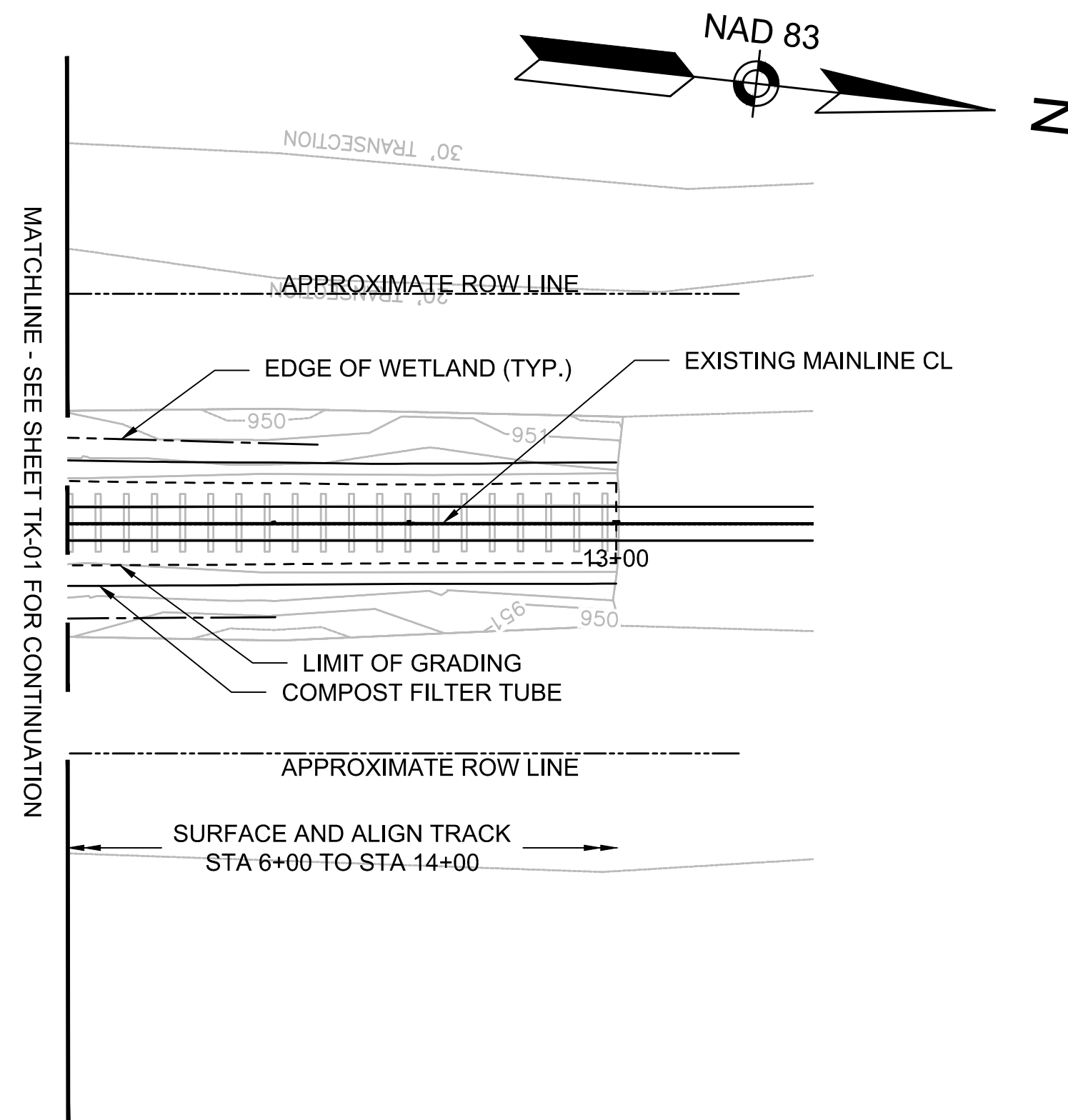
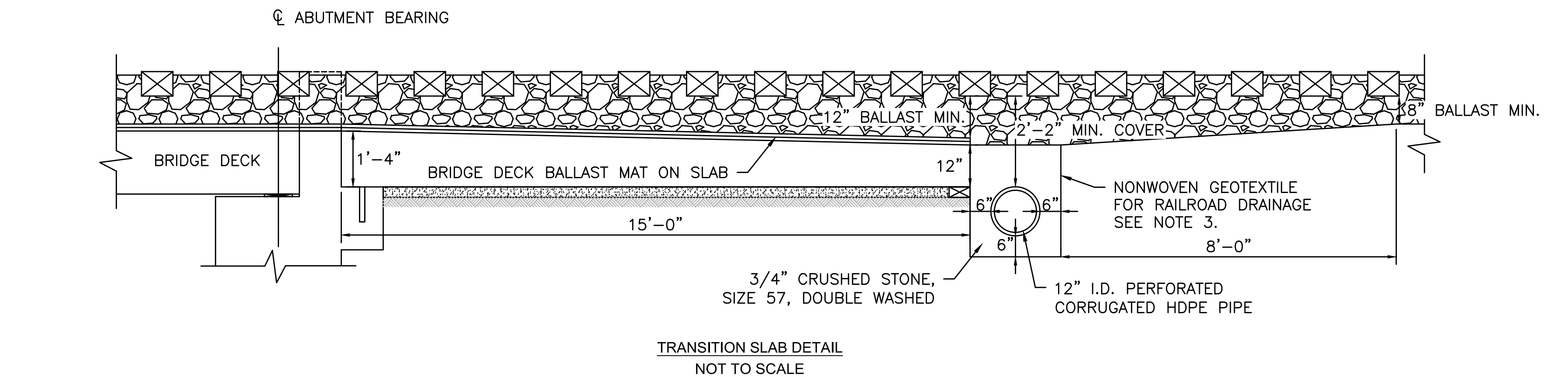




Profile view of the proposed mainline T/R. The profile includes existing ground, existing mainline T/R, and proposed mainline T/R. Key points include PVI 12+44.51 (EL 952.90) and PVC 13+04.51 (EL 952.99). The horizontal curve has a length L of 120.00' and a radius r of 0.80. A note "SEE NOTE 1" points to the profile. The vertical axis shows elevations from 940 to 964. The horizontal axis shows stationing from 13+00 to 13+40.



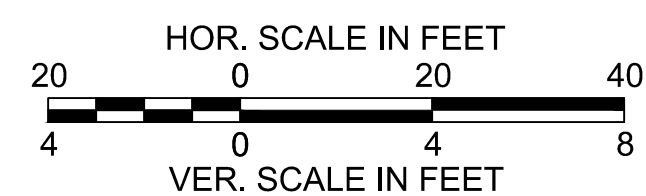
PROFILE

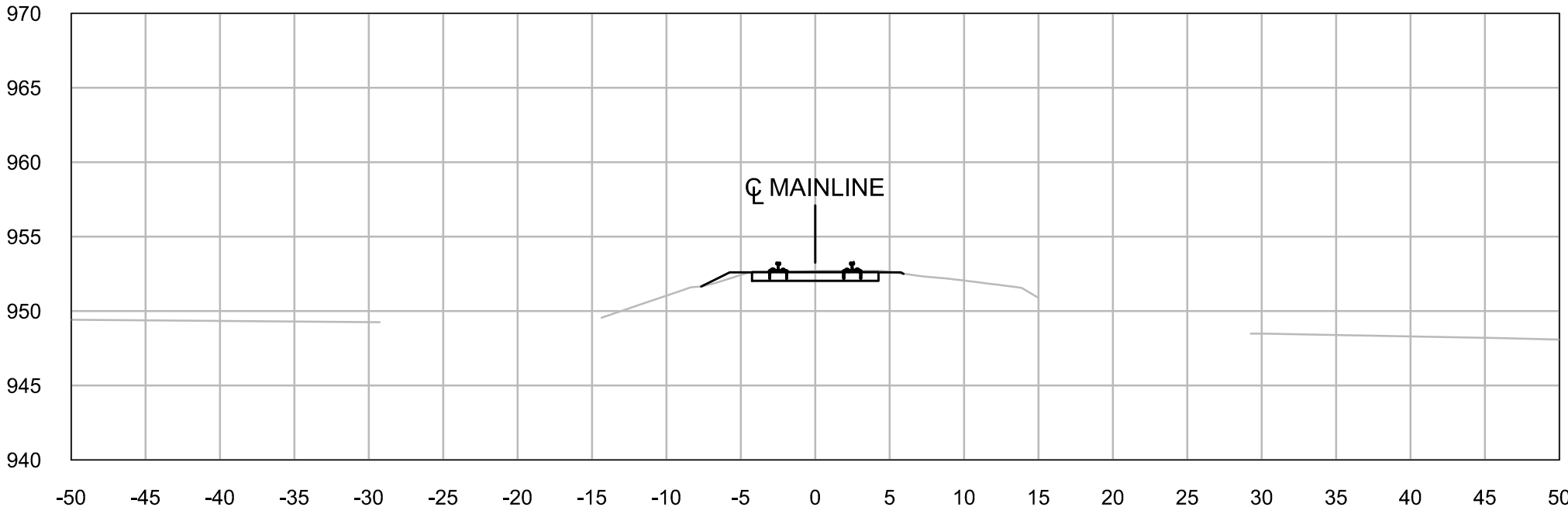


TRANSITION SLAB DETAIL
NOT TO SCALE

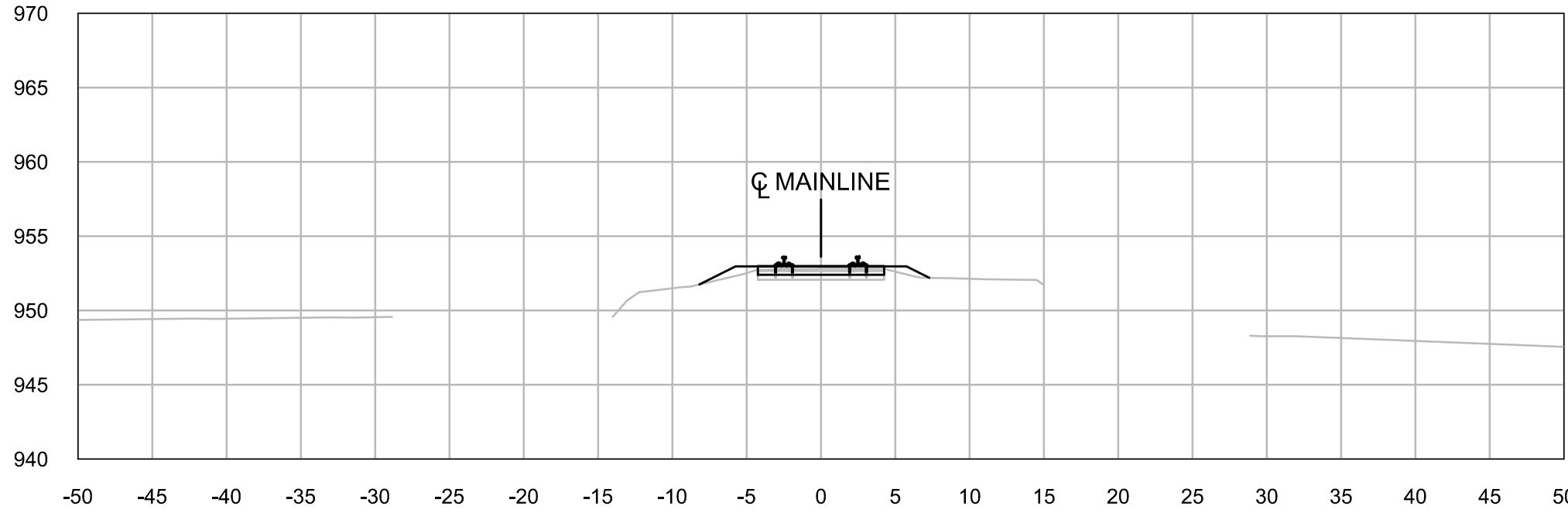
1. SURFACE AND ALIGNMENT LIMIT EXTENDS BEYOND THE VERTICAL CURVE.
2. BALLAST SHALL BE REMOVED TO A DEPTH OF 8" MIN. BELOW THE PROPOSED BOTTOM OF TIE ELEVATION IN THE TIE REPLACEMENT AREAS EXCEPT AS NOTED OTHERWISE ON THE TRANSITION SLAB DETAILS.

3. OVERLAP SUBSURFACE DRAINAGE GEOTEXTILE A MINIMUM OF 12" ON TOP OF THE UNDERDRAIN TRENCH AND A MINIMUM OF 12" AT ALL OTHER LOCATIONS WHERE THE DRAINAGE GEOTEXTILE OVERLAPS.

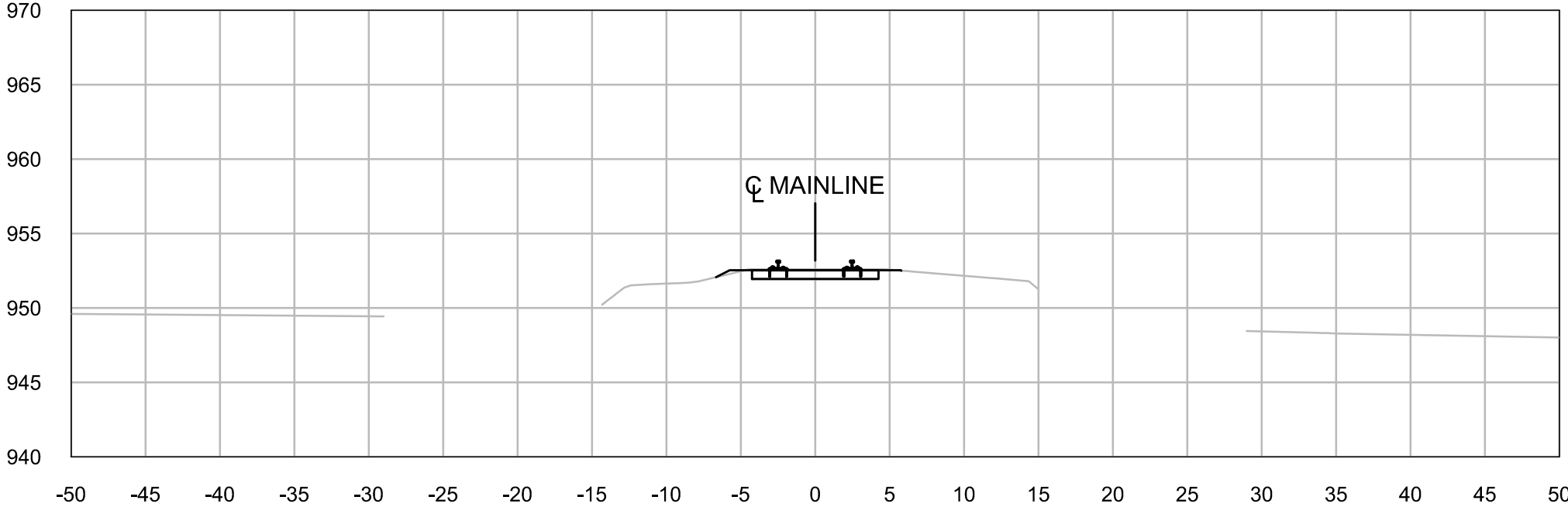
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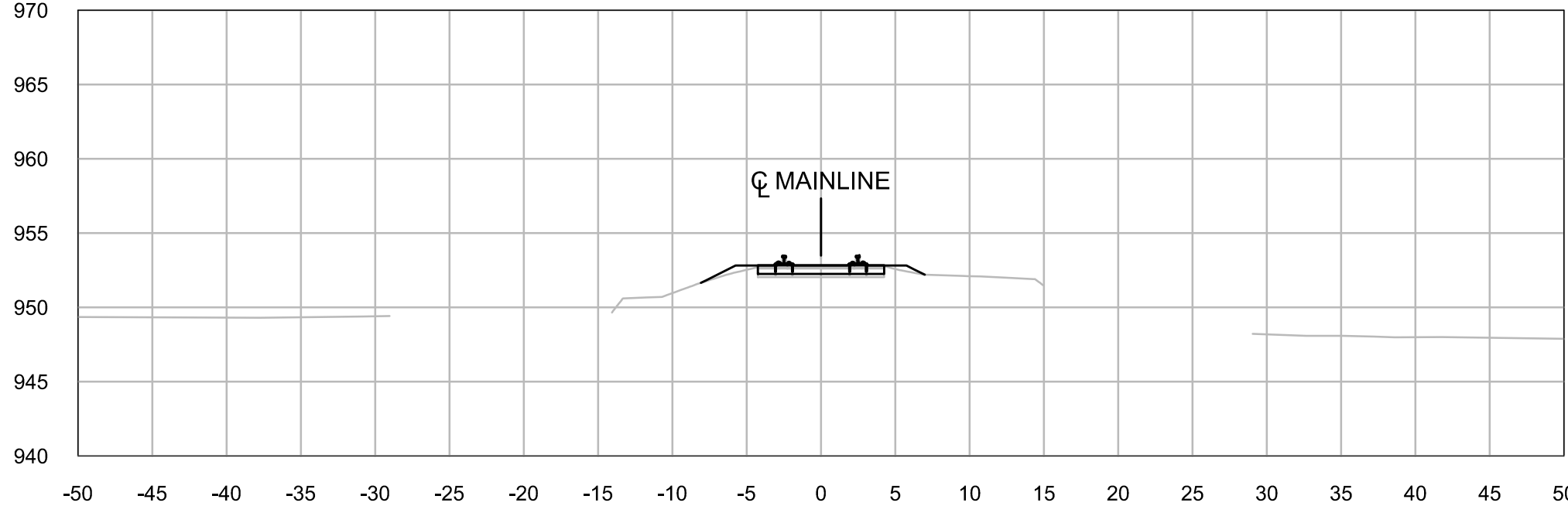
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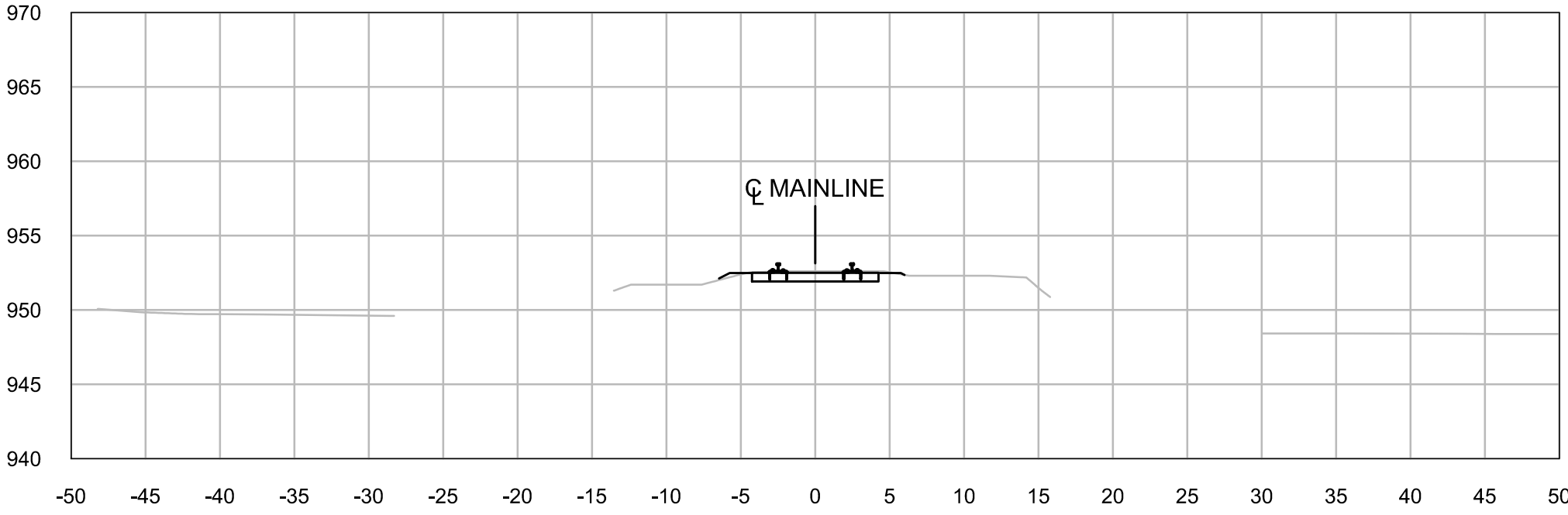
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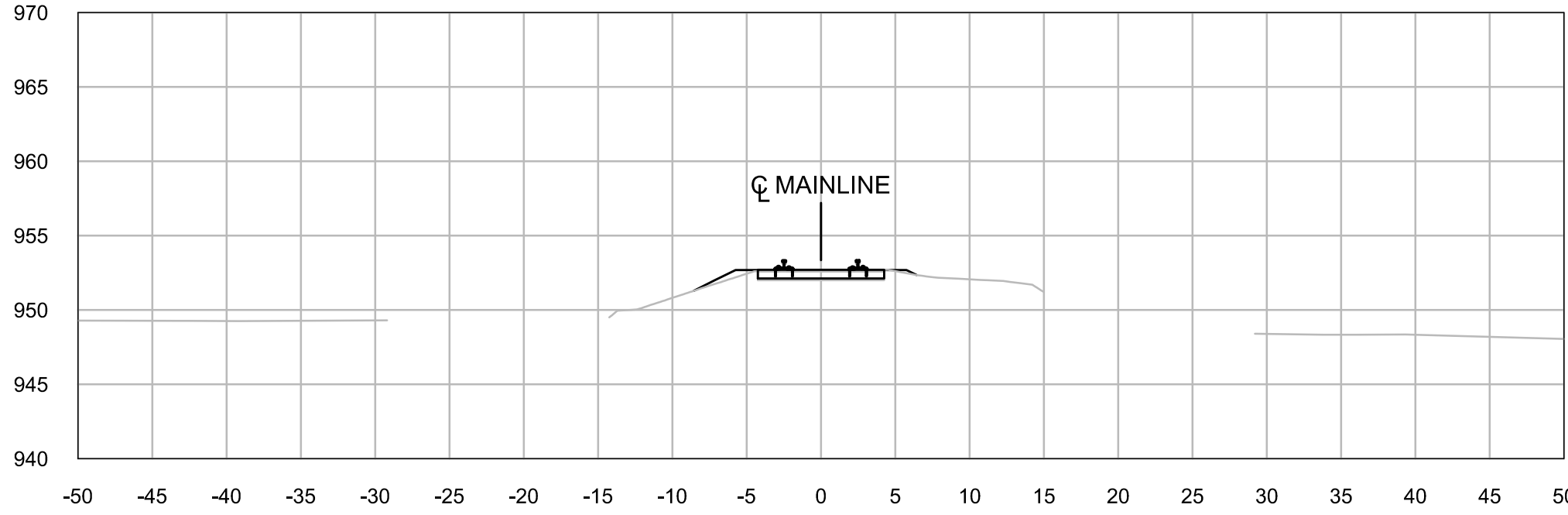
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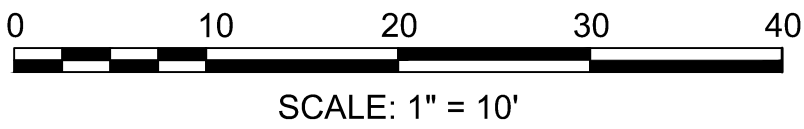
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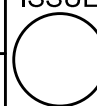


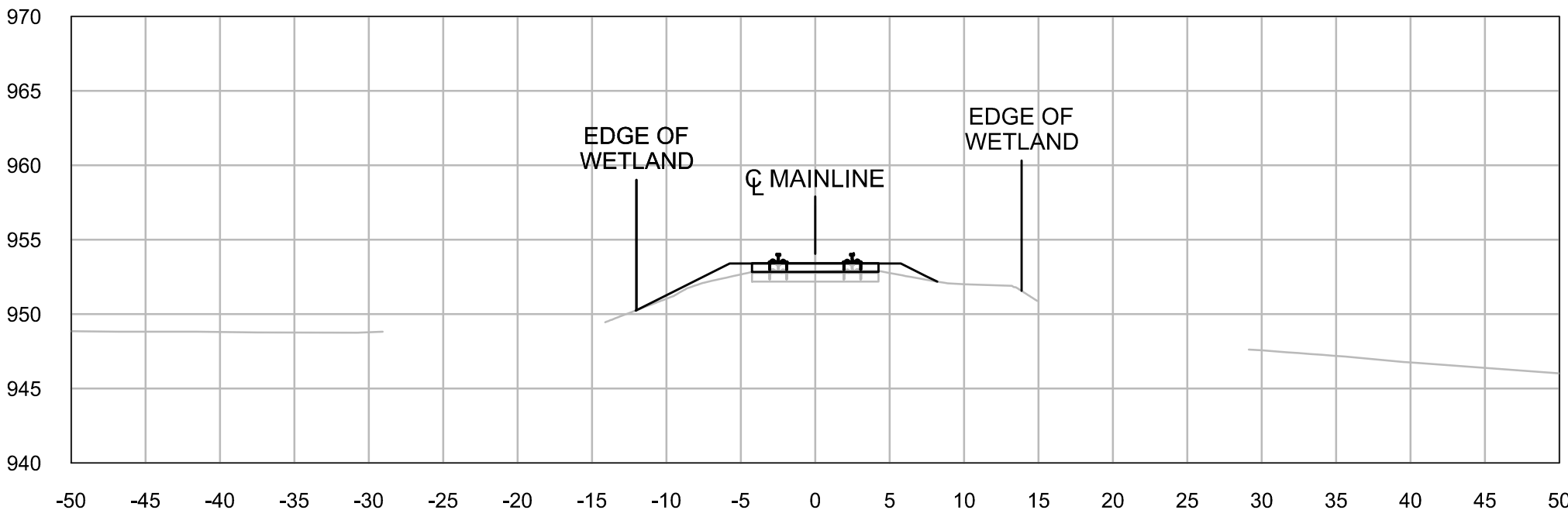
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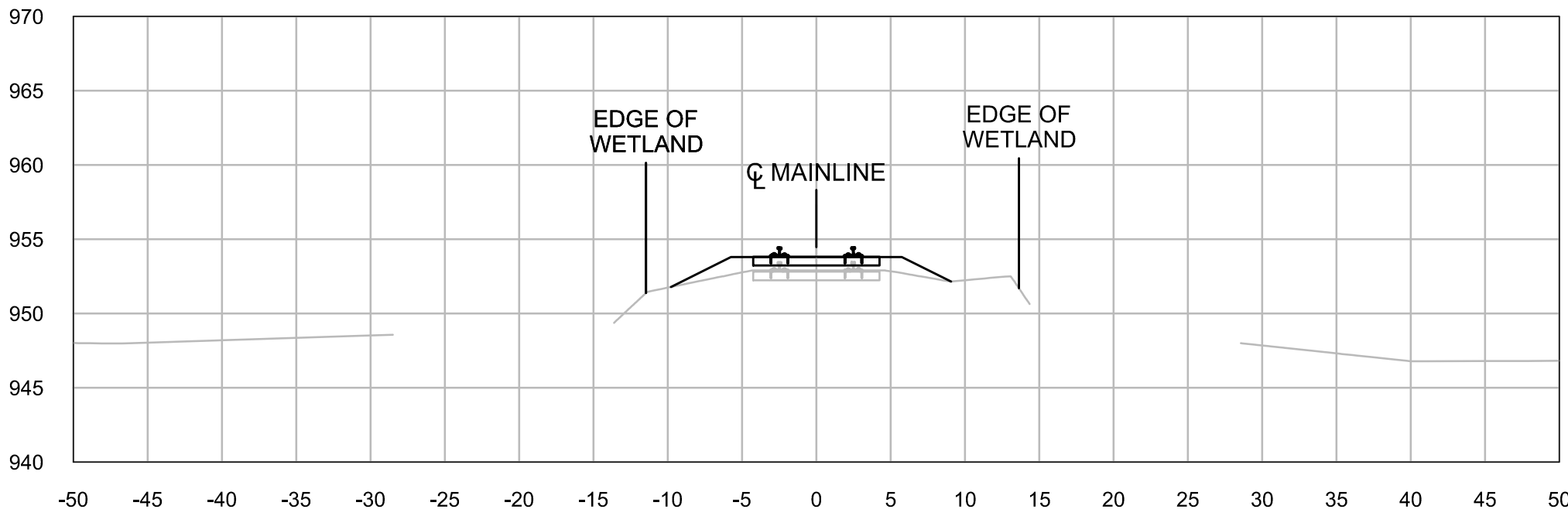
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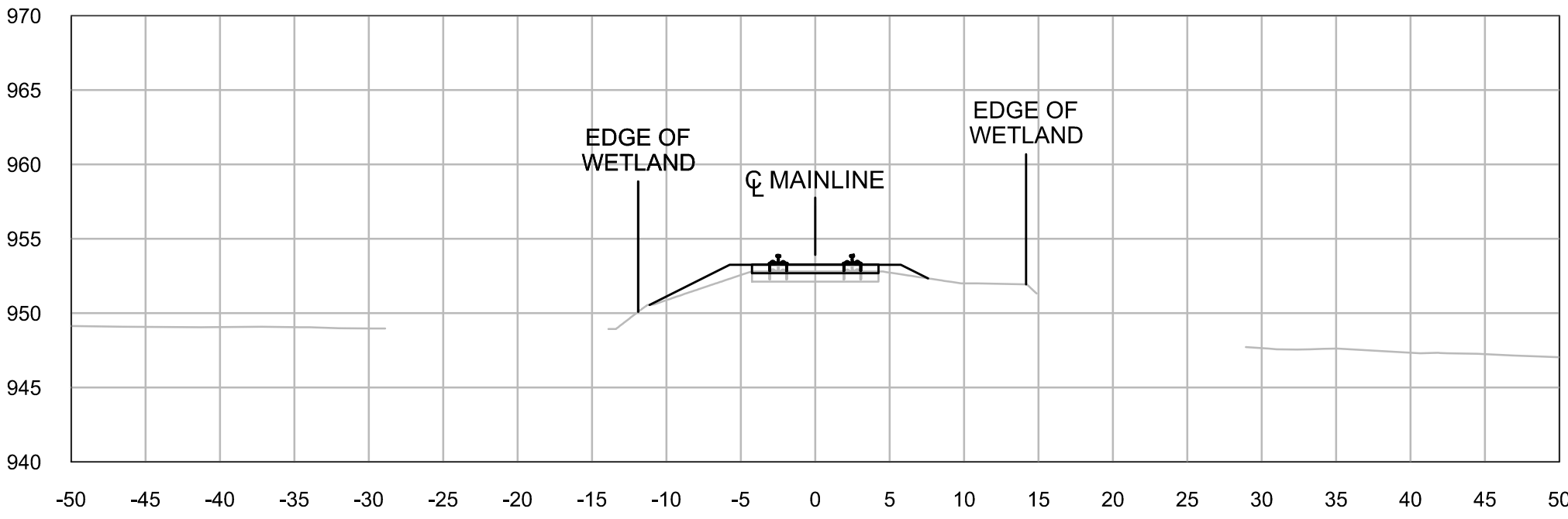
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				REPLACEMENT OF BRIDGES ON BERKSHIRE LINE BRIDGE 79.81 - WILLOW CREEK BRIDGE PROPOSED CROSS SECTIONS STA. 6+80 TO STA. 7+80			
				 HDR, INC. 99 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 357-7700		 Massachusetts Department of Transportation Rail & Transit Division	
SCALE:		DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE	
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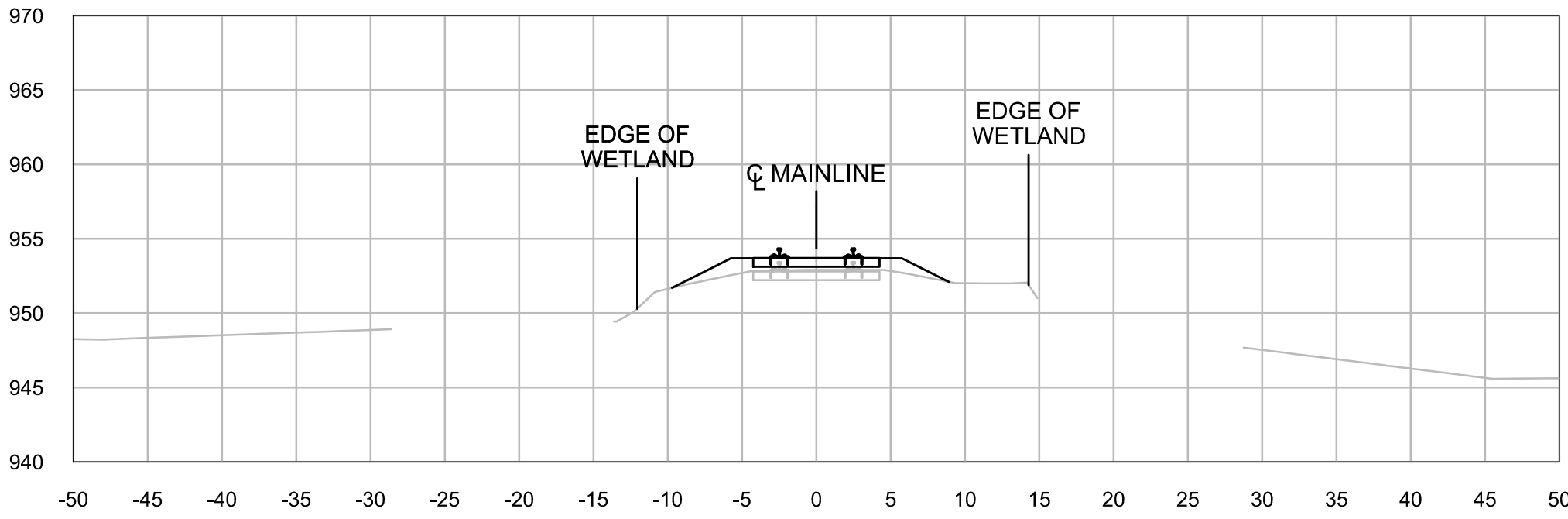
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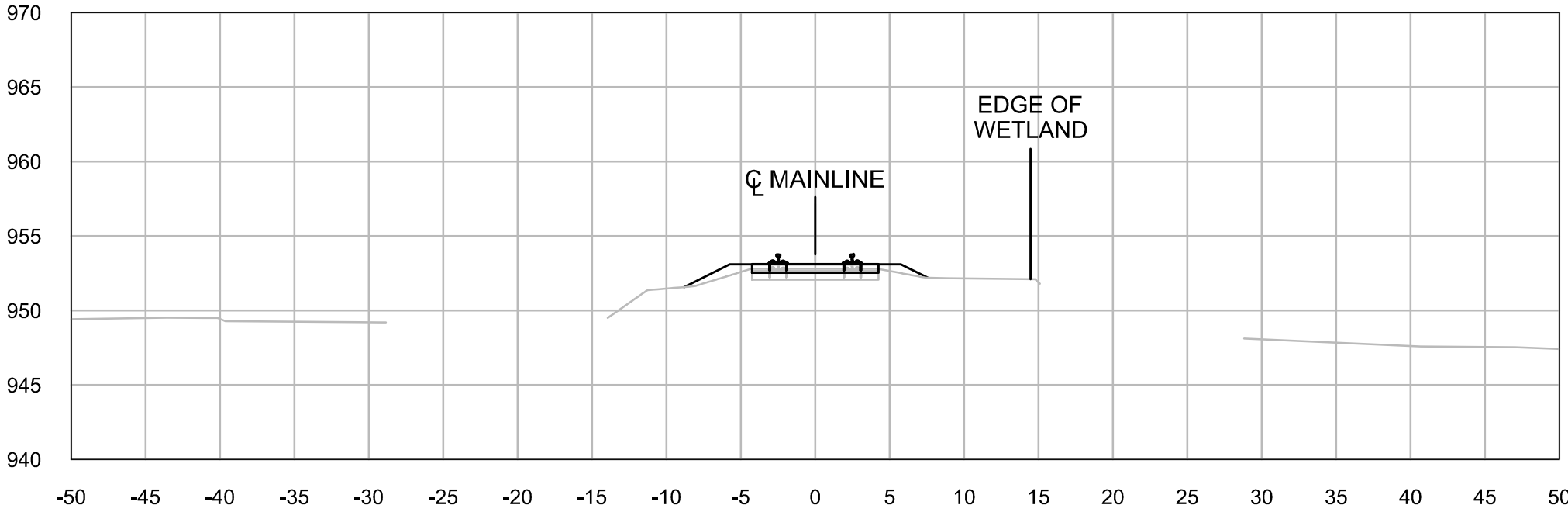
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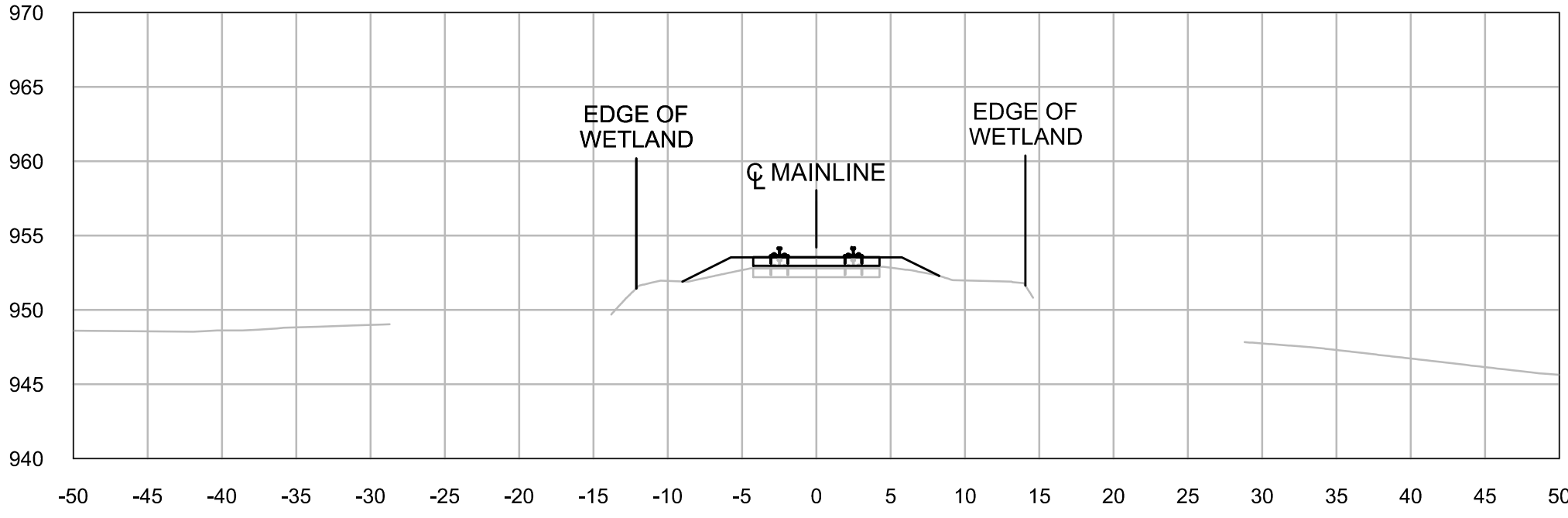
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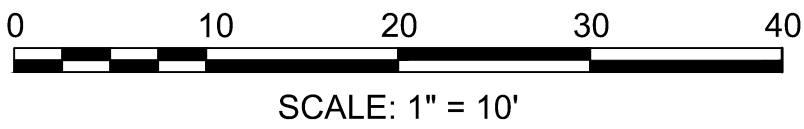
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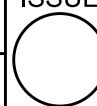


