	0	0	0	0	2	0	3
Total	0	7	0	5	0	0	2	14	0	28
01:00 PM	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	7	0	5	0	5	2	14	0	33
Apprch %	0	100	0	50	0	50	12.5	87.5	0	
Total %	0	21.2	0	15.2	0	15.2	6.1	42.4	0	

	Milestone Road From East				Nobadeer Farm Road From South				Milestone Road From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 12:00 PM													
12:00 PM	0	**3**	0	**3**	**3**	0	0	**3**	**1**	2	0	3	**9**
12:15 PM	0	0	0	0	1	0	0	1	0	**6**	0	**6**	7
12:30 PM	0	3	0	3	1	0	0	1	1	4	0	5	9
12:45 PM	0	1	0	1	0	0	0	0	0	2	0	2	3
Total Volume	0	7	0	7	5	0	0	5	2	14	0	16	28
% App. Total	0	100	0		100	0	0		12.5	87.5	0		
PHF	.000	.583	.000	.583	.417	.000	.000	.417	.500	.583	.000	.667	.778

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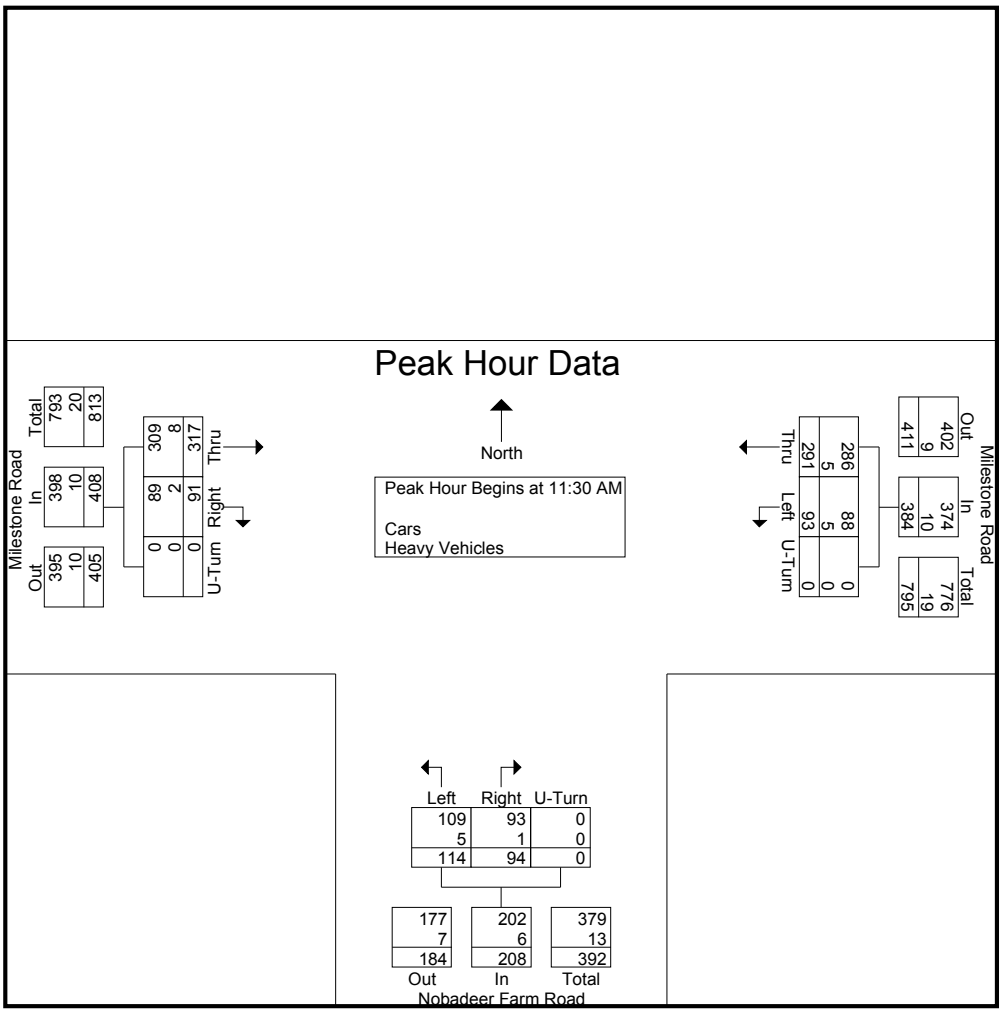
S: Nobadeer Farm Road
E/W: Milestone Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 AAA
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

	Milestone Road From East				Nobadeer Farm Road From South				Milestone Road From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:30 AM													
11:30 AM	71	25	0	96	24	25	0	49	23	76	0	99	244
11:45 AM	60	22	0	82	19	**33**	0	52	**29**	**90**	0	**119**	253
12:00 PM	**93**	20	0	**113**	**29**	29	0	**58**	21	70	0	91	**262**
12:15 PM	67	**26**	0	93	22	27	0	49	18	81	0	99	241
Total Volume	291	93	0	384	94	114	0	208	91	317	0	408	1000
% App. Total	75.8	24.2	0		45.2	54.8	0		22.3	77.7	0		
PHF	.782	.894	.000	.850	.810	.864	.000	.897	.784	.881	.000	.857	.954
Cars	286	88	0	374	93	109	0	202	89	309	0	398	974
% Cars	98.3	94.6	0	97.4	98.9	95.6	0	97.1	97.8	97.5	0	97.5	97.4
Heavy Vehicles	5	5	0	10	1	5	0	6	2	8	0	10	26
% Heavy Vehicles	1.7	5.4	0	2.6	1.1	4.4	0	2.9	2.2	2.5	0	2.5	2.6



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S: Nobadeer Farm Road
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 B
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Nobadeer Farm Road From North			Old South Road From East			Old South Road From West			
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	Int. Total
08:00 AM	45	2	0	5	17	0	17	76	0	162
08:15 AM	50	2	0	3	11	0	13	68	0	147
08:30 AM	57	4	0	2	13	0	17	71	0	164
08:45 AM	56	5	0	1	20	0	16	84	0	182
Total	208	13	0	11	61	0	63	299	0	655
09:00 AM	73	4	0	6	10	0	14	80	0	187
09:15 AM	53	5	0	5	16	0	20	55	0	154
09:30 AM	40	2	0	9	18	0	16	53	0	138
09:45 AM	44	8	0	0	14	0	13	49	0	128
Total	210	19	0	20	58	0	63	237	0	607
10:00 AM	40	6	0	4	19	0	17	69	0	155
10:15 AM	47	9	0	6	16	0	20	47	0	145
10:30 AM	36	9	0	4	20	0	25	40	0	134
10:45 AM	41	3	0	7	15	0	17	43	0	126
Total	164	27	0	21	70	0	79	199	0	560
Grand Total	582	59	0	52	189	0	205	735	0	1822
Apprch %	90.8	9.2	0	21.6	78.4	0	21.8	78.2	0	
Total %	31.9	3.2	0	2.9	10.4	0	11.3	40.3	0	
Cars	547	44	0	36	165	0	187	686	0	1665
% Cars	94	74.6	0	69.2	87.3	0	91.2	93.3	0	91.4
Heavy Vehicles	35	15	0	16	24	0	18	49	0	157
% Heavy Vehicles	6	25.4	0	30.8	12.7	0	8.8	6.7	0	8.6

	Nobadeer Farm Road From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:30 AM													
08:30 AM	57	4	0	61	2	13	0	15	17	71	0	88	164
08:45 AM	56	**5**	0	61	1	**20**	0	**21**	16	**84**	0	**100**	182
09:00 AM	**73**	4	0	**77**	**6**	10	0	16	14	80	0	94	**187**
09:15 AM	53	5	0	58	5	16	0	21	**20**	55	0	75	154
Total Volume	239	18	0	257	14	59	0	73	67	290	0	357	687
% App. Total	93	7	0		19.2	80.8	0		18.8	81.2	0		
PHF	.818	.900	.000	.834	.583	.738	.000	.869	.838	.863	.000	.893	.918
Cars	227	11	0	238	8	48	0	56	62	275	0	337	631
% Cars	95.0	61.1	0	92.6	57.1	81.4	0	76.7	92.5	94.8	0	94.4	91.8
Heavy Vehicles	12	7	0	19	6	11	0	17	5	15	0	20	56
% Heavy Vehicles	5.0	38.9	0	7.4	42.9	18.6	0	23.3	7.5	5.2	0	5.6	8.2

S: Nobadeer Farm Road
E/W: Old South Road
City, State: Nantucket, MA
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File Name : 143955 B
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Groups Printed- Peds and Bicycles

	Nobadeer Farm Road From North			Old South Road From East			Old South Road From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
08:00 AM	0	0	0	0	0	0	0	2	0	2
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	2	0	1	1	4
08:45 AM	0	0	0	0	0	0	0	4	0	4
Total	0	0	0	0	0	2	0	7	1	10
09:00 AM	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	2	0	1	0	0	0	0	3
09:30 AM	1	0	2	0	0	0	0	0	0	3
09:45 AM	0	0	0	0	0	0	0	1	0	1
Total	1	0	4	0	1	0	0	1	0	7
10:00 AM	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0
10:30 AM	1	0	0	0	0	0	2	2	0	5
10:45 AM	2	0	0	0	0	0	0	0	0	2
Total	3	0	0	0	0	0	2	2	0	7
Grand Total	4	0	4	0	1	2	2	10	1	24
Apprch %	50	0	50	0	33.3	66.7	15.4	76.9	7.7	
Total %	16.7	0	16.7	0	4.2	8.3	8.3	41.7	4.2	

	Nobadeer Farm Road From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:30 AM													
08:30 AM	0	0	0	0	0	0	**2**	**2**	0	1	**1**	2	**4**
08:45 AM	0	0	0	0	0	0	0	0	0	**4**	0	**4**	4
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	**2**	**2**	0	**1**	0	1	0	0	0	0	3
Total Volume	0	0	2	2	0	1	2	3	0	5	1	6	11
% App. Total	0	0	100		0	33.3	66.7		0	83.3	16.7		
PHF	.000	.000	.250	.250	.000	.250	.250	.375	.000	.313	.250	.375	.688

PRECISION
D A T A
INDUSTRIES, LLC
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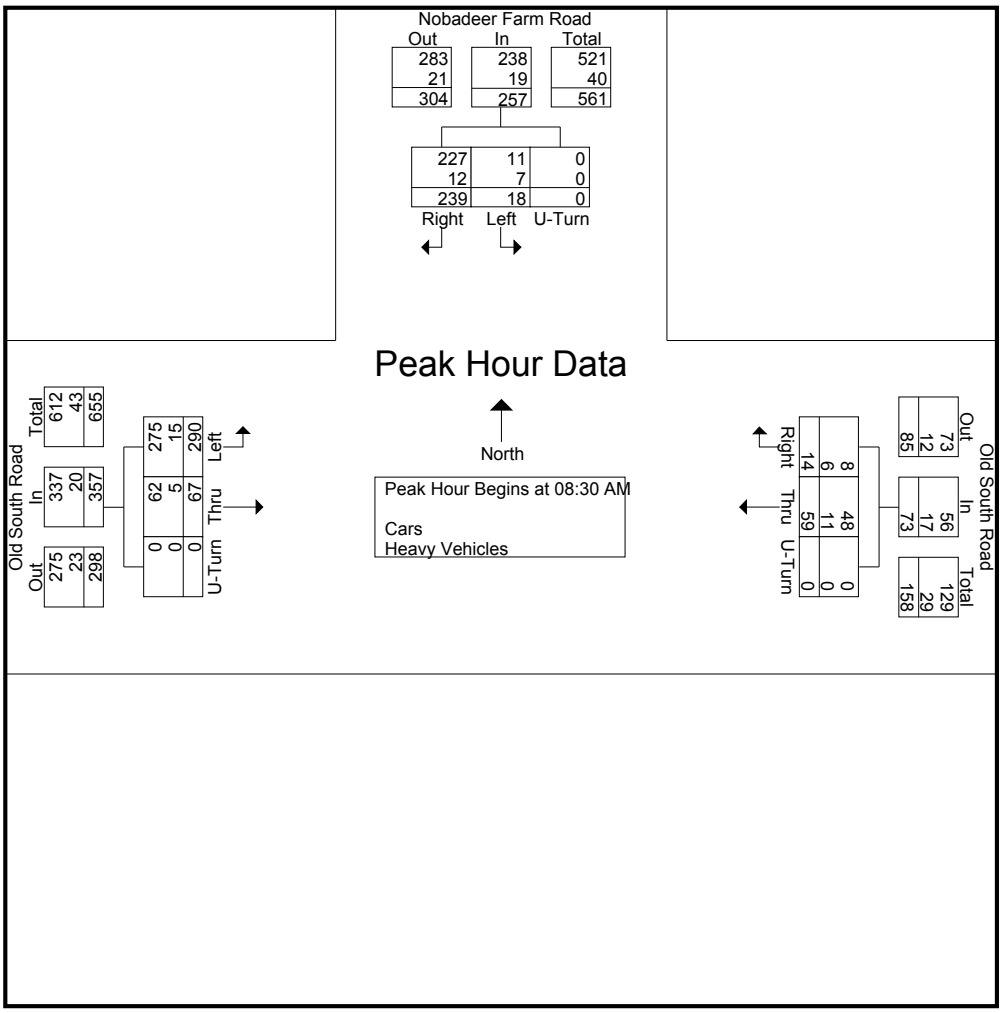
S: Nobadeer Farm Road
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 B
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

	Nobadeer Farm Road From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:30 AM													
08:30 AM	57	4	0	61	2	13	0	15	17	71	0	88	164
08:45 AM	56	**5**	0	61	1	**20**	0	**21**	16	**84**	0	**100**	182
09:00 AM	**73**	4	0	**77**	**6**	10	0	16	14	80	0	94	**187**
09:15 AM	53	5	0	58	5	16	0	21	**20**	55	0	75	154
Total Volume	239	18	0	257	14	59	0	73	67	290	0	357	687
% App. Total	93	7	0		19.2	80.8	0		18.8	81.2	0		
PHF	.818	.900	.000	.834	.583	.738	.000	.869	.838	.863	.000	.893	.918
Cars	227	11	0	238	8	48	0	56	62	275	0	337	631
% Cars	95.0	61.1	0	92.6	57.1	81.4	0	76.7	92.5	94.8	0	94.4	91.8
Heavy Vehicles	12	7	0	19	6	11	0	17	5	15	0	20	56
% Heavy Vehicles	5.0	38.9	0	7.4	42.9	18.6	0	23.3	7.5	5.2	0	5.6	8.2



S: Nobadeer Farm Road
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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File Name : 143955 BB
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Nobadeer Farm Road From North			Old South Road From East			Old South Road From West			
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	Int. Total
03:00 PM	58	3	0	9	14	0	17	53	0	154
03:15 PM	53	5	0	6	11	0	16	55	0	146
03:30 PM	43	2	0	3	13	0	21	65	1	148
03:45 PM	53	6	0	7	20	0	17	54	1	158
Total	207	16	0	25	58	0	71	227	2	606
04:00 PM	56	6	0	5	25	0	25	64	0	181
04:15 PM	58	3	0	3	19	0	17	58	0	158
04:30 PM	59	3	0	2	19	0	16	56	0	155
04:45 PM	71	4	0	4	15	0	21	52	0	167
Total	244	16	0	14	78	0	79	230	0	661
05:00 PM	77	4	0	4	14	0	13	68	0	180
05:15 PM	47	4	0	3	16	0	10	70	0	150
05:30 PM	36	1	0	0	15	0	13	42	0	107
05:45 PM	33	0	0	1	10	0	12	37	0	93
Total	193	9	0	8	55	0	48	217	0	530
Grand Total	644	41	0	47	191	0	198	674	2	1797
Apprch %	94	6	0	19.7	80.3	0	22.7	77.1	0.2	
Total %	35.8	2.3	0	2.6	10.6	0	11	37.5	0.1	
Cars	618	34	0	39	179	0	168	640	2	1680
% Cars	96	82.9	0	83	93.7	0	84.8	95	100	93.5
Heavy Vehicles	26	7	0	8	12	0	30	34	0	117
% Heavy Vehicles	4	17.1	0	17	6.3	0	15.2	5	0	6.5

	Nobadeer Farm Road From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	56	**6**	0	62	**5**	**25**	0	**30**	**25**	**64**	0	**89**	**181**
04:15 PM	58	3	0	61	3	19	0	22	17	58	0	75	158
04:30 PM	59	3	0	62	2	19	0	21	16	56	0	72	155
04:45 PM	**71**	4	0	**75**	4	15	0	19	21	52	0	73	167
Total Volume	244	16	0	260	14	78	0	92	79	230	0	309	661
% App. Total	93.8	6.2	0		15.2	84.8	0		25.6	74.4	0		
PHF	.859	.667	.000	.867	.700	.780	.000	.767	.790	.898	.000	.868	.913
Cars	235	13	0	248	13	74	0	87	66	222	0	288	623
% Cars	96.3	81.3	0	95.4	92.9	94.9	0	94.6	83.5	96.5	0	93.2	94.3
Heavy Vehicles	9	3	0	12	1	4	0	5	13	8	0	21	38
% Heavy Vehicles	3.7	18.8	0	4.6	7.1	5.1	0	5.4	16.5	3.5	0	6.8	5.7

PRECISION
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S: Nobadeer Farm Road
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 BB
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Nobadeer Farm Road From North			Old South Road From East			Old South Road From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
03:00 PM	0	0	0	0	0	0	0	1	0	1
03:15 PM	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	1	0	1	0	0	2
03:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	1	1	0	3
04:00 PM	0	0	0	0	0	0	0	2	0	2
04:15 PM	0	0	0	0	0	0	1	1	0	2
04:30 PM	0	0	1	0	0	0	0	0	0	1
04:45 PM	1	0	0	0	0	0	0	1	0	2
Total	1	0	1	0	0	0	1	4	0	7
05:00 PM	0	0	0	0	1	0	0	1	0	2
05:15 PM	1	0	1	0	2	0	0	0	0	4
05:30 PM	0	0	0	0	1	0	0	0	0	1
05:45 PM	0	0	0	0	1	0	0	0	0	1
Total	1	0	1	0	5	0	0	1	0	8
Grand Total	2	0	2	0	6	0	2	6	0	18
Apprch %	50	0	50	0	100	0	25	75	0	
Total %	11.1	0	11.1	0	33.3	0	11.1	33.3	0	

	Nobadeer Farm Road From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	0	0	**1**	1	0	0	0	0	0	0	0	0	1
04:45 PM	**1**	0	0	1	0	0	0	0	0	**1**	0	**1**	2
05:00 PM	0	0	0	0	0	1	0	1	0	1	0	1	2
05:15 PM	1	0	1	**2**	0	**2**	0	**2**	0	0	0	0	**4**
Total Volume	2	0	2	4	0	3	0	3	0	2	0	2	9
% App. Total	50	0	50		0	100	0		0	100	0		
PHF	.500	.000	.500	.500	.000	.375	.000	.375	.000	.500	.000	.500	.563

S: Nobadeer Farm Road
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
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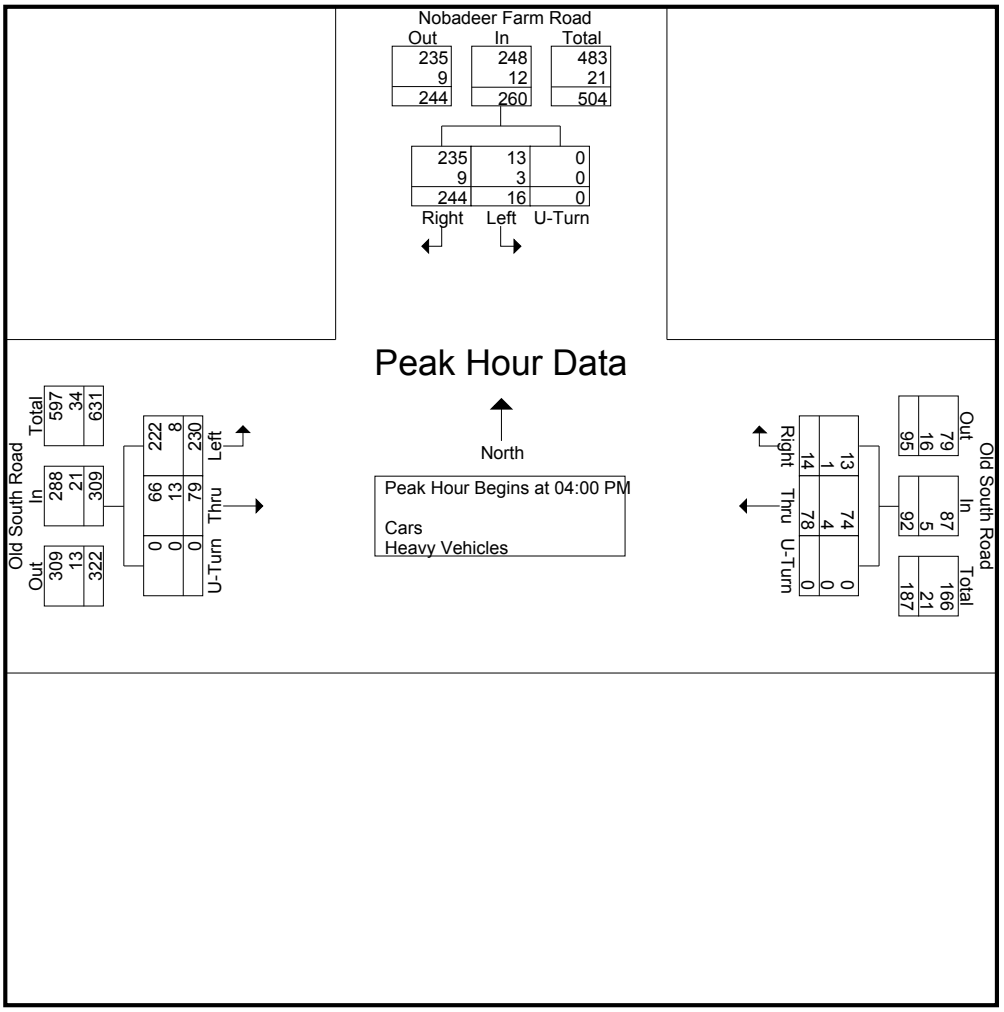
File Name : 143955 BB
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

	Nobadeer Farm Road From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	56	**6**	0	62	**5**	**25**	0	**30**	**25**	**64**	0	**89**	**181**
04:15 PM	58	3	0	61	3	19	0	22	17	58	0	75	158
04:30 PM	59	3	0	62	2	19	0	21	16	56	0	72	155
04:45 PM	**71**	4	0	**75**	4	15	0	19	21	52	0	73	167
Total Volume	244	16	0	260	14	78	0	92	79	230	0	309	661
% App. Total	93.8	6.2	0		15.2	84.8	0		25.6	74.4	0		
PHF	.859	.667	.000	.867	.700	.780	.000	.767	.790	.898	.000	.868	.913
Cars	235	13	0	248	13	74	0	87	66	222	0	288	623
% Cars	96.3	81.3	0	95.4	92.9	94.9	0	94.6	83.5	96.5	0	93.2	94.3
Heavy Vehicles	9	3	0	12	1	4	0	5	13	8	0	21	38
% Heavy Vehicles	3.7	18.8	0	4.6	7.1	5.1	0	5.4	16.5	3.5	0	6.8	5.7



S: Nobadeer Farm Road
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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File Name : 143955 BBB
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Nobadeer Farm Road From North			Old South Road From East			Old South Road From West			
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	Int. Total
11:00 AM	38	2	0	4	14	0	12	36	0	106
11:15 AM	42	5	0	4	11	0	11	52	0	125
11:30 AM	44	5	0	4	20	0	12	47	0	132
11:45 AM	47	7	0	3	10	0	11	41	0	119
Total	171	19	0	15	55	0	46	176	0	482
12:00 PM	44	3	0	3	12	0	8	41	0	111
12:15 PM	52	0	0	1	10	0	6	41	0	110
12:30 PM	45	2	0	1	12	0	7	43	1	111
12:45 PM	41	5	0	0	11	0	9	55	0	121
Total	182	10	0	5	45	0	30	180	1	453
01:00 PM	37	4	0	3	11	0	7	39	0	101
01:15 PM	57	1	0	0	3	0	4	37	0	102
01:30 PM	40	2	0	3	3	0	11	51	0	110
01:45 PM	39	0	0	2	9	0	7	38	0	95
Total	173	7	0	8	26	0	29	165	0	408
Grand Total	526	36	0	28	126	0	105	521	1	1343
Apprch %	93.6	6.4	0	18.2	81.8	0	16.7	83.1	0.2	
Total %	39.2	2.7	0	2.1	9.4	0	7.8	38.8	0.1	
Cars	508	33	0	26	117	0	96	503	1	1284
% Cars	96.6	91.7	0	92.9	92.9	0	91.4	96.5	100	95.6
Heavy Vehicles	18	3	0	2	9	0	9	18	0	59
% Heavy Vehicles	3.4	8.3	0	7.1	7.1	0	8.6	3.5	0	4.4

	Nobadeer Farm Road From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:15 AM													
11:15 AM	42	5	0	47	**4**	11	0	15	11	**52**	0	**63**	125
11:30 AM	44	5	0	49	4	**20**	0	**24**	**12**	47	0	59	**132**
11:45 AM	**47**	**7**	0	**54**	3	10	0	13	11	41	0	52	119
12:00 PM	44	3	0	47	3	12	0	15	8	41	0	49	111
Total Volume	177	20	0	197	14	53	0	67	42	181	0	223	487
% App. Total	89.8	10.2	0		20.9	79.1	0		18.8	81.2	0		
PHF	.941	.714	.000	.912	.875	.663	.000	.698	.875	.870	.000	.885	.922
Cars	172	18	0	190	13	49	0	62	36	170	0	206	458
% Cars	97.2	90.0	0	96.4	92.9	92.5	0	92.5	85.7	93.9	0	92.4	94.0
Heavy Vehicles	5	2	0	7	1	4	0	5	6	11	0	17	29
% Heavy Vehicles	2.8	10.0	0	3.6	7.1	7.5	0	7.5	14.3	6.1	0	7.6	6.0

S: Nobadeer Farm Road
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION
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INDUSTRIES, LLC
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File Name : 143955 BBB
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Nobadeer Farm Road From North			Old South Road From East			Old South Road From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
11:00 AM	0	0	0	0	0	0	0	0	0	0
11:15 AM	1	0	0	0	0	0	0	0	0	1
11:30 AM	1	0	1	0	0	0	1	1	0	4
11:45 AM	1	0	3	0	1	0	0	1	0	6
Total	3	0	4	0	1	0	1	2	0	11
12:00 PM	0	0	3	0	0	0	1	0	0	4
12:15 PM	0	0	2	0	1	0	0	0	0	3
12:30 PM	0	0	0	0	1	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	5	0	2	0	1	0	0	8
01:00 PM	0	0	0	0	1	0	0	0	0	1
01:15 PM	0	0	0	0	0	0	1	3	0	4
01:30 PM	0	0	0	0	0	0	0	0	1	1
01:45 PM	1	0	0	0	0	0	0	0	0	1
Total	1	0	0	0	1	0	1	3	1	7
Grand Total	4	0	9	0	4	0	3	5	1	26
Apprch %	30.8	0	69.2	0	100	0	33.3	55.6	11.1	
Total %	15.4	0	34.6	0	15.4	0	11.5	19.2	3.8	

	Nobadeer Farm Road From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:30 AM													
11:30 AM	**1**	0	1	2	0	0	0	0	**1**	**1**	0	**2**	4
11:45 AM	1	0	**3**	**4**	0	**1**	0	**1**	0	1	0	1	**6**
12:00 PM	0	0	3	3	0	0	0	0	1	0	0	1	4
12:15 PM	0	0	2	2	0	1	0	1	0	0	0	0	3
Total Volume	2	0	9	11	0	2	0	2	2	2	0	4	17
% App. Total	18.2	0	81.8		0	100	0		50	50	0		
PHF	.500	.000	.750	.688	.000	.500	.000	.500	.500	.500	.000	.500	.708

PRECISION
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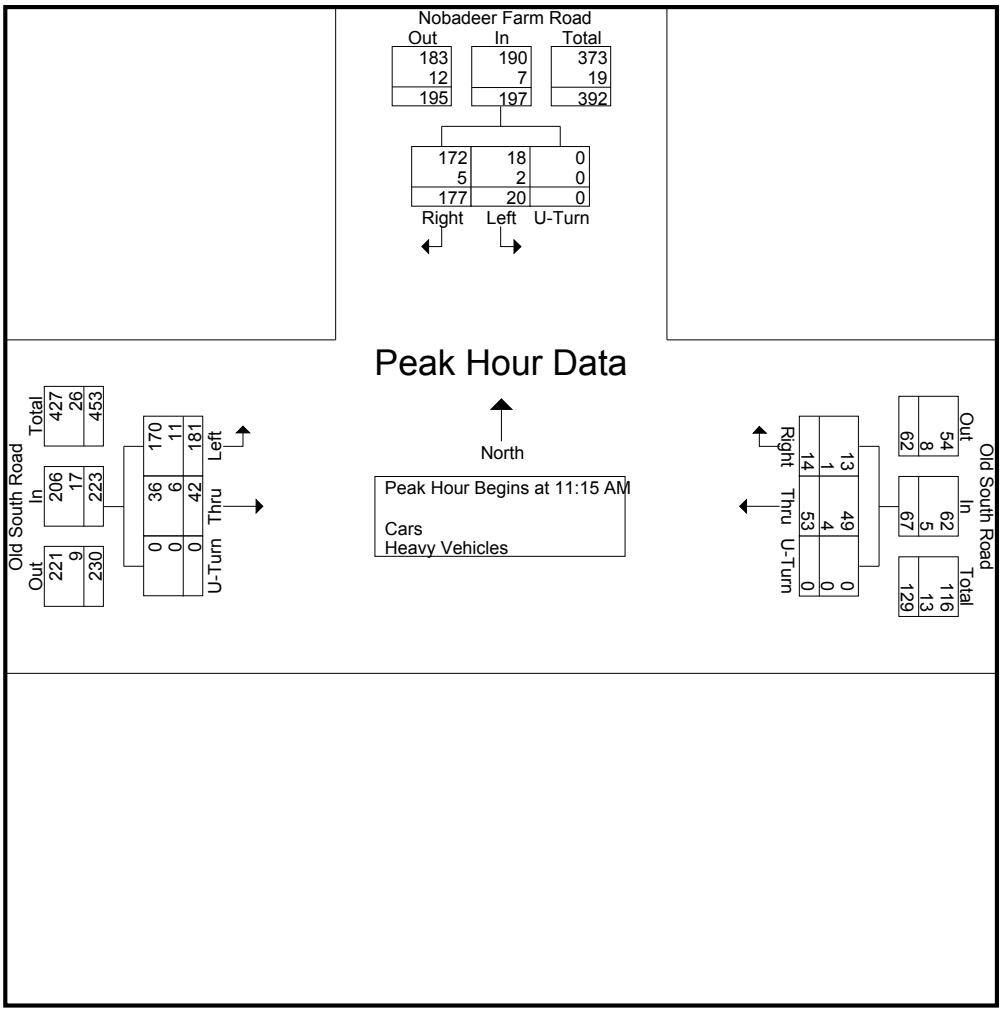
S: Nobadeer Farm Road
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 BBB
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

	Nobadeer Farm Road From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:15 AM													
11:15 AM	42	5	0	47	**4**	11	0	15	11	**52**	0	**63**	125
11:30 AM	44	5	0	49	4	**20**	0	**24**	**12**	47	0	59	**132**
11:45 AM	**47**	**7**	0	**54**	3	10	0	13	11	41	0	52	119
12:00 PM	44	3	0	47	3	12	0	15	8	41	0	49	111
Total Volume	177	20	0	197	14	53	0	67	42	181	0	223	487
% App. Total	89.8	10.2	0		20.9	79.1	0		18.8	81.2	0		
PHF	.941	.714	.000	.912	.875	.663	.000	.698	.875	.870	.000	.885	.922
Cars	172	18	0	190	13	49	0	62	36	170	0	206	458
% Cars	97.2	90.0	0	96.4	92.9	92.5	0	92.5	85.7	93.9	0	92.4	94.0
Heavy Vehicles	5	2	0	7	1	4	0	5	6	11	0	17	29
% Heavy Vehicles	2.8	10.0	0	3.6	7.1	7.5	0	7.5	14.3	6.1	0	7.6	6.0



PRECISION
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Email: datarequests@pdillc.com

N/S: Macy's Lane
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 C
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Macy's Lane From North				Old South Road From East				Macy's Lane From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
08:00 AM	6	3	0	0	2	46	19	0	28	0	57	0	35	63	6	0	265
08:15 AM	11	0	1	0	0	42	22	0	20	1	38	0	46	70	3	0	254
08:30 AM	9	2	1	0	2	42	29	0	28	2	51	0	52	63	5	0	286
08:45 AM	7	1	3	0	0	49	29	0	27	0	52	0	58	71	4	0	301
Total	33	6	5	0	4	179	99	0	103	3	198	0	191	267	18	0	1106
09:00 AM	2	0	3	0	1	72	16	0	31	1	74	0	42	59	4	0	305
09:15 AM	6	0	3	0	3	51	16	0	19	0	52	0	39	54	7	0	250
09:30 AM	5	1	4	0	1	50	10	0	16	1	42	0	51	50	3	0	234
09:45 AM	7	2	0	0	3	38	20	0	21	1	59	3	49	42	6	0	251
Total	20	3	10	0	8	211	62	0	87	3	227	3	181	205	20	0	1040
10:00 AM	5	1	1	0	2	39	20	0	23	0	45	0	44	65	6	0	251
10:15 AM	2	0	0	0	4	51	11	0	21	1	32	0	32	53	1	0	208
10:30 AM	10	4	1	0	3	43	16	0	17	1	31	0	41	47	6	0	220
10:45 AM	4	1	3	0	3	38	11	0	17	2	43	0	38	48	6	0	214
Total	21	6	5	0	12	171	58	0	78	4	151	0	155	213	19	0	893
Grand Total	74	15	20	0	24	561	219	0	268	10	576	3	527	685	57	0	3039
Apprch %	67.9	13.8	18.3	0	3	69.8	27.2	0	31.3	1.2	67.2	0.4	41.5	54	4.5	0	
Total %	2.4	0.5	0.7	0	0.8	18.5	7.2	0	8.8	0.3	19	0.1	17.3	22.5	1.9	0	
Cars	70	12	20	0	23	512	207	0	257	9	546	3	498	628	53	0	2838
% Cars	94.6	80	100	0	95.8	91.3	94.5	0	95.9	90	94.8	100	94.5	91.7	93	0	93.4
Heavy Vehicles	4	3	0	0	1	49	12	0	11	1	30	0	29	57	4	0	201
% Heavy Vehicles	5.4	20	0	0	4.2	8.7	5.5	0	4.1	10	5.2	0	5.5	8.3	7	0	6.6

	Macy's Lane From North					Old South Road From East					Macy's Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:15 AM																					
08:15 AM	**11**	0	1	0	**12**	0	42	22	0	64	20	1	38	0	59	46	70	3	0	119	254
08:30 AM	9	**2**	1	0	12	**2**	42	**29**	0	73	28	**2**	51	0	81	52	63	**5**	0	120	286
08:45 AM	7	1	**3**	0	11	0	49	29	0	78	27	0	52	0	79	**58**	**71**	4	0	**133**	301
09:00 AM	2	0	3	0	5	1	**72**	16	0	**89**	**31**	1	**74**	0	**106**	42	59	4	0	105	**305**
Total Volume	29	3	8	0	40	3	205	96	0	304	106	4	215	0	325	198	263	16	0	477	1146
% App. Total	72.5	7.5	20	0		1	67.4	31.6	0		32.6	1.2	66.2	0		41.5	55.1	3.4	0		
PHF	.659	.375	.667	.000	.833	.375	.712	.828	.000	.854	.855	.500	.726	.000	.767	.853	.926	.800	.000	.897	.939
Cars	27	2	8	0	37	3	185	93	0	281	102	3	207	0	312	189	246	16	0	451	1081
% Cars	93.1	66.7	100	0	92.5	100	90.2	96.9	0	92.4	96.2	75.0	96.3	0	96.0	95.5	93.5	100	0	94.5	94.3
Heavy Vehicles	2	1	0	0	3	0	20	3	0	23	4	1	8	0	13	9	17	0	0	26	65
% Heavy Vehicles	6.9	33.3	0	0	7.5	0	9.8	3.1	0	7.6	3.8	25.0	3.7	0	4.0	4.5	6.5	0	0	5.5	5.7

N/S: Macy's Lane
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
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File Name : 143955 C
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Macy's Lane From North				Old South Road From East				Macy's Lane From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
08:00 AM	0	0	1	2	0	0	0	3	0	1	0	0	0	0	0	0	7
08:15 AM	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
08:30 AM	0	1	0	3	2	0	0	3	0	3	0	0	0	0	0	0	12
08:45 AM	0	0	1	0	0	0	0	2	1	1	0	0	0	0	0	0	5
Total	0	1	2	7	4	0	0	8	1	5	0	0	0	0	0	0	28
09:00 AM	0	0	0	6	0	0	0	4	0	1	0	0	0	2	0	0	13
09:15 AM	0	0	0	8	0	0	0	3	0	1	0	1	0	0	0	0	13
09:30 AM	0	0	2	6	0	0	0	3	0	2	0	0	0	1	0	0	14
09:45 AM	0	0	0	7	0	0	0	2	0	0	0	0	0	1	0	0	10
Total	0	0	2	27	0	0	0	12	0	4	0	1	0	4	0	0	50
10:00 AM	0	0	0	4	0	0	0	2	0	0	0	1	0	0	0	0	7
10:15 AM	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	3
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	6	0	0	0	4	0	0	0	1	0	0	0	0	11
Grand Total	0	1	4	40	4	0	0	24	1	9	0	2	0	4	0	0	89
Apprch %	0	2.2	8.9	88.9	14.3	0	0	85.7	8.3	75	0	16.7	0	100	0	0	
Total %	0	1.1	4.5	44.9	4.5	0	0	27	1.1	10.1	0	2.2	0	4.5	0	0	

	Macy's Lane From North					Old South Road From East					Macy's Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 09:00 AM																					
09:00 AM	0	0	0	6	6	0	0	0	**4**	**4**	0	1	0	0	1	0	**2**	0	0	**2**	13
09:15 AM	0	0	0	**8**	**8**	0	0	0	3	3	0	1	0	**1**	**2**	0	0	0	0	0	13
09:30 AM	0	0	**2**	6	8	0	0	0	3	3	0	**2**	0	0	2	0	1	0	0	1	**14**
09:45 AM	0	0	0	7	7	0	0	0	2	2	0	0	0	0	0	0	1	0	0	1	10
Total Volume	0	0	2	27	29	0	0	0	12	12	0	4	0	1	5	0	4	0	0	4	50
% App. Total	0	0	6.9	93.1		0	0	0	100		0	80	0	20		0	100	0	0		
PHF	.000	.000	.250	.844	.906	.000	.000	.000	.750	.750	.000	.500	.000	.250	.625	.000	.500	.000	.000	.500	.893

N/S: Macy's Lane
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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Email: datarequests@pdillc.com

File Name : 143955 C
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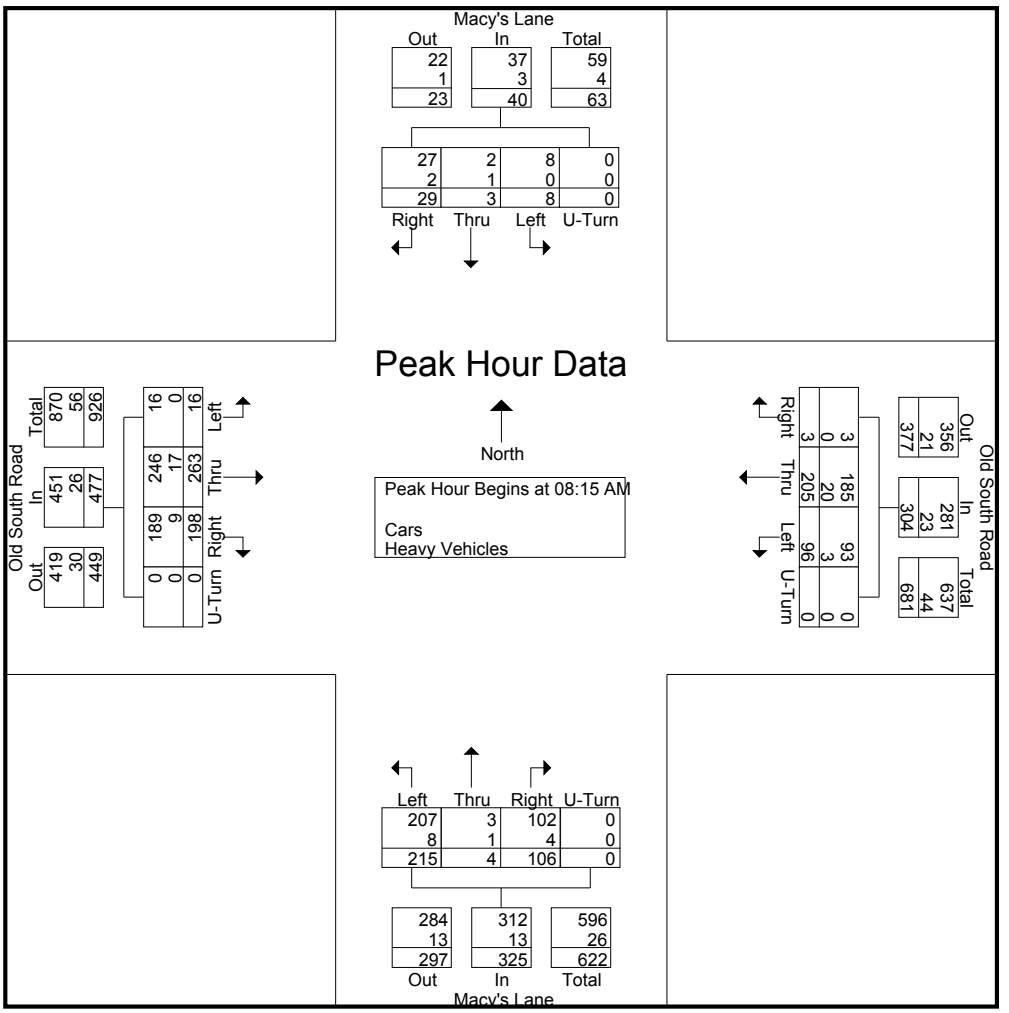
	Macy's Lane From North					Old South Road From East					Macy's Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:15 AM																					
08:15 AM	**11**	0	1	0	**12**	0	42	22	0	64	20	1	38	0	59	46	70	3	0	119	254
08:30 AM	9	**2**	1	0	12	**2**	42	**29**	0	73	28	**2**	51	0	81	52	63	**5**	0	120	286
08:45 AM	7	1	**3**	0	11	0	49	29	0	78	27	0	52	0	79	**58**	**71**	4	0	**133**	301
09:00 AM	2	0	3	0	5	1	**72**	16	0	**89**	**31**	1	**74**	0	**106**	42	59	4	0	105	**305**
Total Volume	29	3	8	0	40	3	205	96	0	304	106	4	215	0	325	198	263	16	0	477	1146
% App. Total	72.5	7.5	20	0		1	67.4	31.6	0		32.6	1.2	66.2	0		41.5	55.1	3.4	0		
PHF	.659	.375	.667	.000	.833	.375	.712	.828	.000	.854	.855	.500	.726	.000	.767	.853	.926	.800	.000	.897	.939
Cars	27	2	8	0	37	3	185	93	0	281	102	3	207	0	312	189	246	16	0	451	1081
% Cars	93.1	66.7	100	0	92.5	100	90.2	96.9	0	92.4	96.2	75.0	96.3	0	96.0	95.5	93.5	100	0	94.5	94.3
Heavy Vehicles	2	1	0	0	3	0	20	3	0	23	4	1	8	0	13	9	17	0	0	26	65
% Heavy Vehicles	6.9	33.3	0	0	7.5	0	9.8	3.1	0	7.6	3.8	25.0	3.7	0	4.0	4.5	6.5	0	0	5.5	5.7



N/S: Macy's Lane
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City, State: Nantucket, MA
Client: Ron Muller & Associates

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File Name : 143955 CC
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Macy's Lane From North				Old South Road From East				Macy's Lane From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
03:00 PM	7	0	2	0	4	54	24	0	21	2	49	0	35	56	7	0	261
03:15 PM	10	1	3	0	3	50	18	0	18	0	31	0	40	61	6	0	241
03:30 PM	3	3	1	0	3	44	19	0	17	0	30	0	46	67	7	0	240
03:45 PM	5	0	0	0	1	52	23	0	18	0	40	0	41	60	10	0	250
Total	25	4	6	0	11	200	84	0	74	2	150	0	162	244	30	0	992
04:00 PM	11	0	2	0	3	64	18	0	24	2	48	0	38	66	9	0	285
04:15 PM	6	0	2	0	7	54	19	0	21	1	48	0	52	58	4	0	272
04:30 PM	6	2	1	0	4	57	20	0	18	4	53	0	55	66	10	0	296
04:45 PM	6	3	1	0	5	63	26	0	19	0	40	0	48	57	6	0	274
Total	29	5	6	0	19	238	83	0	82	7	189	0	193	247	29	0	1127
05:00 PM	12	3	0	0	6	81	21	0	25	1	47	0	51	58	13	0	318
05:15 PM	9	2	1	0	4	50	21	0	20	3	32	0	50	68	11	0	271
05:30 PM	11	1	2	0	1	45	18	0	21	1	46	0	59	44	11	0	260
05:45 PM	3	2	2	0	0	35	22	0	15	3	37	0	46	44	3	0	212
Total	35	8	5	0	11	211	82	0	81	8	162	0	206	214	38	0	1061
Grand Total	89	17	17	0	41	649	249	0	237	17	501	0	561	705	97	0	3180
Apprch %	72.4	13.8	13.8	0	4.4	69.1	26.5	0	31.4	2.3	66.4	0	41.2	51.7	7.1	0	
Total %	2.8	0.5	0.5	0	1.3	20.4	7.8	0	7.5	0.5	15.8	0	17.6	22.2	3.1	0	
Cars	88	17	17	0	40	622	240	0	225	17	486	0	537	643	95	0	3027
% Cars	98.9	100	100	0	97.6	95.8	96.4	0	94.9	100	97	0	95.7	91.2	97.9	0	95.2
Heavy Vehicles	1	0	0	0	1	27	9	0	12	0	15	0	24	62	2	0	153
% Heavy Vehicles	1.1	0	0	0	2.4	4.2	3.6	0	5.1	0	3	0	4.3	8.8	2.1	0	4.8

	Macy's Lane From North					Old South Road From East					Macy's Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	6	0	**2**	0	8	**7**	54	19	0	80	21	1	48	0	70	52	58	4	0	114	272
04:30 PM	6	2	1	0	9	4	57	20	0	81	18	**4**	**53**	0	**75**	**55**	**66**	10	0	**131**	296
04:45 PM	6	**3**	1	0	10	5	63	**26**	0	94	19	0	40	0	59	48	57	6	0	111	274
05:00 PM	**12**	3	0	0	**15**	6	**81**	21	0	**108**	**25**	1	47	0	73	51	58	**13**	0	122	**318**
Total Volume	30	8	4	0	42	22	255	86	0	363	83	6	188	0	277	206	239	33	0	478	1160
% App. Total	71.4	19	9.5	0		6.1	70.2	23.7	0		30	2.2	67.9	0		43.1	50	6.9	0		
PHF	.625	.667	.500	.000	.700	.786	.787	.827	.000	.840	.830	.375	.887	.000	.923	.936	.905	.635	.000	.912	.912
Cars	29	8	4	0	41	22	243	86	0	351	80	6	183	0	269	199	218	33	0	450	1111
% Cars	96.7	100	100	0	97.6	100	95.3	100	0	96.7	96.4	100	97.3	0	97.1	96.6	91.2	100	0	94.1	95.8
Heavy Vehicles	1	0	0	0	1	0	12	0	0	12	3	0	5	0	8	7	21	0	0	28	49
% Heavy Vehicles	3.3	0	0	0	2.4	0	4.7	0	0	3.3	3.6	0	2.7	0	2.9	3.4	8.8	0	0	5.9	4.2

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File Name : 143955 CC
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Groups Printed- Peds and Bicycles

	Macy's Lane From North				Old South Road From East				Macy's Lane From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	0	0	0	4	0	0	0	0	0	1	0	1	0	0	0	0	6
03:15 PM	0	0	0	4	0	0	0	1	0	0	0	0	0	0	0	3	8
03:30 PM	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	3
03:45 PM	0	0	0	5	0	0	0	4	0	0	0	0	0	0	0	1	10
Total	0	0	1	15	0	0	0	5	0	1	0	1	0	0	0	4	27
04:00 PM	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	3
04:15 PM	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	9
04:30 PM	0	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	5
04:45 PM	0	0	0	1	0	0	0	6	0	0	0	0	0	0	0	0	7
Total	0	0	0	4	0	0	0	19	0	0	0	1	0	0	0	0	24
05:00 PM	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	8
05:15 PM	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	5
05:30 PM	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	3
05:45 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3
Total	0	0	0	6	13	0	0	0	0	0	0	0	0	0	0	0	19
Grand Total	0	0	1	25	13	0	0	24	0	1	0	2	0	0	0	4	70
Apprch %	0	0	3.8	96.2	35.1	0	0	64.9	0	33.3	0	66.7	0	0	0	100	
Total %	0	0	1.4	35.7	18.6	0	0	34.3	0	1.4	0	2.9	0	0	0	5.7	

	Macy's Lane From North					Old South Road From East					Macy's Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	0	0	0	0	0	0	0	**9**	**9**	0	0	0	0	0	0	0	0	0	0	**9**
04:30 PM	0	0	0	3	3	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	5
04:45 PM	0	0	0	1	1	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	7
05:00 PM	0	0	0	**4**	**4**	**4**	0	0	0	4	0	0	0	0	0	0	0	0	0	0	8
Total Volume	0	0	0	8	8	4	0	0	17	21	0	0	0	0	0	0	0	0	0	0	29
% App. Total	0	0	0	100		19	0	0	81		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.500	.500	.250	.000	.000	.472	.583	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.806

PRECISION
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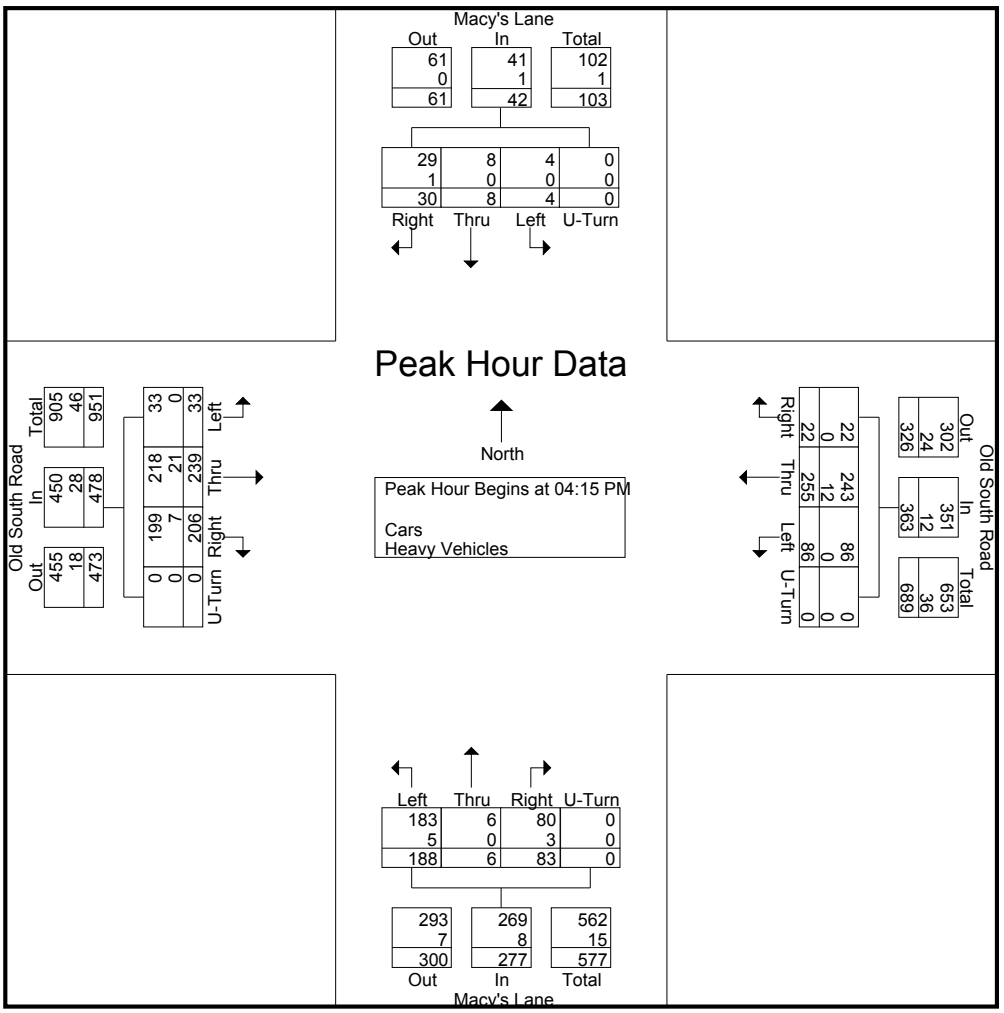
	Macy's Lane From North					Old South Road From East					Macy's Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	6	0	**2**	0	8	**7**	54	19	0	80	21	1	48	0	70	52	58	4	0	114	272
04:30 PM	6	2	1	0	9	4	57	20	0	81	18	**4**	**53**	0	**75**	**55**	**66**	10	0	**131**	296
04:45 PM	6	**3**	1	0	10	5	63	**26**	0	94	19	0	40	0	59	48	57	6	0	111	274
05:00 PM	**12**	3	0	0	**15**	6	**81**	21	0	**108**	**25**	1	47	0	73	51	58	**13**	0	122	**318**
Total Volume	30	8	4	0	42	22	255	86	0	363	83	6	188	0	277	206	239	33	0	478	1160
% App. Total	71.4	19	9.5	0		6.1	70.2	23.7	0		30	2.2	67.9	0		43.1	50	6.9	0		
PHF	.625	.667	.500	.000	.700	.786	.787	.827	.000	.840	.830	.375	.887	.000	.923	.936	.905	.635	.000	.912	.912
Cars	29	8	4	0	41	22	243	86	0	351	80	6	183	0	269	199	218	33	0	450	1111
% Cars	96.7	100	100	0	97.6	100	95.3	100	0	96.7	96.4	100	97.3	0	97.1	96.6	91.2	100	0	94.1	95.8
Heavy Vehicles	1	0	0	0	1	0	12	0	0	12	3	0	5	0	8	7	21	0	0	28	49
% Heavy Vehicles	3.3	0	0	0	2.4	0	4.7	0	0	3.3	3.6	0	2.7	0	2.9	3.4	8.8	0	0	5.9	4.2



N/S: Macy's Lane
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

File Name : 143955 CCC
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Macy's Lane From North				Old South Road From East				Macy's Lane From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
11:00 AM	1	1	1	0	1	49	19	0	16	1	65	0	59	41	6	0	260
11:15 AM	6	1	0	0	1	39	19	0	23	2	39	0	38	45	5	0	218
11:30 AM	4	1	0	0	2	50	21	0	17	1	64	0	47	52	4	0	263
11:45 AM	6	1	0	0	3	46	23	0	18	4	45	0	52	46	4	0	248
Total	17	4	1	0	7	184	82	0	74	8	213	0	196	184	19	0	989
12:00 PM	4	1	0	0	3	44	26	0	18	6	46	0	51	47	0	0	246
12:15 PM	6	2	1	0	2	40	21	0	18	0	42	0	49	27	11	0	219
12:30 PM	2	2	0	0	0	40	27	0	19	0	65	1	51	41	6	0	254
12:45 PM	9	0	3	0	2	31	19	0	12	1	54	1	44	62	5	0	243
Total	21	5	4	0	7	155	93	0	67	7	207	2	195	177	22	0	962
01:00 PM	4	1	1	0	2	41	13	0	16	2	43	0	41	32	4	0	200
01:15 PM	4	2	1	0	4	42	23	0	9	2	46	0	49	38	9	0	229
01:30 PM	6	2	2	0	2	24	23	0	24	0	54	0	70	42	5	0	254
01:45 PM	2	1	2	0	2	24	26	0	15	1	55	0	68	32	7	0	235
Total	16	6	6	0	10	131	85	0	64	5	198	0	228	144	25	0	918
Grand Total	54	15	11	0	24	470	260	0	205	20	618	2	619	505	66	0	2869
Apprch %	67.5	18.8	13.8	0	3.2	62.3	34.5	0	24.3	2.4	73.1	0.2	52	42.4	5.5	0	
Total %	1.9	0.5	0.4	0	0.8	16.4	9.1	0	7.1	0.7	21.5	0.1	21.6	17.6	2.3	0	
Cars	52	15	9	0	21	448	255	0	203	20	604	1	606	477	62	0	2773
% Cars	96.3	100	81.8	0	87.5	95.3	98.1	0	99	100	97.7	50	97.9	94.5	93.9	0	96.7
Heavy Vehicles	2	0	2	0	3	22	5	0	2	0	14	1	13	28	4	0	96
% Heavy Vehicles	3.7	0	18.2	0	12.5	4.7	1.9	0	1	0	2.3	50	2.1	5.5	6.1	0	3.3

	Macy's Lane From North					Old South Road From East					Macy's Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	1	**1**	**1**	0	3	1	49	19	0	69	16	1	**65**	0	**82**	**59**	41	**6**	0	**106**	260
11:15 AM	**6**	1	0	0	**7**	1	39	19	0	59	**23**	2	39	0	64	38	45	5	0	88	218
11:30 AM	4	1	0	0	5	2	**50**	21	0	**73**	17	1	64	0	82	47	**52**	4	0	103	**263**
11:45 AM	6	1	0	0	7	**3**	46	**23**	0	72	18	**4**	45	0	67	52	46	4	0	102	248
Total Volume	17	4	1	0	22	7	184	82	0	273	74	8	213	0	295	196	184	19	0	399	989
% App. Total	77.3	18.2	4.5	0		2.6	67.4	30	0		25.1	2.7	72.2	0		49.1	46.1	4.8	0		
PHF	.708	1.00	.250	.000	.786	.583	.920	.891	.000	.935	.804	.500	.819	.000	.899	.831	.885	.792	.000	.941	.940
Cars	15	4	0	0	19	6	176	81	0	263	73	8	209	0	290	192	176	18	0	386	958
% Cars	88.2	100	0	0	86.4	85.7	95.7	98.8	0	96.3	98.6	100	98.1	0	98.3	98.0	95.7	94.7	0	96.7	96.9
Heavy Vehicles	2	0	1	0	3	1	8	1	0	10	1	0	4	0	5	4	8	1	0	13	31
% Heavy Vehicles	11.8	0	100	0	13.6	14.3	4.3	1.2	0	3.7	1.4	0	1.9	0	1.7	2.0	4.3	5.3	0	3.3	3.1

N/S: Macy's Lane
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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Email: datarequests@pdillc.com

File Name : 143955 CCC
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Macy's Lane From North				Old South Road From East				Macy's Lane From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
11:00 AM	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	2	5
11:15 AM	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	3
11:30 AM	0	0	0	4	0	0	0	3	0	0	0	0	0	0	0	0	7
11:45 AM	0	0	0	4	0	0	0	2	0	0	0	2	0	0	0	0	8
Total	0	0	0	9	0	0	0	9	0	1	0	2	0	0	0	2	23
12:00 PM	0	0	1	5	0	0	0	4	0	1	0	0	0	0	0	0	11
12:15 PM	0	0	0	4	0	0	0	5	0	0	0	0	0	0	0	0	9
12:30 PM	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2
12:45 PM	0	0	0	1	0	0	0	4	0	0	0	0	0	0	0	0	5
Total	0	0	1	11	0	0	0	14	0	1	0	0	0	0	0	0	27
01:00 PM	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	3
01:15 PM	0	0	0	1	0	0	0	5	2	1	0	0	0	0	0	0	9
01:30 PM	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	3
01:45 PM	0	0	0	1	0	1	0	5	0	0	0	0	0	0	0	0	7
Total	0	0	0	4	0	1	0	14	2	1	0	0	0	0	0	0	22
Grand Total	0	0	1	24	0	1	0	37	2	3	0	2	0	0	0	2	72
Apprch %	0	0	4	96	0	2.6	0	97.4	28.6	42.9	0	28.6	0	0	0	100	
Total %	0	0	1.4	33.3	0	1.4	0	51.4	2.8	4.2	0	2.8	0	0	0	2.8	

	Macy's Lane From North					Old South Road From East					Macy's Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:30 AM																					
11:30 AM	0	0	0	4	4	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	7
11:45 AM	0	0	0	4	4	0	0	0	2	2	0	0	0	**2**	**2**	0	0	0	0	0	8
12:00 PM	0	0	**1**	**5**	**6**	0	0	0	4	4	0	**1**	0	0	1	0	0	0	0	0	**11**
12:15 PM	0	0	0	4	4	0	0	0	**5**	**5**	0	0	0	0	0	0	0	0	0	0	9
Total Volume	0	0	1	17	18	0	0	0	14	14	0	1	0	2	3	0	0	0	0	0	35
% App. Total	0	0	5.6	94.4		0	0	0	100		0	33.3	0	66.7		0	0	0	0		
PHF	.000	.000	.250	.850	.750	.000	.000	.000	.700	.700	.000	.250	.000	.250	.375	.000	.000	.000	.000	.000	.795

N/S: Macy's Lane
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City, State: Nantucket, MA
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Start Date : 7/26/2014
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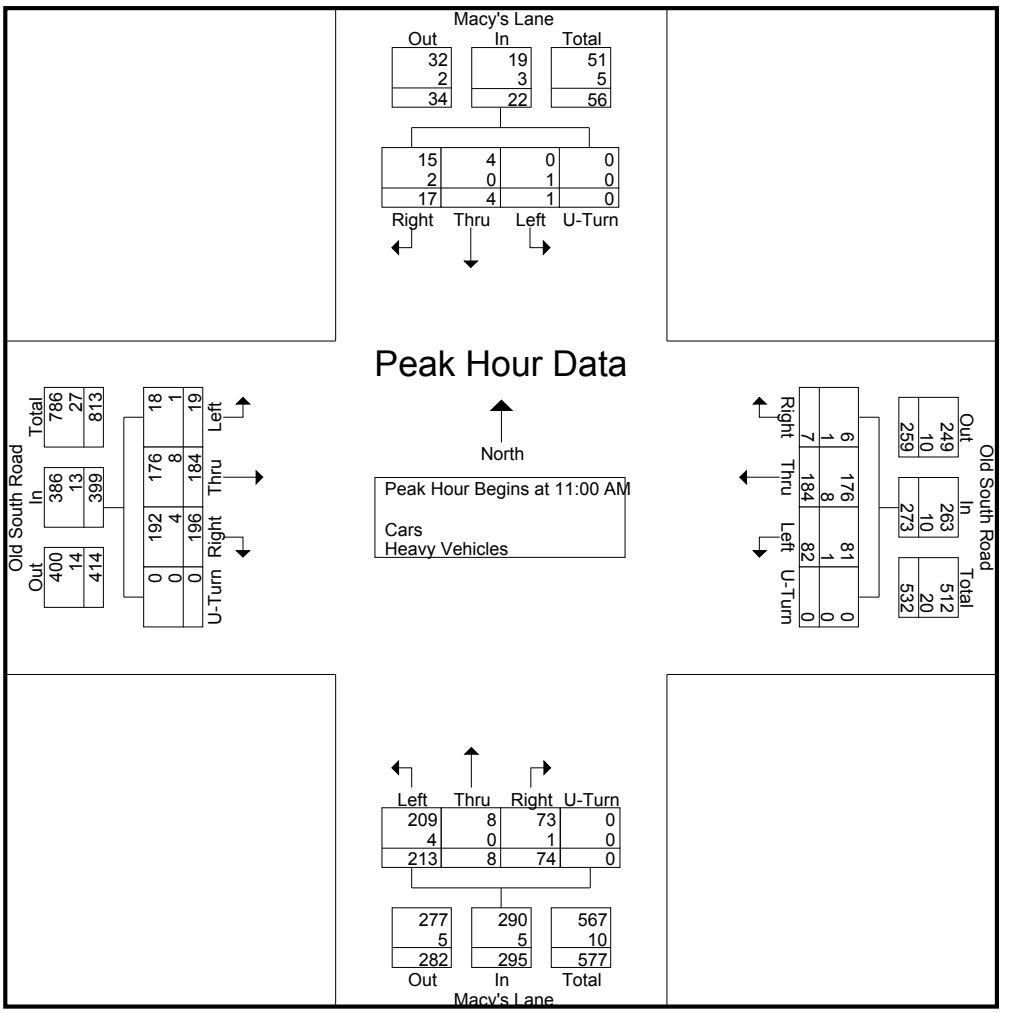
	Macy's Lane From North					Old South Road From East					Macy's Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	1	**1**	**1**	0	3	1	49	19	0	69	16	1	**65**	0	**82**	**59**	41	**6**	0	**106**	260
11:15 AM	**6**	1	0	0	**7**	1	39	19	0	59	**23**	2	39	0	64	38	45	5	0	88	218
11:30 AM	4	1	0	0	5	2	**50**	21	0	**73**	17	1	64	0	82	47	**52**	4	0	103	**263**
11:45 AM	6	1	0	0	7	**3**	46	**23**	0	72	18	**4**	45	0	67	52	46	4	0	102	248
Total Volume	17	4	1	0	22	7	184	82	0	273	74	8	213	0	295	196	184	19	0	399	989
% App. Total	77.3	18.2	4.5	0		2.6	67.4	30	0		25.1	2.7	72.2	0		49.1	46.1	4.8	0		
PHF	.708	1.00	.250	.000	.786	.583	.920	.891	.000	.935	.804	.500	.819	.000	.899	.831	.885	.792	.000	.941	.940
Cars	15	4	0	0	19	6	176	81	0	263	73	8	209	0	290	192	176	18	0	386	958
% Cars	88.2	100	0	0	86.4	85.7	95.7	98.8	0	96.3	98.6	100	98.1	0	98.3	98.0	95.7	94.7	0	96.7	96.9
Heavy Vehicles	2	0	1	0	3	1	8	1	0	10	1	0	4	0	5	4	8	1	0	13	31
% Heavy Vehicles	11.8	0	100	0	13.6	14.3	4.3	1.2	0	3.7	1.4	0	1.9	0	1.7	2.0	4.3	5.3	0	3.3	3.1



N/S: Goldfinch Drive/ Gregien Avenue
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
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File Name : 143955 D
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Goldfinch Drive From North				Old South Road From East				Gregien Avenue From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
08:00 AM	10	2	3	0	0	122	3	0	4	0	17	0	13	91	1	0	266
08:15 AM	16	1	6	0	0	116	1	0	14	0	12	0	9	125	0	0	300
08:30 AM	11	2	3	0	0	101	3	0	9	0	8	0	8	120	0	0	265
08:45 AM	21	0	9	0	0	120	5	0	4	0	12	0	8	141	0	0	320
Total	58	5	21	0	0	459	12	0	31	0	49	0	38	477	1	0	1151
09:00 AM	14	1	3	0	0	145	4	0	4	0	11	0	8	106	0	0	296
09:15 AM	19	0	1	0	0	114	2	0	10	0	12	0	12	112	0	0	282
09:30 AM	22	0	2	0	0	98	4	0	4	0	14	0	15	110	0	0	269
09:45 AM	12	1	3	0	1	110	4	0	4	0	9	0	14	120	0	0	278
Total	67	2	9	0	1	467	14	0	22	0	46	0	49	448	0	0	1125
10:00 AM	16	0	3	0	0	90	3	0	8	0	5	0	5	126	0	0	256
10:15 AM	9	0	0	0	0	82	3	0	0	0	16	0	9	97	0	0	216
10:30 AM	20	0	2	0	0	93	1	0	2	0	5	0	5	116	0	0	244
10:45 AM	15	0	6	0	0	87	3	0	4	0	7	0	12	94	0	0	228
Total	60	0	11	0	0	352	10	0	14	0	33	0	31	433	0	0	944
Grand Total	185	7	41	0	1	1278	36	0	67	0	128	0	118	1358	1	0	3220
Apprch %	79.4	3	17.6	0	0.1	97.2	2.7	0	34.4	0	65.6	0	8	91.9	0.1	0	
Total %	5.7	0.2	1.3	0	0	39.7	1.1	0	2.1	0	4	0	3.7	42.2	0	0	
Cars	178	6	37	0	1	1194	29	0	52	0	104	0	105	1280	1	0	2987
% Cars	96.2	85.7	90.2	0	100	93.4	80.6	0	77.6	0	81.2	0	89	94.3	100	0	92.8
Heavy Vehicles	7	1	4	0	0	84	7	0	15	0	24	0	13	78	0	0	233
% Heavy Vehicles	3.8	14.3	9.8	0	0	6.6	19.4	0	22.4	0	18.8	0	11	5.7	0	0	7.2

	Goldfinch Drive From North					Old South Road From East					Gregien Avenue From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:15 AM																					
08:15 AM	16	1	6	0	23	0	116	1	0	117	**14**	0	**12**	0	**26**	**9**	125	0	0	134	300
08:30 AM	11	**2**	3	0	16	0	101	3	0	104	9	0	8	0	17	8	120	0	0	128	265
08:45 AM	**21**	0	**9**	0	**30**	0	120	**5**	0	125	4	0	12	0	16	8	**141**	0	0	**149**	**320**
09:00 AM	14	1	3	0	18	0	**145**	4	0	**149**	4	0	11	0	15	8	106	0	0	114	296
Total Volume	62	4	21	0	87	0	482	13	0	495	31	0	43	0	74	33	492	0	0	525	1181
% App. Total	71.3	4.6	24.1	0		0	97.4	2.6	0		41.9	0	58.1	0		6.3	93.7	0	0		
PHF	.738	.500	.583	.000	.725	.000	.831	.650	.000	.831	.554	.000	.896	.000	.712	.917	.872	.000	.000	.881	.923
Cars	60	3	20	0	83	0	450	12	0	462	24	0	31	0	55	31	471	0	0	502	1102
% Cars	96.8	75.0	95.2	0	95.4	0	93.4	92.3	0	93.3	77.4	0	72.1	0	74.3	93.9	95.7	0	0	95.6	93.3
Heavy Vehicles	2	1	1	0	4	0	32	1	0	33	7	0	12	0	19	2	21	0	0	23	79
% Heavy Vehicles	3.2	25.0	4.8	0	4.6	0	6.6	7.7	0	6.7	22.6	0	27.9	0	25.7	6.1	4.3	0	0	4.4	6.7

N/S: Goldfinch Drive/ Gregien Avenue
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File Name : 143955 D
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Goldfinch Drive From North				Old South Road From East				Gregien Avenue From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
08:00 AM	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	3
08:15 AM	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	4
08:30 AM	0	3	0	2	0	0	0	0	0	0	0	0	0	0	0	0	5
08:45 AM	0	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	5
Total	0	5	0	10	0	0	0	0	0	2	0	0	0	0	0	0	17
09:00 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	3
09:15 AM	0	0	0	6	0	0	0	0	0	1	0	0	0	0	0	0	7
09:30 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
09:45 AM	0	0	0	4	0	0	0	0	0	2	0	0	0	0	0	0	6
Total	0	0	0	14	0	0	0	0	0	3	0	0	0	1	0	0	18
10:00 AM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
10:45 AM	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	8
Total	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	14
Grand Total	0	5	0	38	0	0	0	0	0	5	0	0	0	1	0	0	49
Apprch %	0	11.6	0	88.4	0	0	0	0	0	100	0	0	0	100	0	0	
Total %	0	10.2	0	77.6	0	0	0	0	0	10.2	0	0	0	2	0	0	

	Goldfinch Drive From North					Old South Road From East					Gregien Avenue From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:30 AM																					
08:30 AM	0	**3**	0	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
08:45 AM	0	1	0	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
09:00 AM	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	**1**	3
09:15 AM	0	0	0	**6**	**6**	0	0	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	**7**
Total Volume	0	4	0	14	18	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	20
% App. Total	0	22.2	0	77.8		0	0	0	0		0	100	0	0		0	100	0	0		
PHF	.000	.333	.000	.583	.750	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.250	.000	.000	.250	.714

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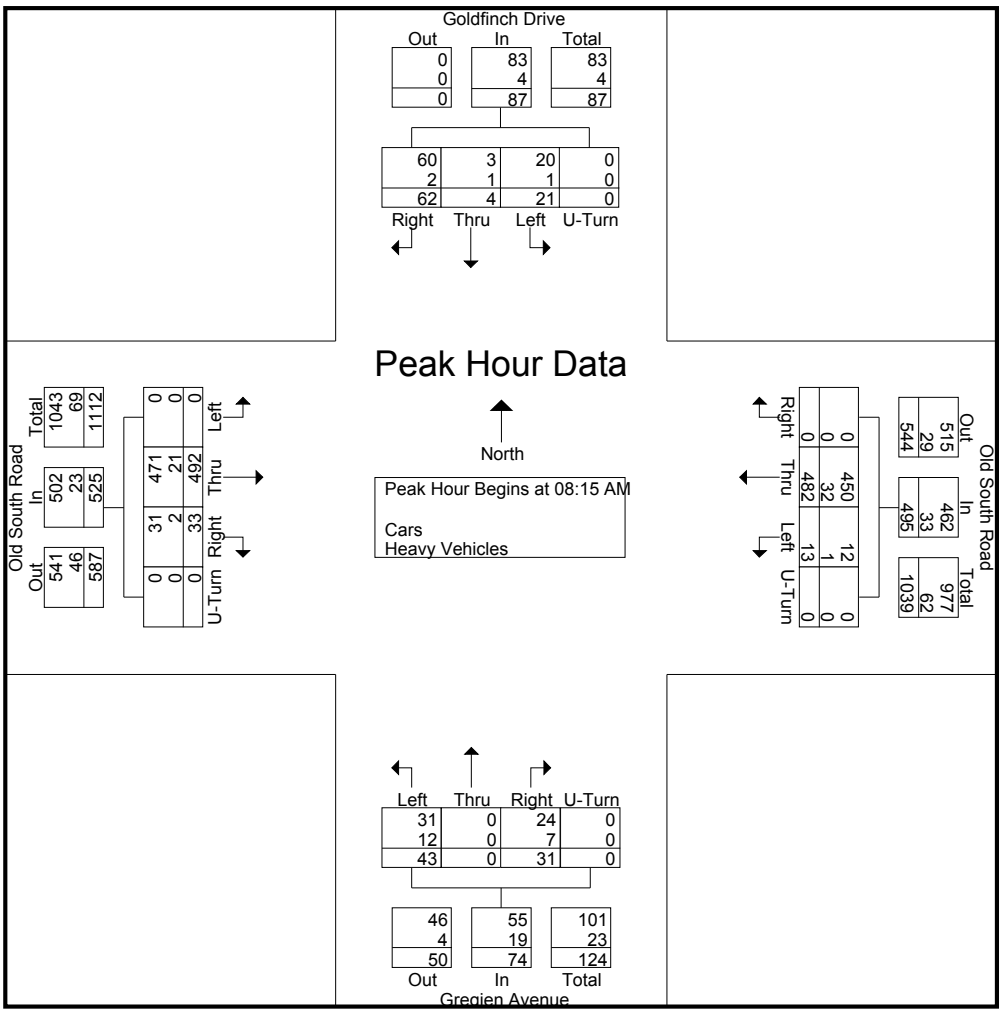
Start Date : 7/24/2014
Page No : 1

	Goldfinch Drive From North					Old South Road From East					Gregien Avenue From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:15 AM																					
08:15 AM	16	1	6	0	23	0	116	1	0	117	**14**	0	**12**	0	**26**	**9**	125	0	0	134	300
08:30 AM	11	**2**	3	0	16	0	101	3	0	104	9	0	8	0	17	8	120	0	0	128	265
08:45 AM	**21**	0	**9**	0	**30**	0	120	**5**	0	125	4	0	12	0	16	8	**141**	0	0	**149**	**320**
09:00 AM	14	1	3	0	18	0	**145**	4	0	**149**	4	0	11	0	15	8	106	0	0	114	296
Total Volume	62	4	21	0	87	0	482	13	0	495	31	0	43	0	74	33	492	0	0	525	1181
% App. Total	71.3	4.6	24.1	0		0	97.4	2.6	0		41.9	0	58.1	0		6.3	93.7	0	0		
PHF	.738	.500	.583	.000	.725	.000	.831	.650	.000	.831	.554	.000	.896	.000	.712	.917	.872	.000	.000	.881	.923
Cars	60	3	20	0	83	0	450	12	0	462	24	0	31	0	55	31	471	0	0	502	1102
% Cars	96.8	75.0	95.2	0	95.4	0	93.4	92.3	0	93.3	77.4	0	72.1	0	74.3	93.9	95.7	0	0	95.6	93.3
Heavy Vehicles	2	1	1	0	4	0	32	1	0	33	7	0	12	0	19	2	21	0	0	23	79
% Heavy Vehicles	3.2	25.0	4.8	0	4.6	0	6.6	7.7	0	6.7	22.6	0	27.9	0	25.7	6.1	4.3	0	0	4.4	6.7



N/S: Goldfinch Drive/ Gregien Avenue
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
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File Name : 143955 DD
Site Code : TBA
Start Date : 7/24/2014

Groups Printed- Cars - Heavy Vehicles

	Goldfinch Drive From North				Old South Road From East				Gregien Avenue From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
03:00 PM	5	0	3	0	0	101	4	0	2	0	11	0	9	118	0	0	253
03:15 PM	15	0	3	0	0	98	0	0	3	0	12	0	11	126	0	0	268
03:30 PM	10	3	9	0	0	76	1	0	6	0	10	0	12	121	0	0	248
03:45 PM	19	0	7	0	0	96	2	0	12	0	6	0	18	135	0	0	295
Total	49	3	22	0	0	371	7	0	23	0	39	0	50	500	0	0	1064
04:00 PM	12	0	3	0	0	109	6	0	7	0	9	0	21	131	0	0	298
04:15 PM	7	1	3	0	0	109	5	0	2	0	14	0	12	146	0	0	299
04:30 PM	12	0	1	0	0	121	5	0	11	0	17	0	9	151	0	0	327
04:45 PM	9	0	6	0	0	116	6	0	3	0	13	0	21	158	0	0	332
Total	40	1	13	0	0	455	22	0	23	0	53	0	63	586	0	0	1256
05:00 PM	7	0	3	0	0	149	4	0	6	0	7	0	21	152	0	0	349
05:15 PM	13	1	7	0	0	110	5	0	8	0	11	0	16	142	0	0	313
05:30 PM	15	1	3	0	0	115	3	0	4	0	9	0	9	137	0	0	296
05:45 PM	15	0	1	0	0	79	2	0	2	0	8	0	8	116	0	0	231
Total	50	2	14	0	0	453	14	0	20	0	35	0	54	547	0	0	1189
Grand Total	139	6	49	0	0	1279	43	0	66	0	127	0	167	1633	0	0	3509
Apprch %	71.6	3.1	25.3	0	0	96.7	3.3	0	34.2	0	65.8	0	9.3	90.7	0	0	
Total %	4	0.2	1.4	0	0	36.4	1.2	0	1.9	0	3.6	0	4.8	46.5	0	0	
Cars	136	5	46	0	0	1246	37	0	57	0	117	0	138	1552	0	0	3334
% Cars	97.8	83.3	93.9	0	0	97.4	86	0	86.4	0	92.1	0	82.6	95	0	0	95
Heavy Vehicles	3	1	3	0	0	33	6	0	9	0	10	0	29	81	0	0	175
% Heavy Vehicles	2.2	16.7	6.1	0	0	2.6	14	0	13.6	0	7.9	0	17.4	5	0	0	5

	Goldfinch Drive From North					Old South Road From East					Gregien Avenue From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	12	0	1	0	13	0	121	5	0	126	**11**	0	**17**	0	**28**	9	151	0	0	160	327
04:45 PM	9	0	6	0	15	0	116	**6**	0	122	3	0	13	0	16	**21**	**158**	0	0	**179**	332
05:00 PM	7	0	3	0	10	0	**149**	4	0	**153**	6	0	7	0	13	21	152	0	0	173	**349**
05:15 PM	**13**	**1**	**7**	0	**21**	0	110	5	0	115	8	0	11	0	19	16	142	0	0	158	313
Total Volume	41	1	17	0	59	0	496	20	0	516	28	0	48	0	76	67	603	0	0	670	1321
% App. Total	69.5	1.7	28.8	0		0	96.1	3.9	0		36.8	0	63.2	0		10	90	0	0		
PHF	.788	.250	.607	.000	.702	.000	.832	.833	.000	.843	.636	.000	.706	.000	.679	.798	.954	.000	.000	.936	.946
Cars	40	0	17	0	57	0	487	19	0	506	24	0	46	0	70	52	575	0	0	627	1260
% Cars	97.6	0	100	0	96.6	0	98.2	95.0	0	98.1	85.7	0	95.8	0	92.1	77.6	95.4	0	0	93.6	95.4
Heavy Vehicles	1	1	0	0	2	0	9	1	0	10	4	0	2	0	6	15	28	0	0	43	61
% Heavy Vehicles	2.4	100	0	0	3.4	0	1.8	5.0	0	1.9	14.3	0	4.2	0	7.9	22.4	4.6	0	0	6.4	4.6

N/S: Goldfinch Drive/ Gregien Avenue
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File Name : 143955 DD
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Goldfinch Drive From North				Old South Road From East				Gregien Avenue From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
03:15 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	3
03:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
03:45 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	5	0	0	0	0	0	2	0	0	0	0	0	1	8
04:00 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
04:15 PM	0	0	0	1	0	0	0	0	0	4	0	0	0	0	0	0	5
04:30 PM	0	0	0	3	0	0	0	1	0	2	0	0	0	0	0	0	6
04:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	0	2	0	4	0	1	0	1	0	7	0	0	0	0	0	0	15
05:00 PM	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	3
05:15 PM	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	3
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	2	0	0	0	1	0	1	0	0	0	1	0	0	6
Grand Total	0	3	0	11	0	1	0	2	0	10	0	0	0	1	0	1	29
Apprch %	0	21.4	0	78.6	0	33.3	0	66.7	0	100	0	0	0	50	0	50	
Total %	0	10.3	0	37.9	0	3.4	0	6.9	0	34.5	0	0	0	3.4	0	3.4	

	Goldfinch Drive From North					Old South Road From East					Gregien Avenue From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
04:00 PM	0	**2**	0	0	2	0	**1**	0	0	**1**	0	0	0	0	0	0	0	0	0	0	3
04:15 PM	0	0	0	1	1	0	0	0	0	0	0	**4**	0	0	**4**	0	0	0	0	0	5
04:30 PM	0	0	0	**3**	**3**	0	0	0	**1**	1	0	2	0	0	2	0	0	0	0	0	**6**
Total Volume	0	2	0	6	8	0	1	0	1	2	0	6	0	0	6	0	0	0	0	0	16
% App. Total	0	25	0	75		0	50	0	50		0	100	0	0		0	0	0	0		
PHF	.000	.250	.000	.500	.667	.000	.250	.000	.250	.500	.000	.375	.000	.000	.375	.000	.000	.000	.000	.000	.667

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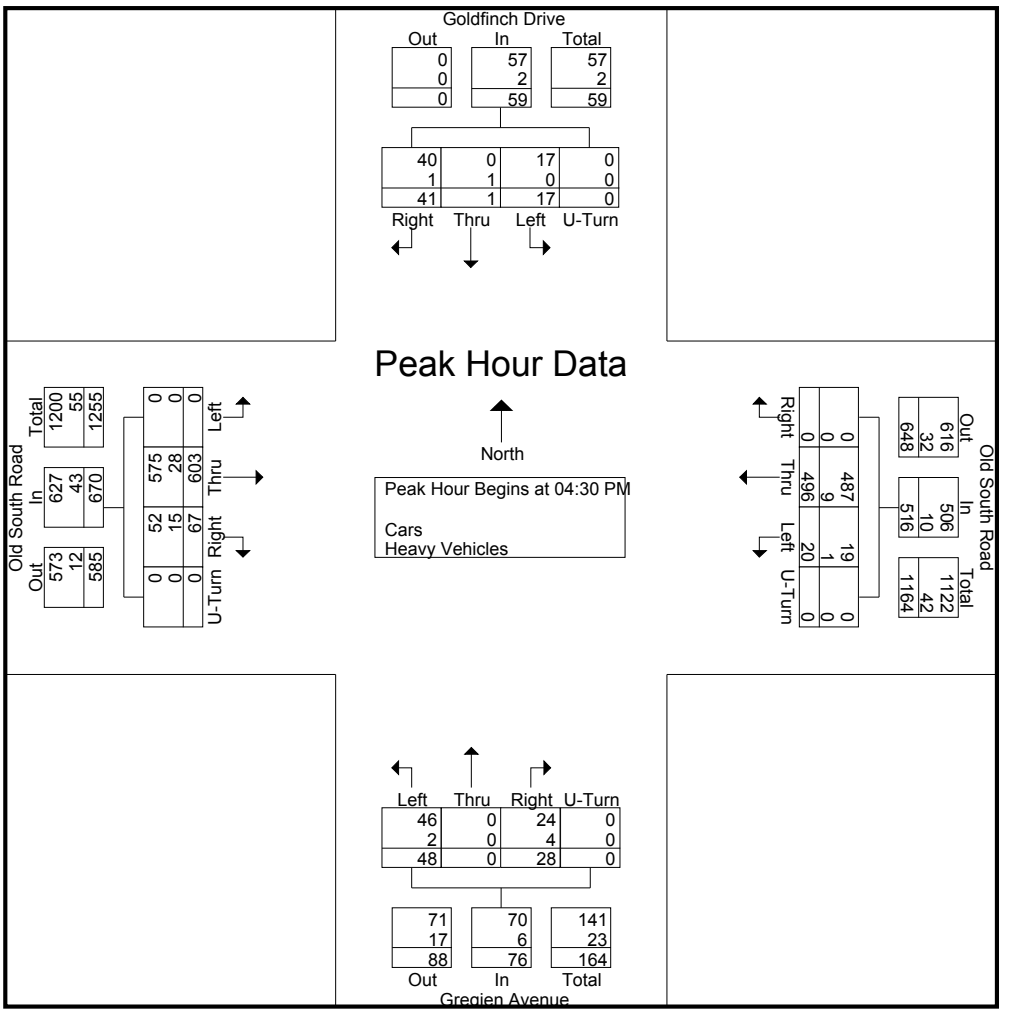
	Goldfinch Drive From North					Old South Road From East					Gregien Avenue From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	12	0	1	0	13	0	121	5	0	126	**11**	0	**17**	0	**28**	9	151	0	0	160	327
04:45 PM	9	0	6	0	15	0	116	**6**	0	122	3	0	13	0	16	**21**	**158**	0	0	**179**	332
05:00 PM	7	0	3	0	10	0	**149**	4	0	**153**	6	0	7	0	13	21	152	0	0	173	**349**
05:15 PM	**13**	**1**	**7**	0	**21**	0	110	5	0	115	8	0	11	0	19	16	142	0	0	158	313
Total Volume	41	1	17	0	59	0	496	20	0	516	28	0	48	0	76	67	603	0	0	670	1321
% App. Total	69.5	1.7	28.8	0		0	96.1	3.9	0		36.8	0	63.2	0		10	90	0	0		
PHF	.788	.250	.607	.000	.702	.000	.832	.833	.000	.843	.636	.000	.706	.000	.679	.798	.954	.000	.000	.936	.946
Cars	40	0	17	0	57	0	487	19	0	506	24	0	46	0	70	52	575	0	0	627	1260
% Cars	97.6	0	100	0	96.6	0	98.2	95.0	0	98.1	85.7	0	95.8	0	92.1	77.6	95.4	0	0	93.6	95.4
Heavy Vehicles	1	1	0	0	2	0	9	1	0	10	4	0	2	0	6	15	28	0	0	43	61
% Heavy Vehicles	2.4	100	0	0	3.4	0	1.8	5.0	0	1.9	14.3	0	4.2	0	7.9	22.4	4.6	0	0	6.4	4.6



N/S: Goldfinch Drive/ Gregien Avenue
E/W: Old South Road
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File Name : 143955 DDD
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Goldfinch Drive From North				Old South Road From East				Gregien Avenue From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
11:00 AM	29	0	6	0	0	120	2	0	6	0	10	0	12	139	0	0	324
11:15 AM	23	2	3	0	0	91	6	0	10	0	6	0	16	93	0	0	250
11:30 AM	12	1	2	0	0	125	8	0	3	0	17	0	16	116	0	0	300
11:45 AM	20	2	4	0	0	98	4	0	4	0	14	0	15	134	0	0	295
Total	84	5	15	0	0	434	20	0	23	0	47	0	59	482	0	0	1169
12:00 PM	12	0	4	0	0	105	3	0	6	0	11	0	8	110	0	0	259
12:15 PM	13	0	3	0	0	87	2	0	4	0	8	0	11	93	0	0	221
12:30 PM	13	0	2	0	0	112	3	0	7	0	11	0	8	115	0	0	271
12:45 PM	11	1	3	0	0	91	3	1	4	0	6	0	9	110	0	0	239
Total	49	1	12	0	0	395	11	1	21	0	36	0	36	428	0	0	990
01:00 PM	22	0	1	0	0	91	2	0	4	0	11	0	6	102	0	0	239
01:15 PM	16	0	5	0	0	90	2	0	0	0	11	0	6	129	0	0	259
01:30 PM	10	0	5	0	0	79	4	0	3	0	4	0	8	122	0	0	235
01:45 PM	13	0	6	0	0	86	3	0	2	0	5	0	7	113	0	0	235
Total	61	0	17	0	0	346	11	0	9	0	31	0	27	466	0	0	968
Grand Total	194	6	44	0	0	1175	42	1	53	0	114	0	122	1376	0	0	3127
Apprch %	79.5	2.5	18	0	0	96.5	3.4	0.1	31.7	0	68.3	0	8.1	91.9	0	0	
Total %	6.2	0.2	1.4	0	0	37.6	1.3	0	1.7	0	3.6	0	3.9	44	0	0	
Cars	190	6	44	0	0	1143	37	1	47	0	103	0	108	1332	0	0	3011
% Cars	97.9	100	100	0	0	97.3	88.1	100	88.7	0	90.4	0	88.5	96.8	0	0	96.3
Heavy Vehicles	4	0	0	0	0	32	5	0	6	0	11	0	14	44	0	0	116
% Heavy Vehicles	2.1	0	0	0	0	2.7	11.9	0	11.3	0	9.6	0	11.5	3.2	0	0	3.7

