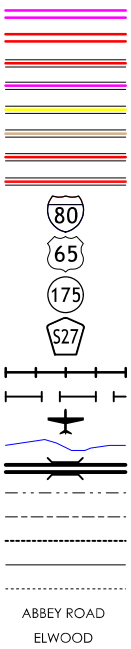


LEGEND

- 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



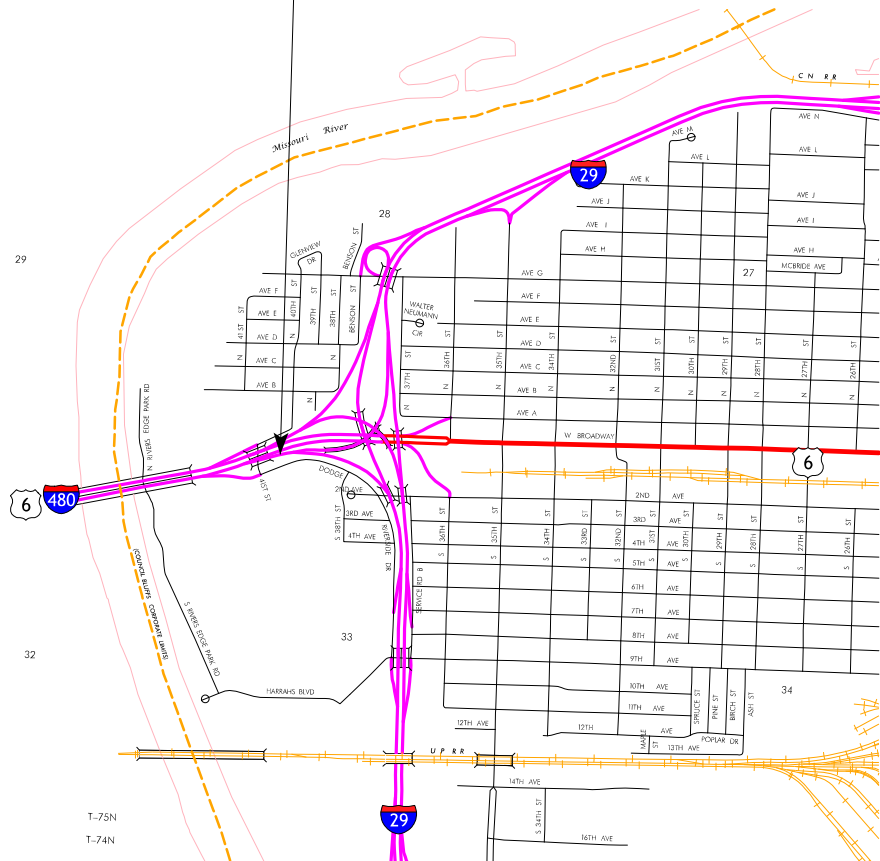
PLANS OF PROPOSED IMPROVEMENTS ON THE

INTERSTATE ROAD SYSTEM
POTTAWATTAMIE COUNTY

BRIDGE NEW - STEEL GIRDER
I-480 E.B. CONNECTOR TO RAMP C AND
RAMP F OVER 40TH STREET

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.

DESIGN 1720
FHWA 700965



R-44W
LOCATION MAP
PART OF CITY OF COUNCIL BLUFFS

PROJECT DIRECTORY NAME: 7802901004

**ENGLISH STANDARD
BRIDGE PLANS**

STANDARD	ISSUED	REVISED

REVISIONS
SEE REVISION SHEET RA 06-08-2022



1-800-292-8989

www.iowaonecall.com



**STANDARD ROAD
PLANS**

STANDARD ROAD PLANS ARE LISTED
ON SHEET NUMBER C.I

DESIGN DATA URBAN

2015 AADT	13,100	V.P.D.
2040 AADT	15,900	V.P.D.
2040 DHV	2,200	V.P.H.
TRUCKS	8	%
ESALs per day	-	

PROJECT WEBSITE:
<http://www.e-Builder.net>
ACCESS TO THE PROJECT WEBSITE FOR SUBCONTRACTORS,
FABRICATORS AND SUPPLIERS SHALL BE GRANTED BY THE
PRIME CONTRACTORS.

