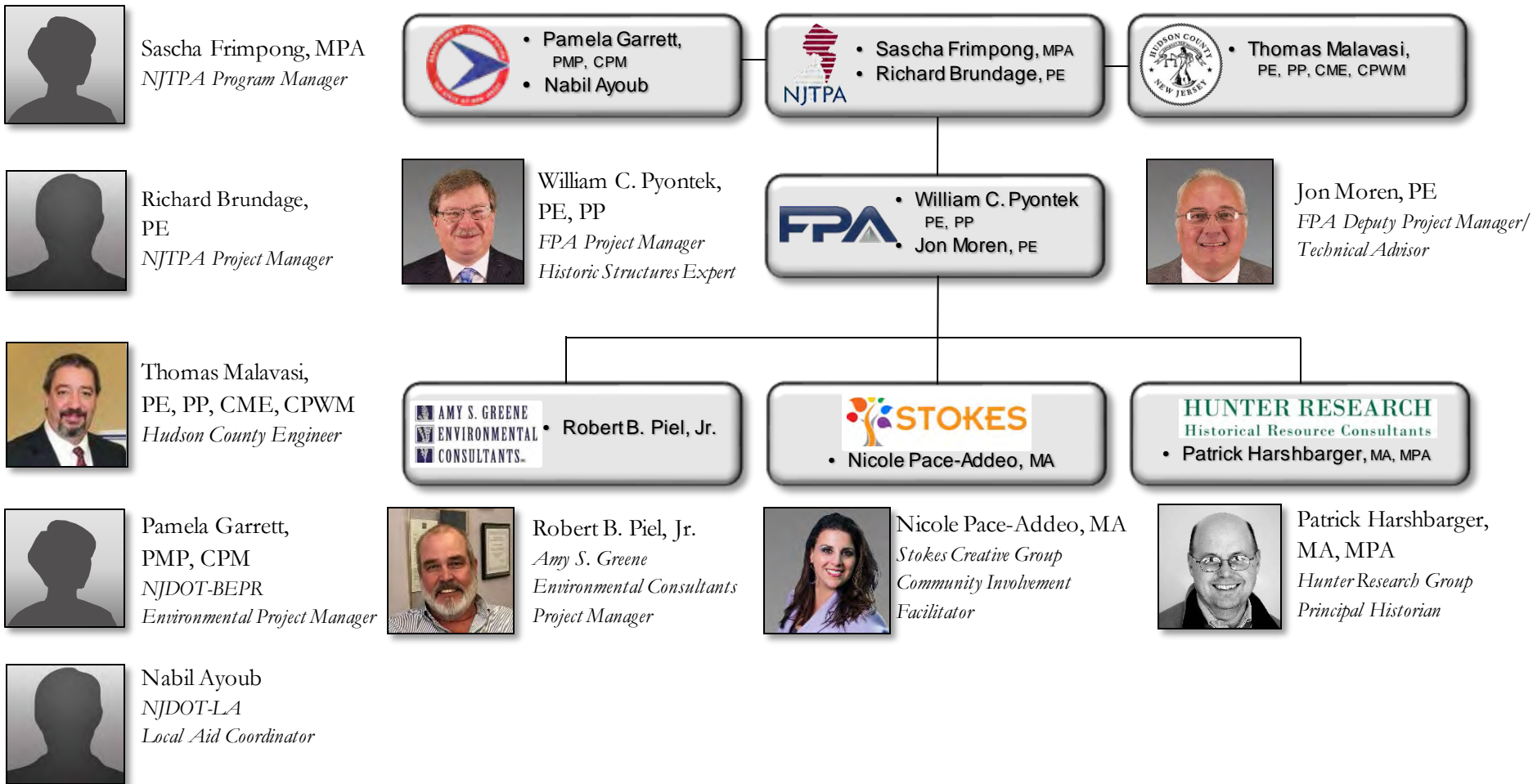


# NJTPA - Local Concept Development Study Retaining Wall and Slope Stabilization Improvements Along Manhattan Avenue Union City, Hudson County, NJ

