

SCOTT COUNTY - DESIGN NO. 1417, 1517, & 1617

BRIDGE REPLACEMENT - STEEL GIRDER
IM-NHS-074-I(1995)--03-82

SCOTT COUNTY - DESIGN NO. 1417, 1517, & 1617

LETTING DATE
04-25-2017

LEGEND

INTERSTATE HIGHWAY	
PRIMARY HIGHWAY-DIVIDED	
PRIMARY HIGHWAY	
PORTLAND CEMENT CONCRETE ROAD	
ASPHALT ROAD	
BITUMINOUS ROAD	
GRAVEL ROAD	
EARTHEN ROAD	
INTERSTATE HIGHWAY	
UNITED STATES HIGHWAY	
STATE HIGHWAY	
COUNTY HIGHWAY	
RAILROAD	
PIPELINE	
AIRPORT	
HYDROLOGY	
BRIDGE	
STATE BOUNDARY	
COUNTY BOUNDARY	
CORPORATE BOUNDARY	
TOWNSHIP LINE	
SECTION LINE	
ROAD NAMES	
UNINCORPORATED PLACE	
ABBEY ROAD	
ELWOOD	



PLANS OF PROPOSED IMPROVEMENTS ON THE
INTERSTATE ROAD SYSTEM
SCOTT COUNTY

BRIDGE REPLACEMENT - STEEL GIRDER
WB I-74 AND U.S. 67 RAMPS B AND D
IN BETTENDORF

THE IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.



1-800-292-8989
www.iowaonecall.com

STANDARD ROAD PLANS
STANDARD ROAD PLANS ARE LISTED ON SHEET C.7

DESIGN DATA URBAN
REFER TO INDIVIDUAL SITUATION PLANS FOR TRAFFIC DATA INFORMATION

ENGLISH STANDARD BRIDGE PLANS

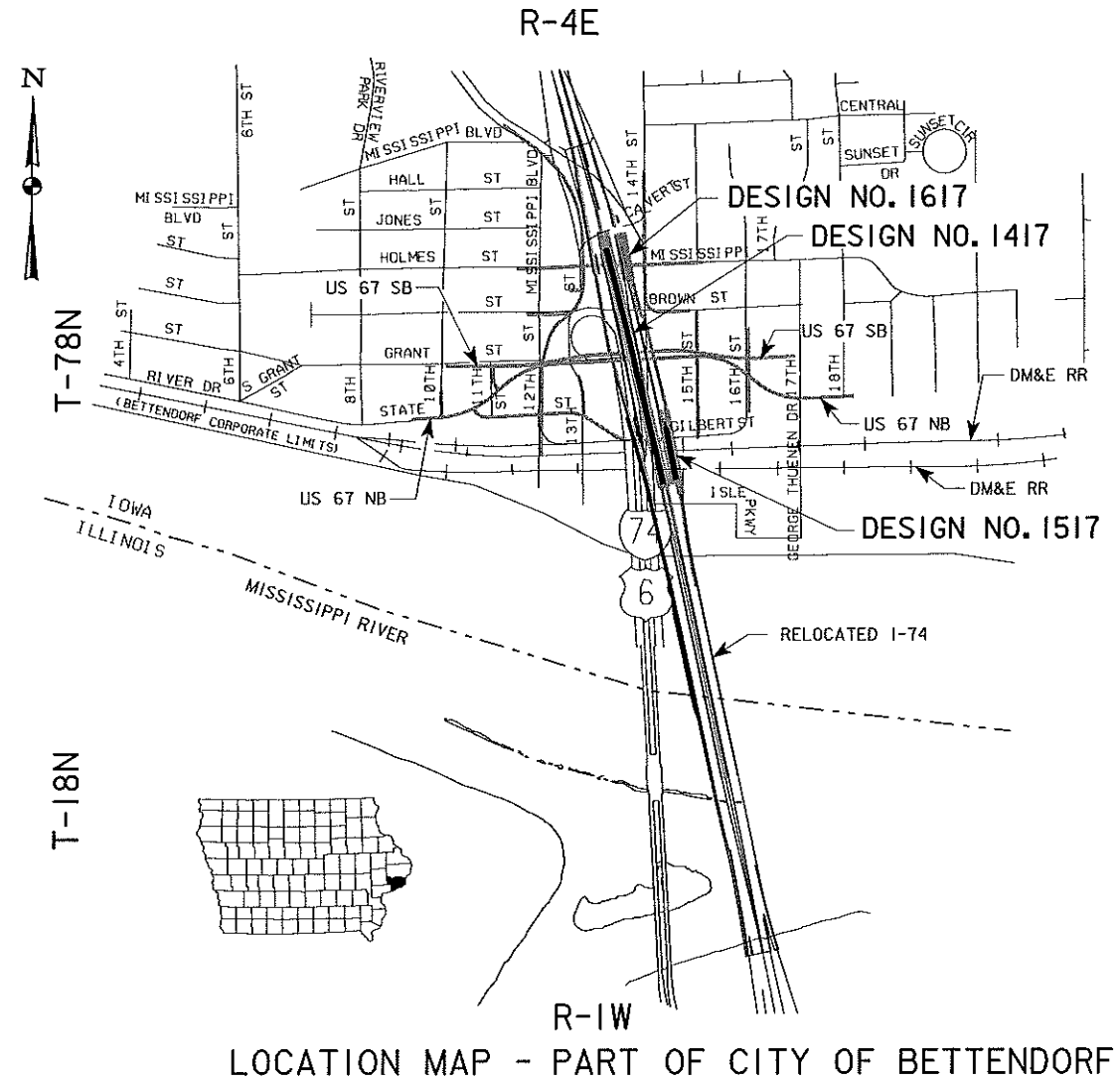
STANDARD	ISSUED	REVISED

REVISIONS
SEE REVISION SHEET RA 09-08-2017

INDEX OF SEALS

SHEET NO.	NAME	TYPE
1	ANDREW J. KEASCHALL	STRUCTURAL
2	JEFF J. PAPE	STRUCTURAL
SPS.1	KIPKOECH K. CHEPKOIT	GEOTECHNICAL
SPS.7	KIPKOECH K. CHEPKOIT	GEOTECHNICAL
SPS.9	KIPKOECH K. CHEPKOIT	GEOTECHNICAL
MU.1	ANDREW J. KEASCHALL	PIER MOCKUP
C.1	STEVEN S. SWEET	ROADWAY
G.1	COVENTINE FEDIS	SURVEY
G.10	JEFFREY J. TARDY	ROADWAY
N.1	STEVEN P. GARBE	ITS DESIGN
P.1	GEOFFREY H. THIESSE	ELECTRICAL

TOTAL SHEETS		486
PROJECT NUMBER		
IM-NHS-074-I(1995)--03-82		
R.O.W. PROJECT NUMBER		
PROJECT IDENTIFICATION NUMBER		
03-82-074-010-03		
INDEX OF SHEETS		
NO.	DESCRIPTION	
1	TITLE SHEET	
RA	REVISION SHEET	
2	ESTIMATE SHEET - DESIGN NO. 1417	
3-259	BRIDGE DESIGN NO. 1417	
SPS.1-SPS.6	SOIL PROFILE SHEET - DESIGN NO. 1417	
260	ESTIMATE SHEET - DESIGN NO. 1517	
261-331	BRIDGE DESIGN NO. 1517	
SPS.7-SPS.8	SOIL PROFILE SHEET - DESIGN NO. 1517	
332	ESTIMATE SHEET - DESIGN NO. 1617	
333-373	BRIDGE DESIGN NO. 1617	
SPS.9	SOIL PROFILE SHEET - DESIGN NO. 1617	
MU.1	ESTIMATE SHEET - PIER MOCKUP	
C.1	ESTIMATE SHEET FOR ROADWAY	
C.2-C.9	ROADWAY SHEETS	
C.10-C.11	SPECIAL WASTE SHEETS	
G.1-G.24	ALIGNMENTS, TIES & BENCHMARKS	
J.1-J.8	TRAFFIC CONTROL PLAN	
N.1-N.17	ITS SHEETS	
P.1-P.34	LIGHTING PLANS	
U.1-U.9	BRIDGE APPROACH SHEETS	



FRA CROSSING NO. 865645Y
IOWA CROSSING NO. 9712

ALL WORKING DRAWINGS, INCLUDING SHOP DRAWINGS AND FALSEWORK DRAWINGS, SHALL BE SUBMITTED ELECTRONICALLY ACCORDING TO ARTICLE 1105.03 OF THE STANDARD SPECIFICATIONS. THESE DRAWINGS SHALL BE SUBMITTED TO AND CHECKED BY:

ALFRED BENESCH & COMPANY (DESIGN NO. 1517 & 1617)
205 NORTH MICHIGAN AVENUE, SUITE 2400
CHICAGO, IL 60601
(312) 565-0450
AKEASCHALL@BENESCH.COM

OR

WHKS & COMPANY (DESIGN NO. 1417)
1412 6TH STREET SW
P.O. BOX 1467
MASON CITY, IA 50402-1467
(641) 423-8271
FDAOUD@WHKS.COM