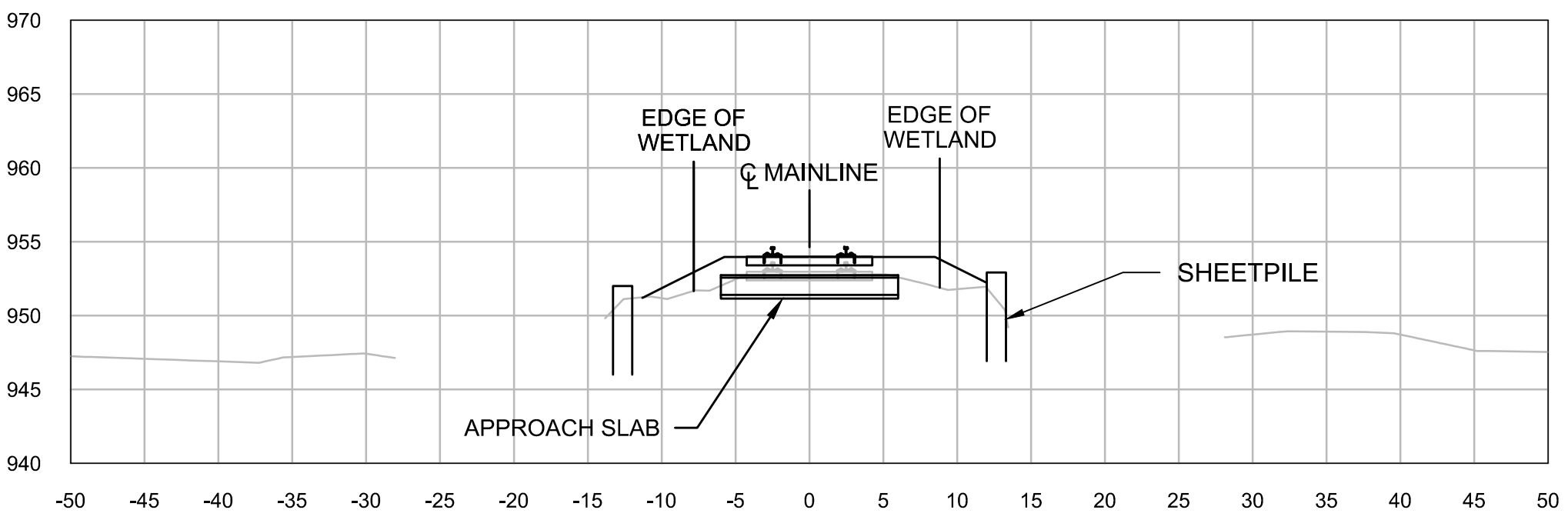
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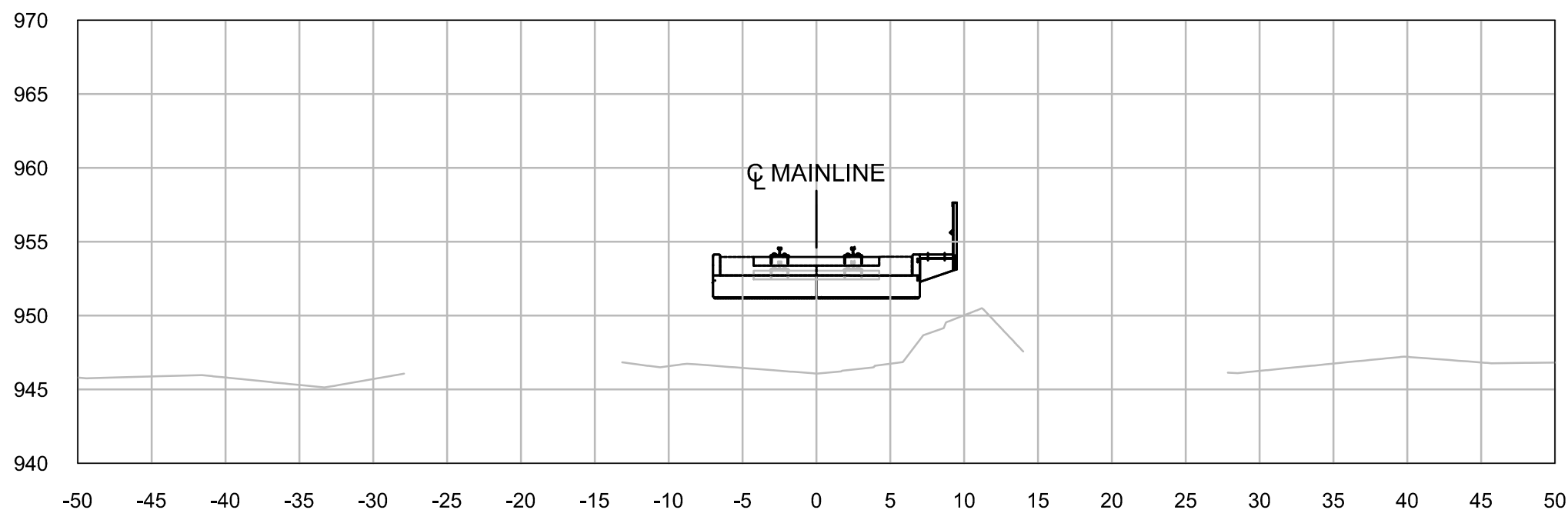
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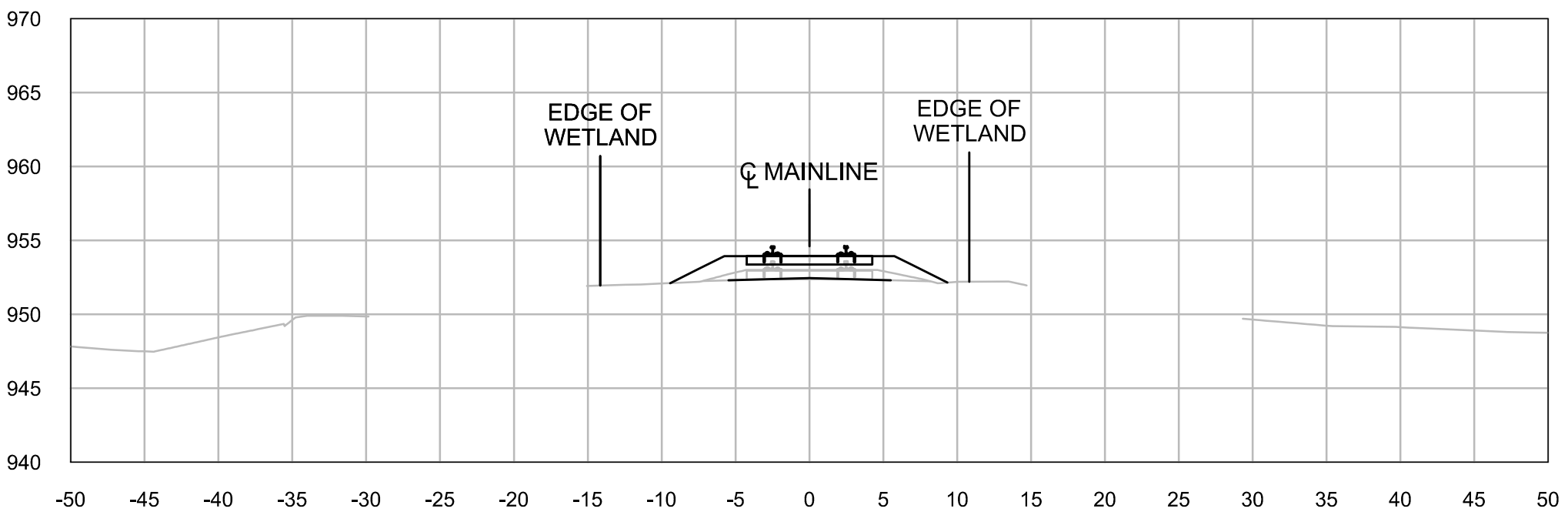
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				 HDR, INC. 90 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 357-7700		 Massachusetts Department of Transportation Rail & Transit Division	
SCALE:		DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE	
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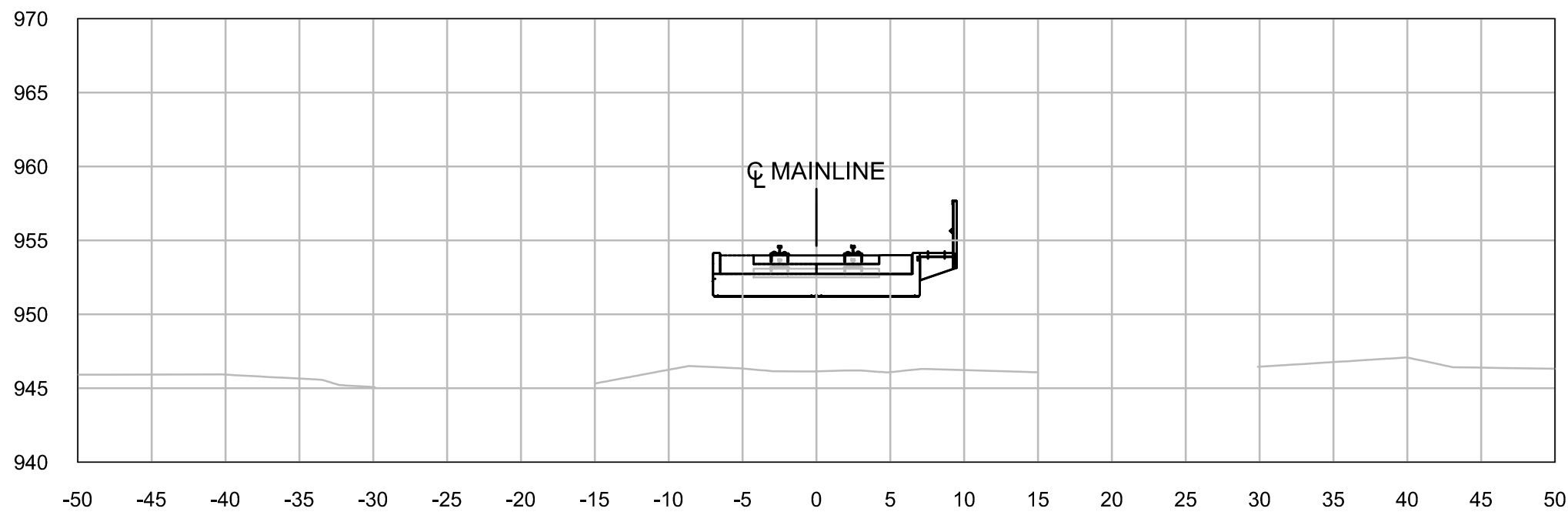
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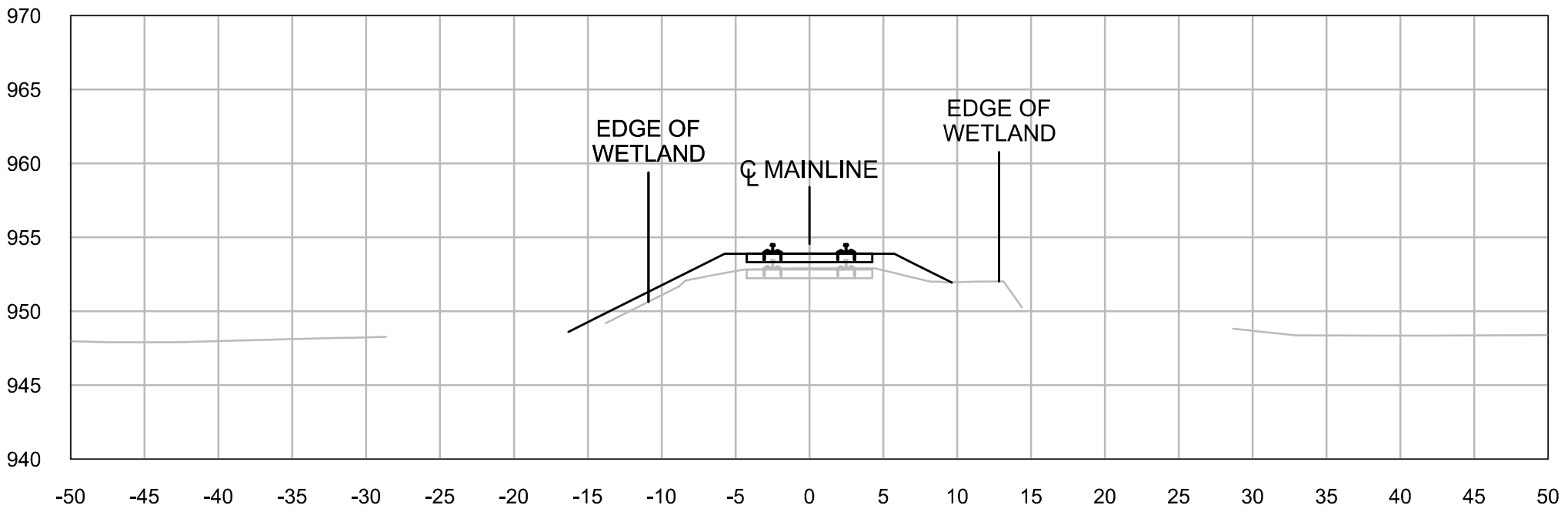
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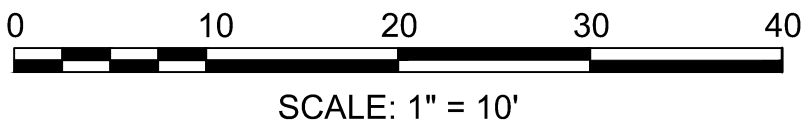
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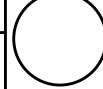


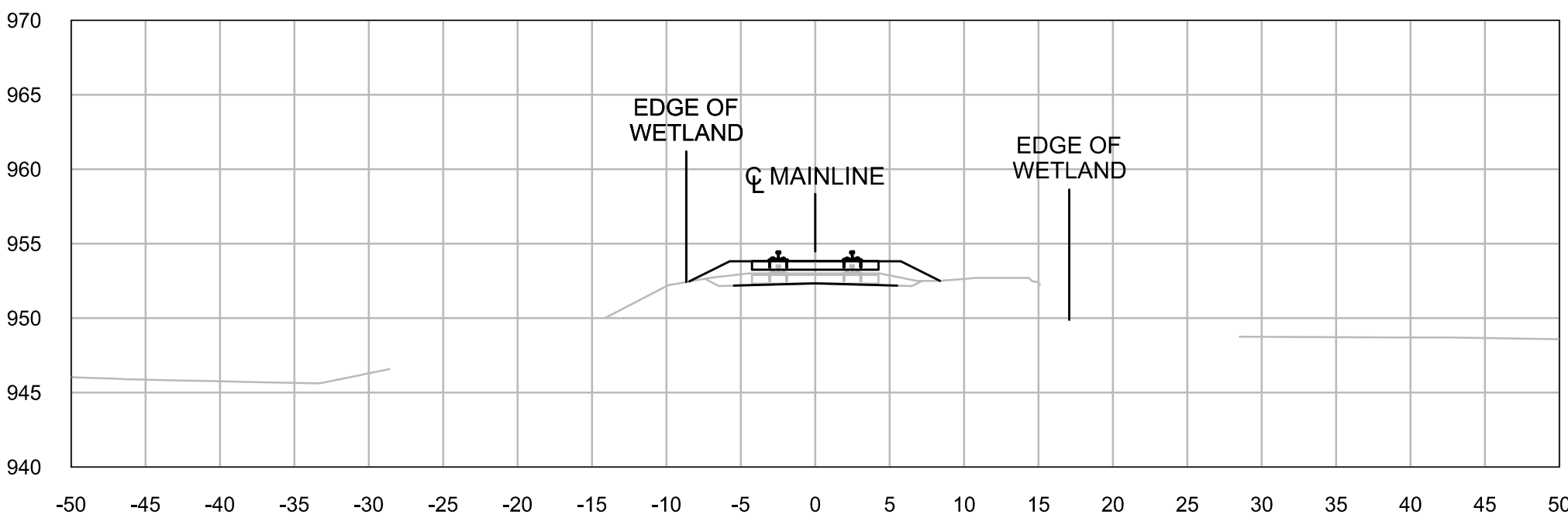
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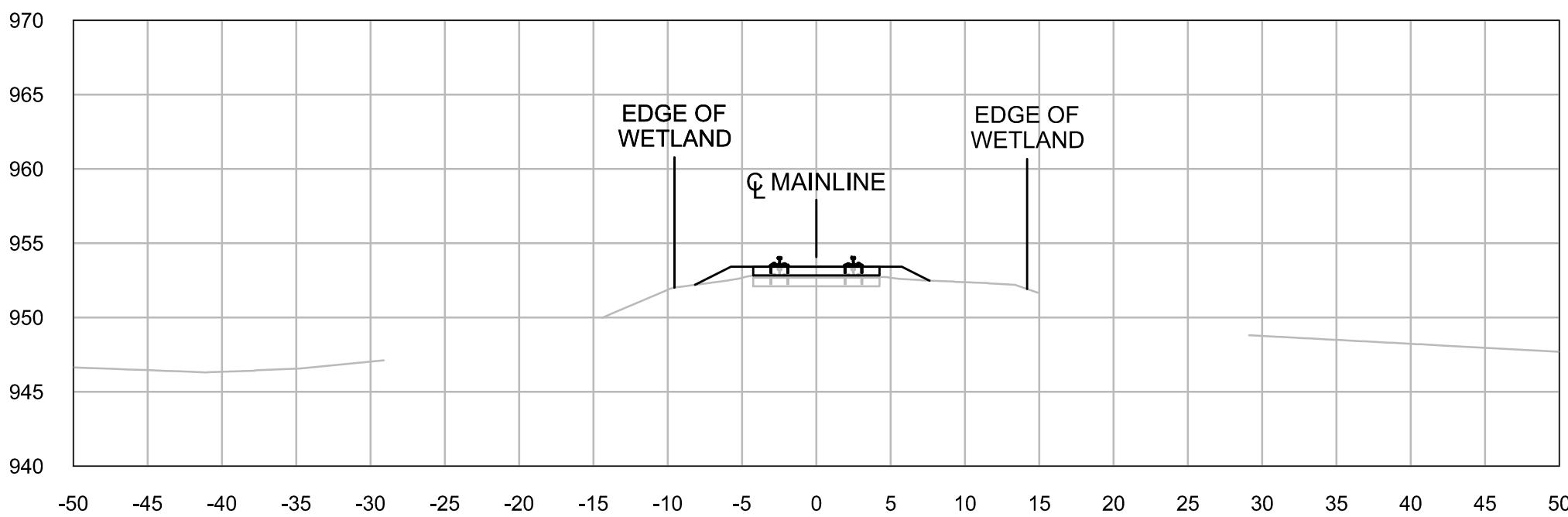
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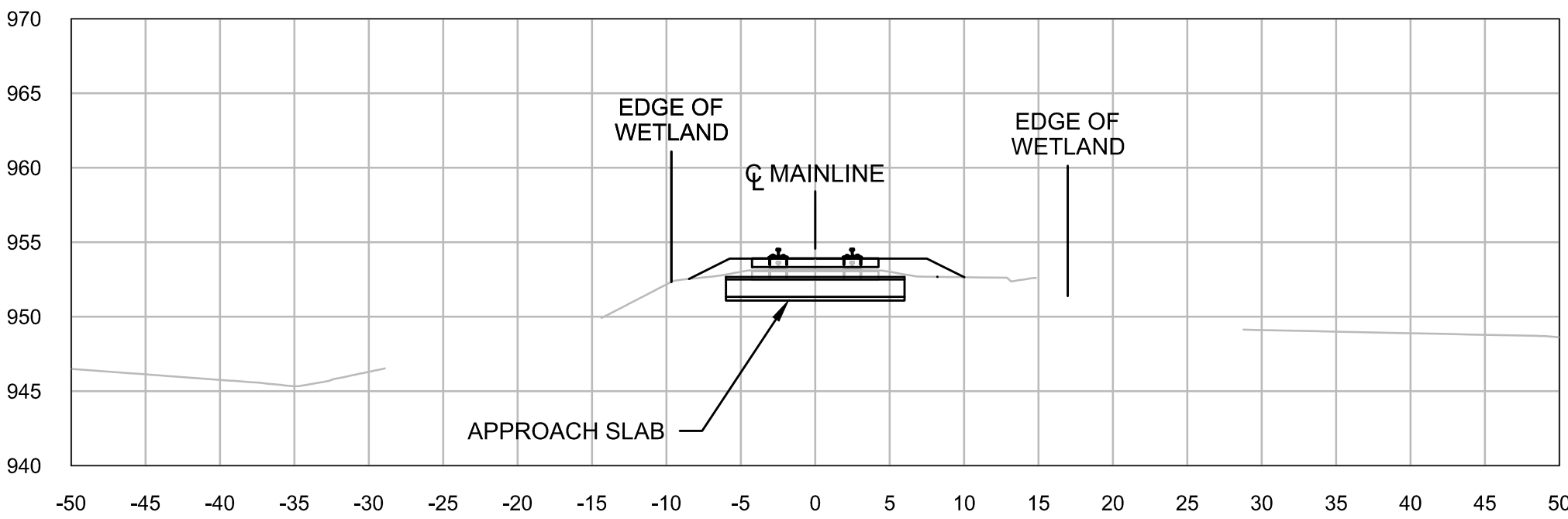
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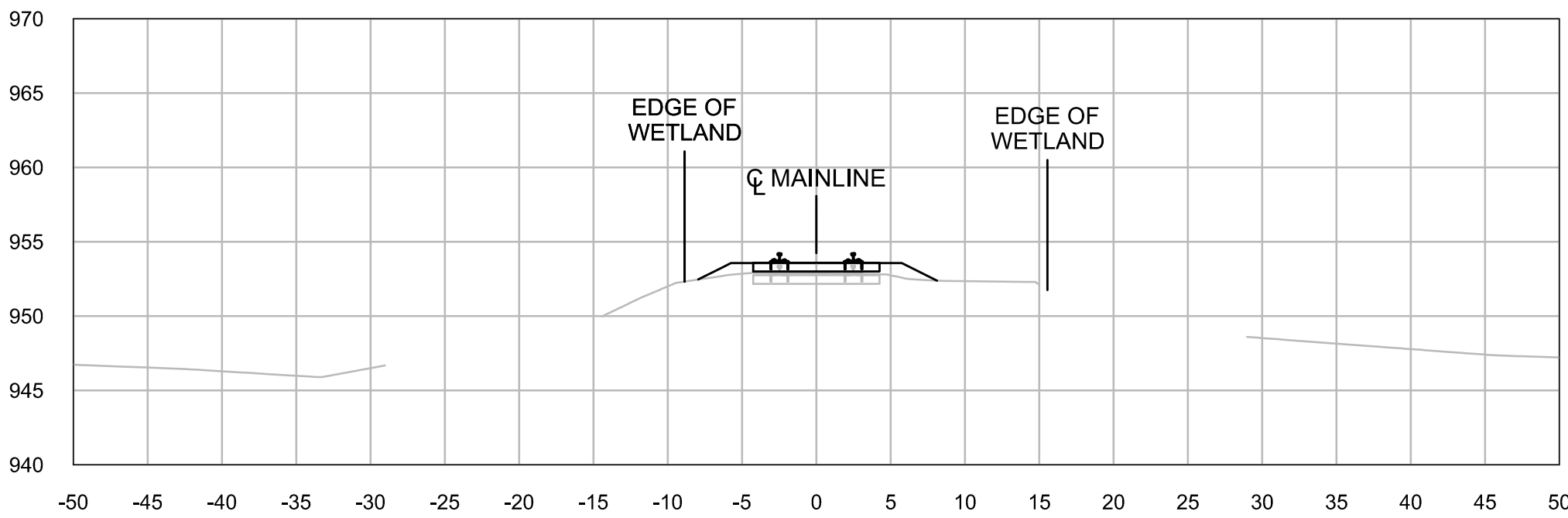
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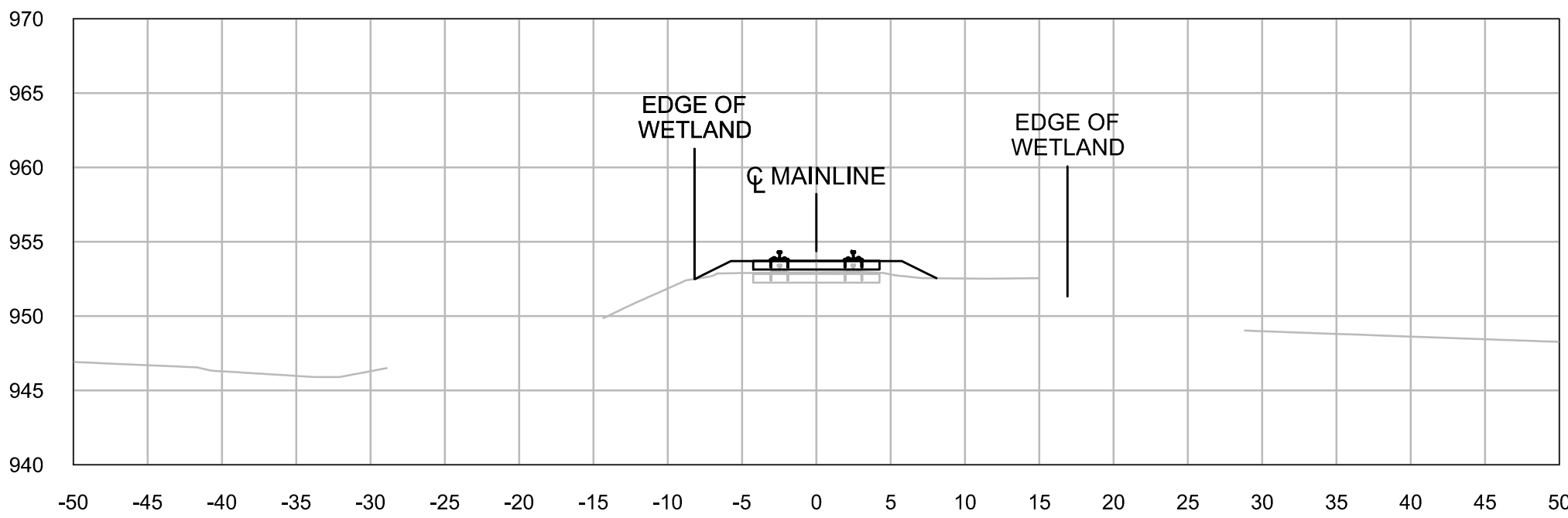
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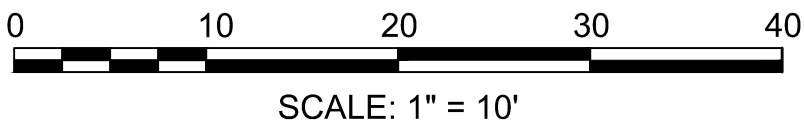
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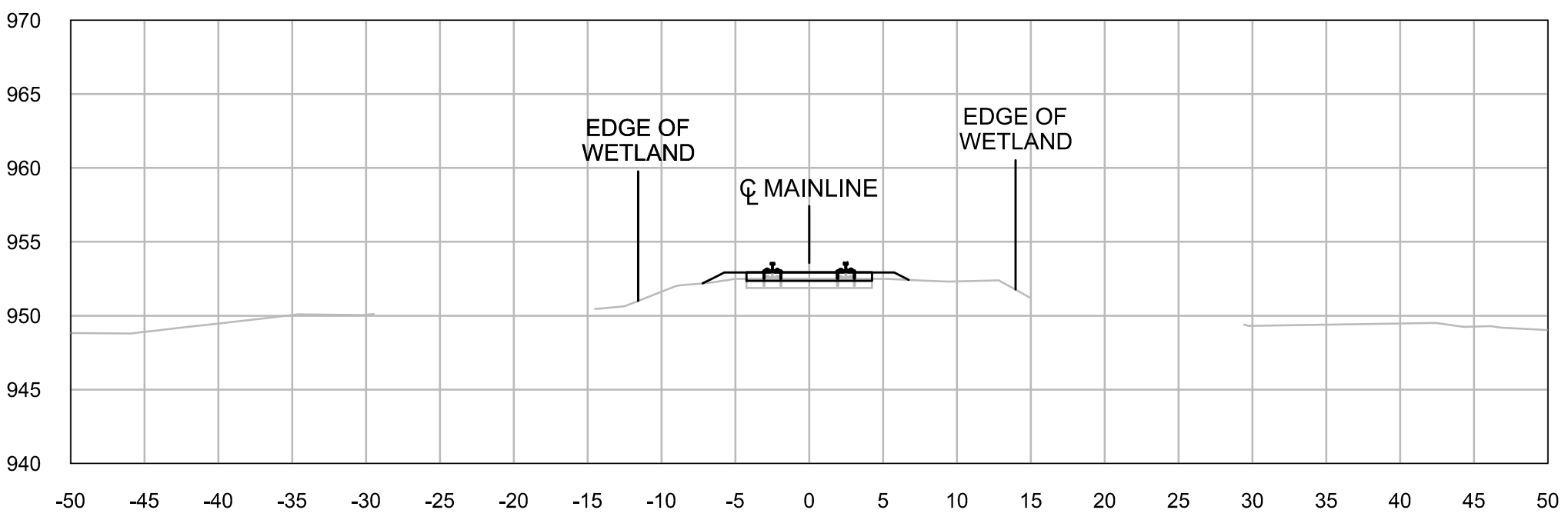
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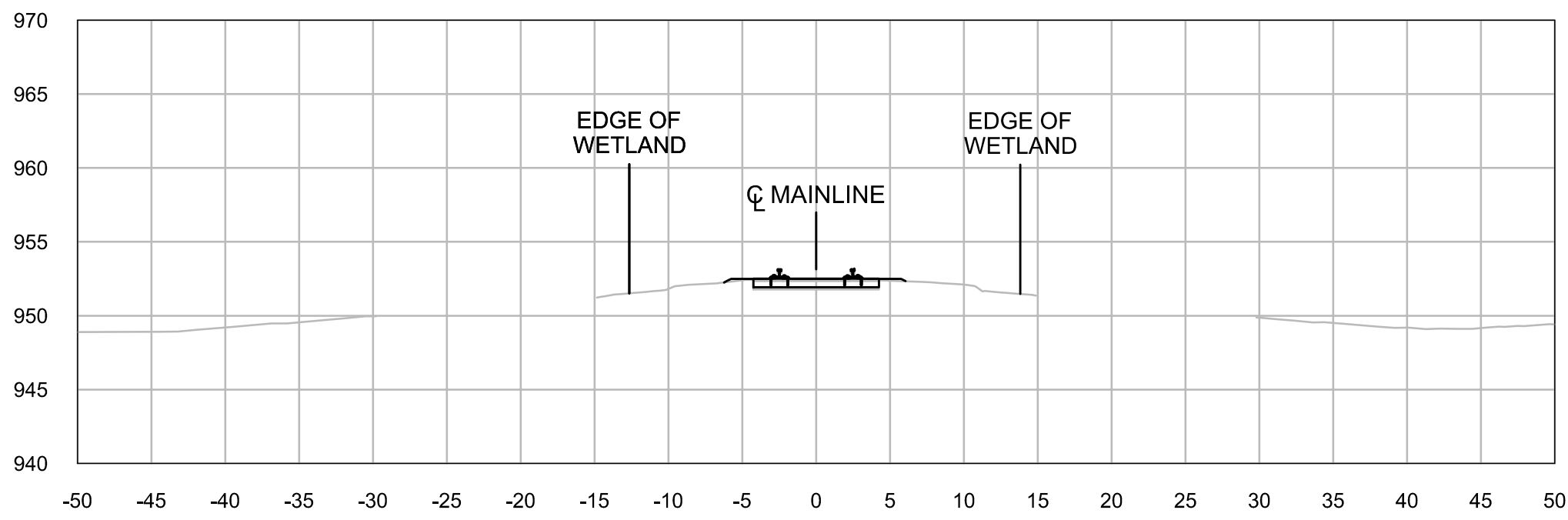
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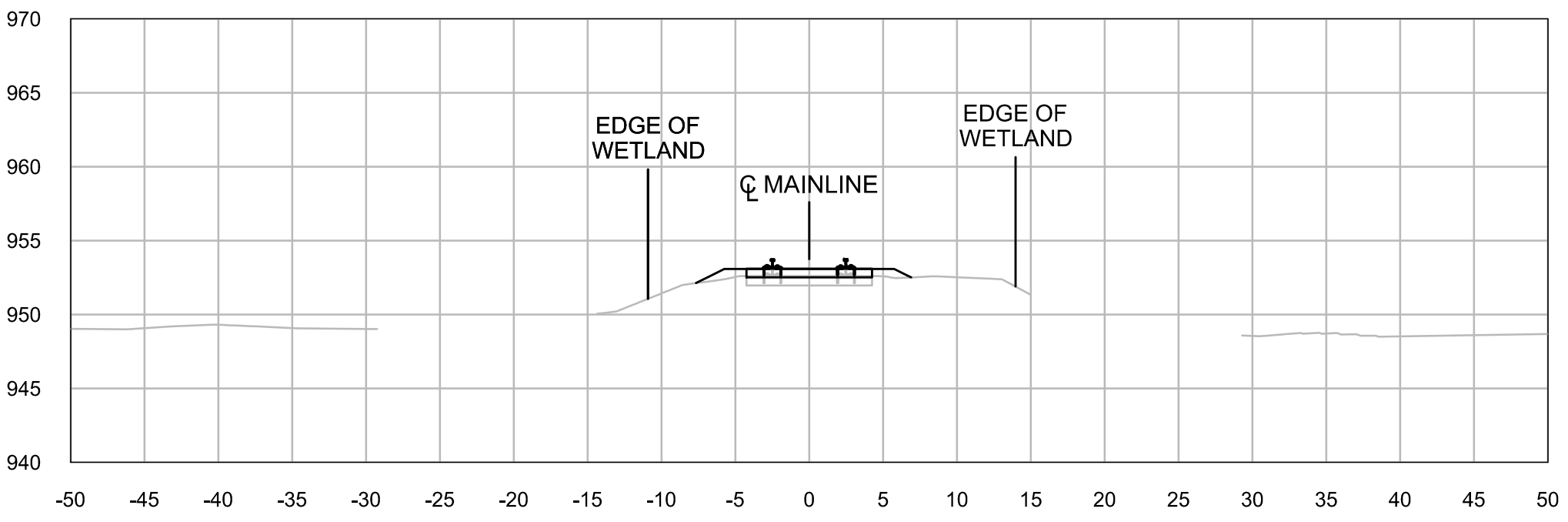
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				 HDR, INC. 90 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 357-7700		 Massachusetts Department of Transportation Rail & Transit Division	
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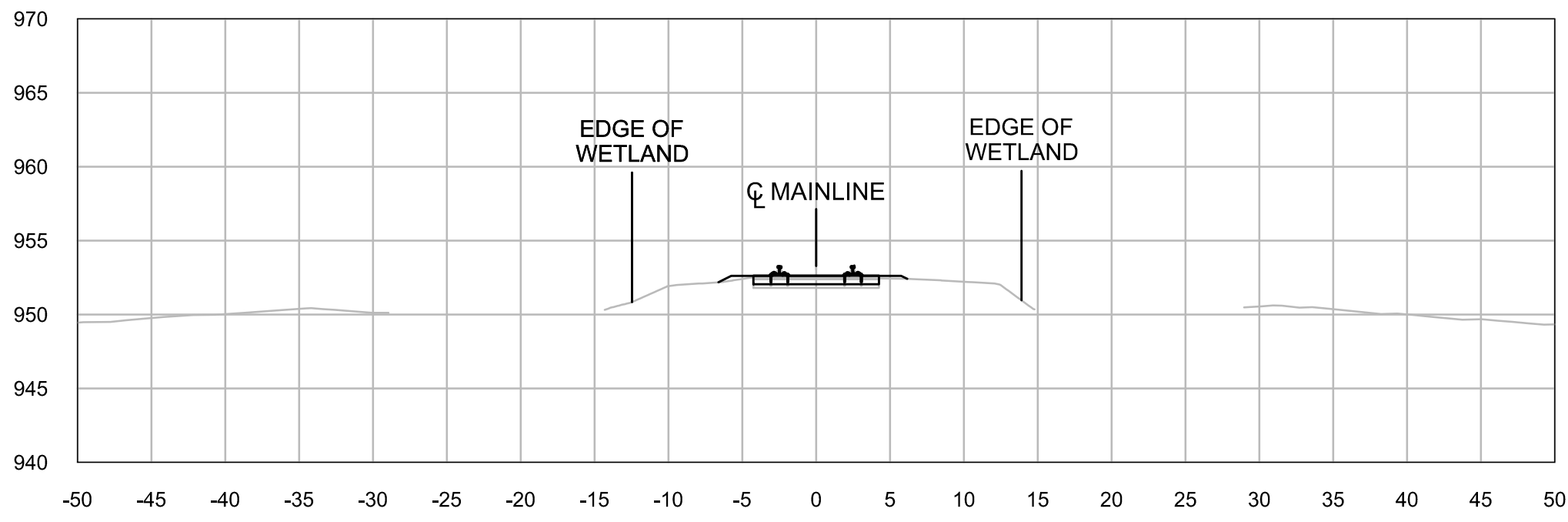
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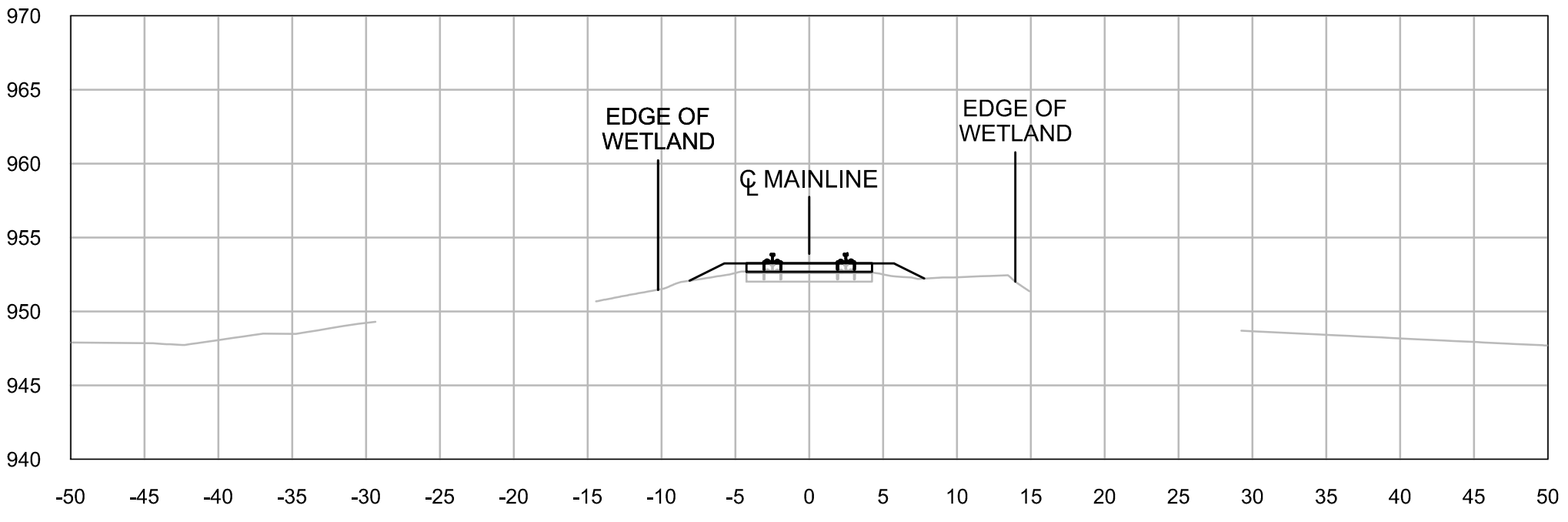
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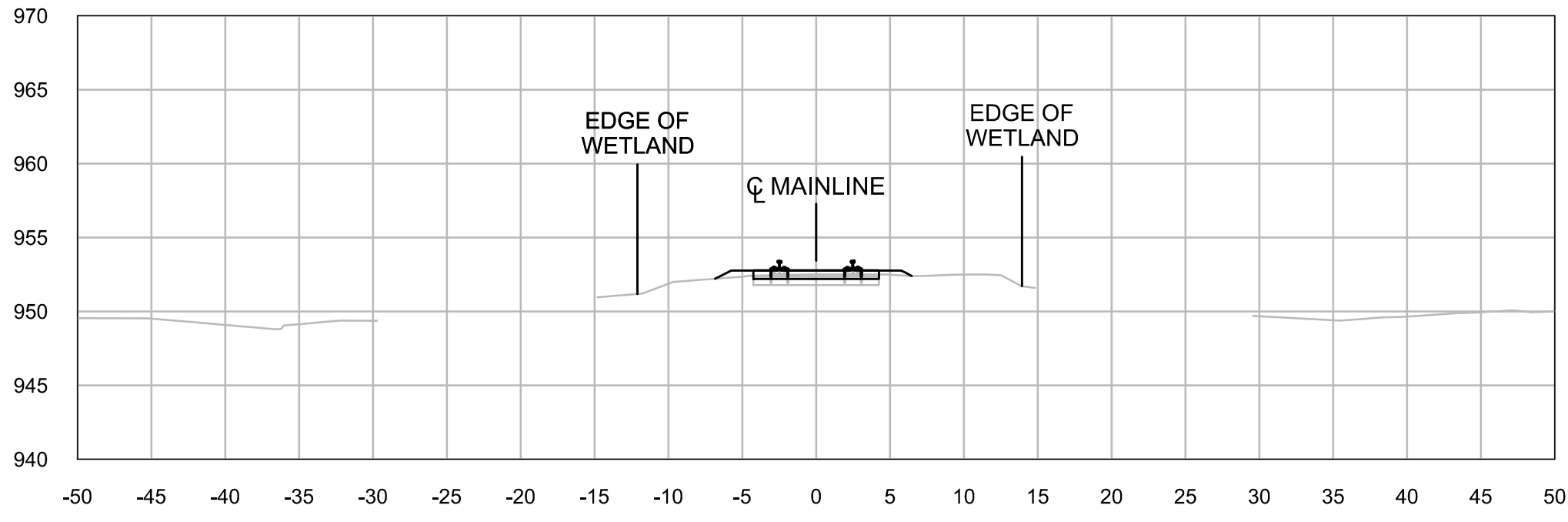
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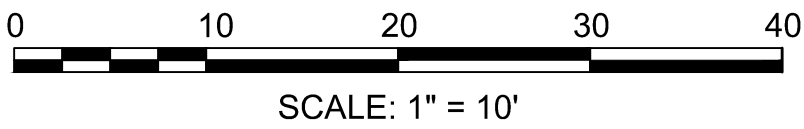
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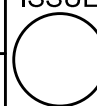


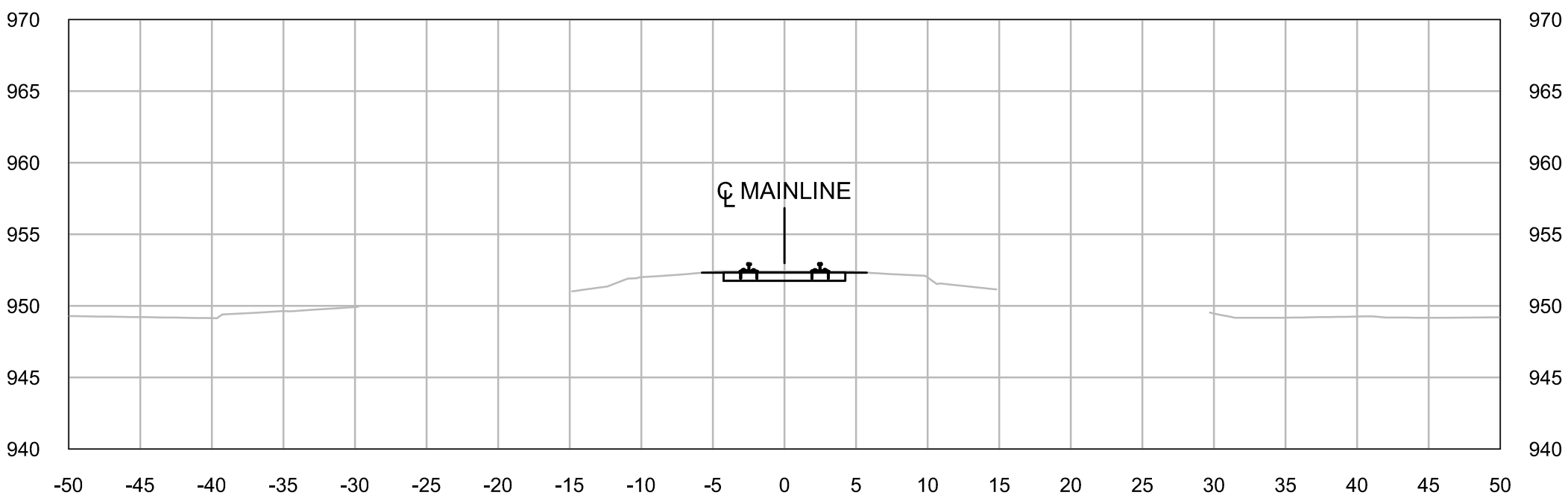
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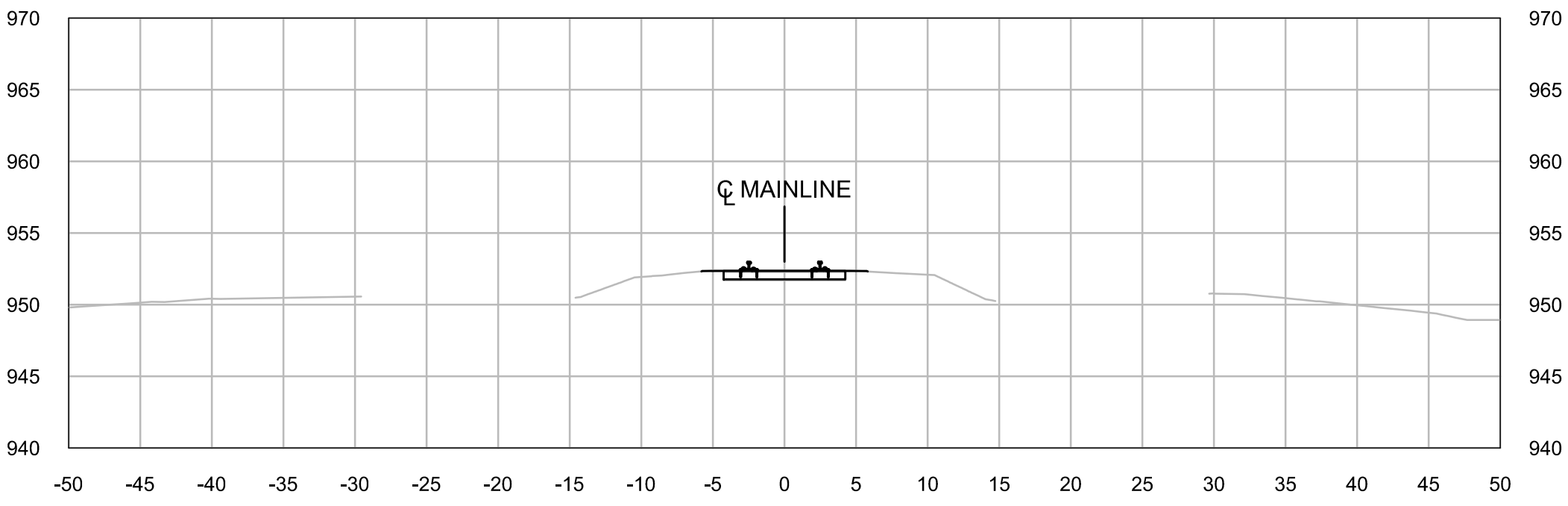
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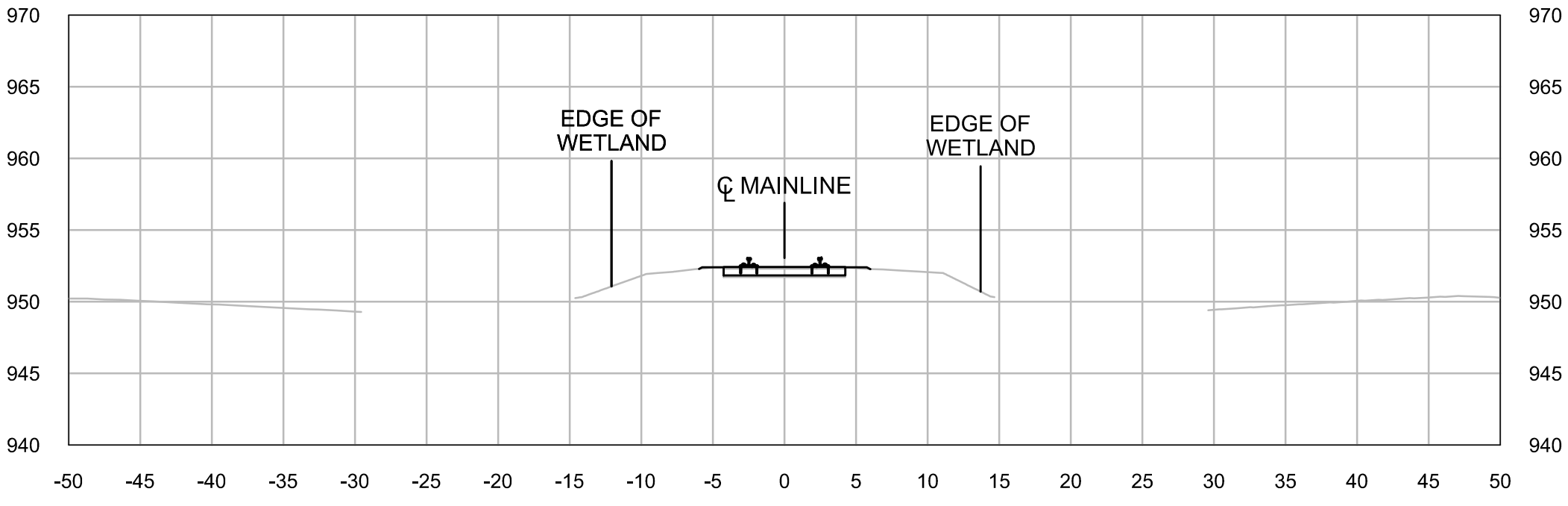
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				 HDR, INC. 90 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 357-7700		 Massachusetts Department of Transportation Rail & Transit Division	
SCALE:		DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE	
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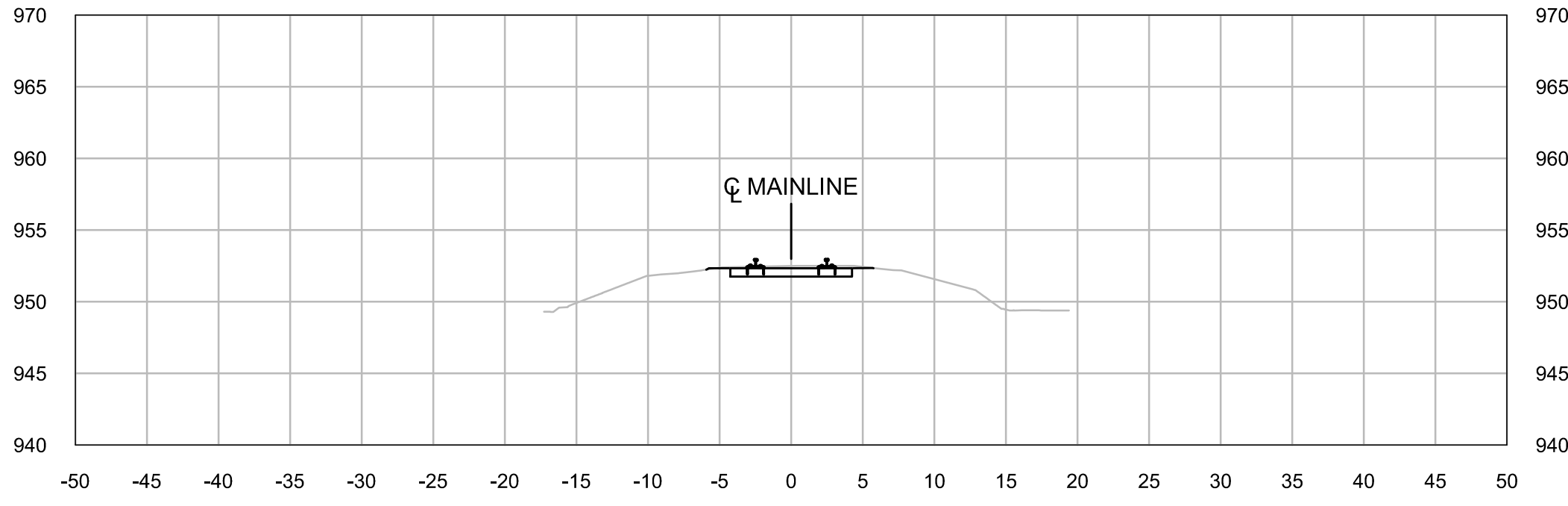
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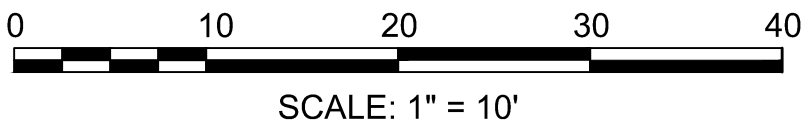
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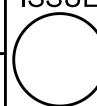


12+40



13+00



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				 HDR, INC. 90 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 357-7700		 Massachusetts Department of Transportation Rail & Transit Division	
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ISSUE	DATE	DESCRIPTION		BY	CHK'D	APP.	

