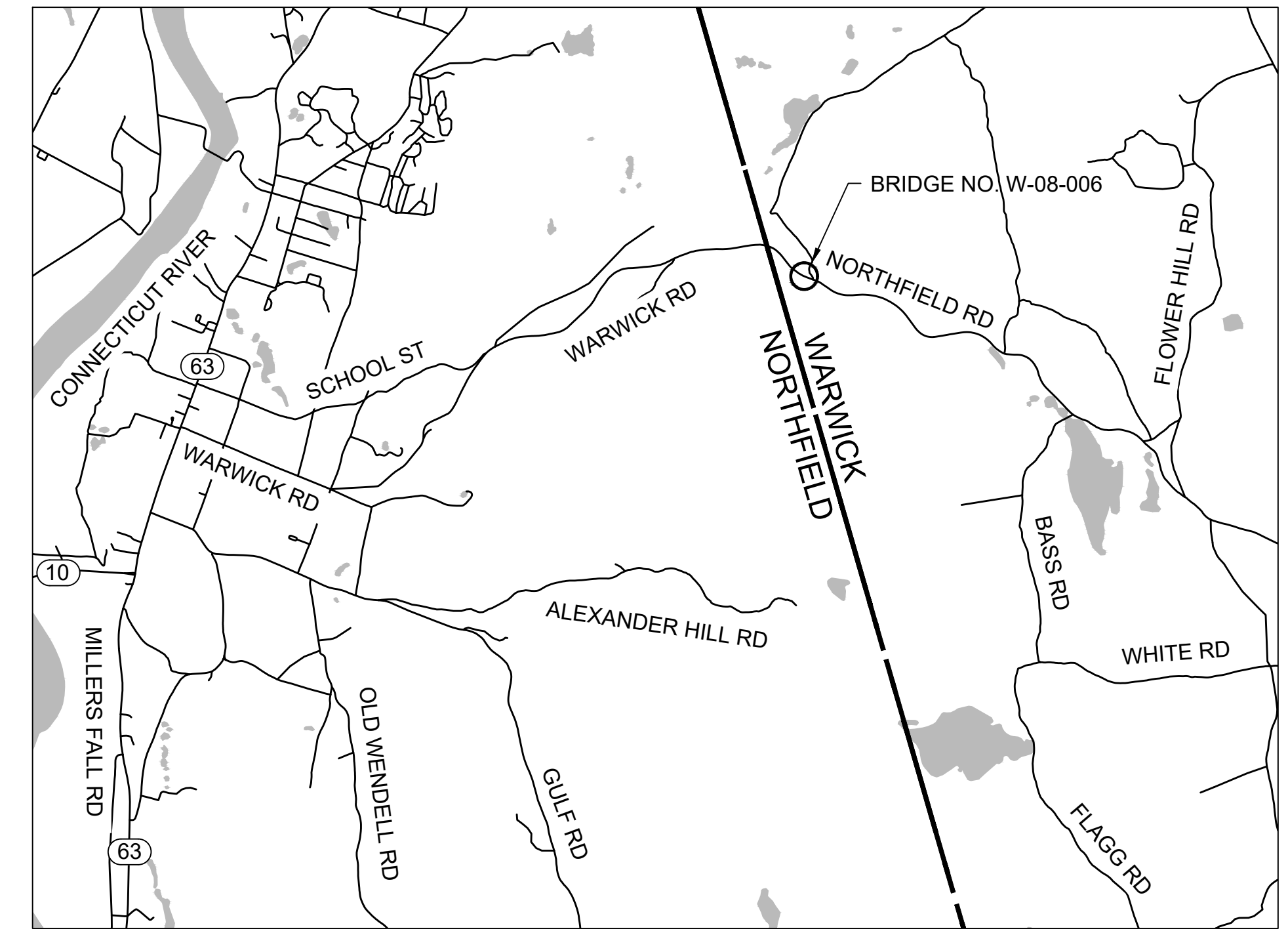


KEY PLAN
SCALE: 1" = 10'



LOCUS MAP
NOT TO SCALE

GENERAL NOTES:

DESIGN:
IN ACCORDANCE WITH THE 2020, 9TH EDITION AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS LRFD BRIDGE DESIGN SPECIFICATIONS FOR HL-93 LOADING.

SPECIFICATIONS:
ALL CONSTRUCTION SHALL COMPLY WITH THE COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, 2021 EDITION, AND THE SPECIAL PROVISIONS INCLUDED WITH THE CONTRACT DOCUMENTS.

EXISTING CONDITIONS:
THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND EXISTING DETAILS NECESSARY FOR THE COMPLETION OF WORK BY FIELD MEASUREMENT AND SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUACY AND ACCURACY THEREOF AND SHALL NOT ORDER ANY MATERIALS OR COMMENCE ANY FABRICATION UNTIL THE REQUIRED MEASUREMENTS HAVE BEEN MADE ON THE ACTUAL STRUCTURE AND THE EXTENT OF PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER.

PLAN REVISIONS:
IF THERE ARE REVISIONS TO APPROVED PLANS, THE CONTRACTOR SHALL SUBMIT THESE CHANGES TO THE ENGINEER OF RECORD FOR THE 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.

BENCH MARK:
ALL ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988.

SPIKE SET NW WING
N: 3083087.74 N: 3083129.27
E: 413977.27 E: 413982.04
EL. 725.59 EL. 723.72

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

- DEMOLITION:**
- SHIELDING SYSTEM SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF ANY DEMOLITION.
 - CONTRACTOR SHALL ENSURE THAT ALL DEMOLITION DEBRIS IS RECOVERED USING THE SHIELDING SYSTEM AND PREVENTED FROM FALLING INTO THE RIVER.
 - ALL DEMOLITION AND CONSTRUCTION SHALL BE ACCOMPLISHED FROM DRY LAND ABOVE AND/OR ADJACENT TO BRIDGE, WITH THE EXCEPTION OF THE INSTALLATION OF THE SHIELDING PLATFORM, WHICH WILL BE INSTALLED BY CONSTRUCTION PERSONNEL STANDING IN THE WATER. CONTRACTOR SHALL PREVENT CONSTRUCTION EQUIPMENT, CONSTRUCTION MATERIALS, AND CONSTRUCTION DEBRIS FROM ENTERING THE WATER.
 - CONTRACTOR SHALL DISPOSE OF ANY DEMOLITION DEBRIS CONSTRUCTION DEBRIS, WOOD WASTES, CONTAMINATED SOILS, HAZARDOUS MATERIALS AND OTHER SPECIAL WASTES IN STRICT ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS.

TRAFFIC:
SEE HIGHWAY PLANS FOR STAGING AND TRAFFIC CONTROL.

REINFORCEMENT:
REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M31 GRADE 60. UNLESS OTHERWISE NOTE ON THE CONSTRUCTION DRAWINGS, ALL BARS SHALL BE LAPPED AS FOLLOWS:

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

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

CONCRETE:
THE FOLLOWING MASSDOT APPROVED CONCRETE MIXES ARE TO BE USED:

- 5000 PSI 3/4", 685 HP CONCRETE: SAFETY CURB
- 4000 PSI 3/8", 660 CONCRETE: CONCRETE SURFACE AREA REPAIRS

DRILL AND GROUT:
DOWEL EMBEDMENT MUST BE ADEQUATE TO FULL DEVELOP 125% OF THE YIELD STRENGTH OF THE BAR. THE EMBEDMENT LENGTH, THE METHOD AND EQUIPMENT USED TO DRILL THE DOWEL HOLES, AND THE DIAMETER OF THE DRILLED HOLE SHALL AT A MINIMUM CONFORM TO THE RECOMMENDATIONS OF THE MANUFACTURER AND BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

DRILLING OPERATION SHALL BE PERFORMED WITHOUT DAMAGE TO ANY EXISTING REINFORCEMENT OR A PORTION OF THE STRUCTURE THAT IS TO REMAIN IN PLACE.

GROUT MATERIAL SHALL BE ON THE MASSDOT APPROVED PRODUCT LIST OF MATERIALS. MASSDOT APPROVED EPOXY, VINYL, OR POLYESTER RESIN ADHESIVES MAY BE UTILIZED IN LIEU OF CEMENTITIOUS GROUT.