STRUCTURAL DESIGN

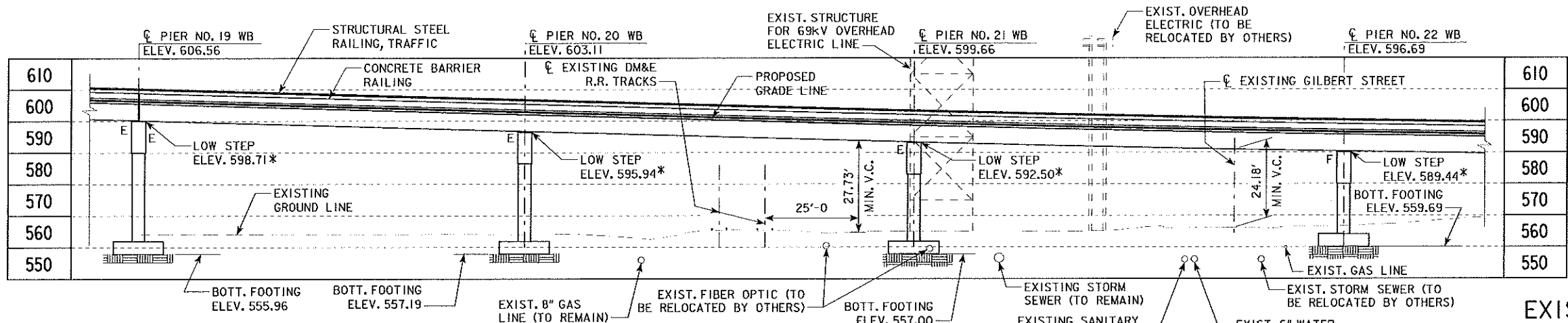
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Andrew J. Keaschall 11/7/2016
Signature Date
Printed or Typed Name
My license renewal date is December 31, 2017

Pages or sheets covered by this seal: 1, 260-331, 332-373

BENCH MARK NO. 500: STA. 6781+18.92 LT. 161.19'
ELEV. 575.797, CHISELED "X" IN BOLT E. SIDE
CONCRETE STRUCTURE

TRAFFIC ESTIMATE			
UNIT 2			
2015 AADT	26,460	V.P.D.	
2035 AADT	32,800	V.P.D.	
2035 DHV	3,700	V.P.H.	
TRUCKS	5	%	



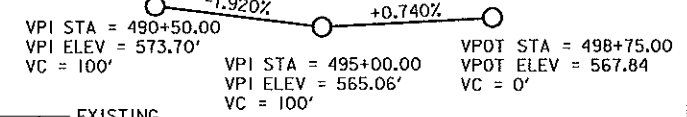
* NOTE:
LOW STEP ELEVATIONS ARE DEPENDENT ON
FINAL BEARING HEIGHTS - SEE DISC
BEARING NOTES ON DESIGN SHEET 153

LONGITUDINAL SECTION ALONG CENTERLINE WESTBOUND APPROACH ROADWAY

NOTE:
ELEVATIONS SHOWN ARE AT CENTERLINE
WESTBOUND APPROACH ROADWAY. PIERS
NOT SHOWN SKEWED FOR CLARITY.

NOTE:
E - DENOTES "EXPANSION BEARING"
F - DENOTES "FIXED BEARING"

EXISTING PROFILE GRADE
GILBERT ST.



MIN. VERT. CLEARANCE OVER
EXIST. GILBERT ST.

OVERHEAD STATION = 6788+62.94, 86.50' RT.
OVERHEAD ELEVATION = 596.95'
DEPTH OF SUPERSTRUCTURE = 5.92'
UNDERPASS ELEVATION = 566.85'
MINIMUM VERTICAL CLEARANCE = 24.18'

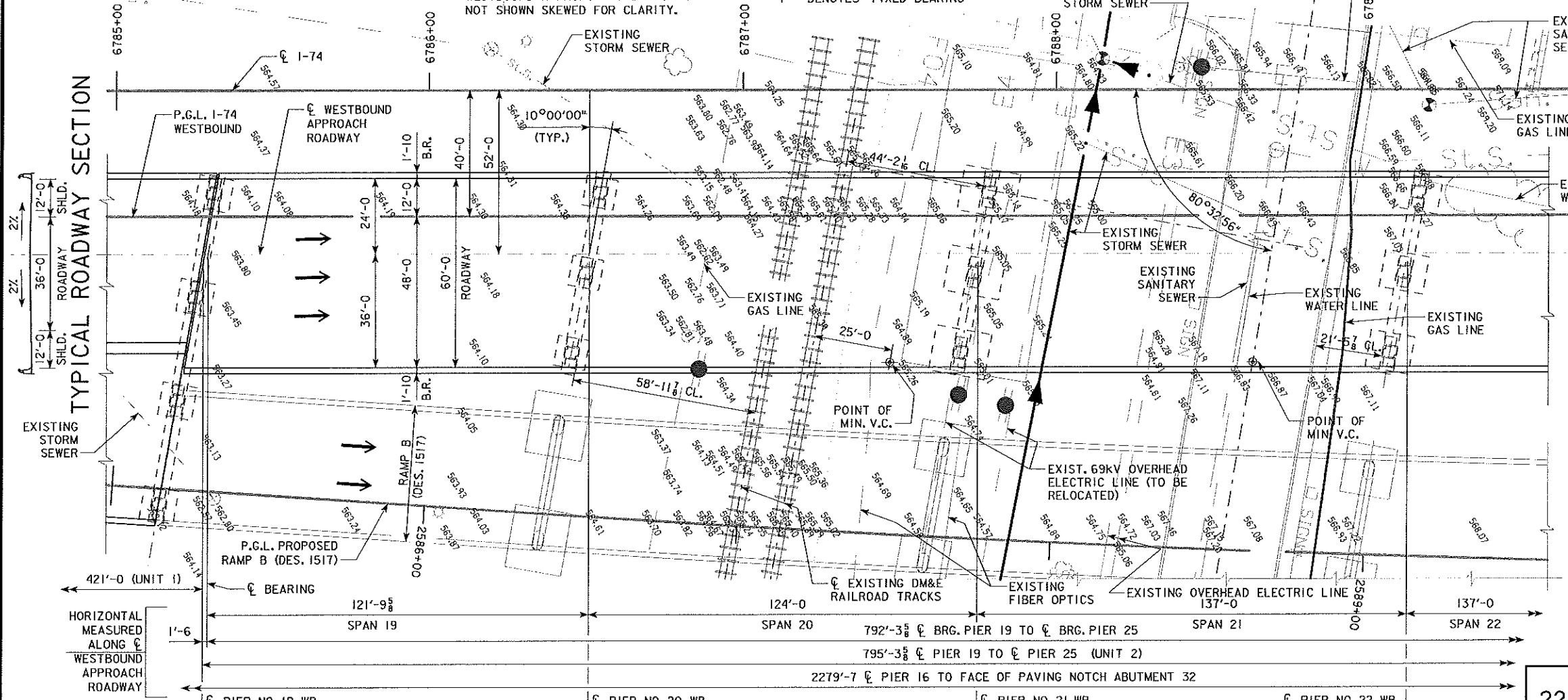
MINIMUM VERTICAL
CLEARANCE OVER DM&E R.R.

OVERHEAD STATION = 6787+47.18, 86.50' RT.
OVERHEAD ELEVATION = 599.76'
DEPTH OF SUPERSTRUCTURE = 5.92'
RAILROAD ELEVATION = 565.5' ±
MINIMUM VERTICAL CLEARANCE = 27.73'

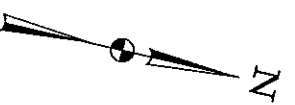
NOTES:

- ALL DIMENSIONS ARE IN FEET.
- FOR LOCATIONS OF DECK DRAINS, SEE SHEET 247.
- FOR LOCATIONS AND DETAILS OF LIGHT POLES, SEE DESIGN SHEET 208.
- FOR LOCATIONS OF SOIL BORINGS, SEE DESIGN SHEETS SPS.2 & SPS.3.
- SEE DESIGN SHEET 4 FOR I-74 WB ROADWAY PROFILE GRADE INFORMATION AND NOTES.
- SEE DESIGN SHEET 4 FOR LOCATION INFORMATION.
- SEE DESIGN SHEET 4 FOR U.S. 67 RAMP B PROFILE GRADE INFORMATION.

