

# TOWN OF WESTFORD, MASSACHUSETTS

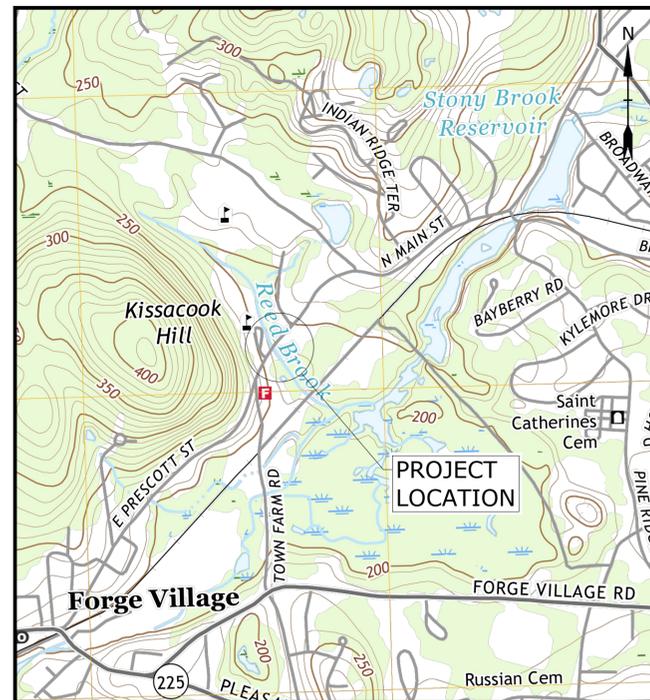
# EAST PRESCOTT STREET & NORTH MAIN STREET

# OVER REED BROOK CULVERT REPLACEMENT

# PERMIT SET

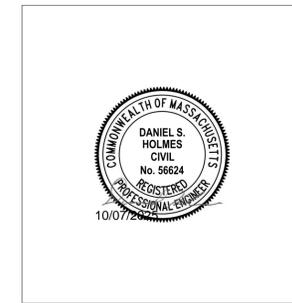
OCTOBER 2025

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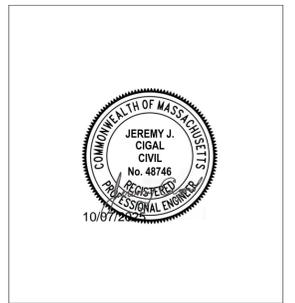


LOCATION MAP  
SCALE: 1" = 1000'

PREPARED BY:  
**Tighe & Bond**



DANIEL S. HOLMES, PE, LEED AP



JEREMY J. CIGAL, PE

PREPARED FOR:  
TOWN OF WESTFORD  
DEPARTMENT OF PUBLIC WORKS  
PAUL STARRATT, PE, TOWN ENGINEER  
KYLE FOX, DIRECTOR OF PUBLIC WORKS



WESTFORD

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MASSACHUSETTS

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NOT FOR CONSTRUCTION  
COMPLETE SET 16 SHEETS

**DESIGN**

- IN ACCORDANCE WITH THE 2024 AMERICAN ASSOCIATION OF STATE AND TRANSPORTATION OFFICIALS LRFD BRIDGE DESIGN SPECIFICATIONS FOR HL-93 LOADING.

**BASE PLAN NOTES**

- THE EXISTING CONDITIONS SHOWN ARE APPROXIMATE AND ARE BASED ON THE FOLLOWING:
  - SURVEY DRAWINGS PROVIDED BY WSP USA TITLED EXISTING CONDITIONS PLAN NORTH MAIN STREET, WESTFORD, MASSACHUSETTS AND DATED NOVEMBER 1, 2023.
  - THE RESOURCE AREA BOUNDARIES DEPICTED ON THE DRAWINGS WERE DELINEATED BY TIGHE & BOND, INC. ON MAY 25, 2023.
- UTILITY LOCATIONS SHOWN WERE PLOTTED FROM DATA OBTAINED FROM FIELD SURVEY. THE ACCURACY AND COMPLETENESS OF SUBSURFACE INFORMATION SHOWN ON THE PLANS IS NOT GUARANTEED.
- THE HORIZONTAL COORDINATE SYSTEM IS THE NORTH AMERICAN DATUM OF 1983, MASSACHUSETTS STATE PLANE, MAINLAND ZONE, US FEET. VERTICAL DATUM IS THE NORTH AMERICAN DATUM OF 1988.
- THE PROJECT IS NOT LOCATED WITHIN THE 100-YEAR FLOOD ZONE BASED ON THE FEMA FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NUMBER 25017C0228F EFFECTIVE 7/8/2025.

**UTILITIES**

- THE CONTRACTOR SHALL LOCATE AND PROTECT FROM DAMAGE OR RELOCATE, AS NECESSARY ALL EXISTING UTILITIES. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE RESPECTIVE UTILITY OWNERS FOR ALL UTILITIES THAT ARE TO BE TEMPORARILY OR PERMANENTLY RELOCATED FOR THE PROPOSED WORK.
- NOTIFY DIGSAFE AT 1-888-344-7233 AND OTHER UTILITY OWNERS IN THE AREA NOT ON THE DIGSAFE LIST AT LEAST 72 HOURS PRIOR TO ANY DIGGING, TRENCHING, ROCK REMOVAL, DEMOLITION, BORING, BACKFILLING, GRADING, LANDSCAPING, OR ANY OTHER EARTH MOVING OPERATIONS.
- LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE. IN ADDITION, SOME UTILITIES MAY NOT BE SHOWN. DETERMINE THE EXACT LOCATION OF UTILITIES BY TEST PIT OR OTHER METHODS, AS NECESSARY TO PREVENT DAMAGE TO UTILITIES AND/OR INTERRUPTIONS IN UTILITY SERVICE OR CONSTRUCTION OPERATIONS. PERFORM TEST PIT EXCAVATIONS AND OTHER INVESTIGATIONS TO LOCATE UTILITIES, AND PROVIDE THIS INFORMATION TO THE ENGINEER, PRIOR TO CONSTRUCTING THE PROPOSED IMPROVEMENTS. LOCATE ALL EXISTING UTILITIES TO BE CROSSED BY HAND EXCAVATION.

**TRAFFIC CONTROL**

- TAKE NECESSARY MEASURES AND PROVIDE CONTINUOUS BARRIERS OF SUFFICIENT TYPE, SIZE, AND STRENGTH TO PREVENT ACCESS TO ALL WORK AND STAGING AREAS AT THE COMPLETION OF EACH WORK DAY.
- NO OPEN TRENCHES WILL BE ALLOWED OVER NIGHT. THE USE OF ROAD PLATES TO PROTECT THE EXCAVATION WILL BE CONSIDERED UPON REQUEST, BUT BACKFILLING IS PREFERRED.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY TRAFFIC CONTROL/SAFETY DEVICES TO ENSURE SAFE VEHICULAR AND PEDESTRIAN ACCESS THROUGH THE WORK AREA, OR FOR SAFETY IMPLEMENTING DETOURS AROUND THE WORK AREA. PERFORM TRAFFIC CONTROL IN ACCORDANCE WITH THE APPROVED TRAFFIC CONTROL PLAN.
- MAINTAIN EMERGENCY ACCESS TO ALL PROPERTIES WITHIN THE PROJECT AREA AT ALL TIMES DURING CONSTRUCTION.
- WHEN WORKING IN THE ROAD, PROVIDE THE OWNER AND LOCAL FIRE/POLICE/SCHOOL AUTHORITIES A DETAILED PLAN OF APPROACH INDICATING METHODS OF PROPOSED TRAFFIC ROUTING ON A DAILY BASIS. PROVIDE COORDINATION TO ENSURE COMMUNICATION AND COORDINATION BETWEEN THE OWNER, CONTRACTOR AND LOCAL FIRE/POLICE/SCHOOL AUTHORITIES THROUGHOUT THE CONSTRUCTION PERIOD.

**BENCHMARK**

MAG NAIL IN GROUND EL. 138.74'  
 N = 3064930.2774  
 E = 673042.5735

DD NAIL IN GUY POLE EL. 201.96'  
 N = 3039458.5793  
 E = 661868.8152

**FOUNDATIONS**

- FOUNDATIONS MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED DURING CONSTRUCTION, WITH THE APPROVAL OF THE ENGINEER.

**UNSUITABLE MATERIAL**

- ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE ENGINEER.

**CONCRETE**

**PRECAST ELEMENTS:**

- THE FABRICATOR IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF LIFT HOOKS FOR ALL PRECAST ELEMENTS. UNDER NO CIRCUMSTANCES WILL THE REINFORCEMENT ELEMENTS SHOWN ON THE PLANS BE USED TO LIFT THE PRECAST ELEMENTS. FOR ADDITIONAL REQUIREMENTS, REFER TO THE "PRECAST CONCRETE ELEMENTS" PORTION OF ITEM 995.1 IN THE SPECIAL PROVISIONS.
- ALL CONCRETE (PRECAST AND CAST-IN-PLACE) SHALL BE 5000 PSI CONCRETE.

**REINFORCEMENT**

- REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 31 GRADE 60. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS, ALL REINFORCING STEEL SHALL BE EPOXY COATED AND ALL BARS SHALL BE LAPPED AS FOLLOWS:

MODIFICATION CONDITION	#4 BARS	#5 BARS	#6 BARS
1. NONE	16"	17"	21"
2. 12" OF CONCRETE BELOW BAR	18"	22"	27"
3. EPOXY COATED BARS, COVER < 3d <sub>b</sub> , OR CLEAR SPACING < 6d <sub>b</sub>	21"	26"	31"
4. COATED BARS, ALL OTHER CASES	17"	21"	25"
5. CONDITION 2. AND 3.	23"	29"	35"
6. CONDITION 2. AND 4.	21"	27"	32"

**EXISTING CONDITIONS AND GENERAL REQUIREMENTS**

- REMOVE AND DISPOSE OF ALL CONSTRUCTION-RELATED WASTE MATERIALS AND DEBRIS IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL LAWS.
- COMPLY WITH PERMITS AND NOTICES NECESSARY TO COMPLETE THE WORK. ARRANGE NECESSARY INSPECTIONS AND APPROVALS FROM THE JURISDICTIONAL AUTHORITIES.
- THE TERM "DEMOLISH" AND "R&D" USED ON THE DRAWINGS MEANS TO REMOVE AND DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL LAWS.
- ALL DIMENSIONS AND DETAILS SHOWN FOR THE EXISTING STRUCTURE ARE BASED ON THE FIELD SURVEY AND ARE NOT GUARANTEED.
- THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO BIDDING TO BECOME FAMILIAR WITH THE EXTENT AND NATURE OF THE WORK TO BE DONE UNDER THIS CONTRACT.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS REQUIRED FOR THE PROPER PERFORMANCE OF THE WORK. FIELD CONDITIONS MAY EXIST WHICH DEVIATE FROM THE TYPICAL AND THEORETICAL DIMENSIONS SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR FABRICATION AND FIT OF THE WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER DISPOSAL OF ALL EXISTING MATERIALS WHICH ARE TO BE REMOVED FROM THE STRUCTURE AS SHOWN ON THE PLANS.
- THE CONTRACTOR IS NOTIFIED THAT IT IS UNACCEPTABLE FOR ANY MATERIAL(S) TO FALL INTO THE AREAS BELOW THE CULVERT OR BE PROJECTED INTO THE TRAVEL LANES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTAINING AND COLLECTING MATERIALS.
- AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.