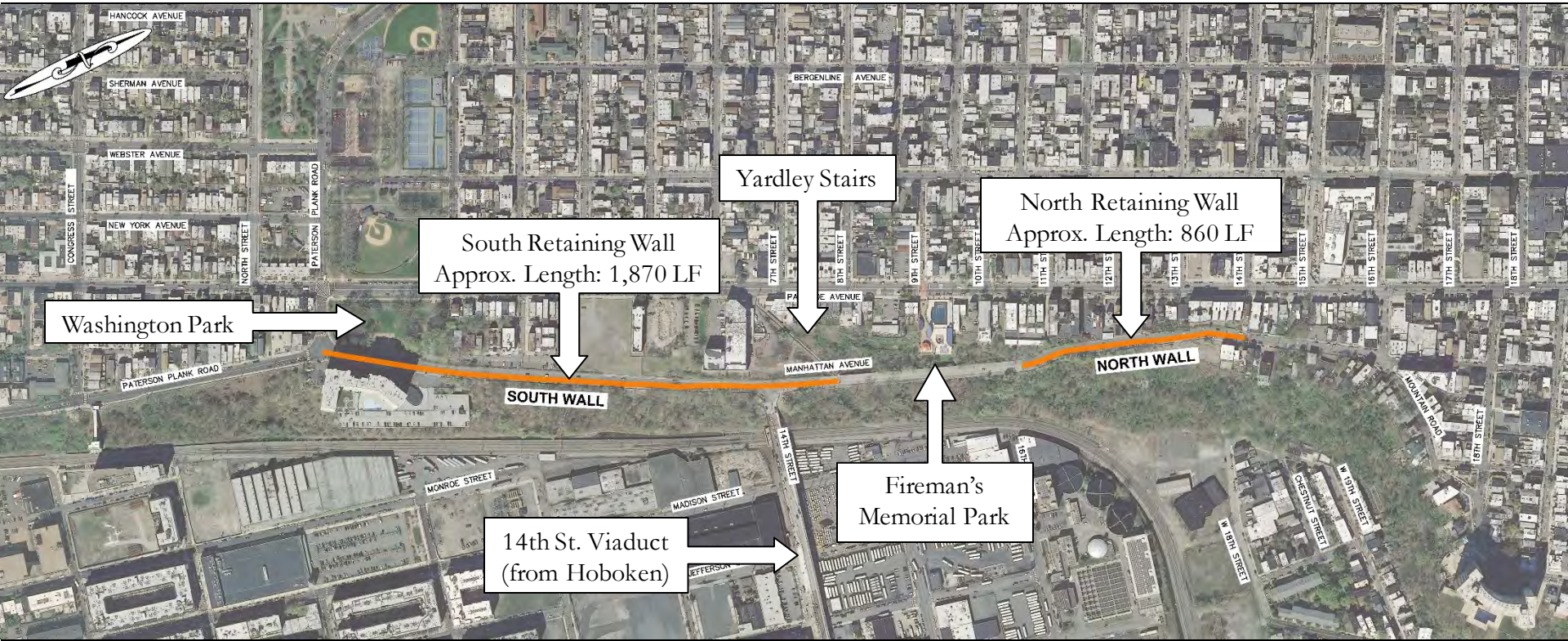


**Public Information Center (PIC) Meeting #2**  
**Monday, March 25, 2019**

# Project Team Organization Chart



# Site Location Map

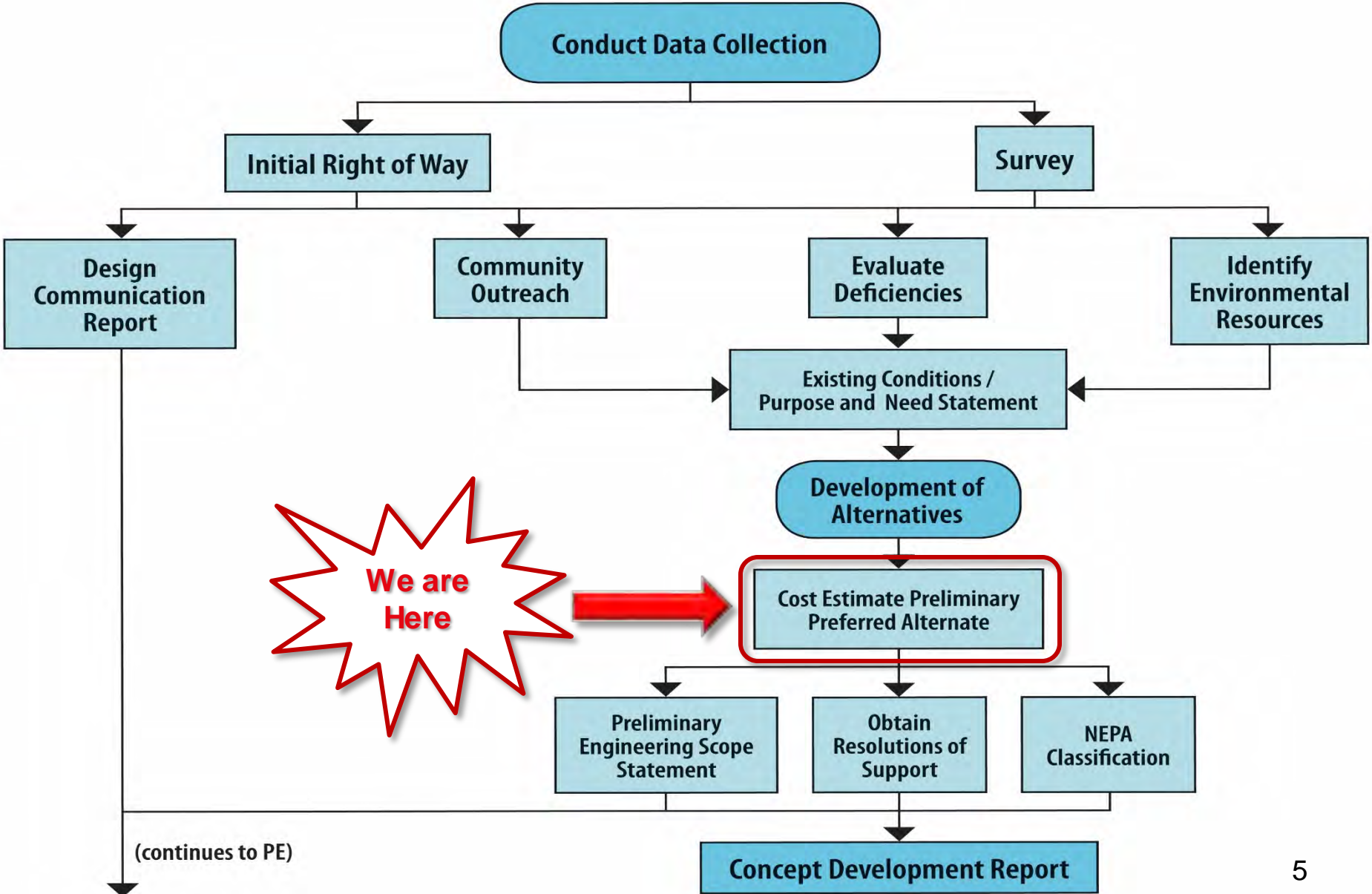


- The Manhattan Avenue Retaining Walls were built between 1912 and 1914.
- The walls were constructed to protect Manhattan Avenue and stabilize the Palisades Cliffs and range to a height of up to 42 feet.

# The Local Capital Delivery Process

Local Concept Development	Local Preliminary Engineering	Final Design/Right of Way Acquisition	Construction
Data Collection	Approved Design Exception Report	Construction Contract Documents and PS&E package	Completed Construction
Purpose and Need Statement	Cost Estimates (Final Design, ROW and Construction)	Environmental Reevaluations	Continue Public Outreach
Selection of Preliminary Preferred Alternative	Approved Environmental Document	Secure Environmental Permits	As-Builts
Environmental Screening Report & NEPA Classification	Preliminary Design	Acquisition on ROW	Update and Finalize Design Communications Report
Concept Development Report	Preliminary Engineering Report	Continue Public Outreach & Involvement	Close-out Documentation
Initiate Public Outreach & Involvement	Continue Public Outreach & Involvement		

# Local Concept Development Phase



# Community Outreach Meetings

## Completed

- Local Officials Meeting #1: **April 17, 2018**
- Public Information Center Meeting #1: **April 25, 2018**
- Stakeholders Meeting #1: **July 18, 2018**
- Technical Assistance Meeting with SHPO: **October 11, 2018**



## Upcoming

- Local Officials Meeting #2: **March 18, 2019**
- Stakeholders Meeting #2: **March 18, 2019**
- Public Information Center Meeting #2: **March 25, 2019**



# Evaluation of Wall Deficiencies

- FPA conducted a detailed inspection of the Manhattan Avenue Retaining Walls.
  - The Overall Condition of Both Walls is POOR
    - North Wall is in worse condition
  - Vertical Cracks, Missing Mortar, and Loose Stones
  - Inadequate Drainage, Clogged Weepholes
  - Large Hollow Sounding Areas



# Interim Wall Repairs

- FPA recommended interim repairs to stabilize the wall.
  - Clean out all weep holes to ensure proper drainage.
  - Repair areas having bulging and missing stones.
  - Repair areas of unsound stone masonry.
  - Continuous monitoring of the wall.
  - Regular tree trimming.
- Hudson County has issued a solicitation for professional engineering services to develop this interim maintenance program.

**FPA**  
FRENCH & PARRELLO  
ASSOCIATES

Advancing our client's vision  
IMPROVING OUR WORLD

EXISTING CONDITIONS REPORT  
FY 2017 HUDSON COUNTY LOCAL  
CONCEPT DEVELOPMENT STUDY  
CONTRACT "B" RETAINING WALL AND  
SLOPE STABILIZATION  
IMPROVEMENTS ALONG  
MANHATTAN AVENUE

Submitted to:

NORTH JERSEY  
TRANSPORTATION  
PLANNING AUTHORITY  
One Newark Center  
17<sup>th</sup> Floor  
Newark, NJ 07102

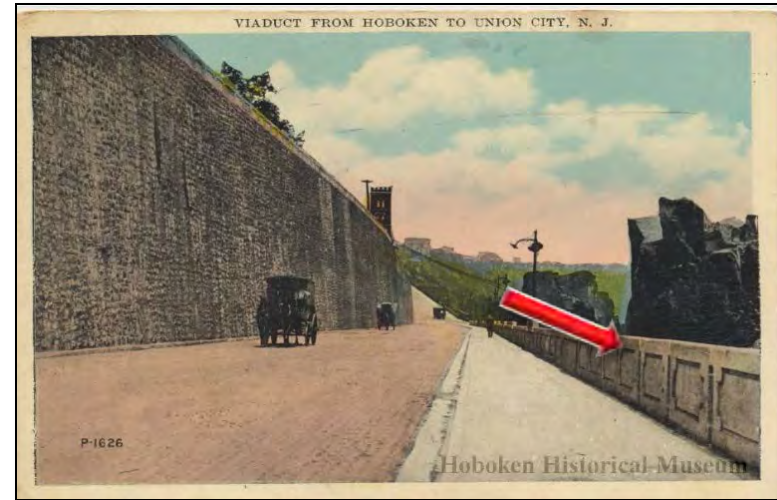
12/7/2018  
FPA No. 12277.001

1800 Route 34, Suite 101 • Wall, NJ • 07719 • T 732.312.9800 • F 732.312.9801  
Camden, NJ • Hackettstown, NJ • New York, NY  
fpaengineers.com



# Historic Eligibility

- Cultural Resources Report complete.
- Informal Technical Assistance Meeting with SHPO.
- SHPO advised;
  - The walls are expected to be eligible for National Register of Historic Places (NRHP).
  - Manhattan Avenue Roadway with original parapets on top of the wall and along east side of roadway are expected to be historic.