INDEX

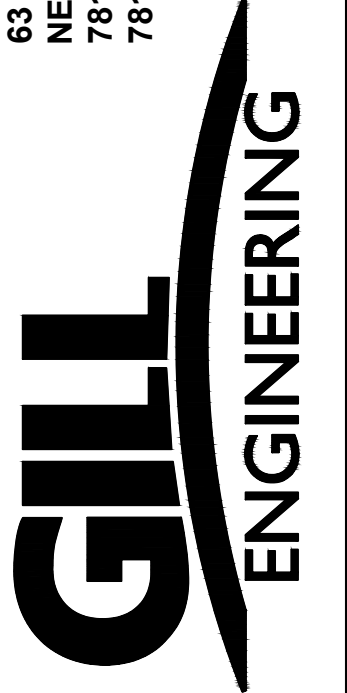
SHEET NO.	DESCRIPTION
1	GENERAL NOTES & KEY PLAN
2	GENERAL PLAN & ELEVATION
3	CONCRETE REPAIR DETAILS
4	RAIL DETAILS

ESTIMATED QUANTITIES

NO.	ITEM	QUANTITY	UNIT
107.855	PRESSURE INJECTION OF CRACKS	9	FT
120.1	UNCLASSIFIED EXCAVATION	1	CY
127.12	REINFORCED CONCRETE EXCAVATION - BRIDGE RAILING	4	CY
129.6	BRIDGE PAVEMENT EXCAVATION	8	SY
451.	HMA FOR PATCHING	1	TON
905.	4000 PSI, 3/8 IN., 660 CEMENT CONCRETE	1	CY
909.2	CEMENTITIOUS MORTAR FOR PATCHING	30	SF
910.1	STEEL REINFORCEMENT FOR STRUCTURES - EPOXY COATED	980	LB
992.1	ALTERATION TO BRIDGE STRUCTURE NO. W-08-006	1	LS
994.01	TEMPORARY PROTECTIVE SHIELDING BRIDGE NO. W-08-006	1	LS

COMMONWEALTH OF MASSACHUSETTS
MassDOT, Highway Division
APPROVED UNDER PROVISIONS OF
MASS. GEN. LAWS CH 85 S 35
[Signature]
BRIDGE ENGINEER 10/9/2021
DATE

63 KENDRICK STREET
NEEDHAM, MA 02494
781-355-7100
781-355-7101 (FAX)



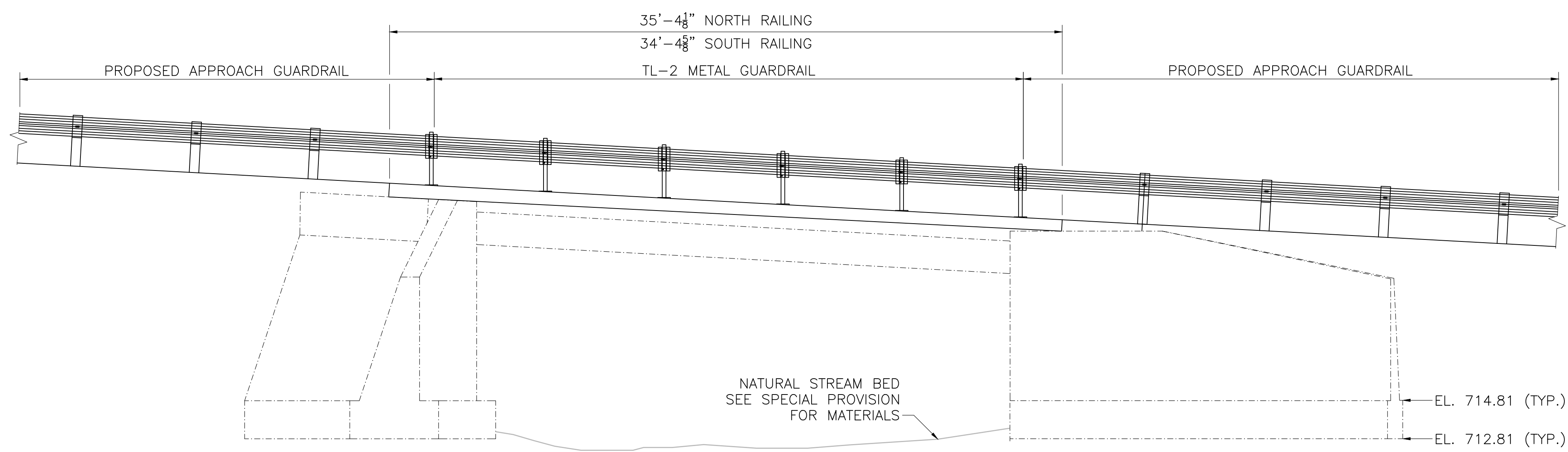
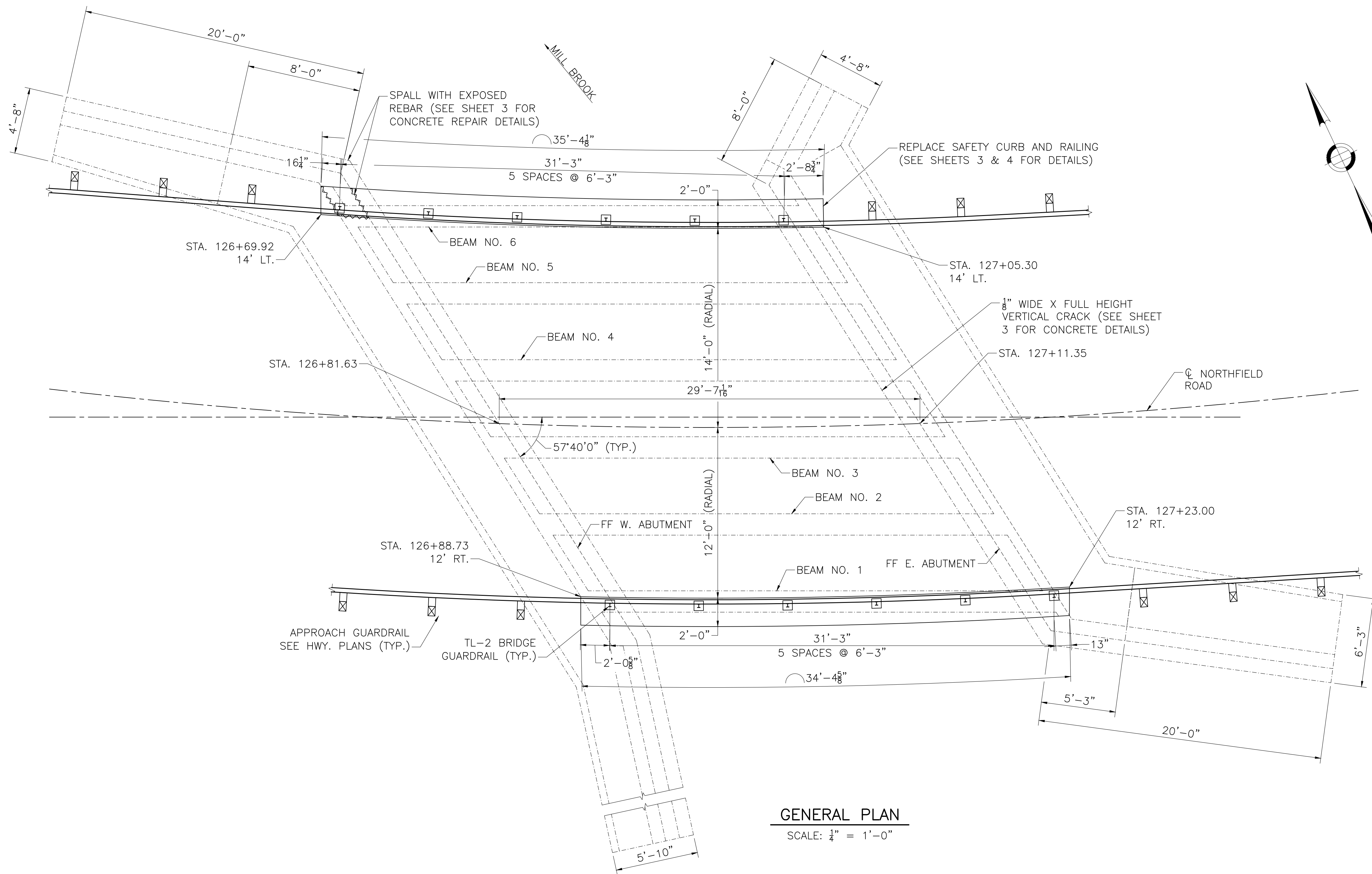
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09/29/2021	ASD	ASD	RTN	ISSUED FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER DATE



BRIDGE PRESERVATION
TOWN OF WARWICK
BRIDGE PRESERVATION FOR WARWICK
W-08-006 (ONU)
NORTHFIELD ROAD OVER MILL BROOK

KEY PLAN & GENERAL NOTES



COMMONWEALTH OF MASSACHUSETTS
MassDOT, Highway Division
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MASS. GEN. LAWS CH 85 S 35
[Signature]
BRIDGE ENGINEER 10/9/2021
DATE

NOTE:
REPAIR LOCATIONS SHOWN ARE APPROX.
SHALL BE FIELD VERIFIED BY CONTRACTOR.

