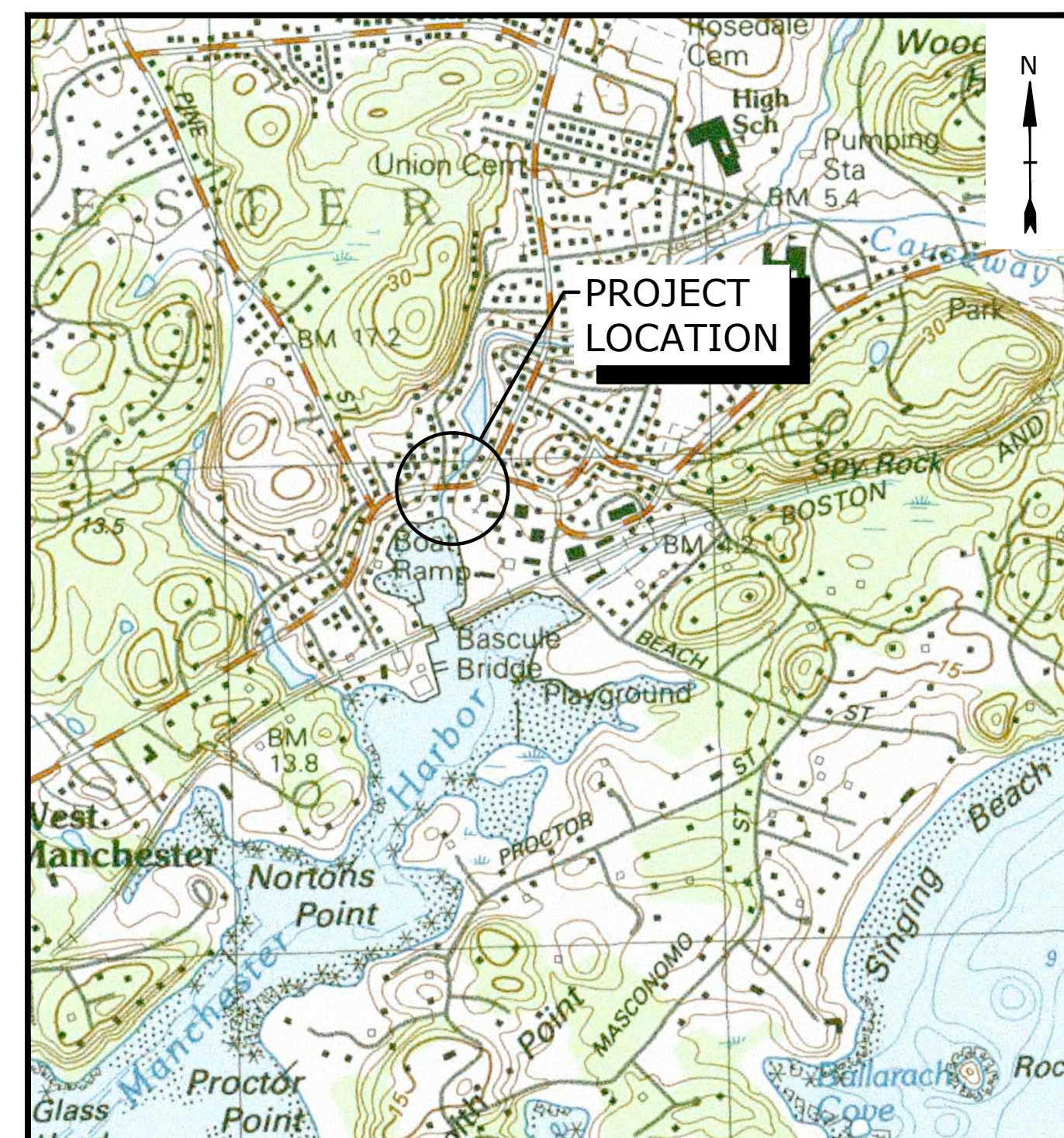


# TOWN OF MANCHESTER-BY-THE-SEA, MASSACHUSETTS

## CENTRAL STREET BRIDGE REPLACEMENT AND CENTRAL POND RESTORATION

MASSDOT BRIDGE NO: M-02-001 (CDL)  
SEPTEMBER 2024

LIST OF DRAWINGS			LIST OF DRAWINGS		
SHEET NO.	DWG NO.	SHEET TITLE	SHEET NO.	DWG NO.	SHEET TITLE
CENTRAL STREET BRIDGE SHEETS			CENTRAL POND RESTORATION SHEETS		
1		COVER	33	PG-001	LEGEND, ABBREVIATIONS, AND GENERAL NOTES
2	G-001	LEGEND, ABBREVIATIONS, AND GENERAL NOTES	34	P-001	EXISTING CONDITIONS & DEMOLITION PLAN
3		CENTRAL STREET SURVEY 1 OF 4	35	P-002	EXISTING CROSS SECTIONS - 1
4		CENTRAL STREET SURVEY 2 OF 4	36	P-003	EXISTING CROSS SECTIONS - 2
5		CENTRAL STREET SURVEY 3 OF 4	37	P-101	SITE PLAN
6		CENTRAL STREET SURVEY 4 OF 4	38	P-102	PLANTING PLAN
7	C-005	DEMOLITION PLAN AND SITE PREPARATION PLAN	39	P-103	EASEMENTS, ACCESS, AND STAGING
8	C-101	SITE PLAN AND PROFILE	40	P-104	PROPOSED CROSS SECTIONS - 1
9	C-102	GRADING AND ALIGNMENT PLAN	41	P-105	PROPOSED CROSS SECTIONS - 2
10	C-103	UTILITY PLAN	42	P-501	CONTROL OF WATER NOTES
11	C-104	TEMPORARY ROADWAY PLAN	43	P-502	TYPICAL BANK DETAILS
12	C-105	UTILITY/WORK STAGING PLAN	44	P-503	REVEGETATION DETAILS
13	C-501	CONSTRUCTION DETAILS (SHEET 1 OF 2)	45	P-504	CONTROL OF WATER DETAILS - 1
14	C-502	CONSTRUCTION DETAILS (SHEET 2 OF 2)	46	P-505	CONTROL OF WATER DETAILS - 2
15	C-503	COASTAL BANK PLAN	47	P-506	CONSTRUCTION DETAILS
16	C-504	CONTROL OF WATER NOTES & DETAILS (SHEET 1 OF 2)	48	P-507	BANK JAM SCHEDULE AND NOTES
17	C-505	CONTROL OF WATER NOTES & DETAILS (SHEET 2 OF 2)	49	P-601	TRANSECT PLAN
18	C-701	TEMPORARY TRAFFIC CONTROL PLAN - GENERAL	50	P-602	TRANSECT CROSS SECTIONS - 1
19	C-702	TEMPORARY TRAFFIC CONTROL PLAN - DETOUR	51	P-603	TRANSECT CROSS SECTIONS - 2
20	S-001	BRIDGE KEY PLAN, PROFILES, LOCUS AND INDEX			
21	S-002	BRIDGE NOTES			
22	S-003	BORING LOGS AND BORING NOTES			
23	S-101	GENERAL BRIDGE PLAN AND ELEVATION			
24	S-102	ABUTMENT PLAN & DETAILS			
25	S-103	ABUTMENT REINFORCING DETAILS			
26	S-104	BRIDGE FRAMING AND LAYOUT PLAN			
27	S-105	BRIDGE SECTIONS & DETAILS			
28	S-106	MISCELLANEOUS DETAILS			
29	S-201	S3-TL4 BARRIER DETAILS			
30	S-202	HEADWALL & S3-TL4 BARRIER DETAILS AT SIDEWALK			
31	S-203	TOP OF END POST FOR S3-TL4 RAILING			
32	S-300	TEMPORARY GANGWAY PLAN, ELEVATION, AND DETAILS			



LOCATION MAP  
SCALE: 1" = 1000'

PREPARED FOR:

TOWN OF MANCHESTER-BY-THE-SEA

GREG FEDERSPIEL, TOWN ADMINISTRATOR

CHUCK DAM, PE, DEPARTMENT OF PUBLIC WORKS DIRECTOR

NATHAN DESROSIERS, PE, TOWN ENGINEER

MARY REILLY, GRANTS ADMINISTRATOR

BOARD OF SELECTMEN

ANN HARRISON, CHAIR

JOHN ROUND, VICE CHAIR

CATHERINE BILOTTA

BRIAN SOLLOS

JEFFREY DELANEY



PREPARED BY:

**Tighe&Bond**

**100% DESIGN  
NOT FOR CONSTRUCTION**

**COMPLETE SET 51 SHEETS**

CENTRAL STREET BRIDGE REPLACEMENT (C/S-SHEETS)  
GENERAL NOTES

- 1. BASE PLAN ENTITLED "MASSACHUSETTS DEPARTMENT OF TRANSPORTATION PLAN OF TOPOGRAPHIC SURVEY OF CENTRAL STREET, MANCHESTER BY THE SEA" PREPARED BY DOUCET SURVEY INC. ON NOVEMBER 9, 2018.
2. UTILITY EXPLORATIONS PERFORMED USING VACUUM TRUCK EXCAVATION ACROSS CENTRAL STREET, WEST OF EXISTING BRIDGE ON DECEMBER 7, 2021. SEE UTILITY PLAN SHEET C-103 FOR APPROXIMATE EXTENTS OF VACUUM TRUCK EXPLORATION.
3. THE HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83). THE VERTICAL DATUM IS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
4. BOLD TEXT AND LINES INDICATES PROPOSED WORK. LIGHT TEXT AND LINES INDICATES APPROXIMATE EXISTING CONDITIONS.
5. WETLAND RESOURCE AREAS WERE DELINEATED BY TIGHE & BOND ON APRIL 18, 2018.
6. SOIL BORINGS WERE PERFORMED BY NEW ENGLAND BORING CONTRACTORS ON AUGUST 9, 2018.
7. NOTIFY "DIGSAFE" AT 1-888-344-7233 TO ARRANGE FOR MARKING OUT EXISTING UNDERGROUND UTILITIES AT LEAST 72 HOURS (EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS) PRIOR TO BEGINNING EXCAVATION AT ANY GIVEN LOCATION. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR BE ALLOWED TO START ANY KIND OF EXCAVATION WORK PRIOR TO OBTAINING ALL THE NECESSARY INFORMATION REGARDING THE LOCATION OF UNDERGROUND UTILITIES AT THE SITE. ACCOMPLISH ALL EXCAVATION SO THAT UNDERGROUND UTILITIES OR STRUCTURES ARE NOT DAMAGED. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE INCURRED DURING EXCAVATION OPERATIONS. REPAIR ANY EXISTING PIPE OR UTILITY DAMAGED DURING CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER.
8. THE OWNER AND ENGINEER ASSUME NO RESPONSIBILITY FOR THE LOCATION OF EXISTING UTILITIES. THE ENGINEER AND OWNER MAKE NO GUARANTEE AS TO THE UNDERGROUND CONDITIONS THAT MAY BE ENCOUNTERED.
9. FIELD MEASURE TO VERIFY EXISTING AND CONTRACT INTERFACE DIMENSIONS, LOCATIONS, AND OTHER CONDITIONS.
10. TEST PITS TO LOCATE EXISTING UTILITIES ARE REQUIRED PRIOR TO CONSTRUCTION.
11. IF CHANGES TO THE DESIGN ARE PROPOSED, THE CHANGES SHALL BE SUBMITTED TO THE OWNER/ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
12. MAKE NECESSARY ARRANGEMENTS TO PERFORM ANY WORK NEAR THE OVERHEAD UTILITIES PRIOR TO THE START OF CONSTRUCTION.
13. EXISTING UTILITY POLES IN CLOSE PROXIMITY TO CONSTRUCTION MAY REQUIRE TEMPORARY SUPPORT BY THE UTILITY COMPANY. INCLUDE COST UNDER THE PRICES BID FOR THE VARIOUS ITEMS OF WORK.
14. NO OPEN TRENCHES WILL BE ALLOWED OVERNIGHT. THE USE OF ROAD PLATES TO PROTECT THE EXCAVATION WILL BE CONSIDERED UPON REQUEST, BUT BACKFILLING IS PREFERRED.
15. STORE FUEL, OIL, PAINT, OR OTHER HAZARDOUS MATERIALS IN A SECONDARY CONTAINER AND REMOVE FROM THE SITE TO A LOCKED INDOOR AREA WITH AN IMPERVIOUS FLOOR DURING NON-WORK HOURS.
16. IMMEDIATELY REPORT SPILLS OF OIL AND/OR HAZARDOUS MATERIALS (OHM) TO THE MASSDEP.
17. PROVIDE A SUFFICIENT SUPPLY OF ABSORBENT SPILL RESPONSE MATERIALS, SUCH AS BOOMS OR BLANKETS, AT THE CONSTRUCTION SITE AT ALL TIMES TO CLEAN UP POTENTIAL SPILLS OF HAZARDOUS MATERIALS.
18. FURNISH AND INSTALL TRAFFIC CONTROL/SAFETY DEVICES TO ENSURE SAFE VEHICULAR TRAFFIC THROUGH THE WORK AREA OR FOR SAFELY IMPLEMENTING DETOURS AROUND THE WORK AREA.

SURFACE RESTORATION NOTES

- 1. RESTORE ALL AREAS DISTURBED BY THE CONTRACTOR BEYOND THE LIMITS OF WORK TO ORIGINAL CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.
2. ALL PAVEMENT DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. PROTECT SURFACE FEATURES (E.G., WALLS, FENCES, MAIL BOXES, SIGNS, SIDEWALKS, CURBING, STAIRS, WALKWAYS, TREES, ECT.) FROM DAMAGE DURING CONSTRUCTION, INCLUDING PROVIDING TEMPORARY SUPPORTS, WHEN APPROPRIATE.
4. IF REMOVAL OF SURFACE FEATURES IS REQUIRED IN ORDER TO PERFORM THE PROPOSED WORK, REMOVE THOSE SITE FEATURES ONLY UPON APPROVAL OF ENGINEER. REPLACE ALL REMOVED SITE FEATURES; NEW ITEMS SHALL BE EQUAL OR BETTER IN QUALITY AND CONDITION TO THE ITEMS REMOVED.
5. EXISTING SURVEY MONUMENTS DISTURBED BY THE CONTRACTOR SHALL BE REPLACED BY A LAND SURVEYOR LICENSED IN THE STATE IN WHICH THE WORK IS PERFORMED AT NO ADDITIONAL COST TO THE OWNER. SEE SPECIAL PROVISIONS.
6. REPAIR DISTURBED PAVED SURFACES AT THE END OF EACH WORK WEEK, UNLESS OTHERWISE APPROVED/REQUIRED BY THE OWNER.

LEGEND

Table with columns for EXISTING and NEW. Lists various symbols and their corresponding descriptions such as IRON PIPE FOUND, UTILITY POLE, BURIED DRAIN PIPE, OVERHEAD UTILITY WIRES, FENCE (SIZE AND TYPE NOTED), GUARDRAIL, APPROXIMATE PROPERTY LINE, SIGN AND POST, TREE LINE, INDEX CONTOUR, INTERMEDIATE CONTOUR, STONEMALL, BORING, PROFILE ELEVATIONS, WETLAND FLAGS, WETLAND SYMBOL, LAND SUBJECT TO COASTAL STORM FLOWAGE, 100-FOOT BUFFER ZONE, 200-FOOT RIVERFRONT AREA, 30-FOOT NO DISTURBANCE ZONE, 50-FOOT NO BUILD ZONE, COASTAL BANK, TEMPORARY COFFERDAM, EROSION CONTROL BARRIERS, SURVEYED EDGE OF WATER (APRIL 2018), TEMPORARY TRAFFIC BARRIER, CATCH BASIN, DRAIN MANHOLE, ELECTRIC MANHOLE, TELEPHONE MANHOLE, SEWER MANHOLE, LIGHT, STORM DRAIN, GRAVITY SANITARY SEWER, WATER SERVICE, UNDERGROUND ELECTRIC, TELEPHONE SERVICE, GAS SERVICE.

ABBREVIATIONS

Table with columns for GENERAL and UTILITIES. Lists abbreviations and their full names, including ABAN (ABANDON), ADJ (ADJUST), APPROX (APPROXIMATE), ASTM (AMERICAN SOCIETY OF TESTING MATERIALS), BIT (BITUMINOUS), BO (BY OTHERS), BOS (BOTTOM OF SLOPE), BVW (BORDERING VEGETATIVE WETLANDS), CC (CONCRETE CURB), CCW (CEMENT CONCRETE WALK), CEM (CEMENT), CLF (CHAIN LINK FENCE), CMP (CORRUGATED METAL PIPE), CONC (CONCRETE), CS (CUT SPIKE), CW (CONCRETE WALK), DIM (DIMENSION), DPW (DEPARTMENT OF PUBLIC WORKS), EOP (EDGE OF PAVEMENT), EXIST (EXISTING), FEET/FOOT, FDN (FOUNDATION), FND (FOUND), GC (GRANITE CURB), GE (GRANITE EDGING), GRAN (GRANITE), HMA (HOT MIX ASPHALT), INCH, IFO (IN FRONT OF), IP (IRON PIN), LSCSF (LAND SUBJECT TO COASTAL STORM FLOWAGE), MASSDEP (MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION), MAX (MAXIMUM), MIN (MINIMUM), MHD (MASSACHUSETTS HIGHWAY DEPARTMENT), M (MHD MATERIAL REFERENCE), MISC (MISCELLANEOUS), N/F (NOW/FORMERLY), NTS (NOT TO SCALE), PCR (PEDESTRIAN CURB RAMP), PRC (PREFERRED), PROP (PROPOSED), PSF (POUNDS PER SQUARE FOOT), PSI (POUNDS PER SQUARE INCH), PVMT (PAVEMENT), QTY (QUANTITY), REMOD (REMODEL), REM (REMOVE), REQD (REQUIRED), RET (RETAIN), R&D (REMOVE AND DISPOSE), R&R (REMOVE AND RESET), R&S (REMOVE AND STACK), SB (STONE BOUND), SF (SQUARE FEET), SPKS (SURVEY SPIKE), TOS (TOP OF SLOPE), TYP (TYPICAL), VGC (VERTICAL GRANITE CURB), YD (YARD), AC (ASBESTOS CEMENT PIPE), ACCMP (ASPHALT COATED CORRUGATED METAL PIPE), CAP (CORRUGATED ALUMINUM PIPE), CB (CATCH BASIN), CI (CAST IRON PIPE), CIT (CHANGE IN TYPE), CMP (CORRUGATED METAL PIPE), CNO (COULD NOT OPEN), COND (CONDUIT), CPP (CORRUGATED PLASTIC PIPE), CS (CURB STOP), DIA (DIAMETER), DI (DUCTILE IRON PIPE), DMH (DRAIN MANHOLE), EMH (ELECTRIC MANHOLE), F&C (FRAME AND COVER), F&G (FRAME AND GRATE), GSO (GAS SHUT OFF), HH (HANDHOLE), HYD (HYDRANT), INV (INVERT ELEVATION), MJ (MECHANICAL JOINT), MW (MONITORING WELL), PVC (POLYVINYLCHLORIDE PIPE), RCP (REINFORCED CONCRETE PIPE), RP (RECORD PLAN), SC (STORM WATER TREATMENT UNIT), SD (STORM DRAIN LINE), SMH (SEWER MANHOLE), TSV&B (TAPPING SLEEVE, VALVE AND BOX), UP (UTILITY POLE), WG (WATER GATE), WSO (WATER SHUT OFF), ALIGNMENT/PROFILE, AD (ALGEBRAIC DIFFERENCE), R (CONSTRUCTION BASELINE), CC (CENTER OF CURVE), E (EAST), EL/ELEV (ELEVATION), GB (GRANITE BOUND), K (RATE OF VERTICAL CURVATURE), L (LENGTH), LT (LEFT), N (NORTH), OC (ON CENTER), PC (POINT OF CURVE), PCC (POINT OF COMPOUND CURVE), PK/SPIKE (SURVEY NAIL), R (PROPERTY LINE), PRC (POINT OF REVERSE CURVE), PT (POINT OF TANGENT), PVC (POINT OF VERTICAL CURVE), PVI (POINT OF VERTICAL INTERSECTION), PVCC (POINT OF VERTICAL COMPOUND CURVE), PVRC (POINT OF VERTICAL REVERSE CURVE), PVT (POINT OF VERTICAL TANGENT), R (RADIUS), ROW (RIGHT OF WAY), RT (RIGHT), S (SOUTH), STA (STATION), VC (VERTICAL CURVE), W (WEST).

100% Drawings Not For Construction

Central Street Bridge Replacement

Department of Public Works

MassDOT Bridge No. M-02-001 (CDL)

Town of Manchester-By-The-Sea, Massachusetts

Table with columns for MARK, DATE, and DESCRIPTION. Includes project information: PROJECT NO: M1476-011, DATE: JUNE 2024, FILE: M1476-011-G-001.dwg, DRAWN BY: AGB/DRF, CHECKED BY: EAO/BRB, APPROVED BY: DLM.

LEGEND, ABBREVIATIONS, AND GENERAL NOTES

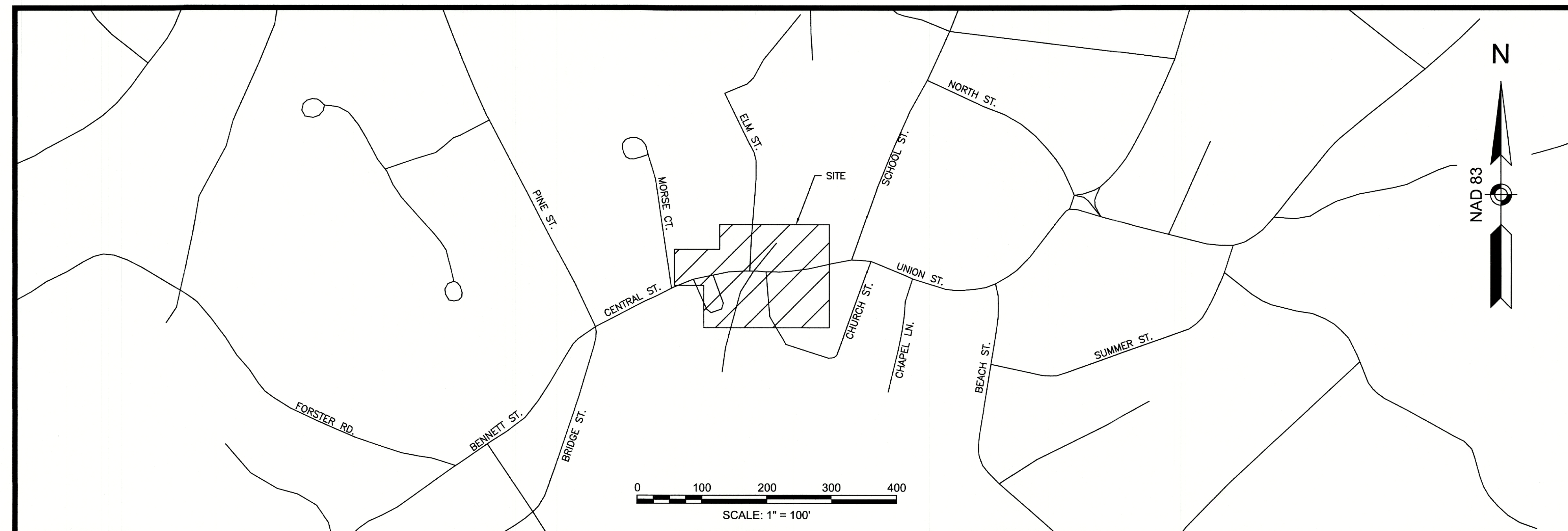
SCALE: NO SCALE

**MANCHESTER BY THE SEA  
CENTRAL STREET**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	X	X
PROJECT FILE NO.		XXXXXX	

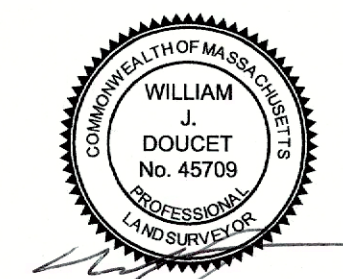
**TITLE SHEET, LEGEND & ABBREVIATIONS  
LEGEND**

	EXISTING RIGHT-OF-WAY LINE (SEE NOTE 3)
	APPROX. ABUTTERS LOT LINE (SEE NOTE 9)
	GAS LINE
	SEWER LINE
	TELEPHONE LINE
	WATER LINE
	UNDERGROUND ELECTRIC LINE
	SHRUB LINE
	OVERHEAD WIRE
	CHAIN-LINK FENCE
	HAND RAIL
	OTHER FENCE
	MAJOR CONTOUR LINE
	MINOR CONTOUR LINE
	RIVER BED MAJOR CONTOUR LINE (SEE NOTE 10)
	RIVER BED MINOR CONTOUR LINE (SEE NOTE 10)
	BRICK
	CONCRETE
	CRUSHED STONE
	LANDSCAPED AREA
	CATCH BASIN - SQUARE
	CLEANOUT
	DISK (CAVT, USC&GS, LAND COURT, ETC.)
	DRAIN MANHOLE
	ELECTRIC HANDHOLE
	ELECTRIC MANHOLE
	ELECTRIC METER
	FLAG POLE
	GAS GATE
	GAS METER
	GAS SHUTOFF VALVE
	FIRE HYDRANT
	LIGHT POLE
	OTHER MANHOLE
	SQUARE POST
	SEWER MANHOLE
	TELEPHONE MANHOLE
	TREE
	SIGN
	UTILITY POLE
	WATER GATE
	WATER SHUTOFF
	BITUMINOUS BERM
	CAST IRON PIPE
	CONCRETE
	COBBLESTONE
	DOUBLE YELLOW LINE
	DRAIN MANHOLE
	DOWN SPOUT
	DISK
	ELEVATION
	EDGE OF PAVEMENT
	EDGE OF TRAVELED WAY
	FINISHED FLOOR
	GRANITE
	HEADWALL
	LEAD PLUG WITH ESCUTCHEON PIN
	RETAINING
	SOLID WHITE LINE
	TYPICAL
	VERTICAL GRANITE CURB



**NOTES:**

- REFERENCE: TOWN OF MANCHESTER BY THE SEA. CENTRAL STREET BRIDGE OVER SAWMILL BROOK. DS PROJECT: 5521 & 6967
- FIELD SURVEY PERFORMED BY B.T. & T.M.M. DURING AUGUST 2018 USING A TRIMBLE S6 TOTAL STATION WITH A TRIMBLE TSC3 DATA COLLECTOR AND A SOKKIA B21 AUTO LEVEL. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS. ADDITIONAL FIELD SURVEY PERFORMED BY M.J.C. IN AUGUST 2018 USING A LEICA P40 HDS SCANNER. REGISTRATION ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS. ADDITIONAL FIELD SURVEY PERFORMED BY DOUCET SURVEY IN NOVEMBER 2021 & MARCH 2022 TO LOCATE RIGHT-OF-WAY MONUMENTATION. TOPOGRAPHIC DETAIL WAS NOT UPDATED DURING THIS EFFORT.
- THE EXISTING RIGHT-OF-WAY AS SHOWN HEREON IS BASED ON REFERENCE PLANS IN THE AREA, COUNTY FIELD NOTEBOOK #257 & #327, AND PHYSICAL EVIDENCE.
- HORIZONTAL DATUM BASED ON MASSACHUSETTS MAINLAND ZONE NAD83(2011) DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK.
- VERTICAL DATUM IS BASED ON NAVD88 DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK AND CALIBRATED TO THREE MASSDOT GEODETIC CONTROL STATIONS (REF. DS PROJECT 4536).
- PROPER FIELD PROCEDURES WERE FOLLOWED IN ORDER TO GENERATE CONTOURS AT (1') INTERVALS. ANY MODIFICATION OF THIS INTERVAL WILL DIMINISH THE INTEGRITY OF THE DATA, AND DOUCET SURVEY, LLC. WILL NOT BE RESPONSIBLE FOR ANY SUCH ALTERATION PERFORMED BY THE USER.
- THE ACCURACY OF MEASURED UTILITY INVERTS AND PIPE SIZES/TYPES IS SUBJECT TO NUMEROUS FIELD CONDITIONS, INCLUDING; THE ABILITY TO MAKE VISUAL OBSERVATIONS, DIRECT ACCESS TO THE VARIOUS ELEMENTS, MANHOLE CONFIGURATION, ETC.
- ALL ELECTRIC, GAS, TEL. WATER, SEWER AND DRAIN SERVICES ARE SHOWN IN SCHEMATIC FASHION, THEIR LOCATIONS ARE NOT PRECISE OR NECESSARILY ACCURATE. NO WORK WHATSOEVER SHALL BE UNDERTAKEN ON THIS SITE USING THIS PLAN TO LOCATE THE ABOVE SERVICES. CONSULT WITH THE PROPER AUTHORITIES CONCERNED WITH THE SUBJECT SERVICE LOCATIONS FOR INFORMATION REGARDING SUCH. CALL DIG-SAFE AT 1-888-DIG-SAFE.
- THE APPROXIMATE ABUTTER SIDELINES AS SHOWN HEREON ARE BASED ON REFERENCE PLANS IN THE AREA AND MASS.GOV OFFICE OF GEOGRAPHIC INFORMATION (MASSGIS).
- ELEVATIONS AND LOCATIONS SHOWN DEPICTING SPRING LINE ARE BASED ON DATA FROM LASER SCAN POINT CLOUD OF STONE ARCH CULVERT.
- VISIBLE UTILITY STRUCTURES (MANHOLES, CATCH BASINS, GAS & WATER VALVES, ETC.) WERE LOCATED BY INSTRUMENT SURVEY BY THIS OFFICE. THE CORRESPONDING STORMWATER DRAIN & SANITARY SEWER INVERT SIZE & ELEVATION IS PER SURVEY DONE BY THIS OFFICE. THE LOCATIONS OF THE REMAINING UNDERGROUND UTILITIES ARE BASED ON THE LOCATIONS OF S.U.E. PAINT MARKS (BY OTHERS - UNKNOWN) OBSERVED ON SITE AT THE TIME OF OUR SURVEY.



PREPARED BY: **DOUCET SURVEY**  
 Serving Your Professional Surveying & Mapping Needs  
 102 Kent Place, Newmarket, NH 03857 (603) 659-6560  
 2 Commerce Drive (Suite 202) Bedford, NH 03110 (603) 614-4060  
 10 Storer Street (Riverview Suite) Kennebunk, ME (207) 502-7005  
 http://www.doucetsurvey.com

REV.	COMMENTS	DATE
01	SMH INVERTS, ADD MISC. FEATURES	10/18/18
02	ADD REF. PLAN 19, MISC. UPDATES	11/09/18
03	ADD RIGHT-OF-WAY UPDATE NOTES	03/25/22

SCALE: 10 FEET TO THE INCH

FILE NAME: 5521A_SV	
FIELD BOOK NO: XXXX	
DRAWN BY: W.D.C.	CHECKED BY: W.J.D.
FIELD CHIEF: XXX	PARS. NO: XXXXXXXX

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
 PLAN OF TOPOGRAPHIC SURVEY OF  
**CENTRAL STREET**  
 (BRIDGE NO. M-02-001(8AM))  
 IN THE TOWN OF  
**MANCHESTER BY THE SEA**  
 AS ORDERED BY  
 MANCHESTER BY THE SEA  
 DEPARTMENT OF PUBLIC WORKS

DATE: \_\_\_\_\_ SHEET 1 OF 4

MANCHESTER BY THE SEA  
CENTRAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	X	X
PROJECT FILE NO.		XXXXXX	

TITLE SHEET, LEGEND & ABBREVIATIONS

REFERENCE PLANS:

- "PLAN OF A PORTION OF THE MAIN ROAD IN MANCHESTER SHOWING THE PROPOSED WIDENINGS" DONE BY CHARLES A. PUTNAM, DATED NOVEMBER 23, 1871. COUNTY OF ESSEX RECORD #1230.
- "PLAN OF A PORTION OF CENTRAL STREET AT THE JUNCTION OF SCHOOL STREET AND UNION STREET IN THE TOWN OF MANCHESTER AS ALTERED" DONE BY CLINTON C. BARKER COUNTY ENGINEER DATED SEPTEMBER 1947. S.E.D.R.D. PLAN #76-35.
- "PLAN OF A PORTION OF CENTRAL STREET FROM ELM STREET TO SCHOOL STREET IN THE TOWN OF MANCHESTER AS ALTERED" BY JOHN O. MARMAALA COUNTY ENGINEER DATED SEPTEMBER 1953. S.E.D.R.D. PLAN #84-8.
- "PLAN OF LAND IN MANCHESTER, MASS FOR JEAN E. GRELET" DATED MARCH 20, 1959 BY DANA F. PERKINS & SONS, INC. S.E.D.R.D. PLAN #92-74.
- "PLAN OF A PORTION OF ELM STREET FROM CENTRAL STREET 700 FEET NORTHERLY IN THE TOWN OF MANCHESTER AS LAID OUT" BY EARL H. PAGE DATED OCTOBER 25, 1966. S.E.D.R.D. PLAN #107-91.
- "PLAN OF LAND IN MANCHESTER, MASSACHUSETTS COUNTY OF ESSEX FOR ANN N. KILEY & DOROTHY B. KILEY" DATED FEBRUARY 14, 1985. DONE BY W. C. CAMMETT ENGINEERING, INC. S.E.D.R.D. PLAN #233-32.
- "SITE PLAN 27 CENTRAL ST. CONDOMINIUMS" DONE BY W. C. CAMMETT ENGINEERING, INC. DATED FEBRUARY 1985. S.E.D.R.D. PLAN #233-33.
- "PLAN OF LAND BELONGING TO SAMUEL KNIGHT SONS CO." DATED SEPTEMBER 27, 1946 BY RICHARD A. WIRLING. S.E.D.R.D. PLAN #1946-824.
- "PLAN OF LAND IN MANCHESTER TO BE CONVEYED FROM F. J. MERRILL TO THE CRICKET PRESS, INC." FEBRUARY 15, 1923. BY RAYMOND C. ALLEN. S.E.D.R.D. PLAN #2549-181.
- "LAND OF JOHN W. MARSHALL HEIRS" DATED OCTOBER 28, 1944 BY WARREN A. CROMBIE. S.E.D.R.D. PLAN #3465-1.
- "PLAN OF LAND BELONGING TO SAMUEL KNIGHT SONS, CO." DATED DECEMBER 10, 1946 BY RICHARD A. WIRLING. S.E.D.R.D. PLAN #3521-600.
- "PROPERTY OF JEAN E. GRELET, CENTRAL ST, MANCHESTER MASS" DATED NOVEMBER 8, 1952 S.E.D.R.D. PLAN #3925-1.
- "PLAN OF LAND IN MANCHESTER PROPERTY OF SEA ROCK ESTATE, INC." DATED DECEMBER 18, 1970. BY ESSEX SURVEY SERVICE, INC. S.E.D.R.D. PLAN #5765-800.
- "PLAN OF LAND IN MANCHESTER PROPERTY OF SEA ROCK ESTATE, INC." DATED MAY 3, 1971 BY ESSEX SURVEY SERVICE, INC. S.E.D.R.D. PLAN #5835-1.
- "PLAN OF LAND IN MANCHESTER PEELE HOUSE SQUARE" FOR SEA ROCK ESTATE, INC. DATED JULY 11, 1972 BY ESSEX SURVEY SERVICE, INC. S.E.D.R.D. PLAN #5961-297.
- "PLAN OF LAND IN MANCHESTER PEELE HOUSE SQUARE" FOR SEA ROCK ESTATE, INC. DATED MAY 8, 1973. BY ESSEX SURVEY SERVICE, INC. S.E.D.R.D. PLAN #6025-1.
- "PLAN OF LAND IN MANCHESTER PROPERTY OF ARTHUR A. & MARJOIRE SECHER" DATED JUNE 11, 1984. BY ESSEX SURVEY SERVICE, INC. S.E.D.R.D. PLAN #7688-133.
- "PLAN TO ACCOMPANY PETITION OF THE TOWN OF MANCHESTER. TO CONSTRUCT A RETAINING WALL AND FILL SOLID MANCHESTER HARBOR" DATED NOVEMBER 3, 1921. BY RAYMOND C. ALLEN. S.E.D.R.D. PLAN #36-31.
- PLAN TITLED "MANCHESTER-BY-THE-SEA DOWNTOWN ATLAS, MANCHESTER-BY-THE-SEA, MASSACHUSETTS, ESSEX COUNTY" PREPARED BY DGT SURVEY GROUP DATED 6-10-2015.

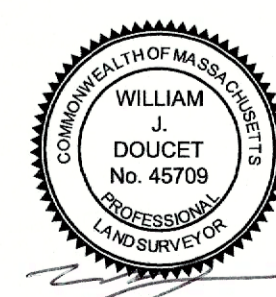
DRAINAGE STRUCTURES	
CB 1104	RIM ELEV.=14.2'
(A) 4" CIP INV.=12.1' (4" METAL**)	
(B) 10" CMP INV.=10.5' (8"**)	
CB 1153	RIM ELEV.=10.1'
SUMP ELEV.=7.8'	
CONC. CHANNEL TO OUTFALL	
CB 1196	RIM ELEV.=9.2'
(OUTFALL) 12" CLAY INV.=5.3' (10" CONC**)	
(A) 12" CLAY INV.=5.2' (12"**)	
CB 1215	RIM ELEV.=9.2'
(122B) 15" CMP INV.=2.6'	
(A) 8" METAL INV.=1.6'	
(B) 8" METAL INV.=1.5'	
DMH 1228	RIM ELEV.=10.1'
(1245) 10" CLAY INV.=6.4' (10" CLAY**)	
(1215) 15" CMP INV.=5.5'	
DMH 1245	RIM ELEV.=11.5'
(1215) 12" PVC INV.=9.3' (12" PVC**)	
(A) VERY RECESSED (12" CLAY FROM CB 1246**)	
WATER ELEV.=9.3'	
SUMP ELEV.=8.3'	
CB 1246	RIM ELEV.=11.2'
(A) 12" UNKN INV.=9.6'	
(10" OR 12" CLAY TO DMH 1245**)	

\*\*INDICATES PIPE SIZE/DIA. INFO.  
IS PER REF. PLAN 19


SEWER STRUCTURES	
SMH 1081	RIM ELEV.=12.4'
CC=-1.1'	
(1155) UNKN BC=-1.2' (12" PIPE**)	
(1109) UNKN BC=-1.3' (15" PIPE**)	
SMH 1109	RIM ELEV.=14.6'
(1081) 15" UNKN INV.=2.1' (15" PIPE**)	
(A) 15" UNKN INV.=2.6'	
(B) 15" UNKN INV.=2.7' (18" PIPE**)	
SMH 1155	RIM ELEV.=10.2'
(A) 4" PVC INV.=4.7'	
(B) 4" PVC INV.=0'	
(C) UNKN INV.=0.3' (6" PIPE**)	
(1248) UNKN INV.=0.6' (15" PIPE**)	
(1081) UNKN INV.=0.6' (12" PIPE**)	
CC=-0.6'	
SMH 1248	RIM ELEV.=13.7'
(A) 8" UNKN INV.=6.7'	
(B) 8" UNKN INV.=0.1'	
(1155) 12" UNKN INV.=0.3' (15" PIPE**)	
(C) 12" UNKN INV.=0.4' (12" PIPE**)	
(D) 12" UNKN INV.=0.4'	

\*\*INDICATES PIPE SIZE/DIA. INFO.  
IS PER REF. PLAN 19

OTHER STRUCTURES	
MH 1063	RIM ELEV.=11.5'
SUMP ELEV.=6.8'	
DRY NO PIPES W/ WATER SHUT OFF	
MH 1550	RIM ELEV.=13.8'
SUMP ELEV.=9.9'	
DRY NO PIPES W/ ELECTRIC METER AND CHANNEL TO FOUNTAIN	



REVISIONS		
REV.	COMMENTS	DATE
01	SMH INVERTS, ADD MISC. FEATURES	10/18/18
02	ADD REF. PLAN 19, MISC. UPDATES	11/09/18
03	ADD RIGHT-OF-WAY UPDATE NOTES	03/25/22

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SCALE: 10 FEET TO THE INCH

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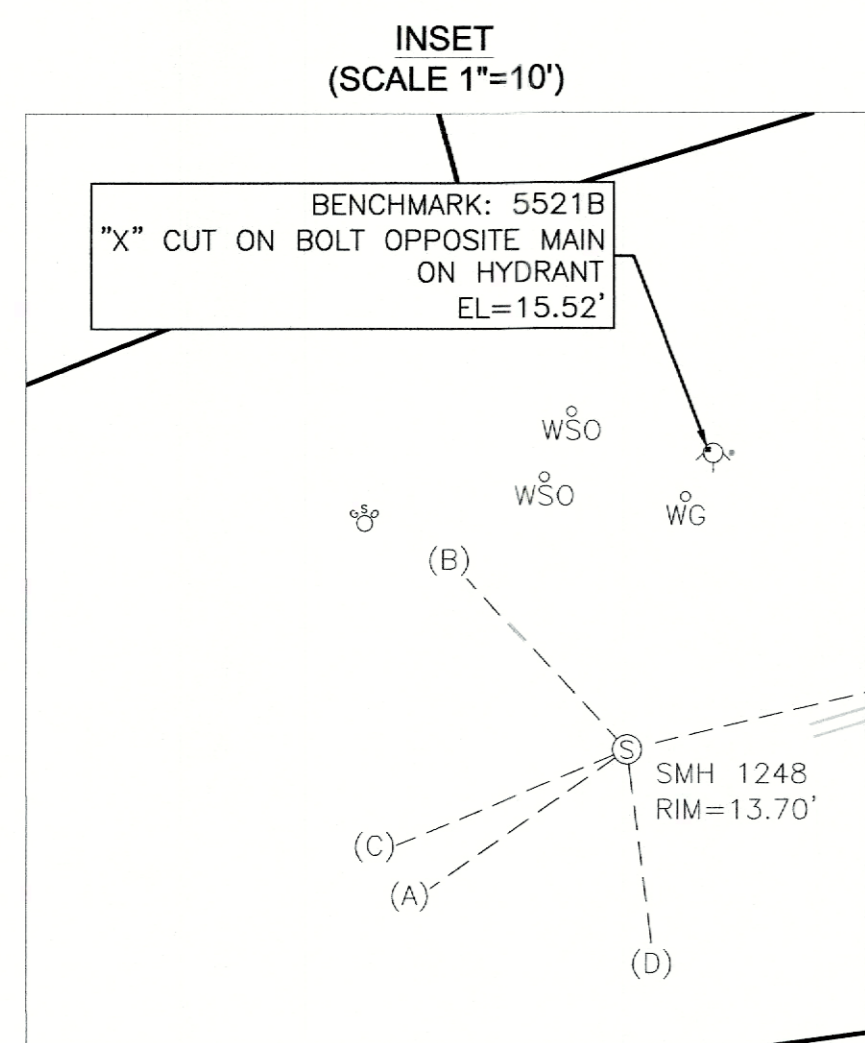
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
 PLAN OF TOPOGRAPHIC SURVEY OF  
**CENTRAL STREET**  
 (BRIDGE NO. M-02-001(8AM))  
 IN THE TOWN OF  
**MANCHESTER BY THE SEA**  
 AS ORDERED BY  
 MANCHESTER BY THE SEA  
 DEPARTMENT OF PUBLIC WORKS

DATE: \_\_\_\_\_ SHEET 2 OF 4

MANCHESTER BY THE SEA  
CENTRAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	X	X
PROJECT FILE NO.		XXXXXX	

SURVEY BASEPLAN



TAX MAP 53, LOT 17  
29 CENTRAL STREET CONDOMINIUM  
40 BEACH ST  
MANCHESTER, MA 01944  
S.E.D.R.D. BOOK 9744, PAGE 483

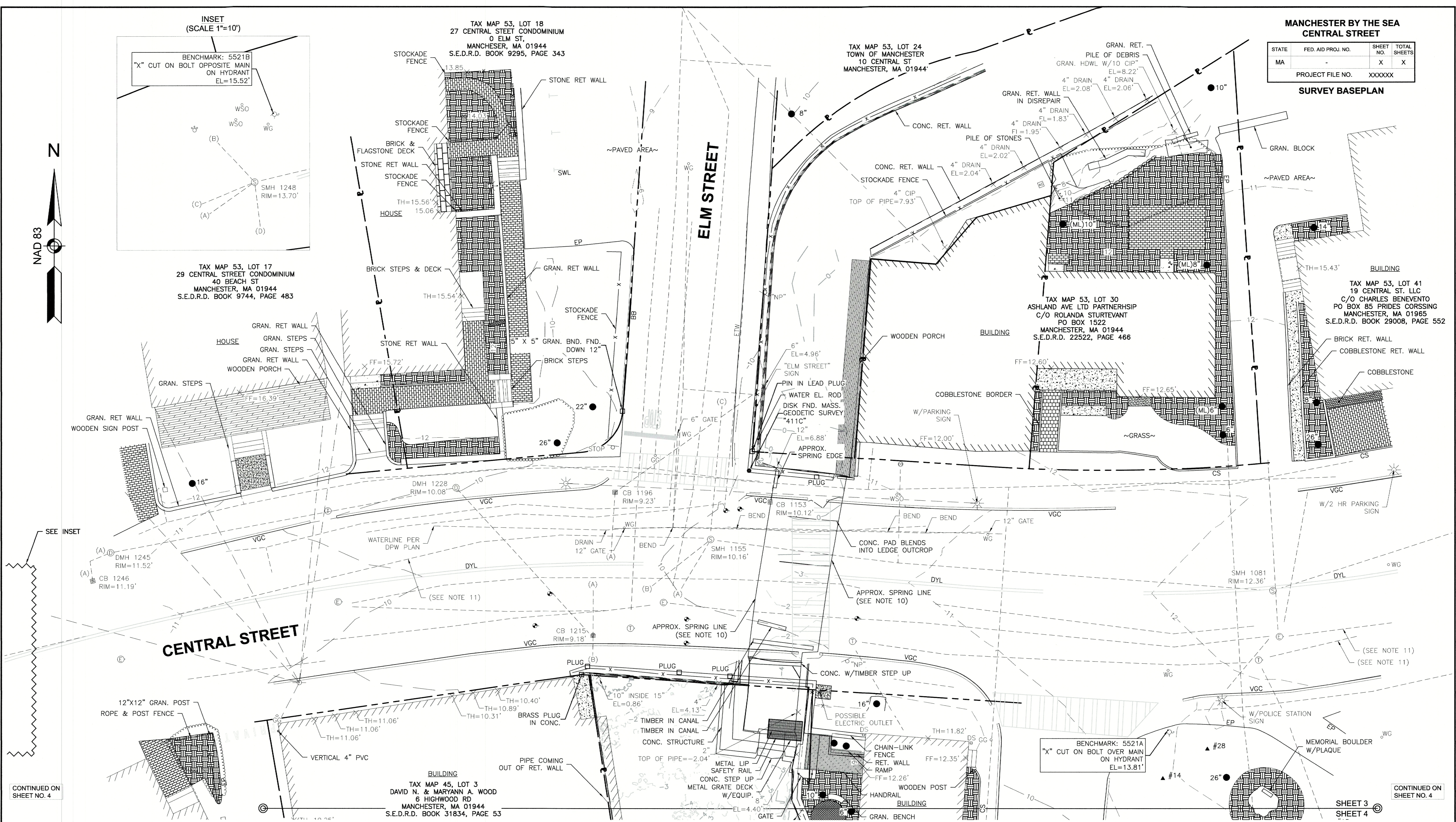
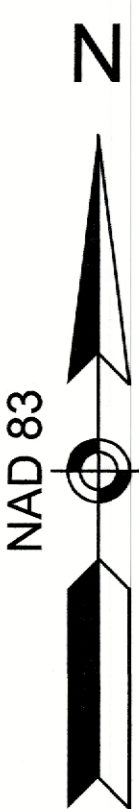
TAX MAP 53, LOT 18  
27 CENTRAL STREET CONDOMINIUM  
0 ELM ST.  
MANCHESTER, MA 01944  
S.E.D.R.D. BOOK 9295, PAGE 343

TAX MAP 53, LOT 24  
TOWN OF MANCHESTER  
10 CENTRAL ST  
MANCHESTER, MA 01944

TAX MAP 53, LOT 30  
ASHLAND AVE LTD PARTNERHSIP  
C/O ROLANDA STURTEVANT  
PO BOX 1522  
MANCHESTER, MA 01944  
S.E.D.R.D. 22522, PAGE 466

TAX MAP 53, LOT 41  
19 CENTRAL ST. LLC  
C/O CHARLES BENEVENTO  
PO BOX 85 PRIDES CORSSING  
MANCHESTER, MA 01965  
S.E.D.R.D. BOOK 29008, PAGE 552

NAD 83



CENTRAL STREET

ELM STREET

12"x12" GRAN. POST ROPE & POST FENCE

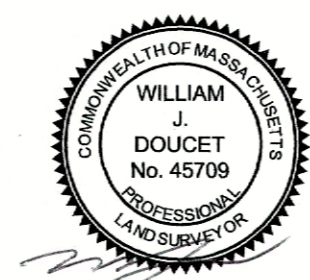
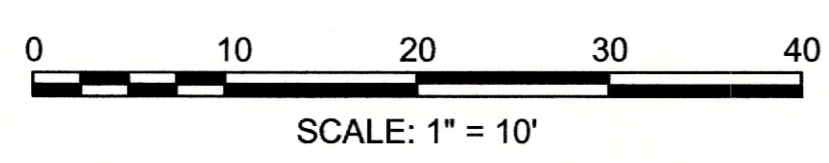
BUILDING  
TAX MAP 45, LOT 3  
DAVID N. & MARYANN A. WOOD  
6 HIGHWOOD RD  
MANCHESTER, MA 01944  
S.E.D.R.D. BOOK 31834, PAGE 53

BENCHMARK: 5521A  
"X" CUT ON BOLT OVER MAIN ON HYDRANT  
EL=13.81'

SHEET 3  
SHEET 4

CONTINUED ON SHEET NO. 4

CONTINUED ON SHEET NO. 4



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REV.	COMMENTS	DATE
01	SMH INVERTS, ADD MISC. FEATURES	10/18/18
02	ADD REF. PLAN 19, MISC. UPDATES	11/09/18
03	ADD RIGHT-OF-WAY UPDATE NOTES	03/25/22

SCALE: 10 FEET TO THE INCH

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FIELD BOOK NO: XXXX	
DRAWN BY: W.D.C.	CHECKED BY: W.J.D.
FIELD CHIEF: XXX	PARS. NO: XXXXXXX

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
 PLAN OF TOPOGRAPHIC SURVEY OF  
**CENTRAL STREET**

(BRIDGE NO. M-02-001(8AM))

IN THE TOWN OF

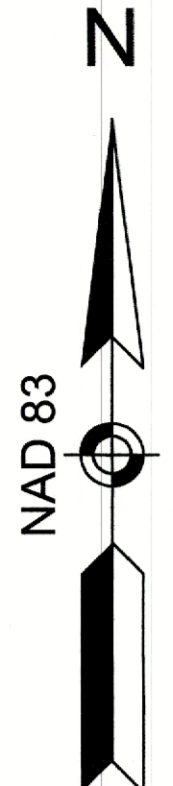
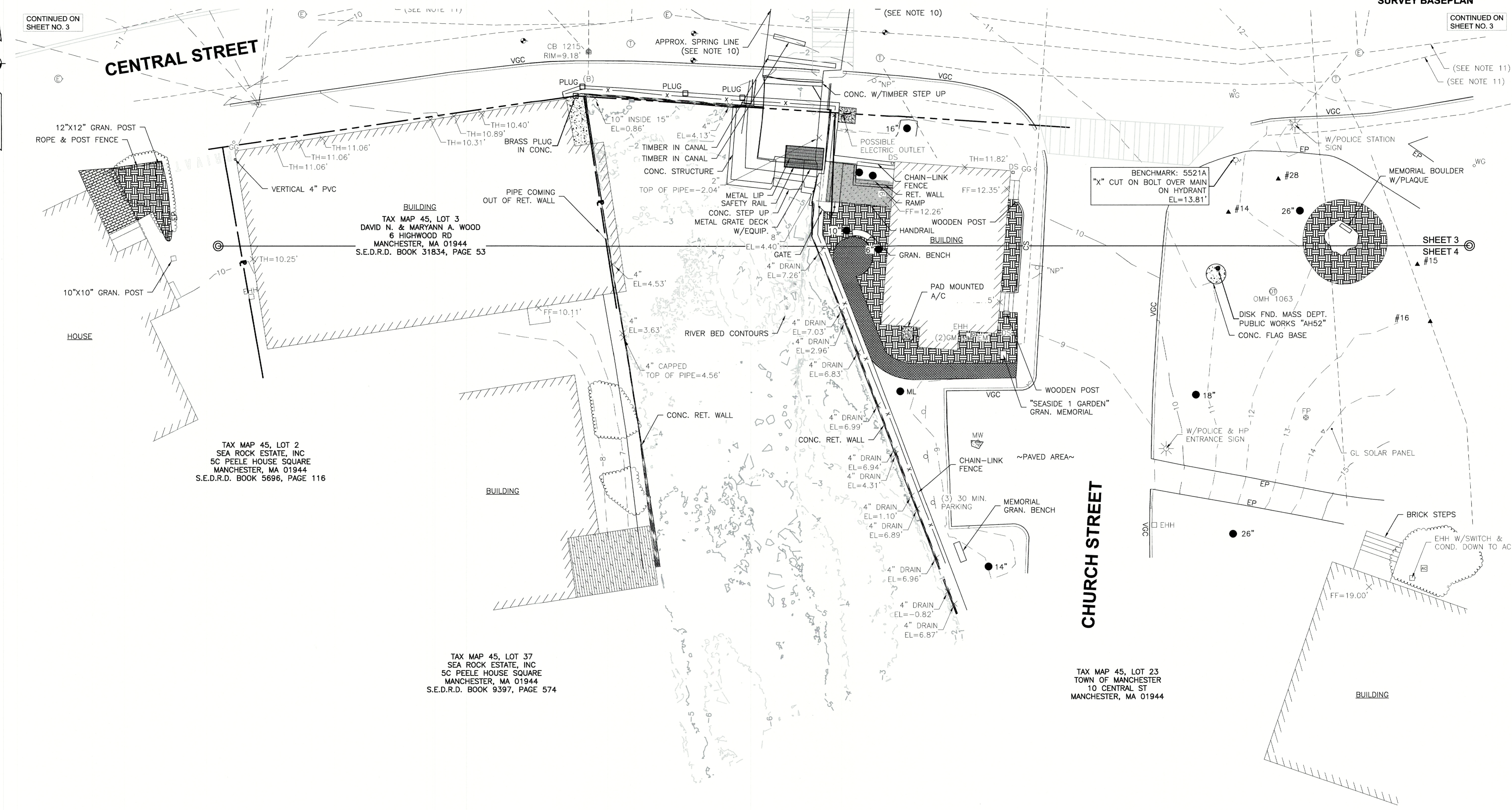
MANCHESTER BY THE SEA

AS ORDERED BY  
 MANCHESTER BY THE SEA  
 DEPTPARTMENT OF PUBLIC WORKS

**MANCHESTER BY THE SEA  
CENTRAL STREET**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	X	X
PROJECT FILE NO. XXXXXX		XXXXXX	

**SURVEY BASEPLAN**



CONTINUED ON SHEET NO. 3

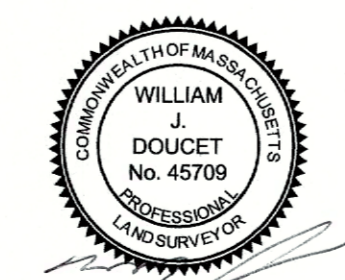
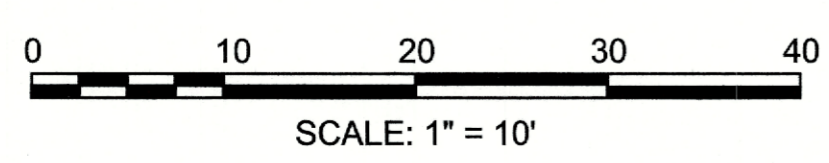
CONTINUED ON SHEET NO. 3

TAX MAP 45, LOT 2  
SEA ROCK ESTATE, INC  
5C PEELE HOUSE SQUARE  
MANCHESTER, MA 01944  
S.E.D.R.D. BOOK 5696, PAGE 116

**BUILDING**  
TAX MAP 45, LOT 3  
DAVID N. & MARYANN A. WOOD  
6 HIGHWOOD RD  
MANCHESTER, MA 01944  
S.E.D.R.D. BOOK 31834, PAGE 53

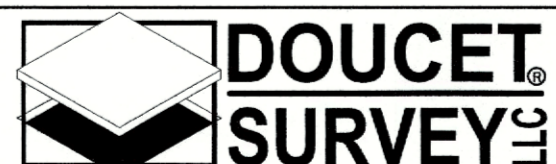
TAX MAP 45, LOT 37  
SEA ROCK ESTATE, INC  
5C PEELE HOUSE SQUARE  
MANCHESTER, MA 01944  
S.E.D.R.D. BOOK 9397, PAGE 574

TAX MAP 45, LOT 23  
TOWN OF MANCHESTER  
10 CENTRAL ST  
MANCHESTER, MA 01944



REVISIONS		
REV.	COMMENTS	DATE
01	SMH INVERTS, ADD MISC. FEATURES	10/18/18
02	ADD REF. PLAN 19, MISC. UPDATES	11/09/18
03	ADD RIGHT-OF-WAY UPDATE NOTES	03/25/22

SCALE: 10 FEET TO THE INCH



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FILE NAME: 5521A\_SV  
FIELD BOOK NO.: XXXX  
DRAWN BY: W.D.C. CHECKED BY: W.J.D.  
FIELD CHIEF: XXX PARS. NO: XXXXXX

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
PLAN OF TOPOGRAPHIC SURVEY OF  
**CENTRAL STREET**

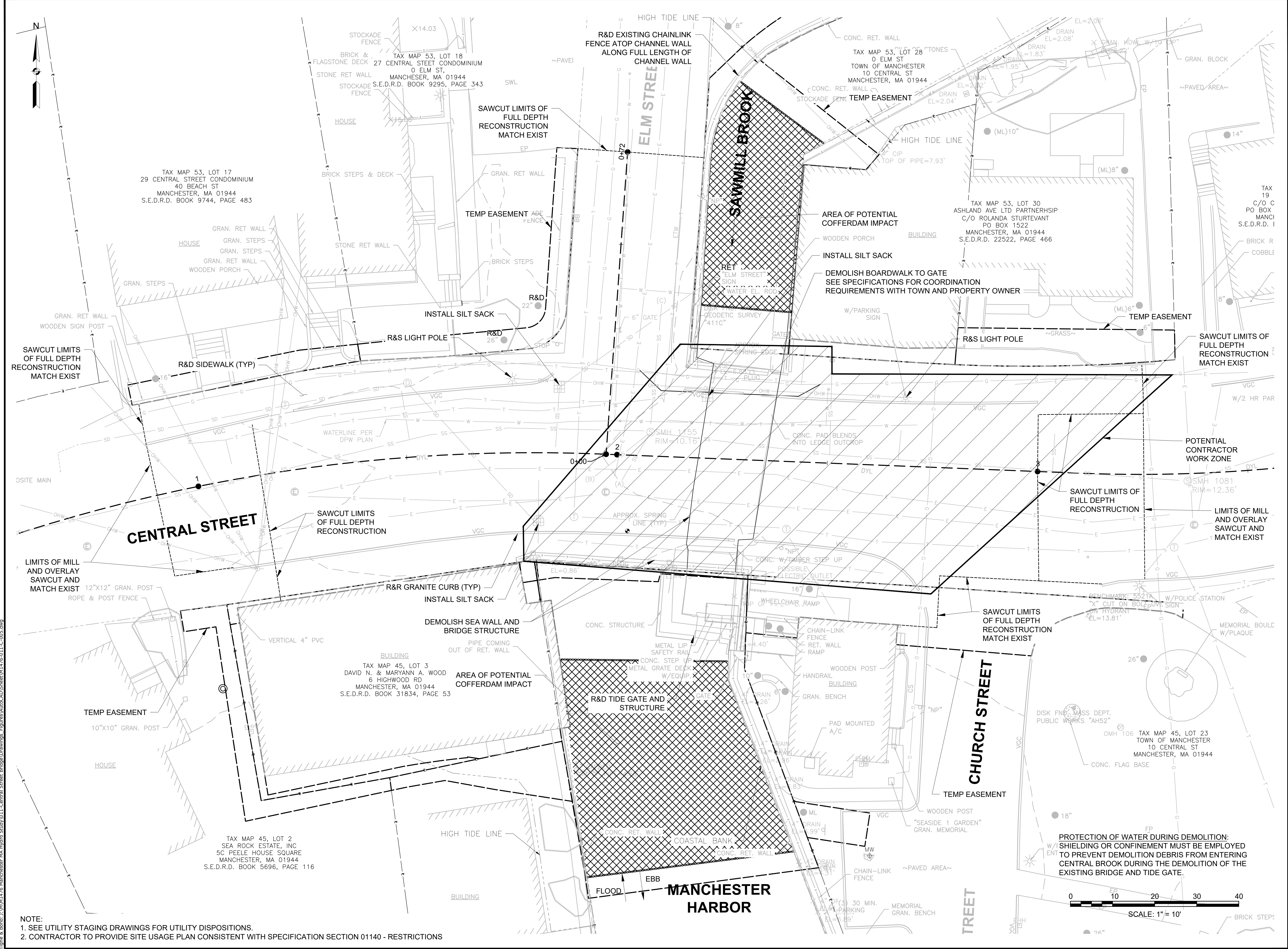
(BRIDGE NO. M-02-001(8AM))

IN THE TOWN OF

**MANCHESTER BY THE SEA**

AS ORDERED BY  
**MANCHESTER BY THE SEA**  
DEPARTMENT OF PUBLIC WORKS

DATE: SHEET 4 OF 4



NOTE:  
 1. SEE UTILITY STAGING DRAWINGS FOR UTILITY DISPOSITIONS.  
 2. CONTRACTOR TO PROVIDE SITE USAGE PLAN CONSISTENT WITH SPECIFICATION SECTION 01140 - RESTRICTIONS

**100%  
 Drawings  
 Not For  
 Construction**

**Central Street  
 Bridge  
 Replacement**

Department of  
 Public Works

MassDOT Bridge No.  
 M-02-001 (CDL)

Town of  
 Manchester-By-  
 The-Sea,  
 Massachusetts

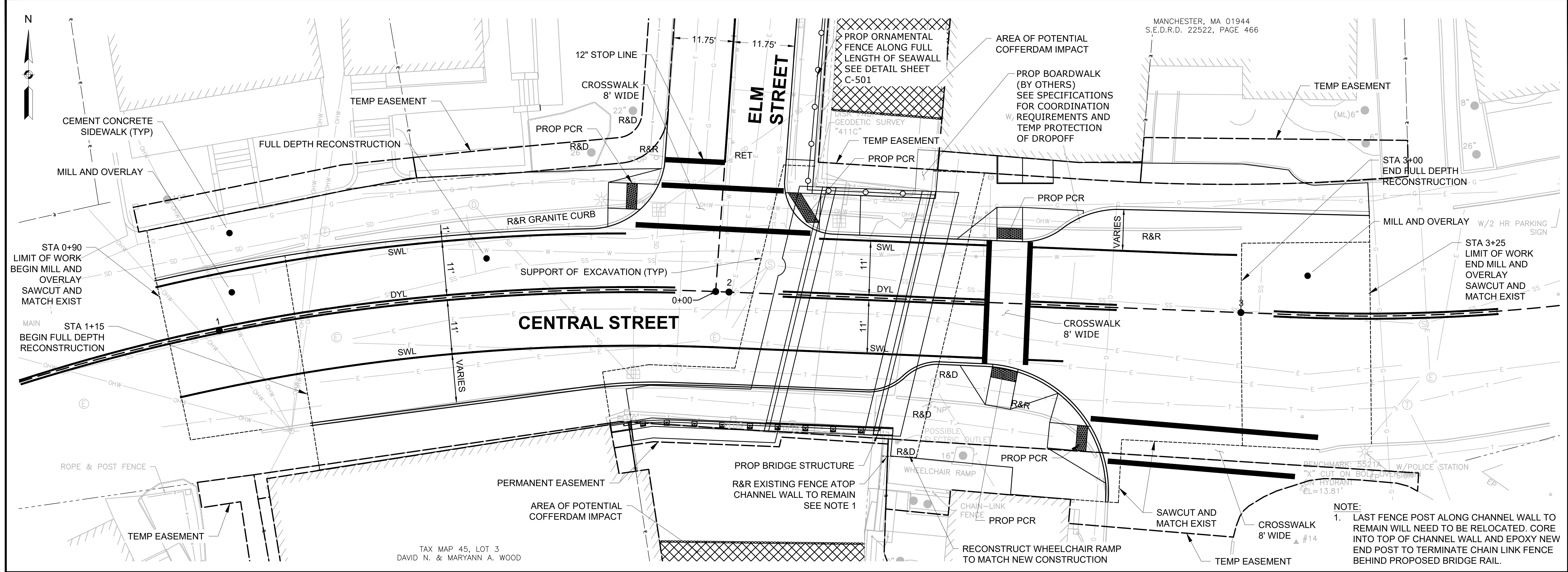
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DATE:	JUNE 2024	
FILE:	M1476-011-C-005.dwg	
DRAWN BY:	AGB/DRF	
CHECKED:	EAO/BRB	
APPROVED:	DLM	

DEMOLITION AND SITE  
 PREPARATION PLAN

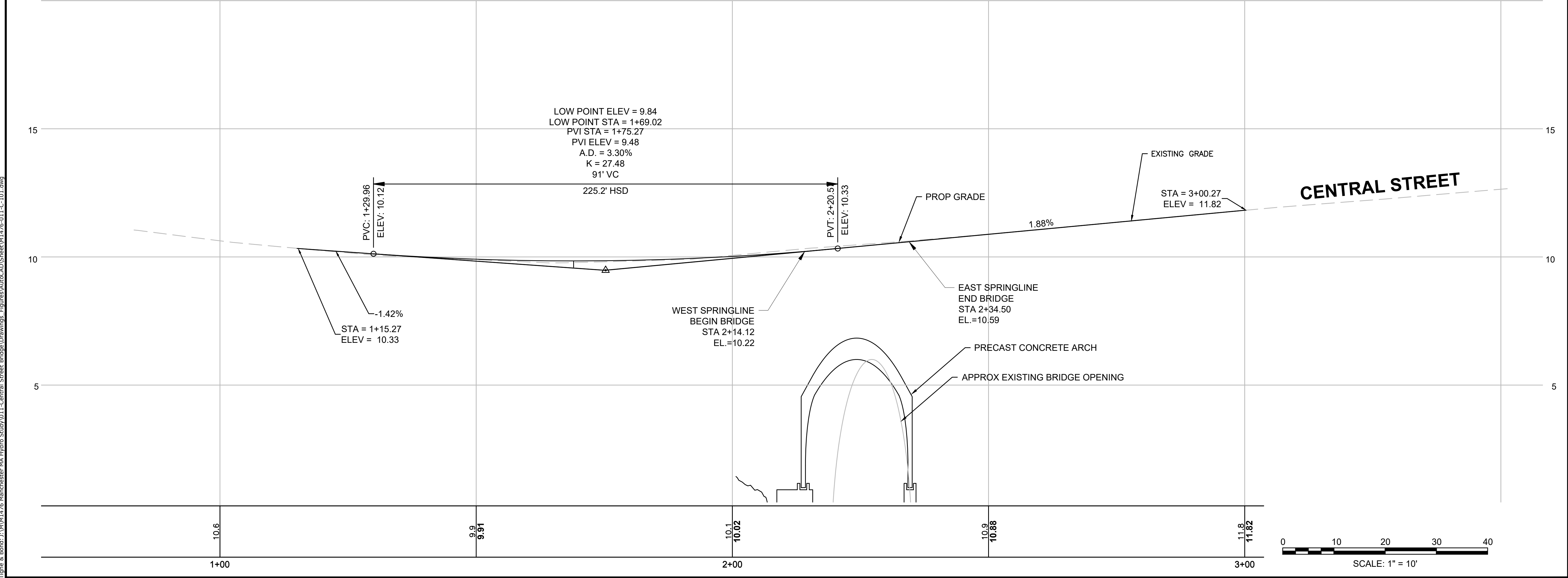
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**C-005**  
 SHEET 7 OF 51

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**100% Drawings Not For Construction**



**Central Street Bridge Replacement**

Department of Public Works

MassDOT Bridge No. M-02-001 (CDL)

Town of Manchester-By-The-Sea, Massachusetts

MARK	DATE	DESCRIPTION
PROJECT NO:	M1476-011	
DATE:	JUNE 2024	
FILE:	M1476-011-C-101.dwg	
DRAWN BY:	AGB/DRF	
CHECKED:	EAO/BRB	
APPROVED:	DLM	

SITE PLAN AND PROFILE

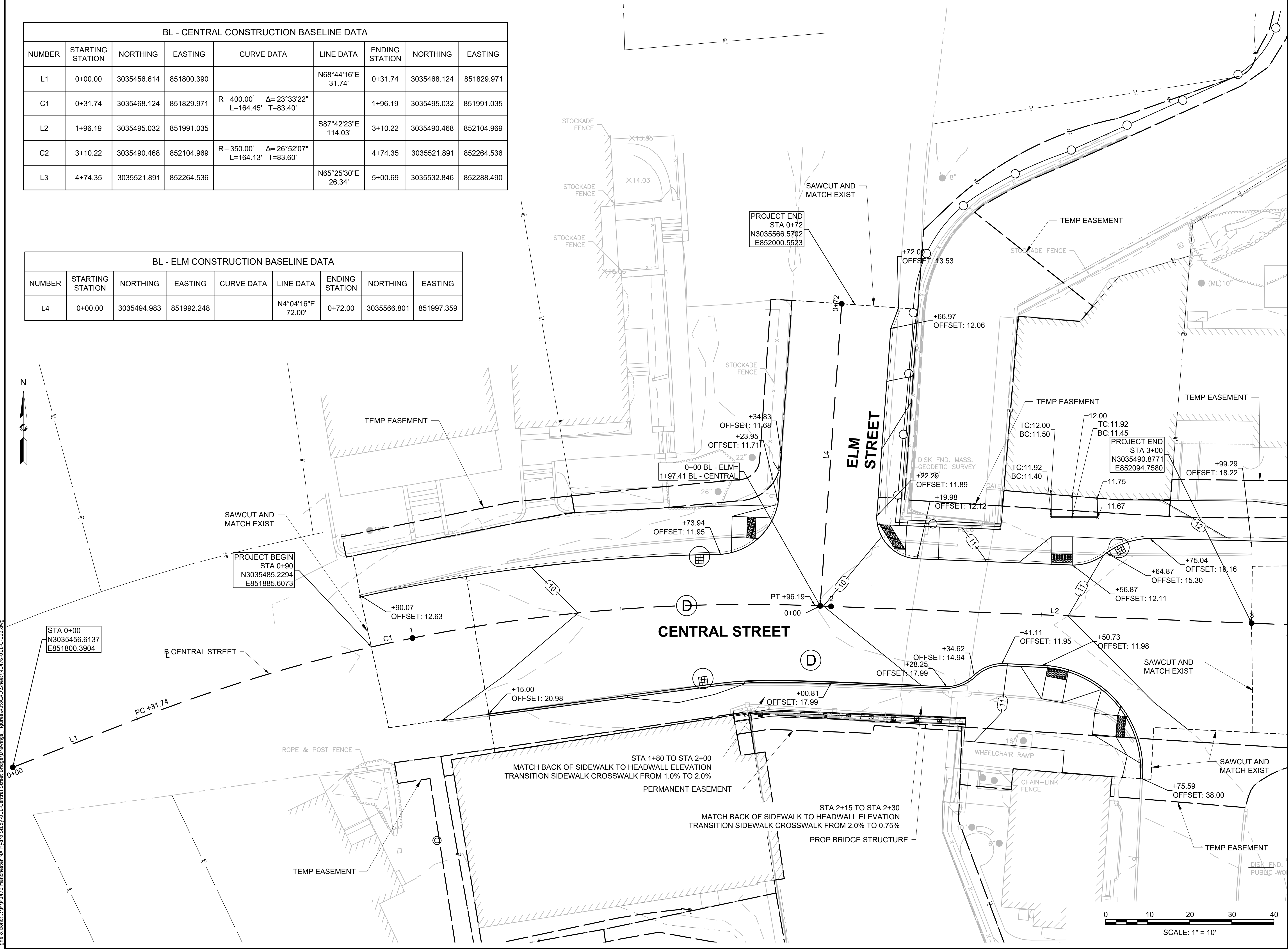
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BL - CENTRAL CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	0+00.00	3035456.614	851800.390		N68°44'16"E 31.74'	0+31.74	3035468.124	851829.971
C1	0+31.74	3035468.124	851829.971	R= 400.00' Δ= 23°33'22" L=164.45' T=83.40'		1+96.19	3035495.032	851991.035
L2	1+96.19	3035495.032	851991.035		S87°42'23"E 114.03'	3+10.22	3035490.468	852104.969
C2	3+10.22	3035490.468	852104.969	R= 350.00' Δ= 26°52'07" L=164.13' T=83.60'		4+74.35	3035521.891	852264.536
L3	4+74.35	3035521.891	852264.536		N65°25'30"E 26.34'	5+00.69	3035532.846	852288.490

BL - ELM CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L4	0+00.00	3035494.983	851992.248		N4°04'16"E 72.00'	0+72.00	3035566.801	851997.359



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**Central Street  
Bridge  
Replacement**

Department of  
Public Works

MassDOT Bridge No.  
M-02-001 (CDL)

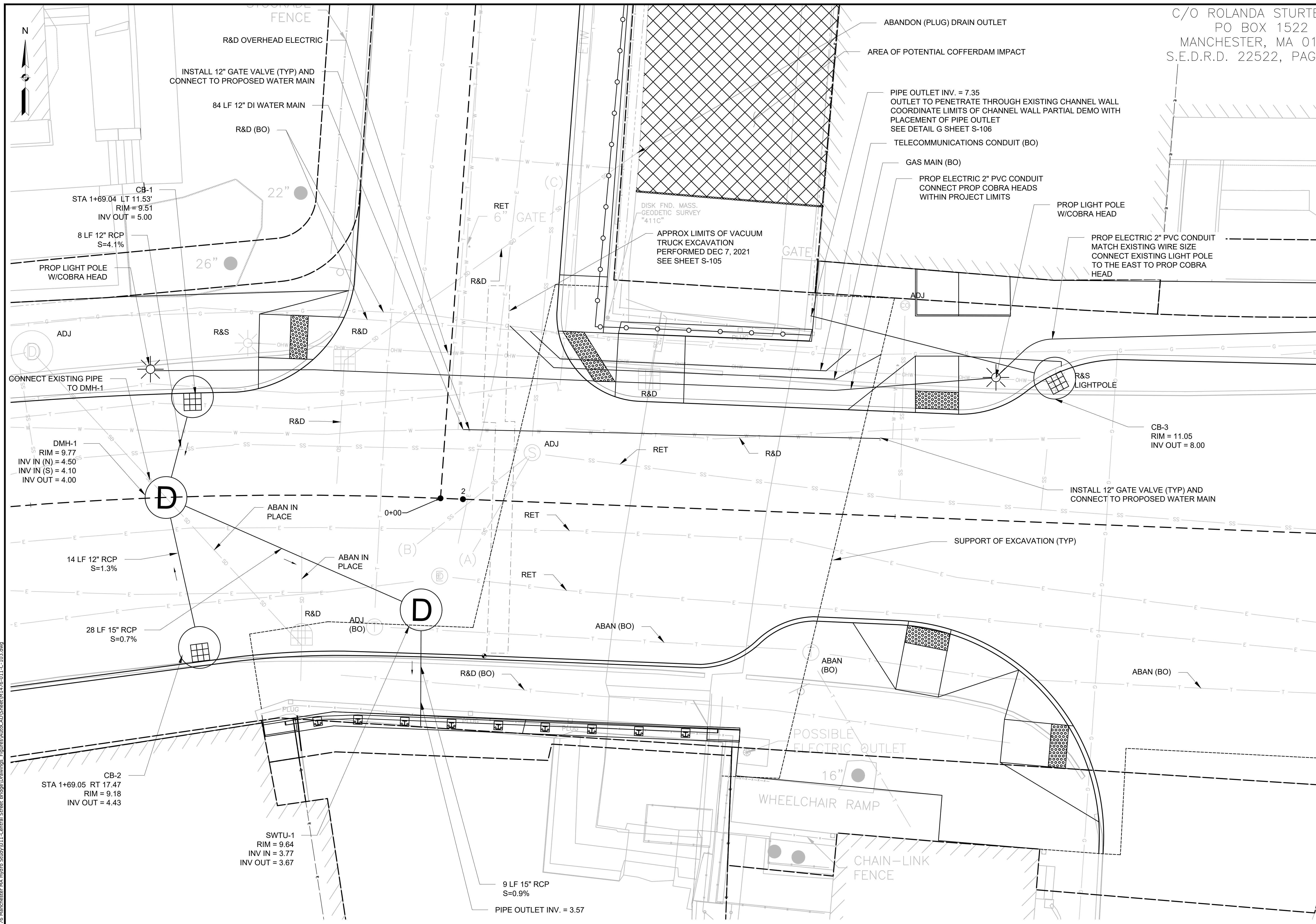
Town of  
Manchester-By-  
The-Sea,  
Massachusetts

MARK	DATE	DESCRIPTION
PROJECT NO:	M1476-011	
DATE:	JUNE 2024	
FILE:	M1476-011-C-102.dwg	
DRAWN BY:	AGB/DRF	
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APPROVED:	DLM	

GRADING AND ALIGNMENT PLAN

SCALE: 1"=10'

Date Saved: 6/25/2024  
 User: J. Bond  
 Project: M1476-011-C-102.dwg  
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100%  
Drawings  
Not For  
Construction

Central Street  
Bridge  
Replacement

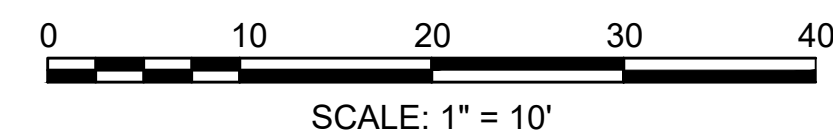
Department of  
Public Works

MassDOT Bridge No.  
M-02-001 (CDL)

Town of  
Manchester-By-  
The-Sea,  
Massachusetts

MARK	DATE	DESCRIPTION
PROJECT NO:	M1476-011	
DATE:	JUNE 2024	
FILE:	M1476-011-C-103.dwg	
DRAWN BY:	AGB/DRF	
CHECKED BY:	EAO/BRB	
APPROVED:	DLM	

UTILITY PLAN

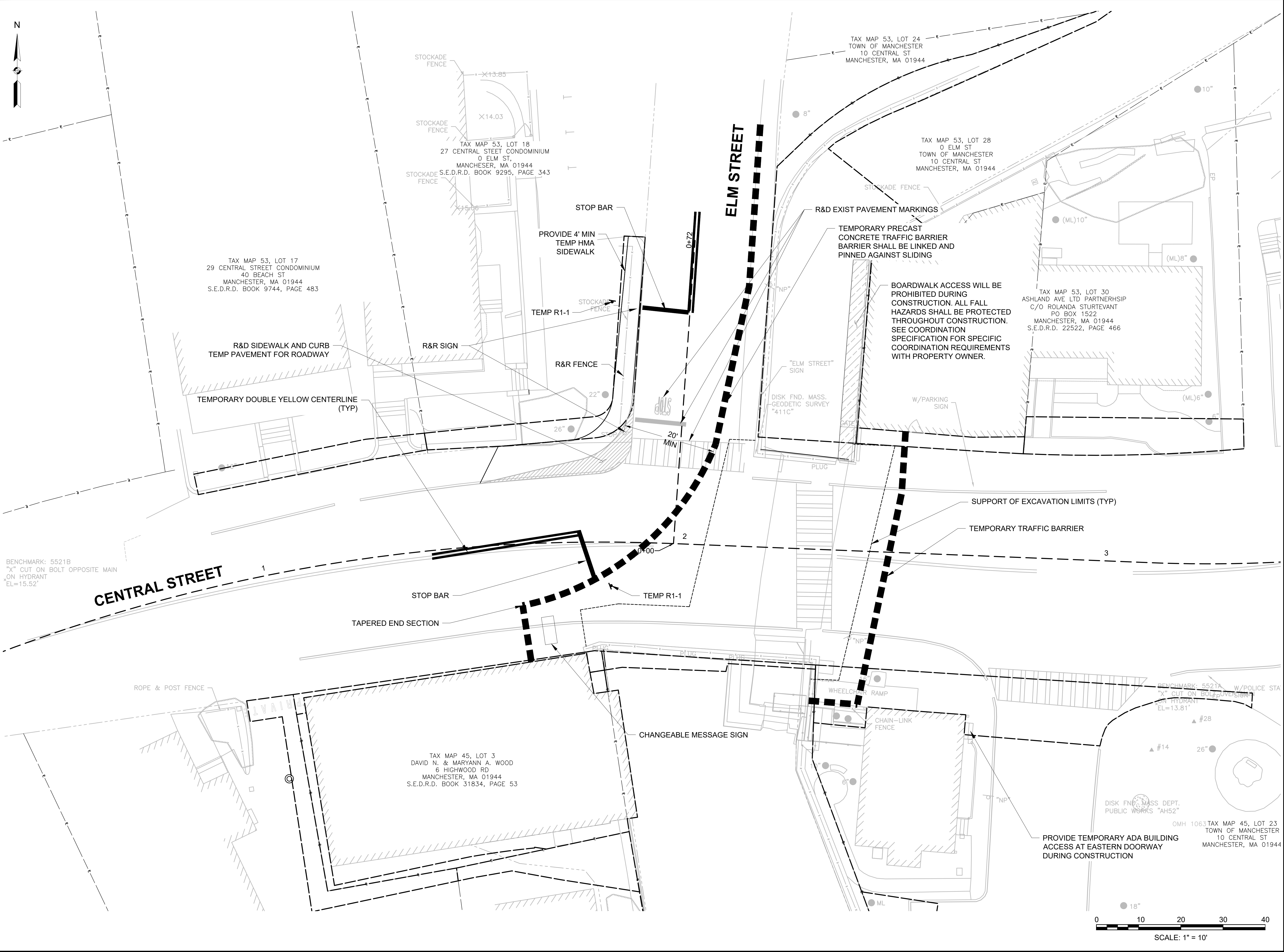


SCALE: 1" = 10'

C-103  
SHEET 10 OF 51

NOTE:  
1. PROPOSED UTILITY LAYOUT SUBJECT TO COORDINATION AND DESIGN BY UTILITY COMPANIES.  
EXISTING UTILITIES SHOWN BASED ON LIMITED INFORMATION AVAILABLE FROM SURVEY AND  
UTILITY RECORDS. CONTRACTOR TO CONFIRM LOCATION.

Plot: Saved: 6/25/2024 11:19:09 AM By: D. Kelly  
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**Central Street Bridge Replacement**

Department of Public Works

MassDOT Bridge No. M-02-001 (CDL)

Town of Manchester-By-The-Sea, Massachusetts

MARK	DATE	DESCRIPTION
PROJECT NO:	M1476-011	
DATE:	JUNE 2024	
FILE:	M1476-011-C-104.dwg	
DRAWN BY:	AGB/DRF	
CHECKED BY:	EAO/BRB	
APPROVED:	DLM	

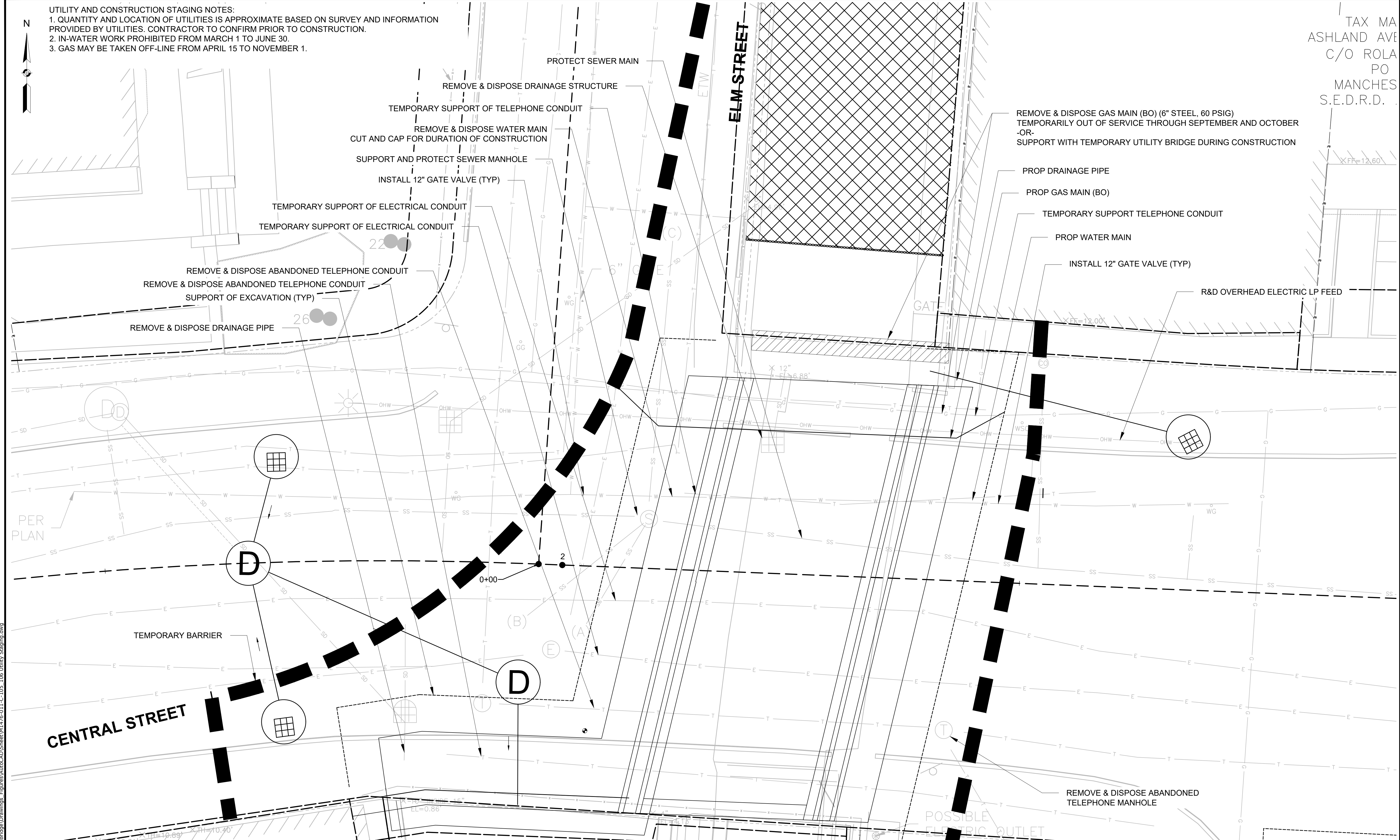
TEMPORARY ROADWAY PLAN

SCALE: 1" = 10'

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TAX MA  
ASHLAND AVE  
C/O ROLA  
PO  
MANCHES  
S.E.D.R.D.

UTILITY AND CONSTRUCTION STAGING NOTES:  
 1. QUANTITY AND LOCATION OF UTILITIES IS APPROXIMATE BASED ON SURVEY AND INFORMATION PROVIDED BY UTILITIES. CONTRACTOR TO CONFIRM PRIOR TO CONSTRUCTION.  
 2. IN-WATER WORK PROHIBITED FROM MARCH 1 TO JUNE 30.  
 3. GAS MAY BE TAKEN OFF-LINE FROM APRIL 15 TO NOVEMBER 1.



**100%  
Drawings  
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Construction**

**Central Street  
Bridge  
Replacement**

Department of  
Public Works

MassDOT Bridge No.  
M-02-001 (CDL)

Town of  
Manchester-By-  
The-Sea,  
Massachusetts

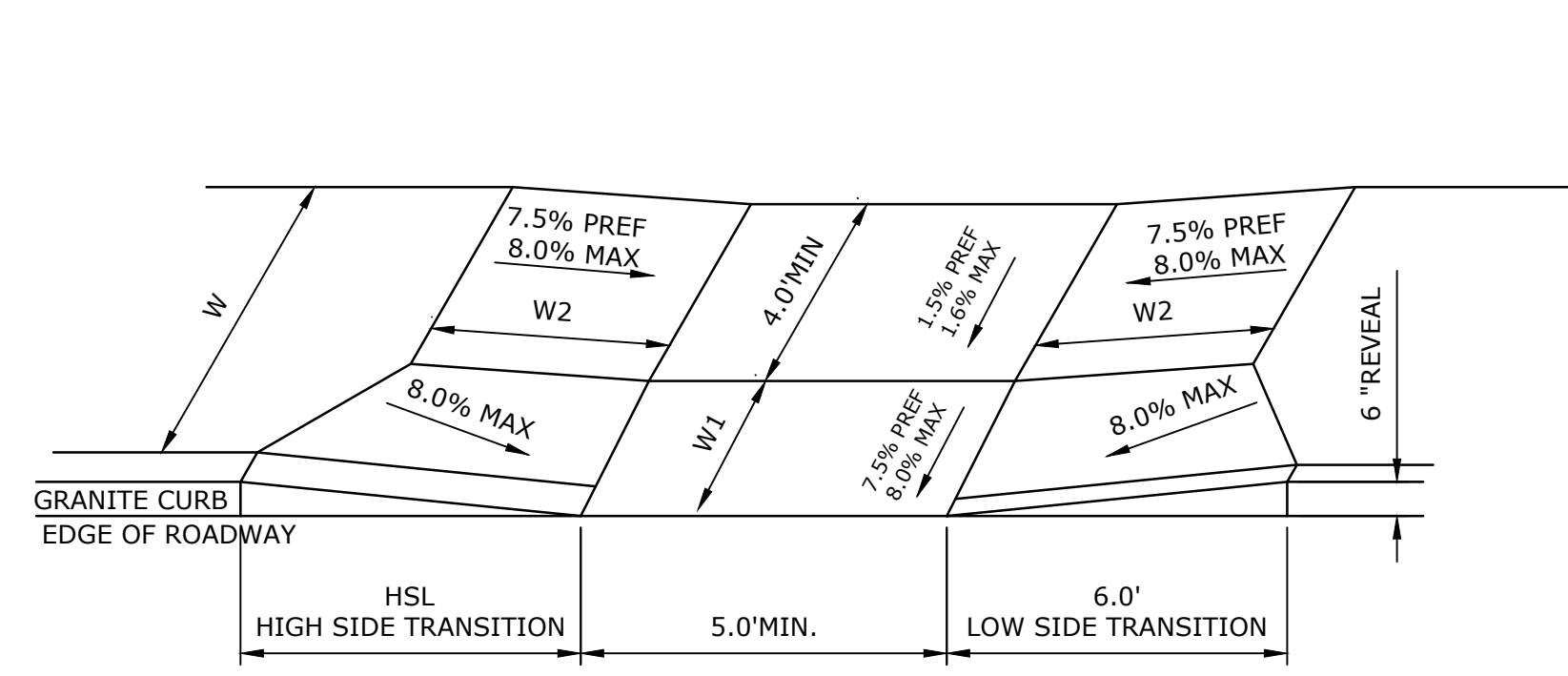
- NOTE:
1. IMMEDIATELY AFTER CONTRACT AWARD AND NOTICE TO PROCEED, DEVELOP MONITORING PROGRAM FOR ADJACENT STRUCTURES, SUBMIT FOR APPROVAL AND ONCE APPROVED, INSTALL MONITORING DEVICES TO CAPTURE DATA REGARDING BASELINE MOVEMENTS OF STRUCTURES.
  2. AFTER CONTRACT AWARD:  
EARLY ACTIONS ARE REQUIRED, AFTER LABOR DAY 2024, TO IDENTIFY LOCATIONS OF ALL EXISTING UTILITIES WITHIN THE LIMITS OF WORK. PERFORM TEST PITS AND COORDINATE WITH THE RESPECTIVE UTILITY COMPANIES TO DETERMINE MEANS OF TEMPORARY SUPPORT OR POTENTIAL RELOCATION. COORDINATE VERTICAL ELEVATIONS OF UTILITIES TO REMAIN WITH FINAL INSTALLATION PROCEDURE.
  3. DESIGN TEMPORARY UTILITY SUPPORT SYSTEMS, SUPPORT OF EXCAVATION SYSTEMS, COFFERDAMS, AND WATER CONTROL SYSTEM FOR APPROVAL BY THE RESPECTIVE UTILITIES AND THE ENGINEER. INCLUDE THE OWNER AND ENGINEER ON ALL CORRESPONDENCE BETWEEN THE CONTRACTOR AND THE UTILITY COMPANIES.
  4. PRIOR TO ROAD CLOSURE AND UTILITY STAGING, SUPPORT, OR RELOCATION, INSTALL COFFERDAMS AND WATER CONTROLS.
- COMMENCING AFTER LABOR DAY 2025:
5. PROVIDE SUPPORT OF EXCAVATION AND TEMPORARILY SHUT DOWN/REMOVE, PROTECT, AND SUPPORT EXISTING UTILITIES AS SHOWN.
  6. EXCAVATE AND DEMOLISH EXISTING ARCH STRUCTURE WHILE UTILITIES ARE TEMPORARILY SUPPORTED.
  7. INSTALL PEDESTAL FOOTINGS WHILE UTILITIES ARE TEMPORARILY SUPPORTED.
  8. INSTALL PRECAST ARCH SEGMENTS NORTH OF THE CENTRAL STREET CONSTRUCTION BASELINE WITHIN THE CLEAR SPACE BETWEEN THE WATER MAIN AND THE GAS MAIN (APPROXIMATELY 8'-10' WIDE).
  9. SLIDE AND CONNECT EACH ARCH SECTION INTO PLACE BY USING HYDRAULIC JACKS, ROLLERS, CASTERS, ETC.
  10. INSTALL THE SOUTHWEST SEAWALL AND BRIDGE HEADWALLS.
  11. EXISTING UTILITIES SHOWN ARE BASED ON SURVEY AND LIMITED INFORMATION PROVIDED BY UTILITIES. FIELD CONFIRM ALL UTILITIES.
  12. BACKFILL STRUCTURE, REMOVE TEMPORARY SUPPORT OF UTILITIES, AND SUPPORT OF EXCAVATION.
  13. INSTALL REMAINING DRAINAGE, WATER, AND GAS UTILITIES.
  14. RECONSTRUCT REMAINING ROADWAY AND SURFACE ELEMENTS.