STRUCTURAL GENERAL NOTES

DESIGN, CONTRUCTION AND FABRICATION

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2022 MASSDOT STANDARD SPECIFICATIONS AND SUPPLEMENTAL SPECIFICATIONS DATED JUNE 30, 2022, SPECIAL PROVISIONS PROVIDED IN THE CONTRACT DOCUMENTS, AND THE LATEST EDITION OF AMERICAN RAILWAY ENGINEERING AND MAINTENANCE–OF–WAY ASSOCIATION (AREMA) "MANUAL FOR RAILWAY ENGINEERING". IN THE EVENT OF DISCREPANCIES BETWEEN THE AREMA SPECIFICATIONS AND THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, THE MORE STRINGENT SPECIFICATION SHALL APPLY AS DETERMINED BY THE ENGINEER.

LIVE LOAD

THE DESIGN LIVE LOAD FOR THE BRIDGE IS AREMA COOPER E80 LOADING.

EXISTING CONDITIONS

ALL DIMENSIONS AND ELEVATIONS SHOWN ON EXISTING STRUCTURE ARE FROM LIMITED FIELD INVESTIGATION. ALL DIMENSIONS AND EXISTING DETAILS NECESSARY FOR THE COMPLETION OF WORK SHALL BE DETERMINED BY THE CONTRACTOR BY FIELD MEASUREMENT AND PRE–CONSTRUCTION SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE FIELD MEASUREMENTS AND PRE–CONSTRUCTION SURVEY, AND SHALL NOT ORDER ANY MATERIAL OR BEGIN FABRICATION OR CONSTRUCTION UNTIL THE FIELD MEASUREMENTS AND PRE–CONSTRUCTION SURVEY ARE COMPLETED AND THE EXTENT OF THE PROPOSED WORK IS APPROVED BY THE ENGINEER.

DATUM

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

MATERIALS

CONCRETE

1. THE COMPRESSIVE STRENGTH OF THE CONCRETE SHALL BE:

PRESTRESSED CONCRETE:
f'ci = 5,000 PSI (AT TRANSFER)
fc = 7,000 PSI (28 –DAY)

REMAINING:
fc = 5,000 PSI (28 –DAY)

2. CONCRETE AGGREGATE SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED IN THE CURRENT EDITION OF ASTM C33. COARSE AGGREGATE SHALL BE SIZE NO. 67.

PRESTRESSING STRANDS

1. PRESTRESSING STRAND SHALL BE 0.6–INCH DIAMETER, SEVEN–WIRE, UNCOATED, LOW–RELAXATION STRAND WHICH IS IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED IN ASTM A416. THE STRAND SHALL HAVE AN ULTIMATE TENSILE STRENGTH OF 270 KSI. THE INITIAL PRESTRESS SHALL BE 43,400 LBS. PER STRAND UNLESS NOTED OTHER OTHERWISE.
2. STRAND SHALL BE TESTED IN ACCORDANCE WITH PCI RECOMMENDATIONS (MOUSTAFA METHOD) AND CERTIFIED BY THE FABRICATOR AS HAVING ADEQUATE BOND CHARACTERISTICS TO SATISFY THE PREDICTION EQUATIONS FOR TRANSFER AND DEVELOPMENT LENGTH GIVEN IN THE AREMA MANUAL FOR RAILWAY ENGINEERING.
3. AN ALTERNATE STRAND PATTERN WHICH HAS THE SAME ECCENTRICITY AS THE PATTERN SHOWN ON THIS PLAN AND IS BETTER SUITED TO THE MANUFACTURE'S FACILITIES WILL BE CONSIDERED. MANUFACTURER MUST SUBMIT PLAN AND COMPUTATIONS FOR RAILROAD APPROVAL PRIOR TO CASTING.

REINFORCING STEEL

1. REINFORCING STEEL SHALL BE DEFORMED AND EPOXY COATED, PER CURRENT ASTM A615 SPECIFICATIONS AND MUST MEET GRADE 60 REQUIREMENT. EPOXY COATING SHALL BE IN ACCORDANCE WITH ASTM A775.
2. FABRICATION OF REINFORCING STEEL SHALL BE PER CHAPTER 7 OF THE CRSI MANUAL OF STANDARD PRACTICE. DIMENSIONS OF BENDING DETAILS ARE OUT–TO–OUT OF BAR.
3. REINFORCING STEEL IS TO BE BLOCKED TO PROPER LOCATION AND SECURELY WIRED AGAINST DISPLACEMENT. USE PLASTIC PROTECTED REINFORCING SUPPORTS MEETING CRSI SPECIFICATIONS CHAPTER 3, CLASS 1. TACK WELDING OF REINFORCING IS PROHIBITED. MINIMUM CONCRETE ON REINFORCEMENT SHALL MEET CURRENT AREMA REQUIREMENTS.

MINIMUM CONCRETE COVER
DECK SLAB : 1 1/2 INCHES.
REMAINDER : 2 INCHES, UNLESS OTHERWISE NOTED.

STEEL

1. STRUCTURAL STEEL PLATES AND BARS SHALL MEET THE REQUIREMENTS OF THE CURRENT ASTM DESIGNATION: A709, GR. 36. UNLESS OTHERWISE NOTED.
2. PILING SHALL BE STEEL H–PILES, ASTM A572, GRADE 50.
3. STEEL SHEET PILING SHALL BE UNCOATED HOT–ROLLED STEEL PZ 35 SECTIONS MEETING THE CHEMICAL AND MECHANICAL REQUIREMENTS OF ASTM A572 GRADE 50.
4. ALL WELDING AND THE PREPARATION AND ASSEMBLY OF MATERIAL FOR WELDING SHALL BE IN ACCORDANCE WITH THE BRIDGE WELDING CODE, ANSI/AASHTO/AWS D1.5. ELECTRODES SHALL BE E70XX.

GALVANIZING

1. ALL STEEL PIPES, ANGLES, CHANNEL AND DECK PLATES SHALL BE HOT–DIPPED GALVANIZED PER ASTM A123.
2. BOLTS, NUTS, INSERTS NUTS AND WASHERS SHALL BE GALVANIZED ACCORDING TO ASTM A153 (HOT DIP PROCESS) OR ACCORDING TO ASTM B695, CLASS 50. TYPE 1 (MECHANICAL PROCESS).

PAINTING

1. THE EXPOSED PORTION OF ANY STEEL (PILE PLATES, BRACKETS, LONGITUDINAL RESTRAINT BRACKETS, EMBEDDED PLATES, ETC.) SHALL BE PAINTED WITH ONE FIELD COAT OF CHEMICAL MASTIC CM–15 (OR APPROVED EQUAL), METALLIC ALUMINUM COLOR, APPLIED TO A DRY FILM THICKNESS OF 8 MILS. CORRESPONDING TO A WET FILM THICKNESS OF 10 MILS. PAINT APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTION.
2. INFORMATION PERTAINING TO CHEMICAL MASTIC CM–15 (OR APPROVED EQUAL) CAN BE OBTAINED FROM THE MANUFACTURER.

FABRICATION

CONCRETE

1. PRODUCTION PROCEDURES AND DIMENSIONAL TOLERANCES FOR THE MANUFACTURE OF PRECAST. PRESTRESSED GIRDERS SHALL BE IN ACCORDANCE WITH THE AREMA MANUAL FOR RAILWAY ENGINEERING AND THE PRESTRESSED CONCRETE INSTITUTES CURRENT MANUA LL MNL –116 FOR QUALITY CONTROL.
2. TOLERANCE FOR LOCATION OF LIFTING LOOPS SHALL BE ± 1/2".
3. THE ENDS OF THE STRANDS SHALL BE CUT OFF FLUSH WITH THE END OF THE BEAM AND PAINTED. RECESSES AND MINOR SPALLS MUST BE FILLED AND FINISHED TO THE PLAN DIMENSIONS USING AN EPOXY BONDING COMPOUND AND GROUT.
4. CONCRETE CURB SHALL BE CAST AFTER THE GIRDER IS REMOVED FROM THE FORM.
5. CONCRETE BONDING AGENT: REFER TO SPECIFICATIONS.
6. SURFACES SHALL BE FORMED IN A MANNER WHICH WILL PRODUCE A SMOOTH AND UNIFORM APPEARANCE WITHOUT RUBBING OR PLASTERING. UNLESS OTHERWISE NOTED, EXPOSED EDGES OF 90–DEGREES OR LESS ARE TO BE CHAFFERED 3/4" X 3/4". UNFORMED SURFACES SHALL HAVE A SMOOTH FINISH FREE OF ALL FLOAT AND TROWEL MARKS.
7. THE FABRICATOR SHALL STENCIL THE FABRICATOR'S NAME, DATE OF FABRICATION PLACE MARK AND LIFTING WEIGHT ON EACH PIECE.
8. FABRICATOR IS RESPONSIBLE FOR ADEQUACY OF LIFTING DEVICES.
9. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" UNLESS OTHERWISE NOTED.
10. ALL BAR–BENDING AND STANDARD HOOK DIMENSIONS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE" AS PUBLISHED BY THE CONCRETE REINFORCING STEEL INSTITUTE UNLESS OTHERWISE SHOWN OR NOTED.

CONSTRUCTION

GENERAL

1. THERE IS NO CONSTRUCTION STAGING AREA AT THE JOB SITE DESIGNATED. AS REQUIRED, THE CONTRACTOR SHALL PROVIDE HIS/HER OWN OFF–SITE STAGING AREA.
2. THE CONTRACTORS'S ATTENTION IS CALLED TO THE FACT THAT CONTINUOUS COORDINATION WITH THE OPERATOR, HOUSATONIC RAILROAD COMPANY (HRRC), WILL BE REQUIRED THROUGHOUT CONSTRUCTION. HRRC WILL PROVIDE THE CONTRACTOR WITH FLAGGERS FOR PROTECTION FROM RAILROAD TRAFFIC WHILE WORK IS BEING PERFORMED ON THE RAILROAD RIGHT–OF–WAY (R.O.W.). THE CONTRACTOR SHALL NOT ENTER THE R.O.W. AT ANYTIME WITHOUT HRRC AUTHORIZATION. THE CONTRACTOR WILL ALSO BE REQUIRED TO OBTAIN R.O.W. TRAINING PRIOR TO WORKING IN THE R.O.W.
3. ALL WORK SHALL BE PERFORMED DURING A SERIES OF SHUTDOWNS OF RAILROAD TRAFFIC. THE CONTRACTOR SHALL COORDINATE ALL SHUTDOWNS WITH HRRC. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION REGARDING SPECIFIC DATES, LENGTH OF SHUTDOWNS, AND LIQUIDATED DAMAGE PENALTIES FOR EXCEEDING AUTHORIZED TIME LIMITS.
4. ALL CONSTRUCTION AND ACCESS SHALL BE WITHIN THE R.O.W. UNLESS OTHERWISE APPROVED BY THE PROPERTY OWNER(S) AND MASSDOT. THE CONTRACTOR SHALL COORDINATE DIRECTLY WITH THE PROPERTY OWNER(S) TO OBTAIN WRITTEN APPROVAL OF LAND USE OUTSIDE THE R.O.W. THE CONTRACTOR SHALL SUBMIT COPIES OF WRITTEN PROPERTY AGREEMENTS TO THE RESIDENT ENGINEER.
5. ANY DAMAGE TO REMAINING EXISTING COMPONENTS THAT IS CAUSED BY THE CONTRACTOR’S ACTIVITY SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AS DIRECTED AND APPROVED BY THE ENGINEER, AT NO ADDITIONAL EXPENSE TO THE BRIDGE OWNER OR RAILROAD OPERATOR.
6. THE CONTRACTOR SHALL PROVIDE SAFE ACCESS TO ALL AREAS OF WORK ON THE BRIDGE FOR THE ENGINEER’S INSPECTIONS. COSTS SHALL BE INCLUDED IN MOBILIZATION.
7. ALL EXISTING MATERIALS NOT REUSED OR RESET AS PART OF THIS PROJECT SHALL BE CONSIDERED WASTE MATERIAL. ALL WASTE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AND PROPERLY DISPOSED OF. ALL TREATED TIMBER SHALL BE DISPOSED OF ONLY AT AN APPROVED FACILITY.
8. COORDINATE RAIL TRAFFIC SHUTDOWNS AND THE USE OF TEMPORARY STAGING AREA DURING THE SHUTDOWN WITH THE RAILROAD.

MORTAR FOR SETTING BEAM

1. BEAMS SHALL HAVE FULL AND EVEN BEARING UPON THE BRIDGE SEAT AREAS. IF NEEDED, MORTAR CONSISTING OF EQUAL PARTS BY VOLUME OF CLASS B EPOXY AND DRY SILICA SAND, FIXED IN ACCORDANCE WITH THE MANUFACTURER’S DIRECTIONS, SHALL BE SPREAD ON THE TOP OF BEARING PADS TO OBTAIN UNIFORM BEARING. SCRAPE EXCESS MORTAR FROM AROUND BEARING PADS AFTER THE BEAMS ARE SET.
2. AFTER PRECAST CONCRETE MEMBERS ARE SET. THE ENDS OF THE LIFTING LOOP STRANDS SHALL BE BURNED OFF AND RECESSED TO A DEPTH OF 1 INCH. FILL RECESSES AT LIFT ANCHORS WITH CEMENT GROUT TO TOP OF SURROUNDING CONCRETE.

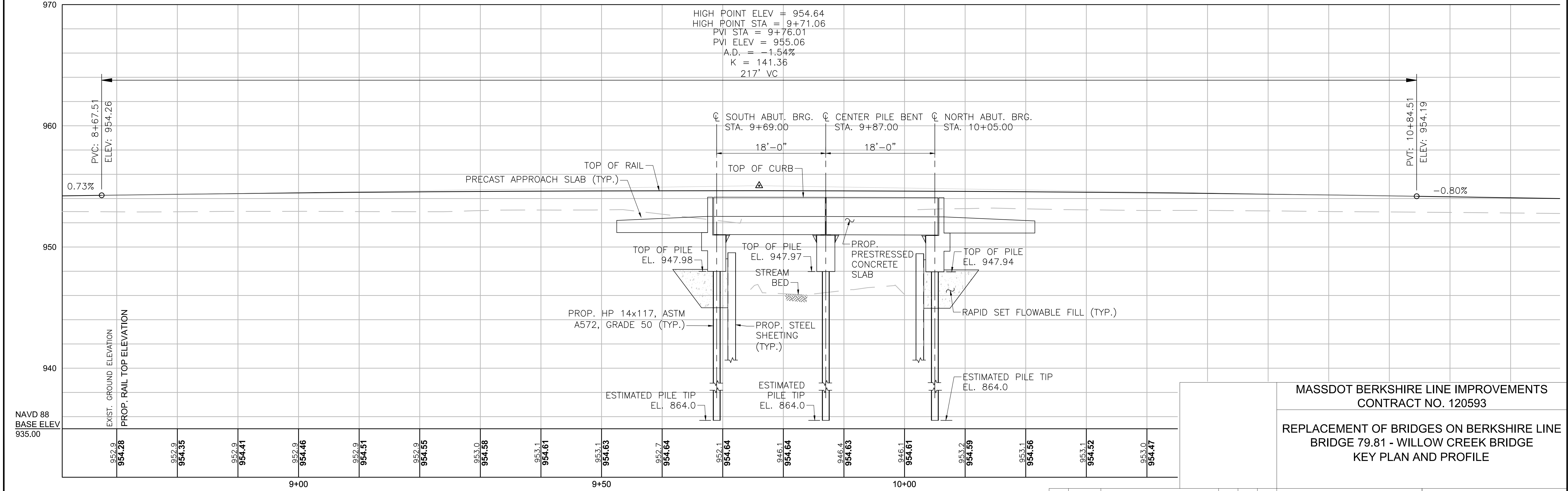
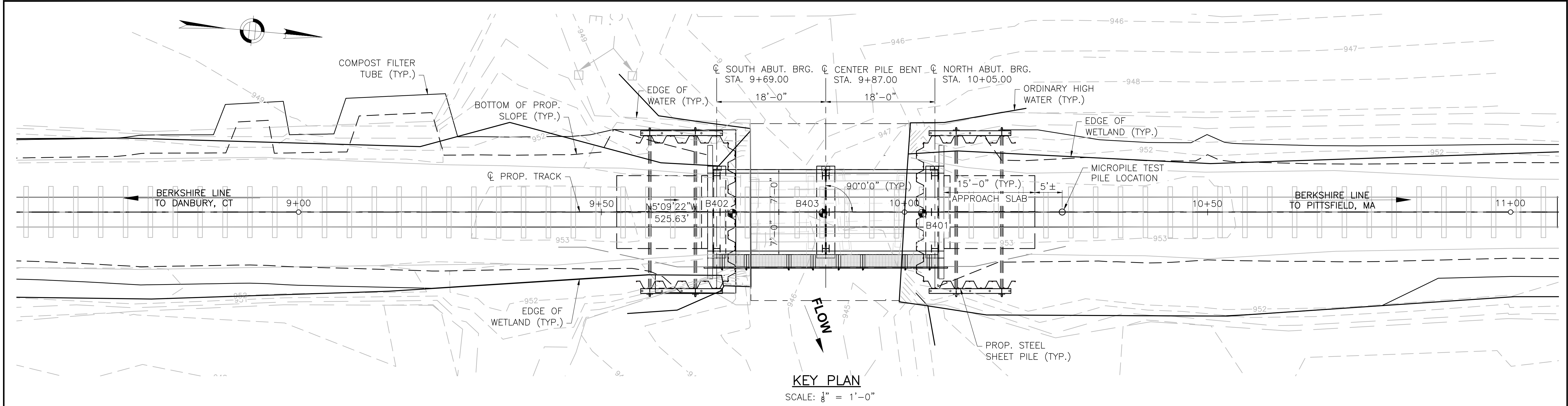
ENVIRONMENTAL:

1. THE CONTRACTOR SHALL PREVENT ANY CONSTRUCTION DEBRIS FROM ENTERING THE WATERWAYS, PUBLIC OR PRIVATE PROPERTY, OR TRAVELED WAYS DURING CONSTRUCTION. ALL WASTE MATERIAL GENERATED AS PART OF THIS PROJECT SHALL BE DISPOSED OF OFF SITE.
2. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE STATUTES AND REGULATIONS RELATING TO THE PREVENTION AND ABATEMENT OF ALL POLLUTION.
3. SEE SPECIFICATIONS FOR REQUIREMENTS FOR WORKING AT PROJECT SITE.

ABBREVIATIONS:

B.F.	BACK FACE
BOT.	BOTTOM
E.F.	EACH FACE
EL. OR ELEV.	ELEVATION
EQ. SP.	EQUALLY SPACED
F.F.	FRONT FACE
R/F	REINFORCEMENT
TYP.	TYPICAL
W.P.	WORKING POINT

								MASSDOT BERKSHIRE LINE IMPROVEMENTS CONTRACT NO. 120593					
								REPLACEMENT OF BRIDGES ON BERKSHIRE LINE BRIDGE 79.81 - WILLOW CREEK BRIDGE STRUCTURAL GENERAL NOTES					
								 HDR, INC. 90 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 357-7700		 Massachusetts Department of Transportation Rail & Transit Division			
												ISSUE	
SCALE: AS NOTED		DRAWN BY: JQW		DESIGN BY: JQW		CHECK BY: SSL		PLAN NO.					
DATE: 12/12/2022								SHEET: S–1					



NOTES:
MICROPILE OPTION NOT SHOWN FOR CLARITY. SEE SHEET S-8A FOR DETAILS.

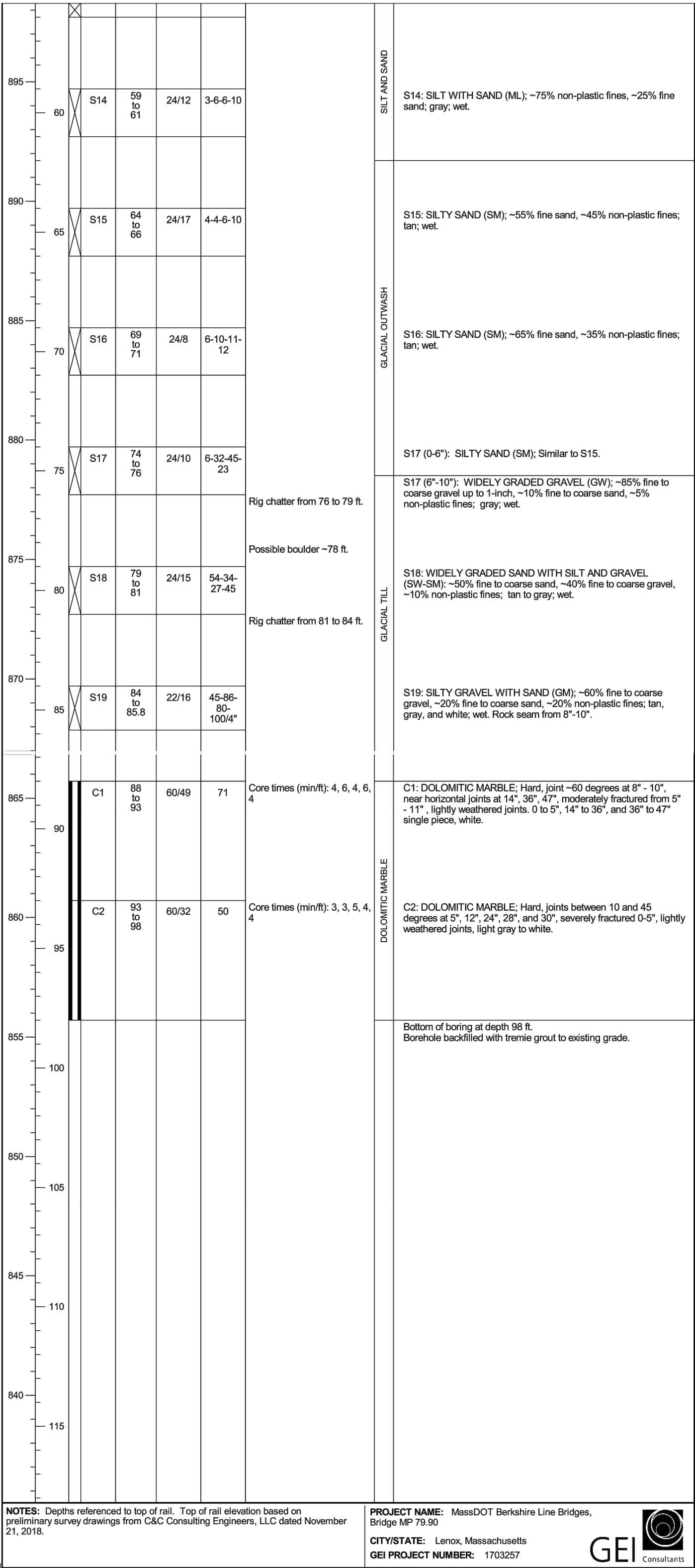
HDR, INC. 90 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 357-7700				Massachusetts Department of Transportation Rail & Transit Division			
SCALE: AS NOTED		DRAWN BY: SSL	DESIGN BY: SSL	CHECK BY: JQW	PLAN NO. SHEET: S-2		ISSUE
DATE: 12/12/2022							
ISSUE	DATE	DESCRIPTION		BY	CHKD	APP.	

BORING B402

BORING B402
(CONTINUED)

BORING B403

BORING INFORMATION										BORING	
LOCATION: Bridge 79.90, South Abutment										B402	
GROUND SURFACE EL. (ft): 953.7										PAGE 1 of 4	
VERTICAL DATUM: NAVD 88											
TOTAL DEPTH (ft): 98.0											
LOGGED BY: D. Litton											
DATE START/END: 10/4/2018 - 10/9/2018											
DRILLING COMPANY: Aquifer Drilling and Testing, Inc.											
DRILLER NAME: Tim Van Ness											
RIG TYPE: CME Hi-Rail Mounted Truck Rig											
DRILLING INFORMATION											
HAMMER TYPE: Automatic				CASING I.D./O.D.: 4 inch / 4.5 inch				CORE BARREL TYPE: NX			
AUGER I.D./O.D.: NA / NA				DRILL ROD O.D.: 2.675 inch				CORE BARREL I.D./O.D.: 2 inch / 3 inch			
DRILLING METHOD: Driven casing and washed with rotary tooling.											
WATER LEVEL DEPTHS (ft): Not measured											
ABBREVIATIONS:											
Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation Length of Sound Core=4 in / Pen. % WOR = Weight of Rods WQH = Weight of Hammer											
S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger											
Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter											
NA, NM = Not Applicable, Not Measured Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.											
Elev. (ft)	Depth (ft)	Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description			
950 5 945 10 940 15 935 20 930 25 925 30 920 35 915 40 910 45 905 50 900 55		S1	0.5 to 2.5	24/4	5-6-5-3		SAND AND GRAVEL	(0-6"); BALLAST. S1: WIDELY GRADED SAND WITH GRAVEL (SW); ~50% fine to coarse sand, ~45% fine to coarse gravel, ~5% non-plastic fines; black; moist. <FILL>			
		S2	2.5 to 4.5	24/3	6-8-12-10	Wood in drill wash ~4 ft. Drill through timber. Drill wash color change ~6 ft.		S2: WIDELY GRADED GRAVEL WITH SAND (GW); ~80% fine to coarse gravel, ~15% fine to coarse sand, ~5% non-plastic fines; brown to black; wet. <FILL>			
		S3	7 to 9	24/11	4-4-6-7			S3: SILT WITH SAND (ML); ~85% non-plastic fines, 15% fine sand; gray; wet.			
		S4	9 to 11	24/19	9-13-11-15	Mix mud. Continue open hole.		S4: SILTY SAND (SM); ~70% fine sand, ~30% non-plastic fines; gray; wet.			
		S5	14 to 16	24/10	8-9-3-4			S5: SILTY SAND (SM); ~65% fine to medium sand, ~30% non-plastic fines, ~5% fine gravel; brown; wet. Wood fibers.			
		S6	19 to 21	24/13	5-9-6-8			S6: SILTY SAND (SM); Similar to S3.			
		S7	24 to 26	24/14	7-7-6-9			S7: SILT WITH SAND (ML); ~85% non-plastic to low plastic fines, ~15% fine sand; gray; wet. ~7 inch timber in spoon. Wood grain parallel to spoon.			
		S8	29 to 31	24/18	9-12-7-10			S8: SILTY SAND (SM); ~60% fine to medium sand, ~40% non-plastic fines; tan to gray; wet. Wood fibers.			
		S9	34 to 36	24/15	2-2-3-2	Use paint screen to clean timber fibers from tub.		S9: SILT WITH SAND (ML); ~75% non-plastic to low plastic fines, ~25% fine sand; gray with tan seams; wet.			
		S10	39 to 41	24/10	3-4-3-3			S10: SANDY SILT (ML); ~60% non-plastic fines, ~40% fine sand; tan; wet.			
		S11	44 to 46	24/13	2-2-2-1			S11: SANDY SILT (ML); Similar to S10, except gray.			
		S12	49 to 51	24/14	2-2-3-2			S12: LEAN CLAY WITH SAND (CL); ~85% low plastic fines, ~15% fine sand; gray with tan bands.			
		S13	54 to 56	24/10	3-3-4-5			S13: SANDY SILT (ML); ~60% non-plastic fines, ~40% fine sand; tan; wet.			



ESTIMATED PILE TIP
ELEV. 864.0 FOR
H-PILES

ESTIMATED PILE TIP
ELEV. 855.0 FOR
MICROPILE

BORING NOTES:

- LOCATION OF BRIDGE BORINGS SHOWN ON THE PLAN THUS: B#
- BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
- WATER LEVELS SHOWN ON THE BORING LOG WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
- FIGURES IN BLOW COUNT COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 2" O.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
- ALL BORINGS WERE MADE IN OCTOBER, 2018.
- THE BORINGS WERE MADE BY AQUIFER DRILLING AND TESTING, INC. OF MINEOLA, NEW YORK.
- THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.

BORING INFORMATION										BORING	
LOCATION: Bridge 79.90, Mid-span										B403	
GROUND SURFACE EL. (ft): 953.7										PAGE 1 of 2	
VERTICAL DATUM: NAVD 88											
TOTAL DEPTH (ft): 32.0											
LOGGED BY: D. Litton											
DATE START/END: 10/9/2018 - 10/9/2018											
DRILLING COMPANY: Aquifer Drilling and Testing, Inc.											
DRILLER NAME: Tim Van Ness											
RIG TYPE: CME Hi-Rail Mounted Truck Rig											
DRILLING INFORMATION											
HAMMER TYPE: Automatic				CASING I.D./O.D.: 4 inch / 4.5 inch				CORE BARREL TYPE: NA			
AUGER I.D./O.D.: NA / NA				DRILL ROD O.D.: 2.675 inch				CORE BARREL I.D./O.D.: NA / NA			
DRILLING METHOD: Spun and driven casing and washed with rotary tooling.											
WATER LEVEL DEPTHS (ft): 3.3 10/9/2018 8:58 am											
ABBREVIATIONS:											
Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation Length of Sound Core=4 in / Pen. % WOR = Weight of Rods WQH = Weight of Hammer											
S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger											
Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter											
NA, NM = Not Applicable, Not Measured Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.											
Elev. (ft)	Depth (ft)	Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description			
950 5 945 10 940 15 935 20 930 25 925 30 920 35 915 40 910 45 905 50 900 55		S1	6 to 8	24/8	1-1-2-8		S&G	S1: WIDELY GRADED GRAVEL WITH SILT AND SAND (GW-GM); 56.6% fine to coarse angular gravel, 32.6% fine to coarse sand, 10.8% non-plastic fines (from grain size analysis); black; wet. 4-inch timber in spoon. <FILL>			
		S2	8 to 10	24/16	34-38-84-33			S2 (0-6"); SILTY GRAVEL WITH SAND (GM); ~60% fine to coarse gravel, ~25% non-plastic to low plastic fines, ~15% fine to coarse sand; black; wet.			
		S3	10 to 12	24/15	17-19-20-16			S2(6"-16"); SILTY SAND WITH GRAVEL (SM) ~40% fine to coarse sand, ~30% non-plastic fines, ~30% fine to coarse gravel; gray; wet.			
		S4	12 to 14	24/11	16-17-18-26			S3: SILT (ML); 94.6% non-plastic fines, 5.4% fine sand (from grain size analysis); gray; wet.			
		S5	14 to 16	24/18	20-26-30-33			S4: SILT WITH SAND (ML); ~75% non-plastic to low plastic fines, ~20% fine to coarse sand, ~5% fine gravel; gray; wet.			
		S6	20 to 22	24/16	10-17-18-17			S5: SANDY SILT (ML); 72.1% non-plastic fines, 27.9% fine sand (from grain size analysis); gray; wet.			
		S7	25 to 27	24/12	3-3-5-10			S6: SILT (ML); 89.7% non-plastic fines, 10.3% fine sand (from grain size analysis); gray; wet.			
		S8	30 to 32	24/20	4-4-5-5			S7: SILT (ML); ~90% non-plastic to low plastic fines; ~10% fine sand; gray to tan; wet.			
NOTES: Depths referenced to top of rail. Top of rail elevation based on preliminary survey drawings from C&C Consulting Engineers, LLC dated November 21, 2018. S1-S3 were taken with a 3-inch split spoon. Debris and organics were resting on top of stream bed.											
PROJECT NAME: MassDOT Berkshire Line Bridges, Bridge MP 79.90											
CITY/STATE: Lenox, Massachusetts											
GEI PROJECT NUMBER: 1703257											

MASSDOT BERKSHIRE LINE IMPROVEMENTS
CONTRACT NO. 120593

REPLACEMENT OF BRIDGES ON BERKSHIRE LINE
BRIDGE 79.81 - WILLOW CREEK BRIDGE
BORING SHEET 1 OF 2

SCALE: AS NOTED		DRAWN BY: SSL	
DATE: 12/12/2022		DESIGN BY: SSL	
CHECK BY: JQW		PLAN NO. SHEET: S-3	
ISSUE		DATE	
DESCRIPTION		BY	
CHKD		APP.	

PAGE 1 of 4

TOP OF NORTH
ABUTMENT PILE
ELEV. 947.94

ESTIMATED PILE TIP
ELEV. 864.0 FOR
H-PILES

ESTIMATED PILE TIP
ELEV. 855.0 FOR
MICROPILE

	X								SILT AND SAND	S14: SILTY SAND (SM); ~65% fine sand, ~35% non-plastic fines; tan; wet.
895										
60	X	S14	59 to 61	24/11	4-7-7-10					
	X									
890										S15: SILTY SAND (SM); Similar to S14, except gray with tan bands.
65	X	S15	64 to 66	24/14	WCH-6- 7-8					
	X									
885										S16: SILTY SAND (SM); ~85% fine to medium sand, ~15% non-plastic fines; tan; wet.
70	X	S16	69 to 71	24/9	8-10-10- 14					
	X									
880										S17: WIDELY GRADED SAND WITH SILT (SW-SM); ~90% fine to coarse sand, 10% non-plastic fines; tan; wet.
75	X	S17	74 to 76	24/8	8-11-13- 16					
	X									
GLACIAL OUTWASH										S18: WIDELY GRADED SAND WITH SILT (SW-SM); Similar to S17.
875										
80	X	S18	79 to 81	24/13	7-10-11- 10					
	X									
GLACIAL TILL										S19: WIDELY GRADED GRAVEL WITH SAND AND SILT (GW-GM); ~60% fine to coarse gravel up to 1.5 inch, ~30% fine to coarse sand, ~10% non-plastic to low plastic fines; tan to white; wet.
870						Rig chatter ~84 ft.				
85	X	S19	84 to 86	24/8	35-42- 30-44					
	X									
Blt grinding between 86 to 89 ft.										
885										S20: WIDELY GRADED GRAVEL WITH SAND AND SILT (GW-GM); ~60% fine to coarse gravel up to 1 inch, ~30% fine to coarse sand, ~10% non-plastic to low plastic fines; tan; wet. Till. Bottom of boring at depth 89.8 feet. Grout mix: 2 bags (94-lb) portland cement, 1 bag bentonite. Borehole backfilled with tremie grout to existing grade.
90	X	S20	89 to 89.8	9/6	32-50/3"					
	X									
860										
95										
855										
-100										
850										
-105										
845										
-110										
840										
-115										

NOTES: Depths referenced to top of rail. Top of rail elevation based on preliminary survey drawings from C&C Consulting Engineers, LLC dated November 21, 2018.

PROJECT NAME: MassDOT Berkshire Line Bridges,
Bridge MP 79.90

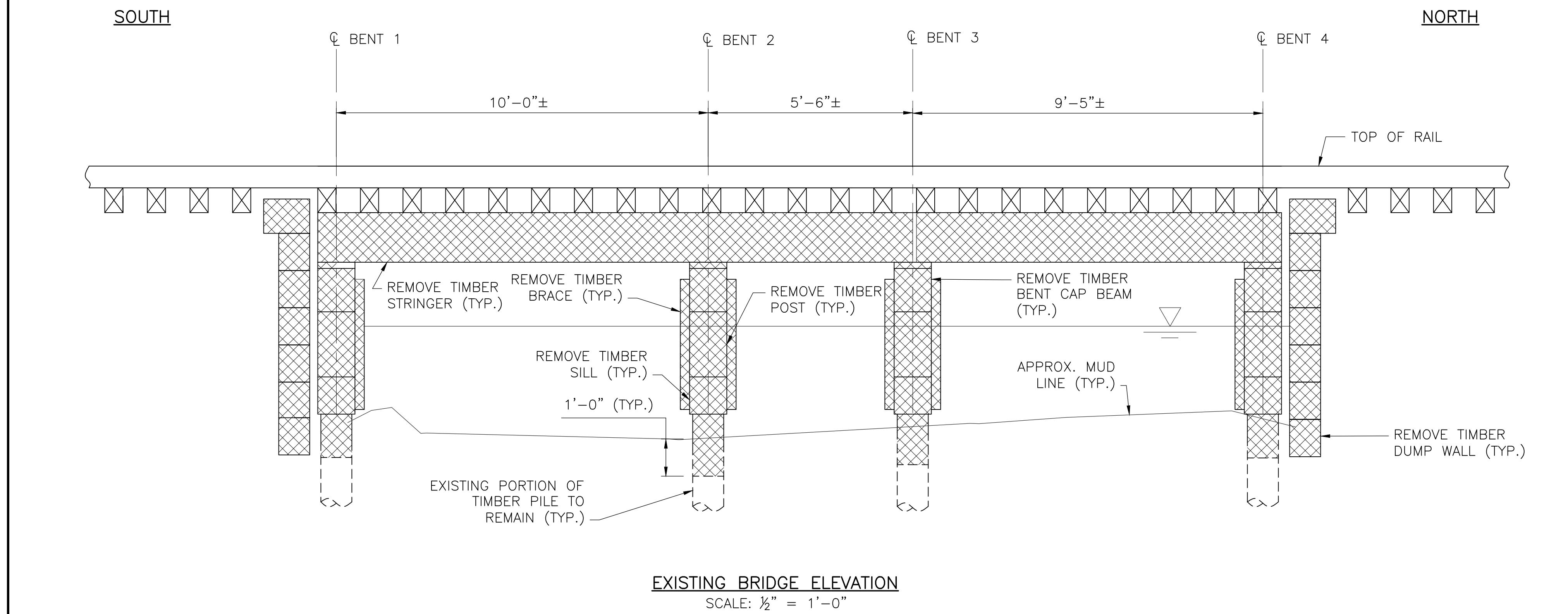
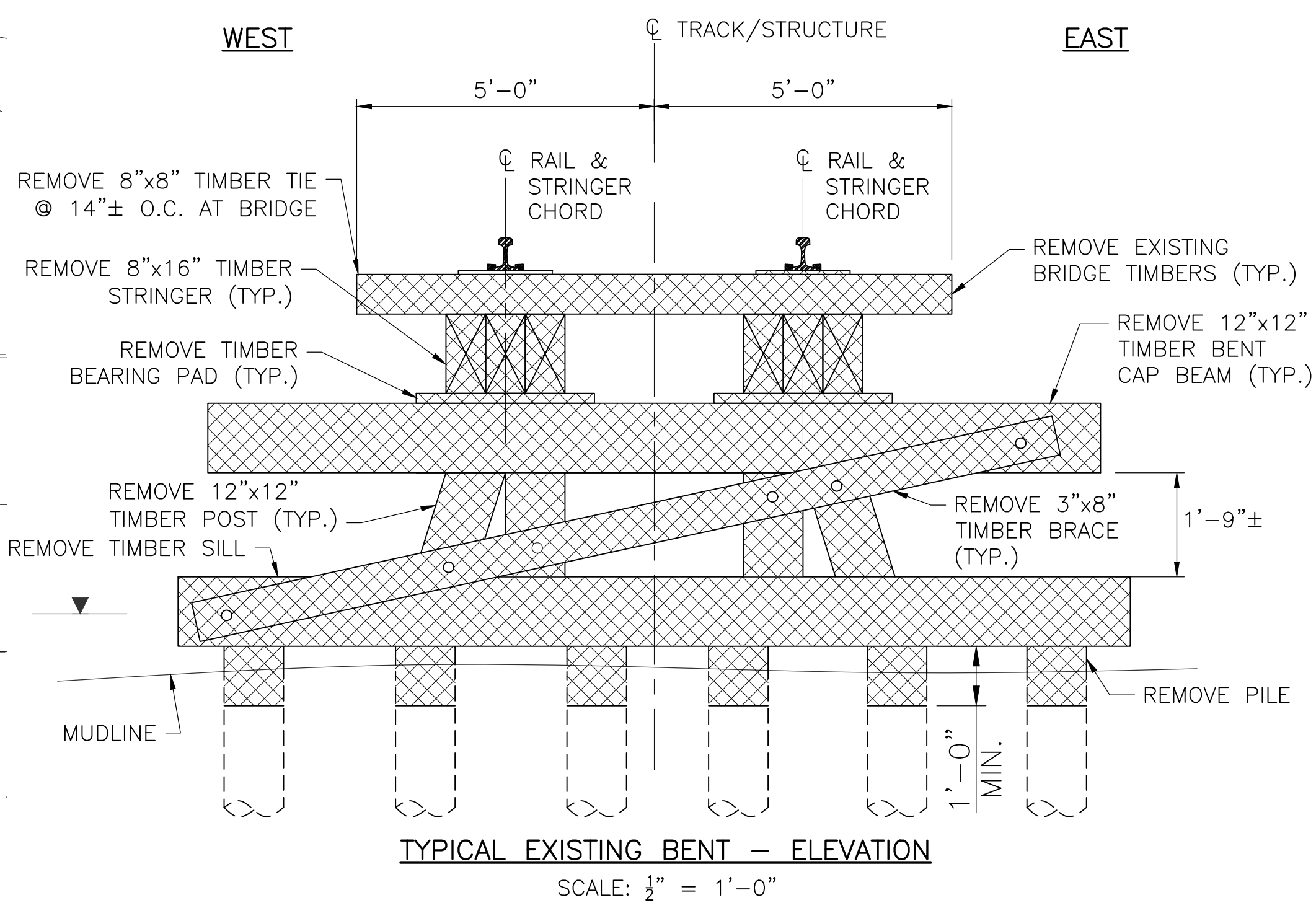
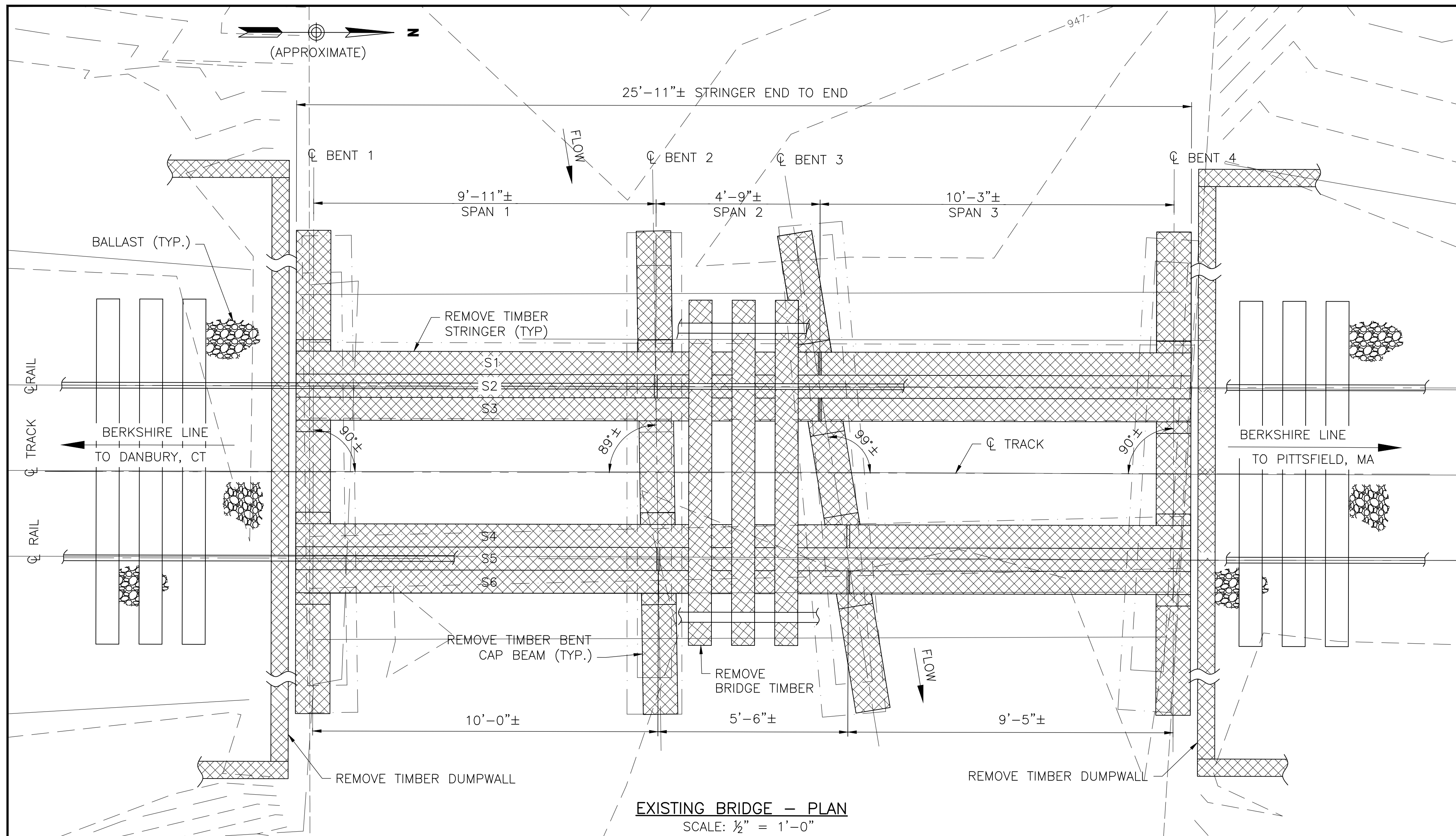
CITY/STATE: Lenox, Massachusetts

GEI PROJECT NUMBER: 1703257

NOTE:

FOR BORING NOTES. SEE SHEET S-3.