TYPICAL ROADWAY SECTION

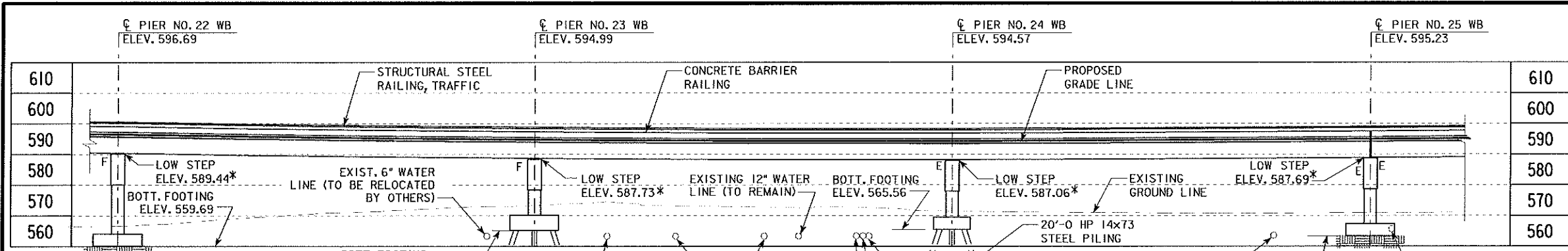


SITUATION PLAN



DESIGN FOR VARIABLE SKEW (L.A.)
**2274'-7" x VARIABLE CONTINUOUS
WELDED GIRDER BRIDGE-WBL**
138'-10" & 152'-8" END SPANS MULTIPLE LENGTH INTERIOR SPANS
SITUATION PLAN - UNIT 2
STA. 6792+44.11 - 52' RIGHT OF I-74
SCOTT COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 5 OF 258 FILE NO. 30253 DESIGN NO. 1417





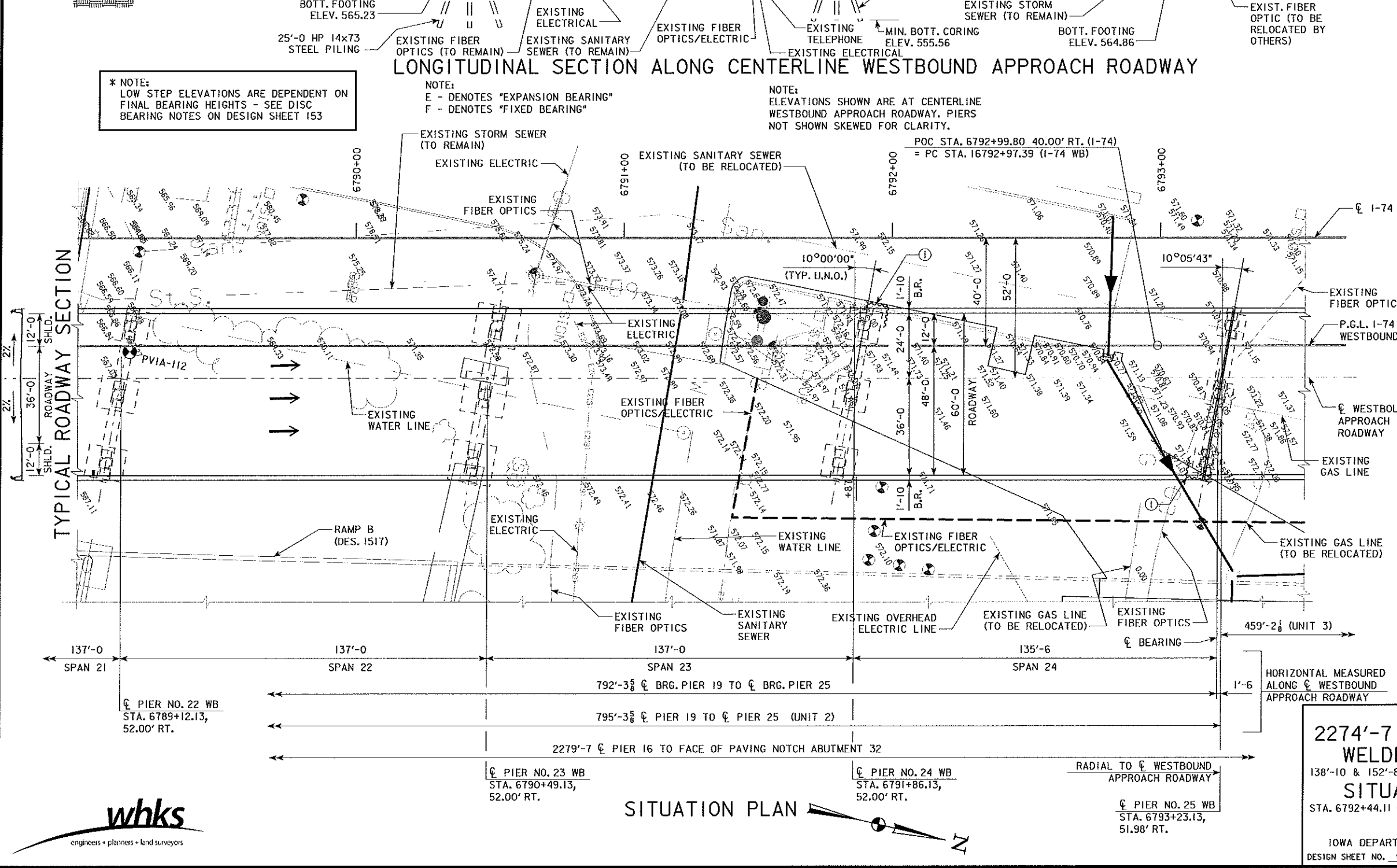
* NOTE:
LOW STEP ELEVATIONS ARE DEPENDENT ON FINAL BEARING HEIGHTS - SEE DISC BEARING NOTES ON DESIGN SHEET 153

NOTE:
E - DENOTES "EXPANSION BEARING"
F - DENOTES "FIXED BEARING"

NOTE:
ELEVATIONS SHOWN ARE AT CENTERLINE WESTBOUND APPROACH ROADWAY. PIERS NOT SHOWN SKEWED FOR CLARITY.

I-74 WB CURVE DATA

P.I. STA. = 16797+67.87
 $\Delta = 03^\circ 50' 58.24''$ LT
 $D = 00^\circ 24' 33.32''$
 $T = 470.48'$
 $L = 940.61'$
 $E = 7.90$
 $R = 14000.00'$
 $e = N.C.$
P.C. STA. = 16792+97.39
P.T. STA. = 16802+38.00

