

# Attachment 5

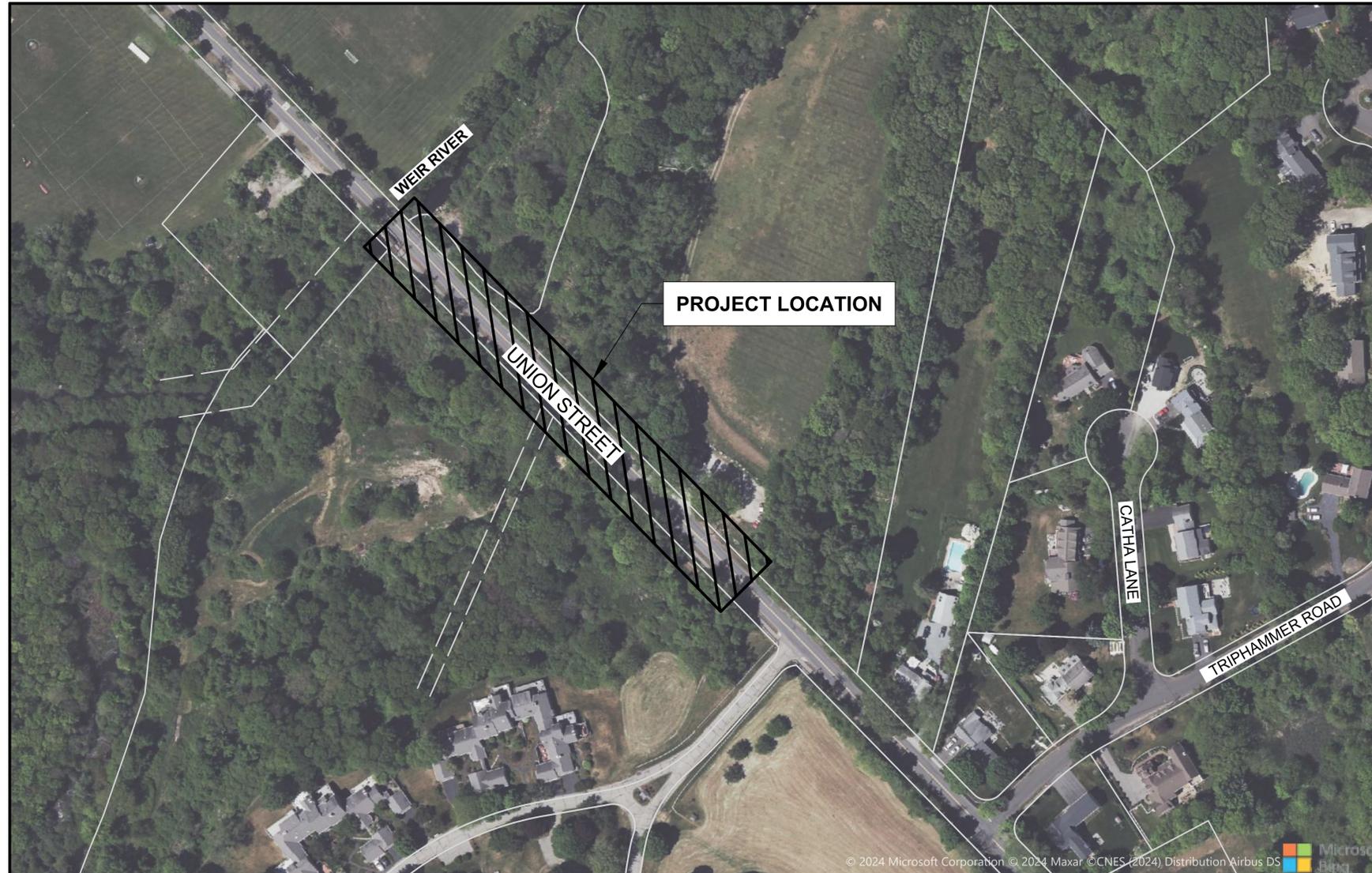
## Drawings



# THE MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION

## WOMPATUCK SEWER FORCE MAIN REPLACEMENT

APRIL 2025



### LOCATION MAP

NOT TO SCALE

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WOMPATUCK  
SEWER FORCE MAIN  
REPLACEMENT

REVISIONS

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DATE: APRIL 2025  
PROJECT NO.: 30235180  
FILE NAME: G-01  
DESIGNED BY: SPM  
DRAWN BY: GS  
CHECKED BY: SGP

SHEET TITLE

GENERAL  
ABBREVIATIONS,  
LEGENDS, NOTES AND  
DRAWING INDEX

SCALE: NOT TO SCALE

DRAWING NO.: G-01

SHEET NO.: 02 OF 12

**ABBREVIATIONS**

AC	ASBESTOS CEMENT
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS
AWWA	AMERICAN WATER WORKS ASSOCIATION
BIT	BITUMINOUS
BM	BENCHMARK
BVW	BORDING VEGETATED WETLANDS
CB	CATCH BASIN
CONC	CONCRETE
DCR	DEPARTMENT OF CONSERVATION AND RECREATION
DI	DUCTILE IRON
DIA	DIAMETER
DMH	DRAIN MANHOLE
DYL	DOTTED YELLOW LINE
E	EASTING
EL	ELEVATION
EOP	EDGE OF PAVEMENT PAVEMENT
EX	EXISTING
FM	FORCE MAIN
HDPE	HIGH DENSITY POLYETHYLENE
HMA	HOT MIX ASPHALT
HYD	HYDRANT
INV	INVERT
NJ	MECHANICAL JOINT
MH	MANHOLE
MM	MILLIMETER
N	NORTHING
OH	OVERHEAD
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
ROW	RIGHT OF WAY
SMH	SEWER MANHOLE
STA	STATION
TBM	TEMPORARY BENCHMARK
TYP	TYPICAL
UPN	UTILITY POLE NUMBER
WF	WETLAND FLAG
WG	WATER GATE

**LEGEND**

CONTOUR (MAJOR)	— 215 —
CONTOUR (MINOR)	— 207 —
EXISTING DRIVEWAY	—
EXISTING GAS	— G —
EXISTING OVERHEAD WIRES	— OH — OH —
EXISTING WATER	— W —
EXISTING SANITARY SEWER	— S —
WATER VALVE	○
UTILITY POLE	○
CATCH BASIN	□
BENCHMARK	⊕
EXISTING CATCH BASIN	□
EXISTING SANITARY MANHOLE	⊙
EDGE OF PAVEMENT	EOP
EXISTING FIRE HYDRANT	⊕
EASEMENT LINE	—
WETLAND FLAG	○
PROPOSED FORCE MAIN	— FS —
FILTER SOCK	— FS — FS —

**SURVEY NOTES**

1. THE TOPOGRAPHY, SITE DETAIL & SURFACE IMPROVEMENTS DEPICTED HEREON WERE OBTAINED FROM AN INSTRUMENT SURVEY CONDUCTED ON THE GROUND BY MERIDIAN ASSOCIATES, INC. (MAI) ON SEPTEMBER 27, 2024.
2. THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE AND ARE BASED UPON A PARTIAL FIELD SURVEY AND COMPILATION OF PLANS OF RECORD. MERIDIAN ASSOCIATES, INC. DOES NOT WARRANT NOR GUARANTEE THE LOCATION OF ALL UTILITIES DEPICTED OR NOT DEPICTED. THE CONTRACTOR, PRIOR TO COMMENCEMENT OF CONSTRUCTION, SHALL VERIFY THE LOCATION OF ALL UTILITIES AND CONTACT DIG SAFE AT 811.
3. THIS PLAN DOES NOT SHOW ANY UNRECORDED OR UNWRITTEN EASEMENTS WHICH MAY EXIST. A REASONABLE AND DILIGENT ATTEMPT HAS BEEN MADE TO OBSERVE ANY APPARENT, VISIBLE USES OF THE LAND, HOWEVER, THIS DOES NOT CONSTITUTE A GUARANTEE THAT NO SUCH EASEMENTS EXIST.
4. THE ELEVATIONS DEPICTED HEREON WERE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), AS DERIVED FROM GPS OBSERVATIONS. HORIZONTAL DATUM IS BASED UPON NORTH AMERICAN DATUM OF 1983 (NAD83) MASSACHUSETTS STATE PLANE COORDINATE SYSTEM (US SURVEY FEET).
5. PROPERTY LINES DEPICTED HEREON ARE BASED ON COMPILED GIS. THIS PLAN IS NOT TO BE USED FOR THE RECONSTRUCTION OF BOUNDARY LINES OR FOR TITLE INSURANCE PURPOSES.
6. THE SUBJECT PROPERTY IS LOCATED IN ZONE RESIDENCE D AND ZONE OFFICIAL & OPEN SPACE.
7. THE WETLAND FLAGS DEPICTED WERE DEMARCATED BY LEC ENVIRONMENTAL CONSULTANTS, INC. ON SEPTEMBER 11, 2024 AND FIELD LOCATED BY MAI ON SEPTEMBER 27, 2024.
8. THE SUBJECT PREMISES IS LOCATED IN THE FOLLOWING FLOOD ZONES PER FEMA FLOOD INSURANCE RATE MAP NUMBER 25009C0434G DATED JULY 16, 2014:
  - FLOOD ZONE X (UNSHADED), AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN
  - FLOOD ZONE AE, AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT DETERMINED BY DETAILED METHODS (ELEV=27.2). (NAVD 88)

