

# Sea Street Pump Station Force Main No.3

Nantucket, MA

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# Agenda:

## Project Background

### Tasks Completed to Date

- Task 1.4 – Alternatives Analysis Report
- Task 1.3 – QA/QC of Alternatives Analysis
  - Currently being reviewed by OPM

### Tasks in Progress

- Task 1.5 – Basis of Design Report
- Task 2.4.4 - Archaeology

### Future Tasks

- Task 1.3 – QA/QC of BODR
- Task 2.4.1-2.4.3 – Wetland Delineation, Survey, Mapping, Easements
- Task 2.5 – Subsurface Exploration and Geotechnical Report
- Task 2.6 – Permitting
- Task 2.7 – Design and Construction Documents
- Task 2.8 – Bidding



# Project Background



# Project Description and Need

- Scope
  - Design and construct a new sewer force main (Force Main No.3) spanning from the Sea Street Pump Station to the Surfside Wastewater Treatment Facility
- Purpose
  - Construct a pipe that will serve as the primary force main
  - Provide additional sewer capacity per the Sewer Master Plan
  - Allow retiring of the existing 16-inch PE force main
  - Reduce reliance on the existing 20-inch DI force main



# Task 1.4 – Alternatives Analysis Report

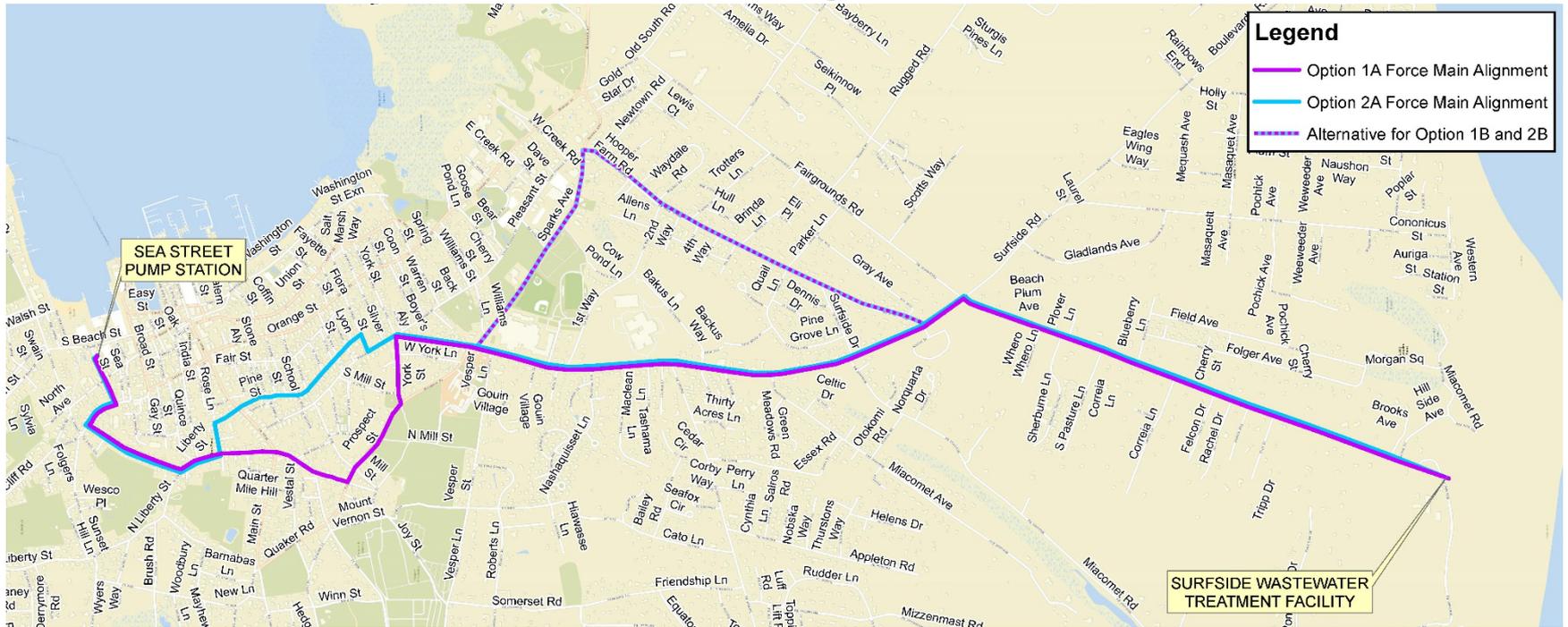


# Assessment Objectives

- Two Studied Alternative Force Main Alignments
- For Each Studied Alignment:
  - Alignment Route
  - Implementation Feasibility Study
  - Utility Replacement Assessment
  - Planning-Level Opinion of Probable Cost



# Alternative Force Main Alignments



Option 1A

Option 1B

Option 2A

Option 2B

Street	Length (ft)
Sea Street	226
Step Lane	300
Centre Street	402
Lily Street	1,200
Liberty Street	485
Gardner Street	640
Milk Street	530
New Mill Street	390
Prospect Street	1,110
W York Street	800
Atlantic Avenue	885
Surfside Road	5,970
South Shore Road	5,800
<b>Total</b>	<b>18,738</b>

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Sea Street	226
Step Lane	300
Centre Street	402
Lily Street	1,200
Liberty Street	485
Gardner Street	640