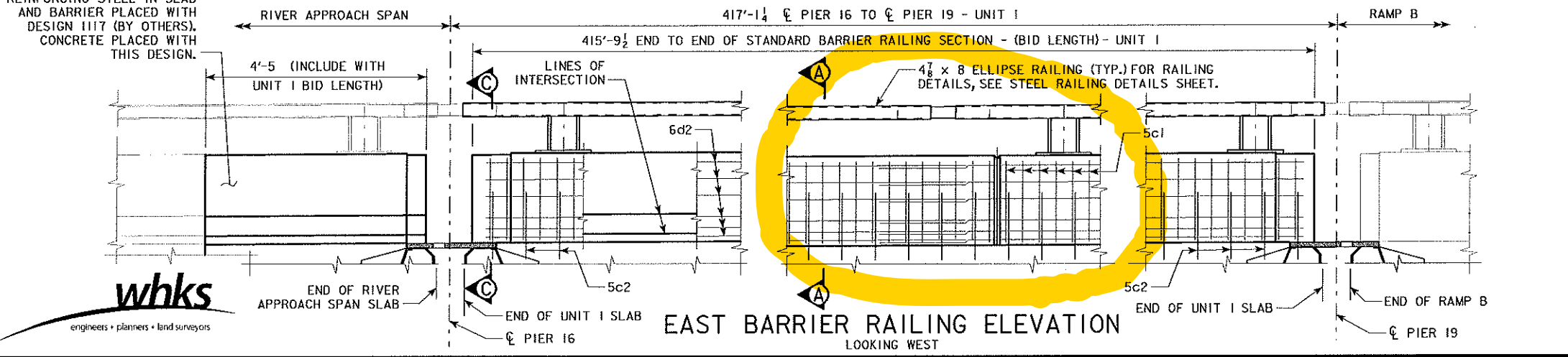
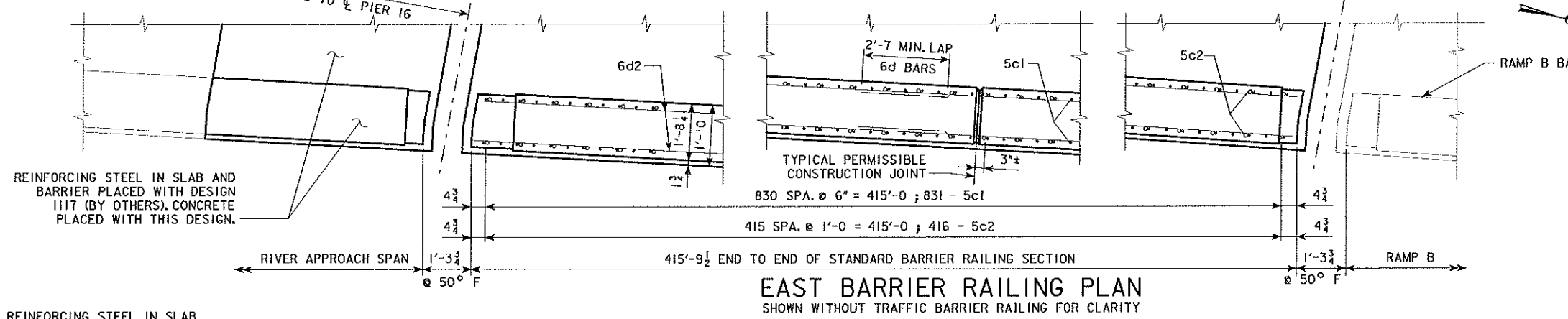
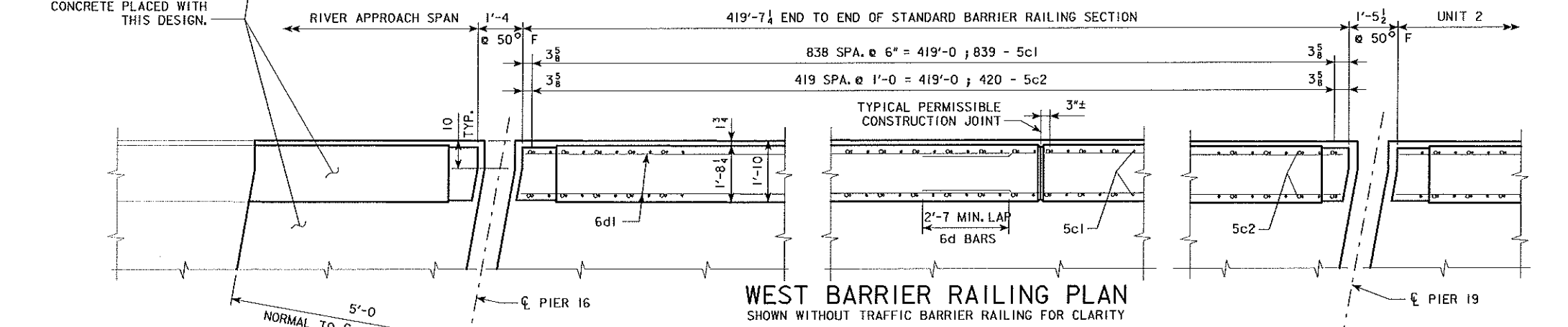
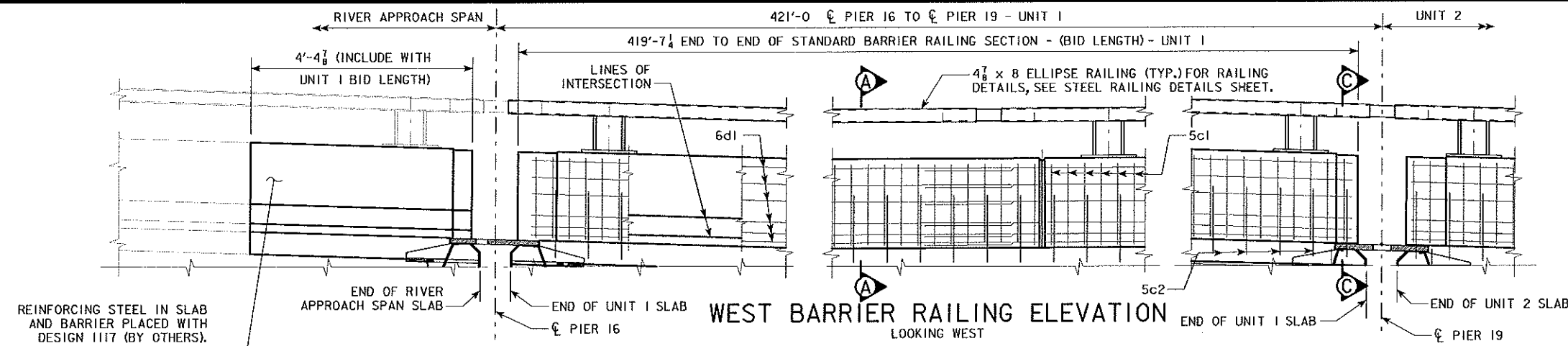


① TEMPORARY SHORING REQUIRED AT PIERS 24 AND 25 IN ORDER TO ACCOMMODATE THE TEMPORARY ALIGNMENT OF US 67 RAMP B. SEE PIER NOTES ON DESIGN SHEET 20 FOR ADDITIONAL INFORMATION.

NOTES:
ALL DIMENSIONS ARE IN FEET.
FOR LOCATIONS OF DECK DRAINS, SEE DESIGN SHEET 247.
FOR LOCATIONS AND DETAILS OF LIGHT POLES, SEE DESIGN SHEET 208.
FOR LOCATIONS AND DETAILS OF SOIL BORINGS, SEE SHEET SPS.3.
SEE DESIGN SHEET 4 FOR I-74 WB ROADWAY PROFILE GRADE INFORMATION AND NOTES.
SEE DESIGN SHEET 4 FOR LOCATION INFORMATION.
SEE DESIGN SHEET 4 FOR U.S. 67 RAMP B PROFILE GRADE INFORMATION.
SEE DESIGN SHEET 5 FOR I-74 WB TRAFFIC ESTIMATE (UNIT 2).

DESIGN FOR VARIABLE SKEW (L.A.)
2274'-7 x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE-WBL
138'-10 & 152'-8 END SPANS MULTIPLE LENGTH INTERIOR SPANS
SITUATION PLAN - UNIT 2
STA. 6792+44.11 - 52' RIGHT ϕ I-74 NOVEMBER, 2016
SCOTT COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 6 OF 258 FILE NO. 30253 DESIGN NO. 1417

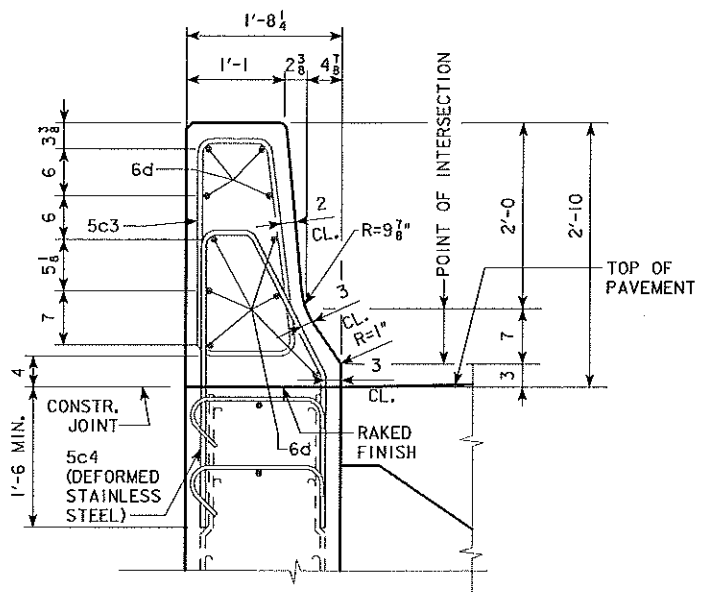
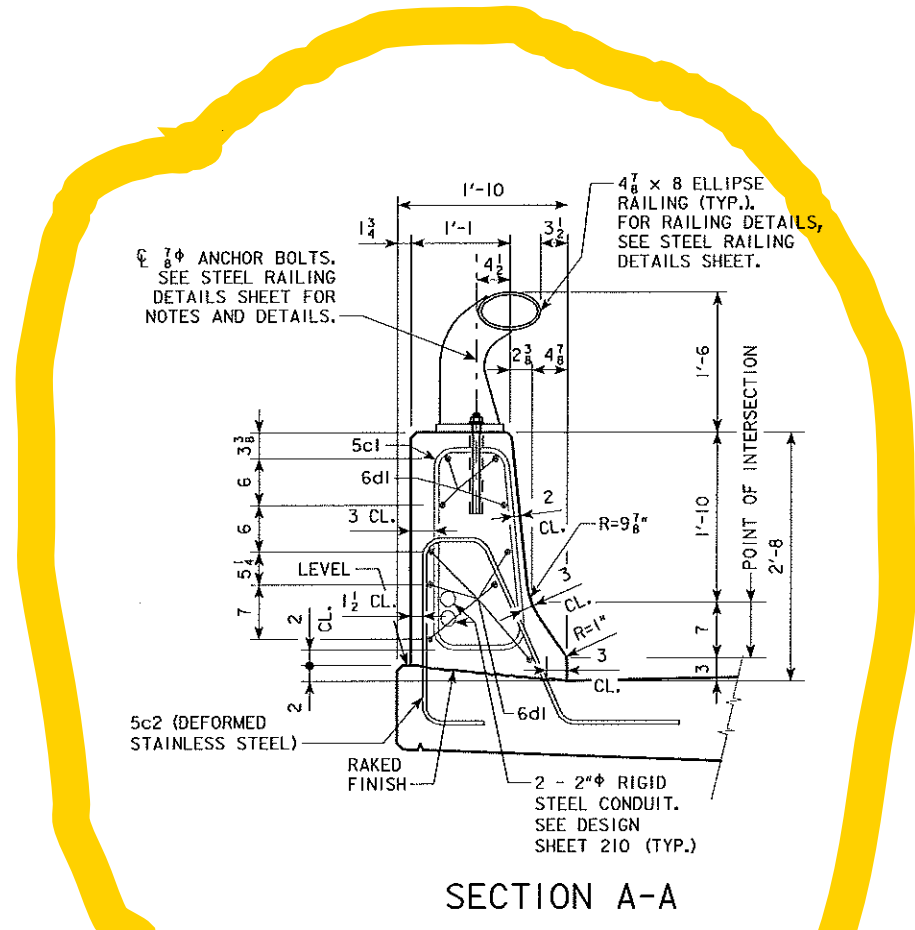
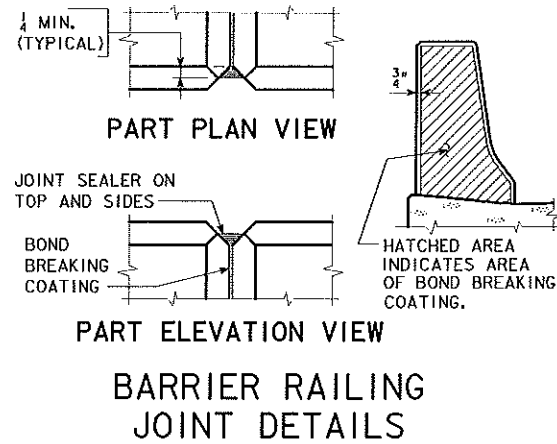
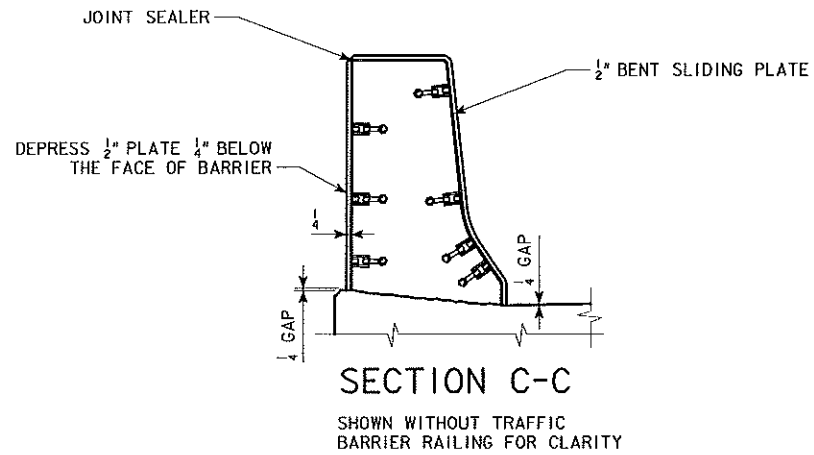