DATE	DRW. BY	CALC. BY	APPRV. BY	DESCRIPTION
09/29/2021	ADD	ADD	KCN	ISSUED FOR CONSTRUCTION

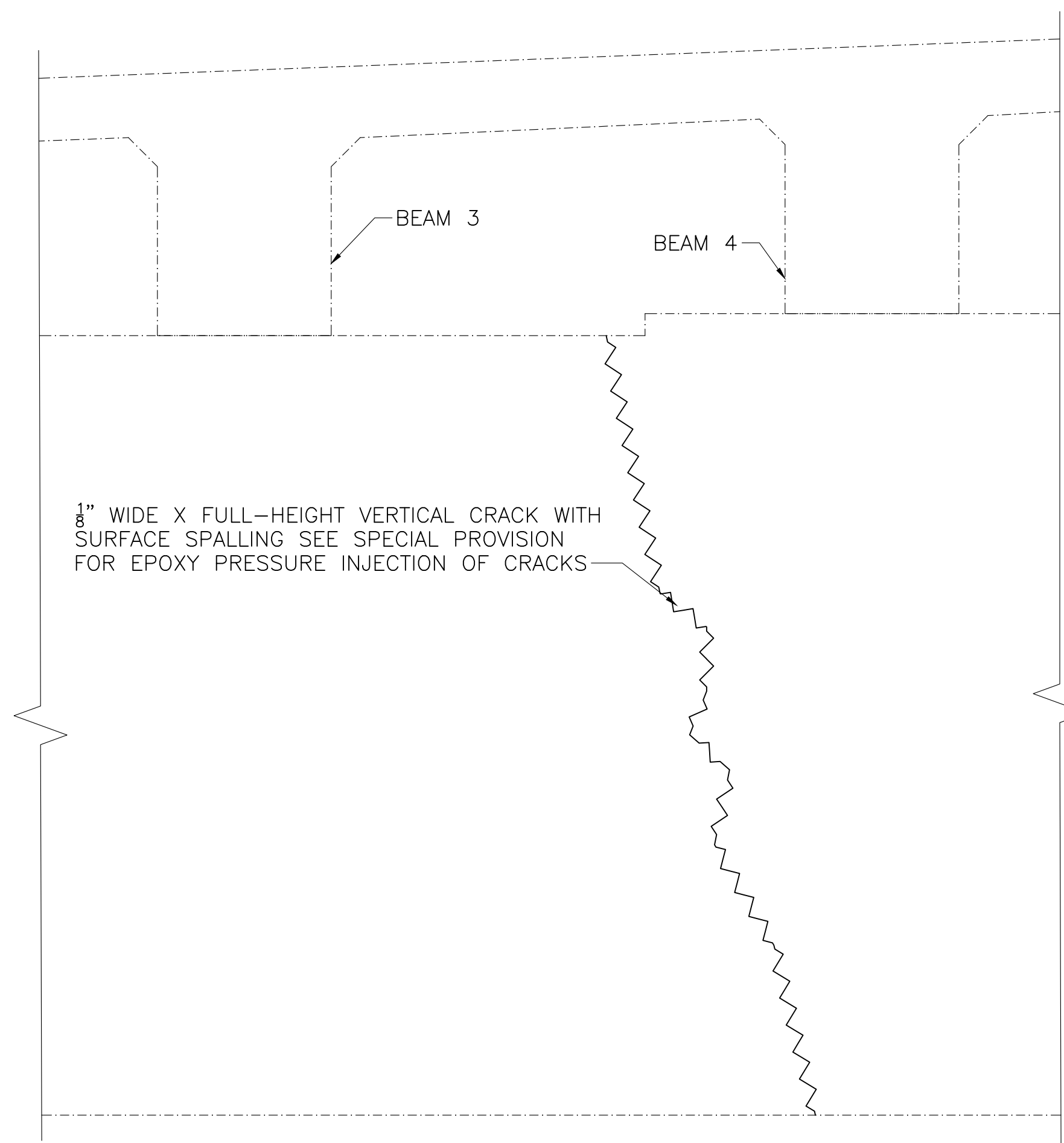
REGISTERED PROFESSIONAL ENGINEER DATE



BRIDGE PRESERVATION
TOWN OF WARWICK
BRIDGE PRESERVATION FOR WARWICK
W-08-006 (ONJ)
NORTHFIELD ROAD OVER MILL BROOK

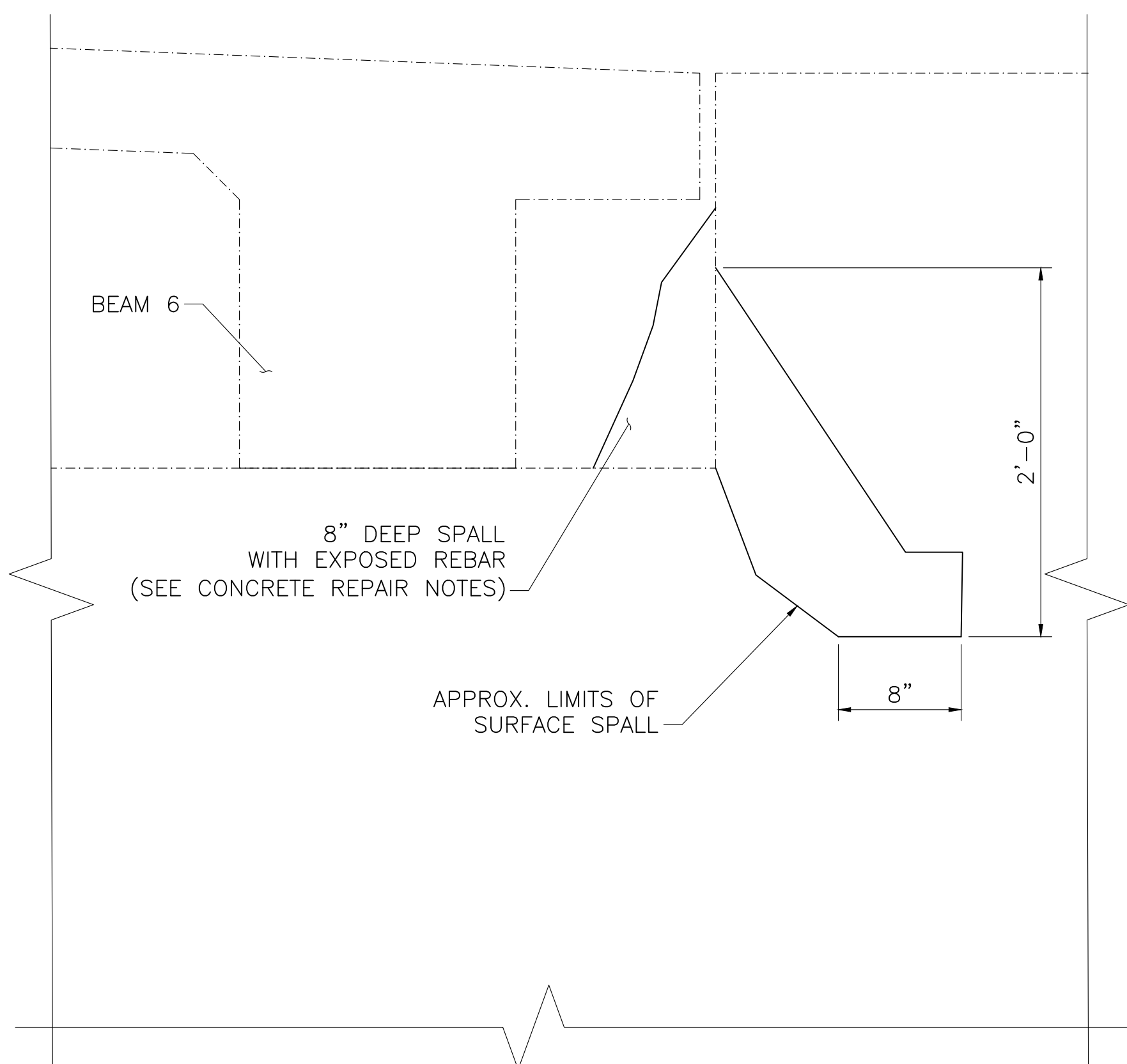
GENERAL
PLAN AND
ELEVATION

SHEET 2 OF
4



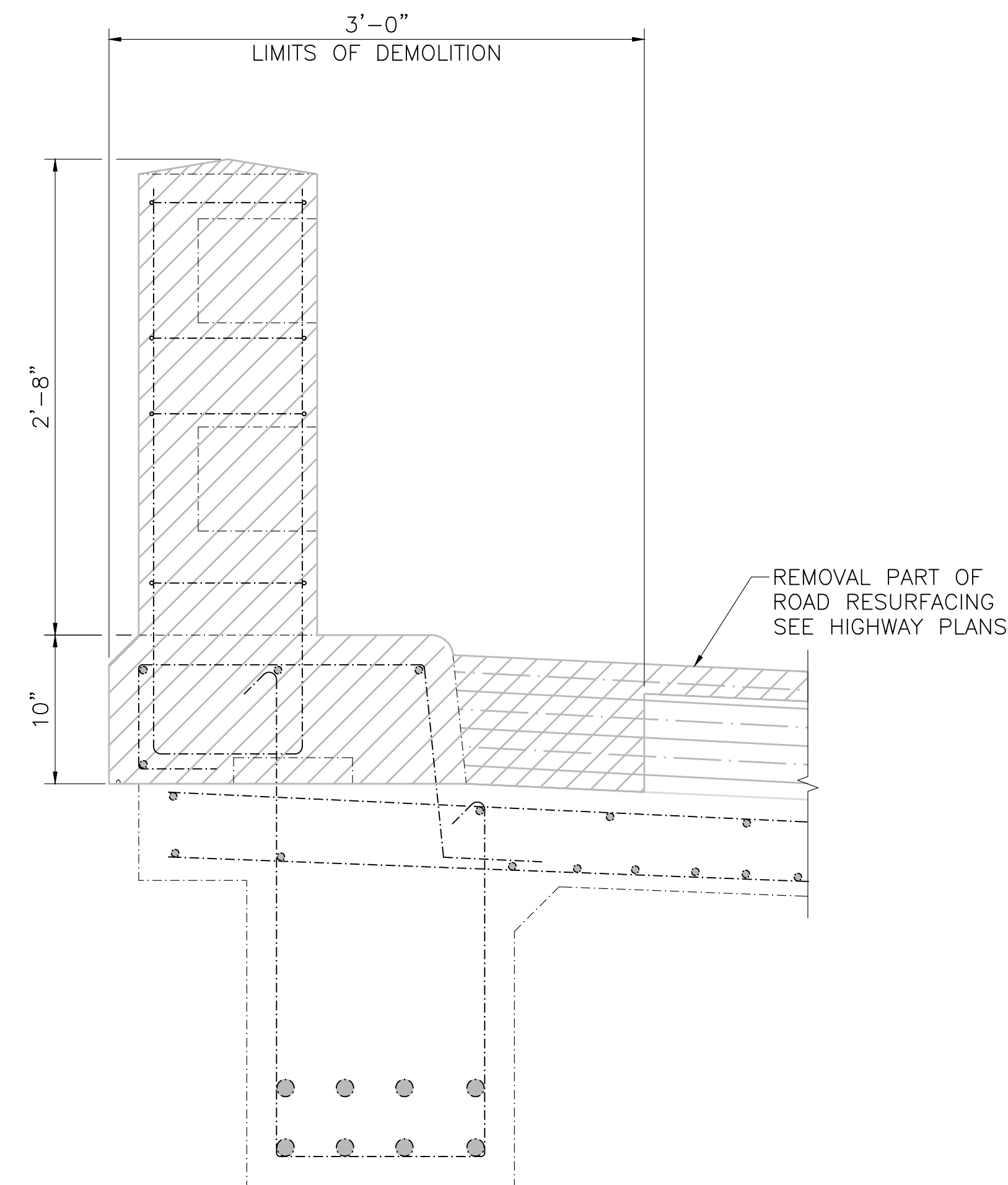
EAST BREASTWALL REPAIR ELEVATION

SCALE: 1" = 1'-0"



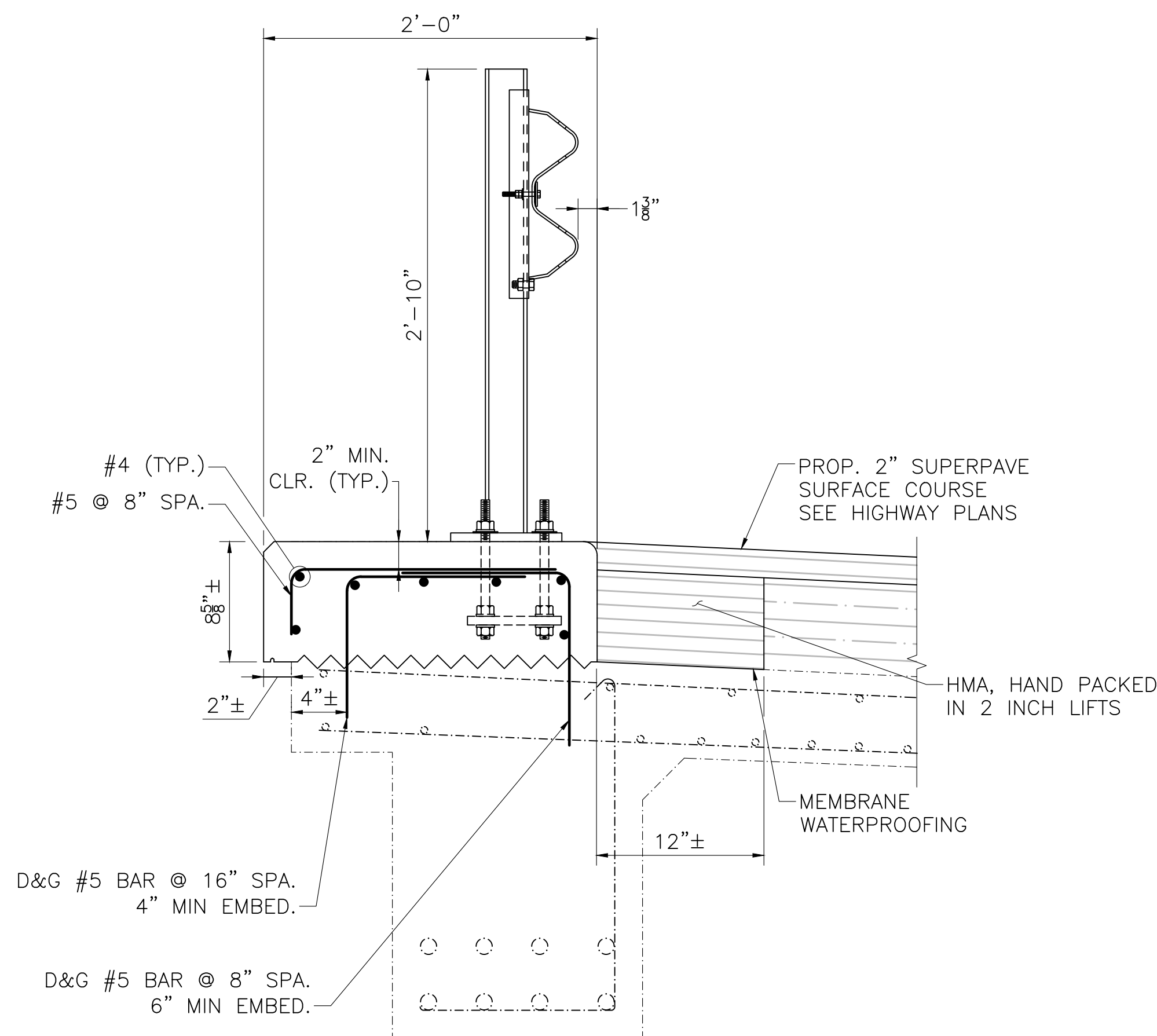
WEST BACKWALL REPAIR ELEVATION

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



EXISTING RAIL DEMO DETAIL

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



PROPOSED RAIL DETAIL

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

CONCRETE REPAIR NOTES

1. THE CONTRACTOR SHALL EXERCISE CARE WHEN REMOVING CONCRETE AROUND REINFORCEMENT TO ONLY REMOVE DETERIORATED CONCRETE AND TO LIMIT THE SOUND CONCRETE REMOVED TO THE MINIMUM NECESSARY TO EFFECT A GOOD REPAIR.
2. THE CONTRACTOR SHALL ESTABLISH LIMITS OF VARIOUS REPAIRS AS SHOWN ON THE PLANS AND AT THE DIRECTION OF THE ENGINEER. THE LOCATIONS SHOWN ON THE PLANS ARE BASED UPON RECORDS OF BRIDGE INSPECTIONS AND OBSERVATION FROM THE GROUND AND ARE NOT GUARANTEED. THE LOCATION AND EXTENT OF ALL CONCRETE REPAIRS ARE TO BE FIELD VERIFIED AND APPROVED BY THE ENGINEER AFTER THE CONTRACTOR HAS SOUNDED AND MARKED OUT THE REPAIR AREAS. REPAIR CONFIGURATIONS SHOULD BE KEPT AS SIMPLE AS POSSIBLE, PREFERABLY WITH SQUARE CORNERS.
3. THE LIMITS OF THE REPAIRS SHALL BE SAWCUT ALONG NEAT LINES TO A DEPTH OF 3/4" TO PRODUCE A CLEAN EDGE.