INDEX OF SEALS

SHEET NO.	NAME	TYPE
I	CAROLINE EPPERLY	STRUCTURAL DESIGN
SPS.I	DONALD J. HAMMOND	SOILS DESIGN
A.I	JAMES L. KINDER	ROADWAY DESIGN

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.



Signature Caroline Epperly Date 01-29-2021
Printed or Typed Name **Caroline Epperly**
My license renewal date is December 31, 2022

Pages or sheets covered by this seal: SHEETS I THRU 71 OF 85

ALL WORKING DRAWINGS, INCLUDING SHOP DRAWINGS AND
FALSEWORK DRAWINGS, SHALL BE SUBMITTED THROUGH THE
PROJECT WEBSITE AND WILL BE REVIEWED BY:

HR GREEN, INC.
5525 MERLE HAY ROAD, SUITE 200
JOHNSTON, IA 50131

LISTING OF PROJECT REVISIONS

DATE	SHEET NUMBER		DESCRIPTION OF REVISIONS	DATE	SHEET NUMBER		DESCRIPTION OF REVISIONS
06-08-2022	RA		REVISION SHEET ADDED.				
06-08-2022	2	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED REINFORCING STEEL QUANTITIES. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.	06-08-2022	51A	I	REVISED: THIS SHEET ADDED TO SHOW UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. UPDATED INCORRECT BAR WEIGHTS. CHANGED REINFORCING STEEL QUANTITIES, COLOR OF REINFORCEMENT, AND BAR LENGTHS. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION. CORRECTED WEIGHTS OF MULTIPLE DECK BARS.
06-08-2022	3	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED REINFORCING STEEL QUANTITIES. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.	06-08-2022	58	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED REINFORCING STEEL QUANTITIES, COLOR OF REINFORCEMENT, LAP LENGTHS, AND NOTE. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.
06-08-2022	22	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.	06-08-2022	59	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED REINFORCING STEEL QUANTITIES, COLOR OF REINFORCEMENT, AND LAP LENGTHS. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.
06-08-2022	23	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.	06-08-2022	60	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED REINFORCING STEEL QUANTITIES AND COLOR OF REINFORCEMENT. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.
06-08-2022	24	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT AND BAR SPACINGS. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.	06-08-2022	61	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED REINFORCING STEEL QUANTITIES AND COLOR OF REINFORCEMENT. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.
06-08-2022	25	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.	06-08-2022	63	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT AND NOTE. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.
06-08-2022	27	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.	06-08-2022	70	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED NOTE. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.
06-08-2022	45	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT AND LAP LENGTHS. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.	06-08-2022	71	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.
06-08-2022	46	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT AND LAP LENGTHS. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.				
06-08-2022	47	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT, LAP LENGTHS, BAR SPACINGS, STATIONS, AND NOTES. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.				
06-08-2022	48	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT, LAP LENGTHS, BAR SPACINGS, STATIONS, AND NOTES. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.				
06-08-2022	49	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT, LAP LENGTHS, AND BAR SPACINGS. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.				
06-08-2022	50	I	REVISED: UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT, LAP LENGTHS, AND BAR SPACINGS. REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.				
06-08-2022	51	I	REVISED: THIS SHEET VOIDED. REASON: EXCESSIVE CHANGES CREATED UNCLEAR REINFORCING STEEL QUANTITY TABLE.				

STRUCTURAL DESIGN

REGISTERED PROFESSIONAL ENGINEER

Stanley T. Stallsmith

12571

IOWA

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.

Stanley T. Stallsmith

06-08-2022
SignatureDate
Printed or Typed Name
My license renewal date is December 31, 2022

Pages or sheets covered by this seal: SHEETS RA, 2-3, 22-25, 27, 45-51, 51A 58-61, 63, 70-71

POTTAWATTAMIE COUNTY
DESIGN NO. 1720
REVISION SHEET



DESIGN TEAM HR GREEN, INC.