MARK	DATE	DESCRIPTION
PROJECT NO:	M1476-011	
DATE:	JUNE 2024	
FILE:	M1476-011-C-105_106 Utility Staging.dwg	
DRAWN BY:	AGB/DRF	
CHECKED:	EAO/BRB	
APPROVED:	DLM	

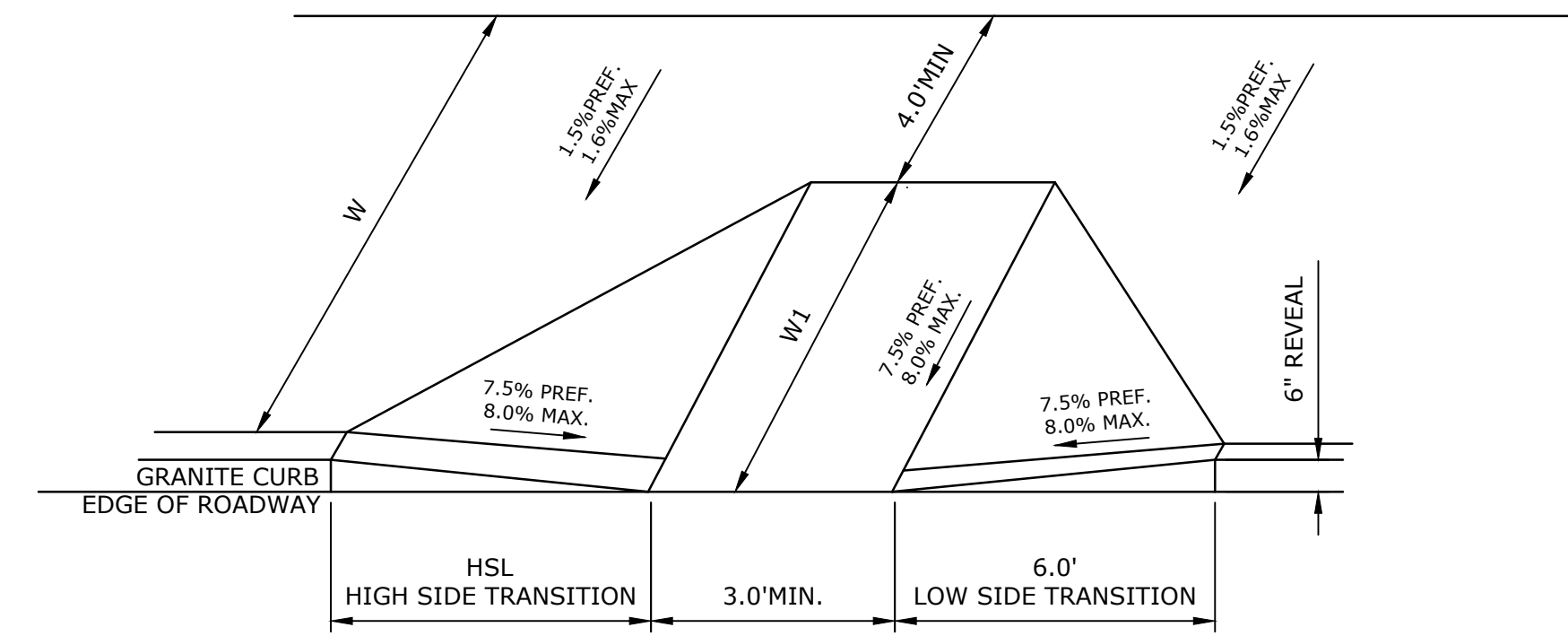
UTILITY/WORK  
STAGING PLAN

SCALE: 1" = 5'

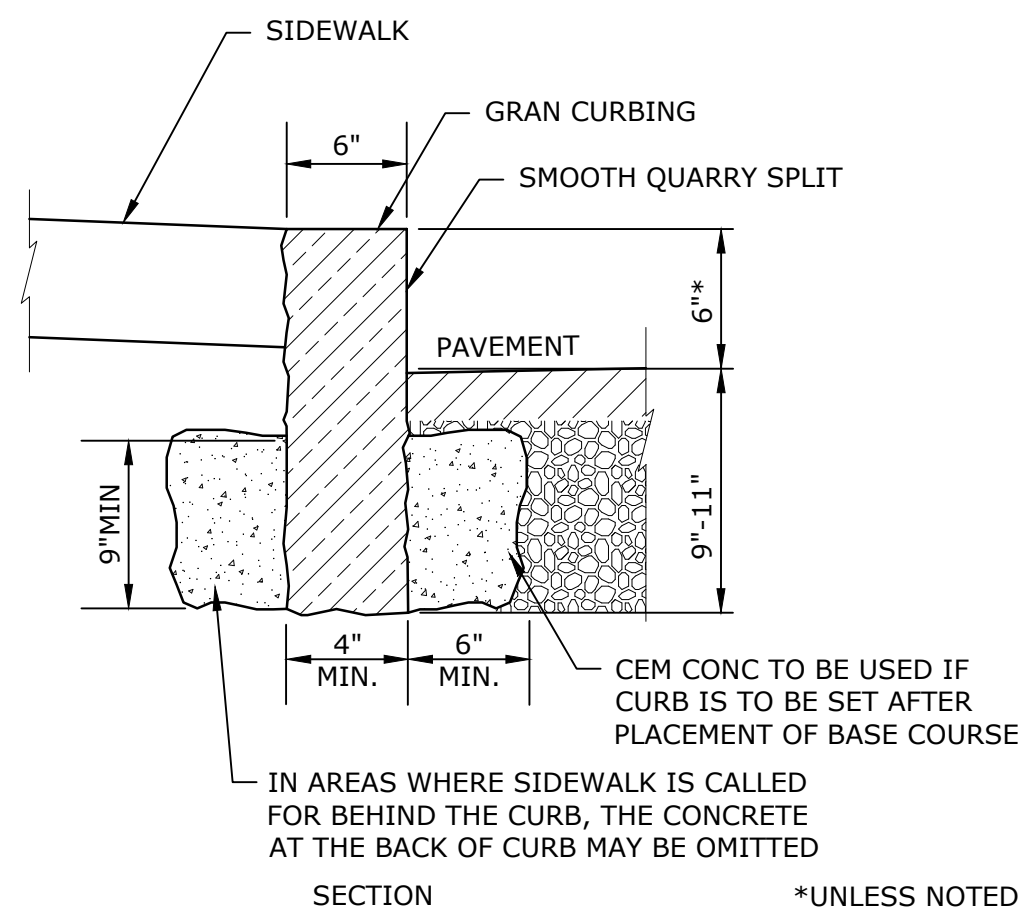
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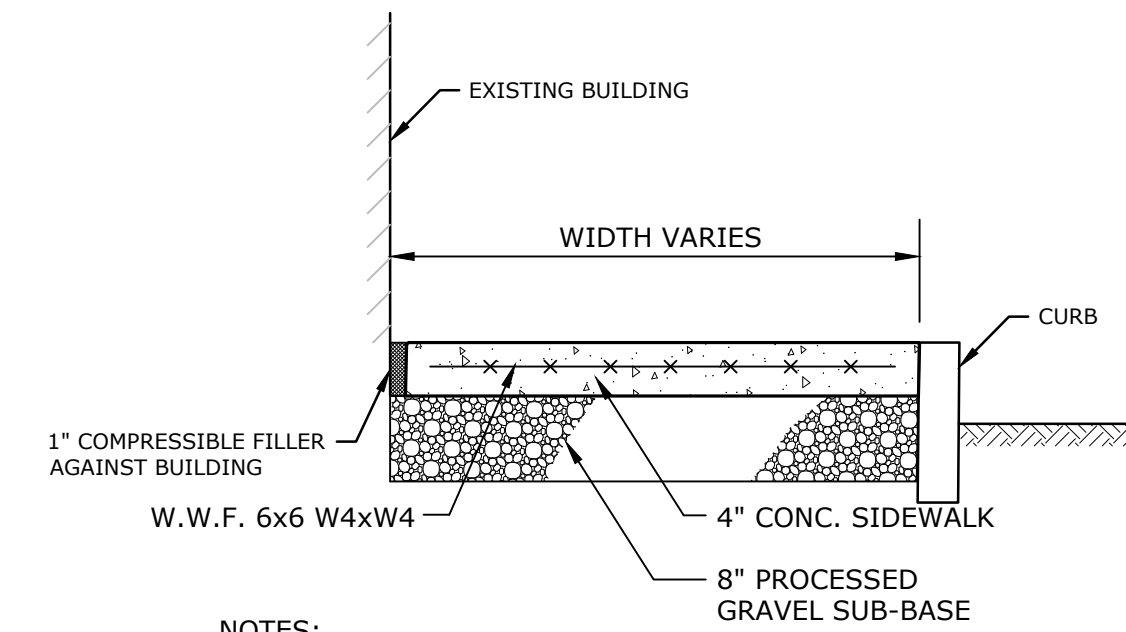
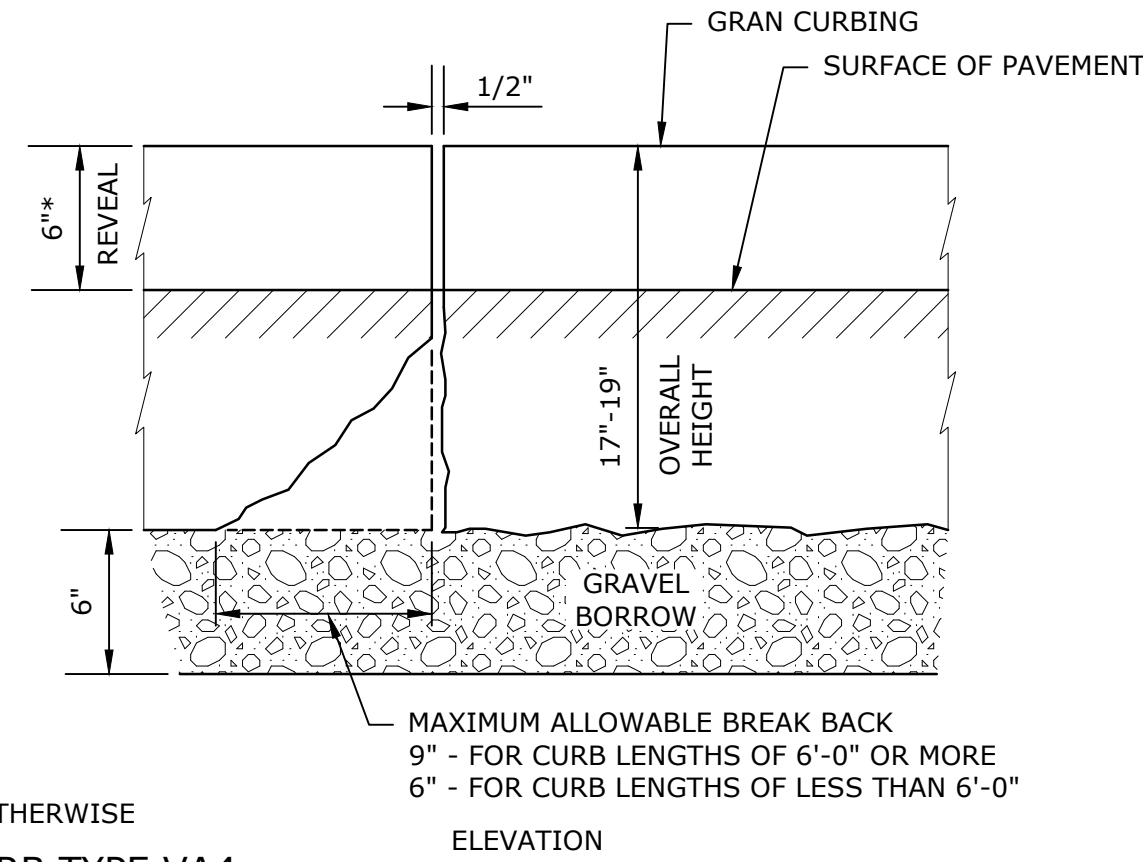
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NO SCALE



**HANDICAP RAMP FOR GREATER THAN 11.5' SIDEWALK**  
NO SCALE

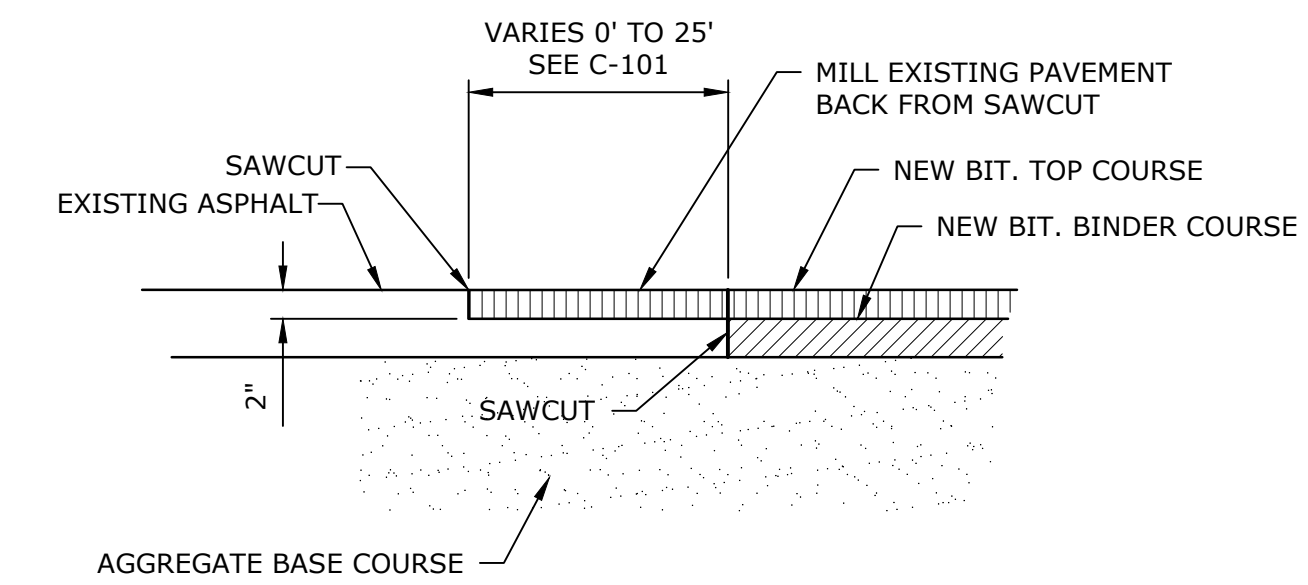


**GRANITE CURB TYPE VA4**  
NO SCALE

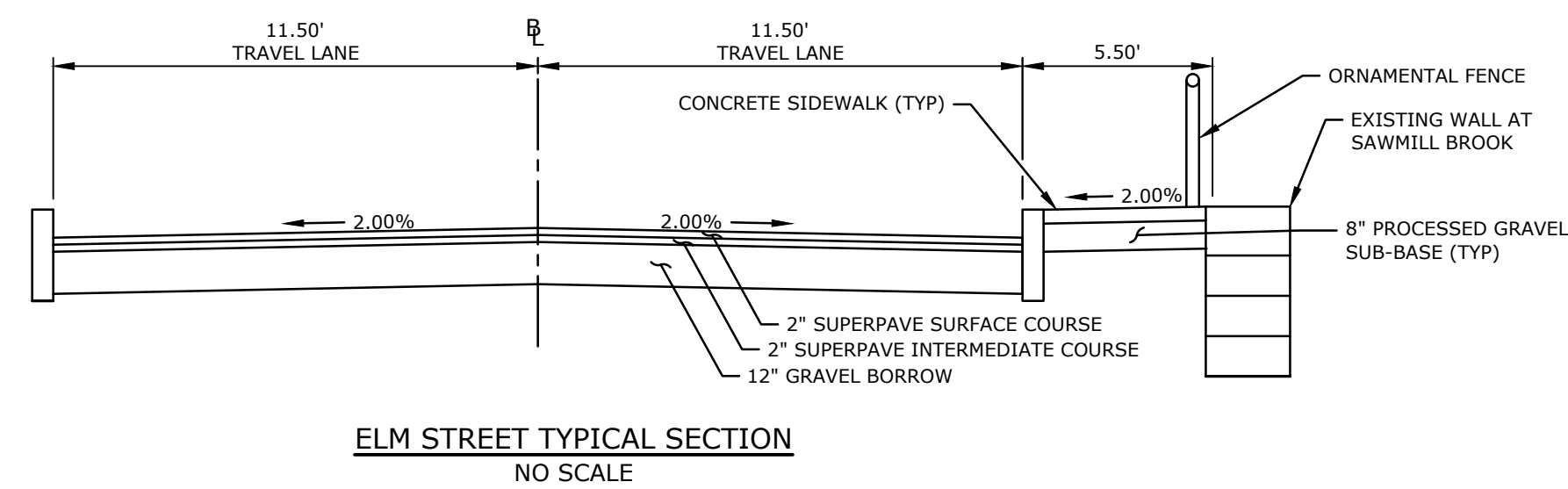


- NOTES:
1. WALK TO HAVE 1/4" RADIUS TOOLED DUMMY JOINT 1/4 OF THE THICKNESS OF THE SIDEWALK IN DEPTH EVERY 5 L.F. OF WALK.
  2. WALK TO HAVE 1/2" WIDE NON-EXTRUDING PREFORMED EXPANSION JOINT EVERY 20 L.F. OF WALK.

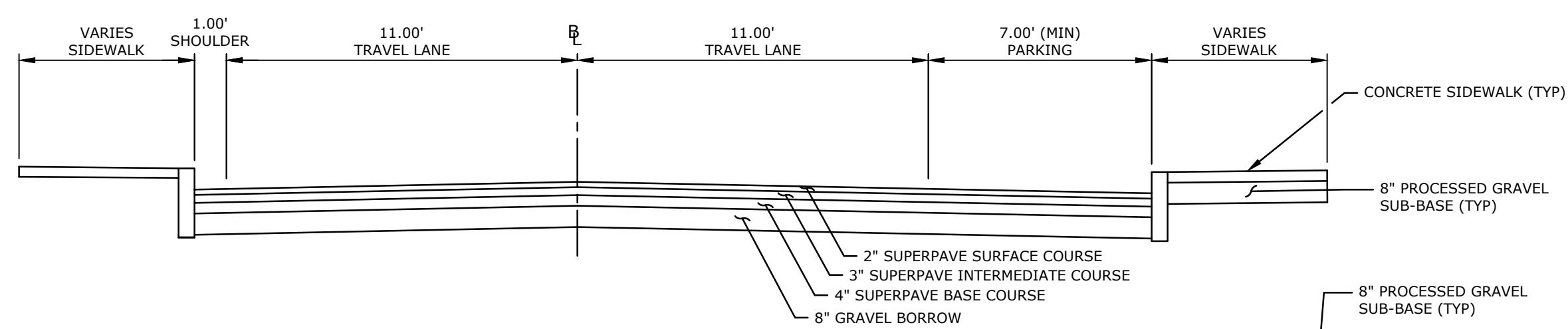
**CONCRETE SIDEWALK**  
NO SCALE



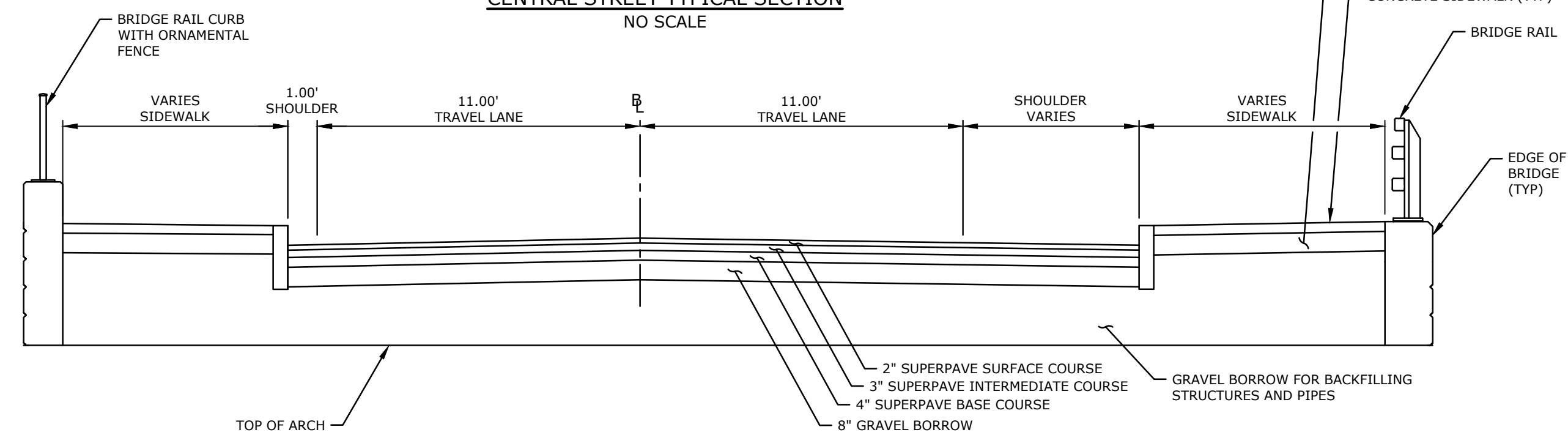
**TYPICAL BUTT JOINT TO EXISTING PAVEMENT**  
NO SCALE



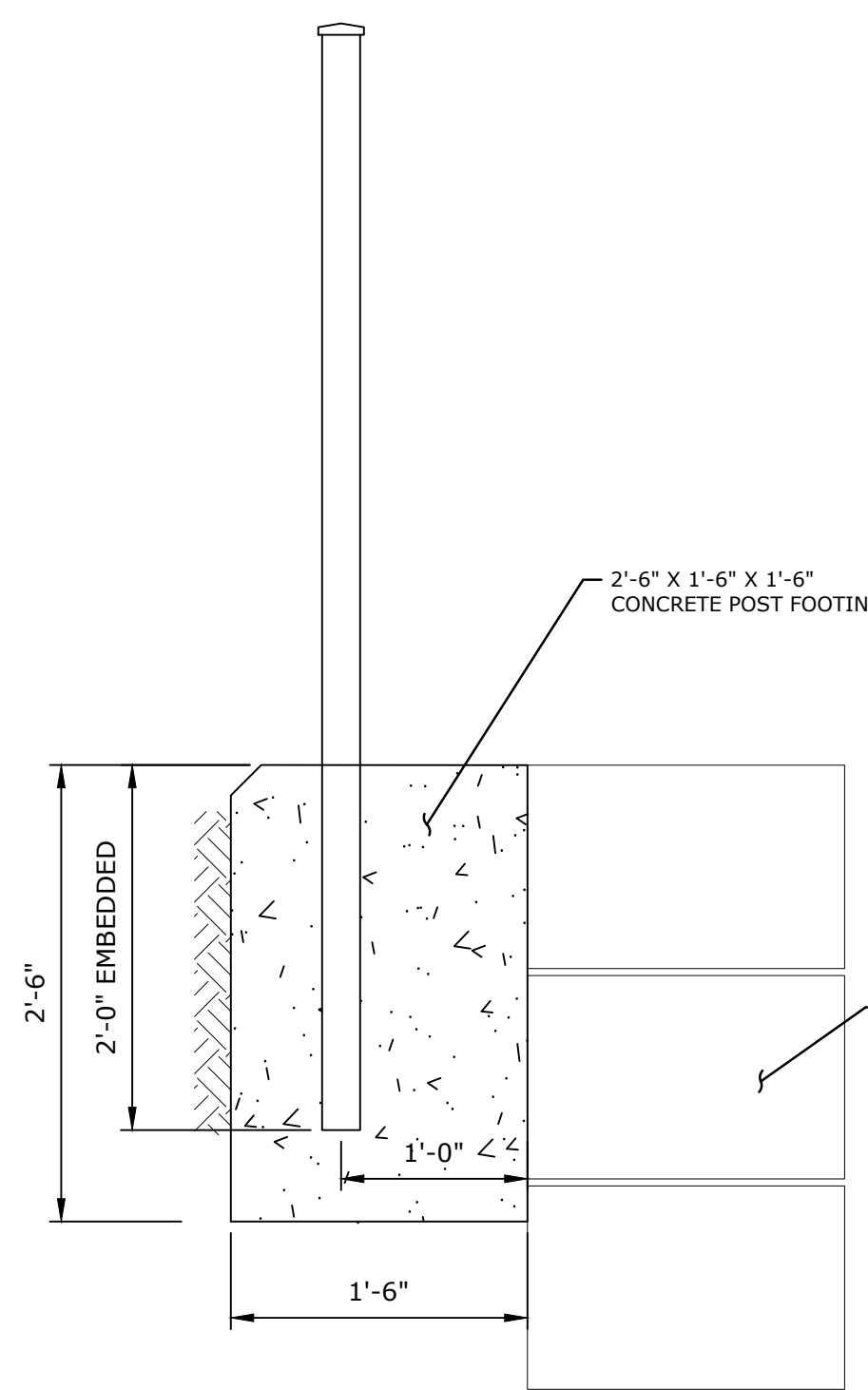
**ELM STREET TYPICAL SECTION**  
NO SCALE



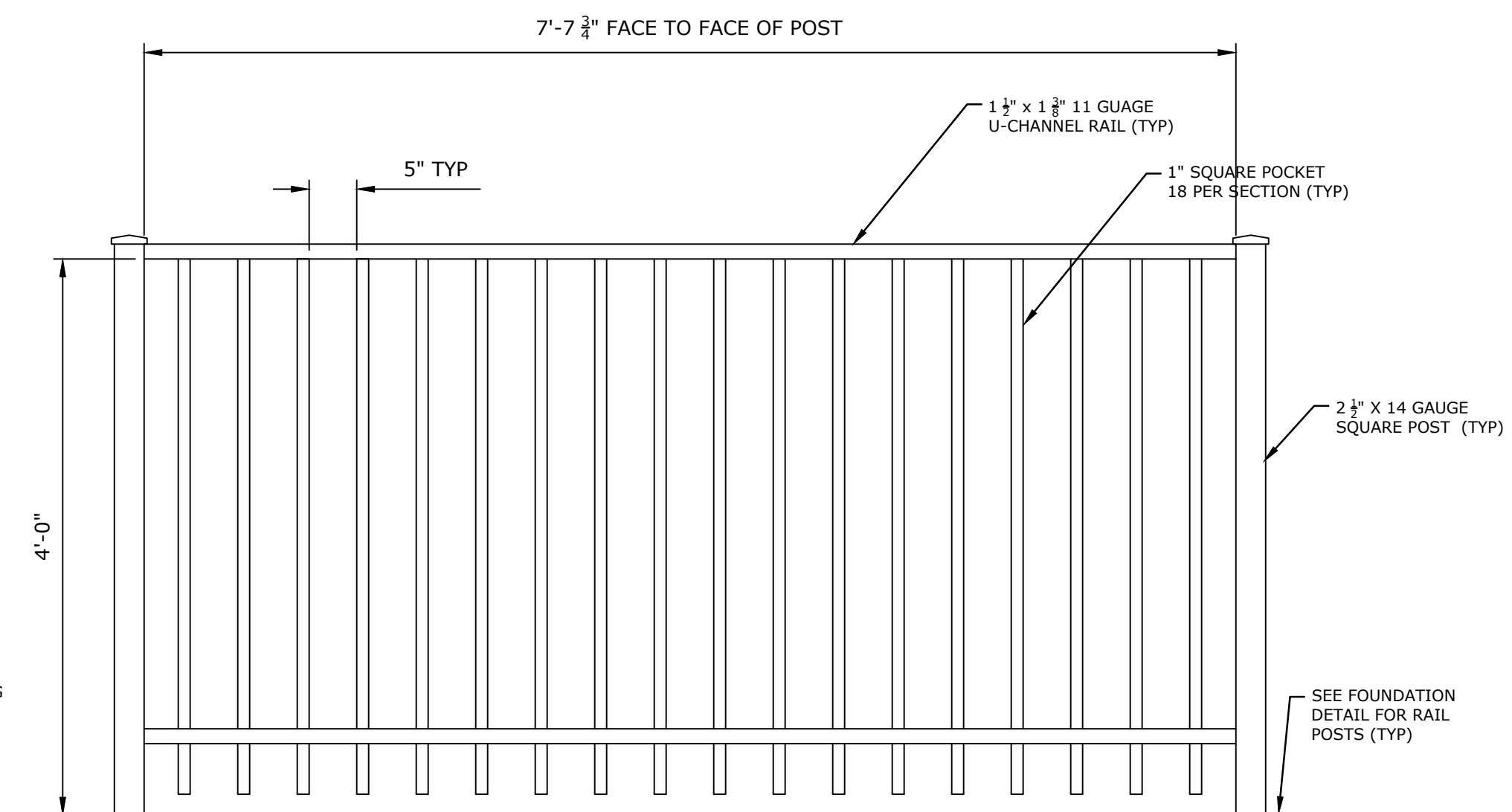
**CENTRAL STREET TYPICAL SECTION**  
NO SCALE



**CENTRAL STREET BRIDGE TYPICAL SECTION**  
NO SCALE



**ORNAMENTAL FENCE ALONG ELM STREET**  
NO SCALE



**ORNAMENTAL FENCE ALONG ELM STREET**  
NO SCALE

**100% Drawings Not For Construction**

**Central Street Bridge Replacement**

Department of Public Works

MassDOT Bridge No. M-02-001 (CDL)

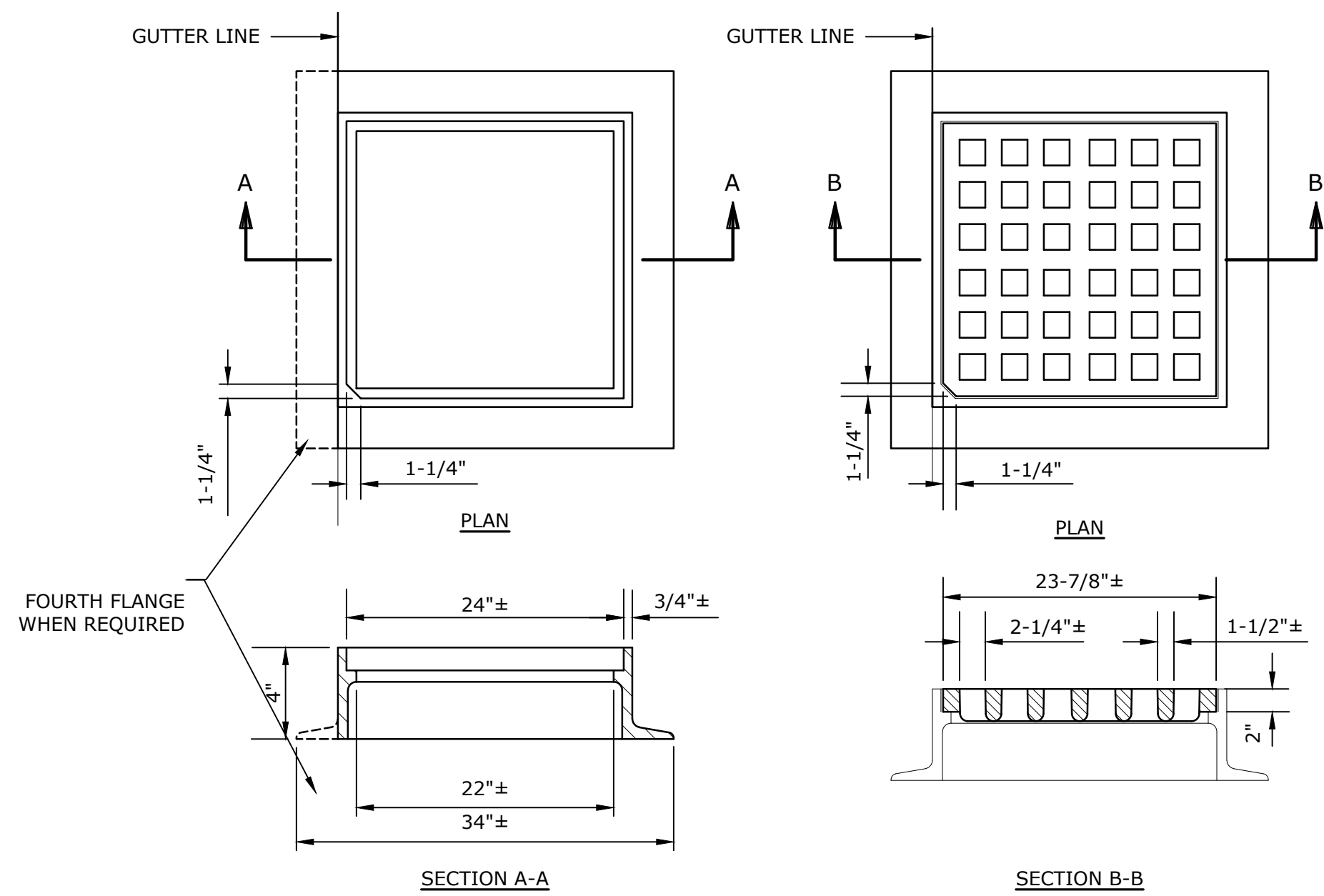
Town of Manchester-By-The-Sea, Massachusetts

MARK	DATE	DESCRIPTION
PROJECT NO:	M1476-011	
DATE:	JUNE 2024	
FILE:	M1476-011-C-501.dwg	
DRAWN BY:	AGB/DRF	
CHECKED:	EAO/BRB	
APPROVED:	DLM	

CONSTRUCTION DETAILS (SHEET 1 OF 2)

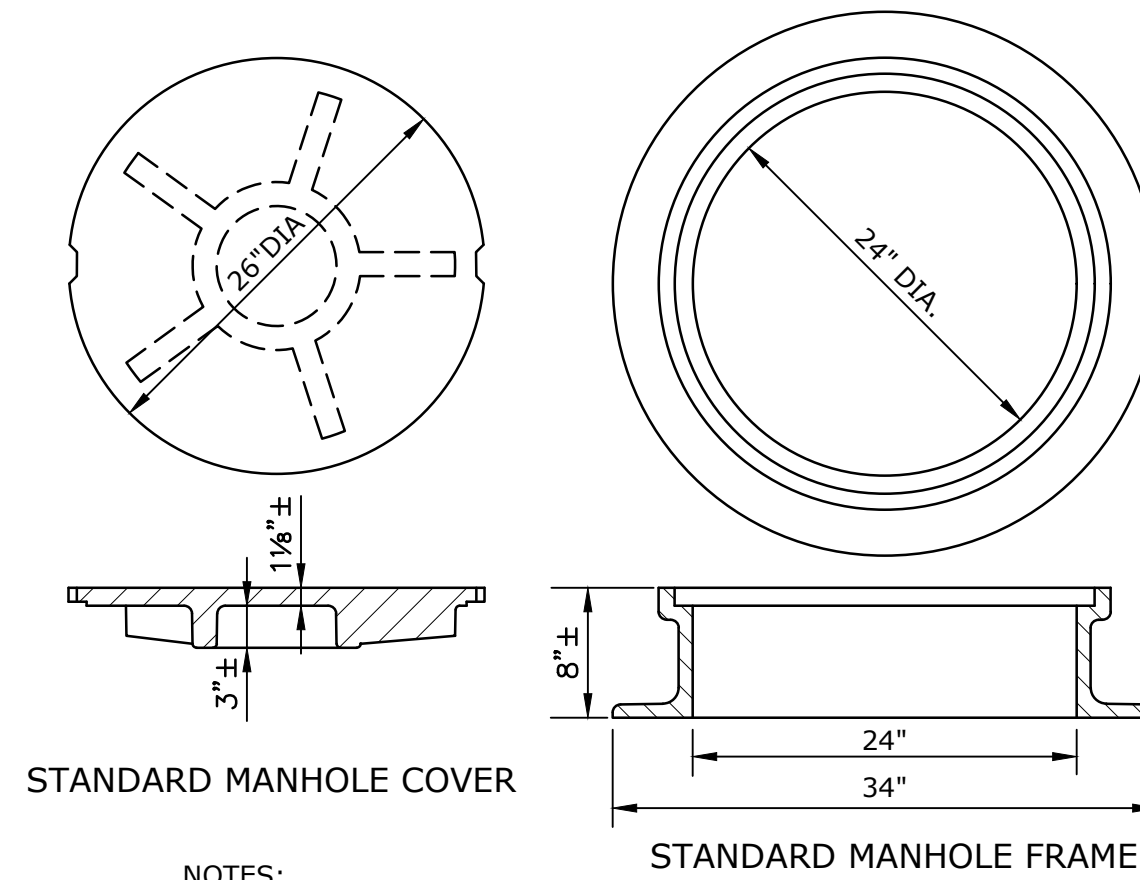
SCALE: AS NOTED

**C-501**  
SHEET 13 OF 51



**CATCH BASIN FRAME**  
NO SCALE

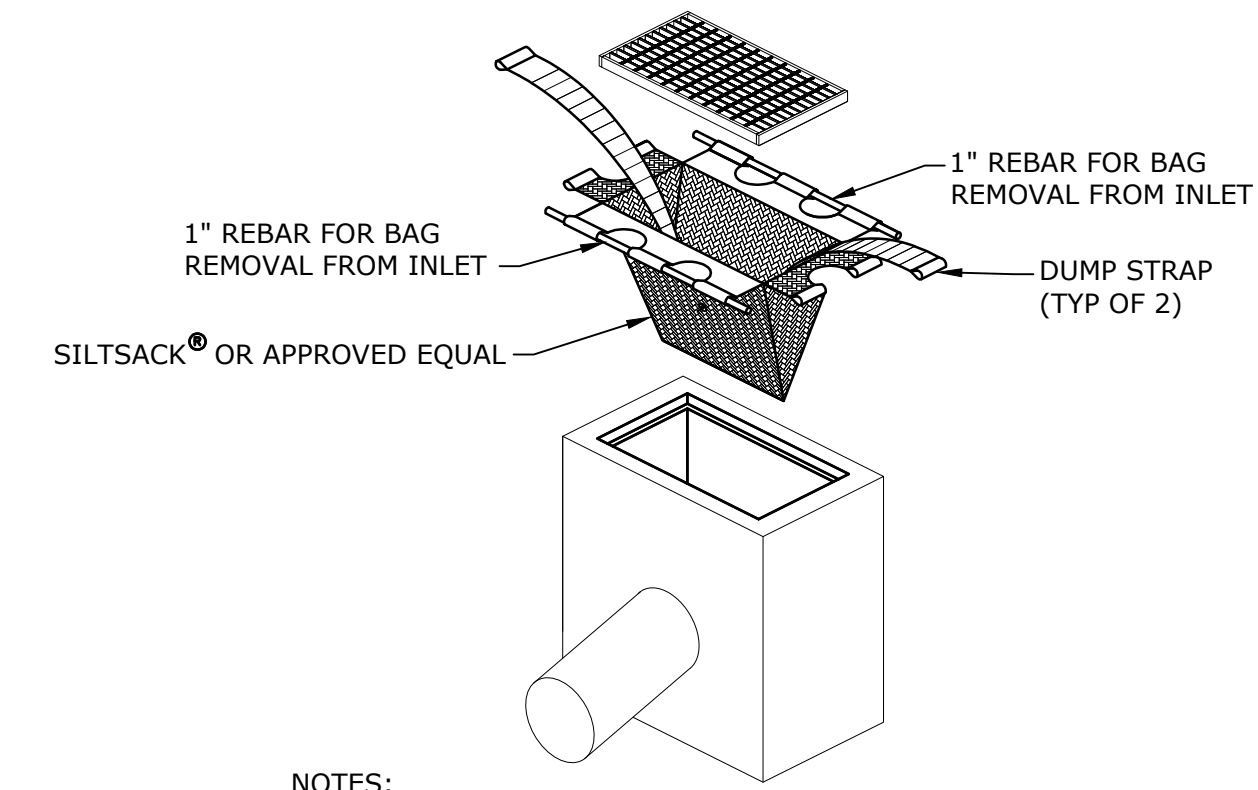
**CATCH BASIN GRATE**  
NO SCALE



**STANDARD MANHOLE COVER**  
**STANDARD MANHOLE FRAME**

- NOTES:**  
1. FRAME AND COVER PROVIDED FROM THE SAME MANUFACTURER.  
2. LETTERING PROVIDED ON COVERS AS SPECIFIED.

**MANHOLE FRAME & COVER**  
NO SCALE

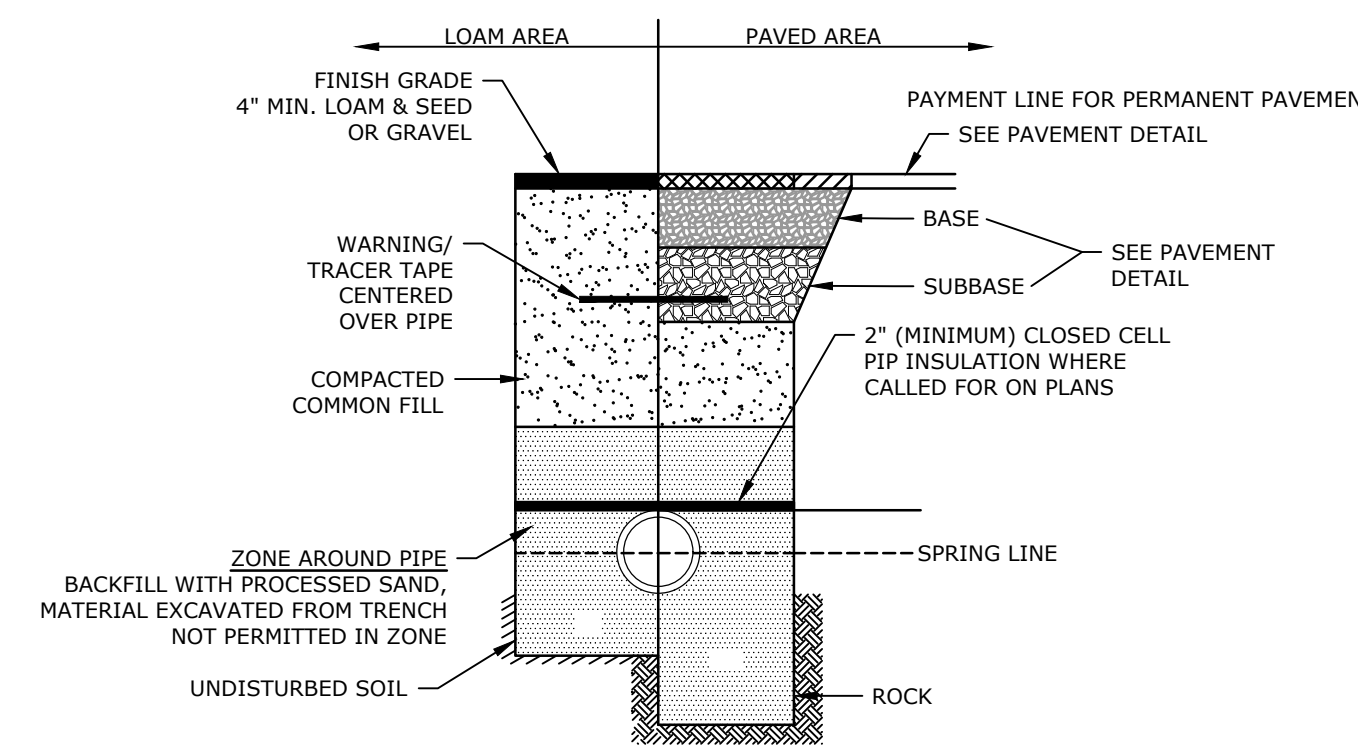
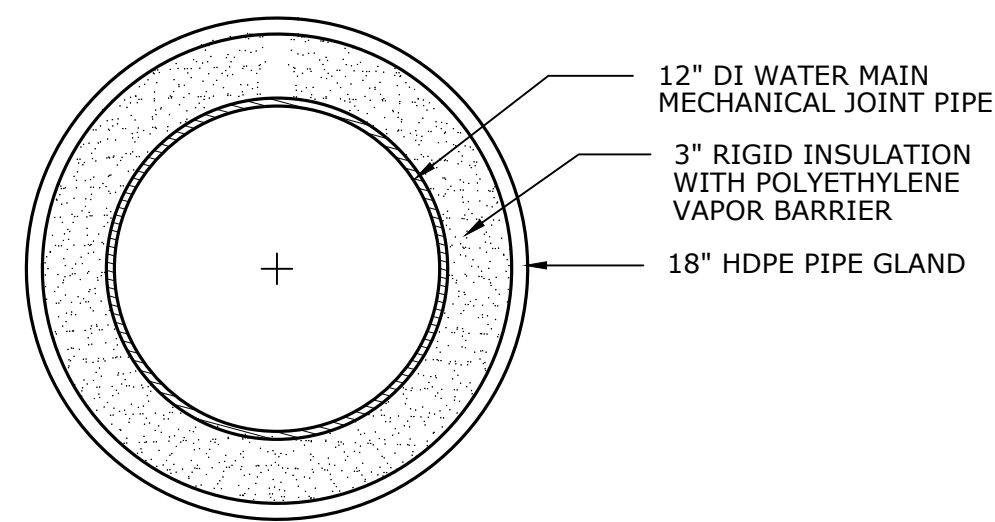


- NOTES:**  
1. "SILT SACKS", "DANDY BAG II," "BLOCKSON & CO. NATURAL FIBER INLET FILTER MAT" OR OTHER SIMILAR SILT RETENTION DEVICE SHALL BE INSTALLED IN LIEU OF HAY BALES FOR CATCH BASINS LOCATED IN EXISTING PAVED AREAS.

**CATCH BASIN INLET SEDIMENTATION PROTECTION**  
NO SCALE

- NOTES:**  
1. INSULATED WATER MAIN IS REQUIRED WHERE THE WATER MAIN HAS LESS THAN 5' OF COVER.  
2. WATER MAIN BENDS LOCATED IN AREAS WITH LESS THAN 5' OF COVER SHALL BE INSULATED.

**INSULATED WATERMAIN**  
NO SCALE



- NOTES:**  
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 4" BELOW PIPE IN EARTH AND 8" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.  
2. ALL UTILITIES SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES AND THE TOWN OF MANCHESTER-BY-THE-SEA.  
3. PAYMENT FOR PAVEMENT INSTALLED BEYOND PAYMENT LINE WILL ONLY BE MADE WHEN SUCH INSTALLATION IS SPECIFICALLY AUTHORIZED BY THE ENGINEER.

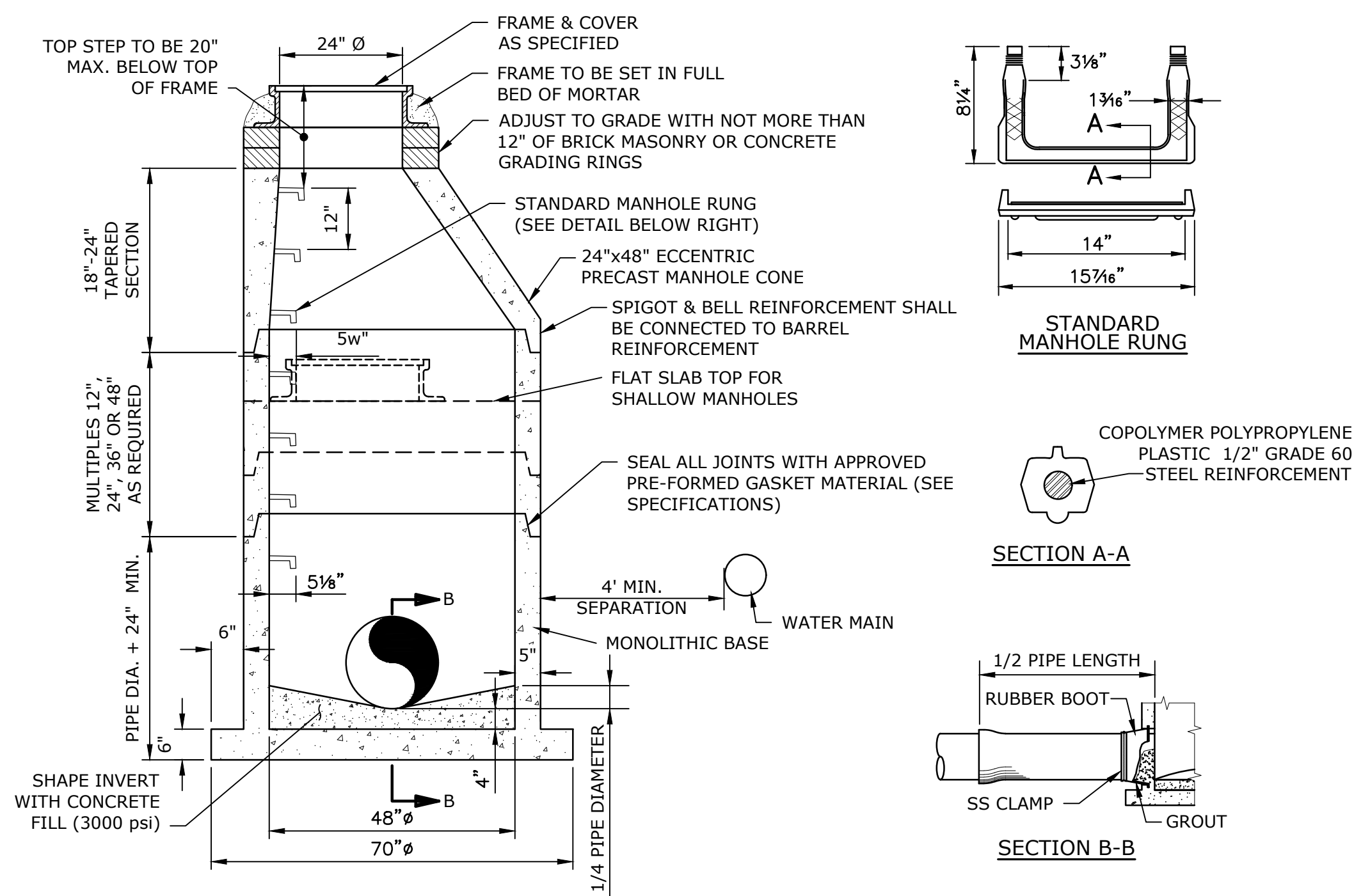
**WATER TRENCH**  
NO SCALE

SIZE (IN.)	FITTING	MINIMUM * RESTRAINED LENGTH, FT. ( ) INDICATES POLYWRAPPED
12"	45° BEND	28 (32)
12"	CAP (DEAD END)	142 (202)
12"	45° VERTICAL UP BEND	28 (32)
12"	45° VERTICAL DOWN BEND	59 (84)
12"	12"x6" TEE BRANCH	60 (86)
12"	12"x8" REDUCER	76 (108)

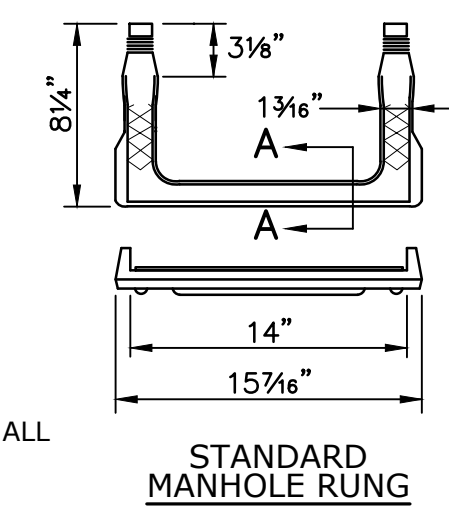
\* MINIMUM RESTRAINED LENGTH BASED ON DIPRA, "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE," 7TH EDITION, 2016.

FOLLOWING CONDITIONS APPLY:  
SOIL TYPE: SAND SILT  
MAX. PRESSURE: 200psi  
LAYING CONDITIONS: TYPE 2  
BURIED DEPTH: 5'

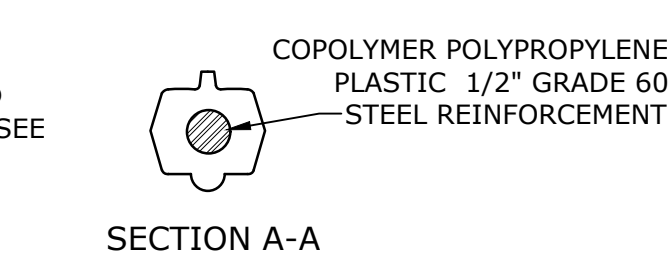
**MINIMUM RESTRAINED LENGTHS FOR DI PIPE**



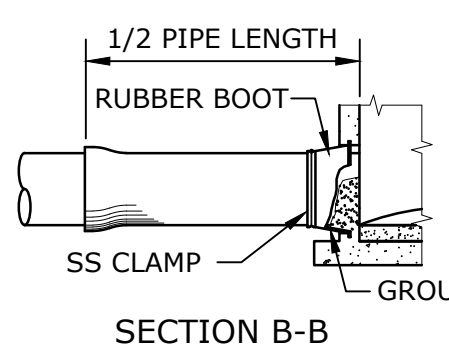
**48" PRECAST DRAIN MANHOLE**  
NO SCALE



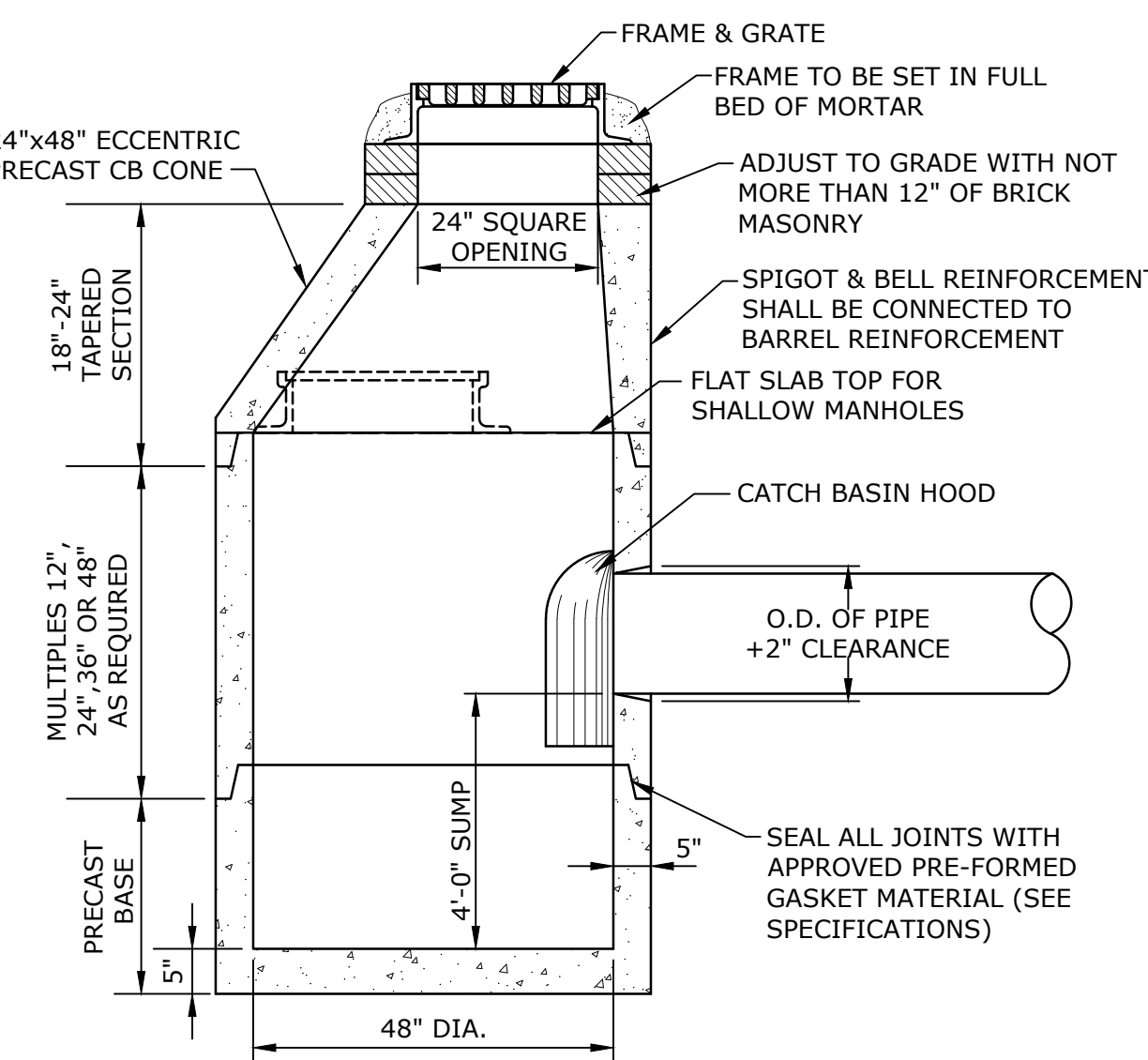
**STANDARD MANHOLE RUNG**



**SECTION A-A**

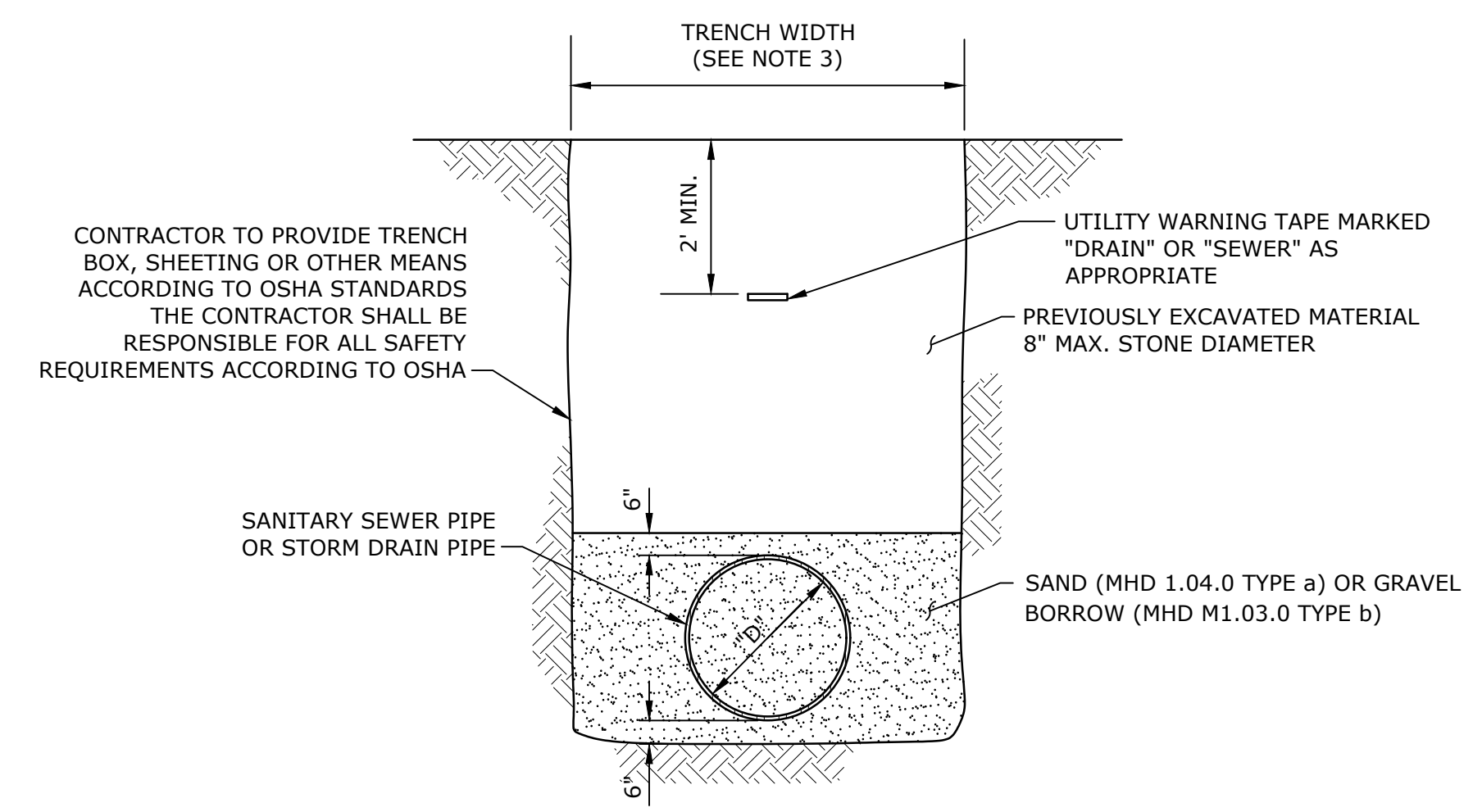


**SECTION B-B**



**PRECAST CONCRETE CATCH BASIN**  
NO SCALE

- NOTES:**  
1. FOR USE WITH PVC PIPE, PROVIDE RUBBER BOOT SIMILAR TO MANHOLE DETAIL.  
2. FOR USE WITH OTHER TYPES OF PIPE, SEAL JOINT BETWEEN PIPE AND CATCH BASIN WITH GROUT.  
3. SEE SHEET 3 FOR CURB INLET LOCATIONS AND SHEET 5 FOR CURB INLET DETAIL.



**TYPICAL DRAIN LINE TRENCH SECTION**  
NO SCALE

- NOTES:**  
1. COMPACT ALL BACKFILL MATERIAL WITH VIBRATORY PLATE EQUIPMENT (MINIMUM TWO PASSES) TO A MINIMUM DENSITY OF 95 PERCENT OF THE STANDARD PROCTOR DENSITY AS DETERMINED BY ASTM D698.  
2. PLACE BACKFILL MATERIAL IN MAXIMUM ONE FOOT LIFTS.  
3. FOR PIPES LESS THAN 24" IN DIAMETER THE TRENCH WIDTH SHALL BE 5.0'. FOR PIPES 24" IN DIAMETER AND GREATER, TRENCH WIDTH SHALL BE THE PIPE DIAMETER PLUS 3.0'.

**100% Drawings Not For Construction**

**Central Street Bridge Replacement**

Department of Public Works

MassDOT Bridge No. M-02-001 (CDL)

Town of Manchester-by-the-Sea, Massachusetts

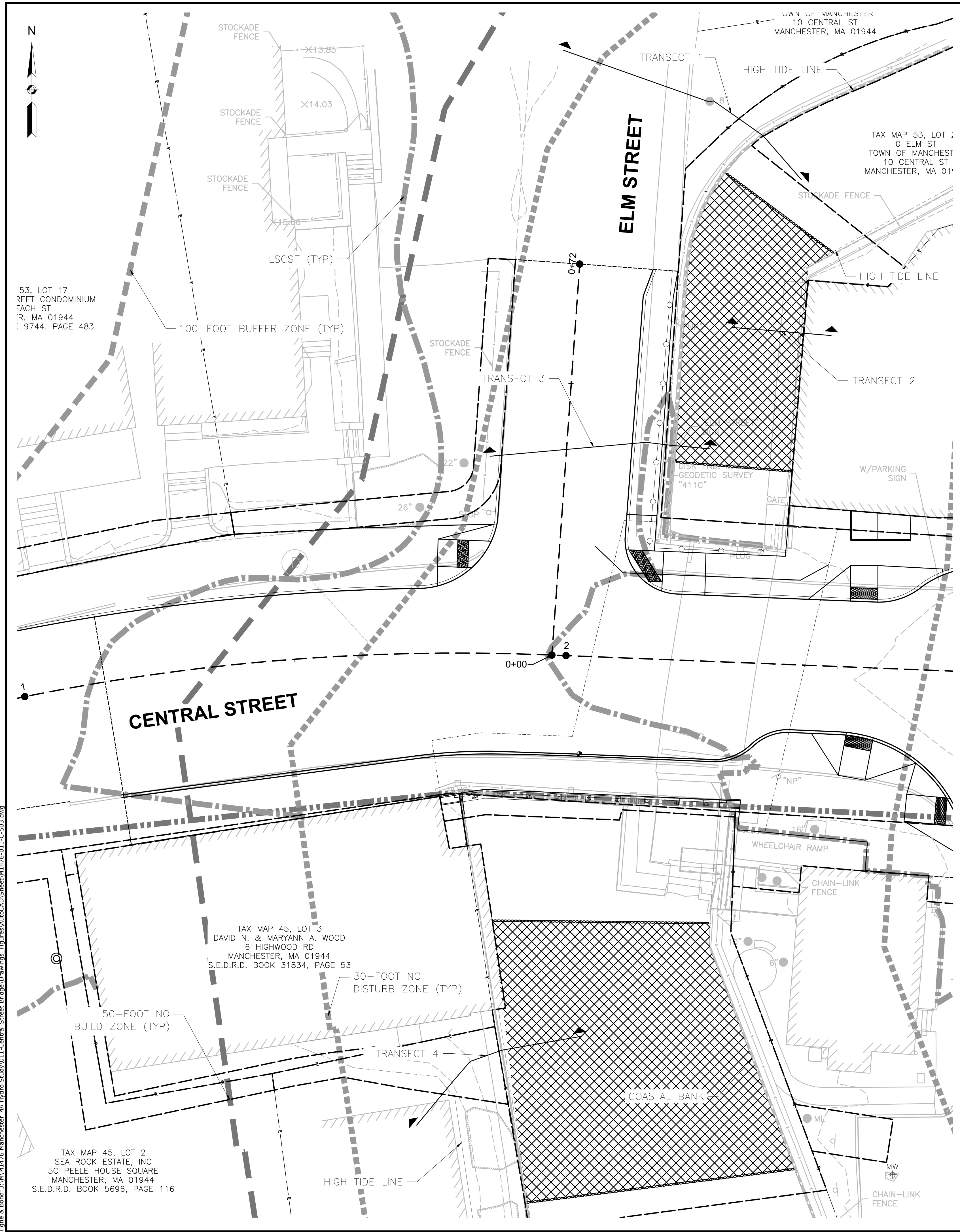
MARK	DATE	DESCRIPTION
PROJECT NO:	M1476-011	
DATE:	JUNE 2024	
FILE:	M1476-011-C-501.dwg	
DRAWN BY:	AGB/DRF	
CHECKED:	EAQ/BRB	
APPROVED:	DLM	

CONSTRUCTION DETAILS (SHEET 2 OF 2)

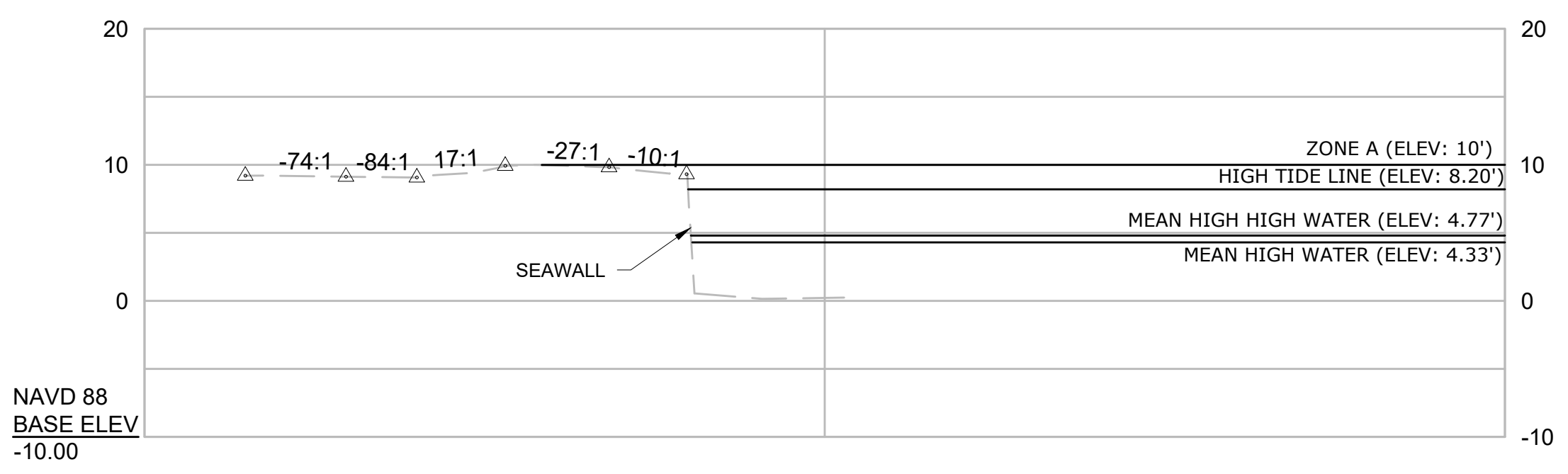
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**C-502**  
SHEET 14 OF 51

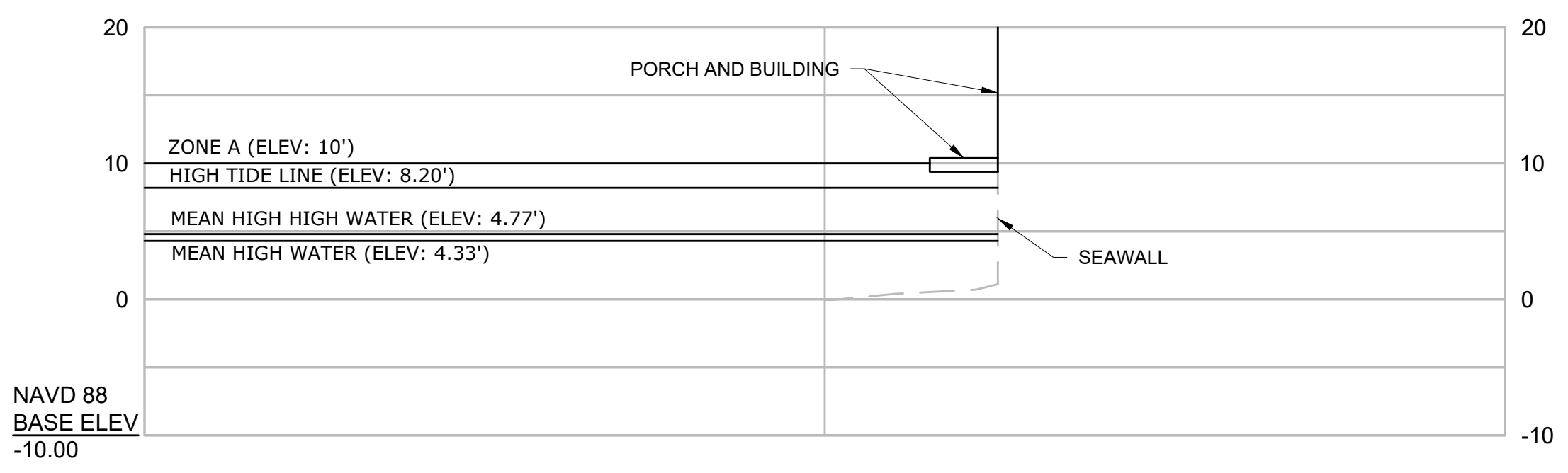
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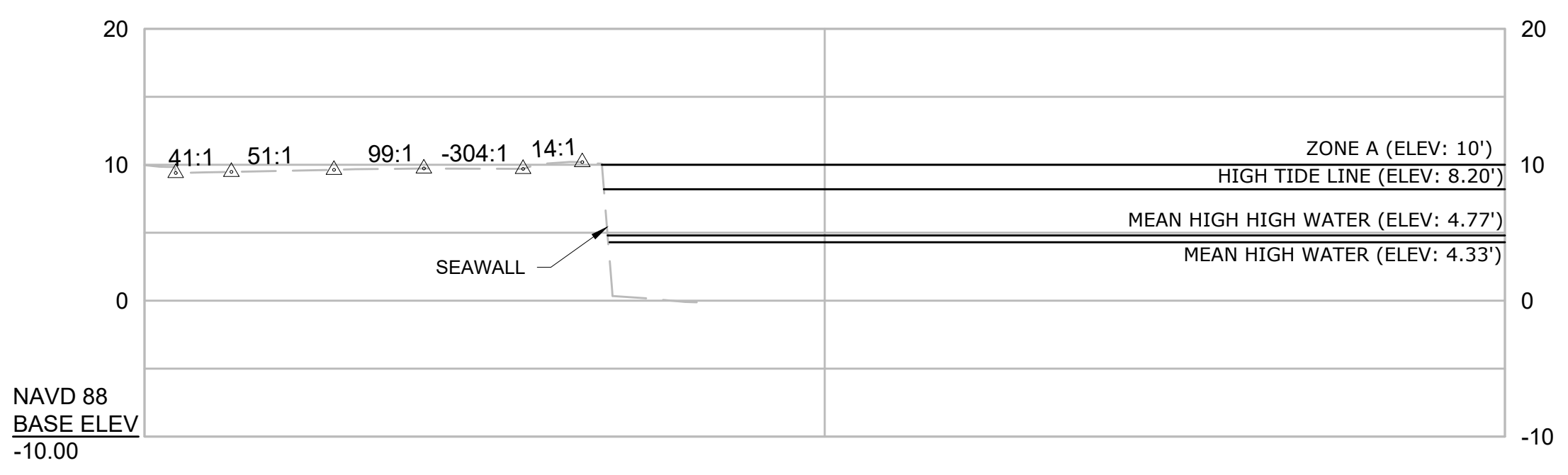
**TRANSECT 1**



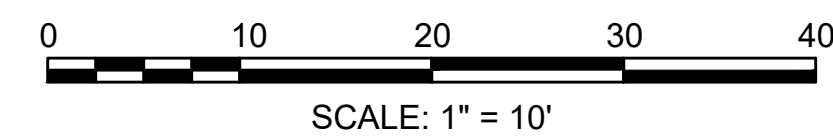
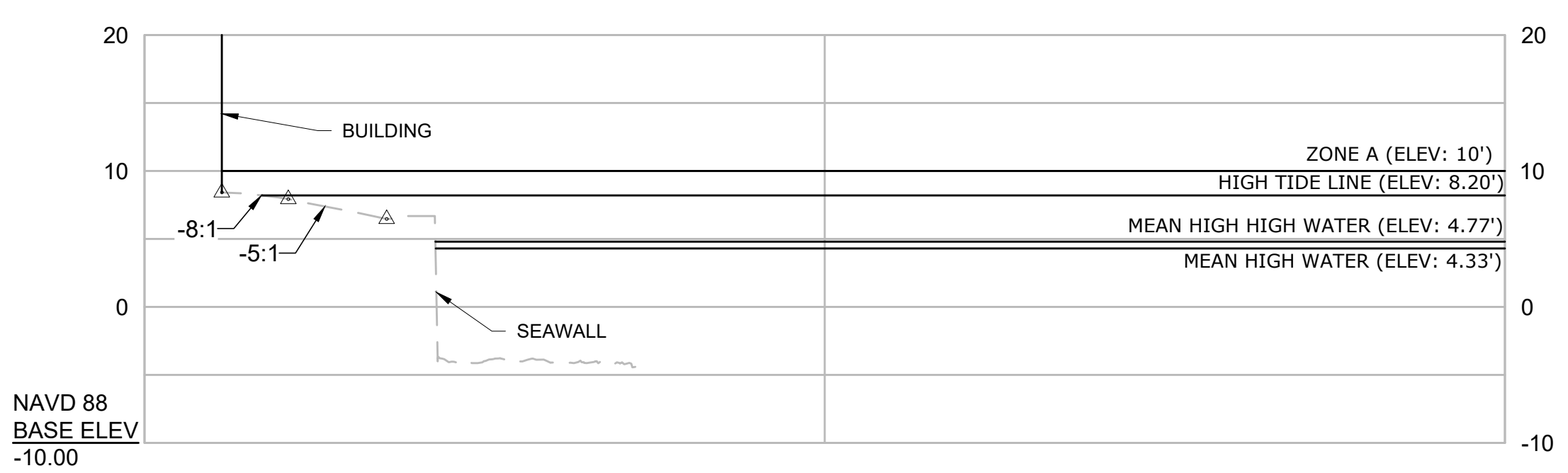
**TRANSECT 2**



**TRANSECT 3**



**TRANSECT 4**



**100% Drawings Not For Construction**

**Central Street Bridge Replacement**

Department of Public Works

MassDOT Bridge No. M-02-001 (CDL)

Town of Manchester-By-The-Sea, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO:	M1476-011
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DRAWN BY:	AGB/DRF
CHECKED:	EAO/BRB
APPROVED:	DLM

Last Saved: 6/26/2024 4:13:21pm By: DDeity  
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BEST MANAGEMENT PRACTICES

INSPECTION AND MAINTENANCE

- SEDIMENT, EROSION CONTROLS, AND BEST MANAGEMENT PRACTICES (BMPs) SHALL BE INSTALLED PRIOR TO COMMENCING CONSTRUCTION AT THE SITE. NO WORK WHICH SHALL DISTURB THE SITE OR CREATE THE POTENTIAL FOR SEDIMENT RELEASE SHALL COMMENCE UNTIL THE SEDIMENT AND EROSION CONTROLS HAVE BEEN INSPECTED AND APPROVED BY THE OWNER, ENGINEER, AND REGULATORY AGENCIES. ALL CONTROLS AND BMPs SHALL BE SUBJECT TO INSPECTION BY THE OWNER, HIS REPRESENTATIVE, AND REGULATORY AGENCIES AT ANYTIME THEREAFTER.
- PERIODIC INSPECTION, MAINTENANCE, AND CLEANING OF TEMPORARY EROSION OF SEDIMENT CONTROL MEASURES AND BMPs SHALL BE REQUIRED. ALL CONTROLS AND BMPs SHALL BE INSPECTED EVERY 7 DAYS AND WITHIN 24 HOURS OF RAINFALL EVENTS OF 0.25 INCHES OR GREATER. ROUTINE INSPECTION AND MAINTENANCE WILL REDUCE THE CHANCE OF POLLUTING STORMWATER BY FINDING AND CORRECTING PROBLEMS BEFORE THE NEXT RAIN EVENT. THE FOCUS OF THE INSPECTION WILL BE TO DETERMINE:
  1. WHETHER OR NOT THE MEASURE WAS INSTALLED / PERFORMED CORRECTLY;
  2. WHETHER OR NOT THERE HAS BEEN ANY DAMAGE TO THE MEASURE SINCE IT WAS INSTALLED OR PERFORMED; AND
  3. WHAT SHOULD BE DONE TO CORRECT ANY PROBLEMS WITH THE MEASURE. EACH MEASURE IS TO BE OBSERVED TO DETERMINE IF IT IS STILL EFFECTIVE.
 IN SOME CASES, SPECIFIC MEASUREMENTS MAY BE TAKEN TO DETERMINE IF MAINTENANCE OF THE MEASURES IS REQUIRED.

SITE MANAGER

- PRIOR TO CONSTRUCTION, A SITE MANAGER SHALL BE DESIGNATED BY THE CONTRACTOR TO BE RESPONSIBLE FOR INSTALLATION, MONITORING, INSPECTION, AND CORRECTION OF EROSION AND SEDIMENT CONTROL MEASURES.

CONSTRUCTION SITE ENTRANCE

- TO REDUCE THE TRACKING OF SEDIMENT FROM THE CONSTRUCTION SITE ONTO OTHER AREAS OF THE PROPERTY AND/OR PUBLIC ROADS, AS WELL AS THE PRODUCTION OF AIRBORNE DUST, A STABILIZED CONSTRUCTION ENTRANCE IS TO BE ESTABLISHED AT ANY PERMANENT CONSTRUCTION STAGING AREA. THE ENTRANCE IS TO CONSIST OF A 6-INCH THICK PAD OF CRUSHED STONE UNDERLAIN WITH FILTER FABRIC OR A BITUMINOUS CONCRETE APRON. IT IS TO BE REMOVED AND THE AREA RESTORED FOLLOWING CONSTRUCTION.

SITE CLEARING

- DURING SITE CLEARING, EXISTING VEGETATION WITHIN THE OVERALL LIMITS OF CLEARING AND GRUBBING SHALL BE REMOVED, EXCEPT AS OTHERWISE DIRECTED. PRIOR TO ANY SITE CLEARING ACTIVITIES, SEDIMENT CONTROL BARRIERS SHALL BE PLACED ALONG THE OUTER LIMIT OF DISTURBANCE. CLEARING IS TO BE LIMITED TO THOSE AREAS OF PROPOSED WORK. DISTURBED AREAS ARE TO BE KEPT TO A MINIMUM. NO TREE WITH A BREAST HEIGHT DIAMETER OF GREATER THAN 6 INCHES SHALL BE CLEARED FROM AREAS OUTSIDE THE LIMITS OF CLEARING AND GRUBBING WITHOUT PRIOR APPROVAL FROM THE OWNER.

DUST CONTROL

- STANDARD DUST CONTROL MEASURES, INCLUDING SPRAYING AND MISTING SHALL BE USED AS NECESSARY. CALCIUM CHLORIDE SHALL NOT BE ALLOWED ON THIS PROJECT.

STAGING AREAS

- THE CONTRACTOR SHALL COORDINATE LAYDOWN STAGING AREAS FOR STORING EQUIPMENT AND MATERIALS WITH THE OWNER.
- STAGING AREAS SHALL BE SURROUNDED WITH COMPOST FILTER TUBE EROSION BARRIERS ON THE DOWNHILL SIDE.
- DURING AND AFTER CONSTRUCTION, ALL PAVED ROAD AND DRIVEWAY SURFACES ARE TO BE SCRAPED AND BROOMED FREE OF EXCAVATED MATERIALS ON A DAILY BASIS, UNLESS APPROVED BY THE OWNER.

STOCKPILED MATERIALS

- STOCKPILES OF SOIL CREATED DURING CONSTRUCTION ACTIVITIES ARE TO BE SURROUNDED WITH AN EROSION CONTROL BARRIER AROUND THE PERIMETER OF THE STOCKPILE. STOCKPILES OF ERODIBLE MATERIAL ARE TO BE COVERED PRIOR TO INCLEMENT WEATHER WITH A MINIMUM OF 20 MIL POLYETHYLENE SHEETING. STOCKPILES LEFT UNDISTURBED LONGER THAN 14 DAYS SHALL BE SEEDED OR COVERED.

EQUIPMENT FUELING

- EQUIPMENT FUELING AND OTHER ACTIVITIES INVOLVING PETROLEUM, OIL, OR OTHER POTENTIALLY HAZARDOUS SUBSTANCES ARE TO BE PERFORMED AT PRE-APPROVED, DESIGNATED AREAS WITH APPROPRIATE SPILL PREVENTION AND CONTROL MEASURES. PORTABLE SECONDARY CONTAINMENT IS TO BE USED, AND SORBENT MATERIALS ARE TO BE PLACED AROUND THE PERIMETER OF THE FUELING AREA.

CONSTRUCTION DEWATERING

- CONSTRUCTION DEWATERING SHALL BE REQUIRED DURING PORTIONS OF CONSTRUCTION WHICH REQUIRE EXCAVATION OR OTHER ACTIVITIES WHERE GROUNDWATER MAY INTERFERE WITH THE WORK.
- CONSTRUCTION DEWATERING DISCHARGES SHALL BE PRE-TREATED FOR SEDIMENT REMOVAL BY PASSING THROUGH AN APPROPRIATELY SIZED FILTER SOCK, SILT BAG, FRACTIONATION / SEDIMENTATION TANK, OR SEDIMENT TRAP PRIOR TO DISCHARGE, AS NECESSARY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING DEWATERING TECHNIQUES AND MAINTAINING DEWATERING PROCEDURES THROUGHOUT THE DURATION OF THE PROJECT.

OUTLET PROTECTION

- APPROPRIATE OUTLET PROTECTION, CONSISTING OF RIPRAP CHANNEL LINING, A LEVEL SPREADER, OR OTHER SUCH MEASURE SHALL BE PROVIDED AT THE OUTLET OF ANY DEWATERING CONDUIT OR STORMWATER CULVERT OR CHANNEL OUTFALL TO REDUCE VELOCITIES AND ENHANCE SEDIMENTATION PRIOR TO DISCHARGE.

LIMITS OF WORK

- THE CONTRACTOR SHALL LINE THE UPGRADIENT BOUNDARY OF WORK AREAS WITH ORANGE SAFETY FENCING BEFORE THE START OF SITE CLEARING ACTIVITIES EXCEPT WHERE CHAIN-LINK FENCING IS NEEDED TO RESTRICT PUBLIC ACCESS.

SURFACE WATER CONTROL

- THE CONTRACTOR MUST MAINTAIN THE SITE FLOWAGE OF SURFACE WATER THROUGH THE WORK AREA IN ACCORDANCE WITH THE SPECIFICATIONS. ALL COFFERDAMS SHALL CONSIST OF NON-ERODIBLE MATERIAL. THE CONTRACTOR SHALL SUBMIT A WATER CONTROL PLAN THAT WILL ADDRESS EMERGENCY MEASURES TO IMPLEMENT IN THE EVENT A STORM OCCURS DURING CONSTRUCTION.

TURBIDITY MONITORING AND CONTROL

- TURBIDITY SHALL BE MONITORED AND CONTROLLED BY THE CONTRACTOR. A TURBIDITY CURTAIN SHALL BE INSTALLED SURROUNDING AREAS OF EXCAVATION AT AND BELOW THE IMPOUNDMENT WATER LINE.
- IF TURBIDITY LEVELS ARE UNACCEPTABLE AS JUDGED BY THE OWNER, ENGINEER, OR REGULATORY AGENCY, ADDITIONAL MEASURES SHALL BE IMPLEMENTED AT NO EXPENSE TO THE OWNER.

TEMPORARY STABILIZATION

- WHEN NECESSARY, TEMPORARY SLOPE PROTECTION SHALL BE PROVIDED BY INSTALLING SEDIMENT TRAP BARRIERS AT THE TOE OF FILLS OR CUT SLOPES. IF ADDITIONAL STABILIZATION IS NEEDED, THEN THE CONTRACTOR SHALL INSTALL MULCH LOGS, MATTING, SUCH AS STRAW, JUTE, WOOD FIBER, OR BIODEGRADABLE MESH. A TACKIFIER SHALL BE USED ON LOOSE MATERIALS USED FOR TEMPORARY EROSION CONTROL.
- IN THE EVENT THAT DISTURBED AREAS AT THE SITE ARE TO BE LEFT UN-WORKED FOR MORE THAN TWO WEEKS, THE AREAS SHALL BE MULCHED WITH STRAW AT A RATE OF 100 LBS. PER 1,000 S.F. TO HELP CONTROL EROSION. 100% BIODEGRADABLE EROSION CONTROL BLANKETS OR TWO INCHES OF WOOD CHIP MULCH MAY ALSO BE USED AS TEMPORARY COVER.
- IN THE EVENT THAT DISTURBED AREAS AT THE SITE ARE TO BE LEFT UN-WORKED FOR MORE THAN ONE MONTH, THE AREAS SHALL BE TOPSOILED AND SEEDED AS PER THE SPECIFICATIONS AND AT NO ADDITIONAL COST TO THE OWNER.
- LEAVE THE SURFACE OF ALL EXCAVATIONS AND FILLS IN A FIRM AND STABLE CONDITION AT THE END OF EACH DAY. ROLL OR OTHERWISE TREAT THE SURFACE AS NEEDED.

SITE RESTORATION

- STABILIZATION OF DISTURBED AREAS OR NEW SOIL FILLS SHALL BE IMPLEMENTED WITHIN 14 DAYS AFTER GRADING OR CONSTRUCTION ACTIVITIES HAVE PERMANENTLY CEASED. APPROPRIATE VEGETATIVE SOIL STABILIZATION IS TO BE USED TO MINIMIZE EROSION. TEMPORARY AND PERMANENT VEGETATIVE COVER IS TO BE ESTABLISHED IN ACCORDANCE WITH THE PROJECT PLANS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORATION OF PREVIOUSLY VEGETATED UPLAND AREAS DISTURBED BY CONSTRUCTION ACTIVITIES. RESTORATION OF UPLAND AREAS CONSIST OF REPLACEMENT OF TOPSOIL OR PLACEMENT OF IMPORTED LOAM AS NEEDED SUCH THAT A MINIMUM OF 4 INCHES OF SUITABLE MATERIAL IS PRESENT AND APPROPRIATELY LIMED, FERTILIZED, GRADED, AND SCARIFIED. FIELDS DISTURBED OR COMPACTED BY CONSTRUCTION ACTIVITIES SHALL BE PLOWED TO LOOSEN THE SOIL, HARROWED TO PROVIDE AN EVEN SURFACE, AND APPROPRIATELY PREPARED FOR PLANTING.
- DISTURBED UPLAND AREAS SHALL THEN BE HYDROSEEDING WITH AN APPROVED SEED MIX AT THE RATE RECOMMENDED BY THE MANUFACTURER. SEEDING RATE SHALL BE DOUBLED FOR DORMANT SEEDING. SEED MIX SHALL BE DRY SITE RESTORATION SEED MIX UNLESS OTHERWISE NOTED OR AS APPROVED BY THE ENGINEER.
- 100% BIODEGRADABLE EROSION CONTROL BLANKETS MUST BE USED FOR STABILIZATION OF SLOPES IN EXCESS OF 3H:1V AND MAY BE USED IN LIEU OF HYDROSEEDING AT THE CONTRACTOR'S DISCRETION TO PROVIDE ADDITIONAL EROSION PROTECTION.
- FINAL STABILIZATION SHALL BE CONSIDERED COMPLETE WHEN ALL SOIL-DISTURBING ACTIVITIES HAVE BEEN COMPLETED AND A UNIFORM, PERENNIAL VEGETATIVE COVER WITH A DENSITY OF EIGHTY PERCENT HAS BEEN ESTABLISHED OR EQUIVALENT STABILIZATION MEASURES (SUCH AS THE USE OF MULCHES OR EROSION CONTROL MATTING) HAVE BEEN EMPLOYED ON ALL UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL VEGETATED SURFACES, INCLUDING WATERING, FERTILIZING, REPAIRING EROSION, INVASIVE PLANT REMOVAL, AND RE-SEEDING UNTIL ESTABLISHMENT CONDITIONS ARE MET AND UNTIL THE END OF THE CONTRACTUAL MAINTENANCE PERIOD.

EROSION CONTROL NOTES:

1. CONTRACTOR MUST FINALIZE AND IMPLEMENT THE EROSION AND SEDIMENT CONTROL PLAN (ESCP).
2. THE ESCP SHALL BE UPDATED AS CONSTRUCTION PROGRESSES. IT SHOULD REFLECT CURRENT OWNERSHIP, RESPONSIBILITIES, OPERATIONS AND FINDINGS. THE PLAN SHALL BE REVISED NO LATER THAN 7 DAYS AFTER THE INSPECTION. IF HAZARDOUS CONDITIONS OCCUR THE PLAN NEEDS TO BE MODIFIED BEFORE PROCEEDING WITH WORK. STEPS TO PREVENT THE REOCCURRENCE OF SUCH RELEASES SHALL BE IDENTIFIED IN A PLAN REVISION AND IMPLEMENTED.
3. MAINTAIN AN ADDITIONAL SUPPLY OF EROSION CONTROL MEASURES THROUGHOUT THE CONSTRUCTION PERIOD.
4. MAINTAIN ALL EROSION CONTROL MEASURES IN GOOD WORKING CONDITION. THIS MAY REQUIRE CLEANING, REPAIRING, REPLACEMENT, AND SEDIMENT DISPOSAL. MAINTENANCE SHALL BE INITIATED WITHIN 24 HOURS OF IDENTIFICATION. SEDIMENT BARRIERS SHOULD HAVE SEDIMENT CLEANED OUT WHEN THE BARRIER IS 50% OF CAPACITY. SOIL AND DEBRIS ON ADJOINING PROPERTIES OR STREETS SHALL BE MINIMIZED. HAZARDOUS MATERIAL SPILLS SHOULD BE REMOVED IMMEDIATELY AND REMEDIAL ACTIONS FOR PREVENTION MUST BE TAKEN. HAZARDOUS MATERIALS SHALL BE CLEANED UP BY REMOVING AND DISPOSING OF CONTAMINATED MATERIALS PROPERLY.
5. 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.
6. THE ESCP MEASURES SHOWN ON THIS PLAN ARE THE BASE REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, UPGRADE THESE MEASURES AS NEEDED TO COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL EROSION AND SEDIMENT CONTROL REGULATIONS.
7. EROSION AND SEDIMENT CONTROL MEASURES INCLUDING PERIMETER SEDIMENT CONTROL MUST BE IN PLACE BEFORE VEGETATION IS DISTURBED AND MUST REMAIN IN PLACE AND BE MAINTAINED, CLEANED, REPAIRED OR REPLACED, AND PROMPTLY IMPLEMENTED FOLLOWING PROCEDURES ESTABLISHED FOR THE DURATION OF CONSTRUCTION, INCLUDING PROTECTION FOR ACTIVE STORM DRAIN INLETS AND CATCH BASINS AND APPROPRIATE NON-STORMWATER POLLUTION CONTROLS.
8. PHASE CLEARING AND GRADING TO THE MAXIMUM EXTENT PRACTICAL TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE UNSTABILIZED EXCAVATION AND CREATION OF BARE GROUND DURING WET WEATHER.
9. PROTECT NEW WORK FROM FLOODING. PROPERLY SLOPE GRADING IN THE AREAS SURROUNDING ALL EXCAVATIONS TO PREVENT WATER FROM RUNNING INTO THE EXCAVATED AREA OR TO ADJACENT PROPERTIES. UPON COMPLETION OF THE WORK, RESTORE ALL AREAS IN A SATISFACTORY MANNER.
10. IDENTIFY, MARK, AND PROTECT (BY FENCING OFF OR OTHER MEANS) CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING ALL TREES AND ASSOCIATED ROOTING ZONES, AND VEGETATION AREAS NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. MARK IN THE FIELD VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, ESPECIALLY IN PERIMETER AREAS.
11. THE INTENTIONAL WASHING OF SEDIMENT INTO SAWMILL BROOK MUST NOT OCCUR. VACUUMING OR DRY SWEEPING AND MATERIAL PICKUP MUST BE USED TO CLEANUP SEDIMENTS.
12. 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.
13. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES ON ALL DISTURBED AREAS AS GRADING PROGRESSES AND FOR ALL ROADWAYS INCLUDING GRAVEL ROADWAYS.
14. ESTABLISH CONCRETE TRUCK AND OTHER CONCRETE EQUIPMENT CONTAINED WASHOUT AREAS BEFORE BEGINNING CONCRETE WORK. CONCRETE WASHOUT MUST BE CONTAINED AWAY FROM DRAINAGE AREAS. IT MUST BE CLEARLY MARKED AND ACCESSIBLE.
15. ESTABLISH MATERIAL AND WASTE STORAGE AREAS, AND OTHER NON-STORMWATER CONTROLS. DISPOSAL OF MATERIALS AND WASTE SHALL COMPLY WITH STATE AND LOCAL WASTE DISPOSAL. SANITARY WASTE AND OTHER HAZARDOUS WASTE SHALL BE DISPOSED OF IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
16. DEWATER AS NECESSARY TO KEEP CONSTRUCTION AREAS FREE OF WATER, DISCHARGE WATER FROM DEWATERING TO THE APPROPRIATE LOCATION AND WITHOUT SEDIMENT.
17. ALL SILT-LADEN WATER MUST BE SETTLED OR FILTERED TO REMOVE ALL SEDIMENTS IN A SEDIMENTATION BASIN OR FILTER BAG LOCATED DOWNSTREAM, PRIOR TO RELEASE TO A WATERWAY OR EXISTING DRAINAGE SYSTEM.
18. PREVENT TRACKING OF SEDIMENT OUTSIDE OF PROJECT LIMITS USING BMPs SUCH AS: GRAVELED (OR PAVED) EXITS AND PARKING AREAS, GRAVEL ALL UNPAVED ROADS LOCATED ONSITE, OR USE AN EXIT TIRE WASH. THESE BMPs MUST BE IN PLACE PRIOR TO LAND-DISTURBING ACTIVITIES. AT THE END OF EACH WORK DAY, ANY SEDIMENTS TRACKED ONTO PUBLIC RIGHT-OF-WAYS BEYOND THE PROJECT LIMITS SHALL BE SWEEP AWAY.
19. WHEN TRUCKING SATURATED SOILS FROM THE SITE, EITHER USE WATER-TIGHT TRUCKS OR DEWATER LOADS ON SITE.
20. BMP'S SHOULD BE IMPLEMENTED AND MONITORED THROUGHOUT THE PROJECT. USE BMPs TO PREVENT OR MINIMIZE STORMWATER EXPOSURE TO POLLUTANTS FROM SPILLS; VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE; OTHER CLEANING AND MAINTENANCE ACTIVITIES; AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, LEFTOVER PAINTS, SOLVENTS, AND GLUES FROM CONSTRUCTION OPERATIONS.
21. WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, SPILL KITS IN ALL VEHICLES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, AND COVERED STORAGE AREAS FOR WASTE AND SUPPLIES. HAZARDOUS MATERIALS SHOULD BE STORED AWAY FROM THE STREAM TO ELIMINATE CHANCES FOR ACCIDENTAL SPILL SHALL BE IMPLEMENTED.
22. IF A TREATMENT (FOR EXAMPLE, ELECTRO-COAGULATION, FLOCCULATION, FILTRATION, ETC.) FOR SEDIMENT OR OTHER POLLUTANT REMOVAL IS EMPLOYED, SUBMIT AN OPERATION AND MAINTENANCE PLAN (INCLUDING SYSTEM SCHEMATIC, LOCATION OF SYSTEM, LOCATION OF INLET, LOCATION OF DISCHARGE, DISCHARGE DISPERSION DEVICE DESIGN, AND A SAMPLING PLAN AND FREQUENCY) BEFORE OPERATING THE TREATMENT SYSTEM. OBTAIN ENGINEER'S PLAN REVIEW BEFORE OPERATING THE TREATMENT SYSTEM. OPERATE AND MAINTAIN THE TREATMENT SYSTEM ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
23. TEMPORARILY STABILIZE SOILS AT THE END OF THE SHIFT BEFORE HOLIDAYS AND WEEKENDS. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT SOILS ARE STABLE DURING EVENTS AT ANY TIME.
24. STABILIZING PRACTICES : SEEDING WITH MULCH AND ROLLED EROSION CONTROL MATTING. ANY AREAS NOT SUBJECT TO CONSTRUCTION ACTIVITY FOR 14 DAYS MUST BE STABILIZED IMMEDIATELY. PRESERVE EXISTING VEGETATION IN AREAS NOT DISTURBED DURING CONSTRUCTION. ANY ON SITE STOCK PILES SHALL BE STABILIZED WITHIN 14 DAYS AFTER CONSTRUCTION ACTIVITY HAS CEASED WITH SEDIMENT BARRIERS INSTALLED.
25. FINAL STABILIZATION: MEANS THAT ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED AND THAT A UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70% FOR THE AREA HAS BEEN ESTABLISHED OR EQUIVALENT STABILIZATION MEASURES HAVE BEEN EMPLOYED.