Milk Street	530
New Mill Street	390
Prospect Street	1,110
West York Street	800
Atlantic Avenue	885
Sparks Avenue	2,650
Hooper Farm Road	4,440
Surfside Road	540
South Shore Road	5,800
<b>Total</b>	<b>20,398</b>

Street	Length (ft)
Sea Street	226
Step Lane	300
Centre Street	402
Lily Street	1,200
Liberty Street	860
Winter Street	305
Pine Street	1,730
Silver Street	215
Pleasant Street	360
Atlantic Avenue	885
Surfside Road	5,970
South Shore Road	5,800
<b>Total</b>	<b>18,253</b>

Street	Length (ft)
Sea Street	226
Step Lane	300
Centre Street	402
Lily Street	1,200
Liberty Street	860
Winter Street	305
Pine Street	1,730
Silver Street	215
Pleasant Street	360
Atlantic Avenue	885
Sparks Avenue	2,650
Hooper Farm Road	4,440
Surfside Road	540
South Shore Road	5,800
<b>Total</b>	<b>19,913</b>



# Force Main Alignments not Considered (1A, 1B, and 2B):

<b>Reasons for not considering the following force main alignments:</b>		
<b>Option 1A</b>	<b>Option 1B</b>	<b>Option 2B</b>
Longer than preferred alignment	Longest studied alignment	Second longest studied alignment
Higher disruption to residential areas than preferred alignment (2A). No utilization of Pine street (75% seasonal residents)	Higher disruption to residential areas than preferred alignment (2A). No utilization of Pine street (75% seasonal residents)	
Higher peak elevation than preferred alignment – less hydraulically favorable	Higher peak elevation than preferred alignment – less hydraulically favorable	
Greater archaeological impacts than preferred alignment	Greater archaeological impacts than preferred alignment	
	Sparks Ave. and Surfside Road cannot be closed at the same time during Surfside Road gravity sewer replacement. Sparks Ave is a truck route to the west part of the island and cannot be closed.	Sparks Ave. and Surfside Road cannot be closed at the same time during Surfside Road gravity sewer replacement. Sparks Ave is a truck route to the west part of the island and cannot be closed.



