

MEMORANDUM

TO: C. Elizabeth Gibson, Town Manager of Nantucket

FROM: Weston & Sampson Engineers, Inc.

DATE: March 19, 2019

SUBJECT: Preliminary Infrastructure Impact Review of the Proposed Harbor Place Redevelopment

Weston & Sampson has completed a preliminary infrastructure impact review of the proposed Harbor Place Redevelopment. Our review of the town's existing infrastructure includes sewer, water, drainage, roadway and sidewalks. A variety of alternative redevelopment plans for Harbor Place were provided by the town. These plans are included in Appendix A.

On November 27, 2018, Weston & Sampson met with David Gray, the Director of the Nantucket Sewer Department and Mark Willett, the Director of the Wannacomet Water Company to review the town's existing sewer and water systems, and to discuss the town's sewer and water system needs and potential system limitations. On November 27, 2018, Weston & Sampson also met with Rob McNeil, the Director of the Department of Public Works to conduct a site walk of the project area and to discuss possible roadway configurations and potential infrastructure limitations based on the proposed redevelopment.

Based on the information collected and reviewed to date, we have developed preliminary conceptual costs for improvements to the town infrastructure directly associated with the proposed Harbor Place redevelopment. Costs are planning level only at this time, based on information available to our team at the time of this review. Our assumptions and preliminary conceptual costs are presented in this memorandum.

SEWER

Our initial review of the Harbor Place wastewater collection system consisted of analyzing existing flow metering data provided by Hazen and Sawyer and conducting field observations to confirm pipe size and invert elevations. The data collected in the field was used to analyze the capacity of the existing system and to determine if the existing collection system has adequate capacity for the additional wastewater flows that would be generated from the proposed Harbor Place redevelopment project.

The wastewater flows for the existing development in the project area are estimated as follows:

| Existing WW Flow Estimate | | | |
|----------------------------------|---------------|----------------|------------|
| Building Use | Quantity (SF) | Flow Rate | Flow (GPD) |
| Grocery | 14,000 | 97 GDP/1000 SF | 1,360 |
| Retail | 2,400 | 50 GPD/1000 SF | 120 |
| Total | | | 1,480 |

The wastewater flows for the proposed Harbor Place Redevelopment are estimated as follows:

| Scenario A WW Flow Estimate | | | |
|------------------------------------|---------------|-------------------|------------|
| Land Use | Quantity (SF) | Flow Rate | Flow (GPD) |
| Grocery | 14,000 | 97 GDP/1000 SF | 1,360 |
| Residential (2 bed) | 124 | 110 GDP / Bedroom | 13,640 |
| Residential (1 bed) | 37 | 110 GDP / Bedroom | 4,070 |
| Retail | 18,977 | 50 GPD/1000 SF | 950 |
| Restaurant | 3,348 | 35 GPD/50 SF | 2,340 |
| Total | | | 22,360 |

| Scenario B WW Flow Estimate | | | |
|------------------------------------|---------------|-------------------|------------|
| Land Use | Quantity (SF) | Flow Rate | Flow (GPD) |
| Grocery | 14,000 | 97 GDP/1000 SF | 1,360 |
| Residential (2 bed) | 52 | 110 GDP / Bedroom | 5,720 |
| Residential (1 bed) | 8 | 110 GDP / Bedroom | 880 |
| Retail | 21,590 | 50 GPD/1000 SF | 1,080 |
| Restaurant | 3,810 | 35 GPD/50 SF | 2670 |
| Total | | | 11,710 |

Based on the initial review it appears the downstream sewer interceptor system from Washington Street and South Water Street to the Sea Street Pump Station has adequate capacity for the additional wastewater flows from the planned redevelopment. The downstream sewer interceptor system is shown on Figure 1. The existing lateral sewers surrounding the proposed redevelopment in Straight Wharf, New Whale Street, Commercial Street and Salem Street, are in need of upgrading. The locations of the needed sewer upgrades are shown on Figure 2. Based on current information, approximately 1,800 feet of new 8-inch PVC sewer in these streets would be required at an approximate cost of \$1,600,000. This includes costs for construction, and an allowance for engineering and contingency. A more detailed preliminary opinion of probable cost for the sewer upgrades is provided in Appendix B.

These costs are exclusive of sewer connection or capacity fees. It is expected that such fees would be assessed separately, as such fees are related to general system costs.

WATER

Based on our initial review of the water distribution system and discussions with the Wannacomet Water Company, it appears that the proposed redevelopment will not have a significant impact on the water supply (well yield). This is based in the assumption that water use would be consistent with wastewater flows presented in the previous section. However, the existing water mains surrounding the development on Straight Wharf, New Whale Street, Commercial Street, Candle Street and Salem Street are in need of upgrading. The locations of the needed water main upgrades are shown on Figure 2. In addition, the water mains appear to be undersized for adequate fire protection. Based on current information, approximately 2,300 feet of new 10-inch DI water main in these streets would be required at an approximate cost of \$1,600,000. This includes costs for construction, and an allowance for engineering and contingency. A more detailed preliminary opinion of probable cost for the water main upgrades is provided in Appendix B.

These costs are exclusive of water connection or capacity fees. It is expected that such fees would be assessed separately, as such fees are related to general system costs.

ROADWAYS, SIDEWALKS AND DRAINAGE

Our preliminary review of the impacts to the town's roadways is based on the Proposed Site Plan prepared for New England Development dated July 17, 2018. That plan does not show the width, or lane geometry of the public roadways and sidewalks surrounding the proposed development. Our preliminary costs are based on widening the existing roadways surrounding the proposed redevelopment, including Straight Wharf, New Whale Street and Commercial Street. The road widening would be required for parking, passenger drop off and pick up, emergency vehicle passage, and tractor trailer truck access to the Stop & Shop. Our assumptions are as follows:

- Roadway lane widths for Straight Wharf and New Whale Street were assumed to be 16 feet (11-foot vehicle and 5-foot bicycle lane) with 8-foot parking lanes on both sides. The 16-foot lane width also allows for emergency vehicle passage and tractor trailer truck access to the existing Stop & Shop based on the proposed internal roadway layout.
- Roadway lane width along Commercial Street was assumed to be 16 feet (11-foot vehicle and 5-foot bicycle lane) while maintaining the existing angled parking along the businesses on the south side of the street. The 16-foot lane width also allows for emergency vehicle passage and tractor trailer truck access to the existing Stop & Shop based on the proposed internal roadway layout.
- Roadway surfaces will be replaced with cobblestones or Belgian Block surface.
- The existing sidewalk along the north side of Straight Wharf to be extended 2 feet to allow for grading adjustments to the roadway, and a new 6-foot wide sidewalk to be located along the south side of Straight Wharf.
- New 6-foot wide sidewalks along both sides of New Whale Street to tie into the existing Harbor Walkway at the wharf.
- New 6-foot wide sidewalk along the north side of Commercial Street.
- All sidewalks to be constructed using new red brick and new straight granite curb.

