Maplewood Avenue Bridge Rehabilitation Project 2024-2025

H.B. FLEMING INC.
Contracting • Engineering
SOUTH PORTLAND, MAINE

NU-PIPE TRENCHLESS SOLUTIONS

EVROKS CORPORATION

HOYLE TANNER

SEVERINO TRUCKING CO. INC.

CITY OF PORTSMOUTH, N.H. · SETTLED · 1623 · INCORPORATED · 1849

Maplewood Ave Bridge Rehabilitation 2024-2025

Karen S. Conard, City Manager
Peter H. Rice, PE, Director of Public Works
David Desfosses, Project Manager

Construction Team

Mike Ferrari, PE – Evroks Corporation

Project Manager

Aaron Lachance, PE – Hoyle Tanner

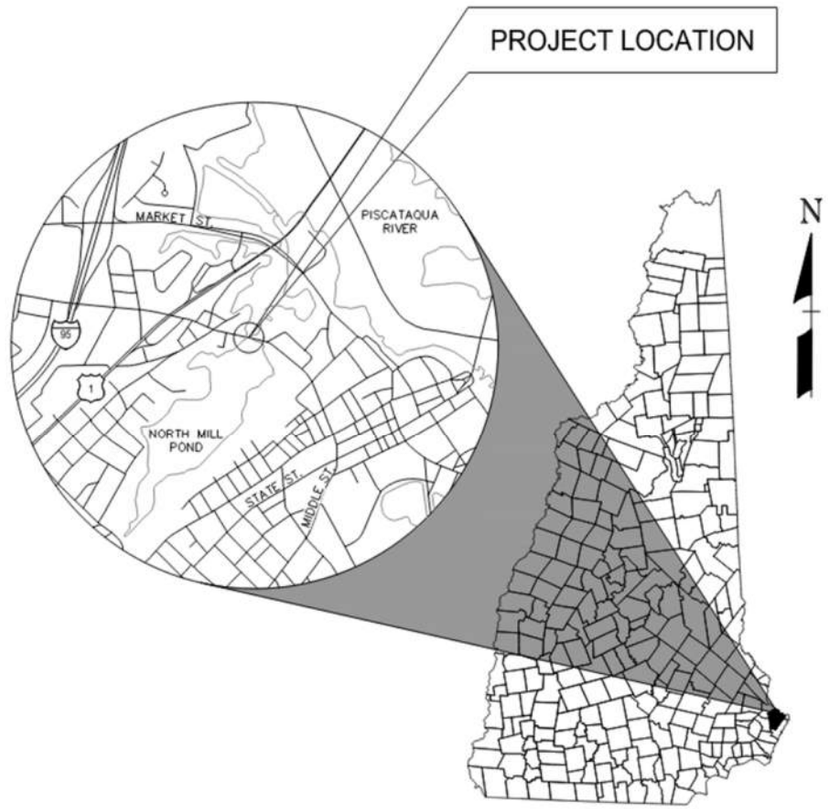
Project Manager & EOR

Kathryn Dziadowicz – Hoyle Tanner

Design & Resident Engineer

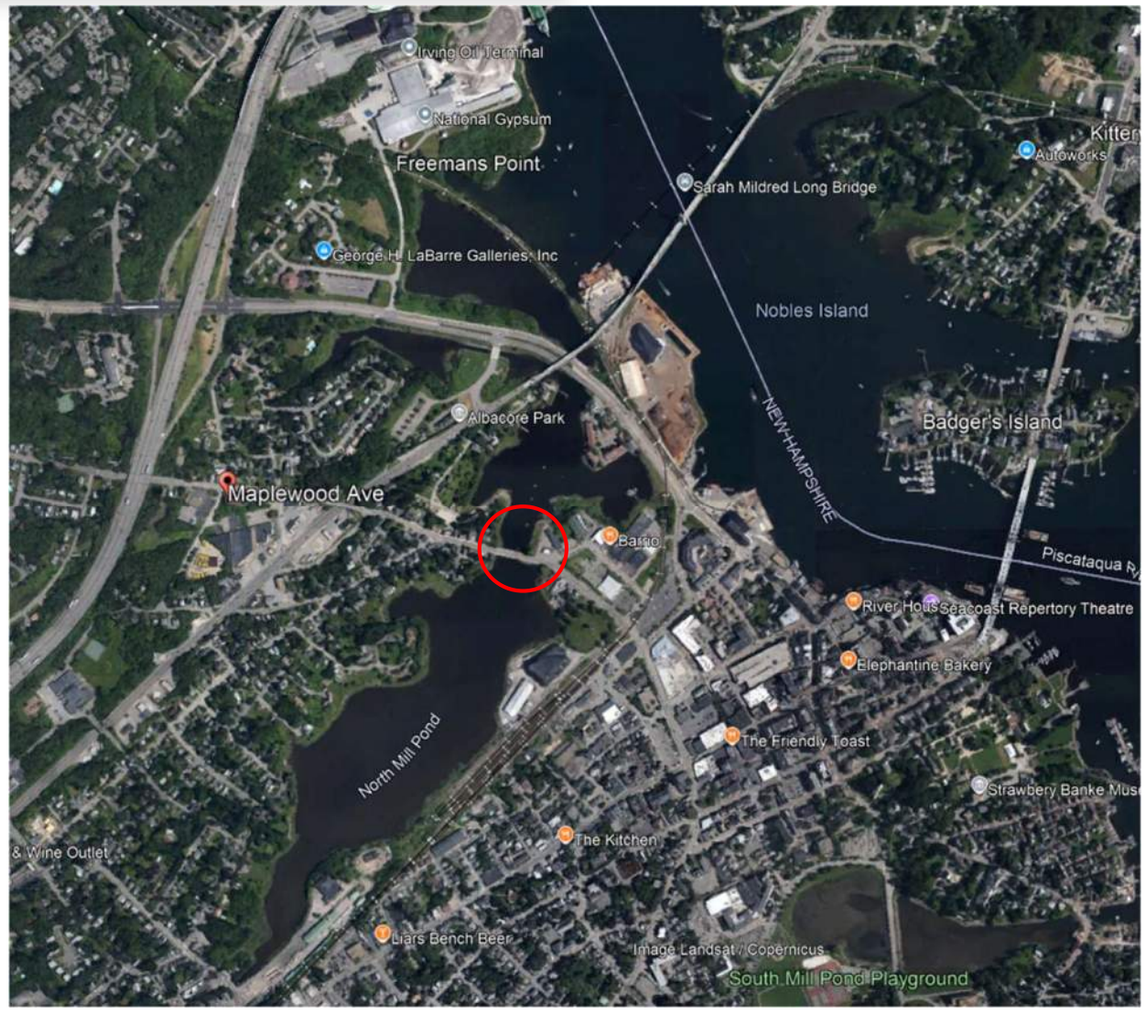
Project Overview

- Owner – City of Portsmouth, NH
- Design & Construction Inspection – Hoyle Tanner
- Prime Contractor – Evroks Corporation
- 2024 & 2025 – Construction
  - July 2024 to November 2025
- Single masonry arch with a CMPA liner on concrete footings



Project Overview

- Year Built: 1896
- Rehabilitation: 1940/1976
- Span – 25’
- NHDOT Rating – 3 (Serious)
- Critical connection between downtown Portsmouth and residential neighborhoods
- Eligible for listing on the National Register of Historic Places



Existing Conditions (old abandoned 1940 sewer pipe in view)

Tidal Flow

2024 Existing Condition of 1976 installed CMP culvert liner and current sewer pipe through existing granite arch

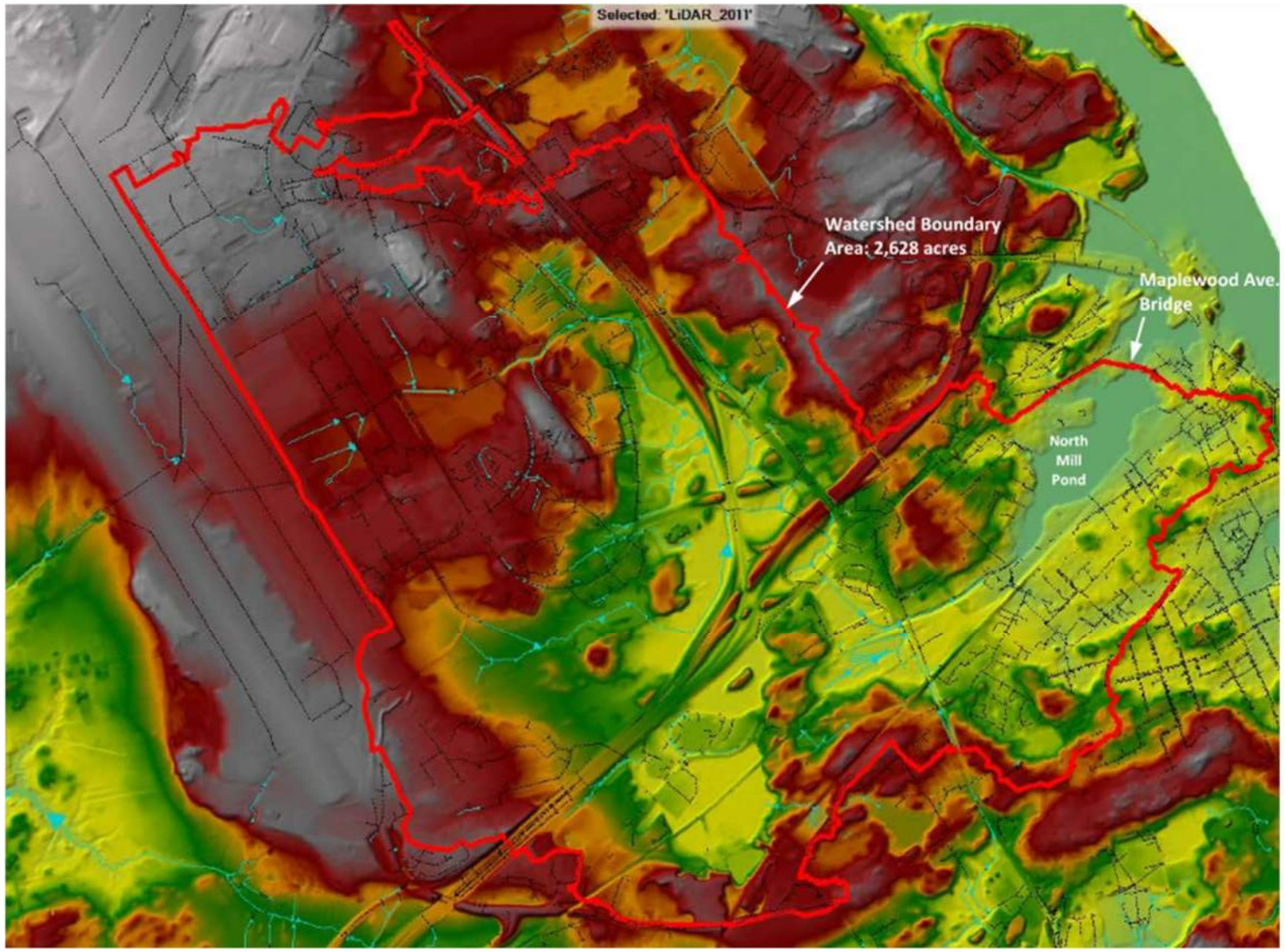
Existing Condition of north wall heavily damaged by 1940 sewer

Condition of bridge before reconstruction (pond side)

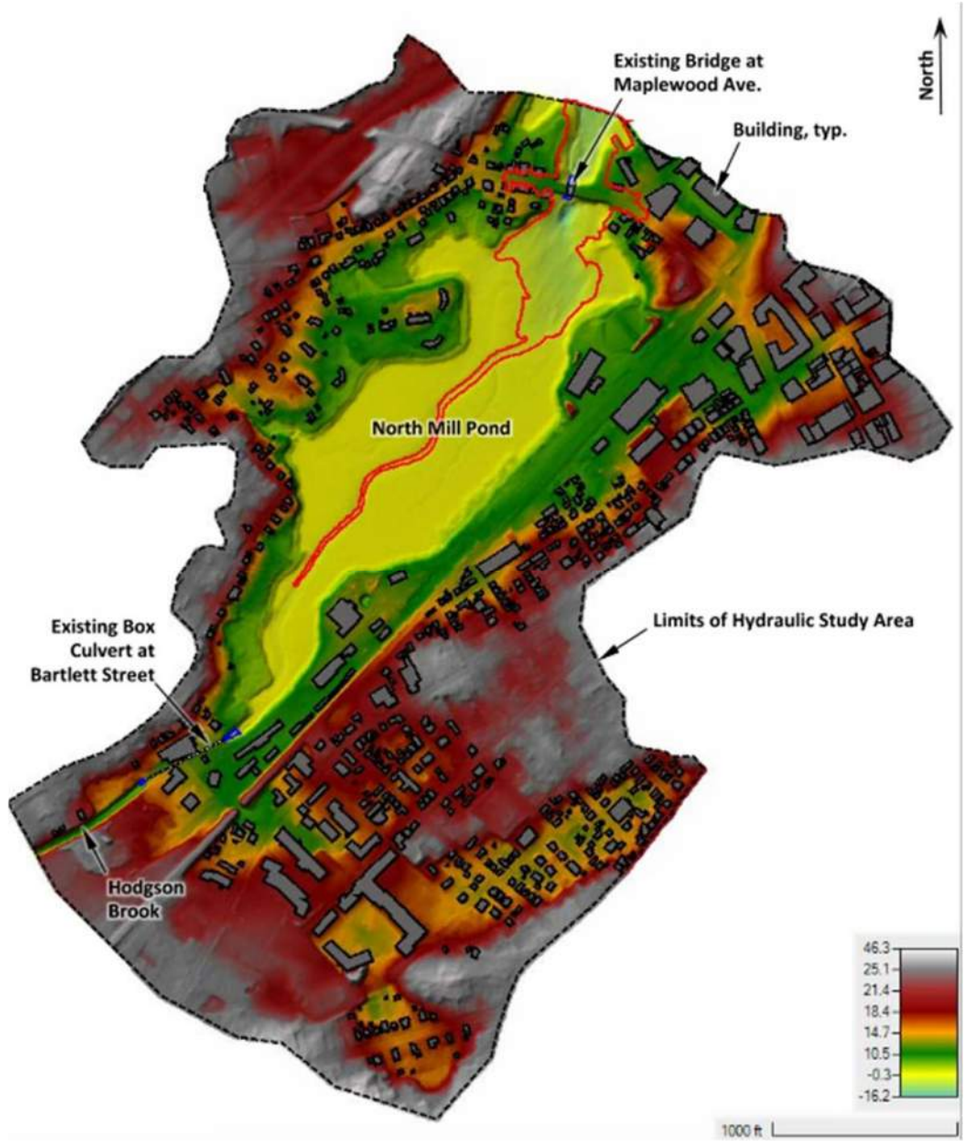
Existing Conditions (road subsiding from material loss)