Manhattan Avenue Retaining Wall, Circa 1915 - 1930

# Purpose and Need Statement

## Purpose:

- To rehabilitate or reconstruct the Manhattan Avenue Retaining Walls to improve public safety.

## Need:

- **Modern Wall Design** – The stone masonry walls are approaching the end of their useful lives.
- **Reduced Maintenance** – Numerous resources have been invested to inspect, maintain, and repair the walls. Within the last 30 years alone, there have been at least three (3) major rehabilitation projects and other smaller-scale maintenance projects that were implemented.
- **Drainage Improvements** – Most of the weep holes appear to be clogged and not functioning.
- **Safe & Reliable Wall** – A 185-foot-long by 40-foot-high segment of the South Wall collapsed in April 2007, during a major Nor'easter.



# Purpose and Need Statement (cont.)

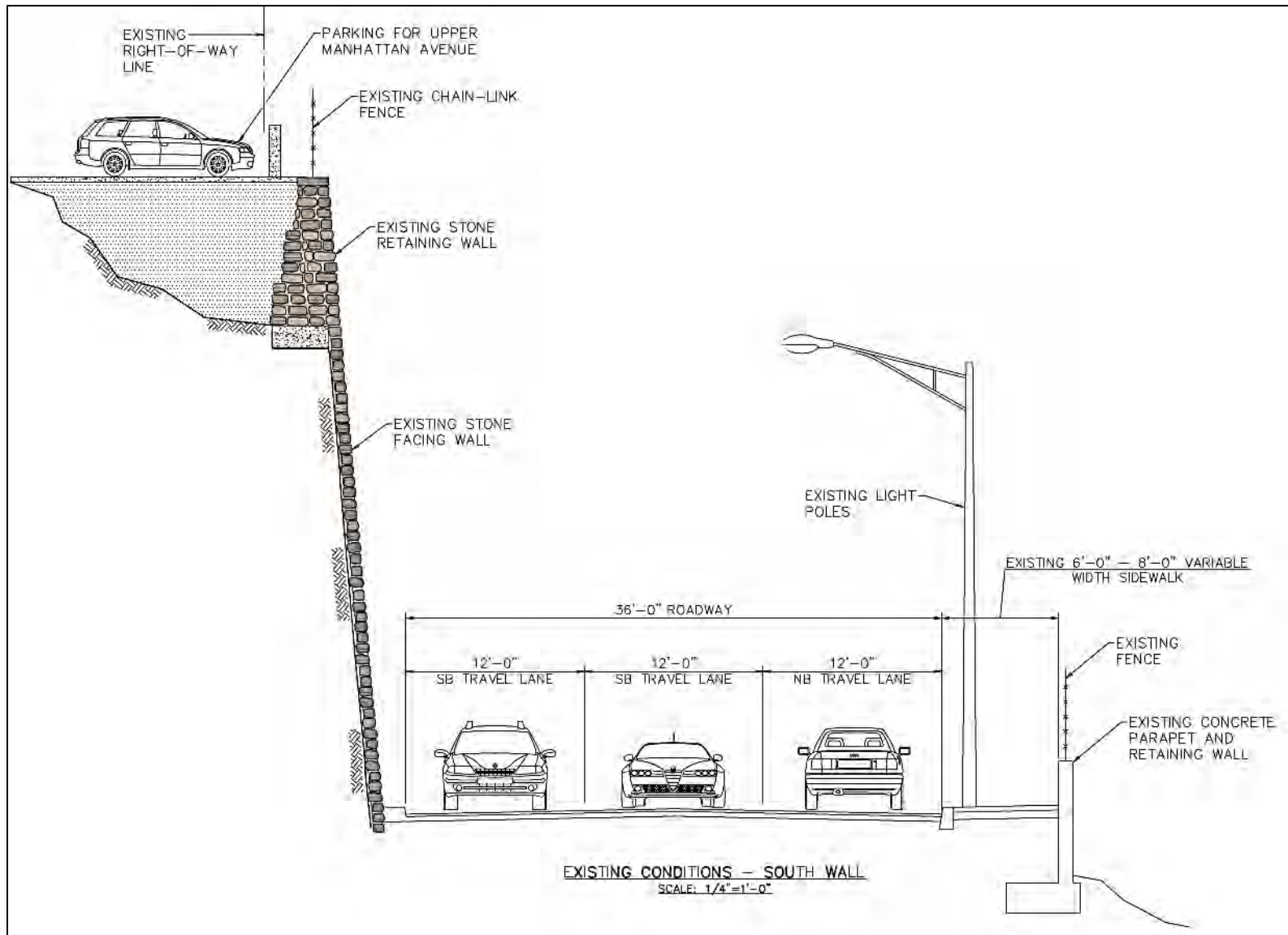
## Goals & Objectives:

- Reinforce and modernize the walls to improve safety.
- Stabilize the Palisade rock cliffs behind the walls to prevent rockslides and slope failures.
- Improve drainage (reduce hydrostatic pressure).
- Maintain accessibility to pedestrians, bicyclists and motorists & minimize inconvenience to public.
- Provide durable and long-lasting repairs.
- Avoid or minimize social, economic, and environmental impacts.
- Implement context sensitive design solutions.
- Coordinate construction with other ongoing high-level transportation projects in the region.