**DRAWING INDEX**

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**WOMPATUCK  
SEWER FORCE MAIN  
REPLACEMENT**

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DESIGNED BY: \_\_\_\_\_  
DRAWN BY: AME  
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SHEET TITLE

GENERAL  
GENERAL NOTES

SCALE: AS SHOWN

DRAWING NO.: G-02

SHEET NO.: 03 OF 12

GENERAL NOTES:

- LOCATION OF ALL UNDERGROUND UTILITIES SHOWN HEREIN ARE APPROXIMATE, ARE NOT NECESSARILY COMPLETE, AND ARE BASED ON FIELD LOCATION OF VISIBLE STRUCTURES SUCH AS CATCH BASINS, MANHOLES, WATER GATES, ETC. AND COMPILED INFORMATION FROM PLANS SUPPLIED BY THE RESPECTIVE UTILITY COMPANIES AND GOVERNMENT AGENCIES. CONTRACTOR SHALL VERIFY THE LOCATION OF UNDERGROUND AND ABOVE GROUND UTILITIES WITH UTILITY OWNERS PRIOR TO ANY EXCAVATION WORK AND SHALL COMPLY WITH THE REQUIREMENTS OF UTILITY OWNERS REGARDING NOTICE OF WORK AND PROTECTION OF UTILITIES. IMPROVEMENTS ON OR UNDER THE LAND MAY NOT BE SHOWN; CONTRACTOR TO NOTIFY ENGINEER IMMEDIATELY OF ANY SUBSURFACE UTILITIES OR PIPES ENCOUNTERED THAT ARE NOT SHOWN ON THE DRAWINGS.
- CONTRACTOR SHALL MARK OUT EXISTING UTILITIES PRIOR TO THE COMMENCEMENT OF WORK. THE CONTRACTOR SHALL CALL DIG SAFE AT 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO EXCAVATING AT ANY LOCATION, SATURDAYS, SUNDAYS, AND HOLIDAYS EXCLUDED. A COPY OF THE DIG SAFE PROJECT REFERENCE NUMBER SHALL BE GIVEN TO THE OWNER PRIOR TO EXCAVATION.
- CONTRACTOR SHALL PROVIDE A REGISTERED LAND SURVEYOR, LICENSED IN THE STATE OF MASSACHUSETTS, TO ESTABLISH VERTICAL AND HORIZONTAL CONTROLS. ALL WORK SHALL BE CONDUCTED WITHIN PUBLIC PROPERTY AND STATE HIGHWAY LAYOUT.
- THE CONTRACTOR SHALL MAKE ALL REQUIRED FIELD MEASUREMENTS TO VERIFY EXISTING AND CONTRACT INTERFACE DIMENSIONS, LOCATIONS AND OTHER CONDITIONS.
- CONTRACTOR SHALL INSTALL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO THE START OF WORK AND MAINTAIN THEM THROUGHOUT CONSTRUCTION UNTIL PERMANENT RESTORATION IS COMPLETED AND APPROVED BY ALL AUTHORITIES HAVING JURISDICTION. REFER TO THE EROSION AND SEDIMENT CONTROL DETAILS AND ENVIRONMENTAL NOTES INCLUDED ON SHEET C-05.
- PROVIDE AND IMPLEMENT TRAFFIC MANAGEMENT PLANS IN ACCORDANCE WITH FEDERAL HIGHWAY ADMINISTRATION MUTCD STANDARDS AND TOWN OF HINGHAM DPW STANDARDS. CONTRACTOR SHALL COORDINATE WITH POLICE AND FIRE DEPARTMENTS TO ENSURE ACCESS FOR EMERGENCY VEHICLES IS MAINTAINED AT ALL TIMES.
- WHERE CONSTRUCTION ACTIVITY IS TO TAKE PLACE IN TRAVELED WAYS, THE CONTRACTOR SHALL PERFORM WORK IN A MANNER ACCEPTABLE TO THE TOWN AND IN ACCORDANCE WITH TRAFFIC CONTROL PLANS SO THAT INTERFERENCE WITH AND INCONVENIENCE TO BUSINESS CONCERNS AND ABUTTERS ON ACCOUNT OF THE CONSTRUCTION WORK IS INCONSEQUENTIAL. THE CONTRACTOR WILL NOT BE ALLOWED TO PARK EQUIPMENT OR STOCKPILE MATERIAL ON THE TRAVELED WAYS OVERNIGHT OR WHEN NOT IN USE. THE CONTRACTOR SHALL MAINTAIN SAFE AND REASONABLE INGRESS TO EGRESS FROM ABUTTING PROPERTIES AT ALL TIMES. NO UNPLATED EXCAVATIONS IN TRAVELED WAYS WILL BE ALLOWED TO REMAIN OVERNIGHT.
- ALL WORK IS LIMITED TO EXISTING RIGHT-OF-WAYS AS SHOWN. DO NOT DISTURB CLOSER THAN 2 FEET TO THE EDGE OF THE RIGHT-OF-WAY SHOWN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGE OR RESTORATION REQUIRED OUTSIDE THESE LIMITS OF WORK.
- STAGING AREAS DESIRED BY THE CONTRACTOR WILL BE ACQUIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. ANY STAGING AREAS SHALL BE REVIEWED BY THE OWNER.
- CONTRACTOR SHALL PROTECT AND RESTORE ALL SITE FEATURES, INCLUDING BUT NOT LIMITED TO TREES, BUSHES, STRUCTURES, WALLS, PAVING, CURBING, UTILITIES, UTILITY POLES, OVERHEAD ELECTRICAL LINES, SIGNS, FENCES, GUARDRAILS, LANDSCAPING, AND OTHER EQUIPMENT. CONTRACTOR SHALL PAY PARTICULAR ATTENTION TO SAFETY ISSUES RELATED TO ELECTRICAL FACILITIES, BOTH OVERHEAD AND UNDERGROUND. ALL DAMAGED OR REMOVED SITE FEATURES TO REMAIN SHALL BE REPAIRED OR REPLACED TO THE COMPLETE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER.
- PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR SHALL PERFORM TEST PITS AS REQUIRED TO DETERMINE THE JOINT TYPE, LOCATION AND DEPTH OF EXISTING UTILITIES. ANY CONFLICTS NOTED IN PROPOSED CONSTRUCTION SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER. IN ADDITION, TEST PITS TO BE UTILIZED TO DETERMINE EXISTING PAVEMENT TYPE AND DEPTH.
- THE EXISTING PUMP STATION AND FORCE MAIN ARE ACTIVE; CONTRACTOR SHALL COORDINATE WITH ENGINEER AND OWNER A MINIMUM OF SEVEN (7) DAYS IN ADVANCE FOR TEMPORARY SHUTDOWNS. CONTRACTOR SHALL PROVIDE VACTOR TRUCKS TO MAINTAIN THE WATER LEVEL IN THE WET WELL AND PREVENT SURCHARGING. VACTOR TRUCKS TO DISCHARGE DIRECTLY TO THE GRAVITY SEWER AT A LOCATION DETERMINED BY THE OWNER.
- THE CONTRACTOR IS RESPONSIBLE FOR DESIGN AND INSTALLATION OF ALL TRENCH EXCAVATION SUPPORT SYSTEM.
- RESTRAIN ALL FITTINGS AND PIPE JOINTS AS INDICATED HEREIN.
- WHERE EXCAVATION WORK REQUIRES, OR RESULTS IN, DISTURBANCE OF EXISTING ASBESTOS CEMENT (AC) SEWER PIPE, EXISTING AC PIPE TO BE ABANDONED IN PLACE OR PLACED CAREFULLY IN THE OPEN TRENCH EXCAVATION.
- UNLESS OTHERWISE SHOWN, EXISTING GRADES SHALL BE RESTORED AFTER CONSTRUCTION OF THE WORK IS COMPLETE.
- THERE WILL BE NO ADDITIONAL COMPENSATION FOR COMPLYING WITH THE REQUIREMENTS LISTED IN THE GENERAL NOTES ABOVE OR PERMIT REQUIREMENTS. IF THE COST TO COMPLY IS NOT SPECIALLY STATED IN THE REQUEST FOR PROPOSAL, PAYMENT SHALL BE INCLUDED IN THE UNIT PRICES FOR THE WORK BEING COMPLETED IN THE AREA.