# Preferred Force Main Alignment – Option 2A

- Advantages

- Shortest of studied routes
- No impact to 100-ft wetland buffer
- Potential Use of Bike Path/Sidewalk (10,932 lf on Surfside and S. Shore)
- Cross-Connection Potential on Surfside Road
- Peak elevation lowest of studied routes (41')
- Pine Street seasonal residents

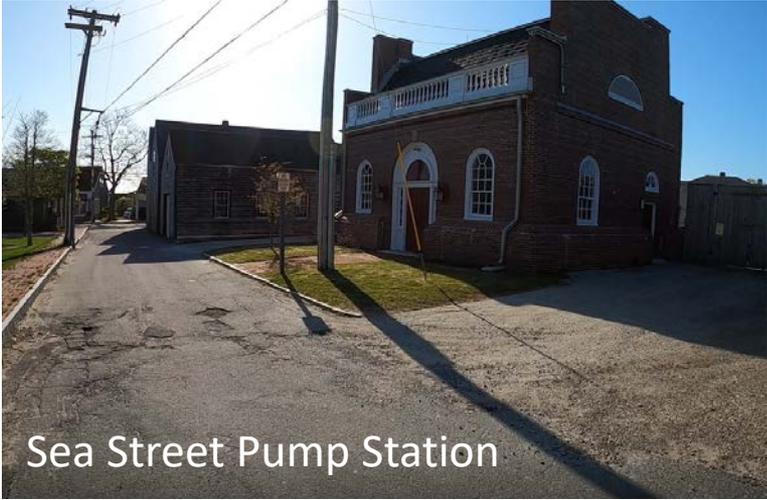
- Construction Challenges

- Construction within residential areas (8,023 lf)
- Construction within historic district (5,790 lf)
- Parking and Traffic Coordination
- Construction within commercial areas (2,415 lf)

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South Shore Road	5,800
<b>Total</b>	<b>18,253</b>