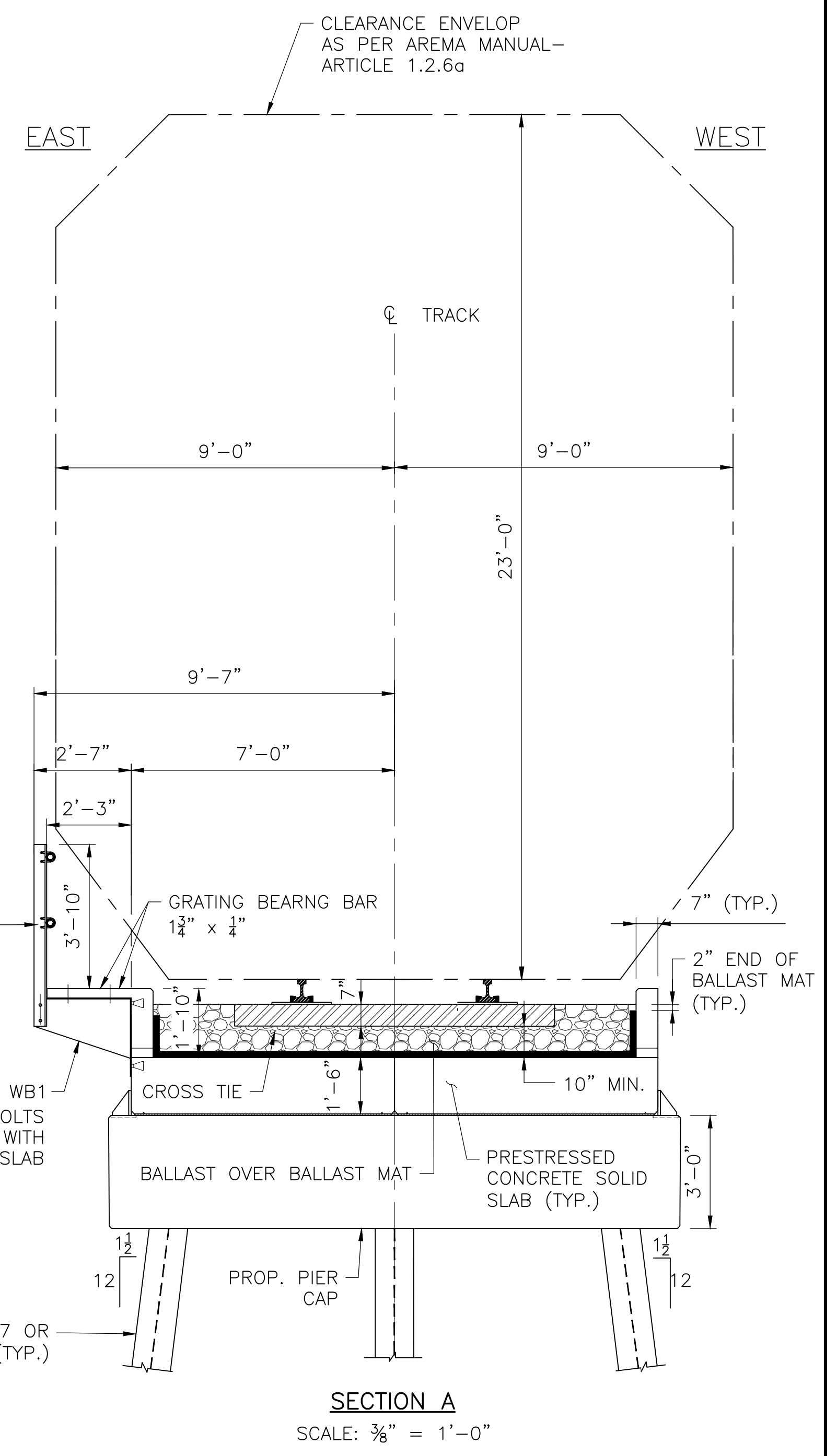
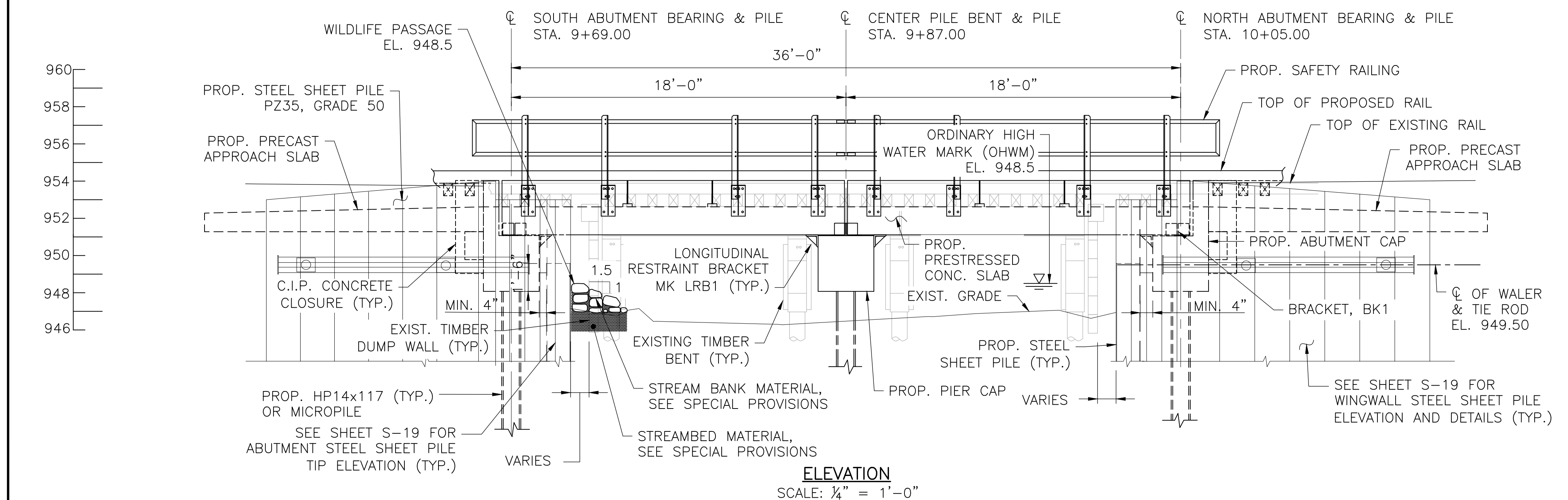
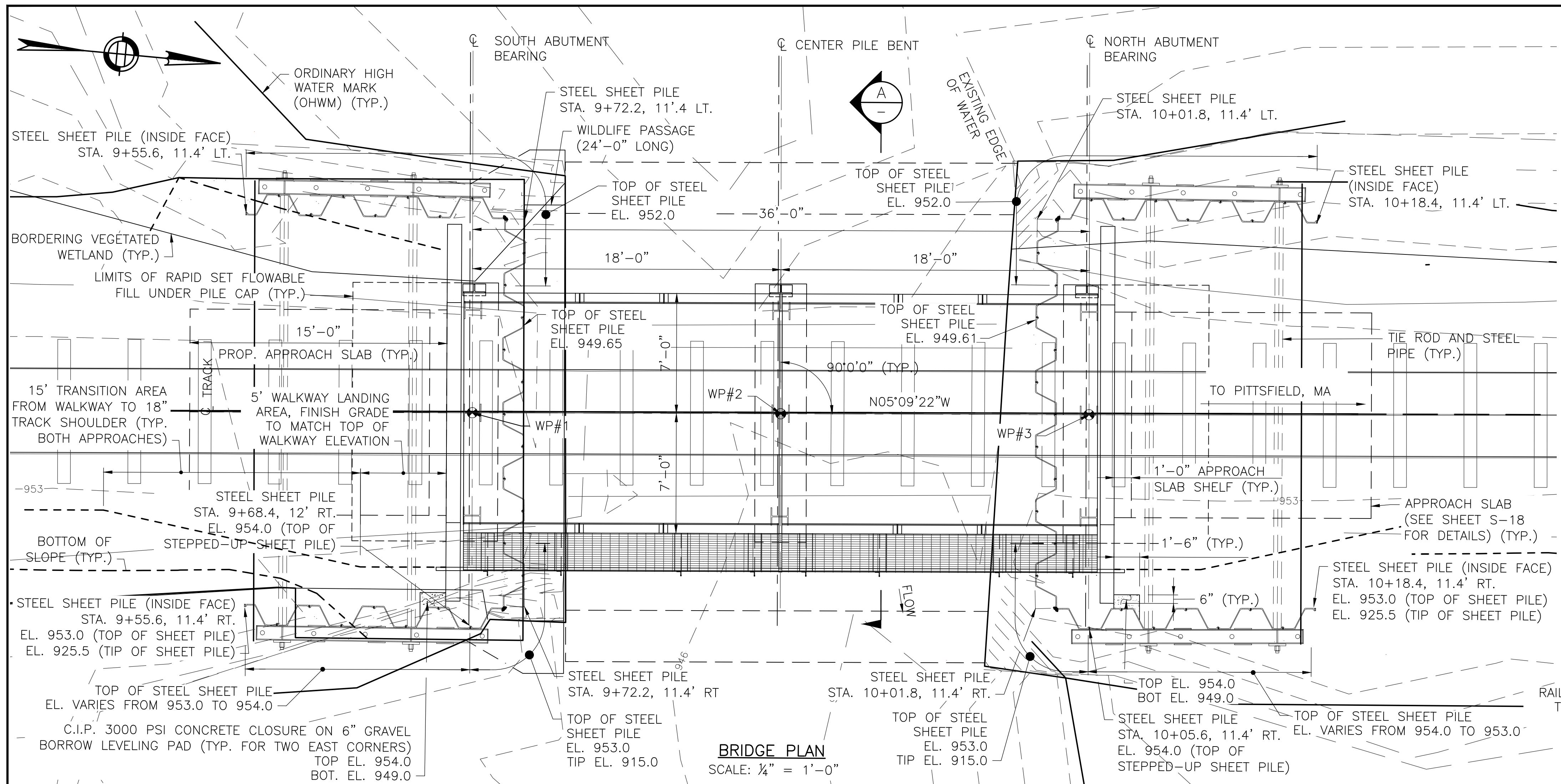
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LEGEND:

EXISTING STRUCTURE REMOVAL

MASSDOT BERKSHIRE LINE IMPROVEMENTS CONTRACT NO. 120593									
REPLACEMENT OF BRIDGES ON BERKSHIRE LINE BRIDGE 79.81 - WILLOW CREEK BRIDGE DEMOLITION LIMITS - PLAN AND ELEVATION									
 HDR, INC. 90 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 367-7700  Massachusetts Department of Transportation Rail & Transit Division									
SCALE: AS NOTED	DRAWN BY: A.T.	DESIGN BY: E.Y.	CHECK BY: SSL	PLAN NO.	ISSUE				
DATE: 12/12/2022				SHEET: S-5					



NOTES:

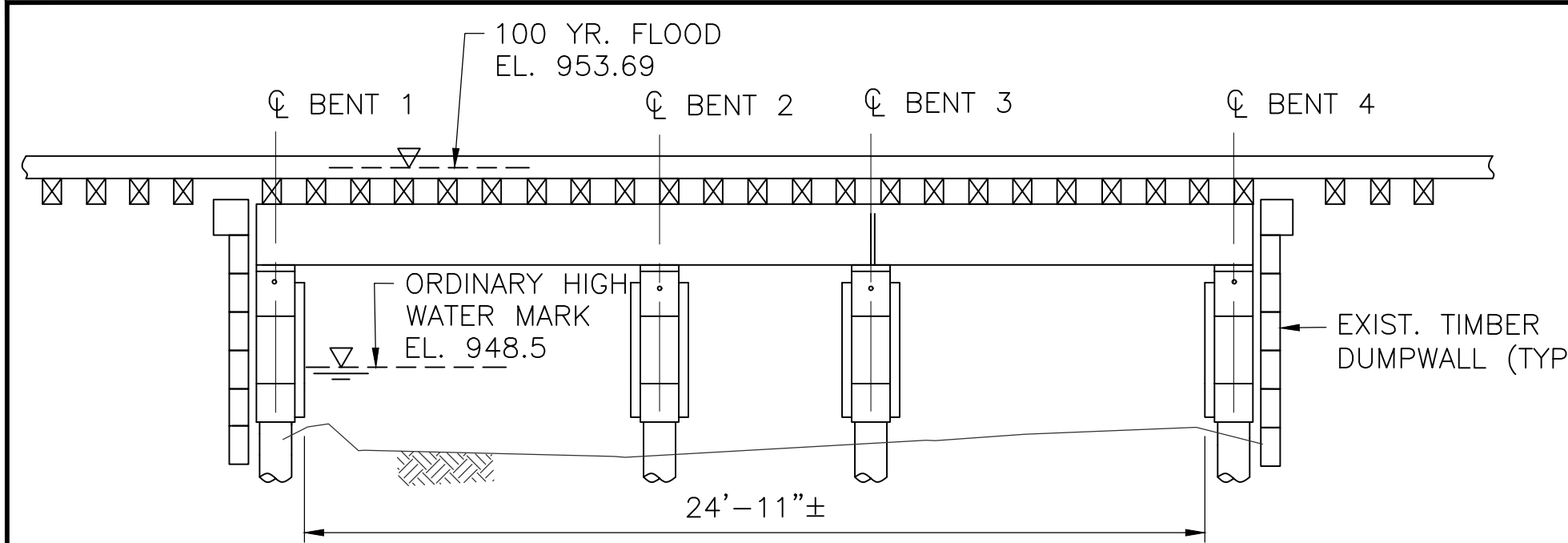
- FOR GENERAL NOTES, SEE SHEET S-1.
- W.P. ELEVATIONS CORRESPOND TO THE ELEVATION OF THE TOP OF THE RAIL AT STATION INDICATED.
- FILL GAP BETWEEN END OF BEAM AND FACE OF BACKWALL WITH PLIES OF PREFORMED JOINT FILLER.
- MICROPILE OPTION NOT SHOWN FOR CLARITY SEE SHEET S-8A FOR DETAILS.

ABBREVIATIONS:

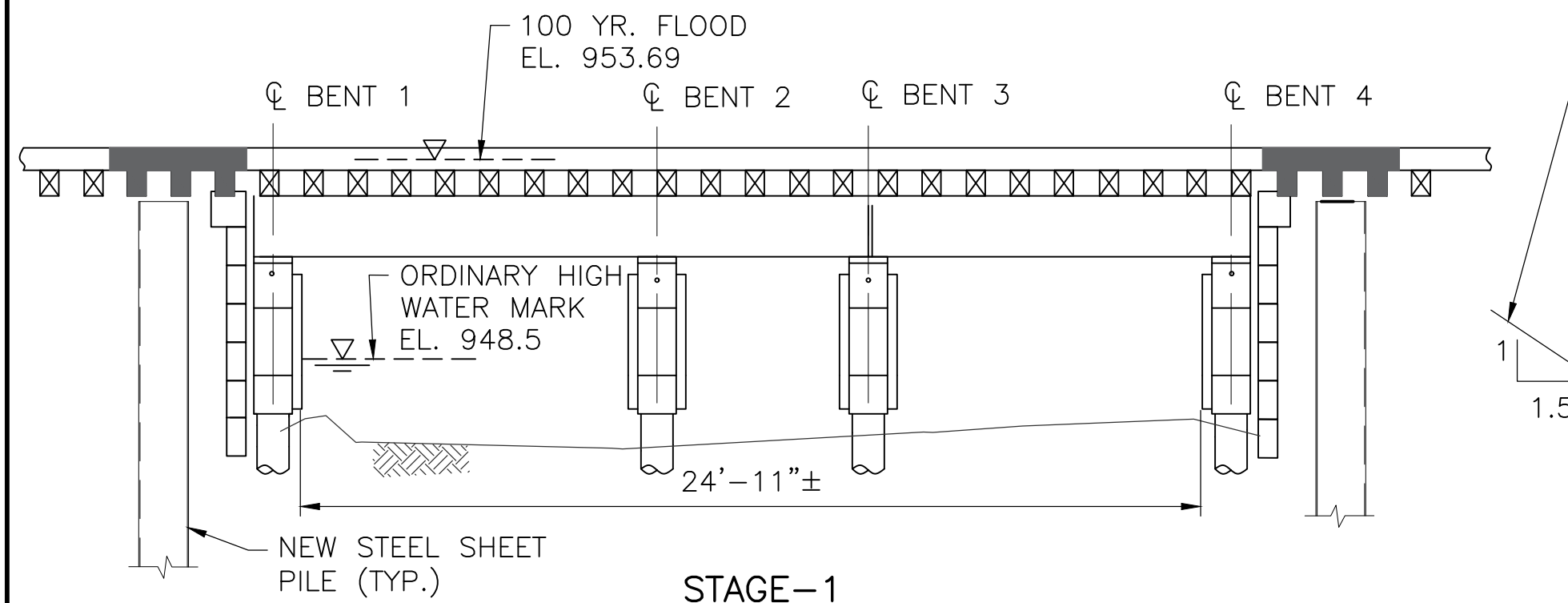
W.P. WORKING POINT
TYP. TYPICAL

WP#	STATION	NORTHING	EASTING	ELEVATION (TOP OF RAIL)
1	9+69.00	2961803.1298	184857.4770	954.64
2	9+87.00	2961821.0570	184855.8593	954.63
3	10+05.00	2961838.9841	184854.2416	954.60

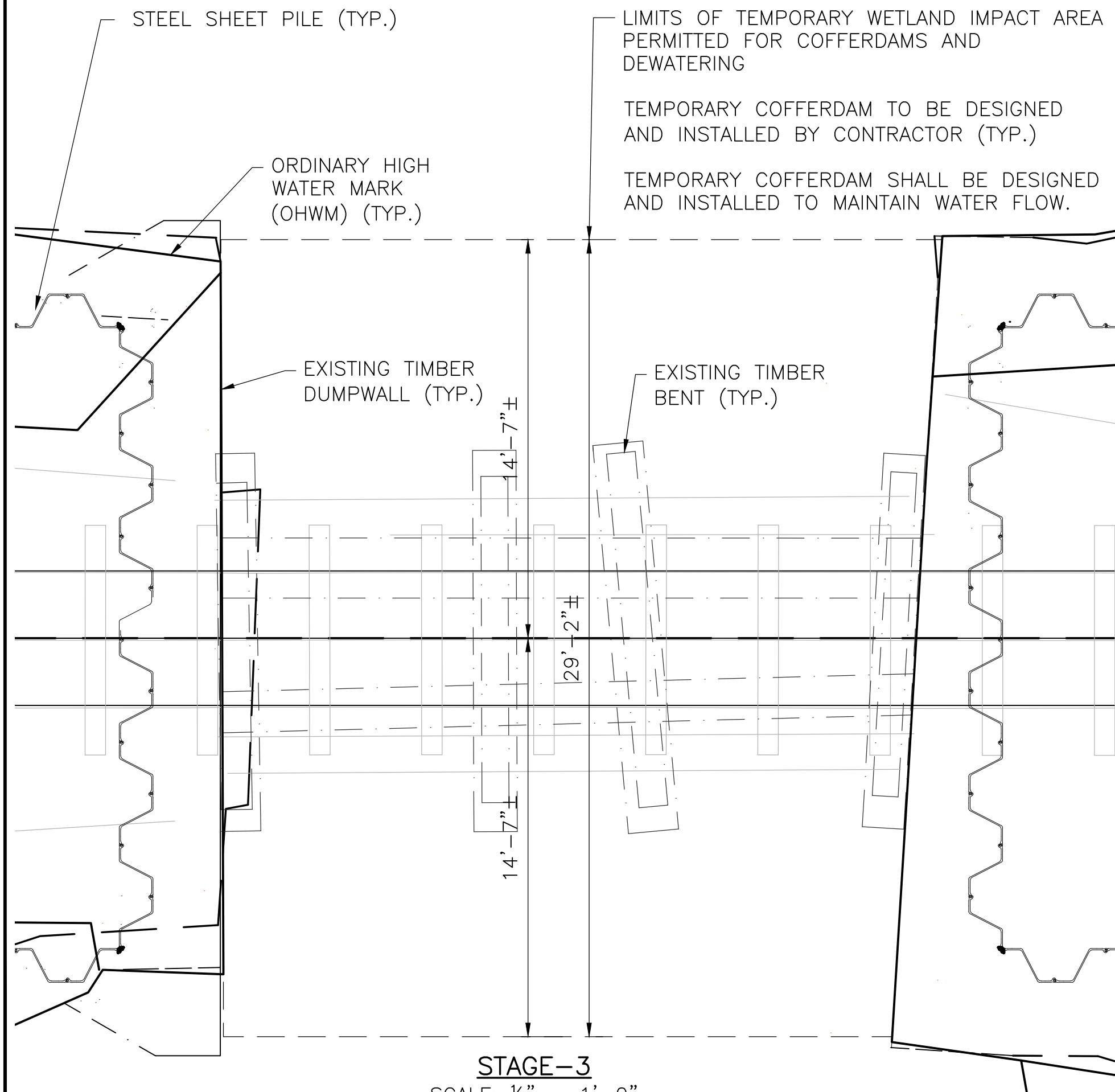
MASSDOT BERKSHIRE LINE IMPROVEMENTS CONTRACT NO. 120593									
REPLACEMENT OF BRIDGES ON BERKSHIRE LINE BRIDGE 79.81 - WILLOW CREEK BRIDGE PROPOSED BRIDGE PLAN & ELEVATION									
HDR, INC. 90 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 367-7700 massDOT Massachusetts Department of Transportation Rail & Transit Division SCALE: AS NOTED DATE: 12/12/2022 DRAWN BY: M.V. DESIGN BY: E.Y. CHECK BY: SSL PLAN NO. SHEET: S-6 ISSUE									
ISSUE	DATE	DESCRIPTION	BY	CHKD	APP.				



EXISTING
SCALE: 1/4" = 1'-0"



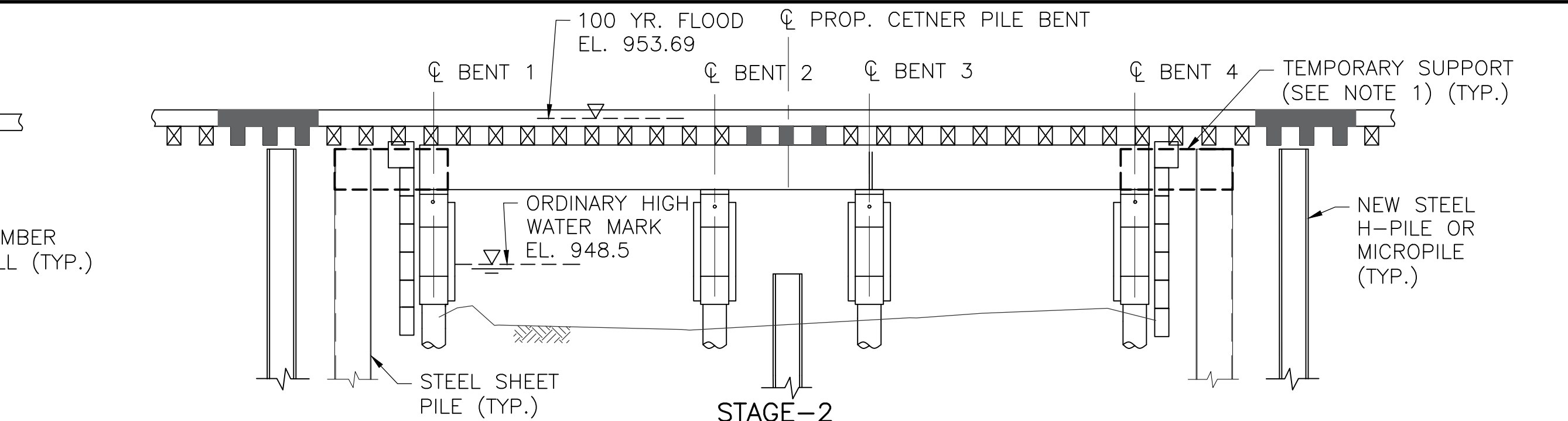
STAGE-1
SCALE: 1/4" = 1'-0"



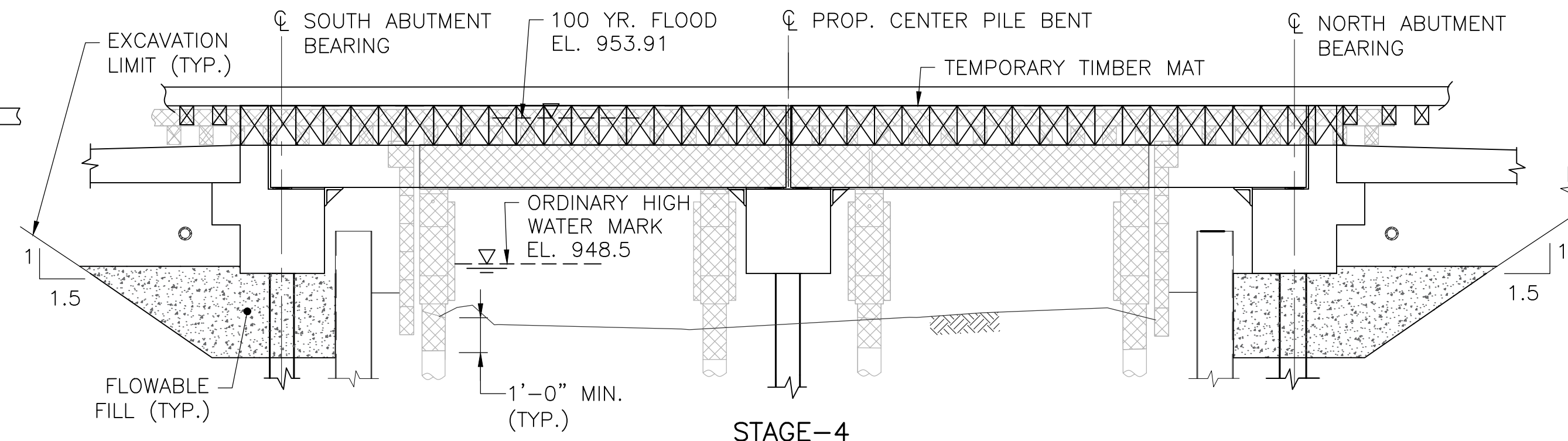
STAGE-3
SCALE: 1/4" = 1'-0"

LEGEND:

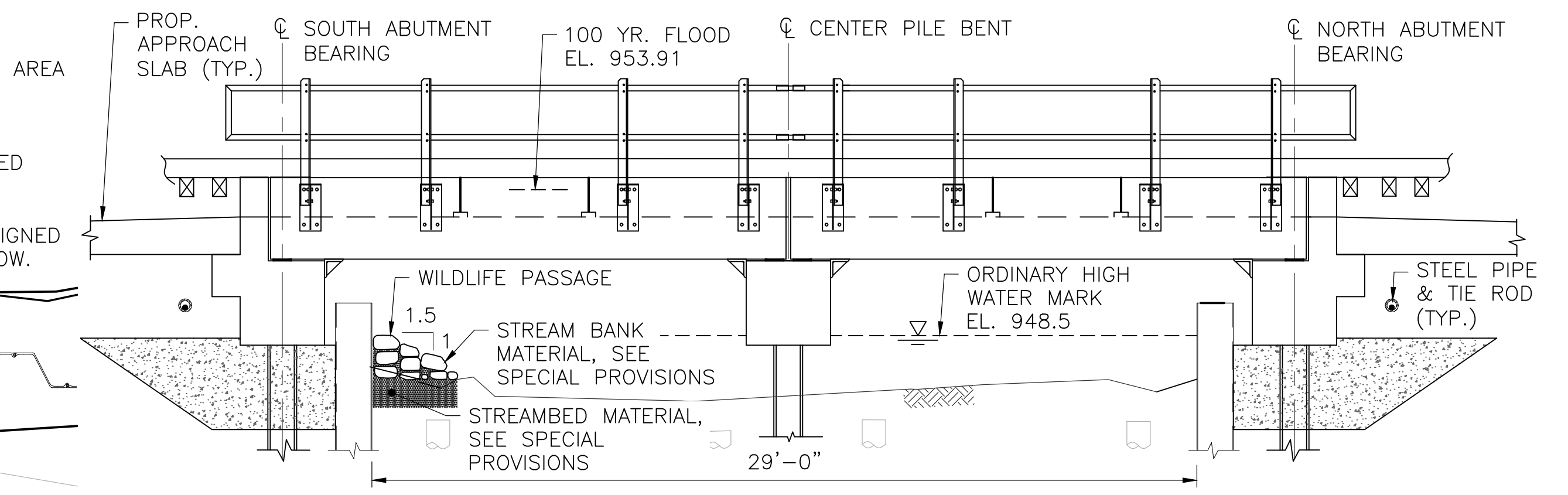
- TEMPORARY REMOVAL
- EXISTING STRUCTURAL REMOVAL



STAGE-2
SCALE: 1/4" = 1'-0"



STAGE-4
SCALE: 1/4" = 1'-0"



FINAL
SCALE: 1/4" = 1'-0"

TEMPORARY SUPPORT NOTES:

- TEMPORARY TRACK SUPPORT BETWEEN END BENTS AND PROPOSED SHEET PILE WALLS SHALL BE DESIGNED AND FABRICATED BY THE CONTRACTOR PRIOR TO CONSTRUCTION IN CASE EXISTING DUMP WALLS ARE DAMAGED DURING INSTALLATION OF SHEET PILES. DESIGN OF TEMPORARY SUPPORTS SHALL BE STAMPED BY A PROFESSIONAL STRUCTURAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS AND SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL BEFORE FABRICATION. COST OF TEMPORARY SUPPORT SHALL BE INCIDENTAL TO STEEL SHEET PILE.
- SHEET PILE WALLS AND BRACING SYSTEM SHOWN IN THESE DRAWINGS ARE FOR THE PERMANENT CONDITION. CONTRACTOR IS RESPONSIBLE FOR DESIGN OF THE SHEET PILE WALLS UNDER TEMPORARY CONDITIONS DURING CONSTRUCTION. DESIGN AND ANALYSIS OF THE SHEET PILE WALLS IN THE TEMPORARY CONDITION SHALL BE PREPARED AND STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS AND SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL BEFORE INSTALLATION. SHEET PILES SHALL BE ANALYZED FOR COOPER E80 LOADING AND CONSTRUCTION SURCHARGES. DESIGN SHALL INCLUDE CONSTRUCTION SEQUENCE, SHEET PILE TIP ELEVATIONS AND SIZES, TEMPORARY BRACING, AND CONSTRUCTION SURCHARGE CRITERIA INCLUDING MINIMUM SETBACKS.
- THE CONTRACTOR SHALL PROVIDE LATERAL SUPPORTS FOR EXISTING PILE BENTS PRIOR TO INSTALLATION OF STEEL SHEET PILES AND PILES.

SUGGESTED CONSTRUCTION STAGING:

STAGE 1 – WORK WILL BE PERFORMED DURING WEEKEND CLOSURES

- INSTALL LATERAL BRACING FOR EXISTING BENTS.
- REMOVE EXISTING TIES AND RAILS TEMPORALLY TO FACILITATE INSTALLATION OF STEEL SHEET PILES.
- INSTALL NEW STEEL SHEET PILES FOR NEW STRUCTURE AND INSTALL TEMPORARY TRACK SUPPORTS ONE ABUTMENT LOCATION AT A TIME AS NEEDED.
- REINSTALL TIES AND RAILS.

STAGE 2 – WORK WILL BE PERFORMED DURING WEEKEND CLOSURES

- REMOVE EXISTING TIES TEMPORALLY TO FACILITATE INSTALLATION OF PILES.
- INSTALL PILES FOR NEW STRUCTURE ONE PIER/ABUTMENT LOCATION AT A TIME.
- REINSTALL TIES.

STAGE 3 – WORK WILL BE PERFORMED DURING NON-OPERATION HOURS

- INSTALL COFFERDAM.

STAGE 4 – WORK WILL BE PERFORMED IN THREE CONSECUTIVE WEEKEND CLOSURES

STAGE 4A – WORK WILL BE PERFORMED DURING 1st WEEKEND CLOSURE

- REMOVE EXISTING BRIDGE SUPERSTRUCTURE, TIMBER PIERS AND ABUTMENTS INCLUDING TIES AND RAILS.
- EXCAVATE AT PROPOSED ABUTMENT CAPS TO PROVIDE ACCESS FOR FIELD WELDING.
- INSTALL AND WELD NEW PRECAST ABUTMENT AND PIER CAPS TO PRE-INSTALLED PILES.
- BACKFILL EXCAVATED AREAS AT ABUTMENT CAPS.
- INSTALL BEARINGS AND BRIDGE SUPERSTRUCTURE AND WELD RESTRAINT BRACKETS MK LRB1.
- INSTALL TEMPORARY TIMBER MAT AND RAILS ON BRIDGE.
- OPEN BRIDGE TO TRAIN SERVICE.

STAGE 4B – WORK WILL BE PERFORMED DURING 2nd WEEKEND CLOSURE

- REMOVE EXISTING RAIL AND TIES AT BRIDGE AND APPROACHES.
- EXCAVATE AT ABUTMENT CAPS FOR PLACEMENT OF RAPID SET FLOWABLE FILL.
- BACKFILL AFTER FLOWABLE FILL HARDENS
- INSTALL PIPES FOR STEEL TIE RODS AND INSTALL APPROACH SLABS.
- REINSTALL TRACK AND OPEN BRIDGE TO TRAIN SERVICE.

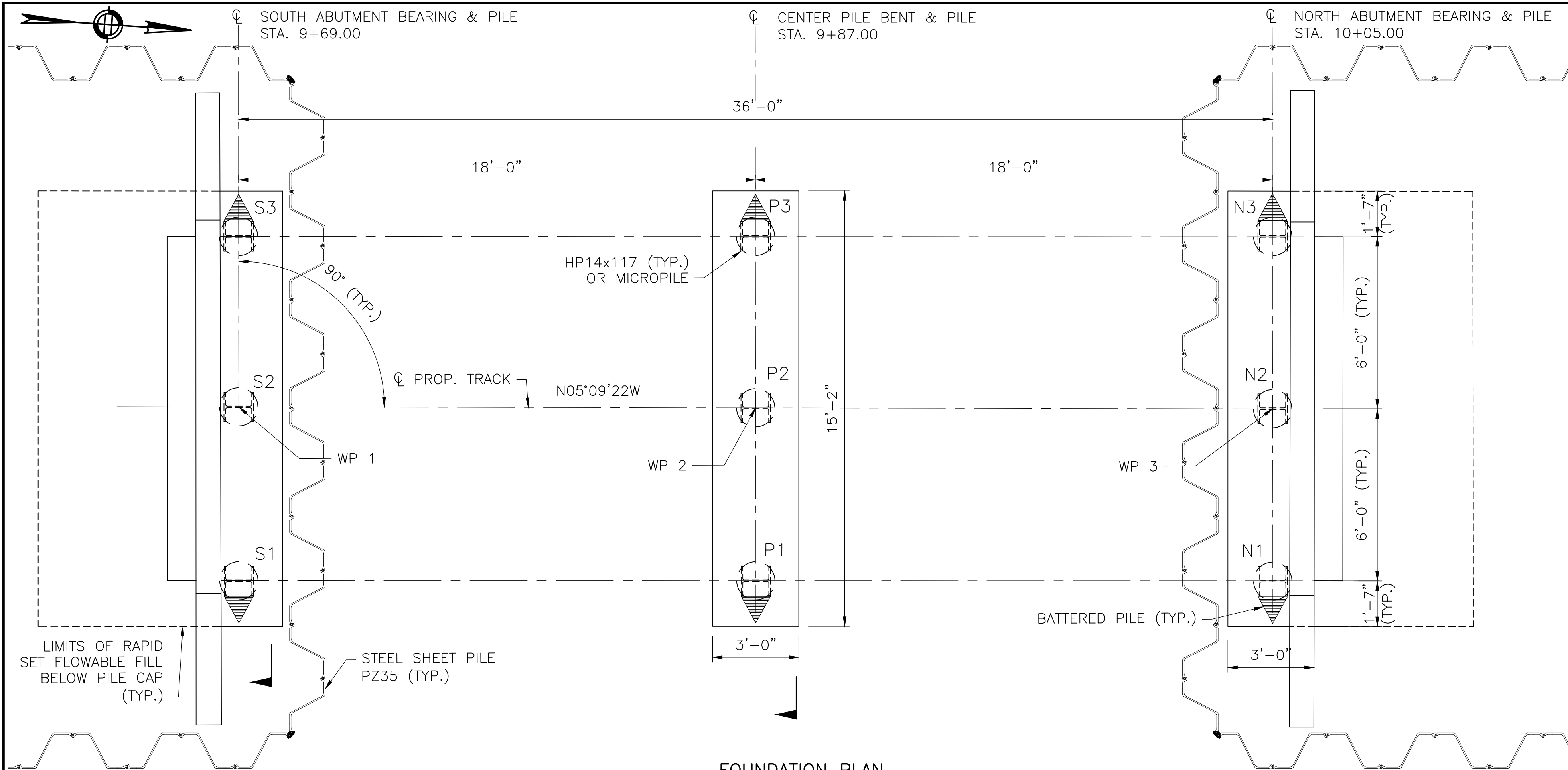
SATGE 4C – WORK WILL BE PERFORMED DURING 3rd WEEKEND CLOSURE

- REMOVE TEMPORARY TIMBER MAT AND RAILS ON BRIDGE
- PERFORM TRACK WORK AT BRIDGE APPROACHES.
- INSTALL BALLAST MAT, BALLAST, CROSS TIES AND RAILS
- OPEN BRIDGE TO TRAIN SERVICE.

STAGE 5 – WORK WILL BE PERFORMED DURING NON-OPERATION HOURS

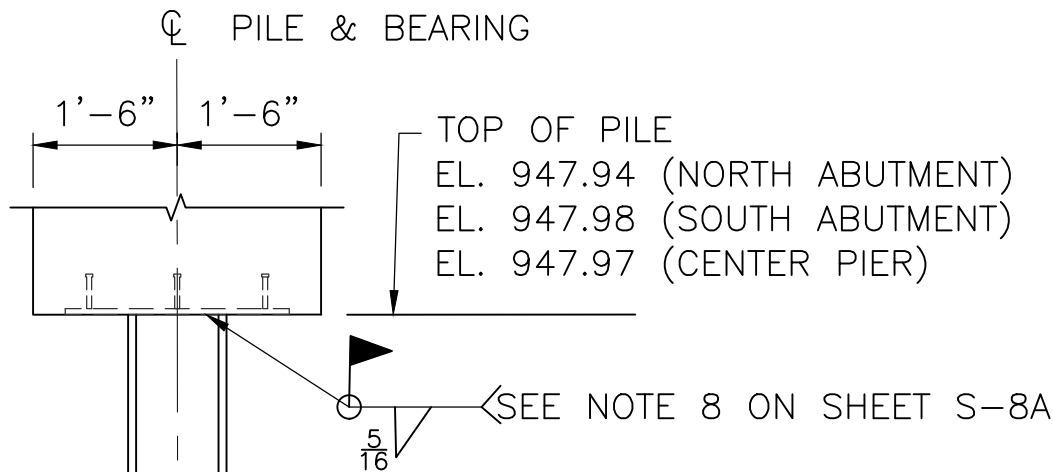
- INSTALL WALES AND TIE RODS FOR STEEL SHEET PILES.
- CUT TIMBER PILES AT 1 FOOT BELOW FINISH GRADE.
- INSTALL WILDLIFE PASSAGE.
- INSTALL BRIDGE WALKWAY AND RAILING.
- REMOVE COFFERDAM

MASSDOT BERKSHIRE LINE IMPROVEMENTS CONTRACT NO. 120593									
REPLACEMENT OF BRIDGES ON BERKSHIRE LINE BRIDGE 79.81 - WILLOW CREEK BRIDGE CONSTRUCTION STAGING									
HR HR, INC. 90 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 357-7700 massDOT Massachusetts Department of Transportation Rail & Transit Division									
SCALE: AS NOTED		DRAWN BY: A.T		DESIGN BY: E.Y		CHECK BY: SSL		PLAN NO.	
DATE: 12/12/2022								SHEET: S-7	
ISSUE	DATE	DESCRIPTION			BY	CHKD	APP.	ISSUE	



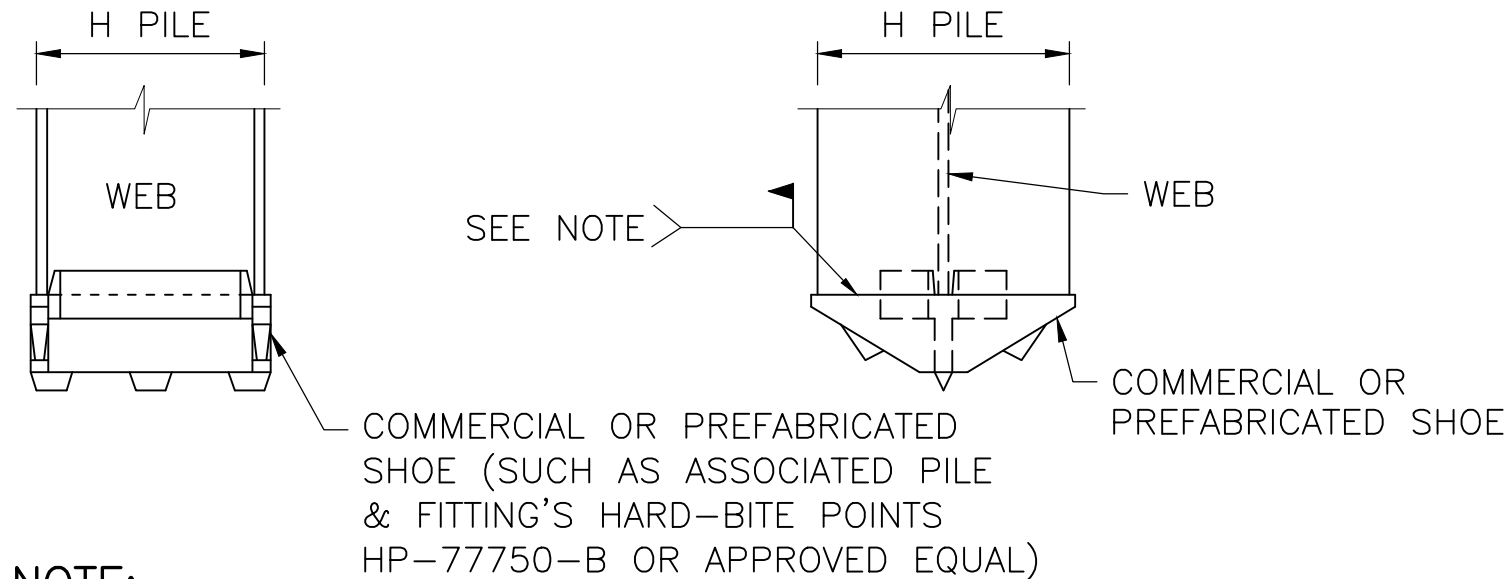
FOUNDATION PLAN

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



STEEL HP PILE DETAIL

SCALE: $\frac{1}{2}$ " = 1'-0"

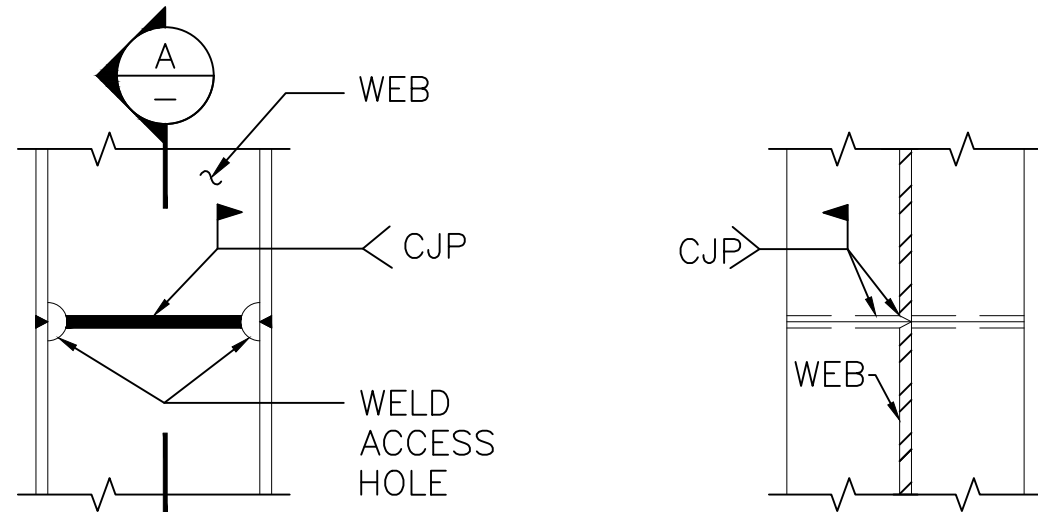


NOTE:

THE SHOE WELD JOINT DESIGN SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION AND AS SHOWN ON THE APPROVED WELDING PROCEDURE SPECIFICATIONS.