	Goldfinch Drive From North					Old South Road From East					Gregien Avenue From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	**29**	0	**6**	0	**35**	0	120	2	0	122	6	0	10	0	16	12	**139**	0	0	**151**	**324**
11:15 AM	23	**2**	3	0	28	0	91	6	0	97	**10**	0	6	0	16	**16**	93	0	0	109	250
11:30 AM	12	1	2	0	15	0	**125**	**8**	0	**133**	3	0	**17**	0	**20**	16	116	0	0	132	300
11:45 AM	20	2	4	0	26	0	98	4	0	102	4	0	14	0	18	15	134	0	0	149	295
Total Volume	84	5	15	0	104	0	434	20	0	454	23	0	47	0	70	59	482	0	0	541	1169
% App. Total	80.8	4.8	14.4	0		0	95.6	4.4	0		32.9	0	67.1	0		10.9	89.1	0	0		
PHF	.724	.625	.625	.000	.743	.000	.868	.625	.000	.853	.575	.000	.691	.000	.875	.922	.867	.000	.000	.896	.902
Cars	80	5	15	0	100	0	422	18	0	440	21	0	46	0	67	51	466	0	0	517	1124
% Cars	95.2	100	100	0	96.2	0	97.2	90.0	0	96.9	91.3	0	97.9	0	95.7	86.4	96.7	0	0	95.6	96.2
Heavy Vehicles	4	0	0	0	4	0	12	2	0	14	2	0	1	0	3	8	16	0	0	24	45
% Heavy Vehicles	4.8	0	0	0	3.8	0	2.8	10.0	0	3.1	8.7	0	2.1	0	4.3	13.6	3.3	0	0	4.4	3.8

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Groups Printed- Peds and Bicycles

	Goldfinch Drive From North				Old South Road From East				Gregien Avenue From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
11:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	13	0	0	0	0	0	0	0	0	1	1	0	0	15
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	14	0	0	0	0	0	0	0	0	2	1	0	0	17
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	4
12:30 PM	0	0	0	5	0	0	0	2	0	0	0	0	1	0	0	0	8
12:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	9	0	0	0	2	0	0	0	0	1	0	0	0	13
01:00 PM	0	0	0	0	0	0	0	2	0	3	0	0	0	0	0	0	5
01:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	2	0	3	0	0	0	0	0	0	6
Grand Total	0	1	0	24	0	0	0	4	0	3	0	0	3	1	0	0	36
Apprch %	0	4	0	96	0	0	0	100	0	100	0	0	75	25	0	0	
Total %	0	2.8	0	66.7	0	0	0	11.1	0	8.3	0	0	8.3	2.8	0	0	

	Goldfinch Drive From North					Old South Road From East					Gregien Avenue From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:15 PM																					
12:15 PM	0	**1**	0	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
12:30 PM	0	0	0	**5**	**5**	0	0	0	**2**	**2**	0	0	0	0	0	**1**	0	0	0	**1**	**8**
12:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
01:00 PM	0	0	0	0	0	0	0	0	2	2	0	**3**	0	0	**3**	0	0	0	0	0	5
Total Volume	0	1	0	9	10	0	0	0	4	4	0	3	0	0	3	1	0	0	0	1	18
% App. Total	0	10	0	90		0	0	0	100		0	100	0	0		100	0	0	0		
PHF	.000	.250	.000	.450	.500	.000	.000	.000	.500	.500	.000	.250	.000	.000	.250	.250	.000	.000	.000	.250	.563

N/S: Goldfinch Drive/ Gregien Avenue
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
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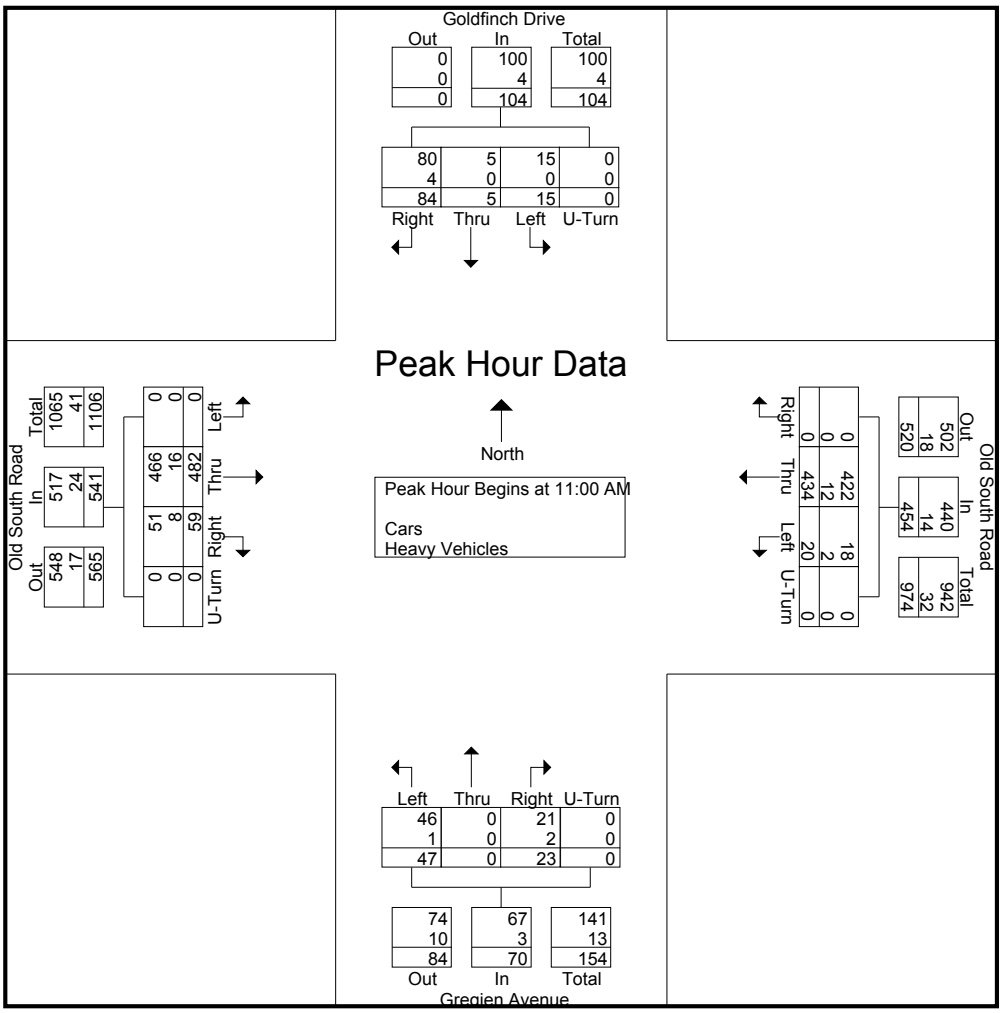
File Name : 143955 DDD
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

	Goldfinch Drive From North					Old South Road From East					Gregien Avenue From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	**29**	0	**6**	0	**35**	0	120	2	0	122	6	0	10	0	16	12	**139**	0	0	**151**	**324**
11:15 AM	23	**2**	3	0	28	0	91	6	0	97	**10**	0	6	0	16	**16**	93	0	0	109	250
11:30 AM	12	1	2	0	15	0	**125**	**8**	0	**133**	3	0	**17**	0	**20**	16	116	0	0	132	300
11:45 AM	20	2	4	0	26	0	98	4	0	102	4	0	14	0	18	15	134	0	0	149	295
Total Volume	84	5	15	0	104	0	434	20	0	454	23	0	47	0	70	59	482	0	0	541	1169
% App. Total	80.8	4.8	14.4	0		0	95.6	4.4	0		32.9	0	67.1	0		10.9	89.1	0	0		
PHF	.724	.625	.625	.000	.743	.000	.868	.625	.000	.853	.575	.000	.691	.000	.875	.922	.867	.000	.000	.896	.902
Cars	80	5	15	0	100	0	422	18	0	440	21	0	46	0	67	51	466	0	0	517	1124
% Cars	95.2	100	100	0	96.2	0	97.2	90.0	0	96.9	91.3	0	97.9	0	95.7	86.4	96.7	0	0	95.6	96.2
Heavy Vehicles	4	0	0	0	4	0	12	2	0	14	2	0	1	0	3	8	16	0	0	24	45
% Heavy Vehicles	4.8	0	0	0	3.8	0	2.8	10.0	0	3.1	8.7	0	2.1	0	4.3	13.6	3.3	0	0	4.4	3.8



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N: Envy Tile Driveway
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 E
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Envy Tile Driveway From North			Old South Road From East			Old South Road From West			
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	Int. Total
08:00 AM	4	0	0	0	153	0	107	1	0	265
08:15 AM	6	0	0	0	145	0	135	0	0	286
08:30 AM	2	0	0	0	124	0	128	1	0	255
08:45 AM	2	0	0	0	152	0	149	2	0	305
Total	14	0	0	0	574	0	519	4	0	1111
09:00 AM	2	0	0	0	167	0	118	1	0	288
09:15 AM	1	1	0	2	145	0	120	1	0	270
09:30 AM	3	2	0	0	132	0	124	3	0	264
09:45 AM	4	3	0	1	133	0	130	2	0	273
Total	10	6	0	3	577	0	492	7	0	1095
10:00 AM	6	3	0	0	110	0	127	2	0	248
10:15 AM	3	0	0	1	107	0	109	2	0	222
10:30 AM	0	0	0	1	116	0	121	2	0	240
10:45 AM	6	0	0	0	106	0	107	7	0	226
Total	15	3	0	2	439	0	464	13	0	936
Grand Total	39	9	0	5	1590	0	1475	24	0	3142
Apprch %	81.2	18.8	0	0.3	99.7	0	98.4	1.6	0	
Total %	1.2	0.3	0	0.2	50.6	0	46.9	0.8	0	
Cars	37	9	0	5	1485	0	1379	24	0	2939
% Cars	94.9	100	0	100	93.4	0	93.5	100	0	93.5
Heavy Vehicles	2	0	0	0	105	0	96	0	0	203
% Heavy Vehicles	5.1	0	0	0	6.6	0	6.5	0	0	6.5

	Envy Tile Driveway From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:15 AM													
08:15 AM	**6**	0	0	**6**	0	145	0	145	135	0	0	135	286
08:30 AM	2	0	0	2	0	124	0	124	128	1	0	129	255
08:45 AM	2	0	0	2	0	152	0	152	**149**	**2**	0	**151**	**305**
09:00 AM	2	0	0	2	0	**167**	0	**167**	118	1	0	119	288
Total Volume	12	0	0	12	0	588	0	588	530	4	0	534	1134
% App. Total	100	0	0		0	100	0		99.3	0.7	0		
PHF	.500	.000	.000	.500	.000	.880	.000	.880	.889	.500	.000	.884	.930
Cars	10	0	0	10	0	548	0	548	505	4	0	509	1067
% Cars	83.3	0	0	83.3	0	93.2	0	93.2	95.3	100	0	95.3	94.1
Heavy Vehicles	2	0	0	2	0	40	0	40	25	0	0	25	67
% Heavy Vehicles	16.7	0	0	16.7	0	6.8	0	6.8	4.7	0	0	4.7	5.9

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N: Envy Tile Driveway
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 E
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Envy Tile Driveway From North			Old South Road From East			Old South Road From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
08:00 AM	0	0	2	0	7	0	0	0	0	9
08:15 AM	0	0	3	0	8	0	0	0	0	11
08:30 AM	0	0	2	0	7	0	0	0	0	9
08:45 AM	0	0	8	0	7	0	0	0	0	15
Total	0	0	15	0	29	0	0	0	0	44
09:00 AM	0	0	6	0	5	0	4	0	0	15
09:15 AM	0	0	5	0	10	0	3	0	0	18
09:30 AM	0	0	4	0	11	0	3	0	0	18
09:45 AM	0	0	4	1	9	0	2	0	0	16
Total	0	0	19	1	35	0	12	0	0	67
10:00 AM	0	0	12	0	15	0	6	0	0	33
10:15 AM	0	0	8	0	13	0	1	0	0	22
10:30 AM	0	0	13	0	12	0	12	0	0	37
10:45 AM	0	1	18	0	7	0	4	0	0	30
Total	0	1	51	0	47	0	23	0	0	122
Grand Total	0	1	85	1	111	0	35	0	0	233
Apprch %	0	1.2	98.8	0.9	99.1	0	100	0	0	
Total %	0	0.4	36.5	0.4	47.6	0	15	0	0	

	Envy Tile Driveway From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 10:00 AM													
10:00 AM	0	0	12	12	0	**15**	0	**15**	6	0	0	6	33
10:15 AM	0	0	8	8	0	13	0	13	1	0	0	1	22
10:30 AM	0	0	13	13	0	12	0	12	**12**	0	0	**12**	**37**
10:45 AM	0	**1**	**18**	**19**	0	7	0	7	4	0	0	4	30
Total Volume	0	1	51	52	0	47	0	47	23	0	0	23	122
% App. Total	0	1.9	98.1		0	100	0		100	0	0		
PHF	.000	.250	.708	.684	.000	.783	.000	.783	.479	.000	.000	.479	.824

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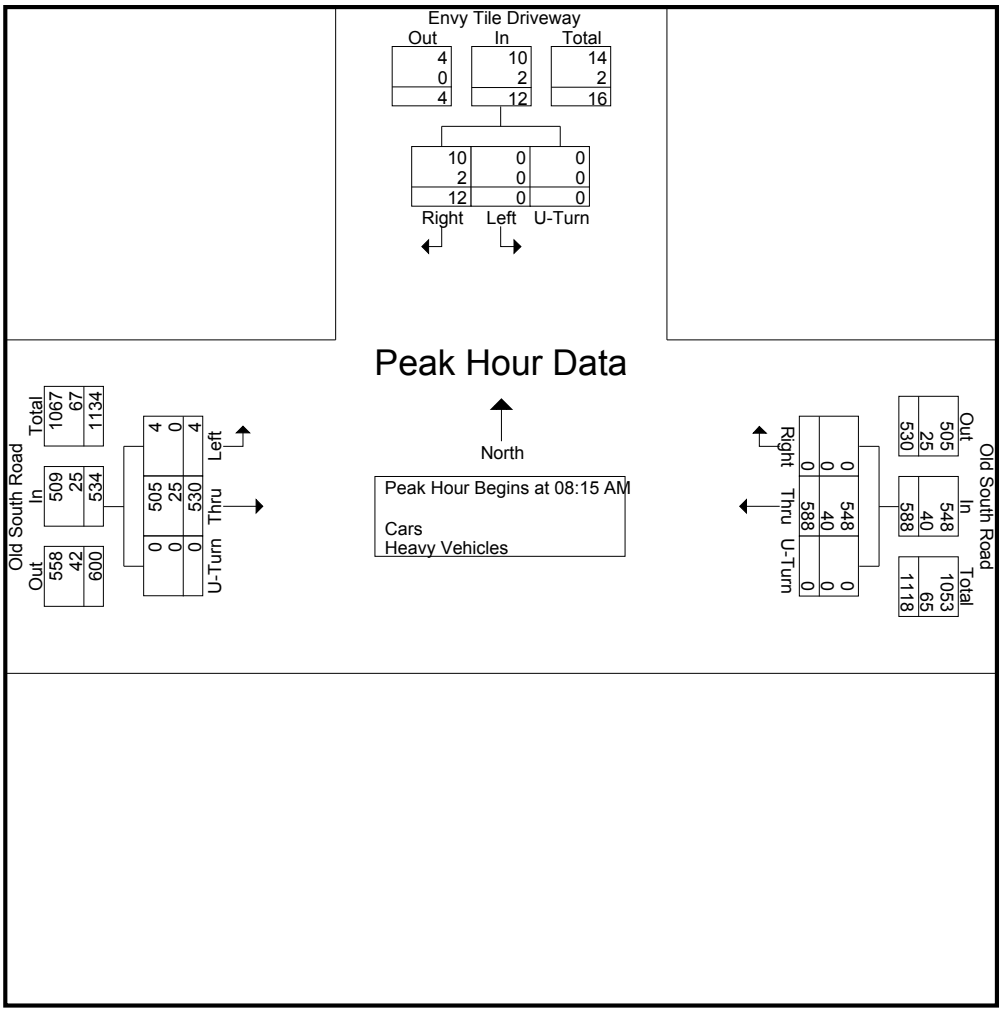
N: Envy Tile Driveway
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 E
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

	Envy Tile Driveway From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:15 AM													
08:15 AM	**6**	0	0	**6**	0	145	0	145	135	0	0	135	286
08:30 AM	2	0	0	2	0	124	0	124	128	1	0	129	255
08:45 AM	2	0	0	2	0	152	0	152	**149**	**2**	0	**151**	**305**
09:00 AM	2	0	0	2	0	**167**	0	**167**	118	1	0	119	288
Total Volume	12	0	0	12	0	588	0	588	530	4	0	534	1134
% App. Total	100	0	0		0	100	0		99.3	0.7	0		
PHF	.500	.000	.000	.500	.000	.880	.000	.880	.889	.500	.000	.884	.930
Cars	10	0	0	10	0	548	0	548	505	4	0	509	1067
% Cars	83.3	0	0	83.3	0	93.2	0	93.2	95.3	100	0	95.3	94.1
Heavy Vehicles	2	0	0	2	0	40	0	40	25	0	0	25	67
% Heavy Vehicles	16.7	0	0	16.7	0	6.8	0	6.8	4.7	0	0	4.7	5.9



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N: Envy Tile Driveway
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 EE
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Envy Tile Driveway From North			Old South Road From East			Old South Road From West			
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	Int. Total
03:00 PM	7	5	0	0	117	0	122	4	0	255
03:15 PM	4	1	0	1	127	0	135	2	0	270
03:30 PM	4	0	0	5	90	0	134	0	0	233
03:45 PM	2	1	0	4	118	0	151	1	0	277
Total	17	7	0	10	452	0	542	7	0	1035
04:00 PM	7	3	0	0	127	0	150	1	0	288
04:15 PM	7	1	0	3	130	0	158	1	0	300
04:30 PM	0	1	0	2	149	0	159	0	0	311
04:45 PM	1	2	0	0	137	0	179	1	0	320
Total	15	7	0	5	543	0	646	3	0	1219
05:00 PM	4	0	0	0	168	0	176	1	0	349
05:15 PM	2	0	0	1	135	0	161	0	0	299
05:30 PM	5	1	0	2	137	0	144	3	0	292
05:45 PM	1	0	0	0	103	0	124	1	0	229
Total	12	1	0	3	543	0	605	5	0	1169
Grand Total	44	15	0	18	1538	0	1793	15	0	3423
Apprch %	74.6	25.4	0	1.2	98.8	0	99.2	0.8	0	
Total %	1.3	0.4	0	0.5	44.9	0	52.4	0.4	0	
Cars	42	15	0	17	1492	0	1673	15	0	3254
% Cars	95.5	100	0	94.4	97	0	93.3	100	0	95.1
Heavy Vehicles	2	0	0	1	46	0	120	0	0	169
% Heavy Vehicles	4.5	0	0	5.6	3	0	6.7	0	0	4.9

	Envy Tile Driveway From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:15 PM													
04:15 PM	**7**	1	0	**8**	**3**	130	0	133	158	**1**	0	159	300
04:30 PM	0	1	0	1	2	149	0	151	159	0	0	159	311
04:45 PM	1	**2**	0	3	0	137	0	137	**179**	1	0	**180**	320
05:00 PM	4	0	0	4	0	**168**	0	**168**	176	1	0	177	**349**
Total Volume	12	4	0	16	5	584	0	589	672	3	0	675	1280
% App. Total	75	25	0		0.8	99.2	0		99.6	0.4	0		
PHF	.429	.500	.000	.500	.417	.869	.000	.876	.939	.750	.000	.938	.917
Cars	12	4	0	16	5	570	0	575	636	3	0	639	1230
% Cars	100	100	0	100	100	97.6	0	97.6	94.6	100	0	94.7	96.1
Heavy Vehicles	0	0	0	0	0	14	0	14	36	0	0	36	50
% Heavy Vehicles	0	0	0	0	0	2.4	0	2.4	5.4	0	0	5.3	3.9

N: Envy Tile Driveway
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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File Name : 143955 EE
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Envy Tile Driveway From North			Old South Road From East			Old South Road From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
03:00 PM	0	0	1	0	2	0	3	0	0	6
03:15 PM	0	0	3	0	2	0	21	0	1	27
03:30 PM	1	0	3	1	6	0	8	0	0	19
03:45 PM	2	0	1	1	7	0	8	0	0	19
Total	3	0	8	2	17	0	40	0	1	71
04:00 PM	0	0	0	0	8	0	0	0	0	8
04:15 PM	0	0	1	0	3	0	5	0	0	9
04:30 PM	0	0	0	0	8	0	3	0	0	11
04:45 PM	0	0	0	1	7	0	0	0	0	8
Total	0	0	1	1	26	0	8	0	0	36
05:00 PM	0	1	0	0	5	0	9	0	0	15
05:15 PM	0	0	0	0	6	0	5	0	0	11
05:30 PM	0	0	0	0	7	0	3	0	0	10
05:45 PM	0	0	0	0	1	0	2	0	0	3
Total	0	1	0	0	19	0	19	0	0	39
Grand Total	3	1	9	3	62	0	67	0	1	146
Apprch %	23.1	7.7	69.2	4.6	95.4	0	98.5	0	1.5	
Total %	2.1	0.7	6.2	2.1	42.5	0	45.9	0	0.7	

	Envy Tile Driveway From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:15 PM													
03:15 PM	0	0	**3**	3	0	2	0	2	**21**	0	**1**	**22**	**27**
03:30 PM	1	0	3	**4**	**1**	6	0	7	8	0	0	8	19
03:45 PM	**2**	0	1	3	1	7	0	**8**	8	0	0	8	19
04:00 PM	0	0	0	0	0	**8**	0	8	0	0	0	0	8
Total Volume	3	0	7	10	2	23	0	25	37	0	1	38	73
% App. Total	30	0	70		8	92	0		97.4	0	2.6		
PHF	.375	.000	.583	.625	.500	.719	.000	.781	.440	.000	.250	.432	.676

N: Envy Tile Driveway
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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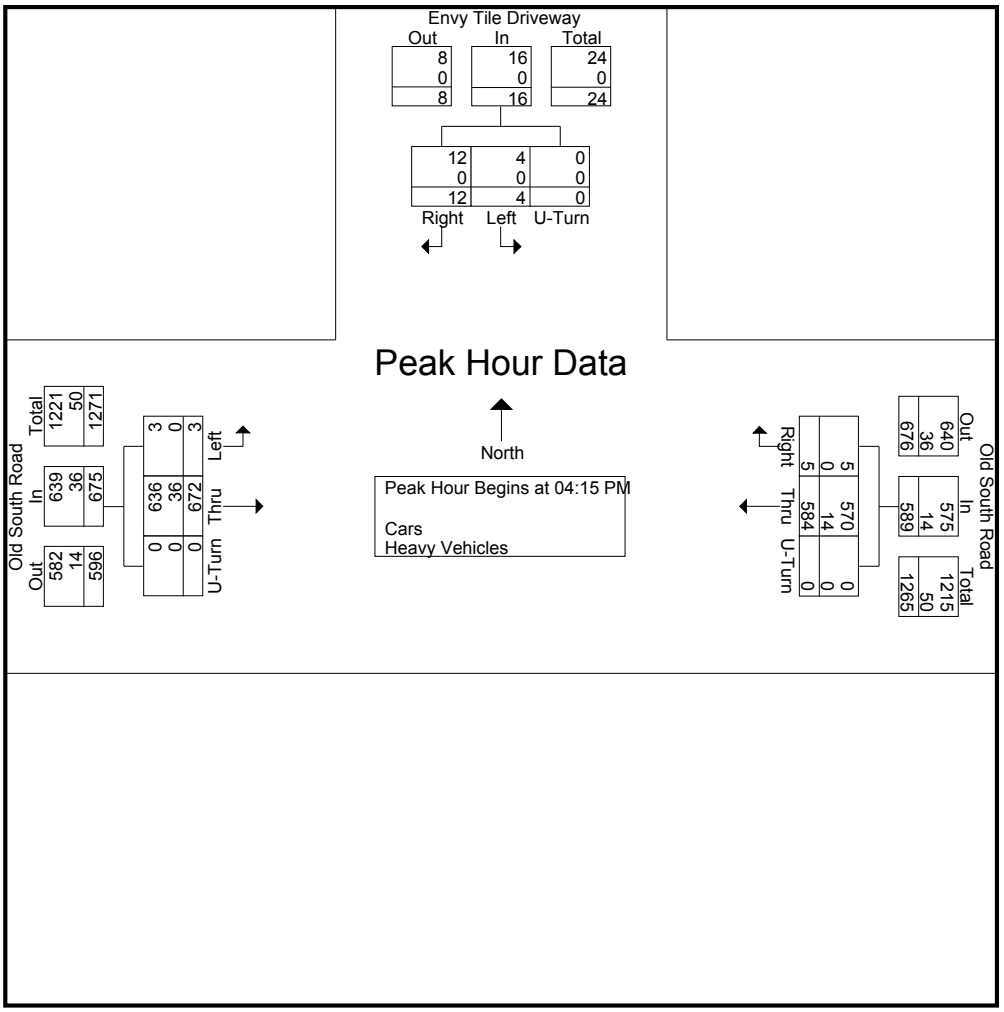
File Name : 143955 EE
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

	Envy Tile Driveway From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:15 PM													
04:15 PM	**7**	1	0	**8**	**3**	130	0	133	158	**1**	0	159	300
04:30 PM	0	1	0	1	2	149	0	151	159	0	0	159	311
04:45 PM	1	**2**	0	3	0	137	0	137	**179**	1	0	**180**	320
05:00 PM	4	0	0	4	0	**168**	0	**168**	176	1	0	177	**349**
Total Volume	12	4	0	16	5	584	0	589	672	3	0	675	1280
% App. Total	75	25	0		0.8	99.2	0		99.6	0.4	0		
PHF	.429	.500	.000	.500	.417	.869	.000	.876	.939	.750	.000	.938	.917
Cars	12	4	0	16	5	570	0	575	636	3	0	639	1230
% Cars	100	100	0	100	100	97.6	0	97.6	94.6	100	0	94.7	96.1
Heavy Vehicles	0	0	0	0	0	14	0	14	36	0	0	36	50
% Heavy Vehicles	0	0	0	0	0	2.4	0	2.4	5.4	0	0	5.3	3.9



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Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Envy Tile Driveway From North			Old South Road From East			Old South Road From West			
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	Int. Total
11:00 AM	4	4	0	2	126	0	136	2	0	274
11:15 AM	0	1	0	2	122	0	133	1	0	259
11:30 AM	4	3	0	2	143	0	139	1	0	292
11:45 AM	1	2	0	1	127	0	134	3	0	268
Total	9	10	0	7	518	0	542	7	0	1093
12:00 PM	1	2	0	2	127	0	165	2	0	299
12:15 PM	6	3	0	1	153	0	174	6	0	343
12:30 PM	4	3	0	0	159	0	159	4	0	329
12:45 PM	3	2	0	0	134	0	154	3	0	296
Total	14	10	0	3	573	0	652	15	0	1267
01:00 PM	7	1	0	1	138	0	154	2	0	303
01:15 PM	7	2	0	0	141	0	126	3	0	279
01:30 PM	2	3	0	1	112	0	121	3	0	242
01:45 PM	3	1	0	2	137	0	137	4	0	284
Total	19	7	0	4	528	0	538	12	0	1108
Grand Total	42	27	0	14	1619	0	1732	34	0	3468
Apprch %	60.9	39.1	0	0.9	99.1	0	98.1	1.9	0	
Total %	1.2	0.8	0	0.4	46.7	0	49.9	1	0	
Cars	41	24	0	13	1539	0	1618	32	0	3267
% Cars	97.6	88.9	0	92.9	95.1	0	93.4	94.1	0	94.2
Heavy Vehicles	1	3	0	1	80	0	114	2	0	201
% Heavy Vehicles	2.4	11.1	0	7.1	4.9	0	6.6	5.9	0	5.8

	Envy Tile Driveway From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 12:15 PM													
12:15 PM	6	**3**	0	**9**	**1**	153	0	154	**174**	**6**	0	**180**	**343**
12:30 PM	4	3	0	7	0	**159**	0	**159**	159	4	0	163	329
12:45 PM	3	2	0	5	0	134	0	134	154	3	0	157	296
01:00 PM	**7**	1	0	8	1	138	0	139	154	2	0	156	303
Total Volume	20	9	0	29	2	584	0	586	641	15	0	656	1271
% App. Total	69	31	0		0.3	99.7	0		97.7	2.3	0		
PHF	.714	.750	.000	.806	.500	.918	.000	.921	.921	.625	.000	.911	.926
Cars	20	7	0	27	2	564	0	566	601	15	0	616	1209
% Cars	100	77.8	0	93.1	100	96.6	0	96.6	93.8	100	0	93.9	95.1
Heavy Vehicles	0	2	0	2	0	20	0	20	40	0	0	40	62
% Heavy Vehicles	0	22.2	0	6.9	0	3.4	0	3.4	6.2	0	0	6.1	4.9

N: Envy Tile Driveway
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

File Name : 143955 EEE
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Envy Tile Driveway From North			Old South Road From East			Old South Road From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
11:00 AM	0	0	1	0	6	0	4	0	0	11
11:15 AM	0	0	2	0	7	0	3	0	1	13
11:30 AM	0	0	1	0	6	0	6	0	0	13
11:45 AM	0	0	5	1	5	0	3	0	0	14
Total	0	0	9	1	24	0	16	0	1	51
12:00 PM	0	0	4	0	4	0	5	0	0	13
12:15 PM	0	0	1	0	1	0	8	0	0	10
12:30 PM	1	0	4	0	3	0	0	0	0	8
12:45 PM	0	0	3	0	7	0	5	0	0	15
Total	1	0	12	0	15	0	18	0	0	46
01:00 PM	0	0	0	0	2	0	0	0	0	2
01:15 PM	0	0	0	0	11	0	0	0	0	11
01:30 PM	0	0	0	0	5	0	0	0	0	5
01:45 PM	0	0	0	0	6	0	0	0	0	6
Total	0	0	0	0	24	0	0	0	0	24
Grand Total	1	0	21	1	63	0	34	0	1	121
Apprch %	4.5	0	95.5	1.6	98.4	0	97.1	0	2.9	
Total %	0.8	0	17.4	0.8	52.1	0	28.1	0	0.8	

	Envy Tile Driveway From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:15 AM													
11:15 AM	0	0	2	2	0	**7**	0	**7**	3	0	**1**	4	13
11:30 AM	0	0	1	1	0	6	0	6	**6**	0	0	**6**	13
11:45 AM	0	0	**5**	**5**	**1**	5	0	6	3	0	0	3	**14**
12:00 PM	0	0	4	4	0	4	0	4	5	0	0	5	13
Total Volume	0	0	12	12	1	22	0	23	17	0	1	18	53
% App. Total	0	0	100		4.3	95.7	0		94.4	0	5.6		
PHF	.000	.000	.600	.600	.250	.786	.000	.821	.708	.000	.250	.750	.946

PRECISION
D A T A
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
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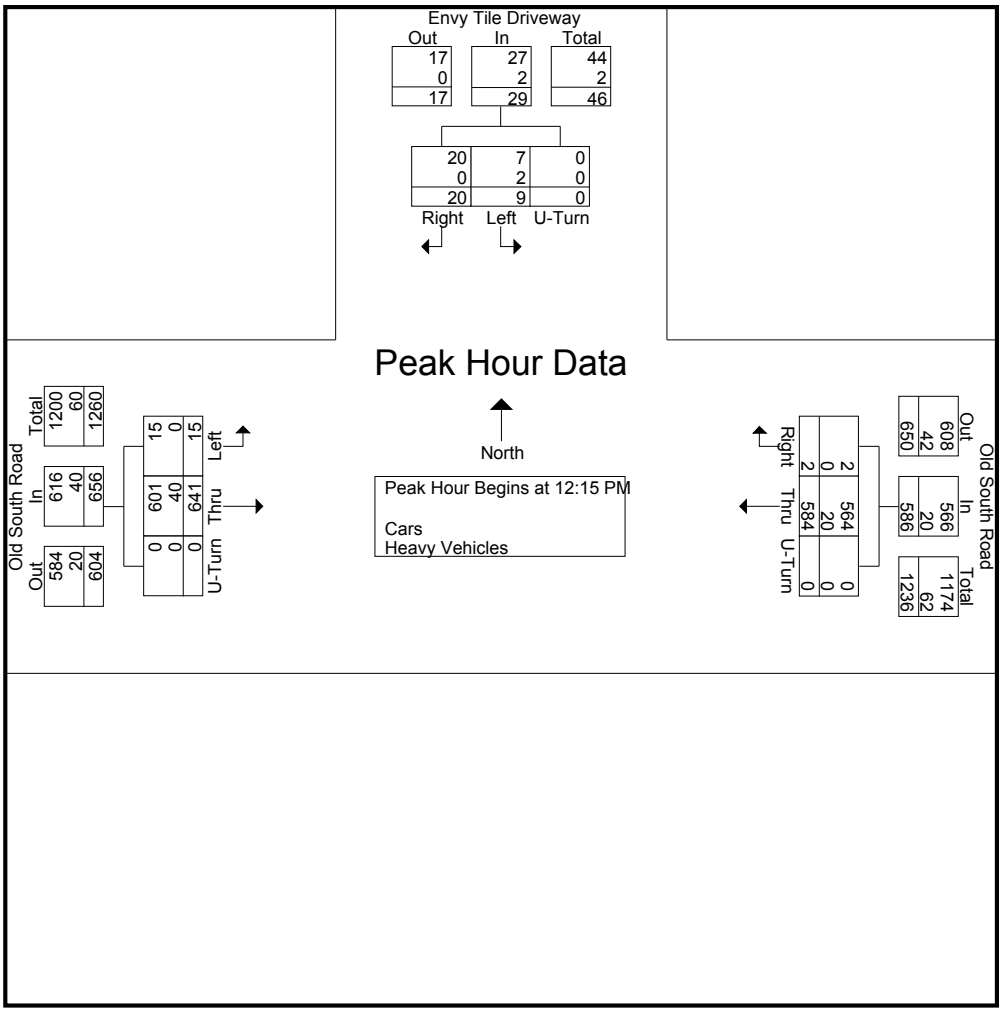
Email: datarequests@pdillc.com

N: Envy Tile Driveway
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 EEE
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

	Envy Tile Driveway From North				Old South Road From East				Old South Road From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 12:15 PM													
12:15 PM	6	**3**	0	**9**	**1**	153	0	154	**174**	**6**	0	**180**	**343**
12:30 PM	4	3	0	7	0	**159**	0	**159**	159	4	0	163	329
12:45 PM	3	2	0	5	0	134	0	134	154	3	0	157	296
01:00 PM	**7**	1	0	8	1	138	0	139	154	2	0	156	303
Total Volume	20	9	0	29	2	584	0	586	641	15	0	656	1271
% App. Total	69	31	0		0.3	99.7	0		97.7	2.3	0		
PHF	.714	.750	.000	.806	.500	.918	.000	.921	.921	.625	.000	.911	.926
Cars	20	7	0	27	2	564	0	566	601	15	0	616	1209
% Cars	100	77.8	0	93.1	100	96.6	0	96.6	93.8	100	0	93.9	95.1
Heavy Vehicles	0	2	0	2	0	20	0	20	40	0	0	40	62
% Heavy Vehicles	0	22.2	0	6.9	0	3.4	0	3.4	6.2	0	0	6.1	4.9



N/S: Valero Garden/ Old South Market
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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File Name : 143955 F
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Valero Garden Center Driveway From North				Old South Road From East				Old South Market East Driveway From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
08:00 AM	2	0	0	0	3	153	0	0	4	1	9	0	0	104	3	0	279
08:15 AM	1	0	0	0	3	146	0	0	6	0	9	0	0	128	2	0	295
08:30 AM	1	1	0	0	2	123	0	0	9	0	4	0	0	120	2	0	262
08:45 AM	1	0	1	0	1	149	1	0	3	0	4	0	0	146	3	0	309
Total	5	1	1	0	9	571	1	0	22	1	26	0	0	498	10	0	1145
09:00 AM	2	0	0	0	0	170	0	0	5	0	3	0	0	115	3	0	298
09:15 AM	0	0	0	0	1	146	0	0	5	0	6	0	0	116	1	0	275
09:30 AM	0	0	0	0	1	135	0	0	6	0	3	0	0	120	3	0	268
09:45 AM	1	0	0	0	1	136	0	0	3	0	5	0	0	130	3	0	279
Total	3	0	0	0	3	587	0	0	19	0	17	0	0	481	10	0	1120
10:00 AM	0	0	0	0	1	113	0	0	3	0	1	0	0	125	3	0	246
10:15 AM	4	0	1	0	3	108	0	0	5	0	7	0	0	100	1	0	229
10:30 AM	1	0	0	0	1	117	0	0	9	0	3	0	0	115	2	0	248
10:45 AM	0	0	1	0	1	110	0	0	6	0	2	0	0	108	1	0	229
Total	5	0	2	0	6	448	0	0	23	0	13	0	0	448	7	0	952
Grand Total	13	1	3	0	18	1606	1	0	64	1	56	0	0	1427	27	0	3217
Apprch %	76.5	5.9	17.6	0	1.1	98.8	0.1	0	52.9	0.8	46.3	0	0	98.1	1.9	0	
Total %	0.4	0	0.1	0	0.6	49.9	0	0	2	0	1.7	0	0	44.4	0.8	0	
Cars	11	1	2	0	16	1496	1	0	58	1	51	0	0	1354	25	0	3016
% Cars	84.6	100	66.7	0	88.9	93.2	100	0	90.6	100	91.1	0	0	94.9	92.6	0	93.8
Heavy Vehicles	2	0	1	0	2	110	0	0	6	0	5	0	0	73	2	0	201
% Heavy Vehicles	15.4	0	33.3	0	11.1	6.8	0	0	9.4	0	8.9	0	0	5.1	7.4	0	6.2

	Valero Garden Center Driveway From North					Old South Road From East					Old South Market East Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:15 AM																					
08:15 AM	1	0	0	0	1	**3**	146	0	0	149	6	0	**9**	0	**15**	0	128	2	0	130	295
08:30 AM	1	**1**	0	0	**2**	2	123	0	0	125	**9**	0	4	0	13	0	120	2	0	122	262
08:45 AM	1	0	**1**	0	2	1	149	**1**	0	151	3	0	4	0	7	0	**146**	**3**	0	**149**	**309**
09:00 AM	**2**	0	0	0	2	0	**170**	0	0	**170**	5	0	3	0	8	0	115	3	0	118	298
Total Volume	5	1	1	0	7	6	588	1	0	595	23	0	20	0	43	0	509	10	0	519	1164
% App. Total	71.4	14.3	14.3	0		1	98.8	0.2	0		53.5	0	46.5	0		0	98.1	1.9	0		
PHF	.625	.250	.250	.000	.875	.500	.865	.250	.000	.875	.639	.000	.556	.000	.717	.000	.872	.833	.000	.871	.942
Cars	3	1	0	0	4	5	546	1	0	552	22	0	18	0	40	0	491	9	0	500	1096
% Cars	60.0	100	0	0	57.1	83.3	92.9	100	0	92.8	95.7	0	90.0	0	93.0	0	96.5	90.0	0	96.3	94.2
Heavy Vehicles	2	0	1	0	3	1	42	0	0	43	1	0	2	0	3	0	18	1	0	19	68
% Heavy Vehicles	40.0	0	100	0	42.9	16.7	7.1	0	0	7.2	4.3	0	10.0	0	7.0	0	3.5	10.0	0	3.7	5.8

N/S: Valero Garden/ Old South Market
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
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File Name : 143955 F
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Valero Garden Center Driveway From North				Old South Road From East				Old South Market East Driveway From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
09:00 AM	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
09:15 AM	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
09:30 AM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
09:45 AM	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
Total	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	16
10:00 AM	0	0	0	11	0	0	0	1	0	0	0	1	0	0	0	1	14
10:15 AM	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	10
10:30 AM	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	14
10:45 AM	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	15
Total	0	0	0	50	0	0	0	1	0	0	0	1	0	0	0	1	53
Grand Total	0	0	0	66	0	0	0	2	0	0	0	1	0	0	0	1	70
Apprch %	0	0	0	100	0	0	0	100	0	0	0	100	0	0	0	100	
Total %	0	0	0	94.3	0	0	0	2.9	0	0	0	1.4	0	0	0	1.4	

	Valero Garden Center Driveway From North					Old South Road From East					Old South Market East Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 10:00 AM																					
10:00 AM	0	0	0	11	11	0	0	0	**1**	**1**	0	0	0	**1**	**1**	0	0	0	**1**	**1**	14
10:15 AM	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
10:30 AM	0	0	0	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
10:45 AM	0	0	0	**15**	**15**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**15**
Total Volume	0	0	0	50	50	0	0	0	1	1	0	0	0	1	1	0	0	0	1	1	53
% App. Total	0	0	0	100		0	0	0	100		0	0	0	100		0	0	0	100		
PHF	.000	.000	.000	.833	.833	.000	.000	.000	.250	.250	.000	.000	.000	.250	.250	.000	.000	.000	.250	.250	.883

N/S: Valero Garden/ Old South Market
E/W: Old South Road
City, State: Nantucket, MA
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Site Code : TBA
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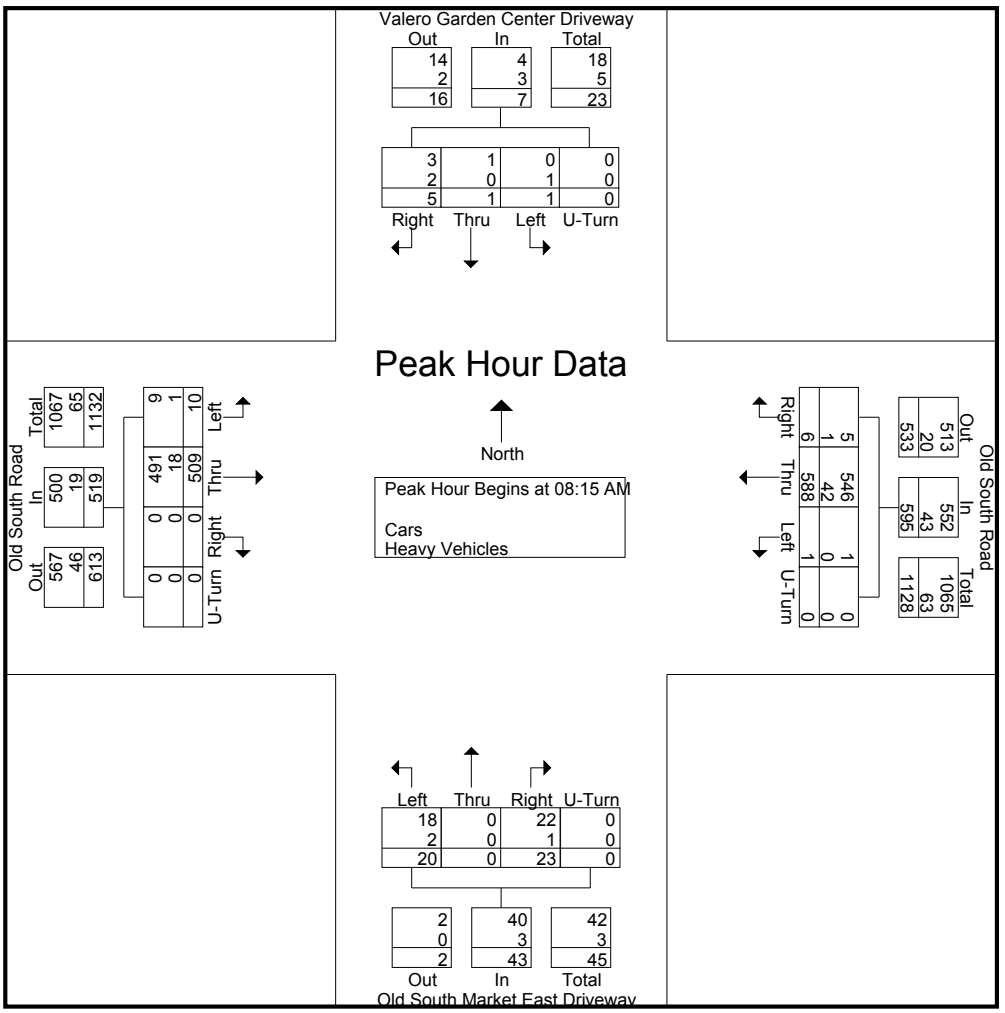
	Valero Garden Center Driveway From North					Old South Road From East					Old South Market East Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:15 AM																					
08:15 AM	1	0	0	0	1	**3**	146	0	0	149	6	0	**9**	0	**15**	0	128	2	0	130	295
08:30 AM	1	**1**	0	0	**2**	2	123	0	0	125	**9**	0	4	0	13	0	120	2	0	122	262
08:45 AM	1	0	**1**	0	2	1	149	**1**	0	151	3	0	4	0	7	0	**146**	**3**	0	**149**	**309**
09:00 AM	**2**	0	0	0	2	0	**170**	0	0	**170**	5	0	3	0	8	0	115	3	0	118	298
Total Volume	5	1	1	0	7	6	588	1	0	595	23	0	20	0	43	0	509	10	0	519	1164
% App. Total	71.4	14.3	14.3	0		1	98.8	0.2	0		53.5	0	46.5	0		0	98.1	1.9	0		
PHF	.625	.250	.250	.000	.875	.500	.865	.250	.000	.875	.639	.000	.556	.000	.717	.000	.872	.833	.000	.871	.942
Cars	3	1	0	0	4	5	546	1	0	552	22	0	18	0	40	0	491	9	0	500	1096
% Cars	60.0	100	0	0	57.1	83.3	92.9	100	0	92.8	95.7	0	90.0	0	93.0	0	96.5	90.0	0	96.3	94.2
Heavy Vehicles	2	0	1	0	3	1	42	0	0	43	1	0	2	0	3	0	18	1	0	19	68
% Heavy Vehicles	40.0	0	100	0	42.9	16.7	7.1	0	0	7.2	4.3	0	10.0	0	7.0	0	3.5	10.0	0	3.7	5.8



N/S: Valero Garden/ Old South Market
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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File Name : 143955 FF
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Valero Garden Center Driveway From North				Old South Road From East				Old South Market East Driveway From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
03:00 PM	0	0	0	0	1	124	0	0	3	1	1	0	0	123	5	0	258
03:15 PM	1	0	1	0	2	129	0	0	6	0	4	0	0	129	2	0	274
03:30 PM	0	0	1	0	0	92	1	0	3	0	2	0	0	131	2	0	232
03:45 PM	0	0	2	0	2	118	0	0	3	0	8	0	0	147	0	0	280
Total	1	0	4	0	5	463	1	0	15	1	15	0	0	530	9	0	1044
04:00 PM	2	0	0	0	3	131	1	0	2	0	2	0	0	149	2	0	292
04:15 PM	1	0	0	0	0	135	1	0	4	0	2	0	0	155	1	0	299
04:30 PM	1	0	0	0	0	147	0	0	4	0	3	0	0	155	0	0	310
04:45 PM	1	0	0	0	1	136	0	0	5	0	7	0	0	173	1	0	324
Total	5	0	0	0	4	549	2	0	15	0	14	0	0	632	4	0	1225
05:00 PM	0	0	1	0	0	170	2	0	5	0	4	0	0	169	0	0	351
05:15 PM	0	0	0	0	0	135	1	0	7	0	3	0	1	152	0	0	299
05:30 PM	0	0	0	0	0	143	1	0	8	0	8	0	0	140	0	0	300
05:45 PM	0	0	0	0	0	104	0	0	9	0	2	0	0	114	0	0	229
Total	0	0	1	0	0	552	4	0	29	0	17	0	1	575	0	0	1179
Grand Total	6	0	5	0	9	1564	7	0	59	1	46	0	1	1737	13	0	3448
Apprch %	54.5	0	45.5	0	0.6	99	0.4	0	55.7	0.9	43.4	0	0.1	99.2	0.7	0	
Total %	0.2	0	0.1	0	0.3	45.4	0.2	0	1.7	0	1.3	0	0	50.4	0.4	0	
Cars	5	0	5	0	8	1514	7	0	55	1	44	0	0	1631	12	0	3282
% Cars	83.3	0	100	0	88.9	96.8	100	0	93.2	100	95.7	0	0	93.9	92.3	0	95.2
Heavy Vehicles	1	0	0	0	1	50	0	0	4	0	2	0	1	106	1	0	166
% Heavy Vehicles	16.7	0	0	0	11.1	3.2	0	0	6.8	0	4.3	0	100	6.1	7.7	0	4.8

	Valero Garden Center Driveway From North					Old South Road From East					Old South Market East Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	**1**	0	0	0	**1**	0	135	1	0	136	4	0	2	0	6	0	155	**1**	0	156	299
04:30 PM	1	0	0	0	1	0	147	0	0	147	4	0	3	0	7	0	155	0	0	155	310
04:45 PM	1	0	0	0	1	**1**	136	0	0	137	**5**	0	**7**	0	**12**	0	**173**	1	0	**174**	324
05:00 PM	0	0	**1**	0	1	0	**170**	**2**	0	**172**	5	0	4	0	9	0	169	0	0	169	**351**
Total Volume	3	0	1	0	4	1	588	3	0	592	18	0	16	0	34	0	652	2	0	654	1284
% App. Total	75	0	25	0		0.2	99.3	0.5	0		52.9	0	47.1	0		0	99.7	0.3	0		
PHF	.750	.000	.250	.000	1.00	.250	.865	.375	.000	.860	.900	.000	.571	.000	.708	.000	.942	.500	.000	.940	.915
Cars	3	0	1	0	4	1	574	3	0	578	16	0	15	0	31	0	620	2	0	622	1235
% Cars	100	0	100	0	100	100	97.6	100	0	97.6	88.9	0	93.8	0	91.2	0	95.1	100	0	95.1	96.2
Heavy Vehicles	0	0	0	0	0	0	14	0	0	14	2	0	1	0	3	0	32	0	0	32	49
% Heavy Vehicles	0	0	0	0	0	0	2.4	0	0	2.4	11.1	0	6.3	0	8.8	0	4.9	0	0	4.9	3.8

N/S: Valero Garden/ Old South Market
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
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File Name : 143955 FF
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Valero Garden Center Driveway From North				Old South Road From East				Old South Market East Driveway From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	3
03:15 PM	0	0	0	4	0	1	0	0	0	0	0	0	0	0	0	2	7
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Total	0	0	0	4	0	1	0	1	0	0	0	1	0	0	0	4	11
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
04:45 PM	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	3
Total	0	0	0	5	0	1	0	0	0	0	0	0	0	0	0	0	6
05:00 PM	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	3
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	4	0	0	0	0	1	0	0	0	0	0	0	0	5
Grand Total	0	0	0	13	0	2	0	1	1	0	0	1	0	0	0	4	22
Apprch %	0	0	0	100	0	66.7	0	33.3	50	0	0	50	0	0	0	100	
Total %	0	0	0	59.1	0	9.1	0	4.5	4.5	0	0	4.5	0	0	0	18.2	

	Valero Garden Center Driveway From North					Old South Road From East					Old South Market East Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	0	0	0	0	0	0	0	0	**1**	**1**	0	0	0	**1**	**1**	0	0	0	1	1	3
03:15 PM	0	0	0	**4**	**4**	0	**1**	0	0	1	0	0	0	0	0	0	0	0	**2**	**2**	**7**
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total Volume	0	0	0	4	4	0	1	0	1	2	0	0	0	1	1	0	0	0	4	4	11
% App. Total	0	0	0	100		0	50	0	50		0	0	0	100		0	0	0	100		
PHF	.000	.000	.000	.250	.250	.000	.250	.000	.250	.500	.000	.000	.000	.250	.250	.000	.000	.000	.500	.500	.393

N/S: Valero Garden/ Old South Market
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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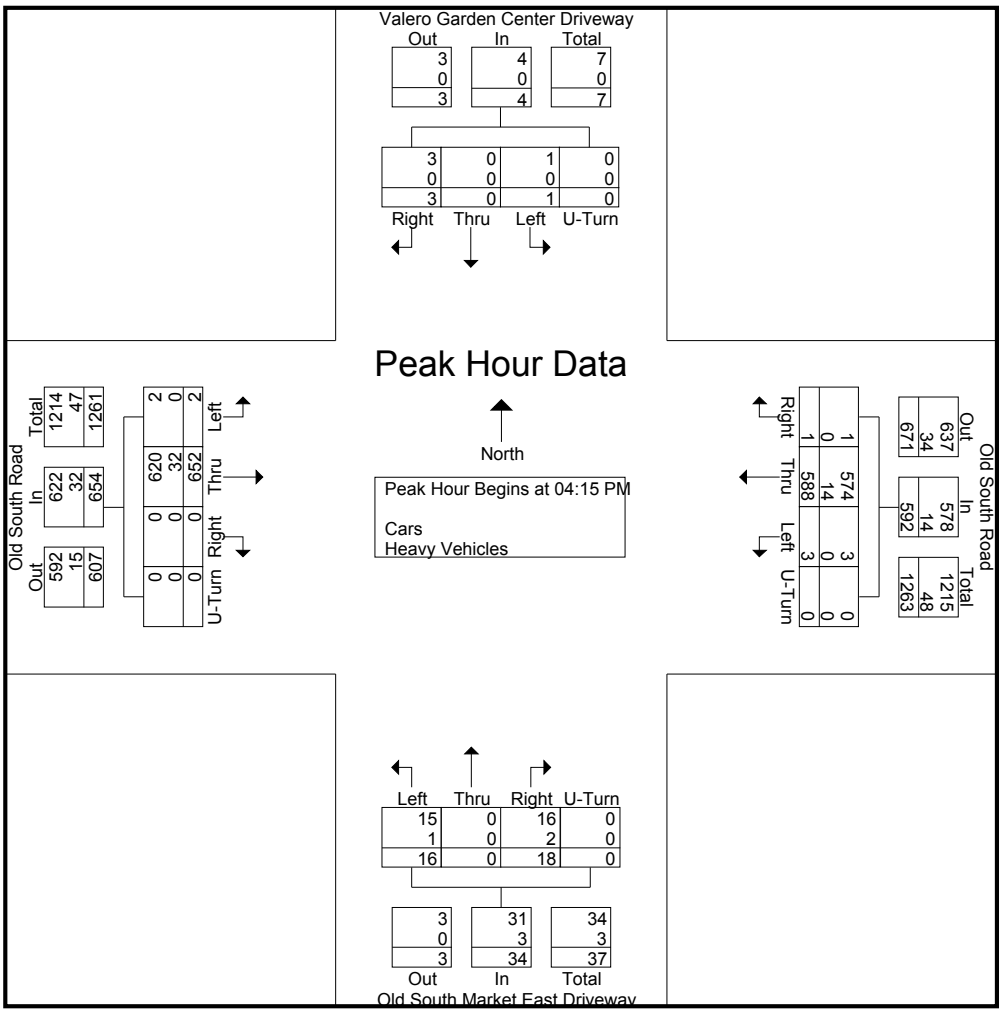
Page No : 1

	Valero Garden Center Driveway From North					Old South Road From East					Old South Market East Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	**1**	0	0	0	**1**	0	135	1	0	136	4	0	2	0	6	0	155	**1**	0	156	299
04:30 PM	1	0	0	0	1	0	147	0	0	147	4	0	3	0	7	0	155	0	0	155	310
04:45 PM	1	0	0	0	1	**1**	136	0	0	137	**5**	0	**7**	0	**12**	0	**173**	1	0	**174**	324
05:00 PM	0	0	**1**	0	1	0	**170**	**2**	0	**172**	5	0	4	0	9	0	169	0	0	169	**351**
Total Volume	3	0	1	0	4	1	588	3	0	592	18	0	16	0	34	0	652	2	0	654	1284
% App. Total	75	0	25	0		0.2	99.3	0.5	0		52.9	0	47.1	0		0	99.7	0.3	0		
PHF	.750	.000	.250	.000	1.00	.250	.865	.375	.000	.860	.900	.000	.571	.000	.708	.000	.942	.500	.000	.940	.915
Cars	3	0	1	0	4	1	574	3	0	578	16	0	15	0	31	0	620	2	0	622	1235
% Cars	100	0	100	0	100	100	97.6	100	0	97.6	88.9	0	93.8	0	91.2	0	95.1	100	0	95.1	96.2
Heavy Vehicles	0	0	0	0	0	0	14	0	0	14	2	0	1	0	3	0	32	0	0	32	49
% Heavy Vehicles	0	0	0	0	0	0	2.4	0	0	2.4	11.1	0	6.3	0	8.8	0	4.9	0	0	4.9	3.8



N/S: Valero Garden/ Old South Market
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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File Name : 143955 FFF
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Valero Garden Center Driveway From North				Old South Road From East				Old South Market East Driveway From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
11:00 AM	2	0	0	0	2	162	0	0	6	0	4	0	0	148	4	0	328
11:15 AM	2	0	1	0	1	124	1	0	7	0	6	0	0	105	2	0	249
11:30 AM	1	0	0	0	0	155	0	0	9	0	5	0	0	124	4	0	298
11:45 AM	0	0	1	0	3	138	1	0	8	0	6	0	0	142	1	0	300
Total	5	0	2	0	6	579	2	0	30	0	21	0	0	519	11	0	1175
12:00 PM	0	0	0	0	1	129	1	0	7	0	7	0	0	112	1	0	258
12:15 PM	3	0	0	0	1	111	0	0	9	0	10	0	0	94	4	0	232
12:30 PM	0	0	0	0	1	138	1	0	4	0	2	0	1	126	0	0	273
12:45 PM	0	0	0	0	1	111	0	0	7	1	6	0	0	108	2	0	236
Total	3	0	0	0	4	489	2	0	27	1	25	0	1	440	7	0	999
01:00 PM	3	0	0	0	2	125	0	0	5	0	5	0	0	102	4	0	246
01:15 PM	1	0	0	0	1	118	0	0	5	0	5	0	2	131	1	0	264
01:30 PM	0	0	0	0	0	96	0	0	5	0	4	0	1	125	0	0	231
01:45 PM	0	0	0	0	2	102	0	0	6	0	1	0	0	115	0	0	226
Total	4	0	0	0	5	441	0	0	21	0	15	0	3	473	5	0	967
Grand Total	12	0	2	0	15	1509	4	0	78	1	61	0	4	1432	23	0	3141
Apprch %	85.7	0	14.3	0	1	98.8	0.3	0	55.7	0.7	43.6	0	0.3	98.1	1.6	0	
Total %	0.4	0	0.1	0	0.5	48	0.1	0	2.5	0	1.9	0	0.1	45.6	0.7	0	
Cars	12	0	2	0	14	1460	4	0	74	1	58	0	4	1377	22	0	3028
% Cars	100	0	100	0	93.3	96.8	100	0	94.9	100	95.1	0	100	96.2	95.7	0	96.4
Heavy Vehicles	0	0	0	0	1	49	0	0	4	0	3	0	0	55	1	0	113
% Heavy Vehicles	0	0	0	0	6.7	3.2	0	0	5.1	0	4.9	0	0	3.8	4.3	0	3.6

	Valero Garden Center Driveway From North					Old South Road From East					Old South Market East Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	**2**	0	0	0	2	2	**162**	0	0	**164**	6	0	4	0	10	0	**148**	**4**	0	**152**	**328**
11:15 AM	2	0	**1**	0	**3**	1	124	**1**	0	126	7	0	**6**	0	13	0	105	2	0	107	249
11:30 AM	1	0	0	0	1	0	155	0	0	155	**9**	0	5	0	**14**	0	124	4	0	128	298
11:45 AM	0	0	1	0	1	**3**	138	1	0	142	8	0	6	0	14	0	142	1	0	143	300
Total Volume	5	0	2	0	7	6	579	2	0	587	30	0	21	0	51	0	519	11	0	530	1175
% App. Total	71.4	0	28.6	0		1	98.6	0.3	0		58.8	0	41.2	0		0	97.9	2.1	0		
PHF	.625	.000	.500	.000	.583	.500	.894	.500	.000	.895	.833	.000	.875	.000	.911	.000	.877	.688	.000	.872	.896
Cars	5	0	2	0	7	6	561	2	0	569	28	0	20	0	48	0	496	10	0	506	1130
% Cars	100	0	100	0	100	100	96.9	100	0	96.9	93.3	0	95.2	0	94.1	0	95.6	90.9	0	95.5	96.2
Heavy Vehicles	0	0	0	0	0	0	18	0	0	18	2	0	1	0	3	0	23	1	0	24	45
% Heavy Vehicles	0	0	0	0	0	0	3.1	0	0	3.1	6.7	0	4.8	0	5.9	0	4.4	9.1	0	4.5	3.8

N/S: Valero Garden/ Old South Market
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Groups Printed- Peds and Bicycles

	Valero Garden Center Driveway From North				Old South Road From East				Old South Market East Driveway From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
11:00 AM	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
11:15 AM	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	9
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	13
12:00 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
12:15 PM	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2
12:30 PM	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	7	0	0	0	1	0	0	0	0	0	0	0	0	8
01:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:15 PM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	4	0	0	0	1	0	0	0	0	0	0	0	0	5
Grand Total	0	0	0	24	0	0	0	2	0	0	0	0	0	0	0	0	26
Apprch %	0	0	0	100	0	0	0	100	0	0	0	0	0	0	0	0	
Total %	0	0	0	92.3	0	0	0	7.7	0	0	0	0	0	0	0	0	

	Valero Garden Center Driveway From North					Old South Road From East					Old South Market East Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
11:15 AM	0	0	0	**9**	**9**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**9**
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
% App. Total	0	0	0	100		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.361	.361	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.361

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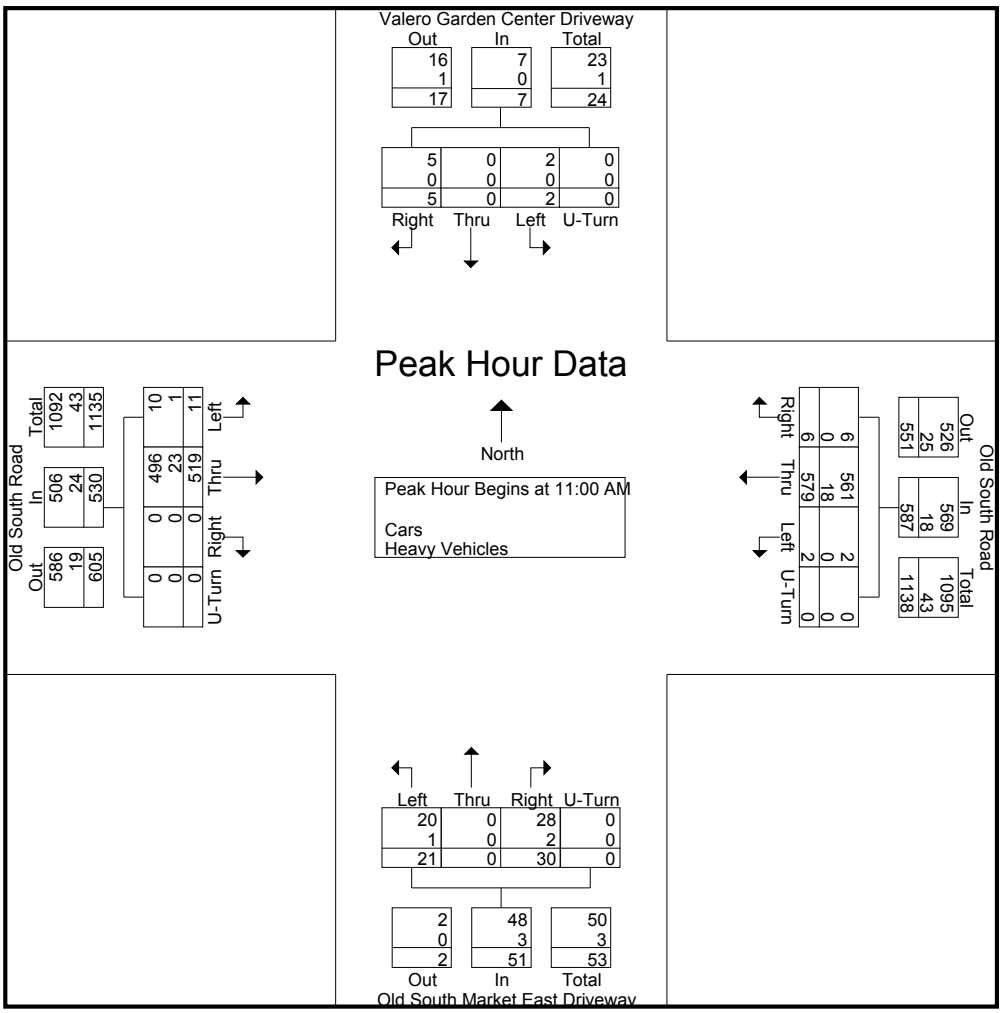
	Valero Garden Center Driveway From North					Old South Road From East					Old South Market East Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	**2**	0	0	0	2	2	**162**	0	0	**164**	6	0	4	0	10	0	**148**	**4**	0	**152**	**328**
11:15 AM	2	0	**1**	0	**3**	1	124	**1**	0	126	7	0	**6**	0	13	0	105	2	0	107	249
11:30 AM	1	0	0	0	1	0	155	0	0	155	**9**	0	5	0	**14**	0	124	4	0	128	298
11:45 AM	0	0	1	0	1	**3**	138	1	0	142	8	0	6	0	14	0	142	1	0	143	300
Total Volume	5	0	2	0	7	6	579	2	0	587	30	0	21	0	51	0	519	11	0	530	1175
% App. Total	71.4	0	28.6	0		1	98.6	0.3	0		58.8	0	41.2	0		0	97.9	2.1	0		
PHF	.625	.000	.500	.000	.583	.500	.894	.500	.000	.895	.833	.000	.875	.000	.911	.000	.877	.688	.000	.872	.896
Cars	5	0	2	0	7	6	561	2	0	569	28	0	20	0	48	0	496	10	0	506	1130
% Cars	100	0	100	0	100	100	96.9	100	0	96.9	93.3	0	95.2	0	94.1	0	95.6	90.9	0	95.5	96.2
Heavy Vehicles	0	0	0	0	0	0	18	0	0	18	2	0	1	0	3	0	23	1	0	24	45
% Heavy Vehicles	0	0	0	0	0	0	3.1	0	0	3.1	6.7	0	4.8	0	5.9	0	4.4	9.1	0	4.5	3.8



N/S: Driveway/ Old South Market West Dr
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
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File Name : 143955 G
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Driveway From North				Old South Road From East				Old South Market West Driveway From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
08:00 AM	0	0	0	0	0	153	8	0	0	0	0	0	10	107	0	0	278
08:15 AM	0	0	0	0	0	151	5	0	0	0	0	0	10	129	0	0	295
08:30 AM	0	0	0	0	0	119	4	0	0	0	0	0	9	124	0	0	256
08:45 AM	0	0	0	0	0	146	3	0	0	0	1	0	7	149	0	0	306
Total	0	0	0	0	0	569	20	0	0	0	1	0	36	509	0	0	1135
09:00 AM	0	0	0	0	0	170	4	0	0	0	0	0	4	119	0	0	297
09:15 AM	0	0	0	0	0	150	3	0	0	0	0	0	7	119	0	0	279
09:30 AM	0	0	0	0	0	135	4	0	0	0	0	0	7	119	0	0	265
09:45 AM	0	0	0	0	0	140	2	0	0	0	0	0	3	135	0	0	280
Total	0	0	0	0	0	595	13	0	0	0	0	0	21	492	0	0	1121
10:00 AM	0	0	0	0	0	109	5	0	0	0	0	0	2	131	0	0	247
10:15 AM	0	0	0	0	0	118	2	0	0	0	0	0	9	101	0	0	230
10:30 AM	0	0	0	0	0	118	2	0	0	0	0	0	9	118	0	0	247
10:45 AM	0	0	0	0	0	108	3	0	0	0	0	0	5	111	0	0	227
Total	0	0	0	0	0	453	12	0	0	0	0	0	25	461	0	0	951
Grand Total	0	0	0	0	0	1617	45	0	0	0	1	0	82	1462	0	0	3207
Apprch %	0	0	0	0	0	97.3	2.7	0	0	0	100	0	5.3	94.7	0	0	
Total %	0	0	0	0	0	50.4	1.4	0	0	0	0	0	2.6	45.6	0	0	
Cars	0	0	0	0	0	1510	41	0	0	0	1	0	71	1372	0	0	2995
% Cars	0	0	0	0	0	93.4	91.1	0	0	0	100	0	86.6	93.8	0	0	93.4
Heavy Vehicles	0	0	0	0	0	107	4	0	0	0	0	0	11	90	0	0	212
% Heavy Vehicles	0	0	0	0	0	6.6	8.9	0	0	0	0	0	13.4	6.2	0	0	6.6

	Driveway From North					Old South Road From East					Old South Market West Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:15 AM																					
08:15 AM	0	0	0	0	0	0	151	**5**	0	156	0	0	0	0	0	**10**	129	0	0	139	295
08:30 AM	0	0	0	0	0	0	119	4	0	123	0	0	0	0	0	9	124	0	0	133	256
08:45 AM	0	0	0	0	0	0	146	3	0	149	0	0	**1**	0	**1**	7	**149**	0	0	**156**	**306**
09:00 AM	0	0	0	0	0	0	**170**	4	0	**174**	0	0	0	0	0	4	119	0	0	123	297
Total Volume	0	0	0	0	0	0	586	16	0	602	0	0	1	0	1	30	521	0	0	551	1154
% App. Total	0	0	0	0		0	97.3	2.7	0		0	0	100	0		5.4	94.6	0	0		
PHF	.000	.000	.000	.000	.000	.000	.862	.800	.000	.865	.000	.000	.250	.000	.250	.750	.874	.000	.000	.883	.943
Cars	0	0	0	0	0	0	542	14	0	556	0	0	1	0	1	27	497	0	0	524	1081
% Cars	0	0	0	0	0	0	92.5	87.5	0	92.4	0	0	100	0	100	90.0	95.4	0	0	95.1	93.7
Heavy Vehicles	0	0	0	0	0	0	44	2	0	46	0	0	0	0	0	3	24	0	0	27	73
% Heavy Vehicles	0	0	0	0	0	0	7.5	12.5	0	7.6	0	0	0	0	0	10.0	4.6	0	0	4.9	6.3

N/S: Driveway/ Old South Market West Dr
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File Name : 143955 G
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Page No : 1

Groups Printed- Peds and Bicycles

	Driveway From North				Old South Road From East				Old South Market West Driveway From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
09:00 AM	0	0	0	8	0	0	0	0	0	1	0	0	0	0	0	0	9
09:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	3
09:30 AM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
09:45 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	14	0	0	0	0	0	1	0	0	0	0	0	2	17
10:00 AM	0	0	0	8	0	0	0	0	0	1	0	0	0	0	0	0	9
10:15 AM	0	0	0	6	0	0	0	0	0	0	0	0	1	0	0	4	11
10:30 AM	0	0	0	16	0	0	0	1	0	0	0	0	0	0	0	1	18
10:45 AM	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	13
Total	0	0	0	43	0	0	0	1	0	1	0	0	1	0	0	5	51
Grand Total	0	0	0	57	0	0	0	1	0	2	0	0	1	1	0	7	69
Apprch %	0	0	0	100	0	0	0	100	0	100	0	0	11.1	11.1	0	77.8	
Total %	0	0	0	82.6	0	0	0	1.4	0	2.9	0	0	1.4	1.4	0	10.1	

	Driveway From North					Old South Road From East					Old South Market West Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 10:00 AM																					
10:00 AM	0	0	0	8	8	0	0	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	9
10:15 AM	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	**1**	0	0	**4**	**5**	11
10:30 AM	0	0	0	**16**	**16**	0	0	0	**1**	**1**	0	0	0	0	0	0	0	0	1	1	**18**
10:45 AM	0	0	0	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
Total Volume	0	0	0	43	43	0	0	0	1	1	0	1	0	0	1	1	0	0	5	6	51
% App. Total	0	0	0	100		0	0	0	100		0	100	0	0		16.7	0	0	83.3		
PHF	.000	.000	.000	.672	.672	.000	.000	.000	.250	.250	.000	.250	.000	.000	.250	.250	.000	.000	.313	.300	.708

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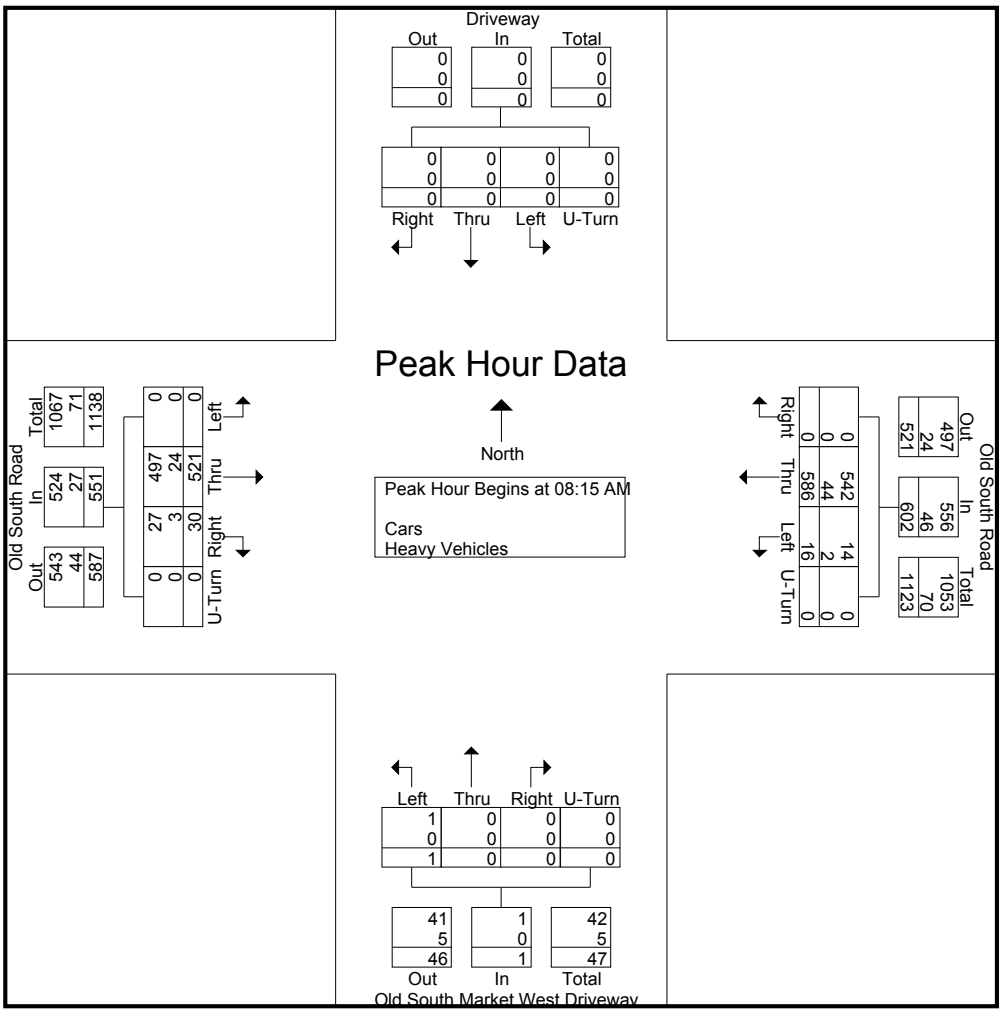
Page No : 1

	Driveway From North					Old South Road From East					Old South Market West Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:15 AM																					
08:15 AM	0	0	0	0	0	0	151	**5**	0	156	0	0	0	0	0	**10**	129	0	0	139	295
08:30 AM	0	0	0	0	0	0	119	4	0	123	0	0	0	0	0	9	124	0	0	133	256
08:45 AM	0	0	0	0	0	0	146	3	0	149	0	0	**1**	0	**1**	7	**149**	0	0	**156**	**306**
09:00 AM	0	0	0	0	0	0	**170**	4	0	**174**	0	0	0	0	0	4	119	0	0	123	297
Total Volume	0	0	0	0	0	0	586	16	0	602	0	0	1	0	1	30	521	0	0	551	1154
% App. Total	0	0	0	0		0	97.3	2.7	0		0	0	100	0		5.4	94.6	0	0		
PHF	.000	.000	.000	.000	.000	.000	.862	.800	.000	.865	.000	.000	.250	.000	.250	.750	.874	.000	.000	.883	.943
Cars	0	0	0	0	0	0	542	14	0	556	0	0	1	0	1	27	497	0	0	524	1081
% Cars	0	0	0	0	0	0	92.5	87.5	0	92.4	0	0	100	0	100	90.0	95.4	0	0	95.1	93.7
Heavy Vehicles	0	0	0	0	0	0	44	2	0	46	0	0	0	0	0	3	24	0	0	27	73
% Heavy Vehicles	0	0	0	0	0	0	7.5	12.5	0	7.6	0	0	0	0	0	10.0	4.6	0	0	4.9	6.3



N/S: Driveway/ Old South Market West Dr
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City, State: Nantucket, MA
Client: Ron Muller & Associates

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File Name : 143955 GG
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Driveway From North				Old South Road From East				Old South Market West Driveway From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
03:00 PM	0	0	0	0	0	122	4	0	0	0	0	0	8	129	0	0	263
03:15 PM	0	0	0	0	0	132	1	0	0	0	0	0	6	132	0	0	271
03:30 PM	0	0	0	0	0	94	0	0	0	0	1	0	4	134	0	0	233
03:45 PM	1	0	0	0	0	120	4	0	0	0	0	0	5	146	0	0	276
Total	1	0	0	0	0	468	9	0	0	0	1	0	23	541	0	0	1043
04:00 PM	0	0	0	0	0	133	2	0	0	0	0	0	5	150	0	0	290
04:15 PM	0	0	0	0	0	138	1	0	0	0	0	0	4	159	0	0	302
04:30 PM	0	0	0	0	0	149	5	0	0	0	0	0	5	156	0	0	315
04:45 PM	1	0	0	0	0	144	4	0	0	0	0	0	6	173	1	0	329
Total	1	0	0	0	0	564	12	0	0	0	0	0	20	638	1	0	1236
05:00 PM	0	0	0	0	0	164	6	0	0	0	1	0	7	173	1	0	352
05:15 PM	0	0	0	0	0	133	6	0	0	0	0	0	5	154	1	0	299
05:30 PM	0	0	0	0	0	144	5	0	2	0	0	0	8	139	0	0	298
05:45 PM	0	0	0	0	0	103	4	0	0	0	0	0	5	115	0	0	227
Total	0	0	0	0	0	544	21	0	2	0	1	0	25	581	2	0	1176
Grand Total	2	0	0	0	0	1576	42	0	2	0	2	0	68	1760	3	0	3455
Apprch %	100	0	0	0	0	97.4	2.6	0	50	0	50	0	3.7	96.1	0.2	0	
Total %	0.1	0	0	0	0	45.6	1.2	0	0.1	0	0.1	0	2	50.9	0.1	0	
Cars	2	0	0	0	0	1538	40	0	2	0	2	0	65	1652	3	0	3304
% Cars	100	0	0	0	0	97.6	95.2	0	100	0	100	0	95.6	93.9	100	0	95.6
Heavy Vehicles	0	0	0	0	0	38	2	0	0	0	0	0	3	108	0	0	151
% Heavy Vehicles	0	0	0	0	0	2.4	4.8	0	0	0	0	0	4.4	6.1	0	0	4.4

	Driveway From North					Old South Road From East					Old South Market West Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	0	0	0	0	0	138	1	0	139	0	0	0	0	0	4	159	0	0	163	302
04:30 PM	0	0	0	0	0	0	149	5	0	154	0	0	0	0	0	5	156	0	0	161	315
04:45 PM	**1**	0	0	0	**1**	0	144	4	0	148	0	0	0	0	0	6	**173**	**1**	0	180	329
05:00 PM	0	0	0	0	0	0	**164**	**6**	0	**170**	0	0	**1**	0	**1**	**7**	173	1	0	**181**	**352**
Total Volume	1	0	0	0	1	0	595	16	0	611	0	0	1	0	1	22	661	2	0	685	1298
% App. Total	100	0	0	0		0	97.4	2.6	0		0	0	100	0		3.2	96.5	0.3	0		
PHF	.250	.000	.000	.000	.250	.000	.907	.667	.000	.899	.000	.000	.250	.000	.250	.786	.955	.500	.000	.946	.922
Cars	1	0	0	0	1	0	582	16	0	598	0	0	1	0	1	20	630	2	0	652	1252
% Cars	100	0	0	0	100	0	97.8	100	0	97.9	0	0	100	0	100	90.9	95.3	100	0	95.2	96.5
Heavy Vehicles	0	0	0	0	0	0	13	0	0	13	0	0	0	0	0	2	31	0	0	33	46
% Heavy Vehicles	0	0	0	0	0	0	2.2	0	0	2.1	0	0	0	0	0	9.1	4.7	0	0	4.8	3.5

N/S: Driveway/ Old South Market West Dr
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Groups Printed- Peds and Bicycles

	Driveway From North				Old South Road From East				Old South Market West Driveway From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3
03:15 PM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
03:30 PM	0	0	0	4	0	0	0	0	0	0	0	0	1	0	0	0	5
03:45 PM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	3
Total	0	0	0	8	0	0	0	0	0	0	1	0	4	0	0	1	14
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
Grand Total	0	0	0	8	0	0	0	0	0	0	1	2	4	0	0	1	16
Apprch %	0	0	0	100	0	0	0	0	0	0	33.3	66.7	80	0	0	20	
Total %	0	0	0	50	0	0	0	0	0	0	6.2	12.5	25	0	0	6.2	

	Driveway From North					Old South Road From East					Old South Market West Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**	0	0	0	**3**	3
03:15 PM	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
03:30 PM	0	0	0	**4**	**4**	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	**5**
03:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	**1**	1	3
Total Volume	0	0	0	8	8	0	0	0	0	0	0	0	1	0	1	4	0	0	1	5	14
% App. Total	0	0	0	100		0	0	0	0		0	0	100	0		80	0	0	20		
PHF	.000	.000	.000	.500	.500	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.333	.000	.000	.250	.417	.700

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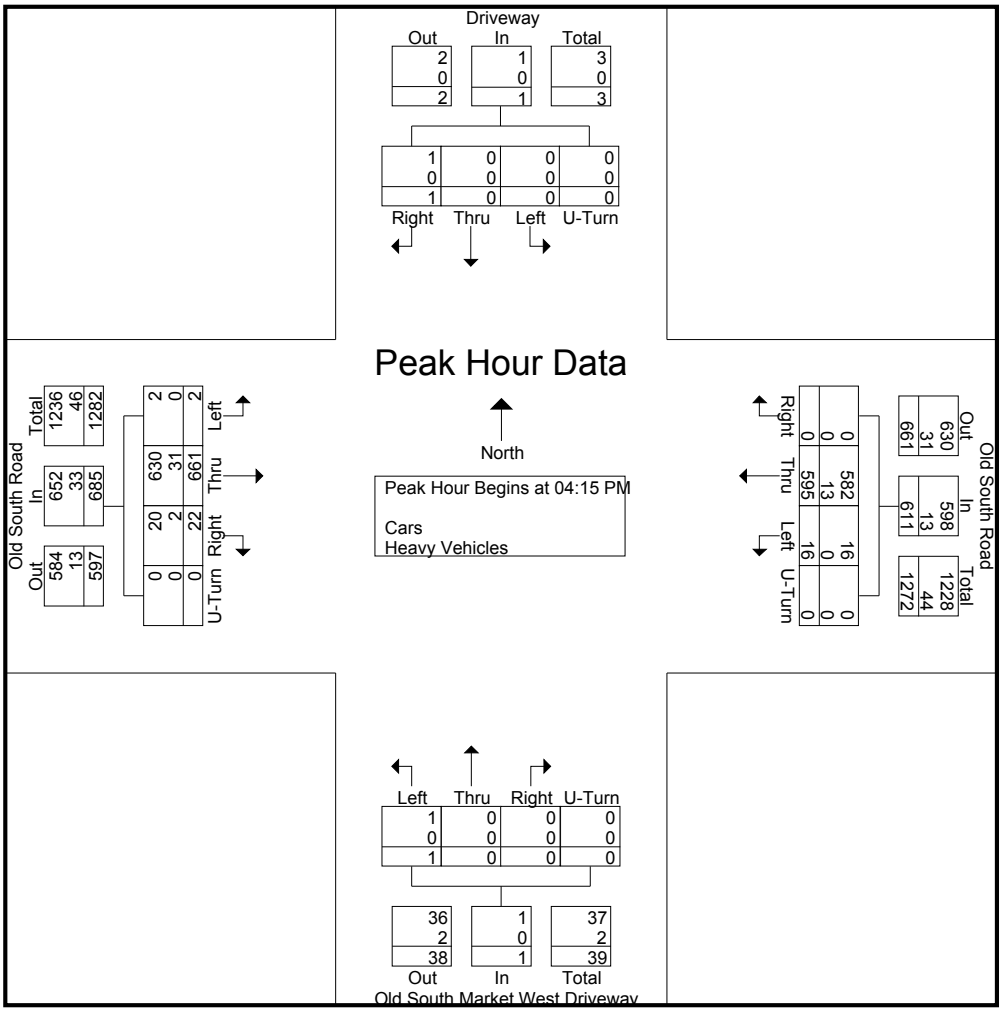
	Driveway From North					Old South Road From East					Old South Market West Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	0	0	0	0	0	138	1	0	139	0	0	0	0	0	4	159	0	0	163	302
04:30 PM	0	0	0	0	0	0	149	5	0	154	0	0	0	0	0	5	156	0	0	161	315
04:45 PM	**1**	0	0	0	**1**	0	144	4	0	148	0	0	0	0	0	6	**173**	**1**	0	180	329
05:00 PM	0	0	0	0	0	0	**164**	**6**	0	**170**	0	0	**1**	0	**1**	**7**	173	1	0	**181**	**352**
Total Volume	1	0	0	0	1	0	595	16	0	611	0	0	1	0	1	22	661	2	0	685	1298
% App. Total	100	0	0	0		0	97.4	2.6	0		0	0	100	0		3.2	96.5	0.3	0		
PHF	.250	.000	.000	.000	.250	.000	.907	.667	.000	.899	.000	.000	.250	.000	.250	.786	.955	.500	.000	.946	.922
Cars	1	0	0	0	1	0	582	16	0	598	0	0	1	0	1	20	630	2	0	652	1252
% Cars	100	0	0	0	100	0	97.8	100	0	97.9	0	0	100	0	100	90.9	95.3	100	0	95.2	96.5
Heavy Vehicles	0	0	0	0	0	0	13	0	0	13	0	0	0	0	0	2	31	0	0	33	46
% Heavy Vehicles	0	0	0	0	0	0	2.2	0	0	2.1	0	0	0	0	0	9.1	4.7	0	0	4.8	3.5



N/S: Driveway/ Old South Market West Dr
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
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File Name : 143955 GGG
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Driveway From North				Old South Road From East				Old South Market West Driveway From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
11:00 AM	0	0	0	0	0	164	5	0	0	0	0	0	8	158	0	0	335
11:15 AM	0	0	0	0	0	121	7	0	0	0	1	0	9	104	0	0	242
11:30 AM	0	0	0	0	0	162	3	0	0	0	0	0	10	129	0	0	304
11:45 AM	0	0	0	0	0	136	8	0	0	0	0	0	16	141	0	0	301
Total	0	0	0	0	0	583	23	0	0	0	1	0	43	532	0	0	1182
12:00 PM	1	0	0	0	0	125	6	0	0	0	0	0	11	114	0	0	257
12:15 PM	0	0	0	0	0	113	5	0	0	0	0	0	2	97	0	0	217
12:30 PM	0	0	0	0	0	129	4	0	0	0	0	0	4	126	0	0	263
12:45 PM	1	0	0	0	0	104	6	0	0	0	1	0	8	110	0	0	230
Total	2	0	0	0	0	471	21	0	0	0	1	0	25	447	0	0	967
01:00 PM	0	0	0	0	0	130	5	0	0	0	0	0	6	105	0	0	246
01:15 PM	0	0	1	0	0	121	3	0	0	0	0	0	6	134	0	0	265
01:30 PM	0	0	0	0	0	97	3	0	0	0	0	0	7	127	0	0	234
01:45 PM	0	0	0	0	0	100	3	0	0	0	0	0	4	115	0	1	223
Total	0	0	1	0	0	448	14	0	0	0	0	0	23	481	0	1	968
Grand Total	2	0	1	0	0	1502	58	0	0	0	2	0	91	1460	0	1	3117
Apprch %	66.7	0	33.3	0	0	96.3	3.7	0	0	0	100	0	5.9	94.1	0	0.1	
Total %	0.1	0	0	0	0	48.2	1.9	0	0	0	0.1	0	2.9	46.8	0	0	
Cars	2	0	1	0	0	1450	53	0	0	0	2	0	87	1401	0	0	2996
% Cars	100	0	100	0	0	96.5	91.4	0	0	0	100	0	95.6	96	0	0	96.1
Heavy Vehicles	0	0	0	0	0	52	5	0	0	0	0	0	4	59	0	1	121
% Heavy Vehicles	0	0	0	0	0	3.5	8.6	0	0	0	0	0	4.4	4	0	100	3.9

	Driveway From North					Old South Road From East					Old South Market West Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	0	0	0	0	0	0	**164**	5	0	**169**	0	0	0	0	0	8	**158**	0	0	**166**	**335**
11:15 AM	0	0	0	0	0	0	121	7	0	128	0	0	**1**	0	**1**	9	104	0	0	113	242
11:30 AM	0	0	0	0	0	0	162	3	0	165	0	0	0	0	0	10	129	0	0	139	304
11:45 AM	0	0	0	0	0	0	136	**8**	0	144	0	0	0	0	0	**16**	141	0	0	157	301
Total Volume	0	0	0	0	0	0	583	23	0	606	0	0	1	0	1	43	532	0	0	575	1182
% App. Total	0	0	0	0		0	96.2	3.8	0		0	0	100	0		7.5	92.5	0	0		
PHF	.000	.000	.000	.000	.000	.000	.889	.719	.000	.896	.000	.000	.250	.000	.250	.672	.842	.000	.000	.866	.882
Cars	0	0	0	0	0	0	566	21	0	587	0	0	1	0	1	40	505	0	0	545	1133
% Cars	0	0	0	0	0	0	97.1	91.3	0	96.9	0	0	100	0	100	93.0	94.9	0	0	94.8	95.9
Heavy Vehicles	0	0	0	0	0	0	17	2	0	19	0	0	0	0	0	3	27	0	0	30	49
% Heavy Vehicles	0	0	0	0	0	0	2.9	8.7	0	3.1	0	0	0	0	0	7.0	5.1	0	0	5.2	4.1