# Site Visit Photos – Option 2A



Sea Street Pump Station



Step Lane and North Water Street

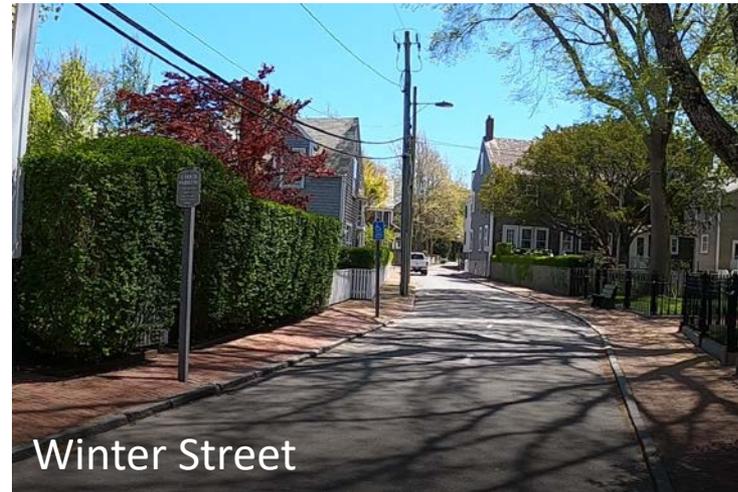


Centre Street



Lily Street

# Site Visit Photos – Option 2A



# Option 2A – Utilities Replacement Assessment

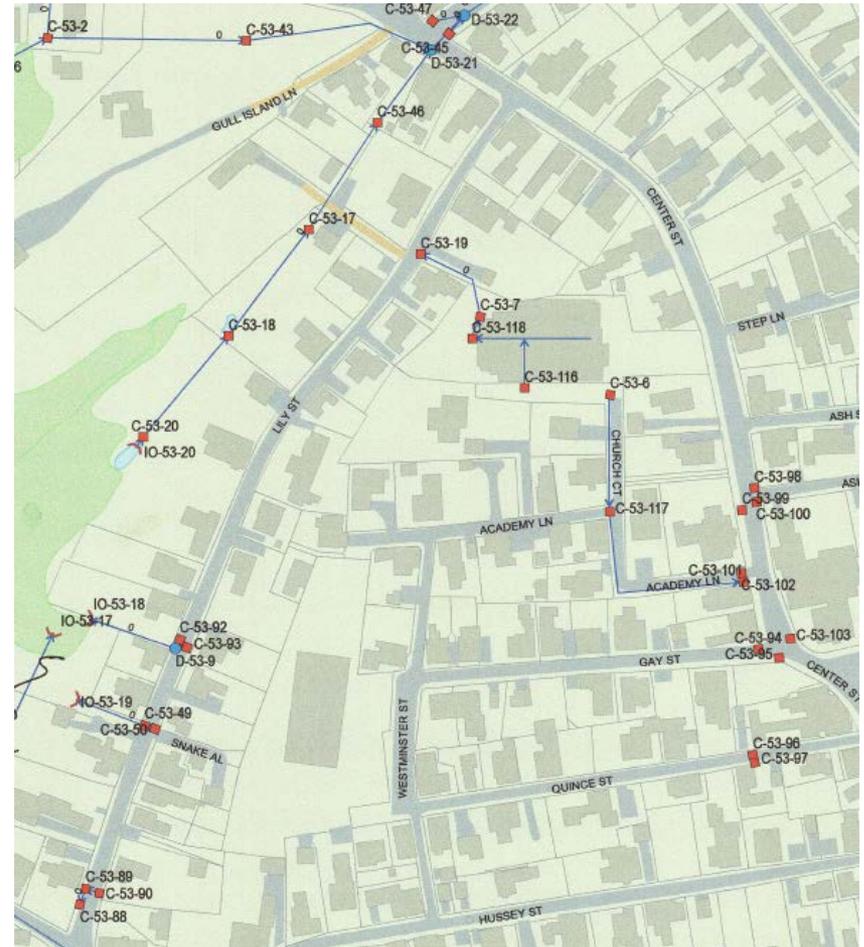
Street	Existing Water Main Notes	Existing Gravity Sewer Notes
Sea Street	6" DI - GIS and Record	8" PVC - CMOM
Step Lane	6" CI - GIS and Record	6" VC - CMOM
Centre Street	12" DI & Abandoned 8" CI - GIS and Record	10" VCP - GIS
Lily Street	6" Transite/CI - GIS and Record	12" VCP - GIS
Liberty Street	6" CICI/CI - GIS and Record	8" VCP - GIS
Winter Street	8" CI - GIS	6" VC - CMOM
Pine Street	6" CI / 8" CI - GIS	8" PE/PVC - CMOM
Silver Street	6" B&SCL - GIS	Unknown
Pleasant Street	6" CI / 12" Transite - GIS	8" PVC, 10" Clay - GIS
Atlantic Avenue	New 12" and Abandoned 6" Universal - GIS and Record	6' VC/PVC - CMOM
Surfside Road	12" DI, 8" Transite, 8" PVC with Abandoned 8" Transite and Abandoned 6" CI - GIS and Record	6" S - GIS
South Shore Road	12" DI - GIS and Record	Unknown

 Indicates Candidate for Replacement



# Option 2A – Drain Replacement Considerations

- All impacted drain lines and structures will be replaced in kind within the limits of work
- Coordination with DPW for cleaning of structures
- Based on research, all stormwater (pipe and structures) along the route is a candidate for replacement