**100%  
Drawings  
Not For  
Construction**

**Central Street  
Bridge  
Replacement**

**Department of  
Public Works**

**MassDOT Bridge No.  
M-02-001 (CDL)**

**Town of  
Manchester-By-  
The-Sea,  
Massachusetts**

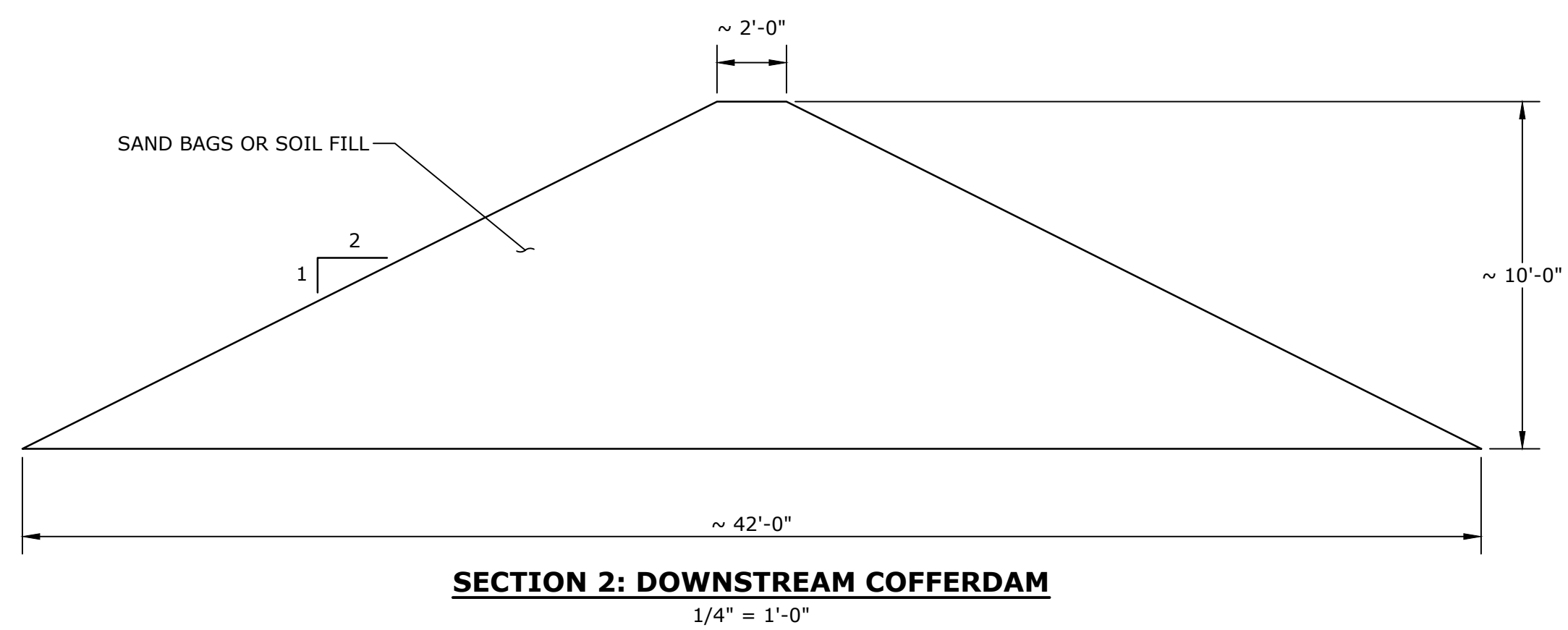
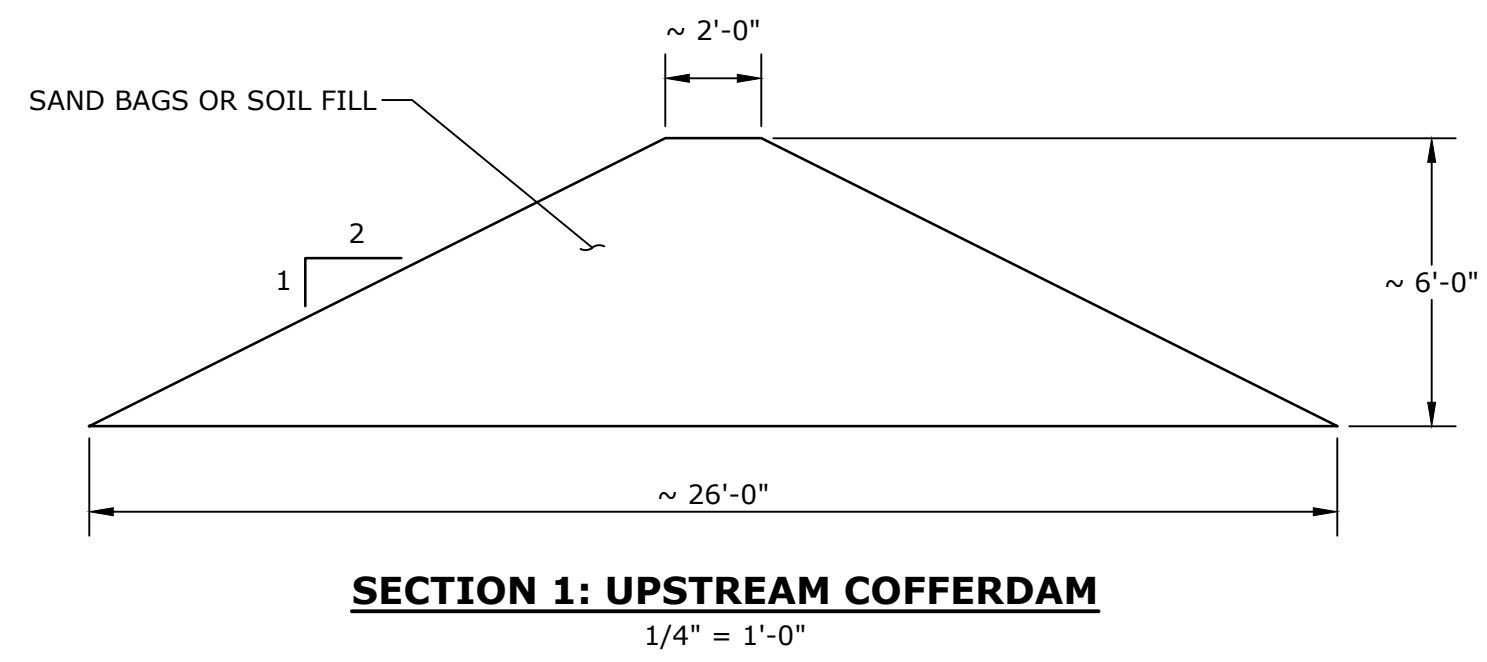
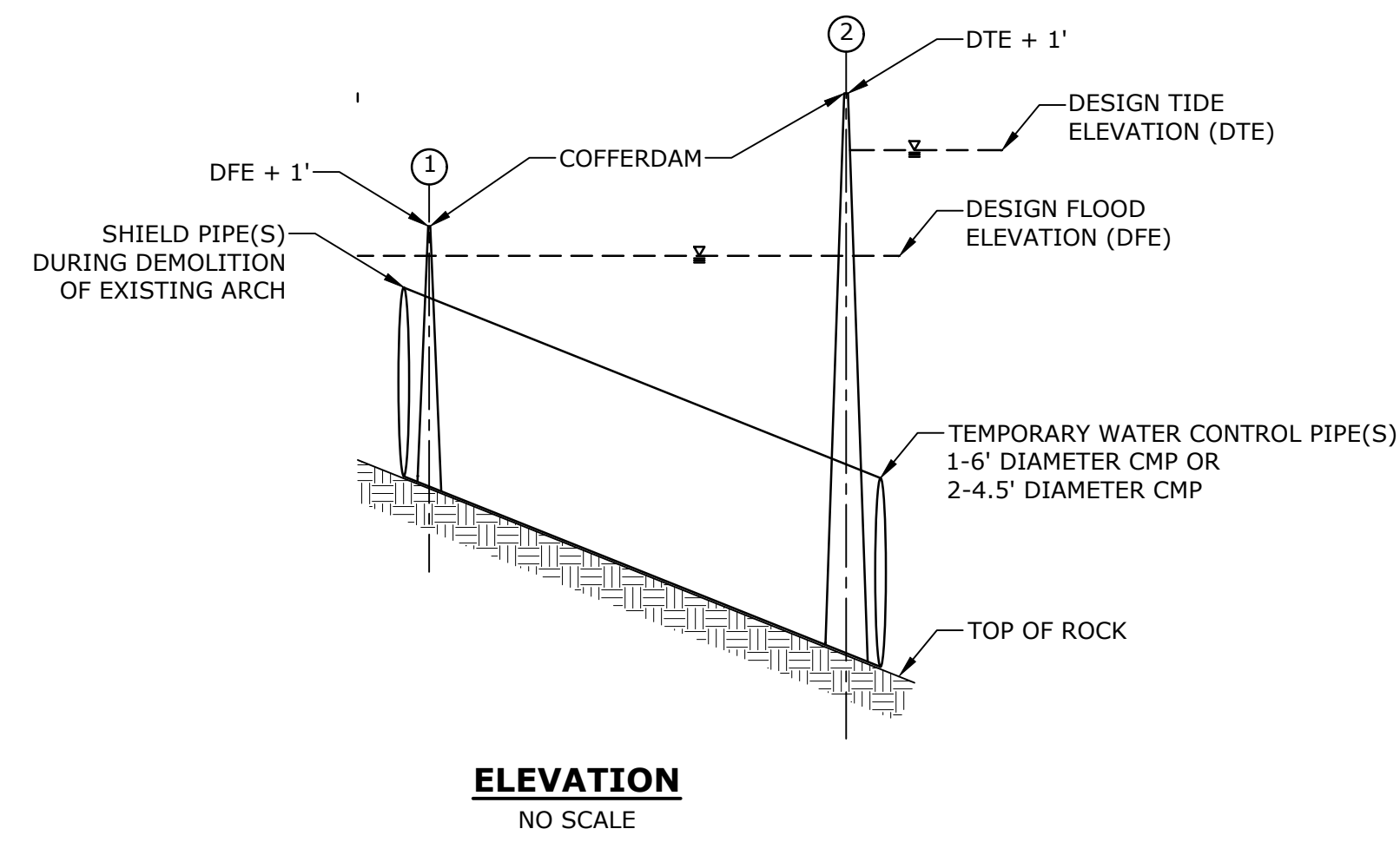
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APPROVED:	DLM	

**CONTROL OF WATER NOTES  
& DETAILS (SHEET 1 OF 2)**

SCALE: AS NOTED

**C-504**  
SHEET 16 OF 51

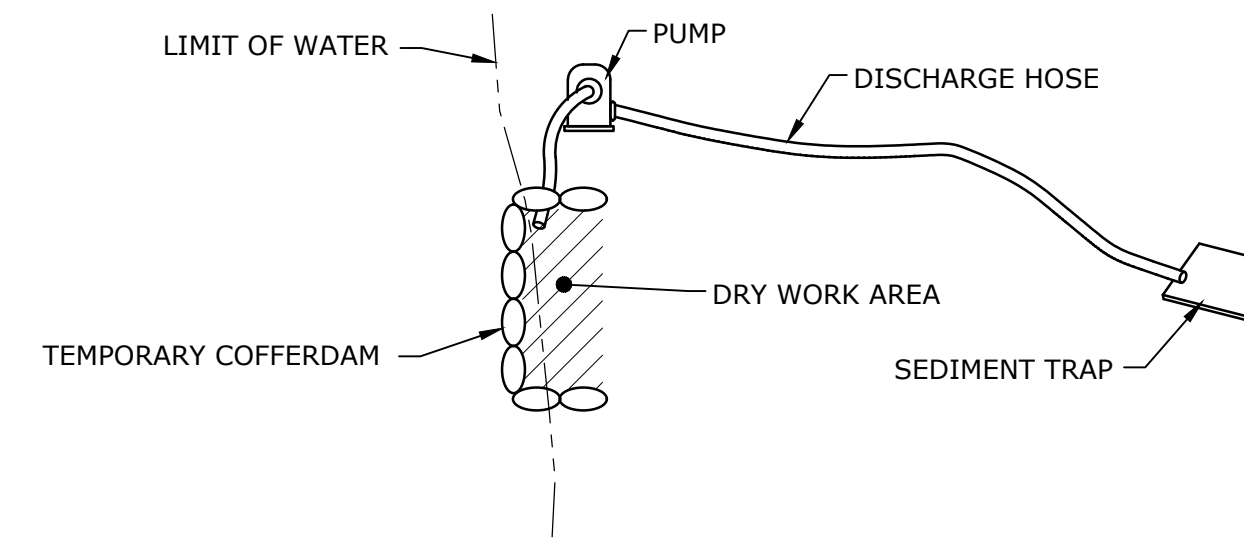
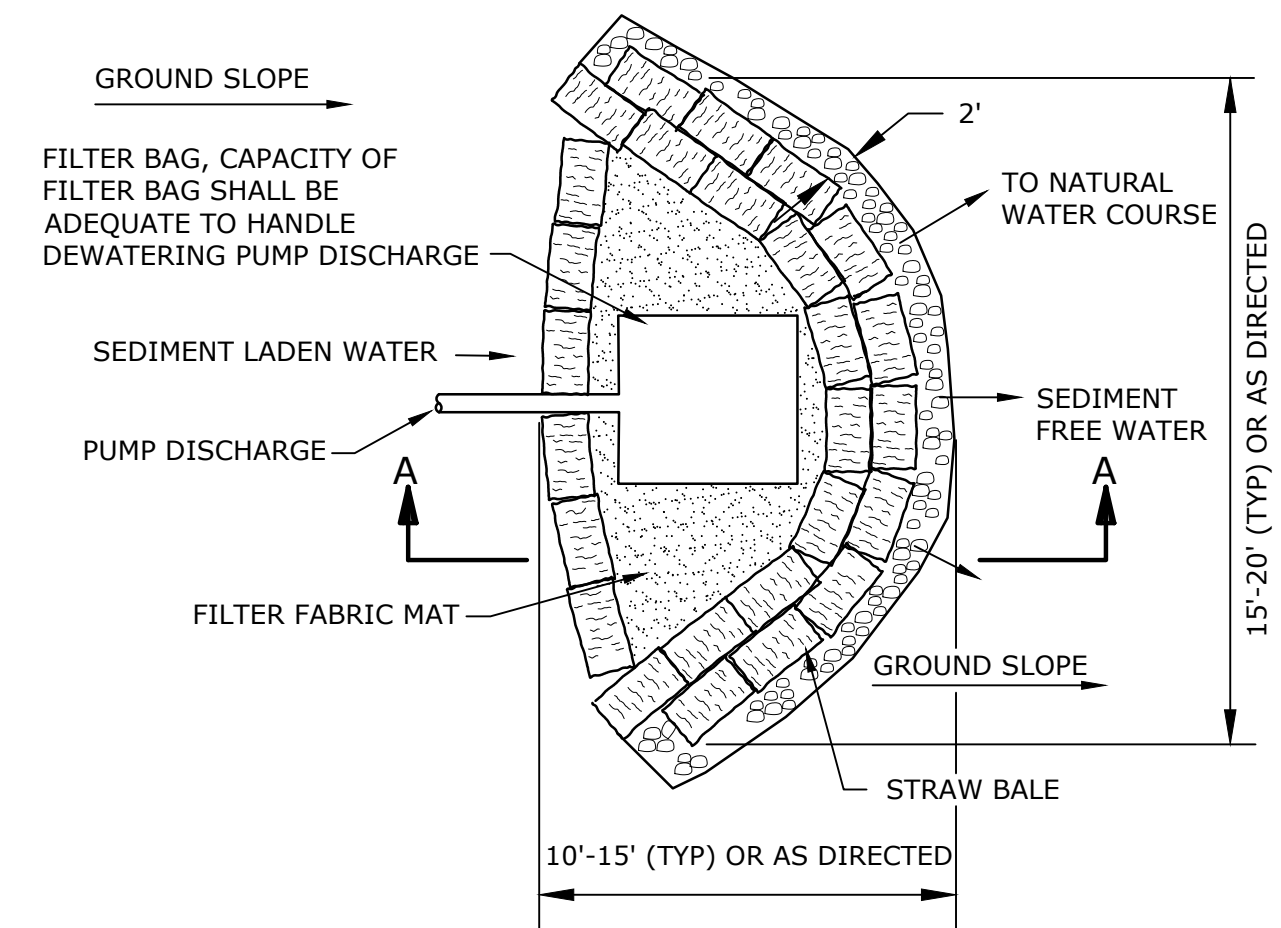
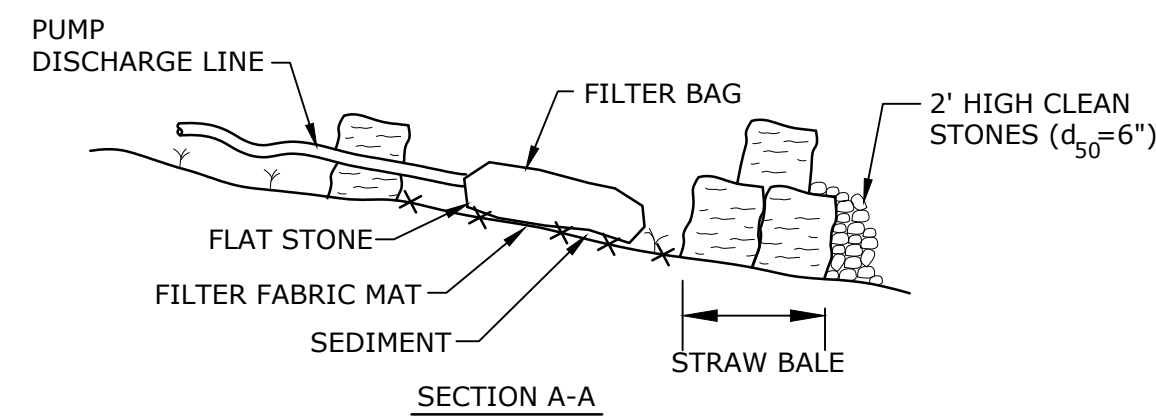
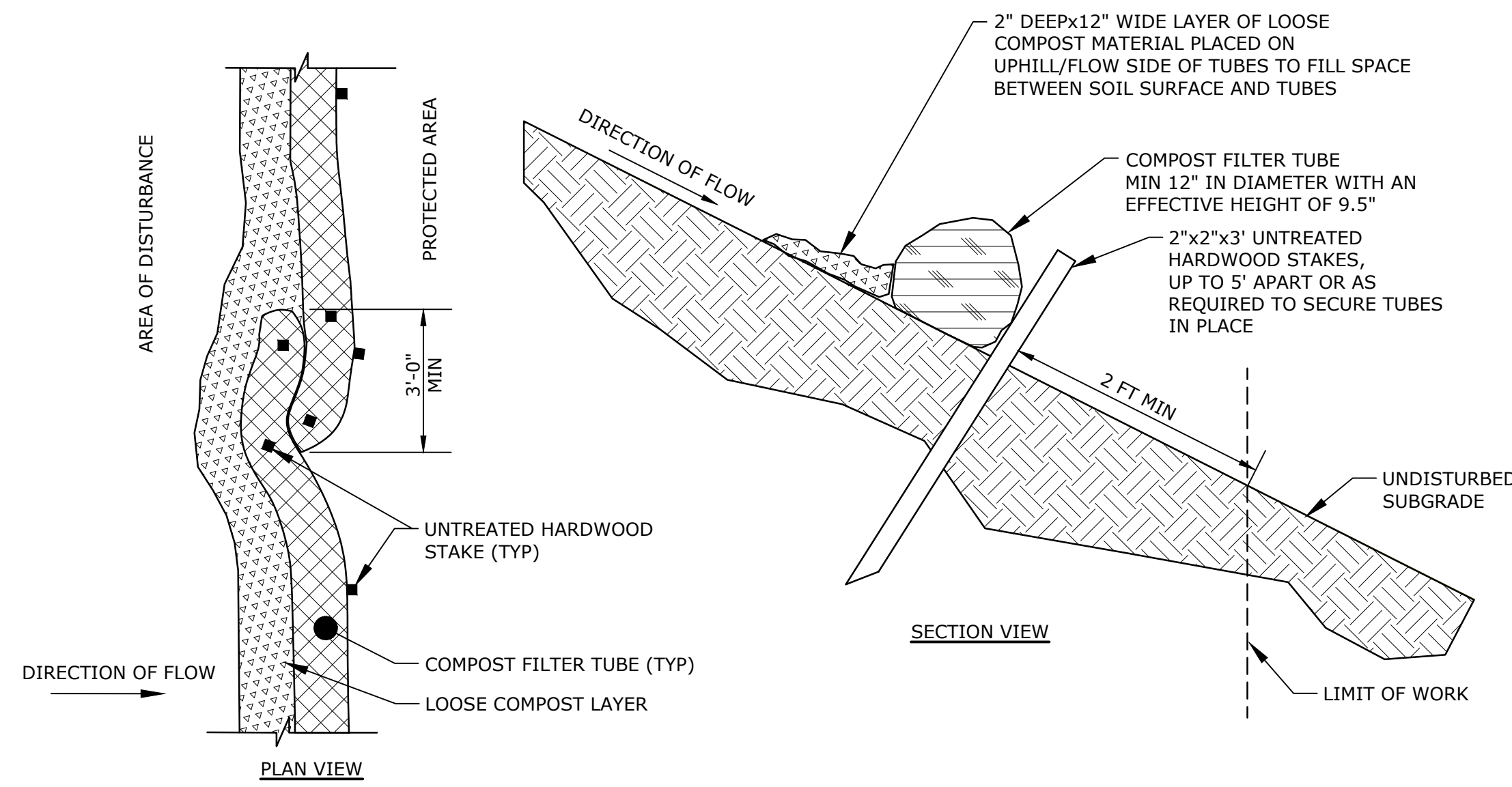




**COFFERDAMS, PUMPING, DEWATERING, AND STREAM BYPASS NOTES:**

- THE DETAILS SHOWN ON THIS SHEET ARE AN EXAMPLE OF ACCEPTABLE METHODS TO USE DURING CONSTRUCTION OF THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR DEVELOPING AND SUBMITTING A COFFERDAM PLAN, BYPASS PUMPING AND DEWATERING PLAN FOR REVIEW AND APPROVAL BY THE CONTRACTING AGENCY OR ENGINEER. THE PLAN SHALL BE PREPARED AND STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS. THE PLAN SHALL INCLUDE SUFFICIENT DETAIL OF MEANS AND METHODS TO SATISFY THE PROJECT SPECIFICATIONS AND PERMIT REQUIREMENTS. IF APPROVED, OTHER METHODS MAY BE USED SUCH AS UTILIZING INFLATABLE BLADDERS, PLATES, OR BARRIERS OF VARIOUS MATERIALS. COFFERDAMS SHALL INCLUDE PLASTIC LINER OR FINE MESH SILT FENCE TO REDUCE TURBIDITY AND FINES FROM ENTERING THE FREE FLOWING PORTION OF LIVE WATER.
- THE CONTRACTOR SHALL DETERMINE A DESIGN TIDE ELEVATION THAT IS AT A MINIMUM THE ANNUAL HIGH TIDE.
- THE CONTRACTING AGENCY IS RESPONSIBLE FOR MEASURING TURBIDITY HOWEVER THE CONTRACTOR SHALL ADHERE TO THE SPECIAL PROCEDURES REGARDING IN-STREAM WORK, TURBIDITY, AND DEWATERING IN THE DESIGN DRAWINGS.
- FILL MATERIAL FOR BULK BAGS FOR "SUPER SACKS", IF USED, SHALL BE CLEAN, WASHED, AND ROUNDED MATERIAL MEETING STANDARD SPECIFICATIONS FOR DRAIN ROCK, STREAMBED AGGREGATES, STREAMBED SEDIMENTS, OR STREAMBED COBBLES. MATERIAL USED TO FILL BULK BAGS SHALL BE DISPOSED OF IN ACCORDANCE WITH THE PERMITS. IF PERMITS ALLOW, MATERIAL MAY BE DISPOSED OF IN UPLAND AREAS AS DIRECTED BY THE CONTRACTING OFFICER.
- DEWATERING PUMP DISCHARGE FROM WITHIN COFFERDAM WORK AREAS SHALL BE RELEASED INTO SEDIMENT TRAPS. ALL RETURN FLOWS MUST MEET PERMIT REQUIREMENTS FOR TURBIDITY.
- EXCAVATIONS ASSOCIATED WITH CHANNEL, FLOODPLAIN, AND STRUCTURES SHALL BE DEWATERED.
- DEWATERING PUMP DISCHARGE FROM WITHIN COFFERDAM WORK AREAS SHALL BE RELEASED INTO SEDIMENT TRAPS AWAY FROM WETLANDS AND CONSTRUCTION ACTIVITIES. DISCHARGE SHALL BE COMPLETELY INFILTRATED PRIOR TO REACHING WETLANDS OR SURFACE WATERS UNLESS APPROVED BY THE CONTRACTING OFFICER. ALL RETURN FLOWS MUST MEET PERMIT REQUIREMENTS FOR TURBIDITY.
- ALL PUMP INTAKES SHALL BE SCREENED FOR FISH PROTECTION AS REQUIRED BY NOAA.
- ALL EARTHWORK ACTIVITIES AND STRUCTURE CONSTRUCTION WITHIN THE ORDINARY HIGH WATER CHANNEL SHALL CONFORM TO THE WATER QUALITY STANDARDS ESTABLISHED BY REGULATORY AGENCY PERMITS FOR THIS PROJECT.
- FLOW PIPE SHALL BE INSTALLED AND SUPPORTED AS NECESSARY TO ACCOUNT FOR IRREGULARITIES OF CHANNEL FLOOR.
- THE TEMPORARY WATER CONTROL PIPE SHALL PROVIDE FISH PASSAGE DURING HIGH TIDES AND ALLOW TIDAL FLUSHING.
- THE LRFD MANUAL RECOMMENDS A TEMPORARY WATER CONTROL DESIGN FLOOD OF THE 50% ANNUAL EXCEEDANCE PROBABILITY (AEP) STORM EVENT (2-YEAR FREQUENCY STORM) FOR CONSTRUCTION RELATED STRUCTURES THAT WILL BE IN PLACE FOR 1-YEAR OR LESS.

DATUMS FOR 8443970, BOSTON MA (NAVD88)	
ANNUAL HIGH TIDE	8.20
MHHW	4.77
MHW	4.33
MSL	-0.30
MLW	-5.16
MLLW	-5.51



- NOTES:**
- DEWATERING EQUIPMENT SHALL REMAIN WITHIN THE PERMANENTLY IMPACTED AREAS AND SHALL DISCHARGE OUTSIDE OF THE RESOURCE AREA BOUNDARY AS SHOWN ON SHEET C-001.
  - DISCHARGE HOSE SHALL NOT CROSS THE WATER AT ANY LOCATION.

**100% Drawings Not For Construction**

**Central Street Bridge Replacement**

Department of Public Works

MassDOT Bridge No. M-02-001 (CDL)

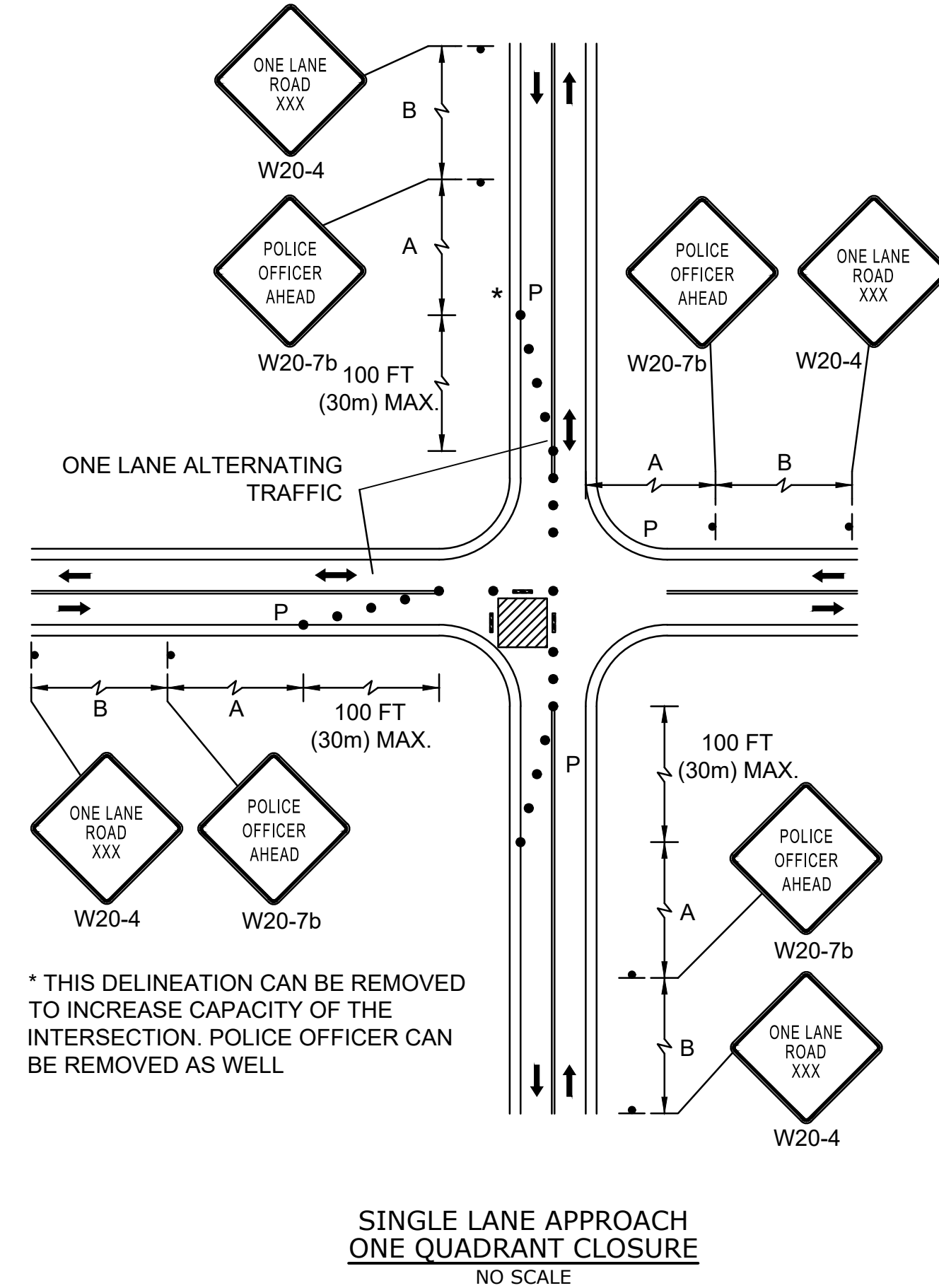
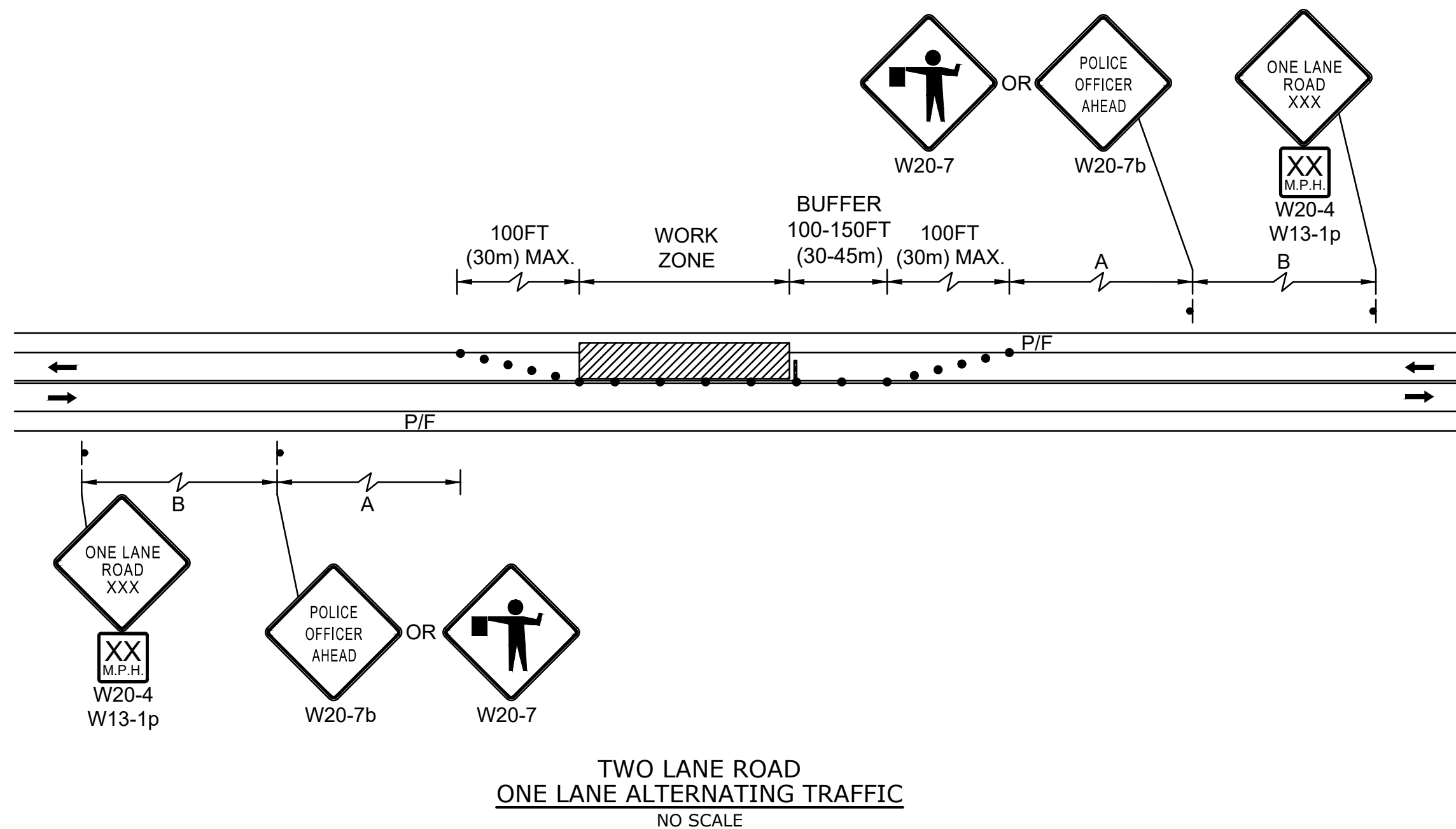
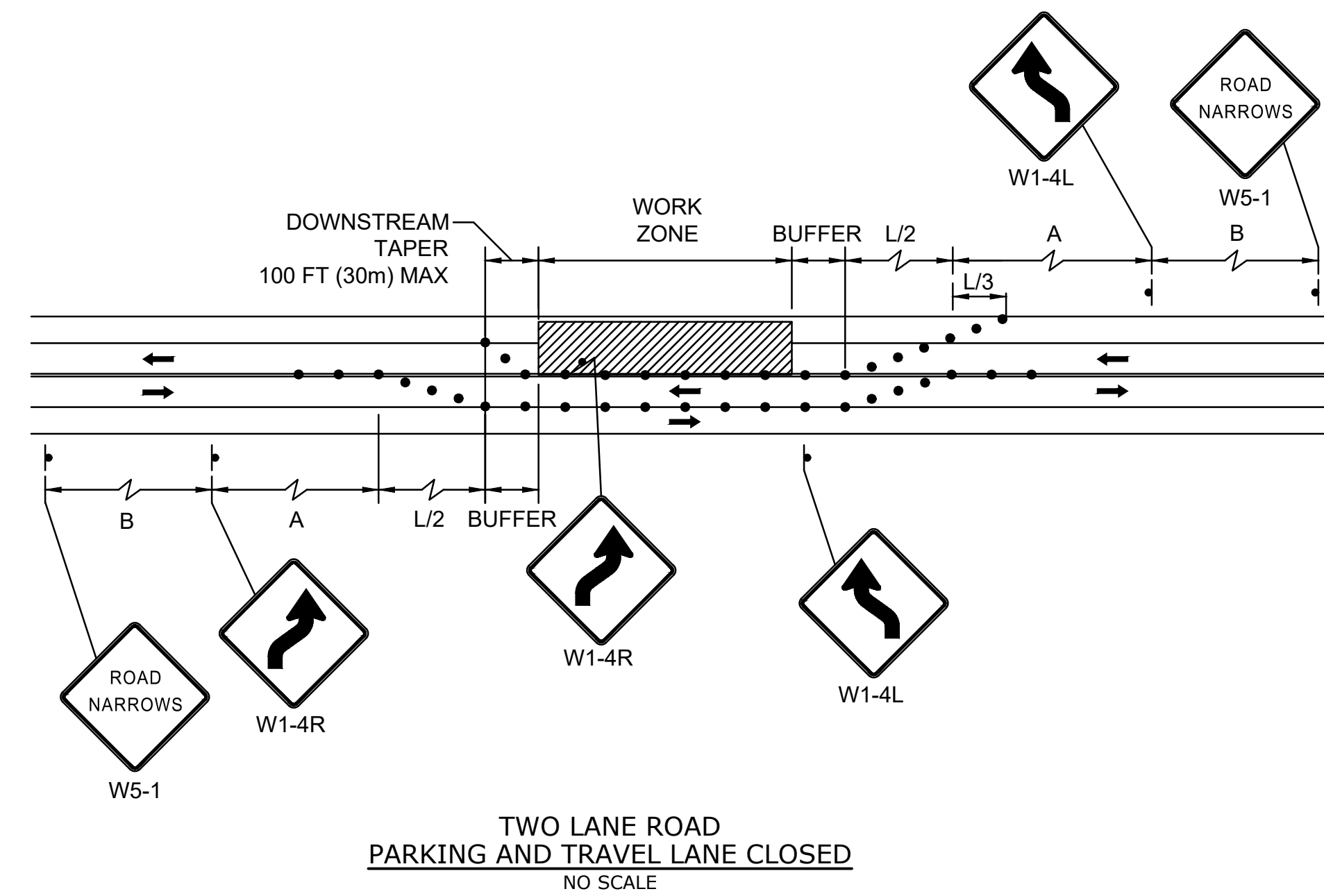
Town of Manchester-By-The-Sea, Massachusetts

MARK	DATE	DESCRIPTION
PROJECT NO:	M1476-011	
DATE:	JUNE 2024	
FILE:	M1476-011-C-501.dwg	
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CHECKED:	EAQ/BRB	
APPROVED:	DLM	

CONTROL OF WATER NOTES & DETAILS (SHEET 2 OF 2)

SCALE: AS NOTED

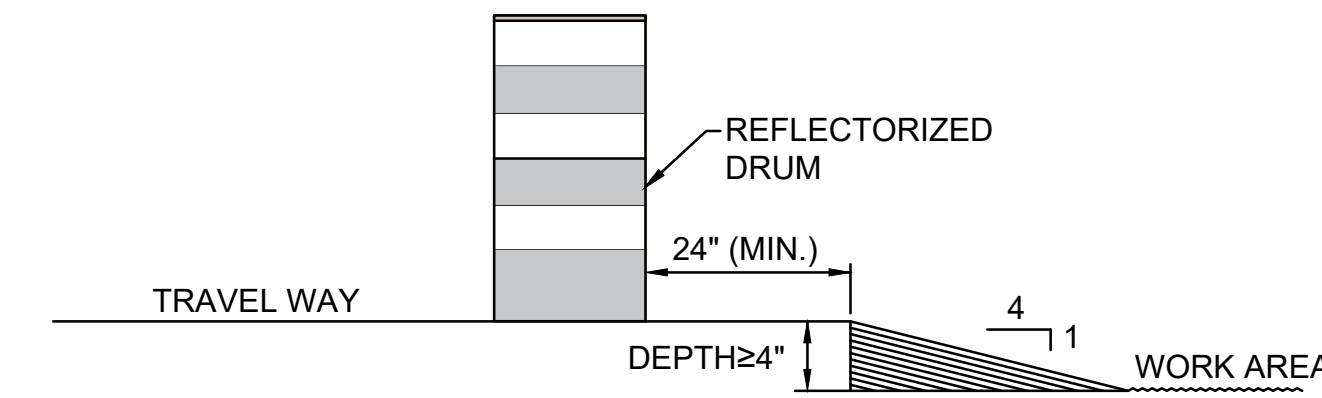
**C-505**  
SHEET 17 OF 51



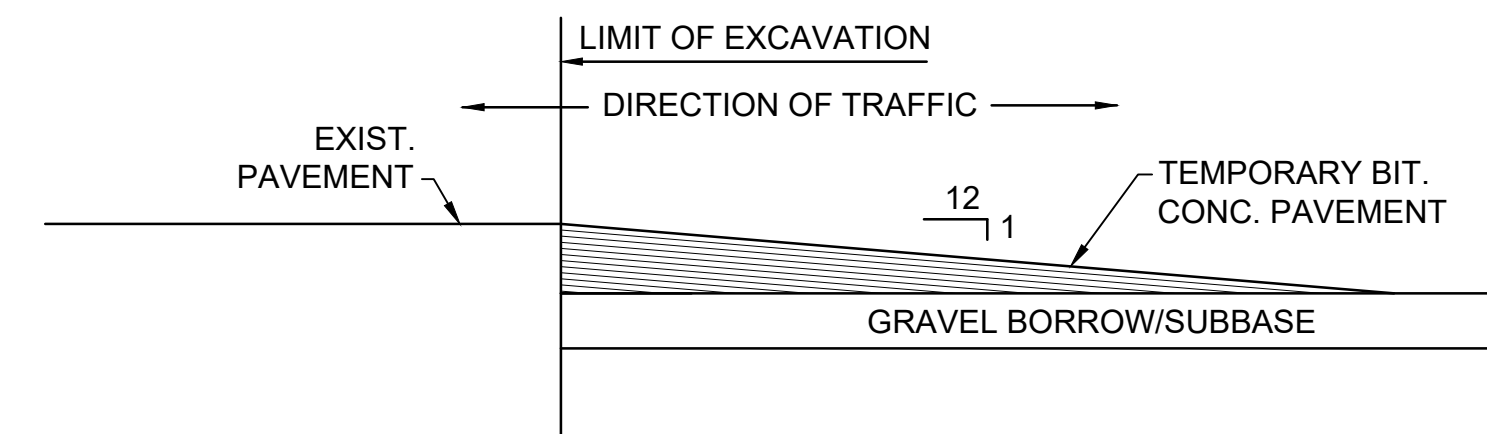
**FORMULAS FOR DETERMINING TAPER LENGTHS**

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

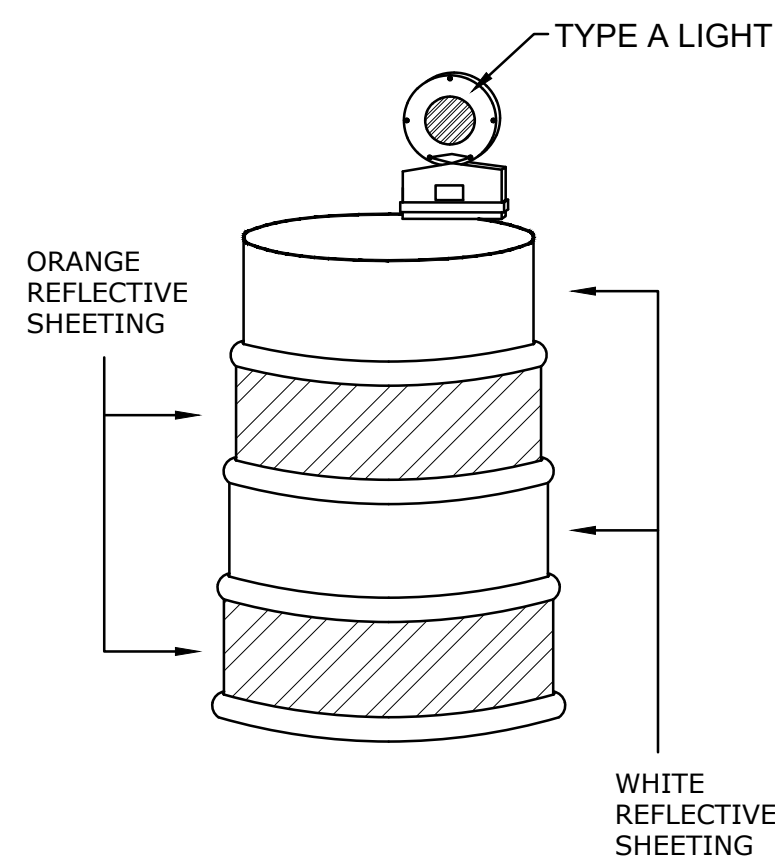


IF "D" IS GREATER THAN 4" THE CONTRACTOR SHALL PLACE FILL MATERIAL AT A 4:1 SLOPE AT THE EDGE OF THE EXCAVATED AREA. SUPPLYING, PLACING AND REMOVING THIS FILL MATERIAL SHALL BE INCIDENTAL TO THE PROJECT AND NOT SEPARATELY MEASURED OR PAID FOR.



**NOTES:**

- ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
- 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.
- THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
- DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD 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.
- TEMPORARY PEDESTRIAN WALKWAY LOCATION TO BE DETERMINED IN THE FIELD. CONTRACTOR AND ENGINEER TO DETERMINE TREE REMOVAL ALONG DETOUR PATH.
- TEMPORARY PEDESTRIAN WALKWAY TO CONFORM WITH ADA STANDARDS.
- TEMPORARY PEDESTRIAN WALKWAY TO BE RETURNED TO PRECONSTRUCTION CONDITIONS. REPLACE TREES IN KIND.
- CURB RAMPS SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE AND NON-SLIP SURFACE.
- PROTECTIVE EDGING WITH A 2 IN. MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6 IN. OR GREATER OR HAS A SIDE APRON SLOP STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3 IN. OR MORE.
- DETECTABLE EDGING WITH 6 IN. MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
- CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
- CLEAR SPACE OF 48x48 IN. MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
- THE CURB RAMP WALKWAY EDGE SHALL BE MARKED WITH A CONTRASTING COLOR 2 TO 4 IN. WIDE MARKING. THE MARKING IS OPTIONAL WHERE COLOR CONTRASTING EDGING IS USED.
- WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
- LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5 IN. WIDTH.
- CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5 IN. LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25 IN. HIGH, AND BEVELED AT 1:2 BETWEEN 0.25 IN. AND 0.5 IN. HEIGHT.



**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 LOSTS TARGET VALUE IT SHALL BE REPLACED.
- STORE UNUSED DRUMS IN ONE LOCATION, AWAY FROM ALL TRAFFIC, OR REMOVE FROM SITE ENTIRELY.

**100% Drawings Not For Construction**

**Central Street Bridge Replacement**

Department of Public Works

MassDOT Bridge No. M-02-001 (CDL)

Town of Manchester-By-The-Sea, Massachusetts

MARK	DATE	DESCRIPTION
PROJECT NO:	M1476 - 011	
DATE:	JUNE 2024	
FILE:	M1476-011-C-701.dwg	
DRAWN BY:	AGB/DRF	
CHECKED:	EAQ/BRB	
APPROVED:	DLM	

TEMPORARY TRAFFIC CONTROL PLAN - GENERAL

SCALE: AS NOTED

C-701 SHEET 18 OF 51

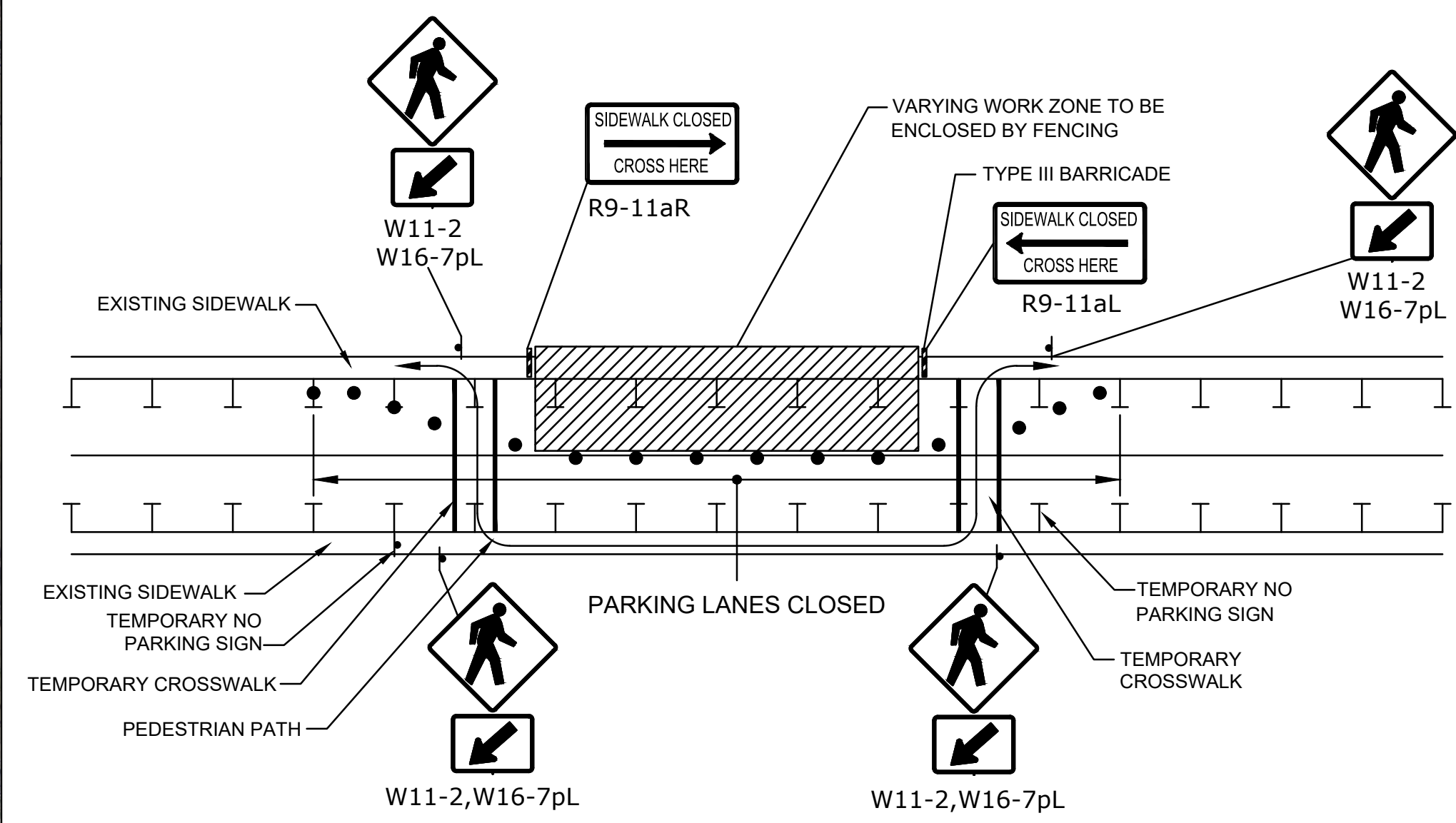
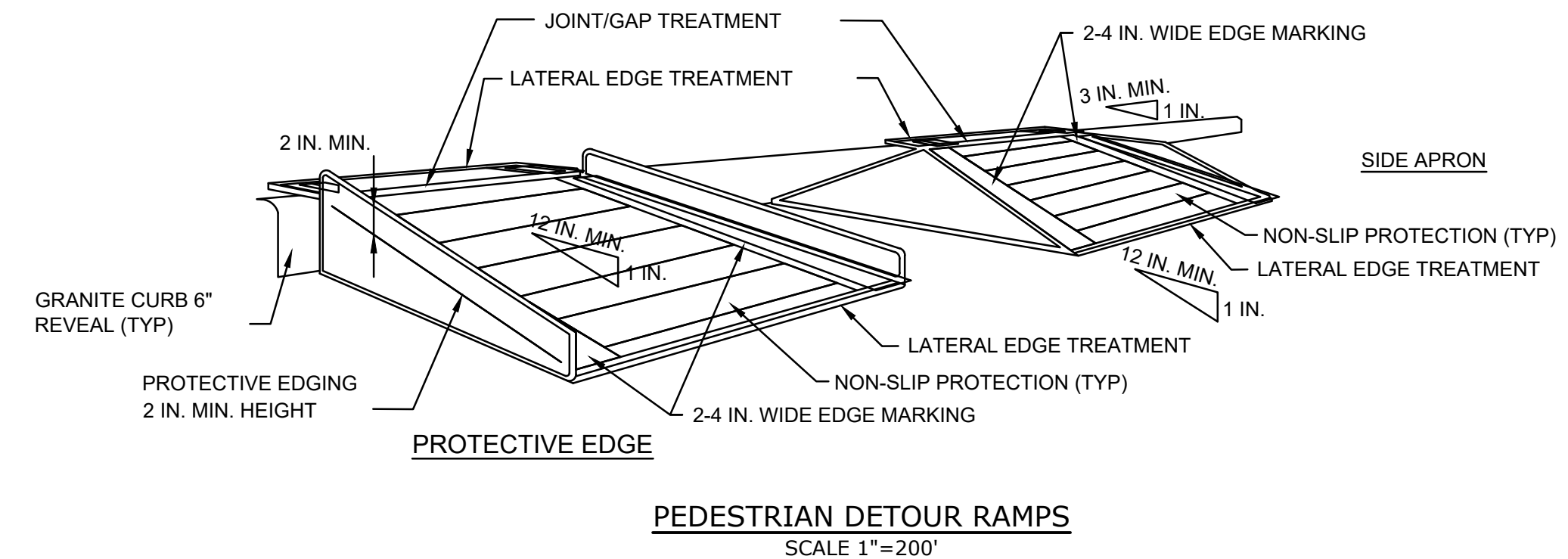


W20-1-a  
DETOUR PLAN  
SCALE 1"=500'

LEGEND

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- ▨ WORK ZONE
- DIRECTION OF TRAFFIC
- ▩ TYPE III BARRICADE
- TRUCK DETOUR DIRECTION OF TRAFFIC
- CHANGEABLE MESSAGE SIGN
- ▲ SIGN

SIGN LEGEND					
CODE	DESCRIPTION	SIZE	AREA	NO.	TOTAL AREA
W20-1-a	ROAD WORK AHEAD	36"x36"	9 SF	2	18 SF
W20-3	ROAD CLOSED AHEAD	36"x36"	9 SF	2	18 SF
R11-2	ROAD CLOSED	48"x30"	10 SF	2	20 SF
R11-4	ROAD CLOSED TO THRU TRAFFIC	60"x30"	12.5 SF	2	25 SF
M4-10L	DETOUR	48"x18"	6 SF	1	6 SF
M4-10R	DETOUR	48"x18"	6 SF	1	6 SF
M4-9L	DETOUR	30"x24"	5 SF	5	25 SF
M4-9R	DETOUR	30"x24"	5 SF	5	25 SF
M4-8a	END DETOUR	30"x24"	5 SF	2	10 SF
TOTAL =					153 SF



- NOTES
- ADDITIONAL ADVANCE WARNING MAY BE NECESSARY.
  - CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN. VEHICULAR TRAFFIC SHOULD BE HANDLED AS SHOWN ELSEWHERE.
  - STREET LIGHTING SHOULD BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
  - TEMPORARY CROSSWALKS WITH APPROPRIATE SIGNS SHOULD BE INSTALLED TO CROSS PEDESTRIANS TO THE OPPOSITE SIDE OF THE STREET AS SHOWN IN PEDESTRIAN BYPASS, AND AS DIRECTED BY THE ENGINEER. TEMPORARY CURB RAMPS WILL BE REQUIRED AT ALL TEMPORARY CROSSWALK LOCATIONS.
  - BYPASS IS TO BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING, AS DIRECTED BY THE ENGINEER.
  - THE TEMPORARY SIDEWALK SHOULD BE A MINIMUM OF 4 FEET WIDE. IF THIS WALKWAY EXCEEDS 200 FEET THEN A 5 FOOT X 5 FOOT PASSING ZONE. (FOR SHORT TERM SETUPS < 10 HOURS, THIS CONDITION MAY BE WAIVED. A NOTE WOULD NEED TO BE INCLUDED IN THE TTCP THAT STATES HOW THE CONTRACTOR SHOULD ADDRESS THIS ISSUE.)
  - TRUCK DETOUR SIGNAGE SHALL BE POSTED DIRECTING TRUCKS TO USE RT. 120 INSTEAD OF PLEASANT STREET.

PEDESTRIAN DETOUR  
NO SCALE

100%  
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Central Street  
Bridge  
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Department of  
Public Works

MassDOT Bridge No.  
M-02-001 (CDL)

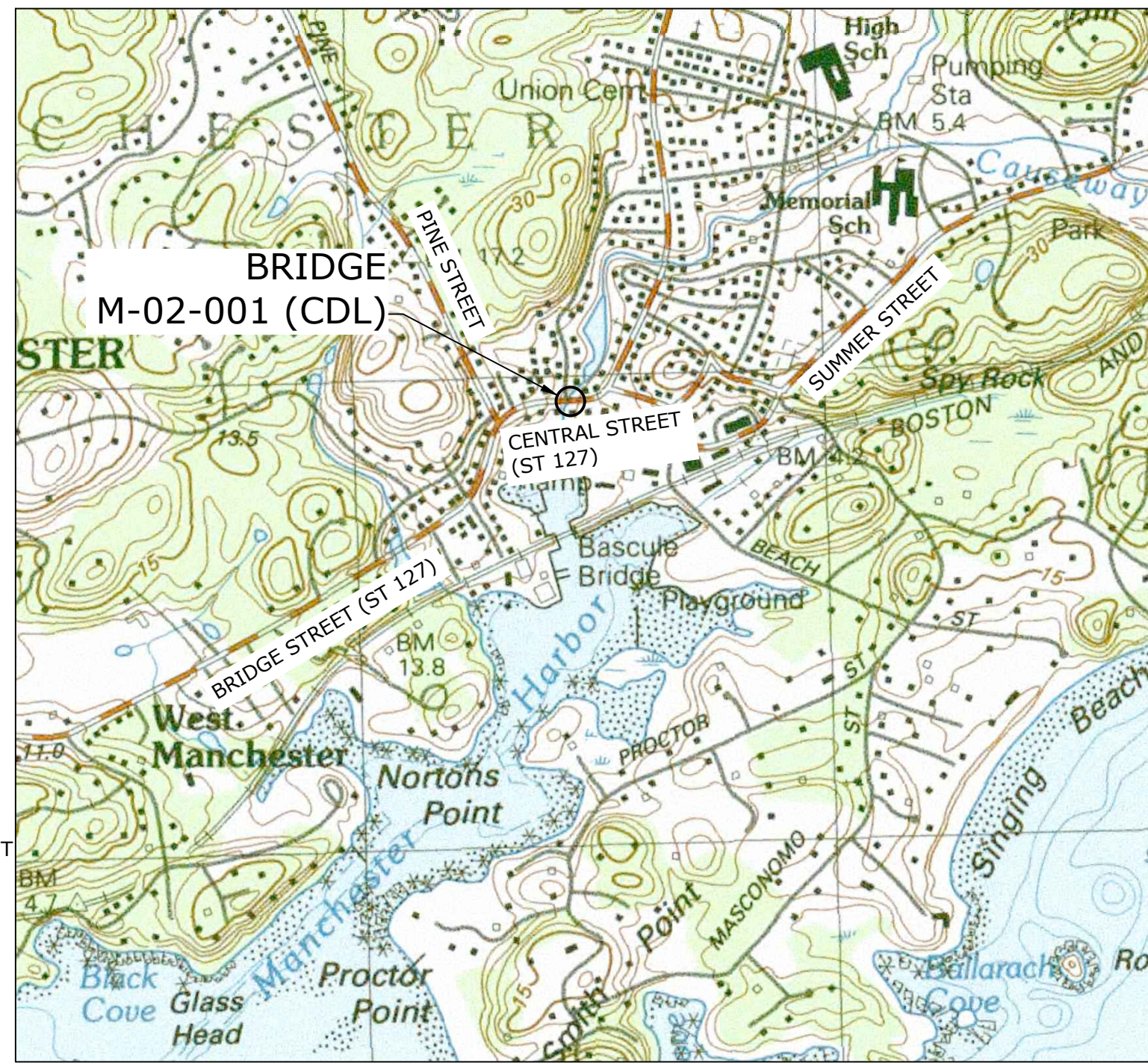
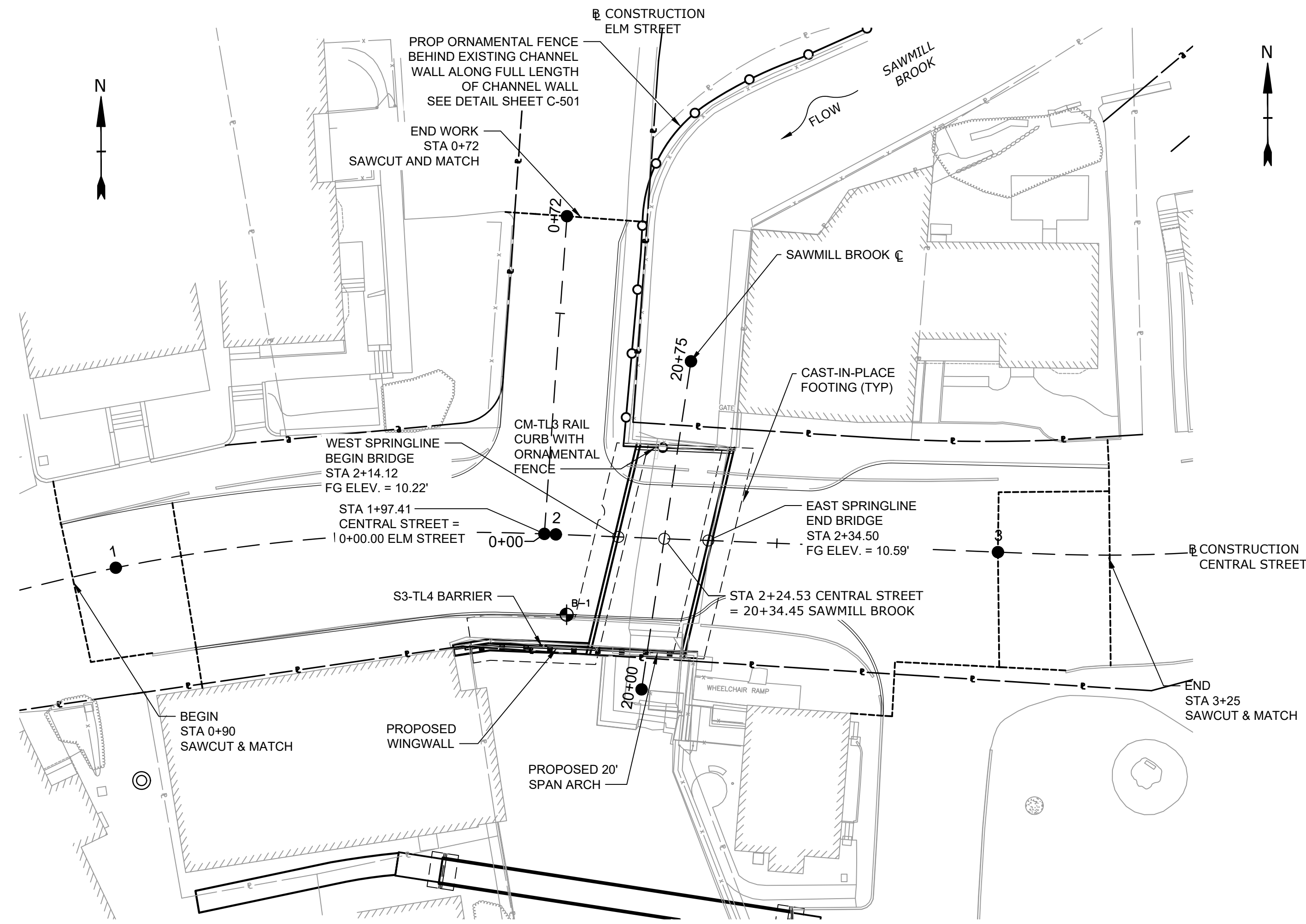
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TEMPORARY TRAFFIC CONTROL  
PLAN - DETOUR

SCALE: AS NOTED

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**BRIDGE DRAWING INDEX**

- S-001 BRIDGE KEY PLAN, PROFILES, LOCUS, AND INDEX
  - S-002 BRIDGE NOTES
  - S-003 BORING LOGS & BORING NOTES
  - S-101 GENERAL BRIDGE PLAN AND ELEVATION
  - S-102 ABUTMENT PLAN & DETAILS
  - S-103 ABUTMENT REINFORCING DETAILS
  - S-104 BRIDGE FRAMING AND LAYOUT PLAN
  - S-105 BRIDGE SECTIONS & DETAILS
  - S-106 MISCELLANEOUS DETAILS
- REFERENCE DRAWING INDEX**
- S-201 S3-TL4 BARRIER DETAILS
  - S-202 HEADWALL & S3-TL4 BARRIER DETAILS AT SIDEWALK
  - S-203 TOP OF END POST FOR S3-TL4 RAILING

HYDRAULIC DATA	
DRAINAGE AREA	5.0 SQ. MILES
WATER CONTROL FLOOD DISCHARGE (2 YR)	254 CFS
DESIGN FLOOD DISCHARGE (25 YR)	1,363 CFS
DESIGN FLOOD ANNUAL CHANCE (RETURN FREQUENCY)	4% (25-YEARS)
DESIGN FLOOD VELOCITY (25 YR)	7.5 FPS
DESIGN FLOOD ELEVATION (25 YR)	5.7 FEET
ANNUAL HIGH TIDE LINE	8.20 FEET
MEAN HIGHER HIGH WATER ELEVATION (MHHW)	4.77 FEET
MEAN HIGH WATER ELEVATION (MHW)	4.33 FEET
MEAN LOW WATER ELEVATION (MLW)	-5.16 FEET
MEAN LOWER LOW WATER ELEVATION (MLLW)	-5.51 FEET
BASE (100-YR) FLOOD DATA	
BASE FLOOD DISCHARGE (100 YR)	2,267 CFS
BASE FLOOD ELEVATION (100 YR)	*7.7 FEET
DESIGN AND CHECK SCOUR DATA	
SCOUR DESIGN FLOOD ANNUAL CHANCE (RETURN FREQUENCY)	2% (50-YEARS)
DESIGN FLOOD ABUTMENT SCOUR DEPTH	LEFT: 2 FT RIGHT: 2 FT
SCOUR CHECK FLOOD ANNUAL CHANCE (RETURN FREQUENCY)	1% (100-YEARS)
CHECK FLOOD ABUTMENT SCOUR DEPTH	LEFT: 2 FT RIGHT: 2 FT
FLOOD OF RECORD	
DISCHARGE	UNKNOWN
FREQUENCY (IF KNOWN)	N/A
MAXIMUM ELEVATION	N/A
DATE	N/A
HISTORY OF ICE FLOES	UNKNOWN
EVIDENCE OF SCOUR AND EROSION	UNKNOWN

\* THE 7.7' ELEVATION IS THE MODELED 100-YEAR PRECIPITATION EVENT DISCHARGE ELEVATION AT THE BRIDGE

**100%  
Drawings  
Not For  
Construction**

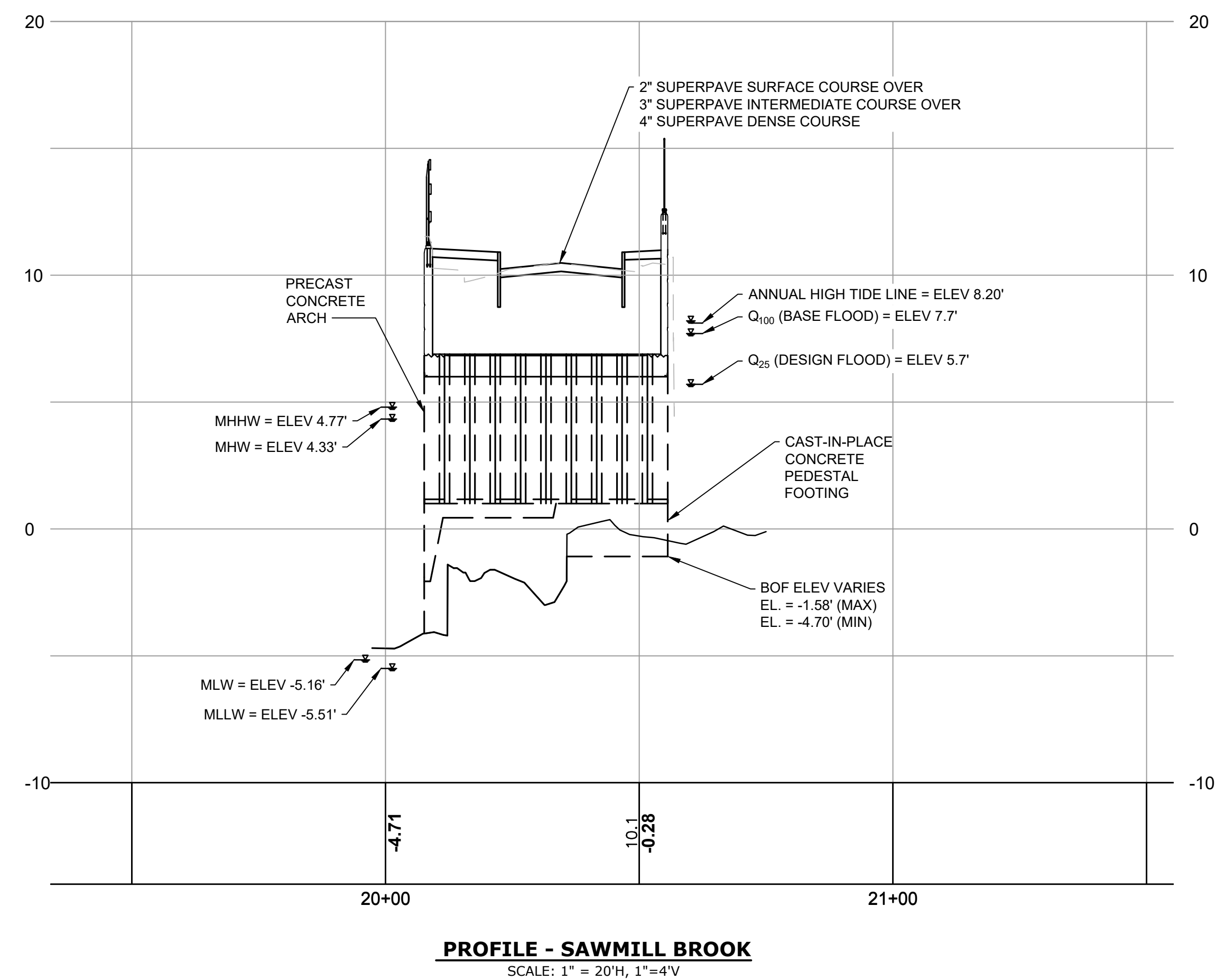
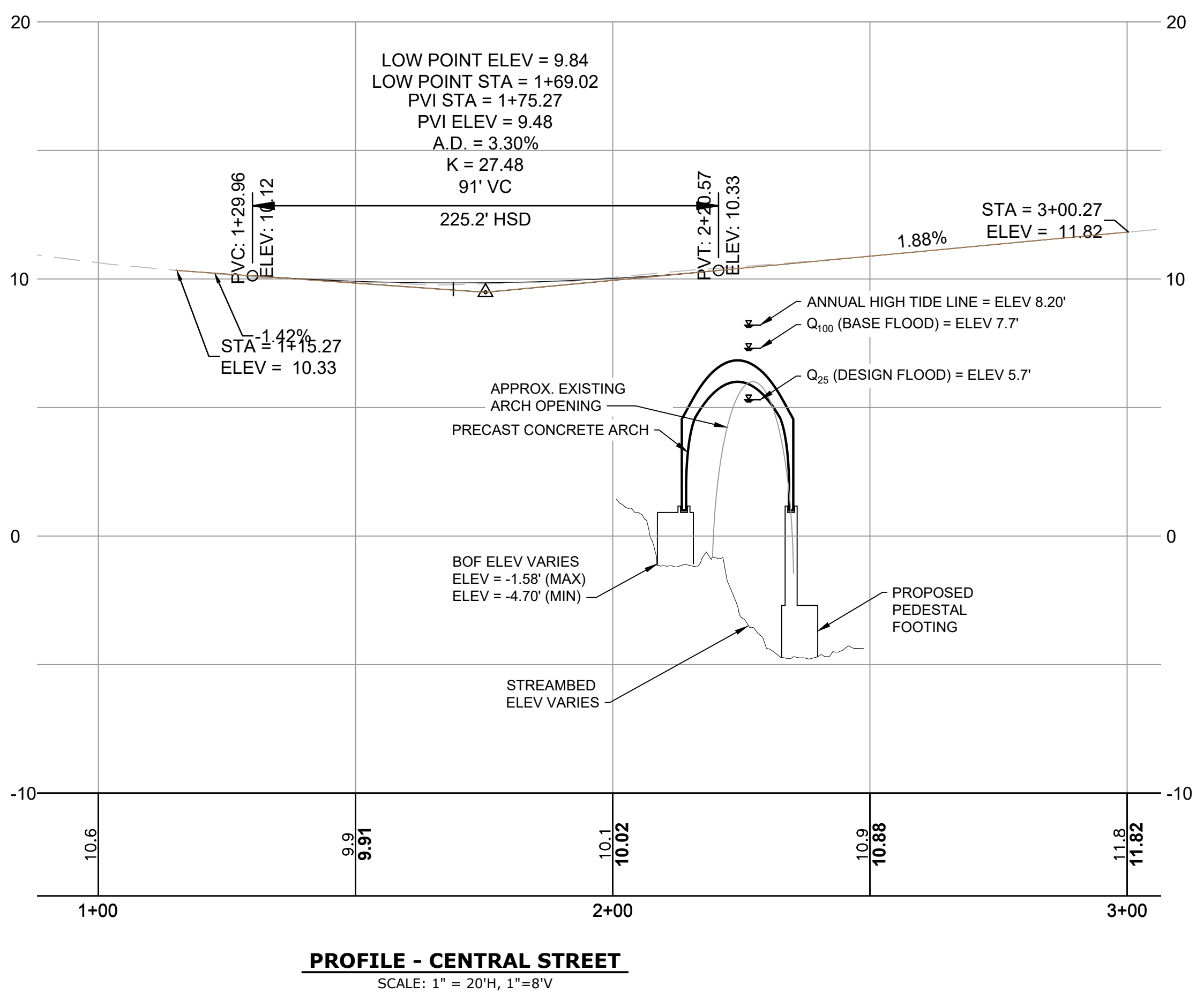
**Central Street  
Bridge  
Replacement**

Department of  
Public Works

MassDOT Bridge No.  
M-02-001 (CDL)

Town of  
Manchester-By-  
The-Sea,  
Massachusetts

SEISMIC DESIGN CRITERIA	
DESIGN RETURN PERIOD	1000-YEARS
DESIGN SPECTRA	
PEAK GROUND ACCELERATION (PGA)	0.08g
A <sub>s</sub>	0.096
S <sub>D5</sub>	0.192
S <sub>D1</sub>	0.068
SITE CLASS	C
SEISMIC DESIGN CATEGORY	A



**CHAPTER 85 SECTION 35 REVIEW AND APPROVAL NOTES:**

1. 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.

**COMMONWEALTH OF MASSACHUSETTS  
MassDOT, Highway Division  
CONCEPTUAL DESIGN IS ACCEPTABLE  
TO MASSDOT FOR CONTRACTING**

STATE BRIDGE ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

MARK	DATE	DESCRIPTION
PROJECT NO:	M1476-011	
DATE:	JUNE 2024	
FILE:	M1476-011-S-001.dwg	
DRAWN BY:	AGB/DRF	
CHECKED:	EAO/BRB	
APPROVED:	DLM	

BRIDGE KEY PLAN, PROFILES,  
LOCUS AND INDEX

SCALE: AS NOTED

**S-001**  
SHEET 20 OF 51

Last Saved: 5/15/2024 10:41:27am By: DDeity  
 Tighe & Bond: J:\M1476\Manchester MA Hydro Study\011-Central Street Bridge\Drawings\_Figures\AutoCAD\Sheet\M1476-011-S-001.dwg

**100%  
Drawings  
Not For  
Construction**

**Central Street  
Bridge  
Replacement**

Department of  
Public Works

MassDOT Bridge No.  
M-02-001 (CDL)

Town of  
Manchester-By-  
The-Sea,  
Massachusetts


MARK	DATE	DESCRIPTION
PROJECT NO:	M1476 - 011	
DATE:	JUNE 2024	
FILE:	M1476-011-S-002.dwg	
DRAWN BY:	AGB/DRF	
CHECKED:	EAQ/BRB	
APPROVED:	DLM	

BRIDGE NOTES

SCALE: AS NOTED

**S-002**  
SHEET 21 OF 51

COMMONWEALTH OF MASSACHUSETTS  
MassDOT, Highway Division  
**CONCEPTUAL DESIGN IS ACCEPTABLE  
TO MASSDOT FOR CONTRACTING**

STATE BRIDGE ENGINEER DATE

**REINFORCEMENT:**

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. EPOXY 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"

ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS.

**PRECAST CONCRETE BRIDGE STRUCTURE NOTES:**

- ITEM 995.01, BRIDGE STRUCTURE - STRUCTURE NO. M-02-001-CDL, SHALL INCLUDE THE PRECAST CONCRETE ARCH, CURBS/HEADWALLS, ORNAMENTAL FENCE ALONG THE TOP OF THE NORTHERN HEADWALL, PEDESTAL FOOTINGS USED TO SUPPORT THE RIGID FRAME, WINGWALL, AND WINGWALL FOOTING. JOINT MATERIALS, MEMBRANE, AND ANY OTHER MATERIALS REQUIRED FOR INSTALLATION OF THE PRECAST CONCRETE BRIDGE OR WINGWALL STRUCTURE SHALL BE SUBSIDIARY.
- THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN CALCULATIONS, SEALED AND SIGNED BY A CURRENTLY REGISTERED MASSACHUSETTS PROFESSIONAL ENGINEER TO THE MUNICIPALITY'S DESIGNER OF RECORD FOR REVIEW AND ACCEPTANCE TO ENSURE CONFORMANCE WITH THE CONTRACT DOCUMENTS AND THEN TO MASSDOT FOR REVIEW AND APPROVAL. DESIGN SHALL ENCOMPASS THE PRECAST ARCH AND CONNECTION OF HEADWALLS TO PRECAST ARCH. SHOP DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED PRIOR TO FABRICATION FOR ALL PRECAST CONCRETE ELEMENTS. SHOP DRAWINGS SHALL SHOW JOINT DETAILS AND REINFORCEMENT SIZE AND LOCATION. CALCULATIONS SHALL INCLUDE A SUMMARY OF ALL FINAL ARCH REACTIONS FOR DESIGN VERIFICATION OF FOOTINGS BY ENGINEER. SEE ADDITIONAL REQUIREMENTS FOR PRECAST ARCH SECTIONS IN SPECIAL PROVISION ITEM 995.01 CONSTRUCTION METHODS - PLANT FABRICATION: SECTION E.
- CHANGES OR MODIFICATIONS DURING THE FABRICATION PROCESS MUST BE SUBMITTED TO THE MUNICIPALITY'S DESIGNER OF RECORD FOR ACCEPTANCE AND THEN TO MASSDOT FOR APPROVAL AND INCORPORATED INTO THE FINAL AS-BUILT DRAWINGS.
- DIMENSIONS SHOWN FOR THE PRECAST CONCRETE ELEMENTS ARE APPROXIMATE AND BASED ON CONCEPTUAL DESIGN. NO ADJUSTMENTS TO QUANTITIES OR PAYMENTS WILL BE MADE AS A RESULT OF PROVIDING PRECAST UNITS SIZED DIFFERENTLY THAN SHOWN ON THE PLANS.
- THE QUALITY OF MATERIALS, THE PROCESS OF MANUFACTURE, AND THE FINISHED PRECAST UNITS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ENGINEER.
- JOINTS BETWEEN ABUTTING PRECAST UNITS SHALL BE MECHANICALLY CONNECTED, WATERTIGHT, GROUTED, AND MEMBRANED.
- SPRAY-APPLIED WATERPROOFING MEMBRANE SHALL BE PROVIDED OVER THE STRUCTURE ACROSS THE ENTIRE WIDTH.
- MEMBRANED SURFACES TO BE BACKFILLED AGAINST SHALL BE PROTECTED BY A PROTECTION BOARD.
- EXPOSED CONCRETE SURFACES SHALL BE TREATED WITH WATER REPELLENT (SILANE/SILOXANE).
- PRECAST CONCRETE CURB/HEADWALL ANCHORAGES, CURB, WINGWALL, AND ARCH SECTIONS SHALL BE DESIGNED TO ACCOUNT FOR ALL EARTH PRESSURE, HYDROSTATIC FORCES UNDER TIDAL LAG CONDITIONS BETWEEN THE ANNUAL HIGH TIDE LINE AND MLW, LIVE LOAD SURCHARGES, AND BRIDGE RAILING LIVE LOAD AS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR NCHRP 350 TL-2 TEST LEVEL AT A MINIMUM.
- WEEP HOLES SHALL BE PLACED 1'-0" (TYP.) ABOVE THE TOP OF THE PEDESTAL FOOTING AND ONE (1) WEEP PROVIDED ON BOTH SIDES OF EACH ARCH OR WINGWALL UNIT OR 10'-0" (MAX.) SPACING ALONG FOOTING.
- FOOTINGS SHALL HAVE A KEYWAY AT THE TOP WITH THE SPECIFIED DIMENSIONS. GROUT SHALL BE PLACED AROUND THE BOTTOM OF THE ARCH OR WINGWALL AND TO THE TOP OF THE KEYWAY.
- TOP SURFACES OF FOOTING UNITS SHALL BE SET UNIFORMLY TRUE & LEVEL TO A TOLERANCE OF +/- 1/8". PRECAST UNITS SHALL UNIFORMLY BEAR ON SUPPORTING MATERIAL.
- ANY UNSUITABLE MATERIALS SUCH AS BOULDERS, ROOTS, ORGANIC SOILS, SILT/CLAY, OR FRACTURED BEDROCK ENCOUNTERED AT THE PROPOSED BOTTOM OF EXCAVATION ELEVATION SHALL BE REMOVED AND REPLACED WITH CONCRETE, AS DIRECTED BY THE ENGINEER.
- DEWATERING SHALL BE REQUIRED AT EACH FOUNDATION LOCATION TO CONTROL THE WATER INFLOW AND ADEQUATELY DEWATER THE FOOTING EXCAVATION. SUMP PUMPING AREAS AROUND THE ENTIRE PERIMETER SHALL BE REQUIRED TO ADEQUATELY CONTROL THE GROUNDWATER WITHIN THE EXCAVATION AREAS. DEWATERING SHALL BE CONTINUOUS FROM DEMOLITION OF THE EXISTING STRUCTURE UNTIL THE PRECAST CONCRETE ARCH AND WINGWALLS ARE BACKFILLED EVENLY ON BOTH SIDES TO THE ELEVATIONS OF THE SURROUNDING WATER TABLE, TIDES, AND FLOOD ELEVATION UNLESS OTHERWISE DIRECTED.
- ANY PROPOSED DEWATERING AND SHORING PROCEDURES SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND ACCEPTANCE.
- WATER PUMPED FROM DEWATERING LOCATIONS SHALL BE FILTERED ADEQUATELY TO REMOVE FINE MATERIALS PRIOR TO RETURNING THE WATER TO THE RIVER/BROOK. ACTUAL LOCATION OF SEDIMENTATION BASIN TO BE DETERMINED BY CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
- ANY FOUNDATION MATERIALS WEAKENED AS A RESULT OF INSUFFICIENT CARE WHILE MAINTAINING A DEWATERED CONDITION SHALL BE REMOVED AND REPLACED WITH CONCRETE AT NO EXPENSE TO THE OWNER.
- REINFORCEMENT SHALL HAVE A 2.5" MINIMUM CLEAR COVER, UNLESS NOTED OTHERWISE.
- A CORROSION INHIBITOR CONCRETE ADDITIVE SHALL BE USED FOR ALL CONCRETE.
- DATE TO BE PLACED ON THE CUSTOM CONCRETE END POSTS AT EACH END OF THE SOUTHERN BRIDGE RAIL. SEE DETAILS SHEET S-203. THE DATE USED SHALL BE THE LATEST YEAR OF CONTRACT COMPLETION AS OF THE DATE THE FIRST END POST IS CONSTRUCTED. BOTH END POSTS SHALL FEATURE THE SAME DATE.
- FORMLINER FOR HARBOR FACING SEAWALL, SOUTH-FACING HEADWALL, AND NORTH-FACING HEADWALL TO BE SELECTED BY THE TOWN. PROVIDE TOWN WITH MOCKUP OF CONCRETE FORMLINER FOR APPROVAL PRIOR TO PROCEEDING WITH CONSTRUCTION.

**BRIDGE REMOVAL NOTES:**

- INSTALL ALL NECESSARY SHORING OR SUPPORT OF EXCAVATION AND SHIELDING PRIOR TO DEMOLITION.
- THE CONTRACTOR'S METHOD FOR REMOVAL OF THE EXISTING BRIDGE SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND ACCEPTANCE PRIOR TO THE COMMENCEMENT OF ANY REMOVAL OPERATIONS.
- REMOVAL OF EXISTING BRIDGE STRUCTURE SHALL INCLUDE THE COMPLETE REMOVAL OF THE ARCH, FOOTINGS, HEADWALLS, SOUTHWESTERLY WINGWALL, AND TIDE GATE. REFER TO SHEET C-005 (CIVIL SHEETS) FOR DEMOLITION PLAN. COORDINATE REMOVAL OF EXISTING STRUCTURE WITH INSTALLATION OF COFFERDAM, FISH PASSAGE/FLOW PIPE, SUPPORT OF EXCAVATION, AND TEMPORARY SHIELDING INSTALLATION.
- REFER TO SHEETS C-504 TO C-505 (CIVIL SHEETS) FOR WATER CONTROL SEQUENCING.
- PRIOR TO REMOVAL OF EXISTING BRIDGE, THE CONTRACTOR SHALL VERIFY THAT EXISTING UTILITIES TO BE DISCONNECTED AND REMOVED HAVE BEEN DEACTIVATED FROM SERVICE.
- CONTRACTOR SHALL CONFIRM DEMOLITION LIMITS AND REQUIREMENTS.

**FOUNDATION NOTES:**

- FOUNDATION MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED DURING CONSTRUCTION, WITH THE APPROVAL OF THE ENGINEER.
- CONCRETE SHALL NOT BE PLACED IN WATER OR ON FROZEN GROUND.
- BOTTOM OF FOUNDATION ELEVATIONS PROVIDED ON DRAWINGS SHALL BE CONSIDERED MINIMUM DEPTHS. CONTRACTOR SHALL REMOVE UNSUITABLE MATERIAL AS REQUIRED.
- ALL FINISHED EXCAVATIONS SHALL BE VERIFIED AND APPROVED BY THE ENGINEER PRIOR TO PLACEMENT OF FORMWORK FOR CONCRETE FOUNDATION.
- ALL FINISHED EXCAVATIONS SHALL BE INSPECTED BY THE ENGINEER PRIOR TO ANY CONCRETE PLACEMENT.
- ALL BACKFILL UNDER OR ADJACENT TO ANY PORTION OF THE STRUCTURE SHALL BE PLACED IN ACCORDANCE WITH MASSDOT STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
- PRIOR TO PLACEMENT OF FOOTINGS, REVIEW IN-SITU CONDITIONS WITH THE OWNER'S DESIGNATED ENGINEER.

**GEOTECHNICAL DESIGN PARAMETERS**

- MINIMUM EMBEDMENT FOR FROST PROTECTION IN SOIL = 4 FEET BELOW ADJACENT GROUND SURFACE.
- FOUNDATIONS SHALL BE ON SOUND INTACT LEDGE PER GEOTECH REPORT 4.3 AND DETAILS IN DRAWINGS.
- FACTORED STRENGTH LIMIT STATE BEARING RESISTANCE = 45.0 TONS PER SQUARE FOOT
  - THE BRIDGE DESIGNER SHALL VERIFY THE BEARING RESISTANCE BASED ON THE FINAL BRIDGE AND WINGWALL FOUNDATION DIMENSIONS AND EMBEDMENT
- MAXIMUM ALLOWABLE SETTLEMENT FOR PROPOSED ELEMENTS = 1/2 INCH TOTAL, 1/2 INCH DIFFERENTIAL
- MINIMUM LATERAL EARTH PRESSURES FOR RESTRAINED ARCH WALLS:
  - STATIC = 200 PSF/FT MINIMUM
- MINIMUM LATERAL EARTH PRESSURES FOR UNRESTRAINED WING WALLS:
  - STATIC = 200 PSF/FT MINIMUM
- MINIMUM BACKFILL UNIT WEIGHT = 120 POUNDS PER CUBIC FOOT (PCF)
- MAXIMUM BACKFILL ANGLE OF INTERNAL FRICTION = 32 DEGREES
- DESIGN FOR HYDROSTATIC FORCES BELOW TIDAL LAG ELEVATION = 1.01 FT
  - SUBMERGED SOIL UNIT WEIGHT = 57.6 POUNDS PER CUBIC FOOT
- MAXIMUM COEFFICIENT OF FRICTION FOR CONCRETE ON CLEAN, SOUND BEDROCK = 0.70 (DELTA = 35 DEGREES)
- BOTTOM OF FOOTINGS ARE TO BE CONSTRUCTED ON SOUND, CLEAN BEDROCK. BEDROCK BEARING SURFACES SHOULD BE CLEARED OF ANY PONDED WATER, LOOSE ROCK, OR SOIL PRIOR TO FOUNDATION CONSTRUCTION. BOTTOM OF FOOTING ELEVATIONS ARE APPROXIMATE. DURING EXCAVATION, INSPECT CONDITION OF ROCK TO VERIFY SUITABILITY FOR CASTING OF FOOTING. SUBMIT EVALUATION OF CONDITION AND FINAL PROPOSED ELEVATIONS TO ENGINEER FOR REVIEW AND APPROVAL BEFORE CASTING THE FOOTINGS.