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PROJECT NO.: 30235180

FILE NAME: G-03

DESIGNED BY: SPM

DRAWN BY: GS

CHECKED BY: SGP

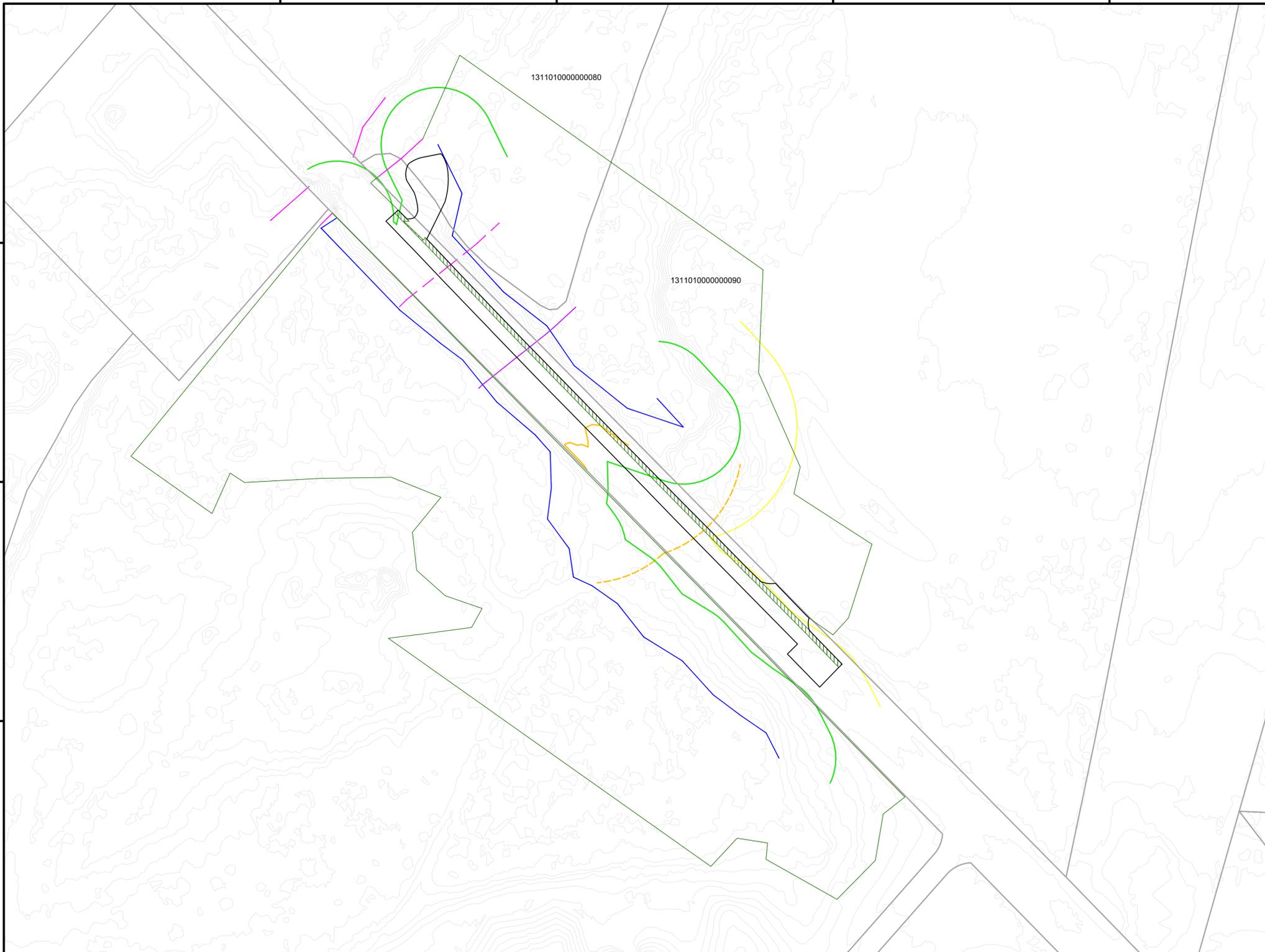
SHEET TITLE

GENERAL  
OVERVIEW MAP

SCALE: NOT TO SCALE

DRAWING NO.: G-03

SHEET NO.: 04 OF 12



**LEGEND**

- PROJECT AREA
- TAX PARCELS
- 1' CONTOURS
- BORDERING VEGETATED WETLANDS 50' BUFFER
- BORDERING LAND SUBJECT TO FLOODING
- BORDERING VEGETATED WETLANDS 100' BUFFER
- BORDERING VEGETATED WETLANDS
- TOP OF BANK/MAHW
- TOP OF BANK/MAHW 100' BUFFER
- RIVERFRONT AREA
- BORDERING LAND SUBJECT TO FLOODING 100' BUFFER
- MAINTAINED LAWN
- VEGETATION

NOTES:

1. BORDERING LAND SUBJECT TO FLOODING PRESUMED TO BE CONSISTENT WITH FLOOD ZONE AE ASSOCIATED WITH A BASE FLOOD ELEVATION OF 27.2 FEET.
2. TOP OF BANK/MAHW LIMIT ASSUMED TO BE CONSISTENT WITH LAND UNDER WATER AND DIADROMOUS FISH RUNS. ASSOCIATED 100' BUFFER ASSUMED CONSISTENT FOR ALL AFOREMENTIONED AREAS.
3. RESOURCE AREAS DELINEATED BY LEC ENVIRONMENTAL CONSULTANTS, INC. ON OCTOBER 8, 2024. DELINEATION REPORT INCLUDED AS ATTACHMENT 6 OF THIS PACKAGE.
4. DATA FOR 1' CONTOURS, TAX PARCELS, AND FEMA REGULATORY FLOODWAY ACCESSED FROM MASSMAPPER ON 4/9/2025.
5. PROJECT LOCATED WITHIN THE BOSTON HARBOR DRAINAGE BASIN, AS MAPPED BY MASSGIS.

TABLE 2. TEMPORARY IMPACTS TO WETLAND RESOURCE AREAS

WETLAND RESOURCE AREAS	RESOURCE AREA		Width of Buffer(feet)	SF	Acres
	SF	Acres			
BORDERING VEGETATED WETLAND	0	0	100	10677	0.25
BORDERING LAND SUBJECT TO FLOODING	5660	0.13	100	1927	0.04
RIVERFRONT AREA (0-100 FEET)	2807	0.06	--	--	--
RIVERFRONT AREA (0-200 FEET)	4285	0.10	--	--	--
BANKS	0	0	100	2807*	0.06*
LAND UNDER WATER	0	0	100	2807*	0.06*

NOTES:

1. \* = AREA NOT REGULATED BY MASSDEP PURSUANT TO 310 CMR 10.00 BUT REGULATED BY THE TOWN OF HINGAM.