**LEGEND:**

EXISTING	PROPOSED	DESCRIPTION
		MAIL BOX
		CONCRETE POST
		BOULDER
		BENCHMARK
		WETLAND FLAG
		SIGN AND POST
		GATE VALVE
		UTILITY POLE
		TREE
		FIRE HYDRANT
		WATER COUPLING
		TEST PIT
		GAS
		OVERHEAD UTILITY
		WATER MAIN
		INTERMEDIATE CONTOURS (MAJOR)
		INTERMEDIATE CONTOURS (MINOR)
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		RIGHT-OF-WAY
		EDGE OF PAVEMENT
		CENTERLINE
		GUARDRAIL
		LIMITS OF WORK
		SEDIMENT CONTROL BARRIER
		COFFERDAM
		STONE WALL
		MEAN HIGH WATER/BANK
		BORDER OF VEGETATED WETLAND
		BORDERING LANDS SUBJECT TO FLOODING
		100-FOOT BUFFER ZONE
		200-FOOT RIVERFRONT AREA

	DEMOLISH
	STONE
	STREAM
	WETLAND REPLACEMENT

	TEST PIT
	BORING

**ABBREVIATIONS:**

BC	BITUMINOUS CURB	R&D	REMOVE AND DISPOSE
BIT	BITUMINOUS	R&R	REMOVE AND RESET
BL	BASELINE	R&S	REMOVE AND STACK
BLSF	BORDERING LAND SUBJECT TO FLOODING	S	SOUTH
BOT	BOTTOM	SBDH	STONE BOUND WITH DRILL HOLE
CB	CATCH BASIN	SF	SQUARE FOOT
CBCI	CATCH BASIN CURB INLET	STA	STATION
CEM	CEMENT	SRW	STONE RETAINING WALL
CPP	CORRUGATED PLASTIC PIPE	SWL	SOLID WHITE LINE
CL	CENTERLINE	TYP	TYPICAL
CMP	CORRUGATED METAL PIPE	TS	TRAFFIC SIGNAL
CONC	CONCRETE	UP	UTILITY POLE
CRW	CONCRETE RETAINING WA;	VGC	VERTICAL GRANITE CURB
CS	COATED STEEL	WRW	WOOD RETAINING WALL
CY	CUBIC YARD		
D/DIA	DIAMETER		
DI	DUCTILE IRON		
DYL	DOUBLE YELLOW LINE		
E	EAST		
EL/ELEV	ELEVATION		
EOP	EDGE OF PAVEMENT		
HMA	HOT MIX ASPHALT		
INV	INVERT		
LT	LEFT		
MAX	MAXIMUM		
MIN	MINIMUM		
N	NORTH		
N/A	NOT APPLICABLE		
OC	ON CENTER		
OHW	OVERHEAD WIRE		
PC	POINT OF CURVATURE		
PCF	POUNDS PER CUBIC FOOT		
PROP	PROPOSED		
PROT	PROTECT		
PSF	POUNDS PER SQUARE FOOT		
PSI	POUNDS PER SQUARE INCH		
PT	POINT OF TANGENCY		
RCP	REINFORCED CONCRETE PIPE		
RET	RETAIN		
RET UP	RETAIN UTILITY POLE		
RT	RIGHT		

**PERMIT SET**

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**East Prescott Street & North Main Street Culvert Replacement**

Westford Department of Public Works

Westford, MA

MARK	DATE	DESCRIPTION
PROJECT NO:	W5005-036	
DATE:	OCTOBER 2025	
FILE:	W5005-036_03_GENERAL.dwg	
DRAWN BY:	JHM	
DESIGNED/CHECKED BY:	SDS/JJC	
APPROVED BY:	DSH	

**GENERAL NOTES (SHEET 1 OF 2)**

SCALE: NO SCALE

Last Saved: 10/27/2025 12:05pm By: MFB  
 Tighe & Bond 21 W5005 Westford MA 03605  
 Project: Westford MA 03605  
 Drawing: W5005-036\_03\_GENERAL.dwg



ELEVATION  
(NAVD 88)



APPROX  
GROUNDWATER  
ON 7/07/23  
EL 192.0'

APPROX BOTTOM  
OF BOX CULVERT  
EL 187.9'

Tighe&Bond Consulting Engineers Middletown, Connecticut		Project: W-5005-036 Location: North Main St. Westford, MA		Boring No. <b>B-5</b> Page 1 of 1 File No. Checked by:				
Drilling Co.: Martin Geo-Environmental, LLC		Casing		Sampler		Groundwater Readings		
Foreman:	Jeremy	Type	Split Spoon	Date	Time	Depth	Casing	Sta. Time
T&B Rep.:	Aaron Champagne	I.D./O.D.	1-3/8"/2"	See Note 1				
Date Start:	07/07/23	End:	07/07/23	Hammer Wt.	140#			
Location	See Exploration Location Plan	Hammer Fall	30"					
GS. Elev.	Datum:	Other						
Depth (ft.)	PID	Sample No. / Rec. (in)	Sample Depth (ft.)	Blow Counts Per 6"	Sample Description	General Stratigraphy	Notes	Well Construction
		S-1/15"	1'-3"	25-34 30-26	12" Asphalt Brown, dry, fine-medium sand, little gravel, trace silt			No Well Installed
		S-2/12"	3'-5"	22-12 6-6	Brown, moist, fine-medium sand, little gravel, little silt			
		S-3/14"	5'-7"	12-2 1-2	Gray, wet, fine sand and silt mixed with peat			
		S-4/18"	10'-12"	8-11 14-14	Gray, wet, fine to coarse sand and gravel, trace silt			
		S-5/15"	15'-17"	15-16 18-39	Gray, wet, coarse sand and gravel, trace fine sand and silt			
		S-6/5"	20'-22"	14-50/5"	Gray, wet, fine to medium sand and gravel, little silt			
					Auger refusal 20'			
Notes: 1. Groundwater encountered at 4 ft below ground surface during drilling operations.								

**BORING B-5 (1 OF 1)**

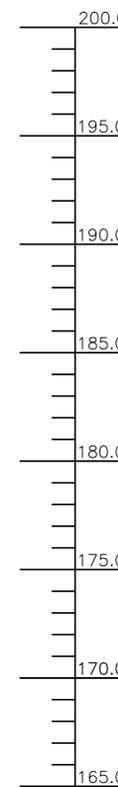
**BORING NOTES:**

- LOCATION OF BORINGS SHOWN ON SHEET 5 THUS:
- BORINGS WERE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
- WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF DRILLING. FIELD CONDITIONS WILL VARY BASED ON TIME OF YEAR AND RAIN EVENTS.
- FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 3/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
- BORING SAMPLES ARE STORED AT TIGHE & BOND'S OFFICE, 53 SOUTHAMPTON ROAD, WESTFIELD, MA 01085. THE CONTRACTOR MAY EXAMINE THE SOIL AND ROCK SAMPLES BY CONTACTING THE DESIGN ENGINEER.
- ALL BORINGS WERE DRILLED IN JULY 2023.
- BORINGS WERE DRILLED BY MARTIN GEO ENVIRONMENTAL LLC. OF BELCHERTOWN, MA.
- THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.
- THE SURFACE ELEVATION ON EACH BORING LOG IS THE ELEVATION OF THE EXISTING GROUND AT THE TIME THE BORING WAS DRILLED.
- ENGINEERING JUDGEMENT WAS EXERCISED IN PREPARING THE SUBSURFACE INFORMATION PRESENTED HEREIN. ANALYSIS AND INTERPRETATION OF SUBSURFACE DATA WAS PERFORMED FOR DESIGN AND ESTIMATING PURPOSES. PRESENTATION OF THE INFORMATION IN THE CONTRACT IS INTENDED TO PROVIDE THE CONTRACTOR ACCESS TO THE SAME DATA AVAILABLE TO THE OWNER. THE SUBSURFACE INFORMATION IS PRESENTED IN GOOD FAITH AND IS NOT INTENDED AS A SUBSTITUTE FOR PERSONAL INVESTIGATION, INDEPENDENT INTERPRETATION, INDEPENDENT ANALYSIS OR JUDGEMENT BY THE CONTRACTOR.

Tighe&Bond Consulting Engineers Middletown, Connecticut		Project: W-5005-036 Location: North Main St. Westford, MA		Boring No. <b>B-6</b> Page 1 of 1 File No. Checked by:				
Drilling Co.: Martin Geo-Environmental, LLC		Casing		Sampler		Groundwater Readings		
Foreman:	Jeremy	Type	Split Spoon	Date	Time	Depth	Casing	Sta. Time
T&B Rep.:	Aaron Champagne	I.D./O.D.	1-3/8"/2"	See Note 1				
Date Start:	07/07/23	End:	07/07/23	Hammer Wt.	140#			
Location	See Exploration Location Plan	Hammer Fall	30"					
GS. Elev.	Datum:	Other						
Depth (ft.)	PID	Sample No. / Rec. (in)	Sample Depth (ft.)	Blow Counts Per 6"	Sample Description	General Stratigraphy	Notes	Well Construction
		S-1/5"	1'-3"	30-39 42-16	12" Asphalt Brown, dry, fine-medium sand and gravel, trace silt			No Well Installed
		S-2/0"	3'-5"	11-5 5-2	No recovery, spoon dry			
		S-3/19"	5'-7"	1-2 1-5	Moist, peat with a 2" layer of fine to medium sand and gravel			
		S-4/15"	10'-12"	11-7 6-4	0-10" Gray, wet, coarse sand and gravel. 10-15" Gray, wet, fine-medium sand, trace silt			
		S-5/15"	15'-17"	3-3 7-7	Gray, wet, coarse sand and gravel			
		S-6/6"	20'-22"	34-50/4"	Gray, wet, coarse sand and gravel			
					Auger refusal 24'			
		C-1	24'-29"	10	Unidentified rock			
Notes: 1. Groundwater encountered at 5 ft below ground surface during drilling operations.								

**BORING B-6 (1 OF 1)**

ELEVATION  
(NAVD 88)



APPROX  
GROUNDWATER  
ON 7/07/23  
EL 191.21'

APPROX BOTTOM  
OF BOX CULVERT  
EL 187.9'

**PERMIT SET**

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**East Prescott Street & North Main Street Culvert Replacement**

Westford Department of Public Works

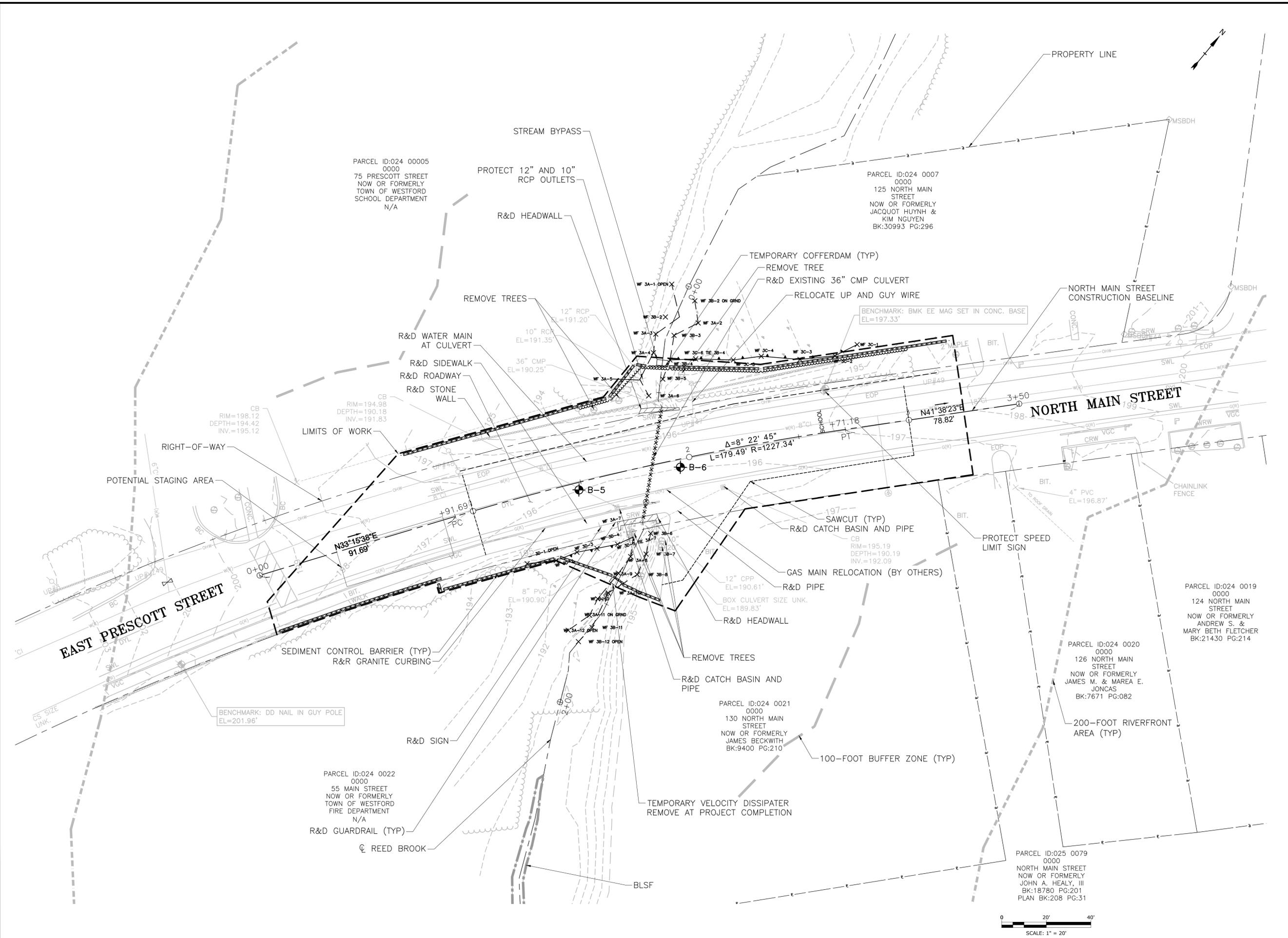
Westford, MA

MARK	DATE	DESCRIPTION
PROJECT NO:	W5005-036	
DATE:	OCTOBER 2025	
FILE:	W5005-036-BORING.dwg	
DRAWN BY:	JHM	
DESIGNED/CHECKED BY:	SDS/JJC	
APPROVED BY:	DSH	