Proposed Rehabilitation Project

- Address serious condition of culvert
- Repair distressed retaining walls
- Replace failing sidewalks
- Address roadway settlement
- Improve usability and appearance



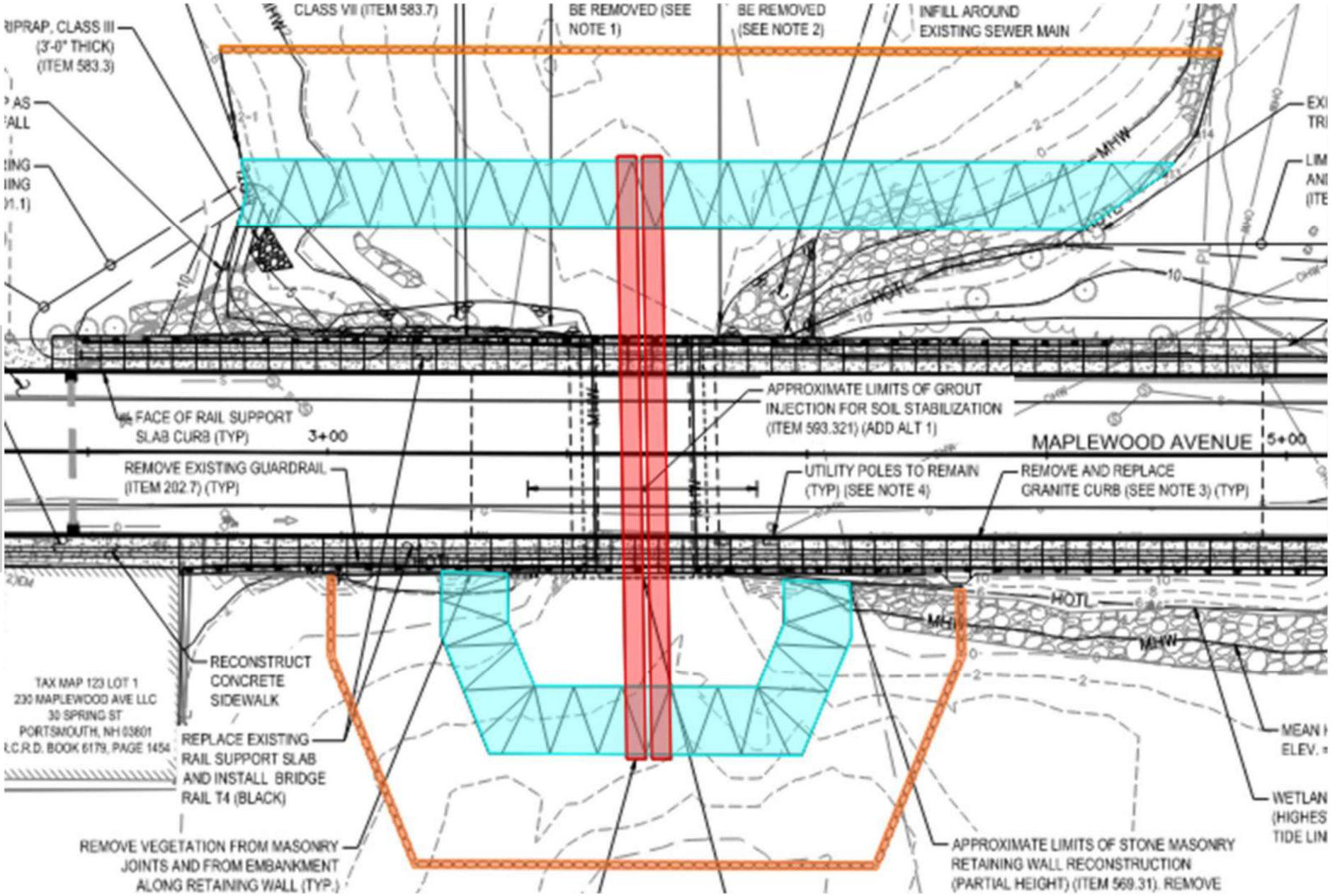
Watershed Relief Map created by Headwaters Consulting, LLC

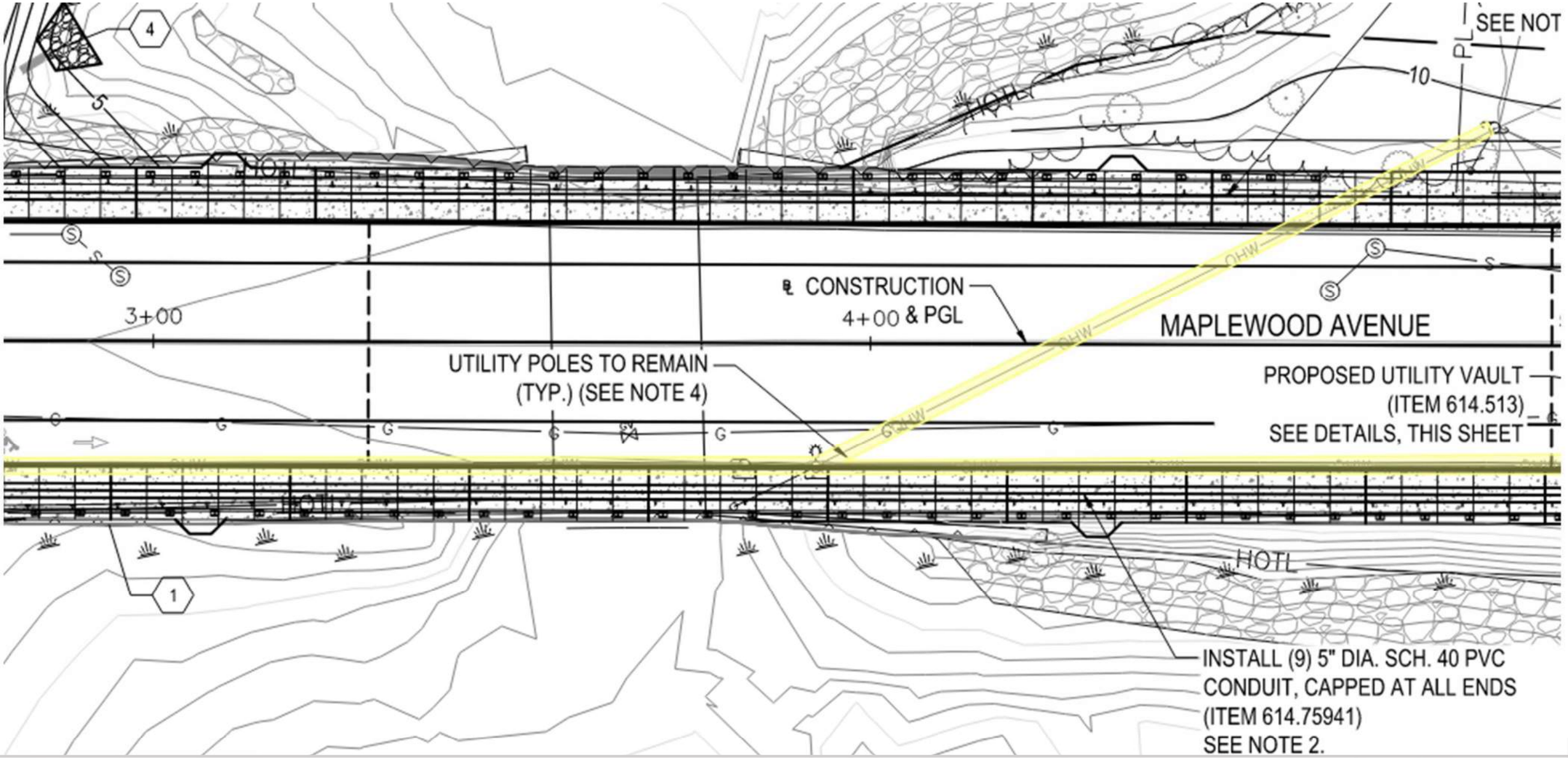


Existing Conditions Digital Elevation Model created by Headwaters Consulting, LLC

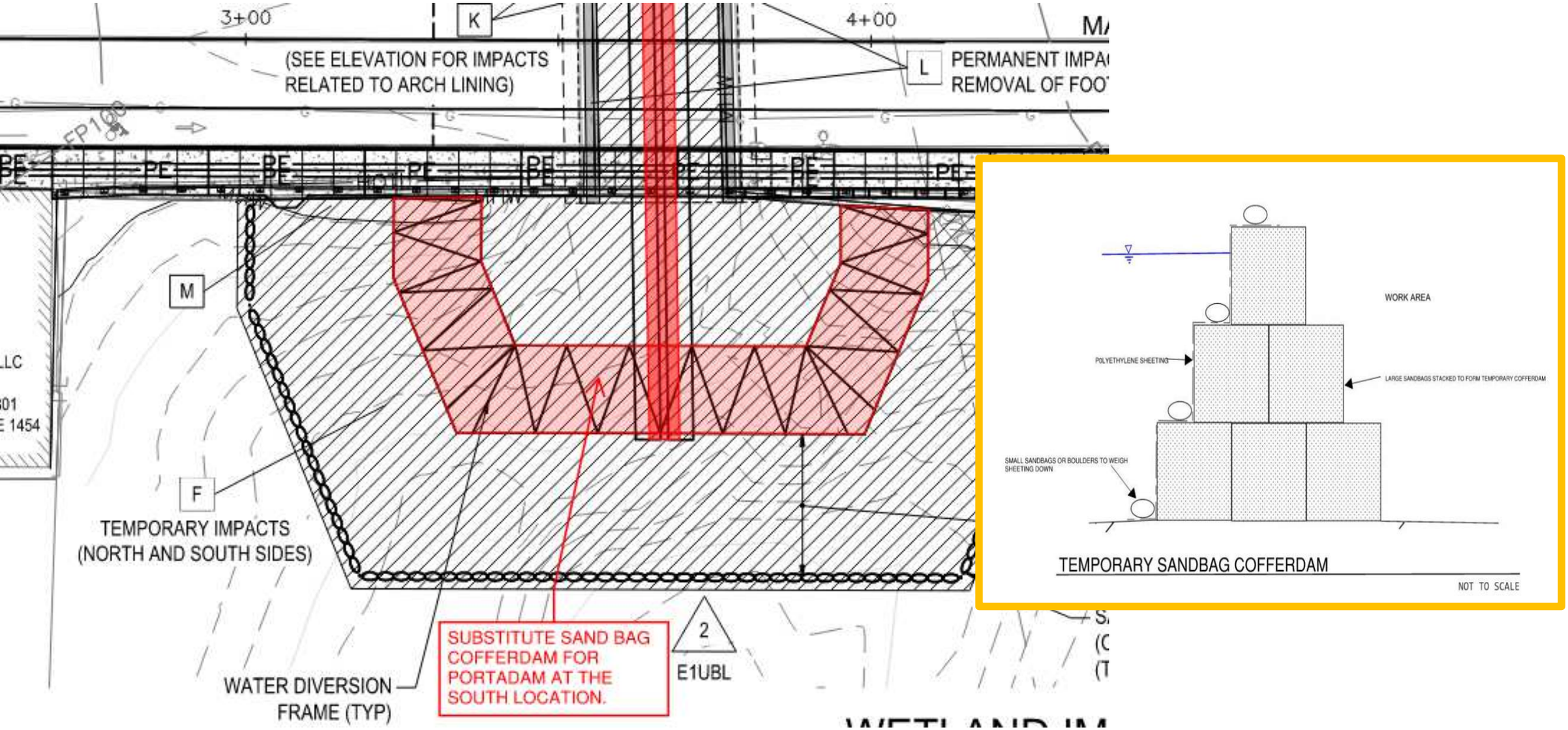
Watershed Area (storm water flow had to be maintained)