NOTES:
 FINGER JOINTS IN PLAN VIEW AND SLIDING PLATES NOT SHOWN FOR CLARITY.
 SEE DESIGN SHEET 199 FOR BARRIER RAILING NOTES, JOINT DETAILS, SECTION A-A AND SECTION C-C.

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2274'-7 x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE-WBL
 138'-10 & 152'-8 END SPANS MULTIPLE LENGTH INTERIOR SPANS
BARRIER RAILING DETAILS - UNIT 1
 STA. 6792+44.11 - 52' RIGHT @ 1-74 NOVEMBER, 2016
SCOTT COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 193 OF 258 FILE NO. 30253 DESIGN NO. 1417





NOTE:
CONDUIT SHOWN MAY NOT BE PRESENT IN ALL SECTIONS.

BARRIER RAILING 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.

CONCRETE BARRIER RAILINGS PLACED USING THE SLIPFORM METHOD WILL REQUIRE THE USE OF A CLASS BR CONCRETE IN ACCORDANCE WITH ARTICLE 2513.03, A, 2, OF THE STANDARD SPECIFICATIONS. CAST-IN-PLACE BARRIER RAILINGS SHALL USE HIGH PERFORMANCE CONCRETE. CLASS D CONCRETE IS NOT PERMITTED FOR CONCRETE BARRIER RAILINGS (CAST-IN-PLACE OR SLIPFORMED METHOD).

THE CONCRETE BARRIER RAILING IS TO BE BID ON A LINEAL FOOT BASIS MEASURED FROM END TO END OF RAILING. THE NUMBER OF LINEAL FEET OF BARRIER RAILING 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 RAILING IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS.

COSTS ASSOCIATED WITH MATERIAL AND INSTALLATION OF CONDUIT, JUNCTION BOXES, FITTINGS, AND SUPPORT HARDWARE SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEMS; "STRUCTURAL CONCRETE (BRIDGE)", "HIGH PERFORMANCE STRUCTURAL CONCRETE", "CONCRETE BARRIER RAILING", AND "HP SELF-CONSOLIDATING CONCRETE (HP-SCC)" AS OUTLINED IN THE BID ITEM REFERENCE INFORMATION ON DESIGN SHEET 2.

ALL BARRIER RAILING REINFORCING STEEL IS TO BE INCLUDED WITH THE SUPERSTRUCTURE REINFORCING STEEL.

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 RAILING IS TO BE PARALLEL TO THE THEORETICAL GRADE.

PLACE POST AND POST ANCHOR BOLTS NORMAL TO GRADE AND RAILINGS PARALLEL TO GRADE.

ON THE NON-TRAFFIC SIDE OF THE BARRIER RAILING, PLACE THE 5c1 BARS WITH A 3" CLEARANCE AND THE 5c2 BARS WITH A 1 1/2" CLEARANCE TO PROVIDE ADEQUATE SPACE BETWEEN THE STEEL CONDUIT AND THE STAINLESS STEEL 5c2 BARS TO MEET THE REQUIREMENTS OF I.M. 452.

NOTE THAT SOME OF THE 6d1 AND 6d4 BARS ARE TO BE PLACED OUTSIDE OF THE 5c1 AND 5c5-5c9 BARS, BETWEEN THE 5c1/5c5-5c9 BARS AND THE 5c2/5c10-5c11 BARS, AS SHOWN IN THE DETAILS.

THE STEEL CONDUIT SHALL BE SECURELY TIED AT EVERY 3'-0 INTERSECTION WITH THE 5c1/5c5-5c9 BARS TO AVOID CONTACT WITH THE STAINLESS STEEL 5c2/5c10-5c11 BARS.

THIS BARRIER MEETS THE REQUIREMENTS OF TEST LEVEL 5 (TL-5).

FOR RIGID STEEL CONDUIT DETAILS, SEE DESIGN SHEETS 208-211 AND P SHEETS IN THESE PLANS.

SEE DESIGN SHEETS 241 THRU 246 FOR BARRIER RAILING COVER PLATE DETAILS.

ALL BARRIER RAILING REINFORCING STEEL, IS TO BE EPOXY COATED UNLESS OTHERWISE NOTED OR SHOWN.

CROSS SECTIONAL AREA OF THE 2'-8 SECTION OF THE BARRIER RAILING = 3.3 SQUARE FEET EXCEPT AT THE 4'-0 SLOPED END OF THE WEST RAILING AT ABUTMENT 32.

CROSS SECTIONAL AREA OF UNIT 4 SPECIAL SECTION B = 3.5 SQUARE FEET EXCEPT AT THE 2'-9 1/2 END NEAR THE JOINT

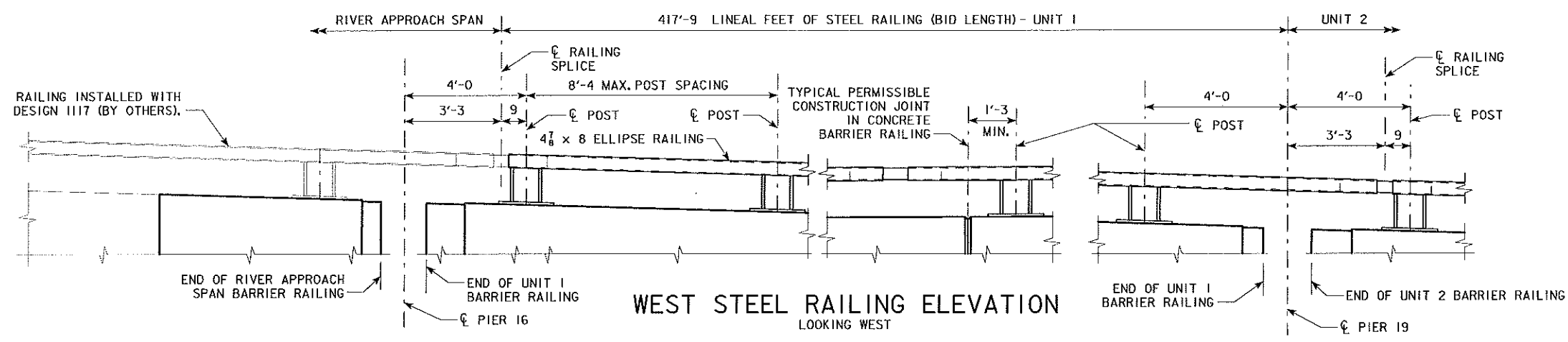
SEE DESIGN SHEET 196 FOR CROSS SECTIONAL AREA OF THE 3'-8 SPECIAL SECTION 'A' OF THE BARRIER RAILING.

