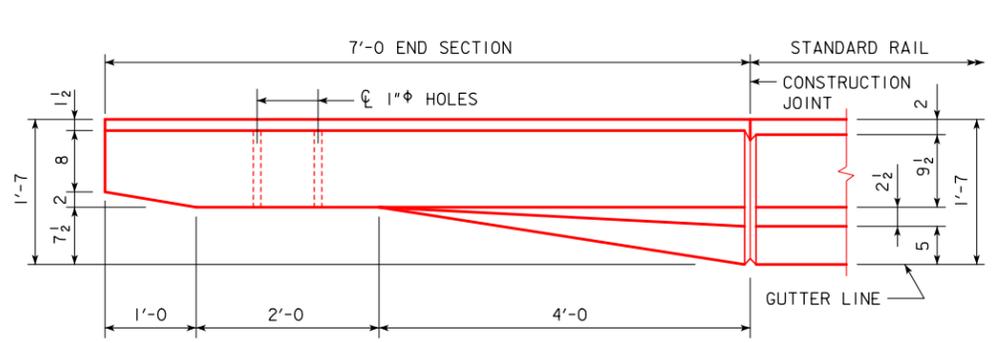
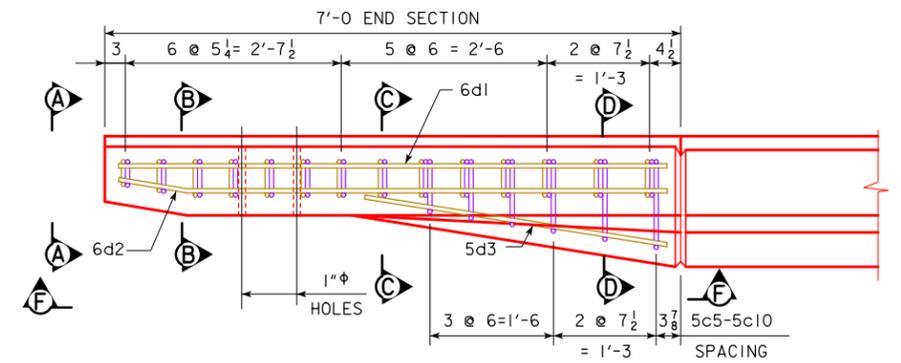


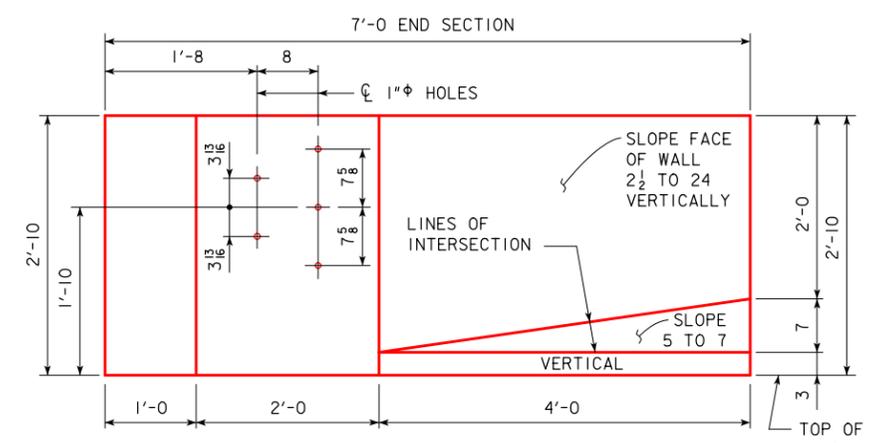
ENGLISHDECKRAILBRIDGES.DGN 10175 - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 6c3, 6c4 & 5c5-5c10 BARS TO STAINLESS STEEL.



PART PLAN VIEW

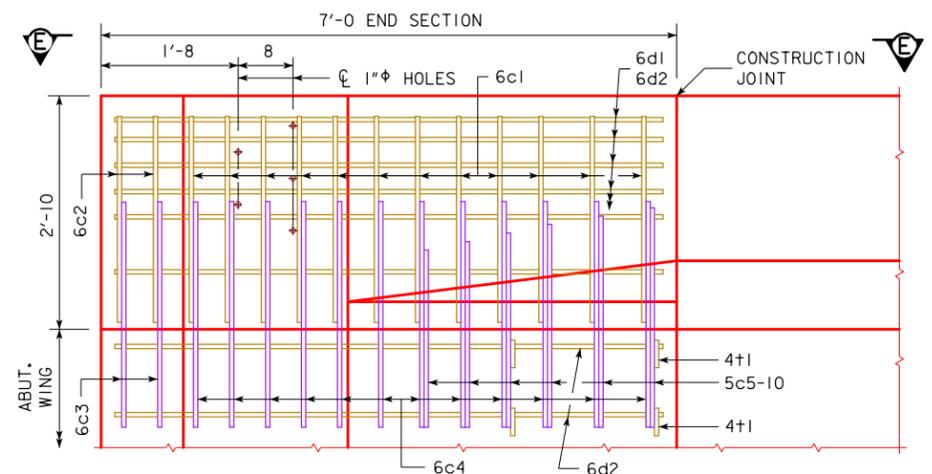


PART VIEW E-E

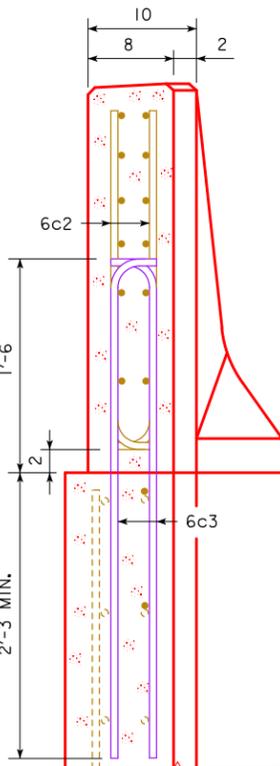


PART ELEVATION VIEW

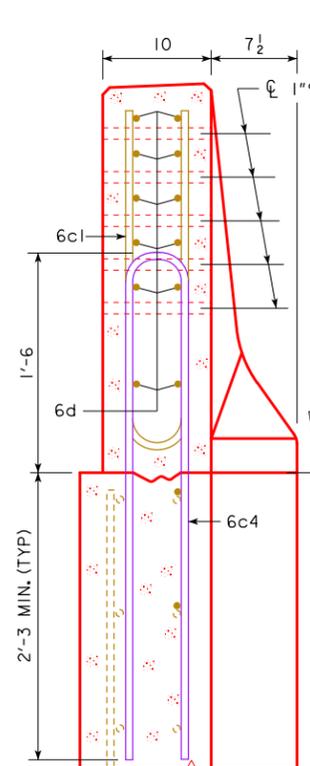
PROVIDE 5 HOLES FORMED WITH 1" PLASTIC CONDUIT. COST TO BE INCLUDED IN PRICE BID FOR CONCRETE BARRIER RAILING.



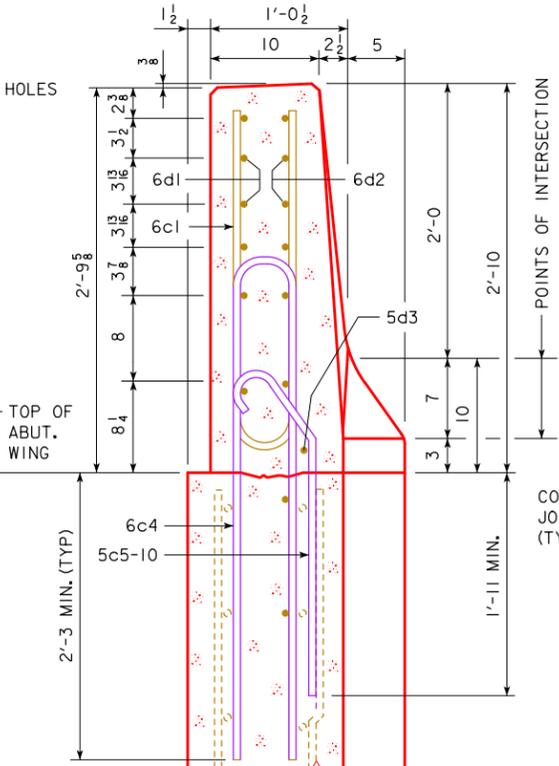
PART VIEW F-F



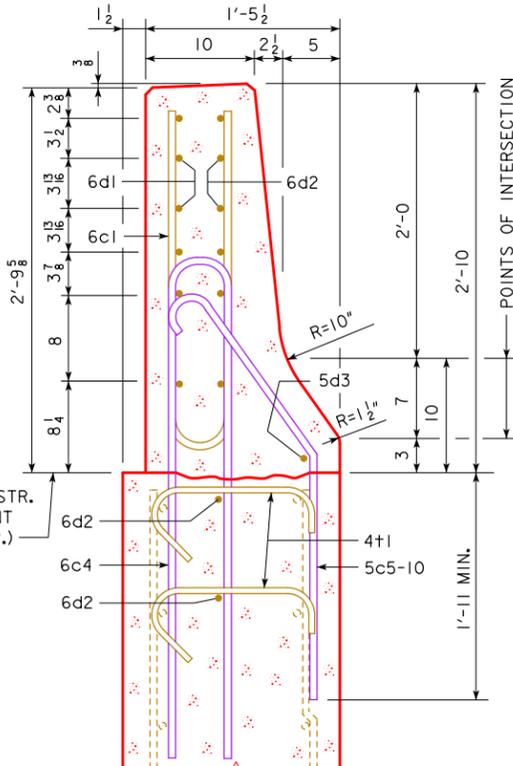
VIEW A-A



SECTION B-B



SECTION C-C



SECTION D-D

NOTE:
4+1 PLACEMENT- 2 BARS EACH LEVEL OF 6d2 IN WING FOOTING.

NOTE:
CONSTRUCTION JOINT BETWEEN TOP OF WING AND BARRIER RAIL IS ROUGHENED CONCRETE.

NOTE:
THE 10" RADIUS AND 1 1/2" RADIUS ARE TYPICAL AND SHALL BE USED WHEN CONSTRUCTING THE CORNERS FOR VIEW A-A, SECTION B-B, SECTION C-C AND SECTION D-D.

NOTE:
THE 6c4, 6c3, 5c5-10, 2 - 6d2 AND 4+1 BARS ARE TO BE PLACED WITH THE ABUTMENT WING. THE DETAILS FOR PLACEMENT ARE SHOWN ON THE WING ABUTMENT SHEET.

NOTE:
DASHED LINES BELOW THE TOP OF WING ARE THE ABUTMENT WING REINFORCING STEEL. SEE WING ABUTMENT SHEET FOR PLACEMENT.

EPOXY COATED REINF. STEEL - ONE END SECT.

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6c1	RAIL, VERTICAL	U	12	5'-6	99
6c2	RAIL, VERTICAL	U	4	2'-10	17
6d1	RAIL, HORIZONTAL	—	6	6'-8	60
6d2	RAIL, HORIZONTAL	—	8	6'-9	81
5d3	RAIL, HORIZONTAL	—	1	3'-9	4
4+1	RAIL, ABUTMENT WING TIE BARS	—	4	VARIES	5
EPOXY REINF. TOTAL WEIGHT (LBS.)					266

STAINLESS STEEL REINF. STEEL - ONE END SECT.

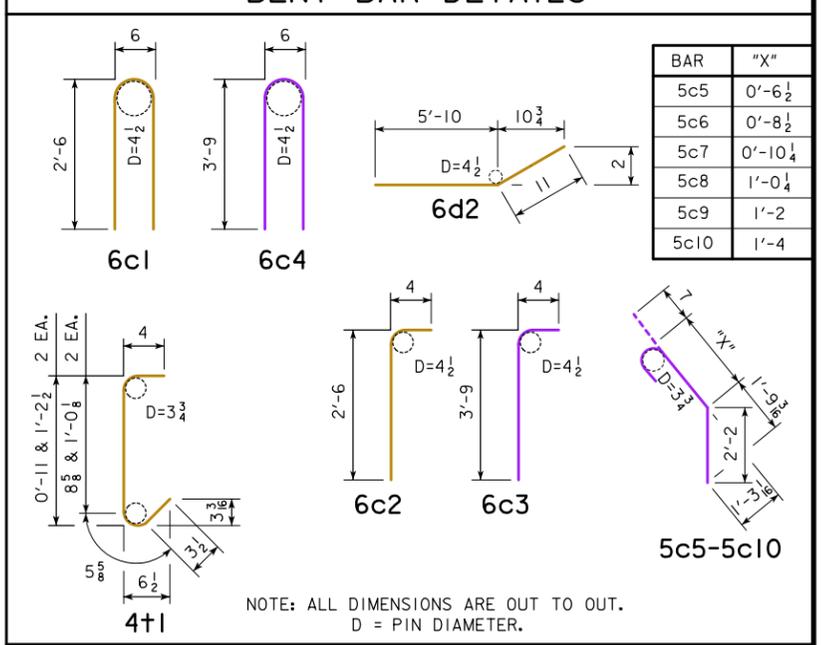
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6c3	RAIL, VERTICAL	U	4	4'-1	25
6c4	RAIL, VERTICAL	U	12	8'-0	144
5c5-10	RAIL, VERTICAL	U	6	VARIES	23
STAINLESS STEEL TOTAL WEIGHT (LBS.)					192

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

CONCRETE PLACEMENT SUMMARY

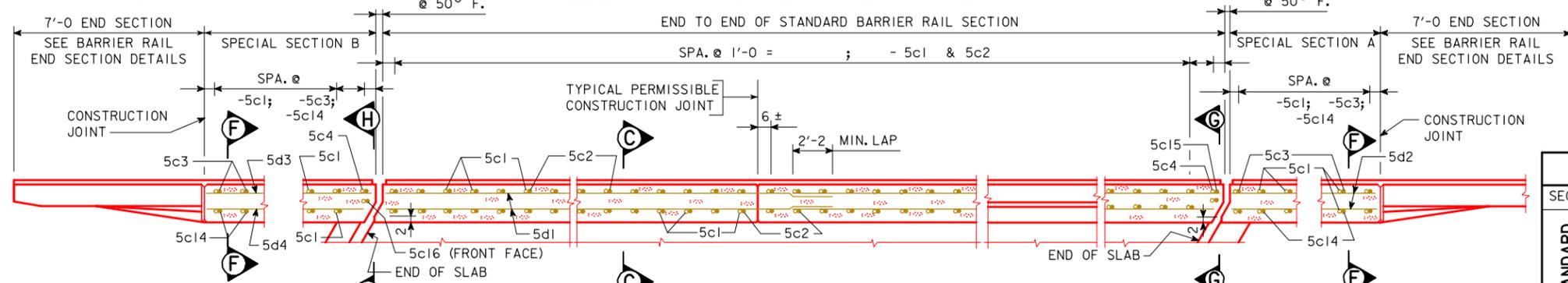
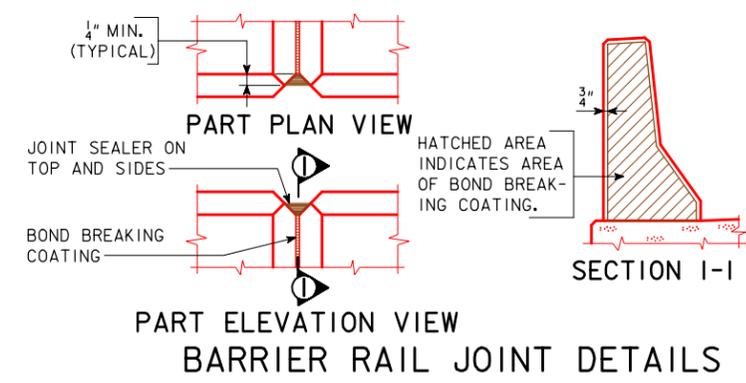
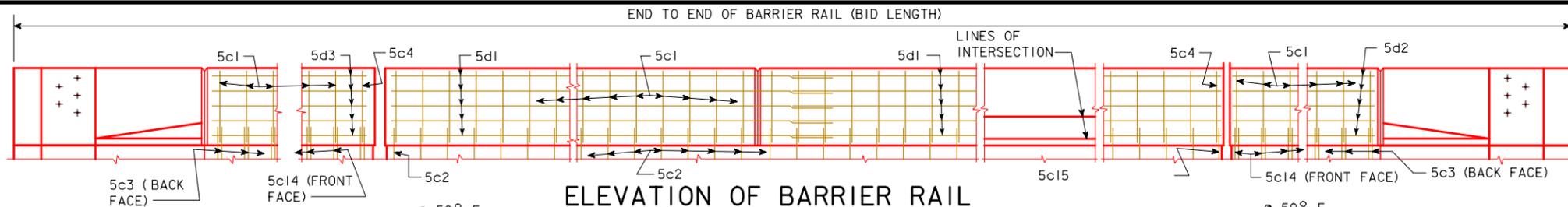
SECTION	TOTAL
BARRIER RAIL ONE END SECTION	0.65 CU. YD.

BENT BAR DETAILS



IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

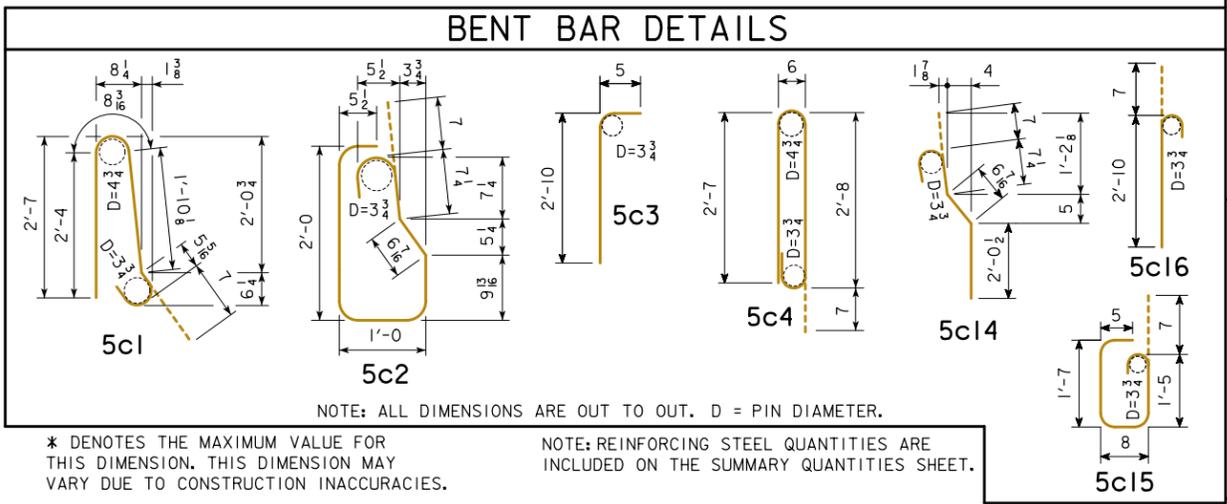
CORRECTION 04-14 - ADDED NOTE TO INCLUDE REINFORCING STEEL TO THE SUMMARY QUANTITIES SHEET. REMOVED END SECT. QTY. FROM BAR LIST & CONC. PLCMNT. SUMMARY. ENGLISHDECKRAILBRIDGES.DGN 1018 - THIS SHEET REISSUED 09-01 FOR F. SHAPE. BARRIER RAIL END SECT. DETAILS MOVED TO STD. SHEET 1017.



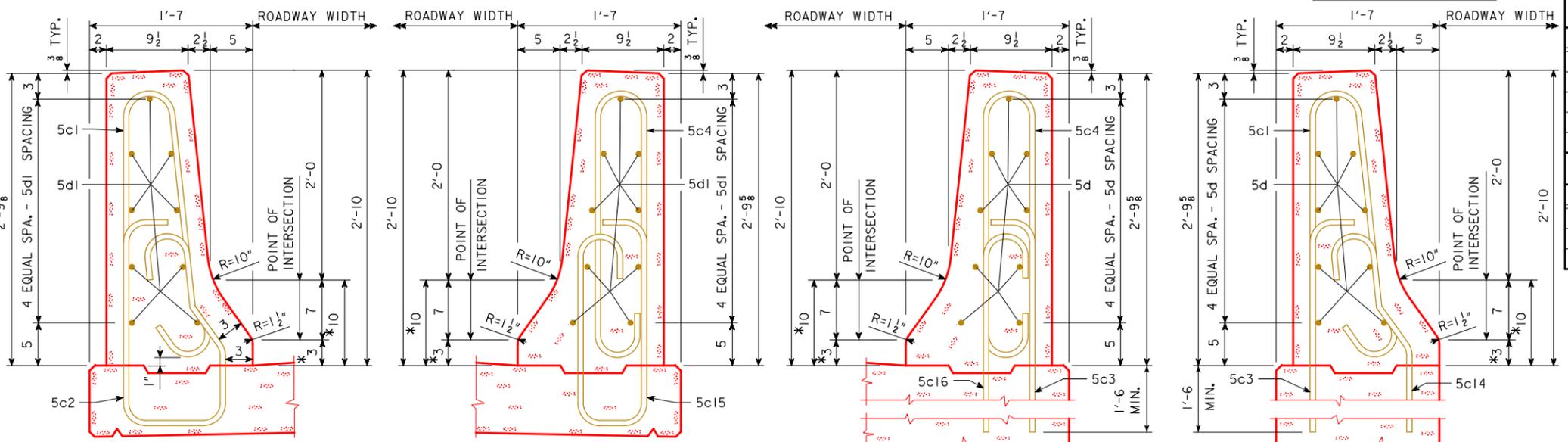
BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
 THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER.
 COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.
 ALL BARRIER RAIL REINFORCING STEEL IS TO BE EPOXY COATED.
 THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.
 THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED. TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL \bar{c} GRADE.
 CROSS SECTIONAL AREA OF THE STANDARD AND SPECIAL SECTIONS OF THE BARRIER RAIL = 2.84 SQUARE FEET.

PART SECTION OF BARRIER RAIL



EPOXY REINFORCING STEEL - TWO RAILS						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTION	5c1	VERTICAL			5'-11"	
	5c2	VERTICAL			6'-0"	
	5c4	VERTICAL		2	6'-4"	13
	5c15	VERTICAL		2	4'-8"	10
	5d1	LONGITUDINAL				
SPECIAL SECTION A	5c1	VERTICAL			5'-11"	
	5c3	VERTICAL			3'-3"	
	5c14	VERTICAL			3'-10"	
	5d2	LONGITUDINAL		18		
SPECIAL SECTION B	5c1	VERTICAL			5'-11"	
	5c3	VERTICAL			3'-3"	
	5c4	VERTICAL		2	6'-4"	13
	5c14	VERTICAL			3'-10"	
	5c16	VERTICAL		2	3'-5"	7
	5d3	LONGITUDINAL				
5d4	LONGITUDINAL					
TOTAL WEIGHT (LBS.)						

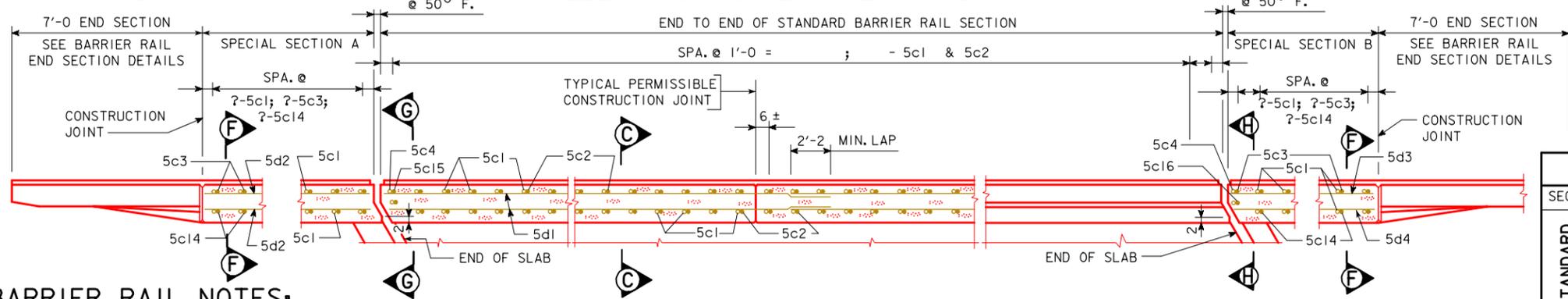
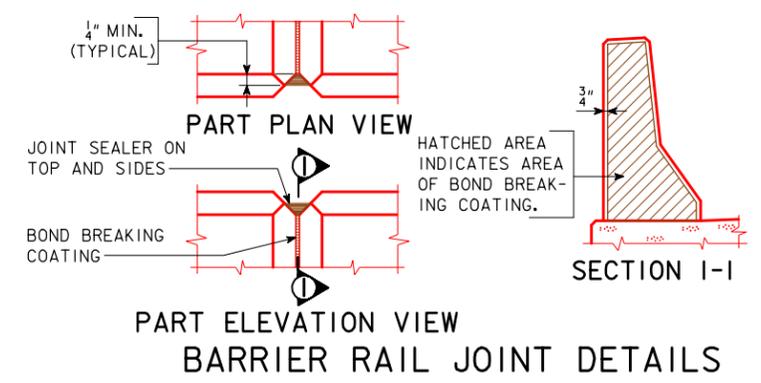
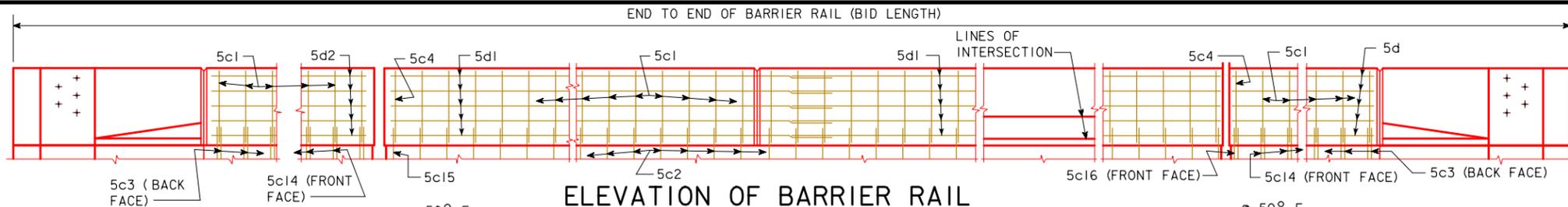


CONCRETE PLACEMENT SUMMARY		
SECTION		TOTAL
STANDARD SECTION	?? AT 0.1052 CU. YDS. PER FT.	
SPECIAL SECTION A	?? AT 0.1052 CU. YDS. PER FT.	
SPECIAL SECTION B	?? AT 0.1052 CU. YDS. PER FT.	
TOTAL (CU. YD.)		

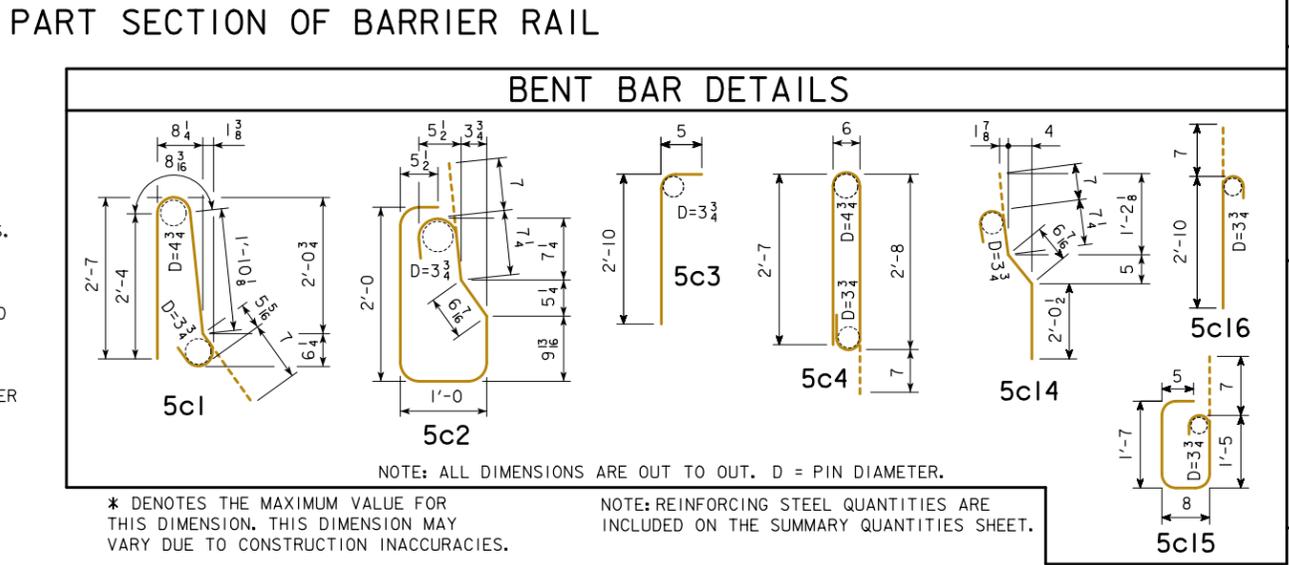
CONCRETE BARRIER RAIL QUANTITIES		
ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAILING	LIN. FT.	

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

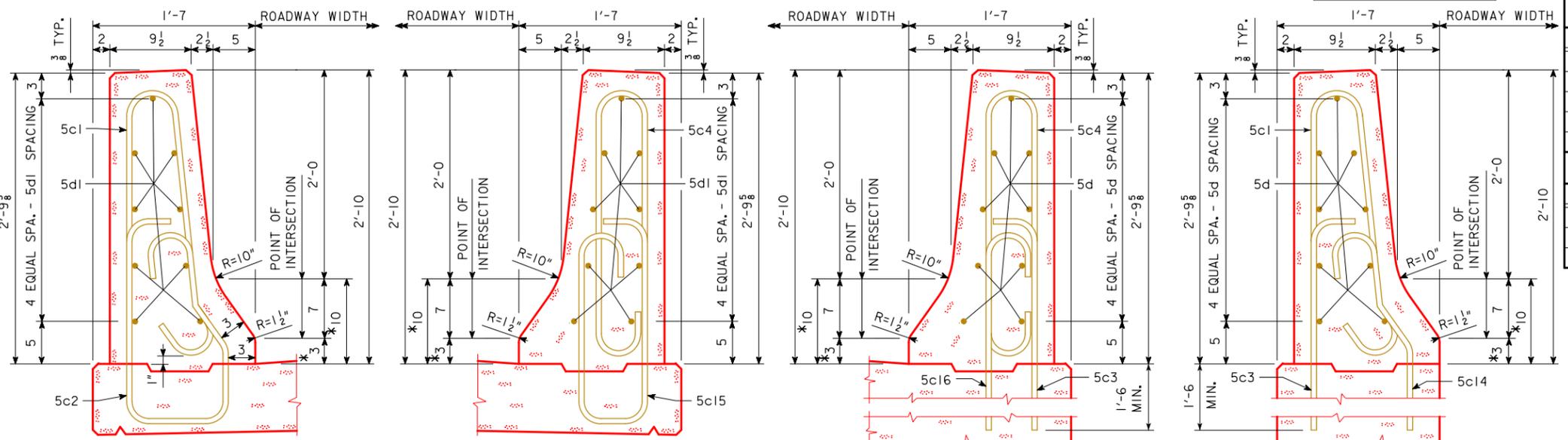
CORRECTION 04-14 - ADDED NOTE TO INCLUDE REINFORCING STEEL TO THE SUMMARY QUANTITIES SHEET. REMOVED END SECT. QTY. FROM BAR LIST & CONC. PLCMNT. SUMMARY. ENGLISHDECKRAILBRIDGES.DGN 1018A - THIS SHEET REISSUED 09-01 FOR F-SHAPE.



BARRIER RAIL NOTES:
 MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
 THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER.
 COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.
 ALL BARRIER RAIL REINFORCING STEEL IS TO BE EPOXY COATED.
 THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.
 THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED. TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL \bar{C} GRADE.
 CROSS SECTIONAL AREA OF THE STANDARD AND SPECIAL SECTIONS OF THE BARRIER RAIL = 2.84 SQUARE FEET.



EPOXY REINFORCING STEEL - TWO RAILS						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTION	5c1	VERTICAL			5'-11"	
	5c2	VERTICAL			6'-0"	
	5c4	VERTICAL		2	6'-4"	13
	5c15	VERTICAL		2	4'-8"	10
	5d1	LONGITUDINAL				
SPECIAL SECTION A	5c1	VERTICAL			5'-11"	
	5c3	VERTICAL			3'-3"	
	5c14	VERTICAL			3'-10"	
	5d2	LONGITUDINAL		18		
SPECIAL SECTION B	5c1	VERTICAL			5'-11"	
	5c3	VERTICAL			3'-3"	
	5c4	VERTICAL		2	6'-4"	13
	5c14	VERTICAL			3'-10"	
	5c16	VERTICAL		2	3'-3"	7
	5d3	LONGITUDINAL		16		
	5d4	LONGITUDINAL		2		
TOTAL WEIGHT (LBS.)						

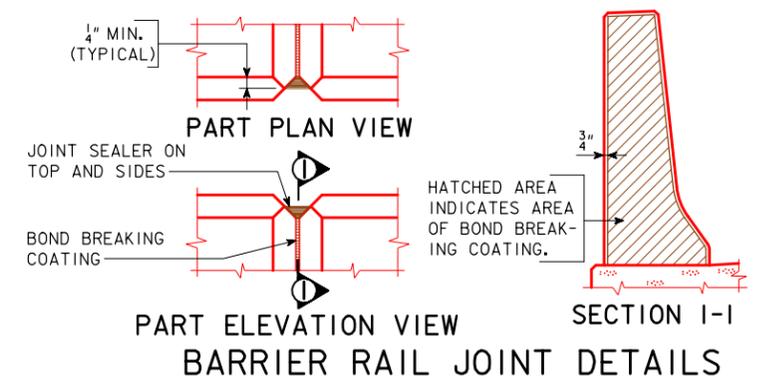
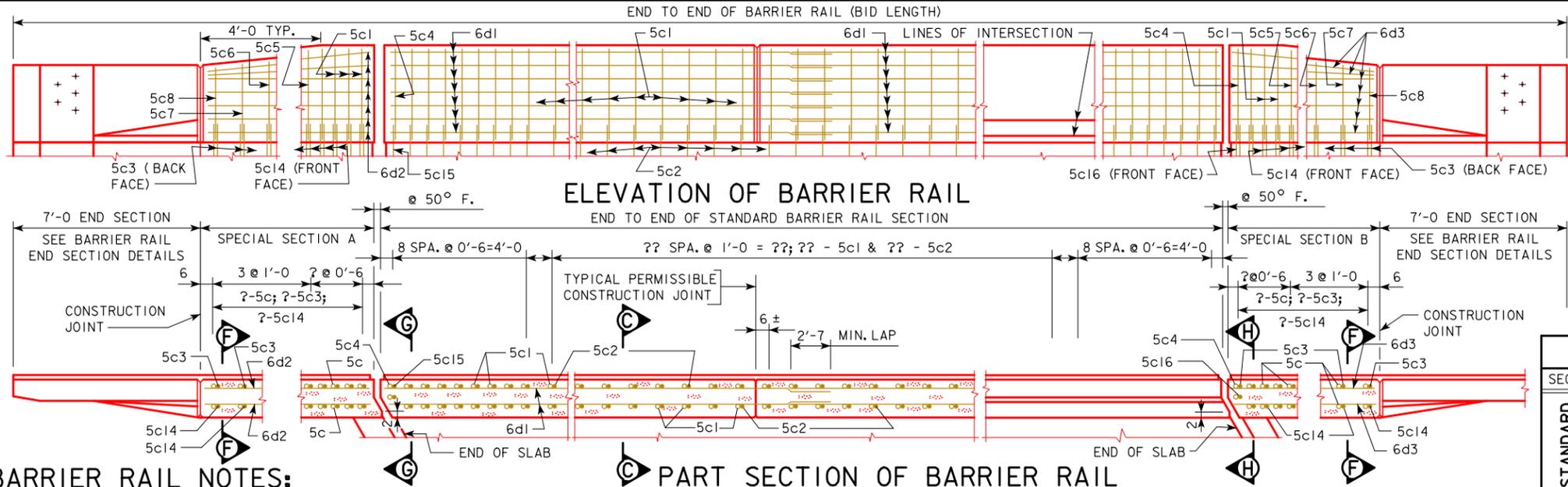


CONCRETE PLACEMENT SUMMARY		
SECTION		TOTAL
STANDARD SECTION	?? AT 0.1052 CU. YDS. PER FT.	
SPECIAL SECTION A	?? AT 0.1052 CU. YDS. PER FT.	
SPECIAL SECTION B	?? AT 0.1052 CU. YDS. PER FT.	
TOTAL (CU. YD.)		

CONCRETE BARRIER RAIL QUANTITIES		
ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAILING	LIN. FT.	

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

CORRECTION 04-14 - ADDED NOTE TO INCLUDE REINF. STEEL TO THE SUMMARY QUANTITY SHEET. REMOVED END SECT. QTY. FROM BAR LIST & CONC. PLCMNT. SUMMARY. ENGLISHDECKRAILBRIDGES.DGN 1018C - THIS SHEET ISSUED 11-07.



BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER.

COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

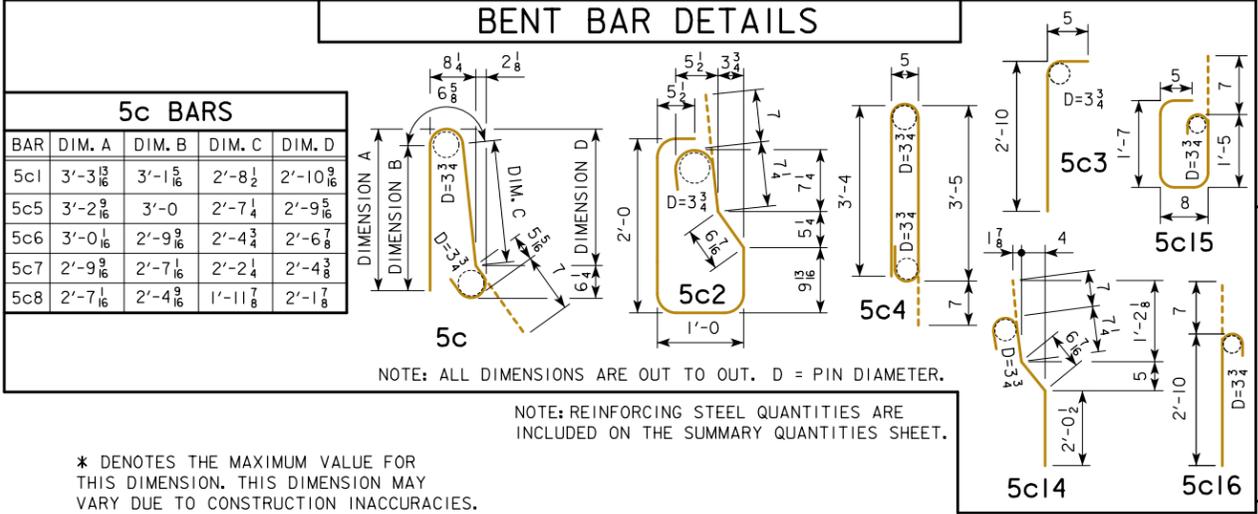
ALL BARRIER RAIL REINFORCING STEEL IS TO BE EPOXY COATED.

THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR 3'-8 CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

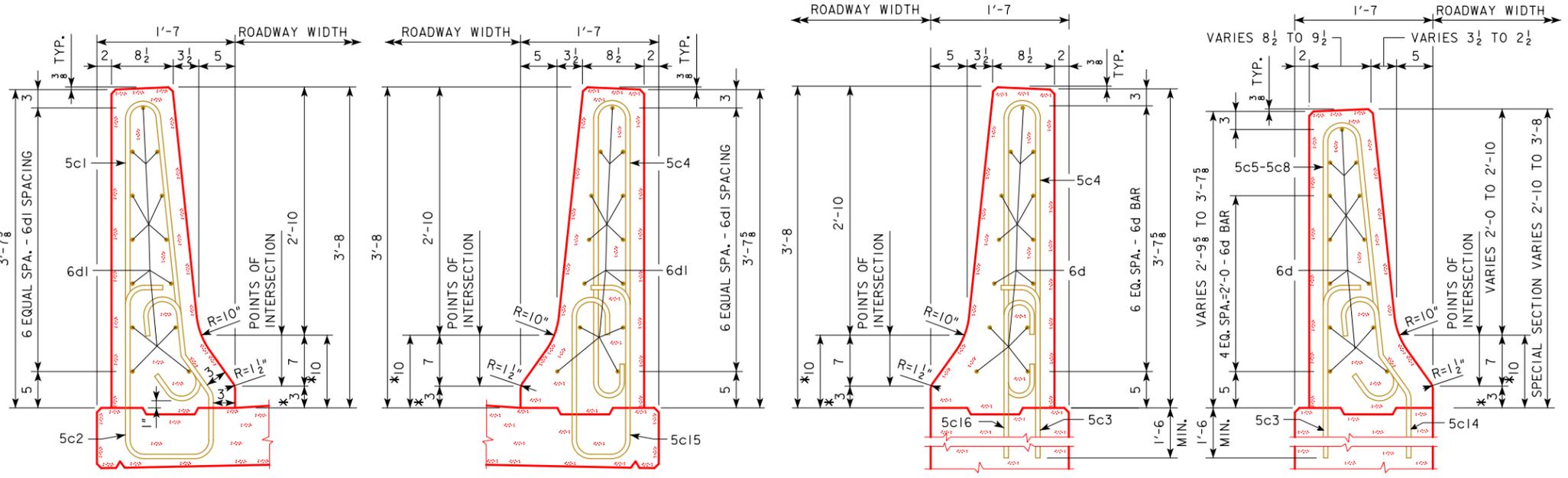
TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL \bar{C} GRADE, EXCEPT AT THE SPECIAL SECTIONS.

CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 3.46 SQUARE FEET EXCEPT THE 4'-0 SLOPED ENDS AT THE END SECTIONS.



5c BARS			
BAR	DIM. A	DIM. B	DIM. C
5c1	3'-3 13/16	3'-1 1/8	2'-8 1/2
5c5	3'-2 9/16	3'-0	2'-7 1/4
5c6	3'-0 1/16	2'-9 9/16	2'-4 3/4
5c7	2'-9 9/16	2'-7 1/8	2'-2 1/4
5c8	2'-7 1/16	2'-4 9/16	1'-11 7/8

EPOXY REINFORCING STEEL - TWO RAILS						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTION	5c1	VERTICAL	⏏		7'-5	
	5c2	VERTICAL	⏏		6'-0	
	5c4	VERTICAL	⏏	2	7'-9	16
	5c15	VERTICAL	⏏	2	4'-8	10
	6d1	LONGITUDINAL	—			
SPECIAL SECTION A	5c1	VERTICAL	⏏		7'-5	
	5c3	VERTICAL	⏏		3'-3	
	5c5	VERTICAL, TOP SLOPED ENDS	⏏	2	7'-3	15
	5c6	VERTICAL, TOP SLOPED ENDS	⏏	2	6'-10	14
	5c7	VERTICAL, TOP SLOPED ENDS	⏏	2	6'-5	13
	5c8	VERTICAL, TOP SLOPED ENDS	⏏	2	6'-0	13
SPECIAL SECTION B	5c14	VERTICAL	⏏		3'-10	
	6d2	LONGITUDINAL	—	26		
	5c1	VERTICAL	⏏		7'-5	
	5c3	VERTICAL	⏏		3'-3	
	5c4	VERTICAL	⏏	2	7'-9	16
	5c5	VERTICAL, TOP SLOPED ENDS	⏏	2	7'-3	15
	5c6	VERTICAL, TOP SLOPED ENDS	⏏	2	6'-10	14
	5c7	VERTICAL, TOP SLOPED ENDS	⏏	2	6'-5	13
	5c8	VERTICAL, TOP SLOPED ENDS	⏏	2	6'-0	13
	5c14	VERTICAL	⏏		3'-10	
	5c16	VERTICAL	⏏	2	3'-5	7
	6d3	LONGITUDINAL	—	26		
TOTAL WEIGHT (LBS.)						

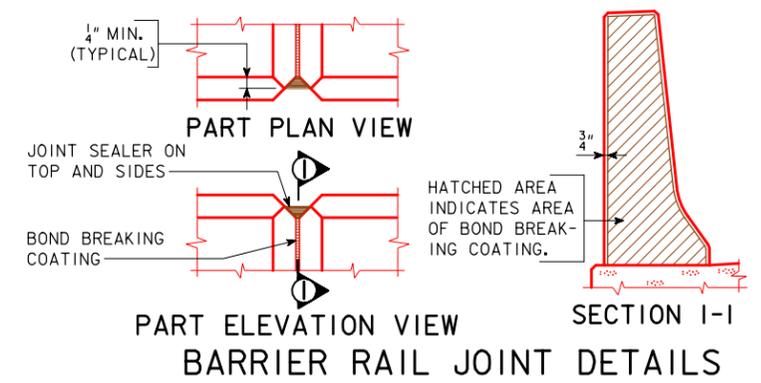
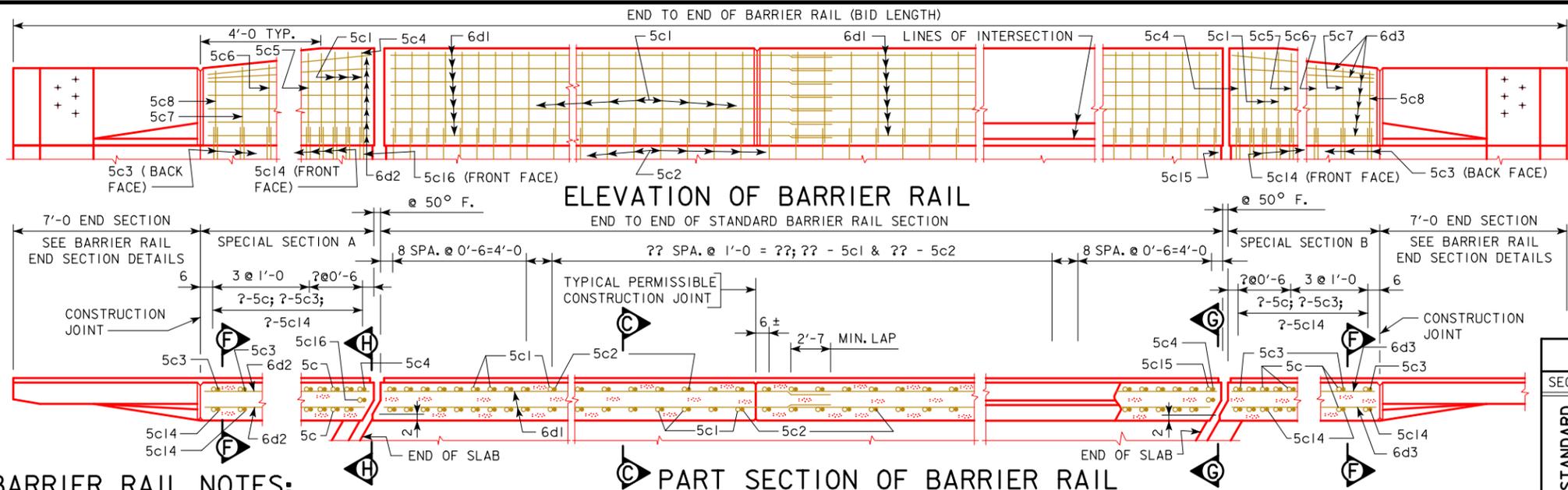


CONCRETE PLACEMENT SUMMARY	
SECTION	QUANTITY
STANDARD SECTION	? AT 0.1281 CU. YDS. PER FT.
SPECIAL SECTION A	? AT 0.1281 CU. YDS. PER FT.
SPECIAL SECTION B	? AT 0.1281 CU. YDS. PER FT.
Δ DEDUCT 0.044 CU. YD. FOR ONE SLOPED END. TOTAL (CU. YD.)	

CONCRETE BARRIER RAIL QUANTITIES		
ITEM	UNIT	TOTAL
CONCRETE BARRIER RAILING, 3'-8	LIN. FT.	

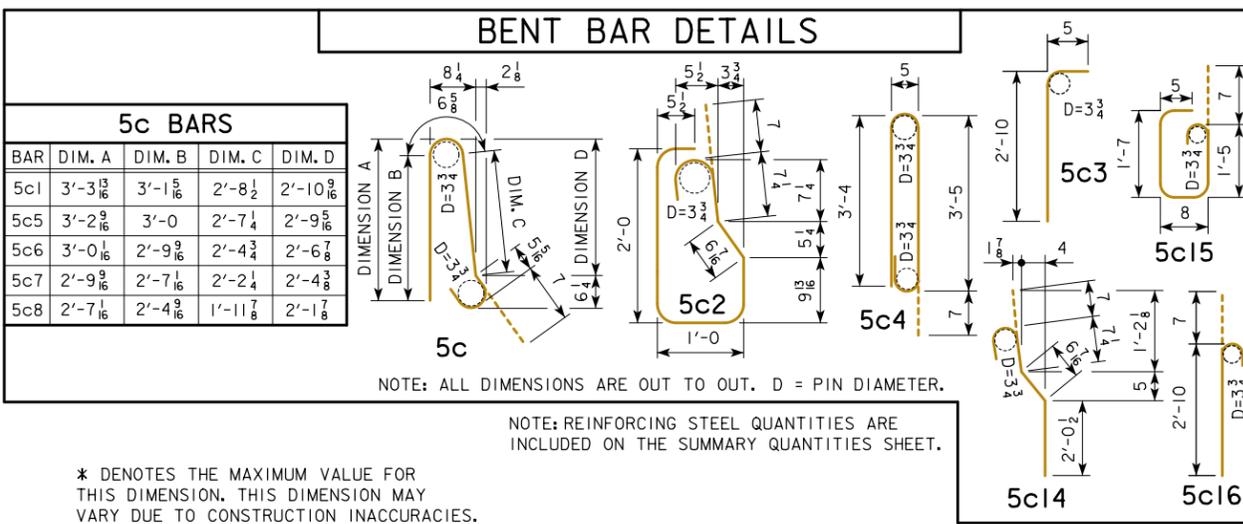
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

CORRECTION 04-14 - ADDED NOTE TO INCLUDE REINF. STEEL TO THE SUMMARY QUANTITY SHEET. REMOVED END SECT. QTY. FROM BAR LIST & CONC. PLCMNT. SUMMARY. ENGLISHDECKRAILBRIDGES.DGN 1018D - THIS SHEET ISSUED 11-07.



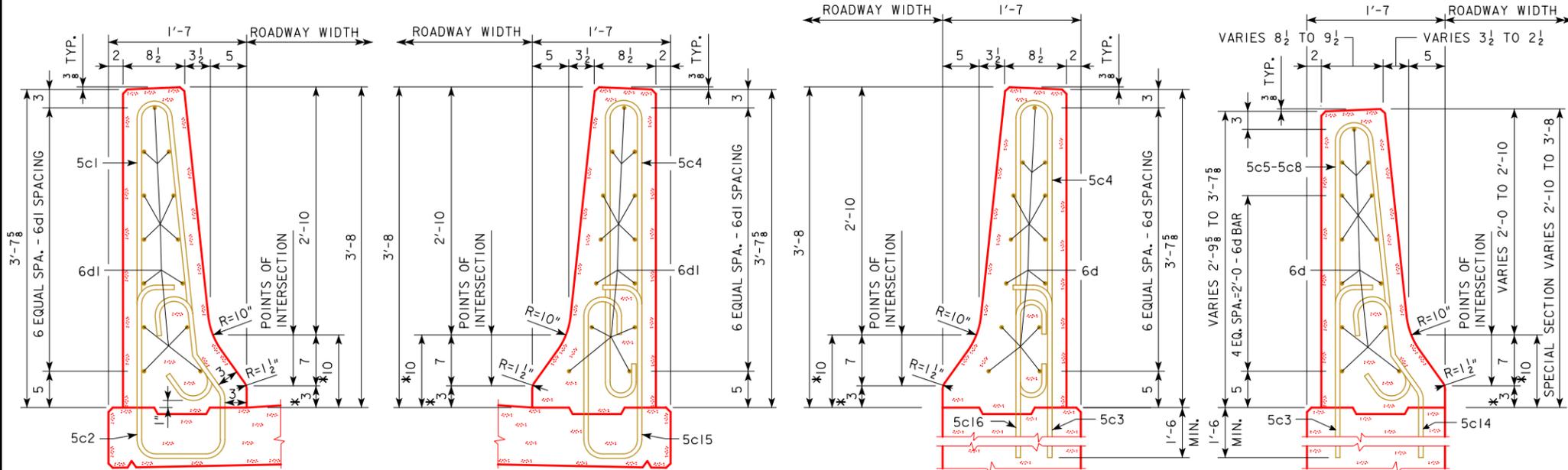
BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
 THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER. COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.
 ALL BARRIER RAIL REINFORCING STEEL IS TO BE EPOXY COATED.
 THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR 3'-8 CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.
 THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED. TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL \bar{C} GRADE, EXCEPT AT THE SPECIAL SECTIONS.
 CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 3.46 SQUARE FEET EXCEPT THE 4'-0 SLOPED ENDS AT THE END SECTIONS.



5c BARS			
BAR	DIM. A	DIM. B	DIM. C
5c1	3'-3 13/16	3'-1 5/8	2'-8 1/2
5c2	3'-2 9/16	3'-0	2'-7 1/4
5c3	3'-0 1/8	2'-9 9/16	2'-4 3/4
5c4	2'-9 9/16	2'-7 1/8	2'-2 1/4
5c5	2'-7 1/8	2'-4 3/4	2'-1 7/8
5c6	2'-7 1/8	2'-4 3/4	2'-1 7/8
5c7	2'-7 1/8	2'-4 3/4	2'-1 7/8
5c8	2'-7 1/8	2'-4 3/4	2'-1 7/8

EPOXY REINFORCING STEEL - TWO RAILS						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTION	5c1	VERTICAL	⏏		7'-5	
	5c2	VERTICAL	⏏		6'-0	
	5c4	VERTICAL	⏏	2	7'-9	16
	5c15	VERTICAL	⏏	2	4'-8	10
SPECIAL SECTION B	5c1	VERTICAL	⏏		7'-5	
	5c3	VERTICAL	⏏		3'-3	
	5c5	VERTICAL, TOP SLOPED ENDS	⏏	2	7'-3	15
	5c6	VERTICAL, TOP SLOPED ENDS	⏏	2	6'-10	14
	5c7	VERTICAL, TOP SLOPED ENDS	⏏	2	6'-5	13
	5c8	VERTICAL, TOP SLOPED ENDS	⏏	2	6'-0	13
SPECIAL SECTION A	5c14	VERTICAL	⏏		3'-10	
	6d3	LONGITUDINAL	—	26		
	5c1	VERTICAL	⏏		7'-5	
	5c3	VERTICAL	⏏		3'-3	
	5c4	VERTICAL	⏏	2	7'-9	16
	5c5	VERTICAL, TOP SLOPED ENDS	⏏	2	7'-3	15
SPECIAL SECTION A	5c6	VERTICAL, TOP SLOPED ENDS	⏏	2	6'-10	14
	5c7	VERTICAL, TOP SLOPED ENDS	⏏	2	6'-5	13
	5c8	VERTICAL, TOP SLOPED ENDS	⏏	2	6'-0	13
	5c14	VERTICAL	⏏		3'-10	
	5c16	VERTICAL	⏏	2	3'-5	7
	6d2	LONGITUDINAL	—	26		
TOTAL WEIGHT (LBS.)						

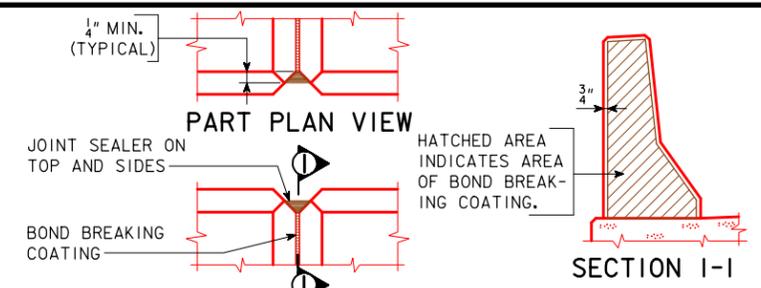
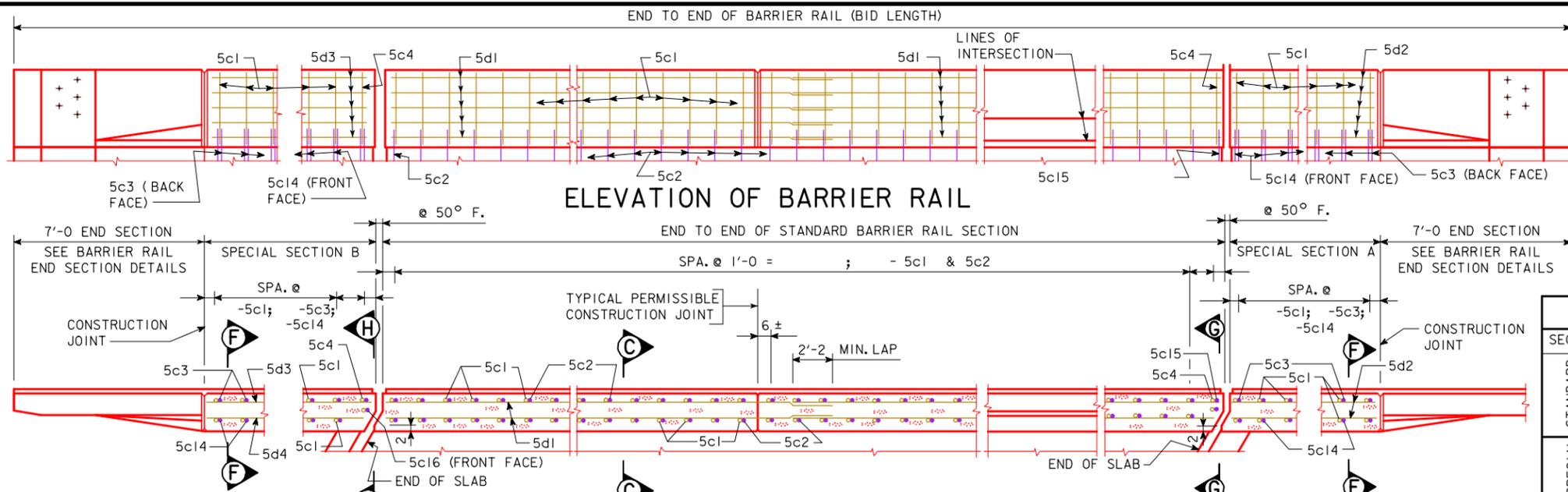


CONCRETE PLACEMENT SUMMARY	
SECTION	QUANTITY
STANDARD SECTION	? AT 0.1281 CU. YDS. PER FT.
SPECIAL SECTION A	? AT 0.1281 CU. YDS. PER FT.
SPECIAL SECTION B	? AT 0.1281 CU. YDS. PER FT.
Δ DEDUCT 0.044 CU. YD. FOR ONE SLOPED END. TOTAL (CU. YD.)	

CONCRETE BARRIER RAIL QUANTITIES		
ITEM	UNIT	TOTAL
CONCRETE BARRIER RAILING, 3'-8	LIN. FT.	

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

ENGLISHDECKRAILBRIDGES.DGN - 1018S - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 5c2, 5c3 & 5c14-16 BARS TO STAINLESS STEEL.



**PART ELEVATION VIEW
BARRIER RAIL JOINT DETAILS**

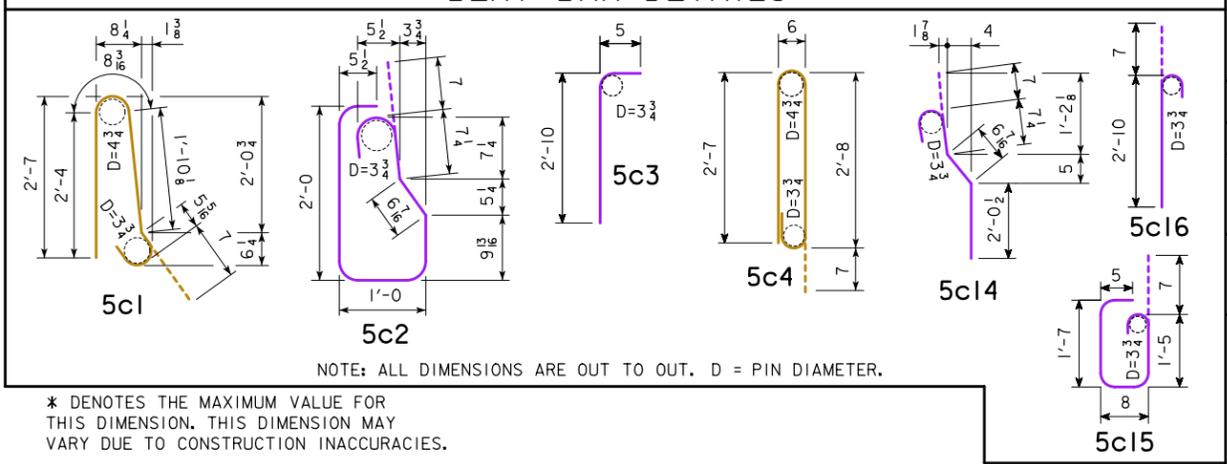
BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
 THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER.
 COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.
 ALL BARRIER RAIL REINFORCING STEEL IS TO BE EITHER EPOXY COATED OR STAINLESS STEEL AS SHOWN. THE STAINLESS STEEL REINFORCING STEEL SHALL BE DEFORMED BAR GRADE 60 MEETING THE REQUIREMENTS OF MATERIALS I.M. 452.
 THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERCT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.
 THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.
 TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL \bar{C} GRADE.
 CROSS SECTIONAL AREA OF THE STANDARD AND SPECIAL SECTIONS OF THE BARRIER RAIL = 2.84 SQUARE FEET.

PART SECTION OF BARRIER RAIL

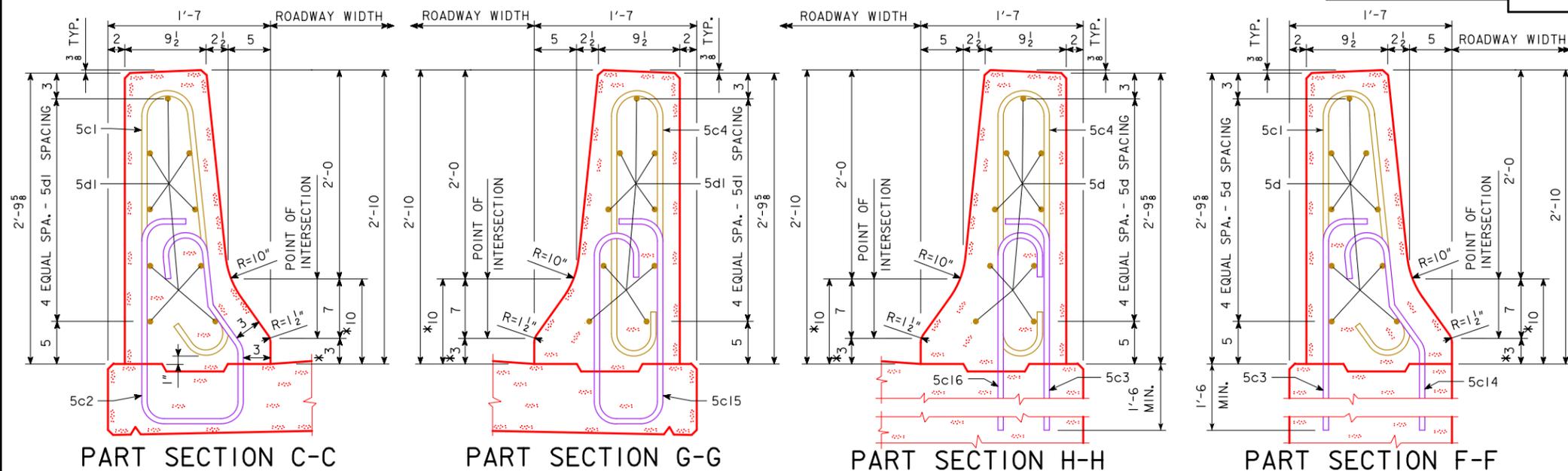
NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

BENT BAR DETAILS



EPOXY COATED REINF. STEEL - TWO RAILS						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c1	RAIL, VERTICAL			5'-11"	
	5c4	RAIL, VERTICAL		2	6'-4"	13
	5d1	RAIL, LONGITUDINAL				
SPECIAL SECT. A	5d2	RAIL, LONGITUDINAL		18		
SPECIAL SECTION B	5c1	RAIL, VERTICAL			5'-11"	
	5c4	RAIL, VERTICAL				
	5d3	RAIL, LONGITUDINAL		16		
	5d4	RAIL, LONGITUDINAL		2		
EPOXY REINF. TOTAL WEIGHT (LBS.)						

STAINLESS STEEL REINF. STEEL - TWO RAILS						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STD. SECTS.	5c2	RAIL, VERTICAL			6'-0"	
	5c15	RAIL, VERTICAL		2	4'-8"	10
SPEC. SECT. A	5c3	RAIL, VERTICAL			3'-3"	
	5c14	RAIL, VERTICAL			3'-10"	
SPECIAL SECTION B	5c3	RAIL, VERTICAL			3'-3"	
	5c14	RAIL, VERTICAL			3'-10"	
	5c16	RAIL, VERTICAL		2	3'-5"	7
STAINLESS STEEL TOTAL WEIGHT (LBS.)						

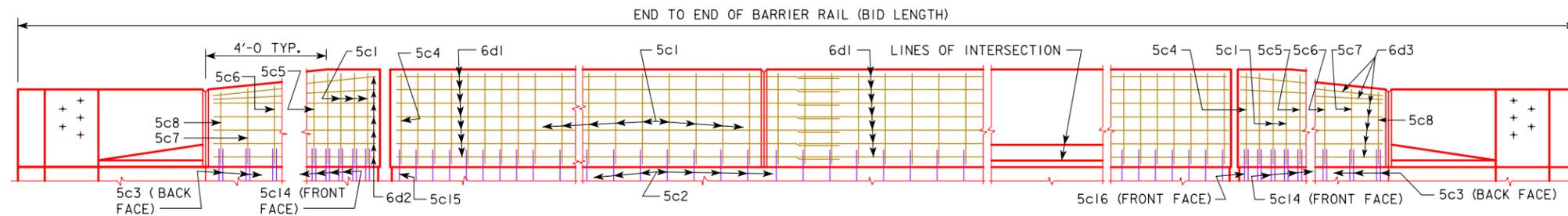


CONCRETE PLACEMENT SUMMARY		
SECTION		TOTAL
STANDARD SECTION	?? AT 0.1052 CU. YDS. PER FT.	
SPECIAL SECTION A	?? AT 0.1052 CU. YDS. PER FT.	
SPECIAL SECTION B	?? AT 0.1052 CU. YDS. PER FT.	
TOTAL (CU. YD.)		

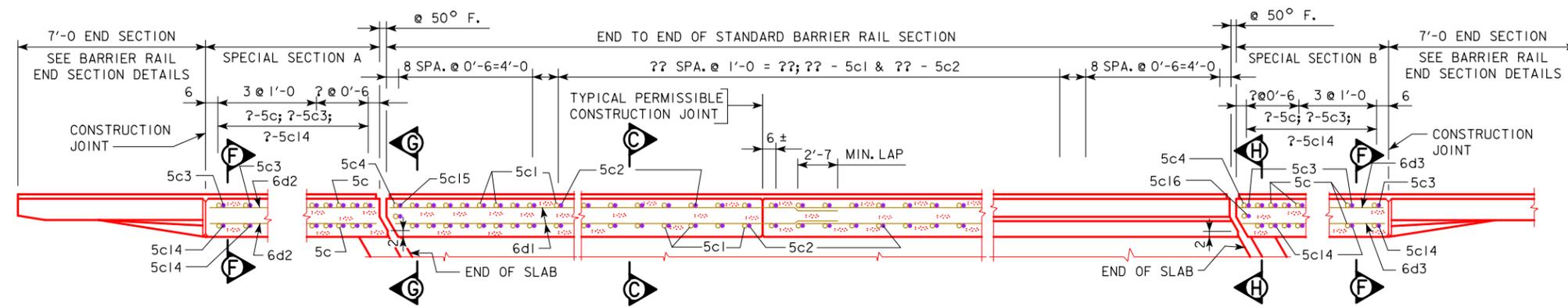
CONCRETE BARRIER RAIL QUANTITIES		
ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAILING	LIN. FT.	

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

ENGLISHDECKRAILBRIDGES.DGN - 1018SA - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 5c2, 5c3, 5c14-16 BARS TO STAINLESS STEEL.

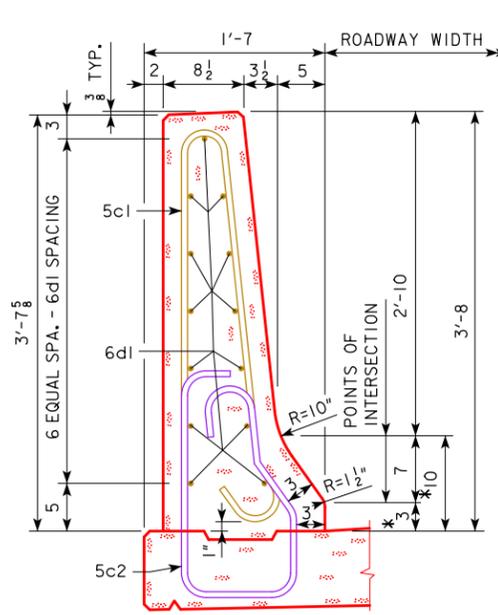


ELEVATION OF BARRIER RAIL

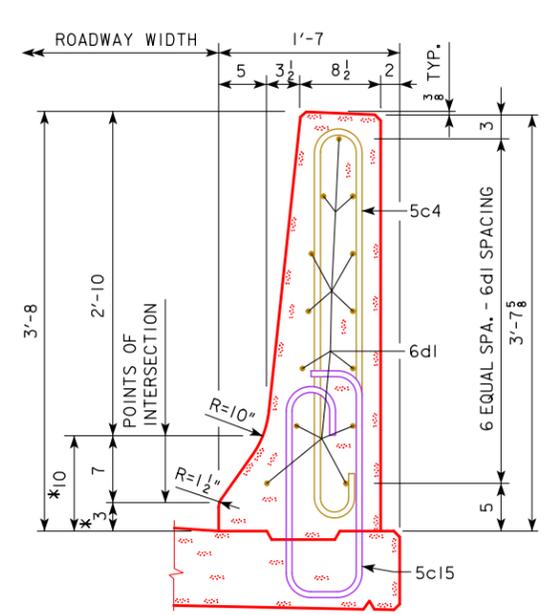


PART SECTION OF BARRIER RAIL

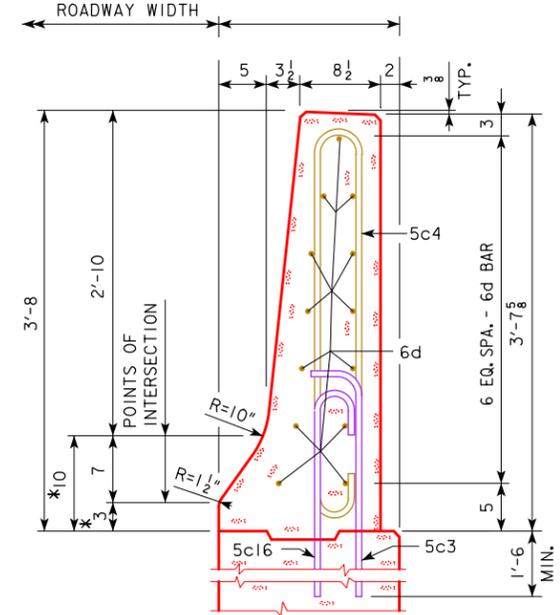
* DENOTES THE MAXIMUM VALUE FOR THIS DIMENSION. THIS DIMENSION MAY VARY DUE TO CONSTRUCTION INACCURACIES.



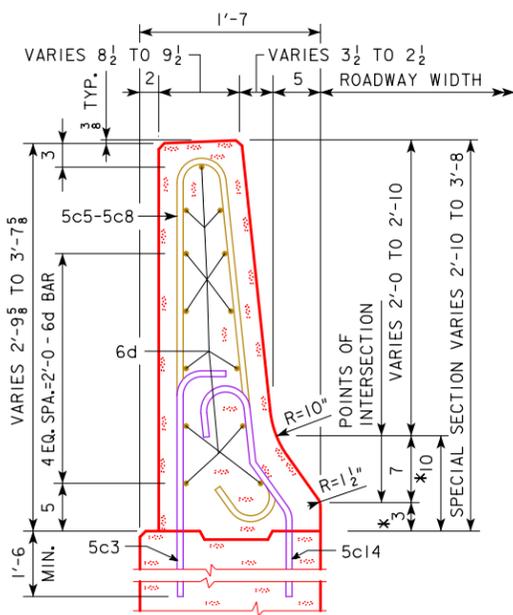
PART SECTION C-C



PART SECTION G-G



PART SECTION H-H



PART SECTION F-F

FOR BAR LISTS, NOTES AND DETAILS NOT SHOWN, SEE STANDARD SHEET 1018SC2.

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

ENGLISHDECKRAILBRIDGES.DGN - 1018SC2 - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 5c2, 5c3, 5c14-16 BARS TO STAINLESS STEEL.

BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER.

COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

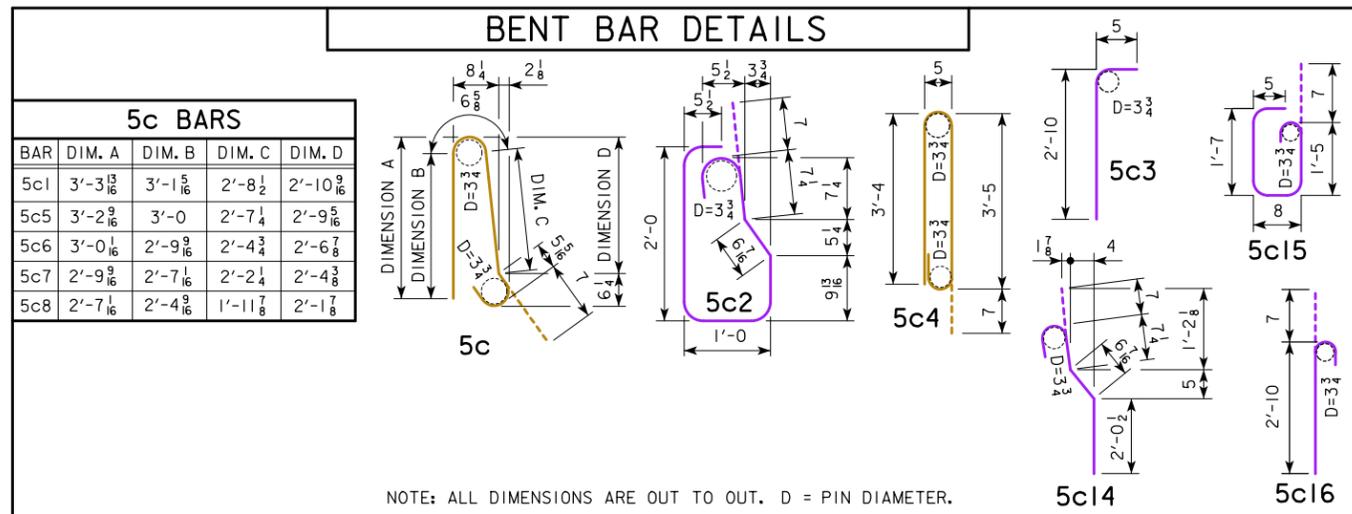
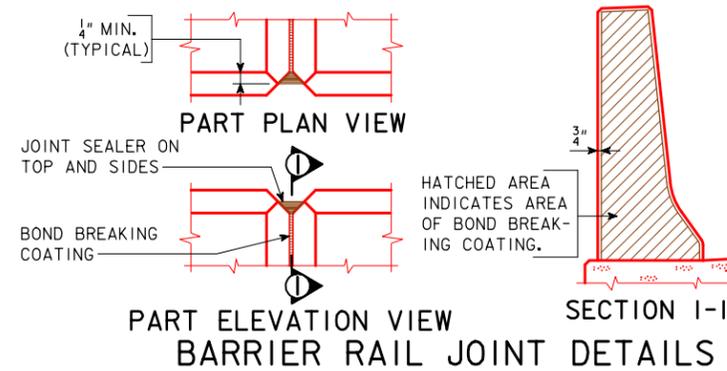
ALL BARRIER RAIL REINFORCING STEEL IS TO BE EITHER EPOXY COATED OR STAINLESS STEEL AS SHOWN. THE STAINLESS STEEL REINFORCING STEEL SHALL BE DEFORMED BAR GRADE 60 MEETING THE REQUIREMENTS OF MATERIALS I.M. 452.

THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR 3'-8 CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL \bar{C} GRADE, EXCEPT AT THE SPECIAL SECTIONS.

CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 3.46 SQUARE FEET EXCEPT THE 4'-0 SLOPED ENDS AT THE SPECIAL SECTIONS.



CONCRETE PLACEMENT SUMMARY		
SECTION		QUANTITY
Δ STANDARD SECTION	? AT 0.1281 CU. YDS. PER FT.	
Δ SPECIAL SECTION A	? AT 0.1281 CU. YDS. PER FT.	
SPECIAL SECTION B	? AT 0.1281 CU. YDS. PER FT.	
TOTAL (CU. YD.)		

Δ DEDUCT 0.044 CU. YD. FOR ONE SLOPED END.

CONCRETE BARRIER RAIL QUANTITIES		
ITEM	UNIT	TOTAL
CONCRETE BARRIER RAILING, 3'-8	LIN. FT.	