Water Diversion Alternatives



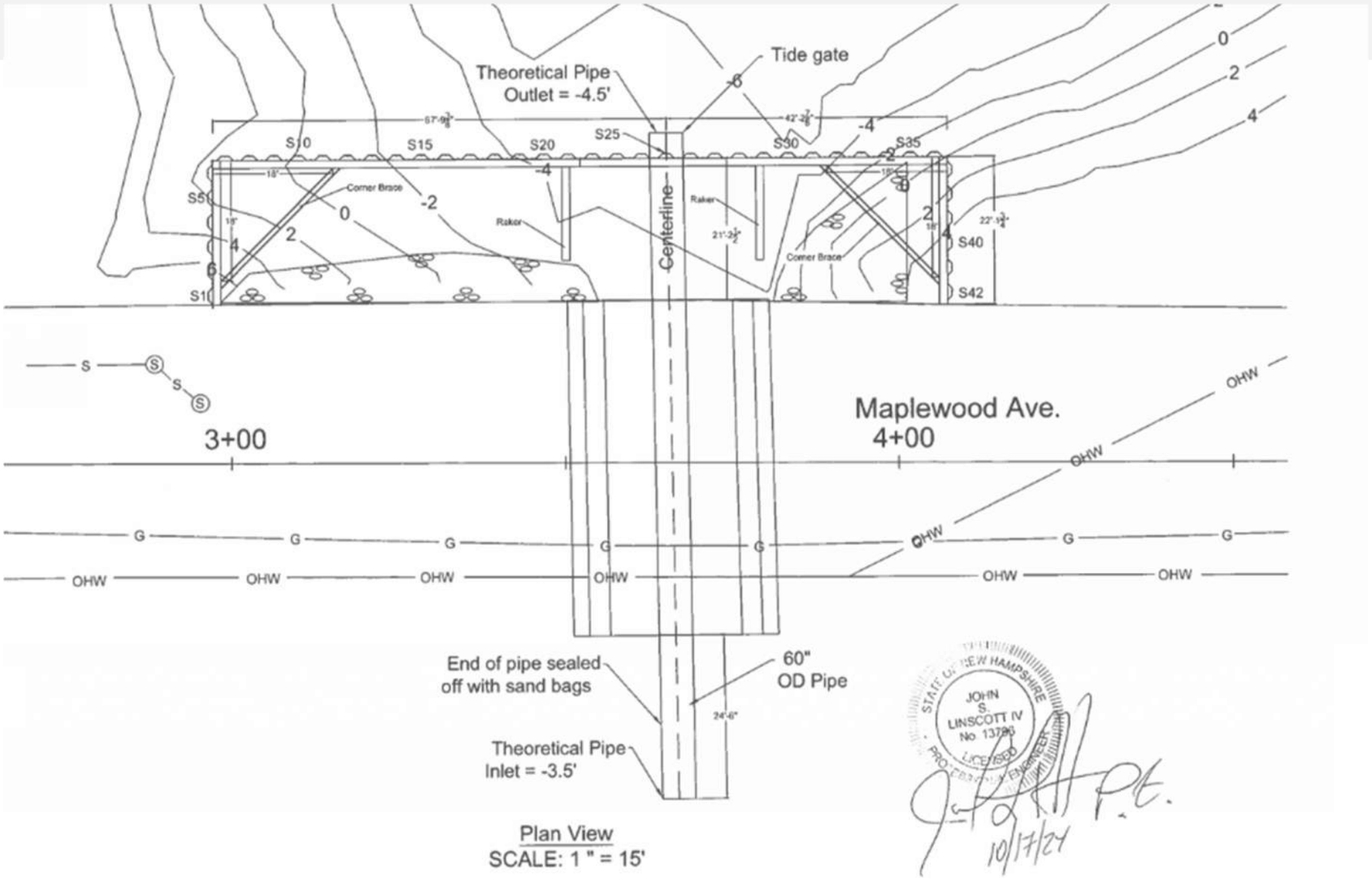


Overhead Utilities (Data and Electrical)had to be maintained too.

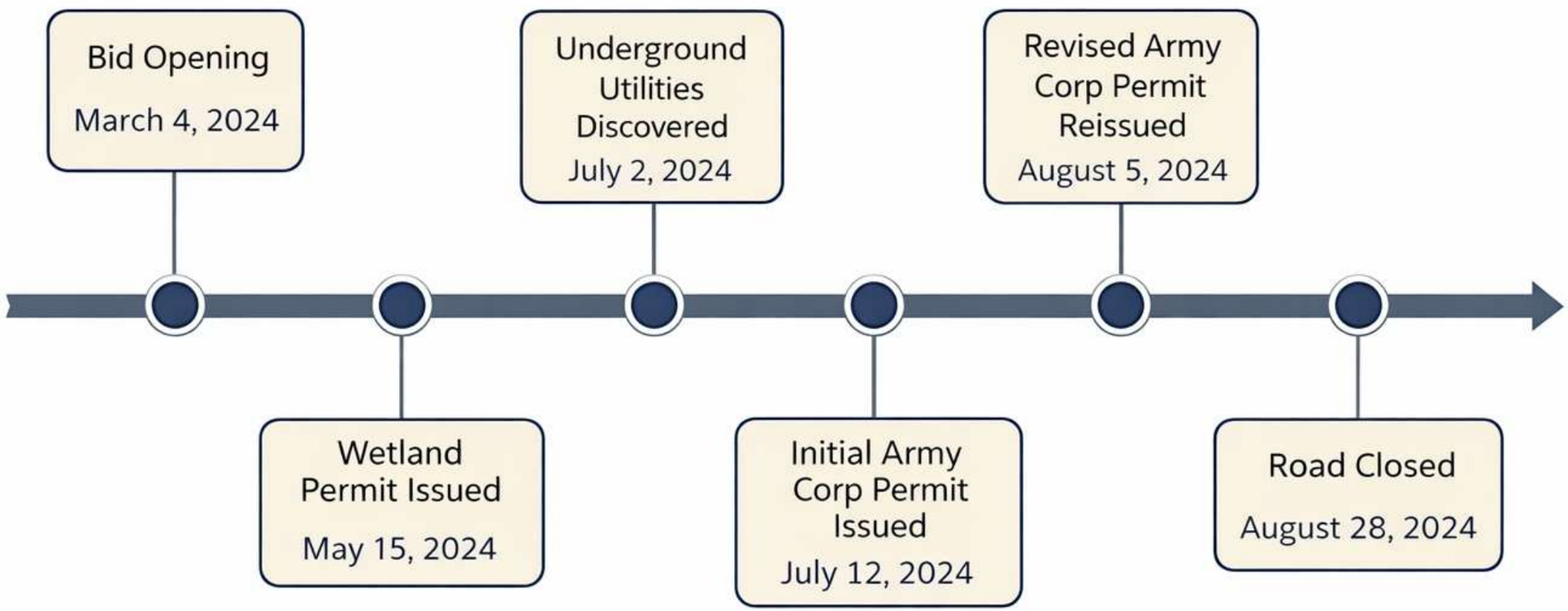


Water Diversion – Sandbag Cofferdam on pond side

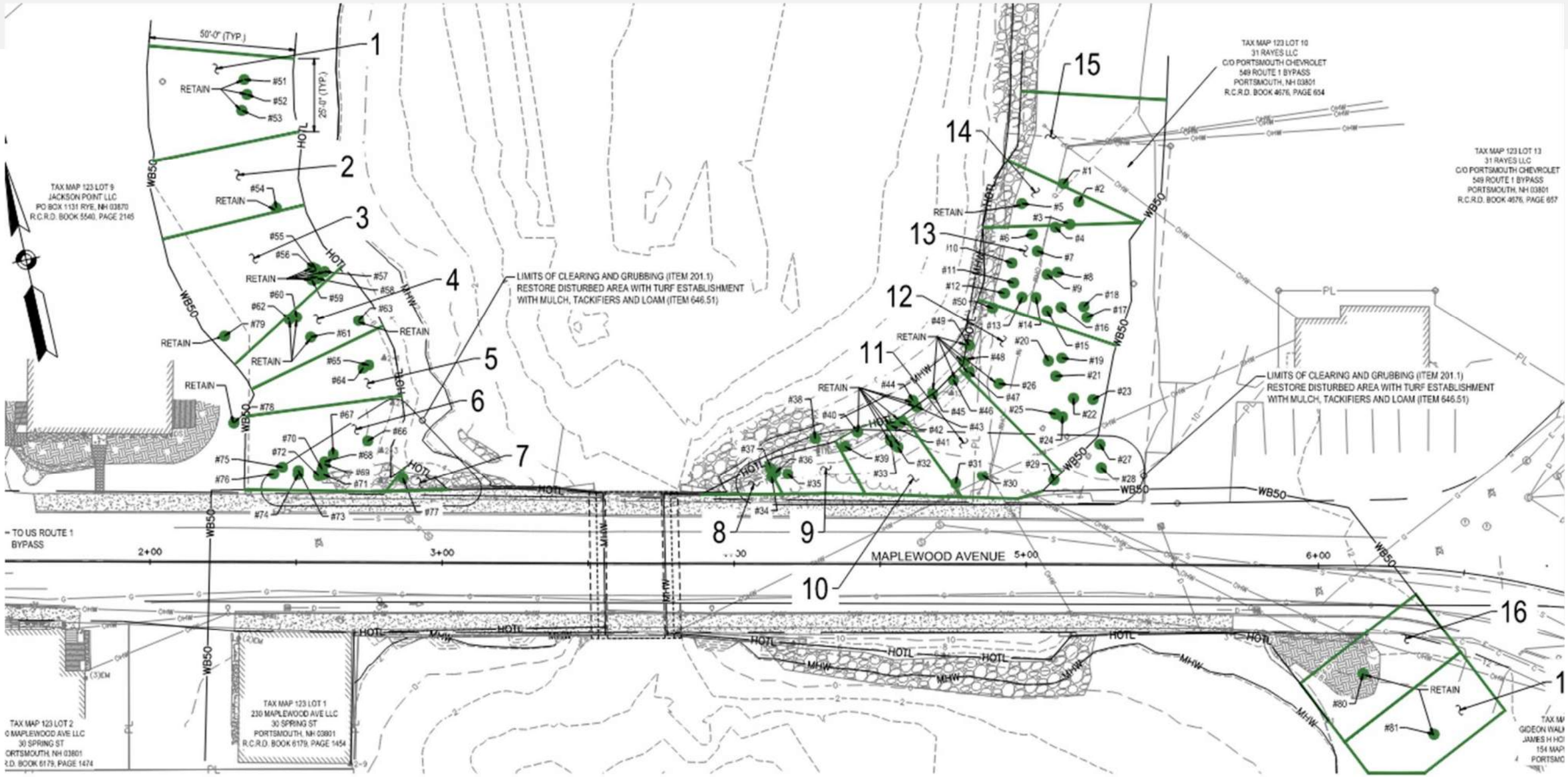
Water Diversion



Permitting Issues

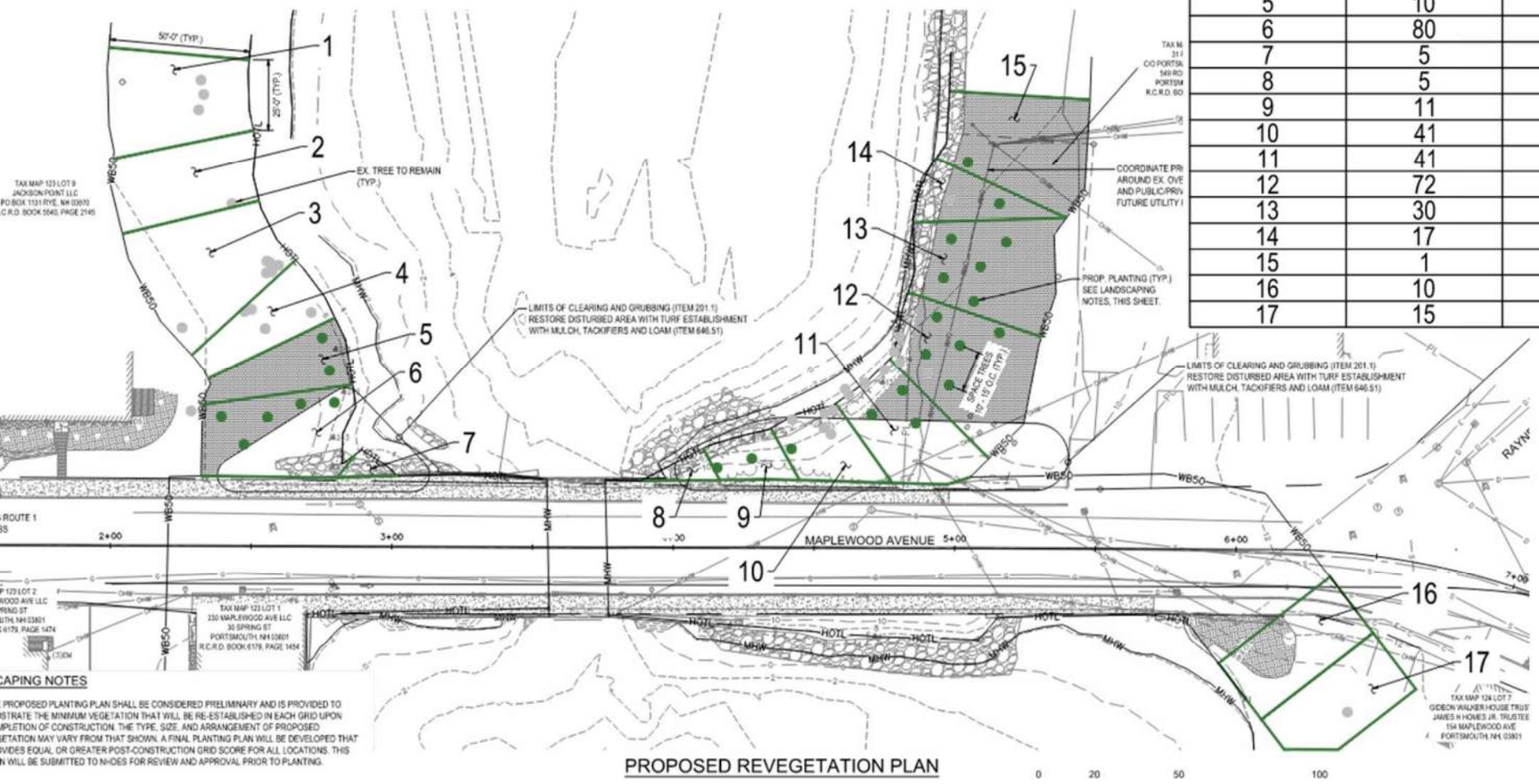


Permitting Issues (Trees needed to be removed for construction)



