

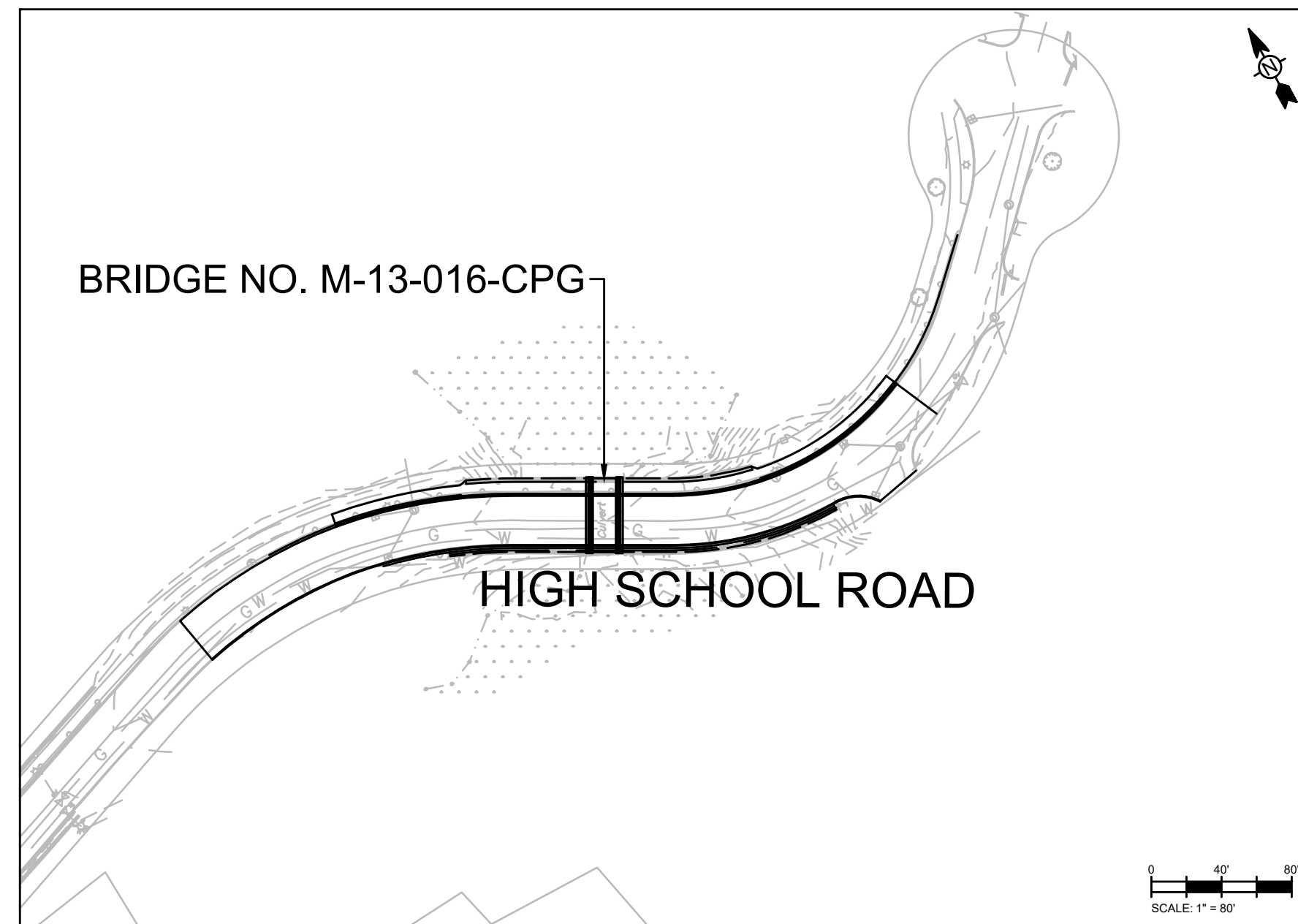
Medway Department of Public Works Medway High School Culvert Replacement Medway, Massachusetts

100 Nickerson Road
Marlborough, MA 01752
508.786.2201

www.tetrattech.com



BID SET



PROJECT LOCATION:

88 Summer Street
Medway, MA

CLIENT INFORMATION:

Town of Medway Department of Public Works
45B Holliston Street
Medway, MA 02053

Tt PROJECT No.:

143-21583-24006

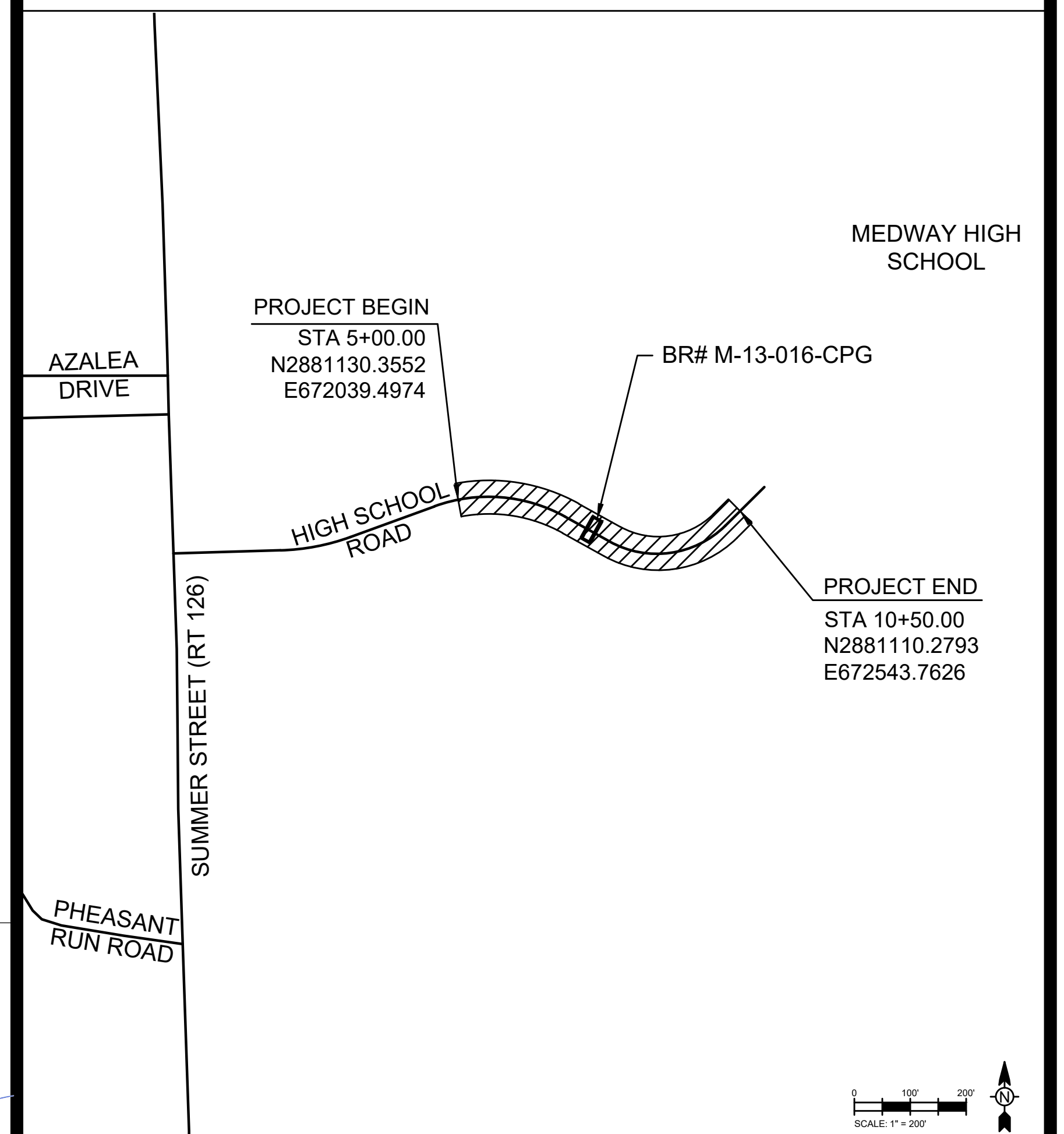
CLIENT PROJECT No.:

PROJECT DESCRIPTION / NOTES:

Replacement of existing 16 ft span aluminum box culvert and appurtenant retaining walls.

ISSUED: MARCH 19, 2025

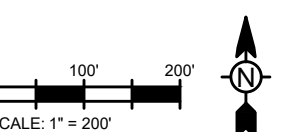
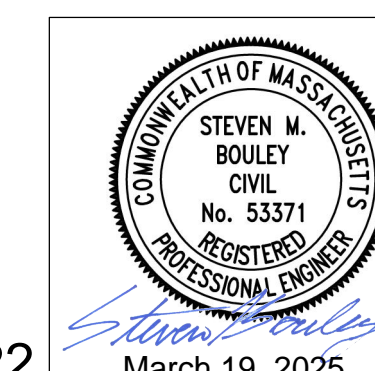
VICINITY MAP:



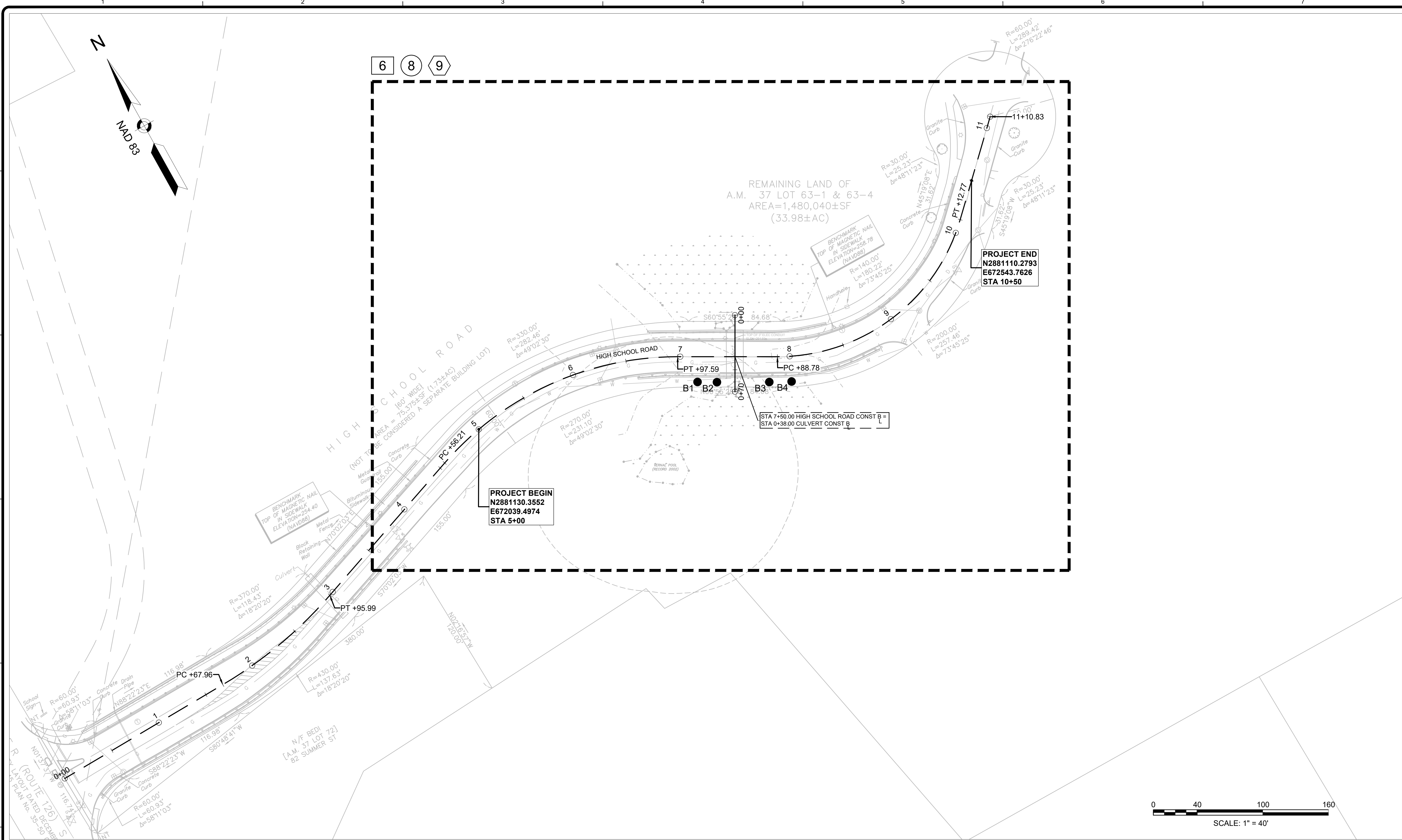
SHEET NO.	SHEET TITLE
HIGHWAY DESIGN PLANS	
SHEET 1	COVER SHEET
SHEET 2	KEY PLAN AND BORING LOCATION PLAN
SHEET 3	LEGEND AND ABBREVIATIONS
SHEET 4	GENERAL NOTES
SHEET 5	TYPICAL SECTIONS
SHEET 6	CONSTRUCTION PLAN
SHEET 7	CONSTRUCTION PLAN ADD ALTERNATE 1
SHEET 8	ROADWAY PROFILE
SHEET 9	CURB TIE AND GRADING PLAN
SHEET 10	SEDIMENT AND EROSION CONTROL PLAN

BRIDGE PLANS	
SHEET 11	KEY PLAN, LOCUS MAP, & PROFILE
SHEET 12	GENERAL NOTES
SHEET 13	BORING SHEET
SHEET 14	CULVERT FOUNDATION PLAN & DETAILS
SHEET 15	BRIDGE PLAN & DETAILS (1 OF 2)
SHEET 16	BRIDGE PLAN & DETAILS (2 OF 2)
SHEET 17	ELEVATIONS & CROSS SECTIONS
SHEET 18	BACKFILL DETAILS

TEMPORARY TRAFFIC CONTROL PLANS	
SHEET 19	ADVANCE WARNING SIGN AND DETOUR PLAN
SHEET 20	TEMPORARY TRAFFIC CONTROL PLAN (1 OF 2)
SHEET 21	TEMPORARY TRAFFIC CONTROL PLAN (2 OF 2)
SHEET 22	CONSTRUCTION SIGN SUMMARY



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KEY PLAN

LEGEND

- # CONSTRUCTION PLANS
- # CURB TIE & GRADING PLANS
- # EROSION AND SEDIMENT CONTROL PLANS
- BORING LOCATIONS (SEE BORING SHEETS FOR LOGS)



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PHONE: 508-786-2200

MARK	DATE	DESCRIPTION	BY
0	03/19/25	ISSUED FOR BID	SMB

Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS	
Proj. Loc.: MEDWAY, MASSACHUSETTS	
KEY PLAN AND BORING LOCATION PLAN	
PROJ:	143-21583-24006
DESN:	SMB
DRWN:	SMB
CHKD:	SMB
2 OF 22	

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Bar Measures 1 inch, otherwise drawing not to scale

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GENERAL SYMBOLS

Table with columns: EXISTING, PROPOSED, DESCRIPTION. Lists symbols for various infrastructure elements like Jersey Barrier, Catch Basin, Gas Pump, Manholes, Fences, and Utility Poles.

PAVEMENT MARKINGS SYMBOLS

Table with columns: EXISTING, PROPOSED, DESCRIPTION. Lists symbols for pavement markings such as Pavement Arrow - White, Legend 'ONLY' - White, Stop Line, Crosswalk, etc.

ABBREVIATIONS

Table with columns: GENERAL, GENERAL. Lists abbreviations for traffic volume (AADT), materials (AC, BIT, CEM), and infrastructure (PVI, PVT, RCP, etc.).



Table with columns: BY, DATE, DESCRIPTION, MARK. Contains a grid for tracking revisions or issues.

Table with columns: BY, DATE, DESCRIPTION, MARK. Continuation of the revision tracking grid.

Table with columns: PROJ, DESN, DRWN, CHKD. Contains project identification and drawing control information.

Bar Measures 1 inch, otherwise drawing not to scale

GENERAL NOTES

1. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT FOR REVIEW A SCHEDULE OF OPERATIONS IN ADDITION TO OTHER CONTRACT REQUIREMENTS TO THE TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS.
2. WHERE THE NEW CONSTRUCTION COINCIDES WITH PRESENT TRAVELED WAYS, THE CONTRACTOR SHALL PERFORM THEIR WORK IN A MANNER ACCEPTABLE TO THE TOWN AND ENGINEER SO THAT INTERFERENCE TO BUSINESS CONCERNS AND ABUTTERS, ON ACCOUNT OF THE CONSTRUCTION WORK, IS KEPT TO A MINIMUM. 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 ACCESS TO AND FROM THE PROPERTY AT ALL TIMES AT NO ADDITIONAL COST.
3. THE CONTRACTOR SHALL PROVIDE METHODS OF DEWATERING OPERATIONS AND FOR STORM WATER RUNOFF NOT TO ALLOW SILT OR DEBRIS TO ENTER EXISTING DRAINAGE FACILITIES OR CREATE NUISANCES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING EXISTING OR NEW FACILITIES IF SILTATION OCCURS DUE TO THE CONTRACTOR'S OPERATIONS.
4. DAMAGE OF PROPERTY BEYOND THE WORK LIMITS CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE, SUBJECT TO THE APPROVAL OF THE ENGINEER AND ACCEPTANCE OF THE PROPERTY OWNER.
5. THE CONTRACTOR SHALL DISPOSE OF ALL WASTE MATERIAL IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS AT THEIR OWN EXPENSE IF NOT OTHERWISE SPECIFIED, OUTSIDE OF THE PROJECT LIMITS.
6. ALL EXISTING MUNICIPAL AND PRIVATE UTILITY CASTINGS SUCH AS WATER BOXES, CURB STOPS, MANHOLE FRAMES AND COVERS, CATCH BASIN FRAME AND GRATES AND OTHER CASTINGS SHALL BE ADJUSTED BY THE CONTRACTOR TO LINE AND GRADE AS DIRECTED BY THE ENGINEER UNLESS OTHERWISE SPECIFIED.
7. IN ALL LOCATIONS WHERE PROPOSED SIDEWALK TRANSITIONS TO MEET EXISTING GRADE, SIDEWALK OR PAVED AREA, SLOPE SHALL NOT EXCEED 1:12.
8. EXISTING CURB (CONCRETE) IN GOOD CONDITION SHALL BE RESET IF ABLE. NEW CURB SHALL BE USED ONLY AFTER ALL EXISTING CURB HAS BEEN RESET.
9. ALL EXISTING DRAINAGE STRUCTURES AND PIPE TO REMAIN WITHIN THE PROJECT LIMITS SHALL BE CLEANED AND SEDIMENT DISPOSED OF UNDER PAY ITEMS 227.3 AND 227.31.
10. ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE ENGINEER.
11. ALL ITEMS SHALL CONFORM TO LATEST COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES AND STANDARD DETAILS UNLESS OTHERWISE NOTED.


SURVEY NOTES

1. THIS PLAN WAS PREPARED FROM AN ACTUAL ON THE GROUND SURVEY CONDUCTED BY GUERRIERE & HALNON, INC. EXISTING CONDITIONS PLANS DATED 13 OCTOBER 2023 AND SUPPLEMENTAL SURVEY REVISED PLAN DATED 7 NOVEMBER 2024.
2. THE HORIZONTAL DATUM SHOWN HEREON REFERENCES THE MASSACHUSETTS STATE COORDINATE GRID, NORTH AMERICAN DATUM OF 1983/2011.
3. THE VERTICAL DATUM SHOWN HEREON REFERENCES THE NORTH AMERICAN VERTICAL DATUM OF 1988.
4. THE UNDERGROUND UTILITY INFORMATION SHOWN HEREON ARE FROM RECORD DOCUMENTS. THE LOCATION OF THE UTILITIES AS SHOWN HEREON HAVE BEEN COMPILED FROM VISIBLE STRUCTURES AND INFORMATION OBTAINED FROM VARIOUS SOURCES. THE ACTUAL LOCATION OF ALL UTILITIES AND UNDERGROUND STRUCTURES SHALL BE CONSIDERED APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICES OR IN ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED.
5. BEFORE DESIGNING FUTURE CONNECTIONS, THE APPROPRIATE UTILITIES MUST BE CONSULTED. BEFORE CONSTRUCTION, ALL UTILITIES, PUBLIC AND PRIVATE, MUST BE NOTIFIED (SEE MASSACHUSETTS GENERAL LAWS, CHAPTER 82 SECTION 40.) CALL "DIG SAFE" (1(888) 344-7233 HTTP://WWW.DIGSAFE.COM

UTILITY NOTES

1. RELIANCE UPON THESE DATA FOR RISK MANAGEMENT PURPOSES DURING BIDDING DOES NOT RELIEVE THE EXCAVATOR OR UTILITY OWNER FROM FOLLOWING ALL APPLICABLE UTILITY DAMAGE PREVENTION STATUES, POLICIES, AND/OR PROCEDURES DURING CONSTRUCTION.
2. IT IS IMPORTANT THAT THE CONTRACTOR INVESTIGATES AND UNDERSTANDS THE SCOPE OF WORK BETWEEN THE PROJECT OWNER AND THEIR ENGINEER REGARDING THE SCOPE AND LIMITS OF THE UTILITY INVESTIGATIONS LEADING TO THESE DEPICTIONS.
3. THE CONTRACTOR SHALL EXCAVATE TEST PITS TO VERIFY LOCATIONS OF EXISTING UTILITIES.
4. THE CONTRACTOR SHALL COORDINATE WORK WITH APPLICABLE UTILITY COMPANIES PRIOR TO BEGINNING CONSTRUCTION. THE CONTRACTOR SHALL ALLOW THE UTILITY COMPANIES AND THEIR REPRESENTATIVES ACCESS TO THE SITE TO COMPLETE REQUIRED WORK IN A TIMELY MANNER.
5. NO EXISTING PUBLIC UTILITY STRUCTURES SHALL BE ABANDONED AND/OR DISMANTLED WITHOUT AUTHORIZATION FROM THE ENGINEER AND THE RESPECTIVE UTILITY OWNERS.
6. THE CONTRACTOR SHALL PROVIDE ACCESS TO ALL UTILITIES THROUGHOUT THE PROJECT SO THAT THE VARIOUS UTILITY OWNERS HAVE ACCESS TO VAULTS AND MANHOLES TO OPERATE VALVES AND OTHER CONTROLS ON THEIR SYSTEM.
7. THE LOCATIONS OF PROPOSED PIPELINES, STRUCTURES AND UTILITY RELOCATIONS MAY BE MODIFIED TO SUIT FIELD CONDITIONS AT THE DISCRETION OF THE ENGINEER.
8. IF THE CONTRACTOR DAMAGES UTILITY SERVICES, THEY SHALL IMMEDIATELY NOTIFY THE RESPECTIVE UTILITY COMPANY AND SHALL IMMEDIATELY REPLACE OR REPAIR, UNLESS INDICATED OTHERWISE BY THE RESPECTIVE UTILITY OWNER.

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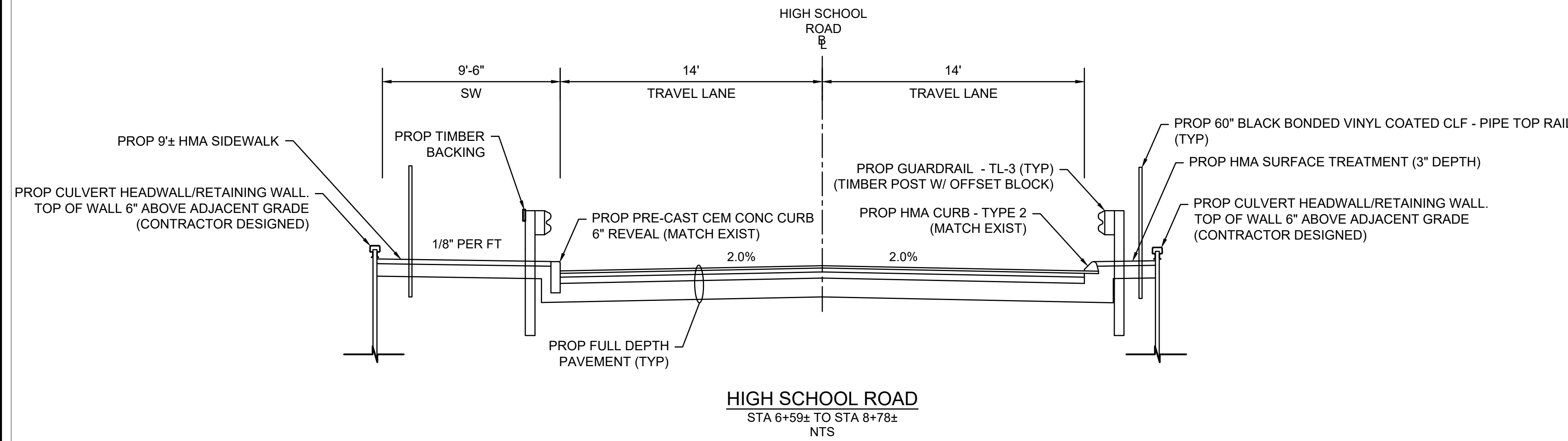
Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS
Proj. Loc.: MEDWAY, MASSACHUSETTS
MEDWAY HIGH SCHOOL CULVERT REPLACEMENT
GENERAL NOTES