POTTAWATTAMIE COUNTY

PROJECT NUMBER	IM-480-1(166)0--13-78
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SHEET NUMBER RA

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POTTAWATTAMIE COUNTY DESIGN NO. 1720 REVISION SHEET

REVISED: JUNE 8, 2022

ESTIMATED BRIDGE QUANTITIES					
ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1	2402-2720000	EXCAVATION, CLASS 20	C.Y.	133	
2	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	C.Y.	175.0	
3	2403-7000210	HIGH PERFORMANCE STRUCTURAL CONCRETE	C.Y.	877.7	
4	2404-7775000	REINFORCING STEEL	LB.	64,667	
5	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB.	15,610	
6	2404-7775009	REINFORCING STEEL, STAINLESS STEEL	LB.	252,863	
7	2405-2705000	EXCAVATE AND DEWATER	L.S.	1.00	
8	2408-7800000	STRUCTURAL STEEL	LB.	980,984	
9	2413-1200000	STEEL EXTRUSION JOINT WITH NEOPRENE	L.F.	60.9	
10	2413-1200100	NEOPRENE GLAND INSTALLATION AND TESTING	L.F.	60.9	
11	2414-6424038	CONCRETE BARRIER RAIL, 3'-8"	L.F.	87.6	
12	2414-6424119	CONCRETE BARRIER RAILING, AESTHETIC	L.F.	646.6	
13	2499-2300001	DECK DRAINS	L.S.	1.00	
14	2501-0201253	PILE, STEEL, HP 12 X 53	L.F.	2,760	
15	2501-0201473	PILE, STEEL, HP 14 X 73	L.F.	2,660	
16	2526-8285000	CONSTRUCTION SURVEY	L.S.	1.00	
17	2533-4980005	MOBILIZATION	L.S.	1.00	
18	2551-0000230	PERMANENT CRASH CUSHION, SEVERE USE (SU)	EACH	1	
19	2551-0000300	PERMANENT CRASH CUSHION SPARE PARTS KIT	EACH	1	
20	2599-9999010	CONCRETE DEADMAN ANCHOR	L.S.	1.00	
21	2599-9999010	GIRDER ERECTION PLAN	L.S.	1.00	
22	2599-9999018	REVETMENT STONE SLOPE PROTECTION	S.Y.	643.5	

ITEM NO.	ESTIMATE REFERENCE INFORMATION
20	INCLUDES ALL COSTS OF FURNISHING AND INSTALLING DEADMAN ANCHOR, INCLUDING ANCHOR TEES, RODS, CLEVIS, TURNBUCKLES, GALVANIZING, CONCRETE, REINFORCING STEEL AND ALL WORK NECESSARY TO COMPLETE THE INSTALLATION OF DEADMAN ANCHOR.
21	REFER TO DEVELOPMENTAL SPECIFICATIONS FOR GIRDER ERECTION PLAN.
22	INCLUDES FURNISHING AND PLACING ENGINEERING FABRIC, CLASS E REVETMENT STONE, EROSION STONE, AND POROUS OR GRANULAR SUBBASE AT FRONT FACE OF ABUTMENT FOOTING. INCLUDES ALL REQUIRED EXCAVATION, SHAPING AND COMPACTING TO DIMENSIONS SHOWN IN PLANS.