SEE DESIGN SHEETS 193 THRU 197 FOR LOCATION OF SECTIONS A-A AND C-C.

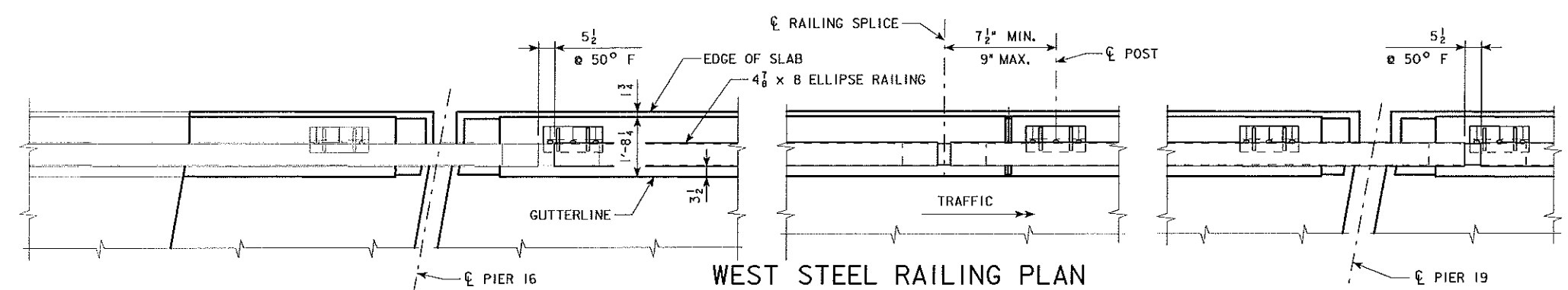
SEE DESIGN SHEET 197 FOR LOCATION OF SECTION B-B.

DESIGN FOR VARIABLE SKEW (L.A.)
2274'-7 x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE-WBL
 138'-10 & 152'-8 END SPANS MULTIPLE LENGTH INTERIOR SPANS
BARRIER RAILING DETAILS & NOTES
 STA. 6792+44.11 - 52' RIGHT @ 1-74 NOVEMBER, 2016
SCOTT COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 199 OF 258 FILE NO. 30253 DESIGN NO. 1417

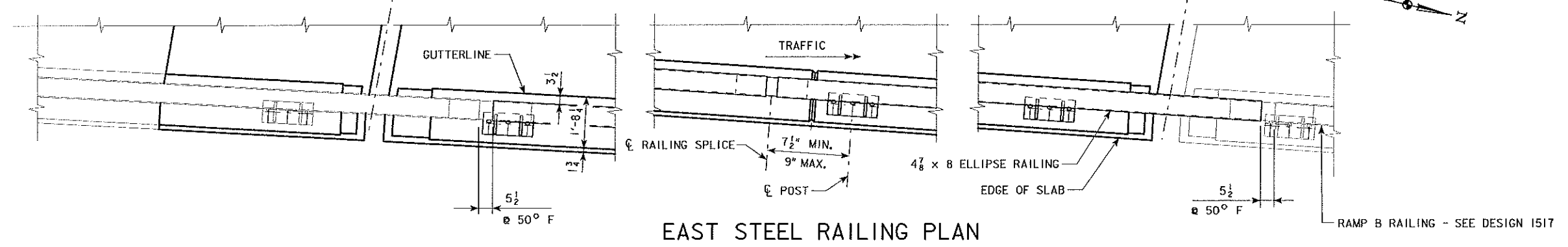




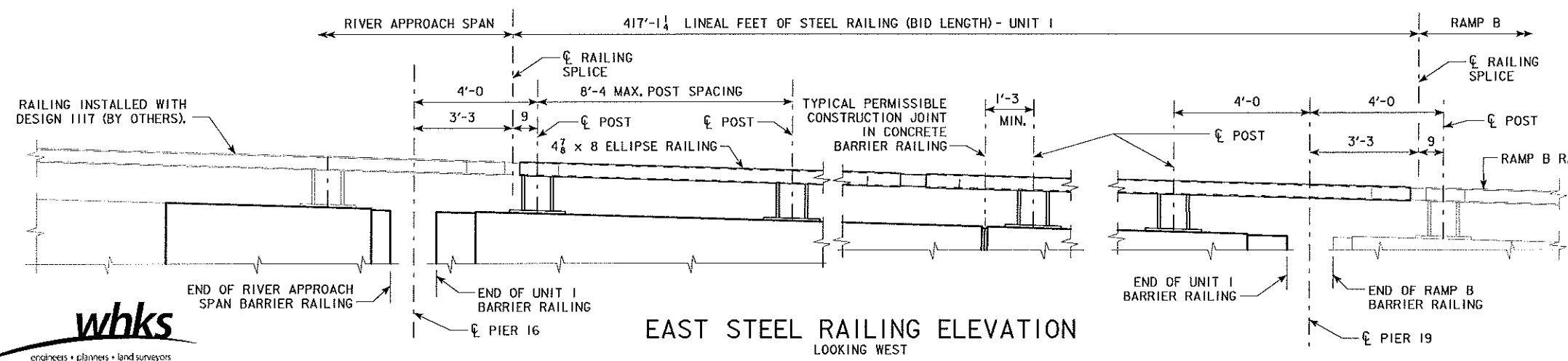
WEST STEEL RAILING ELEVATION
LOOKING WEST



WEST STEEL RAILING PLAN



EAST STEEL RAILING PLAN

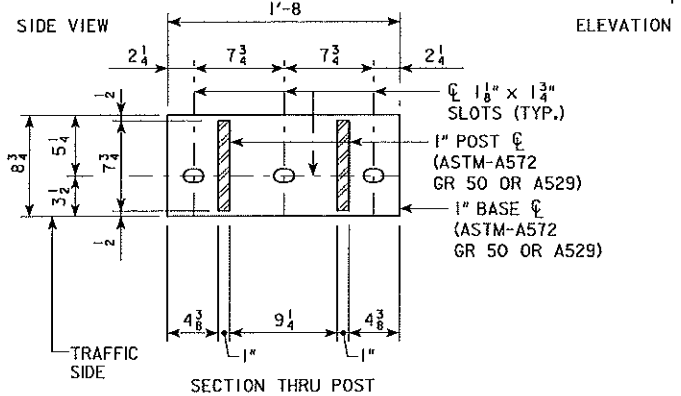
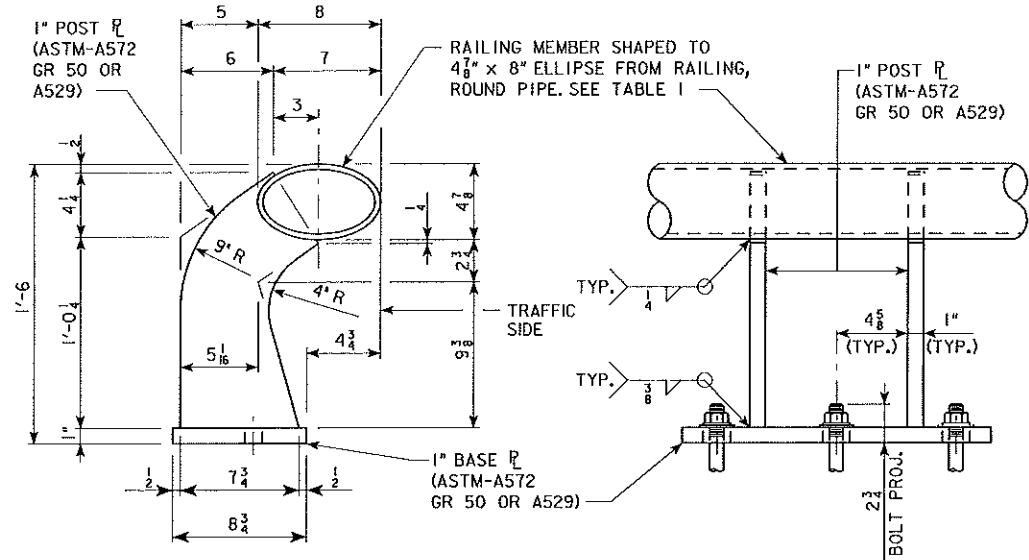


EAST STEEL RAILING ELEVATION
LOOKING WEST

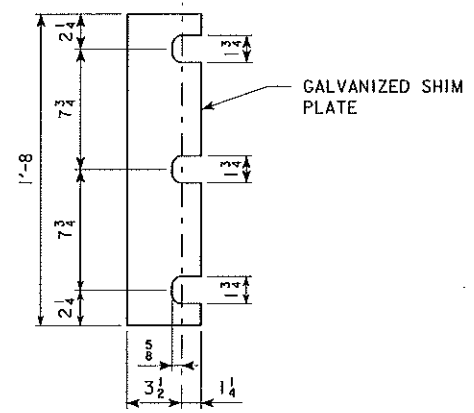
NOTES:
FINGER JOINTS AND SLIDING PLATES NOT SHOWN FOR CLARITY.
SEE DESIGN SHEET 204 FOR RAILING, POSTS AND SPLICE DETAILS.