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

EPOXY COATED REINF. STEEL - TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c1	RAIL, VERTICAL	⏏		7'-5	
	5c4	RAIL, VERTICAL	⏏	2	7'-9	16
	6d1	RAIL, LONGITUDINAL	—			
SPECIAL SECTION A	5c1	RAIL, VERTICAL	⏏		7'-5	
	5c5	RAIL, VERTICAL, TOP SLOPED ENDS	⏏	2	7'-3	15
	5c6	RAIL, VERTICAL, TOP SLOPED ENDS	⏏	2	6'-10	14
	5c7	RAIL, VERTICAL, TOP SLOPED ENDS	⏏	2	6'-5	13
	5c8	RAIL, VERTICAL, TOP SLOPED ENDS	⏏	2	6'-0	13
	6d2	RAIL, LONGITUDINAL	—		26	
SPECIAL SECTION B	5c1	RAIL, VERTICAL	⏏		7'-5	
	5c4	RAIL, VERTICAL	⏏	2	7'-9	16
	5c5	RAIL, VERTICAL, TOP SLOPED ENDS	⏏	2	7'-3	15
	5c6	RAIL, VERTICAL, TOP SLOPED ENDS	⏏	2	6'-10	14
	5c7	RAIL, VERTICAL, TOP SLOPED ENDS	⏏	2	6'-5	13
	5c8	RAIL, VERTICAL, TOP SLOPED ENDS	⏏	2	6'-0	13
	6d3	RAIL, LONGITUDINAL	—		26	
	EPOXY STEEL TOTAL WEIGHT (LBS.)					

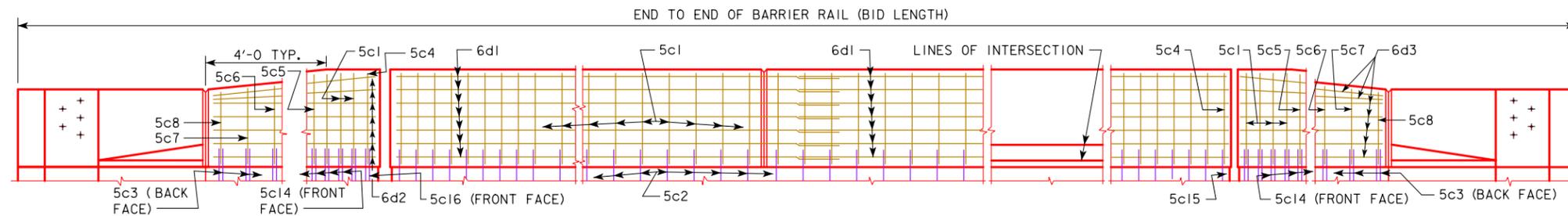
STAINLESS STEEL REINF. STEEL - TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c2	RAIL, VERTICAL	⏏		6'-0	
	5c15	RAIL, VERTICAL	⏏	2	4'-8	10
SPECIAL SECT. A SECTIONS	5c3	RAIL, VERTICAL	⏏		3'-3	
	5c14	RAIL, VERTICAL	⏏		3'-10	
SPECIAL SECTION B	5c3	RAIL, VERTICAL	⏏		3'-3	
	5c14	RAIL, VERTICAL	⏏		3'-10	
	5c16	RAIL, VERTICAL	⏏	2	3'-5	7
STAINLESS STEEL TOTAL WEIGHT (LBS.)						

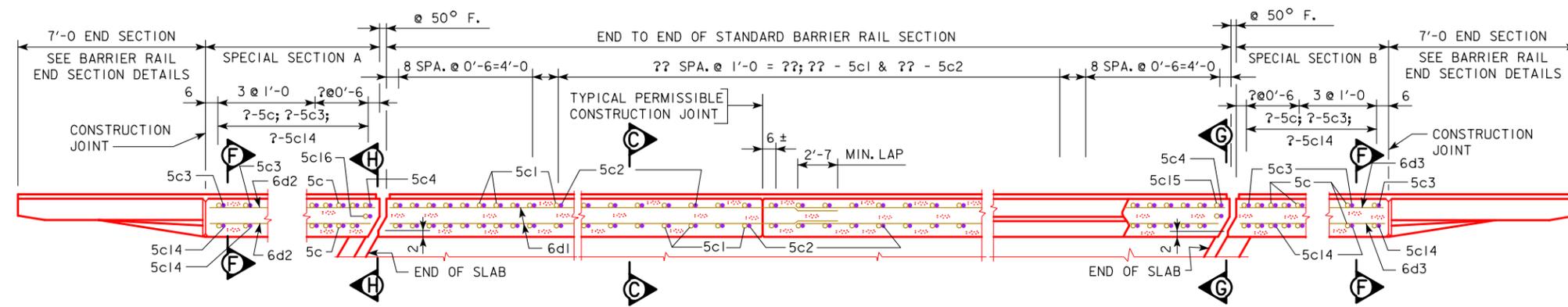
FOR DETAILS AND SECTION LOCATIONS NOT SHOWN, SEE STANDARD SHEET 1018SC1.

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

ENGLISHDECKRAILBRIDGES.DGN 1018SD1 - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 5c2, 5c3, 5c14-16 BARS TO STAINLESS STEEL.

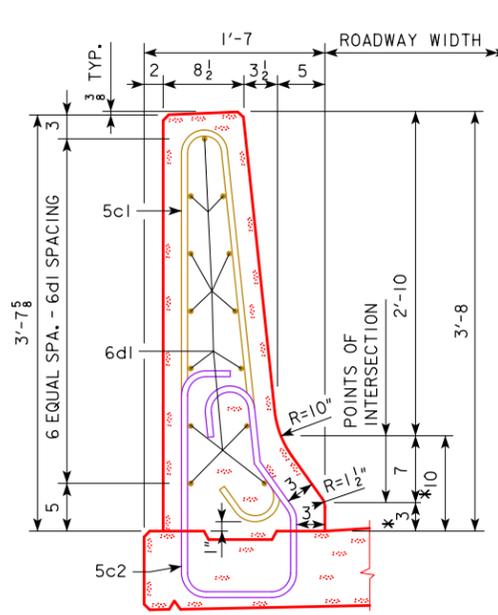


ELEVATION OF BARRIER RAIL

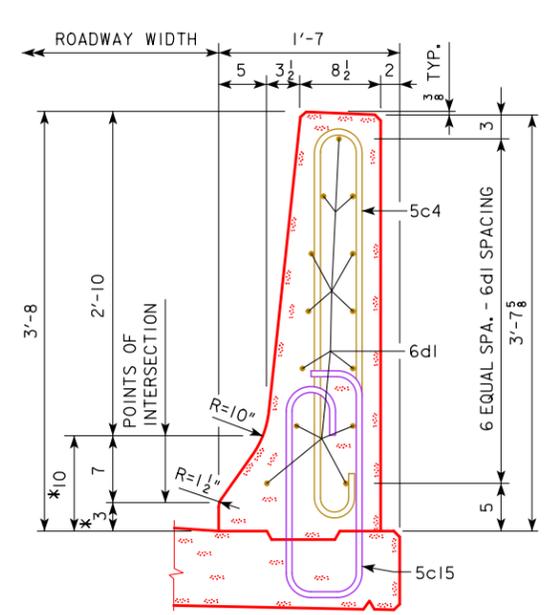


PART SECTION OF BARRIER RAIL

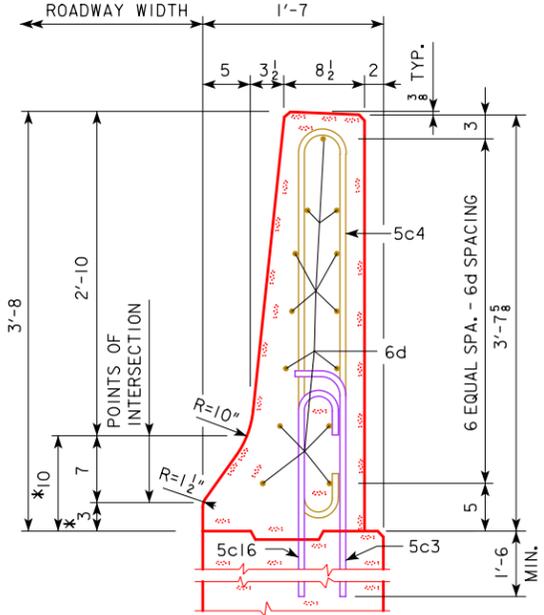
* DENOTES THE MAXIMUM VALUE FOR THIS DIMENSION. THIS DIMENSION MAY VARY DUE TO CONSTRUCTION INACCURACIES.



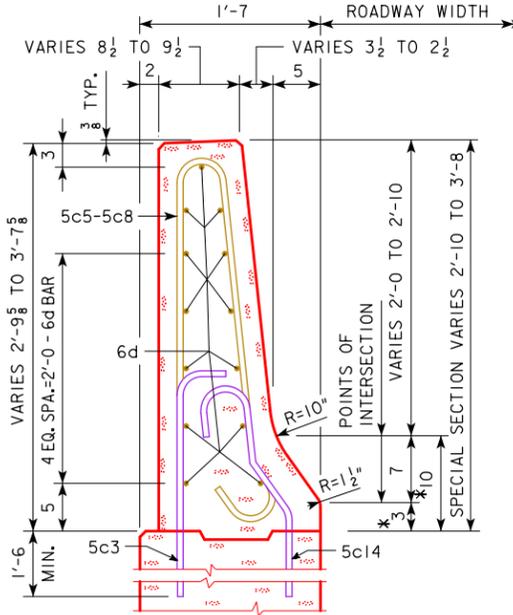
PART SECTION C-C



PART SECTION G-G



PART SECTION H-H



PART SECTION F-F

FOR BAR LISTS, NOTES AND DETAILS NOT SHOWN, SEE STANDARD SHEET 1018SD2.

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

ENGLISHDECKRAILBRIDGES.DGN - 1018SD2 - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 5c2, 5c3, 5c14-16 BARS TO STAINLESS STEEL.

BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER.

COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

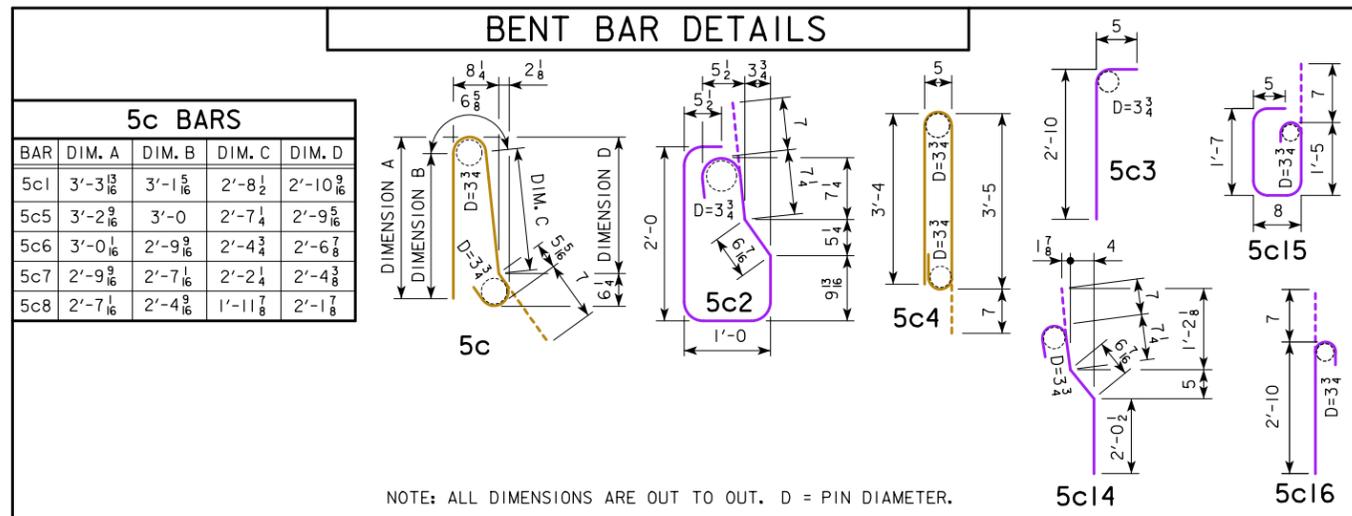
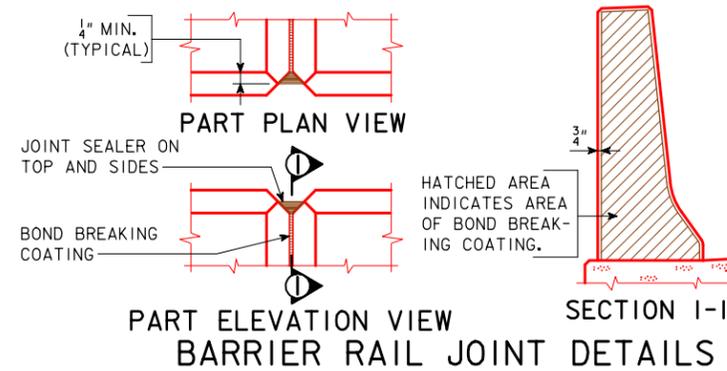
ALL BARRIER RAIL REINFORCING STEEL IS TO BE EITHER EPOXY COATED OR STAINLESS STEEL AS SHOWN. THE STAINLESS STEEL REINFORCING STEEL SHALL BE DEFORMED BAR GRADE 60 MEETING THE REQUIREMENTS OF MATERIALS I.M. 452.

THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR 3'-8 CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL \bar{C} GRADE, EXCEPT AT THE SPECIAL SECTIONS.

CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 3.46 SQUARE FEET EXCEPT THE 4'-0 SLOPED ENDS AT THE SPECIAL SECTIONS.



CONCRETE PLACEMENT SUMMARY		
SECTION		QUANTITY
Δ STANDARD SECTION	? AT 0.1281 CU. YDS. PER FT.	
Δ SPECIAL SECTION A	? AT 0.1281 CU. YDS. PER FT.	
SPECIAL SECTION B	? AT 0.1281 CU. YDS. PER FT.	
TOTAL (CU. YD.)		

Δ DEDUCT 0.044 CU. YD. FOR ONE SLOPED END.

CONCRETE BARRIER RAIL QUANTITIES		
ITEM	UNIT	TOTAL
CONCRETE BARRIER RAILING, 3'-8	LIN. FT.	

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

EPOXY COATED REINF. STEEL - TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c1	RAIL, VERTICAL	⏏		7'-5	
	5c4	RAIL, VERTICAL	⏏	2	7'-9	16
	6d1	RAIL, LONGITUDINAL	—			
SPECIAL SECTION A	5c1	RAIL, VERTICAL	⏏		7'-5	
	5c4	RAIL, VERTICAL	⏏	2	7'-9	16
	5c5	RAIL, VERTICAL, TOP SLOPED ENDS	⏏	2	7'-3	15
	5c6	RAIL, VERTICAL, TOP SLOPED ENDS	⏏	2	6'-10	14
	5c7	RAIL, VERTICAL, TOP SLOPED ENDS	⏏	2	6'-5	13
	5c8	RAIL, VERTICAL, TOP SLOPED ENDS	⏏	2	6'-0	13
	6d3	RAIL, LONGITUDINAL	—	26		
SPECIAL SECTION B	5c1	RAIL, VERTICAL	⏏		7'-5	
	5c5	RAIL, VERTICAL, TOP SLOPED ENDS	⏏	2	7'-3	
	5c6	RAIL, VERTICAL, TOP SLOPED ENDS	⏏	2	6'-10	
	5c7	RAIL, VERTICAL, TOP SLOPED ENDS	⏏	2	6'-5	
	5c8	RAIL, VERTICAL, TOP SLOPED ENDS	⏏	2	6'-0	
	6d2	RAIL, LONGITUDINAL	—	26		
EPOXY STEEL TOTAL WEIGHT (LBS.)						

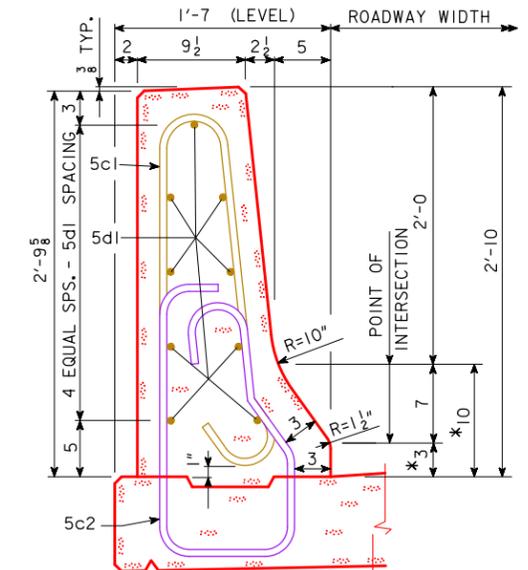
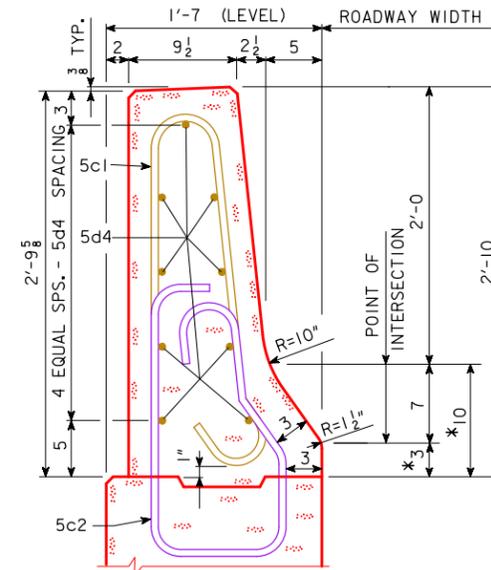
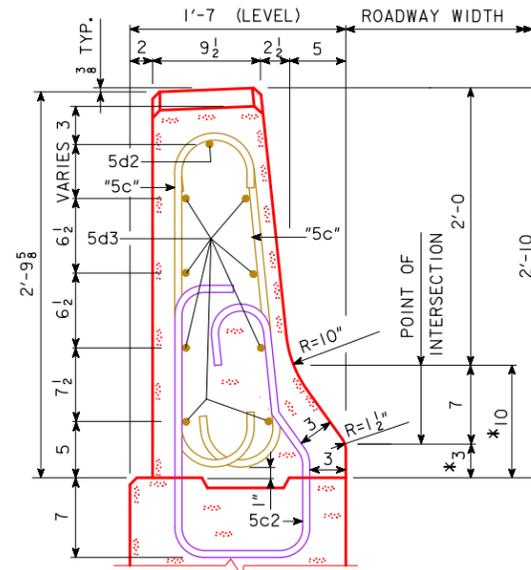
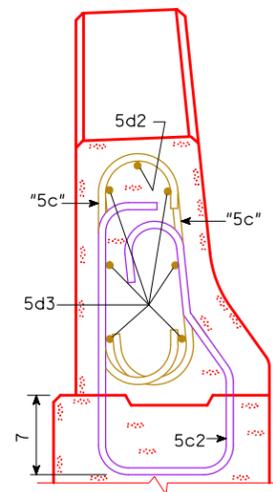
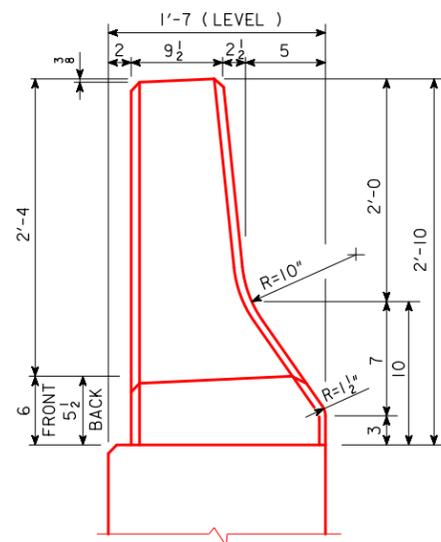
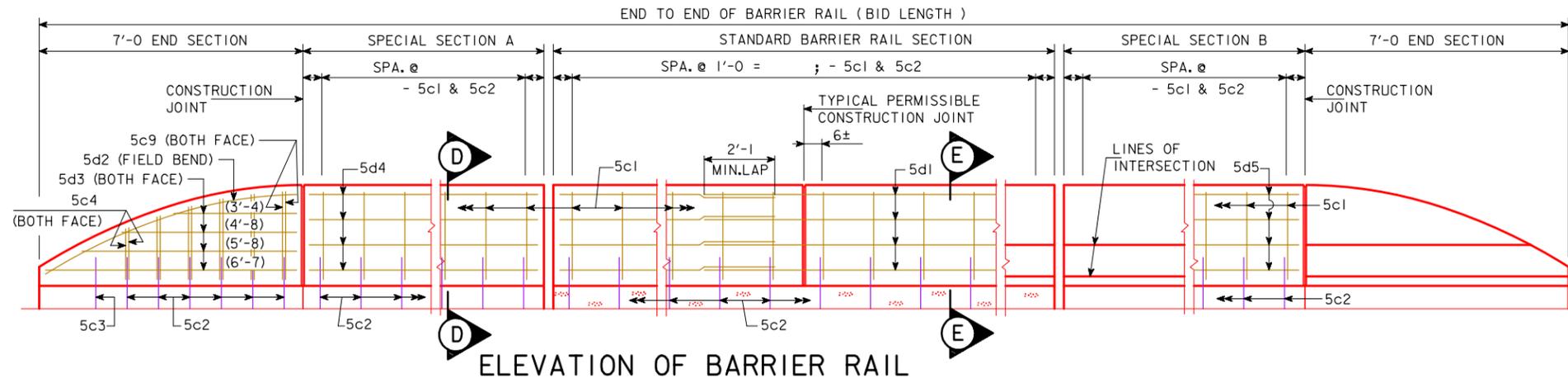
STAINLESS STEEL REINF. STEEL - TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c2	RAIL, VERTICAL	⏏		6'-0	
	5c15	RAIL, VERTICAL	⏏	2	4'-8	10
SPECIAL SECT. A	5c3	RAIL, VERTICAL	⏏		3'-3	
	5c14	RAIL, VERTICAL	⏏		3'-10	
	5c16	RAIL, VERTICAL	⏏	2	3'-5	7
SPECIAL SECTION B	5c3	RAIL, VERTICAL	⏏		3'-3	
	5c14	RAIL, VERTICAL	⏏		3'-10	
STAINLESS STEEL TOTAL WEIGHT (LBS.)						

FOR DETAILS AND SECTION LOCATIONS NOT SHOWN, SEE STANDARD SHEET 1018SD1.

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

ENGLISHDECKRAILBRIDGES.DGN 1019SB - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 5c2 & 5c3 BARS TO STAINLESS STEEL.

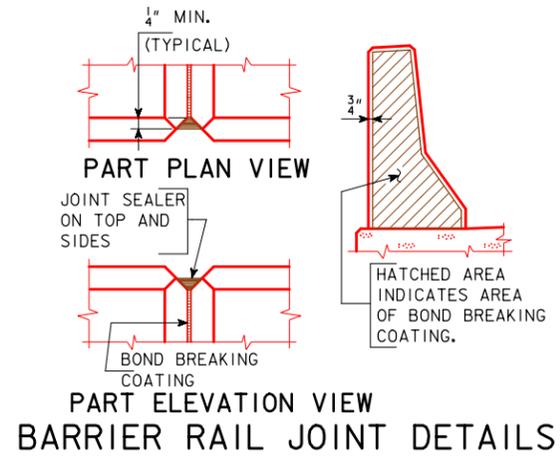
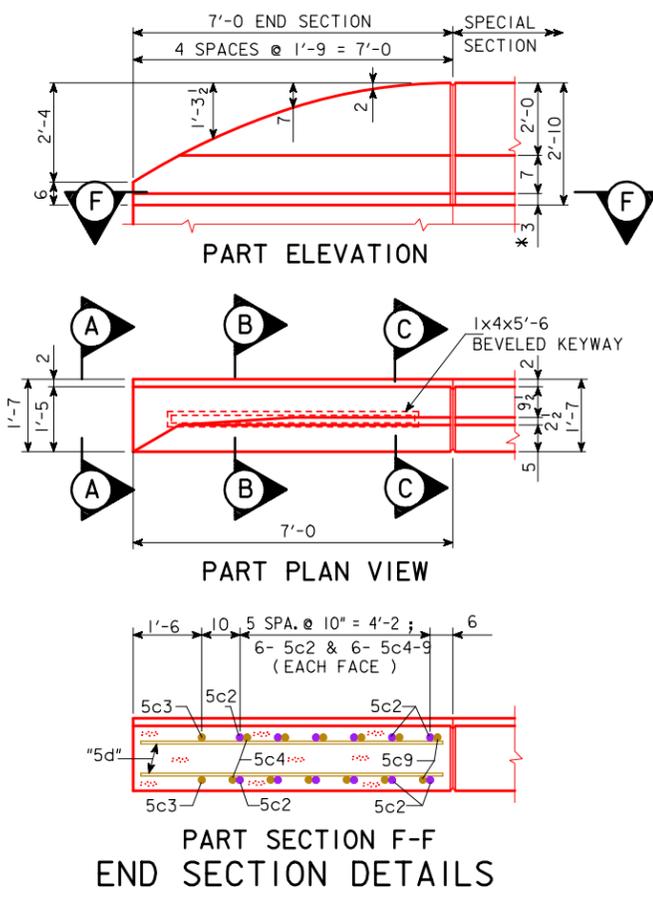


* DENOTES THE MAXIMUM VALUE FOR THIS DIMENSION. THIS DIMENSION MAY VARY DUE TO CONSTRUCTION INACCURACIES.

FOR BAR LISTS, NOTES AND DETAILS NOT SHOWN, SEE STANDARD SHEET 1019SB2.

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

ENGLISHDECKRAILBRIDGES.DGN 1019SB2 - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 5c2 & 5c3 BARS TO STAINLESS STEEL.



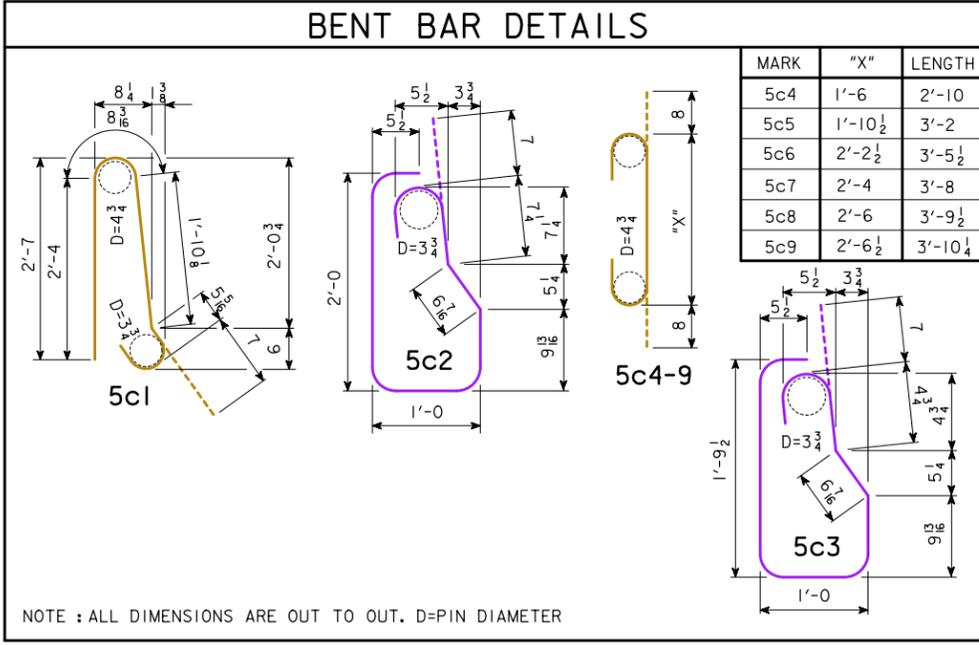
EPOXY COATED REINF. STEEL - TWO RAILS							
SECTION	MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c1	5	RAIL, VERTICAL			5'-9	
	5d1	5	RAIL, LONGITUDINAL				
4 END SECTIONS	5c4-9	5	RAIL, VERTICAL		48	VARIES	176
	5d2	5	RAIL, LONGITUDINAL		4	7'-0	31
	5d3	5	RAIL, LONGITUDINAL		32	VARIES	170
SPECIAL SECTIONS	5c1	5	RAIL, VERTICAL			5'-9	
	5d4	5	RAIL, LONGIT. - SPECIAL SECTION A		18		
	5d5	5	RAIL, LONGIT. - SPECIAL SECTION B		18		
EPOXY STEEL TOTAL (LBS.)							

STAINLESS STEEL REINF. STEEL - TWO RAILS							
SECTION	MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STD SECTS.	5c2	5	RAIL TO SLAB			6'-0	
4 END SECTS.	5c2	5	RAIL TO ABUTMENT		24	6'-0	150
	5c3	5	RAIL TO ABUTMENT		4	5'-7	24
SPEC. SECTS.	5c2	5	RAIL TO ABUTMENT			6'-0	
STAINLESS STEEL TOTAL (LBS.)							

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

BARRIER RAIL NOTES :

TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL \bar{C} GRADE. MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN. ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A $\frac{3}{4}$ " DRESSED AND BEVELED STRIP. ALL BARRIER RAIL REINFORCING STEEL IS TO BE EITHER EPOXY COATED OR STAINLESS STEEL AS SHOWN. THE STAINLESS STEEL REINFORCING STEEL SHALL BE DEFORMED BAR GRADE 60 MEETING THE REQUIREMENTS OF MATERIALS I.M. 452. THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED. COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION. THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20'-0 FEET. CONSTRUCTION JOINT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER. THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. THE PRICE BID FOR "CONCRETE BARRIER RAILING" SHALL BE FULL COMPENSATION FOR FURNISHING ALL EQUIPMENT, LABOR AND MATERIAL, EXCEPT REINFORCING STEEL, REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT STANDARD SPECIFICATIONS. CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 2.83 SQUARE FEET.



NOTE : ALL DIMENSIONS ARE OUT TO OUT. D=PIN DIAMETER

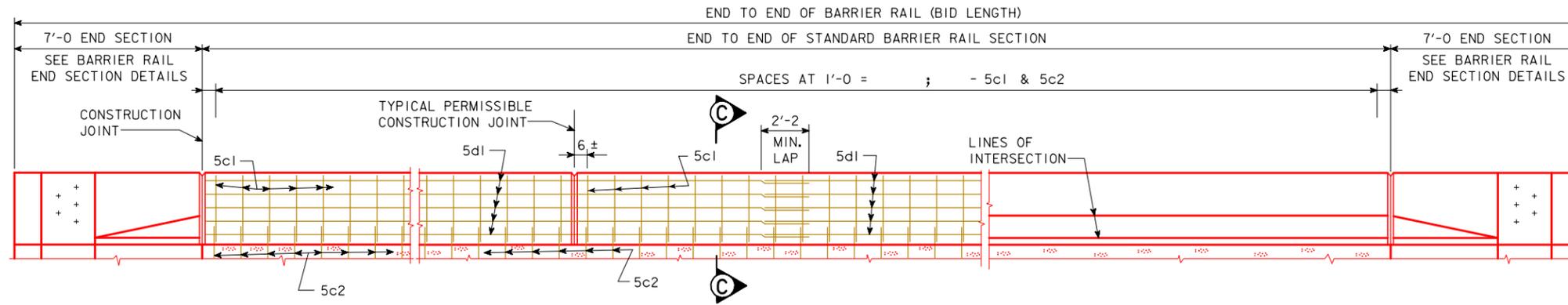
CONCRETE PLACEMENT SUMMARY	
SECTION	TOTAL
STANDARD SECTION @ 0.1048 CU. YD PER FT.	
SPECIAL SECTION A @ 0.1048 CU. YD PER FT.	
SPECIAL SECTION B @ 0.1048 CU. YD PER FT.	
TOTAL (CU. YD)	

CONCRETE BARRIER RAIL QUANTITIES		
ITEM	UNITS	QUANTITY
CONCRETE BARRIER RAILING	LF	

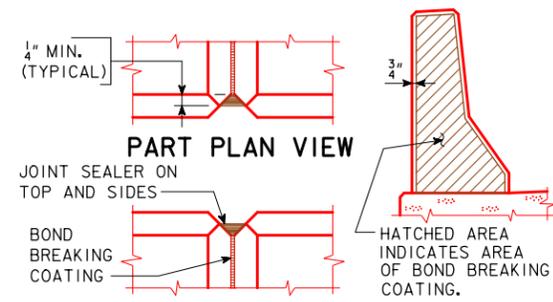
FOR DETAILS AND SECTION LOCATIONS NOT SHOWN, SEE STANDARD SHEET 1019SBI.

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

CORRECTION 04-14 - ADDED NOTE TO INCLUDE REINF. STEEL TO THE SUMMARY QUANTITY SHEET. REMOVED END SECT. QTY. FROM BAR LIST & CONC. PLCMNT. SUMMARY. ENGLISHDECKRAILBRIDGES.DGN 1020A THIS SHEET ISSUED 02-00



ELEVATION OF BARRIER RAIL LAYOUT



BARRIER RAIL JOINT DETAILS

BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER. COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

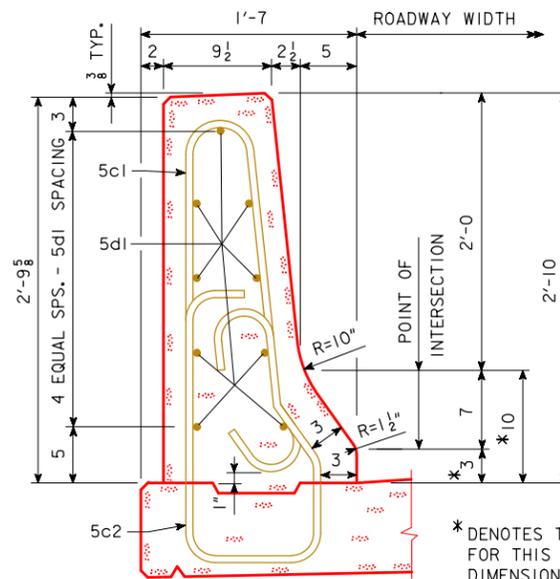
ALL BARRIER RAIL REINFORCING STEEL IS TO BE EPOXY COATED.

THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL ϕ GRADE.

CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 2.84 SQUARE FEET.



PART SECTION C-C

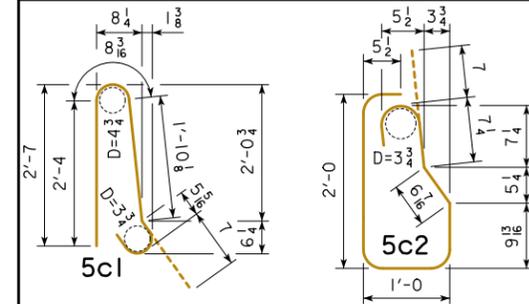
* DENOTES THE MAXIMUM VALUE FOR THIS DIMENSION. THIS DIMENSION MAY VARY DUE TO CONSTRUCTION INACCURACIES.

EPOXY REINF. STEEL-TWO BARRIER RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTION	5c1	VERTICAL			5'-11	
	5c2	VERTICAL			6'-0	
	5d1	LONGITUDINAL				
TOTAL (LBS)						

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

CONCRETE PLACEMENT SUMMARY

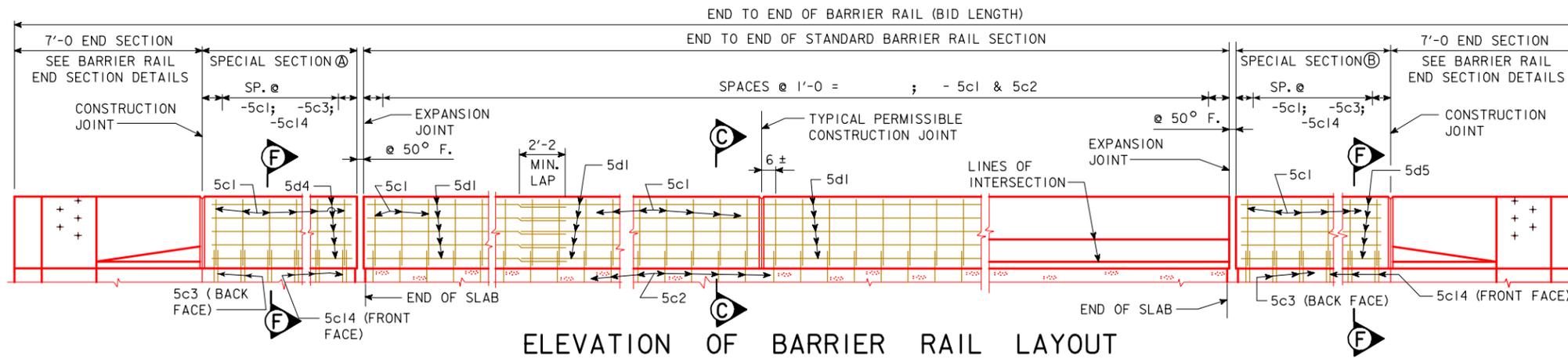
SECTION	TOTAL
STANDARD SECTION @ 0.1052 CU.YD. PER FT.	
TOTAL (CU. YD.)	

CONCRETE BARRIER RAIL QUANTITIES

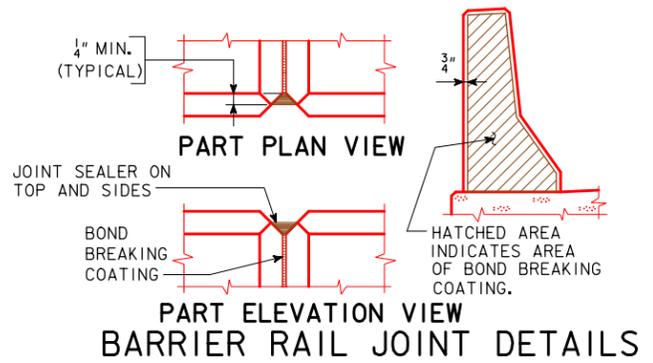
ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAILING	L.F.	

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

CORRECTION 04-14 - ADDED NOTE TO INCLUDE REINF. STEEL TO THE SUMMARY QUANTITY SHEET. REMOVED END SECT. QTY. FROM BAR LIST & CONC. PLCMNT. SUMMARY. ENGLISHDECKRAILBRIDGES.DGN 1020B - THIS SHEET ISSUED 02-00



ELEVATION OF BARRIER RAIL LAYOUT

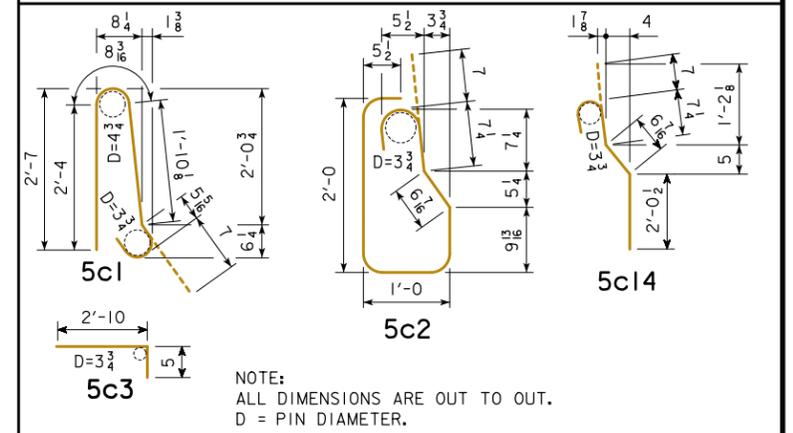


EPOXY REINF. STEEL-TWO BARRIER RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTION	5c1	VERTICAL	U		5'-11	
	5c2	VERTICAL	U		6'-0	
	5d1	LONGITUDINAL	—			
SPECIAL SECTIONS (ALL REINFORCING REQUIRED)	5c1	VERTICAL	U		5'-1	
	5c3	VERTICAL	U		3'-3	
	5c14	VERTICAL	U		3'-10	
	5d4	LONGIT.- SPECIAL SECTIONS (A)	—	18		
	5d5	LONGIT.- SPECIAL SECTIONS (B)	—	18		
TOTAL (LBS.)						