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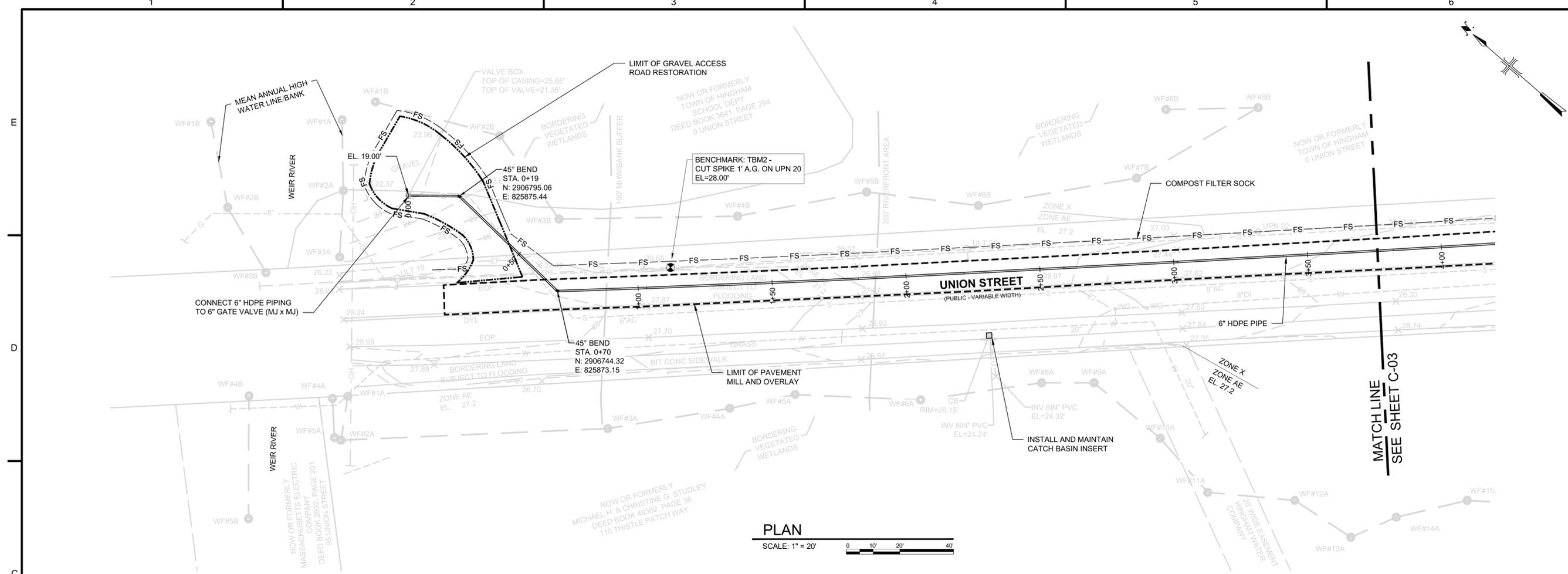
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CIVIL  
PLAN AND PROFILE 1

