



May 31, 2016

Mr. Andrew Vorce, Director
Nantucket Planning & Economic Development Commission
2 Fairgrounds Road
Nantucket, MA 02554

Attn: Mr. Michael Burns

**Re: Peer Review
Surfside Commons Apartments
106 Surfside Road, Nantucket, MA**

Dear Mr. Vorce:

On behalf of the Nantucket Planning Board, Tetra Tech (TT) has completed a peer review of the October 6, 2015 *Traffic Assessment* prepared by Bristol Traffic & Transportation Consulting LLC for the proposed project located at 106 Surfside Road in Nantucket, Massachusetts. We have also reviewed supplemental information provided to the town on May 6, 2016. The supplemental information included the following documents:

- Boundary & Topographical Survey, dated August 7, 2015.
- Profile – north leg of Surfside Road
- Addendum #1 to Surfside Commons Traffic Study (no date).

As we understand it, the proposed project includes the construction of 56 apartment units within four residential buildings and a recreation center. The project also includes approximately 100 parking spaces.

The Traffic Assessment and Addendum was reviewed for conformance with standard professional practices in the state of Massachusetts for the preparation of traffic studies for projects of the size and nature proposed at 106 Surfside Road.

Project Study Area

- The Nantucket Planning & Economic Development Commission suggested to the proponent's traffic consultant that the intersections of Surfside Road/Fairgrounds Road/South Shore Road, Surfside Road/Bartlett Road, Fairgrounds Road/Old South Road were intersections of interest. However, the study only included an impact analysis at the Surfside Road/Fairgrounds Road/South Shore Road intersection.
- The addendum provides estimates for project trips through the Surfside Road/Bartlett Road and Fairgrounds Road/Old South Road intersections. The data provided indicates that the project would cause minor increases at these intersections. At the intersection of Surfside Road/Bartlett Road the project results in an increase of approximately 20 trips per peak hour, and at the Fairgrounds Road/Old South Road intersection the increase is expected to be approximately 10 trips per peak hour.

Study Hours

- The study included an impact analysis of the summer weekday morning, weekday midday, weekday afternoon and Saturday midday peak hours. This is appropriate for a residential development.

Traffic Volumes

- The traffic volumes used in the study were collected in August 2015. No seasonal adjustment factor was applied. As the counts were obtained during a peak summer month, this is appropriate. Traffic volumes turning in and out of Gladlands Avenue were appropriately estimated using the ITE Trip Generation¹ resource.

Safety Analysis

- The traffic assessment indicates that the Surfside Road/Fairgrounds Road/South Shore Road intersection does not have a crash rate higher than the MassDOT statewide or District 5 average. No crash data was provided for the Surfside Road/Gladlands Avenue intersection. Based on Tetra Tech's review of MassDOT crash data obtained for a three year period (2011 to 2013), one crash occurred at the intersection in 2013. The crash did not include injuries.

Transit

- The Nantucket Regional Transit Authority provides service in the vicinity of the site, including a connection to downtown. Currently, no service is provided between October and May. The study did not address the suitability of the existing transit schedule for residents traveling to/from work, include transit ridership data or confirm that the service has adequate capacity to accommodate the additional ridership generated by the proposed project.
- In Addendum #1, the applicant's consultant noted that they had contacted Paula Leary, the NRTA Administrator, who confirmed that the NRTA can accommodate the additional riders generated by Surfside Commons.

Study Time Horizon

- The traffic assessment utilized a five-year planning horizon. Professional practice in Massachusetts currently employs a seven-year planning horizon for the preparation of traffic impact studies.

Future No-Build Traffic Volumes

- A one percent growth rate applied for five years was used to estimate peak hour traffic volumes in 2020. The study indicates that this growth rate was confirmed with town officials.
- Background trips from other proposed developments in the area were not accounted for in the study including the Sachem's Path residential development currently under construction at the Surfside Road/Fairgrounds Road intersection and the expansion of the Nantucket Elementary School. The proponent's traffic assessment should have accounted for the traffic generated by these and any other projects which would affect traffic levels at the study intersections. It is requested that the proponent either explain why off-site development in the vicinity of the study area was not accounted for or resubmit the No-Build and Build condition traffic volumes networks.