## South Wall Overview

# South Wall Cross Section





Existing Home within 6' of the wall

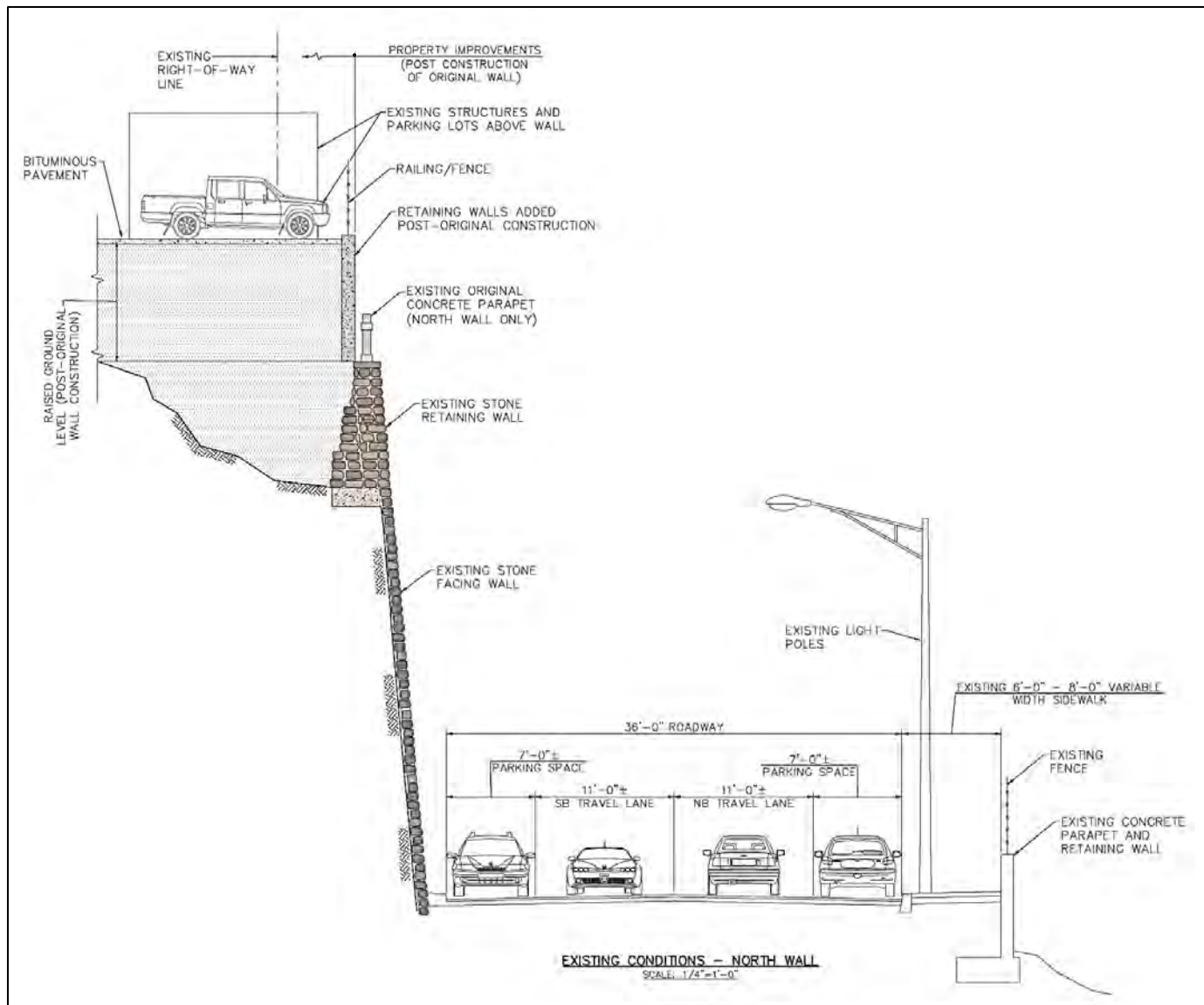
Existing Swimming Pool

Existing Parking Lots

Existing Garage

# North Wall Overview

# North Wall Cross Section





# Development of Alternatives



# Alternatives Analysis Matrix

**DRAFT**

**COMPARISON OF ALTERNATIVES**  
**Local Concept Development Study for Retaining Wall & Slope Stabilization Improvements**  
**Along Manhattan Avenue, Union City, Hudson County, NJ**