PROJ: 143-21583-24006
DESN: SMB
DRWN: SMB
CHKD: SMB

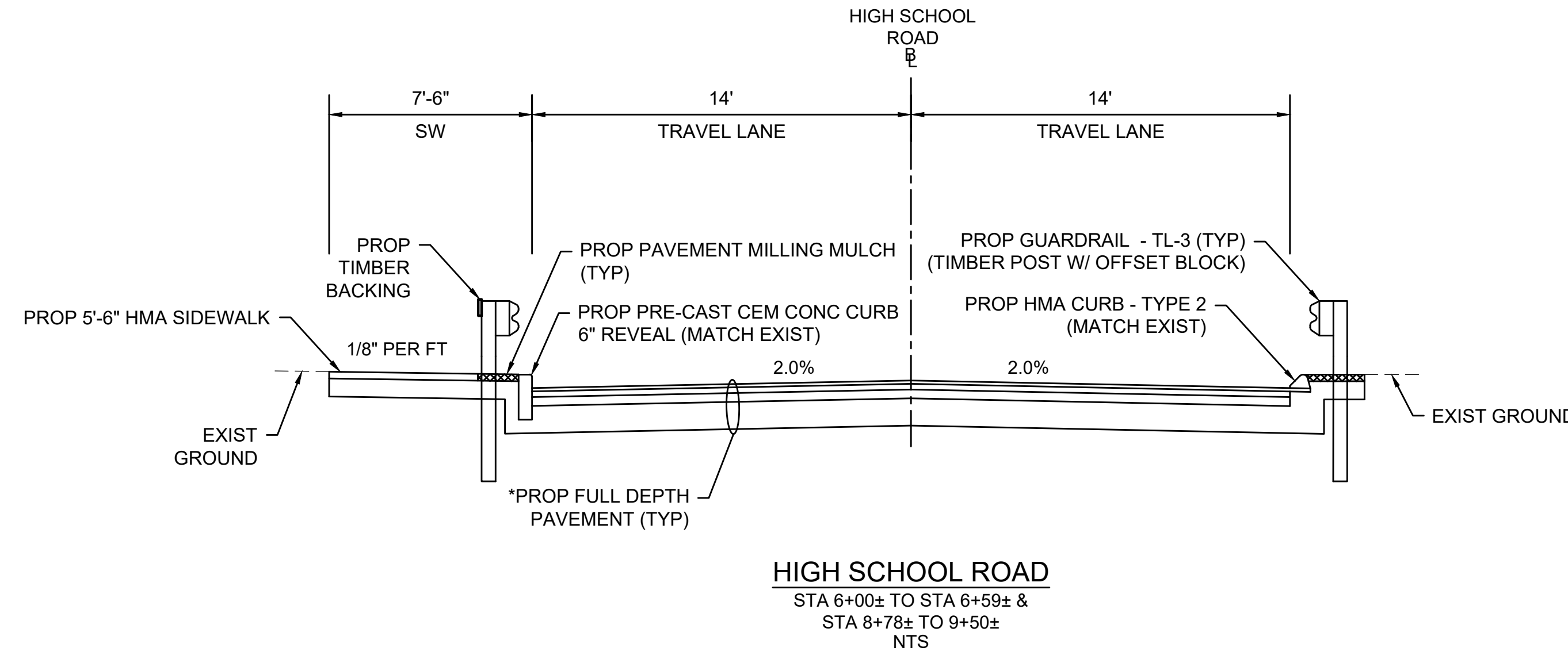
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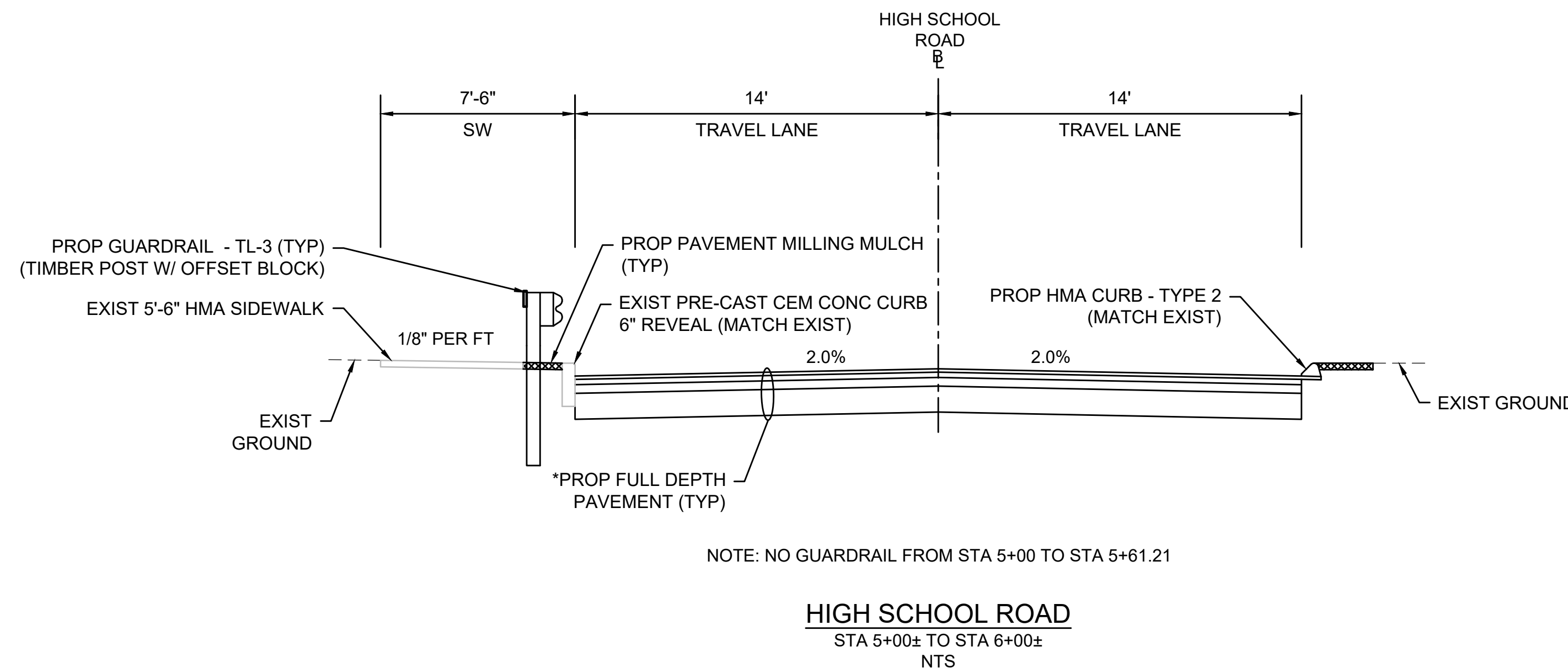
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HIGH SCHOOL ROAD
STA 6+59± TO STA 8+78±
NTS



HIGH SCHOOL ROAD
STA 6+00± TO STA 6+59± &
STA 8+78± TO 9+50±
NTS



NOTE: NO GUARDRAIL FROM STA 5+00 TO STA 5+61.21

HIGH SCHOOL ROAD
STA 5+00± TO STA 6+00±
NTS

BASE BID

PROPOSED FULL DEPTH PAVEMENT (HIGH SCHOOL ROAD)

- SURFACE: 1 1/2" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5)
ASPHALT EMULSION FOR TACK COAT SHALL BE (RS-1h) OVER
- INTERMEDIATE: 2 1/2" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0) OVER
- SUBBASE: 4" DENSE GRADED CRUSHED STONE OVER
8" GRAVEL BORROW (TYPE B)

PROPOSED ADAMS STREET SITE ACCESS ROADWAY (DETOUR)

- SURFACE: 2" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0)
ASPHALT EMULSION FOR TACK COAT SHALL BE (RS-1h) OVER
- SUBBASE: FINE GRADE AND COMPACT EXISTING SURFACE

PROPOSED HMA SIDEWALK

- SURFACE: 1" SUPERPAVE SURFACE COURSE - 9.5 (SSC-9.5) OVER
- INTERMEDIATE: 2" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC-12.5) OVER
- SUBBASE: 8" GRAVEL BORROW (TYPE B)

ADD ALTERNATE 1

PROPOSED FULL DEPTH PAVEMENT

- SURFACE: 1 1/2" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5)
ASPHALT EMULSION FOR TACK COAT SHALL BE (RS-1H) OVER
- INTERMEDIATE: 2 1/2" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0) OVER
- SUBBASE: FINE GRADE AND COMPACT EXISTING SUBBASE

NOTES:

1. ALL HMA SHALL BE IN ACCORDANCE WITH SECTION 450 QUALITY ASSURANCE OF HMA AND SUPERPAVE.
2. ASPHALT EMULSION FOR TACK COAT SHALL BE RS-1h TO RESIST TRACKING OF HAUL VEHICLES.
3. CONTRACTOR SHALL PAVE FROM BACK OF CURB TO BACK OF RET WALL WITHIN LIMITS OF THE RET WALLS TO LIMIT STORMWATER INFILTRATION WITHIN THOSE LIMITS.
4. BACKFILL MATERIAL BELOW SUBBASE SHALL CONFORM TO SPECIFICATIONS OF PROP CULVERT AND RETAINING WALLS BY OTHERS. EXISTING FILL MATERIAL SHALL BE REMOVED WITHIN THE WALL LIMITS AT DEPTHS REQUIRED TO MEET THOSE SPECIFICATIONS.
5. GUARDRAIL (TL-3) SHALL BE SINGLE FACED, W-BEAM WITH TIMBER POSTS AND SHALL MEET STANDARD MASSDOT SPECIFICATIONS.

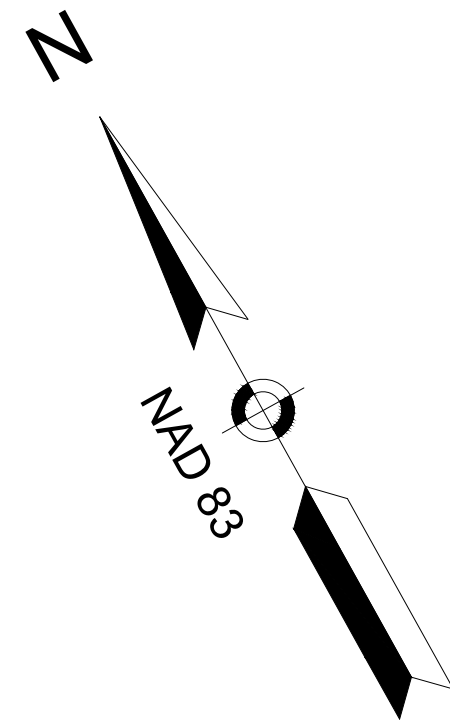
MARK	DATE	DESCRIPTION
0	03/19/25	ISSUED FOR BID

Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS Proj. Loc.: MEDWAY, MASSACHUSETTS MEDWAY HIGH SCHOOL CULVERT REPLACEMENT	PROJ: 143-21583-24006
	DESN: SMB
	DRWN: SMB
	CHKD: SMB

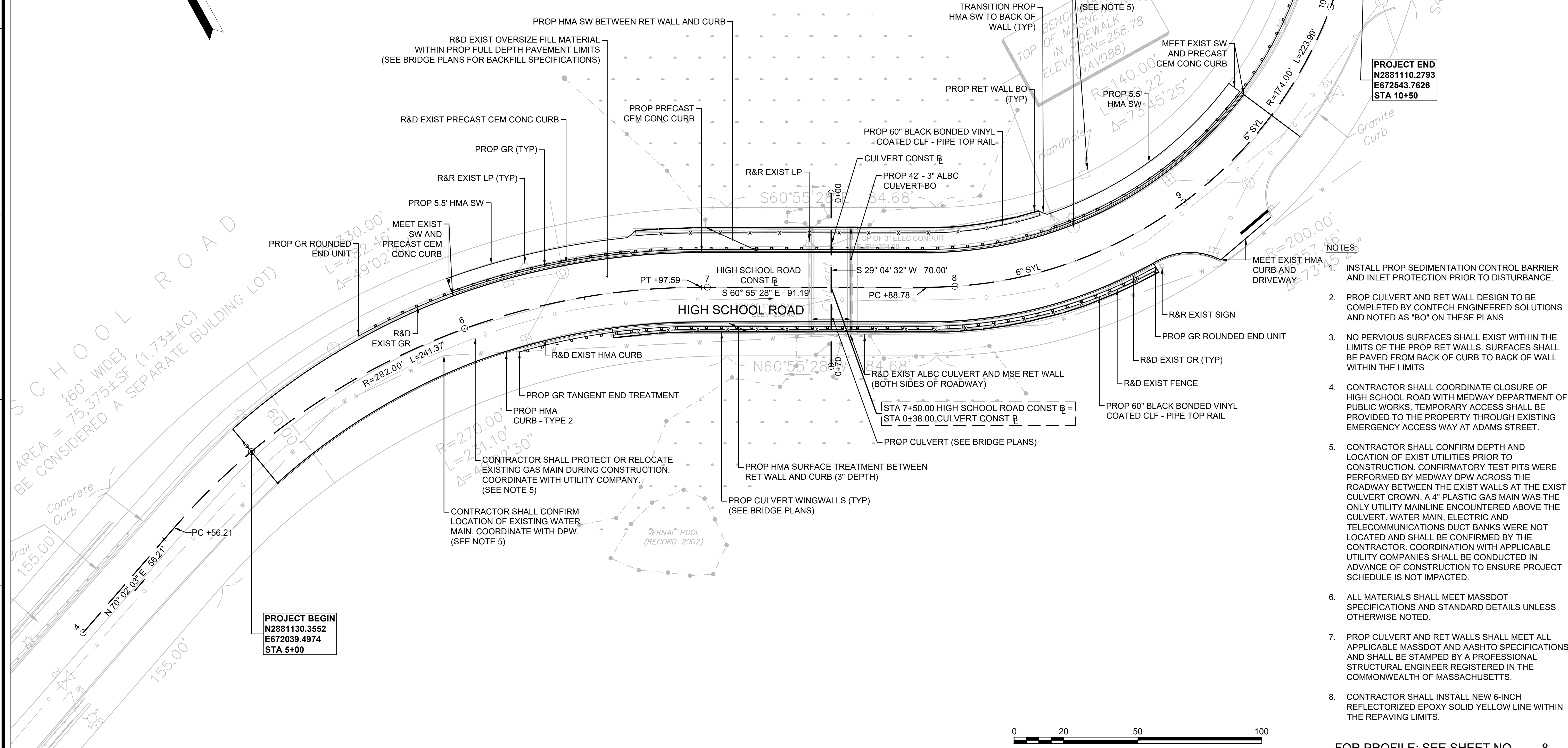
HIGHWAY GUARDRAIL DETAILS

DESCRIPTION	LOCATION (REF HIGH SCHOOL ROAD BASELINE)
ITEM 620.13 GUARDRAIL, TL-3 (SINGLE FACED)	STA 5+61.21, 14.5' LT TO STA 10+47.37, 14.5' LT STA 6+18.68, 14.5' RT TO STA 8+77.09, 14.5' RT
ITEM 627.2 GUARDRAIL ROUNDED END UNIT	STA 5+61.21, 14.5' LT STA 8+77.09, 14.5' RT
ITEM 627.82 GUARDRAIL TANGENT END TREATMENT	STA 10+47.37, 14.5' LT STA 6+18.68, 14.5' RT
ITEM 630.2 HIGHWAY GUARD REMOVED AND DISCARDED	STA 5+61.21, 14.5' LT TO STA 10+47.37, 14.5' LT STA 6+18.68, 14.5' RT TO STA 8+77.09, 14.5' RT

OFFSETS ARE AT FACE OF GUARDRAIL AT BACK OF CURB



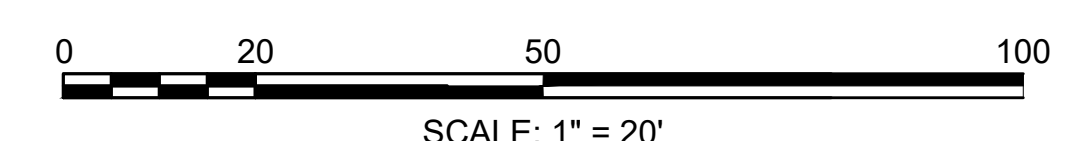
REMAINING LAND OF
A.M. 37 LOT 63-1 & 63-4
AREA=1,480,040±SF
(33.98±AC)



PROJECT END
N288110.2793
E672543.7626
STA 10+50

PROJECT BEGIN
N2881130.3552
E672039.4974
STA 5+00

- NOTES:**
- INSTALL PROP SEDIMENTATION CONTROL BARRIER AND INLET PROTECTION PRIOR TO DISTURBANCE.
 - PROP CULVERT AND RET WALL DESIGN TO BE COMPLETED BY CONTECH ENGINEERED SOLUTIONS AND NOTED AS "BO" ON THESE PLANS.
 - NO PERVIOUS SURFACES SHALL EXIST WITHIN THE LIMITS OF THE PROP RET WALLS. SURFACES SHALL BE PAVED FROM BACK OF CURB TO BACK OF WALL WITHIN THE LIMITS.
 - CONTRACTOR SHALL COORDINATE CLOSURE OF HIGH SCHOOL ROAD WITH MEDWAY DEPARTMENT OF PUBLIC WORKS. TEMPORARY ACCESS SHALL BE PROVIDED TO THE PROPERTY THROUGH EXISTING EMERGENCY ACCESS WAY AT ADAMS STREET.
 - CONTRACTOR SHALL CONFIRM DEPTH AND LOCATION OF EXIST UTILITIES PRIOR TO CONSTRUCTION. CONFIRMATORY TEST PITS WERE PERFORMED BY MEDWAY DPW ACROSS THE ROADWAY BETWEEN THE EXIST WALLS AT THE EXIST CULVERT CROWN. A 4" PLASTIC GAS MAIN WAS THE ONLY UTILITY MAINLINE ENCOUNTERED ABOVE THE CULVERT. WATER MAIN, ELECTRIC AND TELECOMMUNICATIONS DUCT BANKS WERE NOT LOCATED AND SHALL BE CONFIRMED BY THE CONTRACTOR. COORDINATION WITH APPLICABLE UTILITY COMPANIES SHALL BE CONDUCTED IN ADVANCE OF CONSTRUCTION TO ENSURE PROJECT SCHEDULE IS NOT IMPACTED.
 - ALL MATERIALS SHALL MEET MASSDOT SPECIFICATIONS AND STANDARD DETAILS UNLESS OTHERWISE NOTED.
 - PROP CULVERT AND RET WALLS SHALL MEET ALL APPLICABLE MASSDOT AND AASHTO SPECIFICATIONS AND SHALL BE STAMPED BY A PROFESSIONAL STRUCTURAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS.
 - CONTRACTOR SHALL INSTALL NEW 6-INCH REFLECTORIZED EPOXY SOLID YELLOW LINE WITHIN THE REPAVING LIMITS.



FOR PROFILE: SEE SHEET NO. 8



MARK	DATE	DESCRIPTION
0	03/19/25	ISSUED FOR BID

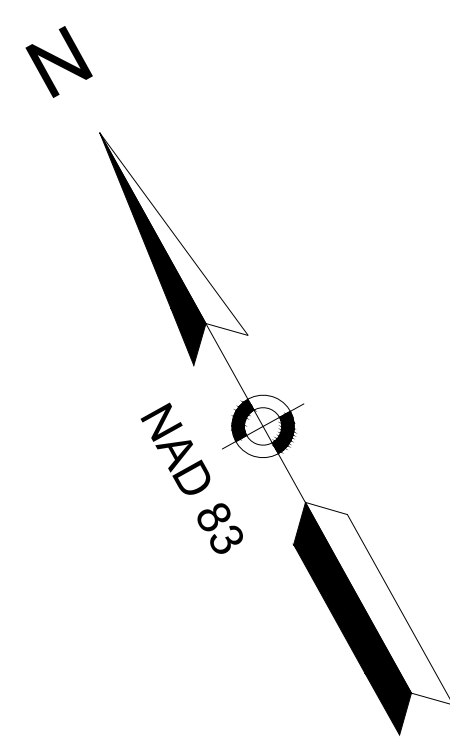
Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS Proj. Loc.: MEDWAY, MASSACHUSETTS	PROJ: 143-21583-24006
MEDWAY HIGH SCHOOL CULVERT REPLACEMENT	DESIGN: SMB
CONSTRUCTION PLAN	DRWN: SMB
	CHKD: SMB
	6 OF 22

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PROJECT BEGIN
 N2881130.3552
 E672039.4974
 STA 5+00

IF ADD ALTERNATE IS ACCEPTED BY TOWN THE CONTRACTOR SHALL PAVE THE ENTIRE DRIVEWAY IN ONE CONTINUOUS PAVING SESSION. CONTRACTOR SHALL LIMIT COLD JOINTS ALONG THE CORRIDOR.

PROP FULL DEPTH PAVEMENT (TYP)
 (SEE SHEET ___ FOR DETAILS)

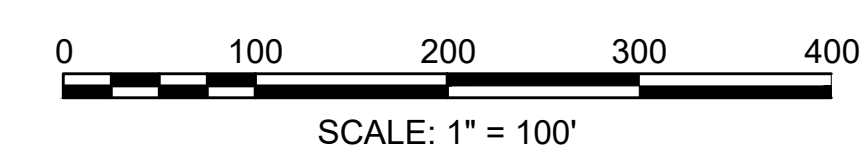
PROP 6-INCH REFLECTORIZED EPOXY SOLID YELLOW LINE (TYP)

SAWCUT TO PROVIDE CLEAN TRANSITION TO EXISTING SUMMER STREET GUTTER LINE

TRANSITION PROP HMA DRIVEWAY TO SUMMER STREET

TRANSITION PROP HMA CROSSWALK TO EXISTING CONCRETE RAMP (TYP)

BENCHMARK TOP OF MAGNETIC NAIL IN SIDEWALK ELEVATION=254.40 (NAVD88)



NOTES:

1. INSTALL PROP SEDIMENTATION CONTROL BARRIER AND INLET PROTECTION PRIOR TO DISTURBANCE.
2. CONTRACTOR SHALL COORDINATE CLOSURE OF HIGH SCHOOL ROAD WITH MEDWAY DEPARTMENT OF PUBLIC WORKS. TEMPORARY ACCESS SHALL BE PROVIDED TO THE PROPERTY THROUGH EXISTING EMERGENCY ACCESS WAY AT ADAMS STREET.
3. ALL MATERIALS SHALL MEET MASSDOT SPECIFICATIONS AND STANDARD DETAILS UNLESS OTHERWISE NOTED.
4. CONTRACTOR SHALL INSTALL NEW REFLECTORIZED EPOXY LINES WITHIN THE REPAVING LIMITS.
5. CONTRACTOR SHALL MAINTAIN EXISTING PAVEMENT MARKING LAYOUT.

FOR PROFILE: SEE SHEET NO. 8

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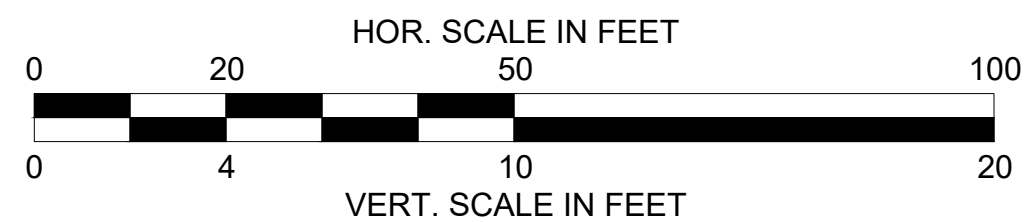
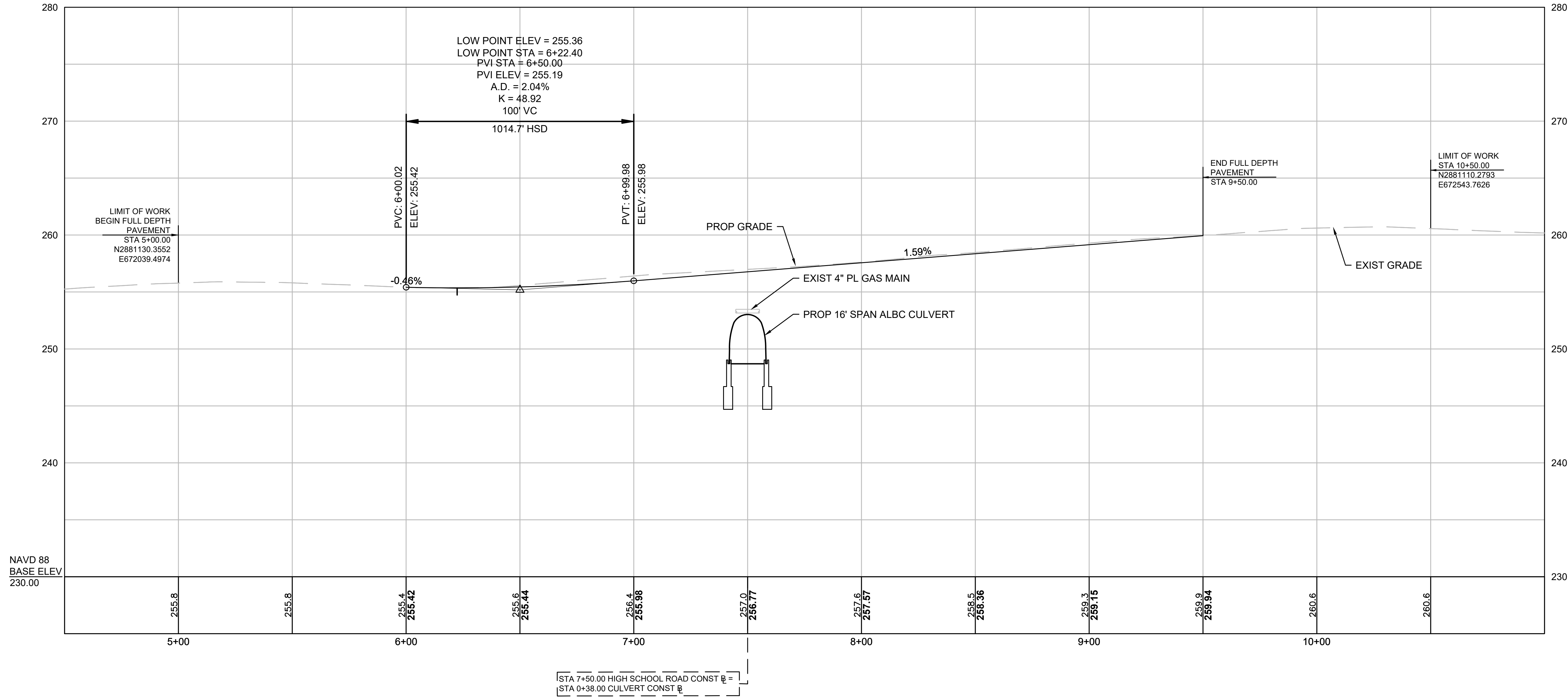
MARK	DATE	DESCRIPTION	ISSUED FOR	BY
0	03/19/25		BID	SMB

Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS
 Proj. Loc.: MEDWAY, MASSACHUSETTS
**MEDWAY HIGH SCHOOL CULVERT REPLACEMENT
 CONSTRUCTION PLAN
 ADD ALTERNATE 1**
 PROJ: 143-21583-24006
 DESN: SMB
 DRWN: SMB
 CHKD: SMB

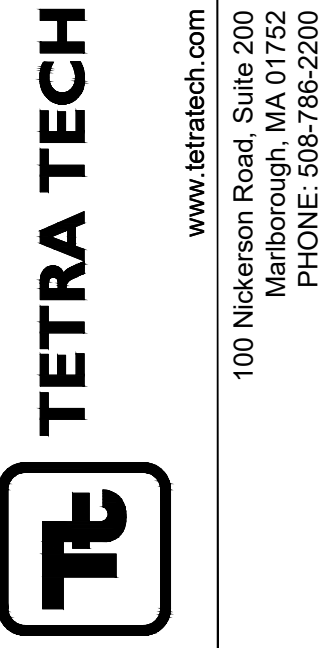
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FOR CONSTRUCTION PLAN: SEE SHEET NO. 6



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MARK	DATE	DESCRIPTION
0	03/19/25	ISSUED FOR BID

Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS
Proj. Loc.: MEDWAY, MASSACHUSETTS
MEDWAY HIGH SCHOOL CULVERT REPLACEMENT
ROADWAY PROFILE