**BORING LOGS**

SCALE: NO SCALE

Last Saved: 10/7/2025 10:02:07 AM By: JHM  
 Project: 036-036-CIVIL.dwg  
 Title: East Prescott Street & Reed Brook Culvert Replacement Drawings\AutoCAD\North Main Street\Sheet\W5005-036-CIVIL.dwg



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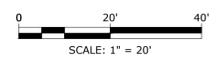
Westford Department of Public Works

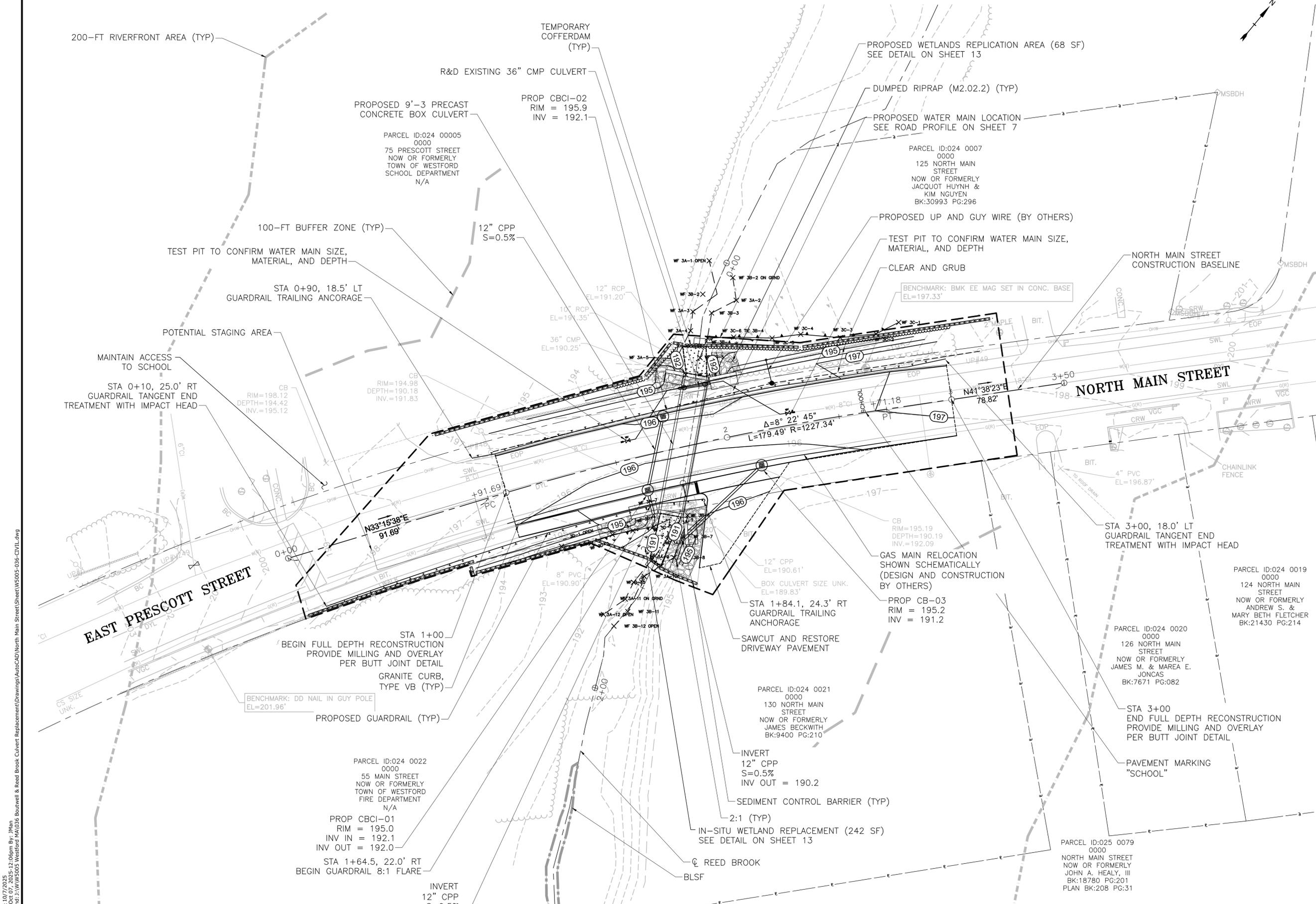
Westford, MA

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PROJECT NO:	W5005-036	
DATE:	OCTOBER 2025	
FILE:	W5005-036-CIVIL.dwg	
DRAWN BY:	JHM	
DESIGNED/CHECKED BY:	SDS/JJC	
APPROVED BY:	DSH	

**EXISTING CONDITION & DEMOLITION PLAN**

SCALE: AS SHOWN





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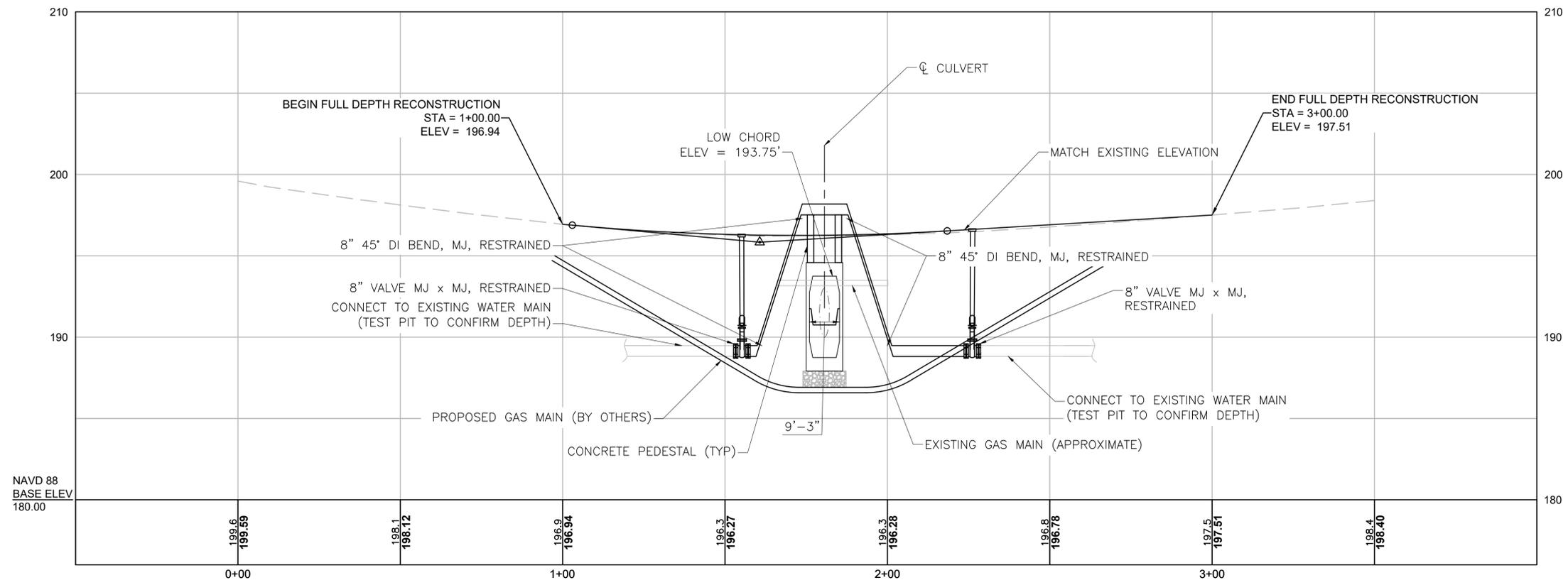
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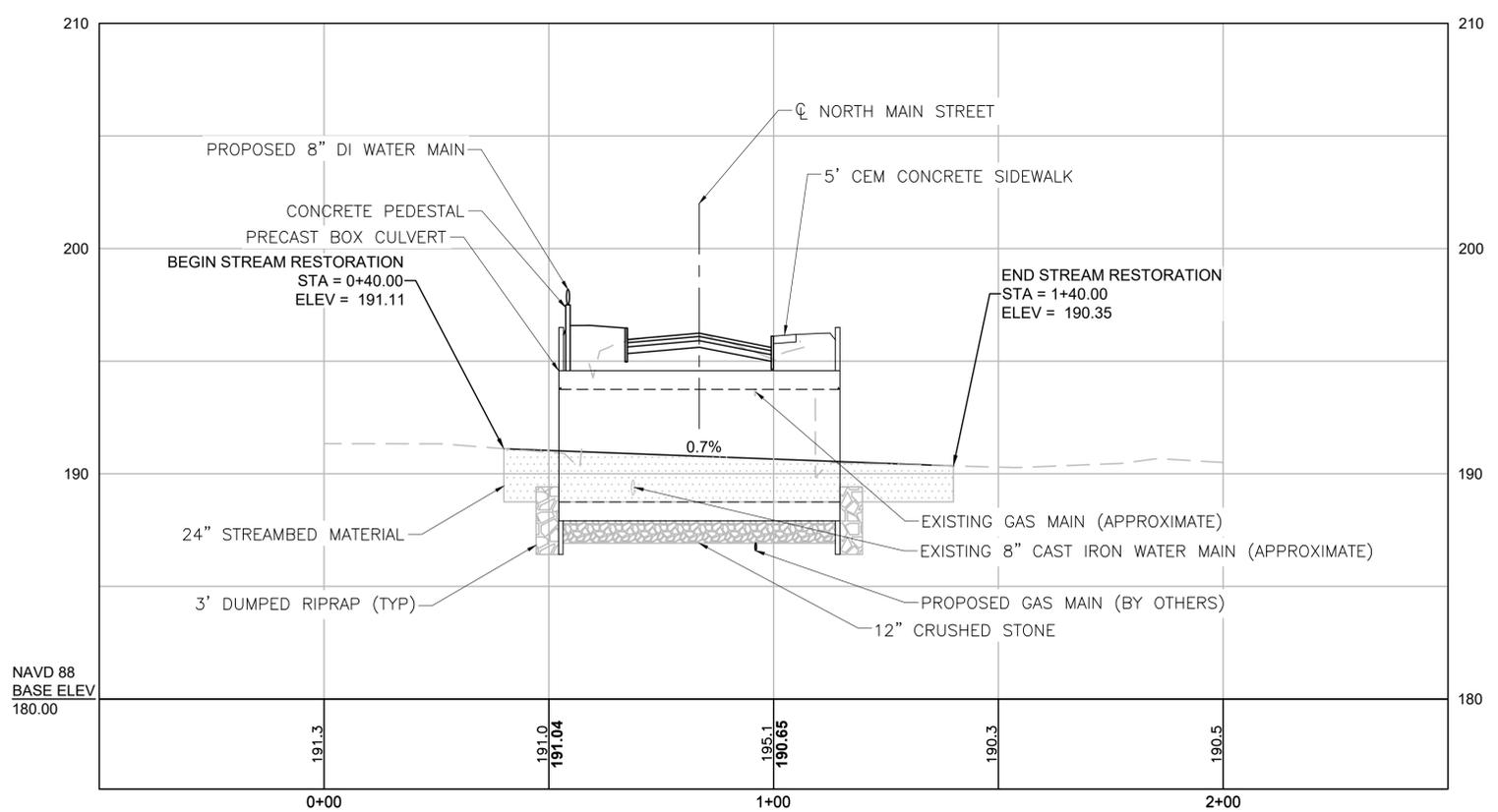
**SITE PLAN**

SCALE: AS SHOWN

Last Saved: 10/7/2025 10:02:07 AM By: JHM  
 Project: 036-036-CIVIL.dwg  
 Tighe & Bond 211 Main Street Westford MA 02786  
 AutoCAD/Drawings/211 Main Street/Replacement/Drawings/211 Main Street/Sheet/W5005-036-CIVIL.dwg