4. REMOVE DETERIORATED AND UNSOUND CONCRETE AS WELL AS SOUND CONCRETE WHERE NECESSARY TO A MINIMUM OF 1" BEYOND SURFACE REINFORCEMENT.
5. EXPOSED REINFORCEMENT IS TO BE CLEANED BY MECHANICAL CLEANING AND HIGH PRESSURE WASHING WITH WATER THAT CONTAINS NO DETERGENTS OR BOND INHIBITING CHEMICALS. WHERE ACTIVE CORROSION HAS OCCURRED (THAT WHICH WOULD INHIBIT BONDING) SANDBLAST STEEL TO SSPC-SP5.
6. MISSING OR DETERIORATED REINFORCING STEEL SHALL BE REPLACED AS DIRECTED BY THE ENGINEER. AFTER REMOVAL AND EDGE PREPARATION ARE COMPLETE, REMOVE BOND INHIBITING MATERIALS (DIRT, GREASE, LOOSELY BONDED AGGREGATE) BY ABRASION BLASTING OR HIGH PRESSURE WATER BLASTING WITH WATER THAT CONTAINS NO DETERGENTS OR BOND INHIBITING CHEMICALS. CHECK THE CONCRETE SURFACES AFTER CLEANING TO INSURE THAT THE SURFACE IS FREE FROM ADDITIONAL LOOSE AGGREGATE OR THAT ADDITIONAL DELAMINATIONS ARE NOT PRESENT.
7. 4000 PSI 3/8" 660 CEMENT CONCRETE SHALL BE USED TO PERFORM THE REPAIRS.
8. PRESOAK CONCRETE SUBSTRATE WITH A WATER HOSE FOR 24 HOURS OR AS LONG AS SITE CONSTRAINTS PERMIT. AT TIME OF REPAIR CONCRETE PLACEMENT, SUBSTRATE SHALL BE SATURATED SURFACE DRY WITH NO STANDING WATER.
9. ALL SURFACES SHALL BE RUBBED TO PRODUCE A SMOOTH FINISH TO MATCH EXISTING SURFACES.
10. IF AN EPOXY BONDING COMPOUND IS USED (AS DIRECTED BY THE ENGINEER), THE MATERIALS SHALL MEET AASHTO M235 TYPE V. GRADE AND CLASS SHALL BE SPECIFIED FOR EACH INDIVIDUAL APPLICATION. THE EPOXY COMPOUND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. IN NO CASE WILL THE EPOXY BONDING COMPOUND BE ALLOWED TO CURE TO A HARDENED STATE PRIOR TO CONCRETE PLACEMENT. IF THIS DOES OCCUR IT MUST BE COMPLETELY REMOVED.

