





**DESIGNER NOTES:**

1. THROUGHOUT THESE GENERAL NOTES AND THROUGHOUT THE STANDARD DRAWINGS, ALL INSTRUCTIONAL COMMENTS TO THE DESIGNER ARE INDICATED IN ITALICS.
2. THE DESIGNER MUST THOROUGHLY REVIEW THE CONTENT OF ALL THE GENERAL NOTES (AS SHOWN ON SHEETS 1 THROUGH 4) FOR THEIR APPLICABILITY TO A SPECIFIC PROJECT AND SHALL MODIFY ANY NOTES AS NECESSARY. ANY NOTES THAT ARE NOT APPLICABLE MUST BE DELETED.
3. WHERE IT HAS BEEN IDENTIFIED IN THE GENERAL NOTES, THE YEAR AND/OR EDITION OF THE PROJECT DESIGN SPECIFICATIONS MUST BE INCLUDED.
4. ELECTRONIC COPIES OF THESE NOTES ARE AVAILABLE UPON REQUEST.

**GENERAL NOTES**

1. ALL CONSTRUCTION INDICATED ON THESE PLANS SHALL BE IN ACCORDANCE WITH:
  - THE (\*STATE YEAR\*) EDITION OF AND SUPPLEMENTS TO THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (RI STANDARD SPECIFICATIONS).
  - THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) LRFD BRIDGE CONSTRUCTION SPECIFICATIONS, (\*STATE NUMBER\*) EDITION, (\*STATE YEAR\*), INCLUDING THE LATEST INTERIM REVISIONS.
  - THE SPECIFICATIONS ACCOMPANYING THESE PLANS.
2. DIMENSIONS, STATIONS, AND ELEVATIONS ARE SHOWN TO THE NEAREST ONE-HUNDREDTH OF A FOOT OR ONE-EIGHTH OF AN INCH, EXCEPT STRUCTURAL STEEL DIMENSIONS WHICH ARE TO THE NEAREST ONE-SIXTEENTH OF AN INCH.
3. ALL ELEVATIONS ARE REFERENCED TO THE NATIONAL GEODETIC VERTICAL DATUM OF (\*DESIGNER TO SPECIFY - NGVD 29, NAVD 88, OR PROVIDENCE M.H.W. ).
4. COORDINATES USED ON THESE PLANS ARE BASED ON THE STATEWIDE COORDINATE SYSTEM, THE NORTH AMERICAN DATUM OF 1983 (NAD 83).
5. TOPOGRAPHIC CONDITIONS WERE OBTAINED FROM AERIAL PHOTOGRAMMETRY. ACCURACY OF VERTICAL TOPOGRAPHY IS WITHIN (\*DESIGNER TO SPECIFY ACCURACY, FOR EXAMPLE "ONE-HALF OF A FOOT").
6. FOR BENCH MARKS AND TIES SEE HIGHWAY LOCATION PLANS.
7. ANGLES ARE SHOWN TO THE NEAREST SECOND.
8. ALL FOOTINGS SHALL BE APPROVED BY THE ENGINEER AS TO DIMENSIONS, ELEVATIONS, AND SUITABILITY OF FOUNDATION MATERIAL BEFORE THE PLACING OF CONCRETE.
9. ALL WORKING POINTS ARE SHOWN AT THE CENTERLINES OF BEARINGS OF ABUTMENTS AND AT THE CENTERLINES OF PIERS, UNLESS OTHERWISE NOTED.
10. ALL ABUTMENTS AND WALLS ARE DRAWN LOOKING AT THE EXPOSED FACES.
11. IF THIS PROJECT IS ON A HURRICANE EVACUATION AND DIVERSIONARY ROUTE AS DESIGNATED ON THE COVER SHEET, THE CONTRACTOR IS ADVISED THAT, UPON 12 (TWELVE) HOURS NOTICE, THE ROADWAY SHALL BE OPEN TO EVACUEES AND EMERGENCY PERSONNEL. ANY EXTRA WORK NECESSARY TO COMPLY WITH THIS REQUIREMENT WILL BE REIMBURSED UNDER FORCE ACCOUNT PROCEDURES.
12. THE EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND WERE LOCATED USING THE BEST AVAILABLE INFORMATION. NO BUILDING SERVICE CONNECTIONS (ELECTRIC, TELEPHONE, GAS, WATER, SANITARY AND OTHERS) ARE SHOWN. THE CONTRACTOR IS TO ASSUME THAT SERVICES TO ALL BUILDINGS ARE PRESENT.
13. BOTH FEDERAL AND STATE LAW (RI. GENERAL LAW 39-1.2) REQUIRE NOTIFICATION OF APPROPRIATE UTILITY COMPANIES BEFORE DIGGING, TRENCHING, BLASTING, DEMOLISHING, BORING, BACK FILLING, GRADING, LANDSCAPING, OR OTHER EARTH MOVING OPERATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY ALL UTILITY COMPANIES (INCLUDING THROUGH THE "DIG SAFE" PROGRAM) TO ENSURE THAT ALL UTILITIES, BOTH UNDERGROUND AND OVERHEAD, HAVE BEEN MARKED BEFORE COMMENCEMENT OF SUCH WORK. THE CONTRACTOR SHOULD UNDERSTAND THAT NOT ALL UTILITIES SUBSCRIBE TO THE "DIG SAFE" PROGRAM. ANY DAMAGE TO EXISTING UTILITIES MARKED IN THE FIELD, OR AS A RESULT OF FAILING TO CONTACT THE APPROPRIATE UTILITY COMPANIES, SHALL BE REPAIRED OR REPLACED (AS DEEMED APPROPRIATE BY THE STATE AND/OR THE IMPACTED UTILITY COMPANY) AT NO ADDITIONAL COST TO THE STATE.

**DESIGN DATA**

**1. DESIGN SPECIFICATIONS**

- THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, (\* STATE NUMBER) EDITION, (\* STATE YEAR), INCLUDING ALL INTERIM REVISIONS TO DATE.
- THE RHODE ISLAND LRFD BRIDGE DESIGN MANUAL (\* STATE YEAR) EDITION INCLUDING ALL REVISIONS TO DATE.
- ALL OTHER APPLICABLE DESIGN SPECIFICATIONS ARE REFERENCED IN SECTION 1 OF THE RHODE ISLAND LRFD BRIDGE DESIGN MANUAL DATED (\* STATE YEAR).
- THE (\* STATE YEAR) REVISION OF AND SUPPLEMENTS TO THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (RI STANDARD SPECIFICATIONS).
- IN CASE OF CONFLICT, THE RHODE ISLAND LRFD BRIDGE DESIGN MANUAL SHALL GOVERN.

**2. LOAD MODIFIERS**

THE LOAD MODIFIERS FOR THIS PROJECT ARE AS FOLLOWS:

- THE LOAD MODIFIER FOR DUCTILITY SHALL BE TAKEN AS 1.0 FOR ALL LIMIT STATES.
- THE LOAD MODIFIER FOR REDUNDANCY SHALL BE TAKEN AS (\* STATE VALUE FOR EACH LIMIT STATE).
- THE LOAD MODIFIER FOR OPERATIONAL IMPORTANCE SHALL BE TAKEN AS (\* STATE VALUE FOR EACH LIMIT STATE).

**3. LOAD FACTORS**

ALL LOAD FACTORS SHALL BE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, EXCEPT AS MODIFIED IN THE RHODE ISLAND LRFD BRIDGE DESIGN MANUAL (SPECIFIED BELOW).

- THE LOAD FACTOR FOR TEMPERATURE GRADIENT SHALL BE TAKEN AS (\* STATE VALUE FOR EACH LIMIT STATE).
- THE LOAD FACTOR FOR LIVE LOAD FOR THE EXTREME EVENT I SHALL BE TAKEN AS ZERO.
- THE LOAD FACTOR FOR DEAD LOAD FOR THE EXTREME EVENT I AND EXTREME EVENT II SHALL BE TAKEN AS 1.0
- THE LOAD FACTOR FOR SETTLEMENT FOR ALL LIMIT STATES SHALL BE TAKEN AS 1.0

**4. LIVE LOADS**

- THE DESIGN VEHICULAR LIVE LOAD SHALL BE THE HL-93 DESIGNATION ADJUSTED FOR DYNAMIC LOAD ALLOWANCE AND MULTIPLE PRESENCE FACTOR.
- THE DESIGN PEDESTRIAN LIVE LOAD SHALL BE (\* DESIGNER TO SPECIFY VALUE OF IN ACCORDANCE WITH RI LRFD 3.4.2) PSF.

**5. FOUNDATION DESIGN DATA**

**SPREAD FOOTINGS:**

THE FACTORED BEARING RESISTANCE FOR THE VARIOUS TYPES OF BEARING MATERIAL ARE AS FOLLOWS:

LOCATION	TYPE OF BEARING MATERIAL	FACTORED BEARING RESISTANCE (KSF)	
		STRENGTH LIMIT STATES	EXTREME LIMIT STATES
*	*	*	*
*	*	*	*

(\*DESIGNER TO SPECIFY THE NOMINAL BEARING RESISTANCE AND ASSOCIATED TOLERABLE MOVEMENT FOR EACH OF THE ABOVE LIMIT STATES\*).

**DEEP FOUNDATIONS:**

THE FACTORED AXIAL AND UPLIFT RESISTANCES FOR THE VARIOUS DEEP FOUNDATION TYPES ARE AS FOLLOWS:

LOCATION	TYPE	FACTORED AXIAL RESISTANCE (KIPS)			
		GEOTECHNICAL		STRUCTURAL	
		STRENGTH LIMIT STATES	EXTREME LIMIT STATES	STRENGTH LIMIT STATES	EXTREME LIMIT STATES
*	*	*	*	*	*
*	*	*	*	*	*

LOCATION	TYPE	FACTORED UPLIFT RESISTANCE (KIPS)	
		STRENGTH LIMIT STATES	EXTREME LIMIT STATES
*	*	*	*
*	*	*	*

(\*DESIGNER TO COMPLETE TABLE\*)

- THE FACTORED DESIGN AXIAL RESISTANCE AT EACH LOCATION IS THE LESSER VALUE OF THE FACTORED GEOTECHNICAL AND THE FACTORED STRUCTURAL RESISTANCES INDICATED.
- THE FACTORED GEOTECHNICAL AXIAL RESISTANCE FOR THE STRENGTH LIMIT STATE IS BASED ON THE NOMINAL AXIAL RESISTANCE AS DETERMINED USING (\*DESIGNER TO SPECIFY METHOD\*) AND A RESISTANCE FACTOR OF (\*DESIGNER TO SPECIFY RESISTANCE FACTOR\*).
- THE FACTORED GEOTECHNICAL AXIAL RESISTANCE FOR THE EXTREME LIMIT STATE IS BASED ON THE NOMINAL AXIAL RESISTANCE AS DETERMINED USING (\*DESIGNER TO SPECIFY METHOD\*) AND A RESISTANCE FACTOR OF (\*DESIGNER TO SPECIFY RESISTANCE FACTOR\*).
- THE FACTORED GEOTECHNICAL UPLIFT RESISTANCE FOR THE STRENGTH LIMIT STATE IS BASED ON THE NOMINAL UPLIFT RESISTANCE AS DETERMINED USING (\*DESIGNER TO SPECIFY METHOD\*) AND A RESISTANCE FACTOR OF (\*DESIGNER TO SPECIFY RESISTANCE FACTOR\*).
- THE FACTORED GEOTECHNICAL UPLIFT RESISTANCE FOR THE EXTREME LIMIT STATE IS BASED ON THE NOMINAL UPLIFT RESISTANCE AS DETERMINED USING (\*DESIGNER TO SPECIFY METHOD\*) AND A RESISTANCE FACTOR OF (\*DESIGNER TO SPECIFY RESISTANCE FACTOR\*).

**6. WIND LOADING DESIGN DATA**

THE WIND LOADING DESIGN SHALL BE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, THE RHODE ISLAND LRFD BRIDGE DESIGN MANUAL, AND AS MODIFIED HEREIN.

- EXCEPT DURING CONSTRUCTION, THE DESIGN WIND PRESSURE IS BASED ON A DESIGN WIND SPEED OF (\*DESIGNER TO SPECIFY - REFER TO RI LRFD SECTION 3\*) MPH.
- THE DESIGN WIND PRESSURES DURING CONSTRUCTION SHALL BE AS SPECIFIED UNDER THE NOTES TITLED "GENERAL NOTES REGARDING TEMPORARY CONSTRUCTION CONDITIONS".

**7. TRAFFIC DATA**

(\*THE DESIGNER SHALL PROVIDE ALL PERTINENT TRAFFIC DATA SUCH AS ADT, DHV, AND PERCENT TRUCK TRAFFIC\*).

**8. HYDRAULIC AND SCOUR DATA**

(\*THE DESIGNER SHALL PROVIDE ALL PERTINENT HYDRAULIC DATA IN ACCORDANCE WITH THE RI LRFD BRIDGE DESIGN MANUAL, SECTION 2\*).

**9. THERMAL DESIGN FORCE DATA**

UNIFORM TEMPERATURE EFFECTS HAVE BEEN TAKEN INTO CONSIDERATION IN ACCORDANCE WITH THE PROCEDURE (\*DESIGNER TO SPECIFY PROCEDURE A OR B - REFER TO RI LRFD SECTION 3\*) OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE MINIMUM DESIGN TEMPERATURE SHALL BE (\* STATE VALUE) DEGREES F, AND THE MAXIMUM TEMPERATURE SHALL BE (\* STATE VALUE) DEGREES F.

**10. SEISMIC DESIGN DATA (\*FOR CRITICAL, NON-CRITICAL, OR SINGLE SPAN STRUCTURES, THE DESIGNER SHALL MODIFY AND/OR SPECIFY ONLY THE NOTES WHICH APPLY\*)**

- THE SEISMIC ANALYSIS AND DESIGN SHALL BE IN ACCORDANCE WITH THE RHODE ISLAND LRFD BRIDGE DESIGN MANUAL (\*DESIGNER TO ALSO REFERENCE SITE-SPECIFIC STUDY REPORT IF ONE WAS PERFORMED\*).
- THE COMBINATION OF SEISMIC FORCE EFFECTS IS IN ACCORDANCE WITH THE RHODE ISLAND LRFD BRIDGE DESIGN MANUAL.
- THIS BRIDGE HAS BEEN CLASSIFIED AS (\*DESIGNER TO SPECIFY "CRITICAL" OR "NON-CRITICAL"\*) .
- THE SITE HAS BEEN CLASSIFIED AS SITE CLASS (\*DESIGNER TO INDICATE A, B, C, D, E OR F\*).
- SCOUR AND LIQUEFACTION EFFECTS HAVE BEEN CONSIDERED IN THE SEISMIC ANALYSIS OF THIS BRIDGE.
- THE SEISMIC ANALYSIS OF THIS BRIDGE WAS BASED ON THE FOLLOWING DESIGN SPECTRA: (\*DESIGNER TO PROVIDE VALUES BASED ON RI LRFD BRIDGE DESIGN MANUAL OR A SITE SPECIFIC STUDY IF ONE WAS PERFORMED\*).

HORIZONTAL DESIGN RESPONSE SPECTRA			
UPPER LEVEL EARTHQUAKE (3% IN 75 YEARS, 5% DAMPING)		LOWER LEVEL EARTHQUAKE (15% IN 75 YEARS, 5% DAMPING)	
PERIOD (SEC)	Sa (g)	PERIOD (SEC)	Sa (g)
*	*	*	*
*	*	*	*
*	*	*	*
*	*	*	*
*	*	*	*
*	*	*	*

(\*DESIGNER TO COMPLETE TABLE\*)

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14. THE EXTERIOR FACE OF FASCIA BEAMS SHALL RECEIVE A SELECTED FORMLINER OR RUBBED FINISH (IN FIELD OR IN THE PLANT) IN ACCORDANCE WITH THE RI STANDARD SPECIFICATIONS. THE COST SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PRESTRESSED CONCRETE MEMBERS.
15. THE TOP SURFACES OF THE PRESTRESSED SLABS, BOX BEAMS, & GIRDERS SHALL HAVE EITHER A SMOOTH OR A RAKED FINISHED (1/4" AMPLITUDE) AS INDICATED ON THE PLANS.
16. ALL SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER IN SUFFICIENT TIME TO PERMIT CAREFUL CHECKING.
17. ALL GALVANIZED PRESTRESSING STEEL AND GALVANIZED REINFORCING BARS SHALL BE SECURELY TIED TO PREVENT DISLOCATION. TIES USED FOR THE GALVANIZED REINFORCING STEEL SHALL ALSO BE GALVANIZED.
18. THE DETAILS OF ALL INSERTS, ANCHORS, AND ANY OTHER ITEMS REQUIRED TO BE CAST INTO THE PRECAST PRESTRESSED UNITS (WHETHER DETAILED ON THE CONTRACT DRAWINGS OR PROVIDED FOR THE CONTRACTOR'S CONVENIENCE) SHALL BE SHOWN ON THE SHOP DRAWINGS. PRECAST UNITS SHALL NOT BE FIRED OR DRILLED INTO FOR ATTACHMENT PURPOSES. ALL HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 232.
19. THE NON-SHRINK GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 10,000 PSI AFTER 28 DAYS AS DETERMINED BY TESTING UNDER ASTM DESIGNATION C-109 AND SHALL NOT EXHIBIT ANY MEASURABLE DECREASE IN VOLUME AFTER CURING. THE CONTRACTOR SHALL STRICTLY FOLLOW THE MANUFACTURER'S RECOMMENDATIONS. GROUTING SHALL BE PERFORMED IN ACCORDANCE WITH THE DETAILS SHOWN. THE GROUT SHALL BE ON THE RIDOT APPROVED MATERIAL LIST.
20. THE ENDS OF BEAMS SHALL BE VERTICAL AFTER ALL DEAD LOADS HAVE BEEN PLACED.
21. HANDHELD VIBRATORS SHALL BE EQUIPPED WITH RUBBER TIPPED HEADS.
22. FOR SIZE AND LOCATION OF ANCHOR BOLTS, SEE PIER, ABUTMENT, AND BEARING DRAWINGS.
23. NO TRAFFIC OR HEAVY EQUIPMENT SHALL BE PERMITTED ON THE BRIDGE UNTIL THE POST TENSIONING OPERATION HAS BEEN COMPLETED AND THE GROUT HAS ATTAINED THE 28 DAY COMPRESSIVE STRENGTH.

**GENERAL NOTES REGARDING TEMPORARY CONSTRUCTION CONDITIONS:**

1. DESIGN WIND PRESSURES FOR CONSTRUCTION:

MINIMUM WIND PRESSURES TO BE USED BY THE CONTRACTOR FOR DESIGN DURING THE CONSTRUCTION CONTRACT (WITH THE EXCEPTION OF SIGNS) SHALL BE FROM THE FOLLOWING TABLE:

HEIGHT ABOVE GROUND	WIND PRESSURE (PSF)
UP TO 17'	*
OVER 17' AND UP TO 33'	*
OVER 33' AND UP TO 50'	*
OVER 50' AND UP TO 75'	*
OVER 75' AND UP TO 100'	*

**TABLE NOTES:**

A. APPLICATION OF THE TABULAR PRESSURE:

- BRIDGE COMPONENTS DURING CONSTRUCTION, PRIOR TO THE INSTALLATION OF THE PERMANENT BRACING SYSTEMS, NOT INCLUDING CRANE LIFTING.
- FALSE WORK, SHORING, AND SCAFFOLDING AS DEFINED IN FHWA "GUIDE DESIGN SPECIFICATION FOR BRIDGE TEMPORARY WORKS", EXCLUDING 3-DIMENSIONAL LATTICED OR TRUSSED FRAMES OR TOWERS;
- TEMPORARY SHIELDING.

WIND PRESSURES FOR ALL OTHER STRUCTURES SHALL BE CALCULATED BASED ON ASCE "DESIGN LOADS ON STRUCTURES DURING CONSTRUCTION", SEI/ASCE 37-02 (ALL REFERENCES TO THE ASCE 7 IN THE SEI/ASCE 37-02 PUBLICATION, SHALL BE THE LATEST REVISION OF ASCE 7). THE EXPOSURE CATEGORY SHALL BE    (\*\* (DESIGNER SHALL COMPLETE PER DESIGNER NOTES BELOW)).

B. WHERE APPLICABLE HIGHER AMTRAK WIND REQUIREMENTS SHALL SUPERSEDE THESE REQUIREMENTS.

C. FOR STRUCTURES SITUATED ABOVE LIVE INTERSTATE TRAFFIC, THE TABULAR VALUES SHALL BE INCREASED BY 5 PSF.

**DESIGNER NOTES:**

- a. THE DESIGNER IS TO FILL THE ABOVE TABULAR PRESSURES (INDICATED WITH ASTERISKS "\*\*") USING THE FOLLOWING VALUES:

HEIGHT ABOVE GROUND (FEET)	WIND PRESSURE (PSF)	
	EXP B	EXP C
UP TO 17'	23	33
OVER 17' AND UP TO 33'	27	37
OVER 33' AND UP TO 50'	30	41
OVER 50' AND UP TO 75'	34	44
OVER 75' AND UP TO 100'	37	47

- b. EXPOSURE CATEGORIES ARE DEFINED AS FOLLOWS (NOTE THAT EXPOSURE "A" NO LONGER EXISTS AS OF THE RELEASE OF ASCE 7-05, AND THAT EXPOSURE "D" IS NOT APPLICABLE TO RHODE ISLAND):

- EXPOSURE B = URBAN AND SUBURBAN AREAS, WOODED AREAS OR OTHER TERRAIN WITH NUMEROUS CLOSELY SPACED OBSTRUCTIONS HAVING THE SIZE OF SINGLE-FAMILY DWELLINGS OR LARGER. THIS EXPOSURE SHALL PREVAIL IN THE UPWIND DIRECTION FOR A DISTANCE OF AT LEAST 2630 FEET, OR 10 TIMES THE HEIGHT OF THE STRUCTURE, WHICHEVER IS GREATER.
- EXPOSURE C = OPEN TERRAIN WITH SCATTERED OBSTRUCTIONS HAVING HEIGHTS GENERALLY LESS THAN 30 FEET, INCLUDING FLAT OPEN COUNTRY, GRASSLANDS, AND ALL WATER SURFACES IN HURRICANE-PRONE REGIONS. THIS EXPOSURE SHALL APPLY FOR ALL CASES WHERE EXPOSURE B DOES NOT APPLY.

THE DESIGNER SHALL INDICATE THE APPROPRIATE EXPOSURE CATEGORY FOR THE PROJECT IN THE NOTES ABOVE. REFER TO THE RI LRFD BRIDGE DESIGN MANUAL AND THE COMMENTARY OF ASCE 7-05 FOR GUIDANCE IN THE APPLICATION OF EXPOSURE CATEGORIES.

2. ERECTION OF BRIDGE COMPONENTS:

FOR THE ERECTION OF STRUCTURES, THE FOLLOWING SHALL APPLY:

- THE CONTRACTOR SHALL SUBMIT AN ERECTION PLAN THAT PROVIDES COMPLETE DETAILS OF THE PROCESS INCLUDING, BUT NOT LIMITED TO, TEMPORARY SUPPORTS, SCHEDULING AND OPERATION SEQUENCING, CRANE PLACEMENT, AND ASSUMED LOADS AND CALCULATED STRESSES DURING VARYING STAGES OF LIFTING. THIS APPLIES TO STRUCTURES OF ANY KIND. THE CAPACITY OF THE CRANE AND ALL LIFTING AND CONNECTING DEVICES SHALL BE ADEQUATE FOR 125 PERCENT (150 PERCENT OVER AMTRAK) OF THE TOTAL PICK LOAD INCLUDING SPREADERS, RIGGING, HOOKS, AND ALL OTHER MATERIALS. THIS FACTOR OF SAFETY SHALL BE IN ADDITION TO ALL MANUFACTURERS' PUBLISHED FACTORS OF SAFETY.
- A REGISTERED PROFESSIONAL ENGINEER, LICENSED IN THE STATE OF RHODE ISLAND, WILL BE REQUIRED TO STAMP THE CONTRACTOR'S ERECTION PLAN.
- THE CONTRACTOR'S PROFESSIONAL ENGINEER WILL BE REQUIRED TO INSPECT AND PROVIDE WRITTEN APPROVAL OF INSTALLATION, PRIOR TO ALLOWING VEHICLES OR PEDESTRIANS ON OR BELOW THE STRUCTURE. THE PROFESSIONAL ENGINEER MUST ALSO STAMP ALL CHANGES TO THE CONTRACTOR'S ERECTION PLAN. ADDITIONALLY, ALL PROPOSED CHANGES MUST BE SUBMITTED TO RIDOT FOR REVIEW AND APPROVAL PRIOR TO IMPLEMENTATION.
- A MANDATORY PRE-ERECTION CONFERENCE WILL BE HELD AT LEAST TWO WEEKS PRIOR TO THE START OF THE GIRDER INSTALLATION TO DISCUSS THE PLAN AND PROCEDURES, WORK SCHEDULES, CONTINGENCY PLANS, SAFETY REQUIREMENTS AND TRAFFIC CONTROL. THE CONTRACTOR'S PROFESSIONAL ENGINEER AND ERECTION SUBCONTRACTOR WILL BE REQUIRED TO ATTEND THIS MEETING, AS WILL THE RIDOT RESIDENT ENGINEER, THE DESIGN PROJECT ENGINEER AND THE DESIGN CONSULTANT. BASED UPON DISCUSSIONS AT THIS MEETING AND A REVIEW OF THE CONTRACTOR'S ERECTION PLAN, RIDOT MAY ORDER THE CONTRACTOR TO MODIFY AND RESUBMIT THE ERECTION PLAN TO THE ENGINEER FOR REVIEW AND APPROVAL.
- THE CONTRACTOR WILL BE REQUIRED TO PERFORM DAILY INSPECTIONS OF THE ERECTED GIRDERS UNTIL THE BRIDGE DECK IS COMPLETELY Poured.
- THE COST OF PREPARING AND STAMPING THE ERECTION PLAN, COMPUTATIONS, AND REPORTS, RESPONDING TO RIDOT'S COMMENTS AND MAKING THE NECESSARY REVISIONS, AND ATTENDANCE AT MEETINGS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE SUPERSTRUCTURE PAY ITEM, BE IT CONCRETE, STEEL OR TIMBER.

**DESIGN TIDAL INFORMATION**

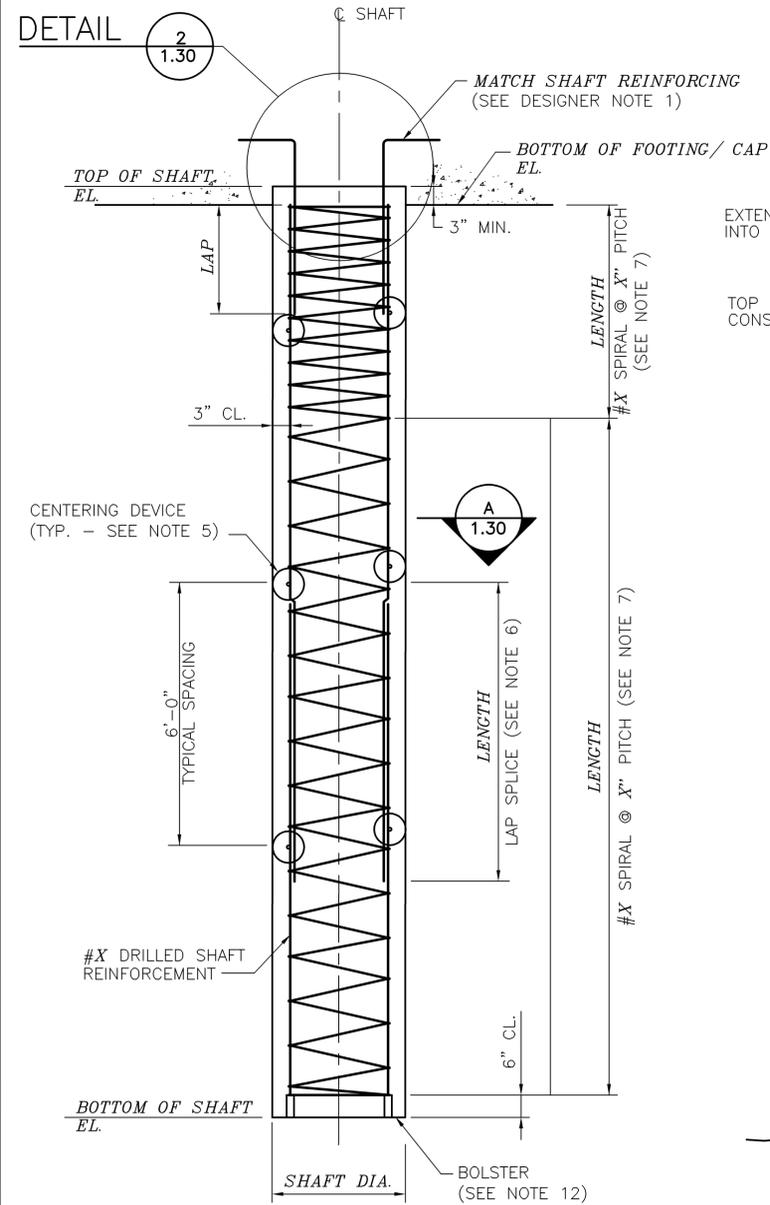
MEAN HIGH TIDE WATER ELEVATION	=	(*DESIGNER TO PROVIDE ELEVATION*)
MEAN HIGH WATER ELEVATION	=	(*DESIGNER TO PROVIDE ELEVATION*)
NGVD 1929 ELEVATION	=	(*DESIGNER TO PROVIDE ELEVATION*)
MEAN LOW WATER ELEVATION	=	(*DESIGNER TO PROVIDE ELEVATION*)
MEAN LOW LOW WATER ELEVATION	=	(*DESIGNER TO PROVIDE ELEVATION*)

THE CONTRACTOR SHALL NOTE THAT HIGHER AND LOWER TIDES ARE POSSIBLE.

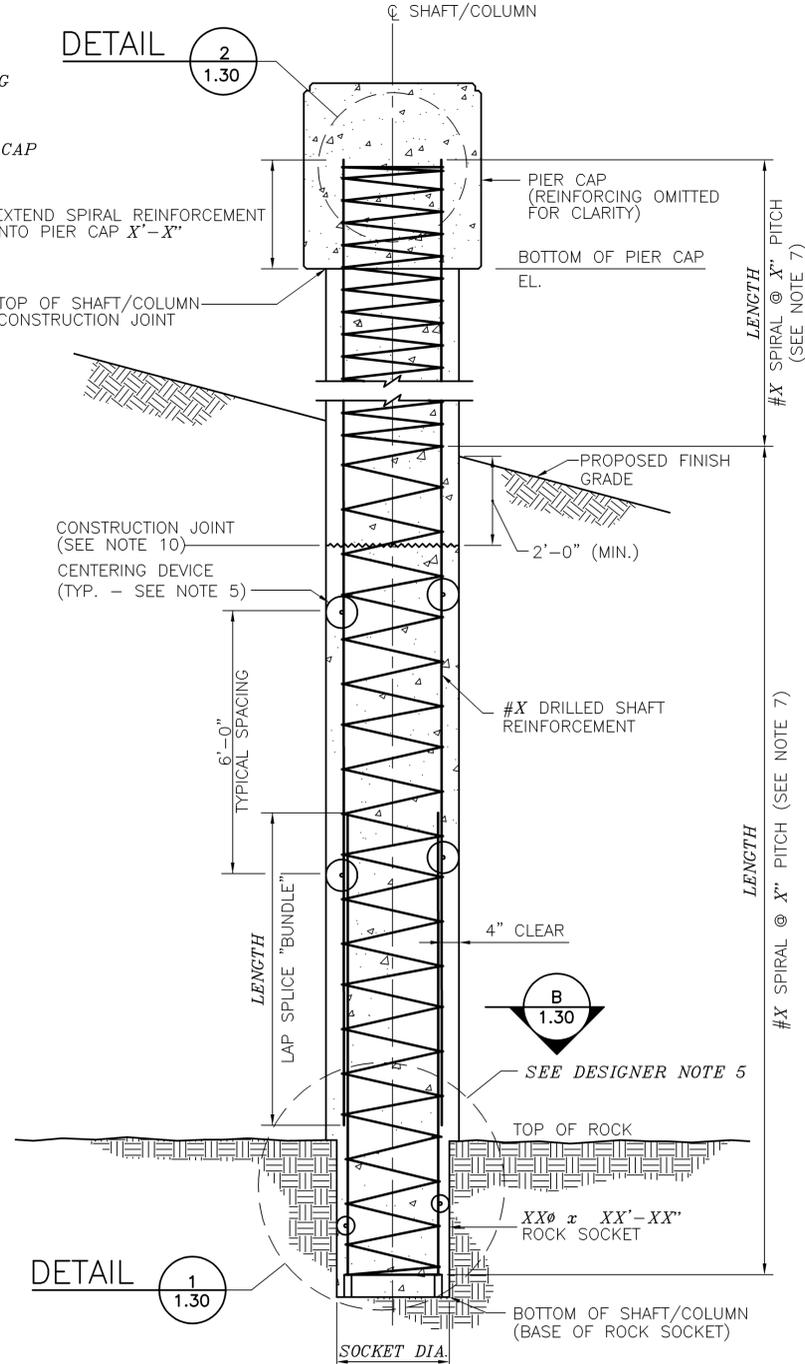
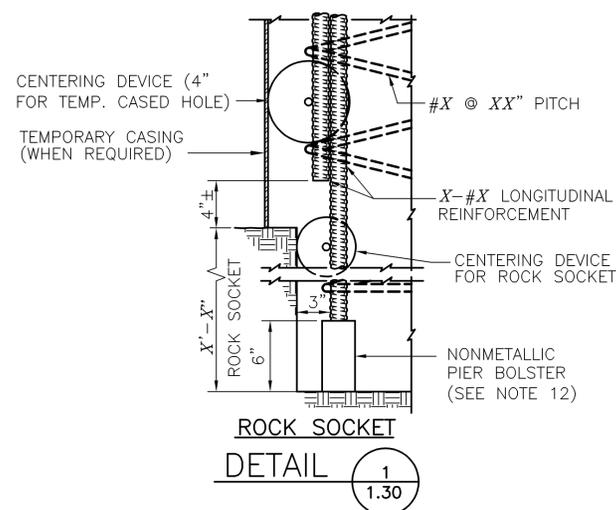
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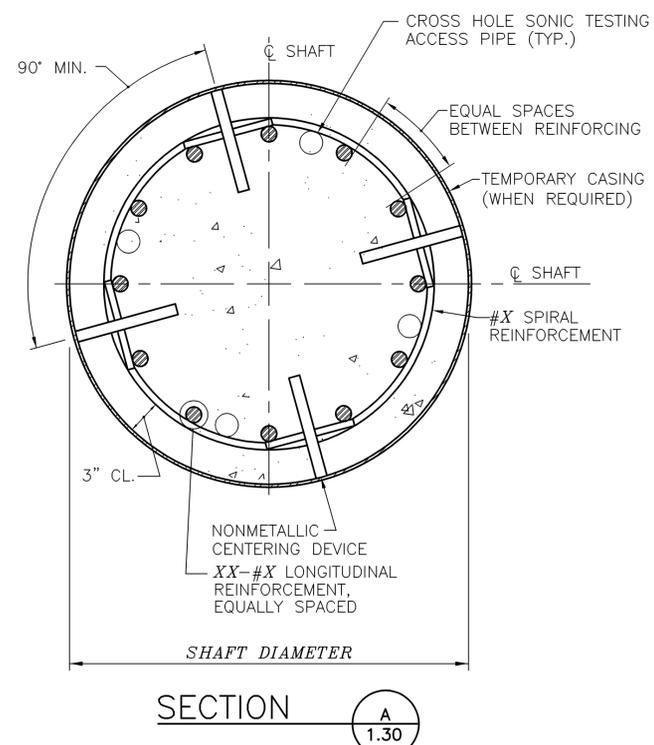
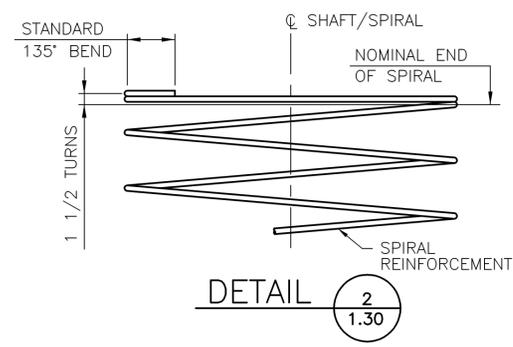




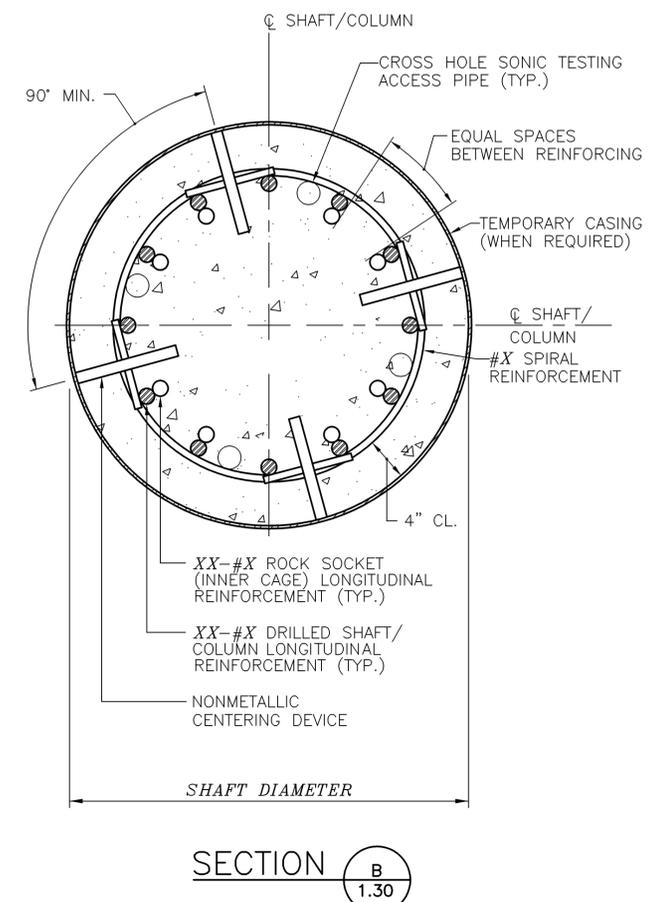
ELEVATION - DRILLED SHAFT IN SOIL



ELEVATION - DRILLED SHAFT/COLUMN IN ROCK



SECTION A 1.30



SECTION B 1.30

DESIGNER NOTES:

1. THE DESIGNER SHALL MODIFY THE TOP OF SHAFT ANCHORAGE DETAILS TO SUIT THE APPLICABLE SUBSTRUCTURE TYPE.
2. DESIGN SHALL BE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
3. THE ENGINEER SHALL ADJUST THE SHAFT REINFORCING DETAILS AS REQUIRED TO SUIT THE SPECIFIC CONSTRUCTION AND SEISMIC REQUIREMENTS.
4. THE APPLICABLE NOTES SHOWN BELOW SHALL BE INCLUDED ON THE CONTRACT DRAWINGS.
5. THE DESIGNER SHALL DETAIL THE ENTIRE SYSTEM TO ACCOMMODATE THE CONSTRUCTION TOLERANCES ANTICIPATED WITH THESE LARGE UNITS. THIS IS PARTICULAR CRITICAL WITH SINGLE COLUMN PIERS.

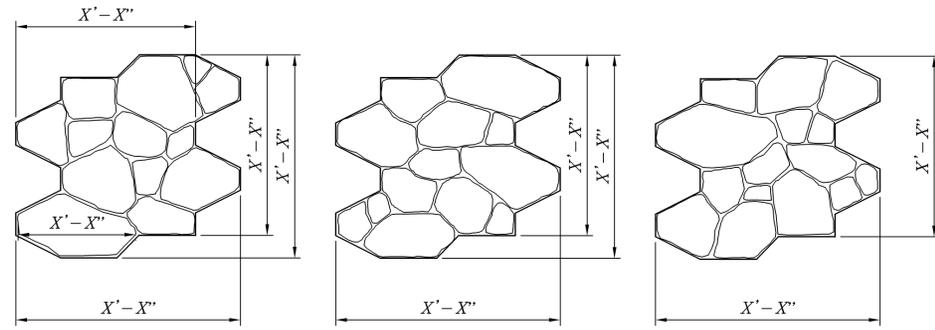
NOTES:

1. CONCRETE SHALL BE PLACED AGAINST UNDISTURBED SOIL IMMEDIATELY AFTER DRILLING UNLESS PREVIOUSLY APPROVED BY THE ENGINEER.
2. THE CONTRACTOR SHALL SUBMIT FOR APPROVAL A METHOD TO REINFORCE THE DRILLED SHAFT REINFORCEMENT CAGE DURING LIFTING OPERATIONS AND INSTALLATION. REINFORCEMENT MAY BE INCREASED AS REQUIRED TO ASSIST WITH HANDLING AND PLACEMENT.
3. DRILLING SHALL BE PERFORMED IN SUCH A MANNER AS TO PREVENT LOSS OF GROUND BEYOND THE SPECIFIED DIAMETER. THE USE OF SURFACE CASING, TEMPORARY CASINGS, DRILLING MUD, DRILLING SLURRY OR OTHER METHODS SHALL BE EMPLOYED TO PREVENT COLLAPSE OF THE BORE HOLE AND LOSS OF GROUND BELOW THE BOTTOM OF THE TEMPORARY OR PERMANENT CASING.
4. THE BOTTOM OF THE EXCAVATION SHALL BE CLEANED OF LOOSE MATERIAL USING EQUIPMENT ACCEPTABLE TO THE ENGINEER PRIOR TO PLACING REINFORCEMENT STEEL AND CONCRETE.
5. NONMETALLIC CENTERING DEVICES SHALL BE OF THE TYPE, AND LOCATED AS SUCH, TO ENSURE THAT THE MINIMUM REINFORCING BAR CLEARANCES SHOWN ARE MAINTAINED.
6. LONGITUDINAL REINFORCEMENT SHALL NOT BE SPLICED WITHIN THE TOP 30 FEET OF THE DRILLED SHAFT. REINFORCING BARS BELOW THE TOP 30 FEET SHALL BE LAP SPLICED THE MINIMUM LENGTH SHOWN ON THE PLANS. LAP SPLICES SHALL BE STAGGERED SO THAT NO MORE THAN 1/2 OF THE SPLICES OCCUR AT THE SAME LOCATION.
7. SPIRAL REINFORCING SHALL BE SUPPLIED IN THE MAXIMUM POSSIBLE CONTINUOUS LENGTHS. WHERE POSSIBLE, NO SPIRAL REINFORCING SHALL BE SPLICED WITHIN THE TOP 30 FEET OF THE DRILLED SHAFT. WHERE SPLICES WITHIN THE TOP 30 FEET ARE REQUIRED, APPROVED MECHANICAL COUPLERS SHALL BE USED. SPLICES BELOW THE TOP 30 FEET MAY BE LAP SPLICED USING 1 1/2 TURNS MINIMUM OR WITH APPROVED MECHANICAL COUPLERS.
8. MECHANICAL COUPLERS SHALL BE APPROVED BY THE ENGINEER AND SHALL BE CAPABLE OF DEVELOPING AT LEAST 125% OF THE ULTIMATE REBAR STRENGTH.
9. AT FREE AND DISCONTINUOUS ENDS OF SPIRALS, THE ENDS SHALL BE ANCHORED AS SHOWN IN DETAIL 2.
10. CONSTRUCTION JOINTS SHALL BE PLACED TWO (2) FEET MINIMUM BELOW GRADE. AT ALL CONSTRUCTION JOINTS, THE TOPS OF THE PREVIOUS POUR SHALL BE CLEANED OF ALL LAITANCE AND ANY OTHER DELETERIOUS MATTER, AND AN EPOXY BONDING AGENT SHALL BE APPLIED.
11. THE BOTTOM OF SHAFT ELEVATIONS SHOWN ON THE PLANS IS APPROXIMATE, AND MAY VARY BASED ON ACTUAL DRILLING CONDITIONS. THE CONTRACTOR SHALL ADJUST THE REINFORCING LENGTH AS REQUIRED TO SUIT THE FINAL SHAFT DEPTH.
12. EACH LONGITUDINAL REINFORCING BAR SHALL BE SUPPORTED BY A NONMETALLIC DURABLE MATERIAL BOLSTER.
13. WELDING OF LONGITUDINAL REINFORCEMENT SHALL NOT BE PERMITTED. WELDING OF OTHER REBAR MAY BE PERMITTED AT THE APPROVAL OF THE ENGINEER.

THIS SHEET NOT TO SCALE.

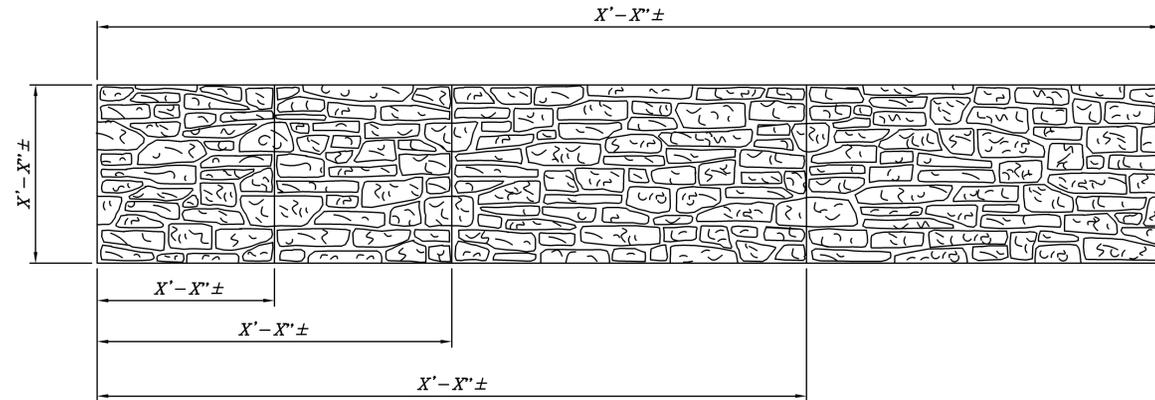
REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
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		DRILLED SHAFT DETAILS





SIMULATED GROUT IS 3/8" TO 3/4" WIDE AT BOTTOM & 1 1/2" TO 2 1/2" AT TOP. SIMULATED STONE DEPTH IS 2 1/8" AT DEEPEST POINTS. ALL DIMENSIONS ARE APPROXIMATE DUE TO ROUGHNESS OF STONE TEXTURE.

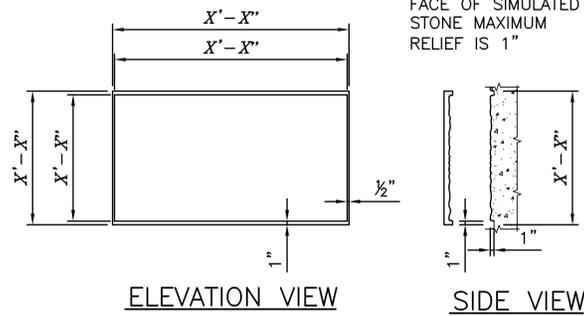
IRREGULAR JOINT  
ELEVATION VIEW



VERTICAL JOINT  
ELEVATION VIEW

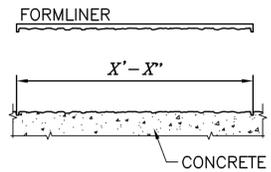
TYPICAL TYPES OF STONE PATTERN LAYOUTS

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



ELEVATION VIEW

SIDE VIEW

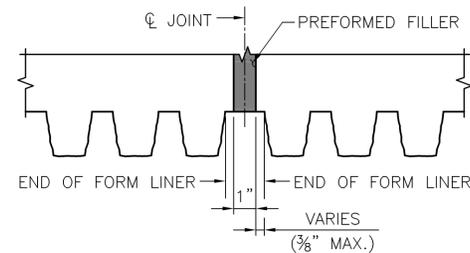


X'-X'' WIDE WITH 1/2" HALF GROUTS, BOTH SIDES; 1" MAXIMUM DEPTH OF TEXTURE

TOP VIEW

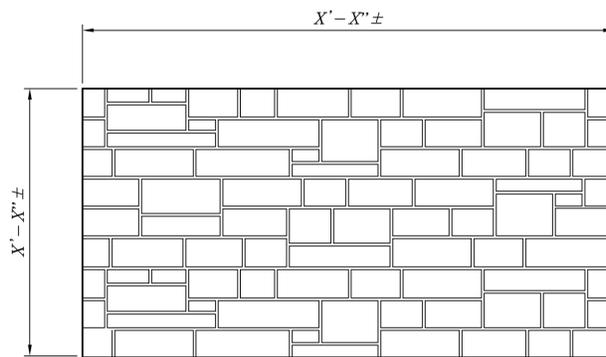
TYPICAL FORMLINER DETAILS

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



EXPANSION JOINT DETAIL

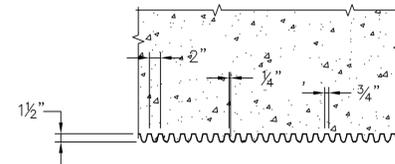
SCALE: 3" = 1'-0"



ELEVATION VIEW

TYPICAL ASHLAR MASONRY PATTERN LAYOUT

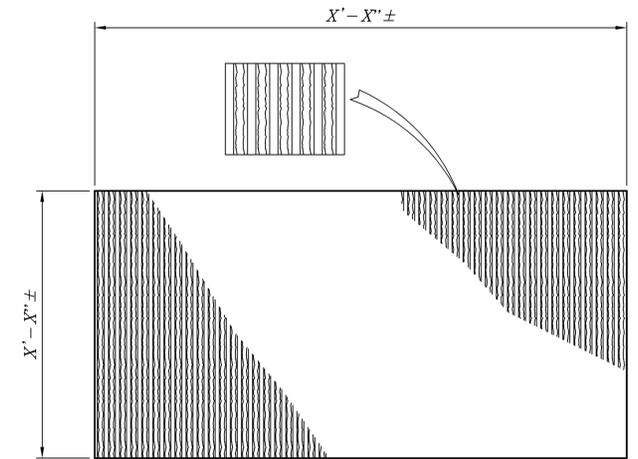
SCALE: 1/2" = 1'-0"



PARTIAL TOP VIEW

TYPICAL FRACTURED RIB PATTERN LAYOUT

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



ELEVATION VIEW

DESIGNER NOTE:

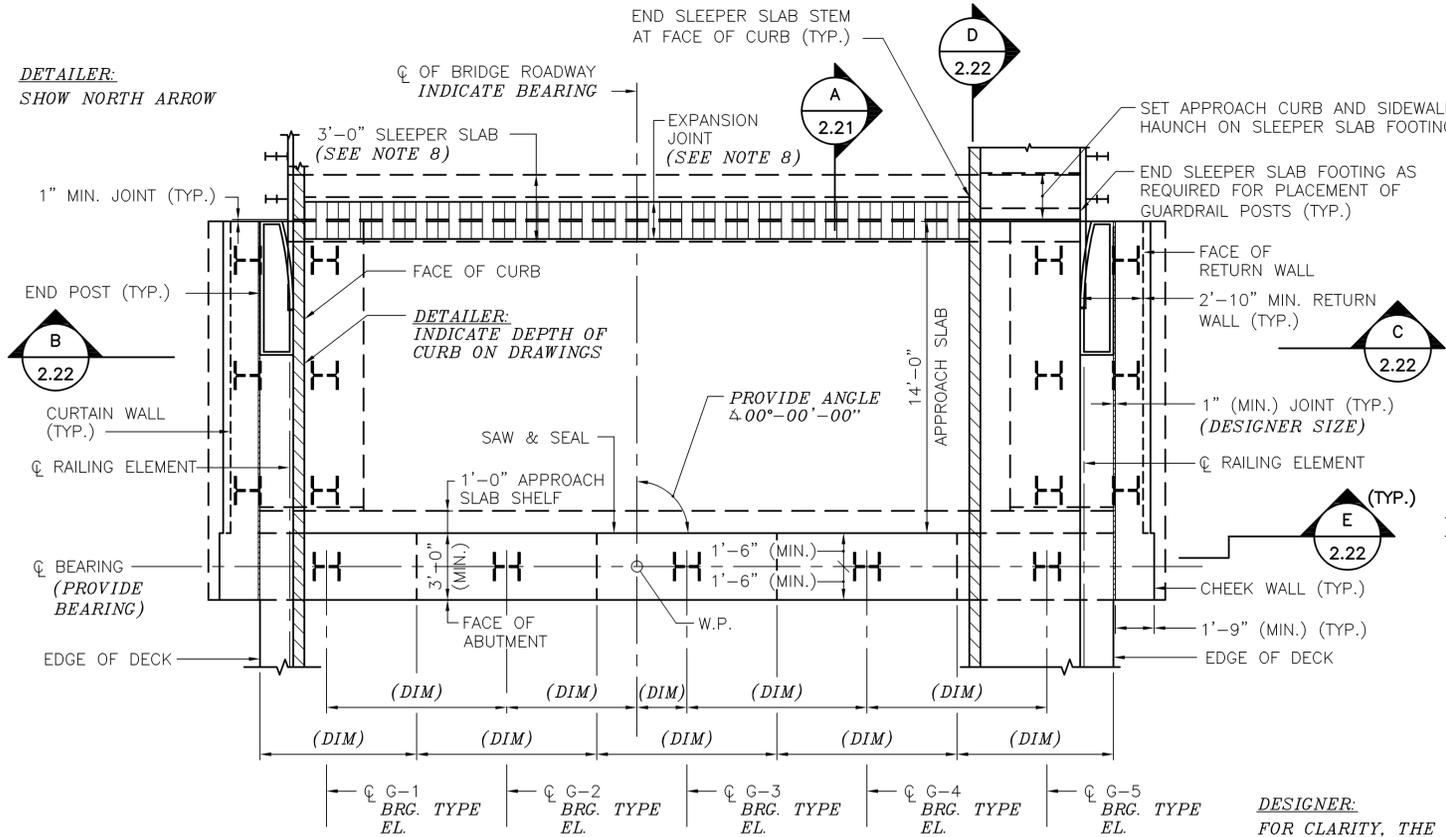
THIS DRAWING DEPICTS SOME POSSIBLE SURFACE TREATMENTS FOR ABUTMENTS AND WALLS, USING FORM LINERS. THE DESIGNER SHALL REFER TO THE RI LRPD BRIDGE DESIGN MANUAL - SECTION 2, FOR BRIDGE AESTHETICS REQUIREMENTS.

NOTES:

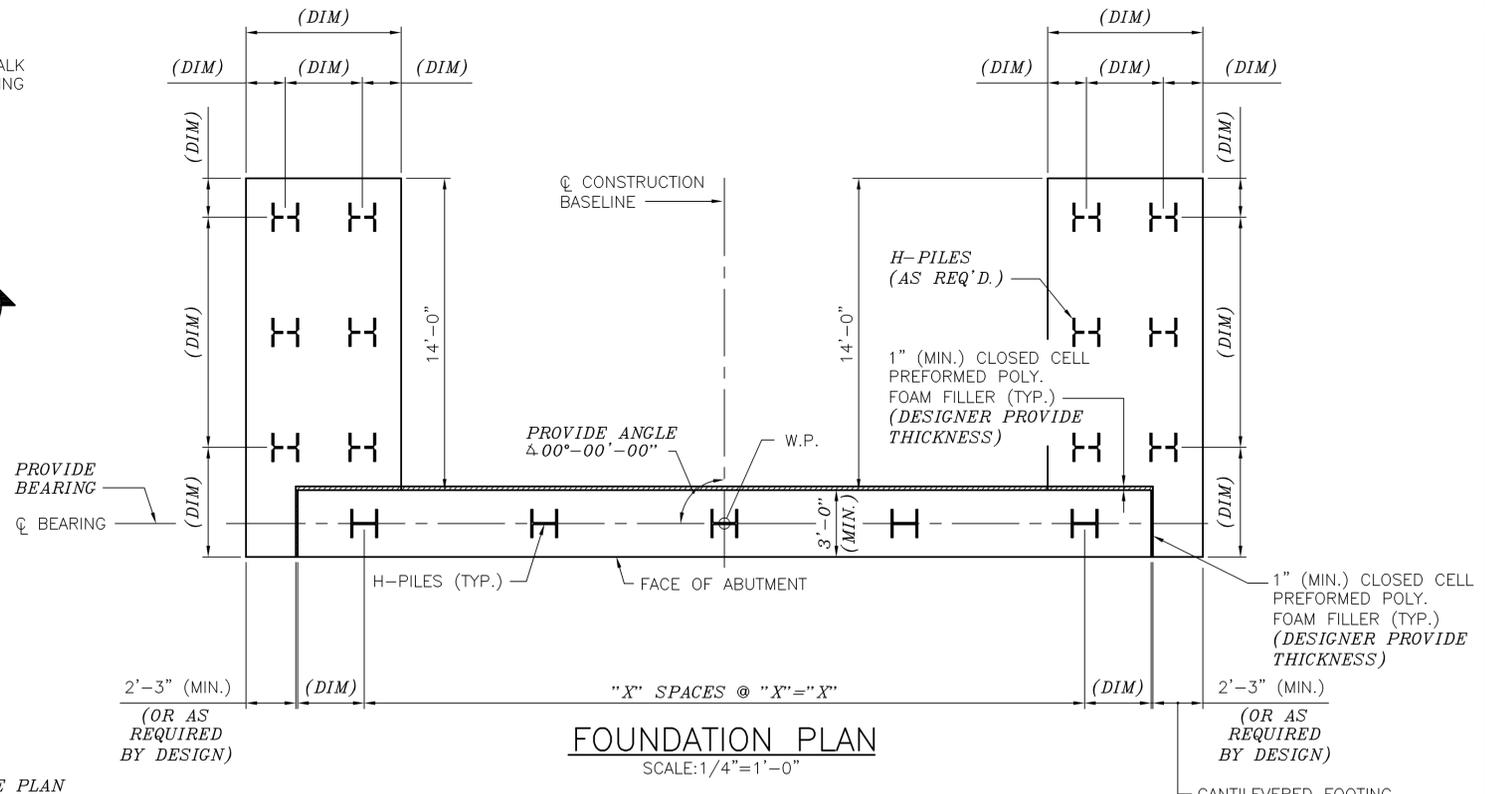
1. THE CONTRACTOR SHALL MAKE SURE THAT THE STRIATION FINS ARE PLUMB AND LINED UP VERTICALLY FROM PANEL TO PANEL.
2. THE HORIZONTAL JOINT MAY BE OMITTED.

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
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		FORMLINER DETAILS
		DRAWING NUMBER: 2.11

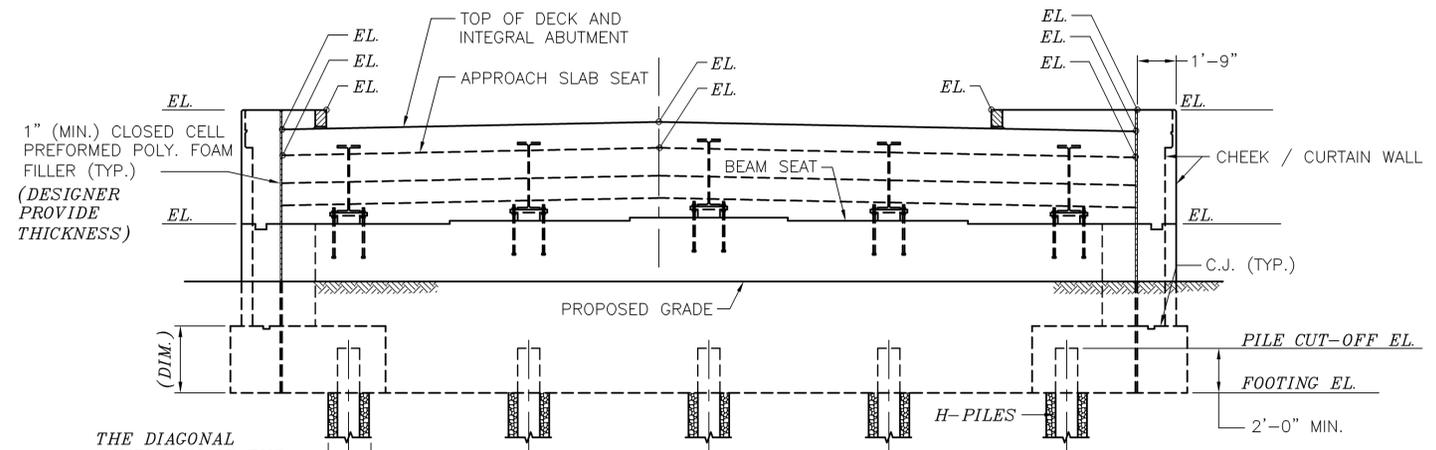
**DETAILER:**  
SHOW NORTH ARROW



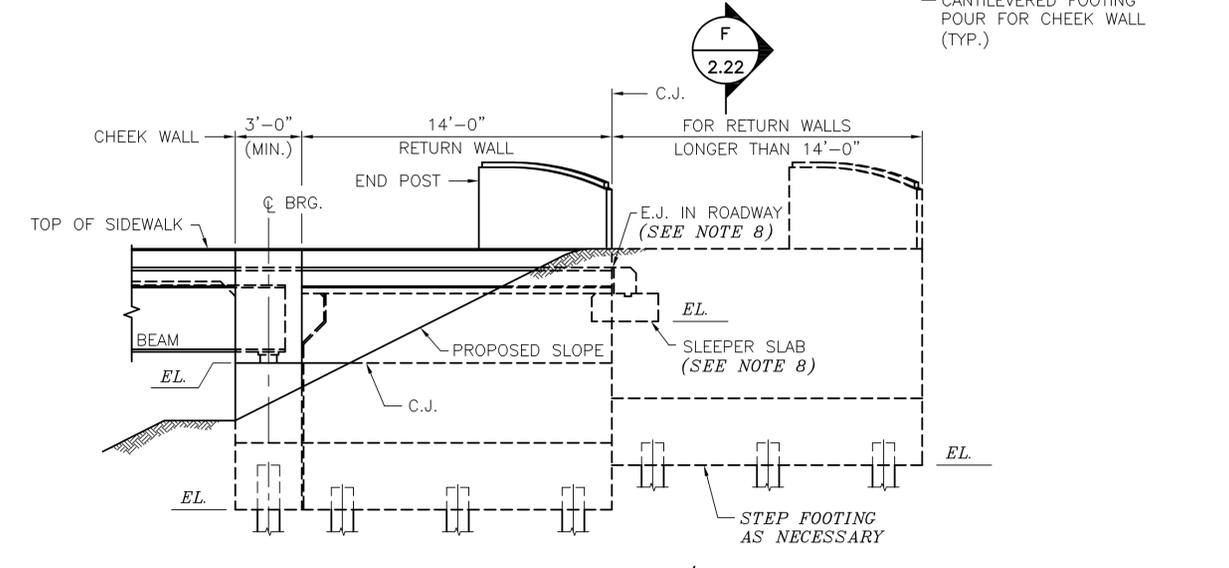
**PLAN AT BEAM SEATS**  
SCALE: 1/4" = 1'-0"



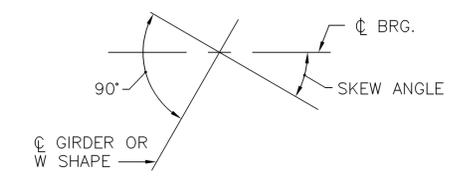
**FOUNDATION PLAN**  
SCALE: 1/4" = 1'-0"



**FRONT ELEVATION**  
SCALE: 1/4" = 1'-0"



**RETURN WALL AT SIDEWALK / SAFETY WALK**  
SCALE: 1/4" = 1'-0"



**SKEW ANGLE DESIGNATION**

**DESIGNER NOTES:**

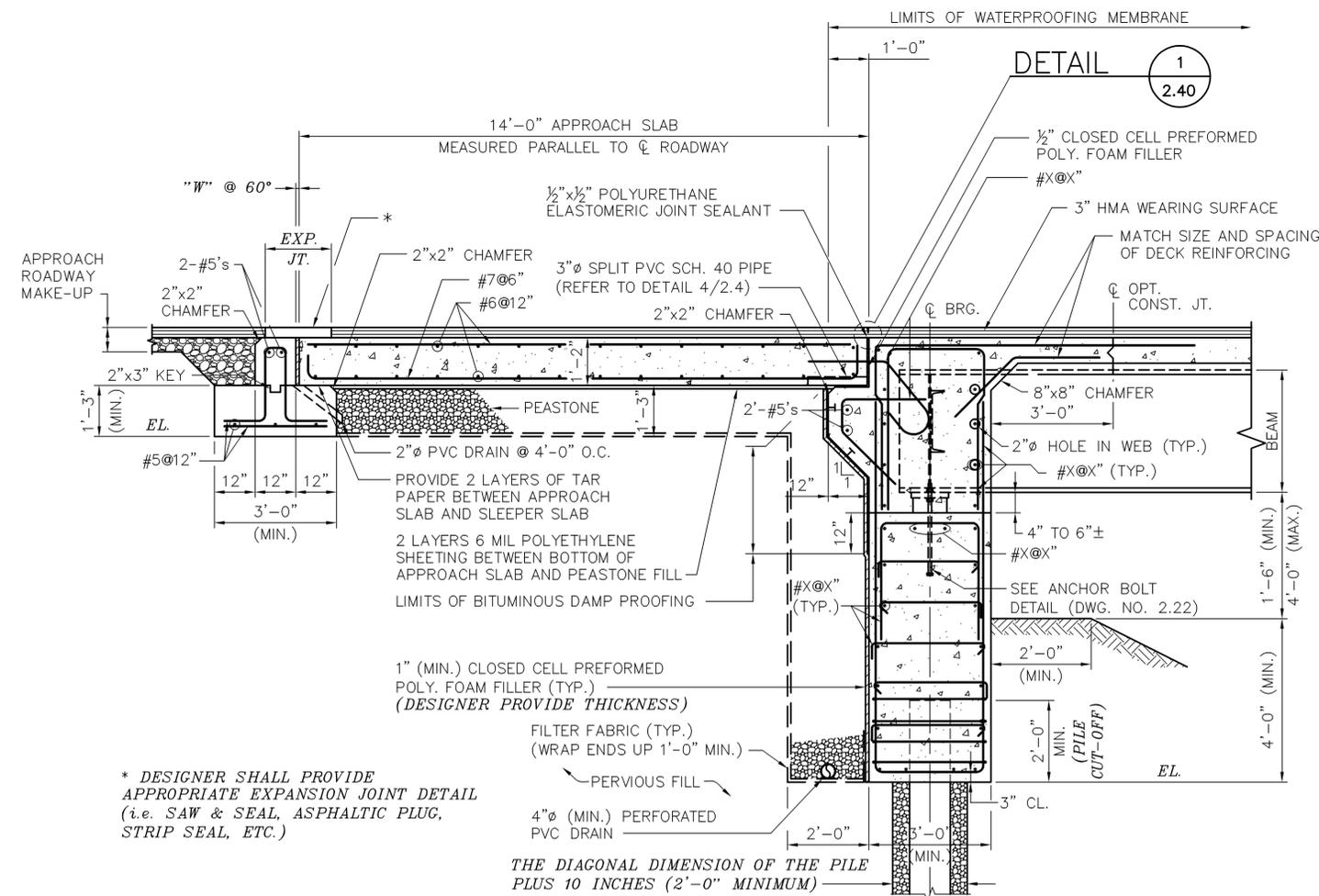
1. THE DESIGNER SHALL REFER TO SECTION 11.3.3 (INTEGRAL ABUTMENTS) OF THE RIDOT LRFD BRIDGE DESIGN MANUAL FOR DESIGN AND DETAILING REQUIREMENTS AND LIMITATIONS ON THE USE OF INTEGRAL ABUTMENTS
2. A NOTE SHALL BE PROVIDED ON THE CONTRACT DRAWINGS STATING THAT THE TOP OF DECK ELEVATIONS ARE GIVEN AT THE FRONT FACE OF INTEGRAL ABUTMENTS.
3. UTILITY PASSAGE THROUGH THE INTEGRAL ABUTMENT SHOULD BE AVOIDED. (SEE SECTION 11.3.3 OF THE RIDOT LRFD BRIDGE DESIGN MANUAL).
4. ABUTMENT DETAILS FOR SKEWED ABUTMENTS ARE SIMILAR.
5. REINFORCING SHOWN IS MINIMUM ONLY.
6. THE SUGGESTED SCALE FOR ANY ABUTMENT PLAN AND ELEVATION IS 1/4" = 1'-0".
7. REFERENCES TO END POSTS AND CENTERLINES OF RAILING ELEMENTS ARE INTENDED TO REFER TO THE DETAILS SHOWN ELSEWHERE IN THESE BRIDGE STANDARDS (SEE APPROPRIATE DETAILS).
8. SLEEPER SLAB AND EXPANSION JOINT IN ROADWAY MAY BE OMITTED FOR BRIDGE SUPERSTRUCTURE SPANS 60 FEET OR LESS.
9. SEE DWG. 2.22 FOR RETURN WALL DETAILS

REVISIONS	
No.	DATE

RHODE ISLAND  
DEPARTMENT OF TRANSPORTATION  
BRIDGE STANDARDS

**INTEGRAL ABUTMENT  
SHEET 1**

DRAWING NUMBER: 2.20

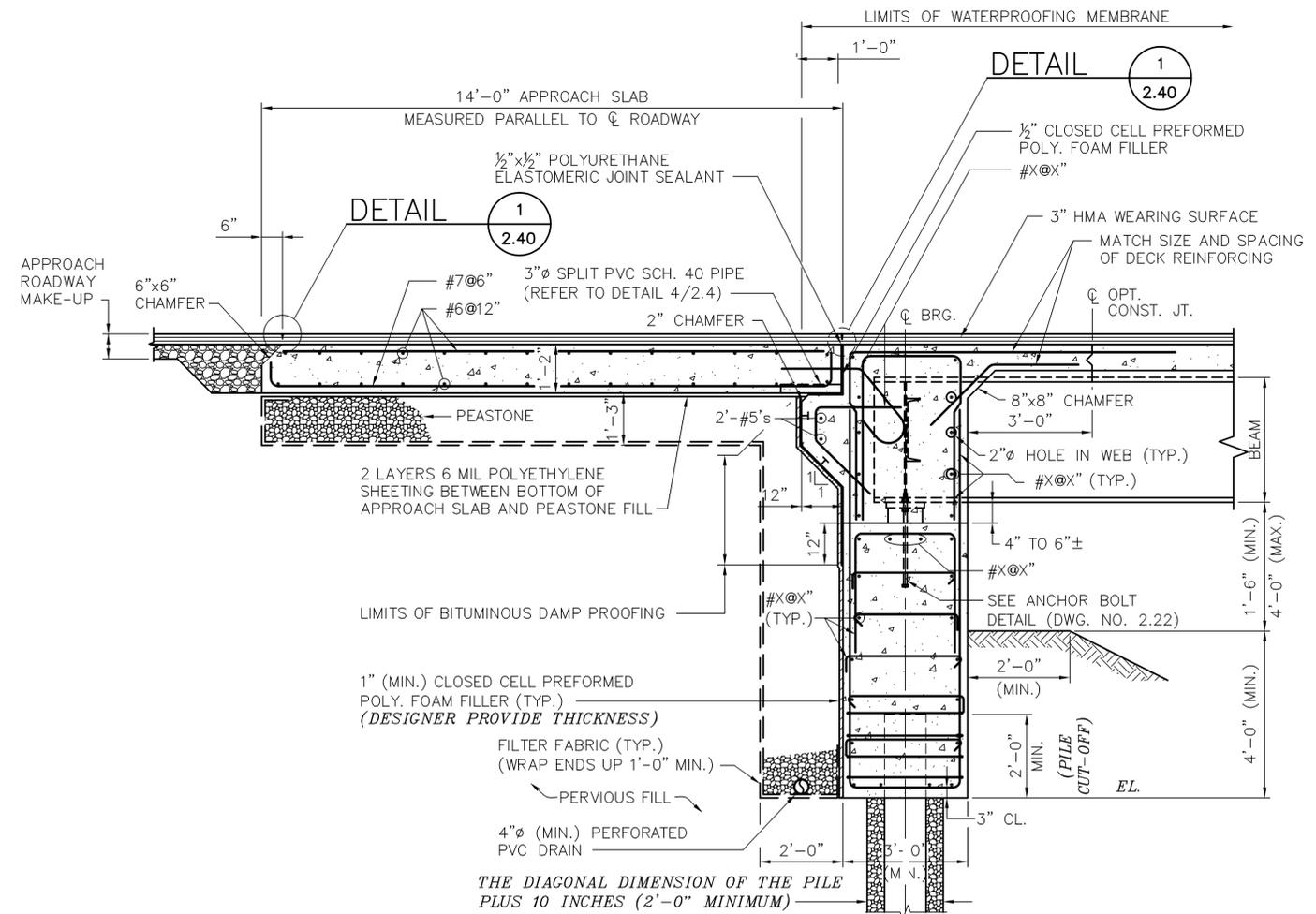


\* DESIGNER SHALL PROVIDE APPROPRIATE EXPANSION JOINT DETAIL (i.e. SAW & SEAL, ASPHALTIC PLUG, STRIP SEAL, ETC.)

THE DIAGONAL DIMENSION OF THE PILE PLUS 10 INCHES (2'-0" MINIMUM)

SPANS > 60'-0"

SECTION A  
SCALE: 1/2" = 1'-0" 2.21



2 LAYERS 6 MIL POLYETHYLENE SHEETING BETWEEN BOTTOM OF APPROACH SLAB AND PEASTONE FILL

1" (MIN.) CLOSED CELL PREFORMED POLY. FOAM FILLER (TYP.) (DESIGNER PROVIDE THICKNESS)

FILTER FABRIC (TYP.) (WRAP ENDS UP 1'-0" MIN.)

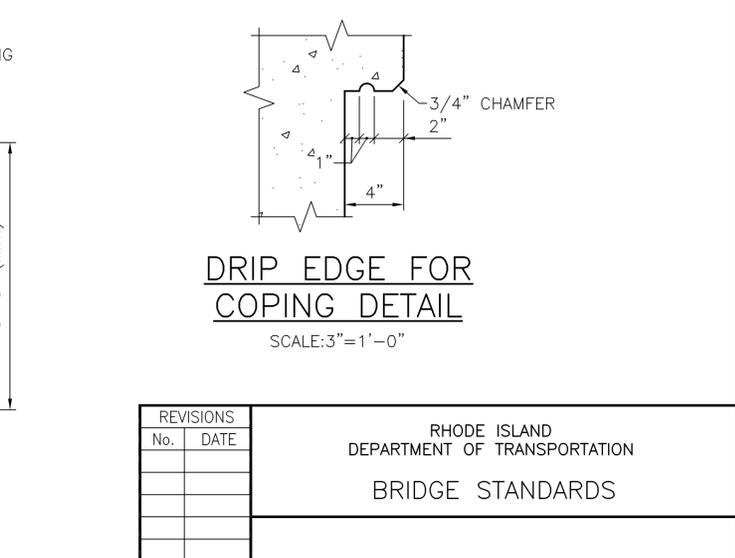
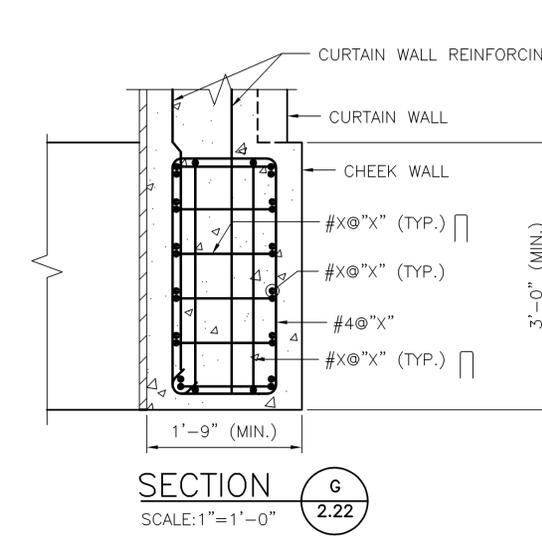
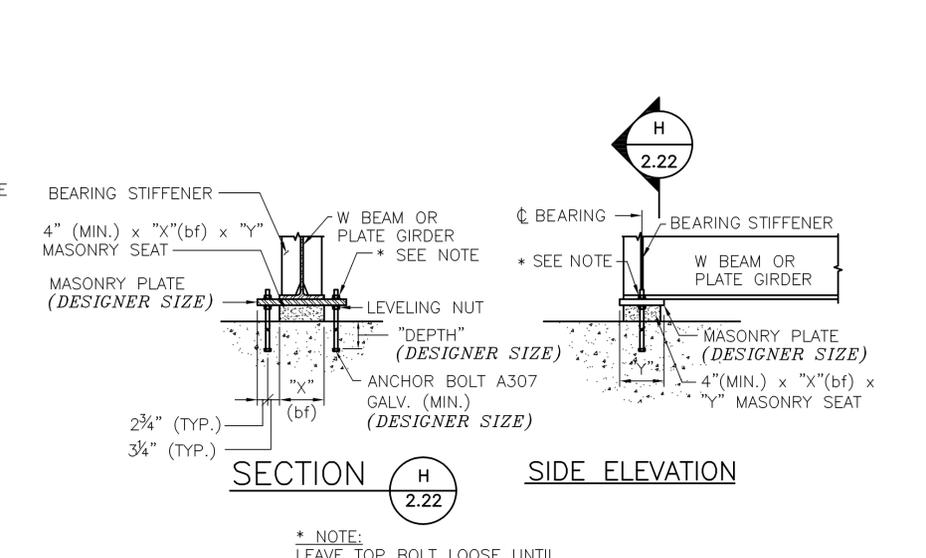
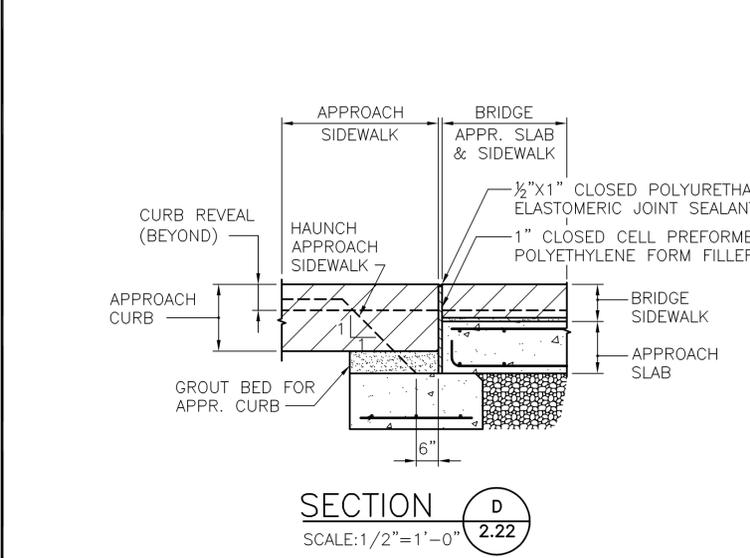
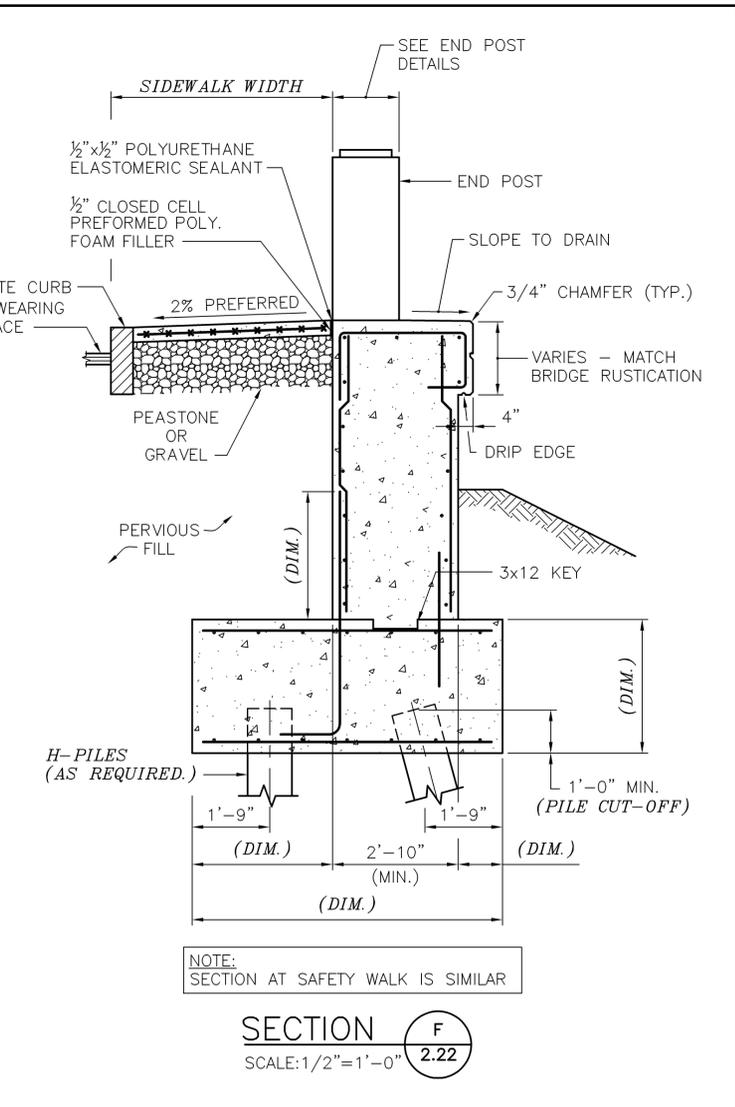
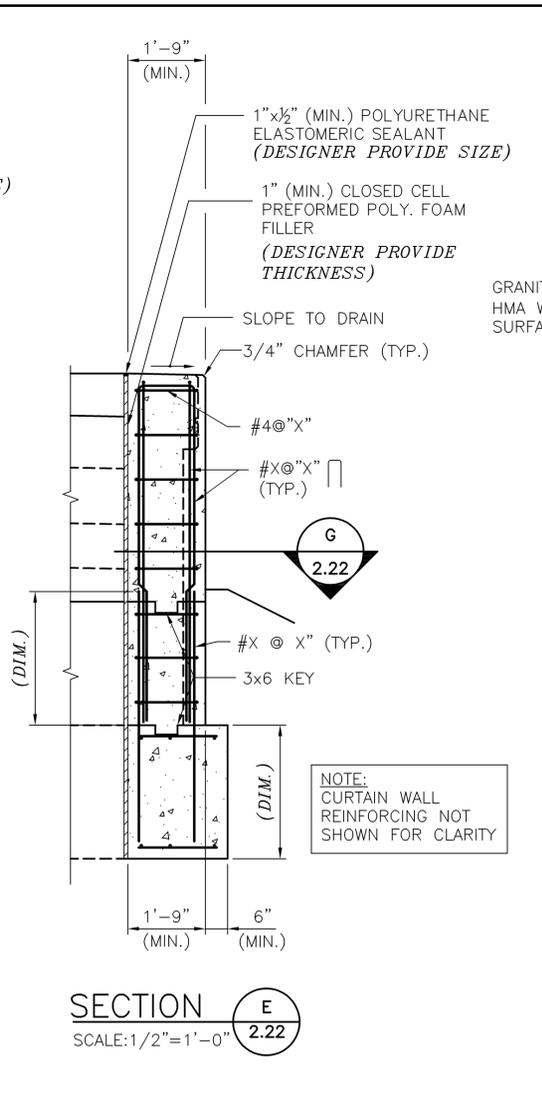
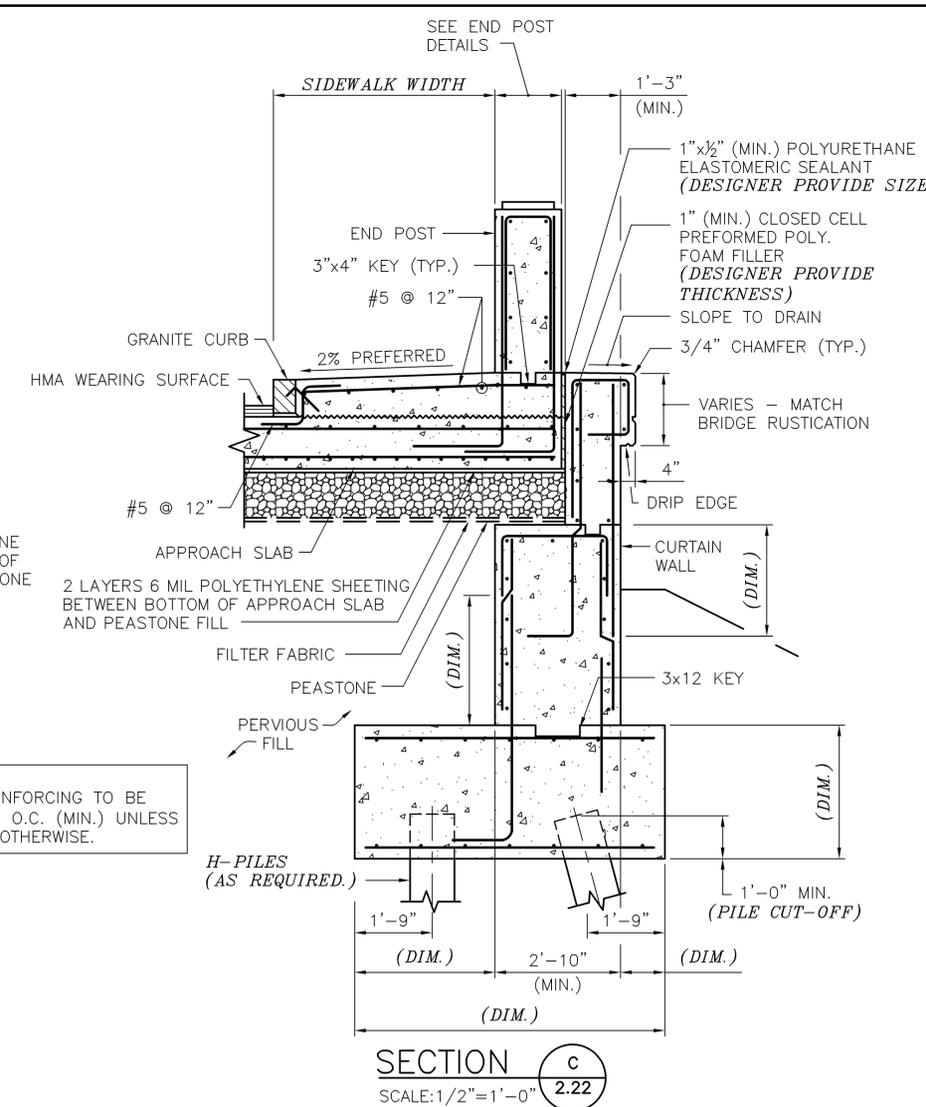
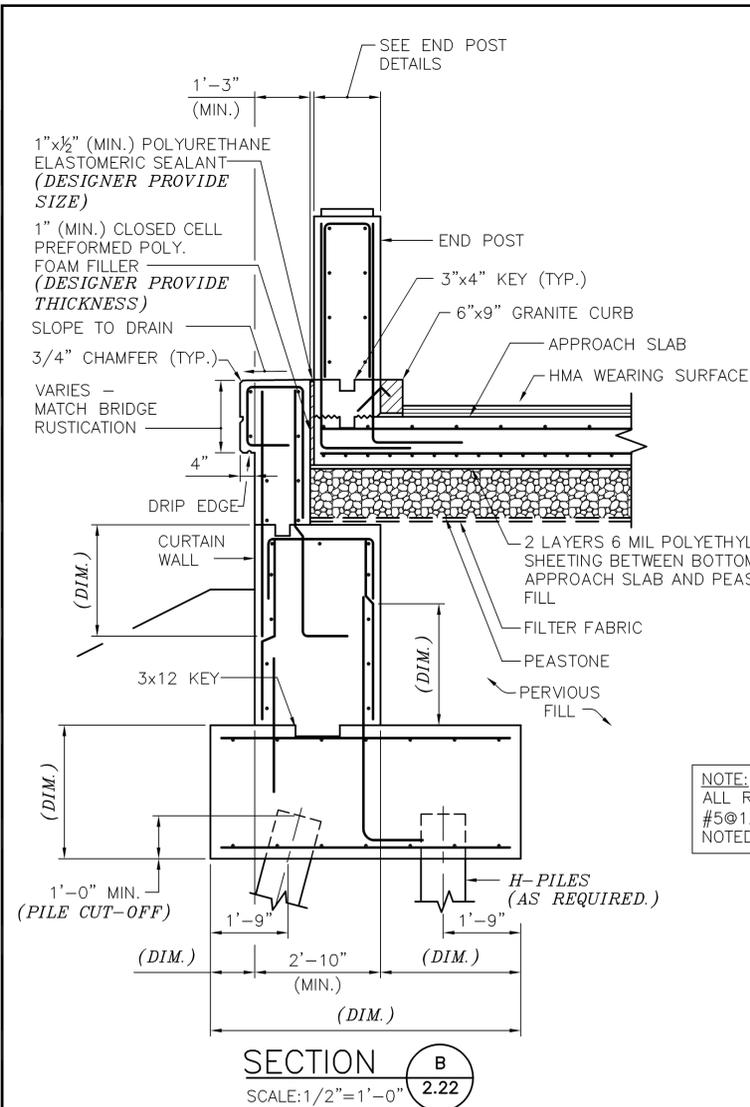
4" (MIN.) PERFORATED PVC DRAIN

THE DIAGONAL DIMENSION OF THE PILE PLUS 10 INCHES (2'-0" MINIMUM)

SPANS ≤ 60'-0"

SECTION A  
SCALE: 1/2" = 1'-0" 2.21

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
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		INTEGRAL ABUTMENT SHEET 2
		DRAWING NUMBER: 2.21



NOTE:  
ALL REINFORCING TO BE  
#5@12" O.C. (MIN.) UNLESS  
NOTED OTHERWISE.