**NORTH MAIN STREET PROFILE**  
 HORIZ: 1" = 20' VERT: 1" = 4'



**REED BROOK PROFILE**  
 HORIZ: 1" = 20' VERT: 1" = 4'

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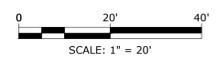
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DRAWN BY:	JHM	
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APPROVED BY:	DSH	

PROFILES

SCALE: AS SHOWN

Last Saved: 10/7/2025 10:07:00 AM By: JHM  
 Project: 036 - Reed Brook Culvert Replacement  
 Drawing: 036-CIVIL.dwg  
 Title: East Prescott Street & North Main Street Culvert Replacement

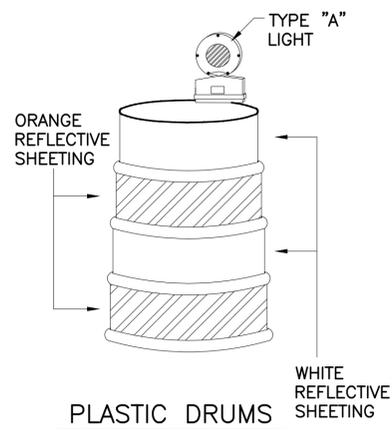


NOTES:

- ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS.
- ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
- TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
- TEMPORARY CONSTRUCTION SIGNING, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
- SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
- NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT, AND SIMILAR OPERATIONS.
- PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE IN PLACE 14 DAYS PRIOR TO THE START OF ANY WORK TO PROVIDE ADVANCE NOTICE OF ROAD WORK.
- THE FIRST FIVE PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH TYPE A LIGHTS.
- THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
- MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
- MINIMUM LANE WIDTH IS TO BE 11 FEET UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
- PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE PROVIDED ON NORTH MAIN STREET AT BOTH ENDS OF THE PROJECT LIMITS.
- DURING ALL CONSTRUCTION ACTIVITIES ON THE ROADWAYS, ONE LANE ALTERNATING TRAFFIC FLOW SHALL BE MAINTAINED.
- FULL ROADWAY WIDTH MUST BE RETURNED AT THE END OF EACH WORK DAY.
- THE NUMBER OF POLICE OFFICERS AT ANY LOCATION IS TO BE DETERMINED BY THE TOWN OF WESTORD.
- ONE LANE TRAFFIC FLOW SHALL BE REQUIRED DURING ALL OPERATIONS WHICH REDUCE DRIVE LANE(S) LESS THAN 12'.
- HALF WIDTH CONSTRUCTION METHODS SHALL BE UTILIZED FOR ROAD EXCAVATION, BASE PREPARATION, AND PAVING OPERATIONS.
- AS CONSTRUCTION OPERATIONS CHANGE, SO SHALL WARNING SIGNS. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING AND ARRANGING SIGNS AS CONSTRUCTION VARIES AND PROCEEDS.

LEGEND:

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- P/F POLICE/FLAGGER DETAIL
- TYPE III BARRICADE
- CHANGEABLE MESSAGE SIGN
- ARROW BOARD
- WORK ZONE
- DIRECTION OF TRAFFIC
- IMPACT ATTENUATOR
- MEDIAN BARRIER
- MEDIAN BARRIER WITH WARNING LIGHTS
- WORK VEHICLE
- TRUCK MOUNTED ATTENUATOR
- TRAFFIC OR PEDESTRIAN SIGNAL
- SIGN



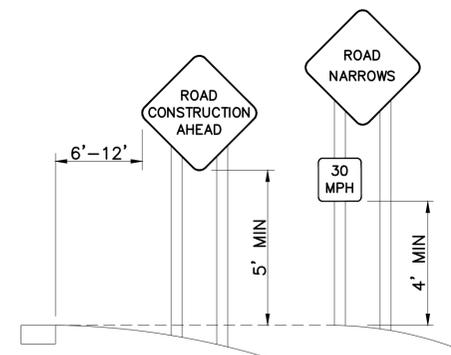
NOTES:

- DRUM DESIGN AND APPLICATION SHALL BE AS PER THE CURRENT EDITION OF THE MUTCD.
- DRUMS SHALL BE APPROXIMATELY 36" IN HEIGHT, HAVING A MINIMUM WALL THICKNESS OF 3/32" AND A MINIMUM DIAMETER OF 18" REGARDLESS OF ORIENTATION.
- DRUM MATERIAL MUST BE APPROVED UV RESISTANT, LOW DENSITY, IMPACT RESISTANT, LINEAR POLYETHYLENE (OR APPROVED EQUIVALENT).
- SHEETING SHALL BE APPROVED ORANGE AND WHITE TYPE IV REFLECTORIZED SHEETING CONFORMING TO M9.30.0.
- ALL DRUMS SHALL BE WELL MAINTAINED INCLUDING REMOVAL OF DUST OR ROAD FILM, SO AS NOT TO REDUCE REFLECTIVE EFFICIENCY. WHEN A DRUM LOSES TARGET VALUE IT SHALL BE REPLACED.
- STORE UNUSED DRUMS IN ONE LOCATION, AWAY FROM ALL TRAFFIC, OR REMOVE FROM SITE ENTIRELY.

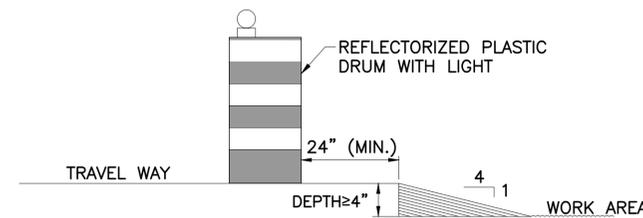
FORMULAS FOR DETERMINING TAPER LENGTHS

SPEED LIMIT (S)	TAPER LENGTH (L) FEET
40 MPH OR LESS	$L = \frac{WS^2}{60}$
45 MPH OR MORE	$L = WS$

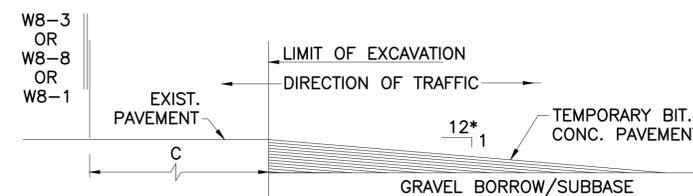
WHERE:  
L = TAPER LENGTH IN FEET  
W = WIDTH OF OFFSET IN FEET  
S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH



TYPICAL INSTALLATION OF PROJECT SIGNS



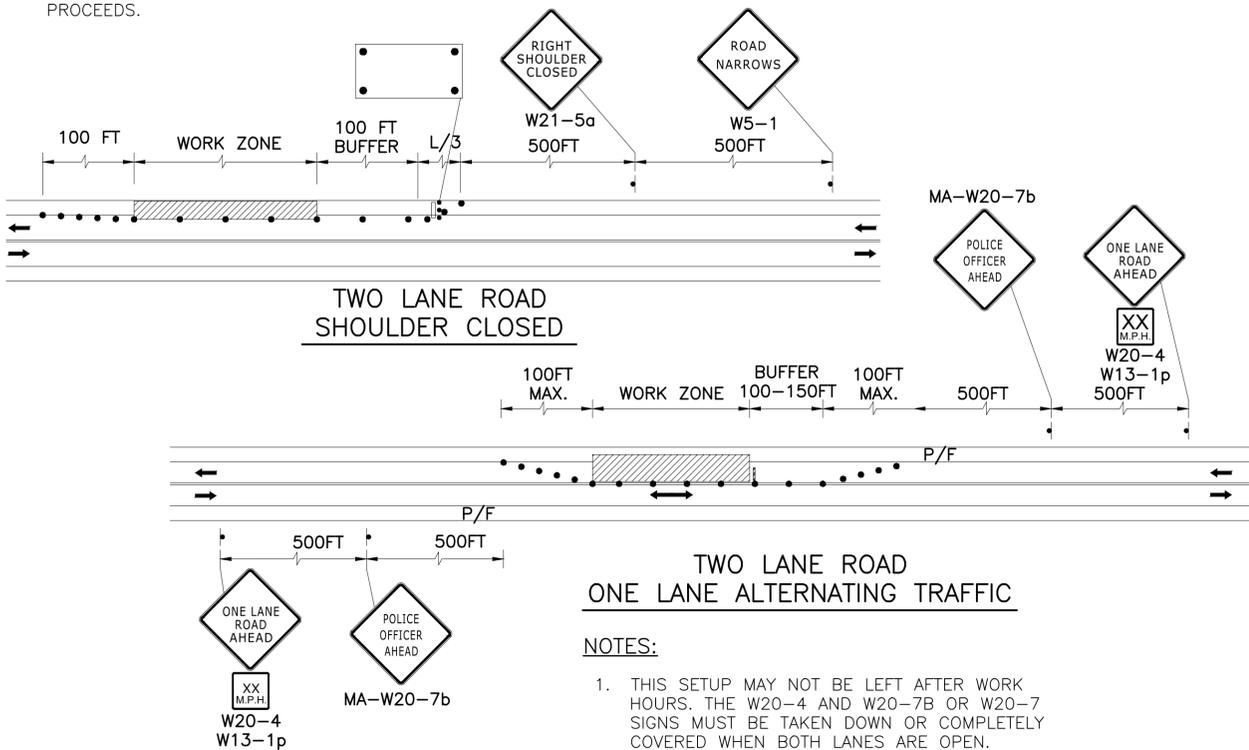
LATERAL DROP-OFF DETAILS



LONGITUDINAL DROP-OFF DETAIL  
NO SCALE

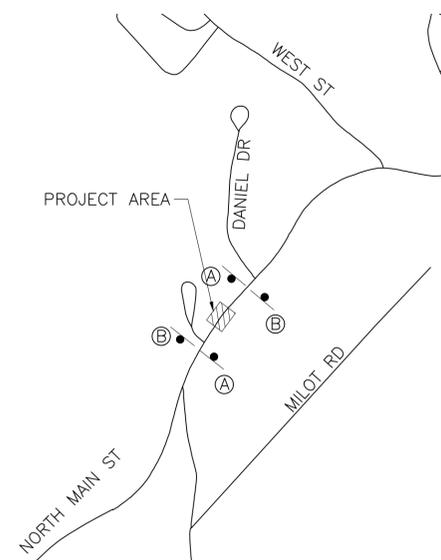
\* - INCREASE SLOPE RATIO FOR HIGHER SPEEDS

LATERAL AND LONGITUDINAL DROP-OFF DETAILS



NOTES:

- THIS SETUP MAY NOT BE LEFT AFTER WORK HOURS. THE W20-4 AND W20-7B OR W20-7 SIGNS MUST BE TAKEN DOWN OR COMPLETELY COVERED WHEN BOTH LANES ARE OPEN.



ADVANCED WARNING SIGNING

SIGN LEGEND					
CODE	DESCRIPTION	SIZE	AREA	NO.	TOTAL AREA
W20-1-a	ROAD WORK AHEAD	36"x36"	9 SF	2	18 SF
G20-2	END ROAD WORK	36"x18"	4.5 SF	2	9 SF
W20-4	ONE LANE ROAD AHEAD	36"x36"	9 SF	2	18 SF
MA-W20-7b	POLICE OFFICER AHEAD	36"x36"	9 SF	2	18 SF
W5-1	ROAD NARROWS	36"x36"	9 SF	1	9 SF
W21-5a	RIGHT SHOULDER CLOSED	36"x36"	9 SF	1	9 SF
					TOTAL = 81 SF



PERMIT SET

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East Prescott Street & North Main Street Culvert Replacement