Trip Generation

- The study used *Trip Generation* Land Use Code (LUC) 220 – Apartment. This is an appropriate LUC to estimate trip generation for this project.
- The trip generation presented in the study were for the project's peak hours (peak hour of the generator). Typically, project trip generation is calculated for the peak hour of the adjacent street. In

¹ *Trip Generation* (Institute of Transportation Engineers, 2009)

this case the trips generated during the generator peak and during the adjacent street peak are similar. No additional data is required.

- The trip generation for the weekday and Saturday daily flows were not reported in the study, although the appendix included calculations for the weekday daily flows. The project is expected to generate approximately 460 trips on a weekday and 350 trips on a Saturday.

Trip Distribution/Trip Assignment

- At the site driveway, it was assumed that 85 to 90 percent of peak hour traffic would be oriented to/from the north and downtown with 10 to 15 percent oriented to/from the south. The distribution of project traffic through the Surfside Road/Fairgrounds Road/South Shore Road intersection was based on existing traffic flows through the intersection. This approach to trip distribution is appropriate for a project of this type and location.
- A comparison of Figures 7/8, which depict peak hour site trips Surfside Road/Gladlands Avenue/Site Driveway, to Figures 9/10, which depict peak hour site trips at the Surfside Road/Fairgrounds Road/South Shore Road, indicate an imbalance in volumes between the two intersections along Surfside Road. Traffic arriving and departing the Surfside Road/Fairgrounds Road/South Shore Road intersection is less than traffic arriving/departing the site driveway.
- In Addendum #1 the imbalance between the intersections was explained. A 20 percent reduction in project generated trips for the weekday peak hours and a 25 percent reduction in project generated trips for the Saturday midday peak hour was applied to the trip assignments at the Surfside Road/South Shore Road intersection to account for non-auto trips. As the traffic study is focused on the project's impact to traffic during the summer months, these reductions seem reasonable given the proximity of the site to the NRTA bus stop and bike path. However, for consistency, these same reductions should have been applied to the Surfside Road/Gladlands Avenue/Site Driveway intersection.
- The study indicates that trips generated by the proposed development will increase summer peak hour traffic levels at the Surfside Road/Fairgrounds Road/South Shore Road by less than 3 percent. It is noted that the increase will be higher during non-summer months.

Intersection Operational Analysis

- Capacity analyses conducted of the future conditions utilized existing peak hour factors. Current MassDOT standards for impact analysis specify that future peak hour factors should be assumed to be 0.92. As the existing peak hour factors that were utilized were generally less than 0.92, the reported results are generally more conservative than if the more appropriate peak hour factors were used in the analyses.
- The report should indicate the methodology (i.e. HCM 2010) and the version of Synchro used to conduct the capacity analyses.
- The capacity analyses for the Surfside Road/Gladlands Avenue/Site Driveway intersection provided in Addendum #1 were based on project trips adjusted for mode share which is inconsistent with the information shown on the figures presented in the Addendum. However, as noted above, it is reasonable to adjust the project trips to account for other mode shares.
- The analyses indicate that on weekdays the project will increase delays to motorists on the southbound approach of Surfside Road to Fairgrounds Road by 3 seconds during the morning peak hour, 13 seconds during the midday peak hour and 16 seconds during the afternoon peak hour. On Saturday the project results in a 5 second increase during the midday peak hour to the southbound approach.

- Tetra Tech confirmed that the intersection analyses were performed appropriately with the exception of the above minor comments. However, the No-Build and Build condition analyses should be resubmitted if the future traffic volume networks are revised to reflect off-site developments.

Concept Plan

An updated Concept Plan was included in Addendum #1. The Concept Plan depicts the current site design including parking, sight lines and proposed off-site improvements. The comments below refer to this plan, rather than the site plan included in Appendix E of the Traffic Assessment. Sight lines are addressed in a subsequent section.