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

BENT BAR DETAILS



BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER. COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

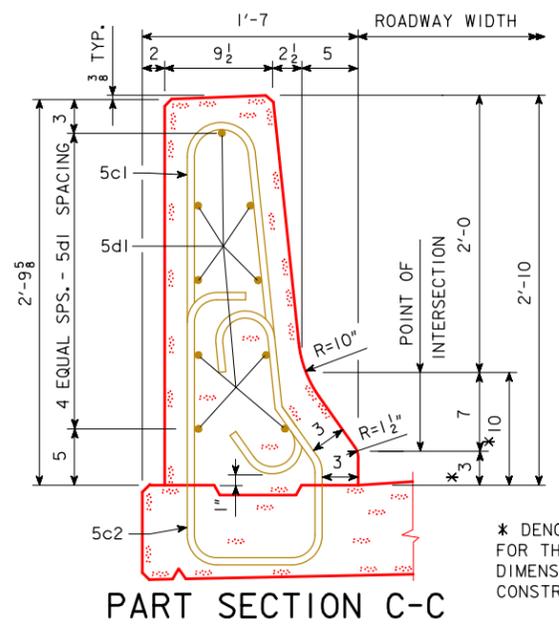
ALL BARRIER RAIL REINFORCING STEEL IS TO BE EPOXY COATED.

THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

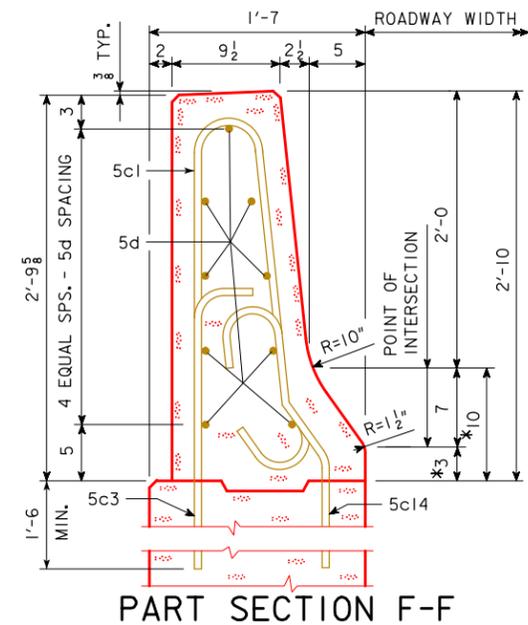
THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL & GRADE.

CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 2.84 SQUARE FEET.



* DENOTES THE MAXIMUM VALUE FOR THIS DIMENSION. THIS DIMENSION MAY VARY DUE TO CONSTRUCTION INACCURACIES.



CONCRETE PLACEMENT SUMMARY

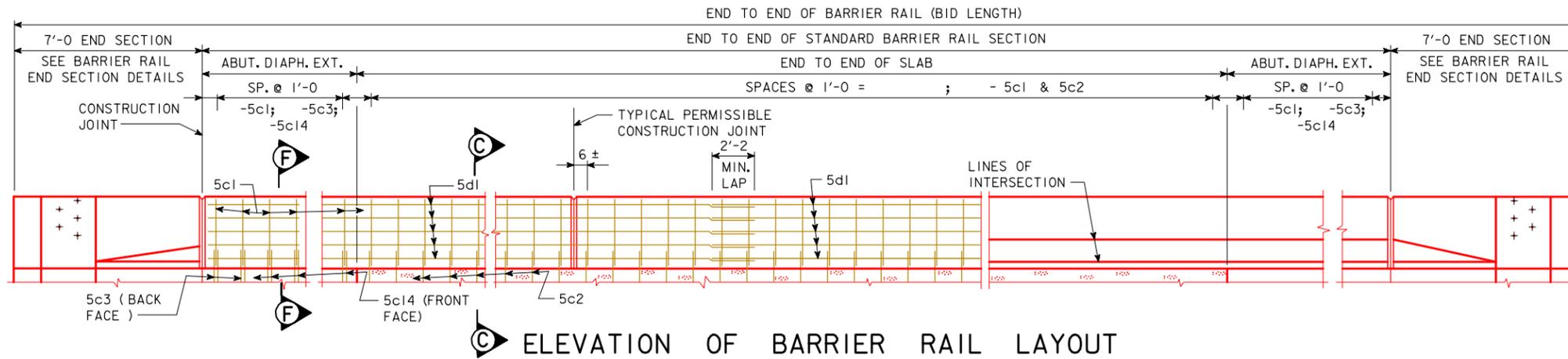
SECTION	TOTAL
STANDARD SECTION @ 0.1052 CU. YD. PER FT.	
SPECIAL SECTION (A) @ 0.1052 CU. YD. PER FT.	
SPECIAL SECTION (B) @ 0.1052 CU. YD. PER FT.	
TOTAL (CU. YD.)	

CONCRETE BARRIER RAIL QUANTITIES

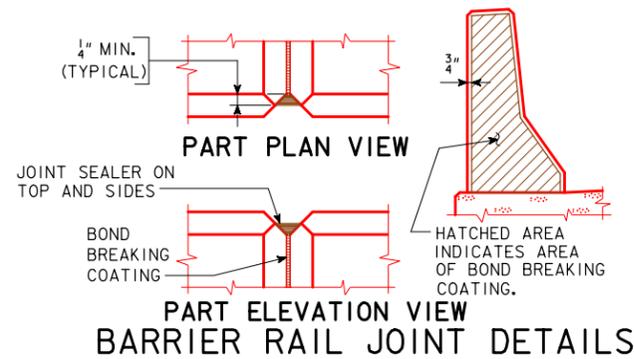
ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAILING	L.F.	

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

CORRECTION 04-14 - ADDED NOTE TO INCLUDE REINF. STEEL TO THE SUMMARY QUANTITY SHEET. REMOVED END SECT. QTY. FROM BAR LIST & CONC. PLCMNT. SUMMARY. ENGLISHDECKRAILBRIDGES.DGN 1020C - THIS SHEET ISSUED 02-00



ELEVATION OF BARRIER RAIL LAYOUT

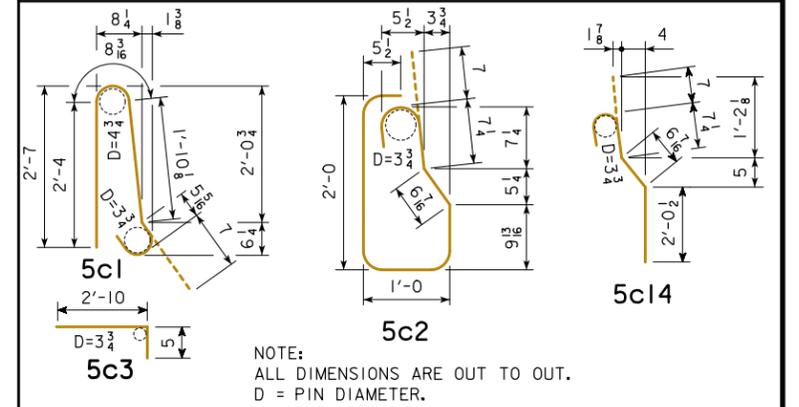


EPOXY REINF. STEEL-TWO BARRIER RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTION	5c1	VERTICAL	[Symbol]		5'-11	
	5c2	VERTICAL			6'-0	
	5c3	VERTICAL			3'-3	
	5c14	VERTICAL			3'-10	
	5d1	LONGITUDINAL	[Symbol]			
TOTAL (LBS.)						

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

BENT BAR DETAILS



CONCRETE PLACEMENT SUMMARY

SECTION	TOTAL
STANDARD SECTION @ 0.1052 CU. YD. PER FT.	
TOTAL (CU. YD.)	

CONCRETE BARRIER RAIL QUANTITIES

ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAILING	L.F.	

BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER. COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

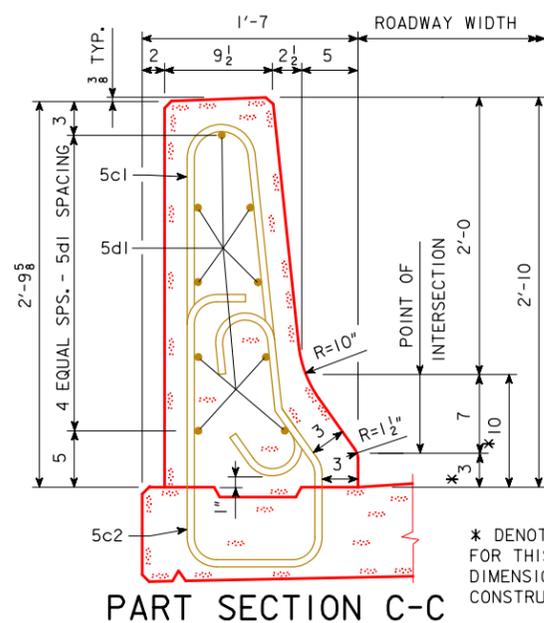
ALL BARRIER RAIL REINFORCING STEEL IS TO BE EPOXY COATED.

THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

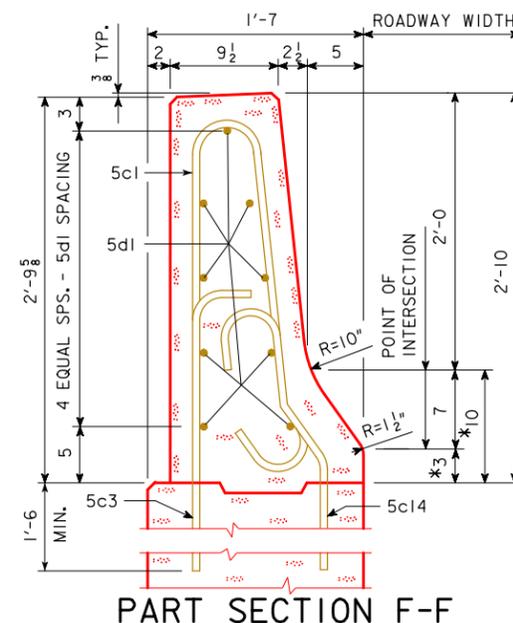
TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL & GRADE.

CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 2.84 SQUARE FEET.



* DENOTES THE MAXIMUM VALUE FOR THIS DIMENSION. THIS DIMENSION MAY VARY DUE TO CONSTRUCTION INACCURACIES.

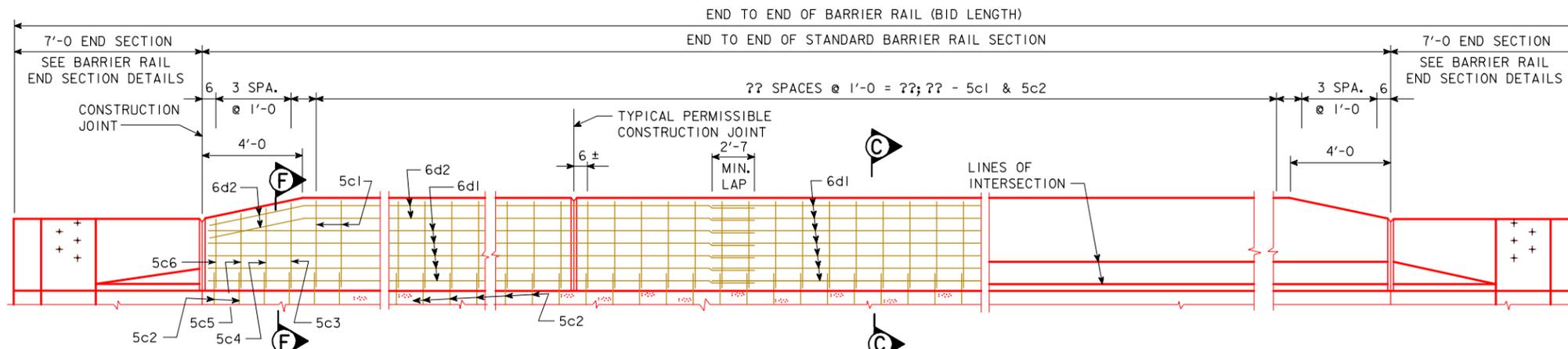
PART SECTION C-C



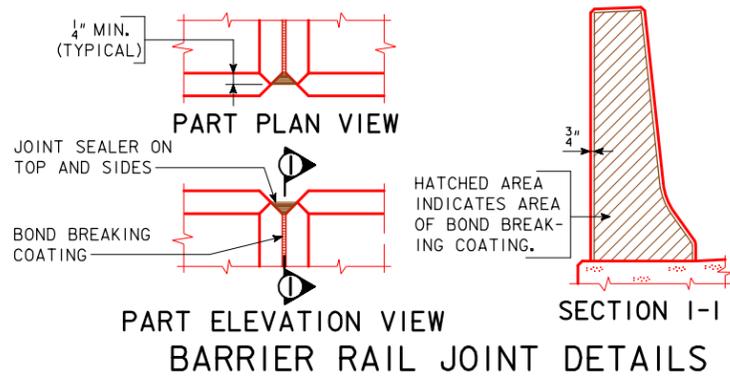
PART SECTION F-F

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

CORRECTION 04-14 - ADDED NOTE TO INCLUDE REINF. STEEL TO THE SUMMARY QUANTITY SHEET. REMOVED END SECT. QTY. FROM BAR LIST & CONC. PLCMNT. SUMMARY. ENGLISHDECKRAILBRIDGES.DGN 1020D - THIS SHEET ISSUED 11-07.



ELEVATION OF BARRIER RAIL



BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER. COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

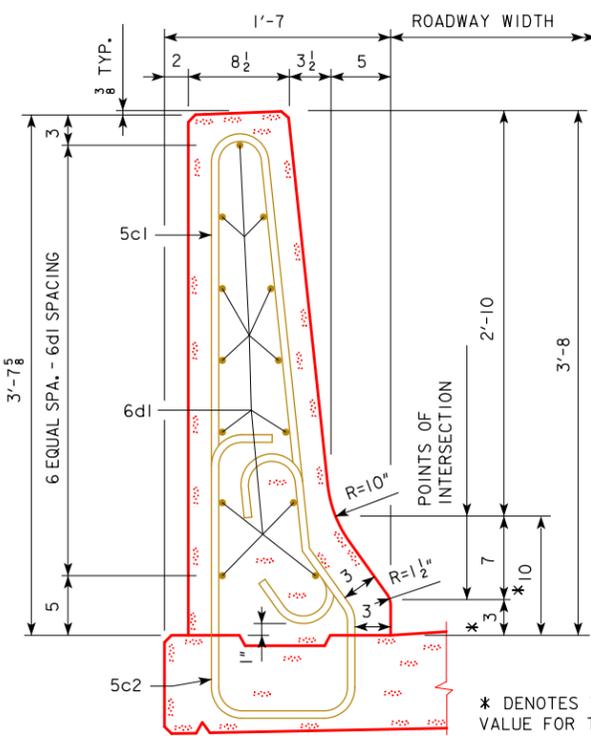
ALL BARRIER RAIL REINFORCING STEEL IS TO BE EPOXY COATED.

THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR 3'-8 CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

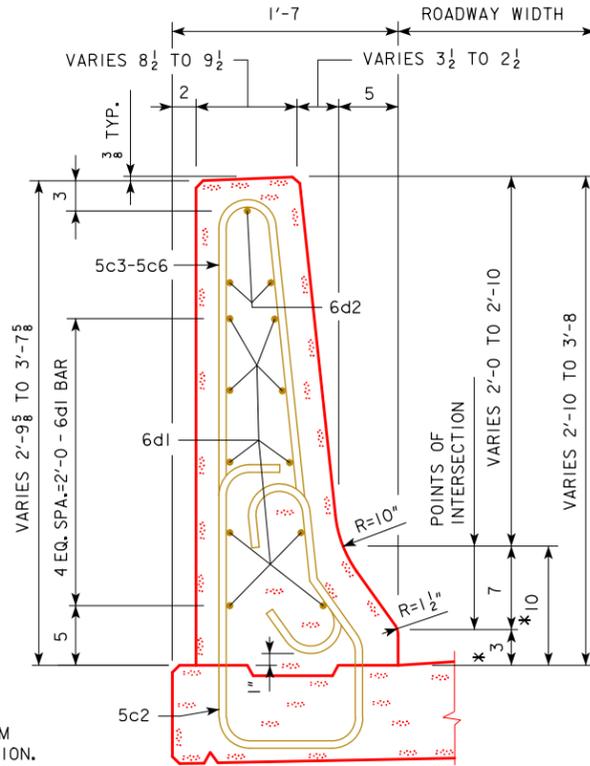
TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL $\frac{1}{2}$ GRADE, EXCEPT AT THE SPECIAL SECTIONS.

CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 3.46 SQUARE FEET EXCEPT THE 4'-0 SLOPED ENDS AT THE END SECTIONS.



PART SECTION C-C

* DENOTES THE MAXIMUM VALUE FOR THIS DIMENSION. THIS DIMENSION MAY VARY DUE TO CONSTRUCTION INACCURACIES.



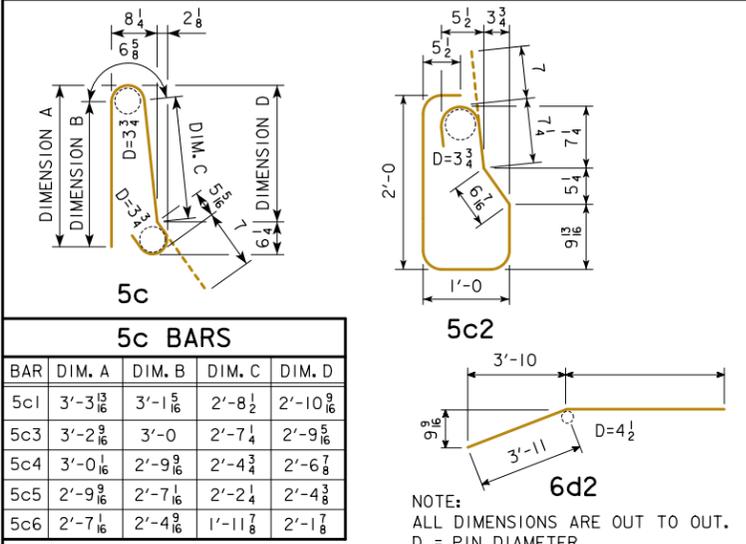
PART SECTION F-F

EPOXY REINFORCING STEEL - TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTION	5c1	VERTICAL	[Symbol]		7'-5	
	5c2	VERTICAL			6'-0	
	5c3	VERTICAL, SLOPED ENDS		4	7'-3	30
	5c4	VERTICAL, SLOPED ENDS		4	6'-10	29
	5c5	VERTICAL, SLOPED ENDS		4	6'-5	27
	5c6	VERTICAL, SLOPED ENDS		4	6'-0	25
	6d1	LONGITUDINAL	[Symbol]			
	6d2	LONGITUDINAL, TOP SLOPED ENDS		12		
TOTAL WEIGHT (LBS.)						

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

BENT BAR DETAILS



5c BARS

BAR	DIM. A	DIM. B	DIM. C	DIM. D
5c1	3'-3 1/8	3'-1 5/16	2'-8 1/2	2'-10 9/16
5c3	3'-2 3/8	3'-0	2'-7 1/4	2'-9 5/16
5c4	3'-0 1/8	2'-9 9/16	2'-4 3/4	2'-6 7/8
5c5	2'-9 9/16	2'-7 1/16	2'-2 1/4	2'-4 3/8
5c6	2'-7 1/16	2'-4 9/16	1'-11 7/8	2'-1 7/8

CONCRETE PLACEMENT SUMMARY

SECTION	TOTAL
STANDARD SECTION @ 0.1281 CU. YD. PER FT.	
TOTAL (CU. YD.)	

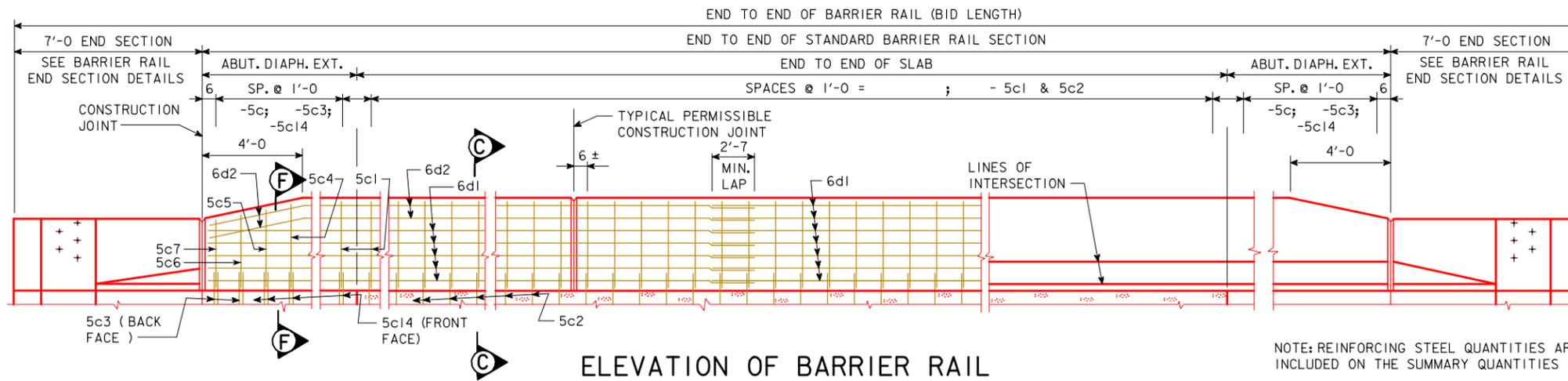
CONCRETE BARRIER RAIL QUANTITIES

ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAILING, 3'-8	L.F.	

Δ DEDUCT 0.044 CU. YD. FOR ONE SLOPED END.

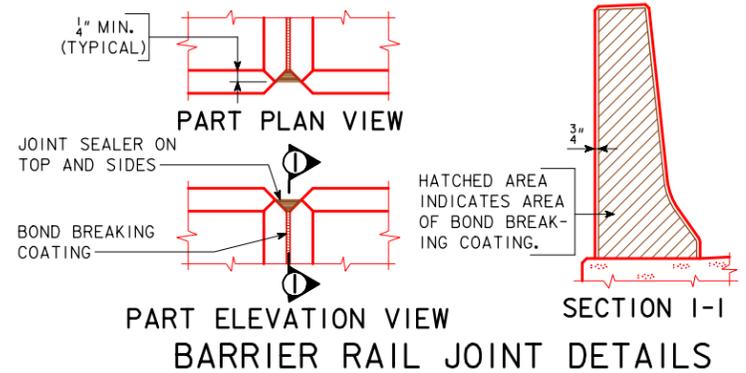
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

CORRECTION 04-14 - ADDED NOTE TO INCLUDE REINF. STEEL TO THE SUMMARY QUANTITY SHEET. REMOVED END SECT. QTY. FROM BAR LIST & CONC. PLCMNT. SUMMARY. ENGLISHDECKRAILBRIDGES.DGN 1020F - THIS SHEET ISSUED 11-07.



ELEVATION OF BARRIER RAIL

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.



PART ELEVATION VIEW
 BARRIER RAIL JOINT DETAILS

BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER. COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

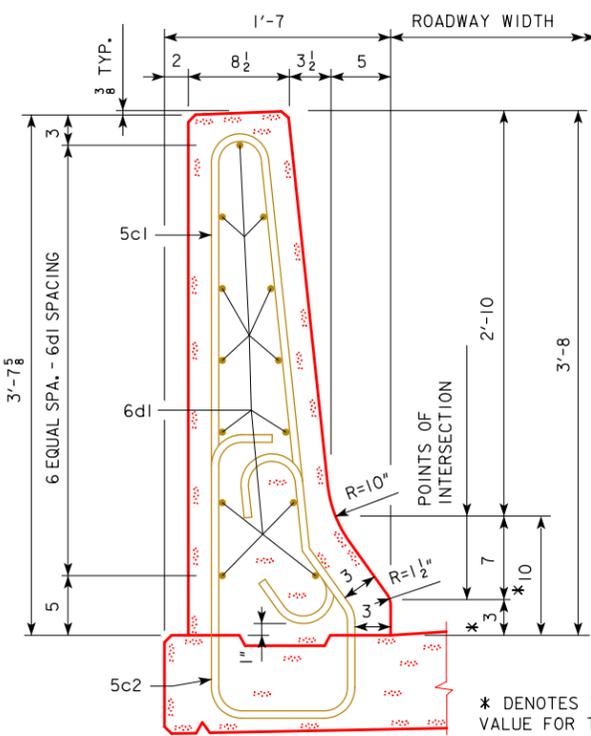
ALL BARRIER RAIL REINFORCING STEEL IS TO BE EPOXY COATED.

THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR 3'-8 CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

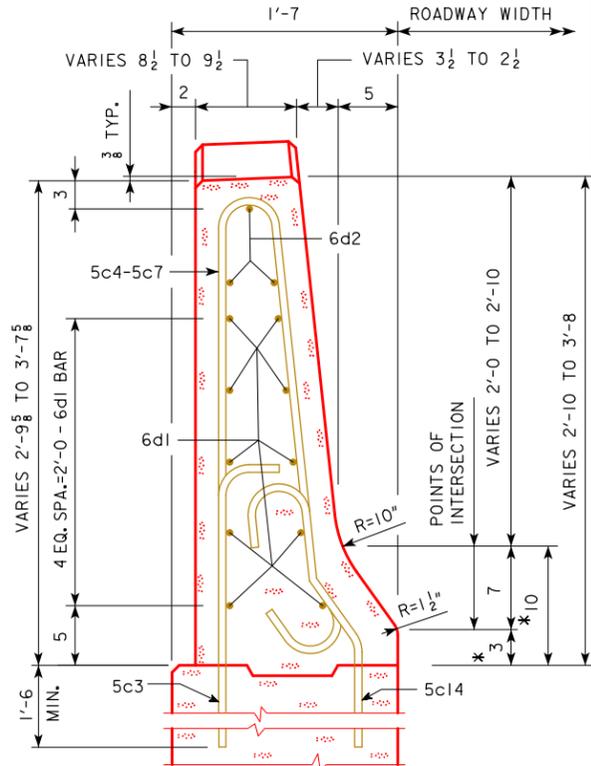
TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL \bar{C} GRADE, EXCEPT AT THE SPECIAL SECTIONS.

CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 3.46 SQUARE FEET EXCEPT THE 4'-0 SLOPED ENDS AT THE END SECTIONS.



PART SECTION C-C

* DENOTES THE MAXIMUM VALUE FOR THIS DIMENSION. THIS DIMENSION MAY VARY DUE TO CONSTRUCTION INACCURACIES.

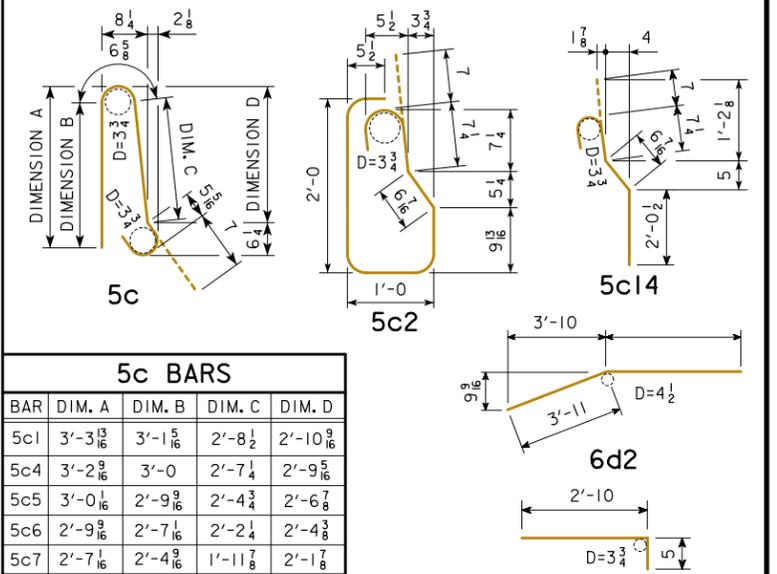


PART SECTION F-F

EPOXY REINFORCING STEEL - TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTION	5c1	VERTICAL	[Symbol]		7'-5"	
	5c2	VERTICAL			6'-0"	
	5c3	VERTICAL			3'-3"	
	5c4	VERTICAL, TOP SLOPED ENDS		4	7'-3"	30
	5c5	VERTICAL, TOP SLOPED ENDS		4	6'-10"	29
	5c6	VERTICAL, TOP SLOPED ENDS		4	6'-5"	27
	5c7	VERTICAL, TOP SLOPED ENDS		4	6'-0"	25
	5c14	VERTICAL		3'-10"		
	6d1	LONGITUDINAL	[Symbol]			
	6d2	LONGITUDINAL AT ENDS		12		
						TOTAL WEIGHT (LBS.)

BENT BAR DETAILS



5c BARS				
BAR	DIM. A	DIM. B	DIM. C	DIM. D
5c1	3'-3 3/8"	3'-1 5/16"	2'-8 1/2"	2'-10 9/16"
5c4	3'-2 9/16"	3'-0"	2'-7 1/4"	2'-9 5/16"
5c5	3'-0 1/16"	2'-9 9/16"	2'-4 3/4"	2'-6 7/8"
5c6	2'-9 9/16"	2'-7 1/16"	2'-2 1/4"	2'-4 3/8"
5c7	2'-7 1/16"	2'-4 9/16"	1'-11 7/8"	2'-1 7/8"

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

CONCRETE PLACEMENT SUMMARY

SECTION	TOTAL
STANDARD SECTION @ 0.1281 CU. YD. PER FT.	
TOTAL (CU. YD.)	

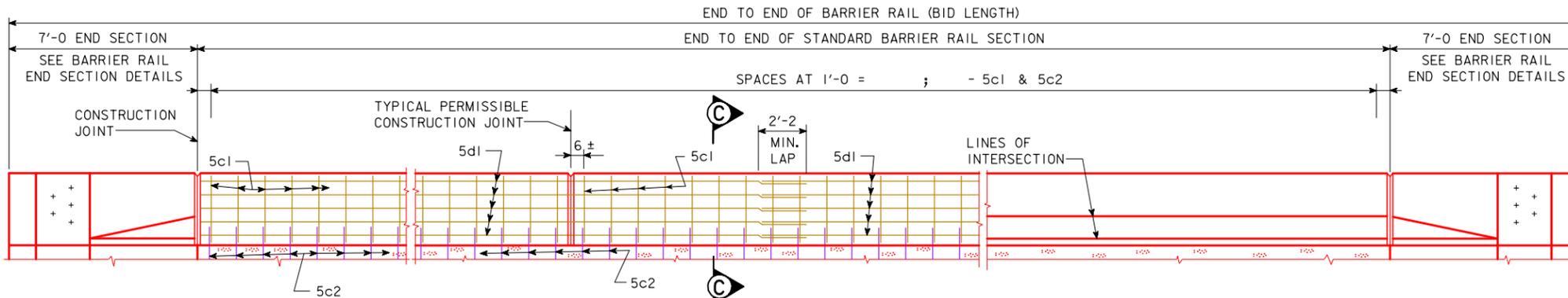
CONCRETE BARRIER RAIL QUANTITIES

ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAILING, 3'-8	L.F.	

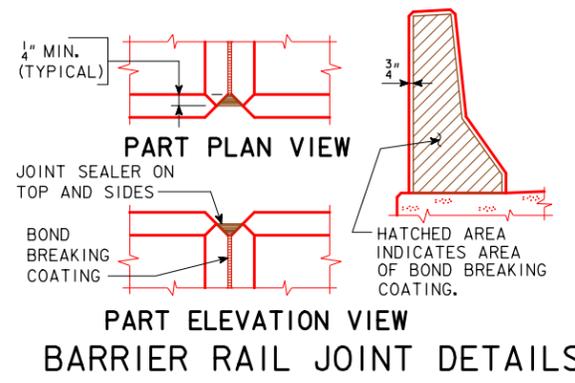
Δ DEDUCT 0.044 CU. YD. FOR ONE SLOPED END.

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

ENGLISHDECKRAILBRIDGES.DGN 1020SA THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 5c2 BARS TO STAINLESS STEEL.

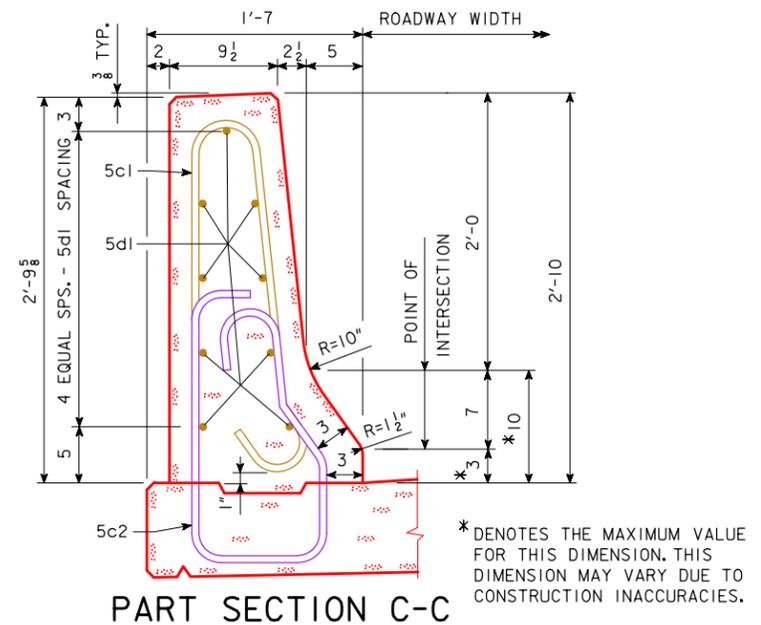


ELEVATION OF BARRIER RAIL LAYOUT



BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
 THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER.
 COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.
 ALL BARRIER RAIL REINFORCING STEEL IS TO BE EITHER EPOXY COATED OR STAINLESS STEEL AS SHOWN. THE STAINLESS STEEL REINFORCING STEEL SHALL BE DEFORMED BAR GRADE 60 MEETING THE REQUIREMENTS OF MATERIALS I.M. 452.
 THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.
 THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.
 TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL G GRADE.
 CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 2.84 SQUARE FEET.



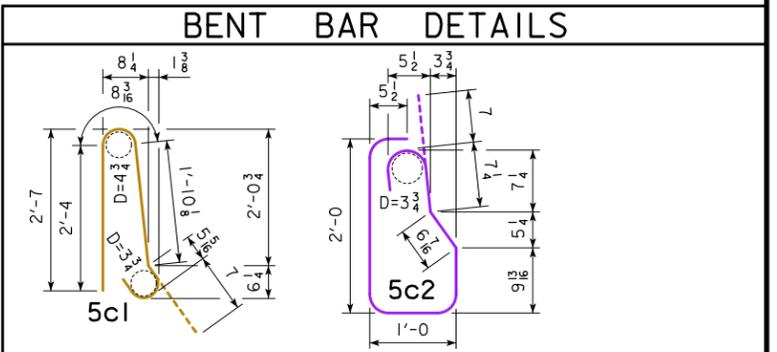
EPOXY COATED REINF. STEEL - TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c1	RAIL, VERTICAL	U		5'-11"	
	5d1	RAIL, LONGITUDINAL	—			
						EPOXY STEEL TOTAL (LBS.)

STAINLESS STEEL REINF. STEEL - TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c2	RAIL, VERTICAL	U		6'-0"	
						STAINLESS STEEL TOTAL (LBS.)

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

CONCRETE PLACEMENT SUMMARY

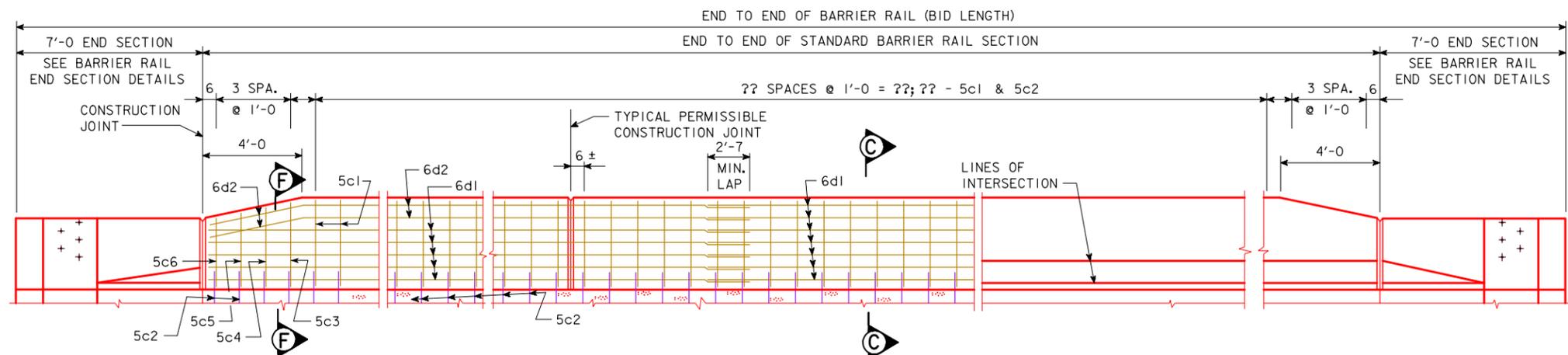
SECTION	TOTAL
STANDARD SECTION	0.1052 CU.YD. PER FT.
TOTAL (CU. YD.)	

CONCRETE BARRIER RAIL QUANTITIES

ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAILING	L.F.	

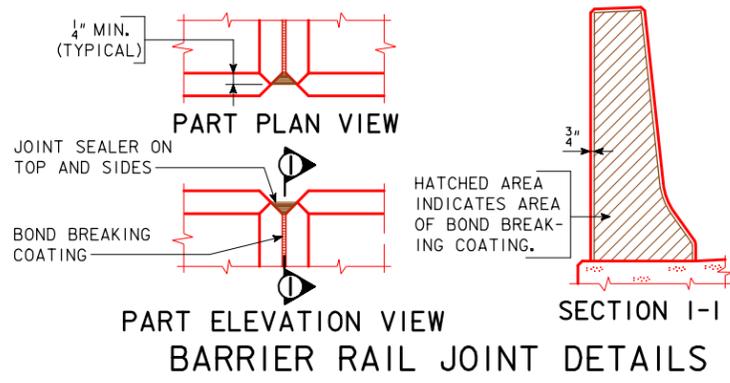
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

ENGLISHDECKRAILBRIDGES.DGN 1020SD - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 5c2 BARS TO STAINLESS STEEL.