Westford Department of Public Works

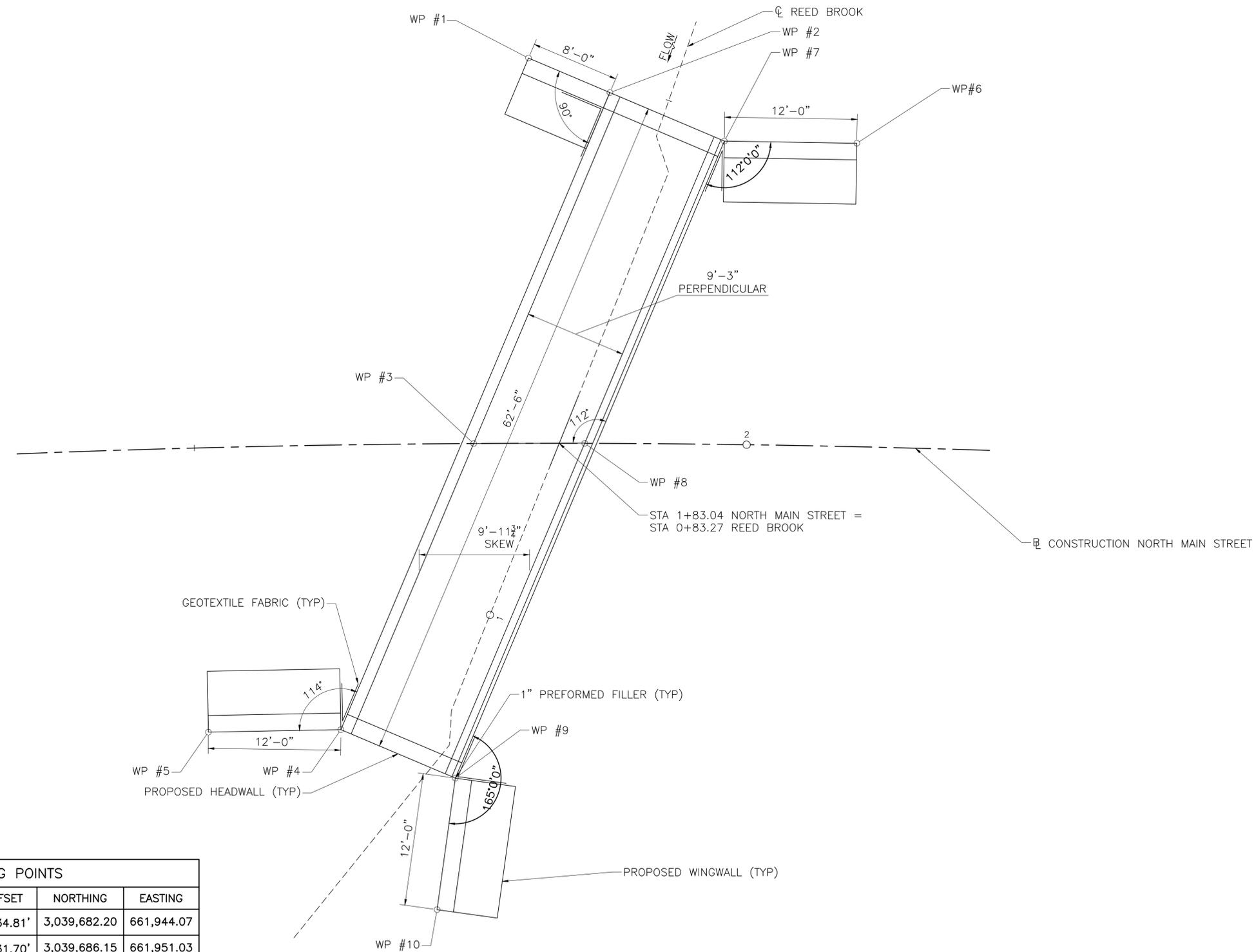
Westford, MA

MARK	DATE	DESCRIPTION
PROJECT NO:	W5005-036	
DATE:	OCTOBER 2025	
FILE:	W5005-036-TTCP.dwg	
DRAWN BY:	JHM	
DESIGNED/CHECKED BY:	SDS/JJC	
APPROVED BY:	DSH	

TEMPORARY TRAFFIC CONTROL PLAN

SCALE: NO SCALE





**CULVERT LAYOUT PLAN**  
SCALE:  $\frac{3}{16}'' = 1'-0''$

**NOTES:**

1. INFORMATION IN THIS TABLE IS BASED ON CONCEPTUAL DESIGN LAYOUT AND GEOMETRY. CONTRACTOR TO CONFIRM WORKING POINTS TO BE CONSISTENT WITH CONTRACTOR'S FINAL DESIGN

WORKING POINTS				
WORKING POINT	STATION	OFFSET	NORTHING	EASTING
WP #1	1+80.31	LT 34.81'	3,039,682.20	661,944.07
WP #2	1+87.49	LT 31.70'	3,039,686.15	661,951.03
WP #3	1+75.29	0.00'	3,039,657.06	661,968.69
WP #4	1+62.86	RT 25.72'	3,039,631.79	661,981.88
WP #5	1+50.60	RT 25.69'	3,039,622.14	661,974.76
WP #6	2+09.38	LT 27.42'	3,039,701.10	661,968.27
WP #7	1+97.64	LT 27.41'	3,039,691.70	661,960.82
WP #8	1+85.34	0.00'	3,039,665.05	661,974.79
WP #9	1+73.41	RT 30.22'	3,039,637.35	661,991.66
WP #10	1+71.61	RT 42.09'	3,039,628.80	662,000.09

**PERMIT SET**

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**East Prescott Street & North Main Street Culvert Replacement**

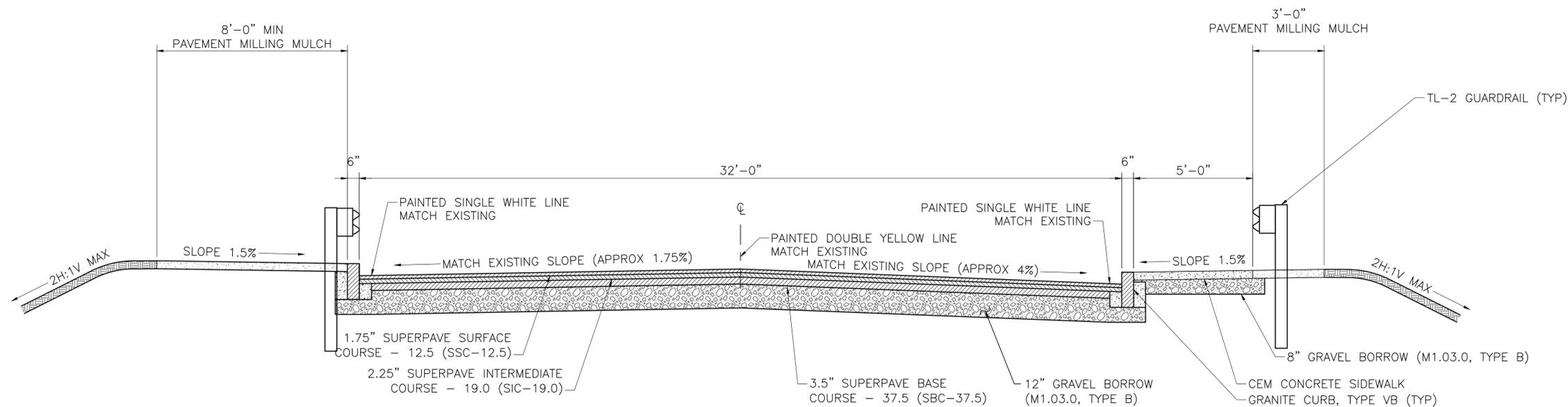
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Westford, MA

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PROJECT NO:	W5005-036	
DATE:	OCTOBER 2025	
FILE:	W5005-036-CULVERT DETAIL.dwg	
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APPROVED BY:	DSH	

CULVERT LAYOUT PLAN

SCALE: AS SHOWN

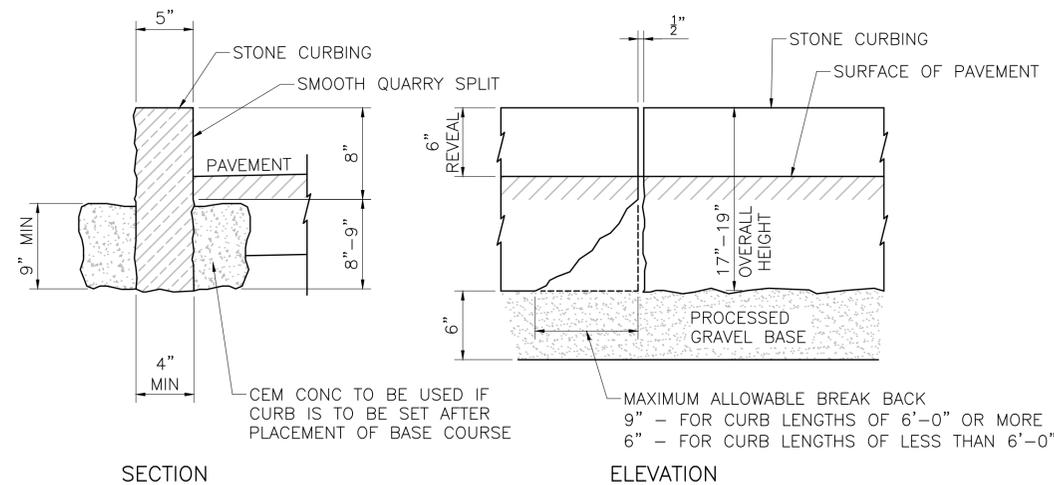
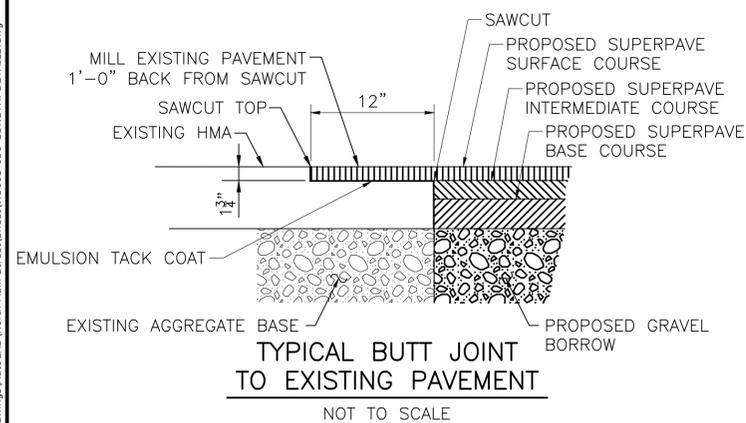


**NOTES:**

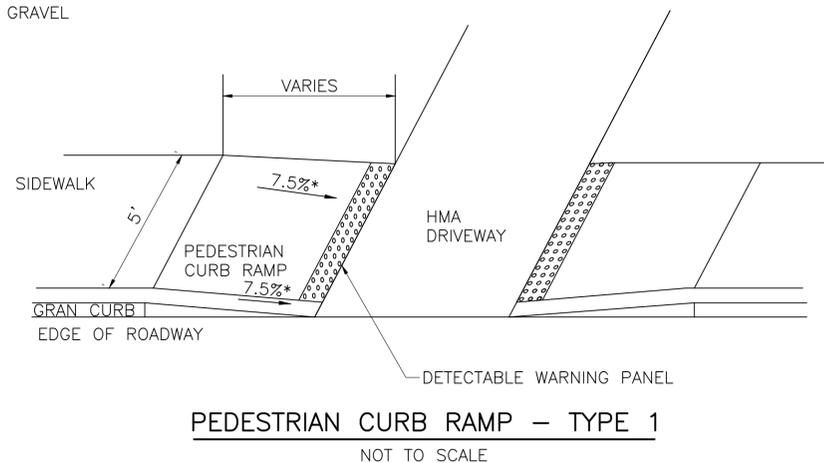
1. PROVIDE REFLECTORIZED PAVEMENT MARKINGS TO MATCH EXISTING. REPLACE STRIPPING IN KIND.