Site Design/Parking

- The site is designed with one 24-foot wide access driveway which will intersect the east side of Surfside Road. The design is in accordance with good access management as it intersects Surfside Road directly opposite Gladlands Avenue forming a four-legged unsignalized intersection. A new crosswalk is proposed on the north leg of Surfside Road. However, the connections between the proposed crosswalk to the existing and proposed bike paths are not shown.
- The proponent should confirm that they have met with the Nantucket Fire Department and that the Department is comfortable with site access and circulation around the site and four buildings. It is noted that access by emergency equipment is not available along all four sides of the buildings located closest to Surfside Road. An auto turn analysis should be provided showing that the site adequately accommodates the appropriate emergency vehicles as required by the NFD.
- The Concept Plan indicates that the drive aisles are 24-feet-wide. To accommodate two-way travel through the site and to facilitate accessibility by emergency vehicles, the 24 foot driveway aisle is appropriate.
- No-parking signs and appropriate pavement markings should be provided along the interior curbs to discourage parallel parking. However, even with signs and pavement markings, it is possible that vehicles could park along the curb. In these circumstances, emergency vehicle access will be ensured with the 24 foot drive aisle as compared to a narrower aisle width.
- The Concept Plan indicates that 100 parking spaces, including 92 surface spaces and 8 garage spaces, will be provided for the 56 apartment units resulting in a parking ratio of 1.79 spaces per unit. Based on Town of Nantucket Zoning By-Laws for apartments in other zoning districts and based on parking ratios measured at apartment complexes by Tetra Tech, the 1.79 parking ratio is adequate.
- It is recommended that a painted or raised crosswalk be installed in the drive aisle at the southerly end of the walkway (located between the two northerly buildings) to accommodate residents traveling between their apartments, the pool area, club house or Surfside Road. It is also recommended that a sidewalk and/or walkway be provided along the west side of the site driveway with a connection to the proposed bike path.

Proposed Off-Site Improvements

- The Concept Plan indicates (via text) that a new bike path will be constructed along the east side of Surfside Road from the site driveway to Fairgrounds Road, however the path is not shown on the plan. A bike path from the site to Fairgrounds Road would reduce pedestrian and bicycle crossings of Surfside Road and be a benefit to future residents. A Concept Plan should be prepared that shows the horizontal alignment of the path for its entire length, connections at the site driveway and new crosswalk, and the connection at the Fairgrounds Road Bike Path.
- The applicant should also confirm that sufficient right-of-way exists on the east side of Surfside Road to construct the bike path.

- If retaining walls and/or significant areas of grading are required to accommodate the proposed bike path, they should be shown along with any required easements.
- The connection between the proposed crosswalk on Surfside Road to the existing Surfside Road Bike Path (west side) should be shown on the Concept Plan.
- The proponent should address if the proposed bike path has the potential to impact the NHESP² Priority Habitats of Rare Species area, as shown on the Boundary & Topographical Survey Plan.

Sight Distance

- In accordance with our request, a sight distance analysis was included in Addendum #1. The analysis was based on an assumed 85th percentile speed of 40 mph (the posted speed is 35 mph) for both Intersection and Stopping Sight Distance. Ideally, sight line requirements are based on 85 percentile speeds obtained at the intersection either by machine or by car following. The assumption of 40 mph appears to be reasonable. The materials provided include partial sight lines on the Concept Plan, a profile of the north leg of Surfside Road, photographs and aerial photography.
- On the Concept Plan, both stopping and intersection sight lines should be shown in their entirety along with any retaining walls needed to support the bike path. Areas where clearing will be required should be dimensioned and property owners identified. Areas to be cleared within the NHESP Priority Habitats of Rare Species shown on the Boundary & Topographical Survey Plan should be identified and addressed.
- The sight line profile provided for the north leg of the intersection is difficult to read due to its scale. A profile for both legs of Surfside Road should be provided utilizing a more appropriate vertical scale (see attached example). The profile should clearly show the Stopping Sight Lines (from a point 3.5 feet above the pavement to a point 2.0 feet above the pavement at the intersection) and the Intersection Sight Lines (from an appropriate distance from the edge of travel way (typically 14.5 feet) and 3.5 feet above the proposed driveway grade to a point 3.5 feet above the existing pavement along Surfside Road). The profile should reflect the position of the stopped vehicle on the site driveway. This distance may exceed 14.5 feet due to the proposed bike path. The existing guard rail and any other obstructions along the east side of Surfside Road should be plotted on the profile to confirm they will not block the sight lines for vehicles turning from the driveway.
- Based on field observations made by Tetra Tech, we were able to confirm that the stopping distance from the south exceeds the minimum recommended by AASHTO³ for 40 mph (305 feet). However, due to existing vegetation and the vertical curve on the north leg on Surfside Road, we were not able to measure the stopping sight distance on the north leg or measure the intersection sight lines, from a point 14.5 feet back from the travel way, looking in either direction.