PROJ: 143-21583-24006
DESIGN: SMB
DRAWN: SMB
CHKD: SMB

Bar Measures 1 inch, otherwise drawing not to scale

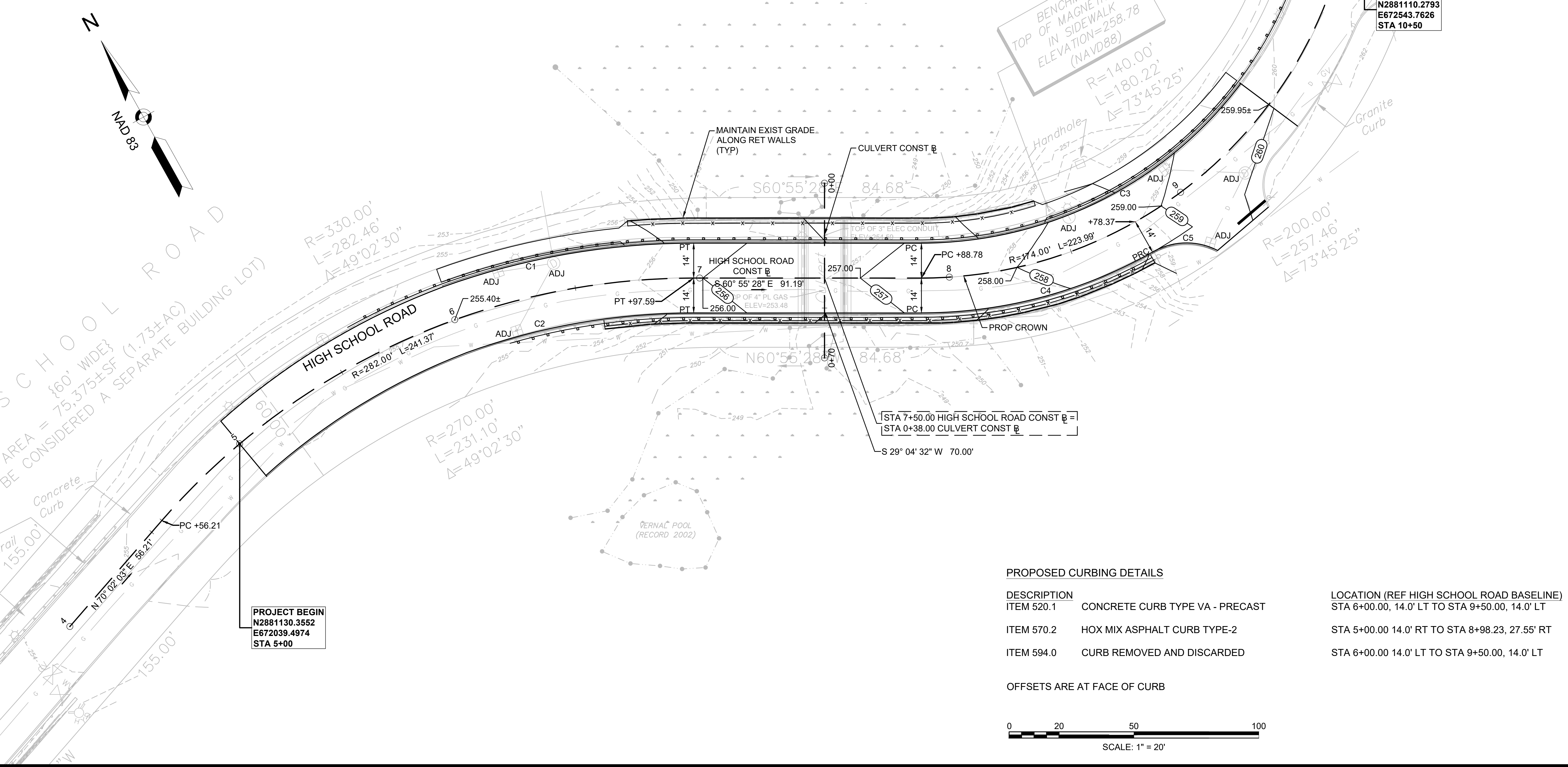
3/19/2025 12:49:29 PM - P:\21583143-21583-24006 (DPW HS CULVERT DES)\CAD\SHHEFILES\BID PLANS\SHEET 09_CURB TIE & GRADING PLAN.DWG - PARADEE, TUCKER

HIGH SCHOOL ROAD CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
START	4+00.00	2881099.457	671944.512		N70°02'03"E 56.21'	4+56.21	2881118.652	671997.348
PC	4+56.21	2881118.652	671997.348	R=282.00' Δ=49°02'30" L=241.37' T=128.64'		6+97.59	2881100.063	672230.682
PT	6+97.59	2881100.063	672230.682		S60°55'28"E 91.19'	7+88.78	2881055.747	672310.382
PC	7+88.78	2881055.747	672310.382	R=174.00' Δ=73°45'25" L=223.99' T=130.54'		10+12.77	2881084.100	672517.290
PT	10+12.77	2881084.100	672517.290		S45°19'08"E 98.06'	11+10+83	2881153.051	672587.013

CURVE TABLE				
CURVE #	STARTING STATION	DELTA	RADIUS	LENGTH
C1	6+00.00	19°49'38"	258.50	102.43
C2	6+00.00	19°49'38"	268.00	92.74
C3	7+88.78	53°04'50"	160.00	148.23
C4	7+88.78	29°35'39"	188.00	97.10
C5	8+78.65	56°57'01"	27.00	26.84

NOTES:
1. GRADES SHOWN ARE AT PAVEMENT ELEVATION UNLESS OTHERWISE SPECIFIED.

CULVERT BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
START	0+00.00	2881107.805	672294.954		S29°04'32"E 70.00'	0+70.00	2881046.626	672260.936



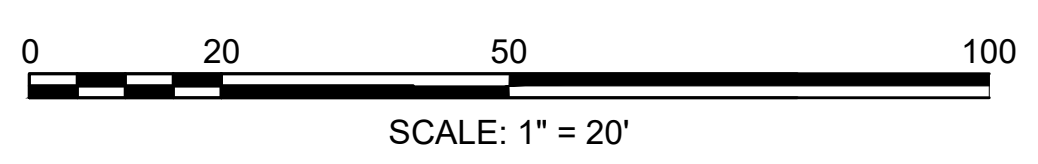
PROJECT BEGIN
N2881130.3552
E672039.4974
STA 5+00

PROJECT END
N2881110.2793
E672543.7626
STA 10+50

STA 7+50.00 HIGH SCHOOL ROAD CONST B =
STA 0+38.00 CULVERT CONST B

PROPOSED CURBING DETAILS		LOCATION (REF HIGH SCHOOL ROAD BASELINE)
DESCRIPTION	ITEM 520.1 CONCRETE CURB TYPE VA - PRECAST	STA 6+00.00, 14.0' LT TO STA 9+50.00, 14.0' LT
	ITEM 570.2 HOX MIX ASPHALT CURB TYPE-2	STA 5+00.00 14.0' RT TO STA 8+98.23, 27.55' RT
	ITEM 594.0 CURB REMOVED AND DISCARDED	STA 6+00.00 14.0' LT TO STA 9+50.00, 14.0' LT

OFFSETS ARE AT FACE OF CURB



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MARK	DATE	DESCRIPTION
0	03/19/25	ISSUED FOR BID

Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS
Proj. Loc.: MEDWAY, MASSACHUSETTS

MEDWAY HIGH SCHOOL CULVERT REPLACEMENT

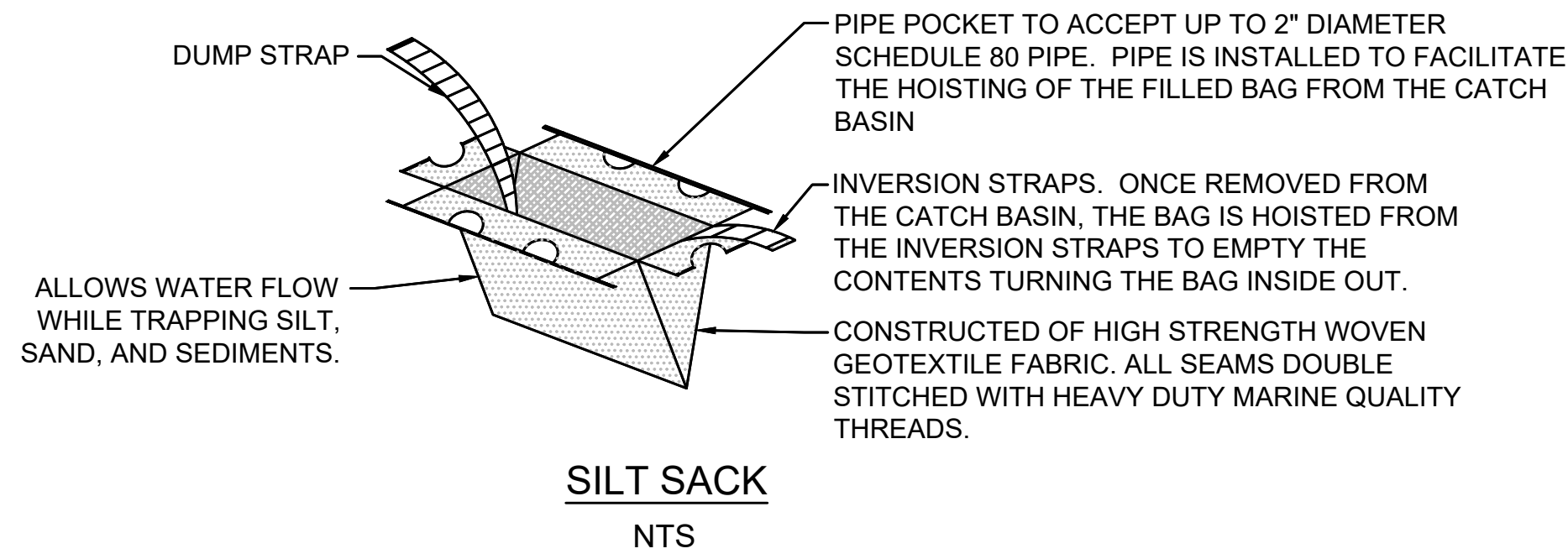
CURB TIE AND GRADING PLAN

PROJ: 143-21583-24006
DESIGN: SMB
DRAWN: SMB
CHKD: SMB

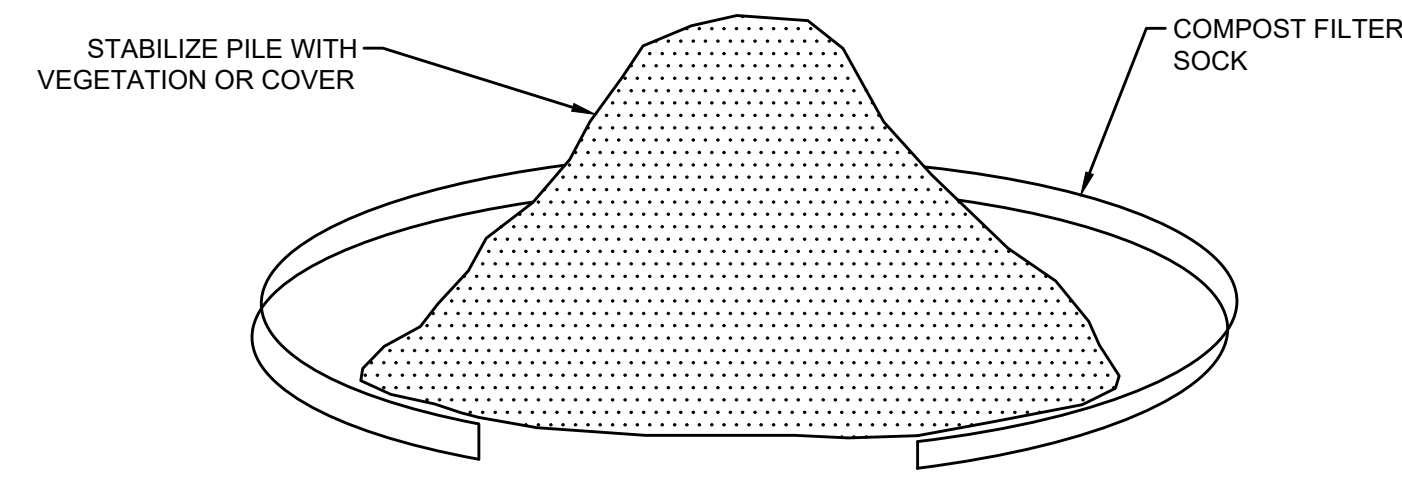
9 OF 22

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Bar Measures 1 inch, otherwise drawing not to scale



SILT SACK
NTS



NOTE:
STOCKPILES MUST BE PHYSICALLY SEPARATED FROM OTHER STORMWATER CONTROLS.

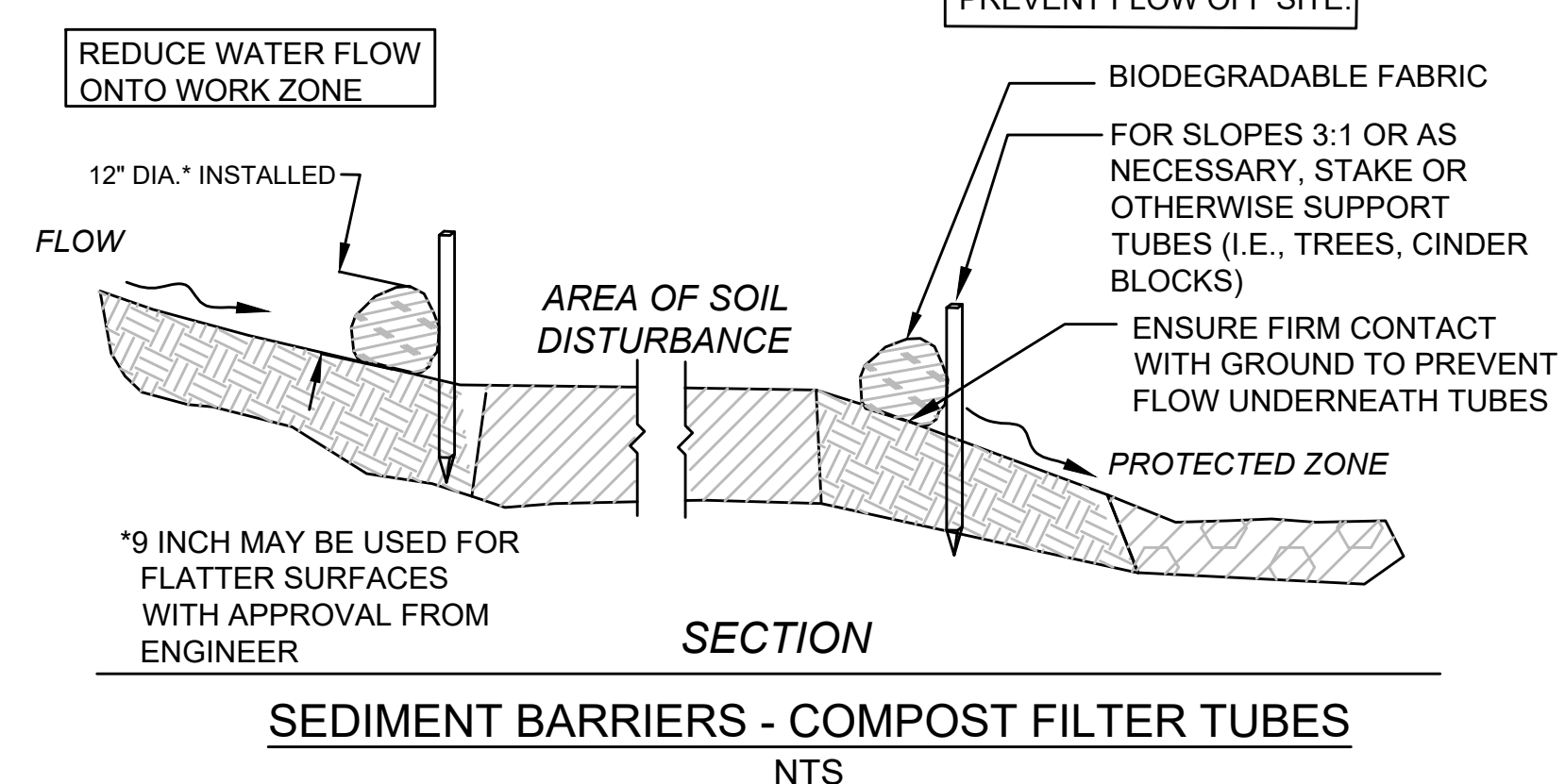
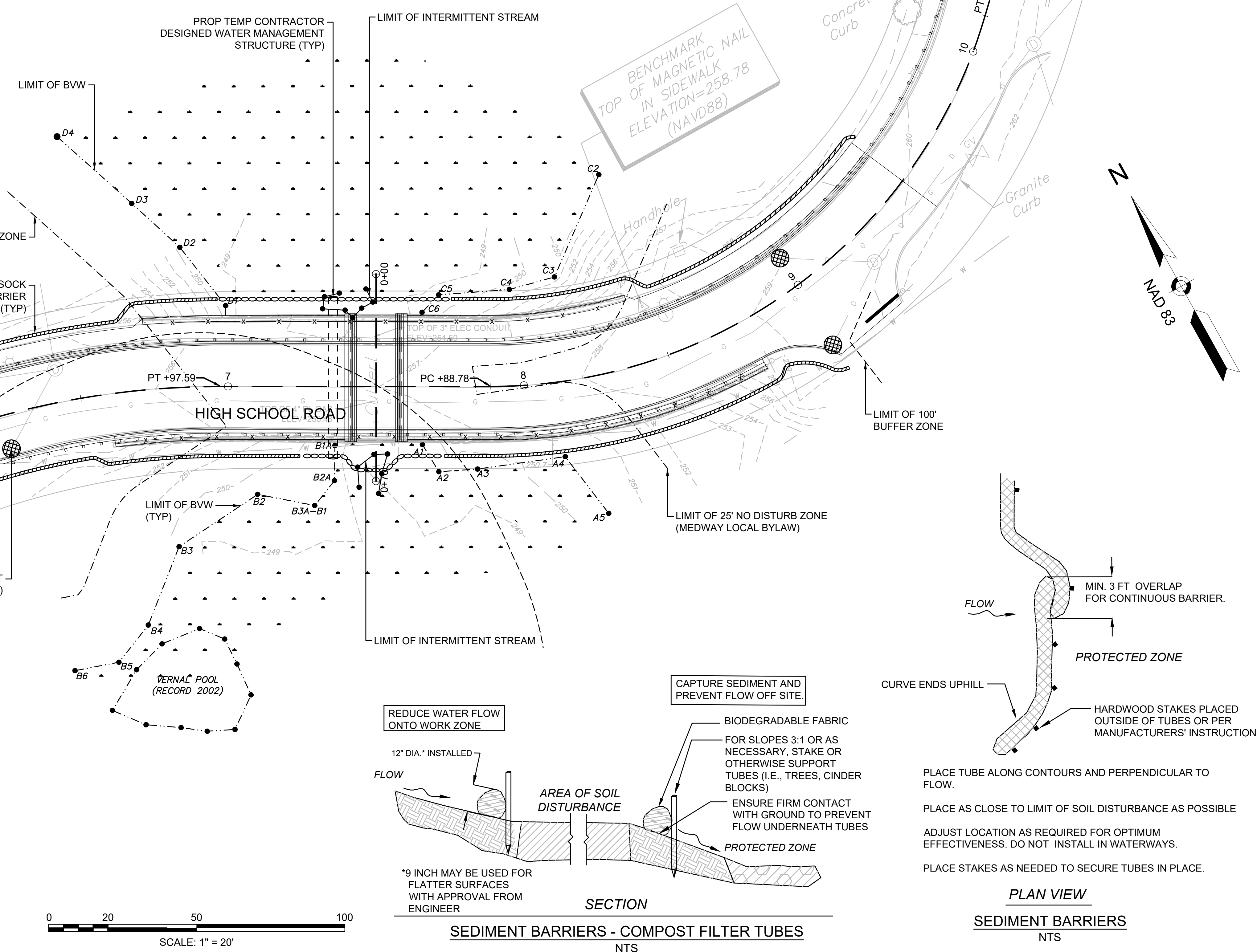
NOTES:

- FOR ANY STOCKPILED OR LAND CLEARING DEBRIS COMPOSED, IN WHOLE OR IN PART, OF SEDIMENT OR SOIL, THE FOLLOWING MEASURES MUST BE FOLLOWED:
 - LOCATE THE PILES 50' OUTSIDE OF ANY RESOURCE AREAS AND PHYSICALLY SEPARATED FROM OTHER STORMWATER CONTROLS;
 - PROTECT FROM CONTACT WITH STORMWATER (INCLUDING RUN-ON) USING A TEMPORARY PERIMETER SEDIMENT BARRIER;
 - PROVIDE COVER OR APPROPRIATE TEMPORARY STABILIZATION TO AVOID DIRECT CONTACT WITH PRECIPITATION OR TO MINIMIZE SEDIMENT DISCHARGE;
 - DO NOT HOSE DOWN OR SWEEP SOIL OR SEDIMENT ACCUMULATED ON PAVEMENT OR OTHER IMPERVIOUS SURFACES INTO ANY STORMWATER CONVEYANCE (UNLESS CONNECTED TO A SEDIMENT BASIN, SEDIMENT TRAP, OR SIMILARLY EFFECTIVE CONTROL), STORM DRAIN INLET, OR SURFACE WATER; AND
 - UNLESS INFEASIBLE, CONTAIN AND SECURELY PROTECT FROM WIND.

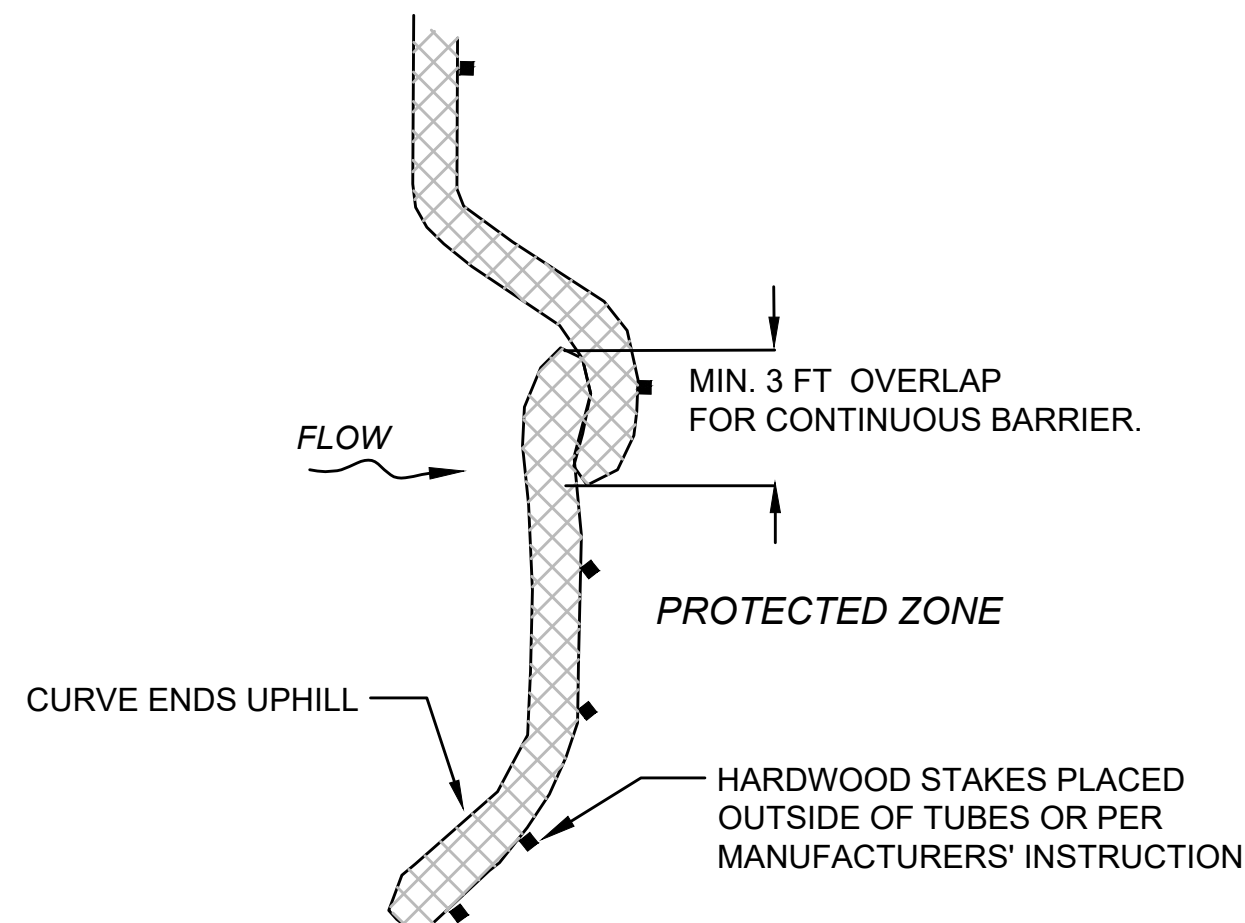
SOIL STOCKPILE CONTROL
NTS

NOTES:

- INSTALL PROP COMPOST FILTER SOCK SEDIMENT CONTROL BARRIER AND SILT SACK INLET PROTECTION PRIOR TO DISTURBANCE.
- SILT SACKS SHALL BE PLACED IN ALL CATCH BASINS FROM LIMIT OF WORK TO SUMMER STREET.
- IF HIGH WATER EXISTS DURING CONSTRUCTION, CONTRACTOR SHALL DESIGN TEMPORARY WATER MANAGEMENT STRUCTURE TO PROPERLY CONTROL WATER WITHIN THE WORK LIMITS. THE CONTRACTOR SHALL SUBMIT WORK PLAN TO THE ENGINEER PRIOR TO IMPLEMENTATION.
- WATER MANAGEMENT STRUCTURE SHALL BE INSTALLED IMMEDIATELY PRIOR TO INSTALLATION OF THE PROP CULVERT AND SHALL REMAIN IN PLACE FOR ONLY TIME NECESSARY TO INSTALL THE CULVERT AND HEADWALL WITHIN THE HIGH WATER LIMITS. ONCE CULVERT, HEADWALL AND CROSSING SURFACE IS PROPERLY STABILIZED, THE STRUCTURE SHALL BE REMOVED AND REPLACED WITH SEDIMENT BARRIER OR SILT CURTAIN DEPENDING ON WATER SURFACE ELEVATION DURING CONSTRUCTION.
- STOCKPILES SHALL BE LIMITED ON PAVED SURFACES. ALL STOCKPILES SHALL BE PROPERLY PROTECTED FROM EROSION DURING CONSTRUCTION.
- CONTRACTOR LAYDOWN AREA SHALL BE LOCATED OUTSIDE OF THE 100 FOOT BUFFER ZONE TO THE RESOURCE AREAS. NO FUELING SHALL TAKE PLACE WITHIN THE 100 FOOT BUFFER ZONE.
- EROSION CONTROLS SHALL BE INSPECTED EVERY WEEK AND AFTER RAINFALL OF 0.25 INCHES OR GREATER. THE CONTRACTOR SHALL INSTALL A RAIN GAUGE AT THE PROJECT SITE TO ACCURATELY MEASURE RAINFALL.
- MAINTENANCE OF EROSION CONTROLS SHALL BE PERFORMED EXPEDITIOUSLY BY THE CONTRACTOR ONCE OBSERVED.