ELEVATION OF BARRIER RAIL

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.



BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER. COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

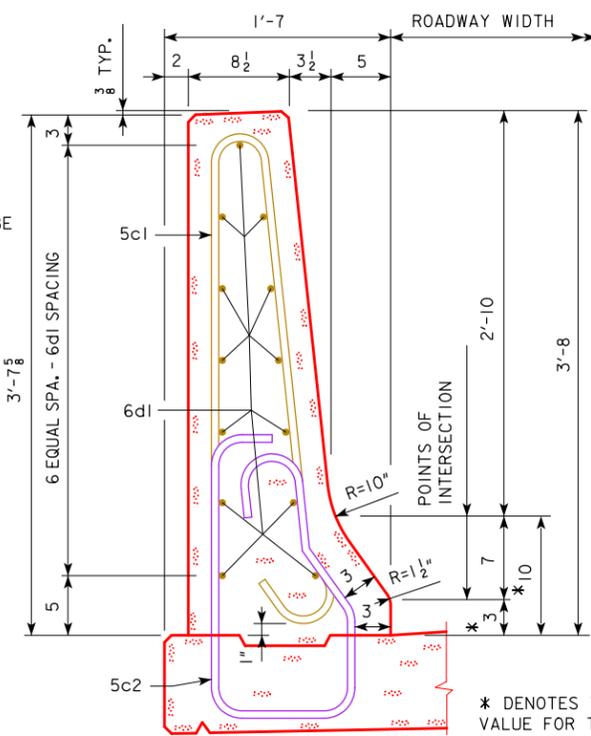
ALL BARRIER RAIL REINFORCING STEEL IS TO BE EITHER EPOXY COATED OR STAINLESS STEEL AS SHOWN. THE STAINLESS STEEL REINFORCING STEEL SHALL BE DEFORMED BAR GRADE 60 MEETING THE REQUIREMENTS OF MATERIALS I.M. 452.

THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR 3'-8 CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

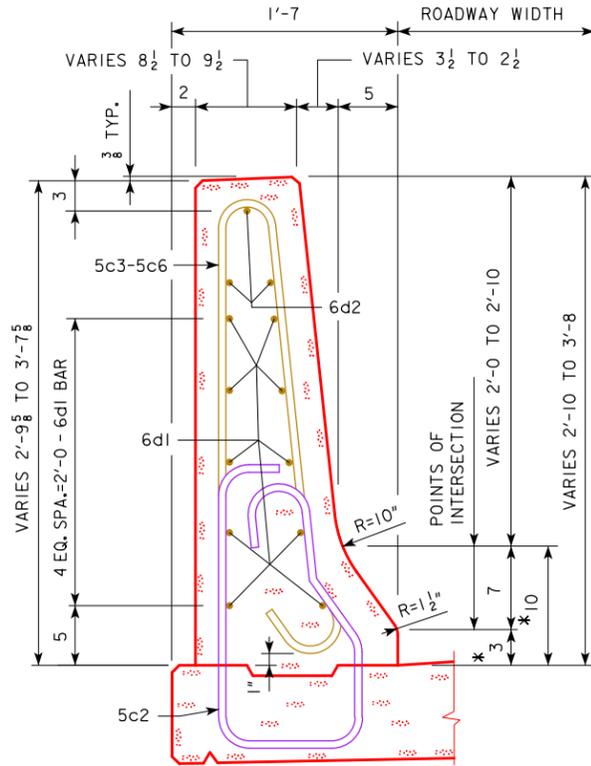
TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL ϕ GRADE, EXCEPT AT THE SPECIAL SECTIONS.

CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 3.46 SQUARE FEET EXCEPT THE 4'-0 SLOPED ENDS AT THE END SECTIONS.



PART SECTION C-C

* DENOTES THE MAXIMUM VALUE FOR THIS DIMENSION. THIS DIMENSION MAY VARY DUE TO CONSTRUCTION INACCURACIES.



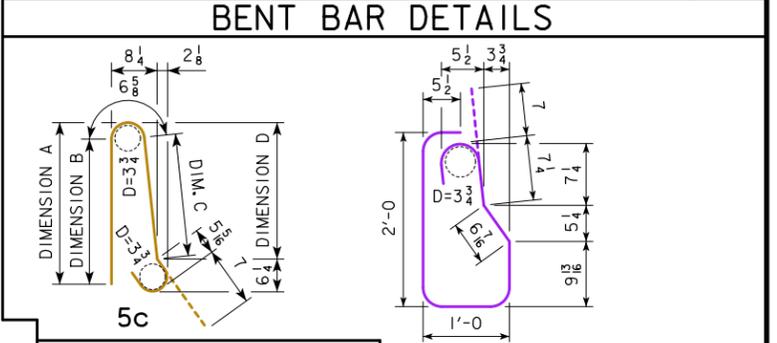
PART SECTION F-F

EPOXY COATED REINF. STEEL - TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c1	RAIL, VERTICAL		4	7'-5	
	5c3	RAIL, VERTICAL, SLOPED ENDS		4	7'-3	30
	5c4	RAIL, VERTICAL, SLOPED ENDS		4	6'-10	29
	5c5	RAIL, VERTICAL, SLOPED ENDS		4	6'-5	27
	5c6	RAIL, VERTICAL, SLOPED ENDS		4	6'-0	25
	6d1	RAIL, LONGITUDINAL		12		
	6d2	RAIL, LONGITUDINAL, TOP SLOPED ENDS				
EPOXY STEEL TOTAL WEIGHT (LBS.)						

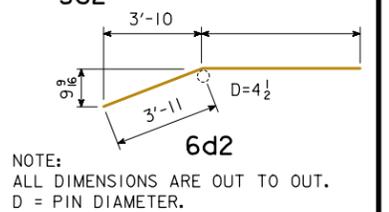
STAINLESS STEEL REINF. STEEL - TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c2	RAIL, VERTICAL			6'-0	
STAINLESS STEEL TOTAL WEIGHT (LBS.)						



5c BARS

BAR	DIM. A	DIM. B	DIM. C	DIM. D
5c1	3'-3 13/16	3'-1 5/16	2'-8 1/2	2'-10 9/16
5c3	3'-2 9/16	3'-0	2'-7 1/4	2'-9 5/8
5c4	3'-0 1/16	2'-9 3/16	2'-4 3/4	2'-6 7/8
5c5	2'-9 9/16	2'-7 1/16	2'-2 1/4	2'-4 3/8
5c6	2'-7 1/16	2'-4 9/16	1'-11 7/8	2'-1 7/8



CONCRETE PLACEMENT SUMMARY

SECTION	TOTAL
STANDARD SECTION @ 0.1281 CU. YD. PER FT.	
TOTAL (CU. YD.)	

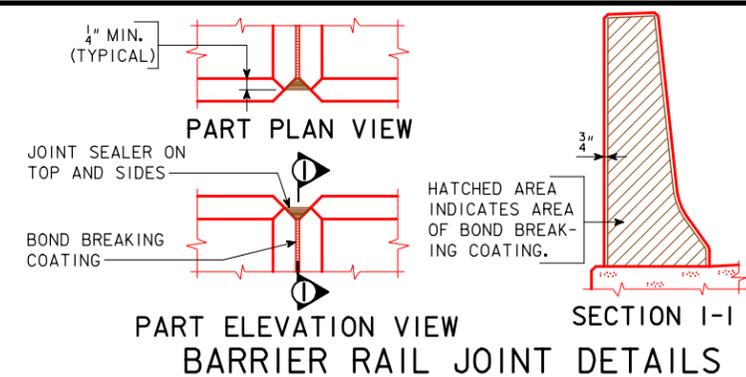
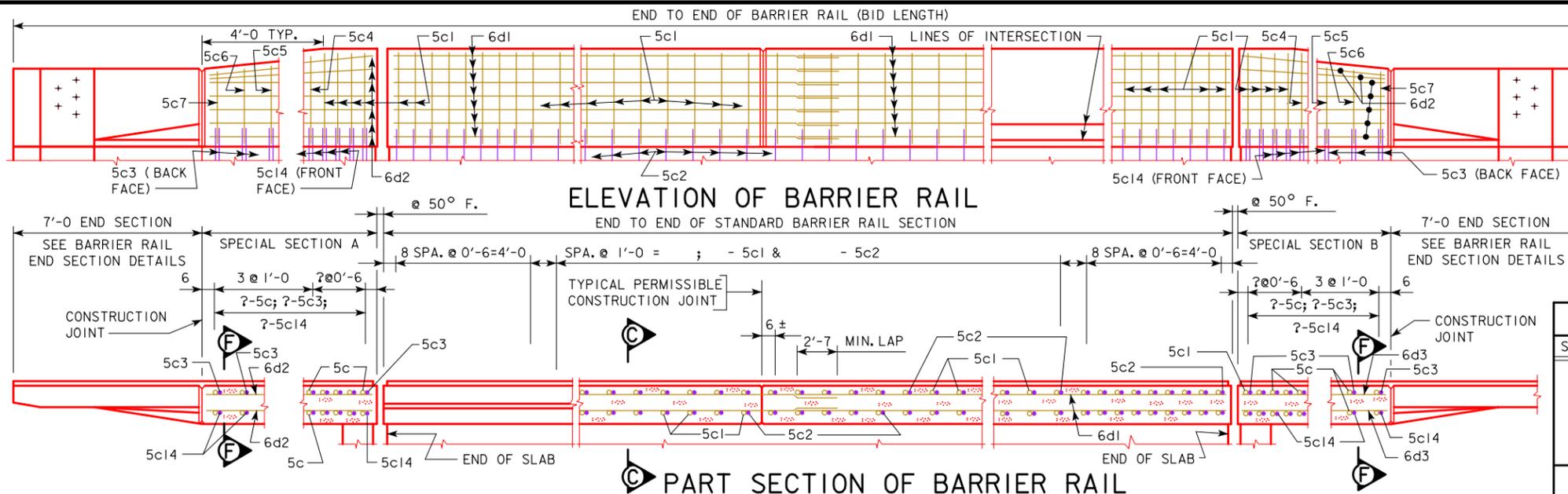
CONCRETE BARRIER RAIL QUANTITIES

ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAILING, 3'-8	L.F.	

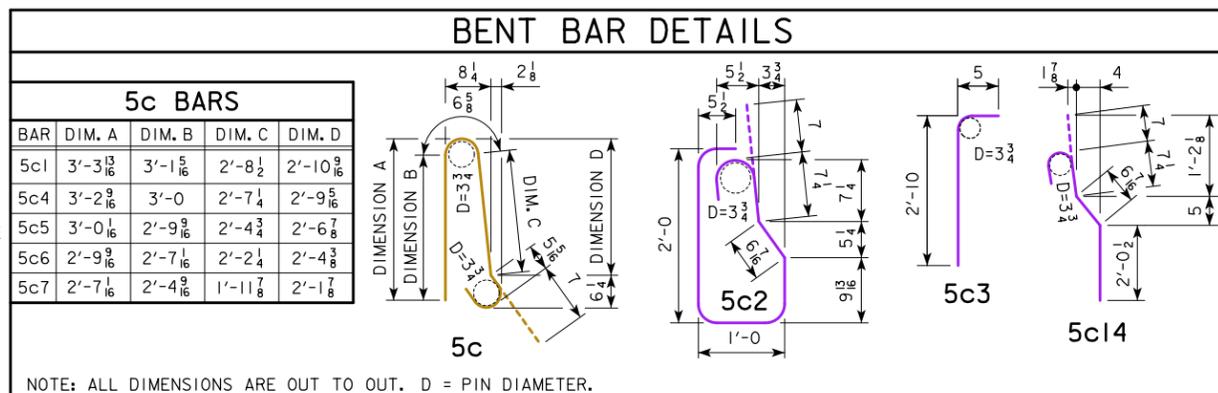
Δ DEDUCT 0.044 CU. YD. FOR ONE SLOPED END.

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

ENGLISHDECKRAILBRIDGES.DGN 1020SE - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 5c2, 5c3, 5c14 BARS TO STAINLESS STEEL.



BARRIER RAIL NOTES:
 MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
 THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER. COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.
 ALL BARRIER RAIL REINFORCING STEEL IS TO BE EITHER EPOXY COATED OR STAINLESS STEEL AS SHOWN. THE STAINLESS STEEL REINFORCING STEEL SHALL BE DEFORMED BAR GRADE 60 MEETING THE REQUIREMENTS OF MATERIALS I.M. 452.
 THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR 3'-8" CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERCT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.
 THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.
 TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL C GRADE, EXCEPT AT THE SPECIAL SECTIONS.
 CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 3.46 SQUARE FEET EXCEPT THE 4'-0" SLOPED ENDS AT THE SPECIAL SECTIONS.



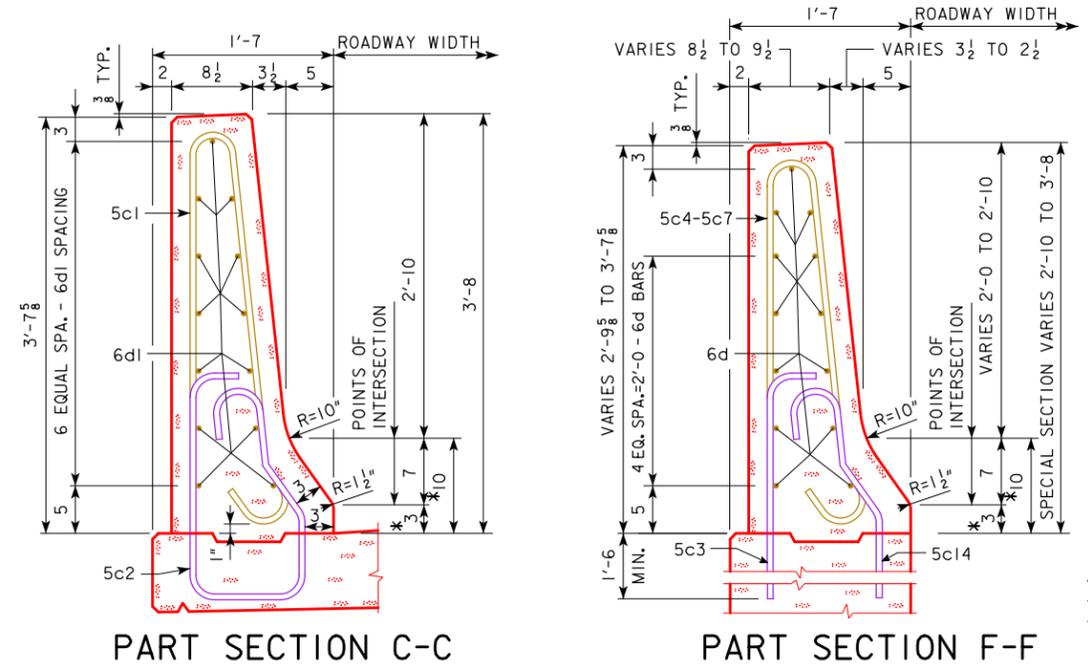
5c BARS				
BAR	DIM. A	DIM. B	DIM. C	DIM. D
5c1	3'-3 13/16"	3'-1 5/16"	2'-8 1/2"	2'-10 9/16"
5c4	3'-2 9/16"	3'-0"	2'-7 1/4"	2'-9 5/16"
5c5	3'-0 1/16"	2'-9 9/16"	2'-4 3/4"	2'-6 7/8"
5c6	2'-9 9/16"	2'-7 1/16"	2'-2 1/4"	2'-4 3/8"
5c7	2'-7 1/16"	2'-4 9/16"	1'-11 7/8"	2'-1 7/8"

EPOXY COATED REINF. STEEL - TWO RAILS						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c1	RAIL, VERTICAL	∧		7'-5"	
	6d1	RAIL, LONGITUDINAL	—			
SPECIAL SECTIONS	5c1	RAIL, VERTICAL	∧		7'-5"	
	5c4	RAIL, VERTICAL, SLOPED ENDS	∧	4	7'-3"	30
	5c5	RAIL, VERTICAL, SLOPED ENDS	∧	4	6'-10"	29
	5c6	RAIL, VERTICAL, SLOPED ENDS	∧	4	6'-5"	27
	5c7	RAIL, VERTICAL, SLOPED ENDS	∧	4	6'-0"	25
	6d2	RAIL, LONGIT. - SPECIAL SECTION A	—		26	
	6d3	RAIL, LONGIT. - SPECIAL SECTION B	—		26	
EPOXY STEEL TOTAL WEIGHT (LBS.)						

STAINLESS STEEL REINF. STEEL - TWO RAILS						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STD. SECTS.	5c2	RAIL, VERTICAL	∩		6'-0"	
	5c3	RAIL, VERTICAL	∩		3'-3"	
SPEC. SECTS.	5c14	RAIL, VERTICAL	∩		3'-10"	
STAINLESS STEEL TOTAL (LBS.)						

CONCRETE PLACEMENT SUMMARY		
SECTION		QUANTITY
STANDARD SECTION	? AT 0.1281 CU. YDS. PER FT.	
Δ SPECIAL SECTION A	? AT 0.1281 CU. YDS. PER FT.	
Δ SPECIAL SECTION B	? AT 0.1281 CU. YDS. PER FT.	
TOTAL (CU. YD.)		

Δ DEDUCT 0.044 CU. YD. FOR ONE SLOPED END.

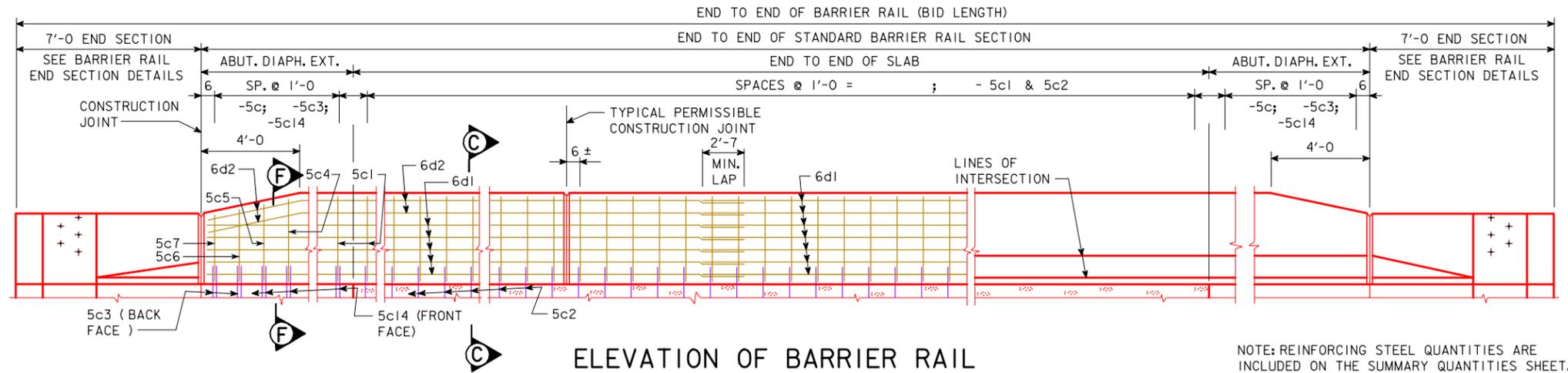


CONCRETE BARRIER RAIL QUANTITIES		
ITEM	UNIT	TOTAL
CONCRETE BARRIER RAILING, 3'-8"	LIN. FT.	

* DENOTES THE MAXIMUM VALUE FOR THIS DIMENSION. THIS DIMENSION MAY VARY DUE TO CONSTRUCTION INACCURACIES.

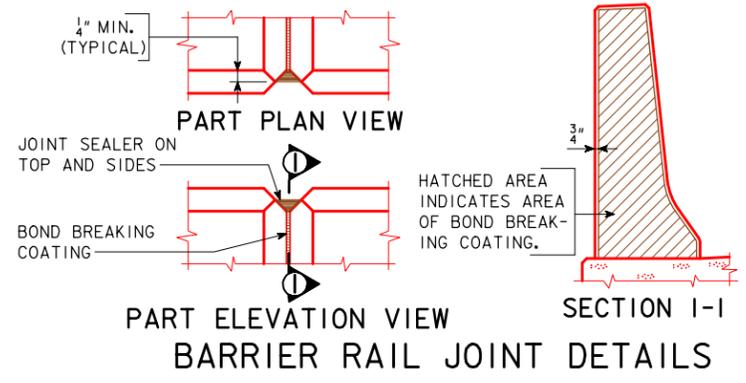
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

REVISED 09-2016 - CHANGED 5c1 BAR LENGTH TO 7'-5 (IT WAS 5'-11 IN ERROR). ENGLISHDECKRAILBRIDGES.DGN 1020SF - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 5c2, 5c3, 5c14 BARS TO STAINLESS STEEL.



ELEVATION OF BARRIER RAIL

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.



BARRIER RAIL JOINT DETAILS

BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER. COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

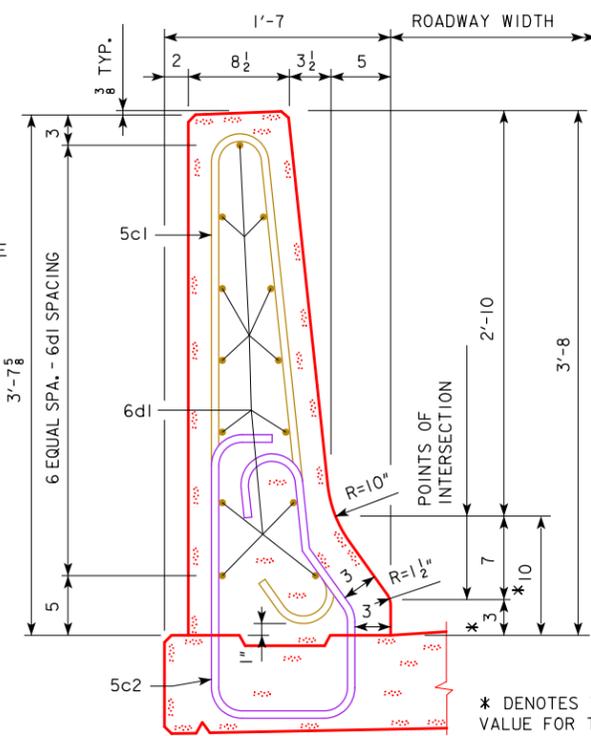
ALL BARRIER RAIL REINFORCING STEEL IS TO BE EITHER EPOXY COATED OR STAINLESS STEEL AS SHOWN. THE STAINLESS STEEL REINFORCING STEEL SHALL BE DEFORMED BAR GRADE 60 MEETING THE REQUIREMENTS OF MATERIALS I.M. 452.

THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR 3'-8 CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

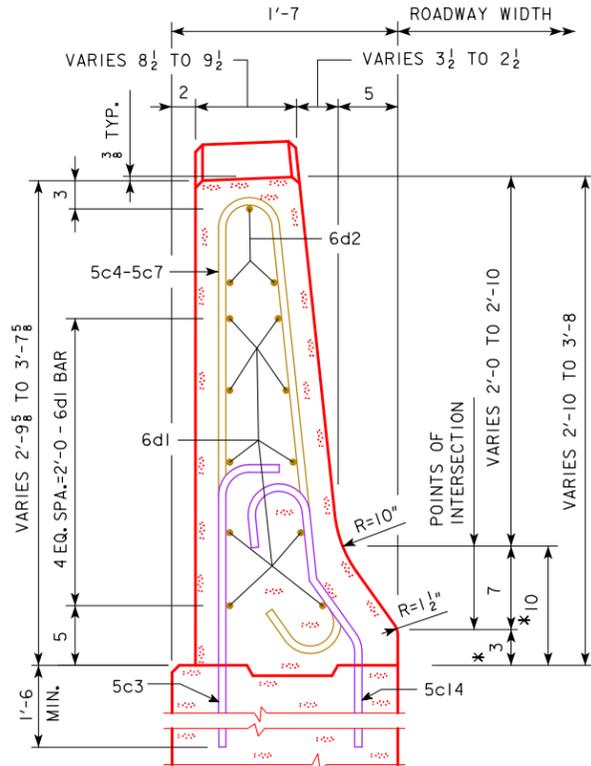
THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL \bar{C} GRADE, EXCEPT AT THE SPECIAL SECTIONS.

CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 3.46 SQUARE FEET EXCEPT THE 4'-0 SLOPED ENDS AT THE END SECTIONS.



PART SECTION C-C



PART SECTION F-F

EPOXY COATED REINF. STEEL - TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c1	RAIL, VERTICAL			7'-5	
	5c4	RAIL, VERTICAL, TOP SLOPED ENDS		4	7'-3	30
	5c5	RAIL, VERTICAL, TOP SLOPED ENDS		4	6'-10	29
	5c6	RAIL, VERTICAL, TOP SLOPED ENDS		4	6'-5	27
	5c7	RAIL, VERTICAL, TOP SLOPED ENDS		4	6'-0	25
	6d1	RAIL, LONGITUDINAL				
	6d2	RAIL, LONGITUDINAL AT ENDS		12		
EPOXY STEEL TOTAL (LBS.)						

STAINLESS STEEL REINF. STEEL - TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c2	RAIL, VERTICAL			6'-0	
	5c3	RAIL, VERTICAL			3'-3	
	5c14	RAIL, VERTICAL			3'-10	
STAINLESS STEEL TOTAL (LBS.)						

BENT BAR DETAILS

5c

5c2

5c14

6d2

5c3

5c BARS				
BAR	DIM. A	DIM. B	DIM. C	DIM. D
5c1	3'-3 13/16	3'-1 5/16	2'-8 1/2	2'-10 9/16
5c4	3'-2 9/16	3'-0	2'-7 1/4	2'-9 9/16
5c5	3'-0 1/16	2'-9 9/16	2'-4 3/4	2'-6 7/8
5c6	2'-9 9/16	2'-7 1/16	2'-2 1/4	2'-4 3/8
5c7	2'-7 1/16	2'-4 9/16	1'-11 7/8	2'-1 7/8

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

CONCRETE PLACEMENT SUMMARY

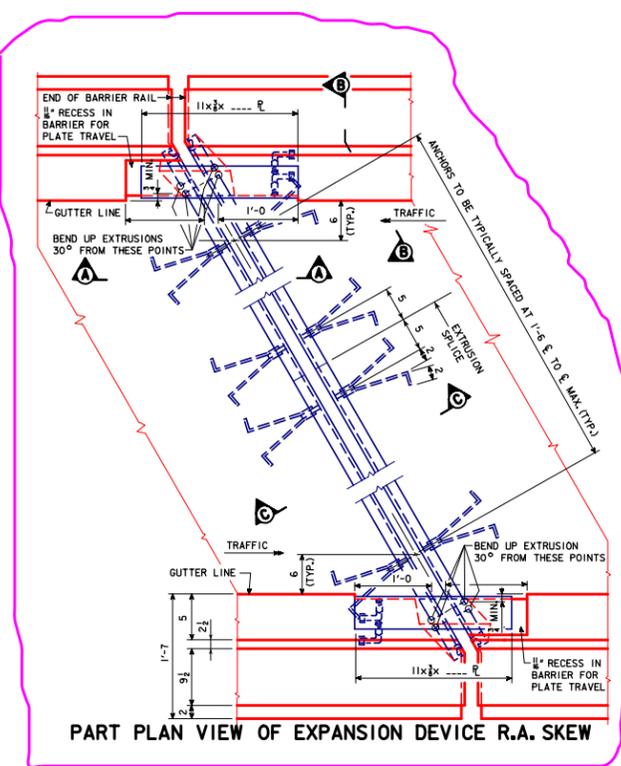
SECTION	TOTAL
STANDARD SECTION	@ 0.1281 CU. YD. PER FT.
TOTAL (CU. YD.)	

Δ DEDUCT 0.044 CU. YD. FOR ONE SLOPED END.

CONCRETE BARRIER RAIL QUANTITIES

ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAILING, 3'-8	L.F.	

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____



CORRECTION 3-02 - ADDITIONAL DETAILS FOR HIGHER SKEWS ADDED OUTSIDE OF SHEET.
 CORRECTION 09-03 - BLOCKOUT DETAIL MOVED INSIDE OF SHEET. HEX HEAD COUNTERSINK SCREW DETAIL ADDED.
 CORRECTION 05-04 - BLOCKOUT DETAIL MOVED INSIDE OF SHEET. PART PLAN R.A. MOVED OUTSIDE OF BORDER.
 REVISION 11-09 - STANDARD TRAFFIC CHANNELS CHANGED TO 10" DEEPER CHANNELS FOR IMPROVED STABILITY.
 REVISION 11-12 - ADDED A NOTE SHOWING MIN. TEMPERATURE TO INSTALL THE GLAND. REMOVED THE STAGE CONSTRUCTION NOTE OUTSIDE OF THE BORDER. ADDED GLAND INSTALLATION MIN. OPENING.

BENCH MARK NO.:

BLOCKOUT DETAIL
(DRAWN FOR 0° SKEW FOR ILLUSTRATIVE PURPOSES)

CONTRACTOR TO NOTE THAT THE CAP SCREW ANCHORAGE SYSTEM FOR THE 3/4" BARRIER PLATES ARE ALWAYS TO BE PLACED ON THE ONCOMING TRAFFIC SIDE.

CAP SCREW DETAIL

PART PLAN VIEW OF EXPANSION DEVICE L.A. SKEW

NOTE: IT IS INTENDED THAT THE 1/2 INCH RECESSED AREA BE FORMED SO THAT WHEN THE 3/4 INCH BENT PLATE IS INSTALLED THE PLATE WILL BE ABLE TO MOVE FREELY IN THIS RECESSED AREA.

BARRIER PLATE NOTE:
THE MATERIAL USED FOR THE BARRIER PLATES IS TO BE ASTM A36 STEEL. THE BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A307. THE PLATES, BOLTS, NUTS AND CAP SCREWS ARE TO BE GALVANIZED IN ACCORDANCE WITH ARTICLE 4100.07 OF THE STANDARD SPECIFICATIONS.

NOTE: JOINT SETTINGS FOR OTHER TEMPERATURES ARE PROPORTIONAL. TEMPERATURES SHOWN ARE CONCRETE DECK TEMPERATURES ON THE UNDERSIDE OR SHADED PORTION OF THE DECK.

EXPANSION OPENING DETAIL

THIS DIMENSION MAY VARY SLIGHTLY DEPENDING ON MANUFACTURER FURNISHING THE JOINT.

AA USED FOR ALL OUT TO OUT DIMENSIONS OF SLAB. THE DIMENSION MAY VARY SLIGHTLY DEPENDING ON MANUFACTURER FURNISHING THE JOINT.

MANUFACTURER	TYPE OF STEEL EXTRUSION	NEOPRENE GLAND	MINIMUM OPENING FOR GLAND INSTALLATION	CORRESPONDING MAXIMUM DECK TEMPERATURE
WATSON-BOWMAN & ACME CORP.	A	SE-	1 1/2"	---- ° F.
D.S. BROWN CO.	SSA2	A2R-400	2"	---- ° F.
APPROVED EQUAL				

PART PLAN VIEW OF EXPANSION DEVICE 0° SKEW

SECTION A-A
(DRAWN FOR 0° SKEW FOR ILLUSTRATIVE PURPOSES)

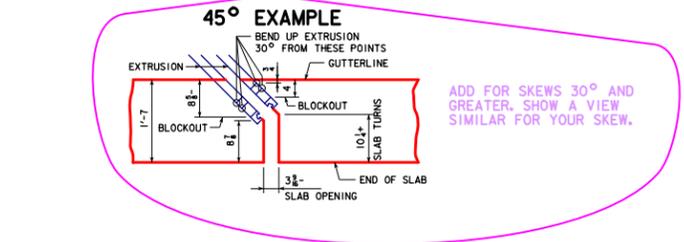
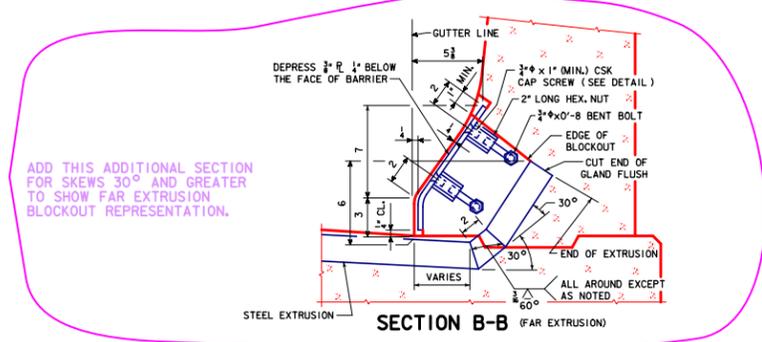
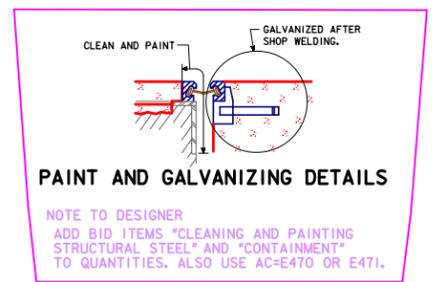
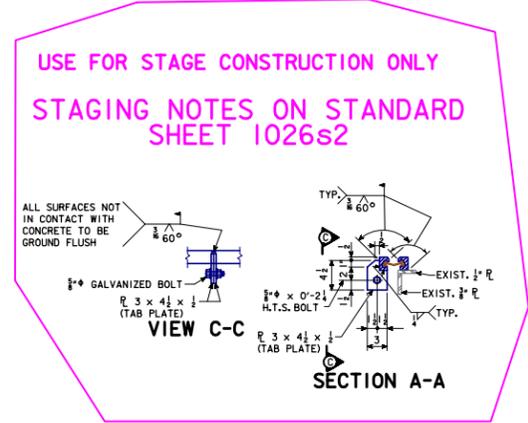
VIEW C-C

BENT BOLT DETAIL

SECTION B-B
(DRAWN FOR 0° SKEW FOR ILLUSTRATIVE PURPOSES)

EXPANSION DEVICE DETAILS

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____
 COUNTY _____ PROJECT NUMBER _____ SHEET NUMBER _____



REVISION 08-13 - STEEL EXTRUSION NOTE WAS ADDED TO SHOW A WELD DETAIL ON THE SHOP DRAWINGS FOR SPLICES. AN ADDITIONAL NEOPRENE GLAND NOTE ABOUT THE CORRESPONDING MAXIMUM DECK TEMPERATURE WAS ADDED. ENGLISHDECKRAILBRIDGES.DGN - 1026s2 - THIS SHEET ISSUED 11-08.

STEEL EXTRUSION NOTES:

THE CONTRACTOR SHALL SUBMIT FOR APPROVAL SHOP DRAWINGS OF THE EXPANSION DEVICES SHOWING LAYOUT, MATERIAL TO BE USED, AND PROVISIONS FOR THE HOLDING DEVICE DURING PLACEMENT OF CONCRETE.

THE EXPANSION DEVICE SHALL BE GALVANIZED AFTER WELDING. ALL CURB PLATES INCLUDING THEIR ANCHORAGES SHALL BE GALVANIZED.

THE EXPANSION DEVICE IS TO BE PARALLEL TO GRADE.

CAP SCREWS SHALL BE COUNTERSUNK $\frac{1}{16}$ " BELOW TOP OF THE PLATE. THE MINIMUM GRADE OF STRUCTURAL STEEL FOR THE EXPANSION DEVICE SHALL BE ASTM A36.

BLOCKOUT DETAILS MAY BE ALTERED FROM THOSE SHOWN PROVIDED THE GLAND MAY BE INSTALLED AND REMOVED IF NECESSARY AND THE CURB AREA REMAINS WATERTIGHT.

SHOP SPLICES OF THE STEEL EXTRUSION WILL BE PERMITTED. PRIOR TO MAKING SHOP SPLICES STEEL EXTRUSION PIECES SHALL HAVE A MINIMUM LENGTH OF 15 FEET. THE INDIVIDUAL LENGTH OF PIECES SHALL BE CHOSEN SO THAT A MINIMUM NUMBER OF SPLICES IS REQUIRED. ALL PIECES SHALL BE JOINED WITH A PREQUALIFIED PARTIAL PENETRATION SINGLE GROOVE WELD DETAILED ON THE SHOP DRAWING. ALL SURFACES NOT IN CONTACT WITH CONCRETE ARE TO BE GROUND FLUSH. NO WELD SHALL BE PERMITTED IN THE INTERNAL SECTION OF THE EXTRUSION WHERE THE NEOPRENE GLAND IS TO BE INSTALLED.

THE NUMBER OF FEET OF STEEL EXTRUSION INSTALLED SHALL BE PAID FOR AT THE CONTRACT PRICE PER FOOT BASED ON PLAN QUANTITIES. THE PRICE BID FOR "STEEL EXTRUSION JOINT W/NEOPRENE" SHALL INCLUDE THE COST OF FURNISHING BUT NOT THE COST OF INSTALLING THE NEOPRENE GLAND. THE CONTRACT PRICE BID FOR "STEEL EXTRUSION JOINT W/NEOPRENE" SHALL BE FULL COMPENSATION FOR FURNISHING AND INSTALLING STEEL EXTRUSIONS. THIS WORK WILL CONSIST OF FURNISHING ALL REQUIRED MATERIALS, (INCLUDING THE $\frac{3}{8}$ " PLATES AT THE CURBS AND THEIR ANCHORAGE SYSTEMS), AND THE INSTALLATION AND ADJUSTMENT OF THE EXPANSION JOINTS IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. THE FURNISHING AND INSTALLATION OF ALL NECESSARY HARDWARE AND ACCESSORIES AS SUPPLIED BY THE EXPANSION JOINT MANUFACTURER ARE TO BE INCLUDED IN THIS WORK, INCLUDING THE ANCHORAGE SYSTEM AND ANY TEMPORARY ERECTION MATERIAL. ALL WORK AND MATERIALS FOR THE INSTALLATION OF THE EXPANSION JOINTS ARE TO COMPLY WITH THE WRITTEN RECOMMENDATIONS OF THE EXPANSION JOINT MANUFACTURER.

FIELD CONSTRUCTION NOTES:

IF THE STEEL EXTRUSION IS SPLICED IN THE FIELD, THE SPLICE LOCATION SHALL BE DETAILED ON THE SHOP DRAWINGS. THE CONNECTION DETAILS SHALL INCLUDE TAB PLATES AND PREPARED ENDS TO ACCOMMODATE THE NECESSARY WELDING. SEE DETAILS IN THESE PLANS.

GALVANIZED COATING DAMAGE BY FIELD WELDING SHALL BE REPAIRED IN ACCORDANCE WITH MATERIALS I.M. 410.

NEOPRENE GLAND NOTES:

THE NEOPRENE GLAND IS TO BE PLACED AS ONE CONTINUOUS PIECE FROM END TO END OF THE STEEL EXTRUSION.