NOTE:  
CURTAIN WALL  
REINFORCING NOT  
SHOWN FOR CLARITY

NOTE:  
SECTION AT SAFETY WALK IS SIMILAR

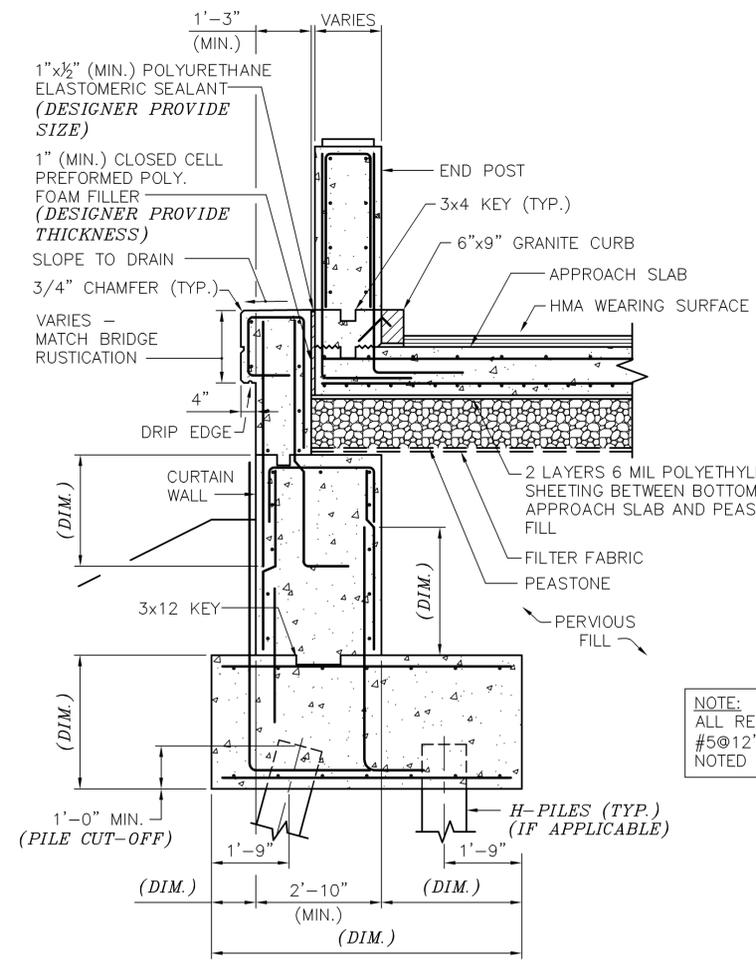
\* NOTE:  
LEAVE TOP BOLT LOOSE UNTIL  
DECK CONCRETE IS PLACED

ANCHOR BOLT DETAIL  
SCALE: 1/2" = 1'-0"

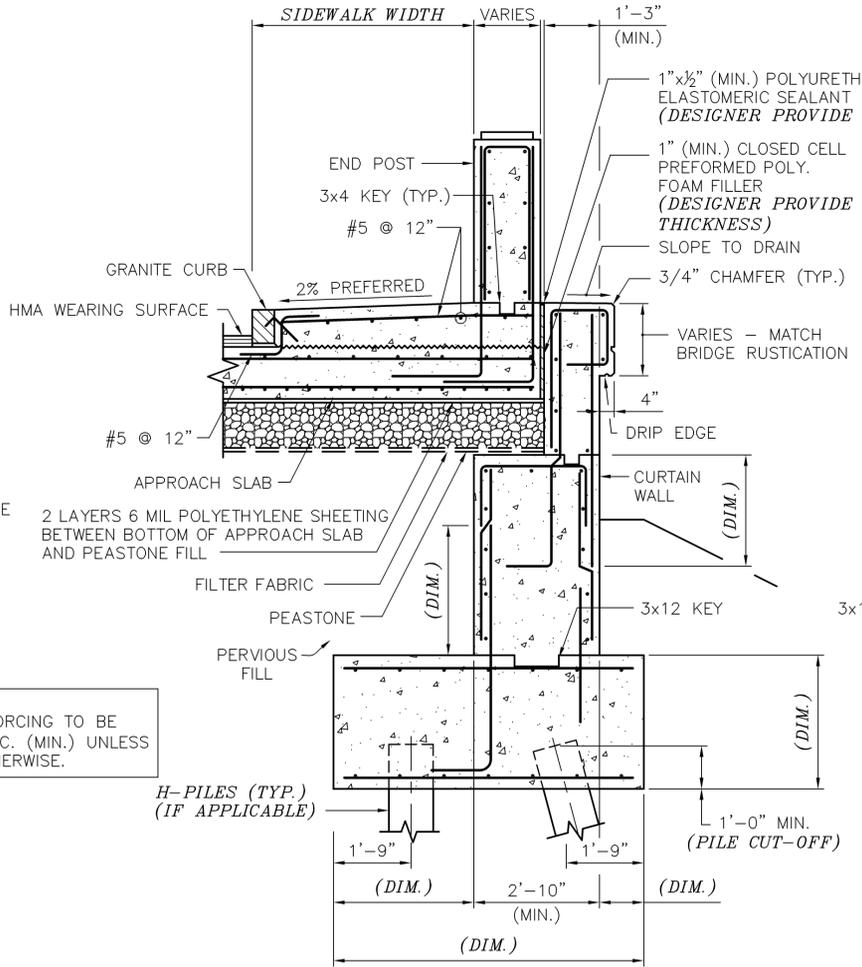
REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
No.	DATE	
		INTEGRAL ABUTMENT SHEET 3
		DRAWING NUMBER: 2.22



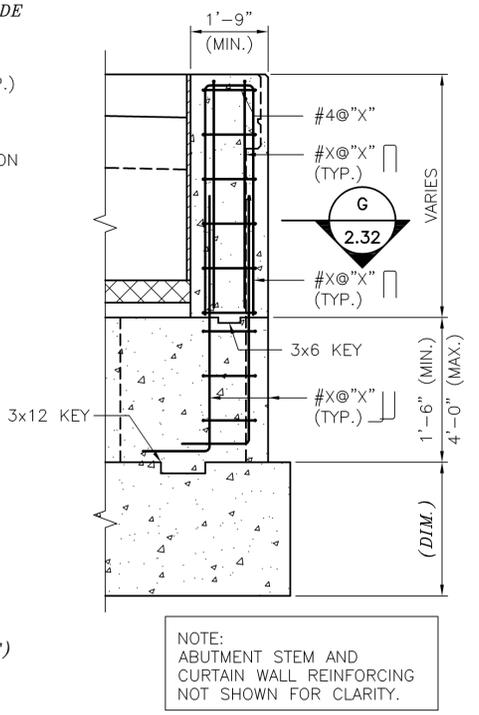




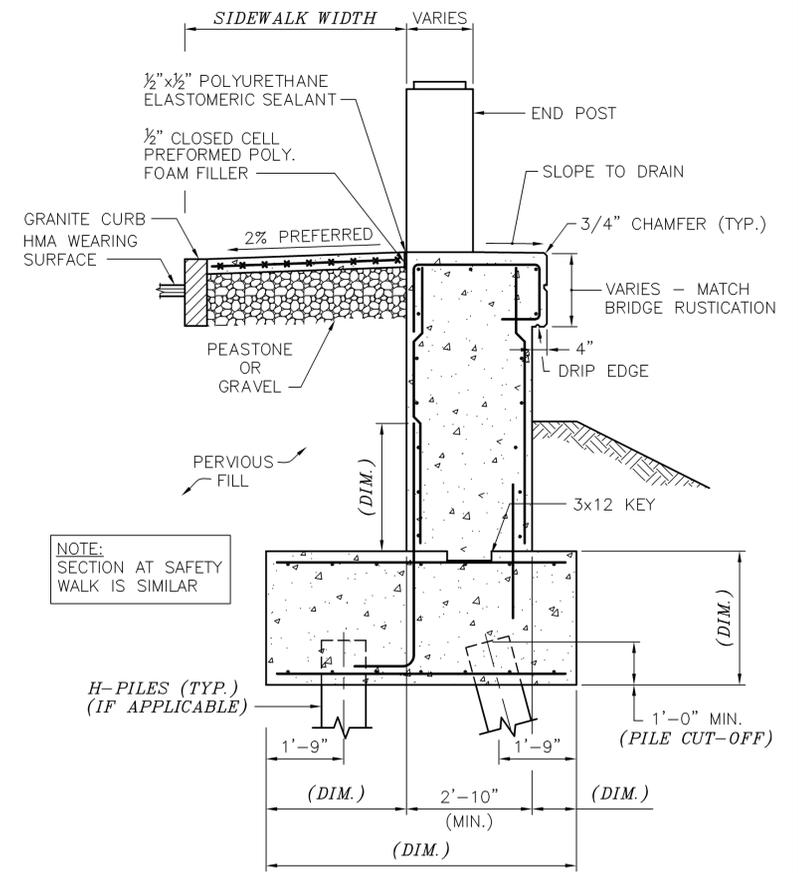
SECTION B  
SCALE: 1/2" = 1'-0"  
2.32



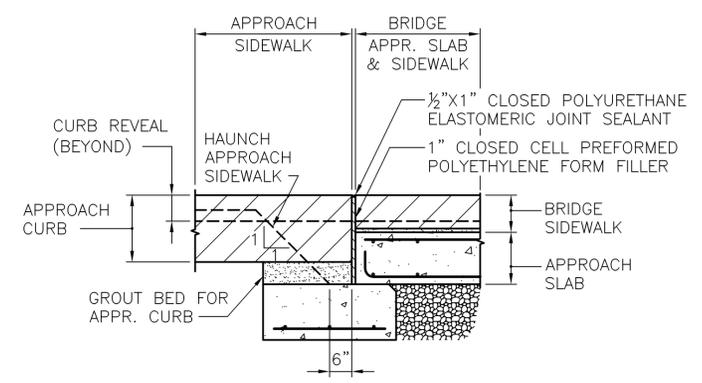
SECTION C  
SCALE: 1/2" = 1'-0"  
2.32



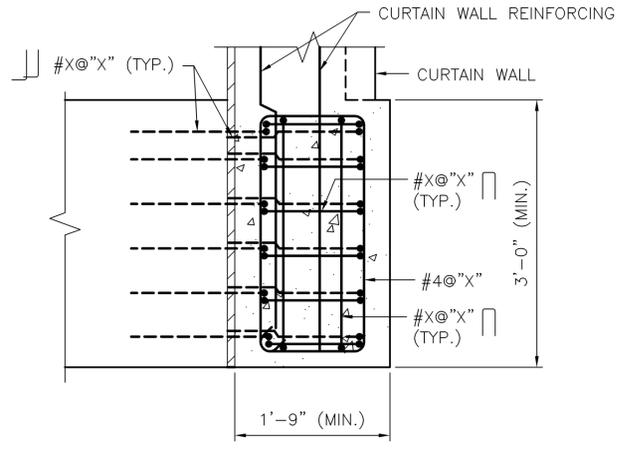
SECTION E  
SCALE: 1/2" = 1'-0"  
2.32



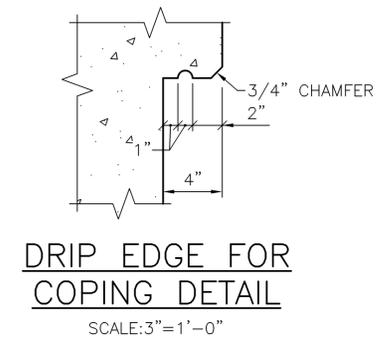
SECTION F  
SCALE: 1/2" = 1'-0"  
2.32



SECTION D  
SCALE: 1/2" = 1'-0"  
2.32



SECTION G  
SCALE: 1" = 1'-0"  
2.32

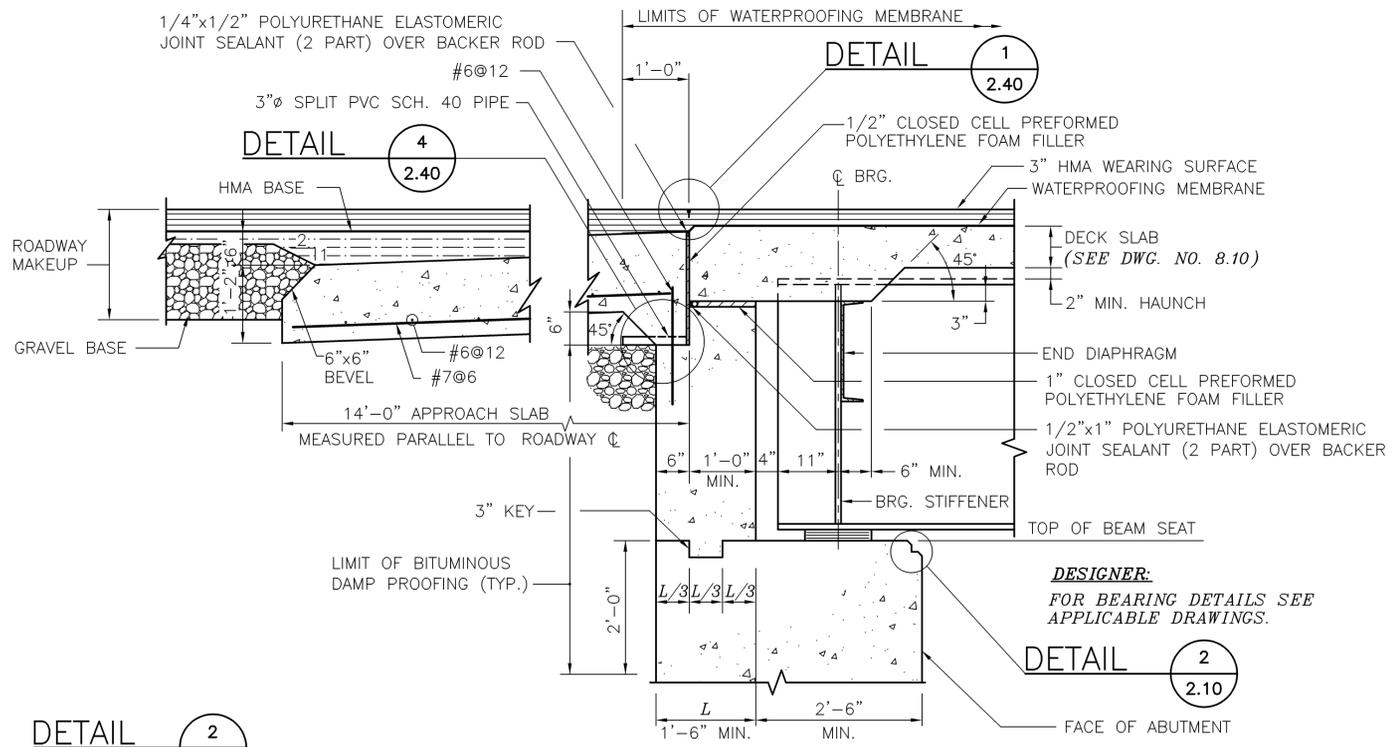


REVISIONS	
No.	DATE

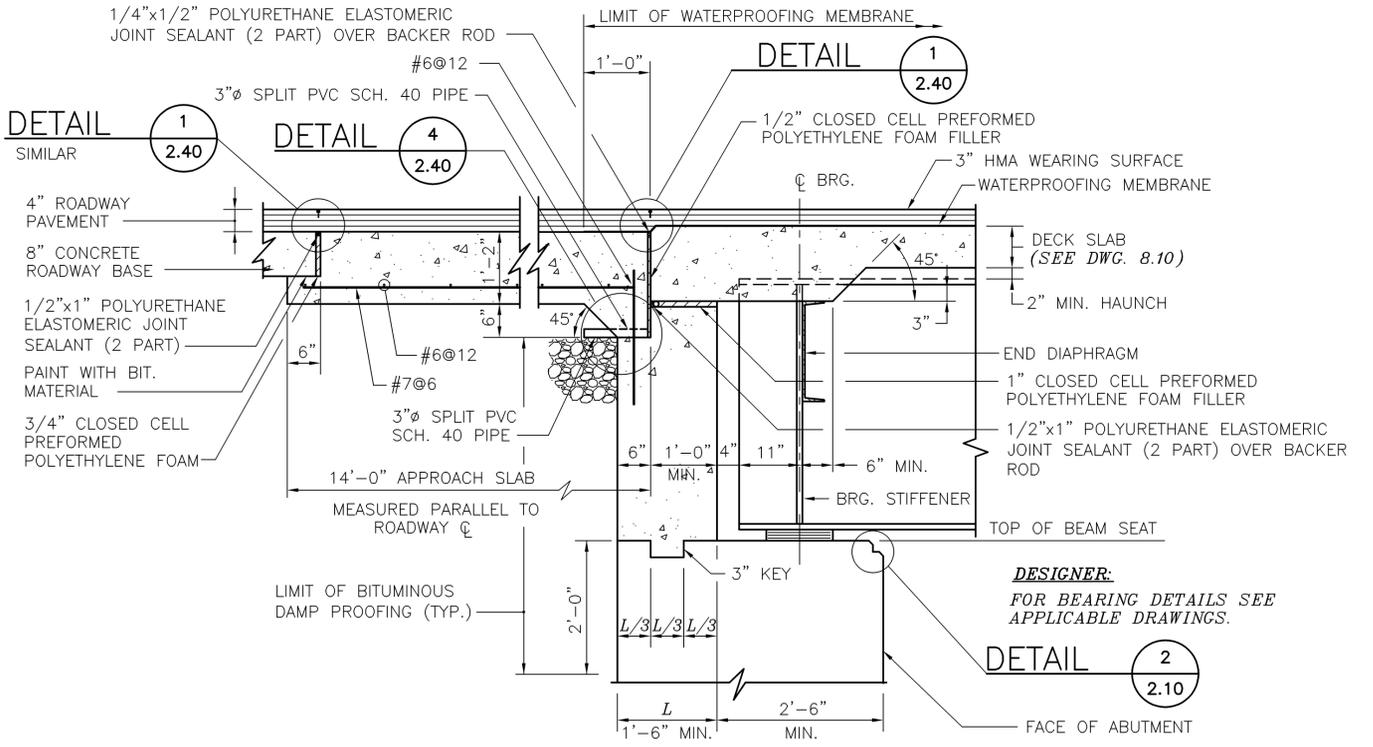
RHODE ISLAND  
DEPARTMENT OF TRANSPORTATION  
BRIDGE STANDARDS

SEMI INTEGRAL ABUTMENT  
SHEET 3

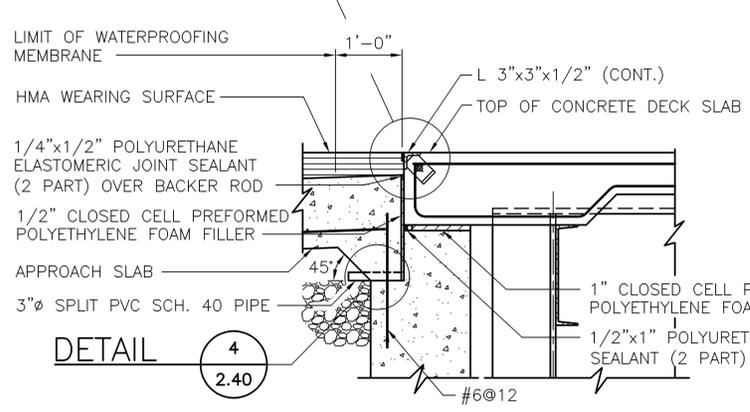
DRAWING NUMBER: 2.32



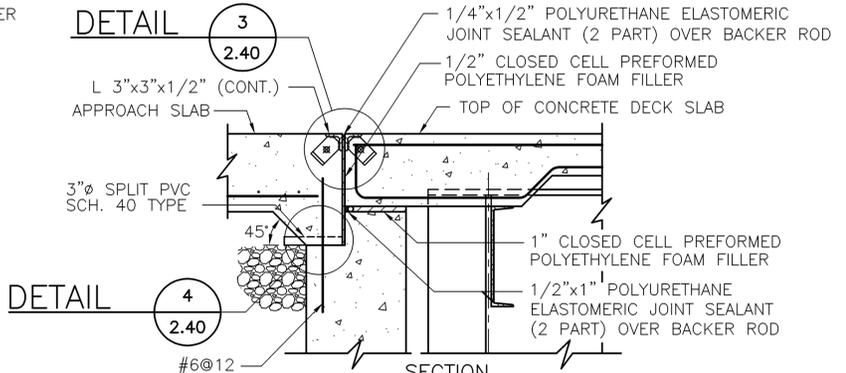
**ABUTMENT BACKWALL TYPE-1**



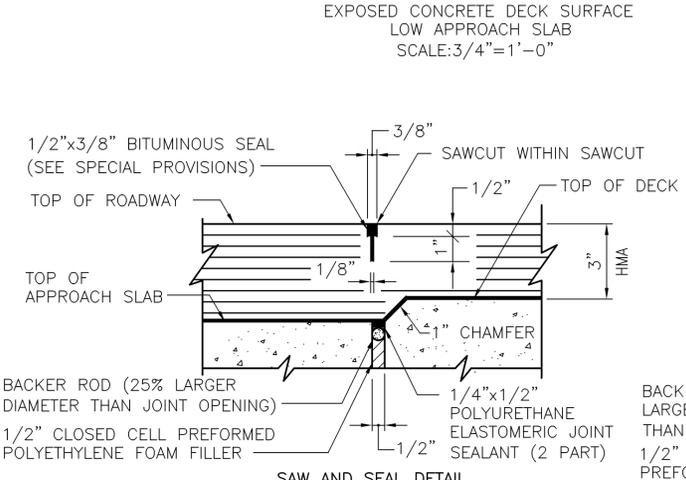
**ABUTMENT BACKWALL TYPE-2**



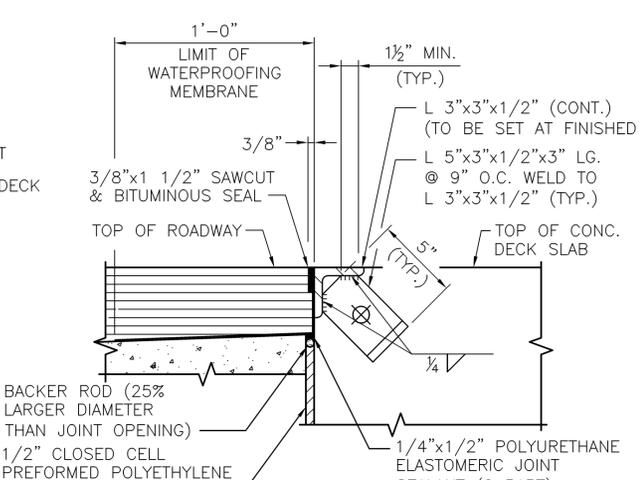
**ABUTMENT BACKWALL TYPE-3**



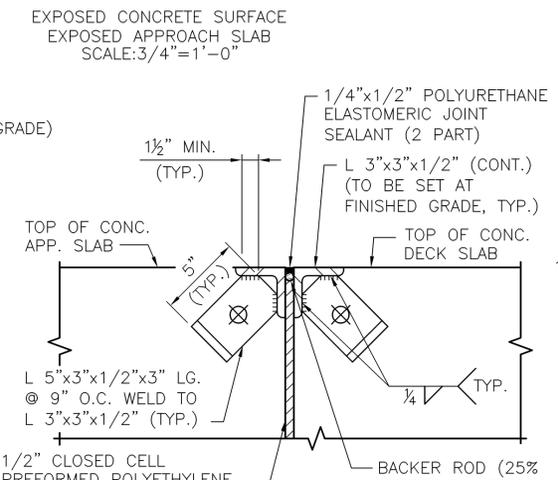
**ABUTMENT BACKWALL TYPE-4**



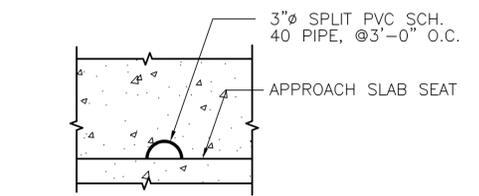
**DETAIL 1**  
NOT TO SCALE 2.40



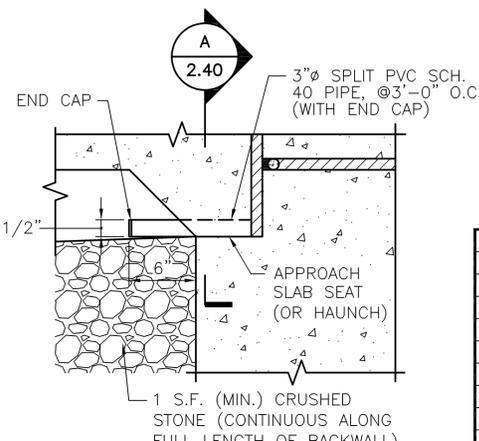
**DETAIL 2**  
NOT TO SCALE 2.40



**DETAIL 3**  
NOT TO SCALE 2.40



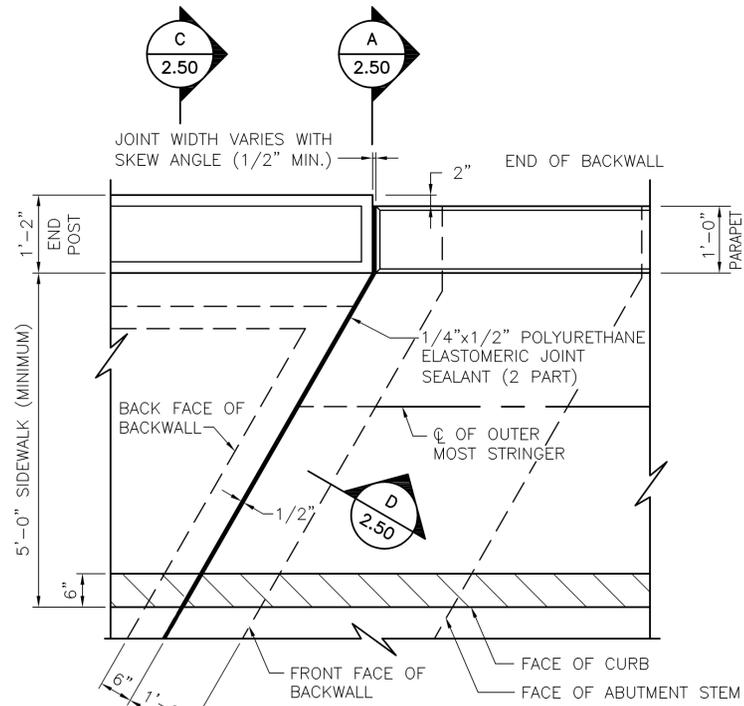
**SECTION A**  
NOT TO SCALE 2.40



**DETAIL 4**  
NOT TO SCALE 2.40

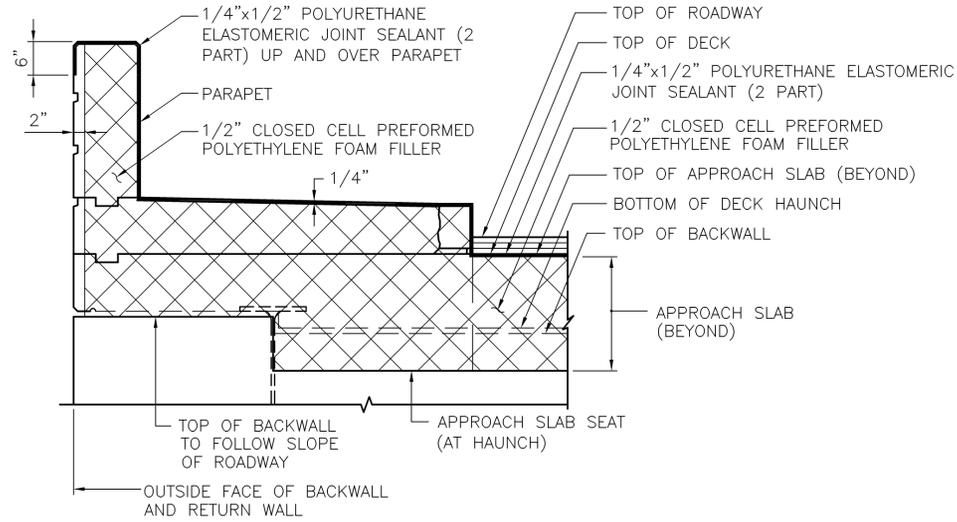
- DESIGNER NOTES:**
1. THE BEAM SEAT WIDTH SPECIFIED IS THE MINIMUM. WHEN DETAILING BEAM SEAT WIDTHS, CONSIDERATION SHALL BE GIVEN TO SEISMIC REQUIREMENTS AS WELL AS SKEW ANGLE.
  2. DETAILS SHOWN ARE FOR STEEL BEAMS SEE SHEETS 7.30 & 7.80 FOR PRESTRESSED BEAM JOINT DETAILS.
  3. FOR DETAILS AT SIDEWALK, CURB AND BARRIER, REFER TO DWG. 2.50.
  4. THESE DETAILS ARE ALSO APPLICABLE TO EXPANSION JOINTS FOR BEAMS WITH SHORT SPAN LENGTHS AND LIMITED SKEW ANGLES.

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
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		FIXED JOINTS AT ABUTMENTS SHEET 1
DRAWING NUMBER: 2.40		

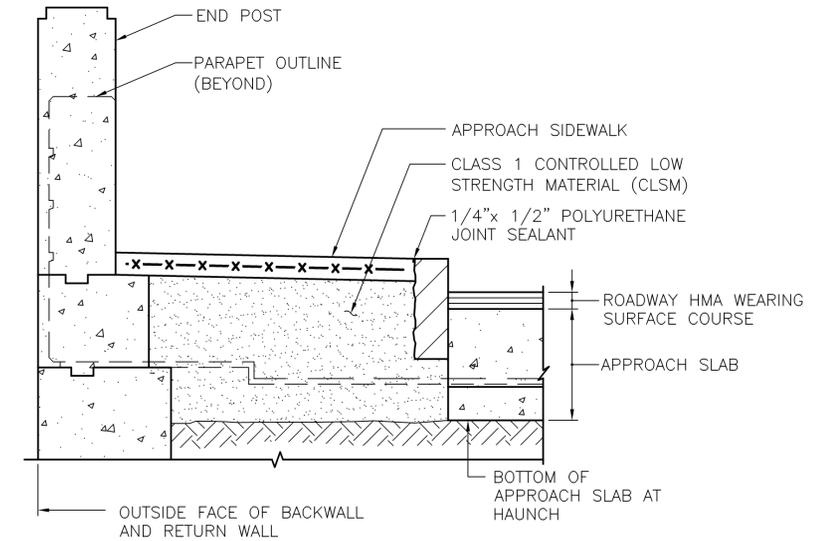


**PLAN AT SIDEWALK**

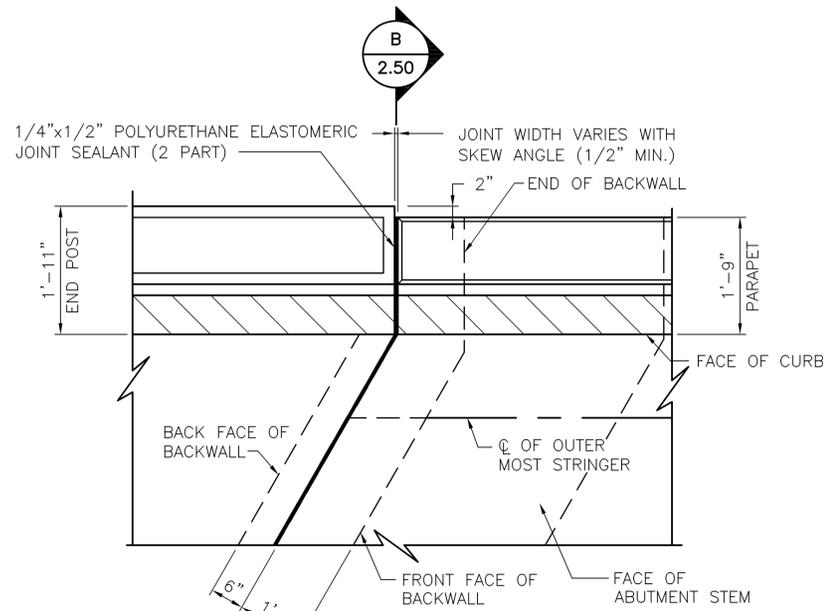
SKREW ANGLE LESS THAN 45° (30° SHOWN)  
SCALE: 3/4"=1'-0"



**SECTION A**  
SCALE: 3/4"=1'-0" 2.50

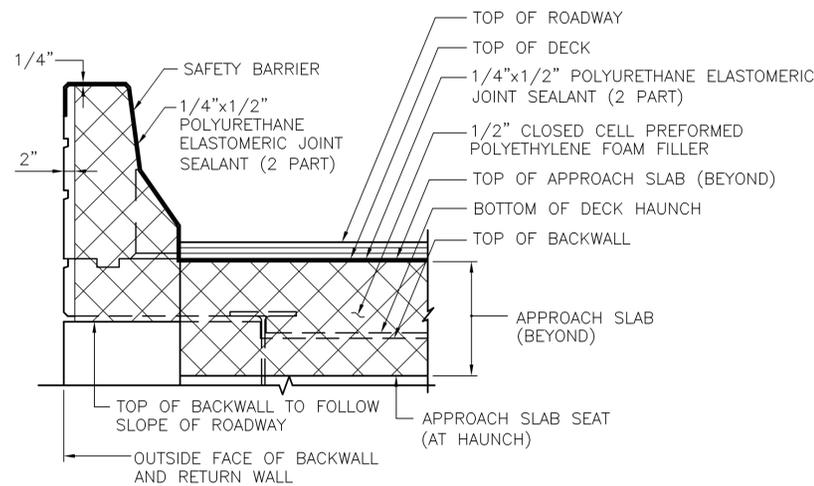


**SECTION C**  
SCALE: 3/4"=1'-0" 2.50

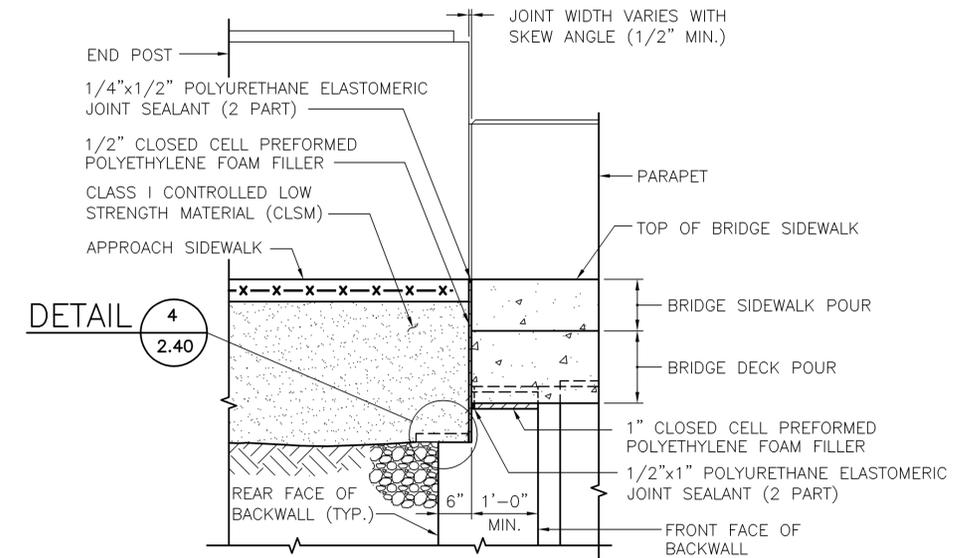


**PLAN AT SAFETY BARRIER**

SKREW ANGLE LESS THAN 45° (30° SHOWN)  
SCALE: 3/4"=1'-0"



**SECTION B**  
SCALE: 3/4"=1'-0" 2.50



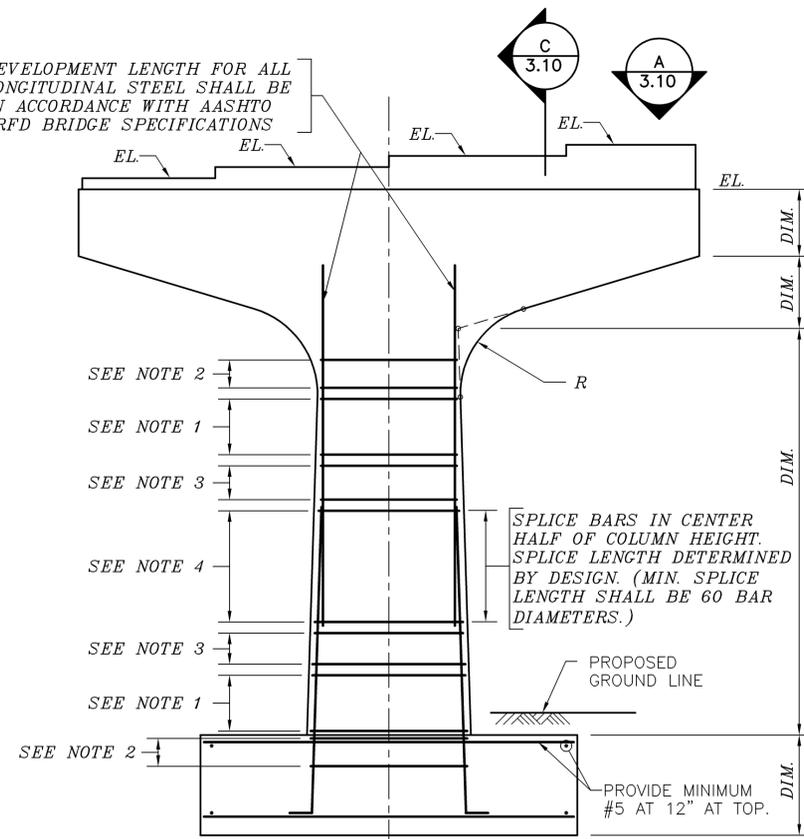
**SECTION D**  
SCALE: 3/4"=1'-0" 2.50

**DESIGNER:**

1. THE DETAILS SHOWN ON THIS SHEET CORRESPOND TO ABUTMENT BACKWALL TYPE-1 AS SHOWN ON DWG. 2.40. THE DETAILS FOR ABUTMENT BACKWALL TYPES-2, 3, AND 4 ARE SIMILAR.

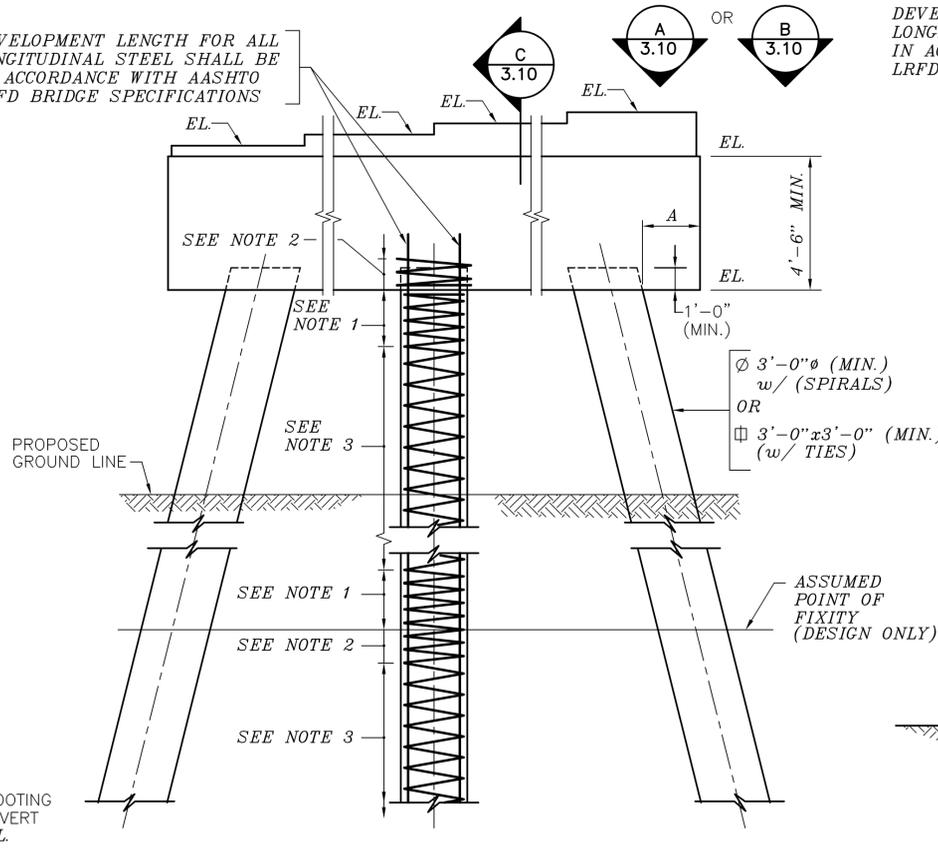
REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
No.	DATE	
		FIXED JOINTS AT ABUTMENTS SHEET 2
		DRAWING NUMBER: 2.50

DEVELOPMENT LENGTH FOR ALL LONGITUDINAL STEEL SHALL BE IN ACCORDANCE WITH AASHTO LRFD BRIDGE SPECIFICATIONS



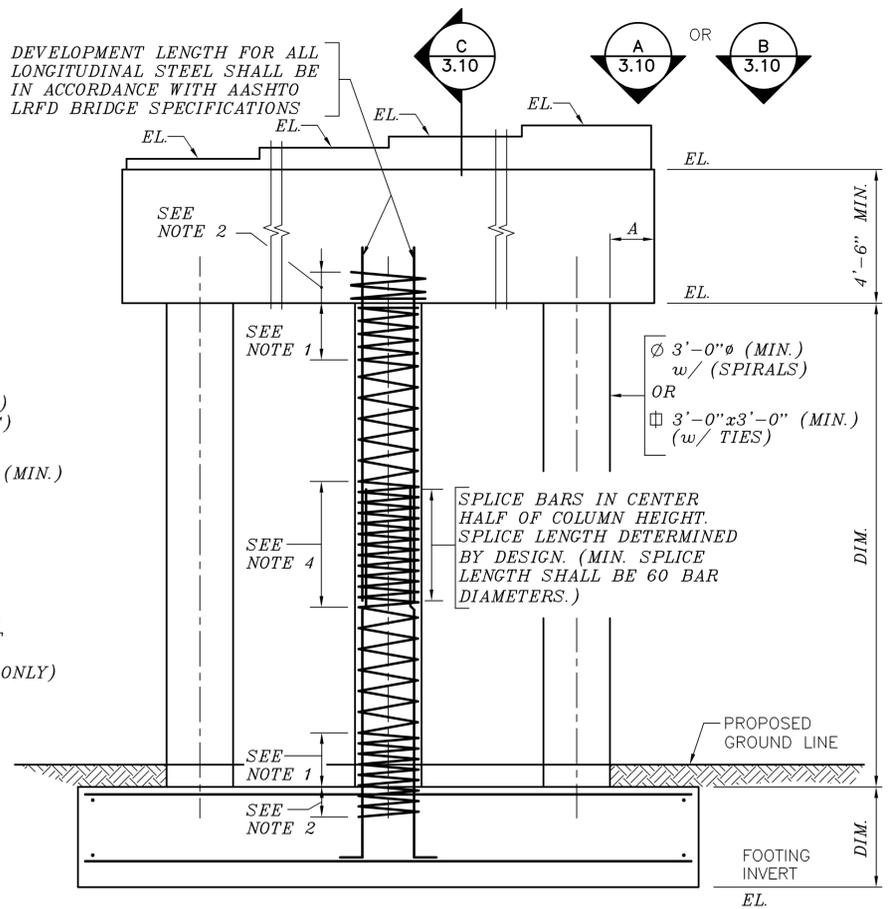
TEE PIER

DEVELOPMENT LENGTH FOR ALL LONGITUDINAL STEEL SHALL BE IN ACCORDANCE WITH AASHTO LRFD BRIDGE SPECIFICATIONS



BENT TYPE PIER

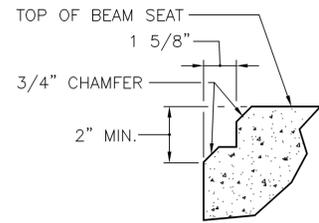
DEVELOPMENT LENGTH FOR ALL LONGITUDINAL STEEL SHALL BE IN ACCORDANCE WITH AASHTO LRFD BRIDGE SPECIFICATIONS



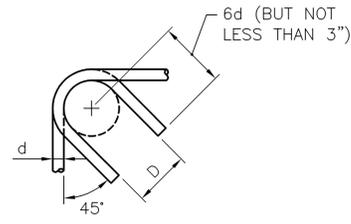
BENT TYPE PIER

**DESIGNER NOTES:**

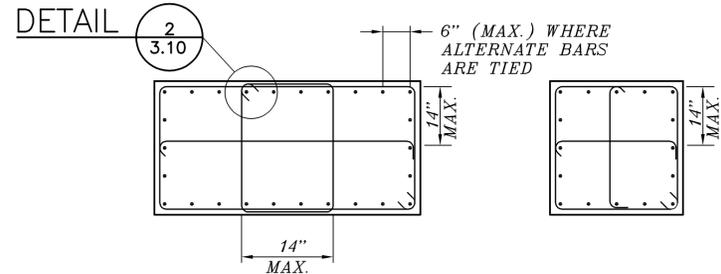
1. PROVIDE TRANSVERSE (CONFINEMENT) STEEL IN ACCORDANCE WITH AASHTO SEISMIC AND OTHER LOADING CRITERIA. TRANSVERSE (CONFINEMENT) STEEL SHALL BE PROVIDED FOR A MINIMUM LENGTH EQUAL TO THE GREATER OF:
  - MAXIMUM CROSS-SECTIONAL COLUMN DIMENSION
  - 1/6 OF THE CLEAR HEIGHT OF COLUMN
  - 18 INCHES
 MAXIMUM TIES (OR SPIRAL) SPACING SHALL BE 6 INCHES.
2. EXTEND TRANSVERSE (CONFINEMENT) STEEL FOR A LENGTH EQUAL TO ONE-HALF THE MAXIMUM CROSS-SECTIONAL COLUMN DIMENSION BUT NOT LESS THAN 15 INCHES. MINIMUM TIES OR SPIRAL SPACING SHALL BE 6 INCHES.
3. PROVIDE TRANSVERSE (CONFINEMENT) STEEL IN ACCORDANCE WITH AASHTO SEISMIC AND OTHER LOADING REQUIREMENTS.
4. SPACING OF TRANSVERSE (CONFINEMENT) STEEL OVER THE LENGTH OF THE SPLICE SHALL NOT EXCEED ONE-QUARTER OF THE MINIMUM CROSS-SECTIONAL COLUMN DIMENSION OR 4 INCHES.
5. DESIGNER SHALL REFER TO THE RIDOT LRFD BRIDGE DESIGN MANUAL (SECTION 11.4) FOR CRASH PROTECTION WALL REQUIREMENTS ADJACENT TO AND IN CLOSE PROXIMITY OF RAILROAD TRACKS.
6. LAP SPLICES IN LONGITUDINAL REINFORCEMENT IN POTENTIAL PLASTIC HINGE REGIONS ARE NOT PERMITTED. FULL MECHANICAL CONNECTION SPLICES IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS MAY BE USED. MECHANICAL SPLICES IN ADJACENT BARS SHALL BE STAGGERED 24" APART. TRANSVERSE SPACING SHALL BE IN ACCORDANCE WITH NOTE 4.
7. LAP SPLICES IN TRANSVERSE REINFORCEMENT IN POTENTIAL PLASTIC HINGE REGIONS ARE NOT PERMITTED. FULL MECHANICAL CONNECTION SPLICES IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS MAY BE USED.
8. DESIGNER SHALL ADD A NOTE TO THE PLANS SPECIFYING THE REQUIREMENTS INDICATED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR "FULL MECHANICAL CONNECTIONS".



DETAIL 1  
NOT TO SCALE

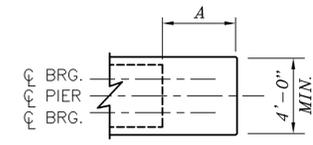


DETAIL 2  
NOT TO SCALE

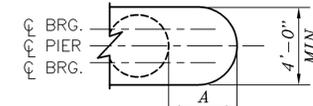


COLUMN TIE DETAILS

DESIGNER: FOR ADDITIONAL REQUIREMENTS REFER TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

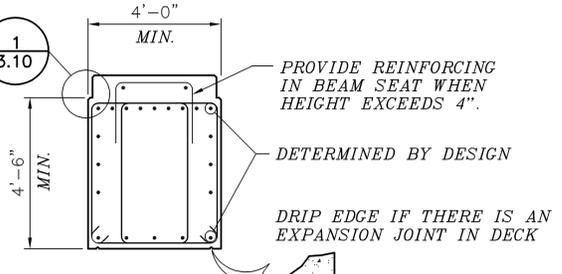


VIEW A  
3.10



VIEW B  
3.10

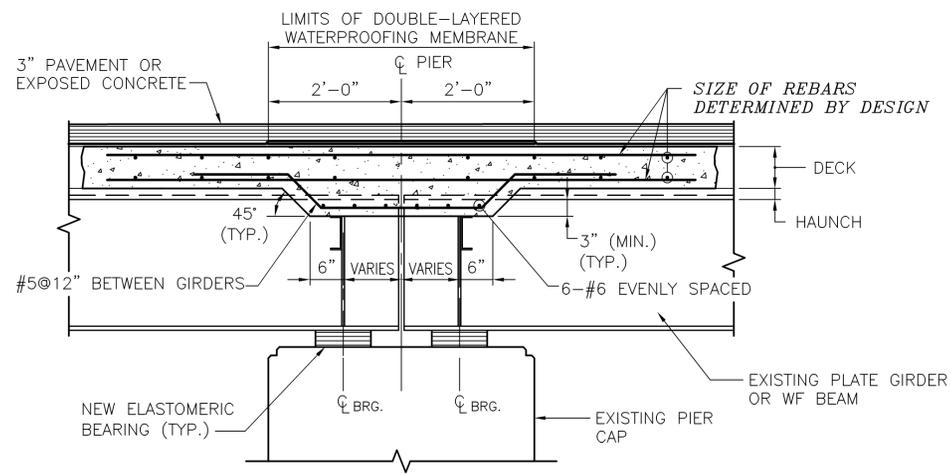
DETAIL 1



SECTION C  
3.10

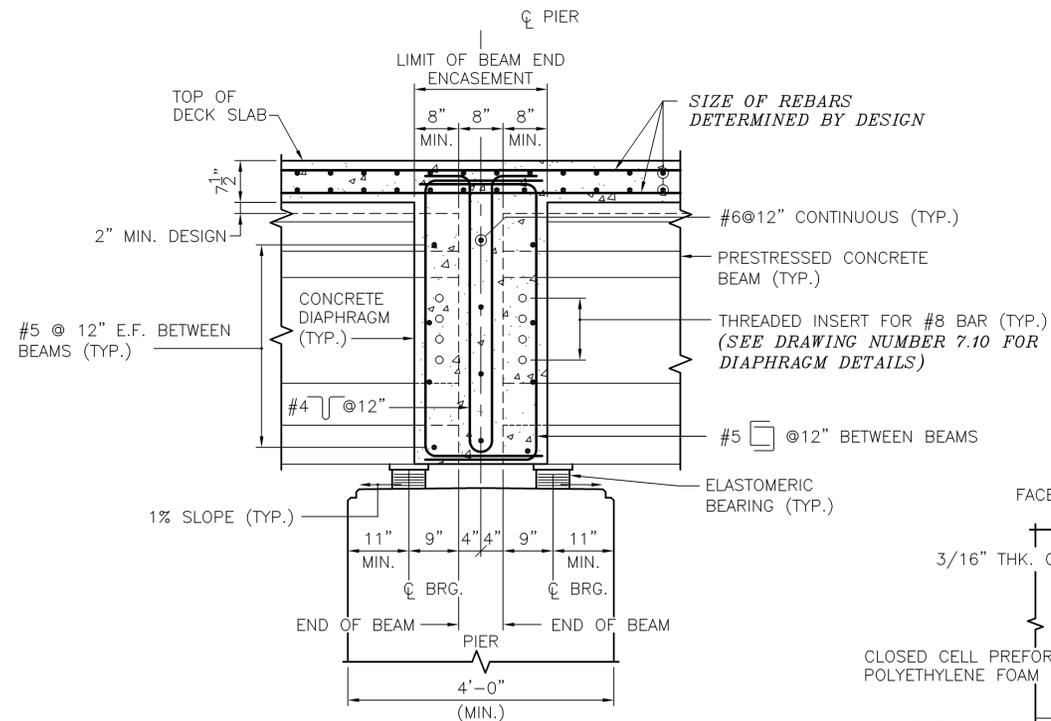
THIS SHEET IS NOT TO SCALE

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
No.	DATE	
		PIER DETAILS
DRAWING NUMBER: 3.10		



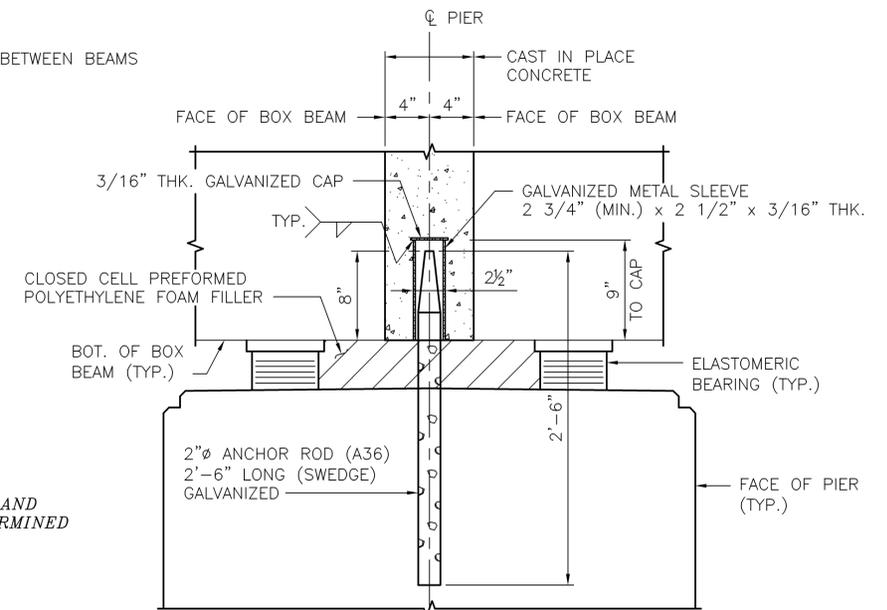
**TYPICAL PIER**  
EXISTING STEEL BEAM AT PIER  
(BRIDGE REHABILITATION)

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



**TYPICAL PIER**  
(PRESTRESSED CONCRETE BEAMS)

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



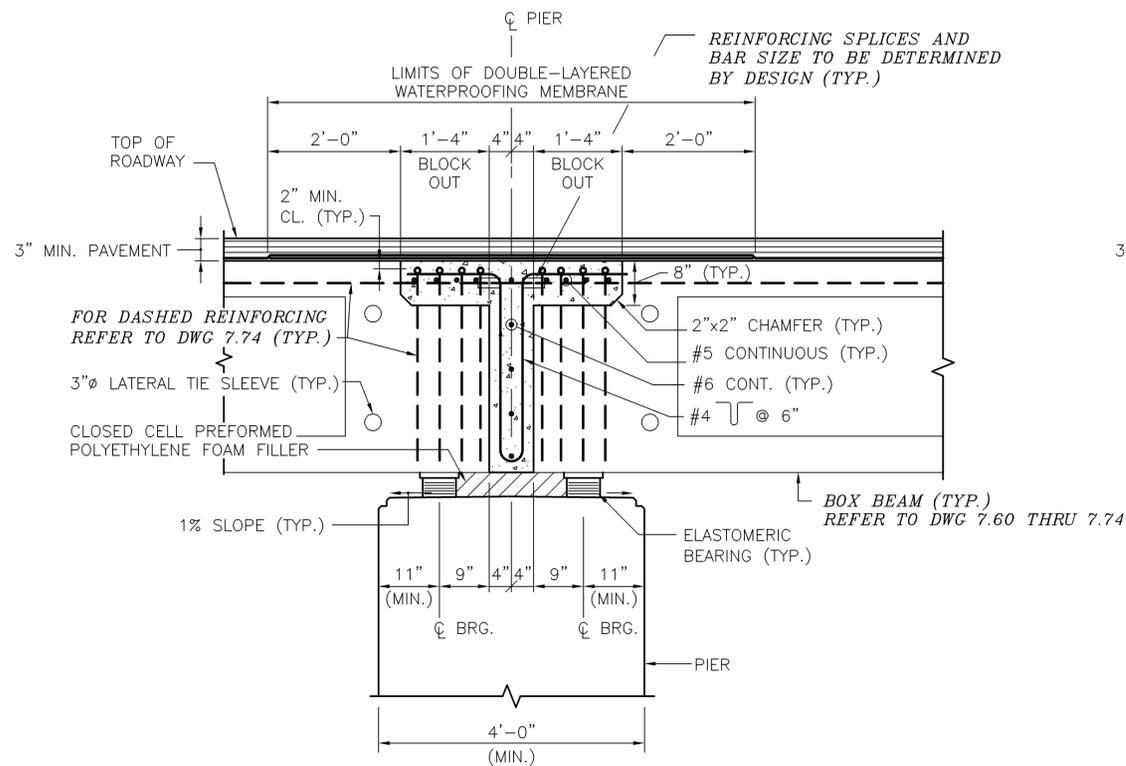
**DETAIL 1**  
3.20

**ANCHOR ROD DETAILS**  
AT FIXED BEARINGS

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

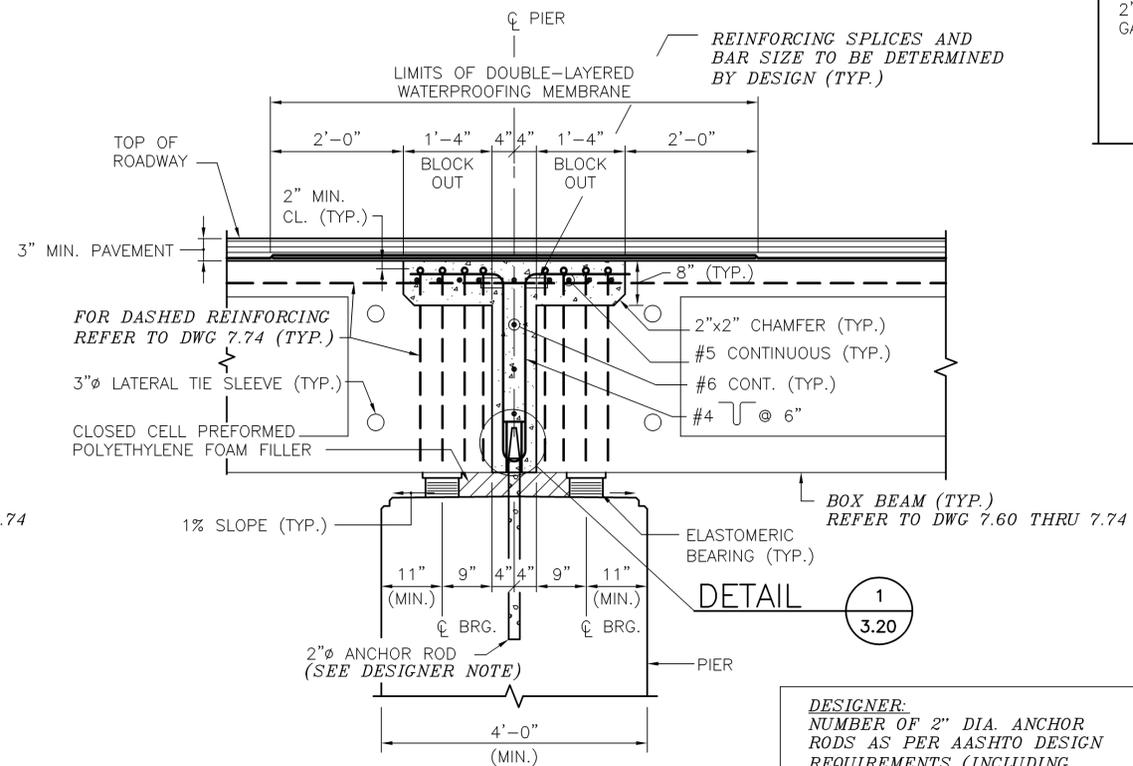
**DESIGNER NOTES:**

1. DEBONDED STRANDS SHALL BE EXTENDED BEYOND THE ENDS OF GIRDERS AND ANCHORED INTO CONTINUITY DIAPHRAGMS AS REQUIRED BY DESIGN.
2. REMAINDER OF REINFORCEMENT AND STRAND EXTENSIONS HAVE NOT BEEN SHOWN FOR CLARITY.



**TYPICAL PIER**  
(PRESTRESSED BUTTED BOX BEAMS AT EXPANSION PIER)

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



**TYPICAL PIER**  
(PRESTRESSED BUTTED BOX BEAMS AT FIXED PIER)

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

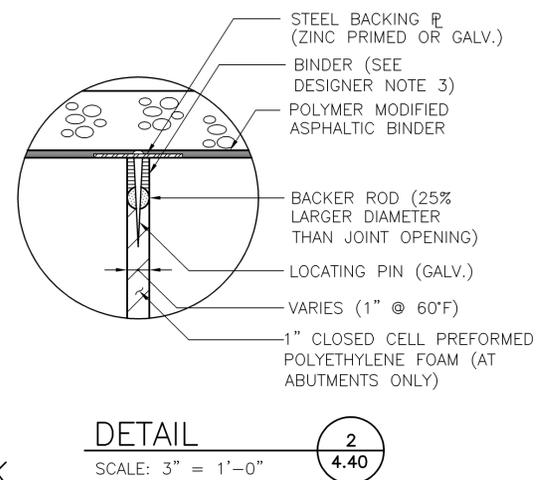
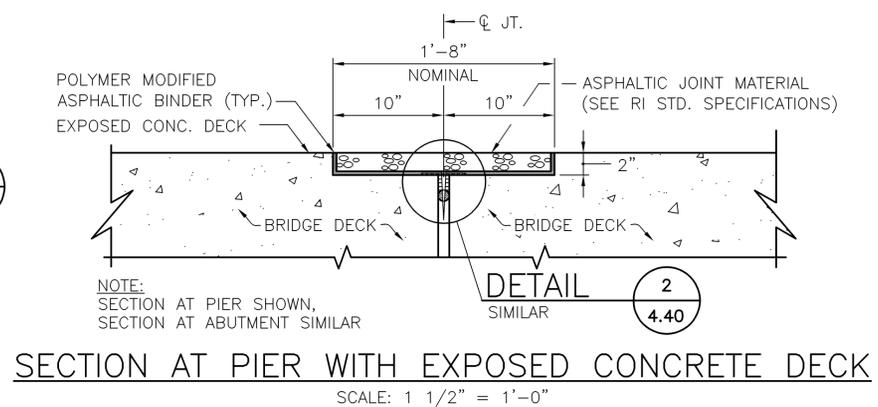
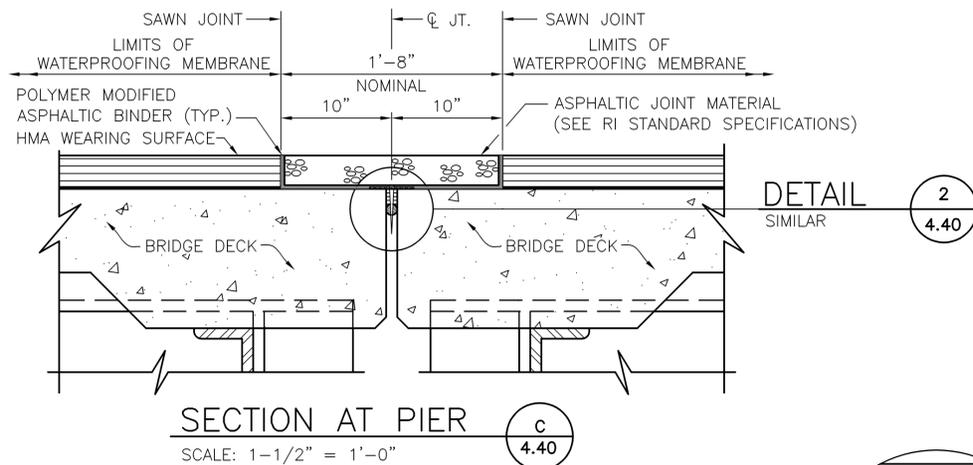
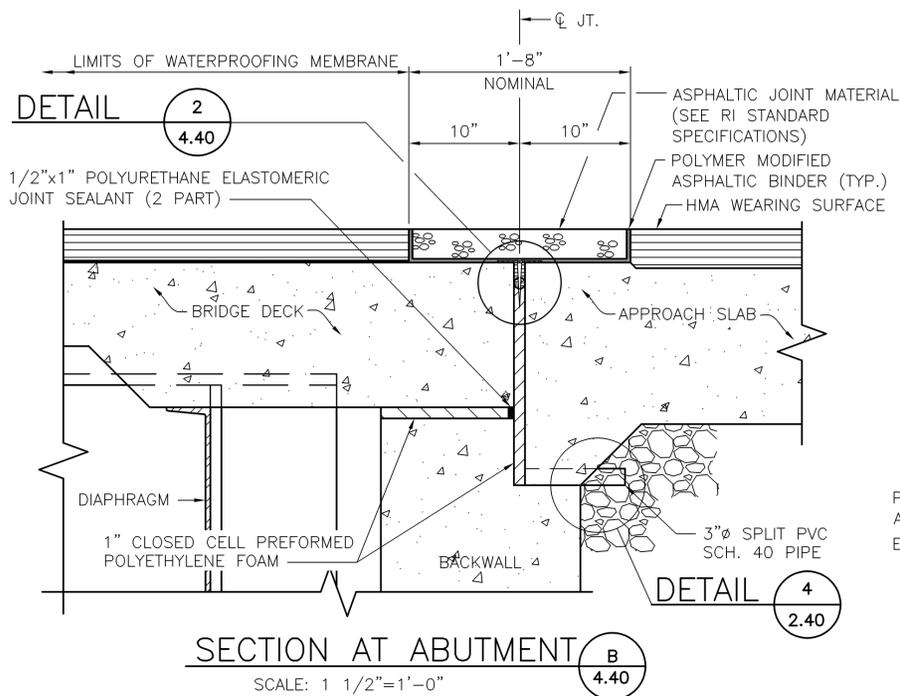
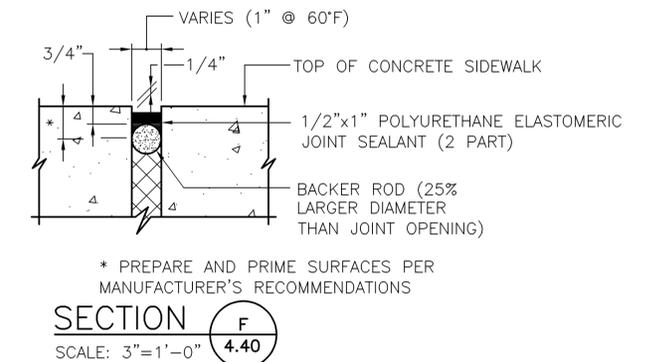
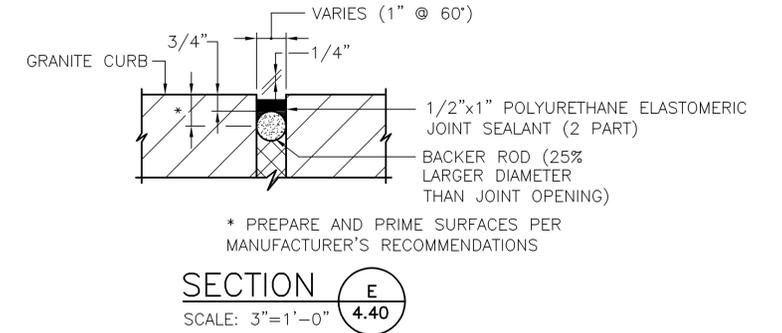
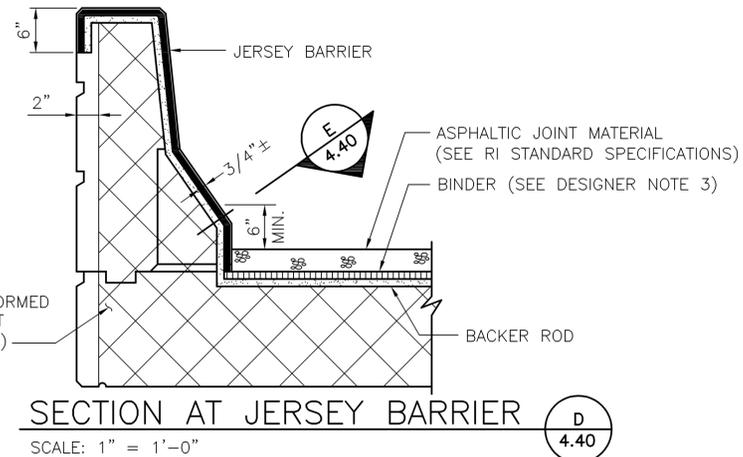
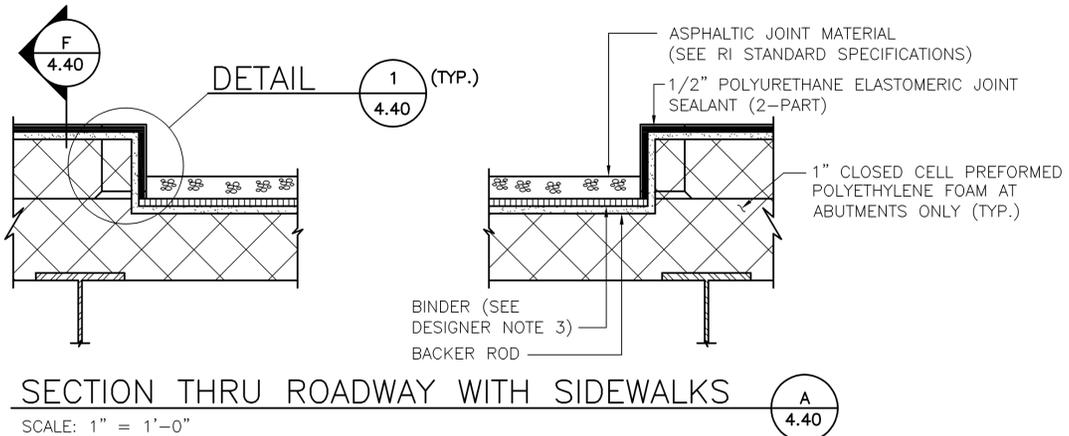
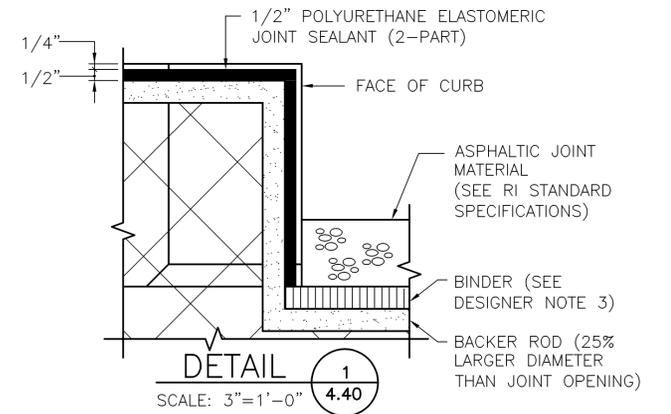
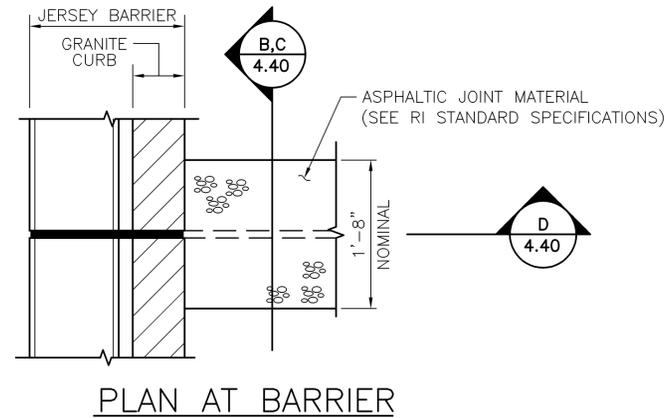
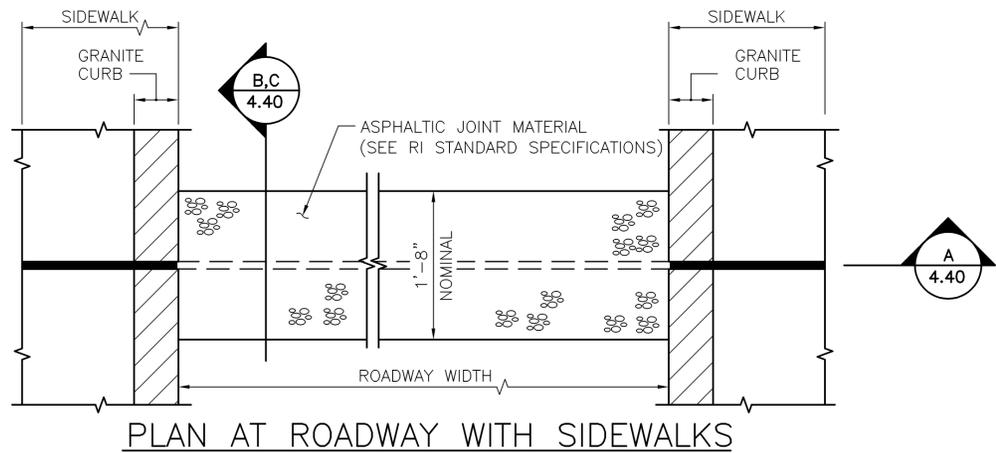
**DESIGNER:**  
NUMBER OF 2" DIA. ANCHOR RODS AS PER AASHTO DESIGN REQUIREMENTS (INCLUDING SEISMIC).