N/S: Driveway/ Old South Market West Dr
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
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File Name : 143955 GGG
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Driveway From North				Old South Road From East				Old South Market West Driveway From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
11:00 AM	0	0	0	10	0	0	0	0	0	0	0	2	0	0	0	0	12
11:15 AM	0	1	0	10	0	0	0	0	0	1	1	0	0	0	0	0	13
11:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
11:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	22	0	0	0	0	0	1	1	2	0	0	0	0	27
12:00 PM	0	0	0	3	0	1	0	0	0	0	0	0	2	0	0	4	10
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2
12:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	4	0	1	0	0	0	0	0	0	2	0	0	5	13
01:00 PM	0	0	0	2	0	0	0	0	1	0	0	1	0	0	0	1	5
01:15 PM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	2	5
01:30 PM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	3	5
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	6	0	0	0	0	1	0	0	2	0	0	0	6	15
Grand Total	0	2	0	32	0	1	0	0	1	1	1	4	2	0	0	11	55
Apprch %	0	5.9	0	94.1	0	100	0	0	14.3	14.3	14.3	57.1	15.4	0	0	84.6	
Total %	0	3.6	0	58.2	0	1.8	0	0	1.8	1.8	1.8	7.3	3.6	0	0	20	

	Driveway From North					Old South Road From East					Old South Market West Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	0	0	0	**10**	10	0	0	0	0	0	0	0	0	**2**	**2**	0	0	0	0	0	12
11:15 AM	0	**1**	0	10	**11**	0	0	0	0	0	0	**1**	**1**	0	2	0	0	0	0	0	**13**
11:30 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:45 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	1	0	22	23	0	0	0	0	0	0	1	1	2	4	0	0	0	0	0	27
% App. Total	0	4.3	0	95.7		0	0	0	0		0	25	25	50		0	0	0	0		
PHF	.000	.250	.000	.550	.523	.000	.000	.000	.000	.000	.000	.250	.250	.250	.500	.000	.000	.000	.000	.000	.519

N/S: Driveway/ Old South Market West Dr
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
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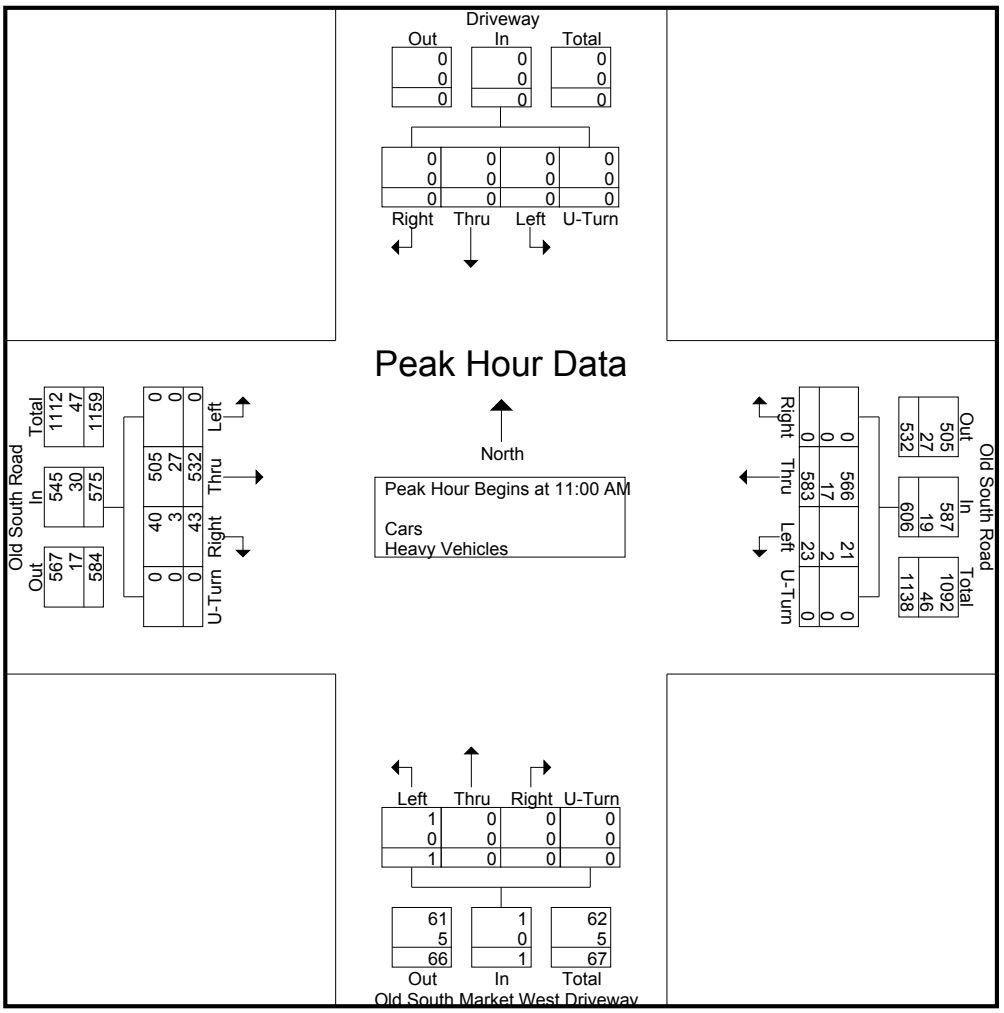
File Name : 143955 GGG
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

	Driveway From North					Old South Road From East					Old South Market West Driveway From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	0	0	0	0	0	0	**164**	5	0	**169**	0	0	0	0	0	8	**158**	0	0	**166**	**335**
11:15 AM	0	0	0	0	0	0	121	7	0	128	0	0	**1**	0	**1**	9	104	0	0	113	242
11:30 AM	0	0	0	0	0	0	162	3	0	165	0	0	0	0	0	10	129	0	0	139	304
11:45 AM	0	0	0	0	0	0	136	**8**	0	144	0	0	0	0	0	**16**	141	0	0	157	301
Total Volume	0	0	0	0	0	0	583	23	0	606	0	0	1	0	1	43	532	0	0	575	1182
% App. Total	0	0	0	0		0	96.2	3.8	0		0	0	100	0		7.5	92.5	0	0		
PHF	.000	.000	.000	.000	.000	.000	.889	.719	.000	.896	.000	.000	.250	.000	.250	.672	.842	.000	.000	.866	.882
Cars	0	0	0	0	0	0	566	21	0	587	0	0	1	0	1	40	505	0	0	545	1133
% Cars	0	0	0	0	0	0	97.1	91.3	0	96.9	0	0	100	0	100	93.0	94.9	0	0	94.8	95.9
Heavy Vehicles	0	0	0	0	0	0	17	2	0	19	0	0	0	0	0	3	27	0	0	30	49
% Heavy Vehicles	0	0	0	0	0	0	2.9	8.7	0	3.1	0	0	0	0	0	7.0	5.1	0	0	5.2	4.1



N/S: Nantucket Seafood/ Lovers Lane
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
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File Name : 143955 H
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Nantucket Seafood Driveway From North				Old South Road From East				Lovars Lane From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
08:00 AM	0	0	0	0	0	154	3	1	5	0	6	0	2	112	0	0	283
08:15 AM	0	0	0	0	0	150	1	1	2	0	4	0	2	137	0	0	297
08:30 AM	0	0	0	0	0	120	3	0	2	0	7	0	3	129	1	0	265
08:45 AM	0	0	0	0	0	149	5	1	1	0	3	0	2	156	3	0	320
Total	0	0	0	0	0	573	12	3	10	0	20	0	9	534	4	0	1165
09:00 AM	1	0	0	0	0	166	5	4	1	0	4	0	7	122	2	0	312
09:15 AM	0	0	0	0	0	149	0	3	1	0	1	0	9	127	0	0	290
09:30 AM	1	0	1	0	1	128	1	4	4	0	3	0	7	121	1	0	272
09:45 AM	0	0	0	0	0	136	2	2	4	0	3	0	2	133	1	0	283
Total	2	0	1	0	1	579	8	13	10	0	11	0	25	503	4	0	1157
10:00 AM	0	0	2	0	0	108	1	0	3	0	4	0	3	128	2	0	251
10:15 AM	1	0	0	0	0	115	2	0	2	0	8	0	8	109	0	0	245
10:30 AM	2	0	0	0	1	118	1	0	4	0	2	0	4	122	1	0	255
10:45 AM	1	0	0	0	0	106	2	0	1	0	4	0	4	115	2	0	235
Total	4	0	2	0	1	447	6	0	10	0	18	0	19	474	5	0	986
Grand Total	6	0	3	0	2	1599	26	16	30	0	49	0	53	1511	13	0	3308
Apprch %	66.7	0	33.3	0	0.1	97.3	1.6	1	38	0	62	0	3.4	95.8	0.8	0	
Total %	0.2	0	0.1	0	0.1	48.3	0.8	0.5	0.9	0	1.5	0	1.6	45.7	0.4	0	
Cars	4	0	2	0	2	1497	25	11	27	0	44	0	50	1418	11	0	3091
% Cars	66.7	0	66.7	0	100	93.6	96.2	68.8	90	0	89.8	0	94.3	93.8	84.6	0	93.4
Heavy Vehicles	2	0	1	0	0	102	1	5	3	0	5	0	3	93	2	0	217
% Heavy Vehicles	33.3	0	33.3	0	0	6.4	3.8	31.2	10	0	10.2	0	5.7	6.2	15.4	0	6.6

	Nantucket Seafood Driveway From North					Old South Road From East					Lovars Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:15 AM																					
08:15 AM	0	0	0	0	0	0	150	1	1	152	**2**	0	4	0	6	2	137	0	0	139	297
08:30 AM	0	0	0	0	0	0	120	3	0	123	2	0	**7**	0	**9**	3	129	1	0	133	265
08:45 AM	0	0	0	0	0	0	149	**5**	1	155	1	0	3	0	4	2	**156**	**3**	0	**161**	**320**
09:00 AM	**1**	0	0	0	**1**	0	**166**	5	**4**	**175**	1	0	4	0	5	**7**	122	2	0	131	312
Total Volume	1	0	0	0	1	0	585	14	6	605	6	0	18	0	24	14	544	6	0	564	1194
% App. Total	100	0	0	0		0	96.7	2.3	1		25	0	75	0		2.5	96.5	1.1	0		
PHF	.250	.000	.000	.000	.250	.000	.881	.700	.375	.864	.750	.000	.643	.000	.667	.500	.872	.500	.000	.876	.933
Cars	1	0	0	0	1	0	545	14	4	563	6	0	15	0	21	13	518	6	0	537	1122
% Cars	100	0	0	0	100	0	93.2	100	66.7	93.1	100	0	83.3	0	87.5	92.9	95.2	100	0	95.2	94.0
Heavy Vehicles	0	0	0	0	0	0	40	0	2	42	0	0	3	0	3	1	26	0	0	27	72
% Heavy Vehicles	0	0	0	0	0	0	6.8	0	33.3	6.9	0	0	16.7	0	12.5	7.1	4.8	0	0	4.8	6.0

N/S: Nantucket Seafood/ Lovers Lane
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Groups Printed- Peds and Bicycles

	Nantucket Seafood Driveway From North				Old South Road From East				Lovars Lane From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
08:00 AM	0	0	0	2	0	7	0	0	0	0	0	0	0	1	0	0	10
08:15 AM	0	0	0	5	0	8	0	0	1	0	0	0	1	2	0	0	17
08:30 AM	0	0	0	3	0	11	0	1	1	0	0	0	0	2	0	0	18
08:45 AM	0	0	0	7	0	7	0	1	1	0	0	0	0	5	0	0	21
Total	0	0	0	17	0	33	0	2	3	0	0	0	1	10	0	0	66
09:00 AM	0	0	0	6	0	5	0	1	0	0	0	0	0	0	0	0	12
09:15 AM	0	0	0	7	0	9	0	4	0	0	0	0	0	0	0	0	20
09:30 AM	0	0	0	7	0	15	0	3	0	0	0	0	0	0	0	0	25
09:45 AM	0	0	0	5	0	11	0	0	0	0	0	0	0	0	0	0	16
Total	0	0	0	25	0	40	0	8	0	0	0	0	0	0	0	0	73
10:00 AM	0	0	0	0	0	12	0	1	0	0	0	0	0	6	0	0	19
10:15 AM	0	0	0	0	0	16	0	4	0	0	1	0	0	6	0	0	27
10:30 AM	0	0	0	0	0	12	0	0	0	0	0	0	0	13	0	0	25
10:45 AM	0	0	0	1	0	7	0	0	0	0	0	0	0	2	0	0	10
Total	0	0	0	1	0	47	0	5	0	0	1	0	0	27	0	0	81
Grand Total	0	0	0	43	0	120	0	15	3	0	1	0	1	37	0	0	220
Apprch %	0	0	0	100	0	88.9	0	11.1	75	0	25	0	2.6	97.4	0	0	
Total %	0	0	0	19.5	0	54.5	0	6.8	1.4	0	0.5	0	0.5	16.8	0	0	

	Nantucket Seafood Driveway From North					Old South Road From East					Lovars Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 09:30 AM																					
09:30 AM	0	0	0	**7**	**7**	0	15	0	3	18	0	0	0	0	0	0	0	0	0	0	25
09:45 AM	0	0	0	5	5	0	11	0	0	11	0	0	0	0	0	0	0	0	0	0	16
10:00 AM	0	0	0	0	0	0	12	0	1	13	0	0	0	0	0	0	**6**	0	0	**6**	19
10:15 AM	0	0	0	0	0	0	**16**	0	**4**	**20**	0	0	**1**	0	**1**	0	6	0	0	6	**27**
Total Volume	0	0	0	12	12	0	54	0	8	62	0	0	1	0	1	0	12	0	0	12	87
% App. Total	0	0	0	100		0	87.1	0	12.9		0	0	100	0		0	100	0	0		
PHF	.000	.000	.000	.429	.429	.000	.844	.000	.500	.775	.000	.000	.250	.000	.250	.000	.500	.000	.000	.500	.806

N/S: Nantucket Seafood/ Lovers Lane
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
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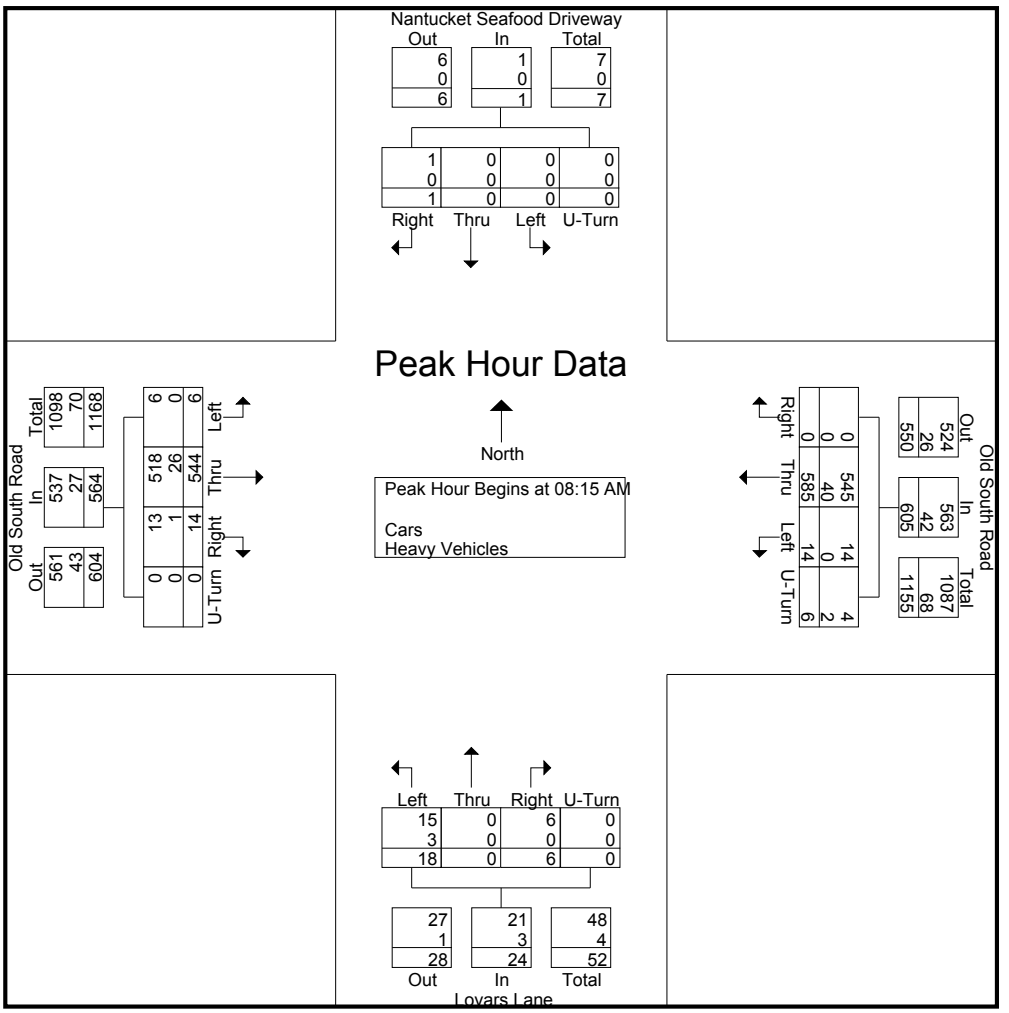
File Name : 143955 H
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

	Nantucket Seafood Driveway From North					Old South Road From East					Lovars Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:15 AM																					
08:15 AM	0	0	0	0	0	0	150	1	1	152	**2**	0	4	0	6	2	137	0	0	139	297
08:30 AM	0	0	0	0	0	0	120	3	0	123	2	0	**7**	0	**9**	3	129	1	0	133	265
08:45 AM	0	0	0	0	0	0	149	**5**	1	155	1	0	3	0	4	2	**156**	**3**	0	**161**	**320**
09:00 AM	**1**	0	0	0	**1**	0	**166**	5	**4**	**175**	1	0	4	0	5	**7**	122	2	0	131	312
Total Volume	1	0	0	0	1	0	585	14	6	605	6	0	18	0	24	14	544	6	0	564	1194
% App. Total	100	0	0	0		0	96.7	2.3	1		25	0	75	0		2.5	96.5	1.1	0		
PHF	.250	.000	.000	.000	.250	.000	.881	.700	.375	.864	.750	.000	.643	.000	.667	.500	.872	.500	.000	.876	.933
Cars	1	0	0	0	1	0	545	14	4	563	6	0	15	0	21	13	518	6	0	537	1122
% Cars	100	0	0	0	100	0	93.2	100	66.7	93.1	100	0	83.3	0	87.5	92.9	95.2	100	0	95.2	94.0
Heavy Vehicles	0	0	0	0	0	0	40	0	2	42	0	0	3	0	3	1	26	0	0	27	72
% Heavy Vehicles	0	0	0	0	0	0	6.8	0	33.3	6.9	0	0	16.7	0	12.5	7.1	4.8	0	0	4.8	6.0



N/S: Nantucket Seafood/ Lovers Lane
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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File Name : 143955 HH
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Nantucket Seafood Driveway From North				Old South Road From East				Lovars Lane From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
03:00 PM	1	0	0	0	0	115	6	0	6	0	10	0	8	130	1	0	277
03:15 PM	1	0	0	0	0	132	1	0	5	0	6	0	10	133	2	0	290
03:30 PM	2	0	2	0	0	91	3	0	4	0	7	0	8	131	4	0	252
03:45 PM	1	0	2	0	1	119	2	0	3	0	3	0	4	147	3	0	285
Total	5	0	4	0	1	457	12	0	18	0	26	0	30	541	10	0	1104
04:00 PM	0	0	2	0	0	132	1	0	3	0	4	0	1	150	1	0	294
04:15 PM	0	0	1	0	0	133	4	0	5	0	12	0	9	155	2	0	321
04:30 PM	1	0	3	0	1	142	5	2	7	1	7	0	9	150	9	0	337
04:45 PM	0	0	2	0	0	136	7	3	4	0	6	0	13	175	2	0	348
Total	1	0	8	0	1	543	17	5	19	1	29	0	32	630	14	0	1300
05:00 PM	3	0	1	0	3	157	9	0	8	0	10	0	12	171	2	0	376
05:15 PM	5	0	1	0	2	123	8	0	6	0	9	0	15	152	2	0	323
05:30 PM	3	0	0	0	1	137	7	0	10	0	5	0	8	138	2	0	311
05:45 PM	2	1	1	0	1	97	4	0	9	0	6	0	9	111	1	0	242
Total	13	1	3	0	7	514	28	0	33	0	30	0	44	572	7	0	1252
Grand Total	19	1	15	0	9	1514	57	5	70	1	85	0	106	1743	31	0	3656
Apprch %	54.3	2.9	42.9	0	0.6	95.5	3.6	0.3	44.9	0.6	54.5	0	5.6	92.7	1.6	0	
Total %	0.5	0	0.4	0	0.2	41.4	1.6	0.1	1.9	0	2.3	0	2.9	47.7	0.8	0	
Cars	18	1	15	0	9	1464	55	5	65	1	82	0	99	1634	30	0	3478
% Cars	94.7	100	100	0	100	96.7	96.5	100	92.9	100	96.5	0	93.4	93.7	96.8	0	95.1
Heavy Vehicles	1	0	0	0	0	50	2	0	5	0	3	0	7	109	1	0	178
% Heavy Vehicles	5.3	0	0	0	0	3.3	3.5	0	7.1	0	3.5	0	6.6	6.3	3.2	0	4.9

	Nantucket Seafood Driveway From North					Old South Road From East					Lovars Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	1	0	**3**	0	4	1	142	5	2	150	7	**1**	7	0	15	9	150	**9**	0	168	337
04:45 PM	0	0	2	0	2	0	136	7	**3**	146	4	0	6	0	10	13	**175**	2	0	**190**	348
05:00 PM	3	0	1	0	4	**3**	**157**	**9**	0	**169**	**8**	0	**10**	0	**18**	12	171	2	0	185	**376**
05:15 PM	**5**	0	1	0	**6**	2	123	8	0	133	6	0	9	0	15	**15**	152	2	0	169	323
Total Volume	9	0	7	0	16	6	558	29	5	598	25	1	32	0	58	49	648	15	0	712	1384
% App. Total	56.2	0	43.8	0		1	93.3	4.8	0.8		43.1	1.7	55.2	0		6.9	91	2.1	0		
PHF	.450	.000	.583	.000	.667	.500	.889	.806	.417	.885	.781	.250	.800	.000	.806	.817	.926	.417	.000	.937	.920
Cars	8	0	7	0	15	6	544	29	5	584	23	1	32	0	56	44	606	15	0	665	1320
% Cars	88.9	0	100	0	93.8	100	97.5	100	100	97.7	92.0	100	100	0	96.6	89.8	93.5	100	0	93.4	95.4
Heavy Vehicles	1	0	0	0	1	0	14	0	0	14	2	0	0	0	2	5	42	0	0	47	64
% Heavy Vehicles	11.1	0	0	0	6.3	0	2.5	0	0	2.3	8.0	0	0	0	3.4	10.2	6.5	0	0	6.6	4.6

N/S: Nantucket Seafood/ Lovers Lane
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File Name : 143955 HH
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Nantucket Seafood Driveway From North				Old South Road From East				Lovars Lane From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
03:15 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	5
03:30 PM	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	7
03:45 PM	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	9
Total	0	0	0	0	0	23	0	0	0	0	0	0	0	0	0	0	23
04:00 PM	0	0	0	0	0	3	0	2	0	0	3	0	1	4	0	0	13
04:15 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	7	0	0	10
04:30 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	1	0	0	7
04:45 PM	0	0	0	0	0	4	0	0	0	0	1	0	0	8	0	0	13
Total	0	0	0	0	0	16	0	2	0	0	4	0	1	20	0	0	43
05:00 PM	0	0	0	0	0	7	0	0	0	0	0	0	2	5	0	0	14
05:15 PM	0	0	0	0	0	6	0	1	0	0	0	0	1	4	0	0	12
05:30 PM	0	0	0	0	0	9	0	0	0	0	1	0	0	3	0	2	15
05:45 PM	0	0	0	0	0	1	0	0	0	0	0	1	1	2	0	1	6
Total	0	0	0	0	0	23	0	1	0	0	1	1	4	14	0	3	47
Grand Total	0	0	0	0	0	62	0	3	0	0	5	1	5	34	0	3	113
Apprch %	0	0	0	0	0	95.4	0	4.6	0	0	83.3	16.7	11.9	81	0	7.1	
Total %	0	0	0	0	0	54.9	0	2.7	0	0	4.4	0.9	4.4	30.1	0	2.7	

	Nantucket Seafood Driveway From North					Old South Road From East					Lovars Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	0	0	0	4	0	0	4	0	0	**1**	0	**1**	0	**8**	0	0	**8**	13
05:00 PM	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	**2**	5	0	0	7	14
05:15 PM	0	0	0	0	0	0	6	0	**1**	7	0	0	0	0	0	1	4	0	0	5	12
05:30 PM	0	0	0	0	0	0	**9**	0	0	**9**	0	0	1	0	1	0	3	0	**2**	5	**15**
Total Volume	0	0	0	0	0	0	26	0	1	27	0	0	2	0	2	3	20	0	2	25	54
% App. Total	0	0	0	0		0	96.3	0	3.7		0	0	100	0		12	80	0	8		
PHF	.000	.000	.000	.000	.000	.000	.722	.000	.250	.750	.000	.000	.500	.000	.500	.375	.625	.000	.250	.781	.900

N/S: Nantucket Seafood/ Lovers Lane
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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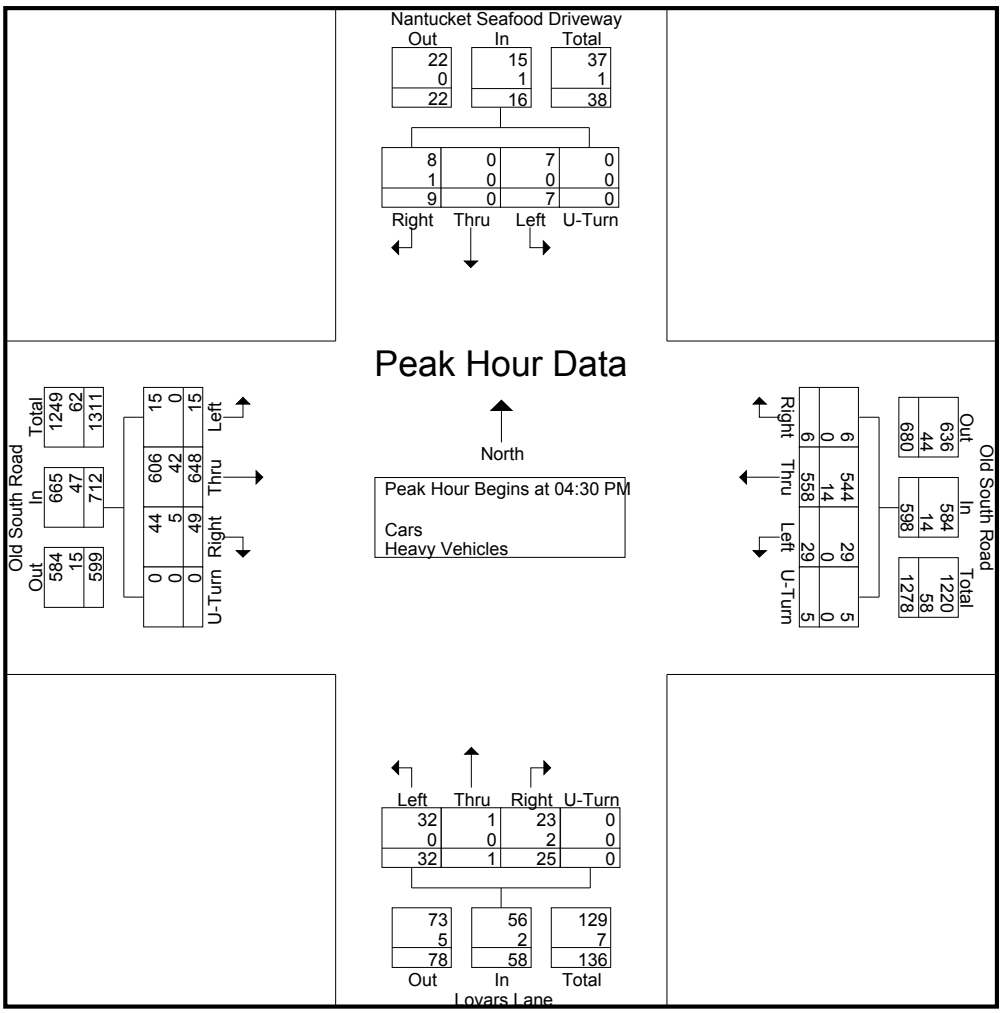
File Name : 143955 HH
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

	Nantucket Seafood Driveway From North					Old South Road From East					Lovars Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	1	0	**3**	0	4	1	142	5	2	150	7	**1**	7	0	15	9	150	**9**	0	168	337
04:45 PM	0	0	2	0	2	0	136	7	**3**	146	4	0	6	0	10	13	**175**	2	0	**190**	348
05:00 PM	3	0	1	0	4	**3**	**157**	**9**	0	**169**	**8**	0	**10**	0	**18**	12	171	2	0	185	**376**
05:15 PM	**5**	0	1	0	**6**	2	123	8	0	133	6	0	9	0	15	**15**	152	2	0	169	323
Total Volume	9	0	7	0	16	6	558	29	5	598	25	1	32	0	58	49	648	15	0	712	1384
% App. Total	56.2	0	43.8	0		1	93.3	4.8	0.8		43.1	1.7	55.2	0		6.9	91	2.1	0		
PHF	.450	.000	.583	.000	.667	.500	.889	.806	.417	.885	.781	.250	.800	.000	.806	.817	.926	.417	.000	.937	.920
Cars	8	0	7	0	15	6	544	29	5	584	23	1	32	0	56	44	606	15	0	665	1320
% Cars	88.9	0	100	0	93.8	100	97.5	100	100	97.7	92.0	100	100	0	96.6	89.8	93.5	100	0	93.4	95.4
Heavy Vehicles	1	0	0	0	1	0	14	0	0	14	2	0	0	0	2	5	42	0	0	47	64
% Heavy Vehicles	11.1	0	0	0	6.3	0	2.5	0	0	2.3	8.0	0	0	0	3.4	10.2	6.5	0	0	6.6	4.6



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File Name : 143955 HHH
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Nantucket Seafood Driveway From North				Old South Road From East				Lovars Lane From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
11:00 AM	2	0	0	0	0	161	4	2	4	0	3	0	9	162	2	0	349
11:15 AM	0	3	2	0	1	113	7	2	4	0	7	0	5	106	2	0	252
11:30 AM	3	0	0	0	1	156	6	3	3	1	7	0	13	136	3	0	332
11:45 AM	1	1	1	0	0	127	10	4	9	1	6	0	10	146	2	0	318
Total	6	4	3	0	2	557	27	11	20	2	23	0	37	550	9	0	1251
12:00 PM	0	1	0	0	0	126	4	5	5	0	7	0	11	119	0	0	278
12:15 PM	2	0	1	0	1	114	5	5	1	0	5	0	8	98	1	0	241
12:30 PM	0	0	0	0	1	129	6	4	1	0	5	0	4	128	2	0	280
12:45 PM	4	0	0	0	0	105	4	6	2	0	7	0	8	116	3	0	255
Total	6	1	1	0	2	474	19	20	9	0	24	0	31	461	6	0	1054
01:00 PM	4	0	0	0	0	124	5	3	1	0	4	0	3	111	4	0	259
01:15 PM	0	0	1	0	0	115	7	3	6	0	4	0	4	134	2	0	276
01:30 PM	0	0	2	0	0	95	2	2	3	0	7	0	4	129	1	0	245
01:45 PM	2	0	0	0	0	97	3	3	5	0	6	0	3	114	2	1	236
Total	6	0	3	0	0	431	17	11	15	0	21	0	14	488	9	1	1016
Grand Total	18	5	7	0	4	1462	63	42	44	2	68	0	82	1499	24	1	3321
Apprch %	60	16.7	23.3	0	0.3	93.1	4	2.7	38.6	1.8	59.6	0	5.1	93.3	1.5	0.1	
Total %	0.5	0.2	0.2	0	0.1	44	1.9	1.3	1.3	0.1	2	0	2.5	45.1	0.7	0	
Cars	16	5	7	0	4	1417	60	39	43	2	65	0	80	1436	23	1	3198
% Cars	88.9	100	100	0	100	96.9	95.2	92.9	97.7	100	95.6	0	97.6	95.8	95.8	100	96.3
Heavy Vehicles	2	0	0	0	0	45	3	3	1	0	3	0	2	63	1	0	123
% Heavy Vehicles	11.1	0	0	0	0	3.1	4.8	7.1	2.3	0	4.4	0	2.4	4.2	4.2	0	3.7

	Nantucket Seafood Driveway From North					Old South Road From East					Lovars Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	2	0	0	0	2	0	**161**	4	2	**167**	4	0	3	0	7	9	**162**	2	0	**173**	**349**
11:15 AM	0	**3**	**2**	0	**5**	**1**	113	7	2	123	4	0	**7**	0	11	5	106	2	0	113	252
11:30 AM	**3**	0	0	0	3	1	156	6	3	166	3	**1**	7	0	11	**13**	136	**3**	0	152	332
11:45 AM	1	1	1	0	3	0	127	**10**	**4**	141	**9**	1	6	0	**16**	10	146	2	0	158	318
Total Volume	6	4	3	0	13	2	557	27	11	597	20	2	23	0	45	37	550	9	0	596	1251
% App. Total	46.2	30.8	23.1	0		0.3	93.3	4.5	1.8		44.4	4.4	51.1	0		6.2	92.3	1.5	0		
PHF	.500	.333	.375	.000	.650	.500	.865	.675	.688	.894	.556	.500	.821	.000	.703	.712	.849	.750	.000	.861	.896
Cars	5	4	3	0	12	2	544	24	11	581	19	2	22	0	43	37	520	9	0	566	1202
% Cars	83.3	100	100	0	92.3	100	97.7	88.9	100	97.3	95.0	100	95.7	0	95.6	100	94.5	100	0	95.0	96.1
Heavy Vehicles	1	0	0	0	1	0	13	3	0	16	1	0	1	0	2	0	30	0	0	30	49
% Heavy Vehicles	16.7	0	0	0	7.7	0	2.3	11.1	0	2.7	5.0	0	4.3	0	4.4	0	5.5	0	0	5.0	3.9

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Email: datarequests@pdillc.com

File Name : 143955 HHH
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Nantucket Seafood Driveway From North				Old South Road From East				Lovars Lane From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
11:00 AM	0	0	0	8	0	8	0	8	0	0	0	0	0	16	0	0	40
11:15 AM	0	0	0	8	0	11	0	3	0	0	0	0	0	3	0	0	25
11:30 AM	0	0	0	1	0	11	0	0	0	0	0	0	0	0	0	0	12
11:45 AM	0	0	0	1	0	8	0	0	1	0	0	0	0	7	0	0	17
Total	0	0	0	18	0	38	0	11	1	0	0	0	0	26	0	0	94
12:00 PM	0	0	0	0	0	11	0	4	0	0	0	0	0	10	0	0	25
12:15 PM	0	0	0	0	0	4	0	0	0	0	0	2	0	2	0	0	8
12:30 PM	0	0	0	1	0	2	0	1	0	0	0	0	2	2	0	0	8
12:45 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	5	0	0	10
Total	0	0	0	1	0	22	0	5	0	0	0	2	2	19	0	0	51
01:00 PM	0	0	0	0	0	7	0	1	0	0	0	0	0	3	0	0	11
01:15 PM	0	0	0	0	0	3	0	2	0	0	0	0	1	10	0	0	16
01:30 PM	0	0	0	0	0	9	0	1	2	0	0	2	0	6	0	1	21
01:45 PM	0	0	0	0	0	11	0	0	0	0	0	0	0	6	0	0	17
Total	0	0	0	0	0	30	0	4	2	0	0	2	1	25	0	1	65
Grand Total	0	0	0	19	0	90	0	20	3	0	0	4	3	70	0	1	210
Apprch %	0	0	0	100	0	81.8	0	18.2	42.9	0	0	57.1	4.1	94.6	0	1.4	
Total %	0	0	0	9	0	42.9	0	9.5	1.4	0	0	1.9	1.4	33.3	0	0.5	

	Nantucket Seafood Driveway From North					Old South Road From East					Lovars Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	0	0	0	**8**	**8**	0	8	0	**8**	**16**	0	0	0	0	0	0	**16**	0	0	**16**	**40**
11:15 AM	0	0	0	8	8	0	**11**	0	3	14	0	0	0	0	0	0	3	0	0	3	25
11:30 AM	0	0	0	1	1	0	11	0	0	11	0	0	0	0	0	0	0	0	0	0	12
11:45 AM	0	0	0	1	1	0	8	0	0	8	**1**	0	0	0	**1**	0	7	0	0	7	17
Total Volume	0	0	0	18	18	0	38	0	11	49	1	0	0	0	1	0	26	0	0	26	94
% App. Total	0	0	0	100		0	77.6	0	22.4		100	0	0	0		0	100	0	0		
PHF	.000	.000	.000	.563	.563	.000	.864	.000	.344	.766	.250	.000	.000	.000	.250	.000	.406	.000	.000	.406	.588

N/S: Nantucket Seafood/ Lovers Lane
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
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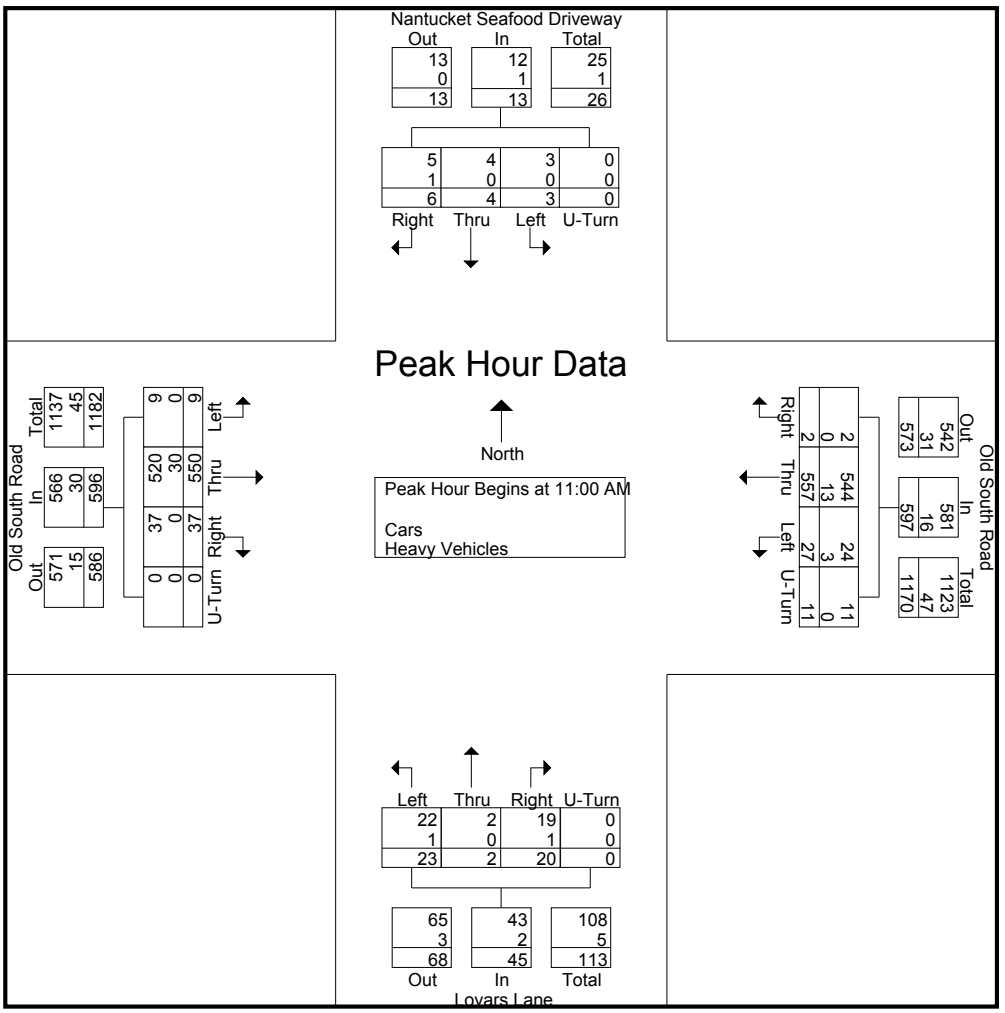
	Nantucket Seafood Driveway From North					Old South Road From East					Lovars Lane From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	2	0	0	0	2	0	**161**	4	2	**167**	4	0	3	0	7	9	**162**	2	0	**173**	**349**
11:15 AM	0	**3**	**2**	0	**5**	**1**	113	7	2	123	4	0	**7**	0	11	5	106	2	0	113	252
11:30 AM	**3**	0	0	0	3	1	156	6	3	166	3	**1**	7	0	11	**13**	136	**3**	0	152	332
11:45 AM	1	1	1	0	3	0	127	**10**	**4**	141	**9**	1	6	0	**16**	10	146	2	0	158	318
Total Volume	6	4	3	0	13	2	557	27	11	597	20	2	23	0	45	37	550	9	0	596	1251
% App. Total	46.2	30.8	23.1	0		0.3	93.3	4.5	1.8		44.4	4.4	51.1	0		6.2	92.3	1.5	0		
PHF	.500	.333	.375	.000	.650	.500	.865	.675	.688	.894	.556	.500	.821	.000	.703	.712	.849	.750	.000	.861	.896
Cars	5	4	3	0	12	2	544	24	11	581	19	2	22	0	43	37	520	9	0	566	1202
% Cars	83.3	100	100	0	92.3	100	97.7	88.9	100	97.3	95.0	100	95.7	0	95.6	100	94.5	100	0	95.0	96.1
Heavy Vehicles	1	0	0	0	1	0	13	3	0	16	1	0	1	0	2	0	30	0	0	30	49
% Heavy Vehicles	16.7	0	0	0	7.7	0	2.3	11.1	0	2.7	5.0	0	4.3	0	4.4	0	5.5	0	0	5.0	3.9



Nantucket Planning and Economic Development Commission (MA)
1 East Chestnut St.

Nantucket, Massachusetts, United States 12345
508 228 7237 mburns@nantucket-ma.gov

Count Name: Old South Rd at Fairgrounds Rd
TMC
Site Code:
Start Date: 08/13/2015

Turning Movement Peak Hour Data (8:15 AM)

Start Time	Southbound						Old South Road Westbound						Fairgrounds Road Northbound						Old South Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:15 AM	0	0	0	0	0	0	0	104	65	0	18	169	77	0	30	0	3	107	11	92	0	0	0	103	379
8:30 AM	0	0	0	0	0	0	0	123	54	0	11	177	72	0	24	0	0	96	29	80	0	0	0	109	382
8:45 AM	0	0	0	0	0	0	0	116	43	0	7	159	70	0	27	0	2	97	43	103	0	0	0	146	402
9:00 AM	0	0	0	0	0	0	0	115	53	0	11	168	77	0	23	0	0	100	26	105	0	0	0	131	399
Total	0	0	0	0	0	0	0	458	215	0	47	673	296	0	104	0	5	400	109	380	0	0	0	489	1562
Approach %	NaN	NaN	NaN	NaN	-	-	0.0	68.1	31.9	0.0	-	-	74.0	0.0	26.0	0.0	-	-	22.3	77.7	0.0	0.0	-	-	-
Total %	0.0	0.0	0.0	0.0	-	0.0	0.0	29.3	13.8	0.0	-	43.1	19.0	0.0	6.7	0.0	-	25.6	7.0	24.3	0.0	0.0	-	31.3	-
PHF	0.000	0.000	0.000	0.000	-	0.000	0.000	0.931	0.827	0.000	-	0.951	0.961	0.000	0.867	0.000	-	0.935	0.634	0.905	0.000	0.000	-	0.837	0.971
Motorcycles	0	0	0	0	-	0	0	3	1	0	-	4	1	0	0	0	-	1	1	3	0	0	-	4	9
% Motorcycles	-	-	-	-	-	-	-	0.7	0.5	-	-	0.6	0.3	-	0.0	-	-	0.3	0.9	0.8	-	-	-	0.8	0.6
Cars	0	0	0	0	-	0	0	318	155	0	-	473	226	0	90	0	-	316	74	271	0	0	-	345	1134
% Cars	-	-	-	-	-	-	-	69.4	72.1	-	-	70.3	76.4	-	86.5	-	-	79.0	67.9	71.3	-	-	-	70.6	72.6
Light Goods Vehicles	0	0	0	0	-	0	0	102	44	0	-	146	64	0	11	0	-	75	28	84	0	0	-	112	333
% Light Goods Vehicles	-	-	-	-	-	-	-	22.3	20.5	-	-	21.7	21.6	-	10.6	-	-	18.8	25.7	22.1	-	-	-	22.9	21.3
Buses	0	0	0	0	-	0	0	1	1	0	-	2	0	0	2	0	-	2	3	2	0	0	-	5	9
% Buses	-	-	-	-	-	-	-	0.2	0.5	-	-	0.3	0.0	-	1.9	-	-	0.5	2.8	0.5	-	-	-	1.0	0.6
Single-Unit Trucks	0	0	0	0	-	0	0	34	14	0	-	48	5	0	1	0	-	6	2	17	0	0	-	19	73
% Single-Unit Trucks	-	-	-	-	-	-	-	7.4	6.5	-	-	7.1	1.7	-	1.0	-	-	1.5	1.8	4.5	-	-	-	3.9	4.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	1
% Articulated Trucks	-	-	-	-	-	-	-	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.9	0.0	-	-	-	0.2	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	3	0	0	-	3	3
% Bicycles on Road	-	-	-	-	-	-	-	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.8	-	-	-	0.6	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	17	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	36.2	-	-	-	-	-	20.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	30	-	-	-	-	-	4	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	63.8	-	-	-	-	-	80.0	-	-	-	-	-	-	-	-

Nantucket Planning and Economic Development Commission (MA)
1 East Chestnut St.

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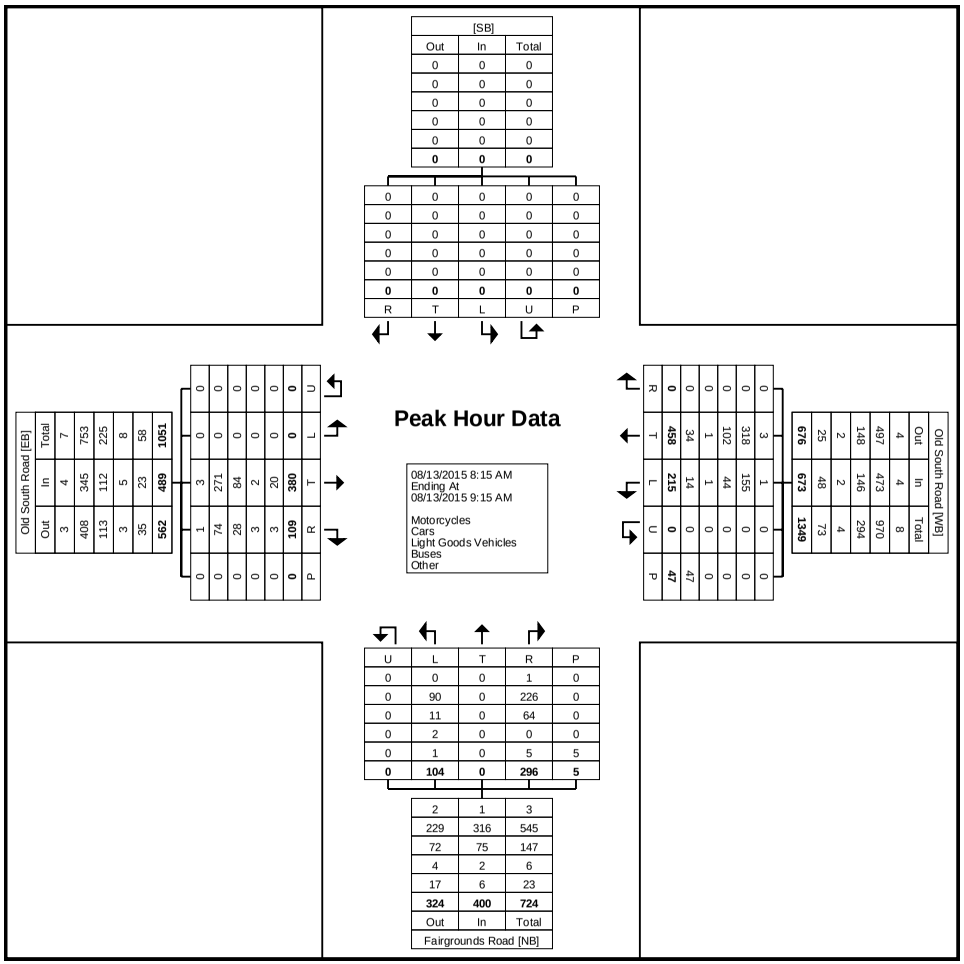
1240 of 1520



Turning Movement Peak Hour Data Plot (8:15 AM)

Nantucket Planning and Economic Development Commission (MA)
1 East Chestnut St.

Nantucket, Massachusetts, United States 12345
508 228 7237 mburns@nantucket-ma.gov

Count Name: Old South Rd at Fairgrounds Rd
TMC
Site Code:
Start Date: 08/13/2015

Turning Movement Peak Hour Data (4:00 PM)

Start Time	Southbound						Old South Road Westbound						Fairgrounds Road Northbound						Old South Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:00 PM	0	0	0	0	0	0	0	97	53	0	0	150	59	0	33	0	0	92	49	125	0	0	0	174	416
4:15 PM	0	0	0	0	0	0	0	93	62	0	0	155	77	0	34	0	3	111	39	102	0	0	0	141	407
4:30 PM	0	0	0	0	0	0	0	86	48	0	0	134	62	0	41	0	1	103	30	123	0	0	0	153	390
4:45 PM	0	0	0	0	0	0	0	103	51	0	0	154	87	0	38	0	2	125	36	108	0	0	0	144	423
Total	0	0	0	0	0	0	0	379	214	0	0	593	285	0	146	0	6	431	154	458	0	0	0	612	1636
Approach %	NaN	NaN	NaN	NaN	-	-	0.0	63.9	36.1	0.0	-	-	66.1	0.0	33.9	0.0	-	-	25.2	74.8	0.0	0.0	-	-	-
Total %	0.0	0.0	0.0	0.0	-	0.0	0.0	23.2	13.1	0.0	-	36.2	17.4	0.0	8.9	0.0	-	26.3	9.4	28.0	0.0	0.0	-	37.4	-
PHF	0.000	0.000	0.000	0.000	-	0.000	0.000	0.920	0.863	0.000	-	0.956	0.819	0.000	0.890	0.000	-	0.862	0.786	0.916	0.000	0.000	-	0.879	0.967
Motorcycles	0	0	0	0	-	0	0	4	8	0	-	12	5	0	5	0	-	10	3	7	0	0	-	10	32
% Motorcycles	-	-	-	-	-	-	-	1.1	3.7	-	-	2.0	1.8	-	3.4	-	-	2.3	1.9	1.5	-	-	-	1.6	2.0
Cars	0	0	0	0	-	0	0	290	153	0	-	443	194	0	121	0	-	315	92	314	0	0	-	406	1164
% Cars	-	-	-	-	-	-	-	76.5	71.5	-	-	74.7	68.1	-	82.9	-	-	73.1	59.7	68.6	-	-	-	66.3	71.1
Light Goods Vehicles	0	0	0	0	-	0	0	73	49	0	-	122	66	0	13	0	-	79	50	107	0	0	-	157	358
% Light Goods Vehicles	-	-	-	-	-	-	-	19.3	22.9	-	-	20.6	23.2	-	8.9	-	-	18.3	32.5	23.4	-	-	-	25.7	21.9
Buses	0	0	0	0	-	0	0	2	0	0	-	2	0	0	4	0	-	4	5	4	0	0	-	9	15
% Buses	-	-	-	-	-	-	-	0.5	0.0	-	-	0.3	0.0	-	2.7	-	-	0.9	3.2	0.9	-	-	-	1.5	0.9
Single-Unit Trucks	0	0	0	0	-	0	0	8	4	0	-	12	19	0	3	0	-	22	2	22	0	0	-	24	58
% Single-Unit Trucks	-	-	-	-	-	-	-	2.1	1.9	-	-	2.0	6.7	-	2.1	-	-	5.1	1.3	4.8	-	-	-	3.9	3.5
Articulated Trucks	0	0	0	0	-	0	0	1	0	0	-	1	1	0	0	0	-	1	0	2	0	0	-	2	4
% Articulated Trucks	-	-	-	-	-	-	-	0.3	0.0	-	-	0.2	0.4	-	0.0	-	-	0.2	0.0	0.4	-	-	-	0.3	0.2
Bicycles on Road	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	2	2	0	0	-	4	5
% Bicycles on Road	-	-	-	-	-	-	-	0.3	0.0	-	-	0.2	0.0	-	0.0	-	-	0.0	1.3	0.4	-	-	-	0.7	0.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66.7	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33.3	-	-	-	-	-	-	-	-

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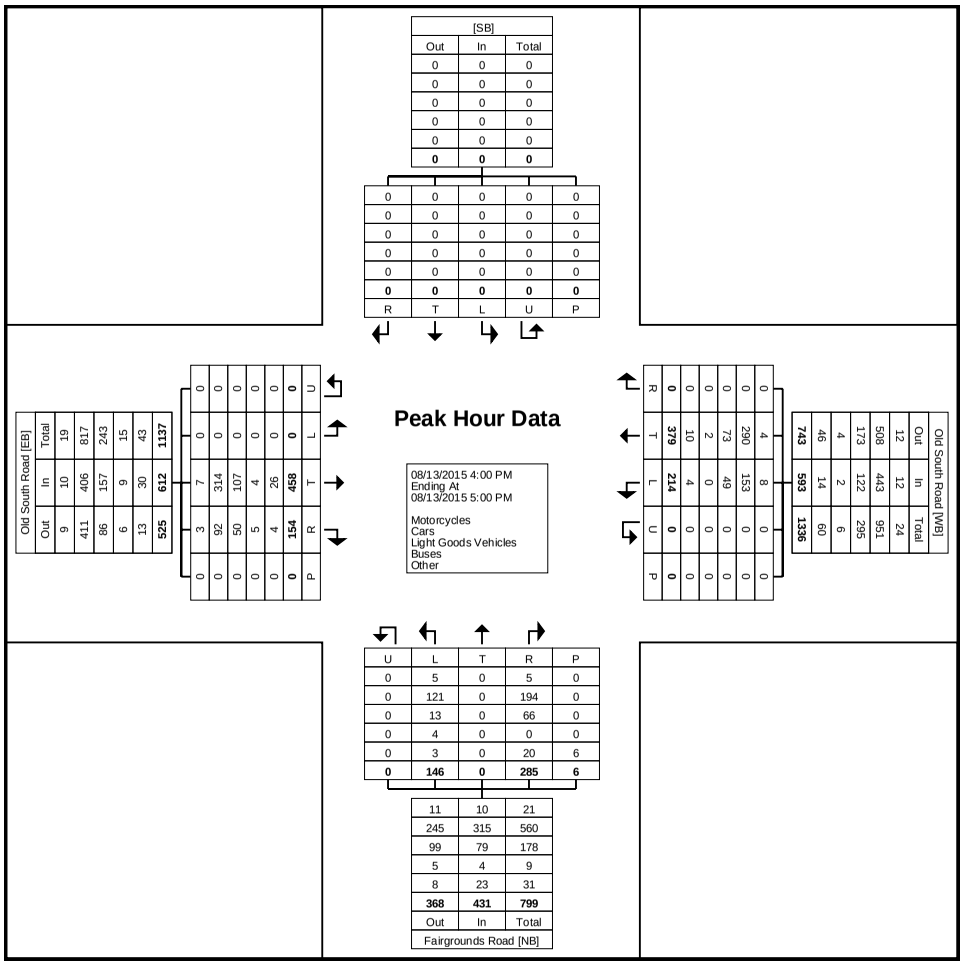
Start Date: 08/13/2015

1242 of 1520



Turning Movement Peak Hour Data Plot (4:00 PM)

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

S: Fairgrounds Road
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 III
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Old South Road From East			Fairgrounds Road From South			Old South Road From West			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
11:00 AM	127	49	0	60	20	0	26	108	0	390
11:15 AM	112	47	0	45	32	0	38	87	0	361
11:30 AM	114	45	0	58	27	0	55	117	0	416
11:45 AM	105	43	0	51	25	0	28	98	0	350
Total	458	184	0	214	104	0	147	410	0	1517
12:00 PM	102	45	0	40	21	0	32	114	0	354
12:15 PM	92	41	0	42	27	0	38	98	0	338
12:30 PM	111	35	0	46	22	0	30	100	0	344
12:45 PM	94	39	0	46	19	0	30	100	0	328
Total	399	160	0	174	89	0	130	412	0	1364
01:00 PM	104	38	0	39	23	0	37	113	0	354
01:15 PM	88	39	0	35	15	0	32	114	0	323
01:30 PM	88	35	0	47	24	0	29	109	0	332
01:45 PM	84	40	0	39	31	1	25	95	0	315
Total	364	152	0	160	93	1	123	431	0	1324
Grand Total	1221	496	0	548	286	1	400	1253	0	4205
Apprch %	71.1	28.9	0	65.6	34.3	0.1	24.2	75.8	0	
Total %	29	11.8	0	13	6.8	0	9.5	29.8	0	
Cars	1196	486	0	528	272	1	385	1207	0	4075
% Cars	98	98	0	96.4	95.1	100	96.2	96.3	0	96.9
Heavy Vehicles	25	10	0	20	14	0	15	46	0	130
% Heavy Vehicles	2	2	0	3.6	4.9	0	3.8	3.7	0	3.1

	Old South Road From East				Fairgrounds Road From South				Old South Road From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:00 AM													
11:00 AM	**127**	**49**	0	**176**	**60**	20	0	80	26	108	0	134	390
11:15 AM	112	47	0	159	45	**32**	0	77	38	87	0	125	361
11:30 AM	114	45	0	159	58	27	0	**85**	**55**	**117**	0	**172**	**416**
11:45 AM	105	43	0	148	51	25	0	76	28	98	0	126	350
Total Volume	458	184	0	642	214	104	0	318	147	410	0	557	1517
% App. Total	71.3	28.7	0		67.3	32.7	0		26.4	73.6	0		
PHF	.902	.939	.000	.912	.892	.813	.000	.935	.668	.876	.000	.810	.912
Cars	450	177	0	627	205	98	0	303	142	392	0	534	1464
% Cars	98.3	96.2	0	97.7	95.8	94.2	0	95.3	96.6	95.6	0	95.9	96.5
Heavy Vehicles	8	7	0	15	9	6	0	15	5	18	0	23	53
% Heavy Vehicles	1.7	3.8	0	2.3	4.2	5.8	0	4.7	3.4	4.4	0	4.1	3.5

S: Fairgrounds Road
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION
D A T A
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

File Name : 143955 III
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Old South Road From East			Fairgrounds Road From South			Old South Road From West			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
11:00 AM	0	0	1	0	0	0	4	0	0	5
11:15 AM	0	0	2	0	0	1	0	0	0	3
11:30 AM	0	0	3	0	0	0	0	0	0	3
11:45 AM	2	0	4	0	0	4	0	0	0	10
Total	2	0	10	0	0	5	4	0	0	21
12:00 PM	1	0	0	0	0	1	2	0	0	4
12:15 PM	1	0	0	0	0	0	0	0	0	1
12:30 PM	0	0	1	0	0	1	0	0	0	2
12:45 PM	0	0	0	0	0	0	0	0	0	0
Total	2	0	1	0	0	2	2	0	0	7
01:00 PM	0	0	1	0	0	0	0	0	0	1
01:15 PM	0	0	2	0	0	0	0	0	0	2
01:30 PM	0	0	0	0	0	0	0	1	0	1
01:45 PM	2	2	0	0	0	0	0	0	0	4
Total	2	2	3	0	0	0	0	1	0	8
Grand Total	6	2	14	0	0	7	6	1	0	36
Apprch %	27.3	9.1	63.6	0	0	100	85.7	14.3	0	
Total %	16.7	5.6	38.9	0	0	19.4	16.7	2.8	0	

	Old South Road From East				Fairgrounds Road From South				Old South Road From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:00 AM													
11:00 AM	0	0	1	1	0	0	0	0	**4**	0	0	**4**	5
11:15 AM	0	0	2	2	0	0	1	1	0	0	0	0	3
11:30 AM	0	0	3	3	0	0	0	0	0	0	0	0	3
11:45 AM	**2**	0	**4**	**6**	0	0	**4**	**4**	0	0	0	0	**10**
Total Volume	2	0	10	12	0	0	5	5	4	0	0	4	21
% App. Total	16.7	0	83.3		0	0	100		100	0	0		
PHF	.250	.000	.625	.500	.000	.000	.313	.313	.250	.000	.000	.250	.525

PRECISION
D A T A
INDUSTRIES, LLC
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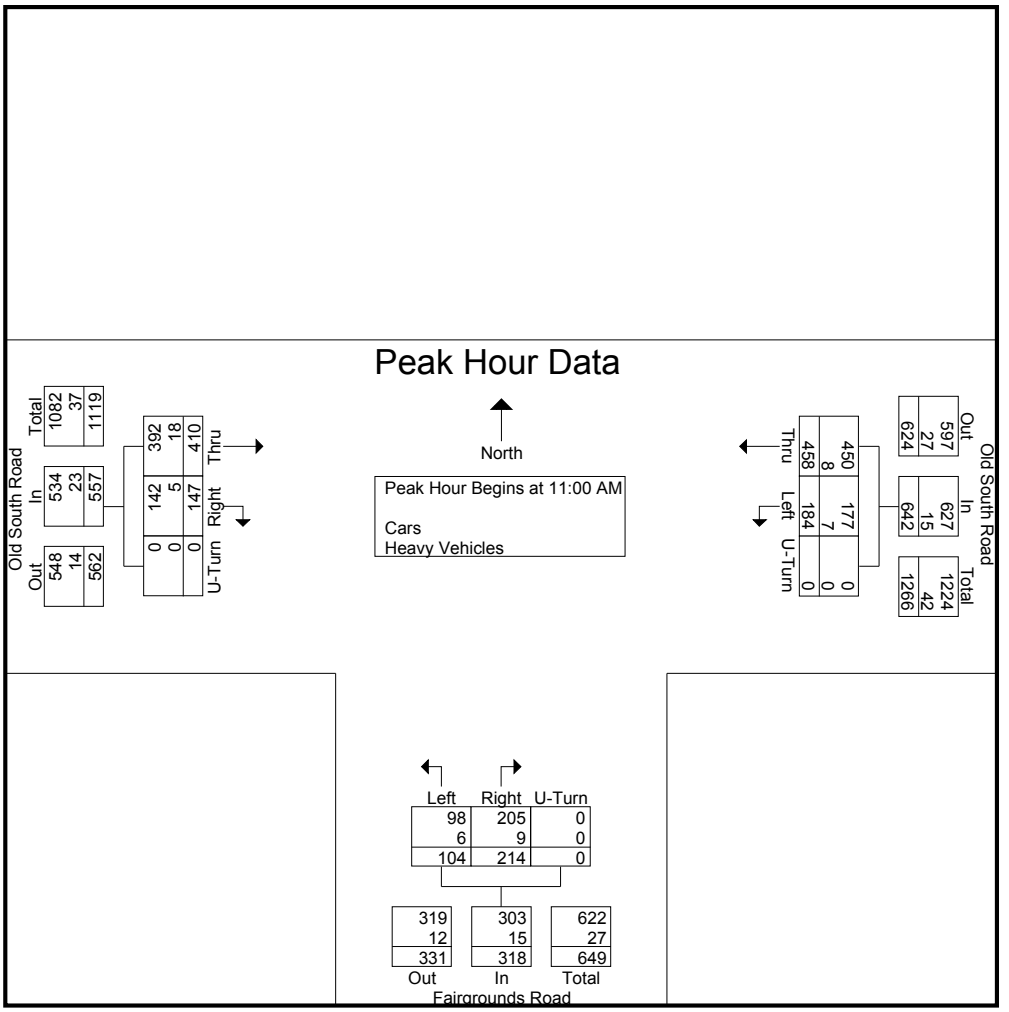
S: Fairgrounds Road
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 III
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

	Old South Road From East				Fairgrounds Road From South				Old South Road From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:00 AM													
11:00 AM	**127**	**49**	0	**176**	**60**	20	0	80	26	108	0	134	390
11:15 AM	112	47	0	159	45	**32**	0	77	38	87	0	125	361
11:30 AM	114	45	0	159	58	27	0	**85**	**55**	**117**	0	**172**	**416**
11:45 AM	105	43	0	148	51	25	0	76	28	98	0	126	350
Total Volume	458	184	0	642	214	104	0	318	147	410	0	557	1517
% App. Total	71.3	28.7	0		67.3	32.7	0		26.4	73.6	0		
PHF	.902	.939	.000	.912	.892	.813	.000	.935	.668	.876	.000	.810	.912
Cars	450	177	0	627	205	98	0	303	142	392	0	534	1464
% Cars	98.3	96.2	0	97.7	95.8	94.2	0	95.3	96.6	95.6	0	95.9	96.5
Heavy Vehicles	8	7	0	15	9	6	0	15	5	18	0	23	53
% Heavy Vehicles	1.7	3.8	0	2.3	4.2	5.8	0	4.7	3.4	4.4	0	4.1	3.5



N/S: Bike Path/ Youngs Way
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
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File Name : 143955 J
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Old South Road Bike Path From North				Old South Road From East				Youngs Way From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
08:00 AM	0	0	0	0	0	158	7	0	3	0	12	0	11	120	0	0	311
08:15 AM	0	0	0	0	0	153	15	0	12	0	7	0	22	132	0	0	341
08:30 AM	0	0	0	0	0	121	4	0	1	0	7	0	8	142	0	0	283
08:45 AM	0	0	0	0	0	159	7	0	4	0	4	0	5	155	0	0	334
Total	0	0	0	0	0	591	33	0	20	0	30	0	46	549	0	0	1269
09:00 AM	0	0	0	0	0	168	4	0	5	0	6	0	10	150	0	0	343
09:15 AM	0	0	0	0	0	167	5	0	7	0	10	0	18	133	0	0	340
09:30 AM	0	0	0	0	0	134	3	0	14	0	20	0	20	126	0	0	317
09:45 AM	0	0	0	0	0	148	5	0	4	0	14	0	12	140	0	0	323
Total	0	0	0	0	0	617	17	0	30	0	50	0	60	549	0	0	1323
10:00 AM	0	0	0	0	0	120	2	0	3	0	9	0	6	135	0	0	275
10:15 AM	0	0	0	0	0	116	8	0	4	0	12	0	7	118	0	0	265
10:30 AM	0	0	0	0	0	118	7	0	5	0	7	0	8	126	0	0	271
10:45 AM	0	0	0	0	0	112	8	0	7	0	9	0	14	114	0	0	264
Total	0	0	0	0	0	466	25	0	19	0	37	0	35	493	0	0	1075
Grand Total	0	0	0	0	0	1674	75	0	69	0	117	0	141	1591	0	0	3667
Apprch %	0	0	0	0	0	95.7	4.3	0	37.1	0	62.9	0	8.1	91.9	0	0	
Total %	0	0	0	0	0	45.7	2	0	1.9	0	3.2	0	3.8	43.4	0	0	
Cars	0	0	0	0	0	1544	72	0	63	0	111	0	136	1490	0	0	3416
% Cars	0	0	0	0	0	92.2	96	0	91.3	0	94.9	0	96.5	93.7	0	0	93.2
Heavy Vehicles	0	0	0	0	0	130	3	0	6	0	6	0	5	101	0	0	251
% Heavy Vehicles	0	0	0	0	0	7.8	4	0	8.7	0	5.1	0	3.5	6.3	0	0	6.8

	Old South Road Bike Path From North					Old South Road From East					Youngs Way From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:45 AM																					
08:45 AM	0	0	0	0	0	0	159	**7**	0	166	4	0	4	0	8	5	**155**	0	0	**160**	334
09:00 AM	0	0	0	0	0	0	**168**	4	0	**172**	5	0	6	0	11	10	150	0	0	160	**343**
09:15 AM	0	0	0	0	0	0	167	5	0	172	7	0	10	0	17	18	133	0	0	151	340
09:30 AM	0	0	0	0	0	0	134	3	0	137	**14**	0	**20**	0	**34**	**20**	126	0	0	146	317
Total Volume	0	0	0	0	0	0	628	19	0	647	30	0	40	0	70	53	564	0	0	617	1334
% App. Total	0	0	0	0		0	97.1	2.9	0		42.9	0	57.1	0		8.6	91.4	0	0		
PHF	.000	.000	.000	.000	.000	.000	.935	.679	.000	.940	.536	.000	.500	.000	.515	.663	.910	.000	.000	.964	.972
Cars	0	0	0	0	0	0	574	17	0	591	27	0	37	0	64	53	534	0	0	587	1242
% Cars	0	0	0	0	0	0	91.4	89.5	0	91.3	90.0	0	92.5	0	91.4	100	94.7	0	0	95.1	93.1
Heavy Vehicles	0	0	0	0	0	0	54	2	0	56	3	0	3	0	6	0	30	0	0	30	92
% Heavy Vehicles	0	0	0	0	0	0	8.6	10.5	0	8.7	10.0	0	7.5	0	8.6	0	5.3	0	0	4.9	6.9

N/S: Bike Path/ Youngs Way
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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File Name : 143955 J
Site Code : TBA
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Page No : 1

Groups Printed- Peds and Bicycles

	Old South Road Bike Path From North				Old South Road From East				Youngs Way From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
08:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
08:30 AM	0	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0	4
08:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Total	0	2	0	0	0	0	0	2	0	0	0	3	0	0	0	0	7
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
09:15 AM	0	1	1	0	0	0	0	0	0	0	0	3	0	0	0	0	5
09:30 AM	0	0	0	1	0	0	0	2	0	0	0	0	1	2	0	0	6
09:45 AM	0	0	0	1	0	0	0	1	0	0	0	3	0	0	0	0	5
Total	0	1	1	2	0	0	0	3	0	0	0	7	1	2	0	0	17
10:00 AM	0	0	0	0	0	0	0	2	0	2	0	1	0	0	0	0	5
10:15 AM	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	4
10:30 AM	0	0	0	0	0	0	1	0	0	2	0	3	0	0	0	0	6
10:45 AM	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	3
Total	0	2	0	0	0	0	1	3	0	5	0	7	0	0	0	0	18
Grand Total	0	5	1	2	0	0	1	8	0	5	0	17	1	2	0	0	42
Apprch %	0	62.5	12.5	25	0	0	11.1	88.9	0	22.7	0	77.3	33.3	66.7	0	0	
Total %	0	11.9	2.4	4.8	0	0	2.4	19	0	11.9	0	40.5	2.4	4.8	0	0	

	Old South Road Bike Path From North					Old South Road From East					Youngs Way From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 09:15 AM																					
09:15 AM	0	**1**	**1**	0	**2**	0	0	0	0	0	0	0	0	**3**	**3**	0	0	0	0	0	5
09:30 AM	0	0	0	**1**	1	0	0	0	**2**	**2**	0	0	0	0	0	**1**	**2**	0	0	**3**	**6**
09:45 AM	0	0	0	1	1	0	0	0	1	1	0	0	0	3	3	0	0	0	0	0	5
10:00 AM	0	0	0	0	0	0	0	0	2	2	0	**2**	0	1	3	0	0	0	0	0	5
Total Volume	0	1	1	2	4	0	0	0	5	5	0	2	0	7	9	1	2	0	0	3	21
% App. Total	0	25	25	50		0	0	0	100		0	22.2	0	77.8		33.3	66.7	0	0		
PHF	.000	.250	.250	.500	.500	.000	.000	.000	.625	.625	.000	.250	.000	.583	.750	.250	.250	.000	.000	.250	.875

N/S: Bike Path/ Youngs Way
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Start Date : 7/24/2014
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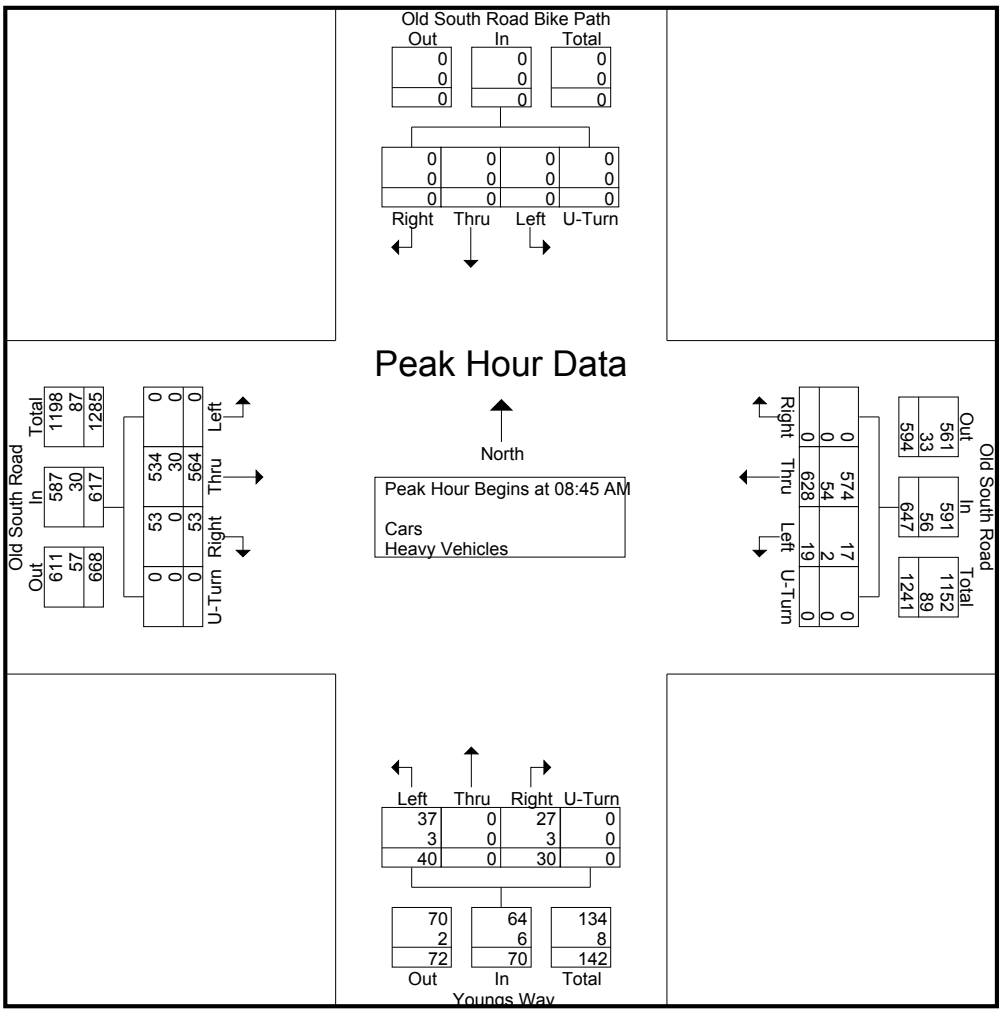
	Old South Road Bike Path From North					Old South Road From East					Youngs Way From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:45 AM																					
08:45 AM	0	0	0	0	0	0	159	**7**	0	166	4	0	4	0	8	5	**155**	0	0	**160**	334
09:00 AM	0	0	0	0	0	0	**168**	4	0	**172**	5	0	6	0	11	10	150	0	0	160	**343**
09:15 AM	0	0	0	0	0	0	167	5	0	172	7	0	10	0	17	18	133	0	0	151	340
09:30 AM	0	0	0	0	0	0	134	3	0	137	**14**	0	**20**	0	**34**	**20**	126	0	0	146	317
Total Volume	0	0	0	0	0	0	628	19	0	647	30	0	40	0	70	53	564	0	0	617	1334
% App. Total	0	0	0	0		0	97.1	2.9	0		42.9	0	57.1	0		8.6	91.4	0	0		
PHF	.000	.000	.000	.000	.000	.000	.935	.679	.000	.940	.536	.000	.500	.000	.515	.663	.910	.000	.000	.964	.972
Cars	0	0	0	0	0	0	574	17	0	591	27	0	37	0	64	53	534	0	0	587	1242
% Cars	0	0	0	0	0	0	91.4	89.5	0	91.3	90.0	0	92.5	0	91.4	100	94.7	0	0	95.1	93.1
Heavy Vehicles	0	0	0	0	0	0	54	2	0	56	3	0	3	0	6	0	30	0	0	30	92
% Heavy Vehicles	0	0	0	0	0	0	8.6	10.5	0	8.7	10.0	0	7.5	0	8.6	0	5.3	0	0	4.9	6.9



N/S: Bike Path/ Youngs Way
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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File Name : 143955 JJ
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Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Old South Road Bike Path From North				Old South Road From East				Youngs Way From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
03:00 PM	0	0	0	0	0	120	6	0	6	0	8	0	8	140	0	0	288
03:15 PM	0	0	0	0	0	139	6	0	6	0	10	0	4	144	0	0	309
03:30 PM	0	0	0	0	0	105	4	0	4	0	8	0	7	145	0	0	273
03:45 PM	0	0	0	0	0	123	3	0	5	0	6	0	12	155	0	0	304
Total	0	0	0	0	0	487	19	0	21	0	32	0	31	584	0	0	1174
04:00 PM	0	1	0	0	0	138	5	0	3	0	5	0	8	151	0	0	311
04:15 PM	0	0	0	0	0	143	4	0	8	0	6	0	10	168	0	0	339
04:30 PM	0	0	0	0	0	159	3	0	4	0	10	0	5	166	0	0	347
04:45 PM	0	0	0	0	0	141	4	0	8	0	4	0	11	186	0	0	354
Total	0	1	0	0	0	581	16	0	23	0	25	0	34	671	0	0	1351
05:00 PM	0	0	0	0	0	155	9	0	4	0	16	0	8	179	0	0	371
05:15 PM	0	0	0	0	0	137	7	1	7	0	8	0	12	163	0	0	335
05:30 PM	0	0	0	0	0	148	1	0	4	0	9	0	5	140	0	0	307
05:45 PM	0	0	0	0	0	105	4	0	1	0	4	0	3	124	0	0	241
Total	0	0	0	0	0	545	21	1	16	0	37	0	28	606	0	0	1254
Grand Total	0	1	0	0	0	1613	56	1	60	0	94	0	93	1861	0	0	3779
Apprch %	0	100	0	0	0	96.6	3.4	0.1	39	0	61	0	4.8	95.2	0	0	
Total %	0	0	0	0	0	42.7	1.5	0	1.6	0	2.5	0	2.5	49.2	0	0	
Cars	0	1	0	0	0	1565	53	0	58	0	94	0	91	1741	0	0	3603
% Cars	0	100	0	0	0	97	94.6	0	96.7	0	100	0	97.8	93.6	0	0	95.3
Heavy Vehicles	0	0	0	0	0	48	3	1	2	0	0	0	2	120	0	0	176
% Heavy Vehicles	0	0	0	0	0	3	5.4	100	3.3	0	0	0	2.2	6.4	0	0	4.7

	Old South Road Bike Path From North					Old South Road From East					Youngs Way From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	0	0	0	0	0	143	4	0	147	**8**	0	6	0	14	10	168	0	0	178	339
04:30 PM	0	0	0	0	0	0	**159**	3	0	162	4	0	10	0	14	5	166	0	0	171	347
04:45 PM	0	0	0	0	0	0	141	4	0	145	8	0	4	0	12	**11**	**186**	0	0	**197**	354
05:00 PM	0	0	0	0	0	0	155	**9**	0	**164**	4	0	**16**	0	**20**	8	179	0	0	187	**371**
Total Volume	0	0	0	0	0	0	598	20	0	618	24	0	36	0	60	34	699	0	0	733	1411
% App. Total	0	0	0	0		0	96.8	3.2	0		40	0	60	0		4.6	95.4	0	0		
PHF	.000	.000	.000	.000	.000	.000	.940	.556	.000	.942	.750	.000	.563	.000	.750	.773	.940	.000	.000	.930	.951
Cars	0	0	0	0	0	0	585	18	0	603	22	0	36	0	58	34	663	0	0	697	1358
% Cars	0	0	0	0	0	0	97.8	90.0	0	97.6	91.7	0	100	0	96.7	100	94.8	0	0	95.1	96.2
Heavy Vehicles	0	0	0	0	0	0	13	2	0	15	2	0	0	0	2	0	36	0	0	36	53
% Heavy Vehicles	0	0	0	0	0	0	2.2	10.0	0	2.4	8.3	0	0	0	3.3	0	5.2	0	0	4.9	3.8

N/S: Bike Path/ Youngs Way
E/W: Old South Road
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File Name : 143955 JJ
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Old South Road Bike Path From North				Old South Road From East				Youngs Way From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Total	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	3
04:00 PM	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3
04:15 PM	0	0	0	0	0	0	0	1	0	1	0	1	1	0	0	0	4
04:30 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
04:45 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2
Total	0	3	0	0	0	0	1	2	0	2	0	2	1	0	0	0	11
05:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2
05:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	2
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	2	0	2	0	0	0	1	0	0	5
Grand Total	0	3	0	0	0	0	1	6	0	4	0	3	1	1	0	0	19
Apprch %	0	100	0	0	0	0	14.3	85.7	0	57.1	0	42.9	50	50	0	0	
Total %	0	15.8	0	0	0	0	5.3	31.6	0	21.1	0	15.8	5.3	5.3	0	0	

	Old South Road Bike Path From North					Old South Road From East					Youngs Way From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	**2**	0	0	**2**	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	3
04:15 PM	0	0	0	0	0	0	0	0	**1**	1	0	**1**	0	**1**	**2**	**1**	0	0	0	**1**	**4**
04:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
04:45 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	2
Total Volume	0	3	0	0	3	0	0	1	2	3	0	2	0	2	4	1	0	0	0	1	11
% App. Total	0	100	0	0		0	0	33.3	66.7		0	50	0	50		100	0	0	0		
PHF	.000	.375	.000	.000	.375	.000	.000	.250	.500	.750	.000	.500	.000	.500	.500	.250	.000	.000	.000	.250	.688

N/S: Bike Path/ Youngs Way
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
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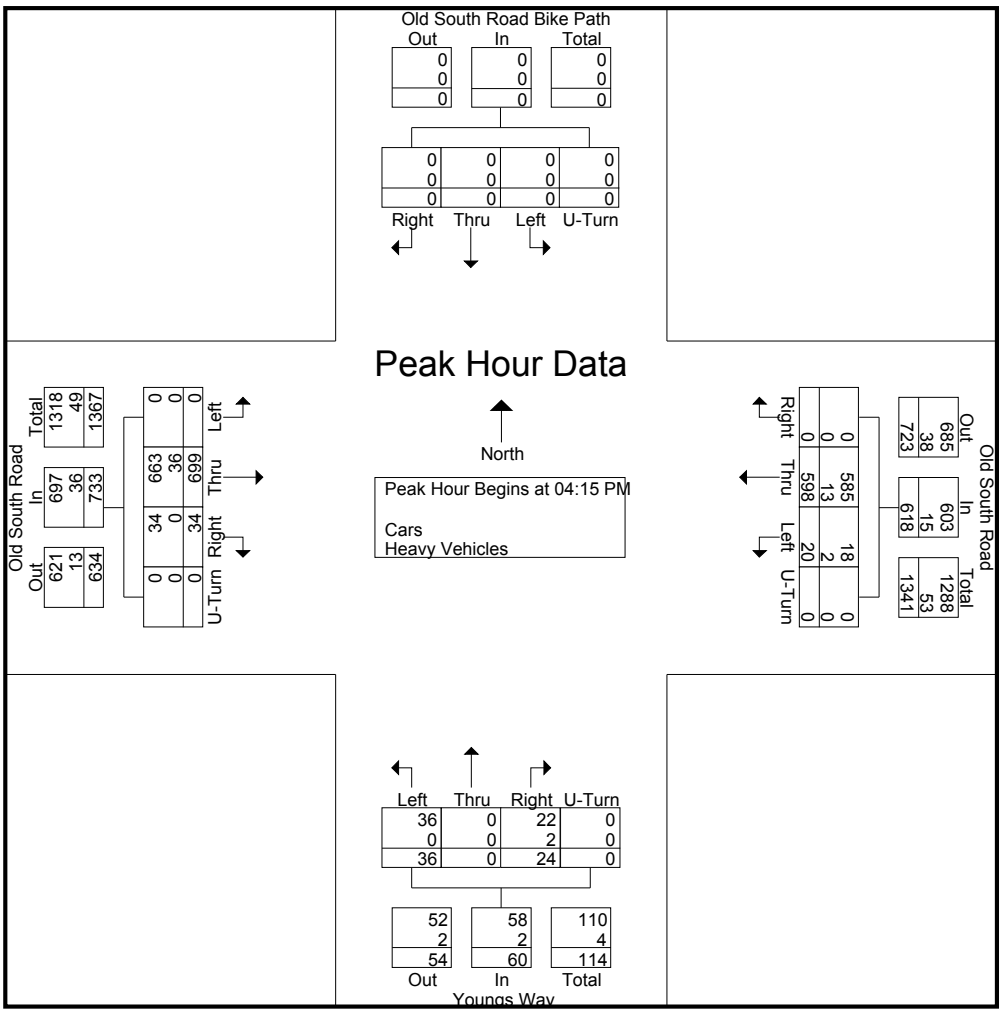
File Name : 143955 JJ
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

	Old South Road Bike Path From North					Old South Road From East					Youngs Way From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	0	0	0	0	0	143	4	0	147	**8**	0	6	0	14	10	168	0	0	178	339
04:30 PM	0	0	0	0	0	0	**159**	3	0	162	4	0	10	0	14	5	166	0	0	171	347
04:45 PM	0	0	0	0	0	0	141	4	0	145	8	0	4	0	12	**11**	**186**	0	0	**197**	354
05:00 PM	0	0	0	0	0	0	155	**9**	0	**164**	4	0	**16**	0	**20**	8	179	0	0	187	**371**
Total Volume	0	0	0	0	0	0	598	20	0	618	24	0	36	0	60	34	699	0	0	733	1411
% App. Total	0	0	0	0		0	96.8	3.2	0		40	0	60	0		4.6	95.4	0	0		
PHF	.000	.000	.000	.000	.000	.000	.940	.556	.000	.942	.750	.000	.563	.000	.750	.773	.940	.000	.000	.930	.951
Cars	0	0	0	0	0	0	585	18	0	603	22	0	36	0	58	34	663	0	0	697	1358
% Cars	0	0	0	0	0	0	97.8	90.0	0	97.6	91.7	0	100	0	96.7	100	94.8	0	0	95.1	96.2
Heavy Vehicles	0	0	0	0	0	0	13	2	0	15	2	0	0	0	2	0	36	0	0	36	53
% Heavy Vehicles	0	0	0	0	0	0	2.2	10.0	0	2.4	8.3	0	0	0	3.3	0	5.2	0	0	4.9	3.8



N/S: Bike Path/ Youngs Way
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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File Name : 143955 JJJ
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Old South Road Bike Path From North				Old South Road From East				Youngs Way From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
11:00 AM	0	1	0	0	0	166	6	0	7	0	8	0	4	170	0	0	362
11:15 AM	0	0	0	0	0	135	3	0	4	0	6	0	4	112	0	0	264
11:30 AM	0	0	0	0	0	158	5	0	3	0	6	0	6	151	0	0	329
11:45 AM	0	0	0	0	0	135	3	0	5	0	2	0	5	145	0	0	295
Total	0	1	0	0	0	594	17	0	19	0	22	0	19	578	0	0	1250
12:00 PM	0	0	0	0	0	133	3	0	4	0	4	0	10	131	0	0	285
12:15 PM	0	0	0	0	0	129	0	0	1	0	3	0	2	113	0	0	248
12:30 PM	0	0	0	0	0	124	1	0	2	0	6	0	5	132	0	0	270
12:45 PM	0	0	0	0	0	127	3	0	3	0	5	0	8	133	0	0	279
Total	0	0	0	0	0	513	7	0	10	0	18	0	25	509	0	0	1082
01:00 PM	0	0	0	0	0	131	1	0	2	0	4	0	8	125	0	0	271
01:15 PM	0	0	0	0	0	119	1	0	3	0	7	0	6	133	0	0	269
01:30 PM	0	0	0	0	0	101	1	0	0	0	1	0	3	141	0	0	247
01:45 PM	0	0	0	0	0	115	1	0	2	0	4	0	5	114	0	0	241
Total	0	0	0	0	0	466	4	0	7	0	16	0	22	513	0	0	1028
Grand Total	0	1	0	0	0	1573	28	0	36	0	56	0	66	1600	0	0	3360
Apprch %	0	100	0	0	0	98.3	1.7	0	39.1	0	60.9	0	4	96	0	0	
Total %	0	0	0	0	0	46.8	0.8	0	1.1	0	1.7	0	2	47.6	0	0	
Cars	0	0	0	0	0	1524	26	0	35	0	56	0	65	1536	0	0	3242
% Cars	0	0	0	0	0	96.9	92.9	0	97.2	0	100	0	98.5	96	0	0	96.5
Heavy Vehicles	0	1	0	0	0	49	2	0	1	0	0	0	1	64	0	0	118
% Heavy Vehicles	0	100	0	0	0	3.1	7.1	0	2.8	0	0	0	1.5	4	0	0	3.5

	Old South Road Bike Path From North					Old South Road From East					Youngs Way From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	0	**1**	0	0	**1**	0	**166**	**6**	0	**172**	**7**	0	**8**	0	**15**	4	**170**	0	0	**174**	**362**
11:15 AM	0	0	0	0	0	0	135	3	0	138	4	0	6	0	10	4	112	0	0	116	264
11:30 AM	0	0	0	0	0	0	158	5	0	163	3	0	6	0	9	**6**	151	0	0	157	329
11:45 AM	0	0	0	0	0	0	135	3	0	138	5	0	2	0	7	5	145	0	0	150	295
Total Volume	0	1	0	0	1	0	594	17	0	611	19	0	22	0	41	19	578	0	0	597	1250
% App. Total	0	100	0	0		0	97.2	2.8	0		46.3	0	53.7	0		3.2	96.8	0	0		
PHF	.000	.250	.000	.000	.250	.000	.895	.708	.000	.888	.679	.000	.688	.000	.683	.792	.850	.000	.000	.858	.863
Cars	0	0	0	0	0	0	575	17	0	592	18	0	22	0	40	18	553	0	0	571	1203
% Cars	0	0	0	0	0	0	96.8	100	0	96.9	94.7	0	100	0	97.6	94.7	95.7	0	0	95.6	96.2
Heavy Vehicles	0	1	0	0	1	0	19	0	0	19	1	0	0	0	1	1	25	0	0	26	47
% Heavy Vehicles	0	100	0	0	100	0	3.2	0	0	3.1	5.3	0	0	0	2.4	5.3	4.3	0	0	4.4	3.8