- New catch basins would be installed located on both sides of the streets approximately every 100 feet using 12-inch pipe. Additional cost for stormwater treatment systems (e.g. vortex separator units) to treat the stormwater before discharge to the harbor.
- Modifications to the existing island and memorial at the intersection of Candle St and Washington St has been assumed to allow for better traffic flow from the proposed development.

The locations of the roadway, sidewalk and drainage improvements are shown on Figure 3. The anticipated cost for the roadway, sidewalk and drainage improvements, including and allowance for engineering and contingency is approximately \$5,800,000. More detailed preliminary opinions of probable cost for the roadway, sidewalk and drainage improvements are provided in Appendix B. The drainage/stormwater costs included here are exclusive of stormwater management costs for the work on the developer's site. Those costs would be borne solely by the developer.

The estimated costs are exclusive of roadway, stormwater or general impact fees.

HAZARDOUS WASTE

Based on discussions, it is our understanding that there is concern for encountering hazardous materials during the excavation and dewatering that would be required to construct the infrastructure improvements. As the limits and types of contamination are unknown, our conceptual estimates do not include costs for hazardous material testing, treatment, or removal during construction. The town should consider these potential cost impacts, and how such costs will be addressed, in any discussions with the developer.

CONCLUSION

Based on our preliminary review of the existing infrastructure relative to the Harbor Place redevelopment, our initial opinion on the improvements needed include upgrading the lateral sewers and water mains surrounding the proposed redevelopment. The improvements include approximately 1,800 feet of new 8-inch PVC sewer and approximately 2,300-feet of new 10-inch DI watermain. Upgrades to the roadway and drainage include widening the existing roadways surrounding the proposed redevelopment, installation of new sidewalks, installation of new catch basins located on both sides of the street approximately every 100 feet using 12-inch pipe, stormwater treatment systems (e.g. vortex separator units) to treat the stormwater before discharge to the harbor and modifications to the existing island and memorial at the intersection of Candle St and Washington St.

The table below summarizes our preliminary opinion on the conceptual costs for each infrastructure category.

| Infrastructure Category | Preliminary Cost |
|----------------------------|---------------------|
| Sewer | ~ \$1,600,00 |
| Water | ~ \$1,600,00 |
| Roadway/Sidewalks/Drainage | ~ \$5,800,000 |
| TOTAL UTILITY | ~\$9,000,000 |

SUPPORTING DOCUMENTS

The following supporting documents are attached for reference:

- Figure 1 – Existing Sewer and Water Main Systems
- Figure 2 - Sewer and Water Main Upgrades
- Figure 3 - Roadway and Drainage Improvements
- Appendix A - Alternative redevelopment plans for Harbor Place
- Appendix B - Sewer and Water Main Preliminary Opinion of Probable Cost
- Appendix B – Roadway, Sidewalk and Drainage Preliminary Opinion of Probable Cost

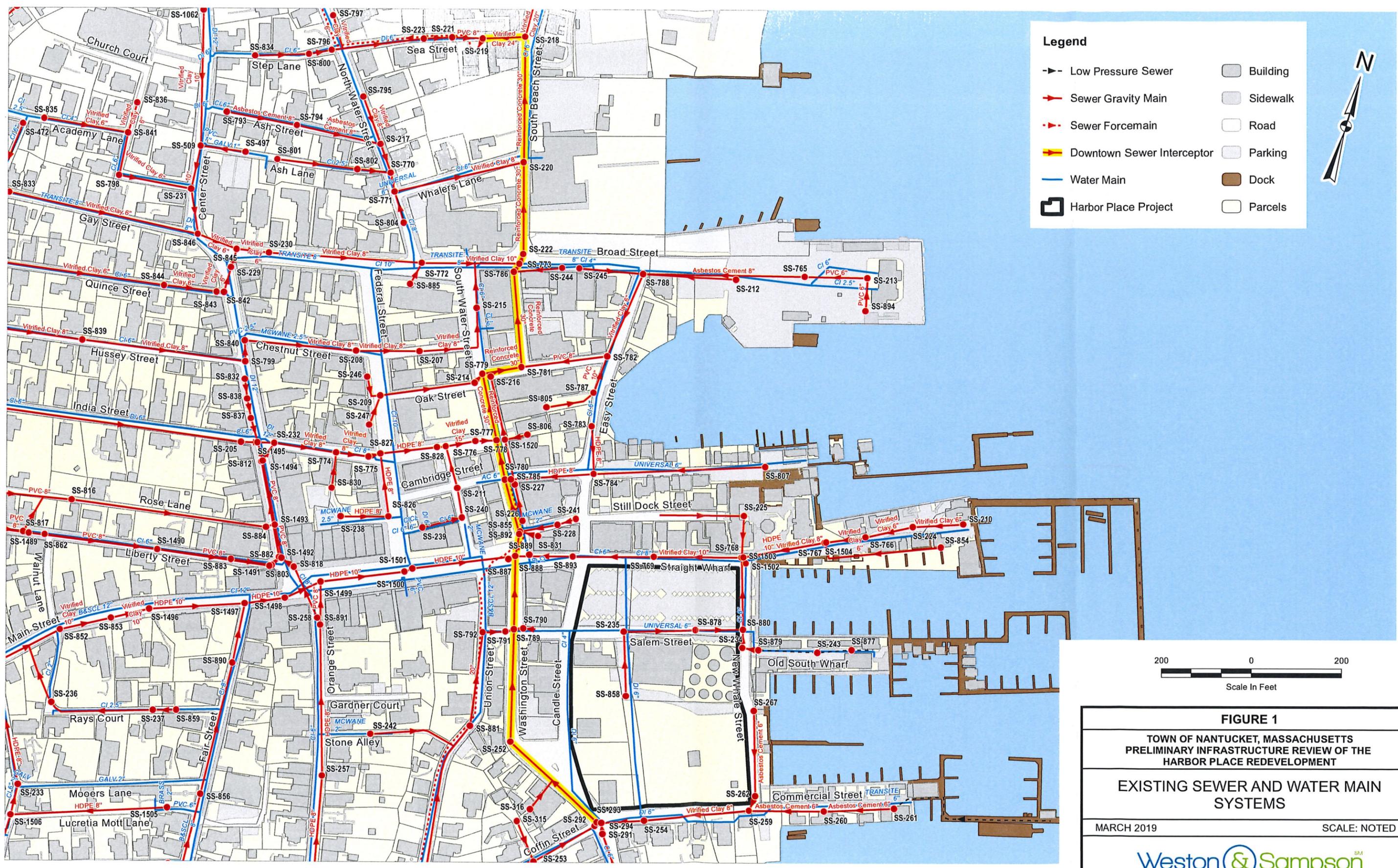
ADDITIONAL CONSIDERATIONS

While it is understood that parking in the harbor area is at a premium, the Town may want to consider limiting access to New Whale Street beyond Salem Street and along Straight Wharf to drop off and pick up only with parking on only one side of the street limited to 15-20 minutes only for those picking people up from the ferry. With the high amount of pedestrian traffic in this area, this limitation would help reduce vehicle-pedestrian conflicts. While the plan does call for a sidewalk around the outside of the development parcel, additional sidewalks should be considered internal to the development along the access roadways and between the development lots to promote pedestrian activity. Additional provisions should be made for bicycle and scooter storage at strategic points within the site to promote their usage. These concepts will help promote the Town's goals of future modal shifts away from vehicle dependency and should be a consideration discussed with the developer now as it would be difficult to incorporate in the future after the development is in place. It should be noted that the new parking area is 700 feet from the wharf area, which is about a 4-minute walk for the average person.