**CHAPTER 85 SECTION 35 REVIEW AND APPROVAL NOTES:**

- 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.
- PROVIDE CHAPTER 85 FINAL APPROVAL STAMP TO ALL DRAWING SHEETS PRIOR TO SUBMISSION TO MASSACHUSETTS DEPARTMENT OF TRANSPORTATION AS SHOWN BELOW:

COMMONWEALTH OF MASSACHUSETTS  
MassDOT, Highway Division  
**APPROVED UNDER PROVISIONS OF  
MASS. GEN. LAWS CH 85 S 35**

STATE BRIDGE ENGINEER DATE

- FINAL CHAPTER 85 APPROVAL MUST BE OBTAINED PRIOR TO FABRICATION OF BRIDGE ELEMENTS. CONTRACTOR SHALL BE RESPONSIBLE FOR EDITS AND/OR REVISIONS REQUIRED FOR FINAL CHAPTER 85 APPROVAL AT SOLE COST TO THE CONTRACTOR.

**DESIGN LOADS AND SPECIFICATIONS:**

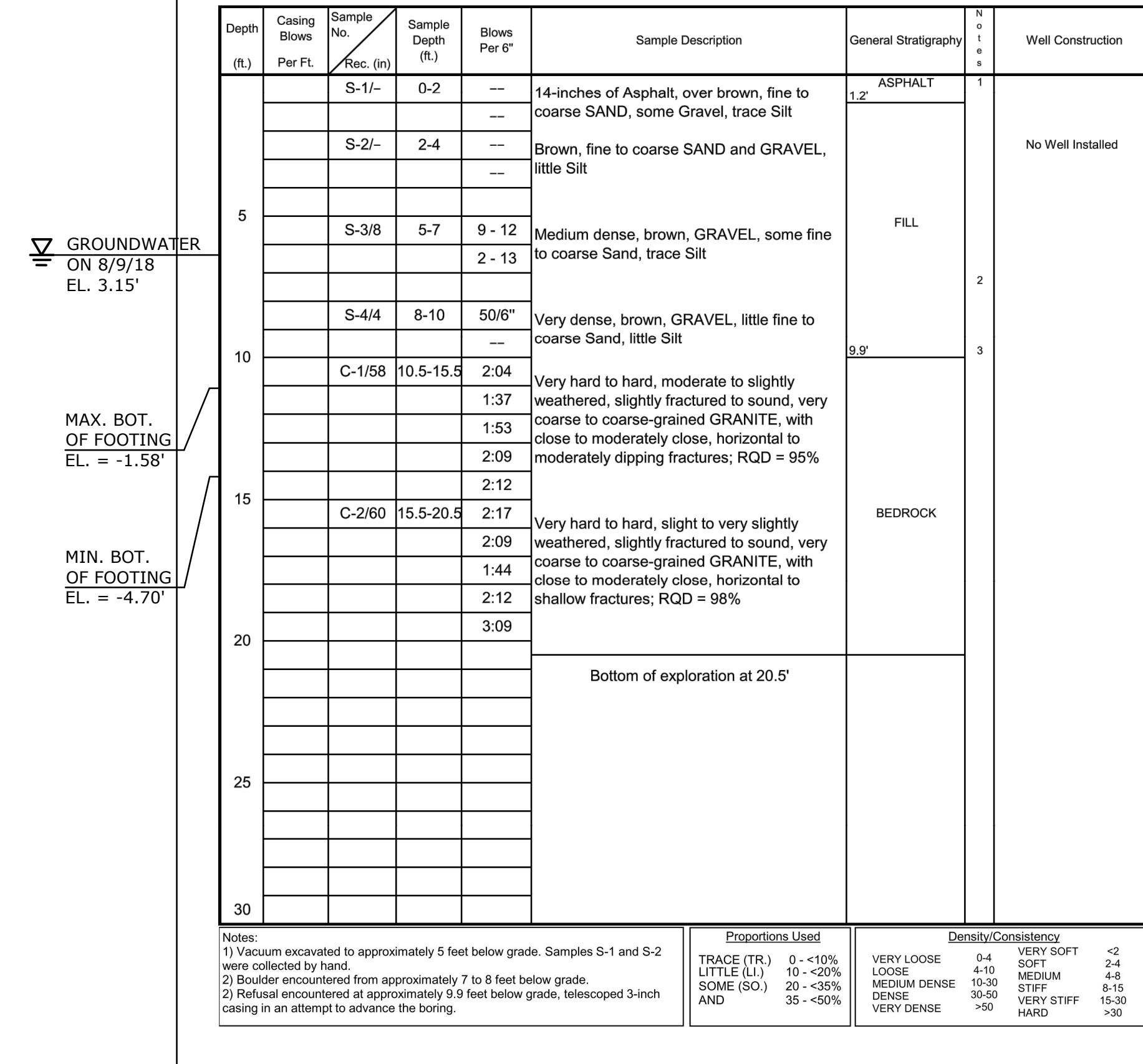
- DESIGN LOADING: HL-93
- DESIGN: LOAD AND RESISTANCE FACTOR DESIGN (LRFD) IN ACCORDANCE WITH: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH ED., 2020 AS AMENDED MASSDOT 2013 LRFD BRIDGE DESIGN MANUAL, AS AMENDED
- SPECIFICATIONS: MASSDOT 2023 STANDARD SPECIFICATIONS AS AMENDED
- FOUNDATION DATA: ABUTMENTS AND WINGWALL: SPREAD FOOTINGS SUPPORTED ON SOUND BEDROCK WITH A NOMINAL BEARING CAPACITY OF 100.0 TSF IN COMBINATION WITH A RESISTANCE FACTOR OF 0.45.
- REINFORCING STEEL: AASHTO M31 (ASTM A 615) GRADE 60 ALL BARS SHALL BE HOT-DIPPED GALVANIZED (ASTM A767 & ASTM A1094)
- CONCRETE: PRECAST ARCH, CAST-IN-PLACE NORTHERN HEADWALL, CAST-IN-PLACE S3-TL4 TOP OF WINGWALL, CAST-IN-PLACE END POSTS: 5000 PSI, 3/4", 685 HP CEMENT CONCRETE  
  
CAST-IN-PLACE PEDESTAL FOOTINGS, CAST-IN-PLACE WINGWALL, CAST-IN-PLACE WINGWALL FOOTING, CAST-IN-PLACE SOUTHERN HEADWALL: 5000 PSI, 1 1/2", 660 CEMENT CONCRETE

**GENERAL NOTES:**

- PLANS OF THE EXISTING BRIDGE ARE NOT AVAILABLE.
- BORINGS WERE MADE BY NEW ENGLAND BORING CONTRACTORS ON 8/9/2018.
- EXISTING SURVEY MONUMENTS DISTURBED BY THE CONTRACTOR SHALL BE REPLACED BY A LAND SURVEYOR LICENSED IN THE STATE IN WHICH THE WORK IS PERFORMED AT NO ADDITIONAL COST TO THE OWNER. SEE SPECIAL PROVISIONS.
- ALL WORK SHALL COMPLY WITH OSHA'S LATEST STANDARDS. ALL REQUIREMENTS OF OSHA'S EXCAVATION STANDARDS SHALL BE PROVIDED BY THE CONTRACTOR INCLUDING, BUT NOT LIMITED TO, THE PROVISION FOR A COMPETENT PERSON ON SITE AND ANY REQUIRED DOCUMENTATION THAT MAY REQUIRE CERTIFICATION BY A PROFESSIONAL ENGINEER.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ALL UTILITIES FUNCTIONING PROPERLY IN THE AREAS UNDER CONSTRUCTION PRIOR TO COMPLETION OF THE PROJECT. ALL PIPES AND STRUCTURES WITHIN THE LIMITS OF THIS CONTRACT SHALL BE LEFT IN A CLEAN AND OPERABLE CONDITION AT THE COMPLETION OF THE WORK. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SAND AND SILT FROM DISTURBED AREAS FROM ENTERING THE SYSTEM. CONTRACTOR IS RESPONSIBLE FOR DAMAGE SUSTAINED TO ANY EXISTING UTILITIES AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE REPAIRS TO THE REQUIREMENTS OF THE TOWN OR RESPECTIVE UTILITY COMPANY.
- ANY AND ALL DEMOLISHED BUILDING MATERIALS, STRUCTURES, PIPES, PAVEMENT, CURBING, SURPLUS MATERIAL, AND SITE RUBBLE SHALL BE DISPOSED OF BY THE CONTRACTOR OFF-SITE AT HIS EXPENSE AND IN ACCORDANCE WITH ALL APPLICABLE STATE AND FEDERAL ENVIRONMENTAL REGULATIONS.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO ENSURE THAT DEBRIS DOES NOT FALL ON ANY ROADWAY, RAILROAD, OR WATERWAY BELOW THE EXISTING STRUCTURE. ALL COSTS INCLUDING ERECTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURES OR OTHER SUCH APPROVED METHODS, SHALL BE SUBSIDIARY TO THE APPROPRIATE ITEMS OF WORK BEING PERFORMED.
- ALL MATERIALS AND METHODS ARE TO COMPLY WITH THE MASSDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, DATED 2023, AND ITS LATEST REVISIONS.
- ALL DISTURBED AREAS SHALL BE LOAMED & SEEDED UNLESS OTHERWISE SPECIFIED. OVER EXCAVATE LOAM & SEED AREAS AS REQUIRED TO MEET GRADE.
- IF THERE ARE REVISIONS TO APPROVED PLANS, THE CONTRACTOR SHALL SUBMIT THESE CHANGES TO THE DESIGNER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. ONCE THESE REVISIONS ARE APPROVED BY THE MUNICIPALITY'S DESIGNER OF RECORD, THEY SHALL THEN BE SUBMITTED TO MASSDOT FOR FILING.
- ALL DIMENSIONS ARE HORIZONTAL AND VERTICAL, AND ARE GIVEN AT 68 DEGREES FAHRENHEIT.
- ALL WORK PERFORMED BY THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS AND REQUIREMENTS.
- THE CONTRACTOR SHALL REVIEW AND UNDERSTAND ALL APPLICABLE ENVIRONMENTAL PERMITS AND ENSURE THAT ALL CONSTRUCTION CONDITIONS ARE MET.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION SAFETY, AND MEANS AND METHODS TO PERFORM AND COMPLETE THE WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE TO PRIVATE OR PUBLIC PROPERTY OUTSIDE THE LIMITS OF CONSTRUCTION SHOWN ON THE PLANS CAUSED BY THE CONTRACTOR, AT THE SOLE COST TO THE CONTRACTOR.
- THE CONTRACTOR MUST COORDINATE ALL WORK WITH THE TOWN OF MANCHESTER-BY-THE-SEA, ALL UTILITY COMPANIES, THE ENGINEER, AND ANY AFFECTED ABUTTERS. WORK SHALL NOT PROCEED WITHOUT WRITTEN APPROVAL FROM THE TOWN OF MANCHESTER-BY-THE-SEA.
- THE CONTRACTOR SHALL SUBMIT LITERATURE (MANUFACTURER'S LITERATURE, CUT SHEETS, APPLICATION PROCEDURES, ETC.) FOR ALL PRODUCTS PROPOSED FOR USE ON THE PROJECT, FOR APPROVAL BY THE ENGINEER. APPROVAL OF MATERIALS SHALL BE IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF MASSDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION AS AMENDED, SUBSECTION 5.03 AND SECTION 6.00, CONTROL OF MATERIALS.

Project: Central Street Bridge  
Location: Central Street, Manchester-by-the-Sea, MA  
Client: Town of Manchester-by-the-Sea

Drilling Co.: New England Boring Contractors		Casing		Sampler		Groundwater Readings				
Foreman:	Type	HW	Split Spoon	Date	Time	Depth	Casing	Sta.	Time	
Mike Porter	L.O.D.	4" I.D.	1.38" I.D.	09/20/18	13:45	6.5'				End of Boring
T&B Rep: M. Trowal										
Date Start: 08/09/18	End: 08/09/18	Hammer Wt: 140#								
Location N: 3035476.76, E: 851997.29	Hammer Fall: 30"									
GS. Elev. 9.45'	Datum: NAVD88	Other: Auto hammer								



**BORING LOG B-1**

**BORING LOCATIONS**

BORING	STATION	OFFSET
B-1	2+03.18	RT. 18.0'

**BORING NOTES:**

- LOCATION OF BORINGS SHOWN ON SHEET S-001 THUS:
- BORINGS WERE TAKEN FOR PURPOSE OF DESIGN AND TO 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 TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
- FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 1/8" 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 MADE IN AUGUST 2018.
- BORINGS WERE MADE BY NEW ENGLAND BORING CONTRACTORS OF DERRY, NEW HAMPSHIRE.
- THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.
- 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.

**100% Drawings Not For Construction**

**Central Street Bridge Replacement**

Department of Public Works

MassDOT Bridge No. M-02-001 (CDL)

Town of Manchester-By-The-Sea, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO:	M1476 - 011
DATE:	JUNE 2024
FILE:	M1476-011-S-003.dwg
DRAWN BY:	AGB/DRF
CHECKED:	EAO/BRB
APPROVED:	DLM

BORING LOGS AND BORING NOTES

SCALE: AS NOTED

**S-003**  
SHEET 22 OF 51

COMMONWEALTH OF MASSACHUSETTS  
MassDOT, Highway Division  
**CONCEPTUAL DESIGN IS ACCEPTABLE TO MASSDOT FOR CONTRACTING**  
STATE BRIDGE ENGINEER DATE

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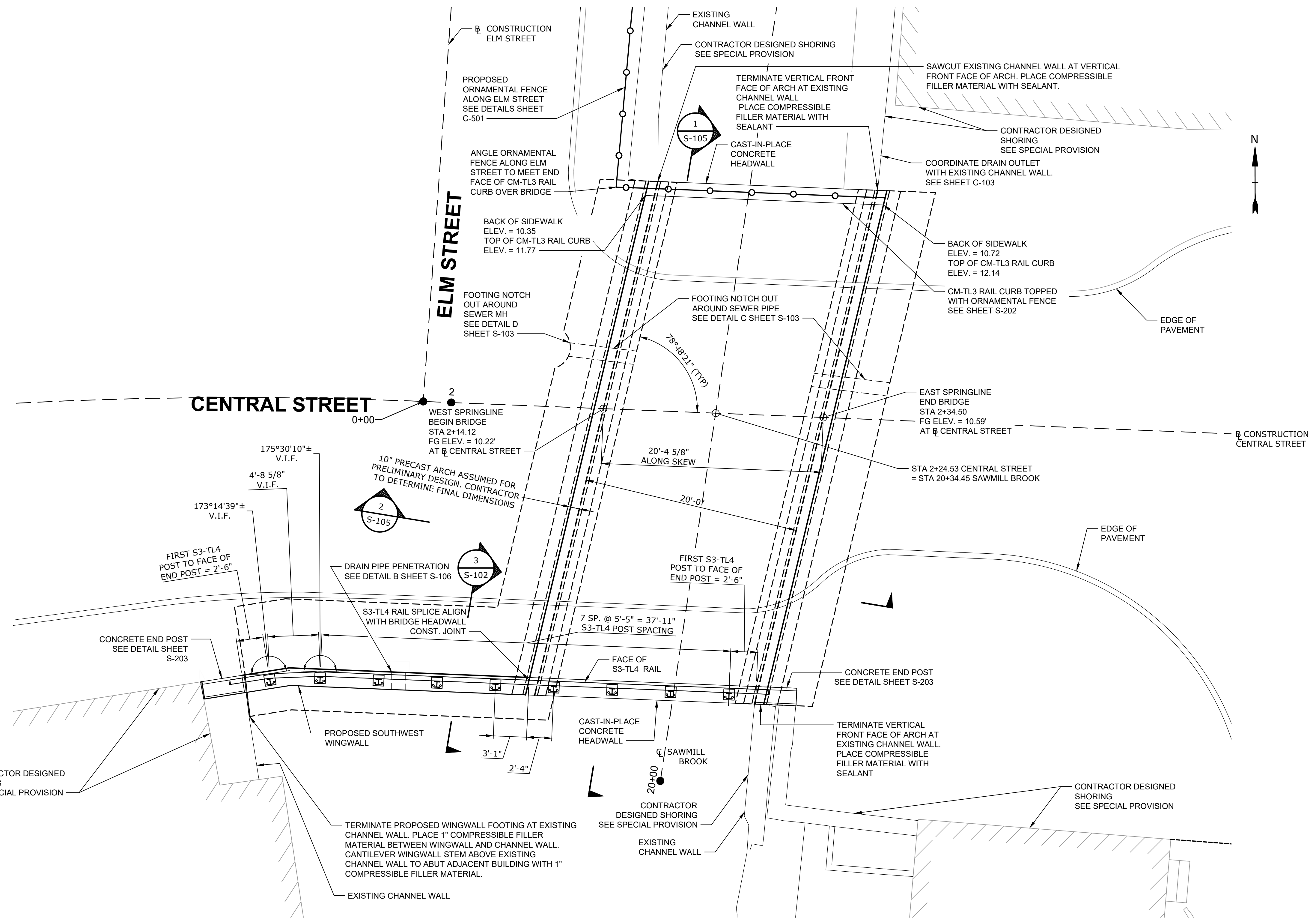
100% Drawings Not For Construction

Central Street Bridge Replacement

Department of Public Works

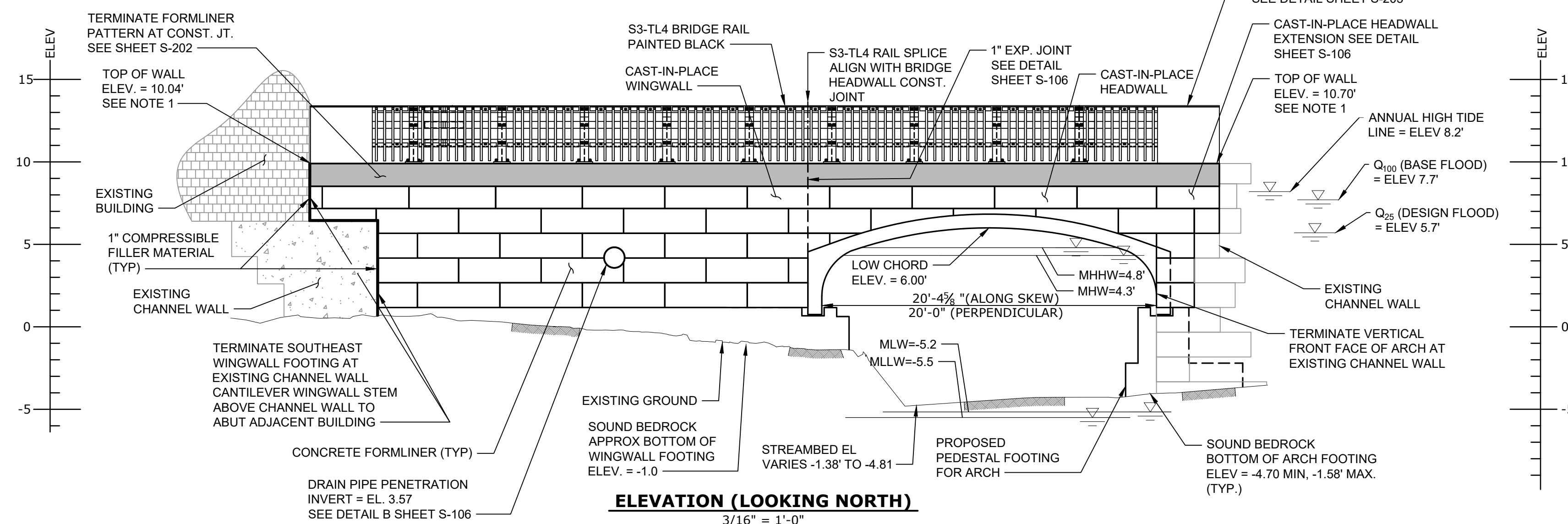
MassDOT Bridge No. M-02-001 (CDL)

Town of Manchester-By-The-Sea, Massachusetts



NOTE:  
1. ROADWAY AND SIDEWALK WIDTHS NOT SHOWN FOR CLARITY. REFER TO SHEET C-101 FOR DIMENSIONS.

GENERAL BRIDGE PLAN  
3/16" = 1'-0"



NOTE:  
1. TOP OF SOUTHERN HEADWALL/WINGWALL TO BE CONTINUOUS AND FLUSH WITH BACK OF SIDEWALK. TOP OF WALL ELEVATION SHALL FOLLOW A CONTINUOUS STRAIGHT LINE BETWEEN ELEVATIONS PROVIDED.  
2. CONTRACTOR'S FINAL DESIGN OF ARCH SHALL PROVIDE A MINIMUM OPENING OF 100 SF. NOTIFY ENGINEER OF ANY PROPOSED DEVIATIONS IN OPENING AREA OF ARCH PRIOR TO FABRICATION.

ELEVATION (LOOKING NORTH)  
3/16" = 1'-0"

COMMONWEALTH OF MASSACHUSETTS  
MassDOT, Highway Division  
CONCEPTUAL DESIGN IS ACCEPTABLE  
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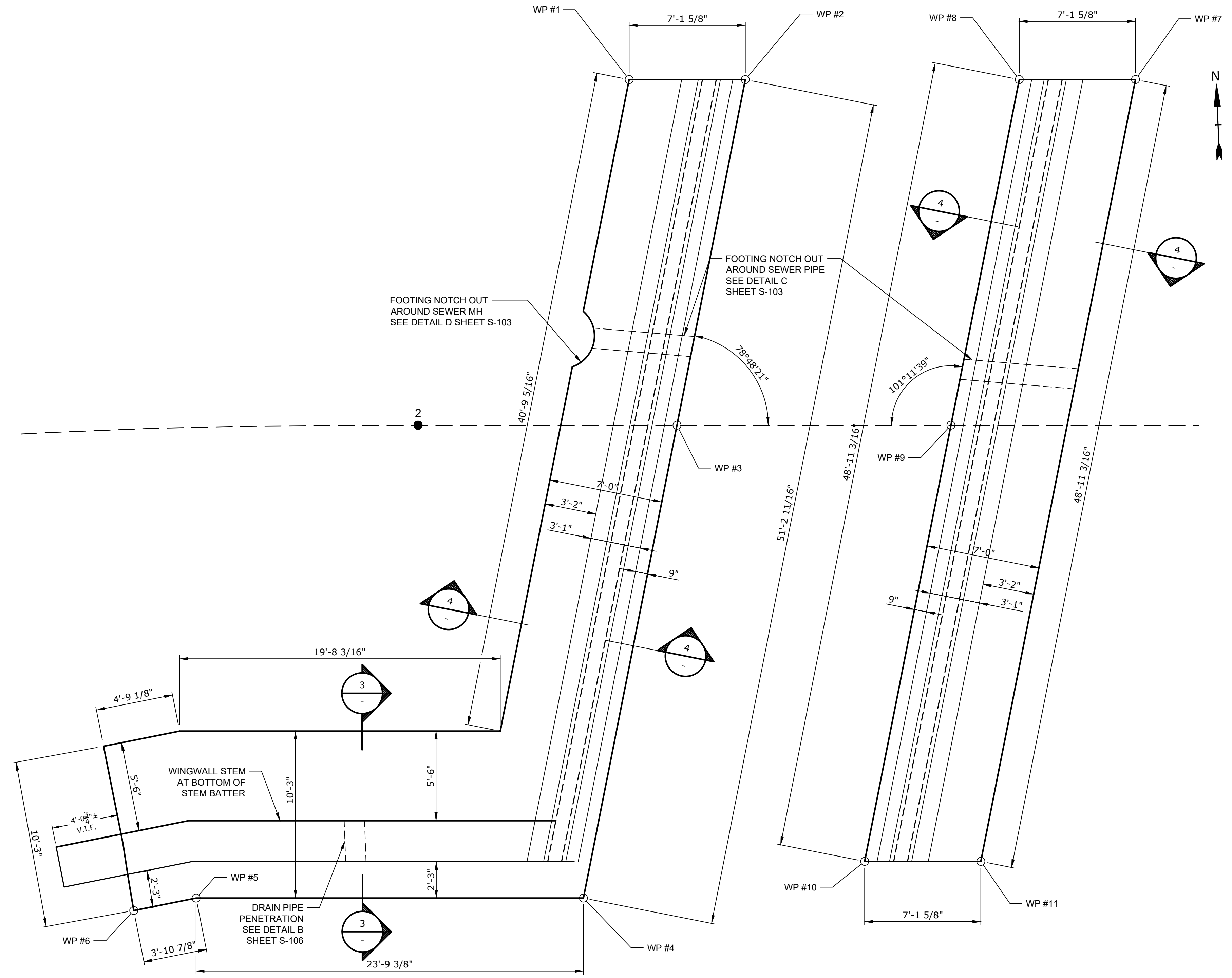
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CHECKED:	EAO/BRB	
APPROVED:	DLM	

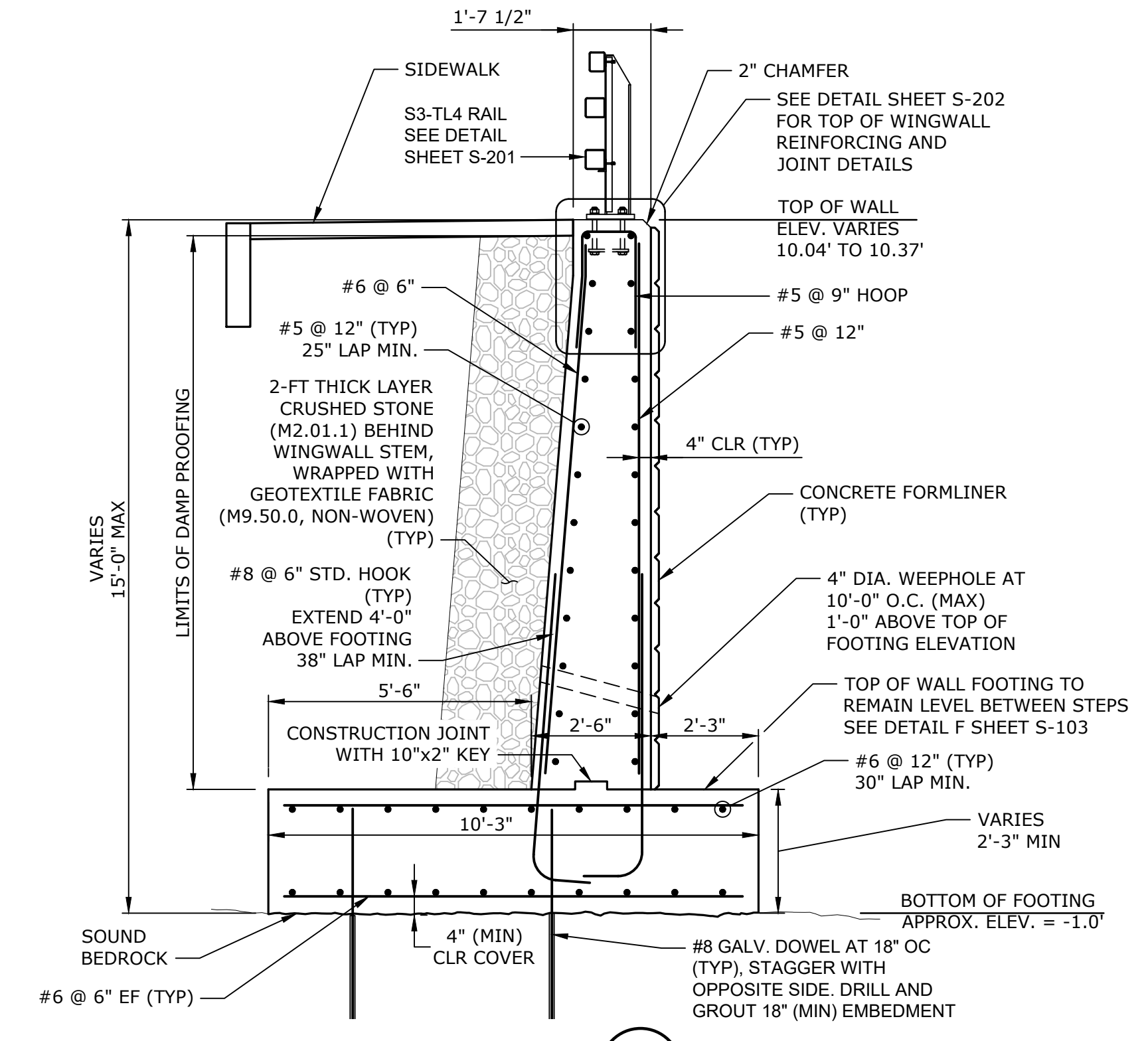
GENERAL BRIDGE PLAN AND ELEVATION

SCALE: AS NOTED

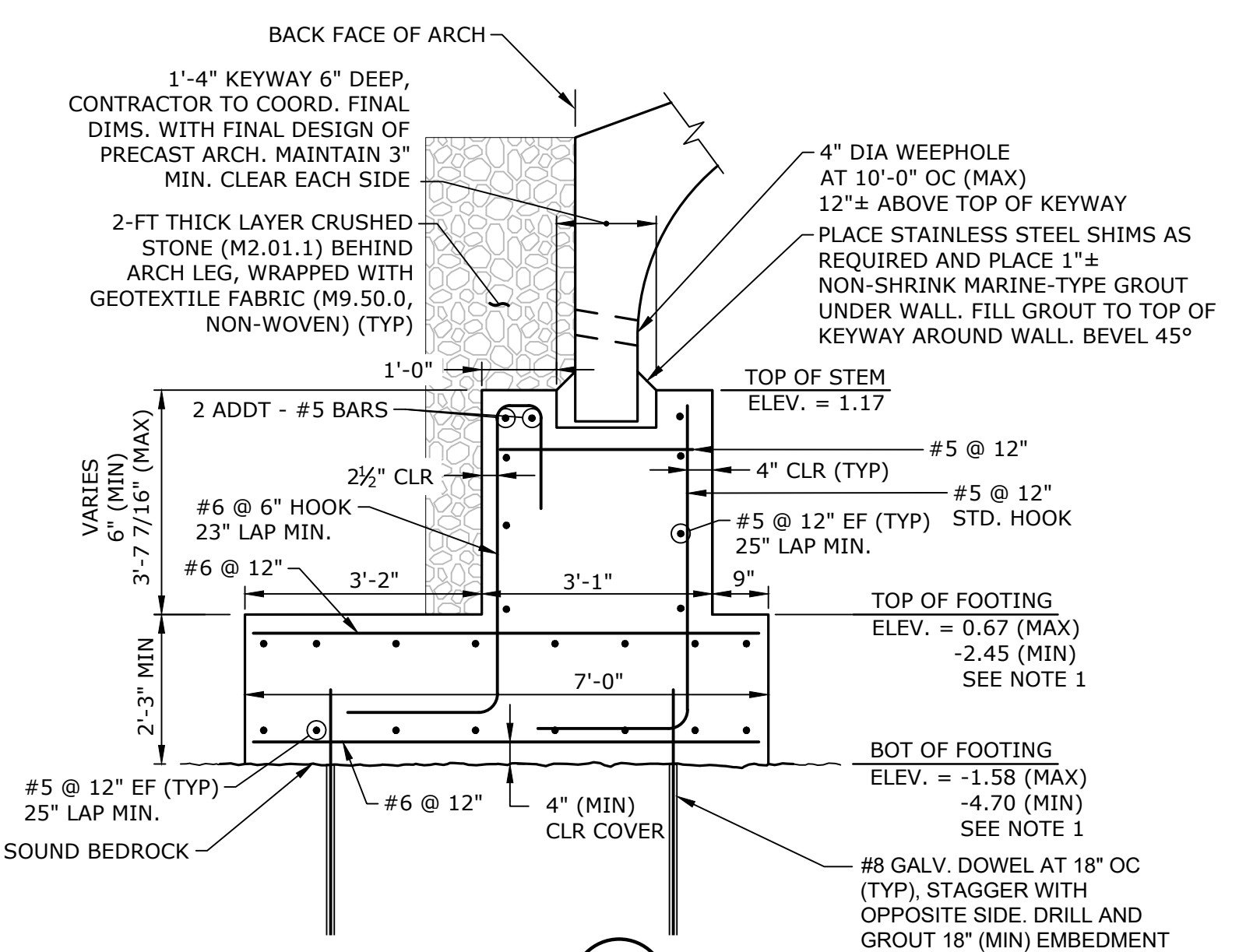
S-101  
SHEET 23 OF 51



WORKING POINT	STATION	OFFSET	NORTHING	EASTING
WP #1	2+17.20	LT 21.22	3,035,515.57	852,008.64
WP #2	2+20.10	LT 21.22	3,035,515.28	852,015.77
WP #3	2+15.90	-	3,035,494.24	852,010.73
WP #4	2+10.16	RT 29.03	3,035,465.47	852,003.83
WP #5	1+85.61	RT 28.90	3,035,466.42	851,980.06
WP #6	1+81.45	RT 29.54	3,035,465.81	851,976.20
WP #7	2+44.06	LT 21.22	3,035,514.32	852,039.71
WP #8	2+36.92	LT 21.11	3,035,514.61	852,032.58
WP #9	2+37.72	-	3,035,493.57	852,027.53
WP #10	2+27.42	RT 26.78	3,035,467.03	852,021.17
WP #11	2+34.56	RT 26.78	3,035,466.74	852,028.30



- WINGWALL NOTES:**
- PROVIDE 4" Ø WEEP HOLES 10'-0" O.C. AS SHOWN. PROVIDE 2-FT THICK LAYER OF CRUSHED STONE BEHIND WINGWALL STEM ALONG FULL LENGTH OF WINGWALL AS SHOWN.
  - CONCRETE FOR WINGWALL FOOTING AND BASE OF STEM BELOW CONSTRUCTION JOINT SHALL BE 5000 PSI, 1 1/2 IN., 660 CEMENT CONCRETE.
  - THE FACTORED BEARING PRESSURE = 13.01 KSF AS PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS STRENGTH I LOAD COMBINATION. FACTORED BEARING RESISTANCE = 90 KSF. FACTORED BEARING RESISTANCE IS THE PRODUCT OF THE NOMINAL BEARING RESISTANCE AND A RESISTANCE FACTOR OF 0.45.



- CAST-IN-PLACE FOOTING NOTES:**
- TOP OF FOOTING/BOTTOM OF FOOTING ELEVATIONS MAY VARY ALONG LENGTH OF FOOTING DUE TO VARIANCE IN BEDROCK PROFILE. PROVIDE STEP IN FOOTING ELEVATION WHERE REQUIRED. SEE DETAIL F SHEET S-103.
  - THE PRECAST CONCRETE ARCH UNITS SHALL BE INSTALLED ON CAST-IN-PLACE CONCRETE FOOTINGS. THE FOOTING DESIGN PROVIDED HEREIN IS BASED ON LRFD METHODOLOGIES AND THE FOLLOWING NOMINAL REACTIONS FROM THE ARCH:

	Vertical	Horizontal*
DC	1.86	-0.71
DW	1.04	-0.57
EV	6.00	-2.83
EH	0.00	1.26
LS	0.00	0.38
LL	5.26	-3.20

\*NEGATIVE FORCES ACT IN DIRECTION FROM STREAM TOWARDS BACKFILL

- CONTRACTOR SHALL PROVIDE FINAL ARCH FRAME REACTIONS ALONG WITH FINAL CALCULATIONS FOR THE ARCH. IF THE CONTRACTOR'S FINAL DESIGN OF THE ARCH DEVIATES FROM THE VALUES PROVIDED ABOVE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REDESIGN OF THE ARCH FOOTINGS COMPLETE WITH SUPPORTING CALCULATIONS SEALED AND SIGNED BY A CURRENTLY REGISTERED MASSACHUSETTS PROFESSIONAL ENGINEER.
- SEE SHEET S-002 FOR GEOTECHNICAL DESIGN PARAMETERS.

COMMONWEALTH OF MASSACHUSETTS  
MassDOT, Highway Division  
**CONCEPTUAL DESIGN IS ACCEPTABLE TO MASSDOT FOR CONTRACTING**  
STATE BRIDGE ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

**100% Drawings Not For Construction**

**Central Street Bridge Replacement**

Department of Public Works

MassDOT Bridge No. M-02-001 (CDL)

Town of Manchester-By-The-Sea, Massachusetts

MARK	DATE	DESCRIPTION
PROJECT NO:	M1476-011	
DATE:	JUNE 2024	
FILE:	M1476-011-S-101_104.dwg	
DRAWN BY:	AGB/DRF	
CHECKED:	EAO/BRB	
APPROVED:	DLM	

ABUTMENT PLAN & DETAILS

SCALE: AS NOTED

**S-102**  
SHEET 24 OF 51



**100%  
Drawings  
Not For  
Construction**

**Central Street  
Bridge  
Replacement**

Department of  
Public Works

MassDOT Bridge No.  
M-02-001 (CDL)

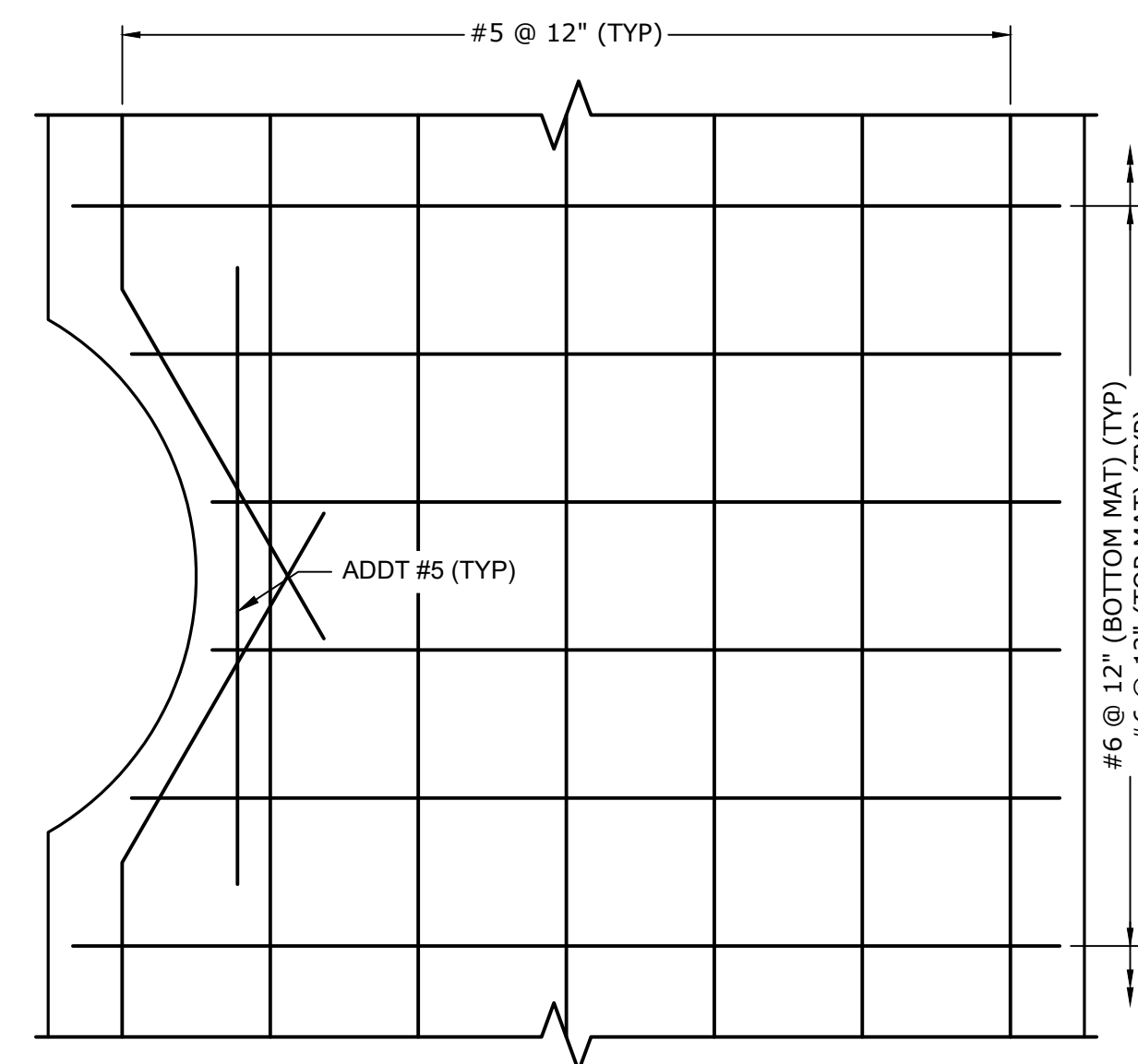
Town of  
Manchester-By-  
The-Sea,  
Massachusetts

MARK	DATE	DESCRIPTION
PROJECT NO:	M1476 - 011	
DATE:	JUNE 2024	
FILE:	M1476-011-S-101_104.dwg	
DRAWN BY:	AGB/DRF	
CHECKED:	EAO/BRB	
APPROVED:	DLM	

ABUTMENT REINFORCING  
DETAILS

SCALE: AS NOTED

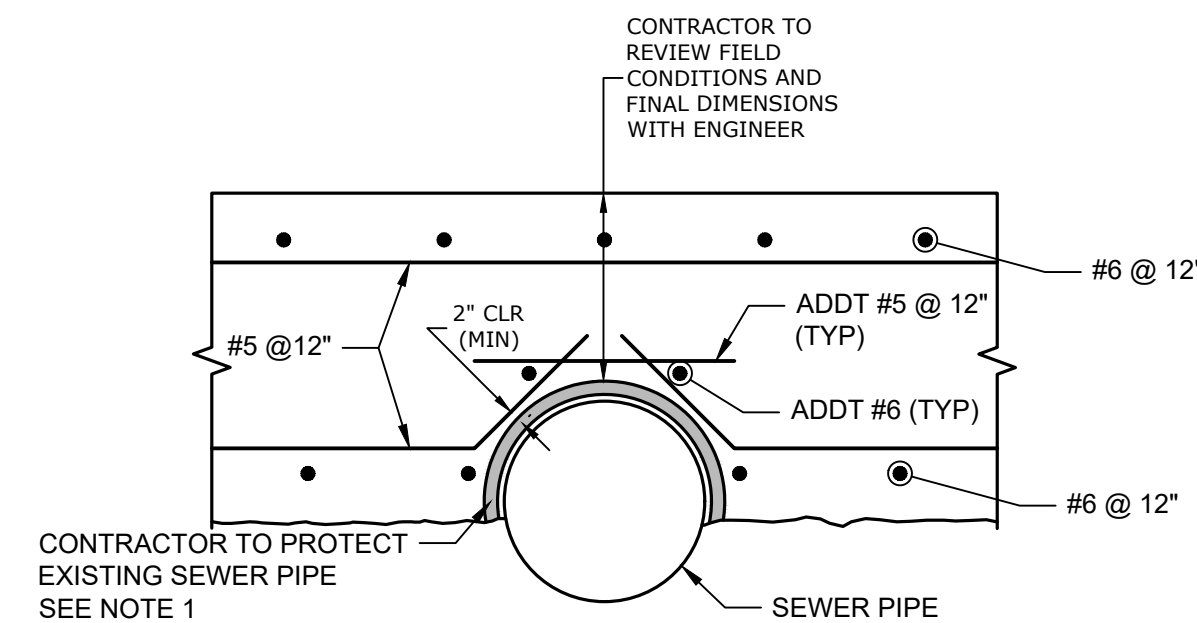
**S-103**  
SHEET 25 OF 51



**DETAIL D**  
NO SCALE  
S-102

**DETAIL NOTE:**

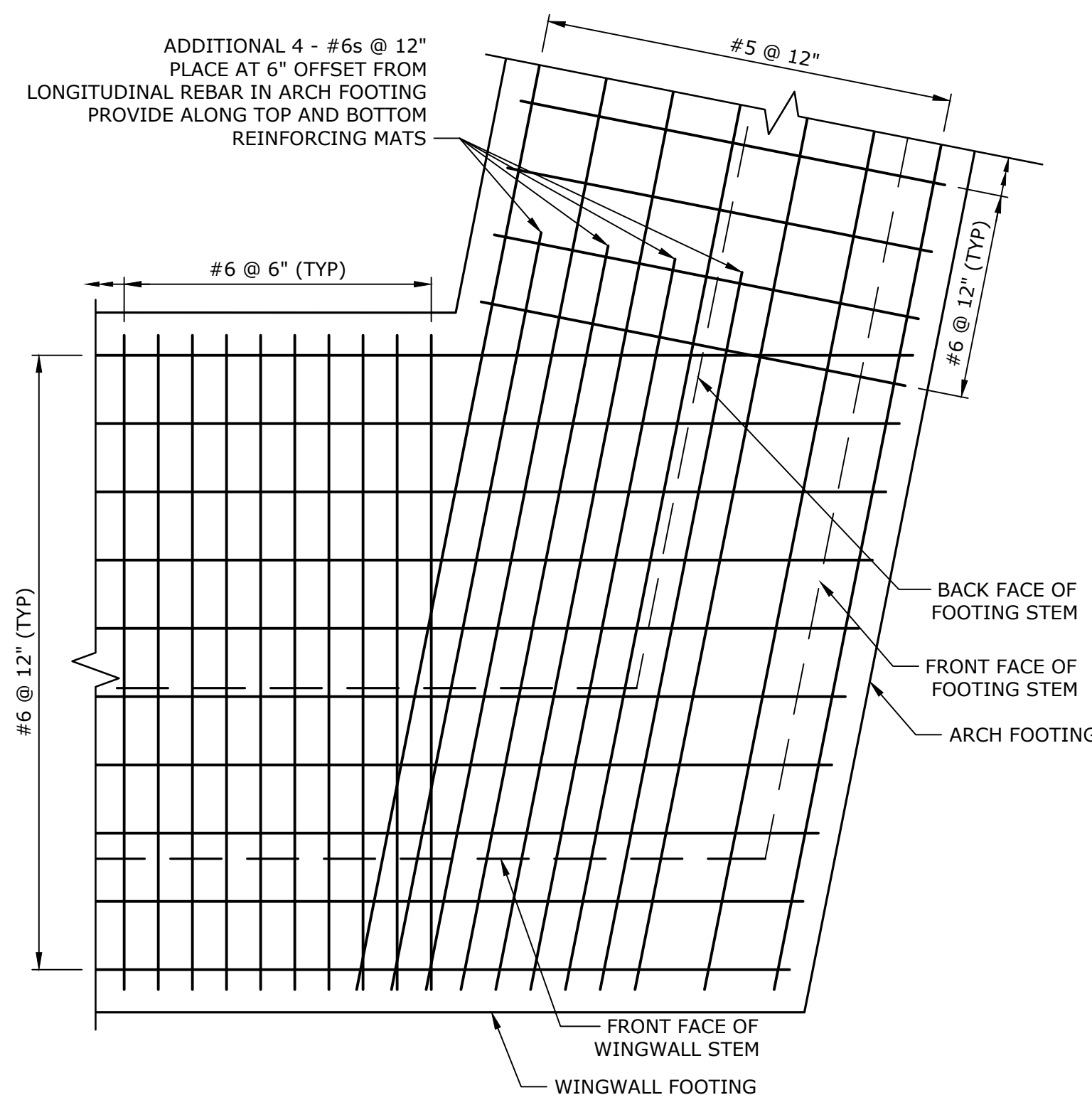
1. ONLY BOTTOM MAT REINFORCING SHOWN FOR CLARITY. DETAIL SIMILAR FOR TOP MAT REINFORCING.



**DETAIL C**  
NO SCALE  
S-102

**DETAIL NOTE:**

1. CONTRACTOR TO ENSURE NO DEAD LOAD OF CONCRETE IS IMPOSED ON EXISTING SEWER PIPE. VOIDS LEFT BETWEEN PIPE AND CONCRETE SHALL BE FILLED WITH COMPRESSIBLE MATERIAL AFTER CONCRETE CURES.

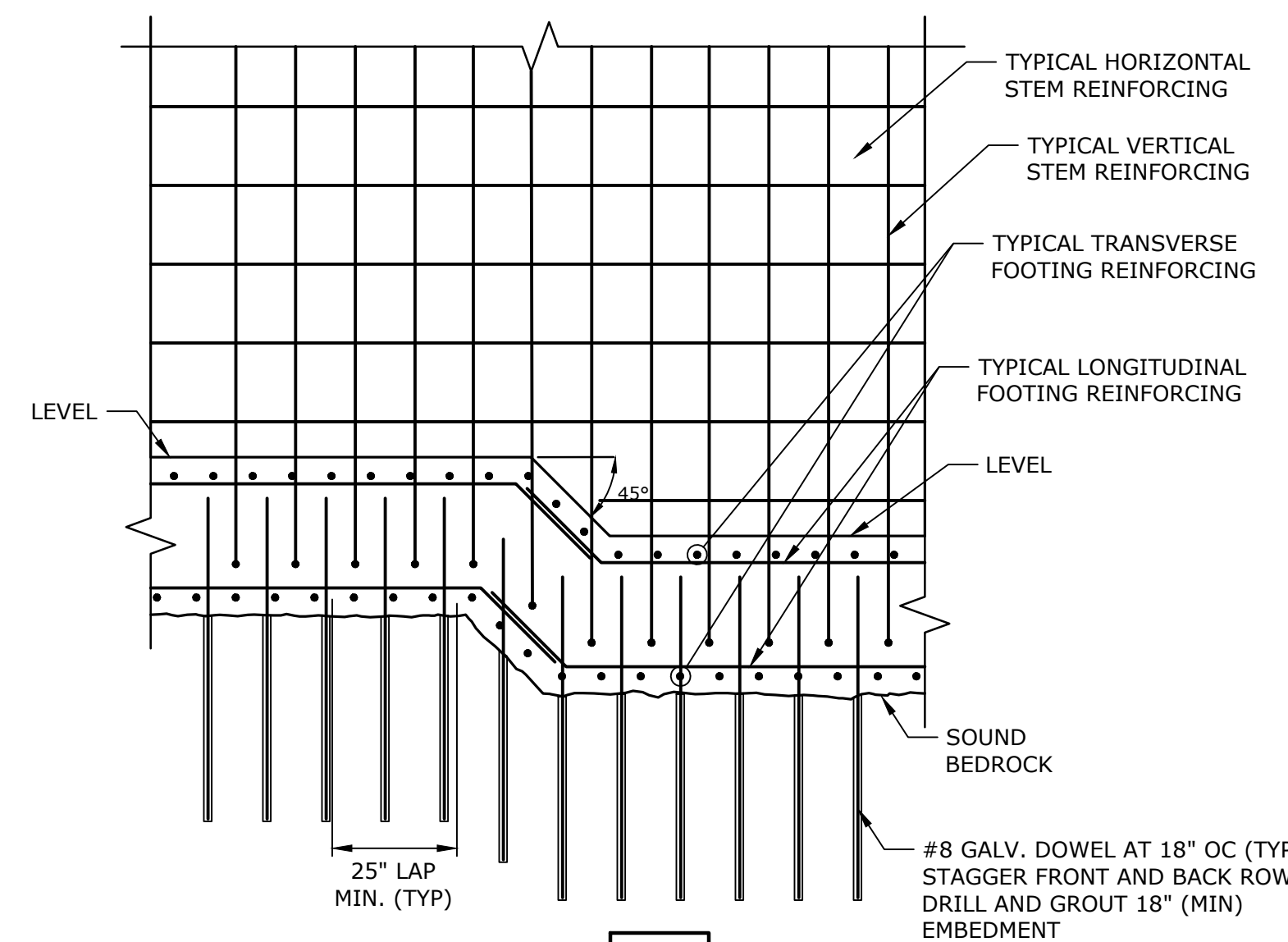


**DETAIL E**  
1/2" = 1'-0"  
S-102

**FOOTING REINFORCING DETAIL  
AT INTERFACE OF WINGWALL AND ARCH FOOTING**

**DETAIL NOTE:**

1. TOP MAT OF REINFORCING NOT SHOWN FOR CLARITY.



**DETAIL F**  
1/2" = 1'-0"  
S-102

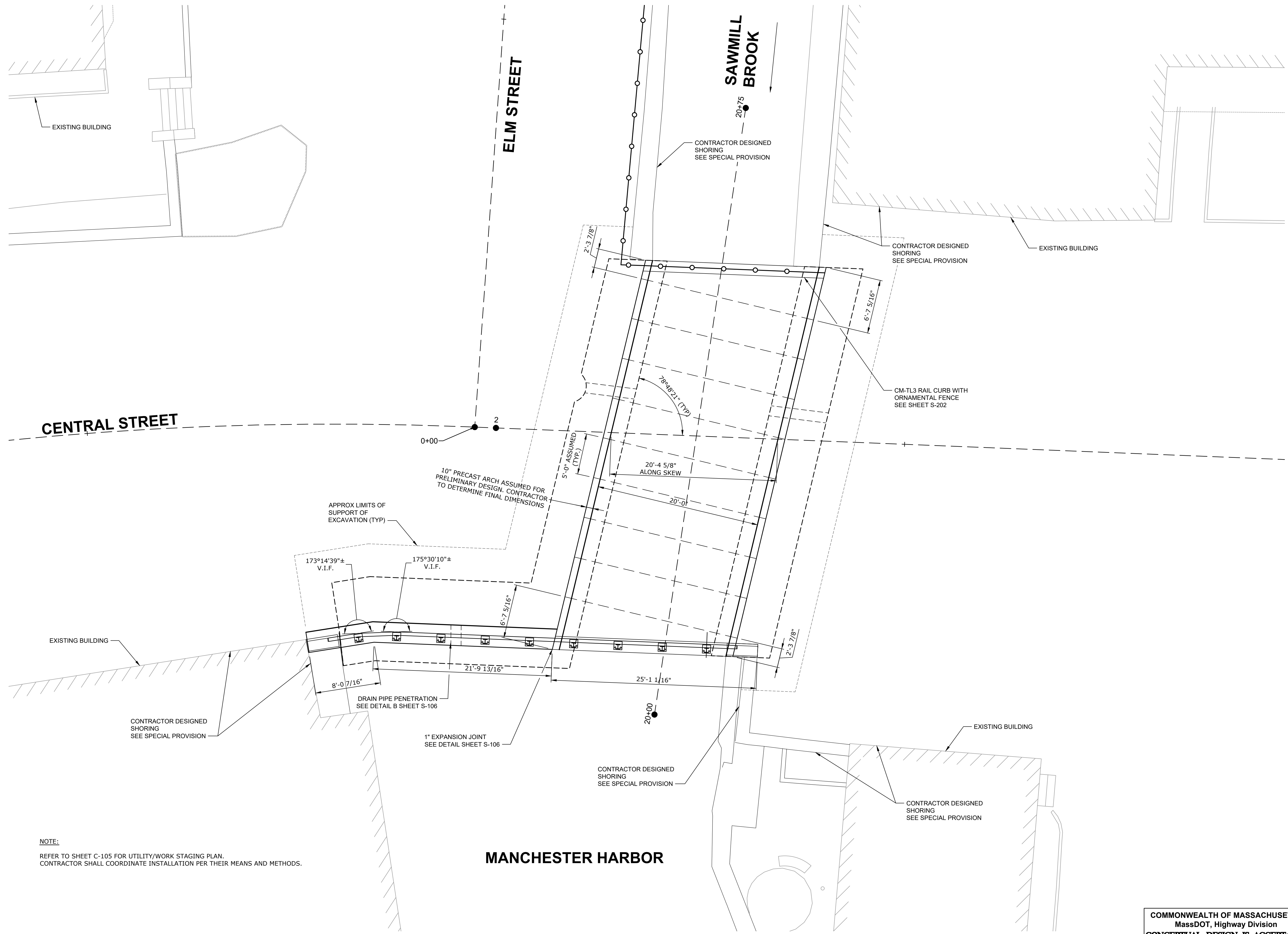
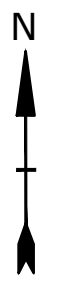
**FOOTING REINFORCING STEP DETAIL**

**DETAIL NOTES:**

1. PROVIDE STEP IN FOOTING ALONG LENGTH OF ARCH FOOTING AND WINGWALL FOOTING TO ACCOMMODATE VARIANCE IN LEDGE ELEVATIONS. ENGINEER TO REVIEW CONTRACTOR'S PROPOSED FOOTING STEP LOCATIONS PRIOR TO CONSTRUCTION OF FOOTINGS.
2. TOP OF FOOTING TO REMAIN LEVEL IN BETWEEN LOCATIONS OF 45° TRANSITION.
3. LAP LONGITUDINAL REINFORCING AS REQUIRED.
4. MAINTAIN 2'-3" THICKNESS OF FOOTING (MINIMUM) AT ALL TIMES.

COMMONWEALTH OF MASSACHUSETTS  
MassDOT, Highway Division  
**CONCEPTUAL DESIGN IS ACCEPTABLE  
TO MASSDOT FOR CONTRACTING**

STATE BRIDGE ENGINEER DATE



**CENTRAL STREET**

**ELM STREET**

**SAWMILL BROOK**

**MANCHESTER HARBOR**

**BRIDGE FRAMING AND LAYOUT PLAN**  
3/16" = 1'-0"

**NOTE:**  
REFER TO SHEET C-105 FOR UTILITY/WORK STAGING PLAN.  
CONTRACTOR SHALL COORDINATE INSTALLATION PER THEIR MEANS AND METHODS.

**100%  
Drawings  
Not For  
Construction**

**Central Street  
Bridge  
Replacement**

Department of  
Public Works

MassDOT Bridge No.  
M-02-001 (CDL)

Town of  
Manchester-By-  
The-Sea,  
Massachusetts

MARK	DATE	DESCRIPTION

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DRAWN BY:	AGB/DRF
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APPROVED:	DLM

**COMMONWEALTH OF MASSACHUSETTS**  
MassDOT, Highway Division  
**CONCEPTUAL DESIGN IS ACCEPTABLE  
TO MASSDOT FOR CONTRACTING**

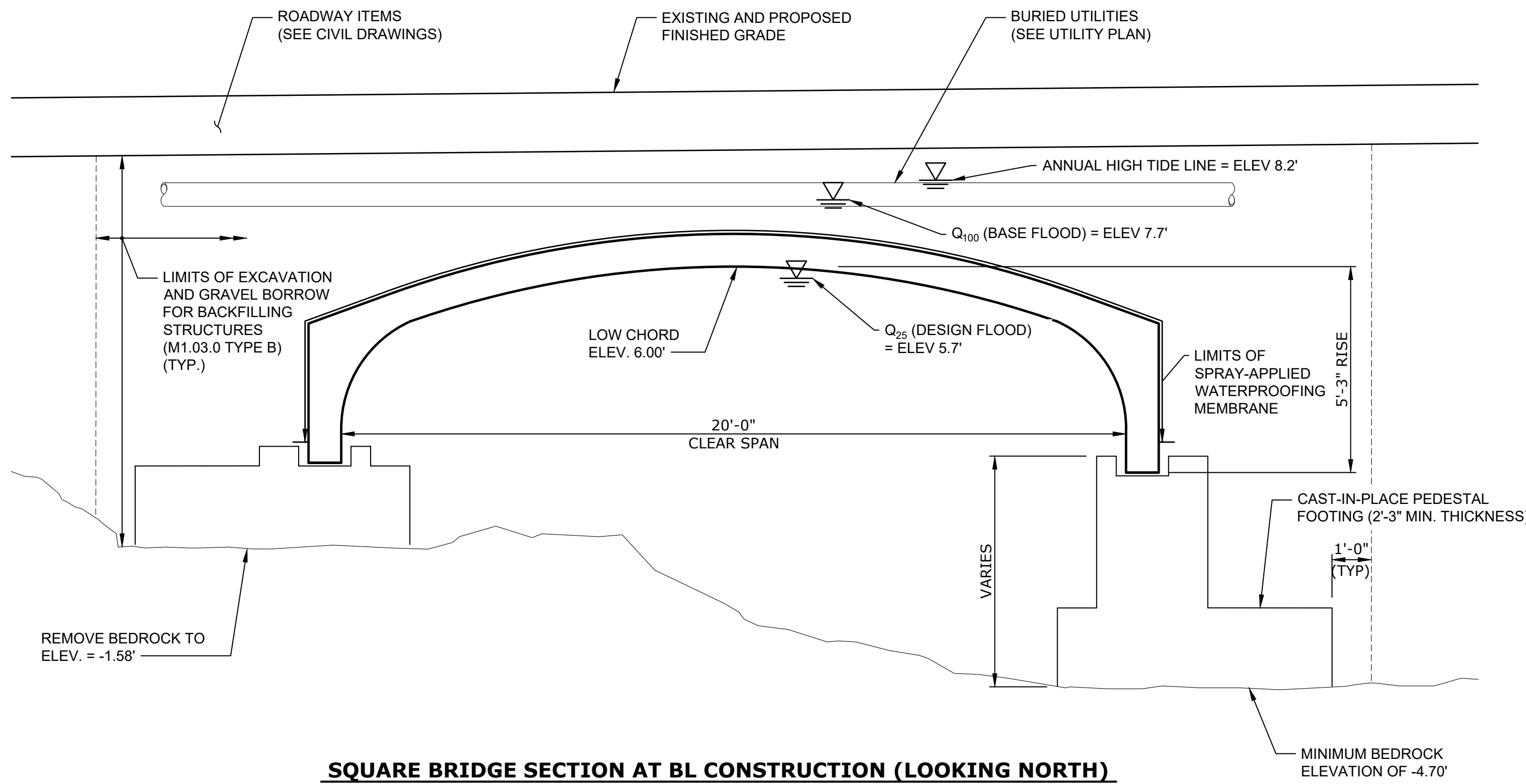
STATE BRIDGE ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

BRIDGE FRAMING AND  
LAYOUT PLAN

SCALE: AS NOTED

**S-104**  
SHEET 26 OF 51

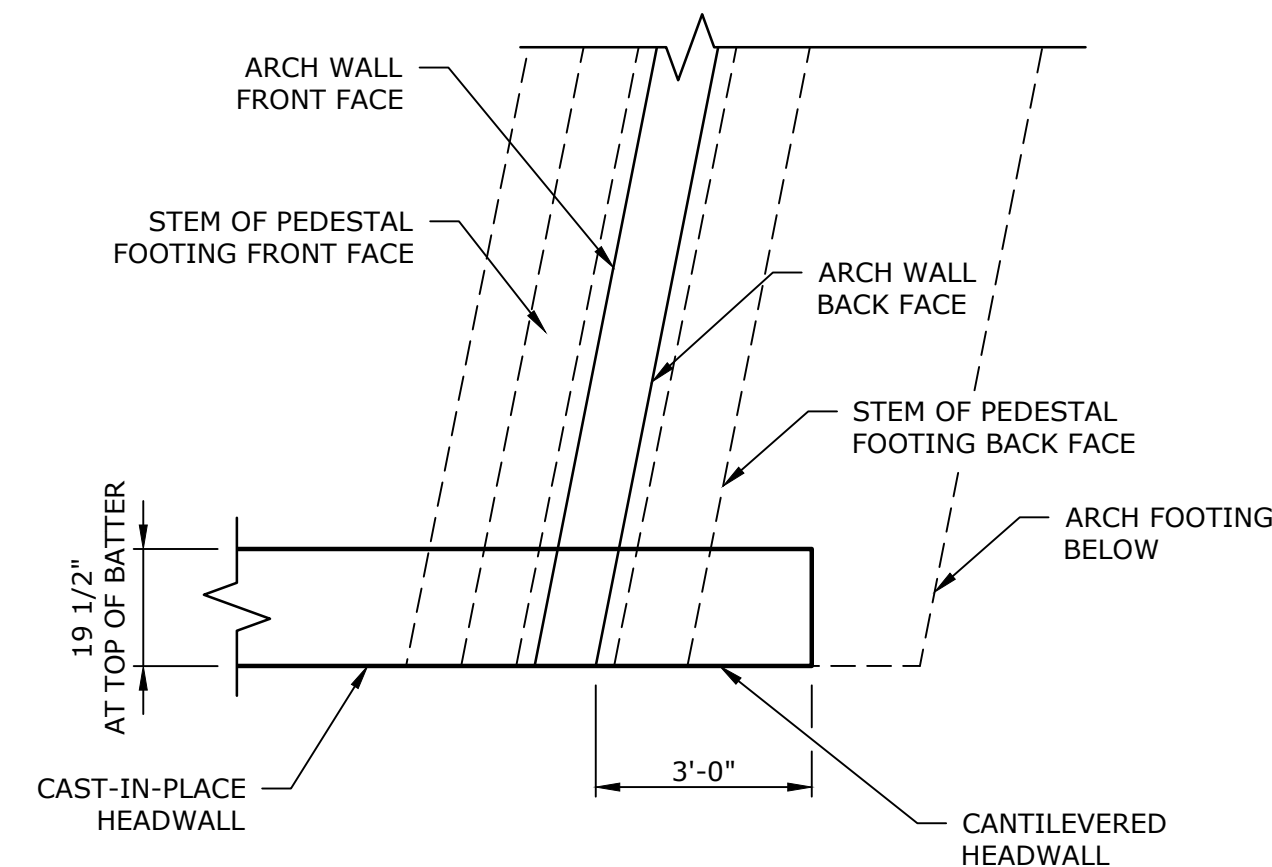
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**SQUARE BRIDGE SECTION AT BL CONSTRUCTION (LOOKING NORTH)**

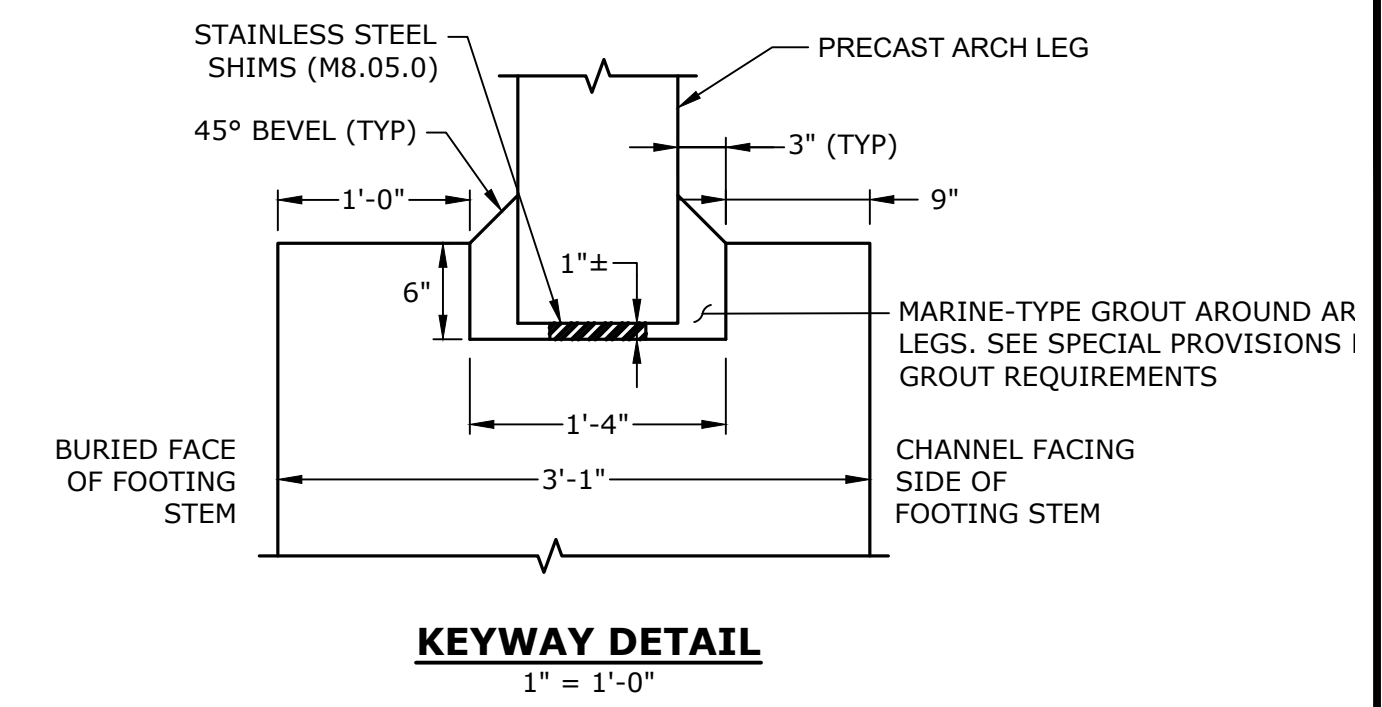
**SECTION 2**  
3/8" = 1'-0"

- NOTE:**
- SECTION REFLECTS MAXIMUM AND MINIMUM ANTICIPATED BEDROCK ELEVATIONS. CONTRACTOR TO EVALUATE FIELD CONDITIONS AFTER DEMOLITION OF EXISTING BRIDGE AND REPORT TO ENGINEER PRIOR TO CASTING OF ARCH FOOTINGS.

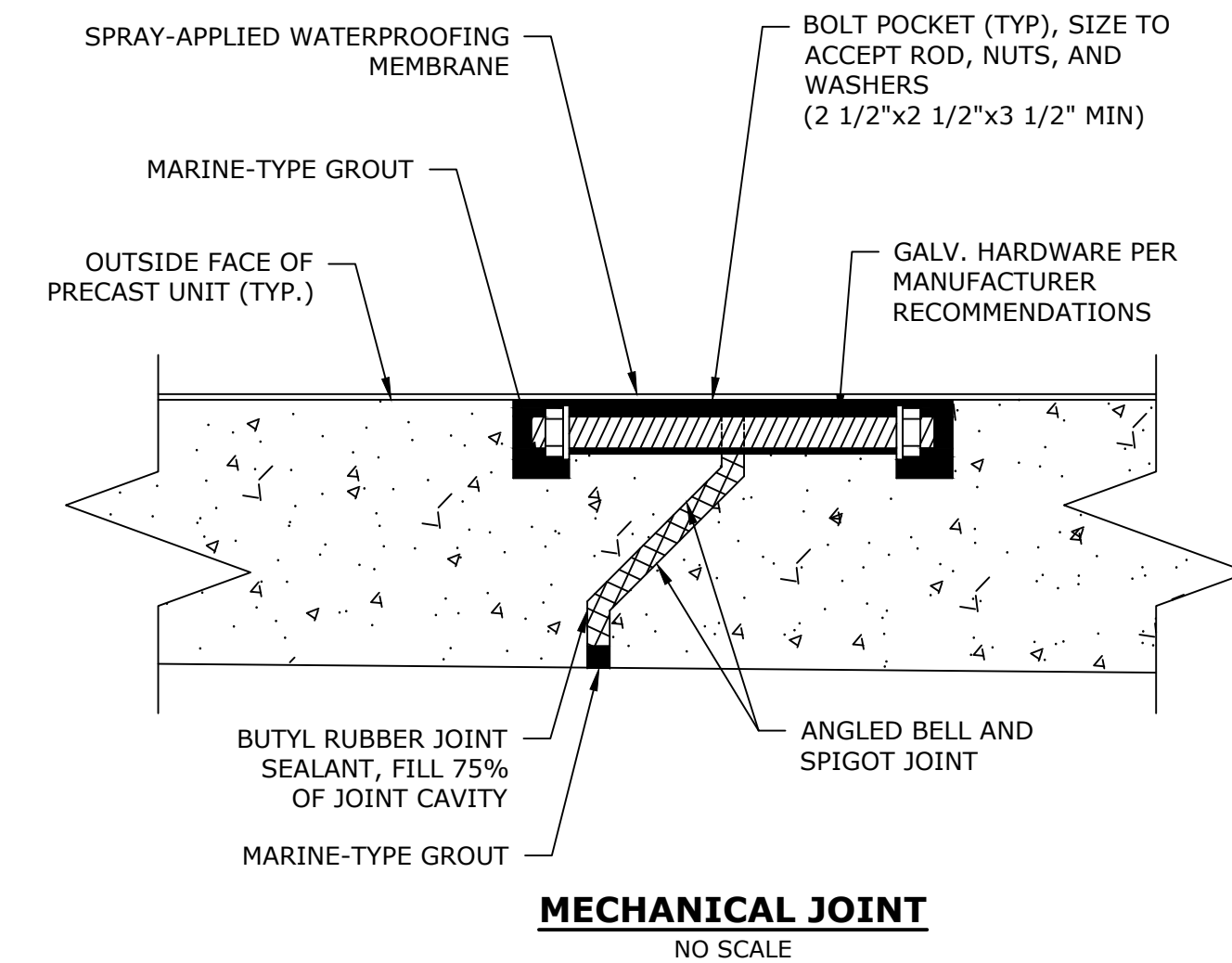


**SOUTHEAST QUADRANT HEADWALL EXTENSION DETAIL**  
SCALE: 3/8" = 1'-0"

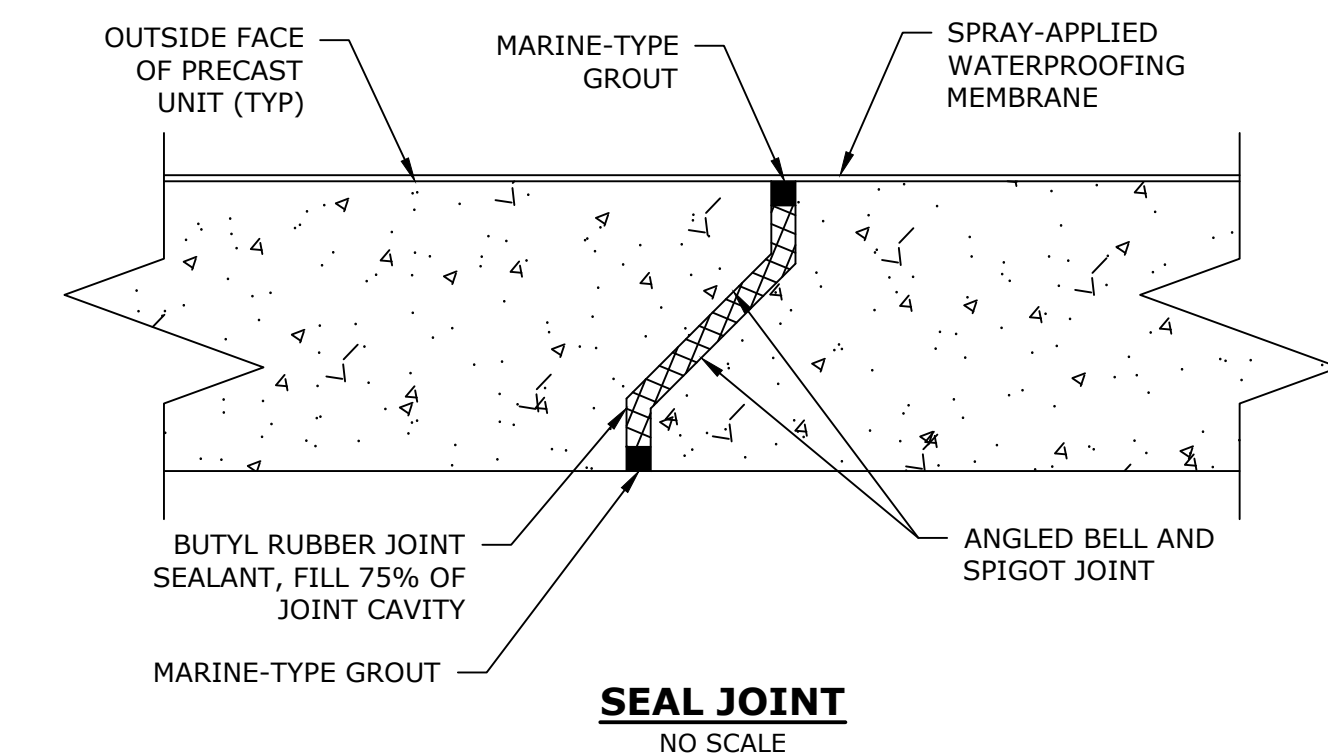
- NOTE:**
- SEE SHEET S-106 FOR CANTILEVERED HEADWALL REINFORCING DETAIL.



**KEYWAY DETAIL**  
1" = 1'-0"



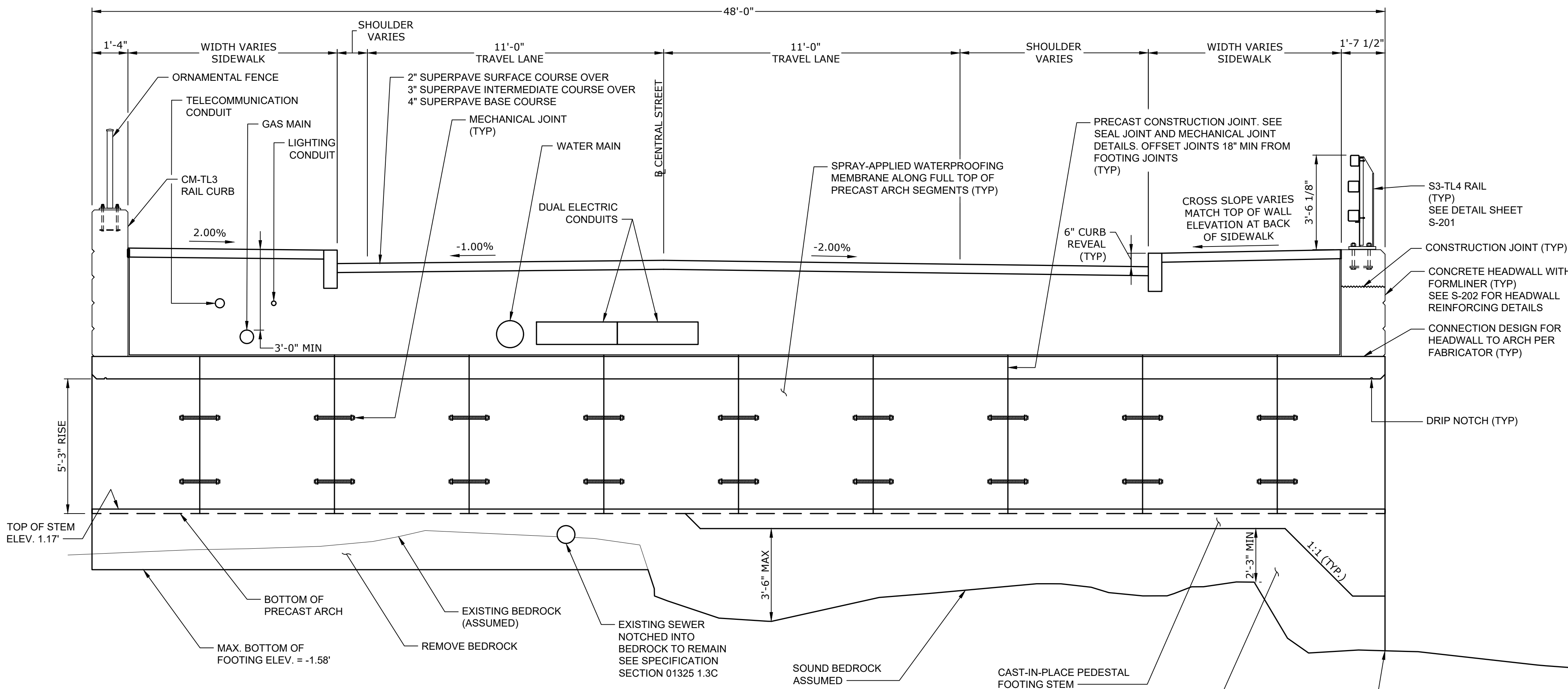
**MECHANICAL JOINT**  
NO SCALE



**SEAL JOINT**  
NO SCALE

**JOINT SEALANT NOTES:**

- PROVIDE BUTYL RUBBER JOINT SEALANT (AASHTO M-198) BETWEEN PRECAST CONCRETE UNITS.
- PROVIDE A MINIMUM OF 7 MECHANICAL CONNECTORS BETWEEN EACH ARCH UNIT (3 ON TOP AND 2 ON EACH SIDE).
- ALL BOLT POCKETS SHALL BE FILLED WITH MARINE-TYPE GROUT. SEE SPECIAL PROVISIONS FOR GROUT REQUIREMENTS.
- PEEL AND STICK BARRIER MEMBRANE SHALL BE PLACED IN 2-FOOT WIDE STRIPS, CENTERED OVER THE TOP AND/OR SIDES OF EACH JOINT.



**TRANSVERSE SQUARE BRIDGE SECTION**

**SECTION 1**  
3/8" = 1'-0"

- NOTES:**
- PROPOSED UTILITY LAYOUT SUBJECT TO COORDINATION AND DESIGN BY UTILITY COMPANIES. EXISTING UTILITIES SHOWN BASED ON LIMITED INFORMATION AVAILABLE FROM SURVEY AND UTILITY RECORDS. CONTRACTOR TO CONFIRM LOCATION.
  - UTILITY LOCATIONS SHOWN IN THIS SECTION INFORMED BY VACUUM TRUCK EXCAVATION PERFORMED ON DECEMBER 7, 2021. CONTRACTOR IS REQUIRED TO PERFORM THEIR OWN INDEPENDENT TEST PITS TO LOCATE EXISTING UTILITIES PRIOR TO CONSTRUCTION. SEE SPECIAL PROVISIONS.

**COMMONWEALTH OF MASSACHUSETTS**  
MassDOT, Highway Division  
**CONCEPTUAL DESIGN IS ACCEPTABLE TO MASSDOT FOR CONTRACTING**

STATE BRIDGE ENGINEER DATE

**100% Drawings Not For Construction**

**Central Street Bridge Replacement**

Department of Public Works

MassDOT Bridge No. M-02-001 (CDL)

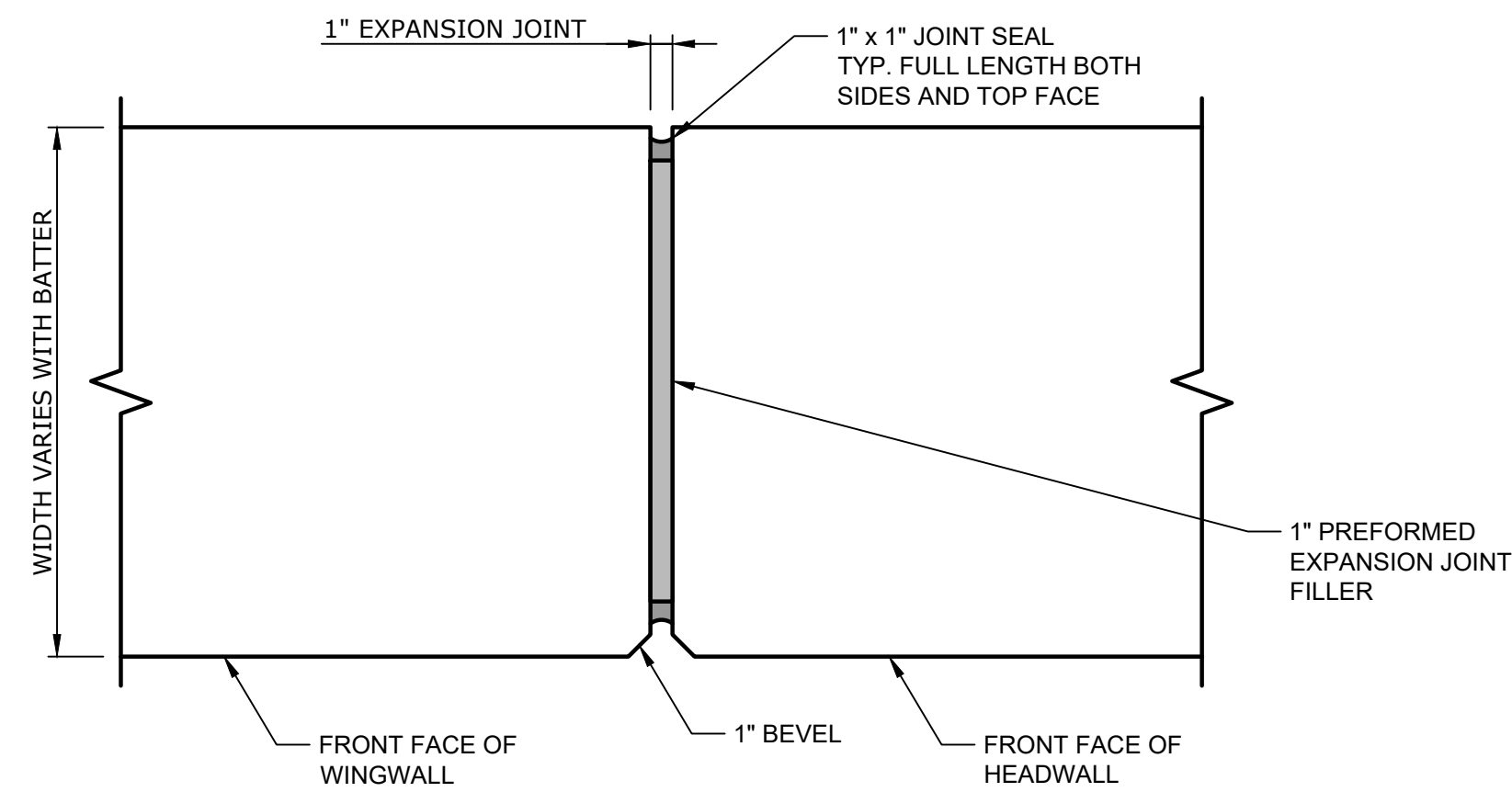
Town of Manchester-By-The-Sea, Massachusetts

MARK	DATE	DESCRIPTION
PROJECT NO:	M1476 - 011	
DATE:	JUNE 2024	
FILE:	M1476-011-S-105_106.dwg	
DRAWN BY:	AGB/DRF	
CHECKED:	EAO/BRB	
APPROVED:	DLM	

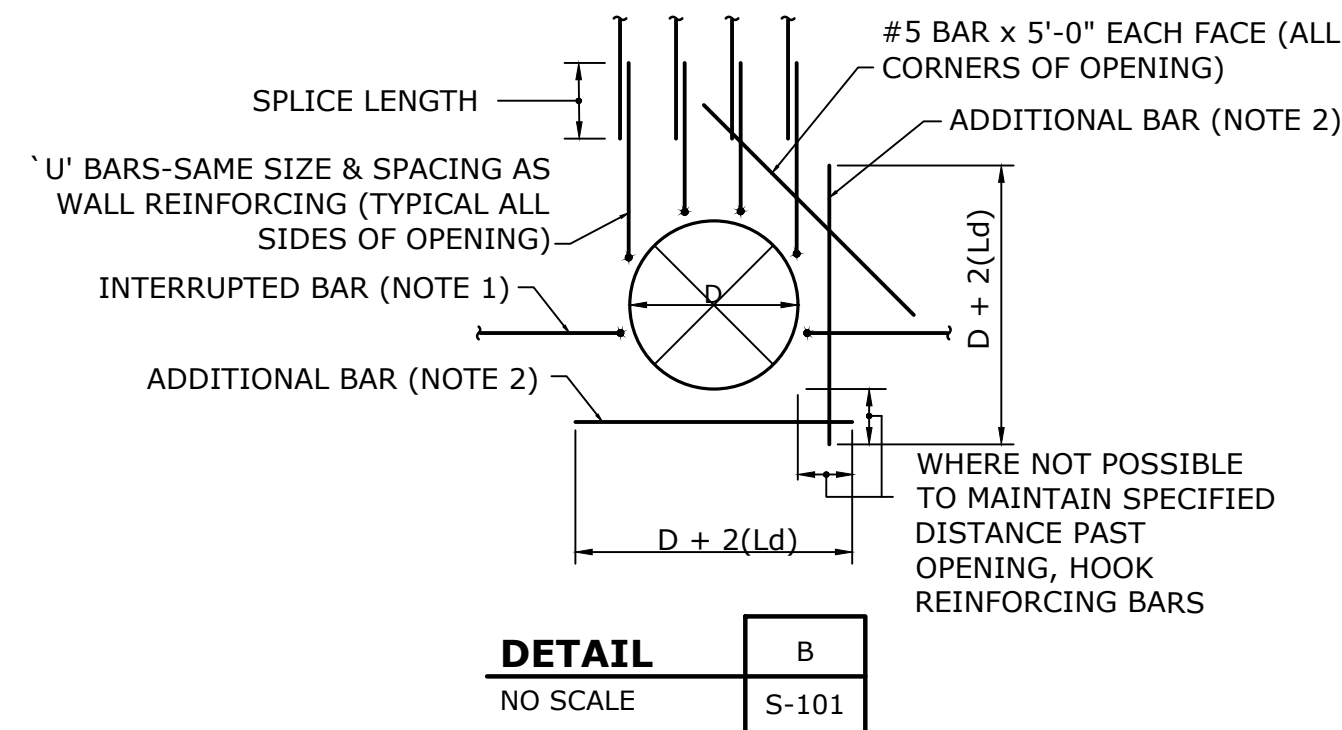
BRIDGE SECTIONS & DETAILS

SCALE: AS NOTED

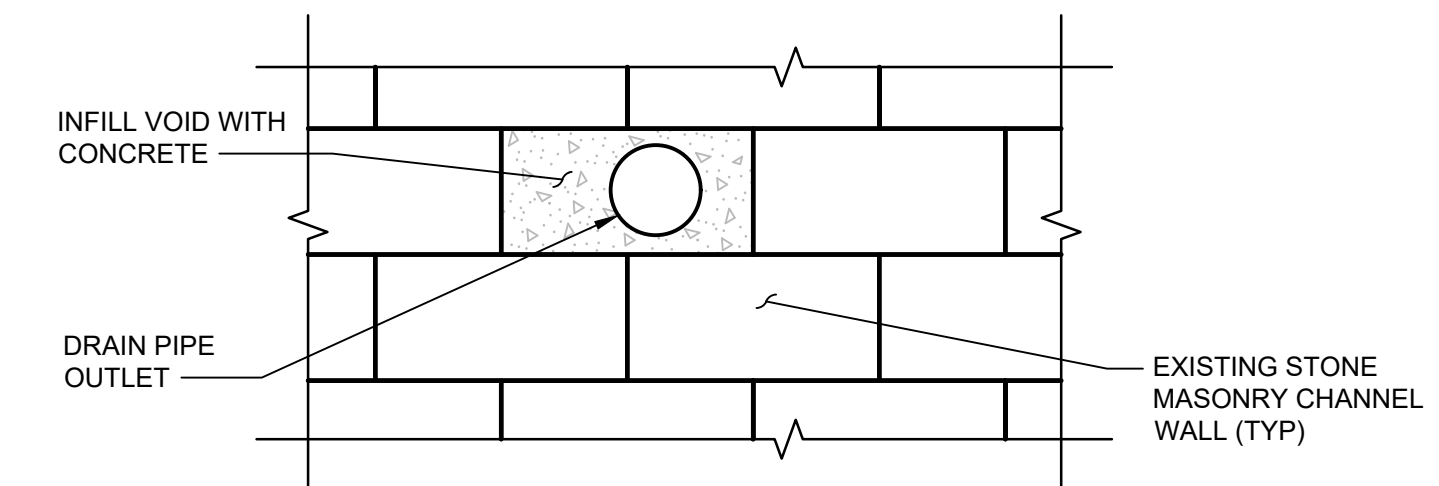
**S-105**  
SHEET 27 OF 51



**VERTICAL EXPANSION JOINT DETAILS**  
NOT TO SCALE



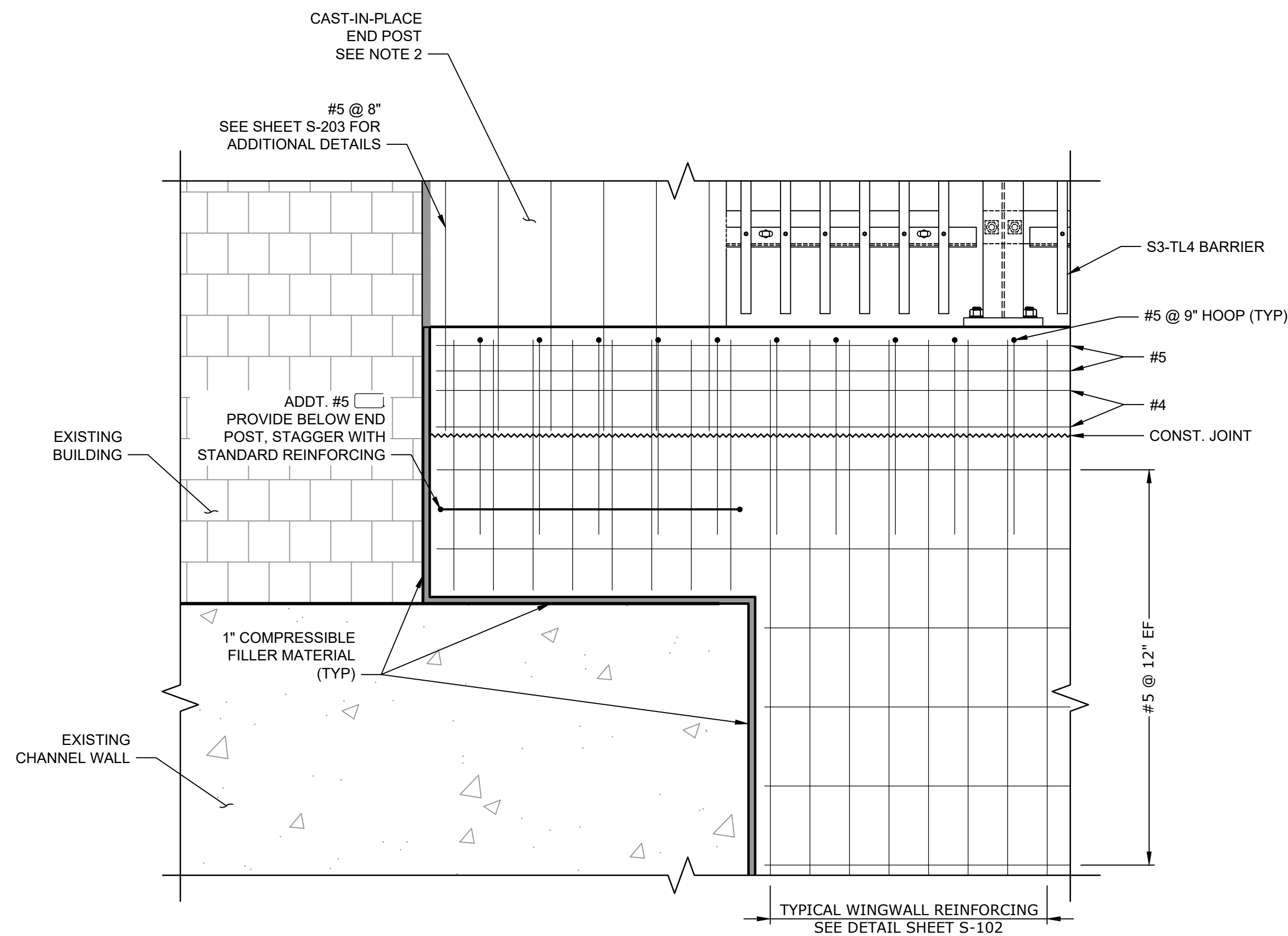
**DETAIL B**  
NO SCALE S-101



**DETAIL G**  
NO SCALE C-103

**NOTES:**

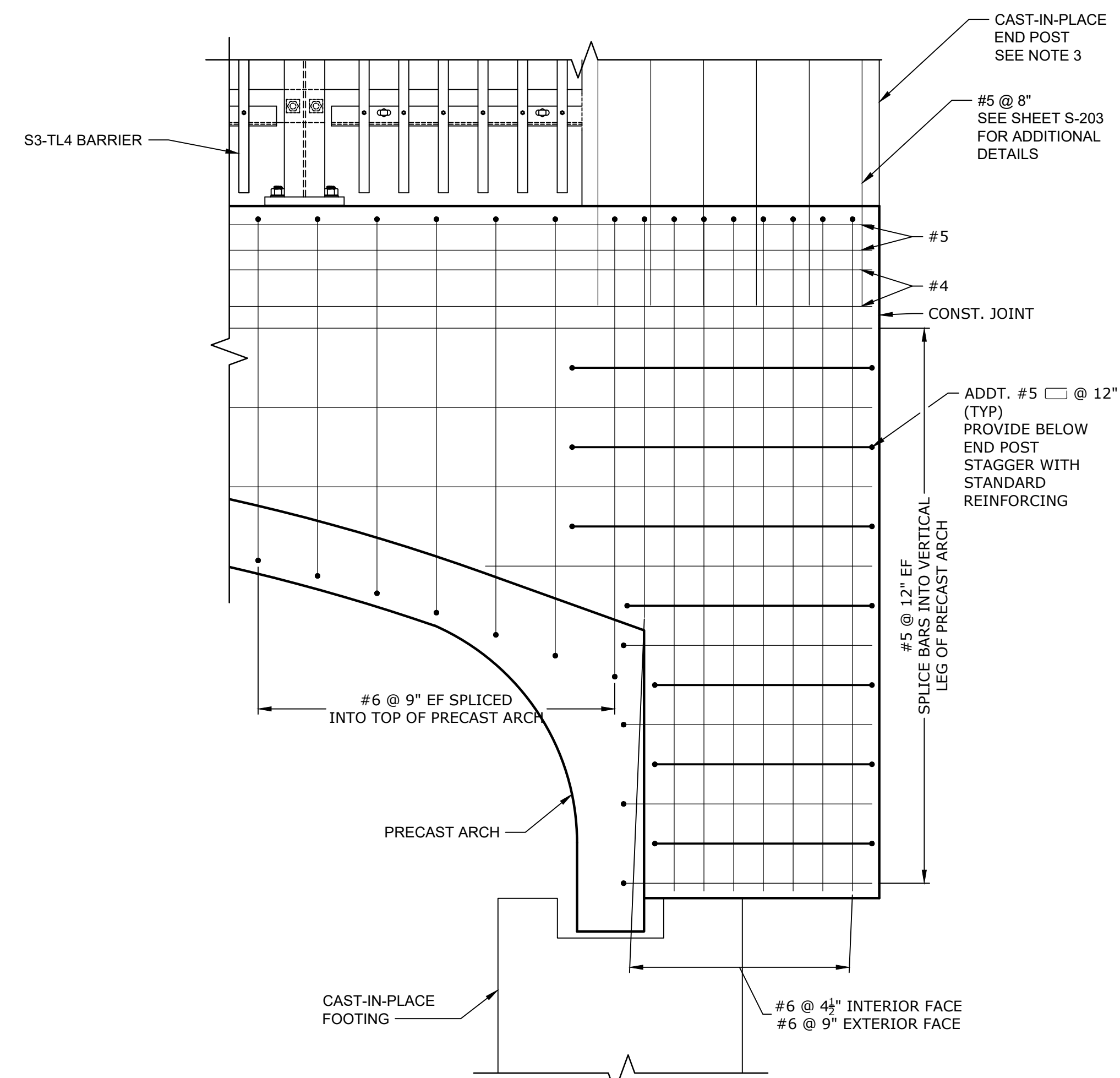
1. FOR SLAB OR WALL APPLICATION WITH A CONCRETE THICKNESS LESS THAN 12 INCHES, 180° OR 90°, HOOK BARS MAY BE USED IN LIEU OF 'U' BARS.
2. PROVIDE ADDITIONAL BARS USING NOT LESS THAN ONE HALF OF INTERRUPTED BARS AT EACH SIDE OF OPENING AT 3" ON CENTER.