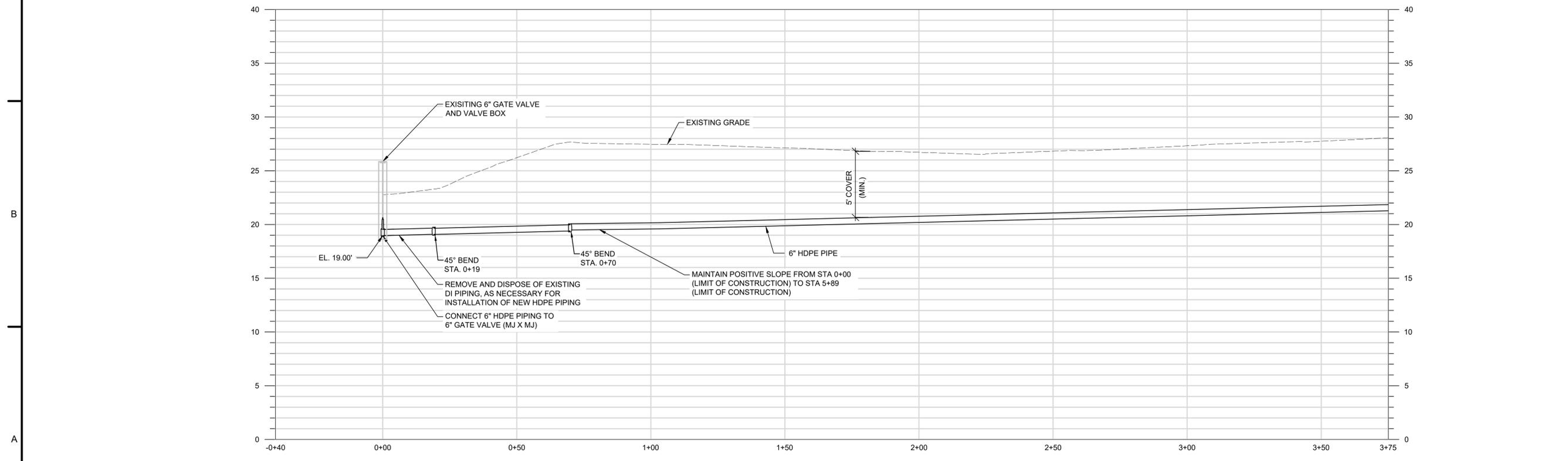
SCALE: AS SHOWN

DRAWING NO.: C-02

SHEET NO.: 06 OF 12



**PLAN**  
SCALE: 1" = 20'



**PROFILE**  
HORZ. SCALE: 1"=20'  
VERT. SCALE: 1"=5'

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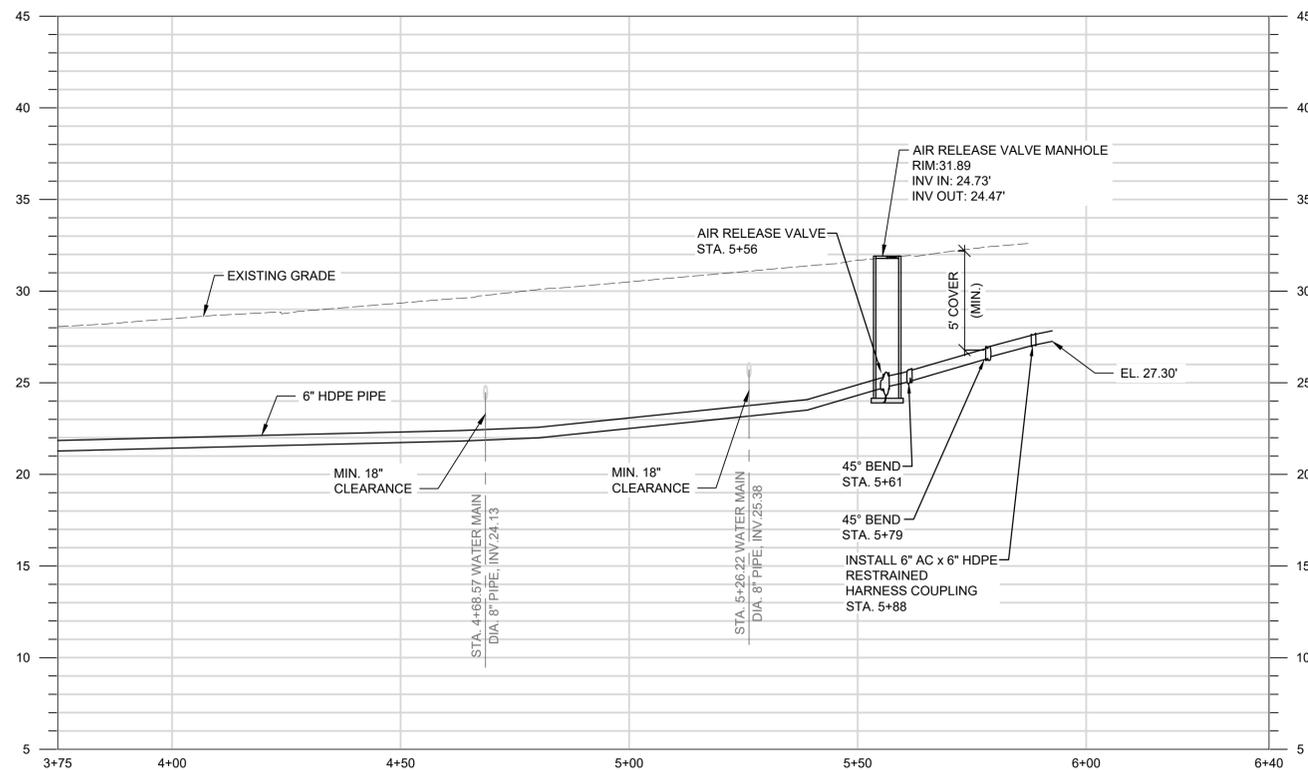
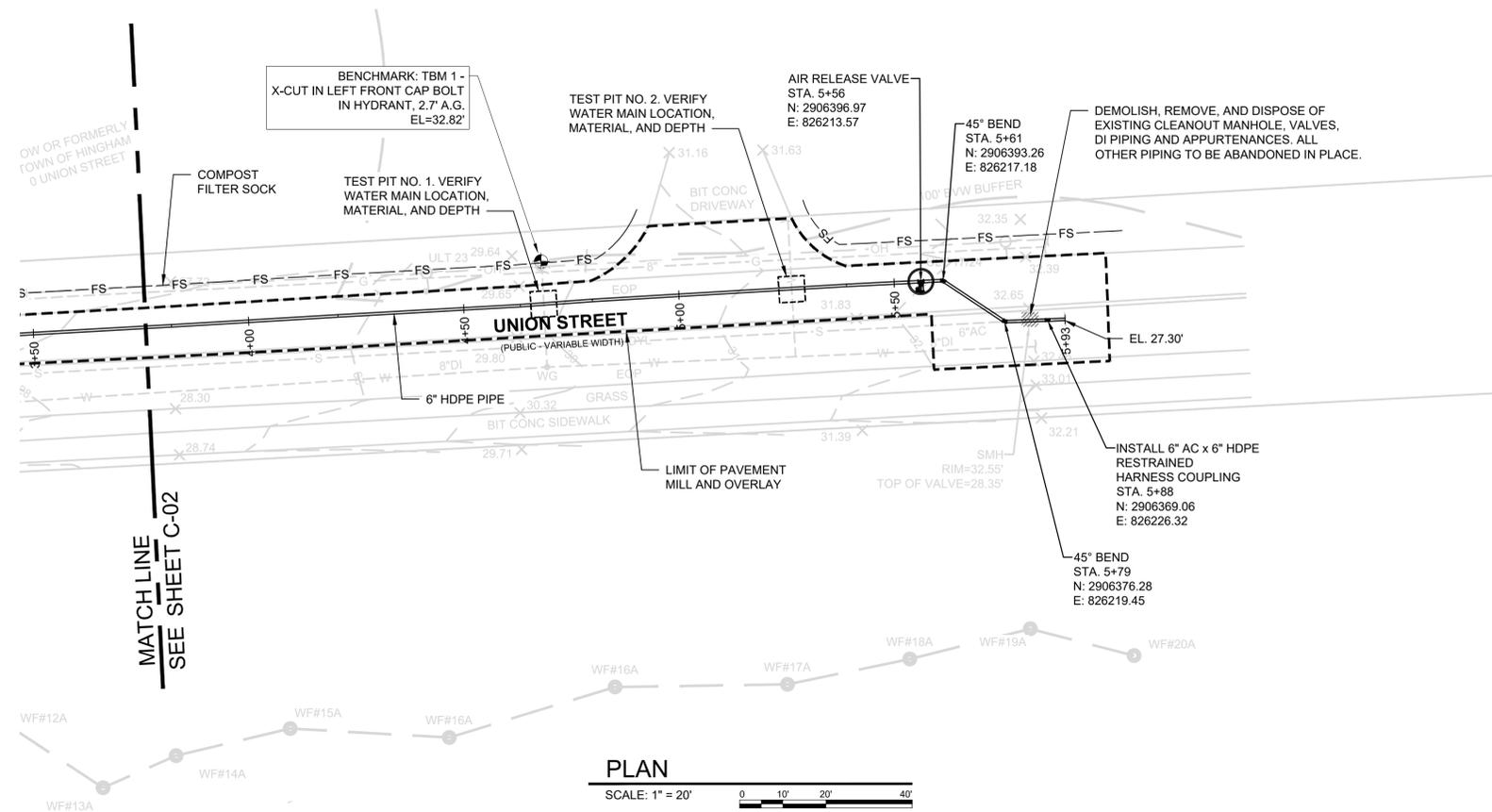
SHEET TITLE

CIVIL  
PLAN AND PROFILE 2

SCALE: AS SHOWN

DRAWING NO.: C-03

SHEET NO.: 07 OF 12



PROFILE

HORZ. SCALE: 1"=20'  
VERT. SCALE: 1"=5'





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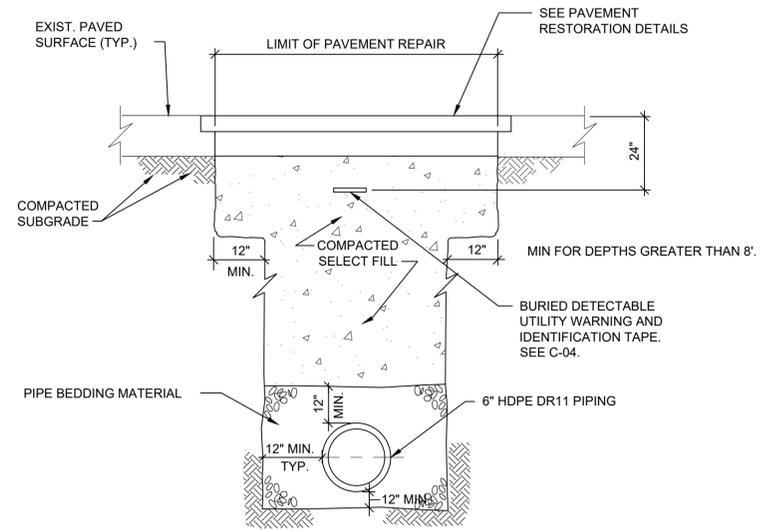
SHEET TITLE