Alternative No.	0	1A	1B	2A	2B	3A	3B	4	5
Criteria Considered	No Build (Existing Condition)	In-Place Rehabilitation Without Slope Stabilization	In-Place Rehabilitation With Slope Stabilization	Construct New Wall in Front of Existing Wall & Widen Roadway	Construct New Wall in Front of Existing Wall & Reduce Lane Widths	Dismantle and Fully Rehabilitate Existing Wall & Widen Roadway	Dismantle and Fully Rehabilitate Existing Wall & Reduce Lane Widths	Remove the Existing Wall (Expose Rock Face) & Construct New Retaining Wall Above Cliff	Construct New Wall in Front of North Wall, Dismantle and Fully Rehabilitate the South Wall
<b>Meets Project Purpose and Need</b>	NO	NO	NO	YES	YES	YES	YES	NO	YES
<b>Maintenance and Protection of Traffic</b>									
Ability to Maintain Pedestrian and Bicycle Traffic During Construction	N/A	Yes	Yes	No <sup>1</sup>	Yes	No <sup>1</sup>	Yes	Yes	Yes
Roadway/Lane Width Provided along North Wing Viaduct	36'-0" Total (2) 11'-0" travel lanes (2) 7'-0" parking lanes 56'-0" Total	Maintain Existing Lane Configuration	Maintain Existing Lane Configuration	Widen Roadway & Maintain Existing Lane Configuration	32'-0" Total (2) 12'-0" travel lanes (1) 8'-0" parking lane 32'-0" Total	Widen Roadway & Maintain Existing Lane Configuration	32'-0" Total (2) 12'-0" travel lanes (1) 8'-0" parking lane 32'-0" Total	Maintain Existing Lane Configuration	Maintain Existing Lane Configuration
Roadway/Lane Width Provided along South Wing Viaduct	(2) 18'-0" travel lanes 36'-0" Total	Maintain Existing Lane Configuration	Maintain Existing Lane Configuration	Widen Roadway & Maintain Existing Lane Configuration	(2) 15'-0" travel lanes 30'-0" Total	Widen Roadway & Maintain Existing Lane Configuration	(2) 15'-0" travel lanes 30'-0" Total	Maintain Existing Lane Configuration	Maintain Existing Lane Configuration
Roadway/Lane Width Provided at South Wing & 14th St. Intersection	(1) 16'-0" thru lane (1) 10'-0" thru lane (4) 10'-0" turning lane 36'-0" Total	Maintain Existing Lane Configuration	Maintain Existing Lane Configuration	Widen Roadway & Maintain Existing Lane Configuration	37'-0" Total (2) 11'-0" thru lanes (1) 10'-0" turning lane	Widen Roadway & Maintain Existing Lane Configuration	37'-0" Total (2) 11'-0" thru lanes (1) 10'-0" turning lane	Maintain Existing Lane Configuration	Maintain Existing Lane Configuration
Roadway/Lane Width Provided at South Wing & Paterson Plank Rd Intersection	(1) 15'-0" thru lane (1) 10'-0" thru lane (1) 11'-0" turning lane	Maintain Existing Lane Configuration	Maintain Existing Lane Configuration	Widen Roadway & Maintain Existing Lane Configuration	32'-0" Total (2) 11'-0" thru lanes (1) 10'-0" turning lane	Widen Roadway & Maintain Existing Lane Configuration	32'-0" Total (2) 11'-0" thru lanes (1) 10'-0" turning lane	Maintain Existing Lane Configuration	Maintain Existing Lane Configuration
Detour Length Required for North Wall Repairs (Nighttime Closures Only)	N/A	Not Required	0.7 miles	0.7 miles	0.7 miles	0.7 miles	0.7 miles	Not Required	0.7 miles
Detour Length Required for South Wall Repairs (Nighttime Closures Only)	N/A	Not Required	2.0 miles	2.0 miles	2.0 miles	2.0 miles	2.0 miles	Not Required	2.0 miles
Detour Impacts, No. of Cars per Night (Nighttime Closures)	N/A	0	8698	8698	8698	8698	8698	8698	8698
<b>Detour Costs (Public Impact)</b>	N/A	\$ 457,000	\$ 2,284,000	\$ 1,828,000	\$ 1,828,000	\$ 1,828,000	\$ 1,828,000	\$ 1,311,000	\$ 1,828,000
<b>Construction Duration</b>									
Duration (Years)	N/A	1 to 1.5	2 to 2.5	1.5 to 2	1.5 to 2	2 to 2.5	2 to 2.5	1.5 to 2	2 to 2.5
<b>Right of Way / Access Impacts</b>									
Required ROW (in Fee - Acres)	N/A	0.17 <sup>2</sup>	0	0	0	0.17 <sup>2</sup>	0.17 <sup>2</sup>	0.17 <sup>2</sup>	0
Number of Temporary Construction Easements Required	N/A	59 <sup>4</sup>	0	0	59 <sup>4</sup>	0	59 <sup>4</sup>	59 <sup>4</sup>	38
Number of Partial Residential Property Acquisitions Required	N/A	4 <sup>4</sup>	0	0	4 <sup>4</sup>	0	4 <sup>4</sup>	4 <sup>4</sup>	0
Potential Access Impacts	N/A	0	0	0	0	0	0	0	0
Maintains Land Use Above Wall During Construction	N/A	No	No	Yes	Yes	No	No	No	Yes (North Wall) No (South Wall)
No. of Parking Spots Temporarily Impacted by Construction	N/A	139 <sup>7</sup>	139 <sup>7</sup>	80 <sup>4</sup>	80 <sup>4</sup>	139 <sup>7</sup>	139 <sup>7</sup>	139 <sup>7</sup>	98 <sup>4</sup>
No. of Parking Spots Permanently Impacted by Construction	N/A	0	0	0	40 <sup>4</sup>	0	40 <sup>4</sup>	0	0
<b>ROW Acquisition / Easements Costs</b>	N/A	\$ 2,909,000	\$ 2,909,000	\$ 513,000	\$ 513,000	\$ 2,909,000	\$ 2,909,000	\$ 2,909,000	\$ 1,295,000
<b>Alternate Parking Costs (Public Impact)</b>	N/A	\$ 212,400	\$ 212,400	\$ -	\$ -	\$ 212,400	\$ 212,400	\$ 212,400	\$ 147,800
<b>Contractor Staging and Storage Costs</b>	N/A	\$ 1,506,000	\$ 1,506,000	\$ 1,506,000	\$ 1,506,000	\$ 1,506,000	\$ 1,506,000	\$ 1,506,000	\$ 1,506,000
<b>Environmental/Historical Impacts</b>									
Green Acres/ Public Park Impacts (Acres)	N/A	0.09 <sup>10</sup>	0.09 <sup>10</sup>	0.09 <sup>10</sup>	0.09 <sup>10</sup>	0.09 <sup>10</sup>	0.09 <sup>10</sup>	0.09 <sup>10</sup>	0.09 <sup>10</sup>
Floodplain and Riparian Zone Impacts	No	No	No	No	No	No	No	No	No
Wetland and Stream Impacts	No	No	No	No	No	No	No	No	No
Hazardous Waste Sites Affected	No	No	No	No	No	No	No	No	No
Threatened or Endangered Species Affected	No	No	No	No	No	No	No	No	No
Avoids Adverse Effects on Eligible Cultural Resources (Yes/No)	Yes	No	No	No	No	No	No	No	No
Level of Adverse Effects on Eligible Cultural Resources (None/Low/High)	None	Low	High	High	High	Low	Low	High	High/Low
Rehabilitation of Historic Wall to Secretary of Interior's Standards Possible? (Yes/No/Maybe)	N/A	Yes	No	No	No	Yes	Yes	Yes	Yes (South Wall) No (North Wall)
<b>Structural Design</b>									
Increases Reliability and Durability of Wall	No	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes
Ability to Mitigate Future Wall Collapse/Failure	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Improves Drainage Capabilities?	No	Yes, Slightly	Yes	Yes	Yes	Yes	Yes	N/A	Yes
Stabilizes Palisade Rock Cliffs to Provide Slope Stabilization?	No	No	Yes	Yes	Yes	Yes	Yes	No	Yes
Ability to Provide Architecturally Pleasing Finish and Appearance	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
<b>Estimated Construction Cost (\$ 2019)</b>	N/A	\$ 39,527,000	\$ 49,034,000	\$ 35,505,000	\$ 32,315,000	\$ 50,399,000	\$ 47,232,000	\$ 27,049,250	\$ 43,322,000
<b>Life Cycle Cost</b>	N/A	\$ 8,470,000	\$ 2,876,000	\$ 1,173,000	\$ 1,173,000	\$ 1,173,000	\$ 1,173,000	\$ 9,529,000	\$ 1,173,000
<b>Total Cost</b>	N/A	\$ 53,090,000	\$ 58,820,000	\$ 40,530,000	\$ 37,340,000	\$ 58,030,000	\$ 54,870,000	\$ 42,580,000	\$ 49,280,000
<b>Total Cost Per Square Foot<sup>8</sup></b>	N/A	\$ 509	\$ 632	\$ 457	\$ 416	\$ 649	\$ 608	\$ 348	\$ 558

**Notes:**  
A. Repair Alternative 5 includes roadway widening and realignment.  
B. The average bid price for the 2008 Nor'easter Repairs was \$354 per square foot (for a concrete Formliner wall system). The equivalent cost, when considering inflation, would be \$490 per square foot.

- Sidewalk access will be temporarily impacted during roadway widening and retaining wall reconstruction.
- Southbound parking lane adjacent to the North Wall will have to be eliminated in order to provide the minimum lane width. This will permanently eliminate 40 parking spots.
- Assumes that property located at 1206 1208 Palisade Avenue (multi-family home with parking lot and swimming pool) will have to be purchased to enable construction access to North Wall and to enable removal and replacement of gravity wall.
- 31 properties along South Wall and 28 properties along the North Wall will be temporarily impacted during construction.
- Even if the wall is built in front of existing wall, the north and south ends of the walls will have to be removed and reconstructed to enable tie-in to existing roadway alignment. This work will require 2 easements for the South Wall and 7 for the North Wall.
- Donc Apartments parking lot will be impacted by roadway realignment work and the reconstruction of the retaining wall in their parking lot.
- 59 Private parking spots (above the wall) and 80 public parking spots along the North Wing Viaduct will be impacted by the construction.
- No impact to Private parking spots. However Parking along North Wing Viaduct (80 Spots) will still be impacted by the construction.
- No impact to Private parking spots along the North Wall. However Parking along North Wing Viaduct (80 Spots) and Private Parking along the top of the South Wall (18 spots) will still be impacted by the construction.
- Acres of Washington Park property that will be temporarily impacted during construction.

3/15/2019



# Repair Alternatives

- 0. No Build
- 1A. In-Place Rehabilitation Without Slope Stabilization
- 1B. In-Place Rehabilitation with Slope Stabilization
- 2A. Construct New Wall in Front of the Existing Wall & Widen Roadway
- 2B. Construct New Wall in Front of the Existing Wall & Reduce Lane Widths
- 3A. Dismantle and Fully Rehabilitate Existing Wall & Widen Roadway
- 3B. Dismantle and Fully Rehabilitate Existing Wall & Reduce Lane Widths
- 4. Remove the Existing Wall (Expose Rock Face) & Construct New Retaining Wall Above Cliff