**SOUTHWEST QUADRANT CANTILEVERED WINGWALL AND END POST BASE REINFORCING DETAIL**  
SCALE: 3/4" = 1'-0"

**NOTES:**

1. SEE SHEET S-102 AND S-202 FOR ADDITIONAL WINGWALL REINFORCING DETAILS.
2. REINFORCING NOT SHOWN IN END POST FOR CLARITY. SEE SHEET S-203 FOR ADDITIONAL DETAILS.



**SOUTHEAST QUADRANT CANTILEVERED HEADWALL AND END POST BASE REINFORCING DETAIL**  
SCALE: 3/4" = 1'-0"

**NOTES:**

1. SEE SHEET S-202 FOR ADDITIONAL HEADWALL REINFORCING DETAILS.
2. REINFORCING NOT SHOWN IN ARCH AND FOOTING FOR CLARITY.
3. REINFORCING NOT SHOWN IN END POST FOR CLARITY. SEE SHEET S-203 FOR ADDITIONAL DETAILS.

**100% Drawings Not For Construction**

**Central Street Bridge Replacement**

Department of Public Works

MassDOT Bridge No. M-02-001 (CDL)

Town of Manchester-By-The-Sea, Massachusetts

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PROJECT NO:	M1476 - 011	
DATE:	JUNE 2024	
FILE:	M1476-011-S-105_106.dwg	
DRAWN BY:	AGB/DRF	
CHECKED:	EAO/BRB	
APPROVED:	DLM	

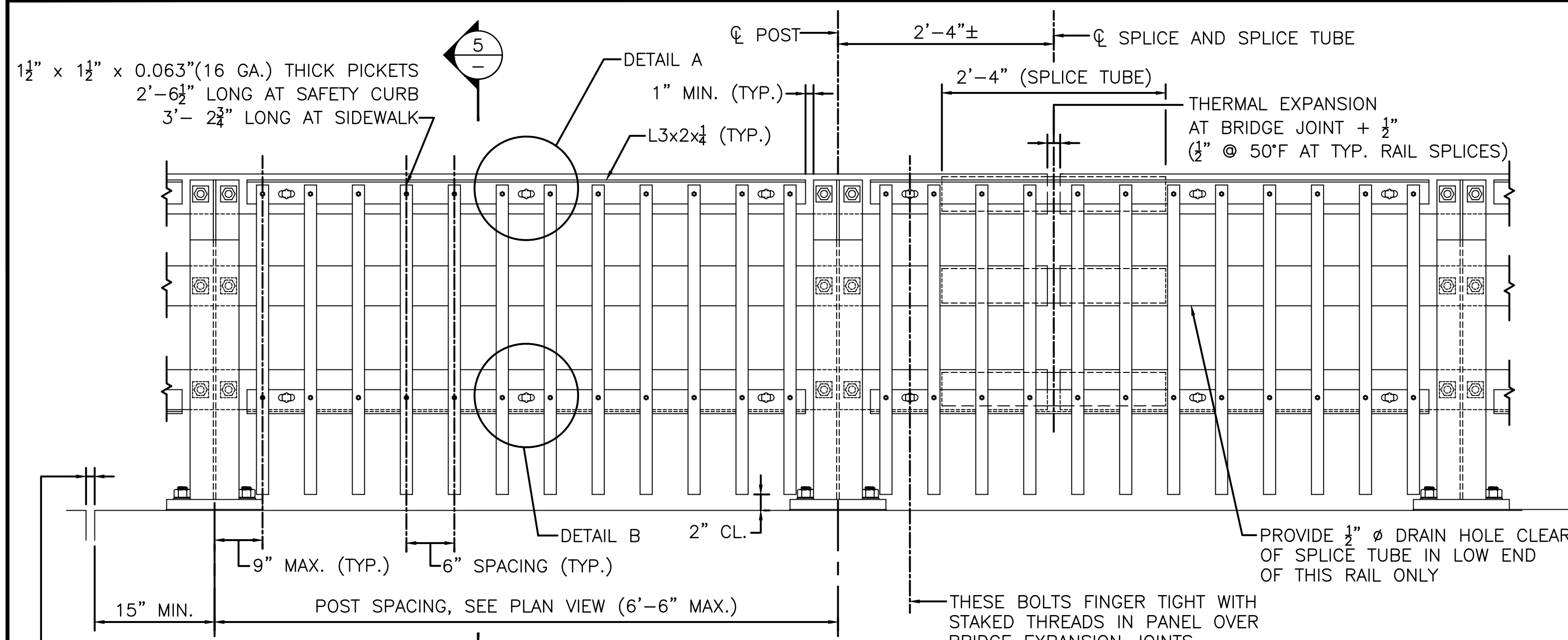
**COMMONWEALTH OF MASSACHUSETTS**  
MassDOT, Highway Division  
**CONCEPTUAL DESIGN IS ACCEPTABLE TO MASSDOT FOR CONTRACTING**

STATE BRIDGE ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

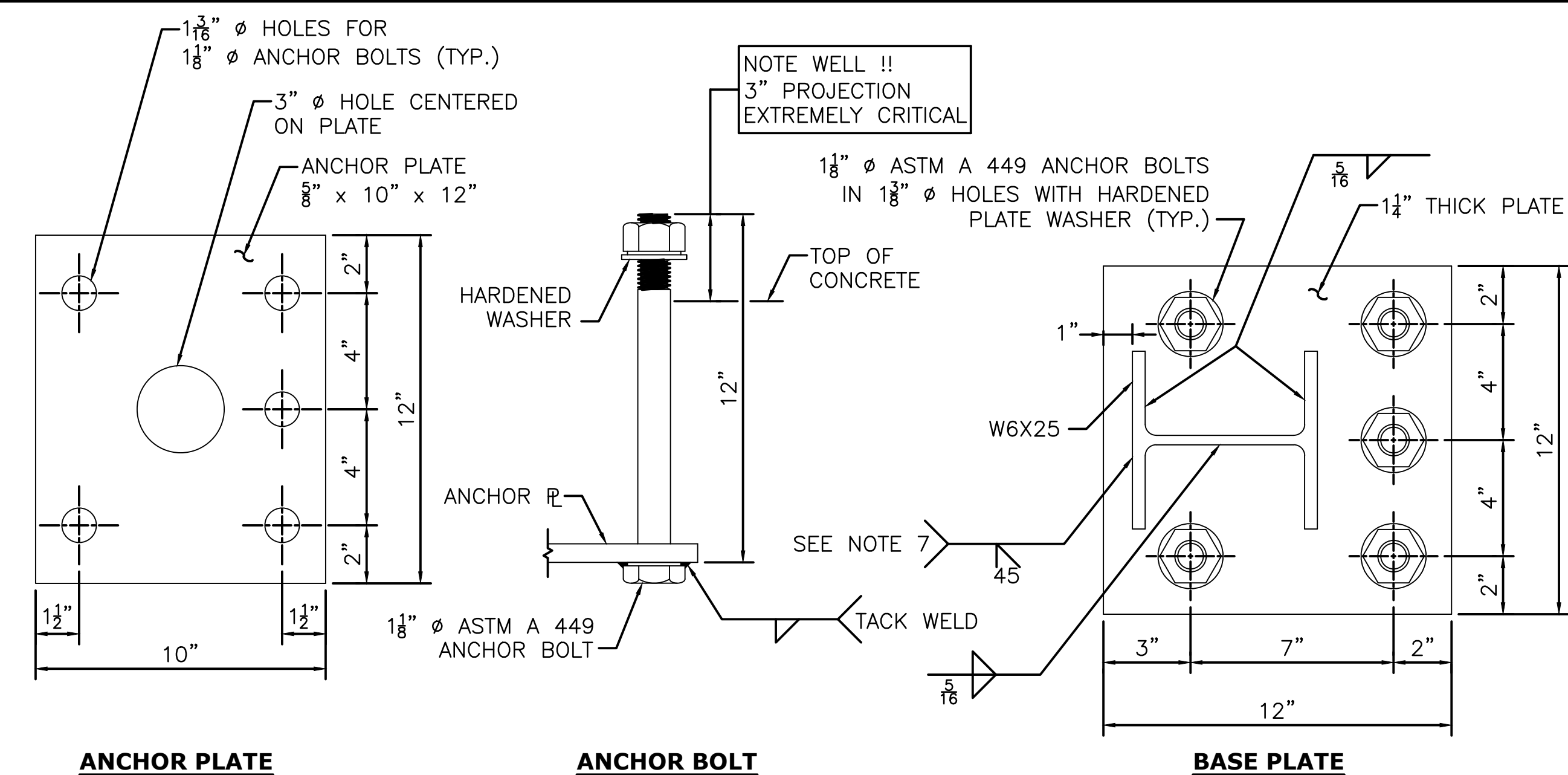
MISCELLANEOUS DETAILS

SCALE: AS NOTED

**S-106**  
SHEET 28 OF 51



**BRIDGE RAILING ELEVATION**  
SCALE: 1" = 1'-0"

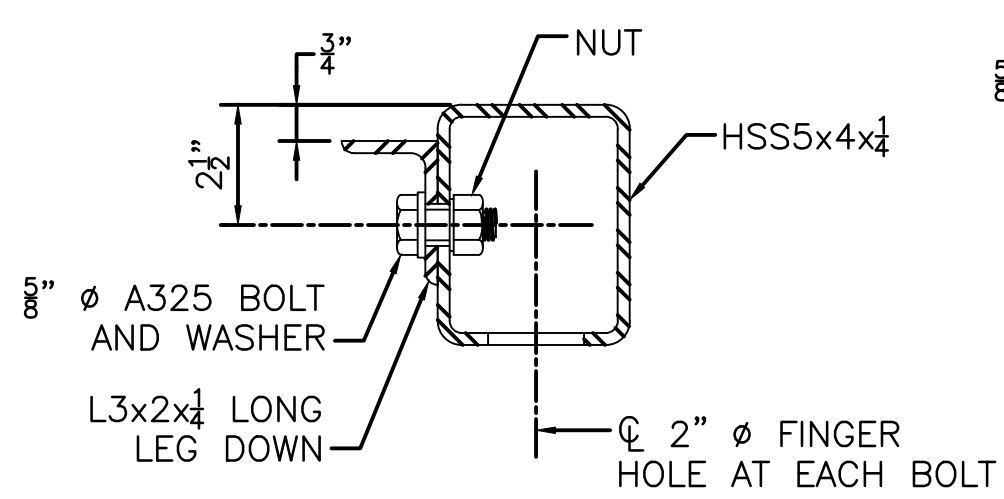


**ANCHOR PLATE**  
SCALE: 3" = 1'-0"

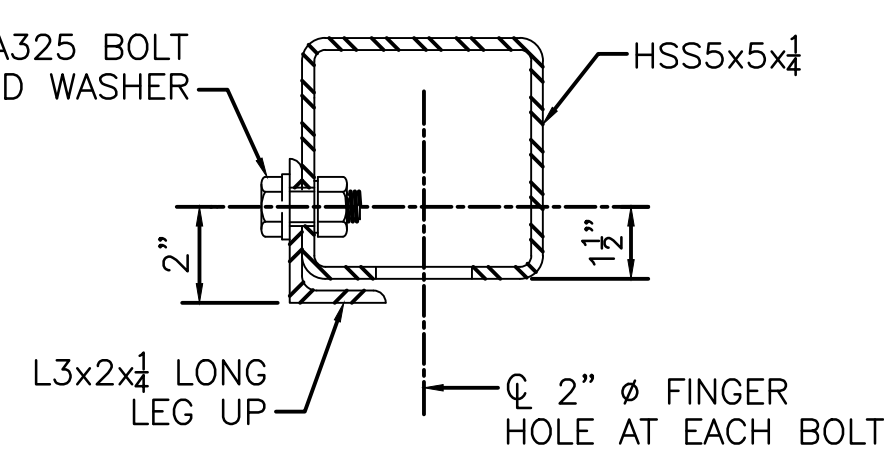
**ANCHOR BOLT**  
SCALE: 3" = 1'-0"

**BASE PLATE**  
SCALE: 3" = 1'-0"

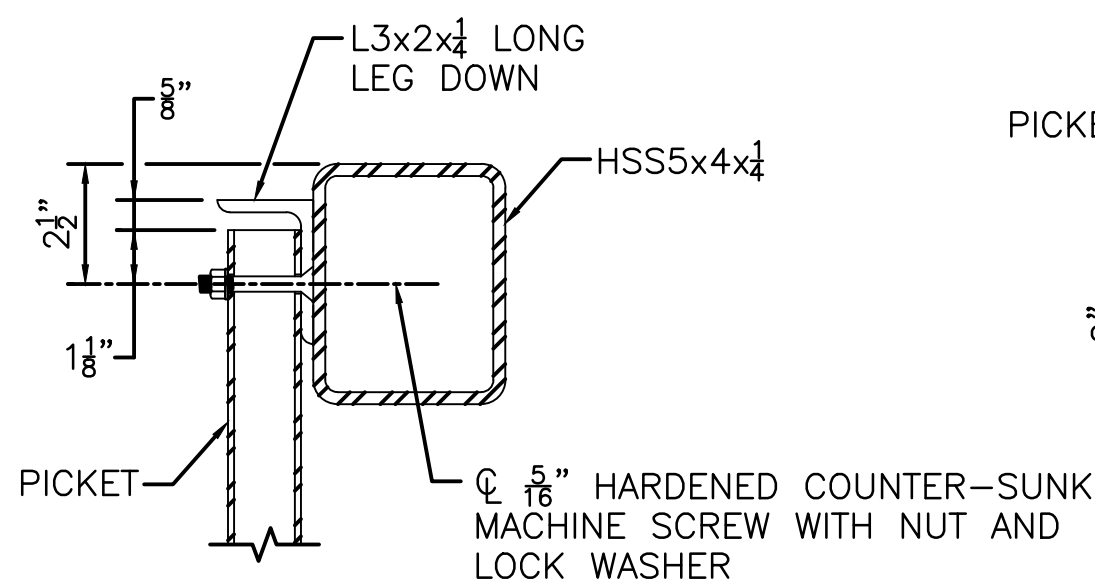
NOTE: ELEVATION AT SIDEWALK SHOWN.



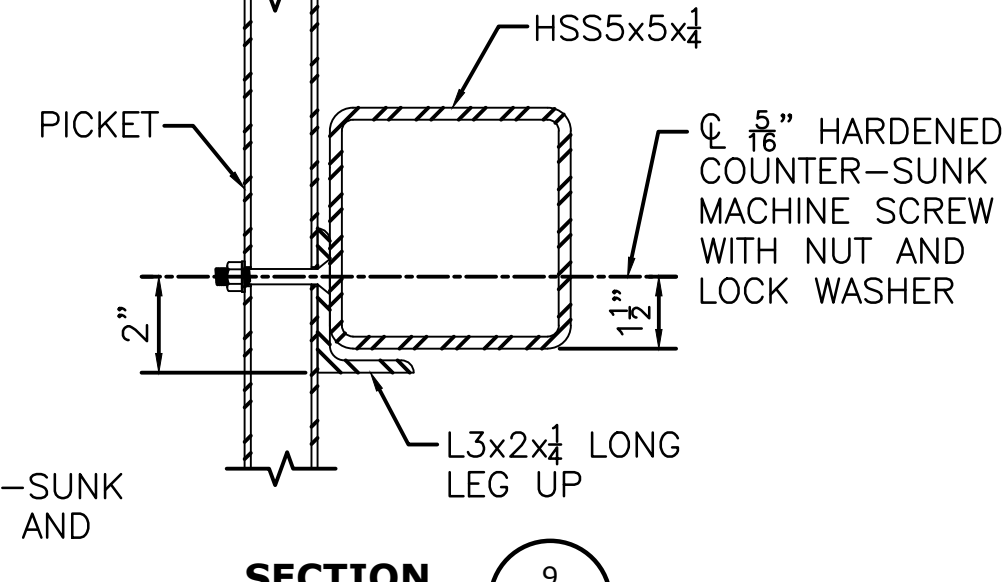
**SECTION 6**  
3" = 1'-0"



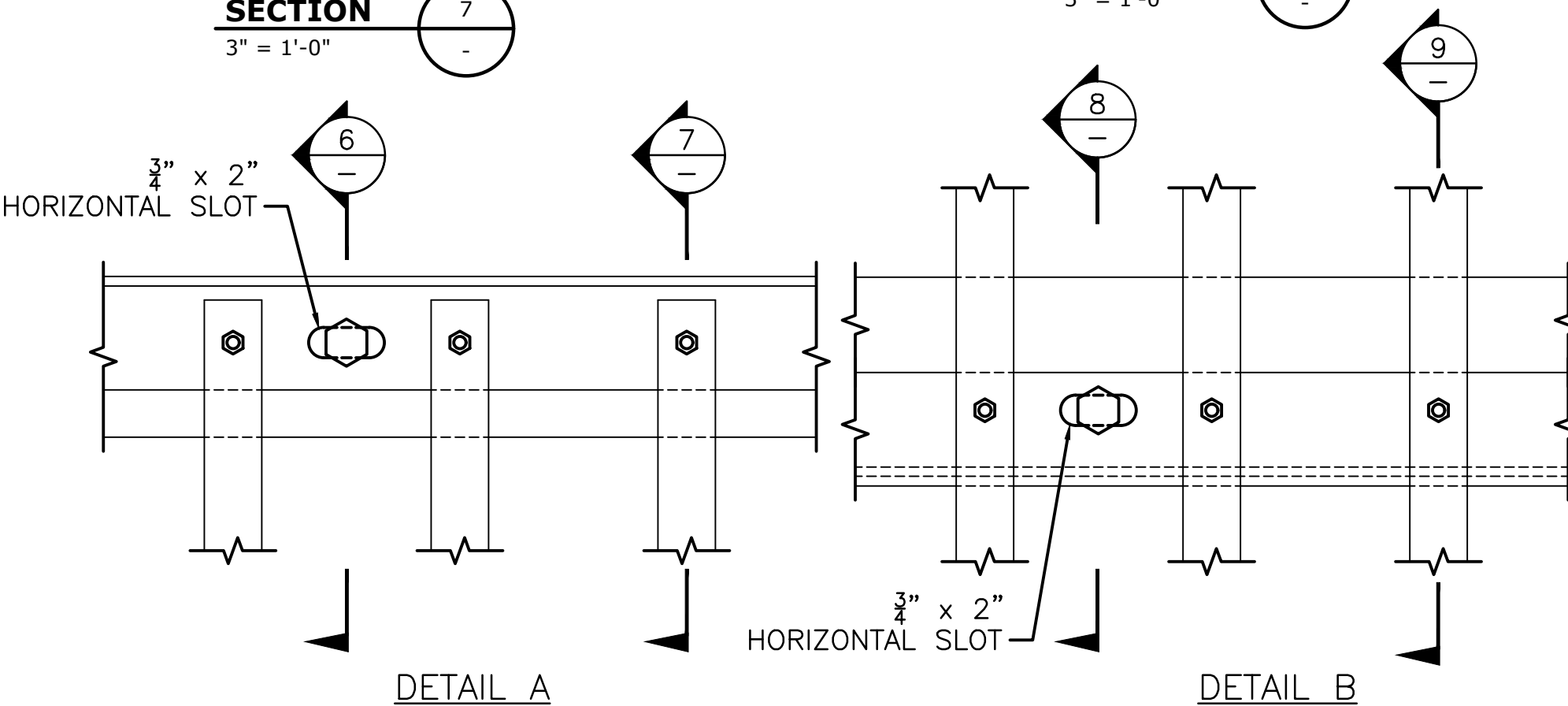
**SECTION 8**  
3" = 1'-0"



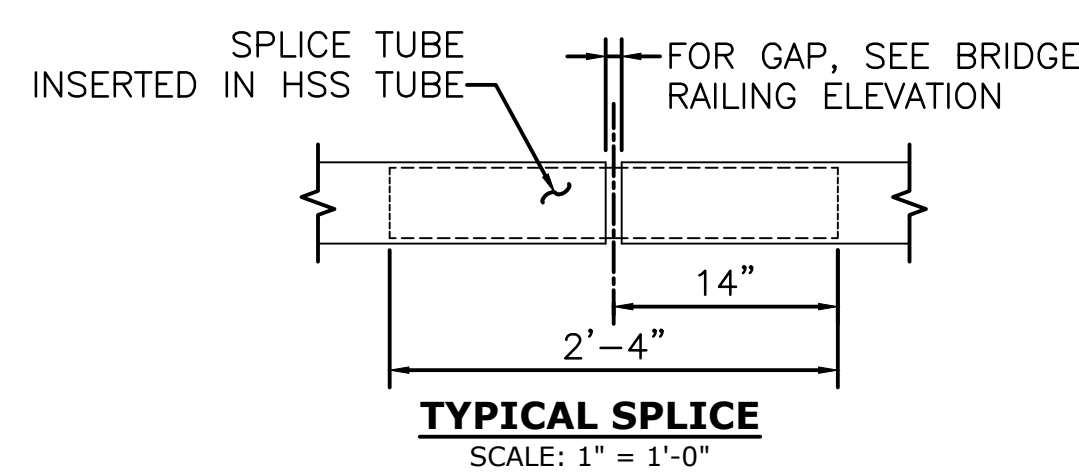
**SECTION 7**  
3" = 1'-0"



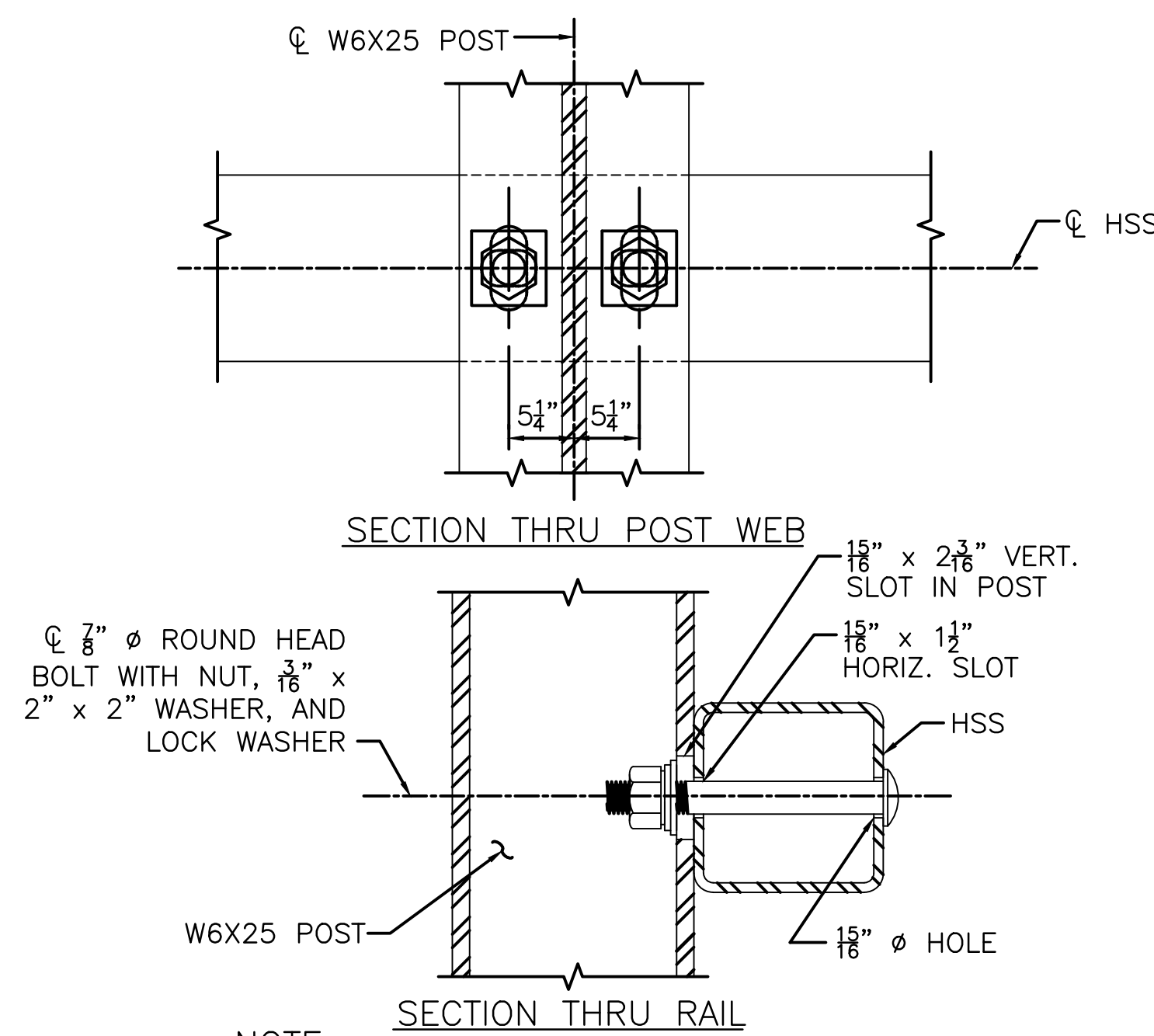
**SECTION 9**  
3" = 1'-0"



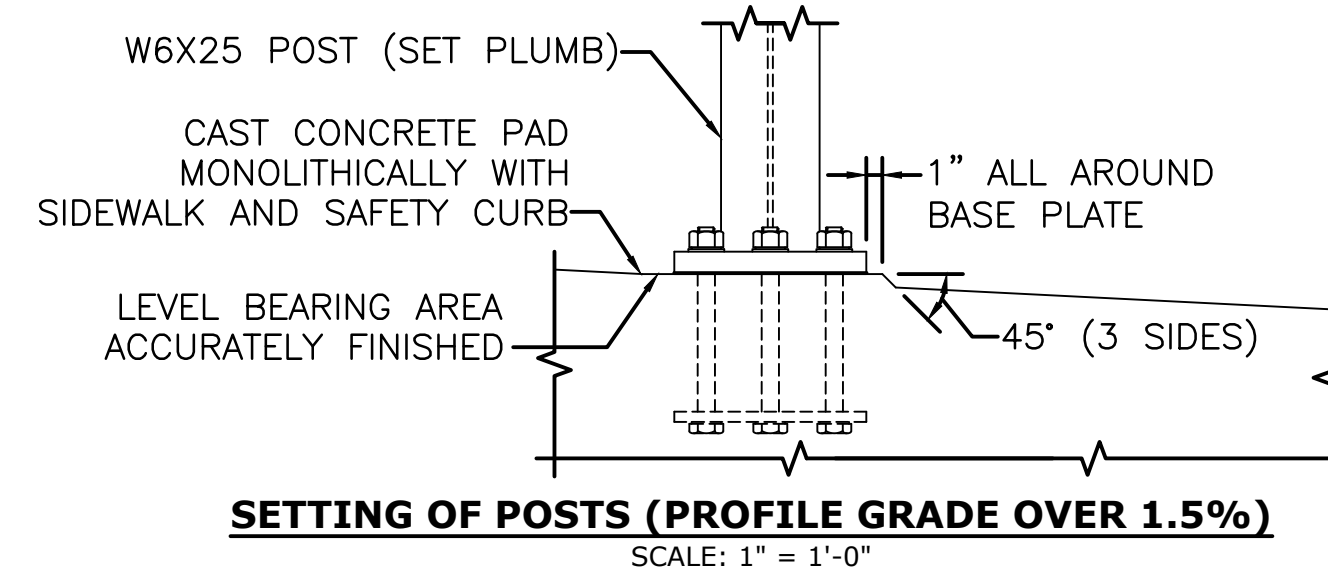
**TYPICAL PICKET TO RAIL DETAILS**  
SCALE: 3" = 1'-0"



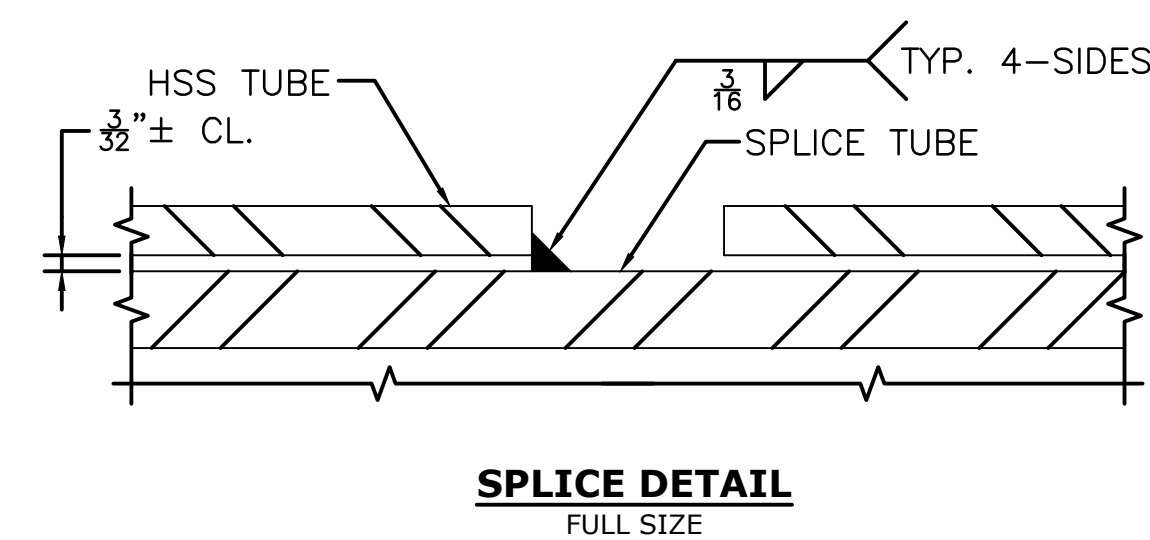
**TYPICAL SPLICE**  
SCALE: 1" = 1'-0"



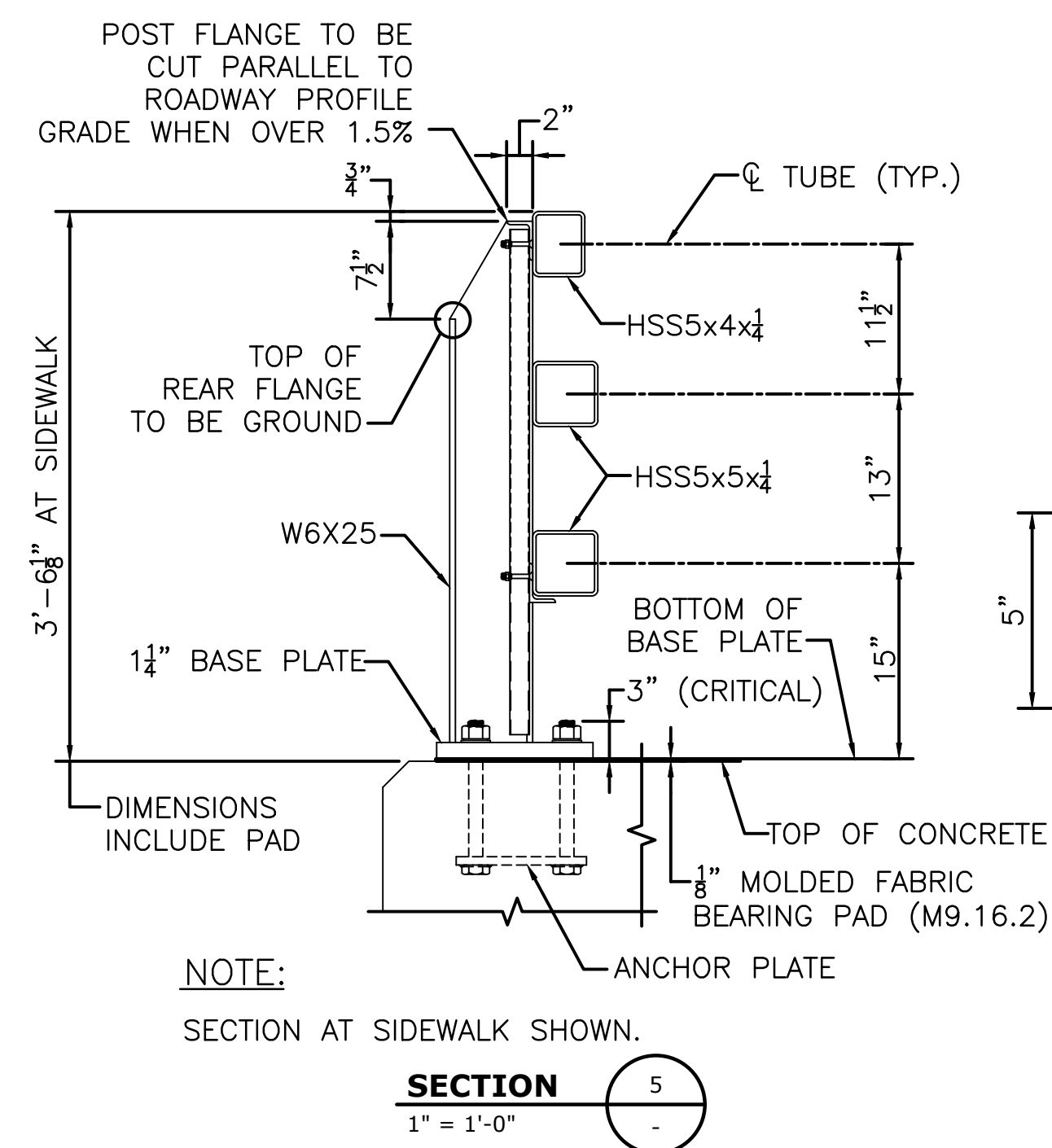
**TYPICAL RAIL TO POST CONNECTIONS**  
SCALE: 1" = 1'-0"



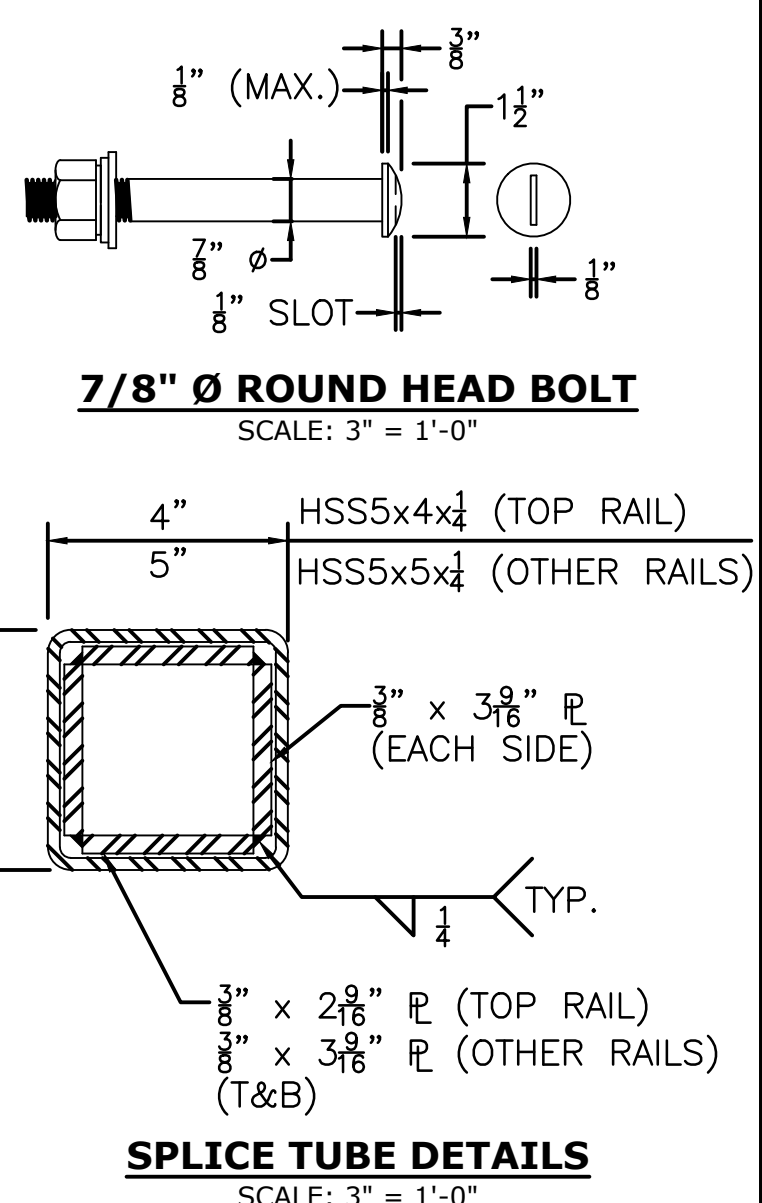
**SETTING OF POSTS (PROFILE GRADE OVER 1.5%)**  
SCALE: 1" = 1'-0"



**SPLICE DETAIL**  
FULL SIZE



**SECTION 5**  
1" = 1'-0"



**7/8" Ø ROUND HEAD BOLT**  
SCALE: 3" = 1'-0"

**SPLICE TUBE DETAILS**  
SCALE: 3" = 1'-0"

**RAILING NOTES:**

- RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 270 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING (HSS) SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 500 WITH A CERTIFIED  $F_y = 50$  KSI MINIMUM. THE MINIMUM HORIZONTAL BENDING RADI OF THE HSS TUBING SHALL BE 8 FEET. PICKET CARRIER ANGLES, ANCHOR PLATES, AND SPLICE TUBE PLATES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 270 GRADE 36. PICKET TUBING SHALL CONFORM TO ASTM A 513 WITH  $F_y = 36$  KSI MIN. OR A 500 GRADE B.
- ALL STEEL (EXCEPT THE 1/8" ANCHOR PLATE AND FASTENERS) SHALL BE GALVANIZED AND PAINTED FEDERAL BLACK (FEDERAL STD. 595 COLOR NO. 27038). ANCHOR PLATE SHALL BE GALVANIZED ONLY. HEADS OF 7/8" Ø ROUND HEAD BOLTS SHALL BE PAINTED TO MATCH RAIL.
- ANCHOR BOLTS SHALL BE SET WITH TEMPLATES. THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN AFTER STEEL IS IN PLACE.
- RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF FOUR (4) POSTS WITHOUT SPLICES WHERE POSSIBLE. RAILS SHALL BE SPLICED IN THE PANELS OVER EXPANSION JOINT.
- ENDS OF TUBE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
- ALL POSTS TO BE PLUMB WHEN PROFILE GRADE EXCEEDS 1.5%. FOR PROFILE GRADES LESS THAN 1.5%, POSTS SHALL BE SET PERPENDICULAR TO GRADE.
- POST FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING. WELD SHALL BE BACK-GROUGED ON BACK SIDE EXCEPT AT WEB. WELD IS THE SAME ON BOTH FLANGES.
- 7/8" Ø ROUND HEAD BOLTS SHALL CONFORM TO THE CHEMICAL AND PHYSICAL REQUIREMENTS OF AASHTO M 164.

MASSDOT STANDARD DETAILS:  
MASSDOT 2013 LRFD BRIDGE MANUAL  
PART II CONVENTIONAL CONSTRUCTION  
S3-TL4 BARRIER DETAILS

COMMONWEALTH OF MASSACHUSETTS  
MassDOT, Highway Division  
**CONCEPTUAL DESIGN IS ACCEPTABLE  
TO MASSDOT FOR CONTRACTING**

STATE BRIDGE ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

**100%  
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**Central Street  
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DRAWN BY:	AGB/DRF	
CHECKED:	EAO/BRB	
APPROVED:	DLM	

S3-TL4 BARRIER DETAILS

SCALE: AS NOTED

**S-201**  
SHEET 29 OF 51

**100%  
Drawings  
Not For  
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**Central Street  
Bridge  
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Department of  
Public Works

MassDOT Bridge No.  
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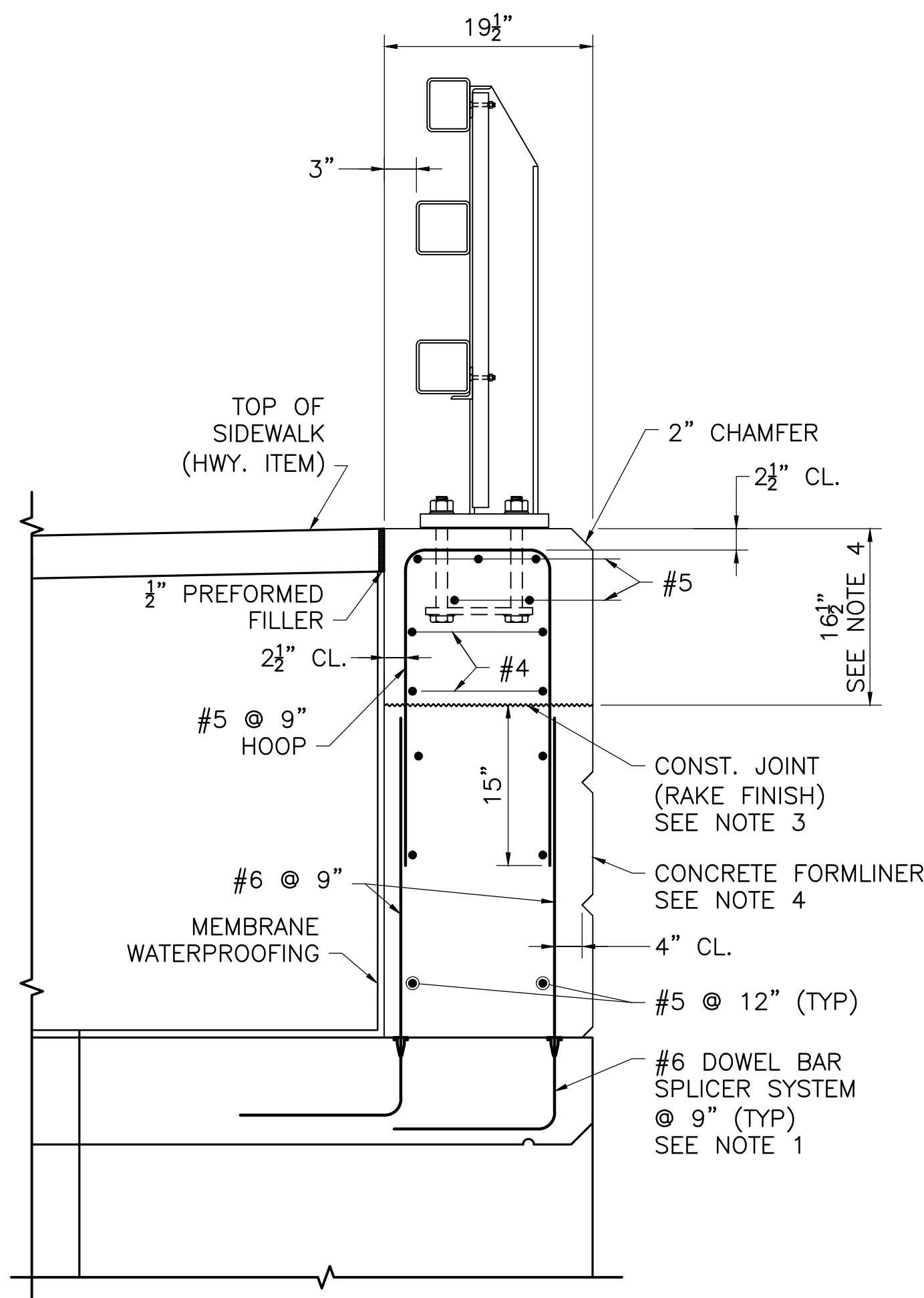
Town of  
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DATE:	JUNE 2024	
FILE:	M1476-011-S-201_S-203.dwg	
DRAWN BY:	AGB/DRB	
CHECKED:	EAO/BRB	
APPROVED:	DLM	

HEADWALL & S3-TL4 BARRIER  
DETAILS AT SIDEWALK

SCALE: AS NOTED

**S-202**  
SHEET 30 OF 51

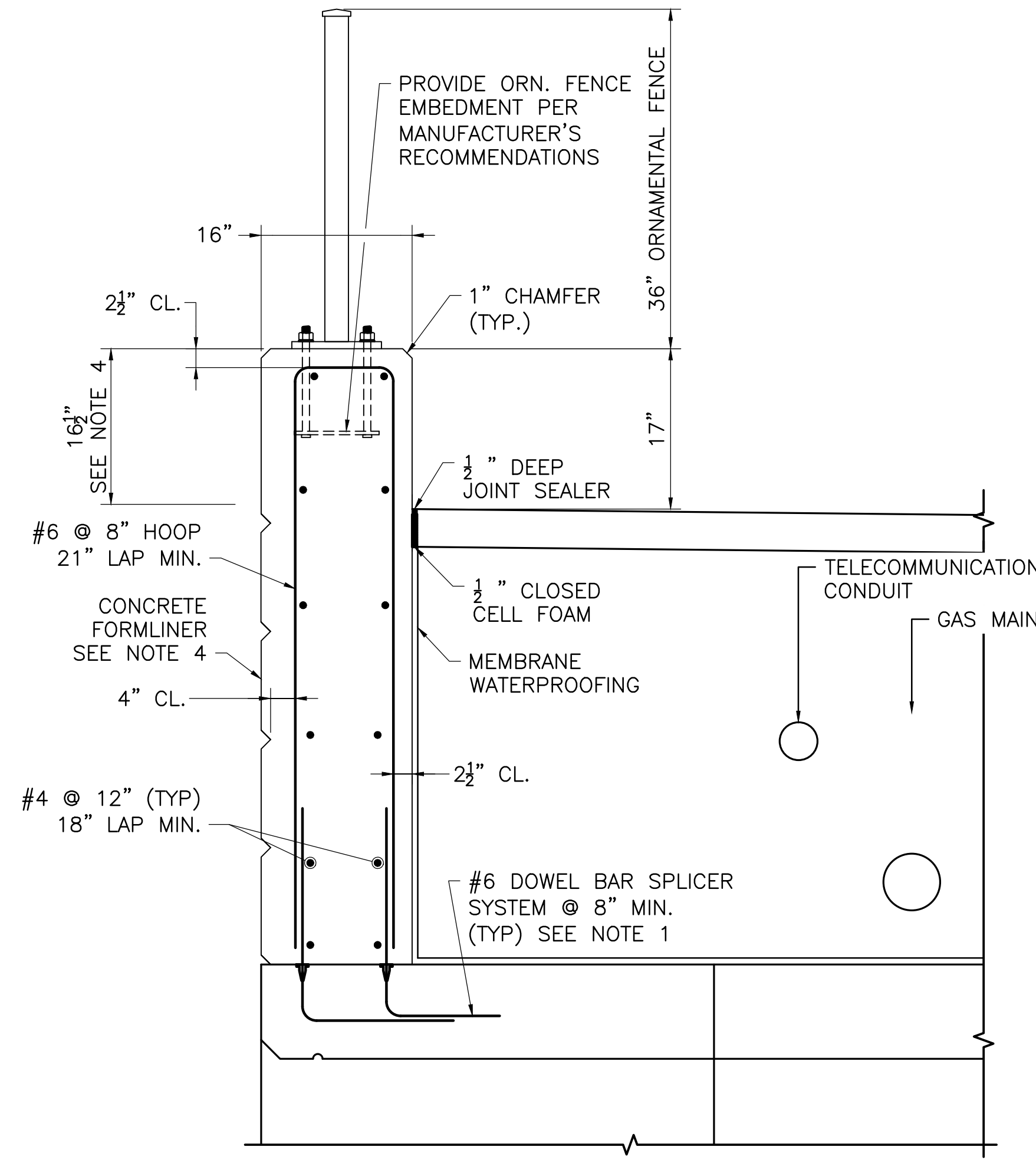


**SECTION THRU SOUTHERN HEADWALL AND S3-TL4 BARRIER**

SCALE: 1" = 1'-0"

**NOTES:**

1. PRECAST ARCH FABRICATOR TO VERIFY DEVELOPMENT LENGTH OF SPLICER BARS INTO TOP OF ARCH. FINAL DEPTH OF ARCH MAY BE GOVERNED BY THE DEVELOPMENT OF SPLICER BARS FOR THE HEADWALL.
2. SOUTHERN HEADWALL CONCRETE TO BE 5000 PSI, 1 1/2 IN, 660 CEMENT CONCRETE.
3. TOP OF SOUTHERN HEADWALL CONCRETE ABOVE CONSTRUCTION JOINT TO BE 5000 PSI, 3/4 IN, 685 HP CEMENT CONCRETE.
4. CONCRETE FORMLINER PATTERN TO BE APPLIED TO FULL LENGTH OF HEADWALL BELOW CONSTRUCTION JOINT AND COORDINATED WITH WINGWALL. NO CONCRETE FORMLINER PATTERN SHALL BE APPLIED ALONG TO THE TOP OF THE HEADWALL ABOVE THE CONSTRUCTION JOINT.

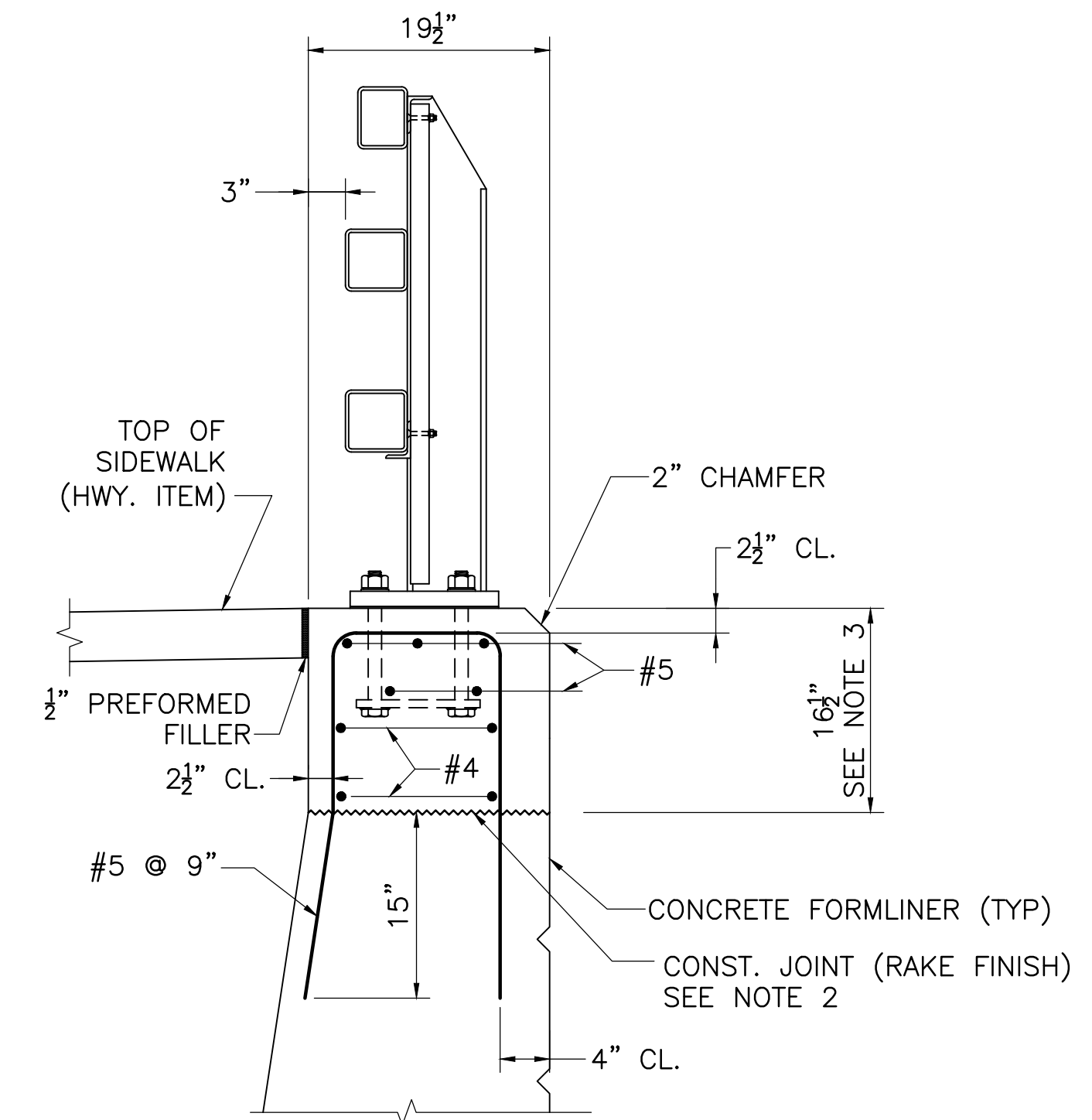


**SECTION THRU NORTHERN HEADWALL, CM-TL3 RAIL CURB, AND ORNAMENTAL FENCE**

SCALE: 1" = 1'-0"

**NOTES:**

1. PRECAST ARCH FABRICATOR TO VERIFY DEVELOPMENT LENGTH OF SPLICER BARS INTO TOP OF ARCH. FINAL DEPTH OF ARCH MAY BE GOVERNED BY THE DEVELOPMENT OF SPLICER BARS FOR THE HEADWALL.
2. NORTHERN HEADWALL CONCRETE TO BE 5000 PSI, 3/4 IN, 685 HP CEMENT CONCRETE.
3. SEE C-501 FOR ADDITIONAL ORNAMENTAL FENCE DETAILS. SEE SPECIAL PROVISIONS FOR ADDITIONAL ORNAMENTAL FENCE REQUIREMENTS.
4. CONCRETE FORMLINER PATTERN TO BE APPLIED TO FULL LENGTH OF HEADWALL BELOW DIMENSION INDICATED ON THE DETAIL. NO CONCRETE FORMLINER PATTERN SHALL BE APPLIED ALONG TO THE TOP OF THE HEADWALL ABOVE THE INDICATED DIMENSION.



**S3-TL4 BARRIER TOP OF WINGWALL DETAILS AT SIDEWALK (MASSDOT 9.3.12)**

SCALE: 1" = 1'-0"

**NOTES:**

1. REINFORCING IN WINGWALL NOT SHOWN. SEE S-102 FOR ADDITIONAL REINFORCING IN WINGWALL.
2. TOP OF WINGWALL CONCRETE ABOVE CONSTRUCTION JOINT TO BE 5000 PSI, 3/4 IN, 685 HP CEMENT CONCRETE.
3. CONCRETE FORMLINER PATTERN TO BE APPLIED TO FULL LENGTH OF WINGWALL BELOW CONSTRUCTION JOINT AND COORDINATED WITH HEADWALL. NO CONCRETE FORMLINER PATTERN SHALL BE APPLIED ALONG TO THE TOP OF THE WINGWALL ABOVE THE CONSTRUCTION JOINT.

**MASSDOT STANDARD DETAILS:**  
MASSDOT 2013 LRFD BRIDGE MANUAL  
PART II CONVENTIONAL CONSTRUCTION  
S3-TL4 BARRIER DETAILS

**COMMONWEALTH OF MASSACHUSETTS**  
MassDOT, Highway Division  
**CONCEPTUAL DESIGN IS ACCEPTABLE  
TO MASSDOT FOR CONTRACTING**

STATE BRIDGE ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

**100%  
Drawings  
Not For  
Construction**

**Central Street  
Bridge  
Replacement**

Department of  
Public Works

MassDOT Bridge No.  
M-02-001 (CDL)

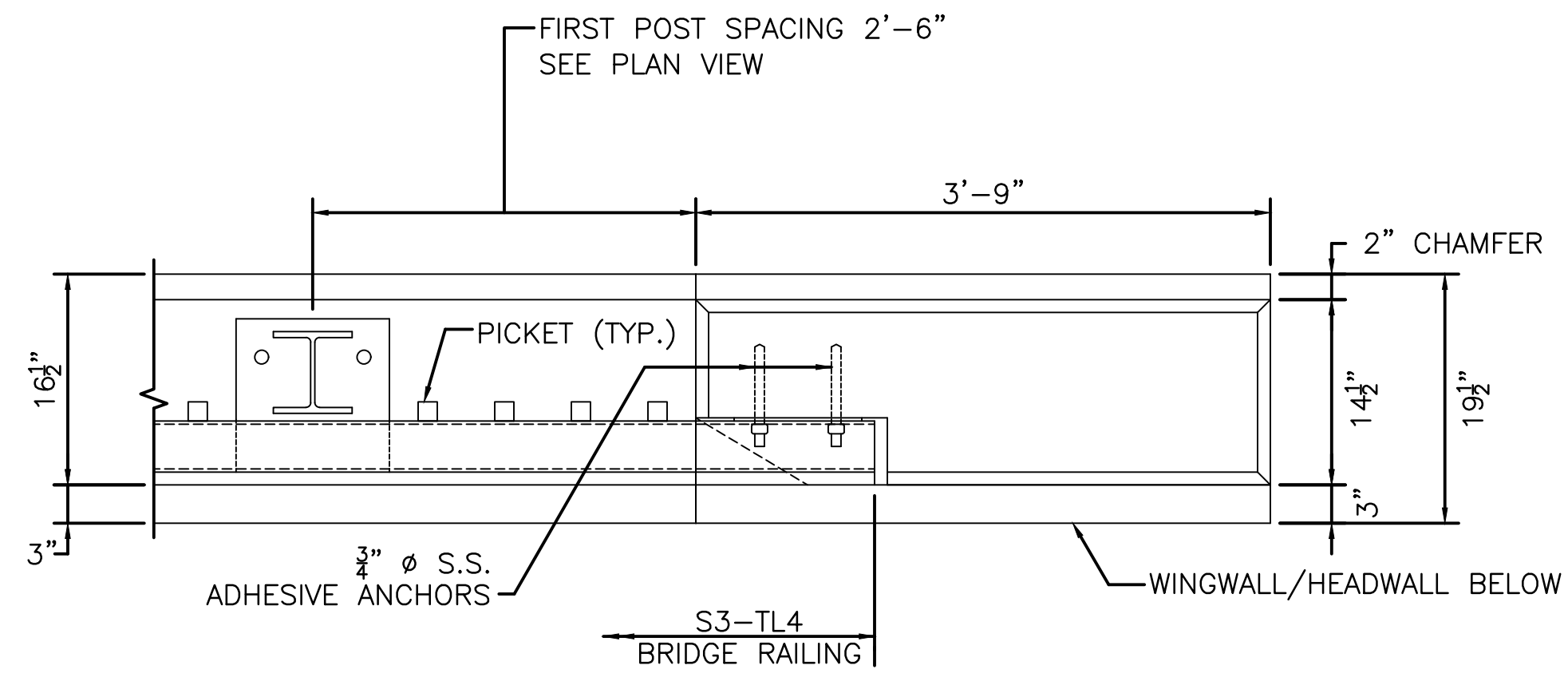
Town of  
Manchester-By-  
The-Sea,  
Massachusetts

MARK	DATE	DESCRIPTION
PROJECT NO:	M1476 - 011	
DATE:	JUNE 2024	
FILE:	M1476-011-S-201_S-203.dwg	
DRAWN BY:	AGB/DRF	
CHECKED:	EAO/BRB	
APPROVED:	DLM	

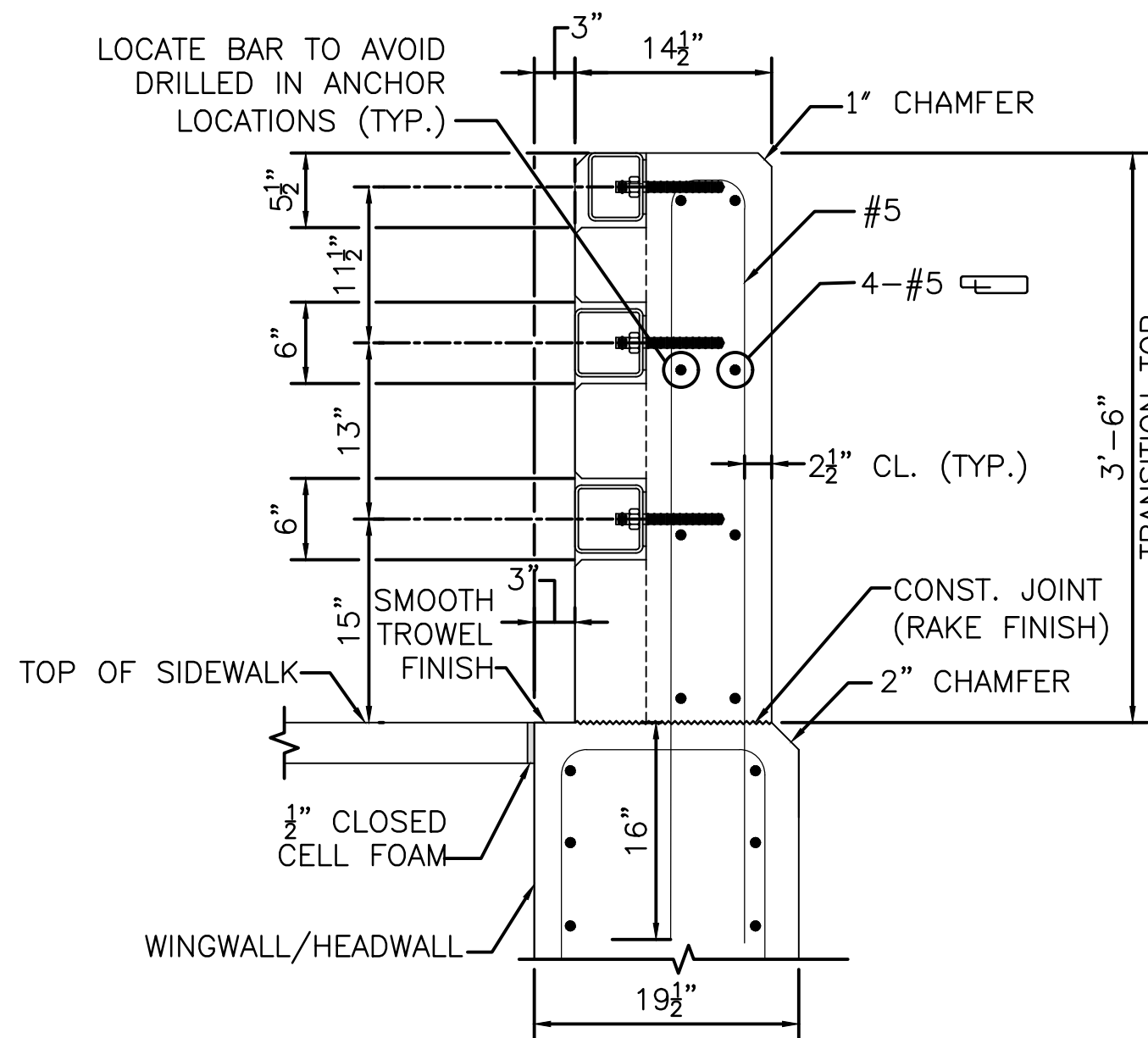
TEMPORARY GANGWAY PLAN,  
ELEVATION, AND DETAILS

SCALE: AS NOTED

**S-203**  
SHEET 31 OF 51

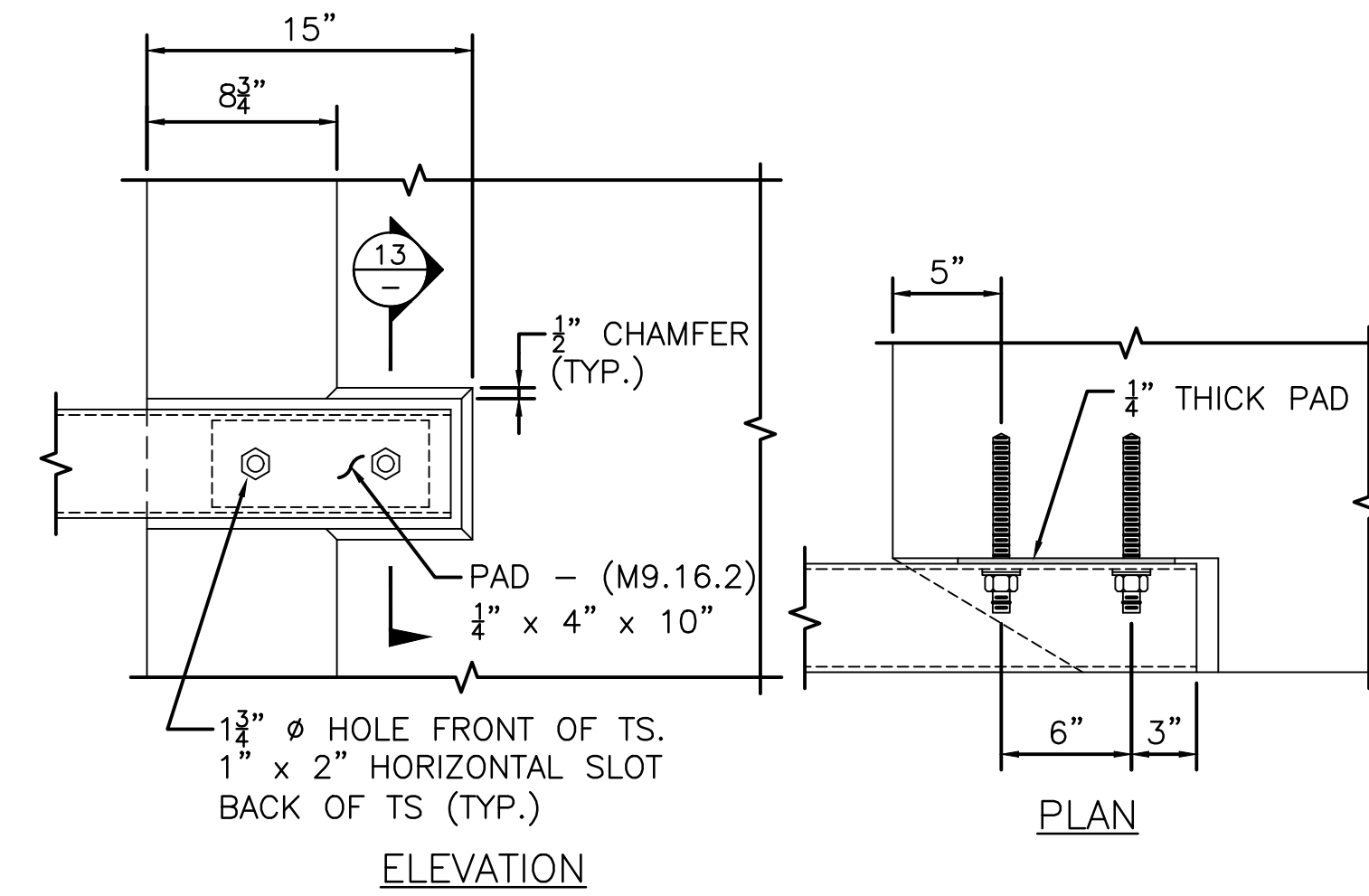


**PLAN AT SIDEWALK**  
SCALE: 1" = 1'-0"

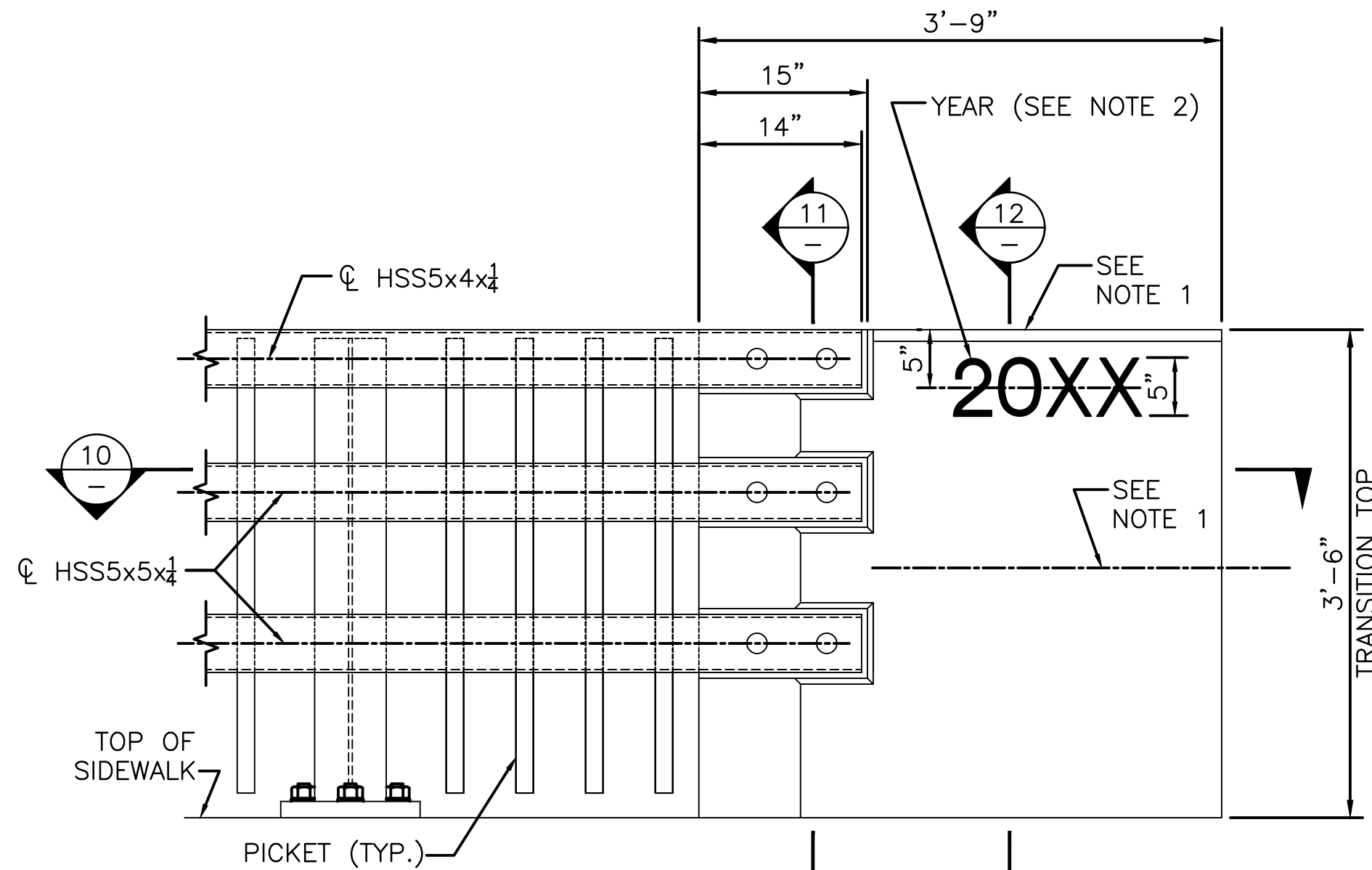


**SECTION AT SIDEWALK**

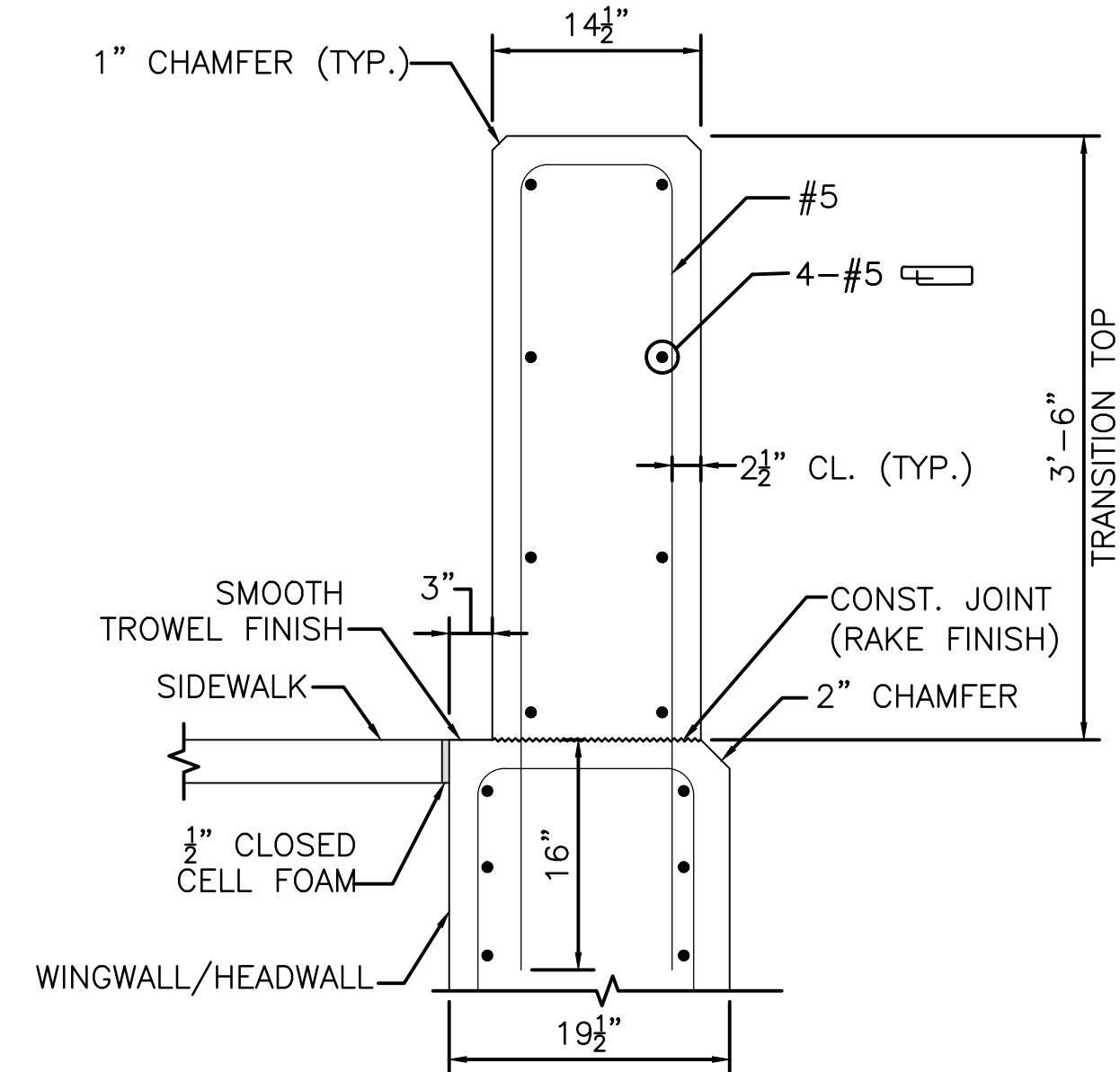
**SECTION 11**  
1" = 1'-0"



**RAIL ATTACHMENT**  
SCALE: 1 1/2" = 1'-0"

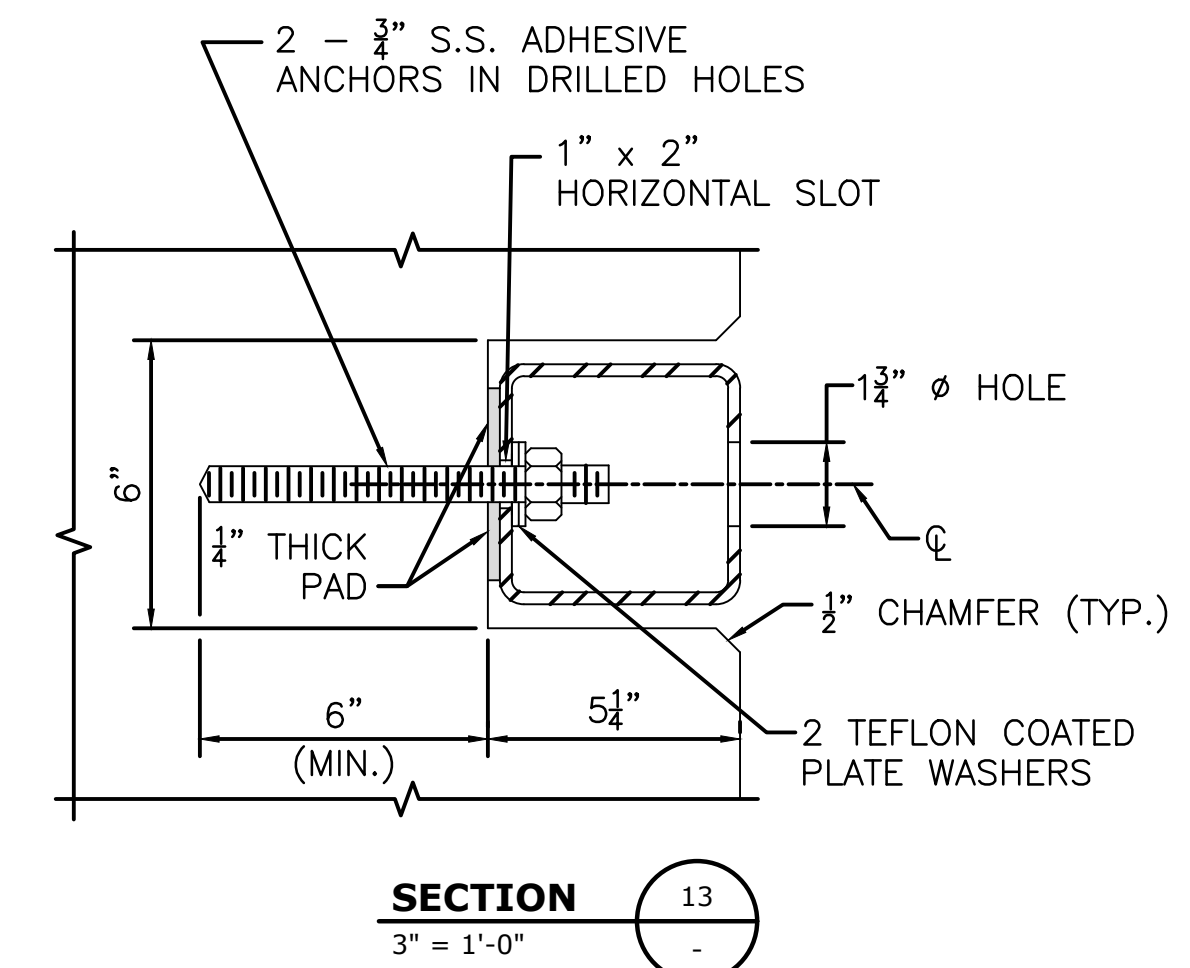


**ELEVATION AT SIDEWALK**  
SCALE: 1" = 1'-0"



**SECTION AT SIDEWALK**

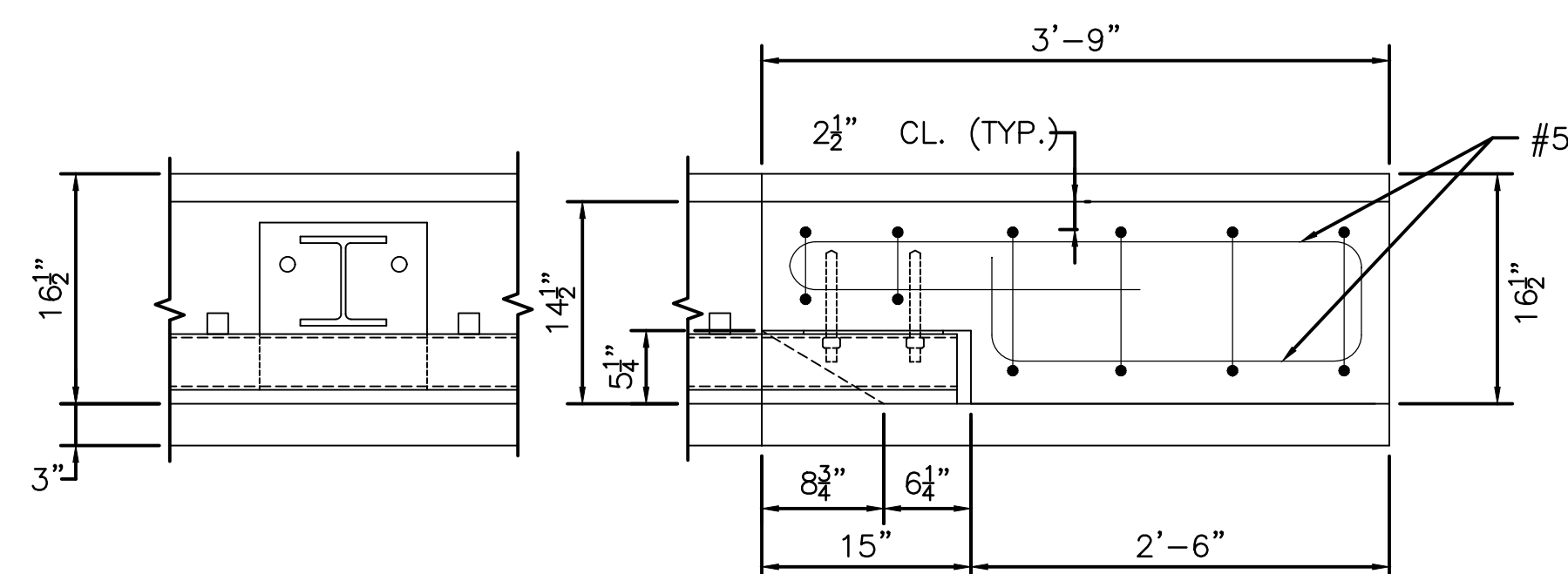
**SECTION 12**  
1" = 1'-0"



**SECTION 13**  
3" = 1'-0"

**NOTES:**

- FOR AN APPROACH GRADE UP TO 3%, THE TRANSITION MAY BE CAST SQUARE AND SET PLUMB WITH THE MINIMUM EMBEDMENT DEPTH SHOWN.
- USE LATEST CONTRACT COMPLETION YEAR IN EFFECT WHEN THE FIRST END POST IS CONSTRUCTED. USE THIS YEAR FOR ALL END POSTS.
- ALL CONCRETE FOR THE CAST-IN-PLACE END POSTS SHALL BE 5000 PSI, 3/4", 685 HP CEMENT CONCRETE.

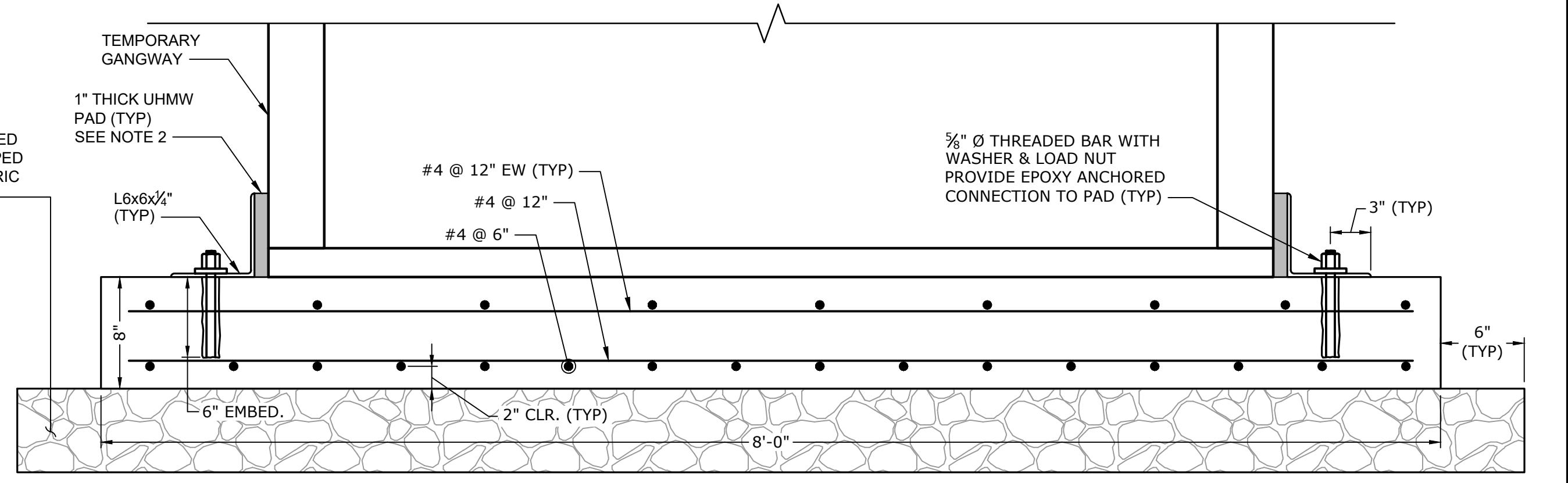
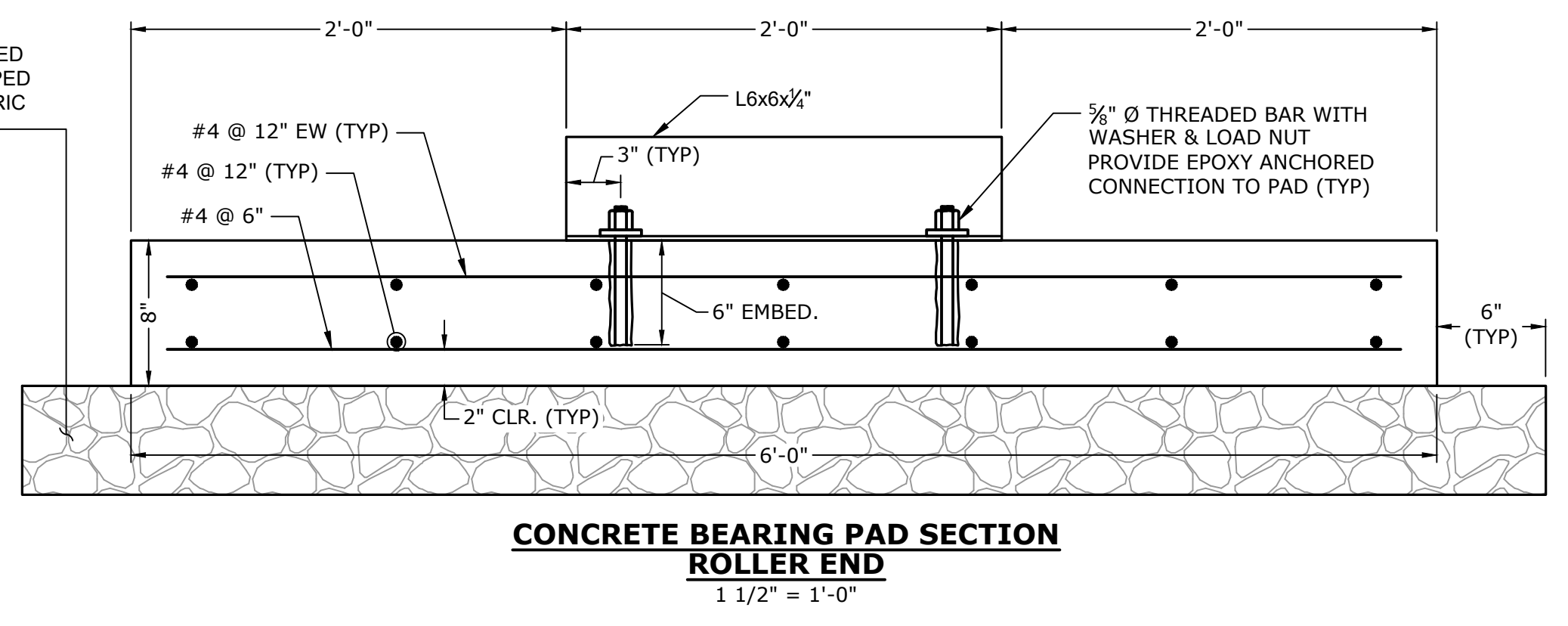
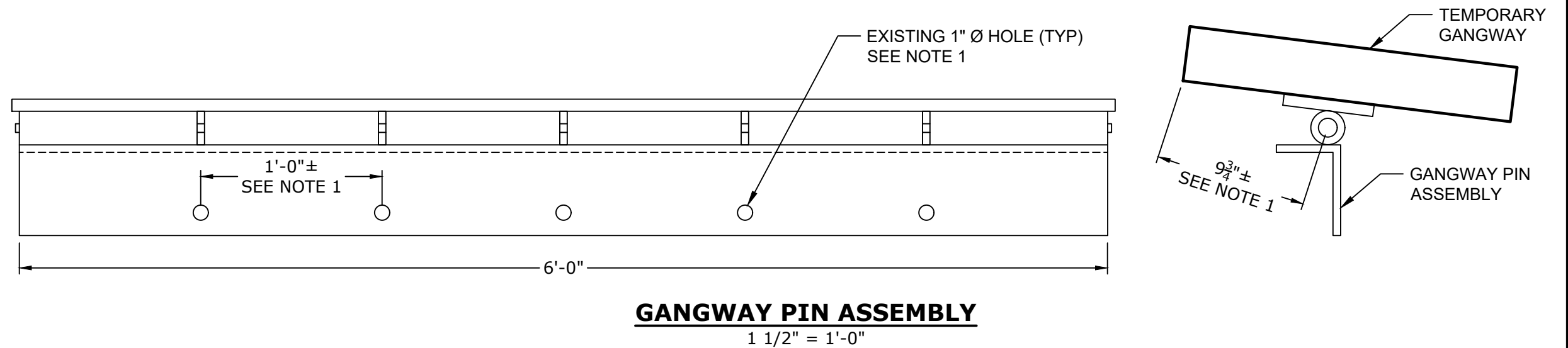
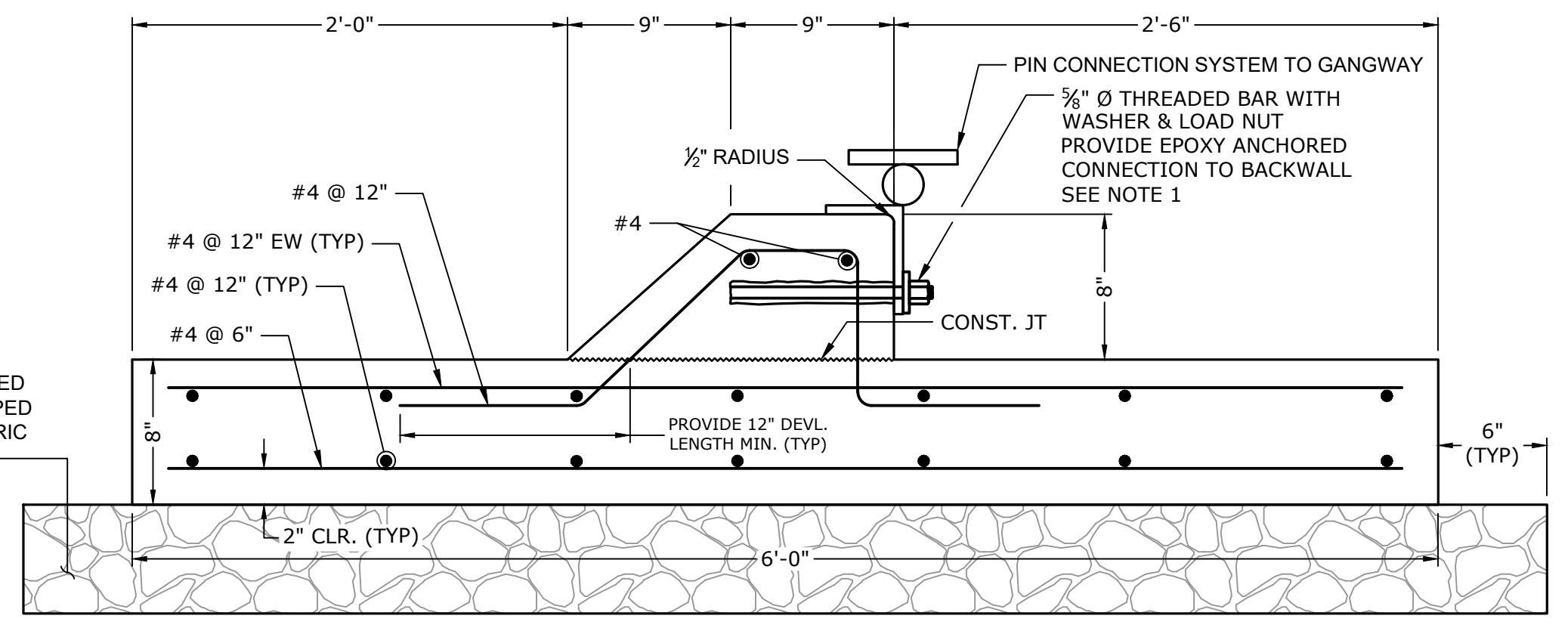
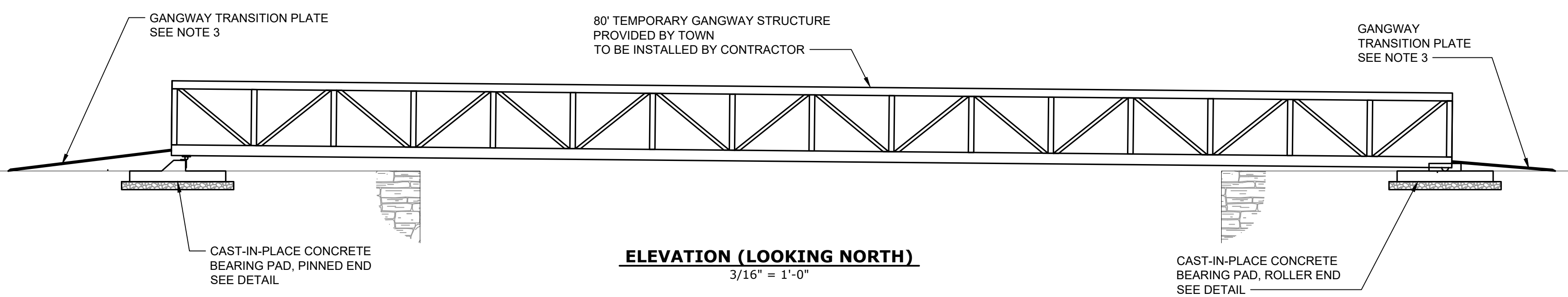
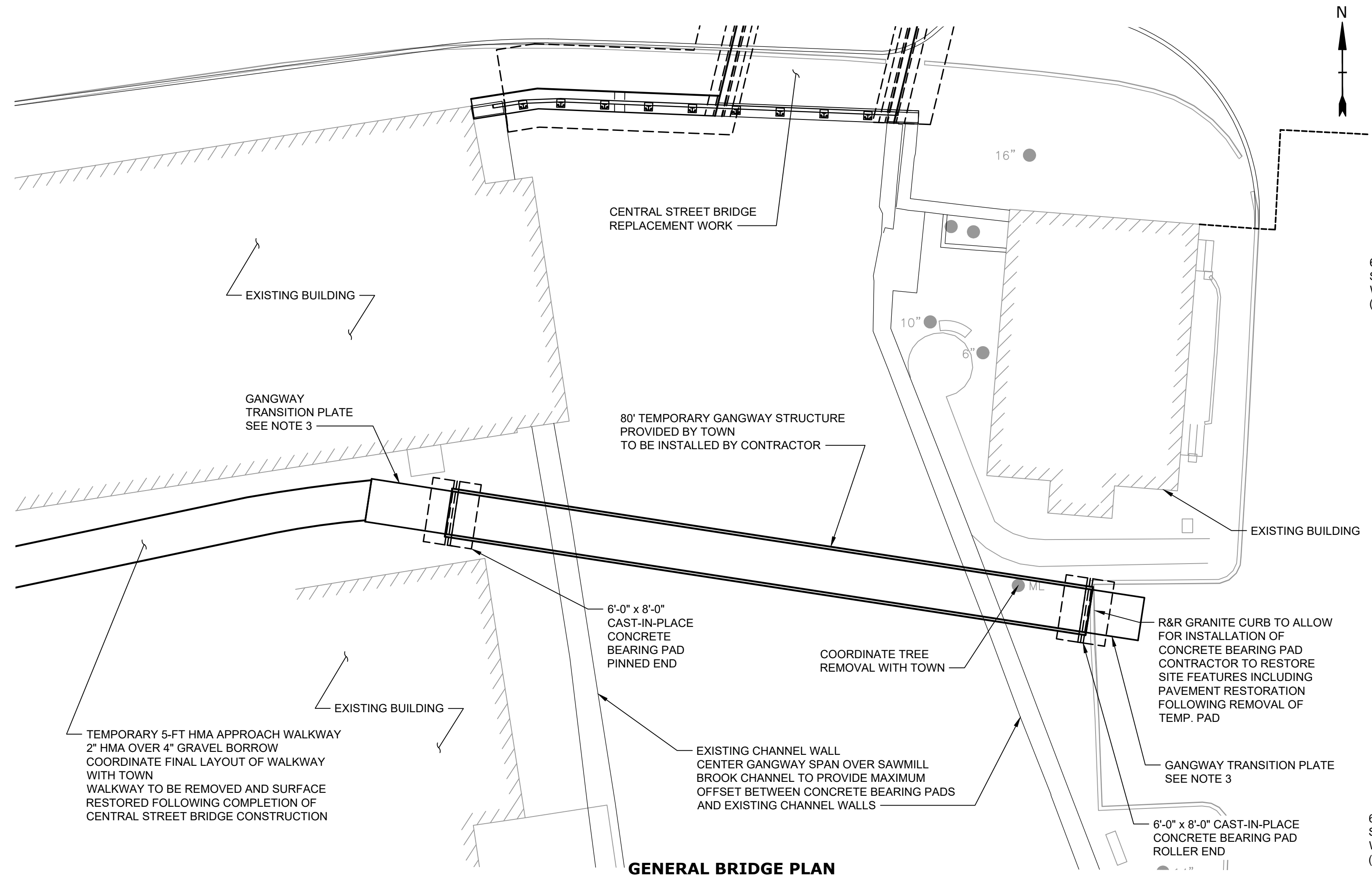


**SECTION 10**  
1" = 1'-0"

**TOP OF END POST FOR S3-TL4 RAILING**

COMMONWEALTH OF MASSACHUSETTS  
MassDOT, Highway Division  
**CONCEPTUAL DESIGN IS ACCEPTABLE  
TO MASSDOT FOR CONTRACTING**

STATE BRIDGE ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_



- NOTES:**
- CONTRACTOR TO DRILL AND GROUT HORIZONTAL THREADED ROD FOR CONNECTION OF GANGWAY PIN SUPPORT TO BEARING PAD BACKWALL IN THE FIELD TO ENSURE PROPER ALIGNMENT WITH EXISTING GANGWAY. VERIFY DIMENSIONS OF PIN ASSEMBLY ON GANGWAY INCLUDING SIZE AND SPACING OF EXISTING HOLES ALONG PIN SUPPORT ANGLE.
  - PROVIDE SUFFICIENT CONNECTION TO FIX UHMW PAD TO LEG OF ANGLE AND PREVENT SHIFTING OF PAD DUE TO ANTICIPATED LATERAL MOVEMENT OF GANGWAY. IF SCREWS OR BOLTS ARE USED TO PROVIDE CONNECTION, COUNTERSINK HEADS 1/4" MINIMUM IN PAD TO PREVENT INTERFERENCE WITH BEARING SURFACE.
  - CONTRACTOR TO PROVIDE TRANSITION PLATES AT EITHER END OF THE GANGWAY TO ACCOMMODATE VERTICAL STEP ONTO GANGWAY. TRANSITION PLATES SHALL MEET MASSACHUSETTS STATE BUILDING CODE AND ARCHITECTURAL ACCESS BOARD ACCESSIBILITY REQUIREMENTS. COORDINATE CONNECTION OF TRANSITION PLATES TO GANGWAY WITH FIELD VERIFIED DIMENSIONS AND CONNECTION DETAILS.