THE NEOPRENE GLAND SHALL CONFORM TO ASTM-2628 MODIFIED TO EXCLUDE RECOVER TEST AND COMPRESSION SET.

THE CONTRACTOR SHALL INSTALL THE GLAND ABOVE THE MINIMUM TEMPERATURE OF 45° AND THE MINIMUM JOINT OPENING AND CORRESPONDING MAXIMUM DECK TEMPERATURE SHOWN IN THESE PLANS. THE DECK TEMPERATURE SHALL BE MEASURED BY RECORDING THE SURFACE TEMPERATURES ON THE UNDERSIDE OF THE DECK ADJACENT TO THE JOINTS. IF THE DECK TEMPERATURE DOES NOT FALL WITHIN THE SPECIFIED TEMPERATURE RANGE BEFORE THE CONTRACTOR HAS COMPLETED ALL OTHER REQUIRED WORK, IT WILL BE NECESSARY FOR THE CONTRACTOR TO RETURN TO THE PROJECT SITE TO COMPLETE INSTALLATION AND TESTING OF THE NEOPRENE GLAND. IF THE CONTRACTOR IS REQUIRED TO RETURN TO THE PROJECT SITE AFTER ALL OTHER REQUIRED WORK HAS BEEN COMPLETED, THE CONTRACTOR SHALL COMPLETE INSTALLATION AND TESTING OF NEOPRENE GLAND AT NO EXTRA CHARGE TO THE STATE.

THE NUMBER OF FEET OF NEOPRENE GLAND INSTALLED SHALL BE PAID FOR AT THE CONTRACT PRICE PER FOOT BASED ON PLAN QUANTITIES. THE PRICE FOR "NEOPRENE GLAND INSTALLATION AND TESTING" SHALL BE FULL COMPENSATION FOR INSTALLING AND TESTING OF THE NEW NEOPRENE GLAND. THIS WORK WILL CONSIST OF CLEANING THE EXTRUSION, INSTALLATION OF THE NEOPRENE GLAND AND WATER TIGHT TESTING OF THE EXPANSION JOINT SYSTEM. ALL WORK AND MATERIALS NECESSARY FOR THE INSTALLATION OF THE NEOPRENE GLAND SHALL COMPLY WITH THE RECOMMENDATIONS OF THE EXPANSION JOINT MANUFACTURER. THE PRICE BID FOR "NEOPRENE GLAND INSTALLATION AND TESTING" SHALL INCLUDE ALL WATERTIGHT INTEGRITY TESTING, LEAK REPAIRS AS DIRECTED BY THE ENGINEER, AND SUBSEQUENT WATERTIGHT TESTING UNTIL A LEAK FREE INSTALLATION IS ACHIEVED.

WATERTIGHT INTEGRITY TESTING AND REPAIR NOTES:

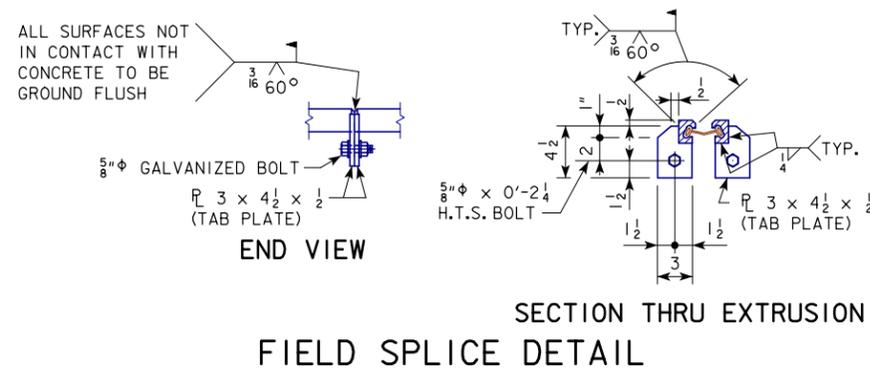
AFTER INSTALLATION OF EACH NEOPRENE GLAND, THE CONTRACTOR SHALL PERFORM WATERTIGHT INTEGRITY TESTS AT THE DECK LEVEL TO DETECT ANY LEAKAGE. THE TESTS ARE TO CHECK FOR LEAKAGE AT THE UPTURNED ENDS OF THE EXPANSION DEVICE AND FOR LEAKAGE ALONG THE EXPANSION DEVICE ACROSS THE DECK AND ANY MEDIANS OR SIDEWALKS. THE CONTRACTOR MAY CONDUCT A SINGLE TEST OF THE ENTIRE DEVICE INCLUDING UPTURNED ENDS OR MAY CONDUCT SEPARATE TESTS OF UPTURNED ENDS AND ONE OR MORE TESTS OF OVERLAPPING LENGTHS BETWEEN THE UPTURNED ENDS.

AT EACH UPTURNED END OF THE EXPANSION DEVICE, THE CONTRACTOR SHALL BLOCK OUT ON THE DECK AT LEAST 3 FEET OF THE EXPANSION DEVICE LEADING TO THE UPTURNED END AND FLOOD THE AREA. A MINIMUM WATER DEPTH OF 3" SHALL BE MAINTAINED AT THE GUTTERLINE FOR AT LEAST 30 MINUTES. DURING THE TEST, THE INSPECTOR SHALL OBSERVE FOR ANY OVERFLOW AT THE UPTURNED END. AT THE CONCLUSION OF THE TEST THE INSPECTOR WILL EXAMINE THE UNDERSIDE OF THE JOINT FOR LEAKAGE. THE EXPANSION DEVICE IS CONSIDERED WATERTIGHT IF THE INSPECTOR OBSERVES NO OVERFLOW DURING THE TEST AND IF NO DRIPPING WATER OR WATER DROPLETS ARE VISIBLE IN THE UNDERDECK AREAS NEAR THE UPTURNED END.

THE CONTRACTOR SHALL TEST THE EXPANSION DEVICE BETWEEN UPTURNED ENDS BY BLOCKING OUT AND COVERING THE DEVICE WITH PONDED OR FLOWING WATER TO A DEPTH OF AT LEAST 1" AT ALL POINTS, FOR AT LEAST 30 MINUTES. VERTICAL CURB SURFACES MAY BE TESTED WITH AN UNNOZZLED HOSE DELIVERING APPROXIMATELY ONE GALLON PER MINUTE DIRECTED TO FLOW OVER THE ENTIRE CURB HEIGHT FOR 30 MINUTES. AT THE CONCLUSION OF THE TEST, THE INSPECTOR WILL EXAMINE THE UNDERSIDE OF THE JOINT FOR LEAKAGE. THE EXPANSION DEVICE IS CONSIDERED WATERTIGHT IF NO DRIPPING WATER OR WATER DROPLETS ARE VISIBLE IN THE UNDERDECK AREAS ALONG THE FULL LENGTH OF THE EXPANSION JOINT. DAMP CONCRETE THAT DOES NOT SHOW DRIPPING WATER OR WATER DROPLETS IS NOT CONSIDERED A SIGN OF LEAKAGE.

IF THE EXPANSION DEVICE LEAKS AT AN UPTURNED END OR ALONG ITS LENGTH, THE CONTRACTOR SHALL LOCATE THE LEAK(S) AND TAKE REPAIR MEASURES TO STOP THE LEAKAGE. THE REPAIR MEASURES SHALL BE AS RECOMMENDED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER PRIOR TO BEGINNING CORRECTIVE WORK.

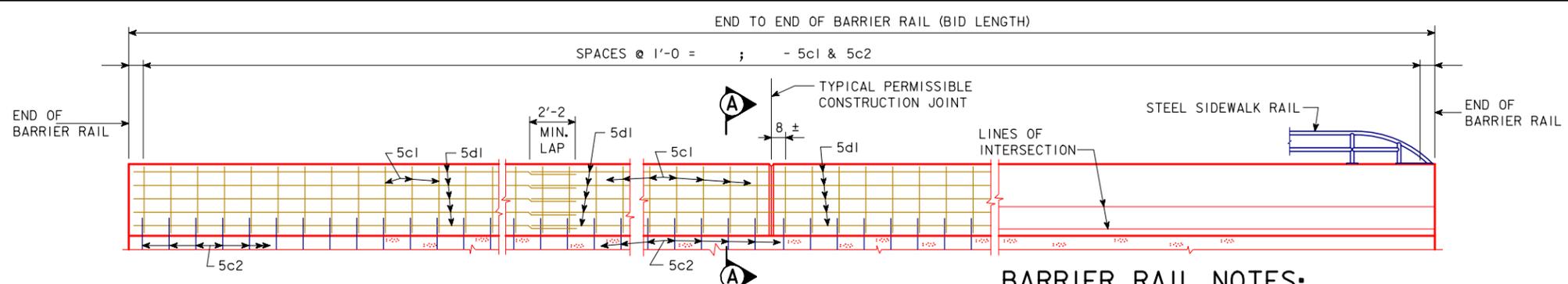
IF MEASURES TO ELIMINATE LEAKAGE ARE TAKEN, THE CONTRACTOR SHALL PERFORM SUBSEQUENT WATERTIGHT INTEGRITY TESTS SUBJECT TO THE SAME CONDITIONS AS THE ORIGINAL TEST.



EXPANSION DEVICE NOTES

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

REVISED 10-14 - MOVED THE OUTLET OF THE DRAIN SLOT 2 INCHES ABOVE THE BRIDGE DECK SURFACE. ENGLISHDECKRAILBRIDGES.DGN 1028SA - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 5c2 BARS TO STAINLESS STEEL.



ELEVATION OF BARRIER RAIL LAYOUT

BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
 THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER. COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.
 ALL BARRIER RAIL REINFORCING STEEL IS TO BE EITHER EPOXY COATED OR STAINLESS STEEL AS SHOWN. THE STAINLESS STEEL REINFORCING STEEL SHALL BE DEFORMED BAR GRADE 60 MEETING THE REQUIREMENTS OF MATERIALS I.M. 452.
 THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS MEASURED FROM END TO END OF RAIL. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS.
 THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.
 TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL \bar{C} GRADE.
 CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 2.84 SQUARE FEET.

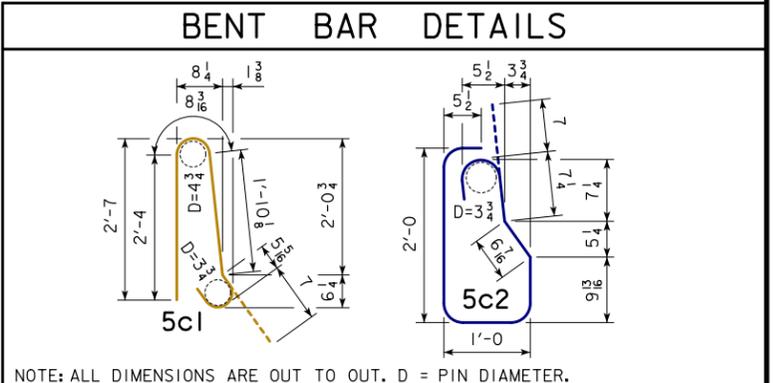
EPOXY COATED REINF. STEEL - TWO RAILS

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5c1	VERTICAL			5'-11"	
5d1	LONGITUDINAL				
EPOXY STEEL TOTAL (LBS.)					

STAINLESS STEEL REINF. STEEL - TWO RAILS

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5c2	VERTICAL			6'-0"	
STAINLESS STEEL TOTAL (LBS.)					

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

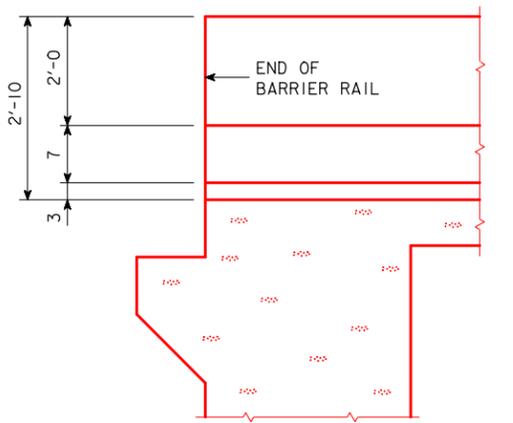


CONCRETE PLACEMENT SUMMARY

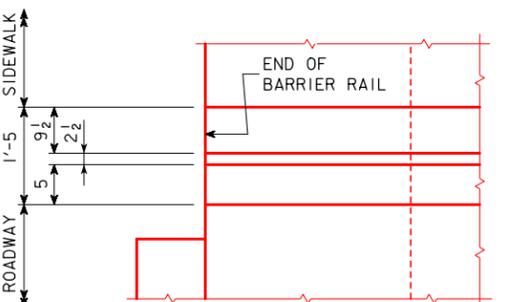
SECTION	TOTAL
STANDARD SECTION @ .1052 CU. YD. PER FT.	

CONCRETE BARRIER RAIL QUANTITIES

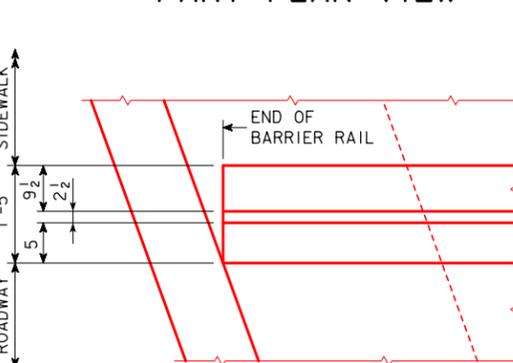
ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAILING	L.F.	



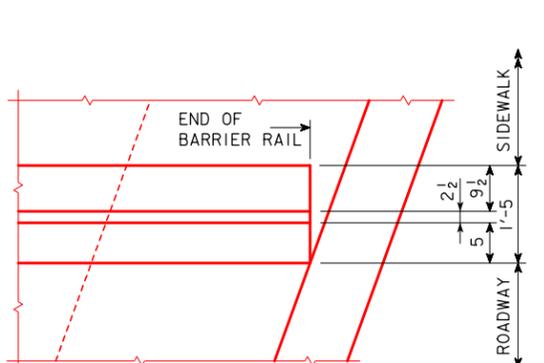
PART ELEVATION VIEW



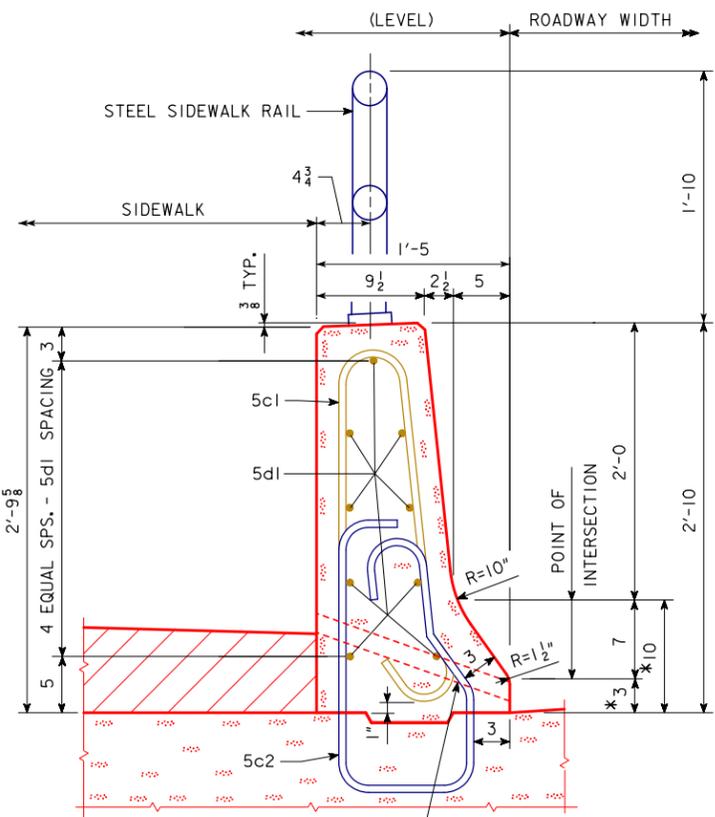
PART PLAN VIEW



PART PLAN VIEW



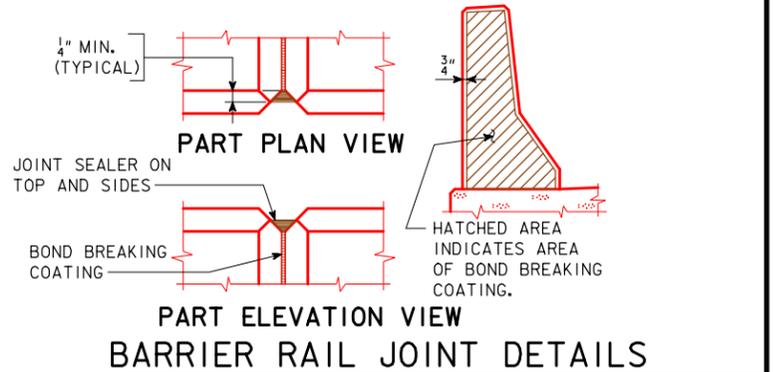
PART PLAN VIEW



PART SECTION A-A

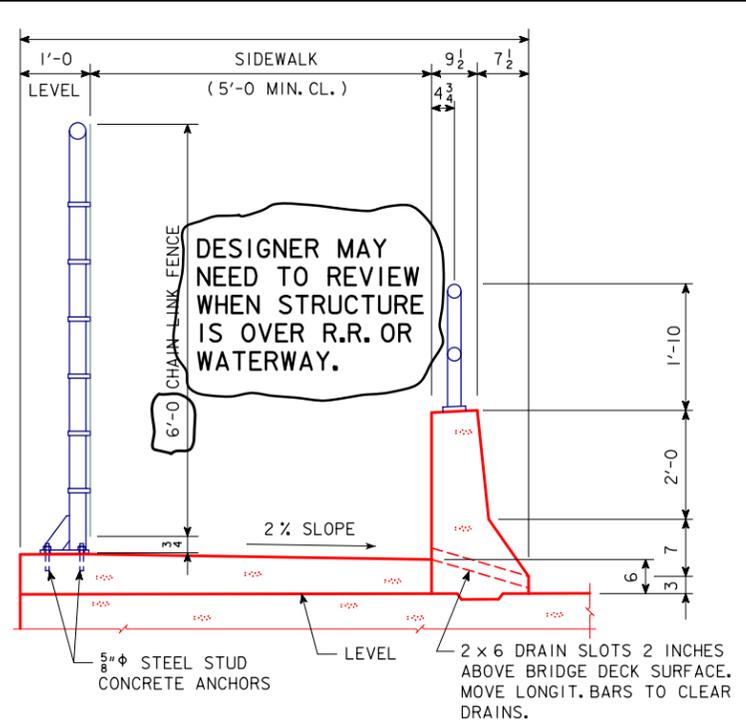
2 x 6 DRAIN SLOTS 2 INCHES ABOVE BRIDGE DECK SURFACE. MOVE LONGIT. BARS TO CLEAR DRAINS.

* DENOTES THE MAXIMUM VALUE FOR THIS DIMENSION. THIS DIMENSION MAY VARY DUE TO CONSTRUCTION INACCURACIES.

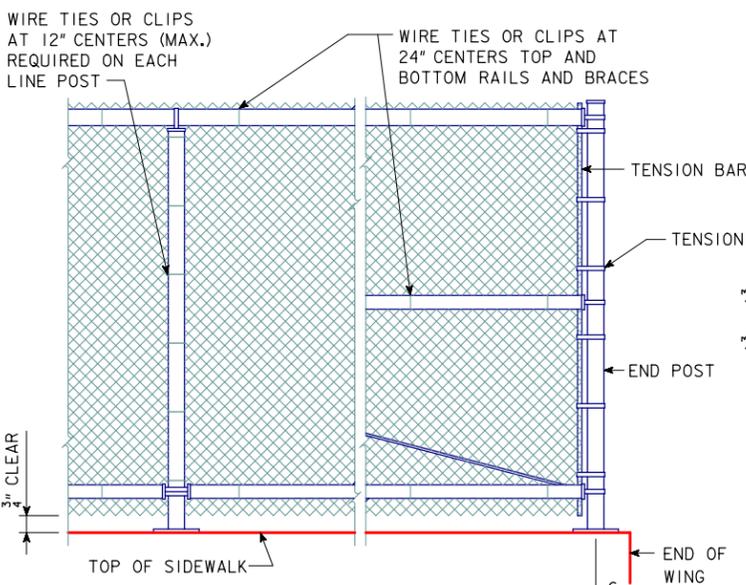


NOTE TO DETAILER USE THESE VIEWS ONLY IF SKEWED

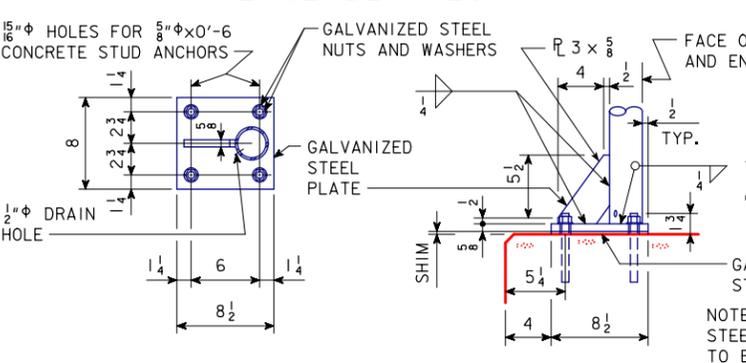
NOTE TO DETAILER, TAKE OFF SIDEWALK OVERLAY AND DRAIN SLOTS IN PART SECTION A-A IF THEY ARE NOT APPLICABLE.



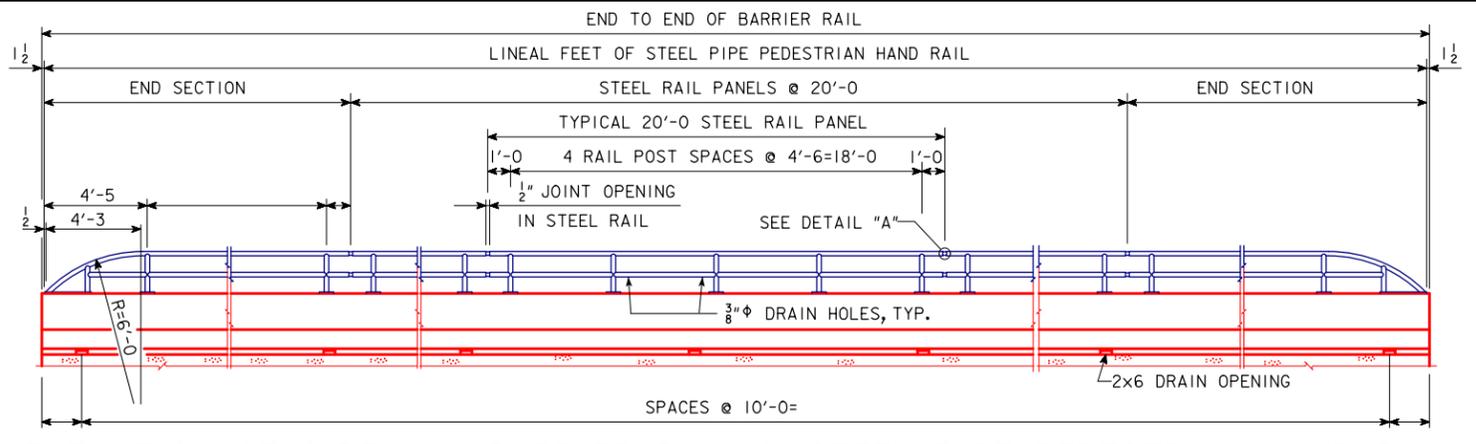
TYPICAL SECTION



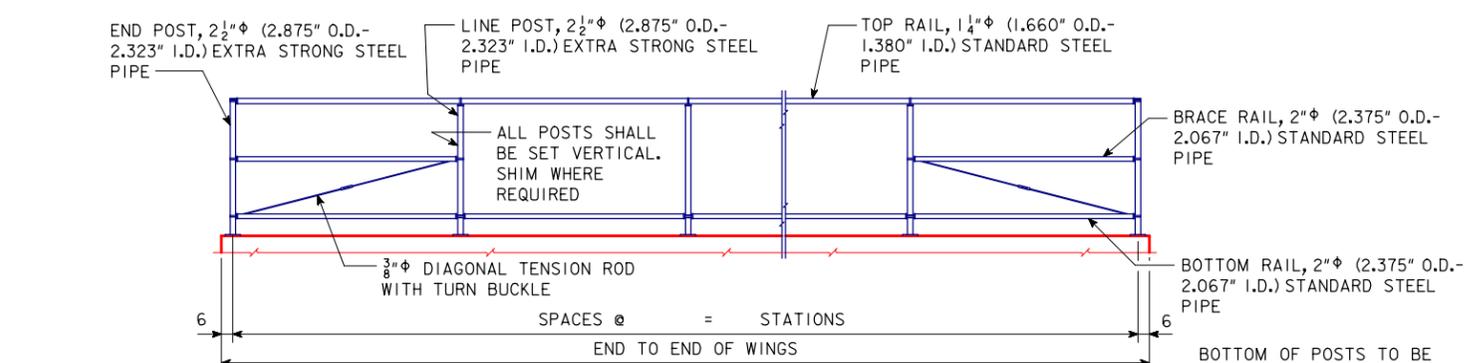
FENCE DETAILS



BASE PLATE DETAILS FOR END POST AND LINE POSTS
NOTE: POSTS AND BASE PLATES SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123.

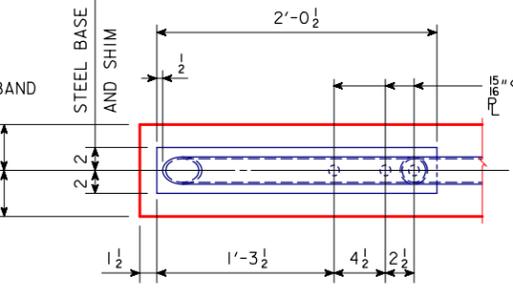


ELEVATION OF SIDEWALK BARRIER RAIL & STEEL PIPE PEDESTRIAN HAND RAIL

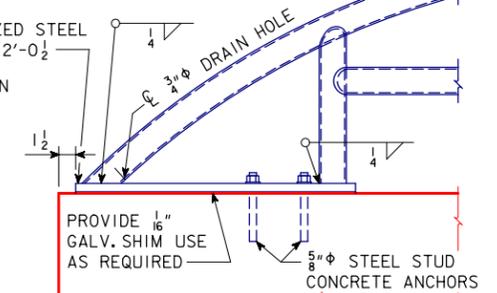


ELEVATION OF FENCE

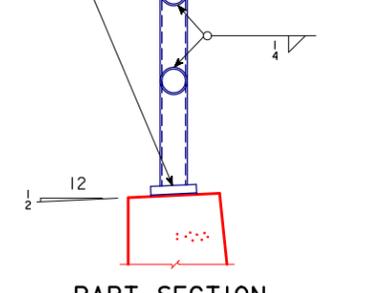
NOTE: MAXIMUM POST SPACING IS 10'-0".



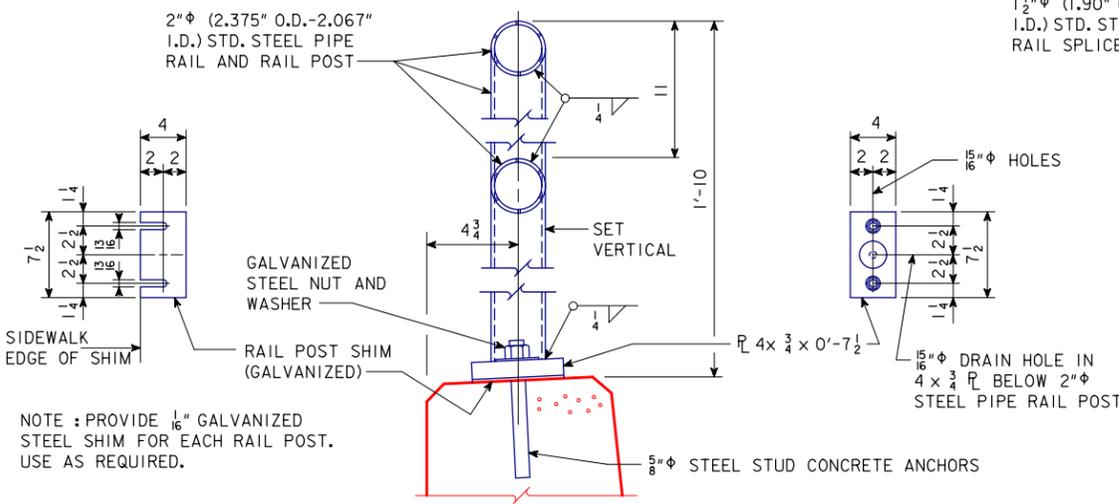
PLAN



ELEVATION RAIL END SECTION



PART SECTION

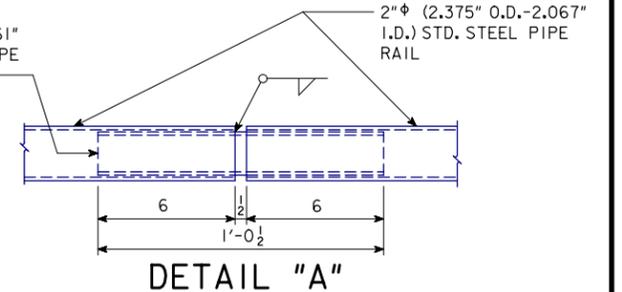


RAIL AND RAIL POST DETAILS

QUANTITIES		
ITEM	UNITS	AMOUNT
STEEL PIPE PEDESTRIAN HAND RAIL	LIN. FT.	
CHAIN LINK FENCE, 72" HEIGHT	LIN. FT.	

STEEL CHAIN LINK FENCE NOTES:
 THE CHAIN LINK FENCE IS TO BE BID ON A LINEAL FOOT BASIS MEASURED FROM C/C OF END POSTS. THE PRICE BID FOR "CHAIN LINK FENCE, 72" HEIGHT" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, INCLUDING CONCRETE ANCHORS AND SHIMS, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE FENCE IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.
 THE CHAIN LINK FENCE SHALL BE EITHER ZINC OR ALUMINUM COATED FABRIC, 2" MESH, NO. 9 WIRES, 72" HEIGHT WITH KNUCKLED SELVAGES TOP AND BOTTOM.
 THE STUD CONCRETE ANCHORS SHALL BE GALVANIZED AND HAVE A MINIMUM PULLOUT STRENGTH OF 8000 POUNDS BASED ON 4000 PSI CONCRETE.
 THE MATERIAL FOR POSTS, BRACES AND RAILS SHALL BE STEEL PIPE IN ACCORDANCE WITH ARTICLE 4154.10, A, OF THE STANDARDS SPECIFICATIONS. BASE PLATES AND SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A36. POSTS AND BASE PLATES SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123. SPECIAL FITTINGS SHALL BE IN ACCORDANCE WITH ARTICLE 4154.11, OF THE STANDARD SPECIFICATIONS, UNLESS OTHERWISE NOTED.
 THE FENCE SHALL BE TRUE TO LINE, TAUT, AND COMPLY WITH THE BEST PRACTICE FOR FENCE CONSTRUCTION OF THIS TYPE. ALL ENDS OF WIRES SHALL BE TURNED SO THAT THEY EXTEND AWAY FROM THE SIDEWALK SIDE OF THE FENCE.

PEDESTRIAN HAND RAIL NOTES:
 THE STEEL PIPE PEDESTRIAN HAND RAIL IS TO BE BID ON A LINEAL FOOT BASIS MEASURED END TO END OF RAIL. THE PRICE BID FOR STEEL PIPE PEDESTRIAN HAND RAIL SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, INCLUDING ANCHOR BOLTS AND SHIMS, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.
 THE MATERIAL FOR TUBE RAILS, POSTS AND SPLICE TUBES SHALL BE STANDARD STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A53, TYPE E OR S, GRADE B. BASE PLATES AND SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A36. PANELS AND END SECTIONS SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123.
 ENDS OF RAIL SECTIONS ARE TO BE SAWED OR MILLED. ALL CUT ENDS ARE TO BE TRUE, SMOOTH, AND FREE OF BURRS OR RAGGED EDGES.
 NO PAINTING WILL BE REQUIRED.
 THE STUD CONCRETE ANCHORS SHALL BE GALVANIZED AND HAVE A MINIMUM PULL OUT STRENGTH OF 8000 POUNDS BASED ON 4000 PSI CONCRETE.
 FOR DETAILS OF CONCRETE BARRIER RAIL SEE DESIGN SHEET --- OF THESE PLANS.



DETAIL "A"

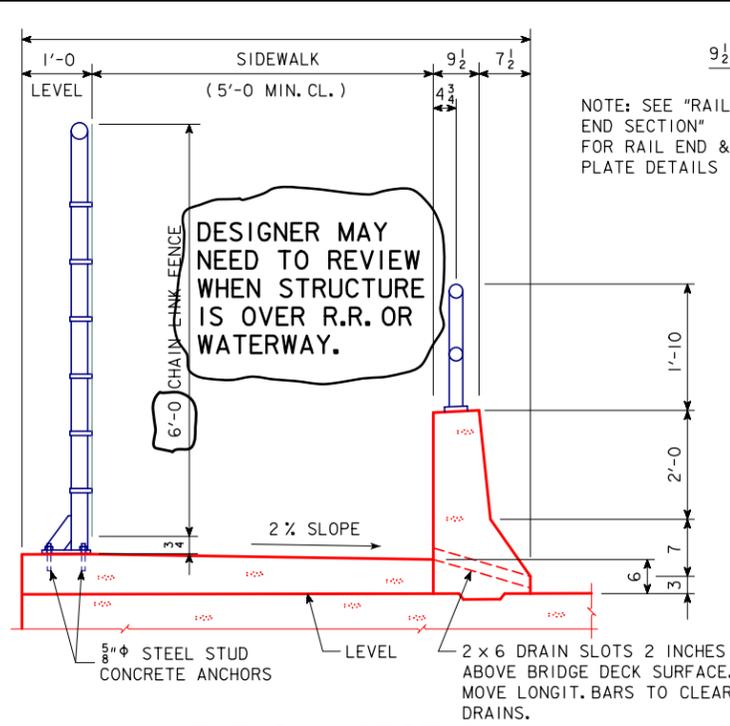
CORRECTION 10-14 - RE-DEFINED THE SURFACE OF THE BRIDGE DECK IN THE TYPICAL SECTION REFERRING TO THE DRAIN SLOTS. ENGLISHDECKRAILBRIDGES.DGN 1029A - THIS SHEET ISSUED 02-00

QUANTITIES

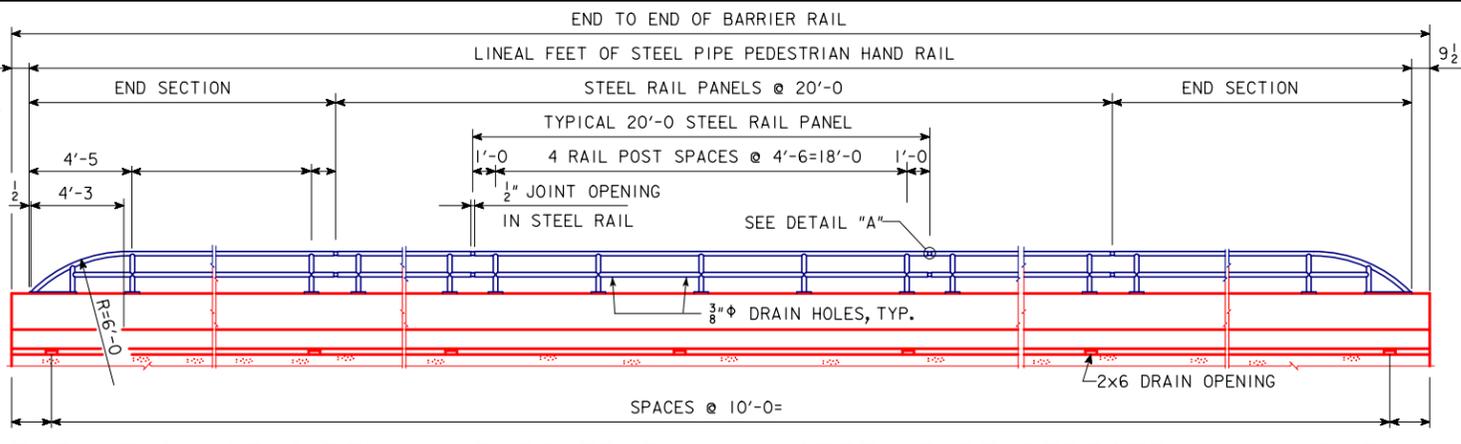
ITEM	UNITS	AMOUNT
STEEL PIPE PEDESTRIAN HAND RAIL	LIN. FT.	
CHAIN LINK FENCE, 72" HEIGHT	LIN. FT.	

STEEL CHAIN LINK FENCE NOTES:
 THE CHAIN LINK FENCE IS TO BE BID ON A LINEAL FOOT BASIS MEASURED FROM C/C TO C/C OF END POSTS. THE PRICE BID FOR "CHAIN LINK FENCE, 72" HEIGHT" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, INCLUDING CONCRETE ANCHORS AND SHIMS, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE FENCE IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.
 THE CHAIN LINK FENCE SHALL BE EITHER ZINC OR ALUMINUM COATED FABRIC, 2" MESH, NO. 9 WIRES, 72" HEIGHT WITH KNUCKLED SELVAGES TOP AND BOTTOM.
 THE STUD CONCRETE ANCHORS SHALL BE GALVANIZED AND HAVE A MINIMUM PULLOUT STRENGTH OF 8000 POUNDS BASED ON 4000 PSI CONCRETE.
 THE MATERIAL FOR POSTS, BRACES AND RAILS SHALL BE STEEL PIPE IN ACCORDANCE WITH ARTICLE 4154.10, A, OF THE STANDARDS SPECIFICATIONS. BASE PLATES AND SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A36. POSTS AND BASE PLATES SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123. SPECIAL FITTINGS SHALL BE IN ACCORDANCE WITH ARTICLE 4154.11, OF THE STANDARD SPECIFICATIONS, UNLESS OTHERWISE NOTED.
 THE FENCE SHALL BE TRUE TO LINE, TAUT, AND COMPLY WITH THE BEST PRACTICE FOR FENCE CONSTRUCTION OF THIS TYPE. ALL ENDS OF WIRES SHALL BE TURNED SO THAT THEY EXTEND AWAY FROM THE SIDEWALK SIDE OF THE FENCE.