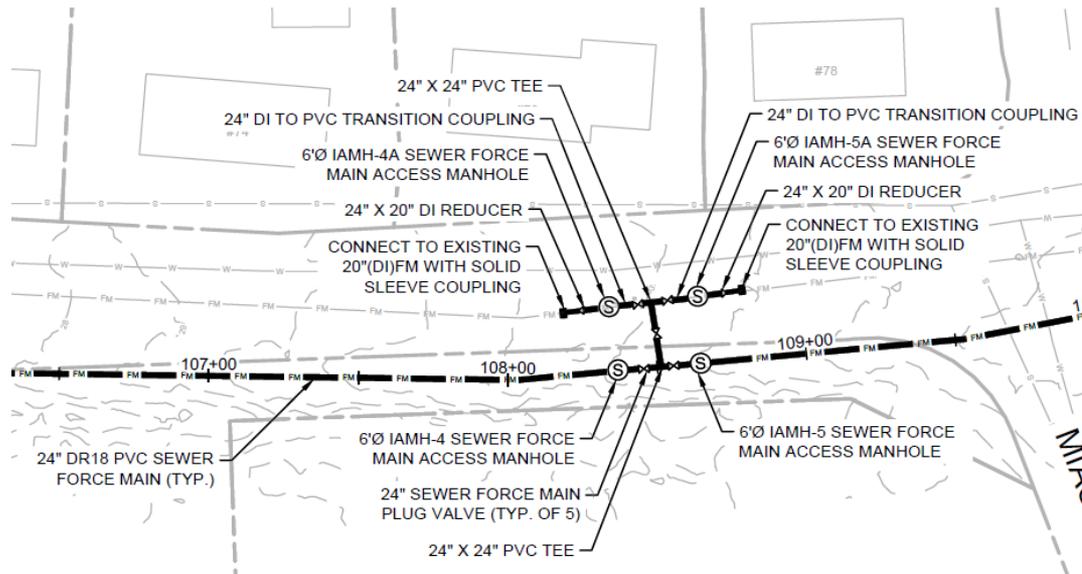


# Task 1.5 – Basis of Design Report



# Force Main Cross-Connection and Secondary Connections

- Cross-Connection Benefits - Allows for isolation and the ability to bypass a portion of a force main to facilitate maintenance
- Secondary Connections
  - Existing Surfside Pump Station
  - Future Surfside Pump Station
  - Future Madaket/Warren's Landing Pump Station