COMMONWEALTH OF MASSACHUSETTS
 MassDOT, Highway Division
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 MASS. GEN. LAWS CH 85 S 35
 BRIDGE ENGINEER DATE

63 KENDRICK STREET
 NEEDHAM, MA 02464
 781-355-7100
 781-355-7101 (FAX)

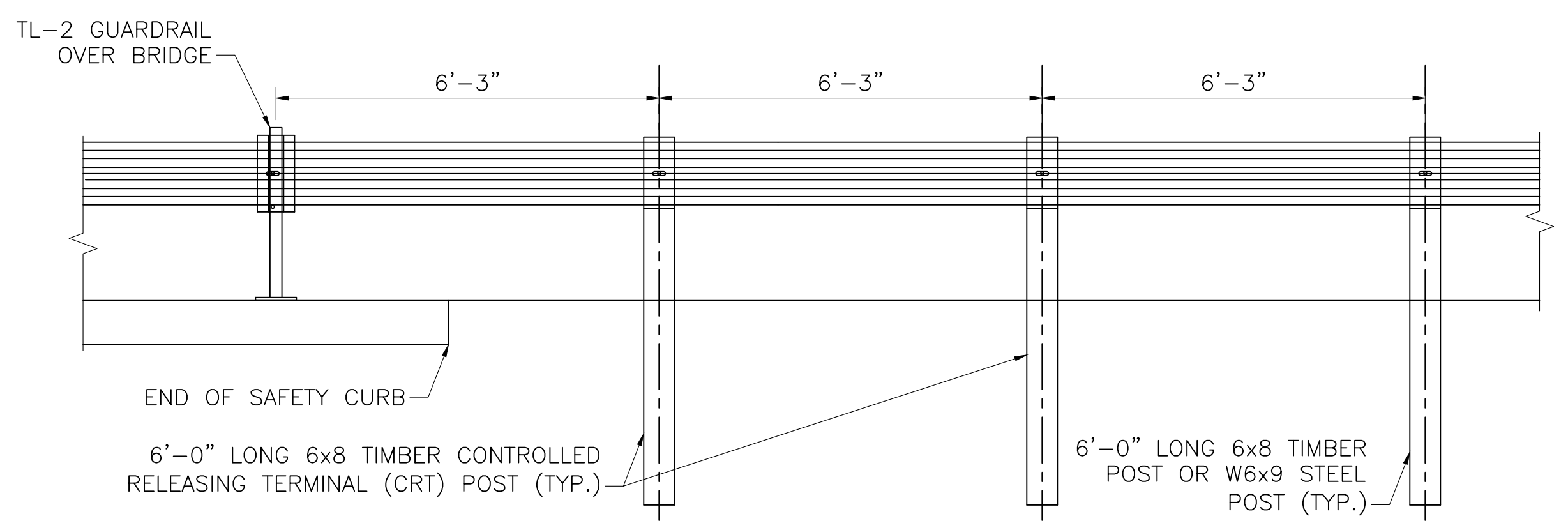
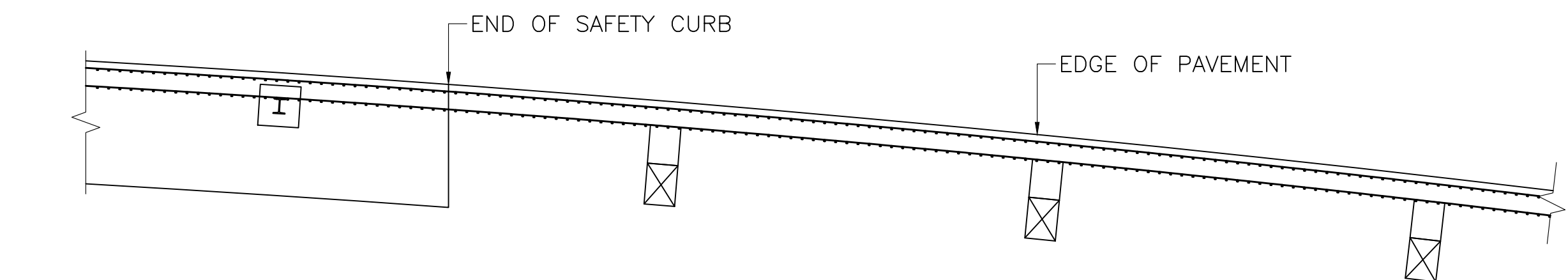


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09/29/2021				ADD	ISSUED FOR CONSTRUCTION

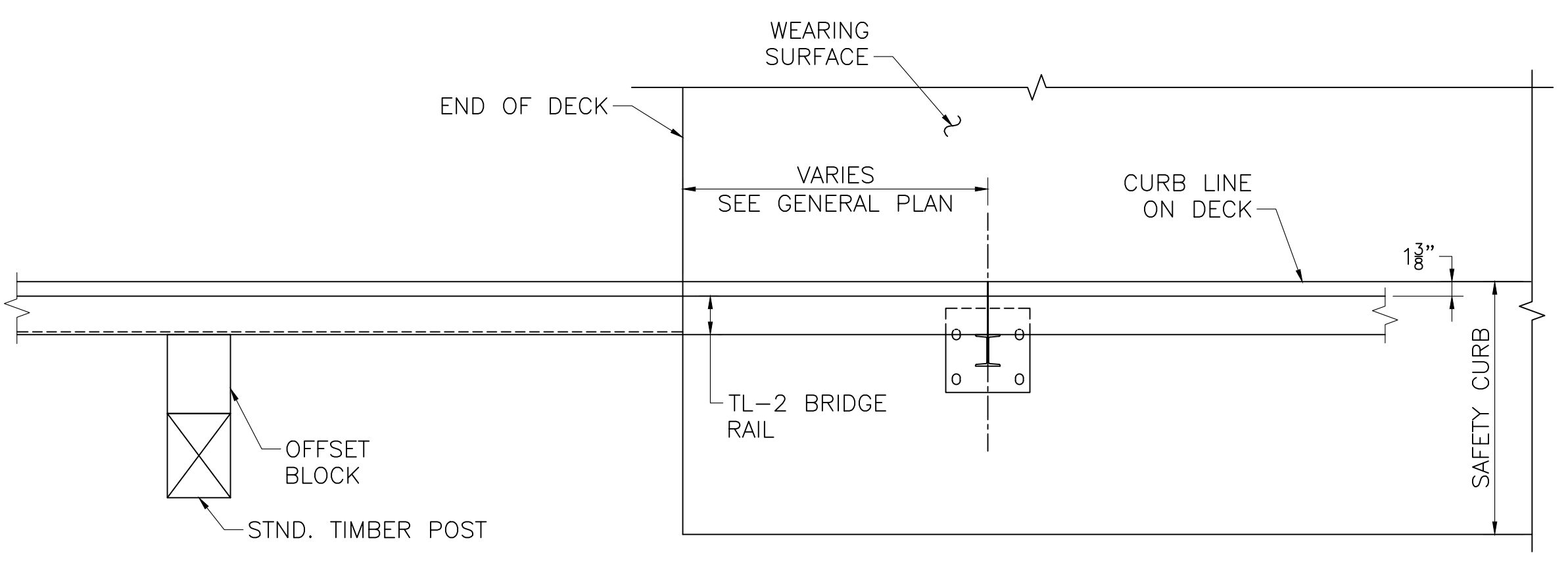


BRIDGE PRESERVATION
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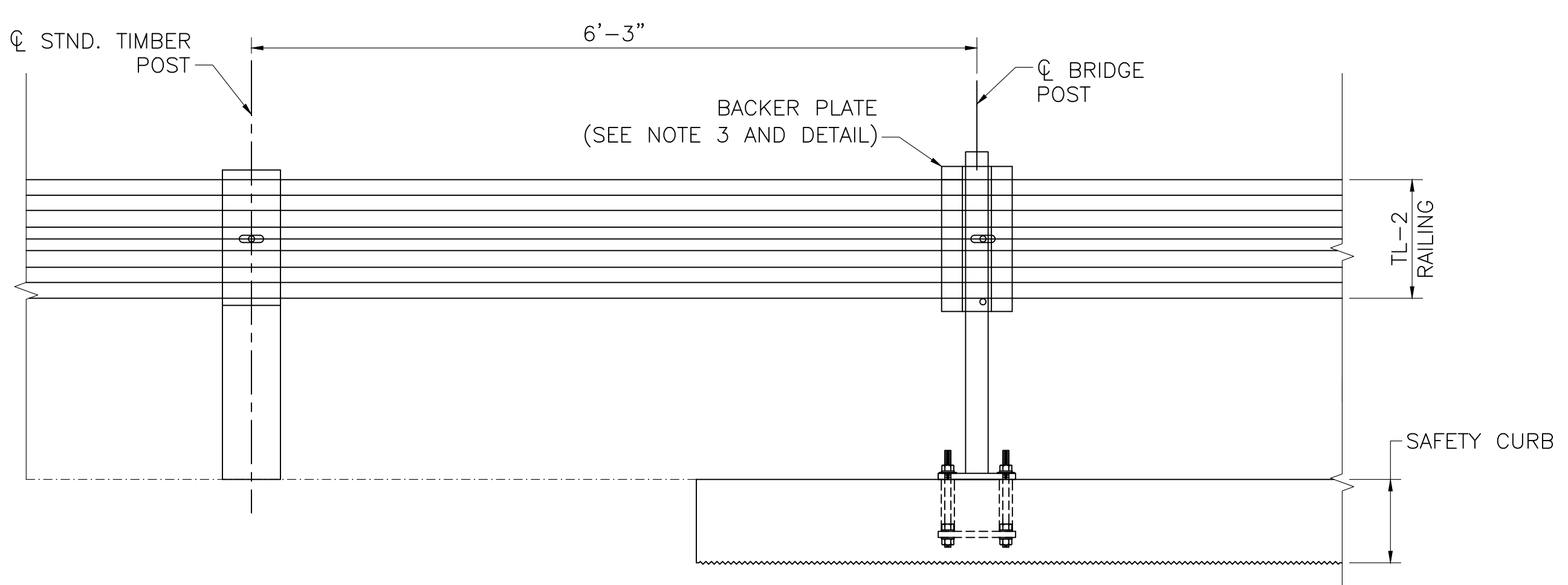
CONCRETE REPAIRS