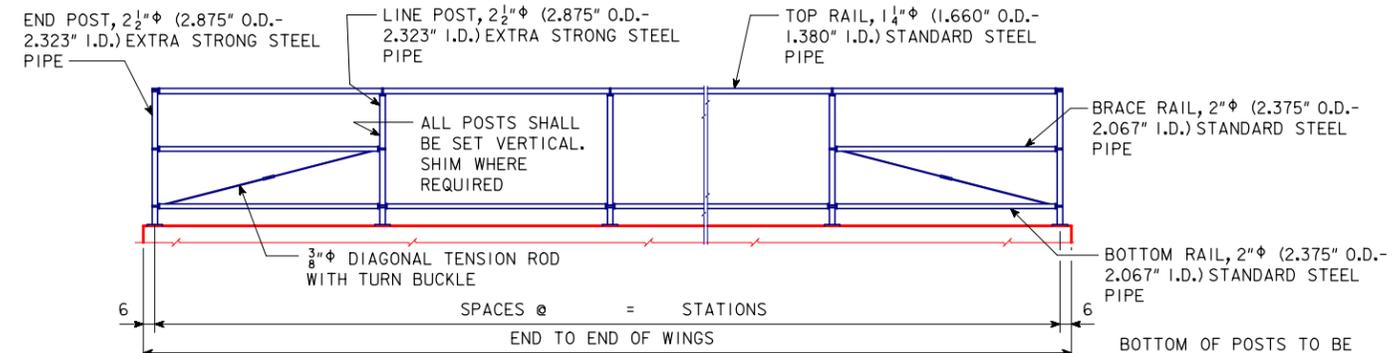
PEDESTRIAN HAND RAIL NOTES:
 THE STEEL PIPE PEDESTRIAN HAND RAIL IS TO BE BID ON A LINEAL FOOT BASIS MEASURED END TO END OF RAIL. THE PRICE BID FOR STEEL PIPE PEDESTRIAN HAND RAIL SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, INCLUDING ANCHOR BOLTS AND SHIMS, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.
 THE MATERIAL FOR TUBE RAILS, POSTS AND SPLICE TUBES SHALL BE STANDARD STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A53, TYPE E OR S, GRADE B. BASE PLATES AND SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A36. PANELS AND END SECTIONS SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123.
 ENDS OF RAIL SECTIONS ARE TO BE SAWED OR MILLED. ALL CUT ENDS ARE TO BE TRUE, SMOOTH, AND FREE OF BURRS OR RAGGED EDGES.
 NO PAINTING WILL BE REQUIRED.
 THE STUD CONCRETE ANCHORS SHALL BE GALVANIZED AND HAVE A MINIMUM PULL OUT STRENGTH OF 8000 POUNDS BASED ON 4000 PSI CONCRETE.
 FOR DETAILS OF CONCRETE BARRIER RAIL SEE DESIGN SHEET --- OF THESE PLANS.



TYPICAL SECTION

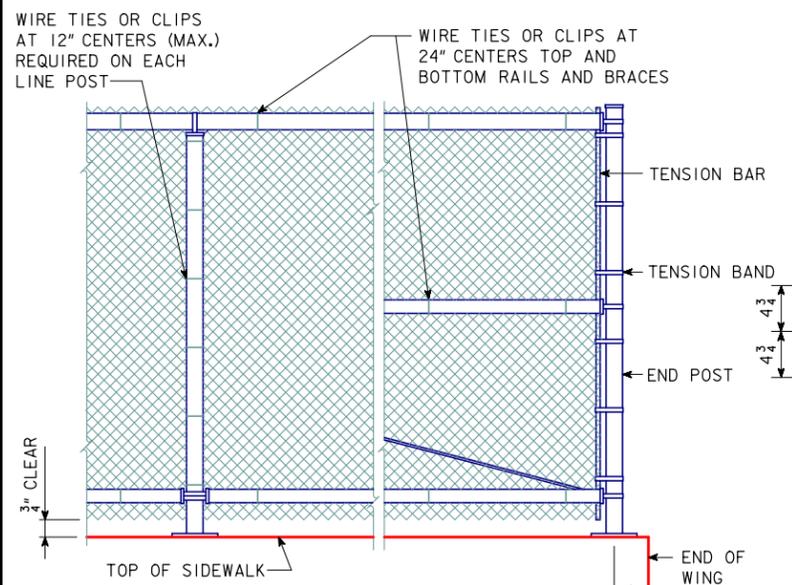


ELEVATION OF SIDEWALK BARRIER RAIL & STEEL PIPE PEDESTRIAN HAND RAIL

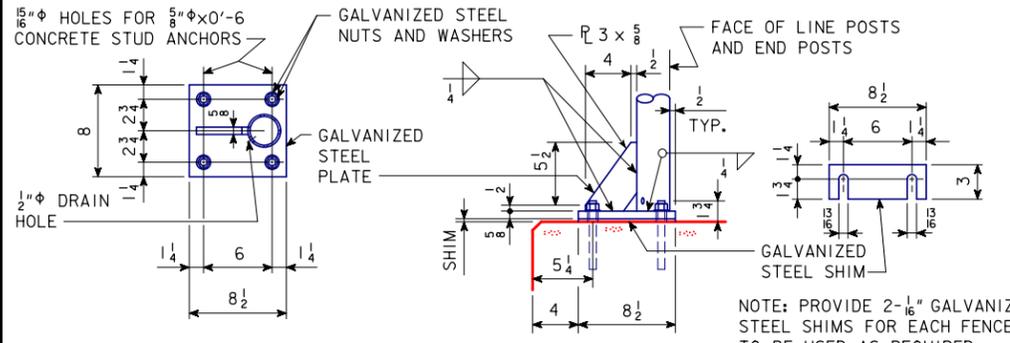


ELEVATION OF FENCE

NOTE: MAXIMUM POST SPACING IS 10'-0".

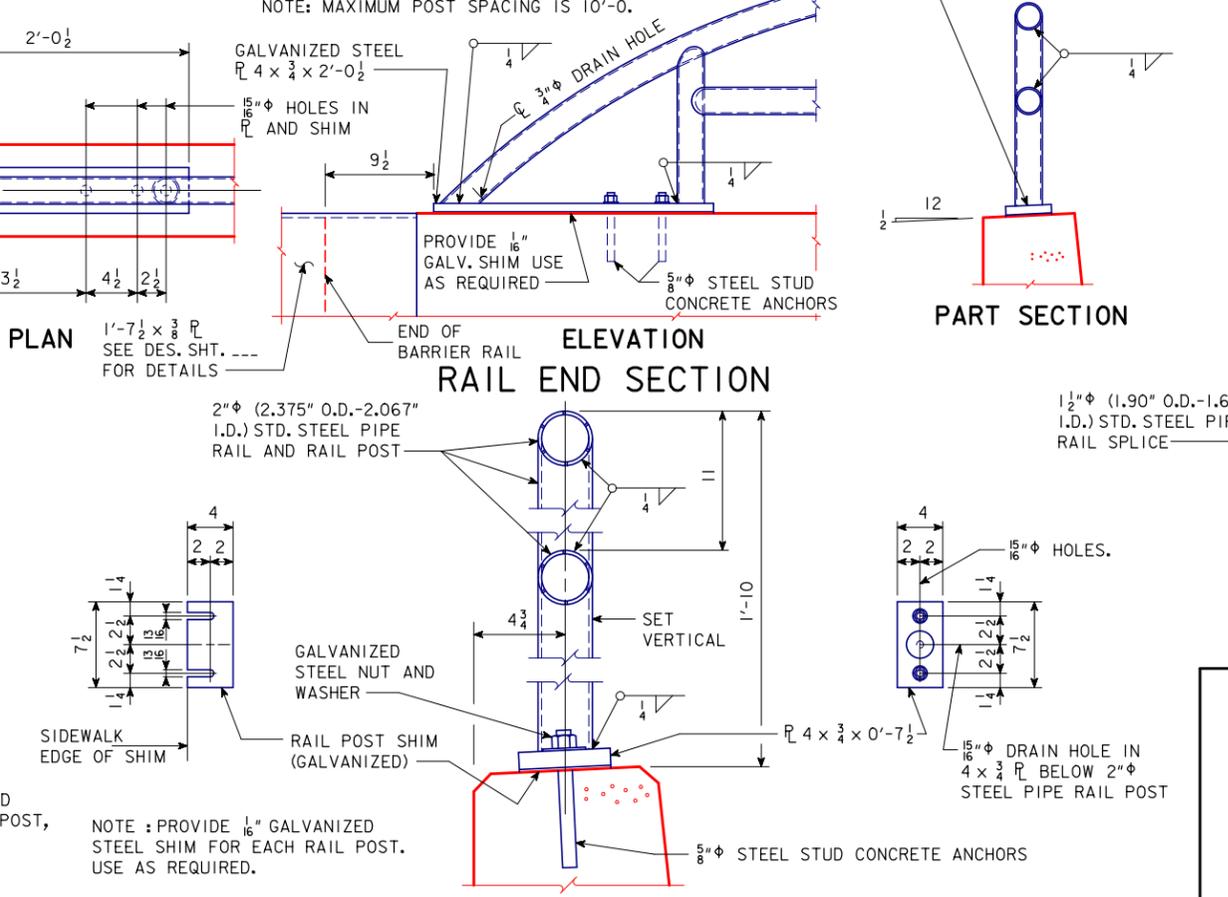


FENCE DETAILS

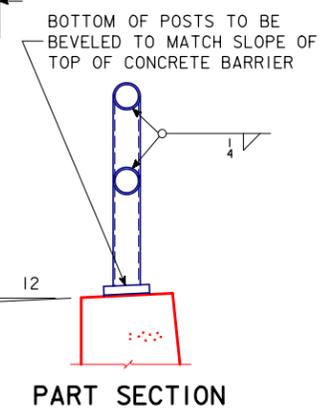


BASE PLATE DETAILS FOR END POST AND LINE POSTS

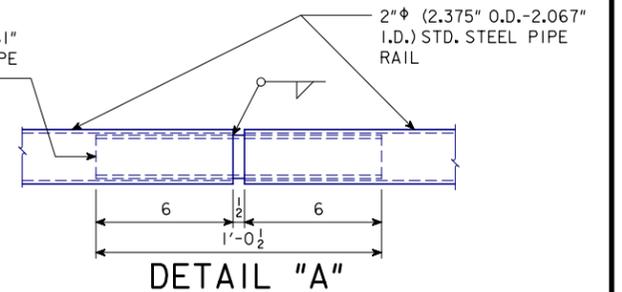
NOTE: POSTS AND BASE PLATES SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123.



RAIL AND RAIL POST DETAILS



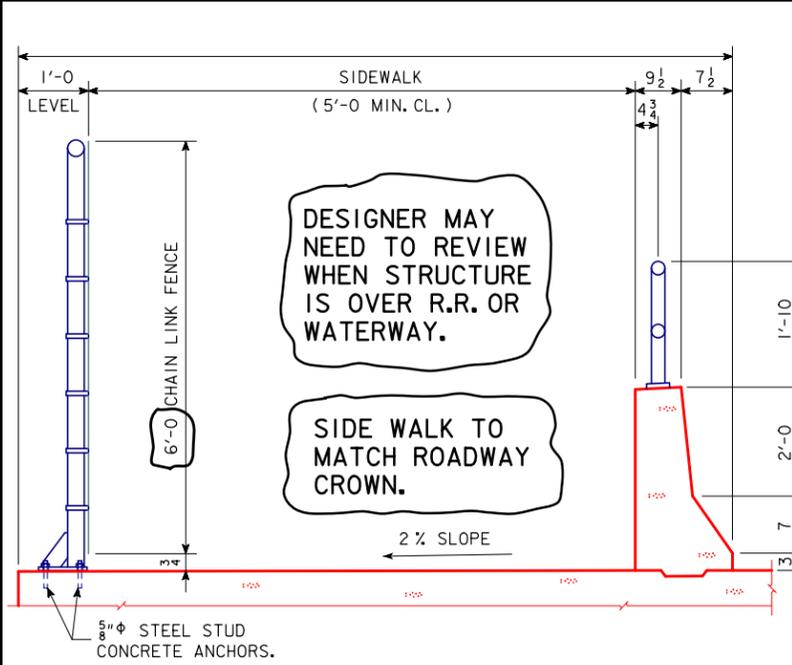
PART SECTION



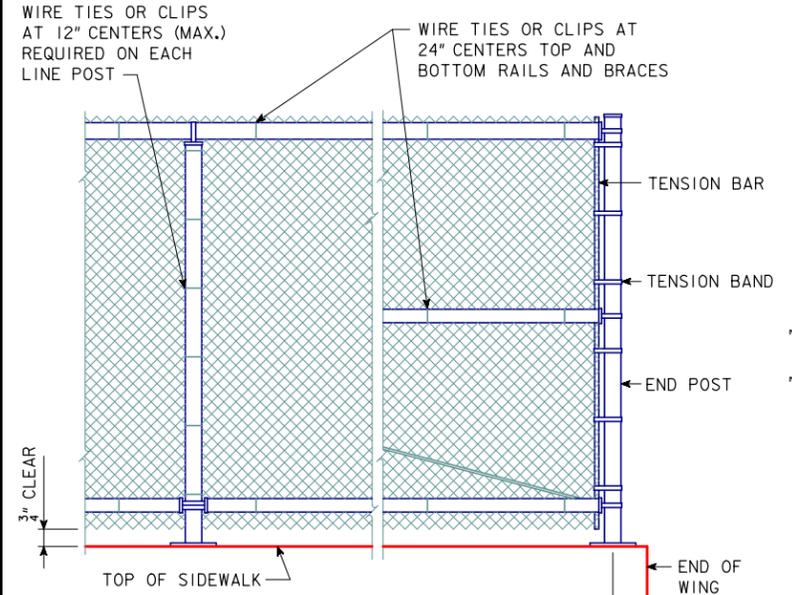
DETAIL "A"

CORRECTION 10-14 - RE-DEFINED THE SURFACE OF THE BRIDGE DECK IN THE TYPICAL SECTION REFERRING TO THE DRAIN SLOTS. ENGLISHDECKRAILBRIDGES.DGN 1029B - THIS SHEET ISSUED 02-00

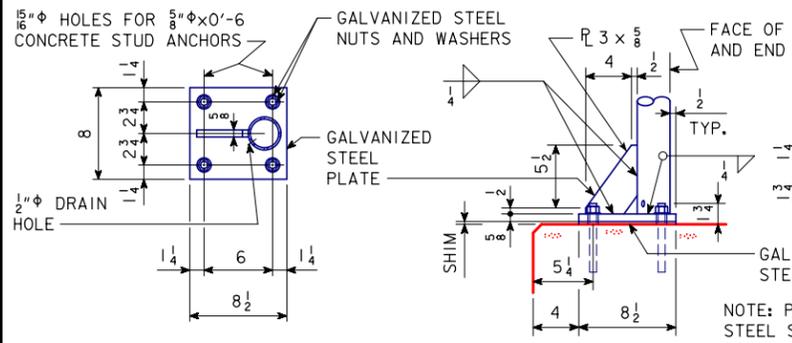
REVISED 04-11 - THE MATERIAL REFERENCE FOR THE POST, BRACES, & RAILS WAS CHANGED TO ARTICLE 4154.10, A, OF THE STANDARD SPECIFICATIONS. ENGLISHDECKRAILBRIDGES.DGN 1029C - THIS SHEET ISSUED 02-00



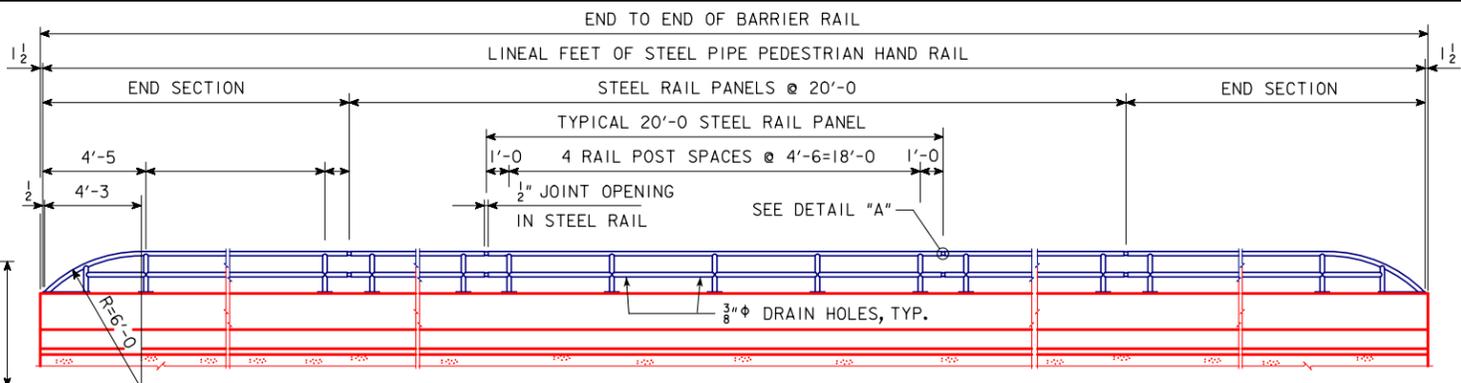
TYPICAL SECTION



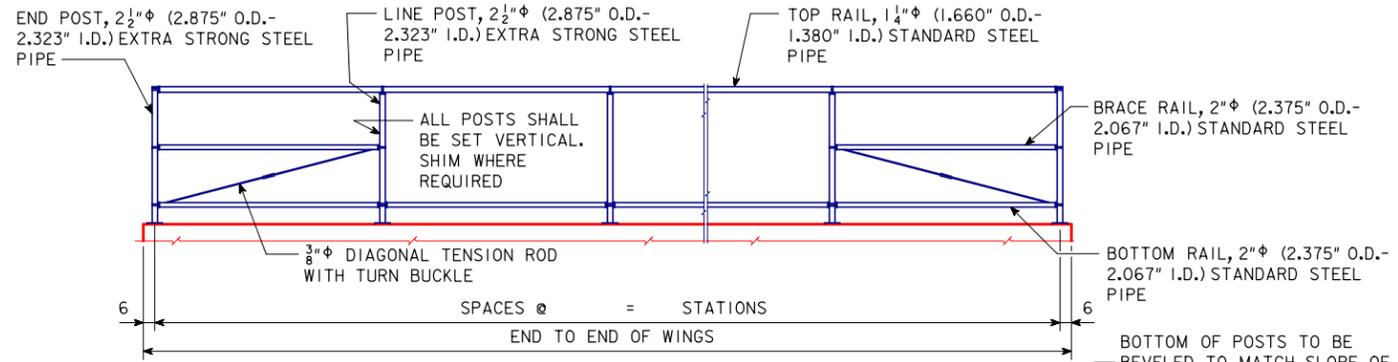
FENCE DETAILS



BASE PLATE DETAILS FOR END POST AND LINE POSTS
NOTE: POSTS AND BASE PLATES SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123.

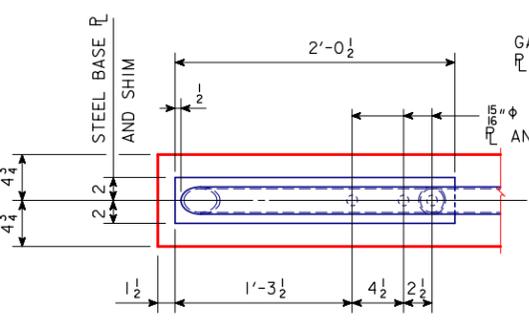


ELEVATION OF SIDEWALK BARRIER RAIL & STEEL PIPE PEDESTRIAN HAND RAIL

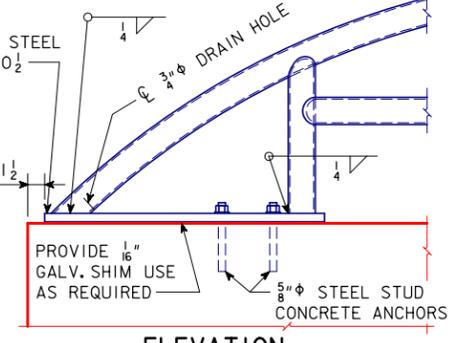


ELEVATION OF FENCE

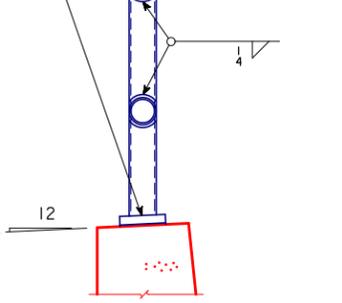
NOTE: MAXIMUM POST SPACING IS 10'-0".



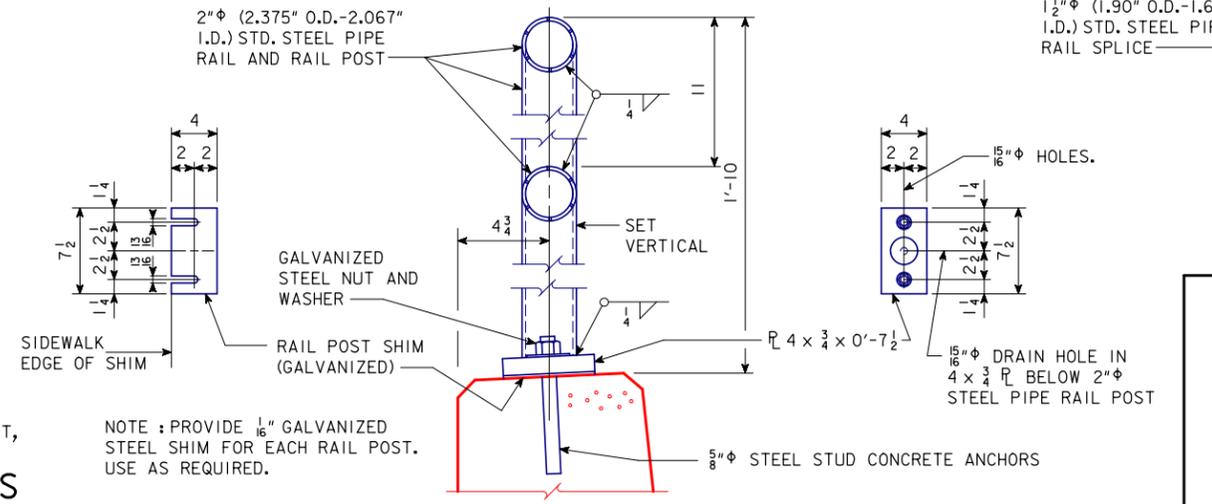
PLAN



ELEVATION RAIL END SECTION



PART SECTION

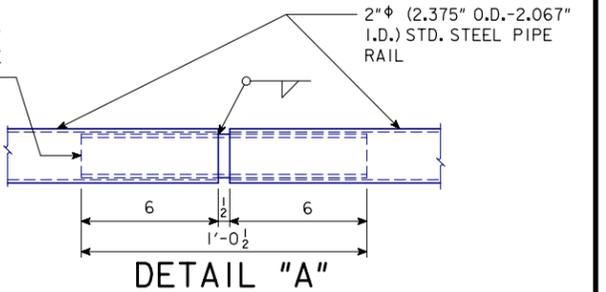


RAIL AND RAIL POST DETAILS

QUANTITIES		
ITEM	UNITS	AMOUNT
STEEL PIPE PEDESTRIAN HAND RAIL	LIN. FT.	
CHAIN LINK FENCE, 72" HEIGHT	LIN. FT.	

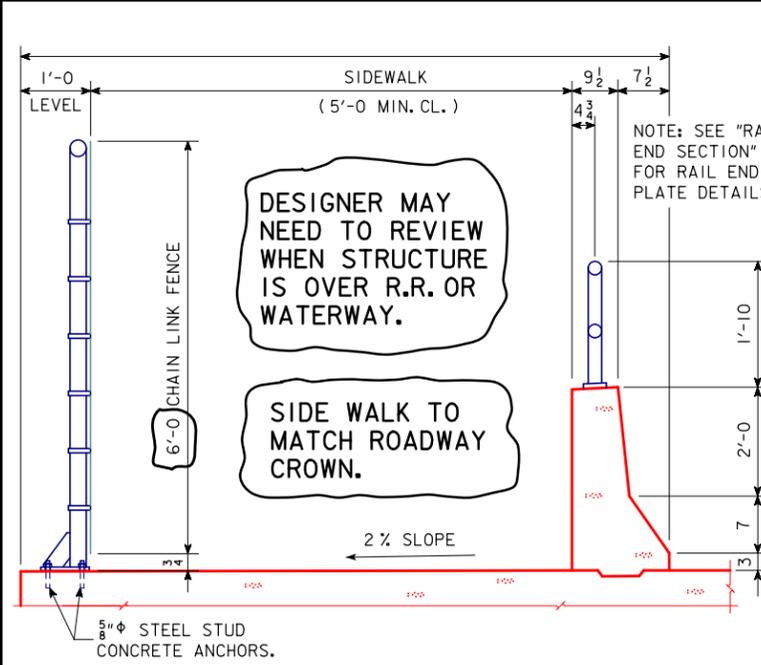
STEEL CHAIN LINK FENCE NOTES:
THE CHAIN LINK FENCE IS TO BE BID ON A LINEAL FOOT BASIS MEASURED FROM C/C TO C/C OF END POSTS. THE PRICE BID FOR "CHAIN LINK FENCE, 72" HEIGHT" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, INCLUDING CONCRETE ANCHORS AND SHIMS, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE FENCE IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.
THE CHAIN LINK FENCE SHALL BE EITHER ZINC OR ALUMINUM COATED FABRIC, 2" MESH, NO. 9 WIRES, 72" HEIGHT WITH KNUCKLED SELVAGES TOP AND BOTTOM.
THE STUD CONCRETE ANCHORS SHALL BE GALVANIZED AND HAVE A MINIMUM PULLOUT STRENGTH OF 8000 POUNDS BASED ON 4000 PSI CONCRETE.
THE MATERIAL FOR POSTS, BRACES AND RAILS SHALL BE STEEL PIPE IN ACCORDANCE WITH ARTICLE 4154.10, A, OF THE STANDARDS SPECIFICATIONS. BASE PLATES AND SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A36. POSTS AND BASE PLATES SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123. SPECIAL FITTINGS SHALL BE IN ACCORDANCE WITH ARTICLE 4154.11, OF THE STANDARD SPECIFICATIONS, UNLESS OTHERWISE NOTED.
THE FENCE SHALL BE TRUE TO LINE, TAUT, AND COMPLY WITH THE BEST PRACTICE FOR FENCE CONSTRUCTION OF THIS TYPE. ALL ENDS OF WIRES SHALL BE TURNED SO THAT THEY EXTEND AWAY FROM THE SIDEWALK SIDE OF THE FENCE.

PEDESTRIAN HAND RAIL NOTES:
THE STEEL PIPE PEDESTRIAN HAND RAIL IS TO BE BID ON A LINEAL FOOT BASIS MEASURED END TO END OF RAIL. THE PRICE BID FOR STEEL PIPE PEDESTRIAN HAND RAIL SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, INCLUDING ANCHOR BOLTS AND SHIMS, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.
THE MATERIAL FOR TUBE RAILS, POSTS AND SPLICE TUBES SHALL BE STANDARD STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A53, TYPE E OR S, GRADE B. BASE PLATES AND SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A36. PANELS AND END SECTIONS SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123.
ENDS OF RAIL SECTIONS ARE TO BE SAWED OR MILLED. ALL CUT ENDS ARE TO BE TRUE, SMOOTH, AND FREE OF BURRS OR RAGGED EDGES.
NO PAINTING WILL BE REQUIRED.
THE STUD CONCRETE ANCHORS SHALL BE GALVANIZED AND HAVE A MINIMUM PULL OUT STRENGTH OF 8000 POUNDS BASED ON 4000 PSI CONCRETE.
FOR DETAILS OF CONCRETE BARRIER RAIL SEE DESIGN SHEET --- OF THESE PLANS.

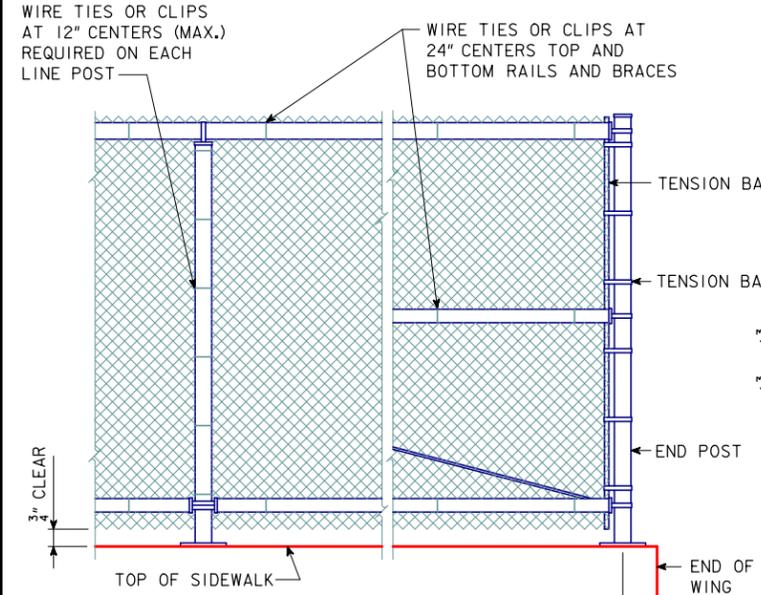


DETAIL "A"

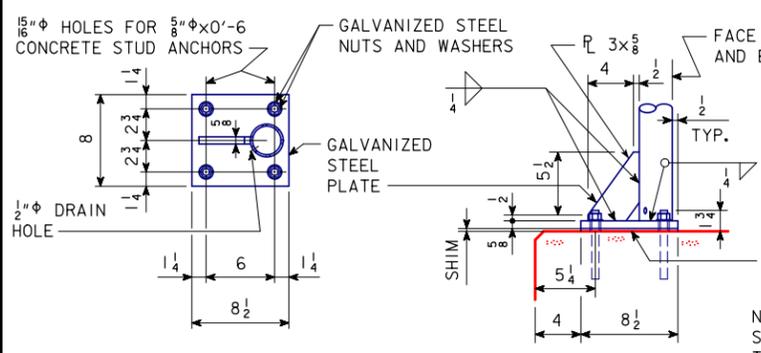
REVISED 04-11 - THE MATERIAL REFERENCE FOR THE POST, BRACES, & RAILS WAS CHANGED TO ARTICLE 4154.10, A, OF THE STANDARD SPECIFICATIONS. ENGLISHDECKRAILBRIDGES.DGN 1029D - THIS SHEET ISSUED 02-00



TYPICAL SECTION

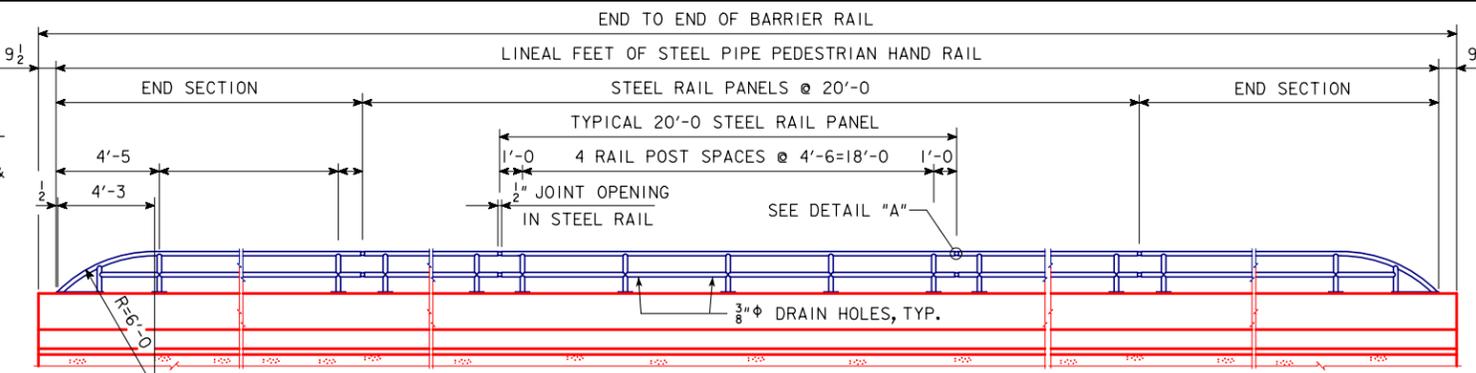


FENCE DETAILS

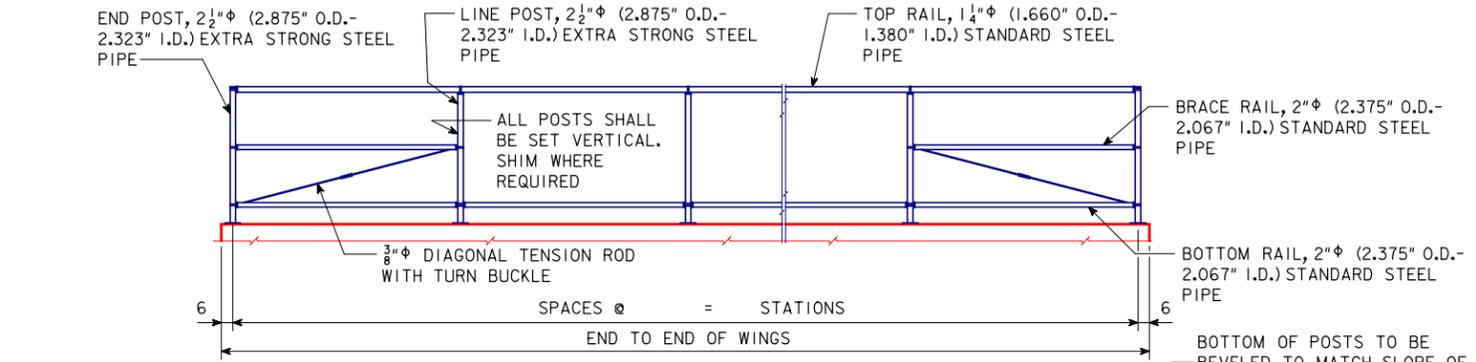


BASE PLATE DETAILS FOR END POST AND LINE POSTS

NOTE: POSTS AND BASE PLATES SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123.

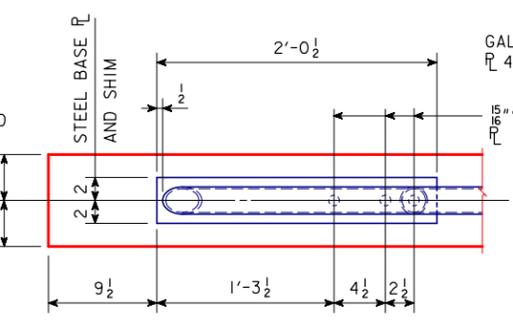


ELEVATION OF SIDEWALK BARRIER RAIL & STEEL PIPE PEDESTRIAN HAND RAIL

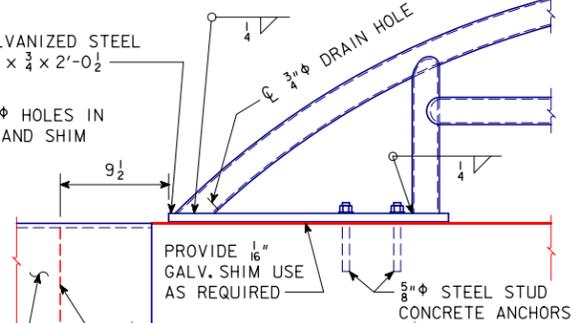


ELEVATION OF FENCE

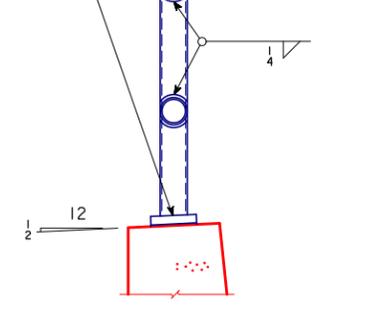
NOTE: MAXIMUM POST SPACING IS 10'-0.



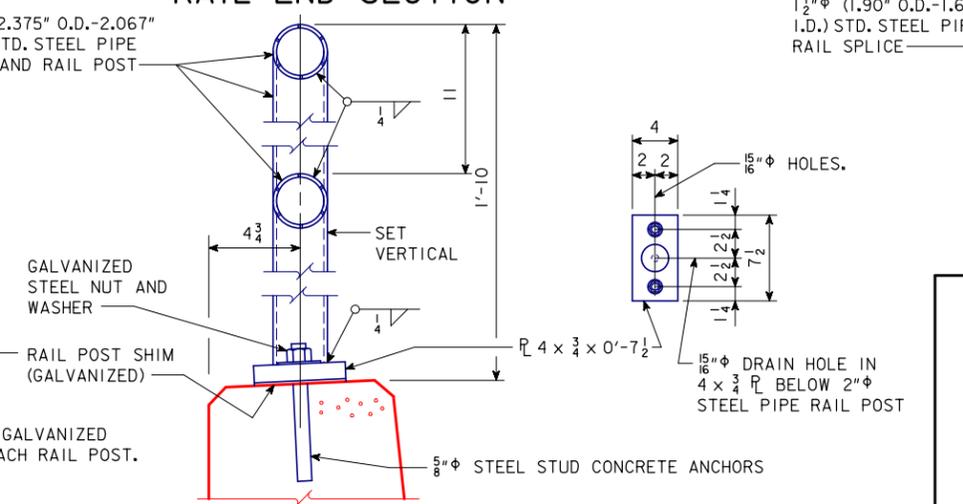
PLAN



ELEVATION RAIL END SECTION



PART SECTION

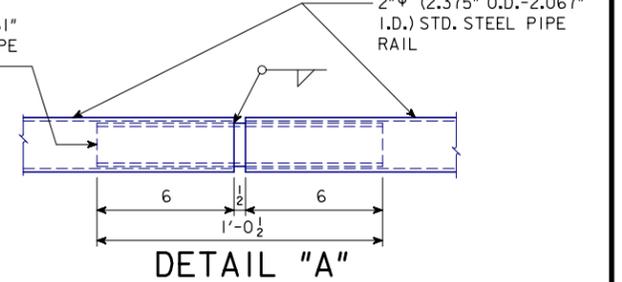


RAIL AND RAIL POST DETAILS

QUANTITIES		
ITEM	UNITS	AMOUNT
STEEL PIPE PEDESTRIAN HAND RAIL	LIN. FT.	
CHAIN LINK FENCE, 72" HEIGHT	LIN. FT.	