**100% Drawings Not For Construction**

**Central Street Bridge Replacement**

Department of Public Works

MassDOT Bridge No. M-02-001 (CDL)

Town of Manchester-By-The-Sea, Massachusetts

MARK	DATE	DESCRIPTION
PROJECT NO:	M1476-011	
DATE:	JUNE 2024	
FILE:	M1476-011-S-300.dwg	
DRAWN BY:	AGB/DRF	
CHECKED:	EAO/BRB	
APPROVED:	DLM	

TEMPORARY GANGWAY PLAN, ELEVATION, AND DETAILS

SCALE: AS NOTED

**S-300**  
SHEET 32 OF 51

Last Saved: 5/14/2024 1:57pm, By: Denny Tighe & Bond, J:\M1476\Manchester MA Hydro Study\011-Central Street Bridge\Drawings\_Figures\AutoCAD\Sheet\M1476-011-S-300.dwg



**CENTRAL POND RESTORATION (P-SHEETS)**

**GENERAL NOTES:**

- BASE PLAN ENTITLED "TOPOGRAPHIC PLAN FOR TIGHE & BOND OF SAWMILL BROOK BRIDGE STREET TO NORWOOD AVE, MANCHESTER-BY-THE-SEA, MASSACHUSETTS" PREPARED BY DOUCET SURVEY INC. IN DECEMBER 2017.
- THE HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83). THE VERTICAL DATUM IS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
- BOLD TEXT AND LINES INDICATES PROPOSED WORK. LIGHT TEXT AND LINES INDICATES APPROXIMATE EXISTING CONDITIONS.
- WETLAND RESOURCE AREAS WERE DELINEATED BY TIGHE & BOND ON 4/18/2018.
- SOIL BORINGS WERE ADVANCED BY NEW ENGLAND BORING CONTRACTORS ON NOVEMBER 28, 2018.
- NOTIFY "DIGSAFE" AT 1-888-344-7233 TO ARRANGE FOR MARKING OUT EXISTING UNDERGROUND UTILITIES AT LEAST 72 HOURS (EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS) PRIOR TO BEGINNING EXCAVATION AT ANY GIVEN LOCATION. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR BE ALLOWED TO START ANY KIND OF EXCAVATION WORK PRIOR TO OBTAINING ALL THE NECESSARY INFORMATION REGARDING THE LOCATION OF UNDERGROUND UTILITIES AT THE SITE. ACCOMPLISH ALL EXCAVATION SO THAT UNDERGROUND UTILITIES OR STRUCTURES ARE NOT DAMAGED. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE INCURRED DURING EXCAVATION OPERATIONS. REPAIR ANY EXISTING PIPE OR UTILITY DAMAGED DURING CONSTRUCTION AT NO ADDITIONAL COST TO THE TOWN.
- THE TOWN AND ENGINEER ASSUME NO RESPONSIBILITY FOR THE LOCATION OF EXISTING UTILITIES. THE TOWN AND ENGINEER MAKE NO GUARANTEE AS TO THE UNDERGROUND CONDITIONS THAT MAY BE ENCOUNTERED.
- FIELD MEASURE TO VERIFY EXISTING AND CONTRACT INTERFACE DIMENSIONS, LOCATIONS, AND OTHER CONDITIONS.
- TEST PITS TO LOCATE EXISTING UTILITIES ARE STRONGLY ENCOURAGED AND MAY BE ORDERED BY THE ENGINEER.
- IF CHANGES TO THE DESIGN ARE PROPOSED, THE CHANGES SHALL BE SUBMITTED TO THE TOWN/ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
- MAKE NECESSARY ARRANGEMENTS TO PERFORM ANY WORK NEAR OVERHEAD UTILITIES PRIOR TO THE START OF CONSTRUCTION.
- EXISTING UTILITY POLES IN CLOSE PROXIMITY TO CONSTRUCTION MAY REQUIRE TEMPORARY SUPPORT BY THE UTILITY COMPANY. INCLUDE COST UNDER THE PRICES BID FOR THE VARIOUS ITEMS OF WORK.
- NO OPEN TRENCHES WILL BE ALLOWED OVERNIGHT. THE USE OF ROAD PLATES TO PROTECT THE EXCAVATION WILL BE CONSIDERED UPON REQUEST, BUT BACKFILLING IS PREFERRED.
- STORE FUEL, OIL, PAINT, OR OTHER HAZARDOUS MATERIALS IN A SECONDARY CONTAINER AND REMOVE FROM THE SITE TO A LOCKED INDOOR AREA WITH AN IMPERVIOUS FLOOR DURING NON-WORK HOURS.
- IMMEDIATELY REPORT SPILLS OF OIL AND/OR HAZARDOUS MATERIALS (OHM) TO THE MASSDEP.
- PROVIDE A SUFFICIENT SUPPLY OF ABSORBENT SPILL RESPONSE MATERIALS, SUCH AS BOOMS OR BLANKETS, AT THE CONSTRUCTION SITE AT ALL TIMES TO CLEAN UP POTENTIAL SPILLS OF HAZARDOUS MATERIALS.
- FURNISH AND INSTALL TRAFFIC CONTROL/SAFETY DEVICES TO ENSURE SAFE VEHICULAR TRAFFIC THROUGH THE WORK AREA OR FOR SAFELY IMPLEMENTING DETOURS AROUND THE WORK AREA.
- SAWMILL BROOK IS RECOGNIZED AS A RAINBOW SMELT SPAWNING AREA. NO INWATER WORK WILL BE PERMITTED DURING SPAWNING SEASON.

**PROJECT INFORMATION:**

- NATURE OF CONSTRUCTION INCLUDED IN P-SHEETS INCLUDES: EXCAVATION AND REPLACEMENT OF AN EXISTING RETAINING WALL, EXCAVATION AND CONSTRUCTION OF IMBRICATED WALL AND INSTALLATION OF ENGINEERED LOG JAMES, TOE ROCK, ENCAPSULATED SOIL LIFTS AND HABITAT STRUCTURES, FLOODPLAIN BENCHING, BIO-STABILIZATION, AND REVEGETATION.
- LOCATION: 42°34'34.98" N, 70°46'19.36" W
- TOTAL AREA OF POND PORTION OF THE PROJECT: 1.3 ACRES, AREA TO BE DISTURBED: 0.34 ACRES
- SWPPP IMPLEMENTATION - CONTRACTOR WILL BE RESPONSIBLE FOR IMPLEMENTATION OF THE PROJECT'S ESCP. POC: \_\_\_\_\_, CONTACT # \_\_\_\_\_.
- RECEIVING WATERS - SAWMILL BROOK.
- CONTRACTOR SHALL SUBMIT SEQUENCING PLAN FOR REVIEW AND APPROVAL BY ENGINEER.
- APPROXIMATE SEQUENCE OF EVENTS FOR POND PORTION:
  - INSTALL EROSION AND SEDIMENT CONTROLS BMP'S AND TEMPORARY CONSTRUCTION ACCESS POINTS.
  - INSTALL COFFER DAMS, TURBIDITY CURTAIN FOR STAGE 1 WATER CONTROL (WEST BANK TOE WOOD)
  - PERFORM GRADING AND INSTALL TOE WOOD AS SHOWN IN PLANS (STAGE 1), RETAIN EXISTING BANK AND PROTECT EXISTING VEGETATION. PROVIDE WATER CONTROL FOR CONSTRUCTION ACTIVITIES (STAGE 1 WATER CONTROL).
  - INSTALL TEMPORARY ACCESS ROAD & LOG MATT, APEX JAM CONSTRUCTION.
  - REMOVE EXISTING UPSTREAM BANK OF HABITAT CHANNEL.
  - INSTALL COFFER DAMS AND TURBIDITY CURTAIN FOR STAGE 2 WATER CONTROL (EAST BANK RETAINING WALL).
  - REMOVE AND REPLACE EXISTING RETAINING WALL, RETAINING WALL MUST BE CONSTRUCTED IN SEGMENTS, MAXIMUM 250 LINEAR FEET COFFERDAM & ISOLATION AT ONCE (STAGE 2)
  - REMOVE COFFER DAM, TEMPORARY RIVER ACCESS POINTS AND IN-CHANNEL BMP'S STREAM.
  - INSTALL EROSION CONTROL MATTING AND SEEDING.
  - REMOVE ACCESS ROAD AND REVEGETATE.
  - REMOVE STAGING AREAS AND OTHER TEMPORARY BMP'S.
  - PLANTING IN CENTRAL POND TO BE CONDUCTED BY HAND LABOR AT LOW TIDE AFTER CONSTRUCTION.

**ABBREVIATIONS**

BIT	BITUMINOUS
CONC	CONCRETE
CMP	CORRUGATED METAL PIPE
ELEV	ELEVATION
ELJ	ENGINEERED LOG JAM
EOP	EDGE OF PAVEMENT
EOW	EDGE OF WATER
FG	FINISHED GRADE
HMA	HOT MIXED ASPHALT
MHHW	MEAN HIGH HIGH WATER
MLW	MEAN LOW WATER
MLLW	MEAN LOW LOW WATER
R&D	REMOVE AND DISPOSE
R&S	REMOVE AND STACK
RET	RETAIN
SPK	SPIKE
TBM	TEMPORARY BENCHMARK
TYP	TYPICAL
UP	UTILITY POLE

**LEGEND**

	INTERMEDIATE CONTOURS		WATERWAY BANK
	INDEX CONTOURS		EROSION CONTROL BARRIER
	PROPOSED CONTOURS		PROPOSED COFFERDAM
	OVERHEAD WIRES		LIMIT OF WORK
	EXISTING GUARD RAIL		PROPERTY BOUNDARY
	PROPOSED GUARD RAIL		REVTMENT/COBBLE BOTTOM
	FEMA FLOOD ZONE		WETLAND FLAG
	MEAN ANNUAL HIGH WATER		UTILITY POLE
	VEGETATED WETLAND BOUNDARY (BVW)		DECIDUOUS/CONIFER TREE
	WATERS OF THE UNITED STATES		BOLLARD
			BORING
			PIPING, STRUCTURES, etc. TO BE REMOVED
			ENGINEERED LOG JAM
			APEX JAM

**CONSTRUCTION NOTES:**

- SEE SHEET P-501 AND TECHNICAL SPECIFICATIONS FOR A DETAILED DESCRIPTION OF CONTRACTOR REQUIREMENTS CONCERNING EROSION CONTROL (NPDES) AND CARE OF WATER (USACE 401).
- WATER HANDLING PLAN IS SHOWN FOR PERMITTING AND COST ESTIMATING PURPOSES ONLY. CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING A CONTROL OF WATER PLAN TO MEET PERMITTING REQUIREMENTS AND CONSTRUCTION NEEDS. CONTRACTOR IS WHOLLY RESPONSIBLE FOR MONITORING RIVER LEVELS, TIDE CONDITIONS AND WEATHER FORECASTS AND MAKING ADJUSTMENTS TO THE PROJECT'S COFFER DAM SYSTEM OR DEMOBILIZING OUT OF THE RIVER IF FLOW CONDITIONS EXCEEDS OR IS PREDICTED TO EXCEED THE ISOLATION SYSTEM CAPACITY.

**GENERAL REQUIREMENTS FOR POND PORTION:**

- CONSTRUCTION STAKING
- SITE PREPARATION - INSTALL CONSTRUCTION ENTRANCE AND EROSION & SEDIMENT CONTROL MEASURES
- LOCATE AND CONSTRUCT CONSTRUCTION ACCESS ROUTES
- PLACE COFFERDAMS, DEWATER PROJECT AREA
- EARTHWORK AND CONSTRUCTION OF RETAINING WALLS AND LIVING SHORELINE
- CHECK GRADES AND OBTAIN APPROVAL OF ALL HABITAT STRUCTURE INSTALLATION PRIOR TO EXCAVATION
- REMOVE COFFERDAMS
- RECLAIM CONSTRUCTION ACCESS AND STAGING AREAS

**WORK SCHEDULE:**

- THE APPROVED IN-WATER WORK WINDOW FOR THIS PROJECT IS FROM JULY 1 TO FEBRUARY 28; ALL IN-WATER WORK SHALL BE COMPLETED DURING THIS PERIOD. WORK REQUIRING EQUIPMENT TO OPERATE PARTLY, OR WHOLLY, BELOW THE ORDINARY HIGH WATER LINE SHALL BE COMPLETED DURING THE IN-WATER WORK WINDOW.
- THE CONTRACTOR MAY NOT LEAVE THE WORK SITE OR SUSPEND ACTIVITY FOR MORE THAN FIVE (5) CONSECUTIVE DAYS AFTER MOBILIZING TO THE SITE AND PRIOR TO REACHING SUBSTANTIAL COMPLETION UNLESS OTHERWISE APPROVED BY THE ENGINEER.

**LOCATION:**

- ALL WORK IS ON THE SAWMILL BROOK AND ADJACENT FLOODPLAIN AND TERRACE
- ACCESS TO THE PROJECT SITE: SITE IMPROVEMENTS WILL BE REQUIRED TO CREATE ACCESS POINTS SUITABLE FOR MOBILIZATION OF CONSTRUCTION EQUIPMENT AND DELIVERY OF PROJECT MATERIALS.

**CONTRACTORS USE OF PREMISES:**

- PRIOR TO PERFORMING WORK, THE CONTRACTOR SHALL BECOME THOROUGHLY FAMILIAR WITH THE PROJECT SITE, PROJECT SITE CONDITIONS, AND ALL PORTIONS OF THE WORK.
- CONTRACTOR MUST COORDINATE ALL WORK AND ACCESS TO THE SITE WITH THE ENGINEER.
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING PUBLIC SAFETY IN AND AROUND THE PROJECT SITE, AND WILL PROVIDE ANY SAFETY PRECAUTIONS SUCH AS TEMPORARY FENCING OR OTHER METHODS AT THE CONTRACTOR'S DISCRETION WHERE DEEMED NECESSARY. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS, IN THE CONSTRUCTION PRACTICES FOR ALL EMPLOYEES DIRECTLY ENGAGED IN THE CONSTRUCTION OF THIS PROJECT.
- THE CONTRACTOR IS RESPONSIBLE FOR THE SECURITY OF PROPERTY AT THE PROJECT SITE AND WILL PROVIDE REASONABLE PROTECTION TO PREVENT DAMAGE OR LOSS TO EQUIPMENT, MATERIALS, AND SUPPLIES INCORPORATED IN THE PROJECT AND TO THE PROPERTY OWNER.
- THE CONTRACTOR SHALL ONLY ACCESS THE PROJECT SITE AS SHOWN ON THE DRAWINGS AND THE CONTRACTOR'S STAGING AND LAYOUT PLAN AS APPROVED BY THE ENGINEER.
- CONTRACTOR SHALL ONLY USE DESIGNATED ACCESS ROUTES AND STREAM ACCESS AND CROSSING LOCATIONS AS INDICATED ON THE DRAWINGS.
- AREAS FOR CLEARING AND GRUBBING SHALL BE THE MINIMUM NECESSARY AND WITHIN THE LIMITS OF DISTURBANCE (GRADING LIMITS) SHOWN ON THE PLANS AND INCLUDING TEMPORARY CONSTRUCTION ACCESS ROUTES, STAGING AREAS, STOCKPILE AREAS, STORAGE AREAS, AND CONTRACTOR PARKING AREAS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE INCURRED TO ANY UTILITY LINES AT NO COST OR OBLIGATION TO THE SPONSOR OR THE PROPERTY OWNER.
- MOVEMENT OF CONSTRUCTION EQUIPMENT OVER PIPES, BRIDGES, UTILITIES OR INFRASTRUCTURE DURING CONSTRUCTION SHALL BE AT THE CONTRACTOR'S RISK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE INCURRED TO INFRASTRUCTURE AT NO COST OR OBLIGATION TO THE SPONSOR OR THE PROPERTY OWNER.
- CONTRACTOR IS EXPECTED TO KEEP A NEAT AND TIDY CONSTRUCTION SITE, FREE OF ACCUMULATED WASTE MATERIALS AND TRASH.
- CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO MINIMIZE DAMAGE TO EXISTING VEGETATION DURING CONSTRUCTION ACTIVITIES.
- THE CONTRACTOR SHALL ONLY REMOVE TREES AND SHRUBS THAT ARE ABSOLUTELY NECESSARY FOR THE EXECUTION OF THE WORK AND SHALL MAKE ALL EFFORTS TO MINIMIZE TREE REMOVAL. IN THE EVENT THAT A TREE OR SHRUB OUTSIDE THE IMMEDIATE WORK AREAS MUST BE REMOVED OR DAMAGED, THE CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM THE ENGINEER. ANY TREE OR SHRUB UNNECESSARILY REMOVED FROM THE WORK SITE SHALL BE REPLACED BY A NEW TREE OR SHRUB OF EQUAL OR GREATER VALUE AT THE SOLE EXPENSE OF THE CONTRACTOR AS APPROVED BY THE CONTRACTING OFFICER.
- THE CONTRACTOR SHALL REMOVE ALL TEMPORARY EQUIPMENT AND FACILITIES UPON COMPLETION OF WORK UNDER THIS CONTRACT.

**EQUIPMENT:**

- CONTRACTOR IS REQUIRED TO PRESSURE WASH AND REMOVE ALL DIRT, GREASE, OIL, FUEL, VEGETATION AND WEED SEEDS OFF OF EQUIPMENT BEFORE BRINGING EQUIPMENT AND CONSTRUCTION MATTING ON SITE TO LIMIT INTRODUCTION OF NOXIOUS WEEDS, AQUATIC INVASIVES AND POLLUTANTS TO THE SITE.
- COMPLETE VEHICLE AND EQUIPMENT STAGING, CLEANING, MAINTENANCE, REFUELING, AND FUEL STORAGE IN THE DESIGNATED CONSTRUCTION STAGING AND MATERIAL STORAGE AREA A MINIMUM OF 150 FEET AWAY OR AS APPROVED BY ENGINEER FROM ANY NATURAL WATER BODY.
- INSPECT ALL VEHICLES AND EQUIPMENT OPERATED WITHIN 150 FEET OF LIVE WATER DAILY FOR FLUID LEAKS BEFORE LEAVING THE CONSTRUCTION STAGING AND MATERIAL STORAGE AREA. REPAIR ANY EQUIPMENT LEAKS DETECTED IN THE CONSTRUCTION STAGING AND MATERIAL STORAGE AREA BEFORE RESUMING OPERATION. DOCUMENT INSPECTIONS IN A RECORD THAT IS AVAILABLE FOR REVIEW ON REQUEST BY THE ENGINEER AND REGULATORY AGENCIES.
- USE OF EQUIPMENT IN FLOWING WATER IS LIMITED BY APPLICABLE PERMITS. EQUIPMENT MUST BE THOROUGHLY CLEANED BEFORE ENTERING THE WATER. CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH APPLICABLE REGULATIONS FOR IN-WATER EQUIPMENT USE.
- ABSORBENT PADS TO SOAK UP LEAKS AND A FUEL SPILL RESPONSE KIT (INCLUDING RAG PADS AND BOOMS) OF APPROPRIATE SIZE FOR THE EQUIPMENT USED SHALL BE ON SITE AT ALL TIMES AND READILY AVAILABLE THROUGHOUT THE CONSTRUCTION PERIOD.

**HOURS OF WORK:**

- THE NORMAL WORK HOURS SHALL BE 8:00 AM TO 4:00 PM, MONDAY THROUGH FRIDAY. NO WORK SHALL BE PERFORMED OUTSIDE THE NORMAL WORK HOURS, OR ON SATURDAYS, SUNDAYS, OR HOLIDAYS UNLESS AUTHORIZED BY THE ENGINEER. THE CONTRACTOR SHALL REQUEST WORK HOUR VARIATIONS IN WRITING VIA EMAIL AND OBTAIN WRITTEN APPROVAL FROM THE ENGINEER PRIOR TO WORKING OUTSIDE NORMAL WORK HOURS.

**SPECIAL PROCEDURES:**

**IN-STREAM WORK**

- IN-STREAM WORK IS ALLOWED ONLY AS SPECIFIED IN THE APPLICABLE PERMIT DOCUMENTS.
- TURBIDITY CRITERIA SHALL BE STRICTLY ADHERED TO WHILE COMPLETING ALL INSTREAM WORK. COFFERDAMS, FLOW DIVERSION STRUCTURES AND BYPASS CHANNELS SHALL BE INSTALLED AT ALL LOCATIONS INDICATED ON THE DRAWINGS OR AT LOCATIONS SHOWN ON THE APPROVED "COFFERDAM AND FLOW DIVERSION PLAN." SOME ASPECTS OF THE PROJECT MAY NOT REQUIRE THE USE OF A COFFERDAM TO COMPLETE THE WORK. CONTRACTOR SHALL PREPARE AND SUBMIT COFFERDAM AND FLOW DIVERSION PLAN PER SHEET P-505.
- DEWATERING WITHIN COFFERDAMS SHALL BE PERFORMED TO THE EXTENT NECESSARY TO CONSTRUCT THE PROJECT AS SHOWN ON THESE PLANS AS FOLLOWS: DEWATERING AT WOOD STRUCTURE LOCATIONS SHALL BE CONDUCTED SUCH THAT WATER IS NO DEEPER THAN THE DIAMETER OF THE LOG(S) ON THE LOWEST LAYER OF THE STRUCTURE, AND WITHIN CONSTRUCTION EXCAVATIONS SUCH THAT WATER IS SHALLOW ENOUGH TO ALLOW THE ENGINEER TO EASILY INSPECT FINISHED ELEVATIONS OF THE WORK. DISCHARGE FROM PUMPING SHALL BE ROUTED TO THE FLOODPLAIN AREAS SO AS TO ALLOW THE REMOVAL OF FINE SEDIMENTS PRIOR TO REENTERING SURFACE WATERS OR WETLANDS.

**100% DESIGN  
NOT FOR  
CONSTRUCTION**

**CENTRAL  
STREET  
BRIDGE  
REPLACEMENT  
AND CENTRAL  
POND  
RESTORATION**

**Central Street  
to Knight Circle  
Manchester  
-by-the-Sea, MA**

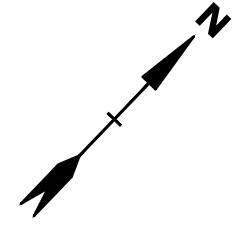
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DATE:	JANUARY 12, 2024	
FILE:	M1476-014-G-001_NotesLgnd.dwg	
DRAWN BY:	DWB, TMP	
CHECKED:	DLM	
APPROVED:	DAM	

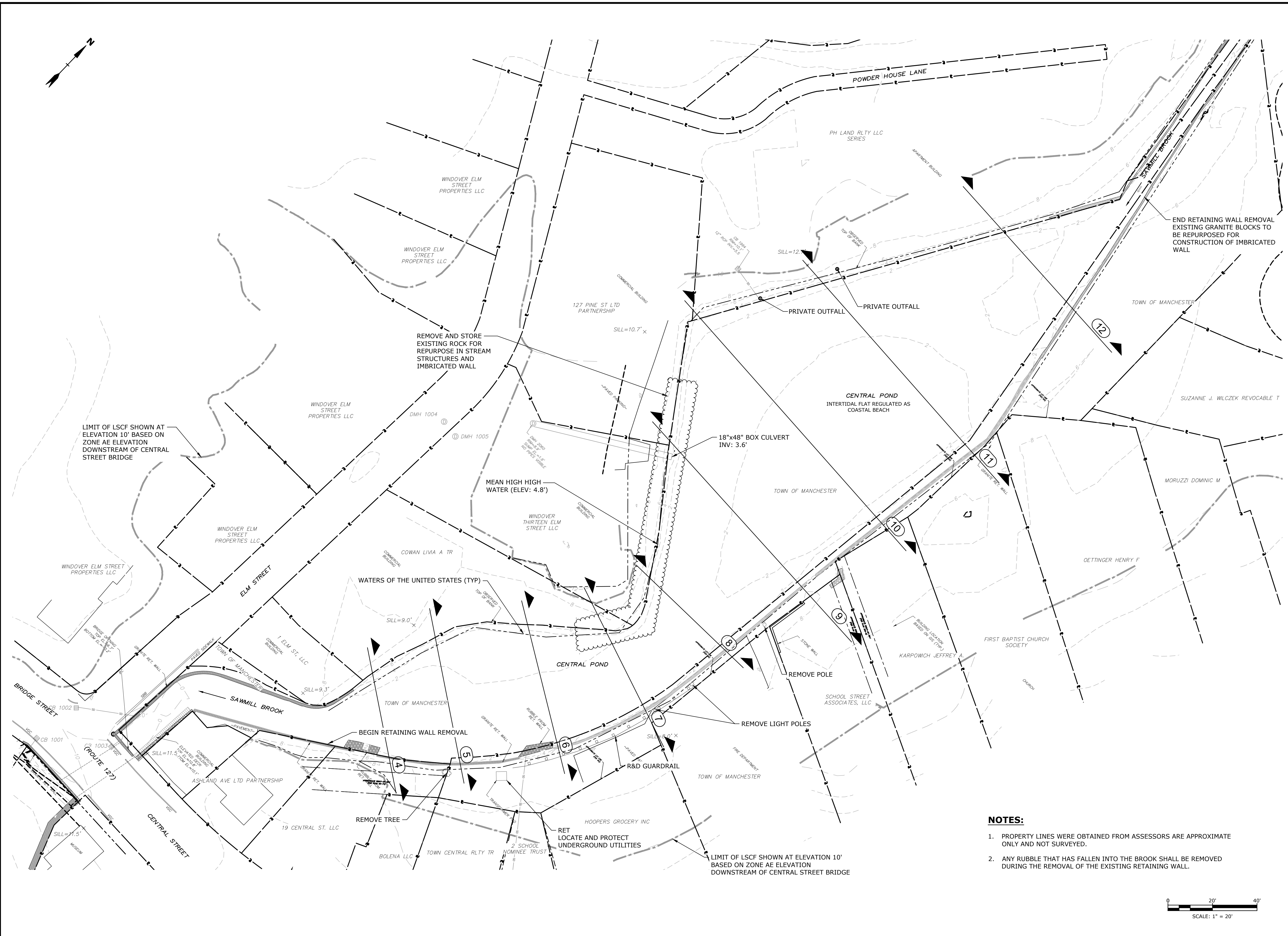
**LEGEND, ABBREVIATIONS,  
AND GENERAL NOTES**

SCALE: NO SCALE

**PG-001**  
SHEET 33 OF 51



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Plotted On: Oct 09, 2024 1:42pm By: DPfety  
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CONSTRUCTION**

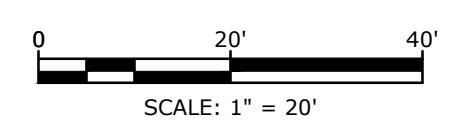
### CENTRAL STREET REPLACEMENT AND CENTRAL POND RESTORATION

Central Street  
to Knight Circle  
Manchester  
-by-the-Sea, MA

**VERIFY SCALE**  
BAR IS 1 INCH ON  
ORIGINAL DRAWING  
0 1 INCH  
IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

MARK	DATE	DESCRIPTION
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DATE:	JANUARY 12, 2024	
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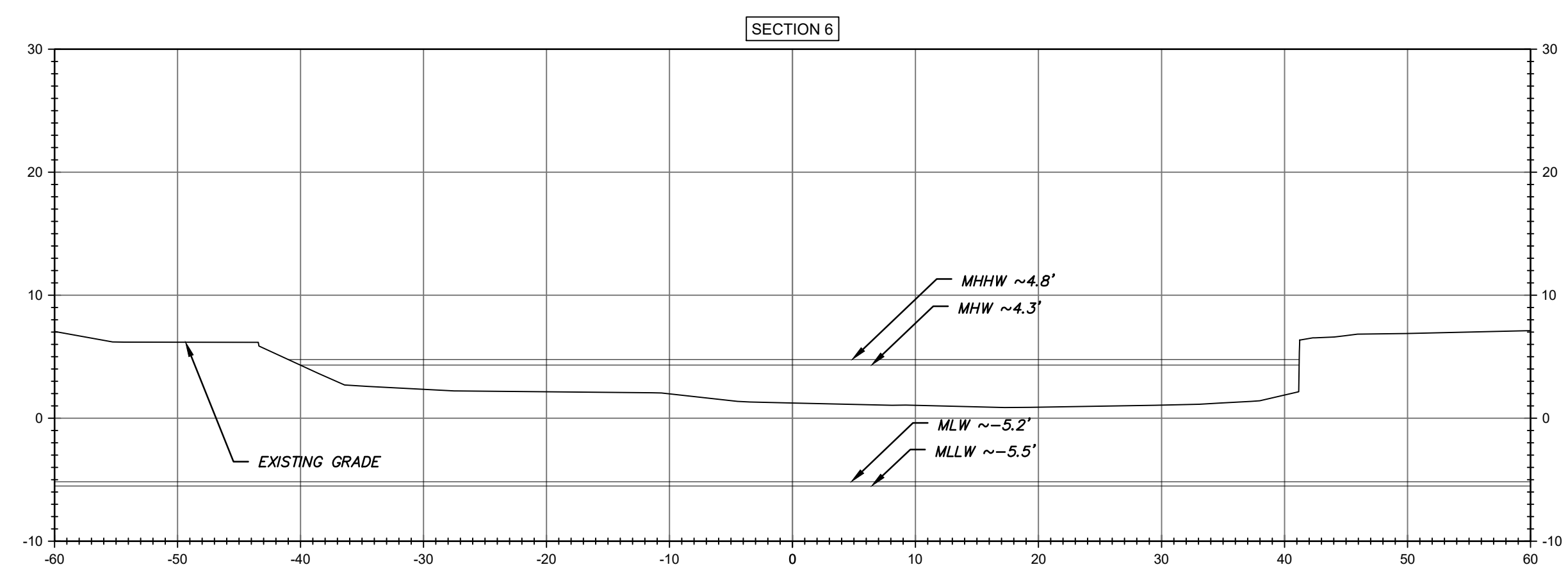
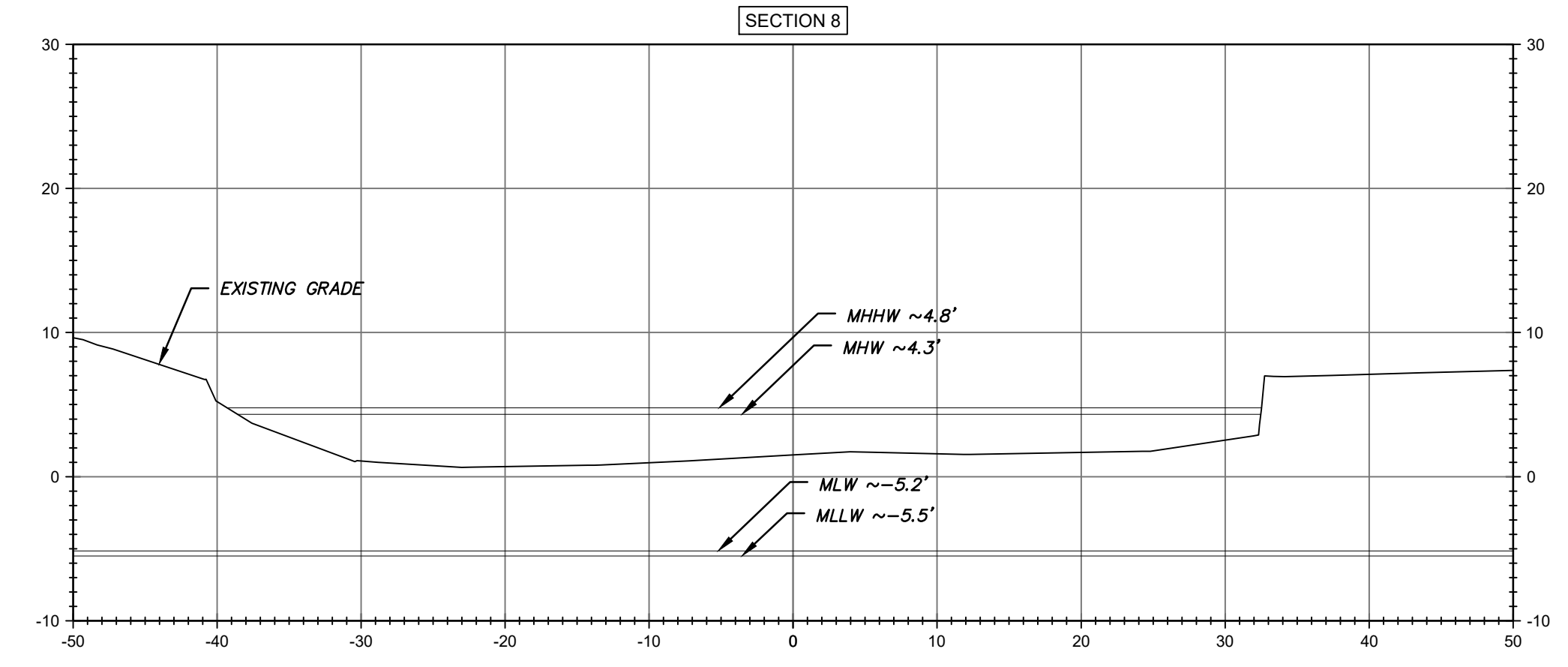
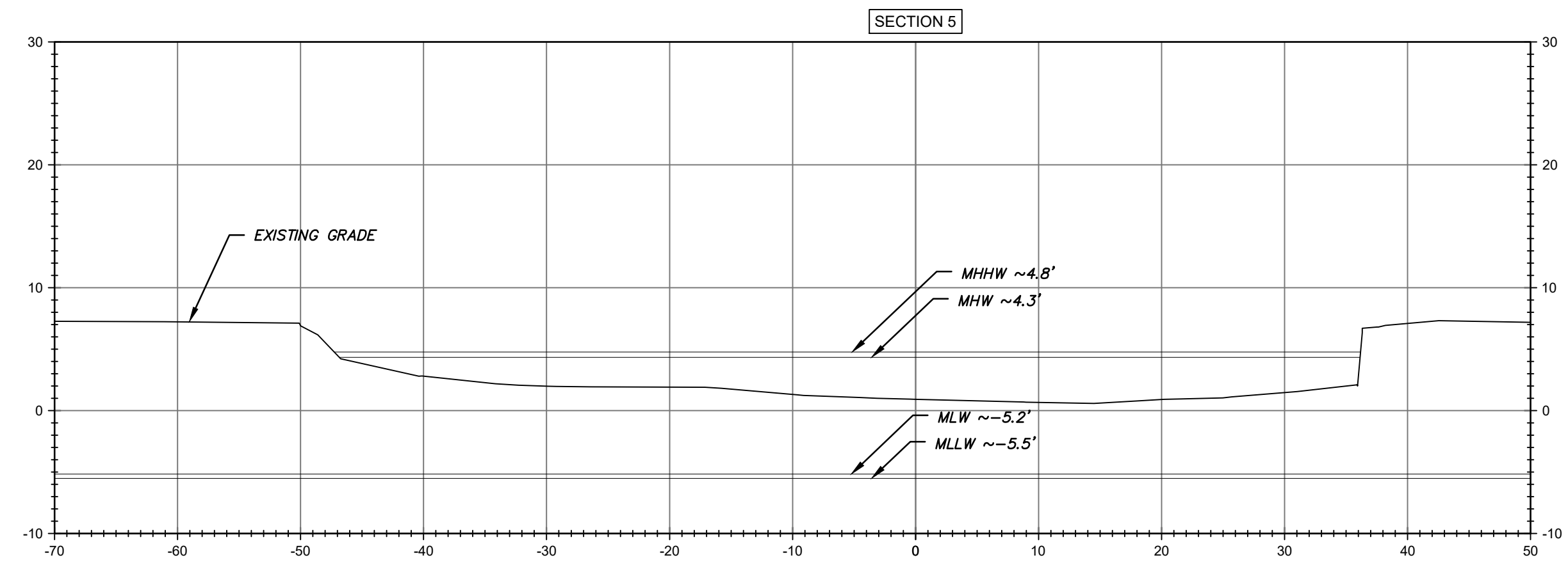
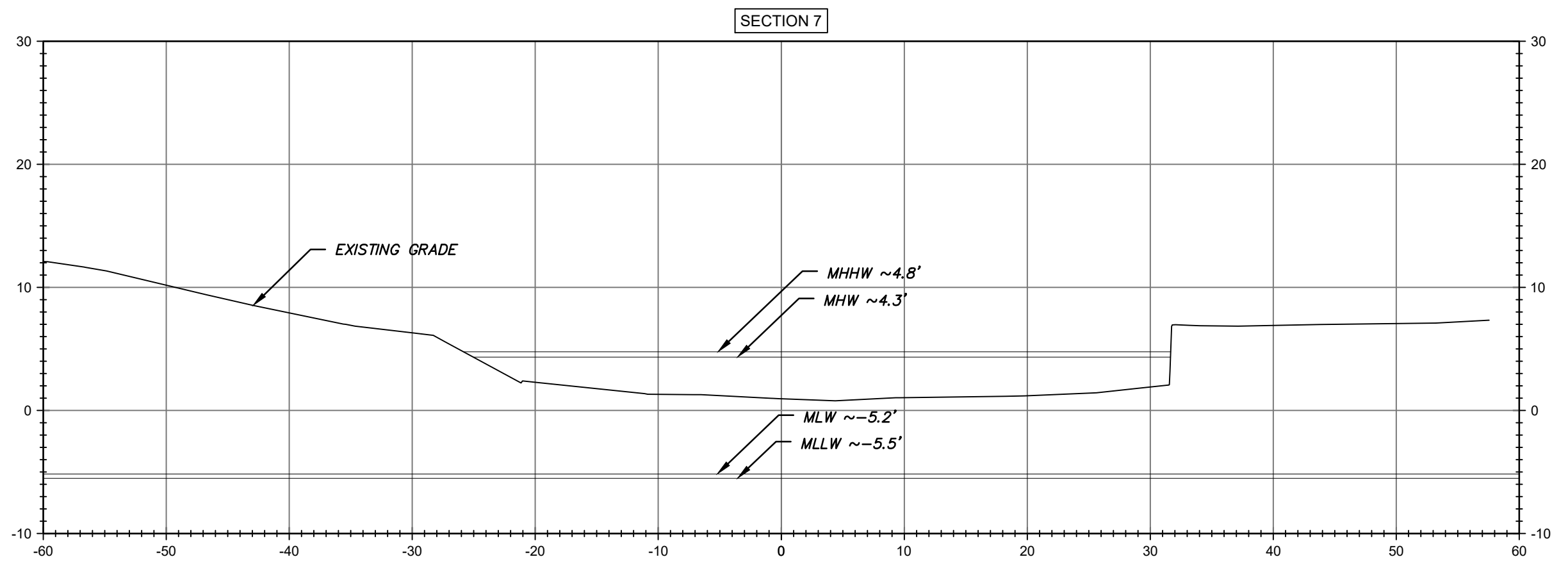
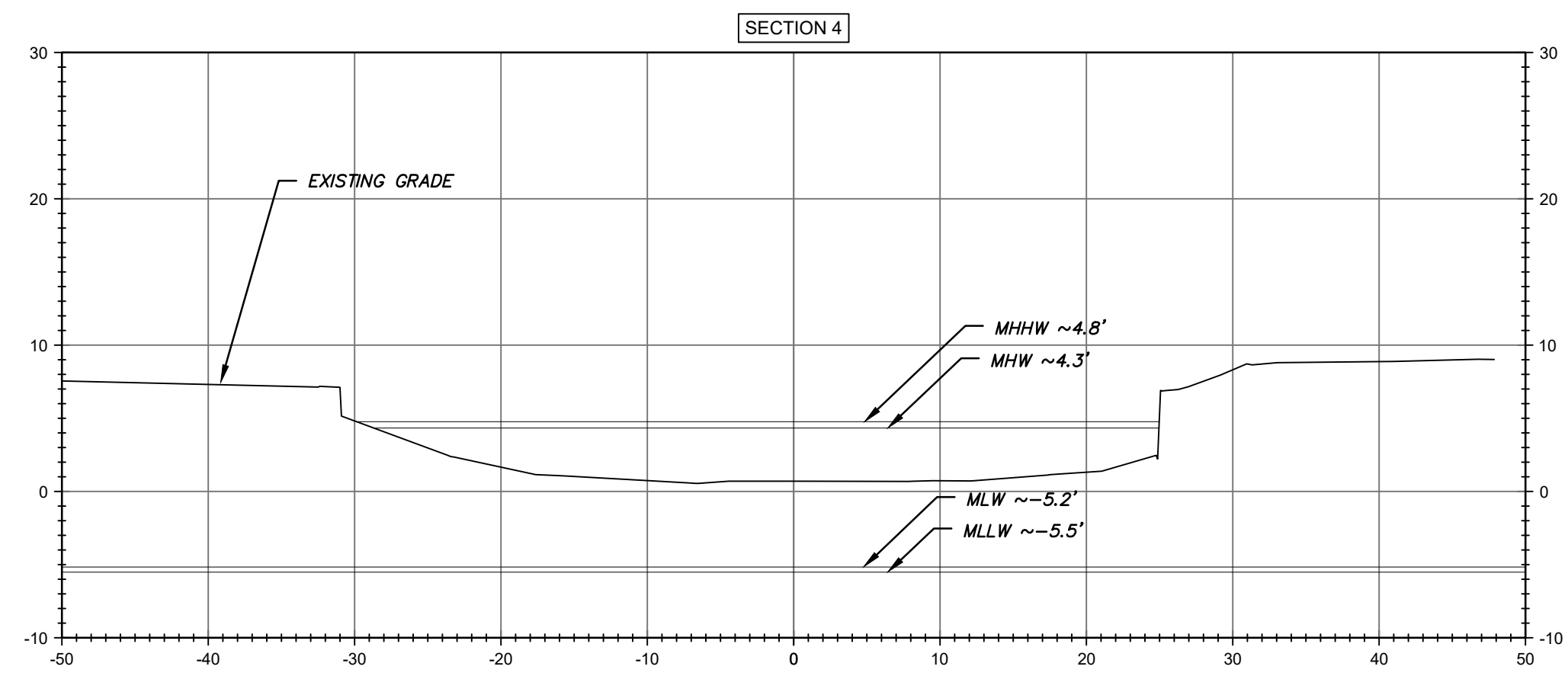
- NOTES:**
- PROPERTY LINES WERE OBTAINED FROM ASSESSORS ARE APPROXIMATE ONLY AND NOT SURVEYED.
  - ANY RUBBLE THAT HAS FALLEN INTO THE BROOK SHALL BE REMOVED DURING THE REMOVAL OF THE EXISTING RETAINING WALL.



EXISTING CONDITIONS  
& DEMOLITION PLAN

SCALE: 1" = 20'

**P-001**  
SHEET 34 OF 51



**100% DESIGN  
NOT FOR  
CONSTRUCTION**

**CENTRAL  
STREET  
BRIDGE  
REPLACEMENT  
AND CENTRAL  
POND  
RESTORATION**  
Central Street  
to Knight Circle  
Manchester  
-by-the-Sea, MA

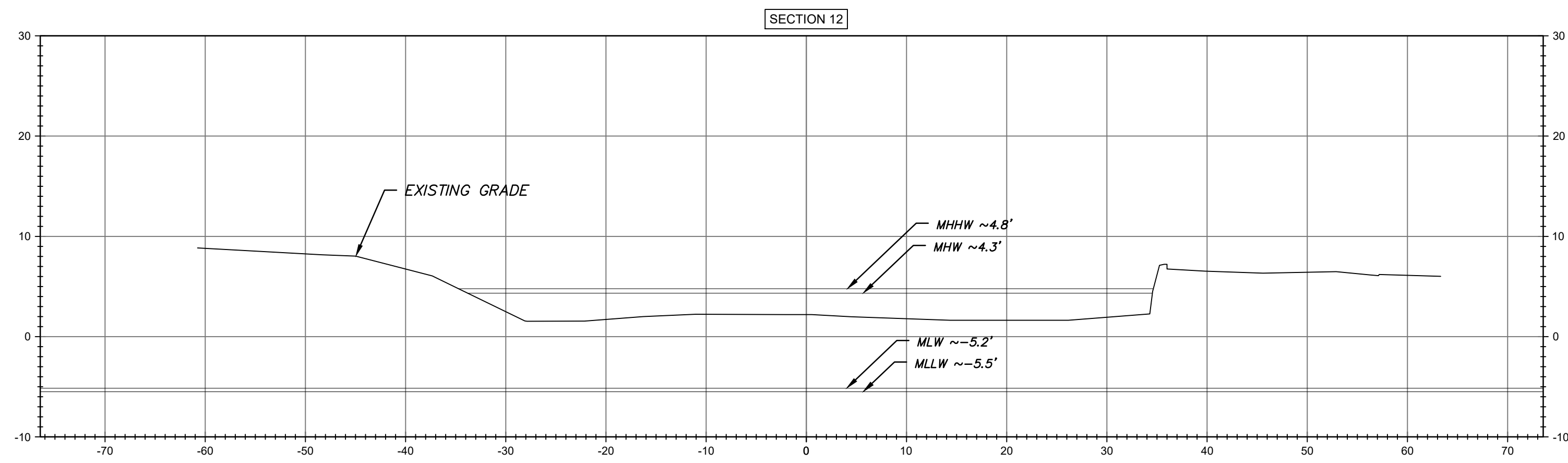
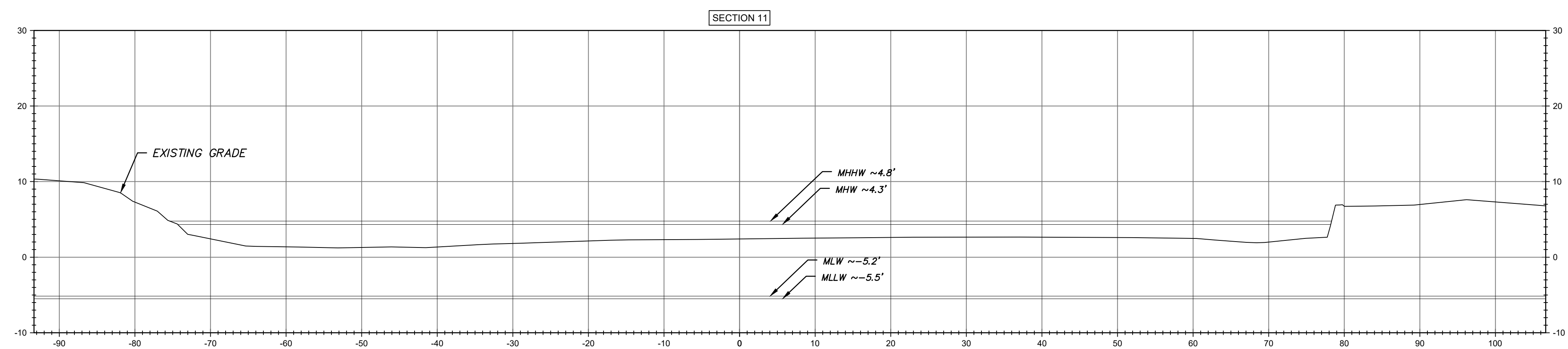
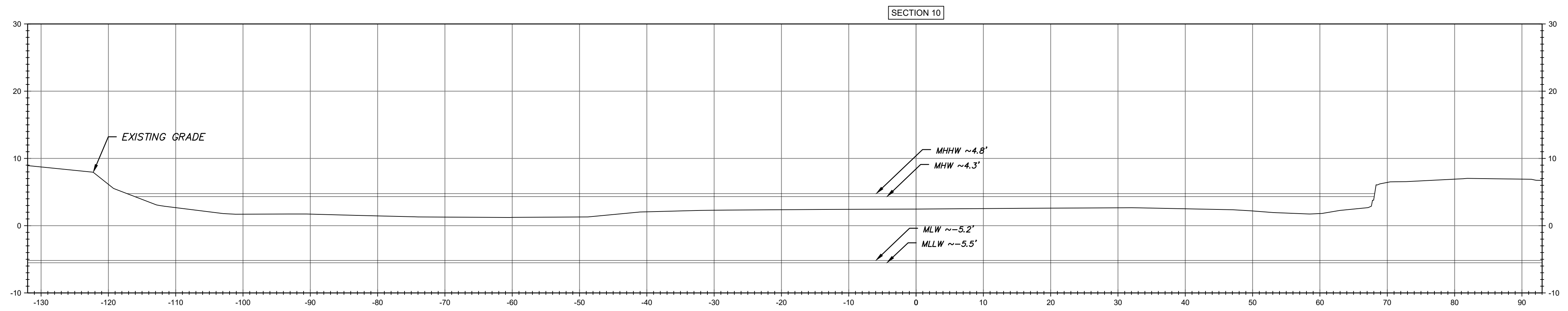
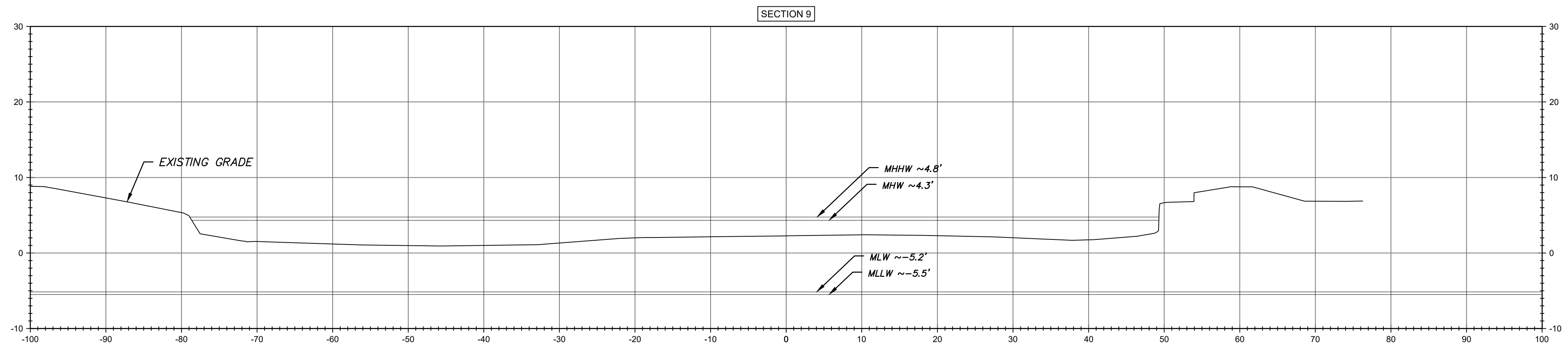
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SCALES ACCORDINGLY

MARK	DATE	DESCRIPTION

PROJECT NO: M1467-014  
DATE: JANUARY 12, 2024  
FILE: M1476-014-C-002\_EXXsec.dwg  
DRAWN BY: DWB, TMP  
CHECKED: DLM  
APPROVED: DAM

EXISTING CROSS  
SECTIONS - 1  
SCALE: HOR: 1"=10'; VER: 1"=10'

**P-002**  
SHEET 35 OF 51



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NOT FOR  
CONSTRUCTION**

**CENTRAL  
STREET  
BRIDGE  
REPLACEMENT  
AND CENTRAL  
POND  
RESTORATION**  
Central Street  
to Knight Circle  
Manchester  
-by-the-Sea, MA

VERIFY SCALE  
BAR IS 1 INCH ON  
ORIGINAL DRAWING  
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SCALES ACCORDINGLY

MARK	DATE	DESCRIPTION

PROJECT NO: M1467-014  
DATE: JANUARY 12, 2024  
FILE: M1476-014-C-002\_EXXsec.dwg  
DRAWN BY: DWB, TMP  
CHECKED: DLM  
APPROVED: DAM

EXISTING CROSS SECTIONS - 2

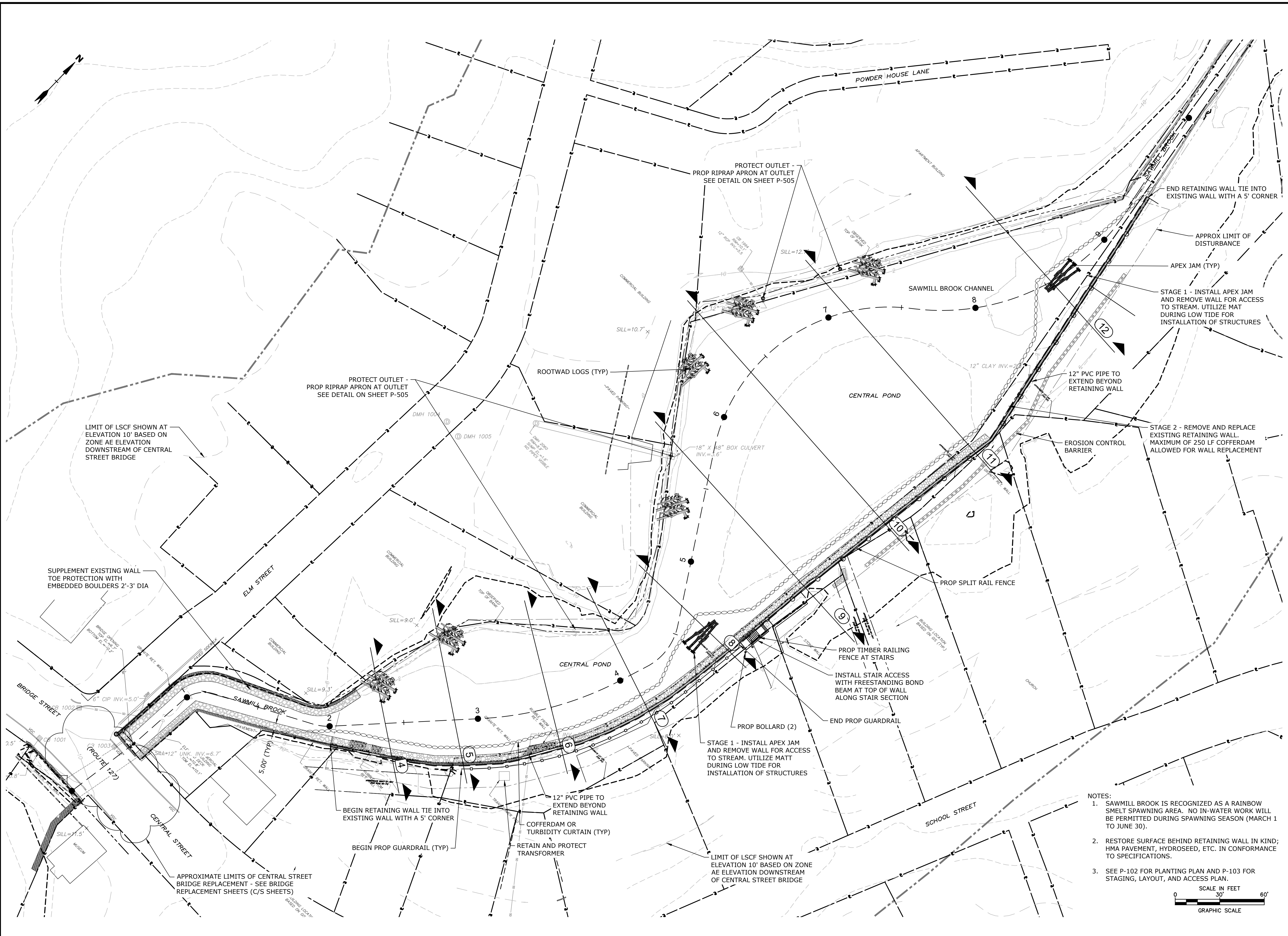
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**P-003**

SHEET 36 OF 51

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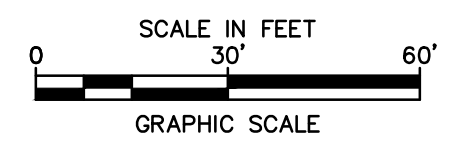


**100% DESIGN  
NOT FOR  
CONSTRUCTION**

**CENTRAL  
STREET  
BRIDGE  
REPLACEMENT  
AND CENTRAL  
POND  
RESTORATION**  
 Central Street  
 to Knight Circle  
 Manchester  
 -by-the-Sea, MA

**VERIFY SCALE**  
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 ORIGINAL DRAWING  
 0 1 INCH  
 IF NOT ONE INCH ON  
 THIS SHEET, ADJUST  
 SCALES ACCORDINGLY

- NOTES:**
- SAWMILL BROOK IS RECOGNIZED AS A RAINBOW SMELT SPAWNING AREA. NO IN-WATER WORK WILL BE PERMITTED DURING SPAWNING SEASON (MARCH 1 TO JUNE 30).
  - RESTORE SURFACE BEHIND RETAINING WALL IN KIND; HMA PAVEMENT, HYDROSEED, ETC. IN CONFORMANCE TO SPECIFICATIONS.
  - SEE P-102 FOR PLANTING PLAN AND P-103 FOR STAGING, LAYOUT, AND ACCESS PLAN.



MARK	DATE	DESCRIPTION
PROJECT NO:	M1467-014	
DATE:	JANUARY 12, 2024	
FILE:	M1476-014-C-100_SP.dwg	
DRAWN BY:	DWB, JEP	
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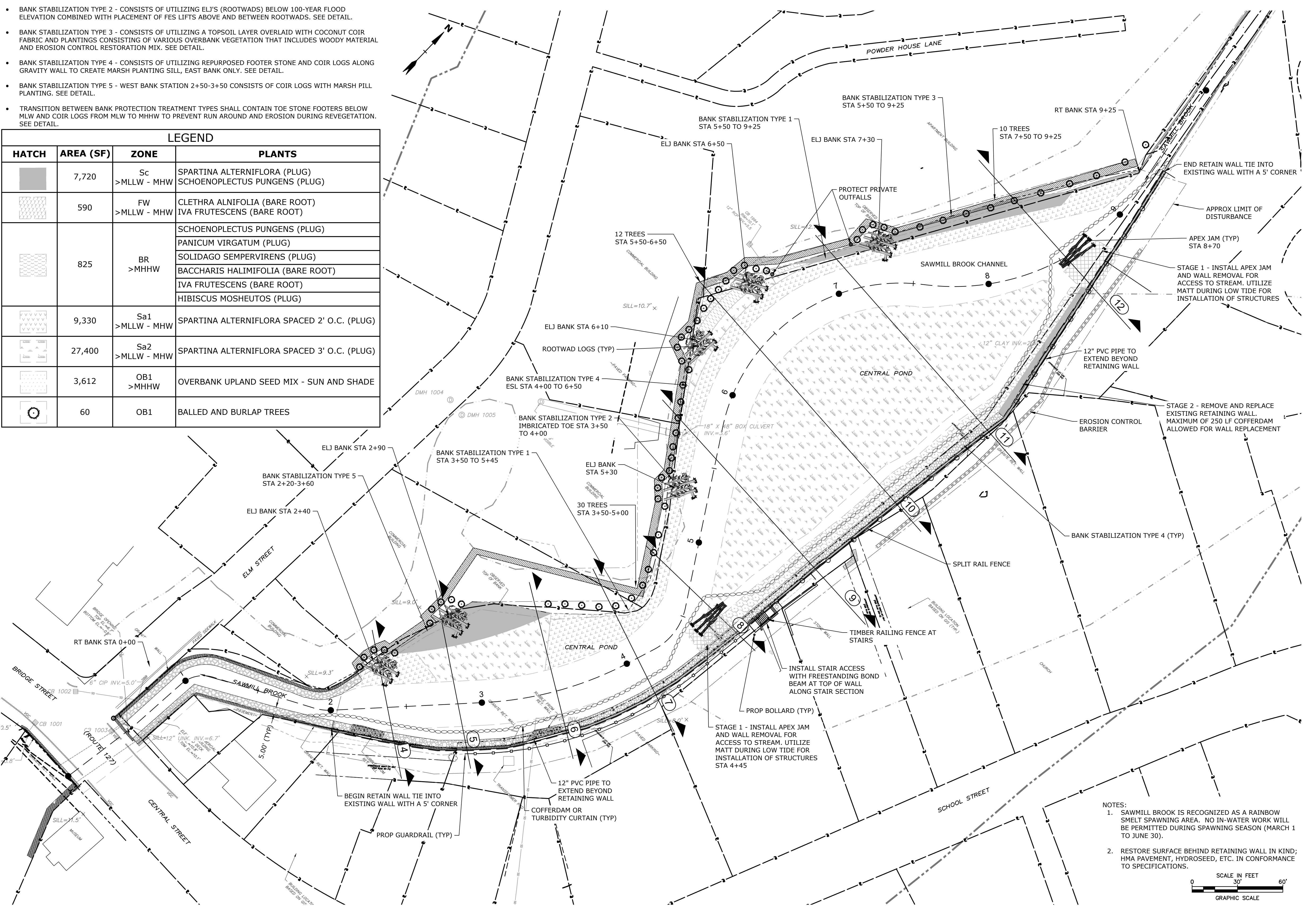
**SITE PLAN**

SCALE: 1" = 30'

**P-101**  
SHEET 37 OF 51

- BANK STABILIZATION TYPE 1 - CONSISTS OF UTILIZING BURIED FES, WOODY MATERIAL AND STONE MIX IN A CONTINUOUS CONFIGURATION, LOCATED ALONG THE OUTSIDE OF BENDS. SEE DETAIL.
- BANK STABILIZATION TYPE 2 - CONSISTS OF UTILIZING ELJ'S (ROOTWADS) BELOW 100-YEAR FLOOD ELEVATION COMBINED WITH PLACEMENT OF FES LIFTS ABOVE AND BETWEEN ROOTWADS. SEE DETAIL.
- BANK STABILIZATION TYPE 3 - CONSISTS OF UTILIZING A TOPSOIL LAYER OVERLAIN WITH COCONUT COIR FABRIC AND PLANTINGS CONSISTING OF VARIOUS OVERBANK VEGETATION THAT INCLUDES WOODY MATERIAL AND EROSION CONTROL RESTORATION MIX. SEE DETAIL.
- BANK STABILIZATION TYPE 4 - CONSISTS OF UTILIZING REPURPOSED FOOTER STONE AND COIR LOGS ALONG GRAVITY WALL TO CREATE MARSH PLANTING SILL, EAST BANK ONLY. SEE DETAIL.
- BANK STABILIZATION TYPE 5 - WEST BANK STATION 2+50-3+50 CONSISTS OF COIR LOGS WITH MARSH PILL PLANTING. SEE DETAIL.
- TRANSITION BETWEEN BANK PROTECTION TREATMENT TYPES SHALL CONTAIN TOE STONE FOOTERS BELOW MLW AND COIR LOGS FROM MLW TO MHHW TO PREVENT RUN AROUND AND EROSION DURING REVEGETATION. SEE DETAIL.

LEGEND			
HATCH	AREA (SF)	ZONE	PLANTS
[Hatch Pattern]	7,720	Sc >MLLW - MHW	SPARTINA ALTERNIFLORA (PLUG) SCHOENOPLECTUS PUNGENS (PLUG)
[Hatch Pattern]	590	FW >MLLW - MHW	CLETHRA ALNIFOLIA (BARE ROOT) IVA FRUTESCENS (BARE ROOT)
[Hatch Pattern]	825	BR >MHHW	SCHOENOPLECTUS PUNGENS (PLUG) PANICUM VIRGATUM (PLUG) SOLIDAGO SEMPERVIRENS (PLUG) BACCHARIS HALIMIFOLIA (BARE ROOT) IVA FRUTESCENS (BARE ROOT) HIBISCUS MOSHEUTOS (PLUG)
[Hatch Pattern]	9,330	Sa1 >MLLW - MHW	SPARTINA ALTERNIFLORA SPACED 2' O.C. (PLUG)
[Hatch Pattern]	27,400	Sa2 >MLLW - MHW	SPARTINA ALTERNIFLORA SPACED 3' O.C. (PLUG)
[Hatch Pattern]	3,612	OB1 >MHHW	OVERBANK UPLAND SEED MIX - SUN AND SHADE
[Hatch Pattern]	60	OB1	BALLED AND BURLAP TREES

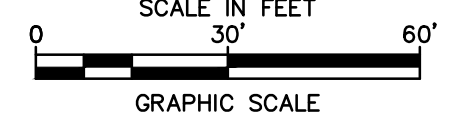


**100% DESIGN  
NOT FOR  
CONSTRUCTION**

**CENTRAL STREET BRIDGE REPLACEMENT AND CENTRAL POND RESTORATION**  
Central Street to Knight Circle  
Manchester -by-the-Sea, MA

VERIFY SCALE	
BAR IS 1 INCH ON ORIGINAL DRAWING	1 INCH
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	

- NOTES:
- SAWMILL BROOK IS RECOGNIZED AS A RAINBOW SMELT SPAWNING AREA. NO IN-WATER WORK WILL BE PERMITTED DURING SPAWNING SEASON (MARCH 1 TO JUNE 30).
  - RESTORE SURFACE BEHIND RETAINING WALL IN KIND; HMA PAVEMENT, HYDROSEED, ETC. IN CONFORMANCE TO SPECIFICATIONS.



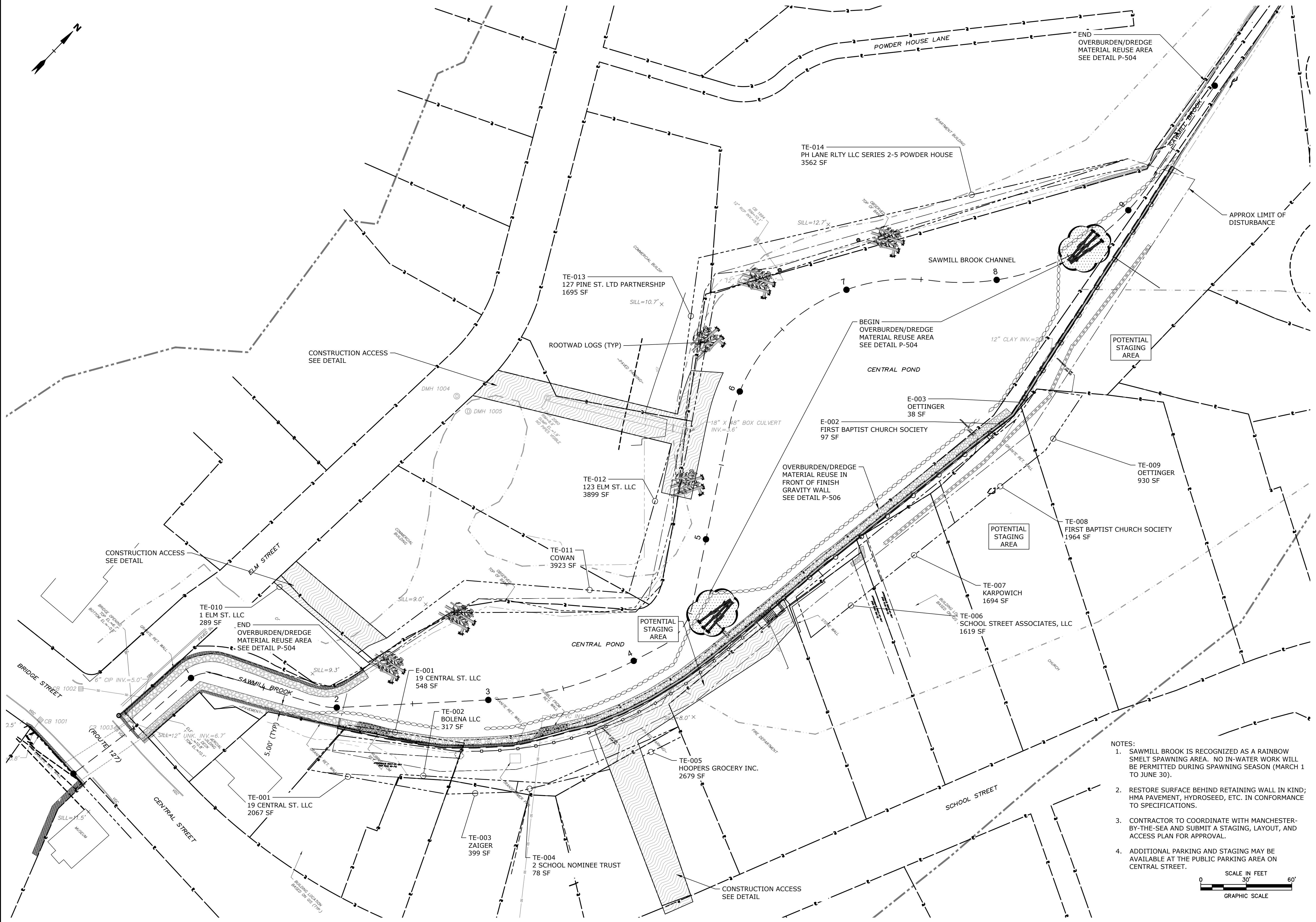
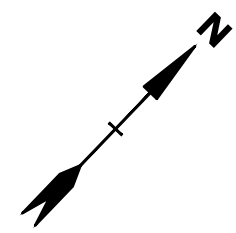
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DATE:	JANUARY 12, 2024	
FILE:	M1476-014-C-100_SP.dwg	
DRAWN BY:	DWB, JEP	
CHECKED:	DLM	
APPROVED:	DAM	

PLANTING PLAN

SCALE: 1" = 30'

P-102  
SHEET 38 OF 51

10/8/2024 10:43:00 AM  
 Plotted On: Oct 09, 2024 11:43:00 AM  
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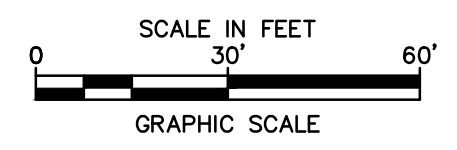


**100% DESIGN  
NOT FOR  
CONSTRUCTION**

**CENTRAL  
STREET  
BRIDGE  
REPLACEMENT  
AND CENTRAL  
POND  
RESTORATION**  
Central Street  
to Knight Circle  
Manchester  
-by-the-Sea, MA

**VERIFY SCALE**  
BAR IS 1 INCH ON  
ORIGINAL DRAWING  
0 1 INCH  
IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

- NOTES:**
1. SAWMILL BROOK IS RECOGNIZED AS A RAINBOW SMELT SPAWNING AREA. NO IN-WATER WORK WILL BE PERMITTED DURING SPAWNING SEASON (MARCH 1 TO JUNE 30).
  2. RESTORE SURFACE BEHIND RETAINING WALL IN KIND; HMA PAVEMENT, HYDROSEED, ETC. IN CONFORMANCE TO SPECIFICATIONS.
  3. CONTRACTOR TO COORDINATE WITH MANCHESTER-BY-THE-SEA AND SUBMIT A STAGING, LAYOUT, AND ACCESS PLAN FOR APPROVAL.
  4. ADDITIONAL PARKING AND STAGING MAY BE AVAILABLE AT THE PUBLIC PARKING AREA ON CENTRAL STREET.



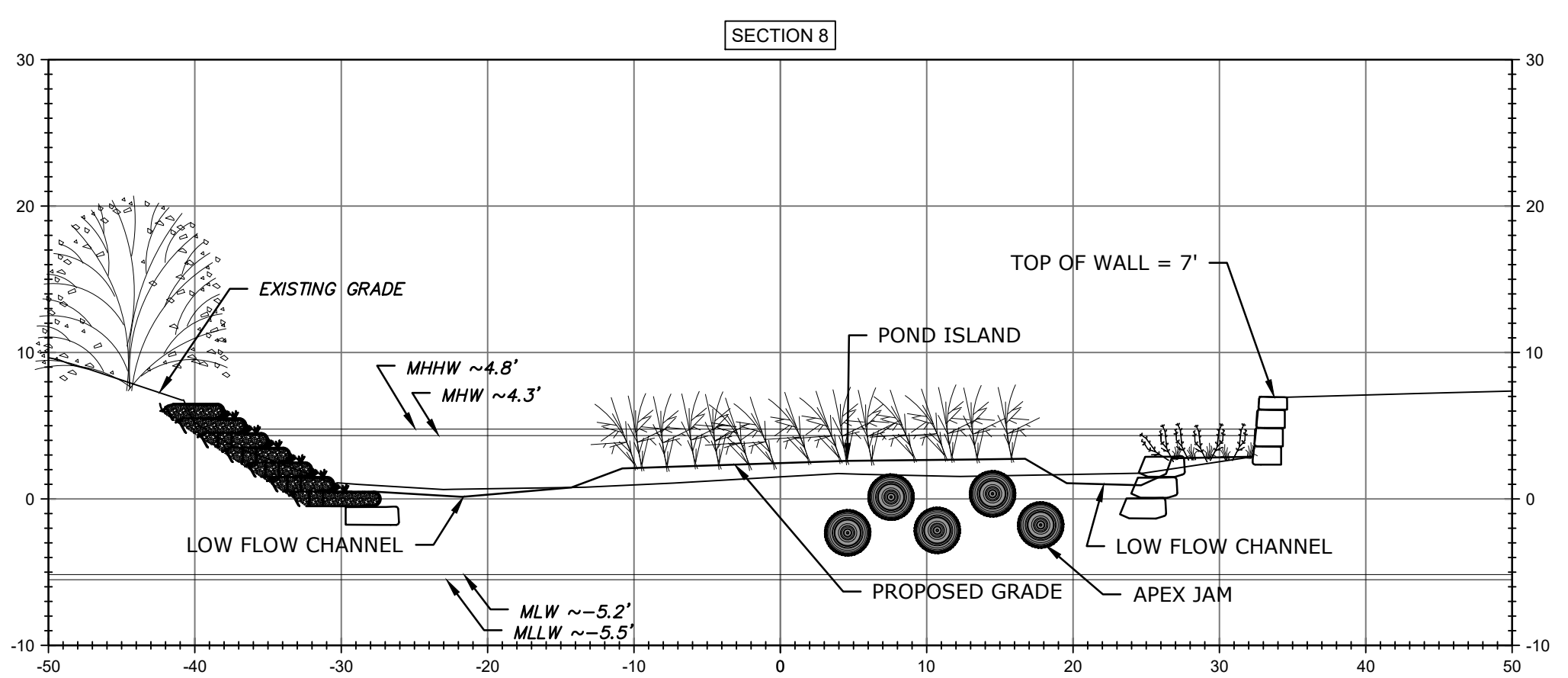
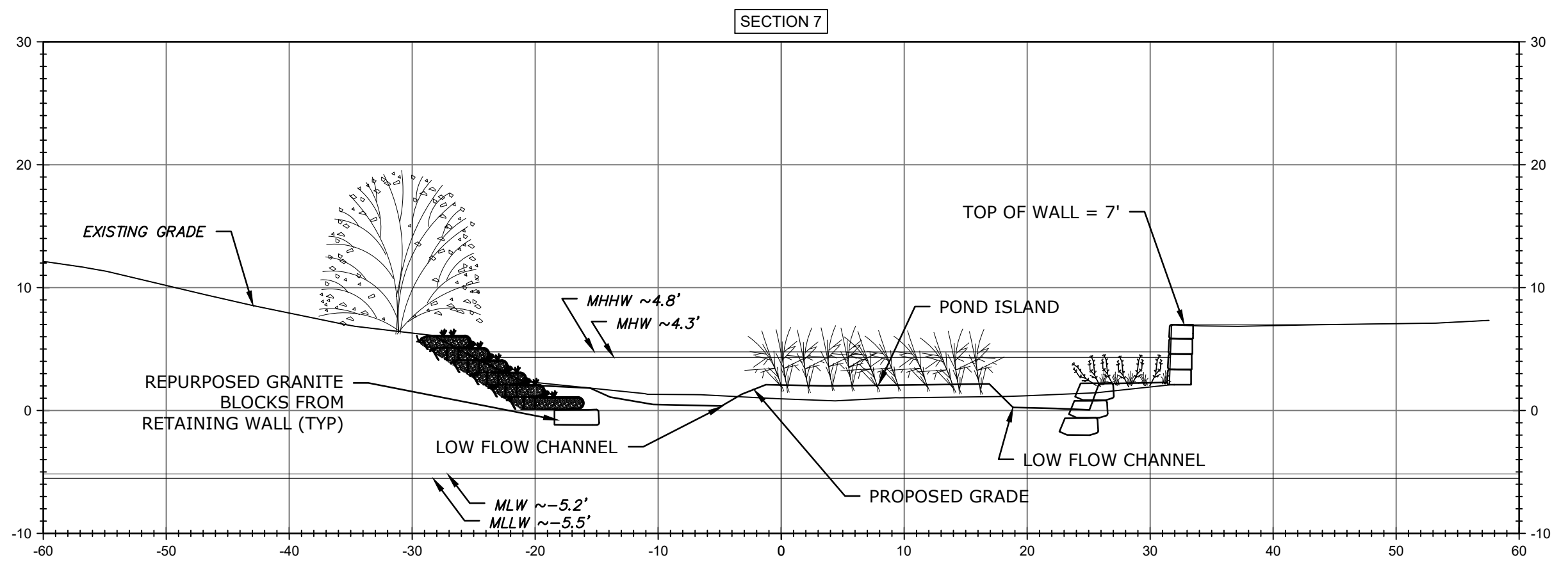
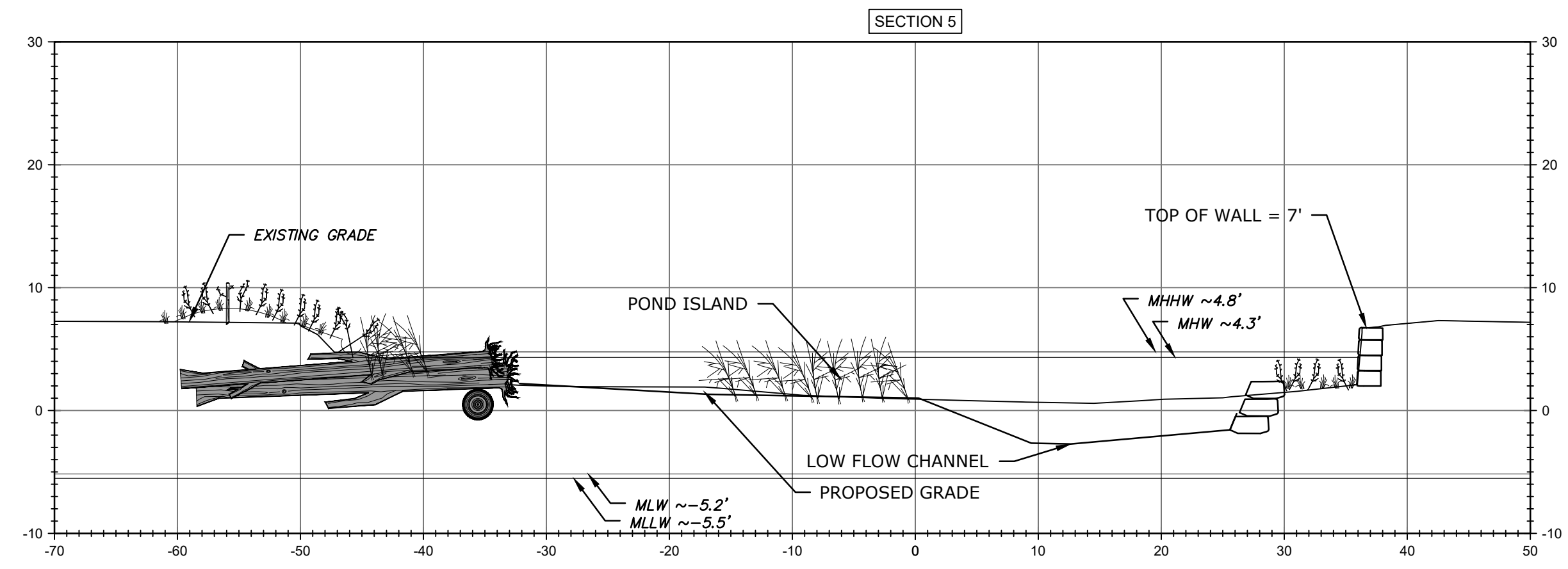
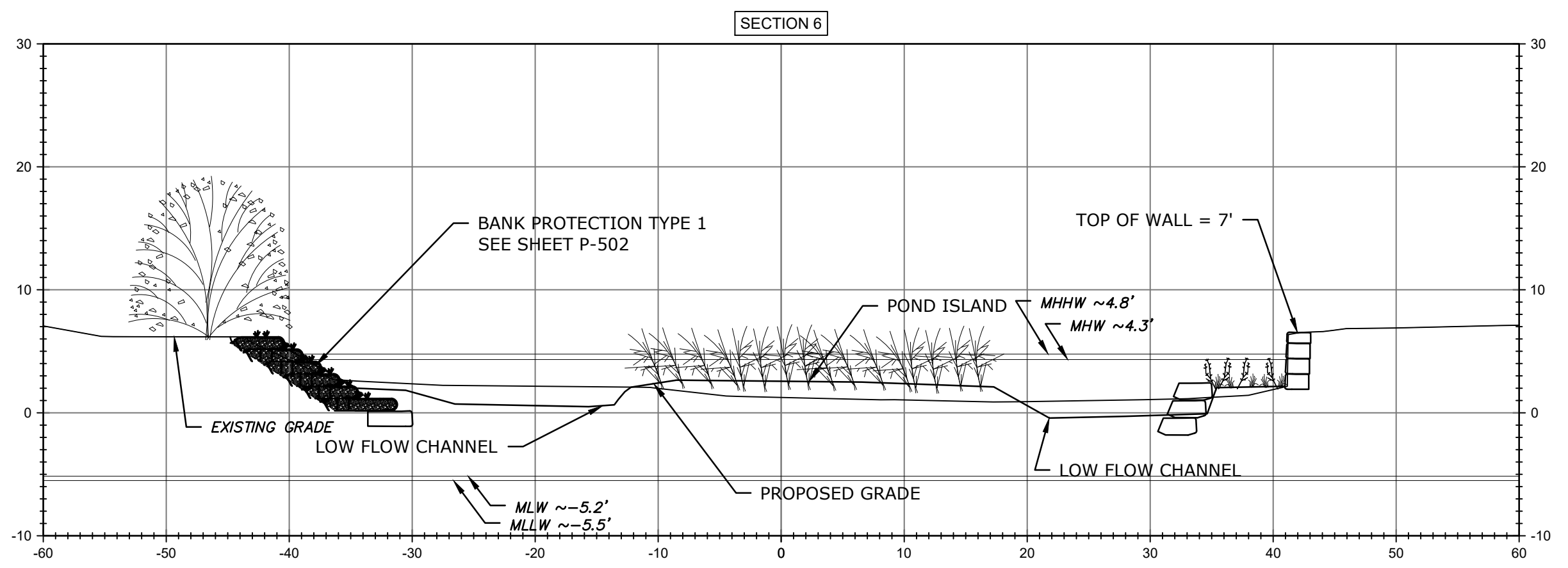
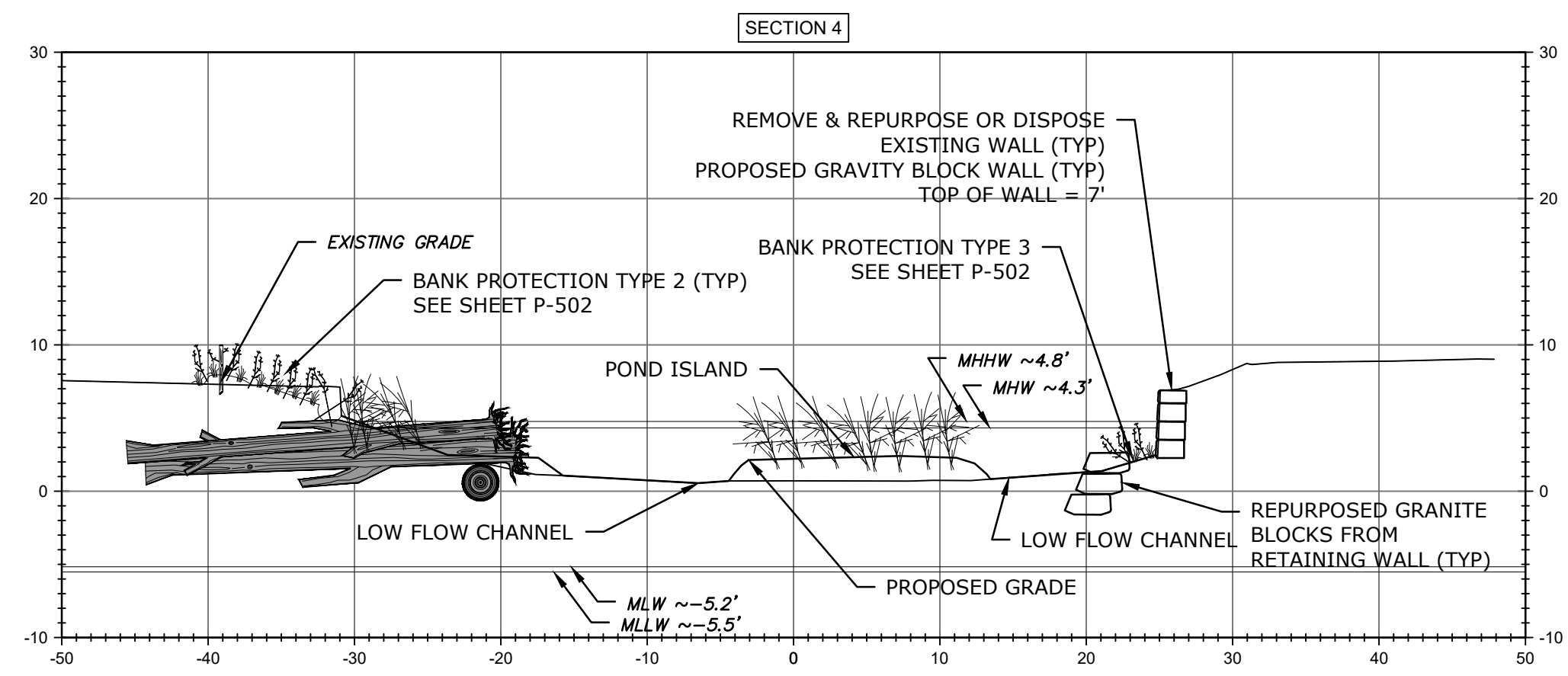
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DRAWN BY:	DWB, JEP	
CHECKED:	DLM	
APPROVED:	DAM	

**EASEMENTS, ACCESS, AND STAGING**

SCALE: 1" = 30'

**P-103**  
SHEET 39 OF 51

Last Saved: 10/8/2024 10:43:00 AM  
Plotted On: Oct 09, 2024 1:43:00 PM  
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**100% DESIGN  
NOT FOR  
CONSTRUCTION**

**CENTRAL  
STREET  
BRIDGE  
REPLACEMENT  
AND CENTRAL  
POND  
RESTORATION**  
Central Street  
to Knight Circle  
Manchester  
-by-the-Sea, MA

**VERIFY SCALE**  
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FILE:	M1476-014-C-104_xsec.dwg	
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PROPOSED CROSS SECTIONS - 1

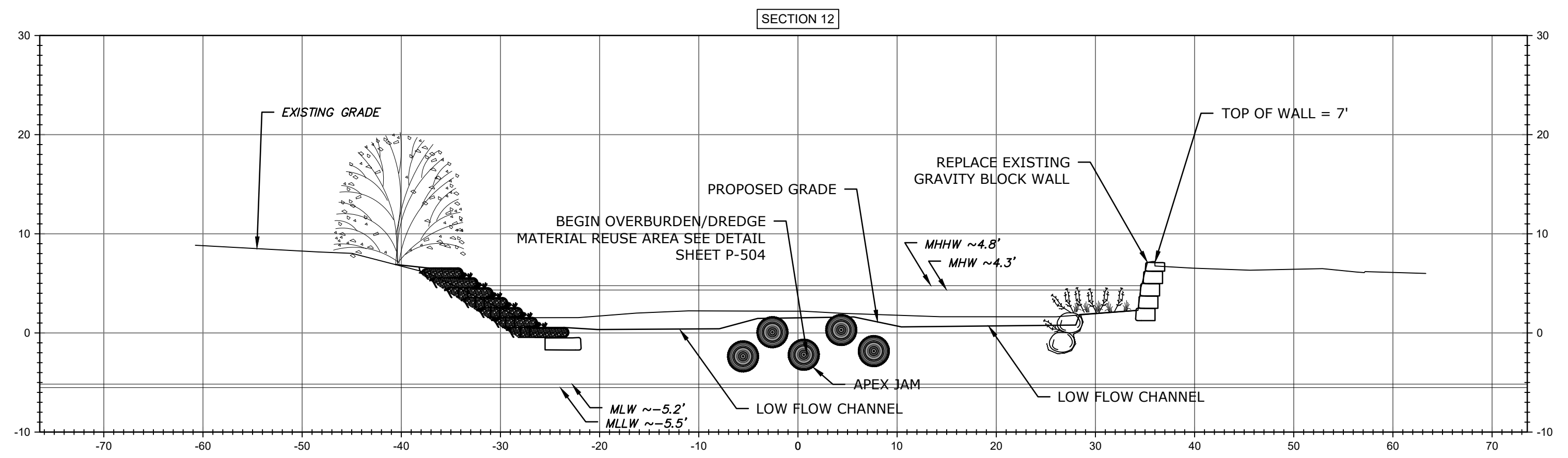
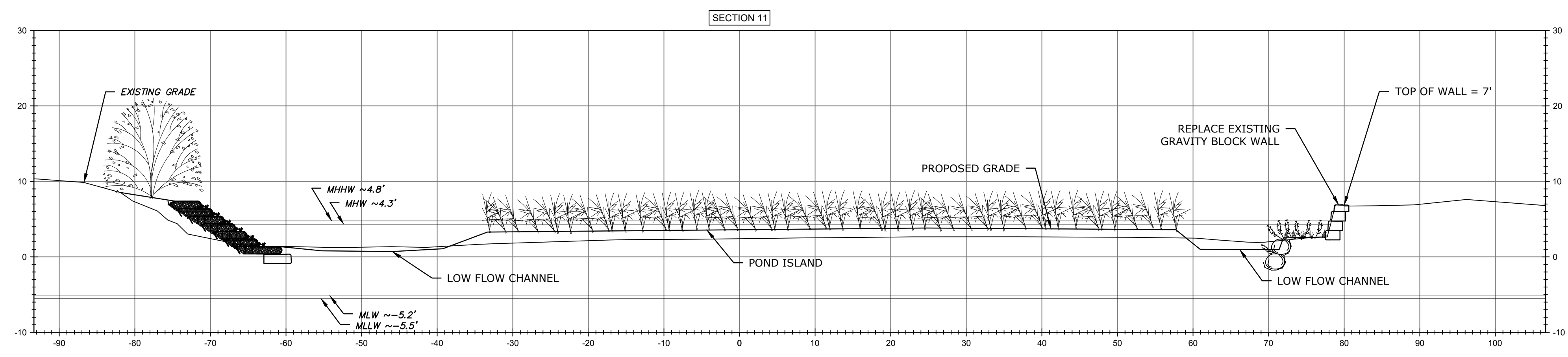
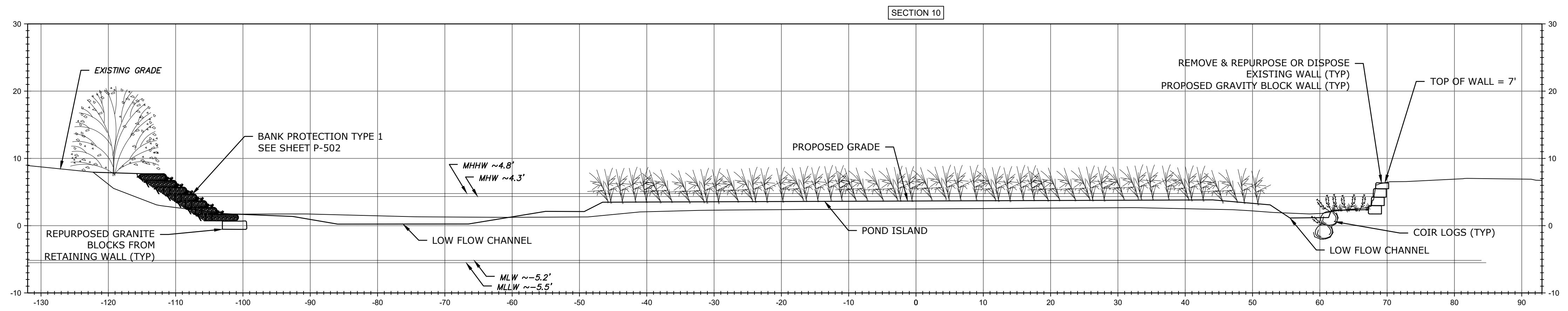
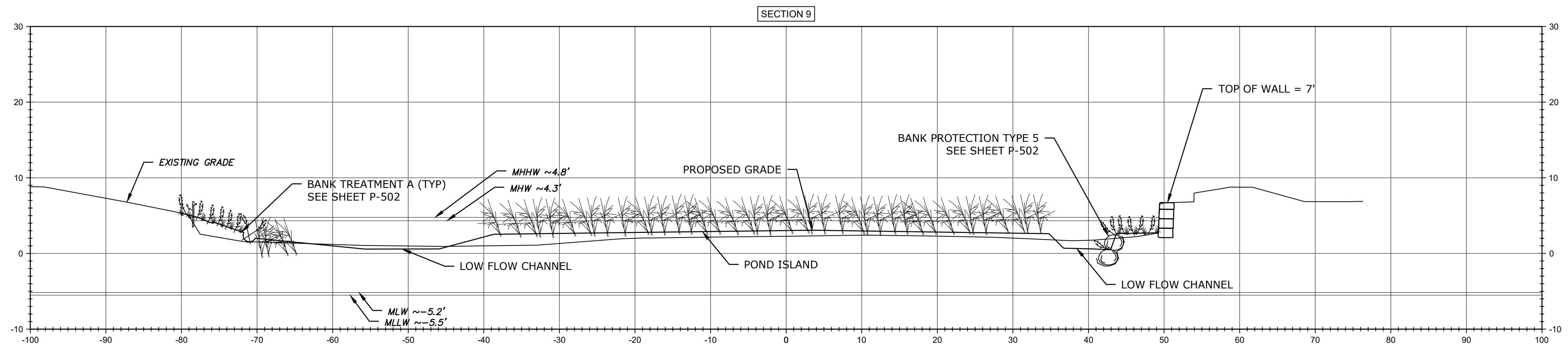
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**P-104**

SHEET 40 OF 51

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 CONSTRUCTION**

**CENTRAL  
 STREET  
 BRIDGE  
 REPLACEMENT  
 AND CENTRAL  
 POND  
 RESTORATION**  
 Central Street  
 to Knight Circle  
 Manchester  
 -by-the-Sea, MA

**VERIFY SCALE**  
 BAR IS 1 INCH ON  
 ORIGINAL DRAWING  
 0 1 INCH  
 IF NOT ONE INCH ON  
 THIS SHEET, ADJUST  
 SCALES ACCORDINGLY

MARK	DATE	DESCRIPTION

PROJECT NO: M1467-014  
 DATE: JANUARY 12, 2024  
 FILE: M1476-014-C-104\_xsec.dwg  
 DRAWN BY: DWB, TMP  
 CHECKED: DLM  
 APPROVED: DAM

PROPOSED CROSS SECTIONS - 2

SCALE: HOR: 1"=10'; VER: 1"=10'

**BEST MANAGEMENT PRACTICES**

**INSPECTION AND MAINTENANCE**

- SEDIMENT, EROSION CONTROLS, AND BEST MANAGEMENT PRACTICES (BMPs) SHALL BE INSTALLED PRIOR TO COMMENCING CONSTRUCTION AT THE SITE. NO WORK WHICH SHALL DISTURB THE SITE OR CREATE THE POTENTIAL FOR SEDIMENT RELEASE SHALL COMMENCE UNTIL THE SEDIMENT AND EROSION CONTROLS HAVE BEEN INSPECTED AND APPROVED BY THE TOWN, ENGINEER, AND REGULATORY AGENCIES. ALL CONTROLS AND BMPs SHALL BE SUBJECT TO INSPECTION BY THE TOWN, ITS REPRESENTATIVE, AND REGULATORY AGENCIES AT ANYTIME THEREAFTER.
- PERIODIC INSPECTION, MAINTENANCE, AND CLEANING OF TEMPORARY EROSION OF SEDIMENT CONTROL MEASURES AND BMPs SHALL BE REQUIRED. ALL CONTROLS AND BMPs SHALL BE INSPECTED EVERY 7 DAYS AND WITHIN 24 HOURS OF RAINFALL EVENTS OF 0.25 INCHES OR GREATER. ROUTINE INSPECTION AND MAINTENANCE WILL REDUCE THE CHANCE OF POLLUTING STORMWATER BY FINDING AND CORRECTING PROBLEMS BEFORE THE NEXT RAIN EVENT. THE FOCUS OF THE INSPECTION WILL BE TO DETERMINE:
  1. WHETHER OR NOT THE MEASURE WAS INSTALLED / PERFORMED CORRECTLY;
  2. WHETHER OR NOT THERE HAS BEEN ANY DAMAGE TO THE MEASURE SINCE IT WAS INSTALLED OR PERFORMED; AND
  3. WHAT SHOULD BE DONE TO CORRECT ANY PROBLEMS WITH THE MEASURE. EACH MEASURE IS TO BE OBSERVED TO DETERMINE IF IT IS STILL EFFECTIVE.IN SOME CASES, SPECIFIC MEASUREMENTS MAY BE TAKEN TO DETERMINE IF MAINTENANCE OF THE MEASURES IS REQUIRED.