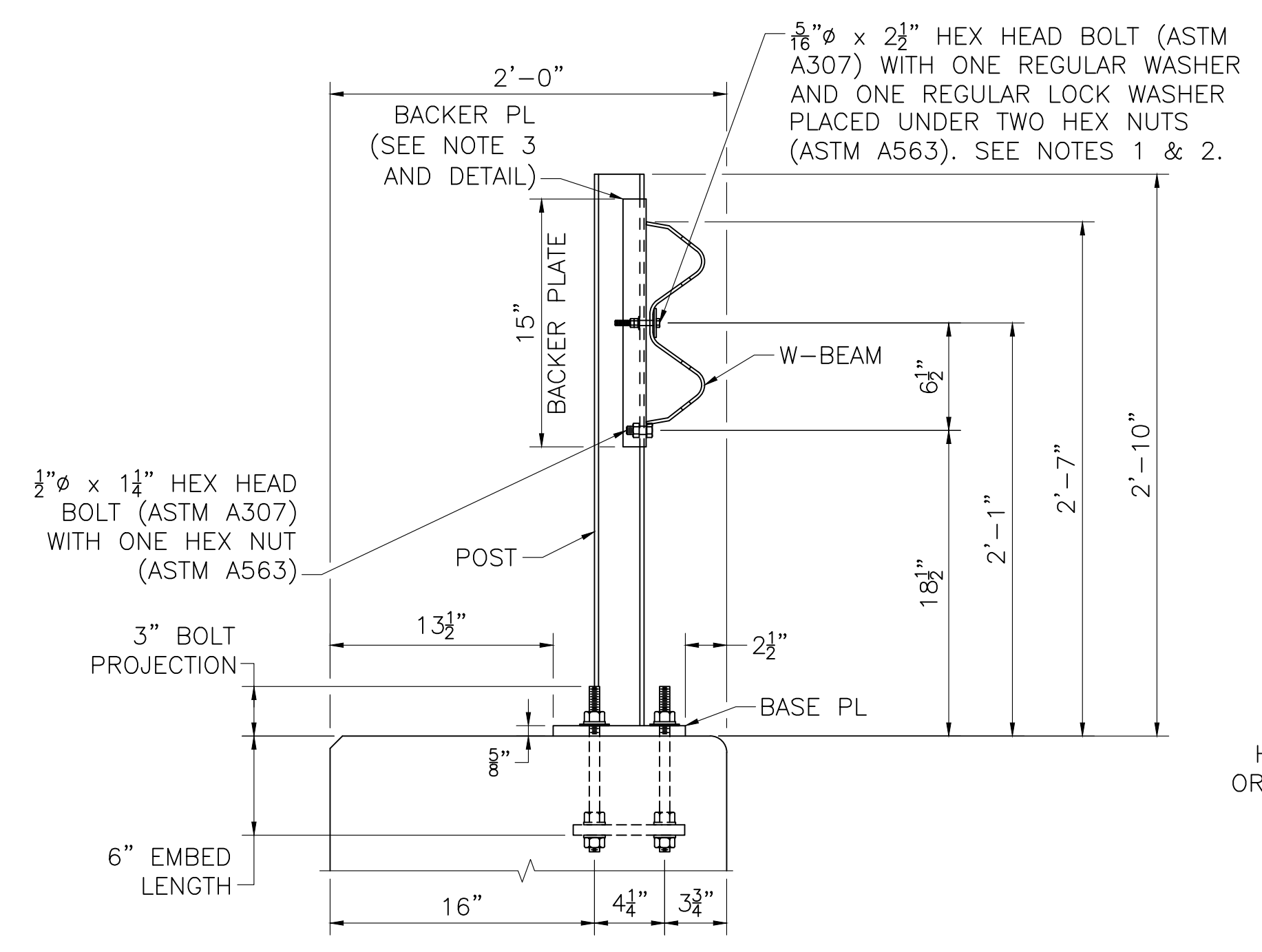
GUARDRAIL APPROACH TRANSITION
SCALE: 1/2" = 1'-0"



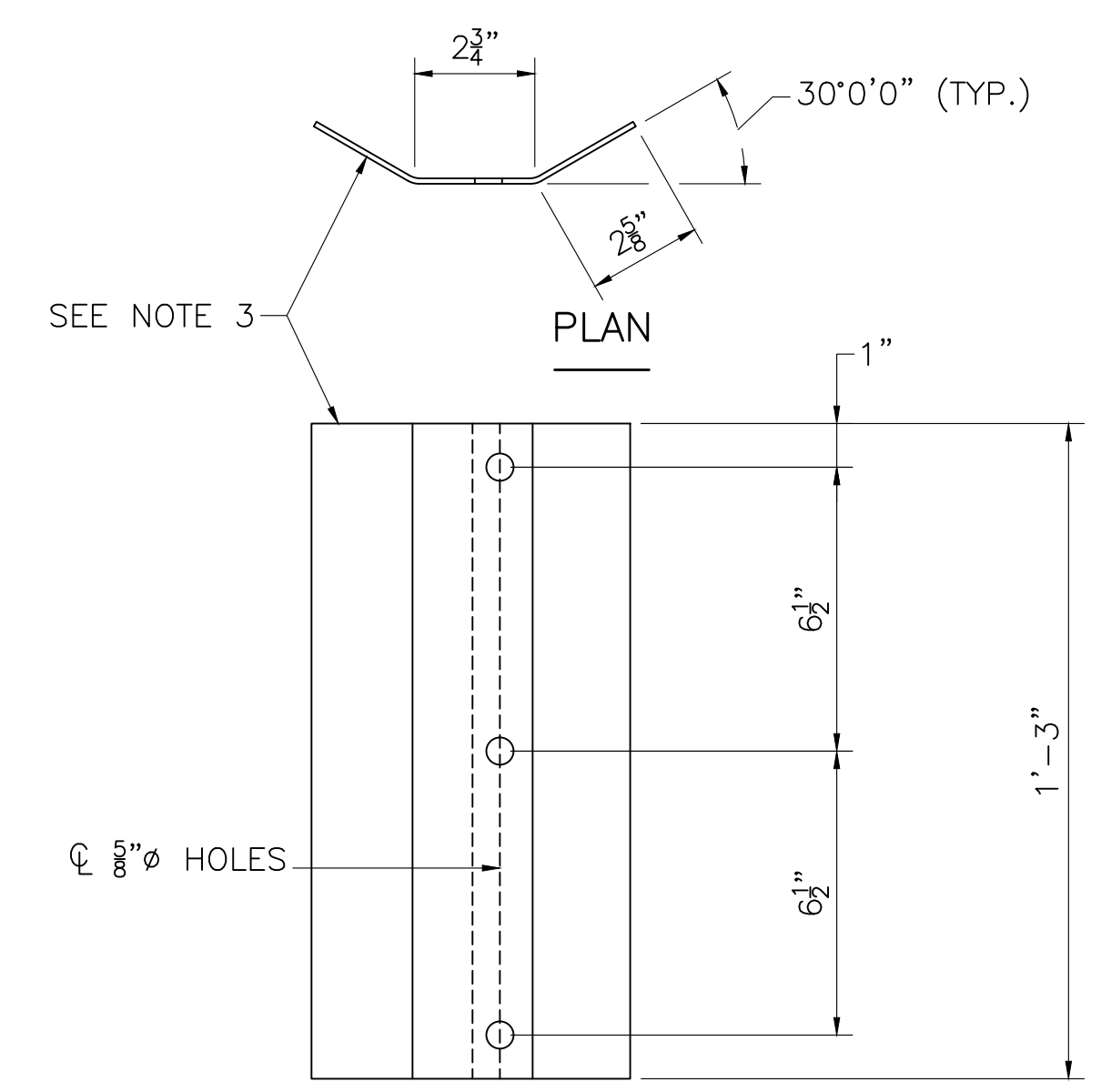
TYPICAL DETAIL END OF SAFETY CURB
SCALE: 1" = 1'-0"