It appears that with the removal of the two parking aisles between Salem Street and Straight Wharf there is the loss of approximately 104 parking spaces. The proposed surface parking lot under phase 1 only proposes constructing 82 spaces. Therefore, there is a shortage of approximately 22 vehicles immediately without considering the additional parking requirements of the new development areas (60,605 sf). The Town should consider requiring the additional parking spaces be provided under Phase 1 and not wait for future phases.

The use of wayfinding signing for pedestrians and vehicles both outside and internal to the site would be helpful to guide patrons and may help alleviate some lost or misguided trips around the development which in turn reduces the traffic load and pedestrian-vehicle interactions, thus increasing safety.

FIGURES



Legend

- Low Pressure Sewer
- Sewer Gravity Main
- Sewer Forcemain
- Downtown Sewer Interceptor
- Water Main
- Harbor Place Project
- Building
- Sidewalk
- Road
- Parking
- Dock
- Parcels

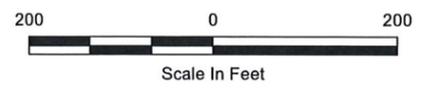
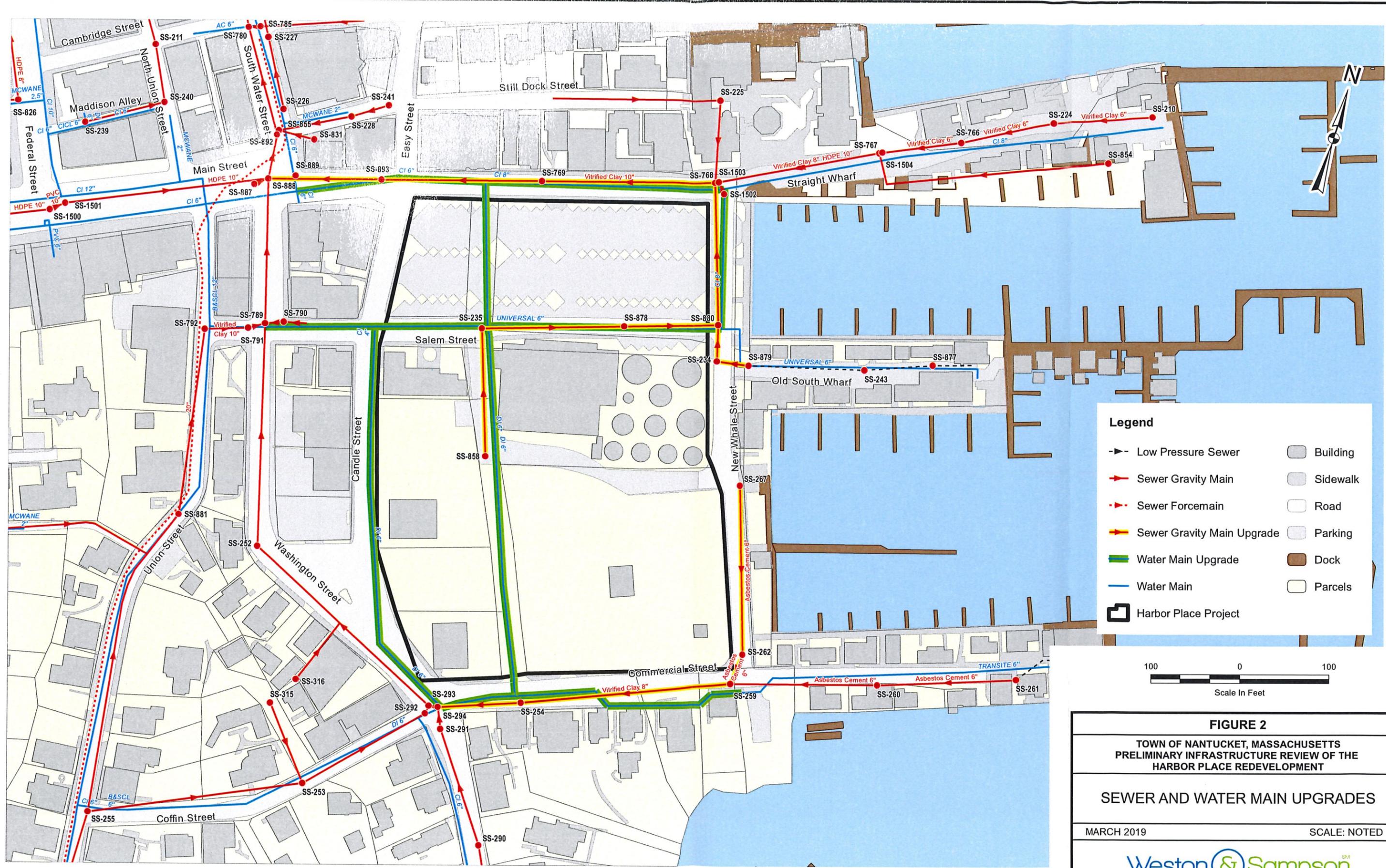


FIGURE 1

TOWN OF NANTUCKET, MASSACHUSETTS
 PRELIMINARY INFRASTRUCTURE REVIEW OF THE
 HARBOR PLACE REDEVELOPMENT

EXISTING SEWER AND WATER MAIN SYSTEMS

MARCH 2019 SCALE: NOTED



Legend

| | | | |
|-------|----------------------------|---|----------|
| - - - | Low Pressure Sewer | ▭ | Building |
| → | Sewer Gravity Main | ▭ | Sidewalk |
| → | Sewer Forcemain | ▭ | Road |
| → | Sewer Gravity Main Upgrade | ▭ | Parking |
| → | Water Main Upgrade | ▭ | Dock |
| → | Water Main | ▭ | Parcels |
| ▭ | Harbor Place Project | | |