**No-Build Option**

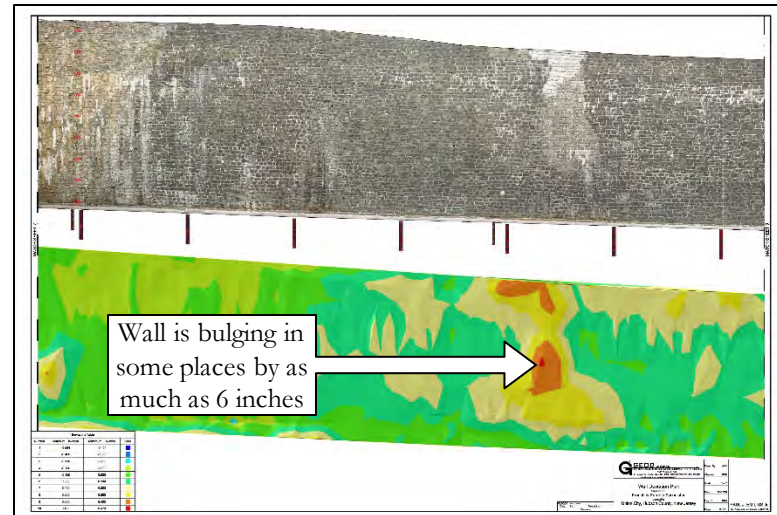
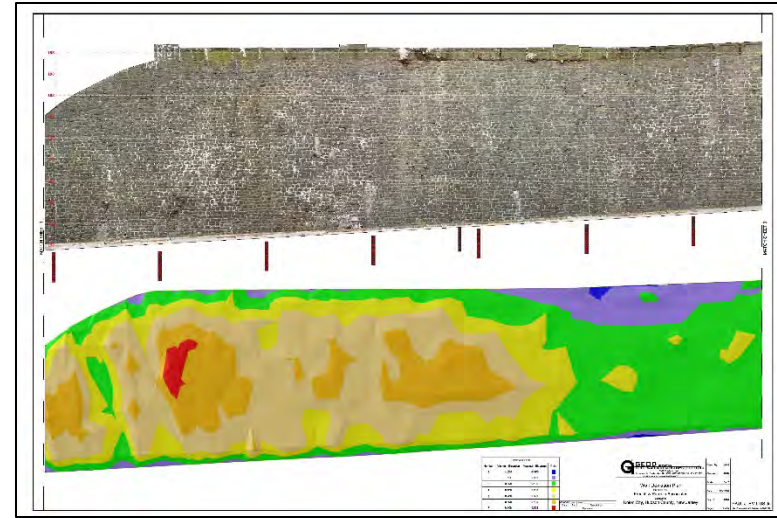
**Rehabilitation Options**

**Reconstruction Options**

**Demolition Option**

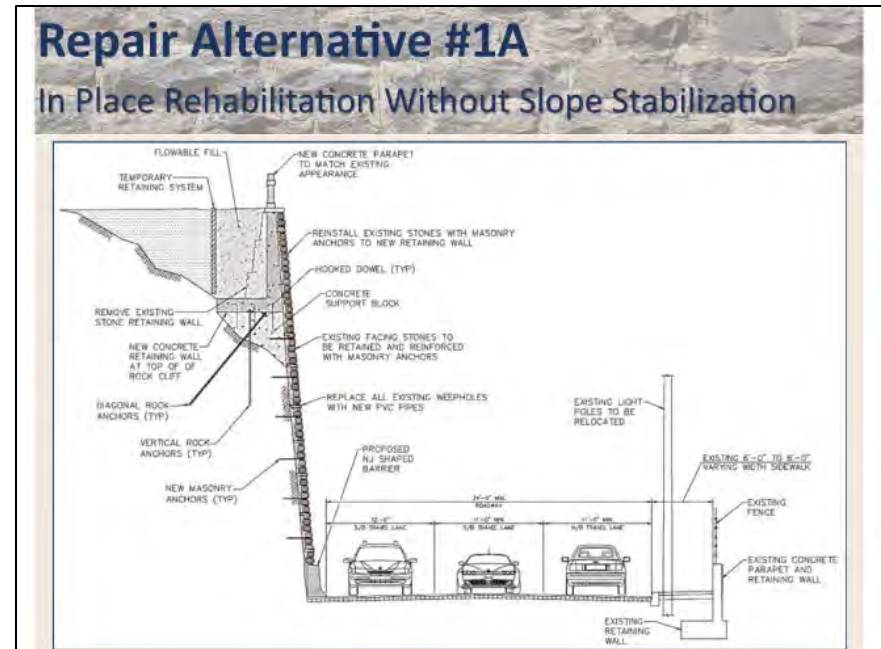
# No Build Option

- **The No-Build option does not meet the Purpose and Need.**
- The walls are approaching the end of their useful lives.
- Many of the previous wall repairs have not held up.
  - Bulging, leaking, missing mortar and hollow sounding areas.
- As the wall continues to age, the rate of deterioration will likely increase.



# Rehabilitation Options – Alternative #1A

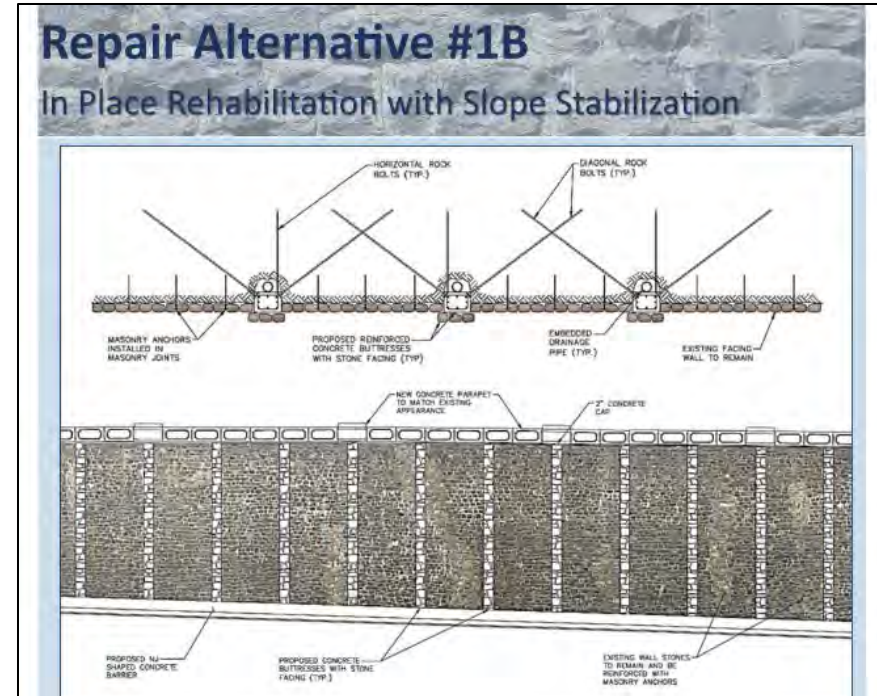
- Alternative #1A only repairs visual deficiencies.
  - Requires the replacement of the gravity wall at top of slope with impact to private property.
  - Does not address unknown construction and conditions behind the wall.
  - Slope stabilization and drainage not provided.
  - Is not a durable long term solution, requires future maintenance.