**NORTH MAIN STREET TYPICAL SECTION**

SCALE:  $\frac{3}{8}$ " = 1'-0"



**GRANITE CURB**  
NOT TO SCALE



**NOTES:**

- \* TOLERANCE FOR CONSTRUCTION  $\pm 0.5\%$

**PERMIT SET**

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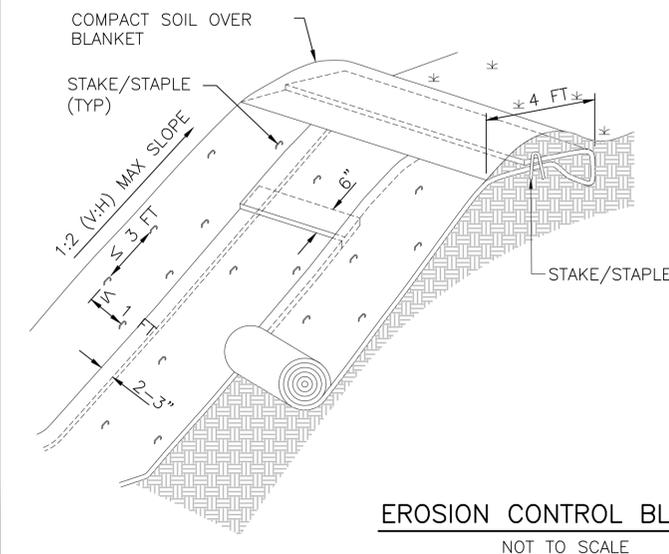
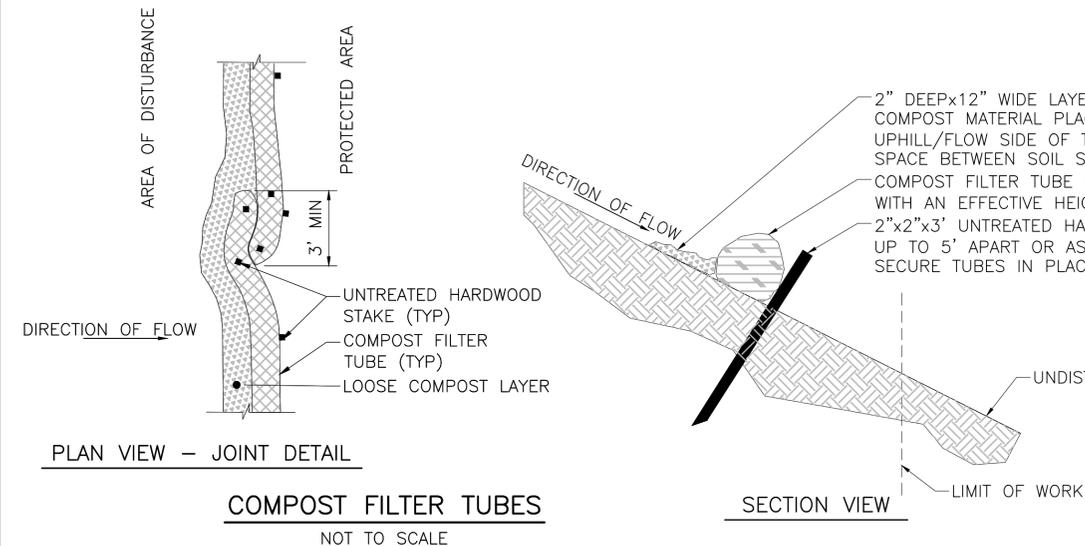
**ROADWAY SECTIONS AND DETAILS**

SCALE: AS SHOWN

Last Saved: 10/27/2025 10:00:00 AM By: JHM  
Tighe & Bond 231 W. W5005 Westford MA 03085  
Boutwell & Reed Brook Culvert Replacement Drawings\AutoCAD\North Main Street\Sheet\W5005-036-CONSTR. DETAILS.dwg

**COMPOST FILTER TUBE NOTES:**

1. PROVIDE A MINIMUM TUBE DIAMETER OF 12" FOR SLOPES UP TO 50' IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATION WITH LONGER SLOPES OR STEEPER SLOPES.
2. INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
3. DO NOT INSTALL IN PERENNIAL, EPHEMERAL OR INTERMITTENT STREAMS.
4. CONFIGURE TUBES AROUND EXISTING SITE FEATURES TO MINIMIZE SITE DISTURBANCE AND MAXIMIZE CAPTURE AREA OF STORMWATER RUN-OFF.
5. TUBES FOR COMPOST FILTERS SHALL BE JUTE MESH OR APPROVED BIODEGRADABLE MATERIAL. ADDITIONAL TUBES SHALL BE USED AT THE DIRECTION OF THE ENGINEER.
6. TAMP TUBES IN PLACE TO ENSURE GOOD CONTACT WITH SOIL SURFACE. IT IS NOT NECESSARY TO TRENCH TUBES INTO EXISTING GRADE.
7. WHEN STAKING IS NOT POSSIBLE, SUCH AS WHEN TUBES MUST BE PLACED ON PAVEMENT, HEAVY CONCRETE OR CINDER BLOCKS CAN BE USED BEHIND TUBES UP TO 5' APART OR AS REQUIRED TO SECURE TUBES IN PLACE.
8. PROVIDE 3' MINIMUM OVERLAP AT ENDS OF TUBES TO JOIN IN A CONTINUOUS BARRIER AND MINIMIZE UNIMPEDED FLOW.
9. STAKE JOINING TUBES SNUGLY AGAINST EACH OTHER TO PREVENT UNFILTERED FLOW BETWEEN THEM.
10. SECURE ENDS OF TUBES WITH STAKES SPACED 18" APART THROUGH TOPS OF TUBES.

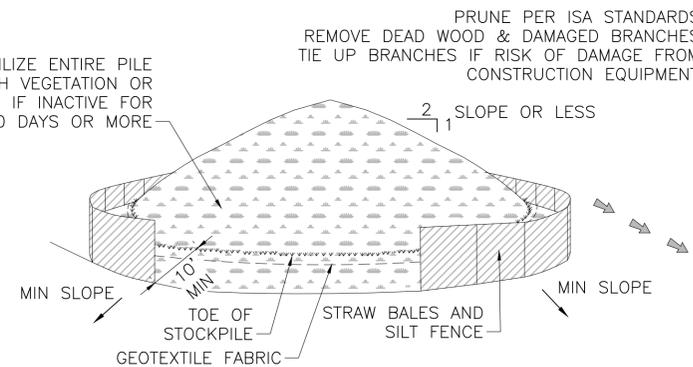


**INSTALLATION NOTES:**

1. TEMPORARY WEAVE JUTE NET EROSION CONTROL BLANKET OVER 6" LOAM & SEED. IN ALL LOCATIONS WITH A 3:1 SLOPE OR STEEPER. SEED MIX AS SHOWN IN TABLE BELOW.
2. EROSION CONTROL BLANKET SHOULD BE INSTALLED VERTICALLY DOWNSLOPE.
3. STAKES/STAPLES SHOULD BE PLACED NO MORE THAN 3 FT APART VERTICALLY, AND 1 FT APART HORIZONTALLY.
4. SLOPE SURFACE SHOULD BE FREE OF STICKS, ROCKS, AND OTHER OBSTRUCTIONS.
5. BLANKETS SHOULD BE ROLLED OUT LOOSELY AND STAKED/STAPLED TO MAINTAIN DIRECT SOIL CONTACT. DO NOT STRETCH THE BLANKETS.

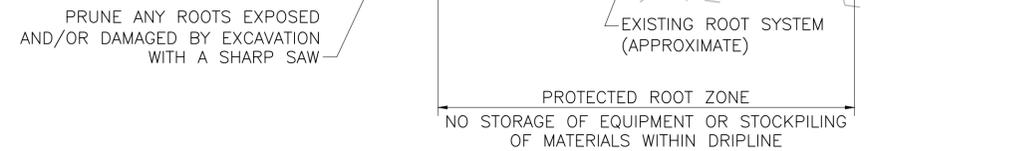
**EROSION CONTROL NOTES:**

1. ALL EROSION CONTROL MEASURES SHOWN, SPECIFIED AND REQUIRED BY THE ENGINEER SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION OR IMMEDIATELY UPON REQUEST. MAINTAIN ALL SUCH CONTROL MEASURES UNTIL FINAL SURFACE TREATMENTS ARE IN PLACE AND/OR UNTIL PERMANENT VEGETATION IS ESTABLISHED.
2. A PRE-CONSTRUCTION MEETING WITH THE WESTFORD CONSERVATION COMMISSION AND THE ENGINEER IS REQUIRED. THE EROSION CONTROL MEASURES ARE TO BE REVIEWED BY THE COMMISSION PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. MAINTAIN AN ADDITIONAL SUPPLY OF EROSION CONTROL MEASURES THROUGHOUT THE CONSTRUCTION PERIOD.
4. PRIOR TO STARTING WORK, CLEARLY STAKE WORK LIMIT LINE(S). DO NOT DISTURB VEGETATION AND TOPSOIL BEYOND THE NEW LIMIT LINE. COORDINATE WITH THE ENGINEER THE LOCATIONS FOR THE TEMPORARY STOCKPILING OF TOPSOIL DURING CONSTRUCTION.
5. SIDE SLOPES, AND DISTURBED VEGETATED AREAS, SHALL BE A MAXIMUM GRADE OF 2:1 COMPACTED, STABILIZED, LOAMED AND SEEDED AS SHOWN ON DRAWINGS. SIDE SLOPES SHALL BE IMMEDIATELY FINE GRADED AND SEEDED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
6. SILT TRAPPED AT BARRIERS SHALL BE REMOVED AND DISPOSED OF IN UPLAND AREAS OUTSIDE BUFFER ZONES. MATERIALS DEPOSITED IN ANY TEMPORARY SETTLING BASIN SHALL BE REMOVED AT THE COMPLETION OF THE PROJECT. ALL DISTURBED AREAS SHALL BE RESTORED.
7. INSTALL EROSION CONTROLS AT THE EDGE OF NEW WORK. EROSION CONTROLS SHALL ACT AS LIMIT OF WORK LINE TO HELP ENSURE THAT EQUIPMENT DOES NOT DISTURB ADJACENT PROPERTIES.
8. ADDITIONAL EROSION CONTROLS MAY BE REQUIRED TO LIMIT SEDIMENTS FROM DISCHARGING TO ADJACENT PROPERTIES OR WATERWAYS.
9. PROPERLY STABILIZE AND PROTECT TEMPORARY STOCKPILES OF MATERIALS RELATED TO THE CONSTRUCTION ACTIVITIES TO LIMIT MOVEMENT OF MATERIAL ONTO ADJACENT PARCELS, OR INTO THE STREAM.
10. STABILIZE THE AREAS OF CONSTRUCTION ACTIVITIES AT THE CLOSE OF EACH CONSTRUCTION DAY. CHECK EROSION CONTROLS AT THIS TIME AND MAINTAIN OR REINFORCE IF NECESSARY.
11. PROTECT NEW WORK FROM FLOODING. PROPERLY SLOPE GRADING IN THE AREAS SURROUNDING ALL EXCAVATIONS TO LIMIT WATER FROM RUNNING INTO THE EXCAVATED AREA OR TO ADJACENT PROPERTIES. UPON COMPLETION OF THE WORK, RESTORE ALL AREAS IN A SATISFACTORY MANNER.
12. ALL SILT-LADEN WATER MUST BE SETTLED OR FILTERED TO REMOVE ALL SEDIMENTS PRIOR TO RELEASE TO AN UPLAND AREA, IN A SEDIMENTATION OR FILTER BAG LOCATED DOWN GRADIENT.
13. DEWATER AS NECESSARY TO KEEP CONSTRUCTION AREAS FREE OF WATER, DISCHARGE WATER FROM DEWATERING TO APPROPRIATE UPLAND LOCATION AND WITHOUT SEDIMENT (SEE DEWATERING REQUIREMENTS).
14. AT THE END OF EACH WORK DAY, ANY SEDIMENTS TRACKED ONTO PUBLIC RIGHTS-OF-WAY BEYOND THE PROJECT LIMITS SHALL BE REMOVED.



**INSTALLATION NOTES:**

1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 2H:1V.
3. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED WITH EITHER SILT FENCING AND STRAW BALES, THEN STABILIZED WITH VEGETATION OR COVERED.



**PERMIT SET**

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**East Prescott Street & North Main Street Culvert Replacement**

Westford Department of Public Works

Westford, MA

MARK	DATE	DESCRIPTION
PROJECT NO:	W5005-036	
DATE:	OCTOBER 2025	
FILE:	W5005-036-CONSTR. DETAILS.dwg	
DRAWN BY:	JHM	
DESIGNED/CHECKED BY:	SDS/JJC	
APPROVED BY:	DSH	

ROADWAY SECTIONS AND DETAILS

SCALE: NO SCALE

**IN-SITU WETLAND RESTORATION NOTES:**

1. STABILIZATION OF DISTURBED AREAS OR NEW SOIL SHALL BE IMPLEMENTED WITHIN 14 DAYS AFTER GRADING OR CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED. APPROPRIATE VEGETATIVE SOIL STABILIZATION IS TO BE USED TO MINIMIZE EROSION. TEMPORARY OR PERMANENT VEGETATIVE COVER IS TO BE ESTABLISHED IN ACCORDANCE WITH THE PROJECT PLANS AND SPECIFICATIONS, USING HYDRO-SEEDING, BROADCASTING, OR OTHER APPROVED TECHNIQUES.
2. TREES AND SHRUBS SHOULD BE PLANTED FIRST AND THEN SEEDING WITH THE SPECIFIED SEED MIX (TABLE 1).
3. TREES AND SHRUB SPECIES PLANTING SUBSTITUTIONS MAY BE REQUIRED BASED ON THE AVAILABILITY OF NATIVE MATERIAL. SUBSTITUTIONS SHALL BE APPROVED BY A WETLAND SCIENTIST OR ENGINEER OVERSEEING THE RESTORATION.
4. MAINTAIN VEGETATED SURFACES, INCLUDING WATER, AND RE-SEEDING UNTIL ESTABLISHED CONDITIONS ARE MET AND UNTIL THE END OF THE CONTRACTUAL MAINTENANCE PERIOD.
5. SEED MIX SPECIFIED IN TABLE 1 SHALL BE APPLIED BASED ON THE APPLICATION RATE SPECIFIED BY THE SUPPLIER.
6. THE IN-SITU WETLAND RESTORATION AREAS SHALL BE MULCHED WITH WEED FREE STRAW FOLLOWING SEEDING.
7. AREAS WHERE WETLAND TOPSOIL IS SIGNIFICANTLY DISTURBED OR REMOVED ENTIRELY, WETLAND TOPSOIL FOR WETLAND REPLACEMENT AREAS SHALL CONSIST OF A MIXTURE OF EQUAL VOLUMES OF CLEAN, WEED AND SEED FREE ORGANIC AND MINERAL MATERIALS. WELL-DECOMPOSED CLEAN LEAF COMPOST SHALL BE USED AS A SOIL AMENDMENT TO ACHIEVE THE ORGANIC STANDARD. WOOD CHIPS, PEAT MOSS, AND PEAT MOSS BY-PRODUCTS SHALL NOT BE USED AS ORGANIC AMENDMENTS. SUPPLEMENTAL TOPSOIL IN WETLAND REPLACEMENT AREAS SHALL HAVE A MINIMUM ORGANIC CARBON CONTENT OF 4-12% (7 TO 21% ORGANIC MATTER) ON A DRY WEIGHT BASIS. MATCH EXISTING GRADE.