**DETAIL 1**  
3.20

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION
No.	DATE	
		BRIDGE STANDARDS
		JOINTS AT PIERS
		DRAWING NUMBER: 3.20

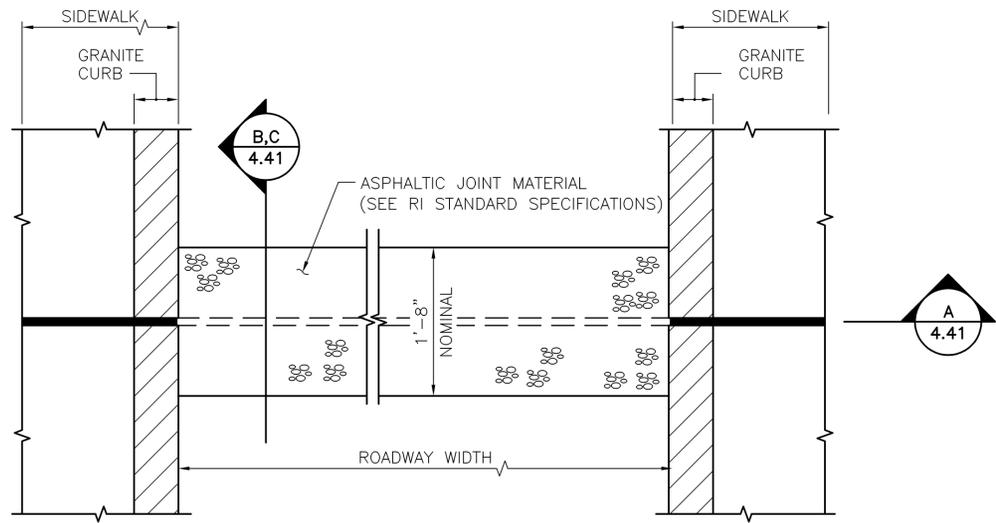




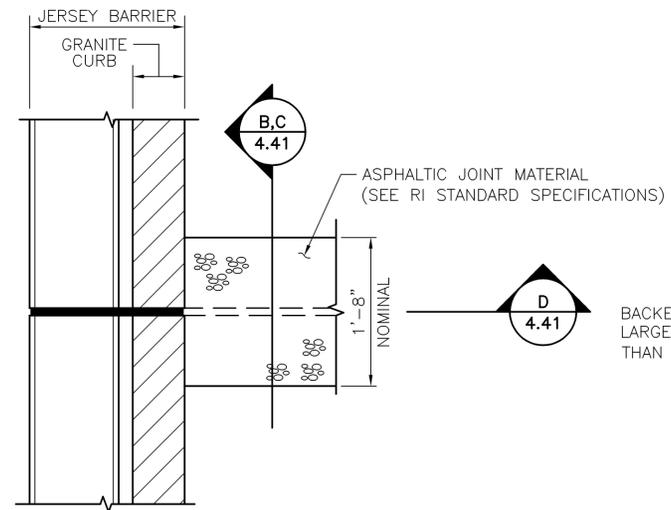


- DESIGNER NOTES:**
- THIS DETAIL MAY BE USED FOR A TOTAL ANTICIPATED JOINT MOVEMENT OF LESS THAN 1" AND AT A MAXIMUM SKEW ANGLE OF LESS THAN 20°. REFER TO RIDOT LRFD BRIDGE DESIGN MANUAL SECTION 14. THE USE OF THIS JOINT TYPE IS NOT PERMITTED ON HIGH VOLUME INTERSTATES AND EXPRESSWAY BRIDGES, UNLESS APPROVED BY MANAGING ENGINEER BRIDGE DESIGN.
  - SEE RHODE ISLAND SPECIFICATIONS FOR SPECIFICS ON MATERIALS AND CONSTRUCTION METHODS.
  - POLYURETHANE ELASTOMERIC JOINT SEALANT (2-PART) MAY BE SUBSTITUTED FOR BINDER MATERIAL (1/2" THICK WITH A 3 DAY MINIMUM CURE).
  - AVOID USING THIS JOINT SYSTEM AT OR NEAR INTERSECTIONS WHERE BRAKING FORCES WILL SHOVE THE JOINT MATERIAL.

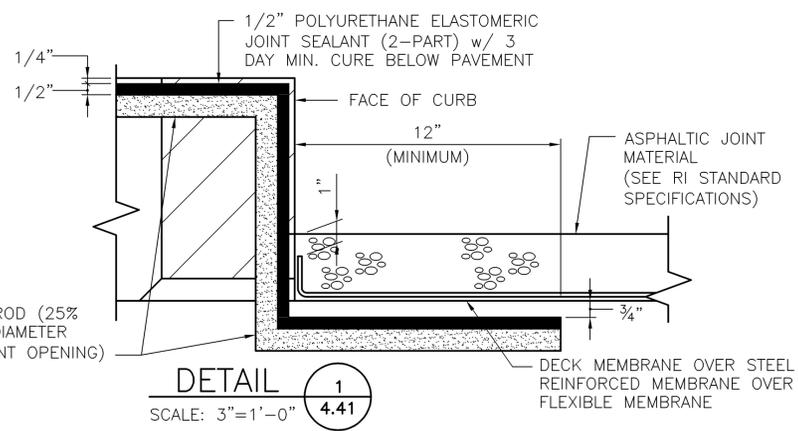
REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		ASPHALTIC EXPANSION JOINT SYSTEM
		DRAWING NUMBER: 4.40



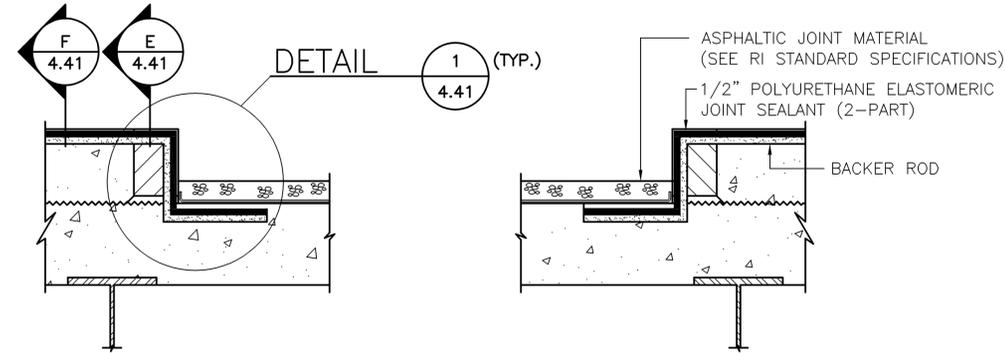
PLAN AT ROADWAY WITH SIDEWALKS



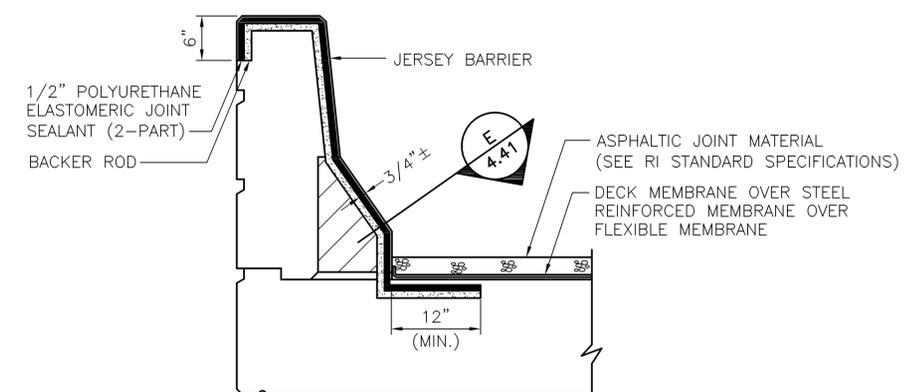
PLAN AT BARRIER



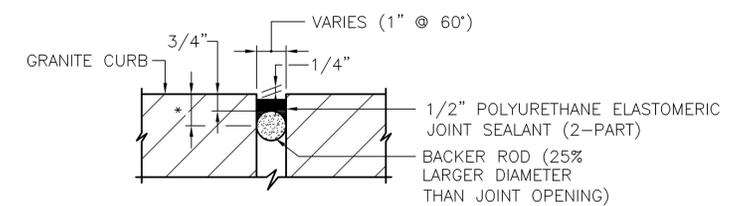
DETAIL 1  
SCALE: 3"=1'-0"



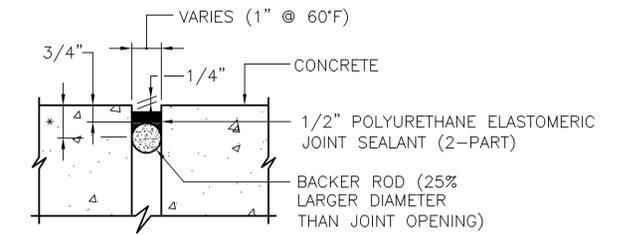
SECTION THRU ROADWAY WITH SIDEWALKS  
SCALE: 1" = 1'-0"



SECTION AT JERSEY BARRIER  
SCALE: 1" = 1'-0"



SECTION E  
SCALE: 3"=1'-0"



SECTION F  
SCALE: 3"=1'-0"

\* PREPARE AND PRIME SURFACES PER MANUFACTURER'S RECOMMENDATIONS

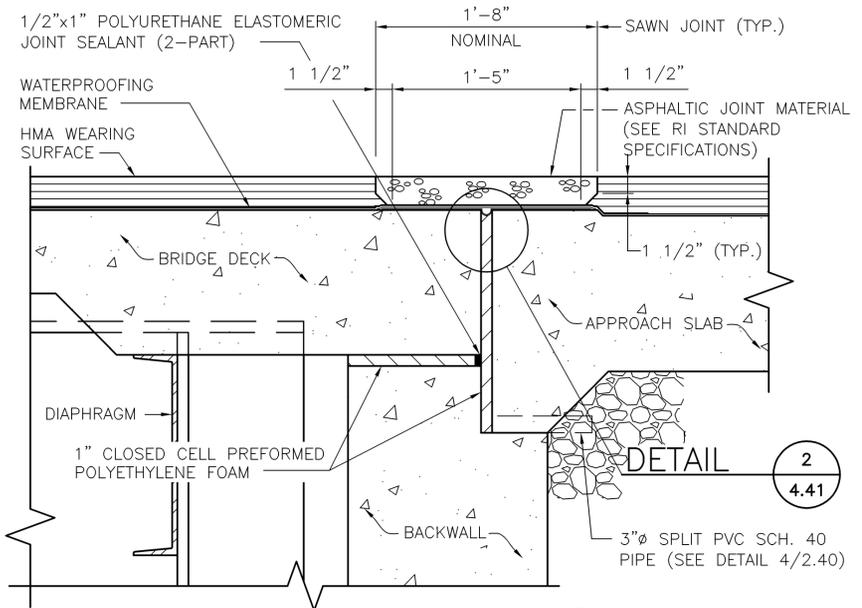
\* PREPARE AND PRIME SURFACES PER MANUFACTURER'S RECOMMENDATIONS

**DESIGNER:**

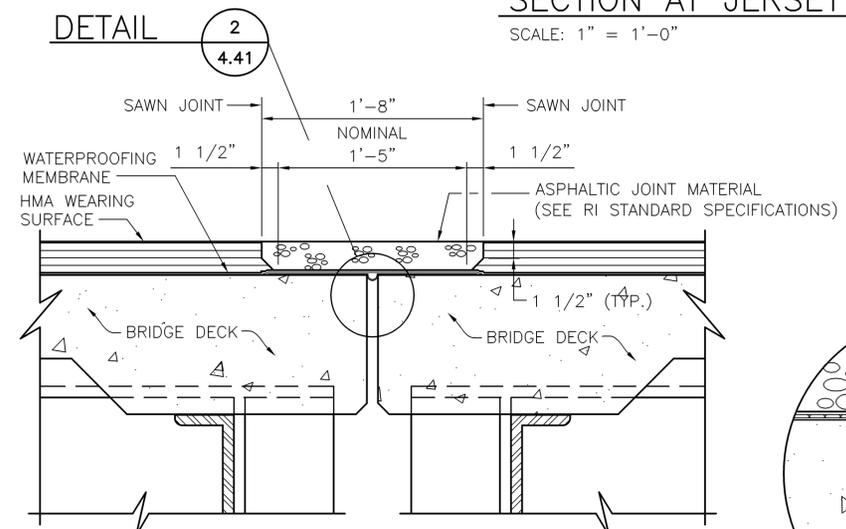
THIS DETAIL MAY BE USED FOR A TOTAL ANTICIPATED JOINT MOVEMENT OF LESS THAN 1" AND AT A MAXIMUM SKEW ANGLE OF LESS THAN 20°. REFER TO RIDOT LRFD BRIDGE DESIGN MANUAL SECTION 14. THE USE OF THIS JOINT TYPE IS NOT PERMITTED ON HIGH VOLUME INTERSTATES AND EXPRESSWAY BRIDGE SECTION.

**NOTE:**

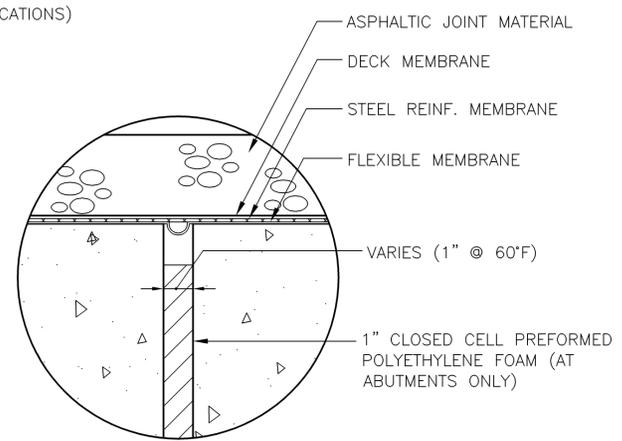
SEE SPECIAL PROVISIONS AND RHODE ISLAND SPECIFICATIONS FOR SPECIFICS ON MATERIALS AND CONSTRUCTION METHODS.



SECTION AT ABUTMENT  
SCALE: 1 1/2"=1'-0"



SECTION AT PIER  
SCALE: 1-1/2" = 1'-0"

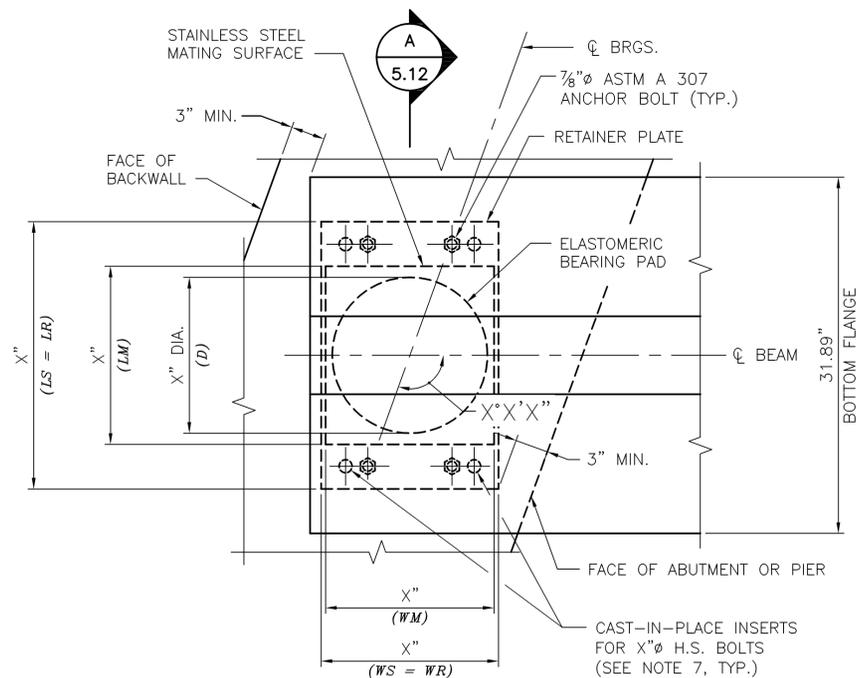


DETAIL 2  
SCALE: 3" = 1'-0"

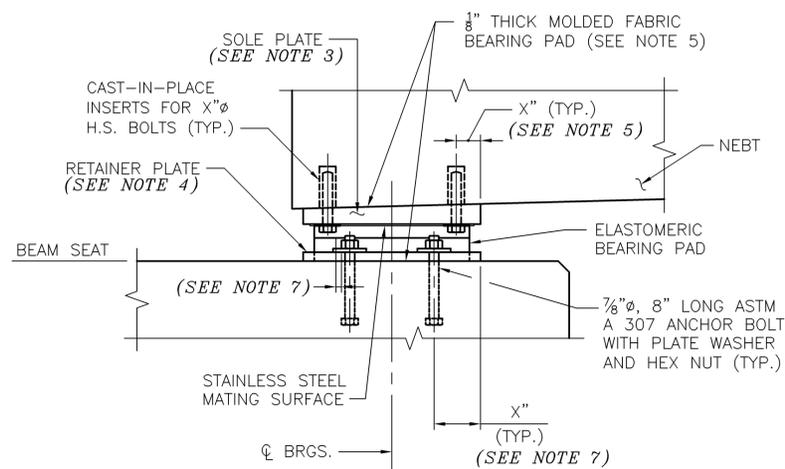
REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		ALTERNATE ASPHALTIC EXPANSION JOINT SYSTEM
		DRAWING NUMBER: 4.41



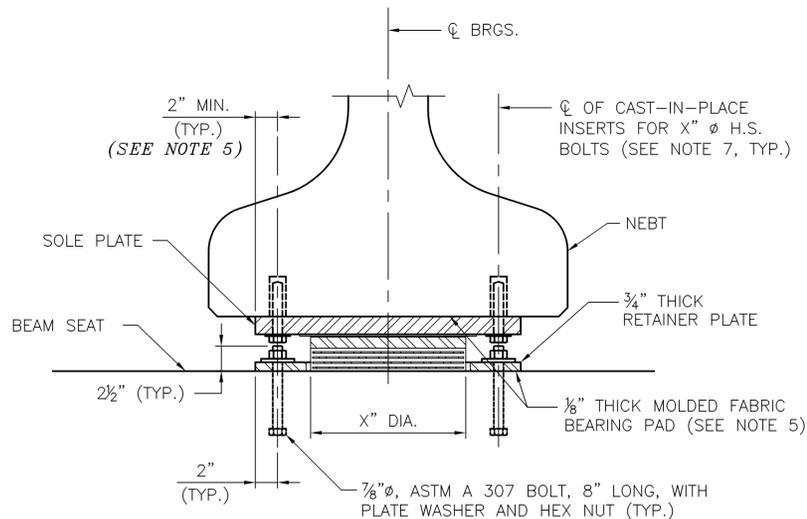




**PLAN**  
SCALE: 1 1/2" = 1'-0"



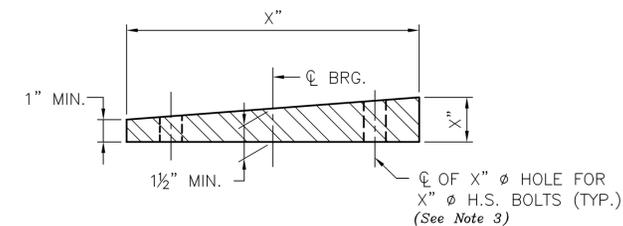
**ELEVATION**  
SCALE: 1" = 1'-0"



**NOTES:**

1. STAINLESS STEEL MATING SURFACE SHALL BE TYPE 304 CONFORMING TO ASTM A 167/A 240 WITH A SURFACE FINISH OF 8 MICRO-INCHES RMS OR BETTER. IT SHALL BE WELDED WITH AN ALL-AROUND WELD TO THE SOLE PLATE SO THAT IT REMAINS FLAT AND IN FULL CONTACT WITH THE SOLE PLATE.
2. STAINLESS STEEL MATING SURFACE SHALL BE PROTECTED FROM SCRATCHES, GOUGES OR OTHER DAMAGE DURING SHIPMENT AND STORAGE.
3. THE SOLE PLATE ASSEMBLY SHALL BE METALIZED, EXCEPT FOR THE STAINLESS STEEL MATING SURFACE. THE RETAINER PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 111.
4. STEEL SOLE AND RETAINER PLATES SHALL CONFORM TO AASHTO M 270 GRADE 36.
5. MOLDED FABRIC BEARING PAD SHALL CONFORM TO M.13.03.4.a. THE BEARING PAD UNDERNEATH THE RETAINER PLATE SHALL BE CUT TO MATCH ITS SILHOUETTE. THE BEARING PAD MUST SIT ON CONCRETE AND NOT ON FABRIC PAD.
6. BOLTS, PLATE WASHERS AND NUTS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 232.
7. CAST-IN-PLACE INSERTS SHALL HAVE AN ULTIMATE SHEAR CAPACITY OF XX KIPS.

**SECTION** **A**  
SCALE: 1 1/2" = 1'-0" **5.12**



**SOLE PLATE DETAIL**  
SCALE: 3" = 1'-0"

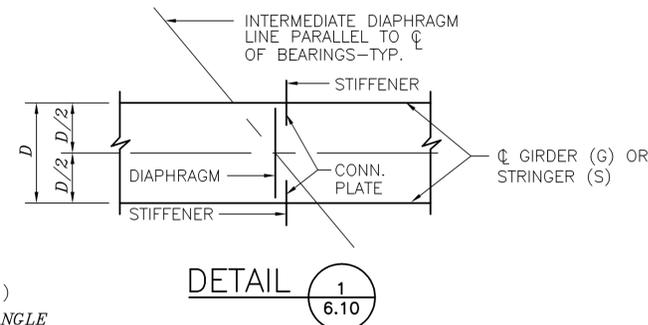
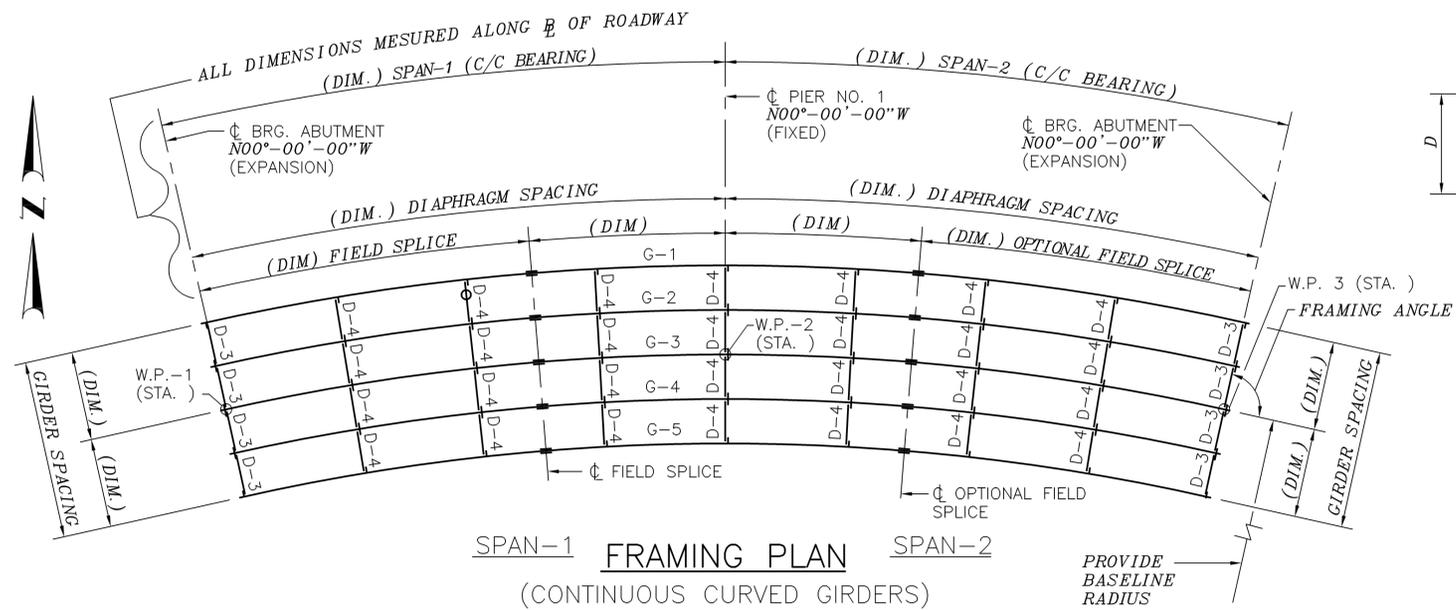
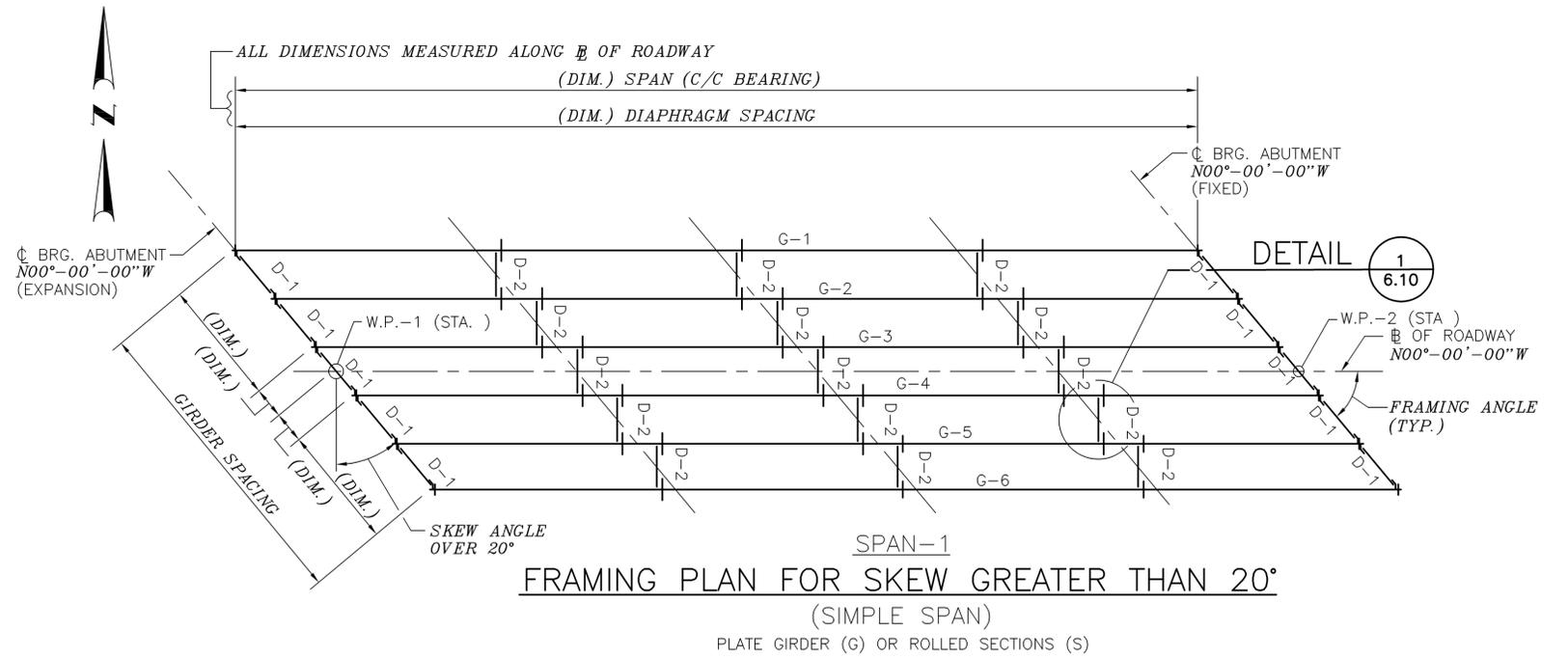
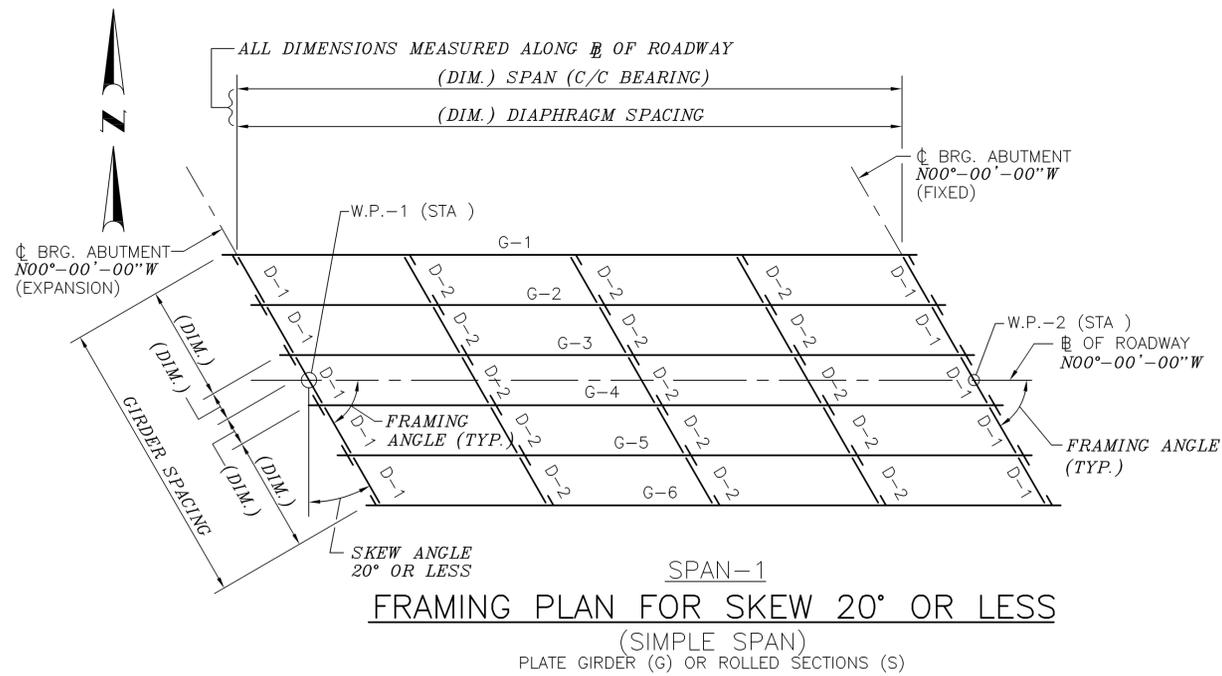
**DESIGNER NOTES:**

1.  $D$  = DIAMETER OF ELASTOMERIC BEARING PAD;  
 $LM$  = LENGTH OF STAINLESS STEEL MATING SURFACE =  $D + 2"$ ;  
 $WM$  = WIDTH OF STAINLESS STEEL MATING SURFACE =  $D +$  (CALCULATED TOTAL THERMAL MOVEMENT RANGE  $\times 1.5$ ), ROUNDED UP TO THE NEAREST 1/2";  
 $LS$  = LENGTH OF SOLE PLATE =  $LM + 8"$ ;  
 $WS$  = WIDTH OF SOLE PLATE =  $WM + 1"$ ;  
 $LR$  = LENGTH OF RETAINER PLATE =  $LS$ ;  
 $WR$  = WIDTH OF RETAINER PLATE =  $WS$ .
2. THE END OF THE BEAM AND SOLE PLATE MAY BE FLUSH, HOWEVER THE SOLE PLATE CANNOT EXTEND BEYOND THE BEAM END. IF REQUIRED, INCREASE THE LENGTH OF BEAM SO THAT IT ALWAYS STAYS FLUSH WITH SOLE PLATE.
3. SOLE PLATE MUST BE TAPERED IF SLOPE OF BEAM BOTTOM FLANGE DUE TO ROADWAY GRADE AND CAMBER EXCEEDS 1%. PROVIDE DETAIL OF TAPERED SOLE PLATE AS SHOWN ON THIS SHEET. DIAMETER OF HOLE = (BOLT DIAMETER  $\times 1.25$ ), ROUNDED UP TO NEAREST 1/4".
4. MODIFY RETAINER PLATE AS REQUIRED AND PROVIDE DETAIL.
5. SET CENTERLINE OF CAST-IN-PLACE INSERTS ON STRAND LOCATION AND OMIT THOSE COLUMNS OF STRANDS FOR THE SPECIFIC STRAND PATTERN.
6. DESIGNER MUST PROVIDE SUFFICIENT VERTICAL CLEARANCE, WHICH IS BASED ON THE TOTAL HEIGHT OF THE BEARING ASSEMBLY, FOR THE BOLTS SECURING SOLE PLATE, TO ALLOW FOR THEIR COMPLETED UNSCREWING AND SUBSEQUENT REMOVAL OF THE RETAINER PLATE AND THE BEARING PAD.
7. DESIGNER MUST ALSO PROVIDE SUFFICIENT HORIZONTAL CLEARANCE AFTER MAXIMUM THERMAL MOVEMENTS BETWEEN THE CENTERLINES OF THE CAST-IN-PLACE INSERTS AND THE NUTS SECURING RETAINER PLATE TO AVOID THEIR INTERFERENCE DURING POSSIBLE REMOVAL OF THE RETAINER PLATE AND THE BEARING PAD.

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		ELASTOMERIC BEARINGS SLIDING BEARINGS
DRAWING NUMBER: 5.12		





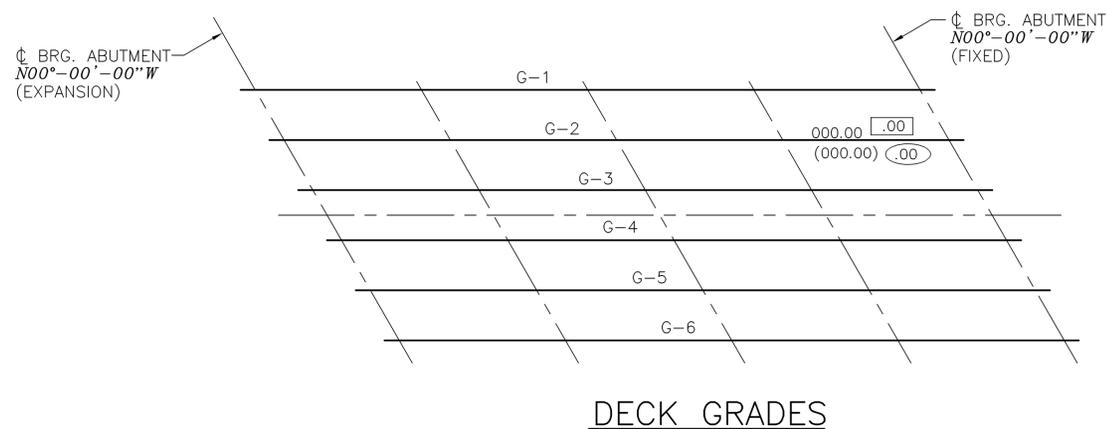


**DESIGNER NOTES:**

- FOR SKEWS 20 DEGREES OR LESS, PLACE INTERMEDIATE DIAPHRAGMS PARALLEL TO CENTERLINE OF BEARING.
- FOR SKEWS GREATER THAN 20 DEGREES, PLACE INTERMEDIATE DIAPHRAGMS PERPENDICULAR TO GIRDER.
- FOR HORIZONTALLY CURVED GIRDER BRIDGES, DIAPHRAGMS SHALL BE PROVIDED AT EACH SUPPORT AND AT INTERMEDIATE INTERVALS BETWEEN SUPPORTS WITH SPACING AS DETERMINED BY DESIGN CONSIDERATION. MINIMUM DIAPHRAGM SPACING SHALL BE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. DIAPHRAGMS SHOULD BE PLACED RADIALLY.
- WHEN USING ROLLED SECTIONS, MARK FRAMING PLAN WITH PREFIX S-1, S-2, ETC.
- LAYOUT IS SIMILAR FOR CONTINUOUS GIRDERS.
- FRAMING PLAN SHOULD CONTAIN BEARING TYPE AND APPLICABLE LEGENDS.

**DECK GRADE NOTES:**

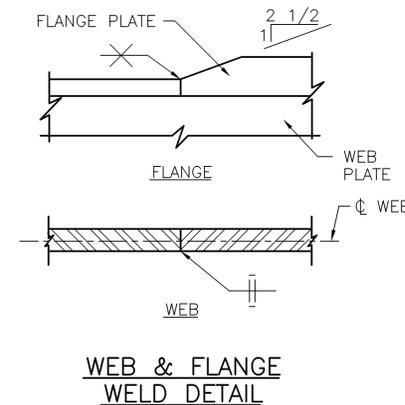
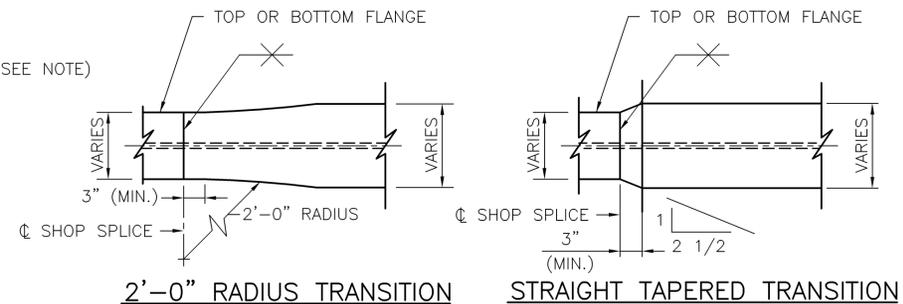
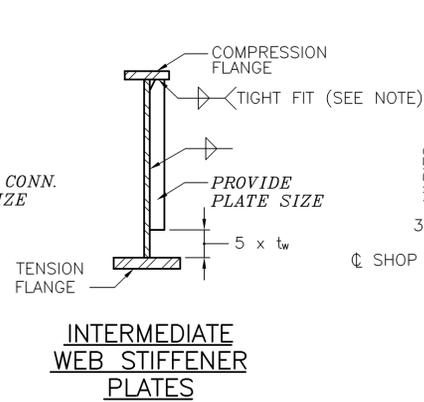
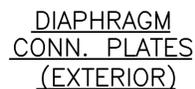
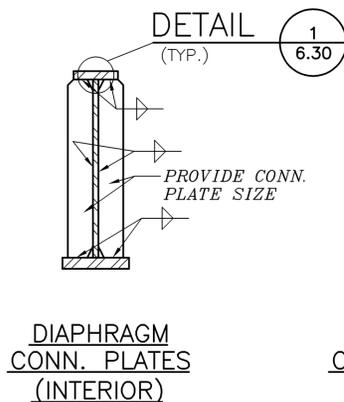
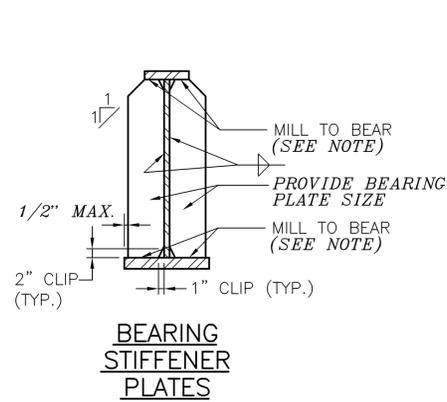
- ELEVATIONS OF BEAMS ARE GIVEN AT THE CENTERLINE OF BEARING OF EACH BEAM AND AT THE QUARTER POINTS OF EACH SPAN.
- 000.00 ELEVATIONS GIVEN ARE THEORETICAL FINAL GRADES ON TOP OF CONCRETE DECK AT CENTERLINE OF BEAM.
- (000.00) ELEVATIONS GIVEN IN PARENTHESES ARE THEORETICAL GRADES ON TOP OF BEAMS BEFORE PLACING CONCRETE.
- .00 FIGURES IN RECTANGLES ARE DEAD LOAD DEFLECTIONS IN INCHES CAUSED BY THE WEIGHT OF THE CONCRETE DECK.
- .00 FIGURES ARE DEFLECTIONS IN INCHES CAUSED BY SUPERIMPOSED DEAD LOADS (WEIGHT OF RAILINGS, RAIL BASE AND CURBS).



THIS SHEET IS NOT TO SCALE

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		TYPICAL FRAMING PLAN LAYOUTS
		DRAWING NUMBER: 6.10

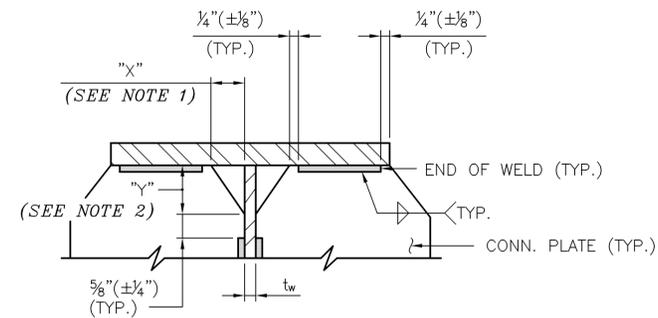
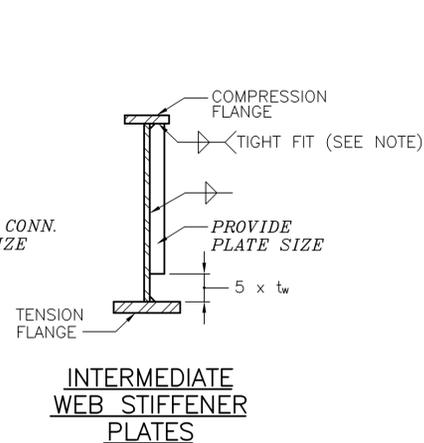
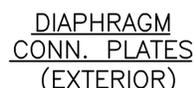
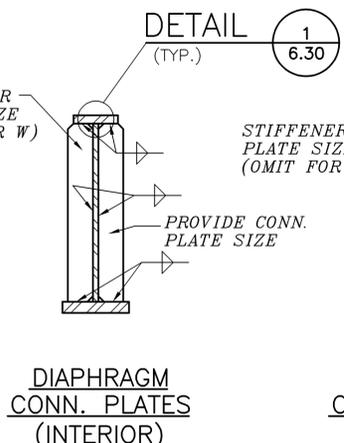
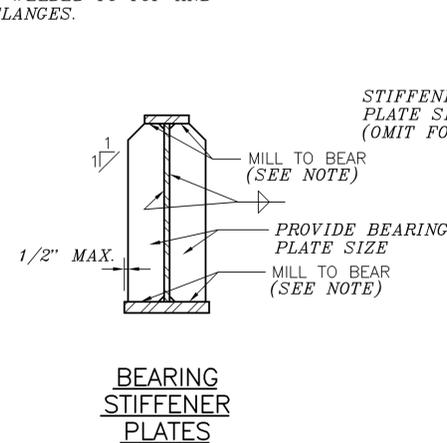




**SPLICE TRANSITION DETAILS (BUILT-UP SECTIONS)**

**NOTE:**  
BEARING STIFFENERS USED AS DIAPHRAGM CONNECTION PLATES SHALL BE WELDED TO TOP AND BOTTOM FLANGES.

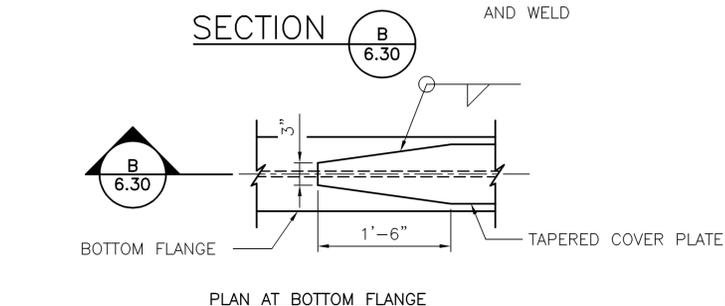
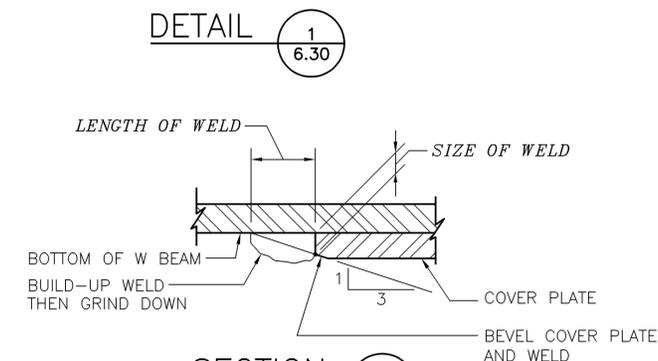
**SKEW 20° OR LESS**



**DESIGNER:**  
**CONNECTION PLATE NOTES:**  
1. WIDTH OF CLIP SHALL BE 2 x tw.  
2. HEIGHT OF CLIP SHALL BE 5 x tw.

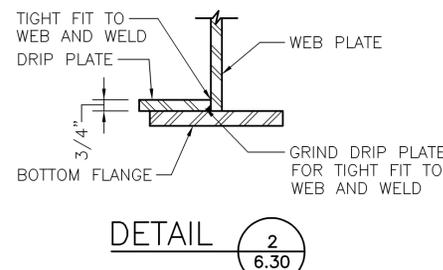
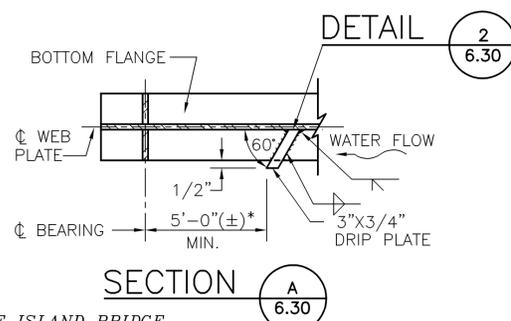
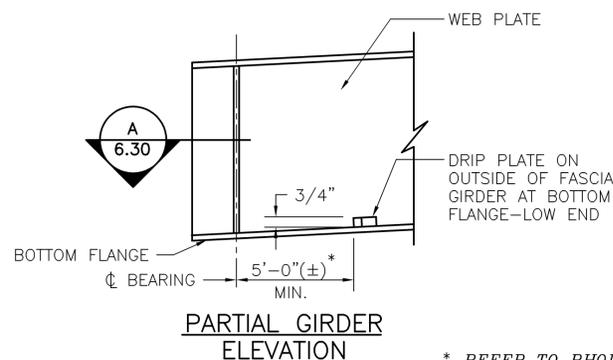
**STIFFENER AND CONNECTION PLATE DETAILS**

**SKEW GREATER THAN 20°**



**END OF COVER PLATE DETAIL**

**DESIGNER:**  
**COVER PLATE NOTES:**  
1. COVER PLATES ARE TO BE IN ONE PIECE AND SHALL BE LIMITED TO ONE AT ANY FLANGE.  
2. THICKNESS OF COVER PLATES SHALL NOT EXCEED 1.5 TIMES FLANGE THICKNESS.



\* REFER TO RHODE ISLAND BRIDGE DESIGN MANUAL FOR WEATHERING STEEL REQUIREMENTS

**DRIP PLATE DETAILS**

**DESIGNER:**  
DRIP PLATES SHALL BE USED ON ALL WEATHERING STEEL AND ON ALL PROFILE GRADES GREATER THAN 4%. (OPTIONAL AT GRADES LESS THAN 4% ON NON-WEATHERING STEEL)

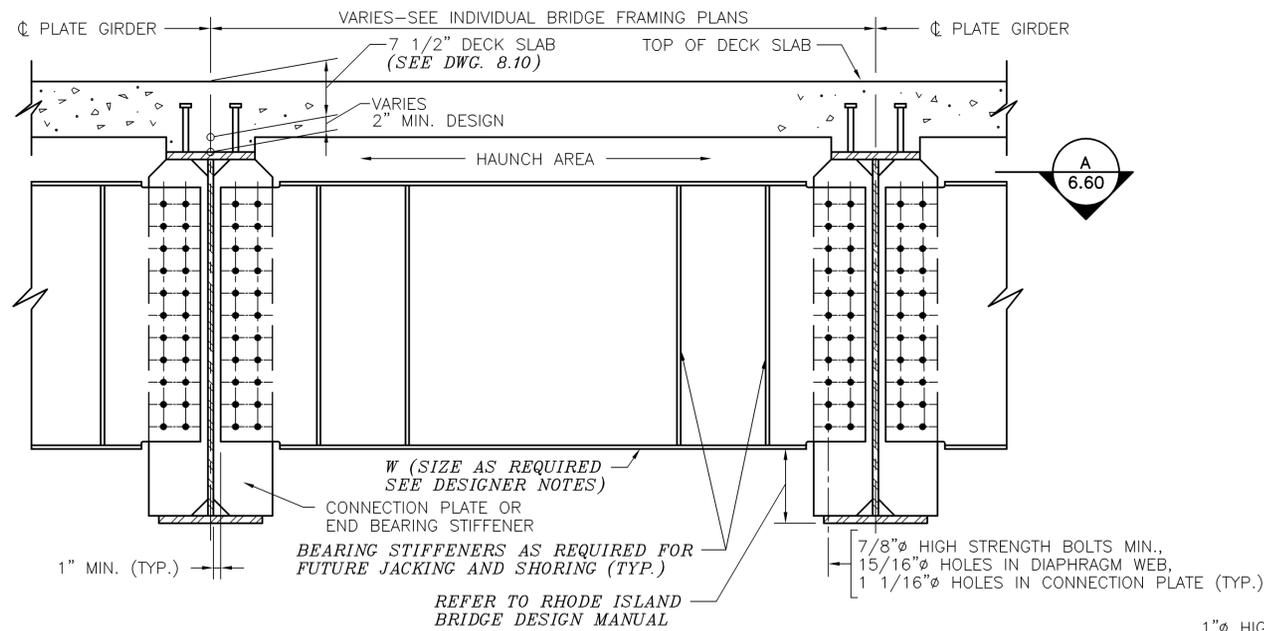
THIS SHEET IS NOT TO SCALE

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
No.	DATE	
		STEEL DETAILS SHEET 1
		DRAWING NUMBER: 6.30

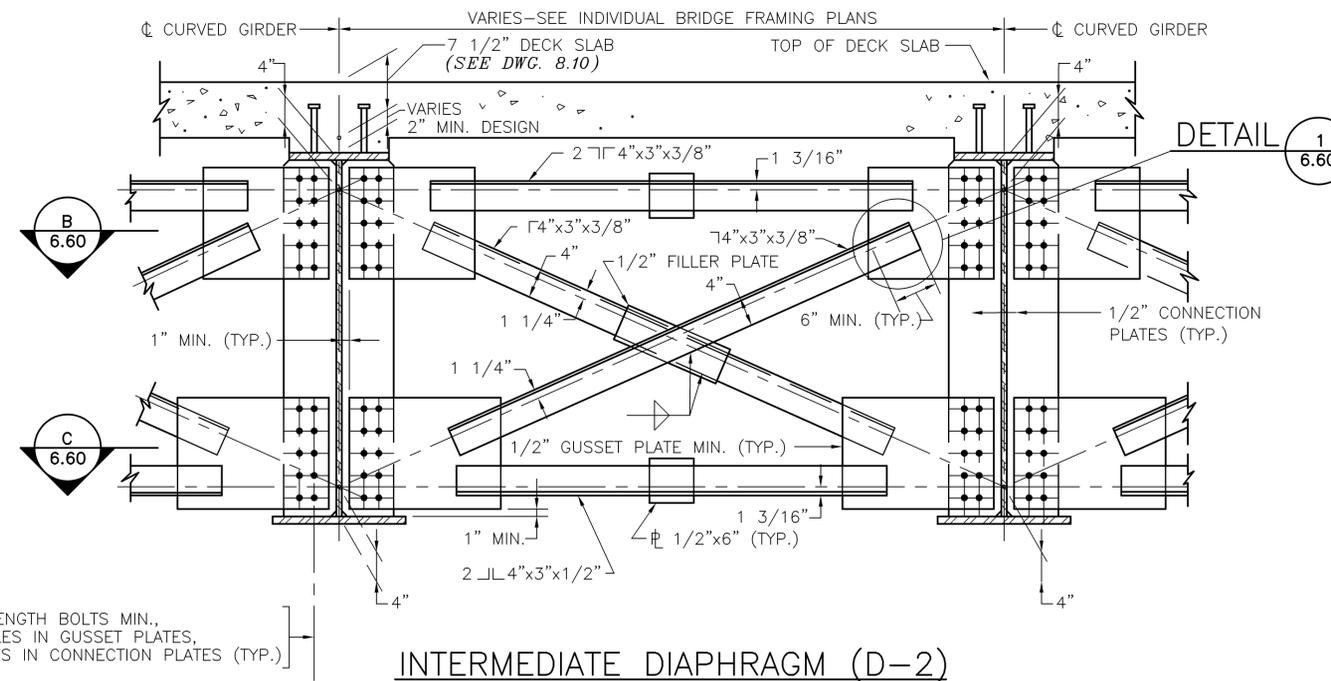




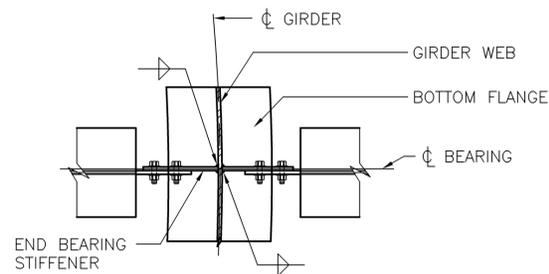




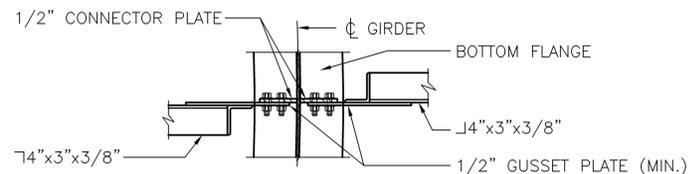
END DIAPHRAGM (D-1)



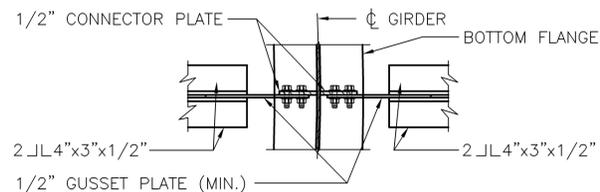
INTERMEDIATE DIAPHRAGM (D-2)



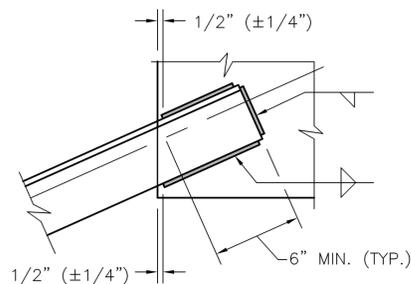
SECTION A 6.60



SECTION B 6.60



SECTION C 6.60



DETAIL 1 6.60

**DESIGNER NOTES:**

1. THE SIZE OF THE END DIAPHRAGM AND CONNECTION DETAILS SHALL ALSO BE DETERMINED BASED ON FUTURE JACKING LOAD REQUIREMENTS (REFER TO THE RIDOT LRFD BRIDGE DESIGN MANUAL)
2. THE CLASS OF THE CONTACT SURFACE OF BOLTED PARTS AS REQUIRED BASED ON DESIGN CONSIDERATIONS, SHALL BE INDICATED ON THE CONTRACT DRAWINGS.

**NOTES:**

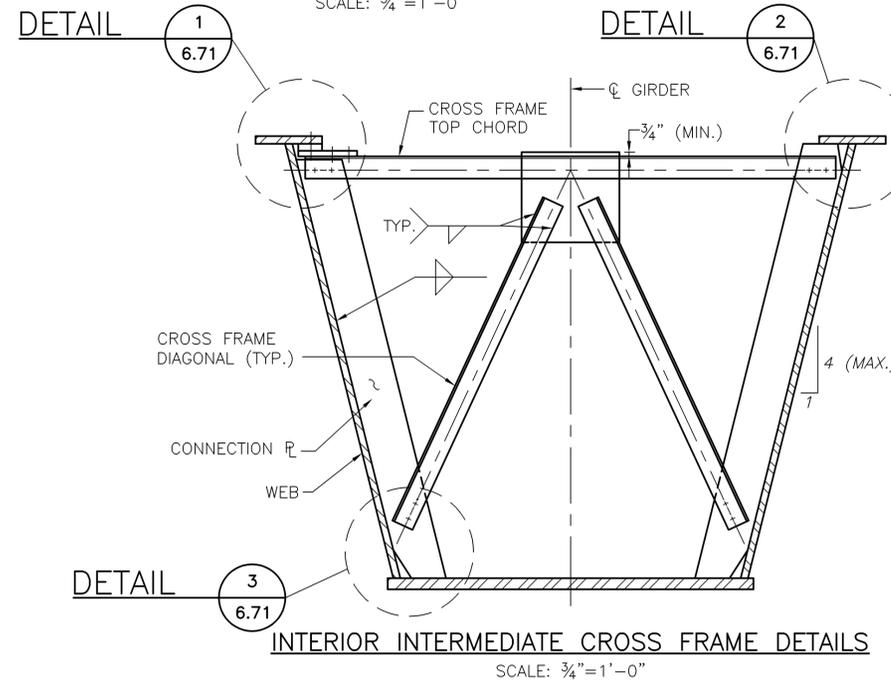
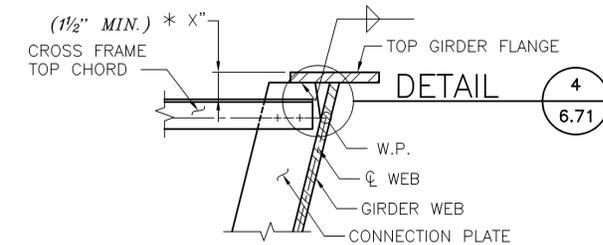
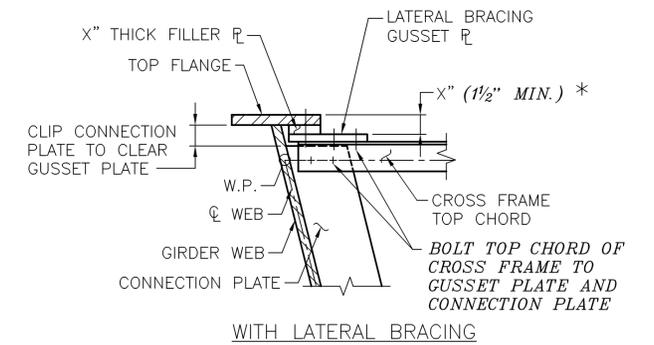
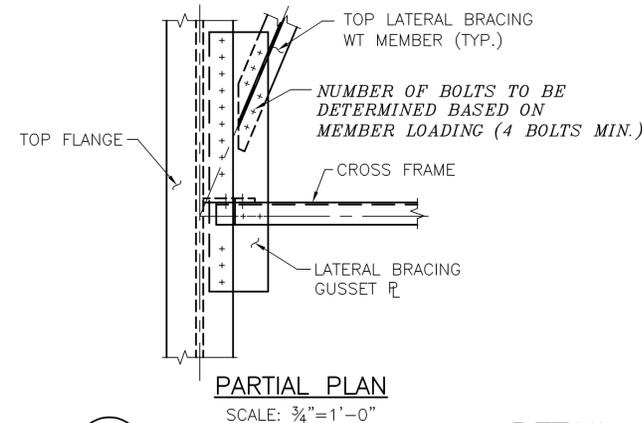
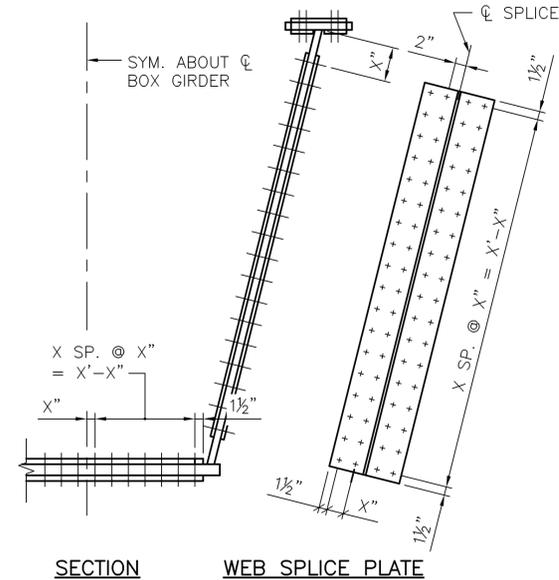
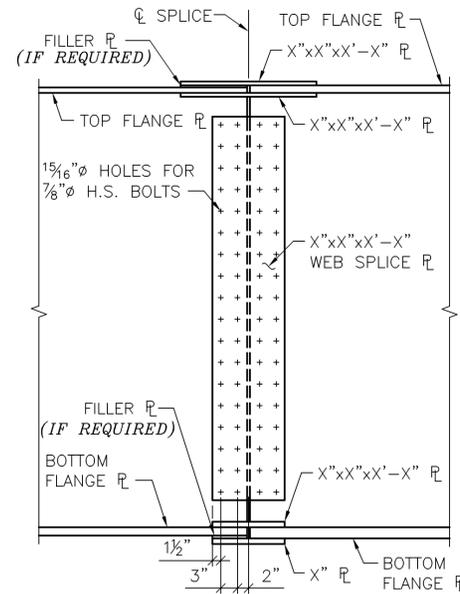
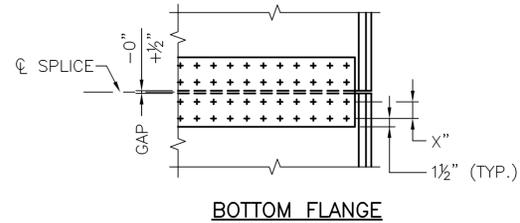
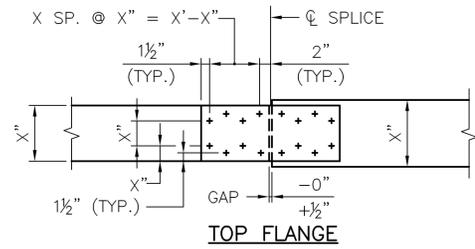
1. THE END DIAPHRAGMS ARE TO FOLLOW THE CROSS PITCH OF THE ROADWAY.
2. LOCATIONS OF HOLES IN CONNECTION PLATES SHALL BE DETERMINED BY THE FABRICATOR.

DIAPHRAGMS ARE SHOWN STRAIGHT FOR STANDARDIZATION PURPOSES ONLY.

THIS SHEET IS NOT TO SCALE

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
No.	DATE	
		DIAPHRAGM DETAILS FOR PLATE GIRDERS—CURVED
		DRAWING NUMBER: 6.60



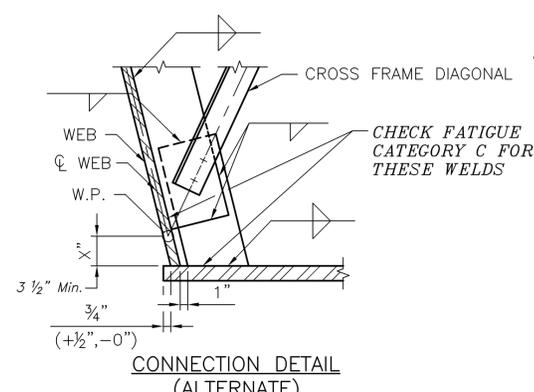
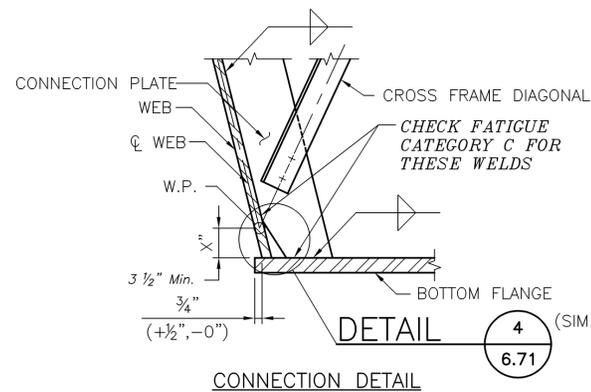


**NOTES:**

- BOLTED FIELD SPLICES SHALL BE CONSIDERED SLIP-CRITICAL CONNECTIONS WITH CLASS B FAYING SURFACES.
- + DENOTES 3/8" Ø ASTM A325 HIGH STRENGTH BOLT IN 1/8" Ø HOLE.
- THICKNESS DIFFERENCES OF 1/16" OR LESS DO NOT REQUIRE FILLER PLATES. FILLER PLATES SHALL CONFORM TO AASHTO M 270 GRADE 36 OR 50.
- ONE ROW OF STUD SHEAR CONNECTORS SHALL BE PLACED ALONG THE CENTERLINE OF THE TOP FLANGE SPLICE PLATES.

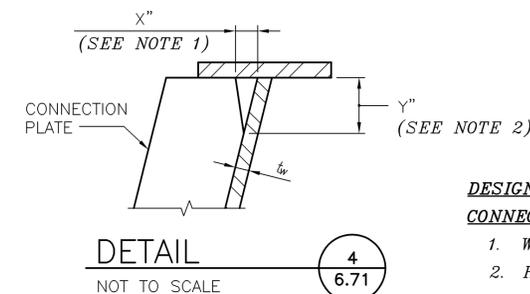
**BOLTED FIELD SPLICE DETAILS**

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



**DESIGNER NOTES:**

- THE TOP LATERAL BRACING MAY BE BOLTED DIRECTLY TO THE FLANGE WITHOUT A GUSSET PLATE WHERE THE FLANGE WIDTH PERMITS.
- SINGLE ANGLES ARE PREFERRED FOR INTERMEDIATE CROSS FRAMES. DOUBLE ANGLES MAY BE REQUIRED AS THE DESIGN DICTATES.
- RECTANGULAR GUSSET PLATES ARE PREFERRED.



**DESIGNER:**

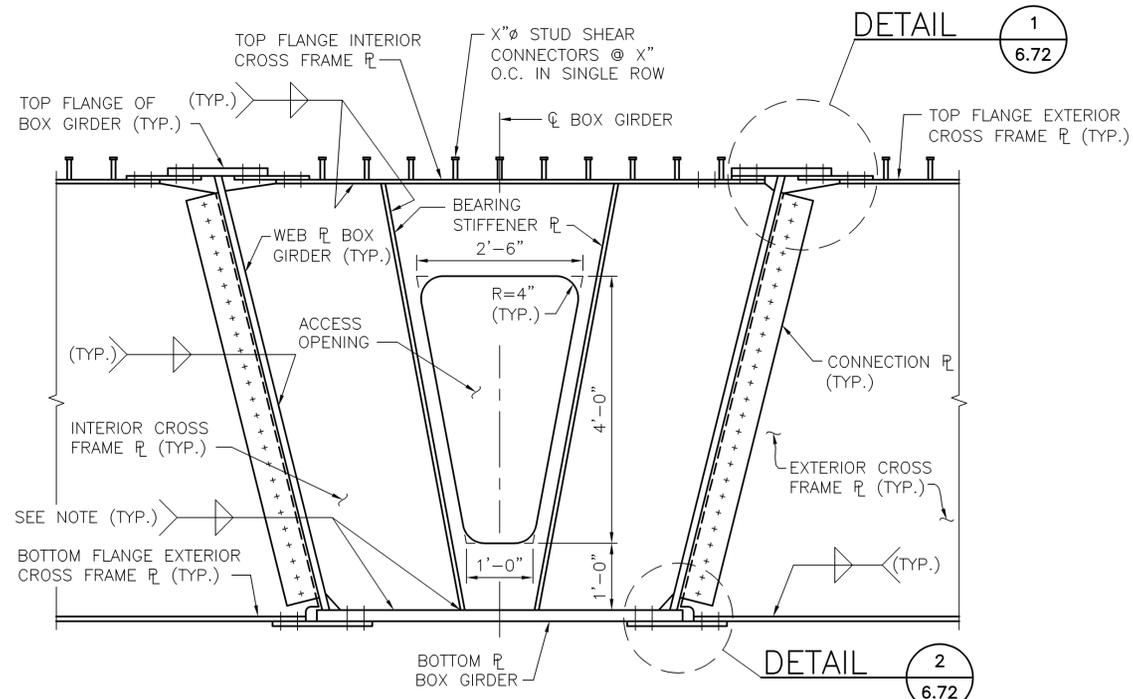
**CONNECTION PLATE NOTES:**

- WIDTH OF CLIP SHALL BE 2 x t<sub>w</sub>.
- HEIGHT OF CLIP SHALL BE 5 x t<sub>w</sub>.

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		STEEL BOX GIRDER DETAILS SHEET 2
		DRAWING NUMBER: 6.71

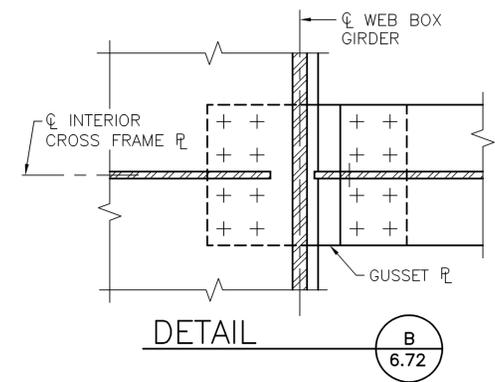
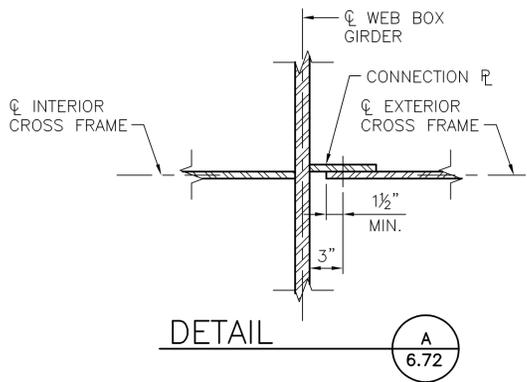
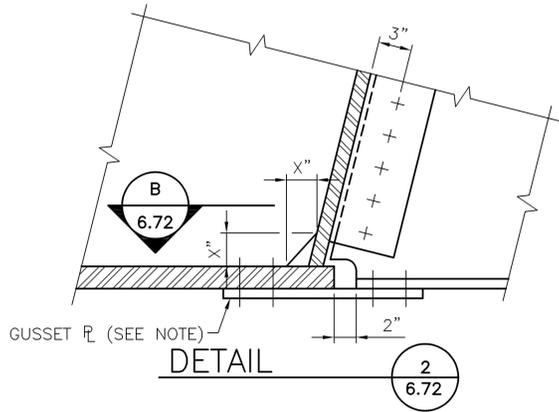
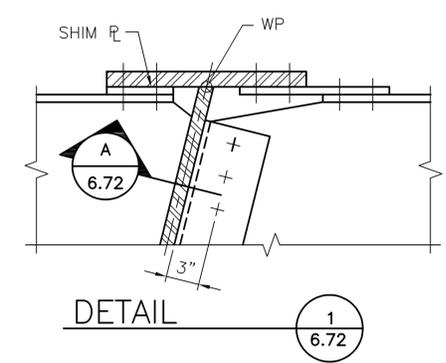
**NOTE:**

TERMINATE FILLET WELDS 1/2" SHORT OF ALL PLATE EDGES



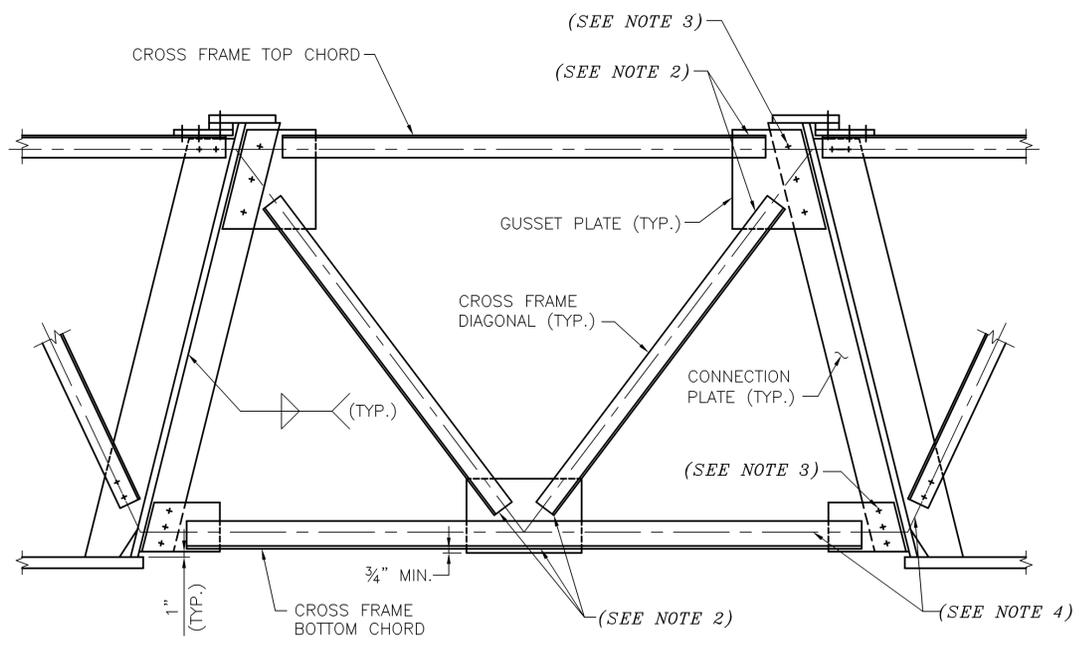
**NOTE:**  
ALL CROSS FRAME AND STIFFENER PLATE CONNECTIONS TO BOX GIRDER BOTTOM FLANGE ARE MILLED TO BEAR.

**END CROSS FRAME**  
SCALE: 3/4"=1'-0"



**NOTE:**  
BEND PLATE AS REQUIRED WHEN CONNECTION CROSS FRAME BETWEEN BOXED WITH VARYING CROSS SLOPE.

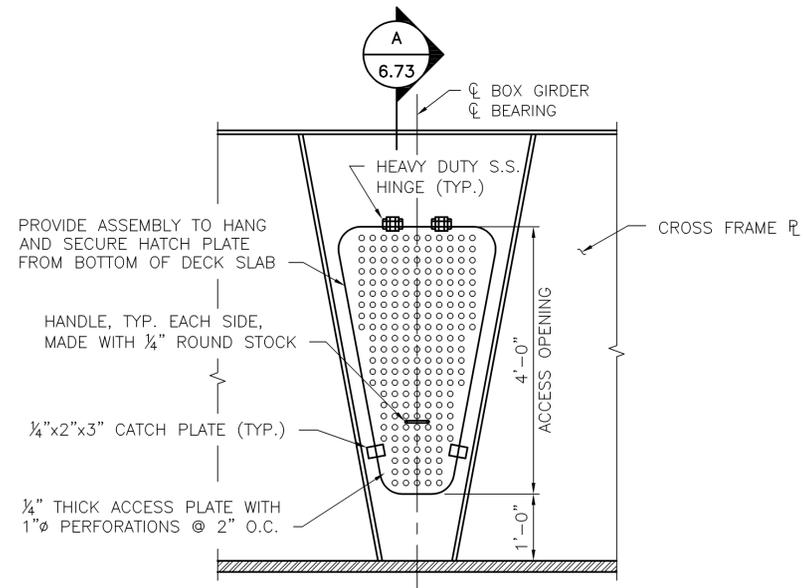
**END CROSS FRAME CONNECTION DETAILS**  
SCALE: 1/2"=1'-0"



**EXTERIOR INTERMEDIATE CROSS FRAME**  
SCALE: 3/4"=1'-0"

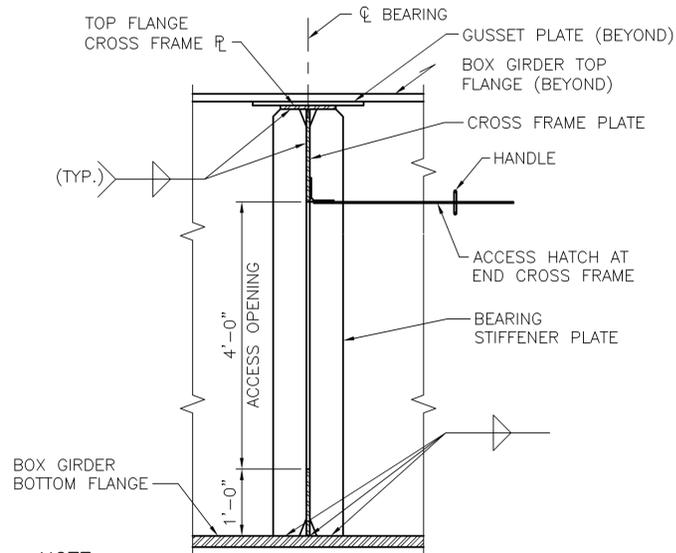
- DESIGNER NOTES:**
1. THE INTERIOR CROSS FRAME MEMBERS SHALL BE DESIGNED TO ACCOMMODATE THE FORCES FROM THE EXTERIOR CROSS FRAMES.
  2. WELD ALL ANGLES TO GUSSET PLATES WITH FILLET WELDS ON NEAR SIDE ONLY.
  3. MINIMUM NUMBER OF BOLTS SHOWN. ACTUAL NUMBER OF BOLTS SHALL BE DETERMINED BY DESIGN.
  4. LINE OF ACTION FOR INTERIOR AND EXTERIOR CROSS FRAME MEMBERS SHALL BE COINCIDENT TO THE CENTERLINE OF WEB.

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
No.	DATE	
		STEEL BOX GIRDER DETAILS SHEET 3



**ACCESS HATCH AT INTERIOR END CROSS FRAME**

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

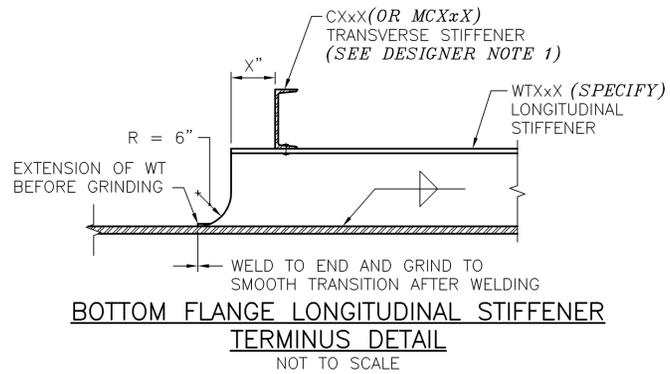


NOTE:  
ABUTMENT END CROSS FRAME SHOWN. PIER END CROSS FRAME SIMILAR.  
(INCLUDE THIS NOTE FOR MULTIPLE SPAN BRIDGES)

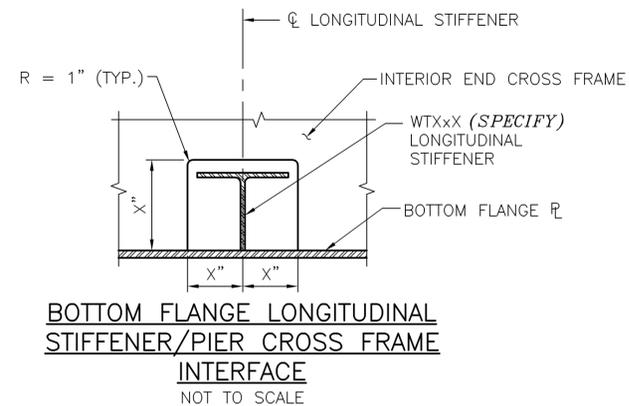
**SECTION**

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

**A**  
6.73



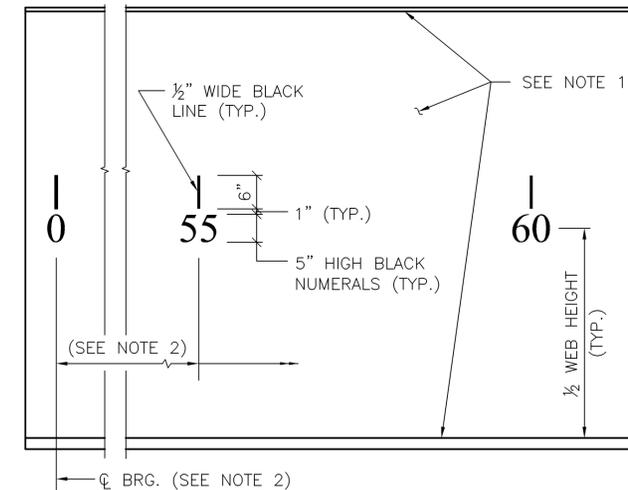
**BOTTOM FLANGE LONGITUDINAL STIFFENER TERMINUS DETAIL**  
NOT TO SCALE



**BOTTOM FLANGE LONGITUDINAL STIFFENER/PIER CROSS FRAME INTERFACE**  
NOT TO SCALE

**DESIGNER NOTES:**

- REFER TO AASHTO-LRFD FOR ADDITIONAL INFORMATION REGARDING SIZE AND LOCATION OF THE TRANSVERSE STIFFENER AND IT'S CONNECTION TO THE LONGITUDINAL STIFFENER. SHOW LOCATION OF TRANSVERSE STIFFENER ON FRAMING PLAN.
- LONGITUDINAL STIFFENERS ARE TYPICALLY ONLY REQUIRED FOR WIDER THAN NORMAL BOX GIRDERS. THE BEARING STIFFENER DETAILS SHOWN ON DWG. NO. 6.72 MAY NEED TO BE MODIFIED TO ACCOMMODATE THE LONGITUDINAL STIFFENER.