- **Alternative #1A does not meet the Project Purpose & Need.**

# Rehabilitation Options – Alternative #1B

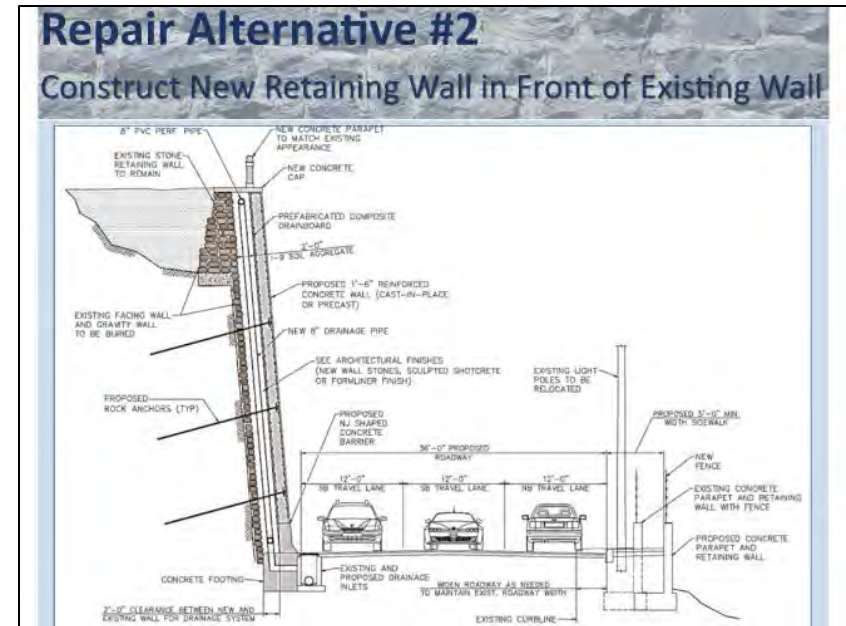
- Alternative #1B is similar to #1A, but provides limited slope stabilization and isolated drainage improvements.
  - Rehabilitation is not a viable alternative
    - Due to the many unknown risks associated with the location and nature of the rock face.
    - May ultimately require the removal of the entire wall to facilitate the repairs.



• **Alternative #1B does not meet the Project Purpose & Need.**

# Reconstruction Options - Alternative #2

- Alternative #2 allows the existing wall to remain, with a new modern retaining wall constructed in front of it.
- Provides slope stabilization and drainage improvements.
- Reduces impact to private properties above wall.
- Large effect to the historic cultural resource.
- Impacts Manhattan Avenue Roadway alignment.
- **Alternative #2 meets the Purpose and Need and is best for the North Wall.**



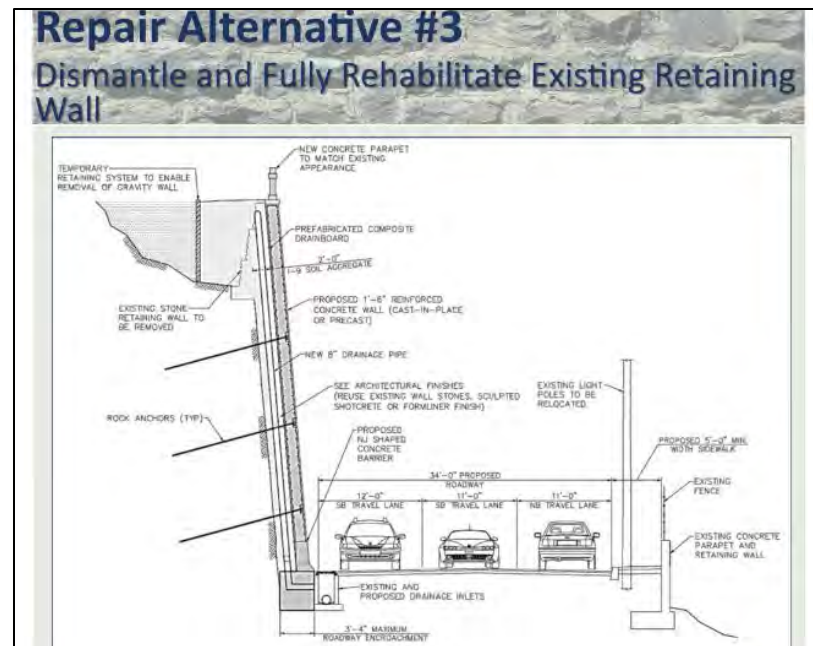
- Option #2A: Widen roadway
  - Recommended
- Option #2B: Reduce roadway

# Reconstruction Options – Alternative #3

- Alternative #3 removes the existing wall and replaces it with a new modern wall.

- Similar to Alternative #2, and provides drainage and slope stabilization.
- Permits reuse of original stone.
- Reduces impact to Manhattan Avenue Roadway alignment.
- Removes unknown risks associated with the condition of the rock face.
- Results in significant impacts to properties along top of wall.
- Requires temporary retaining system.

- **Alternative #3 meets the Purpose and Need and is best for the South Wall.**



- Option #3A: Widen roadway
  - Recommended
- Option #3B: Reduce roadway

# Demolition Option - Alternative #4

- Alternative #4 includes the removal of the existing stone masonry façade and gravity wall and exposes the Palisade rock face.
  - Reduce maintenance by removal of stone masonry.
  - Eliminates need for drainage improvements, however slope stability is still required.
  - Aesthetically unpleasing.
  - Will likely require a rock catchment system to prevent loose rocks from falling on the roadway.
  - Severe impacts to properties adjacent to the wall.
    - Eliminates an historic cultural resource.
- **Alternative #4 does not meet the Project Purpose & Need.**

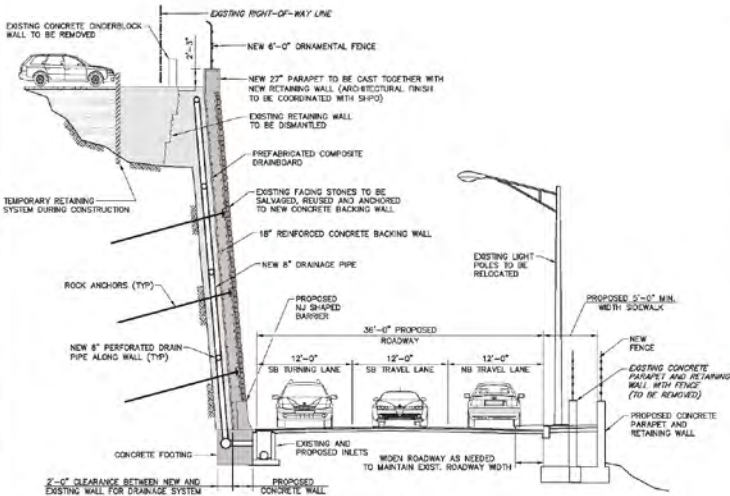




# Preliminary Preferred Alternative – South Wall



PLAN – SOUTH WALL  
STA. 0+00 TO STA. 12+00  
SCALE 1" = 40'-0"



SECTION 2-2  
(REPAIR ALTERNATIVE #3A)  
N.T.S.



**LEGEND**

- █ REPOINTING/RECONSTRUCTION (REPAIR ALTERNATIVE #1C)
- █ CONSTRUCT NEW RETAINING WALL IN FRONT OF EXISTING WALL (REPAIR ALTERNATIVE #2)
- █ DISMANTLE AND FULLY REHABILITATE EXISTING RETAINING WALL (REPAIR ALTERNATIVE #3)
- █ SHORE UP REPAIR
- █ OVERLAY EXISTING CONCRETE WALL WITH STONE

PLAN – SOUTH WALL  
STA. 12+00 TO STA. 18+00  
SCALE 1" = 40'-0"

**FPA**  
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**PRELIMINARY**  
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PROFESSIONAL ENGINEER NO. 10-10081

**PPA OVERVIEW - SOUTH WALL**

FOR THE  
RETAINING WALL & SLOPE STABILIZATION  
IMPROVEMENTS  
ALONG MANHATTAN AVENUE

IN THE CITY OF UNION CITY,  
Hudson County, New Jersey

DATE:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE:
AS 6-10-09				11/11/09