**TABLE 1**  
Seed Mix<sup>1</sup> for Application to Bank and Wetland Restoration Areas and for Wetland Replacement

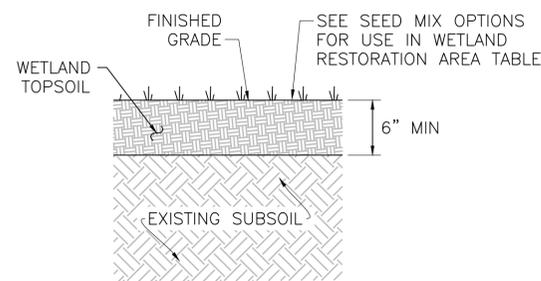
Common Name	Botanical Name <sup>2</sup>	Indicator Status <sup>1</sup>
Fox Sedge	<i>Carex vulpinoidea</i>	OBL
Blunt Broom Sedge	<i>Carex scoparia</i>	FACW
Lurid Sedge	<i>Carex lurida</i>	OBL
Hop Sedge	<i>Carex lupulina</i>	OBL
Fowl Bluegrass	<i>Poa palustris</i>	FACW
Beggar Ticks	<i>Bidens frondosa</i>	FACW
Green Bulrush	<i>Scirpus atrovirens</i>	OBL
Swamp Milkweed	<i>Asclepias incarnata</i>	OBL
Fringed Sedge	<i>Carex crinita</i>	OBL
New York Ironweed	<i>Vernonia noveboracensis</i>	FACW
Soft Rush	<i>Juncus effusus</i>	OBL
Starved/Calico Aster	<i>Aster lateriflorus</i> ( <i>Symphotrichum lateriflorum</i> )	FAC
Blue Flag	<i>Iris versicolor</i>	OBL
American Mannagrass	<i>Glyceria grandis</i>	OBL
Square Stemmed Monkey Flower	<i>Mimulus ringens</i>	OBL
Spotted Joe Pye Weed	<i>Eupatorium maculatum</i> ( <i>Eutrochium maculatum</i> )	OBL

<sup>1</sup> New England Wetmix (Wetland Seed Mix) Species Composition (New England Wetland Plants, Inc.)  
<sup>2</sup> This list was adapted from the New England Wetland Plants, Inc. information sheet as of October 10, 2020.  
<sup>3</sup> Indicator status is based on the USDA NRCS Plants Database.

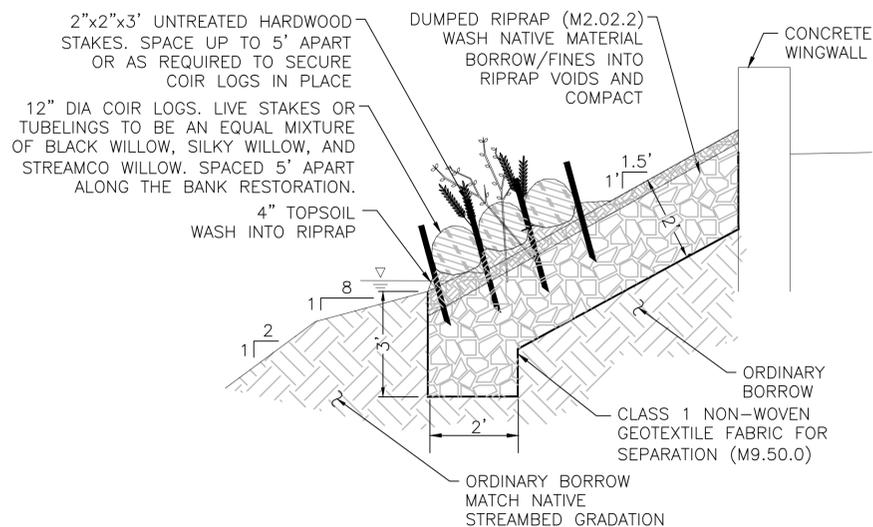
**TABLE 2**  
Native Shrubs for Wetland Mitigation Along Boutwell Brook

Common Name	Scientific Name	Size <sup>2</sup>	Number of Plantings
Silky Dogwood	<i>Cornus amomum</i>	3' - 4'	3
Meadowsweet	<i>Spiraea alba</i>	3' - 4'	4
Northern Arrow-wood	<i>Viburnum dentatum</i>	3' - 4'	3
Wild Raisin	<i>Viburnum nudum</i>	3' - 4'	2

<sup>1</sup> Shrubs to be selected from the species listed in this table based on the availability of native nursery stock at the time of installation.  
<sup>2</sup> Minimum size (height) at time of installation.



**WETLAND TOPSOIL FOR INLAND WETLAND REPLACEMENT AREA**  
NOT TO SCALE



**RIPRAP SLOPE STABILIZATION**  
NOT TO SCALE

**PERMIT SET**

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**East Prescott Street & North Main Street Culvert Replacement**

Westford Department of Public Works

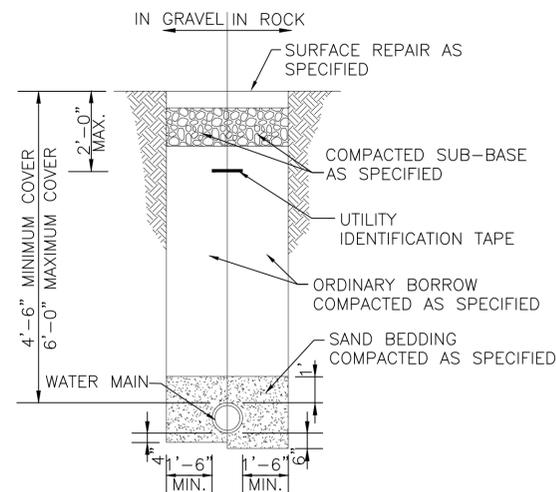
Westford, MA

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APPROVED BY:	DSH	

**WETLAND REPLACEMENT AND SLOPE DETAILS**

SCALE: NO SCALE





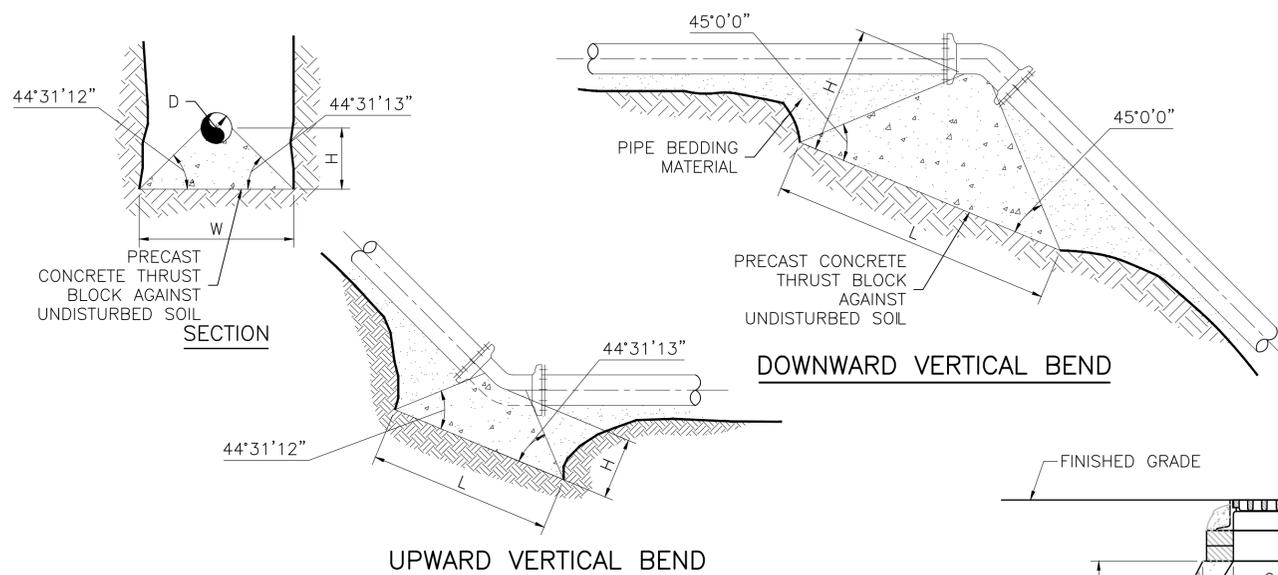
**TYPICAL WATER MAIN TRENCH**

SIZE (IN.)	FITTING	MINIMUM RESTRAINED LENGTH, FT. (1)
8	90° BEND	26
8	45° BEND	11
8	22 1/2° BEND	5
8	11 1/4° BEND	3
8	DEAD END/VALVE	65
8	45° VERTICAL UP BEND	27
8	45° VERTICAL DOWN BEND	6
8	8"x8" TEE	65
8	8"x12" TEE	92

**MINIMUM RESTRAINED LENGTHS FOR DI PIPE**

**NOTES:**

1. MINIMUM RESTRAINED LENGTH IS BASED ON DIPRA RESTRAINED LENGTH CALCULATOR, LATEST EDITION.
2. THE FOLLOWING CONDITIONS APPLY:
  - SOIL TYPE: SAND SILT
  - MAX. PRESSURE: 200 psi
  - TRENCH TYPE: 4
  - BURIED DEPTH: 5'
3. THE MINIMUM RESTRAINED LENGTHS SHOWN ARE SUBJECT TO RECALCULATION BASED ON FIELD CONDITIONS.



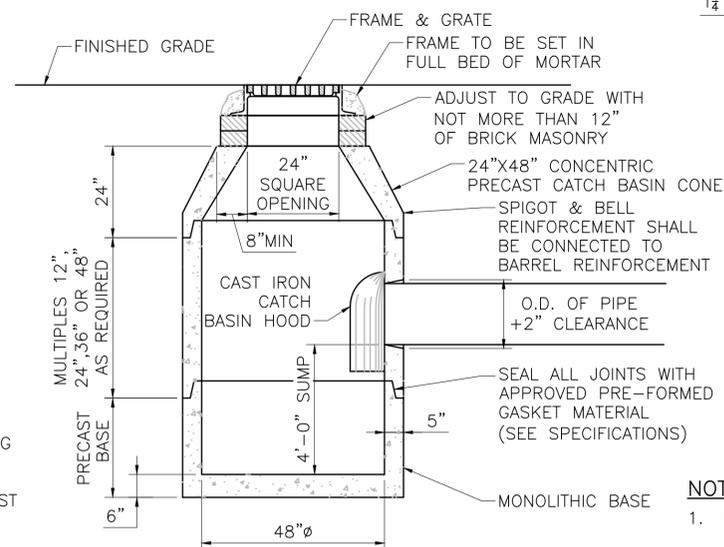
CONCRETE THRUST BLOCK										
D	UPWARD VERTICAL BENDS					DOWNWARD VERTICAL BENDS				
	BEARING AREA (S.F.)	"L"	"H"	"W"	VOLUME (C.F.)	BEARING AREA (S.F.)	"L"	"H"	"W"	VOLUME (C.F.)
8	4.9	2.7	1.8	0.9	4.4	1.3	6.0	3.0	5.0	90.9

\* THE WIDTH OF THE BLOCK (W) IS ASSUMED TO BE THE WIDTH OF THE TRENCH.