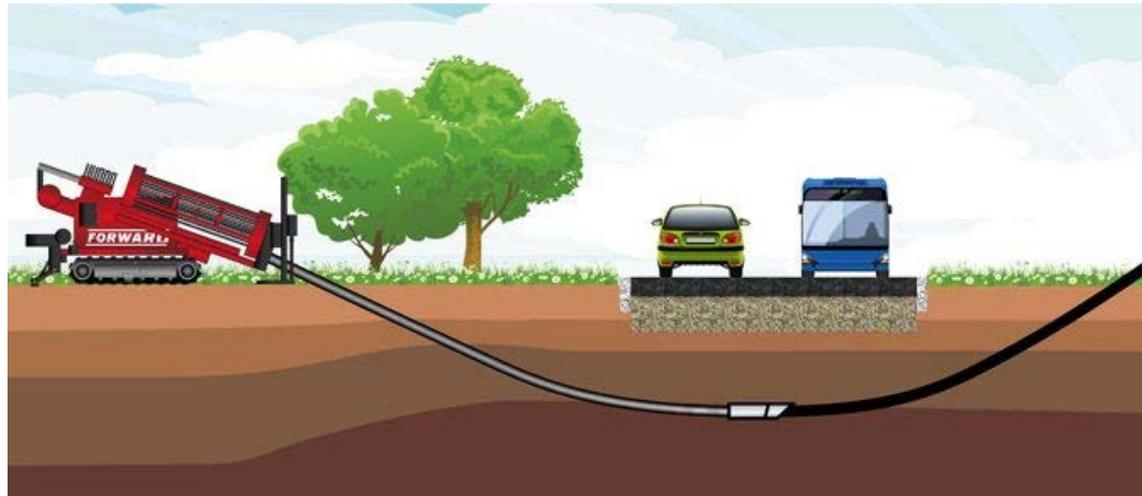


# Force Main Cross-Connection and Secondary Connections



# Horizontal Directional Drilling

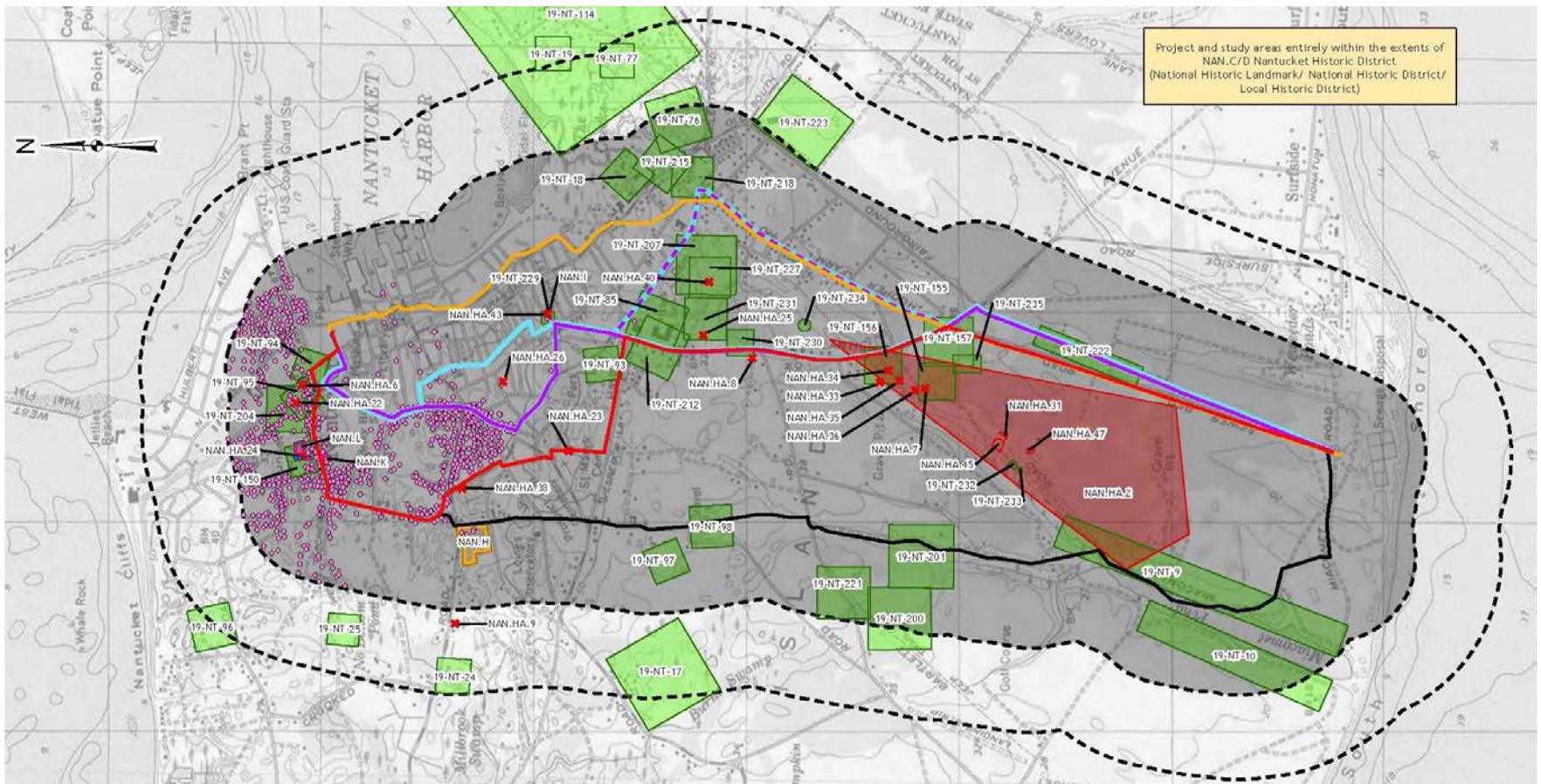
- HDD was considered for installation of the force main between the SSPS and Centre Street (~550 lf)
- HDD may be considered in other areas – TBD during design
- Advantages
  - Minimizes disruption to surface features (i.e. pavement, sidewalks)
  - Avoid conflict with existing utilities due to depth of installation
  - Minimize foundation damage