STEEL H-PILE SHOE

NOT TO SCALE



ELEVATION

SECTION A

NOTES:

- ALL WELDS SHALL BE COMPLETE PENETRATION AND SHALL CONFORM TO THE ANSI/AASHTO/AWS BRIDGE WELDING CODE, D1.5.
- WELDING PROCEDURE SPECIFICATIONS MUST BE APPROVED BY THE ENGINEER PRIOR TO WELDING.
- WHENEVER POSSIBLE ALL PILES SHALL BE SPLICED ON THE GROUND IN THE FLAT POSITION.
- WEB SHALL BE COPED TO ALLOW FOR COMPLETE PENETRATION WELDING OF FLANGES.

H-PILE SPLICE DETAILS

NOT TO SCALE

LIST OF PILES			
LOCATION	NO.	SIZE	ESTIMATED LENGTH (FT)
SOUTH ABUTMENT	S2	HP 14 X 117	85±
	S1 & S3	HP 14 X 117	85±
CENTER PIER BENT	P2	HP 14 X 117	85±
	P1 & P3	HP 14 X 117	85±
NORTH ABUTMENT	N2	HP 14 X 117	85±
	N1 & N3	HP 14 X 117	85±

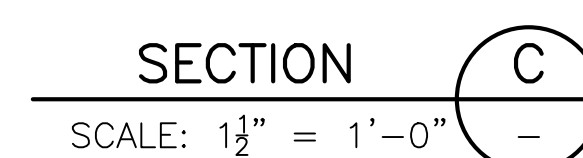
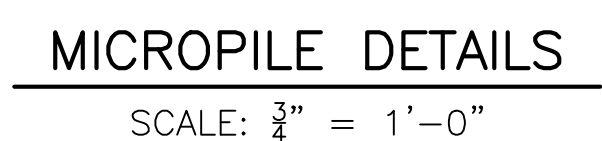
NOTES:

- ESTIMATED PILE LENGTHS SHOWN IN THE TABLE ABOVE ARE BASED ON INFORMATION FROM BORINGS. FINAL PILE LENGTHS ARE EXPECTED TO VARY BASED ON DRIVING CONDITIONS AND THE RESULTS OF DYNAMIC PILE TESTING.
HIGHEST ALLOWABLE TIP ELEVATION FOR DRIVEN ABUTMENT AND PIER PILES IS 50 FEET BELOW THE BOTTOM OF THE PILE CAPS:
- SOUTH ABUTMENT: EL. 898.15
- CENTER PIER: EL. 898.14
- NORTH ABUTMENT: EL. 898.11
DRIVEN PILES ARE ANTICIPATED TO BE DRIVEN DEEPER INTO THE GLACIAL OUTWASH OR GLACIAL TILL OR TO THE TOP OF BEDROCK TO DEVELOP THE REQUIRED ULTIMATE RESISTANCE.
- ALL SPLICES SHALL HAVE COMPLETE PENETRATION BUTT WELDS. THERE SHALL BE NO SPLICES WITHIN THE TOP 30 FEET OF PILE. SPICE WELDS SHALL BE 100% UTRASONIC TESTING.
- THE AXIAL DESIGN LOAD PER PILE IS 260.0 KIPS AS PER AREMA SERVICE LOAD DESIGN GROUP I LOAD COMBINATION.
- THE ALLOWABLE STRUCTURAL PILE RESISTANCE IS 509.8 KIPS.
- HEAVY DUTY PILE SHOES SHALL BE INSTALLED ON THE TIPS OF ALL PILES. PREFABRICATED PILE SHOES MAY BE USED IF APPROVED BY THE ENGINEER.
- DETERMINATION OF THE DRIVEN PILE RESISTANCE, PILE DRIVING CRITERIA, AND PILE INTEGRITY SHALL BE PERFORMED USING THE PILE DRIVING ANALYZER (PDA) WITH SIGNAL MATCHING. PILES SHALL BE INSTALLED TO ACHIEVE AN ULTIMATE DRIVEN RESISTANCE EQUAL TO OR GREATER THAN 2.25 TIMES THE MAXIMUM SERVICE AXIAL DESIGN LOAD. A MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER ENGAGED BY THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING THE PDA TESTING IN ACCORDANCE WITH SECTION 940 OF THE MASSDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, 2022 EDITION.
- THE CONTRACTOR SHALL SUBMIT A PILE SCHEDULE, PILE INSTALLATION, AND PILE DRIVING/TESTING PLAN FOR REVIEW AND APPROVAL OF THE ENGINEER.
- PILE DRIVING TESTING SHALL BE PERFORMED BY CONTRACTOR ON A LEAST ONE ABUTMENT PILE ON EACH SIDE, ONE BATTERED PIER PILE, AND ONE VERTICAL PIER PILE FOR A TOTAL OF AT LEAST 4 PILES.
- PILES SHALL BE DRIVEN IN ACCORDANCE WITH SECTION 940 OF THE MASSDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, 2022 EDITION AND THE REQUIREMENTS SHOWN ON THE DRAWINGS. IN THE EVENT OF A CONFLICT, THE NOTES ON THE DRAWING GOVERN.
- PILES SHALL CONFORM TO ASTM A572, GRADE 50.
- PILES SHALL BE COATED WITH COAL TAR EPOXY COATING BEFORE DRIVING. THE COAL TAR EPOXY COATING SHALL EXTEND AT LEAST 15 FEET BELOW THE FINAL GRADE. TOUCH UP COAL TAR EPOXY AT TOP OF PILE AFTER WELDING.
- SEE SHEET S-8A FOR DETAILS FOR MICROPILE OPTION.

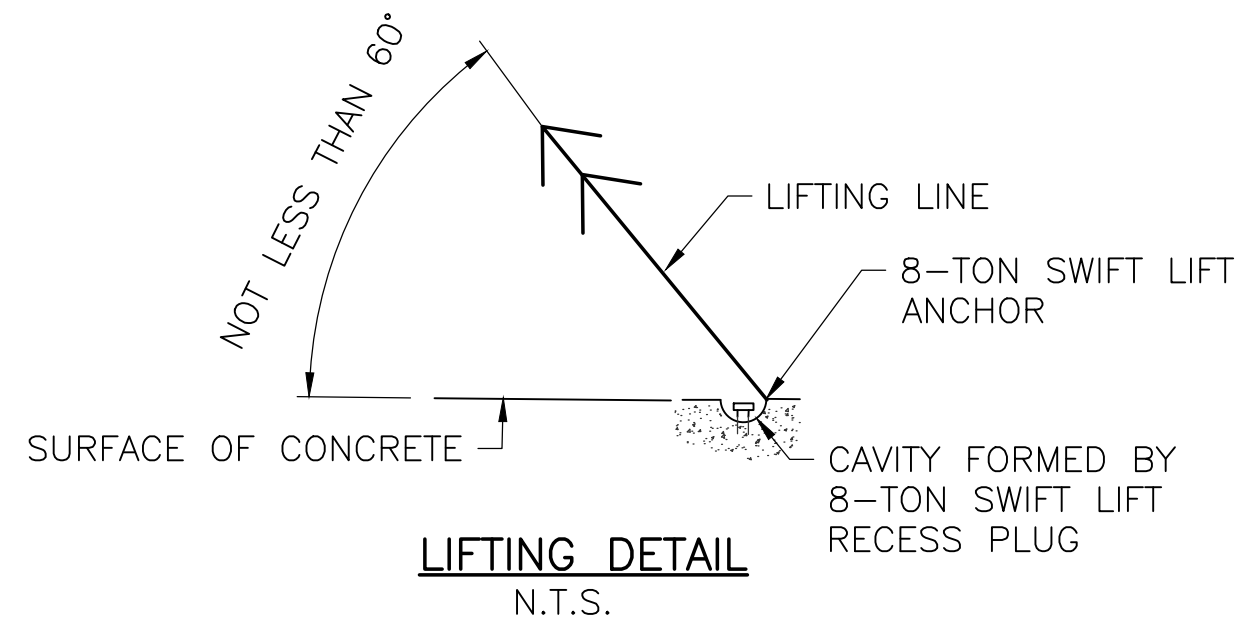
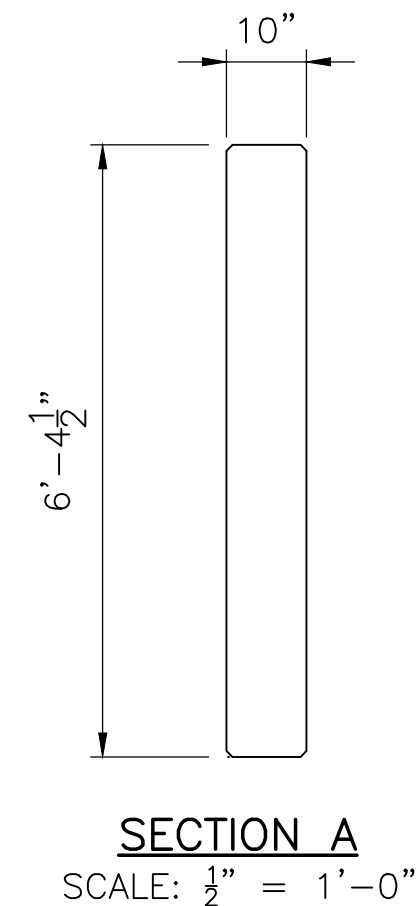
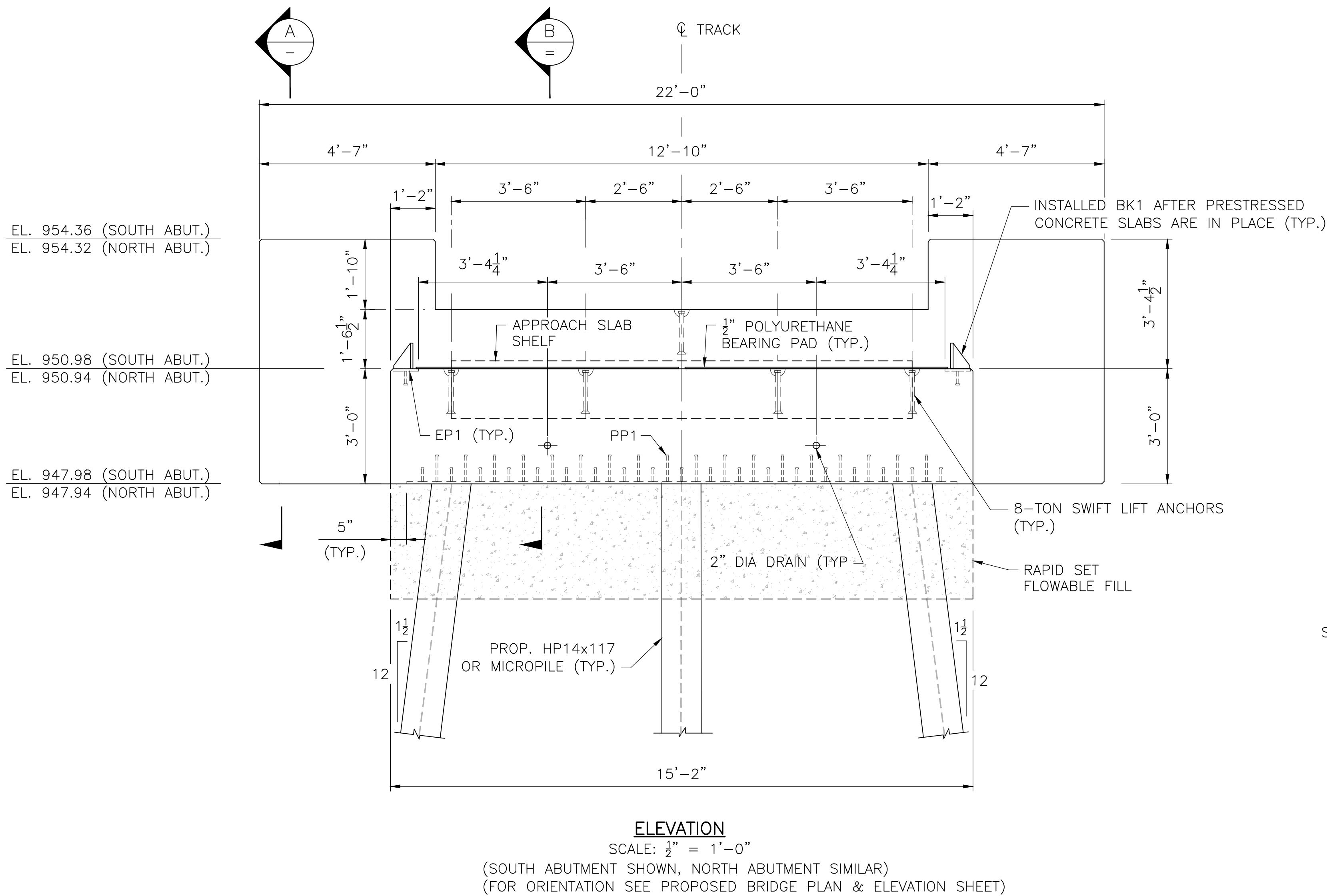
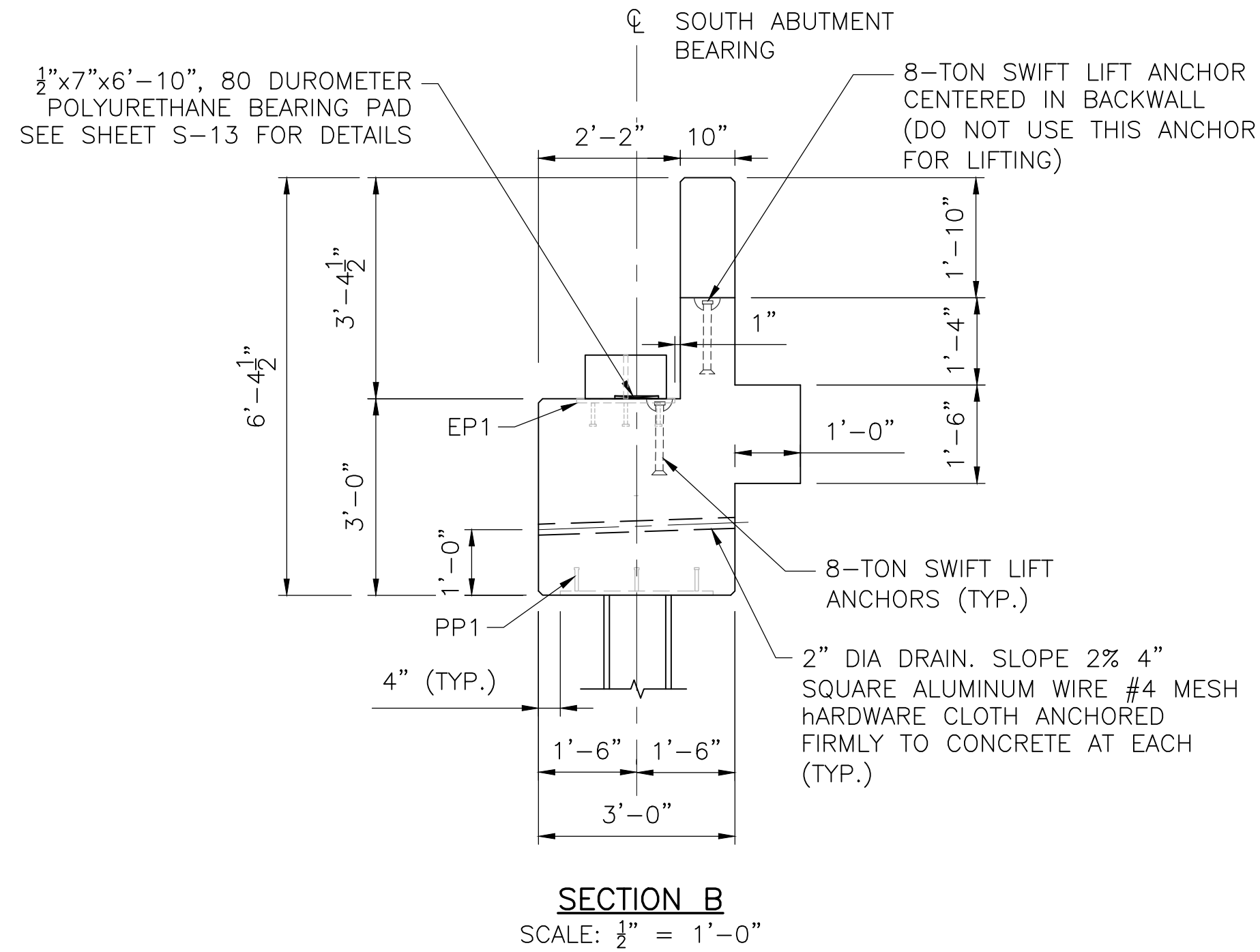
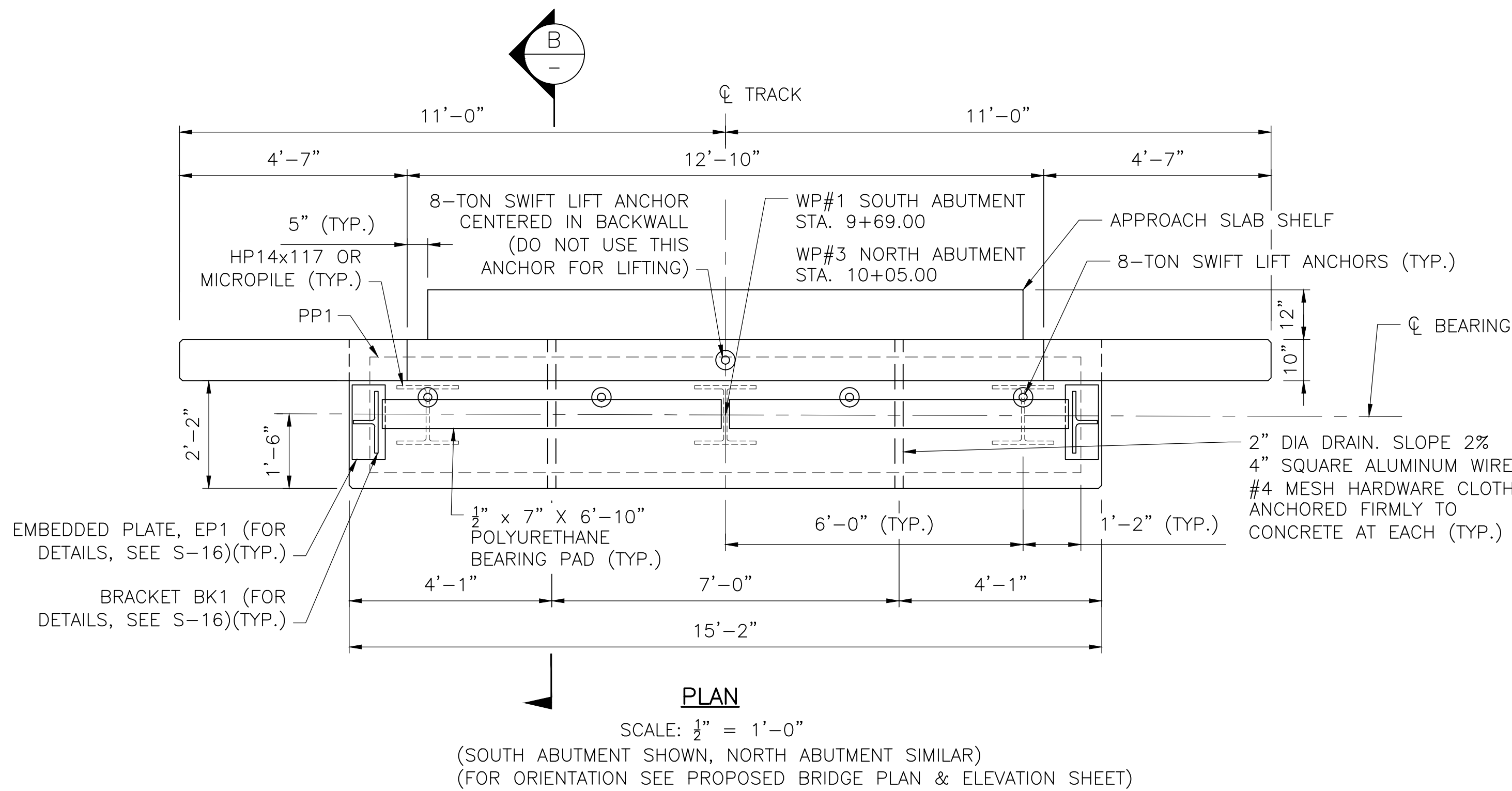
REQUIRED PILE LOCATION TOLERANCES:

- CONFORMANCE TO THE FOLLOWING TOLERANCES IS OF EXTREME IMPORTANCE TO FOUNDATIONS OF THIS TYPE.
- PRIOR TO DRIVING, EACH PILE SHALL BE HELD BY TEMPLATE TO WITHIN 1" OF PLAN LOCATION.
- AFTER EACH PILE IS DRIVEN, THE TOP OF THE PILE SHALL BE WITHIN 3" OF PLAN LOCATION.

								MASSDOT BERKSHIRE LINE IMPROVEMENTS CONTRACT NO. 120593					
								REPLACEMENT OF BRIDGES ON BERKSHIRE LINE BRIDGE 79.81 - WILLOW CREEK BRIDGE FOUNDATION LAYOUT DETAILS					
								 HDR, INC. 99 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 357-7700		 massDOT Massachusetts Department of Transportation Rail & Transit Division			
								SCALE: AS NOTED	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE
								DATE: 12/12/2022	A.T.	E.Y	G.J.	SHEET: S—8	
ISSUE	DATE	DESCRIPTION				BY	CHKD	APP.					

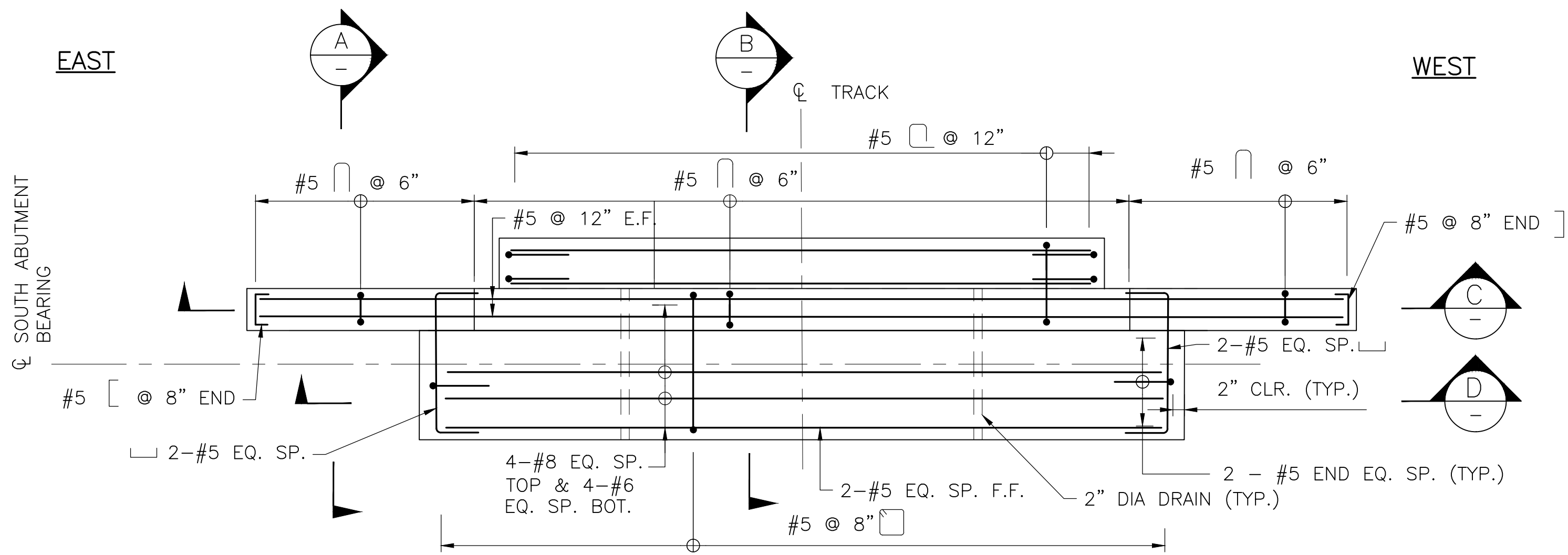


							MASSDOT BERKSHIRE LINE IMPROVEMENTS CONTRACT NO. 120593								
							REPLACEMENT OF BRIDGES ON BERKSHIRE LINE BRIDGE 79.81 - WILLOW CREEK BRIDGE DETAILS FOR MICROPILE OPTION								
										HDR, INC. 60 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 357-7700					
							SCALE: AS NOTED	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.		ISSUE		
ISSUE	DATE	DESCRIPTION				BY	CHK'D	APP.	DATE: 12/12/2022	SSL	SSL	QJW	SHEET: S-8A		



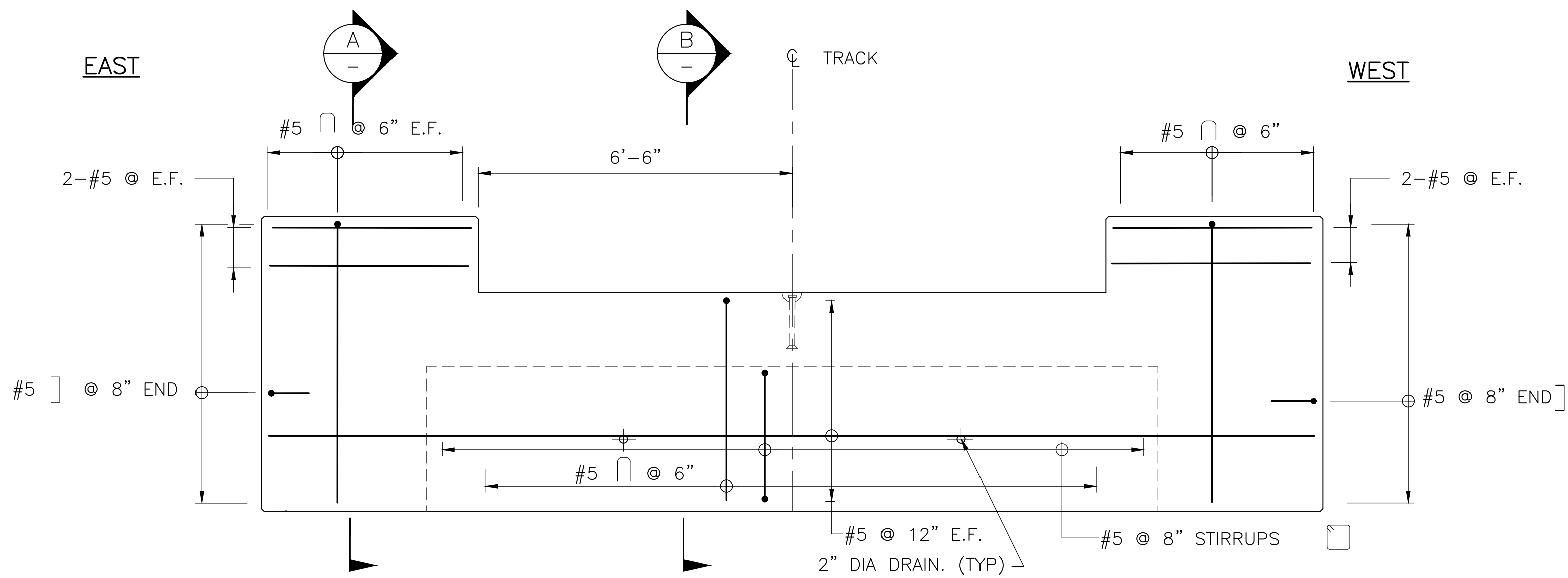
- NOTES:**
1. FOR GENERAL NOTES SEE SHEET S-1
 2. THIS DRAWING TO BE READ IN CONJUNCTION WITH S-8, S-11 AND S-16.
 3. MICROPILE OPTION NOT SHOWN FOR CLARITY.

MASSDOT BERKSHIRE LINE IMPROVEMENTS CONTRACT NO. 120593									
REPLACEMENT OF BRIDGES ON BERKSHIRE LINE BRIDGE 79.81 - WILLOW CREEK BRIDGE ABUTMENT LAYOUT DETAILS									
								ISSUE	
SCALE: AS NOTED				DRAWN BY: A.T.				PLAN NO.	
DATE: 12/12/2022				DESIGN BY: E.Y.				SHEET: S-9	
ISSUE				CHECK BY: SSL					
DATE				APP.					
DESCRIPTION									
BY									
CHKD									
APP.									



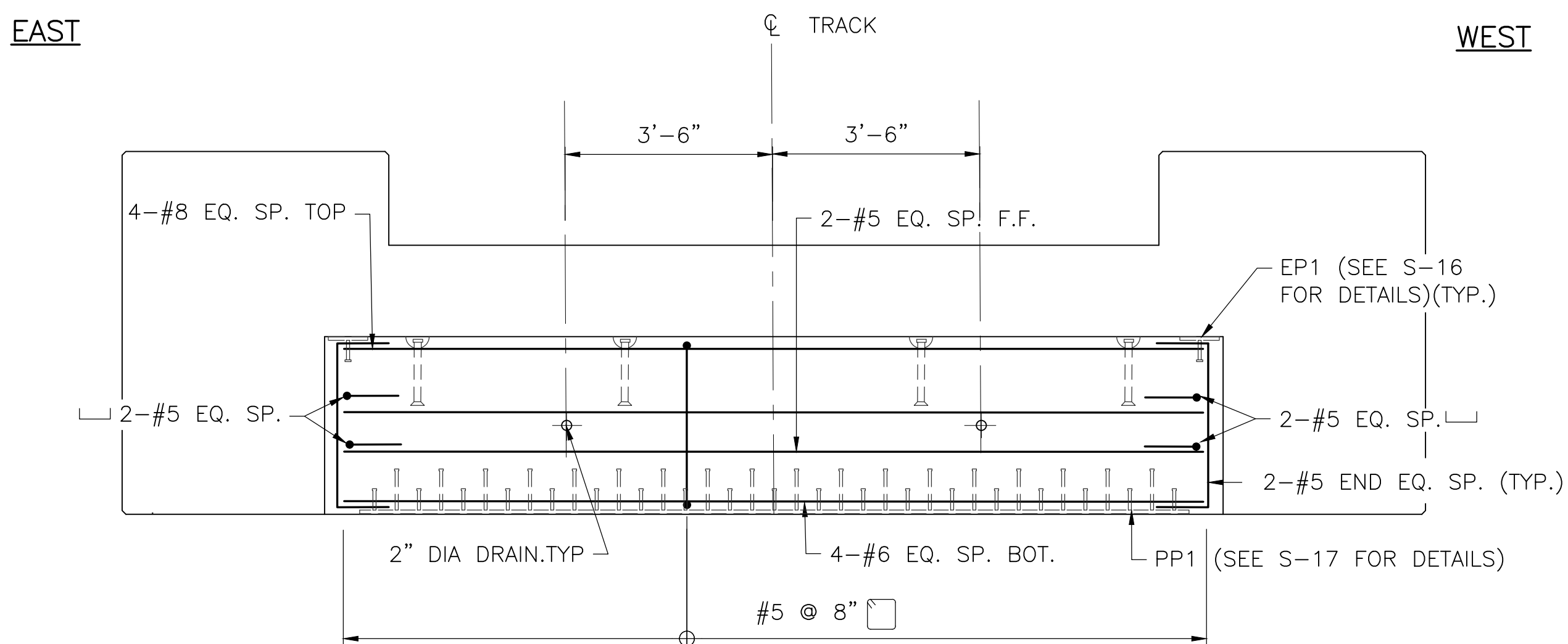
SOUTH ABUTMENT REINFORCING PLAN

SCALE: $\frac{1}{2}" = 1'-0"$
(SOUTH ABUTMENT SHOWN, NORTH ABUTMENT SIMILAR)



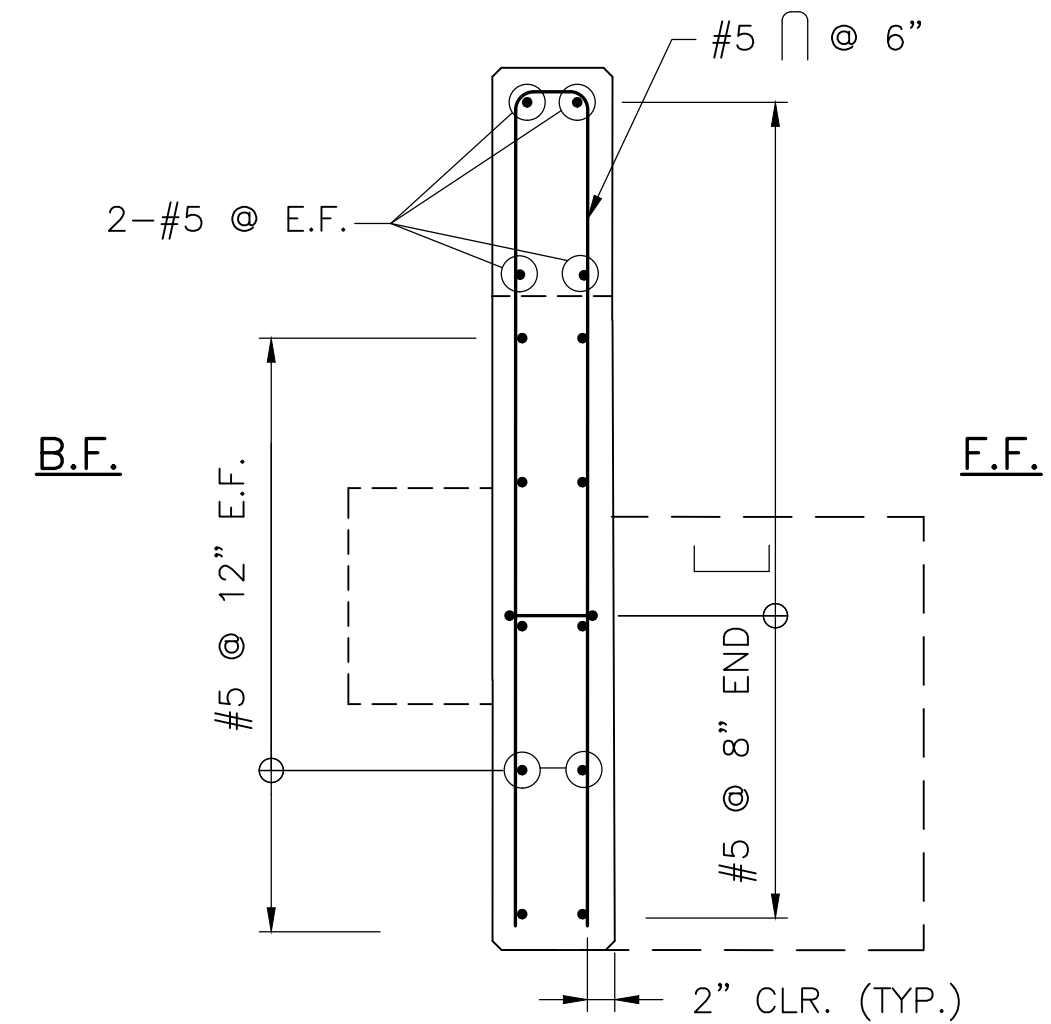
SECTION C-C - BACKWALL REINFORCING

SCALE: $\frac{1}{2}" = 1'-0"$
(SOUTH ABUTMENT R/F SHOWN, NORTH ABUTMENT R/F SIMILAR)



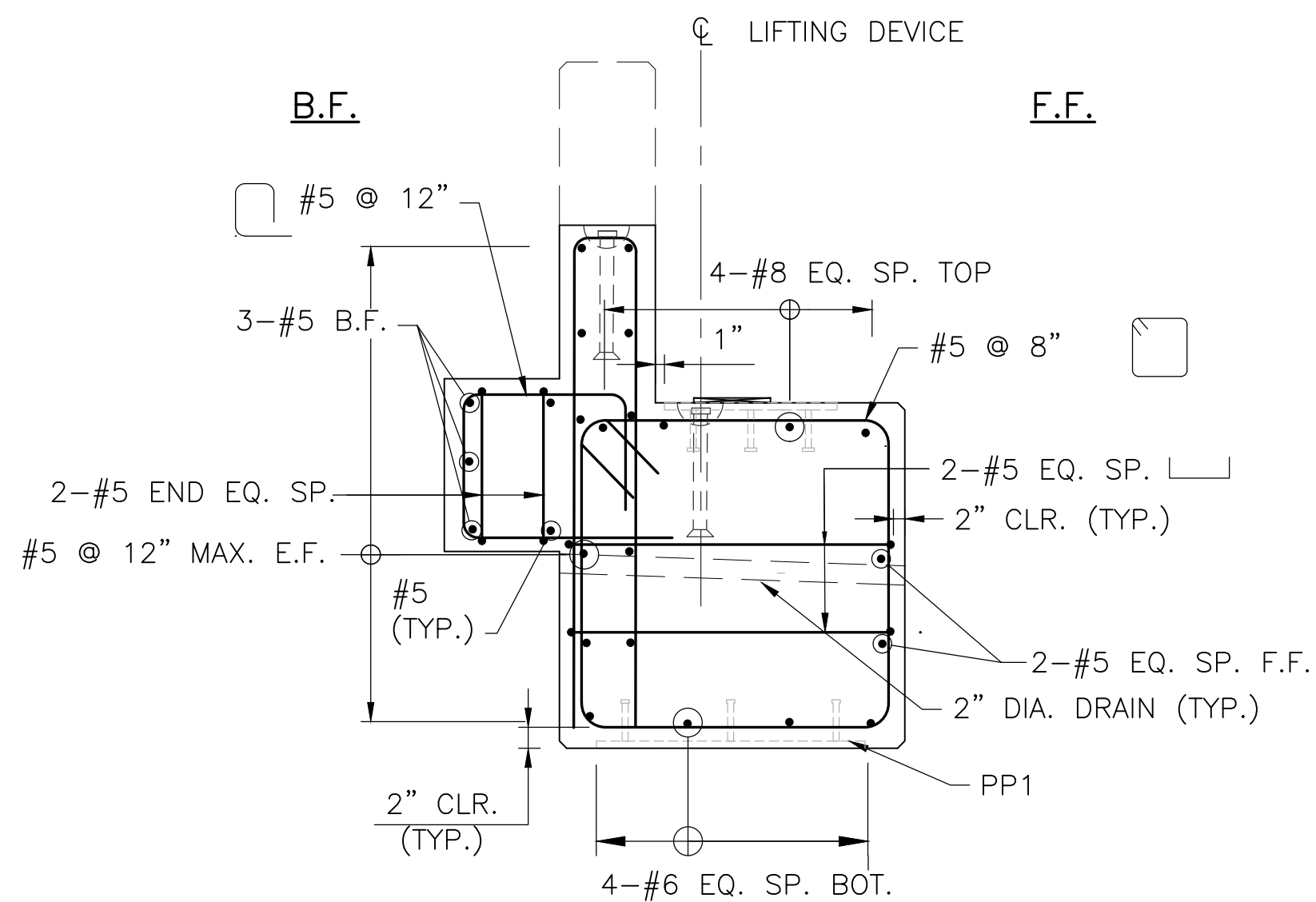
SECTION D-D - BRIDGE SEAT REINFORCING

SCALE: $\frac{1}{2}" = 1'-0"$
(SOUTH ABUTMENT R/F SHOWN, NORTH ABUTMENT R/F SIMILAR)



SECTION A

SCALE: $\frac{3}{4}" = 1'-0"$



SECTION B

SCALE: $\frac{3}{4}" = 1'-0"$

LEGEND:

F.F. DENOTES FRONT FACE
B.F. DENOTES BACK FACE
E.F. DENOTES EACH FACE
TYP. DENOTES TYPICAL
BOT. DENOTES BOTTOM
EQ. SP. DENOTES EQUALLY SPACED
R/F DENOTES REINFORCEMENT

NOTES:

1. FOR GENERAL NOTES SEE SHEET S-1.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH S-9 AND S-16.

MASSDOT BERKSHIRE LINE IMPROVEMENTS
CONTRACT NO. 120593

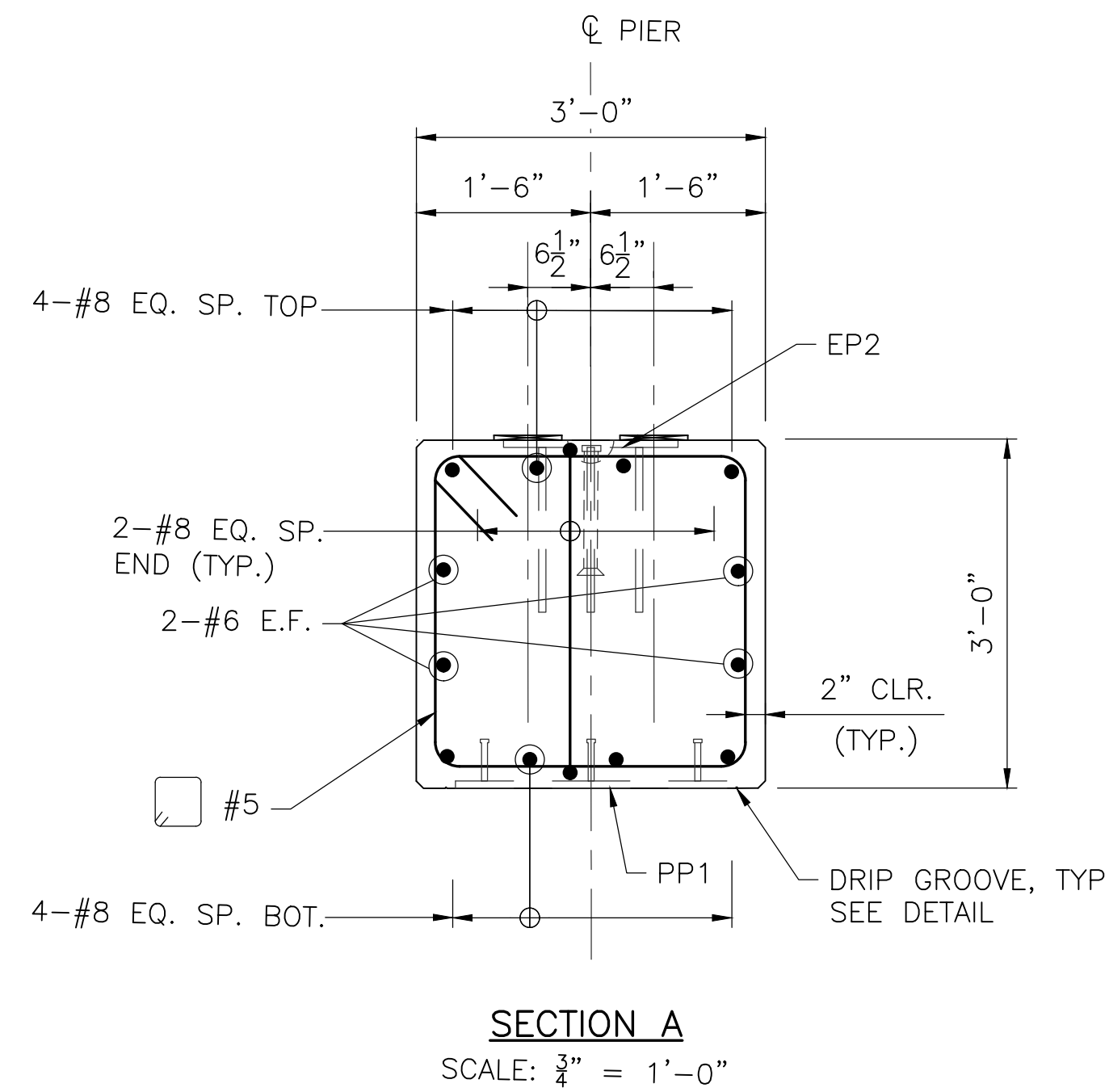
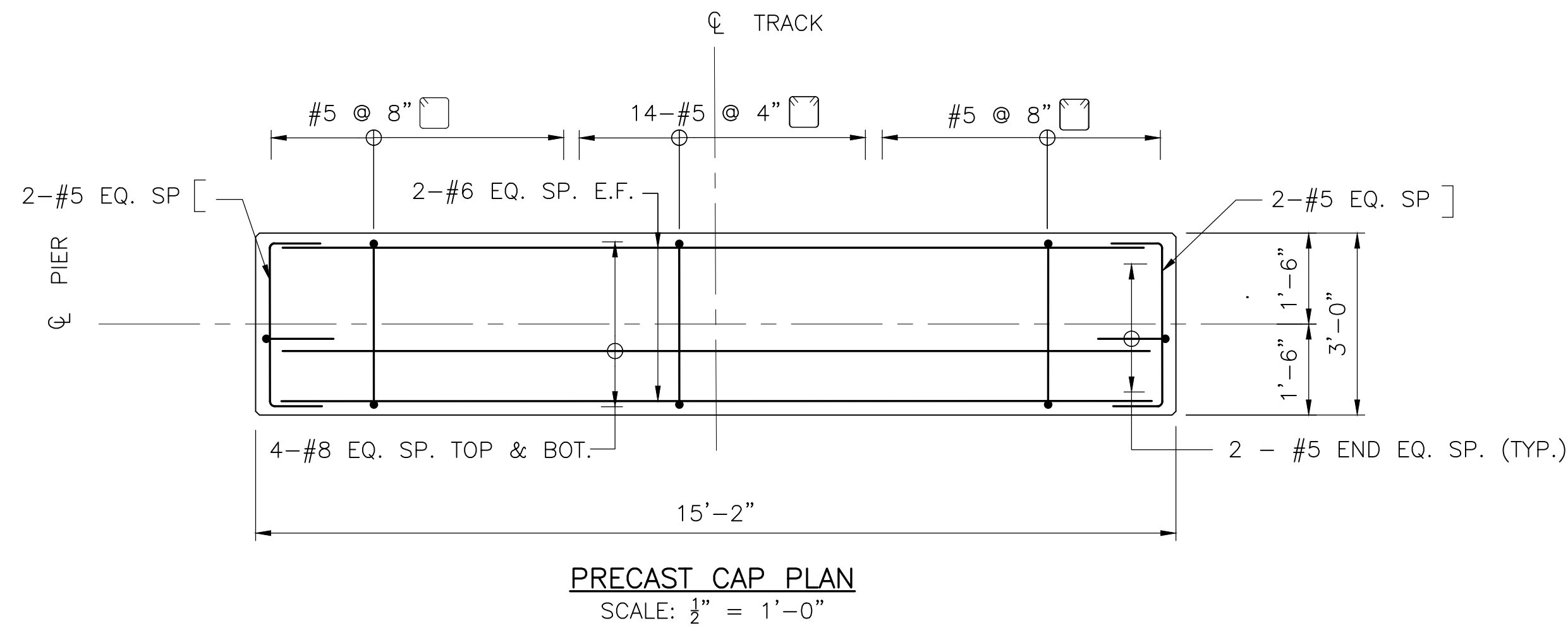
REPLACEMENT OF BRIDGES ON BERKSHIRE LINE
BRIDGE 79.81 - WILLOW CREEK BRIDGE
ABUTMENT CAP REINFORCEMENT DETAILS