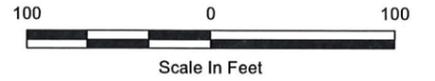
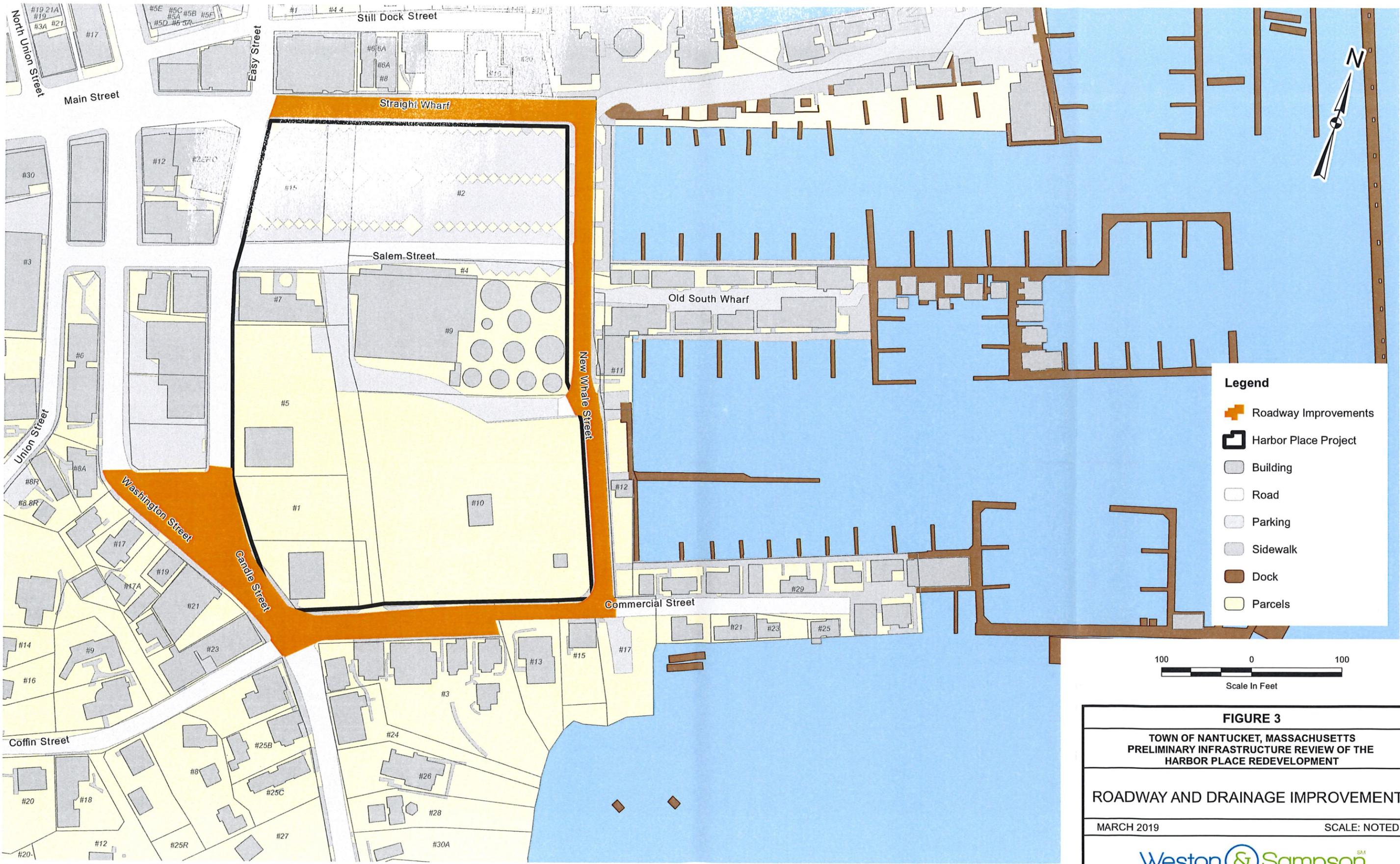


FIGURE 2
 TOWN OF NANTUCKET, MASSACHUSETTS
 PRELIMINARY INFRASTRUCTURE REVIEW OF THE
 HARBOR PLACE REDEVELOPMENT

SEWER AND WATER MAIN UPGRADES

MARCH 2019 SCALE: NOTED

Weston & SampsonSM



Legend

- Roadway Improvements
- Harbor Place Project
- Building
- Road
- Parking
- Sidewalk
- Dock
- Parcels

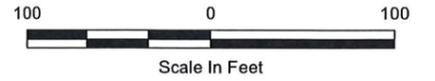


FIGURE 3
 TOWN OF NANTUCKET, MASSACHUSETTS
 PRELIMINARY INFRASTRUCTURE REVIEW OF THE
 HARBOR PLACE REDEVELOPMENT

ROADWAY AND DRAINAGE IMPROVEMENTS

MARCH 2019 SCALE: NOTED

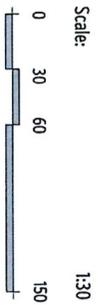
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APPENDIX A

Step 1:
Land agreement for zoning and support for increased density



NEW ENGLAND DEVELOPMENT
75 Park Plaza • Boston, Massachusetts 02116
617.955.8700 • NEDdevelopment.com



July 17, 2018

This plan is provided for illustrative purposes only and shall not be deemed to be a warranty, representation or agreement by Landlord that the Center, Common Areas, buildings and/or services will be as illustrated on this plan, or that tenants which may be referenced on this plan will be at any time be occupants of the Center. Landlord reserves the right to modify size, configuration and occupants of the Center at any time.

Proposed Site Plan
Tank Farm
Nantucket, MA



Washington St.

Easy St.

Washington St.

Pedestrian access
best utilized on
Candle/Corner of
S&S

Garage Access
both IN and OUT
on Candle St.