**SITE MANAGER**

- PRIOR TO CONSTRUCTION, A SITE MANAGER WILL BE DESIGNATED BY THE CONTRACTOR TO BE RESPONSIBLE FOR INSTALLATION, MONITORING, INSPECTION, AND CORRECTION OF EROSION AND SEDIMENT CONTROL MEASURES.

**CONSTRUCTION SITE ENTRANCE**

- TO REDUCE THE TRACKING OF SEDIMENT FROM THE CONSTRUCTION SITE ONTO OTHER AREAS OF THE PROPERTY AND/OR PUBLIC ROADS, AS WELL AS THE PRODUCTION OF AIRBORNE DUST, A STABILIZED CONSTRUCTION ENTRANCE IS TO BE ESTABLISHED AT ANY PERMANENT CONSTRUCTION STAGING AREA. THE ENTRANCE IS TO CONSIST OF RUBBER TIRE MATS WITH TIE WASH AND SEDIMENT BASIN WHERE ASPHALT STAGING IS THE SURFACE, OTHERWISE A 6-INCH THICK PAD OF CRUSHED STONE UNDERLAIN WITH FILTER FABRIC OR A BITUMINOUS CONCRETE APRON. IT IS TO BE REMOVED AND THE AREA RESTORED FOLLOWING CONSTRUCTION. CONTRACTOR TO PROVIDE TRUCK WASH PLAN FOR REVIEW AND APPROVAL BY THE TOWN AND THE ENGINEER.

**SITE CLEARING**

- DURING SITE CLEARING, EXISTING VEGETATION WITHIN THE OVERALL LIMITS OF CLEARING AND GRUBBING SHALL BE REMOVED, EXCEPT AS OTHERWISE DIRECTED. PRIOR TO ANY SITE CLEARING ACTIVITIES, SEDIMENT CONTROL BARRIERS SHALL BE PLACED ALONG THE OUTER LIMIT OF DISTURBANCE. CLEARING IS TO BE LIMITED TO THOSE AREAS OF PROPOSED WORK. DISTURBED AREAS ARE TO BE KEPT TO A MINIMUM. NO TREE WITH A BREAST HEIGHT DIAMETER OF GREATER THAN 6 INCHES SHALL BE CLEARED FROM AREAS OUTSIDE THE LIMITS OF CLEARING AND GRUBBING WITHOUT PRIOR APPROVAL BY ENGINEER.

**DUST CONTROL**

- STANDARD DUST CONTROL MEASURES, INCLUDING SPRAYING AND MISTING SHALL BE USED AS NECESSARY. CALCIUM CHLORIDE SHALL NOT BE ALLOWED ON THIS PROJECT.

**STAGING AREAS**

- THE CONTRACTOR SHALL COORDINATE LAYDOWN STAGING AREAS FOR STORING EQUIPMENT AND MATERIALS WITH THE TOWN.
- STAGING AREAS SHALL BE SURROUNDED WITH COMPOST FILTER TUBE EROSION BARRIERS ON THE DOWNHILL SIDE.
- DURING AND AFTER CONSTRUCTION, ALL PAVED ROAD AND DRIVEWAY SURFACES ARE TO BE SCRAPED AND BROOMED FREE OF EXCAVATED MATERIALS ON A DAILY BASIS, UNLESS APPROVED BY THE TOWN.

**STOCKPILED MATERIALS**

- STOCKPILES OF SOIL CREATED DURING CONSTRUCTION ACTIVITIES ARE TO BE SURROUNDED WITH AN EROSION CONTROL BARRIER AROUND THE PERIMETER OF THE STOCKPILE. STOCKPILES OF ERODIBLE MATERIAL ARE TO BE COVERED PRIOR TO INCLEMENT WEATHER WITH A MINIMUM OF 20 MIL POLYETHYLENE SHEETING. STOCKPILES LEFT UNDISTURBED LONGER THAN 14 DAYS SHALL BE SEED OR COVERED.

**EQUIPMENT FUELING**

- EQUIPMENT FUELING AND OTHER ACTIVITIES INVOLVING PETROLEUM, OIL, OR OTHER POTENTIALLY HAZARDOUS SUBSTANCES ARE TO BE PERFORMED AT PRE-APPROVED, DESIGNATED AREAS WITH APPROPRIATE SPILL PREVENTION AND CONTROL MEASURES. PORTABLE SECONDARY CONTAINMENT IS TO BE USED, AND SORBENT MATERIALS ARE TO BE PLACED AROUND THE PERIMETER OF THE FUELING AREA.

**CONSTRUCTION DEWATERING**

- CONSTRUCTION DEWATERING SHALL BE REQUIRED DURING PORTIONS OF CONSTRUCTION WHICH REQUIRE EXCAVATION OR OTHER ACTIVITIES WHERE GROUNDWATER MAY INTERFERE WITH THE WORK.
- CONSTRUCTION DEWATERING DISCHARGES SHALL BE PRE-TREATED FOR SEDIMENT REMOVAL BY PASSING THROUGH AN APPROPRIATELY SIZED FILTER SOCK, SILT BAG, FRACTIONATION / SEDIMENTATION TANK, OR SEDIMENT TRAP PRIOR TO DISCHARGE, AS NECESSARY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING DEWATERING TECHNIQUES AND MAINTAINING DEWATERING PROCEDURES THROUGHOUT THE DURATION OF THE PROJECT.

**OUTLET PROTECTION**

- APPROPRIATE OUTLET PROTECTION, CONSISTING OF A LEVEL SPREADER SHALL BE PROVIDED AT THE OUTLET OF ANY DEWATERING CONDUIT OR STORMWATER CULVERT OR CHANNEL OUTFALL TO REDUCE VELOCITIES AND ENHANCE SEDIMENTATION PRIOR TO DISCHARGE.

**LIMITS OF WORK**

- THE CONTRACTOR SHALL LINE THE UPGRADIENT BOUNDARY OF WORK AREAS WITH ORANGE SAFETY FENCING BEFORE THE START OF SITE CLEARING ACTIVITIES EXCEPT WHERE CHAIN-LINK FENCING IS NEEDED TO RESTRICT PUBLIC ACCESS.

**SURFACE WATER CONTROL**

- THE CONTRACTOR MUST MAINTAIN THE SITE FLOWAGE OF SURFACE WATER THROUGH THE WORK AREA IN ACCORDANCE WITH THE SPECIFICATIONS. ALL COFFERDAMS SHALL CONSIST OF NON-ERODIBLE MATERIAL. THE CONTRACTOR SHALL SUBMIT A WATER CONTROL PLAN THAT WILL ADDRESS EMERGENCY MEASURES TO IMPLEMENT IN THE EVENT A STORM OCCURS DURING CONSTRUCTION.

**TURBIDITY MONITORING AND CONTROL**

- TURBIDITY SHALL BE MONITORED AND CONTROLLED BY THE CONTRACTOR. A TURBIDITY CURTAIN SHALL BE INSTALLED SURROUNDING AREAS OF EXCAVATION AT AND BELOW THE IMPOUNDMENT WATER LINE.
- IF TURBIDITY LEVELS ARE UNACCEPTABLE AS JUDGED BY THE TOWN, ENGINEER, OR REGULATORY AGENCY, ADDITIONAL MEASURES SHALL BE IMPLEMENTED AT NO EXPENSE TO THE TOWN.

**TEMPORARY STABILIZATION**

- WHEN NECESSARY, TEMPORARY SLOPE PROTECTION SHALL BE PROVIDED BY INSTALLING SEDIMENT TRAP BARRIERS AT THE TOE OF FILLS OR CUT SLOPES. IF ADDITIONAL STABILIZATION IS NEEDED, THEN THE CONTRACTOR SHALL INSTALL MULCH LOGS, MATTING, SUCH AS STRAW, JUTE, WOOD FIBER, OR BIODEGRADABLE MESH. A TACKIFIER SHALL BE USED ON LOOSE MATERIALS USED FOR TEMPORARY EROSION CONTROL.
- IN THE EVENT THAT DISTURBED AREAS AT THE SITE ARE TO BE LEFT UN-WORKED FOR MORE THAN TWO WEEKS, THE AREAS SHALL BE MULCHED WITH STRAW AT A RATE OF 100 LBS. PER 1,000 S.F. TO HELP CONTROL EROSION. 100% BIODEGRADABLE EROSION CONTROL BLANKETS OR TWO INCHES OF WOOD CHIP MULCH MAY ALSO BE USED AS TEMPORARY COVER.
- IN THE EVENT THAT DISTURBED AREAS AT THE SITE ARE TO BE LEFT UN-WORKED FOR MORE THAN ONE MONTH, THE AREAS SHALL BE TOPSOILED AND SEEDED AS PER THE SPECIFICATIONS AND AT NO ADDITIONAL COST TO THE TOWN.
- LEAVE THE SURFACE OF ALL EXCAVATIONS AND FILLS IN A FIRM AND STABLE CONDITION AT THE END OF EACH DAY. ROLL OR OTHERWISE TREAT THE SURFACE AS NEEDED.

**SITE RESTORATION**

- STABILIZATION OF DISTURBED AREAS OR NEW SOIL FILLS SHALL BE IMPLEMENTED WITHIN 14 DAYS AFTER GRADING OR CONSTRUCTION ACTIVITIES HAVE PERMANENTLY CEASED. APPROPRIATE VEGETATIVE SOIL STABILIZATION IS TO BE USED TO MINIMIZE EROSION. TEMPORARY AND PERMANENT VEGETATIVE COVER IS TO BE ESTABLISHED IN ACCORDANCE WITH THE PROJECT PLANS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORATION OF PREVIOUSLY VEGETATED UPLAND AREAS DISTURBED BY CONSTRUCTION ACTIVITIES. RESTORATION OF UPLAND AREAS CONSIST OF REPLACEMENT OF TOPSOIL OR PLACEMENT OF IMPORTED LOAM AS NEEDED SUCH THAT A MINIMUM OF 4 INCHES OF SUITABLE MATERIAL IS PRESENT AND APPROPRIATELY LIMED, FERTILIZED, GRADED, AND SCARIFIED. FIELDS DISTURBED OR COMPACTED BY CONSTRUCTION ACTIVITIES SHALL BE PLOWED TO LOOSEN THE SOIL, HARROWED TO PROVIDE AN EVEN SURFACE, AND APPROPRIATELY PREPARED FOR PLANTING.
- DISTURBED UPLAND AREAS SHALL THEN BE HYDROSEEDED WITH AN APPROVED SEED MIX AT THE RATE RECOMMENDED BY THE MANUFACTURER. SEEDING RATE SHALL BE DOUBLED FOR DORMANT SEEDING. SEED MIX SHALL BE DRY SITE RESTORATION SEED MIX UNLESS OTHERWISE NOTED OR AS APPROVED BY THE ENGINEER.
- 100% BIODEGRADABLE EROSION CONTROL BLANKETS MUST BE USED FOR STABILIZATION OF SLOPES IN EXCESS OF 3H:1V AND MAY BE USED IN LIEU OF HYDROSEEDING AT THE CONTRACTOR'S DISCRETION TO PROVIDE ADDITIONAL EROSION PROTECTION.
- FINAL STABILIZATION SHALL BE CONSIDERED COMPLETE WHEN ALL SOIL-DISTURBING ACTIVITIES HAVE BEEN COMPLETED AND A UNIFORM, PERENNIAL VEGETATIVE COVER WITH A DENSITY OF EIGHTY PERCENT HAS BEEN ESTABLISHED OR EQUIVALENT STABILIZATION MEASURES (SUCH AS THE USE OF MULCHES OR EROSION CONTROL MATTING) HAVE BEEN EMPLOYED ON ALL UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL VEGETATED SURFACES, INCLUDING WATERING, FERTILIZING, REPAIRING EROSION, INVASIVE PLANT REMOVAL, AND RE-SEEDING UNTIL ESTABLISHMENT CONDITIONS ARE MET AND UNTIL THE END OF THE CONTRACTUAL MAINTENANCE PERIOD.

**EROSION CONTROL NOTES:**

1. CONTRACTOR MUST FINALIZE AND IMPLEMENT THE EROSION AND SEDIMENT CONTROL PLAN (ESCP).
2. THE ESCP SHALL BE UPDATED AS CONSTRUCTION PROGRESSES. IT SHOULD REFLECT CURRENT OWNERSHIP, RESPONSIBILITIES, OPERATIONS AND FINDINGS. THE PLAN SHALL BE REVISED NO LATER THAN 7 DAYS AFTER THE INSPECTION. IF HAZARDOUS CONDITIONS OCCUR THE PLAN NEEDS TO BE MODIFIED BEFORE PROCEEDING WITH WORK. STEPS TO PREVENT THE REOCCURRENCE OF SUCH RELEASES WILL BE IDENTIFIED IN A PLAN REVISION AND IMPLEMENTED.
3. MAINTAIN AN ADDITIONAL SUPPLY OF EROSION CONTROL MEASURES THROUGHOUT THE CONSTRUCTION PERIOD.
4. MAINTAIN ALL EROSION CONTROL MEASURES IN GOOD WORKING CONDITION. THIS MAY REQUIRE CLEANING, REPAIRING, REPLACEMENT, AND SEDIMENT DISPOSAL. MAINTENANCE SHALL BE INITIATED WITHIN 24 HOURS OF IDENTIFICATION. SEDIMENT BARRIERS SHOULD HAVE SEDIMENT CLEANED OUT WHEN THE BARRIER IS 50% OF CAPACITY. SOIL AND DEBRIS ON ADJOINING PROPERTIES OR STREETS SHALL BE MINIMIZED. HAZARDOUS MATERIAL SPILLS SHOULD BE REMOVED IMMEDIATELY AND REMEDIAL ACTIONS FOR PREVENTION MUST BE TAKEN. HAZARDOUS MATERIALS SHALL BE CLEANED UP BY REMOVING AND DISPOSING OF CONTAMINATED MATERIALS PROPERLY.
5. 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.
6. THE ESCP MEASURES SHOWN ON THIS PLAN ARE THE BASE REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, UPGRADE THESE MEASURES AS NEEDED TO COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL EROSION AND SEDIMENT CONTROL REGULATIONS.
7. EROSION AND SEDIMENT CONTROL MEASURES INCLUDING PERIMETER SEDIMENT CONTROL MUST BE IN PLACE BEFORE VEGETATION IS DISTURBED AND MUST REMAIN IN PLACE AND BE MAINTAINED, CLEANED, REPAIRED OR REPLACED, AND PROMPTLY IMPLEMENTED FOLLOWING PROCEDURES ESTABLISHED FOR THE DURATION OF CONSTRUCTION, INCLUDING PROTECTION FOR ACTIVE STORM DRAIN INLETS AND CATCH BASINS AND APPROPRIATE NON-STORMWATER POLLUTION CONTROLS.
8. PHASE CLEARING AND GRADING TO THE MAXIMUM EXTENT PRACTICAL TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE UNSTABILIZED EXCAVATION AND CREATION OF BARE GROUND DURING WET WEATHER.
9. PROTECT NEW WORK FROM FLOODING. PROPERLY SLOPE GRADING IN THE AREAS SURROUNDING ALL EXCAVATIONS TO PREVENT WATER FROM RUNNING INTO THE EXCAVATED AREA OR TO ADJACENT PROPERTIES. UPON COMPLETION OF THE WORK, RESTORE ALL AREAS IN A SATISFACTORY MANNER.
10. IDENTIFY, MARK, AND PROTECT (BY FENCING OFF OR OTHER MEANS) CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING ALL TREES AND ASSOCIATED ROOTING ZONES, AND VEGETATION AREAS NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. MARK IN THE FIELD VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, ESPECIALLY IN PERIMETER AREAS.
11. THE INTENTIONAL WASHING OF SEDIMENT INTO SAWMILL BROOK MUST NOT OCCUR. VACUUMING OR DRY SWEEPING AND MATERIAL PICKUP MUST BE USED TO CLEANUP SEDIMENTS.
12. 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.
13. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES ON ALL DISTURBED AREAS AS GRADING PROGRESSES AND FOR ALL ROADWAYS INCLUDING GRAVEL ROADWAYS.
14. ESTABLISH CONCRETE TRUCK AND OTHER CONCRETE EQUIPMENT CONTAINED WASHOUT AREAS BEFORE BEGINNING CONCRETE WORK. CONCRETE WASHOUT MUST BE CONTAINED AWAY FROM DRAINAGE AREAS. IT MUST BE CLEARLY MARKED AND ACCESSIBLE.
15. ESTABLISH MATERIAL AND WASTE STORAGE AREAS, AND OTHER NON-STORMWATER CONTROLS. DISPOSAL OF MATERIALS AND WASTE SHALL COMPLY WITH STATE AND LOCAL WASTE DISPOSAL. SANITARY WASTE AND OTHER HAZARDOUS WASTE SHALL BE DISPOSED OF IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
16. DEWATER AS NECESSARY TO KEEP CONSTRUCTION AREAS FREE OF WATER, DISCHARGE WATER FROM DEWATERING TO THE APPROPRIATE LOCATION AND WITHOUT SEDIMENT.
17. ALL SILT-LADEN WATER MUST BE SETTLED OR FILTERED TO REMOVE ALL SEDIMENTS IN A SEDIMENTATION BASIN OR FILTER BAG LOCATED DOWNSTREAM, PRIOR TO RELEASE TO A WATERWAY OR EXISTING DRAINAGE SYSTEM.
18. PREVENT TRACKING OF SEDIMENT OUTSIDE OF PROJECT LIMITS USING BMPs SUCH AS: GRAVELED (OR PAVED) EXITS AND PARKING AREAS, GRAVEL ALL UNPAVED ROADS LOCATED ON SITE, OR USE AN EXIT TIRE WASH. THESE BMPs MUST BE IN PLACE PRIOR TO LAND-DISTURBING ACTIVITIES. AT THE END OF EACH WORK DAY, ANY SEDIMENTS TRACKED ONTO PUBLIC RIGHT-OF-WAYS BEYOND THE PROJECT LIMITS SHALL BE SWEEP AWAY.
19. WHEN TRUCKING SATURATED SOILS FROM THE SITE, EITHER USE WATER-TIGHT TRUCKS OR DEWATER LOADS ON SITE.
20. BMP'S SHOULD BE IMPLEMENTED AND MONITORED THROUGHOUT THE PROJECT. USE BMPs TO PREVENT OR MINIMIZE STORMWATER EXPOSURE TO POLLUTANTS FROM SPILLS; VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE; OTHER CLEANING AND MAINTENANCE ACTIVITIES; AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, LEFTOVER PAINTS, SOLVENTS, AND GLUES FROM CONSTRUCTION OPERATIONS.
21. WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, SPILL KITS IN ALL VEHICLES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, AND COVERED STORAGE AREAS FOR WASTE AND SUPPLIES. HAZARDOUS MATERIALS SHOULD BE STORED AWAY FROM THE STREAM TO ELIMINATE CHANCES FOR ACCIDENTAL SPILL SHALL BE IMPLEMENTED.
22. IF A TREATMENT (FOR EXAMPLE, ELECTRO-COAGULATION, FLOCCULATION, FILTRATION, ETC.) FOR SEDIMENT OR OTHER POLLUTANT REMOVAL IS EMPLOYED, SUBMIT AN OPERATION AND MAINTENANCE PLAN (INCLUDING SYSTEM SCHEMATIC, LOCATION OF SYSTEM, LOCATION OF INLET, LOCATION OF DISCHARGE, DISCHARGE DISPERSION DEVICE DESIGN, AND A SAMPLING PLAN AND FREQUENCY) BEFORE OPERATING THE TREATMENT SYSTEM. OBTAIN ENGINEER'S PLAN REVIEW BEFORE OPERATING THE TREATMENT SYSTEM. OPERATE AND MAINTAIN THE TREATMENT SYSTEM ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
23. TEMPORARILY STABILIZE SOILS AT THE END OF THE SHIFT BEFORE HOLIDAYS AND WEEKENDS. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT SOILS ARE STABLE DURING EVENTS AT ANY TIME.
24. STABILIZING PRACTICES : SEEDING WITH MULCH AND ROLLED EROSION CONTROL MATTING. ANY AREAS NOT SUBJECT TO CONSTRUCTION ACTIVITY FOR 14 DAYS MUST BE STABILIZED IMMEDIATELY. PRESERVE EXISTING VEGETATION IN AREAS NOT DISTURBED DURING CONSTRUCTION. ANY ON SITE STOCK PILES SHALL BE STABILIZED WITHIN 14 DAYS AFTER CONSTRUCTION ACTIVITY HAS CEASED WITH SEDIMENT BARRIERS INSTALLED.
25. FINAL STABILIZATION: MEANS THAT ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED AND THAT A UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70% FOR THE AREA HAS BEEN ESTABLISHED OR EQUIVALENT STABILIZATION MEASURES HAVE BEEN EMPLOYED.

**100% DESIGN  
NOT FOR  
CONSTRUCTION**

**CENTRAL  
STREET  
BRIDGE  
REPLACEMENT  
AND CENTRAL  
POND  
RESTORATION**

Central Street  
to Knight Circle  
Manchester  
-by-the-Sea, MA

**VERIFY SCALE**

BAR IS 1 INCH ON ORIGINAL DRAWING  
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

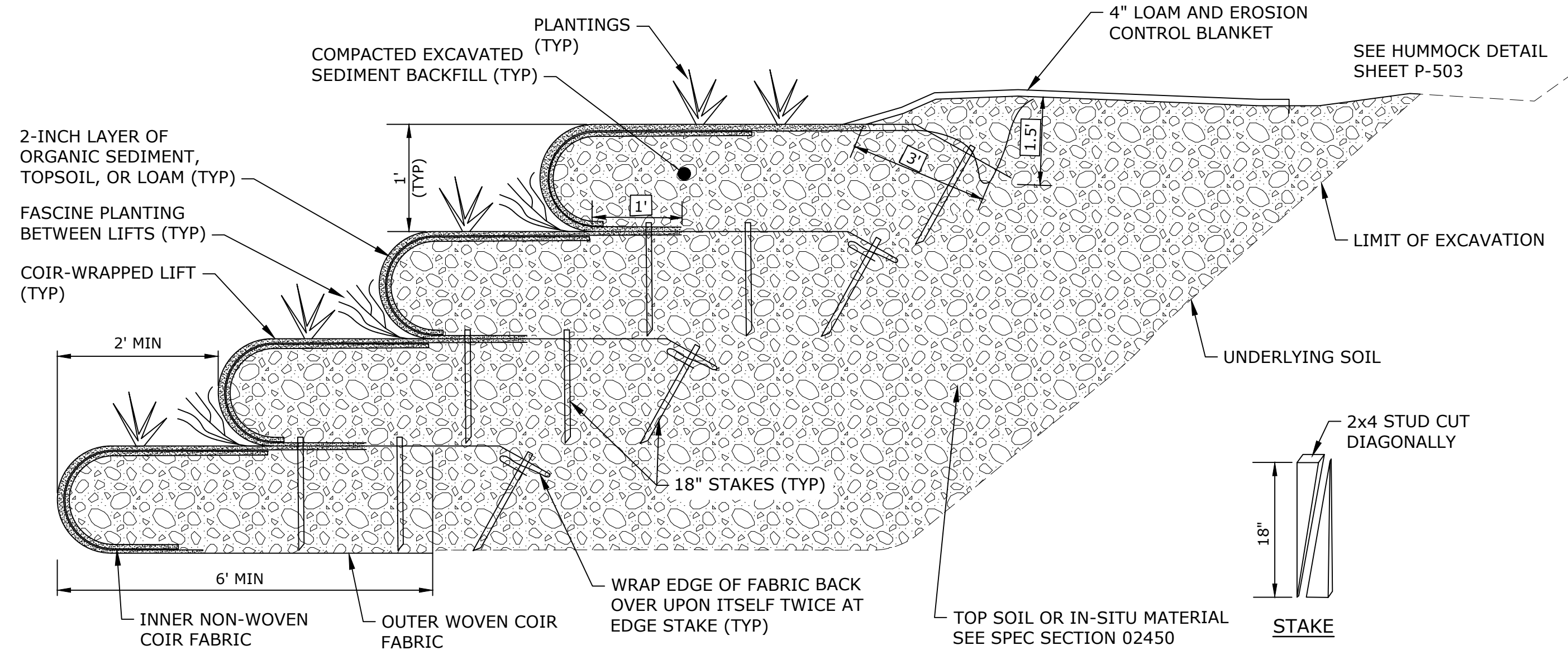
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DATE:	JANUARY 12, 2024
FILE:	M1476-014-C-500_Details.dwg
DRAWN BY:	DWB, TMP
CHECKED:	DLM
APPROVED:	DAM

**CONTROL OF WATER NOTES**

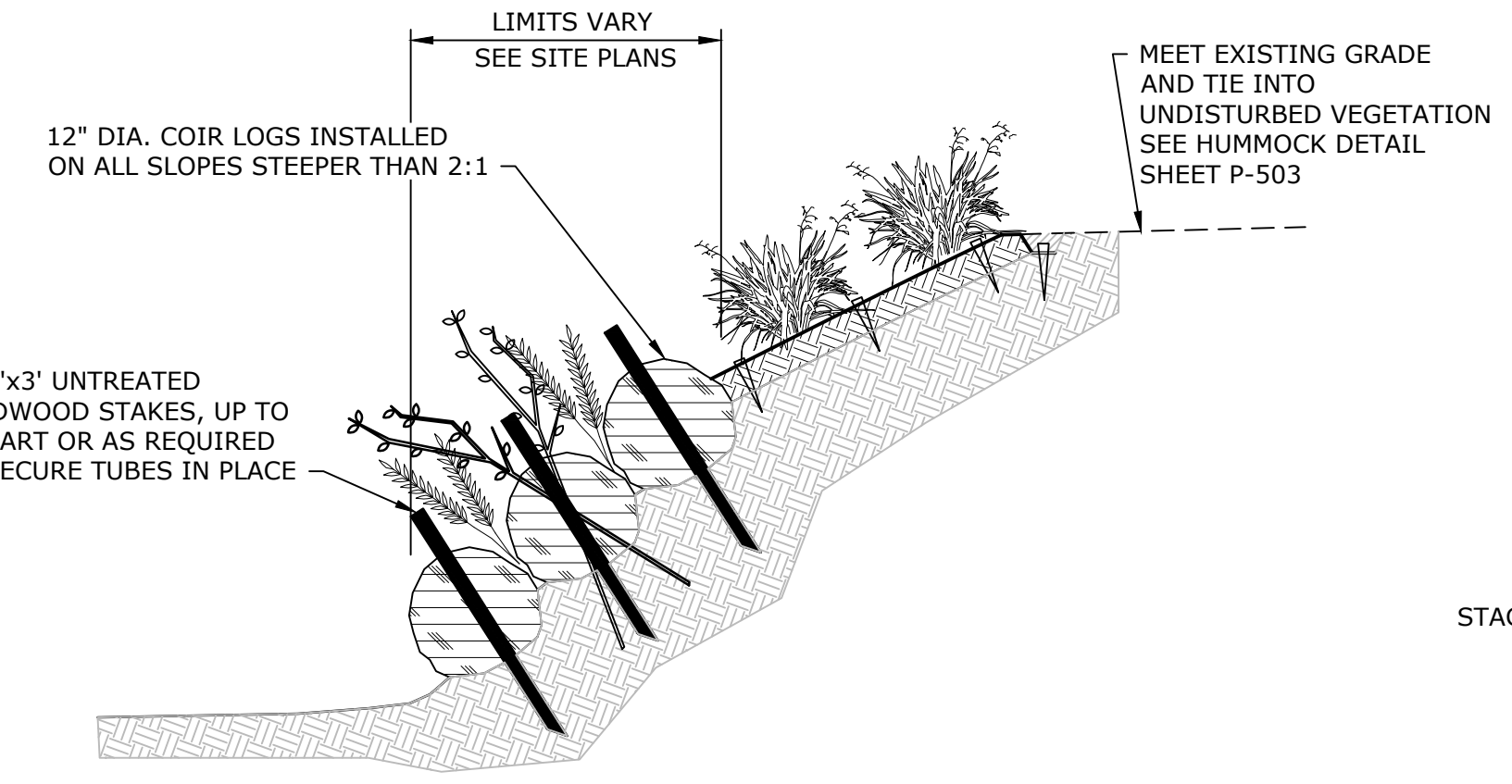
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**P-501**  
SHEET 42 OF 51

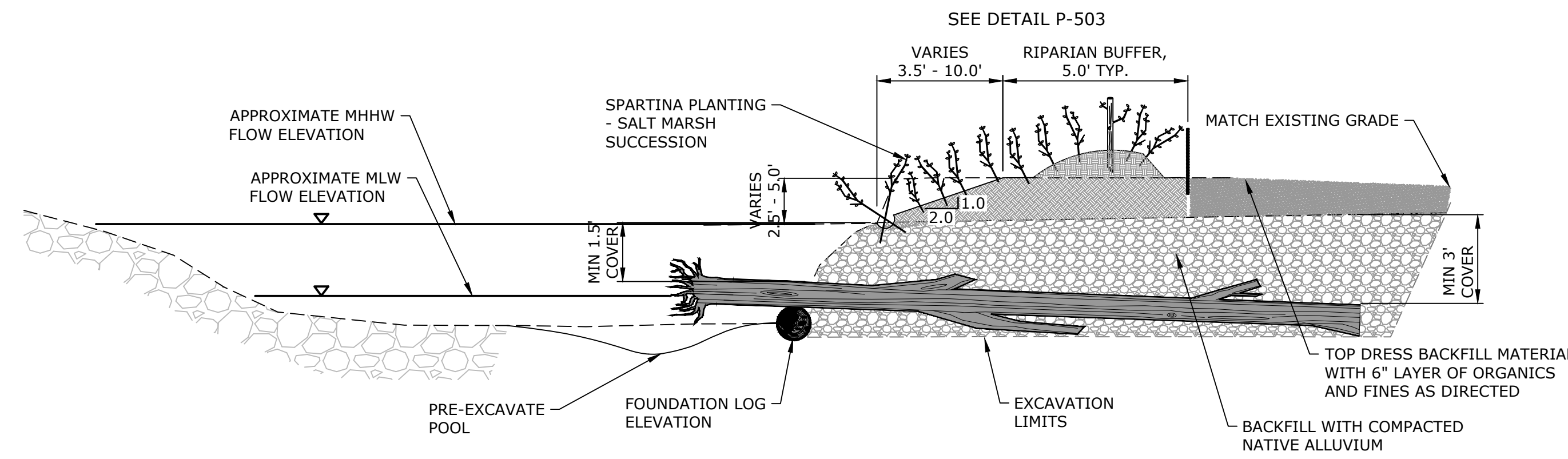


- NOTES:**
1. INSTALL ENCAPSULATED SOIL LIFTS FROM DOWNSTREAM TO UPSTREAM, WITH UPSTREAM COIR FABRIC OVERLAPPING DOWNSTREAM FABRIC BY 18" MINIMUM.
  2. USE SANDBAGS, TIMBER FORM, OR OTHER AS NECESSARY TO FORM FACE OF LIFT AND KEEP LOWER LIFTS SUFFICIENTLY DRY FOR INSTALLATION AND COMPACTION.
  3. PROTECT FROM DAMAGE WHEN CONSTRUCTED BELOW TEMPORARY ACCESS ROAD OR NEAR OTHER WORK.

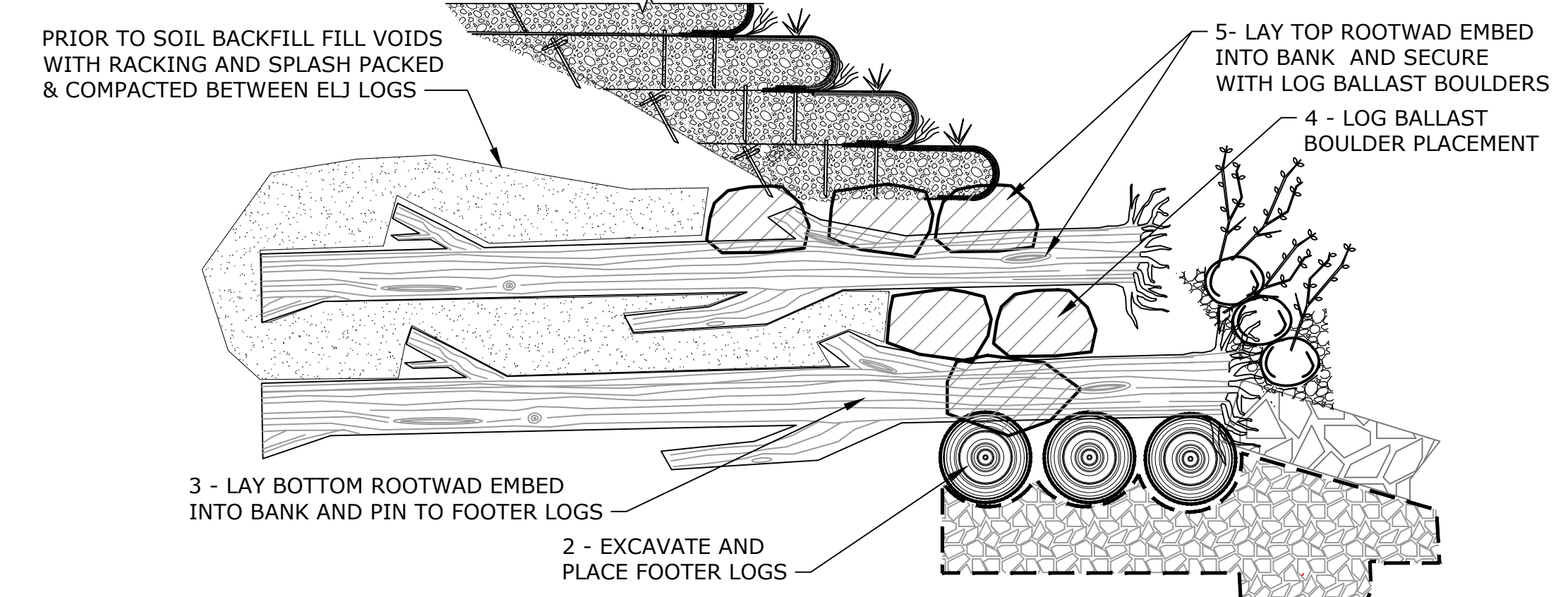
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 NO SCALE



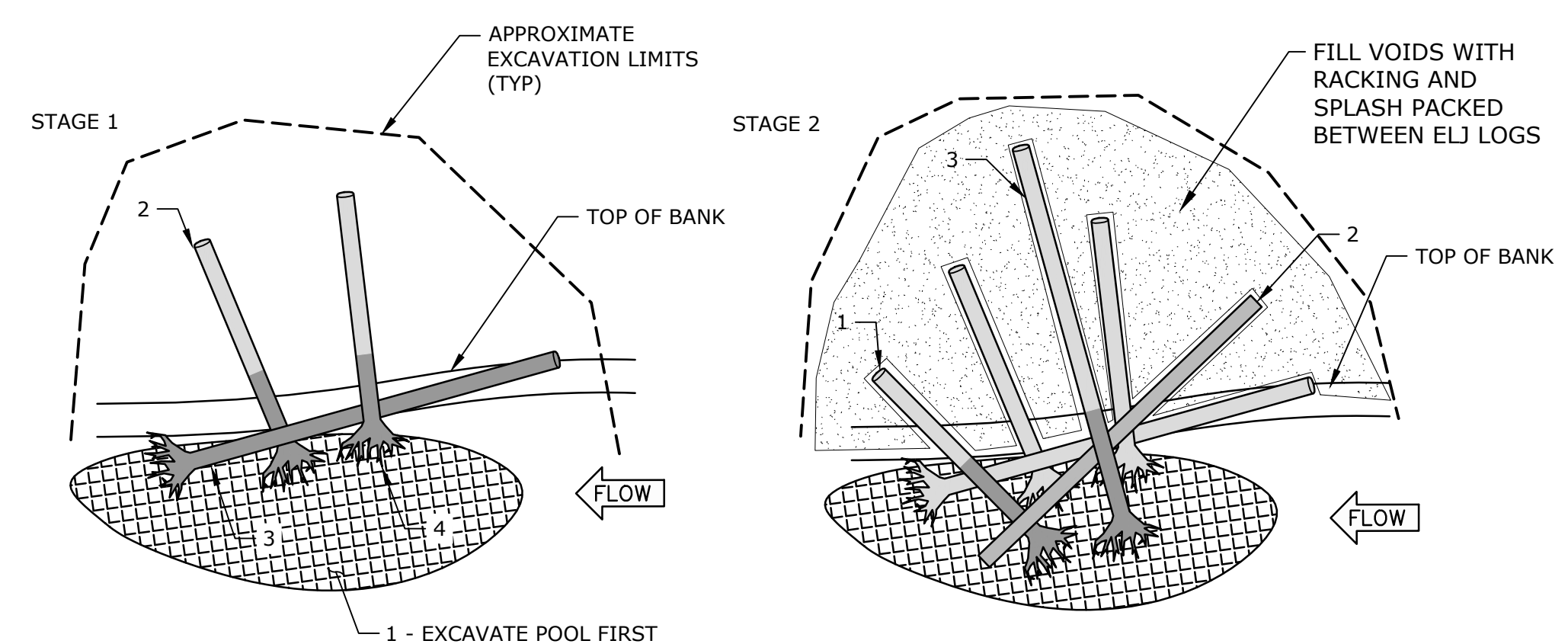
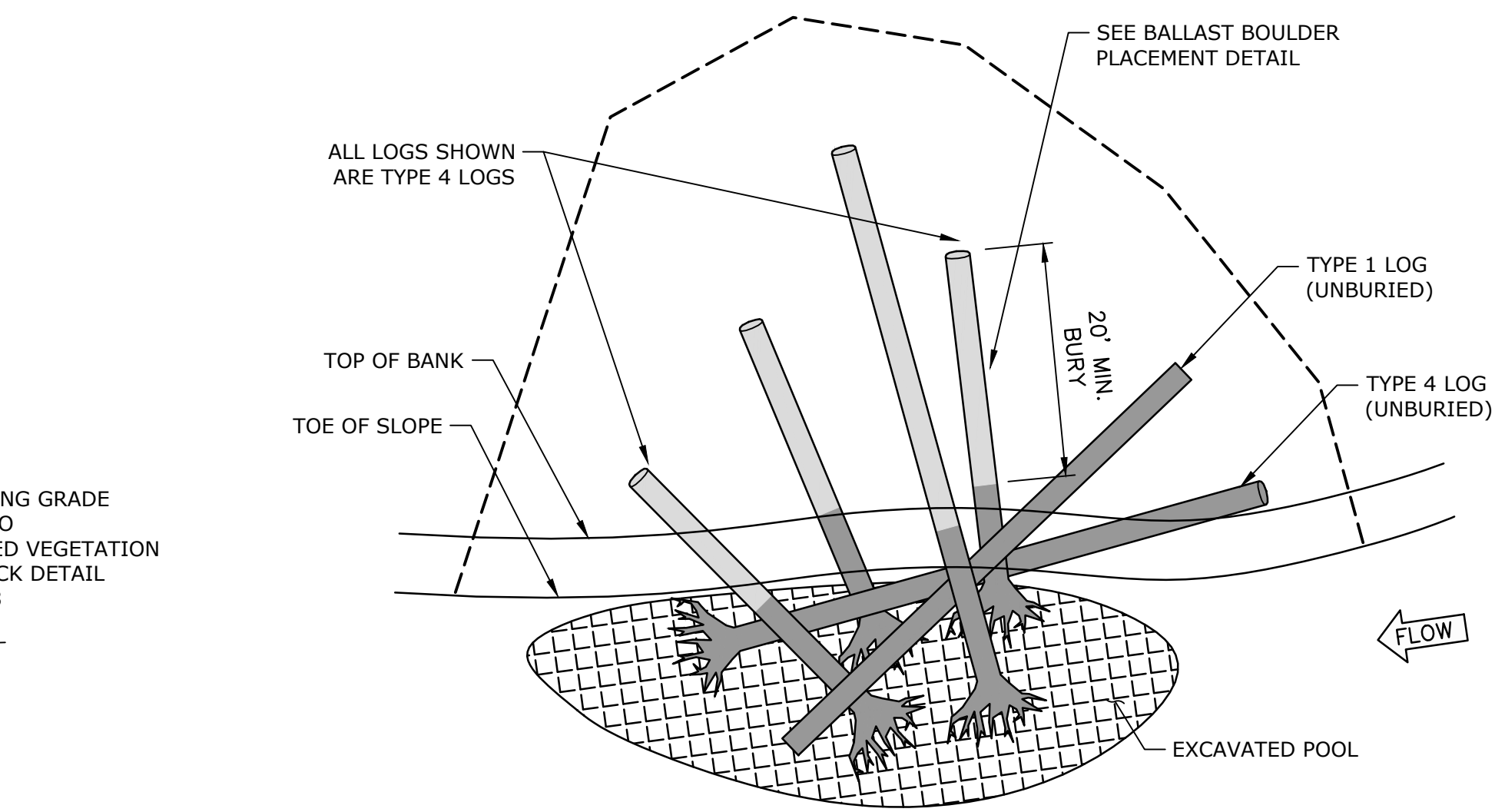
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 NO SCALE



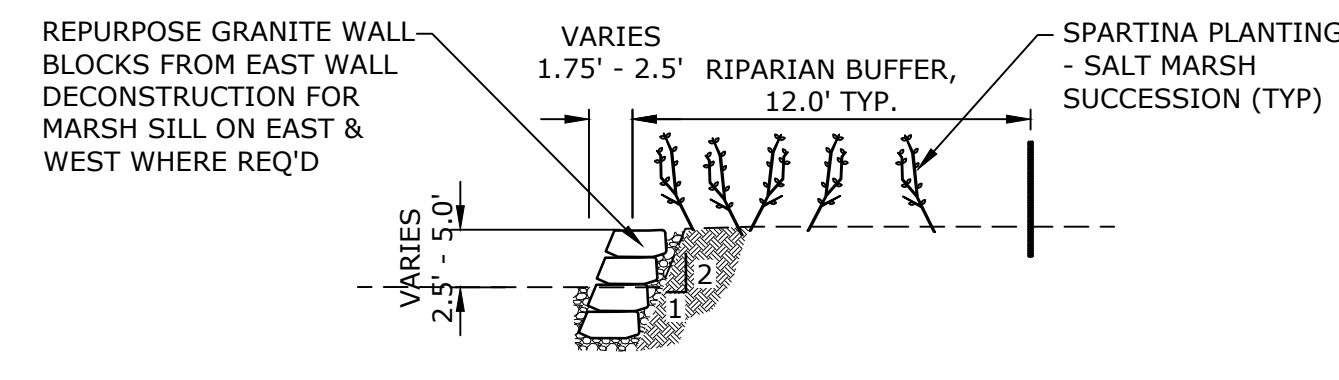
**BANK STABILIZATION TYPE 2 < 2:1 BANK SLOPE  
 ROOTWAD DETAIL**  
 NO SCALE



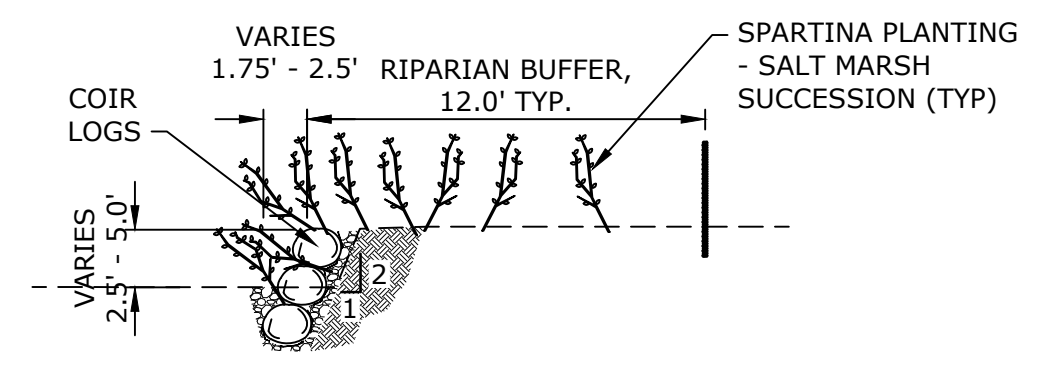
**BANK STABILIZATION TYPE 2 - SECTION  
 STRUCTURE SEQUENCING**  
 NO SCALE



**ISOMETRIC  
 STRUCTURE SEQUENCING**  
 NO SCALE



**BANK STABILIZATION TYPE 4  
 REPURPOSED GRANITE BLOCK TREATMENT  
 IMBRICATED ROCK WALL - RIGHT BANK**



**BANK STABILIZATION TYPE 5  
 COIR LOG TREATMENT  
 AND MARSH REVEGETATION**

**BANK STABILIZATION TYPE 4 AND TYPE 5  
 MARSH SILL**  
 NO SCALE

**100% DESIGN  
 NOT FOR  
 CONSTRUCTION**

**CENTRAL  
 STREET  
 BRIDGE  
 REPLACEMENT  
 AND CENTRAL  
 POND  
 RESTORATION**  
 Central Street  
 to Knight Circle  
 Manchester  
 -by-the-Sea, MA

**VERIFY SCALE**  
 BAR IS 1 INCH ON ORIGINAL DRAWING  
 0 1 INCH  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

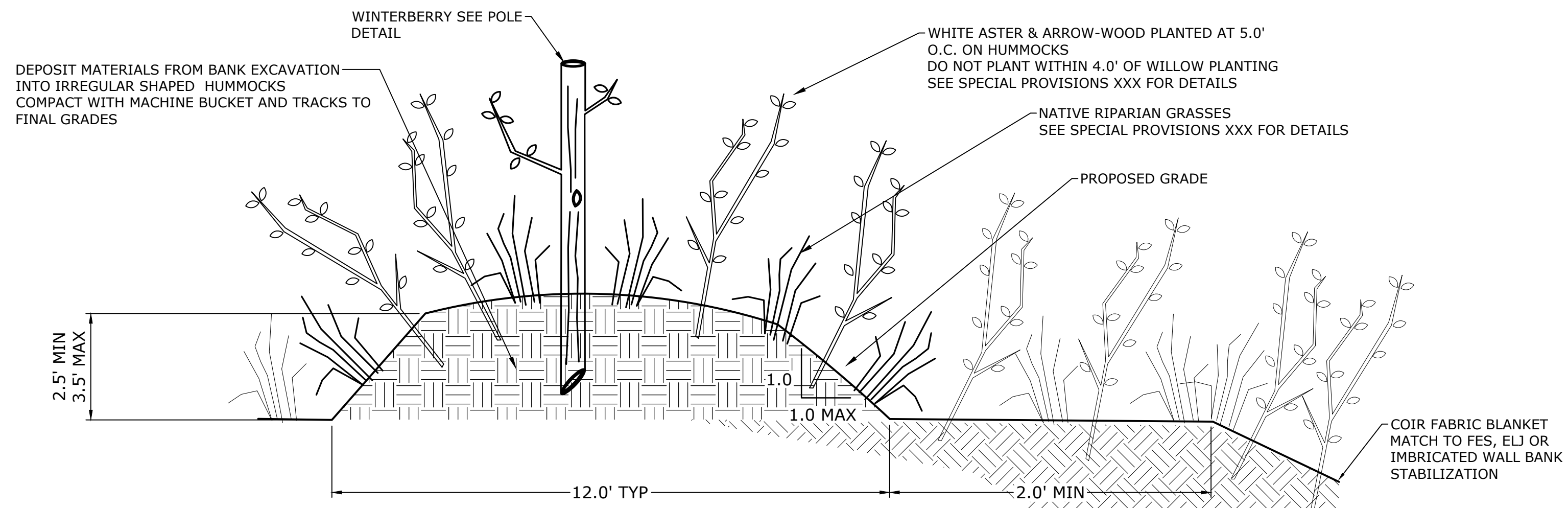
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FILE:	M1476-014-C-500_Details.dwg	
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CHECKED:	DLM	
APPROVED:	DAM	

TYPICAL BANK DETAILS

SCALE: AS NOTED

**P-502**  
 SHEET 43 OF 51

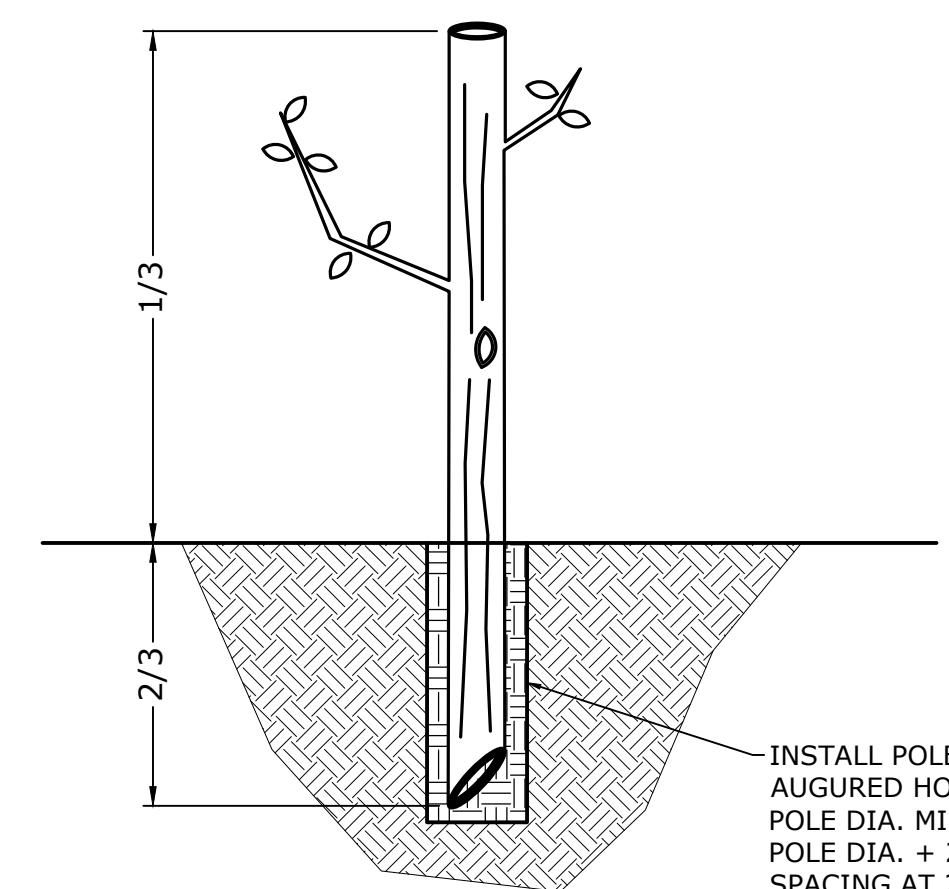
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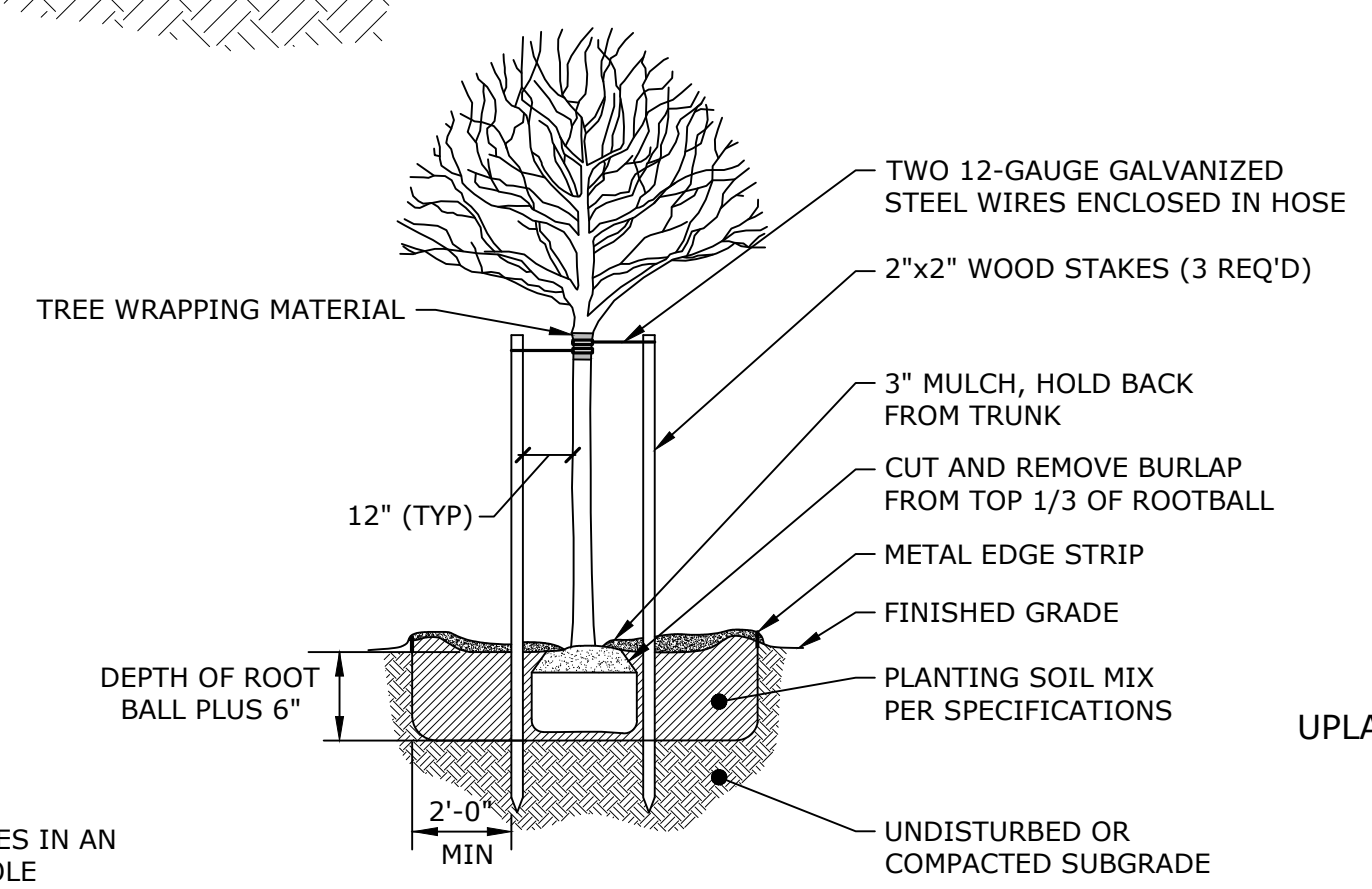
**HUMMOCK DETAIL - SECTION**  
NO SCALE

**CONSTRUCTION NOTES:**

- SEE SPECIAL PROVISIONS XXX
- CUTTINGS SHALL BE COLLECTED WHILE DORMANT, WHEN THE LEAVES HAVE FALLEN, AND NIGHT TEMPERATURES ARE FREEZING.
- CUTTINGS OF WINTERBERRY SHALL BE 0.75"-1.5" IN DIAMETER, AND 6' MINIMUM IN LENGTH.
- CUTTING SHALL BE TAKEN FROM THE BASE OF THE STEMS. CUT THE BOTTOMS AT A 45 DEG. ANGLE AND THE TOPS FLAT.
- CUTTINGS SHALL BE STRIPPED OF LEADERS, AND LONG BRANCHES TO AVOID EXCESS DRYING.
- CUTTINGS SHOULD BE STORED IN WATER AND SHADE FOR UP TO 24 HOURS BEFORE PLANTING.



**POLE PLANTING DETAIL**  
NO SCALE



**TREE AND SHRUB PLANTING DETAIL**  
NO SCALE

**REVEGETATION NOTES:**

**SALVAGED TOPSOIL**

- SURFACING OF ALL WOOD STRUCTURES SHALL INCLUDE A 8" LAYER OF TOPSOIL AND SLASH MIXTURE. TOPSOIL SHALL BE SALVAGED AT PROJECT EXCAVATIONS SHOWN IN THE PLANS.
- CONTRACTOR SHALL USE CAUTION TO NOT COMPACT TOPSOIL LAYER. TOPSOIL LAYER THAT HAS BEEN TRACKED OVER SHALL BE SCARIFIED TO A DEPTH OF 8".
- TOPSOIL LAYER SHALL BE PLACED SUCH THAT THE TOP OF THE ORGANIC LAYER EQUALS THE DESIGN FINISH GRADE ELEVATION.

**SEEDING**

- SEEDING SHALL OCCUR AFTER ALL CONSTRUCTION ACTIVITIES AND AFTER SPRING HIGH WATER. TIMING TO BE DETERMINED BY THE TOWN AND/OR ENGINEER OR AS SPECIFIED IN THE CONTRACT DOCUMENTS.
- ALL DISTURBED AREAS OUTSIDE OF THE ORDINARY HIGH WATER LIMITS SHALL BE SEED WITH SEED MIX 1.
- ALL DISTURBED AREAS WITHIN THE ORDINARY HIGH WATER LIMITS (EXCLUDING CHANNELS) SHALL BE SEED WITH SEED MIX 2.
- SEED SHALL BE BROADCAST APPLIED AT THE RATES SPECIFIED BELOW. SEEDBED SHALL BE GENTLY HARROWED/RAKED OR CHAINED FOLLOWING APPLICATION OF SEED, TO MIX SEED WITH THE TOP 1/4" OF SOIL.
- ALL SEED SHALL BE CERTIFIED.
- SEED MIXES SHALL CONFORM TO THE ADDITIONAL CRITERIA AS FOLLOWS:
  - 1-97% PER SEED (MINIMUM)
  - 2-85% GERMINATION (MINIMUM)
  - 3-TOTAL WEED SEED LESS THAN 0.5%
  - 4-ALL SEED SHALL BE FREE OF SEEDS OF WEEDS LISTED AS PRIMARILY NOXIOUS BY THE MASSACHUSETTS NATURAL HERITAGE & ENDANGERED SPECIES PROGRAM, SPECIFICALLY MIPAG.

**LIVE STAKES**

- LIVE STAKES SHALL BE INSTALLED WITHIN ALL WOOD HABITAT STRUCTURES PER THE LIVE STAKE SCHEDULE. LIVE STAKE MATERIAL SHALL CONSIST OF A VARIETY OF SPECIES INCLUDED IN THE TABLE.
- LIVE STAKES SHALL CONSIST OF LOCALLY HARVESTED WILLOW OR COTTONWOOD STAKES. STAKES ARE BETWEEN APPROXIMATELY 3/4" TO 4" IN DIAMETER DEPENDING UPON SPECIES AND SOURCE. STAKES HARVESTED WITH CARE AND CUT TO LENGTHS OF 3' TO 4'. STAKES SHALL BE BUNDLED AND SUBMERGED IN STANDING WATER FOR 5 TO 7 DAYS PRIOR TO PLANTING. CARE SHOULD BE TAKEN TO MARK UPWARD OR DOWNWARD ENDS OF STAKES (I.E. DIPPED).

BARE ROOT & PLUG QUANTITY SCHEDULE										
LOCATION	LOCATION			BANK LENGTH (LF)	PLANTING AREA (SF)	LIVE STAKE PLANTING DENSITY (STAKES PER LF OF BANK LENGTH)	LIVE STAKE PLANTING DENSITY (ON CENTER WITHIN PLANTING AREA)	TOTAL LIVE STAKES (EA)		
	START STA	END STA	BANK							
TYPE 1 BANK STABILIZATION	3+50	5+45	R	175		2		350		
	5+50	10+00		450				900		
TYPE 2 BANK STABILIZATION	2+15	2+45				PLUG PLANTING DENSITY		30		
	2+65	2+95						30		
	5+15	5+45						30		
	5+90	6+20						4' O.C. TRIANGULAR	30	
	6+40	6+70						0.5000	8' O.C. TRIANGULAR	30
	7+10	7+40								30
TYPE 3 BANK STABILIZATION	2+25	3+50		500		TOTAL		50		
	5+50	10+00		4500				225		

**PLANTING SCHEDULES**

**OVERBANK AREA (SUN): ABOVE MHHW**

SURFACE TREATMENTS: ENCAPSULATED SOIL LIFTS - FES

SEED:

COMMON NAME	BOTANICAL NAME
THE NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DRY SITES:	
CREeping RED FESCUE	<i>Festuca rubra</i>
CANADA WILD RYE	<i>Elymus canadensis</i>
ANNUAL RYEGRASS	<i>Lolium multiflorum</i>
PERENNIAL RYEGRASS	<i>Lolium perenne</i>
BLUE GRAMA	<i>Bouteloua gracilis</i>
LITTLE BLUESTEM	<i>Schizachyrium scoparium</i>
INDIAN GRASS	<i>Sorghastrum nutans</i>
ROUGH BENTGRASS/TICKLEGRASS	<i>Agrostis scabra</i>
UPLAND BENTGRASS	<i>Agrostis perennans</i>

PLANTINGS: PLANT THE FOLLOWING TUBLINGS OR LIVE STAKINGS THROUGH COIR BLANKET AT 4' O.C. GRID; PLANT LIVE STAKES IN CLUSTERS OF 3.

**TABLE 1: BARE ROOT PLANTINGS SPECIES**

COMMON NAME	BOTANICAL NAME
SWEET PEPPERBUSH	<i>Clethra alnifolia</i>
GROUNDSELTREE	<i>Baccharus halimifolia</i>
JESUIT'S BARK	<i>Iva frutescens</i>

**OVERBANK AREA (SHADE): ABOVE MHHW**

SURFACE TREATMENTS: 4" LOAM COVERED WITH EROSION CONTROL BLANKETS  
SEED: NONE  
PLANT PLUGS OF THE FOLLOWING SHADE TOLERANT HERBS PER STAKE AND PLUG SCHEDULE; ALTERNATE BETWEEN DECIDUOUS TREE PLANTINGS

COMMON NAME	BOTANICAL NAME
WHITE WOOD ASTER	<i>Eurybia divaricata</i>
VIRGINIA WILD RYE	<i>Elymus virginicus</i>
RIVERBANK WILD RYE	<i>Elymus riparius</i>

PLANT THE FOLLOWING SHADE TOLERANT SHRUBS

COMMON NAME	BOTANICAL NAME
GRAY DOGWOOD, 24", x4	<i>Cornus racemosa</i>
WITCH HAZEL, 24", x2	<i>Hamamelis virginiana</i>

**UPLAND AREA: ABOVE MHHW**

SURFACE TREATMENTS: 4" LOAM (INCLUDES STRIPPED TOPSOIL AND RECOVERED ORGANIC SEDIMENT) COVERED WITH EROSION CONTROL BLANKETS

SEED:

COMMON NAME	BOTANICAL NAME
THE NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR MOIST SITES:	
RIVERBANK WILD RYE	<i>Elymus riparius</i>
RED FESCUE	<i>Festuca rubra</i>
LITTLE BLUESTEM	<i>Schizachyrium scoparium</i>
SWITCH GRASS	<i>Panicum</i>
BIG BLUESTEM	<i>Andropogon gerardii</i>
BLUE VERVAIN	<i>Verbena hastata</i>
UPLAND BENTGRASS	<i>Agrostis perennans</i>
NODDING BUR MARIGOLD	<i>Bidens cernua</i>
HOLLOW-STEM JOE PYE WEED	<i>Eupatorium fistulosum</i>
BONESET	<i>Eupatorium perfoliatum</i>
NEW ENGLAND ASTER	<i>Aster novae-angliae</i>
WOOL GRASS	<i>Scirpus cyperinus</i>
SOFT RUSH	<i>Juncus effusus</i>

THE NEW ENGLAND SHOWY WILDFLOWER MIX:

COMMON NAME	BOTANICAL NAME
LITTLE BLUESTEM	<i>Schizachyrium scoparium</i>
PARTRIDGE PEA	<i>Chamaecrista fasciculata</i>
INDIANA GRASS	<i>Sorghastrum nutans</i>
RED FESCUE	<i>Festuca rubra</i>
CANADA WILD RYE	<i>Elymus canadensis</i>
RIVERBANK WILD RYE	<i>Elymus riparius</i>
OX EYE SUNFLOWER	<i>Heliopsis helianthoides</i>
LANCE LEAVED COREOPSIS	<i>Coreopsis lanceolata</i>
BLACK EYED SUSAN	<i>Rudbeckia hirta</i>
WILD BLUE FALSE INDIGO	<i>Baptisia australis</i>
SPIKED GAYFEATHER	<i>Liatris spicata</i>
COMMON SNEEZEWEED	<i>Helianthus autumnale</i>
BLUE VERVAIN	<i>Verbena hastata</i>
BUTTERFLY MILKWEED	<i>Asclepias tuberosa</i>
NEW ENGLAND ASTER	<i>Aster novae-angliae</i>
HOLLOW-STEM JOE PYE WEED	<i>Eupatorium fistulosum</i>
EARLY GOLDENROD	<i>Solidago juncea</i>

PLANTINGS: 1.5" CALIPER RED MAPLE 8' O.C.

**STONE TOE AREA: BR ZONE - BELOW MHHW (SALT TOLERANT SPECIES)**

SURFACE TREATMENTS: COVER LIBERALLY WITH EXCAVATED SEDIMENT; WASH SEDIMENT WITH WATER AND REPEAT UNTIL VOIDS ARE FILLED AND STONE TOE IS COVERED  
SEED: NEW ENGLAND EROSION CONTROL MIX FOR DRY SITES (SEE COMPOSITION ABOVE)  
PLANTINGS: LIVE STAKES OR TUBLINGS, AS RECOMMENDED BY SUPPLIER FOR SEASON, WITHIN STONE TOE AT 4' O.C.; LIVE STAKES TO BE GRIDDED IN CLUSTERS OF 3.

**TABLE 3: PLUG PLANTINGS BELOW MHHW, WHERE SPECIFIED ON REVEGETATION AND PLANTING PLAN**

COMMON NAME	BOTANICAL NAME
SMOOTH CORDGRASS	<i>Spartina alterniflora</i>
COMMON THREE-SQUARE	<i>Schoenoplectus pungens</i>
SWITCHGRASS	<i>Panicum virgatum</i>
SEASIDE GOLDENROD	<i>Solidago sempervirens</i>
SWAMP ROSE MALLOW	<i>Hibiscus moscheutos</i>

**100% DESIGN NOT FOR CONSTRUCTION**

**CENTRAL STREET BRIDGE REPLACEMENT AND CENTRAL POND RESTORATION**

Central Street to Knight Circle  
Manchester  
-by-the-Sea, MA

VERIFY SCALE  
BAR IS 1 INCH ON ORIGINAL DRAWING  
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

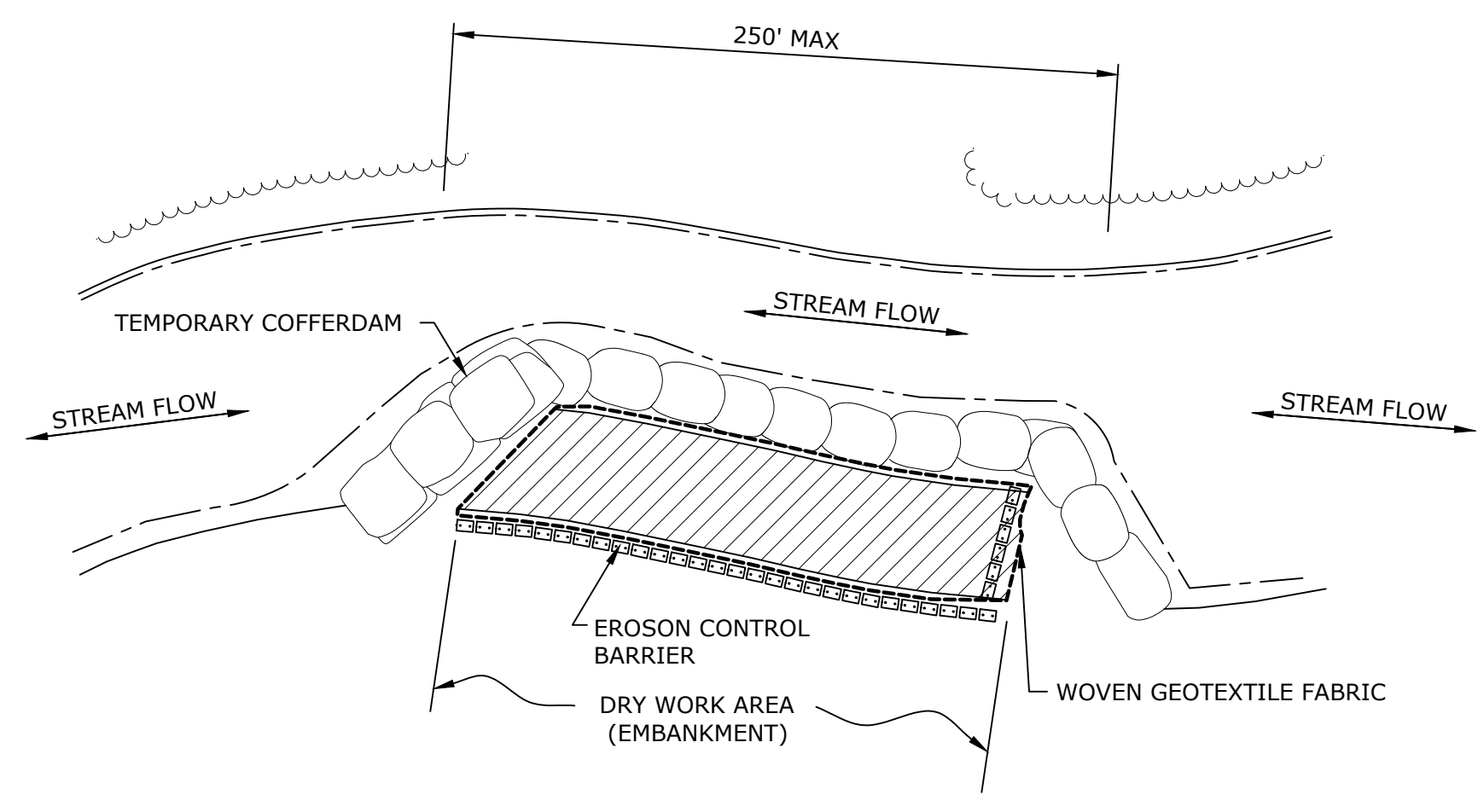
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DATE:	JANUARY 12, 2024	
FILE:	M1476-014-C-500_Details.dwg	
DRAWN BY:	DWB, TMP	
CHECKED:	DLM	
APPROVED:	DAM	

REVEGETATION DETAILS

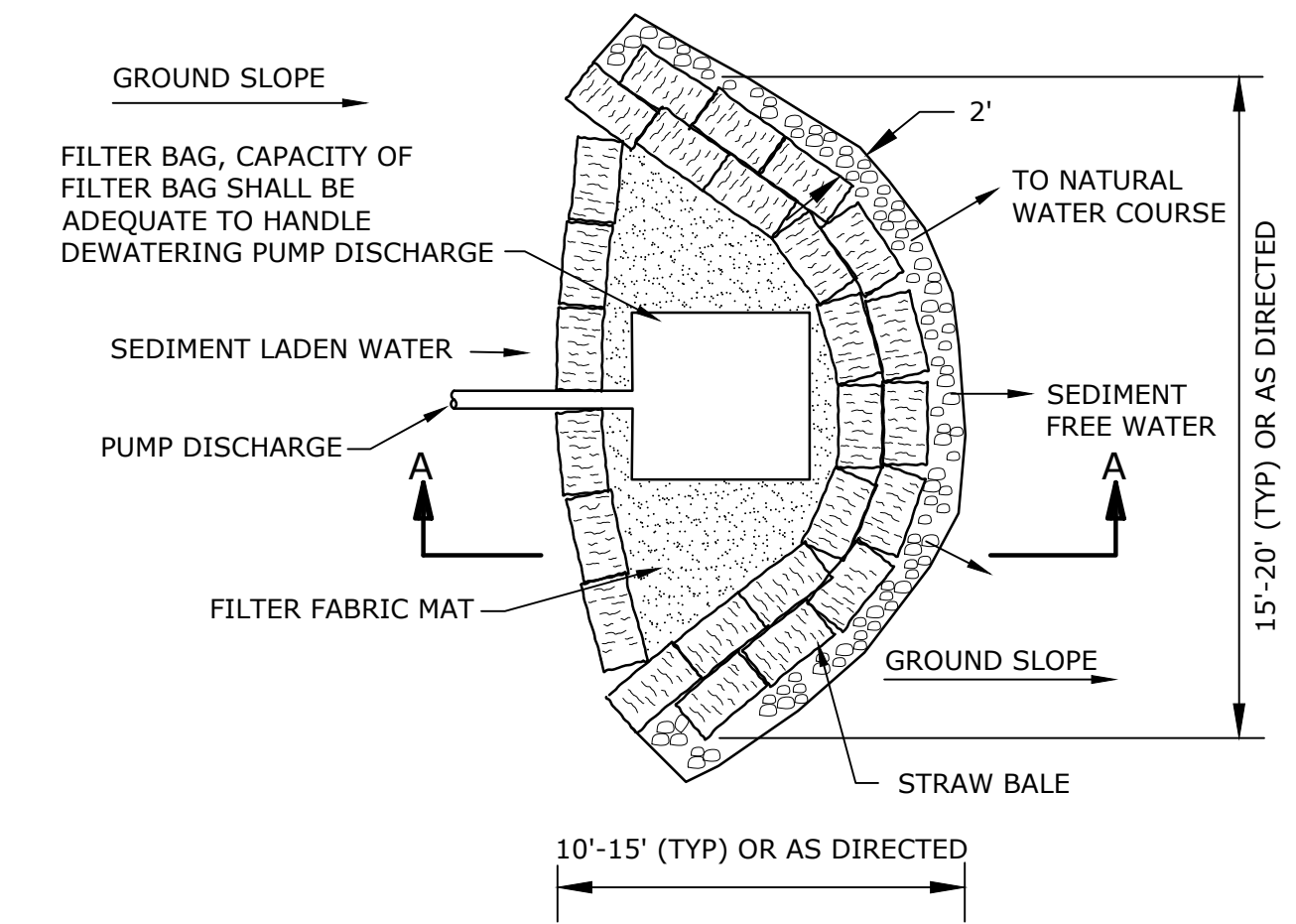
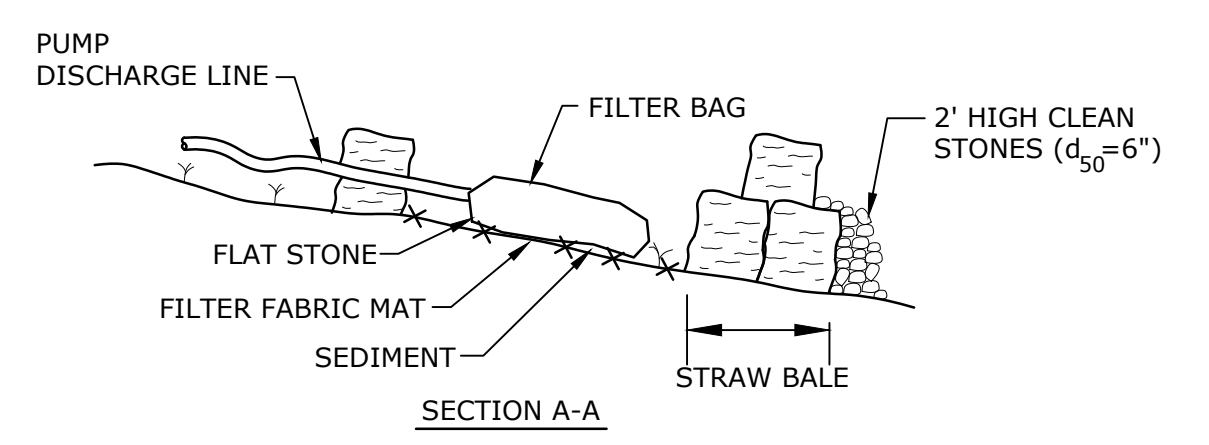
SCALE: AS NOTED

P-503  
SHEET 44 OF 51

Last Saved: 10/8/2024 1:45pm By: Dreilly  
 Plotted On: Oct 09, 2024 1:45pm By: Dreilly  
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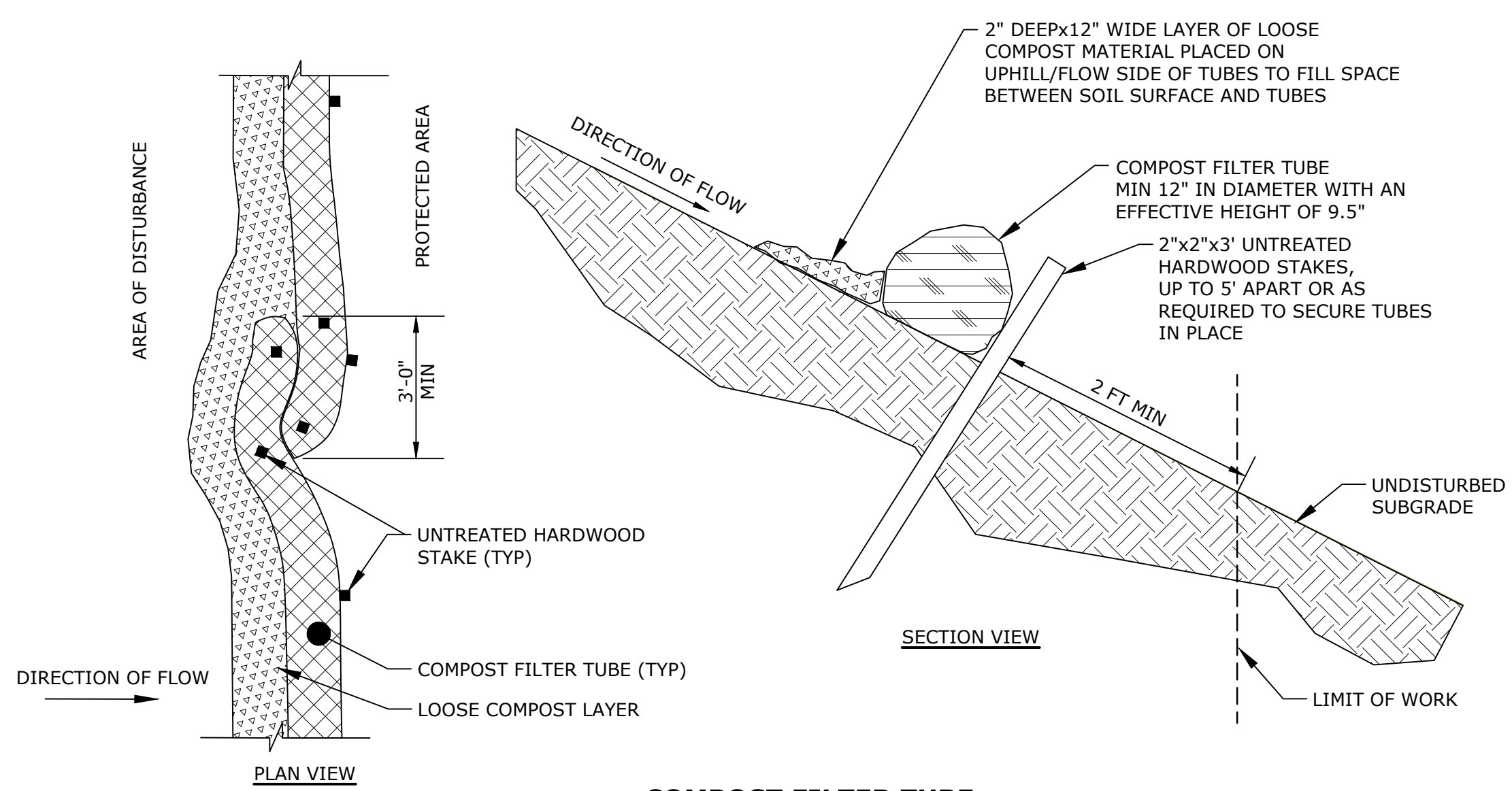


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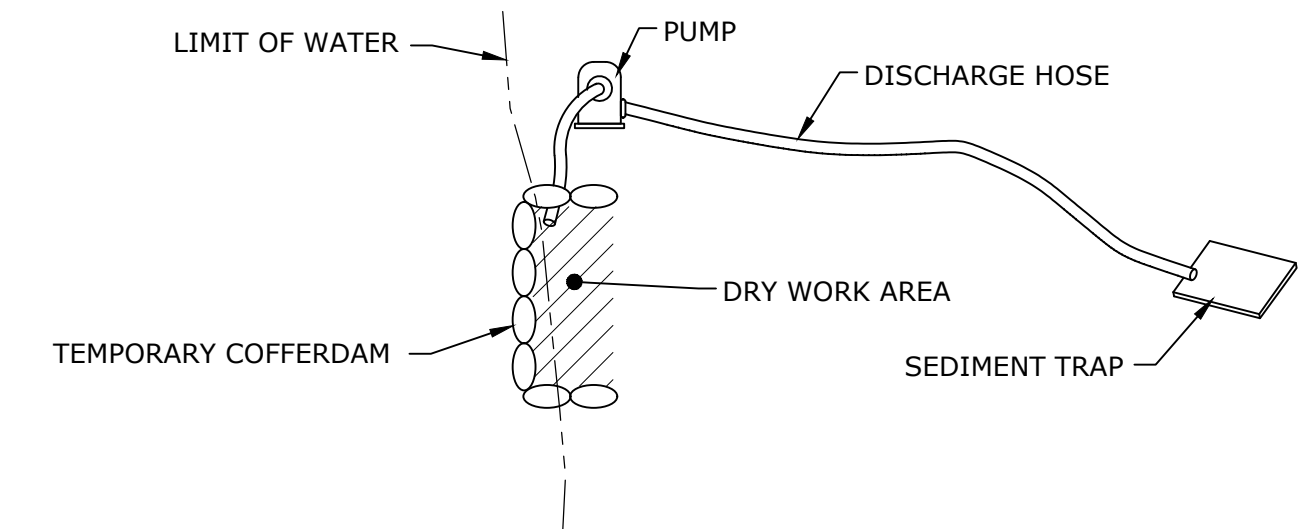


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CONSTRUCTION**

**CENTRAL  
STREET  
REPLACEMENT  
AND CENTRAL  
POND  
RESTORATION**  
Central Street  
to Knight Circle  
Manchester  
-by-the-Sea, MA



**COMPOST FILTER TUBE**  
NO SCALE



- NOTES:**
1. DEWATERING EQUIPMENT SHALL REMAIN WITHIN THE PERMANENTLY IMPACTED AREAS AND SHALL DISCHARGE OUTSIDE OF THE WETLAND BOUNDARY AS SHOWN ON SHEET P-001.
  2. DISCHARGE HOSE SHALL NOT CROSS THE STREAM AT ANY LOCATION.
  3. CONTRACTOR IS RESPONSIBLE FOR SUBMITTING DEWATERING AND CARE OF WATER PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER. MODIFICATIONS TO THE DEWATERING PLAN WILL BE REQUESTED IN WRITING AND APPROVED BY THE ENGINEER.