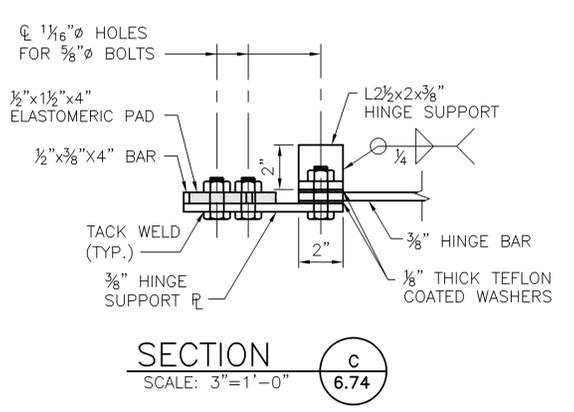
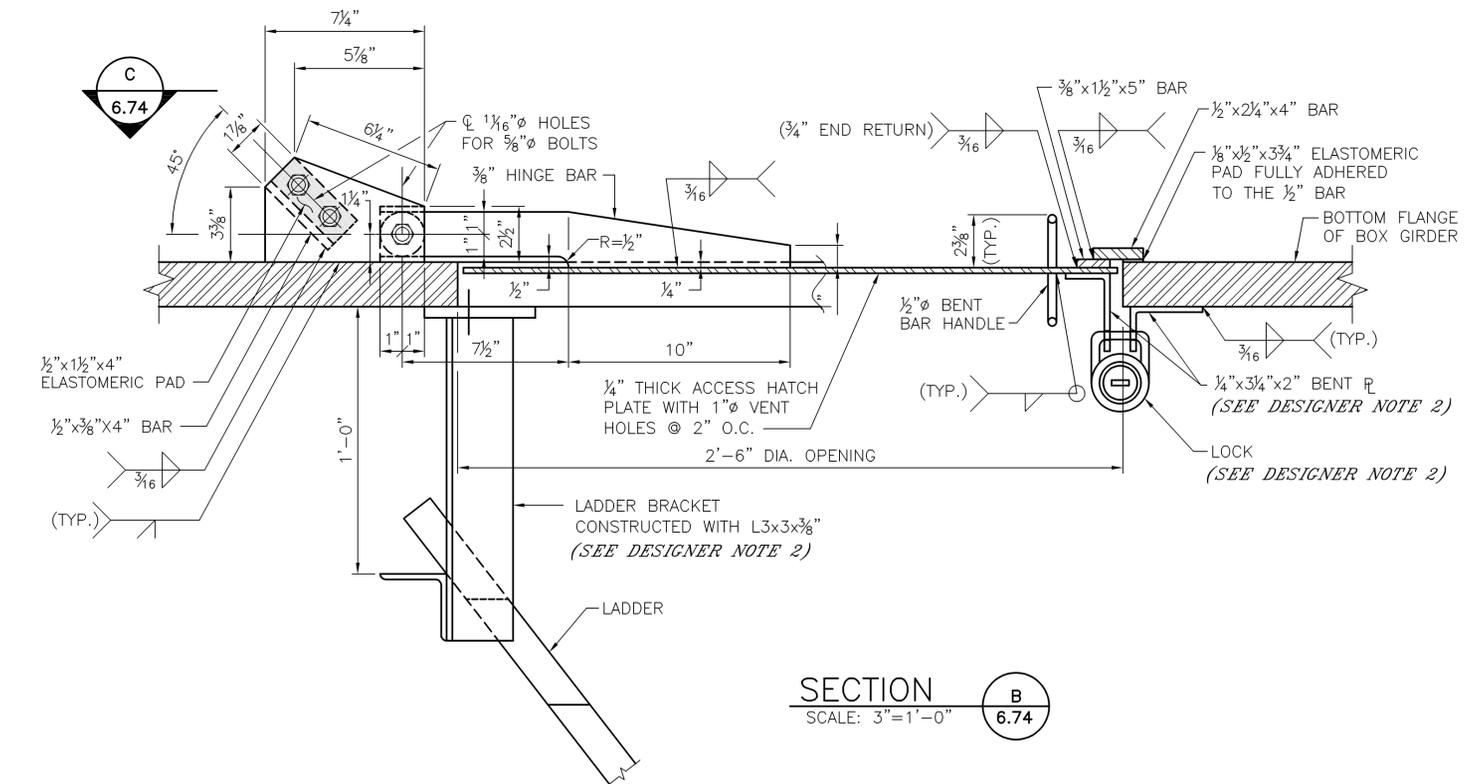
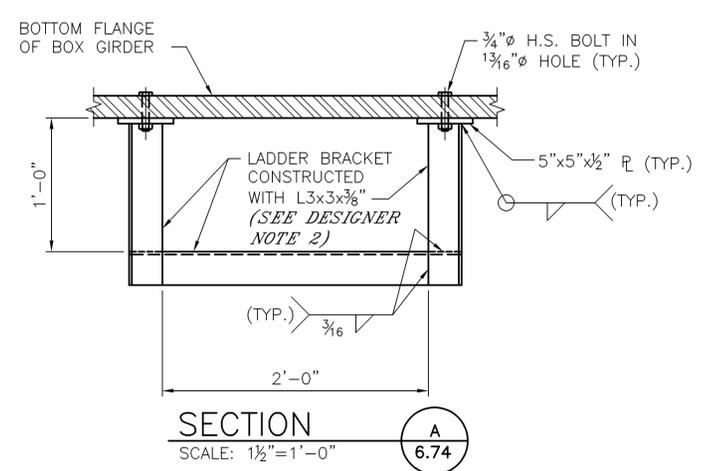
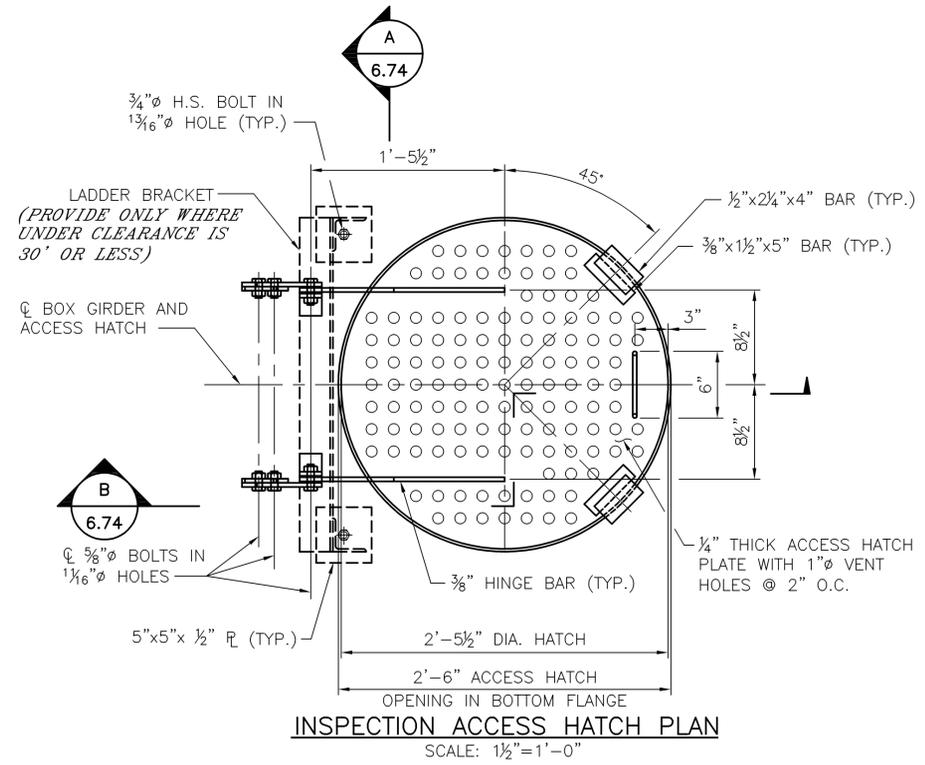
**NOTES:**

- THE INTERIOR OF ALL BOX GIRDERS, INCLUDING ALL STRUCTURAL STEEL COMPONENTS WITHIN EACH BOX GIRDER (SUCH AS DIAPHRAGMS, CROSS-FRAMES, CONNECTION PLATES, ETC.) SHALL BE PAINTED GLOSS WHITE (FEDERAL STANDARD 595B, COLOR NO. 17925).
- INDICATE DISTANCES SEQUENTIALLY AT FIVE (5) FOOT INTERVALS WITHOUT INTERRUPTION FULL LENGTH WITHIN EACH BOX GIRDER WITH BLACK LINES AND NUMERALS ON LEFT WEB, GOING UPSTATION.
- DO NOT CARRY OVER THE MEASURED DISTANCE SEQUENCE BETWEEN SEPARATE BOX GIRDERS WITHIN THE SAME GIRDER LINE OVER PIER(S).

**INTERIOR PAINTING REQUIREMENTS**

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

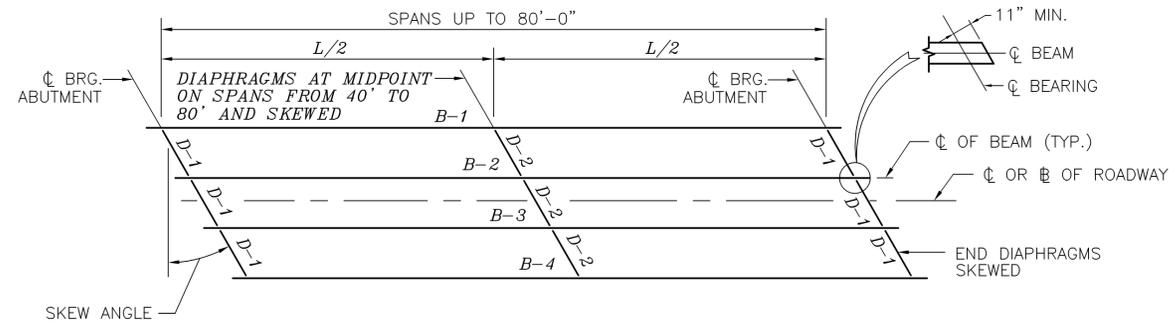
REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		STEEL BOX GIRDER DETAILS SHEET 4
DRAWING NUMBER: 6.73		



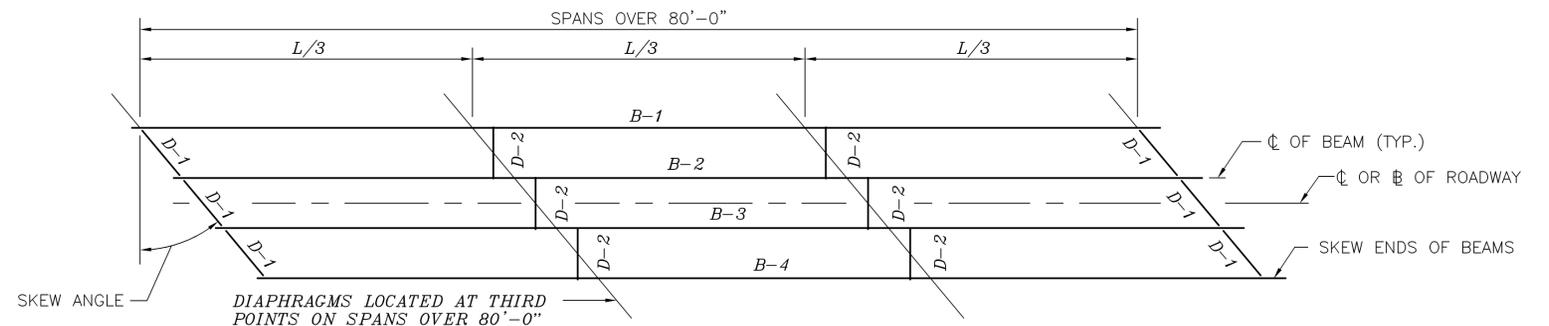
- INSPECTION ACCESS HATCH NOTES:**
1. INTERIOR OF ALL BOX BEAMS SHALL BE LEFT IN A BROOM CLEAN CONDITION, FREE FROM ALL DEBRIS. THE ENGINEER SHALL BE PROVIDED ACCESS TO BOX INTERIORS FOR CLEAN-OUT ACCEPTANCE.
  2. ALL STEEL COMPONENTS SHALL CONFORM TO AASHTO M 270 GRADE 36 AND SHALL BE GALVANIZED AFTER ASSEMBLY IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO M 111. ALL FASTENERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO M 232.
  3. ACCESS HATCH SHALL BE PAINTED ON BOTH SIDES AND EDGES WITH THE SAME COATING AS USED ON THE OUTSIDE/INSIDE OF THE BOX GIRDER.
  4. ALL LOCKS ON A BRIDGE SHALL BE KEYED THE SAME.  
(ELIMINATE THIS NOTE IF LOCKS ARE NOT NEEDED)

- DESIGNER NOTES:**
1. THE DESIGNER SHALL COORDINATE THE LOCATION OF THE INSPECTION HATCH WITH THE RIDOT BRIDGE SECTION.
  2. LOCKS AND 1/4" X 3/4" X 2" BENT PLATES SHALL BE PROVIDED ON A BRIDGE ONLY IF THE INSPECTION ACCESS HATCH IS LOCATED LESS THAN 20' FROM THE GROUND.

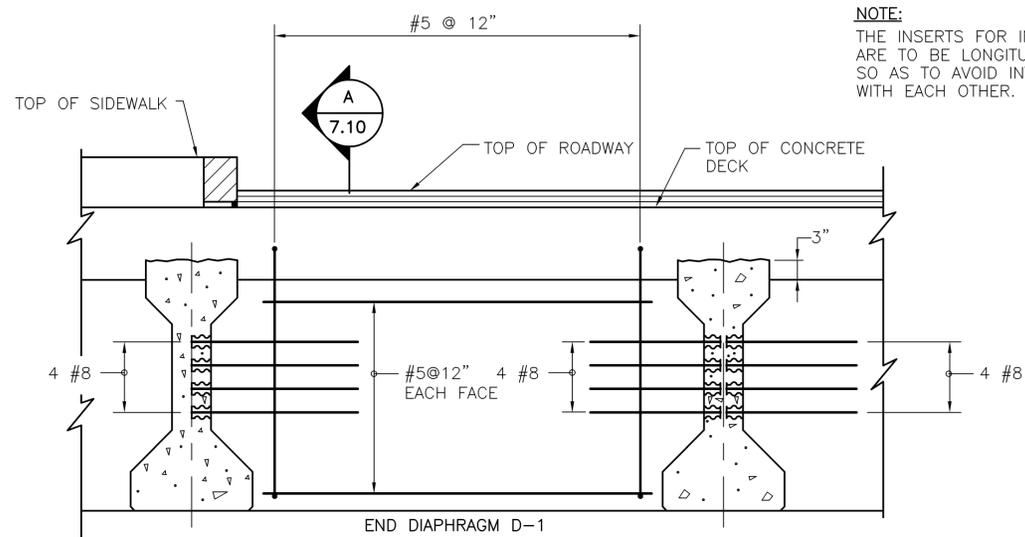
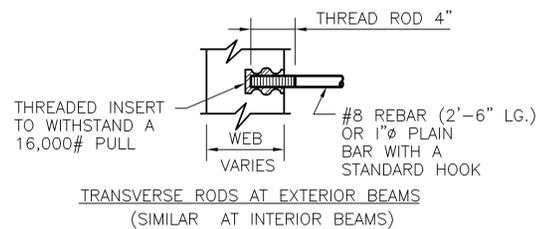
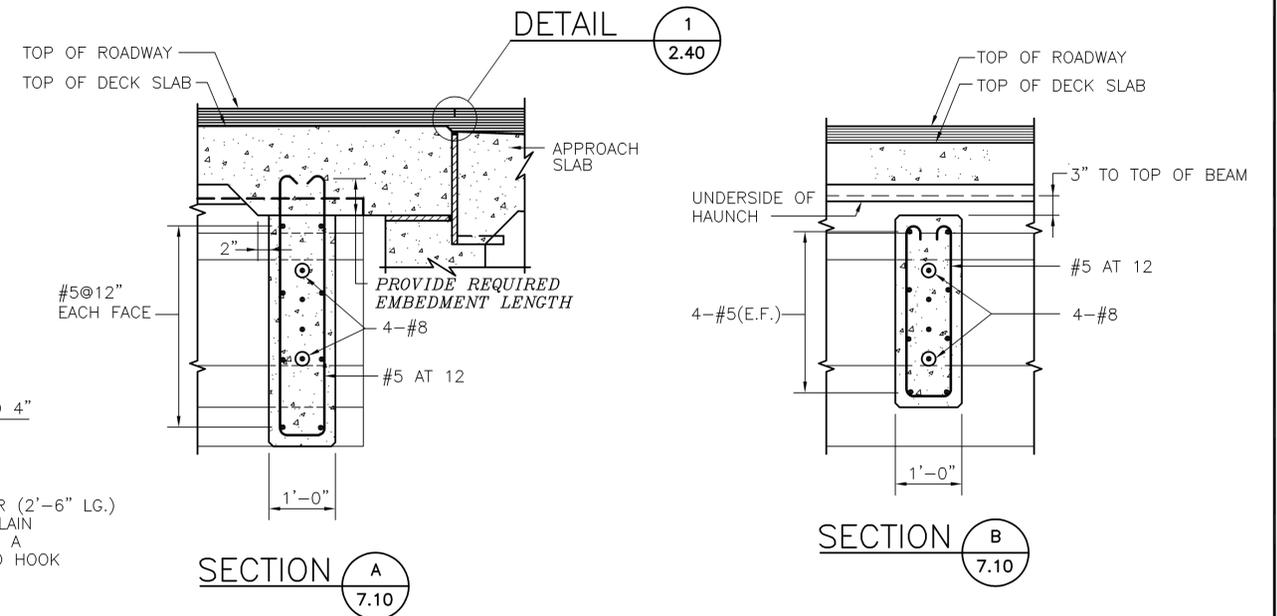
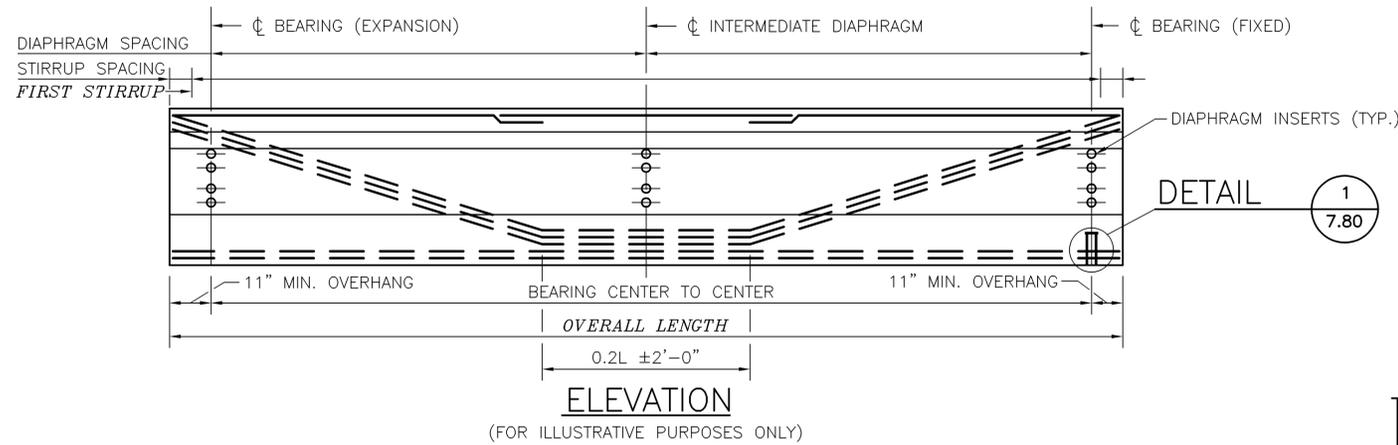
REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		STEEL BOX GIRDER DETAILS SHEET 5
DRAWING NUMBER: 6.74		



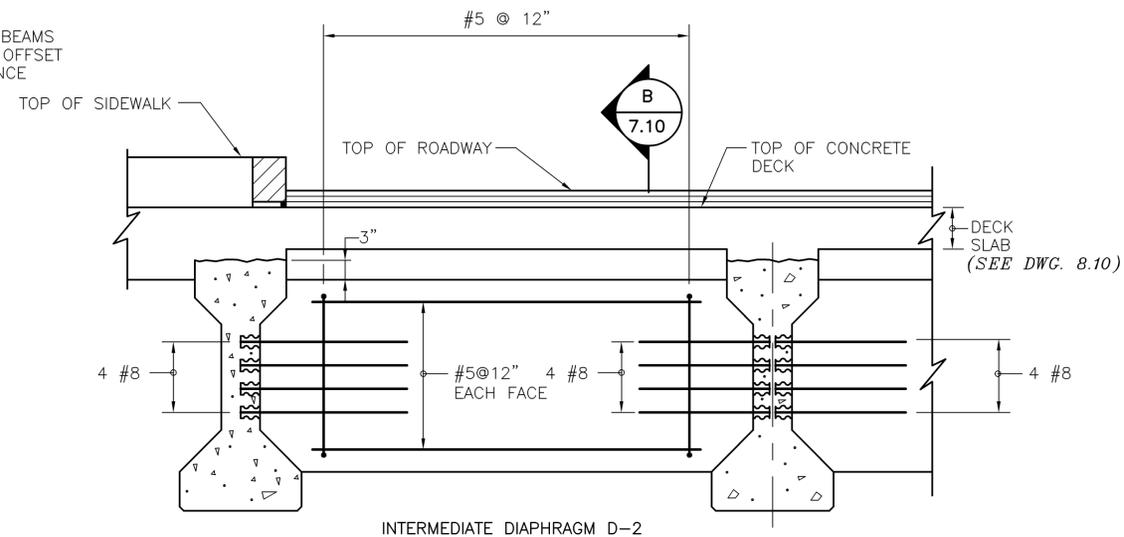
FRAMING PLAN  
PRESTRESSED CONCRETE BEAMS  
(SKEW ANGLE 30° AND UNDER)



FRAMING PLAN  
PRESTRESSED CONCRETE BEAMS  
(SKEW ANGLE OVER 30°)



**NOTE:**  
THE INSERTS FOR INTERIOR BEAMS ARE TO BE LONGITUDINALLY OFFSET SO AS TO AVOID INTERFERENCE WITH EACH OTHER.



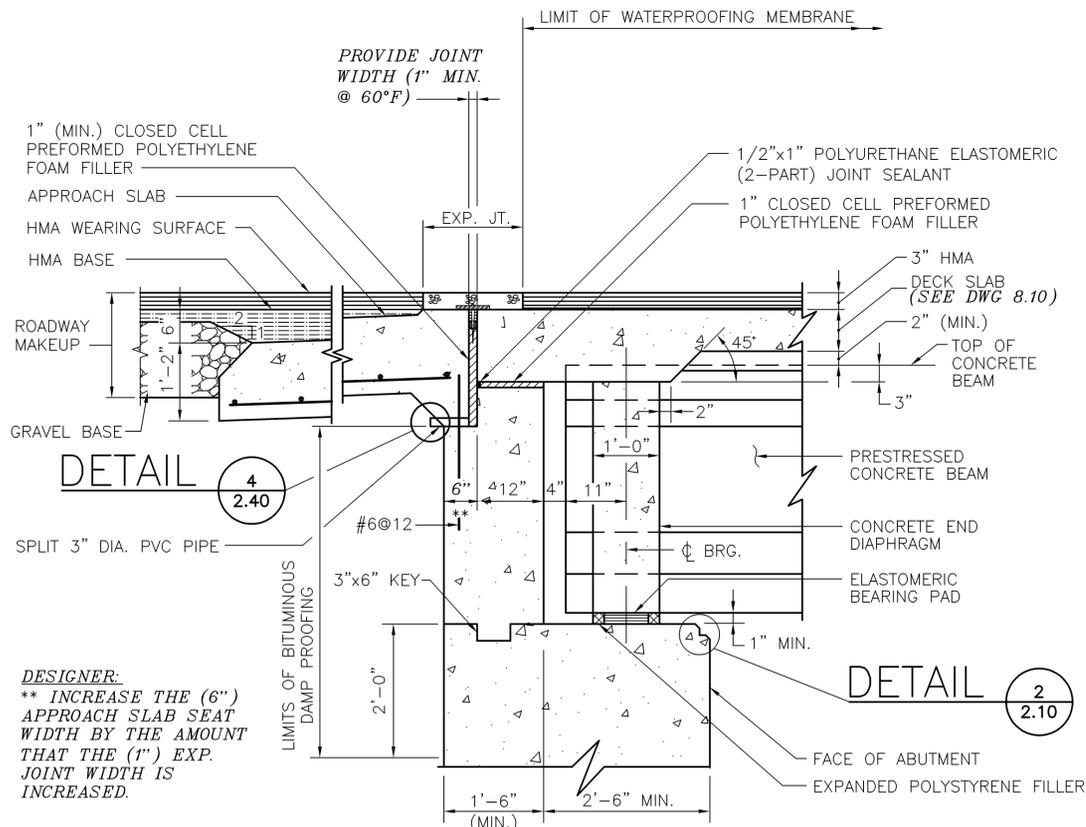
**DESIGNER NOTES:**

1. FOR BEARING DETAILS AND REQUIREMENTS, AND EXPANSION JOINT DETAILS, REFER TO DRAWING 7.30.
2. TO AVOID CRACKING OF THE GIRDERS, THE DESIGNER SHALL LIMIT THE TOTAL HOLD DOWN FORCE TO 3/4 OF THE BEAM WEIGHT.
3. THE DESIGNER SHALL REFER TO THE RHODE ISLAND LRFD BRIDGE DESIGN MANUAL FOR FUTURE JACKING REQUIREMENTS.
4. REFER TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR VERTICAL STIRRUP REQUIREMENTS AT ENDS OF BEAMS.

THIS SHEET IS NOT TO SCALE

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
No.	DATE	
		PRESTRESSED BEAM DETAILS AND FRAMING LAYOUT
		DRAWING NUMBER: 7.10

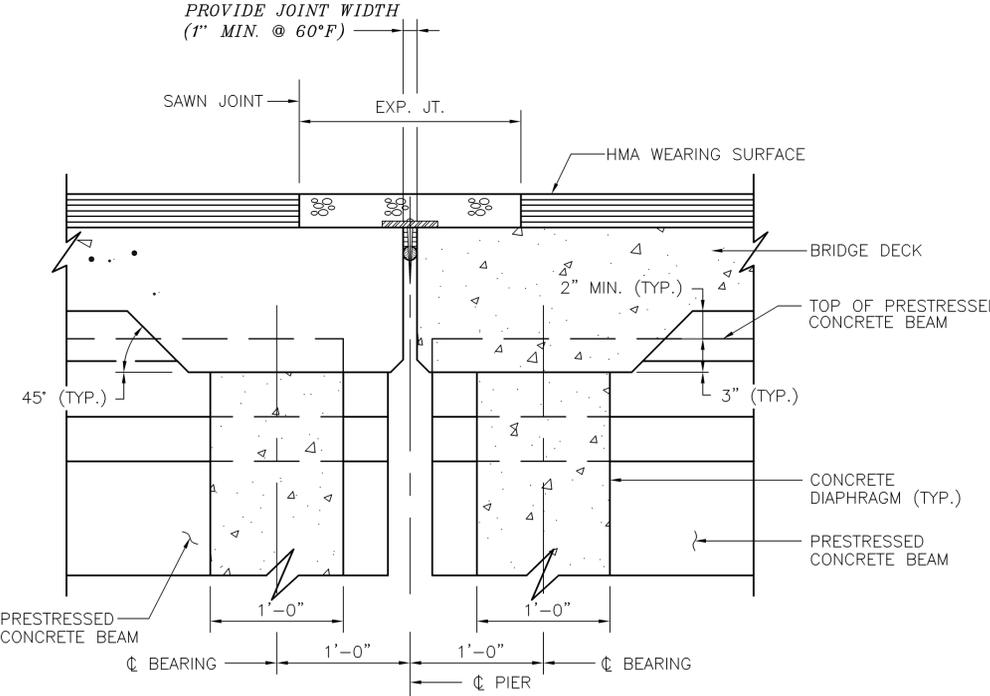




**EXPANSION JOINT AT ABUTMENT**

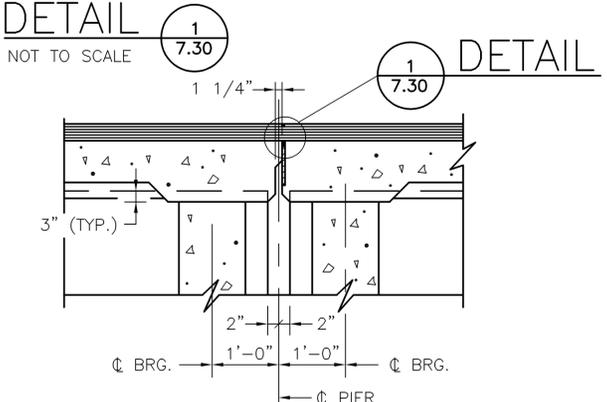
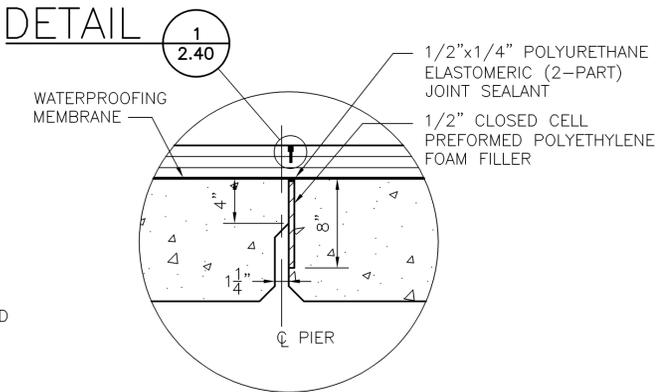
SCALE: 3/4" = 1'-0"

**DESIGNER:**  
 \*\* INCREASE THE (6")  
 APPROACH SLAB SEAT  
 WIDTH BY THE AMOUNT  
 THAT THE (1") EXP.  
 JOINT WIDTH IS  
 INCREASED.



**EXPANSION JOINT AT PIER**

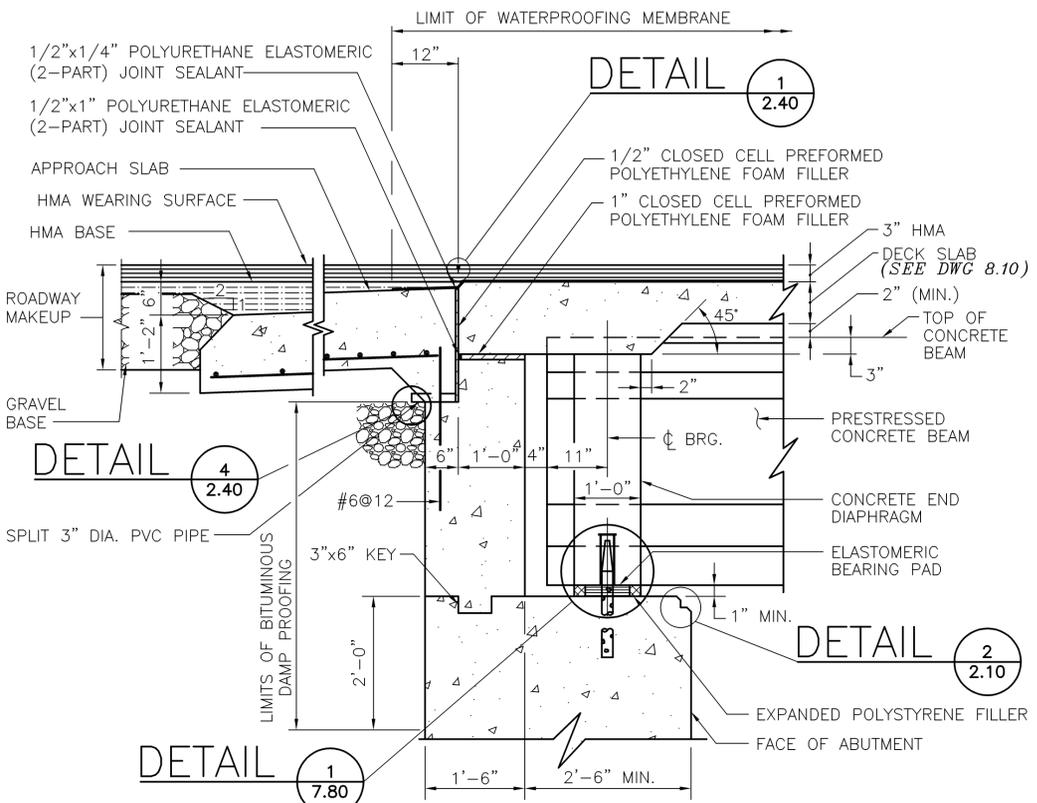
SCALE: 1 1/2" = 1'-0"  
 \* SEE DESIGNER NOTE 8



**\* FIXED JOINT AT PIER**

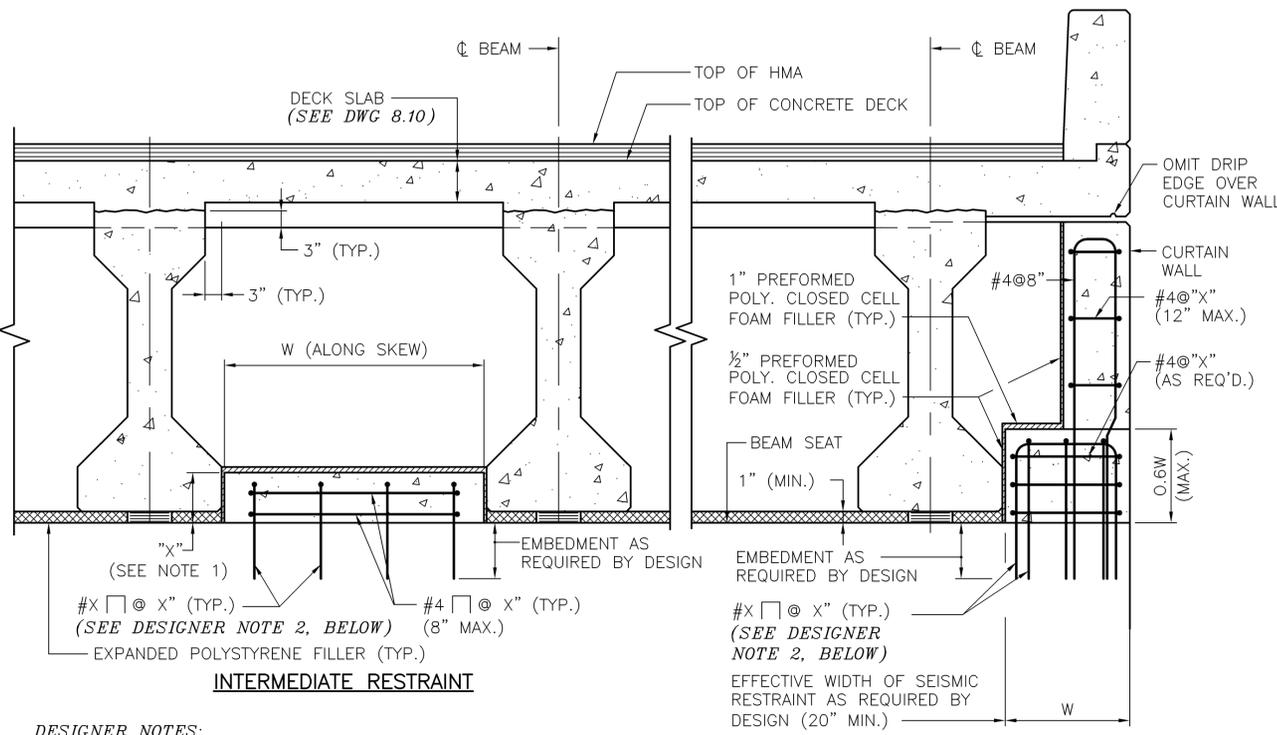
NOT TO SCALE  
 \* SEE DESIGNER NOTE 8

- DESIGNER NOTES:**
1. DIMENSIONS SHOWN ARE SQUARE DIMENSIONS.
  2. FOR APPROACH SLAB DETAILS REFER TO DRAWING 2.40.
  3. THE DESIGNER SHALL PROVIDE THE APPROPRIATE EXPANSION JOINT DETAIL FOR THE ANTICIPATED AMOUNT OF JOINT MOVEMENT. REFER TO RIDOT LRFD BRIDGE DESIGN MANUAL (SECTION 14).
  4. FOR DETAILS OF ASPHALTIC EXPANSION JOINT SYSTEMS, REFER TO DRAWINGS 4.20 AND 4.41.
  5. FOR DETAILS OF THE STRIP SEAL EXPANSION JOINT, REFER TO DRAWINGS 4.20 AND 4.30.
  6. FOR DETAILS OF ALTERNATE FIXED JOINTS REFER TO DRAWINGS 2.40 AND 2.50.
  7. FOR DETAILS OF BEARING ANCHOR RODS REFER TO DRAWING 7.80.
  8. ELIMINATION OF EXPANSION AND FIXED JOINTS AT PIER IS PREFERRED. SEE DRAWING 3.20.
  9. THE DESIGN OF THE ELASTOMERIC BEARINGS SHALL BE IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.



**FIXED JOINT AT ABUTMENT**

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



**INTERMEDIATE RESTRAINT**

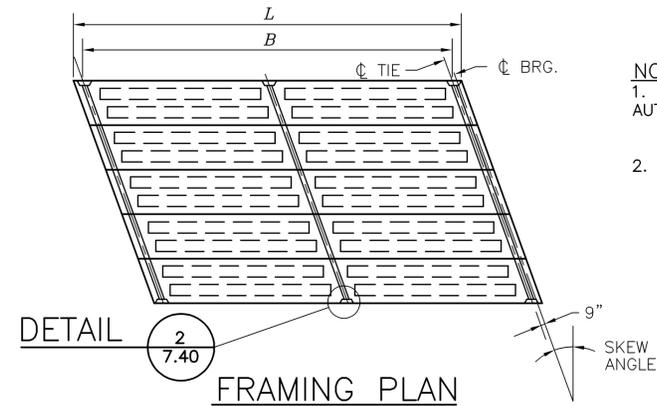
**CURTAIN WALL RESTRAINT**

- DESIGNER NOTES:**
1. HEIGHT OF LATERAL RESTRAINT BLOCK: HEIGHT ≤ W/3.
  2. DESIGN AS SHEAR FRICTION REINFORCEMENT TO RESIST TRANSVERSE SEISMIC LOADS. REINFORCEMENT CONFIGURATION IS CONCEPTUAL. THE DESIGNER SHALL MODIFY THE ARRANGEMENT AS REQUIRED.
  3. INTERMEDIATE RESTRAINTS ARE ONLY USED WHEN CURTAIN WALL RESTRAINTS ARE INSUFFICIENT. AVOID LOCATING INTERMEDIATE RESTRAINTS IN UTILITY BAYS.

**TYPICAL PLACEMENT OF LATERAL RESTRAINTS AT EXPANSION JOINTS**

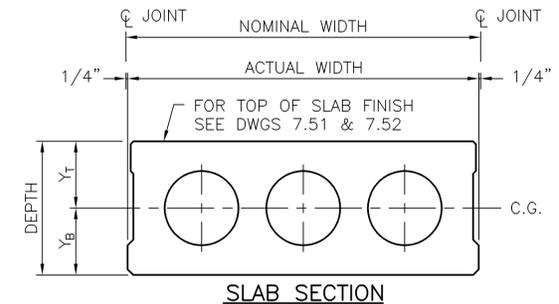
SCALE: 3/4" = 1'-0"

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		JOINT DETAILS FOR PRESTRESSED BEAMS
		DRAWING NUMBER: 7.30



**NOTE:**  
 1. SKEW ANGLE IS NOT TO EXCEED 30° EXCEPT AS AUTHORIZED BY THE ENGINEER.  
 (SEE DESIGNER NOTE 5)  
 2. PROVIDE LATERAL TIES AT MIDPOINT AND AT END POINTS.

BEAM TYPE	DEPTH (IN.)	WIDTH (IN.)		A (IN. <sup>2</sup> )	I (IN. <sup>4</sup> )	Y <sub>B</sub> (IN.)	Y <sub>T</sub> (IN.)	S <sub>B</sub> (IN. <sup>3</sup> )	S <sub>T</sub> (IN. <sup>3</sup> )	WT. LBS./FT.	* MAX. SPAN/FT.
		NOMINAL	ACTUAL								
S12x36	12.0	36.0	35.5	417.0	5033.0	5.98	6.02	842.0	836.0	434	30
S15x36	15.0	36.0	35.5	419.0	9419.0	7.47	7.53	1261.0	1251.0	436	40
S18x36	18.0	36.0	35.5	464.0	15963.0	8.96	9.04	1782.0	1766.0	483	46
S21x36	21.0	36.0	35.5	497.0	24827.0	10.45	10.55	2376.0	2353.0	518	54
S12x48	12.0	48.0	47.5	561.0	6761.0	5.98	6.02	1131.0	1123.0	584	34
S15x48	15.0	48.0	47.5	548.0	12593.0	7.47	7.53	1686.0	1672.0	571	39
S18x48	18.0	48.0	47.5	601.0	21303.0	8.97	9.03	2375.0	2359.0	626	47
S21x48	21.0	48.0	47.5	670.0	33597.0	10.47	10.53	3209.0	3191.0	698	58



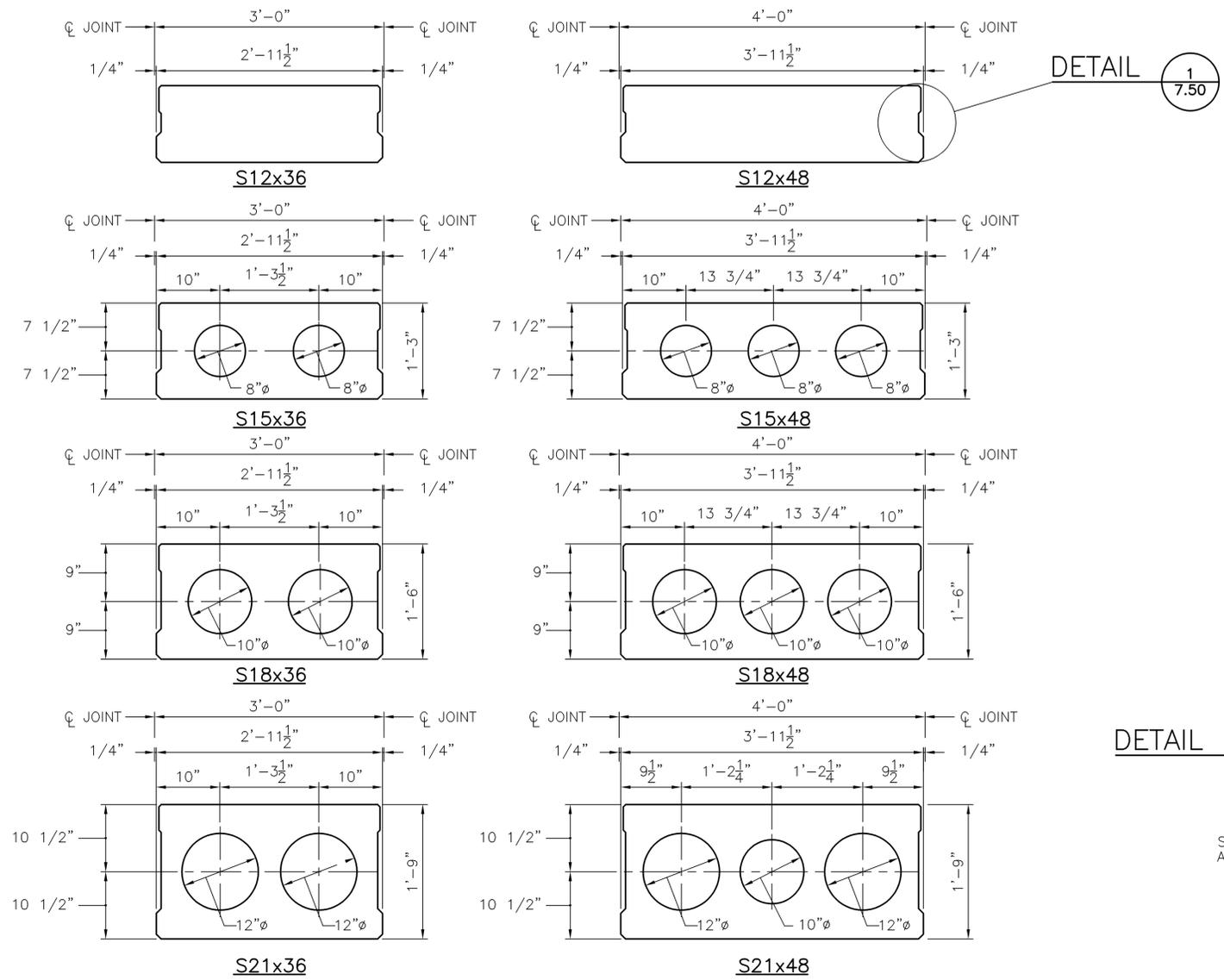
\* SEE DESIGNER NOTE 3

**NOTE:**

- FABRICATOR SHALL FURNISH ACCESS HANDHOLES AS REQUIRED FOR LATERAL TIE INSTALLATION.

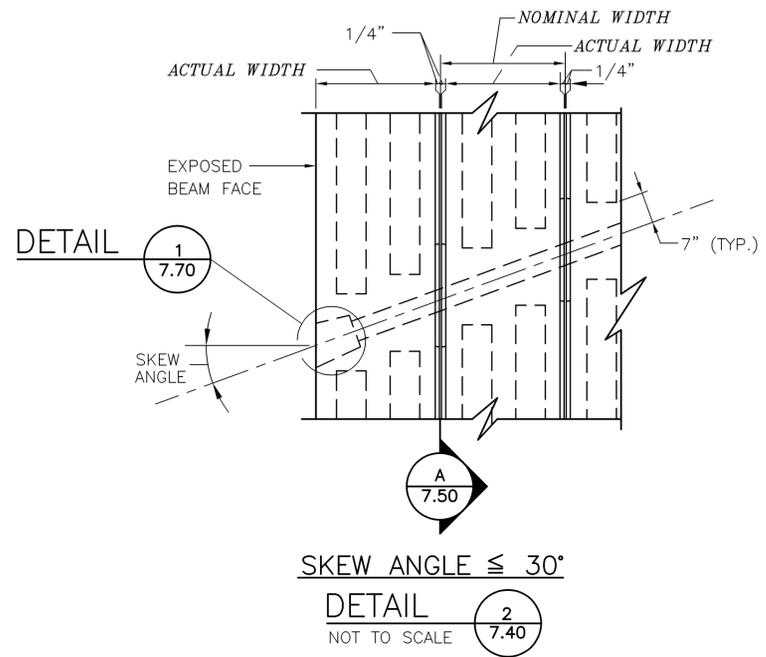
**DESIGNER NOTES:**

- DESIGNER SHALL INVESTIGATE EXTERIOR BEAM GROUP FOR TORSIONAL LOADS DUE TO SLAB OVERHANG OR UTILITY PLACEMENT. CONSIDERATION SHOULD BE GIVEN TO INCREASING THE NUMBER OF LATERAL TIES, AMOUNT OF POST TENSIONING AND/OR PROVIDING ADDITIONAL SHEAR BLOCKS.
- STIRRUP SIZE AND SPACING SHALL BE AS REQUIRED BY DESIGN. STIRRUP SPACING AND SIZE SHOWN ARE MINIMUM REQUIREMENTS.
- THE MAXIMUM SPAN LENGTHS LISTED ABOVE ARE APPROXIMATE AND ARE PROVIDED AS A GUIDE ONLY. THEY ARE BASED ON AN HL93 LIVE LOAD, BUT THEY WILL VARY DEPENDING ON SUCH FACTORS AS STRENGTH OF CONCRETE, SIZE AND NUMBER OF STRANDS, AND WHETHER OR NOT A 5" MIN. REINFORCED CONCRETE DECK OVERLAY IS USED.
- THIS SHEET CONTAINS STANDARD PRESTRESSED CONCRETE SLAB SECTIONS. SPECIFIC APPLICATIONS, DETAILS (INCLUDING SLAB DIMENSIONS, ELEVATIONS, SIZES AND NUMBERS OF STRANDS OF BAR REINFORCEMENT) SHALL BE SHOWN ON THE CONTRACT DRAWINGS.
- FOR ANY AUTHORIZED SKEW ANGLE GREATER THAN 30 DEGREES, THE DESIGNER MUST CONSIDER THE RESULTING EFFECTS OF THE LARGER SKEW ANGLE AND CONSIDER DETAILING ADDITIONAL LATERAL TIE STRANDS TO COMPENSATE FOR THE REDUCED LATERAL FORCES.



**SLAB SECTIONS**

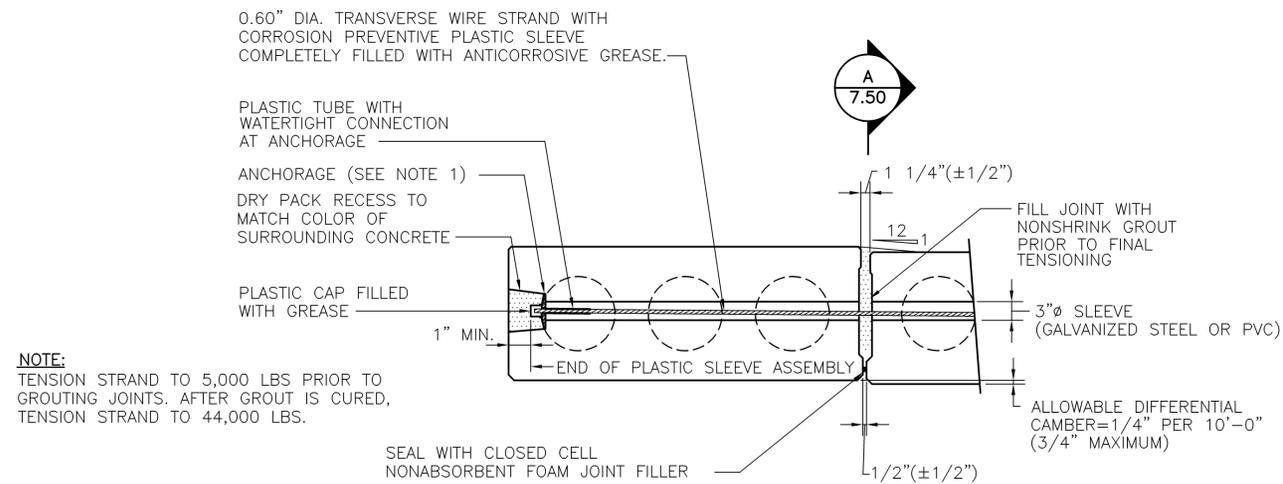
SCALE: 1" = 1'-0"



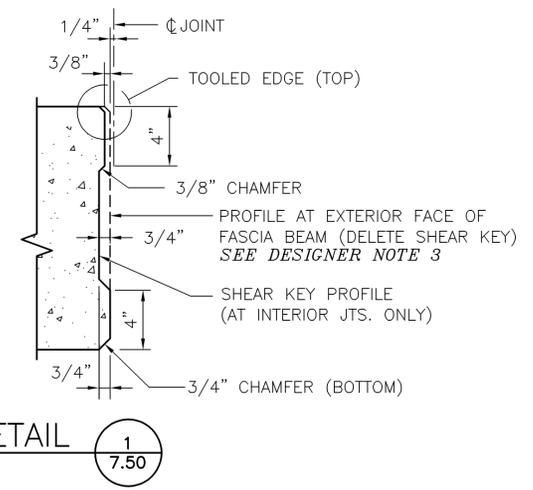
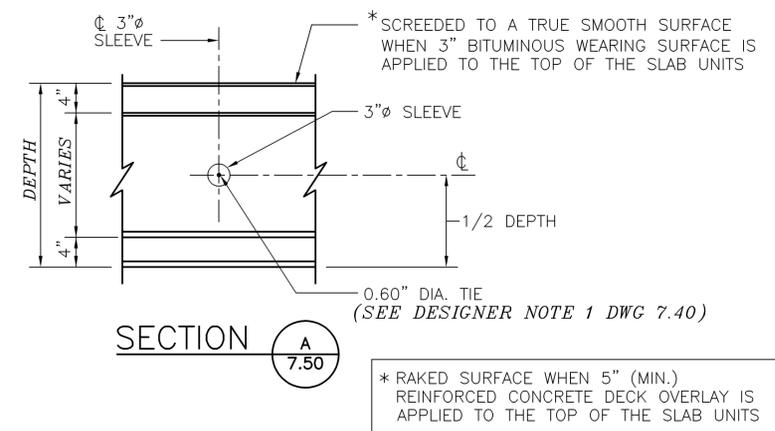
SKEW ANGLE ≤ 30°

**DETAIL**  
NOT TO SCALE

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		PRESTRESSED CONCRETE SLABS SHEET 1
		DRAWING NUMBER: 7.40



**LATERAL TIE DETAILS**  
SCALE: 1"=1'-0"



**SHEAR KEY DETAILS**

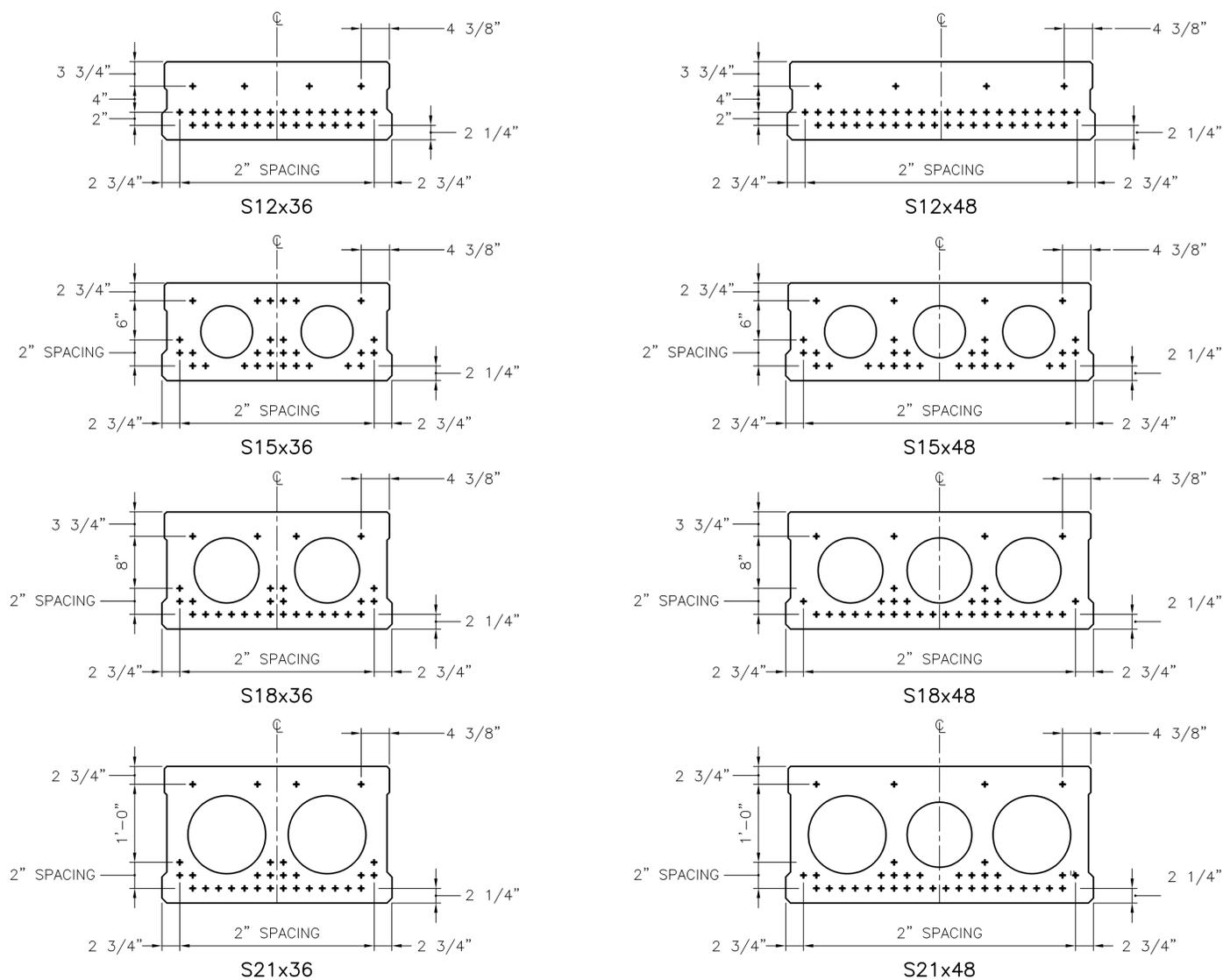
NOT TO SCALE

**DESIGNER NOTES:**

1. THE STANDARD STRAND PATTERNS SHOWN HERE DEPICT THE MAXIMUM NUMBER OF STRANDS POSSIBLE FOR A GIVEN BEAM SECTION WHILE STILL MEETING APPLICABLE FABRICATION CLEARANCES.
2. PRESTRESSED WIRE STRANDS SHALL BE 0.50" DIA. OR 0.60" DIA.
3. THE EXTERIOR FACE OF THE FASCIA BEAMS SHALL RECEIVE A SELECTED FORMLINER OR RUBBED FINISH.

**NOTES:**

1. DETAILS OF THE ANCHORAGE ASSEMBLY ARE TO BE SUBMITTED FOR REVIEW AND APPROVAL BY THE ENGINEER.
2. ALL PRESTRESSED CONCRETE SLABS SHALL BE ERECTED AS INDICATED ON THE CONTRACT DRAWINGS. THEY SHALL BE SET TO THE SPECIFIED (NOMINAL) DIMENSIONS AND WITH THE SPECIFIED (NOMINAL) 1 INCH SPACING BETWEEN UNITS. THE LATERAL POST-TENSIONING STRANDS SHALL BE TENSIONED INITIALLY TO 5,000 POUNDS. SAID LATERAL POST-TENSIONING IS NOT EXPECTED TO DRAW THE UNITS TOGETHER. AFTER THE UNITS ARE IN PLACE, THE FOAM JOINT FILLER SHALL BE PLACED AT THE BOTTOM OF THE SHEAR KEYS. APPROVED NON-SHRINK GROUT SHALL THEN BE PLACED INTO THE SHEAR KEYS (PENCIL VIBRATE THE GROUT IN THE KEY TO CONSOLIDATE MATERIAL) AND ALLOWED TO CURE, FOR A MINIMUM OF 72 HOURS, AFTER WHICH THE STRANDS SHALL BE STRESSED TO THE FULL 44,000 POUNDS.
3. THE CONTRACTOR SHALL FURNISH THE STATE WITH CALCULATIONS FOR THE THEORETICAL ELONGATION OF THE LATERAL POST-TENSIONING STRANDS SO THAT THE STRAND TENSION INDICATED ON THE CALIBRATED METER CAN BE VERIFIED. THE CONTRACTOR SHALL FURNISH RECORDS TO THE STATE OF THE GAUGE READINGS VERSUS THE MEASURED ELONGATIONS.
4. NO TRAFFIC OR HEAVY EQUIPMENT SHALL BE PERMITTED ON THE STRUCTURE UNTIL ALL TRANSVERSE TIES HAVE BEEN PROPERLY TENSIONED AND THE GROUT HAS ATTAINED THE 28 DAY COMPRESSIVE STRENGTH.

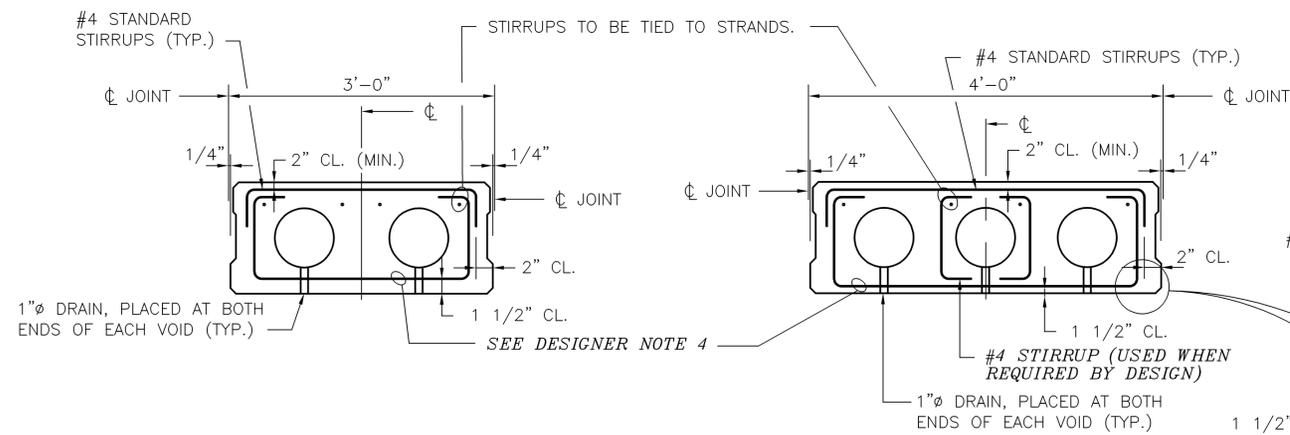


**STRAND LOCATIONS**  
SCALE: 1"=1'-0"

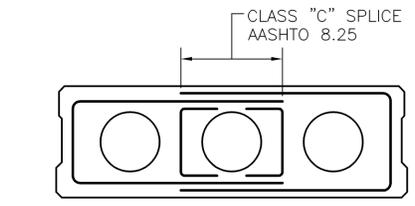
**LEGEND**

+ STRAIGHT STRAND  
(SEE DESIGNER NOTE 2)

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		PRESTRESSED CONCRETE SLABS SHEET 2
DRAWING NUMBER: 7.50		

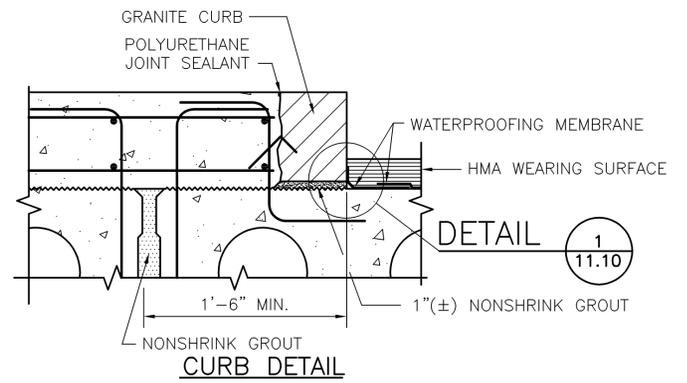


**TYPICAL REINFORCING PATTERN**  
SCALE: 1"=1'-0"

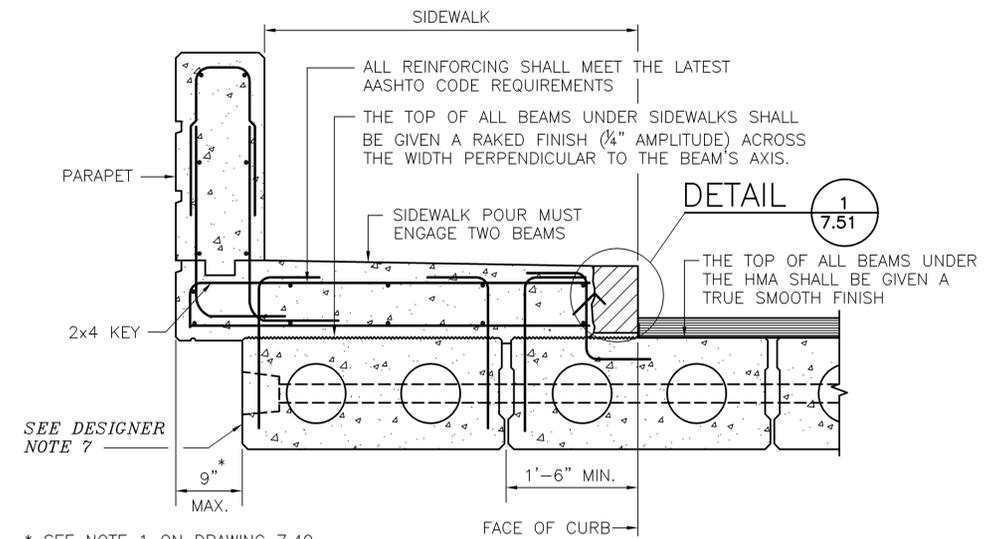


NOTE:  
FOR S12x36 AND S12x48 BEAMS USE THIS ALTERNATIVE PATTERN EXCLUSIVELY

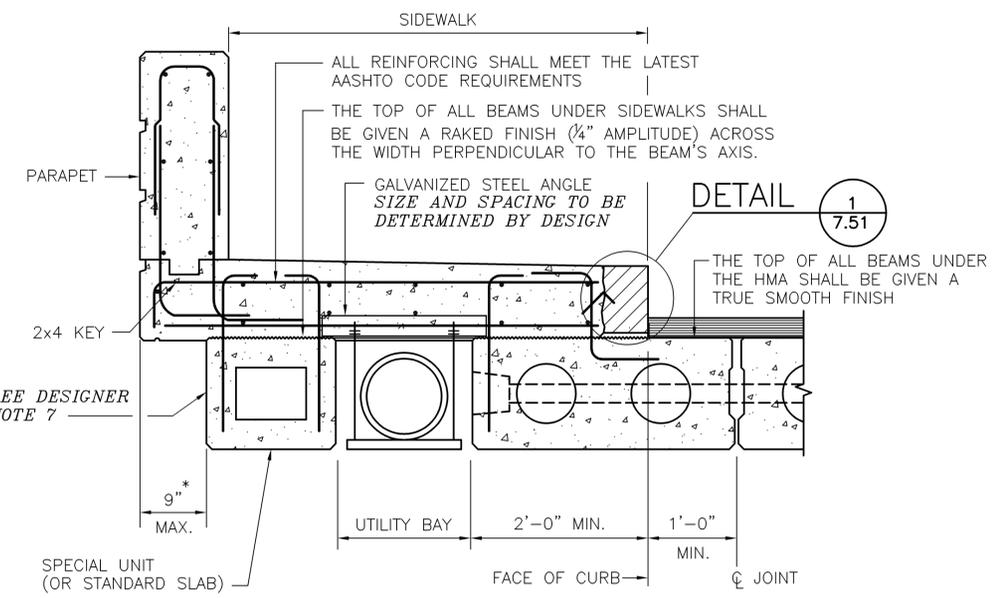
**ALTERNATE STIRRUP PATTERN**  
SCALE: 1"=1'-0"



**DETAIL 1**  
7.51

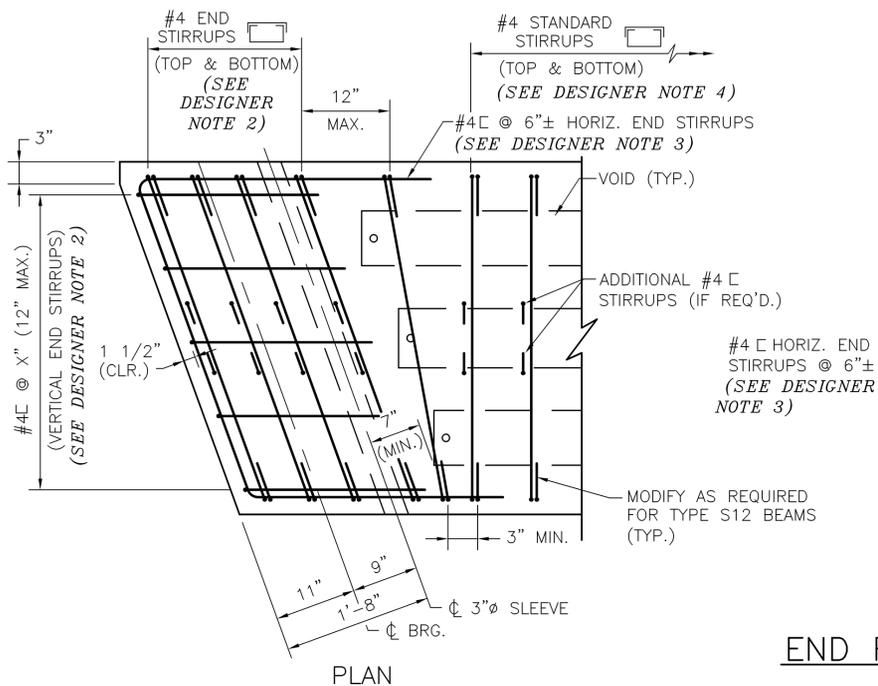


**SIDEWALK OVERHANG WITHOUT UTILITIES**

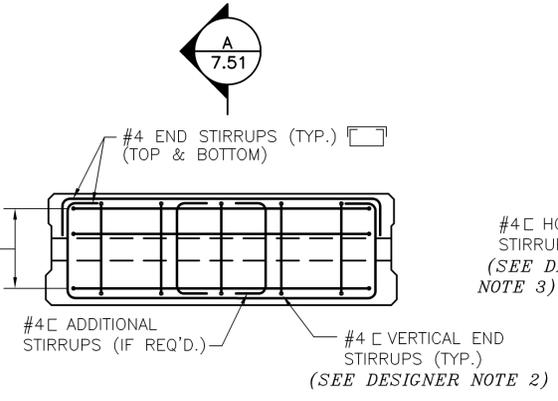


**SIDEWALK OVERHANG WITH UTILITIES**

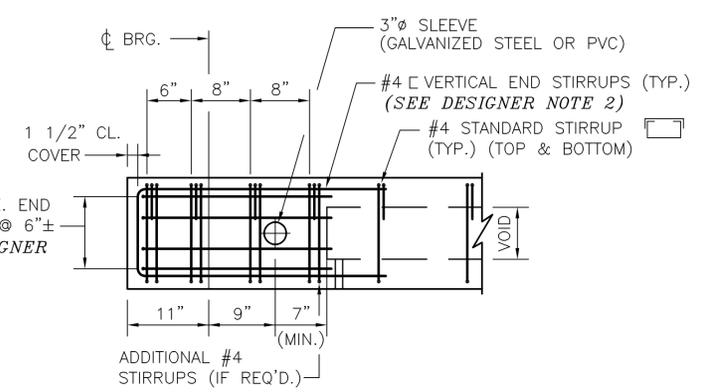
NOTE:  
POST TENSIONING REQUIREMENT NOT APPLICABLE TO SPECIAL UNIT



**END REINFORCING PATTERN**  
SCALE: 1"=1'-0"



**END OF BEAM SECTION**



**LONGITUDINAL SECTION**

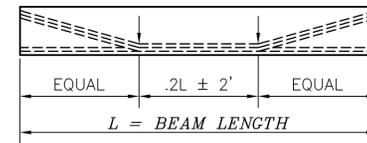
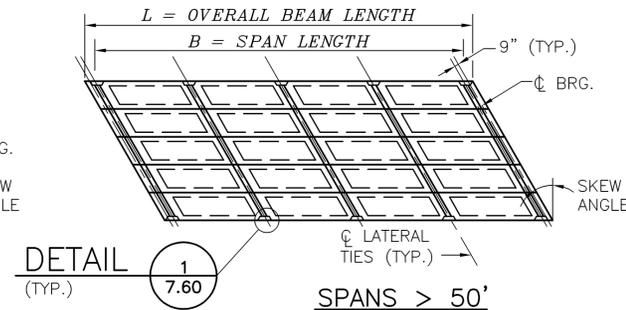
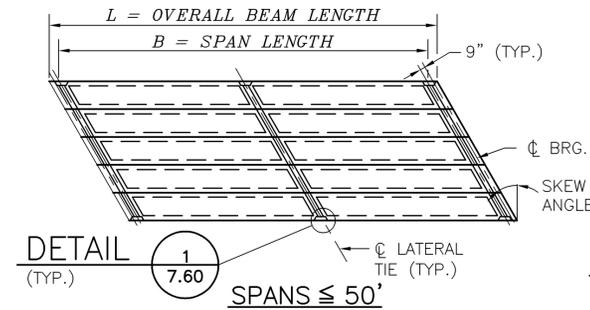
**SECTION A**  
7.51

**DESIGNER NOTES:**

1. THIS DRAWING IS INTENDED TO APPLY TO PRESTRESSED CONCRETE SLAB UNITS WITH AN ASPHALTIC WEARING SURFACE ONLY. SEE DRAWING 7.52 FOR PRESTRESSED CONCRETE SLAB UNITS WITH A 5" MIN. COMPOSITE REINFORCED CONCRETE DECK OVERLAY.
2. DESIGN END STIRRUPS IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN REQUIREMENTS FOR ANCHORAGE ZONES. THE HORIZONTAL LEG LENGTHS OF THE VERTICAL END STIRRUPS ARE EQUAL TO THE DEPTH OF THE BEAM AND SHALL BE DIMENSIONED ON THE PLAN VIEW.
3. HORIZONTAL END STIRRUPS SHALL BE EMBEDDED A MINIMUM DISTANCE EQUAL TO THE DEPTH OF BEAM INTO THE WEB OF THE VOIDED SECTION. LENGTH OF EMBEDMENT SHALL BE NOTED ON THE PLAN.
4. STANDARD STIRRUP SPACING SHALL NOT EXCEED 12".
5. PROPERLY NOTE AND SHOW THE LOCATION AND SPACING OF ANY DOWELS WHICH EXTEND INTO SLABS, SIDEWALKS, CURB, OR BARRIERS ON THE CROSS SECTION AND PLAN VIEWS OF THE BEAMS.
6. THE MAXIMUM ALLOWABLE DEPTH OF PAVEMENT BUILD UP (TO ACCOMMODATE ROADWAY PROFILE AND CROSS SLOPE) SHALL BE 7 INCHES UNLESS OTHERWISE AUTHORIZED BY THE MANAGING BRIDGE ENGINEER.
7. THE EXTERIOR FACE OF THE FASCIA BEAMS SHALL RECEIVE A SELECTED FORMLINER OR RUBBED FINISH.

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		PRESTRESSED CONCRETE SLABS SHEET 3
		DRAWING NUMBER: 7.51





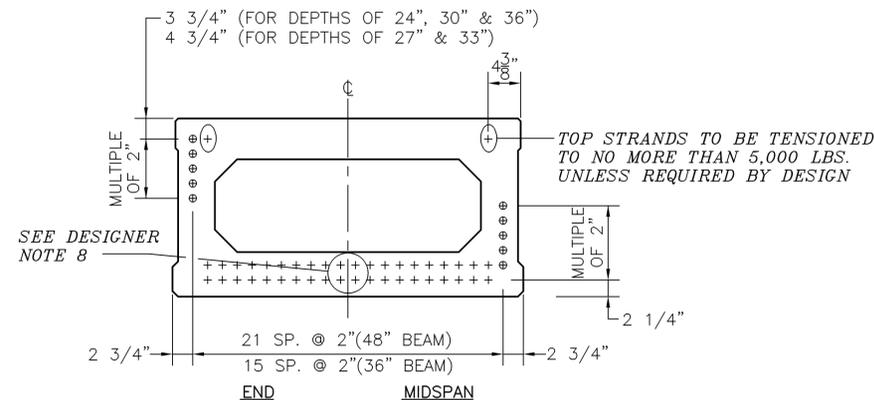
**HOLD DOWN POINTS FOR DRAPED STRANDS**

**NOTE:**  
FABRICATOR SHALL FURNISH ACCESS HANDHOLES AS REQUIRED FOR LATERAL TIE INSTALLATION.

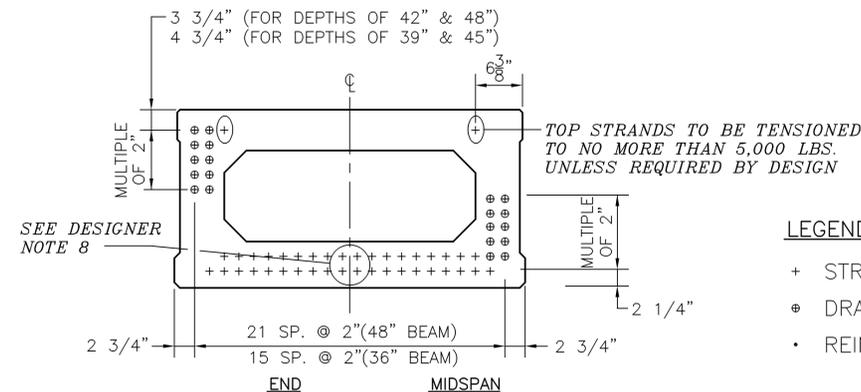
LATERAL TIES AT SUPPORTS AND MIDPOINT WHEN  $B \leq 50'-0"$ , AND AT QUARTER POINTS WHEN  $B > 50'-0"$

**FRAMING PLANS**

$SKEW < 30^\circ$  (SEE DESIGNER NOTE 7)



**STRAND LOCATION—(B24x36 THRU B36x36) & (B24x48 THRU B36x48)**

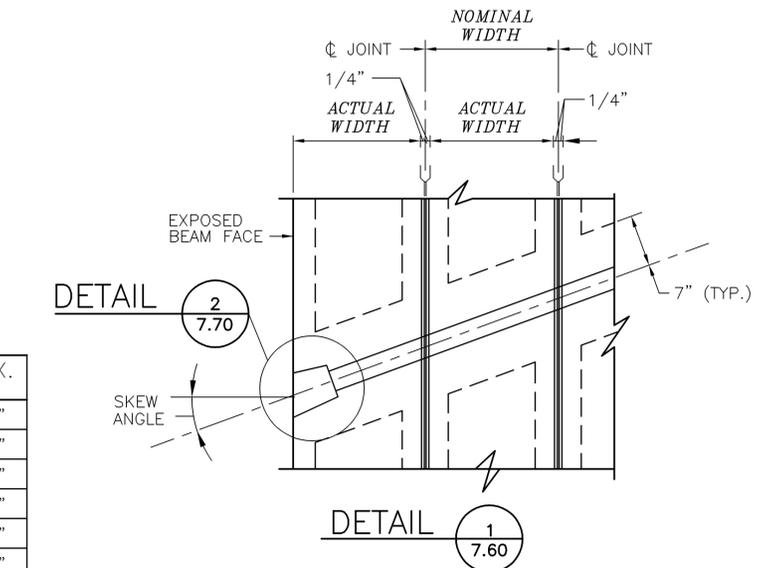


**STRAND LOCATION—(B39x36 THRU B48x36) & (B39x48 THRU B48x48)**

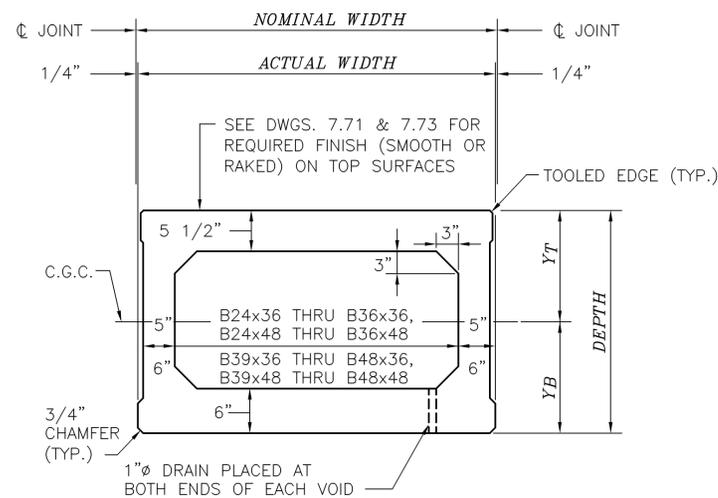
STRAND PATTERNS SHOWN ARE MAXIMUM NUMBER TYPICALLY ALLOWED. DEVIATIONS MAY BE PERMITTED WITH PRIOR CONSULTATION WITH LOCAL FABRICATORS. PRESTRESSED WIRE STRANDS SHALL BE .50" DIA. OR .60" DIA. AS REQUIRED BY DESIGN

**LEGEND**

- + STRAIGHT STRAND
- ⊕ DRAPED STRAND
- REINFORCING STEEL



THIS SHEET IS NOT TO SCALE



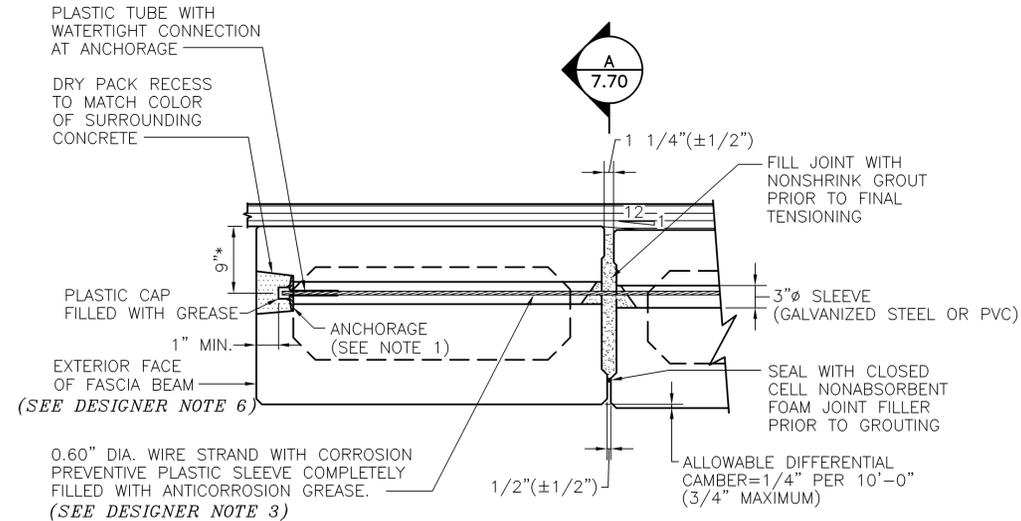
**BOX BEAM SECTION**

**BOX BEAM PROPERTIES**

TYPE	DEPTH (IN.)	WIDTH (IN.)		A (IN. <sup>2</sup> )	I (IN. <sup>4</sup> )	Y <sub>B</sub> (IN.)	Y <sub>T</sub> (IN.)	S <sub>B</sub> (IN. <sup>3</sup> )	S <sub>T</sub> (IN. <sup>3</sup> )	WT. LBS./FT.	* MAX. SPAN
		NOMINAL	ACTUAL								
B24x36	24.0	36.0	35.5	543	36609	11.82	12.18	3097	3006	566	64'-0"
B27x36	27.0	36.0	35.5	573	50267	13.29	13.71	3782	3666	597	71'-0"
B30x36	30.0	36.0	35.5	603	66503	14.77	15.23	4503	4367	628	78'-0"
B33x36	33.0	36.0	35.5	633	85453	16.24	16.76	5262	5099	659	84'-0"
B36x36	36.0	36.0	35.5	663	107251	17.72	18.28	6053	5867	691	92'-0"
B39x36	39.0	36.0	35.5	748	135514	19.24	19.76	7043	6858	779	99'-0"
B42x36	42.0	36.0	35.5	784	164680	20.73	21.27	7944	7742	817	107'-0"
B45x36	45.0	36.0	35.5	820	197374	22.21	22.79	8887	8661	854	113'-0"
B48x36	48.0	36.0	35.5	856	233759	23.70	24.30	9863	9620	892	117'-0"
B24x48	24.0	48.0	47.5	681	48461	11.80	12.20	4107	3972	709	64'-0"
B27x48	27.0	48.0	47.5	711	66201	13.27	13.73	4989	4822	741	70'-0"
B30x48	30.0	48.0	47.5	741	87139	14.73	15.27	5916	5707	772	79'-0"
B33x48	33.0	48.0	47.5	771	111410	16.20	16.80	6877	6632	803	85'-0"
B36x48	36.0	48.0	47.5	801	139151	17.68	18.32	7871	7596	834	92'-0"
B39x48	39.0	48.0	47.5	886	173980	19.19	19.81	9066	8782	923	103'-0"
B42x48	42.0	48.0	47.5	922	210330	20.67	21.33	10176	9861	960	111'-0"
B45x48	45.0	48.0	47.5	958	250828	22.15	22.85	11324	10977	998	115'-0"
B48x48	48.0	48.0	47.5	994	295638	23.63	24.37	12511	12131	1035	122'-0"

\* SEE DESIGNER NOTE 9

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
No.	DATE	
		PRECAST CONCRETE BUTTED BOX BEAMS SHEET 1
DRAWING NUMBER: 7.60		



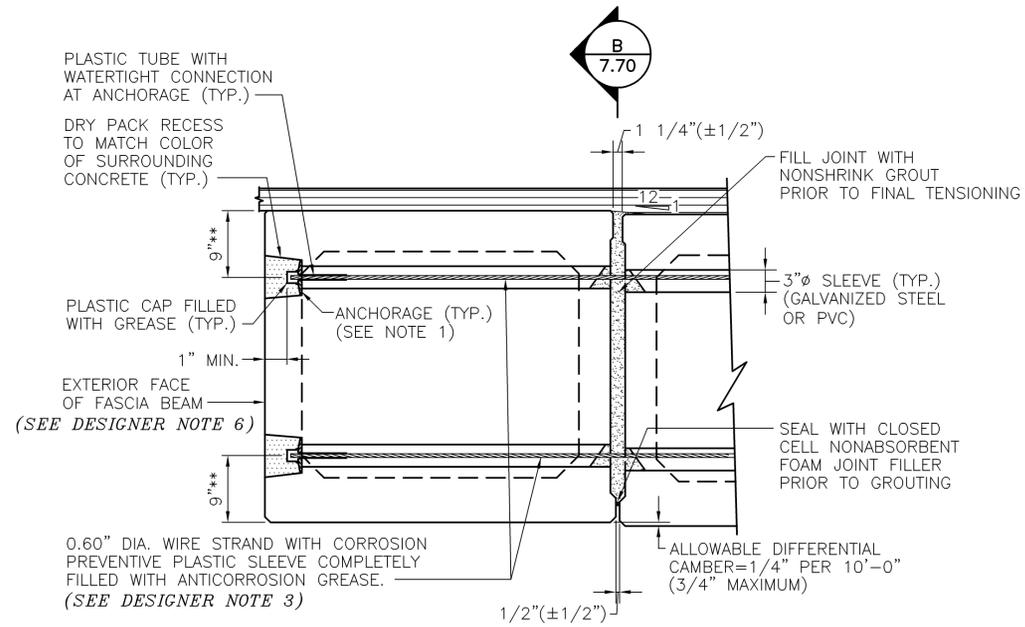
**DETAIL I**

(APPLIES TO BOX BEAMS B24 THRU B33)

**NOTES:**

1. TENSION STRAND TO 5,000 LBS PRIOR TO GROUTING JOINTS. AFTER GROUT IS CURED, TENSION STRAND TO 44,000 LBS.
2. PLACE SHIMS IN JOINT, TENSION STRANDS TO 5,000 LBS AND FILL WITH NONSHRINK GROUT.