HDR, INC.
90 HIGH STREET, SUITE 2300
BOSTON, MA 02110
(617) 357-7700



ISSUE	DATE	DESCRIPTION	BY	CHKD	APP.	SCALE:	AS NOTED	DRAWN BY:	DESIGN BY:	CHECK BY:	PLAN NO.	ISSUE
						DATE: 12/12/2022		M.V.	E.Y.	SSL	SHEET: S-11	

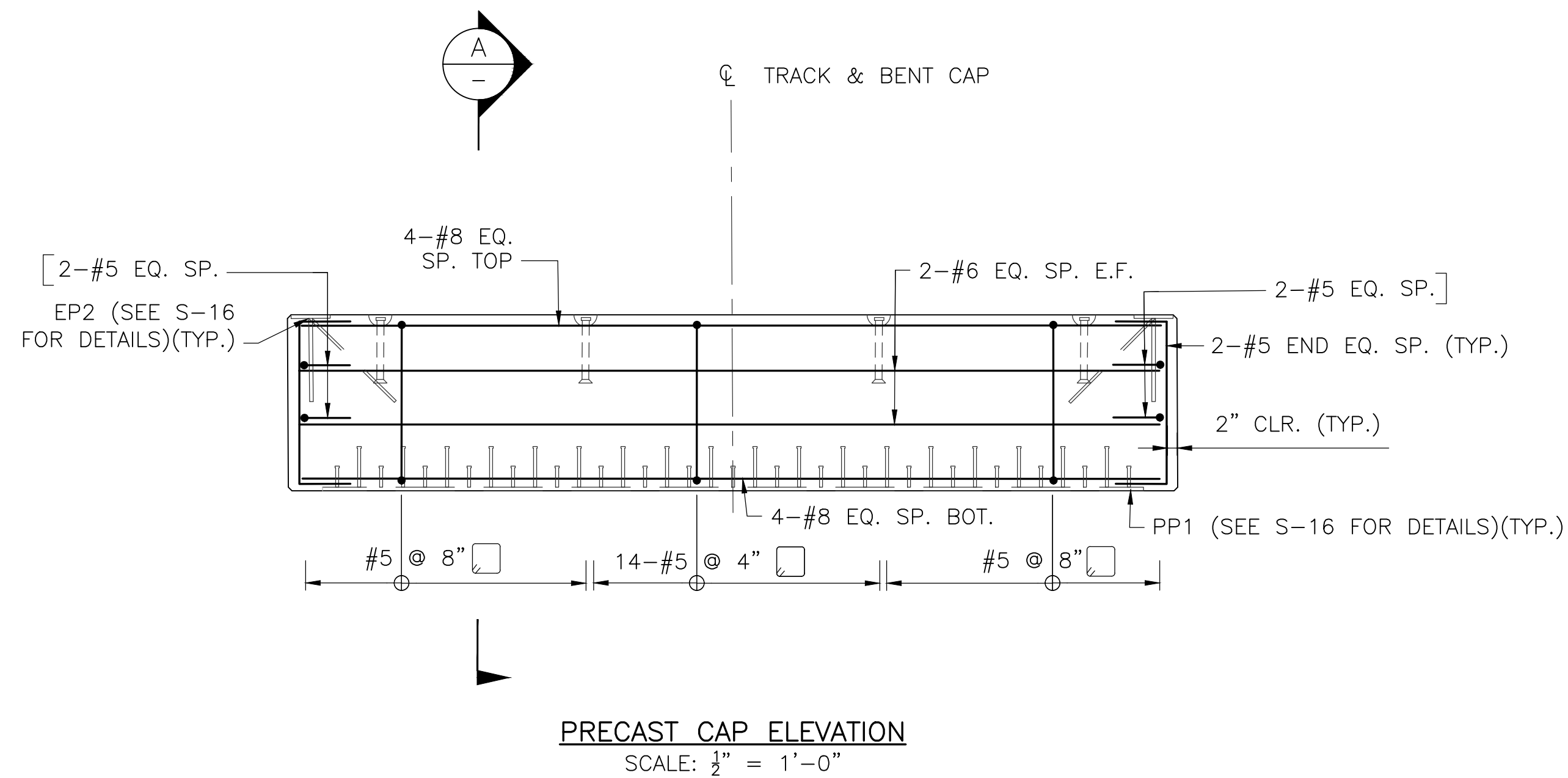


NOTES:

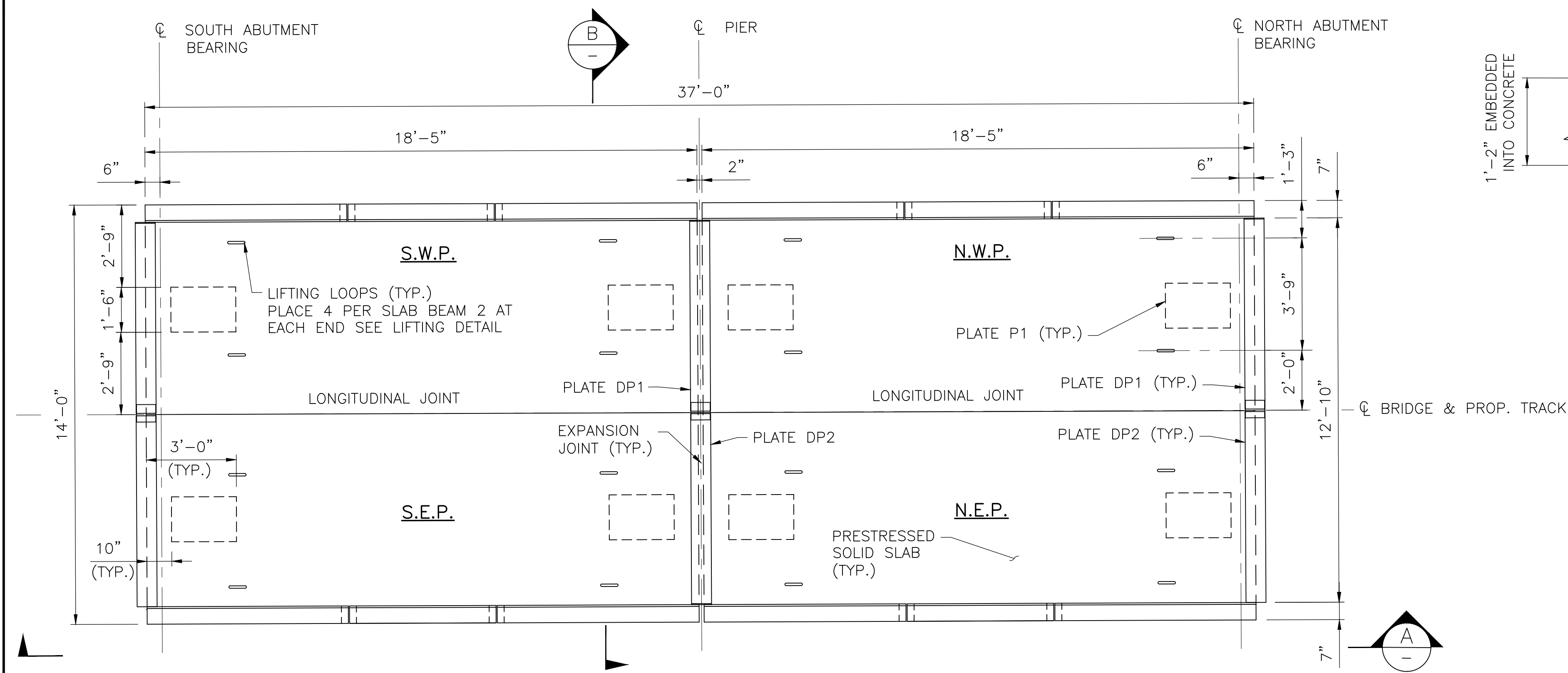
1. FOR GENERAL NOTES SEE SHEET S-1.

LEGEND:

F.F.	DENOTES	FRONT FACE
B.F.	DENOTES	BACK FACE
E.F.	DENOTES	EACH FACE
TYP.	DENOTES	TYPICAL
BOT.	DENOTES	BOTTOM
EQ. SP.	DENOTES	EQUALLY SPACED
R/F	DENOTES	REINFORCEMENT

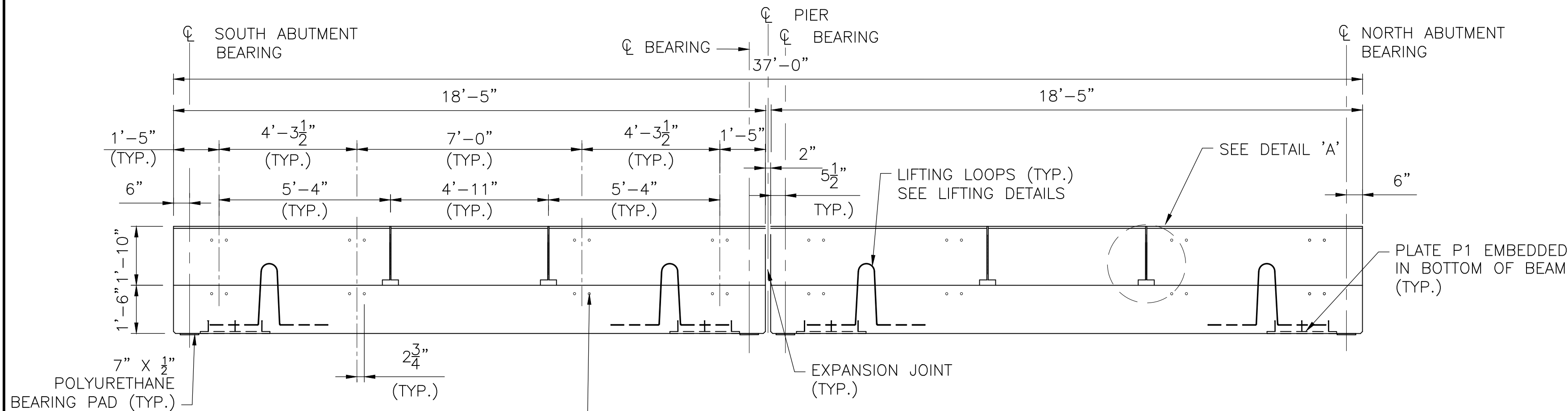


							MASSDOT BERKSHIRE LINE IMPROVEMENTS CONTRACT NO. 120593						
							REPLACEMENT OF BRIDGES ON BERKSHIRE LINE BRIDGE 79.81 - WILLOW CREEK BRIDGE PIER CAP REINFORCEMENT DETAILS						
									HDR, INC. 90 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 357-7700				
							SCALE: AS NOTED		DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE
							DATE: 12/12/2022		A.T.	E.Y.	SSL	SHEET: S-12	
ISSUE	DATE	DESCRIPTION			BY	CHK'D	APP.						



PRESTRESSED CONCRETE SLAB PLAN

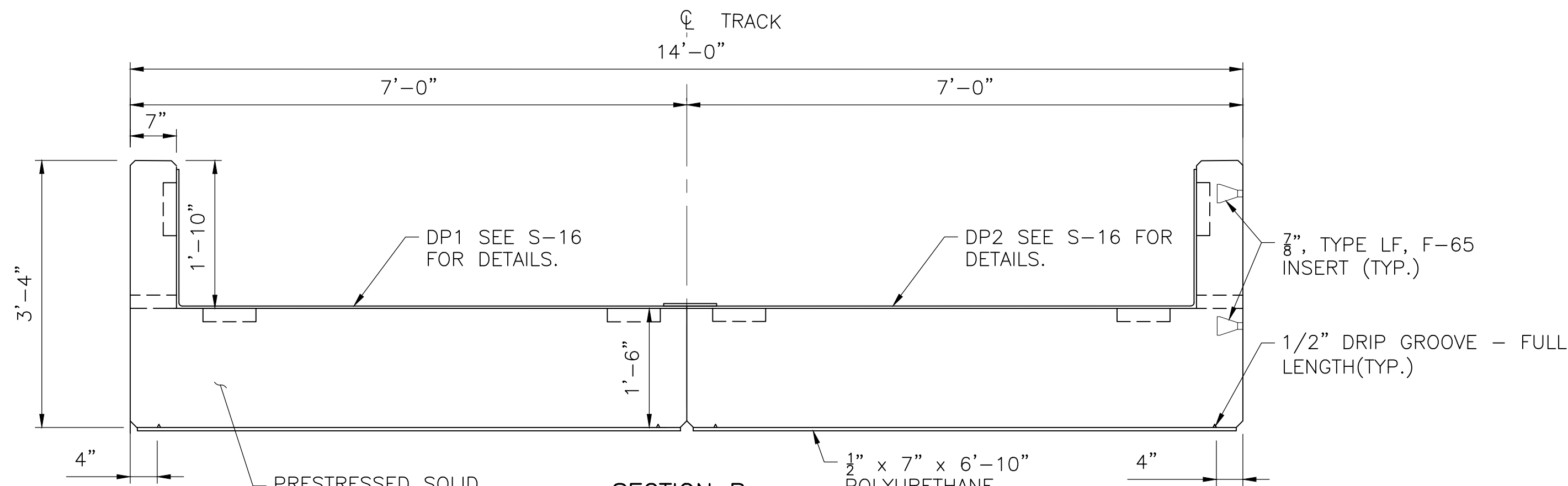
SCALE: $\frac{3}{8}$ " = 1'-0"



SECTION A

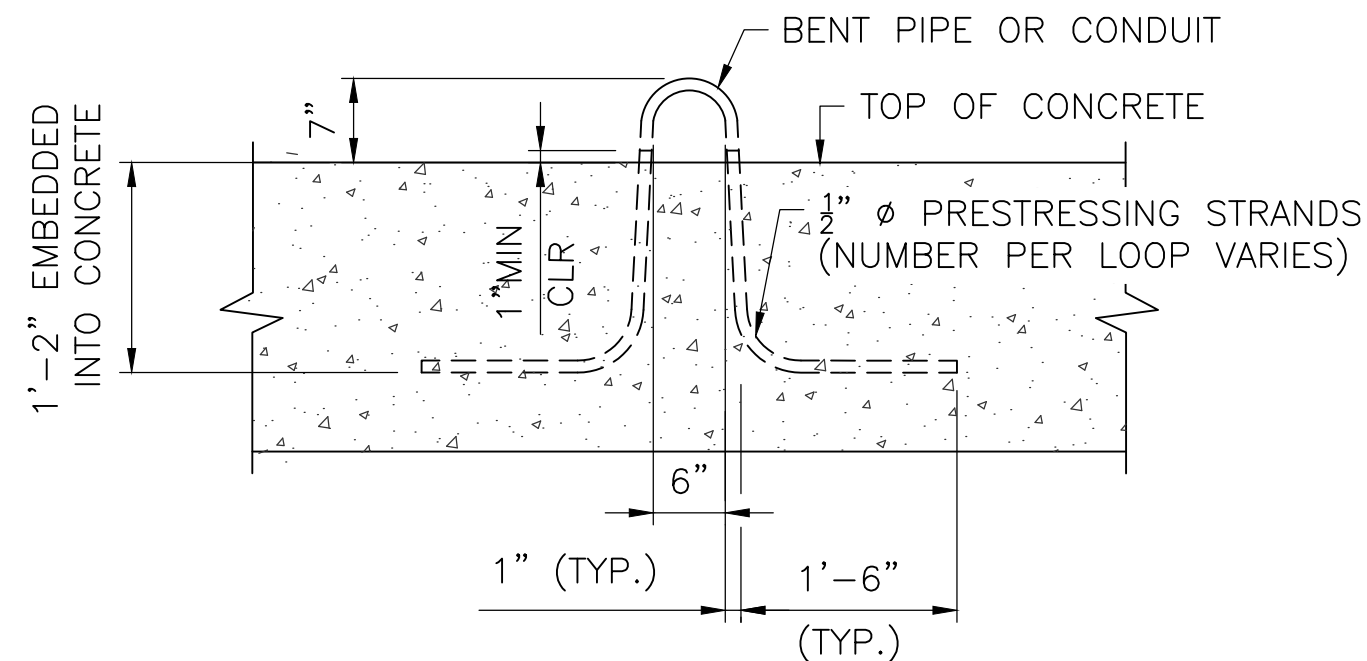
SCALE: $\frac{3}{8}$ " = 1'-0"

(SOUTH WEST AND NORTH WEST PANEL SHOWN, SOUTH EAST AND NORTH EAST PANEL MIRRORED.)



SECTION B

SCALE: $\frac{3}{4}$ " = 1'-0"



LIFTING DETAIL

SCALE: N.T.S.

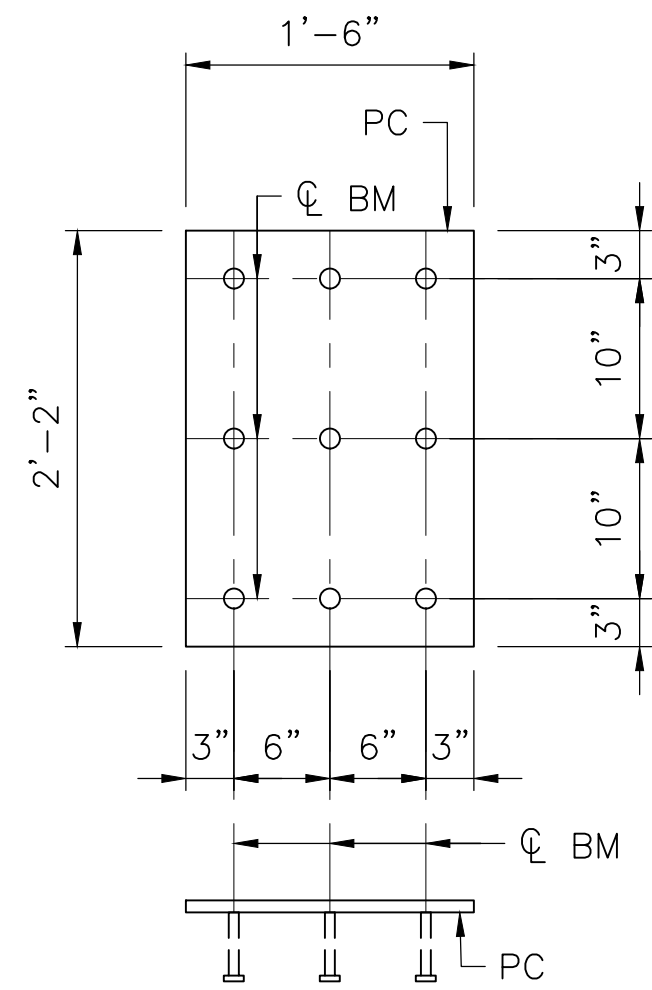
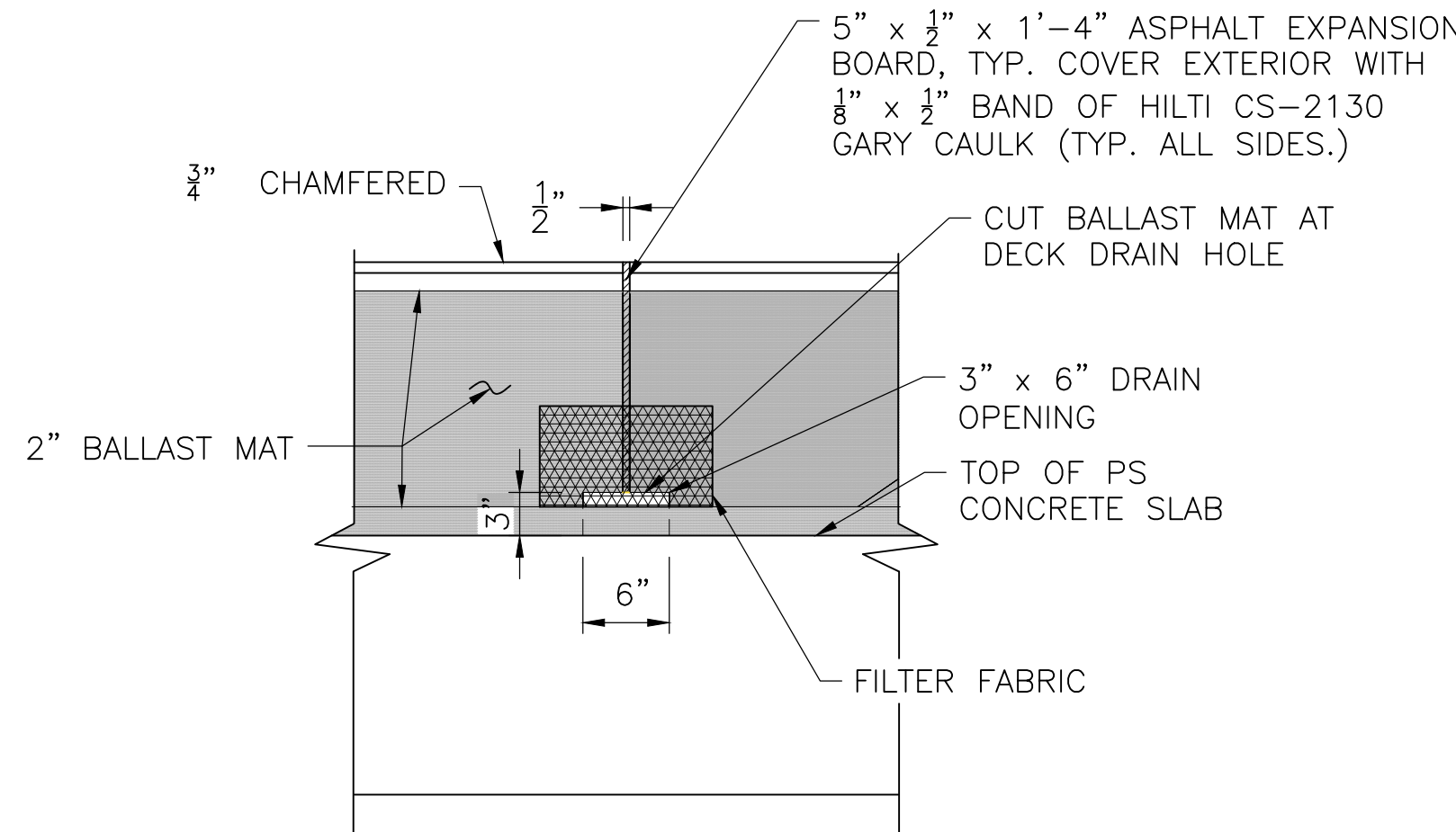


PLATE P1

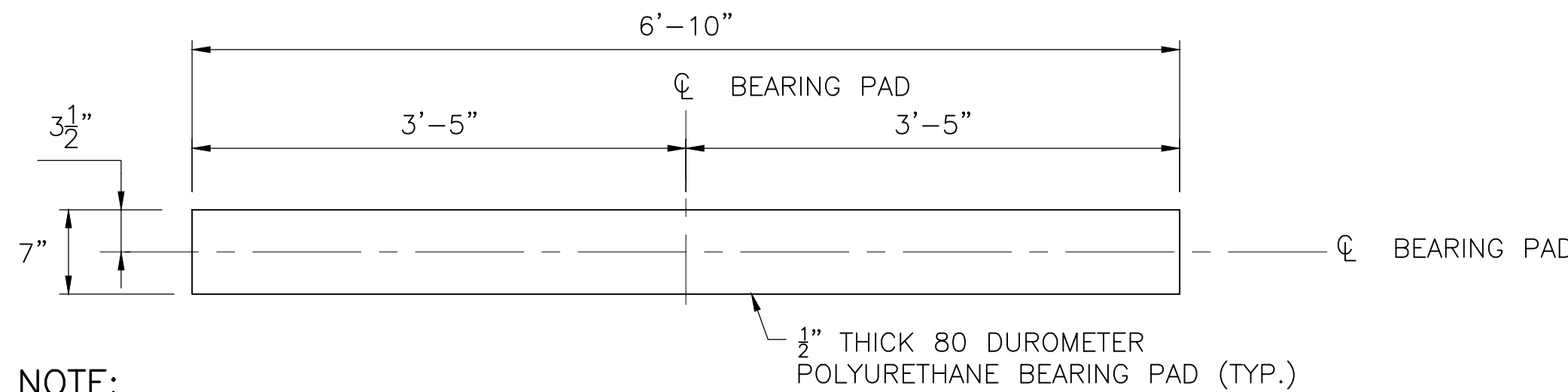
SCALE: N.T.S.

- 1 ~ PLATE $\frac{3}{4}$ "X18"x2'-2" - PC
9 ~ $\frac{9}{8}$ " DIA X 4" SHEAR STUD - BM



DETAIL 'A'

SCALE: 1" = 1'-0"



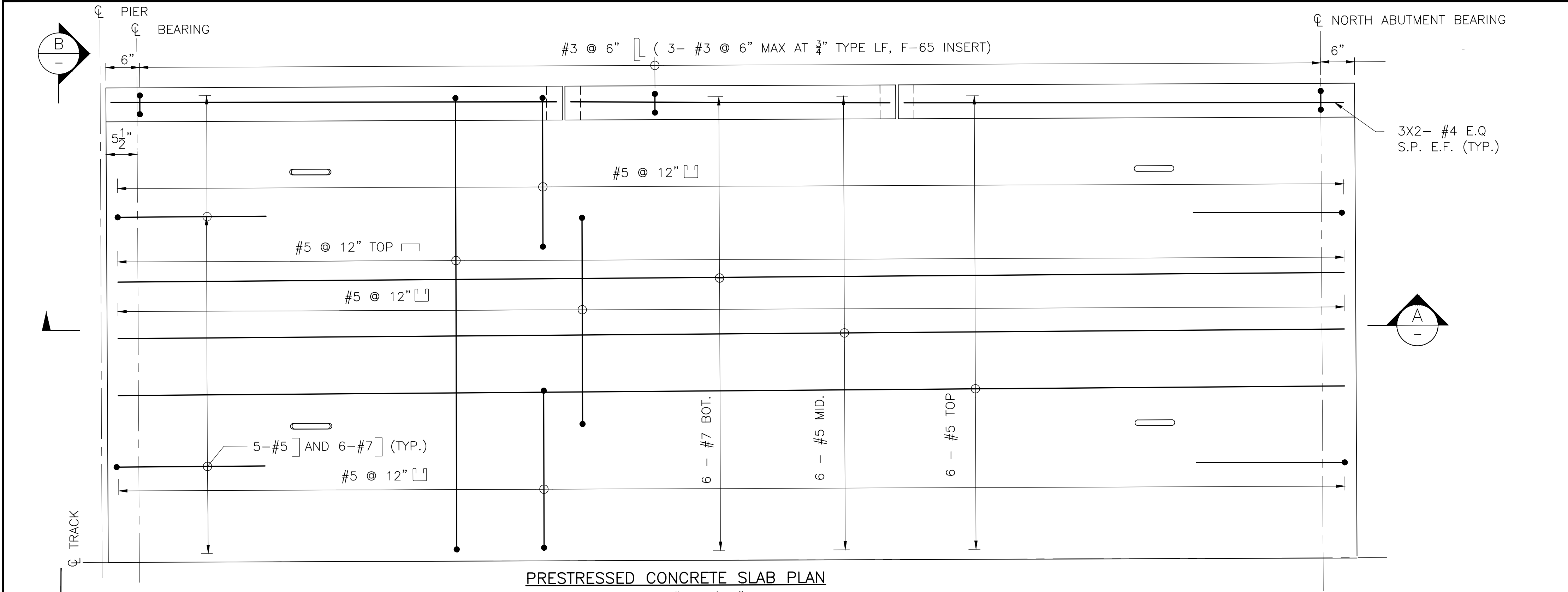
NOTE:

1. THE BEARING PAD SHALL BE IN ACCORDANCE WITH THE LATEST AREMA MANUAL WITH THE FOLLOWING CHARACTERISTICS/CONSTRAINTS:
- 80 DUROMETER POLYURETHANE WITH A MINIMUM SHEAR MODULUS OF 500 PSI AND MAXIMUM SHEAR MODULUS OF 1,450 PSI.
 - AVERAGE COMPRESSIVE STRESS OF 1,000 PSI.

BEARING PAD PLAN

SCALE: N.T.S.

MASSDOT BERKSHIRE LINE IMPROVEMENTS CONTRACT NO. 120593									
REPLACEMENT OF BRIDGES ON BERKSHIRE LINE BRIDGE 79.81 - WILLOW CREEK BRIDGE PRESTRESSED CONCRETE SLAB LAYOUT DETAILS									
ISSUE		DATE	DESCRIPTION	BY	CHKD	APP.	SCALE: AS NOTED		
ISSUE		DATE	DESCRIPTION	BY	CHKD	APP.	DATE: 12/12/2022		
ISSUE		DATE	DESCRIPTION	BY	CHKD	APP.	DRAWN BY: A.T.		
ISSUE		DATE	DESCRIPTION	BY	CHKD	APP.	DESIGN BY: E.Y.		
ISSUE		DATE	DESCRIPTION	BY	CHKD	APP.	CHECK BY: SSL		
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ISSUE		DATE	DESCRIPTION	BY	CHKD	APP.	SHEET: S-13		

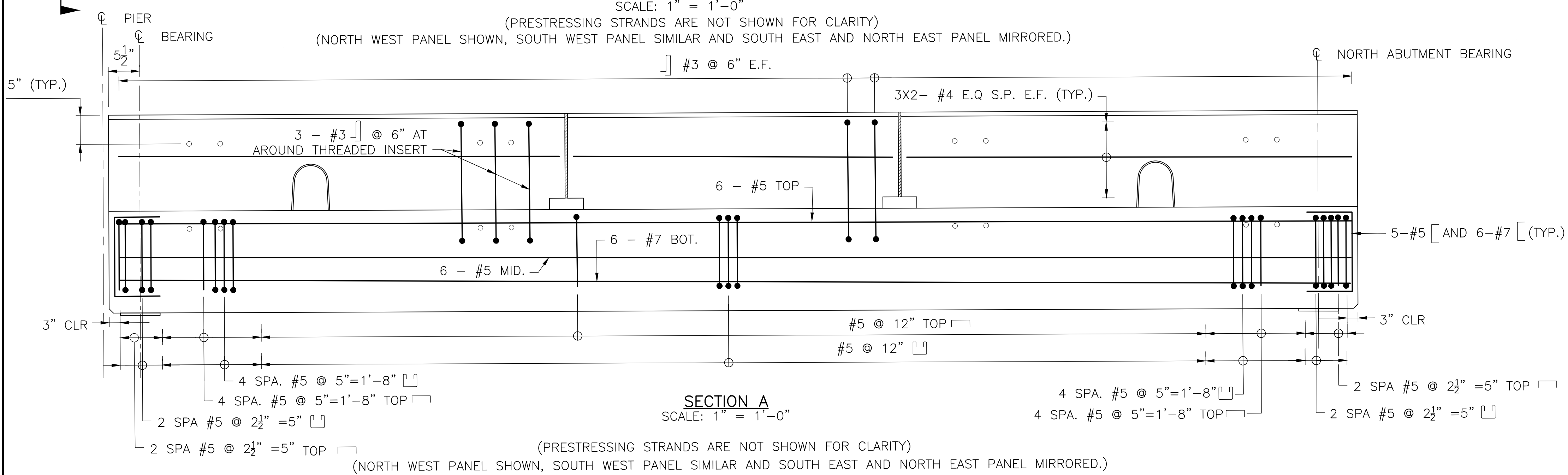


PRESTRESSED CONCRETE SLAB PLAN

SCALE: 1" = 1'-0"

(PRESTRESSING STRANDS ARE NOT SHOWN FOR CLARITY)

(NORTH WEST PANEL SHOWN, SOUTH WEST PANEL SIMILAR AND SOUTH EAST AND NORTH EAST PANEL MIRRORED.)

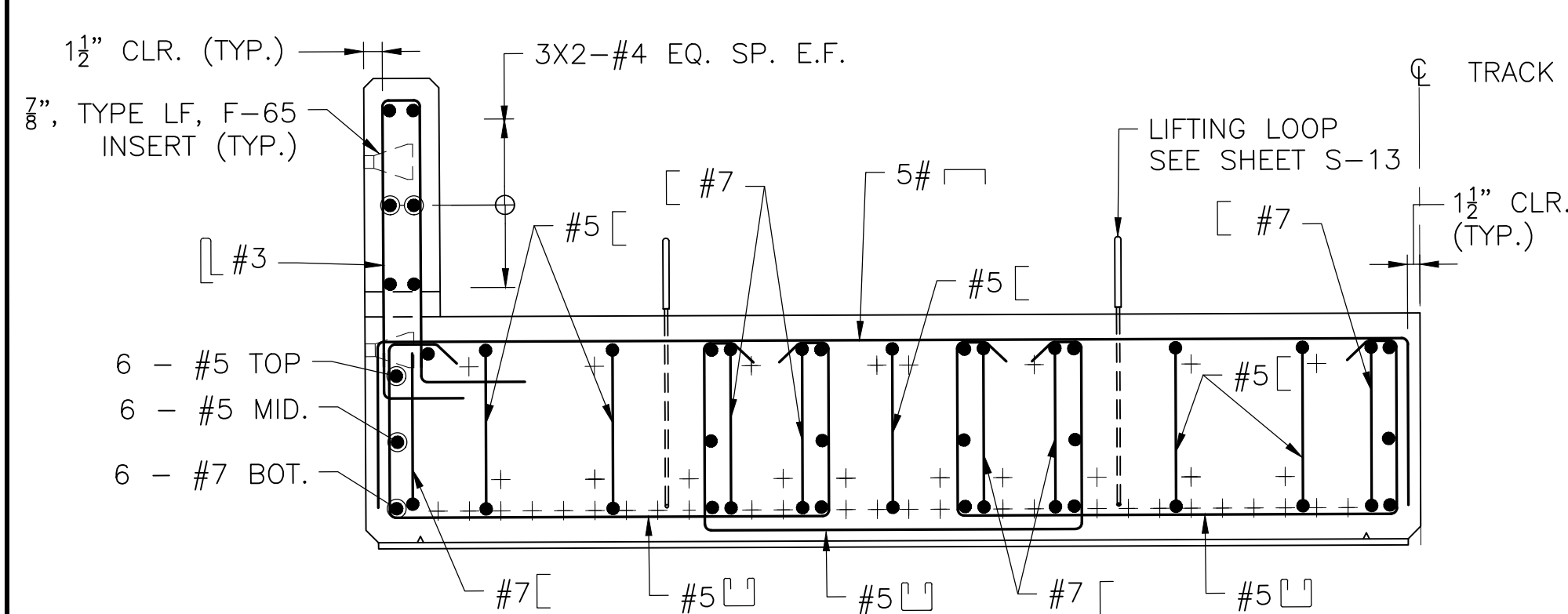


SECTION A

SCALE: 1" = 1'-0"

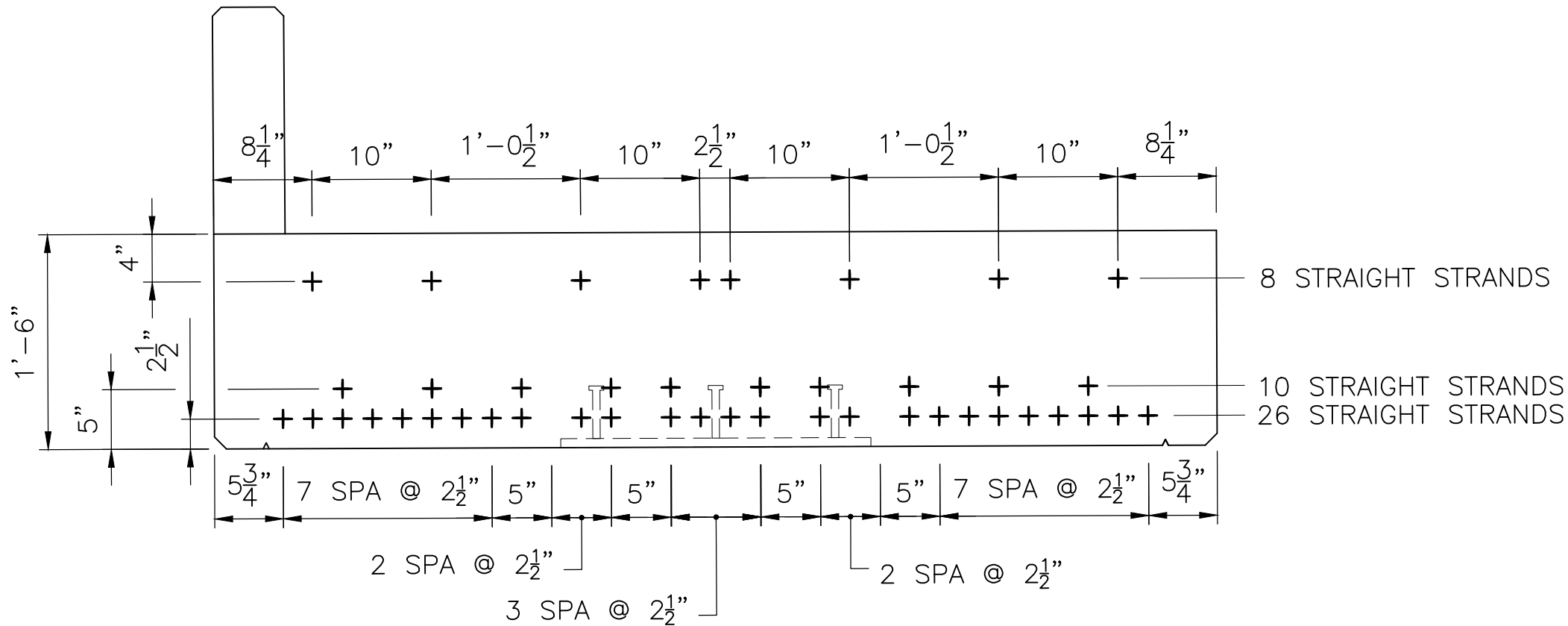
(PRESTRESSING STRANDS ARE NOT SHOWN FOR CLARITY)

(NORTH WEST PANEL SHOWN, SOUTH WEST PANEL SIMILAR AND SOUTH EAST AND NORTH EAST PANEL MIRRORED.)



SECTION B

SCALE: 1" = 1'-0"



SECTION B

SCALE: 1" = 1'-0"

NOTES:

1. FOR GENERAL NOTES SEE SHEET S-1.

LEGEND:

- F.F. DENOTES FRONT FACE
B.F. DENOTES BACK FACE
E.F. DENOTES EACH FACE
MID. DENOTES MIDDLE LAYER
TYP. DENOTES TYPICAL
BOT. DENOTES BOTTOM
EQ.SP. DENOTES EQUALLY SPACED

MASSDOT BERKSHIRE LINE IMPROVEMENTS
CONTRACT NO. 120593

REPLACEMENT OF BRIDGES ON BERKSHIRE LINE
BRIDGE 79.81 - WILLOW CREEK BRIDGE
PRESTRESSED CONCRETE SLAB
REINFORCEMENT DETAILS

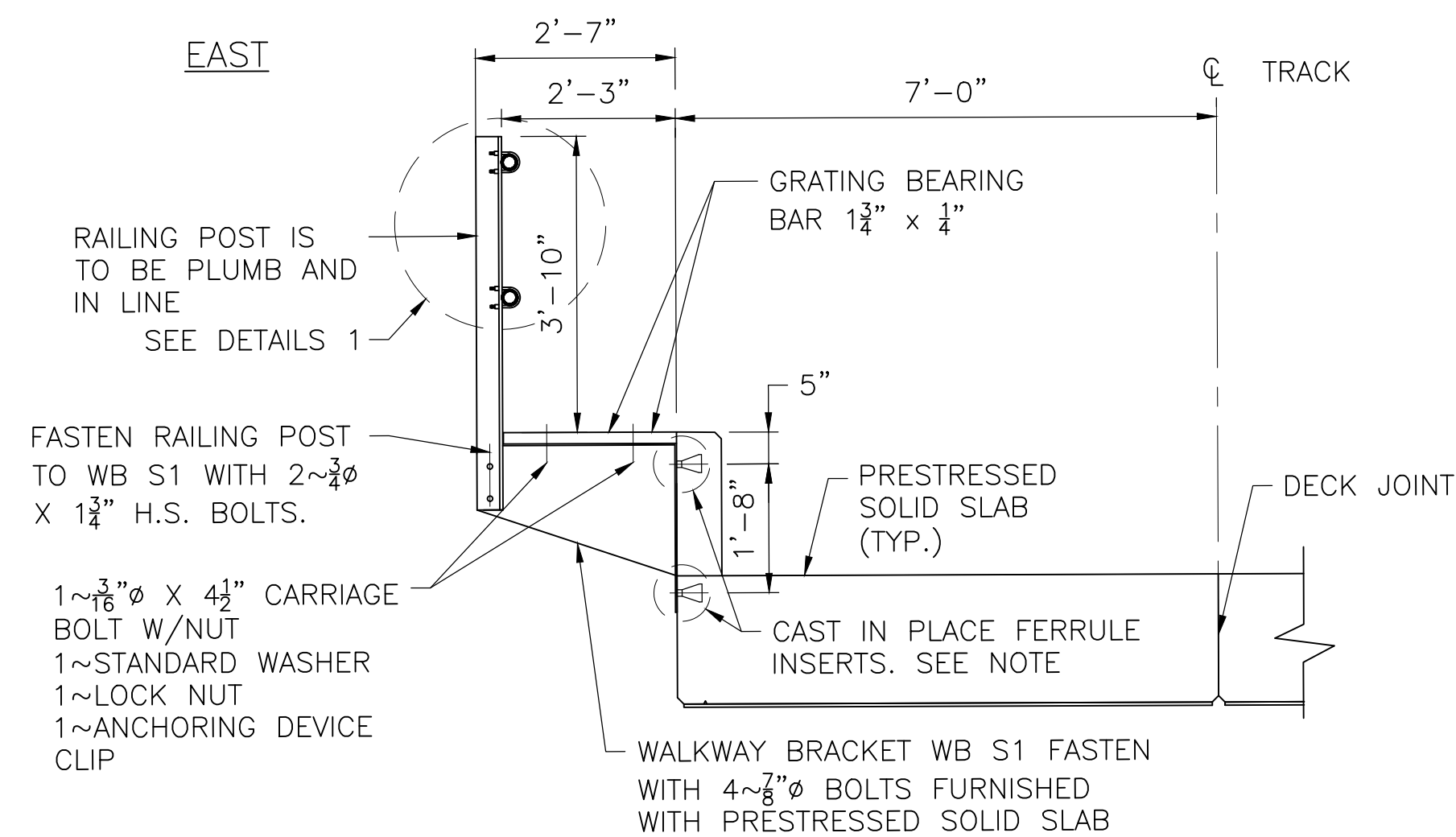


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(617) 357-7700



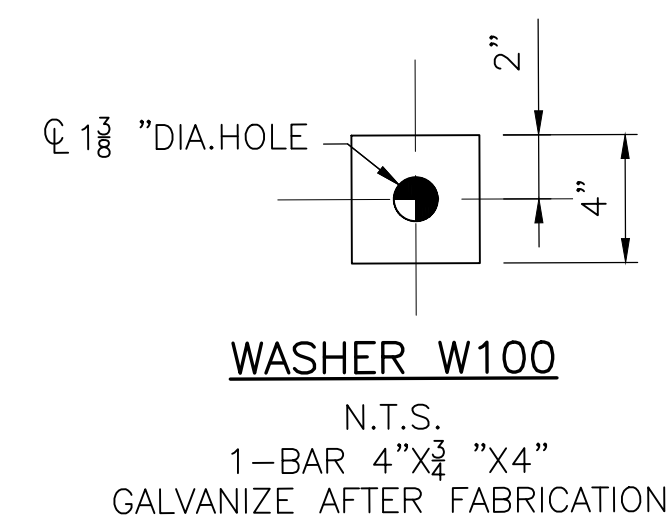
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DATE: 12/12/2022
DRAWN BY: M.V.
DESIGN BY: E.Y.
CHECK BY: SSL
PLAN NO.:
SHEET: S-14

ISSUE



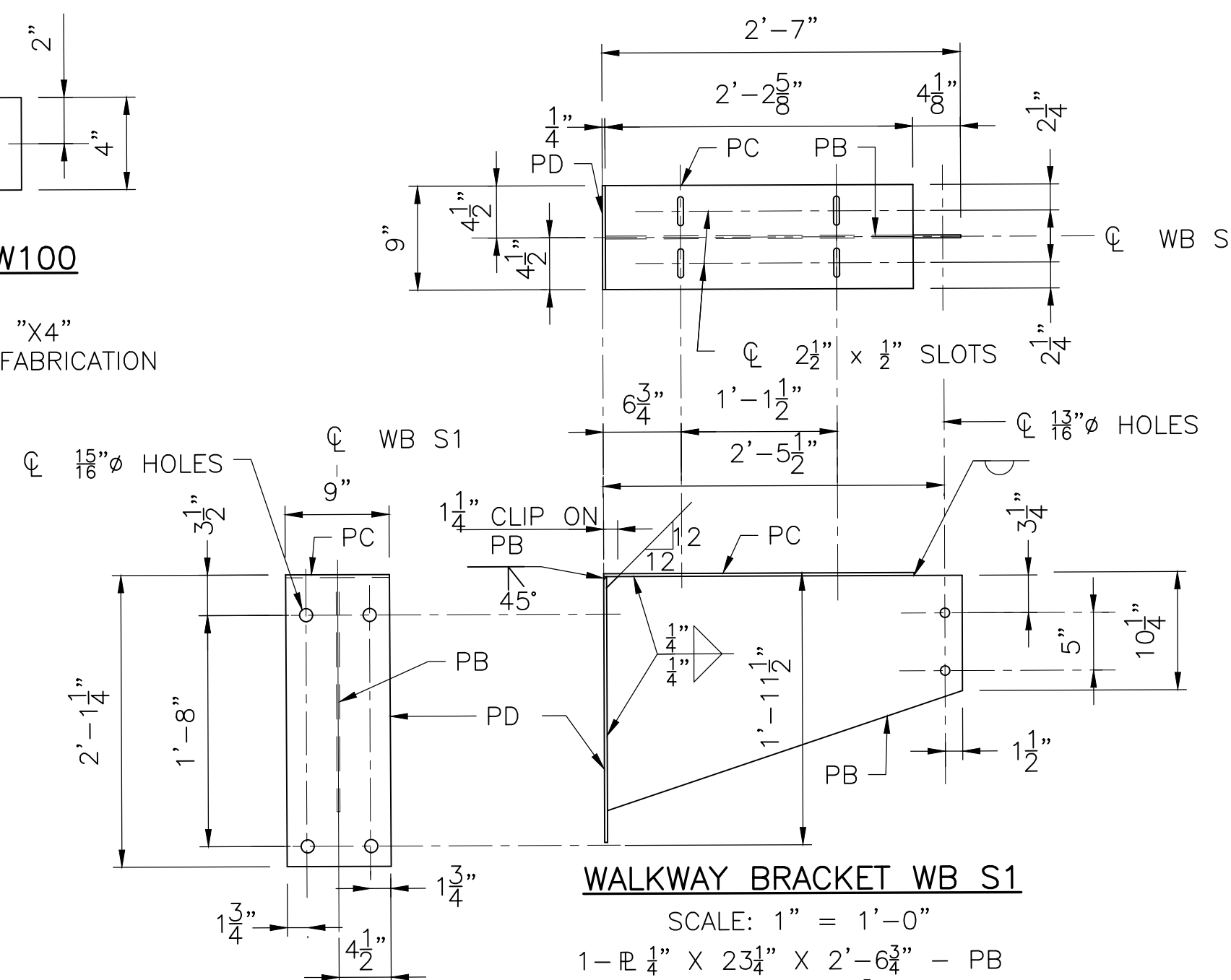
SECTION A
SCALE: $\frac{1}{2}" = 1'-0"$

NOTE:
CAST IN PLACE FERRULE INSERTS TYPE LF X $\frac{7}{8}$ " Ø AS
MANUFACTURED BY DAYTON/RICHMOND SCREW ANCHOR CO. OR
EQUAL. MINIMUM SHEAR = 3,000 LBS. MINIMUM TENSION = 3,660
LBS. 4 INSERTS PER WALKWAY BRACKET LOCATION. FURNISH WITH
 $\frac{7}{8}$ " Ø BOLTS AND WASHERS. ALL ITEMS SHALL BE GALVANIZED.