ITEM NO.	ESTIMATE REFERENCE INFORMATION
1	INCLUDES WEST ABUTMENT EXCAVATION QUANTITY BASED ON PROPOSED GROUND CONDITIONS.
2	THIS BID ITEM INCLUDES THE CONCRETE FOR THE PIER FOOTINGS. INCLUDES ALL RESILIENT JOINT FILLER REQUIRED.
3	THIS BID ITEM INCLUDES THE CONCRETE FOR THE DECK, ABUTMENT, PIER CAPS AND COLUMNS, AND WINGWALLS. REFER TO THE DEVELOPMENTAL SPECIFICATION FOR "HIGH PERFORMANCE CONCRETE FOR STRUCTURES" FOR ADDITIONAL INFORMATION. INCLUDES FURNISHING AND PLACING CONCRETE SEALER. INCLUDES FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), POROUS BACKFILL, GEOTEXTILE FABRIC, AND SUBDRAIN OUTLET AT ABUTMENTS AND TOE OF BERM. PLACING OF BACKFILL BY FLOODING WILL NOT BE ALLOWED. INCLUDES ALL COSTS ASSOCIATED WITH CONCRETE RUSTICATION, TEXTURING, AND FORM LINING FOR THE ABUTMENTS AND PIERS. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING CONDUIT, JUNCTION BOX, AND FITTINGS IN THE PIER AND DECK. INCLUDES 1 JUNCTION BOX, 10 LF OF 1" DIAMETER RIGID STEEL CONDUIT, 40 LF OF 2" DIAMETER RIGID STEEL CONDUIT AND 100 LF OF 1" DIAMETER FIBERGLASS CONDUIT. RIGID STEEL CONDUIT CAN BE REPLACED BY FIBERGLASS CONDUIT, AT THE CONTRACTOR'S OPTION. IF FIBERGLASS CONDUIT IS USED, REFER TO SPECIAL PROVISIONS FOR FIBERGLASS CONDUIT EMBEDDED IN STRUCTURE.
7	FOR PIER, IN ACCORDANCE WITH SECTION 2405 OF THE STANDARD SPECIFICATIONS. INCLUDES PIER EXCAVATION AS SHOWN ON THE SUMMARY QUANTITIES SHEET. PIER 9 EXCAVATION QUANTITY IS BASED ON PROPOSED GROUND CONDITIONS.
8	INCLUDES NEOPRENE SHEETS UNDER BEARINGS.
9	INCLUDES ALL NECESSARY HARDWARE AND ACCESSORIES INCLUDING THE ANCHORAGE SYSTEM, TEMPORARY ERECTION MATERIAL AND THE 3/8" BARRIER PLATES WITH THEIR ANCHORAGE SYSTEM. EXCLUDES INSTALLATION OF NEOPRENE GLAND.
10	INCLUDES INSTALLATION OF NEOPRENE GLAND AND WATER TESTING OF JOINT.
11	IF PLACEMENT OF CONCRETE IS DONE BY SLIPFORMING METHOD, CLASS BR CONCRETE IS REQUIRED. CAST-IN-PLACE BARRIER RAILS SHALL USE CLASS C MIX. PRICE BID FOR THIS ITEM SHALL INCLUDE THE COST OF CAST-IN-PLACE FORMS IF REQUIRED FOR PLACEMENT OF THE CONCRETE.
12	CAST-IN-PLACE BARRIER RAILS SHALL USE CLASS C MIX. PRICE BID FOR THIS ITEM SHALL INCLUDE THE COST OF CAST-IN-PLACE FORMS. SLIP-FORMING OF THE CONCRETE BARRIER RAILS IS NOT ALLOWED. INCLUDES ALL COSTS ASSOCIATED WITH CONCRETE RUSTICATION, TEXTURING, AND FORM LINERS FOR AESTHETIC BARRIER RAILS.
13	INCLUDES ALL NEW DECK DRAINS. REFER TO DESIGN SHEETS 62 AND 63 FOR LOCATION, MATERIALS AND THE DETAILS OF THEIR CONSTRUCTION. MEASUREMENT WILL BE THE LUMP SUM FOR ALL DECK DRAINS REQUIRED AS SPECIFIED IN THE PLANS. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EQUIPMENT AND LABOR AND FOR PERFORMANCE OF ALL WORK NECESSARY FOR FABRICATING AND INSTALLING THE DECK DRAINS AS PER PLAN.
14, 15	INCLUDES FURNISHING AND INSTALLING STEEL PILE POINTS. INCLUDES CMP, BLOCKING MATERIALS, INSTALLATION, AND SAND BACK FILLED INTO CMP AT WEST ABUTMENT WITHIN THE SPECIAL BACKFILL OF THE MSE WALL.
16	ITEM DOES NOT INCLUDE CONSTRUCTION SURVEY AS REQUIRED FOR THE TIED (I90) GRADE AND PAVE PROJECT.
17	ITEM DOES NOT INCLUDE MOBILIZATION AS REQUIRED FOR THE TIED (I90) GRADE AND PAVE PROJECT.
18, 19	CRASH CUSHION IS FOR PERMANENT, SEVERE USE INSTALLATION. SEE DESIGN SHEET 5 FOR LOCATION. CRASH CUSHION TO BE USED SHALL BE "UNIVERSAL TAU-11-R" OR "SCI100GM".

ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

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SUPERSTRUCTURE DETAILS	22
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REVISED: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED REINFORCING STEEL QUANTITIES.

REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE

153'-0 END SPANS

ESTIMATED QUANTITIES

STA. 3554+77.00 @ 1-480 RAMP C) NOVEMBER, 2020

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 70 FILE NO. 30170 DESIGN NO. 1720



REVISED: JUNE 8, 2022

GENERAL NOTES:

IT IS INTENT OF THIS DESIGN TO CONSTRUCT A 306'-0 X VARIABLE WIDTH STEEL GIRDER BRIDGE ON I-480 E.B. CONNECTOR TO RAMP C AND RAMP F OVER 40TH STREET.

ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.

THE USE OF BLACK OR GALVANIZED STEEL FOR THE DECK STEEL SUPPORT CHAIRS IS PROHIBITED.

THE BRIDGE CONTRACTOR SHALL DRIVE ABUTMENT PILING BEFORE THE MECHANICALLY STABILIZED EARTH (MSE)WALL IS CONSTRUCTED AND MAINTAIN PROPER POSITION OF PILING WHILE THE MSE WALL IS BEING CONSTRUCTED. THE PILING SHALL BE TIED TOGETHER BY MECHANICAL MEANS AND ANCHORED TO PREVENT DISPLACEMENT DURING BACKFILLING OPERATIONS AND MSE WALL CONSTRUCTION. THE CONTRACTOR SHALL SUBMIT A PLAN TO THE ENGINEER FOR APPROVAL OF THE CONNECTIONS AND ANCHORAGE.

IN ACCORDANCE WITH IOWA DOT STANDARD SPECIFICATIONS SECTION 1105, THE CONTRACTOR SHALL SUBMIT A GIRDER ERECTION PLAN (GEP) CONSISTING OF ERECTION PLANS, ERECTION PROCEDURES, AND ERECTION ENGINEERING CALCULATIONS TO THE ENGINEER ACCORDING TO DESIGN SPECIFICATION DS-15076 "GIRDER ERECTION PLAN".

THE CITY AND UTILITY COMPANIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE BRIDGE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

THIS BRIDGE IS DESIGNED FOR HL-93 LOADING, PLUS 20 LBS. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.

ROADWAY EXCAVATION IS INCLUDED IN THE TIED PROJECT IM-029-3(190)53--13-78. EXCAVATION QUANTITIES FOR THE PIERS ARE BASED ON THE ASSUMPTION THAT ROADWAY EXCAVATION WILL HAVE BEEN COMPLETED AND ABUTMENT FILLS ARE IN PLACE PRIOR TO STARTING CONSTRUCTION OF THE PIERS.

IT SHALL BE THE BRIDGE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SITES FOR EXCESS EXCAVATED MATERIAL. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

COORDINATE DRIVING OF PILES WITH MSE WALL PROJECT IM-029-3(190)53--13-78.

CONCRETE BARRIER RAILS 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 RAILS SHALL USE CLASS C MIX. CLASS D CONCRETE IS NOT PERMITTED FOR CONCRETE BARRIER RAILS (CASTIN-PLACE OR SLIPFORMED METHOD).

SUBSTRUCTURE CONCRETE SHALL BE PROTECTED FROM STAINING BY A WRAPPING OF POLYETHYLENE OR SIMILAR MATERIALS WHICH SHALL BE LEFT IN PLACE AND KEPT IN A SERVICEABLE CONDITION UNTIL AFTER THE DECK HAS BEEN PLACED. IF SUBSTRUCTURE CONCRETE IS STAINED, THE STAINS SHALL BE REMOVED BY METHODS APPROVED BY THE ENGINEER. ALL COSTS ASSOCIATED WITH THE PROTECTION AND ANY REQUIRED CLEANING OF THE SUBSTRUCTURE CONCRETE SHALL BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL STEEL".

CAST IN-ONE-PIECE STEEL PILE POINTS ARE REQUIRED FOR THE ABUTMENT AND PIER PILES IN ACCORDANCE WITH ARTICLE 4167.02 OF THE CURRENT STANDARD SPECIFICATIONS AND MATERIALS I.M. 468.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5ø1 IS 5/8 INCH DIAMETER BAR). ENGLISH REINFORCING STEEL RECEIVED IN THE FIELD MAY DISPLAY THE FOLLOWING "BAR DESIGNATION". THE "BAR DESIGNATION" IS THE STAMPED IMPRESSION ON THE REINFORCING BARS, AND IS EQUIVALENT TO THE BAR DIAMETER IN MILLIMETERS.