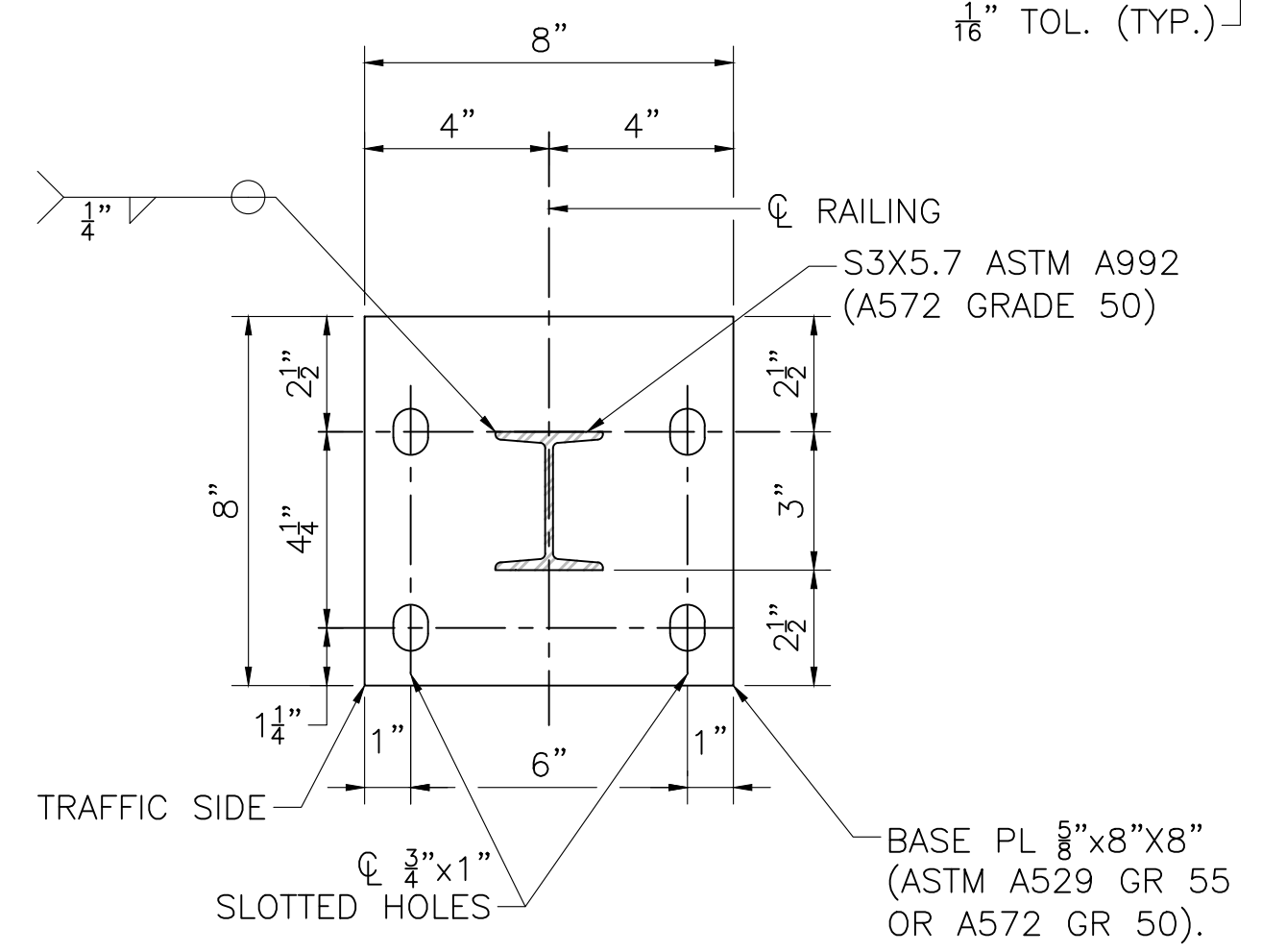
TYPICAL RAILING ELEVATION
SCALE: 1" = 1'-0"



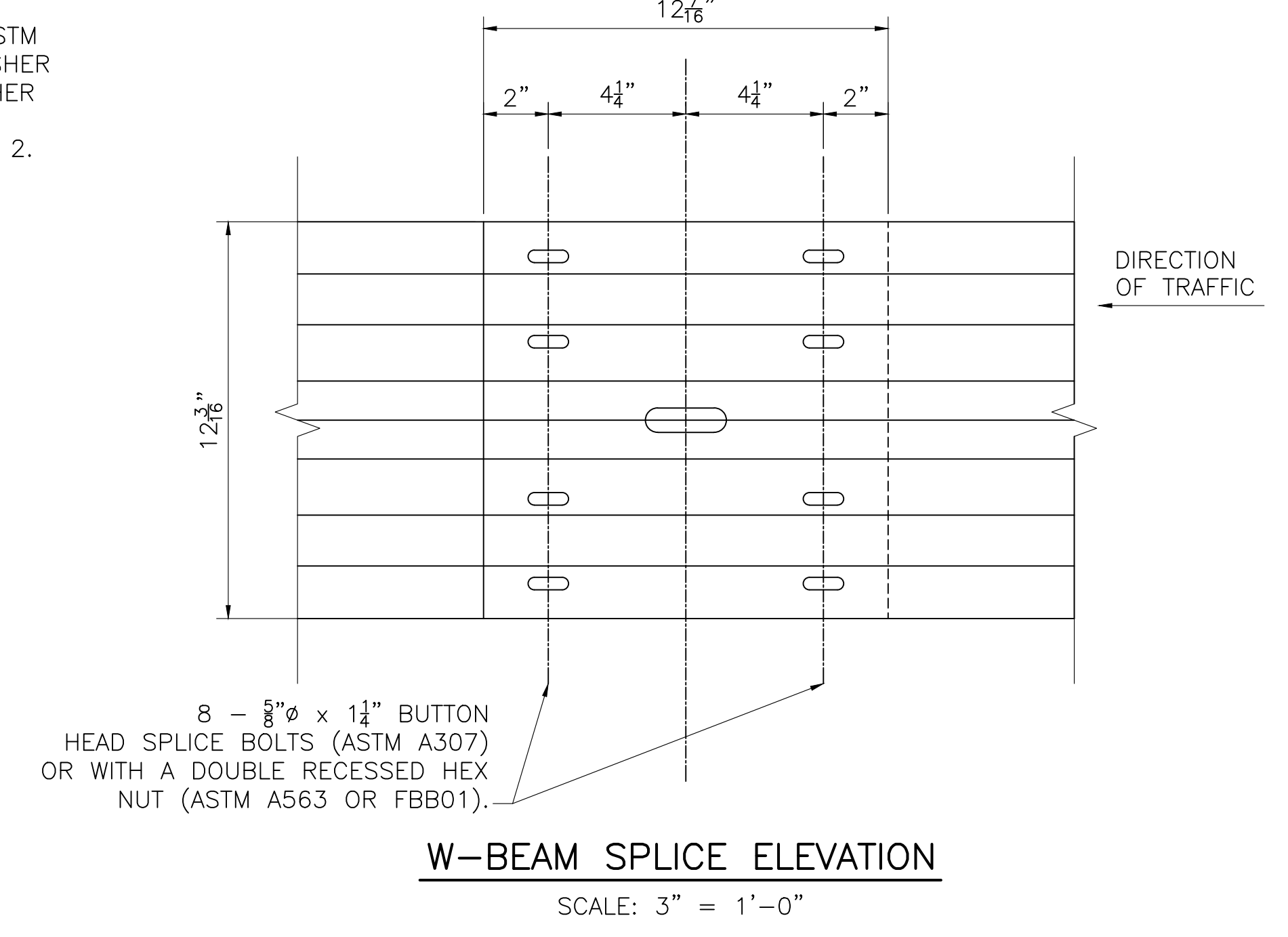
RAIL SECTION ON SAFETY CURB
SCALE: 1 1/2" = 1'-0"