CIVIL  
CONSTRUCTION  
DETAILS 1

SCALE: AS SHOWN

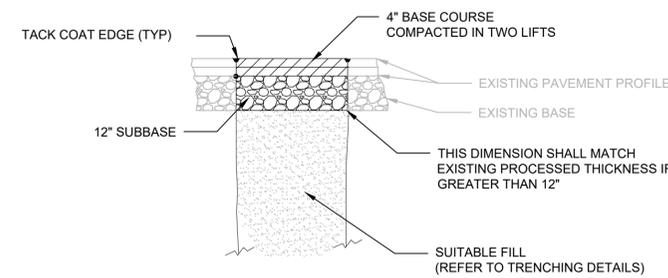
DRAWING NO.: C-06

SHEET NO.: 10 OF 12



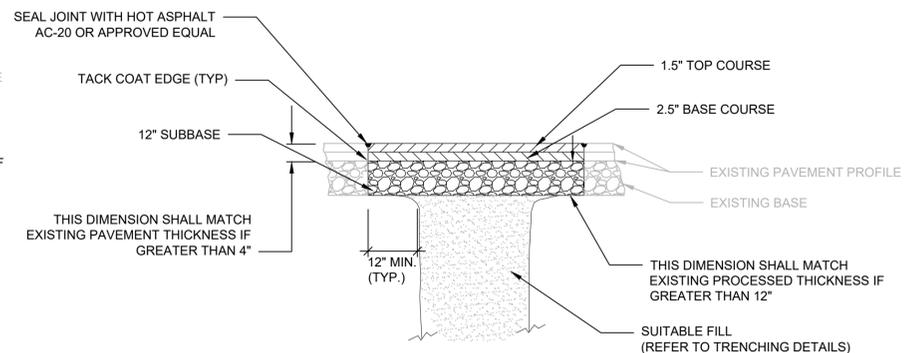
**TRENCHING FOR PIPE INSTALLATION**

SCALE: NTS



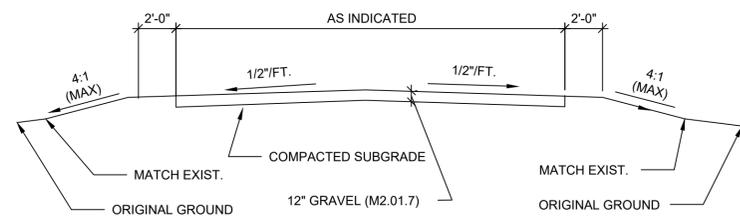
**TEMPORARY TRENCH PAVEMENT REPAIR**

SCALE: NTS



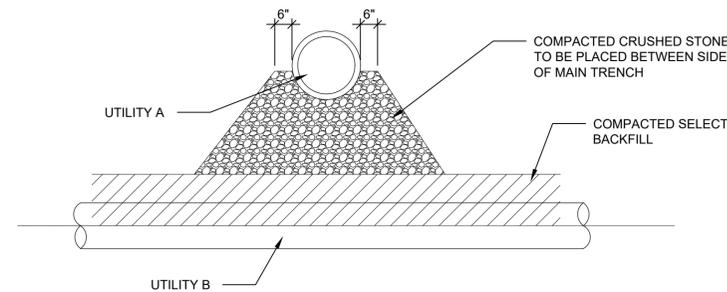
**PERMANENT TRENCH PAVEMENT REPAIR**

SCALE: NTS



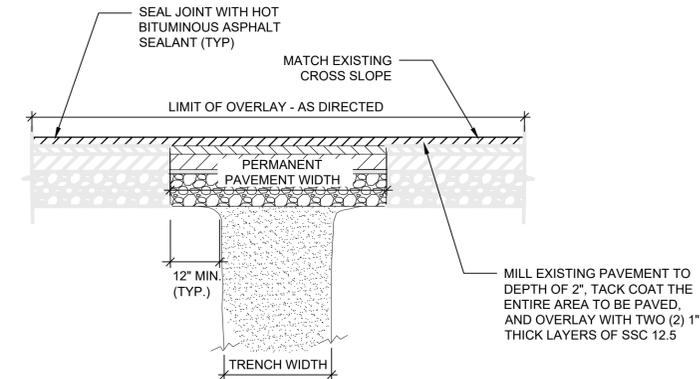
**STABILIZED GRAVEL ROAD**

SCALE: NTS



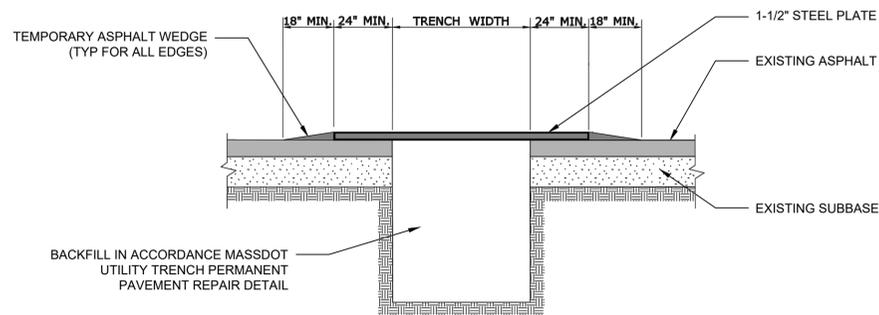
**UTILITY CROSSING**

SCALE: NTS



**MILL AND OVERLAY DETAIL**

SCALE: NTS



**TEMPORARY STEEL PLATE OVER TRENCH**

SCALE: NTS

**STEEL PLATE NOTES:**

- STEEL PLATES SHALL BE CAPABLE OF SAFELY SUSTAINING HS20 LOADING WITH 33% IMPACT.
- EXTENDED USE OF TEMPORARY STEEL PLATES IS NOT PERMITTED.

**GENERAL PAVING NOTES:**

- PAVEMENT SHALL BE IN ACCORDANCE WITH MASSDOT STANDARDS AND SPECIFICATIONS.
- FINAL TRENCH REPAIR PAVEMENT SHALL BE COMPLETED WITHIN 30 DAYS OF ACCEPTANCE OF PIPE INSTALLATION.
- WHERE EXISTING SUBBASE AND PAVEMENT DEPTH(S) ARE GREATER THAN WHAT IS SHOWN IN THE DETAILS ABOVE, SUBBASE AND PAVEMENT SHALL MATCH THE EXISTING PAVEMENT.
- PROCESS GRAVEL BASE COURSE SHALL CONFORM TO MASSDOT STANDARD M1.03.1. THE GRAVEL SHALL BE COMPACTED IN TWO LIFTS TO 95% OF THE MAXIMUM DRY DENSITY. THE FIRST LIFT SHALL BE 8" IN DEPTH AND THE SECOND SHALL BE 4" IN DEPTH.
- THE ENTIRE AREA TO BE PAVED, INCLUDING THE EDGES, SHALL BE SWEEPED PRIOR TO TACK COAT AND PAVING.
- ALL PAVEMENT MARKINGS REMOVED OR DAMAGED TO BE RESTORED FOLLOWING TEMPORARY AND PERMANENT PAVEMENT RESTORATION.



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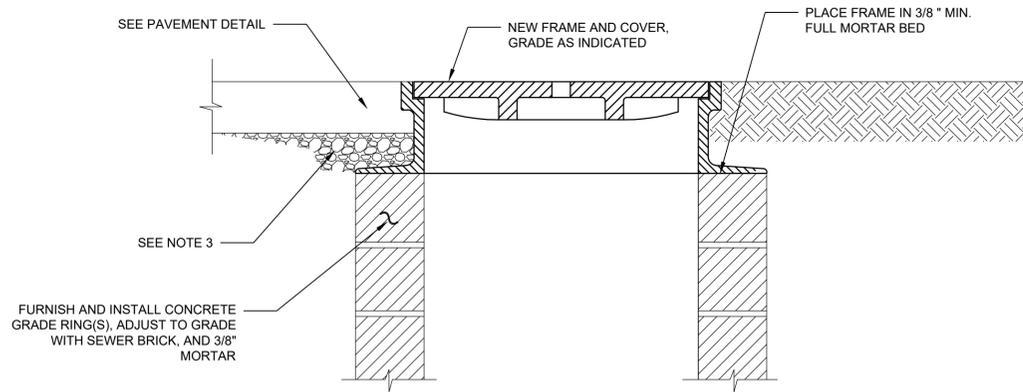
SHEET TITLE

CIVIL  
CONSTRUCTION  
DETAILS 2

SCALE: AS SHOWN

DRAWING NO.: C-07

SHEET NO.: 11 OF 12



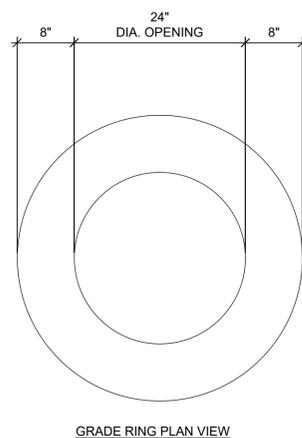
**MANHOLE FRAME AND COVER INSTALLATION**

SCALE: NTS

NOTES:

1. FRAME SHALL BE 8-INCHES IN DEPTH, 24-INCHES IN WIDTH AND STAMPED WITH "SEWER" ON TOP.
2. EACH GRADING RING SHALL BE LAID IN A FULL BED OF 1:2 CEMENT-SAND MORTAR AND SHALL BE THOROUGHLY BONDED. THE BASE OF THE BELL OR GROOVE END AT JOINTS BETWEEN COMPONENTS SHALL BE BUTTERED WITH MORTAR TO PROVIDE A UNIFORM BEARING. ALL JOINTS SHALL BE SEALED WITH CEMENT MORTAR INSIDE AND OUT AND TROWLED SMOOTH TO THE CONTOUR OF THE WALL SURFACE.
3. CONTRACTOR TO PROVIDE AND INSTALL SUBBASE OR CONCRETE COLLAR AROUND MANHOLE FRAME IN ACCORDANCE WITH DCR AND TOWN OF HINGHAM REQUIREMENTS.