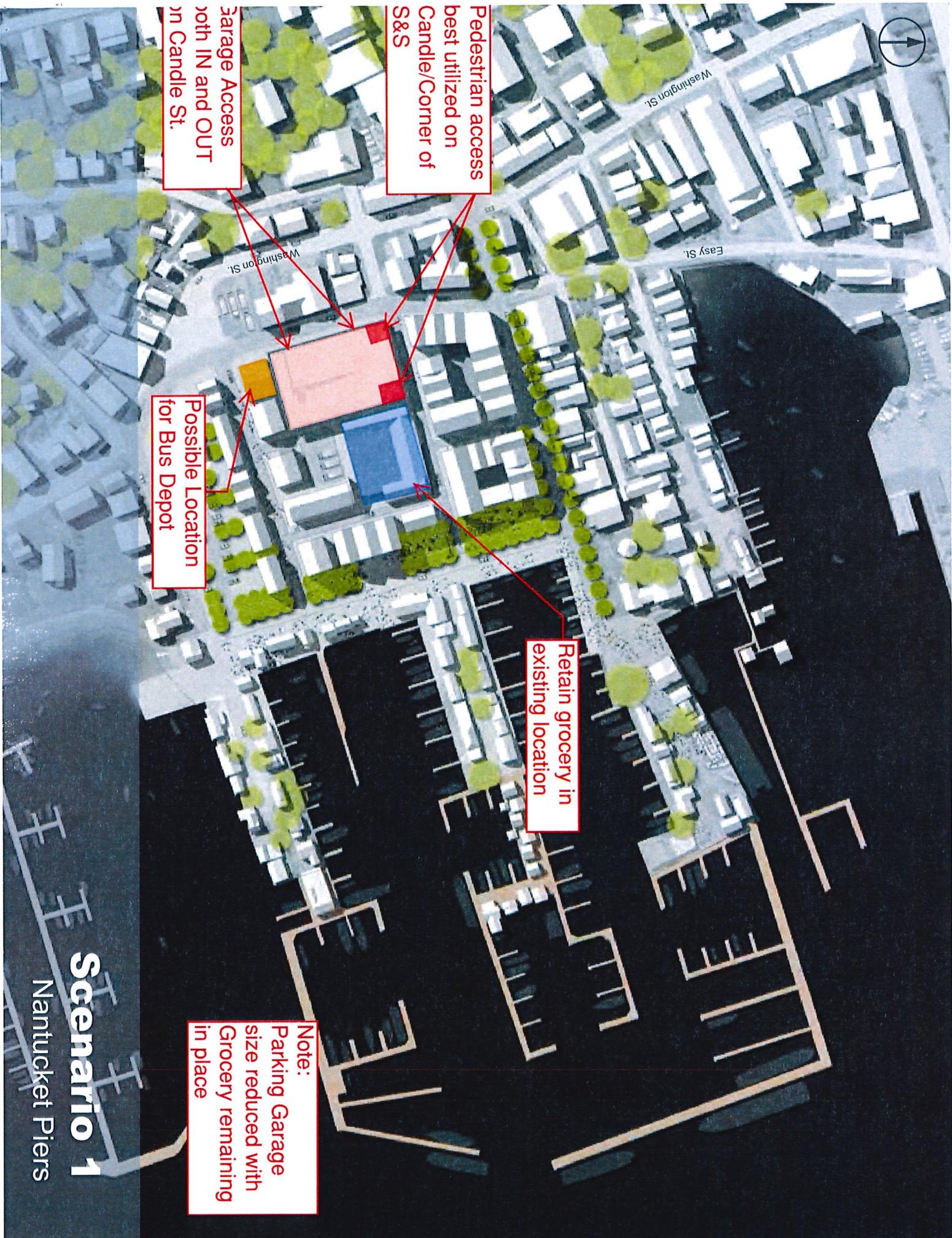
Possible Location
for Bus Depot

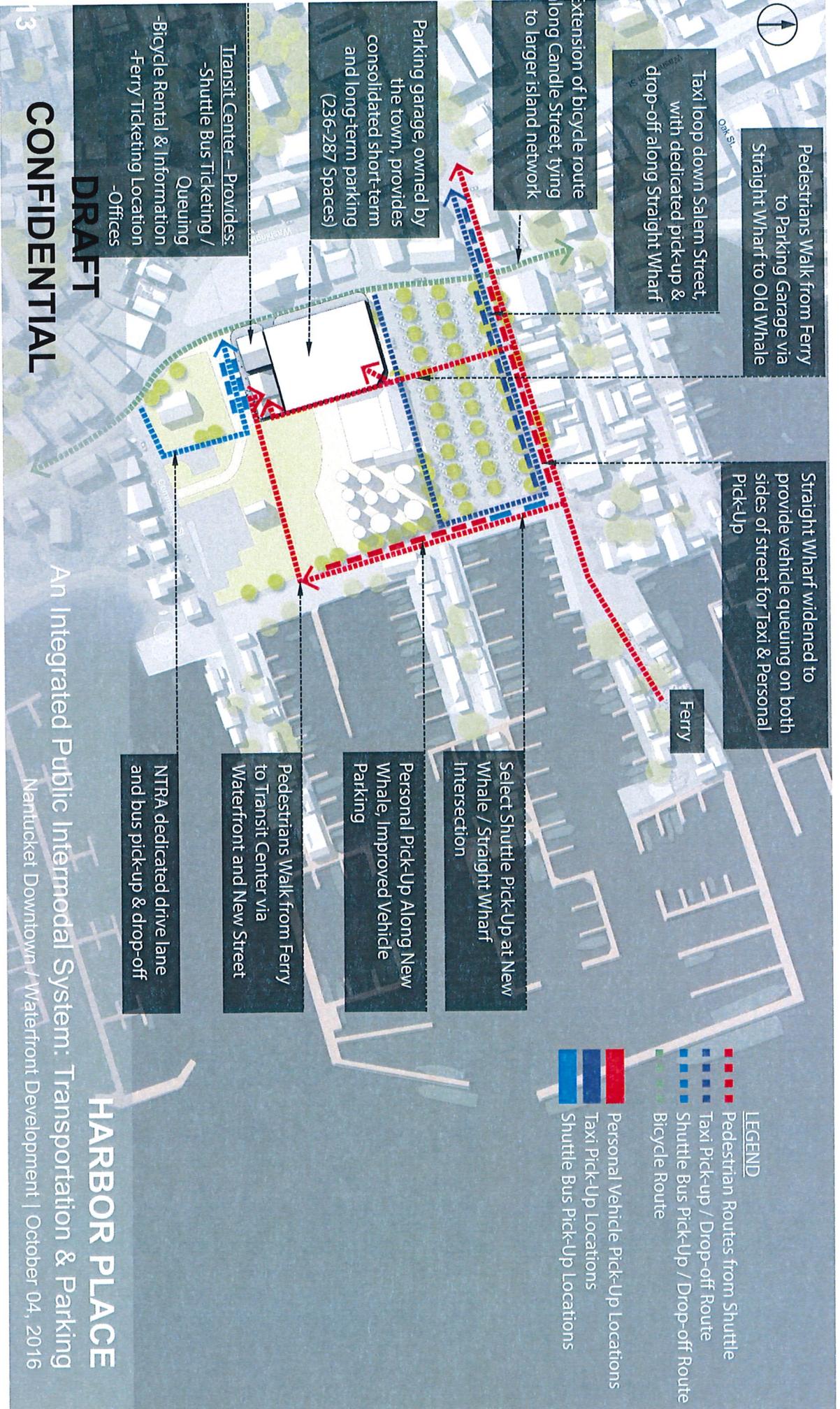
Retain grocery in
existing location

Note:
Parking Garage
size reduced with
Grocery remaining
in place

Scenario 1

Nantucket Piers





Pedestrians Walk from Ferry to Parking Garage via Straight Wharf to Old Whale

Taxi loop down Salem Street, with dedicated pick-up & drop-off along Straight Wharf

extension of bicycle route along Candle Street, tying to larger island network

Parking garage, owned by the town, provides consolidated short-term and long-term parking (236-287 Spaces)