Permitting Issues (Restoration Plan needed)

SUMMARY OF EXISTING / PROPOSED PLANTINGS					
GRID	CURRENT	PROP. AFTER REMOVAL	CHANGE	PROP. PLANTINGS	PROP. SCORE WITH PLANTINGS
1	16	16	0		
2	1	1	0		
3	36	36	0		
4	21	21	0		
5	10	0	-10	2 TREES	10
6	80	0	-80	5 TREES	25
7	5	0	-5	*	
8	5	0	-5	*	
9	11	0	-11	2 TREES*	10
10	41	40	-1	1 TREES	45
11	41	11	-30	3 TREES	26
12	72	35	-37	5 TREES	70
13	30	0	-30	5 TREES	25
14	17	15	-2	1 TREES	20
15	1	0	-1	1 TREES	5
16	10	10	0		
17	15	15	0		

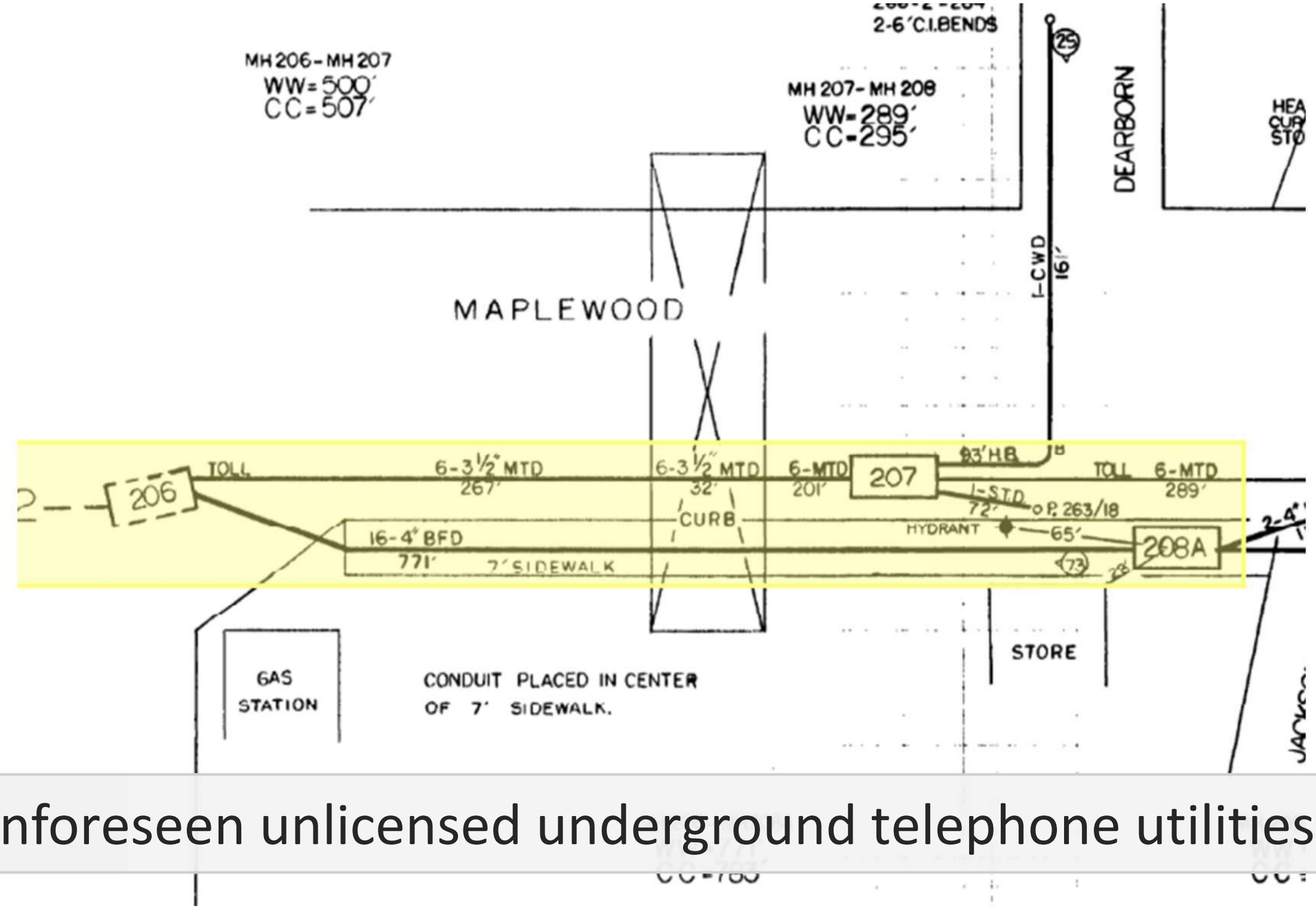


CAPING NOTES

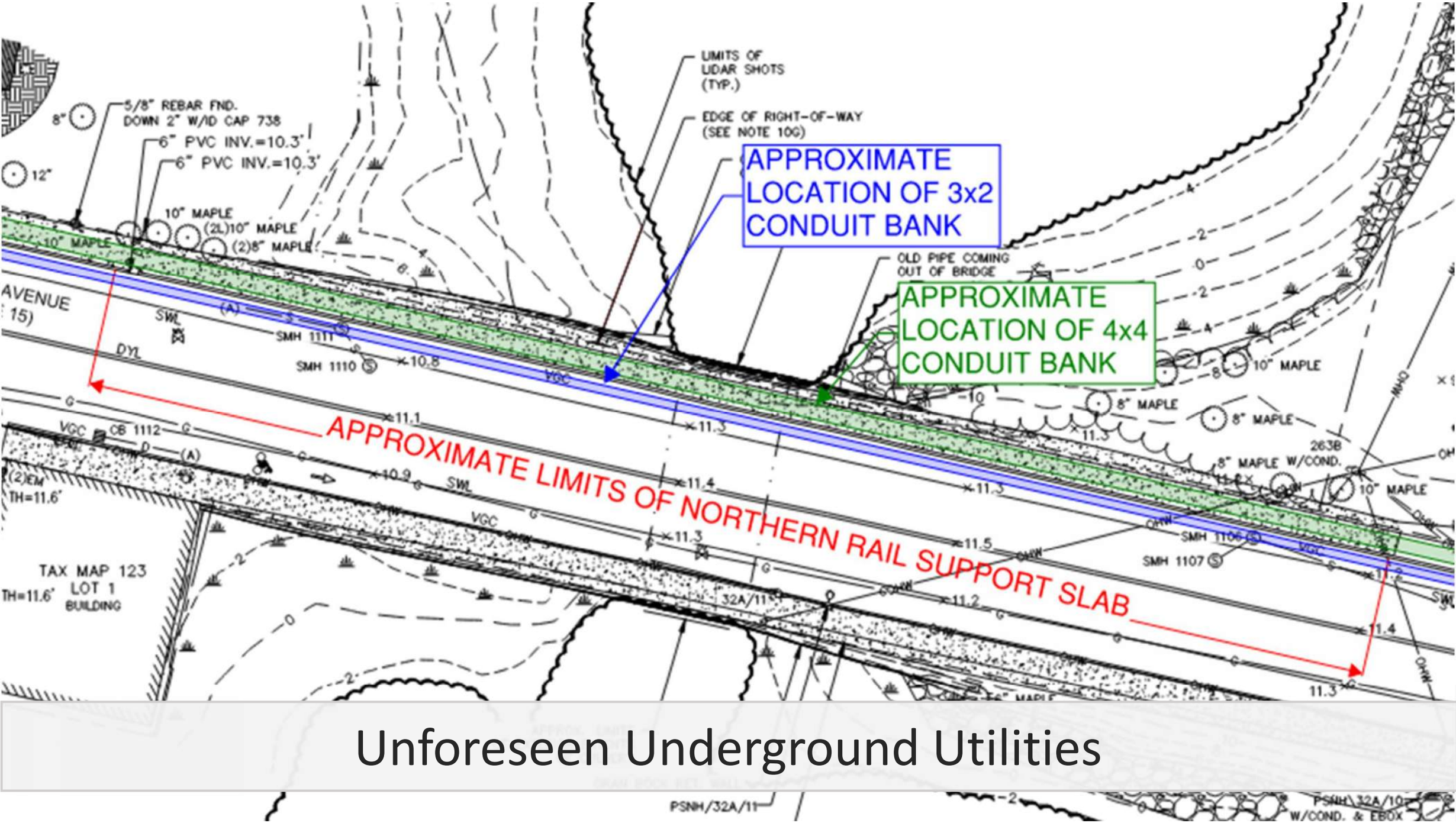
PROPOSED PLANTING PLAN SHALL BE CONSIDERED PRELIMINARY AND IS PROVIDED TO STRATE THE MINIMUM VEGETATION THAT WILL BE RE-ESTABLISHED IN EACH GRID UPON MPLETION OF CONSTRUCTION. THE TYPE, SIZE, AND ARRANGEMENT OF PROPOSED ETATION MAY VARY FROM THAT SHOWN. A FINAL PLANTING PLAN WILL BE DEVELOPED THAT VIDES EQUAL OR GREATER POST-CONSTRUCTION GRID SCORE FOR ALL LOCATIONS. THIS N WILL BE SUBMITTED TO NHDES FOR REVIEW AND APPROVAL PRIOR TO PLANTING.