## Task 2.4.4 – Archaeology



# Archaeology Study



- Existing 20-Inch Force Main
- Existing 16-Inch Force Main
- Option 1
- Option 2
- Alternative for Option 1 & 2
- Option 3
- Archaeological Study Area, ½-Mile
- Pre-Contact Archaeological Site
- Post-Contact Archaeological Site
- Aboveground Study Area, ¼-Mile
- Inventoried Historic District
- Local Historic District
- Property Contributing to NHL/NRDIS/LHD
- Historic Resource Individually Listed in the National Register



# Future Tasks and Schedule



# Action Items

- Town-approval of Preferred Force Main Alignment
- Must award before June 2021 for SRF funding eligibility
- Advance BODR and Preliminary Design  
Complete September 30, 2020
- Commence Survey of Preferred Force Main Alignment  
Begin on September 10, 2020
- Commence Geotechnical/Subsurface Exploration  
Begin on September 27, 2020
- Design and Construction Documents  
Complete February 28, 2021



# Electrical and Communication Considerations

- Underground Electrical
  - Planning
  - Cost implication
  - Coordination with NGRID
  - Does not eliminate the need for poles
  - Requires easements for transformers
  - No direct feeder along the proposed FM route
  - Does not address services
  - Structures are too large in relation to roadway width (sewer, drain and water pipe)
- Underground Telecommunication
  - Verizon and Comcast
- Schedule impact

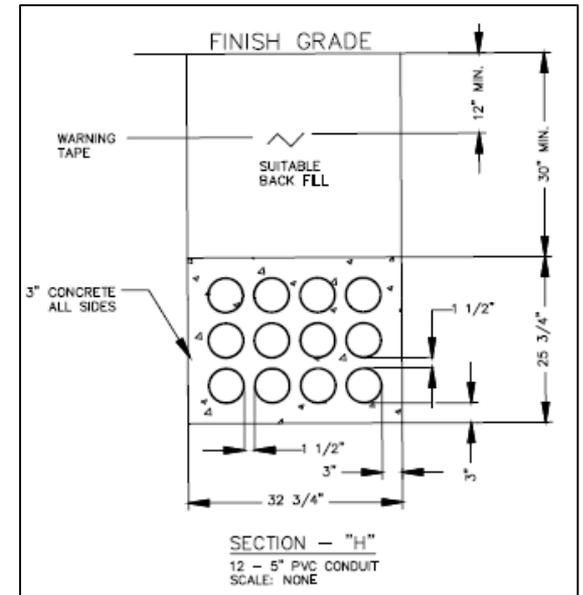


# Ground-Level Transformers

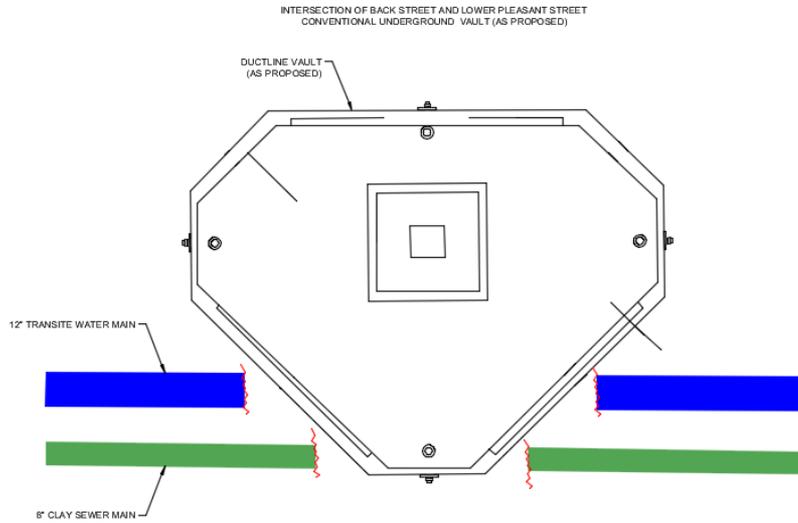


# Ductline Construction Challenges

- Narrow Roadways and Right-of-Ways
- Groundwater/Dewatering
- Existing Utilities/Utility Stacking



# Ductline Construction Challenges





THANK  
YOU



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