Straight Wharf widened to provide vehicle queuing on both sides of street for Taxi & Personal Pick-Up

Ferry

Select Shuttle Pick-Up at New Whale / Straight Wharf Intersection

Personal Pick-Up Along New Whale, Improved Vehicle Parking

Pedestrians Walk from Ferry to Transit Center via Waterfront and New Street

NTRA dedicated drive lane and bus pick-up & drop-off

Transit Center – Provides:
 -Shuttle Bus Ticketing / Queuing
 -Bicycle Rental & Information
 -Ferry Ticketing Location
 -Offices

DRAFT

CONFIDENTIAL

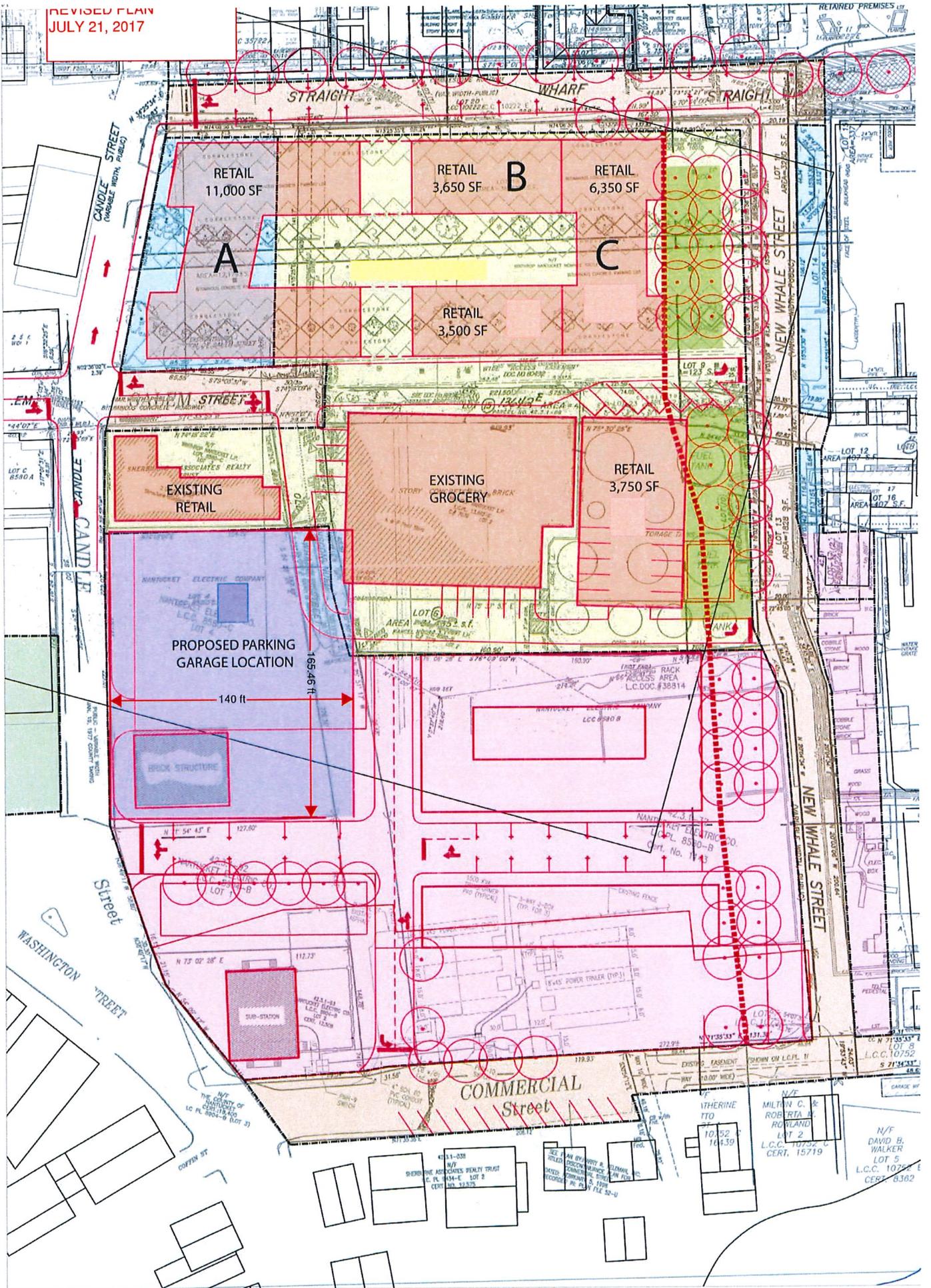
- LEGEND**
- Pedestrian Routes from Shuttle
 - Taxi Pick-up / Drop-off Route
 - Shuttle Bus Pick-Up / Drop-off Route
 - Bicycle Route

- Personal Vehicle Pick-Up Locations
- Taxi Pick-Up Locations
- Shuttle Bus Pick-Up Locations

HARBOR PLACE

An Integrated Public Intermodal System: Transportation & Parking
 Nantucket Downtown / Waterfront Development | October 04, 2016