N/S: Bike Path/ Youngs Way
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
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File Name : 143955 JJJ
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Old South Road Bike Path From North				Old South Road From East				Youngs Way From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	1	0	0	0	0	0	1	0	0	0	2	0	1	0	0	5
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Total	0	1	0	0	0	0	0	1	0	0	0	3	0	1	0	0	6
12:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
12:15 PM	0	3	0	0	0	0	0	0	0	3	0	1	0	0	0	0	7
12:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	3	0	0	0	0	0	0	0	5	0	1	0	0	0	0	9
01:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	1	0	0	0	4	0	0	0	0	0	1	0	0	0	0	6
Total	0	1	0	0	0	4	0	0	0	1	0	1	0	0	0	0	7
Grand Total	0	5	0	0	0	4	0	1	0	6	0	5	0	1	0	0	22
Apprch %	0	100	0	0	0	80	0	20	0	54.5	0	45.5	0	100	0	0	
Total %	0	22.7	0	0	0	18.2	0	4.5	0	27.3	0	22.7	0	4.5	0	0	

	Old South Road Bike Path From North					Old South Road From East					Youngs Way From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45 AM																					
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	1	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
12:15 PM	0	**3**	0	0	**3**	0	0	0	0	0	0	**3**	0	1	**4**	0	0	0	0	0	**7**
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	0	3	0	0	3	0	0	0	0	0	0	5	0	2	7	0	0	0	0	0	10
% App. Total	0	100	0	0		0	0	0	0		0	71.4	0	28.6		0	0	0	0		
PHF	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.417	.000	.500	.438	.000	.000	.000	.000	.000	.357

N/S: Bike Path/ Youngs Way
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
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File Name : 143955 JJJ
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Start Date : 7/26/2014
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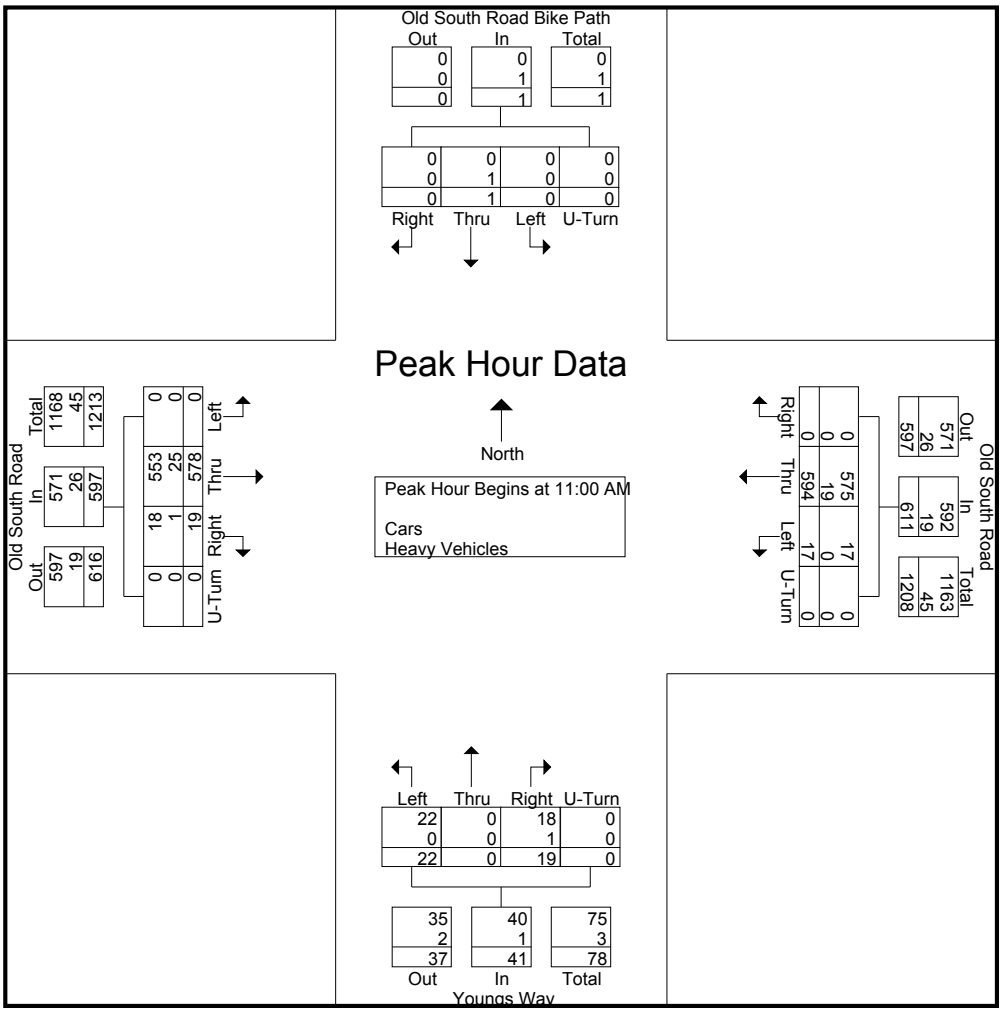
	Old South Road Bike Path From North					Old South Road From East					Youngs Way From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	0	**1**	0	0	**1**	0	**166**	**6**	0	**172**	**7**	0	**8**	0	**15**	4	**170**	0	0	**174**	**362**
11:15 AM	0	0	0	0	0	0	135	3	0	138	4	0	6	0	10	4	112	0	0	116	264
11:30 AM	0	0	0	0	0	0	158	5	0	163	3	0	6	0	9	**6**	151	0	0	157	329
11:45 AM	0	0	0	0	0	0	135	3	0	138	5	0	2	0	7	5	145	0	0	150	295
Total Volume	0	1	0	0	1	0	594	17	0	611	19	0	22	0	41	19	578	0	0	597	1250
% App. Total	0	100	0	0		0	97.2	2.8	0		46.3	0	53.7	0		3.2	96.8	0	0		
PHF	.000	.250	.000	.000	.250	.000	.895	.708	.000	.888	.679	.000	.688	.000	.683	.792	.850	.000	.000	.858	.863
Cars	0	0	0	0	0	0	575	17	0	592	18	0	22	0	40	18	553	0	0	571	1203
% Cars	0	0	0	0	0	0	96.8	100	0	96.9	94.7	0	100	0	97.6	94.7	95.7	0	0	95.6	96.2
Heavy Vehicles	0	1	0	0	1	0	19	0	0	19	1	0	0	0	1	1	25	0	0	26	47
% Heavy Vehicles	0	100	0	0	100	0	3.2	0	0	3.1	5.3	0	0	0	2.4	5.3	4.3	0	0	4.4	3.8



N/S: Bike Path/ Amelia Drive
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
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File Name : 143955 K
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Bike Path From North				Old South Road From East				Amelia Drive From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
08:00 AM	0	0	0	0	0	160	10	0	5	1	9	0	9	122	0	0	316
08:15 AM	0	0	0	0	0	148	11	0	6	0	6	0	15	148	0	0	334
08:30 AM	0	0	0	0	0	119	10	0	9	0	9	0	14	138	0	0	299
08:45 AM	0	0	0	0	0	153	8	0	2	0	7	0	12	166	0	0	348
Total	0	0	0	0	0	580	39	0	22	1	31	0	50	574	0	0	1297
09:00 AM	0	0	0	0	0	165	12	0	5	0	9	0	15	157	0	0	363
09:15 AM	0	0	0	0	0	165	13	0	9	1	17	0	10	140	0	0	355
09:30 AM	0	0	0	0	0	146	11	0	9	0	10	0	15	145	0	0	336
09:45 AM	0	0	0	0	0	155	12	0	10	0	9	0	30	141	0	0	357
Total	0	0	0	0	0	631	48	0	33	1	45	0	70	583	0	0	1411
10:00 AM	0	0	0	0	0	113	12	0	13	0	18	0	9	135	0	0	300
10:15 AM	0	0	0	0	0	118	8	0	5	0	13	0	9	123	0	0	276
10:30 AM	0	0	0	0	0	117	8	0	7	0	7	0	9	123	0	0	271
10:45 AM	0	0	0	0	0	113	3	0	7	0	11	0	14	121	0	0	269
Total	0	0	0	0	0	461	31	0	32	0	49	0	41	502	0	0	1116
Grand Total	0	0	0	0	0	1672	118	0	87	2	125	0	161	1659	0	0	3824
Apprch %	0	0	0	0	0	93.4	6.6	0	40.7	0.9	58.4	0	8.8	91.2	0	0	
Total %	0	0	0	0	0	43.7	3.1	0	2.3	0.1	3.3	0	4.2	43.4	0	0	
Cars	0	0	0	0	0	1547	112	0	83	0	121	0	156	1555	0	0	3574
% Cars	0	0	0	0	0	92.5	94.9	0	95.4	0	96.8	0	96.9	93.7	0	0	93.5
Heavy Vehicles	0	0	0	0	0	125	6	0	4	2	4	0	5	104	0	0	250
% Heavy Vehicles	0	0	0	0	0	7.5	5.1	0	4.6	100	3.2	0	3.1	6.3	0	0	6.5

	Bike Path From North					Old South Road From East					Amelia Drive From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 09:00 AM																					
09:00 AM	0	0	0	0	0	0	**165**	12	0	177	5	0	9	0	14	15	**157**	0	0	**172**	**363**
09:15 AM	0	0	0	0	0	0	165	**13**	0	**178**	9	**1**	**17**	0	**27**	10	140	0	0	150	355
09:30 AM	0	0	0	0	0	0	146	11	0	157	9	0	10	0	19	15	145	0	0	160	336
09:45 AM	0	0	0	0	0	0	155	12	0	167	**10**	0	9	0	19	**30**	141	0	0	171	357
Total Volume	0	0	0	0	0	0	631	48	0	679	33	1	45	0	79	70	583	0	0	653	1411
% App. Total	0	0	0	0		0	92.9	7.1	0		41.8	1.3	57	0		10.7	89.3	0	0		
PHF	.000	.000	.000	.000	.000	.000	.956	.923	.000	.954	.825	.250	.662	.000	.731	.583	.928	.000	.000	.949	.972
Cars	0	0	0	0	0	0	582	47	0	629	32	0	45	0	77	68	551	0	0	619	1325
% Cars	0	0	0	0	0	0	92.2	97.9	0	92.6	97.0	0	100	0	97.5	97.1	94.5	0	0	94.8	93.9
Heavy Vehicles	0	0	0	0	0	0	49	1	0	50	1	1	0	0	2	2	32	0	0	34	86
% Heavy Vehicles	0	0	0	0	0	0	7.8	2.1	0	7.4	3.0	100	0	0	2.5	2.9	5.5	0	0	5.2	6.1

N/S: Bike Path/ Amelia Drive
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

File Name : 143955 K
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Bike Path From North				Old South Road From East				Amelia Drive From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
08:00 AM	0	3	0	0	0	0	0	0	0	1	0	0	0	0	0	1	5
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	1	4
Total	0	3	0	0	0	0	0	0	1	2	0	0	2	0	0	2	10
09:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	5	7
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
09:30 AM	0	0	0	0	0	0	0	2	0	3	0	0	0	2	0	0	7
09:45 AM	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	3
Total	0	1	0	0	0	0	0	2	0	4	0	3	0	2	0	6	18
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
10:15 AM	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	5	9
10:30 AM	0	2	0	3	1	0	0	0	0	0	0	2	0	2	0	2	12
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Total	0	3	0	6	1	0	0	0	0	0	0	2	0	2	0	9	23
Grand Total	0	7	0	6	1	0	0	2	1	6	0	5	2	4	0	17	51
Apprch %	0	53.8	0	46.2	33.3	0	0	66.7	8.3	50	0	41.7	8.7	17.4	0	73.9	
Total %	0	13.7	0	11.8	2	0	0	3.9	2	11.8	0	9.8	3.9	7.8	0	33.3	

	Bike Path From North					Old South Road From East					Amelia Drive From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 09:45 AM																					
09:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	**2**	**2**	0	0	0	0	0	3
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
10:15 AM	0	1	0	**3**	4	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**	**5**	9
10:30 AM	0	**2**	0	3	**5**	**1**	0	0	0	**1**	0	0	0	2	2	0	**2**	0	2	4	**12**
Total Volume	0	4	0	6	10	1	0	0	0	1	0	0	0	4	4	0	2	0	8	10	25
% App. Total	0	40	0	60		100	0	0	0		0	0	0	100		0	20	0	80		
PHF	.000	.500	.000	.500	.500	.250	.000	.000	.000	.250	.000	.000	.000	.500	.500	.000	.250	.000	.400	.500	.521

N/S: Bike Path/ Amelia Drive
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
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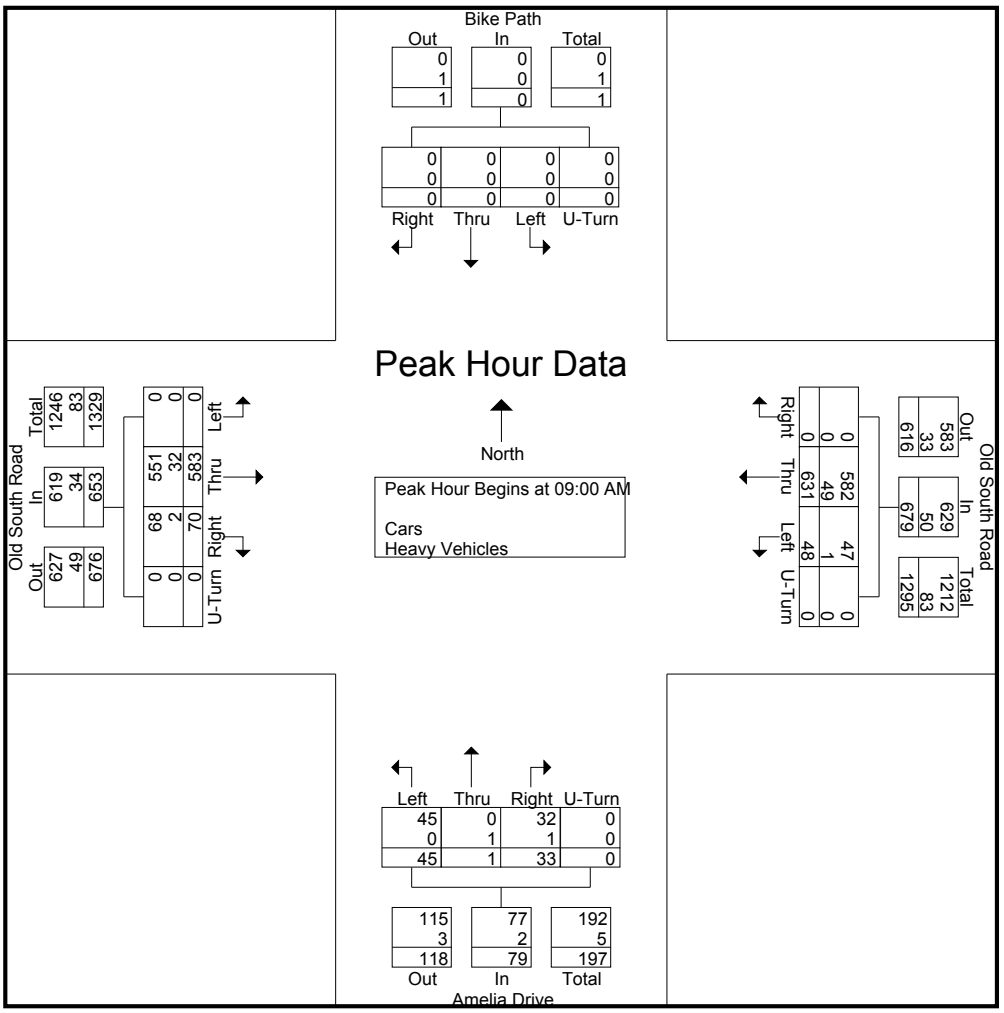
Email: datarequests@pdillc.com

File Name : 143955 K
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

	Bike Path From North					Old South Road From East					Amelia Drive From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 10:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 09:00 AM																					
09:00 AM	0	0	0	0	0	0	**165**	12	0	177	5	0	9	0	14	15	**157**	0	0	**172**	**363**
09:15 AM	0	0	0	0	0	0	165	**13**	0	**178**	9	**1**	**17**	0	**27**	10	140	0	0	150	355
09:30 AM	0	0	0	0	0	0	146	11	0	157	9	0	10	0	19	15	145	0	0	160	336
09:45 AM	0	0	0	0	0	0	155	12	0	167	**10**	0	9	0	19	**30**	141	0	0	171	357
Total Volume	0	0	0	0	0	0	631	48	0	679	33	1	45	0	79	70	583	0	0	653	1411
% App. Total	0	0	0	0		0	92.9	7.1	0		41.8	1.3	57	0		10.7	89.3	0	0		
PHF	.000	.000	.000	.000	.000	.000	.956	.923	.000	.954	.825	.250	.662	.000	.731	.583	.928	.000	.000	.949	.972
Cars	0	0	0	0	0	0	582	47	0	629	32	0	45	0	77	68	551	0	0	619	1325
% Cars	0	0	0	0	0	0	92.2	97.9	0	92.6	97.0	0	100	0	97.5	97.1	94.5	0	0	94.8	93.9
Heavy Vehicles	0	0	0	0	0	0	49	1	0	50	1	1	0	0	2	2	32	0	0	34	86
% Heavy Vehicles	0	0	0	0	0	0	7.8	2.1	0	7.4	3.0	100	0	0	2.5	2.9	5.5	0	0	5.2	6.1



N/S: Bike Path/ Amelia Drive
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

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File Name : 143955 KK
Site Code : TBA
Start Date : 7/24/2014

Groups Printed- Cars - Heavy Vehicles

	Bike Path From North				Old South Road From East				Amelia Drive From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
03:00 PM	0	0	0	0	0	125	6	0	8	0	18	0	14	139	0	0	310
03:15 PM	0	0	0	0	0	138	9	0	7	0	12	0	23	147	0	0	336
03:30 PM	0	0	0	0	0	107	5	0	7	0	10	0	14	143	0	0	286
03:45 PM	0	0	0	0	0	131	2	0	10	0	11	0	17	157	0	0	328
Total	0	0	0	0	0	501	22	0	32	0	51	0	68	586	0	0	1260
04:00 PM	0	0	0	0	0	130	10	0	9	0	17	0	18	152	0	0	336
04:15 PM	0	0	0	0	0	134	13	0	13	0	9	0	15	171	0	0	355
04:30 PM	0	0	0	0	0	157	12	0	8	0	13	0	14	163	0	0	367
04:45 PM	0	0	0	0	0	137	11	0	14	0	10	0	20	178	0	0	370
Total	0	0	0	0	0	558	46	0	44	0	49	0	67	664	0	0	1428
05:00 PM	0	0	0	0	0	154	17	0	18	0	10	0	24	162	0	0	385
05:15 PM	0	0	0	0	0	137	14	0	8	0	10	0	17	159	0	0	345
05:30 PM	0	0	0	0	0	151	6	0	6	0	13	0	11	137	0	0	324
05:45 PM	0	0	0	0	0	104	5	0	6	0	4	0	15	119	0	0	253
Total	0	0	0	0	0	546	42	0	38	0	37	0	67	577	0	0	1307
Grand Total	0	0	0	0	0	1605	110	0	114	0	137	0	202	1827	0	0	3995
Apprch %	0	0	0	0	0	93.6	6.4	0	45.4	0	54.6	0	10	90	0	0	
Total %	0	0	0	0	0	40.2	2.8	0	2.9	0	3.4	0	5.1	45.7	0	0	
Cars	0	0	0	0	0	1559	108	0	112	0	137	0	200	1707	0	0	3823
% Cars	0	0	0	0	0	97.1	98.2	0	98.2	0	100	0	99	93.4	0	0	95.7
Heavy Vehicles	0	0	0	0	0	46	2	0	2	0	0	0	2	120	0	0	172
% Heavy Vehicles	0	0	0	0	0	2.9	1.8	0	1.8	0	0	0	1	6.6	0	0	4.3

	Bike Path From North					Old South Road From East					Amelia Drive From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	0	0	0	0	0	134	13	0	147	13	0	9	0	22	15	171	0	0	186	355
04:30 PM	0	0	0	0	0	0	**157**	12	0	169	8	0	**13**	0	21	14	163	0	0	177	367
04:45 PM	0	0	0	0	0	0	137	11	0	148	14	0	10	0	24	20	**178**	0	0	**198**	370
05:00 PM	0	0	0	0	0	0	154	**17**	0	**171**	**18**	0	10	0	**28**	**24**	162	0	0	186	**385**
Total Volume	0	0	0	0	0	0	582	53	0	635	53	0	42	0	95	73	674	0	0	747	1477
% App. Total	0	0	0	0		0	91.7	8.3	0		55.8	0	44.2	0		9.8	90.2	0	0		
PHF	.000	.000	.000	.000	.000	.000	.927	.779	.000	.928	.736	.000	.808	.000	.848	.760	.947	.000	.000	.943	.959
Cars	0	0	0	0	0	0	568	51	0	619	52	0	42	0	94	73	641	0	0	714	1427
% Cars	0	0	0	0	0	0	97.6	96.2	0	97.5	98.1	0	100	0	98.9	100	95.1	0	0	95.6	96.6
Heavy Vehicles	0	0	0	0	0	0	14	2	0	16	1	0	0	0	1	0	33	0	0	33	50
% Heavy Vehicles	0	0	0	0	0	0	2.4	3.8	0	2.5	1.9	0	0	0	1.1	0	4.9	0	0	4.4	3.4

N/S: Bike Path/ Amelia Drive
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
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File Name : 143955 KK
Site Code : TBA
Start Date : 7/24/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Bike Path From North				Old South Road From East				Amelia Drive From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
03:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	3
03:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	4
Total	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	6	8
04:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
04:15 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4
04:30 PM	0	0	2	2	0	0	0	4	0	3	0	0	0	0	0	1	12
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Total	0	2	2	2	0	0	0	4	0	4	0	1	0	1	0	3	19
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	2	4
Total	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	2	5
Grand Total	0	3	2	2	0	0	0	5	0	6	0	1	0	2	0	11	32
Apprch %	0	42.9	28.6	28.6	0	0	0	100	0	85.7	0	14.3	0	15.4	0	84.6	
Total %	0	9.4	6.2	6.2	0	0	0	15.6	0	18.8	0	3.1	0	6.2	0	34.4	

	Bike Path From North					Old South Road From East					Amelia Drive From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	**3**	**3**	4
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	**1**	0	0	1	2
04:15 PM	0	**2**	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4
04:30 PM	0	0	**2**	**2**	**4**	0	0	0	**4**	**4**	0	**3**	0	0	**3**	0	0	0	1	1	**12**
Total Volume	0	2	2	2	6	0	0	0	4	4	0	5	0	0	5	0	1	0	6	7	22
% App. Total	0	33.3	33.3	33.3		0	0	0	100		0	100	0	0		0	14.3	0	85.7		
PHF	.000	.250	.250	.250	.375	.000	.000	.000	.250	.250	.000	.417	.000	.000	.417	.000	.250	.000	.500	.583	.458

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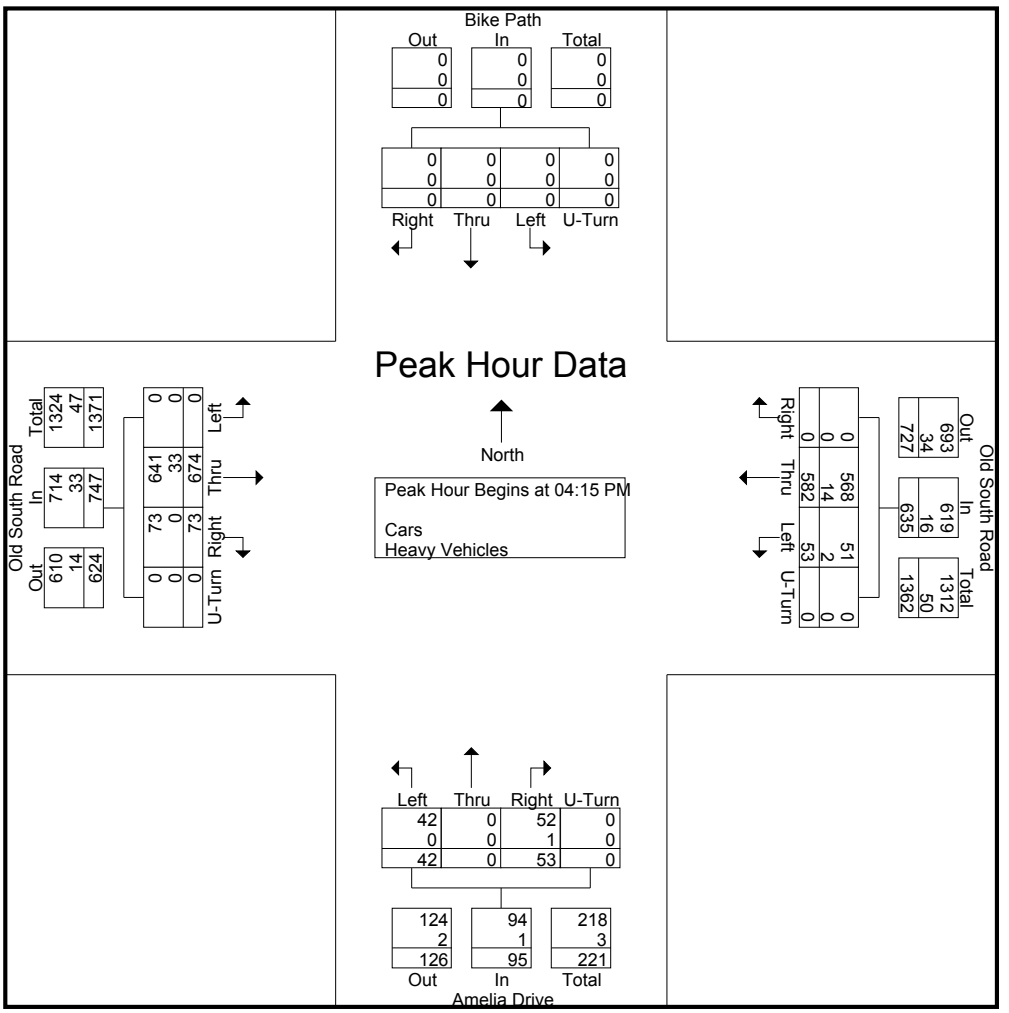
	Bike Path From North					Old South Road From East					Amelia Drive From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	0	0	0	0	0	134	13	0	147	13	0	9	0	22	15	171	0	0	186	355
04:30 PM	0	0	0	0	0	0	**157**	12	0	169	8	0	**13**	0	21	14	163	0	0	177	367
04:45 PM	0	0	0	0	0	0	137	11	0	148	14	0	10	0	24	20	**178**	0	0	**198**	370
05:00 PM	0	0	0	0	0	0	154	**17**	0	**171**	**18**	0	10	0	**28**	**24**	162	0	0	186	**385**
Total Volume	0	0	0	0	0	0	582	53	0	635	53	0	42	0	95	73	674	0	0	747	1477
% App. Total	0	0	0	0		0	91.7	8.3	0		55.8	0	44.2	0		9.8	90.2	0	0		
PHF	.000	.000	.000	.000	.000	.000	.927	.779	.000	.928	.736	.000	.808	.000	.848	.760	.947	.000	.000	.943	.959
Cars	0	0	0	0	0	0	568	51	0	619	52	0	42	0	94	73	641	0	0	714	1427
% Cars	0	0	0	0	0	0	97.6	96.2	0	97.5	98.1	0	100	0	98.9	100	95.1	0	0	95.6	96.6
Heavy Vehicles	0	0	0	0	0	0	14	2	0	16	1	0	0	0	1	0	33	0	0	33	50
% Heavy Vehicles	0	0	0	0	0	0	2.4	3.8	0	2.5	1.9	0	0	0	1.1	0	4.9	0	0	4.4	3.4



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City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 KKK
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Bike Path From North				Old South Road From East				Amelia Drive From South				Old South Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
11:00 AM	0	0	0	0	0	163	11	0	17	0	16	0	14	155	0	0	376
11:15 AM	0	0	0	0	0	127	14	1	10	0	10	0	14	107	0	0	283
11:30 AM	0	0	0	0	0	155	9	0	9	0	6	0	20	153	0	1	353
11:45 AM	0	0	0	0	0	125	10	0	11	0	15	0	11	134	0	0	306
Total	0	0	0	0	0	570	44	1	47	0	47	0	59	549	0	1	1318
12:00 PM	0	0	0	0	0	128	8	0	6	0	11	0	19	137	0	0	309
12:15 PM	0	0	0	0	0	129	2	0	4	0	8	0	12	114	0	1	270
12:30 PM	0	0	0	0	0	127	6	0	13	0	13	0	13	122	0	0	294
12:45 PM	0	0	0	0	0	129	2	0	6	0	6	0	8	137	0	0	288
Total	0	0	0	0	0	513	18	0	29	0	38	0	52	510	0	1	1161
01:00 PM	0	0	0	0	0	131	5	0	5	0	9	0	17	124	0	0	291
01:15 PM	0	0	0	0	0	119	5	0	5	0	10	0	11	132	0	0	282
01:30 PM	0	0	0	0	0	100	3	0	8	0	11	0	13	140	0	0	275
01:45 PM	0	0	0	0	0	114	4	0	8	1	11	0	9	117	0	0	264
Total	0	0	0	0	0	464	17	0	26	1	41	0	50	513	0	0	1112
Grand Total	0	0	0	0	0	1547	79	1	102	1	126	0	161	1572	0	2	3591
Apprch %	0	0	0	0	0	95.1	4.9	0.1	44.5	0.4	55	0	9.3	90.6	0	0.1	
Total %	0	0	0	0	0	43.1	2.2	0	2.8	0	3.5	0	4.5	43.8	0	0.1	
Cars	0	0	0	0	0	1499	77	1	98	1	126	0	159	1509	0	2	3472
% Cars	0	0	0	0	0	96.9	97.5	100	96.1	100	100	0	98.8	96	0	100	96.7
Heavy Vehicles	0	0	0	0	0	48	2	0	4	0	0	0	2	63	0	0	119
% Heavy Vehicles	0	0	0	0	0	3.1	2.5	0	3.9	0	0	0	1.2	4	0	0	3.3

	Bike Path From North					Old South Road From East					Amelia Drive From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	0	0	0	0	0	0	**163**	11	0	**174**	**17**	0	**16**	0	**33**	14	**155**	0	0	169	**376**
11:15 AM	0	0	0	0	0	0	127	**14**	**1**	142	10	0	10	0	20	14	107	0	0	121	283
11:30 AM	0	0	0	0	0	0	155	9	0	164	9	0	6	0	15	**20**	153	0	**1**	**174**	353
11:45 AM	0	0	0	0	0	0	125	10	0	135	11	0	15	0	26	11	134	0	0	145	306
Total Volume	0	0	0	0	0	0	570	44	1	615	47	0	47	0	94	59	549	0	1	609	1318
% App. Total	0	0	0	0		0	92.7	7.2	0.2		50	0	50	0		9.7	90.1	0	0.2		
PHF	.000	.000	.000	.000	.000	.000	.874	.786	.250	.884	.691	.000	.734	.000	.712	.738	.885	.000	.250	.875	.876
Cars	0	0	0	0	0	0	557	42	1	600	43	0	47	0	90	57	525	0	1	583	1273
% Cars	0	0	0	0	0	0	97.7	95.5	100	97.6	91.5	0	100	0	95.7	96.6	95.6	0	100	95.7	96.6
Heavy Vehicles	0	0	0	0	0	0	13	2	0	15	4	0	0	0	4	2	24	0	0	26	45
% Heavy Vehicles	0	0	0	0	0	0	2.3	4.5	0	2.4	8.5	0	0	0	4.3	3.4	4.4	0	0	4.3	3.4

PRECISION
D A T A
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: Bike Path/ Amelia Drive
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 KKK
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Peds and Bicycles

	Bike Path From North				Old South Road From East				Amelia Drive From South				Old South Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4
11:30 AM	0	2	0	0	1	0	0	0	0	0	0	1	0	0	0	0	4
11:45 AM	0	3	0	0	1	1	0	0	0	0	1	0	0	0	0	1	7
Total	0	8	0	0	2	1	0	0	0	0	1	1	0	0	0	2	15
12:00 PM	0	0	0	3	3	0	0	3	0	0	0	0	0	0	0	0	9
12:15 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	3	3	0	0	4	0	0	0	1	0	0	0	0	12
01:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	2	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4
01:45 PM	0	0	0	0	0	3	0	0	0	1	0	2	0	0	0	6	12
Total	2	1	0	0	1	3	0	0	0	1	0	2	1	0	0	6	17
Grand Total	2	10	0	3	6	4	0	4	0	1	1	4	1	0	0	8	44
Apprch %	13.3	66.7	0	20	42.9	28.6	0	28.6	0	16.7	16.7	66.7	11.1	0	0	88.9	
Total %	4.5	22.7	0	6.8	13.6	9.1	0	9.1	0	2.3	2.3	9.1	2.3	0	0	18.2	

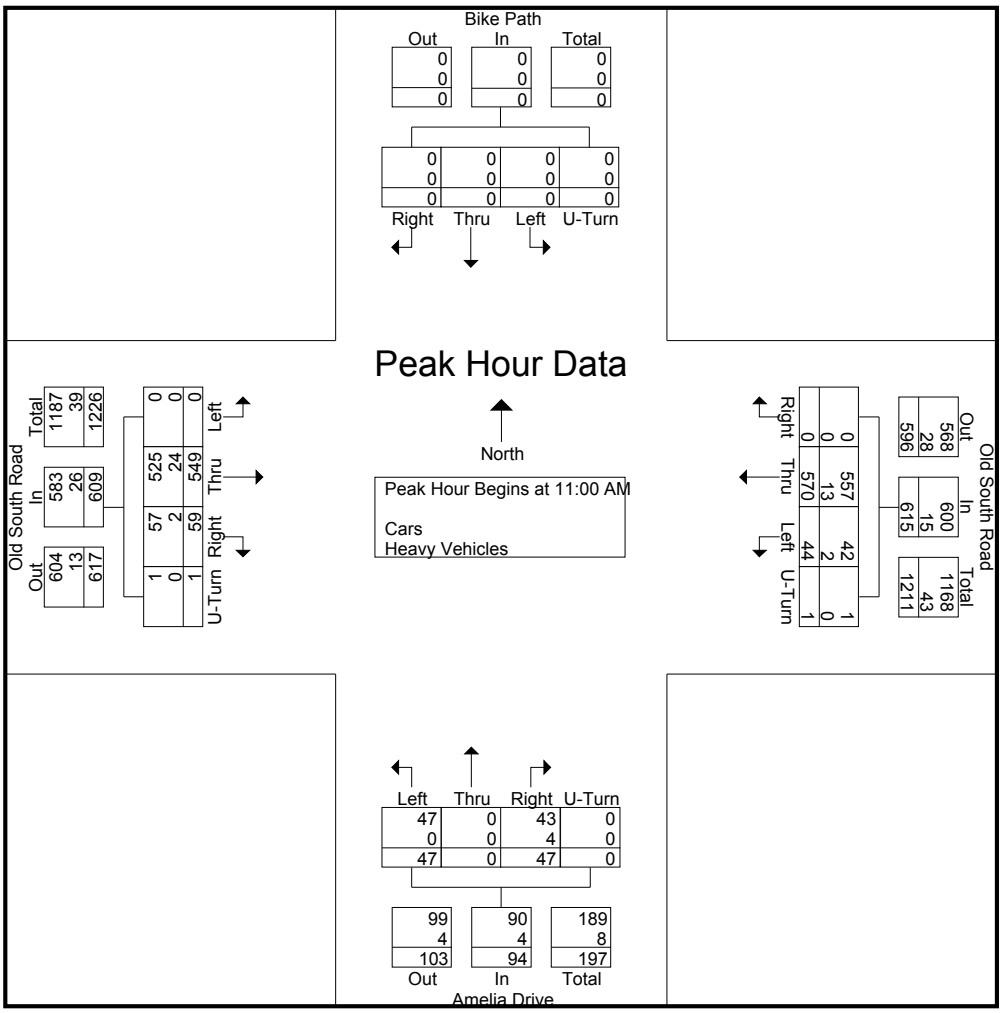
	Bike Path From North					Old South Road From East					Amelia Drive From South					Old South Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:15 AM																					
11:15 AM	0	**3**	0	0	**3**	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**	4
11:30 AM	0	2	0	0	2	1	0	0	0	1	0	0	0	**1**	**1**	0	0	0	0	0	4
11:45 AM	0	3	0	0	3	1	**1**	0	0	2	0	0	**1**	0	1	0	0	0	1	1	7
12:00 PM	0	0	0	**3**	3	**3**	0	0	**3**	**6**	0	0	0	0	0	0	0	0	0	0	**9**
Total Volume	0	8	0	3	11	5	1	0	3	9	0	0	1	1	2	0	0	0	2	2	24
% App. Total	0	72.7	0	27.3		55.6	11.1	0	33.3		0	0	50	50		0	0	0	100		
PHF	.000	.667	.000	.250	.917	.417	.250	.000	.250	.375	.000	.000	.250	.250	.500	.000	.000	.000	.500	.500	.667

PRECISION
D A T A
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: Bike Path/ Amelia Drive
E/W: Old South Road
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 KKK
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

	Bike Path From North					Old South Road From East					Amelia Drive From South					Old South Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	0	0	0	0	0	0	**163**	11	0	**174**	**17**	0	**16**	0	**33**	14	**155**	0	0	169	**376**
11:15 AM	0	0	0	0	0	0	127	**14**	**1**	142	10	0	10	0	20	14	107	0	0	121	283
11:30 AM	0	0	0	0	0	0	155	9	0	164	9	0	6	0	15	**20**	153	0	**1**	**174**	353
11:45 AM	0	0	0	0	0	0	125	10	0	135	11	0	15	0	26	11	134	0	0	145	306
Total Volume	0	0	0	0	0	0	570	44	1	615	47	0	47	0	94	59	549	0	1	609	1318
% App. Total	0	0	0	0		0	92.7	7.2	0.2		50	0	50	0		9.7	90.1	0	0.2		
PHF	.000	.000	.000	.000	.000	.000	.874	.786	.250	.884	.691	.000	.734	.000	.712	.738	.885	.000	.250	.875	.876
Cars	0	0	0	0	0	0	557	42	1	600	43	0	47	0	90	57	525	0	1	583	1273
% Cars	0	0	0	0	0	0	97.7	95.5	100	97.6	91.5	0	100	0	95.7	96.6	95.6	0	100	95.7	96.6
Heavy Vehicles	0	0	0	0	0	0	13	2	0	15	4	0	0	0	4	2	24	0	0	26	45
% Heavy Vehicles	0	0	0	0	0	0	2.3	4.5	0	2.4	8.5	0	0	0	4.3	3.4	4.4	0	0	4.3	3.4



Nantucket Planning and Economic Development Commission (MA)
1 East Chestnut St.

Nantucket, Massachusetts, United States 12345
508 228 7237 mburns@nantucket-ma.gov

Count Name: Milestone Rotary Roundabout
Site Code:
Start Date: 08/13/2015

Turning Movement Peak Hour Data (8:45 AM)

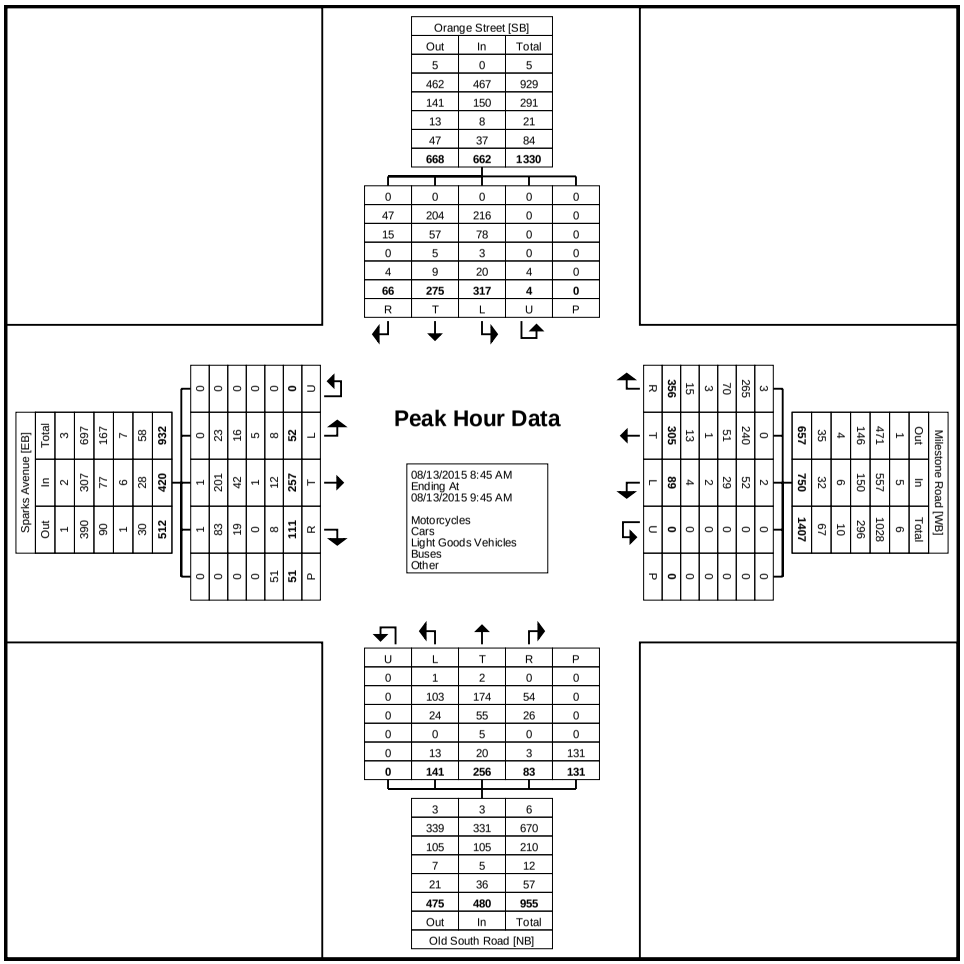
Start Time	Orange Street Southbound						Milestone Road Westbound						Old South Road Northbound						Sparks Avenue Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:45 AM	15	66	86	0	0	167	104	87	28	0	0	219	18	70	34	0	29	122	28	65	8	0	10	101	609
9:00 AM	24	62	90	4	0	180	83	80	19	0	0	182	16	66	32	0	31	114	28	69	10	0	12	107	583
9:15 AM	12	71	74	0	0	157	84	66	18	0	0	168	31	53	40	0	33	124	36	61	10	0	16	107	556
9:30 AM	15	76	67	0	0	158	85	72	24	0	0	181	18	67	35	0	38	120	19	62	24	0	13	105	564
Total	66	275	317	4	0	662	356	305	89	0	0	750	83	256	141	0	131	480	111	257	52	0	51	420	2312
Approach %	10.0	41.5	47.9	0.6	-	-	47.5	40.7	11.9	0.0	-	-	17.3	53.3	29.4	0.0	-	-	26.4	61.2	12.4	0.0	-	-	-
Total %	2.9	11.9	13.7	0.2	-	28.6	15.4	13.2	3.8	0.0	-	32.4	3.6	11.1	6.1	0.0	-	20.8	4.8	11.1	2.2	0.0	-	18.2	-
PHF	0.688	0.905	0.881	0.250	-	0.919	0.856	0.876	0.795	0.000	-	0.856	0.669	0.914	0.881	0.000	-	0.968	0.771	0.931	0.542	0.000	-	0.981	0.949
Motorcycles	0	0	0	0	-	0	3	0	2	0	-	5	0	2	1	0	-	3	1	1	0	0	-	2	10
% Motorcycles	0.0	0.0	0.0	0.0	-	0.0	0.8	0.0	2.2	-	-	0.7	0.0	0.8	0.7	-	-	0.6	0.9	0.4	0.0	-	-	0.5	0.4
Cars	47	204	216	0	-	467	265	240	52	0	-	557	54	174	103	0	-	331	83	201	23	0	-	307	1662
% Cars	71.2	74.2	68.1	0.0	-	70.5	74.4	78.7	58.4	-	-	74.3	65.1	68.0	73.0	-	-	69.0	74.8	78.2	44.2	-	-	73.1	71.9
Light Goods Vehicles	15	57	78	0	-	150	70	51	29	0	-	150	26	55	24	0	-	105	19	42	16	0	-	77	482
% Light Goods Vehicles	22.7	20.7	24.6	0.0	-	22.7	19.7	16.7	32.6	-	-	20.0	31.3	21.5	17.0	-	-	21.9	17.1	16.3	30.8	-	-	18.3	20.8
Buses	0	5	3	0	-	8	3	1	2	0	-	6	0	5	0	0	-	5	0	1	5	0	-	6	25
% Buses	0.0	1.8	0.9	0.0	-	1.2	0.8	0.3	2.2	-	-	0.8	0.0	2.0	0.0	-	-	1.0	0.0	0.4	9.6	-	-	1.4	1.1
Single-Unit Trucks	2	4	14	0	-	20	13	11	4	0	-	28	3	13	13	0	-	29	8	11	3	0	-	22	99
% Single-Unit Trucks	3.0	1.5	4.4	0.0	-	3.0	3.7	3.6	4.5	-	-	3.7	3.6	5.1	9.2	-	-	6.0	7.2	4.3	5.8	-	-	5.2	4.3
Articulated Trucks	0	0	1	0	-	1	1	1	0	0	-	2	0	0	0	0	-	0	0	1	0	0	-	1	4
% Articulated Trucks	0.0	0.0	0.3	0.0	-	0.2	0.3	0.3	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.4	0.0	-	-	0.2	0.2
Bicycles on Road	2	5	5	4	-	16	1	1	0	0	-	2	0	7	0	0	-	7	0	0	5	0	-	5	30
% Bicycles on Road	3.0	1.8	1.6	100.0	-	2.4	0.3	0.3	0.0	-	-	0.3	0.0	2.7	0.0	-	-	1.5	0.0	0.0	9.6	-	-	1.2	1.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	100	-	-	-	-	-	21	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76.3	-	-	-	-	-	41.2	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	31	-	-	-	-	-	30	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23.7	-	-	-	-	-	58.8	-	-

Nantucket Planning and Economic Development Commission (MA)
1 East Chestnut St.

Nantucket, Massachusetts, United States 12345
508 228 7237 mburns@nantucket-ma.gov

Count Name: Milestone Rotary Roundabout
Site Code:
Start Date: 08/13/2015

1265 of 1520



Turning Movement Peak Hour Data Plot (8:45 AM)

Nantucket Planning and Economic Development Commission (MA)
1 East Chestnut St.

Nantucket, Massachusetts, United States 12345
508 228 7237 mburns@nantucket-ma.gov

Count Name: Milestone Rotary Roundabout
Site Code:
Start Date: 08/13/2015

Turning Movement Peak Hour Data (4:15 PM)

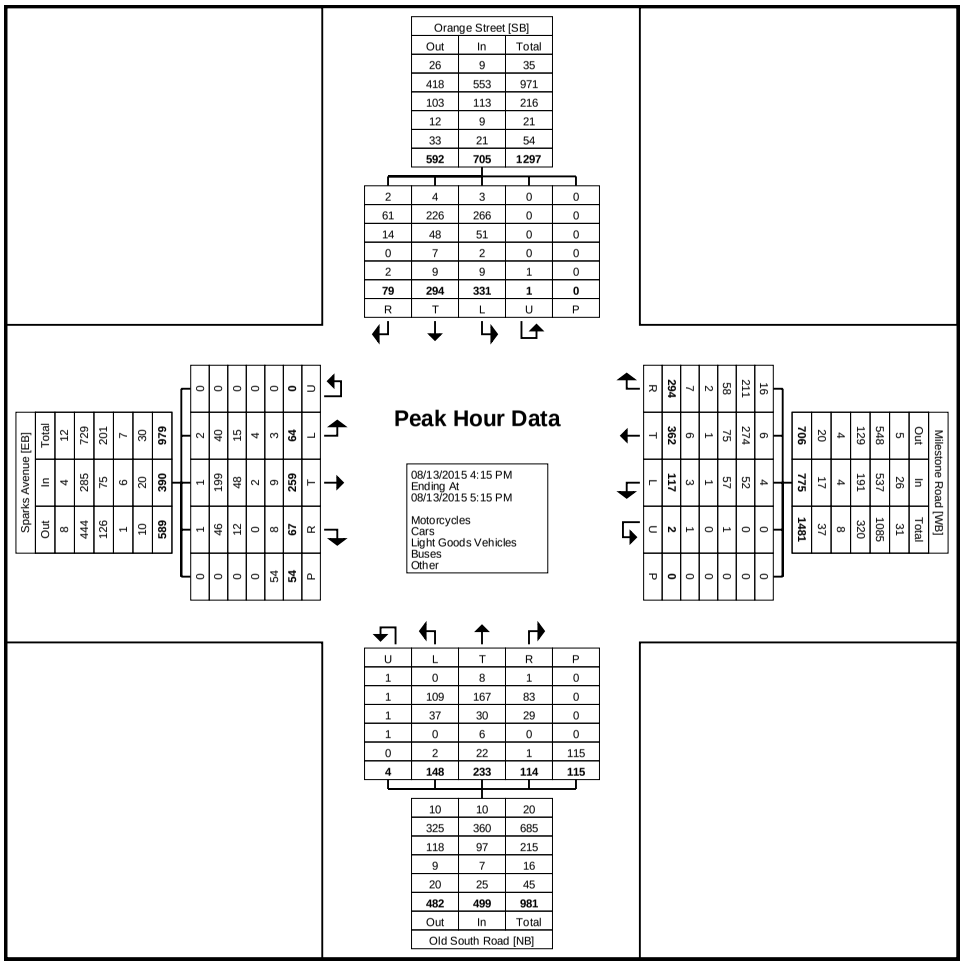
Start Time	Orange Street Southbound						Milestone Road Westbound						Old South Road Northbound						Sparks Avenue Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:15 PM	18	75	87	0	0	180	74	90	29	0	0	193	24	72	30	0	27	126	19	68	16	0	12	103	602
4:30 PM	21	78	72	1	0	172	74	103	19	1	0	197	30	59	35	1	34	125	20	68	16	0	14	104	598
4:45 PM	21	75	76	0	0	172	75	87	31	1	0	194	32	52	42	2	26	128	15	59	18	0	21	92	586
5:00 PM	19	66	96	0	0	181	71	82	38	0	0	191	28	50	41	1	28	120	13	64	14	0	7	91	583
Total	79	294	331	1	0	705	294	362	117	2	0	775	114	233	148	4	115	499	67	259	64	0	54	390	2369
Approach %	11.2	41.7	47.0	0.1	-	-	37.9	46.7	15.1	0.3	-	-	22.8	46.7	29.7	0.8	-	-	17.2	66.4	16.4	0.0	-	-	-
Total %	3.3	12.4	14.0	0.0	-	29.8	12.4	15.3	4.9	0.1	-	32.7	4.8	9.8	6.2	0.2	-	21.1	2.8	10.9	2.7	0.0	-	16.5	-
PHF	0.940	0.942	0.862	0.250	-	0.974	0.980	0.879	0.770	0.500	-	0.984	0.891	0.809	0.881	0.500	-	0.975	0.838	0.952	0.889	0.000	-	0.938	0.984
Motorcycles	2	4	3	0	-	9	16	6	4	0	-	26	1	8	0	1	-	10	1	1	2	0	-	4	49
% Motorcycles	2.5	1.4	0.9	0.0	-	1.3	5.4	1.7	3.4	0.0	-	3.4	0.9	3.4	0.0	25.0	-	2.0	1.5	0.4	3.1	-	-	1.0	2.1
Cars	61	226	266	0	-	553	211	274	52	0	-	537	83	167	109	1	-	360	46	199	40	0	-	285	1735
% Cars	77.2	76.9	80.4	0.0	-	78.4	71.8	75.7	44.4	0.0	-	69.3	72.8	71.7	73.6	25.0	-	72.1	68.7	76.8	62.5	-	-	73.1	73.2
Light Goods Vehicles	14	48	51	0	-	113	58	75	57	1	-	191	29	30	37	1	-	97	12	48	15	0	-	75	476
% Light Goods Vehicles	17.7	16.3	15.4	0.0	-	16.0	19.7	20.7	48.7	50.0	-	24.6	25.4	12.9	25.0	25.0	-	19.4	17.9	18.5	23.4	-	-	19.2	20.1
Buses	0	7	2	0	-	9	2	1	1	0	-	4	0	6	0	1	-	7	0	2	4	0	-	6	26
% Buses	0.0	2.4	0.6	0.0	-	1.3	0.7	0.3	0.9	0.0	-	0.5	0.0	2.6	0.0	25.0	-	1.4	0.0	0.8	6.3	-	-	1.5	1.1
Single-Unit Trucks	0	8	6	0	-	14	3	6	3	0	-	12	0	4	1	0	-	5	7	8	2	0	-	17	48
% Single-Unit Trucks	0.0	2.7	1.8	0.0	-	2.0	1.0	1.7	2.6	0.0	-	1.5	0.0	1.7	0.7	0.0	-	1.0	10.4	3.1	3.1	-	-	4.4	2.0
Articulated Trucks	0	1	2	0	-	3	0	0	0	1	-	1	1	1	1	0	-	3	1	0	0	0	-	1	8
% Articulated Trucks	0.0	0.3	0.6	0.0	-	0.4	0.0	0.0	0.0	50.0	-	0.1	0.9	0.4	0.7	0.0	-	0.6	1.5	0.0	0.0	-	-	0.3	0.3
Bicycles on Road	2	0	1	1	-	4	4	0	0	0	-	4	0	17	0	0	-	17	0	1	1	0	-	2	27
% Bicycles on Road	2.5	0.0	0.3	100.0	-	0.6	1.4	0.0	0.0	0.0	-	0.5	0.0	7.3	0.0	0.0	-	3.4	0.0	0.4	1.6	-	-	0.5	1.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	85	-	-	-	-	-	36	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73.9	-	-	-	-	-	66.7	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	30	-	-	-	-	-	18	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.1	-	-	-	-	-	33.3	-	-

Nantucket Planning and Economic Development Commission (MA)
1 East Chestnut St.

Nantucket, Massachusetts, United States 12345
508 228 7237 mburns@nantucket-ma.gov

Count Name: Milestone Rotary Roundabout
Site Code:
Start Date: 08/13/2015
Page No: 9

1267 of 1520



Turning Movement Peak Hour Data Plot (4:15 PM)

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Orange Street/ Old South Road
E/W: Milestone Road/ Sparks Avenue
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 LLL
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Orange Street From North				Milestone Road From East				Old South Road From South				Sparks Avenue From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
11:00 AM	25	72	49	1	68	85	20	0	24	64	39	1	26	63	12	0	549
11:15 AM	20	71	38	0	90	95	22	1	24	67	39	0	21	72	12	0	572
11:30 AM	29	81	74	2	74	96	25	1	32	66	32	0	29	66	6	0	613
11:45 AM	18	61	67	2	81	92	18	0	22	60	43	0	24	62	13	0	563
Total	92	285	228	5	313	368	85	2	102	257	153	1	100	263	43	0	2297
12:00 PM	24	70	68	5	87	103	17	1	23	47	40	0	34	57	12	0	588
12:15 PM	15	64	78	1	75	90	19	2	25	52	37	0	21	68	9	0	556
12:30 PM	15	65	70	0	58	75	14	2	14	56	43	0	21	68	10	0	511
12:45 PM	19	58	85	0	57	78	20	0	20	62	26	0	25	68	10	0	528
Total	73	257	301	6	277	346	70	5	82	217	146	0	101	261	41	0	2183
01:00 PM	13	73	53	1	53	62	15	0	20	65	31	1	36	56	7	0	486
01:15 PM	25	70	49	1	63	67	19	0	14	50	31	0	41	61	8	0	499
01:30 PM	22	58	51	1	45	67	10	0	30	39	30	0	39	64	8	0	464
01:45 PM	15	51	57	0	50	47	12	1	28	48	37	0	39	55	10	0	450
Total	75	252	210	3	211	243	56	1	92	202	129	1	155	236	33	0	1899
Grand Total	240	794	739	14	801	957	211	8	276	676	428	2	356	760	117	0	6379
Apprch %	13.4	44.4	41.4	0.8	40.5	48.4	10.7	0.4	20	48.9	31	0.1	28.9	61.6	9.5	0	
Total %	3.8	12.4	11.6	0.2	12.6	15	3.3	0.1	4.3	10.6	6.7	0	5.6	11.9	1.8	0	
Cars	236	756	722	14	789	944	208	8	273	644	421	2	344	733	102	0	6196
% Cars	98.3	95.2	97.7	100	98.5	98.6	98.6	100	98.9	95.3	98.4	100	96.6	96.4	87.2	0	97.1
Heavy Vehicles	4	38	17	0	12	13	3	0	3	32	7	0	12	27	15	0	183
% Heavy Vehicles	1.7	4.8	2.3	0	1.5	1.4	1.4	0	1.1	4.7	1.6	0	3.4	3.6	12.8	0	2.9

	Orange Street From North					Milestone Road From East					Old South Road From South					Sparks Avenue From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:15 AM																					
11:15 AM	20	71	38	0	129	90	95	22	1	208	24	67	39	0	130	21	72	12	0	105	572
11:30 AM	29	81	74	2	186	74	96	25	1	196	32	66	32	0	130	29	66	6	0	101	613
11:45 AM	18	61	67	2	148	81	92	18	0	191	22	60	43	0	125	24	62	13	0	99	563
12:00 PM	24	70	68	5	167	87	103	17	1	208	23	47	40	0	110	34	57	12	0	103	588
Total Volume	91	283	247	9	630	332	386	82	3	803	101	240	154	0	495	108	257	43	0	408	2336
% App. Total	14.4	44.9	39.2	1.4		41.3	48.1	10.2	0.4		20.4	48.5	31.1	0		26.5	63	10.5	0		
PHF	.784	.873	.834	.450	.847	.922	.937	.820	.750	.965	.789	.896	.895	.000	.952	.794	.892	.827	.000	.971	.953
Cars	91	271	243	9	614	330	382	80	3	795	99	231	153	0	483	103	244	38	0	385	2277
% Cars	100	95.8	98.4	100	97.5	99.4	99.0	97.6	100	99.0	98.0	96.3	99.4	0	97.6	95.4	94.9	88.4	0	94.4	97.5
Heavy Vehicles	0	12	4	0	16	2	4	2	0	8	2	9	1	0	12	5	13	5	0	23	59
% Heavy Vehicles	0	4.2	1.6	0	2.5	0.6	1.0	2.4	0	1.0	2.0	3.8	0.6	0	2.4	4.6	5.1	11.6	0	5.6	2.5

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Orange Street/ Old South Road
E/W: Milestone Road/ Sparks Avenue
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 LLL
Site Code : TBA
Start Date : 7/26/2014

Groups Printed- Peds and Bicycles

	Orange Street From North				Milestone Road From East				Old South Road From South				Sparks Avenue From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
11:00 AM	0	0	5	0	2	0	0	0	0	0	0	5	9	0	0	9	30
11:15 AM	0	0	3	0	0	2	0	0	0	0	0	7	1	0	0	2	15
11:30 AM	0	0	0	0	5	0	0	0	0	0	0	4	0	0	0	10	19
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	10	19
Total	0	0	8	0	7	2	0	0	0	0	0	25	10	0	0	31	83
12:00 PM	10	0	0	0	2	0	0	0	0	0	0	2	0	15	0	4	33
12:15 PM	0	0	2	0	0	1	0	0	0	0	0	1	1	24	0	0	29
12:30 PM	2	4	2	0	1	0	0	0	0	0	0	1	8	7	0	2	27
12:45 PM	4	1	0	0	0	0	0	0	0	0	0	1	5	5	1	2	19
Total	16	5	4	0	3	1	0	0	0	0	0	5	14	51	1	8	108
01:00 PM	2	1	0	0	2	1	0	0	0	0	0	0	3	5	2	4	20
01:15 PM	0	0	7	4	2	0	0	0	0	0	0	1	2	11	0	0	27
01:30 PM	2	1	1	0	0	0	0	0	0	0	0	8	0	17	0	3	32
01:45 PM	0	0	1	0	1	0	0	0	0	0	0	5	7	3	0	2	19
Total	4	2	9	4	5	1	0	0	0	0	0	14	12	36	2	9	98
Grand Total	20	7	21	4	15	4	0	0	0	0	0	44	36	87	3	48	289
Apprch %	38.5	13.5	40.4	7.7	78.9	21.1	0	0	0	0	0	100	20.7	50	1.7	27.6	
Total %	6.9	2.4	7.3	1.4	5.2	1.4	0	0	0	0	0	15.2	12.5	30.1	1	16.6	

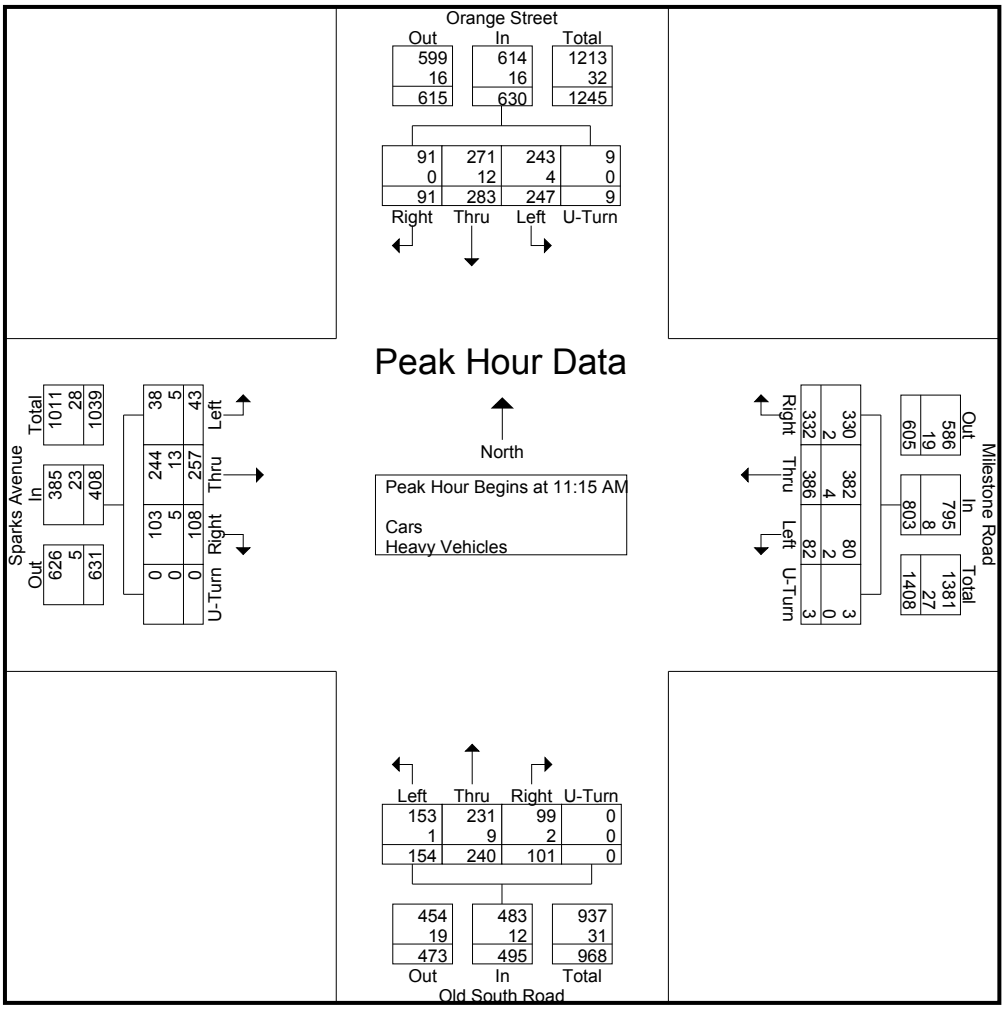
	Orange Street From North					Milestone Road From East					Old South Road From South					Sparks Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45 AM																					
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	9	9	0	0	0	10	10	19
12:00 PM	10	0	0	0	10	2	0	0	0	2	0	0	0	2	2	0	15	0	4	19	33
12:15 PM	0	0	2	0	2	0	1	0	0	1	0	0	0	1	1	1	24	0	0	25	29
12:30 PM	2	4	2	0	8	1	0	0	0	1	0	0	0	1	1	8	7	0	2	17	27
Total Volume	12	4	4	0	20	3	1	0	0	4	0	0	0	13	13	9	46	0	16	71	108
% App. Total	60	20	20	0		75	25	0	0		0	0	0	100		12.7	64.8	0	22.5		
PHF	.300	.250	.500	.000	.500	.375	.250	.000	.000	.500	.000	.000	.000	.361	.361	.281	.479	.000	.400	.710	.818

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Orange Street/ Old South Road
E/W: Milestone Road/ Sparks Avenue
City, State: Nantucket, MA
Client: Ron Muller & Associates

File Name : 143955 LLL
Site Code : TBA
Start Date : 7/26/2014
Page No : 1

	Orange Street From North					Milestone Road From East					Old South Road From South					Sparks Avenue From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:15 AM																					
11:15 AM	20	71	38	0	129	90	95	22	1	208	24	67	39	0	130	21	72	12	0	105	572
11:30 AM	29	81	74	2	186	74	96	25	1	196	32	66	32	0	130	29	66	6	0	101	613
11:45 AM	18	61	67	2	148	81	92	18	0	191	22	60	43	0	125	24	62	13	0	99	563
12:00 PM	24	70	68	5	167	87	103	17	1	208	23	47	40	0	110	34	57	12	0	103	588
Total Volume	91	283	247	9	630	332	386	82	3	803	101	240	154	0	495	108	257	43	0	408	2336
% App. Total	14.4	44.9	39.2	1.4		41.3	48.1	10.2	0.4		20.4	48.5	31.1	0		26.5	63	10.5	0		
PHF	.784	.873	.834	.450	.847	.922	.937	.820	.750	.965	.789	.896	.895	.000	.952	.794	.892	.827	.000	.971	.953
Cars	91	271	243	9	614	330	382	80	3	795	99	231	153	0	483	103	244	38	0	385	2277
% Cars	100	95.8	98.4	100	97.5	99.4	99.0	97.6	100	99.0	98.0	96.3	99.4	0	97.6	95.4	94.9	88.4	0	94.4	97.5
Heavy Vehicles	0	12	4	0	16	2	4	2	0	8	2	9	1	0	12	5	13	5	0	23	59
% Heavy Vehicles	0	4.2	1.6	0	2.5	0.6	1.0	2.4	0	1.0	2.0	3.8	0.6	0	2.4	4.6	5.1	11.6	0	5.6	2.5



Ron Müller & Associates

Traffic Engineering and Consulting Services
56 Teresa Road, Hopkinton, MA 01748
(508) 395-1576

SPOT SPEED DATA

Location:	Old South Road between Goldfinch Drives	Date:	9/7/2013
Study Distance:	150 feet	Time:	1:00 PM
Weather:	Sunny	Speed Limit:	35

		Eastbound (toward airport)			Westbound (toward downtown)		
Time (sec)	Speed (mph)	Number	Cum.	Percent	Number	Cum.	Percent
4.0	25.6	1	1	2%		0	0%
3.9	26.2	1	2	5%	1	1	2%
3.8	26.9		2	5%	1	2	5%
3.7	27.6		2	5%		2	5%
3.6	28.4		2	5%	3	5	12%
3.5	29.2		2	5%	2	7	17%
3.4	30.1	1	3	7%	2	9	22%
3.3	31.0	2	5	12%	3	12	29%
3.2	32.0	5	10	24%	2	14	34%
3.1	33.0	3	13	31%	2	16	39%
3.0	34.1	1	14	33%	4	20	49%
2.9	35.3	6	20	48%	2	22	54%
2.8	36.5	9	29	69%	3	25	61%
2.7	37.9	3	32	76%	10	35	85%
2.6	39.3	3	35	83%	2	37	90%
2.5	40.9	3	38	90%	2	39	95%
2.4	42.6	1	39	93%	2	41	100%
2.3	44.5	2	41	98%		41	100%
2.2	46.5	1	42	100%		41	100%
2.1	48.7		42	100%		41	100%
2.0	51.1		42	100%		41	100%
1.9	53.8		42	100%		41	100%
1.8	56.8		42	100%		41	100%
1.7	60.2		42	100%		41	100%
1.6	63.9		42	100%		41	100%
1.5	68.2		42	100%		41	100%
1.4	73.1		42	100%		41	100%
1.3	78.7		42	100%		41	100%
1.2	85.2		42	100%		41	100%
1.1	93.0		42	100%		41	100%
1.0	102.3		42	100%		41	100%
	TOTAL:	42			41		
Avg. Speed:			**36 mph**			**35 mph**	
85th % Speed:			**40 mph**			**38 mph**	

Crash Rate Worksheets

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Nantucket COUNT DATE : Aug-15

DISTRICT : 5 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Milestone Road

MINOR STREET(S) : Orange Street, Sparke Avenue, Old South Road

INTERSECTION DIAGRAM
(Label Approaches)

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/PM) :	390	775	499	705		2,369

" K " FACTOR : **0.081**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **29,247**

TOTAL # OF CRASHES : 9

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **3.00**

CRASH RATE CALCULATION : **0.28**

$$\text{RATE} = \frac{(A * 1{,}000{,}000)}{(V * 365)}$$

Comments :

Project Title & Date: 12015/Nantucket

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Nantucket COUNT DATE : Aug-15

DISTRICT : 5 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Old South Road

MINOR STREET(S) : Fairgrounds Road

INTERSECTION DIAGRAM
(Label Approaches)

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB			
PEAK HOURLY VOLUMES (AM/PM) :	612	593	431			1,636

" K " FACTOR : **0.081**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **20,198**

TOTAL # OF CRASHES : 10

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **3.33**

CRASH RATE CALCULATION : **0.45**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: 12015/Nantucket

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Nantucket COUNT DATE : Jul-14

DISTRICT : 5 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Old South Road

MINOR STREET(S) : Amelia Drive

INTERSECTION DIAGRAM (Label Approaches)

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB			
PEAK HOURLY VOLUMES (AM/PM) :	753	635	95			1,483

" K " FACTOR : **0.081** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **18,309**

TOTAL # OF CRASHES : 3 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR (**A**) : **1.00**

CRASH RATE CALCULATION : **0.15** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: 12015/Nantucket

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Nantucket COUNT DATE : Jul-14

DISTRICT : 5 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Old South Road

MINOR STREET(S) : Lovers Lane

INTERSECTION DIAGRAM (Label Approaches)

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/PM) :	712	593	59	16		1,380

" K " FACTOR : **0.081**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **17,037**

TOTAL # OF CRASHES : 1

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.33**

CRASH RATE CALCULATION : **0.05**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: 12015/Nantucket

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Nantucket COUNT DATE : Jul-14

DISTRICT : 5 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Old South Road

MINOR STREET(S) : Goldfinch Drive and Greglen Avenue

INTERSECTION DIAGRAM
(Label Approaches)

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/PM) :	670	516	76	59		**1,321**

" K " FACTOR :	**0.081**	INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME :	**16,309**

TOTAL # OF CRASHES :	3	# OF YEARS :	3	AVERAGE # OF CRASHES PER YEAR (**A**) :	**1.00**

CRASH RATE CALCULATION : **0.17** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: 12015/Nantucket

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Nantucket COUNT DATE : Jul-14

DISTRICT : 5 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Old South Road

MINOR STREET(S) : Nobadeer Farm Road

INTERSECTION DIAGRAM (Label Approaches)

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	SB			
PEAK HOURLY VOLUMES (AM/PM) :	309	92	260			661

" K " FACTOR : **0.081** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **8,160**

TOTAL # OF CRASHES : 1 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR (**A**) : **0.33**

CRASH RATE CALCULATION : **0.11** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: 12015/Nantucket

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Nantucket | COUNT DATE : Jul-14

DISTRICT : 5 | UNSIGNALIZED : X | SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Milestone Road

MINOR STREET(S) : Nobadeer Farm Road

INTERSECTION DIAGRAM (Label Approaches)

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB			
PEAK HOURLY VOLUMES (AM/PM) :	422	408	279			1,109

" K " FACTOR : **0.081**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **13,691**

TOTAL # OF CRASHES : 7

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **2.33**

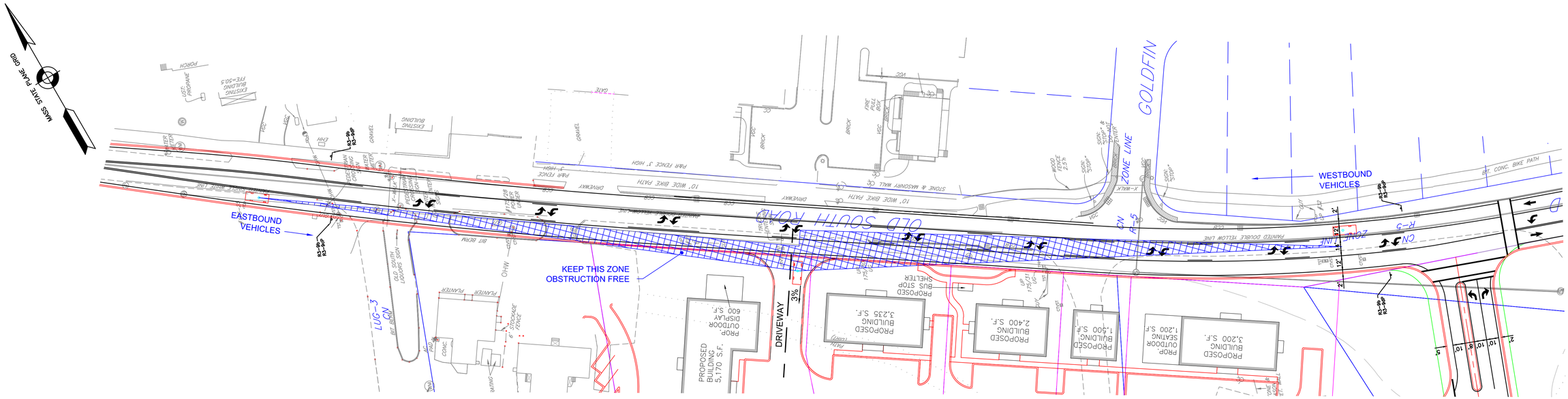
CRASH RATE CALCULATION : **0.47**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

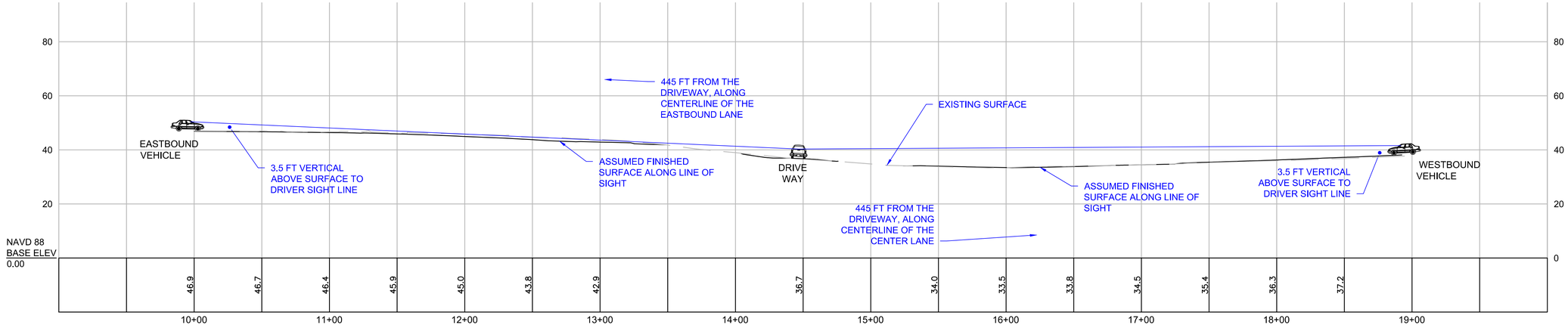
Comments :

Project Title & Date: 12015/Nantucket

Sight Line Plan and Profile



PLAN
SCALE: 1" = 40'



DRIVER IN DRIVEWAY WAITING TO TURN ONTO OLD SOUTH ROAD

HORIZ SCALE: 1" = 40'
VERT SCALE: 1" = 20'

0 40 100 160
SCALE: 1" = 40'

0 20 50 100
SCALE: 1" = 20'

GENERAL NOTES:

1. THE LONGITUDINAL GRADE ON THE DRIVEWAY WAS ASSUMED TO BE 3□ ON THE APPROACH TO OLD SOUTH ROAD.
2. FOR BOTH OLD SOUTH ROAD AND THE DRIVEWAY, A 2□ CROSS-SLOPE WERE ASSUMED.
3. THE MINIMUM CLEAR SIGHT DISTANCE TO THE DRIVEWAY IS 445 FT FOR VEHICLES TRAVELING ALONG OLD SOUTH ROAD.

REV. #	DESCRIPTION	DATE

Ron Müller & Associates

Traffic Engineering and Consulting Services

56 TERESA ROAD, HOPKINTON, MA, 01748
P: (508)395-1576 F: (508)435-2481

OLD SOUTH ROAD AT SITE DRIVE
NANTUCKET,
MASSACHUSETTS

PROPOSED SIGHT TRIANGLES

DATE: *8/2/16*

SHEET 1 OF 1

Traffic Growth and Background Development Worksheets

MassDOT Transportation Data Management System

STATION 253516 - OLD SOUTH ROAD, NANTUCKET (Peak Month July-August Data)

YEAR #	YEAR	AADT
1	2007	15,978
2	2008	14,074
3	2009	15,524
4	2010	15,353
5	2011	
6	2012	15,428
7	2013	15,454
8	2014	15,549
9	2015	
10	2016	15,967

2012-2016 Annual Growth:

Year 6-7	0.17%
Year 6-8	0.39%
Year 6-9	
Year 6-10	0.87%
Year 7-8	0.61%
Year 7-9	
Year 7-10	1.11%
Year 8-9	
Year 8-10	1.34%
Year 9-10	
Avg. Growth:	**0.75%**

Traffic Growth Calculations

Year 1-2	-11.92%	Year 2-3	10.30%	Year 3-4	-1.10%	Year 4-5		Year 5-6
Year 1-3	-1.42%	Year 2-4	4.54%	Year 3-5		Year 4-6	0.24%	Year 5-7
Year 1-4	-1.30%	Year 2-5		Year 3-6	-0.21%	Year 4-7	0.22%	Year 5-8
Year 1-5		Year 2-6	2.41%	Year 3-7	-0.11%	Year 4-8	0.32%	Year 5-9
Year 1-6	-0.69%	Year 2-7	1.96%	Year 3-8	0.03%	Year 4-9		Year 5-10
Year 1-7	-0.55%	Year 2-8	1.75%	Year 3-9		Year 4-10	0.67%	
Year 1-8	-0.38%	Year 2-9		Year 3-10	0.41%			
Year 1-9		Year 2-10	1.68%					
Year 1-10	-0.01%							

Year 6-7	0.17%	Year 7-8	0.61%	Year 8-9		Year 9-10
Year 6-8	0.39%	Year 7-9		Year 8-10	1.34%	
Year 6-9		Year 7-10	1.11%			
Year 6-10	0.87%					

2007-2016 Annual Average Traffic Growth Rate: 0.41%

1289 of 1520

Institute of Transportation Engineers (ITE); 9th Edition

Land Use Code (LUC) 850 - Supermarket

21 Old South Road Grocery

Average Vehicle Trips Ends vs: 1000 Sq. Feet Gross Floor Area
Independent Variable (X): 4.900

AVERAGE WEEKDAY DAILY

T = 102.24 * (X)
T = 1719.62
T = 1,720 vehicle trips
with 50% (860 vpd) entering and 50% (860 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 3.40 * (X)
T = 16.66
T = 17 vehicle trips
with 62% (11 vph) entering and 39% (6 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 9.48 * (X)
T = 46.45
T = 46 vehicle trips
with 51% (23 vph) entering and 49% (23 vph) exiting.

SATURDAY DAILY

T = 177.59 * (X)
T = 870.19
T = 870 vehicle trips
with 50% (435 vpd) entering and 50% (435 vpd) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

T = 10.65 * (X)
T = 52.19
T = 52 vehicle trips
with 51% (27 vpd) entering and 49% (25 vpd) exiting.

Institute of Transportation Engineers (ITE); 9th Edition

Land Use Code (LUC) 220 - Apartment

21 Old South Road Apartments

Average Vehicle Trips Ends vs: Dwelling Units
Independent Variable (X): 4

AVERAGE WEEKDAY DAILY

T = 6.06 * (X) + 123.56
T = 147.80
T = 150 vehicle trips
with 50% (75 vpd) entering and 50% (75 vpd) exiting.

Use Avg. Rate for < 40 Units:

T = 6.65 * (X)
T = 26.60
T = 30 vehicle trips
with 15 vpd entering and 15 vpd exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.49 * (X) + 3.73
T = 5.69
T = 6 vehicle trips
with 20% (1 vph) entering and 80% (5 vph) exiting.

Use Max. Rate for < 40 Units:

T = 1.02 * (X)
T = 4.08
T = 4 vehicle trips
with 1 vph entering and 3 vph exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.55 * (X) + 17.65
T = 19.85
T = 20 vehicle trips
with 65% (13 vph) entering and 35% (7 vph) exiting.

Use Max. Rate for < 40 Units:

T = 1.64 * (X)
T = 6.56
T = 7 vehicle trips
with 5 vph entering and 2 vph exiting.

SATURDAY DAILY

T = 7.85 * (X) - 256.19
T = -224.79
T = -220 vehicle trips
with 50% (-110 vpd) entering and 50% (-110 vpd) exiting.

Use Avg. Rate for < 40 Units:

T = 6.39 * (X)
T = 25.56
T = 30 vehicle trips
with 15 vpd entering and 15 vpd exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

T = 0.41 * (X) + 19.23
T = 20.87
T = 21 vehicle trips
with 50% (11 vph) entering and 50% (10 vph) exiting.

Use Avg. Rate for < 40 Units:

T = 1.05 * (X)
T = 4.20
T = 4 vehicle trips
with 2 vph entering and 2 vph exiting.

Institute of Transportation Engineers (ITE); 9th Edition

Land Use Code (LUC) 492 - Health/Fitness Club

86 Old South Road Health Club

Average Vehicle Trips Ends vs: 1000 Sq. Feet Gross Floor Area
Independent Variable (X): 21.700

AVERAGE WEEKDAY DAILY

T = 32.93 * (X)
T = 714.58
T = 710 vehicle trips
with 50% (355 vpd) entering and 50% (355 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 1.41 * (X)
T = 30.60
T = 31 vehicle trips
with 50% (16 vph) entering and 50% (15 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

Ln (T) = 0.95 Ln(X) + 1.43
Ln (T) = 4.35
T = 77.75
T = 78 vehicle trips
with 57% (44 vph) entering and 43% (34 vph) exiting.

SATURDAY DAILY

T = 20.87 * (X)
T = 452.88
T = 450 vehicle trips
with 50% (225 vpd) entering and 50% (225 vpd) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

T = 2.78 * (X)
T = 60.33
T = 60 vehicle trips
with 45% (27 vpd) entering and 55% (33 vpd) exiting.

Institute of Transportation Engineers (ITE); 9th Edition
Land Use Code (LUC) 812 - Building Materials and Lumber Store

6-8 Lovers Lane - RGPD, LLC

Average Vehicle Trips Ends vs: 1,000 Sq. Feet Gross Leasable Area
Independent Variable (X): 7.500 ksf

AVERAGE WEEKDAY DAILY

T = 38.51 * (X) + 61.48
T = 350.31
T = 350 vehicle trips
with 50% (175 vpd) entering and 50% (175 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 2.60 * (X)
T = 19.50
T = 20 vehicle trips
with 67% (13 vph) entering and 33% (7 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 4.49 * (X)
T = 33.68
T = 34 vehicle trips
with 47% (16 vph) entering and 53% (18 vph) exiting.

SATURDAY DAILY

T = 36.75 * (X) + 137.21
T = 2910.34
T = 2,910 vehicle trips
with 50% (1,455 vpd) entering and 50% (1,455 vpd) exiting.

SATURDAY DAILY AVERAGE RATE

T = 51.6 * (X)
T = 387
T = 390 Vehicle Trips
with 50% (195 vpd) entering and 50% (195 vpd) exiting

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

Ln T = 0.95 Ln (X) + 2.34
Ln T = 4.25
T = 70.40
T = 70 vehicle trips
with 51% (36 vph) entering and 49% (34 vph) exiting.

SATURDAY MIDDAY PEAK HOUR AVERAGE RATE

T = 9.58 * (X)
T = 71.85
T = 72 Vehicle Trips
with 51% (37 vph) entering and 49% (35 vph) exiting

Institute of Transportation Engineers (ITE); 9th Edition
Land Use Code (LUC) 220 - Apartment

1-13 Greglen Ave RGPD Apartments

Average Vehicle Trips Ends vs: Dwelling Units
Independent Variable (X): 36

AVERAGE WEEKDAY DAILY
T = 6.06 * (X) + 123.56
T = 341.72
T = 340 vehicle trips
with 50% (170 vpd) entering and 50% (170 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC
T = 0.49 * (X) + 3.73
T = 21.37
T = 21 vehicle trips
with 20% (4 vph) entering and 80% (17 vph) exiting.

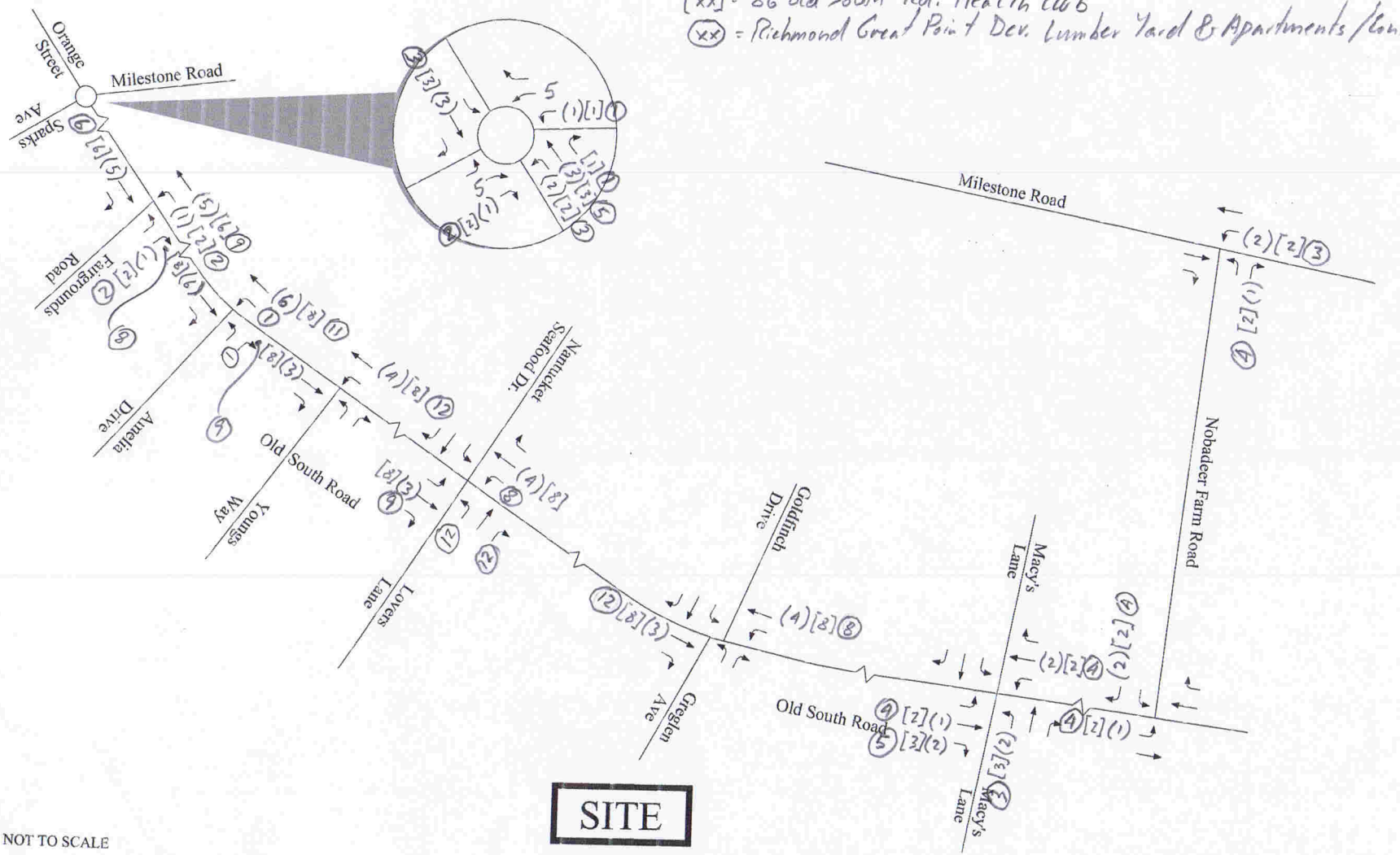
WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC
T = 0.55 * (X) + 17.65
T = 37.45
T = 37 vehicle trips
with 65% (24 vph) entering and 35% (13 vph) exiting.

SATURDAY DAILY
T = 7.85 * (X) - 256.19
T = 26.41
T = 30 vehicle trips
with 50% (15 vpd) entering and 50% (15 vpd) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR
T = 0.41 * (X) + 19.23
T = 33.99
T = 34 vehicle trips
with 50% (17 vph) entering and 50% (17 vph) exiting.