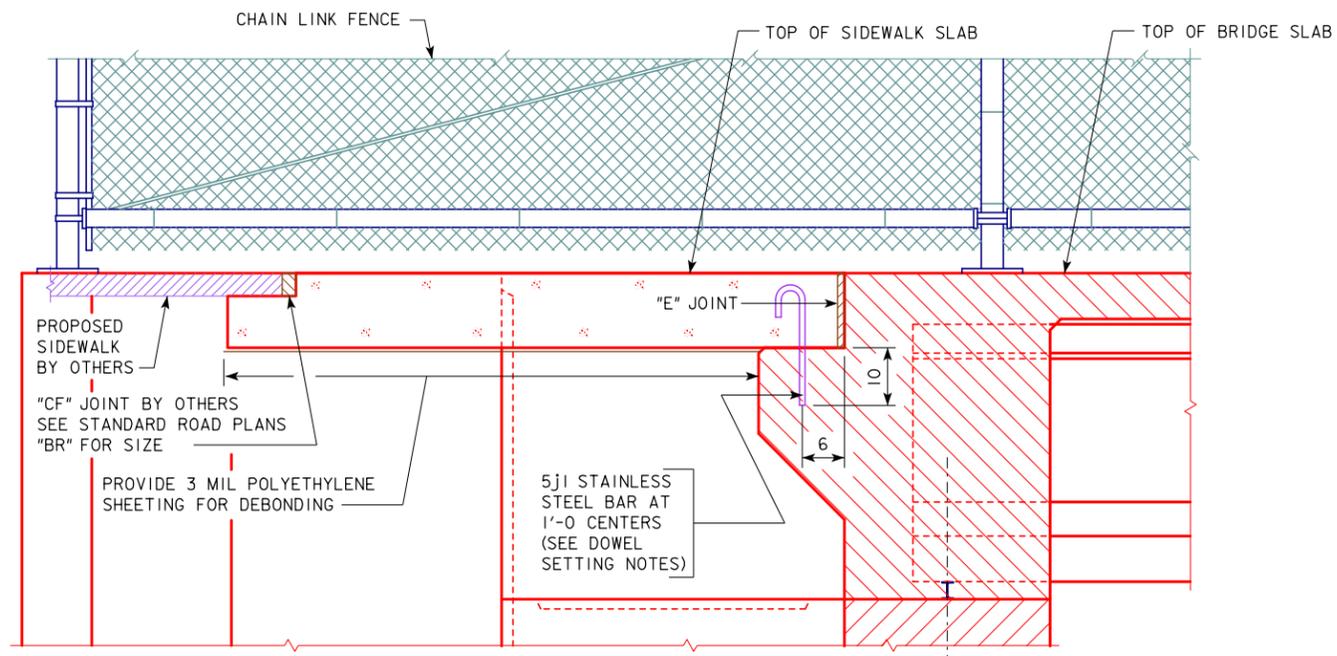
STEEL CHAIN LINK FENCE NOTES:
 THE CHAIN LINK FENCE IS TO BE BID ON A LINEAL FOOT BASIS MEASURED FROM C/C TO C/C OF END POSTS. THE PRICE BID FOR "CHAIN LINK FENCE, 72" HEIGHT" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, INCLUDING CONCRETE ANCHORS AND SHIMS, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE FENCE IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.
 THE CHAIN LINK FENCE SHALL BE EITHER ZINC OR ALUMINUM COATED FABRIC, 2" MESH, NO. 9 WIRES, 72" HEIGHT WITH KNUCKLED SELVAGES TOP AND BOTTOM.
 THE STUD CONCRETE ANCHORS SHALL BE GALVANIZED AND HAVE A MINIMUM PULLOUT STRENGTH OF 8000 POUNDS BASED ON 4000 PSI CONCRETE.
 THE MATERIAL FOR POSTS, BRACES AND RAILS SHALL BE STEEL PIPE IN ACCORDANCE WITH ARTICLE 4154.10, A, OF THE STANDARDS SPECIFICATIONS. BASE PLATES AND SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A36. POSTS AND BASE PLATES SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123. SPECIAL FITTINGS SHALL BE IN ACCORDANCE WITH ARTICLE 4154.11, OF THE STANDARD SPECIFICATIONS, UNLESS OTHERWISE NOTED.
 THE FENCE SHALL BE TRUE TO LINE, TAUT, AND COMPLY WITH THE BEST PRACTICE FOR FENCE CONSTRUCTION OF THIS TYPE. ALL ENDS OF WIRES SHALL BE TURNED SO THAT THEY EXTEND AWAY FROM THE SIDEWALK SIDE OF THE FENCE.

PEDESTRIAN HAND RAIL NOTES:
 THE STEEL PIPE PEDESTRIAN HAND RAIL IS TO BE BID ON A LINEAL FOOT BASIS MEASURED END TO END OF RAIL. THE PRICE BID FOR STEEL PIPE PEDESTRIAN HAND RAIL SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, INCLUDING ANCHOR BOLTS AND SHIMS, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.
 THE MATERIAL FOR TUBE RAILS, POSTS AND SPLICE TUBES SHALL BE STANDARD STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A53, TYPE E OR S, GRADE B. BASE PLATES AND SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A36. PANELS AND END SECTIONS SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123.
 ENDS OF RAIL SECTIONS ARE TO BE SAWED OR MILLED. ALL CUT ENDS ARE TO BE TRUE, SMOOTH, AND FREE OF BURRS OR RAGGED EDGES.
 NO PAINTING WILL BE REQUIRED.
 THE STUD CONCRETE ANCHORS SHALL BE GALVANIZED AND HAVE A MINIMUM PULL OUT STRENGTH OF 8000 POUNDS BASED ON 4000 PSI CONCRETE.
 FOR DETAILS OF CONCRETE BARRIER RAIL SEE DESIGN SHEET --- OF THESE PLANS.

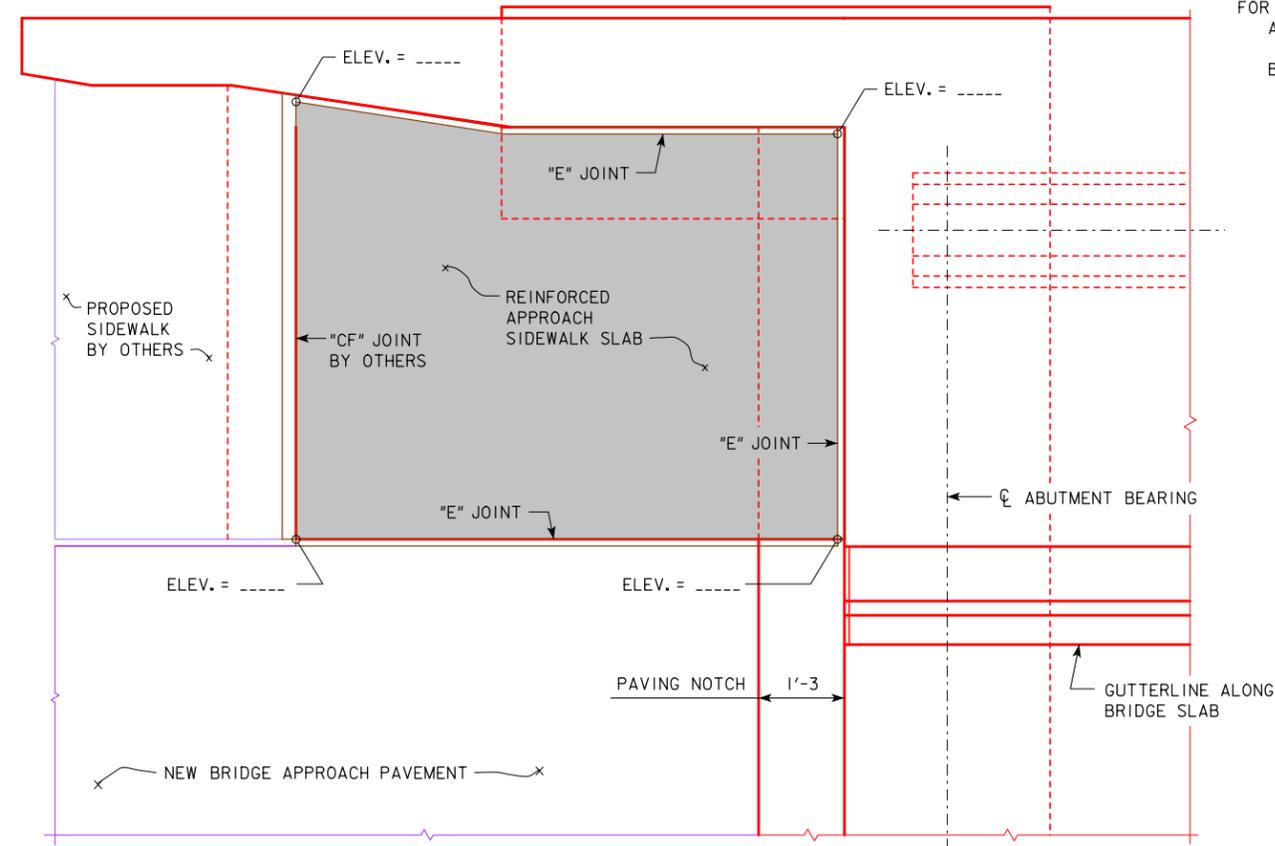


DETAIL "A"

REVISED 04-14 - STAINLESS STEEL REINFORCING IS NOW A BID ITEM AND THE S.S. BAR LIST WAS ADDED ON THIS SHEET.
 REVISED 09-2016 - CHANGED THE BRIDGE APPROACH PAVEMENT STANDARD TO "BR" (WAS "RK-20") AND CORRECTED TYPOS.
 ENGLISHDECKRAILBRIDGES.DGN - 1029E - THIS SHEET ISSUED 09-07.



PART LONGITUDINAL SECTION THRU APPROACH SIDEWALK SLAB



PART PLAN VIEW OF APPROACH SIDEWALK SLAB
(CHAIN LINK FENCE NOT SHOWN IN PART PLAN VIEW)

REINFORCING BAR LIST - ONE SIDEWALK SLAB					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
EPOXY BARS	4e1	SIDEWALK SLAB HOOPS		17'-6	
	4e2	SIDEWALK SLAB HOOPS AT SIDEWALK LIP		4'-1	
	4m1	SIDEWALK SLAB TRANSV. TOP & BOTTOM		19	
EPOXY COATED REINFORCING STEEL TOTAL (LBS.)					
REINFORCING BAR LIST - ONE SIDEWALK SLAB					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
S.S. BARS	5j1	SIDEWALK SLAB DOWEL BAR		2'-5	
STAINLESS REINFORCING STEEL TOTAL (LBS.)					

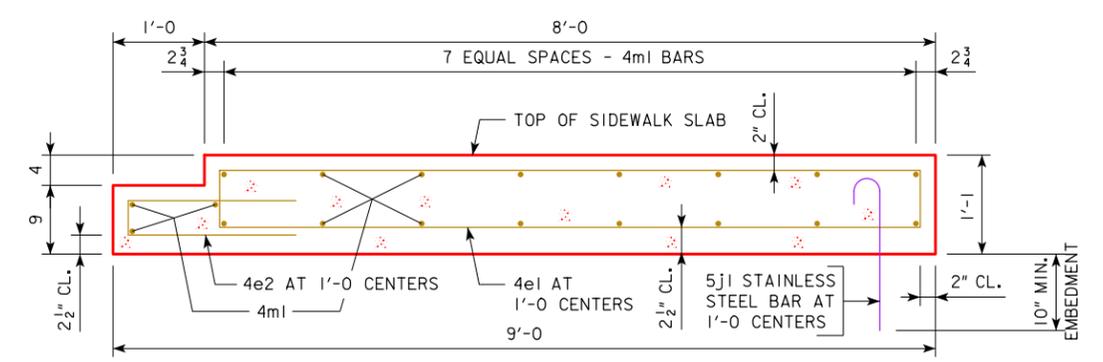
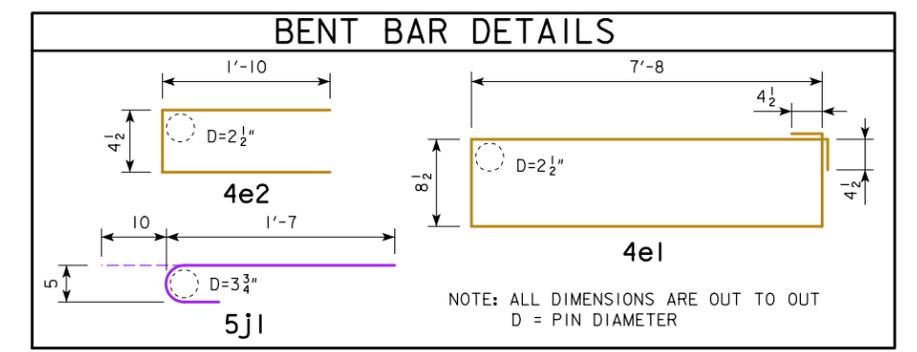
SIDEWALK SLAB DOWELS SHALL BE DEFORMED BAR GRADE 60, TYPE 316 LN IN ACCORDANCE WITH ASTM A955/A955M-01.

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

DOWEL SETTING NOTE :

THE 5j1 BARS SHALL BE SET AS DOWELS IN DRILLED HOLES. HOLES ARE TO BE 10" DEEP. THE DOWELS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ONE OF THE FOLLOWING SYSTEMS SHALL BE USED AS A BONDING AGENT FOR THE DOWELS :

- POLYMER GROUT SYSTEM IN ACCORDANCE WITH ARTICLE 2301.03, E, OF THE STANDARD SPECIFICATIONS.
- HYDRAULIC CEMENT GROUT SYSTEMS. DRILLED HOLES ARE TO BE 2 1/2 TIMES THE DOWEL DIAMETER AND ARE TO BE BLOWN CLEAN WITH COMPRESSED AIR IMMEDIATELY PRIOR TO PLACING GROUT. THE HYDRAULIC CEMENT GROUT SHALL BE ONE OF THOSE APPROVED IN MATERIALS I.M. 491.13 AND SHALL BE USED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.



LONGITUDINAL SECTION OF APPROACH SIDEWALK SLAB

CONCRETE PLACEMENT QUANTITY		
ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (BRIDGE)	CU.YD.	

NOTE: COST OF "E" JOINT MATERIAL AND POLYETHYLENE SHEETING IS CONSIDERED INCIDENTAL TO THE COST OF STRUCTURAL CONCRETE.

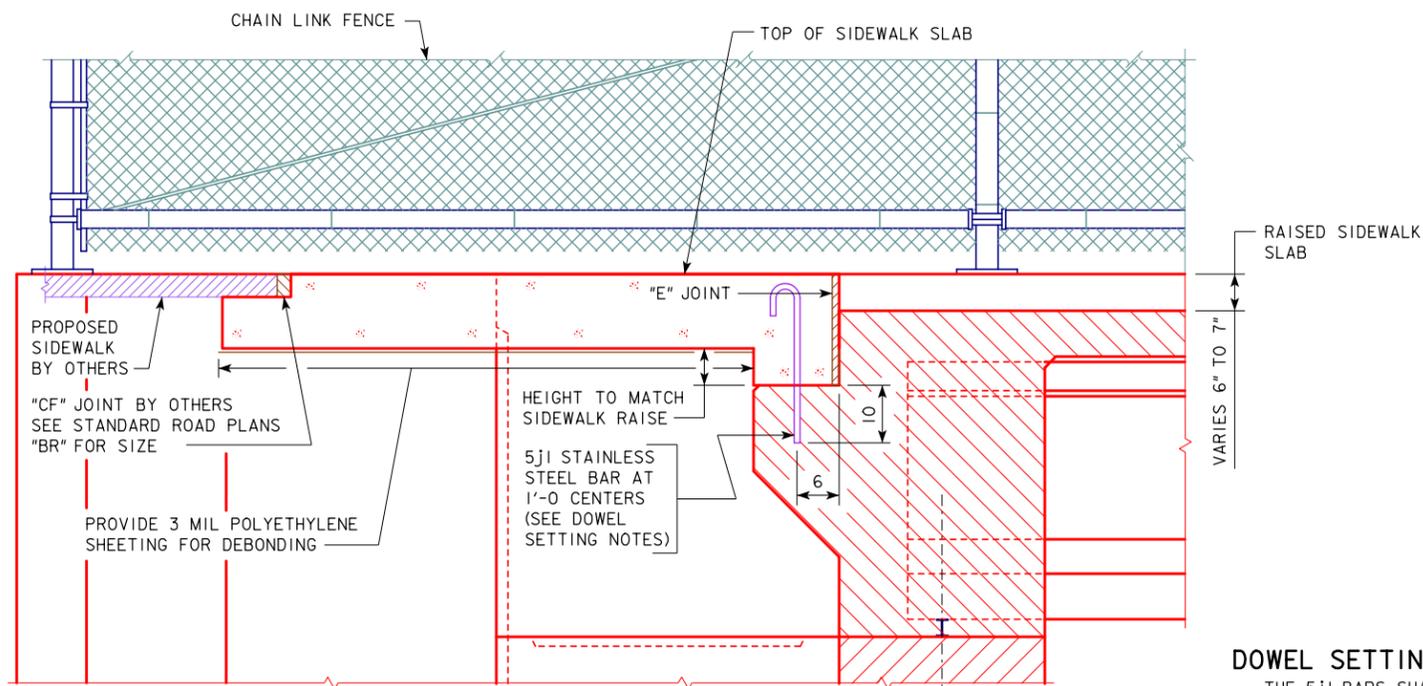
NOTE: CONCRETE QUANTITY IS TO BE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

REINF. APPROACH SIDEWALK SLAB

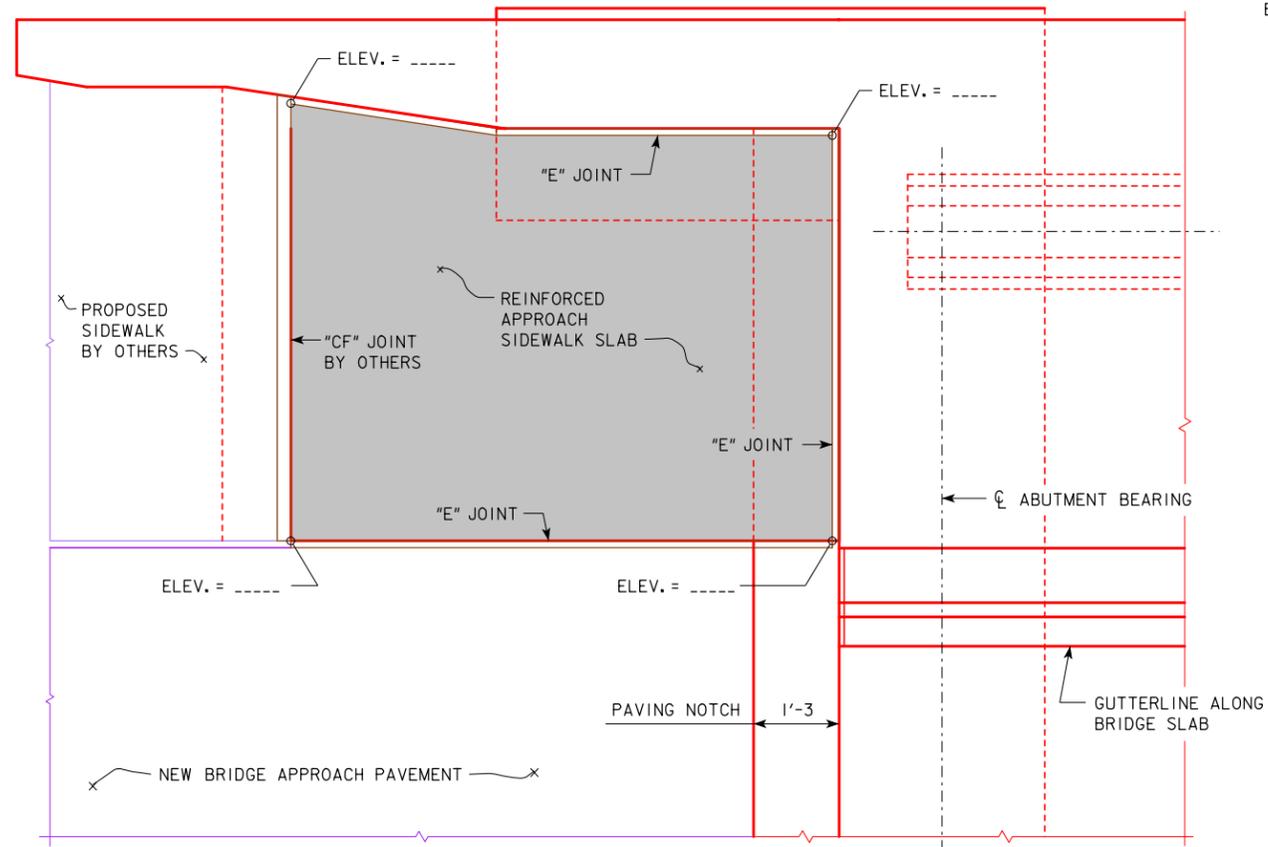
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____

REVISED 04-14 - STAINLESS STEEL REINFORCING IS NOW A BID ITEM AND THE S.S. BAR LIST WAS ADDED ON THIS SHEET.
 REVISED 09-2016 - CHANGED THE BRIDGE APPROACH PAVEMENT STANDARD TO "BR" (WAS "RK-20") AND CORRECTED TYPOS.
 ENGLISHDECKRAILBRIDGES.DGN - 1029F - THIS SHEET ISSUED 09-07.



PART LONGITUDINAL SECTION THRU APPROACH SIDEWALK SLAB



PART PLAN VIEW OF APPROACH SIDEWALK SLAB

(CHAIN LINK FENCE NOT SHOWN IN PART PLAN VIEW)

REINFORCING BAR LIST - ONE SIDEWALK SLAB					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
4e1	SIDEWALK SLAB HOOPS			17'-6	
4e2	SIDEWALK SLAB HOOPS AT SIDEWALK LIP			4'-1	
4e3	SIDEWALK SLAB HOOPS AT PAVING NOTCH			5'-1	
4m1	SIDEWALK SLAB TRANSV. TOP & BOTTOM		21		
EPOXY COATED REINFORCING STEEL TOTAL (LBS.)					

REINFORCING BAR LIST - ONE SIDEWALK SLAB					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5j1	SIDEWALK SLAB DOWEL BAR			3'-0	
STAINLESS REINFORCING STEEL TOTAL (LBS.)					

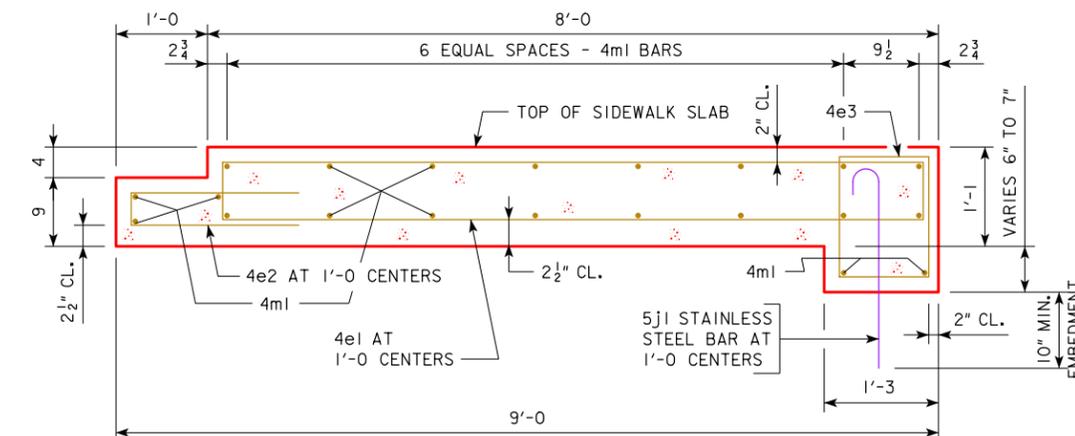
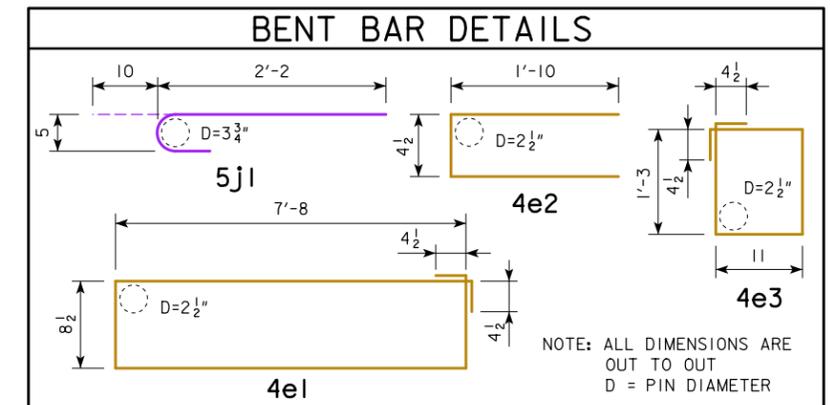
SIDEWALK SLAB DOWELS SHALL BE DEFORMED BAR GRADE 60, TYPE 316 LN IN ACCORDANCE WITH ASTM A955/A955M-01.

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

DOWEL SETTING NOTE :

THE 5j1 BARS SHALL BE SET AS DOWELS IN DRILLED HOLES. HOLES ARE TO BE 10" DEEP. THE DOWELS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ONE OF THE FOLLOWING SYSTEMS SHALL BE USED AS A BONDING AGENT FOR THE DOWELS :

- A. POLYMER GROUT SYSTEM IN ACCORDANCE WITH ARTICLE 2301.03, E, OF THE STANDARD SPECIFICATIONS.
- B. HYDRAULIC CEMENT GROUT SYSTEMS. DRILLED HOLES ARE TO BE 2 1/2 TIMES THE DOWEL DIAMETER AND ARE TO BE BLOWN CLEAN WITH COMPRESSED AIR IMMEDIATELY PRIOR TO PLACING GROUT. THE HYDRAULIC CEMENT GROUT SHALL BE ONE OF THOSE APPROVED IN MATERIALS I.M. 491.13 AND SHALL BE USED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.



LONGITUDINAL SECTION OF APPROACH SIDEWALK SLAB

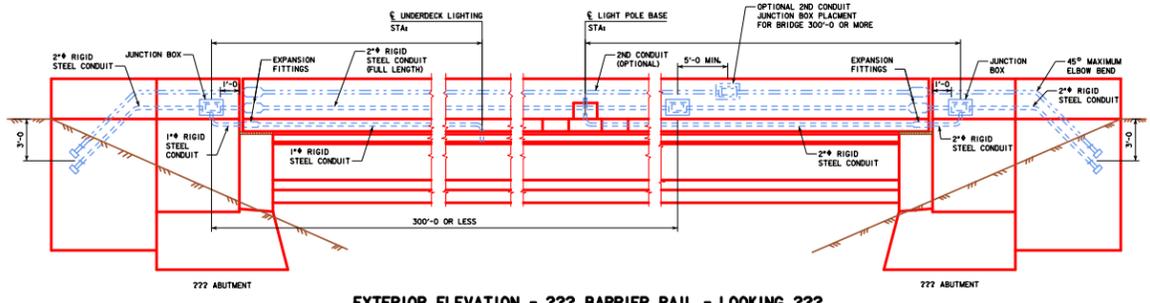
CONCRETE PLACEMENT QUANTITY		
ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (BRIDGE)	CU.YD.	

NOTE: COST OF "E" JOINT MATERIAL AND POLYETHYLENE SHEETING IS CONSIDERED INCIDENTAL TO THE COST OF STRUCTURAL CONCRETE.

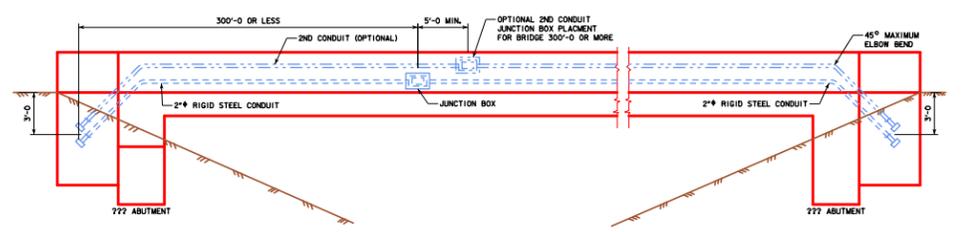
NOTE: CONCRETE QUANTITY IS TO BE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

REINF. APPROACH SIDEWALK SLAB

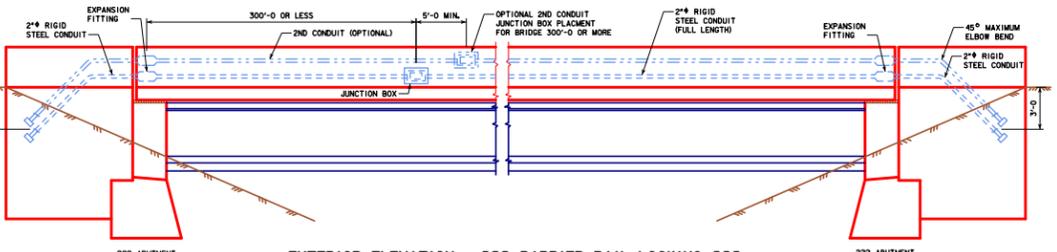
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____



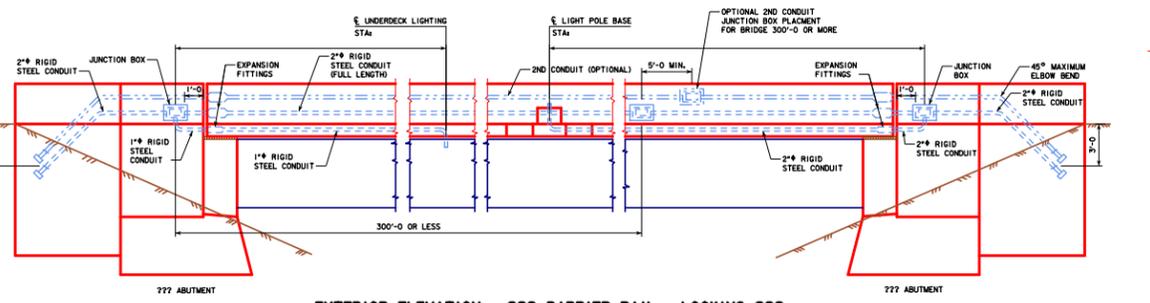
EXTERIOR ELEVATION - ??? BARRIER RAIL - LOOKING ???
DETAILS FOR BLISTERS AND UNDERDECK LIGHTING -
PRESTRESSED W\STUB ABUTMENTS & MASKWALL.



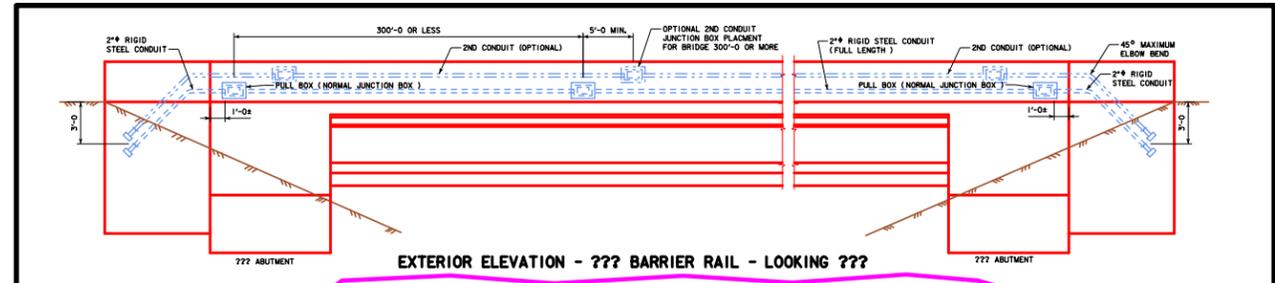
EXTERIOR ELEVATION - ??? BARRIER RAIL - LOOKING ???
CONDUIT ONLY, CONTINUOUS CONCRETE SLAB BRIDGE



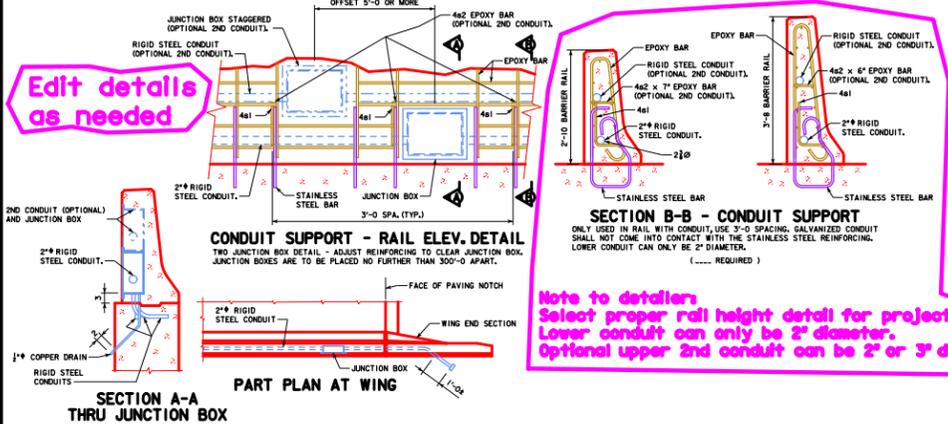
EXTERIOR ELEVATION - ??? BARRIER RAIL LOOKING ???
CONDUIT ONLY, STEEL BRIDGE W\STUB ABUT.



EXTERIOR ELEVATION - ??? BARRIER RAIL - LOOKING ???
DETAILS FOR BLISTERS AND UNDERDECK LIGHTING -
STEEL BRIDGE W\STUB ABUTMENTS & MASKWALL.



EXTERIOR ELEVATION - ??? BARRIER RAIL - LOOKING ???
CONDUIT ONLY, PRESTRESSED W\INTEGRAL ABUT.
(EXAMPLE SHOWN-SEE OTHER EXAMPLES OUTSIDE OF BORDER SHEET FOR SPECIFIC BRIDGE TYPE)



EPOXY REINFORCING STEEL-ONE RAIL

BAR	LOCATION	SHAPE NO.	LENGTH	WEIGHT
461	RAIL CONDUIT	2	1'-9"	??
462	RAIL CONDUIT (OPTIONAL)	2	??	??
			TOTAL WEIGHT (LBS.)	??

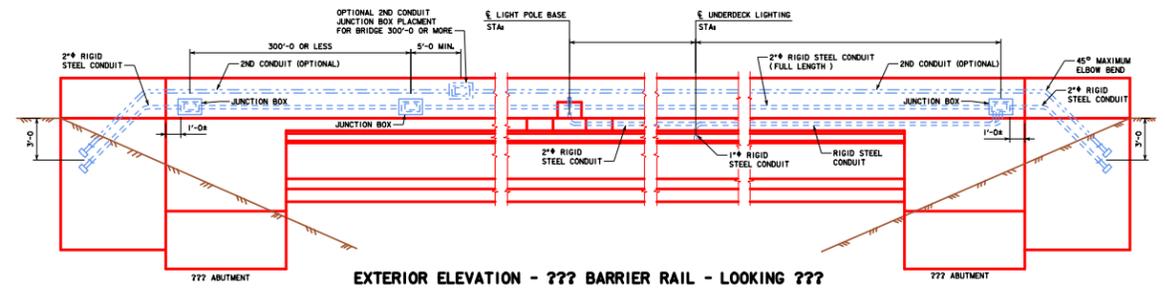
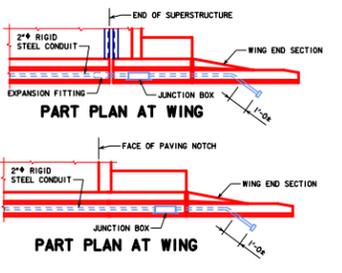
NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

LIGHTING DETAILS

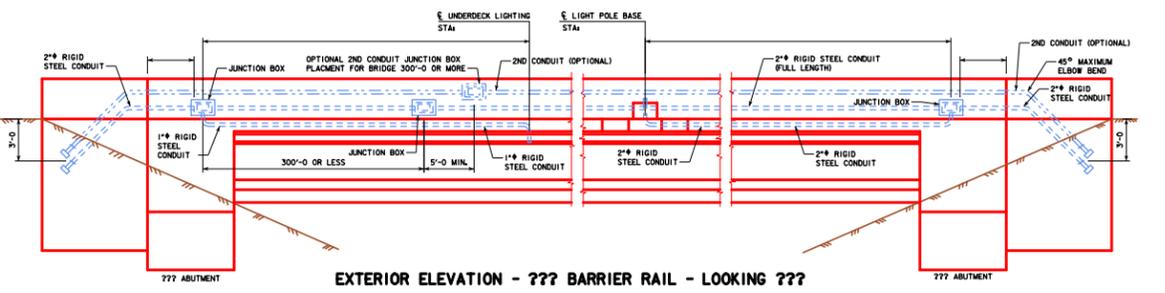
I.T.S. CONDUIT NOTES:
 I.T.S. CONDUIT SHALL BE LIMITED TO SIX 45° ELBOW BENDS FOR A CABLE PULL FROM HANDHOLE TO HANDHOLE.
 RIGID STEEL CONDUIT FOR I.T.S. APPLICATIONS SHALL BE INSTALLED AND PREPARED TO FACILITATE INSTALLATION OF FIBER OPTIC CABLE.
 THE MINIMUM INSIDE BEND RADIUS FOR RIGID STEEL CONDUIT USED FOR I.T.S. APPLICATIONS SHALL BE 18".
 RIGID STEEL CONDUIT FOR I.T.S. APPLICATIONS SHALL BE CUT AND THREADED TO ELIMINATE EXPOSED THREADS. AFTER COMPLETING THE CONNECTIONS ALL COUPLINGS SHALL BE TIGHTENED UNTIL THE CONDUIT ENDS MEET TO ALLOW A CONTINUOUS INNER SURFACE THROUGHOUT THE ENTIRE LENGTH OF THE CONDUIT. RIPS SHOULD BE USED TO ELIMINATE CUTTING AND THREADING SHORT LENGTHS OF CONDUIT.
 ALL BURRS AND ROUGHENED SURFACES SHALL BE REMOVED FROM CONDUITS AND FITTINGS. ALL CONDUIT RAILS SHALL BE REAMED, CLEANED AND SWABBED FOR INSTALLATION OF FIBER OPTIC CABLE.
 ONLY GALVANIZED FITTINGS SHALL BE USED WITH RIGID STEEL CONDUIT. DAMAGED GALVANIZED SURFACES OF RIGID STEEL CONDUIT OR FITTINGS SHALL BE PAINTED WITH AN ACCEPTABLE ZINC-RICH PAINT.
 I.T.S. CONDUIT SHALL INCLUDE A POLYPROPYLENE PULL ROPE BETWEEN HANDHOLES WITH A MINIMUM 600 POUND TENSILE STRENGTH.
 I.T.S. RIGID STEEL CONDUIT, PULL ROPES AND FITTINGS, INCLUDING LABOR AND ANY ADDITIONAL WORK FOR INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

Note to detailer: Add I.T.S. conduit note to sheet as needed.

CONNECTION 05-08 - TOOK SIZE OFF OF CONDUIT IN SECTION THRU JUNCTION BOX. CHANGED TEMPORARY PAVING BLOCK IN PART PLAN AT WING VIEW. CHANGED CONDUIT SHAPE AT ENDS.
 REVISION 05-11 - ADDED THE WORD 'MINIMUM' TO THE 3' HORIZONTAL DIMENSION FOR THE LOCATION OF THE 2" RIGID CONDUIT IN THE BARRIER RAIL.
 REVISED 05-08 - ADDED CONDUIT SUPPORT RAIL DETAILS TO KEEP CONDUIT ISOLATED FROM THE STAINLESS STEEL REINFORCING.



EXTERIOR ELEVATION - ??? BARRIER RAIL - LOOKING ???
CONDUIT, BLISTER, UNDERDECK, LOCATE JUNCTION BOX, PRESTRESSED W\INTEGRAL ABUT.



EXTERIOR ELEVATION - ??? BARRIER RAIL - LOOKING ???
CONDUIT, BLISTER, UNDERDECK, LOCATE JUNCTION BOX, PRESTRESSED W\INTEGRAL ABUT.