DESIGN FOR VARIABLE SKEW (L.A.)
2274'-7 x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE-WBL
 138'-10 & 152'-8 END SPANS MULTIPLE LENGTH INTERIOR SPANS
STEEL RAILING DETAILS - UNIT 1
 STA. 6792+44.11 - 52' RIGHT @ 1-74 NOVEMBER, 2016
SCOTT COUNTY
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 DESIGN SHEET NO. 200 OF 258 FILE NO. 30253 DESIGN NO. 1417



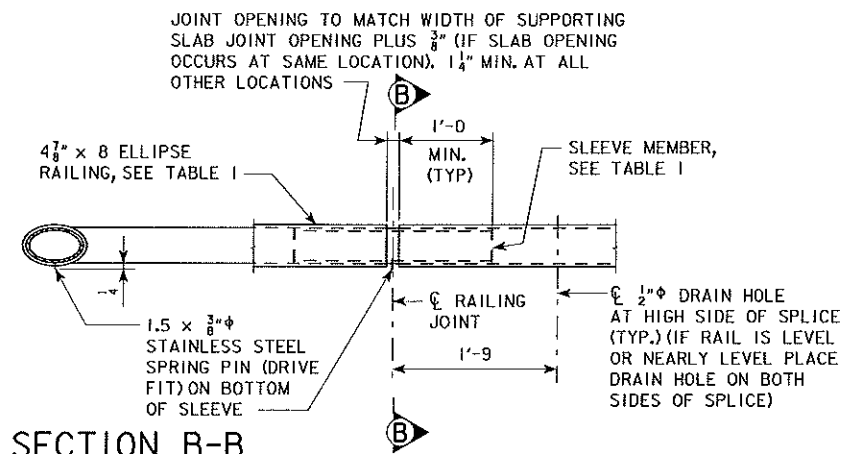


ELLIPTICAL TUBE WITH RAILING POST AND ANCHORAGE DETAILS



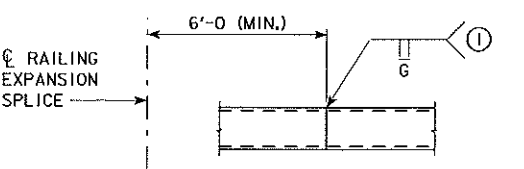
SHIM PLATE DETAIL

NOTE:
PROVIDE 2-1/16\"/>



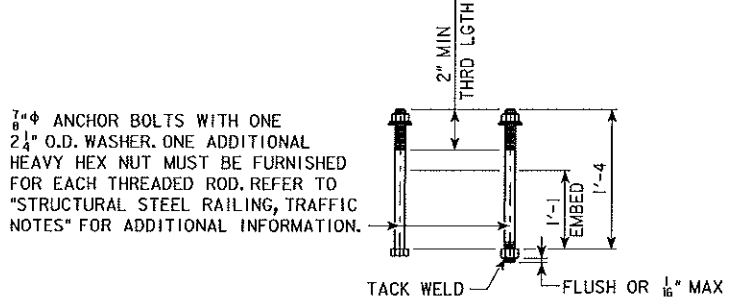
**SECTION B-B
ELLIPSE RAILING SPLICE**

NOTE:
THE MAJOR AND MINOR DIAMETERS OF THE RAILING MEMBER MAY VARY +/- 0.1875 INCHES FROM PLAN DIMENSIONS. HOWEVER, THE DIFFERENCE BETWEEN THE OUTSIDE DIAMETERS OF THE SLEEVE AND THE INSIDE DIAMETERS OF THE RAILING SHALL NOT EXCEED 0.125 INCHES ALONG THE MAJOR OR MINOR AXIS. THE MAXIMUM GAP ALONG THE 45° AXIS OF THE SLEEVE MAY BE 1/4\"/>



RAILING SHOP SPLICE DETAIL

① ONE SHOP SPLICE PER PANEL IS PERMITTED WITH MINIMUM 85 PERCENT PENETRATION. THE WELD MAY BE SQUARE GROOVE, DOUBLE VEE GROOVE, OR SINGLE GROOVE. GRIND SMOOTH.



CAST-IN-PLACE ANCHOR BOLT OPTIONS

STRUCTURAL STEEL RAILING, TRAFFIC NOTES:

STRUCTURAL STEEL BARRIER JOINTS ARE TO BE LOCATED AS SHOWN.
THE STRUCTURAL STEEL RAILING IS TO BE BID ON A PER LINEAR FOOT BASIS MEASURED FROM END TO END OF STEEL RAILING.
THE NUMBER OF LINEAR FOOT OF STRUCTURAL STEEL RAILING INSTALLED WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER FOOT BASED ON PLAN QUANTITIES.
PRICE BID FOR "STRUCTURAL STEEL RAILING, TRAFFIC" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, AND ALL EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAILING IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS.
ALL RAILINGS, POSTS, SLEEVES, BASE PLATES, AND SHIMS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123.
OPTIONAL CAST-IN-PLACE ANCHOR BOLTS TO COMPLY WITH ASTM F1554 GRADE 105. HEX NUTS TO COMPLY WITH ASTM A563 GRADE DH. WASHERS TO COMPLY WITH ASTM F436. GALVANIZING IN ACCORDANCE WITH ASTM F2329.

ANCHOR BOLTS SHALL BE 7/8\"/>

TESTING NOTE FOR TUBE STEEL:

THE RESULTS OF THE FOLLOWING TEST SHALL BE SUBMITTED AS A CERTIFIED TEST REPORT TO THE CENTRAL MATERIALS OFFICE IN AMES ALONG WITH A CERTIFIED MILL TEST REPORT. IN ADDITION, A 1 FOOT LONG TUBE SAMPLE FROM THE FABRICATING SHOP SHALL ALSO BE SUBMITTED TO THE CENTRAL MATERIALS OFFICE IN AMES FOR VERIFICATION TESTING.
TESTING IS NOT REQUIRED FOR HOT ROLLED TUBE STEEL CONFORMING TO ASTM A501.
ALL COLD FORMED TUBE STEEL SHALL BE TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM E436 - "DROP-WEIGHT TEAR TESTS OF FERRITIC STEELS", EXCEPT WITH THE FOLLOWING MODIFICATIONS:
ALL TESTS SHALL BE PERFORMED BY THE PRODUCING MILL PRIOR TO FABRICATION. MATERIAL SAMPLES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 PRIOR TO TESTING.
THE TESTING SHALL BE CONDUCTED AT A TEMPERATURE OF 0 DEGREES FAHRENHEIT ON A 3\"/>

TABLE I

APPROVED RAILING MATERIAL		
4 7/8 x 8 ELLIPSE RAILING	SLEEVE MEMBER (AT RAILING SPLICE)	
	MATERIAL	THICKNESS
6\"/>		

DESIGN FOR VARIABLE SKEW (L.A.)
2274'-7 x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE-WBL
138'-10 & 152'-8 END SPANS MULTIPLE LENGTH INTERIOR SPANS
STEEL RAILING DETAILS
STA. 6792+44.11 - 52' RIGHT C/L 1-74 NOVEMBER, 2016
SCOTT COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 204 OF 258 FILE NO. 30253 DESIGN NO. 1417



2 RAILINGS - UNIT 1						2 RAILINGS - UNIT 2						2 RAILINGS - UNIT 3					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5c1-1	VERTICAL	U	1670	7'-8	13,354	5c1-2	VERTICAL	U	3174	7'-8	25,380	5c1-3	VERTICAL	U	1830	7'-8	14,633
6d1-1	LONGIT.-WEST RAILING	---	120	37'-6	6,759												
6d2-1	LONGIT.-EAST RAILING	---	120	37'-2	6,699	6d1-2	LONGITUDINAL	---	440	38'-8	25,554	6d1-3	LONGITUDINAL	---	260	37'-9	14,742
EPOXY COATED STEEL FROM GORE AREA					1,912												
(INCLUDED WITH SUPERSTRUCTURE) TOTAL WT. (LBS.)					28,724	(INCLUDED WITH SUPERSTRUCTURE) TOTAL WT. (LBS.)					50,934	(INCLUDED WITH SUPERSTRUCTURE) TOTAL WT. (LBS.)					29,375

2 RAILINGS - UNIT 1						2 RAILINGS - UNIT 2						2 RAILINGS - UNIT 3					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5c2-1	VERTICAL	U	836	6'-11	6,031	5c2-2	VERTICAL	U	1588	6'-11	11,456	5c2-3	VERTICAL	U	916	6'-11	6,608
STAINLESS STEEL FROM GORE AREA					308												
(INCLUDED WITH SUPERSTRUCTURE) TOTAL WT. (LBS.)					6,339	(INCLUDED WITH SUPERSTRUCTURE) TOTAL WT. (LBS.)					11,456	(INCLUDED WITH SUPERSTRUCTURE) TOTAL WT. (LBS.)					6,608