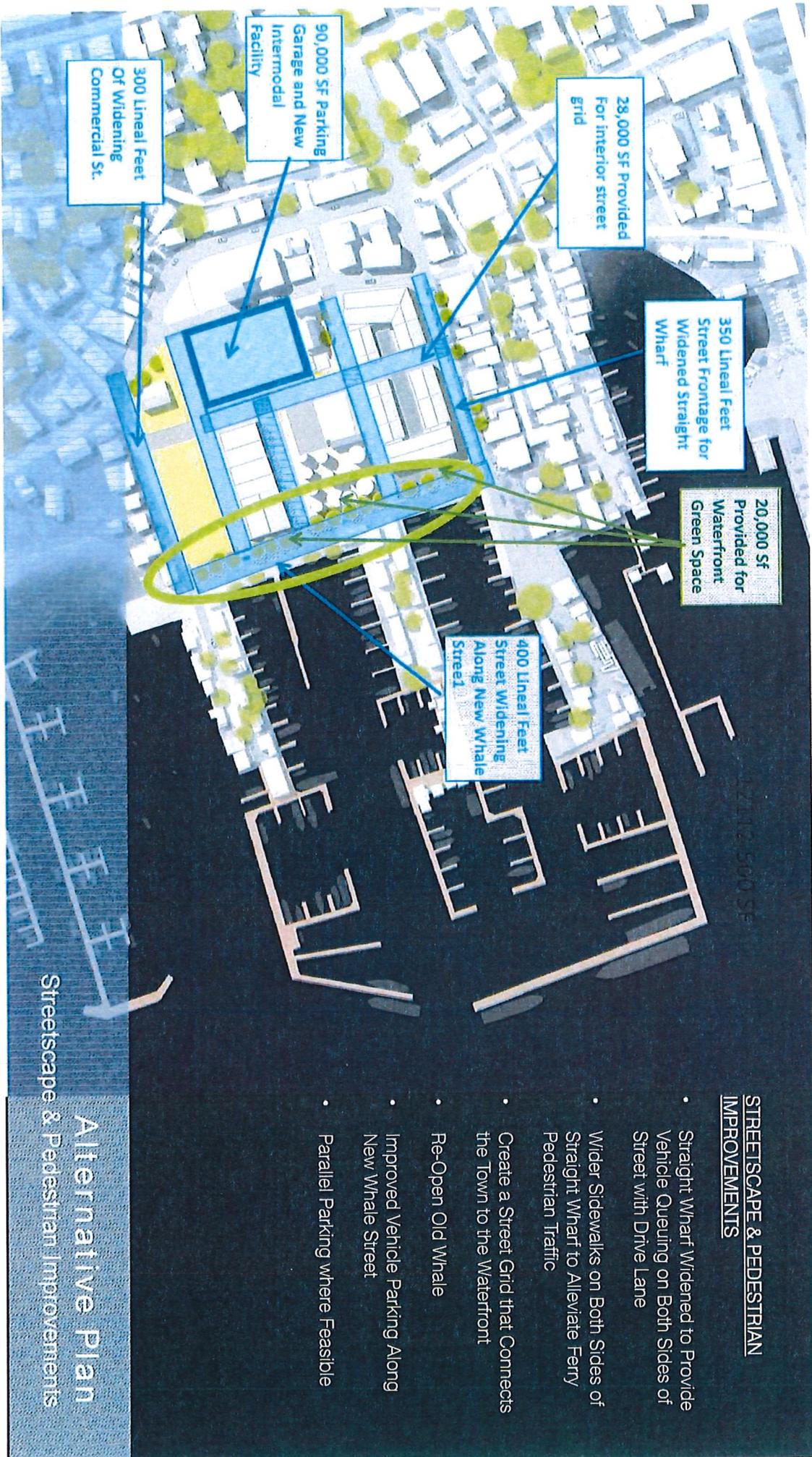
REVISED PLAN
JULY 21, 2017



HARBOR PLACE SURVEY PDF BASE

Scale: 1"=50'

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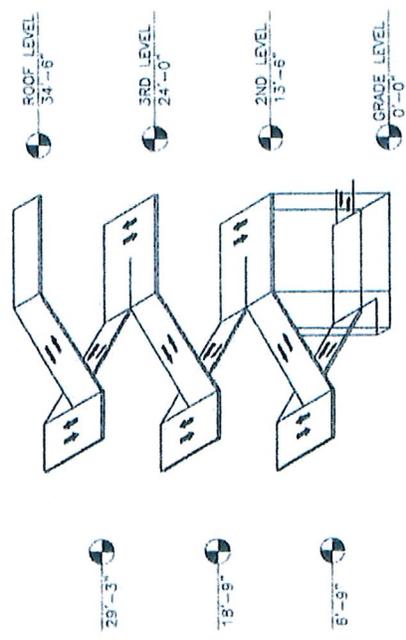
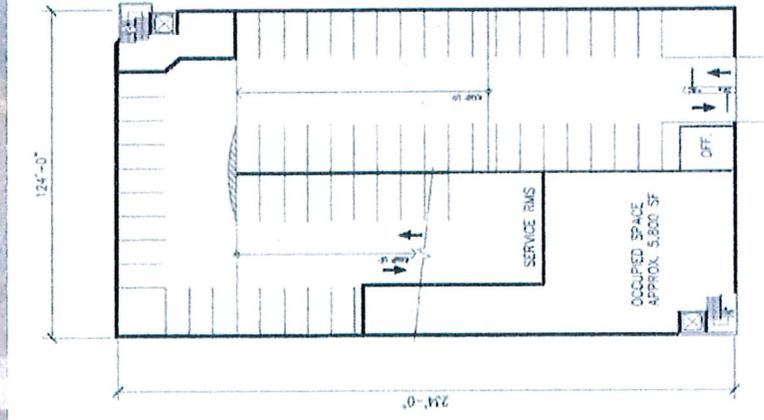
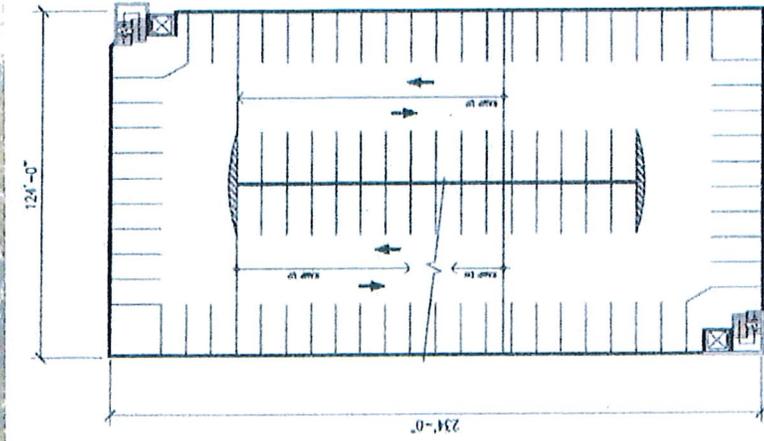


STREETSCAPE & PEDESTRIAN IMPROVEMENTS

- Straight Wharf Widened to Provide Vehicle Queuing on Both Sides of Street with Drive Lane
- Wider Sidewalks on Both Sides of Straight Wharf to Alleviate Ferry Pedestrian Traffic
- Create a Street Grid that Connects the Town to the Waterfront
- Re-Open Old Whale
- Improved Vehicle Parking Along New Whale Street
- Parallel Parking where Feasible

**Alternative Plan
Streetscape & Pedestrian Improvements**

Option A – Basic Layout



Garage - Option A

| | Cars | Area | Eff. | Elev above entry |
|--------------|------------|---------------|--------------|------------------|
| Grade | 48 | 17,571 | 366.1 | 0'-0" |
| Second | 92 | 29,371 | 319.3 | 13'-6" |
| Third | 92 | 29,371 | 319.3 | 24'-0" |
| Roof | 38 | 11,828 | 311.3 | 34'-6" |
| Occupied | | 5,800 | | 0'-0" |
| Total | 270 | 88,141 | 326.4 | |

ROOF LEVEL 34'-6"
 3RD LEVEL 24'-0"
 2ND LEVEL 13'-6"
 GRADE LEVEL 0'-0"
 29'-3"
 18'-9"
 8'-9"