FURNISH AND INSTALL CONCRETE GRADE RING(S), ADJUST TO GRADE WITH SEWER BRICK, AND 3/8" MORTAR

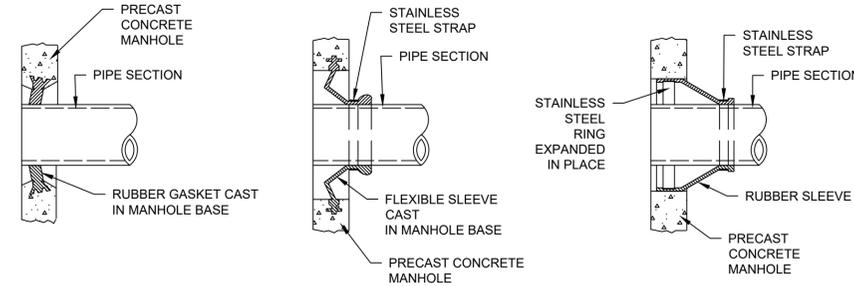


**MANHOLE GRADE RING**

SCALE: NTS

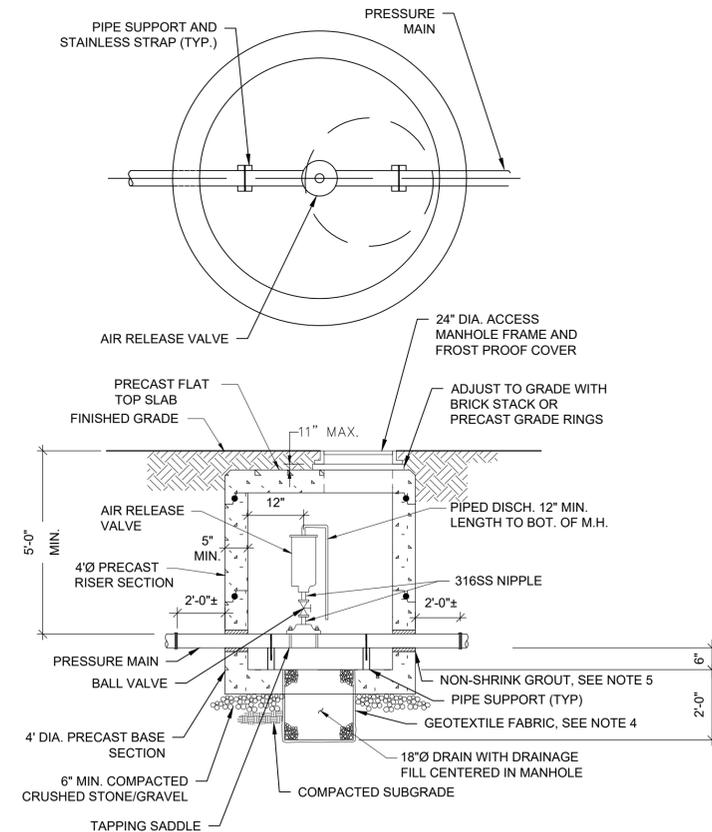
NOTES:

1. REINFORCING STEEL WELDED WIRE FABRIC CONFORMS TO LATEST ASTM SPECIFICATION A185.
2. REINFORCING STEEL DEFORMED BARS CONFORM TO LATEST ASTM SPECIFICATION A615.
3. CONCRETE COMPRESSIVE STRENGTH - 4,000 PSI AT 28 DAYS.
4. MANHOLE DESIGN SPECIFICATION CONFORMS TO LATEST ASTM DESIGNATION C478.
5. CONTRACTOR SHALL USE HYDROPHYLIC SEALANT BETWEEN CONCRETE GRADE RINGS



**MANHOLE SEAL DETAILS**

SCALE: NTS



**AIR RELEASE VALVE MANHOLE**

SCALE: NTS

NOTES:

1. CONTRACTOR SHALL DESIGN AND SUBMIT FOR APPROVAL MANHOLE ANTI-FLOTATION FOR ASSUMED GROUNDWATER LEVEL AT GRADE.
2. HEIGHT OF PRECAST CONCRETE RISER SECTIONS SHALL BE AS NECESSARY TO MEET ELEVATION REQUIREMENTS AND MINIMIZE DEPTH OF BRICK OR GRADE RING CHIMNEY.
3. CONTRACTOR TO DESIGN, PROVIDE, AND INSTALL PIPE SUPPORTS, AS REQUIRED.
4. GEOTEXTILE FABRIC SHALL BE ITEM M9.50.0 FOR SUBSURFACE DRAINAGE IN ACCORDANCE WITH MASSDOT STANDARD SPECIFICATIONS (2024). CONTRACTOR TO PROVIDE PRODUCT LISTED IN THE MASSACHUSETTS QUALIFIED CONSTRUCTION MATERIALS LIST FOR THE INTENDED APPLICATION.
5. NON-SHRINK GROUT SHALL BE PRE-PACKAGED, NON-METALLIC, CEMENTITIOUS GROUT REQUIRING ONLY THE ADDITION OF WATER AT THE SITE. MINIMUM 28-DAY COMPRESSIVE STRENGTH: 7,000PSI.



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**Attachment B**

DEP Bordering Vegetated Wetland Determination Forms

**BORDERING VEGETATED WETLAND DETERMINATION FORM**

Project/Site: Union Street, Hingham (MassDCR project) City/Town: Hingham Sampling Date: 10/8/24  
 Applicant/Owner: Massachusetts Department of Conservation and Recreation Sampling Point or Zone: Wetland Flag 16A (wetland)  
 Investigator(s): Mark Manganello, LEC Environmental Consultants Latitude / Longitude: 42, 13' 20" / -70, 52' 22"  
 Soil Map Unit Name: Saco Mucky Silt Loam NWI or DEP Classification: Deciduous Swamp

Are climatic/hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? (If yes, explain in Remarks)  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If yes, explain in Remarks)

**SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.**

Wetland vegetation criterion met?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydic Soils criterion met?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetlands hydrology present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks, Photo Details, Flagging, etc.:			
Sampling location within wetland that displays a 6" layer of fill over a buried mucky A-horizon. Fill likely associated with roadway construction many decades ago. Regional water tables lower than usual due to prolonged absence of significant rainfall.			

**HYDROLOGY**

<b>Field Observations:</b>		
Surface Water Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> Depth (inches) _____
Water Table Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> Depth (inches) _____
Saturation Present (including capillary fringe)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> Depth (inches) _____
<b>Wetland Hydrology Indicators</b>		
Reliable Indicators of Wetlands Hydrology <input type="checkbox"/> Water-stained leaves <input type="checkbox"/> Evidence of aquatic fauna <input type="checkbox"/> Iron deposits <input type="checkbox"/> Algal mats or crusts <input type="checkbox"/> Oxidized rhizospheres/pore linings <input checked="" type="checkbox"/> Thin muck surfaces <input type="checkbox"/> Plants with air-filled tissue (aerenchyma) <input type="checkbox"/> Plants with polymorphic leaves <input type="checkbox"/> Plants with floating leaves <input type="checkbox"/> Hydrogen sulfide odor	Indicators that can be Reliable with Proper Interpretation <input type="checkbox"/> Hydrological records <input type="checkbox"/> Free water in a soil test hole <input type="checkbox"/> Saturated soil <input type="checkbox"/> Water marks <input type="checkbox"/> Moss trim lines <input type="checkbox"/> Presence of reduced iron <input checked="" type="checkbox"/> Woody plants with adventitious roots <input type="checkbox"/> Trees with shallow root systems <input type="checkbox"/> Woody plants with enlarged lenticels	Indicators of the Influence of Water <input type="checkbox"/> Direct observation of inundation <input type="checkbox"/> Drainage patterns <input type="checkbox"/> Drift lines <input type="checkbox"/> Scoured areas <input type="checkbox"/> Sediment deposits <input type="checkbox"/> Surface soil cracks <input type="checkbox"/> Sparsely vegetated concave surface <input type="checkbox"/> Microtopographic relief <input type="checkbox"/> Geographic position (depression, toe of slope, fringing lowland)
Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):		