SEDIMENT BARRIERS - COMPOST FILTER TUBES
NTS



SEDIMENT BARRIERS
NTS

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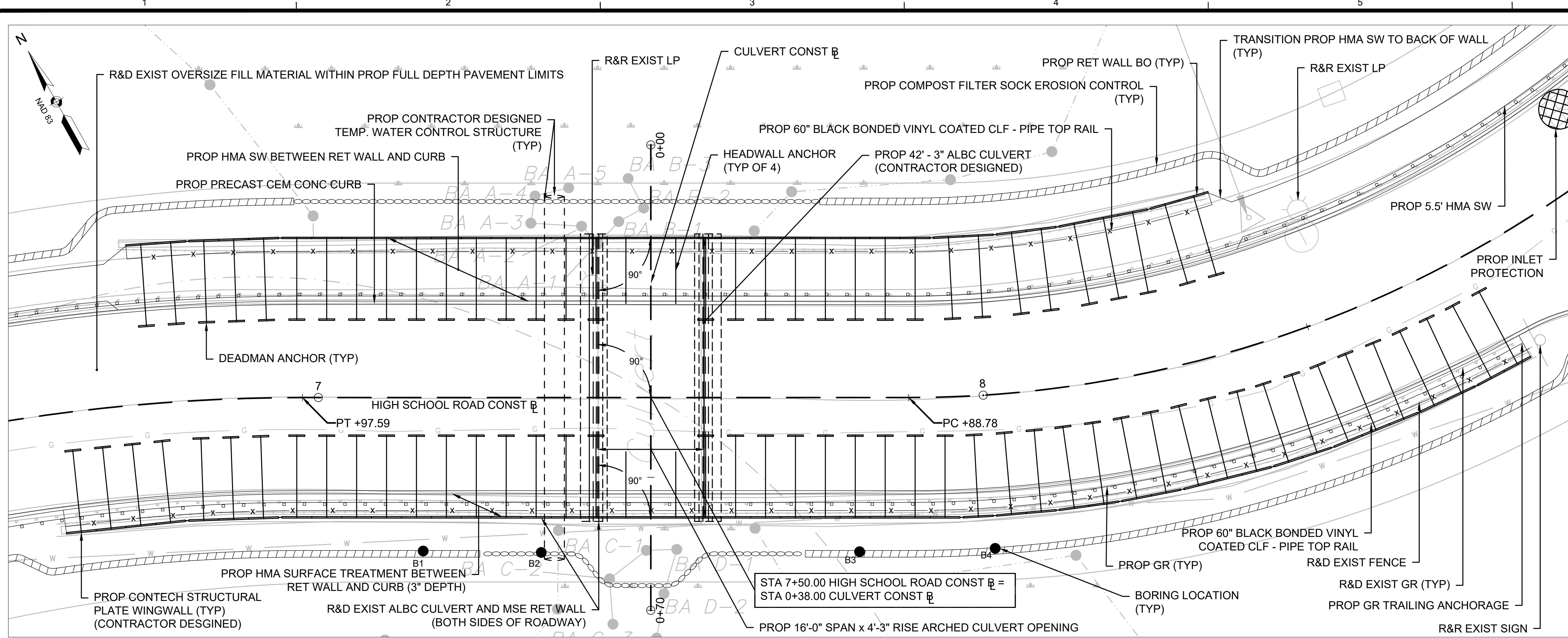
Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS
 Proj. Loc.: MEDWAY, MASSACHUSETTS

MEDWAY HIGH SCHOOL CULVERT REPLACEMENT
SEDIMENT AND EROSION CONTROL PLAN

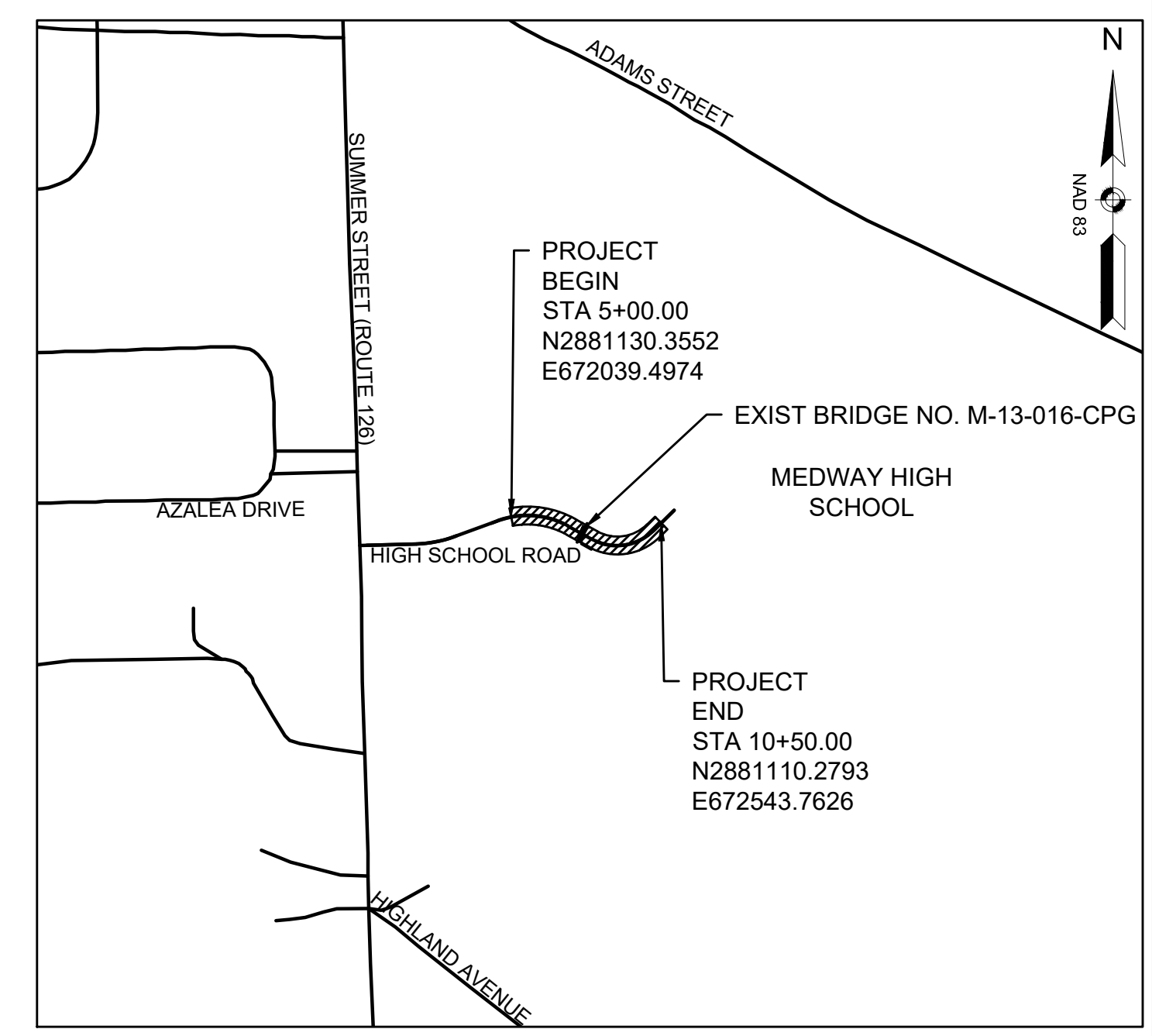
PROJ: 143-21583-24006
 DESN: SMB
 DRWN: SMB
 CHKD: SMB

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Bar Measures 1 inch, otherwise drawing not to scale

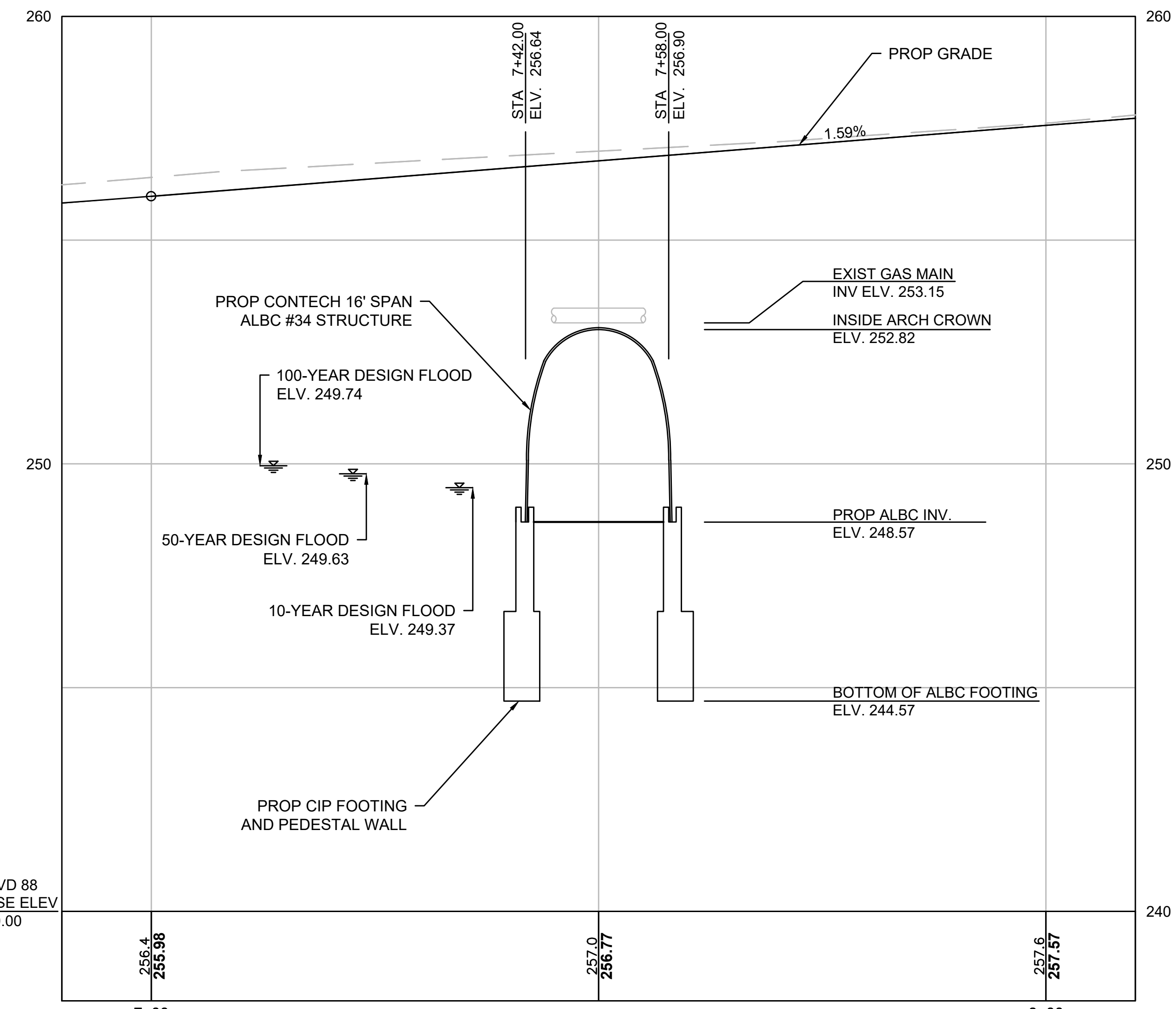


KEY PLAN
SCALE: 1" = 10'

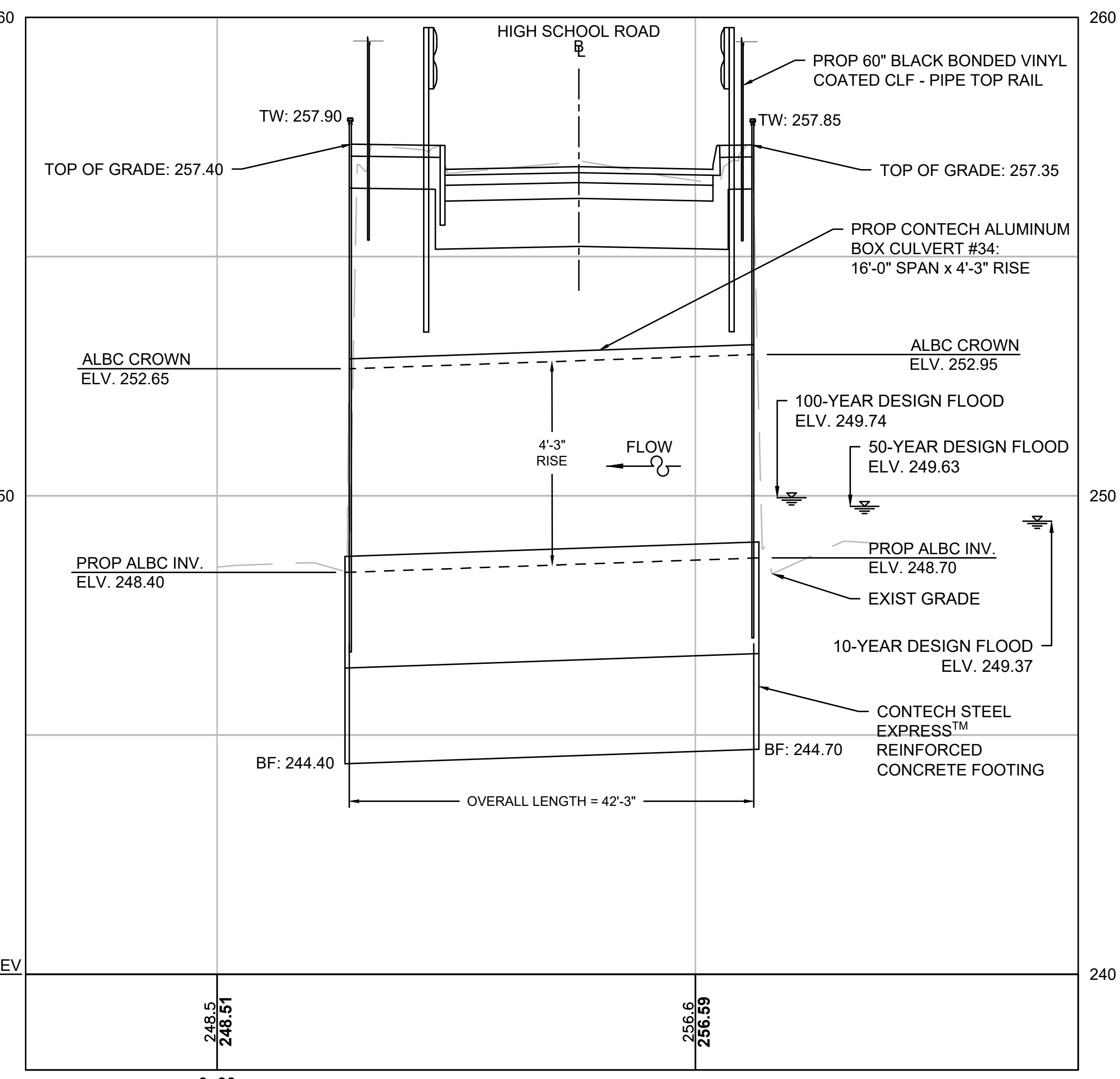


LOCUS MAP
SCALE: 1" = 500'

- INDEX OF BRIDGE SHEETS:**
1. KEY PLAN, LOCUS MAP, AND PROFILE
 2. GENERAL NOTES
 3. BORING SHEET
 4. CULVERT FOUNDATION PLAN & DETAILS
 5. BRIDGE PLAN & DETAILS (1 OF 2)
 6. BRIDGE PLAN & DETAILS (2 OF 2)
 7. ELEVATIONS & CROSS SECTIONS
 8. BACKFILL DETAILS



PROFILE ALONG HIGH SCHOOL ROAD
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 2'



PROFILE ALONG CULVERT
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 2'

Chapter 85 Section 35 Review and Approval
In accordance and compliance with the requirements of Chapter 85 Section 35 of the Massachusetts General Laws, the Contractor shall submit to the Massachusetts Department of Transportation all construction drawings and design calculations that shall be used to fabricate and construct the structure denoted on these plans for review and approval. This approval shall constitute the final approval as stipulated by Chapter 85 Section 35 of the Massachusetts General Laws.

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BY	DATE	DESCRIPTION
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0		

Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS
 Proj. Loc.: MEDWAY, MASSACHUSETTS

MEDWAY HIGH SCHOOL CULVERT REPLACEMENT

KEY PLAN,
 LOCUS MAP, & PROFILE

PROJ:	143-21583-24006
DESN:	SMB
DRWN:	SMB
CHKD:	SMB

11 of 22

SHEET 1 OF 8 SHEETS BRIDGE NO M-13-016-CPG
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3/19/2025 8:23:12 AM - P:\21583148-21583-24006 (DPW HS CULVERT DES)CAD\SHSHEETFILES\BID PLANS\SHEET 12_GENERAL NOTES.DWG - PARADEE, TUCKER

- 1. DESIGN AND MANUFACTURING STANDARDS**
- 1.1 STANDARDS - ALL STANDARDS REFER TO THE CURRENT ASTM / AASHTO EDITION UNLESS OTHERWISE NOTED.
 - 1.2 AASHTO M219 - STANDARD SPECIFICATION FOR CORRUGATED ALUMINUM ALLOY STRUCTURAL PLATE FOR FIELD-BOLTED PIPE, PIPE-ARCHES AND ARCHES
 - 1.3 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.
 - 1.4 AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS - SECTION 26.
 - 1.5 ASTM B864 - STANDARD SPECIFICATION FOR CORRUGATED ALUMINUM BOX CULVERTS.

- 2. DEFINITIONS**
- 2.1 ENGINEER - IN THESE NOTES THE WORD "ENGINEER" SHALL MEAN THE ENGINEER OF RECORD OR OWNER'S DESIGNATED ENGINEERING REPRESENTATIVE.
 - 2.2 MANUFACTURER - IN THESE NOTES THE WORD "MANUFACTURER" SHALL MEAN THE MANUFACTURER OF THE ALBC, CONTECH ENGINEERED SOLUTIONS @ PHONE 800/338-1122.
 - 2.3 CONTRACTOR - IN THESE NOTES THE WORD "CONTRACTOR" SHALL MEAN THE FIRM OR CORPORATION UNDERTAKING THE EXECUTION OF ANY INSTALLATION WORK UNDER THE TERMS OF THESE SPECIFICATIONS.

- 3. ALUMINUM BOX CULVERT (ALBC) STRUCTURE ASSEMBLY**
- 3.1 ASSEMBLY OF THE ALBC SHALL BE IN ACCORDANCE WITH SECTION 26 OF AASHTO LRFD CONSTRUCTION SPECIFICATIONS (LATEST EDITION, WITH INTERIMS) AND ANY SUPPLEMENTAL RECOMMENDATIONS PROVIDED BY THE MANUFACTURER.
 - 3.2 ALL PLATES AND ACCESSORIES SHALL BE UNLOADED AND HANDLED WITH REASONABLE CARE. PLATES SHALL NOT BE ROLLED OR DRAGGED OVER GRAVEL ROCK AND SHALL BE PREVENTED FROM STRIKING ROCK OR OTHER HARD OBJECTS DURING PLACEMENT IN TRENCH OR ON BEDDING.
 - 3.3 FOR STRUCTURES SET ON CONCRETE FOOTINGS, PLATE ASSEMBLY CAN BEGIN AFTER PLACEMENT OF STRUCTURE FOOTINGS HAS BEEN APPROVED BY THE ENGINEER. VERIFICATION OF PROPER SPACING, ALIGNMENT, AND ORIENTATION OF THE FOUNDATIONS IS STRONGLY RECOMMENDED PRIOR TO BEGINNING PLATE ASSEMBLY. ANY MODIFICATIONS TO THE FOUNDATIONS SHALL BE MADE PRIOR TO BEGINNING PLATE ASSEMBLY.
 - 3.4 WHEN A METAL FOUNDATION IS USED, THE SOIL BEDDING REQUIRES A MINIMUM OF 6 INCHES OF LOOSE GRANULAR MATERIAL WITH A MAXIMUM PARTICLE SIZE OF ONE HALF THE CORRUGATION DEPTH. THE PROPER WIDTH OF THE BEDDING MATERIAL REQUIRED SHALL CONFORM TO THE PROJECT PLANS AND SPECIFICATIONS. BEDDING PREPARATION SHOULD BE APPROVED BY THE ENGINEER PRIOR TO ASSEMBLY. THE BED SHOULD BE CONSTRUCTED TO UNIFORM LINE AND GRADE. IT SHOULD BE FREE OF ROCK FORMATIONS, PROTRUDING STONES, FROZEN LUMPS, ROOTS AND OTHER FOREIGN MATTER.
 - 3.5 THE SPAN AND RISE OF THE STRUCTURE SHOULD BE CHECKED FREQUENTLY DURING THE EARLY STAGES OF ASSEMBLY TO VERIFY THAT ASSEMBLY TOLERANCES ARE BEING ACHIEVED AND TO ALLOW FOR ADJUSTMENTS TO PROCEDURES, IF NECESSARY, BEFORE ASSEMBLY IS COMPLETE.
 - 3.6 CUT PLATES FOR SKEWED ENDS SHOULD BE ATTACHED AFTER THE MAIN BARREL OF A STRUCTURE HAS BEEN ASSEMBLED. WHEN CAST-IN-PLACE CONCRETE COLLARS OR HEADWALLS ARE TO BE CONSTRUCTED, THE CONTRACTOR MUST ALLOW FOR FORMWORK TO BE ERECTED ON THE END OF THE STRUCTURE. FORMING AGAINST A SKEWED CORRUGATION PROFILE IS COMPLEX AND SHOULD BE ACCOUNTED FOR BY THE FORMING CONTRACTOR WHEN PLANNING PROCEDURES AND METHODS FOR FORMWORK CONSTRUCTION. IN SOME CASES, FIELD TRIMMING OF THE STRUCTURE MAY BE NECESSARY. SPECIAL BRACING AND/OR SCAFFOLDING (DESIGN BY OTHERS) IS REQUIRED TO SUPPORT SKEWED ENDS UNTIL ADEQUATE COMPRESSIVE STRENGTH IS ACHIEVED AS REQUIRED BY THE COLLAR/HEADWALL DESIGNER.
 - 3.7 NUTS SHALL BE PLACED WITH THE ROUNDED FACE IN CONTACT WITH THE PLATES UNLESS NOTED OTHERWISE. NUTS CAN BE ON EITHER THE INSIDE OR OUTSIDE OF THE STRUCTURE TO FACILITATE ASSEMBLY.
 - 3.8 BOLTS AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-307 and/or ASTM A-449. RECOMMENDED TORQUE RANGE ON THE BOLTS IS 100 TO 150 FT-LBS.
 - 3.9 INSIDE SPAN AND RISE OF THE ASSEMBLED STRUCTURE AFTER BOLTING SHALL BE WITHIN 2% OF THE PLAN DIMENSIONS. THE STRUCTURE LENGTH SHALL BE WITHIN 1%.

- 4. ENGINEERED BACKFILL ENVELOPE**
- 4.1 ENGINEERED BACKFILL MATERIAL SHALL BE PLACED WITHIN THE ENGINEERED BACKFILL ENVELOPE TO THE MINIMUM WIDTH AND WITHIN THE COVER LIMITS SHOWN ON THESE DRAWINGS. THE ENGINEERED BACKFILL ENVELOPE SHALL NOT BE ALTERED WITHOUT WRITTEN APPROVAL FROM CONTECH.
 - 4.2 IN-SITU SOILS BELOW AND ADJACENT TO THE ENGINEERED BACKFILL ENVELOPE SHALL PROVIDE A FIRM SURFACE AGAINST WHICH TO COMPACT THE ENGINEERED BACKFILL MATERIAL. THE GEOTECHNICAL ENGINEER SHALL EVALUATE THE IN-SITU SOILS AND DETERMINE THE TYPE AND DEGREE OF ANY SOIL IMPROVEMENTS REQUIRED. THESE MAY INCLUDE BENCHING OR SLOPING OF THE SIDE SOILS. BACKFILL PLACEMENT MAY NOT BEGIN UNTIL THE GEOTECHNICAL ENGINEER HAS APPROVED THE IN-SITU SOILS AND ANY REQUIRED IMPROVEMENTS.
 - 4.3 A DRAINED CONDITION WAS ASSUMED FOR THE ENGINEERED BACKFILL ENVELOPE. DESIGN AND SUPPLY OF A SUBSURFACE DRAINAGE SYSTEM (IF NEEDED) SHALL BE PROVIDED BY OTHERS.
 - 4.4 IF REQUIRED BY THE GEOTECHNICAL ENGINEER, A GEOTEXTILE OR GRADED SOIL FILTER MAY BE USED BETWEEN THE ENGINEERED BACKFILL AND IN-SITU SOIL TO PREVENT MIGRATION OF FINES AND POSSIBLE INTERNAL EROSION OF THE SOIL.

- 5. ENGINEERED BACKFILL MATERIAL REQUIREMENTS**
- 5.1 THE DESIGN OF ALBC STRUCTURES RELIES ON COMPACTED SOIL PROPERTIES PROVIDED BY THE ENGINEERED BACKFILL MATERIALS. THE CORRECT SELECTION AND PLACEMENT OF COMPACTED ENGINEERED BACKFILL MATERIAL IS CRITICAL TO THE PERFORMANCE OF ALBC STRUCTURES.
 - 5.2 THE ENGINEERED BACKFILL MATERIAL SHALL NOT BE ADVERSELY AFFECTED BY WETTING, DRYING, SATURATION, FREEZE/THAW, VIBRATIONS, OR FLOWING WATER.
 - 5.3 BACKFILL MATERIALS SHALL CONFORM TO PROPERTIES REFERENCED IN THE PROJECT SPECIFICATIONS OR THE PROPERTIES DESCRIBED HEREIN, WHICHEVER IS MORE STRINGENT.
 - 5.4 ALBC SHALL BE BACKFILLED USING CLEAN WELL GRADED GRANULAR MATERIAL THAT MEETS THE REQUIREMENTS FOR SOIL CLASSIFICATIONS A-1, A-2-4, A-2-5, OR A-3 MODIFIED PER AASHTO M-145.
A-3 MATERIAL MAY NOT CONTAIN FINE BEACH SANDS, WINDBLOWN SANDS, STREAM DEPOSITED SAND, ETC. EXHIBITING FINE, ROUNDED PARTICLES.
REFER TO BACKFILL DETAILS FOR SOIL CLASSIFICATION TABLE. OPEN GRADED OR GAP GRADED MATERIALS ARE NOT PREFERRED. THE BACKFILL MATERIAL SHOULD BE FREE OF FROZEN LUMPS, FOREIGN MATERIAL OR ORGANIC DECOMPOSABLE MATERIALS. WHEN USING A-2 MATERIALS, MOISTURE CONTENT MUST BE BETWEEN -3% AND +2% OPTIMUM AS DEFINED BY AASHTO T 180.
 - 5.5 GRAIN SIZE DISTRIBUTION (GRADATION) OF THE ENGINEERED BACKFILL MATERIAL SHALL SATISFY: C_u GREATER THAN OR EQUAL TO 3 AND C_c BETWEEN 0.7 AND 3, WHERE $C_u = \frac{D_{60}}{D_{10}}$ AND $C_c = \frac{D_{40} - D_{20}}{D_{10} - D_{20}}$. D_{XX} IS THE PARTICLE SIZE CORRESPONDING TO XX% FINER ON THE CUMULATIVE PARTICLE SIZE DISTRIBUTION CURVE (ASTM D2487).
 C_u REQUIREMENTS ARE WAIVED FOR CRUSHER RUN SCREENED AGGREGATES. C_c REQUIREMENTS ARE WAIVED FOR BACKFILL MATERIAL CONTAINING MORE THAN 60% GRAVEL (> #4 SIEVE).
 - 5.6 ABRASION LOSS SHALL NOT EXCEED 45% AS DETERMINED BY THE LOS ANGELES ABRASION TEST (ASTM C131).
 - 5.7 HUMIC (DECAYING) ORGANIC MATTER SHALL NOT EXCEED 1.0% (DRY WEIGHT BASIS).
 - 5.8 ELECTROCHEMICAL REQUIREMENTS FOR SOIL AND WATER IN CONTACT WITH BOTH THE INSIDE AND OUTSIDE OF THE ALBC STRUCTURE ARE AS FOLLOWS:
- PH = 4 TO 9
- RESISTIVITY > 500 OHM-CM
 - 5.9 IF THE ELECTROCHEMICAL PROPERTIES OF THE BACKFILL OR WATER FALL OUTSIDE OF THE RECOMMENDED RANGE, A SECONDARY PROTECTION SYSTEM MAY BE NEEDED TO ACHIEVE THE DESIGN SERVICE LIFE. SECONDARY PROTECTION SYSTEMS (IF REQUIRED) SHALL BE DESIGNED AND PROVIDED BY OTHERS.
 - 5.10 THE SELECTION AND EVALUATION OF PROPOSED ENGINEERED BACKFILL MATERIAL IS THE RESPONSIBILITY OF THE CONTRACTOR. THE PROPOSED ENGINEERED BACKFILL MATERIAL SHALL MEET OR EXCEED THE REQUIREMENTS OF THESE SPECIFICATIONS.