2 RAILINGS - UNIT 4						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTION	5c1-4	VERTICAL	U	2394	7'-8	19,143
	5c5-4	VERTICAL	U	1	7'-6	8
	5c6-4	VERTICAL	U	1	7'-3	8
	5c7-4	VERTICAL	U	1	6'-9	7
	5c8-4	VERTICAL	U	1	6'-3	7
	5c9-4	VERTICAL	U	4	7'-9	32
SPECIAL SECTION A	6d1-4	LONGITUDINAL	---	340	37'-11	19,363
	6d4-4	LONGITUDINAL, SLOPED	---	3	5'-5	24
	5c9-4	VERTICAL	U	31	7'-9	251
	6d5-4	LONGITUDINAL, WEST	---	13	22'-4	436
SPECIAL SECTION B	5c1-4	VERTICAL, END	U	6	7'-8	48
	5c3-4	VERTICAL	U	25	8'-2	213
	6d3-4	LONGITUDINAL, EAST	---	10	15'-4	230
EPOXY COATED STEEL FROM END SECTION						274
(INCLUDED WITH SUPERSTRUCTURE) TOTAL WT. (LBS.)						40,044

CONCRETE PLACEMENT SUMMARY-C.Y.				CONCRETE PLACEMENT SUMMARY-C.Y.				CONCRETE PLACEMENT SUMMARY-C.Y.			
SECTION	TOTAL	SECTION	TOTAL	SECTION	TOTAL	SECTION	TOTAL				
* 2'-8 STANDARD SECT.-W. RAILING	424' @ 0.122 C.Y. PER FT. 51.7	2'-8 STANDARD SECT.-W. RAILING	793.9' @ 0.122 C.Y. PER FT. 96.9	2'-8 STANDARD SECT.-W. RAILING	458' @ 0.122 C.Y. PER FT. 55.9						
* 2'-8 STANDARD SECT.-E. RAILING	420.2' @ 0.122 C.Y. PER FT. 51.3	2'-8 STANDARD SECT.-E. RAILING	793.9' @ 0.122 C.Y. PER FT. 96.9	2'-8 STANDARD SECT.-E. RAILING	457.9' @ 0.122 C.Y. PER FT. 55.9						
GORE AREA BARRIER	60' @ 0.130 C.Y. PER FT. 7.8										
TOTAL (C.Y.)		110.8	TOTAL (C.Y.)		193.8	TOTAL (C.Y.)		111.8			

2 RAILINGS - UNIT 4						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
SPECIAL SECTION B	5c2-4	VERT. STD. SECT.	U	1197	6'-11	8,635
	5c4-4	VERT. SPEC. SECT. 'B'	U	16	6'-11	115
	5c10-4	VERT. STD. SECT.	U	8	6'-4	53
	5c11-4	VERT. SPEC. SECT. 'A'	U	31	3'-3	105
	5c12-4	VERT. SPEC. SECT. 'A'	U	31	3'-10	124
STAINLESS STEEL FROM END SECTION						205
(INCLUDED WITH SUPERSTRUCTURE) TOTAL WT. (LBS.)						9,237

CONCRETE PLACEMENT SUMMARY-C.Y.			
SECTION	TOTAL	SECTION	TOTAL
‡ 2'-8 STANDARD SECT.-W. RAILING	601.5' @ 0.122 C.Y. PER FT. 73.5	2'-8 STANDARD SECT.-E. RAILING	601.4' @ 0.122 C.Y. PER FT. 73.4
SPECIAL SECTION A - W. RAILING	22.7' @ 0.130 C.Y. PER FT. 3.6	SPECIAL SECTION B - E. RAILING	15.7' @ 0.160 C.Y. PER FT. 2.0
END SECTION	7' @ VARIES C.Y. PER FT. 0.8		
TOTAL (C.Y.)		153.3	

CONC. BARRIER RAILING QUANTITIES		
ITEM	UNIT	QUANTITY
** CONCRETE BARRIER RAILING	L.F.	904.2

CONC. BARRIER RAILING QUANTITIES		
ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAILING	L.F.	1587.8

CONC. BARRIER RAILING QUANTITIES		
ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAILING	L.F.	915.9

STEEL RAILING QUANTITIES - L.F.	
ITEM	AMOUNT
STRUCTURAL STEEL RAILING, TRAFFIC - WEST RAILING	417.8
STRUCTURAL STEEL RAILING, TRAFFIC - EAST RAILING	417.1
STRUCTURAL STEEL RAILING, GORE AREA	60.9
TOTAL (L.F.)	895.8

STEEL RAILING QUANTITIES - L.F.	
ITEM	AMOUNT
STRUCTURAL STEEL RAILING, TRAFFIC - WEST RAILING	795.3
STRUCTURAL STEEL RAILING, TRAFFIC - EAST RAILING	795.3
TOTAL (L.F.)	1590.6

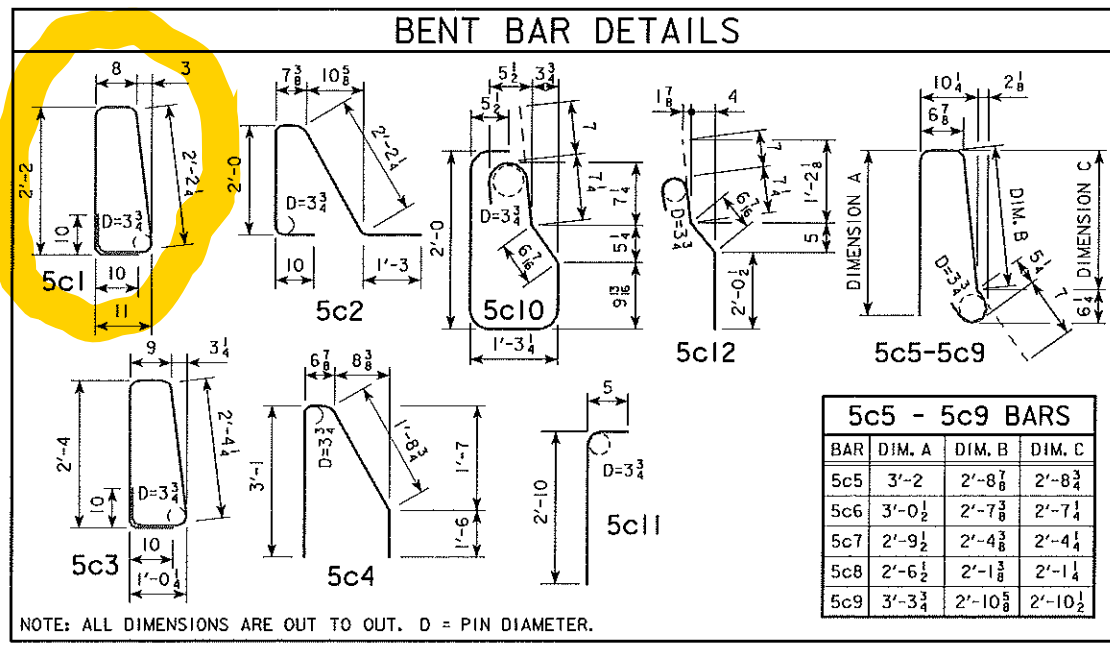
STEEL RAILING QUANTITIES - L.F.	
ITEM	AMOUNT
STRUCTURAL STEEL RAILING, TRAFFIC - WEST RAILING	459.2
STRUCTURAL STEEL RAILING, TRAFFIC - EAST RAILING	459.1
TOTAL (L.F.)	918.3

CONC. BARRIER RAILING QUANTITIES		
ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAILING	L.F.	1248.9

STEEL RAILING QUANTITIES - L.F.	
ITEM	AMOUNT
STRUCTURAL STEEL RAILING, TRAFFIC - WEST RAILING	599.4
STRUCTURAL STEEL RAILING, TRAFFIC - EAST RAILING	600.3
TOTAL (L.F.)	1199.7

* INCLUDES PLACEMENT OF CONCRETE FOR PORTION UP TO 5 FEET FROM CENTERLINE OF PIER 16 ON SPAN 15. REINFORCING STEEL IN THIS SECTION PROVIDED BY OTHERS. LINEAR FEET OF BARRIER RAILING INCLUDED IN UNIT 1 QUANTITY.

** INCLUDES 60.0 FEET OF NON-STANDARD BARRIER AT GORE AREA.



NOTE:
DESIGNATION "-4" SIGNIFIES BAR ASSOCIATED WITH THE UNIT 4 BRIDGE. "-4" NOT SHOWN IN DETAILS FOR CLARITY.

DESIGN FOR VARIABLE SKEW (L.A.)
2274'-7 x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE-WBL
 138'-10 & 152'-8 END SPANS MULTIPLE LENGTH INTERIOR SPANS
RAILING QUANTITIES-ALL UNITS
 STA. 6792+44.11 - 52' RIGHT @ 1-74 NOVEMBER, 2016
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 DESIGN SHEET NO. 207 OF 258 FILE NO. 30253 DESIGN NO. 1417