PROPOSED REVEGETATION PLAN

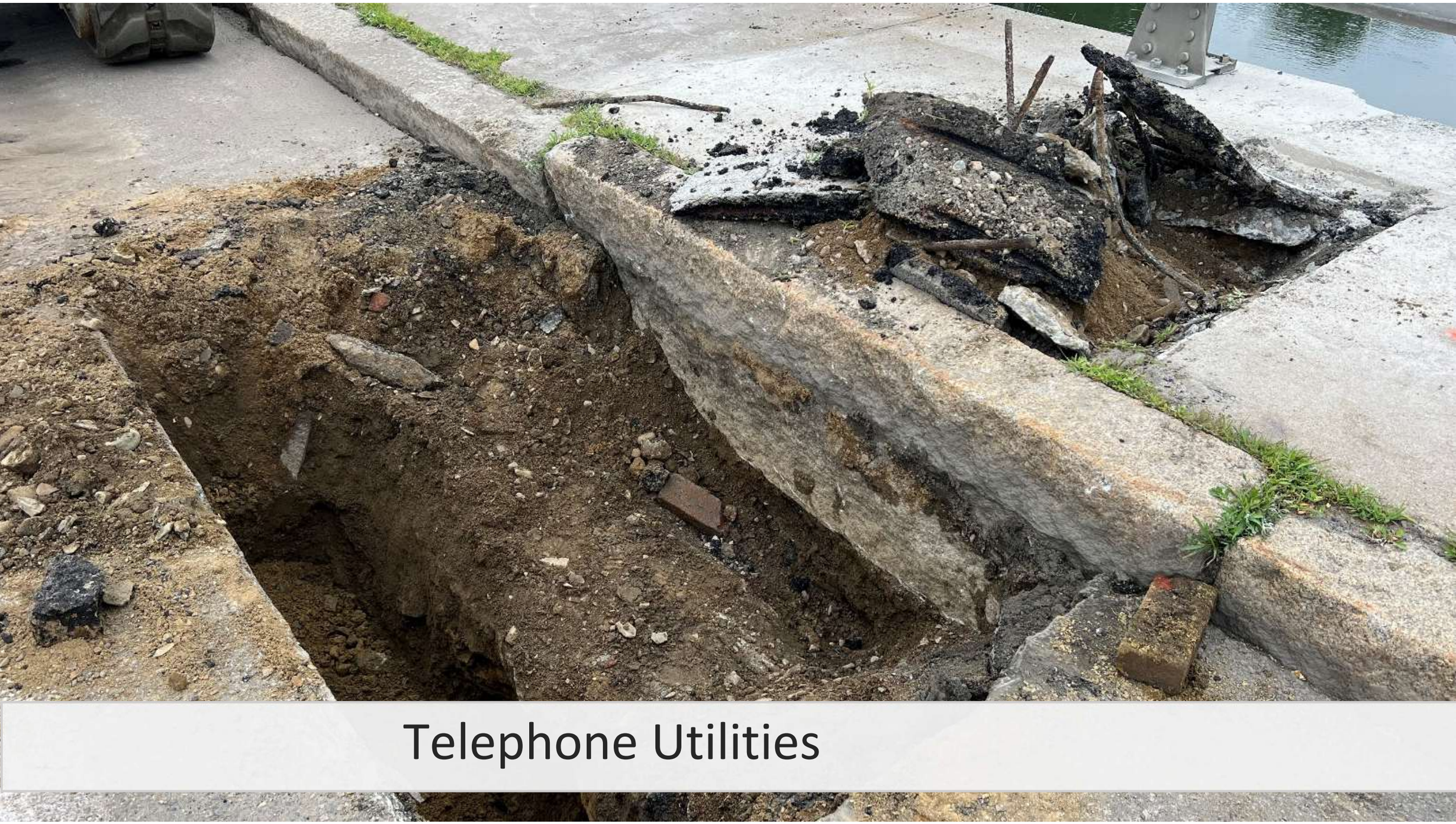
0 20 50 100



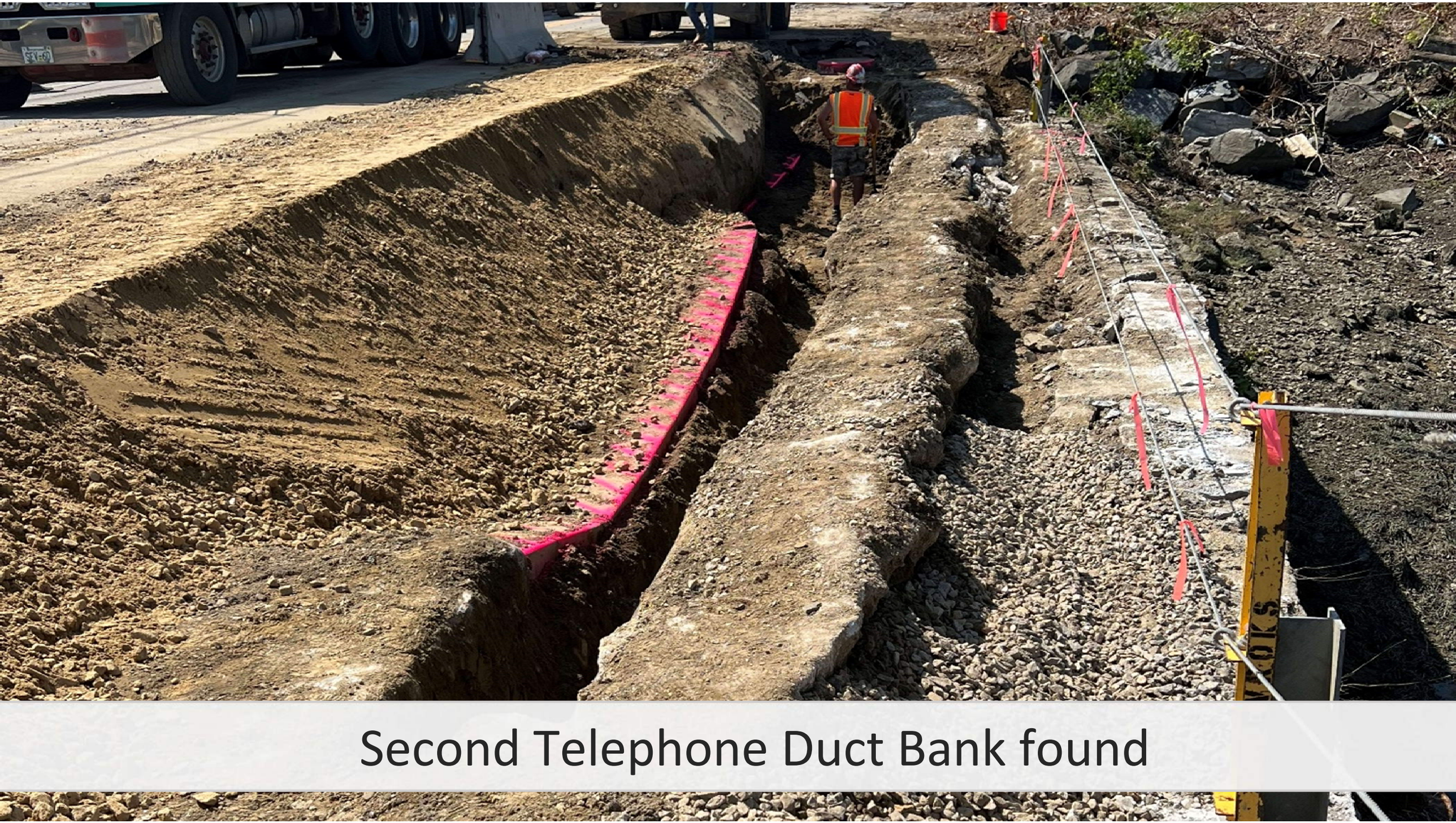
Unforeseen unlicensed underground telephone utilities



Unforeseen Underground Utilities



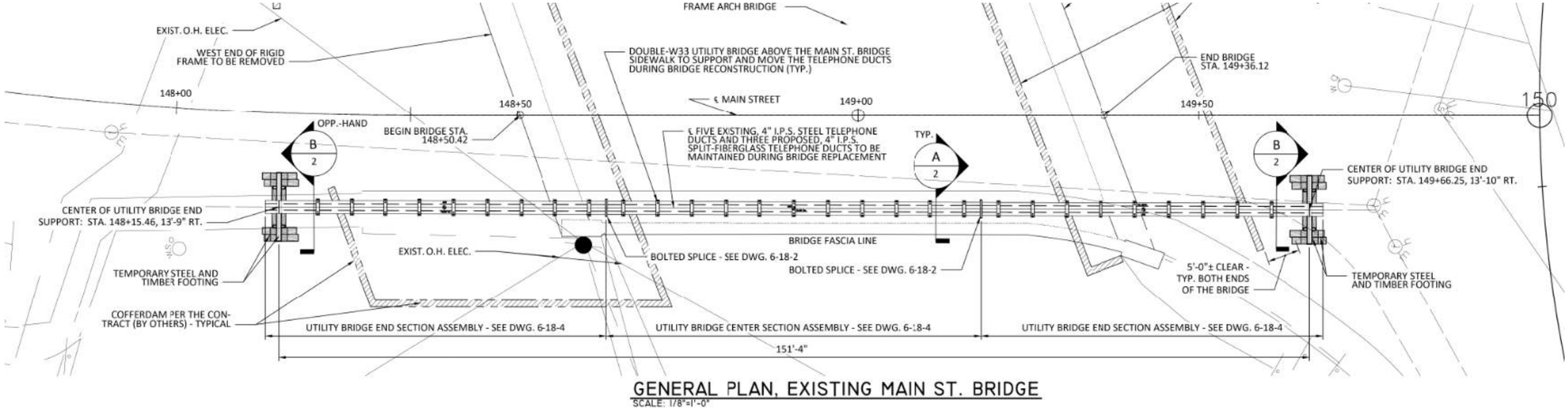
Telephone Utilities



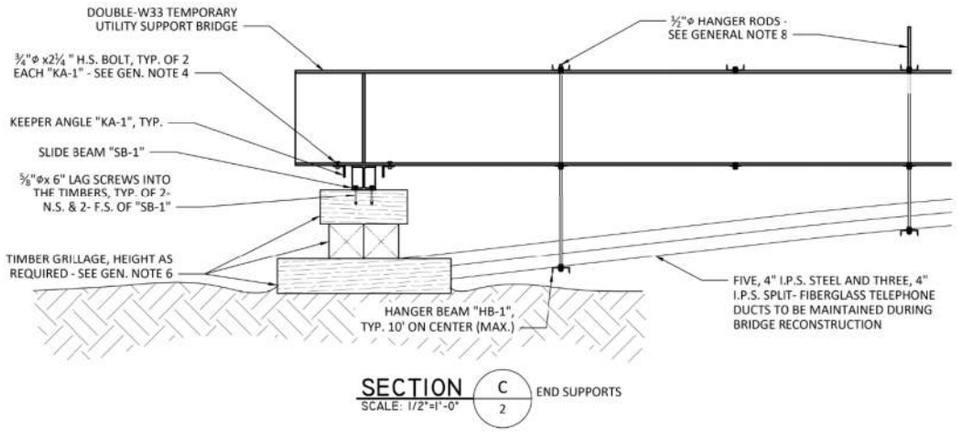
Second Telephone Duct Bank found

Northern Rail Support Slab (Sidewalk) Removal

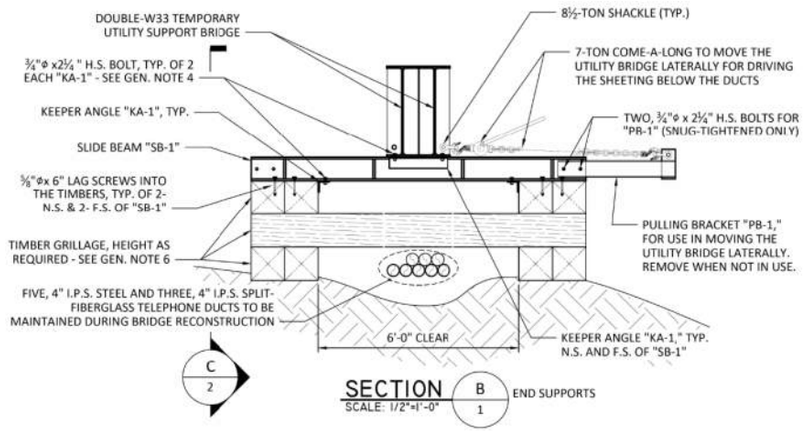
Telephone and Data Utilities



GENERAL PLAN, EXISTING MAIN ST. BRIDGE
SCALE: 1/8"=1'-0"



SECTION C 2 END SUPPORTS
SCALE: 1/2"=1'-0"



C 2

SECTION B 1 END SUPPORTS
SCALE: 1/2"=1'-0"

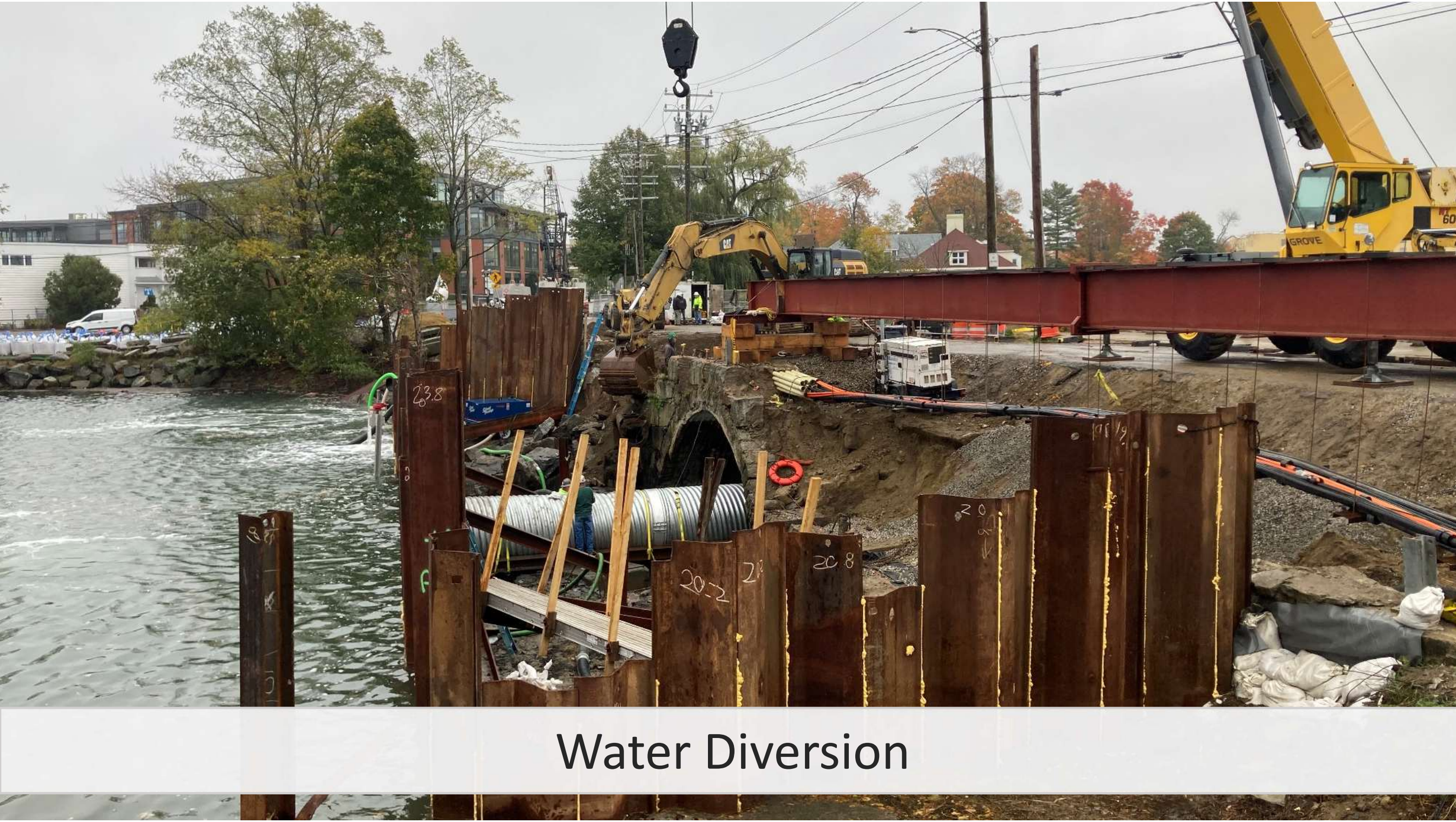
How we supported telephone for wall reconstruction