WASHER W100

N.T.S.
1-BAR 4"X $\frac{3}{4}$ "X4"
GALVANIZE AFTER FABRICATION



WALKWAY BRACKET WB S1

SCALE: 1" = 1'-0"

$$\begin{aligned} 1 - \text{P} \frac{1}{4}'' \times 23 \frac{1}{4}'' \times 2' - 6 \frac{3}{4}'' &= \text{PB} \\ 1 - \text{P} \frac{1}{4}'' \times 9'' \times 2' - 2 \frac{5}{8}'' &= \text{PC} \\ 1 - \text{P} \frac{1}{4}'' \times 9'' \times 2' - 1 \frac{1}{4}'' &= \text{PD} \end{aligned}$$

- GENERAL NOTES:

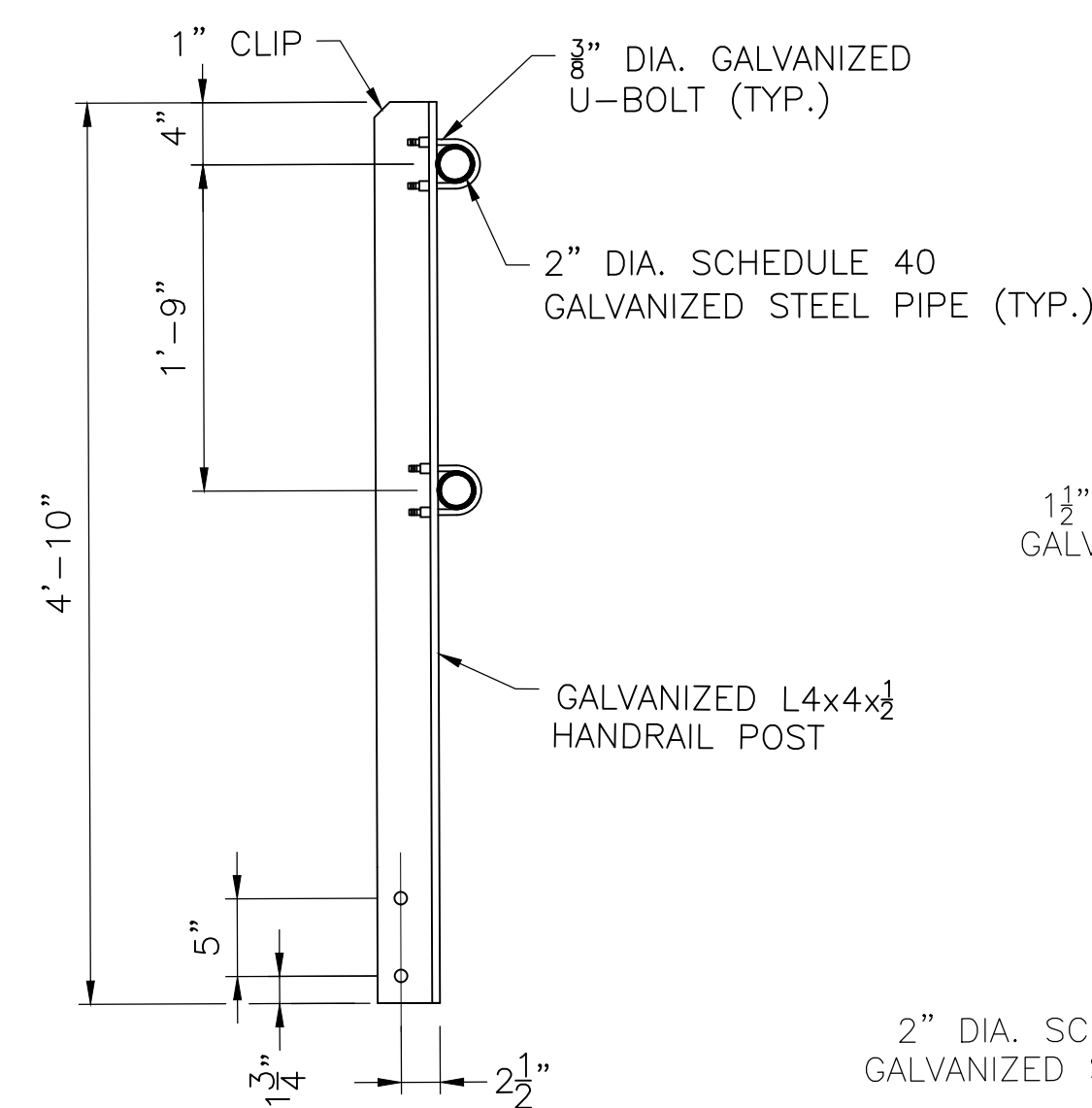
1. MATERIAL: STRUCTURAL STEEL PLATES AND BARS SHALL MEET THE REQUIREMENTS OF THE CURRENT ASTM A709 GRADE 36.
2. ALL BOLTS SHALL MEET THE REQUIREMENT OF ASTM F3125, GRADE A325.

FABRICATION NOTES:

1. SHOP NOTES: FABRICATION AND ARC WELDING OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH CHAPTER 15. PART 3 OF THE CURRENT A.R.E.M.A. MANUAL FOR RAILWAY ENGINEERING.
2. GALVANIZING: WB S1 BRACKETS, HANDRAIL POSTS AND HAND RAILS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH THE CURRENT A.S.T.M. DESIGNATION: A123.
3. AFTER GALVANIZING ALL ELEMENTS SHALL BE FREE OF FINS, ABRASIONS, ROUGH OR SHARP EDGES AND OTHER SURFACE DEFECTS.

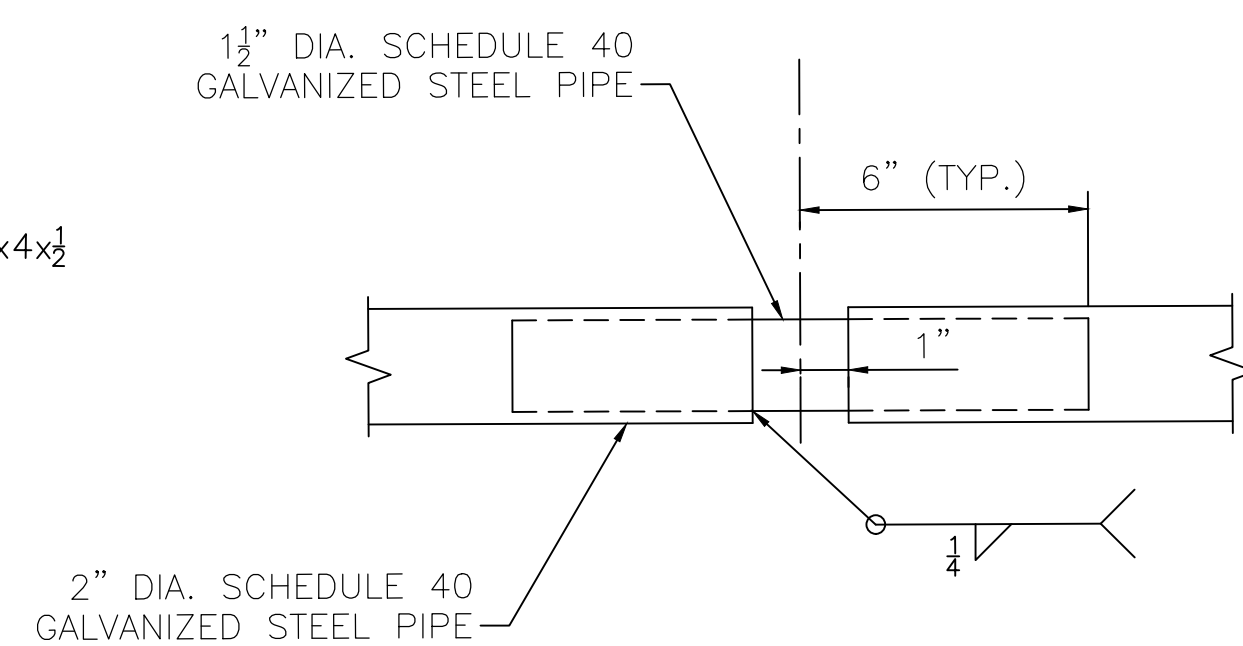
NOTES:

1. FOR GENERAL NOTES, SEE SHEET S-1.



DETAIL 1

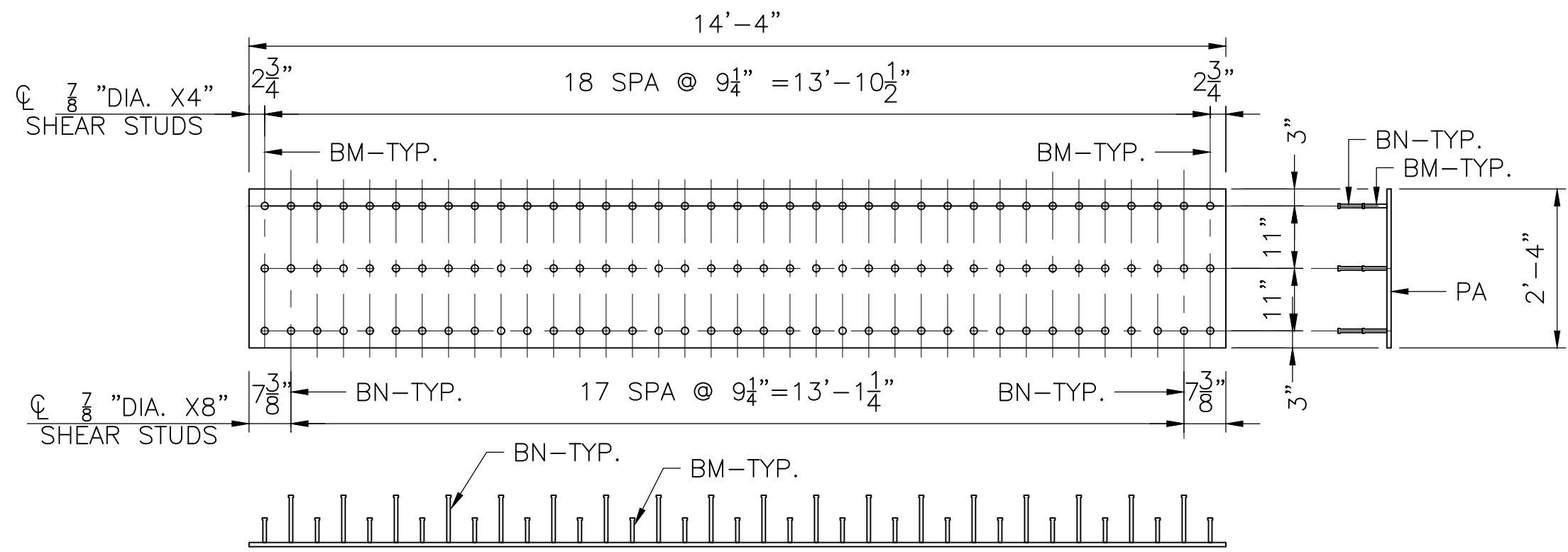
SCALE: 1" = 1'-0"



RAIL SPLICE DETAIL AT PIER

SCALE: 1" = 1'-0"

[illegible]



PILE PLATE PP1
SCALE: 1/2" = 1'-0"
1~PL 3/4"X28"X14'-4"-PA
57~ 7/8" DIA X 4" SHEAR STUDS-BM
54~ 7/8" DIA X 8" SHEAR STUDS-BN

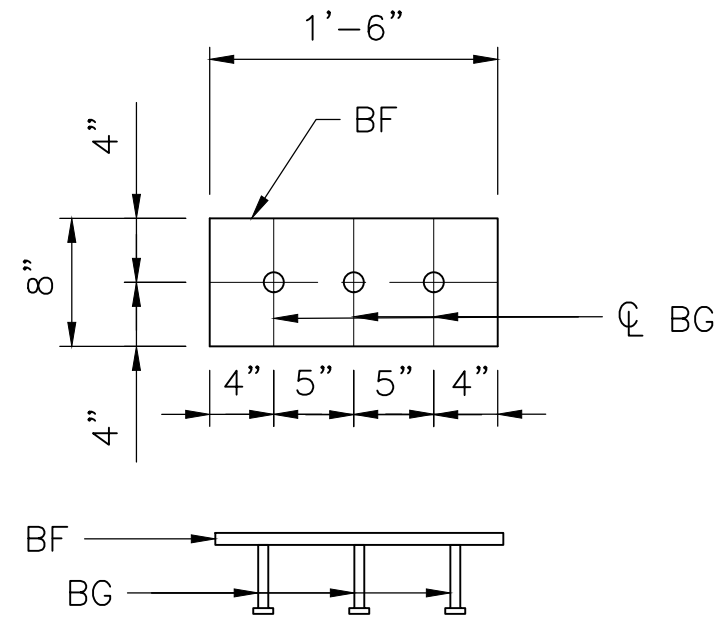


PLATE EP1
SCALE: N.T.S.
1~BAR 8"X3/4"X1'-6"-BF
3~ 7/8" DIA X 4" STUDS-BG

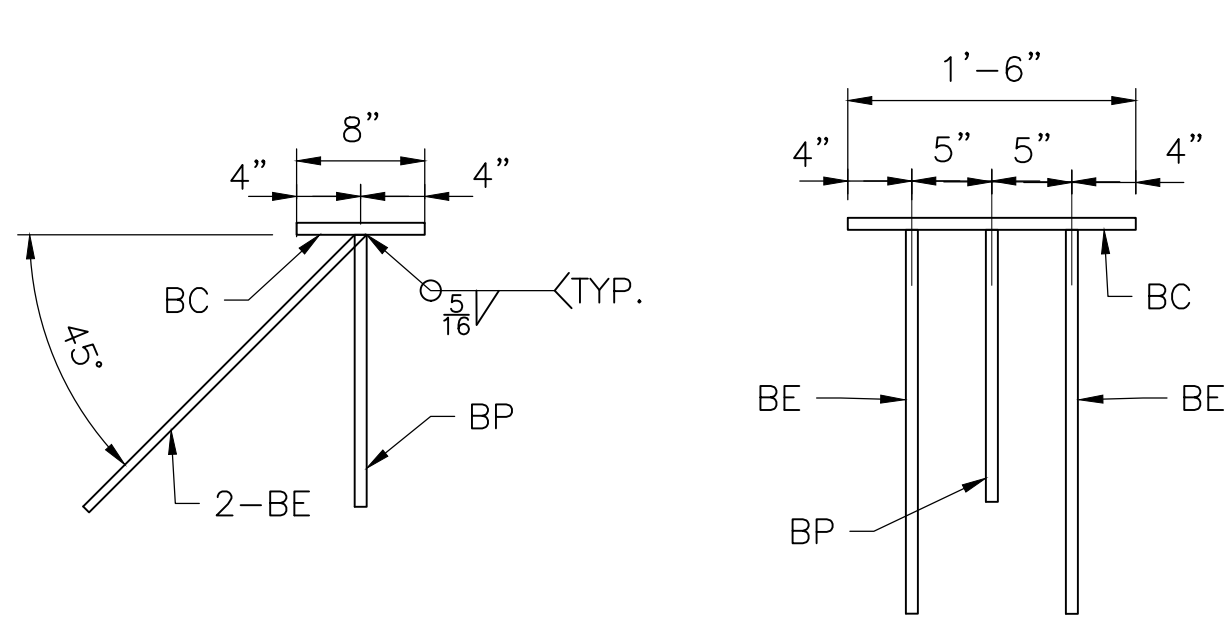
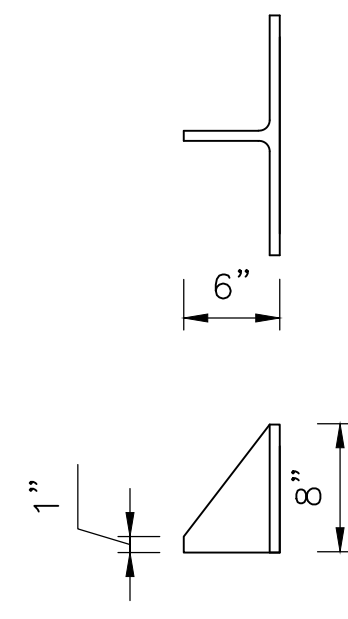
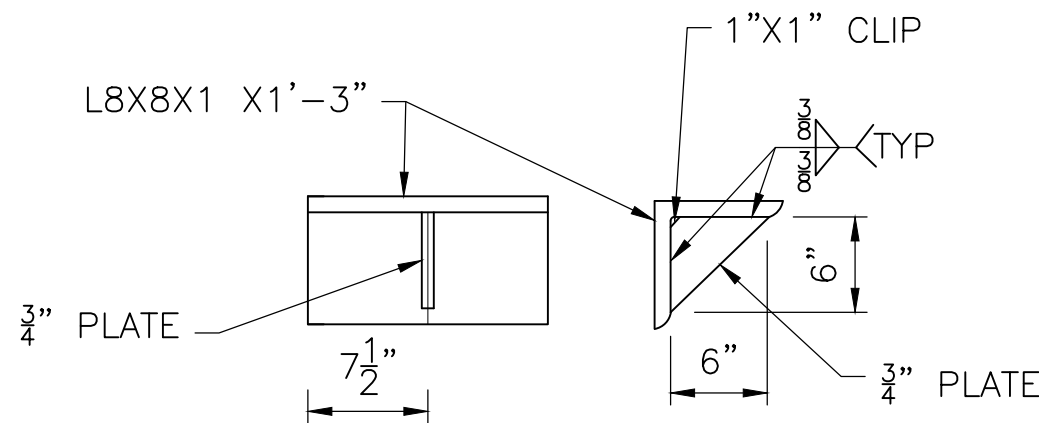


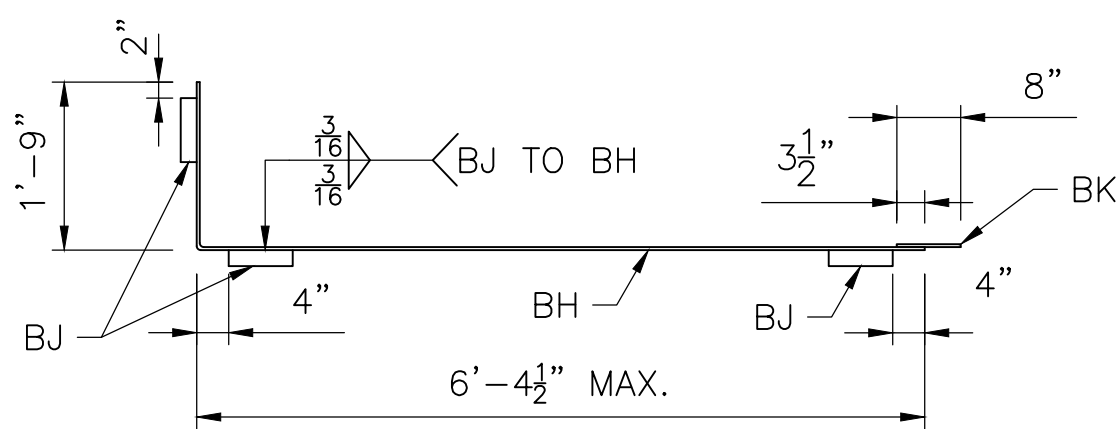
PLATE EP2
SCALE: N.T.S.
1~BAR 8"X3/4"X1'-6"-BC
2~BARS #6 X 2'-0" -BE
1~BARS #6 X 1'-5" -BP



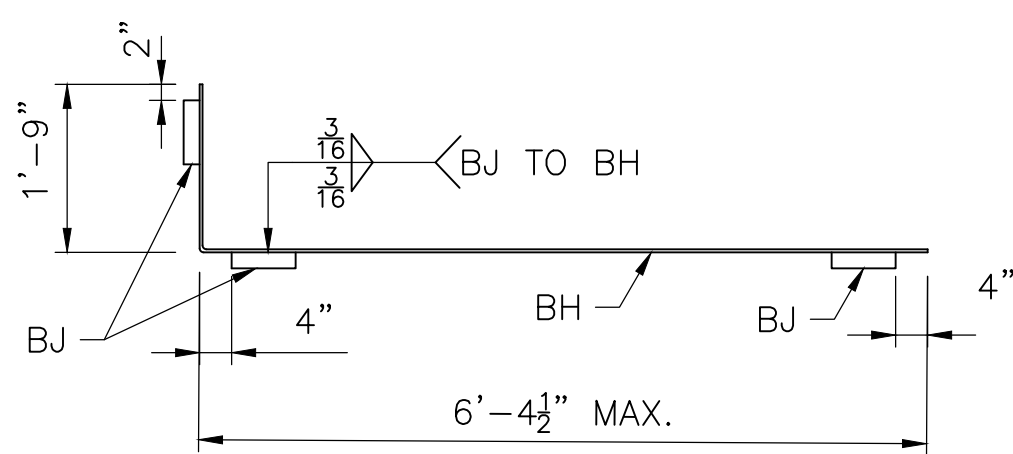
BRACKET BK1
SCALE: N.T.S.
CONTRCTOR TO FABRICATE FROM
HP14X117
GALVANIZED AFTER FRABRICATION



**LONGITUDINAL RESTRAINT
BRACKET MK_LRB1**
SCALE: N.T.S.
1~ L8X8X1 X1'-3"
1~PL 3/4" X6" X0'-6"



DECK PLATE DP1
SCALE: 1/2" = 1'-0"
1~PL 3/8" x 8" x 8'-1 1/2" (BENT) - BH
3~BARS 2" x 3/8" x 8" - BJ
1~BAR 7" x 3/8" x 8" - BK
GALVANIZED AFTER FABRICATION



DECK PLATE DP2
SCALE: 1/2" = 1'-0"
1~PL 3/8" x 8" x 8'-1 1/2" (BENT) - BH
3~BARS 2" x 3/8" x 8" - BJ
GALVANIZED AFTER FABRICATION

GENERAL NOTES:

- MATERIAL: STRUCTURAL STEEL PLATES AND BARS SHALL MEET THE REQUIREMENTS OF THE CURRENT A.S.T.M. DESIGNATION: A709. GRADE 36.
- ALL STEEL PILE PLATES (PP1) SHALL MEET THE REQUIREMENTS OF THE CURRENT A.S.T.M. DESIGNATION: A709. GRADE 50.
- SHEAR CONNECTOR STUDS SHALL MEET THE REQUIREMENTS OF SECTION 7 OF THE CURRENT A.W.S. STRUCTURAL WELDING CODE D1.1 FOR GRADE 1020 SOLID FLUX FILLED HEADED STUDS.

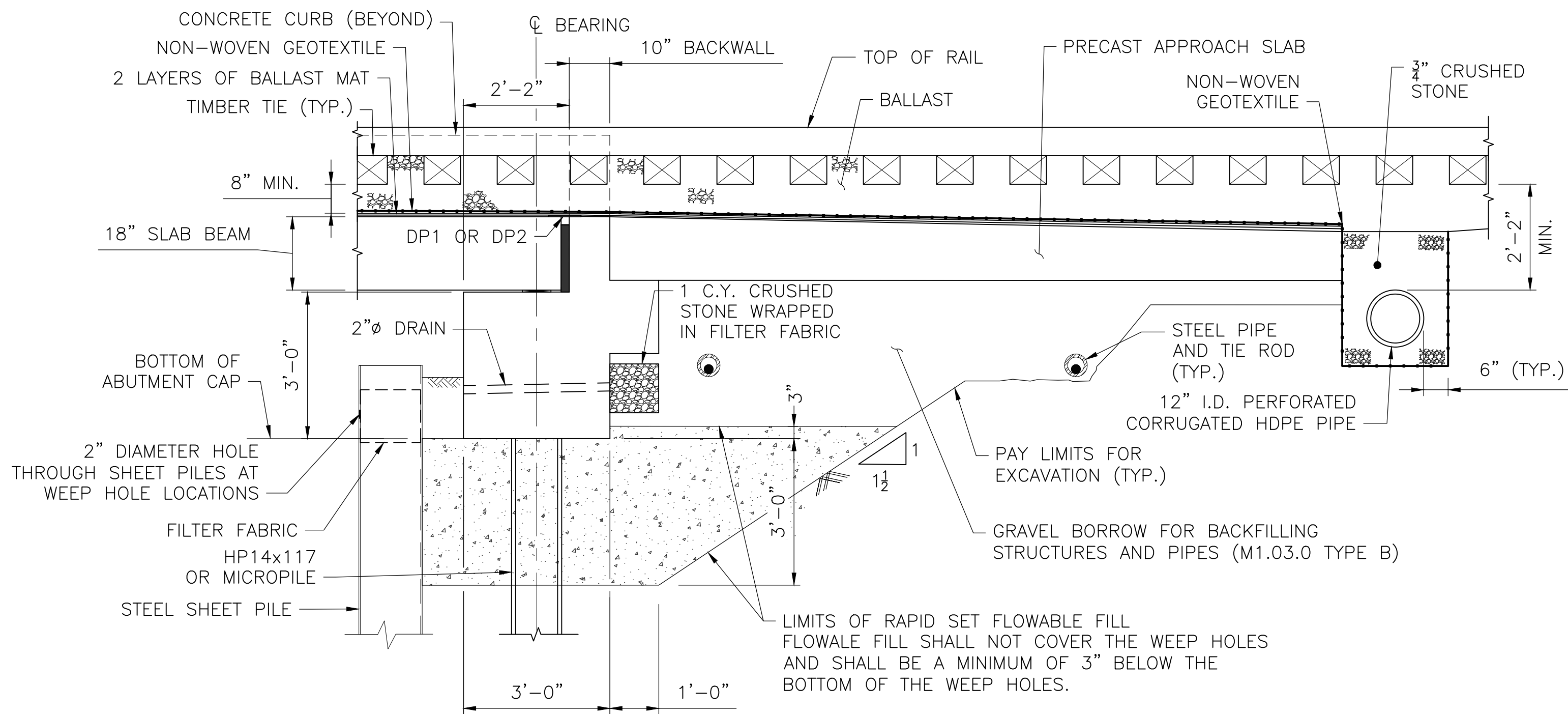
FABRICATION NOTES:

- SHOP NOTES: FABRICATION AND ARC WELDING OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH CHAPTER 15, PART 3 OF THE CURRENT A.R.E.M.A. MANUAL FOR RAILWAY ENGINEERING. OPEN HOLES: AS NOTED. SHOP PAINT: NONE.
- SHEAR CONNECTOR STUDS SHALL BE AUTOMATICALLY END WELDED WITH COMPLETE FUSION IN ACCORDANCE WITH SECTION 7 OF THE CURRENT A.W.S. STRUCTURAL WELDING CODE D1.1.
- DECK PLATE DP1 AND DP2 SHALL BE GALVANISED AFTER FABRICATION IN ACCORDANCE WITH THE CURRENT A.S.T.M. DESIGNATION: A123
- AFTER GALVANIZING ALL ELEMENTS SHALL BE FREE OF FINS, ABRASIONS, ROUGH OR SHARP EDGES AND OTHER SURFACE DEFECTS.

NOTES:

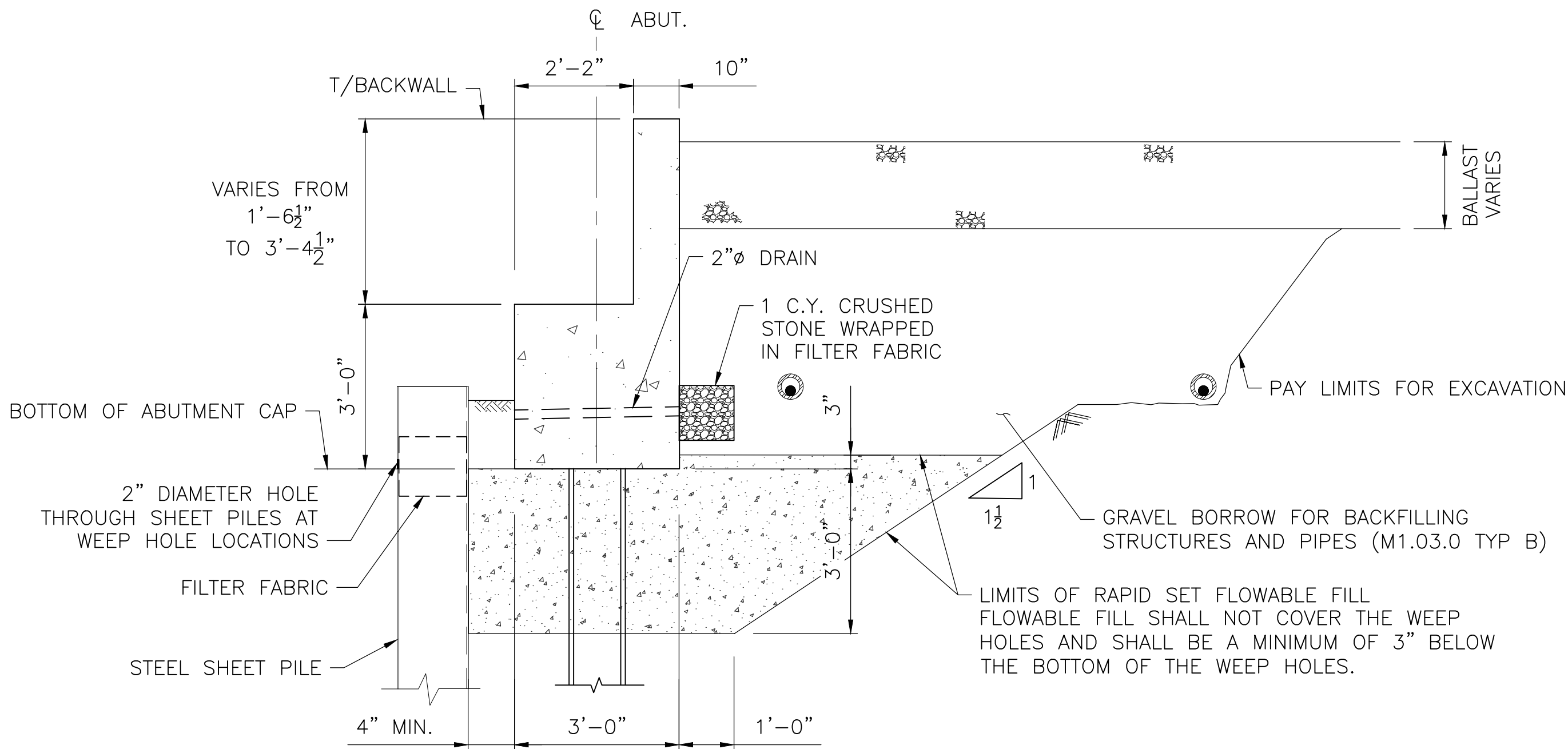
- FOR GENERAL NOTES, SEE SHEET S-1
- THIS DRAWING TO BE READ IN CONJUNCTION WITH S-6, S-7, S-8, S-9, S-10, S-11 AND S-12.

MASSDOT BERKSHIRE LINE IMPROVEMENTS CONTRACT NO. 120593									
REPLACEMENT OF BRIDGES ON BERKSHIRE LINE BRIDGE 79.81 - WILLOW CREEK BRIDGE STEEL DETAILS									
ISSUE		DATE	DESCRIPTION	BY	CHKD	APP.	SCALE: AS NOTED		DATE: 12/12/2022
ISSUE		DATE	DESCRIPTION	BY	CHKD	APP.	DRAWN BY: A.T.		DESIGN BY: E.Y.
ISSUE		DATE	DESCRIPTION	BY	CHKD	APP.	CHECK BY: SSL		PLAN NO. SHEET: S-16
ISSUE		DATE	DESCRIPTION	BY	CHKD	APP.	ISSUE		



TYPICAL ABUTMENT SECTION AT TRACK

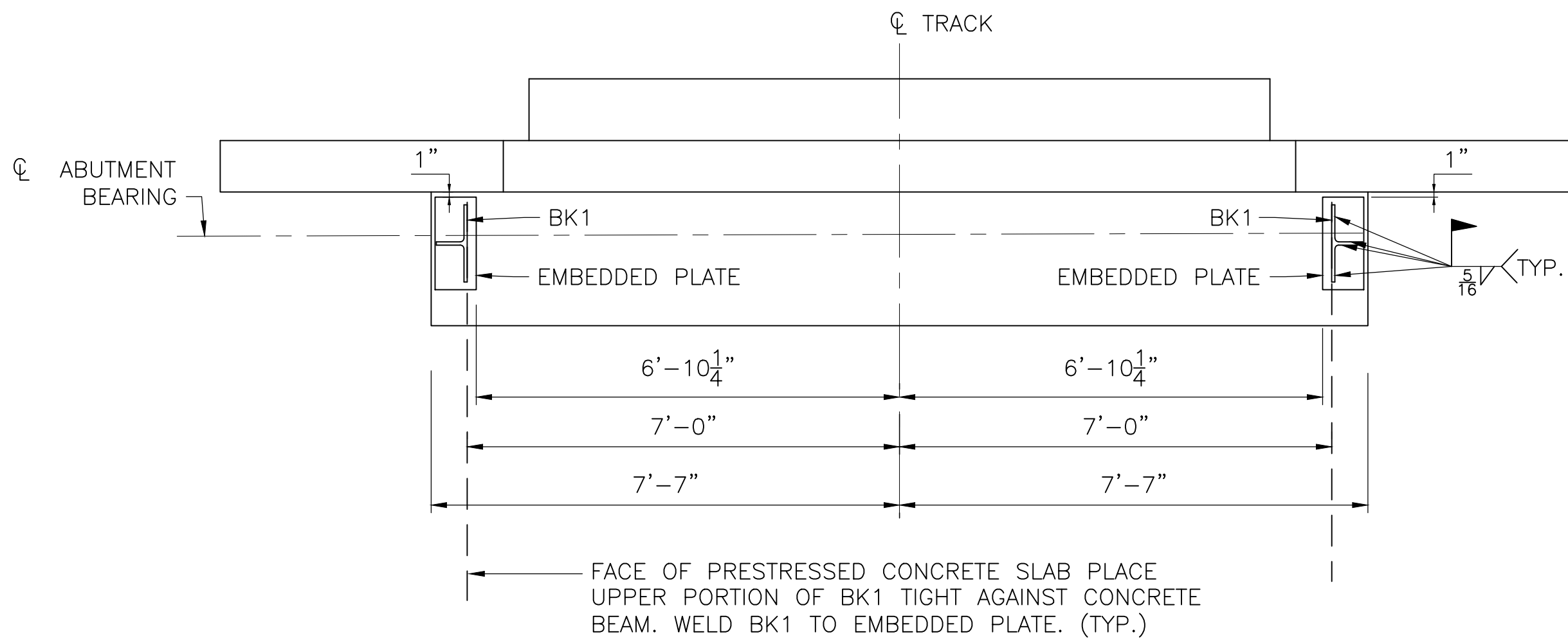
SCALE: $\frac{1}{2}$ " = 1'-0"



TYPICAL ABUTMENT SECTION OUTSIDE OF TRACK

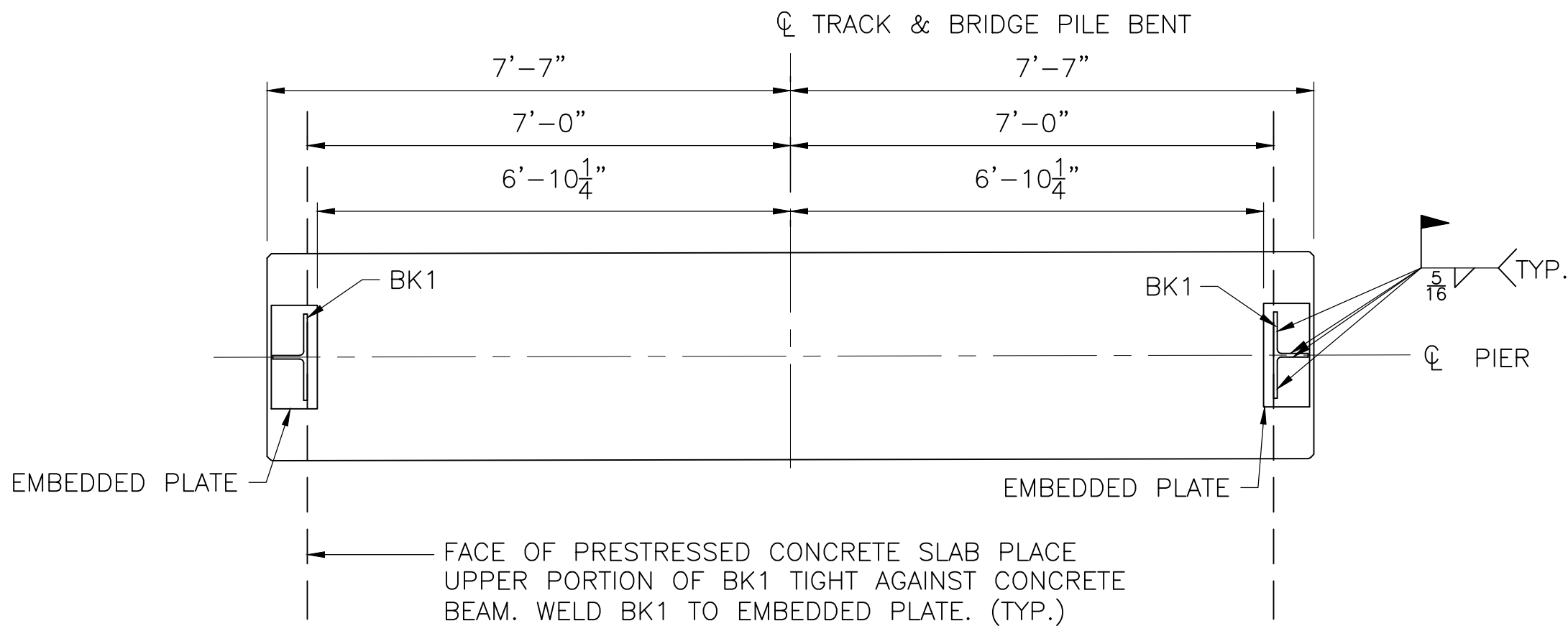
SCALE: $\frac{1}{2}$ " = 1'-0"

BEFORE BACKFILLING END BENTS, APPLY A COATING OF PETROLATUM TO PILE PLATE PP1, AND TOP ONE FOOT OF PILES



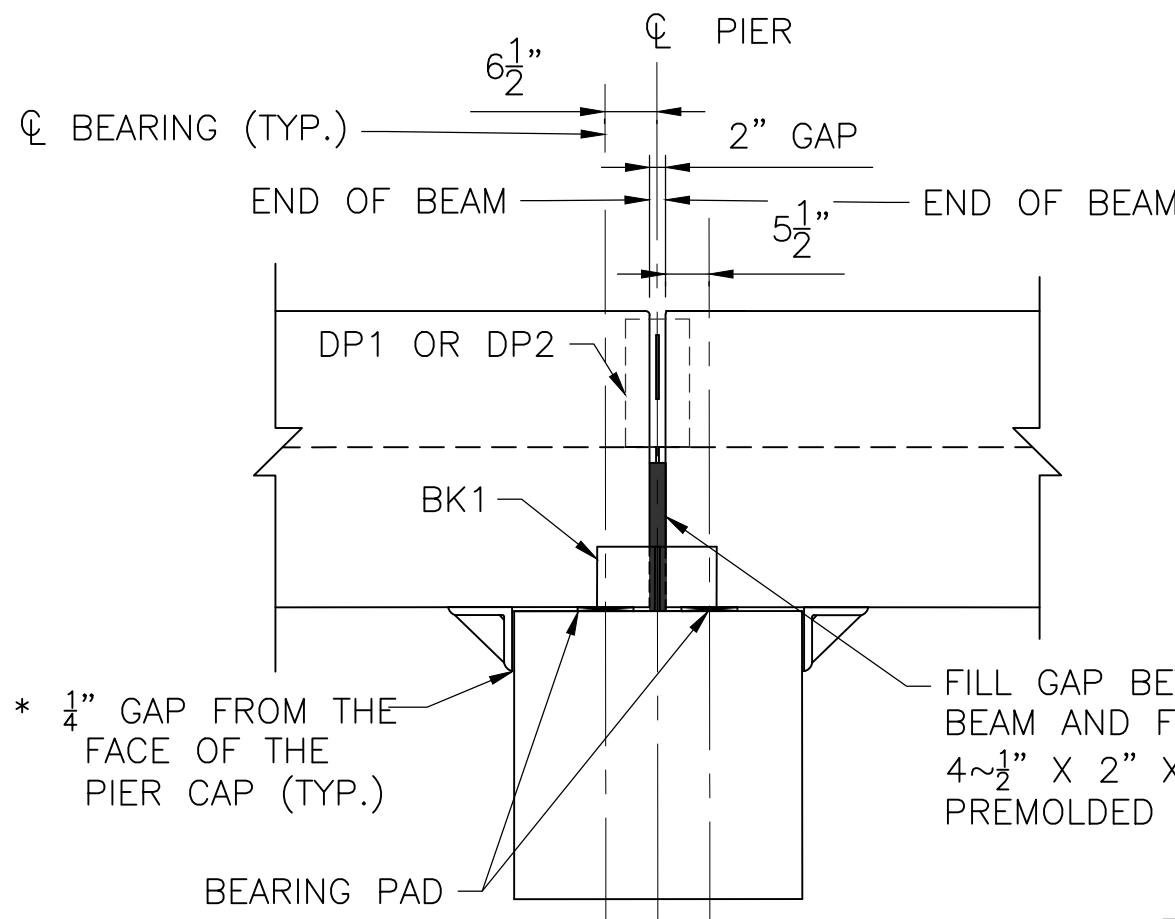
WELDING OF LATERAL RESTRAINT BK1
ABUTMENT