ENGLISH SIZE	3	4	5	6	7	8	9	10	11
BAR DESIGNATION	10	13	16	19	22	25	29	32	36

THE CONTRACTOR IS RESPONSIBLE TO PROVIDE SUFFICIENT TEMPORARY BRACING TO MINIMIZE LATERAL DEFLECTION AND ROTATION OF EXTERIOR STEEL BEAMS DURING DECK PLACEMENT. LATERAL DEFLECTION AND ROTATION OF EXTERIOR BEAMS MAY RESULT IN THIN DECKS AND AN UPWARDS SHIFT IN BAR MATS WHICH CAN DECREASE CONCRETE COVER. PARTIALLY OR FULLY INSTALLED PERMANENT BRACING AS SHOWN IN THESE DESIGN PLANS SHALL NOT BE ASSUMED SUFFICIENT TO MINIMIZE LATERAL DEFLECTION AND ROTATION OF EXTERIOR BEAMS DURING DECK PLACEMENT. TEMPORARY BRACING SHALL NOT BE WELDED TO THE STEEL BEAMS OR ITS ATTACHMENTS INCLUDING THE STUDS.



THIS STRUCTURE SHALL BE BUILT WITH WEATHERING STEEL. ALL STRUCTURAL STEEL, EXCEPT AS NOTED, SHALL CONFORM TO ASTM A709 GRADE 50W. PAINTING REQUIREMENTS FOR THIS STRUCTURE SHALL BE IN ACCORDANCE WITH ARTICLE 2408.02, Q, OF THE STANDARD SPECIFICATIONS.

KEYWAY DIMENSIONS SHOWN ON THE PLANS ARE BASED ON NOMINAL DIMENSIONS UNLESS STATED OTHERWISE. IN ADDITION, THE BEVEL USED ON THE KEYWAY SHALL BE LIMITED TO A MAXIMUM OF 10 DEGREES FROM VERTICAL.

COORDINATE INSTALLATION OF MODULAR EXPANSION JOINT ASSEMBLY WITH PROJECTS IM-029-3(192)54--13-78 (RAMP C) AND IM-029-3(221)54--13-79 (RAMP F). BID ITEM IS NOT INCLUDED WITH THIS PROJECT.

INTERMEDIATE FOUNDATION IMPROVEMENT (IFI) REMEDIATION WILL BE INSTALLED BELOW THE WEST ABUTMENT AS PART OF THE TIED (190) GRADE AND PAVE PROJECT. COORDINATE WITH THE IFI VENDOR TO AVOID CONFLICTS WITH ABUTMENT STEEL PILING.

TRAFFIC CONTROL PLAN

THIS STRUCTURE IS BEING CONSTRUCTED ON A RELOCATION AND THE ROAD WILL NOT BE OPEN TO TRAFFIC UNTIL AFTER COMPLETION OF CONSTRUCTION. TRAFFIC CONTROL PLAN INCLUDED IN THE TIED PROJECT IM-029-3(190)53--13-78.

NOTE: POLLUTION PREVENTION PLAN IS INCLUDED IN THE TIED ROAD PLANS, PROJECT NO. IM-029-3(190)53--13-78

SPECIFICATIONS:

DESIGN:
AASHTO LRFD 7th Ed, SERIES OF 2014, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

CONSTRUCTION:
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.
-DEVELOPMENTAL SPECIFICATIONS FOR "MODULAR EXPANSION JOINT ASSEMBLY"
-DEVELOPMENTAL SPECIFICATIONS FOR "HIGH PERFORMANCE CONCRETE FOR STRUCTURES"
-DEVELOPMENTAL SPECIFICATIONS FOR "GIRDER ERECTION PLAN"
-SPECIAL PROVISIONS FOR "E-BUILDER"
-SPECIAL PROVISIONS FOR "FIBERGLASS CONDUIT EMBEDDED IN STRUCTURE"
-SPECIAL PROVISIONS FOR "MASS CONCRETE-CONTROL OF HEAT OF HYDRATION"