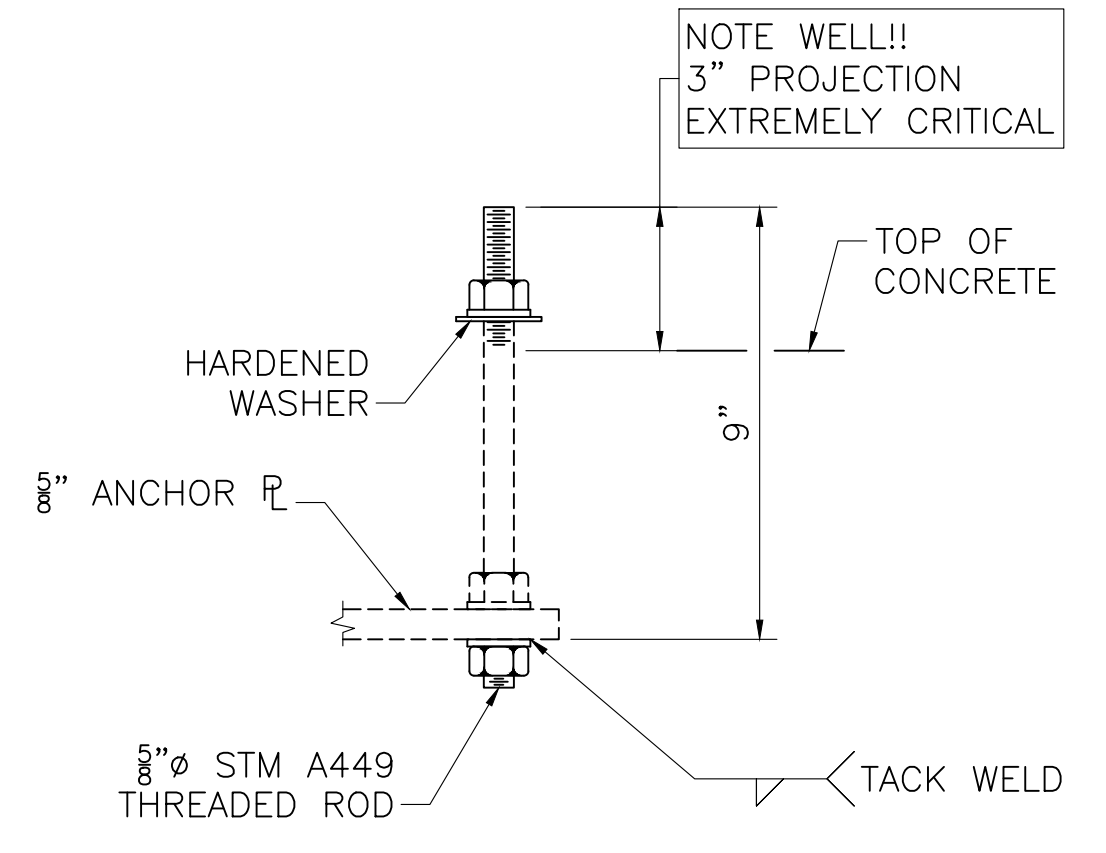
BACKER PLATE
SCALE: 3" = 1'-0"



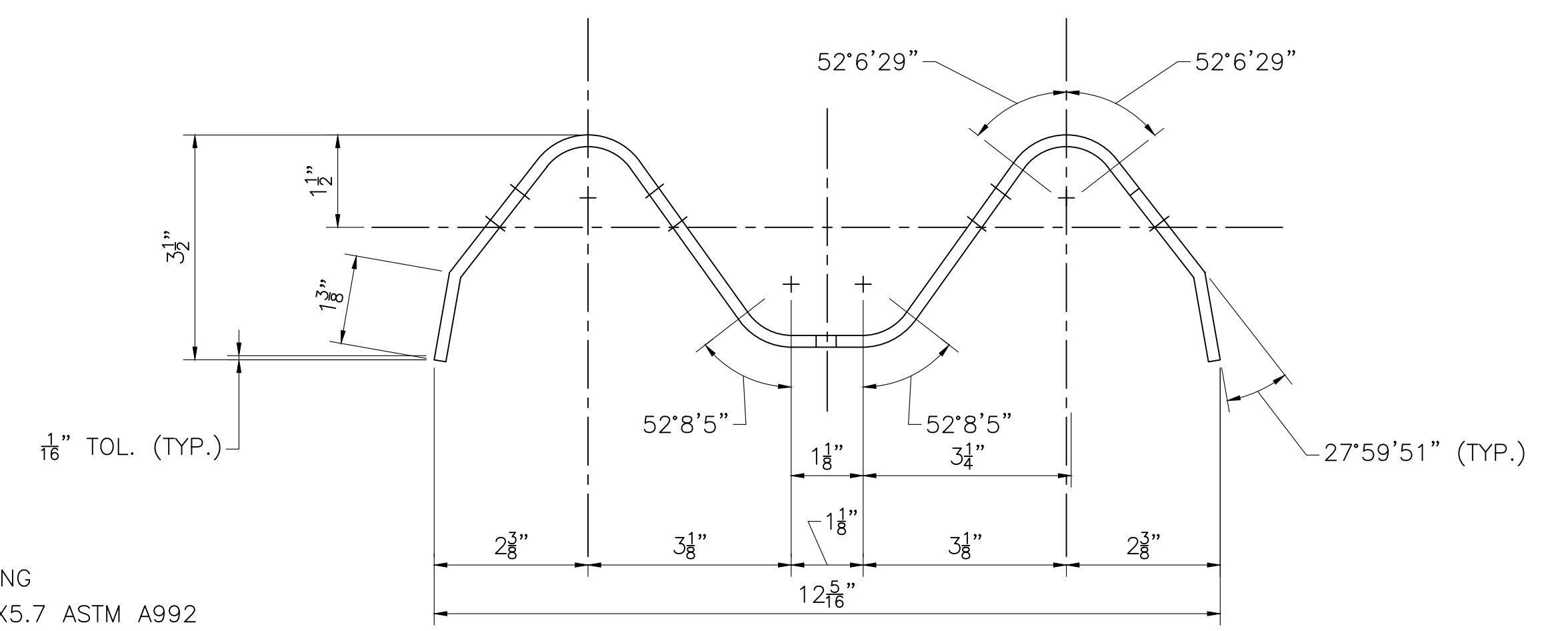
W-BEAM RAIL POST BASE PLATE DETAIL
SCALE: 3" = 1'-0"



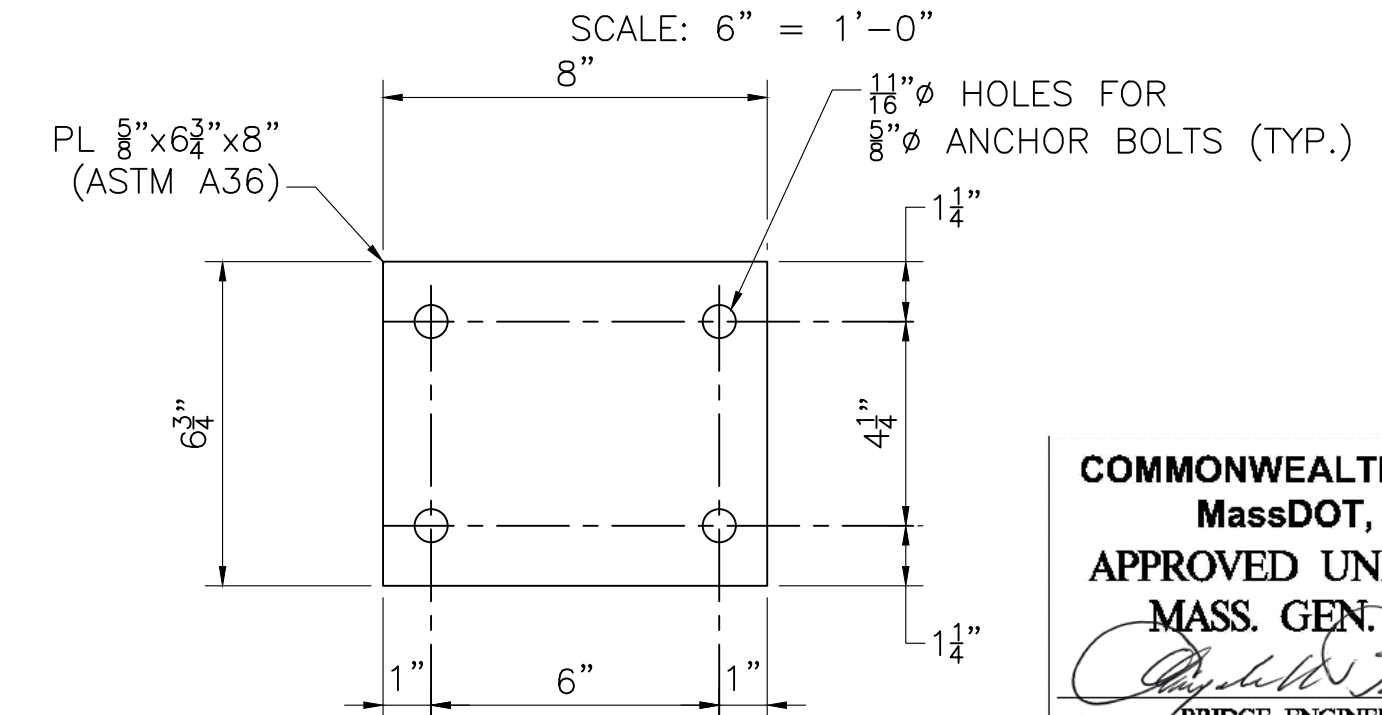
W-BEAM SPLICE ELEVATION
SCALE: 3" = 1'-0"



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



BRIDGE GUARDRAIL SECTION
SCALE: 6" = 1'-0"



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

NOTE WELL!!
3" PROJECTION
EXTREMELY CRITICAL

BRIDGE RAIL NOTES

1. TIGHTEN THE FIRST HEX NUT BY HAND UNTIL THE TOP AND BOTTOM EDGES OF THE W-BEAM ENGAGE THE BACKER PLATE (BACKER PLATE SHOULD BE SNUG AGAINST THE POST). THEN TIGHTEN THE HEX NUT ONE REVOLUTION WITH WRENCH AND SECURE WITH THE SECOND HEX NUT.
2. PL 1/2" X 1 1/2" X 1 1/2" WITH 3/8" HOLE CENTERED IN PL (ASTM A36). SQUARE GUARDRAIL WASHER (FWR01).
3. BACKER PL 1/2" X 8" X 1'-3" (ASTM A1011 CS OR SS GR 33, OR A1008 CS OR SS GR 33 (11 GAGE ACCEPTABLE)).

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