SCALE: $\frac{1}{2}$ " = 1'-0"



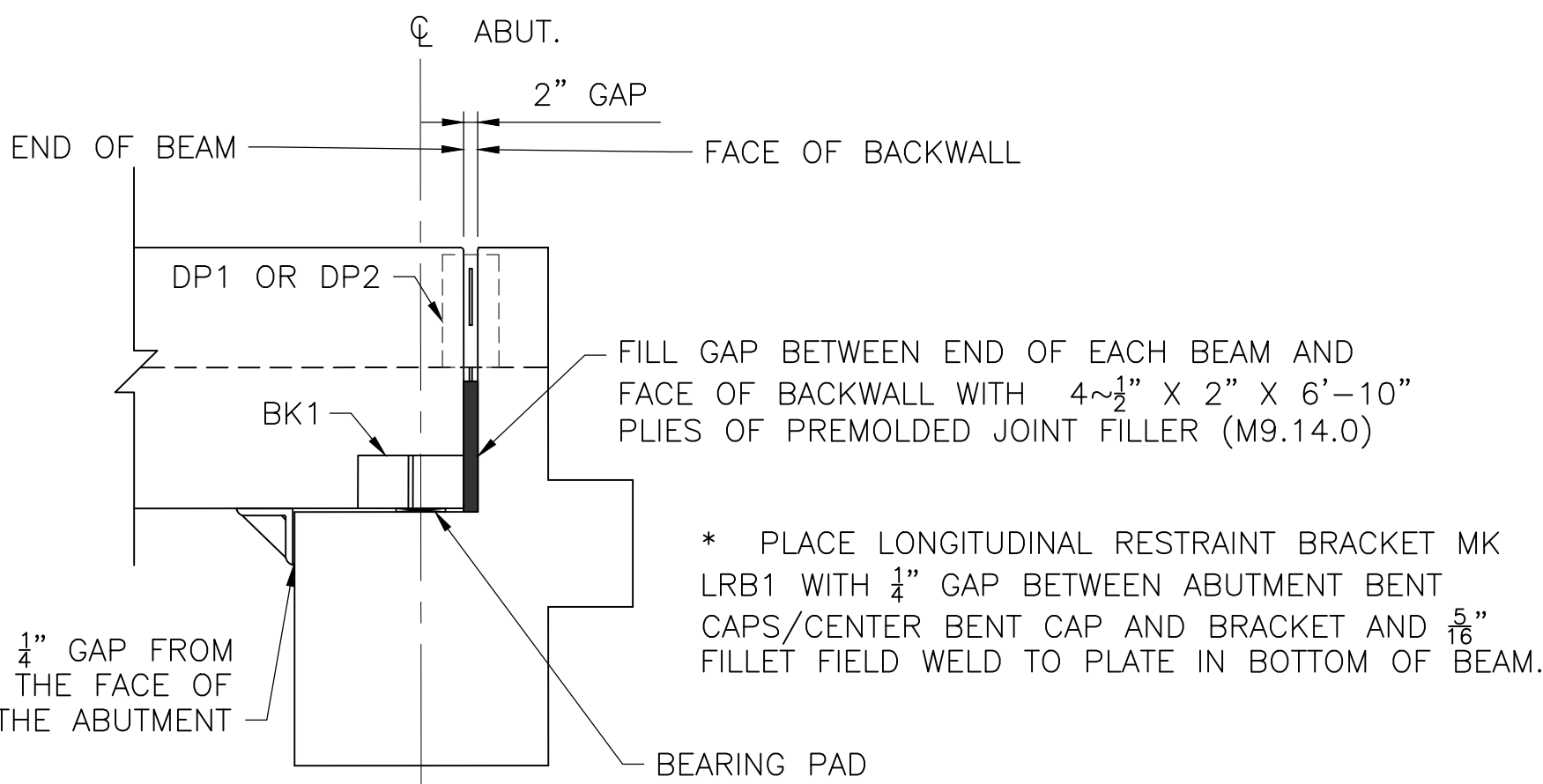
WELDING OF LATERAL RESTRAINT BK1
PIER CAP

SCALE: $\frac{1}{2}$ " = 1'-0"

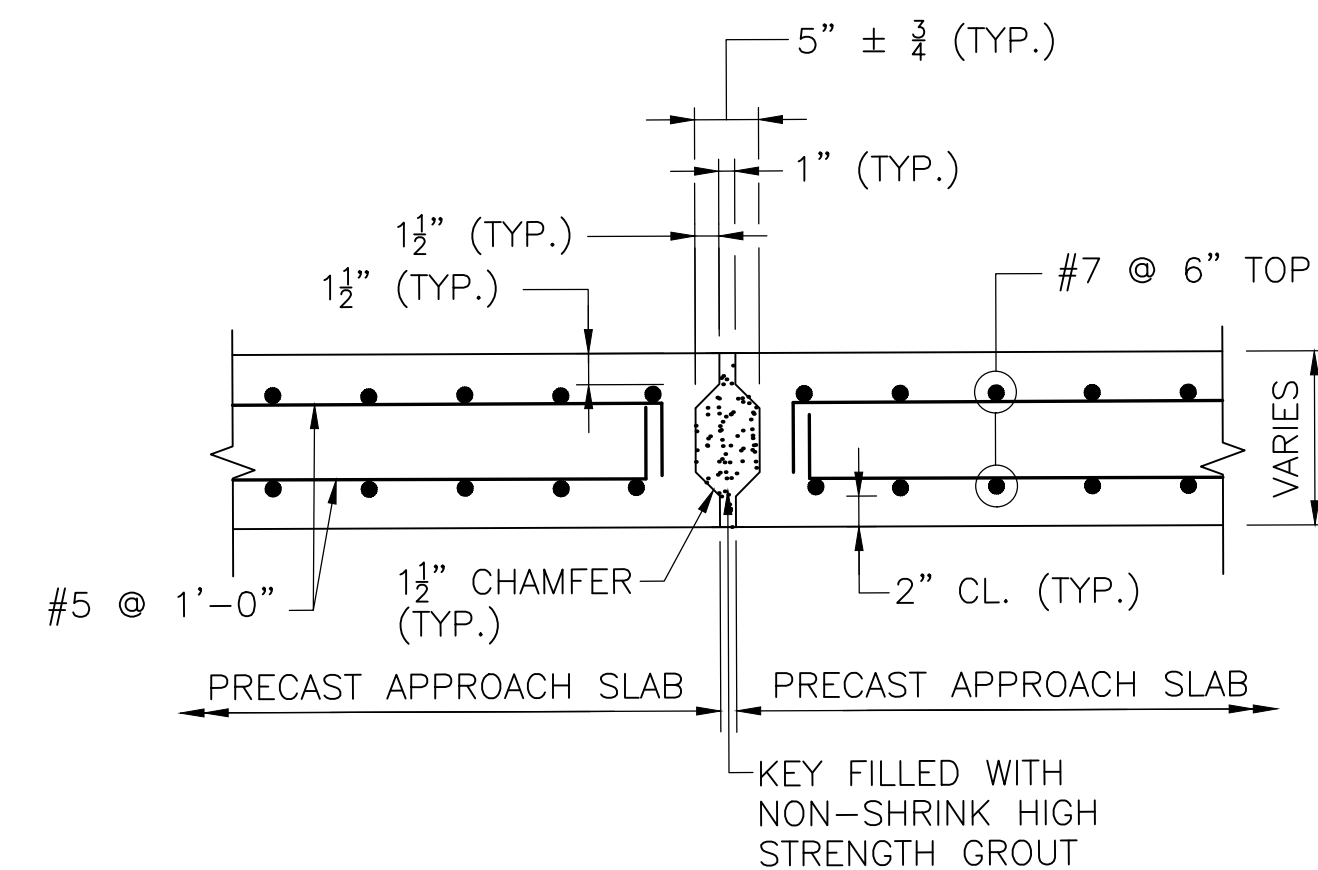


BEARING DETAILS-SLAB GIRDERS

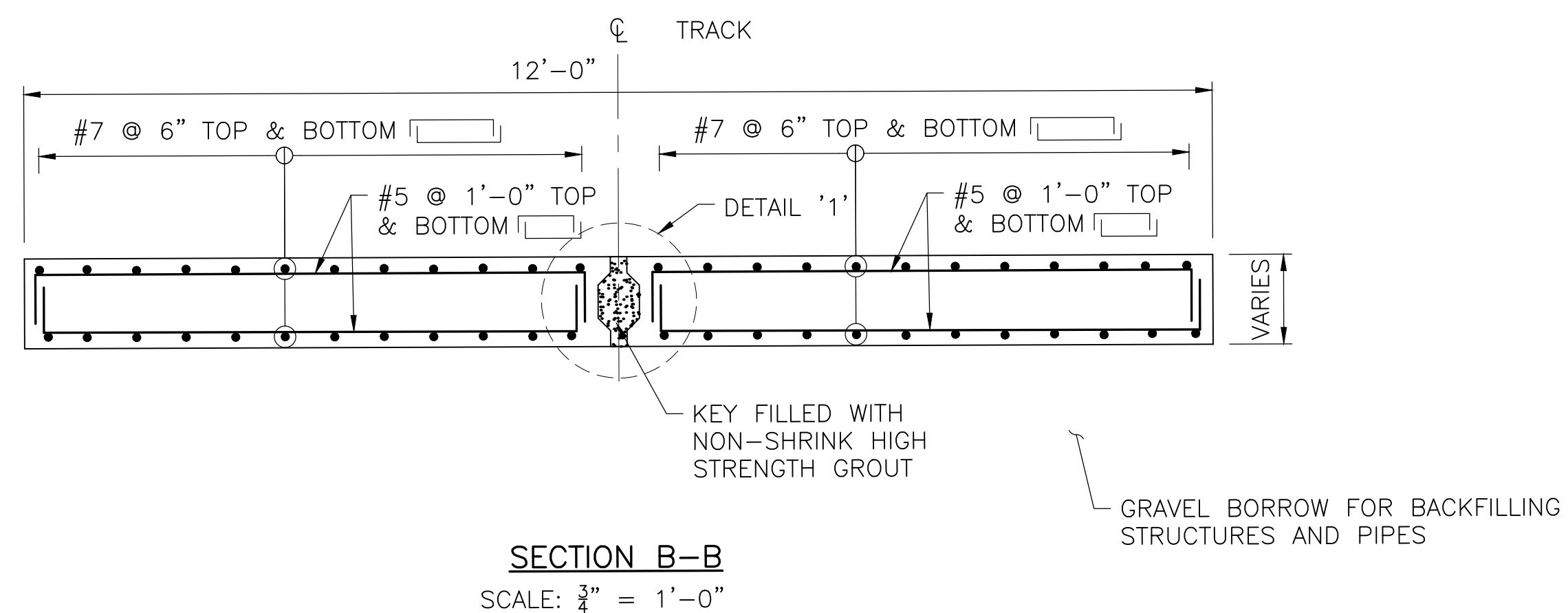
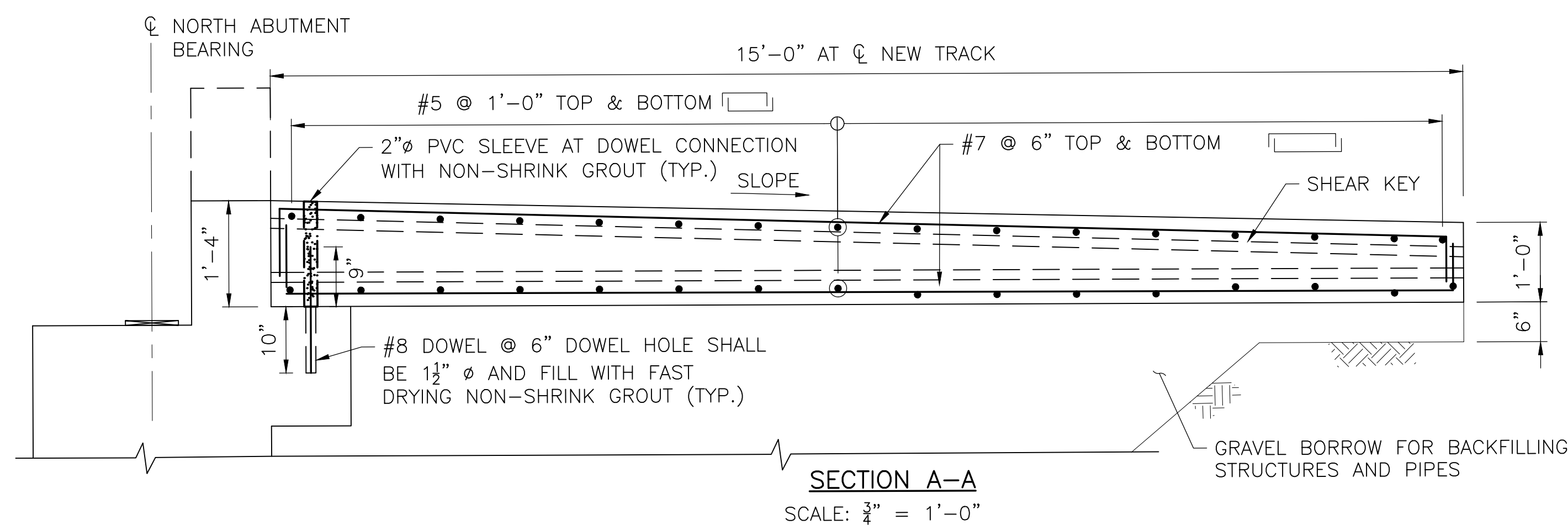
SCALE: $\frac{1}{2}$ " = 1'-0"



MASSDOT BERKSHIRE LINE IMPROVEMENTS CONTRACT NO. 120593									
REPLACEMENT OF BRIDGES ON BERKSHIRE LINE BRIDGE 79.81 - WILLOW CREEK BRIDGE MISCELLANEOUS DETAILS									
H&R					HDR, INC. 80 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 357-7700				
SCALE: AS NOTED					DRAWN BY: A.T. DESIGN BY: E.Y. CHECK BY: SSL				
DATE: 12/12/2022					PLAN NO. SHEET: S-17				
ISSUE	DATE	DESCRIPTION	BY	CHKD	APP.				



DETAIL '1'
SCALE: 1" = 1'-0"



								MASSDOT BERKSHIRE LINE IMPROVEMENTS CONTRACT NO. 120593							
								REPLACEMENT OF BRIDGES ON BERKSHIRE LINE BRIDGE 79.81 - WILLOW CREEK BRIDGE PRECAST APPROACH SLAB DETAILS							
								 HDR, INC. 90 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 357-7700	 massDOT Massachusetts Department of Transportation Rail & Transit Division						
										SCALE: AS NOTED	DRAWN BY		DESIGN BY	CHECK BY	PLAN NO.
										DATE: 12/12/2022	A.T.		E.Y.	SSL	SHEET: S-18
ISSUE	DATE	DESCRIPTION		BY	CHK'D	APP.									

SCALE: AS NOTED	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	
DATE: 12/12/2022	BEF	BEF	JQW	SHEET: G-1	

WETLAND REPLICATION AREA SEDIMENTATION AND EROSION CONTROL NOTES:

1. PRIOR TO STARTING ANY WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION & SEDIMENTATION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN ALL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. THE EXISTING SITE INFORMATION WAS OBTAINED FROM VARIOUS SOURCES. NO FIELD SURVEY WAS PERFORMED BY THE DESIGNER. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SITE INFORMATION PRIOR TO CONSTRUCTION.
3. SEDIMENT CONTROL MEASURES SHALL BE ADJUSTED TO MEET FIELD CONDITIONS AT THE TIME OF AND DURING ALL PHASES OF CONSTRUCTION AND BE CONSTRUCTED PRIOR TO AND IMMEDIATELY AFTER ANY GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL ON THE SITE.
4. PERIODIC INSPECTION AND MAINTENANCE OF ALL SEDIMENT CONTROL STRUCTURES SHALL BE PROVIDED TO INSURE THAT THE INTENDED PURPOSE IS ACCOMPLISHED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SEDIMENT LEAVING THE LIMIT OF WORK. SEDIMENT CONTROL MEASURES SHALL BE IN WORKING CONDITION AT THE END OF EACH WORKING DAY.
5. ALL POINTS OF CONSTRUCTION INGRESS OR EGRESS WILL BE PROTECTED TO PREVENT TRACKING OF MUD ONTO PUBLIC WAYS.
6. AFTER ANY SIGNIFICANT RAINFALL, SEDIMENT CONTROL STRUCTURES SHALL BE INSPECTED FOR INTEGRITY. ANY DAMAGED DEVICES SHALL BE CORRECTED IMMEDIATELY.
7. ALL STOCKPILES SHALL BE PROTECTED AND LOCATED AWAY FROM EXISTING WATER BODIES & WITHIN THE LIMIT OF WORK.
8. ANY SEDIMENT TRACKED ONTO PAVED AREAS SHALL BE SWEEPED AT THE END OF EACH WORKING DAY.
9. ALL DEBRIS GENERATED DURING SITE PREPARATION ACTIVITIES SHALL BE LEGALLY DISPOSED OF OFF-SITE.
10. AN EROSION CONTROL BARRIER SHALL BE INSTALLED ALONG THE EDGE OF THE PROPOSED WETLAND MITIGATION AREA.
11. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL EROSION AND SEDIMENT CONTROLS AT THE COMPLETION OF SITE CONSTRUCTION.
12. MEANS OF EROSION AND SEDIMENT PROTECTION AS NOTED ON THE DRAWINGS INDICATE THE MINIMUM PROVISIONS NECESSARY. ADDITIONAL MEANS OF PROTECTION SHALL BE PROVIDED BY THE CONTRACTOR AS REQUIRED FOR CONTINUED OR UNFORESEEN EROSION PROBLEMS, AT NO ADDITIONAL EXPENSE TO THE OWNER.
13. THE CONTRACTOR SHALL USE TEMPORARY SEEDING, MULCHING OR OTHER APPROVED STABILIZATION MEASURES TO PROTECT EXPOSED AREAS DURING PROLONGED CONSTRUCTION OR OTHER LAND DISTURBANCE. STOCKPILES THAT WILL BE EXPOSED FOR LONGER THAN 15 DAYS SHALL BE SEEDED WITH AN ANNUAL RYE.
14. ALL STOCKPILED MATERIALS SHALL BE LOCATED AT LEAST 100 FEET FROM THE WETLANDS AND 200 FEET FROM PERENNIAL WATERCOURSES. EXCESS EXCAVATED MATERIALS SHALL BE REMOVED FROM THE SITE IMMEDIATELY AND PROPERLY DISPOSED OF AFTER EXCAVATION.

WETLAND REPLICATION AREA PLANTING NOTES AND CONSTRUCTION SEQUENCE:

1. EROSION CONTROLS WILL BE INSTALLED ALONG THE EXISTING WETLAND BOUNDARY. THIS WILL ALLOW THE SITE CONTRACTOR TO PROPERLY TIE - IN PROPOSED CONTOURS AT THE EDGE OF THE EXISTING WETLAND
2. A WETLAND SPECIALIST SHALL BE PROVIDED BY MASSDOT AND BE ON-SITE TO MONITOR CONSTRUCTION OF THE WETLAND MITIGATION AREA TO ENSURE COMPLIANCE WITH THE MITIGATION PLAN.
3. UNDER THE DIRECTION OF THE WETLAND SPECIALIST, THE CONTRACTOR SHALL PROVIDE ROUGH GRADING (+/- 3 INCHES) WITHIN THE REPLICATION WETLAND. WETLAND MITIGATION GRADING IS SUBJECT TO MODIFICATION BASED ON ACTUAL SITE CONDITIONS. THE WETLAND SPECIALIST WILL INSPECT THE SUB-GRADE OF THE REPLICATION AREA TO ENSURE THAT STE PROPER HYDROLOGY AND MICROTOPOGRAPHY HAS BEEN ESTABLISHED.
5. PRIOR TO SOIL ADDITIONS AND/OR PLANTINGS, PROJECT SURVEYORS SHOULD VERIFY THAT GRADES HAVE BEEN ACHIEVED AS SHOWN ON THIS DRAWING OR AS DIRECTED BY THE WETLAND SPECIALIST.
6. PRIOR TO PLANTING, THE MITIGATION AREA SHOULD BE EXCAVATED APPROXIMATELY 1 FOOT BELOW THE FINISHED GRADE OF THE WETLAND MITIGATION AREA. FOLLOWING EXCAVATION OF THE MITIGATION AREA, A WETLAND TOPSOIL MIXTURE (NATURAL OR MANMADE) SHALL BE USED TO BRING THE EXCAVATED WETLAND MITIGATION AREA TO FINISHED GRADE. PRIOR TO USE, THE SOIL MIXTURE WILL BE ANALYZED BY A SOIL TESTING LABORATORY FOR TEXTURE AND NUTRIENTS. THE SELECTED CONTRACTOR WILL BE RESPONSIBLE FOR THIS COORDINATION.
7. NO WOOD CHIPS WILL BE ADDED TO THE SOIL AMENDMENTS. A WETLAND SPECIALIST WILL REVIEW IMPORTED SOILS TO ENSURE THEY ARE FREE OF WASTE MATERIAL.
8. CARE WILL BE TAKEN DURING PLACEMENT OF SOILS IN THE REPLICATION AREA SO AS TO AVOID COMPACTION. SHOULD SOILS BE COMPACTED, THEY WILL BE LOOSENEED MECHANICALLY OR BY HAND.
9. PENDING SITE AND WEATHER CONDITIONS ALL PLANTINGS WILL TAKE PLACE IN SPRING (MAY 15-JUNE 15) OR FALL (SEPTEMBER 1 - NOVEMBER 1).
10. ALL PLANTED SHRUB SPECIMENS SHALL BE EITHER BARE ROOT OR POTTED AND BE INSPECTED BY THE WETLAND SPECIALIST PRIOR TO PLACING THE SPECIMENS IN THE WETLAND MITIGATION AREA. PENDING SITE AND SEASONAL CONDITIONS, PLANTINGS WILL BE WATERED THROUGHOUT THE FIRST GROWING SEASON AS NEEDED. ALL PLANT MATERIAL PLANTED IN THE WETLAND REPLICATION AREA SHALL BE GUARANTEED FOR ONE YEAR FOLLOWING THE DATE OF FINAL ACCEPTANCE.
11. THE SHRUBS PLANTED IN THE MITIGATION AREA SHOULD BE PLACED AS NOTED ON THE PLANTING PLAN. SHRUB SHALL BE LOCATED IN THE FIELD BY THE SPECIALIST. SHRUB SPECIES SHALL BE CONSERVATION-GRADE, AND NEW ENGLAND NATIVE. SHRUB PLANTINGS SHALL NOT CONSIST OF SPECIES VARIETIES AND/OR CULTIVARS.
12. ALL PLANTS SHALL BE SET PLUMB AND STRAIGHT AND LOCATED IN THE CENTER OF THE PIT.
13. PENDING AVAILABILITY OF LISTED SPECIES, APPLICABLE SUBSTITUTES MAY BE USED UNDER THE DIRECTION OF THE WETLAND SPECIALIST.

14. A WETLAND SEED MIXTURE WILL BE SPREAD THROUGHOUT THE REPLICATION SITE AS SPECIFIED. SEED MIXTURE AND SOURCE SHALL BE APPROVED BY THE WETLAND SPECIALIST.
15. 4" OF LOAM (WEED-FREE, FINE SANDY LOAM), IF NECESSARY, AND A CONSERVATION/WILDLIFE SEED MIX WILL BE SPREAD IN ALL OTHER AREAS DISTURBED BY THE CONTRACTOR AS SPECIFIED (I.E. SITE ACCESS). LOAM, SEED MIXTURE AND SOURCE SHALL BE APPROVED BY THE WETLAND SPECIALIST.
16. TEMPORARY STRUCTURES AND DEVICES TO CONTROL EROSION AND SEDIMENTATION IN AND AROUND THE MITIGATION SITE SHALL BE DISASSEMBLED AND PROPERLY DISPOSED OF NO LATER THAN NOVEMBER 1 THREE FULL GROWING SEASONS AFTER PLANTING. SEDIMENT COLLECTED BY THESE DEVICES SHALL BE REMOVED AND PROPERLY DISPOSED OF IN A MANNER THAT PREVENTS ITS EROSION AND TRANSPORT TO A WATERWAY OR WETLAND.

WETLAND REPLICATION AREA GENERAL CONSTRUCTION NOTES:

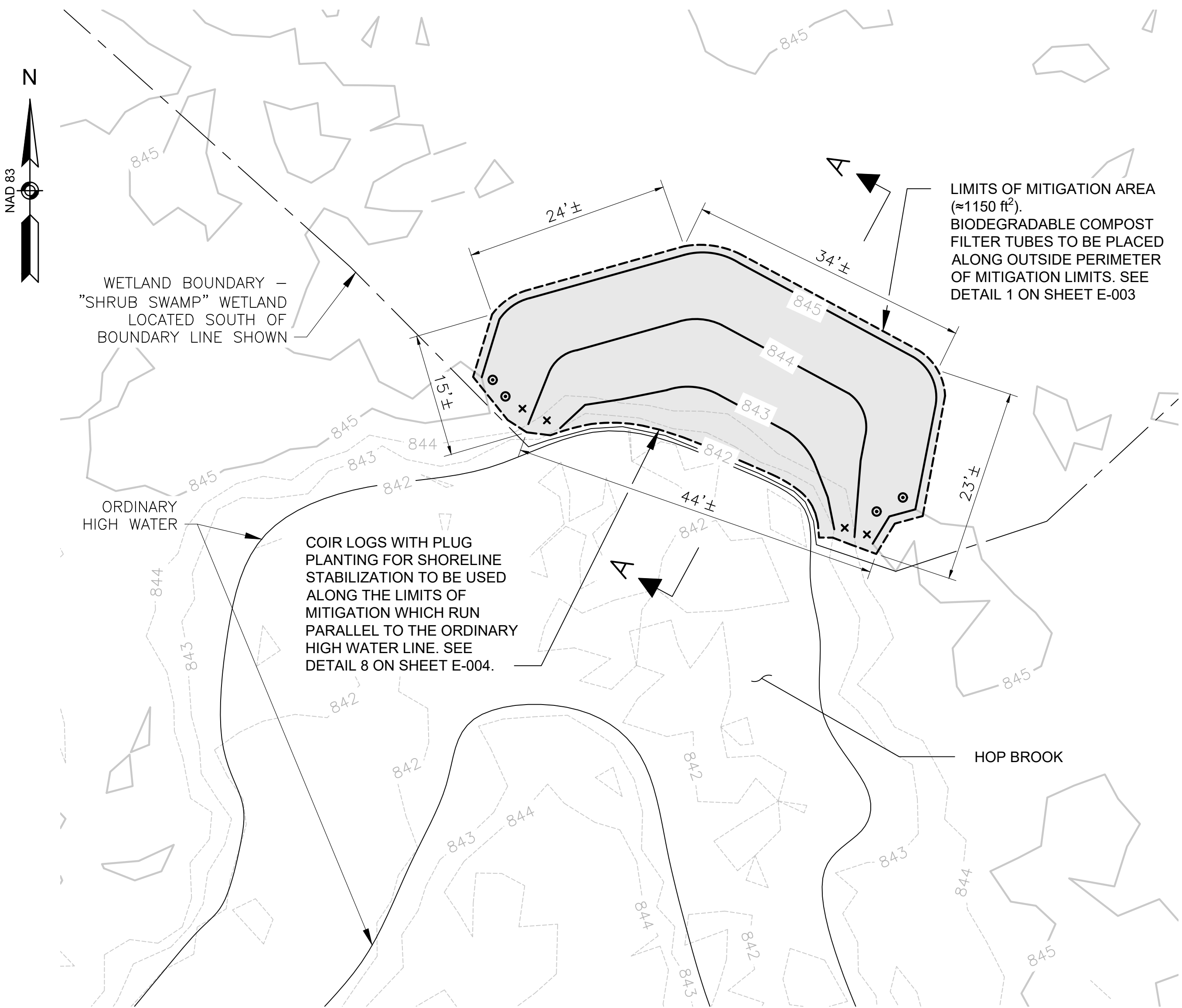
1. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS OF SITE THROUGH SURVEY PRIOR TO THE START OF WORK, AND SUBMIT ALL FINDINGS AND ANY DISCREPANCIES TO THE ENGINEER FOR REVIEW.
2. CONTRACTOR SHALL LIMIT IMPACT TO, AND ENSURE COMPLETE PROTECTION OF, EXISTING CONDITIONS OUTSIDE SPECIFIED MITIGATION AREA. ALL TEMPORARY IMPACTS REQUIRE PRIOR APPROVAL BY THE ENGINEER. ANY AREAS APPROVED FOR TEMPORARY IMPACT SHALL BE RETURNED TO EXISTING CONDITIONS PRIOR TO CONCLUSION OF CONSTRUCTION.

LEGEND:

- WETLAND SOIL AND WETLAND SEED MIX
- PROPOSED CONTOUR
- EXISTING CONTOUR
- LIMITS OF MITIGATION
- APPROXIMATE EDGE OF HOP BROOK
- WETLAND BOUNDARY
- o

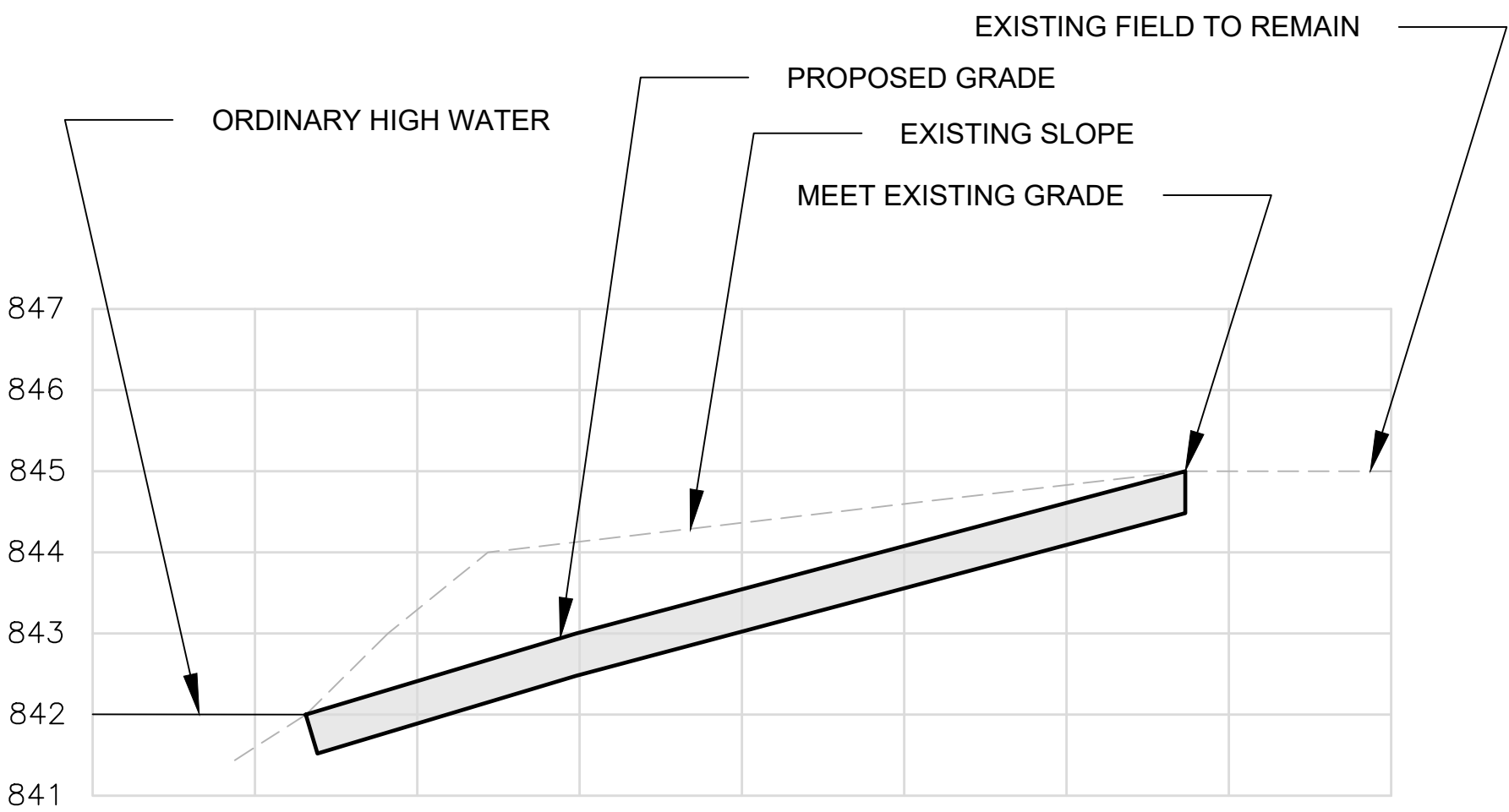
ELDERBERRY PLANTING LOCATION
- x

BUTTONBUSH PLANTING LOCATION



WETLAND MITIGATION PLAN

SCALE: 1" = 20'-0" @ 11"x17"



WETLAND MITIGATION – SECTION AA

SCALE: (HOR. SCALE 1"=8', VERT. SCALE 1"=4') @ 11"x17"

MASSDOT BERKSHIRE LINE IMPROVEMENTS CONTRACT NO. 120593									
WETLAND MITIGATION FOR REPLACEMENT OF BRIDGES 77.04 & 79.81 SITE PLAN AND SECTION									
HDR HDR, INC. 99 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 357-7700 massDOT Massachusetts Department of Transportation Rail & Transit Division									
SCALE: AS NOTED		DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.		ISSUE		
DATE: 12/12/2022		BEF	BEF	JQW	SHEET: E-02				
ISSUE	DATE	DESCRIPTION			BY	CHK'D	APP.		

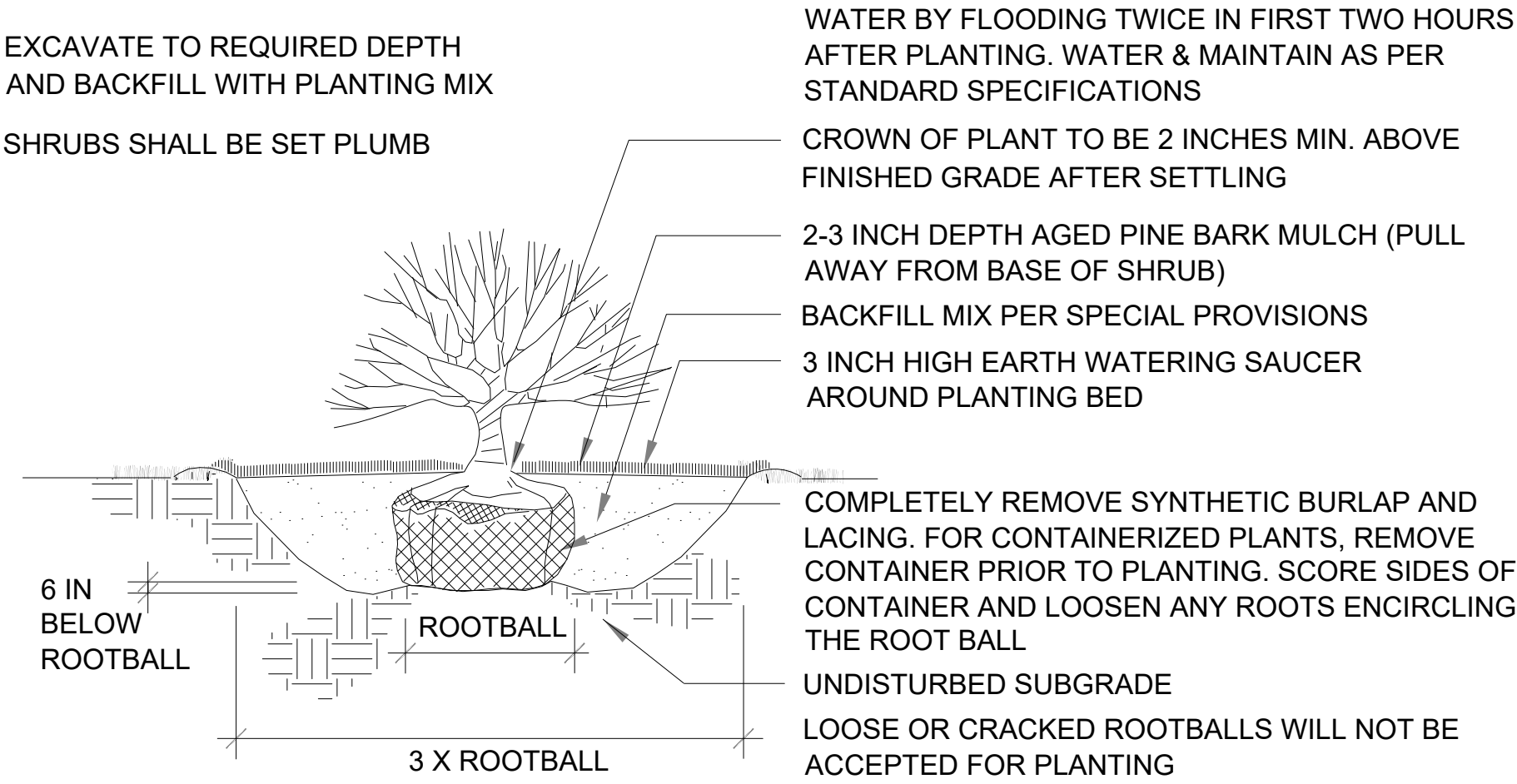


Plant Name	Plant Size	Plant Quantity ¹	Wetland Indicator Status	Planting Notes ²
Spike rush (<i>Eleocharis palustris</i>)	2" plug	1 tray (50 plugs)	OBL	To be planted in coir log or just upgradient.
Soft rush (<i>Juncus effusus</i>)	2" plug	1 tray	OBL	To be planted upgradient of coir log. A good pioneer species that provides cover for wildlife. The root systems offer erosion protection. (OBL)
Green bulrush (<i>Scirpus atrovirens</i>)	2" plug	2 trays	OBL	To be planted in coir log or just upgradient. A good soil stabilizer, provides many of the same benefits as woolgrass and is resistant to both flooding and short periods of drought
Three square bulrush (<i>Schoenoplectus pungens</i>)	2" plug	2 trays	FACW	To be planted in coir log or just upgradient. Commonly found in standing water up to 6 inches deep. Can tolerate periods of drought and complete inundation.
Fowl bluegrass (<i>Poa palustris</i>)	2" plug	1 tray	FACW	To be planted above coir log intermixed with fox sedge. A native grass of marsh edges and wet meadows, reaching a height of 3-4'. Often forms dense stands that exclude other wetland species. Wildlife and ground nesting birds frequently use this grass for cover and nesting
Fox sedge (<i>Carex vulpinoidea</i>)	2" plug	1 tray	OBL	To be planted above coir log intermixed with fowl bluegrass. A sedge common to wet meadows, this plant provides good cover for nesting birds
Elderberry (<i>Sambucus canadensis</i>)	3 – 4 ft	4	FACW	Plant as marked on plans. Found growing in wet meadows and marshes. White umbel flowers in summer form black fruit in fall. Valued as food for many bird species.
Buttonbush (<i>Cephalanthus occidentalis</i>),	3 – 4 ft	4	OBL	Plant as marked on plans. To be planted along wetland boundary. Medium-sized shrub, white globular-shaped flowers in summer. Prefers soils flooded or saturated for long periods or fluctuating hydrology.

² Source: New England Wetland Plants, Inc.

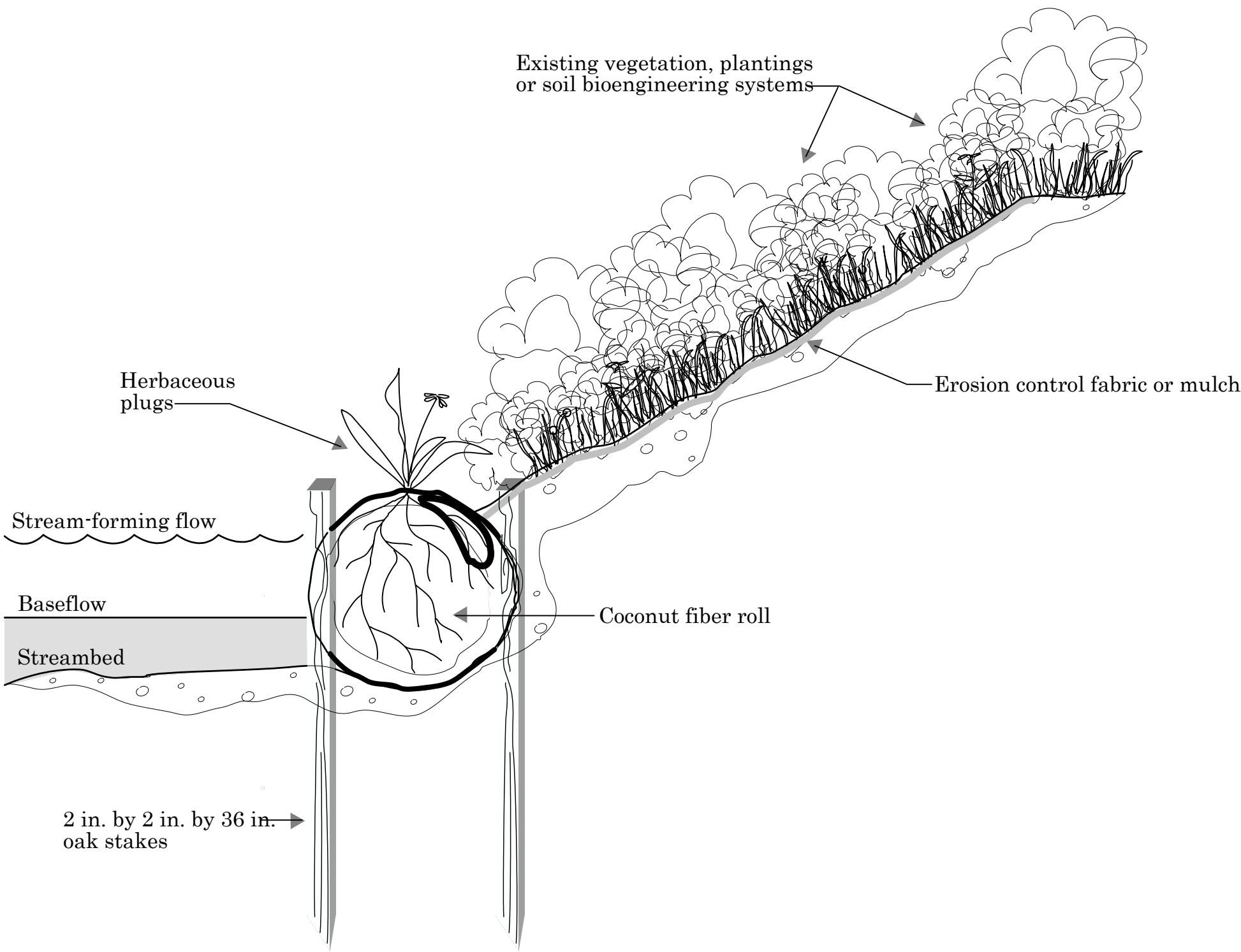
PLANTLIST WETLAND – DETAIL 4

						MASSDOT BERKSHIRE LINE IMPROVEMENTS CONTRACT NO. 120593					
						WETLAND MITIGATION FOR REPLACEMENT OF BRIDGES 77.04 & 79.81 DETAILS 1 OF 2					
						 HDR, INC. 99 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 351-7700	 Massachusetts Department of Transportation Rail & Transit Division				
						SCALE: AS NOTED	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO.	ISSUE NO.
ISSUE	DATE		DESCRIPTION	BY	CHKD APP.	DATE: 12/12/2022	BEF	BEF	JQW	SHEET: E-03	



SHRUB PLANTING – DETAIL 5

NOT TO SCALE



COCONUT FIBER ROLL – DETAIL 6

NOT TO SCALE

										MASSDOT BERKSHIRE LINE IMPROVEMENTS CONTRACT NO. 120593																			
										WETLAND MITIGATION FOR REPLACEMENT OF BRIDGES 77.04 & 79.81 DETAILS 2 OF 2																			
										 HDR, INC. 99 HIGH STREET, SUITE 2300 BOSTON, MA 02110 (617) 327-7700  Massachusetts Department of Transportation Rail & Transit Division																			
										SCALE: AS NOTED					DRAWN BY		DESIGN BY		CHECK BY		PLAN NO.					ISSUE			
										DATE: 12/12/2022					BEF		BEF		JQW		SHEET: E-04								
ISSUE	DATE	DESCRIPTION					BY	CHKD	APP.																				