Beam supplied by Telephone Co. for temporary support

Utilities strapped to beam

Water Diversion coffer dam being installed on river side

Water Diversion



Water Diversion

Water diversion gate needed in case of big storms or high tides

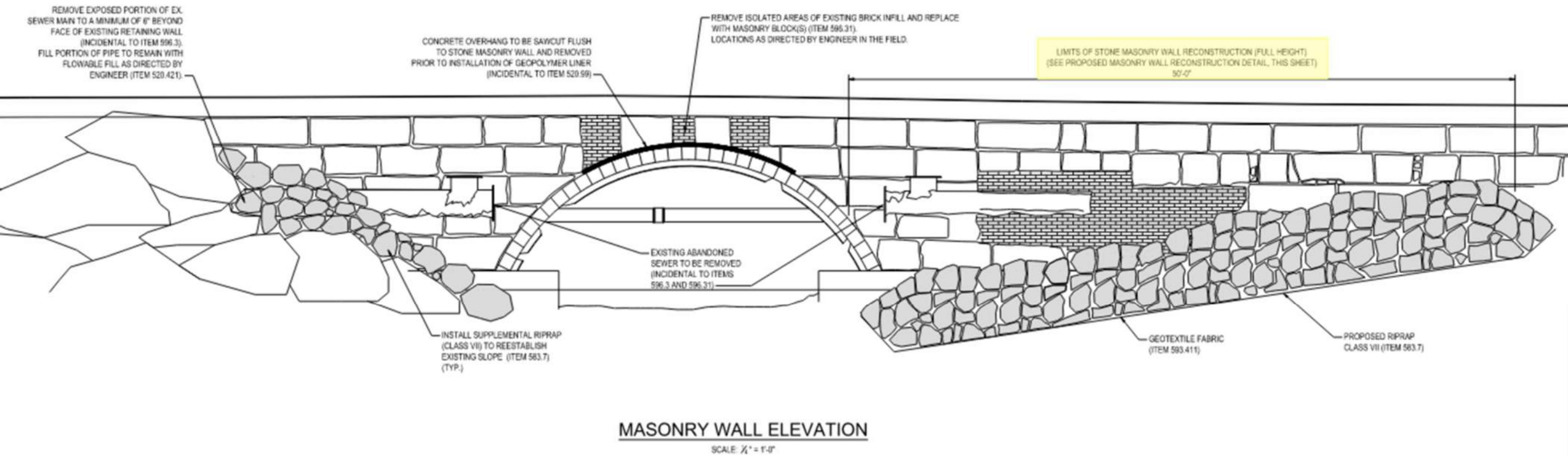
Water Diversion

Water Diversion

Water Diversion

Water Diversion

Northern Retaining Wall

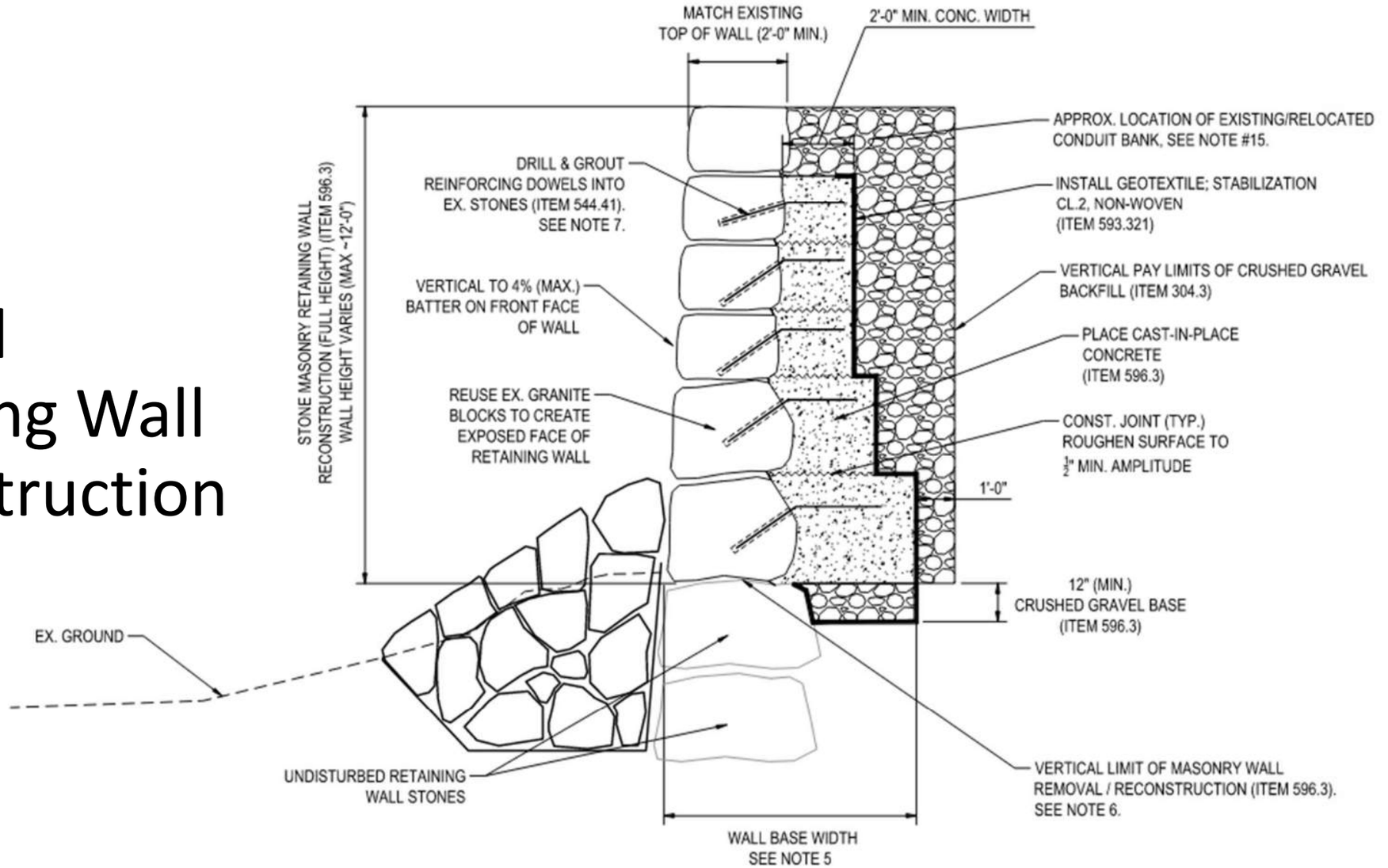


MASONRY WALL ELEVATION

SCALE: ¼" = 1'-0"

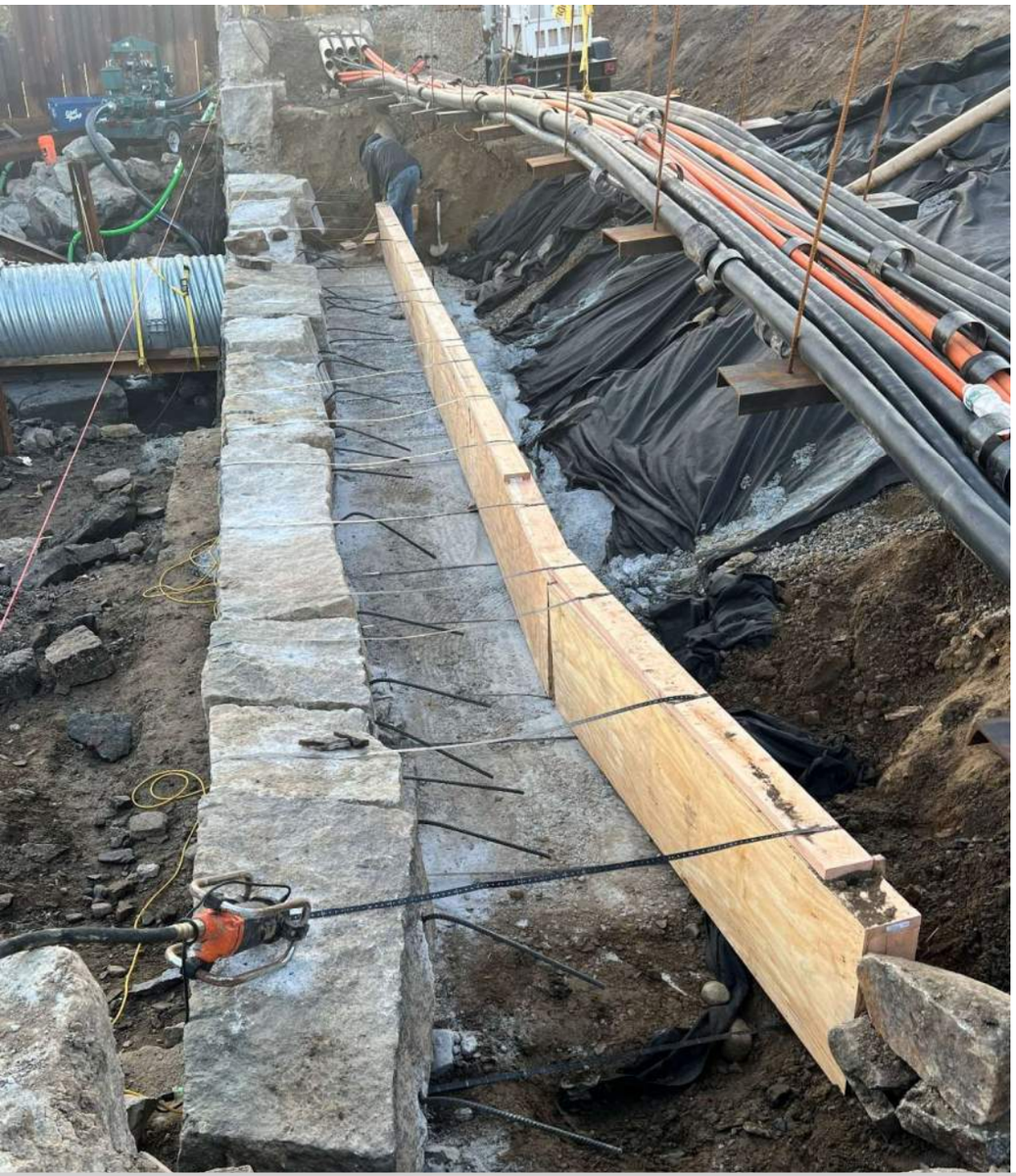
Proposed Limits of Northern Retaining Wall Reconstruction

Revised Retaining Wall Reconstruction Detail



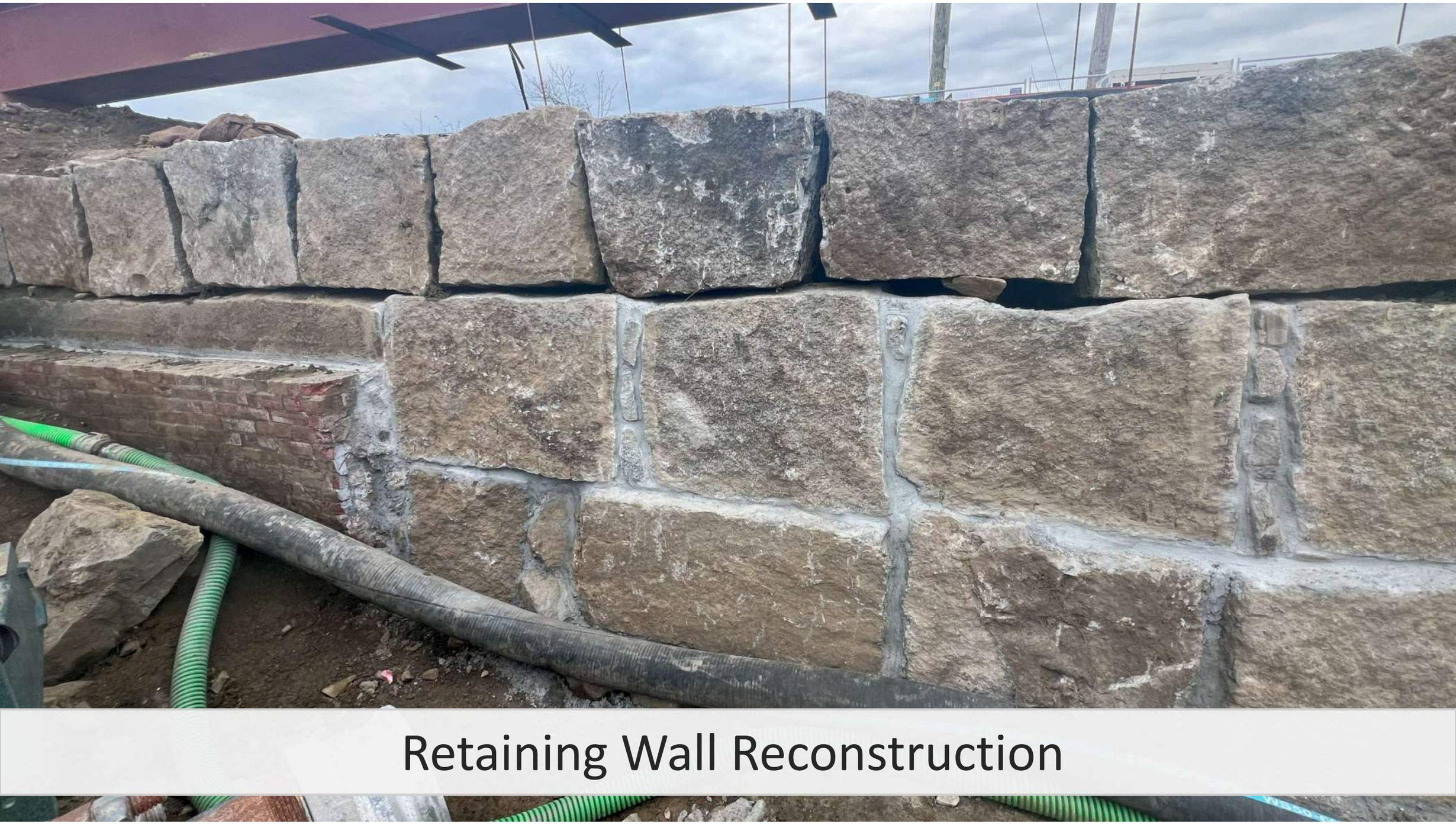
PROP. STONE MASONRY WALL RECONSTRUCTION (FULL HEIGHT) DETAIL

SCALE: ⅜" = 1'-0"