\* (SEE DESIGNER NOTE 4)



**DETAIL II**

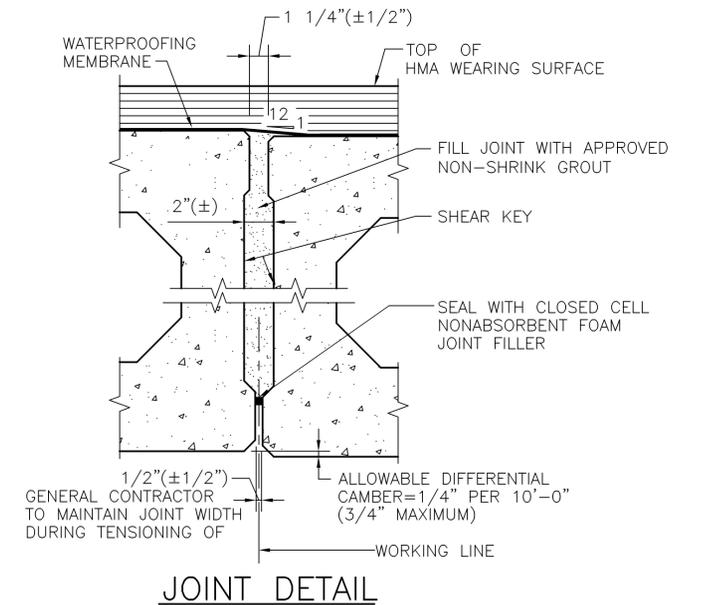
(APPLIES TO BOX BEAMS B36 THRU B48)

**NOTES:**

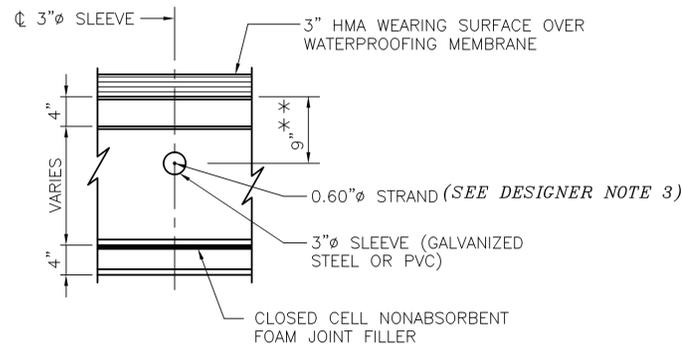
1. DETAILS OF THE ANCHORAGE ASSEMBLY ARE TO BE SUBMITTED FOR REVIEW AND APPROVAL BY THE ENGINEER.
2. ALL PRESTRESSED CONCRETE SLABS SHALL BE ERECTED AS INDICATED ON THE CONTRACT DRAWINGS. THEY SHALL BE SET TO THE SPECIFIED (NOMINAL) DIMENSIONS AND WITH THE SPECIFIED (NOMINAL) 1 INCH SPACING BETWEEN UNITS. THE LATERAL POST-TENSIONING STRANDS SHALL BE TENSIONED INITIALLY TO 5,000 POUNDS. SAID LATERAL POST-TENSIONING IS NOT EXPECTED TO DRAW THE UNITS TOGETHER. AFTER THE UNITS ARE IN PLACE, THE FOAM JOINT FILLER SHALL BE PLACED AT THE BOTTOM OF THE SHEAR KEYS (PENCIL VIBRATE THE GROUT IN THE KEY TO CONSOLIDATE MATERIAL) AND ALLOWED TO CURE, FOR A MINIMUM OF 72 HOURS, AFTER WHICH THE STRANDS SHALL BE STRESSED TO THE FULL 44,000 POUNDS.
3. THE CONTRACTOR SHALL FURNISH THE STATE WITH CALCULATIONS FOR THE THEORETICAL ELONGATION OF THE LATERAL POST-TENSIONING STRANDS SO THAT THE STRAND TENSION INDICATED ON THE CALIBRATED METER CAN BE VERIFIED. THE CONTRACTOR SHALL FURNISH RECORDS TO THE STATE OF THE GAUGE READINGS VERSUS THE MEASURED ELONGATIONS.
4. NO TRAFFIC OR HEAVY EQUIPMENT SHALL BE PERMITTED ON THE STRUCTURE UNTIL ALL TRANSVERSE TIES HAVE BEEN PROPERLY TENSIONED AND THE GROUT HAS ATTAINED THE 28 DAY COMPRESSIVE STRENGTH.

**DESIGNER NOTES:**

1. THIS DRAWING APPLIES TO PRESTRESSED CONCRETE BOX BEAMS WITH AN ASPHALT WEARING SURFACE ONLY.
2. REFER TO DWG No. 7.72 & No. 7.73 FOR PRESTRESSED CONCRETE BOX BEAMS WITH A 5" MIN. COMPOSITE REINFORCED CONCRETE DECK OVERLAY.
3. FOR LOCATION OF LATERAL TIES (LONGITUDINALLY ALONG THE BEAM) SEE DWG. No. 7.60.
4. IN LATERAL TIE DETAILS (DETAIL I) THE DEPTH TO THE LATERAL TIE MAY BE INCREASED UP TO D/2 FOR WIDE BRIDGES TO MINIMIZE THE "DISHING EFFECT" ACROSS THE WIDTH OF THE DECK, PROVIDED THAT THERE ARE NO DESIGN CONCERNS FOR TORSIONAL LOADS ON EXTERIOR BEAMS. (SEE DESIGNER NOTE 1 ON DWG No. 7.40)
5. THE MAXIMUM ALLOWABLE DEPTH OF PAVEMENT BUILDUP (TO ACCOMMODATE ROADWAY PROFILE AND CROSS SLOPE) SHALL BE 7 INCHES UNLESS OTHERWISE AUTHORIZED BY THE MANAGING BRIDGE ENGINEER.
6. THE EXTERIOR FACE OF THE FASCIA BEAMS SHALL RECEIVE A SELECTED FORMLINER OR RUBBED FINISH.

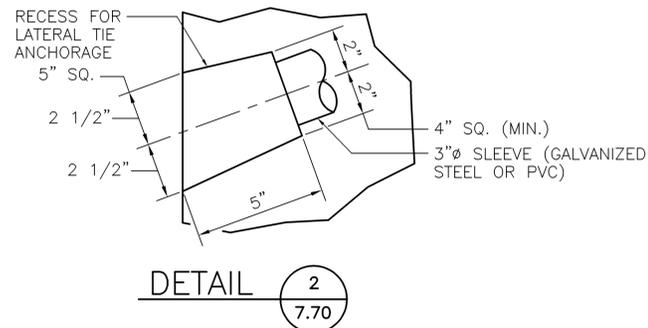


**JOINT DETAIL**

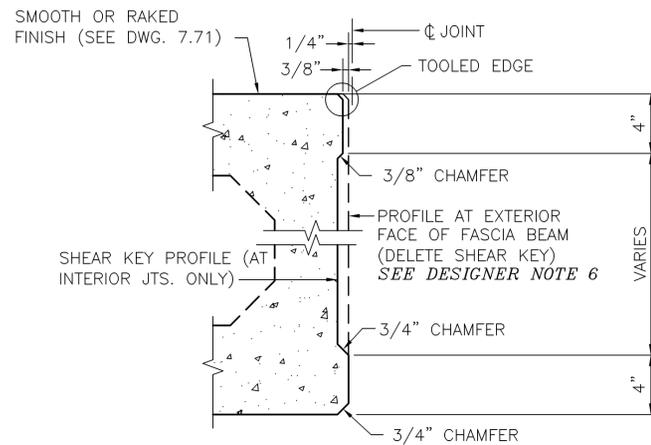


**SECTION A**  
7.70

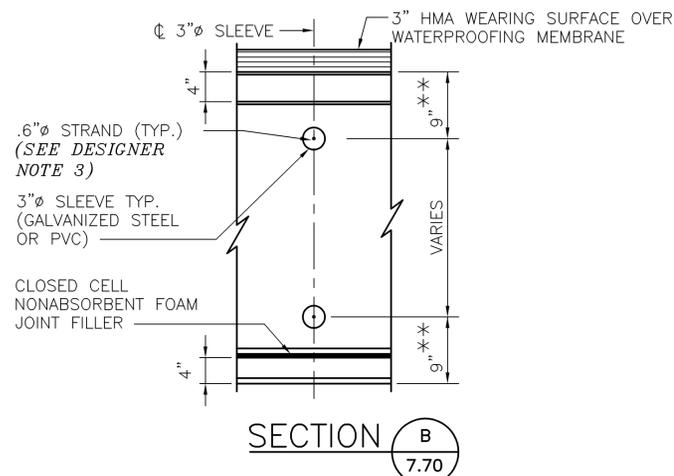
\*\* LATERAL TIES MAY BE MOVED TO AVOID CONFLICT WITH PRESTRESSING STRANDS.



**DETAIL 2**  
7.70



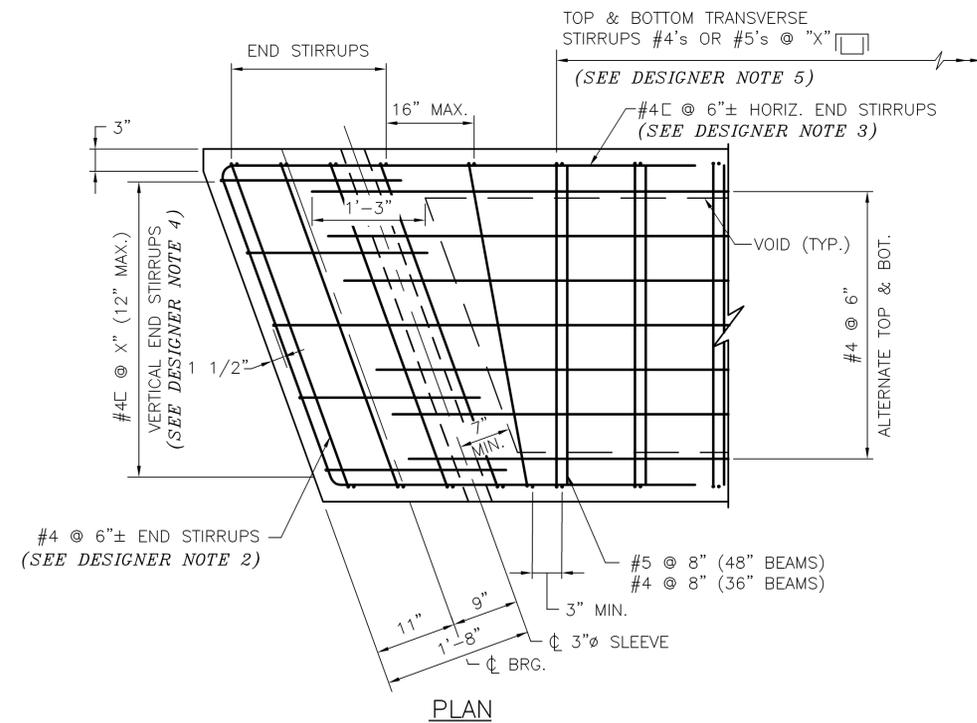
**SHEAR KEY PROFILE DETAIL**



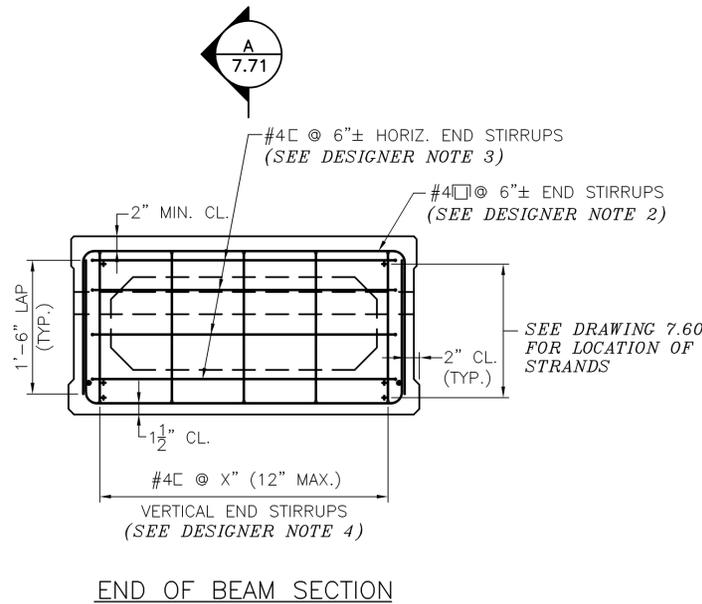
**SECTION B**  
7.70

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		PRECAST CONCRETE BUTTED BOX BEAMS SHEET 2
		DRAWING NUMBER: 7.70

DRAWING NUMBER: 7.70

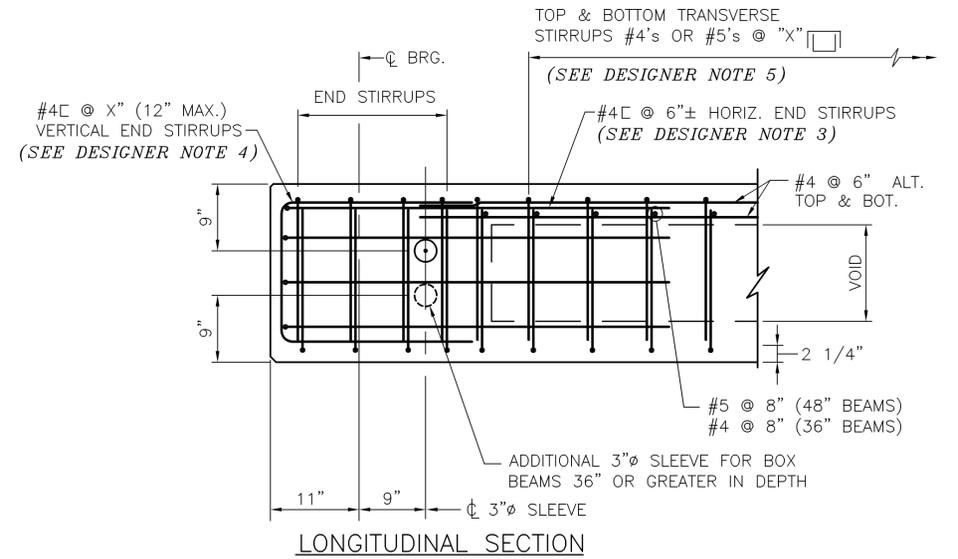


PLAN



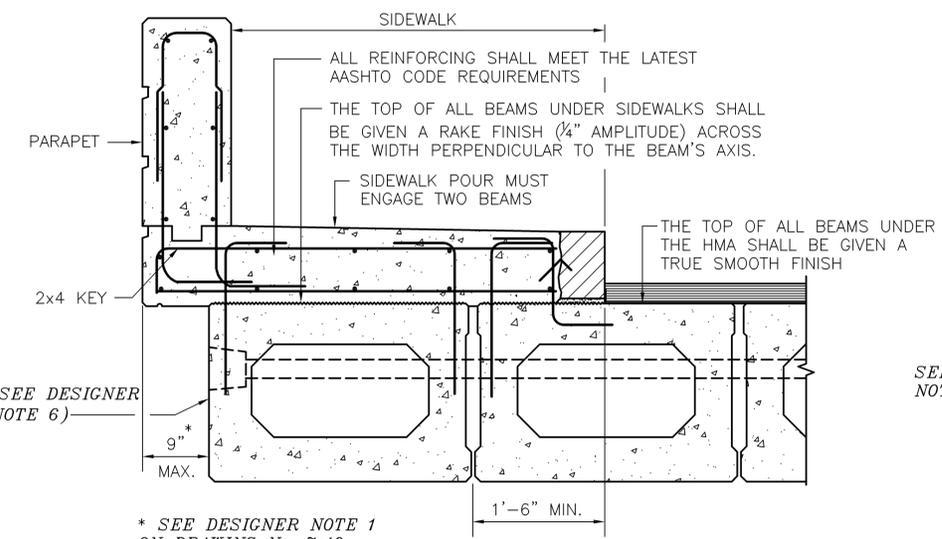
END OF BEAM SECTION

END REINFORCING PATTERN

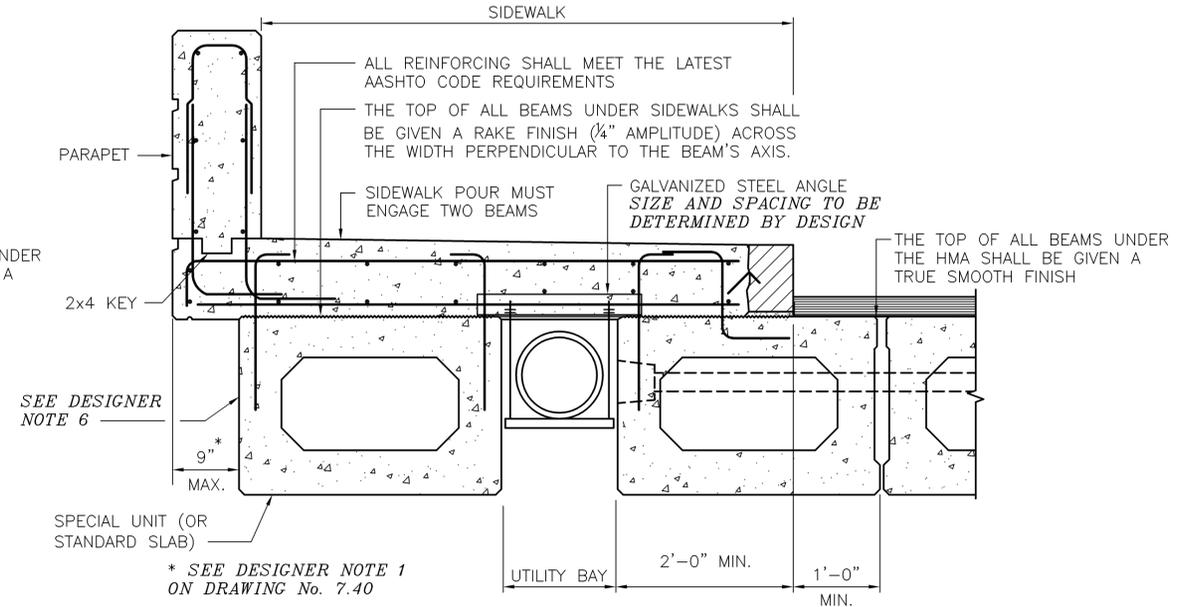


LONGITUDINAL SECTION

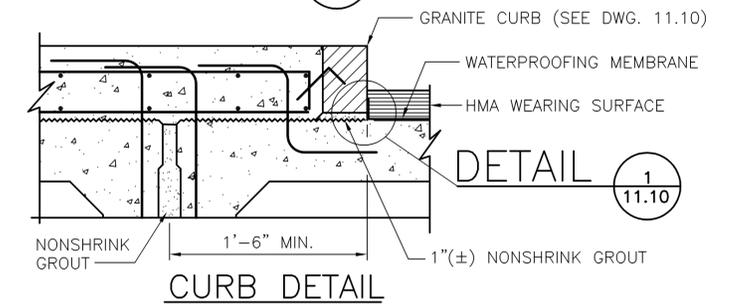
SECTION A 7.71



SIDEWALK OVERHANG WITHOUT UTILITIES

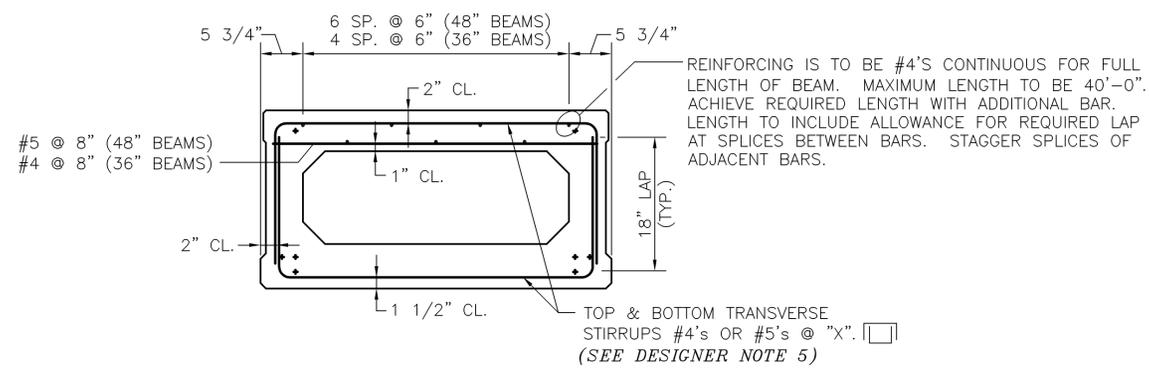


SIDEWALK OVERHANG WITH UTILITIES



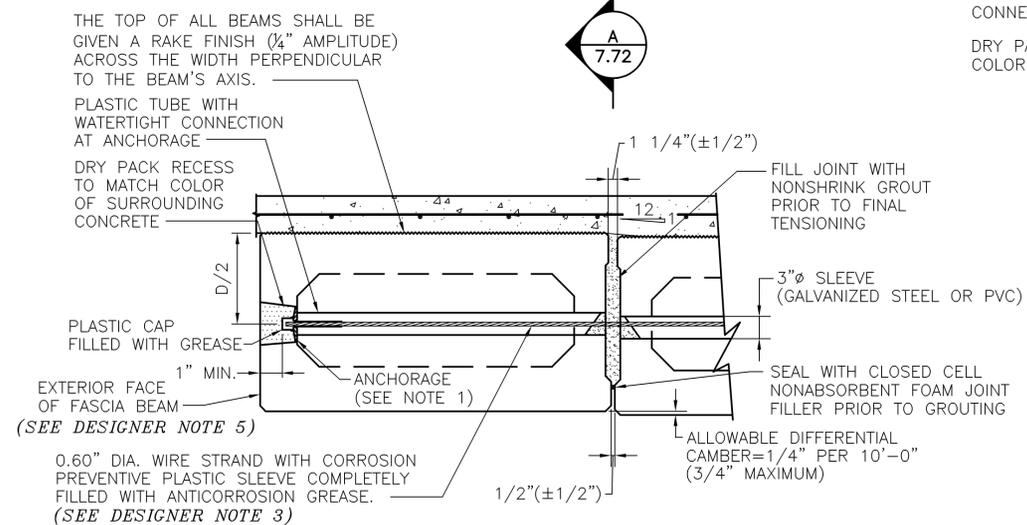
CURB DETAIL

- DESIGNER NOTES:**
1. THIS DRAWING APPLIES TO PRESTRESSED CONCRETE BOX BEAMS WITH AN ASPHALT WEARING SURFACE ONLY. FOR PRESTRESSED CONCRETE BOX BEAMS WITH A 5" MINIMUM REINFORCED COMPOSITE CONCRETE DECK OVERLAY REFER TO DWG No. 7.72 & No. 7.73
  2. DESIGN END STIRRUPS IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN REQUIREMENTS FOR ANCHORAGE ZONES.
  3. HORIZONTAL END STIRRUPS SHALL BE EMBEDDED A MINIMUM DISTANCE EQUAL TO DEPTH OF BEAM INTO THE WEB OF THE VOIDED SECTION. LENGTH OF EMBEDMENT SHALL BE NOTED ON THE PLAN.
  4. THE HORIZONTAL LEG OF VERTICAL END STIRRUPS SHALL EQUAL THE DEPTH OF THE BEAM AND SHALL BE DIMENSIONED ON THE PLAN VIEW.
  5. TOP AND BOTTOM TRANSVERSE STIRRUP SIZE AND SPACING SHALL BE AS REQUIRED BY DESIGN, WITH THE ADDITIONAL REQUIREMENT THAT SPACING DOES NOT EXCEED 16"
  6. THE EXTERIOR FACE OF THE FASCIA BEAMS SHALL RECEIVE A SELECTED FORMLINER OR RUBBED FINISH.
- THIS SHEET IS NOT TO SCALE



MIDSPAN REINFORCING PATTERN

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		PRECAST CONCRETE BUTTED BOX BEAMS SHEET 3
		DRAWING NUMBER: 7.71



**DETAIL I**  
(APPLIES TO BOX BEAMS  
B24 THRU B33)

THE TOP OF ALL BEAMS SHALL BE GIVEN A RAKE FINISH (1/4" AMPLITUDE) ACROSS THE WIDTH PERPENDICULAR TO THE BEAM'S AXIS.

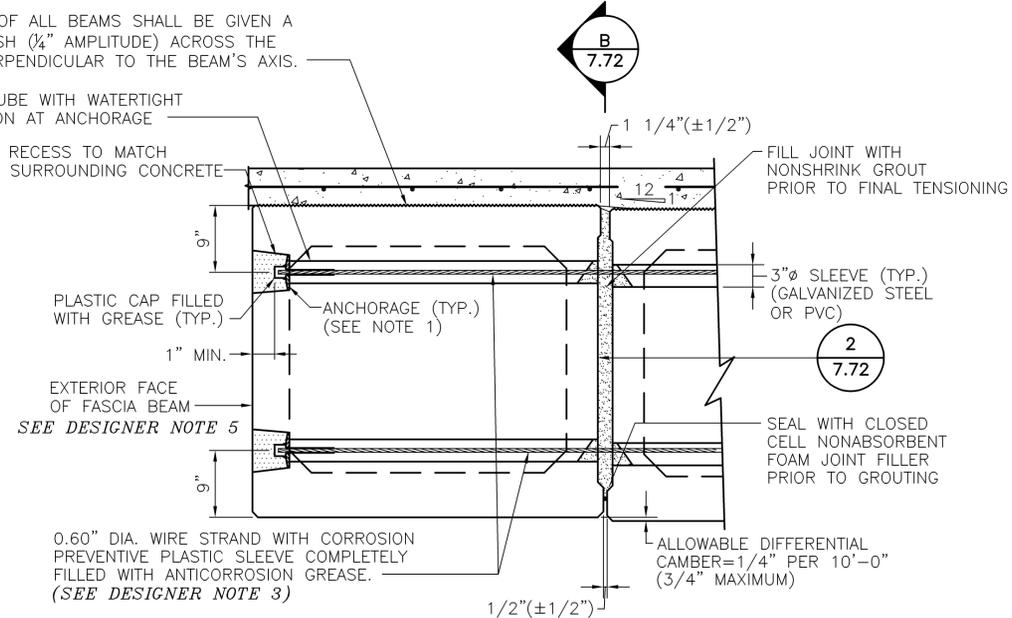
PLASTIC TUBE WITH WATERTIGHT CONNECTION AT ANCHORAGE  
DRY PACK RECESS TO MATCH COLOR OF SURROUNDING CONCRETE

PLASTIC CAP FILLED WITH GREASE (TYP.)  
1" MIN.

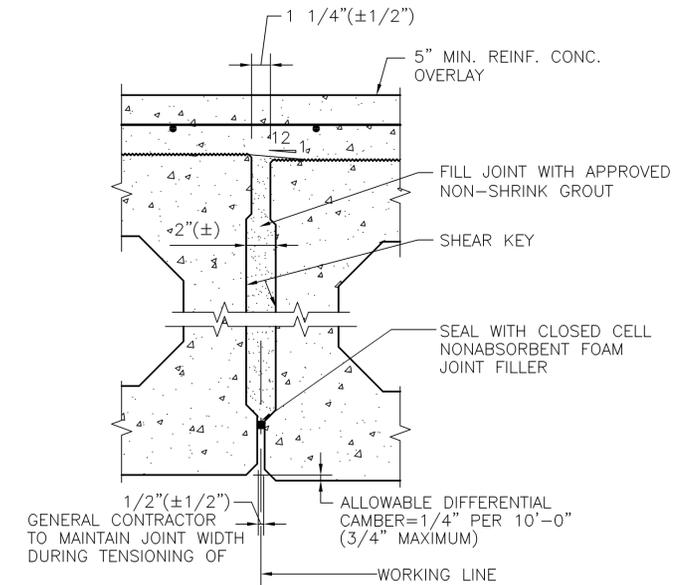
EXTERIOR FACE OF FASCIA BEAM  
SEE DESIGNER NOTE 5

0.60" DIA. WIRE STRAND WITH CORROSION PREVENTIVE PLASTIC SLEEVE COMPLETELY FILLED WITH ANTICORROSION GREASE.  
(SEE DESIGNER NOTE 3)

- NOTES:**
1. TENSION STRAND TO 5,000 LBS PRIOR TO GROUTING JOINTS. AFTER GROUT IS CURED, TENSION STRAND TO 44,000 LBS.
  2. PLACE SHIMS IN JOINT, TENSION STRANDS TO 5,000 LBS AND FILL WITH NONSHRINK GROUT.

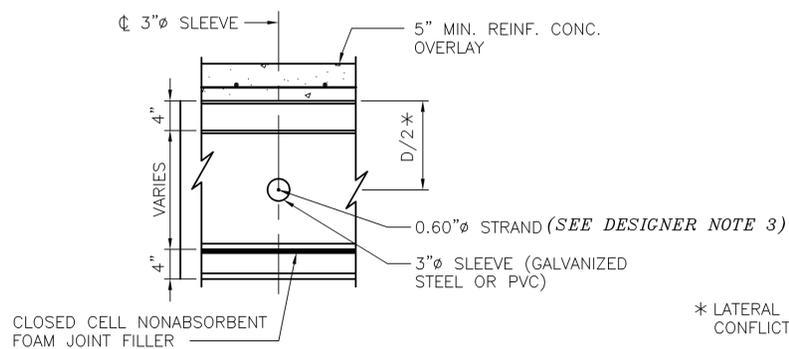


**DETAIL II**  
(APPLIES TO BOX BEAMS  
B36 THRU B48)

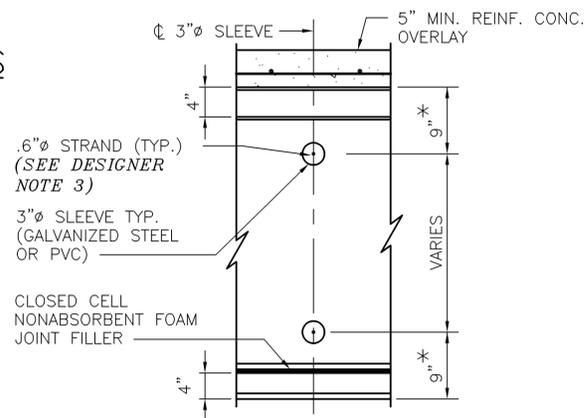


**JOINT DETAIL**

**LATERAL TIE DETAILS**



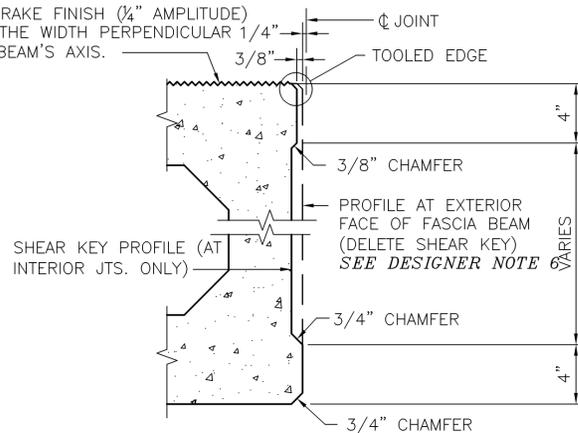
**SECTION A**  
7.72



**SECTION B**  
7.72

\* LATERAL TIES MAY BE MOVED TO AVOID CONFLICT WITH PRESTRESSING STRANDS.

THE TOP OF ALL BEAMS SHALL BE GIVEN A RAKE FINISH (1/4" AMPLITUDE) ACROSS THE WIDTH PERPENDICULAR TO THE BEAM'S AXIS.



**SHEAR KEY PROFILE DETAIL**

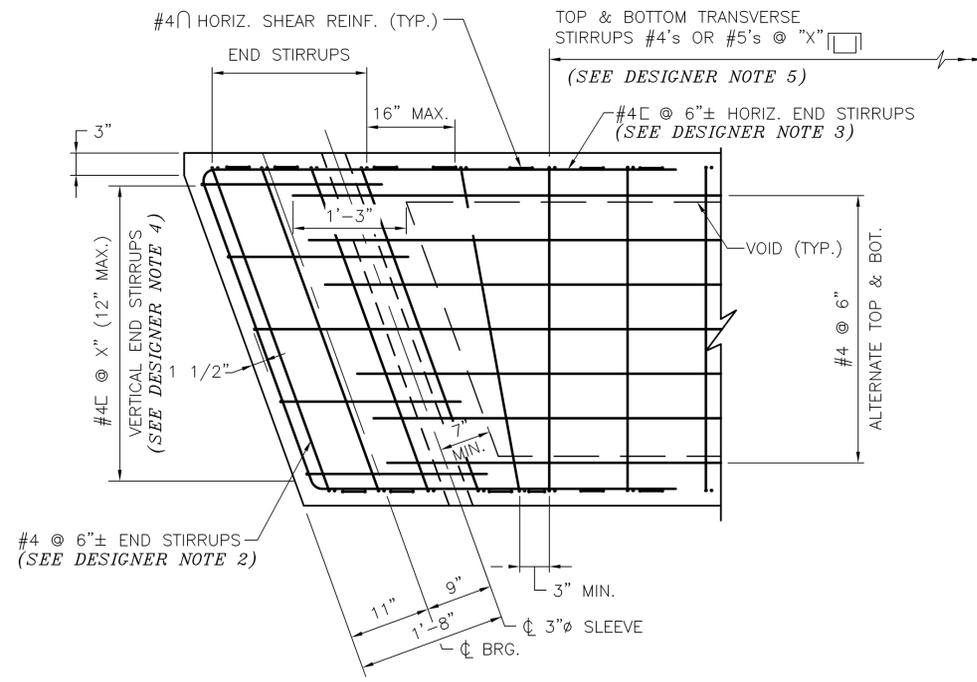
**NOTES:**

1. DETAILS OF THE ANCHORAGE ASSEMBLY ARE TO BE SUBMITTED FOR REVIEW AND APPROVAL BY THE ENGINEER.
2. ALL PRESTRESSED CONCRETE SLABS SHALL BE ERECTED AS INDICATED ON THE CONTRACT DRAWINGS. THEY SHALL BE SET TO THE SPECIFIED (NOMINAL) DIMENSIONS AND WITH THE SPECIFIED (NOMINAL) 1 INCH SPACING BETWEEN UNITS. THE LATERAL POST-TENSIONING STRANDS SHALL BE TENSIONED INITIALLY TO 5,000 POUNDS. SAID LATERAL POST-TENSIONING IS NOT EXPECTED TO DRAW THE UNITS TOGETHER. AFTER THE UNITS ARE IN PLACE, THE FOAM JOINT FILLER SHALL BE PLACED AT THE BOTTOM OF THE SHEAR KEYS (PENCIL VIBRATE THE GROUT IN THE KEY TO CONSOLIDATE MATERIAL) AND ALLOWED TO CURE, FOR A MINIMUM OF 72 HOURS, AFTER WHICH THE STRANDS SHALL BE STRESSED TO THE FULL 44,000 POUNDS.
3. THE CONTRACTOR SHALL FURNISH THE STATE WITH CALCULATIONS FOR THE THEORETICAL ELONGATION OF THE LATERAL POST-TENSIONING STRANDS SO THAT THE STRAND TENSION INDICATED ON THE CALIBRATED METER CAN BE VERIFIED. THE CONTRACTOR SHALL FURNISH RECORDS TO THE STATE OF THE GAUGE READINGS VERSUS THE MEASURED ELONGATIONS.

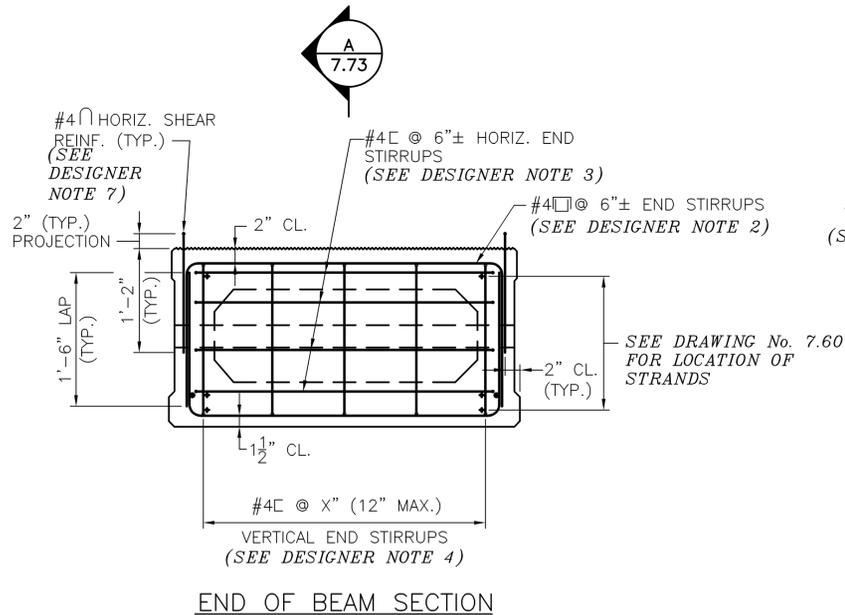
**DESIGNER NOTES:**

1. THIS DRAWING APPLIES TO PRESTRESSED CONCRETE BOX BEAMS WITH A 5" MINIMUM REINFORCED CONCRETE COMPOSITE DECK OVERLAY ONLY.
2. REFER TO DWG 7.70 & 7.71 FOR PRESTRESSED CONCRETE BOX BEAMS WITH AN ASPHALTIC WEARING SURFACE.
3. FOR LOCATIONS OF LATERAL TIES (LONGITUDINAL ALONG THE BEAM) SEE DWG 7.6.
4. DESIGNER SHALL SPECIFY THAT THE TOP OF ALL BEAMS WITH A CONCRETE OVERLAY BE GIVEN A RAKED FINISH (1/4" AMPLITUDE) ACROSS THE WIDTH (PERPENDICULAR TO THE BEAM'S AXIS)
5. THE EXTERIOR FACE OF THE FASCIA BEAMS SHALL RECEIVE A SELECTED FORMLINER OR RUBBED FINISH.
6. CONCRETE FOR DECK SLAB SHALL BE PLACED AFTER THE TIES HAVE BEEN FULLY TENSIONED.

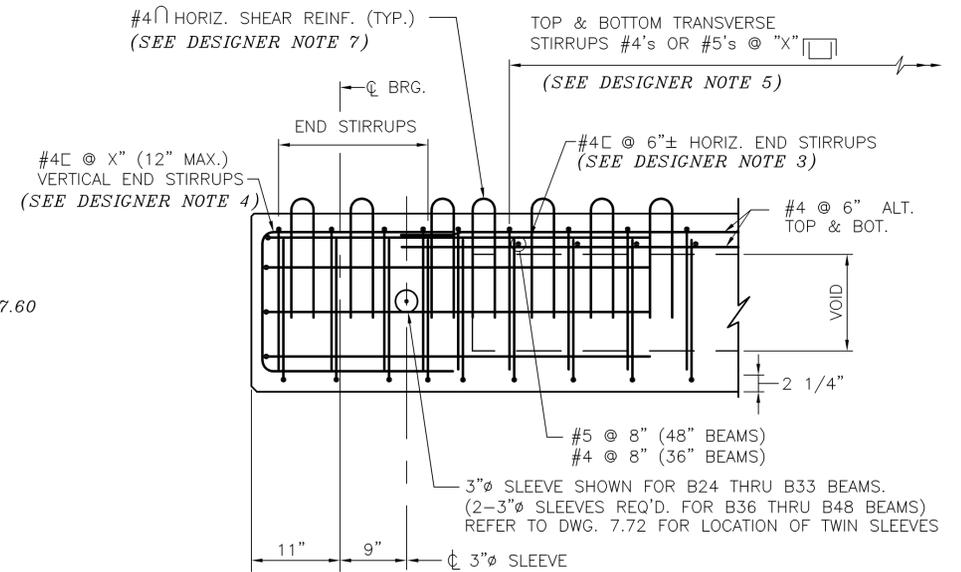
REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		PRECAST CONCRETE BUTTED BOX BEAMS SHEET 4
		DRAWING NUMBER: 7.72



PLAN



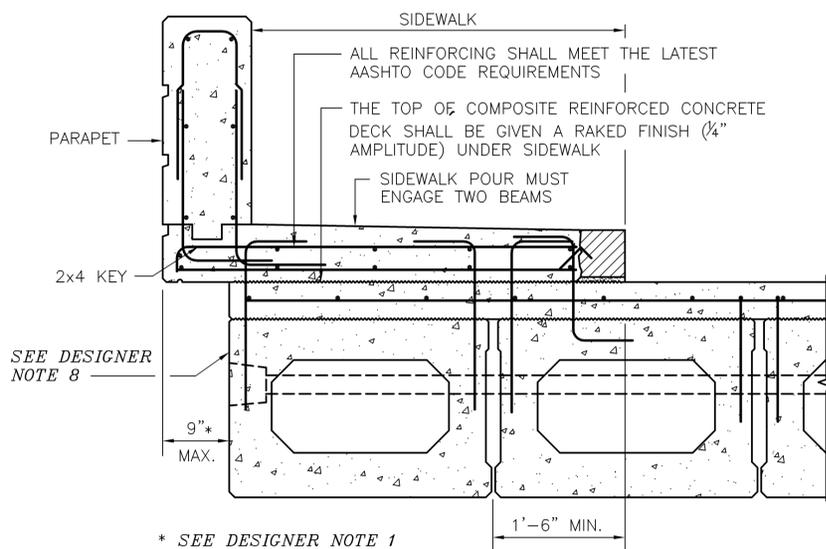
END OF BEAM SECTION



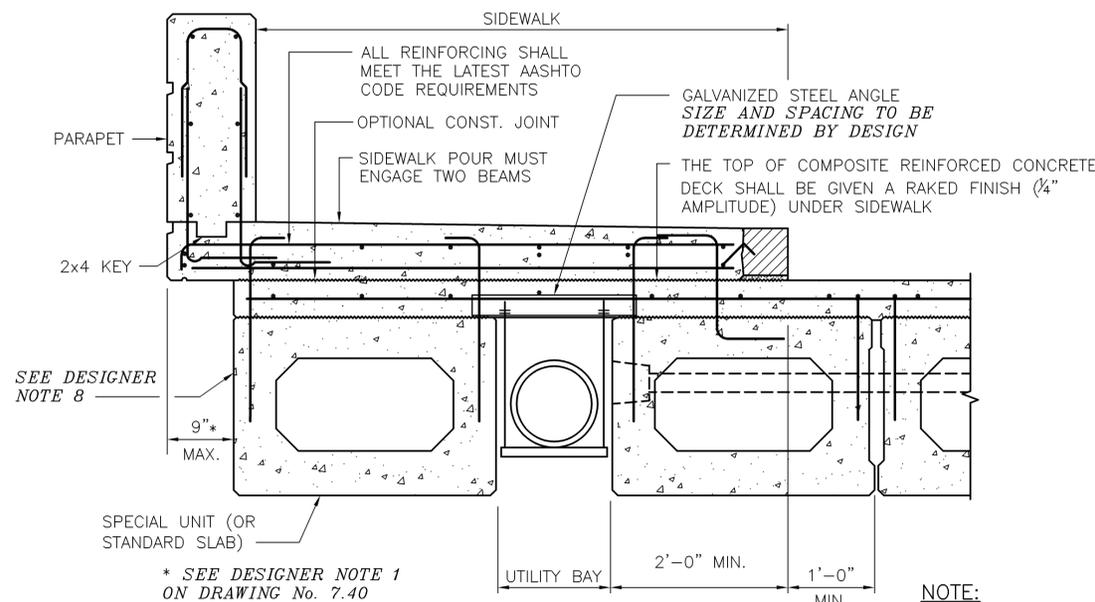
LONGITUDINAL SECTION

END REINFORCING PATTERN

SECTION A 7.73



SIDEWALK OVERHANG WITHOUT UTILITIES

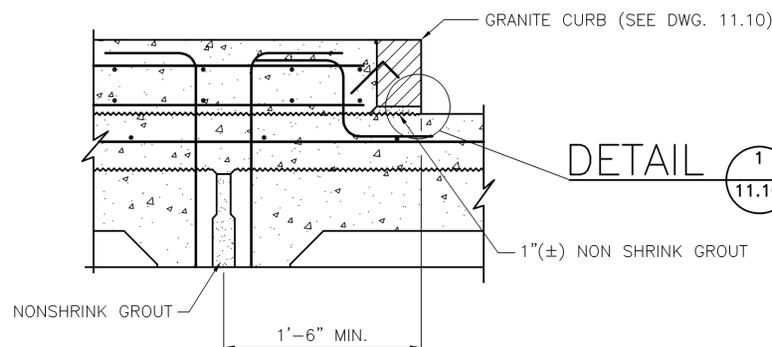


SIDEWALK OVERHANG WITH UTILITIES

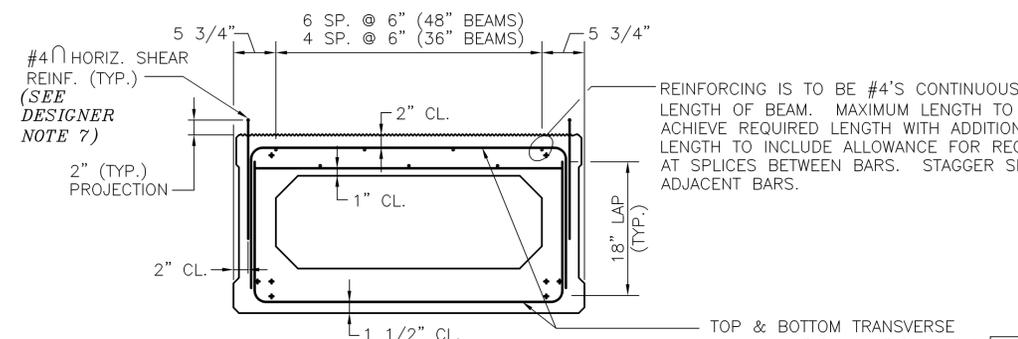
NOTE: POST TENSIONING REQUIREMENT NOT APPLICABLE TO SPECIAL UNIT

DESIGNER NOTES:

- THIS DRAWING APPLIES TO PRESTRESSED CONCRETE BOX BEAMS WITH A 5" MINIMUM COMPOSITE REINFORCED CONCRETE DECK OVERLAY ONLY. FOR PRESTRESSED CONCRETE BOX BEAMS WITH AN ASPHALT WEARING SURFACE REFER TO DWG No. 7.70 & No. 7.71.
- DESIGN END STIRRUPS IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATION REQUIREMENTS FOR ANCHORAGE ZONES.
- HORIZONTAL END STIRRUPS SHALL BE EMBEDDED A MINIMUM DISTANCE EQUAL TO DEPTH OF BEAM INTO THE WEB OF THE VOIDED SECTION. LENGTH OF EMBEDMENT SHALL BE NOTED ON THE PLAN.
- THE HORIZONTAL LEG OF VERTICAL END STIRRUPS SHALL EQUAL THE DEPTH OF THE BEAM AND SHALL BE DIMENSIONED ON THE PLAN VIEW.
- TOP AND BOTTOM TRANSVERSE STIRRUP SIZE AND SPACING SHALL BE AS REQUIRED BY DESIGN, WITH THE ADDITIONAL REQUIREMENT THAT SPACING DOES NOT EXCEED 16".
- PROPERLY NOTE AND SHOW THE LOCATION AND SPACING OF ANY DOWELS WHICH EXTEND INTO SLABS, SIDEWALKS, CURB OR BARRIERS IN THE CROSS SECTION AND PLAN VIEWS OF THE BEAMS.
- HORIZONTAL SHEAR REINFORCEMENT SHALL BE DESIGNED IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND SHALL BE SPACED AT A MULTIPLE OF THE STANDARD STIRRUP SPACING. PROVIDE ADDITIONAL PROJECTION FOR USE WITH SPREAD BOX BEAM UNITS.
- THE EXTERIOR FACE OF THE FASCIA BEAMS SHALL RECEIVE A SELECTED FORMLINER OR RUBBED FINISH.



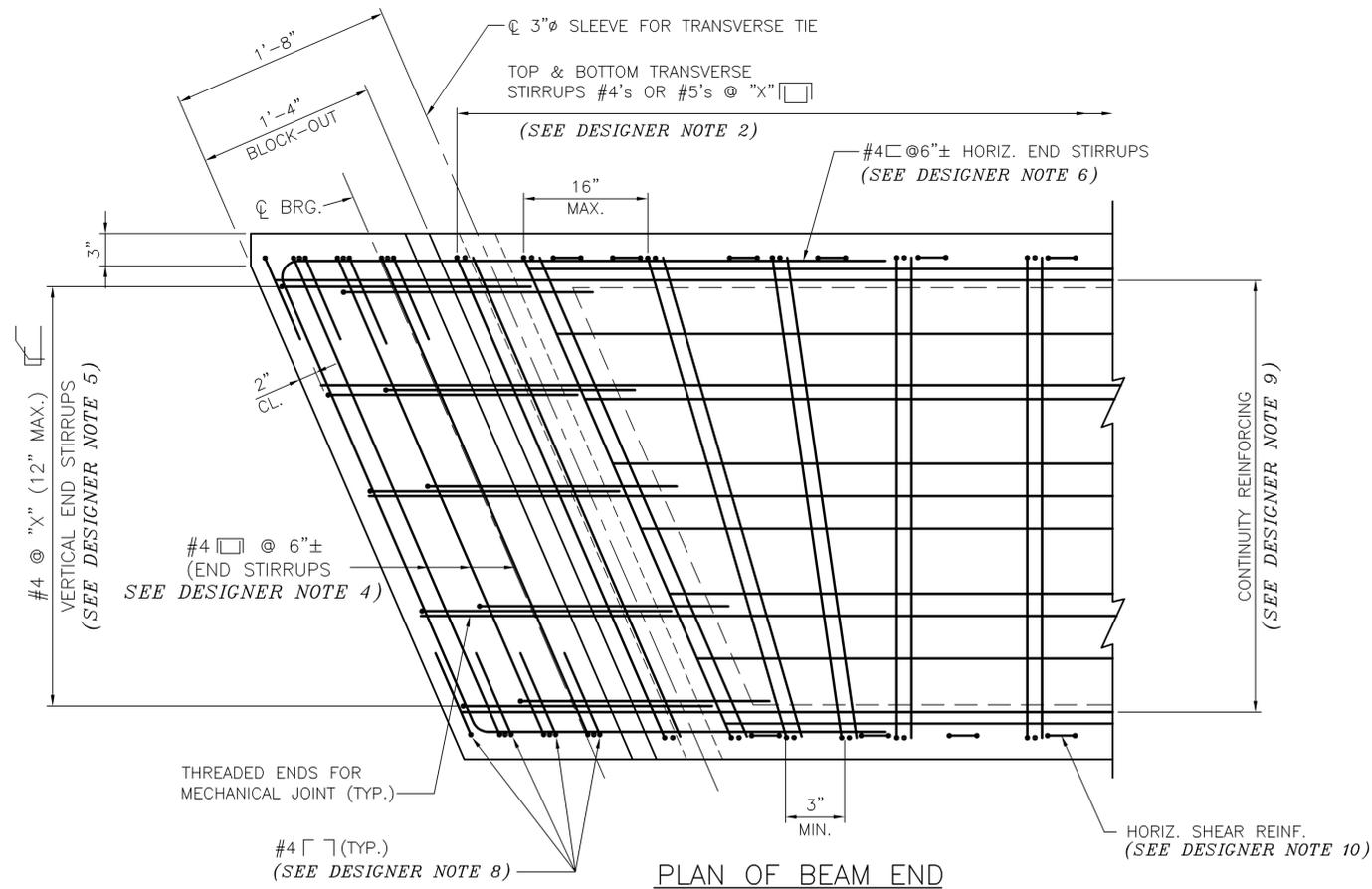
CURB DETAIL



MID SPAN REINFORCING PATTERN

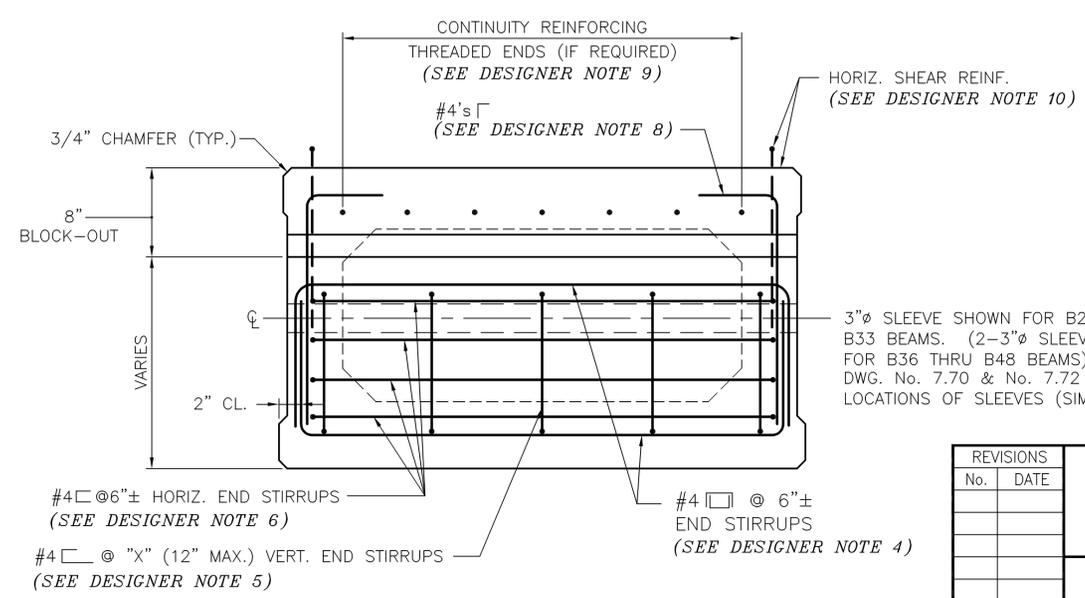
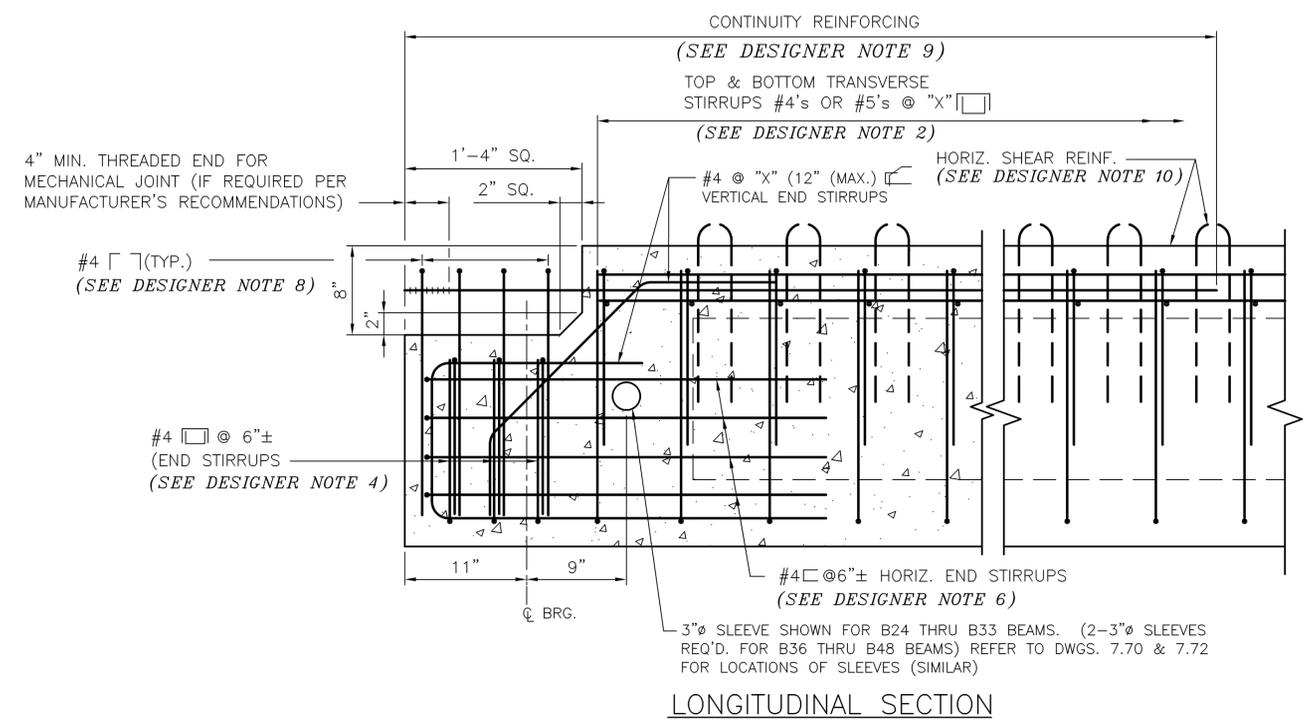
THIS SHEET IS NOT TO SCALE

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		PRECAST CONCRETE BUTTED BOX BEAMS SHEET 5
		DRAWING NUMBER: 7.73



**DESIGNER NOTES:**

1. ALL PRESTRESSED BEAMS WILL BE DESIGNED ACCORDING TO THE LATEST AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR HIGHWAY BRIDGES
2. TOP AND BOTTOM TRANSVERSE STIRRUP SIZE AND SPACING SHALL BE AS REQUIRED BY DESIGN, WITH THE ADDITIONAL REQUIREMENT THAT SPACING DOES NOT EXCEED 16"
3. THE ACTUAL NUMBER AND LOCATION OF THE PRESTRESSED STRANDS SHALL BE DESIGNED AND SHALL CONFORM TO THE SPACINGS SHOWN ON DRAWING No. 7.60.
4. END STIRRUPS LOCATED 1/4 OF THE BEAM DEPTH FROM THE END SHALL BE DESIGNED TO MEET THE AASHTO LRFD BRIDGE REQUIREMENTS FOR ANCHORAGE ZONES OF PRESTRESSED CONCRETE BEAMS. ALL OTHER STIRRUPS IN THE BLOCK-OUT SECTION SHALL BE DESIGNED AS TRANSVERSE STIRRUPS.
5. THE HORIZONTAL LEGS OF THE VERTICAL END STIRRUPS ARE EQUAL TO THE DEPTH OF THE BEAM AND SHALL BE DIMENSIONED ON THE PLAN.
6. HORIZONTAL END STIRRUPS SHALL BE EMBEDDED A MINIMUM DISTANCE EQUAL TO THE DEPTH OF THE BEAM (OR 12") INTO THE WEB OF THE VOIDED SECTION, WHICHEVER IS LONGER. LENGTH OF EMBEDMENT SHALL BE NOTED ON THE PLAN VIEW.
7. PROPERLY NOTE OR SHOW THE LOCATION AND SPACING OF ANY DOWELS WHICH EXTEND INTO SIDEWALKS, CURBS, OR BARRIERS ON THE CROSS-SECTION AND PLAN VIEWS OF THE BEAMS.
8. IF BLOCK-OUT SECTION IS FOR CONTINUITY, PROVIDE #4 BARS TO MEET SHEAR REQUIREMENTS. IF BLOCK-OUT SECTION IS FOR A JOINT SYSTEM, PROVIDE A MINIMUM OF 4-#4 BARS. (TYP.)
9. THE LENGTH, SIZE AND QUANTITY OF CONTINUITY REINFORCEMENT SHALL BE DETERMINED BY THE DESIGNER. CONTINUITY REINFORCEMENT WILL NOT BE REQUIRED IF BLOCK OUT IS FOR PLACING A JOINT SYSTEM.
10. THE DESIGNER SHALL COORDINATE THIS DRAWING WITH DRAWING Nos. 7.60, 7.70, 7.71, 7.72 & 7.73. HORIZONTAL SHEAR REINFORCING AND RAKED TOP SURFACES SHALL BE REQUIRED FOR BUTTED BOX BEAMS UTILIZING A 5" MIN. COMPOSITE REINFORCED CONCRETE DECK OVERLAY.

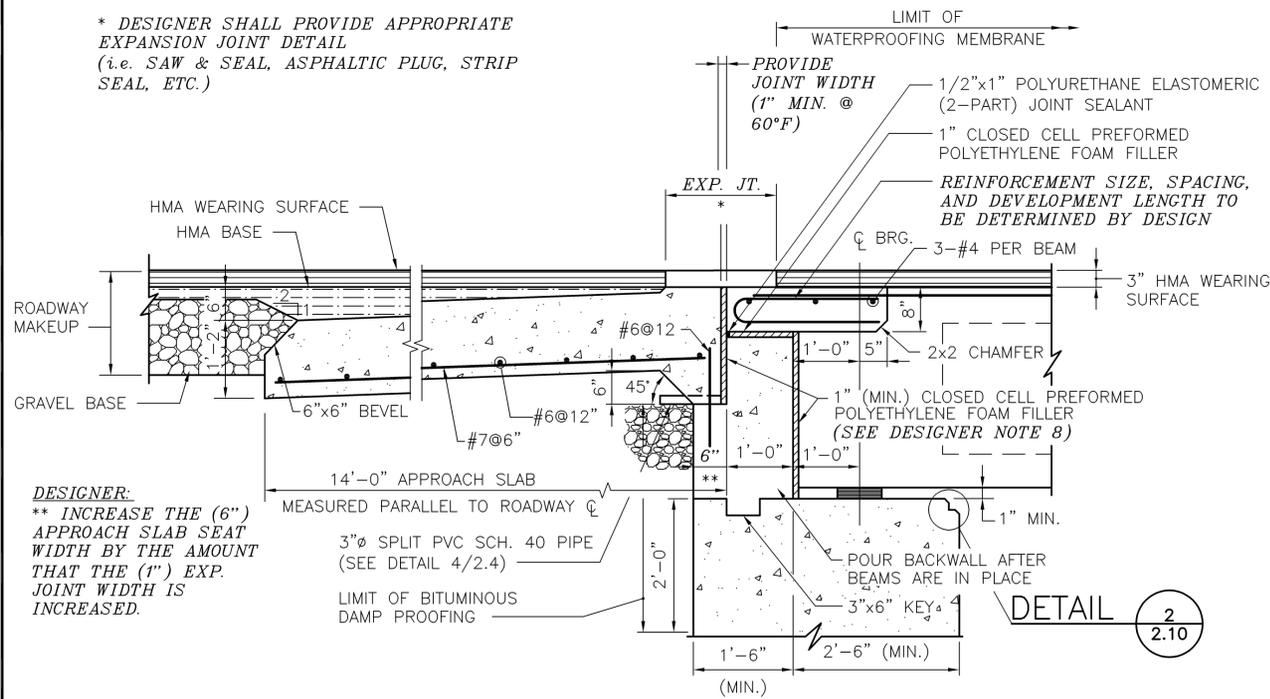


LONGITUDINAL SECTION  
END REINFORCING PATTERN (WITH BLOCK-OUT)

END OF BEAM SECTION

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		PRECAST CONCRETE BUTTED BOX BEAMS SHEET 6
		DRAWING NUMBER: 7.74

\* DESIGNER SHALL PROVIDE APPROPRIATE EXPANSION JOINT DETAIL (i.e. SAW & SEAL, ASPHALTIC PLUG, STRIP SEAL, ETC.)

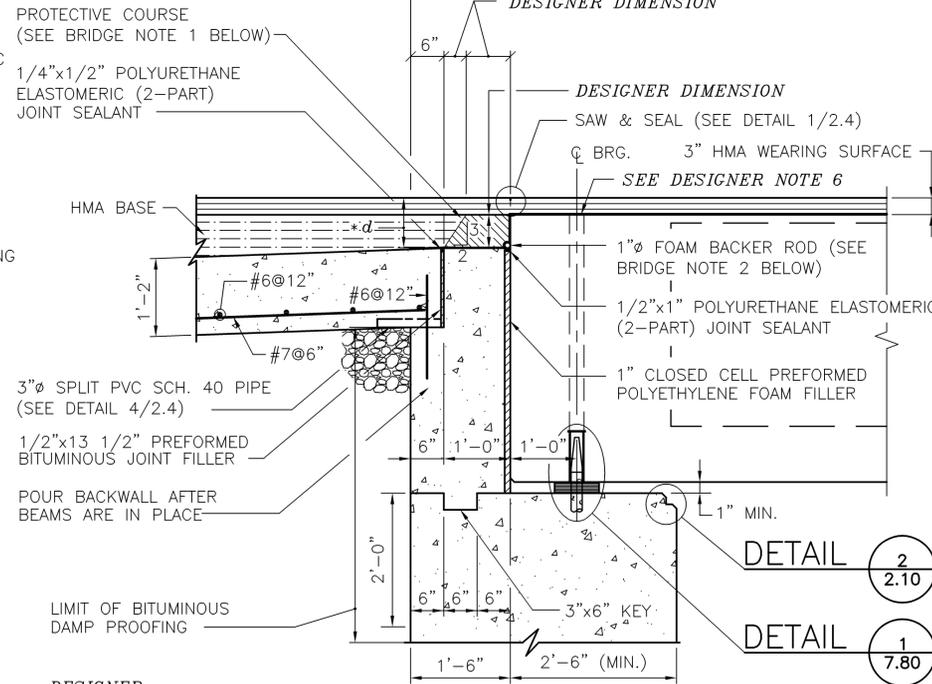


DESIGNER:  
\*\* INCREASE THE (6") APPROACH SLAB SEAT WIDTH BY THE AMOUNT THAT THE (1") EXP. JOINT WIDTH IS INCREASED.

AT EXPANSION JOINT

PRESTRESSED BUTTED BOX BEAM – SPANS OVER 65 FEET

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



DESIGNER:  
\*d=DESIGN DEPTH OF APPROACH PAVEMENT

AT FIXED JOINT

DESIGNER:

PROVIDE BEVELED BEARING PAD WHEN REQUIRED

HOLE TO ACCOMMODATE ANCHOR ROD (TYP., OMIT WHEN NOT REQUIRED)

ELASTOMERIC BEARING PAD  
2'-6"x8" (36" SLAB & BOX SECTION)  
3'-6"x8" (48" SLAB & BOX SECTION)

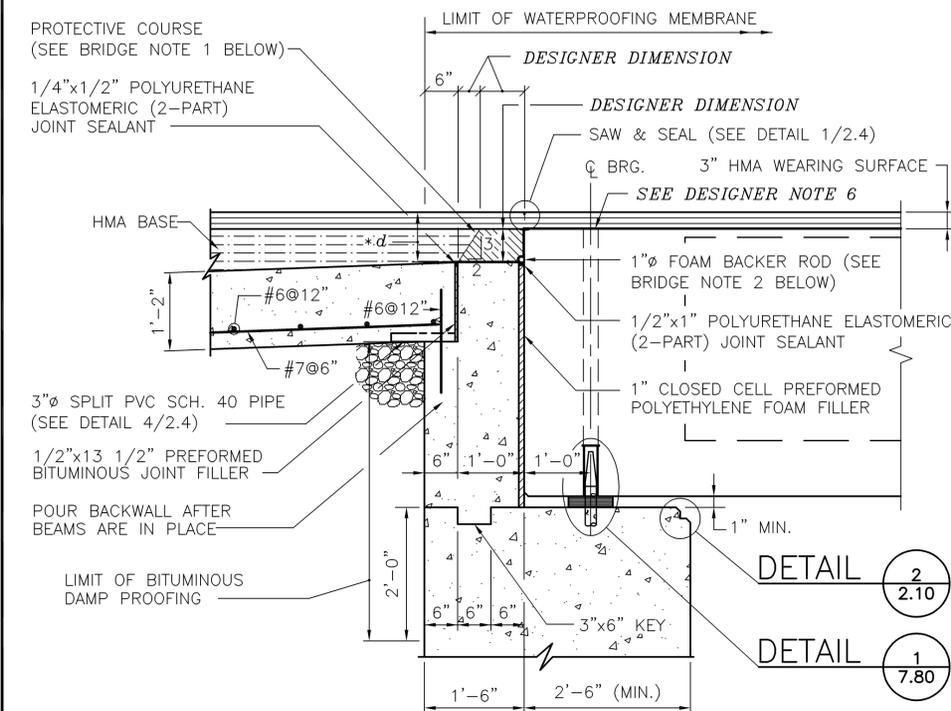


ELASTOMERIC BEARING PADS

(SLAB & BOX SECTIONS)  
SCALE: 3/8"=1'-0"

DESIGNER NOTES:

- IN GENERAL, THE USE OF CHEEK WALLS TO RESTRICT TRANSVERSE MOVEMENT IS ENCOURAGED; HOWEVER, ANCHOR RODS ARE TO BE PROVIDED AT FIXED JOINTS OF SPANS EXCEEDING 65 FEET, WHERE CHEEK WALLS CANNOT BE PROVIDED FOR TRANSVERSE RESTRAINT, OR WHERE THEY ARE REQUIRED TO PREVENT STRUCTURE MOVEMENT DUE TO EXCESSIVE PROFILE GRADE.
- ANCHOR ROD DIAMETERS SHOWN ARE MINIMUM REQUIRED. DESIGNER SHALL DETERMINE IF A LARGER SIZE, BASED ON SEISMIC AND OTHER AASHTO LOADING REQUIREMENTS, IS REQUIRED.
- AT THE FIXED BEARINGS, ANCHOR RODS SHALL BE PROVIDED FOR APPROXIMATELY 1/3 OF ALL GIRDERS OR BEAMS. THIS SHALL PREFERABLY OCCUR AT THE INTERIOR GIRDERS OR BEAMS.
- THE DESIGNER SHALL PROVIDE THE APPROPRIATE EXPANSION JOINT DETAIL FOR THE AMOUNT OF ANTICIPATED EXPANSION. REFER TO RIDOT BRIDGE DESIGN MANUAL (SECTION 14).
- FOR DETAILS OF THE STRIP SEAL EXPANSION JOINT, REFER TO DRAWINGS No. 4.20 AND No. 4.30.
- FOR SHALLOW BEAMS, AN ALTERNATE ANCHOR BOLT DETAIL MAY BE SHOWN USING A DRILLING AND GROUTING TECHNIQUE AT THE APPROVAL OF THE ENGINEER. AN ALTERNATIVE TO USING ANCHOR RODS AT EXPANSION JOINTS WOULD BE TO DETAIL SHEAR BLOCKS (OR CHEEK WALLS AT ALL FOUR CORNERS) TO RESTRICT TRANSVERSE MOVEMENT OF THE DECK.
- THE DESIGN OF THE ELASTOMERIC BEARINGS SHALL BE IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THICKNESS OF CLOSED CELL PREFORMED POLYETHYLENE FOAM BETWEEN APPROACH SLAB AND BACKWALL SHALL BE DETERMINED BASED ON ANTICIPATED THERMAL MOVEMENT OF THE BRIDGE SUPERSTRUCTURE. THICKNESS OF CLOSED CELL PREFORMED POLYETHYLENE FOAM BETWEEN THE BACKWALL AND PRESTRESSED BEAM SHALL BE THE BASED ON ANTICIPATED THERMAL MOVEMENT PLUS 1/2".
- APPROACH SLAB IS PITCHED (6") TO DRAIN AWAY FROM THE ABUTMENT. THE PITCH MAY NEED TO BE INCREASED (BASED ON BASELINE PROFILE) TO PROVIDE FOR THE MINIMUM DESIGN DEPTH OF APPROACH PAVEMENT AT THE (APPROACH) END OF THE SLAB.



BRIDGE NOTES:

TO BE INCLUDED WITH TYPICAL PRESTRESSED BUTTED BOX BEAMS FOR SPANS UP TO 65 FEET (AT EXPANSION & FIXED JOINTS)

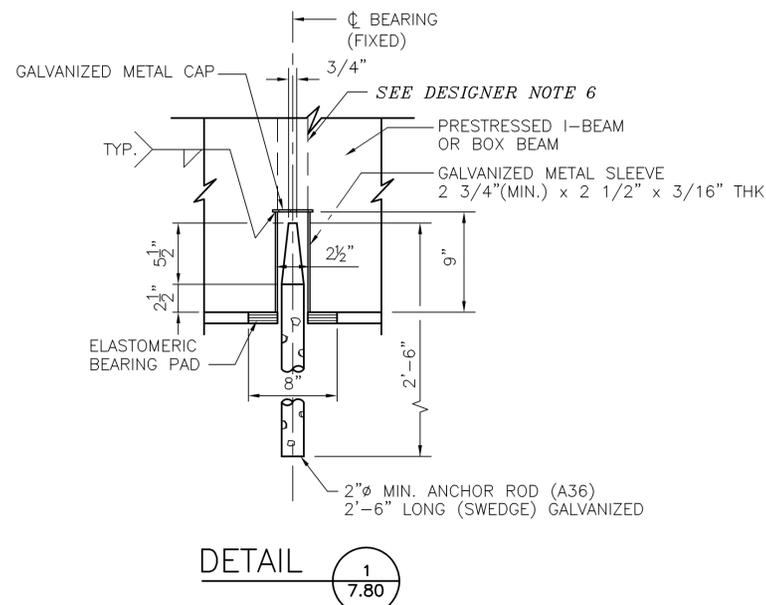
- BRIDGE BINDER TO BE PLACED IN 1 1/2" INCH LAYERS AND COMPACTED WITH MECHANICAL HAND-GUIDED TAMPER WITHIN 12 HOURS AFTER PLACING MEMBRANE WATERPROOFING.
- DRAPe MEMBRANE WATERPROOFING OVER CLOSED CELL FOAM BACKER ROD.
- ATTACH CLOSED CELL POLYETHYLENE FOAM TO BACK OF PRECAST BEAM WITH ADHESIVE.

DESIGNER:  
\*d=DESIGN DEPTH OF APPROACH PAVEMENT

AT JOINTS

PRESTRESSED BUTTED BOX BEAM – SPANS UP TO 65 FEET

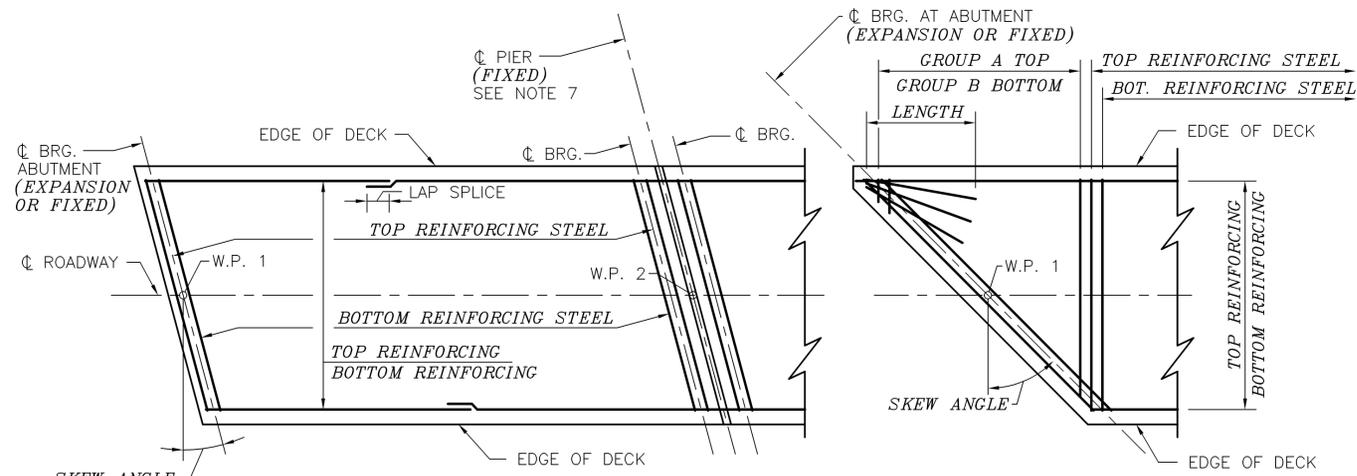
SCALE: 3/4"=1'-0"



ANCHOR ROD DETAILS – AT FIXED BEARINGS

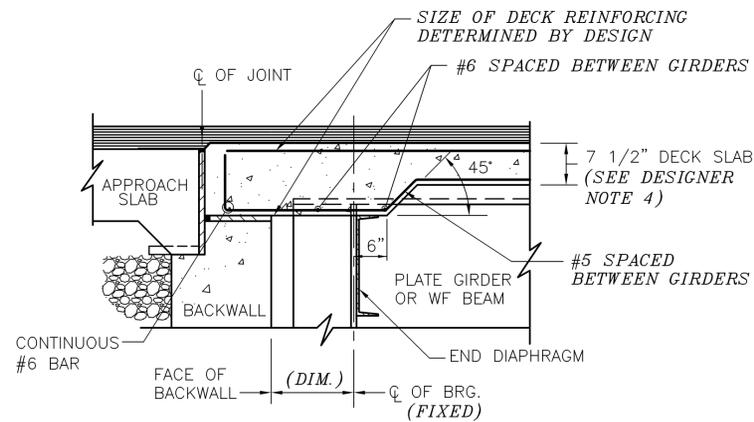
SCALE: 1 1/2"=1'-0"

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		PRESTRESSED CONCRETE ANCHOR ROD AND JOINT DETAILS
		DRAWING NUMBER: 7.80

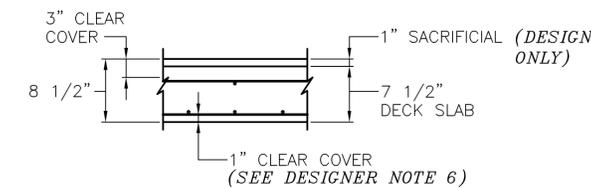


DECK SLAB WITH A SKEW ANGLE OF 30° AND UNDER

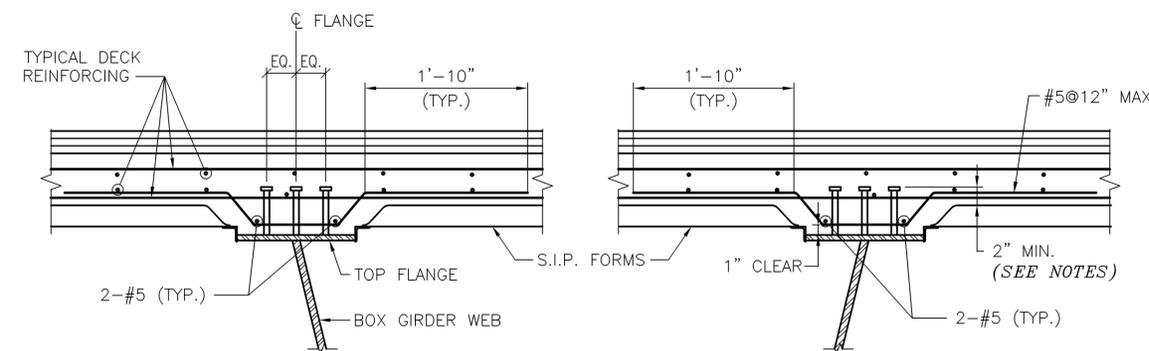
PARTIAL DECK SLAB WITH SKEW ANGLE OVER 30°



DECK HAUNCH DETAIL AT ABUTMENT



EXPOSED CONC. DECK SLAB



SPECIAL HAUNCH REINFORCING & SHEAR STUD DETAIL

DESIGNER: SHEAR STUDS SHALL BE PLACED PARALLEL TO THE TRANSVERSE DECK REINFORCING.