Option A – Cost Estimate

1. Inflated costs associated with line items 1, 2, 3, 4, 6, 13 & 17
2. Added lines 18, 19 & 20

PROJECT BUDGET - OPTION A

Garage Statistics

| | | | |
|-----------|-----------------|-----------------|-----------------|
| Spaces: | 270 spaces | Supported Slab: | 70,570 Sq. Feet |
| Exterior: | 25,747 Sq. Feet | Slab-On-Grade: | 17,571 Sq. Feet |
| | | Core & Shell: | 5,800 Sq. Feet |
| | | Total: | 93,941 Sq. Feet |

| Code | Line Item | Cost/ Square Foot | Square Footage | Total Est. Cost |
|---|--|-------------------|----------------|-------------------------|
| 1 | General Conditions & Mobilization ¹ | \$ 5.00 /S.F. | 93,941 S.F. | \$ 469,705.00 |
| 2 | Site Improvements ² | \$ 12.00 /S.F. | 93,941 S.F. | \$ 1,127,292.00 |
| 3 | Excavation ³ | \$ 8.00 /S.F. | 93,941 S.F. | \$ 751,528.00 |
| 4 | Foundation ⁴ | \$ 12.00 /S.F. | 93,941 S.F. | \$ 1,127,292.00 |
| 5 | Precast Structure ⁵ | \$ 40.00 /S.F. | 70,570 S.F. | \$ 2,822,800.00 |
| 6 | Slab on Grade & CIP Structure Fill ⁵ | \$ 14.00 /S.F. | 17,571 S.F. | \$ 245,994.00 |
| 7 | Stairs ⁵ | \$ 0.25 /S.F. | 93,941 S.F. | \$ 23,485.25 |
| 8 | Block, Rough Carpentry, WP, Roof ⁵ | \$ 0.40 /S.F. | 93,941 S.F. | \$ 37,576.40 |
| 9 | Glass, HM HW, Misc. Metals ⁵ | \$ 5.00 /S.F. | 93,941 S.F. | \$ 469,705.00 |
| 10 | Mechanical/Plumbing ⁷ | \$ 8.00 /S.F. | 93,941 S.F. | \$ 751,528.00 |
| 11 | Electrical ⁵ | \$ 6.00 /S.F. | 93,941 S.F. | \$ 563,646.00 |
| 12 | Misc. Grills & Screens ⁵ | \$ 1.75 /S.F. | 93,941 S.F. | \$ 164,396.75 |
| 13 | Paint/Graphics/Striping ⁵ | \$ 1.00 /S.F. | 93,941 S.F. | \$ 93,941.00 |
| 14 | Elevators (2) ⁵ | \$ 2.60 /S.F. | 93,941 S.F. | \$ 244,246.60 |
| 15 | Caulk Joints and Sealer ⁵ | \$ 1.50 /S.F. | 93,941 S.F. | \$ 140,911.50 |
| 16 | Auxiliary Area General Construction ⁵ | \$ 150.00 /S.F. | 5,800 S.F. | \$ 870,000.00 |
| 17 | PARCS/APGS Equipment ¹⁰ | \$ 3.50 /S.F. | 93,941 S.F. | \$ 328,793.50 |
| 18 | Auxiliary Area Fit Out & Finishes ¹¹ | \$ 10.00 /S.F. | 5,800 S.F. | \$ 58,000.00 |
| 19 | Architectural Façade ¹² | \$ 35.00 /S.F. | 25,747 S.F. | \$ 901,145.00 |
| 20 | Aesthetic Allowances ¹³ | \$ 6.00 /S.F. | 93,941 S.F. | \$ 563,646.00 |
| SubTotal Hard (Construction) Costs | | | | \$ 11,755,632.00 |
| Construction Contingency (10%) ⁵ | | | | \$ 1,175,563.20 |
| Local Cost Inflation Factor (35%) ¹⁴ | | | | \$ 4,525,918.32 |
| Soft Costs (25%) Allocation ^{5,15} | | | | \$ 4,364,278.38 |
| GRAND TOTAL: | | | | \$ 21,821,391.90 |
| Est. Cost/Space: | | | | \$ 80,819.97 |

APPENDIX B

SEWER & WATER MAIN CONCEPTUAL COSTS

| ITEM | QUANTITY | | | DESCRIPTION | UNIT PRICE | TOTAL AMOUNT |
|----------|----------|-------|--|--|--------------|--------------|
| 1 | | | | SEWERS COMPLETE IN PLACE | | |
| 1a | 1800 | LF | | 8-inch PVC sewers, 0-12 ft. deep, per L.F. | \$450.00 | \$810,000 |
| 1b | 1800 | LF | | Temporary pavement, 2" thick, trench width, per L.F. | \$100.00 | \$180,000 |
| 1c | 1 | LS | | Normal dewatering, lump sum | \$100,000.00 | \$100,000 |
| 1d | 600 | Hours | | Police Details, per hour | \$50.00 | \$30,000 |
| 1e | 1 | LS | | Mobilization, lump sum (5%) | | \$56,000 |
| | | | | Subtotal | | \$1,176,000 |
| | | | | Engineering and Contingency (35%) | | \$412,000 |
| | | | | Subtotal | | \$1,588,000 |
| 2 | | | | WATER MAINS, COMPLETE IN PLACE | | |
| 2a | 2300 | | | 10-inch DI water main, 0-12 ft. deep, per L.F. | \$250.00 | \$575,000 |
| 2b | 2300 | LF | | Temporary pavement, 2" thick, trench width, per L.F. | \$100.00 | \$230,000 |
| 2c | 1000 | LF | | Overlay paving on Candle & Salem | \$200.00 | \$200,000 |
| 2d | 1 | LS | | Normal dewatering, lump sum | \$100,000.00 | \$100,000 |
| 2e | 800 | Hours | | Police Details, per hour | \$50.00 | \$40,000 |
| 2f | 1 | LS | | Mobilization, lump sum (5%) | | \$57,250 |
| | | | | Subtotal | | \$1,202,000 |
| | | | | Engineering and Contingency (35%) | | \$420,800 |
| | | | | Subtotal | | \$1,622,800 |
| | | | | Total Sewer and Water | | \$3,210,800 |

ROADWAY & DRAINAGE CONCEPTUAL COSTS

Conceptual Cost Estimate of Roadway and Sidewalk Cost for Public Roadways Associated with Harbor Place

Based on Proposed Site Plan prepared for New England Development dated July, 17,
2018

| Roadway Description | Cost |
|--|--------------------|
| Straight Wharf | \$1,900,000 |
| New Whale Street | \$1,970,000 |
| Commercial Street (incl Parking Spaces) | \$980,000 |
| Candle Street & Washington Street Intersection | \$150,000 |
| | <hr/> |
| Subtotal | \$5,000,000 |
| Engineering (16%) | \$800,000 |
| TOTAL | \$5,800,000 |