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

**VEGETATION** – Use both common and scientific names of plants.

<u>Tree Stratum</u>		Plot size <u>30-feet</u>			
		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name		Scientific name			
1.	Red Maple	Acer rubrum	FAC	38.0	Yes Yes
2.	Ash	Fraxinus	FAC	10.5	Yes Yes
3.					
4.					
5.					
6.					
7.					
8.					
9.					
<u>48.5</u> = Total Cover					
<u>Shrub/Sapling Stratum</u>		Plot size <u>15-feet</u>			
		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name		Scientific name			
1.	Glossy Buckthorn	Frangula alnus	FAC	20.5	Yes Yes
2.	Arrowwood	Viburnum dentatum	FAC	20.5	Yes Yes
3.					
4.					
5.					
6.					
7.					
8.					
9.					
<u>41.0</u> = Total Cover					
<u>Herb Stratum</u>		Plot size <u>5-feet</u>			
		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name		Scientific name			
1.	Glossy Buckthorn seedlings	Frangula alnus	FAC	20.5	Yes Yes
2.	Raspberry	Rubus spp.	FACU	3.0	No No
3.	Asiatic Bittersweet	Celastrus orbiculata	FACU	3.0	No No
4.	Poison Ivy	Toxicodendron radican	FAC	3.0	No Yes
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
<u>29.5</u> = Total Cover					

**VEGETATION – continued.**

<u>Woody Vine Stratum</u>	Plot size _____				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1.					
2.					
3.					
4.					
0.0 = Total Cover					

<b>Rapid Test:</b> Do all dominant species have an indicator status of OBL or FACW?			Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>Dominance Test:</b>	Number of dominant species	Number of dominant species that are wetland indicator plants	Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
	5	5	
<b>Prevalence Index:</b>		Total % Cover (all strata)	Multiply by:
	OBL species		X 1 = 0.00
	FACW species		X 2 = 0.00
	FAC species	113	X 3 = 339.00
	FACU species	6	X 4 = 24.00
	UPL species		X 5 = 0.00
	Column Totals	(A) 119	(B) 363
Prevalence Index		B/A = <b>3.05</b>	
			Is the Prevalence Index ≤ 3.0? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>Wetland vegetation criterion met?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			

**Definitions of Vegetation Strata**

- Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height
- Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall
- Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall
- Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %



**BORDERING VEGETATED WETLAND DETERMINATION FORM**

Project/Site: Union Street, Hingham (MassDCR project) City/Town: Hingham Sampling Date: 10/8/24  
 Applicant/Owner: Massachusetts Department of Conservation and Recreation Sampling Point or Zone: Wetland Flag 16A (upland side)  
 Investigator(s): Mark Manganello, LEC Environmental Consultants Latitude / Longitude: 42, 13' 20" / -70, 52' 22"  
 Soil Map Unit Name: Saco Mucky Silt Loam NWI or DEP Classification: Deciduous Swamp

Are climatic/hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? (If yes, explain in Remarks)  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If yes, explain in Remarks)

**SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.**

Wetland vegetation criterion met?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydic Soils criterion met?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetlands hydrology present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Remarks, Photo Details, Flagging, etc.:  
 Sampling location within upland that displays a 14" layer of fill over a buried mucky A-horizon. Fill likely associated with roadway construction many decades ago. Regional water tables lower than usual due to prolonged absence of significant rainfall.

**HYDROLOGY**

<b>Field Observations:</b>			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches)	_____
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches)	_____
Saturation Present (including capillary fringe)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches)	_____

<b>Wetland Hydrology Indicators</b>		
Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
<input type="checkbox"/> Water-stained leaves	<input type="checkbox"/> Hydrological records	<input type="checkbox"/> Direct observation of inundation
<input type="checkbox"/> Evidence of aquatic fauna	<input type="checkbox"/> Free water in a soil test hole	<input type="checkbox"/> Drainage patterns
<input type="checkbox"/> Iron deposits	<input type="checkbox"/> Saturated soil	<input type="checkbox"/> Drift lines
<input type="checkbox"/> Algal mats or crusts	<input type="checkbox"/> Water marks	<input type="checkbox"/> Scoured areas
<input type="checkbox"/> Oxidized rhizospheres/pore linings	<input type="checkbox"/> Moss trim lines	<input type="checkbox"/> Sediment deposits
<input type="checkbox"/> Thin muck surfaces	<input type="checkbox"/> Presence of reduced iron	<input type="checkbox"/> Surface soil cracks
<input type="checkbox"/> Plants with air-filled tissue (aerenchyma)	<input type="checkbox"/> Woody plants with adventitious roots	<input type="checkbox"/> Sparsely vegetated concave surface
<input type="checkbox"/> Plants with polymorphic leaves	<input type="checkbox"/> Trees with shallow root systems	<input type="checkbox"/> Microtopographic relief
<input type="checkbox"/> Plants with floating leaves	<input type="checkbox"/> Woody plants with enlarged lenticels	<input type="checkbox"/> Geographic position (depression, toe of slope, fringing lowland)
<input type="checkbox"/> Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

**VEGETATION** – Use both common and scientific names of plants.

<u>Tree Stratum</u>		Plot size <u>30-feet</u>				
		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)	
Common name		Scientific name				
1.	Red Maple	Acer rubrum	FAC	60.0	Yes	Yes
2.	Crabapple	Malus sp.	FAC	3.0	No	No
3.						
4.						
5.						
6.						
7.						
8.						
9.						
<u>63.0</u> = Total Cover						
<u>Shrub/Sapling Stratum</u>		Plot size <u>15-feet</u>				
		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)	
Common name		Scientific name				
1.	Spicebush	Lindera benzoin	FAC	3.0	Yes	Yes
2.	Arrowwood	Viburnum dentatum	FAC	3.0	Yes	Yes
3.						
4.						
5.						
6.						
7.						
8.						
9.						
<u>6.0</u> = Total Cover						
<u>Herb Stratum</u>		Plot size <u>5-feet</u>				
		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)	
Common name		Scientific name				
1.	Glossy Buckthorn seedlings	Frangula alnus	FAC	10.5	Yes	Yes
2.	Raspberry	Rubus sp.	FACU	3.0	No	No
3.	Multiflora Rose seedling	Rosa multiflora	FACU	3.0	No	No
4.	Dogwood seedling	Cornus sp.	FAC	3.0	No	Yes
5.	Black cherry seedling	Prunus serotina	FACU	20.5	Yes	No
6.						
7.						
8.						
9.						
10.						
11.						
12.						
<u>40.0</u> = Total Cover						

**VEGETATION – continued.**

<u>Woody Vine Stratum</u>	Plot size _____				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1.					
2.					
3.					
4.					
0.0 = Total Cover					

<b>Rapid Test:</b> Do all dominant species have an indicator status of OBL or FACW?			Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>Dominance Test:</b>	Number of dominant species 5	Number of dominant species that are wetland indicator plants 4	Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>Prevalence Index:</b>		Total % Cover (all strata)	Multiply by:
	OBL species		X 1 = 0.00
	FACW species		X 2 = 0.00
	FAC species	83	X 3 = 247.50
	FACU species	27	X 4 = 106.00
	UPL species		X 5 = 0.00
	Column Totals	(A) 109	(B) 353.5
Prevalence Index		B/A = <b>3.24</b>	
			Is the Prevalence Index ≤ 3.0? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>Wetland vegetation criterion met?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			

**Definitions of Vegetation Strata**

- Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height
- Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall
- Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall
- Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %



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**Attachment C**

Site Photographs



Photo 1: View of project area looking south.



Photo 2: View of project area looking north toward Weir River bridge.



Photo 3: Weir River on the west side of the bridge.



Photo 4: Weir River on the east side of the bridge.



Photo 5: Parking area on the east side of the project area near the bridge.



Photo 6: Typical BVW conditions with dense understory.



Photo 7: Typical BVW conditions with dense understory.