THE SHEAR STUDS SHALL EXTEND A MINIMUM OF 2 INCHES ABOVE THE BOTTOM OF THE DECK SLAB

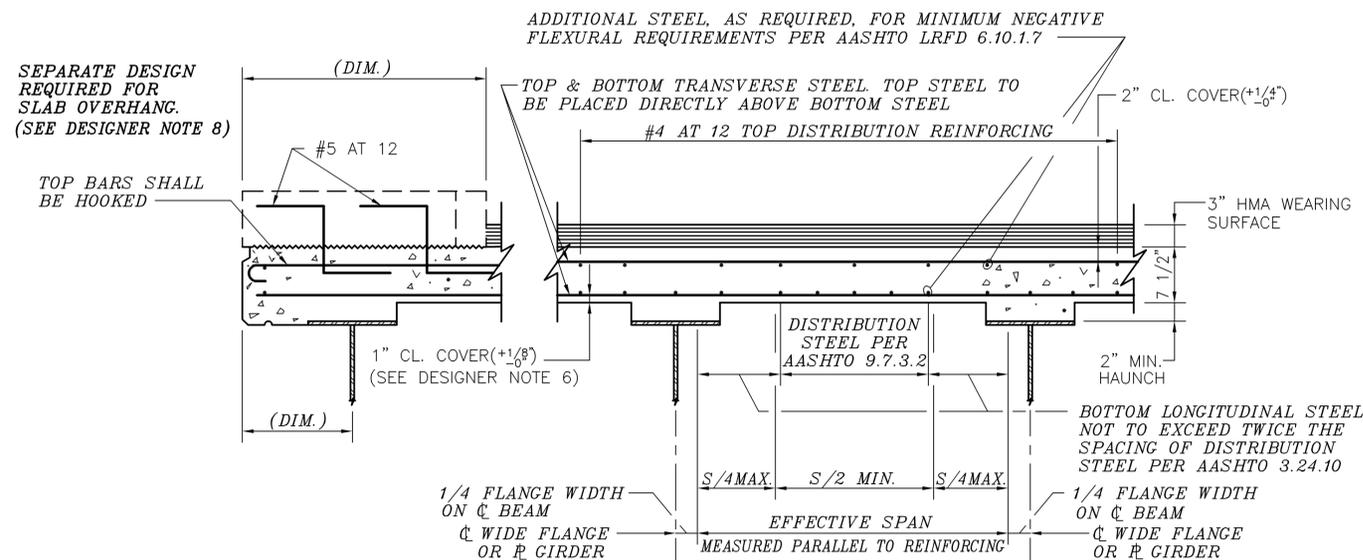
NOTES:

- SPACE HAUNCH REINFORCING BETWEEN GIRDERS OR BEAMS AND TIE TO BOTTOM REINFORCING OF DECK.
- TRANSVERSE REINFORCEMENT LISTED AS STRAIGHT SHALL BE SHOP OR FIELD BENT AS REQUIRED TO PROVIDE MINIMUM COVER.
- DECK SLAB REINFORCING COVER SHALL HAVE TOLERANCE OF (+)1/4", (-)0" FOR TOP BARS AND (+)1/8", (-)0" FOR BOTTOM BARS.
- CHAIRS SHALL BE SPACED TO PROVIDE THE REQUIRED CONCRETE COVER WITH THE SPECIFIED TOLERANCES. MAXIMUM SPACING OF CHAIRS SHALL BE 5'-0" ON CENTER, PREFERABLY LOCATED AT THE INTERSECTION OF REINFORCEMENT. CHAIRS SHALL HAVE APPROVED CORROSION PROTECTION (i.e. EPOXY COATED, PLASTIC COATED, ETC.)
- DECK CONCRETE PLACEMENT SHALL BE IN ACCORDANCE WITH THE RI STANDARD SPECIFICATIONS.
- SHOULD ADDITIONAL HAUNCH REINFORCING OR ADJUSTMENTS TO THE SHEAR STUD LENGTHS BE NECESSARY DUE TO DEVIATIONS IN THE AS BUILT CAMBER OF THE SUPERSTRUCTURE STEEL IT SHALL BE CONSIDERED AS INCIDENTAL TO THE APPROPRIATE BID ITEMS FOR REINFORCING STEEL AND/OR SHEAR STUDS. THE ADJUSTED LENGTHS OF SHEAR STUDS SHALL BE DETERMINED BY THE ENGINEER. THE REQUIREMENTS FOR REINFORCING HAUNCHES GREATER THAN 4" HIGH SHALL BE AS SHOWN ON THIS SHEET.

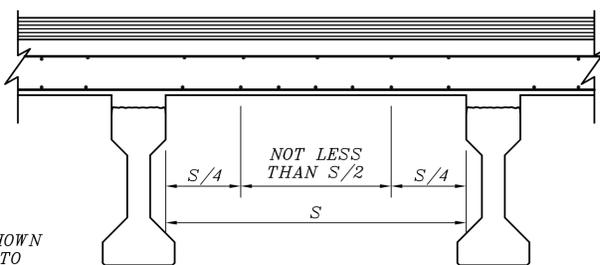
DESIGNER NOTES:

- TOP BARS SHALL BE LAPPED MIDWAY BETWEEN GIRDERS.
- MAXIMUM LENGTH OF REINFORCING BARS SHALL PREFERABLY BE LIMITED TO 35'-0".
- THE EXACT POURING SEQUENCE SHALL BE PROVIDED BY THE DESIGNER/ENGINEER AND SHOWN ON THE DRAWINGS.
- STANDARD MINIMUM SLAB THICKNESS SHALL BE 7 1/2" UNLESS UNUSUAL DESIGN OR LONGER EFFECTIVE SPAN DICTATES THAT A THICKER SLAB IS REQUIRED.
- THE APPLICABLE NOTES PROVIDED BELOW SHALL BE INCLUDED ON THE CONTRACT DRAWINGS.
- INCREASE THE BOTTOM REINFORCING COVER TO 1 1/2" (AND MINIMUM DECK THICKNESS TO 8") FOR BRIDGES OVER SALT OR BRACKISH WATER. SEE RIDOT LRFD BRIDGE MANUAL SECTION 9.
- WHENEVER POSSIBLE BRIDGE SUPERSTRUCTURES (INCLUDING DECKS) SHALL BE MADE CONTINUOUS AT PIERS.
- THE FASCIA SLAB OVERHANG SHALL BE DESIGNED TO INCLUDE THE AASHTO LRFD BRIDGE DESIGN SPECIFICATION FOR RAIL IMPACT LOADING.

THIS SHEET NOT TO SCALE.



SLAB ON STEEL BEAMS

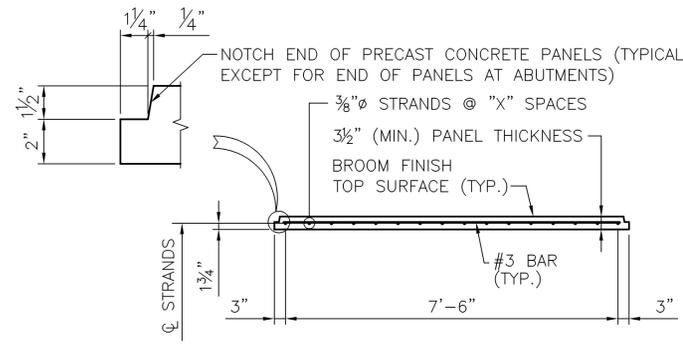


SLAB ON PRESTRESSED BEAMS

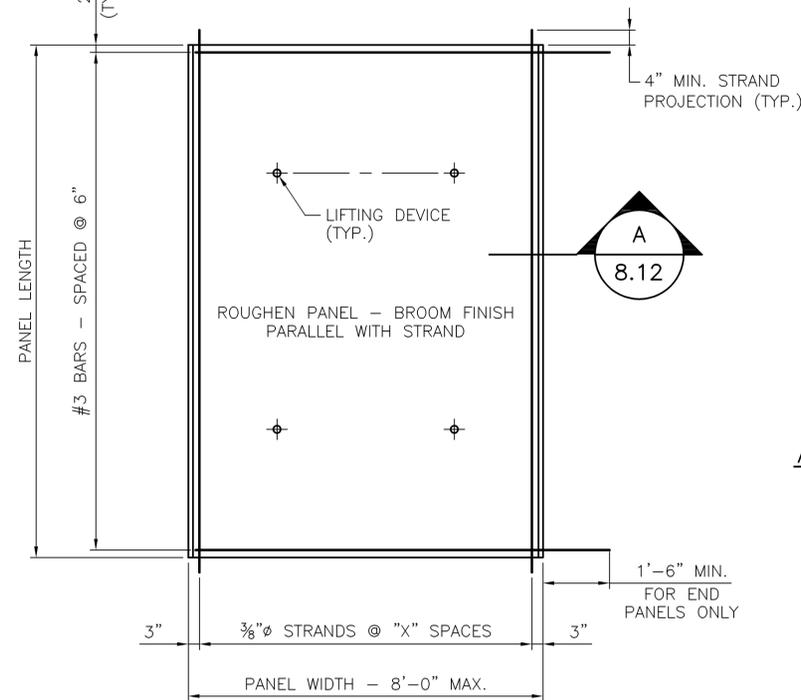
NOTE: FOR INFORMATION NOT SHOWN ON THIS SECTION REFER TO THE STEEL BEAM SECTION.

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		DECK SLAB DETAILS
DRAWING NUMBER: 8.10		



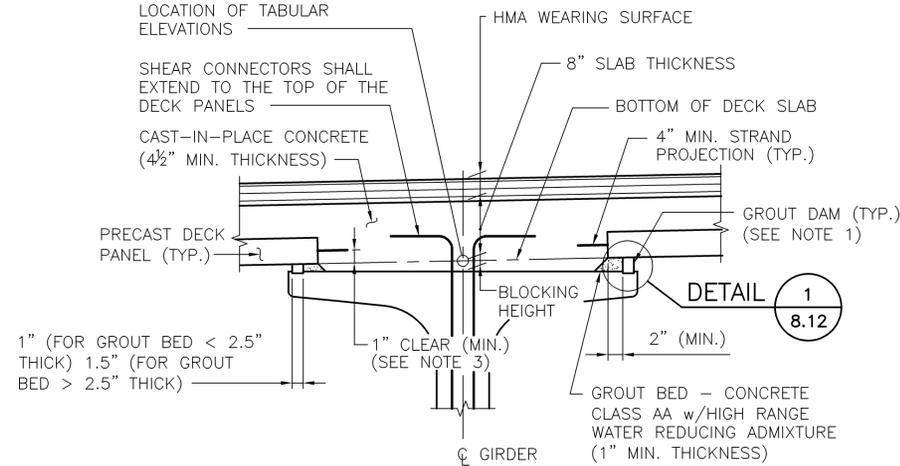
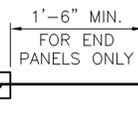


SECTION A  
SCALE: 1/2"=1'-0"  
8.12

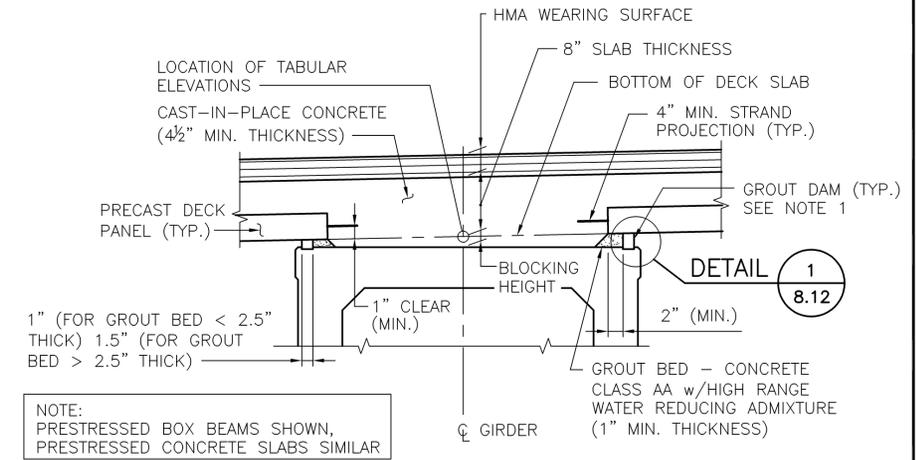


DECK PANEL DETAIL  
SCALE: 1/2"=1'-0"

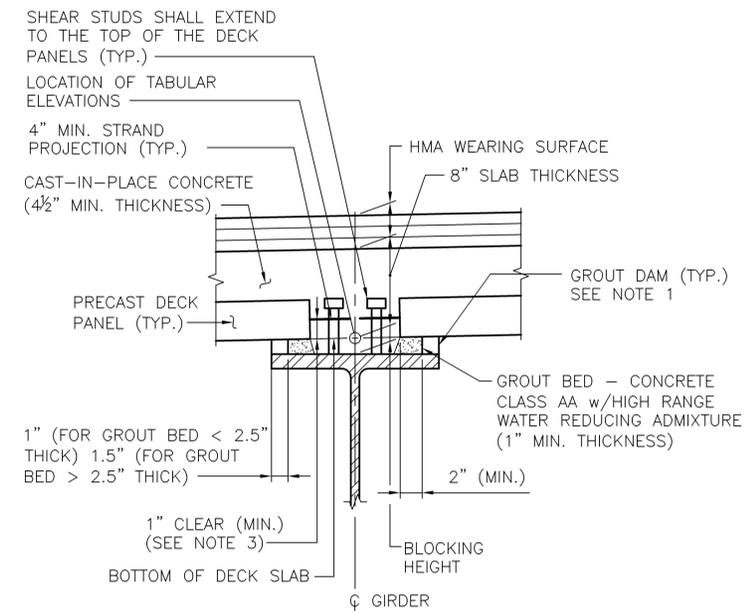
DECK PANEL END AT ABUTMENT DETAIL  
SCALE: 1"=1'-0"



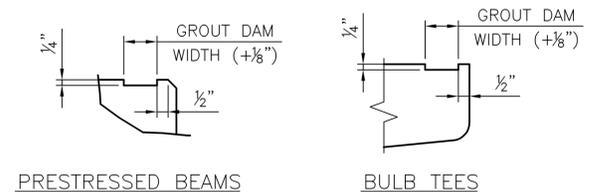
HAUNCH DETAIL - PRESTRESSED BULB TEES  
SCALE: 1"=1'-0"



HAUNCH DETAIL - PRESTRESSED BOX BEAMS  
SCALE: 1"=1'-0"



HAUNCH DETAIL - STEEL GIRDER  
SCALE: 1 1/2"=1'-0"



DETAIL 1  
NOT TO SCALE  
8.12

NOTES:

- TEMPORARY SUPPORTS FOR PRECAST DECK PANELS SHALL CONSIST OF CONTINUOUS, HIGH-DENSITY, EXPANDED POLYSTYRENE STRIPS (GROUT DAM) WITH A MINIMUM COMPRESSIVE STRENGTH OF (55 PSI). IF LEVELING SCREWS ARE USED, A 1.7 POUND PER CUBIC FOOT POLYETHYLENE FOAM SEAL (WITH AN APPROVED ADHESIVE) SHALL BE USED AS A GROUT DAM FOR THE GIRDER AND DECK PANEL.
- IF LEVELING SCREWS ARE USED, TEMPORARY BRACING BETWEEN THE ENDS OF PANELS SHALL BE INSTALLED AS REQUIRED TO PREVENT TRANSVERSE PANEL MOVEMENT THAT COULD LEAD TO LOSS OF BEARING ON THE LEVELING SCREWS.
- DECK PANELS ARE REQUIRED TO BE GROUTED IN PLACE PRIOR TO PLACEMENT OF THE CAST-IN-PLACE CONCRETE DECK. THE GROUT BED SHOULD EXTEND FOR THE FULL WIDTH OF THE GIRDER FLANGE COMPLETELY FILLING THE AREA BETWEEN THE GROUT DAMS. THE TOP OF THE GROUT BED SHOULD BE 1 INCH CLEAR BELOW THE STRAND EXTENSIONS.
- IF LEVELING SCREWS ARE USED THEY SHALL BE COMPLETELY REMOVED AFTER THE GROUTING OPERATION AND PRIOR TO DECK PLACEMENT.

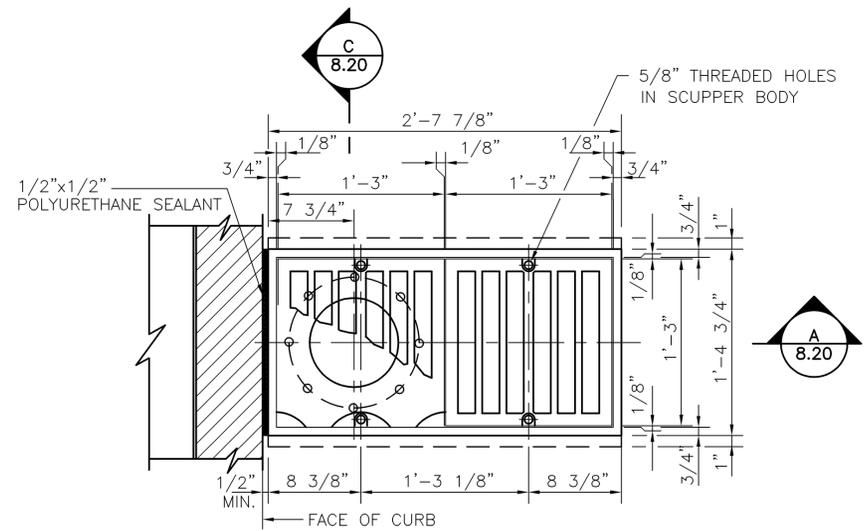
REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		STAY-IN-PLACE PRECAST CONCRETE DECK PANELS
		DRAWING NUMBER: 8.12

TOP OF FORM ELEVATIONS FOR DECK SLAB PRIOR TO PLACEMENT OF CONCRETE											
BEAM #	CL BRG.	1/10 PT.	2/10 PT.	3/10 PT.	4/10 PT.	5/10 PT.	6/10 PT.	7/10 PT.	8/10 PT.	9/10 PT.	CL BRG.

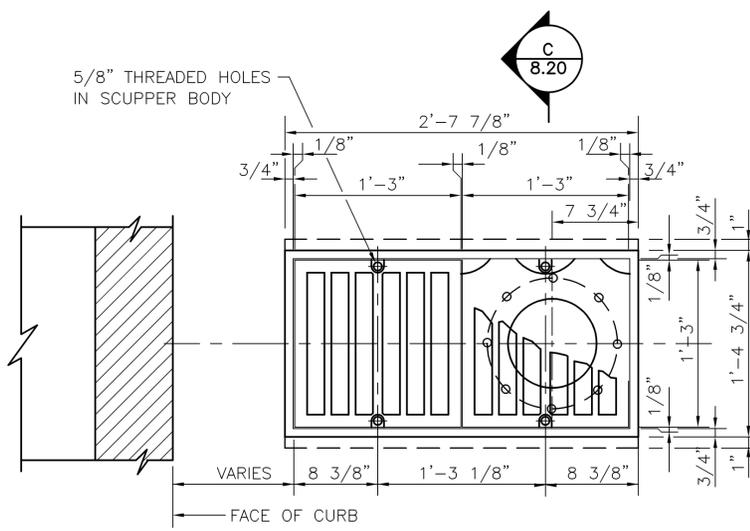
DESIGNER NOTES:

- FOR SPANS OF 50 FEET AND LESS, ELEVATIONS ARE TO BE SHOWN AT 1/4 POINTS.
- THE TABULAR ELEVATIONS SHALL BE CALCULATED BY TAKING THE PROPOSED FINISHED GRADE OF THE CENTERLINE OF BEAMS AND:
  - SUBTRACTING THE SURFACING AND CONCRETE SLAB THICKNESS AND
  - ADDING THE THEORETICAL DEFLECTION OF THE BEAMS DUE TO THE WEIGHT OF THE SLAB, SURFACING, AND ALL OTHER SUPERIMPOSED DEAD LOADS.
- AT THE POINT OF MAXIMUM CAMBER, MINIMUM BLOCKING HEIGHTS SHALL BE 1 INCH FOR SPANS UP TO 50 FEET AND 1 1/2 FOR SPANS OVER 50 FEET. USE THE BLOCKING HEIGHTS FOR THE COMPUTATION OF BRIDGE SEAT ELEVATIONS BUT DO NOT SHOW ON THE CONSTRUCTION PLANS. BLOCKING HEIGHTS SHALL BE CONSIDERED AS 0 INCHES WHEN CALCULATING THE PHYSICAL PROPERTIES OF COMPOSITE BEAMS, HOWEVER, THE WEIGHT OF THE HAUNCH SHALL BE INCLUDED IN THE DESIGN CALCULATIONS.
- FOR PLATE GIRDERS WITH DIFFERENT TOP FLANGE THICKNESSES OR ROLLED BEAMS WITH TOP FLANGE COVER PLATE, BLOCKING HEIGHTS SHALL BE MEASURED FROM THE TOP OF THE THICKEST PLATE OR THE TOP OF THE COVER PLATE.
- THE DESIGNER SHALL REFER TO RIDOT LRFD BRIDGE DESIGN MANUAL (SECTION 9.6.9) FOR DESIGN REQUIREMENTS.
- THE TABULAR ELEVATIONS SHALL BE INCREASED FOR STRUCTURES USING TRAPEZOIDAL STEEL BOX GIRDERS TO SUFFICIENTLY ACCOMMODATE THE INTERNAL CROSS FRAME AND DIAGONAL BRACING CONNECTIONS AND ELIMINATE ANY INTERFERENCE BETWEEN THE BOTTOM OF THE S.I.P. FORMS; THE GIRDER FLANGES; AND THE BRACING, CROSS FRAMES, AND THEIR CONNECTION HARDWARE. THE DESIGNER SHALL ALSO ACCOUNT FOR THE DEPTH OF THE S.I.P. FORMS IN THE HAUNCH VOLUME COMPUTATIONS.

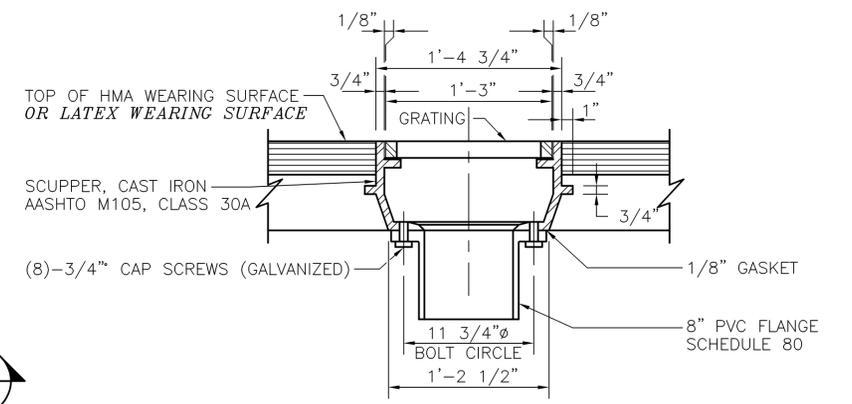




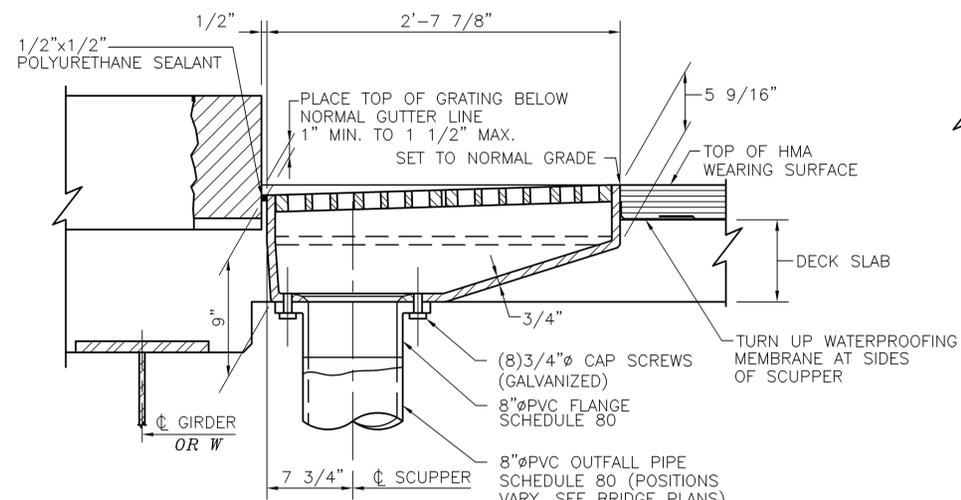
PLAN  
2 SECTION SCUPPER



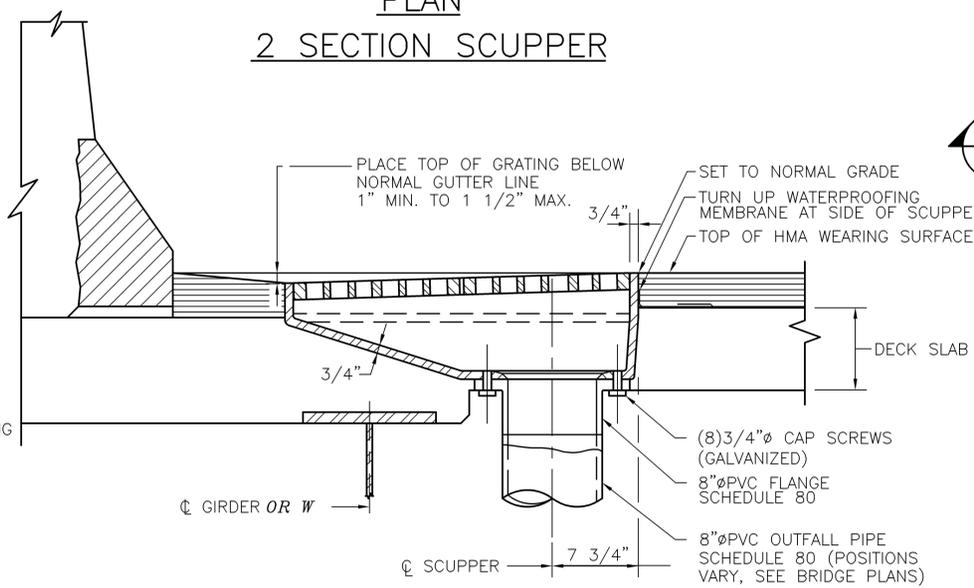
PLAN  
2 SECTION SCUPPER



SECTION C  
8.20

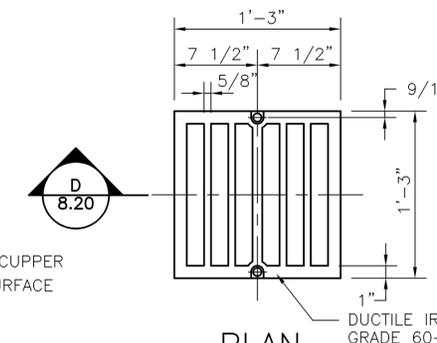


SECTION A  
8.20



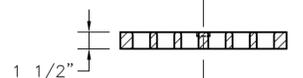
SECTION B  
8.20

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

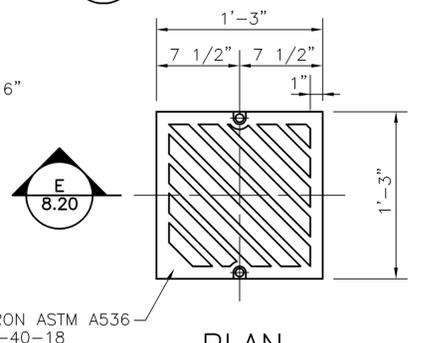


PLAN  
TYPE A GRATING

WHEN BICYCLES ARE PROHIBITED FROM BRIDGE

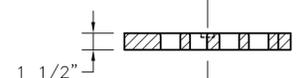


SECTION D  
8.20

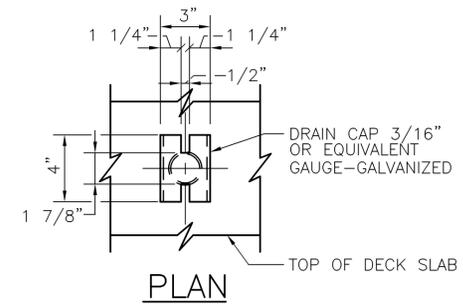


PLAN  
TYPE B GRATING

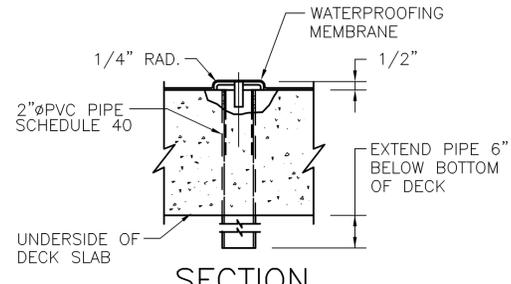
WHEN BICYCLES ARE NOT PROHIBITED FROM BRIDGE



SECTION E  
8.20

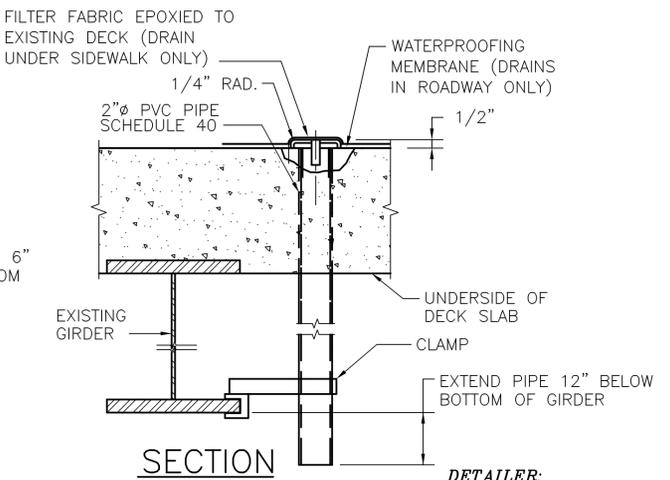


PLAN



SECTION

SUBPAVEMENT DRAIN  
NO TO SCALE



SECTION

DETAILER:  
EXTEND PIPE 12" BELOW BOTTOM OF GIRDER IF WATER IS LIKELY TO DISCHARGE ON TO GIRDER.

DESIGNER NOTES:

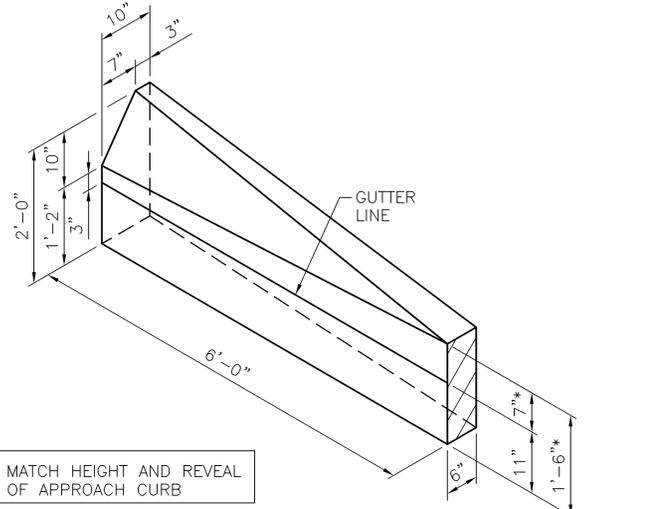
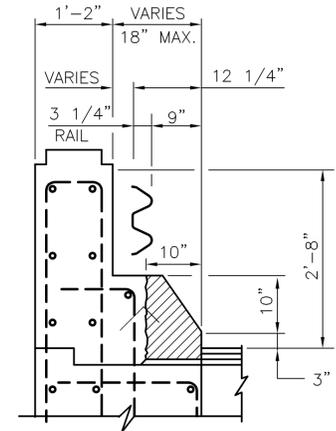
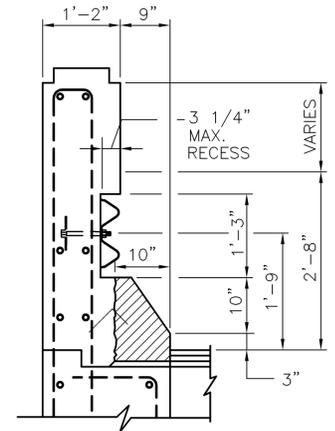
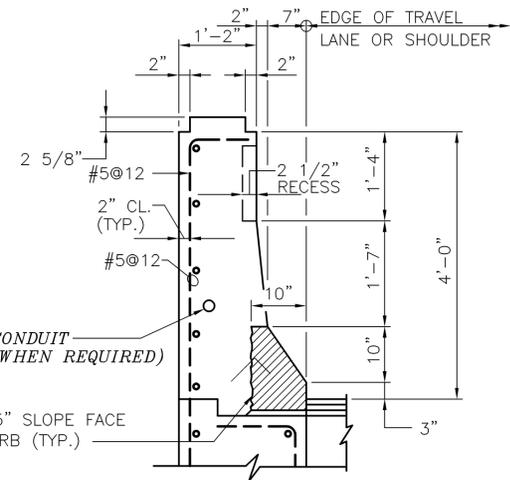
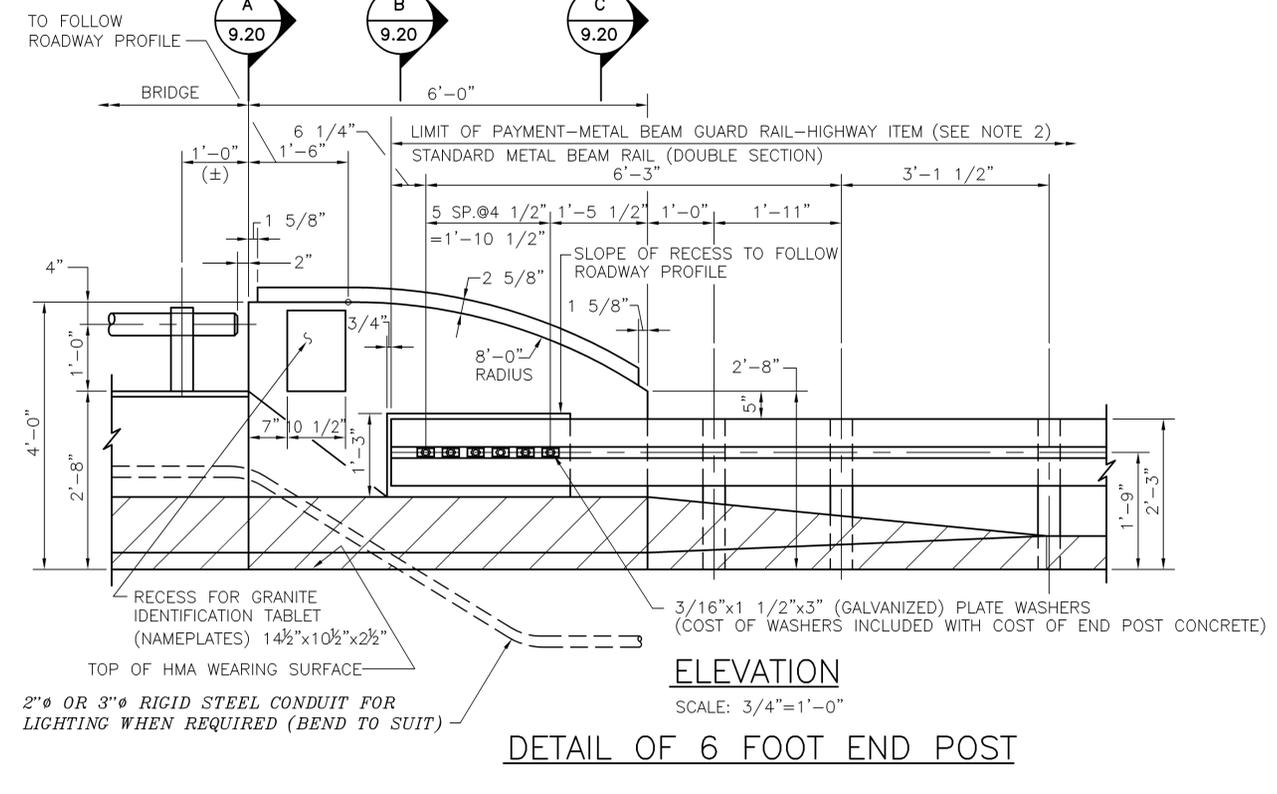
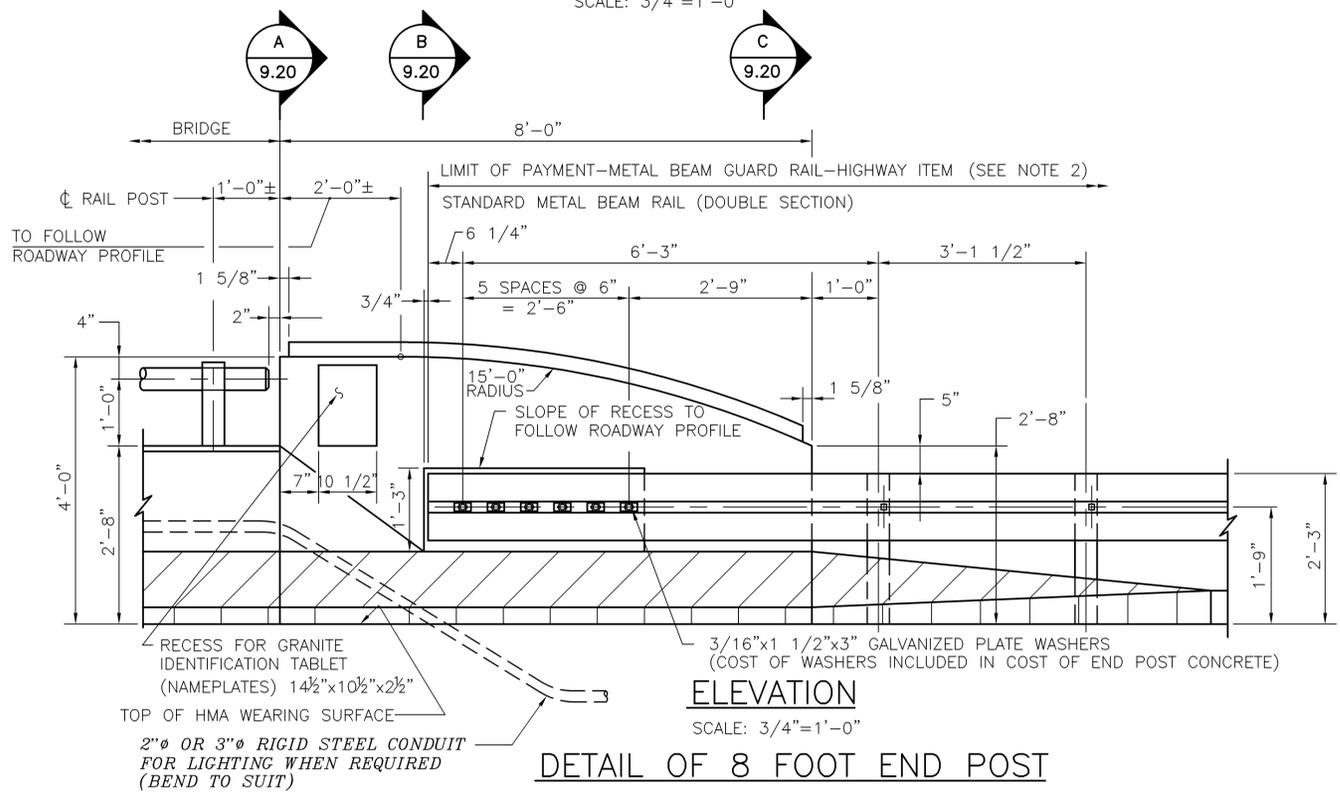
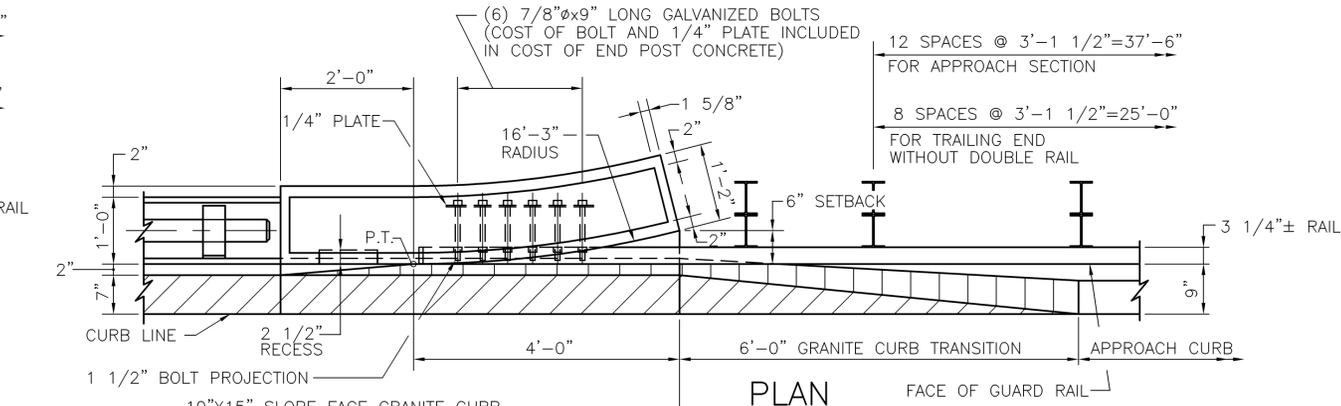
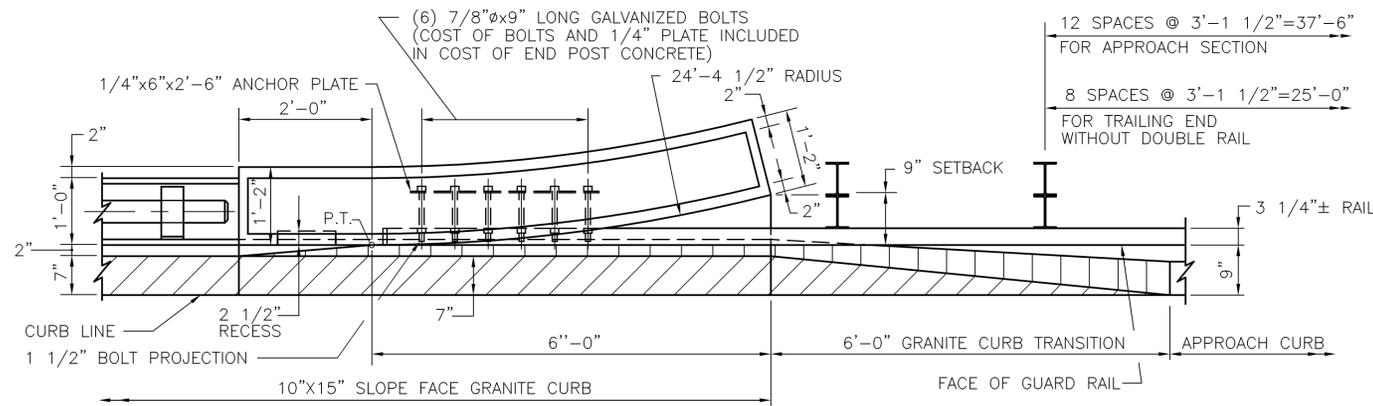
1. THE SECTION B/8.20 SCUPPER SHOULD BE USED WHEN GIRDERS, STRINGERS OR PRESTRESSED BEAMS INTERFERE WITH THE OUTFALL PIPE.
2. REFER TO THE RIDOT LRFD BRIDGE DESIGN MANUAL FOR SCUPPER DESIGN AND DETAILING REQUIREMENTS.
3. WHEN THE SCUPPER IS PLACED AT A LOCATION WHERE EXPANSION BETWEEN IT AND THE SCUPPER DISCHARGE PIPING SYSTEM ATTACHED TO THE SUBSTRUCTURE UNIT MAY OCCUR, PROVISIONS SHALL BE MADE TO ACCOMMODATE THE MOVEMENT.
4. DETAILS ARE SIMILAR FOR FINISHED CONCRETE DECK.

NOTE:

1. AN ALTERNATE DETAIL OF SIMILAR DIMENSIONS AND EQUAL CAPACITY MAY BE SUBMITTED FOR APPROVAL OF THE ENGINEER.

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		DRAINAGE DETAILS
		DRAWING NUMBER: 8.20

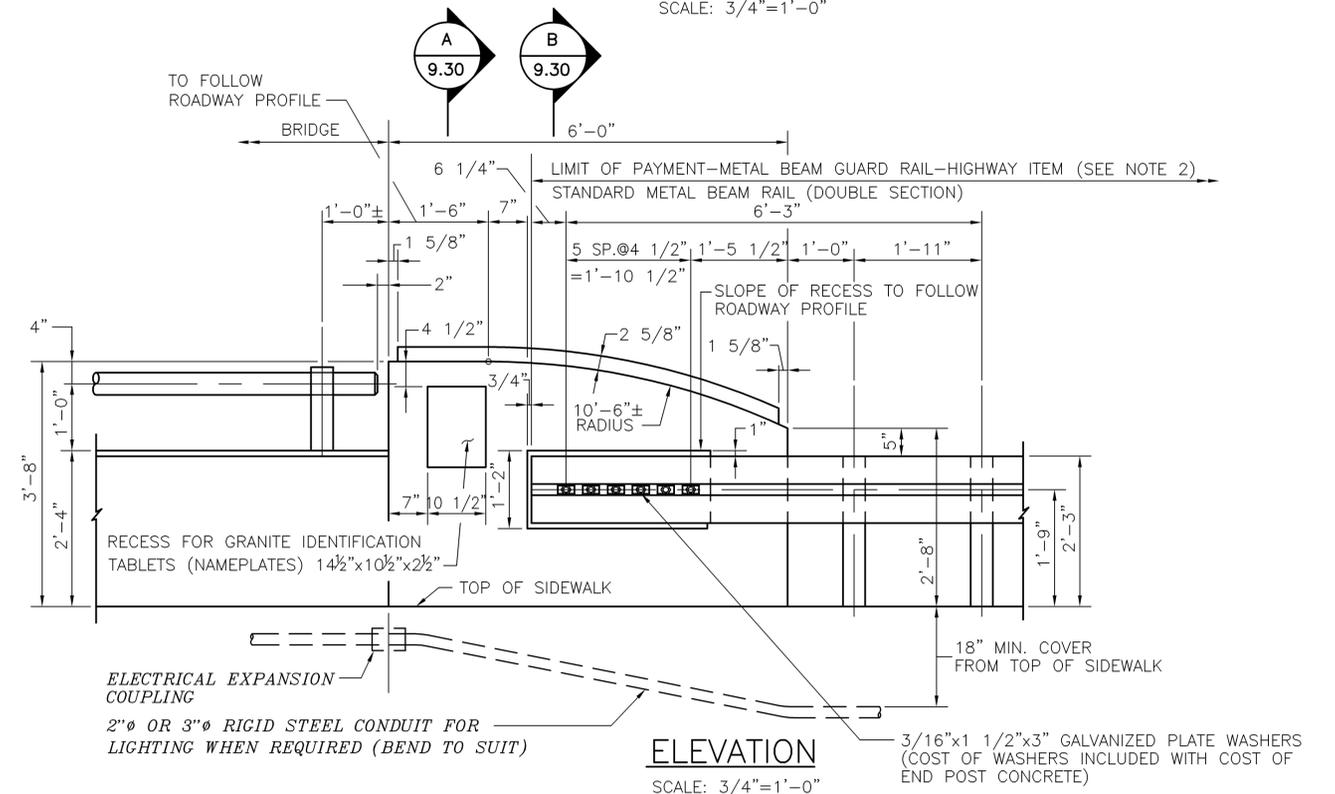
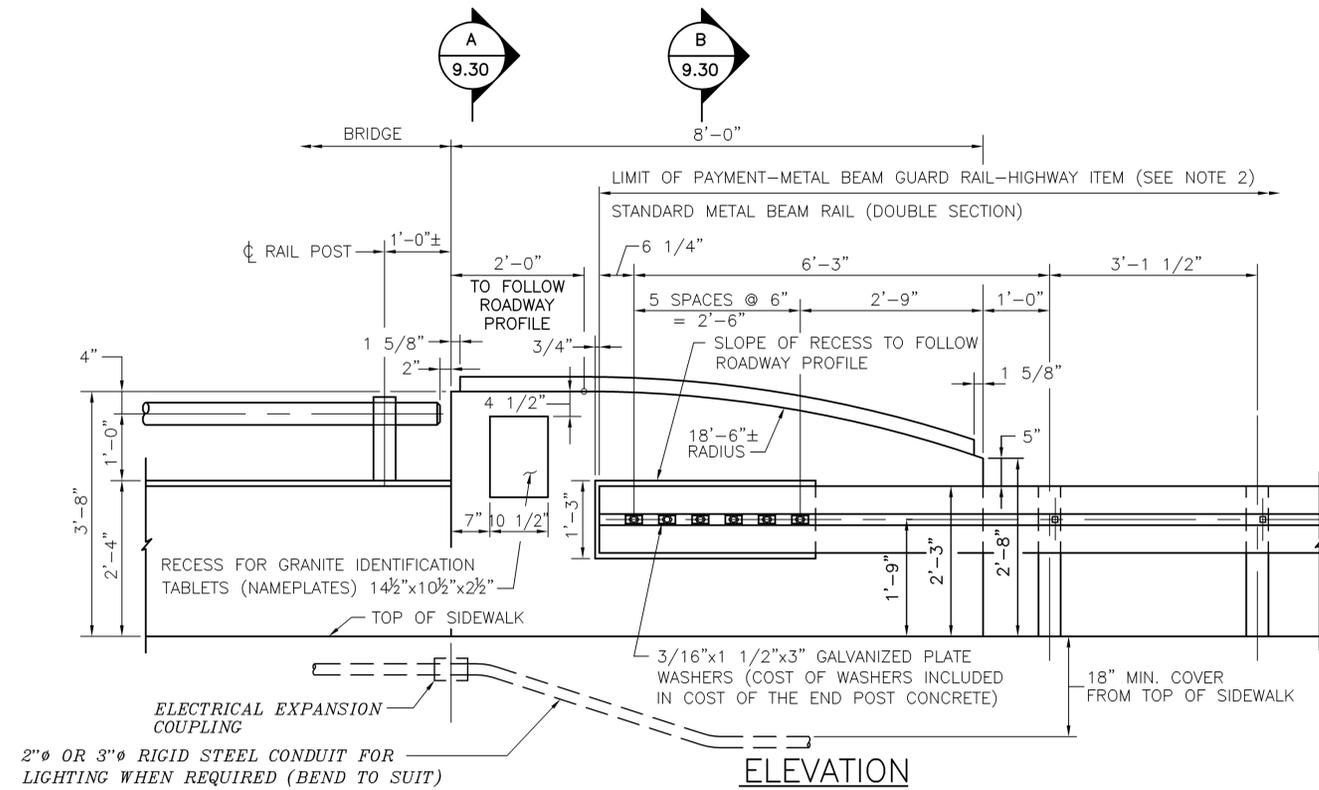
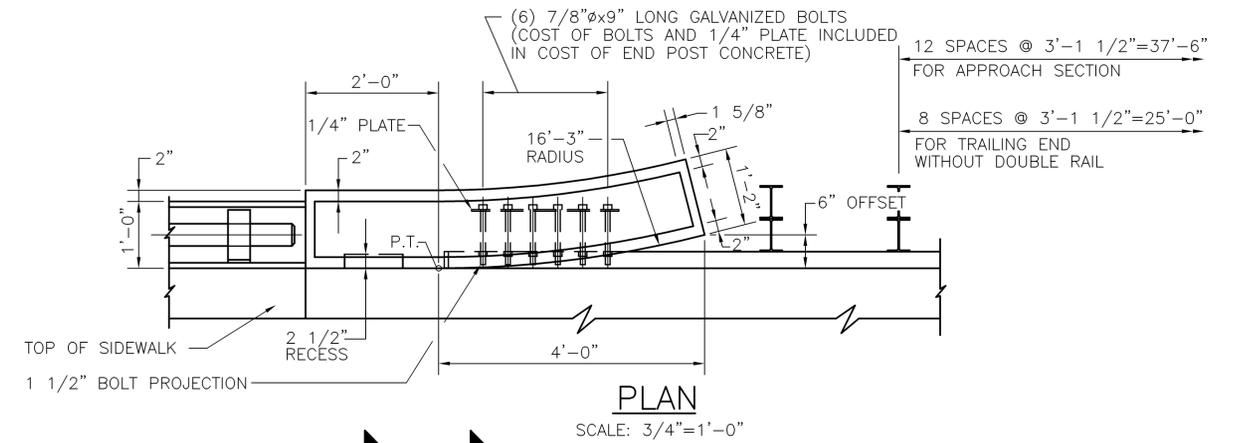
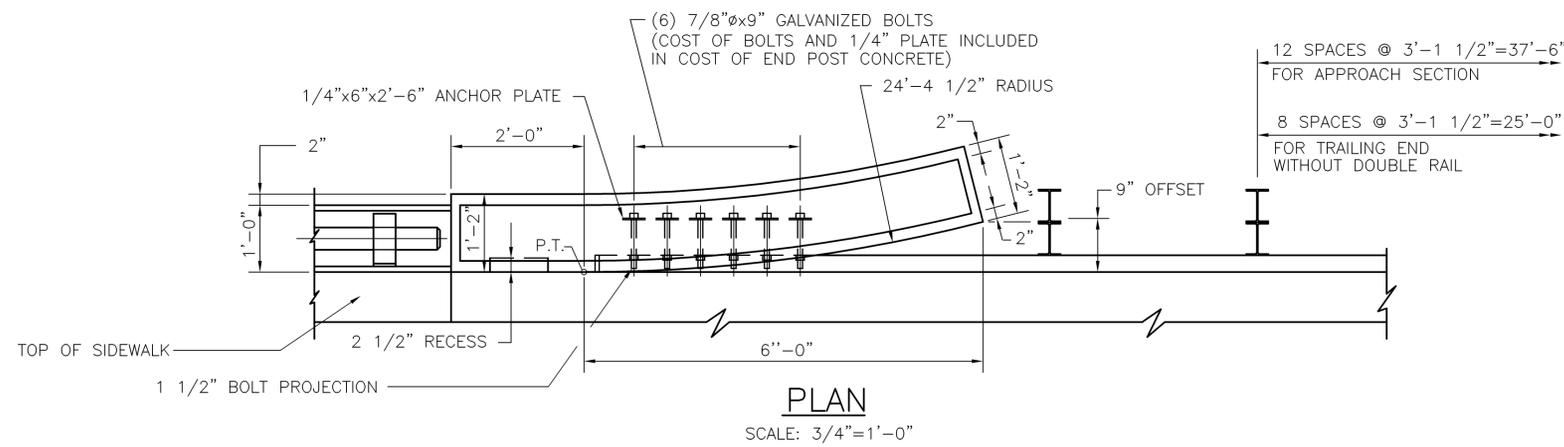




- NOTES:**
1. TO INSURE PROPER GUARD RAIL ANCHORAGE, THE GUARD RAIL INSTALLATION SHALL BEGIN AT EACH END OF THE BRIDGE.
  2. THE COST OF THE GUARD RAIL TRANSITION TO BRIDGE END POSTS ARE HIGHWAY ITEMS. APPROACH SECTIONS AND TRAILING SECTIONS ARE SEPARATE ITEMS IN THE PROPOSAL.
  3. SEE DRAWING (18.20) FOR 1-BAR ORNAMENTAL RAIL DETAILS.
  4. REFER TO DRAWING (9.10) TO FOR NAMEPLATE TABLET DETAILS

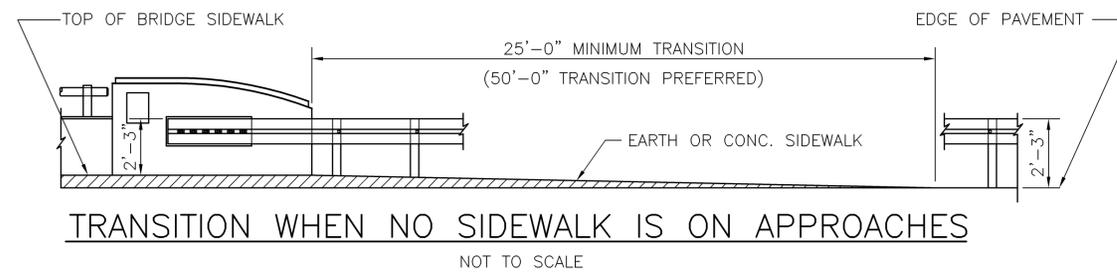
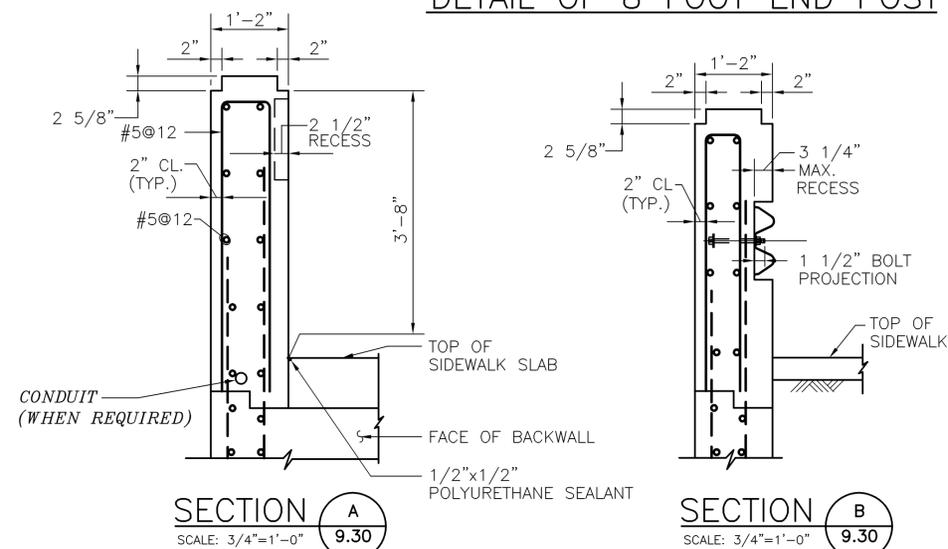
**LOW VOLUME-LOW SPEED**

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
No.	DATE	
		END POST DETAILS FOR SAFETY BARRIER PARAPET
		DRAWING NUMBER: 9.20



**DETAIL OF 8 FOOT END POST**

**DETAIL OF 6 FOOT END POST**



**NOTES:**

1. TO INSURE PROPER GUARD RAIL ANCHORAGE, THE GUARD RAIL INSTALLATION SHALL BEGIN AT EACH END OF THE BRIDGE.
2. THE COST OF THE GUARD RAIL TRANSITION TO BRIDGE END POSTS ARE HIGHWAY ITEMS. APPROACH SECTIONS AND TRAILING SECTIONS ARE SEPARATE ITEMS IN THE PROPOSAL.
3. REFER TO DRAWING (9.10) FOR NAMEPLATE TABLET DETAILS.

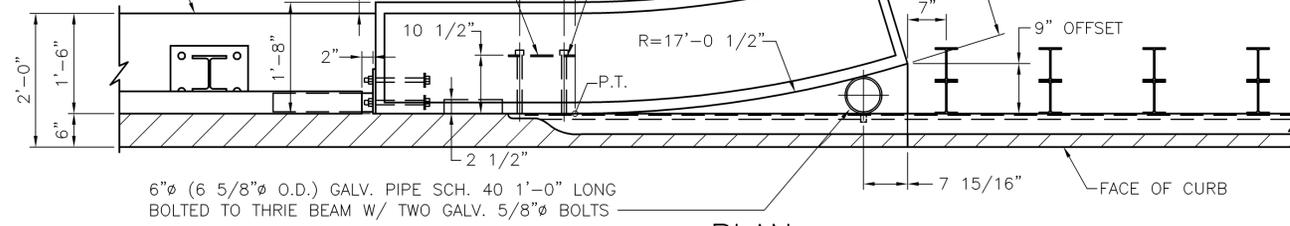
LOW VOLUME—LOW SPEED

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
No.	DATE	
		END POST DETAILS FOR PARAPET WITH SIDEWALK
		DRAWING NUMBER: 9.30

(5) 7/8"Ø BOLTS x 12" LONG ASTM A325 GALVANIZED BOLTS (COST OF BOLTS AND 1/4" ANCHOR PLATE INCLUDED IN COST OF END POST CONCRETE)

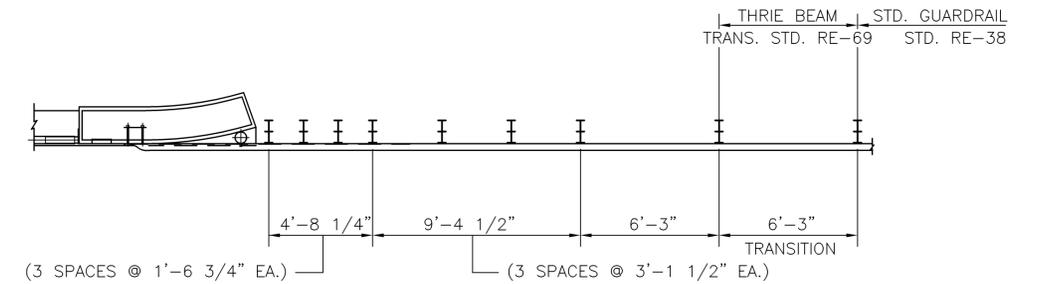
1/4" ANCHOR PLATE (GALVANIZED) (SEE DETAIL THIS SHEET)

EDGE OF DECK



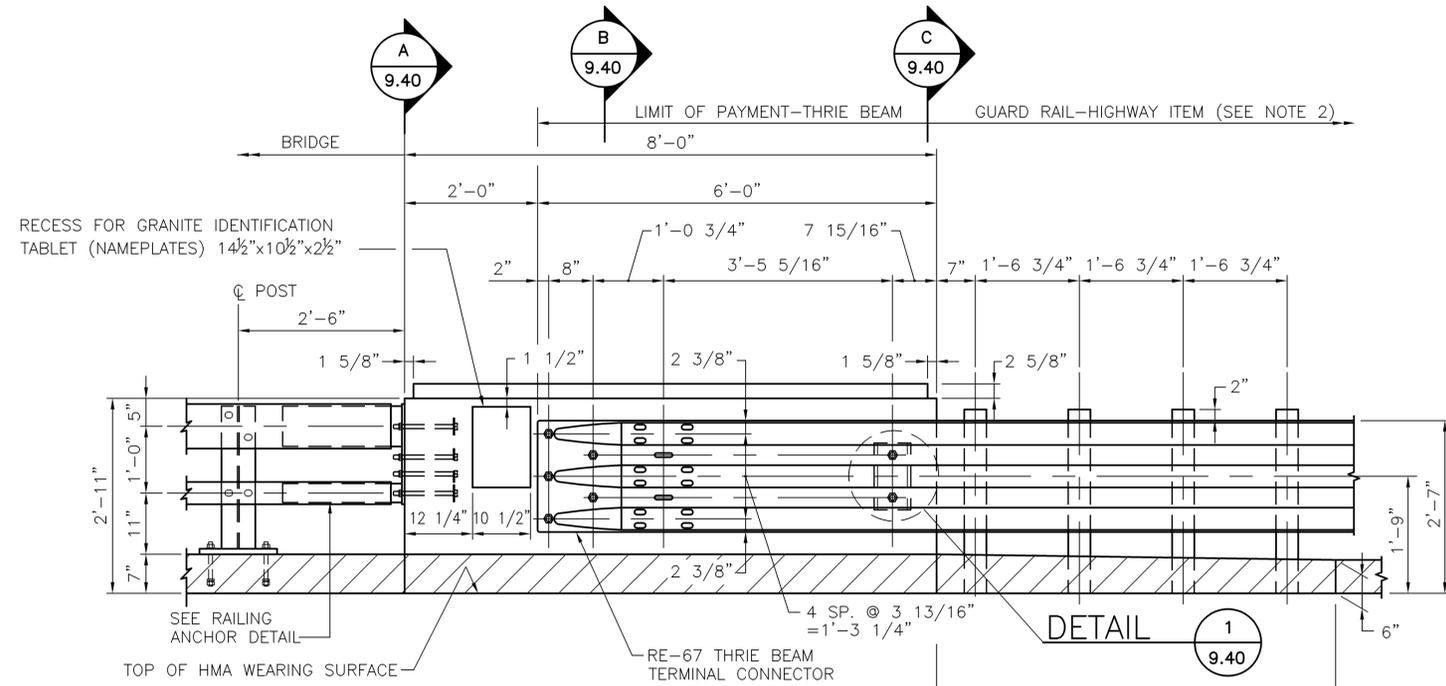
**PLAN**

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



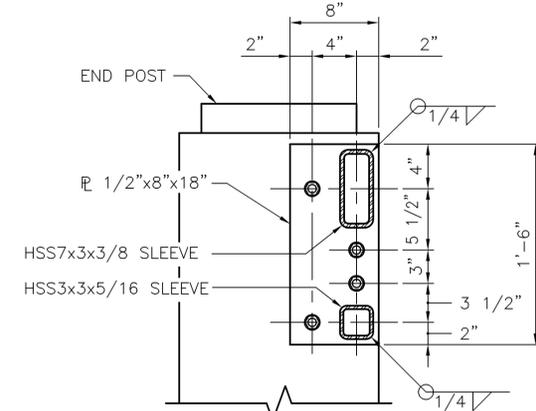
**PLAN VIEW OF GUARDRAIL TRANSITION**

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



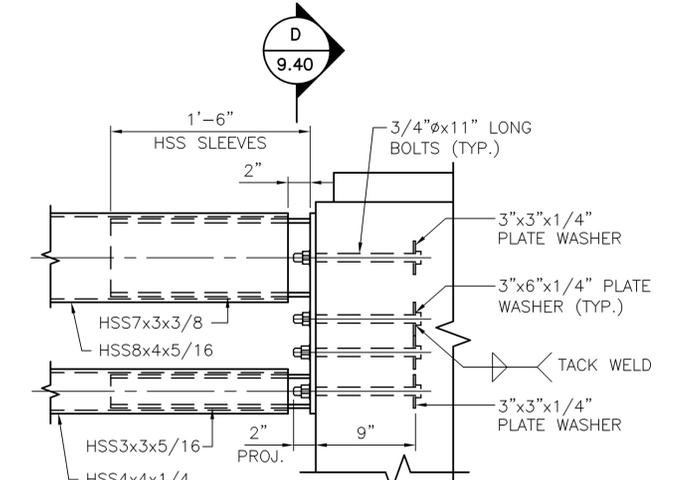
**ELEVATION**

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



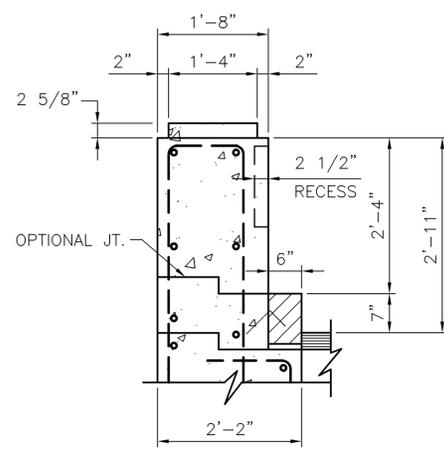
**SECTION D**

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

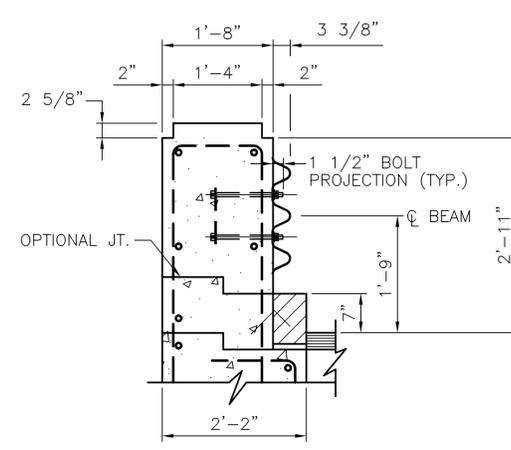


**RAILING ANCHOR DETAIL**

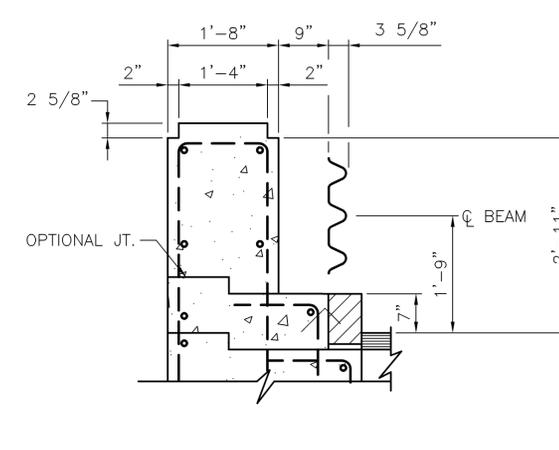
SCALE: 1 1/2"=1'-0"



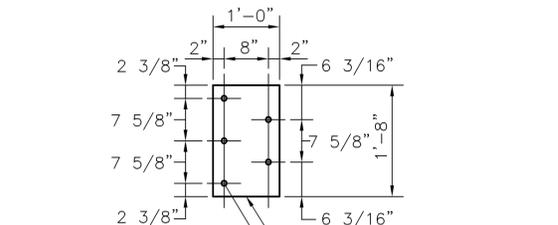
**SECTION A**  
SCALE: 3/4"=1'-0"



**SECTION B**  
SCALE: 3/4"=1'-0"

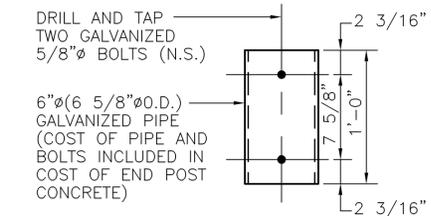


**SECTION C**  
SCALE: 3/4"=1'-0"



**DETAIL OF ANCHOR PLATE FOR THRIE BEAM**

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



**DETAIL 1**

**PIPE SEPARATOR DETAIL**

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

**DESIGNER:**

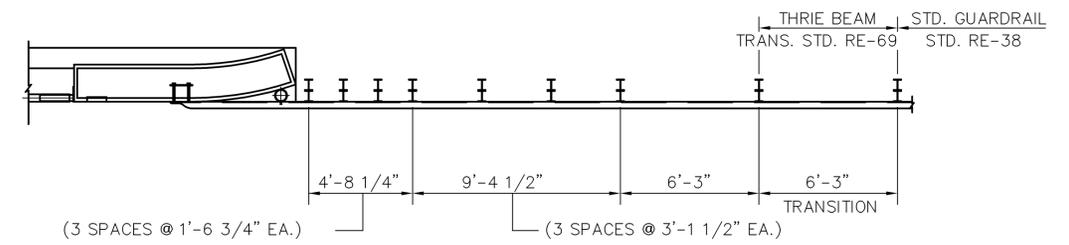
- COORDINATE THIS DRAWING WITH DRAWING 10.30

**NOTES:**

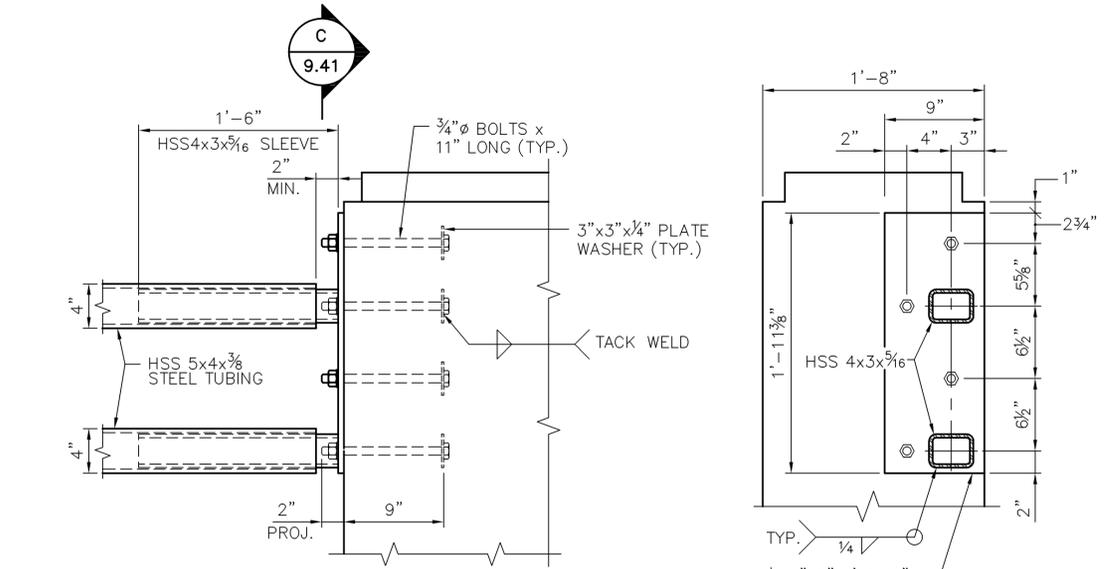
- TO INSURE PROPER GUARD RAIL ANCHORAGE, THE GUARD RAIL INSTALLATION SHALL BEGIN AT EACH END OF THE BRIDGE AND WORK INTO THE APPROACHES.
- THE COST OF THE GUARD RAIL TRANSITIONS TO BRIDGE END POSTS ARE HIGHWAY ITEMS. APPROACH SECTIONS AND TRAILING SECTIONS ARE SEPARATE ITEMS IN THE PROPOSAL.
- THE COST OF BRIDGE RAIL ANCHORAGE (PLATES, ANCHOR BOLTS AND PLATE SLEEVES) IS INCLUDED IN COST OF END POST CONCRETE.
- REFER TO DRAWING (9.10) FOR NAMEPLATE TABLET DETAILS.

**HIGH VOLUME-HIGH SPEED**

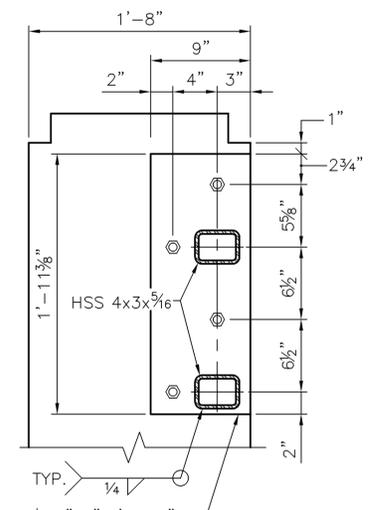
REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
No.	DATE	
		END POST DETAILS FOR TWO BAR RAIL
		DRAWING NUMBER: 9.40



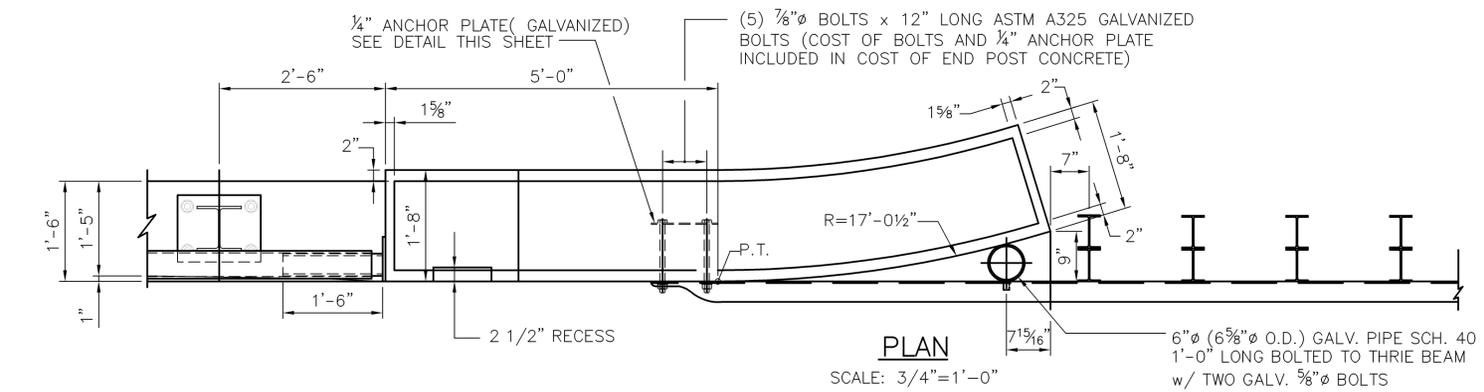
PLAN VIEW OF GUARDRAIL TRANSITION  
NOT TO SCALE



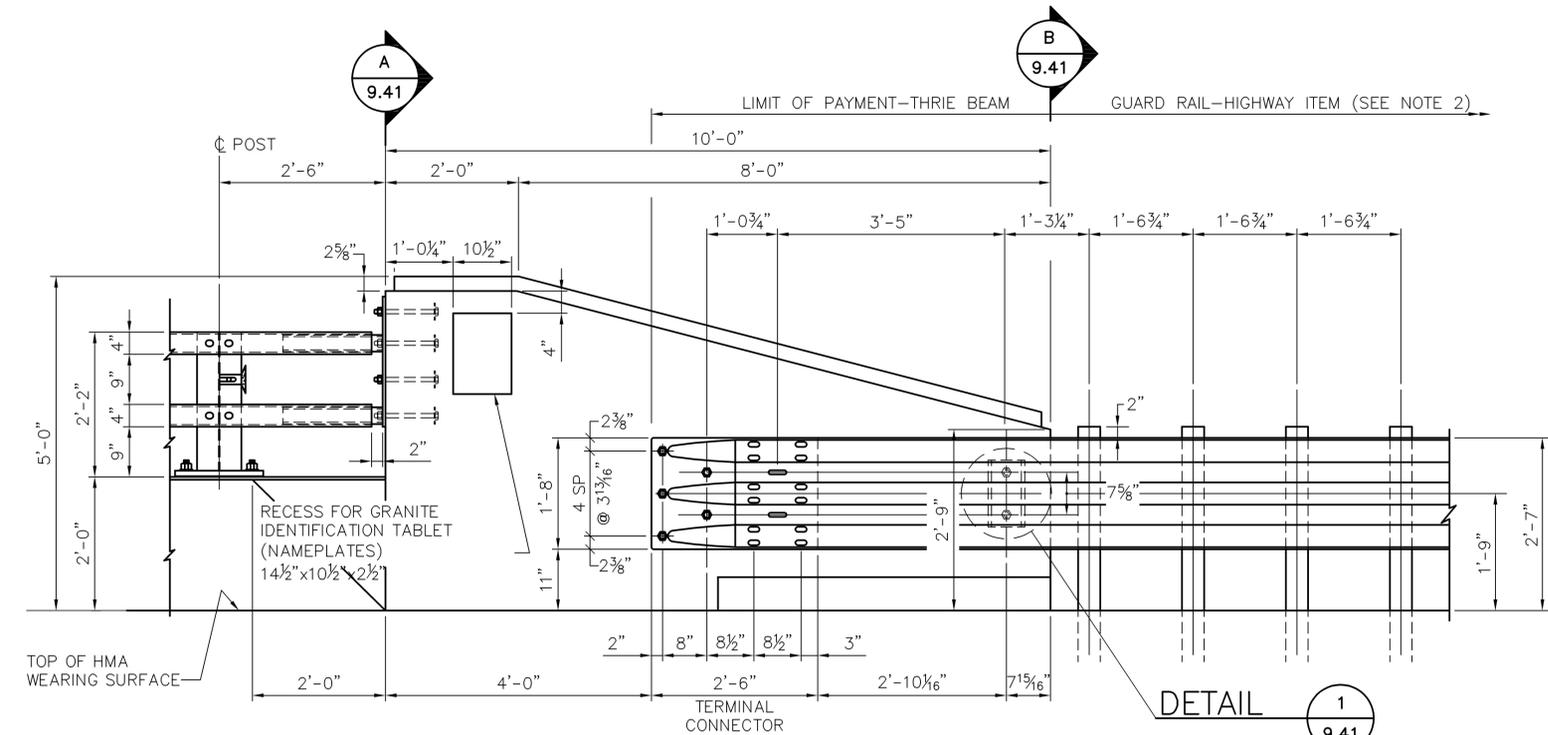
PARTIAL ELEVATION AT END POST  
SCALE: 1 1/2"=1'-0"



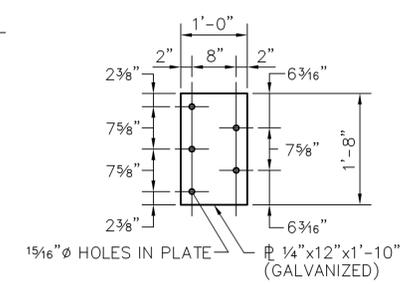
SECTION C  
SCALE: 1 1/2"=1'-0"



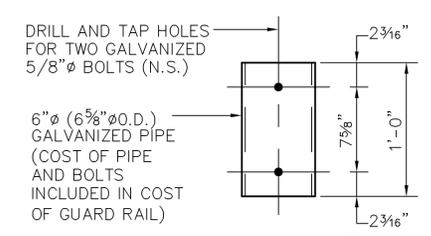
PLAN  
SCALE: 3/4"=1'-0"



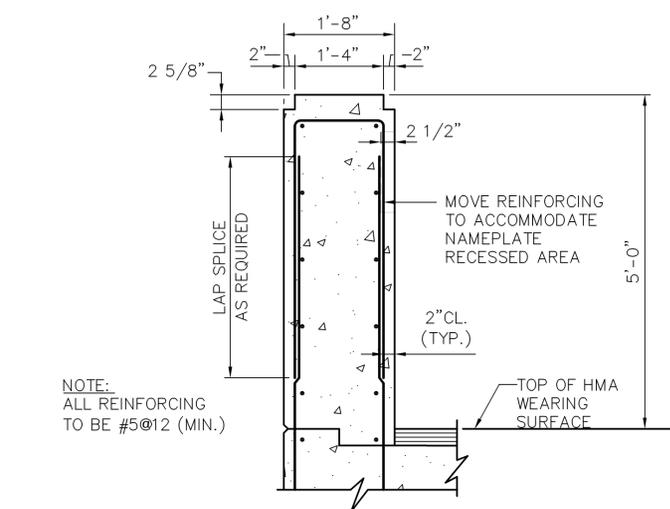
ELEVATION  
SCALE: 3/4"=1'-0"



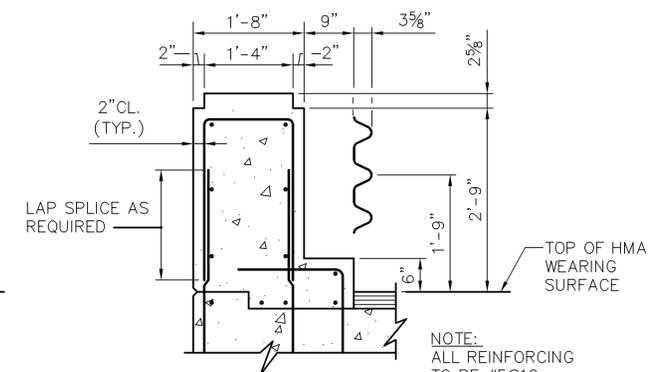
DETAIL OF ANCHOR PLATE FOR THRIE BEAM  
SCALE: 3/4"=1'-0"



PIPE SEPARATOR DETAIL  
SCALE: 1 1/2"=1'-0"



SECTION A  
SCALE: 3/4"=1'-0"



SECTION B  
SCALE: 3/4"=1'-0"

**DESIGNER:**

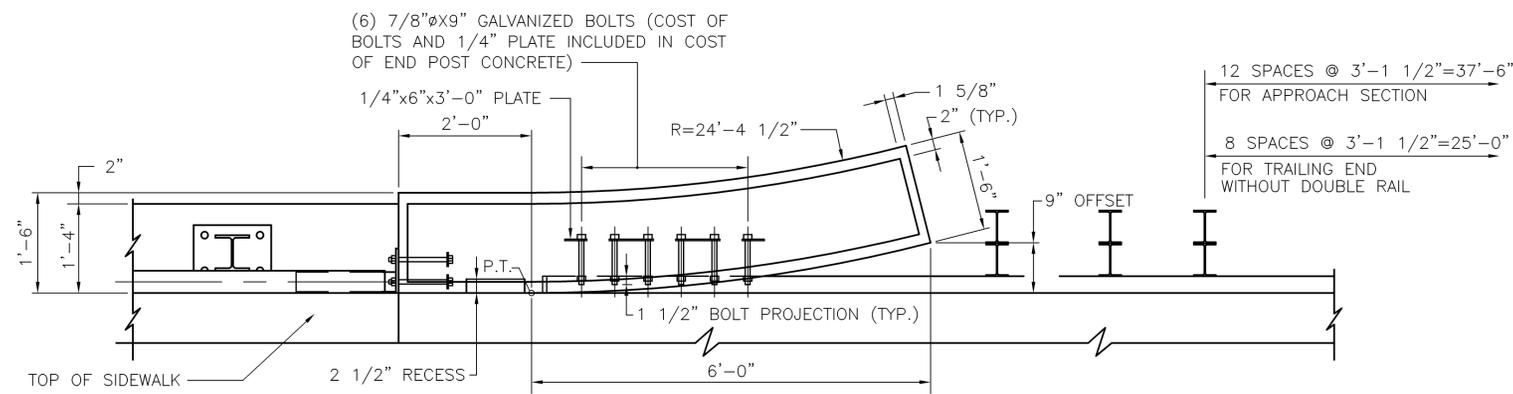
1. COORDINATE THIS DRAWING WITH DRAWING 10.35

**NOTES:**

- TO INSURE PROPER GUARD RAIL ANCHORAGE, THE GUARD RAIL INSTALLATION SHALL BEGIN AT EACH END OF THE BRIDGE AND WORK INTO THE APPROACHES.
- THE COST OF THE GUARD RAIL TRANSITIONS TO BRIDGE END POSTS ARE HIGHWAY ITEMS. APPROACH SECTIONS AND TRAILING SECTIONS ARE SEPARATE ITEMS IN THE PROPOSAL.
- THE COST OF BRIDGE RAIL ANCHORAGE (PLATES, ANCHOR BOLTS, WASHERS AND PLATE SLEEVES) IS INCLUDED IN THE COST OF END POST CONCRETE.
- ALL STEEL SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO DESIGNATION M270, GRADE 36.
- ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM DESIGNATION A 307.
- REFER TO DRAWING (9.10) FOR NAMEPLATE TABLET DETAILS.