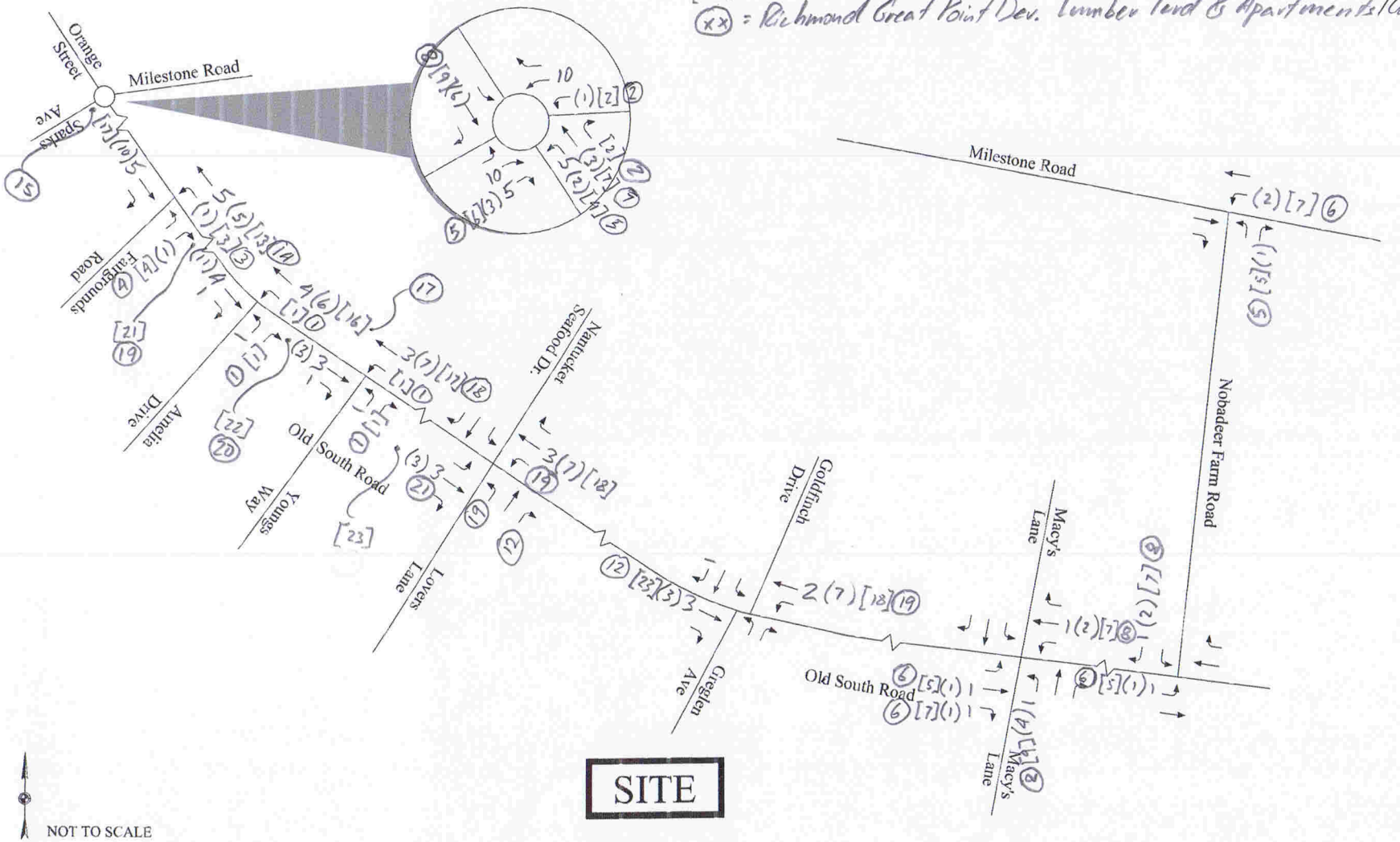
Background Development
AM Peak Hour Traffic Volumes

XX = Stop & Shop Expansion
(XX) = 21 Old South Rd. Grocery & Apt.
[XX] = 86 Old South Rd. Health Club
(XX) = Richmond Great Point Dev. Lumber Yard & Apartments/Condos



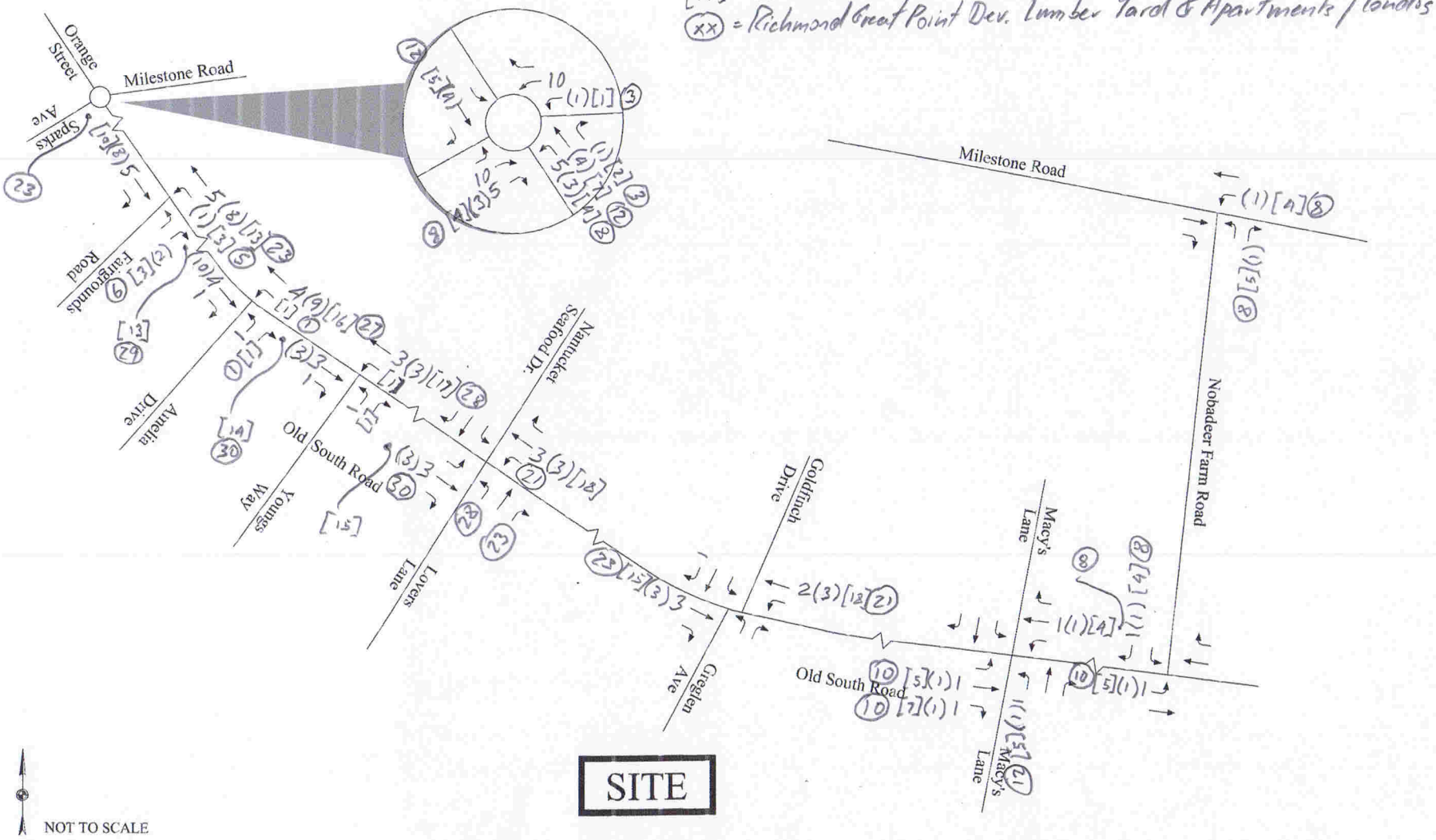
Background Development
PM Peak Hour Traffic Volumes

XX = Stop & Shop Expansion
(XX) = 21 Old South Rd. Grocery & Apt.
[XX] = 86 Old South Rd. Health Club
(XX) = Richmond Great Point Dev. Lumber Yard & Apartments/Condos



Background Development
Sat. Peak Hour Traffic Volumes

XX = Stop & Shop Expansion
(XX) = 21 Old South Rd. Grocery & Apd.
[XX] = 86 Old South Rd. Health Club
(XX) = Richmond Great Point Dev. Lumber Yard & Apartments / Condos



1297 of 1520

Trip Generation Worksheets

Institute of Transportation Engineers (ITE); 9th Edition

Land Use Code (LUC) 210 - Single-Family Detached Housing

Average Vehicle Trips Ends vs: Dwelling Units
Independent Variable (X): 100

WEEKDAY DAILY

Ln T = 0.92 Ln (X) + 2.72
Ln T = 6.96
T = 1050.22
T = 1,050 vehicle trips
with 50% (525 vpd) entering and 50% (525 vpd) exiting.

Use Average Rate for < 20 Units:

T = 9.52 (X)
T = 952.00
T = 950 vehicle trips
with 475 vpd entering and 475 vpd exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.70 (X) + 9.74
T = 79.74
T = 80 vehicle trips
with 25% (20 vph) entering and 75% (60 vph) exiting.

Use Average Rate for < 20 Units:

T = 0.75 (X)
T = 75.00
T = 75 vehicle trips
with 19 vpd entering and 56 vpd exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

Ln T = 0.90 Ln (X) + 0.51
Ln T = 4.65
T = 105.07
T = 105 vehicle trips
with 63% (66 vph) entering and 37% (39 vph) exiting.

Use Average Rate for < 20 Units:

T = 1.00 (X)
T = 100.00
T = 100 vehicle trips
with 63 vpd entering and 37 vpd exiting.

SATURDAY DAILY

Ln T = 0.93 Ln (X) + 2.64
Ln T = 6.92
T = 1015.17
T = 1,020 vehicle trips
with 50% (510 vpd) entering and 50% (510 vpd) exiting.

Use Average Rate for < 20 Units:

T = 9.91 (X)
T = 991.00
T = 990 vehicle trips
with 495 vpd entering and 495 vpd exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

T = 0.89 (X) +8.77
T = 97.77
T = 98 vehicle trips
with 53% (52 vph) entering and 47% (46 vph) exiting.

Use Average Rate for < 20 Units:

T = 0.93 (X)
T = 93.00
T = 93 vehicle trips
with 50 vpd entering and 43 vpd exiting.

SUNDAY DAILY

T = 8.63 (X) - 0.63
T = 862.37
T = 860 vehicle trips
with 50% (430 vpd) entering and 50% (430 vpd) exiting.

Use Average Rate for < 20 Units:

T = 8.62 (X)
T = 862.00
T = 860 vehicle trips
with 430 vpd entering and 430 vpd exiting.

SUNDAY MIDDAY PEAK HOUR OF GENERATOR

Ln T = 0.91 Ln (X) + 0.31
Ln T = 4.50
T = 90.08
T = 90 vehicle trips
with 53% (48 vph) entering and 47% (42 vph) exiting.

Use Average Rate for < 20 Units:

T = 0.86 (X)
T = 86.00
T = 86 vehicle trips
with 46 vpd entering and 40 vpd exiting.

Institute of Transportation Engineers (ITE); 9th Edition

Land Use Code (LUC) 826 - Specialty Retail Center

Average Vehicle Trips Ends vs: 1,000 Sq. Feet Gross Leasable Area
Independent Variable (X): 12.300 ksf

AVERAGE WEEKDAY DAILY

T = 42.78 * (X) + 37.66
T = 563.85
T = 560 vehicle trips
with 50% (280 vpd) entering and 50% (280 vpd) exiting.

WEEKDAY AM PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\frac{\text{ITE LUC 820 Weekday Morning Trip Rate}}{\text{ITE LUC 820 Weekday Evening Trip Rate}} = \frac{\text{ITE LUC 826 Weekday Morning Trip Rate}}{\text{ITE LUC 826 Weekday Evening Trip Rate}}$$

$$\frac{0.96}{3.71} = \frac{(Y)}{4.15} \qquad Y = 1.07$$

T = 1.07 * (X)
T = 13.2
T = 13 vehicle trips
with 62% (8 vph) entering and 38% (5 vph) exiting.

(same distribution split as ITE LUC 820 during the weekday morning peak hour of adjacent street traffic)

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 2.40 * (X) + 21.48
T = 51.00
T = 51 vehicle trips
with 44% (22 vph) entering and 56% (29 vph) exiting.

SATURDAY DAILY

T = 42.04 * (X)
T = 517.09
T = 520 vehicle trips
with 50% (260 vpd) entering and 50% (260 vpd) exiting.

SATURDAY MIDDAY PEAK HOUR

$$\frac{\text{ITE LUC 820 Saturday Midday Trip Rate}}{\text{ITE LUC 820 Weekday Evening Trip Rate}} = \frac{\text{ITE LUC 826 Saturday Midday Trip Rate}}{\text{ITE LUC 826 Weekday Evening Trip Rate}}$$

$$\frac{4.82}{3.71} = \frac{(Y)}{4.15} \qquad Y = 5.39$$

T = 5.39 * (X)
T = 66.26
T = 66 vehicle trips
with 52% (34 vph) entering and 48% (32 vph) exiting.

(same distribution split as ITE LUC 820 during the Saturday midday peak hour of generator)

Institute of Transportation Engineers (ITE); 9th Edition
Land Use Code (LUC) 220 - Apartment

Average Vehicle Trips Ends vs: Dwelling Units
Independent Variable (X): 225

AVERAGE WEEKDAY DAILY
T = 6.06 * (X) + 123.56
T = 1487.06
T = 1,490 vehicle trips
with 50% (745 vpd) entering and 50% (745 vpd) exiting.

Use Avg. Rate for < 40 Units:
T = 6.65 * (X)
T = 1496.25
T = 1500 vehicle trips
with 750 vpd entering and 750 vpd exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC
T = 0.49 * (X) + 3.73
T = 113.98
T = 114 vehicle trips
with 20% (23 vph) entering and 80% (91 vph) exiting.

Use Max. Rate for < 40 Units:
T = 1.02 * (X)
T = 229.50
T = 230 vehicle trips
with 46 vph entering and 184 vph exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC
T = 0.55 * (X) + 17.65
T = 141.40
T = 141 vehicle trips
with 65% (92 vph) entering and 35% (49 vph) exiting.

Use Max. Rate for < 40 Units:
T = 1.64 * (X)
T = 369.00
T = 369 vehicle trips
with 240 vph entering and 129 vph exiting.

SATURDAY DAILY
T = 7.85 * (X) - 256.19
T = 1510.06
T = 1,510 vehicle trips
with 50% (755 vpd) entering and 50% (755 vpd) exiting.

Use Avg. Rate for < 40 Units:
T = 6.39 * (X)
T = 1437.75
T = 1440 vehicle trips
with 720 vpd entering and 720 vpd exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR
T = 0.41 * (X) + 19.23
T = 111.48
T = 111 vehicle trips
with 50% (56 vph) entering and 50% (55 vph) exiting.

Use Avg. Rate for < 40 Units:
T = 1.05 * (X)
T = 236.25
T = 236 vehicle trips
with 118 vph entering and 118 vph exiting.

Institute of Transportation Engineers (ITE); 9th Edition

Land Use Code (LUC) 931 - Quality Restaurant

Average Vehicle Trips Ends vs: 1,000 Sq. Feet Gross Floor Area
Independent Variable (X): 3.200 ksf

AVERAGE WEEKDAY DAILY

T = 89.95 * (X)
T = 287.84
T = 290 vehicle trips
with 50% (145 vpd) entering and 50% (145 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.81 * (X)
T = 2.59
T = 3 vehicle trips
with 55% (2 vph) entering and 45% (1 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 7.49 * (X)
T = 23.97
T = 24 vehicle trips
with 67% (16 vph) entering and 33% (8 vph) exiting.

SATURDAY DAILY

T = 94.36 * (X)
T = 301.95
T = 300 vehicle trips
with 50% (150 vpd) entering and 50% (150 vpd) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

T = 10.87 * (X) - 0.46
T = 34.32
T = 34 vehicle trips
with 59% (20 vph) entering and 41% (14 vph) exiting.

Capacity Analysis Methodology and Worksheets

General

A primary result of capacity analysis is the assignment of levels of service to traffic facilities under various traffic flow conditions. The capacity analysis methodology is based on the concepts and procedures in the *Highway Capacity Manual* (HCM); Transportation Research Board; Washington, D.C.; 2010. The concept of level of service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level of service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six levels of service are defined for each type of facility. They are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F the worst. Since the level of service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of levels of service, depending on the time of day, day of week, or period of year. A description of the operating condition under each level of service is provided below:

- LOS A describes conditions with little to no delay to motorists.
- LOS B represents a desirable level with relatively low delay to motorists.
- LOS C describes conditions with average delays to motorists.
- LOS D describes operations where the influence of congestion becomes more noticeable. Delays are still within an acceptable range.
- LOS E represents operating conditions with high delay values. This level is considered by many agencies to be the limit of acceptable delay.
- LOS F is considered to be unacceptable to most drivers with high delay values that often occur, when arrival flow rates exceed the capacity of the intersection.

Unsignalized Intersections

Levels of service for unsignalized intersections are calculated using the operational analysis methodology of the HCM. The procedure accounts for lane configuration on both the minor and major street approaches, conflicting traffic stream volumes, and the type of intersection control (STOP, YIELD, or all-way STOP control). The definition of level of service for unsignalized intersections is a function of average *control* delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The level-of-service criteria for unsignalized intersections are shown in Table A-1.

Signalized Intersections

Levels of service for signalized intersections are also calculated using the operational analysis methodology of the HCM. The methodology for signalized intersections assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometries on average *control* delay. Control delay includes queue move-up time and stopped delay. Table A-l summarizes the relationship between level of service and average control delay.

Roundabouts

The level of service method used for roundabouts is based on both delay and the volume-to-capacity ratio as presented in the (HCM 2010). The control delay formulation for roundabouts is similar to that of two-way and all-way stop controlled intersections, adjusting for the effect of yield control. As such, the LOS criterion for automobiles in roundabouts is the same as that of unsignalized intersections. LOS F is assigned to a movement if the volume-to-capacity ratio exceeds 1.0 regardless of the movement control delay. Intersection and approach LOS values, however, are based on the average delay for all movements and are not governed by the volume-to-capacity ratio. Continuous right-turn by-pass lanes always operate at LOS A.

Table A-1
Level-of-Service Criteria for Intersections and Roundabouts

Level of Service	Unsignalized and Roundabout Criteria Average Control Delay In Seconds Per Vehicle	Signalized Criteria Average Control Delay In Seconds Per Vehicle
A	≤ 10	≤ 10
B	10.1 to 15.0	10.1 to 20.0
C	15.1 to 25.0	20.1 to 35.0
D	25.1 to 35.0	35.1 to 55.0
E	35.1 to 50.0	55.1 to 80.0
F	>50	>80

For signalized intersections and roundabouts, this delay criterion may be applied in assigning level of service designations to individual lane groups, to individual intersection approaches, or to the entire intersection. For unsignalized intersections, this delay criterion may be applied in assigning level of service designations to individual lane groups or to individual intersection approaches.

MOVEMENT SUMMARY

Site: Milestone Rotary

2016 Existing AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Old South Rd											
3	L2	148	6.0	1.208	127.1	LOS F	41.4	1085.7	1.00	2.84	11.4
8	T1	269	6.0	1.208	123.0	LOS F	41.4	1085.7	1.00	2.84	11.4
18	R2	87	6.0	1.208	123.0	LOS F	41.4	1085.7	1.00	2.84	11.3
Approach		505	6.0	1.208	124.2	LOS F	41.4	1085.7	1.00	2.84	11.4
East: Milestone Rd											
1	L2	94	4.0	0.569	12.3	LOS B	4.9	127.0	0.81	0.88	27.3
6	T1	321	4.0	0.569	8.1	LOS A	4.9	127.0	0.81	0.88	27.3
16	R2	375	4.0	0.514	7.6	LOS A	4.0	104.2	0.78	0.84	27.1
Approach		789	4.0	0.569	8.4	LOS A	4.9	127.0	0.80	0.86	27.2
North: Orange St											
7	L2	338	3.0	0.510	12.9	LOS B	3.8	97.2	0.80	0.96	26.2
4	T1	289	3.0	0.542	9.2	LOS A	4.2	108.6	0.82	0.93	27.2
14	R2	69	3.0	0.542	9.6	LOS A	4.2	108.6	0.82	0.93	26.6
Approach		697	3.0	0.542	11.0	LOS B	4.2	108.6	0.81	0.94	26.6
West: Sparks Ave											
5	L2	55	5.0	1.127	91.0	LOS F	27.5	714.9	1.00	2.41	14.0
2	T1	271	5.0	1.127	86.9	LOS F	27.5	714.9	1.00	2.41	14.0
12	R2	117	5.0	1.127	86.9	LOS F	27.5	714.9	1.00	2.41	13.8
Approach		442	5.0	1.127	87.4	LOS F	27.5	714.9	1.00	2.41	13.9
All Vehicles		2434	4.3	1.208	47.5	LOS E	41.4	1085.7	0.88	1.58	18.5

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	290	67	59	14	18	239
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	23	23	7	7
Mvmt Flow	315	73	64	15	20	260

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	79	0	-	0	775	72
Stage 1	-	-	-	-	72	-
Stage 2	-	-	-	-	703	-
Critical Hdwy	4.16	-	-	-	6.47	6.27
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	2.254	-	-	-	3.563	3.363
Pot Cap-1 Maneuver	1494	-	-	-	359	976
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	482	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1494	-	-	-	280	976
Mov Cap-2 Maneuver	-	-	-	-	280	-
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	376	-

Approach	EB	WB	SB
HCM Control Delay, s	6.5	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1494	-	-	-	831
HCM Lane V/C Ratio	0.211	-	-	-	0.336
HCM Control Delay (s)	8.1	0	-	-	11.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.8	-	-	-	1.5

Intersection	
Int Delay, s/veh	8.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	200	148	111	271	181	134
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	8	8	9	9	9	9
Mvmt Flow	211	156	117	285	191	141

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	366	0	807	288
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	519	-
Critical Hdwy	-	-	4.19	-	6.49	6.29
Critical Hdwy Stg 1	-	-	-	-	5.49	-
Critical Hdwy Stg 2	-	-	-	-	5.49	-
Follow-up Hdwy	-	-	2.281	-	3.581	3.381
Pot Cap-1 Maneuver	-	-	1155	-	341	735
Stage 1	-	-	-	-	745	-
Stage 2	-	-	-	-	583	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1155	-	300	735
Mov Cap-2 Maneuver	-	-	-	-	300	-
Stage 1	-	-	-	-	745	-
Stage 2	-	-	-	-	513	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.5	25.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	300	735	-	-	1155	-
HCM Lane V/C Ratio	0.635	0.192	-	-	0.101	-
HCM Control Delay (s)	35.7	11.1	-	-	8.5	0
HCM Lane LOS	E	B	-	-	A	A
HCM 95th %tile Q(veh)	4	0.7	-	-	0.3	-

Intersection	
Intersection Delay, s/veh	22.3
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	16	263	198	0	96	205	3	0	215	4	106
Peak Hour Factor	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94
Heavy Vehicles, %	2	6	6	6	2	8	8	8	2	4	4	4
Mvmt Flow	0	17	280	211	0	102	218	3	0	229	4	113
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	28.5	17.5	19.2
HCM LOS	D	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	66%	3%	32%	20%
Vol Thru, %	1%	55%	67%	8%
Vol Right, %	33%	42%	1%	72%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	325	477	304	40
LT Vol	215	16	96	8
Through Vol	4	263	205	3
RT Vol	106	198	3	29
Lane Flow Rate	346	507	323	43
Geometry Grp	1	1	1	1
Degree of Util (X)	0.615	0.808	0.57	0.084
Departure Headway (Hd)	6.4	5.729	6.346	7.094
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	564	629	569	503
Service Time	4.445	3.768	4.392	5.169
HCM Lane V/C Ratio	0.613	0.806	0.568	0.085
HCM Control Delay	19.2	28.5	17.5	10.8
HCM Lane LOS	C	D	C	B
HCM 95th-tile Q	4.2	8.2	3.6	0.3

Intersection	
Int Delay, s/veh	13.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	380	109	215	458	104	296
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	60
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	7	7	5	5	2	2
Mvmt Flow	392	112	222	472	107	305

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	504	0	1363	448
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	915	-
Critical Hdwy	-	-	4.15	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.245	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1045	-	163	611
Stage 1	-	-	-	-	644	-
Stage 2	-	-	-	-	390	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1045	-	116	611
Mov Cap-2 Maneuver	-	-	-	-	116	-
Stage 1	-	-	-	-	644	-
Stage 2	-	-	-	-	278	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3	47.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	116	611	-	-	1045	-
HCM Lane V/C Ratio	0.924	0.499	-	-	0.212	-
HCM Control Delay (s)	133.9	16.6	-	-	9.4	0
HCM Lane LOS	F	C	-	-	A	A
HCM 95th %tile Q(veh)	5.8	2.8	-	-	0.8	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	584	70	48	631	45	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	5	5	7	7	3	3
Mvmt Flow	608	73	50	657	47	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	681	0	1402	645
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	757	-
Critical Hdwy	-	-	4.17	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.263	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	889	-	153	470
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	461	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	889	-	139	470
Mov Cap-2 Maneuver	-	-	-	-	139	-
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	420	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	35.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	198	-	-	889	-
HCM Lane V/C Ratio	0.41	-	-	0.056	-
HCM Control Delay (s)	35.3	-	-	9.3	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	1.9	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	564	53	19	639	40	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	5	5	9	9	9	9
Mvmt Flow	581	55	20	659	41	31

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	636	0	1307	609
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	698	-
Critical Hdwy	-	-	4.19	-	6.49	6.29
Critical Hdwy Stg 1	-	-	-	-	5.49	-
Critical Hdwy Stg 2	-	-	-	-	5.49	-
Follow-up Hdwy	-	-	2.281	-	3.581	3.381
Pot Cap-1 Maneuver	-	-	915	-	170	482
Stage 1	-	-	-	-	530	-
Stage 2	-	-	-	-	481	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	915	-	164	482
Mov Cap-2 Maneuver	-	-	-	-	164	-
Stage 1	-	-	-	-	530	-
Stage 2	-	-	-	-	465	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	27.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	229	-	-	915	-
HCM Lane V/C Ratio	0.315	-	-	0.021	-
HCM Control Delay (s)	27.8	-	-	9	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	544	14	14	585	0	18	0	6	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	5	5	5	7	7	7	13	13	13	0	0	0
Mvmt Flow	6	585	15	15	629	0	19	0	6	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	629	0	0	600	0	0	1265	1264	592	1268	1272	629
Stage 1	-	-	-	-	-	-	605	605	-	659	659	-
Stage 2	-	-	-	-	-	-	660	659	-	609	613	-
Critical Hdwy	4.15	-	-	4.17	-	-	7.23	6.63	6.33	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.23	5.63	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.23	5.63	-	6.1	5.5	-
Follow-up Hdwy	2.245	-	-	2.263	-	-	3.617	4.117	3.417	3.5	4	3.3
Pot Cap-1 Maneuver	939	-	-	953	-	-	139	161	486	147	169	486
Stage 1	-	-	-	-	-	-	466	470	-	456	464	-
Stage 2	-	-	-	-	-	-	434	444	-	486	486	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	939	-	-	953	-	-	135	156	486	141	163	486
Mov Cap-2 Maneuver	-	-	-	-	-	-	135	156	-	141	163	-
Stage 1	-	-	-	-	-	-	461	465	-	451	453	-
Stage 2	-	-	-	-	-	-	423	433	-	475	481	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	30.8	12.4
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	165	939	-	-	953	-	-	486
HCM Lane V/C Ratio	0.156	0.007	-	-	0.016	-	-	0.002
HCM Control Delay (s)	30.8	8.9	0	-	8.8	0	-	12.4
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	492	33	13	482	0	43	0	31	21	4	62
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	7	7	7	26	0	26	5	5	5
Mvmt Flow	0	535	36	14	524	0	47	0	34	23	4	67

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	524	0	0	571	0	0	1141	1105	553	1122	1123	524
Stage 1	-	-	-	-	-	-	553	553	-	552	552	-
Stage 2	-	-	-	-	-	-	588	552	-	570	571	-
Critical Hdwy	4.14	-	-	4.17	-	-	7.36	6.5	6.46	7.15	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.36	5.5	-	6.15	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.36	5.5	-	6.15	5.55	-
Follow-up Hdwy	2.236	-	-	2.263	-	-	3.734	4	3.534	3.545	4.045	3.345
Pot Cap-1 Maneuver	1032	-	-	977	-	-	160	213	489	181	203	547
Stage 1	-	-	-	-	-	-	477	518	-	513	510	-
Stage 2	-	-	-	-	-	-	456	518	-	501	500	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1032	-	-	977	-	-	136	209	489	166	199	547
Mov Cap-2 Maneuver	-	-	-	-	-	-	136	209	-	166	199	-
Stage 1	-	-	-	-	-	-	477	518	-	513	500	-
Stage 2	-	-	-	-	-	-	388	508	-	466	500	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	35.8	19.9
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	195	1032	-	-	977	-	-	335
HCM Lane V/C Ratio	0.412	-	-	-	0.014	-	-	0.282
HCM Control Delay (s)	35.8	0	-	-	8.7	0	-	19.9
HCM Lane LOS	E	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	1.9	0	-	-	0	-	-	1.1

MOVEMENT SUMMARY

Site: Milestone Rotary

2016 Existing PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Old South Rd											
3	L2	155	3.0	1.200	123.9	LOS F	40.9	1048.0	1.00	2.81	11.6
8	T1	238	3.0	1.200	119.8	LOS F	40.9	1048.0	1.00	2.81	11.6
18	R2	116	3.0	1.200	119.8	LOS F	40.9	1048.0	1.00	2.81	11.5
Approach		509	3.0	1.200	121.0	LOS F	40.9	1048.0	1.00	2.81	11.5
East: Milestone Rd											
1	L2	121	2.0	0.640	13.0	LOS B	6.4	162.0	0.85	0.92	27.1
6	T1	369	2.0	0.640	8.9	LOS A	6.4	162.0	0.85	0.92	27.0
16	R2	300	2.0	0.442	7.1	LOS A	3.0	76.2	0.73	0.79	27.3
Approach		791	2.0	0.640	8.9	LOS A	6.4	162.0	0.81	0.87	27.1
North: Orange St											
7	L2	339	4.0	0.565	14.9	LOS B	4.6	118.5	0.86	1.04	25.6
4	T1	300	4.0	0.635	12.2	LOS B	5.8	148.5	0.90	1.07	26.2
14	R2	81	4.0	0.635	12.6	LOS B	5.8	148.5	0.90	1.07	25.7
Approach		719	4.0	0.635	13.5	LOS B	5.8	148.5	0.88	1.06	25.8
West: Sparks Ave											
5	L2	65	6.0	1.087	77.8	LOS F	21.9	575.1	1.00	2.15	15.2
2	T1	264	6.0	1.087	73.6	LOS F	21.9	575.1	1.00	2.15	15.2
12	R2	68	6.0	1.087	73.7	LOS F	21.9	575.1	1.00	2.15	15.0
Approach		398	6.0	1.087	74.3	LOS F	21.9	575.1	1.00	2.15	15.2
All Vehicles		2417	3.5	1.200	44.6	LOS E	40.9	1048.0	0.90	1.55	19.0

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	230	79	78	14	16	244
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	7	7	5	5	5	5
Mvmt Flow	253	87	86	15	18	268

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	101	0	-	0	685	93
Stage 1	-	-	-	-	93	-
Stage 2	-	-	-	-	592	-
Critical Hdwy	4.17	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.263	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	1461	-	-	-	409	956
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	547	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1461	-	-	-	335	956
Mov Cap-2 Maneuver	-	-	-	-	335	-
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	447	-

Approach	EB	WB	SB
HCM Control Delay, s	5.9	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1461	-	-	-	858
HCM Lane V/C Ratio	0.173	-	-	-	0.333
HCM Control Delay (s)	8	0	-	-	11.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.6	-	-	-	1.5

Intersection	
Int Delay, s/veh	6.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	277	145	111	297	143	136
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	5	5	2	2	4	4
Mvmt Flow	289	151	116	309	149	142

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	440	0	905	364
Stage 1	-	-	-	-	364	-
Stage 2	-	-	-	-	541	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1120	-	304	676
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	579	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1120	-	266	676
Mov Cap-2 Maneuver	-	-	-	-	266	-
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	507	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	23.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	266	676	-	-	1120	-
HCM Lane V/C Ratio	0.56	0.21	-	-	0.103	-
HCM Control Delay (s)	34.5	11.7	-	-	8.6	0
HCM Lane LOS	D	B	-	-	A	A
HCM 95th %tile Q(veh)	3.1	0.8	-	-	0.3	-

Intersection	
Intersection Delay, s/veh	24.3
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	33	239	206	0	86	255	22	0	188	5	83
Peak Hour Factor	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91
Heavy Vehicles, %	2	6	6	6	2	3	3	3	2	3	3	3
Mvmt Flow	0	36	263	226	0	95	280	24	0	207	5	91
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	31.6	21.2	17.8
HCM LOS	D	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	68%	7%	24%	10%
Vol Thru, %	2%	50%	70%	19%
Vol Right, %	30%	43%	6%	71%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	276	478	363	42
LT Vol	188	33	86	4
Through Vol	5	239	255	8
RT Vol	83	206	22	30
Lane Flow Rate	303	525	399	46
Geometry Grp	1	1	1	1
Degree of Util (X)	0.558	0.838	0.679	0.092
Departure Headway (Hd)	6.624	5.74	6.13	7.15
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	543	630	590	498
Service Time	4.675	3.785	4.179	5.23
HCM Lane V/C Ratio	0.558	0.833	0.676	0.092
HCM Control Delay	17.8	31.6	21.2	11
HCM Lane LOS	C	D	C	B
HCM 95th-tile Q	3.4	9	5.2	0.3

Intersection	
Int Delay, s/veh	30.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	458	154	214	379	146	285
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	60
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	6	3	3	6	6
Mvmt Flow	472	159	221	391	151	294

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	631	0	1384	552
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	832	-
Critical Hdwy	-	-	4.13	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.227	-	3.554	3.354
Pot Cap-1 Maneuver	-	-	947	-	155	526
Stage 1	-	-	-	-	569	-
Stage 2	-	-	-	-	421	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	947	-	~ 109	526
Mov Cap-2 Maneuver	-	-	-	-	~ 109	-
Stage 1	-	-	-	-	569	-
Stage 2	-	-	-	-	296	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	111.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	109	526	-	-	947	-
HCM Lane V/C Ratio	1.381	0.559	-	-	0.233	-
HCM Control Delay (s)	290.7	20.2	-	-	10	0
HCM Lane LOS	F	C	-	-	A	A
HCM 95th %tile Q(veh)	10.5	3.4	-	-	0.9	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	680	73	53	582	42	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	4	4	3	3	1	1
Mvmt Flow	708	76	55	606	44	55

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	784	0	1463	746
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	717	-
Critical Hdwy	-	-	4.13	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.227	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	830	-	142	415
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	485	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	830	-	128	415
Mov Cap-2 Maneuver	-	-	-	-	128	-
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	437	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	37.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	208	-	-	830	-
HCM Lane V/C Ratio	0.476	-	-	0.067	-
HCM Control Delay (s)	37.1	-	-	9.6	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	2.3	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	699	34	20	599	36	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	2	2	3	3
Mvmt Flow	736	36	21	631	38	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	772	0	1427	754
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	673	-
Critical Hdwy	-	-	4.12	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.218	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	843	-	148	407
Stage 1	-	-	-	-	463	-
Stage 2	-	-	-	-	505	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	843	-	142	407
Mov Cap-2 Maneuver	-	-	-	-	142	-
Stage 1	-	-	-	-	463	-
Stage 2	-	-	-	-	486	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	32.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	192	-	-	843	-
HCM Lane V/C Ratio	0.329	-	-	0.025	-
HCM Control Delay (s)	32.7	-	-	9.4	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	648	49	29	558	6	32	1	25	7	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	7	7	7	2	2	2	3	3	3	6	6	6
Mvmt Flow	16	704	53	32	607	7	35	1	27	8	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	613	0	0	758	0	0	1442	1440	731	1451	1463	610
Stage 1	-	-	-	-	-	-	764	764	-	673	673	-
Stage 2	-	-	-	-	-	-	678	676	-	778	790	-
Critical Hdwy	4.17	-	-	4.12	-	-	7.13	6.53	6.23	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.16	5.56	-
Follow-up Hdwy	2.263	-	-	2.218	-	-	3.527	4.027	3.327	3.554	4.054	3.354
Pot Cap-1 Maneuver	942	-	-	853	-	-	110	132	420	106	126	487
Stage 1	-	-	-	-	-	-	395	411	-	438	448	-
Stage 2	-	-	-	-	-	-	440	451	-	383	396	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	942	-	-	853	-	-	101	121	420	92	115	487
Mov Cap-2 Maneuver	-	-	-	-	-	-	101	121	-	92	115	-
Stage 1	-	-	-	-	-	-	383	399	-	425	422	-
Stage 2	-	-	-	-	-	-	407	425	-	347	384	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.5	44.9	28.7
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	151	942	-	-	853	-	-	169
HCM Lane V/C Ratio	0.418	0.017	-	-	0.037	-	-	0.103
HCM Control Delay (s)	44.9	8.9	0	-	9.4	0	-	28.7
HCM Lane LOS	E	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	1.8	0.1	-	-	0.1	-	-	0.3

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	603	67	20	496	0	48	0	28	17	1	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	92	95
Heavy Vehicles, %	6	6	6	2	2	2	8	8	8	3	3	3
Mvmt Flow	0	635	71	21	522	0	51	0	29	18	1	43

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	522	0	0	705	0	0	1256	1234	670	1249	1269	522
Stage 1	-	-	-	-	-	-	670	670	-	564	564	-
Stage 2	-	-	-	-	-	-	586	564	-	685	705	-
Critical Hdwy	4.16	-	-	4.12	-	-	7.18	6.58	6.28	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.18	5.58	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.18	5.58	-	6.13	5.53	-
Follow-up Hdwy	2.254	-	-	2.218	-	-	3.572	4.072	3.372	3.527	4.027	3.327
Pot Cap-1 Maneuver	1024	-	-	893	-	-	144	172	447	149	168	553
Stage 1	-	-	-	-	-	-	437	446	-	509	507	-
Stage 2	-	-	-	-	-	-	486	499	-	436	438	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1024	-	-	893	-	-	129	166	447	136	162	553
Mov Cap-2 Maneuver	-	-	-	-	-	-	129	166	-	136	162	-
Stage 1	-	-	-	-	-	-	437	446	-	509	490	-
Stage 2	-	-	-	-	-	-	432	483	-	407	438	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	41.8	21
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	175	1024	-	-	893	-	-	287
HCM Lane V/C Ratio	0.457	-	-	-	0.024	-	-	0.217
HCM Control Delay (s)	41.8	0	-	-	9.1	0	-	21
HCM Lane LOS	E	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	2.1	0	-	-	0.1	-	-	0.8

MOVEMENT SUMMARY

Site: Milestone Rotary

2016 Existing Saturday
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Old South Rd											
3	L2	162	2.0	1.030	56.8	LOS F	24.5	623.4	1.00	1.95	17.7
8	T1	253	2.0	1.030	52.6	LOS F	24.5	623.4	1.00	1.95	17.7
18	R2	106	2.0	1.030	52.7	LOS F	24.5	623.4	1.00	1.95	17.4
Approach		521	2.0	1.030	53.9	LOS F	24.5	623.4	1.00	1.95	17.6
East: Milestone Rd											
1	L2	86	1.0	0.674	14.3	LOS B	7.2	180.4	0.90	1.00	26.7
6	T1	406	1.0	0.674	10.2	LOS B	7.2	180.4	0.90	1.00	26.7
16	R2	349	1.0	0.512	8.2	LOS A	4.0	101.1	0.80	0.87	26.9
Approach		842	1.0	0.674	9.8	LOS A	7.2	180.4	0.86	0.95	26.8
North: Orange St											
7	L2	260	3.0	0.490	14.7	LOS B	3.5	88.9	0.83	1.00	25.6
4	T1	298	3.0	0.669	13.4	LOS B	6.4	164.4	0.92	1.11	25.9
14	R2	96	3.0	0.669	13.8	LOS B	6.4	164.4	0.92	1.11	25.3
Approach		654	3.0	0.669	14.0	LOS B	6.4	164.4	0.89	1.07	25.7
West: Sparks Ave											
5	L2	45	6.0	1.300	161.3	LOS F	50.5	1322.8	1.00	3.34	9.7
2	T1	271	6.0	1.300	157.2	LOS F	50.5	1322.8	1.00	3.34	9.7
12	R2	219	6.0	1.300	157.2	LOS F	50.5	1322.8	1.00	3.34	9.6
Approach		535	6.0	1.300	157.5	LOS F	50.5	1322.8	1.00	3.34	9.7
All Vehicles		2552	2.8	1.300	50.8	LOS F	50.5	1322.8	0.93	1.68	18.0

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	181	42	53	14	20	117
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	8	8	8	8	4	4
Mvmt Flow	197	46	58	15	22	127

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	73	0	-	0	504	65
Stage 1	-	-	-	-	65	-
Stage 2	-	-	-	-	439	-
Critical Hdwy	4.18	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.272	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	1490	-	-	-	524	993
Stage 1	-	-	-	-	953	-
Stage 2	-	-	-	-	646	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1490	-	-	-	453	993
Mov Cap-2 Maneuver	-	-	-	-	453	-
Stage 1	-	-	-	-	953	-
Stage 2	-	-	-	-	558	-

Approach	EB	WB	SB
HCM Control Delay, s	6.3	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1490	-	-	-	846
HCM Lane V/C Ratio	0.132	-	-	-	0.176
HCM Control Delay (s)	7.8	0	-	-	10.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.6

Intersection	
Int Delay, s/veh	4.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	317	91	93	291	114	94
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	334	96	98	306	120	99

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	429	0	884	382
Stage 1	-	-	-	-	382	-
Stage 2	-	-	-	-	502	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1125	-	315	663
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	606	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1125	-	282	663
Mov Cap-2 Maneuver	-	-	-	-	282	-
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	542	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	19.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	282	663	-	-	1125	-
HCM Lane V/C Ratio	0.426	0.149	-	-	0.087	-
HCM Control Delay (s)	26.9	11.4	-	-	8.5	0
HCM Lane LOS	D	B	-	-	A	A
HCM 95th %tile Q(veh)	2	0.5	-	-	0.3	-

Intersection	
Intersection Delay, s/veh	14.8
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	19	184	196	0	82	184	7	0	213	8	74
Peak Hour Factor	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94
Heavy Vehicles, %	2	3	3	3	2	4	4	4	2	2	2	2
Mvmt Flow	0	20	196	209	0	87	196	7	0	227	9	79
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	16.1	13.5	14.8
HCM LOS	C	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	72%	5%	30%	5%
Vol Thru, %	3%	46%	67%	18%
Vol Right, %	25%	49%	3%	77%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	295	399	273	22
LT Vol	213	19	82	1
Through Vol	8	184	184	4
RT Vol	74	196	7	17
Lane Flow Rate	314	424	290	23
Geometry Grp	1	1	1	1
Degree of Util (X)	0.509	0.61	0.459	0.041
Departure Headway (Hd)	5.837	5.173	5.685	6.267
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	615	696	630	566
Service Time	3.895	3.228	3.745	4.36
HCM Lane V/C Ratio	0.511	0.609	0.46	0.041
HCM Control Delay	14.8	16.1	13.5	9.6
HCM Lane LOS	B	C	B	A
HCM 95th-tile Q	2.9	4.2	2.4	0.1

Intersection	
Int Delay, s/veh	17.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	410	147	184	458	104	214
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	60
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	4	4	2	2	5	5
Mvmt Flow	451	162	202	503	114	235

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	612	0	1439	531
Stage 1	-	-	-	-	531	-
Stage 2	-	-	-	-	908	-
Critical Hdwy	-	-	4.12	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.218	-	3.545	3.345
Pot Cap-1 Maneuver	-	-	967	-	144	542
Stage 1	-	-	-	-	584	-
Stage 2	-	-	-	-	389	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	967	-	~ 102	542
Mov Cap-2 Maneuver	-	-	-	-	~ 102	-
Stage 1	-	-	-	-	584	-
Stage 2	-	-	-	-	276	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.8	77.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	102	542	-	-	967	-
HCM Lane V/C Ratio	1.12	0.434	-	-	0.209	-
HCM Control Delay (s)	203.5	16.6	-	-	9.7	0
HCM Lane LOS	F	C	-	-	A	A
HCM 95th %tile Q(veh)	7.4	2.2	-	-	0.8	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	550	59	44	572	47	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	4	4	2	2	4	4
Mvmt Flow	625	67	50	650	53	53

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	692	0	1409	659
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	750	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	903	-	151	460
Stage 1	-	-	-	-	511	-
Stage 2	-	-	-	-	463	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	903	-	138	460
Mov Cap-2 Maneuver	-	-	-	-	138	-
Stage 1	-	-	-	-	511	-
Stage 2	-	-	-	-	423	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	38.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	212	-	-	903	-
HCM Lane V/C Ratio	0.504	-	-	0.055	-
HCM Control Delay (s)	38.1	-	-	9.2	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	2.6	-	-	0.2	-

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	578	19	17	594	22	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	4	4	3	3	2	2
Mvmt Flow	672	22	20	691	26	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	694	0	1413	683
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	730	-
Critical Hdwy	-	-	4.13	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.227	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	897	-	152	449
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	477	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	897	-	147	449
Mov Cap-2 Maneuver	-	-	-	-	147	-
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	460	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	26.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	214	-	-	897	-
HCM Lane V/C Ratio	0.223	-	-	0.022	-
HCM Control Delay (s)	26.6	-	-	9.1	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	9	550	37	27	557	2	23	2	20	3	4	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	5	5	5	3	3	3	4	4	4	8	8	8
Mvmt Flow	10	611	41	30	619	2	26	2	22	3	4	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	621	0	0	652	0	0	1338	1333	632	1344	1352	620
Stage 1	-	-	-	-	-	-	652	652	-	680	680	-
Stage 2	-	-	-	-	-	-	686	681	-	664	672	-
Critical Hdwy	4.15	-	-	4.13	-	-	7.14	6.54	6.24	7.18	6.58	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-	6.18	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-	6.18	5.58	-
Follow-up Hdwy	2.245	-	-	2.227	-	-	3.536	4.036	3.336	3.572	4.072	3.372
Pot Cap-1 Maneuver	945	-	-	930	-	-	129	153	477	125	146	477
Stage 1	-	-	-	-	-	-	453	461	-	431	442	-
Stage 2	-	-	-	-	-	-	434	447	-	440	445	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	945	-	-	930	-	-	118	143	477	112	136	477
Mov Cap-2 Maneuver	-	-	-	-	-	-	118	143	-	112	136	-
Stage 1	-	-	-	-	-	-	445	453	-	424	420	-
Stage 2	-	-	-	-	-	-	403	425	-	410	437	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.4	32.7	25.6
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	179	945	-	-	930	-	-	189
HCM Lane V/C Ratio	0.279	0.011	-	-	0.032	-	-	0.076
HCM Control Delay (s)	32.7	8.8	0	-	9	0	-	25.6
HCM Lane LOS	D	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	1.1	0	-	-	0.1	-	-	0.2

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	482	59	20	434	0	47	0	23	15	5	84
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	4	4	4	3	3	3	4	4	4	4	4	4
Mvmt Flow	0	536	66	22	482	0	52	0	26	17	6	93

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	482	0	0	601	0	0	1144	1095	568	1108	1128	482
Stage 1	-	-	-	-	-	-	568	568	-	527	527	-
Stage 2	-	-	-	-	-	-	576	527	-	581	601	-
Critical Hdwy	4.14	-	-	4.13	-	-	7.14	6.54	6.24	7.14	6.54	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-	6.14	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-	6.14	5.54	-
Follow-up Hdwy	2.236	-	-	2.227	-	-	3.536	4.036	3.336	3.536	4.036	3.336
Pot Cap-1 Maneuver	1070	-	-	971	-	-	175	212	519	186	203	580
Stage 1	-	-	-	-	-	-	504	503	-	531	525	-
Stage 2	-	-	-	-	-	-	499	525	-	496	486	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1070	-	-	971	-	-	140	205	519	173	197	580
Mov Cap-2 Maneuver	-	-	-	-	-	-	140	205	-	173	197	-
Stage 1	-	-	-	-	-	-	504	503	-	531	509	-
Stage 2	-	-	-	-	-	-	401	509	-	472	486	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	38.2	17.4
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	184	1070	-	-	971	-	-	405
HCM Lane V/C Ratio	0.423	-	-	-	0.023	-	-	0.285
HCM Control Delay (s)	38.2	0	-	-	8.8	0	-	17.4
HCM Lane LOS	E	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	1.9	0	-	-	0.1	-	-	1.2

MOVEMENT SUMMARY

Site: Milestone Rotary

2023 No-Build AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Old South Rd											
3	L2	166	6.0	1.349	186.1	LOS F	59.4	1555.8	1.00	3.49	8.8
8	T1	300	6.0	1.349	181.9	LOS F	59.4	1555.8	1.00	3.49	8.8
18	R2	96	6.0	1.349	182.0	LOS F	59.4	1555.8	1.00	3.49	8.7
Approach		562	6.0	1.349	183.2	LOS F	59.4	1555.8	1.00	3.49	8.8
East: Milestone Rd											
1	L2	103	4.0	0.618	13.0	LOS B	5.9	151.1	0.85	0.92	27.1
6	T1	349	4.0	0.618	8.9	LOS A	5.9	151.1	0.85	0.92	27.0
16	R2	402	4.0	0.549	8.0	LOS A	4.6	118.5	0.80	0.86	27.0
Approach		855	4.0	0.618	9.0	LOS A	5.9	151.1	0.82	0.89	27.0
North: Orange St											
7	L2	362	3.0	0.575	14.5	LOS B	4.8	121.6	0.85	1.04	25.7
4	T1	320	3.0	0.626	11.4	LOS B	5.6	144.2	0.88	1.05	26.5
14	R2	75	3.0	0.626	11.7	LOS B	5.6	144.2	0.88	1.05	25.9
Approach		757	3.0	0.626	12.9	LOS B	5.6	144.2	0.87	1.04	26.0
West: Sparks Ave											
5	L2	59	5.0	1.346	182.3	LOS F	50.1	1301.6	1.00	3.43	8.9
2	T1	296	5.0	1.346	178.2	LOS F	50.1	1301.6	1.00	3.43	8.9
12	R2	137	5.0	1.346	178.2	LOS F	50.1	1301.6	1.00	3.43	8.8
Approach		492	5.0	1.346	178.7	LOS F	50.1	1301.6	1.00	3.43	8.9
All Vehicles		2665	4.3	1.349	78.1	LOS F	59.4	1555.8	0.91	1.95	14.8

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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SIDRA INTERSECTION 6

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	318	72	63	15	19	264
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	23	23	7	7
Mvmt Flow	346	78	68	16	21	287

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	85	0	-	0	847	77
Stage 1	-	-	-	-	77	-
Stage 2	-	-	-	-	770	-
Critical Hdwy	4.16	-	-	-	6.47	6.27
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	2.254	-	-	-	3.563	3.363
Pot Cap-1 Maneuver	1487	-	-	-	326	970
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	448	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1487	-	-	-	247	970
Mov Cap-2 Maneuver	-	-	-	-	247	-
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	339	-

Approach	EB	WB	SB
HCM Control Delay, s	6.6	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1487	-	-	-	811
HCM Lane V/C Ratio	0.232	-	-	-	0.379
HCM Control Delay (s)	8.2	0	-	-	12.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.9	-	-	-	1.8

Intersection	
Int Delay, s/veh	11.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	214	159	126	291	194	151
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	8	8	9	9	9	9
Mvmt Flow	225	167	133	306	204	159

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	393	0	881	309
Stage 1	-	-	-	-	309	-
Stage 2	-	-	-	-	572	-
Critical Hdwy	-	-	4.19	-	6.49	6.29
Critical Hdwy Stg 1	-	-	-	-	5.49	-
Critical Hdwy Stg 2	-	-	-	-	5.49	-
Follow-up Hdwy	-	-	2.281	-	3.581	3.381
Pot Cap-1 Maneuver	-	-	1128	-	308	715
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	551	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1128	-	264	715
Mov Cap-2 Maneuver	-	-	-	-	264	-
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	473	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	35.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	264	715	-	-	1128	-
HCM Lane V/C Ratio	0.774	0.222	-	-	0.118	-
HCM Control Delay (s)	53.4	11.5	-	-	8.6	0
HCM Lane LOS	F	B	-	-	A	A
HCM 95th %tile Q(veh)	5.8	0.8	-	-	0.4	-

Intersection	
Intersection Delay, s/veh	34.1
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	17	289	222	0	103	228	3	0	238	4	114
Peak Hour Factor	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94
Heavy Vehicles, %	2	6	6	6	2	8	8	8	2	4	4	4
Mvmt Flow	0	18	307	236	0	110	243	3	0	253	4	121
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	49.5	22.4	25.1
HCM LOS	E	C	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	67%	3%	31%	21%
Vol Thru, %	1%	55%	68%	7%
Vol Right, %	32%	42%	1%	72%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	356	528	334	43
LT Vol	238	17	103	9
Through Vol	4	289	228	3
RT Vol	114	222	3	31
Lane Flow Rate	379	562	355	46
Geometry Grp	1	1	1	1
Degree of Util (X)	0.713	0.946	0.666	0.1
Departure Headway (Hd)	6.776	6.066	6.75	7.886
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	530	595	533	457
Service Time	4.849	4.134	4.83	5.886
HCM Lane V/C Ratio	0.715	0.945	0.666	0.101
HCM Control Delay	25.1	49.5	22.4	11.8
HCM Lane LOS	D	E	C	B
HCM 95th-tile Q	5.7	12.6	4.9	0.3

Intersection	
Int Delay, s/veh	23.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	424	117	235	511	111	322
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	60
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	7	7	5	5	2	2
Mvmt Flow	437	121	242	527	114	332

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	558	0	1508	497
Stage 1	-	-	-	-	497	-
Stage 2	-	-	-	-	1011	-
Critical Hdwy	-	-	4.15	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.245	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	998	-	133	573
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	352	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	998	-	~ 87	573
Mov Cap-2 Maneuver	-	-	-	-	~ 87	-
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	231	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	88.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	87	573	-	-	998	-
HCM Lane V/C Ratio	1.315	0.579	-	-	0.243	-
HCM Control Delay (s)	289.2	19.6	-	-	9.8	0
HCM Lane LOS	F	C	-	-	A	A
HCM 95th %tile Q(veh)	8.5	3.7	-	-	1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	648	75	52	701	48	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	5	5	7	7	3	3
Mvmt Flow	675	78	54	730	50	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	753	0	1553	714
Stage 1	-	-	-	-	714	-
Stage 2	-	-	-	-	839	-
Critical Hdwy	-	-	4.17	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.263	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	835	-	124	430
Stage 1	-	-	-	-	483	-
Stage 2	-	-	-	-	422	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	835	-	110	430
Mov Cap-2 Maneuver	-	-	-	-	110	-
Stage 1	-	-	-	-	483	-
Stage 2	-	-	-	-	376	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	50.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	162	-	-	835	-
HCM Lane V/C Ratio	0.54	-	-	0.065	-
HCM Control Delay (s)	50.7	-	-	9.6	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	2.7	-	-	0.2	-

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	625	57	20	709	43	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	5	5	9	9	9	9
Mvmt Flow	644	59	21	731	44	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	703	0	1446	674
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	772	-
Critical Hdwy	-	-	4.19	-	6.49	6.29
Critical Hdwy Stg 1	-	-	-	-	5.49	-
Critical Hdwy Stg 2	-	-	-	-	5.49	-
Follow-up Hdwy	-	-	2.281	-	3.581	3.381
Pot Cap-1 Maneuver	-	-	863	-	140	443
Stage 1	-	-	-	-	494	-
Stage 2	-	-	-	-	444	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	863	-	134	443
Mov Cap-2 Maneuver	-	-	-	-	134	-
Stage 1	-	-	-	-	494	-
Stage 2	-	-	-	-	426	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	36.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	191	-	-	863	-
HCM Lane V/C Ratio	0.405	-	-	0.024	-
HCM Control Delay (s)	36.1	-	-	9.3	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	594	24	23	639	0	31	0	18	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	5	5	5	7	7	7	13	13	13	0	0	0
Mvmt Flow	6	639	26	25	687	0	33	0	19	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	687	0	0	665	0	0	1402	1402	652	1411	1414	687
Stage 1	-	-	-	-	-	-	665	665	-	737	737	-
Stage 2	-	-	-	-	-	-	737	737	-	674	677	-
Critical Hdwy	4.15	-	-	4.17	-	-	7.23	6.63	6.33	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.23	5.63	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.23	5.63	-	6.1	5.5	-
Follow-up Hdwy	2.245	-	-	2.263	-	-	3.617	4.117	3.417	3.5	4	3.3
Pot Cap-1 Maneuver	893	-	-	901	-	-	111	133	449	117	139	450
Stage 1	-	-	-	-	-	-	432	441	-	413	428	-
Stage 2	-	-	-	-	-	-	394	409	-	448	455	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	893	-	-	901	-	-	106	126	449	107	131	450
Mov Cap-2 Maneuver	-	-	-	-	-	-	106	126	-	107	131	-
Stage 1	-	-	-	-	-	-	427	436	-	408	409	-
Stage 2	-	-	-	-	-	-	375	391	-	424	450	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	42.6	13
HCM LOS			E	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	147	893	-	-	901	-	-	450
HCM Lane V/C Ratio	0.358	0.007	-	-	0.027	-	-	0.002
HCM Control Delay (s)	42.6	9.1	0	-	9.1	0	-	13
HCM Lane LOS	E	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.5	0	-	-	0.1	-	-	0

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	598	35	14	669	0	46	0	33	21	4	62
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	7	7	7	26	0	26	5	5	5
Mvmt Flow	0	650	38	15	727	0	50	0	36	23	4	67

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	727	0	0	688	0	0	1462	1427	669	1445	1446	727
Stage 1	-	-	-	-	-	-	669	669	-	758	758	-
Stage 2	-	-	-	-	-	-	793	758	-	687	688	-
Critical Hdwy	4.14	-	-	4.17	-	-	7.36	6.5	6.46	7.15	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.36	5.5	-	6.15	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.36	5.5	-	6.15	5.55	-
Follow-up Hdwy	2.236	-	-	2.263	-	-	3.734	4	3.534	3.545	4.045	3.345
Pot Cap-1 Maneuver	867	-	-	883	-	-	94	136	418	108	130	419
Stage 1	-	-	-	-	-	-	410	459	-	395	411	-
Stage 2	-	-	-	-	-	-	348	418	-	432	442	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	867	-	-	883	-	-	75	132	418	97	126	419
Mov Cap-2 Maneuver	-	-	-	-	-	-	75	132	-	97	126	-
Stage 1	-	-	-	-	-	-	410	459	-	395	399	-
Stage 2	-	-	-	-	-	-	280	406	-	395	442	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	98.5	33.2
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	114	867	-	-	883	-	-	220
HCM Lane V/C Ratio	0.753	-	-	-	0.017	-	-	0.43
HCM Control Delay (s)	98.5	0	-	-	9.1	0	-	33.2
HCM Lane LOS	F	A	-	-	A	A	-	D
HCM 95th %tile Q(veh)	4.2	0	-	-	0.1	-	-	2

MOVEMENT SUMMARY

Site: Milestone Rotary

2023 No-Build PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Old South Rd											
3	L2	183	3.0	1.368	193.7	LOS F	63.2	1618.6	1.00	3.58	8.5
8	T1	272	3.0	1.368	189.6	LOS F	63.2	1618.6	1.00	3.58	8.5
18	R2	129	3.0	1.368	189.6	LOS F	63.2	1618.6	1.00	3.58	8.5
Approach		584	3.0	1.368	190.9	LOS F	63.2	1618.6	1.00	3.58	8.5
East: Milestone Rd											
1	L2	136	2.0	0.707	14.4	LOS B	8.1	205.1	0.91	0.99	26.6
6	T1	406	2.0	0.707	10.2	LOS B	8.1	205.1	0.91	0.99	26.6
16	R2	321	2.0	0.480	7.6	LOS A	3.5	88.1	0.75	0.82	27.1
Approach		863	2.0	0.707	9.9	LOS A	8.1	205.1	0.85	0.93	26.8
North: Orange St											
7	L2	363	4.0	0.669	18.5	LOS C	6.3	162.8	0.94	1.14	24.6
4	T1	345	4.0	0.780	18.6	LOS C	9.2	236.4	1.00	1.27	24.4
14	R2	87	4.0	0.780	19.0	LOS C	9.2	236.4	1.00	1.27	23.9
Approach		795	4.0	0.780	18.6	LOS C	9.2	236.4	0.97	1.21	24.4
West: Sparks Ave											
5	L2	70	6.0	1.379	197.7	LOS F	49.4	1293.9	1.00	3.40	8.4
2	T1	294	6.0	1.379	193.6	LOS F	49.4	1293.9	1.00	3.40	8.4
12	R2	93	6.0	1.379	193.6	LOS F	49.4	1293.9	1.00	3.40	8.3
Approach		457	6.0	1.379	194.2	LOS F	49.4	1293.9	1.00	3.40	8.4
All Vehicles		2699	3.5	1.379	82.8	LOS F	63.2	1618.6	0.94	2.01	14.4

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	260	85	84	15	17	280
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	7	7	5	5	5	5
Mvmt Flow	286	93	92	16	19	308

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	109	0	-	0	766	101
Stage 1	-	-	-	-	101	-
Stage 2	-	-	-	-	665	-
Critical Hdwy	4.17	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.263	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	1451	-	-	-	367	946
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	506	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1451	-	-	-	291	946
Mov Cap-2 Maneuver	-	-	-	-	291	-
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	401	-

Approach	EB	WB	SB
HCM Control Delay, s	6.1	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1451	-	-	-	838
HCM Lane V/C Ratio	0.197	-	-	-	0.389
HCM Control Delay (s)	8.1	0	-	-	12
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	1.9

Intersection	
Int Delay, s/veh	9.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	297	155	134	318	153	157
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	5	5	2	2	4	4
Mvmt Flow	309	161	140	331	159	164

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	471	0	1000	390
Stage 1	-	-	-	-	390	-
Stage 2	-	-	-	-	610	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1091	-	267	654
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	538	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1091	-	225	654
Mov Cap-2 Maneuver	-	-	-	-	225	-
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	454	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	32.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	225	654	-	-	1091	-
HCM Lane V/C Ratio	0.708	0.25	-	-	0.128	-
HCM Control Delay (s)	52.4	12.3	-	-	8.8	0
HCM Lane LOS	F	B	-	-	A	A
HCM 95th %tile Q(veh)	4.7	1	-	-	0.4	-

Intersection	
Intersection Delay, s/veh	42.8
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	35	269	236	0	92	291	24	0	224	6	89
Peak Hour Factor	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91
Heavy Vehicles, %	2	6	6	6	2	3	3	3	2	3	3	3
Mvmt Flow	0	38	296	259	0	101	320	26	0	246	7	98
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	63	34.8	24.6
HCM LOS	F	D	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	70%	6%	23%	29%
Vol Thru, %	2%	50%	71%	2%
Vol Right, %	28%	44%	6%	69%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	319	540	407	59
LT Vol	224	35	92	17
Through Vol	6	269	291	1
RT Vol	89	236	24	41
Lane Flow Rate	351	593	447	65
Geometry Grp	1	1	1	1
Degree of Util (X)	0.689	1	0.833	0.146
Departure Headway (Hd)	7.071	6.368	6.706	8.079
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	508	570	541	445
Service Time	5.167	4.394	4.717	6.107
HCM Lane V/C Ratio	0.691	1.04	0.826	0.146
HCM Control Delay	24.6	63	34.8	12.5
HCM Lane LOS	C	F	D	B
HCM 95th-tile Q	5.2	14.5	8.5	0.5

Intersection	
Int Delay, s/veh	63.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	538	165	236	443	157	315
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	60
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	6	3	3	6	6
Mvmt Flow	555	170	243	457	162	325

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	725	0	1583	640
Stage 1	-	-	-	-	640	-
Stage 2	-	-	-	-	943	-
Critical Hdwy	-	-	4.13	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.227	-	3.554	3.354
Pot Cap-1 Maneuver	-	-	873	-	~ 117	468
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	372	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	873	-	~ 73	468
Mov Cap-2 Maneuver	-	-	-	-	~ 73	-
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	233	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.7	245.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	73	468	-	-	873	-
HCM Lane V/C Ratio	2.217	0.694	-	-	0.279	-
HCM Control Delay (s)	$ 680.6	28.4	-	-	10.7	0
HCM Lane LOS	F	D	-	-	B	A
HCM 95th %tile Q(veh)	15.1	5.3	-	-	1.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	4.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	784	79	59	667	46	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	4	4	3	3	1	1
Mvmt Flow	817	82	61	695	48	61

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	899	0	1676	858
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	818	-
Critical Hdwy	-	-	4.13	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.227	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	751	-	105	358
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	435	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	751	-	91	358
Mov Cap-2 Maneuver	-	-	-	-	91	-
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	378	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	68.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	157	-	-	751	-
HCM Lane V/C Ratio	0.697	-	-	0.082	-
HCM Control Delay (s)	68.5	-	-	10.2	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	4.1	-	-	0.3	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	797	37	23	687	40	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	2	2	3	3
Mvmt Flow	839	39	24	723	42	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	878	0	1630	858
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	772	-
Critical Hdwy	-	-	4.12	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.218	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	769	-	111	355
Stage 1	-	-	-	-	414	-
Stage 2	-	-	-	-	454	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	769	-	105	355
Mov Cap-2 Maneuver	-	-	-	-	105	-
Stage 1	-	-	-	-	414	-
Stage 2	-	-	-	-	430	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	50.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	148	-	-	769	-
HCM Lane V/C Ratio	0.484	-	-	0.031	-
HCM Control Delay (s)	50.2	-	-	9.8	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	2.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	9.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	16	701	74	50	626	6	53	1	39	7	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	7	7	7	2	2	2	3	3	3	6	6	6
Mvmt Flow	17	762	80	54	680	7	58	1	42	8	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	687	0	0	842	0	0	1634	1633	802	1651	1669	684
Stage 1	-	-	-	-	-	-	837	837	-	792	792	-
Stage 2	-	-	-	-	-	-	797	796	-	859	877	-
Critical Hdwy	4.17	-	-	4.12	-	-	7.13	6.53	6.23	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.16	5.56	-
Follow-up Hdwy	2.263	-	-	2.218	-	-	3.527	4.027	3.327	3.554	4.054	3.354
Pot Cap-1 Maneuver	884	-	-	794	-	-	80	101	382	77	94	442
Stage 1	-	-	-	-	-	-	360	381	-	377	395	-
Stage 2	-	-	-	-	-	-	379	398	-	346	361	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	884	-	-	794	-	-	70	87	382	60	81	442
Mov Cap-2 Maneuver	-	-	-	-	-	-	70	87	-	60	81	-
Stage 1	-	-	-	-	-	-	347	367	-	363	352	-
Stage 2	-	-	-	-	-	-	330	354	-	295	348	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.7	146.5	41.1
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	107	884	-	-	794	-	-	117
HCM Lane V/C Ratio	0.945	0.02	-	-	0.068	-	-	0.149
HCM Control Delay (s)	146.5	9.2	0	-	9.9	0	-	41.1
HCM Lane LOS	F	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	5.8	0.1	-	-	0.2	-	-	0.5

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	687	72	21	578	0	51	0	30	17	1	42
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	92	95
Heavy Vehicles, %	6	6	6	2	2	2	8	8	8	3	3	3
Mvmt Flow	0	723	76	22	608	0	54	0	32	18	1	44

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	608	0	0	799	0	0	1436	1414	761	1430	1452	608
Stage 1	-	-	-	-	-	-	761	761	-	653	653	-
Stage 2	-	-	-	-	-	-	675	653	-	777	799	-
Critical Hdwy	4.16	-	-	4.12	-	-	7.18	6.58	6.28	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.18	5.58	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.18	5.58	-	6.13	5.53	-
Follow-up Hdwy	2.254	-	-	2.218	-	-	3.572	4.072	3.372	3.527	4.027	3.327
Pot Cap-1 Maneuver	951	-	-	824	-	-	108	134	396	112	130	494
Stage 1	-	-	-	-	-	-	389	405	-	455	462	-
Stage 2	-	-	-	-	-	-	434	454	-	388	396	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	951	-	-	824	-	-	95	129	396	100	125	494
Mov Cap-2 Maneuver	-	-	-	-	-	-	95	129	-	100	125	-
Stage 1	-	-	-	-	-	-	389	405	-	455	444	-
Stage 2	-	-	-	-	-	-	378	436	-	357	396	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	72.1	26.7
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	132	951	-	-	824	-	-	228
HCM Lane V/C Ratio	0.646	-	-	-	0.027	-	-	0.277
HCM Control Delay (s)	72.1	0	-	-	9.5	0	-	26.7
HCM Lane LOS	F	A	-	-	A	A	-	D
HCM 95th %tile Q(veh)	3.4	0	-	-	0.1	-	-	1.1

MOVEMENT SUMMARY

Site: Milestone Rotary

2023 No-Build Saturday
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Old South Rd											
3	L2	195	2.0	1.268	148.2	LOS F	55.4	1406.9	1.00	3.25	10.3
8	T1	295	2.0	1.268	144.1	LOS F	55.4	1406.9	1.00	3.25	10.3
18	R2	120	2.0	1.268	144.1	LOS F	55.4	1406.9	1.00	3.25	10.2
Approach		609	2.0	1.268	145.4	LOS F	55.4	1406.9	1.00	3.25	10.3
East: Milestone Rd											
1	L2	98	1.0	0.733	15.6	LOS C	8.8	222.0	0.94	1.06	26.3
6	T1	446	1.0	0.733	11.4	LOS B	8.8	222.0	0.94	1.06	26.3
16	R2	375	1.0	0.546	8.5	LOS A	4.5	113.4	0.81	0.89	26.8
Approach		919	1.0	0.733	10.7	LOS B	8.8	222.0	0.89	0.99	26.5
North: Orange St											
7	L2	279	3.0	0.579	17.5	LOS C	4.6	117.5	0.89	1.08	24.9
4	T1	341	3.0	0.810	20.6	LOS C	10.2	260.9	1.00	1.32	23.9
14	R2	103	3.0	0.810	21.0	LOS C	10.2	260.9	1.00	1.32	23.4
Approach		723	3.0	0.810	19.5	LOS C	10.2	260.9	0.96	1.22	24.2
West: Sparks Ave											
5	L2	48	6.0	1.304	164.0	LOS F	47.1	1233.3	1.00	3.25	9.6
2	T1	301	6.0	1.304	159.8	LOS F	47.1	1233.3	1.00	3.25	9.6
12	R2	143	6.0	1.304	159.8	LOS F	47.1	1233.3	1.00	3.25	9.5
Approach		493	6.0	1.304	160.2	LOS F	47.1	1233.3	1.00	3.25	9.6
All Vehicles		2744	2.6	1.304	69.8	LOS F	55.4	1406.9	0.95	1.96	15.6

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	211	45	57	15	21	139
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	8	8	8	8	4	4
Mvmt Flow	229	49	62	16	23	151

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	78	0	-	0	578	70
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	508	-
Critical Hdwy	4.18	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.272	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	1483	-	-	-	474	987
Stage 1	-	-	-	-	948	-
Stage 2	-	-	-	-	600	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1483	-	-	-	399	987
Mov Cap-2 Maneuver	-	-	-	-	399	-
Stage 1	-	-	-	-	948	-
Stage 2	-	-	-	-	505	-

Approach	EB	WB	SB
HCM Control Delay, s	6.5	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1483	-	-	-	827
HCM Lane V/C Ratio	0.155	-	-	-	0.21
HCM Control Delay (s)	7.9	0	-	-	10.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.8

Intersection	
Int Delay, s/veh	6.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	340	98	113	312	122	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	358	103	119	328	128	121

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	461	0	975	409
Stage 1	-	-	-	-	409	-
Stage 2	-	-	-	-	566	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1095	-	278	640
Stage 1	-	-	-	-	668	-
Stage 2	-	-	-	-	566	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1095	-	241	640
Mov Cap-2 Maneuver	-	-	-	-	241	-
Stage 1	-	-	-	-	668	-
Stage 2	-	-	-	-	491	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	24.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	241	640	-	-	1095	-
HCM Lane V/C Ratio	0.533	0.189	-	-	0.109	-
HCM Control Delay (s)	35.8	11.9	-	-	8.7	0
HCM Lane LOS	E	B	-	-	A	A
HCM 95th %tile Q(veh)	2.8	0.7	-	-	0.4	-

Intersection	
Intersection Delay, s/veh	21
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	20	231	229	0	88	211	8	0	247	9	79
Peak Hour Factor	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94
Heavy Vehicles, %	2	3	3	3	2	4	4	4	2	2	2	2
Mvmt Flow	0	21	246	244	0	94	224	9	0	263	10	84
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	25.6	16.8	19.1
HCM LOS	D	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	74%	4%	29%	4%
Vol Thru, %	3%	48%	69%	17%
Vol Right, %	24%	48%	3%	78%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	335	480	307	23
LT Vol	247	20	88	1
Through Vol	9	231	211	4
RT Vol	79	229	8	18
Lane Flow Rate	356	511	327	24
Geometry Grp	1	1	1	1
Degree of Util (X)	0.618	0.78	0.562	0.048
Departure Headway (Hd)	6.357	5.601	6.193	7.095
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	570	649	585	506
Service Time	4.357	3.601	4.196	5.116
HCM Lane V/C Ratio	0.625	0.787	0.559	0.047
HCM Control Delay	19.1	25.6	16.8	10.5
HCM Lane LOS	C	D	C	B
HCM 95th-tile Q	4.2	7.5	3.5	0.2

Intersection	
Int Delay, s/veh	36.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	486	158	206	540	111	240
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	60
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	2	2	5	5
Mvmt Flow	528	172	224	587	121	261

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	700	0	1649	614
Stage 1	-	-	-	-	614	-
Stage 2	-	-	-	-	1035	-
Critical Hdwy	-	-	4.12	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.218	-	3.545	3.345
Pot Cap-1 Maneuver	-	-	897	-	~ 107	486
Stage 1	-	-	-	-	534	-
Stage 2	-	-	-	-	338	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	897	-	~ 67	486
Mov Cap-2 Maneuver	-	-	-	-	~ 67	-
Stage 1	-	-	-	-	534	-
Stage 2	-	-	-	-	213	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	176.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	67	486	-	-	897	-
HCM Lane V/C Ratio	1.801	0.537	-	-	0.25	-
HCM Control Delay (s)	$ 514.6	20.7	-	-	10.3	0
HCM Lane LOS	F	C	-	-	B	A
HCM 95th %tile Q(veh)	10.9	3.1	-	-	1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	4.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	646	64	49	669	51	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	2	2	4	4
Mvmt Flow	702	70	53	727	55	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	772	0	1571	737
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	834	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	843	-	120	415
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	423	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	843	-	107	415
Mov Cap-2 Maneuver	-	-	-	-	107	-
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	379	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	59
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	171	-	-	843	-
HCM Lane V/C Ratio	0.655	-	-	0.063	-
HCM Control Delay (s)	59	-	-	9.6	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	3.8	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	670	21	19	685	25	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	3	3	2	2
Mvmt Flow	728	23	21	745	27	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	751	0	1526	740
Stage 1	-	-	-	-	740	-
Stage 2	-	-	-	-	786	-
Critical Hdwy	-	-	4.13	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.227	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	854	-	130	417
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	449	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	854	-	125	417
Mov Cap-2 Maneuver	-	-	-	-	125	-
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	430	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	31.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	186	-	-	854	-
HCM Lane V/C Ratio	0.275	-	-	0.024	-
HCM Control Delay (s)	31.5	-	-	9.3	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	9	611	70	50	621	2	53	2	44	3	4	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	5	5	5	3	3	3	4	4	4	8	8	8
Mvmt Flow	10	679	78	56	690	2	59	2	49	3	4	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	692	0	0	757	0	0	1546	1541	718	1565	1579	691
Stage 1	-	-	-	-	-	-	738	738	-	802	802	-
Stage 2	-	-	-	-	-	-	808	803	-	763	777	-
Critical Hdwy	4.15	-	-	4.13	-	-	7.14	6.54	6.24	7.18	6.58	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-	6.18	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-	6.18	5.58	-
Follow-up Hdwy	2.245	-	-	2.227	-	-	3.536	4.036	3.336	3.572	4.072	3.372
Pot Cap-1 Maneuver	889	-	-	849	-	-	92	114	426	88	106	434
Stage 1	-	-	-	-	-	-	407	421	-	369	388	-
Stage 2	-	-	-	-	-	-	372	393	-	388	398	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	889	-	-	849	-	-	79	100	426	69	93	434
Mov Cap-2 Maneuver	-	-	-	-	-	-	79	100	-	69	93	-
Stage 1	-	-	-	-	-	-	399	413	-	362	346	-
Stage 2	-	-	-	-	-	-	323	351	-	335	390	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.7	117	36.1
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	125	889	-	-	849	-	-	130
HCM Lane V/C Ratio	0.88	0.011	-	-	0.065	-	-	0.111
HCM Control Delay (s)	117	9.1	0	-	9.5	0	-	36.1
HCM Lane LOS	F	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	5.6	0	-	-	0.2	-	-	0.4

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	561	63	21	509	0	50	0	25	15	5	84
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	4	4	4	3	3	3	4	4	4	4	4	4
Mvmt Flow	0	623	70	23	566	0	56	0	28	17	6	93

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	566	0	0	693	0	0	1320	1270	658	1284	1305	566
Stage 1	-	-	-	-	-	-	658	658	-	612	612	-
Stage 2	-	-	-	-	-	-	662	612	-	672	693	-
Critical Hdwy	4.14	-	-	4.13	-	-	7.14	6.54	6.24	7.14	6.54	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-	6.14	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-	6.14	5.54	-
Follow-up Hdwy	2.236	-	-	2.227	-	-	3.536	4.036	3.336	3.536	4.036	3.336
Pot Cap-1 Maneuver	996	-	-	898	-	-	133	167	461	140	159	520
Stage 1	-	-	-	-	-	-	450	458	-	477	481	-
Stage 2	-	-	-	-	-	-	448	481	-	442	442	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	996	-	-	898	-	-	103	161	461	128	153	520
Mov Cap-2 Maneuver	-	-	-	-	-	-	103	161	-	128	153	-
Stage 1	-	-	-	-	-	-	450	458	-	477	463	-
Stage 2	-	-	-	-	-	-	350	463	-	415	442	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	63.7	21.4
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	139	996	-	-	898	-	-	334
HCM Lane V/C Ratio	0.6	-	-	-	0.026	-	-	0.346
HCM Control Delay (s)	63.7	0	-	-	9.1	0	-	21.4
HCM Lane LOS	F	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	3.1	0	-	-	0.1	-	-	1.5

MOVEMENT SUMMARY

Site: Milestone Rotary

2023 Build AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Old South Rd											
3	L2	199	6.0	1.547	272.1	LOS F	86.6	2268.4	1.00	4.28	6.6
8	T1	348	6.0	1.547	268.0	LOS F	86.6	2268.4	1.00	4.28	6.6
18	R2	104	6.0	1.547	268.0	LOS F	86.6	2268.4	1.00	4.28	6.5
Approach		652	6.0	1.547	269.2	LOS F	86.6	2268.4	1.00	4.28	6.6
East: Milestone Rd											
1	L2	105	4.0	0.626	13.2	LOS B	6.0	155.2	0.86	0.94	27.0
6	T1	349	4.0	0.626	9.1	LOS A	6.0	155.2	0.86	0.94	27.0
16	R2	402	4.0	0.554	8.2	LOS A	4.7	120.4	0.81	0.87	26.9
Approach		857	4.0	0.626	9.2	LOS A	6.0	155.2	0.83	0.91	26.9
North: Orange St											
7	L2	362	3.0	0.580	14.7	LOS B	4.8	123.7	0.86	1.05	25.6
4	T1	336	3.0	0.657	12.2	LOS B	6.2	159.3	0.90	1.08	26.2
14	R2	75	3.0	0.657	12.6	LOS B	6.2	159.3	0.90	1.08	25.7
Approach		773	3.0	0.657	13.4	LOS B	6.2	159.3	0.88	1.06	25.9
West: Sparks Ave											
5	L2	59	5.0	1.406	208.4	LOS F	55.9	1454.0	1.00	3.64	8.1
2	T1	296	5.0	1.406	204.2	LOS F	55.9	1454.0	1.00	3.64	8.1
12	R2	148	5.0	1.406	204.2	LOS F	55.9	1454.0	1.00	3.64	8.0
Approach		503	5.0	1.406	204.7	LOS F	55.9	1454.0	1.00	3.64	8.1
All Vehicles		2784	4.4	1.547	106.6	LOS F	86.6	2268.4	0.92	2.23	12.5

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Intersection	
Int Delay, s/veh	8.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	341	72	63	15	19	272
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	23	23	7	7
Mvmt Flow	371	78	68	16	21	296

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	85	0	-	0	897	77
Stage 1	-	-	-	-	77	-
Stage 2	-	-	-	-	820	-
Critical Hdwy	4.16	-	-	-	6.47	6.27
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	2.254	-	-	-	3.563	3.363
Pot Cap-1 Maneuver	1487	-	-	-	304	970
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	424	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1487	-	-	-	225	970
Mov Cap-2 Maneuver	-	-	-	-	225	-
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	313	-

Approach	EB	WB	SB
HCM Control Delay, s	6.8	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1487	-	-	-	798
HCM Lane V/C Ratio	0.249	-	-	-	0.396
HCM Control Delay (s)	8.2	0	-	-	12.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	1	-	-	-	1.9

Intersection	
Int Delay, s/veh	12.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	214	159	134	291	194	174
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	8	8	9	9	9	9
Mvmt Flow	225	167	141	306	204	183

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	393	0	897	309
Stage 1	-	-	-	-	309	-
Stage 2	-	-	-	-	588	-
Critical Hdwy	-	-	4.19	-	6.49	6.29
Critical Hdwy Stg 1	-	-	-	-	5.49	-
Critical Hdwy Stg 2	-	-	-	-	5.49	-
Follow-up Hdwy	-	-	2.281	-	3.581	3.381
Pot Cap-1 Maneuver	-	-	1128	-	302	715
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	542	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1128	-	256	715
Mov Cap-2 Maneuver	-	-	-	-	256	-
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	460	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.7	36.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	256	715	-	-	1128	-
HCM Lane V/C Ratio	0.798	0.256	-	-	0.125	-
HCM Control Delay (s)	57.9	11.8	-	-	8.6	0
HCM Lane LOS	F	B	-	-	A	A
HCM 95th %tile Q(veh)	6.1	1	-	-	0.4	-

Intersection	
Intersection Delay, s/veh	40.7
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	17	312	246	0	103	236	3	0	247	4	114
Peak Hour Factor	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94
Heavy Vehicles, %	2	6	6	6	2	8	8	8	2	4	4	4
Mvmt Flow	0	18	332	262	0	110	251	3	0	263	4	121
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	62.1	23.4	26.6
HCM LOS	F	C	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	68%	3%	30%	21%
Vol Thru, %	1%	54%	69%	7%
Vol Right, %	31%	43%	1%	72%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	365	575	342	43
LT Vol	247	17	103	9
Through Vol	4	312	236	3
RT Vol	114	246	3	31
Lane Flow Rate	388	612	364	46
Geometry Grp	1	1	1	1
Degree of Util (X)	0.736	1	0.685	0.101
Departure Headway (Hd)	6.825	6.202	6.774	7.958
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	532	587	531	453
Service Time	4.852	4.207	4.844	5.958
HCM Lane V/C Ratio	0.729	1.043	0.685	0.102
HCM Control Delay	26.6	62.1	23.4	11.9
HCM Lane LOS	D	F	C	B
HCM 95th-tile Q	6.2	14.7	5.2	0.3

Intersection	
Int Delay, s/veh	38.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	452	117	259	596	111	329
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	60
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	7	7	5	5	2	2
Mvmt Flow	466	121	267	614	114	339

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	587	0	1674	526
Stage 1	-	-	-	-	526	-
Stage 2	-	-	-	-	1148	-
Critical Hdwy	-	-	4.15	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.245	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	973	-	~ 105	552
Stage 1	-	-	-	-	593	-
Stage 2	-	-	-	-	302	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	973	-	~ 61	552
Mov Cap-2 Maneuver	-	-	-	-	~ 61	-
Stage 1	-	-	-	-	593	-
Stage 2	-	-	-	-	176	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	157
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	61	552	-	-	973	-
HCM Lane V/C Ratio	1.876	0.614	-	-	0.274	-
HCM Control Delay (s)	$ 558.9	21.4	-	-	10.1	0
HCM Lane LOS	F	C	-	-	B	A
HCM 95th %tile Q(veh)	10.7	4.1	-	-	1.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	683	75	52	810	48	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	5	5	7	7	3	3
Mvmt Flow	711	78	54	844	50	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	790	0	1703	751
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	952	-
Critical Hdwy	-	-	4.17	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.263	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	808	-	100	409
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	373	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	808	-	87	409
Mov Cap-2 Maneuver	-	-	-	-	87	-
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	326	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	75.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	131	-	-	808	-
HCM Lane V/C Ratio	0.668	-	-	0.067	-
HCM Control Delay (s)	75.4	-	-	9.8	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	3.6	-	-	0.2	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	660	57	20	818	43	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	5	5	9	9	9	9
Mvmt Flow	680	59	21	843	44	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	739	0	1595	710
Stage 1	-	-	-	-	710	-
Stage 2	-	-	-	-	885	-
Critical Hdwy	-	-	4.19	-	6.49	6.29
Critical Hdwy Stg 1	-	-	-	-	5.49	-
Critical Hdwy Stg 2	-	-	-	-	5.49	-
Follow-up Hdwy	-	-	2.281	-	3.581	3.381
Pot Cap-1 Maneuver	-	-	836	-	113	422
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	392	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	836	-	108	422
Mov Cap-2 Maneuver	-	-	-	-	108	-
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	374	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	47.9
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	158	-	-	836	-
HCM Lane V/C Ratio	0.489	-	-	0.025	-
HCM Control Delay (s)	47.9	-	-	9.4	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	2.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	611	42	27	725	0	54	0	18	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	5	5	5	7	7	7	13	13	13	0	0	0
Mvmt Flow	6	657	45	29	780	0	58	0	19	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	780	0	0	702	0	0	1530	1530	680	1540	1553	780
Stage 1	-	-	-	-	-	-	692	692	-	838	838	-
Stage 2	-	-	-	-	-	-	838	838	-	702	715	-
Critical Hdwy	4.15	-	-	4.17	-	-	7.23	6.63	6.33	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.23	5.63	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.23	5.63	-	6.1	5.5	-
Follow-up Hdwy	2.245	-	-	2.263	-	-	3.617	4.117	3.417	3.5	4	3.3
Pot Cap-1 Maneuver	824	-	-	873	-	-	90	111	433	95	114	399
Stage 1	-	-	-	-	-	-	417	429	-	364	384	-
Stage 2	-	-	-	-	-	-	345	367	-	432	438	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	824	-	-	873	-	-	85	103	433	86	106	399
Mov Cap-2 Maneuver	-	-	-	-	-	-	85	103	-	86	106	-
Stage 1	-	-	-	-	-	-	412	424	-	360	361	-
Stage 2	-	-	-	-	-	-	324	345	-	408	433	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	100.1	14
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	106	824	-	-	873	-	-	399
HCM Lane V/C Ratio	0.73	0.008	-	-	0.033	-	-	0.003
HCM Control Delay (s)	100.1	9.4	0	-	9.3	0	-	14
HCM Lane LOS	F	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	3.9	0	-	-	0.1	-	-	0

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	597	5	3	732	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	0	0	7	0	0
Mvmt Flow	649	5	3	796	3	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	654	0	1454	652
Stage 1	-	-	-	-	652	-
Stage 2	-	-	-	-	802	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	943	-	145	471
Stage 1	-	-	-	-	522	-
Stage 2	-	-	-	-	445	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	943	-	144	471
Mov Cap-2 Maneuver	-	-	-	-	144	-
Stage 1	-	-	-	-	522	-
Stage 2	-	-	-	-	442	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	26.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	174	-	-	943	-
HCM Lane V/C Ratio	0.025	-	-	0.003	-
HCM Control Delay (s)	26.2	-	-	8.8	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	598	669	0	21	66
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	7	7	5	5
Mvmt Flow	0	650	727	0	23	72

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	727	0	-	0	1377	727
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	650	-
Critical Hdwy	4.14	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.236	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	867	-	-	-	157	419
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	514	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	867	-	-	-	157	419
Mov Cap-2 Maneuver	-	-	-	-	157	-
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	514	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	22.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	867	-	-	-	299
HCM Lane V/C Ratio	-	-	-	-	0.316
HCM Control Delay (s)	0	-	-	-	22.5
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1.3

Intersection	
Int Delay, s/veh	8.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	572	47	29	540	129	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	0	0	7	0	0
Mvmt Flow	622	51	32	587	140	87

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	673	0	1297	647
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	650	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	927	-	180	475
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	523	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	927	-	171	475
Mov Cap-2 Maneuver	-	-	-	-	171	-
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	496	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	56.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	171	475	-	-	927	-
HCM Lane V/C Ratio	0.82	0.183	-	-	0.034	-
HCM Control Delay (s)	82.5	14.3	-	-	9	0
HCM Lane LOS	F	B	-	-	A	A
HCM 95th %tile Q(veh)	5.6	0.7	-	-	0.1	-

MOVEMENT SUMMARY

Site: Milestone Rotary

2023 Build PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Old South Rd											
3	L2	204	3.0	1.460	232.7	LOS F	77.9	1993.5	1.00	4.00	7.4
8	T1	304	3.0	1.460	228.6	LOS F	77.9	1993.5	1.00	4.00	7.4
18	R2	135	3.0	1.460	228.6	LOS F	77.9	1993.5	1.00	4.00	7.4
Approach		643	3.0	1.460	229.9	LOS F	77.9	1993.5	1.00	4.00	7.4
East: Milestone Rd											
1	L2	121	2.0	0.649	13.3	LOS B	6.6	166.8	0.86	0.94	27.0
6	T1	369	2.0	0.649	9.1	LOS A	6.6	166.8	0.86	0.94	26.9
16	R2	300	2.0	0.449	7.3	LOS A	3.1	78.4	0.74	0.80	27.2
Approach		791	2.0	0.649	9.1	LOS A	6.6	166.8	0.82	0.89	27.0
North: Orange St											
7	L2	363	4.0	0.649	17.5	LOS C	5.9	151.7	0.91	1.11	24.9
4	T1	398	4.0	0.820	19.7	LOS C	10.8	277.5	1.00	1.32	24.1
14	R2	87	4.0	0.820	20.0	LOS C	10.8	277.5	1.00	1.32	23.7
Approach		848	4.0	0.820	18.7	LOS C	10.8	277.5	0.96	1.23	24.4
West: Sparks Ave											
5	L2	70	6.0	1.538	267.9	LOS F	64.3	1685.8	1.00	3.88	6.6
2	T1	294	6.0	1.538	263.7	LOS F	64.3	1685.8	1.00	3.88	6.6
12	R2	129	6.0	1.538	263.8	LOS F	64.3	1685.8	1.00	3.88	6.6
Approach		493	6.0	1.538	264.3	LOS F	64.3	1685.8	1.00	3.88	6.6
All Vehicles		2774	3.6	1.538	108.5	LOS F	77.9	1993.5	0.94	2.25	12.3

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	278	85	84	15	17	308
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	7	7	5	5	5	5
Mvmt Flow	305	93	92	16	19	338

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	109	0	-	0	805	101
Stage 1	-	-	-	-	101	-
Stage 2	-	-	-	-	704	-
Critical Hdwy	4.17	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.263	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	1451	-	-	-	348	946
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	485	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1451	-	-	-	271	946
Mov Cap-2 Maneuver	-	-	-	-	271	-
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	377	-

Approach	EB	WB	SB
HCM Control Delay, s	6.2	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1451	-	-	-	837
HCM Lane V/C Ratio	0.211	-	-	-	0.427
HCM Control Delay (s)	8.1	0	-	-	12.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.8	-	-	-	2.2

Intersection	
Int Delay, s/veh	11.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	297	155	161	318	153	174
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	5	5	2	2	4	4
Mvmt Flow	309	161	168	331	159	181