- 6. ENGINEERED BACKFILL PLACEMENT PROCEDURE**
- 6.1 CONTECH RECOMMENDS THAT A PRECONSTRUCTION CONFERENCE IS HELD PRIOR TO COMMENCEMENT OF WORK TO REVIEW AND DISCUSS THE RECOMMENDED PROCEDURES FOR BACKFILLING, AND STRUCTURE SHAPE MEASUREMENTS. ANY CONTRACTOR WITH RESPONSIBILITY FOR BACKFILLING OR CONSTRUCTION OF END TREATMENTS MUST BE REPRESENTED AT THIS MEETING. IT IS RECOMMENDED THAT THE ENGINEER AND ANY THIRD PARTY INVOLVED IN COMPACTION TESTING OR OTHER QUALITY CONTROL MEASURES ALSO ATTEND.
 - 6.2 ANY IMPROVEMENT OF THE SUBGRADE AND EMBANKMENT SOILS REQUIRED BY THE GEOTECHNICAL ENGINEER SHALL BE COMPLETED AND APPROVED PRIOR TO BEGINNING PLACEMENT OF ENGINEERED BACKFILL MATERIAL.
 - 6.3 THE ENGINEERED BACKFILL MATERIAL SHALL BE PLACED UNIFORMLY ON BOTH SIDES OF THE STRUCTURE IN LAYERS OF 8 INCHES OR LESS (BEFORE COMPACTION).
 - 6.4 BACKFILL SHALL BE COMPACTED TO THE MINIMUM DENSITY INDICATED IN THESE DRAWINGS. DEPENDING ON THE COMPACTION EQUIPMENT AND ENGINEERED BACKFILL MATERIAL USED, IT MAY BE NECESSARY TO DECREASE THE LIFT THICKNESS AND/OR MOISTURE CONDITION THE LOOSE SOIL TO ACHIEVE THE SPECIFIED MINIMUM LEVEL OF COMPACTION.
 - 6.5 IF THE ENGINEERED BACKFILL MATERIAL DOES NOT PRODUCE A PROCTOR CURVE AND/OR IS NOT CONDUCTIVE TO TRADITIONAL FIELD-TESTING METHODS, QUALITATIVE METHODS OF EVALUATING COMPACTION MAY BE USED. SUCH METHODS SHALL BE EVALUATED AND APPROVED BY THE GEOTECHNICAL ENGINEER AND A COPY OF THE METHOD BE PROVIDED TO THE DESIGNER.
 - 6.6 THE DIFFERENCE IN BACKFILL LEVELS ON THE TWO SIDES OF THE STRUCTURE AT ANY TRANSVERSE SECTION SHALL NOT EXCEED 24 INCHES WITHOUT PRIOR APPROVAL FROM CONTECH.
 - 6.7 CONSTRUCTION EQUIPMENT USED WITHIN 5 FEET LATERALLY OF THE WIDEST PART OF THE STRUCTURE, UP TO THE MINIMUM DESIGN COVER HEIGHT ABOVE THE STRUCTURE, SHALL HAVE A STATIC MASS OF 10 TONS OR LESS. IT MAY BE POSSIBLE TO USE HEAVIER EQUIPMENT IF IT CAN BE DEMONSTRATED THAT THE STRUCTURE SHAPE IS NOT ADVERSELY AFFECTED. ENGINEERED BACKFILL MATERIAL PLACED WITHIN 1 FOOT LATERALLY OF THE WIDEST PART OF THE STRUCTURE SHALL BE COMPACTED USING HAND OPERATED EQUIPMENT UNTIL THE MINIMUM COVER HEIGHT IS REACHED. OVER-COMPACTION OF ENGINEERED BACKFILL IN THIS ZONE SHOULD BE AVOIDED, AS THIS CAN CONTRIBUTE TO EXCESSIVE DEFLECTION OF SOME STRUCTURES. AREAS CLOSEST TO THE STRUCTURE SHALL BE COMPACTED RUNNING PARALLEL TO THE LENGTH OF THE STRUCTURE.
 - 6.8 ONCE THE BACKFILL ELEVATION REACHES THE MIDDLE OF THE HAUNCH CURVE (DEPENDING ON RELATIVE MOVEMENT DURING THE BACKFILL PROCESS), PLACE AND COMPACT ENGINEERED BACKFILL MATERIAL IN RADIAL LIFTS OVER THE TOP OF THE STRUCTURE USING EQUIPMENT AS DESCRIBED ABOVE. THE FIRST RADIAL LIFT SHOULD BE THICKER AND PROVIDE A MINIMUM 12 INCHES OF COVER BETWEEN THE STRUCTURE AND COMPACTION EQUIPMENT. EQUIPMENT SHOULD RUN PERPENDICULAR TO THE LONGITUDINAL AXIS OF THE STRUCTURE. NO EQUIPMENT SHALL BE ALLOWED OVER THE STRUCTURE THAT WOULD EXCEED THE DESIGN LOAD AT THE MINIMUM DESIGN HEIGHT OF COVER. NO CONSTRUCTION EQUIPMENT SHALL BE ALLOWED TO PARK ON TOP OF A PARTIALLY BACKFILLED STRUCTURE.
 - 6.9 AT NO TIME SHALL THE ENGINEERED BACKFILL MATERIAL BE DUMPED OR PUSHED AGAINST THE STRUCTURE WALL(S) SO AS TO CHANGE THE SHAPE OR ALIGNMENT OF THE STRUCTURE. MATERIAL SHALL NOT BE DUMPED ON TOP OF THE STRUCTURE AT ANY TIME. TRUCKS MAY UNLOAD IN ROUGH LAYERS NO CLOSER THAN 5 FEET FROM THE WIDEST PART OF THE STRUCTURE.
 - 6.10 THE STRUCTURE SHALL BE CHECKED PERIODICALLY DURING BACKFILLING TO ENSURE THE FINAL SHAPE OF THE STRUCTURE MEETS DESIGN REQUIREMENTS AND IS CONSISTENT WITH THE ASSEMBLY TOLERANCES AS STATED IN THESE NOTES. IF DEFLECTION OF THE STRUCTURE IS GREATER THAN EXPECTED, BACKFILLING SHALL BE HALTED AND BACKFILL PLACEMENT AND COMPACTION PROCEDURES MODIFIED TO CORRECT THE STRUCTURE SHAPE. IT MAY BE NECESSARY TO REMOVE SOME OF THE BACKFILL TO CORRECT EXCESSIVE DEFLECTION.

- 7. CONSTRUCTION OBSERVATIONS AND TESTING**
- 7.1 OBSERVATION AND TESTING SHALL BE PERFORMED DURING CONSTRUCTION TO VERIFY COMPLIANCE WITH THESE DRAWINGS, APPLICABLE PROJECT DOCUMENTS, AND STANDARDS REFERENCED IN THESE NOTES.
 - 7.2 THE CONTRACTOR IS RESPONSIBLE FOR QUALITY CONTROL PROCEDURES, VERIFICATION MEASUREMENTS, ADEQUATE SUPERVISION, PROGRESS TESTING, EVALUATION OF PROPOSED ENGINEERED BACKFILL MATERIALS, AND/OR OTHER MEASURES AS NEEDED TO ENSURE THAT THE COMPLETED PROJECT COMPLIES WITH THESE DRAWINGS AND NOTES.
 - 7.3 THE PROJECT OWNER (OR THEIR DESIGNATED REPRESENTATIVE) IS RESPONSIBLE FOR PROJECT OVERSIGHT AND FINAL ACCEPTANCE OF THE CONSTRUCTED STRUCTURE. THE OWNER MAY ACCEPT THE CONTRACTOR'S QUALITY CONTROL PROGRAM OR ADOPT AN INDEPENDENT QUALITY ASSURANCE PROGRAM TO VERIFY COMPLIANCE.
 - 7.4 OBSERVATIONS AND TESTING PRIOR TO STRUCTURE ASSEMBLY & BACKFILL SHALL INCLUDE BUT NOT BE LIMITED TO:
- EVALUATION OF FOUNDATION SOILS BELOW FOOTINGS AND THE ENGINEERED BACKFILL ENVELOPE
- VERIFICATION OF PROPER ALIGNMENT, DIMENSIONS, AND PLACEMENT OF FOUNDATIONS
- VERIFICATION OF PROPER SHAPING, PLACEMENT, AND PREPARATION OF BEDDING SOILS (STRUCTURES WITH INVERTS)
- VERIFICATION OF PROPER PREPARATION OF EMBANKMENT SOILS ADJACENT TO THE ENGINEERED BACKFILL ENVELOPE
- EVALUATION AND APPROVAL OF ENGINEERED BACKFILL MATERIALS
- VERIFICATION OF PROPER PLACEMENT OF GEOTEXTILES (WHEN REQUIRED)
 - 7.5 OBSERVATIONS AND TESTING DURING ASSEMBLY & BACKFILLING SHALL INCLUDE BUT NOT BE LIMITED TO:
- STRUCTURE ALIGNMENT
- PLATE TIGHTNESS OBSERVATIONS
- BOLT TORQUE MEASUREMENTS
- INITIAL STRUCTURE SHAPE MEASUREMENTS (PRIOR TO STARTING BACKFILLING)
- PERIODIC STRUCTURE SHAPE MEASUREMENTS (DURING BACKFILLING)
- ENGINEERED BACKFILL MATERIAL SAMPLING AND TESTING
- OBSERVATIONS OF PROPER FILL PLACEMENT AND COMPACTION PROCEDURES.
 - 7.6 CONTECH MAY REQUIRE ADDITIONAL OBSERVATIONS AND/OR TESTING WHICH MAY INCLUDE, BUT NOT BE LIMITED TO, FULL TIME SHAPE MONITORING, ADDITIONAL SOIL TESTING, AND SITE EVALUATIONS DEPENDING ON THE STRUCTURE GEOMETRY, DESIGN, AND/OR OTHER PROJECT SPECIFIC FACTORS.

EXISTING BRIDGE PLANS:
NO EXISTING BRIDGE PLANS EXIST. THE EXISTING BRIDGE INFORMATION CONTAINED IN THESE DRAWINGS IS NOT GUARANTEED. THE CONTRACTOR IS RESPONSIBLE TO COMPLETE HIS OWN INVESTIGATION OF THE EXISTING STRUCTURE PRIOR TO BIDDING.

BENCH MARK:
MAG NAIL IN SIDEWALK
EL. 254.40'

MAG NAIL IN SIDEWALK
EL. 258.78

REFER TO HIGHWAY PLANS FOR ADDITIONAL BENCHMARK LOCATIONS.

ELEVATIONS:
ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

DATE:
TO BE PLACED ON THE OUTSIDE FACES OF THE CULVERT PEDESTAL WALL. A SHEET SHOWING SIZE AND CHARACTER OF NUMERALS WILL BE FURNISHED. THE DATE USED SHALL BE THE LATEST YEAR OF THE COMPLETION AS OF THE DATE THE CULVERT IS INSTALLED. THE SAME DATE SHALL BE USED FOR BOTH ENDS OF THE CULVERT.

MASSDOT SURVEY NOTEBOOKS:
COPIES OF ELECTRONIC SURVEY FILES MAY BE OBTAINED FROM GUERRIERE & HALNON, INC.

SCALES:
SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZED PRINTS. DIVIDE SCALE BY 2 FOR HALF-SIZE PRINTS (A3).

FOUNDATIONS:
FOUNDATIONS MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED DURING CONSTRUCTION. WITH THE APPROVAL OF THE ENGINEER, CONTRACTOR SHALL REFER TO GEOTECHNICAL REPORT BY HALEY AND ALDRICH TO CONFIRM GEOTECHNICAL FINDINGS AND RECOMMENDATIONS PRIOR TO CONSTRUCTION. GEOTECHNICAL ENGINEER SHALL BE PRESENT DURING FOUNDATION PREPARATION.

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

SEISMIC DESIGN:
CONTRACTOR SHALL INCORPORATE SEISMIC DESIGN PARAMETERS INCLUDING SEISMIC DESIGN CATEGORY AS PART OF FINAL STRUCTURAL DESIGN OF THE PROJECT.

CONCRETE:
UNLESS OTHERWISE SPECIFIED, ALL CONCRETE SHALL BE 5000 HP CONCRETE.

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

MODIFICATION CONDITION	#4 BARS	#5 BARS	#6 BARS
1. NONE	16"	19"	23"
2. 12" OF CONCRETE BELOW BAR	20"	25"	30"
3. COATED BARS, COVER < 3db, OR CLEAR SPACING < 6db	23"	29"	34"
4. COATED BARS, ALL OTHER CASES	18"	23"	27"
5. CONDITION 2. AND 3.	26"	32"	39"
6. CONDITION 2. AND 4.	24"	30"	36"

TRAFFIC DATA:
NONE

HYDRAULIC DESIGN:
FULL HYDRAULIC REPORT IS NOT REQUIRED. THE MUNICIPALITY'S DESIGNER OF RECORD SHALL PREPARE AN ABBREVIATED HYDRAULIC ASSESSMENT THAT SHALL EVALUATE CURRENT AND PAST CONDITIONS AND SITE SPECIFIC CRITICAL HYDRAULIC ISSUES INCLUDING PAST FLOODS OF RECORD, LOCAL FLOODING ISSUES, FEMA FLOOD PROFILES, PAST AND/OR CURRENT SCOUR OF BRIDGE SUPERSTRUCTURE ELEMENTS, AND SHALL DETERMINE IF THE EXISTING HYDRAULIC OPENING IS ADEQUATE TO REMAIN.

- RECOMMENDED SEQUENCE OF CONSTRUCTION:**
1. INSTALL DETOUR MEASURES AND WORK ZONE PROTECTION (CONTRACTOR DESIGNED)
 2. INSTALL TEMPORARY WATER CONTROL AND EROSION CONTROL (CONTRACTOR DESIGNED)
 3. EXCAVATE ROADWAY.
 4. SHORE/BYPASS EXISTING GAS MAIN (COORDINATE WITH UTILITY).
 5. REMOVE EXISTING ALUMINUM BOX CULVERT SUPERSTRUCTURE, RETAINING WALLS AND OVERSIZED FILL MATERIAL.
 6. EXCAVATE SUBGRADE ALONG CULVERT FOOTINGS AND RETAINING WALL ALIGNMENT.
 7. INSTALL CRUSHED STONE SUB-FOOTING MATERIAL AT CULVERT.
 8. INSTALL CULVERT FOOTING/PEDESTAL WALL FORMS, REINFORCEMENT AND PLACE CONCRETE (CONTRACTOR DESIGNED).
 9. BACKFILL FOOTING/PEDESTAL WALL AND PREPARE CHANNEL SURFACE.
 10. INSTALL PRE-FABRICATED ALUMINUM BOX CULVERT (CONTRACTOR DESIGNED).
 11. INSTALL GRANULAR STRUCTURAL BACKFILL ALONG WALL ALIGNMENTS.
 12. INSTALL RETAINING WALLS, GEOTEXTILE FABRIC, ANCHORS AND GRANULAR STRUCTURAL BACKFILL.
 13. REMOVE TEMPORARY WATER CONTROL AND REPLACE WITH SILT CURTAIN OR COMPOST FILTER SOCK AS SITE CONDITIONS DICTATE (CONTRACTOR DESIGNED).
 14. INSTALL PROPOSED SURFACE FEATURES (SEE HIGHWAY PLANS), GRADE AND PAVE ROADWAY.
 15. FINISH CONSTRUCTION.

SEISMIC DESIGN CRITERIA	
DESIGN RETURN PERIOD:	*
DESIGN SPECTRA	
As	*
SDs	*
SD1	*
SITE CLASS	*
SEISMIC DESIGN CATEGORY (SDC)	*
*CONTRACTOR SHALL PROVIDE SEISMIC DESIGN CRITERIA AS PART OF FINAL BRIDGE DESIGN	

HYDRAULIC DESIGN FLOOD (HDF) DATA	
DRAINAGE AREA (SQ. MILES)	0.076
HDF DISCHARGE (C.F.S.)	37.79
HDF FREQUENCY (YEARS)	10
HDF VELOCITY (F.P.S.)	2.10
HDF ELEVATION (FEET, NAVD, UPSTREAM)	249.37

BASE (100-YEAR) FLOOD DATA	
BASE FLOOD DISCHARGE (C.F.S.)	74.55
BASE FLOOD ELEVATION (FEET, NAVD, UPSTREAM)	249.74

SCOUR DESIGN FLOOD (SDF) EVENT DATA	
SDF EVENT FREQUENCY (YEARS)	25
SDF ELEVATION (FEET, NAVD, UNDER BRIDGE)	N/A
SDF TOTAL SCOUR DEPTH AT ABUTMENT (FEET)	N/A
SDF TOTAL SCOUR DEPTH AT PIER (FEET)	N/A

SCOUR CHECK FLOOD (SCF) EVENT DATA	
SCF EVENT FREQUENCY (YEARS)	50
SCF ELEVATION (FEET, NAVD, UNDER BRIDGE)	N/A
SCF TOTAL SCOUR DEPTH AT ABUTMENT (FEET)	N/A
SCF TOTAL SCOUR DEPTH AT PIER (FEET)	N/A

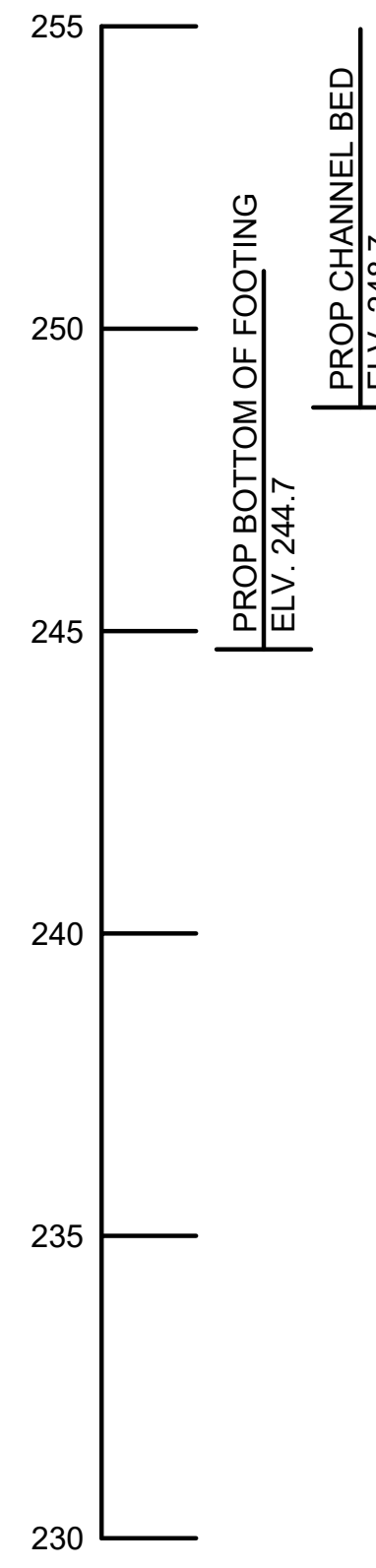
FLOOD OF RECORD	
DISCHARGE (C.F.S.)	N/A
FREQUENCY (IF KNOWN, YEARS)	N/A
MAXIMUM ELEVATION (FEET, NAVD)	N/A
DATE (MM/YYYY)	N/A
HISTORY OF ICE FLOES	N/A
EVIDENCE OF SCOUR AND EROSION	N/A



BY	DATE	DESCRIPTION
SMB	03/19/25	ISSUED FOR BID

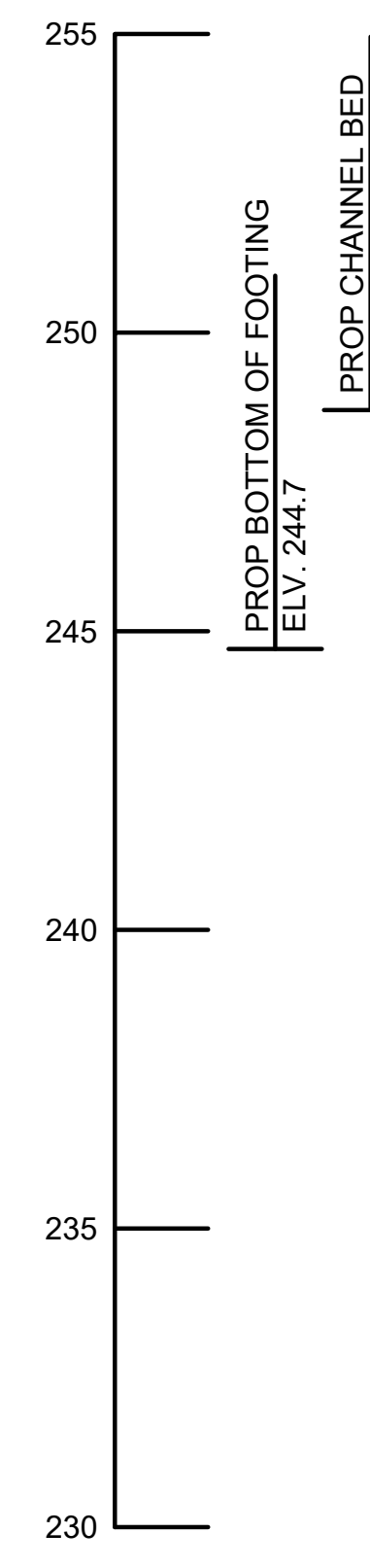
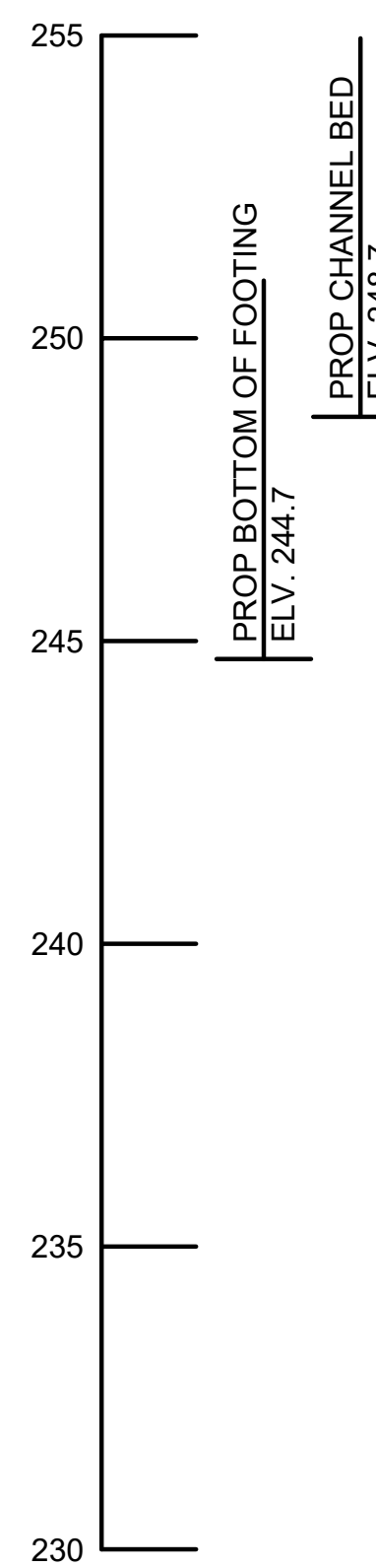
Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS
Proj. Loc.: MEDWAY, MASSACHUSETTS
MEDWAY HIGH SCHOOL CULVERT REPLACEMENT
GENERAL NOTES

PROJ: 143-21583-24006
DESIGN: SMB
DRAWN: SMB
CHKD: SMB



TEST BORING REPORT Boring No. B1. Project: MEDWAY HIGH SCHOOL CULVERT, MEDWAY, MA. Includes data for casing, sampler, barrel, drilling equipment, and visual-manual identification and description of soil layers.

TEST BORING REPORT Boring No. B3. Project: MEDWAY HIGH SCHOOL CULVERT, MEDWAY, MA. Includes data for casing, sampler, barrel, drilling equipment, and visual-manual identification and description of soil layers.



TEST BORING REPORT Boring No. B2. Project: MEDWAY HIGH SCHOOL CULVERT, MEDWAY, MA. Includes data for casing, sampler, barrel, drilling equipment, and visual-manual identification and description of soil layers.



TEST BORING REPORT Boring No. B4. Project: MEDWAY HIGH SCHOOL CULVERT, MEDWAY, MA. Includes data for casing, sampler, barrel, drilling equipment, and visual-manual identification and description of soil layers.

- BORING NOTES:
1. LOCATION OF BORINGS SHOWN ON THE KEY PLAN AND BORING LOCATION PLAN THUS: B1
2. BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
4. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 1/2" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
5. ALL BORINGS WERE MADE ON FEBRUARY 24, 2023.
6. BORINGS WERE MADE BY SEABOARD DRILLING, INC. OF CHICOPEE, MA UNDER GUIDANCE OF HALEY & ALDRICH INC. OF FRAMINGHAM, MA.
7. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.
8. GROUND SURFACE ELEVATIONS ARE APPROXIMATE.