**NOTES:**

1. DIMENSIONS SHOWN WERE CALCULATED BASED ON A 200 PSI INTERNAL PIPE PRESSURE, SOIL BEARING LOADS OF 3,000 PSF, AND A 45° BEND.
2. CONCRETE THRUST BLOCKS SHALL BE CONSTRUCTED OF PRECAST CONCRETE MATERIAL PLACED AGAINST UNDISTURBED SOIL.
3. DIMENSIONS L, W, & H MAY BE ADJUSTED TO MEET FIELD CONDITIONS, PROVIDED THE BEARING AREA AND VOLUME REMAIN UNCHANGED.

**CONCRETE THRUST BLOCK FOR VERTICAL BENDS**

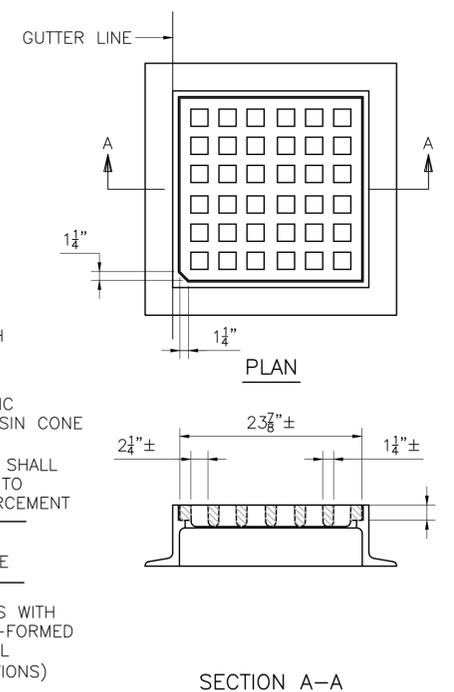


**NOTES:**

1. SEAL JOINT BETWEEN PIPE AND CATCH BASIN WITH GROUT.

**PRECAST CONCRETE CATCH BASIN**

NOT TO SCALE

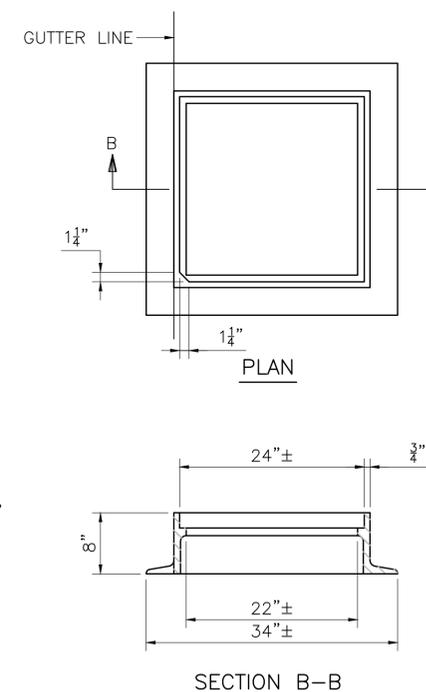


**CATCH BASIN GRATE**

NOT TO SCALE

**NOTES:**

1. MINIMUM WEIGHT OF GRATE - 190 LBS.
2. MATERIAL - CAST IRON, SEE SPECIFICATIONS.



**CATCH BASIN FRAME**

NOT TO SCALE

**NOTES:**

1. MINIMUM FRAME WEIGHT: 4 FLANGE - 295± LBS
2. MATERIAL - CAST IRON, SEE SPECIFICATIONS.
3. FOR ADDITIONAL INFORMATION SEE MHD 201.6.0

**PERMIT SET**

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**East Prescott Street & North Main Street Culvert Replacement**

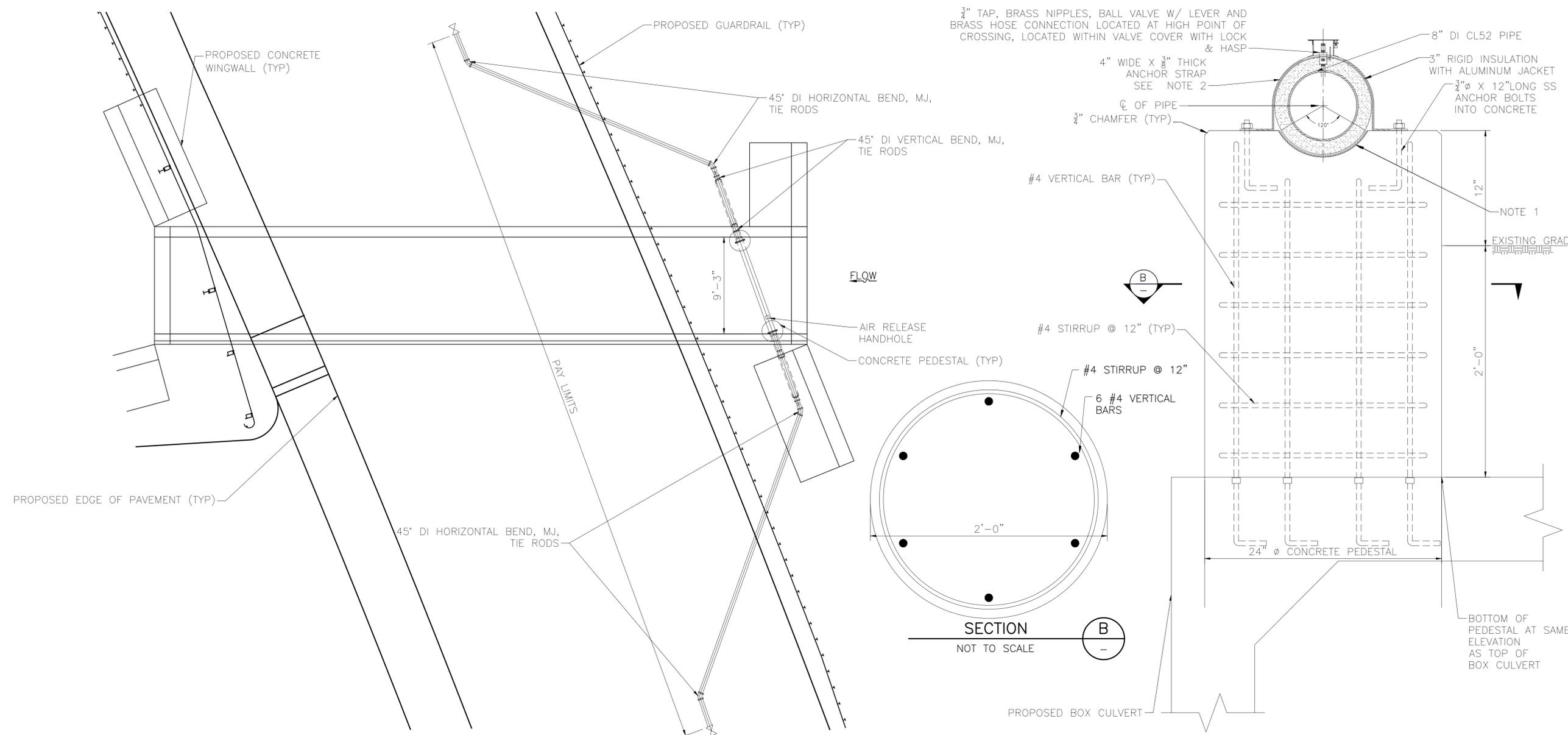
Westford Department of Public Works

Westford, MA

MARK	DATE	DESCRIPTION
PROJECT NO:	W5005-036	
DATE:	OCTOBER 2025	
FILE:	W5005-036-CULVERT DETAIL.dwg	
DRAWN BY:	JHM	
DESIGNED/CHECKED BY:	SDS/JJC	
APPROVED BY:	DSH	

**UTILITY DETAILS**

SCALE: NO SCALE



**WATER MAIN CULVERT CROSSING PLAN VIEW**

SCALE:  $\frac{3}{16}'' = 1'-0''$

$\frac{3}{4}''$  TAP, BRASS NIPPLES, BALL VALVE W/ LEVER AND BRASS HOSE CONNECTION LOCATED AT HIGH POINT OF CROSSING, LOCATED WITHIN VALVE COVER WITH LOCK & HASP

4" WIDE X  $\frac{3}{8}''$  THICK ANCHOR STRAP SEE NOTE 2  
 $\frac{3}{4}''$  CHAMFER (TYP)  
 8" DI CL52 PIPE  
 3" RIGID INSULATION WITH ALUMINUM JACKET  
 $\frac{3}{4}'' \phi$  X 12" LONG SS ANCHOR BOLTS INTO CONCRETE

#4 VERTICAL BAR (TYP)

#4 STIRRUP @ 12" (TYP)

#4 STIRRUP @ 12"

6 #4 VERTICAL BARS

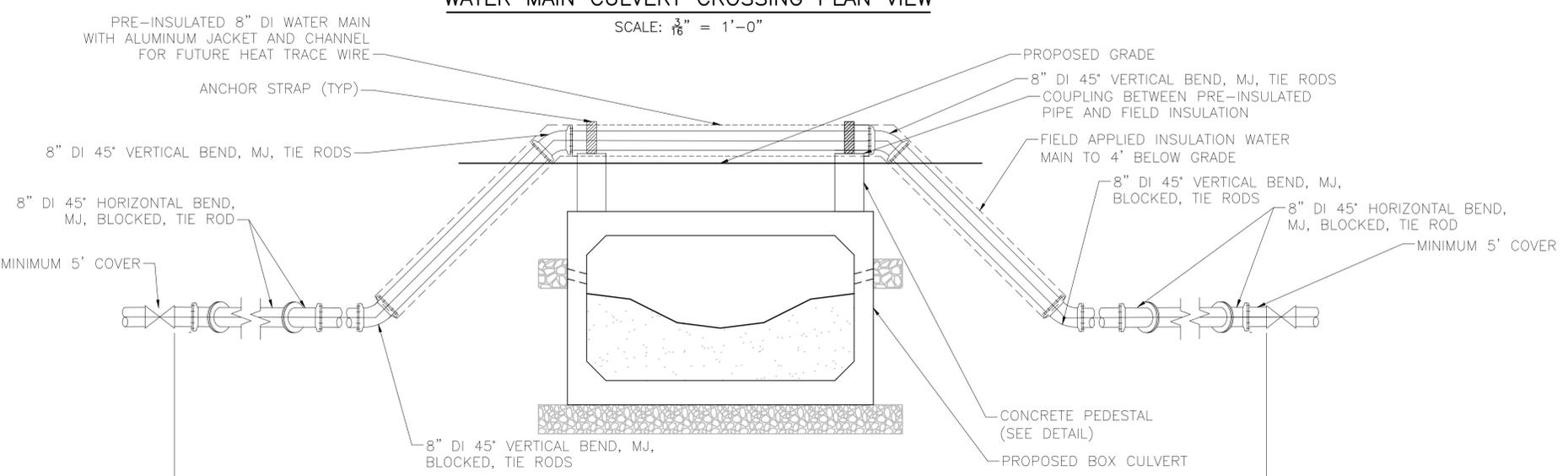
SECTION B  
 NOT TO SCALE

PROPOSED BOX CULVERT

NOTE 1

EXISTING GRADE

BOTTOM OF PEDESTAL AT SAME ELEVATION AS TOP OF BOX CULVERT



**WATER MAIN CULVERT CROSSING PROFILE VIEW**

NOT TO SCALE

SECTION A  
 NOT TO SCALE

**NOTES:**

1. PROVIDE  $\frac{1}{8}''$  THICK PTFE COATED FABREEKA PAD (OR APPROVED EQUAL) BOUNDED TO BEVELED CONCRETE PIER SURFACE.
2. PROVIDE  $\frac{1}{8}''$  THICK PTFE COATED FABREEKA PAD (OR APPROVED EQUAL) BONDED TO UNDERSIDE OF ANCHOR STRAP.
3. PREPARE SURFACES TO RECEIVE FABREEKA PADS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

**PERMIT SET**

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**East Prescott Street & North Main Street Culvert Replacement**

Westford Department of Public Works

Westford, MA

MARK	DATE	DESCRIPTION
PROJECT NO:	W5005-036	
DATE:	OCTOBER 2025	
FILE:	W5005-036-WATERMAIN DETAILS.dwg	
DRAWN BY:	JHM	
DESIGNED/CHECKED BY:	SDS/JJC	
APPROVED BY:	DSH	

**UTILITY DETAILS**

SCALE: AS SHOWN

Last Saved: 10/27/2025 10:02:00 AM By: MJB  
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