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	471	0	1057	390
Stage 1	-	-	-	-	390	-
Stage 2	-	-	-	-	667	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1091	-	247	654
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	507	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1091	-	200	654
Mov Cap-2 Maneuver	-	-	-	-	200	-
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	411	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3	39.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	200	654	-	-	1091	-
HCM Lane V/C Ratio	0.797	0.277	-	-	0.154	-
HCM Control Delay (s)	69.7	12.6	-	-	8.9	0
HCM Lane LOS	F	B	-	-	A	A
HCM 95th %tile Q(veh)	5.6	1.1	-	-	0.5	-

Intersection	
Intersection Delay, s/veh	49.1
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	35	287	254	0	92	319	24	0	253	6	89
Peak Hour Factor	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91
Heavy Vehicles, %	2	6	6	6	2	3	3	3	2	3	3	3
Mvmt Flow	0	38	315	279	0	101	351	26	0	278	7	98
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	64.7	47.7	31.1
HCM LOS	F	E	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	73%	6%	21%	29%
Vol Thru, %	2%	50%	73%	2%
Vol Right, %	26%	44%	6%	69%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	348	576	435	59
LT Vol	253	35	92	17
Through Vol	6	287	319	1
RT Vol	89	254	24	41
Lane Flow Rate	382	633	478	65
Geometry Grp	1	1	1	1
Degree of Util (X)	0.774	1	0.916	0.152
Departure Headway (Hd)	7.284	6.657	6.895	8.433
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	497	544	526	425
Service Time	5.318	4.716	4.932	6.499
HCM Lane V/C Ratio	0.769	1.164	0.909	0.153
HCM Control Delay	31.1	64.7	47.7	13
HCM Lane LOS	D	F	E	B
HCM 95th-tile Q	6.9	14.2	10.9	0.5

Intersection	
Int Delay, s/veh	102.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	634	165	251	501	157	342
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	60
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	6	6	3	3	6	6
Mvmt Flow	654	170	259	516	162	353

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	824	0	1773	739
Stage 1	-	-	-	-	739	-
Stage 2	-	-	-	-	1034	-
Critical Hdwy	-	-	4.13	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.227	-	3.554	3.354
Pot Cap-1 Maneuver	-	-	802	-	~ 89	411
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	337	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	802	-	~ 49	411
Mov Cap-2 Maneuver	-	-	-	-	~ 49	-
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	184	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.9	$ 414.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	49	411	-	-	802	-
HCM Lane V/C Ratio	3.303	0.858	-	-	0.323	-
HCM Control Delay (s)	$ 1211.3	48.1	-	-	11.6	0
HCM Lane LOS	F	E	-	-	B	A
HCM 95th %tile Q(veh)	17.6	8.4	-	-	1.4	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	8.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	907	79	60	740	46	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	4	4	3	3	1	1
Mvmt Flow	945	82	62	771	48	62

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1027	0	1882	986
Stage 1	-	-	-	-	986	-
Stage 2	-	-	-	-	896	-
Critical Hdwy	-	-	4.13	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.227	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	672	-	78	302
Stage 1	-	-	-	-	363	-
Stage 2	-	-	-	-	400	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	672	-	65	302
Mov Cap-2 Maneuver	-	-	-	-	65	-
Stage 1	-	-	-	-	363	-
Stage 2	-	-	-	-	334	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	138.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	117	-	-	672	-
HCM Lane V/C Ratio	0.944	-	-	0.093	-
HCM Control Delay (s)	138.1	-	-	10.9	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	6	-	-	0.3	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	921	37	23	761	40	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	2	2	3	3
Mvmt Flow	969	39	24	801	42	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1008	0	1838	989
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	849	-
Critical Hdwy	-	-	4.12	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.218	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	687	-	83	298
Stage 1	-	-	-	-	359	-
Stage 2	-	-	-	-	418	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	687	-	78	298
Mov Cap-2 Maneuver	-	-	-	-	78	-
Stage 1	-	-	-	-	359	-
Stage 2	-	-	-	-	392	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	81.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	112	-	-	687	-
HCM Lane V/C Ratio	0.639	-	-	0.035	-
HCM Control Delay (s)	81.8	-	-	10.4	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	3.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	34.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	16	789	110	51	674	6	79	1	39	7	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	7	7	7	2	2	2	3	3	3	6	6	6
Mvmt Flow	17	858	120	55	733	7	86	1	42	8	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	739	0	0	977	0	0	1804	1802	917	1821	1859	736
Stage 1	-	-	-	-	-	-	952	952	-	847	847	-
Stage 2	-	-	-	-	-	-	852	850	-	974	1012	-
Critical Hdwy	4.17	-	-	4.12	-	-	7.13	6.53	6.23	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.16	5.56	-
Follow-up Hdwy	2.263	-	-	2.218	-	-	3.527	4.027	3.327	3.554	4.054	3.354
Pot Cap-1 Maneuver	845	-	-	706	-	-	~ 61	79	328	58	72	412
Stage 1	-	-	-	-	-	-	310	337	-	351	372	-
Stage 2	-	-	-	-	-	-	353	375	-	298	312	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	845	-	-	706	-	-	~ 52	65	328	43	60	412
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 52	65	-	43	60	-
Stage 1	-	-	-	-	-	-	296	322	-	335	323	-
Stage 2	-	-	-	-	-	-	299	326	-	247	298	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.7	$ 503.5	56.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	72	845	-	-	706	-	-	87
HCM Lane V/C Ratio	1.796	0.021	-	-	0.079	-	-	0.2
HCM Control Delay (s)	$ 503.5	9.3	0	-	10.5	0	-	56.4
HCM Lane LOS	F	A	A	-	B	A	-	F
HCM 95th %tile Q(veh)	11.4	0.1	-	-	0.3	-	-	0.7

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	827	20	13	701	19	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	0	0	2	0	0
Mvmt Flow	899	22	14	762	21	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	921	0	1700	910
Stage 1	-	-	-	-	910	-
Stage 2	-	-	-	-	790	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	750	-	102	336
Stage 1	-	-	-	-	396	-
Stage 2	-	-	-	-	451	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	750	-	99	336
Mov Cap-2 Maneuver	-	-	-	-	99	-
Stage 1	-	-	-	-	396	-
Stage 2	-	-	-	-	437	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	39.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	139	-	-	750	-
HCM Lane V/C Ratio	0.25	-	-	0.019	-
HCM Control Delay (s)	39.3	-	-	9.9	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	840	671	0	17	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	6	6	2	2	3	3
Mvmt Flow	0	884	706	0	18	45

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	706	0	-	0	1590	706
Stage 1	-	-	-	-	706	-
Stage 2	-	-	-	-	884	-
Critical Hdwy	4.16	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.254	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	874	-	-	-	118	434
Stage 1	-	-	-	-	488	-
Stage 2	-	-	-	-	402	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	874	-	-	-	118	434
Mov Cap-2 Maneuver	-	-	-	-	118	-
Stage 1	-	-	-	-	488	-
Stage 2	-	-	-	-	402	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	24.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	874	-	-	-	247
HCM Lane V/C Ratio	-	-	-	-	0.256
HCM Control Delay (s)	0	-	-	-	24.5
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1

Intersection	
Int Delay, s/veh	9.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	693	147	73	584	87	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	0	0	2	0	0
Mvmt Flow	753	160	79	635	95	66

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	913	0	1626	833
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	793	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	755	-	114	372
Stage 1	-	-	-	-	430	-
Stage 2	-	-	-	-	449	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	755	-	96	372
Mov Cap-2 Maneuver	-	-	-	-	96	-
Stage 1	-	-	-	-	430	-
Stage 2	-	-	-	-	376	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	105.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	96	372	-	-	755	-
HCM Lane V/C Ratio	0.985	0.178	-	-	0.105	-
HCM Control Delay (s)	168.1	16.8	-	-	10.3	0
HCM Lane LOS	F	C	-	-	B	A
HCM 95th %tile Q(veh)	5.9	0.6	-	-	0.4	-

MOVEMENT SUMMARY

Site: Milestone Rotary

2023 Build Saturday
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Old South Rd											
3	L2	220	2.0	1.365	189.2	LOS F	72.2	1834.7	1.00	3.77	8.7
8	T1	332	2.0	1.365	185.1	LOS F	72.2	1834.7	1.00	3.77	8.7
18	R2	127	2.0	1.365	185.1	LOS F	72.2	1834.7	1.00	3.77	8.6
Approach		679	2.0	1.365	186.4	LOS F	72.2	1834.7	1.00	3.77	8.7
East: Milestone Rd											
1	L2	105	1.0	0.756	16.6	LOS C	9.5	240.0	0.97	1.11	26.0
6	T1	446	1.0	0.756	12.4	LOS B	9.5	240.0	0.97	1.11	26.0
16	R2	375	1.0	0.559	9.0	LOS A	4.7	118.6	0.83	0.91	26.7
Approach		926	1.0	0.756	11.5	LOS B	9.5	240.0	0.91	1.03	26.3
North: Orange St											
7	L2	279	3.0	0.617	19.2	LOS C	5.1	129.6	0.91	1.11	24.4
4	T1	383	3.0	0.908	30.4	LOS D	14.9	382.7	1.00	1.53	21.6
14	R2	103	3.0	0.908	30.8	LOS D	14.9	382.7	1.00	1.53	21.2
Approach		765	3.0	0.908	26.4	LOS D	14.9	382.7	0.97	1.38	22.5
West: Sparks Ave											
5	L2	48	6.0	1.453	229.5	LOS F	61.9	1621.8	1.00	3.79	7.5
2	T1	301	6.0	1.453	225.4	LOS F	61.9	1621.8	1.00	3.79	7.5
12	R2	172	6.0	1.453	225.4	LOS F	61.9	1621.8	1.00	3.79	7.4
Approach		521	6.0	1.453	225.8	LOS F	61.9	1621.8	1.00	3.79	7.5
All Vehicles		2892	2.7	1.453	95.1	LOS F	72.2	1834.7	0.96	2.26	13.3

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	232	45	57	15	21	162
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	8	8	8	8	4	4
Mvmt Flow	252	49	62	16	23	176

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	78	0	-	0	623	70
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	553	-
Critical Hdwy	4.18	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.272	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	1483	-	-	-	447	987
Stage 1	-	-	-	-	948	-
Stage 2	-	-	-	-	572	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1483	-	-	-	369	987
Mov Cap-2 Maneuver	-	-	-	-	369	-
Stage 1	-	-	-	-	948	-
Stage 2	-	-	-	-	472	-

Approach	EB	WB	SB
HCM Control Delay, s	6.6	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1483	-	-	-	828
HCM Lane V/C Ratio	0.17	-	-	-	0.24
HCM Control Delay (s)	7.9	0	-	-	10.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.6	-	-	-	0.9

Intersection	
Int Delay, s/veh	7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	340	98	135	312	122	135
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	358	103	142	328	128	142

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	461	0	1022	409
Stage 1	-	-	-	-	409	-
Stage 2	-	-	-	-	613	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1095	-	260	640
Stage 1	-	-	-	-	668	-
Stage 2	-	-	-	-	539	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1095	-	219	640
Mov Cap-2 Maneuver	-	-	-	-	219	-
Stage 1	-	-	-	-	668	-
Stage 2	-	-	-	-	453	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.7	26.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	219	640	-	-	1095	-
HCM Lane V/C Ratio	0.586	0.222	-	-	0.13	-
HCM Control Delay (s)	42.4	12.2	-	-	8.8	0
HCM Lane LOS	E	B	-	-	A	A
HCM 95th %tile Q(veh)	3.3	0.8	-	-	0.4	-

Intersection	
Intersection Delay, s/veh	29.5
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	20	252	250	0	88	234	8	0	272	9	79
Peak Hour Factor	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94
Heavy Vehicles, %	2	3	3	3	2	4	4	4	2	2	2	2
Mvmt Flow	0	21	268	266	0	94	249	9	0	289	10	84
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	40	20.1	24
HCM LOS	E	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	76%	4%	27%	4%
Vol Thru, %	3%	48%	71%	17%
Vol Right, %	22%	48%	2%	78%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	360	522	330	23
LT Vol	272	20	88	1
Through Vol	9	252	234	4
RT Vol	79	250	8	18
Lane Flow Rate	383	555	351	24
Geometry Grp	1	1	1	1
Degree of Util (X)	0.704	0.899	0.633	0.052
Departure Headway (Hd)	6.619	5.831	6.486	7.604
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	544	622	555	468
Service Time	4.671	3.881	4.543	5.702
HCM Lane V/C Ratio	0.704	0.892	0.632	0.051
HCM Control Delay	24	40	20.1	11.1
HCM Lane LOS	C	E	C	B
HCM 95th-tile Q	5.6	11	4.4	0.2

Intersection	
Int Delay, s/veh	61.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	560	158	224	608	111	260
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	60
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	2	2	5	5
Mvmt Flow	609	172	243	661	121	283

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	780	0	1843	695
Stage 1	-	-	-	-	695	-
Stage 2	-	-	-	-	1148	-
Critical Hdwy	-	-	4.12	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.218	-	3.545	3.345
Pot Cap-1 Maneuver	-	-	837	-	~ 81	437
Stage 1	-	-	-	-	490	-
Stage 2	-	-	-	-	298	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	837	-	~ 44	437
Mov Cap-2 Maneuver	-	-	-	-	~ 44	-
Stage 1	-	-	-	-	490	-
Stage 2	-	-	-	-	161	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3	$ 313.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	44	437	-	-	837	-
HCM Lane V/C Ratio	2.742	0.647	-	-	0.291	-
HCM Control Delay (s)	$ 983.4	27.1	-	-	11.1	0
HCM Lane LOS	F	D	-	-	B	A
HCM 95th %tile Q(veh)	13	4.5	-	-	1.2	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	6.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	740	64	50	755	51	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	2	2	4	4
Mvmt Flow	804	70	54	821	55	58

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	874	0	1768	839
Stage 1	-	-	-	-	839	-
Stage 2	-	-	-	-	929	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	772	-	91	363
Stage 1	-	-	-	-	421	-
Stage 2	-	-	-	-	381	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	772	-	79	363
Mov Cap-2 Maneuver	-	-	-	-	79	-
Stage 1	-	-	-	-	421	-
Stage 2	-	-	-	-	332	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	109.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	131	-	-	772	-
HCM Lane V/C Ratio	0.863	-	-	0.07	-
HCM Control Delay (s)	109.4	-	-	10	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	5.5	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	765	21	19	772	25	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	3	3	2	2
Mvmt Flow	832	23	21	839	27	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	854	0	1723	843
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	880	-
Critical Hdwy	-	-	4.13	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.227	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	781	-	98	364
Stage 1	-	-	-	-	422	-
Stage 2	-	-	-	-	406	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	781	-	93	364
Mov Cap-2 Maneuver	-	-	-	-	93	-
Stage 1	-	-	-	-	422	-
Stage 2	-	-	-	-	386	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	43.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	143	-	-	781	-
HCM Lane V/C Ratio	0.357	-	-	0.026	-
HCM Control Delay (s)	43.5	-	-	9.7	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0.1	-

Intersection	
Int Delay, s/veh	32.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	9	675	102	55	683	2	78	2	44	3	4	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	5	5	5	3	3	3	4	4	4	8	8	8
Mvmt Flow	10	750	113	61	759	2	87	2	49	3	4	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	761	0	0	863	0	0	1715	1710	807	1734	1765	760
Stage 1	-	-	-	-	-	-	827	827	-	882	882	-
Stage 2	-	-	-	-	-	-	888	883	-	852	883	-
Critical Hdwy	4.15	-	-	4.13	-	-	7.14	6.54	6.24	7.18	6.58	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-	6.18	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-	6.18	5.58	-
Follow-up Hdwy	2.245	-	-	2.227	-	-	3.536	4.036	3.336	3.572	4.072	3.372
Pot Cap-1 Maneuver	838	-	-	775	-	-	~ 70	90	378	66	81	396
Stage 1	-	-	-	-	-	-	363	383	-	333	356	-
Stage 2	-	-	-	-	-	-	336	361	-	346	356	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	838	-	-	775	-	-	~ 58	76	378	49	68	396
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 58	76	-	49	68	-
Stage 1	-	-	-	-	-	-	354	374	-	325	308	-
Stage 2	-	-	-	-	-	-	281	312	-	292	347	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.7	$ 430.2	49
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	83	838	-	-	775	-	-	96
HCM Lane V/C Ratio	1.66	0.012	-	-	0.079	-	-	0.15
HCM Control Delay (s)	$ 430.2	9.3	0	-	10	0	-	49
HCM Lane LOS	F	A	A	-	B	A	-	E
HCM 95th %tile Q(veh)	11.4	0	-	-	0.3	-	-	0.5

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	659	29	18	686	24	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	0	0	3	0	0
Mvmt Flow	716	32	20	746	26	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	748	0	1517	732
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	785	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	870	-	133	424
Stage 1	-	-	-	-	480	-
Stage 2	-	-	-	-	453	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	870	-	128	424
Mov Cap-2 Maneuver	-	-	-	-	128	-
Stage 1	-	-	-	-	480	-
Stage 2	-	-	-	-	435	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	31.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	178	-	-	870	-
HCM Lane V/C Ratio	0.244	-	-	0.022	-
HCM Control Delay (s)	31.6	-	-	9.2	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	675	615	0	15	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	4	4	3	3	4	4
Mvmt Flow	0	750	683	0	17	99

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	683	0	-	0	1433	683
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	750	-
Critical Hdwy	4.14	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.236	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	901	-	-	-	146	446
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	463	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	901	-	-	-	146	446
Mov Cap-2 Maneuver	-	-	-	-	146	-
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	463	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	901	-	-	-	344
HCM Lane V/C Ratio	-	-	-	-	0.336
HCM Control Delay (s)	0	-	-	-	20.7
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1.4

Intersection	
Int Delay, s/veh	6.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	584	106	61	519	96	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	0	0	3	0	0
Mvmt Flow	635	115	66	564	104	66

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	750	0	1389	692
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	697	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	868	-	159	447
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	498	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	868	-	141	447
Mov Cap-2 Maneuver	-	-	-	-	141	-
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	443	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	55.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	141	447	-	-	868	-
HCM Lane V/C Ratio	0.74	0.148	-	-	0.076	-
HCM Control Delay (s)	81.2	14.5	-	-	9.5	0
HCM Lane LOS	F	B	-	-	A	A
HCM 95th %tile Q(veh)	4.4	0.5	-	-	0.2	-

Intersection	
Intersection Delay, s/veh	21.3
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	17	312	246	0	103	236	3	0	247	4	114
Peak Hour Factor	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94
Heavy Vehicles, %	2	6	6	6	2	8	8	8	2	4	4	4
Mvmt Flow	0	18	332	262	0	110	251	3	0	263	4	121
Number of Lanes	0	0	1	1	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	19	23	24.5
HCM LOS	C	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	68%	5%	0%	30%	21%
Vol Thru, %	1%	95%	0%	69%	7%
Vol Right, %	31%	0%	100%	1%	72%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	365	329	246	342	43
LT Vol	247	17	0	103	9
Through Vol	4	312	0	236	3
RT Vol	114	0	246	3	31
Lane Flow Rate	388	350	262	364	46
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.714	0.672	0.449	0.68	0.096
Departure Headway (Hd)	6.617	6.913	6.171	6.73	7.56
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	548	522	584	538	472
Service Time	4.655	4.66	3.917	4.775	5.634
HCM Lane V/C Ratio	0.708	0.67	0.449	0.677	0.097
HCM Control Delay	24.5	22.8	13.9	23	11.4
HCM Lane LOS	C	C	B	C	B
HCM 95th-tile Q	5.8	5	2.3	5.1	0.3

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	611	42	27	725	0	54	0	18	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	5	5	5	7	7	7	13	13	13	0	0	0
Mvmt Flow	6	657	45	29	780	0	58	0	19	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	780	0	0	702	0	0	1530	1530	680	1540	1553	780
Stage 1	-	-	-	-	-	-	692	692	-	838	838	-
Stage 2	-	-	-	-	-	-	838	838	-	702	715	-
Critical Hdwy	4.15	-	-	4.17	-	-	7.23	6.63	6.33	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.23	5.63	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.23	5.63	-	6.1	5.5	-
Follow-up Hdwy	2.245	-	-	2.263	-	-	3.617	4.117	3.417	3.5	4	3.3
Pot Cap-1 Maneuver	824	-	-	873	-	-	90	111	433	95	114	399
Stage 1	-	-	-	-	-	-	417	429	-	364	384	-
Stage 2	-	-	-	-	-	-	345	367	-	432	438	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	824	-	-	873	-	-	85	103	433	86	106	399
Mov Cap-2 Maneuver	-	-	-	-	-	-	202	218	-	208	222	-
Stage 1	-	-	-	-	-	-	412	424	-	360	361	-
Stage 2	-	-	-	-	-	-	324	345	-	408	433	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	28	14
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	233	824	-	-	873	-	-	399
HCM Lane V/C Ratio	0.332	0.008	-	-	0.033	-	-	0.003
HCM Control Delay (s)	28	9.4	0	-	9.3	0	-	14
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.4	0	-	-	0.1	-	-	0

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	597	5	3	732	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	0	0	7	0	0
Mvmt Flow	649	5	3	796	3	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	654	0	1454	652
Stage 1	-	-	-	-	652	-
Stage 2	-	-	-	-	802	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	943	-	145	471
Stage 1	-	-	-	-	522	-
Stage 2	-	-	-	-	445	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	943	-	144	471
Mov Cap-2 Maneuver	-	-	-	-	284	-
Stage 1	-	-	-	-	522	-
Stage 2	-	-	-	-	442	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	315	-	-	943	-
HCM Lane V/C Ratio	0.014	-	-	0.003	-
HCM Control Delay (s)	16.6	-	-	8.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	598	669	0	21	66
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	7	7	5	5
Mvmt Flow	0	650	727	0	23	72

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	727	0	-	0	1377	727
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	650	-
Critical Hdwy	4.14	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.236	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	867	-	-	-	157	419
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	514	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	867	-	-	-	157	419
Mov Cap-2 Maneuver	-	-	-	-	296	-
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	514	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	17.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	867	-	-	-	381
HCM Lane V/C Ratio	-	-	-	-	0.248
HCM Control Delay (s)	0	-	-	-	17.5
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	572	47	29	540	129	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	0	0	7	0	0
Mvmt Flow	622	51	32	587	140	87

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	673	0	1297	647
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	650	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	927	-	180	475
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	523	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	927	-	174	475
Mov Cap-2 Maneuver	-	-	-	-	314	-
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	505	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	21.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	314	475	-	-	927	-
HCM Lane V/C Ratio	0.447	0.183	-	-	0.034	-
HCM Control Delay (s)	25.4	14.3	-	-	9	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	2.2	0.7	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	31.5
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	35	287	254	0	92	319	24	0	253	6	89
Peak Hour Factor	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91
Heavy Vehicles, %	2	6	6	6	2	3	3	3	2	3	3	3
Mvmt Flow	0	38	315	279	0	101	351	26	0	278	7	98
Number of Lanes	0	0	1	1	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	22.7	47.1	29.7
HCM LOS	C	E	D

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	73%	11%	0%	21%	29%
Vol Thru, %	2%	89%	0%	73%	2%
Vol Right, %	26%	0%	100%	6%	69%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	348	322	254	435	59
LT Vol	253	35	0	92	17
Through Vol	6	287	0	319	1
RT Vol	89	0	254	24	41
Lane Flow Rate	382	354	279	478	65
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.761	0.728	0.514	0.912	0.15
Departure Headway (Hd)	7.161	7.407	6.631	6.866	8.31
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	505	485	539	526	434
Service Time	5.237	5.198	4.423	4.947	6.31
HCM Lane V/C Ratio	0.756	0.73	0.518	0.909	0.15
HCM Control Delay	29.7	27.7	16.3	47.1	12.8
HCM Lane LOS	D	D	C	E	B
HCM 95th-tile Q	6.6	5.9	2.9	10.8	0.5

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	16	789	110	51	674	6	79	1	39	7	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	7	7	7	2	2	2	3	3	3	6	6	6
Mvmt Flow	17	858	120	55	733	7	86	1	42	8	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	739	0	0	977	0	0	1804	1802	917	1821	1859	736
Stage 1	-	-	-	-	-	-	952	952	-	847	847	-
Stage 2	-	-	-	-	-	-	852	850	-	974	1012	-
Critical Hdwy	4.17	-	-	4.12	-	-	7.13	6.53	6.23	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.16	5.56	-
Follow-up Hdwy	2.263	-	-	2.218	-	-	3.527	4.027	3.327	3.554	4.054	3.354
Pot Cap-1 Maneuver	845	-	-	706	-	-	~ 61	79	328	58	72	412
Stage 1	-	-	-	-	-	-	310	337	-	351	372	-
Stage 2	-	-	-	-	-	-	353	375	-	298	312	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	845	-	-	706	-	-	~ 52	65	328	44	60	412
Mov Cap-2 Maneuver	-	-	-	-	-	-	156	174	-	130	153	-
Stage 1	-	-	-	-	-	-	296	322	-	335	323	-
Stage 2	-	-	-	-	-	-	299	326	-	247	298	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.7	57.5	23.6
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	189	845	-	-	706	-	-	211
HCM Lane V/C Ratio	0.684	0.021	-	-	0.079	-	-	0.082
HCM Control Delay (s)	57.5	9.3	0	-	10.5	0	-	23.6
HCM Lane LOS	F	A	A	-	B	A	-	C
HCM 95th %tile Q(veh)	4.2	0.1	-	-	0.3	-	-	0.3

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	827	20	13	701	19	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	0	0	2	0	0
Mvmt Flow	899	22	14	762	21	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	921	0	1700	910
Stage 1	-	-	-	-	910	-
Stage 2	-	-	-	-	790	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	750	-	102	336
Stage 1	-	-	-	-	396	-
Stage 2	-	-	-	-	451	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	750	-	99	336
Mov Cap-2 Maneuver	-	-	-	-	235	-
Stage 1	-	-	-	-	396	-
Stage 2	-	-	-	-	437	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	20.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	268	-	-	750	-
HCM Lane V/C Ratio	0.13	-	-	0.019	-
HCM Control Delay (s)	20.4	-	-	9.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	840	671	0	17	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	6	6	2	2	3	3
Mvmt Flow	0	884	706	0	18	45

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	706	0	-	0	1590	706
Stage 1	-	-	-	-	706	-
Stage 2	-	-	-	-	884	-
Critical Hdwy	4.16	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.254	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	874	-	-	-	118	434
Stage 1	-	-	-	-	488	-
Stage 2	-	-	-	-	402	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	874	-	-	-	118	434
Mov Cap-2 Maneuver	-	-	-	-	254	-
Stage 1	-	-	-	-	488	-
Stage 2	-	-	-	-	402	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	17.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	874	-	-	-	361
HCM Lane V/C Ratio	-	-	-	-	0.175
HCM Control Delay (s)	0	-	-	-	17.1
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.6

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	693	147	73	584	87	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	100
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	0	0	2	0	0
Mvmt Flow	753	160	79	635	95	66

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	913	0	1626	833
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	793	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	755	-	114	372
Stage 1	-	-	-	-	430	-
Stage 2	-	-	-	-	449	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	755	-	102	372
Mov Cap-2 Maneuver	-	-	-	-	236	-
Stage 1	-	-	-	-	430	-
Stage 2	-	-	-	-	402	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	24.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	236	372	-	-	755	-
HCM Lane V/C Ratio	0.401	0.178	-	-	0.105	-
HCM Control Delay (s)	30.1	16.8	-	-	10.3	-
HCM Lane LOS	D	C	-	-	B	-
HCM 95th %tile Q(veh)	1.8	0.6	-	-	0.4	-

Intersection	
Intersection Delay, s/veh	17.6
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	20	252	250	0	88	234	8	0	272	9	79
Peak Hour Factor	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94
Heavy Vehicles, %	2	3	3	3	2	4	4	4	2	2	2	2
Mvmt Flow	0	21	268	266	0	94	249	9	0	289	10	84
Number of Lanes	0	0	1	1	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	14.8	18.8	21.1
HCM LOS	B	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	76%	7%	0%	27%	4%
Vol Thru, %	3%	93%	0%	71%	17%
Vol Right, %	22%	0%	100%	2%	78%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	360	272	250	330	23
LT Vol	272	20	0	88	1
Through Vol	9	252	0	234	4
RT Vol	79	0	250	8	18
Lane Flow Rate	383	289	266	351	24
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.667	0.526	0.428	0.611	0.049
Departure Headway (Hd)	6.271	6.539	5.788	6.265	7.2
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	571	547	617	572	500
Service Time	4.352	4.333	3.581	4.358	5.2
HCM Lane V/C Ratio	0.671	0.528	0.431	0.614	0.048
HCM Control Delay	21.1	16.5	12.9	18.8	10.6
HCM Lane LOS	C	C	B	C	B
HCM 95th-tile Q	5	3	2.1	4.1	0.2

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	9	675	102	55	683	2	78	2	44	3	4	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	5	5	5	3	3	3	4	4	4	8	8	8
Mvmt Flow	10	750	113	61	759	2	87	2	49	3	4	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	761	0	0	863	0	0	1715	1710	807	1734	1765	760
Stage 1	-	-	-	-	-	-	827	827	-	882	882	-
Stage 2	-	-	-	-	-	-	888	883	-	852	883	-
Critical Hdwy	4.15	-	-	4.13	-	-	7.14	6.54	6.24	7.18	6.58	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-	6.18	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-	6.18	5.58	-
Follow-up Hdwy	2.245	-	-	2.227	-	-	3.536	4.036	3.336	3.572	4.072	3.372
Pot Cap-1 Maneuver	838	-	-	775	-	-	~ 70	90	378	66	81	396
Stage 1	-	-	-	-	-	-	363	383	-	333	356	-
Stage 2	-	-	-	-	-	-	336	361	-	346	356	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	838	-	-	775	-	-	~ 59	76	378	50	68	396
Mov Cap-2 Maneuver	-	-	-	-	-	-	166	187	-	145	166	-
Stage 1	-	-	-	-	-	-	354	374	-	325	308	-
Stage 2	-	-	-	-	-	-	281	312	-	292	347	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.7	50.9	22.8
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	208	838	-	-	775	-	-	217
HCM Lane V/C Ratio	0.662	0.012	-	-	0.079	-	-	0.067
HCM Control Delay (s)	50.9	9.3	0	-	10	0	-	22.8
HCM Lane LOS	F	A	A	-	B	A	-	C
HCM 95th %tile Q(veh)	4	0	-	-	0.3	-	-	0.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	659	29	18	686	24	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	0	0	3	0	0
Mvmt Flow	716	32	20	746	26	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	748	0	1517	732
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	785	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	870	-	133	424
Stage 1	-	-	-	-	480	-
Stage 2	-	-	-	-	453	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	870	-	128	424
Mov Cap-2 Maneuver	-	-	-	-	267	-
Stage 1	-	-	-	-	480	-
Stage 2	-	-	-	-	435	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	18.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	313	-	-	870	-
HCM Lane V/C Ratio	0.139	-	-	0.022	-
HCM Control Delay (s)	18.3	-	-	9.2	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	675	615	0	15	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	4	4	3	3	4	4
Mvmt Flow	0	750	683	0	17	99

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	683	0	-	0	1433	683
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	750	-
Critical Hdwy	4.14	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.236	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	901	-	-	-	146	446
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	463	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	901	-	-	-	146	446
Mov Cap-2 Maneuver	-	-	-	-	286	-
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	463	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	17.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	901	-	-	-	413
HCM Lane V/C Ratio	-	-	-	-	0.28
HCM Control Delay (s)	0	-	-	-	17.1
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1.1

Intersection	
Int Delay, s/veh	2.7

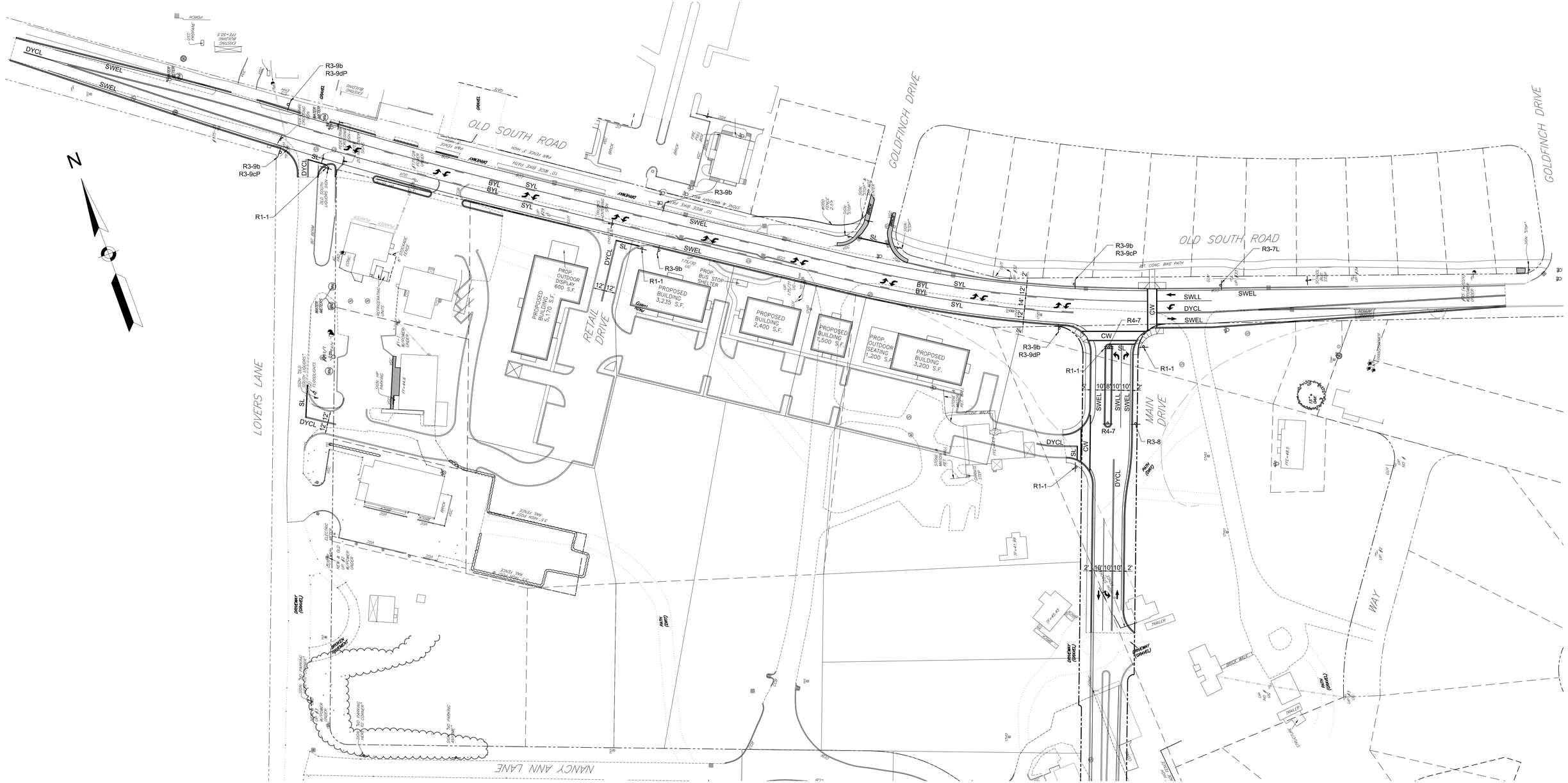
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	584	106	61	519	96	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	0	0	3	0	0
Mvmt Flow	635	115	66	564	104	66

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	750	0	1389	692
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	697	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	868	-	159	447
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	498	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	868	-	147	447
Mov Cap-2 Maneuver	-	-	-	-	286	-
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	460	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	20.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	286	447	-	-	868	-
HCM Lane V/C Ratio	0.365	0.148	-	-	0.076	-
HCM Control Delay (s)	24.6	14.5	-	-	9.5	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1.6	0.5	-	-	0.2	-

Old South Road Conceptual Improvement Plan



SIGN LEGEND

R1-1	STOP	R3-9b	CENTER LANE ONLY	R4-7	
R3-7L	LEFT LANE MUST TURN LEFT	R3-9cP	BEGIN		
R3-8	ONLY ONLY	R3-9dP	END		

PAVEMENT MARKING LEGEND

DYCL	DOUBLE YELLOW CENTER LINE
SWEL	SOLID WHITE EDGE LINE
SYEL	SOLID YELLOW EDGE LINE
BYL	BROKEN YELLOW LINE
SL	STOP LINE
SWLL	SOLID WHITE LANE LINE
CW	CROSSWALK

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

REV. #	DESCRIPTION	DATE

Ron Müller & Associates

Traffic Engineering and Consulting Services

56 TERESA ROAD, HOPKINTON, MA, 01748
P: (508)395-1576 F: (508)435-2481

PROPOSED CENTER TURN LANE OLD SOUTH ROAD NANTUCKET, MASSACHUSETTS

CONCEPTUAL IMPROVEMENT PLAN

DATE: *8/18/16*

FIGURE 1

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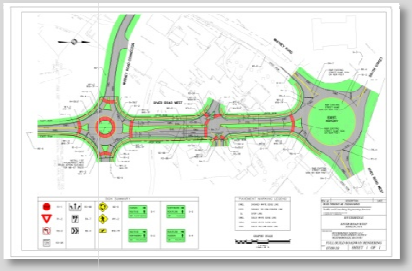
Quality

Traffic Impact and Access Study



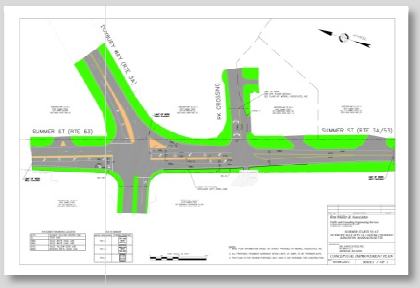
Old South Road Mixed-Use Development
Nantucket, Massachusetts

Accuracy

Prepared for:

Richmond Great Point Development LLC
20 Davkim Lane
Nantucket, MA 02554

Integrity



COMMONWEALTH OF MASSACHUSETTS
RONALD MÜLLER
TRAFFIC
No. 40482
REGISTERED PROFESSIONAL ENGINEER

August 26, 2016

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Traffic Impact and Access Study

To:	Richmond Great Point Development LLC 20 Davkim Lane Nantucket, MA 02554	Reg:	Old South Road Mixed Use Development Nantucket, MA
		Date:	August 26, 2016
From:	Ron Müller, P.E., Principal	Project #:	12015

INTRODUCTION

Ron Müller & Associates (RMA) has conducted this Traffic Impact and Access Study (TIAS) to evaluate the traffic impacts of a mixed-use development project proposed by Richmond Great Point Development LLC (the 'Project Proponent") on approximately 35 acres of contiguous property located on the south side of Old South Road generally between Lover's Lane and Daffodil Lane. The proposed development is comprised of a combination of 100 single-family homes, 225 apartment units, and approximately 15,500 square feet of retail and restaurant space (the "Project").

Vehicular access to and from the Project is proposed via a (new) primary access road connecting to Old South Road to be located east of Goldfinch Drive (West), a (new) driveway connecting to Old South Road, primarily intended to serve the proposed retail space, and located further west of Goldfinch Drive (West), and a (new) driveway connecting to Lover's Lane, that will also primarily serve the proposed retail space. The primary access road and site driveways will all be interconnected to allow travel through and between the various components of the Project, although it is expected that all of the residential units will be accessed via the (new) primary access road. The existing "extension" of Greglen Avenue (which was not plotted or approved as a road, but was constructed by the prior owner of the properties and has been utilized as a means of providing vehicular access to Old South Road for several decades) will be terminated / eliminated between Old South Road and Nancy Ann Lane, once the (new) primary access road is constructed and other portions of Nancy Ann Lane have been relocated and incorporated into the new vehicular circulation system as part of the Project. The Project location in relation to the surrounding street network is shown on Figure 1.

Figure 1
Site Location and Study Area Map

EXECUTIVE SUMMARY

This study provides an estimate of the expected traffic generation of the Project, evaluates the safety and capacity impacts of that traffic at the site's primary access road, at the site driveways, and on adjacent streets, and determines the necessity for and recommends appropriate improvements / mitigation to the area roadway system to improve traffic conditions.

This study was prepared in conformance with the Massachusetts Environmental Policy Act (MEPA) regulations and Massachusetts Department of Transportation (MassDOT) standards. Aspects of the scope and certain criteria for the study were also established in consultation between RMA staff and the transportation and planning staff of the Town of Nantucket Planning & Land Use Services (PLUS) Department.

- As further described in this study, the Project is expected to generate approximately 210, 293, and 277 new peak hour vehicle trips during the weekday AM peak hour, weekday PM peak hour, and Saturday midday peak hour, respectively, to the adjacent streets (new trips are comprised / defined as total trips after deducting "pass-by" trips that will already be traveling on the local street network, the methodology and calculations for which are documented in detail in the balance of this study).

- Once distributed onto the local roadway network, traffic generated by the Project is expected to increase peak hour volumes on Old South Road in the immediate vicinity of the Project site by a maximum of 198 new trips (during the weekday PM peak hour) or by +/- 14 percent compared to the year 2023 design horizon No-Build volumes.

- As traffic generated by the Project distributes onto the available access routes to and from the west of the site (to and from the Downtown area), peak hour traffic volumes at the Milestone Rotary at the western end of the Old South Road corridor are expected to increase by a maximum of 154 new trips (during the weekday PM peak hour) or by +/- 6 percent compared to the year 2023 design horizon No-Build volumes.

- As traffic generated by the Project distributes to and from the east (to and from the airport area), peak hour traffic volumes at the Macy's Lane (Airport Road) intersection with Old South Road are expected to increase by a maximum 93 new trips (during the weekday PM peak hour) or by +/- 7 percent, compared to the year 2023 design horizon No-Build volumes.

The impacts of these additional volumes (reflected as the decreases in current levels of service and increases in delays experienced by vehicles being driven through these roadway segments and intersections) will be mitigated / improved by the series of traffic improvements that are recommended and described in the balance of this study, to the point where traffic conditions, in almost all cases, will actually be better than those which are experienced under current conditions. This mitigation will include a combination of traffic improvements specifically

funded and constructed by the Project Proponent in conjunction with the development of the Project, as well as those that are already planned and anticipated to be constructed by the Town of Nantucket.

Sight distance analysis at the proposed (new) primary access road and the (new) site driveways indicates that the available sight lines exceed both minimum requirements and desirable distances, such that safe operation can therefore be expected. It is recommended that any proposed landscaping or obstructions in the vicinity of the access road and driveways be set back sufficiently so as not to impede sight distances for drivers exiting the site. It is recommended that the (new) primary access road be constructed providing two exiting lanes and one entering lane, separated by a raised median. The exiting lanes should be under STOP-sign control. The (new) retail driveways connecting to Old South Road and to Lover's Lane should be constructed providing one exiting lane (under STOP-sign control) and one entering lane, separated by a double yellow centerline.

Analysis of future traffic conditions (projected out to a seven-year design horizon to 2023, assuming that the entire Project has been developed and occupied at that time) anticipates that many of the nine (9) individual local intersections in the vicinity of the Project site that were analyzed for the study will operate at level of service (LOS) F by the year 2023 during all three peak hours (AM, PM, and Saturday midday), with or without any additional traffic generated by the Project.

However, several of the nine (9) intersections in the vicinity of the Project site will operate at level of service (LOS) F or at volume-to-capacity (v/c) ratios above 1.0 by the year 2023 specifically as a result of traffic generated by the Project. Accordingly, specific traffic improvements are recommended to be funded and constructed by the Project Proponent in conjunction with the development of the Project to mitigate those impacts. These include improvements to the Old South Road intersections with Lover's Lane, along the segment of Old South Road along and between the (new) retail driveway and the (new) primary access road, to and / or through the vicinity of the Goldfinch Drive (West) intersection, which serves as the exit road from the Naushop residential community on Old South Road, and at the intersection of Old South Road and Macy's Lane (Airport Road).

It is therefore recommended that Old South Road be widened to construct a two-way center-left-turn lane, extending +/- 1,500 feet in length from a point west of Lover's Lane to a point east of the (new) primary access road serving the Project. Construction of this center-left-turn lane will allow acceptable operating conditions at all of these locations as well as the many other driveways on both the north and south sides of this section of Old South Road, including Nantucket Seafood, the Nantucket Emporium, the cluster of existing retail uses owned by the Project Proponent near the intersection of Old South Road and Lover's Lane, and at the driveways providing access to and from the Valero & Sons Garden Center property.

As previously referenced, the existing "extension" of Greglen Avenue (which was not plotted or approved as a road, but was constructed by the prior owner of the surrounding properties and has

been utilized as a means of providing vehicular access to Old South Road for several decades) will also be terminated / eliminated between Old South Road and Nancy Ann Lane once the (new) primary access road is constructed. This will have a significant traffic safety and vehicle capacity benefit along this segment of Old South Road by eliminating the existing conflict that is created by the offset intersection that is currently formed by this "extension" of Greglen Avenue and Goldfinch Drive (West as they intersect with Old South Road.

Project traffic will also have a measurable impact at the Old South Road and Macy's Lane (Airport Road) intersection during all peak hours (weekday AM, weekday PM, and Saturday midday). To mitigate these impacts, it is recommended that a +/- 250-foot long portion of Old South Road be widened to provide a two-lane approach on Old South Road, heading eastbound (toward Nantucket Municipal Airport) with a shared left/through lane and an exclusive right-turn lane. The ability to widen Old South Road in this area is subject to confirmation by an engineering survey. However, sufficient width appears to exist within the Old South Road right of way to accommodate this additional lane. With these improvements, the eastbound approach of this intersection improves substantially, from LOS F to D or better during all peak hours.

EXISTING CONDITIONS

Scope and Study Area Locations

Evaluation of the traffic impacts associated with the proposed Project requires an evaluation of existing and projected traffic volumes, the volume of traffic expected to be generated by the Project, and the impact that this traffic will have on the adjacent streets. Based on industry-standard methodology and in consultation with the transportation and planning staff of the Town of Nantucket Planning & Land Use Services (PLUS) Department, it was determined that the following nine (9) local intersections should be specifically analyzed and evaluated:

- Old South Road at Sparks Avenue, Milestone Road, and Orange Street (at the location where these road segments form the Milestone Rotary)
- Old South Road at Fairgrounds Road
- Old South Road at Amelia Drive
- Old South Road at Young's Way
- Old South Road at Lover's Lane and the Nantucket Seafood Driveway
- Old South Road at Goldfinch Drive (West) and the "extension" of Greglen Avenue
- Old South Road at Macy's Lane (Airport Road)
- Old South Road at Nobadeer Farm Road
- Milestone Road at Nobadeer Farm Road

Based on the anticipated traffic generation, as further documented in this study, the Project is expected to have a minimal effect on traffic operations beyond the geographic area comprising this study area. The nine (9) individual study area locations are shown on Figure 1.

Existing Traffic Volumes

Traffic volume information along Old South Road was obtained from the Town of Nantucket PLUS Department, as well as manual turning movement and vehicle classification counts collected by a traffic data collection firm in July of 2014 (during the "peak" local summer visitor and population period) at all nine (9) study area intersections. These counts were conducted during the weekday AM peak period (8:00 to 11:00 AM), the weekday PM peak period (3:00 to 6:00 PM), and the Saturday midday peak period (11:00 AM to 2:00 PM) and are provided in the Appendix. The traffic count data indicate that the weekday AM peak hour generally occurs from 8:15 to 9:15 AM, the weekday PM peak hour from 4:15 to 5:15 PM, and the Saturday peak hour from 11:00 AM to 12:00 PM. However, the actual peak hours observed at the individual intersections were used in this study, in order to present a more conservative analytical scenario.

To determine whether the 2014 traffic count data still represent current (2016) volume conditions, historical traffic data provided by the Town of Nantucket PLUS Department were reviewed. The results from 10 years of traffic counts taken on Old South Road east of

Fairgrounds Road confirmed that traffic has stayed fairly consistent over the past 10 years at an average rate of 0.41 percent per year. In addition, manual turning movement counts were collected by the Town of Nantucket PLUS Department at the Milestone Rotary and at the Old South Road and Fairgrounds Road intersection in August 2015. These counts were compared with the 2014 traffic count data in order to determine whether traffic has changed in a statistically meaningful way since these respective traffic counts were taken. A comparison of these traffic counts is provided in Table 1.

Table 1
Historical Volume Comparison

Location	2014 Counts[a]	2015 Counts[a]	Percent Change
Milestone Rotary			
AM Peak Hour	2,239	2,312	+3.3%
PM Peak Hour	2,374	2,369	-0.2%
Old South Road at Fairgrounds Road			
AM Peak Hour	1,598	1,562	-2.3%
PM Peak Hour	1,713	1,636	-4.5%
Total Both Intersections:	**7,923**	**7,879**	**-0.6%**

[a] In vehicles per hour. Volumes represent total intersection entering volumes.

As shown, overall traffic volumes have not changed in a statistically meaningful way between the dates of the 2014 and 2015 counts. It is therefore reasonable to conclude that the July 2014 traffic counts are still valid and still represent current traffic volume conditions within the study area. As the Town of Nantucket PLUS Department traffic counts are more recent, these counts were used as the basis for the existing condition traffic volumes in this study. All traffic count data are provided in the Appendix.

Based on discussions with Town of Nantucket PLUS Department staff, it was confirmed that the months of July and August represent peak-month traffic volume conditions. Therefore, no additional seasonal adjustments were made to the collected data. A summary of the traffic counts on Old South Road is provided in Table 2 and the 2016 Existing peak hour traffic flow networks are shown graphically on Figures 2 through 4.

Figure 2
2016 Existing Weekday AM
Peak Hour Traffic Volumes

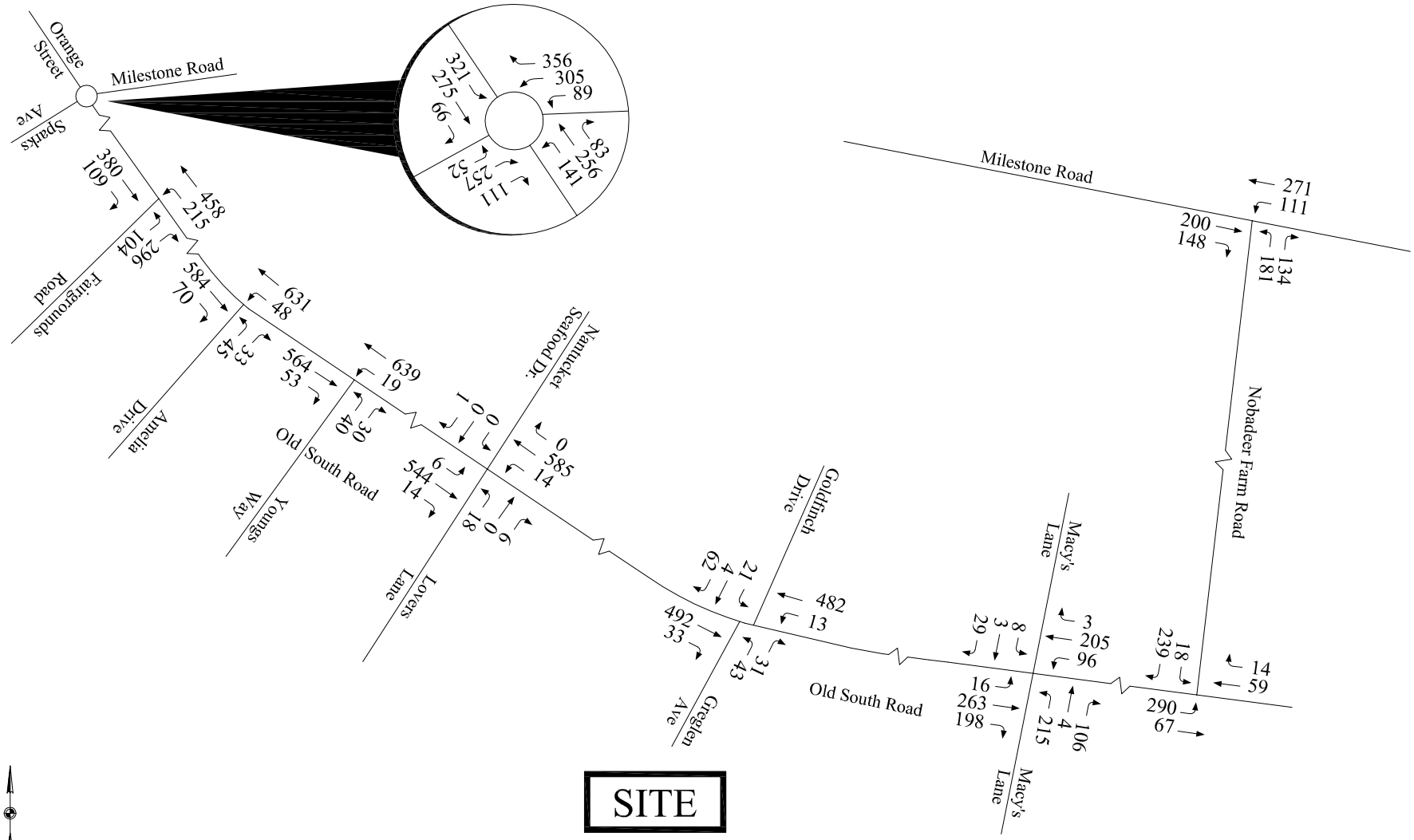
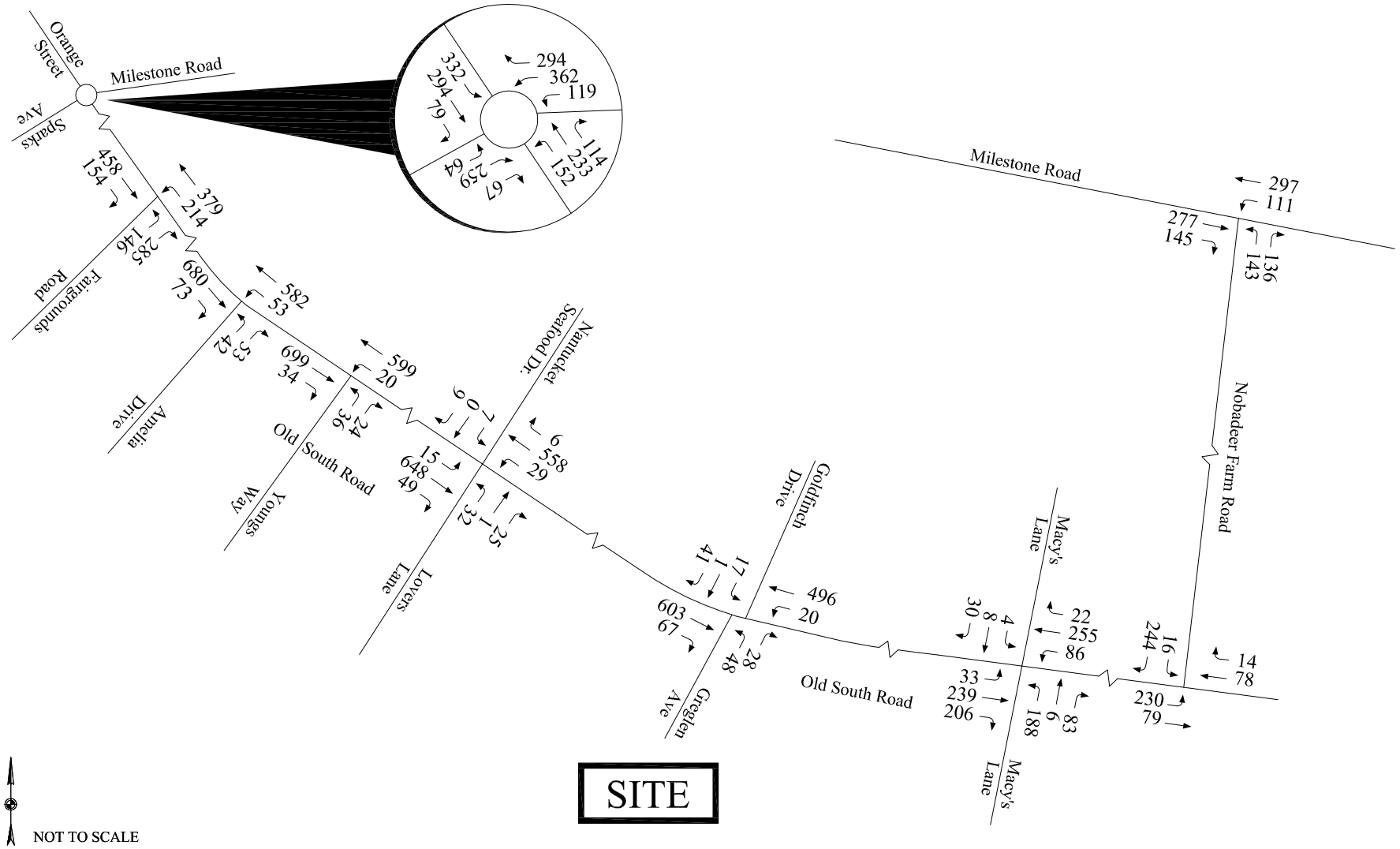


Figure 3
2016 Existing Weekday PM
Peak Hour Traffic Volumes



1428 of 1520

Figure 4
2016 Existing Saturday
Peak Hour Traffic Volumes

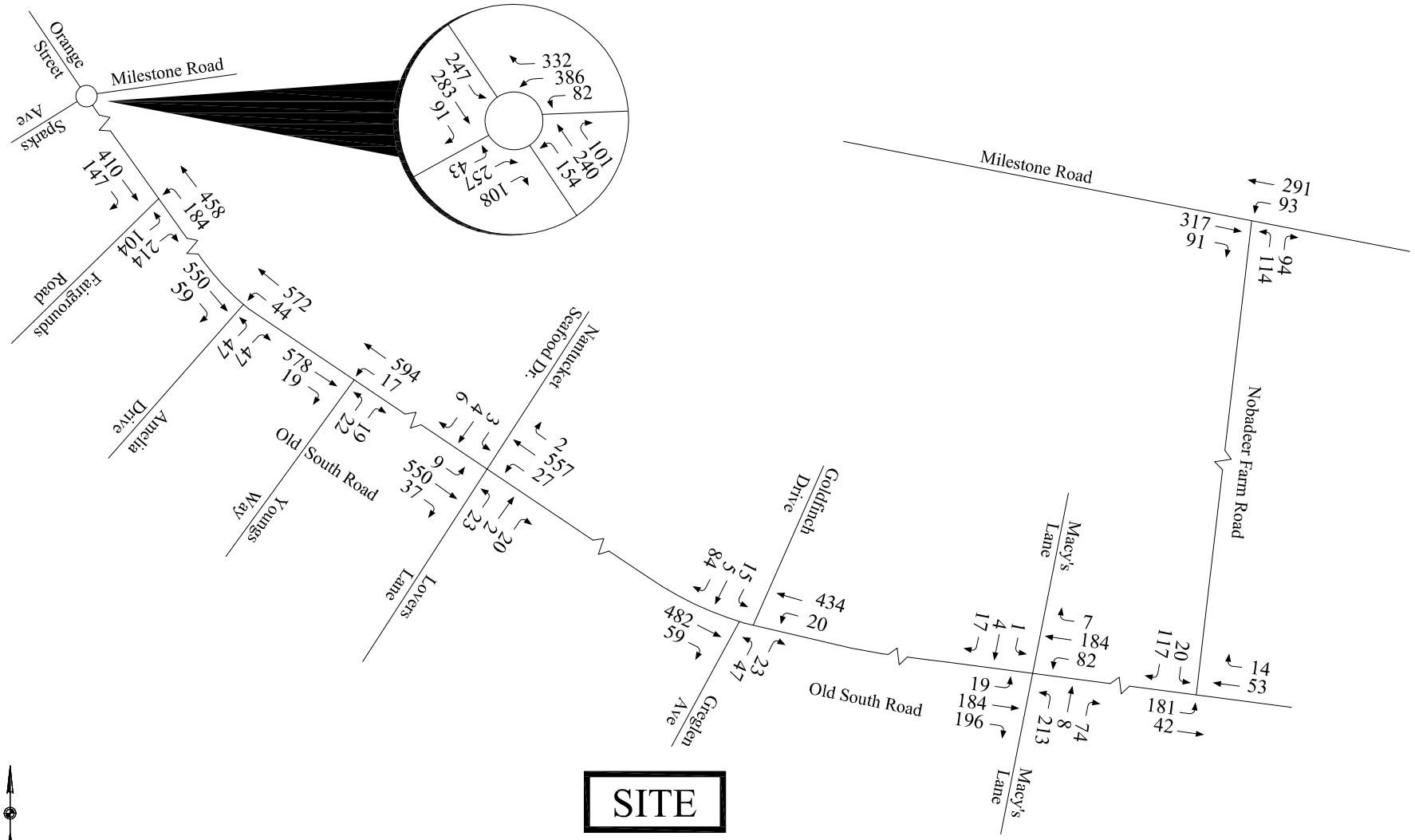


Table 2
Existing Peak Month Traffic Volume Summary

Location	Daily Volume [a]	Peak Hour Volume [b]	K-Factor [c]	Directional Distribution [d]
Old South Road adjacent to the site:				
Weekday	15,970	AM: 1,149	7.2%	52% WB
		PM: 1,273	8.0%	53% EB
Saturday	14,840	Midday: 1,159	7.8%	51% WB

[a] In vehicles per day. Daily volumes obtained from Nantucket PLUS Department for Old South Road east of Fairgrounds Road.
[b] In vehicles per hour.
[c] Percentage of daily traffic occurring during the peak hour.
[d] EB = Eastbound; WB = Westbound.

Vehicle Accident History

Vehicle accident data for the nine (9) study area intersections were obtained from MassDOT for the period between 2012 and 2014, the latest three years of available data. A summary of the MassDOT accident data is provided in Table 3. In addition to the summary, accident occurrence should also be compared to the volume of traffic through a particular intersection to determine any significance. Accordingly, the accident rate was calculated for the intersections and compared with the statewide and district-wide averages. An intersection accident rate is a measure of the frequency of accidents compared to the volume of traffic through an intersection and is presented in accidents per million entering vehicles (acc/mev). For unsignalized intersections, both the statewide and district-wide (District 5) average accident rate is 0.58 acc/mev. A comparison of the calculated accident rate to the statewide and district-wide averages can be used to establish the significance of accident occurrence and whether or not potential safety problems exist. The crash rate worksheets are provided in the Appendix.

As shown in Table 3, the Milestone Rotary, the Old South Road and Fairgrounds Road intersection, and the Milestone Road and Nobadeer Farm Road intersection experienced the highest number of accidents among the nine (9) study area intersections over the three year analysis period, with an average of approximately two to three accidents per year. However, the calculated crash rates are lower than the statewide and district-wide average and no particular trends are apparent in accident occurrence. All other study intersections experienced far fewer accidents with crash rates well below the state average. Given the low calculated crash rates, there are no particular trends or concerns apparent in accident incidence within the study area. It should be pointed out that nearly 70 percent of all accidents occurred during the summer months of June, July, and August, which is expected given the surge in traffic during these peak seasonal months.

Table 3
Accident Summary

Location	Number of Accidents			Severity [a]			Accident Type [b]						% During Wet/Icy Conditions
	Total	Avg./ Year	Accident Rate [c]	PD	PI	F	CM	RE	HO	FO	Ped	Other	
Milestone Rotary	9	3.0	0.28	5	4	0	1	6	0	0	2	0	0%
Old South Road at Farigrounds Road	10	3.3	0.45	5	5	0	1	8	0	0	1	0	33%
Old South Road at Amelia Drive	3	1.0	0.15	2	1	0	0	2	0	0	0	1	0%
Old South Road at Young's Way	0	0.0	0.00	0	0	0	0	0	0	0	0	0	0%
Old South Road at Lover's Lane	1	0.3	0.05	0	1	0	0	1	0	0	0	0	100%
Old South Road at Goldfinch/Greglen	3	1.0	0.17	2	1	0	2	0	1	0	0	0	0%
Old South Road at Macy's Lane	0	0.0	0.00	0	0	0	0	0	0	0	0	0	0%
Old South Road at Nobadeer Farm	1	0.3	0.11	1	0	0	0	1	0	0	0	0	0%
Milestone Road at Nobadeer Farm	7	2.3	0.47	4	3	0	2	1	1	0	1	2	14%

Source: MassDOT Traffic Operations Safety Management System – 2012 through 2014 data.
[a] PD = property damage only; PI = personal injury; F = fatality.
[b] CM = cross movement/angle; RE = rear end; HO = head on; FO = fixed object; Ped = pedestrian or bicyclist.
[c] Measured in accidents per million entering vehicles.

Vehicle Speeds

Vehicle speed measurements were conducted along Old South Road adjacent to the Project site to determine the minimum sight distance requirements as discussed further below. Vehicle speeds were recorded by measuring the elapsed time for vehicles traveling a short, pre-measured distance between two checkpoints and the speed is derived by dividing the elapsed time into the measured distance between checkpoints. The results of the vehicle speed measurements are summarized in Table 4 and the vehicle speed data are provided in the Appendix.

Table 4
Observed Travel Speeds [a]

Location/Direction	Posted Speed Limit	Average Speed	85th Percentile Speed [b]
Old South Road			
Eastbound	35	36	40
Westbound	35	35	38

[a] In miles per hour (mph).
[b] Speed at, or below which 85 percent of all observed vehicles travel.

As shown, the recorded average speeds are consistent with the posted speed limit, while 85th percentile speeds are approximately 5 miles per hour faster than the posted limit. These higher speeds were used as the basis for determining minimum sight distance requirements, as discussed below.

Sight Distance

To identify potential safety concerns associated with site access and egress, sight distances have been evaluated at the proposed site driveways and the (new) primary access road to determine if the available sight distances for vehicles exiting the site meet or exceed the minimum distances required for approaching vehicles to safely stop. The available sight distances were compared with minimum requirements, as established by the American Association of State Highway and Transportation Officials (AASHTO)[1]. AASHTO is the national standard by which vehicle sight distance is calculated, measured, and reported. The MassDOT and the Executive Office of Energy and Environmental Affairs (EEA) require the use of AASHTO sight distance standards when preparing traffic impact assessments and studies, as stated in their guidelines for traffic impact assessment.

Sight distance is the length of roadway ahead that is visible to the driver. Stopping Sight Distance (SSD) is the minimum distance required for a vehicle traveling at a certain speed to safely stop before reaching a stationary object in its path. The values are based on a driver perception and reaction time of 2.5 seconds and a braking distance calculated for wet, level pavements. When the roadway is either on an upgrade or downgrade, grade correction factors are applied. Stopping sight distance is measured from an eye height of 3.5 feet to an object height of 2 feet above street level, equivalent to the taillight height of a passenger car. The SSD is measured along the centerline of the traveled way of the major road.

[1] *A Policy on Geometric Design of Highways and Streets*; American Association of State Highway and Transportation Officials (AASHTO); 2004.

Intersection sight distance (ISD) is provided on minor street approaches to allow the drivers of stopped vehicles a sufficient view of the major roadway to decide when to enter the major roadway. By definition, ISD is the minimum distance required for a motorist exiting a minor street to turn onto the major street, without being overtaken by an approaching vehicle reducing its speed from the design speed to 70 percent of the design speed. ISD is measured from an eye height of 3.5 feet to an object height of 3.5 feet above street level. The use of an object height equal to the driver eye height makes intersection sight distances reciprocal (i.e., if one driver can see another vehicle, then the driver of that vehicle can also see the first vehicle). When the minor street is on an upgrade that exceeds 3 percent, grade correction factors are applied.

SSD is generally more important as it represents the minimum distance required for safe stopping while ISD is based only upon acceptable speed reductions to the approaching traffic stream. However, the ISD must be equal to or greater than the minimum required SSD in order to provide safe operations at the intersection. In accordance with the AASHTO manual, *"If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions. However, in some cases, this may require a major-road vehicle to stop or slow to accommodate the maneuver by a minor-road vehicle. To enhance traffic operations, intersection sight distances that exceed stopping sight distances are desirable along the major road."* Accordingly, ISD should be at least equal to the distance required to allow a driver approaching the minor road to safely stop.

The available SSD and ISD at the proposed site driveways on Old South Road and on Lover's Lane and at the (new) primary access road were measured and compared to minimum requirements as established by AASHTO. Since the requirements are based on the speed of traffic on the adjacent street, the 85th percentile speeds as shown in Table 4 were used for this purpose. The required minimum sight distances for these speeds are compared to the available distances, as shown in Table 5.

Table 5
Sight Distance Summary

Direction	Intersection Sight Distance (feet)		
	Measured	Minimum Required [a]	Desirable [b]
Old South Road at Main Site Driveway			
East of Intersection	500+	305	390
West of Intersection	500+	305	390
Old South Road at Retail Driveway			
East of Intersection	500+	305	390
West of Intersection	445	305	390
Lover's Lane at Site Driveway			
North of Intersection	300	155	280
South of Intersection	300+	155	280

[a] Values based on AASHTO SSD requirements for 85th percentile speeds on Old South Road of 40 mph and an assumed speed of 25 mph on Lover's Lane.
[b] Values based on AASHTO ISD requirements for posted speed limit of 35 mph on Old South Road and an assumed speed limit on Lover's Lane of 25 mph.

As shown in the table, ample sight distances exist at all proposed site driveway locations and at the (new) primary access road, exceeding minimum requirements as well as desirable distances, and safe operation can therefore be expected. At the proposed retail driveway, the sight distance for drivers looking west, toward Fairgrounds Road, is limited by the existing topography of Old South Road. To more specifically assess the available sight distance in this direction, as shown in Table 5, a sight line plan and profile was prepared, which confirms that this sight distance in this direction exceeds the stated requirements. This plan is provided in the Appendix. It is recommended, however, that any proposed landscaping, signs, or any other obstructions in the vicinity of the driveways be set back outside the sight triangles (as defined by AASHTO) so as not to impede sight distances for drivers in vehicles exiting the site.

FUTURE TRAFFIC CONDITIONS

Future traffic conditions within the study area were projected out to the year 2023, representing a seven (7) year design horizon consistent with state guidelines for traffic impact assessment. To project traffic conditions within this design horizon, two distinct components of future traffic growth were included. First, an annual traffic growth rate was determined to account for additional traffic that will be generated as a result of general population growth as well as by smaller development projects that may impact traffic within the study area. Based on historical traffic volume data on Old South Road supplied by the Town of Nantucket PLUS Department for the period 2007 through 2016, traffic volumes have remained fairly consistent over the years. A summary of the historical count data is provided in the Appendix. These data show an average growth in traffic of 0.41 percent per year over this ten year period. However, given that this trend may not continue into the future and based on discussions with Town of Nantucket PLUS Department staff, a one percent (1.00%) per year traffic growth rate was used in this study, to ensure a more conservative analytical methodology.

Second, any planned or approved specific development projects in the area that would be expected to generate a statistically meaningful volume of traffic on study area roadways within the seven (7) year design horizon period were investigated. Based on discussions with Town of Nantucket PLUS Department staff, traffic to be generated by the following specific development projects were calculated and included in the traffic projections:

1. **Stop & Shop Supermarket Redevelopment (31 Sparks Avenue)** - although this project was completed and occupied in May of 2015, the traffic generated by this project was not included when the traffic counts utilized for this study were collected. Accordingly, the projected traffic volumes to be added through the study intersections as a result of this project were taken from the traffic study[2] conducted for this project.

2. **Nantucket Emporium (54 Old South Road)** - since collection of the traffic count data, this property has been redeveloped from 12,100 square feet of retail space to a combination of 1,700 square feet of retail, 2,350 square feet of office, and 7,750 square feet of self storage space. Based on the Institute of Transportation Engineers (ITE) *Trip Generation Manual*,[3] the traffic generation of the current uses on the site are less than the prior use. However, to present a more conservative analytical methodology, no reduction in traffic was assumed from redevelopment of this site.

3. **John Reedy Trust Project (21 Old South Road)** - the currently vacant parcel is proposed be developed with 4,900 square feet of grocery store space and one apartment unit. The traffic to be generated by this project was estimated using the ITE *Trip Generation Manual* for Land Use Code 850 (Supermarket) and assigned to the roadway

[2] *Traffic Impact and Access Study, Proposed Stop & Shop Redevelopment, Nantucket, MA;* prepared for The Stop & Shop Supermarket Company; prepared by VHB, Inc.; January 2014.
[3] *Trip Generation Manual, 9th Edition;* Institute of Transportation Engineers; Washington, DC, 2012.

network based on the retail and residentail trip distribution patterns described later in this study.

4. **EZIA Athletic Club (86-88 Old South Road)** - the currently vacant parcel is proposed to be developed with a 21,700 square foot health/fitness club. The traffic to be generated by this project was estimated using the ITE *Trip Generation Manual* for Land Use Code 492 (Health/Fitness Club) and assigned to the roadway network based on the retail trip distribution pattern described later in this study.

5. **Shepley Wood Products, Inc. Development (6-8 Lovers Lane)** - the existing single family home site is being redeveloped into a 7,500 square foot lumber yard. The traffic to be generated by this project was estimated using the ITE *Trip Generation Manual* for Land Use Code 812 (Building Materials and Lumber Store) and assigned to the roadway network based on the retail trip distribution pattern described later in this study. No trip reduction was assumed for the elimination of the existing residential home.

6. **Richmond Great Point Development LLC Residential Development (1-3-5 Greglen Avenue and 11-13 Greglen Avenue)** - the six existing single family homes on these properties are being redeveloped into 28 apartment units and 8 condominium units (comprised of 4 duplex units). The traffic to be generated by this project was estimated using the ITE *Trip Generation Manual* for Land Use Code 220 (Apartment) and assigned to the roadway network based on the residential trip distribution pattern described later in this study. No trip reduction was assumed for the elimination of the existing occupied residential homes. (It is noted that the properties upon which the 8 condominium units are being developed, the 11-13 Greglen Avenue properties, have since been sold by Richmond Great Point Development LLC to individual buyers who are developing the properties for these uses).

The trip-generation worksheets and assignment of the specific traffic volumes that are expected to be generated from these development projects are detailed in the Appendix.

Previously Planned Study Area Roadway / Intersection Improvements

The Milestone Rotary: This rotary / intersection is proposed to be reconfigured by the Town of Nantucket to create a modern roundabout. The current approaches to the rotary do not provide sufficient deflection and allow higher than desired entry speeds, and do not provide adequate pedestrian and bicycle crossings. The Sparks Avenue and Old South Road approaches provide only single approach lanes that are not adequate to accommodate the existing or projected level of traffic. There are also access and parking conflicts, particularly in the southwest corner of the rotary between Old South Road and Sparks Avenue. The Town of Nantucket commissioned a study[4] of this rotary / intersection to evaluate improvements. The initial plan is to add a

[4] *Roundabout Implementatioin Report, Milestone Rotary;* prepared for NP&EDC; prepared by Ourston Roundabout Engineering; September 2006.

pedestrian crossing across the Milestone Road approach to improve pedestrian safety. The ultimate plan is to reconfigure the rotary to provide adequate deflection to reduce entry speeds, provide two lanes of traffic on every approach, provide safe pedestrian/bicycle crossings across all four approaches, and eliminate the access conflicts by controlling site access to the property in the southwest corner. Based on discussions with Town of Nantucket PLUS Department staff, these improvements are not expected to be implemented by the 2023 design year horizon and, accordingly, were not assumed to be completed within the design horizon of this study.

The Old South Road and Fairgrounds Road Intersection: This intersection is proposed to be modified by the Town of Nantucket into a modern roundabout. The existing STOP-sign controlled intersection is under significant capacity constraints due to the current volume of traffic on both roads, resulting in long delays and queues on the Fairgrounds Road approach, which currently operates at a level F. The Town of Nantucket has appropriated capital funds in Fiscal Year 2018 for the design of improvements that would replace the existing T-type intersection with a modern roundabout with single-lane approaches. Based on a study[5] commissioned by the Town in 2006, these improvements would allow the intersection to operate at level C or better during all peak hours. As no time-frame has been established yet for construction of the improvements, they are not assumed to be completed by the 2023 design year horizon of this study.

Old South Road Corridor Improvements: Modifications in this area are contemplated to be made in the near future by the Town of Nantucket, including multi-modal access and congestion improvements. The Town of Nantucket Planning and Economic Development Commission (NP&EDC) will be initiating a study of the Old South Road corridor this coming winter in order to develop and evaluate various design alternatives. For the purpose of this study, no corridor improvements are assumed to be implemented by the 2023 design year horizon.

No-Build Traffic Conditions (Without the Project)

As described above, the 2023 year No-Build traffic volume networks were developed by applying a compounded one percent (1.00%) annual growth rate (equal a 7.2 percent increase over seven years) to the existing volumes, as well as by adding the traffic that is expected to be generated by the six (6) individual above-mentioned development projects. The 2023 No-Build peak-hour traffic-flow networks are shown on Figures 5 through 7.

Project Trip Generation

The proposed Project will consist of a combination of 225 apartment units, 100 single family homes, and approximately 15,500 square feet of retail and quality restaurant space. The traffic to be generated by the residential portion of the Project was estimated based on the ITE *Trip*

[5] *Technical Memorandum, Alternative Traffic Control Analysis, Surfside Road and Old South Road at Fairgrounds Road, Nantucket, MA;* prepared for NP&EDC; prepared by Greenman-Pedersen, Inc.; September 12, 2006.

Figure 5
2023 No-Build Weekday AM
Peak Hour Traffic Volumes

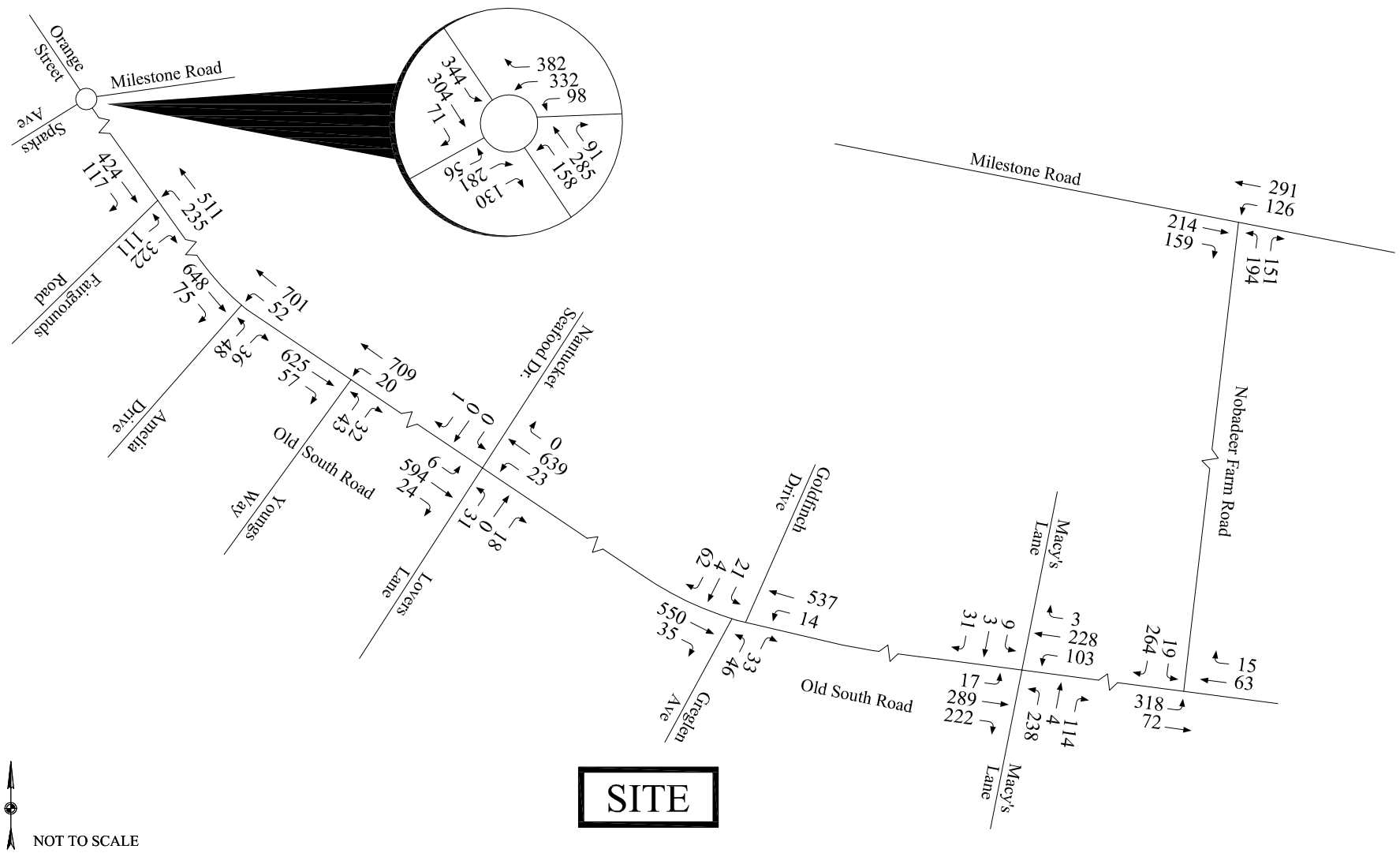


Figure 6
2023 No-Build Weekday PM
Peak Hour Traffic Volumes

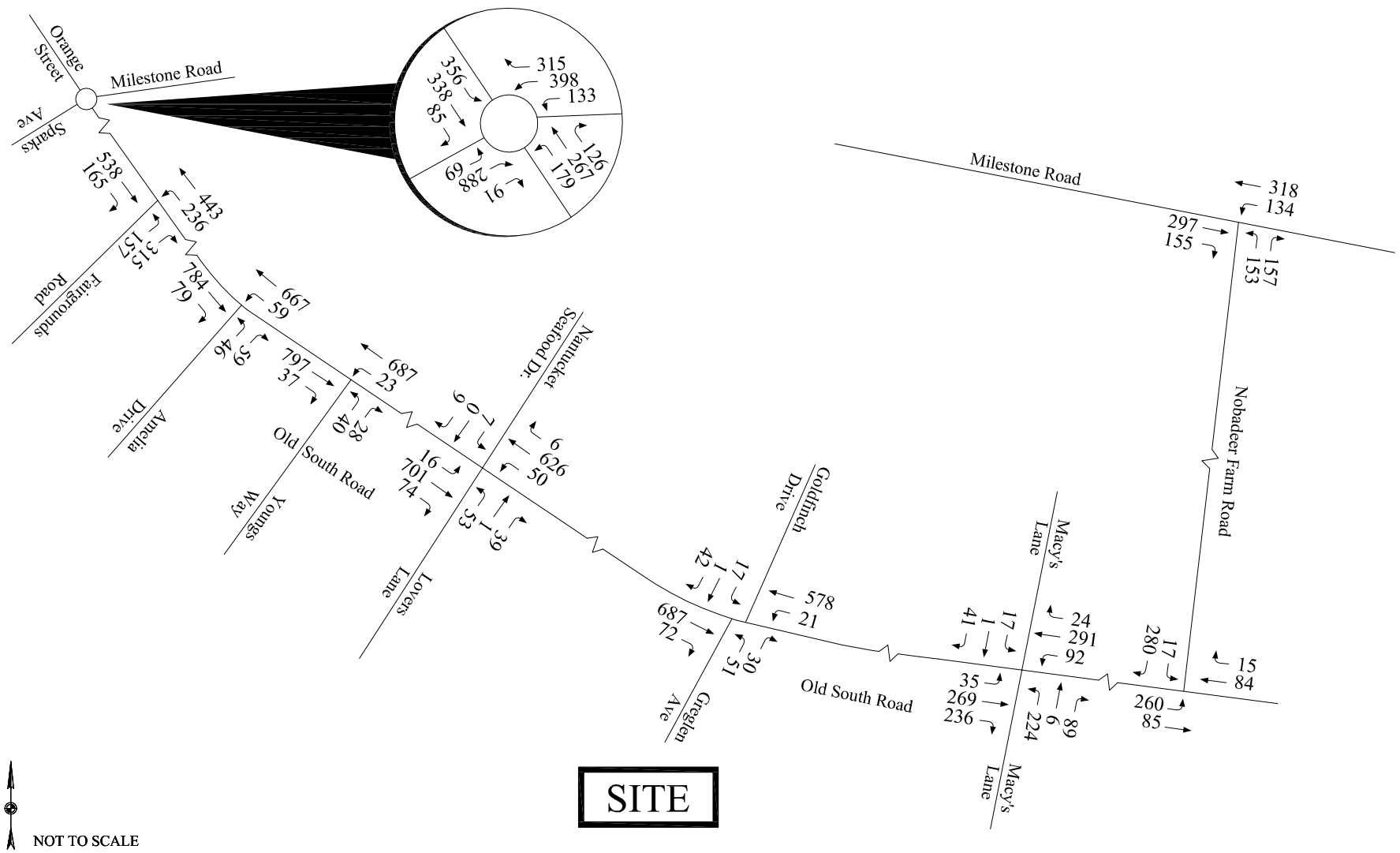
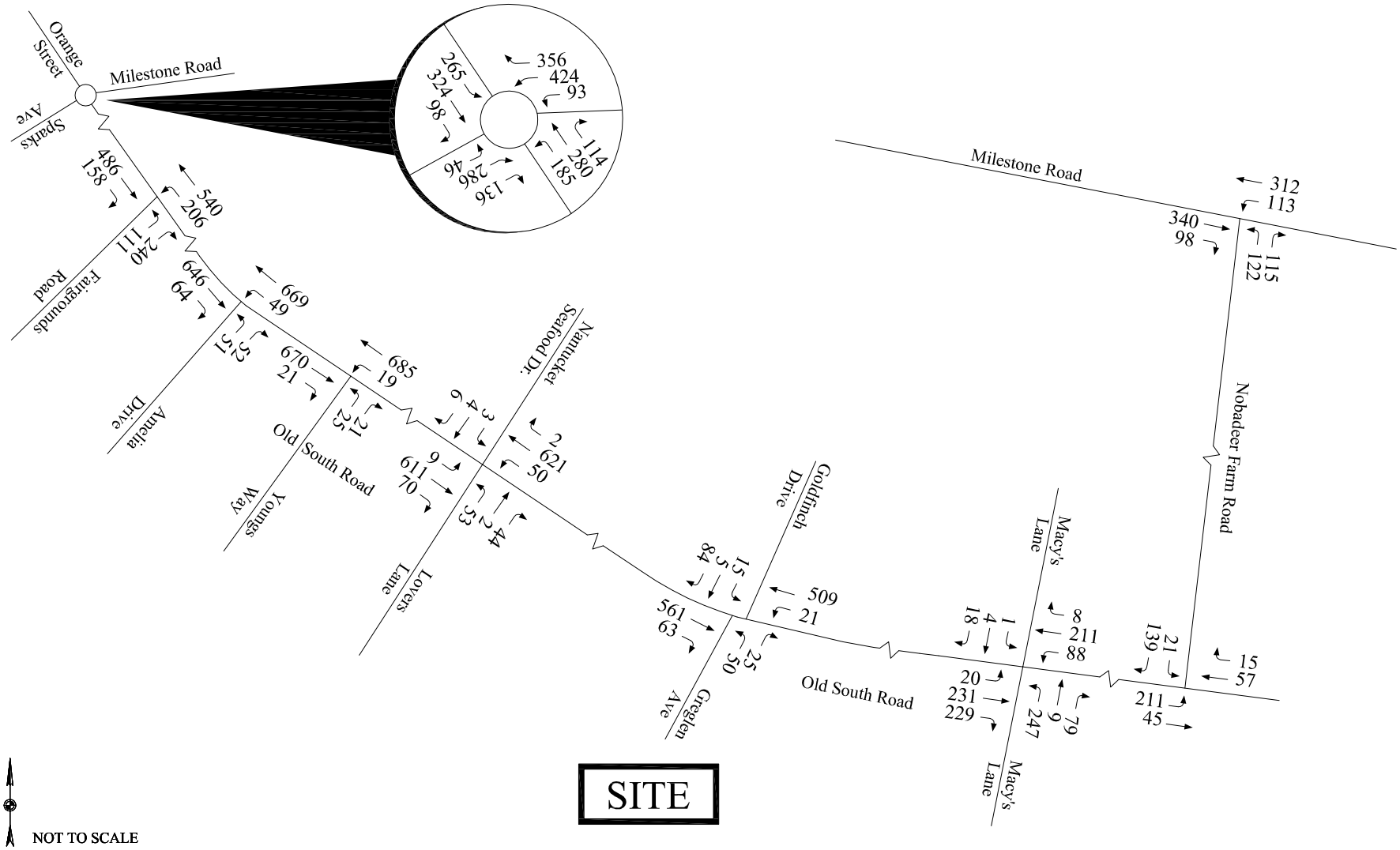


Figure 7
2023 No-Build Saturday
Peak Hour Traffic Volumes



Generation Manual using Land Use Codes 220 (Apartment) and 210 (Single Family Detached Housing).

Although specific tenants for the retail portion of the Project have not yet been identified, it is anticipated that the retail liner buildings will be occupied by general merchandise stores, a variety store, and a print shop. Similarly, no specific tenant or operator has been selected for the proposed restaurant space at this time; as a result, the size of this space (3,200 square feet) and the traffic volumes that are generated by the restaurant space are expected to be a maximum / worst-case scenario; the size may well be smaller and may well generate less traffic, but the trip generation utilized in the study have been calculated at the higher levels, in order to ensure a more conservative analytical methodology.

Accordingly, ITE Land Use Code 826 (Specialty Retail Center) trip rates were applied to 12,300 square feet of the retail space and ITE Land Use Code 931 (Quality Restaurant) trip rates were applied to the 3,200 square foot restaurant building. The volume of traffic to be generated by each of the above uses is summarized in Table 6 and the ITE trip-generation worksheets are provided in the Appendix.

Table 6
Trip Generation Summary

Time Period	225 Apartments [a]	100 Homes [b]	12,300 sf Retail [c]	3,200 sf Restaurant [d]	**Total Trips**
Weekday Daily	1,490	1,050	560	290	**3,390**
Weekday AM Peak Hour					
Enter	23	20	8	2	**53**
Exit	91	60	5	1	**157**
Total	114	80	13	3	**210**
Weekday PM Peak Hour					
Enter	92	66	22	16	**196**
Exit	49	39	29	8	**125**
Total	141	105	51	24	**321**
Saturday Peak Hour					
Enter	56	52	34	20	**162**
Exit	55	46	32	14	**147**
Total	111	98	66	34	**309**

[a] ITE Land Use Code 220 (Apartment).
[b] ITE Land Use Code 210 (Single Family Detached Housing).
[c] ITE Land Use Code 826 (Specialty Retail Center).
[d] ITE Land Use Code 931 (Quality Restaurant).

As shown, the Project will generate a total of 3,390 vehicle trips on a typical weekday (average daily trips) with half (1,695 vehicles) entering and half exiting the site over the course of the entire day. During the peak hours, the Project will generate 210 vehicle trips during the AM peak hour (53 entering and 157 exiting), 321 vehicles trips during the PM peak hour (196 entering and 125 exiting), and 309 vehicles trips during the Saturday peak hour (162 entering and 147 exiting). These vehicle trips will be realized at the (new) site driveways.