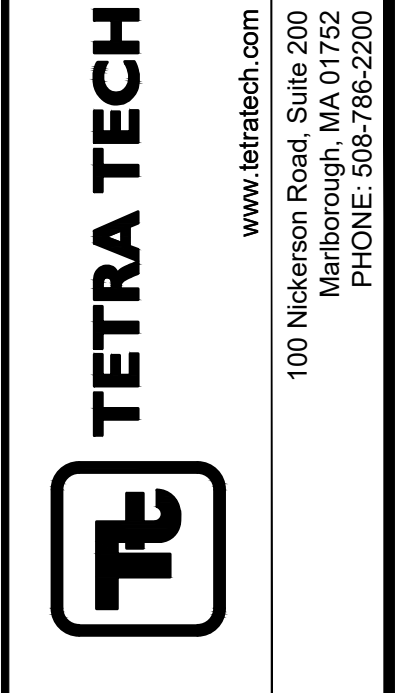
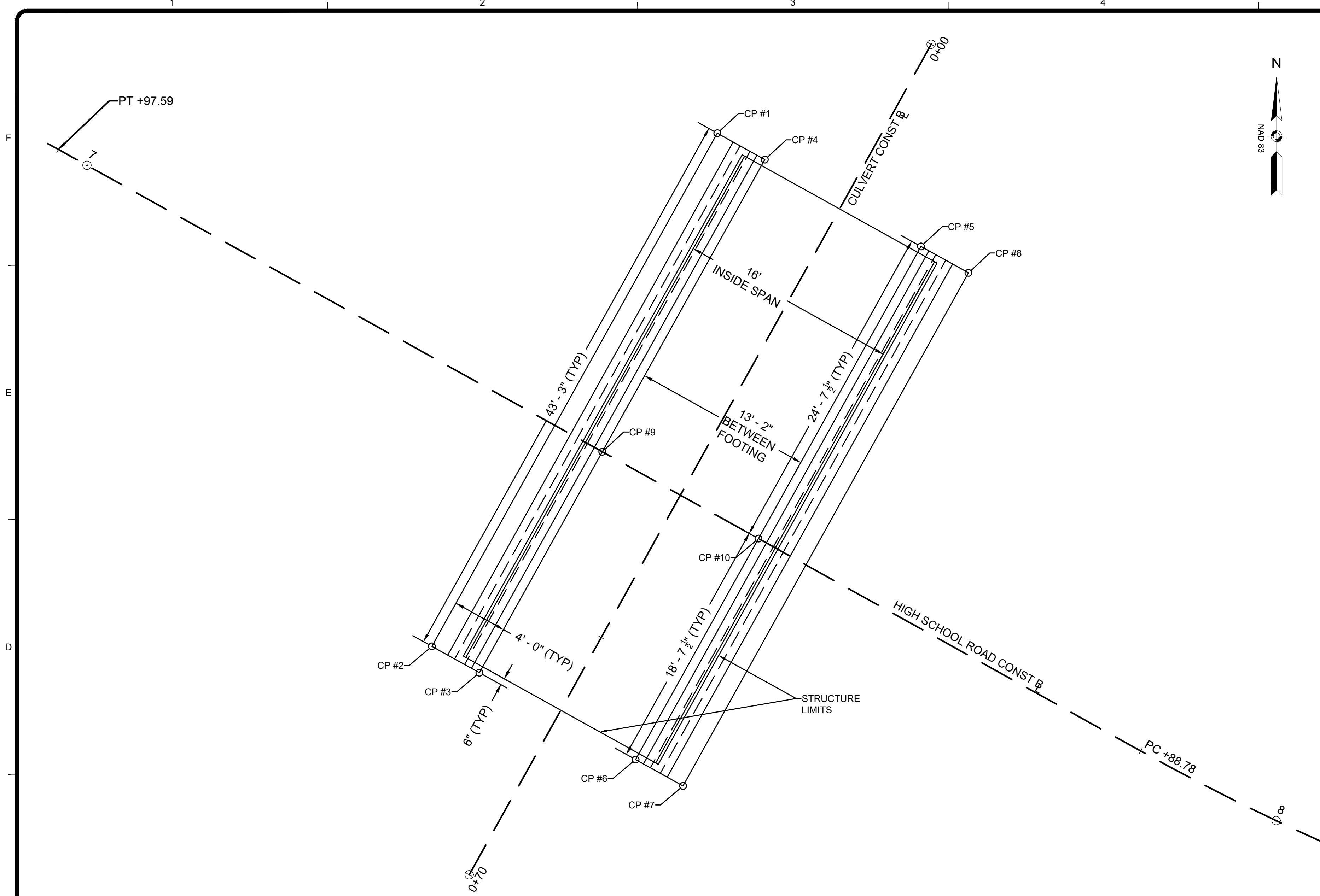


Table with columns: BY, MARK, DATE, DESCRIPTION, ISSUED FOR BID. Includes project name 'MEDWAY HIGH SCHOOL CULVERT REPLACEMENT BORING SHEET' and drawing number '13 OF 22'.

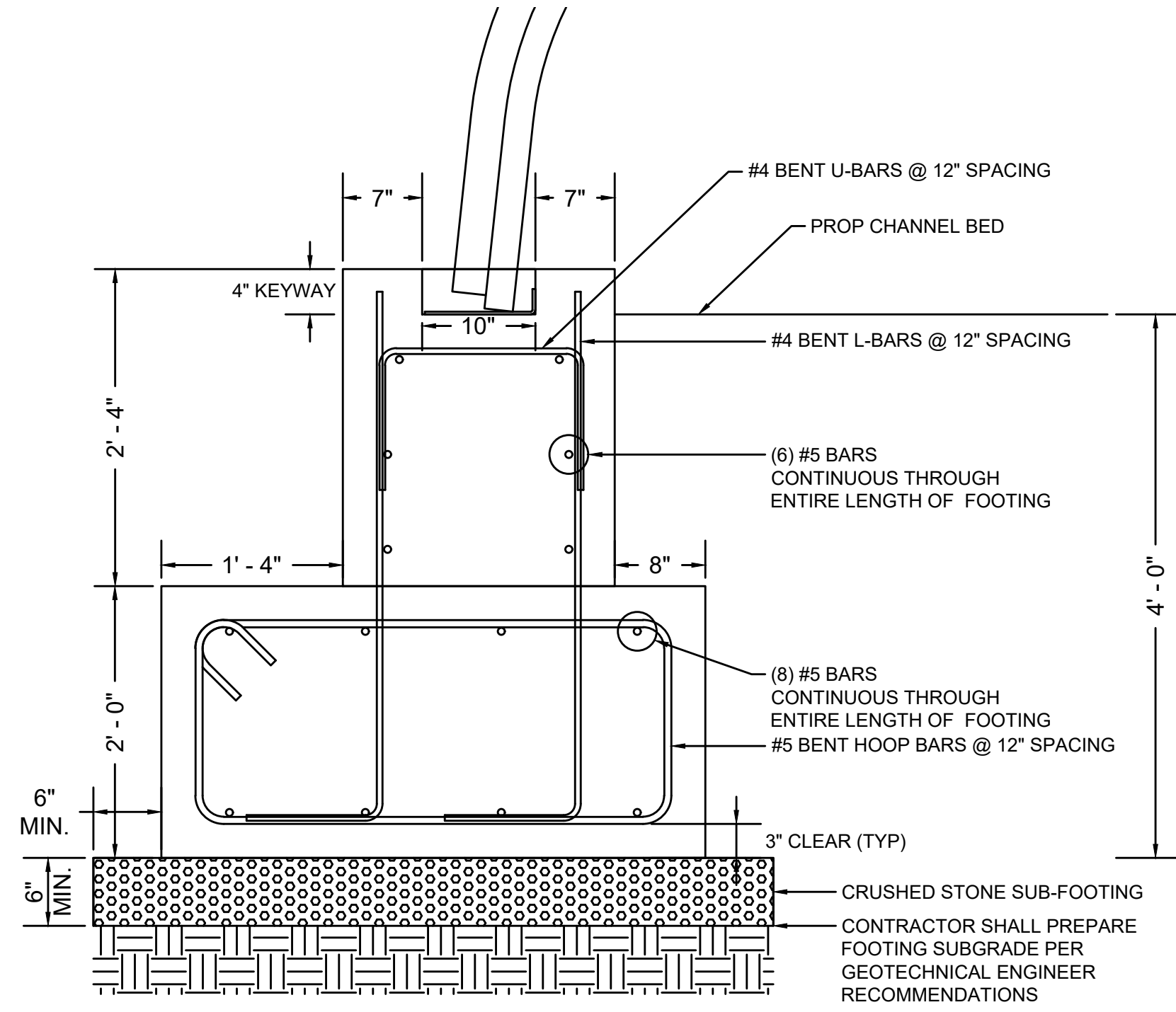
3/19/2025 8:57:23 AM - P:\21583\143-21583-24006 (DPW HS CULVERT DES)\CAD\SHSHEETFILES\BID PLANS\14_CULVERT FOUNDATION PLAN & DETAILS.DWG - PARADEE, TUCKER



FOUNDATION PLAN
SCALE: 1" = 5'

- FOUNDATION NOTES:**
1. PRIOR TO CONSTRUCTION, CONTRACTOR MUST VERIFY ALL MEASUREMENTS WITH THE ENGINEER.
 2. EXCAVATION FOR FOOTINGS SHALL BE CONDUCTED WITH SMOOTH-EDGED BUCKET TO MINIMIZE DISTURBANCE TO BEARING SURFACES.
 3. EXPOSED FOOTING SUBGRADE SHALL BE OBSERVED IN THE FIELD BY THE GEOTECHNICAL ENGINEER TO CONFIRM SUBGRADE MATERIALS ARE SUITABLE FOR FOUNDATION SUPPORT. IF UNEXPECTED SOIL CONDITIONS ARE ENCOUNTERED, OR THE SOIL BEARING REQUIREMENTS CANNOT BE ACHIEVED, ENGINEER MUST BE NOTIFIED TO DETERMINE IF FOOTING DESIGN CHANGES ARE REQUIRED.
 4. FOOTING EXCAVATION WILL OCCUR BELOW GROUNDWATER LEVEL AND DEWATERING OF THE EXCAVATION WILL BE REQUIRED. ALL WATER SHALL BE DIVERTED AWAY FROM THE EXCAVATION. THE CONTRACTOR SHALL PROVIDE A WATER CONTROL PLAN FOR REVIEW BY THE ENGINEER PRIOR TO IMPLEMENTATION.
 5. REINFORCED CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS, SECTION 8, REINFORCED CONCRETE, FOR CLASS A CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI.
 6. REINFORCING STEEL FOR FOUNDATIONS SHALL CONFORM TO ASTM A615, GRADE 60 (F_y=60 KSI).
 7. SOIL BEARING SURFACE BELOW COMPLETED FOUNDATIONS MUST BE PROTECTED AGAINST FREEZING BEFORE AND AFTER CONCRETE PLACEMENT. CONTRACTOR SHALL CONSULT WITH THE ENGINEER PRIOR TO BACKFILL OF FOOTINGS.
 8. KEYWAY TO BE FILLED WITH NON-METALLIC, NON-SHRINK GROUT, WITH A MINIMUM 4,000 PSI COMPRESSIVE STRENGTH (ASTM C1107) GROUT AND SHIMMING MATERIAL SHALL NOT CONTAIN ANY CORROSION-PROMOTING AGENTS.

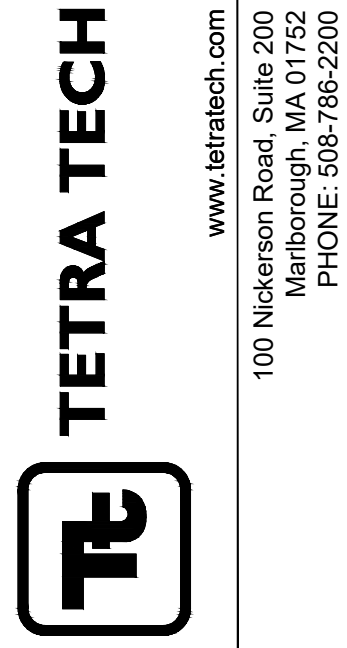
DESIGN PARAMETERS
 DESIGN LIVE LOAD: HL-93
 DESIGN MAXIMUM FILL HEIGHT: 4' - 0"
 DESIGN METHOD: LOAD FACTOR DESIGN PER AASHTO SPECIFICATION
 DESIGN MINIMUM NET ALLOWABLE BEARING CAPACITY: 4,000 PSF



FOOTING/PEDESTAL WALL DETAIL
SCALE: 1" = 1'-0"

CULVERT FOUNDATION CONSTRUCTION POINTS					
POINT	STATION	OFFSET	NORTHING	EASTING	BOTTOM FOOTING ELV
CP #1	7+39.42	24.63 LT	2881101.257	672279.207	244.40
CP #2	7+39.42	18.62 RT	2881063.457	672258.189	244.70
CP #3	7+43.42	18.62 RT	2881061.514	672261.685	244.70
CP #4	7+43.42	24.63 LT	2881099.313	672282.703	244.40
CP #5	7+56.58	24.63 LT	2881092.918	672294.205	244.40
CP #6	7+56.58	18.62 RT	2881055.118	672273.187	244.70
CP #7	7+60.58	18.62 RT	2881053.174	672276.683	244.70
CP #8	7+60.58	24.63 LT	2881090.974	672297.701	244.40
CP #9	7+43.42	0.00	2881077.791	672270.736	244.57
CP #10	7+56.58	0.00	2881071.396	672282.238	244.57

*STATIONS REFERENCE HIGH SCHOOL ROAD CONSTRUCTION BASELINE

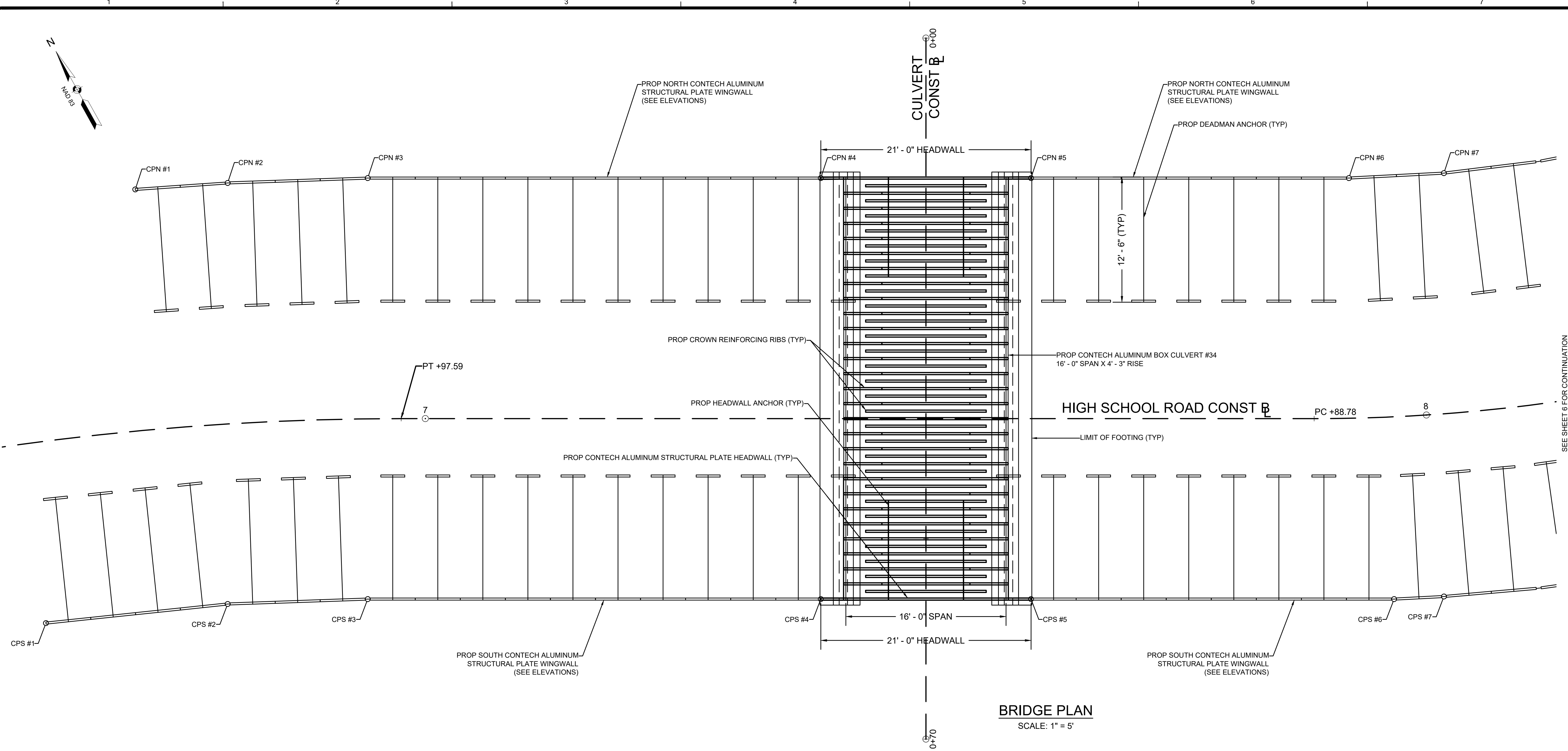
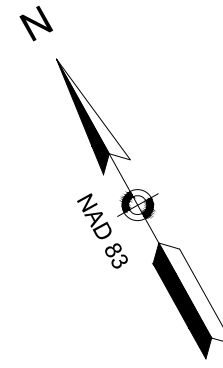


www.tetra-tech.com
 100 Nickerson Road, Suite 200
 Marlborough, MA 01752
 PHONE: 508-786-2200

BY	DATE	DESCRIPTION
SMB	03/19/25	ISSUED FOR BID

Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS
 Proj. Loc.: MEDWAY, MASSACHUSETTS
MEDWAY HIGH SCHOOL CULVERT REPLACEMENT
CULVERT FOUNDATION PLAN & DETAILS

PROJ:	143-21583-24006
DESN:	SMB
DRWN:	SMB
CHKD:	SMB

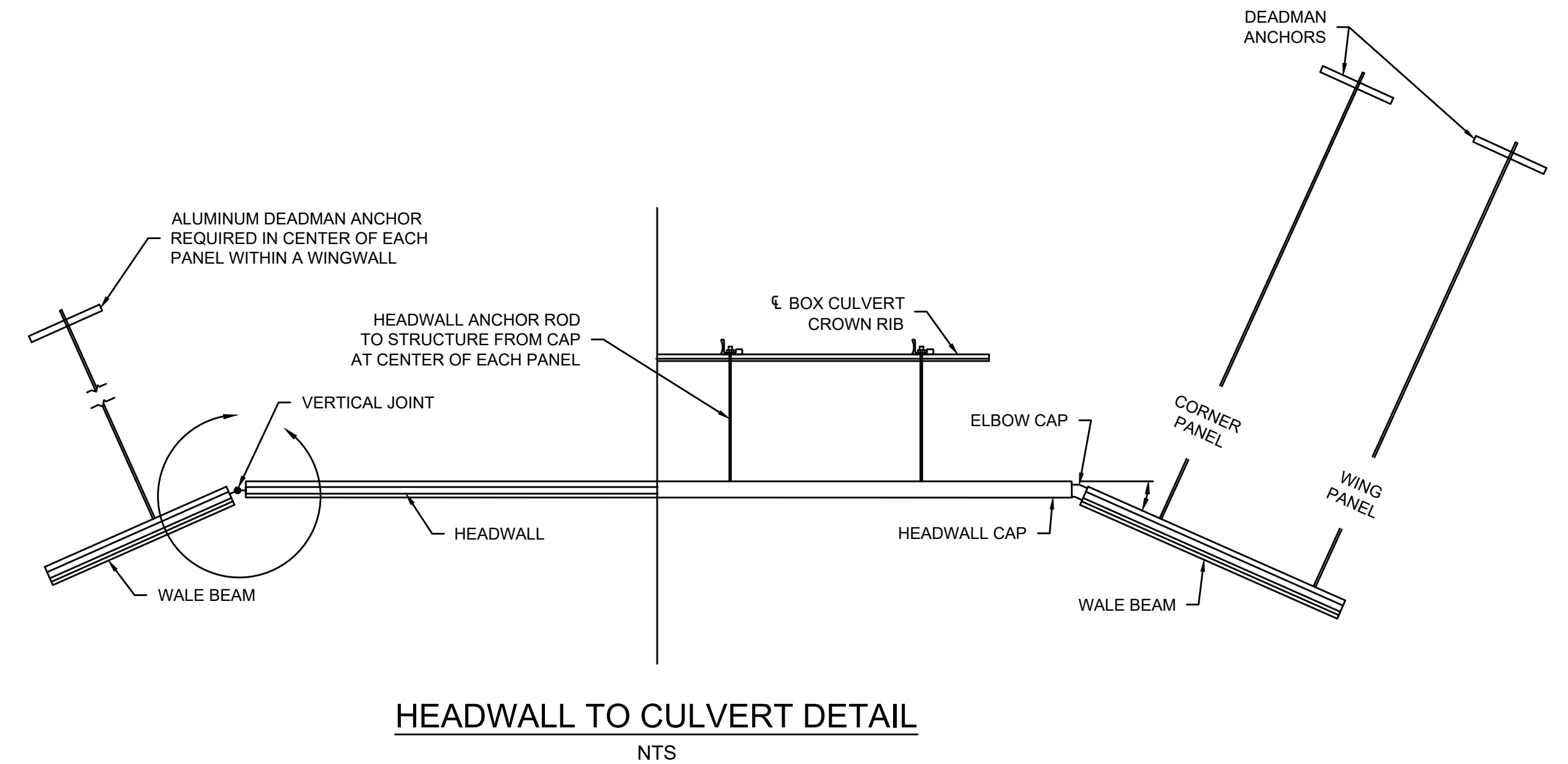


BRIDGE PLAN
SCALE: 1" = 5'

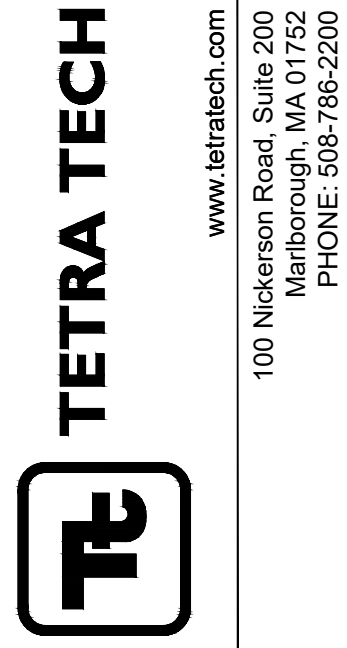
NORTH WINGWALL CONSTRUCTION POINTS							
POINT	STATION	OFFSET	NORTHING	EASTING	HORIZONTAL ANGLE	TOP OF WALL ELV ⁶	BOT OF WALL ELV ⁷
CPN #1	6+73.08	24.04 LT	2881132.973	672218.594	-	256.49	256.30
CPN #2	6+81.61	24.02 LT	2881129.054	672226.971	178°	256.59	253.89
CPN #3	6+94.51	24.04 LT	2881122.681	672239.437	178°	256.74	250.82
CPN #4	7+39.50	24.02 LT	2881100.690	672278.984	180°	257.47	248.38
CPN #5	7+60.50	24.02 LT	2881090.485	672297.337	180°	257.80	248.86
CPN #6	7+92.80	23.98 LT	2881075.055	672325.086	183°	258.31	251.88
CPN #7	8+03.82	23.96 LT	2881070.879	672333.619	184°	258.49	252.95

SOUTH WINGWALL CONSTRUCTION POINTS							
POINT	STATION	OFFSET	NORTHING	EASTING	HORIZONTAL ANGLE	TOP OF WALL ELV ⁶	BOT OF WALL ELV ⁷
CPS #1	6+59.57	18.02 RT	2881099.462	672189.750	-	256.30	256.02
CPS #2	6+79.06	17.94 RT	2881092.309	672206.540	184°	256.48	253.53
CPS #3	6+94.02	18.00 RT	2881085.936	672219.005	182°	256.68	252.59
CPS #4	7+39.50	18.02 RT	2881063.947	672258.553	180°	257.39	250.44
CPS #5	7+60.50	18.02 RT	2881053.741	672276.906	180°	257.73	249.18
CPS #6	7+95.99	18.19 RT	2881036.125	672308.588	177°	258.30	250.81
CPS #7	8+00.52	18.20 RT	2881033.927	672313.079	178°	258.37	250.69

- NOTES:**
- STATIONS REFERENCE HIGH SCHOOL ROAD CONSTRUCTION BASELINE.
 - PRIOR TO CONSTRUCTION, CONTRACTOR MUST VERIFY ALL MEASUREMENTS WITH THE ENGINEER.
 - EACH CONSTRUCTION POINT LOCATION IS A CHANGE IN WALL ALIGNMENT. THE WALL ALIGNMENT SHALL FOLLOW A STRAIGHT LINE BETWEEN EACH CONSTRUCTION POINT.
 - CONSTRUCTION POINTS ARE LOCATED AT THE CENTER OF THE WALL ALIGNMENT.
 - ANGLE DIMENSIONS REFER TO INTERIOR (ROADSIDE) HORIZONTAL ANGLES BETWEEN ADJOINING WINGWALL SECTIONS
 - TOP OF WALL SHALL EXTEND 6" ABOVE ADJACENT PROPOSED GRADE.
 - BOT OF WALL ELEVATIONS REFER TO THE EXISTING GRADE ELEVATION AT THE EXTERIOR (WETLAND SIDE) OF THE WINGWALL SECTIONS. THESE ELEVATIONS ARE APPROXIMATE AND THE CONTRACTOR SHALL MEET EXISTING GRADES AS NECESSARY.