Recommendations

A transportation demand management (TDM) plan should be developed and committed to by the proponent. The TDM plan should include elements such as:

- On-site secure bicycle storage

² National Heritage & Endangered Species Program

³ *A Policy On Geometric Design of Highways and Streets* (American Association of State Highway and Transportation Officials, 2011)

- Installation of a bulletin board at the club house which includes bicycle route and transit routes/schedules

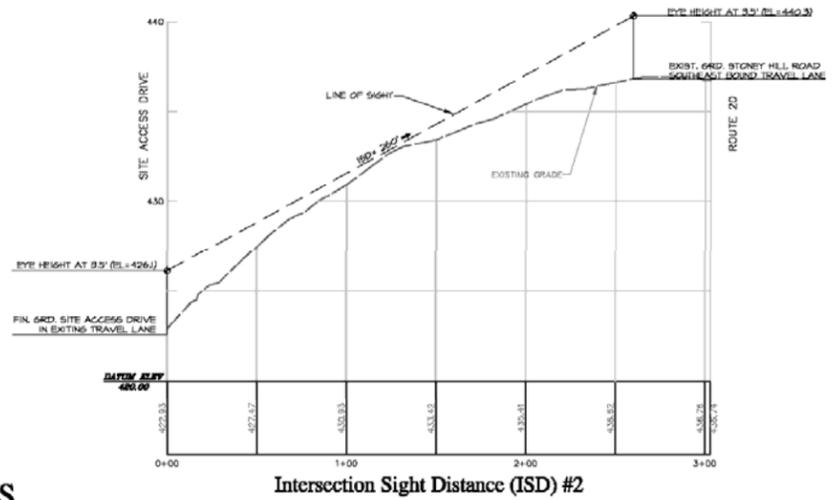
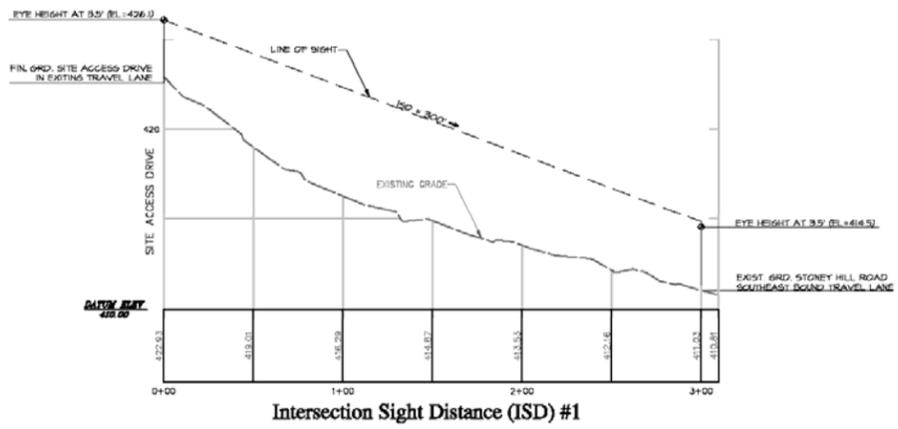
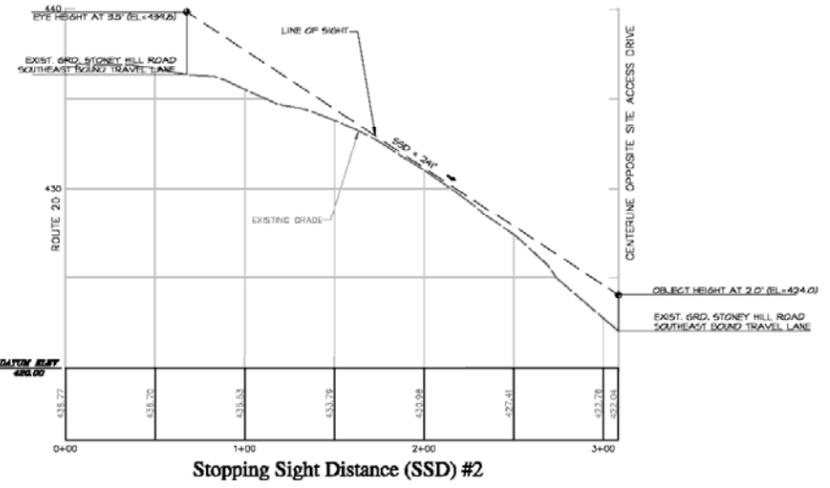
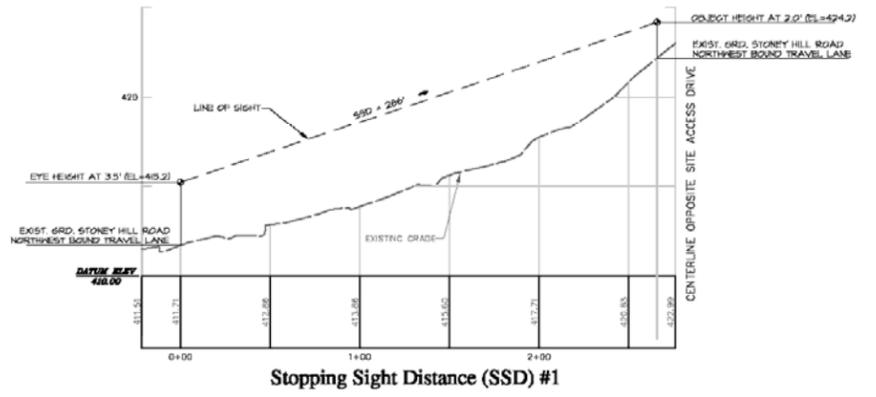
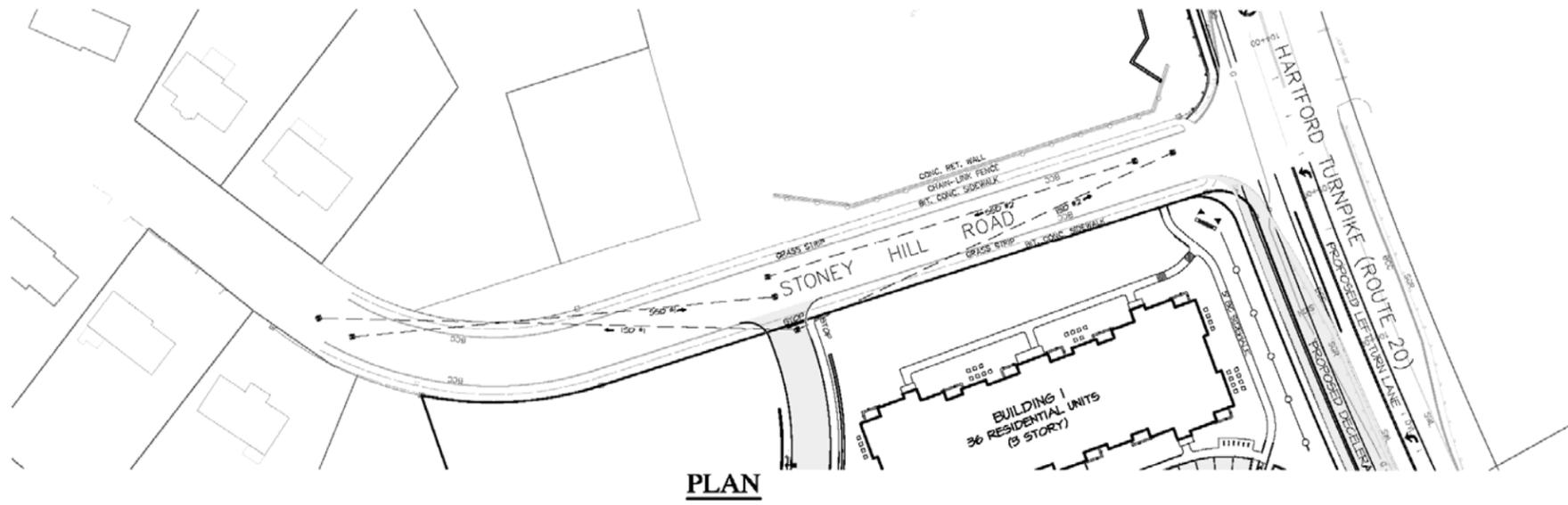
Thank for the opportunity to provide these peer review services. If you have any questions or comments regarding the above information, please feel free to contact me at (508) 786-2208.

Very truly yours,



Nancy B. Doherty, P.E.
Senior Transportation Planner

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