It is noted, however, that not all of the retail and restaurant trips will be new to the adjacent streets. Studies have shown that retail developments and in particular restaurants generate a substantial portion of their business from the traffic already present on the adjacent roadway. This traffic is referred to as "pass-by" trips. Based on data published in the ITE *Trip Generation Handbook*,[6] an average of 44 percent of the total traffic generated by quality restaurants is typically pass-by traffic. For retail establishments, the ITE average pass-by rate is 34 percent for weekday conditions and 26 percent for Saturday conditions. Therefore, while the total traffic generated by the Project will be experienced at the site driveways, the impact of that traffic on the adjacent streets will be incrementally less than this (total) traffic. It should be noted that no pass-by adjustments were made to the retail and restaurant traffic generated during the weekday AM peak hour. Table 7 summarizes the expected volume of pass-by trips and the resulting new trips to be added to the surrounding roadways.

Table 7
New vs. Pass-By Trips

Time Period	Total Trips [a]	Pass-By Trips [b]	New Trips [c]
Weekday Daily	3,390	320	3,070
Weekday AM Peak Hour			
Enter	53	0	53
Exit	157	0	157
Total	210	0	210
Weekday PM Peak Hour			
Enter	196	14	185
Exit	125	14	111
Total	321	28	293
Saturday Peak Hour			
Enter	162	16	146
Exit	147	16	131
Total	309	32	277

[a] From Table 6.
[b] Volumes represent 44% of the restaurant trips identified in Table 6 for the weekday PM peak hour and Saturday peak hour plus 34 percent of the weekday PM peak hour retail trips and 26% of the Saturday peak hour trips.
[c] Total trips less pass-by trips.

[6] *Trip Generation Handbook; 3rd Edition*; Institute of Transportation Engineers; Washington, DC; August 2014.

As shown, the Project is expected to distribute increments of 210, 277, and 293 new peak hour vehicle trips to the adjacent streets during the weekday AM peak, weekday PM peak, and Saturday Midday peak hours (respectively) with the remaining traffic generated by the Project already present in the adjacent traffic stream, representing the increment of "pass-by" traffic.

Project Trip Distribution

The distribution of new traffic generated by the Project on the area roadways is based on an analysis of existing travel patterns, area employment opportunities, population densities, and turning movement counts collected at nearby residential roads and retail driveways. Two different trip distribution patterns were developed for the purposes of the analysis: one for the residential portion of the Project and one for the retail portion. A summary of the expected distribution of traffic is provided in Table 8.

Table 8
Trip Distribution Pattern

Route	Residential Distribution	Retail Distribution
Orange Street	30%	20%
Sparks Avenue	20%	13%
Milestone Road (East of the Rotary)	5%	5%
Fairgrounds Road	15%	10%
Amelia Drive	0%	3%
Young's Way	0%	2%
Lover's Lane	0%	2%
Old South Road residential streets (between Goldfinch Dr. and Macy's Ln.)	0%	5%
Macy's Lane (Airport Road)	15%	20%
Nobadeer Farm Rd. residential streets (between Old South Rd. and Milestone Rd.)	0%	5%
Milestone Road (East of Nobadeer Farm Rd.)	15%	15%
Total	**100%**	**100%**

As previously referenced, the existing "extension" of Greglen Avenue (which was not plotted or approved as a road, but was constructed by the prior owner of the surrounding properties and has been utilized as a means of providing vehicular access to Old South Road for several decades) will also be terminated / eliminated, between Old South Road and Nancy Ann Lane, once the (new) primary access road is constructed. Accordingly, the traffic currently using this portion of Greglen Avenue was re-distributed onto either Lover's Lane or the (new) primary access road, depending on the anticipated direction of travel.

Build Traffic Conditions (With the Project)

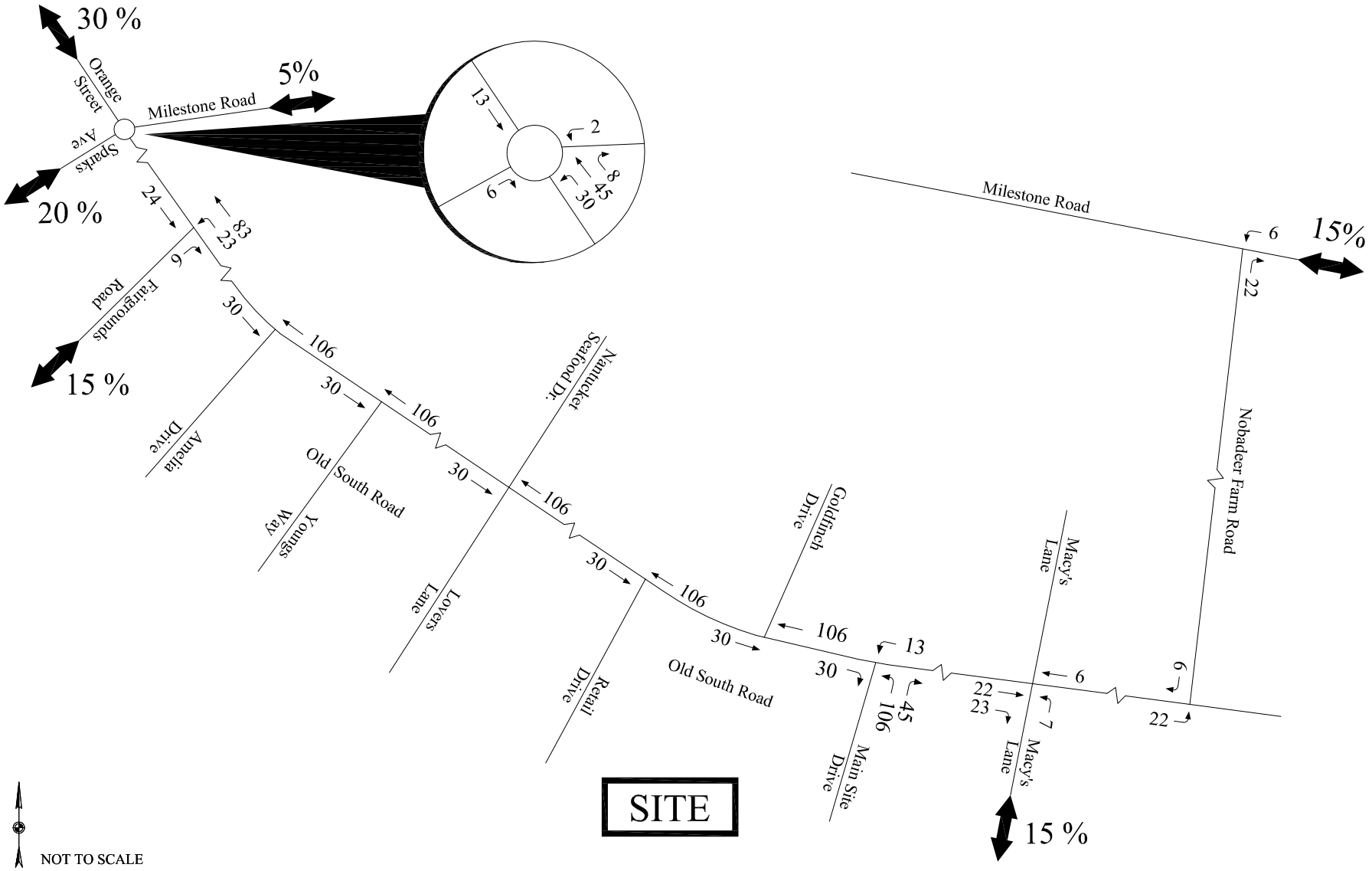
Based on the traffic generation and distribution estimates as described above, the residential trips generated by the Project were assigned to the local roadway network as shown on Figures 8 through 10 and the retail trips were assigned to the local roadway network as shown on Figures 11 through 13. These traffic volumes and the re-distributed Greglen Avenue traffic volumes were added to the 2023 No-Build traffic volumes to develop the 2023 Build traffic volumes, which are shown graphically on Figures 14 though 16.

Traffic Increases (Resulting from the Project)

Development of the proposed Project will result in a range of different increases in traffic volumes on different portions of the study area roadways. The text description provided in the Executive Summary of this study and the data which are shown graphically in Figures 8 through 16 of the study depict the traffic volumes which are expected to be added by the development of the Project and the Build (year 2023 design horizon) traffic volumes that are expected to occur at the nine (9) study area intersections during all three of the peak traffic hours (weekday AM, weekday PM, and Saturday midday). The anticipated impacts of these additional (Build) traffic volumes on the nine (9) study area intersections (in terms of level of service, volume-to-capacity, queue, and delay) are summarized in the *Capacity Analysis* section of this study.

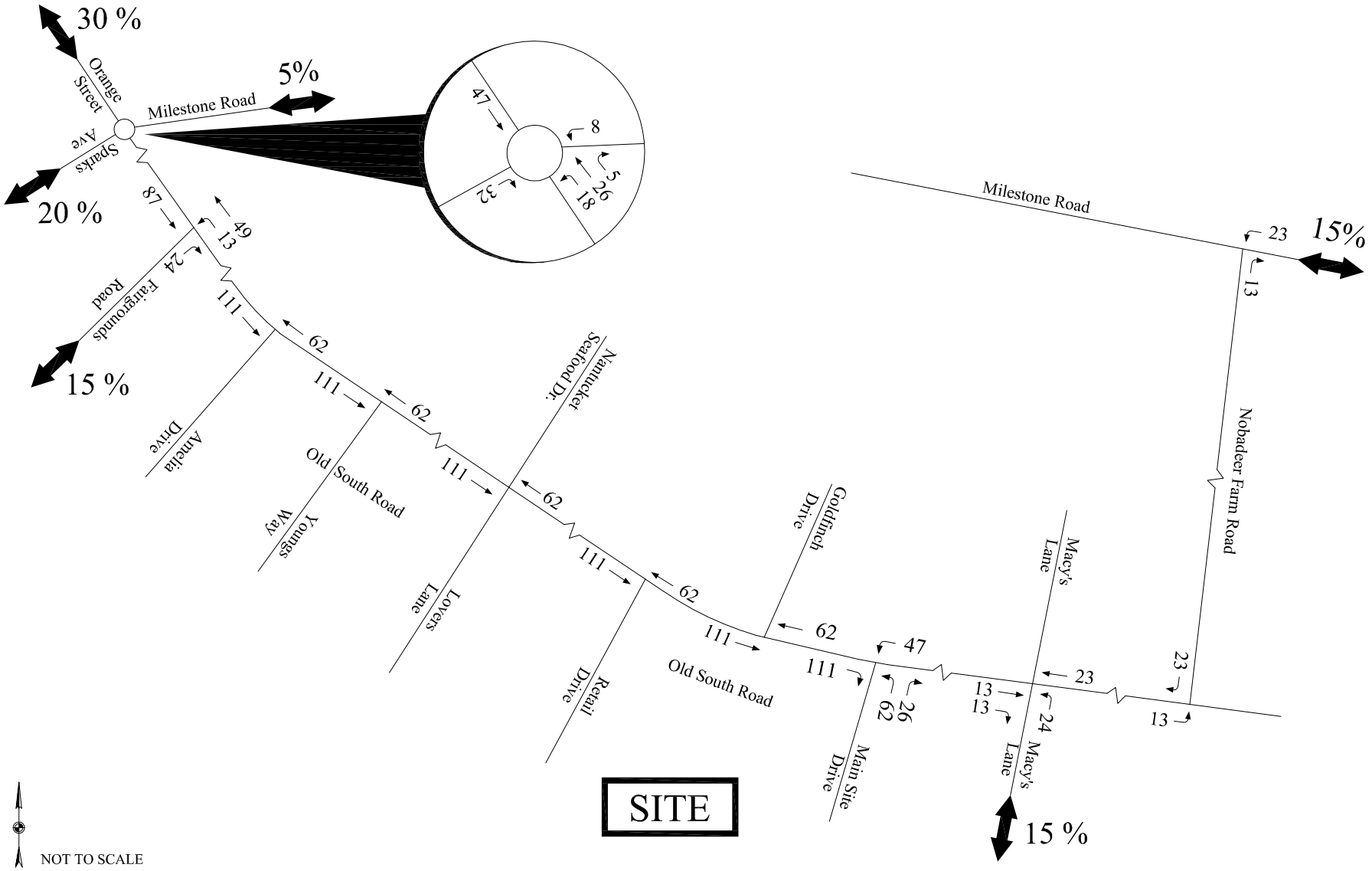
In addition to the information provided in the *Capacity Analysis* section of this study, Table 9 below summarizes the No-Build and Build traffic volumes on segments of the study area roadways which are located beyond the strict limits of the traffic study area. These data reflect the traffic volume increases that are expected to occur on these particular roadway segments further "downstream" and outside the study area intersections as a result of the development of the Project.

Figure 8
Residential Trip Distribution
AM Peak Hour Traffic Volumes



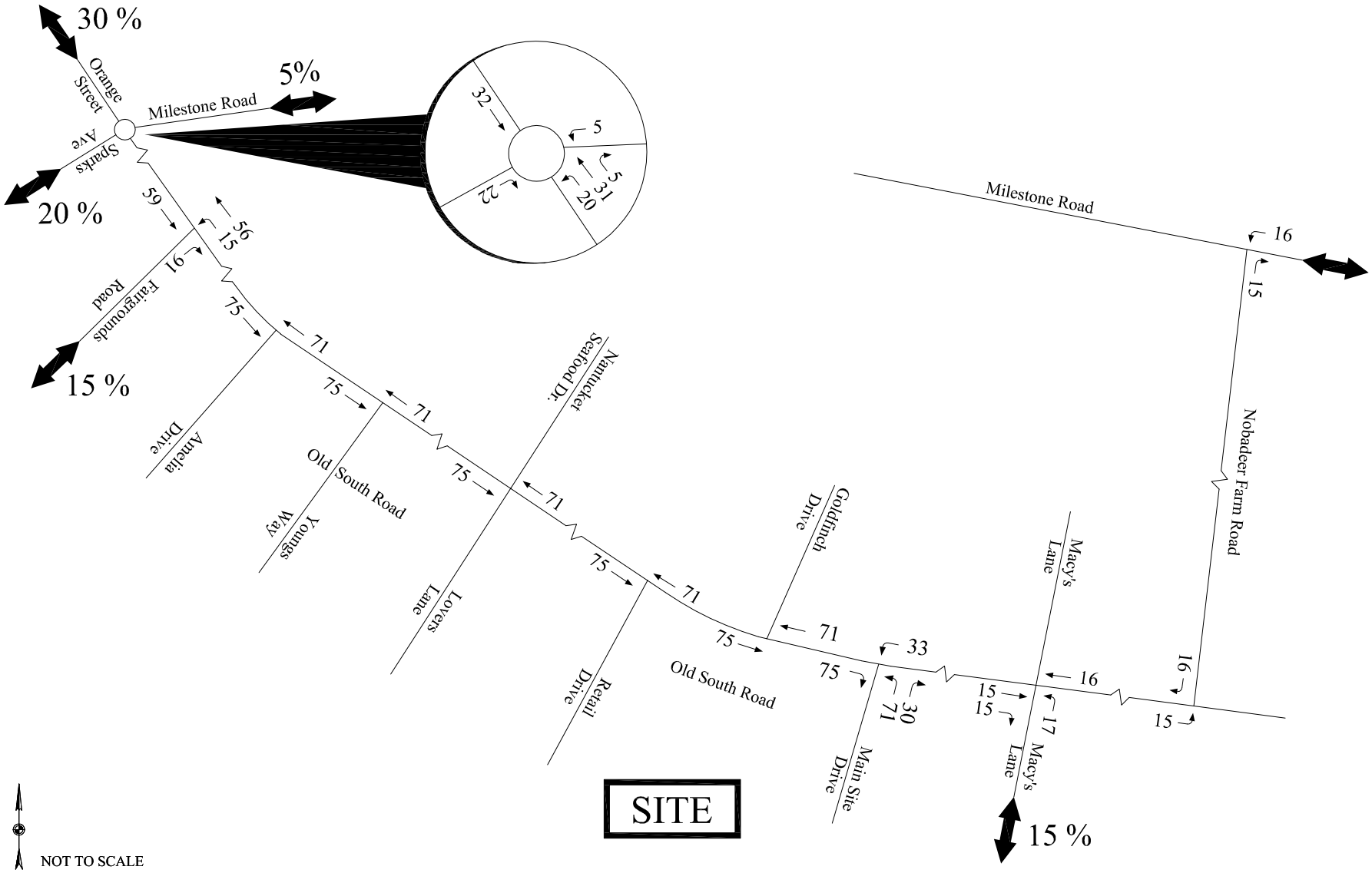
1445 of 1520

Figure 9
Residential Trip Distribution
PM Peak Hour Traffic Volumes



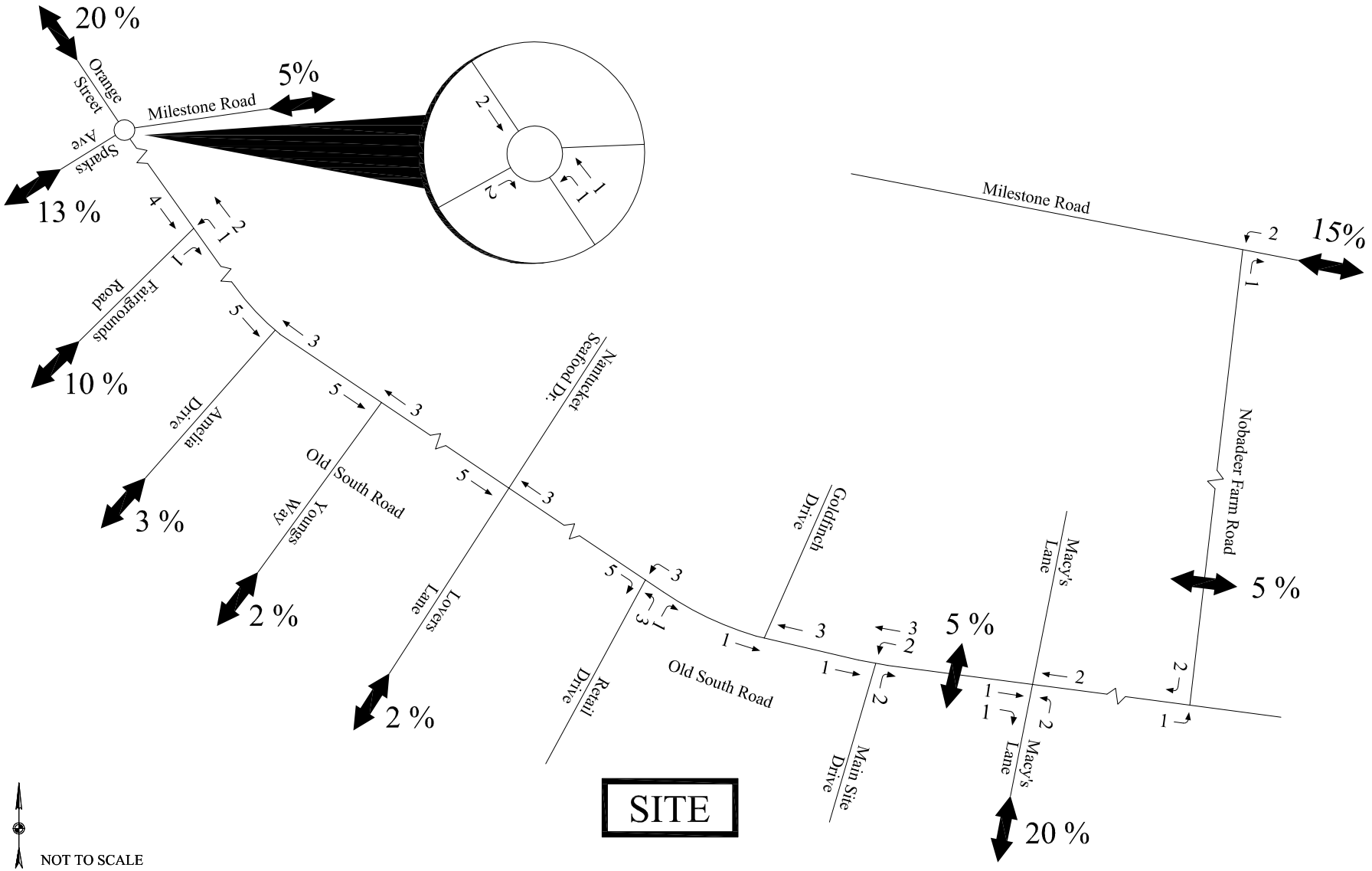
1446 of 1520

Figure 10
Residential Trip Distribution
Sat. Peak Hour Traffic Volumes



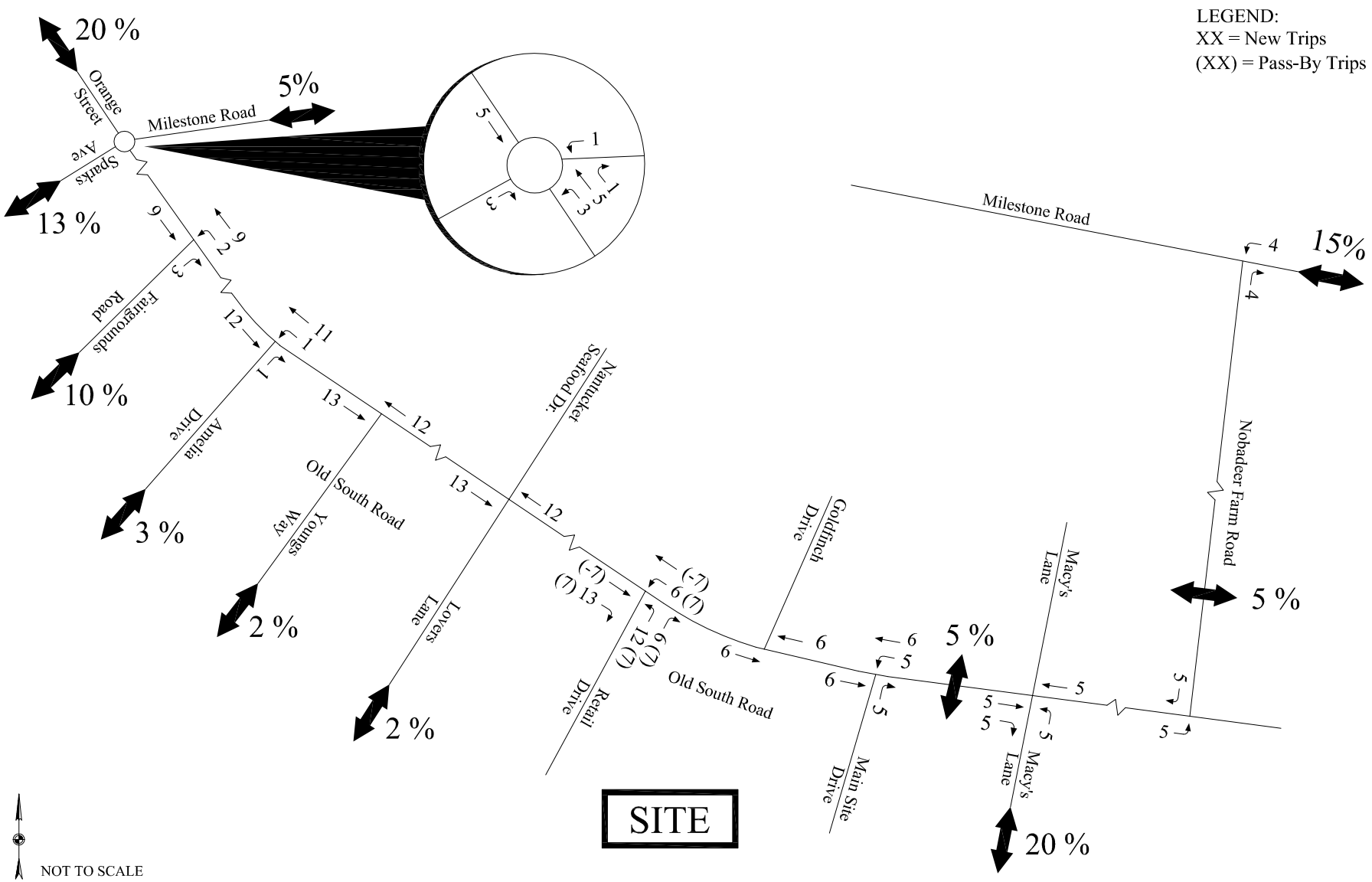
1447 of 1520

Figure 11
Retail Trip Distribution
AM Peak Hour Traffic Volumes



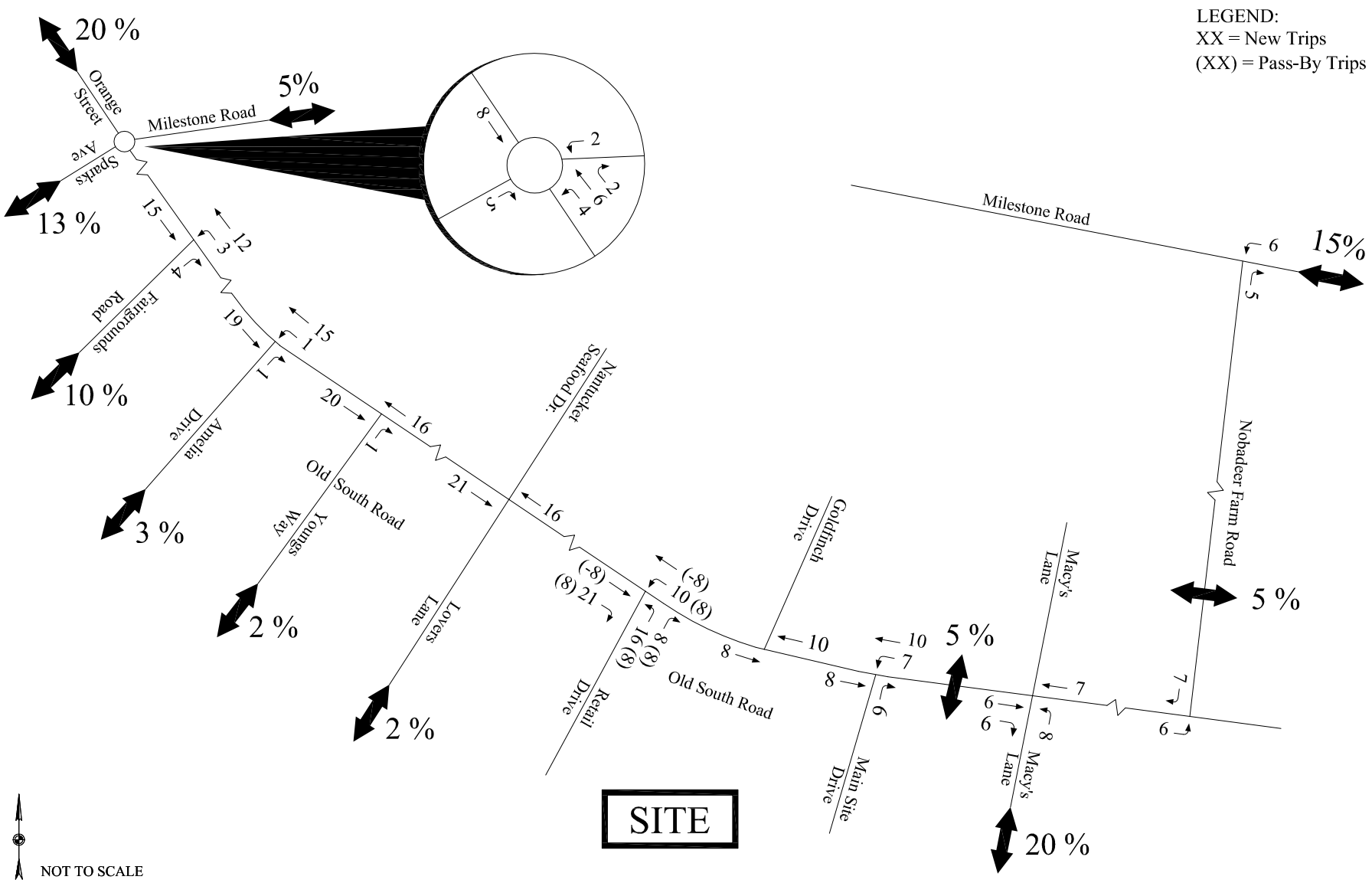
1448 of 1520

Figure 12
Retail Trip Distribution
PM Peak Hour Traffic Volumes



1449 of 1520

Figure 13
Retail Trip Distribution
Sat. Peak Hour Traffic Volumes



1450 of 1520

Figure 14
2023 Build Weekday AM
Peak Hour Traffic Volumes

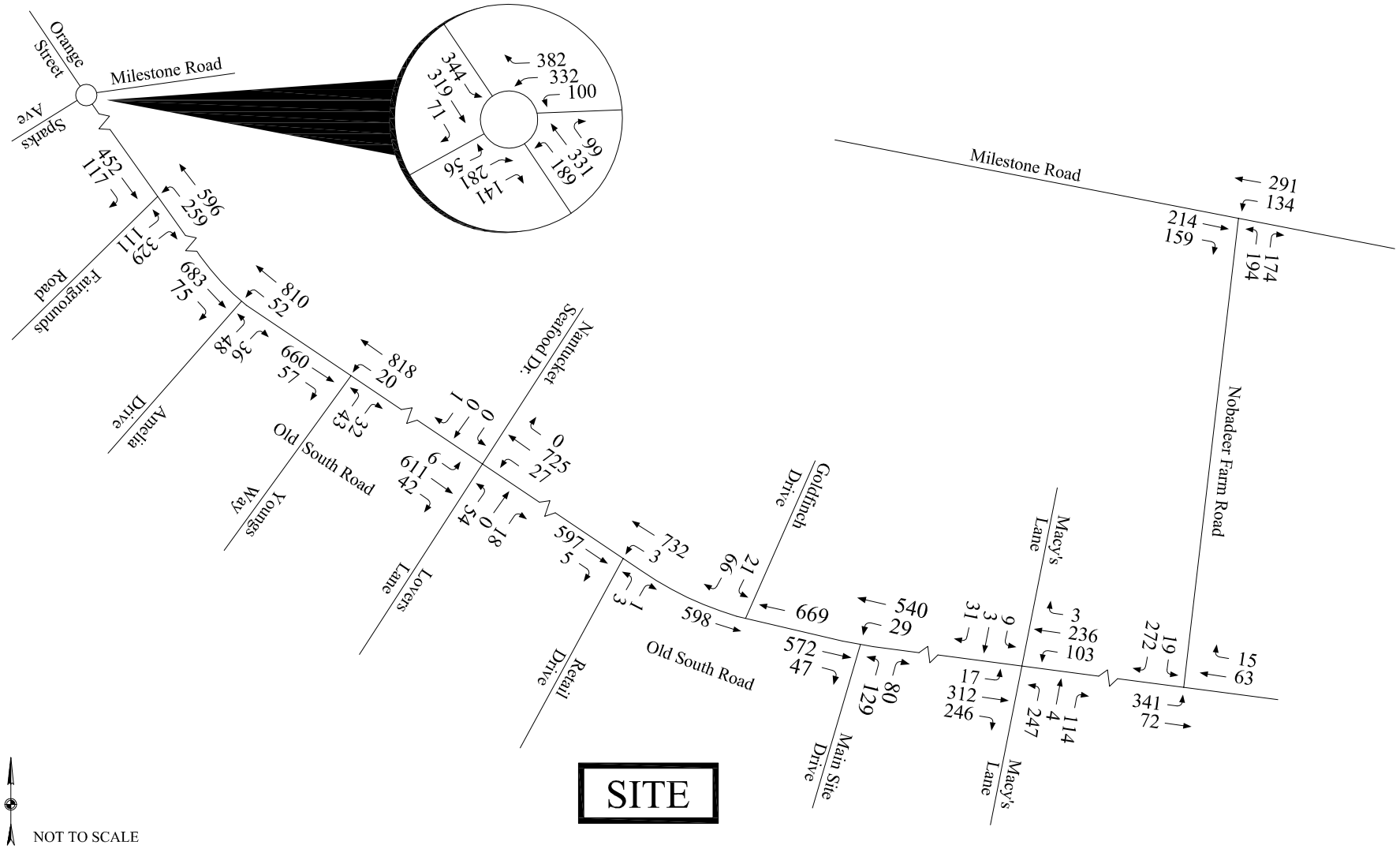


Figure 15
2023 Build Weekday PM
Peak Hour Traffic Volumes

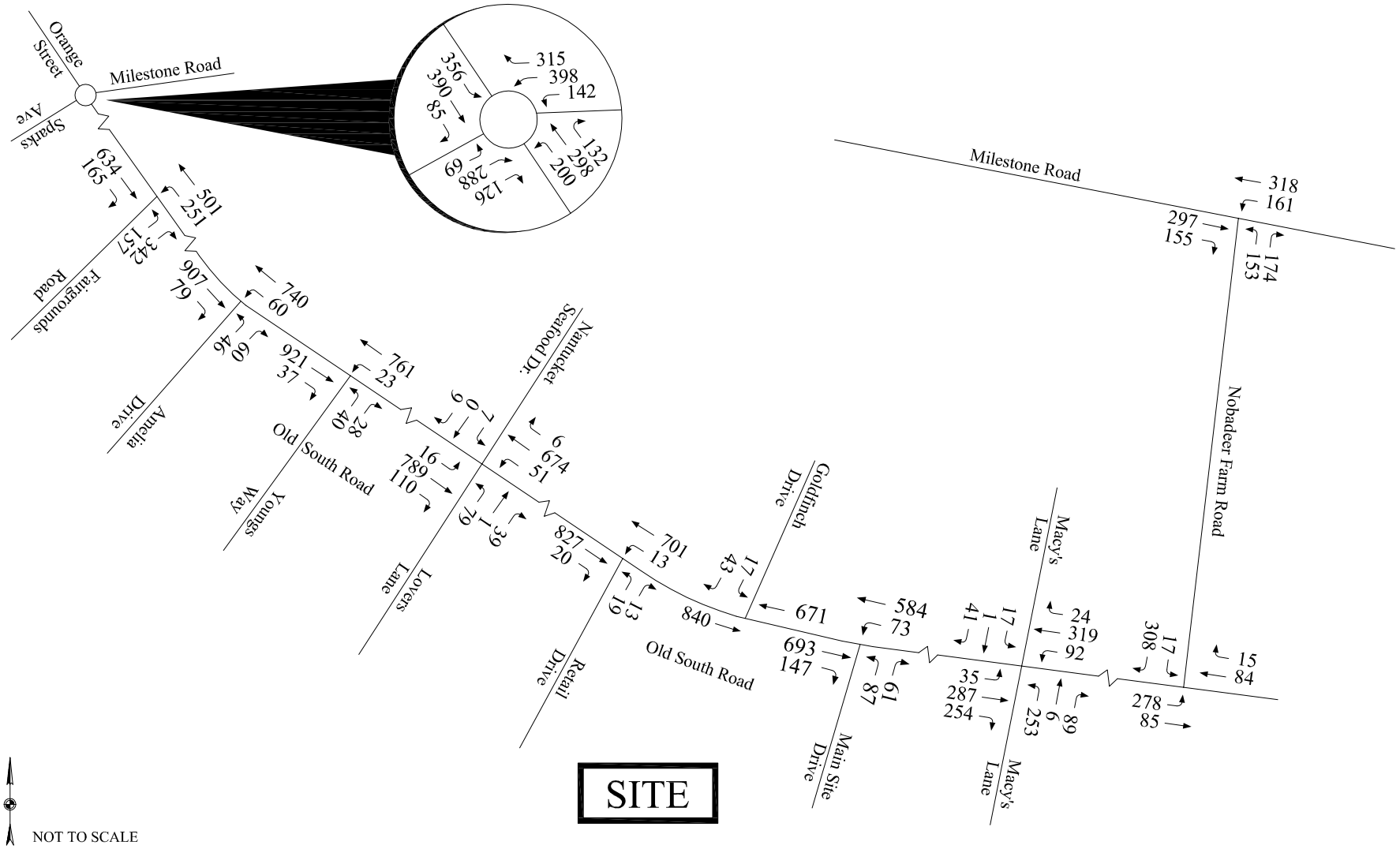


Figure 16
2023 Build Saturday
Peak Hour Traffic Volumes

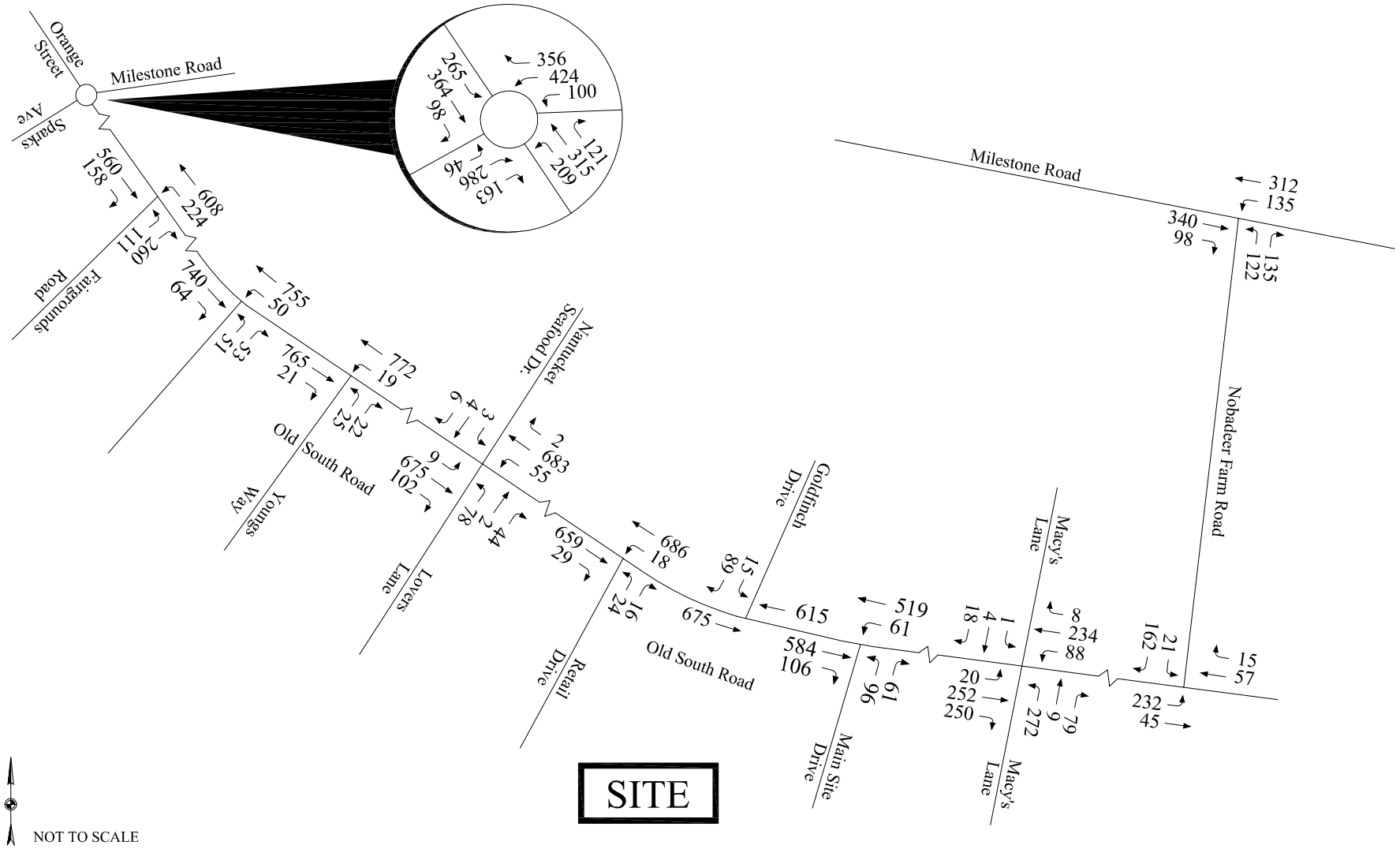


Table 9
Traffic Increases Outside of the Study Area

Route/Peak Hour	2023 No-Build Volumes	2023 Build Volumes	Volume Increase	Percent Increase
Orange Street				
Weekday AM Peak Hour	1,442	1,503	61	4.2%
Weekday PM Peak Hour	1,430	1,513	83	5.8%
Saturday Peak Hour	1,369	1,444	75	5.5%
Sparks Avenue				
Weekday AM Peak Hour	1,028	1,070	42	4.1%
Weekday PM Peak Hour	1,110	1,166	56	5.0%
Saturday Peak Hour	1,175	1,226	51	4.3%
Fairgrounds Road				
Weekday AM Peak Hour	785	816	31	3.9%
Weekday PM Peak Hour	873	915	42	4.8%
Saturday Peak Hour	715	753	38	5.3%
Macy's Lane (Airport Road)				
Weekday AM Peak Hour	684	717	33	4.8%
Weekday PM Peak Hour	648	695	47	7.3%
Saturday Peak Hour	656	702	46	7.0%
Milestone Road (East of Nobadeer Farm Rd.)				
Weekday AM Peak Hour	782	813	31	4.0%
Weekday PM Peak Hour	906	950	44	4.9%
Saturday Peak Hour	880	922	42	4.8%

As shown in Table 9, once distributed onto the available roadways, relatively small incremental increases in traffic volumes will be added further "downstream" from the study area. In general, along these "downstream" local roadways segments, such as Orange Street (northwest of the Milestone rotary), Sparks Avenue (west of the Milestone rotary), Fairgrounds Road (near the Nantucket Police Station), Macy's Lane (toward Nantucket Municipal Airport), and Milestone Road (east of Nobadeer Farm Road), these traffic volume increases will range from an average of +/- 40 additional vehicles during the weekday AM peak hour, +/- 55 additional vehicles during the weekday PM peak hour, and +/- 50 additional vehicles during the Saturday midday peak hour. When compared with the year 2023 design horizon No-Build conditions, these volumes represent increases in traffic between four and five percent (+/- 4.0% to +/- 5.0%). Much smaller increases in traffic are expected during all other hours of the day.

Note that little to no additional traffic is anticipated to be generated by the Project on Lover's Lane (south of its existing intersection with Nancy Ann Lane) and on Young's Way and Amelia Drive, due to the fact that the percentage of retail traffic to/from these streets is too low to

produce a statistically meaningful value and the fact that none of the residential traffic is expected to use these streets.

Site Access (To and From the Project)

Access to the Project site is proposed via a combination of: (1) a (new) primary access road connecting to Old South Road, to be located east of Goldfinch Drive (West) (the existing exit road serving the Naushop residential community), (2) a (new) driveway connecting to Old South Road, which is primarily intended to serve the retail space, located further west of Goldfinch Drive (West), and (3) a (new) driveway connecting to Lover's Lane, which is also primarily intended to serve the retail space.

All site driveways will be interconnected within the Property, to allow for convenient travel between the various components of the Project, without vehicles having to exit and re-enter to and from Old South Road, although it is expected that all of the residential development will be accessed exclusively via the (new) primary access road.

As previously referenced, the existing "extension" of Greglen Avenue (which was not plotted or approved as a road, but was constructed by the prior owner of the surrounding properties and has been utilized as a means of providing vehicular access to Old South Road for several decades) will also be terminated / eliminated, between Old South Road and Nancy Ann Lane, once the (new) primary access road is constructed.

From a design and engineering standpoint, it is recommended that the (new) primary access road be constructed to provide two 10-foot wide exiting lanes with a 2-foot wide paved shoulder to allow separate left and right turns out of the Property. A STOP sign and stop line should be installed at the access road exit. Entering traffic should be separated from the exiting travel lanes by a raised median and should be 15 feet in width, providing a 10-foot wide travel lane and a 5-foot wide paved shoulder to allow motorists to by-pass any vehicles that may break down in the section of the access road where the raised median is located. The access road should provide 30-foot corner radii, to accommodate turning movements of larger single-unit trucks such as moving trucks, other delivery trucks (particularly those which will serve the proposed retail and restaurant uses) as well as to ensure that it can accommodate larger emergency vehicles. Five-foot wide sidewalks should be constructed along both sides of the access road, with crosswalks and handicap-accessible wheelchair ramps constructed across the access road and across Old South Road, in order to connect with the existing bike path that is located on the north side of Old South Road. This crosswalk connection should be located on the east side of the new intersection as traffic volumes are lower at this location.

The (new) retail driveway should be constructed as a 24-foot wide driveway, providing one entering and one exiting lane, separated by a double yellow centerline. A STOP sign and stop line should be installed at the driveway exit. The driveway should provide minimum 25-foot

corner radii to accommodate the turning movements of delivery trucks to the retail and restaurant establishments, without having to cross into oncoming traffic on Old South Road.

The (new) driveway connecting to Lover's Lane should be constructed as a 24-foot wide driveway, providing one entering and one exiting lane, separated by a double yellow centerline. A STOP sign and stop line should be installed at the driveway exit. As this driveway is not expected to be used by delivery vehicles, the corner radii should be a minimum of 10 feet.

Potential For Inter-Neighborhood Roadway Connections

During preliminary meetings and public hearings that have been held in conjunction with the applications filed with the Town of Nantucket for the Project, the Project Proponent has received some indication that Town officials, including the Planning Board, which has the primary jurisdiction over local subdivision plans, and the Board of Selectmen, which has the primary jurisdiction over local roadway layouts and improvements in its capacity as the Nantucket County Commissioners, may wish to require inter-neighborhood roadway connections at one or more locations to and from from the Project.

Given the substantial scale of the overall portfolio owned by the Project Proponent (totaling +/- sixty 60 acres) the mixed-use nature of the Project, its location abutting Old South Road and its adjacency to several prominent existing residential neighborhoods (including Cedar Crest, Naushop, and Surfside) as well as to several major existing or potential roadways such as Macy's Lane (Airport Road), Lovers Lane, Ticcoma Way, Rugged Road, and the Boulevarde, Town officials and the community at large may collectively want to consider the relative benefits and impacts of providing such inter-neighborhood roadway connections.

Because such a wide variety of alternative interconnections could be proposed and considered and are not known at this time and would need to be further refined and described by the Town Boards with jurisdiction over these issues, no specific analysis of the traffic volumes / impacts of these prospective interconnections could be analyzed within the scope of this study.

Accordingly, in the event that the concept for such inter-neighborhood roadway connections is proposed by either of the Town Boards with jurisdiction over these issues, the Town would need to establish the scope of, and then commission additional traffic impact analyses, in order to specifically assess the benefits and impacts of such connections in conjunction with these decisions.

CAPACITY ANALYSIS

Level-of-service (LOS) analyses were conducted at the nine (9) different study area intersections under existing and projected traffic volume conditions to determine the effect that the traffic generated by the Project will have on traffic operations. The capacity analysis methodology is based on the concepts and procedures set forth in the *Highway Capacity Manual*[7] (HCM) and is described in the Appendix. For unsignalized intersections, the 95th percentile queue represents the length of queue of the critical minor-street movement that is not expected to be exceeded 95 percent of the time during the analysis period (typically one hour). In this case, the queue length is a function of the capacity of the movement and the movement's degree of saturation.

The Synchro analysis program was used for capacity analyses of the unsignalized intersections. For the Milestone Rotary, the SIDRA Intersection 6.0, "Standard SIDRA" capacity model was used applying the HCM 2010 LOS criteria. The level-of-service and queue results are presented in Table 10 and are discussed below. All analysis worksheets are provided in the Appendix.

[7]*Highway Capacity Manual 2010;* Transportation Research Board; Washington, DC; 2010.

Table 10
Level-of-Service Analysis Summary

Location/Peak Hour/Movement	2016 Existing				2023 No-Build				2023 Build			
	v/c[a]	Del.[b]	LOS[c]	Queue[d]	v/c	Delay	LOS	Queue	v/c	Delay	LOS	Queue
Old South Road at Milestone Rotary												
Weekday AM Peak												
Old South Rd.	1.21	124.2	F	1086	1.35	183.2	F	1556	1.55	269.2	F	2268
Milestone Rd.	0.57	8.4	A	127	0.62	9.0	A	151	0.63	9.2	A	155
Orange St.	0.54	11.0	B	109	0.63	12.9	B	144	0.66	13.4	B	159
Sparks Ave.	1.13	87.4	F	715	1.35	178.7	F	1302	1.41	204.7	F	1454
Weekday PM Peak												
Old South Rd.	1.20	121.0	F	1048	1.37	190.9	F	1619	1.46	229.9	F	1994
Milestone Rd.	0.64	8.9	A	162	0.71	9.9	A	205	0.65	9.1	A	166
Orange St.	0.64	13.5	B	149	0.78	18.6	C	236	0.82	18.7	C	278
Sparks Ave.	1.09	74.3	F	575	1.38	194.2	F	1294	1.54	264.3	F	1686
Sat Midday Peak												
Old South Rd.	1.03	53.9	F	623	1.27	145.4	F	1407	1.37	186.4	F	1835
Milestone Rd.	0.67	9..8	A	180	0.73	10.7	B	222	0.76	11.5	B	240
Orange St.	0.67	14.0	B	164	0.81	19.5	C	261	0.91	26.4	D	383
Sparks Ave.	1.30	157.5	F	1323	1.30	160.2	F	1233	1.45	225.8	F	1622
Old South Road at Fairgrounds Road												
Weekday AM Peak												
NB Left	0.92	133.9	F	150	1.32	NA	F	225	1.88	NA	F	275
NB Right	0.50	16.6	C	75	0.58	19.6	C	100	0.61	21.4	C	125
WB Left	0.21	9.4	A	25	0.24	9.8	A	25	0.27	10.1	B	50
Weekday PM Peak												
NB Left	1.38	NA	F	275	2.22	NA	F	400	3.30	NA	F	450
NB Right	0.60	20.2	C	100	0.69	28.4	D	150	0.80	40.5	E	175
WB Left	0.23	10.0	A	25	0.28	10.7	B	50	0.32	11.6	B	50
Sat Midday Peak												
NB Left	1.12	203.5	F	200	1.80	NA	F	275	2.74	NA	F	325
NB Right	0.43	16.6	C	75	0.54	20.7	C	100	0.65	27.1	D	125
WB Left	0.21	9.7	A	25	0.25	10.3	B	25	0.29	11.1	B	50

[a] Volume-to-capacity ratio.
[b] Average control delay (sec./vehicle).
[c] Level of service.
[d] 95th percentile queue in feet, assuming 25 feet/vehicle.
NA = not calculable.

Table 10 (continued)
Level-of-Service Analysis Summary

Location/Peak Hour/Movement	2016 Existing				2023 No-Build				2023 Build			
	v/c[a]	Del.[b]	LOS[c]	Queue[d]	v/c	Delay	LOS	Queue	v/c	Delay	LOS	Queue
Old South Road at Amelia Drive												
Weekday AM Peak												
NB All	0.41	35.3	E	50	0.54	50.7	F	75	0.67	75.4	F	100
WB Left	0.06	9.3	A	25	0.07	9.6	A	25	0.08	9.8	A	25
Weekday PM Peak												
NB All	0.48	37.1	E	75	0.70	68.5	F	125	0.94	138.1	F	150
WB Left	0.07	9.6	A	25	0.08	10.2	B	25	0.09	10.9	B	25
Sat Midday Peak												
NB All	0.50	38.1	E	75	0.66	59.0	F	100	0.86	109.4	F	150
WB Left	0.06	9.2	A	25	0.06	9.6	A	25	0.07	10.0	B	25
Old South Road at Young's Way												
Weekday AM Peak												
NB All	0.32	27.8	D	50	0.41	36.1	E	50	0.49	47.9	E	75
WB Left	0.02	9.0	A	25	0.02	9.3	A	25	0.03	9.4	A	25
Weekday PM Peak												
NB All	0.33	32.7	D	50	0.48	50.2	F	75	0.64	81.8	F	100
WB Left	0.03	9.4	A	25	0.03	9.8	A	25	0.04	10.4	B	25
Sat Midday Peak												
NB All	0.22	26.6	D	25	0.28	31.5	D	50	0.36	43.5	E	50
WB Left	0.02	9.1	A	25	0.02	9.3	A	25	0.03	9.7	A	25

[a] Volume-to-capacity ratio.
[b] Average control delay (sec./vehicle).
[c] Level of service.
[d] 95th percentile queue in feet, assuming 25 feet/vehicle.
NA = not calculable.

Table 10 (continued)
Level-of-Service Analysis Summary

Location/Peak Hour/Movement	2016 Existing				2023 No-Build				2023 Build			
	v/c[a]	Del.[b]	LOS[c]	Queue[d]	v/c	Delay	LOS	Queue	v/c	Delay	LOS	Queue
Old South Road at Lover's Lane												
Weekday AM Peak												
NB All	0.16	30.8	D	25	0.36	42.6	E	50	0.73	100.1	F	100
EB Left	0.01	8.9	A	0	0.01	9.1	A	0	0.01	9.4	A	0
WB Left	0.02	8.8	A	0	0.03	9.1	A	25	0.03	9.3	A	25
SB All	0.00	12.4	B	0	0.00	13.0	B	0	0.00	14.0	B	0
Weekday PM Peak												
NB All	0.42	44.9	E	50	0.95	146.5	F	150	1.80	NA	F	300
EB Left	0.02	8.9	A	25	0.02	9.2	A	25	0.02	9.3	A	25
WB Left	0.04	9.4	A	25	0.07	9.9	A	25	0.08	10.5	B	25
SB All	0.10	28.4	D	25	0.15	41.1	E	25	0.20	56.4	F	25
Sat Midday Peak												
NB All	0.28	32.7	D	50	0.88	117.0	F	150	1.66	NA	F	300
EB Left	0.01	8.8	A	0	0.01	9.1	A	0	0.01	9.3	A	0
WB Left	0.03	9.0	A	25	0.07	9.5	A	25	0.08	10.0	B	25
SB All	0.08	25.6	D	25	0.11	36.1	E	25	0.15	49.0	E	25
Old South Road at Goldfinch Drive												
Weekday AM Peak												
NB All	0.41	35.8	E	50	0.75	98.5	F	125	---	---	---	---
WB Left	0.01	8.7	A	0	0.02	9.1	A	25	---	---	---	---
SB All	0.28	19.9	C	50	0.43	33.2	D	25	0.32	22.5	C	50
Weekday PM Peak												
NB All	0.46	41.8	E	75	0.65	72.1	F	100	---	---	---	---
WB Left	0.02	9.1	A	25	0.03	9.5	A	25	---	---	---	---
SB All	0.22	21.0	C	25	0.28	26.7	D	50	0.26	24.5	C	25
Sat Midday Peak												
NB All	0.42	38.2	E	50	0.60	63.7	F	100	---	---	---	---
WB Left	0.02	8.8	A	25	0.03	9.1	A	25	---	---	---	---
SB All	0.29	17.4	C	50	0.35	21.4	C	50	0.34	20.7	C	50

[a] Volume-to-capacity ratio.
[b] Average control delay (sec./vehicle).
[c] Level of service.
[d] 95th percentile queue in feet, assuming 25 feet/vehicle.
NA = not calculable.

Table 10 (continued)
Level-of-Service Analysis Summary

Location/Peak Hour/Movement	2016 Existing				2023 No-Build				2023 Build			
	v/c[a]	Del.[b]	LOS[c]	Queue[d]	v/c	Delay	LOS	Queue	v/c	Delay	LOS	Queue
Old South Road at Macy's Lane												
Weekday AM Peak												
NB All	0.61	19.2	C	125	0.72	25.1	D	150	0.73	26.6	D	175
EB All	0.81	28.5	D	225	0.95	49.5	E	325	1.04	62.1	F	375
WB All	0.57	17.5	C	100	0.67	22.4	C	125	0.69	23.4	C	150
SB All	0.09	10.8	B	25	0.10	11.8	B	25	0.10	11.9	B	25
Weekday PM Peak												
NB All	0.56	17.8	C	100	0.69	24.6	C	150	0.77	31.1	D	175
EB All	0.83	31.6	D	225	1.04	63.0	F	375	1.16	64.7	F	375
WB All	0.68	21.2	C	150	0.83	34.8	D	225	0.91	47.7	E	275
SB All	0.09	11.0	B	25	0.15	12.5	B	25	0.15	13.0	B	25
Sat Midday Peak												
NB All	0.51	14.8	B	75	0.63	19.1	C	125	0.70	24.0	C	150
EB All	0.61	16.1	C	125	0.79	25.6	D	200	0.89	40.0	E	275
WB All	0.46	13.5	B	75	0.56	16.8	C	100	0.63	220.1	C	125
SB All	0.04	9.6	A	25	0.05	10.5	B	25	0.05	11.1	B	25
Old South Road at Nobadeer Farm Road												
Weekday AM Peak												
EB Left	0.21	8.1	A	25	0.23	8.2	A	25	0.25	8.2	A	25
SB All	0.34	11.5	B	50	0.38	12.1	B	50	0.40	12.4	B	50
Weekday PM Peak												
EB Left	0.17	8.0	A	25	0.20	8.1	A	25	0.21	8.1	A	25
SB All	0.33	11.3	B	50	0.39	12.0	B	50	0.43	12.5	B	75
Sat Midday Peak												
EB Left	0.13	7.8	A	25	0.16	7.9	A	25	0.17	7.9	A	25
SB All	0.18	10.2	B	25	0.21	10.5	B	25	0.24	10.7	B	25

[a] Volume-to-capacity ratio.
[b] Average control delay (sec./vehicle).
[c] Level of service.
[d] 95th percentile queue in feet, assuming 25 feet/vehicle.
NA = not calculable.

Table 10 (continued)
Level-of-Service Analysis Summary

Location/Peak Hour/Movement	2016 Existing				2023 No-Build				2023 Build			
	v/c[a]	Del.[b]	LOS[c]	Queue[d]	v/c	Delay	LOS	Queue	v/c	Delay	LOS	Queue
Milestone Road at Nobadeer Farm Road												
Weekday AM Peak												
NB Left	0.64	35.7	E	100	0.77	53.4	F	150	0.80	57.9	F	175
NB Right	0.19	11.1	B	25	0.22	11.5	B	25	0.36	11.8	B	25
WB Left	0.10	8.5	A	25	0.12	8.6	A	25	0.13	8.6	A	25
Weekday PM Peak												
NB Left	0.56	34.5	D	100	0.71	52.4	F	150	0.80	69.7	F	150
NB Right	0.21	11.7	B	25	0.25	12.3	B	25	0.28	12.6	B	50
WB Left	0.10	8.6	A	25	0.13	8.8	A	25	0.15	8.9	A	25
Sat Midday Peak												
NB Left	0.43	26.9	D	50	0.53	35.8	E	75	0.59	42.4	E	100
NB Right	0.15	11.4	B	25	0.19	11.9	B	25	0.22	12.2	B	25
WB Left	0.09	8.5	A	25	0.11	8.7	A	25	0.13	8.8	A	25
Old South Road at Primary Access Road												
Weekday AM Peak												
NB Left	---	---	---	---	---	---	---	---	0.82	82.5	F	150
NB Right	---	---	---	---	---	---	---	---	0.18	14.3	B	25
WB Left	---	---	---	---	---	---	---	---	0.03	9.0	A	25
Weekday PM Peak												
NB Left	---	---	---	---	---	---	---	---	0.99	168.1	F	150
NB Right	---	---	---	---	---	---	---	---	0.18	16.8	C	25
WB Left	---	---	---	---	---	---	---	---	0.11	10.3	B	25
Sat Midday Peak												
NB Left	---	---	---	---	---	---	---	---	0.74	81.2	F	125
NB Right	---	---	---	---	---	---	---	---	0.15	14.5	B	25
WB Left	---	---	---	---	---	---	---	---	0.08	9.5	A	25

[a] Volume-to-capacity ratio.
[b] Average control delay (sec./vehicle).
[c] Level of service.
[d] 95th percentile queue in feet, assuming 25 feet/vehicle.
NA = not calculable.

Table 10 (continued)
Level-of-Service Analysis Summary

Location/Peak Hour/Movement	2016 Existing				2023 No-Build				2023 Build			
	v/c[a]	Del.[b]	LOS[c]	Queue[d]	v/c[a]	Del.[b]	LOS[c]	Queue	v/c[a]	Del.[b]	LOS[c]	Queue
Old South Road at Retail Site Driveway												
Weekday AM Peak												
NB All	---	---	---	---	---	---	---	---	0.03	26.2	D	25
WB Left	---	---	---	---	---	---	---	---	0.00	8.8	A	0
Weekday PM Peak												
NB All	---	---	---	---	---	---	---	---	0.25	39.3	E	25
WB Left	---	---	---	---	---	---	---	---	0.02	9.9	A	25
Sat Midday Peak												
NB All	---	---	---	---	---	---	---	---	0.24	31.6	D	25
WB Left	---	---	---	---	---	---	---	---	0.02	9.2	A	25

[a] Volume-to-capacity ratio.
[b] Average control delay (sec./vehicle).
[c] Level of service.
[d] 95th percentile queue in feet, assuming 25 feet/vehicle.
NA = not calculable.

Capacity Analysis Results

As shown in Table 10, the Milestone Rotary currently experiences significant capacity constraints, particularly on the Old South Road and Sparks Avenue approaches, where very long delays and queues are experienced, at level of service (LOS) F. It should be noted that the analysis model does not take into consideration the access and parking conflicts in the southwest corner of the intersection that can lead to additional delays and queues not reflected in the analysis results. These conditions will be exacerbated under the future volume conditions, with or without the additional traffic from the Project. As described previously, the Town of Nantucket is planning major upgrades and will be reconstructing this intersection into a modern roundabout, providing adequate deflection to reduce entry speeds, two lanes of traffic on every approach, safe pedestrian/bicycle crossings across all four approaches, and eliminating the access conflicts by controlling site access to the property in the southwest corner. As documented in the study commissioned by the Town, upon the construction of these improvements, a significant improvement in traffic operations would be realized on all approaches. These improvements should be advanced by the town at the earliest possible time, given the current level of operation.

Similarly, the Old South Road and Fairgrounds Road intersection currently operates at LOS F during all peak hours with very long delays and queues on the Fairgrounds Road approach (particularly for vehicles attempting to make a left turn, to the west, traveling toward the Milestone rotary and the Downtown area). The volume-to-capacity (v/c) ratio for existing traffic exiting Fairgrounds Road is calculated at well over 1.0 during the weekday PM and Saturday peak hours, indicating that there is insufficient capacity to accommodate the volume of traffic. As these volumes were counted going through the intersection, the volume-to-capacity (v/c) ratio cannot be greater than 1.0. This indicates that motorists are accepting gaps in traffic that are far shorter than those assumed in the analysis model. As shown in Table 10, these conditions will be exacerbated under the future volume conditions, with or without the additional traffic from the Project. The Town of Nantucket has plans to reconstruct this intersection into a modern roundabout, with single-lane approaches on all legs of the intersection. Based on the study commissioned by the Town, upon the construction of these improvements, the intersection would operate at LOS C or better during all peak hours. These improvements should be advanced by the Town at the earliest possible time, given the current level of operation.

Traffic exiting Amelia Drive during peak hours currently operates at LOS E, indicating long delays. By the 2023 design year, these movements will operate at LOS F with or without the additional traffic from the Project. However, v/c ratios will remain below 1.0, indicating that capacity remains to accommodate the traffic. At the Old South Road and Young's Way intersection, traffic exiting Young's Way currently operates at acceptable levels (LOS D) during all peak hours. By 2023, these movements will operate at levels ranging from E to F with or without additional traffic from the Project, with long delays for traffic exiting Young's Way. However, v/c ratios will remain well below 1.0, indicating that ample capacity remains to accommodate the traffic.

Traffic exiting Lover's Lane onto Old South Road currently operates at LOS D to E during peak hours. With the increase in through traffic along Old South Road under the 2023 No-Build condition, these traffic movements will operate at LOS E to F. As a result of the redistribution of traffic that will occur from the elimination of the existing "extension" of Greglen Avenue, as a result of the Project, as well as the increase in traffic on Old South Road as a result of the Project, Lover's Lane traffic will experience a significant increase in delay with v/c ratios well above 1.0. As a result, improvements are recommended to be made at this intersection, as further described in the *Mitigation* section of this study.

At the Old South Road and Greglen Avenue / Goldfinch Drive intersection, traffic exiting the existing "extension" of Greglen Avenue currently operates at LOS E and is projected to operate at LOS F under the 2023 No-Build conditions. These movements will be eliminated as a result of the development of the Project. As a result, traffic exiting the Goldfinch Drive (West) exit from the Naushop residential community actually improves in level of service, fairly substantially, from LOS D to C. Additional improvements in traffic operations for Goldfinch Drive traffic will also be experienced as a result of the improvements proposed and described in the *Mitigation* section of this study.

The Old South Road and Macy's Lane (Airport Road) intersection currently operates at acceptable levels during all peak hours, but vehicle queues of about nine (9) vehicles are noted on the Old South Road eastbound approach during the weekday AM and PM peak hours. Under the 2023 No-Build conditions, this approach is expected to operate at LOS F with long delays and queues of about fifteen (15) vehicles during the PM peak hour and a v/c ratio in excess of 1.0, indicating that the volume of traffic exceeds the capacity of this movement. The addition of traffic from the Project will cause additional delays and queues on this approach with LOS F traffic operations also occurring during the weekday AM peak hour. As a result of this impact, improvements are recommended at this intersection as described in the *Mitigation* section of this study.

The Old South Road and Nobadeer Farm Road intersection operates at desirable levels (LOS A to B) during all peak hours under all volume conditions. The Milestone Road and Nobadeer Farm Road intersection currently operates at LOS E during the weekday AM peak hour and at LOS D during all other peak hours. Under the 2023 No-Build conditions, the Nobadeer Farm Road approach is expected to operate at LOS F during both weekday peak hours with long delays and queues of about six (6) vehicles. The addition of site traffic from the Project under the 2023 Build conditions will create some additional delays, but no changes in level of service and all v/c ratios will remain below 1.0, indicating that capacity remains at the intersection to accommodate the projected volumes of traffic.

Absent any improvements, the (new) site driveway and (new) primary access roadway connecting to and from Old South Road are projected to operate at LOS E to F with long delays and v/c ratios nearing 1.0. As a result, improvements are recommended at these locations that will significantly improve traffic operations, as further described in the *Mitigation* section of this study. No capacity analyses were performed for the proposed site driveway on Lover's Lane as none of the site traffic was assigned to this driveway.

MITIGATION RECOMMENDATIONS

The final component of the traffic analysis process is to identify any measures that may be necessary to improve existing or projected traffic operations and to mitigate the effects of the Project on the area transportation system.

As described in the *Capacity Analysis* section of this study, both the Milestone Rotary and the Old South Road and Fairgrounds Road intersection currently operate at LOS F with insufficient capacity to accommodate the existing volume of peak hour traffic. The Town of Nantucket is proposing significant improvements to these locations that will not only resolve existing operational constraints, but will provide additional capacity to accommodate future traffic levels. These improvements should be advanced by the town at the earliest possible time.

There are several other study area intersections that are projected to operate at LOS F with or without the generation of any future traffic from the Project, but have sufficient remaining capacity (volume-to-capacity ratios of less than 1.0) to accommodate the future traffic levels. Improvements are therefore not required at these locations as part of the Project.

The Project will have a significant impact at several study area roadway segment and intersection locations, as described below, and specific traffic improvements are recommended to be implemented by the Project Proponent in order to mitigate these impacts.

Old South Road Corridor Improvements (Center-Left-Turn Lane)

Each of the proposed (new) primary access road, the (new) site driveway location, and the Lover's Lane intersection with Old South Road are projected to operate with long delays at LOS F and with v/c ratios over 1.0 as a result of traffic generated by the Project. To improve traffic operations for the these intersections as well as all driveways along this section of Old South Road, it is recommended that Old South Road be widened (+/- 1,500 feet in length) to construct a two-way center-left-turn lane, extending from west of Lover's Lane to a point east of the proposed (new) primary access road. Such a center turn lane has the effect of allowing side-street traffic to make left turns in two stages, crossing first one direction of traffic on Old South Road, then waiting in the center turn lane to merge with the other direction of traffic. In addition, the center turn lane allows left turns from Old South Road a safe place to wait for a gap in traffic without affecting through traffic (which will no longer have to wait and cause a backup or delay until the turning vehicle has exited the main travel lane). Construction of a center turn lane will require widening Old South Road on both sides of the street and will also require acquisition of land from the Project site. A conceptual plan of such a center turn lane is provided in the Appendix. As shown on this plan, it is recommended that Old South Road be widened to provide 12-foot wide through lanes, a 14-foot wide center turn lane, and 2-foot wide shoulders. Appropriate signs should be installed identifying the beginning and end of the center turn lane.

The levels of service that will be experienced along Old South Road in this area as a result of the construction of these improvements are shown in Table 11 and all analysis worksheets are provided in the Appendix. As shown, delays for traffic exiting the proposed (new) primary access road, the (new) site driveway, and Goldfinch Drive (West) will be significantly improved to LOS C to D during all peak hours. Traffic exiting Lover's Lane will also experience a significant reduction in delay, although LOS F conditions would still exist during the weekday PM and Saturday peak hours. However, v/c ratios are projected at 0.68 or less, indicating that ample capacity remains to accommodate the traffic. Similar results would be expected at all of the other driveways within this section of Old South Road, including the driveways to Nantucket Seafood, the Nantucket Emporium, the cluster of existing retail uses owned by the Project Proponent near the intersection of Old South Road and Lovers Lane, and all of the driveways serving the Valero & Sons Garden Center. It is also important to point out that these operating conditions will exist only during the peak summer months, which has a short duration of 3-4 months. During the remainder of the year, volumes will be significantly lower and traffic operations accordingly better.

As previously described, construction of the (new) primary access road will eliminate the "extension" of Greglen Avenue located between Old South Road and Nancy Ann Lane. Greglen Avenue currently intersects Old South Road opposite Goldfinch Drive (West), but is offset slightly to the west. This often causes conflicts between vehicles turning right from Goldfinch Drive (West) traveling to the west (toward the Downtown area) and those turning left from Greglen Avenue, also traveling to the west (toward the Downtown area), which is by far the dominant turning movement and direction for traffic exiting these intersections. Eliminating this poorly located and designed existing "extension" of Greglen Avenue will accordingly have a significant traffic safety benefit.

While the additional traffic generated by the Project along this section of Old South Road represents an increase in traffic of only about 14 percent and the recommended improvements will have significant benefits to access and traffic safety for all other properties along the corridor, it is anticipated that the Project Proponent will solely fund and provide for the construction of these recommended improvements before any substantial component of the Project is actually built and occupied.

Table 11
Level-of-Service Analysis Summary - With Mitigation

Location/Peak Hour/Movement	2023 No-Build				2023 Build				2023 Build Mitigated			
	v/c[a]	Del.[b]	LOS[c]	Queue[d]	v/c	Delay	LOS	Queue	v/c	Delay	LOS	Queue
Old South Road at Lover's Lane												
Weekday AM Peak												
NB All	0.36	42.6	E	50	0.73	100.1	F	100	0.33	28.0	D	50
EB Left	0.01	9.1	A	0	0.01	9.4	A	0	0.01	9.4	A	0
WB Left	0.03	9.1	A	25	0.03	9.3	A	25	0.03	9.3	A	25
SB All	0.00	13.0	B	0	0.00	14.0	B	0	0.00	14.0	B	0
Weekday PM Peak												
NB All	0.95	146.5	F	150	1.80	NA	F	300	0.68	57.5	F	125
EB Left	0.02	9.2	A	25	0.02	9.3	A	25	0.02	9.3	A	25
WB Left	0.07	9.9	A	25	0.08	10.5	B	25	0.08	10.5	B	25
SB All	0.15	41.1	E	25	0.20	56.4	F	25	0.08	23.6	C	25
Sat Midday Peak												
NB All	0.88	117.0	F	150	1.66	NA	F	300	0.66	50.9	F	100
EB Left	0.01	9.1	A	0	0.01	9.3	A	0	0.01	9.3	A	0
WB Left	0.07	9.5	A	25	0.08	10.0	B	25	0.08	10.0	B	25
SB All	0.11	36.1	E	25	0.15	49.0	E	25	0.07	22.8	C	25
Old South Road at Goldfinch Drive												
Weekday AM Peak												
NB All	0.75	98.5	F	125	---	---	---	---	---	---	---	---
WB Left	0.02	9.1	A	25	---	---	---	---	---	---	---	---
SB All	0.43	33.2	D	25	0.32	22.5	C	50	0.25	17.5	C	25
Weekday PM Peak												
NB All	0.65	72.1	F	100	---	---	---	---	---	---	---	---
WB Left	0.03	9.5	A	25	---	---	---	---	---	---	---	---
SB All	0.28	26.7	D	50	0.26	24.5	C	25	0.18	17.1	C	25
Sat Midday Peak												
NB All	0.60	63.7	F	100	---	---	---	---	---	---	---	---
WB Left	0.03	9.1	A	25	---	---	---	---	---	---	---	---
SB All	0.35	21.4	C	50	0.34	20.7	C	50	0.28	17.1	C	50

[a] Volume-to-capacity ratio.
[b] Average control delay (sec./vehicle).
[c] Level of service.
[d] 95th percentile queue in feet, assuming 25 feet/vehicle.
NA = not calculable.

Table 11 (continued)
Level-of-Service Analysis Summary - With Mitigation

Location/Peak Hour/Movement	2023 No-Build				2023 Build				2023 Build Mitigated			
	v/c[a]	Del.[b]	LOS[c]	Queue[d]	v/c	Delay	LOS	Queue	v/c	Delay	LOS	Queue
Old South Road at Retail Site Driveway												
Weekday AM Peak												
NB All	---	---	---	---	0.03	26.2	D	25	0.01	16.6	C	0
WB Left	---	---	---	---	0.00	8.8	A	0	0.00	8.8	A	0
Weekday PM Peak												
NB All	---	---	---	---	0.25	39.3	E	25	0.13	20.4	C	25
WB Left	---	---	---	---	0.02	9.9	A	25	0.02	9.9	A	25
Sat Midday Peak												
NB All	---	---	---	---	0.24	31.6	D	25	0.14	18.3	C	25
WB Left	---	---	---	---	0.02	9.2	A	25	0.02	9.2	A	25
Old South Road at Primary Access Road												
Weekday AM Peak												
NB Left	---	---	---	---	0.82	82.5	F	150	0.45	25.4	D	75
NB Right	---	---	---	---	0.18	14.3	B	25	0.18	14.3	B	25
WB Left	---	---	---	---	0.03	9.0	A	25	0.03	9.0	A	25
Weekday PM Peak												
NB Left	---	---	---	---	0.99	168.1	F	150	0.40	30.1	D	50
NB Right	---	---	---	---	0.18	16.8	C	25	0.18	16.8	C	25
WB Left	---	---	---	---	0.11	10.3	B	25	0.11	10.3	B	25
Sat Midday Peak												
NB Left	---	---	---	---	0.74	81.2	F	125	0.37	24.6	C	50
NB Right	---	---	---	---	0.15	14.5	B	25	0.15	14.5	B	25
WB Left	---	---	---	---	0.08	9.5	A	25	0.08	9.5	A	25

[a] Volume-to-capacity ratio.
[b] Average control delay (sec./vehicle).
[c] Level of service.
[d] 95th percentile queue in feet, assuming 25 feet/vehicle.
NA = not calculable.

Table 11 (continued)
Level-of-Service Analysis Summary - With Mitigation

Location/Peak Hour/Movement	2023 No-Build				2023 Build				2023 Build Mitigated			
	v/c[a]	Del.[b]	LOS[c]	Queue[d]	v/c	Delay	LOS	Queue	v/c	Delay	LOS	Queue
Old South Road at Macy's Lane												
Weekday AM Peak												
NB All	0.72	25.1	D	150	0.73	26.6	D	175	0.71	24.5	C	150
EB All	0.95	49.5	E	325	1.04	62.1	F	375	0.67	22.8	C	125
EB Right	---	---	---	---	---	---	---	---	0.45	13.9	B	75
WB All	0.67	22.4	C	125	0.69	23.4	C	150	0.68	23.0	C	150
SB All	0.10	11.8	B	25	0.10	11.9	B	25	0.10	11.4	B	25
Weekday PM Peak												
NB All	0.69	24.6	C	150	0.77	31.1	D	175	0.76	29.7	D	175
EB All	1.04	63.0	F	375	1.16	64.7	F	375	0.73	27.7	D	150
EB Right	---	---	---	---	---	---	---	---	0.52	16.3	C	75
WB All	0.83	34.8	D	225	0.91	47.7	E	275	0.91	47.1	E	275
SB All	0.15	12.5	B	25	0.15	13.0	B	25	0.15	12.8	B	25
Sat Midday Peak												
NB All	0.63	19.1	C	125	0.70	24.0	C	150	0.67	21.1	C	125
EB All	0.79	25.6	D	200	0.89	40.0	E	275	0.53	16.5	C	75
EB Right	---	---	---	---	---	---	---	---	0.43	12.9	B	75
WB All	0.56	16.8	C	100	0.63	220.1	C	125	0.61	18.8	C	125
SB All	0.05	10.5	B	25	0.05	11.1	B	25	0.05	10.6	B	25

[a] Volume-to-capacity ratio.
[b] Average control delay (sec./vehicle).
[c] Level of service.
[d] 95th percentile queue in feet, assuming 25 feet/vehicle.
NA = not calculable.

Old South Road at Macy's Lane Intersection Improvements (Exclusive Right-Turn Lane)

This intersection currently operates with long delays and queues on the Old South Road eastbound approach to the intersection (for vehicles traveling east, toward Nantucket Memorial Airport), particularly during the weekday PM peak hour. Traffic growth by 2023 will exacerbate these conditions and the Project has a measurable impact on these conditions by causing the v/c ratio on the eastbound approach to exceed 1.0, resulting in the approach being well over capacity to accommodate this level of traffic.

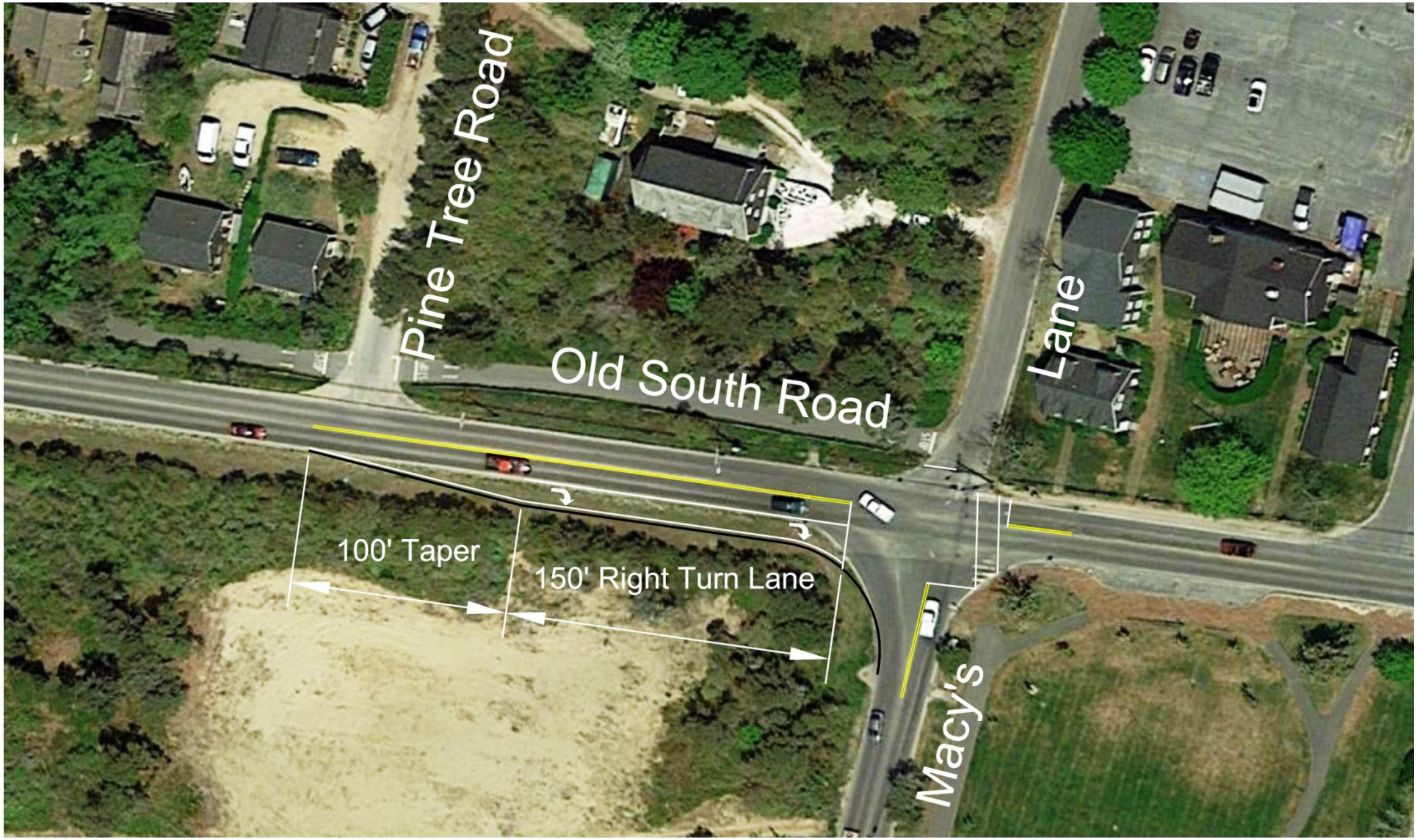
It is accordingly recommended that Old South Road eastbound approach be widened along the south side to create a shared left/through lane and an exclusive right-turn lane. The turn lane should be 150 feet in length with a 100-foot taper to meet the existing pavement edge. The left/through lane should be 11 feet in width and the exclusive right-turn lane should be 10 feet in

width with a 2-foot paved shoulder. The intersection should continue to operate under ALL-WAY STOP control. A sketch of the recommended improvements is shown on Figure 17. With these improvements, the eastbound approach improves substantially, from LOS F to D or better during all peak hours, as shown in Table 11. All analysis worksheets are provided in the Appendix.

In instances where a specific development project generates an increment of traffic that causes an existing intersection on a public roadway system with poor levels of service and unacceptable v/c ratios to worsen further, industry standard methodology is to require the project to contribute funding for the necessary mitigation at a rate that is proportionate or "pro –rata" to its impact on the intersection. In this case, the traffic added by the proposed Project to the Macy's Lane (Airport Road) and Old South Road intersection represents an increase of 5.1 percent during the weekday AM peak hour, 7.0 percent during the weekday PM peak hour, and 7.9 percent during the Saturday peak hour over the total traffic that is expected to travel through the intersection at the (future) 2023 design horizon.

Accordingly, based on this methodology, the Project Proponent should be required to fund 7.9% of the total cost of the recommended mitigation for this intersection. The proportion of funding of the total cost of the recommended mitigation should be negotiated with the local permitting authority with jurisdiction over the review and approval of the Project and / or the traffic improvements (which, in this case, is the Town of Nantucket Planning Board and / or the Town of Nantucket Board of Selectmen, acting as the Nantucket County Commissioners).

Figure 17 - Conceptual Improvement Plan
Old South Road at Macy's Lane



SUMMARY OF CONCLUSIONS

Existing and future traffic conditions at the nine (9) different study area intersections have been described and analyzed with respect to traffic operations and the impact of the proposed Project. Conclusions of this study and recommendations are summarized below.

Project Description

- The proposed Project includes the prospective development of a combination of 100 single-family homes, 225 apartment units, and approximately 15,500 square feet of retail and restaurant space. Site access is proposed via a (new) primary access road connecting to Old South Road east of Goldfinch Drive (West), a (new) driveway on Old South Road, primarily intended to serve the retail space and located further west of Goldfinch Drive (West), and a (new) driveway connecting to Lover's Lane that is also primarily intended to serve the retail space.

Existing Traffic Counts / Volumes

- Existing traffic conditions within the study area were developed by collecting manual turning movement and vehicle classification counts during peak month (July and August) conditions. While the majority of the counts were collected in 2014, historical count data provided by the Town of Nantucket Planning and Land Use Services (PLUS) Department indicates that traffic has remained fairly consistent over the past 10 years. The collected data therefore accurately reflect existing traffic volume conditions.

Vehicle Accident History

- A review of vehicle accident records revealed that none of the study intersections experienced a significant number of crashes and the calculated crash rates are well below the statewide average. Nearly seventy percent (70%) of all accidents occurred during the summer months of June, July, and August, which is expected given the surge in traffic during these peak seasonal months and the fact that more drivers that are unfamiliar with the local roadway system are driving during these periods (visitors / tourists, as opposed to local residents).

Site Distance Analysis

- Sight distance analysis conducted for the proposed (new) primary access road and the (new) site driveways indicates that the available sight lines exceed both minimum requirements and desirable distances and safe operation can therefore be expected. It is recommended that any proposed landscaping or obstructions in the vicinity of the driveways be set back sufficiently so as not to impede sight distances for drivers exiting the site.

Future Traffic Conditions

- Future traffic volumes were projected out to the year 2023 by applying a one percent (1.00%) compounded annual traffic growth rate to all volumes and by adding the traffic from six (6) other recently constructed and / or planned development projects.

- Due to long-standing capacity constraints at the Milestone Rotary and the Old South Road and Fairgrounds Road intersection, the Town of Nantucket has plans to modify these intersections that will significantly improve traffic conditions at these locations in the future. Based on discussions with Town of Nantucket PLUS Department staff however, these improvements are not expected to be implemented by the 2023 design year and accordingly were not assumed to be completed within the design horizon of this study. In addition, the Town of Nantucket PLUS Department will soon be undertaking a study of the Old South Road corridor to evaluate multi-modal access and congestion improvements.

Project Generated Traffic Volumes and Increases on Local Intersections / Roadways

- The Project is expected to generate approximately 210, 293, and 277 new peak hour vehicle trips during the weekday AM peak hour, weekday PM peak hour, and Saturday midday peak hour (respectively) to the adjacent streets.

- Once distributed onto the local roadway network, traffic generated by the Project is expected to increase peak hour volumes on Old South Road in the immediate vicinity of the Project site by a maximum of 198 new trips (during the weekday PM peak hour) or by +/- 14 percent compared to the year 2023 design horizon No-Build volumes..

- As traffic generated by the Project distributes onto the available access routes to and from the west of the site (to and from the Downtown area), peak hour traffic volumes at the Milestone Rotary at the western end of the Old South Road corridor are expected to increase by a maximum of 154 new trips (during the weekday PM peak hour) or by +/- 6 percent compared to the year 2023 design horizon No-Build volumes.

- As traffic generated by the Project distributes to and from the east (to and from the airport area), peak hour traffic volumes at the Macy's Lane (Airport Road) intersection with Old South Road are expected to increase by a maximum 93 new trips (during the weekday PM peak hour) or by +/- 7 percent, compared to the year 2023 design horizon No-Build volumes.

- Smaller incremental increases in traffic will also be generated further "downstream" from the study area. Along these "downstream" local roadways segments, such as Orange Street (northwest of the Milestone rotary), Sparks Avenue (west of the Milestone rotary), Fairgrounds Road (near the Nantucket Police Station), Macy's Lane (toward Nantucket Municipal Airport), and Milestone Road (east of Nobadeer Farm Road), these traffic

volume increases will range from an average of +/- 40 additional vehicles during the weekday AM peak hour, +/- 55 additional vehicles during the weekday PM peak hour, and +/- 50 additional vehicles during the Saturday midday peak hour. When compared with the year 2023 design horizon No-Build conditions, these volumes represent increases in traffic between four and five percent (+/- 4.0% to +/- 5.0%). Much smaller increases in traffic are expected during all other hours of the day.

Impacts of Project Generated Traffic and Recommended Mitigation / Improvements

- Analysis of future traffic conditions reveals that many of the study area intersections will operate at level of service (LOS) F by 2023, with or without any traffic from the Project. Both the Milestone Rotary and the Fairgrounds Road and Old South Road intersection will operate far above the capacity of these intersections. The Town of Nantucket has plans to improve both of these locations. Several other study area intersections will operate at LOS F with or without any traffic from the Project, but with volume-to-capacity (v/c) ratios remaining below 1.0, indicating that additional capacity remains to accommodate the anticipated demand.

- Several of the study area intersections will operate at LOS F or at v/c ratios above 1.0 directly as a result of additional traffic that will be generated by the Project and specific traffic improvements are recommended to mitigate those impacts. These include:

  (1) Improvements along the entire segment of Old South Road in the vicinity of the Project, primarily comprised of a center-left-turn lane running from the intersection of Old South Road and Lover's Lane, to the east, past the (new) retail driveway connecting to Old South Road, and past the (new) primary access road serving the Project (located east of the Goldfinch Drive (West) intersection, which serves as the exit to the Naushop residential community).

  (2) Improvements to the Macy's Lane (Airport Road) and Old South Road intersection, primarily comprised of a widening of the south side of the road, to accommodate a dedicated right-turn lane to allow improved operations at this intersection, particularly for vehicles seeking to turn right from Old South Road traveling toward Nantucket Memorial Airport.

- Implementation of the series of traffic improvements that are recommended in the body of this study, as summarized above, will result in substantial improvement to and mitigation of traffic operations (in terms of levels of service, volume-to-capacity ratios, delays, and queues) at these locations, to the point where traffic conditions will, in almost all cases, actually be better than those which are experienced under current conditions.

- In conjunction with the development of the Project, the existing "extension" of Greglen Avenue (which was not plotted or approved as a road, but was constructed by the prior owner of the surrounding properties and has been utilized as a means of providing

vehicular access to Old South Road for several decades) will also be terminated / eliminated between Old South Road and Nancy Ann Lane once the (new) primary access road is constructed. This modification will have a significant traffic safety and vehicle capacity benefit along this important segment of Old South Road, by eliminating the existing conflict that is created by the offset intersection that is currently formed by this "extension" of Greglen Avenue and the Goldfinch Drive (West) (exit) road from the Naushop residential community as they intersect with Old South Road.

Site Roadway Design Recommendations

- It is recommended that the proposed (new) primary access road for the Project should be constructed by providing two exiting lanes and one entering lane separated by a raised median. The exiting lanes (for vehicles seeking to make either a left hand turn or a right hand turn from the Project on to Old South Road) should be under STOP-sign control. The two (new) driveways connecting to Old South Road and to Lover's Lane, primarily intended to serve the proposed retail uses, should be constructed providing one exiting lane (under STOP-sign control) and one entering lane, separated by a double yellow centerline.