Retaining Wall Reconstruction

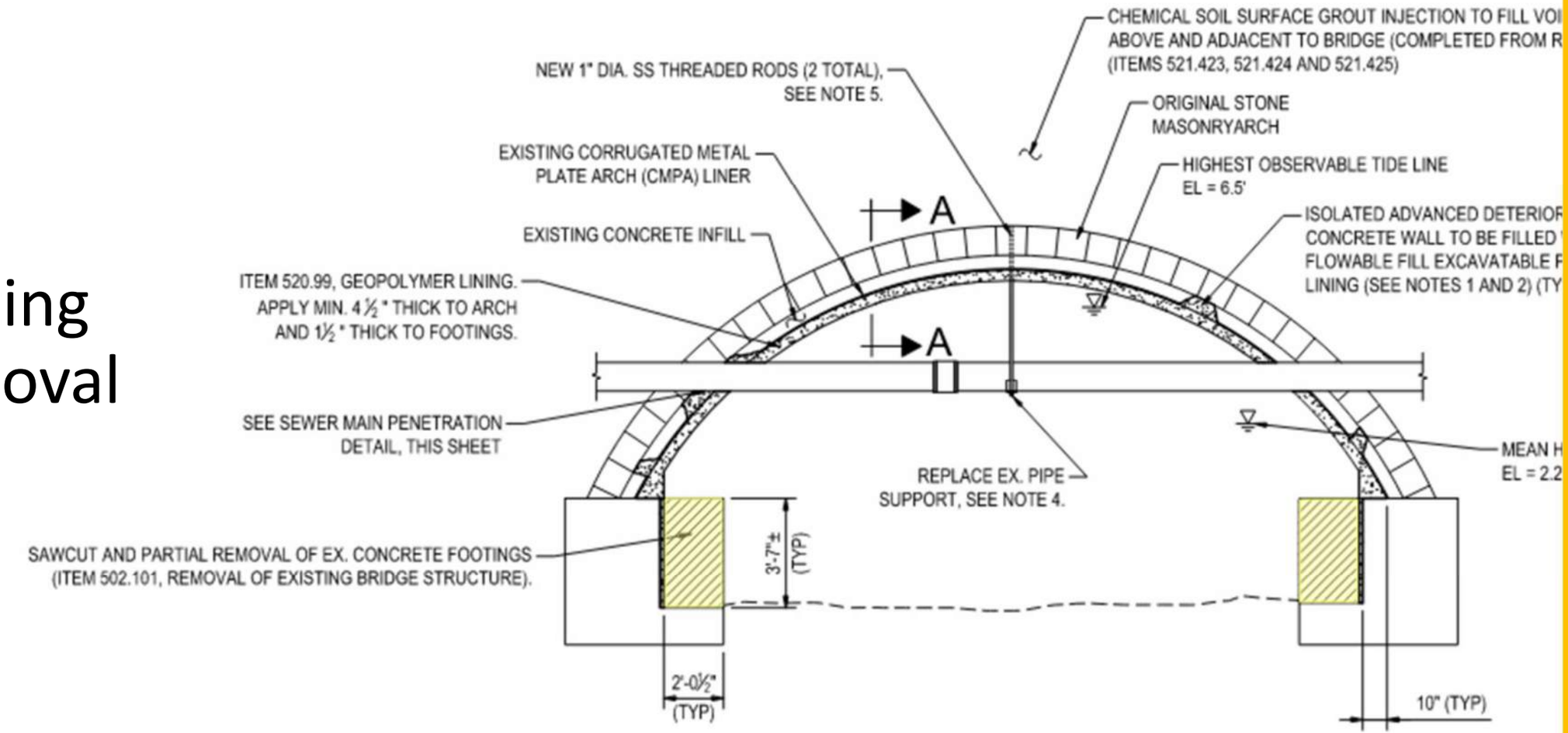
Retaining Wall Reconstruction



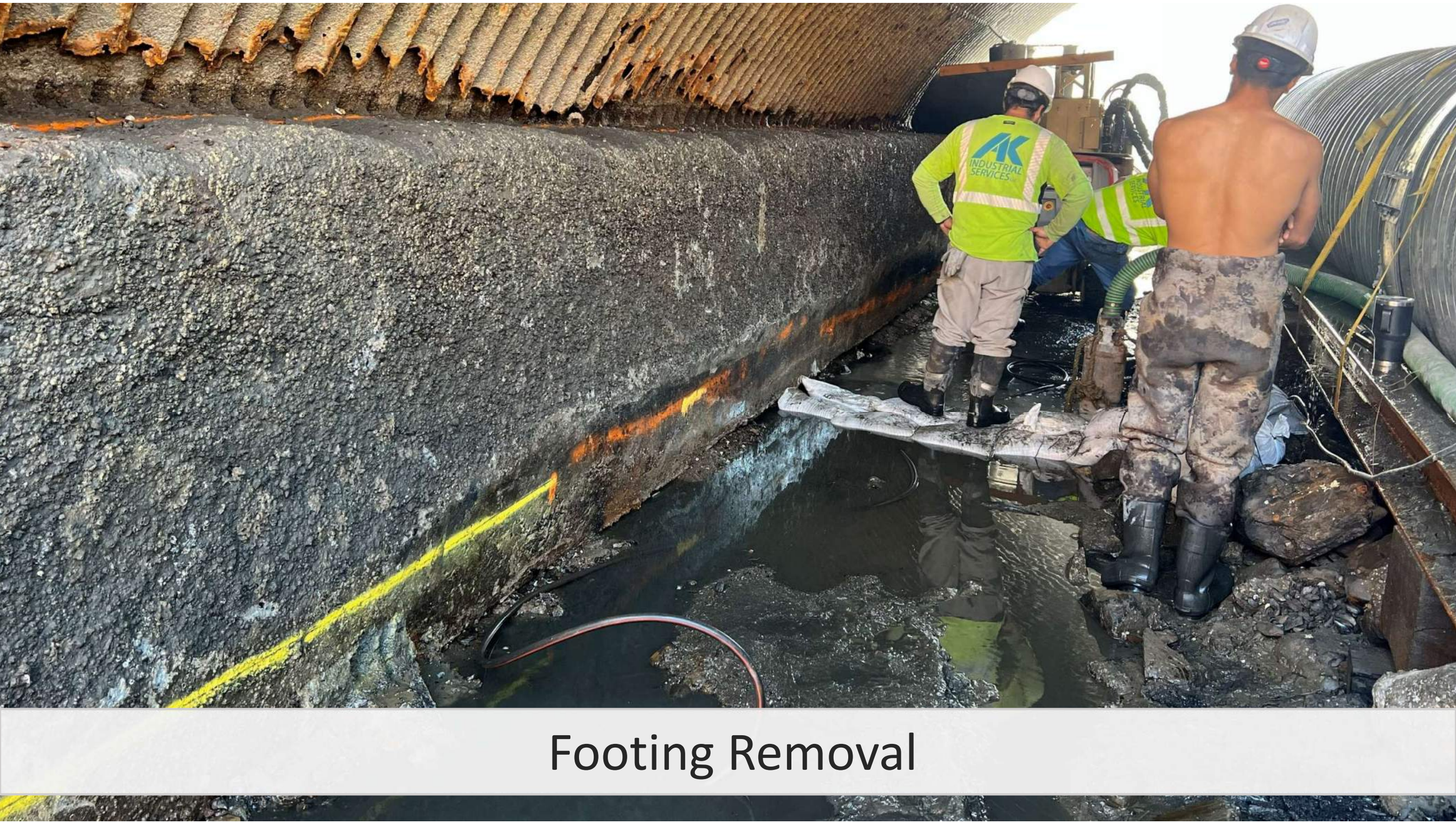
Retaining Wall Reconstruction

Retaining Wall Reconstruction

Footing Removal



Footing Removal was necessary for more flow through culvert



Footing Removal

Hydrodemolition

Hydrodemolition

Footing Removal

Telephone Conduit Encasement

Conduit Encasement

Conduit Encasement

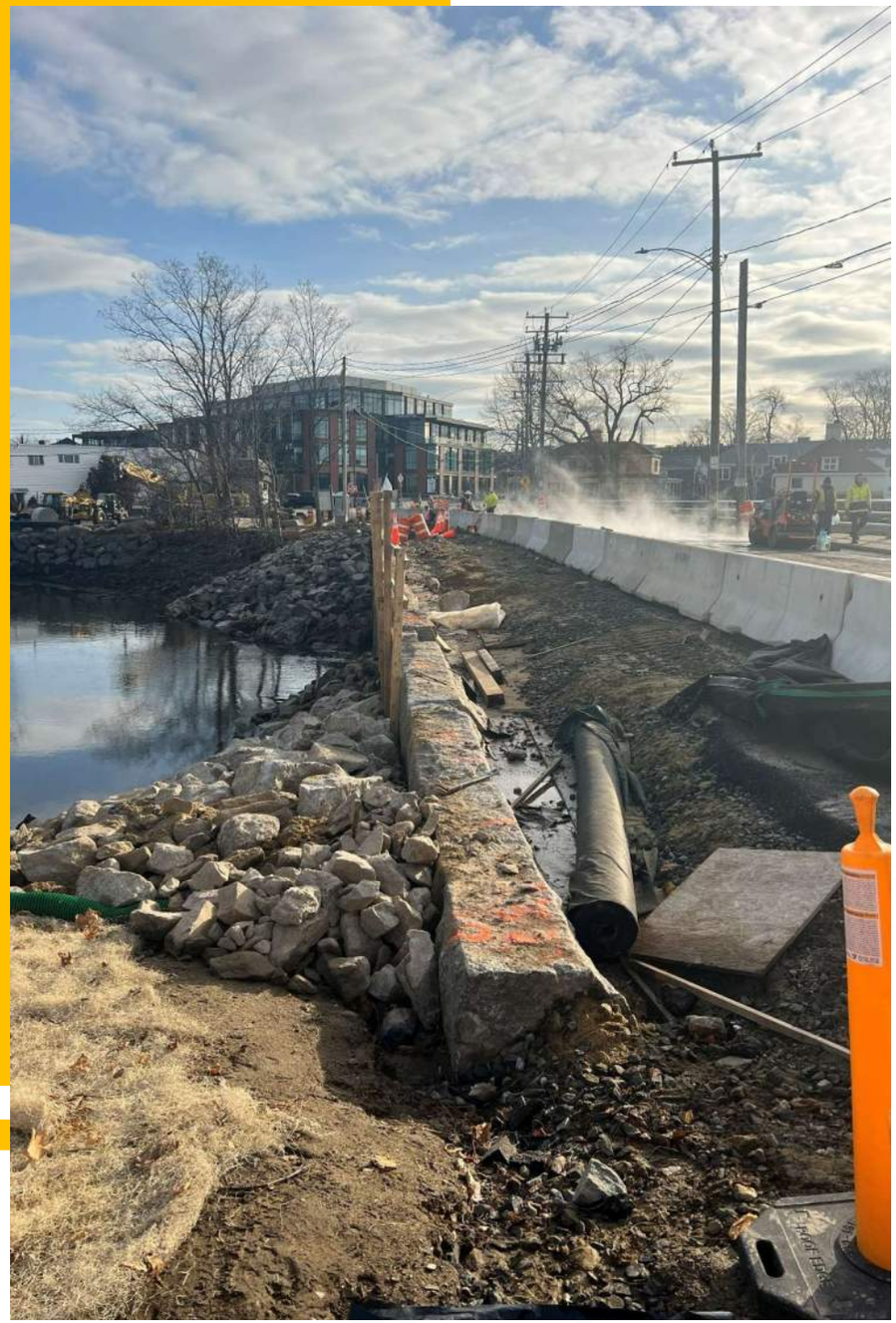
Grout Injection behind culvert wall to stop soil loss