HEADWALL TO CULVERT DETAIL
NTS



www.tetratech.com
100 Nickerson Road, Suite 200
Marlborough, MA 01752
PHONE: 508-786-2200

MARK	DATE	DESCRIPTION
0	03/19/25	ISSUED FOR BID

Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS
Proj. Loc.: MEDWAY, MASSACHUSETTS

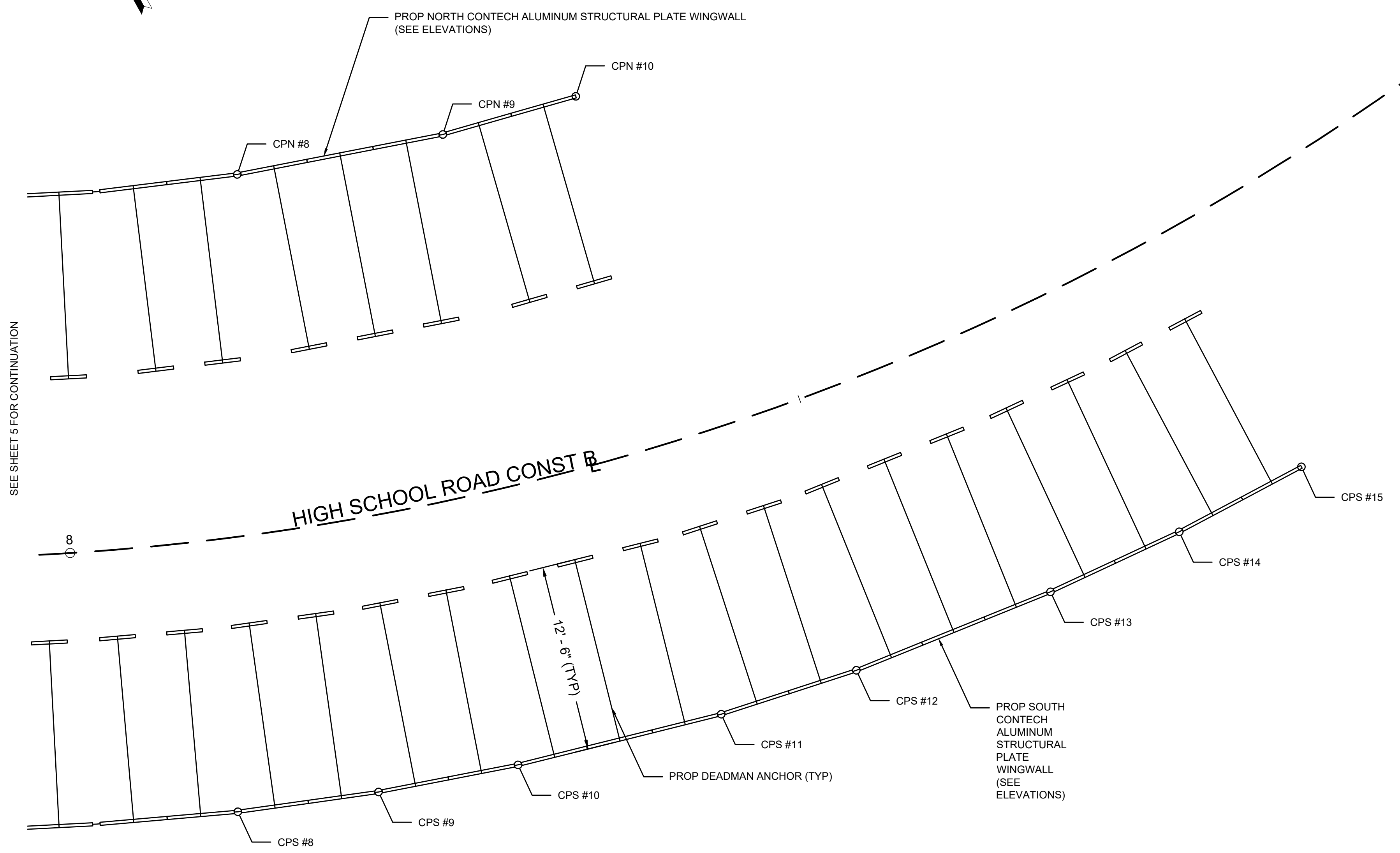
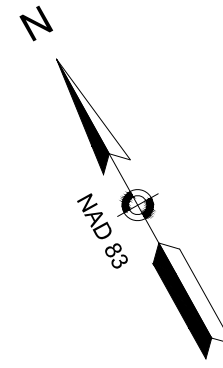
MEDWAY HIGH SCHOOL CULVERT REPLACEMENT

BRIDGE PLAN & DETAILS
(1 OF 2)

PROJ: 143-21583-24006
DESN: SMB
DRWN: SMB
CHKD: SMB

15 OF 22

3/19/2025 9:00:33 AM - P:\21583\143-21583-24006 (DPW HS CULVERT DES)\CAD\SHSHEETFILES\BID PLANS\SHSHEET 15 WALL PLAN & DETAILS.DWG - PARADEE, TUCKER

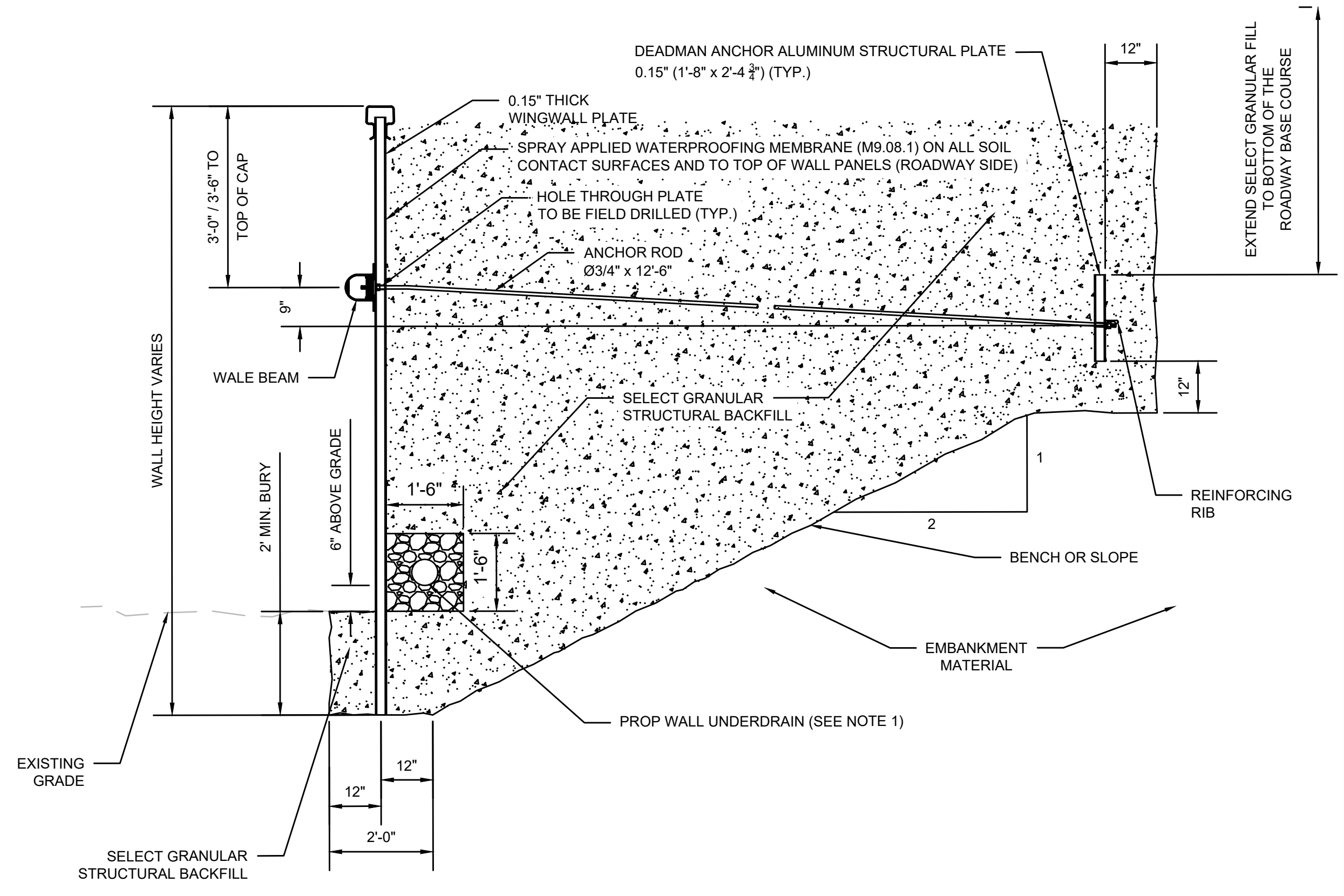


BRIDGE PLAN (CONT'D)
SCALE: 1" = 5'

NORTH WINGWALL CONSTRUCTION POINTS							
POINT	STATION	OFFSET	NORTHING	EASTING	HORIZONTAL ANGLE	TOP OF WALL ELV ⁶	BOT OF WALL ELV ⁷
CPN #8	8+14.84	24.00 LT	2881067.309	672342.423	184°	258.66	254.15
CPN #9	8+31.08	23.93 LT	2881062.965	672355.732	185°	258.92	256.97
CPN #10	8+41.81	23.98 LT	2881060.873	672364.742	-	259.09	258.73

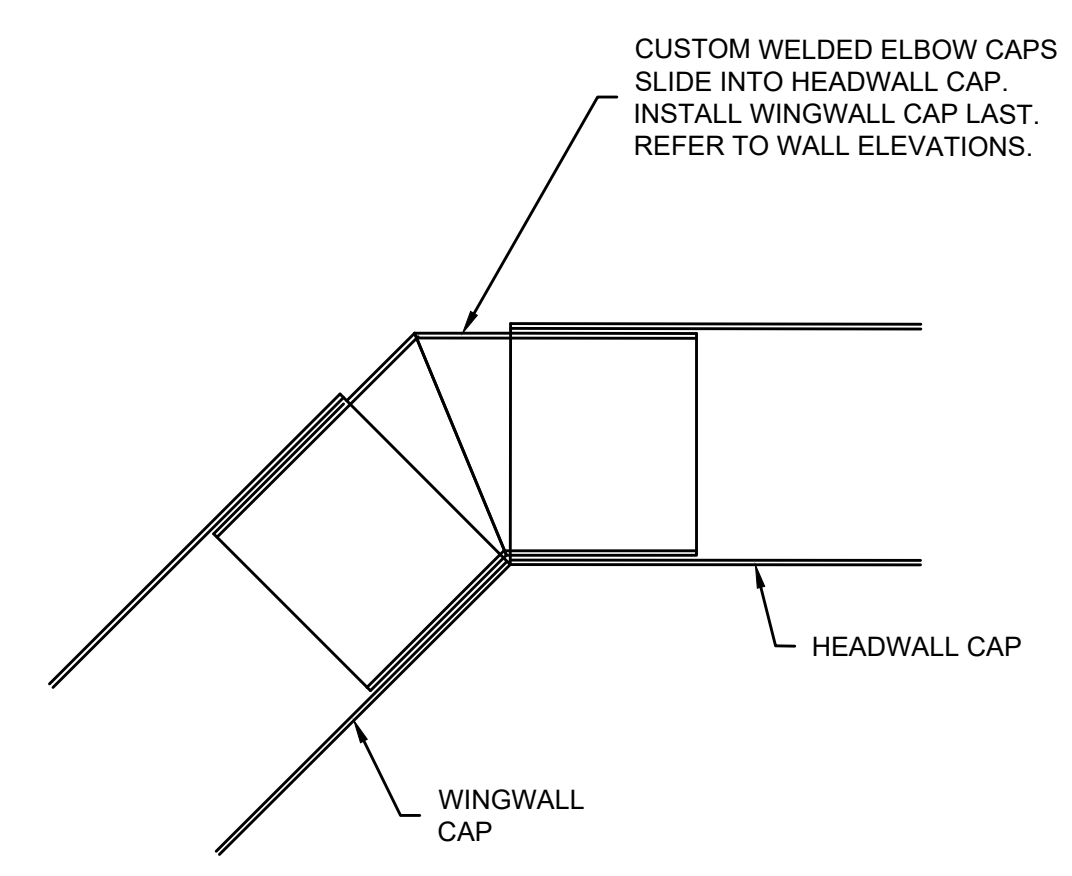
SOUTH WINGWALL CONSTRUCTION POINTS							
POINT	STATION	OFFSET	NORTHING	EASTING	HORIZONTAL ANGLE	TOP OF WALL ELV ⁶	BOT OF WALL ELV ⁷
CPS #8	8+09.12	18.24 RT	2881030.052	672321.752	177°	258.51	250.76
CPS #9	8+17.72	18.26 RT	2881026.636	672330.616	177°	258.64	250.96
CPS #10	8+26.32	18.25 RT	2881023.688	672339.647	177°	258.78	251.29
CPS #11	8+38.99	18.36 RT	2881020.047	672353.165	176°	258.98	252.35
CPS #12	8+47.58	18.35 RT	2881018.222	672362.488	176°	259.12	252.96
CPS #13	8+60.25	18.22 RT	2881016.497	672376.382	177°	259.32	254.55
CPS #14	8+68.85	18.21 RT	2881015.822	672385.858	177°	259.45	256.42
CPS #15	8+77.23	18.17 RT	2881015.648	672395.106	-	259.58	259.18

NOTES:
 1. STATIONS REFERENCE HIGH SCHOOL ROAD CONSTRUCTION BASELINE.
 2. PRIOR TO CONSTRUCTION, CONTRACTOR MUST VERIFY ALL MEASUREMENTS WITH THE ENGINEER.
 3. EACH CONSTRUCTION POINT LOCATION IS A CHANGE IN WALL ALIGNMENT. THE WALL ALIGNMENT SHALL FOLLOW A STRAIGHT LINE BETWEEN EACH CONSTRUCTION POINT.
 4. CONSTRUCTION POINTS ARE LOCATED AT THE CENTER OF THE WALL ALIGNMENT.
 5. ANGLE DIMENSIONS REFER TO INTERIOR (ROADSIDE) HORIZONTAL ANGLES BETWEEN ADJOINING WINGWALL SECTIONS.
 6. TOP OF WALL SHALL EXTEND 6" ABOVE ADJACENT PROPOSED GRADE.
 7. BOT OF WALL ELEVATIONS REFER TO THE EXISTING GRADE ELEVATION AT THE EXTERIOR (WETLAND SIDE) SIDE OF THE WINGWALL SECTIONS. THESE ELEVATIONS ARE APPROXIMATE AND THE CONTRACTOR SHALL MEET EXISTING GRADES AS NECESSARY.

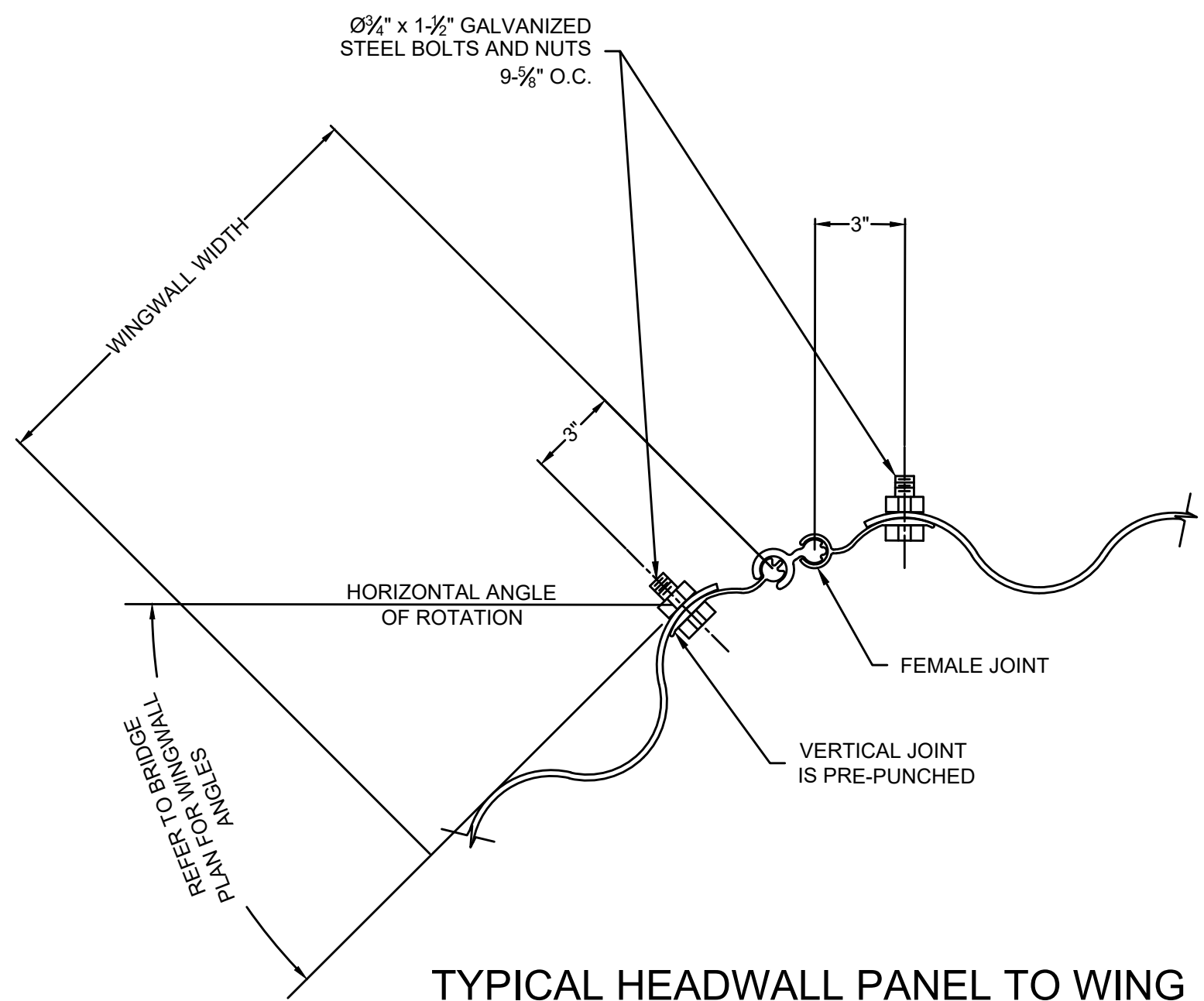


WINGWALL SECTION
SCALE: 1" = 2'

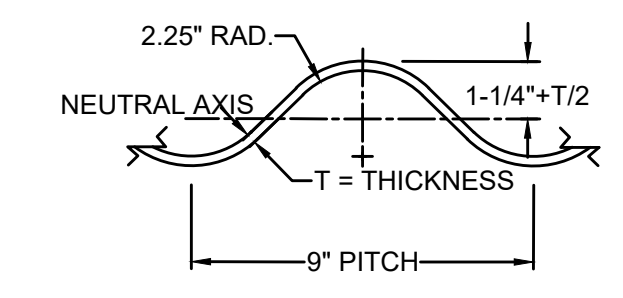
NOTES:
 1. 6" PERFORATED SDR 35 PIPE (PERFORATIONS UP) IN 3/8" WASHED CRUSHED STONE, WRAPPED IN NON-WOVEN GEOTEXTILE FABRIC (MIRAFI 160N). THE DRAINS SHALL RUN THE LENGTH OF EACH WALL AND SHALL BE CONNECTED TO THE CULVERT UNDERDRAIN SYSTEM WITH A 6X6X4 TEE (MATCH INVERTS) AT EACH END. PROVIDE CLEANOUT TO GRADE AT THE OPPOSITE END. PROVIDE 4" OUTLETS THROUGH PLATE WALL (FIELD DRILLED, AT DIRECTION OF WALL MANUFACTURER) AT 10' O.C. CONNECT OUTLETS TO UNDERDRAIN WITH 6X4X6 (MATCH INVERTS). SEAL WALL PENETRATIONS AT DIRECTION OF WALL MANUFACTURER.



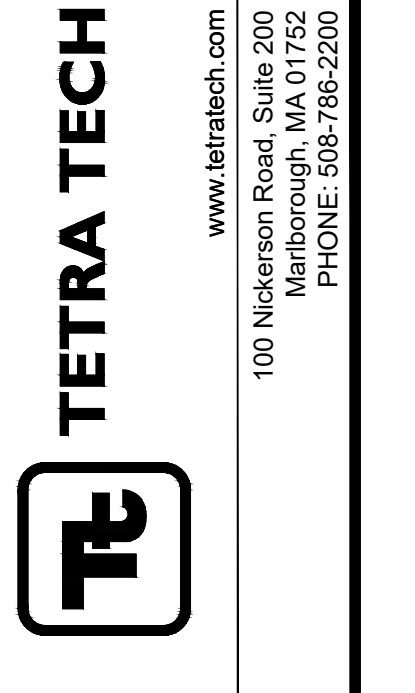
ELBOW CAP DETAIL
NTS



TYPICAL HEADWALL PANEL TO WINGWALL PANEL JOINTS DETAIL
NTS



ALUMINUM STRUCTURAL PLATE CORRUGATION PROFILE
NTS



MARK	DATE	DESCRIPTION
0	03/19/25	ISSUED FOR BID

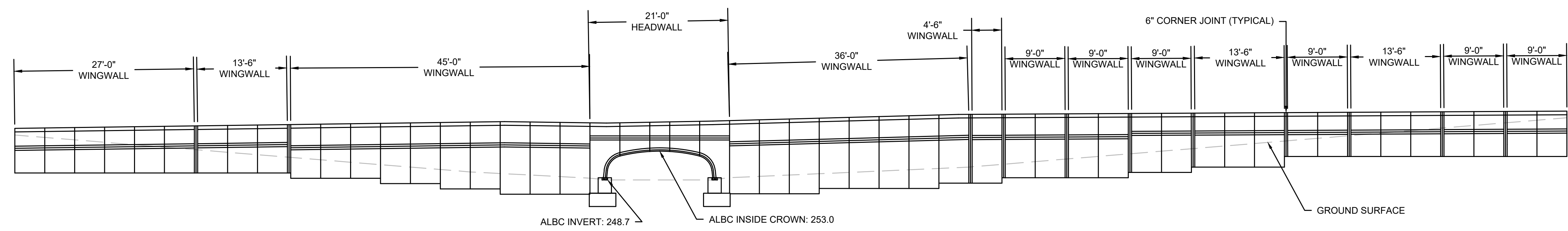
Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS
 Proj. Loc.: MEDWAY, MASSACHUSETTS
MEDWAY HIGH SCHOOL CULVERT REPLACEMENT
BRIDGE PLAN & DETAILS
(2 OF 2)

PROJ:	143-21583-24006
DESN:	SMB
DRWN:	SMB
CHKD:	SMB

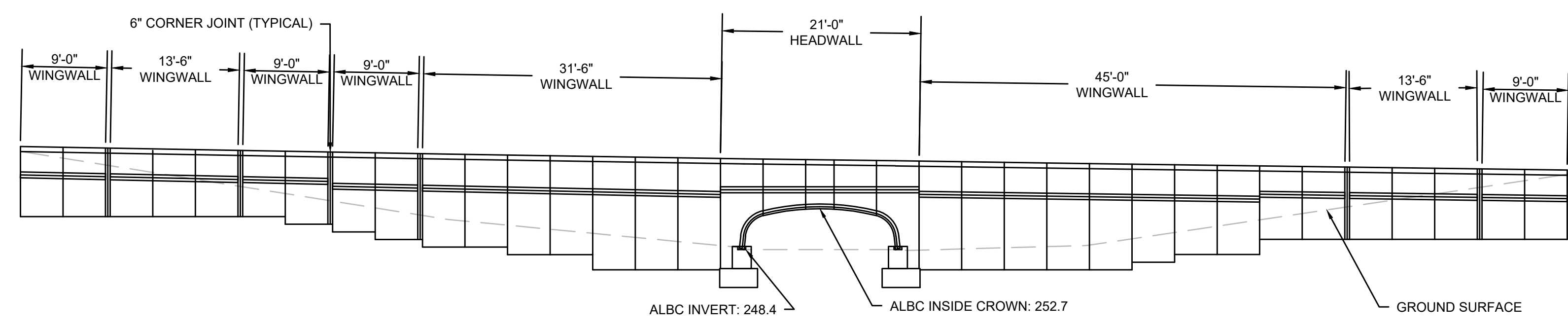
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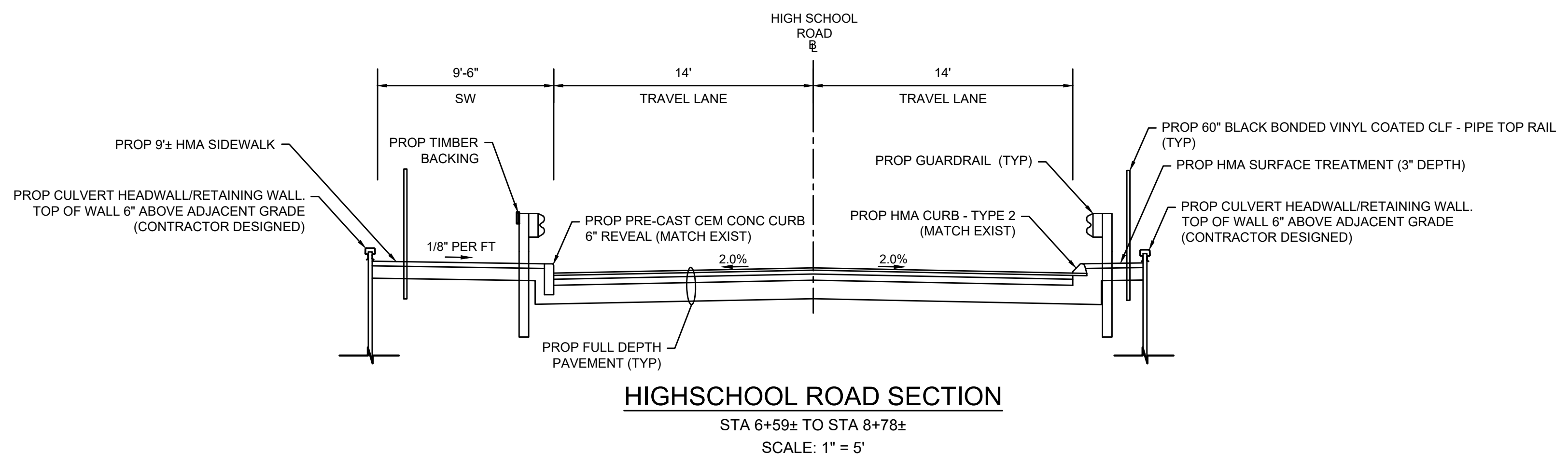
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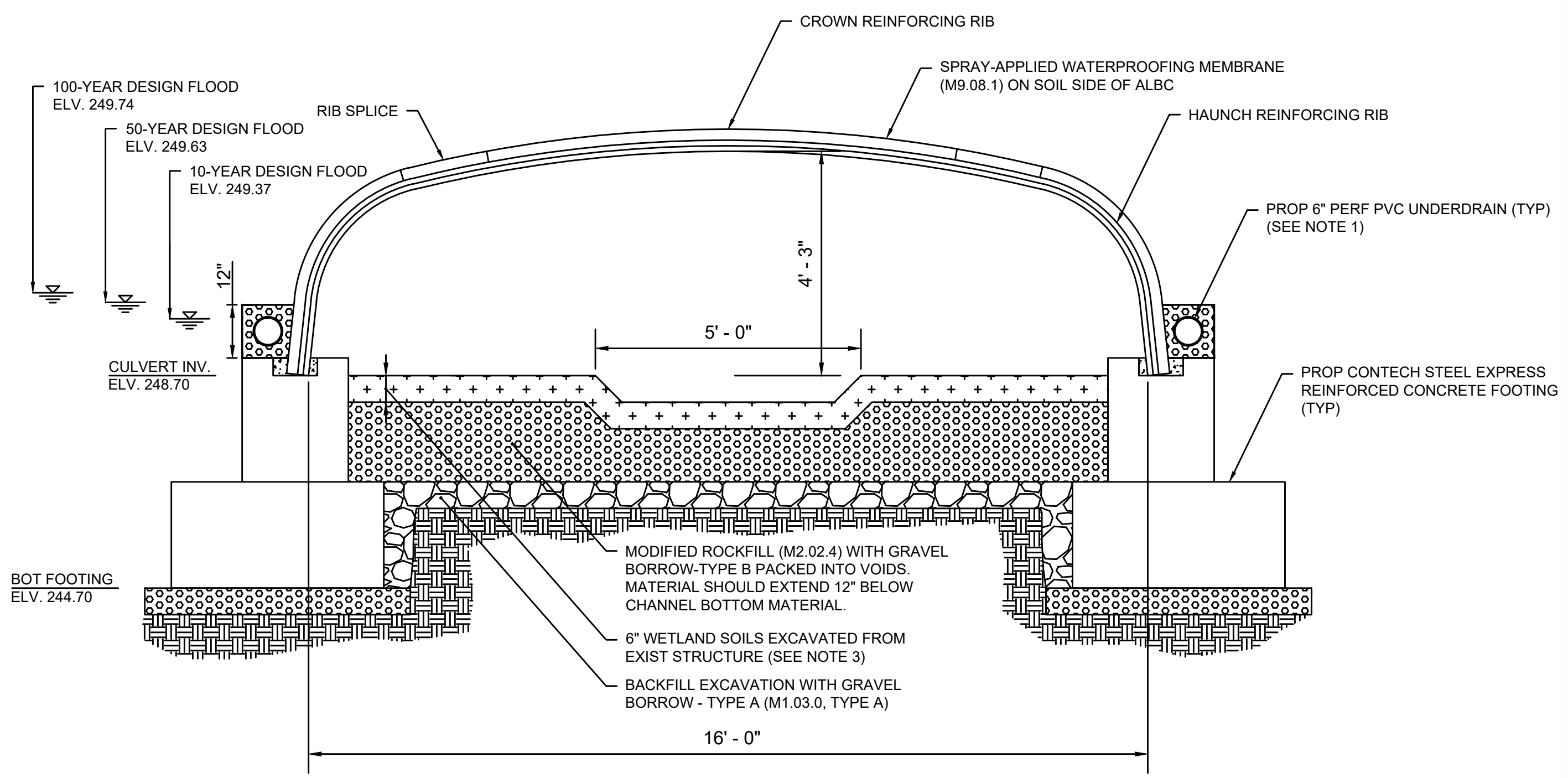
SOUTH ELEVATION
SCALE: 1" = 10'