**SEDIMENT TRAP AND DEWATERING**  
NO SCALE

**VERIFY SCALE**  
BAR IS 1 INCH ON ORIGINAL DRAWING  
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

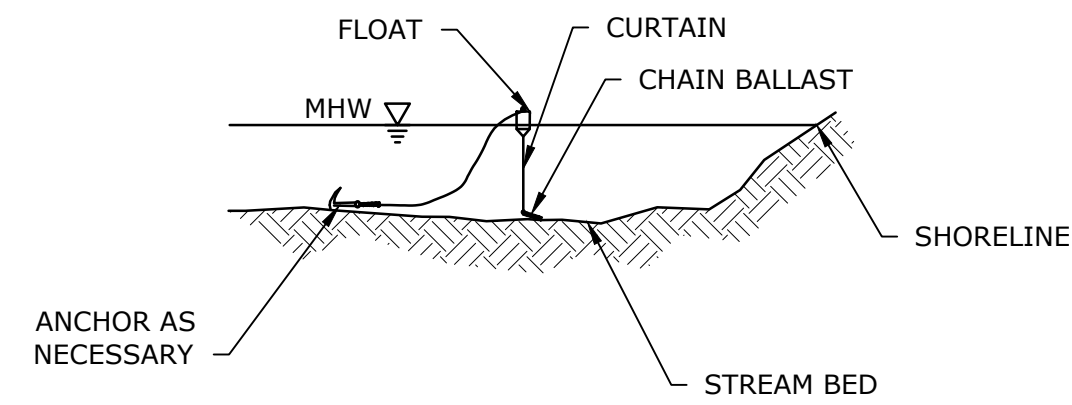
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PROJECT NO: M1467-014  
DATE: JANUARY 12, 2024  
FILE: M1476-014-C-500\_Details.dwg  
DRAWN BY: DWB, TMP  
CHECKED: DLM  
APPROVED: DAM

CONTROL OF WATER  
DETAILS - 1

SCALE: AS NOTED

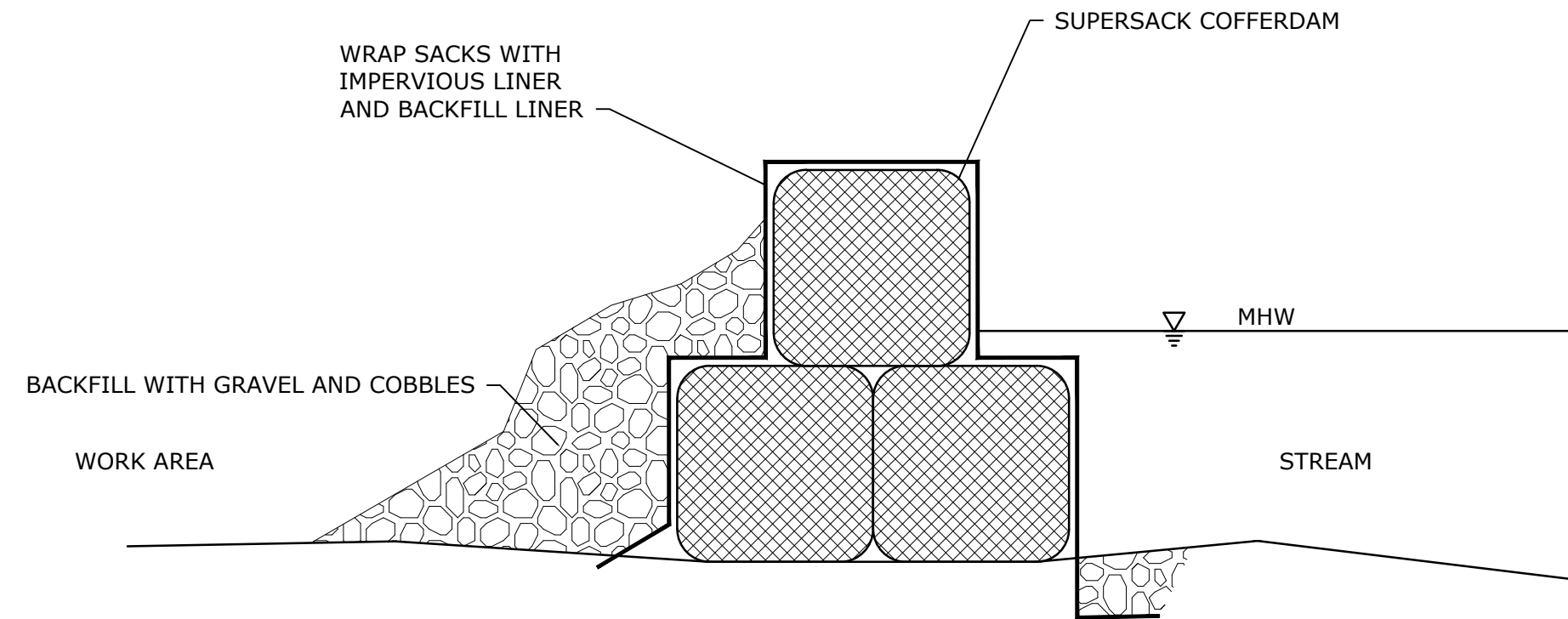
**P-504**  
SHEET 45 OF 51



SECTION VIEW

**TURBIDITY CURTAIN (TYP)**

NO SCALE



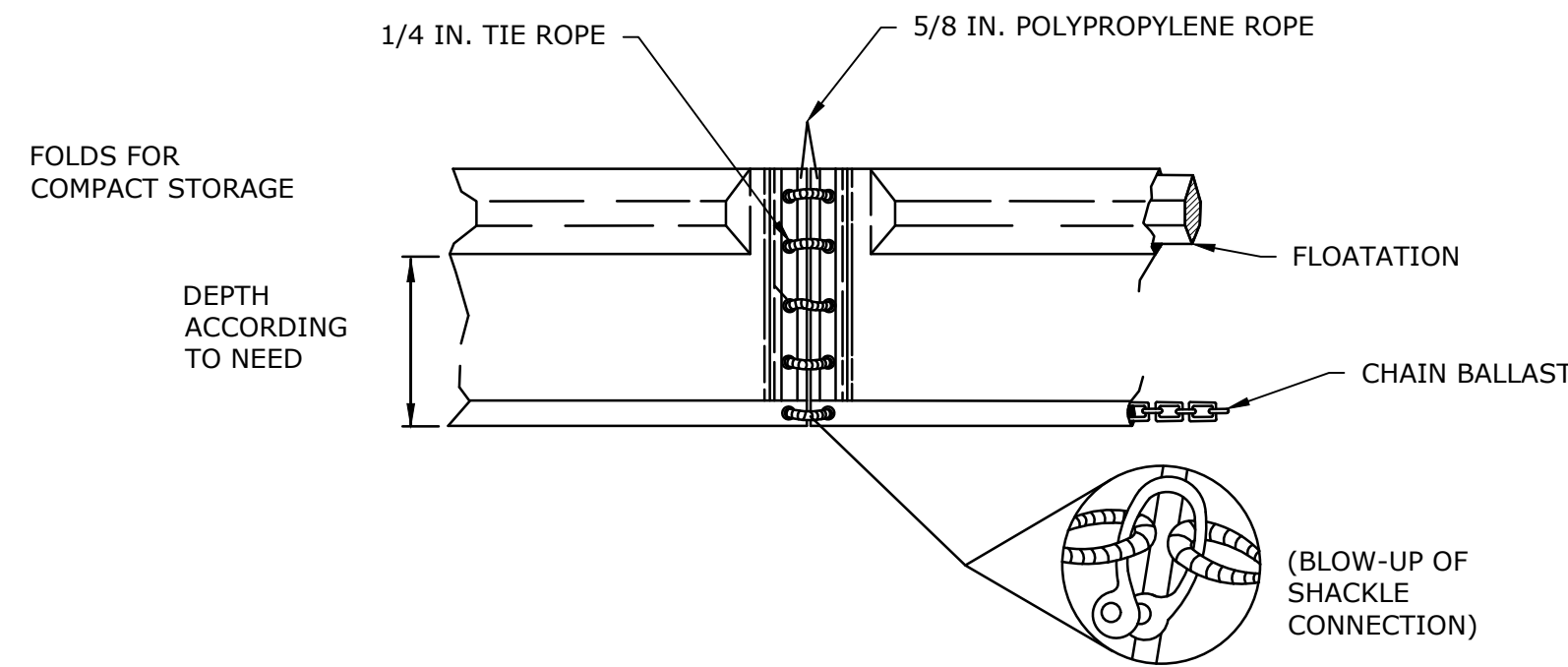
COFFERDAM SECTION

NO SCALE

- COFFERDAMS NOTES:**
1. WRAP "SUPER SACKS" WITH IMPERVIOUS PLASTIC LINER TO PREVENT SEEPAGE.
  2. BACKFILL THE ISOLATED SIDE OF THE COFFERDAM WITH NATIVE ALLUVIUM.
  3. USE "SUPER SACKS" AS A BUTRESS AS REQUIRED.

**COFFERDAMS, PUMPING, DEWATERING, AND STREAM BYPASS NOTES:**

1. THE DETAILS SHOWN ON THIS SHEET ARE AN EXAMPLE OF ACCEPTABLE METHODS TO USE DURING CONSTRUCTION OF THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR DEVELOPING AND SUBMITTING A COFFERDAM PLAN, PUMPING AND DEWATERING PLAN FOR REVIEW AND APPROVAL BY THE CONTRACTING AGENCY OR ENGINEER. THE PLAN SHALL INCLUDE SUFFICIENT DETAIL OF MEANS AND METHODS TO SATISFY THE PROJECT SPECIFICATIONS AND PERMIT REQUIREMENTS. IF APPROVED, OTHER METHODS MAY BE USED SUCH AS UTILIZING INFLATABLE BLADDERS, PLATES, OR BARRIERS OF VARIOUS MATERIALS. COFFERDAMS SHALL INCLUDE PLASTIC LINER OR FINE MESH SILT FENCE TO REDUCE TURBIDITY AND FINES FROM ENTERING THE FREE FLOWING PORTION OF LIVE WATER.
2. THE CONTRACTING AGENCY IS RESPONSIBLE FOR MEASURING TURBIDITY HOWEVER THE CONTRACTOR SHALL ADHERE TO THE SPECIAL PROCEDURES REGARDING IN-STREAM WORK, TURBIDITY, AND DEWATERING IN THE DESIGN DRAWINGS.
3. CONSERVATION MEASURES ARE SUMMARIZED IN THE PLANS AND SHALL BE STRICTLY ADHERED TO.
4. THE CONTRACTOR SHALL NOTIFY THE OWNER AND CONTRACTING OFFICER AT LEAST 5 DAYS BEFORE EACH COFFERDAM INSTALLATION DATE. ANTICIPATED COFFERDAM LOCATIONS ARE SHOWN IN THE PLANS.
5. FILL MATERIAL FOR BULK BAGS FOR "SUPER SACKS", IF USED, SHALL BE CLEAN, WASHED, AND ROUNDED MATERIAL MEETING STANDARD SPECIFICATIONS FOR DRAIN ROCK, STREAMBED AGGREGATES, STREAMBED SEDIMENTS, OR STREAMBED COBBLES. MATERIAL USED TO FILL BULK BAGS SHALL BE DISPOSED OF IN ACCORDANCE WITH THE PERMITS. IF PERMITS ALLOW, MATERIAL MAY BE DISPOSED OF IN UPLAND AREAS AS DIRECTED BY THE CONTRACTING OFFICER.
6. DEWATERING PUMP DISCHARGE FROM WITHIN COFFERDAM WORK AREAS SHALL BE RELEASED INTO SEDIMENT TRAPS AWAY FROM WETLANDS AND CONSTRUCTION ACTIVITIES. DISCHARGE SHALL BE COMPLETELY INFILTRATED PRIOR TO REACHING WETLANDS OR SURFACE WATERS UNLESS APPROVED BY THE CONTRACTING OFFICER. ALL RETURN FLOWS MUST MEET PERMIT REQUIREMENTS FOR TURBIDITY.
7. EXCAVATIONS ASSOCIATED WITH CHANNEL, FLOODPLAIN, AND WOOD HABITAT STRUCTURES SHALL BE DEWATERED.
8. WATER SHALL BE PUMPED AND DISCHARGED AWAY FROM THE WORK AREAS TO SEDIMENT TRAPS.
9. DEWATERING PUMP DISCHARGE FROM WITHIN COFFERDAM WORK AREAS SHALL BE RELEASED INTO SEDIMENT TRAPS AWAY FROM WETLANDS AND CONSTRUCTION ACTIVITIES. DISCHARGE SHALL BE COMPLETELY INFILTRATED PRIOR TO REACHING WETLANDS OR SURFACE WATERS UNLESS APPROVED BY THE CONTRACTING OFFICER. ALL RETURN FLOWS MUST MEET PERMIT REQUIREMENTS FOR TURBIDITY.
10. ALL PUMP INTAKES SHALL BE SCREENED FOR FISH PROTECTION AS REQUIRED BY NOAA.
11. ALL EARTHWORK ACTIVITIES AND WOOD HABITAT STRUCTURE CONSTRUCTION WITHIN THE ORDINARY HIGH WATER CHANNEL SHALL CONFORM TO THE WATER QUALITY STANDARDS ESTABLISHED BY REGULATORY AGENCY PERMITS FOR THIS PROJECT.

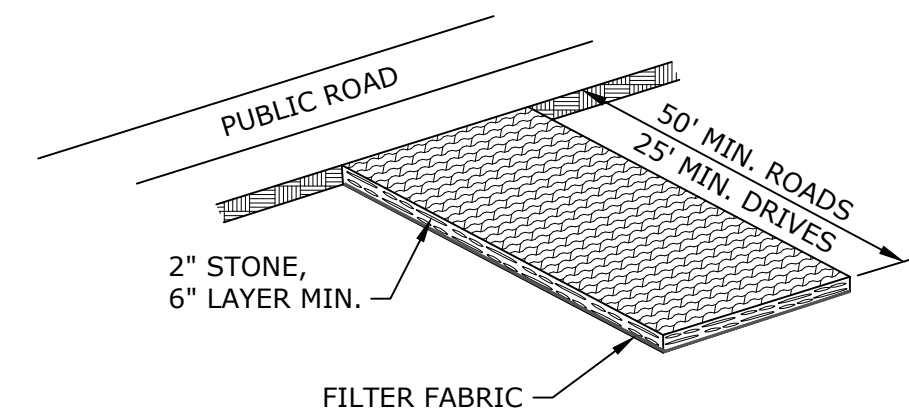


PROFILE VIEW

**TURBIDITY CURTAIN (TYP)**

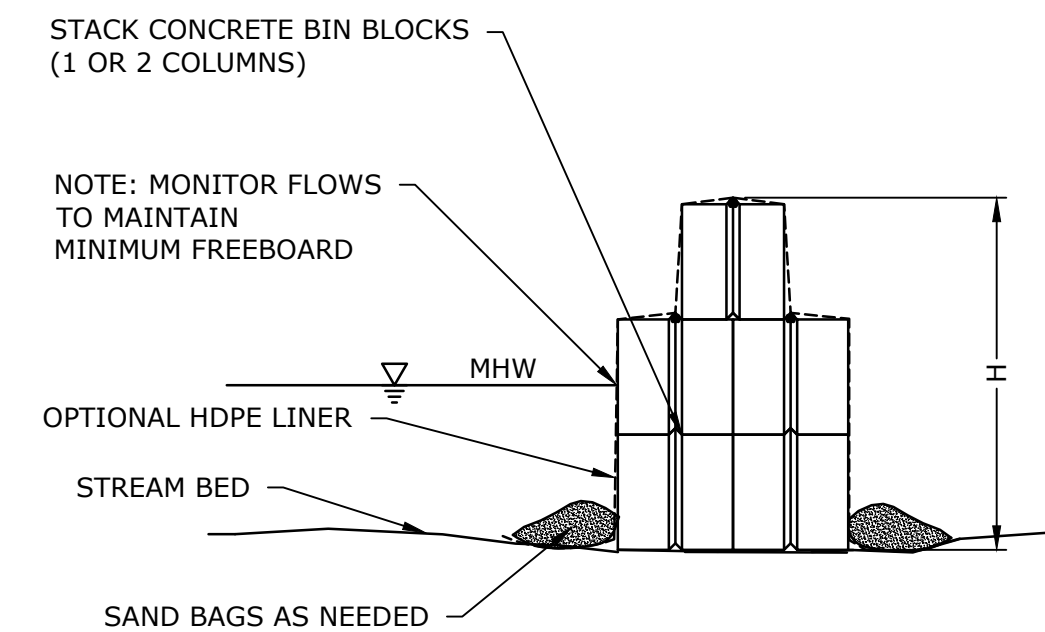
NO SCALE

NOTE: SILTMASTER II PERMEABLE GEOTEXTILE DREDGE BARRIER NON-WOVEN DBNW BY PARKER SYSTEMS OR EQUIVALENT



CONSTRUCTION ENTRANCE

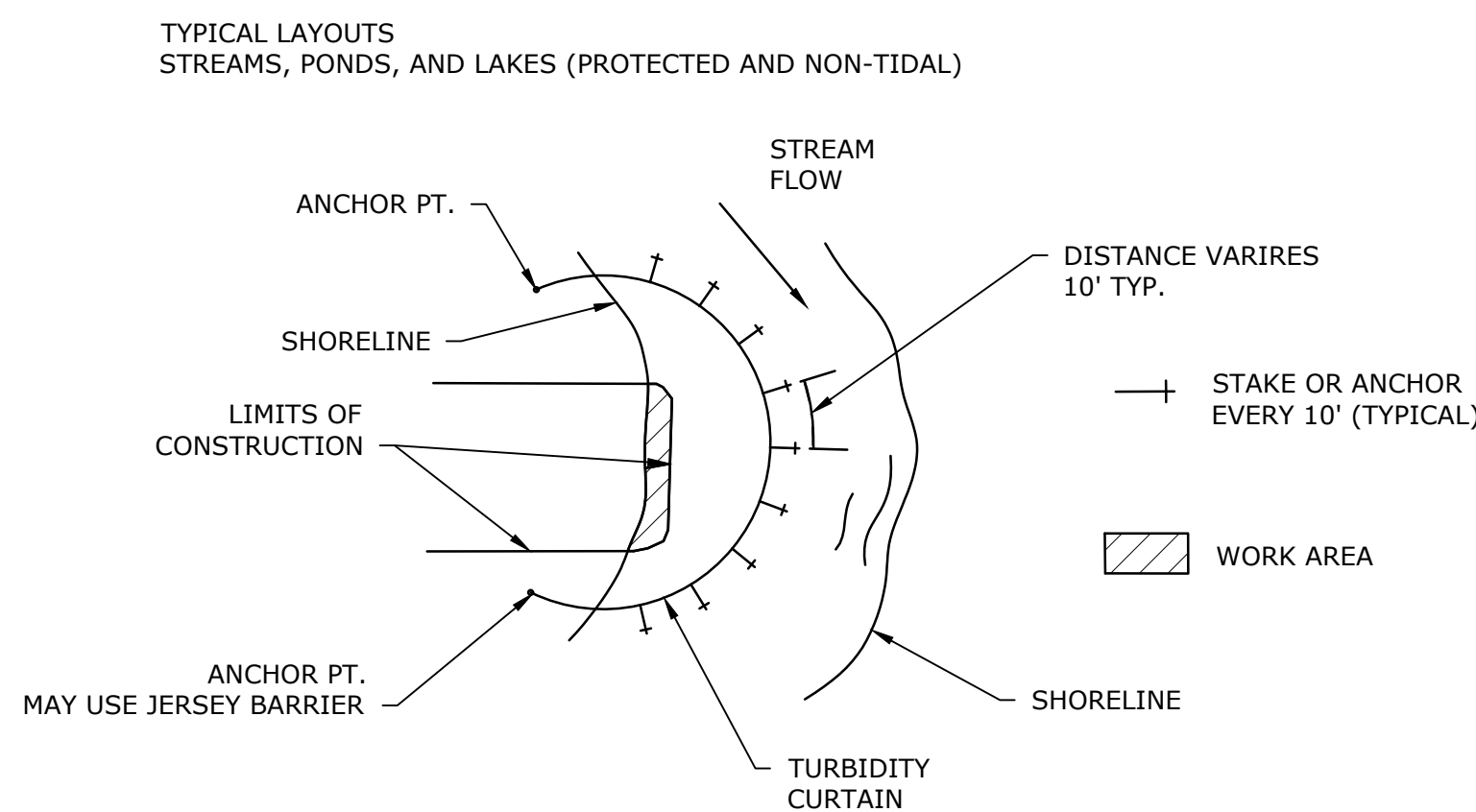
NO SCALE



CONCRETE BARRIER COFFERDAM (TYP)

NO SCALE

NOTE: SINGLE COLUMN - HMAX = 4.5'  
DOUBLE COLUMN - HMAX = 7.0'  
MIN FREEBOARD = 0.25 H  
MAX DEPTH = 6.0'

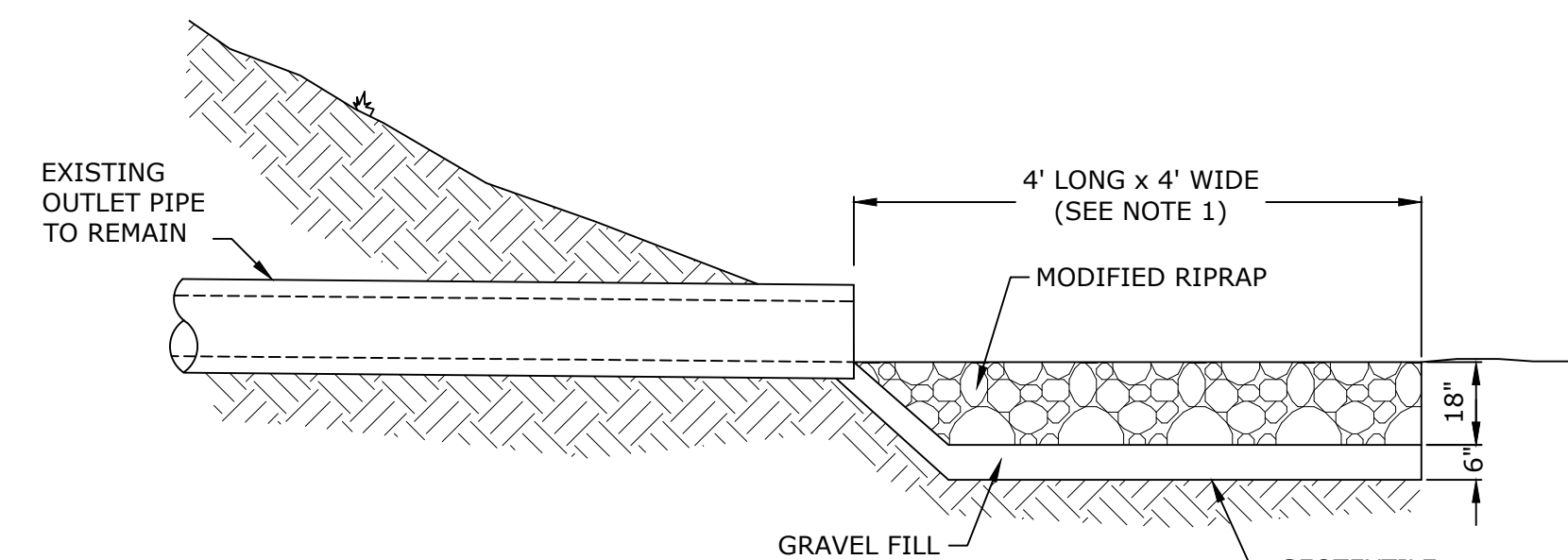


PLAN VIEW

**TURBIDITY CURTAIN (TYP)**

NO SCALE

- NOTES:**
1. CONTRACTOR IS RESPONSIBLE FOR SUBMITTING DEWATERING AND CARE OF WATER PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER. MODIFICATIONS TO THE DEWATERING PLAN WILL BE REQUESTED IN WRITING AND APPROVED BY THE ENGINEER. SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

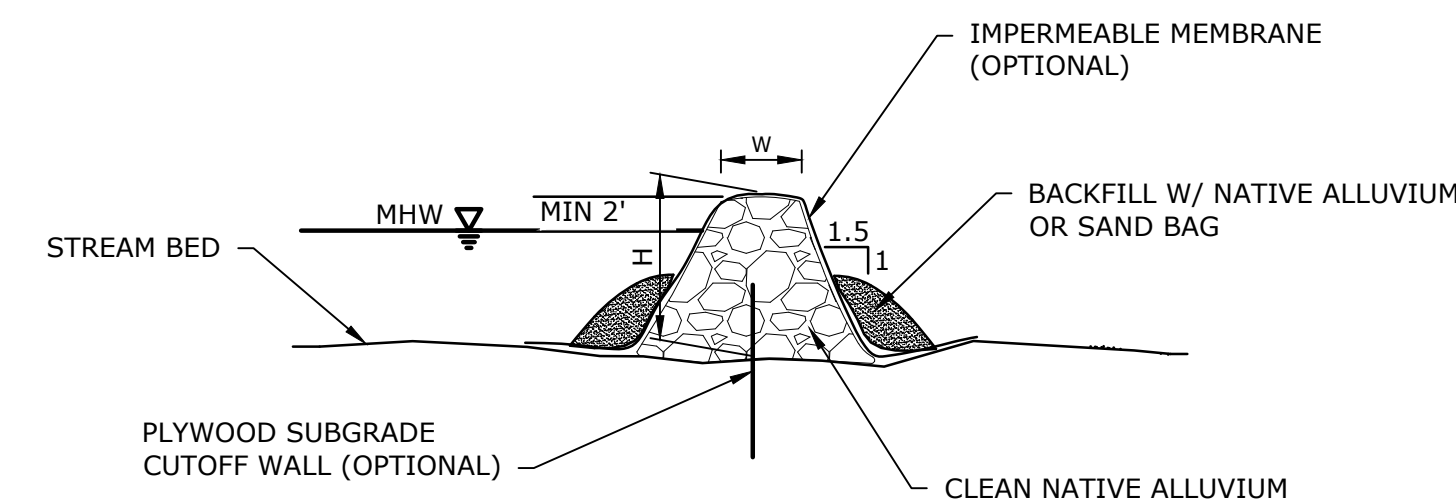


**NOTES:**

1. PAD DIMENSIONS AT EXISTING 18" x 48" CULVERT SHALL BE 6' LONG x 6' WIDE.

**RIPRAP APRON AT STORMWATER OUTFALLS**

NO SCALE



**NOTES:**

1. CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A COFFERDAM PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER. MODIFICATIONS TO THE DEWATERING PLAN WILL BE REQUESTED IN WRITING AND APPROVED BY THE ENGINEER.

**ALLUVIAL COFFER (TYP)**

NO SCALE

NOTE: MIN FREEBOARD = 0.25 H  
H MAX = 10'  
W = 0.5 x H  
MAX DEPTH = 7'

**100% DESIGN  
NOT FOR  
CONSTRUCTION**

**CENTRAL  
STREET  
REPLACEMENT  
AND CENTRAL  
POND  
RESTORATION**

Central Street  
to Knight Circle  
Manchester  
-by-the-Sea, MA

**VERIFY SCALE**

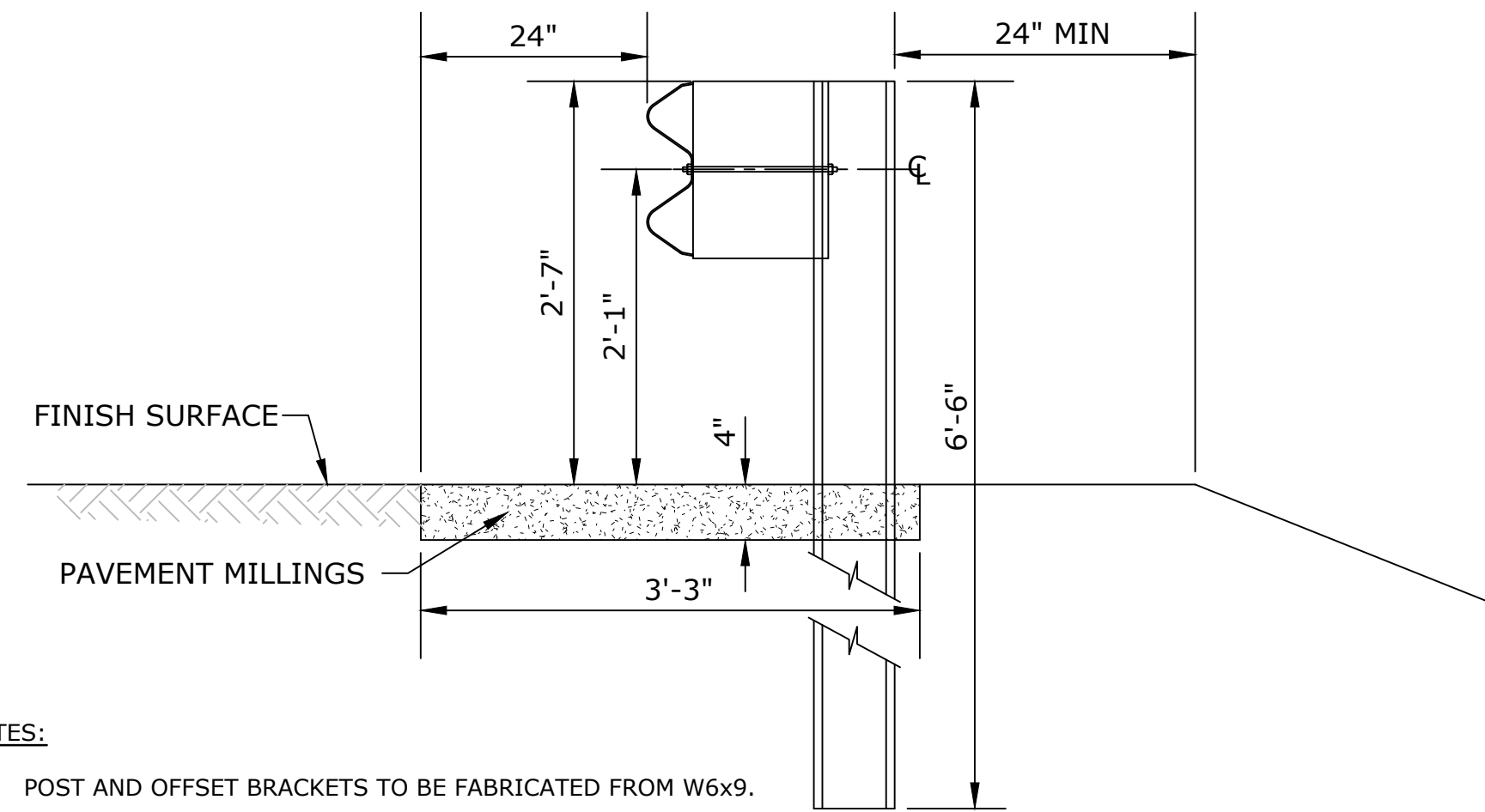
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DATE:	JANUARY 12, 2024	
FILE:	M1476-014-C-500_Details.dwg	
DRAWN BY:	DWB, TMP	
CHECKED:	DLM	
APPROVED:	DAM	

CONTROL OF WATER  
DETAILS - 2

SCALE: AS NOTED

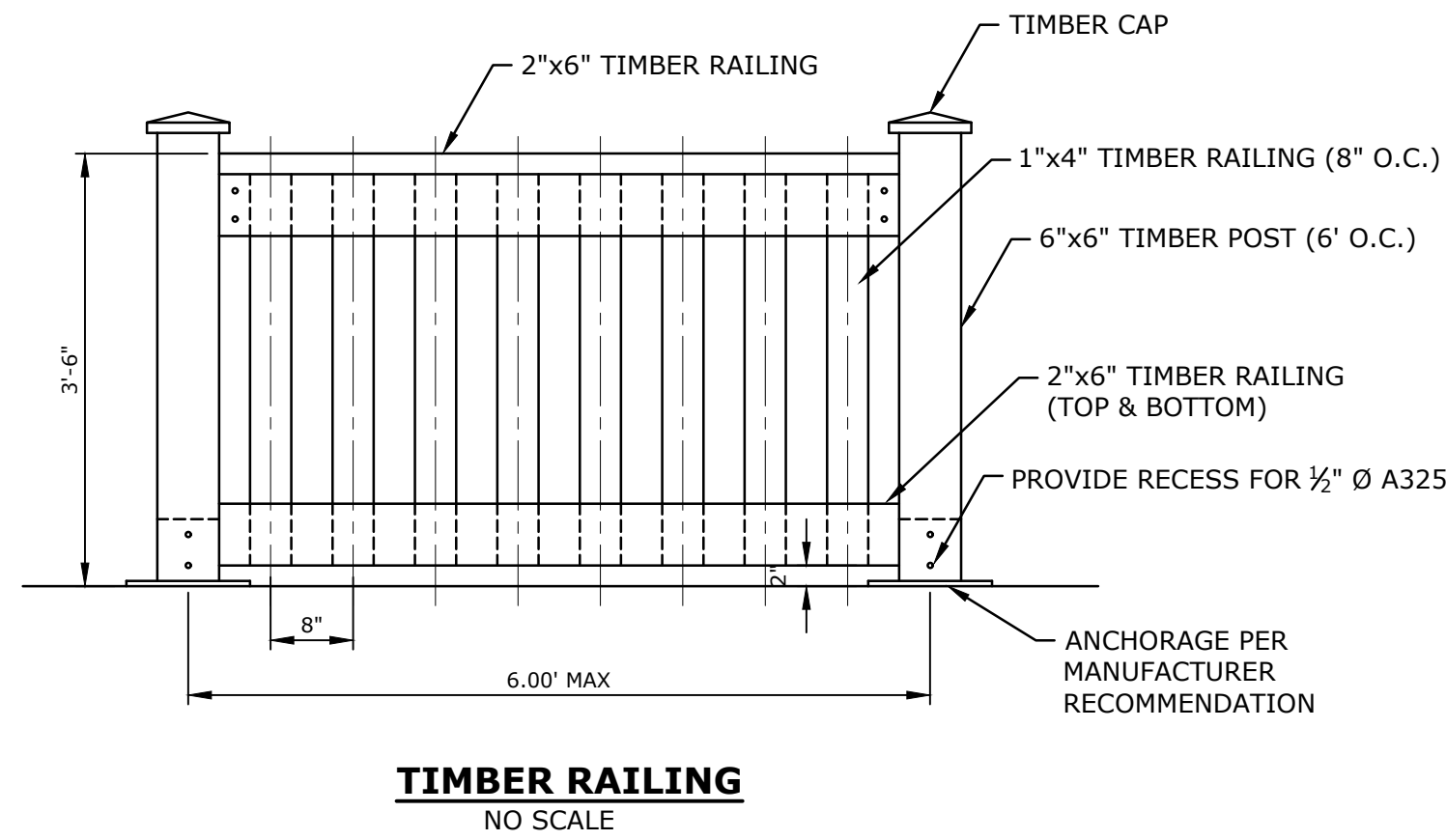
P-505  
SHEET 46 OF 51



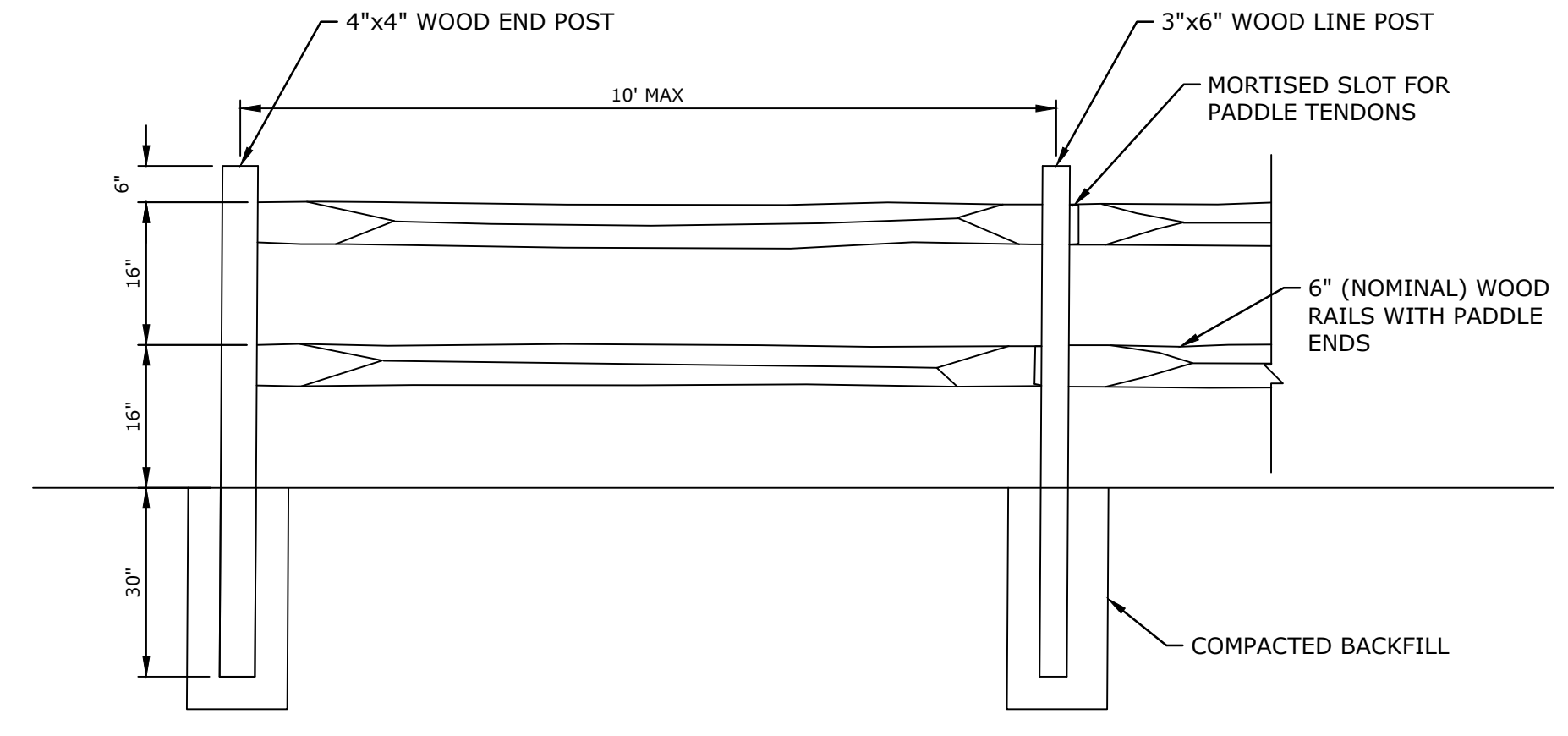
**NOTES:**

1. POST AND OFFSET BRACKETS TO BE FABRICATED FROM W6x9.
2. POST AND BRACKET HOLES TO BE 3/4" DIAMETER.
3. BACK-UP PLATE TO BE USED ON POSTS WHERE NO SPLICE OCCURS.
4. FABRICATION DIMENSIONS ALSO APPLY TO "C" POSTS AND BRACKETS.
5. MAXIMUM POST SPACING IS 6'-3" CENTER TO CENTER.
6. WHEN THE MAXIMUM POST SPACING IS EXCEEDED, NEST UP GUARDRAIL WITH 25' RAIL SEGMENT. MAXIMUM SPIN IS 12'-6" CENTER TO CENTER.
7. PROVIDE A TL2 RATED TERMINAL END SECTION AT EACH W RAIL TERMINUS.

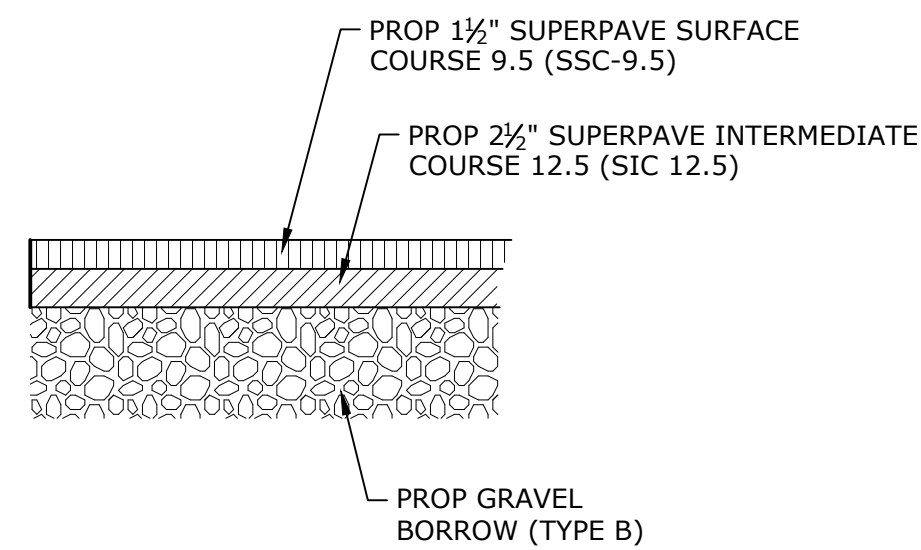
**STEEL BEAM HIGHWAY GUARD W/RAIL**  
NO SCALE



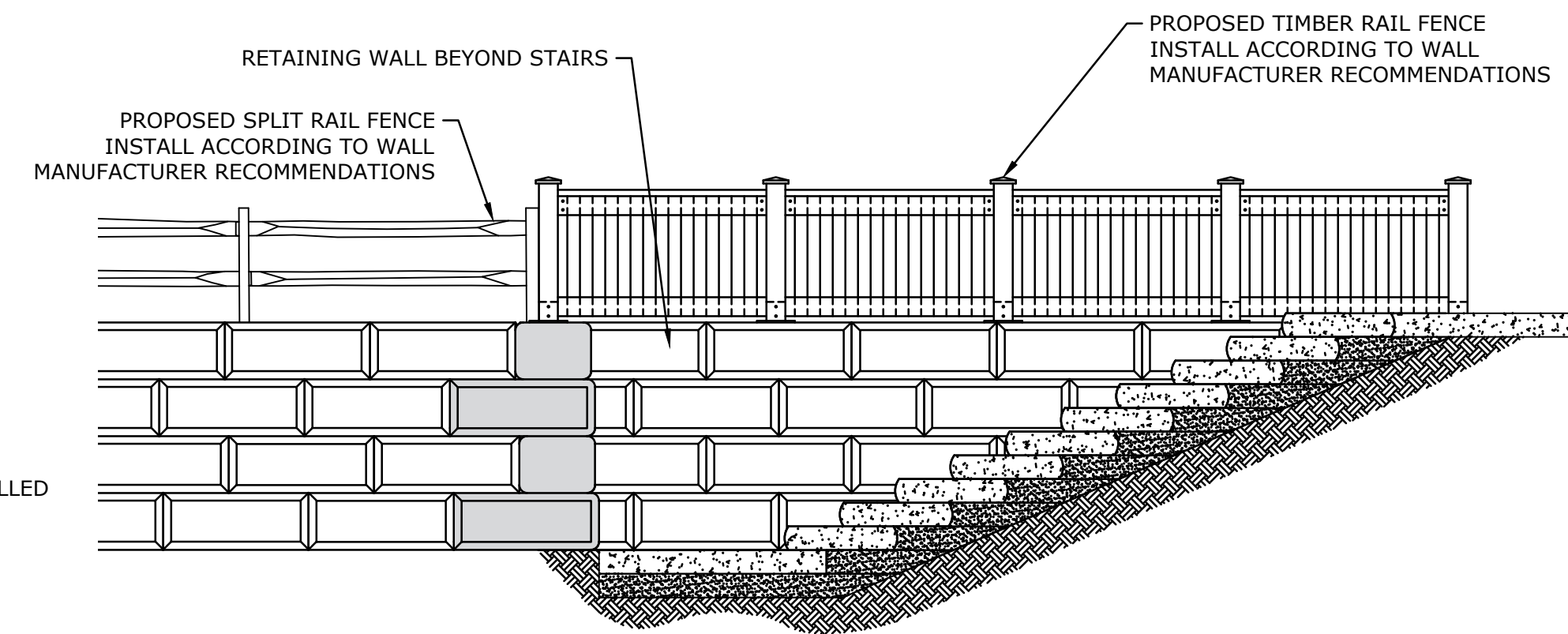
**TIMBER RAILING**  
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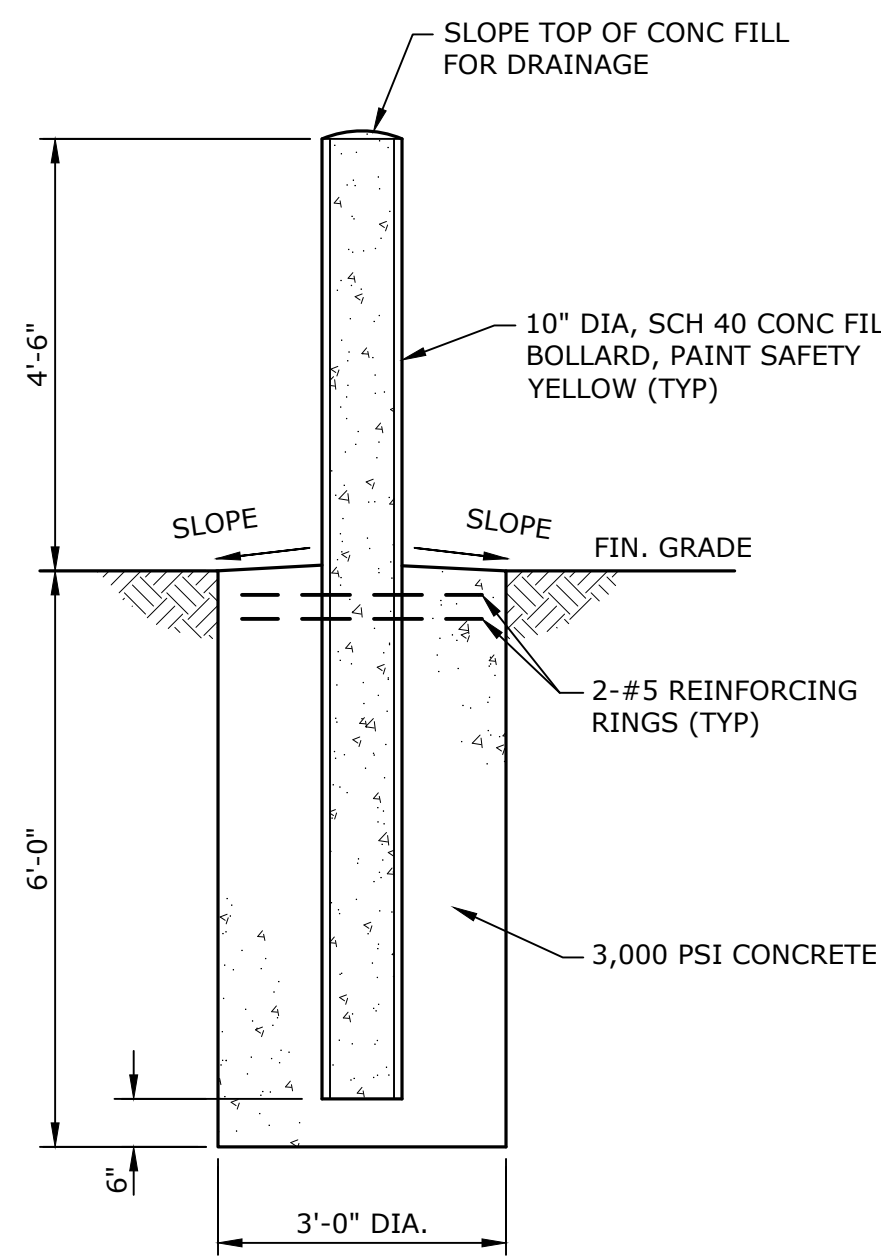
**SPLIT RAIL FENCE**  
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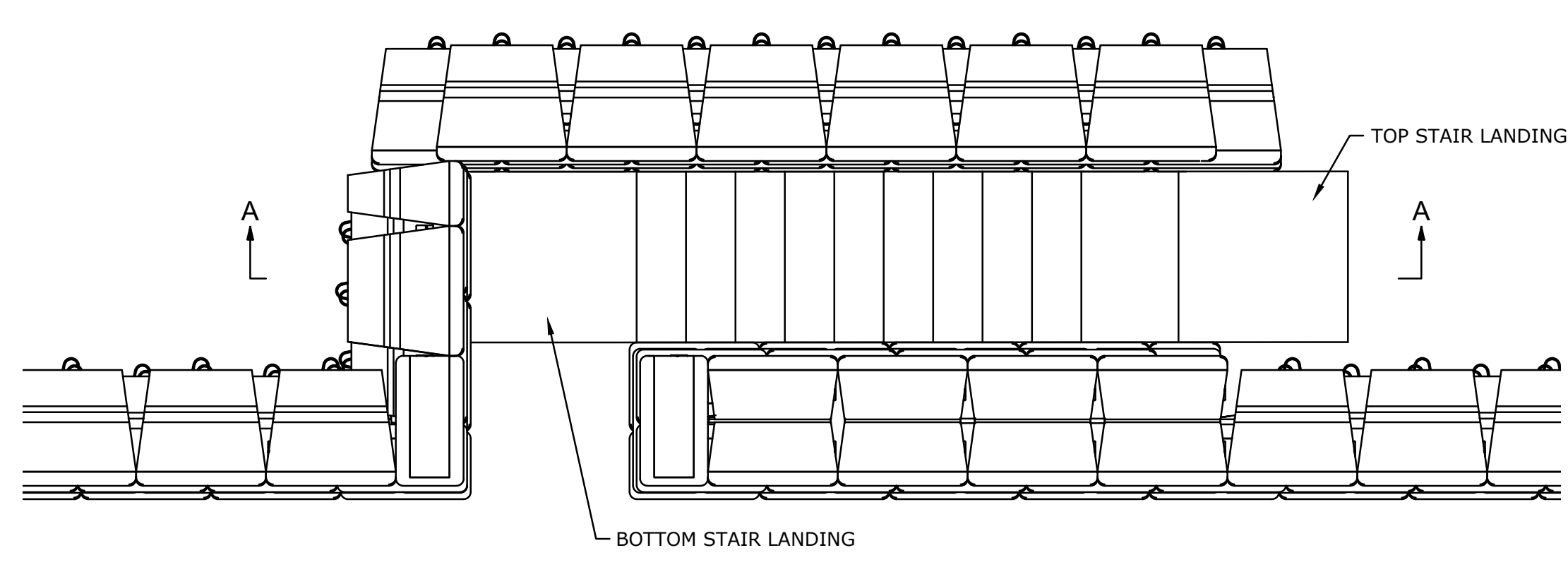
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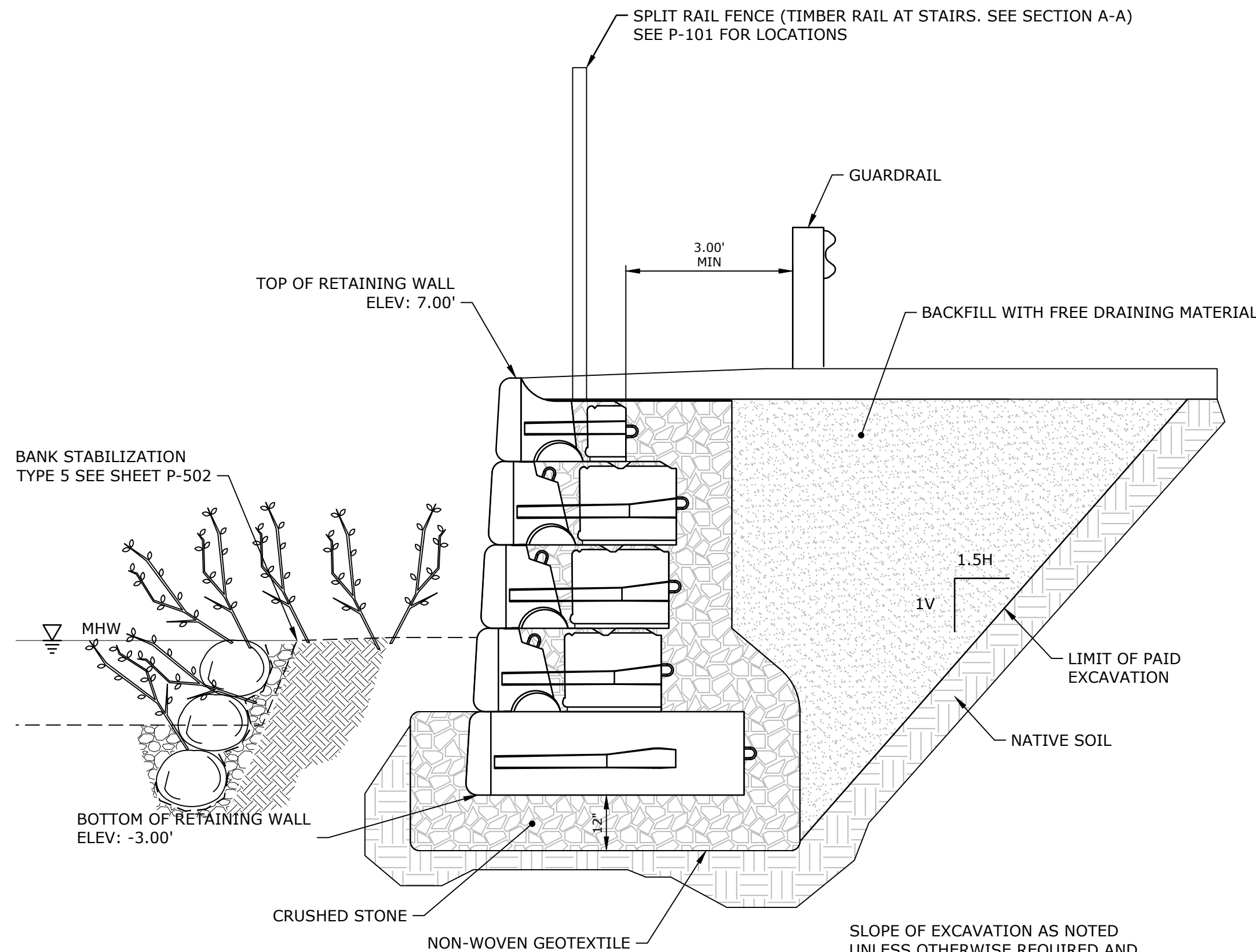
**SECTION A-A**



**10" DIAMETER STEEL BOLLARD**  
NO SCALE



**STAIR ACCESS**  
NO SCALE



**GRAVITY BLOCK WALL**  
NO SCALE

SLOPE OF EXCAVATION AS NOTED UNLESS OTHERWISE REQUIRED AND APPROVED BY ENGINEER.

**100% DESIGN  
NOT FOR  
CONSTRUCTION**

**CENTRAL  
STREET  
REPLACEMENT  
AND CENTRAL  
POND  
RESTORATION**  
Central Street  
to Knight Circle  
Manchester  
-by-the-Sea, MA

**VERIFY SCALE**  
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DRAWN BY:	DWB, TMP	
CHECKED:	DLM	
APPROVED:	DAM	

**CONSTRUCTION DETAILS**

SCALE: AS NOTED

**P-506**  
SHEET 47 OF 51

### BANK JAM A LOG QUANTITY SCHEDULE

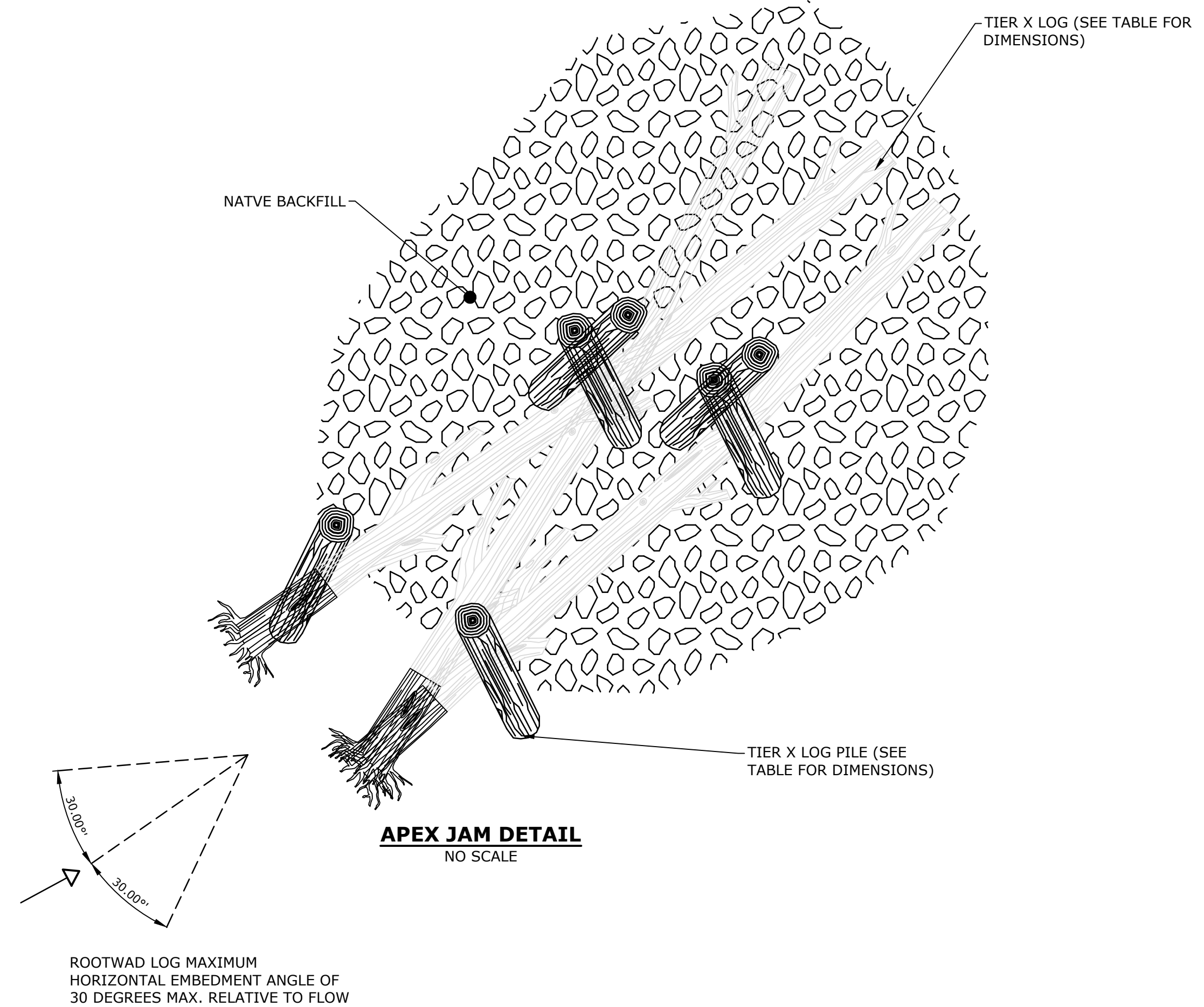
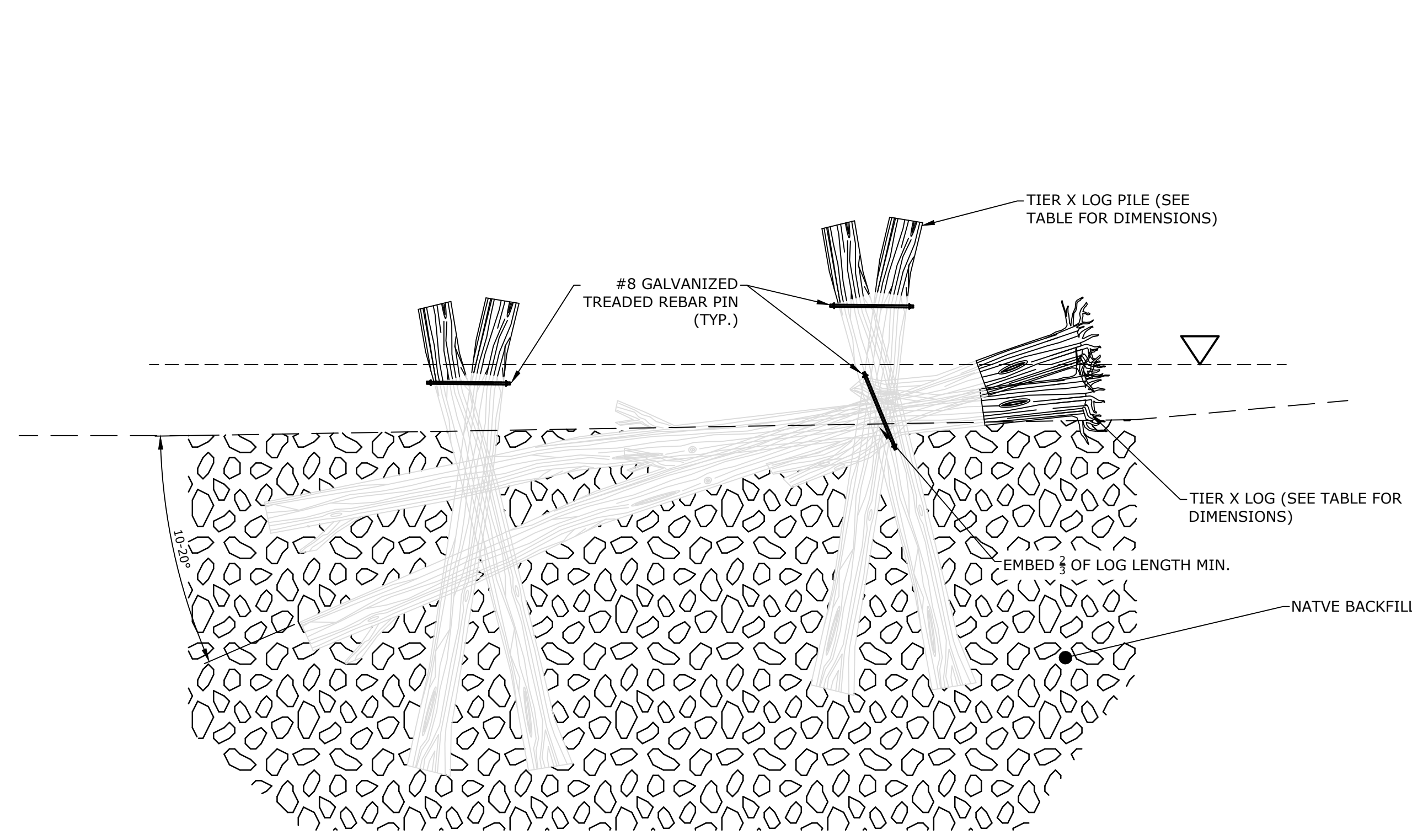
STRUCTURE	LOCATION				TYPE 1 **	TYPE 2 *	TYPE 3 **	TYPE 4 *	RACKING (EA) *	SLASH (CY) *
	ID	RIVER	STA	BANK						
ELJ-ROOTWAD STRUCTURE	SAWMILL BK	NA	R	0.0	6	6	12	0	24	10
APEX JAM					0	0	6	12	8	2

\* LOGS WITHOUT ROOTWADS

\*\* LOGS WITH ROOTWAD

### BANK JAM NOTES:

- INSTALL STRUCTURES AT LOCATIONS IDENTIFIED ON PLAN SHEETS.
- BASE ELEVATION (BOTTOM OF FIRST PLACED LOG) OF EACH STRUCTURE (SPECIFIED IN THE STRUCTURE SCHEDULE) SHALL BE CHECKED/VERIFIED BY THE TOWN OR ENGINEER IN THE FIELD - CHECK WITH TOWN OR ENGINEER BEFORE BEGINNING WORK FOR EACH STRUCTURE.
- SEE "STRUCTURE SEQUENCING" DETAIL ON SHEET P-103 FOR NUMBER OF STRUCTURES, LOCATIONS, LOGS, AND ASSOCIATED MATERIAL QUANTITIES.
- EXCAVATE A 2' DEEP POOL ADJACENT TO THE STRUCTURE AND EXTEND POOL OUT PAST THE END OF THE ROOTWADS EXTENDING INTO THE CHANNEL AT THE DIRECTION OF THE TOWN OR ENGINEER.
- ALL CUT ENDS OF LOGS THAT WILL BE EXPOSED UPON COMPLETION OF STRUCTURE SHALL BE MARRED PRIOR TO INSTALLATION. THE CONTRACTOR SHALL USE AN EXCAVATOR, OR OTHER HEAVY EQUIPMENT TO TEAR APART WOOD FIBERS AT THE CUT END OF THE LOG TO CREATE THE APPEARANCE OF A LOG THAT HAS NATURALLY BROKEN APART.
- TYPE 4 LOG SHALL BE HANDLED A MINIMUM NUMBER OF TIMES TO REDUCE LOSS OF LIMBS, FOLIAGE, ETC.. IF MORE THAN 15% OF TREE BRANCHES ARE REMOVED OR DAMAGED DURING HANDLING THE CONTRACTOR SHALL REPLACE TYPE 4 LOG AT NO COST TO THE CONTRACTING AGENCY.
- RACKING AND SLASH MATERIAL SHALL BE INCORPORATED INTO THE STRUCTURE BY WEAVING IT IN BETWEEN PLACED LOGS, FILLING VOIDS, ETC. AT EACH STEP THROUGHOUT CONSTRUCTION AS DIRECTED BY THE ENGINEER.
- BACKFILL USING NATIVE EXCAVATED MATERIAL UNLESS NATIVE MATERIAL IS UNSUITABLE FOR BACKFILL. PLACE BACKFILL IN 1-FOOT MAXIMUM LIFTS. COMPACT EACH LIFT USING MECHANICAL EQUIPMENT SUCH AS AN EXCAVATOR BUCKET OR EQUIPMENT TRACKING MAKING CERTAIN TO NOT DAMAGE OR CHANGE THE ELEVATION OF THE STRUCTURE MATERIAL DURING COMPACTION.
- LOG PLACEMENT CAN BE ADJUSTED IN THE FIELD AT THE DIRECTION OF THE TOWN OR ENGINEER.
- LIVE STAKES SHALL BE INSTALLED TO ENSURE A MINIMUM OF 1-FT SUBMERGENCE IN GROUND WATER. SEE LIVE STAKE QUANTITIES ON SHEET P-503 REVEGETATION NOTES.



### NOTES:

- A 3 ROOTWAD LOG, 6 PIN LOG STRUCTURE IS SHOWN TO ILLUSTRATE EMBEDMENT SPECIFICATIONS. THE SAME EMBEDMENT SPECIFICATIONS SHALL BE USED FOR A 5 ROOTWAD LOG, 8 PIN LOG STRUCTURE.
- ROOTWAD LOG DIAMETER 16" MINIMUM.
- TOTAL LENGTH FOR ROOTWAD LOGS SHALL BE 20' MINIMUM, INCLUDING ROOT WAD.
- ROOTWADS SHALL BE ORIENTED FACING UPSTREAM.
- ROOTWAD LOGS SHALL BE BURIED A MINIMUM OF 2/3 OF LENGTH WITH AN AVERAGE BURIAL DEPTH OF 4', VERTICALLY ANGLED 10 DEGREES TO 20 DEGREES RELATIVE TO THE CHANNEL SURFACE, AND HORIZONTALLY ANGLED NO MORE THAN 30 DEGREES RELATIVE TO THE DIRECTION OF FLOW.
- PIN LOGS SHALL BE A MINIMUM 18" IN LENGTH AND MAY VARY FROM 12" TO 14" IN DIAMETER. PIN LOGS SHALL BE PLACED AT A VERTICAL ANGLE NO GREATER THAN 55 DEGREES FROM VERTICAL.
- PIN LOGS SHALL BE DRIVEN AS DEEP AS POSSIBLE AND MEET A MINIMUM EMBEDMENT LENGTH OF AT LEAST 12' OF THE PIN LOG BURIED BELOW THE SURFACE.
- BACKFILL LARGE WOOD WITH NATIVE CHANNEL MATERIAL, LEAVING ROOTWAD EXPOSED.
- IF IT IS INFEASIBLE FOR ALL LOGS IN A STRUCTURE TO MEET THE MINIMUM EMBEDMENT SPECIFICATIONS, ADDITIONAL PIN LOGS SHALL BE FIELD-FIT TO ENSURE STRUCTURAL INTEGRITY IS MAINTAINED.

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POND  
RESTORATION**  
Central Street  
to Knight Circle  
Manchester  
-by-the-Sea, MA

VERIFY SCALE  
BAR IS 1 INCH ON ORIGINAL DRAWING  
0 1 INCH  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

MARK	DATE	DESCRIPTION
PROJECT NO:	M1467-014	
DATE:	JANUARY 12, 2024	
FILE:	M1476-014-C-500_Details.dwg	
DRAWN BY:	DWB, TMP	
CHECKED:	DLM	
APPROVED:	DAM	

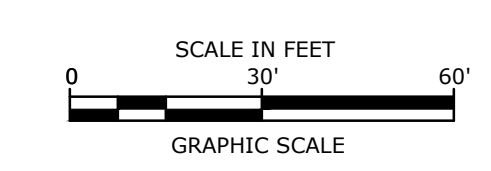
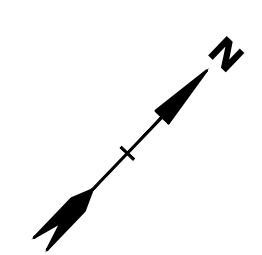
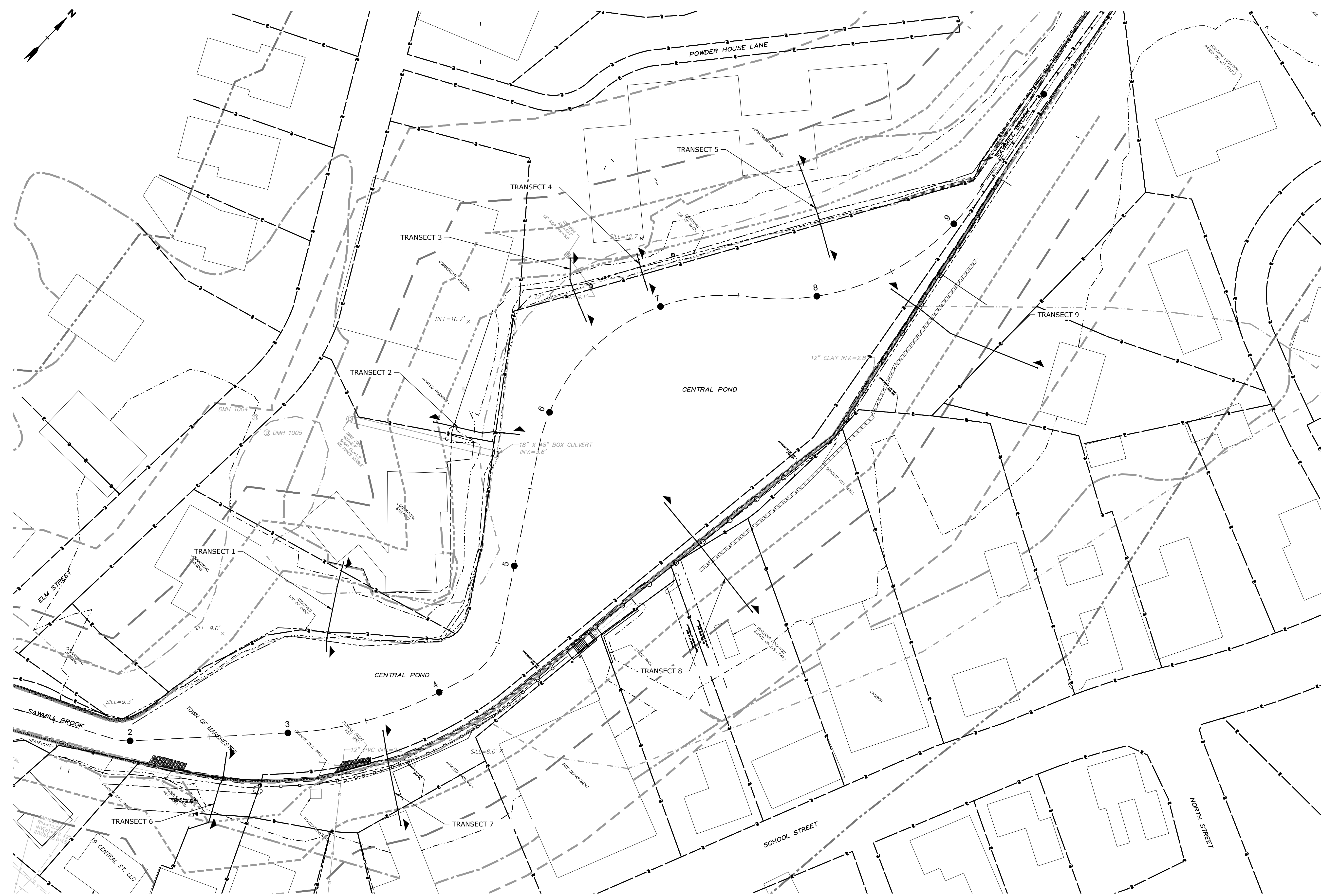
**BANK JAM SCHEDULE  
AND NOTES**

SCALE: AS NOTED

**P-507**  
SHEET 48 OF 51



Last Saved: 10/8/2024  
 Plotted On: Oct 09, 2024 - 1:49pm By: D'Felty  
 Page & Bond, Inc. 21 W 1476 Manchester MA Hydro Study 014 Sawmill Central PondPermit Task 4 - Final DesignAutoCAD View (M1476-012\_Design.dwg)



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 ORIGINAL DRAWING  
 0 1 INCH  
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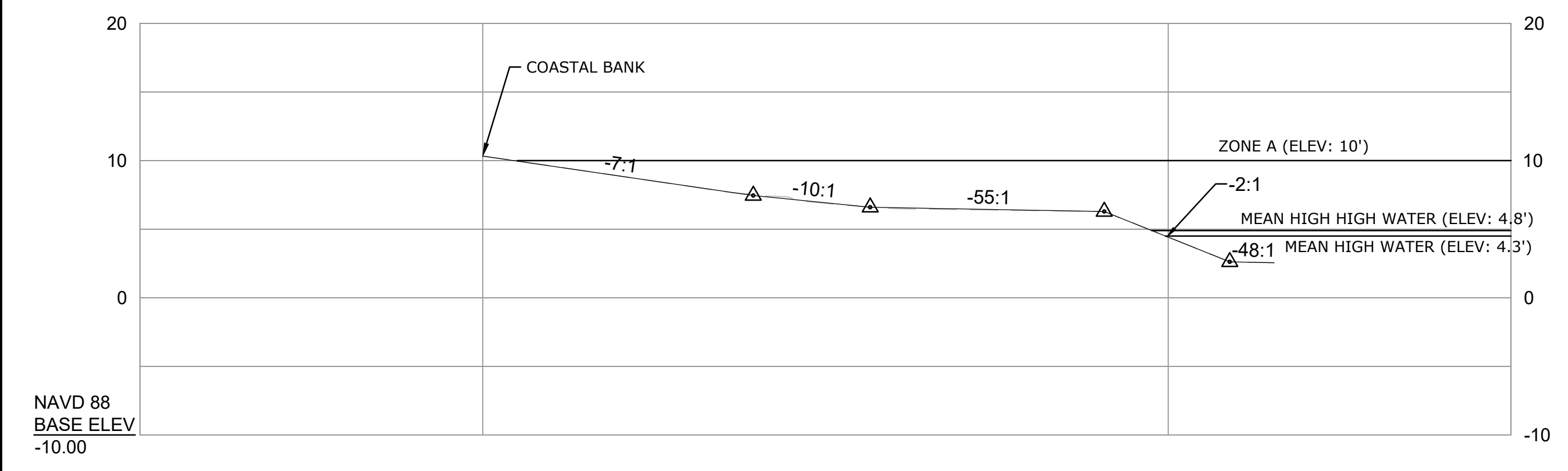
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DATE:	JANUARY 12, 2024	
FILE:	M1476-012_Design.dwg	
DRAWN BY:	DWB	
CHECKED:	DLM	
APPROVED:	DAM	

TRANSECT PLAN

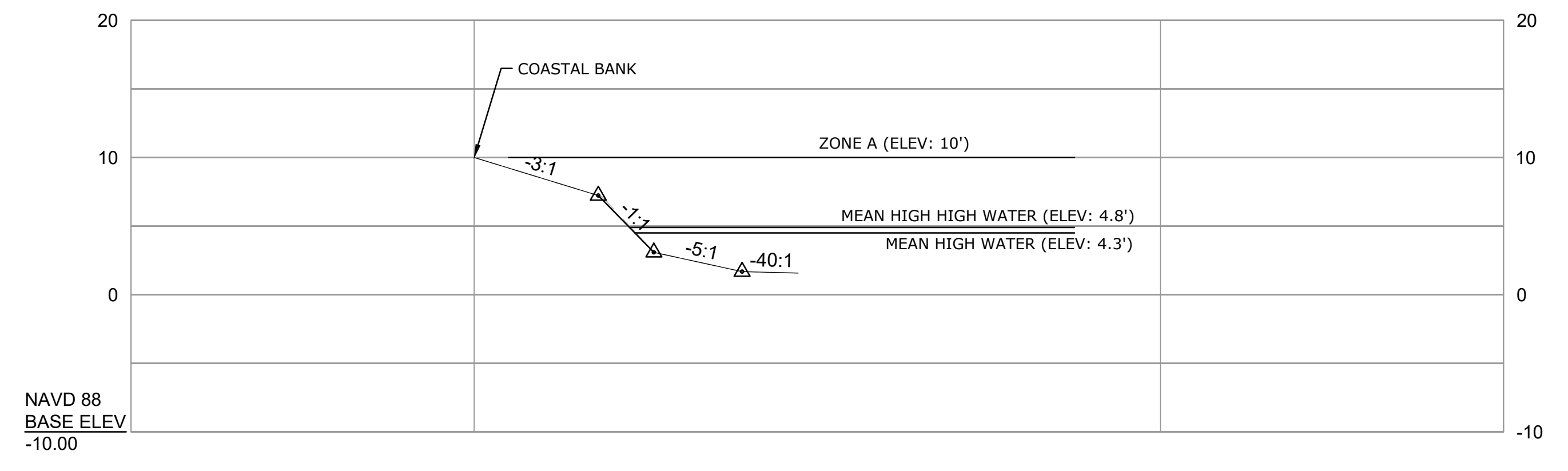
SCALE: 1" = 30'

**P-601**  
SHEET 49 OF 51

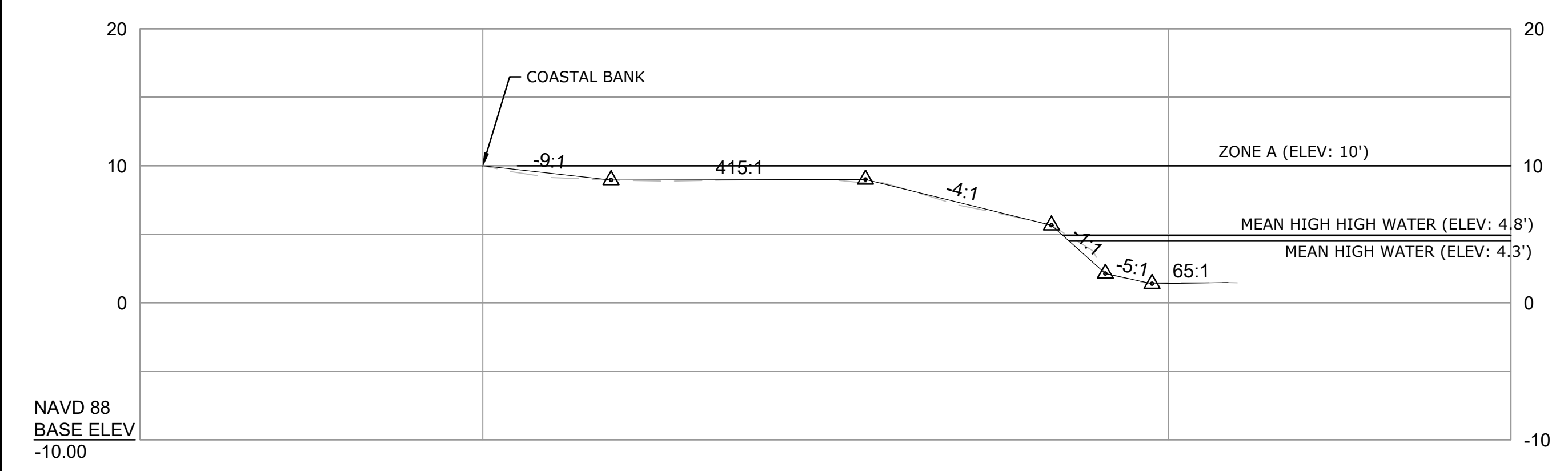
**TRANSECT 1**



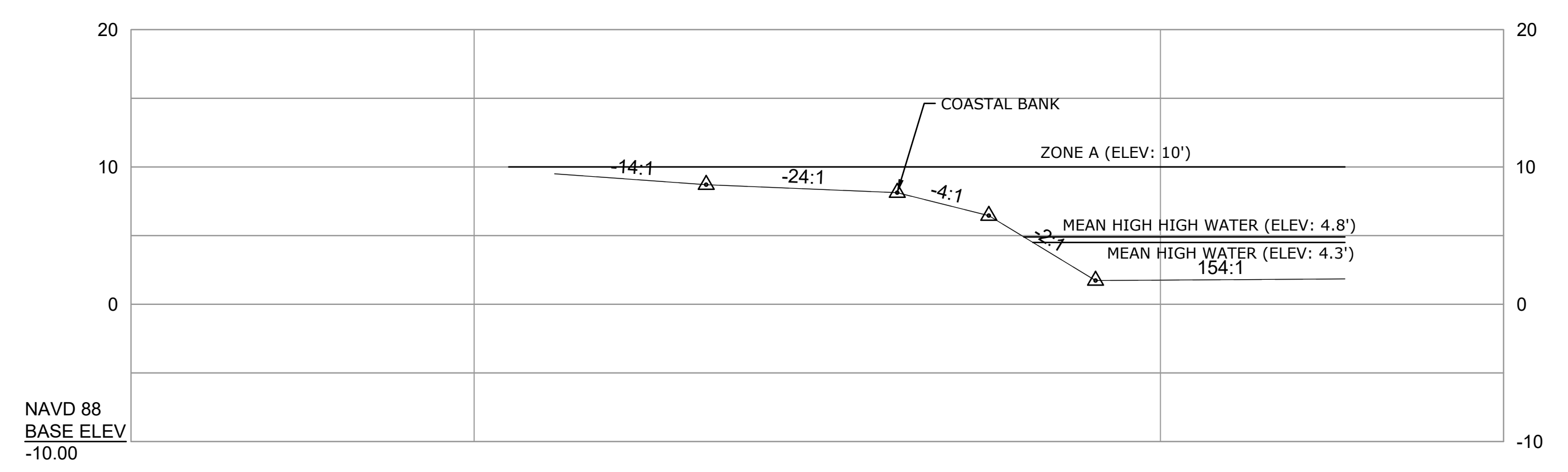
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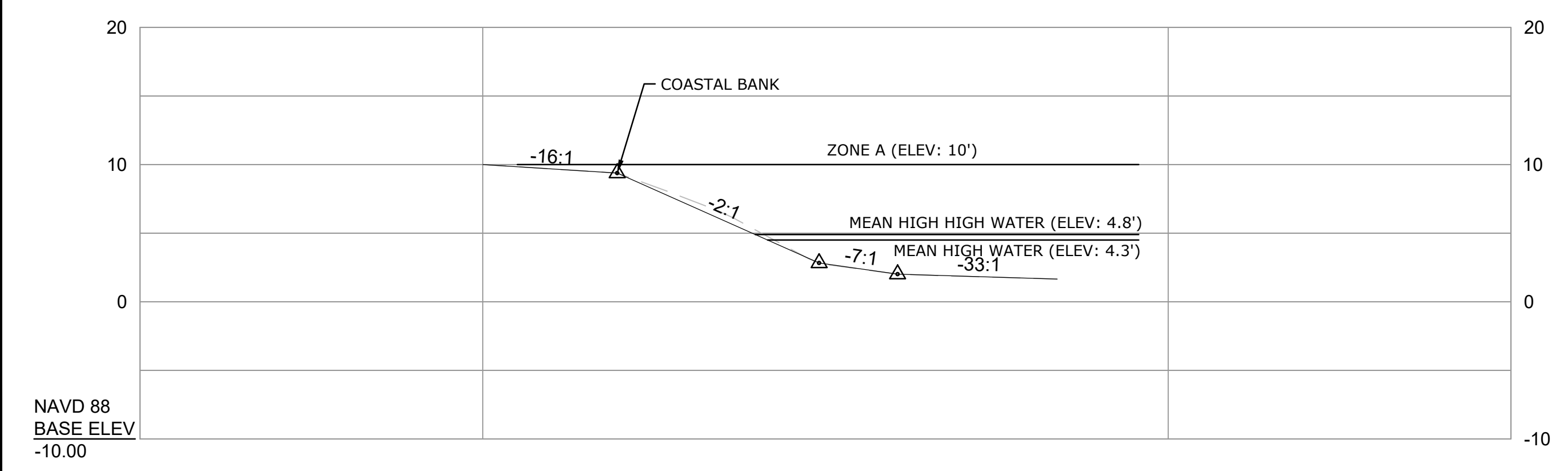
**TRANSECT 2**



**TRANSECT 5**



**TRANSECT 3**



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**VERIFY SCALE**  
BAR IS 1 INCH ON  
ORIGINAL DRAWING  
0 1 INCH  
IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

MARK	DATE	DESCRIPTION

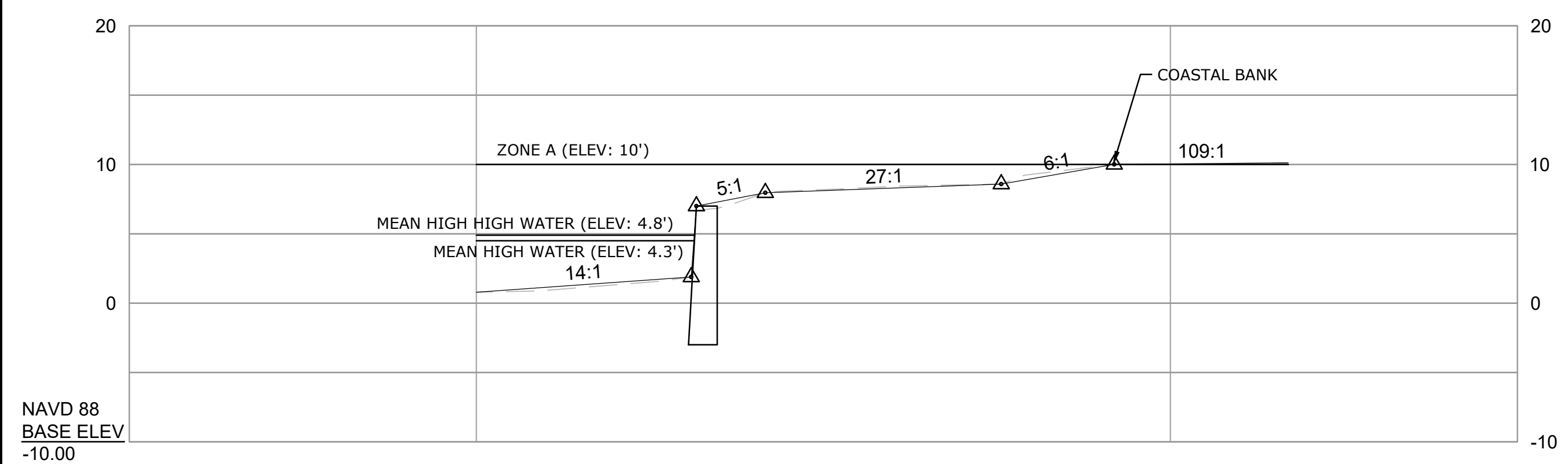
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DATE: JANUARY 12, 2024  
FILE: M1476-012\_Design.dwg  
DRAWN BY: DWB  
CHECKED: DLM  
APPROVED: DAM

TRANSECT CROSS  
SECTIONS - 1  
SCALE: HOR: 1"=8'; VER: 1"=8'

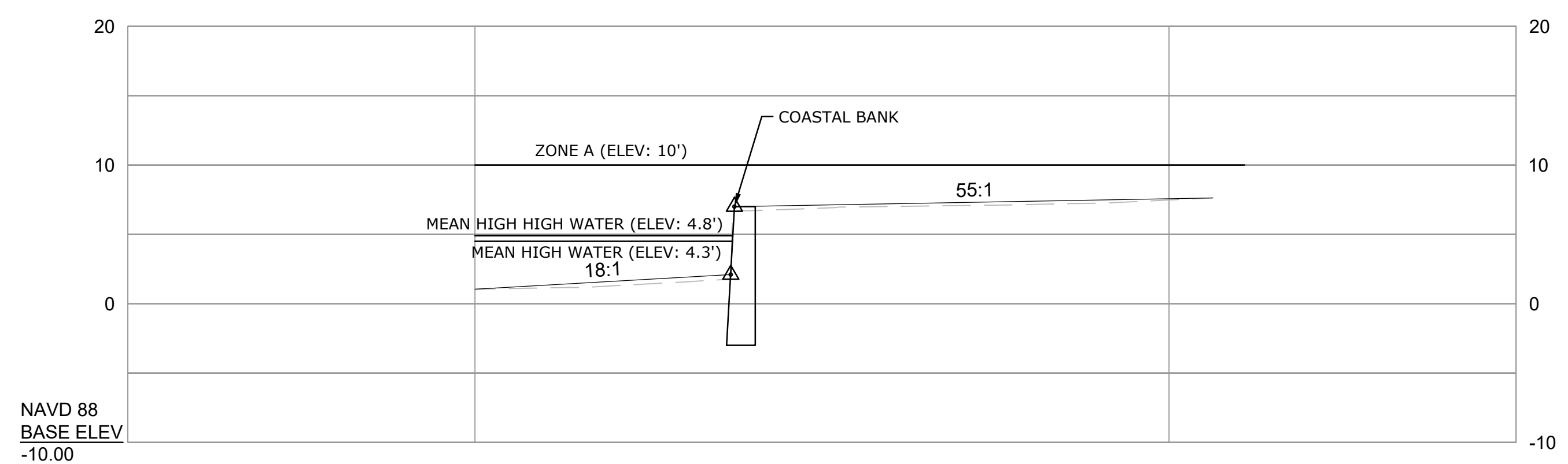
**P-602**  
SHEET 50 OF 51

Last Saved: 10/8/2024 10:09:09 AM  
 Plotted On: Oct 09, 2024 11:47:00 AM  
 Tight & Bond, Inc. 21 W. Main St. Manchester, MA 01747  
 Hydro Study\014-Sawmill-Central-Pond\PermitTask-4-Final-Design\AutoCAD\Ver\M1476-012\_Design.dwg

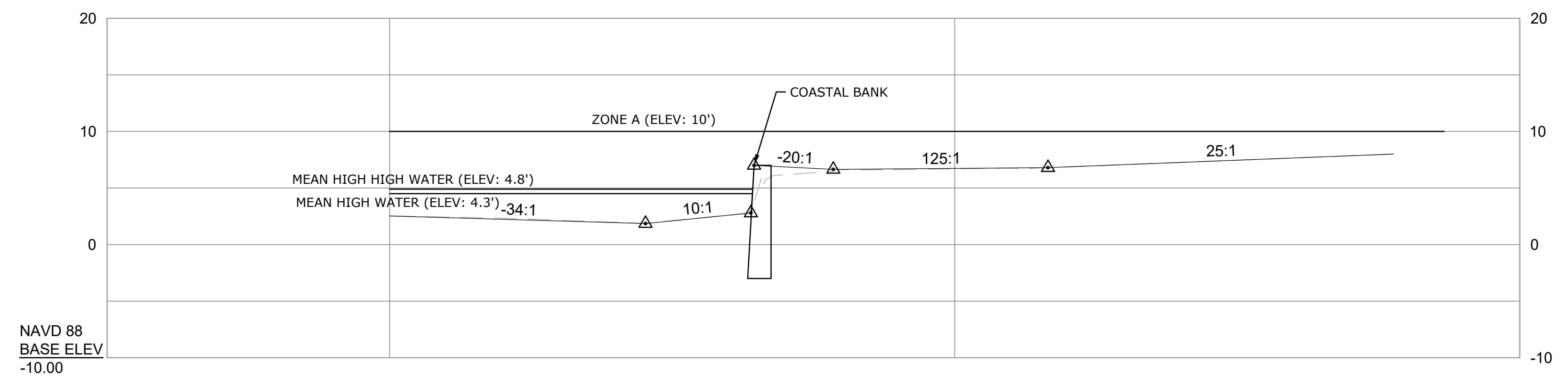
**TRANSECT 6**



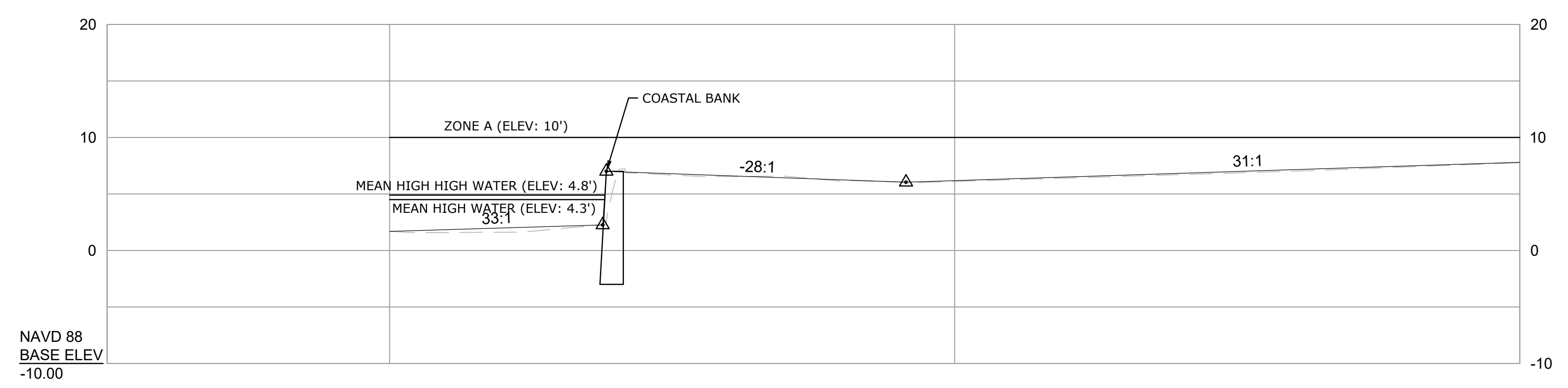
**TRANSECT 7**



**TRANSECT 8**



**TRANSECT 9**



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BAR IS 1 INCH ON  
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0 1 INCH  
IF NOT ONE INCH ON  
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SCALES ACCORDINGLY

MARK	DATE	DESCRIPTION

PROJECT NO: M1467-014  
DATE: JANUARY 12, 2024  
FILE: M1476-012\_Design.dwg  
DRAWN BY: DWB  
CHECKED: DLM  
APPROVED: DAM

TRANSECT CROSS  
SECTIONS - 2

SCALE: HOR: 1"=8'; VER: 1"=8'

**P-603**  
SHEET 51 OF 51

Last Saved: 10/8/2024 10:09:09 AM  
 Plotted On: Oct 09, 2024 1:49pm By: DPfeily  
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