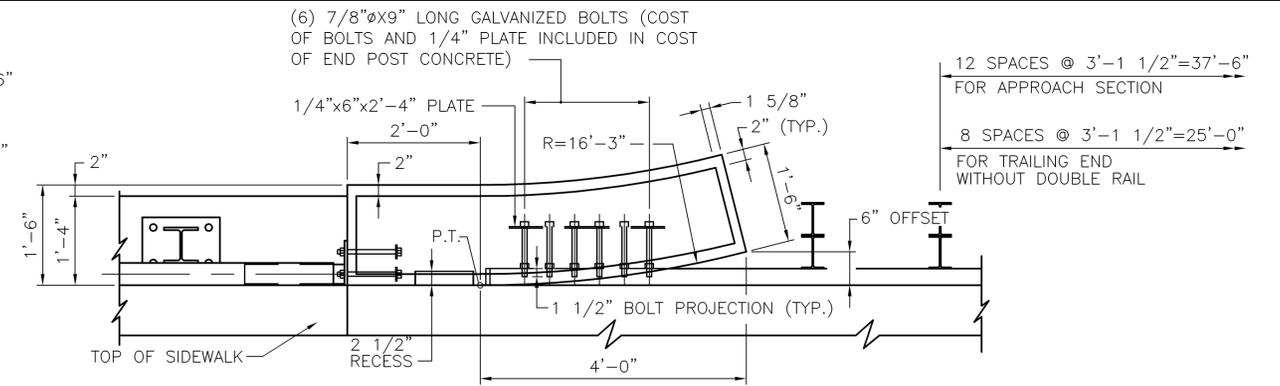
REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		END POST DETAILS FOR TL-5 RAIL

DRAWING NUMBER: 9.41



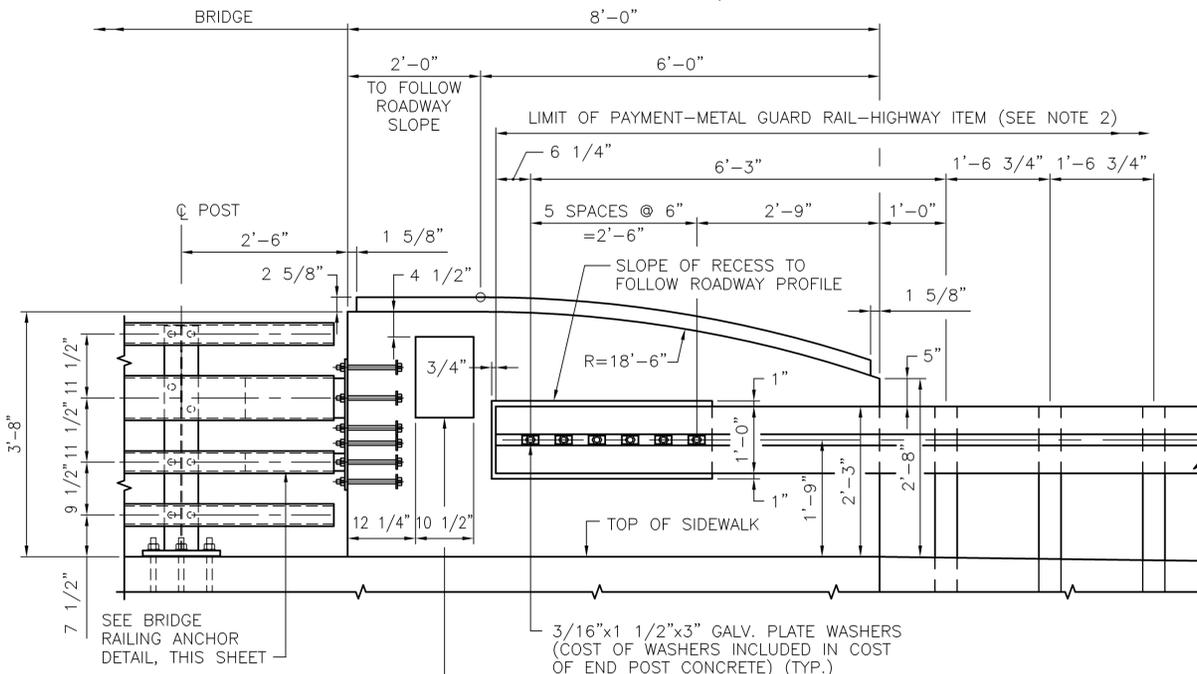
**PLAN**

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



**PLAN**

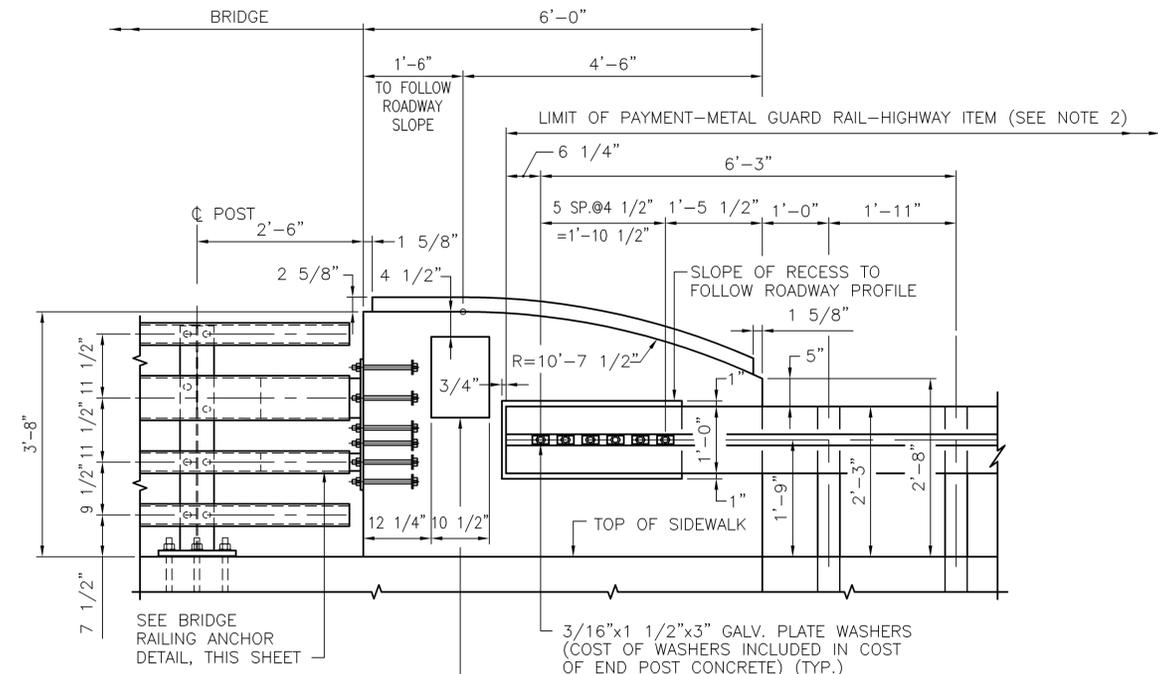
SCALE: 3/4"=1'-0"



**ELEVATION**

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

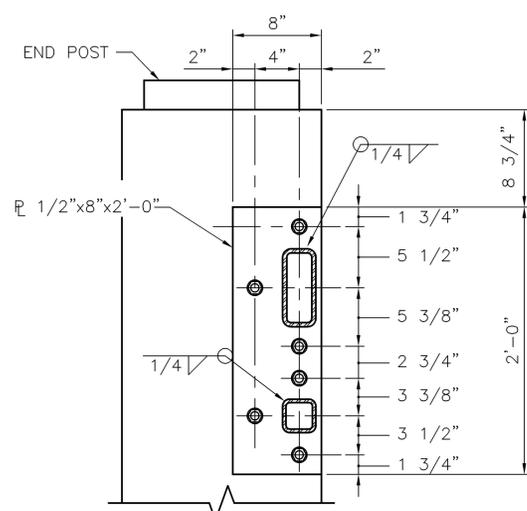
**DETAIL OF 8 FOOT END POST**



**ELEVATION**

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

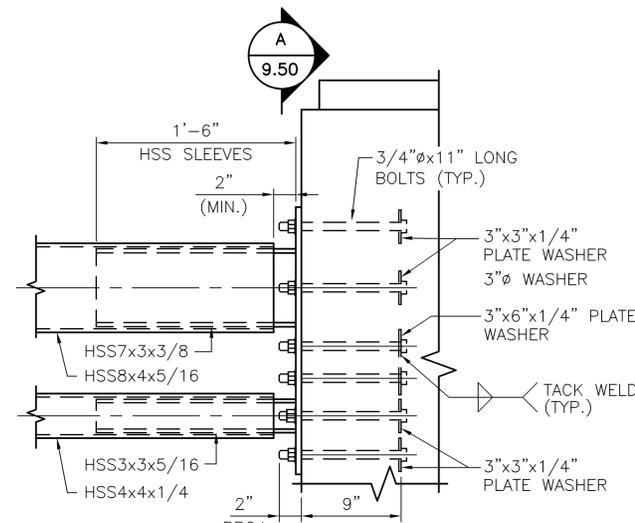
**DETAIL OF 6 FOOT END POST**



**SECTION**

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

A 9.50



**BRIDGE RAILING ANCHOR DETAIL**

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

**DESIGNER:**

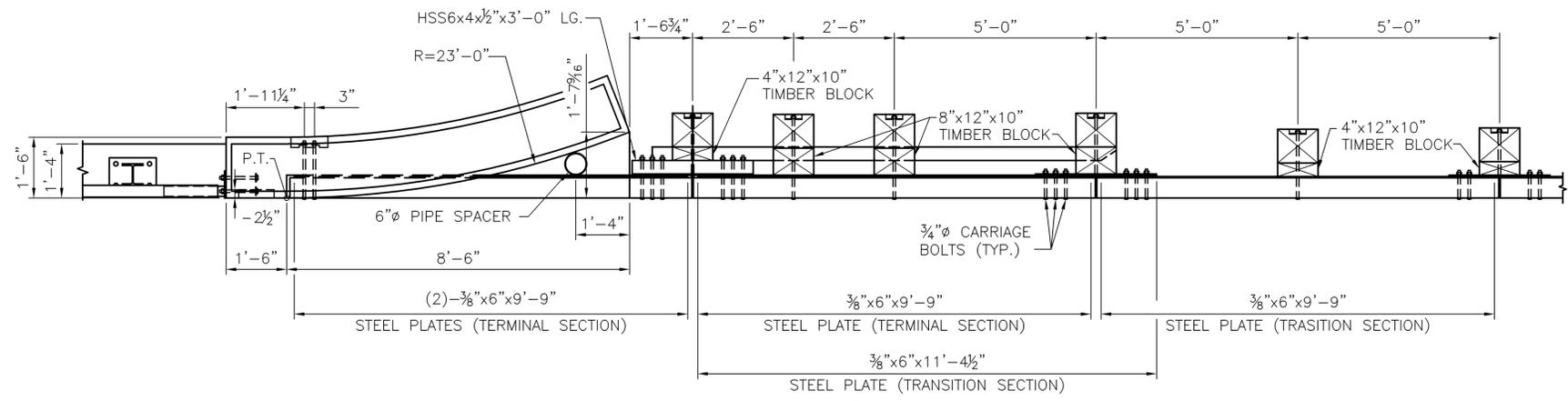
1. COORDINATE THIS DRAWING WITH DRAWING 10.22

**NOTES:**

- TO INSURE PROPER GUARD RAIL ANCHORAGE, THE GUARD RAIL INSTALLATION SHALL BEGIN AT EACH END OF THE BRIDGE AND WORK INTO THE APPROACHES.
- THE COST OF THE GUARD RAIL TRANSITION TO BRIDGE END POSTS ARE HIGHWAY ITEMS. APPROACH SECTIONS AND TRAILING SECTIONS ARE SEPARATE ITEMS IN THE PROPOSAL.
- THE COST OF BRIDGE RAIL ANCHORAGE (PLATES, ANCHOR BOLTS, WASHERS AND PLATE SLEEVES) IS INCLUDED IN COST OF POST CONCRETE.
- REFER TO DRAWING (9.10) FOR NAMEPLATE TABLET DETAILS.

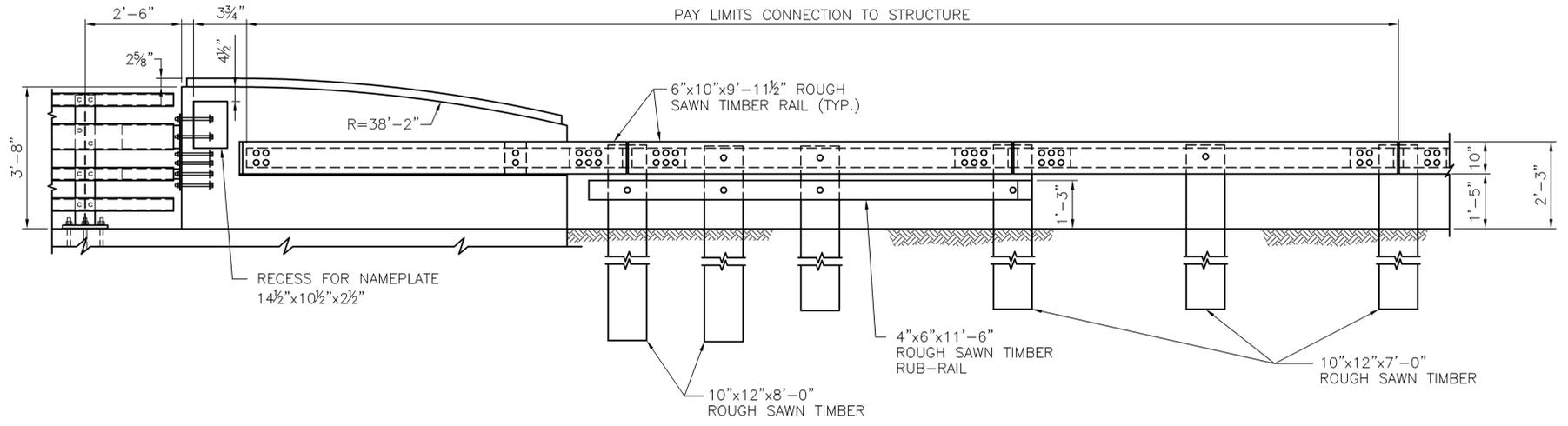
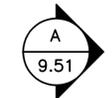
LOW VOLUME-LOW SPEED

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
No.	DATE	
		END POST DETAILS FOR FOUR BAR RAIL
		DRAWING NUMBER: 9.50



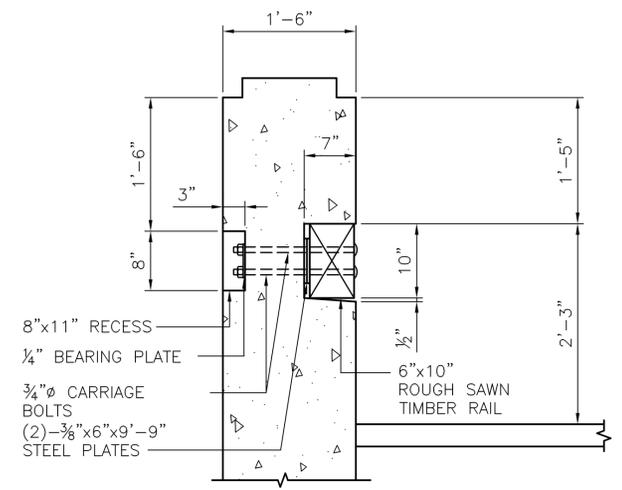
**PLAN**

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



**ELEVATION**

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



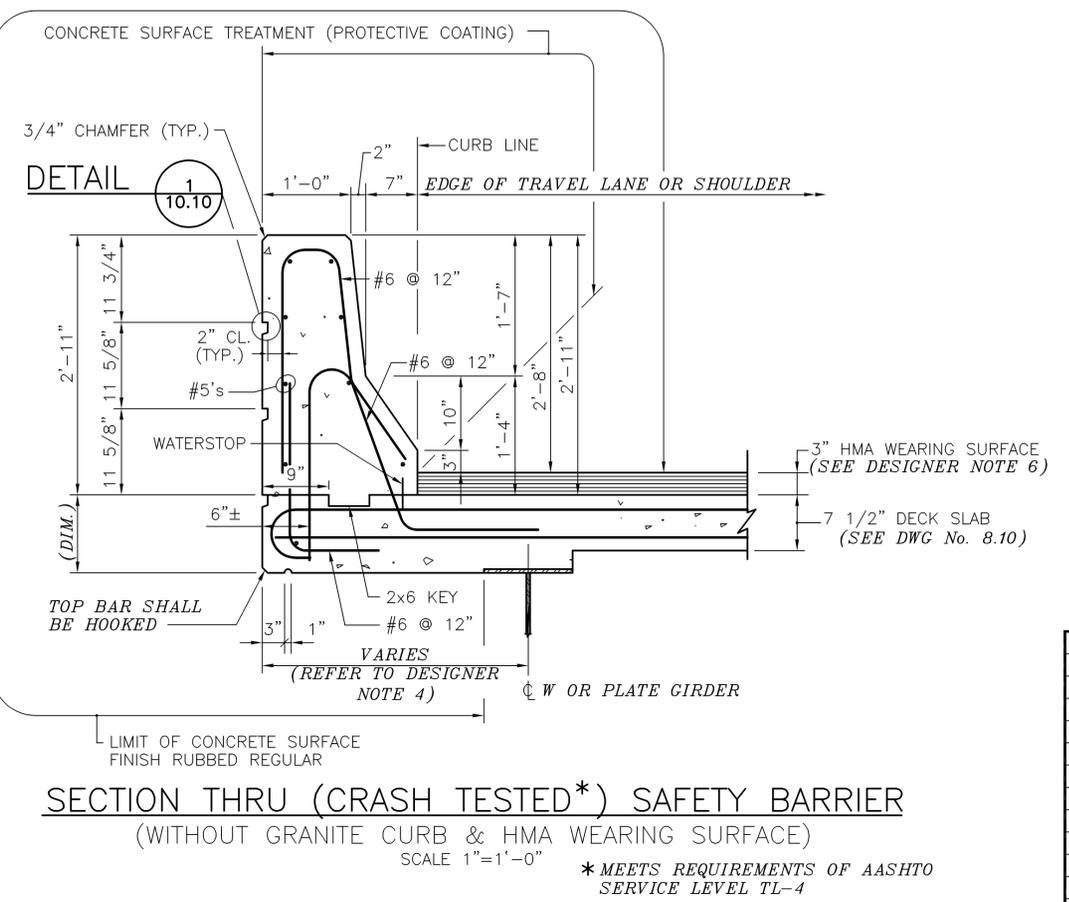
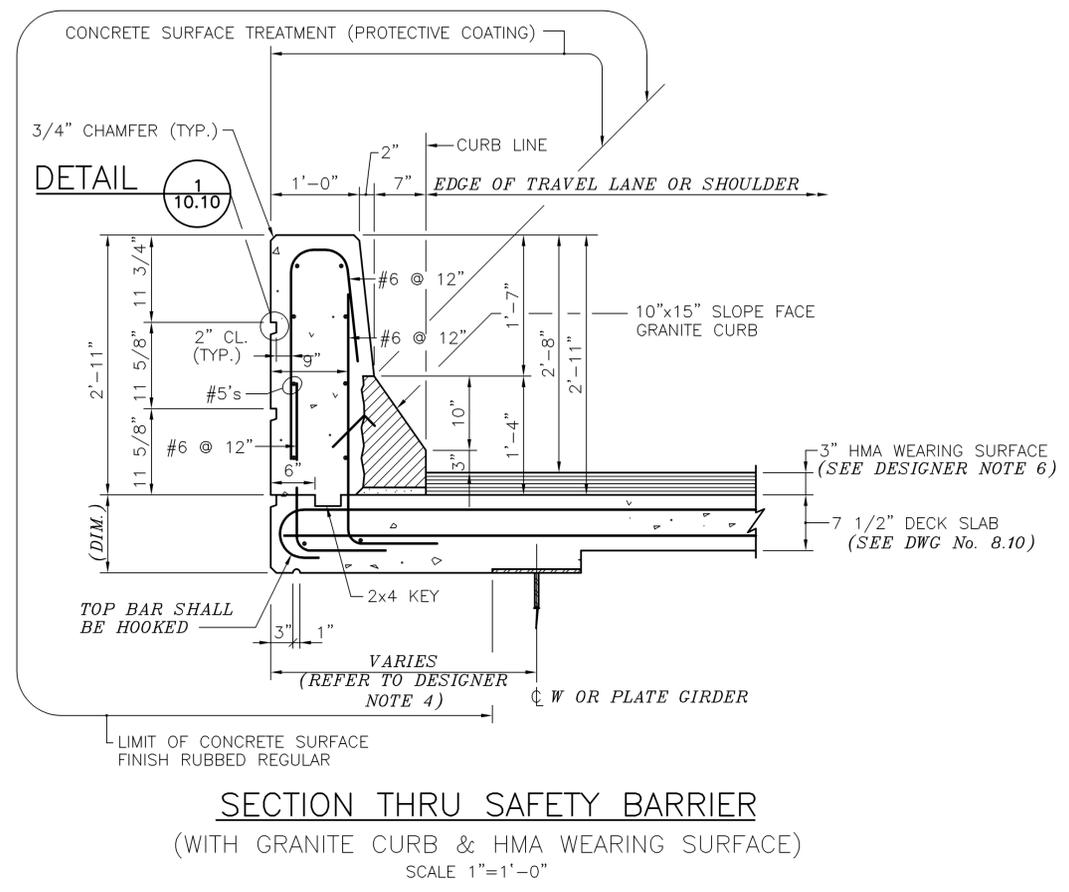
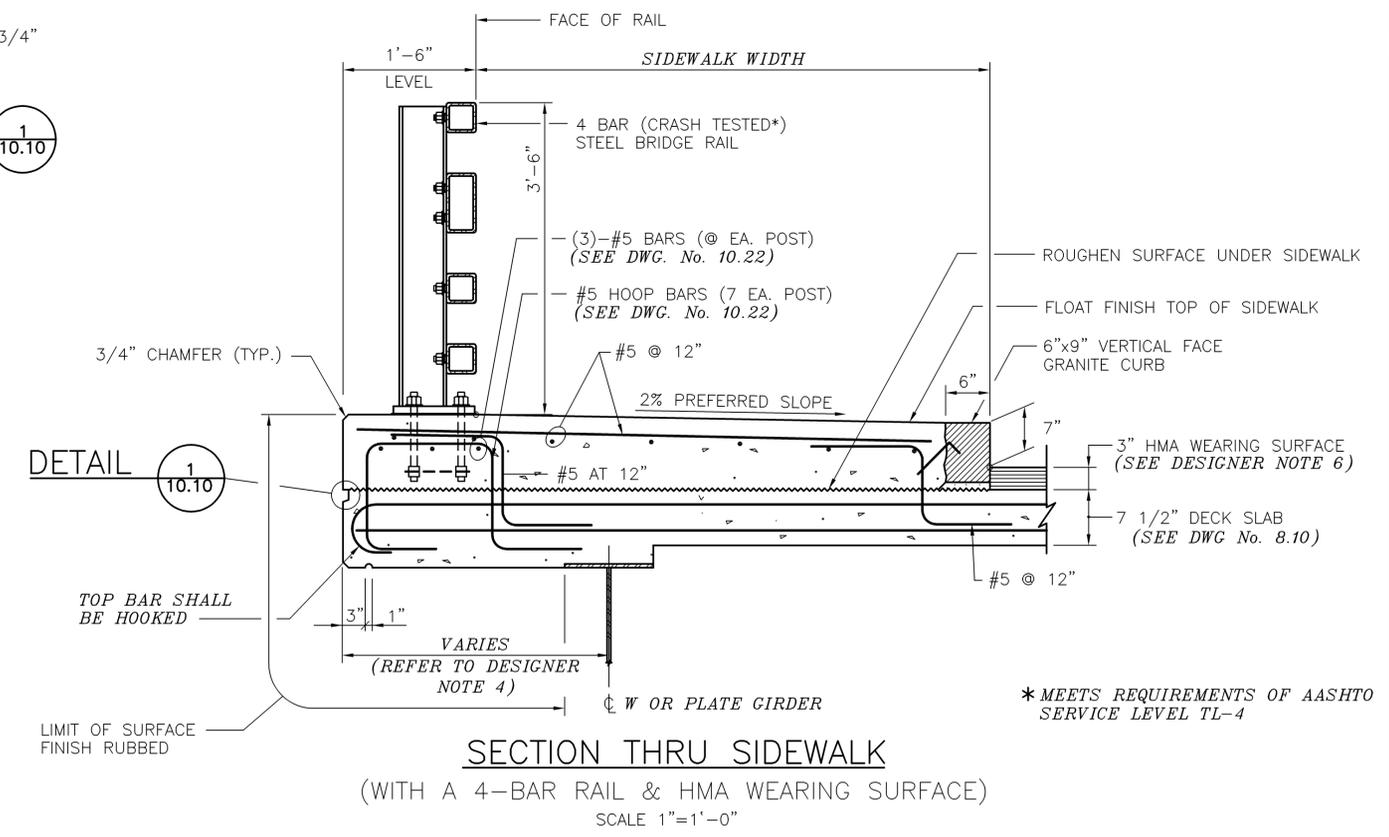
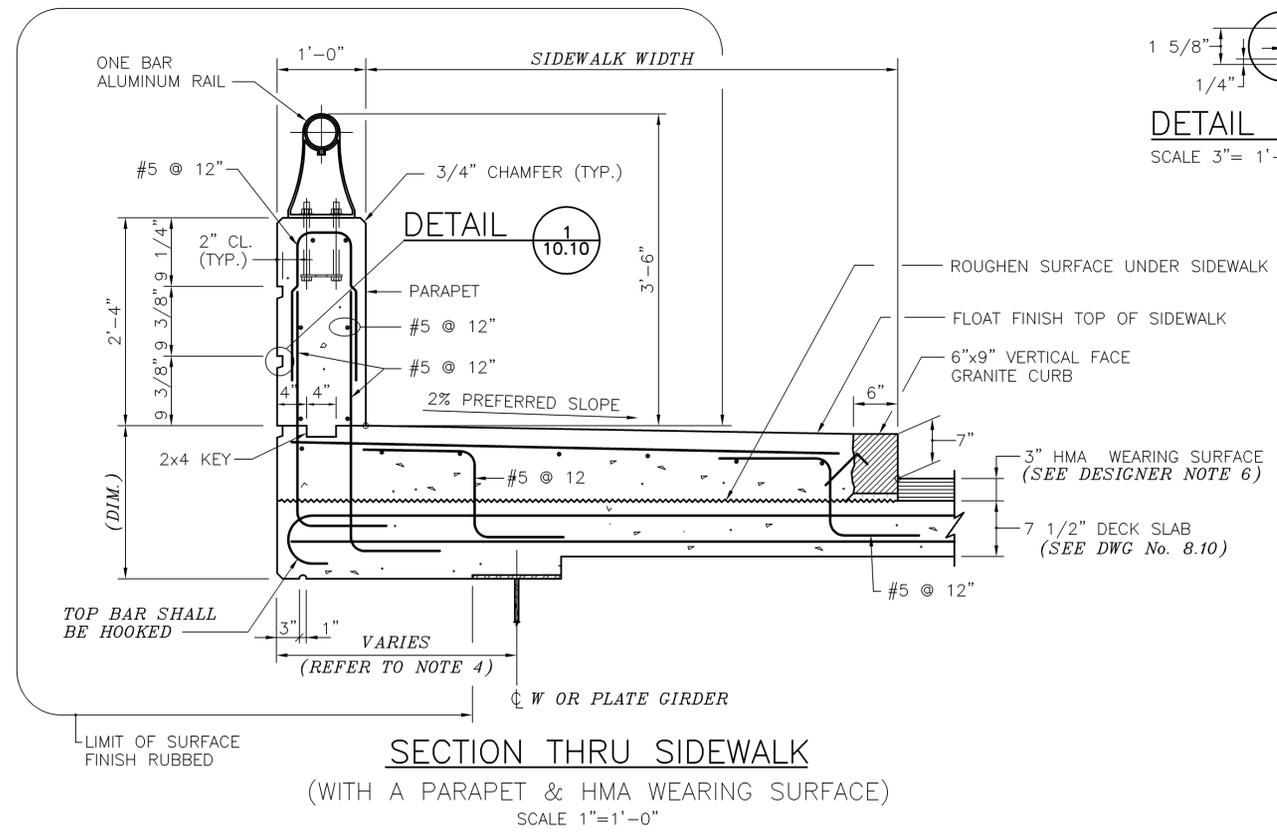
**SECTION**

SCALE: 1"=1'-0"



LOW VOLUME – LOW SPEED

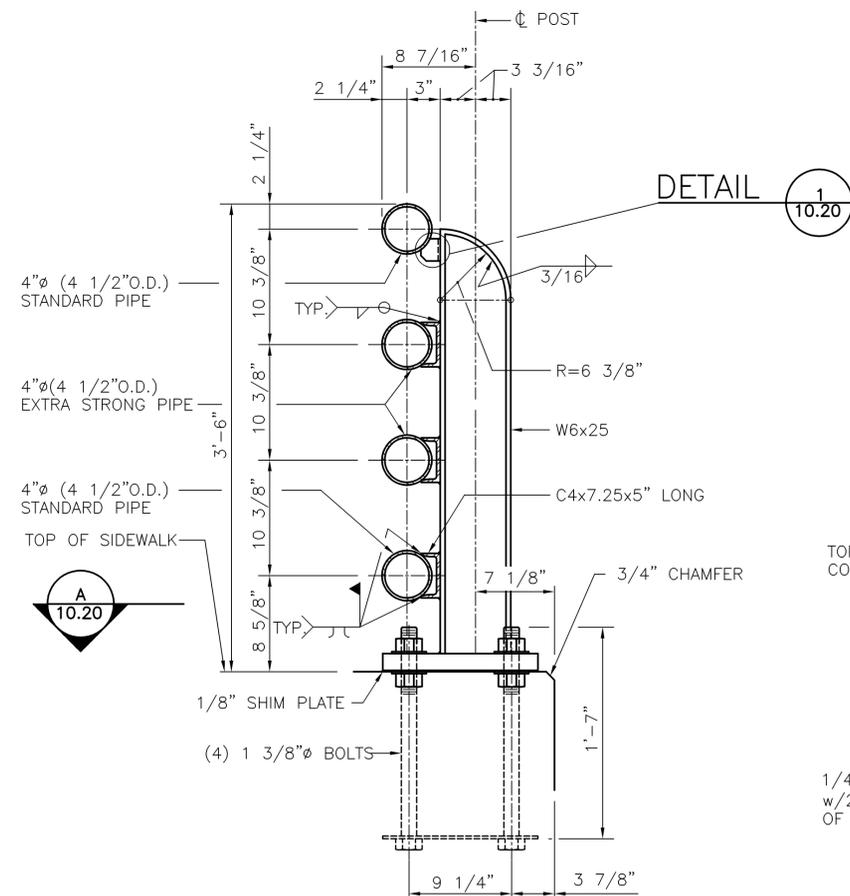
REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
No.	DATE	
		END POST DETAILS FOR STEEL BACKED TIMBER GUARDRAIL
DRAWING NUMBER: 9.51		



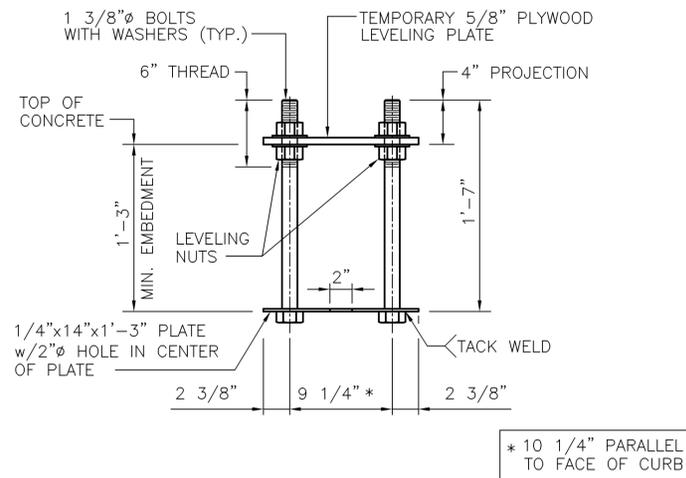
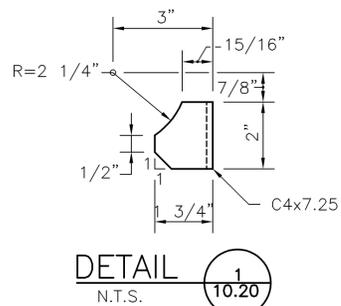
- DESIGNER NOTES:**
- FOR DETAILS OF THE FOUR BAR (CRASH TESTED) STEEL BRIDGE RAIL, REFER TO DWG. No. 10.22.
  - FOR DETAILS OF THE ONE BAR (ORNAMENTAL) ALUMINUM RAILING, REFER TO DRAWING 10.20.
  - FOR CURB DETAILS, REFER TO DRAWING 11.10.
  - FOR DESIGN REQUIREMENTS OF THE DECK OVERHANG REFER TO THE RIDOT LRFD BRIDGE DESIGN MANUAL
  - SPECIFY CONCRETE SURFACE TREATMENT (PROTECTIVE COATING) IN ACCORDANCE WITH THE RIDOT LRFD BRIDGE DESIGN MANUAL.
  - SEE DWG. No. 10.11 FOR DETAILS WITH EXPOSED CONCRETE DECK SURFACE.

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		SIDEWALK, SAFETY BARRIER AND PARAPET DETAILS-1 (WITH HMA WEARING SURFACE)
		DRAWING NUMBER: 10.10



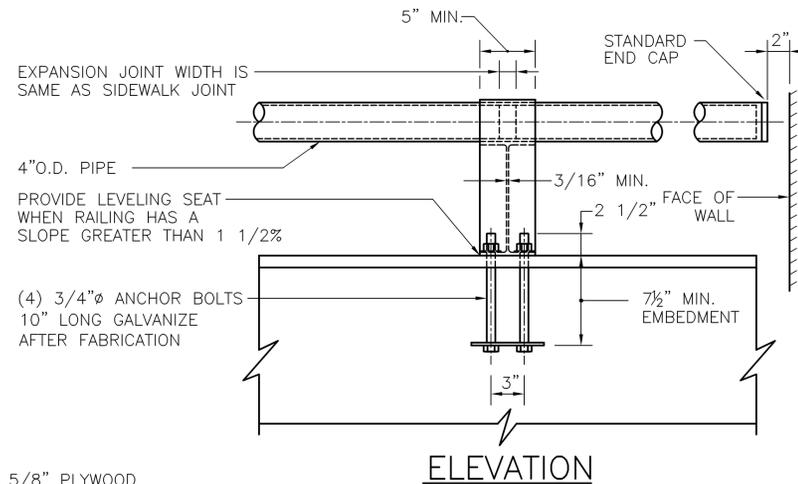


**STEEL 4-BAR RAIL**  
SCALE: 1 1/2" = 1'-0"

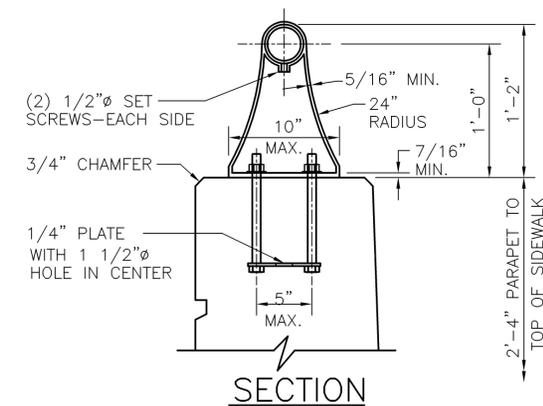


**ANCHOR BOLT DETAIL FOR 4-BAR RAIL**  
SCALE: 1 1/2" = 1'-0"

\* 10 1/4" PARALLEL TO FACE OF CURB



**ELEVATION**



**SECTION**

**ALUMINUM 1-BAR RAIL**

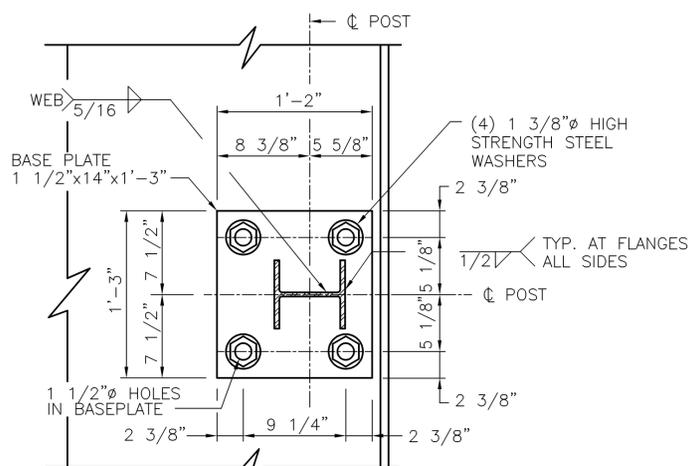
SCALE: 1 1/2" = 1'-0"

**ALUMINUM RAILING NOTES**

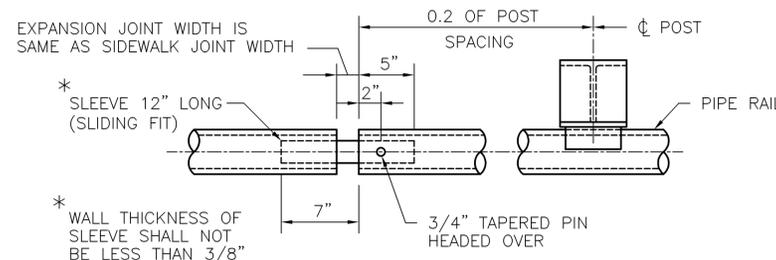
1. ALL ALUMINUM IN CONTACT WITH CONCRETE OR STEEL SURFACES SHALL BE THOROUGHLY COATED WITH APPROVED ALUMINUM IMPREGNATED CAULKING COMPOUND.
2. THE POSTS SHALL BE CAST ALUMINUM ALLOYS A 444.0-T4, A356.0-T61 OR A356.0-T6.
3. THE RAILS SHALL BE 4 INCH O.D. X 1/8 INCH WALL THICKNESS, ALUMINUM ALLOYS 6061-T6, 6063-T6 OR 6351-T5.

**STEEL RAILING NOTES**

1. THE ENTIRE RAILING SYSTEM SHALL BE METALIZED AND PAINTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE R.I. STANDARD SPECIFICATIONS.
2. STANDARD AND EXTRA STRONG STEEL PIPES SHALL CONFORM TO THE LATEST REQUIREMENTS OF ASTM DESIGNATION A 53, GRADE B.
3. STRUCTURAL STEEL SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO DESIGNATION M 270 GRADE 36.
4. ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM DESIGNATION A 307.
5. THE ENTIRE ANCHOR BOLT ASSEMBLY SHALL BE GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO DESIGNATION M 111.
6. RAIL POSTS SHALL BE SET VERTICAL IN THE FIELD. LEAD SHIMS SHALL BE PROVIDED UNDER THE BASE PLATES TO MAKE UP THE DIFFERENCE BETWEEN THE FABRICATED POST UNIT AND THE ACTUAL SLOPE OF THE SIDEWALK OR BRUSH CURB.
7. MAXIMUM POST SPACING SHALL BE 8'-0".
8. THE RAILS AND CHANNELS SHALL BE WELDED PARALLEL TO THE ACTUAL PROFILE OF THE SIDEWALK OR BRUSH CURB.
9. RAILINGS SHALL BE SPLICED OVER EXPANSION JOINTS.

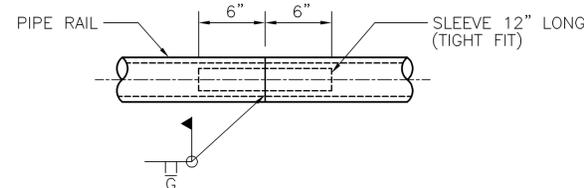


**SECTION**  
SCALE: 1 1/2" = 1'-0"



**TYPICAL EXPANSION JOINT DETAIL**

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

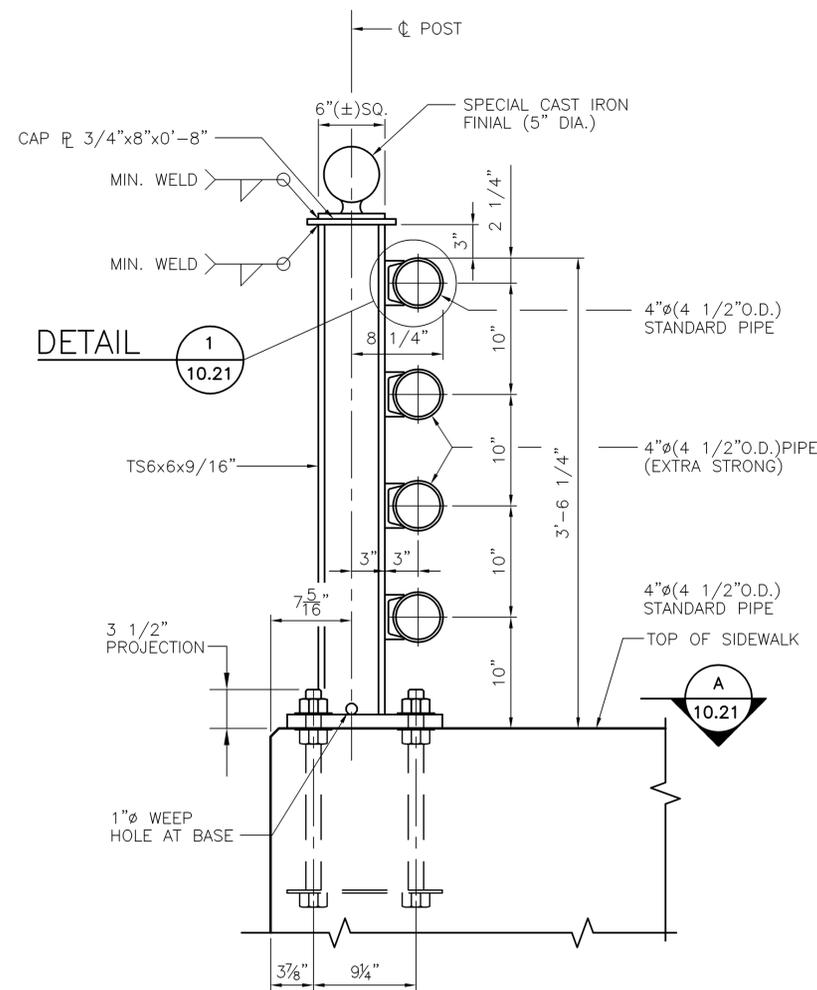


**TYPICAL STEEL RAIL JOINT**

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

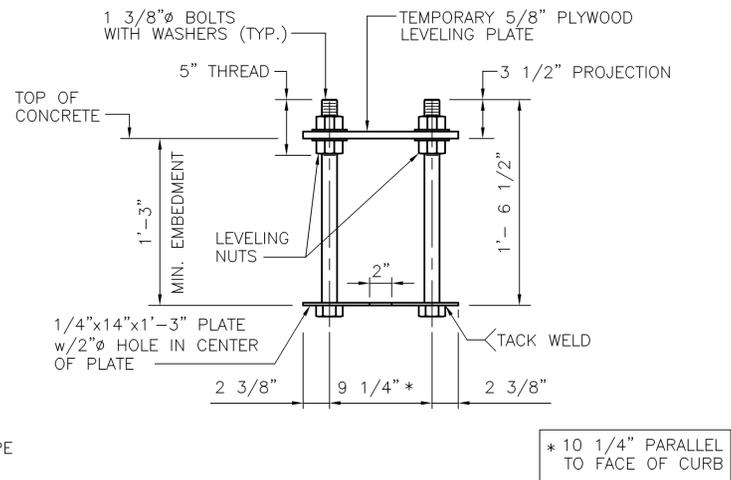
**DESIGNER NOTE:**  
PROVIDE PAINT COLOR FOR RAILING SYSTEM

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		ONE AND FOUR BAR RAIL AND POST DETAILS
		DRAWING NUMBER: 10.20



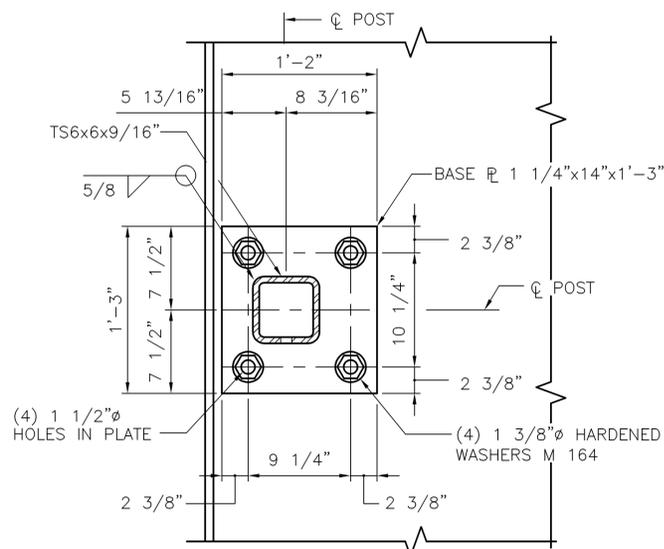
**TYPICAL SECTION AT RAIL POST**

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



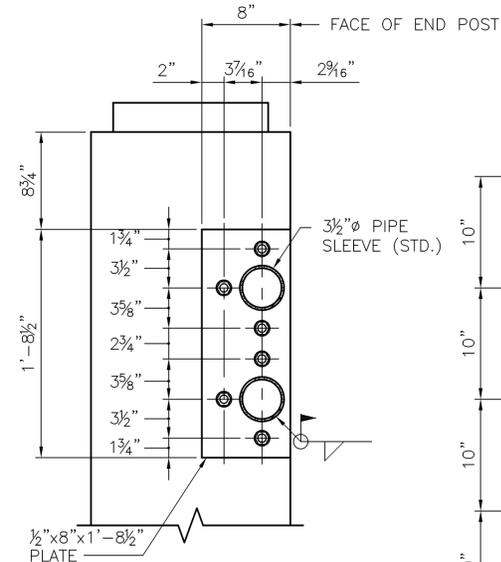
**ANCHOR BOLT ASSEMBLY**

SCALE: 1"=1'-0"



**SECTION A**

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

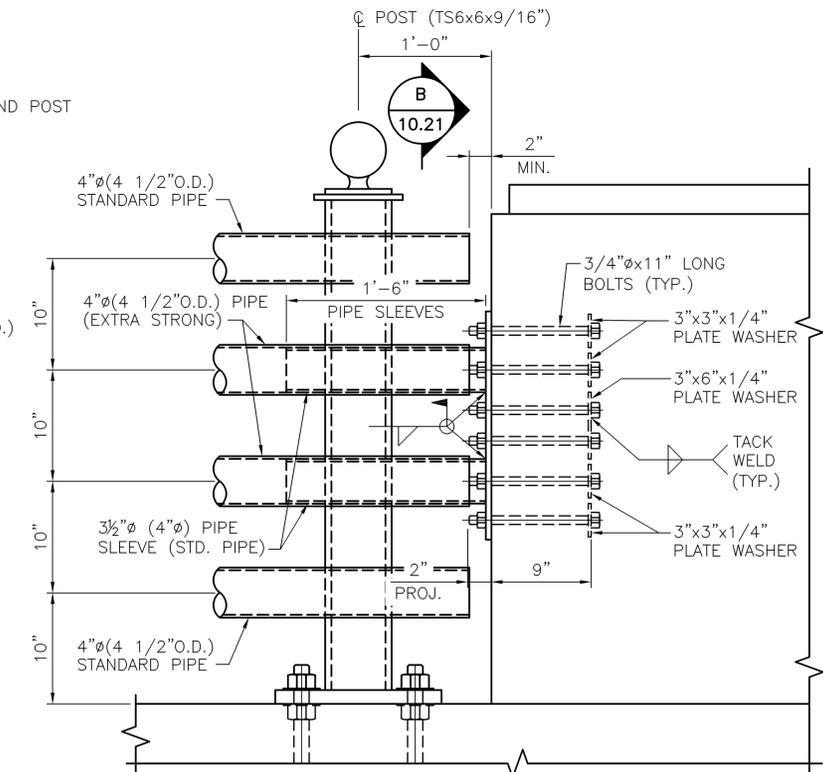


**SECTION B**

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

**DESIGNER NOTE:**

PROVIDE PAINT COLOR FOR RAILING SYSTEM.

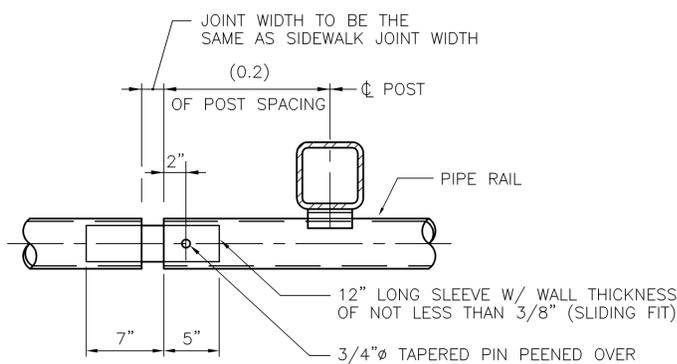


**BRIDGE RAILING ANCHOR DETAIL**

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

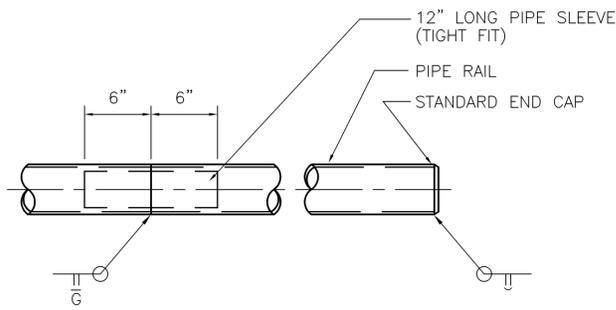
**STEEL RAILING NOTES**

1. THE ENTIRE RAILING SYSTEM SHALL BE METALIZED AND PAINTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE R.I. STANDARD SPECIFICATIONS.
2. STANDARD AND EXTRA STRONG STEEL PIPES SHALL CONFORM TO THE LATEST REQUIREMENTS OF ASTM DESIGNATION A 53, GRADE B.
3. STRUCTURAL STEEL SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO DESIGNATION M 270 GRADE 36.
4. ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM DESIGNATION A 307.
5. THE ENTIRE ANCHOR BOLT ASSEMBLY SHALL BE GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO DESIGNATION M 111.
6. RAIL POSTS SHALL BE SET VERTICAL IN THE FIELD. LEAD SHIMS SHALL BE PROVIDED UNDER THE BASE PLATES TO MAKE UP THE DIFFERENCE BETWEEN THE FABRICATED POST UNIT AND THE ACTUAL SLOPE OF THE SIDEWALK OR BRUSH CURB.
7. MAXIMUM POST SPACING SHALL BE 8'-0".
8. THE RAILS AND CHANNELS SHALL BE WELDED PARALLEL TO THE ACTUAL PROFILE OF THE SIDEWALK OR BRUSH CURB.
9. RAILINGS SHALL BE SPLICED OVER EXPANSION JOINTS.



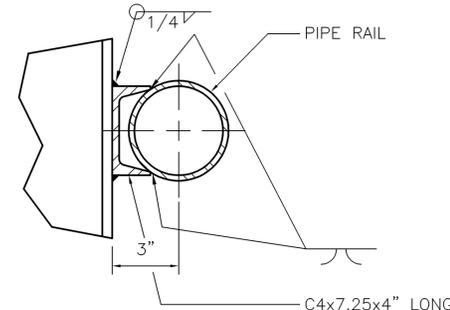
**TYPICAL EXPANSION JOINT DETAIL**

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



**TYPICAL RAIL JOINT**

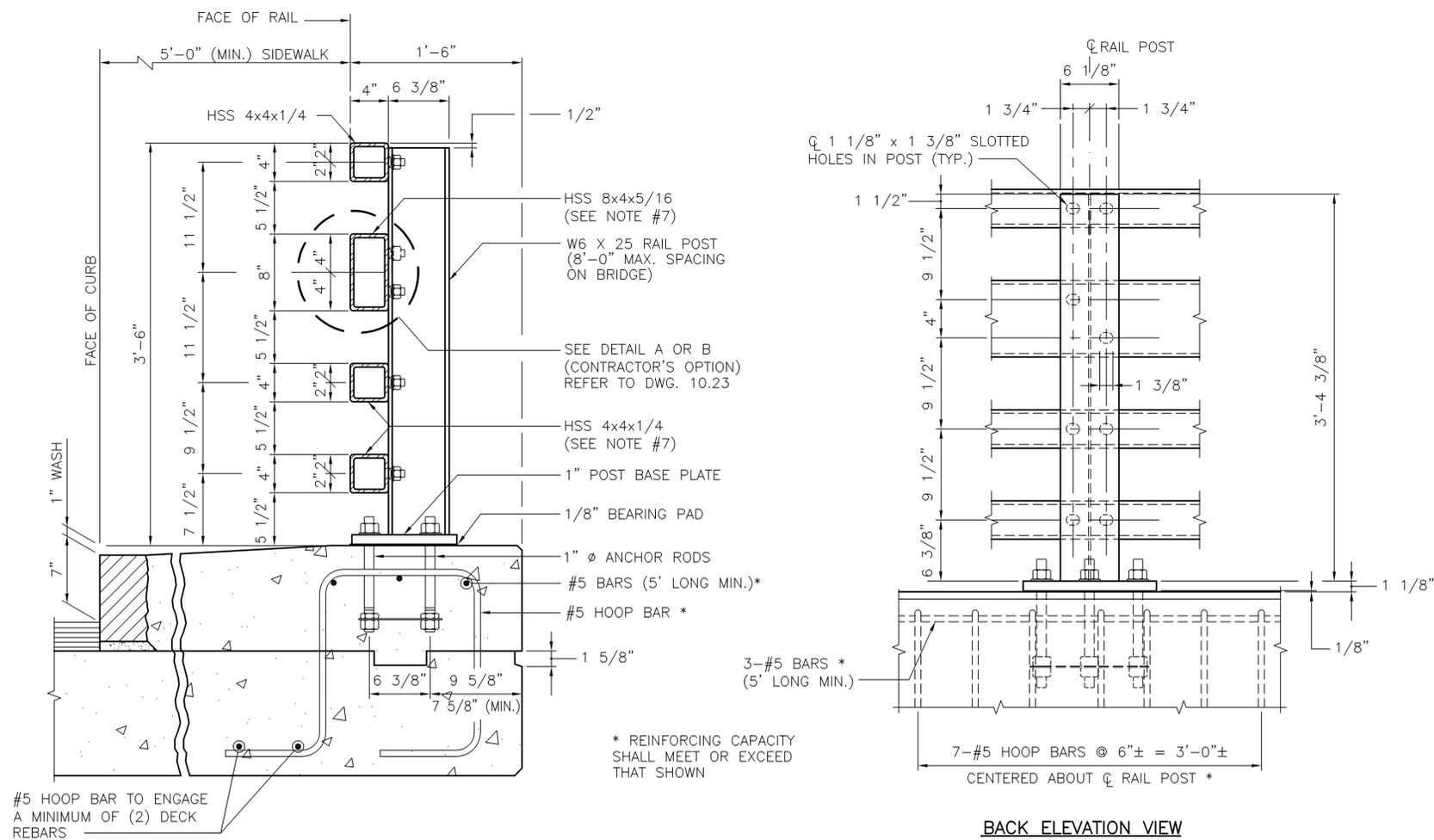
SCALE: 1 1/2"=1'-0"



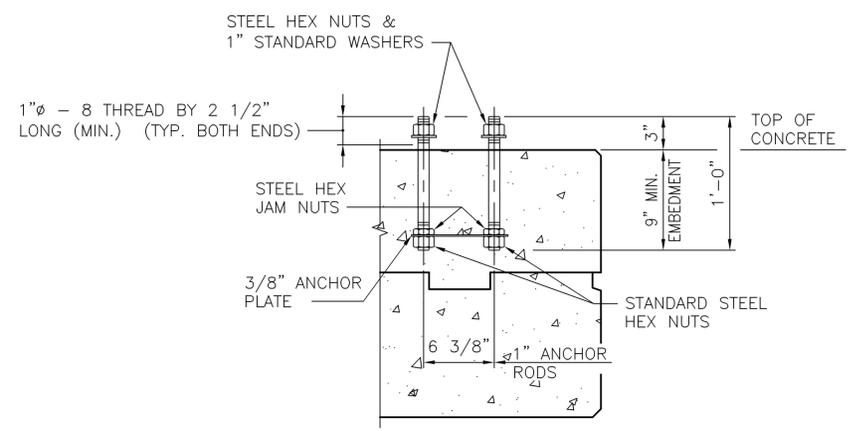
**DETAIL 1**

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

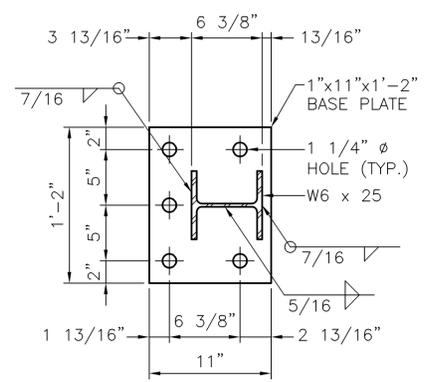
REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		BALDWIN FOUR BAR ORNAMENTAL RAIL
		DRAWING NUMBER: 10.21



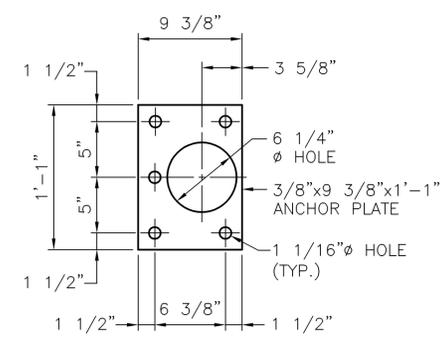
**POST ASSEMBLY**  
SCALE: 1 1/2"=1'-0"



**POST ANCHOR ASSEMBLY**  
SCALE: 1 1/2"=1'-0"



**POST BASE PLATE**  
SCALE: 1 1/2"=1'-0"



**ANCHOR PLATE**  
SCALE: 1 1/2"=1'-0"

**RAIL NOTES:**

- FOUR BAR (CRASH-TESTED) STEEL BRIDGE RAIL SHALL INCLUDE POSTS, BASE PLATES, ANCHOR RODS, PREFORMED PADS, RAIL ASSEMBLY BOLTS, NUTS, WASHERS, STUDS, STRUCTURAL TUBING, SPLICE BARS, PIPE SPACERS, RETRO REFLECTIVE DELINEATORS, ALL APPURTENANCES, METALIZING, AND PAINTING (IF SPECIFIED).
- BRIDGE RAIL POSTS SHALL BE SET NORMAL (90 DEGREES) TO THE PROFILE GRADE, EXCEPT ON GRADES OVER 1.5% WHERE POSTS SHALL BE SET VERTICAL.
- ENDS OF RAIL TUBE SECTIONS SHALL BE SAWED OR MILLED AND SHALL BE TRUE AND SMOOTH. ALL CUT EDGES OF ALL MATERIAL SHALL BE GROUND SMOOTH.
- EACH PIECE OF RAIL TUBING SHALL BE ATTACHED TO A MINIMUM OF THREE (3) POSTS.
- BOLT HOLES SHALL BE DRILLED OR PUNCHED. FLAME CUTTING MAY BE USED TO FINISH SLOTTED HOLES IF MECHANICALLY GUIDED.
- AT INTERIOR SPLICES, PIPE SPACERS SHALL BE USED ON ONLY ONE SIDE OF THE SPLICE TO ALLOW MOVEMENT ON THAT SIDE. ALL 4 RAILS AT A SPLICE SHALL RECEIVE THE SAME TREATMENT. AT END SPLICES AND AT INTERIOR EXPANSION SPLICES PIPE SPACERS SHALL BE USED ON BOTH SIDES OF THE SPLICE TO ALLOW MOVEMENT ON BOTH SIDES.
- MILL OR SHOP TRANSVERSE WELDS SHALL NOT BE PERMITTED ON ANY RAIL ELEMENT. RAIL ELEMENTS USED ON CURVES SHALL USE 3/8" WALL TUBES AND SHALL BE SHOP FORMED TO THE REQUIRED CURVATURE.
- NO PUNCHING, DRILLING, CUTTING OR WELDING SHALL BE PERMITTED AFTER METALIZING, (EXCEPT FOR DETAIL "A"). DAMAGED AREAS OF METALIZING SHALL BE REPAIRED IN STRICT CONFORMANCE WITH THE MATERIAL SUPPLIER'S RECOMMENDATIONS AND SHALL BE APPROVED BY THE ENGINEER.
- NUTS FOR 1" THREADED ANCHOR RODS CONNECTING THE BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN.
- THREADS FOR ANCHOR RODS MAY BE ROLLED OR CUT. IF CUT THREADS ARE USED BOLT DIAMETER SHALL NOT BE LESS THAN NOMINAL DIAMETER. IF ROLLED THREADS ARE USED, ROD DIAMETER SHALL NOT BE LESS THAN ROOT DIAMETER OF THREADS.

**MATERIAL NOTES:**

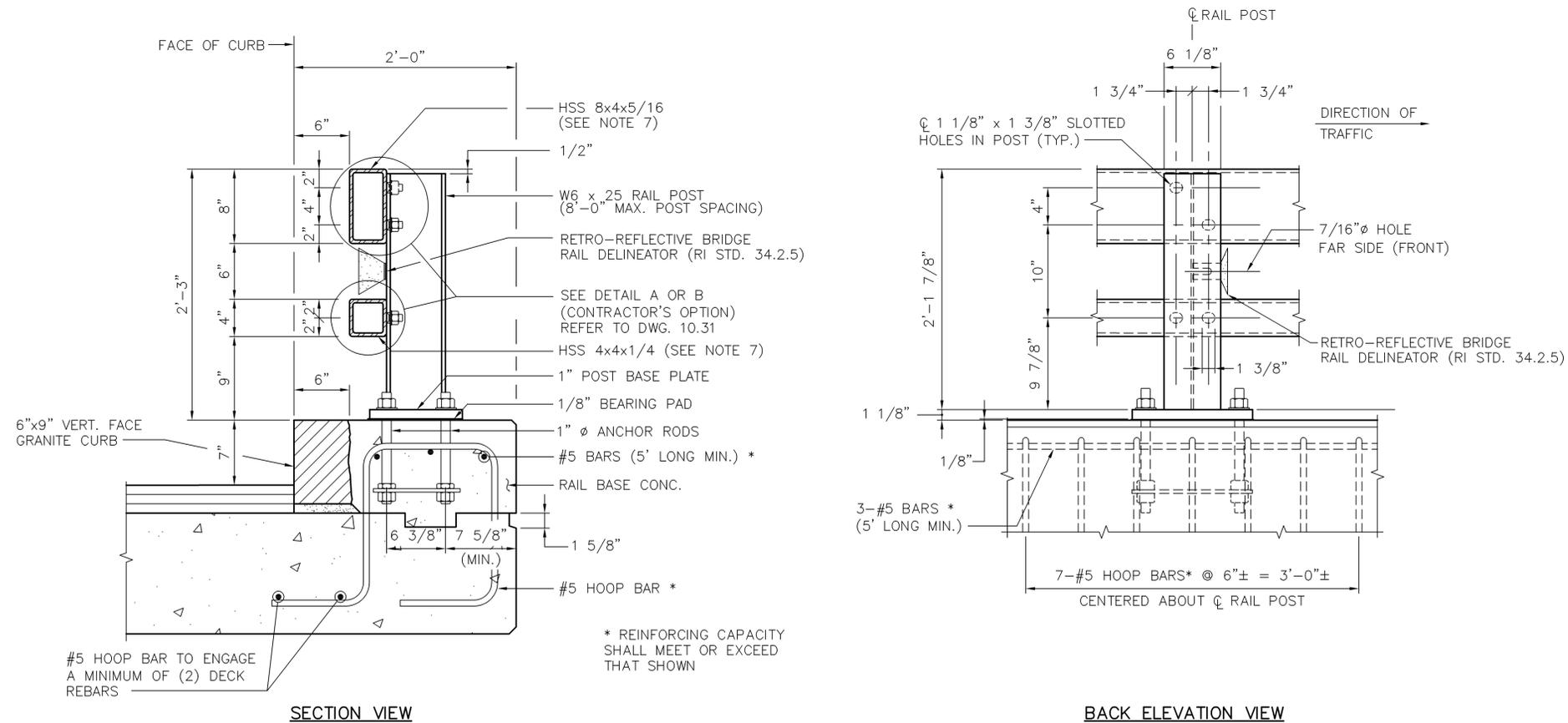
- STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500, GRADE B, STRUCTURAL STEEL TUBING. RAIL TUBING SHALL MEET THE LONGITUDINAL CHАРY V-NOTCH REQUIREMENTS OF 15 LBS. AT 0°F FOR ASTM A500, GRADE B. THE TEST SAMPLES SHALL BE TAKEN AFTER FORMING THE TUBES. CHАРY V-NOTCH IS NOT REQUIRED FOR SPLICE TUBES.
- RAIL POSTS AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A572 GR. 50, EXCEPT ANCHOR PLATES MAY BE ASTM A36.
- THREADED STUDS AND MATCHING NUTS FOR RAIL-TO-POST ATTACHMENT (DETAIL A) SHALL CONFORM TO ASTM A276 TYPE 304, STAINLESS STEEL, AND SHALL BE TORQUE TESTED PER AWS D1.5, 7.7.1. DETAIL B BOLTS SHALL BE ASTM A325 OR A449. ALL OTHER BOLTS AND NUTS SHALL CONFORM TO ASTM A307 AND ASTM 563 GRADE A RESPECTIVELY OR BETTER. ANCHOR RODS SHALL CONFORM TO ASTM A449 EXCEPT THAT ASTM A307 NUTS MAY BE USED ON THE BOTTOM OF ANCHOR ASSEMBLY. WASHERS SHALL BE HARDENED STEEL COMMERCIAL TYPE A PLAIN WIDE WASHERS AND SHALL MEET THE DIMENSIONAL REQUIREMENTS OF A.N.S.I. B18.22.
- ALL STEEL COMPONENTS (EXCEPT STAINLESS) SHALL BE METALIZED AFTER FABRICATION IN CONFORMANCE WITH SECTION 827 "THERMAL SPRAYED ZINC COATING FOR NEW STRUCTURAL STEEL" OF THE RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. THE METALIZING SHALL HAVE A UNIFORM APPEARANCE, AND METALIZED MATERIAL SHALL BE PROPERLY STORED.
- DETAIL "A" STUDS SHALL BE WELDED BEFORE TUBES ARE METALIZED.
- PREFORMED BEARING PADS (1/8" THICK) SHALL CONFORM TO AASHTO M251.

**DESIGNER NOTE:**  
PROVIDE PAINT COLOR FOR RAILING SYSTEM.

THIS BRIDGE RAIL SYSTEM WAS SUCCESSFULLY CRASH TESTED FOR AASHTO TL4 IN 1997 BY THE NEW ENGLAND TRANSPORTATION CONSORTIUM.

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		FOUR BAR STEEL BRIDGE RAIL (CRASH-TESTED TL-4) SHEET 1
		DRAWING NUMBER: 10.22





**POST ASSEMBLY**  
SCALE: 1 1/2" = 1'-0"

**RAIL NOTES:**

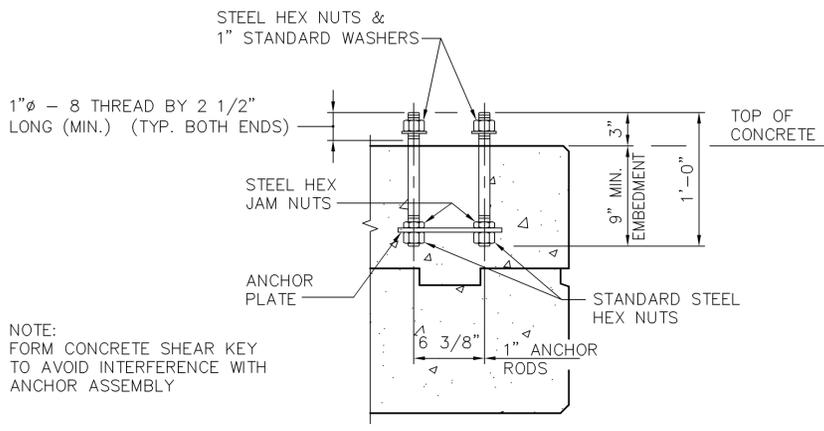
- TWO BAR (CRASH-TESTED) STEEL BRIDGE RAIL, SHALL INCLUDE POSTS, BASE PLATES, ANCHOR RODS, PREFORMED PADS, RAIL ASSEMBLY BOLTS, NUTS, WASHERS, STUDS, STRUCTURAL TUBING, SPLICE BARS, PIPE SPACERS, RETRO REFLECTIVE DELINEATORS, ALL APPURTENANCES, METALIZING, AND PAINTING (IF SPECIFIED).
- BRIDGE RAIL POSTS SHALL BE SET NORMAL (90 DEGREES) TO THE PROFILE GRADE, EXCEPT ON GRADES OVER 1.5% WHERE POSTS SHALL BE SET VERTICAL.
- ENDS OF RAIL TUBE SECTIONS SHALL BE SAWED OR MILLED AND SHALL BE TRUE AND SMOOTH. ALL CUT EDGES OF ALL MATERIAL SHALL BE GROUND SMOOTH.
- EACH PIECE OF RAIL TUBING SHALL BE ATTACHED TO A MINIMUM OF THREE (3) POSTS.
- BOLT HOLES SHALL BE DRILLED OR PUNCHED. FLAME CUTTING MAY BE USED TO FINISH SLOTTED HOLES IF MECHANICALLY GUIDED.
- AT INTERIOR SPLICES, PIPE SPACERS SHALL BE USED ON ONLY ONE SIDE OF THE SPLICE TO ALLOW MOVEMENT ON THAT SIDE. BOTH RAILS AT A SPLICE SHALL RECEIVE THE SAME TREATMENT. AT INTERIOR EXPANSION JOINTS AND AT ALL END SPLICES, THE SLOTTED HOLES AND PIPE SPACERS SHALL BE USED ON BOTH SIDES OF THE SPLICE TO ALLOW MOVEMENT ON EACH SIDE.
- MILL OR SHOP TRANSVERSE WELDS SHALL NOT BE PERMITTED ON ANY RAIL ELEMENT. RAIL ELEMENTS USED ON CURVES SHALL USE 3/8" WALL TUBES AND SHALL BE SHOP FORMED TO THE REQUIRED CURVATURE.
- NO PUNCHING, DRILLING, CUTTING OR WELDING SHALL BE PERMITTED AFTER METALIZING, (EXCEPT FOR DETAIL "A"). DAMAGED AREAS OF METALIZING SHALL BE REPAIRED IN STRICT CONFORMANCE WITH THE MATERIAL SUPPLIER'S RECOMMENDATIONS AND SHALL BE APPROVED BY THE ENGINEER.
- NUTS FOR 1" Ø THREADED ANCHOR RODS CONNECTING THE BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN.
- THREADS FOR ANCHOR RODS MAY BE ROLLED OR CUT. IF CUT THREADS ARE USED, BOLT DIAMETER SHALL NOT BE LESS THAN NOMINAL DIAMETER. IF ROLLED THREADS ARE USED, ROD DIAMETER SHALL NOT BE LESS THAN ROOT DIAMETER OF THREADS.
- THE RAIL POST, BASE PLATE AND ANCHOR CAGE MUST BE INSTALLED PRECISELY TO THE LOCATION DIMENSIONED ON THESE PLANS. THE POSITION OF THE (3)-#5 LONGITUDINAL REBARS MAY BE ADJUSTED TO ACCOMMODATE THE ANCHOR CAGE, BUT MUST NOT BE CUT.

**MATERIAL NOTES:**

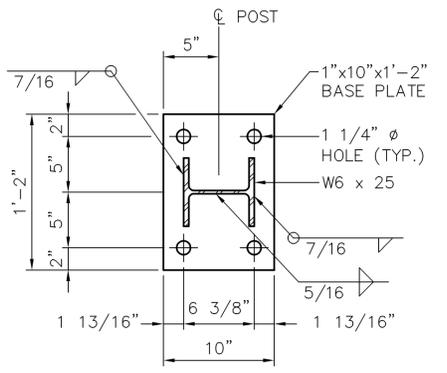
- STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500, GRADE B, STRUCTURAL STEEL TUBING. RAIL TUBING SHALL MEET THE LONGITUDINAL CHАРPY V-NOTCH REQUIREMENTS OF 15 LBS. AT 0°F FOR ASTM A500, GRADE B. THE TEST SAMPLES SHALL BE TAKEN AFTER FORMING THE TUBES. CHАРPY V-NOTCH IS NOT REQUIRED FOR SPLICE TUBES.
- RAIL POSTS AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A572 GR. 50, EXCEPT ANCHOR PLATES MAY BE ASTM A36.
- THREADED STUDS AND MATCHING NUTS FOR RAIL-TO-POST ATTACHMENT (DETAIL A) SHALL CONFORM TO ASTM A276 TYPE 304, STAINLESS STEEL, AND SHALL BE TORQUE TESTED PER AWS D1.5, 7.7.1. DETAIL B BOLTS SHALL BE ASTM A325 OR A449. ALL OTHER BOLTS AND NUTS SHALL CONFORM TO ASTM A307 AND ASTM 563 GRADE A RESPECTIVELY OR BETTER. ANCHOR RODS SHALL CONFORM TO ASTM A449 EXCEPT THAT ASTM A307 NUTS MAY BE USED ON THE BOTTOM OF ANCHOR ASSEMBLY. WASHERS SHALL BE HARDENED STEEL COMMERCIAL TYPE A PLAIN WIDE WASHERS AND SHALL MEET THE DIMENSIONAL REQUIREMENTS OF A.N.S.I. B18.22.
- ALL STEEL COMPONENTS (EXCEPT STAINLESS) SHALL BE METALIZED AFTER FABRICATION IN CONFORMANCE WITH SECTION 827 "THERMAL SPRAYED ZINC COATING FOR NEW STRUCTURAL STEEL" OF THE RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. THE METALIZING SHALL HAVE A UNIFORM APPEARANCE, AND METALIZED MATERIAL SHALL BE PROPERLY STORED.
- DETAIL "A" STUDS SHALL BE WELDED BEFORE TUBES ARE METALIZED.
- PREFORMED BEARING PADS (1/8" THICK) SHALL CONFORM TO AASHTO M251.

**DESIGNER NOTE:**  
PROVIDE PAINT COLOR FOR RAILING SYSTEM.

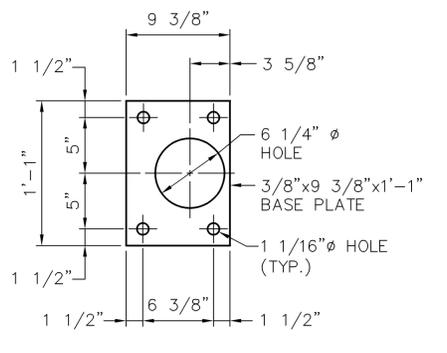
THIS BRIDGE RAIL SYSTEM WAS SUCCESSFULLY CRASH TESTED FOR AASHTO TL4 IN 1994 BY THE NEW ENGLAND TRANSPORTATION CONSORTIUM.