NORTH ELEVATION
SCALE: 1" = 10'

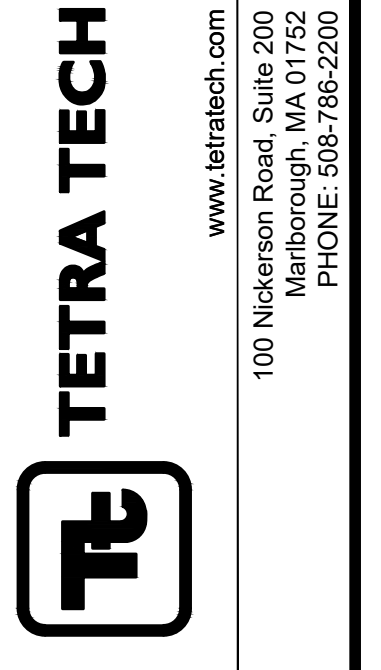


HIGHSCHOOL ROAD SECTION
STA 6+59± TO STA 8+78±
SCALE: 1" = 5'



ALBC CROSS SECTION
SCALE: 1" = 2'

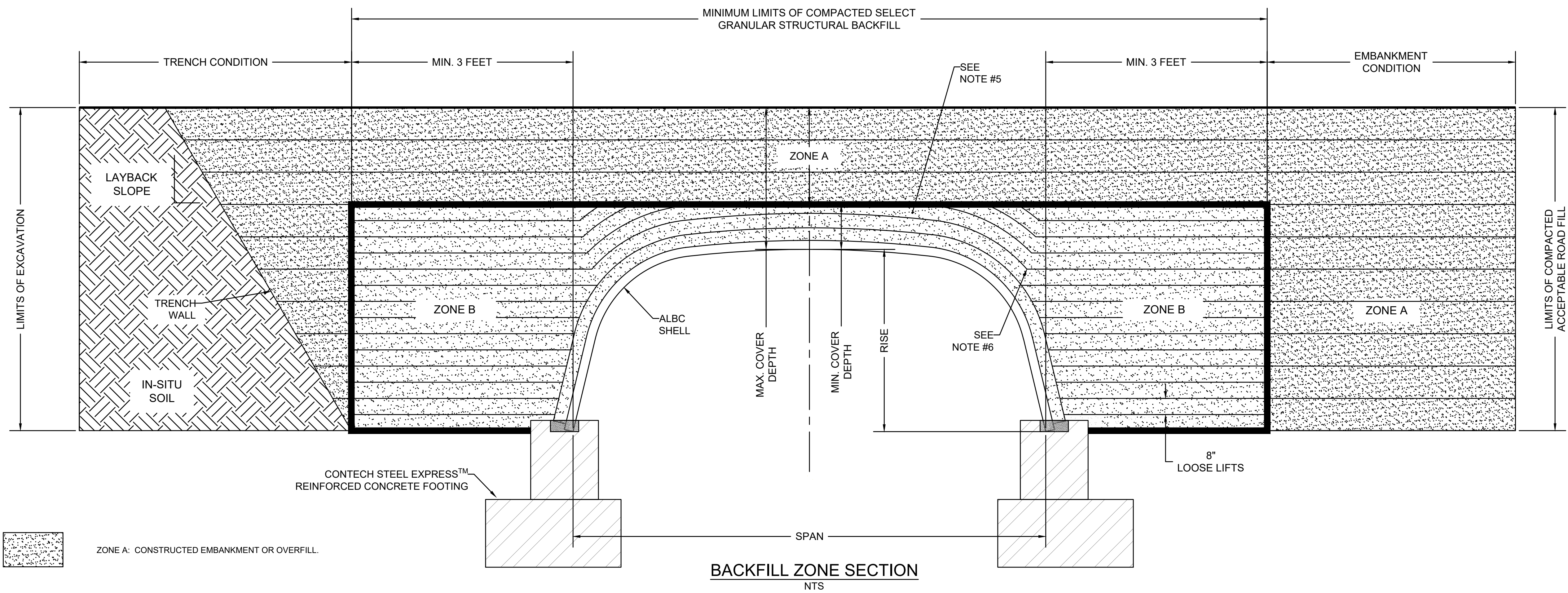
- CULVERT NOTES:**
- 6" PERFORATED SDR 35 PIPE (PERFORATIONS UP) IN 2" WASHED CRUSHED STONE, WRAPPED IN NON-WOVEN GEOTEXTILE FABRIC (MIRAFI 160n). THE DRAINS SHALL RUN THE LENGTH OF THE CULVERT AND SHALL BE CONNECTED TO THE WALL UNDERDRAIN SYSTEM WITH A 6X6X4 TEE (MATCH INVERTS) AT EACH END. A 4" WALL PENETRATION (FIELD DRILLED, AT DIRECTION OF WALL MANUFACTURER) SHALL BE PROVIDED AT EACH END TO ALLOW FOR CLEANING. SEAL WALL PENETRATIONS AT DIRECTION OF WALL MANUFACTURER.
 - CULVERT SHALL BE PROTECTED WITH SPRAY APPLIED MEMBRANE ON BACKFILL SIDE OF STRUCTURE.
 - CONTRACTOR SHALL REMOVE AND STOCKPILE EXISTING WETLAND SOIL MATERIAL DURING DEMOLITION OF THE EXISTING STRUCTURE.
 - CHANNEL CENTERLINE SHALL BE PROVIDED ALONG THE CULVERT BASELINE.



MARK	DATE	DESCRIPTION
0	03/19/25	ISSUED FOR BID

Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS	PROJ: 143-21583-24006
Proj. Loc.: MEDWAY, MASSACHUSETTS	DESN: SMB
MEDWAY HIGH SCHOOL CULVERT REPLACEMENT	DRWN: SMB
ELEVATIONS & CROSS SECTIONS	CHKD: SMB

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- ZONE A: CONSTRUCTED EMBANKMENT OR OVERFILL.
- ZONE B: ENGINEERED BACKFILL ENVELOPE.

STRUCTURAL PLATE BACKFILL GROUP CLASSIFICATION, REFERENCE AASHTO M-145					
GROUP CLASSIFICATION	A-1-a	A-1-b	A-2-4	A-2-5	A-3
Sieve Analysis Percent Passing					
No. 10 (2.000 mm)	50 max.	----	----	----	----
No. 40 (0.425 mm)	30 max.	50 max.	----	----	51 max.*
No. 200 (0.075 mm)	15 max.	25 max.	35 max.	35 max.	10 max.
Atterberg Limits for Fraction Passing No. 40 (0.425 mm)					
Liquid Limits	----	----	40 max.	41 min.	----
Plasticity Index	6 max.	6 max.	10 max.	10 max.	Non Plastic
Usual Materials	Stone Fragment, Gravel and Sand		Silty or Clayey Gravel and Sand		Coarse Sand

*Modified from M-145.

Fine beach sands, windblown sands, stream deposited sands, etc., exhibiting fine, rounded particles and typically Classified by AASHTO M-145 as A-3 materials should not be used.

Reference the most current version of ASTM D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System), for comparable soil groups.

- NOTES:**
- MINIMUM ENGINEERED BACKFILL ENVELOPE WIDTH IS PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.
 - ENGINEERED BACKFILL ENVELOPE TO BE PLACED IN A BALANCED FASHION IN THIN LIFTS (8" LOOSE TYPICALLY) AND COMPACTED TO 90 PERCENT DENSITY PER AASHTO T-190. THERE SHOULD BE NO MORE THAN 2" DIFFERENTIAL ON EACH SIDE. ENGINEERED BACKFILL MATERIAL PLACED WITHIN 1 FOOT LATERALLY OF THE WIDEST PART OF THE STRUCTURE SHOULD BE COMPACTED USING HAND OPERATED EQUIPMENT UNTIL MINIMUM COVER HEIGHT IS REACHED.
 - SHAPE MONITORING OF THE ALBC STRUCTURE IS REQUIRED DURING THE BACKFILLING PROCESS. THE METHOD, FREQUENCY AND DURATION SHALL BE DETERMINED BASED ON THE SIZE AND SHAPE OF THE STRUCTURE.
 - PLACE ENGINEERED BACKFILL ENVELOPE IN RADIAL LIFTS BEGINNING AT APPROXIMATELY THE MIDDLE OF THE HAUNCH ZONE.
 - BECAUSE OF THE FLEXING AND VIBRATION OF THE CROWN PLATES, THE FULL COMPACTION DENSITY LEVELS OFTEN CAN NOT BE ACHIEVED IN THE FIRST SEVERAL INCHES OF FILL OVER THE CROWN.
 - ONCE THE BACKFILL ELEVATION REACHES THE MIDDLE OF THE HAUNCH CURVE (DEPENDING ON RELATIVE MOVEMENT DURING THE BACKFILL PROCESS), PLACE AND COMPACT ENGINEERED BACKFILL MATERIAL IN RADIAL LIFTS OVER THE TOP OF THE STRUCTURE.
 - WHEN REQUIRED, AS DETERMINED BY THE GEOTECHNICAL ENGINEER, A GEOTEXTILE OR GRADED SOIL FILTER MAY BE USED BETWEEN THE ENGINEERED BACKFILL AND IN-SITU SOIL TO PREVENT MIGRATION OF FINES AND POSSIBLE INTERNAL EROSION OF THE SOIL.
 - DURING BACKFILL, ONLY LIGHTWEIGHT TRACKED VEHICLES (D-4 OR LIGHTER) SHOULD BE NEAR THE STRUCTURE AS FILL PROGRESSES ABOVE THE CROWN AND TO THE FINISHED GRADE.
 - THE MINIMUM COVER IS THE VERTICAL DISTANCE FROM THE OUTSIDE VALLEY OF THE CORRUGATIONS TO THE TOP OF RIGID OR BOTTOM OF FLEXIBLE PAVEMENT.

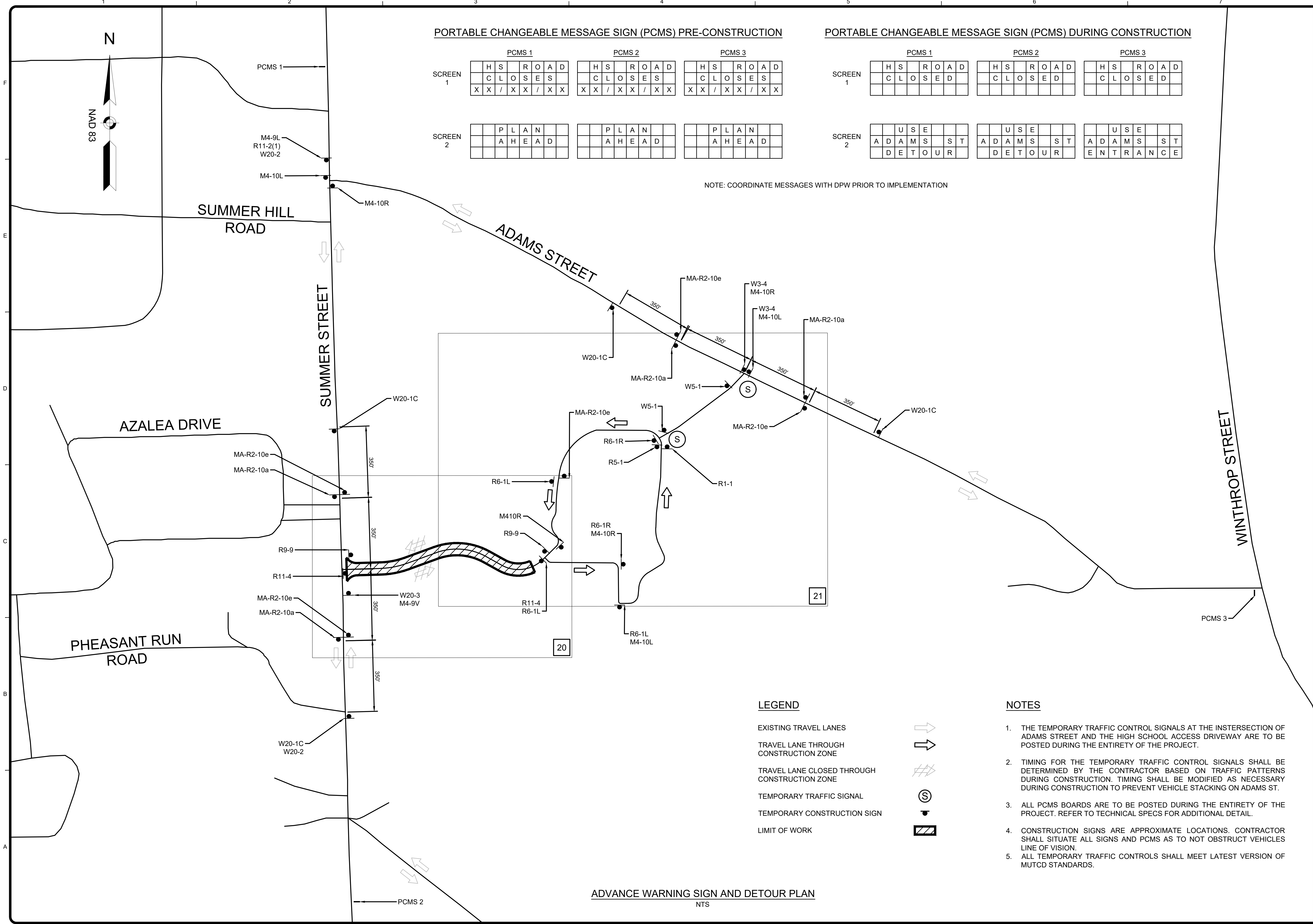
MARK	DATE	DESCRIPTION
0	03/19/25	ISSUED FOR BID

Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS
Proj. Loc.: MEDWAY, MASSACHUSETTS

ELEVATIONS & CROSS SECTIONS

PROJ: 143-21583-24006
DESN: SMB
DRWN: SMB
CHKD: SMB

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PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) PRE-CONSTRUCTION

	PCMS 1	PCMS 2	PCMS 3
SCREEN 1	H S R O A D C L O S E S X X / X X / X X	H S R O A D C L O S E S X X / X X / X X	H S R O A D C L O S E S X X / X X / X X
SCREEN 2	P L A N A H E A D	P L A N A H E A D	P L A N A H E A D

PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) DURING CONSTRUCTION

	PCMS 1	PCMS 2	PCMS 3
SCREEN 1	H S R O A D C L O S E D	H S R O A D C L O S E D	H S R O A D C L O S E D
SCREEN 2	U S E A D A M S S T D E T O U R	U S E A D A M S S T D E T O U R	U S E A D A M S S T E N T R A N C E

NOTE: COORDINATE MESSAGES WITH DPW PRIOR TO IMPLEMENTATION

LEGEND

- EXISTING TRAVEL LANES
- TRAVEL LANE THROUGH CONSTRUCTION ZONE
- TRAVEL LANE CLOSED THROUGH CONSTRUCTION ZONE
- TEMPORARY TRAFFIC SIGNAL
- TEMPORARY CONSTRUCTION SIGN
- LIMIT OF WORK

NOTES

- THE TEMPORARY TRAFFIC CONTROL SIGNALS AT THE INTERSECTION OF ADAMS STREET AND THE HIGH SCHOOL ACCESS DRIVEWAY ARE TO BE POSTED DURING THE ENTIRETY OF THE PROJECT.
- TIMING FOR THE TEMPORARY TRAFFIC CONTROL SIGNALS SHALL BE DETERMINED BY THE CONTRACTOR BASED ON TRAFFIC PATTERNS DURING CONSTRUCTION. TIMING SHALL BE MODIFIED AS NECESSARY DURING CONSTRUCTION TO PREVENT VEHICLE STACKING ON ADAMS ST.
- ALL PCMS BOARDS ARE TO BE POSTED DURING THE ENTIRETY OF THE PROJECT. REFER TO TECHNICAL SPECS FOR ADDITIONAL DETAIL.
- CONSTRUCTION SIGNS ARE APPROXIMATE LOCATIONS. CONTRACTOR SHALL SITUATE ALL SIGNS AND PCMS AS TO NOT OBSTRUCT VEHICLES LINE OF VISION.
- ALL TEMPORARY TRAFFIC CONTROLS SHALL MEET LATEST VERSION OF MUTCD STANDARDS.

ADVANCE WARNING SIGN AND DETOUR PLAN
NTS

TETRA TECH
www.tetra-tech.com
100 Nickerson Road, Suite 200
Marlborough, MA 01752
PHONE: 508-786-2200

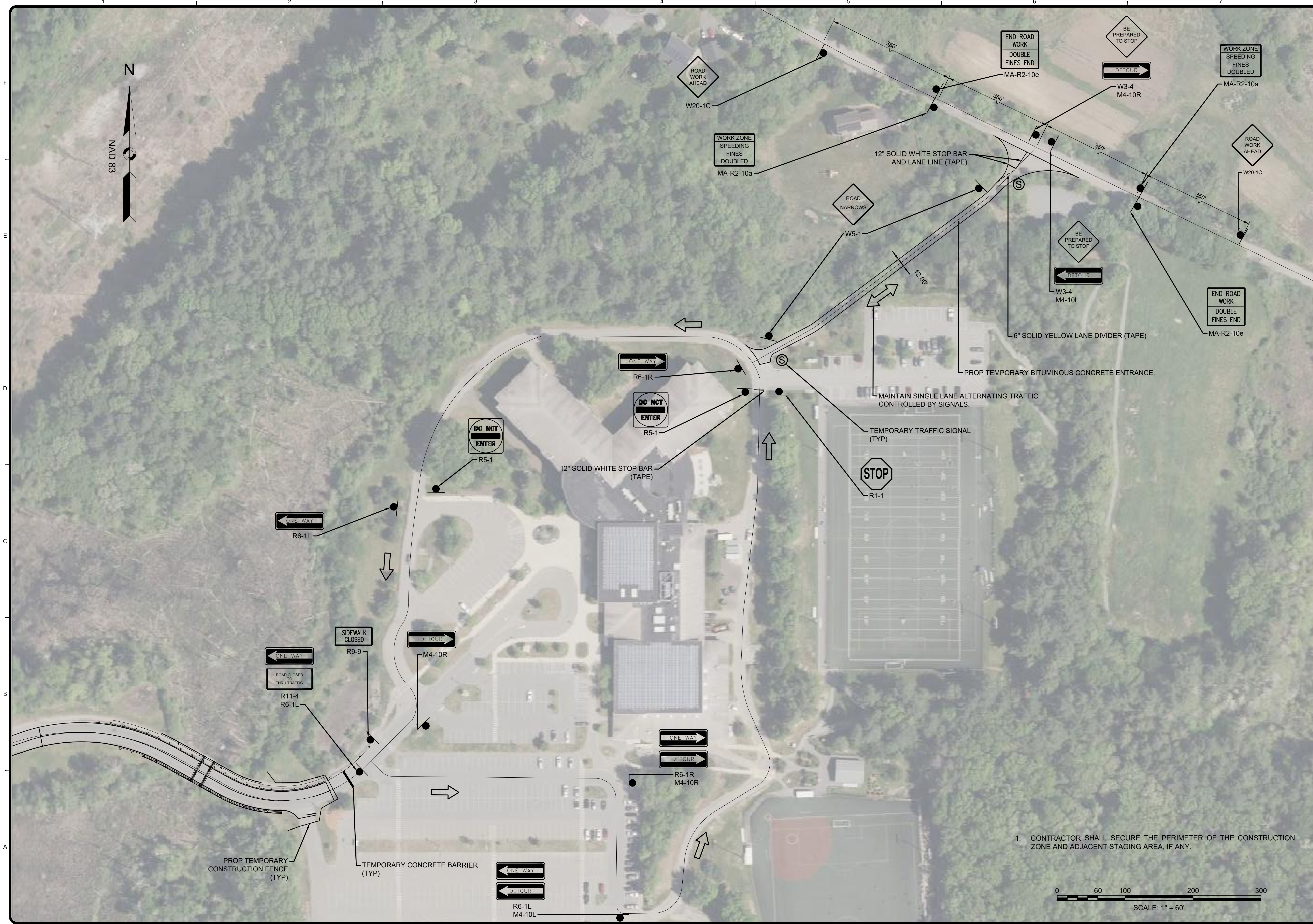
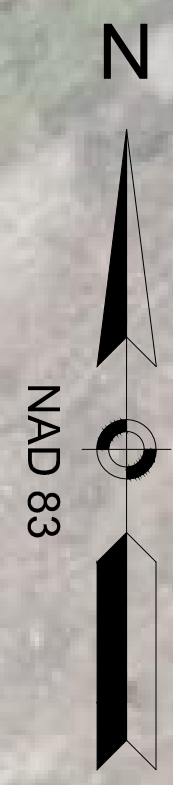
MARK	DATE	DESCRIPTION
0	03/19/25	ISSUED FOR BID

Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS
Proj. Loc.: MEDWAY, MASSACHUSETTS
MEDWAY HIGH SCHOOL CULVERT REPLACEMENT
ADVANCE WARNING SIGN AND DETOUR PLAN

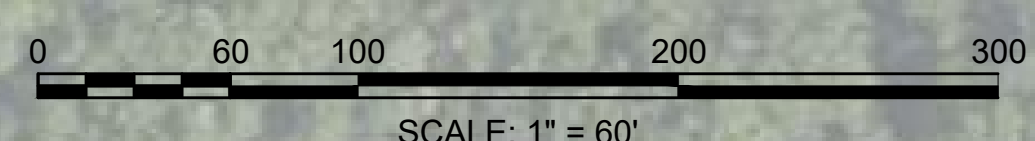
PROJ: 143-21583-24006
DESN: SMB
DRWN: SMB
CHKD: SMB

Bar Measures 1 inch, otherwise drawing not to scale

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1. CONTRACTOR SHALL SECURE THE PERIMETER OF THE CONSTRUCTION ZONE AND ADJACENT STAGING AREA, IF ANY.



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MARK	DATE	DESCRIPTION	ISSUED FOR BID	BY
0	03/19/25			SMB

Client: TOWN OF MEDWAY DEPARTMENT OF PUBLIC WORKS
Proj. Loc.: MEDWAY, MASSACHUSETTS
PROJ: 143-21583-24006
DESIGN: SMB
DRAWN: SMB
CHKD: SMB

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Bar Measures 1 inch, otherwise drawing not to scale

CONSTRUCTION SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN (INCHES)		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER			
M4-9L	30	24		MUTCD STANDARD			1	FLUOR-ESCENT ORANGE	BLACK	BLACK	-	5.00	5.00
M4-9V													5.00
M4-10L	48	18		MUTCD STANDARD			3	FLUOR-ESCENT ORANGE	BLACK	BLACK	-	6.00	18.00
M4-10R	48	18		MUTCD STANDARD			4	FLUOR-ESCENT ORANGE	BLACK	BLACK	-	6.00	24.00
MA-R2-10a	48	36		MASSDOT STANDARD			4	FLUOR-ESCENT ORANGE	BLACK	BLACK	-	12.00	48.00
MA-R2-10e	36	48		MASSDOT STANDARD			4	FLUOR-ESCENT ORANGE	BLACK	BLACK	-	12.00	48.00
R1-1	30	30		MUTCD STANDARD			1	RED	WHITE	WHITE	-	6.25	6.25
R5-1	30	30		MUTCD STANDARD			2	WHITE	RED	RED	-	6.25	12.50
R6-1L	36	12		MUTCD STANDARD			3	BLACK	BLACK	BLACK	-	3.00	9.00
R6-1R	36	12		MUTCD STANDARD			3	BLACK	BLACK	BLACK	-	3.00	9.00
R9-9	24	12		MUTCD STANDARD			1	WHITE	BLACK	BLACK	-	2.00	2.00
R11-2 (1)	48	30		MUTCD STANDARD			1	FLUOR-ESCENT ORANGE	BLACK	BLACK	-	10.00	10.00
R11-4	60	30		MUTCD STANDARD			2	WHITE	BLACK	BLACK	-	12.50	25.00
W3-4	36	36		MUTCD STANDARD			2	FLUOR-ESCENT ORANGE	BLACK	BLACK	-	9.00	18.00
W5-1	36	36		MUTCD STANDARD			2	FLUOR-ESCENT ORANGE	BLACK	BLACK	-	9.00	18.00
W20-1c	36	36		MUTCD STANDARD			4	FLUOR-ESCENT ORANGE	BLACK	BLACK	-	9.00	36.00
W20-2	36	36		MUTCD STANDARD			2	FLUOR-ESCENT ORANGE	BLACK	BLACK	-	9.00	18.00
W20-3	36	36		MUTCD STANDARD			1	FLUOR-ESCENT ORANGE	BLACK	BLACK	-	9.00	9.00

1. SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY SHALL MEET CRITERIA SET FORTH IN NCHRP 350.

TOTAL = 320.75 SF



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Proj. Loc.: MEDWAY, MASSACHUSETTS
MEDWAY HIGH SCHOOL CULVERT REPLACEMENT
CONSTRUCTION SIGN SUMMARY

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DRWN:	SMB
CHKD:	SMB