Geo-polymer Liner being installed

Geo-polymer Liner

Geopolymer Liner

End of 2024 Construction Season

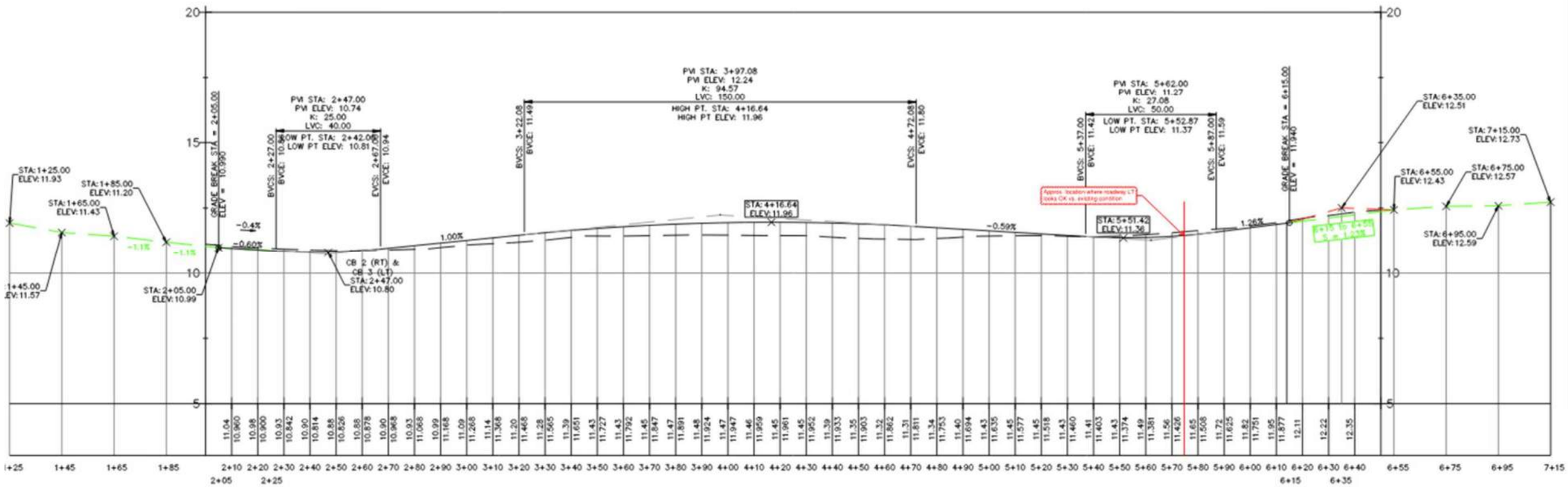


End of 2024 Construction Season

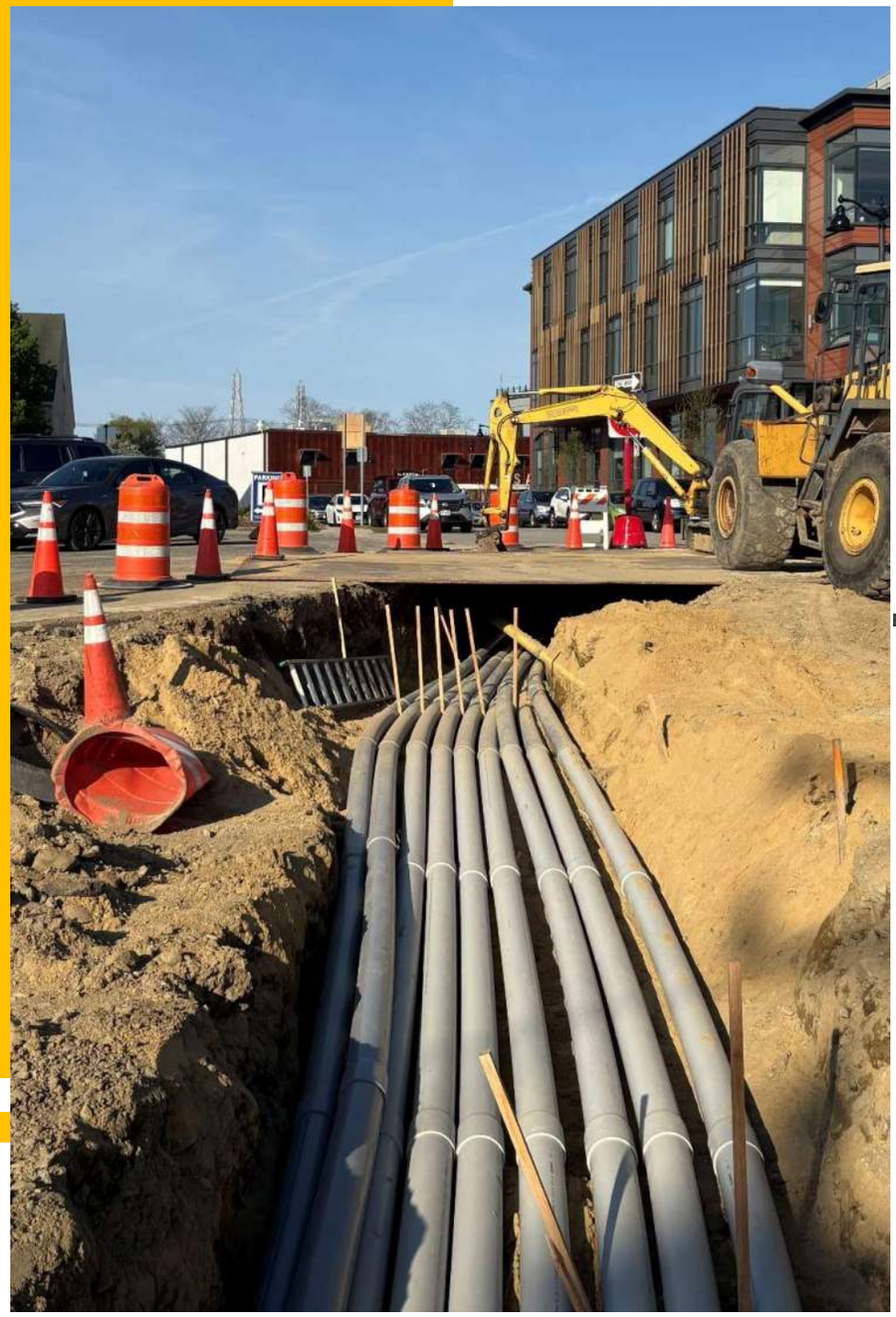
Start of 2025 Construction Season

The water Main needed to be replaced as it was from 1896 too.

New 12" Water Main

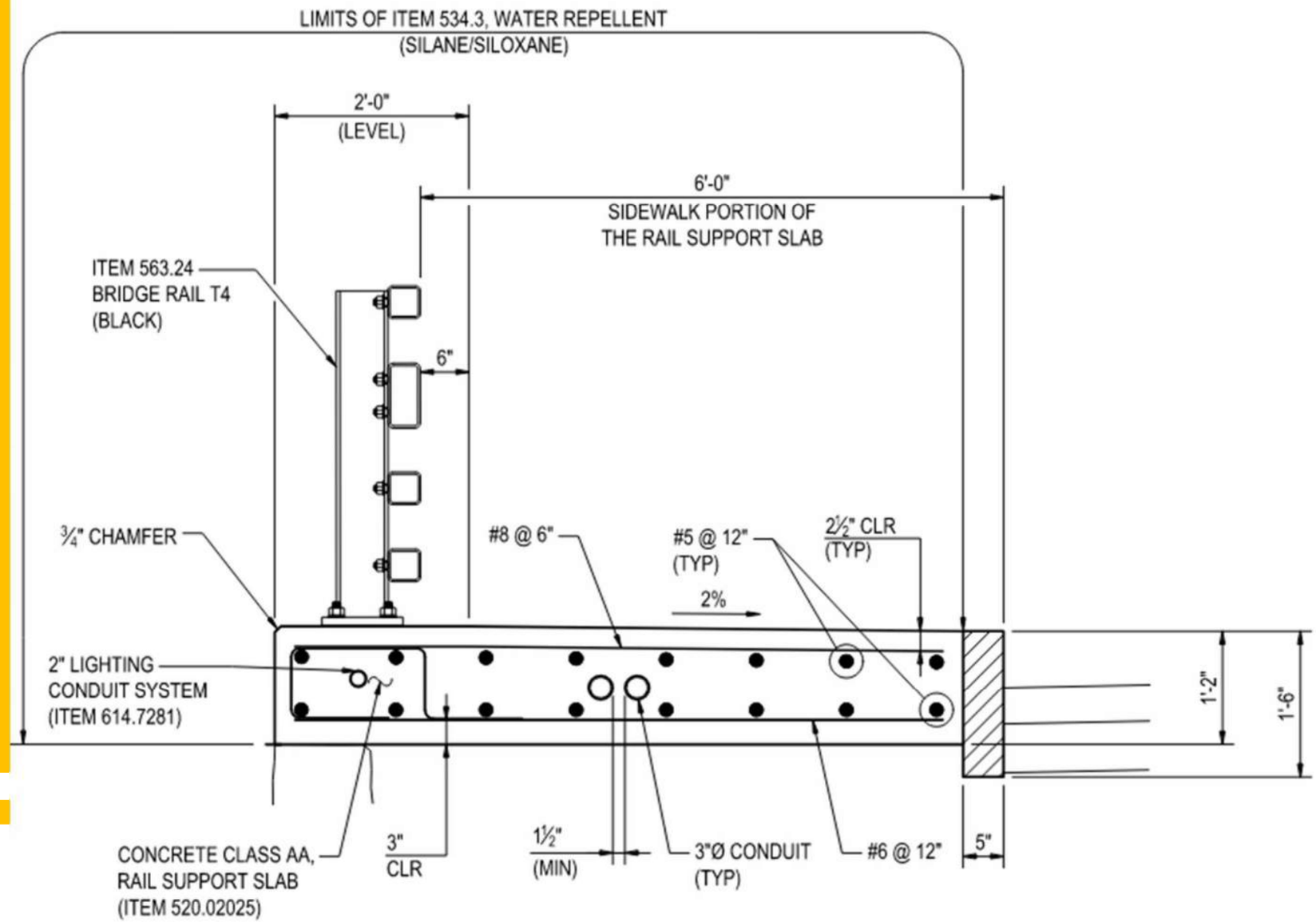


The road got a revised profile so it would drain better



These new conduits were installed for future power demands of downtown and to be able to remove the wires that are currently over the bridge.

One-Way Traffic restored in June 2025



Northern Rail Support Slab (RSS) Reconstruction

Northern RSS Reconstruction

Northern RSS Reconstruction (Conduit for new lights)

Curb Detailing

While most of the wall damage was on the north side, some southern retaining wall reconstruction required too

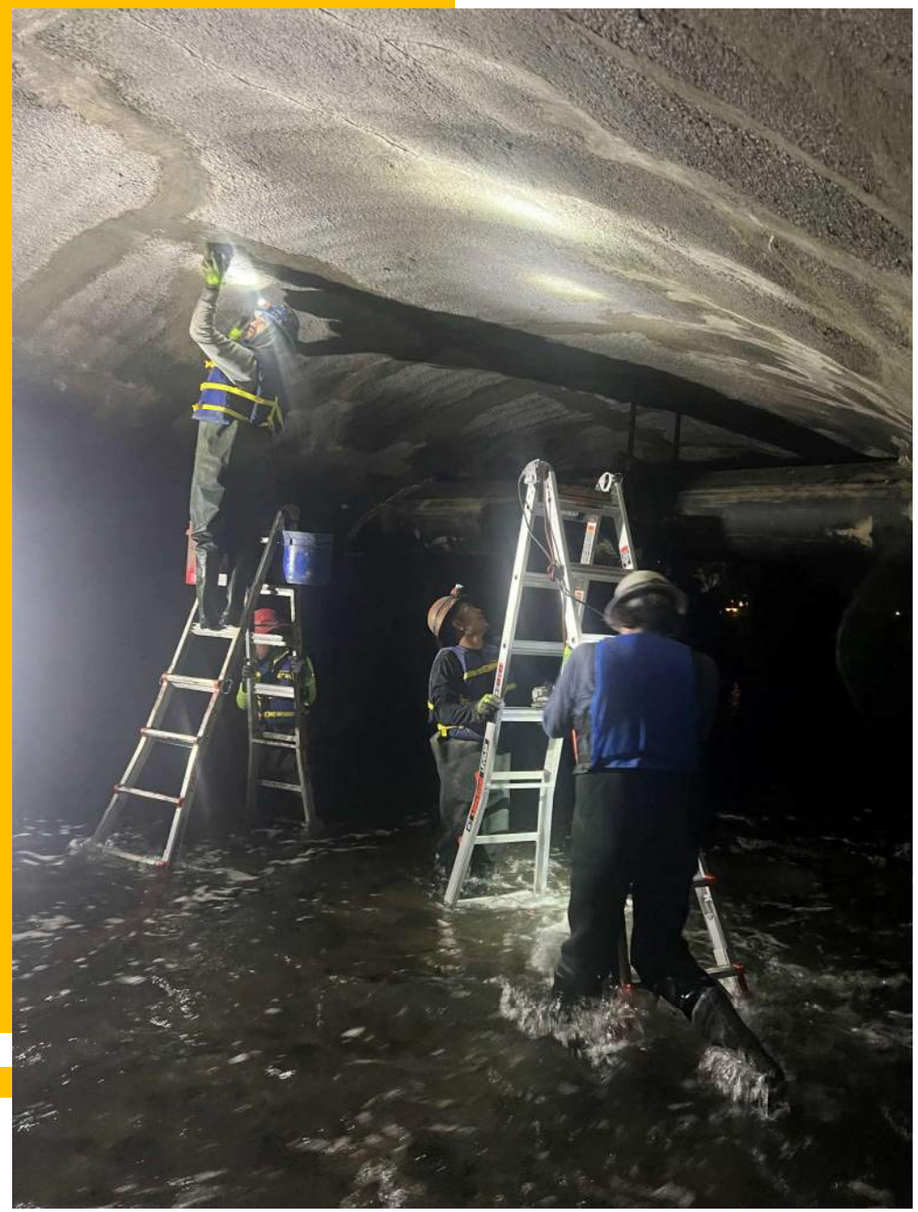
Southern Retaining Wall Removal

Southern Retaining Wall Removal

Southern Retaining Wall Reconstruction

Southern Retaining Wall Reconstruction

Southern Retaining Wall Reconstruction



Geopolymer Repairs to address minor cracks

Southern RSS existing electrical conduit bank also encountered

Southern RSS Reconstruction with new conduits for future power

Southern RSS Reconstruction

Southern RSS Reconstruction

Southern RSS Reconstruction

Final Condition fall of 2025

Final Condition of pond side

Final Condition of river side

Final Condition of culvert