ARTICLE 13
(Zoning Map Change: LUG-2 to LUG-1 - 106 and 108 Surfside Road)

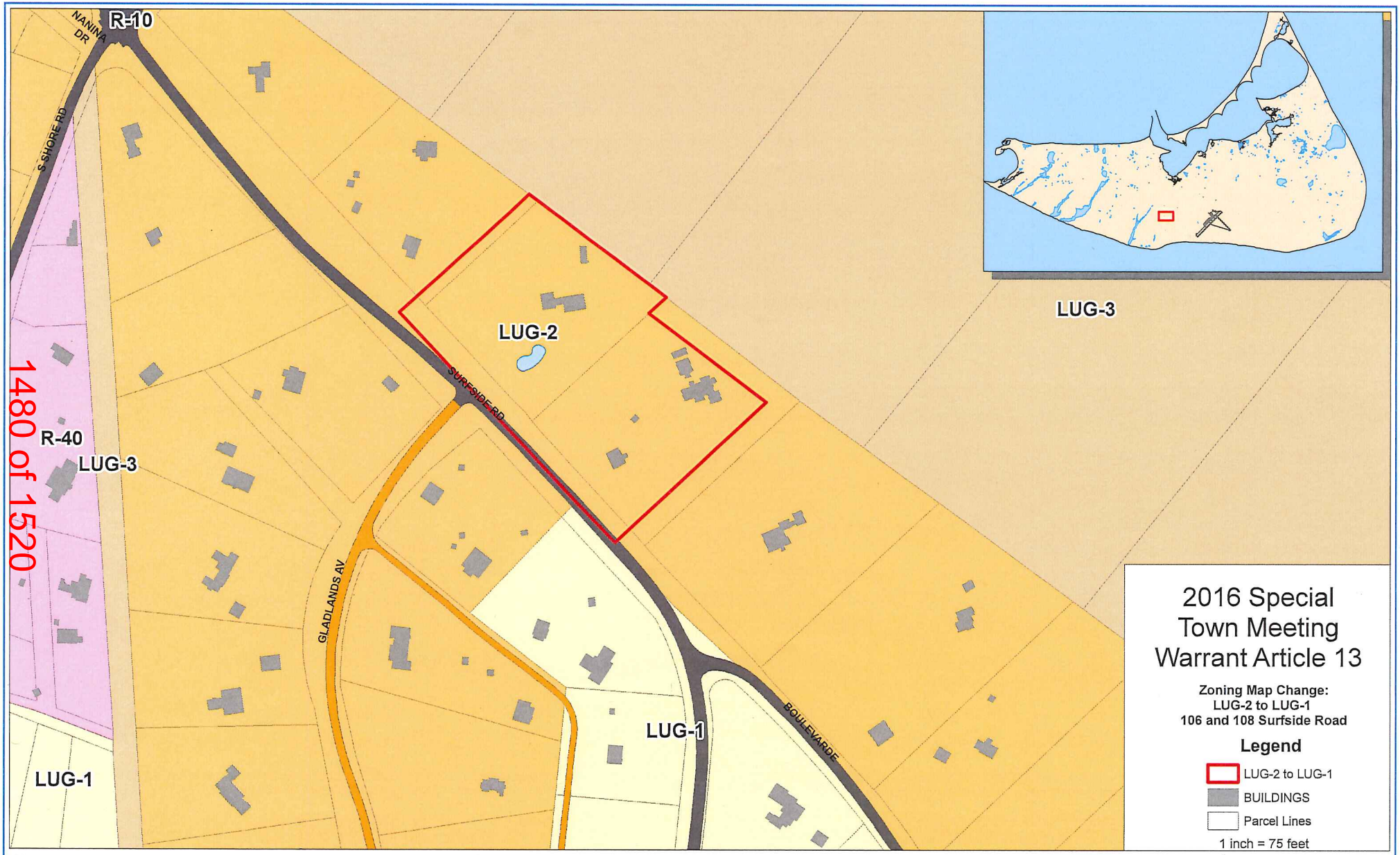
To see if the Town will vote to amend the Zoning Map of the Town of Nantucket by placing the following properties currently located in the Limited Use General 2 (LUG-2) district, in the Limited Use General 1 (LUG-1) district:

Map	Lot	Number	Street
67	80	106	Surfside Road
80	5	108	Surfside Road
Parcels 7, 8, 9, 10, and 11 as shown on Plan No. 2014-52 filed with the Nantucket Registry of Deeds			

All as shown on a map entitled "2016 Special Town Meeting Warrant Article 13 Zoning Map Change: LUG-2 to LUG-1 - 106 and 108 Surfside Road" dated August, 2016 and filed herewith at the Office of the Town Clerk.

Or to take any other action related thereto.

(Board of Selectmen)



Data Sources:
The planimetric data on this mapsheet is based primarily upon interpretation of April, 2013 aerial photography. It was compiled to meet the ASPRS Standard for Class I Map Accuracy for 1"=100' scale maps.

The parcel boundaries are based primarily upon the Tax Assessor's data through December, 2013.

The data on this mapsheet represents the efforts of the Town of Nantucket and other cooperating organizations to record and compile pertinent geographical and related information utilizing the capabilities of the Nantucket Geographic Information System (GIS). The GIS staff maintains an ongoing program to record and correct errors in these data that are brought to its attention. The Town of Nantucket makes no claims as to the absolute validity or reliability of these data or their fitness for any particular use.

Town of Nantucket - GIS Mapsheet

Nantucket governmental agencies will not necessarily approve applications based soley on GIS data. Applicants for permits and licenses must inquire of the relevant agency for applicable requirements.

The presence of information of this mapsheet does not necessarily imply public right-of-way or the right of public access.

August, 2016

Please send identification of any errors and corresponding corrections to:

GIS Coordinator
Town of Nantucket
2 Fairgrounds Road
Nantucket, MA 02554

ARTICLE 14

(Zoning Bylaw (Town and Country Overlay District) and Sewer District Amendment: 4, 6, and 8 Hawthorne Lane)

To see if the Town will vote to amend the Code of the Town of Nantucket by taking the following actions *(NOTE: new language is shown as highlighted text, language to be deleted is shown by strikeout; these methods to denote changes are not meant to become part of the final text and, further, that non-substantive changes to the numbering of this bylaw be permitted in order that it be in compliance with the numbering format of the Code of the Town of Nantucket):*

1. Amend Chapter 139 (Zoning), section 4E, by placing the following properties currently located in the Country Overlay District in the Town Overlay District:

Map	Lot	Number	Street
56	215	4	Hawthorne Lane
56	216	6	Hawthorne Lane
56	220	8	Hawthorne Lane

2. Amend Chapter 41 (Board of Sewer Commissioners), section 41-3A (Town Sewer District) of the Code of the Town of Nantucket by adding the following properties to the Town Sewer District:

Map	Lot	Number	Street
56	215	4	Hawthorne Lane
56	216	6	Hawthorne Lane
56	220	8	Hawthorne Lane

All as shown on a map entitled "2016 Special Town Meeting Warrant Article ___: Zoning Bylaw (Town and Country Overlay District) and Sewer District Amendment: 4, 6, and 8 Hawthorne Lane" dated , 2016 and filed herewith at the Office of the Town Clerk.

Or to take any other action related thereto.

(Terry Sanford, et al)

ARTICLE ___

(Zoning Bylaw (Town and Country Overlay District) and Sewer District Amendment: 4, 6, and 8 Hawthorne Lane)

To see if the Town will vote to amend the Code of the Town of Nantucket by taking the following actions *(NOTE: new language is shown as highlighted text, language to be deleted is shown by strikeout; these methods to denote changes are not meant to become part of the final text and, further, that non-substantive changes to the numbering of this bylaw be permitted in order that it be in compliance with the numbering format of the Code of the Town of Nantucket):*

1. Amend Chapter 139 (Zoning), section 4E, by placing the following properties currently located in the Country Overlay District in the Town Overlay District:

Map	Lot	Number	Street
56	215	4	Hawthorne Lane
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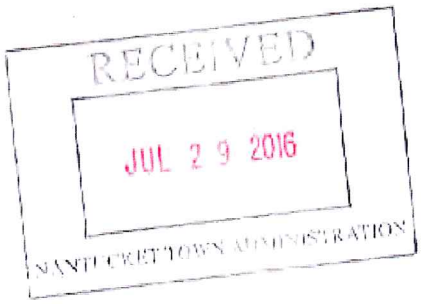
2. Amend Chapter 41 (Board of Sewer Commissioners), section 41-3A (Town Sewer District) of the Code of the Town of Nantucket by adding the following properties to the Town Sewer District:

Map	Lot	Number	Street
56	215	4	Hawthorne Lane
56	216	6	Hawthorne Lane
56	220	8	Hawthorne Lane

All as shown on a map entitled "2016 Special Town Meeting Warrant Article ___: Zoning Bylaw (Town and Country Overlay District) and Sewer District Amendment: 4, 6, and 8 Hawthorne Lane" dated , 2016 and filed herewith at the Office of the Town Clerk.

Or to take any other action related thereto.

(Terry Sanford, *et al)*



DATE and TIME this paper received by Registrars
July 29, 2016
3:39 PM

SPECIAL TOWN MEETING - CITIZEN'S ARTICLE

To see if the Town will vote to:

See attached article relative to 4, 6, and 8 Hawthorne Lane.

RECEIVED
JUL 29 2016
TOWN CLERK'S OFFICE

SIGNERS' STATEMENT We are qualified voters of the Commonwealth of Massachusetts and of the Town of Nantucket.

INSTRUCTIONS TO SIGNERS:
Your signature should be written as substantially as registered. If you are prevented, by physical disability, from writing you may authorize some person to write your name and residence in your presence.

	I		II	III	
	Check	Signatures to be made in person with name substantially as registered (except in case of physical disability as stated above)	Now Living At (Street and Number)	Ward 0	Prec 1	PRINTED NAME
1	✓	[illegible]	97 Somerset Rd	0	1	Bill Hunter
2	✓	[illegible]	3 Cawford	0	1	Tracy MacDonald
3	✓	[illegible]	4 Moesan Square	0	1	David Callahan
4	N	[illegible]	53 Vestal St	0	1	Mark Nevis
5	✓	[illegible]	8 Somerset Lane	0	1	Kerry Kennedy Flynn
6	N	[illegible]	14 Helens Drive	0	1	John Hedden
7	✓	[illegible]	40 Surrey Rd	0	1	Duane C Norcop
8	✓	[illegible]	16 Baxter	0	1	Dwight Westbrook
9	✓	[illegible]	16 Baxter	0	1	Robert Westbrook
10	✓	[illegible]	3 Alexandria	0	1	Melissa Murphy
11	✓	[illegible]	17 First Way A	0	1	Elizabeth Blair
12	✓	[illegible]	27 Edgewater	0	1	Andy Reis
13	✓	[illegible]	76A Old Sconset Rd.	0	1	George MacLellan
14	✓	[illegible]	8 Tripp Drive	0	1	Doris Strang
15	✓	[illegible]	4 White St	0	1	David Fredericks
16	✓	[illegible]	6 Squantaqua Cir	0	1	Karen Wheeler
17	✓	[illegible]	23 Daffodil Ln	0	1	Jane E Lovering
18	✓	[illegible]	19 Friendship Lane	0	1	Bryan Swan
19	✓	[illegible]	9 Meadowview Farm Rd	0	1	Tom Pella
20	✓	[illegible]	67 CATO Ln	0	1	Dayton Theael

Instructions to Registrars

You must time-stamp or write in date and time these papers are received.

Check thus ✓ against the name of qualified voter to be certified. For names not certified, use the codes opposite.

N B no such registered voter at that address.
S B unable to identify signature or address as that of
W B wrong district or community.
T B already signed this petition.

CERTIFICATION OF SIGNATURES

We certify that (18) Eighteen signatures checked thus ✓ are names of voters of the Town of Nantucket and are qualified to sign this petition.

(115) One hundred fifteen SIGNATURES

at least three Registrars – names must be signed or stamped

Registrars of Voters of the Town of Nantucket

Jane M. Coffin

DATE and TIME this paper received by Registrars July 29 2016 3:39pm

SPECIAL TOWN MEETING - CITIZEN'S ARTICLE

To see if the Town will vote to:

See attached article relative to 4, 6, and 8 Hawthorne Lane.

SIGNERS' STATEMENT We are qualified voters of the Commonwealth of Massachusetts and of the Town of Nantucket.

INSTRUCTIONS TO SIGNERS:
Your signature should be written as substantially as registered. If you are prevented, by physical disability, from writing you may authorize some person to write your name and residence in your presence.

	I		II	III	
	Check	Signatures to be made in person with name substantially as registered (except in case of physical disability as stated above)	Now Living At (Street and Number)	Ward 0	Prec 1	PRINTED NAME
1	✓		7 5th way	0	1	Michelle Lamb
2	✓		3 Anna Olive	0	1	Richard P. Beaudette
3	✓		7 Sesapana Rd	0	1	Kevin F. Dale
4	✓		25 BLEUSTEIN RD	0	1	PATRICIA A. HALSTED
5	✓		31 Somerset L	0	1	Jessie M Brescher
6	✓		161 Meadowview Dr	0	1	Patricia Patterson
7	✓		46 CLIFF RD	0	1	TODD-BOLING
8	✓		11 Fairgrounds Rd	0	1	Gisti Hughes
9	✓		4 Blueberry Ln	0	1	AT Ryder
10	✓		14 Evergreen Dr	0	1	Lisa T Holdgate
11	✓		9 MILLBROOK RD	0	1	Richard F. LAMARCHE
12	✓		56 Macomber Ave	0	1	NoREEDER
13	✓		87 Skyline Dr	0	1	Stacy Montes
14	✓		20 Hussey Way	0	1	MATT MACEACHERN
15	✓		58 Hummock Pond Rd	0	1	ELISA H. ALLEN
16	✓		4 Blueberry Lane	0	1	Nat Lovell
17	✓		18 Hummock Pd Rd	0	1	JOSEPH TOPHAM
18				0	1	
19				0	1	
20				0	1	

Instructions to Registrars

You must time-stamp or write in date and time these papers are received.

Check thus ✓ against the name of qualified voter to be certified. For names not certified, use the codes opposite.

N B no such registered voter at that address.
S B unable to identify signature or address as that of
W B wrong district or community.
T B already signed this petition.

CERTIFICATION OF SIGNATURES

We certify that (17) SEVENTEEN signatures checked thus ✓ are names of voters of the Town of Nantucket and are qualified to sign this petition.

(at least three Registrars= names must be signed or stamped below)

Registrars of Voters of the Town of Nantucket

DATE and TIME this paper received by Registrars July 29, 2016 3:30 pm

SPECIAL TOWN MEETING - CITIZEN'S ARTICLE

To see if the Town will vote to:

See Attached Article Relative to 4.6 and Bow Thorne Lane

SIGNERS' STATEMENT We are qualified voters of the Commonwealth of Massachusetts and of the Town of Nantucket.

INSTRUCTIONS TO SIGNERS:
Your signature should be written as substantially as registered. If you are prevented, by physical disability, from writing you may authorize some person to write your name and residence in your presence

	I		II	III		
	Check	Signatures to be made in person with name substantially as registered (except in case of physical disability as stated above)	Printed Name	Ward 0	Prec 1	Now Living At (Street and Number)
1	✓	Caroline S Thornewill	CAROLINE S THORNEWILL			48 Dukes Rd Nantucket
2	✓	Zora Butler	Zora Butler			4 Bailey Pond, Nantucket
3	✓	Brenda H. Dunham	Brenda H. Dunham			11e Deer Run Rd
4	✓		Julia B Kessler			31 Summit Lane Nantucket
5	✓	Susan C Compose	Susan C. Compose			67 Milestone Rd
6	✓	Jennifer Shalley	Jennifer Shalley			144 Polpis Rd
7	N	Boat TRANSIT/A	Boat TRANSIT/A.			9 Wauwinet Rd.
8	N	gina Roscioli	GINA ROSCIOLI			11e Boulevarde.
9	✓	Jamie Dickinson	Jamie Dickinson			15 Green Meadows Dr.
10	✓		Holly J. Visco			2 Zachary Way
11	✓	Bernadette Mayer	Bernadette Mayer			149 Main St.
12	N	Susan Chambers	Susan Chambers			113 Somerset Rd.
13	N		Gary Winn			25 N. Water
14	✓					37 Main St 25 Lane
15	✓		Donna Barnett			13 Reef Lane
16	N		Daniel Barber			127 Orange St
17	✓		Paul Swiergosz			18 Woodland Dr
18	✓		Dot Coffin			13 Green Meadows
19	✓		Matt Payne			75 Goldfinch Dr
20	✓		John J O'Connor			10 Austin Farm Dr.

Instructions to Registrars

You must time-stamp or write in date and time these papers are received.

Check thus ✓ against the name of qualified voters to be certified.

N = no such registered voter at that address.
S = unable to identify signature or address as that of
W = wrong district or community.

DATE and TIME this paper received by Registrars July 29, 2016 Mary Rose 3:30pm

SPECIAL TOWN MEETING - CITIZEN'S ARTICLE

To see if the Town will vote to:

See Attached Article Relative to 4, 6 and 8 Hawthorne Lane.

SIGNERS' STATEMENT We are qualified voters of the Commonwealth of Massachusetts and of the Town of Nantucket.

INSTRUCTIONS TO SIGNERS:
Your signature should be written as substantially as registered. If you are prevented, by physical disability, from writing you may authorize some person to write your name and residence in your presence

	I		II	III		
	Check	Signatures to be made in person with name substantially as registered (except in case of physical disability as stated above)	Printed Name	Ward 0	Prec 1	Now Living At (Street and Number)
1	✓		LINDA Williams			6 S. Pasture Lane
2	✓		Jessica Sosebee			15 Pine Tree Rd
3	✓		Jill Roetnke			14 Bluebird Lane
4	✓	Barbara C Reis	Barbara Reis			27 Equator Drive
5	✓		Carrie Phillip			8 Coffin Rd
6	✓	Leigh M Topham	Leigh Topham			20 Hummock Pond Road
7	✓		Whitney Gifford			19 Keel Ln.
8	✓		Kenneth G. Hearn			18 [illegible]
9	✓	Marianne Hanley	Marianne Hanley			51A Washington Ave
10	✓	Arthur L. Reed, Jr.	Arthur L. Reed, Jr.			41 India Street
11	✓	Mary A Reardon	MARY A. REARDON			5 PARKER LN
12	✓	Meagan Malloy	Meagan Malloy			12 Flintlock Back House
13	✓		ANN R SCHMID			3 CHASE LANE
14	✓		Tammy Conway			55 Somerset Road
15	✓		Raymond Pohl			24 PINE STREET
16	✓		LISA BUTTARELLI			24 PINE ST
17	✓		GREG MCKECHNIE			50 DUKES RD.
18	✓		SAM PAESONS			1 MARBLE WAY
19	✓		Debbi Culbertson			55 TEAKWOOD
20	✓		Jim Gorrill			8 Quince St

Instructions to Registrars

You must time-stamp or write in date and time these papers are received.

Check thus ✓ against the name of qualified voters to be certified

N = no such registered voter at that address.
S = unable to identify signature or address as that of
W = wrong district or community

SPECIAL TOWN MEETING - CITIZEN'S ARTICLE

To see if the Town will vote to:

See Attached Article Relative to 4, 6 and 8 Hawthorne Lane

DATE and TIME this paper received by Registrars
July 29, 2016
M. Holmes 3:30 pm

SIGNERS' STATEMENT We are qualified voters of the Commonwealth of Massachusetts and of the Town of Nantucket.

INSTRUCTIONS TO SIGNERS:
Your signature should be written as substantially as registered. If you are prevented, by physical disability, from writing you may authorize some person to write your name and residence in your presence

	I		II	III	
	Check	Signatures to be made in person with name substantially as registered (except in case of physical disability as stated above)	Printed Name	Ward 0	Prec 1	Now Living At (Street and Number)
1	✓	Kenneth A. Hilbig	Kenneth A. Hilbig			137 Surfside Rd.
2	✓	Michele Lindstedt	Michele Lindstedt			34 Dartmouth St
3	✓	Barbara Ann Joyce	Barbara Ann Joyce			89 Fairgrounds Rd.
4	✓	Nicole Bousquet	Nicole Bousquet			4 PINKHAM CIRCLE
5	✓	Deborah Willett	Deborah Willett			18 Pine Crest
6	✓	Sharon Mankiewicz	Sharon Mankiewicz			30 Rugged Road
7	✓	Stuart Reed	Stuart Reed			38½ York
8	✓	Tracy Cullinane	Tracy Cullinane			16 Sheep Holland
9	✓	Carl Lindvall	Carl Lindvall			2/A Mays Ln
10	✓	Edmund Little	Edmund Little			7 Mill Street
11	✓	Katie Sebrell	Katie Sebrell			77 Skyline Dr
12	✓	John F. Trudel III	John F. Trudel III			11 Mizzenmast Rd.
13	✓	GERI WALKER	Geri Walker			5 Rachel Drive
14	✓	Penelope Day	PENELOPE DAY			17 Warren St.
15	✓	Heidi Drew	Heidi Drew			73 Milk Street
16	✓	F. Nash Studwick	F. NASH STUDWICK			5 PINKHAM DR
17	✓	S. Anderson	S. ANDERSON			282 Madaket
18	✓	Kathryn L. Gladden	Kathryn L. Gladden			41 Simmons Lane
19	✓	Kimberly Geezin	Kimberly Geezin			15B Pine Tree Road
20	✓	Richard J Gloria	RICHARD J GLORIA			41 Amrsit Lane

Instructions to Registrars

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S = unable to identify signature or address as that of
W = wrong district or community

DATE and TIME this paper received by Registrars July 29, 2016 3:30pm

SPECIAL TOWN MEETING - CITIZEN'S ARTICLE

To see if the Town will vote to:

See Attached Article Relative to 4, 6 and 8 Hawthorne Lane

SIGNERS' STATEMENT We are qualified voters of the Commonwealth of Massachusetts and of the Town of Nantucket.

INSTRUCTIONS TO SIGNERS:
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	I	II	III		
	Check	Signatures to be made in person with name substantially as registered (except in case of physical disability as stated above)	Printed Name	Ward 0	Prec 1	Now Living At (Street and Number)
1	✓	[signature]	K or. Kristina			11D Teasdale Circle
2	✓	[signature]	Joyce Montalbano			140 Main, Town
3	✓	[signature]	Anne C Gifford			19 Keel Lane
4	✓	[signature]	KELLY O'KEEFE			17 EVERGREEN WAY
5	✓	[signature]	Maria Watson			55 Cato Lane
6	N	[signature]	SUSAN SCOTT			15 FOLGER AVE
7	✓	[signature]	Dawn Dugan			80 Somerset Rd
8	✓	[signature]	JO RYMER			21 EXETER
9	✓	[signature]	Jennifer Dubois			3 Dodey Ct.
10	✓	[signature]	KAREN BOPP			61 LOVERS LANE
11	✓	[signature]	JOHN HARTFORD			41 MADAKET ROAD
12	✓	[signature]	LAURA REID			11 Correia Rd
13	N	[signature]	melissa reid			11 correia lane
14	✓	[signature]	JANET S JAEGER			11 SWIFT ROCK RD
15	✓	[signature]	SUSAN HAYFORD			41 MADAKET RD.
16	✓	[signature]	MARIANNE DOUK			14 Somerset Lane
17	✓	[signature]	CHRISTOPHER A. YOUNG			12 SEIKINNOW PLACE
18	✓	[signature]	MARYBETH FERRO			104 Surfside Rd
19	✓	[signature]	Amy Masterson			42 Friendship Lane
20	✓	[signature]	EVAN GERARDI			6 Spatsure Lane

Instructions to Registrars

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Check thus ✓ against the name of qualified voters to be certified

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S = unable to identify signature or address as that of
W = wrong district or community.

DATE and TIME this paper received by Registrars July 29, 2016 3:39pm

SPECIAL TOWN MEETING - CITIZEN'S ARTICLE

To see if the Town will vote to:

See attached article relative to 4, 6, and 8 Hawthorne Lane.

SIGNERS' STATEMENT We are qualified voters of the Commonwealth of Massachusetts and of the Town of Nantucket.

INSTRUCTIONS TO SIGNERS:
Your signature should be written as substantially as registered. If you are prevented, by physical disability, from writing you may authorize some person to write your name and residence in your presence.

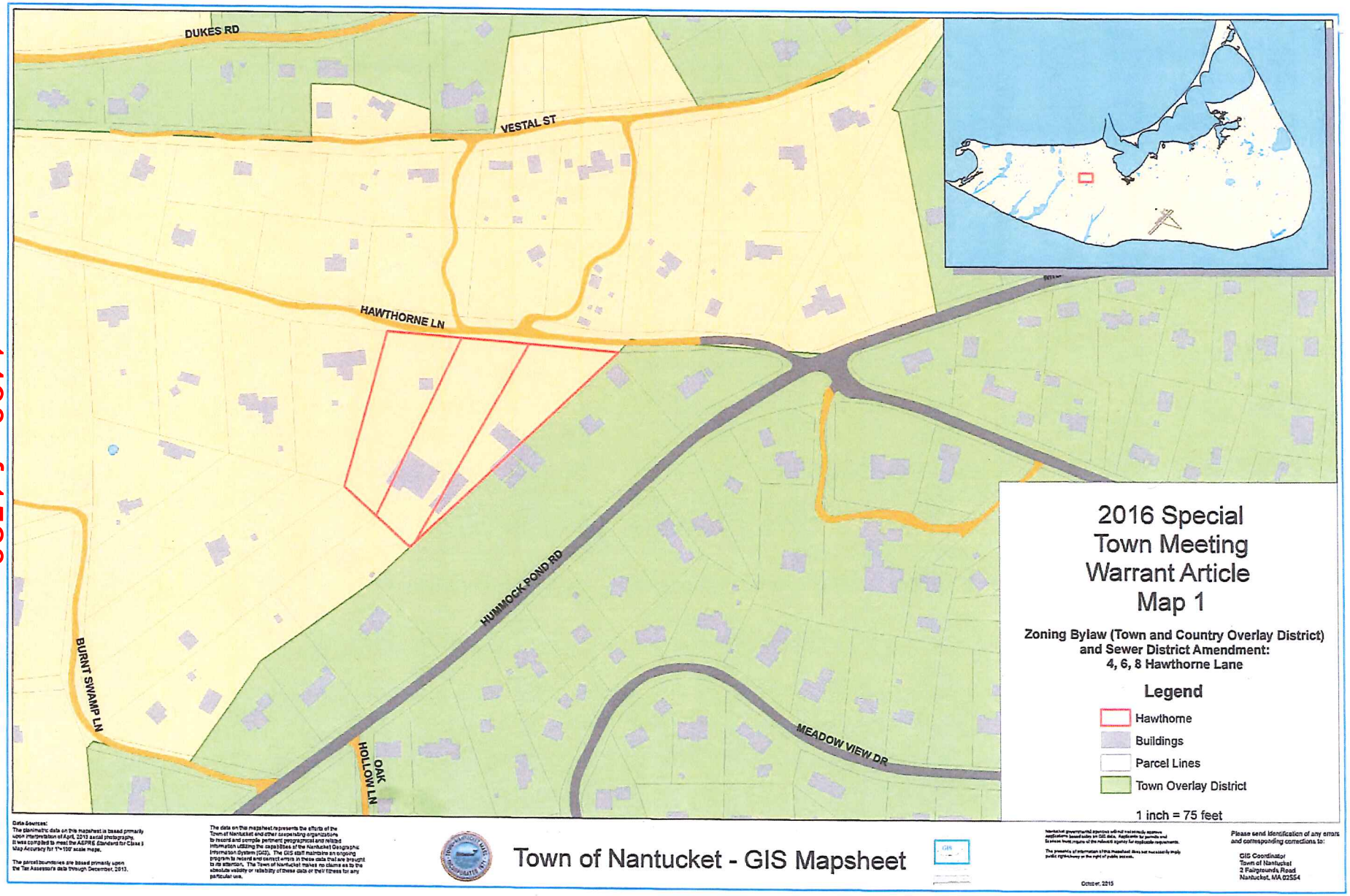
	I		II			III
	Check	Signatures to be made in person with name substantially as registered (except in case of physical disability as stated above)	Now Living At (Street and Number)	Ward 0	Prec 1	PRINTED NAME
1	✓	THOMAS KENNELLY	4 Sheep Commons	0	1	THOMAS KENNELLY
2	✓	Mason Kennelly	4 Sheep Commons	0	1	Mason Kennelly
3	N	CHLOE SANFORD	6 Hawthorne Lane	0	1	CHLOE SANFORD
4	N		12 OLD NORTH WHARF	0	1	TERRY SANFORD
5	✓	Jim Willmann	20 Wilkes St.	0	1	Jim Willmann
6	✓	Sandra R Holland	13 Pleasant St.	0	1	Sandra R. Holland
7	✓	Alfred Sanford	13 Pleasant St	0	1	ALFRED SANFORD
8	N	[illegible]	8 Cornish St.	0	1	JUSTIN MOORE
9	✓	Stoddard	6 Quaker Rd	0	1	Jane Stoddard
10	✓	T. Heiser	6 Quaker Rd	0	1	Tom Heiser
11	✓	[illegible]	12 old N. Wharf	0	1	Maria Mullen
12				0	1	
13				0	1	
14				0	1	
15				0	1	
16				0	1	
17				0	1	
18				0	1	
19				0	1	
20				0	1	

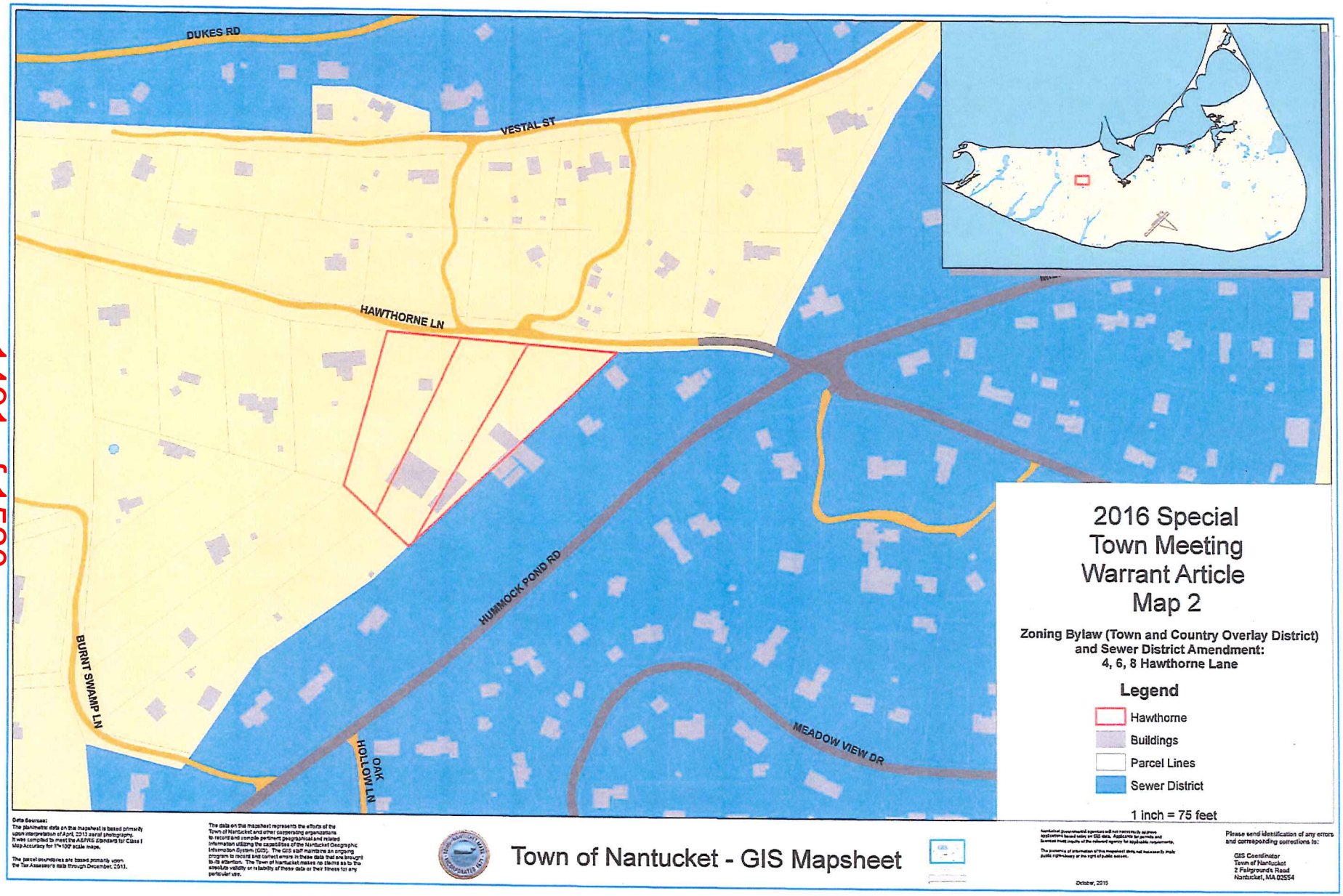
Instructions to Registrars

You must time-stamp or write in date and time these papers are received.

N B no such registered voter at that address.

S B unable to identify signature or address as that of


DUKES RD
VESTAL ST
HAWTHORNE LN
HUMMOCK POND RD
BURNT SWAMP LN
OAK HOLLOW LN
MEADOW VIEW DR
2016 Special Town Meeting Warrant Article Map 1
Zoning Bylaw (Town and Country Overlay District) and Sewer District Amendment: 4, 6, 8 Hawthorne Lane
Legend
Hawthorne
Buildings
Parcel Lines
Town Overlay District
1 inch = 75 feet
Town of Nantucket - GIS Mapsheet
October, 2015
Please send identification of any errors and corresponding corrections to:
GIS Coordinator
Town of Nantucket
2 Fairgrounds Road
Nantucket, MA 02554


DUKES RD
VESTAL ST
HAWTHORNE LN
HUMMOCK POND RD
BURNT SWAMP LN
OAK HOLLOW LN
MEADOW VIEW DR
2016 Special Town Meeting Warrant Article Map 2
Zoning Bylaw (Town and Country Overlay District) and Sewer District Amendment: 4, 6, 8 Hawthorne Lane
Legend
Hawthorne
Buildings
Parcel Lines
Sewer District
1 inch = 75 feet
Town of Nantucket - GIS Mapsheet
October, 2016

ARTICLE 15

(Zoning Map Change: LUG-2 to LUG-1 Surfside West - South Shore Road, Rachel Drive, Zachary Way, Tripp Drive, Correia Lane, Felcon Drive and Marilyn Lane, Masaquet Avenue, Morgan Square)

To see if the Town will vote to amend the Zoning Map of the Town of Nantucket by placing the following properties identified in the Surfside Area Plan as a portion of "Surfside West", currently located in the Limited Use General 2 (LUG-2) zoning district, to the Limited Use General (LUG-1) zoning district:

Map	Lot	Number	Street
80	52	1	Zachary Way
80	51	8	Tripp Drive
80	51.1	12	Tripp Drive
80	51.2	4	Tripp Drive
80	51.3	2	Tripp Drive
80	53	3	Rachel Drive
80	53.1	47	South Shore Road
80	53.2	43	South Shore Road
80	53.3	2	Rachel Drive
80	53.4	4	Rachel Drive
80	53.5	5	Rachel Drive
80	54	16	Correia Lane
80	55	17	Correia Lane
80	56	15	Correia Lane
80	57	13	Correia Lane
80	58	9	Correia Lane
80	58.1	11	Correia Lane
80	59	12	Correia Lane
80	60	8	Correia Lane
80	61	4	Correia Lane
80	62	34	South Shore Road
80	63	3	Correia Lane
80	64	33	South Shore Road
80	115	52	South Shore Road
80	117	42	South Shore Road
80	118	36	South Shore Road
80	177	32	South Shore Road
80	294	1	Felcon Drive
80	296.1	29A	South Shore Road
80	296.2	29B	South Shore Road
80	296.3	29C	South Shore Road
80	296.4	29D	South Shore Road
80	311	53	South Shore Road
80	312	2	Zachary Way
80	313	3	Zachary Way
80	326	3	Marylin Lane
80	329	5	Felcon Drive
80	330	9	Felcon Drive
80	331	11	Felcon Drive
80	193	8	Masaquet Avenue
87	3.1	4	Morgan Square
87	3.2	2	Morgan Square
80	310	14	Tripp Drive

All as shown on a map entitled "2016 Special Town Meeting Warrant Article __ Zoning Map Change: LUG-2 to LUG-1 Surfside West - South Shore Road, Rachel Drive, Zachary Way, Tripp Drive, Correia Lane, Felcon Drive, and Marilyn Lane, Masaquet Avenue, Morgan Square)" dated July 2016 and filed herewith at the Office of the Town Clerk.

Or to take any other action related thereto.

(Leona Tripp, et al)

ARTICLE __
2016 Special Town Meeting
(Zoning Map Change: LUG-2 to LUG-1 Surfside West - South Shore Road, Rachel Drive, Zachary Way, Tripp Drive, Correia Lane, Felcon Drive and Marilyn Lane, Masaquet Avenue, Morgan Square,)

To see if the Town will vote to amend the Zoning Map of the Town of Nantucket by placing the following properties identified in the Surfside Area Plan as a portion of "Surfside West", currently located in the Limited Use General 2 (LUG-2) zoning district, to the Limited Use General (LUG-1) zoning district:

Map	Lot	Number	Street
80	52	1	Zachary Way
80	51	8	Tripp Drive
80	51.1	12	Tripp Drive
80	51.2	4	Tripp Drive
80	51.3	2	Tripp Drive
80	53	3	Rachel Drive
80	53.1	47	South Shore Road
80	53.2	43	South Shore Road
80	53.3	2	Rachel Drive
80	53.4	4	Rachel Drive
80	53.5	5	Rachel Drive
80	54	16	Correia Lane
80	55	17	Correia Lane
80	56	15	Correia Lane
80	57	13	Correia Lane
80	58	9	Correia Lane
80	58.1	11	Correia Lane
80	59	12	Correia Lane
80	60	8	Correia Lane
80	61	4	Correia Lane
80	62	34	South Shore Road
80	63	3	Correia Lane
80	64	33	South Shore Road
80	115	52	South Shore Road
80	117	42	South Shore Road
80	118	36	South Shore Road
80	177	32	South Shore Road
80	294	1	Felcon Drive
80	296.1	29A	South Shore Road

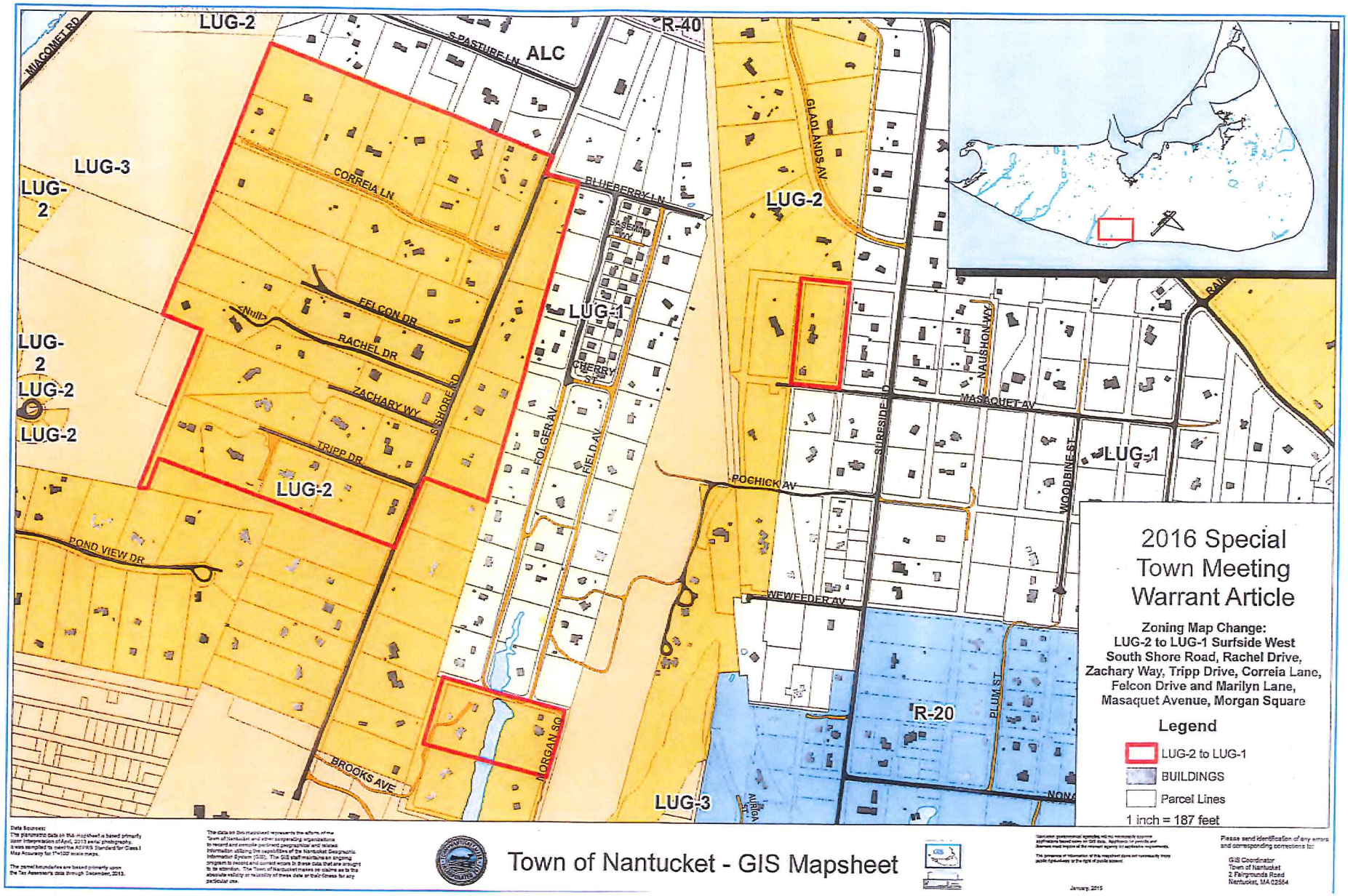
RECEIVED
JUL 28 2016

80	296.2	29B	South Shore Road
80	296.3	29C	South Shore Road
80	296.4	29D	South Shore Road
80	311	53	South Shore Road
80	312	2	Zachary Way
80	313	3	Zachary Way
80	326	3	Marylin Lane
80	329	5	Felcon Drive
80	330	9	Felcon Drive
80	331	11	Felcon Drive
80	193	8	Masaquet Avenue
87	3.1	4	Morgan Square
87	3.2	2	Morgan Square
80	310	14	Tripp Drive

All as shown on a map entitled "2016 Special Town Meeting Warrant Article __ Zoning Map Change: LUG-2 to LUG-1 Surfside West - South Shore Road, Rachel Drive, Zachary Way, Tripp Drive, Correia Lane, Felcon Drive, and Marilyn Lane, Masaquet Avenue, Morgan Square)" dated July 2016 and filed herewith at the Office of the Town Clerk.

Or to take any other action related thereto.

JUL 28 2016


LUG-2
WIAGOMET RD
S PASTURE LN
ALC
R-40
LUG-3
LUG-2
CORREIA LN
BLUEBERRY LN
LUG-2
GLADLANDS AV
LUG-1
FELCON DR
RACHEL DR
ZACHARY WY
S SHORE RD
TRIPP DR
LUG-2
LUG-2
LUG-2
POND VIEW DR
FOLGER AV
FIELD AV
CHERRY ST
NAUSHON WY
MASAQUET AV
SURFSIDE
WOODBINE ST
LUG-1
POCHICK AV
WEWEEDER AV
R-20
PLUM ST
MORGAN SQ
BROOKS AVE
LUG-3
2016 Special Town Meeting Warrant Article
Zoning Map Change:
LUG-2 to LUG-1 Surfside West South Shore Road, Rachel Drive, Zachary Way, Tripp Drive, Correia Lane, Felcon Drive and Marilyn Lane, Masaquet Avenue, Morgan Square
Legend
LUG-2 to LUG-1
BUILDINGS
Parcel Lines
1 inch = 187 feet
Town of Nantucket - GIS Mapsheet

SPECIAL TOWN MEETING - CITIZEN'S ARTICLE

To see if the Town will vote to:

JUL 26 2016

DATE and TIME this paper received by Registrars - N.T. Holmes July 25, 2016 3:23 p.m.

2016 Special Town Meeting

(Zoning Map Change: LUG-2 to LUG-1 Surfside West - South Shore Road, Rachel Drive, Zachary Way, Tripp Drive, Correia Lane, Felcon Drive and Marilyn Lane, Masaquet Avenue, Morgan Square,)

To see if the Town will vote to amend the Zoning Map of the Town of Nantucket by taking the following actions:

By placing the following properties identified in the Surfside Area Plan as a portion of "Surfside West", currently located in the Limited Use General 2 (LUG-2) zoning district, to the Limited Use General (LUG-1) zoning district:

SIGNERS' STATEMENT We are qualified voters of the Commonwealth of Massachusetts and of the Town of Nantucket.

INSTRUCTIONS TO SIGNERS:

Your signature should be written as substantially as registered. If you are prevented, by physical disability, from writing you may authorize some person to write your name and residence in your presence

	I		II	III		
	Check	Signatures to be made in person with name substantially as registered (except in case of physical disability as stated above)	Printed Name	Ward 0	Prec 1	Now Living At (Street and Number)
1	✓	Ida May Dias	Ida May Dias			6 Tripp Drive
2	✓	Dennis F. Dias	Dennis F. Dias			6 Tripp Drive
3	✓	Diane O'Neil	Diane O'Neil			14 Tripp Drive
4	✓		Logan O'Connor			3 Kittiwake Lane
5	✓	Amy Gammons	Amy Gammons			11 Curlew Ct
6	✓		Dennis E Dias			2 Tripp Dr.
7	✓		Marissa Bozarth			30 Lynn's Lane
8	✓	Matthew Anderson	Matthew Anderson			30 Lynn's Lane
9	✓	Leona M. Tripp	Leona Tripp			4 Tripp Drive
10	✓	Mark W. Voigt	Mark Voigt			13 Gray Ave
11						
12						
13						
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20						

Instructions to Registrars

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Check thus ✓ against the name of qualified voter to be certified. For names not certified, use the codes opposite.

N = no such registered voter at that address.
S = unable to identify signature or address as that of
W = wrong district or community.
T = already signed this petition.

CERTIFICATION OF SIGNATURES

We certify that (110) One Hundred Ten signatures checked thus ✓ are names of voters of the Town of Nantucket and are qualified to sign this petition.

(at least three Registrars' names must be signed or stamped below)

Registrars of Voters of the Town of Nantucket

SPECIAL TOWN MEETING - CITIZEN'S ARTICLE

To see if the Town will vote to:

DATE and TIME this paper received by Registrars
July 25, 2016 3:23 pm

2016 Special Town Meeting

(Zoning Map Change: LUG-2 to LUG-1 Surfside West - South Shore Road, Rachel Drive, Zachary Way, Tripp Drive, Correia Lane, Felcon Drive and Marilyn Lane, Masaquet Avenue, Morgan Square,)

To see if the Town will vote to amend the Zoning Map of the Town of Nantucket by taking the following actions:

By placing the following properties identified in the Surfside Area Plan as a portion of "Surfside West", currently located in the Limited Use General 2 (LUG-2) zoning district, to the Limited Use General (LUG-1) zoning district:

SIGNERS' STATEMENT We are qualified voters of the Commonwealth of Massachusetts and of the Town of Nantucket.

INSTRUCTIONS TO SIGNERS:

Your signature should be written as substantially as registered. If you are prevented, by physical disability, from writing you may authorize some person to write your name and residence in your presence

	I	II			III
	Check	Signatures to be made in person with name substantially as registered (except in case of physical disability as stated above)	Printed Name	Ward 0	Prec 1	Now Living At (Street and Number)
1	✓		LINDA Williams			6 S. Pasture Lane
2	✓		Jessica Sosebee			15 Pine Tree Rd
3	✓		Jill Roehnke			14 Bluebird Lane
4	✓	Barbara A Reis	Barbara A Reis			27 Equator Drive
5	✓		Carrie Philipp			8 Coffin Rd.
6	✓		Whitney Gifford			19 Reel Ln.
7	✓		Leigh Topham			20 Hummock Pond Rd
8	✓					
9	✓		Marianne Hanley			9 Washington Ave
10	✓		Arthur C. Readel Jr			41 India Street
11	✓		MARY A. REARDON			5 PARKER LN
12	✓		Meagan Malloy			12 Flintlock Rd Back House
13	✓		[illegible]			3 CHASE LANE
14	✓		Tammy Conway			55 Somerset Road
15	✓		Raymond Pohl			24 PINE STREET
16	✓		LISA BOTTARELLI			24 PINE STREET
17	✓		GREG MCKEOWN			50 DUKES ROAD
18	✓		SAM PARSONS			1 MARBLE WAY
19	✓		Michelle Lindstrat			34 Dartmouth
20	✓		DD Pulbeston			55 Tetuit Rd

Instructions to Registrars

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CERTIFICATION OF SIGNATURES	(at least three Registrars= names must be signed or stamped below)
We certify that ( )_____ signatures checked thus ✓ are names of voters of the Town of Nantucket and are qualified to sign this petition.	Registrars of Voters of the Town of Nantucket

SPECIAL TOWN MEETING - CITIZEN'S ARTICLE

To see if the Town will vote to:

JUL 20 2016

DATE and TIME this paper received by Registrars

July 20th 3:39pm

2016 Special Town Meeting

(Zoning Map Change: LUG-2 to LUG-1 Surfside West - South Shore Road, Rachel Drive, Zachary Way, Tripp Drive, Correia Lane, Felcon Drive and Marilyn Lane, Masaquet Avenue, Morgan Square,)

To see if the Town will vote to amend the Zoning Map of the Town of Nantucket by taking the following actions:

By placing the following properties identified in the Surfside Area Plan as a portion of "Surfside West", currently located in the Limited Use General 2 (LUG-2) zoning district, to the Limited Use General (LUG-1) zoning district:

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	I		II	III		
	Check	Signatures to be made in person with name substantially as registered (except in case of physical disability as stated above)	Printed Name	Ward 0	Prec 1	Now Living At (Street and Number)
1	✓		Jim Gargels			8 Quince Ln
2	✓		Kenneth A. Hilbig			137 Surfside Rd.
3	✓		Barbara Ann Joy			79 Fairgrounds Rd
4	✓		MICHELE BURGUIERE			4 Pinehaven Circle
5	✓		Deborah Willett			18 Pine Crest
6	✓		SARAH MANETTA			30 Ryder Rd
7	✓		STUART Reid			38½ York St
8	✓		Tracy Cullinane			16 Sleepy Hollow
9	✓		Carol Lindall			21A Macys Ln
10	✓		Edmund Liddle			7 Hill Street
11	✓		Katie Sebrell			77 Skyline Dr
12	✓		John F. Trudel III			11 Mizzenmast Rd.
13	✓		GERI WALKER			6 Rachel Drive
14	✓		PENELOPE DEY			17 Warren St.
15	✓		Heidi Drew			73 Milk St.
16	✓		F. NASH STRUDWICK			5 PHEASANT DR.
17	✓		SCOTT W. ANDERSON			282 MADAKET
18	✓		Kathryn L. Golden			41 Somerset Lane
19	✓		Kimberly Curtin			15B Pine Tree Road
20	✓		RICHARD J GUDIN			41 SCHOOL LANE

Instructions to Registrars

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Registrars of Voters of the Town of Nantucket

SPECIAL TOWN MEETING - CITIZEN'S ARTICLE

To see if the Town will vote to:

JUL 29 2015

DATE and TIME this paper received by Registrars
July 29, 2016 3:23pm

2016 Special Town Meeting

(Zoning Map Change: LUG-2 to LUG-1 Surfside West - South Shore Road, Rachel Drive, Zachary Way, Tripp Drive, Correia Lane, Felcon Drive and Marilyn Lane, Masaquet Avenue, Morgan Square,)

To see if the Town will vote to amend the Zoning Map of the Town of Nantucket by taking the following actions:

By placing the following properties identified in the Surfside Area Plan as a portion of "Surfside West", currently located in the Limited Use General 2 (LUG-2) zoning district, to the Limited Use General (LUG-1) zoning district:

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	I		II			III
	Check	Signatures to be made in person with name substantially as registered (except in case of physical disability as stated above)	Printed Name	Ward 0	Prec 1	Now Living At (Street and Number)
1		Caroline S Thornell	CAROLINE S THORNELL			48 Dukes Rd
2		[illegible]	Zora H. Butler			4 Butler Road, Nant
3		Brenda H. Dunham	BRENDA H. DUNHAM			116 Deep Run Nantucket
4			John B Presley			31 Summit Ln
5		[illegible]	Susan C. Campese			67 Milestone Rd
6		[illegible]	Brent Tolman			9 Wannacomet
7		[illegible]	Gina Roscioli			116 Boulevarde
8		[illegible]	Jamie Dickinson			15 Green Meadows Dr
9		B Mayer	Bernadette Mayer			149 Main St
10		Susan Chambers	Susan Chambers			113 Somerset Rd.
11		[illegible]	Gary Winn			25 N. Water St
12						" 37 Main St "
13		[illegible]	[illegible]			127 Orange St.
14		[illegible]	Dana Barnett			13 Reel Reel Lane
15		[illegible]	Paul J. Sprague			18 Woodland Dr.
16		[illegible]	Dot Coffin			13 Green Meadows
17		[illegible]	Matt Payne			75 Goldfinch Dr.
18		[illegible]	John S Clement			10 Austin Farm Dr.
19		[illegible]	[illegible]			11D Teashade Circle
20		[illegible]	Joyce Montalbano			140 Main St Town

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Registrars of Voters of the Town of Nantucket

SPECIAL TOWN MEETING - CITIZEN'S ARTICLE

To see if the Town will vote to:

DATE and TIME this paper received by Registrars
July 25, 2016 3:25p.m.

JUL 2 8 2016

2016 Special Town Meeting

(Zoning Map Change: LUG-2 to LUG-1 Surfside West - South Shore Road, Rachel Drive, Zachary Way, Tripp Drive, Correia Lane, Felcon Drive and Marilyn Lane, Masaquet Avenue, Morgan Square,)

To see if the Town will vote to amend the Zoning Map of the Town of Nantucket by taking the following actions:

By placing the following properties identified in the Surfside Area Plan as a portion of "Surfside West", currently located in the Limited Use General 2 (LUG-2) zoning district, to the Limited Use General (LUG-1) zoning district:

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	I		II	III		
	Check	Signatures to be made in person with name substantially as registered (except in case of physical disability as stated above)	Printed Name	Ward 0	Prec 1	Now Living At (Street and Number)
1						
2	N	[illegible]	JESSICA [illegible]			15 [illegible] Tree
3	✓	Kelly O'Keefe	KELLY O'KEEFE			17 EVERGREEN Way
4	N	[illegible]	Maria Watson			55 Cato Lane
5	N	SUSAN SCOT	SUSAN SCOTT			15 FELDSPAR AVE
6	✓	Dawn L Dugan	Dawn L Dugan			80 Somerset
7	✓	Jo Kymer	JO KYMER			21 EXETER
8	✓	[illegible]	Jennifer Dubois			3 Dooley Ct.
9	✓	Karen Bopp	KAREN BOPP			61 Lours Lane
10	✓	[illegible]	JOHN HAYFORD			41 MADAKET ROAD
11	✓	[illegible]	TARA REID			11 Correia Ln
12	N	Melissa Reid	Melissa Reid			11 correia lane
13	✓	[illegible]	JANET SMEDER			11 SWIFT ROCK RD
14	✓	Susan Hayford	SUSAN HAYFORD			41 MADAKET RD
15	✓	[illegible]	Margaret Worth			14 Somerset Lane
16	✓	[illegible]	CHRISTOPHER YOUNG			12 SEIKINNOW PURCH
17	✓	[illegible]	MaryBeth Ferro			104 Surfside Rd.
18	✓	[illegible]	Amy Masterson			42 Friendship Ln
19	✓	Evan Gerardi	Evan Gerardi			6 S Pasture Lane
20	✓	[illegible]	Bill Hunter			97 Shawkemo Lane

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Registrars of Voters of the Town of Nantucket

SPECIAL TOWN MEETING - CITIZEN'S ARTICLE

To see if the Town will vote to:

DATE and TIME this paper received by Registrars
July 25, 2016 3:20 pm

JUL 25 2016

2016 Special Town Meeting

(Zoning Map Change: LUG-2 to LUG-1 Surfside West - South Shore Road, Rachel Drive, Zachary Way, Tripp Drive, Correia Lane, Felcon Drive and Marilyn Lane, Masaquet Avenue, Morgan Square,)

To see if the Town will vote to amend the Zoning Map of the Town of Nantucket by taking the following actions:

By placing the following properties identified in the Surfside Area Plan as a portion of "Surfside West", currently located in the Limited Use General 2 (LUG-2) zoning district, to the Limited Use General (LUG-1) zoning district:

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	I	II	III		
	Check	Signatures to be made in person with name substantially as registered (except in case of physical disability as stated above)	Printed Name	Ward 0	Prec 1	Now Living At (Street and Number)
1	✓		Douglas Burnett			8 Pine Grove Rd
2	✓		Doris C. Strang			8 Tripp Drive
3	✓		Karen P Hull			8½ Thurstons Way
4	N		John Hedden			14 Helens Drive
5	✓		James Leng			5 Dox Ryder Rd
6	✓		Joseph Manning			50 Hummock Pond
7	✓		Angela Giles			2 Weatherly Place
8	✓		Charles Sloane			8 Tripp Dr.
9	✓		Scott Bowman			7 Folger Ave
10	✓		SUSAN M BURNS			7 Folger Ave
11	✓		Joseph P. Kirby			4 Kebel Lane
12	✓		Ally CIARCI			36 Fairgrounds
13	✓		Shane R Vallo			8 Spruce St
14	✓		David D. Bartlett			41 Bartlett Farm Rd
15	✓		Melinda Burnssmith			2 Little Isle Ln
16	✓		Holly Viscs			2 Zachary Way
17	✓		Robin Strang			7 Folger Ave
18	✓		Ernest Strang			55 Bartlett Rd.
19	✓		Jamison Viera			14 Tripp Drive
20	✓		RONALD SANTOS			8 MASAQUET AVE

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Registrars of Voters of the Town of Nantucket

SPECIAL TOWN MEETING - CITIZEN'S ARTICLE

To see if the Town will vote to:

JUL 28 2016

DATE and TIME this paper received by Registrars
July 27, 2016 3:24pm

2016 Special Town Meeting
(Zoning Map Change: LUG-2 to LUG-1 Surfside West - South Shore Road, Rachel Drive, Zachary Way, Tripp Drive, Correia Lane, Felcon Drive and Marilyn Lane, Masaquet Avenue, Morgan Square,)
To see if the Town will vote to amend the Zoning Map of the Town of Nantucket by taking the following actions:

By placing the following properties identified in the Surfside Area Plan as a portion of "Surfside West", currently located in the Limited Use General 2 (LUG-2) zoning district, to the Limited Use General (LUG-1) zoning district:

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	I		II			III
	Check	Signatures to be made in person with name substantially as registered (except in case of physical disability as stated above)	Printed Name	Ward 0	Prec 1	Now Living At (Street and Number)
1	W	Tracy R. MacDonald	Tracy MacDonald			3 Cau Pond
2	W	David Callahan	DAVID CALLAHAN			4 Morgan Sq
3	N		MARK NORRIS			53 Vestal St
4	W	Kerry Kennedy Flynn	Kerry Kennedy Flynn			8 Somerset Lane
5	W	Duane G Vorce	DUANE G VORCE			40 Essex Road
6	W	Daryl Westbrook	Daryl Westbrook			DARYL WESTBROOK
7	W	125 Westbrook	16 BAXTER			Robert WESTBROOK
8	W	MMurphy	3 Alexandria			Melissa Murphy
9	W	EBlair	17 First Way A			Elizabeth Blair
10	W	GMacLellan	76A Old South Rd.			George MacLellan
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Registrars of Voters of the Town of Nantucket

SPECIAL TOWN MEETING - CITIZEN'S ARTICLE

To see if the Town will vote to:

DATE and **TIME** this paper received by Registrars
July 25, 2016 3:23 pm

2016 Special Town Meeting
(Zoning Map Change: LUG-2 to LUG-1 Surfside West - South Shore Road, Rachel Drive, Zachary Way, Tripp Drive, Correia Lane, Felcon Drive and Marilyn Lane, Masaquet Avenue, Morgan Square,)
To see if the Town will vote to amend the Zoning Map of the Town of Nantucket by taking the following actions:

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	I	II			III
	Check	**Signatures to be made in person with name substantially as registered (except in case of physical disability as stated above)**	**Printed Name**	**Ward 0**	**Prec 1**	**Now Living At (Street and Number)**
1	✓	Bethany Maury	BETHANY MAURY			3 Windy Way
2	✓	[illegible]	JOANNE DECE			48 Hooper Farm
3						
4						
5						
6						
7						
8						
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CERTIFICATION OF SIGNATURES	(at least three Registrars= names must be signed or stamped below)
We certify that ( )_____ signatures checked thus ✓ are names of voters of the Town of Nantucket and are qualified to sign this petition.	Registrars of Voters of the Town of Nantucket

ARTICLE 16
(Zoning Map Change: LUG-2 to R-40 - 4 Daffodil Lane)

To see if the Town will vote to amend the Zoning Map of the Town of Nantucket by placing the property at 4 Daffodil Lane shown on Tax Assessor's Map 68 as Parcel 719, currently located in the Limited Use General 2 (LUG-2) district in the Residential 40 (R-40) district, as shown on a map entitled "2016 Special Town Meeting Warrant Article ___ Zoning Map Change: LUG-2 to R-40 - 4 Daffodil Lane" dated May 2016 and filed herewith at the Office of the Town Clerk.

Or to take any other action related thereto.

(Gina LeBrecht, et al)

Aug 1, 2016
2:24 pm. N. Holmes

ARTICLE ___
(Zoning Map Change: LUG-2 to R-40 - 4 Daffodil Lane)

To see if the Town will vote to amend the Zoning Map of the Town of Nantucket by placing the property at 4 Daffodil Lane shown on Tax Assessor's Map 68 as Parcel 719, currently located in the Limited Use General 2 (LUG-2) district in the Residential 40 (R-40) district, as shown on a map entitled "2016 Special Town Meeting Warrant Article ___ Zoning Map Change: LUG-2 to R-40 - 4 Daffodil Lane" dated May 2016 and filed herewith at the Office of the Town Clerk.

Or to take any other action related thereto.

(Gina LeBrecht, et al)

Name (signature)	Name (printed)	Address
Gina LeBrecht	GINA LeBRECHT	4 DAFFODIL LN.
Douglas S. LeBrecht	DOUGLAS F. LeBRECHT	4 DAFFODIL LN
		133 Old South RD
	Garry J Caruso	133 old south RD
	William Ciarmataro	5 madison Court
	Tate Keegan	5 Daffodil Lane
	Lucy Lau	5 Daffodil Lane
	Jim Lydon	20 Evergreen Lane
Nance Lydon	Nance Lydon	20 Evergreen Way
Madeline Lydon	Madeline Lydon	20 Evergreen Way
	PATRICK HEHIR	2 Spinnaker Circle.

David Good

Dawn M. Collins

Name (signature)	Name (printed)	Address
	STEPHANIE MCGRATH	3 VALLEY VIEW DRIVE
	Eve Maskell	53 New St. Sconset
	Grace Maskell	53 New St. 'Sconset
	Emma Pykosz	68 Lovers Lane
	Jessica Toole	POB 2445
	VICTORIA P. EWING	PO BOX 1001 NANT 02554
	Lucy Hehir	2 Spinnaker Circle
	ERIN KING	4 DAISY COURT
	Lynda Cutrone	35 Chuck Hill Rd
	Jared Keltz	113 Madaket Rd
	Nicole Gross	72 Cato Lane
	Fiona Johnson	37 Fairgrounds
	Joelle Bouchard	18 Gloucester Street
	Kate Bartleman	5 Friendship Lane
	William Bartleman	5 Friendship Lane

(23) Twenty Three Page 1 of 2

Name (signature)	Name (printed)	Address
J. Cook	James R. Cook	8 Evergreen Way
Jennie E. Cook	Jennie E. Cook	8 Evergreen Way
Sarah Ruy	SARAH RUY	8b Folgar Ave

(3) Three

Name (signature)	Name (printed)	Address
Stacey Damon	Stacey Damon	11 Daffodil Ln.
Name (signature)	Name (printed)	Address
Dominic Bell	Dominic Bell	5 1/2 Deer Run Road
Name (signature)	Name (printed)	Address
Shanna Bell	Shanna Bell	5 1/2 Deer Run Rd.
Name (signature)	Name (printed)	Address
KARL Gross	KARL Gross	72 Cook LN
Name (signature)	Name (printed)	Address
Laura Banion	Laura O Banion	29 Daffodil Lane
Name (signature)	Name (printed)	Address
Gillean Myers	Gillean Myers	28 Kelly Rd
Name (signature)	Name (printed)	Address
Renee Barrett	Renee Barrett	31 Dakeard.
Name (signature)	Name (printed)	Address
Erin Myers	Erin Myers	14 Sleepy Hollow Rd
Name (signature)	Name (printed)	Address
Christina O'Day	CHRISTINA O'DAY	15 GRAY AVE
Name (signature)	Name (printed)	Address

(9) NINE

(a)

Name (signature)	Name (printed)	Address
	Josephine Jackson	5 Sea Fox Cir
	Kristen Dussault	40 Southshore Rd
	Sara Brooks	6 Kenkinnick Way
	Laura Kohlhoff Graves	23 Appleton Rd
	Justin Brack	6 Kennebec Way
	Robert Graves	23 Appleton RD
	Page Martineau	36 Friendship LN
	Julie Gammill	87 Somerset Rd
	James Pignato	40 Appleton Rd
	Sara Sylvia	198 Daffodil Ln
	Jean Iler	7 Pine Crest Dr
	Kirsten Heiman	209 Madaket
	Tyrone Feather	209 Madaket Rd
	Courtney Lester	48 Arkansas Ave
	Walter Lester	56 Miacomet Ave
	Merrily Crowell	3 Marsh Hawk Lane

(12) Twelve

Name (signature)	Name (printed)	Address
	Edward Morell	12A Arrowhead
		14 Tashua
	David A. Leary	23 Hunnewell Road
	John Myers	14 Sleepy Hollow Rd.
	Malcolm Corbin	8 N. Cambridge St
	William Cirmmaco	52 Sentry Rd
	Colin Williams	16 Williams St
	Thomas McGrath	71 Hummock Pond Rd.
	James Cabral	8 South Shore Rd
	James Cronin	10 Thurston way
	William Saad	5 Grove Ln
	[illegible]	11 Seminole Pl
	Robert Turner	11 Seminole Place
	Michael Ramos	10 Milestone Crossing
	Peter Loughman	88 Surfside Road

(28) Twenty Eight

Name (signature)	Name (printed)	Address
Mark O'Brien	Mark O'Brien	29 Bakehill Lane
Jeff O'Hara	Jeff O'Hara	4 Jonathan Way
Brad Grant	Brad Grant	6 Millbrook Rd. (12 ESSEX RD)
Susan Scott	SUSAN SCOTT	15 FOTHERGILL LN
Marie Watson	Marie Watson	55 Cato Lane
	Holly MacDonald	14 Priscilla Lane
Dawn L Dugan	Dawn L Dugan	80 Somerset Rd
Kelly O'Keefe	KELLY O'KEEFE	17 EVERGREEN WAY
	Jennifer Dubois	3 Dooley Ct.
Beth Hanlon	Beth Hanlon	26 Milk Street
Sarah Holton-Roth	Sarah Holton-Roth	1 Bluebird Lane
Mark Lucas	MARK LUCAS	1 Bluebird Lane
Ann Fitzgerald	ANN FITZGERALD	8 HICKORY MEADOW LN
Molly Harding	Molly Harding	50 Hummock Pond Rd Nantucket
Bouchra Yates	Bouchra Yates	11 Low Pond Apt B Nant.

(15)

(15)

Name (signature)	Name (printed)	Address
	Kathleen Fitzpatrick	87 Pleasant Street
	Chris Copeland	10 Westmoor Ln
	Isaiah Stone	63 Cate Lane
	Patrick Hehir	2 Spinnaker Circle
	Lor. Fox	12 Bailey Rd.
	PHIL ALBERTSON	6 ANNA DRIVE
	Kate Howard	53A S. Shore Rd.
	Miranda Holmes	8 Cliff Road
	TIM MAHONEY	7 PINETREE RD
	TONY BAKER	9 PINE GROVE
	Matt Erisman	2 wall street
	Laura Hanson	47 Hooper Farm Rd.
	Colby Roberts	13 Hetherus Drive
	Kerry M. Buckley	76A Old South Rd (Egan Lane)
	George S Macfellan	76A Old South Rd.

(12) Twelve
+ 14
26 Twenty Six

(5)

Name (signature)	Name (printed)	Address
	Frances Grangrade	11 Friendship Lane Nantucket MA 02554
	Deborah Hawkins	36 Sparks Ave Nantucket, Ma 02554
	Anne Foyc	24 Brewster Rd.
	Erica Kiley	39 S Cambridge St.
	Trevor Balliff	21 Sconset Rd
	Tracy Roberts	15 Helens
	Erik Carson	17 Evergreen Way
	Mark Cupone	35 Cliff Holland RD
	Samuel Alois	35 Mill St.
	Kevin Kitsock	C 43 Mitey's Lane
	Brad Grant	C6 Millbrook Rd
	Dave Gauthier	14 Arrowhead Dr.
	Robert I Ramos	11 Ramos Ct
	Thomas Patesh	43 Sconset Shore Rd
	Thomas Pastrana Jr	10 Waydale Rd

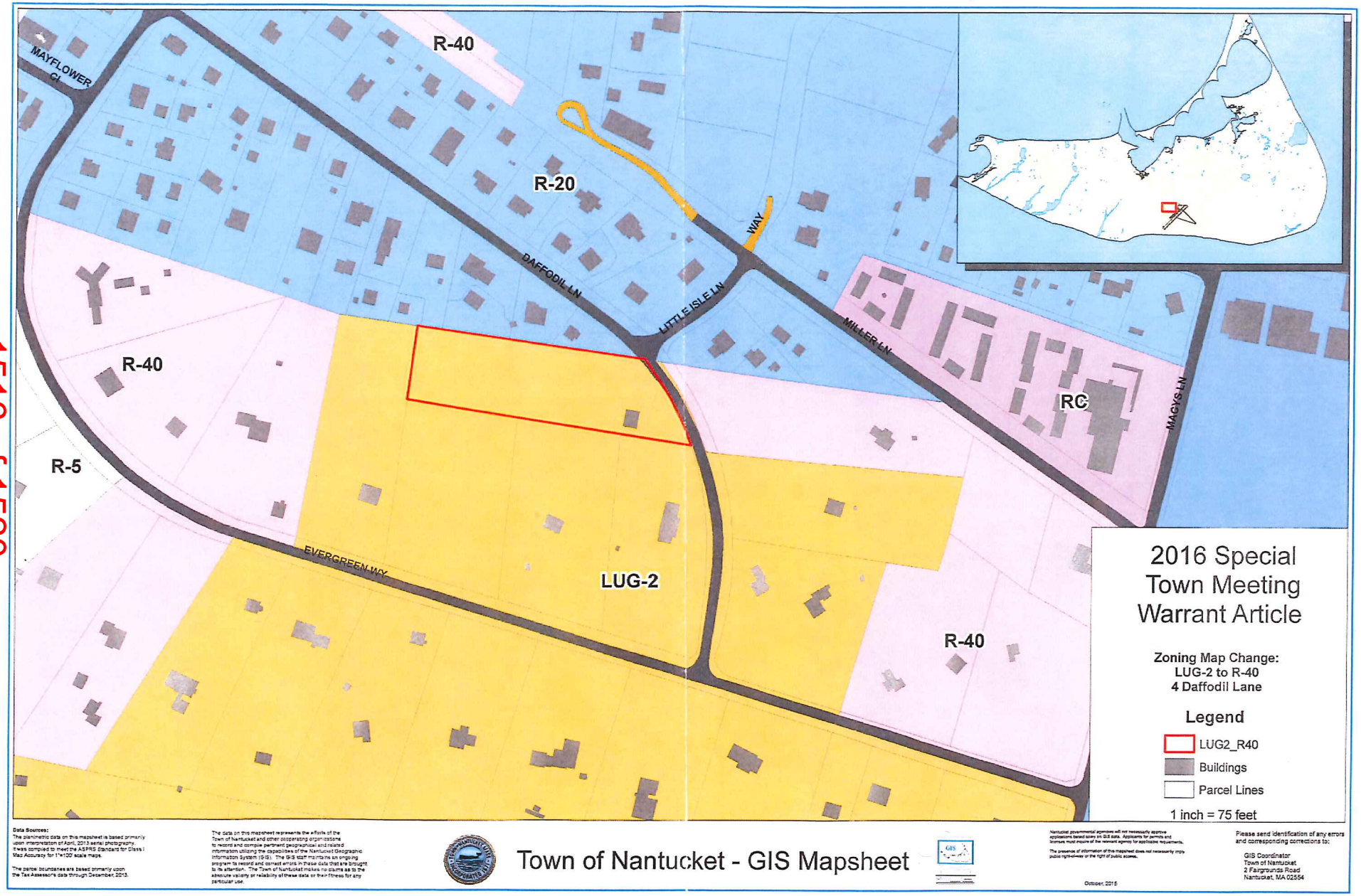
(44) ~~FOURTEEN~~

Name (signature)	Name (printed)	Address
	Scott Corbett	2 Bailey Rd.
	Kelly Corbett	2 Bailey Rd
	Laurel Meeks	53 Miacomet Ave
	Brian King	4 Daley Court
	Shauna Pekarek	50 Hooperfarm Rd
	Scott Barrett	31 Dukes Rd
	Rene Bistany	5 Equator Dr
	Meghan Shoemaker	9 Brenda Lane
	Steeyann Lawrence	17 Atlens Lane
	Kirsten Conyleton	29 Lyons Lane
	Ainsley Ellis	35 Somerset Lane
	Hadley Dutra	76 Hummock Pond Rd
	Heather B Keltz	113 Madaket Road
	Amy Mannino	13A Park Circle
	Josh Grant	6 Millbrook Rd.

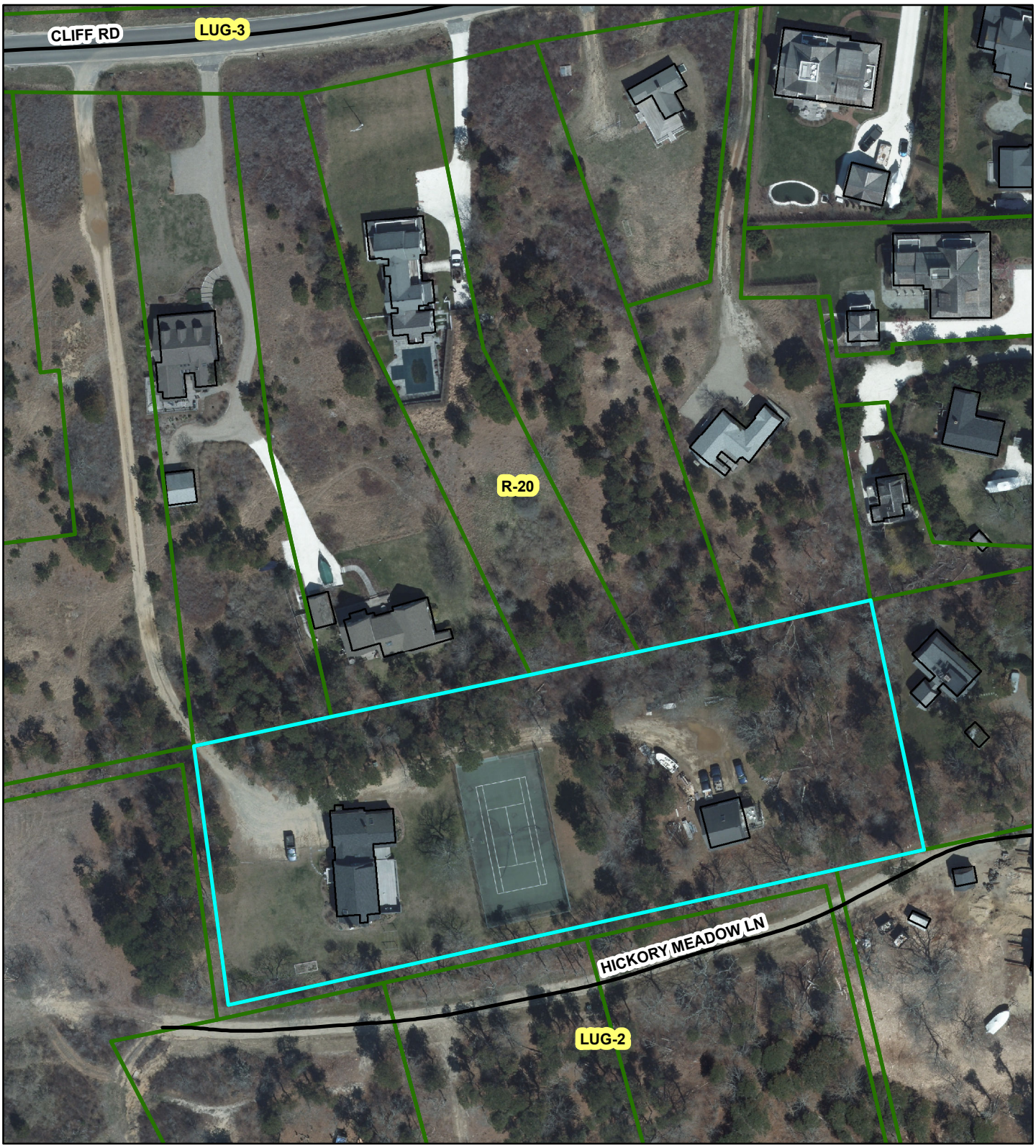
(14) FOURTEEN

(15)

115 SIGNATURES


MAYFLOWER CI
R-40
R-20
DAFFODIL LN
LITTLE ISLE LN
WAY
MILLER LN
MAGYS LN
RC
R-40
R-5
EVERGREEN WY
LUG-2
R-40
2016 Special Town Meeting Warrant Article
Zoning Map Change:
LUG-2 to R-40
4 Daffodil Lane
Legend
LUG2_R40
Buildings
Parcel Lines
1 inch = 75 feet
Data Sources:
The planimetric data on this mapsheet is based primarily upon interpretation of April, 2013 aerial photography. It was compiled to meet the ASPRS Standard for Class I Map Accuracy for 1"=100' scale maps.
The parcel boundaries are based primarily upon the Tax Assessor's data through December, 2013.
The data on this mapsheet represents the efforts of the Town of Nantucket and other cooperating organizations to record and compile pertinent geographical and related information utilizing the capabilities of the Nantucket Geographic Information System (GIS). The GIS staff maintains an ongoing program to record and correct errors in these data that are brought to its attention. The Town of Nantucket makes no claims as to the absolute validity or reliability of these data or their fitness for any particular use.
Town of Nantucket - GIS Mapsheet
Nantucket governmental agencies will not necessarily approve applications based solely on GIS data. Applicants for permits and licenses must inquire of the relevant agency for applicable requirements.
The presence of information of this mapsheet does not necessarily imply public right-of-way or the right of public access.
October, 2015
Please send identification of any errors and corresponding corrections to:
GIS Coordinator
Town of Nantucket
2 Fairgrounds Road
Nantucket, MA 02554

154 Cliff Road
Preliminary Plan



Nantucket Planning Board

Form C
Preliminary Plan Application

File one completed form with the Planning Board and one copy with the Town Clerk.

Date: September 6, 2016

To the Planning Board of Nantucket:

I (We) the undersigned, hereby submit in accordance with Chapter 41, Section 81-S, an application for a preliminary plan subdivision shown on a plan entitled Preliminary Subdivision Plan, 154 Cliff Road, designed by Site Design Engineering, LLC dated September 1, 2016.

The proposed preliminary plan subdivision is located on 154 Cliff Road, the total number of lots proposed is: 3 (buildable: 2), and the total acreage of the tract is 2.1+/- acres.

The tract is also identified as Nantucket Assessor's Map # 41, Parcel(s) 73.

● Residential subdivision ☐ Non-residential subdivision

Name of owner(s) (to include all the names and addresses of the principals of the owner entity such as principal officers of the corporation, trustees of a trust or partners of a partnership): Roy K. & Carol A Barrett, 154 Cliff Road, Nantucket, MA 02554

Address of owner(s): c/o John Brescher, Glidden & Glidden, 37 Centre St, PO Box 1079, Nantucket, MA 02554

Phone number: 508-228-0771 Fax number: 508-228-6205 E-mail: john@gliddenandglidden.com

Name of applicant (if other than owner): _____

Address of applicant: _____

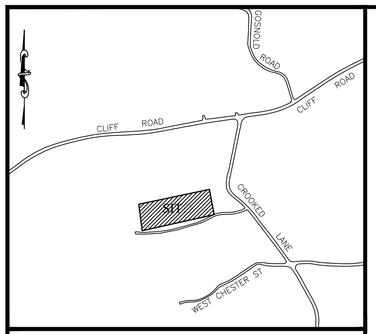
Phone number: _____ Fax number: _____ E-mail: _____

I hereby certify that the applicant(s) listed above have been authorized by me to file a preliminary subdivision plan with the Nantucket Planning Board on property that I own.

_____

Owner's signature

Planning Board File #_____ Received by Town Clerk: _____



LOCUS NOT TO SCALE

LEGEND

- PROPERTY LINE
- 36 TOPOGRAPHIC CONTOUR
- X FENCE
- W WATER MAIN

OVERLAY DISTRICT APPLICABILITY

TOWN YES

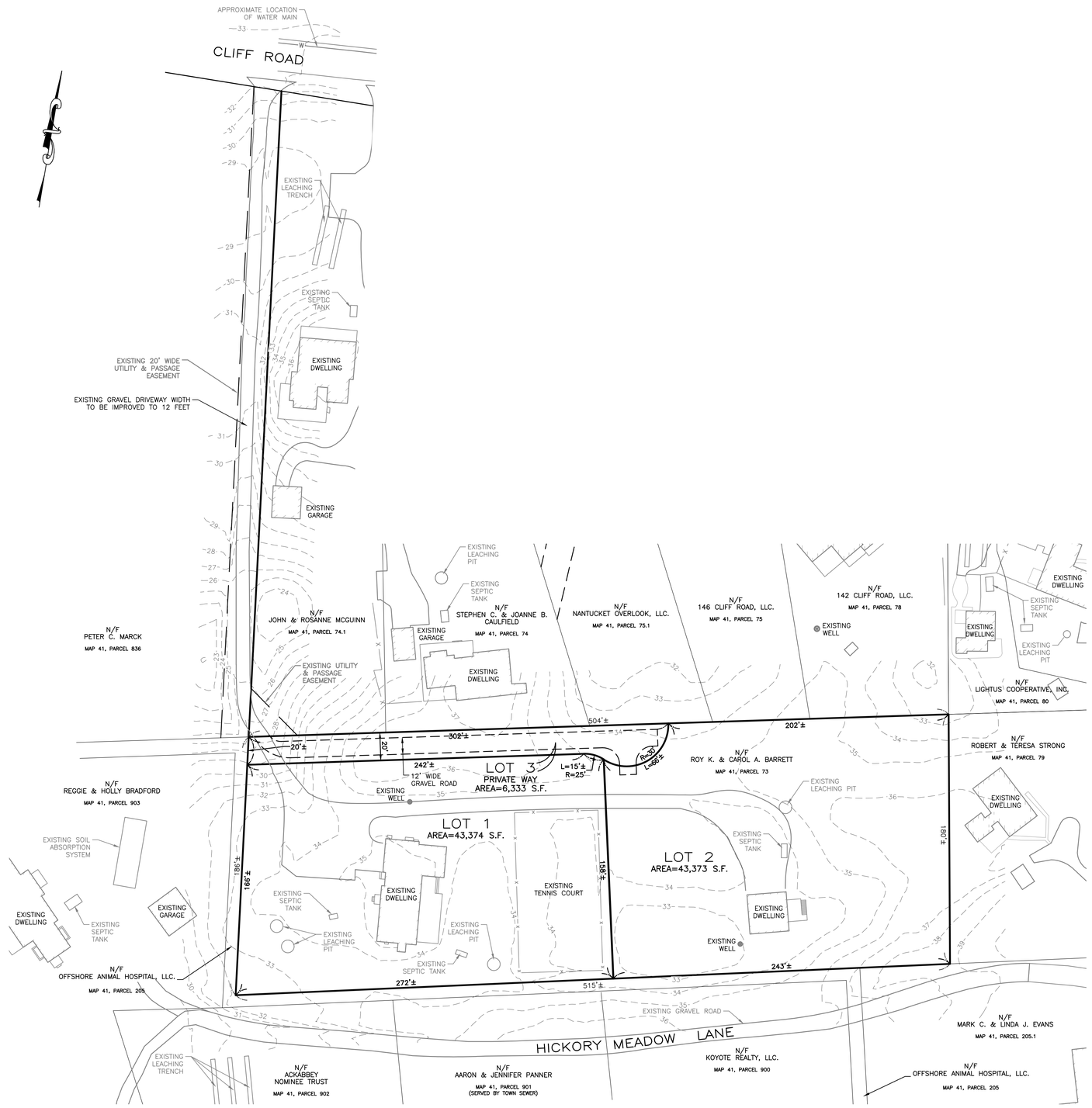
ZONING REQUIREMENTS:

THE SITE IS ZONED RESIDENTIAL 20 (R-20)

	REQUIRED
LOT AREA	20,000 S.F.
LOT FRONTAGE	75 FT.
FRONT YARD SETBACK	30 FT.
REAR YARD SETBACK	10 FT.
SIDE YARD SETBACK	10 FT.
MAX. GROUND COVER RATIO	12.5%

GENERAL NOTES:

1. EXISTING CONDITIONS INFORMATION WAS COMPILED FROM RECORD PLAN INFORMATION.
2. ELEVATIONS ARE REFERENCED TO AN ASSUMED DATUM.
3. THE SITE IS NOT LOCATED WITHIN ANY KNOWN FLOOD HAZARD ZONES AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP COMMUNITY-PANEL NUMBER 250230 0086 G, DATED JUNE 9, 2014.
4. THIS PLAN AND ANY ACCOMPANYING CERTIFICATIONS DO NOT CONSTITUTE A CERTIFICATION OF TITLE TO THE PROPERTY DISPLAYED HEREON. THE OWNER OF LOCUS AND ABUTTING PROPERTIES ARE SHOWN ACCORDING TO CURRENT TOWN ASSESSORS RECORDS.
5. EXISTING UTILITY LINES SHOWN ON THIS PLAN ARE FROM AVAILABLE INFORMATION AND ARE APPROXIMATE LOCATIONS. THERE MAY BE EXISTING LINES OTHER THAN THOSE INDICATED. SITE DESIGN ENGINEERING, LLC. ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED OR INACCURATELY SHOWN. BEFORE PLANNING FUTURE CONNECTIONS, THE PROPER PUBLIC UTILITY ENGINEERING DEPARTMENT SHOULD BE CONSULTED.



40 0 20 40 80

SCALE: 1 INCH = 40 FEET

CURRENT OWNER

ROY K. & CAROL A. BARRETT
154 CLIFF ROAD
NANTUCKET, MA 02554

TITLE REFERENCE:
L.C. CERT. #7158

PLAN REFERENCES:
L.C. PLAN #12626-B (LOT2)

SITE LOCATION:
154 CLIFF ROAD
NANTUCKET, MA

ASSESSORS REFERENCE:
MAP 41, PARCEL 73

SITE DESIGN ENGINEERING, LLC.
11 CUSHMAN STREET
MIDDLEBORO, MA 02346
T: 508-967-0673 F: 508-967-0674
WWW.SDE-LDEC.COM

NO.	DATE	DESCRIPTION	APPROVED

PLAN REVISIONS

DATE: SEPTEMBER 1, 2016

DRAWN BY:	DESIGN BY:	CHECK BY:
SKD	DCM	DCM

PROJECT NO. 16092

ISSUED FOR: APPROVAL

COMMONWEALTH OF MASSACHUSETTS
DANIEL C. MULLOY
CIVIL
No. 41757
REGISTERED PROFESSIONAL ENGINEER

PRELIMINARY SUBDIVISION PLAN

154 CLIFF ROAD
ASSESSOR'S MAP 41, PARCELS 73
NANTUCKET, MASSACHUSETTS

PREPARED FOR ROY K. & CAROL A. BARRETT

DRAWING TITLE:
PRELIMINARY SUBDIVISION PLAN

SCALE: 1'=40'

SHEET NO. 1 OF 1

PUBLIC NOTICE

A **PUBLIC HEARING** of the **NANTUCKET ZONING BOARD OF APPEALS** is scheduled for **1:00 PM** on Thursday, September 8, 2016 in the **Public Safety Facility Building** at 4 Fairgrounds Road, Nantucket, MA, 02554. The complete application materials may be reviewed at the Zoning Board of Appeals office at 2 Fairgrounds Road, Nantucket, MA 02554 between the hours of 7:30 A.M. and 4:30 P.M., Monday through Friday. Please submit written comments for the September 8, 2016 meeting to the Nantucket Zoning Board of Appeals at the above address, fax to (508) 228-7298, or e-mail to eantonietti@nantucket-ma.gov. Comments received in writing by 4:00 PM on Thursday, September 1, 2016, will be provided to the Board in advance of the meeting.

OLD BUSINESS:
DONALD J. MACKINNON, TRUSTEE OF NANTUCKET 106 SURFSIDE REALTY TRUST – a/k/a SURFSIDE COMMONS 40B, FILE NO. 04-16
GERALD T. & MARGARET VENTO, TR. OF NINETY-ONE LOW BEACH ROAD NOMINEE TRUST, FILE NO. 20-16

NEW BUSINESS:The following agenda items will be discussed September 8, 2016:

6 LILY STREET LLC & SCONSET PARTNERS LLC, FILE NO. 24-16
(Public hearing not opened at August meeting) **CONTINUED TO OCTOBER 13, 2016**

ALAN A. SHUCH AS TRUSTEE OF THE ANN F. SHUCH QUALIFIED PERSONAL RESIDENCE TRUST, FILE NO. 32-16
(Public hearing not opened at August meeting) **CONTINUED TO OCTOBER 13, 2016**

SUSAN A. WAGER, FILE NO. 33-16
Applicant is seeking Special Permit relief pursuant to Zoning By-law Section 139-33.A in order to alter the pre-existing nonconforming dwelling on the pre-existing nonconforming lot. The existing dwelling is sited within the easterly side yard setback. The alterations consist of raising the building to install a new foundation as well as conforming additions. As so altered, the structure will be no closer to the easterly lot line and will remain conforming as to height. In the alternative, and to the extent necessary, applicant seeks Variance relief from the provisions of Section 139-16. The Locus, an undersized lot of record, created pursuant to M.G.L. Chapter 41 Section 81L, situated at 3 Meader Street, is shown on Assessor's Map 42.2.3 as Parcel 39, and as Lot 1A in Plan File 2013-15. Evidence of owner's title is registered in Book 1389, Page 220 on file at the Registry of Deeds. The site is zoned Residential Old Historic (ROH).

POLPIS HARBOR , LLC, FILE NO. 34-16
Applicant is seeking Special Permit relief pursuant to Zoning By-Law Section 139-33.A to allow the change of use of a pre-existing nonconforming garage structure to a pool house/cabana. The existing structure is sited within the easterly front yard setback. The proposed alterations will result in a decrease in size such that the structure's footprint and massing will not increase within the setback area. The Locus is situated at 248 and 250 Polpis Road, is shown on Assessor's Map 26 as Parcel 27, as Lot A-7 upon Land Court Plan 13443-E and as Lot A-3 upon Land Court Plan 13443-D. Evidence of owner's title is registered on Certificate of Title No. 25343 at the Nantucket County District of the Land Court. The site is zoned Limited Use General 3 (LUG-3).