# Anticipated Access Easements - South Wall



20-Foot-Wide Permanent Easement for Future Maintenance and Rock Anchors

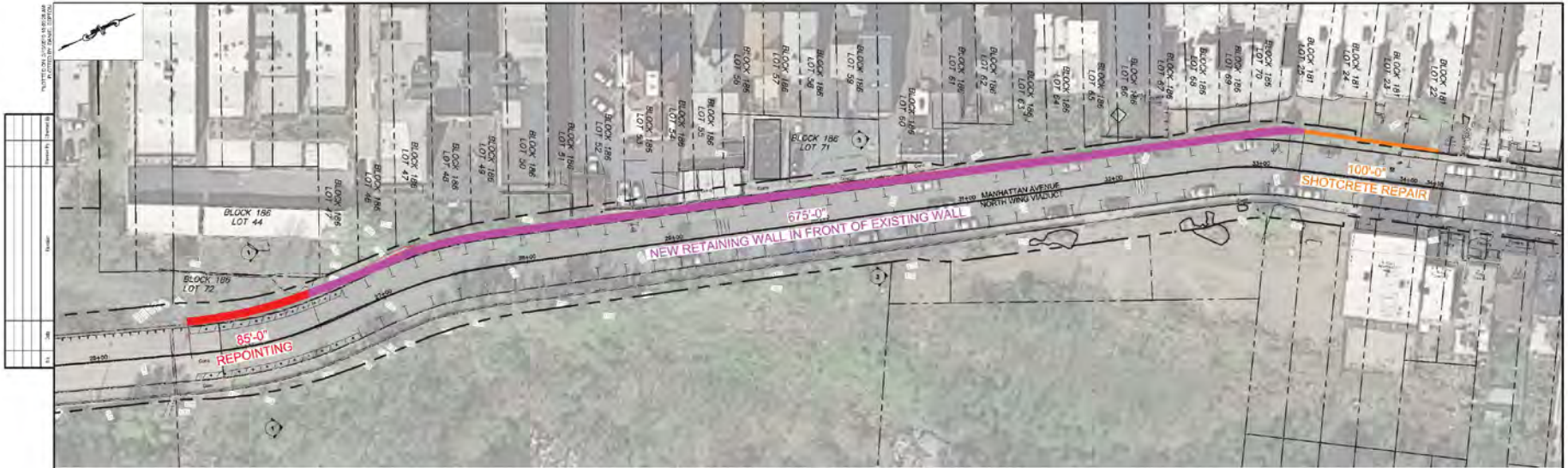
15-Foot-Wide Temporary Construction Easement

15'-0"

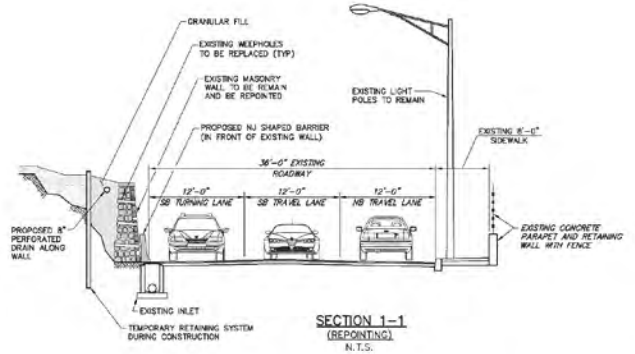
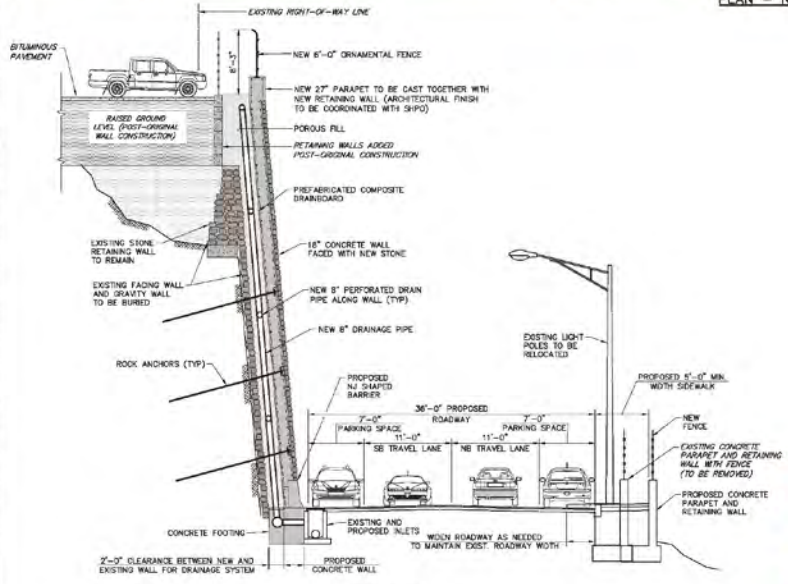
20'-0"

Google Earth

# PPA Plan – North Wall



PLAN – NORTH WALL – STA. 25+65 TO STA. 34+18  
SCALE 1" = 30'-0"



- LEGEND**
- █ REPOINTING/RECONSTRUCTION (REPAIR ALTERNATIVE #1C)
  - █ CONSTRUCT NEW RETAINING WALL IN FRONT OF EXISTING WALL (REPAIR ALTERNATIVE #2)
  - █ DISMANTLE AND FULLY REHABILITATE EXISTING RETAINING WALL (REPAIR ALTERNATIVE #3)
  - █ SHOTCRETE REPAIR
  - █ OVERLAY EXISTING CONCRETE WALL WITH STONE

**FPA**  
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**PRELIMINARY**  
WILLIAM C. PYTEK PE PP  
PROFESSIONAL ENGINEER N.J.C. No. 10088

**PPA OVERVIEW - NORTH WALL**

FOR THE  
RETAINING WALL & SLOPE STABILIZATION  
IMPROVEMENTS  
ALONG MANHATTAN AVENUE

AS PREPARED BY MANHATTAN  
Hudson County Rail Station

DATE:	DESIGNED BY:	APPROVED BY:	DATE:
08/14/2018	WCP	WCP	08/14/2018

# Anticipated Access Easements - North Wall



# PPA Cost Estimate

- **Construction Costs**
  - Wall: **\$40.1M**
  - Roadway Improvements: **\$3.2M**
  - Easements: **\$4.8M**
  - Lifecycle Costs: **\$1.2M**
  - **Total: \$49.3M**
- **Estimated Construction Duration**
  - North Wall: **1 Year**
  - South Wall: **1.5 Years**




# Next Steps

- Address Comments received from public and Finalize the Preliminary Preferred Alternative.
- **Obtain Resolutions of Support for PPA from Union City and adjoining municipalities.**
- Complete Local Concept Development Report.
- Hold Inter-Agency (FHWA, NJTPA, NJDOT) Review (IRC) Meeting for PPA.
- Concept Development Phase completed (May 2019).

# Project Contact Information

- Nicole Pace-Addeo, MA – Stokes Creative Group, Community Involvement Facilitator
  - Phone: [201-564-0119](tel:201-564-0119)
  - Email: [npace@stokescg.com](mailto:npace@stokescg.com)
- Manhattan Avenue Project Website and Twitter:
  - [www.ManhattanAvenueWall.com/contact/](http://www.ManhattanAvenueWall.com/contact/)
  - Twitter: [@ManhattanAvWall](https://twitter.com/ManhattanAvWall)
- Public Comments and Suggestions will be received throughout the project via the project website and hotline.
- **This Power Point Presentation will be posted on the Manhattan Avenue Project website.**



A photograph of a stone wall covered in ivy and bare branches. The wall is constructed from dark, irregularly shaped stones. The ivy is green and covers most of the wall, with some bare branches visible. The background shows more bare trees and a building.

# Questions & Comments