**POST ANCHOR ASSEMBLY**  
SCALE: 1 1/2" = 1'-0"



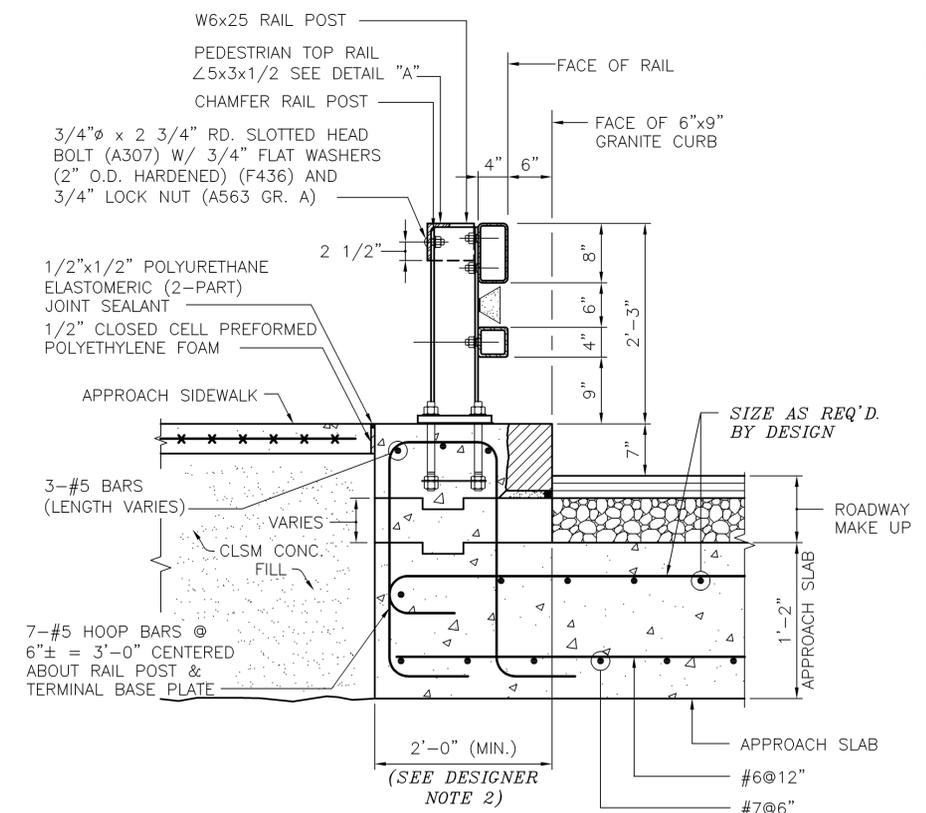
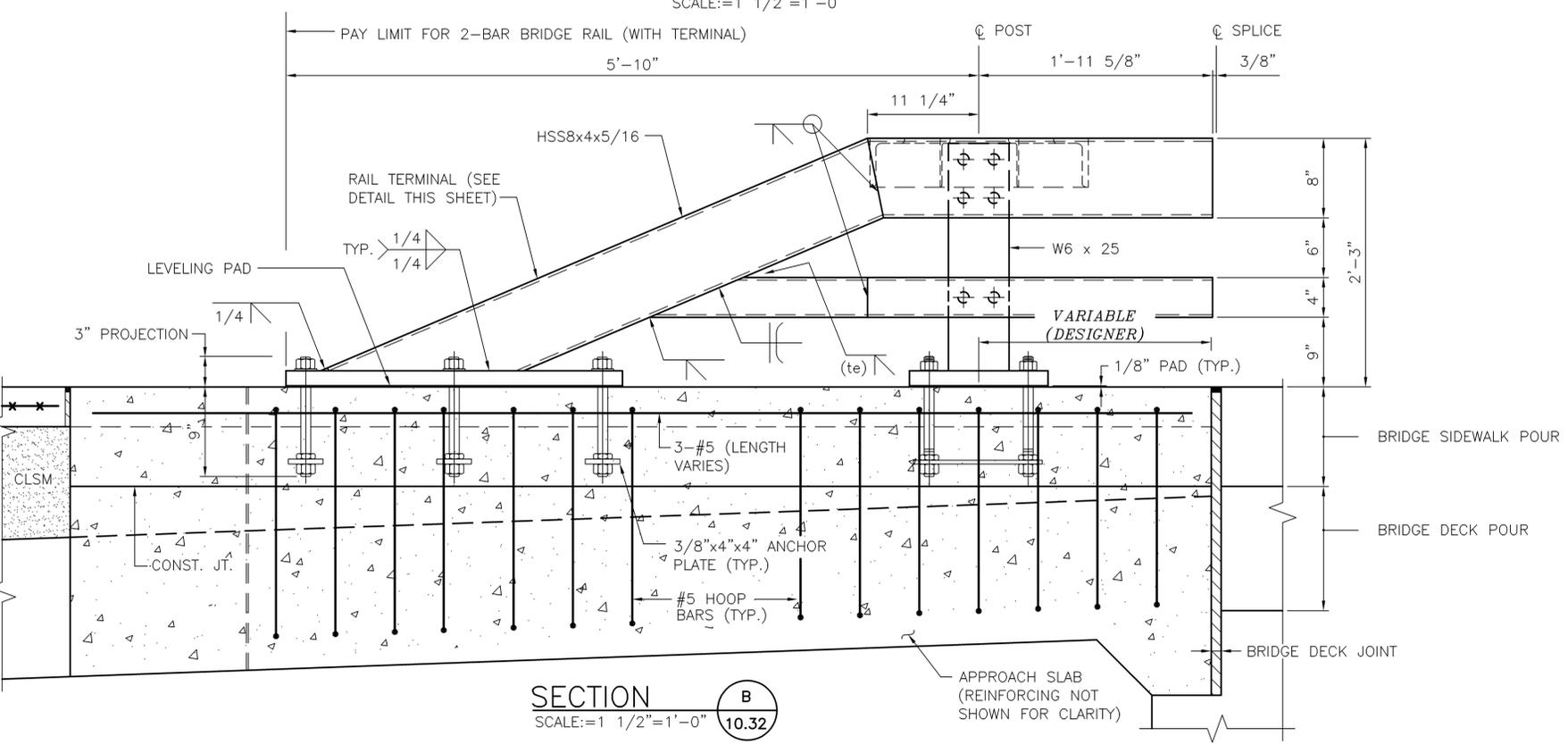
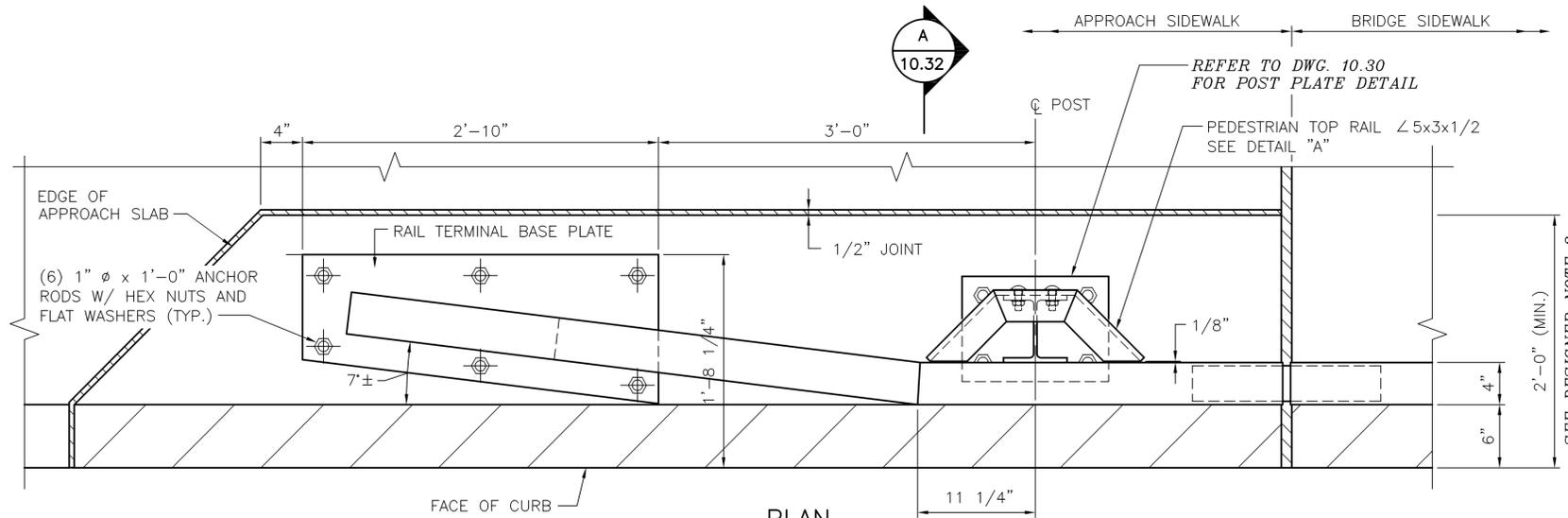
**POST BASE PLATE**  
SCALE: 1 1/2" = 1'-0"



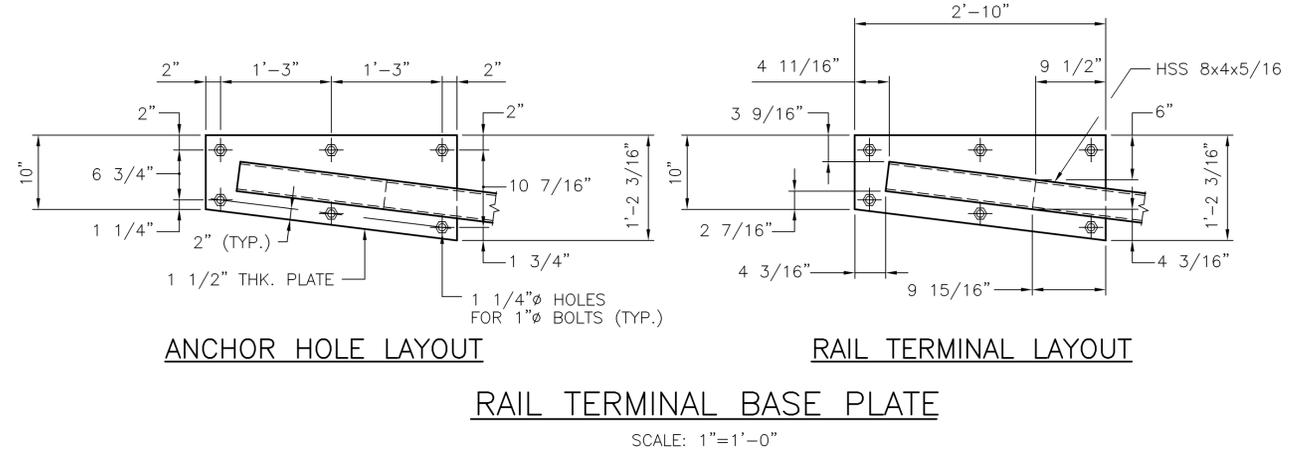
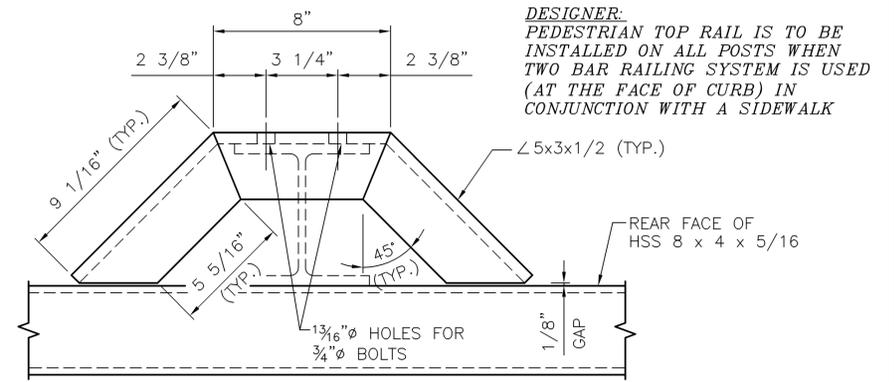
**ANCHOR PLATE**  
SCALE: 1 1/2" = 1'-0"

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		<b>TWO BAR STEEL BRIDGE RAIL (CRASH-TESTED TL-4) SHEET 1</b>





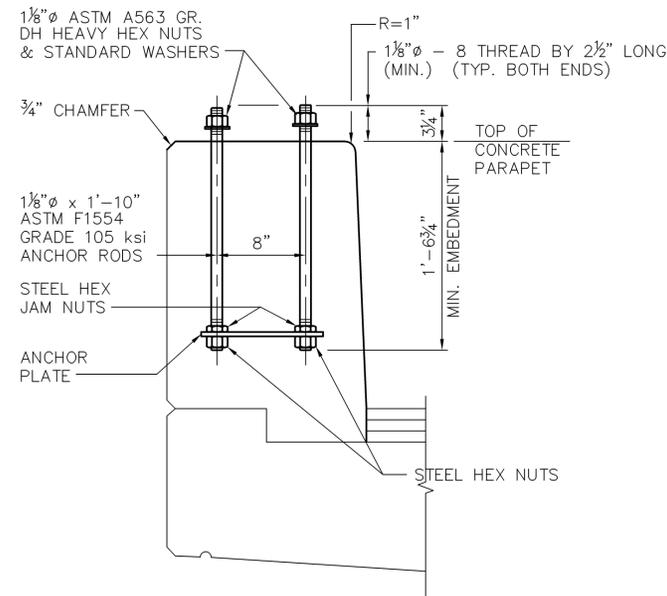
DESIGNER: FOR RAIL AND POST DETAILS, REFER TO DRAWINGS No. 10.30 & 10.31



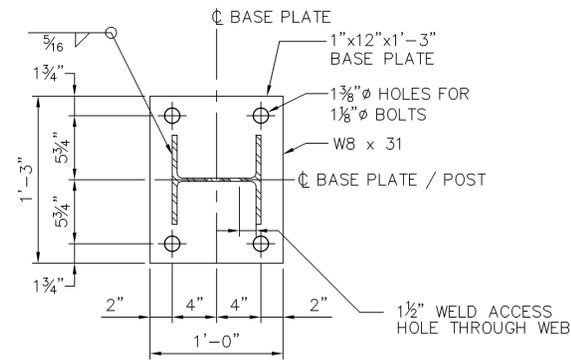
- DESIGNER NOTES:**
- THE DETAILS SHOWN ARE FOR TWO BAR RAIL TERMINALS (AT THE FACE OF CURB) ENDING OFF OF THE BRIDGE DECK. RAIL TERMINALS ENDING ON THE BRIDGE DECK WOULD BE SIMILAR.
  - THE RAIL TERMINAL FOUNDATION SHALL BE AS REQUIRED TO ACCOMMODATE THE APPLICABLE AASHTO LRFD RAIL IMPACT LOADING.
  - ALTERNATE RAIL TERMINAL FOUNDATIONS (SUCH AS FOUNDATIONS CANTILEVERED FROM THE REAR FACES OF THE ABUTMENT STEMS/BACKWALLS OR FOUNDATIONS SET ON INDIVIDUAL WALL STEMS AND FOOTINGS AND CAST INTEGRALLY WITH THE ABUTMENT STEMS AND FOOTINGS) MAY BE CONSIDERED.

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		TWO BAR STEEL BRIDGE RAIL (CRASH-TESTED TL-4) SHEET 3
		DRAWING NUMBER: 10.32

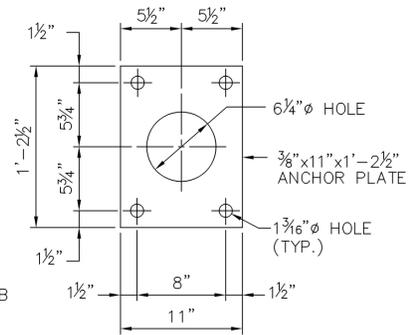




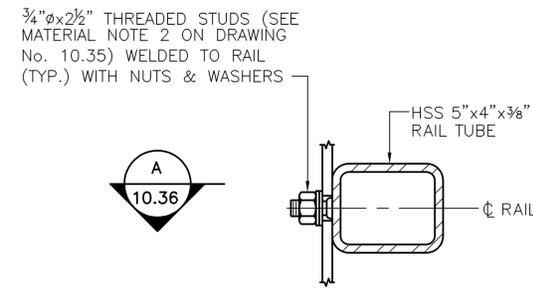
**DETAIL 1**  
**POST ANCHOR ASSEMBLY**  
 SCALE: 1 1/2" = 1'-0"



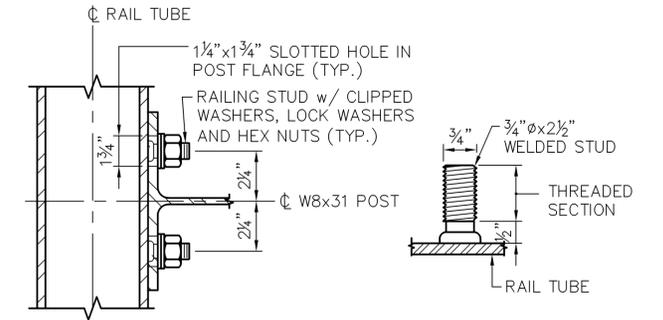
**POST BASE PLATE**  
 SCALE: 1 1/2" = 1'-0"



**ANCHOR PLATE**  
 SCALE: 1 1/2" = 1'-0"

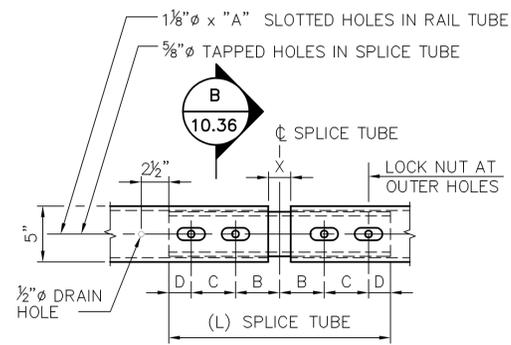


**DETAIL 2**  
 SCALE: 3" = 1'-0"



**SECTION A**  
 SCALE: 3" = 1'-0"

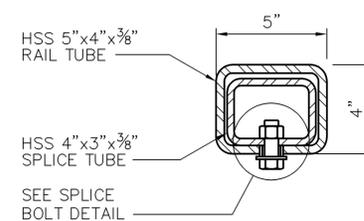
**RAILING STUD DETAIL**  
 NOT TO SCALE



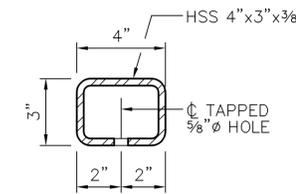
**RAIL SPLICE (BOTTOM VIEW)**  
**DETAIL 3**  
 SCALE: 1 1/2" = 1'-0"

SPLICE TUBE DIMENSION TABLE						
TOTAL MOVEMENT	A	B	C	D	X	L
INTERIOR	2 1/2"	4"	4"	2"	3/4"	1'-8"
* < 3 1/4"	2 1/2"	4"	4"	2"	2"	1'-8"
* 3 1/4" TO 5 1/4"	3 1/2"	5"	5"	2 1/2"	3"	2'-1"

T = TOTAL MOVEMENT OF BRIDGE  
 \* = END SPLICE BAR

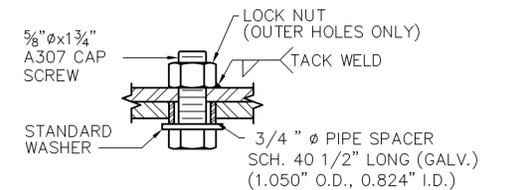


**SECTION B**  
 SCALE: 3" = 1'-0"



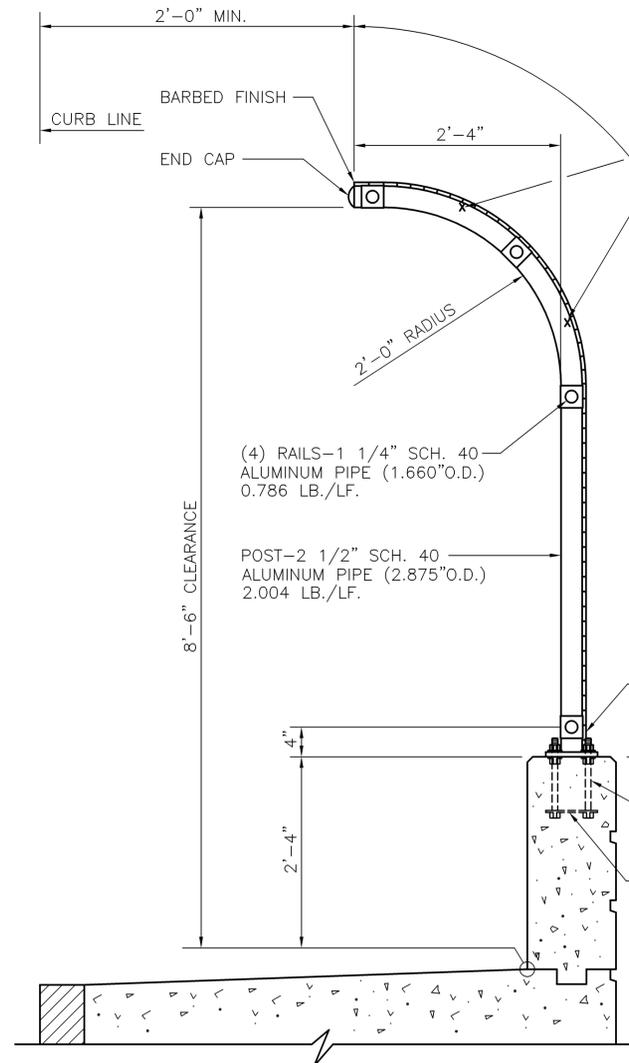
**SPLICE TUBE SECTION**  
 SCALE: 3" = 1'-0"

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

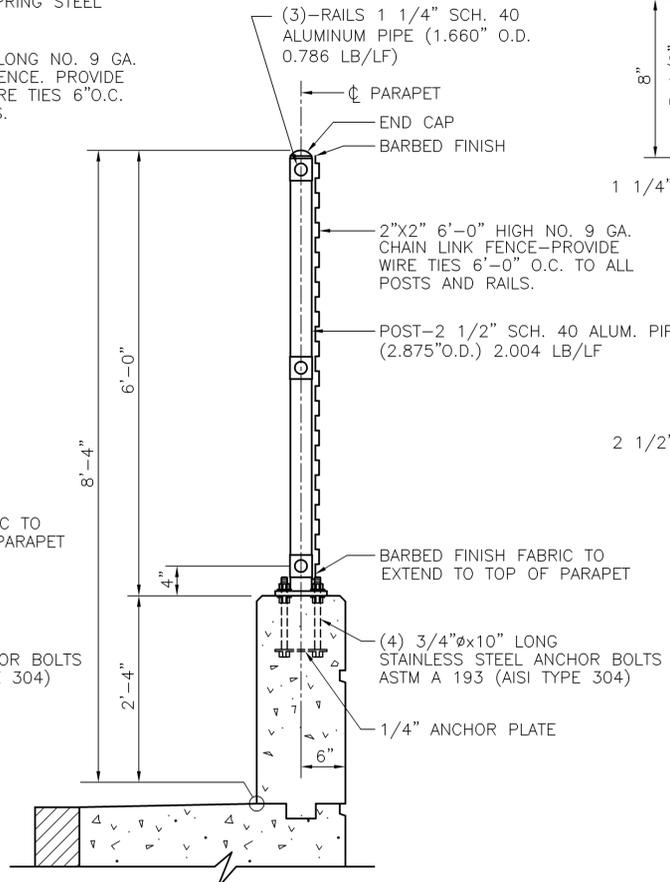


**SPLICE BOLT DETAIL**  
 NOT TO SCALE

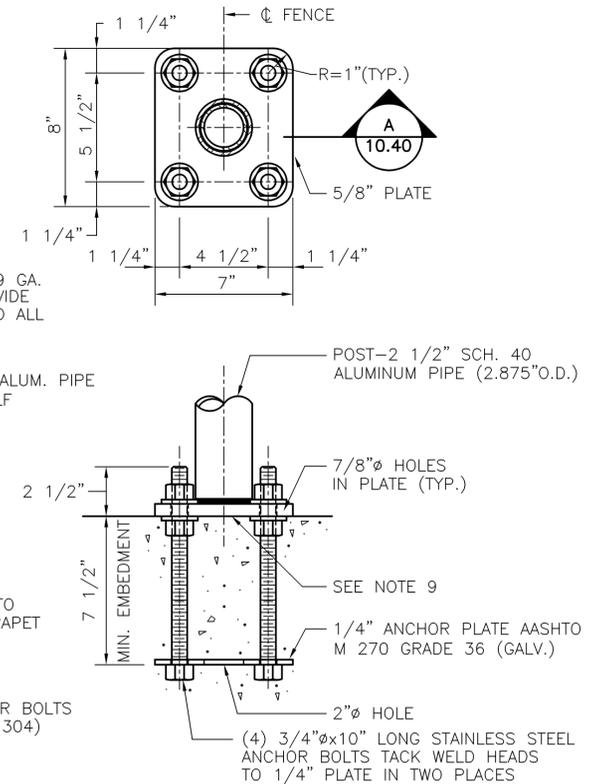
REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
No.	DATE	
		TL-5 RAILING SHEET 2
DRAWING NUMBER: 10.36		



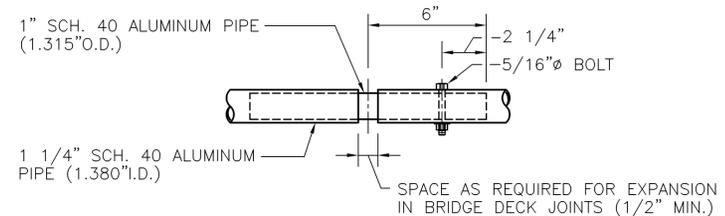
**TYPE I PROTECTIVE SCREEN  
(CHAIN LINK FENCE)**



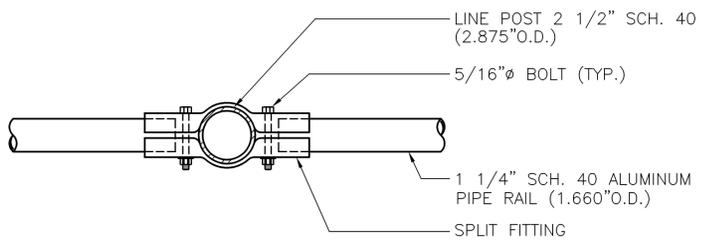
**TYPE II PROTECTIVE SCREEN  
(CHAIN LINK FENCE)**



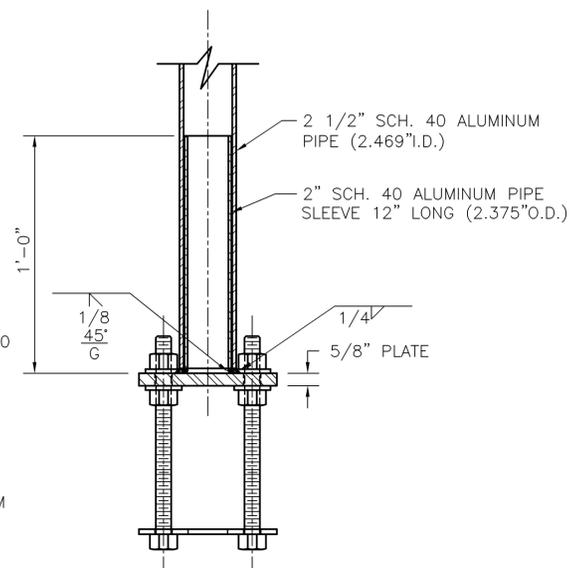
**ANCHOR DETAIL**



**RAIL SPLICE DETAIL**



**DETAIL OF POST CONNECTION**



**SECTION A-A  
10.40**

**DESIGNER NOTES:**

1. IN GENERAL PROTECTIVE SCREENS SHOULD BE CONSIDERED ON OVERPASSES WITH HEAVY PEDESTRIAN TRAFFIC (SUCH AS NEAR SCHOOLS AND PLAYGROUNDS). OVERPASSES IN URBAN AREAS, OVERPASSES WHERE PRIVATE PROPERTIES ARE LOCATED BENEATH, AND OVERPASSES SPANNING RAILROAD TRACKS.
2. THE TYPE II PROTECTIVE SCREEN (CHAIN LINK FENCE) SHOULD ONLY BE CONSIDERED FOR BRIDGES SPANNING RAILROAD TRACKS OR WHEN THE SIDEWALK IS TOO NARROW TO ALLOW FOR TYPE I.
3. ALTERNATE PROTECTIVE SCREEN DETAILS MAY BE CONSIDERED, SHOULD SPECIFIC CONDITIONS WARRANT.
4. THE NOTES SHOWN BELOW, SHOULD BE INCLUDED ON THE CONTRACT DRAWINGS.

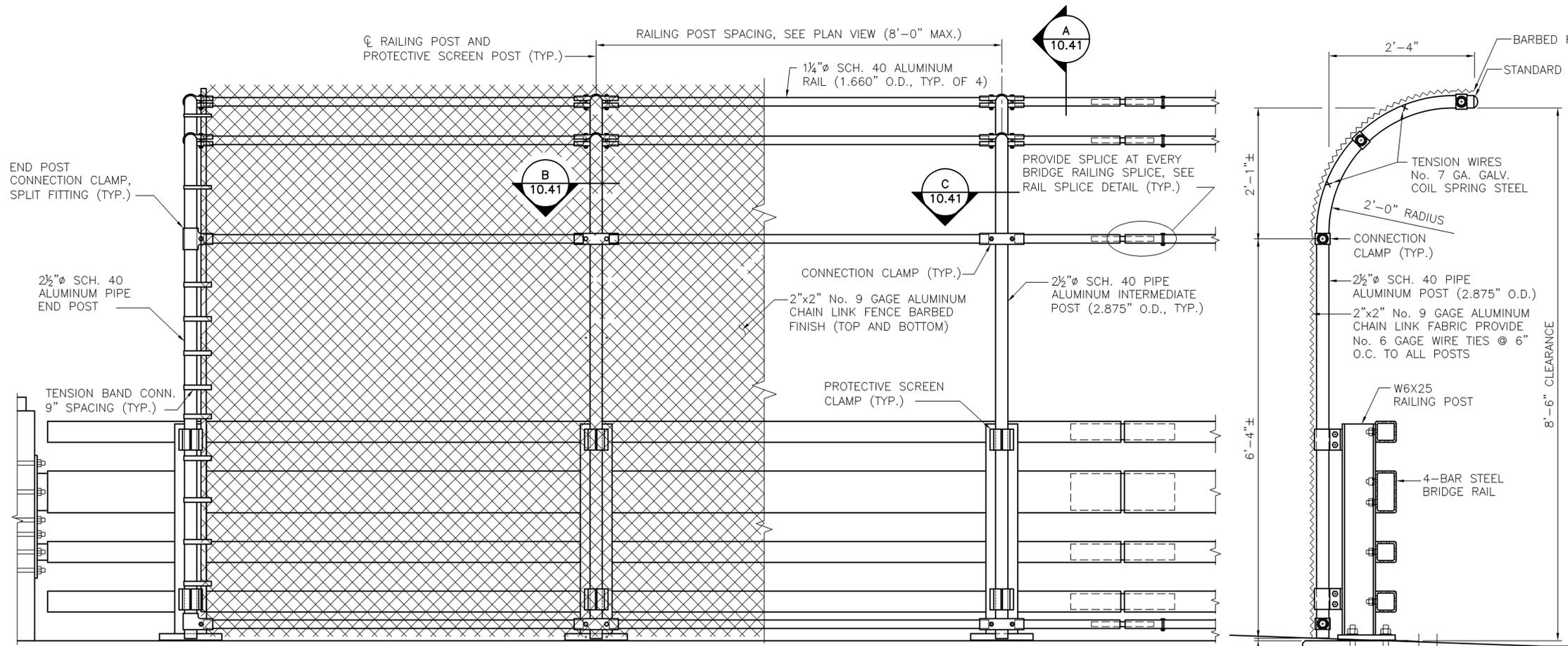
**NOTES:**

1. ALL POSTS SHALL BE SET VERTICAL UNLESS OTHERWISE SPECIFIED.
2. MAXIMUM POST SPACING SHALL BE 8'-0".
3. POSTS, RAILS, TENSION BARS, RAIL SPLICES, WASHERS AND POST CONNECTION CLAMPS SHALL BE ALUMINUM ALLOY 6061-T6 ASTM DESIGNATION B 221.
4. THE ALUMINUM FABRIC SHALL BE ALUMINUM ALLOY 6061-T89-94 ASTM DESIGNATION B 221, NO. 9 GAUGE (0.148" DIAMETER).
5. THE WIRE TIES SHALL BE ALUMINUM ALLOY 1100-H-18 NO. 6 GAUGE (0.194" DIAMETER).
6. THE TENSION BANDS SHALL BE ALUMINUM ALLOY 6063-T5 ASTM DESIGNATION B 221.
7. THE BOLTS SHALL BE STAINLESS STEEL ASTM DESIGNATION A 193 (AISI TYPE 304) F<sub>y</sub> = 30 KSI.
8. THE NUTS SHALL BE STAINLESS STEEL ASTM DESIGNATION A 194.
9. THE PORTIONS OF THE ALUMINUM BASE PLATES TO BE IN CONTACT WITH THE CONCRETE PARAPET AND THE STEEL ANCHOR BOLTS SHALL BE THOROUGHLY COATED WITH AN APPROVED ALUMINUM IMPREGNATED CAULKING COMPOUND.
10. THE ALUMINUM BASE PLATES SHALL BE ALUMINUM ALLOY 6061-T6 ASTM DESIGNATION B 221.

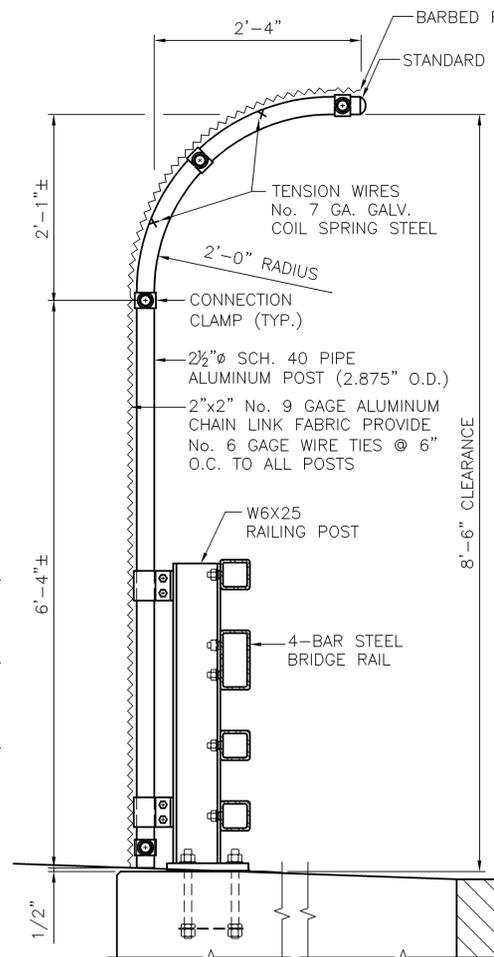
THIS SHEET IS NOT TO SCALE

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		<b>PROTECTIVE SCREEN (CHAIN LINK FENCE) SHEET 1</b>

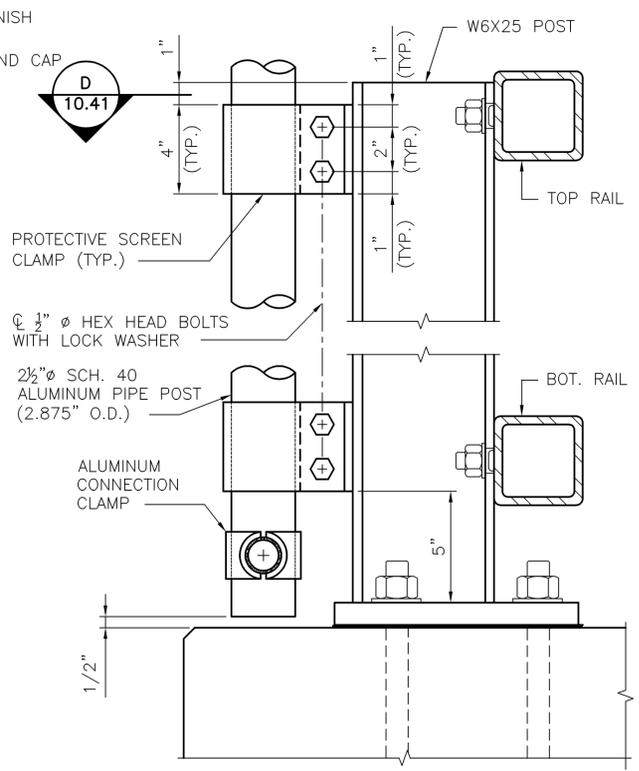
**DRAWING NUMBER: 10.40**



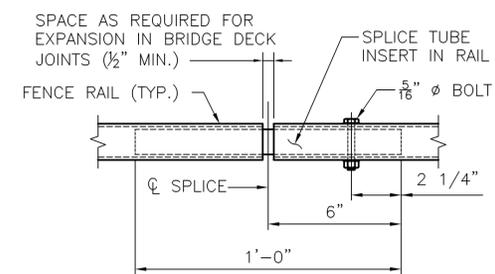
**BACK ELEVATION VIEW**  
SCALE: 1" = 1'-0"



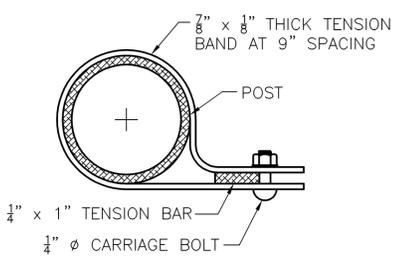
**SECTION A**  
SCALE: 6" = 1'-0"



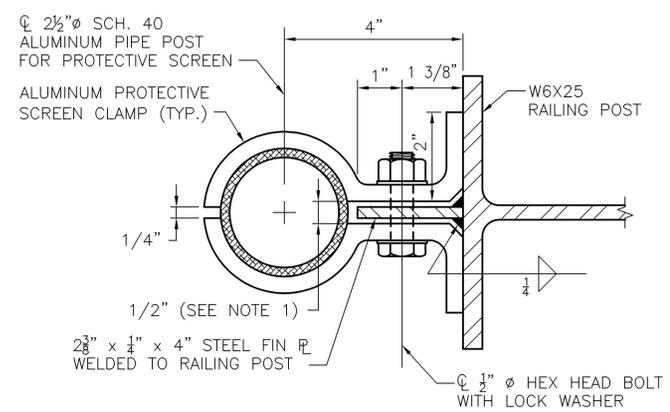
**ELEVATION - PROTECTIVE SCREEN CLAMPS**  
SCALE: 3" = 1'-0"



**RAIL SPLICE**  
SCALE: 3" = 1'-0"

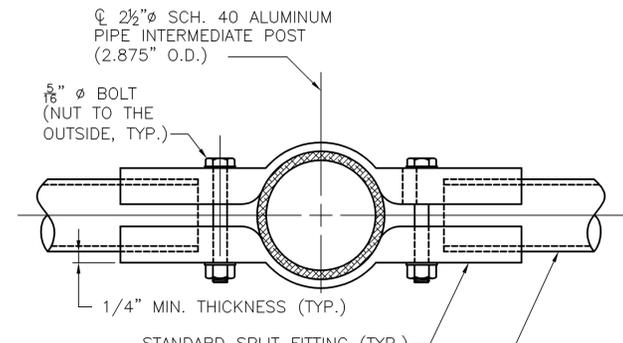


**TENSION BAND CONNECTION**  
SCALE: 6" = 1'-0"



**NOTES:**  
1. DRAW FOR FABRICATION TO ENSURE CLAMPING ACTION.  
2. SLIGHT VARIATIONS IN EXTRUSION DIMENSIONS MAY BE SUBMITTED FOR APPROVAL.

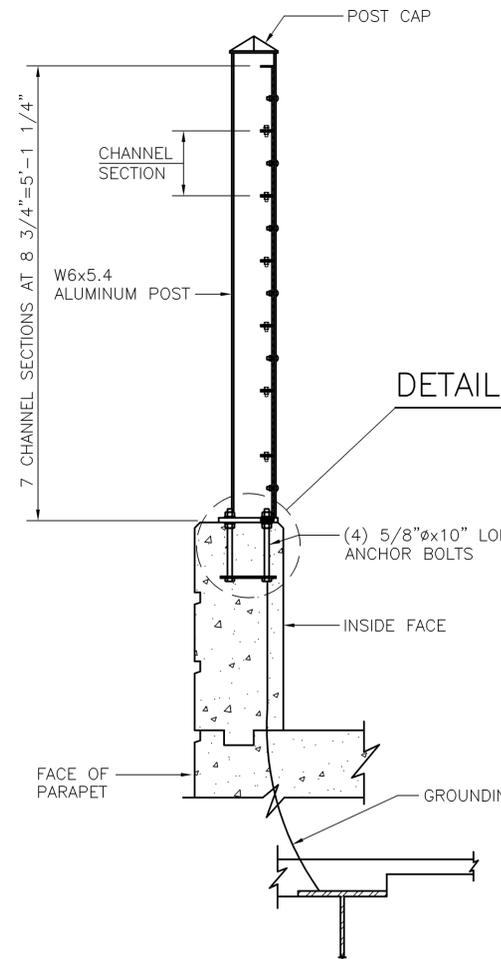
**SECTION C**  
SCALE: 6" = 1'-0"



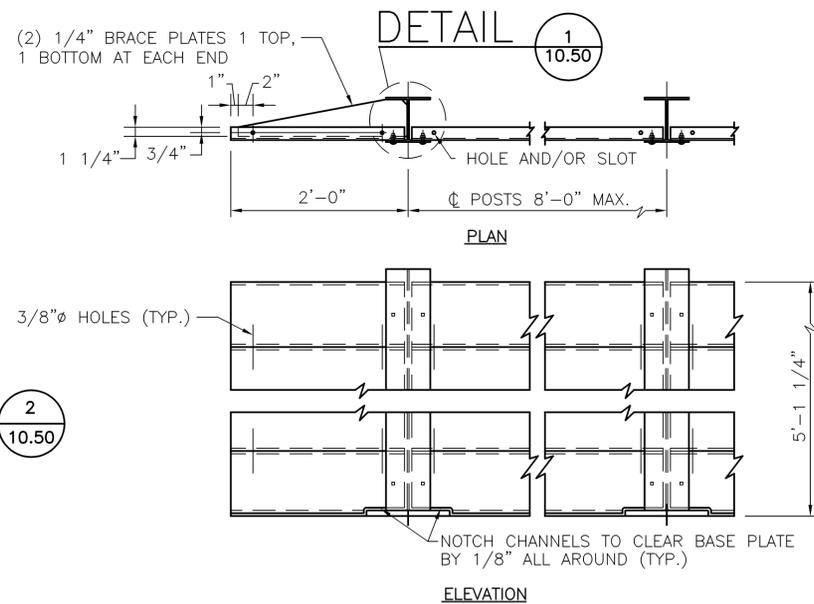
**SECTION D**  
SCALE: 6" = 1'-0"

- NOTES:**
- 1 ALL POSTS SHALL BE SET VERTICAL UNLESS OTHERWISE SPECIFIED.
  - 2 MAXIMUM POST SPACING SHALL BE 8'-0".
  - 3 POSTS, RAILS, TENSION BARS, RAIL SPLICES, WASHERS AND POST CONNECTION CLAMPS SHALL BE ALUMINUM ALLOY 6061-T6 ASTM DESIGNATION B 221.
  - 4 THE ALUMINUM FABRIC SHALL BE ALUMINUM ALLOY 6061-T89-94 ASTM DESIGNATION B 221, NO. 9 GAUGE (0.148" DIAMETER).
  - 5 THE WIRE TIES SHALL BE ALUMINUM ALLOY 1100-H-18 NO. 6 GAUGE (0.194" DIAMETER).
  - 6 THE TENSION BANDS SHALL BE ALUMINUM ALLOY 6063-T5 ASTM DESIGNATION B 221.
  - 7 THE BOLTS SHALL BE STAINLESS STEEL ASTM DESIGNATION A 193 (AISI TYPE 304) Fy = 30 KSI.
  - 8 THE NUTS SHALL BE STAINLESS STEEL ASTM DESIGNATION A 194.

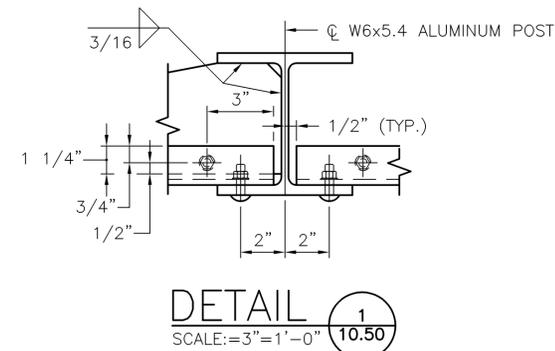
REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		PROTECTIVE SCREEN (CHAIN LINK FENCE) SHEET 2
		DRAWING NUMBER: 10.41



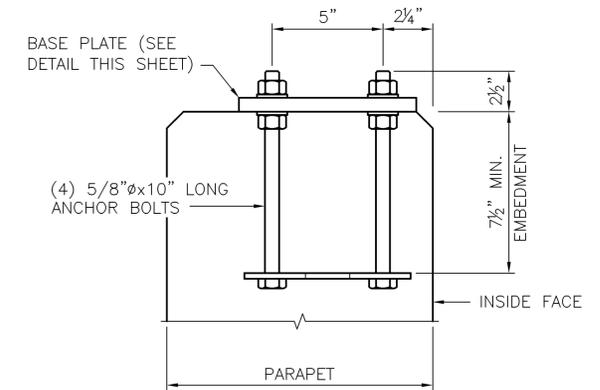
TYPICAL SECTION THRU PROTECTIVE BARRIER RAILING



END OF PROTECTIVE SCREEN



DETAIL 1  
SCALE: 3"=1'-0" 10.50



DETAIL 2  
SCALE: 3"=1'-0" 10.50

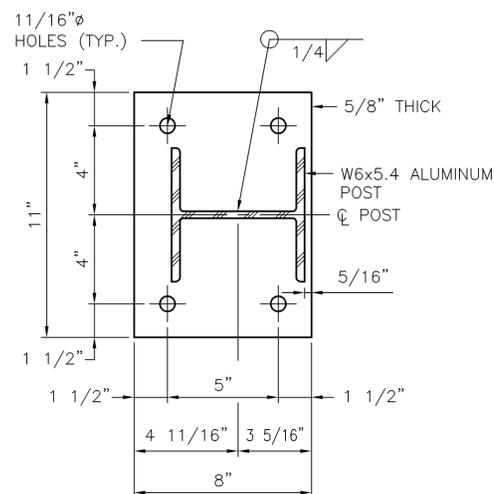
**DESIGNER NOTES:**

1. THE RAILROAD PROTECTIVE BARRIER RAILING SHOULD BE USED FOR BRIDGES SPANNING RAILROAD TRACKS AND WHEN PLANS FOR FUTURE TRACK ELECTRIFICATION IS ANTICIPATED. THE USE OF THESE TYPES OF PROTECTIVE BARRIER RAILINGS SHALL BE COORDINATED WITH AND APPROVED BY THE DEPARTMENT.
2. THE NOTES PROVIDED BELOW SHALL BE INCLUDED ON THE CONTRACT DRAWINGS.
3. USE SAME DETAILS FOR PROTECTIVE SCREEN BARRIER (BARRIER TYPE) MOUNTED ON JERSEY BARRIER SHAPED PARAPETS.

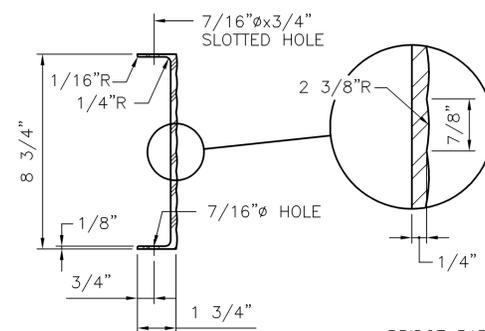
**NOTES:**

- 1 ALL SHAPES AND PLATES (EXCEPT 1/4" ANCHOR PLATE) TO BE ALUMINUM DESIGNATION 6061-T6 (ASTM DESIGNATION B221).
- 2 MATERIAL FOR ANCHOR BOLTS SHALL CONFORM TO ASTM A 276, TYPE 430 STAINLESS STEEL, ANNEALED HOT FINISH, ULTIMATE STRENGTH 70,000 PSI MIN., 20% MIN. ELONGATION. THREAD TO BE ROLLED AND NOT CUT.
- 3 ALL HARDWARE NOT SPECIFICALLY CALLED FOR ON ANY DETAIL SHALL BE STAINLESS STEEL ASTM A 193 (AISI TYPE 304).
- 4 COST OF POST CAPS TO BE INCLUDED IN TOTAL COST OF THE PROTECTIVE SCREEN.
- 5 AN APPROVED METHOD OF GROUNDING THE PROTECTIVE SCREEN TO THE STRUCTURAL STEEL AND OF GROUNDING THE STRUCTURAL STEEL WILL BE REQUIRED. THIS DETAIL MUST BE COORDINATED WITH THE GOVERNING RAILROAD AGENCY.
- 6 POST SPACING TO BE 8'-0" MAX.
- 7 ANCHOR BOLT HEX NUTS & WASHERS TO BE STAINLESS STEEL AND STRUCTURALLY COMPATIBLE WITH ANCHOR BOLTS.

THIS SHEET IS NOT TO SCALE

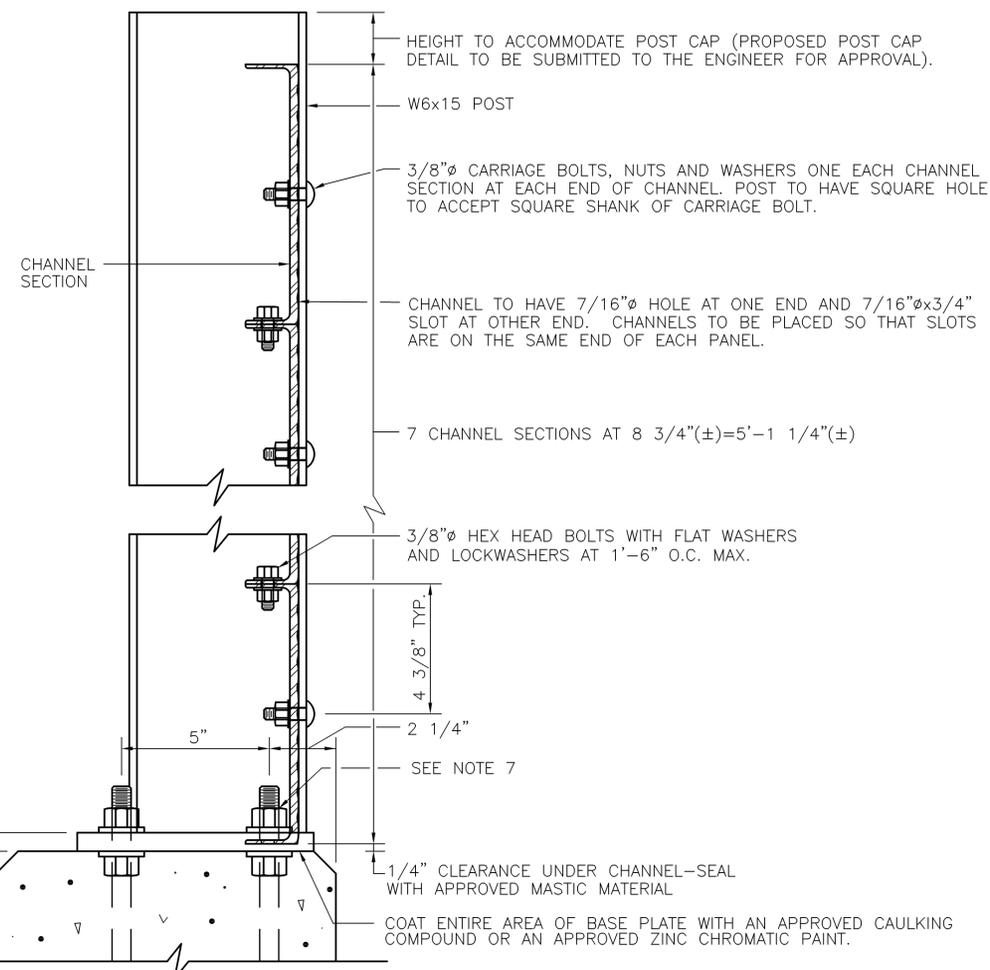


BASE PLATE DETAIL



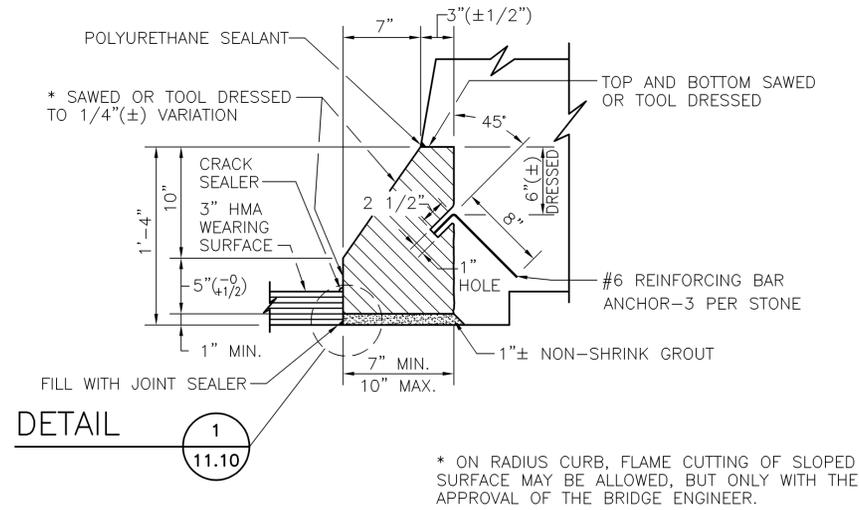
CHANNEL SECTION

AN ALTERNATE CHANNEL SECTION MAY BE SUBSTITUTED SUBJECT TO APPROVAL BY THE ENGINEER.



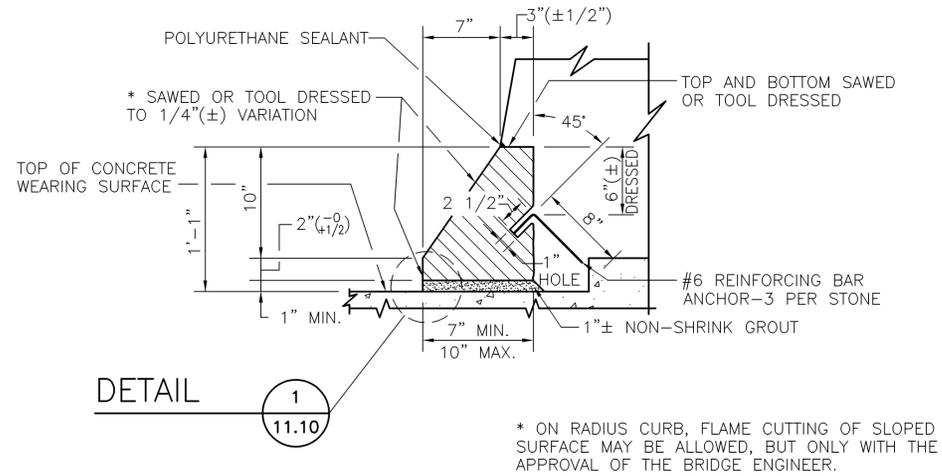
TYPICAL SECTION AT POST

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		PROTECTIVE SCREEN (BARRIER TYPE)
		DRAWING NUMBER: 10.50



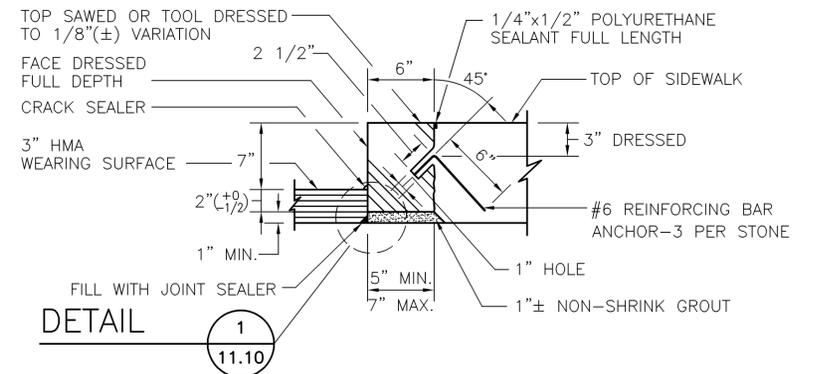
**10"x15" SLOPE FACE GRANITE CURB**

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



**10"x12" SLOPE FACE GRANITE CURB**

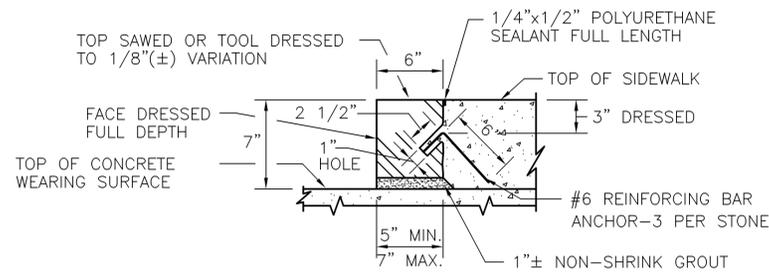
SCALE: 1 1/2"=1'-0"



**6"x9" VERTICAL FACE GRANITE CURB**

(HMA WEARING SURFACE)

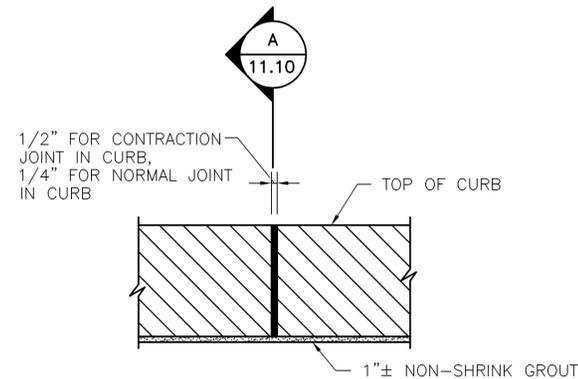
SCALE: 1 1/2"=1'-0"



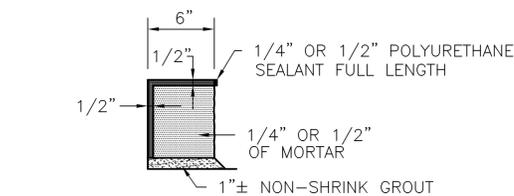
**6"x6" VERTICAL FACE GRANITE CURB**

(CONCRETE WEARING SURFACE)

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

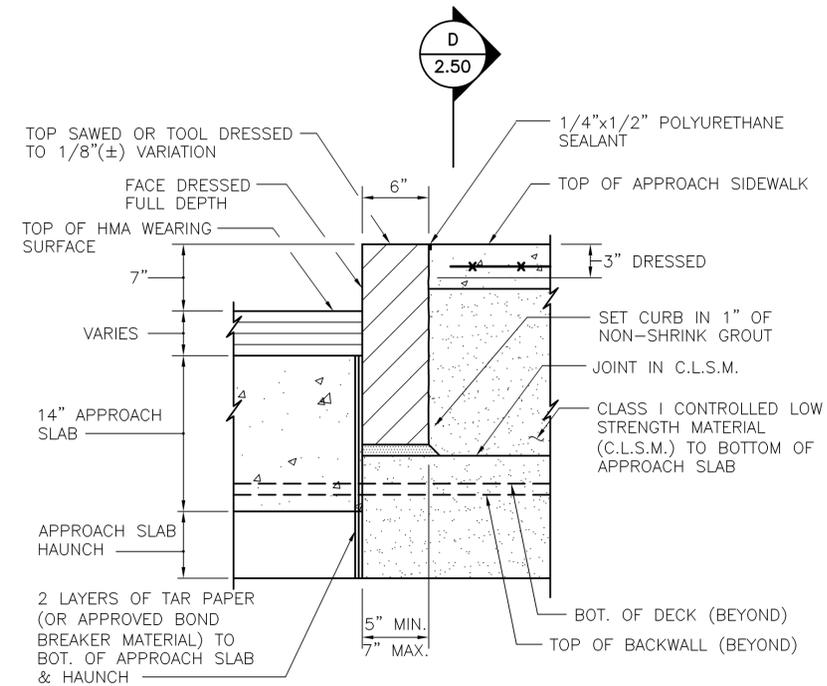


**ELEVATION AT FACE OF CURB**



**SECTION**

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



**6"x18" GRANITE CURB AT ABUTMENT BACKWALL**

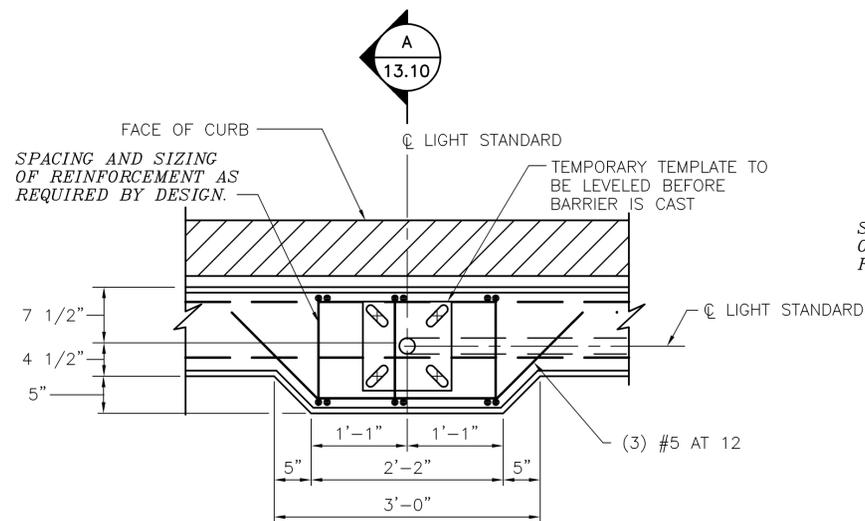
SCALE: 1 1/2"=1'-0"

**CURB NOTES:**

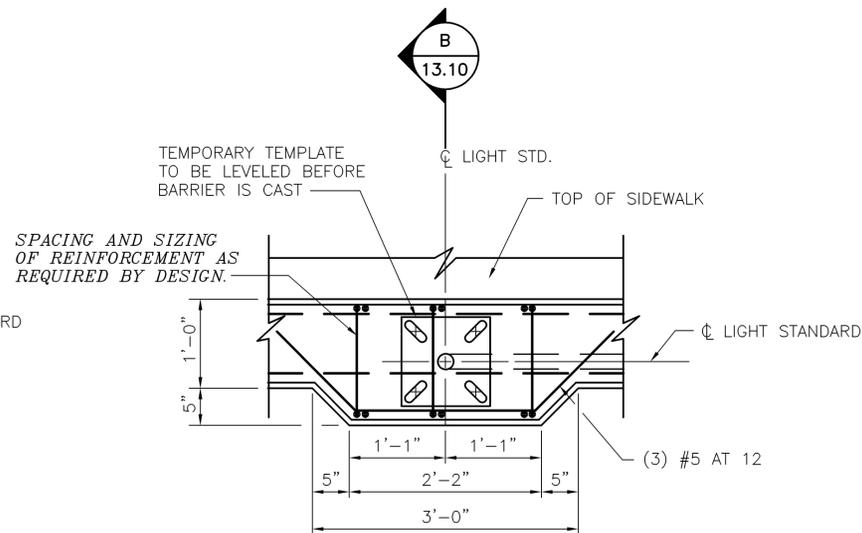
- FOR CUTTING TOLERANCES ON GRANITE CURB SEE R.I. STANDARD SPECIFICATION M-09.05.
- STRAIGHT CURB SHALL BE FURNISHED IN LENGTHS OF NOT LESS THAN 6 FEET OR GREATER THAN 10 FEET. (5 FOOT LENGTHS MAY BE ALLOWED UNDER UNUSUAL CIRCUMSTANCES, BUT ONLY WITH THE APPROVAL OF THE BRIDGE ENGINEER).
- CURB WHICH IS SET ON A RADIUS BETWEEN 160 FEET AND 300 FEET MAY BE FURNISHED STRAIGHT IN LENGTHS NOT TO EXCEED 6 FEET.
- CURB TO BE SET ON A RADIUS OF 160 FEET OR LESS SHALL BE CUT TO THE CURVE REQUIRED.

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
No.	DATE	
		CURB DETAILS
		DRAWING NUMBER: 11.10

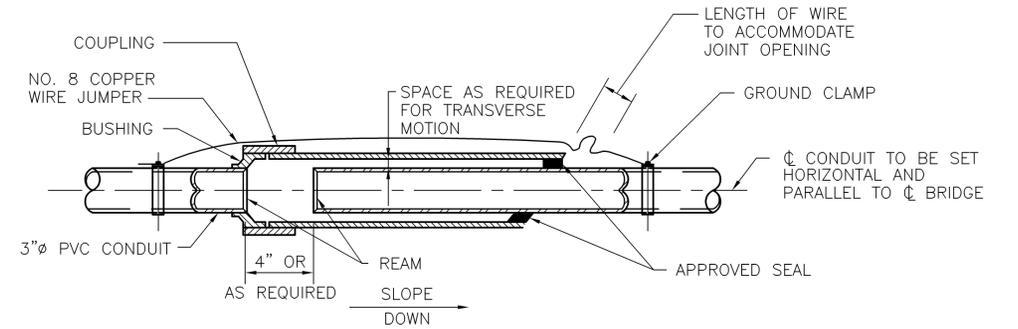




**PLAN**  
AT SAFETY BARRIER



**PLAN**  
AT SIDEWALK



**ELECTRICAL CONDUIT EXPANSION COUPLING**

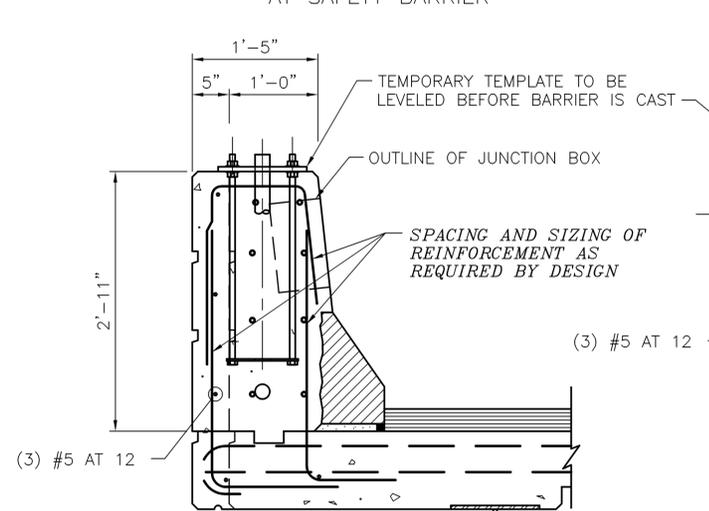
ALL EXPANSION FITTINGS TO BE FACTORY MANUFACTURED

**NOTES:**

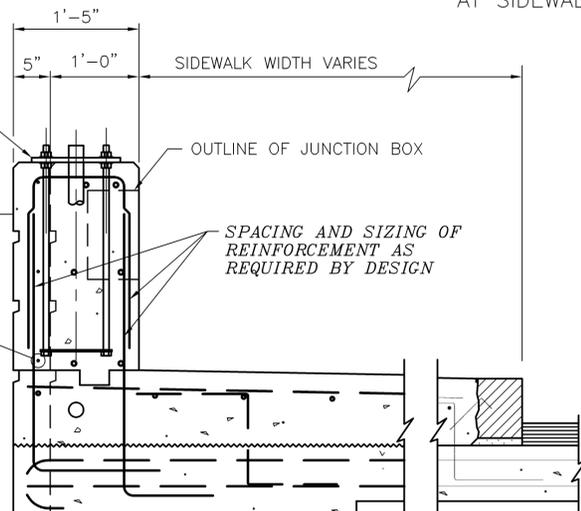
1. EACH LENGTH OF CONDUIT SHALL BEAR THE LABEL OF UNDERWRITERS LABORATORIES INC.
2. AN ALTERNATE ELECTRICAL CONDUIT EXPANSION COUPLING DETAIL MAY BE USED SUBJECT TO APPROVAL BY THE ENGINEER.
3. INSTALLATIONS SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.
4. WORK SHALL CONFORM TO PUBLIC CHAPTER 5-6-2, FOR WHICH A LICENSE IS REQUIRED.
5. METAL CONDUIT AND FITTINGS SHALL BE ZINC COATED.
6. MINIMUM BOLT PROJECTION ABOVE NUT IS 1/2 BOLT DIAMETER.

**JUNCTION BOX NOTES**

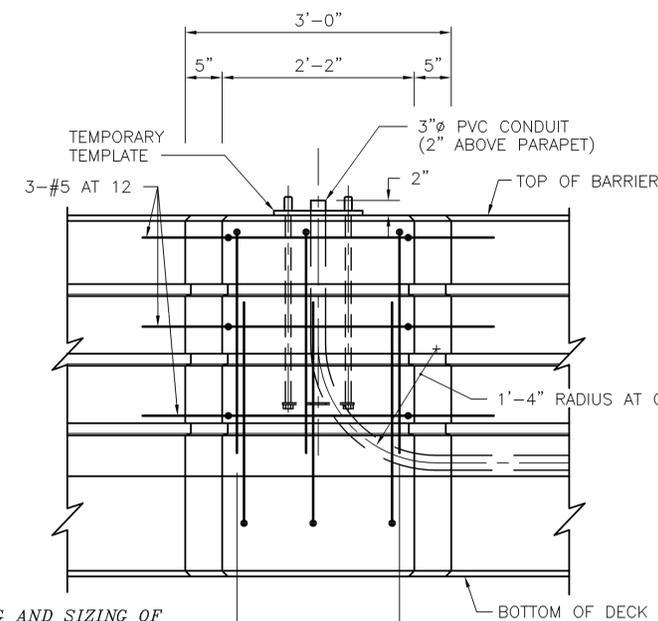
1. JUNCTION BOXES SHALL BE GALVANIZED, FERROUS, AND FLUSH MOUNTED WITH RECESSED WEATHERPROOF COVER.
2. THE MINIMUM STEEL GAUGE SHALL BE 10 GA.
3. THE MINIMUM CAST IRON GAUGE SHALL BE 9/32" GA.
4. THE COVER PLATE SHALL BE CHECKERED STEEL PLATE, THE COVER SCREWS SHALL BE FLAT HEAD BRASS, AND THE GASKET SHALL BE NEOPRENE.
5. THE DIMENSIONS SHOWN ARE MINIMUM.
6. ALL CONDUITS SHALL BE PITCHED TOWARD THE BOXES WITH A MINIMUM SLOPE OF .0025. A DRAIN AT THE LOW POINT SHALL BE PROVIDED FOR EACH JUNCTION BOX.
7. 18"x12"x10" JUNCTION BOXES ARE TO BE USED WHEN BOXES ARE PLACED IN SIDEWALKS. 18"x12"x8" JUNCTION BOXES ARE TO BE USED WHEN BOXES ARE PLACED IN PARAPETS OR JERSEY BARRIERS.



**SECTION A**  
13.10



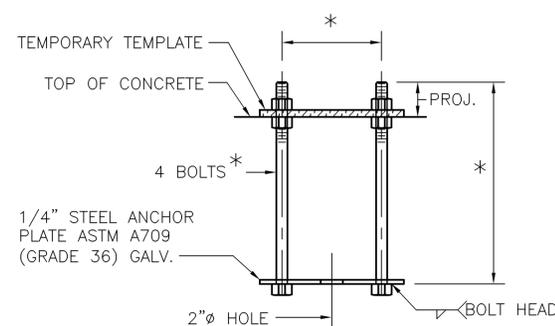
**SECTION B**  
13.10



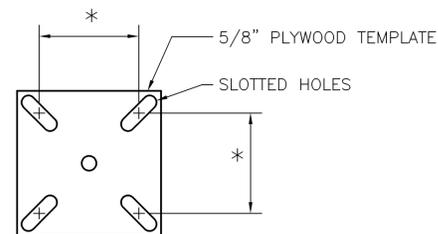
**ELEVATION**

(AT SIDEWALK SHOWN)

NOTE:  
ELEVATION AT SAFETY BARRIER IS SIMILAR

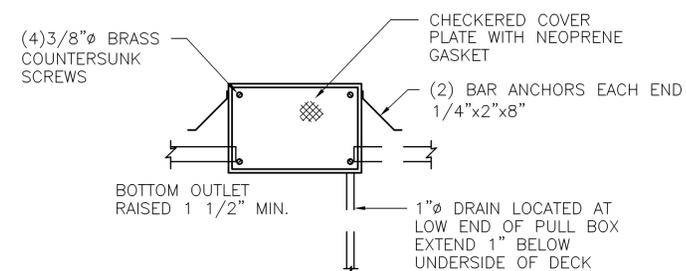


**ANCHOR FOR LIGHT STANDARD**



TEMPORARY TEMPLATE IS USED TO PROPERLY SET THE ANCHOR BOLT CAGE AND IS TO BE REMOVED BEFORE PLACING LIGHT STANDARD

**TEMPORARY TEMPLATE**



**STANDARD JUNCTION BOX**  
FOR VERTICAL MOUNTING

**DESIGNER:**

1. UNDER SPECIAL CONDITIONS, JUNCTION BOXES MAY BE OMITTED WITH THE APPROVAL OF THE ENGINEER.

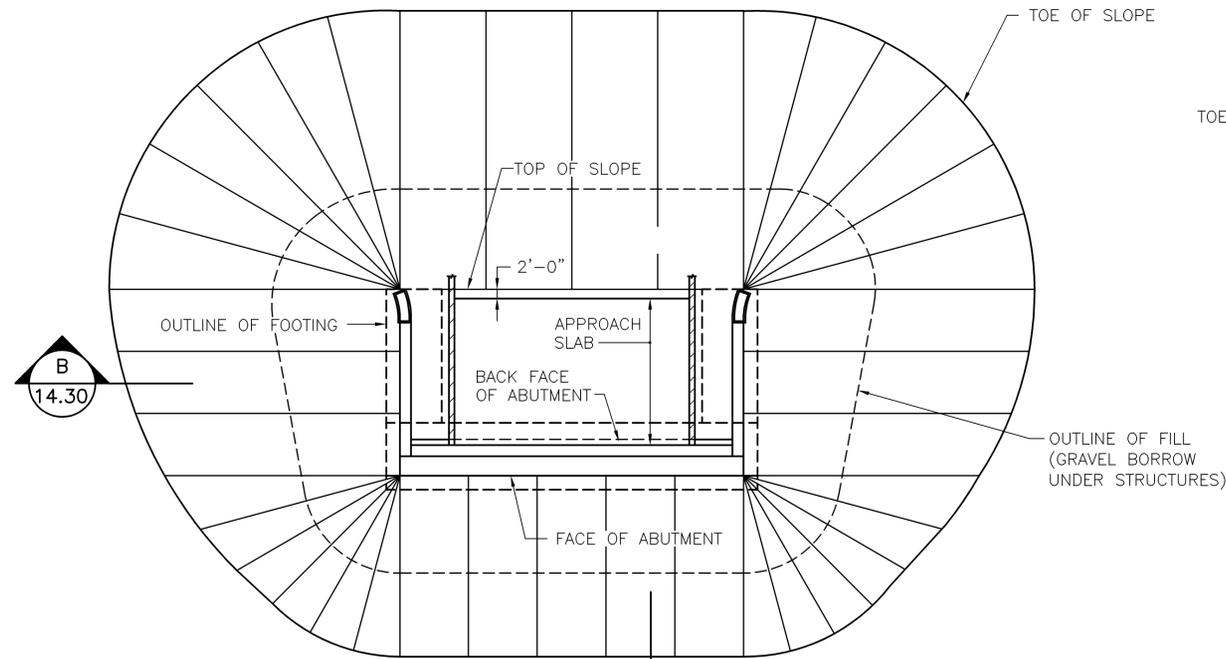
THIS SHEET IS NOT TO SCALE

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION  BRIDGE STANDARDS
No.	DATE	
		LIGHT STANDARD ANCHORAGES & ELECTRICAL DETAILS
		DRAWING NUMBER: 13.10

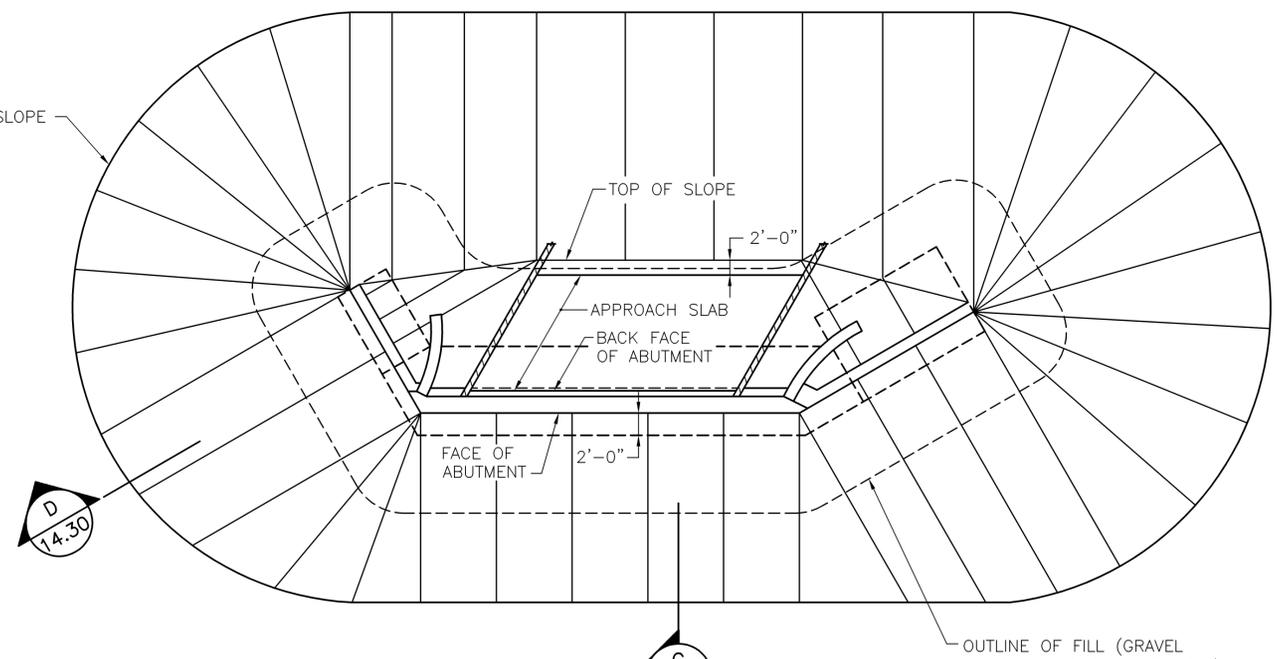
\* BOLT CIRCLE, SIZE, MATERIAL, PROJECTION AND EMBEDMENT TO BE DETERMINED BY MANUFACTURER



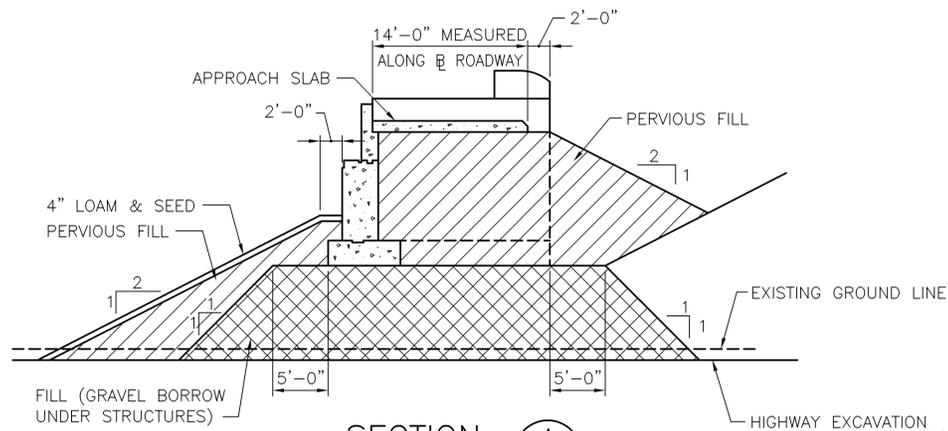




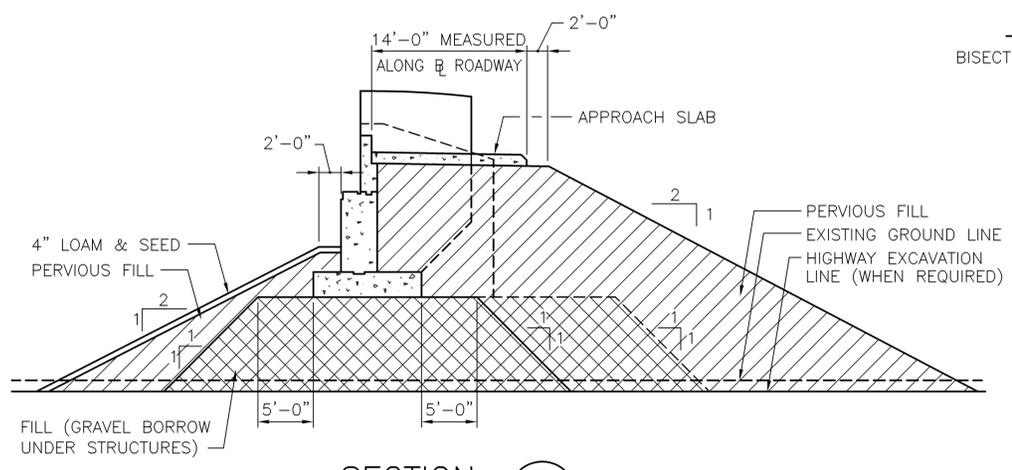
**PLAN**  
PARALLEL WINGWALLS  
**A**  
14.30



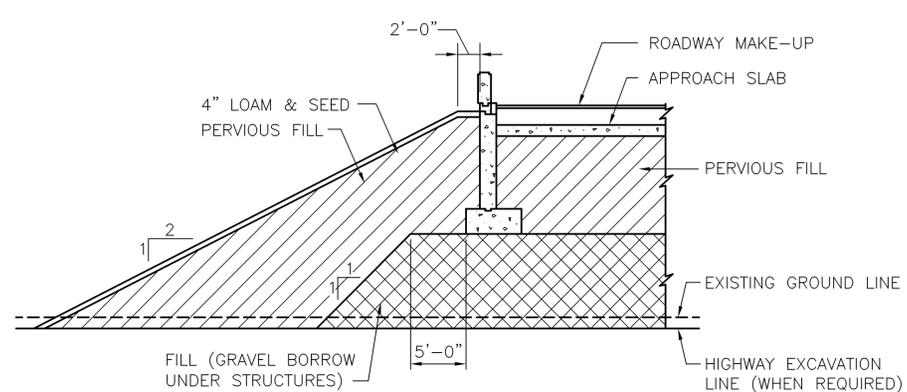
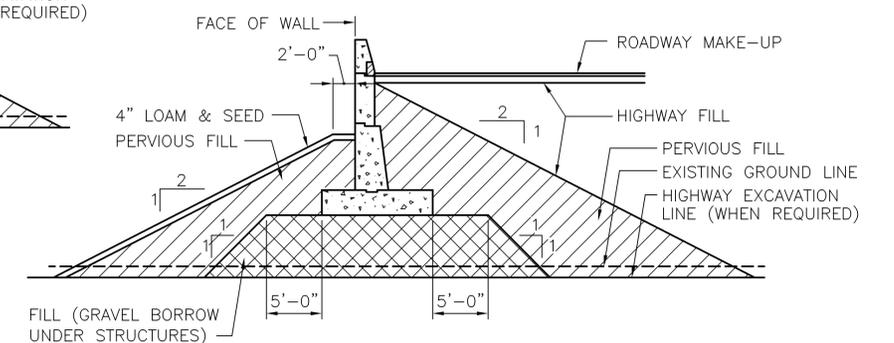
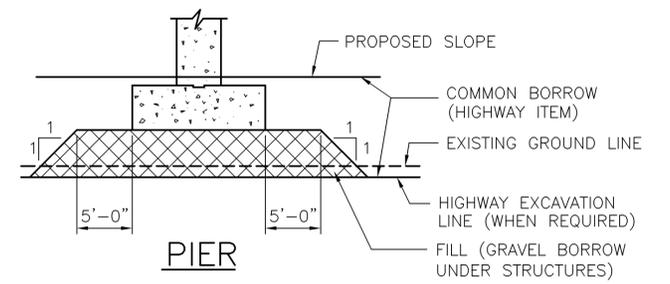
**PLAN**  
BISECTING WINGWALLS  
**C**  
14.30



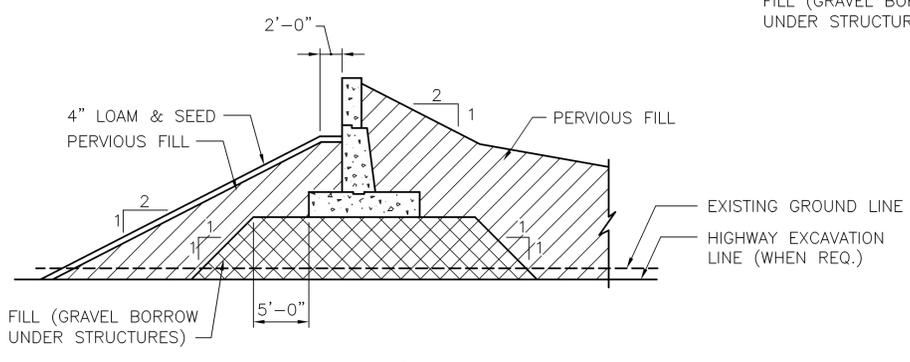
**SECTION A**  
14.30



**SECTION C**  
14.30



**SECTION B**  
14.03



**SECTION D**  
14.30

THIS SHEET IS NOT TO SCALE

REVISIONS		RHODE ISLAND DEPARTMENT OF TRANSPORTATION BRIDGE STANDARDS
No.	DATE	
		ABUTMENTS, PIERS AND WALLS ON FILL
DRAWING NUMBER: 14.30		