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7th Ed, SERIES OF 2014, EXCEPT AS NOTED IN THE CORRESPONDING EDITION OF THE IOWA BRIDGE DESIGN MANUAL.
REINFORCING STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 5, GRADE 60 FOR EPOXY COATED AND NON-COATED, AND GRADE 60 OR 75 FOR STAINLESS.
CONCRETE IN ACCORDANCE WITH AASHTO LRFD SECTION 5, f'c = 4.0 KSI.
STRUCTURAL STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 6. ASTM A709 GRADE 36, GRADE 50, AND GRADE 50W (AASHTO M270 GRADE 36, GRADE 50, AND GRADE 50W).
FATIGUE DESIGN BASED ON FATIGUE I LOAD COMBINATION AND INFINITE LIFE.

DESIGN:
AASHTO LRFD 7th Ed, SERIES OF 2014, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

CONSTRUCTION:
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.
-SPECIAL PROVISIONS FOR "E-BUILDER"
-SPECIAL PROVISIONS FOR "FIBERGLASS CONDUIT EMBEDDED IN STRUCTURE"
-SPECIAL PROVISIONS FOR "HIGH PERFORMANCE CONCRETE FOR STRUCTURES"

BRIDGE DECK DIMENSIONS TABLE

NO.	ITEM	UNIT	QUANTITY
1	DECK LENGTH	L.F.	309.2
2	MINIMUM DECK WIDTH	L.F.	59.7
3	MAXIMUM DECK WIDTH	L.F.	98.0
4	DECK AREA	S.F.	23,073

1. DECK LENGTH IS MEASURED FROM FACE OF PAVING NOTCH TO CENTERLINE PIER 8 ALONG THE BASELINE OF THE ROADWAY.
- 2, 3. DECK WIDTHS ARE MEASURED FROM OUT-TO-OUT OF DECK PERPENDICULAR TO RAMP C (P.G.L.).
4. DECK AREA IS TO BE BASED ON THE DECK LENGTH DISTANCE AND OUT-TO-OUT DECK DIMENSIONS.

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE

153'-0 END SPANS

GENERAL NOTES

STA. 3554+77.00 (@ I-480 RAMP C) NOVEMBER, 2020

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 3 OF 70 FILE NO. 30170 DESIGN NO. 1720

WEATHERING STEEL NOTES:

ALL STRUCTURAL STEEL, EXCEPT AS NOTED, SHALL CONFORM TO ASTM A709 GRADE 50W. THE MINIMUM YIELD POINT FOR GRADE 50W STRUCTURAL STEEL IS 50 KSI FOR PLATES 4 INCHES AND UNDER IN THICKNESS, AND ALL STRUCTURAL SHAPES. THE GRADE 50W STEEL IS A WEATHERING STEEL AND IS TO REMAIN UNPAINTED, EXCEPT AS NOTED.

DECK DRAINS INCLUDING PLATES WELDED TO THE DRAIN FOR DRAIN SUPPORT ARE TO BE GRADE 36 STEEL.

ALL PIECES COMPRISING THE ABUTMENT AND PIER BEARINGS SHALL COMPLY WITH THE REQUIREMENTS AS STATED IN THE NOTES ON DESIGN SHEETS 43.

SHEAR STUDS ARE TO BE OF AN APPROVED TYPE LISTED IN MATERIALS I.M. 453.10, APPENDIX A.

THE FINISH ON DECK DRAINS, BEARINGS AND WEATHERING STEEL SHALL BE IN ACCORDANCE WITH THE PLAN NOTES AND SECTION 2408, OF THE STANDARD SPECIFICATIONS. EXTERIOR SURFACES OF ALL GALVANIZED COMPONENTS WHICH ARE DESIGNATED IN THE CONTRACT DOCUMENTS TO BE PAINTED SHALL BE PREPARED ACCORDING TO ARTICLE 2509.03, OF THE STANDARD SPECIFICATIONS.

BOLTS FOR USE WITH WEATHERING STEEL SHALL BE A325 TYPE III WITH A563 GRADE DH3 NUTS AND F436 TYPE III WASHERS.

BOLTS USED TO SPLICE GIRDER SECTIONS ARE TO BE INSTALLED SUCH THAT NUTS ARE ON THE INSIDE FACE OF THE GIRDER WEBS FOR THE EXTERIOR GIRDERS, AND ON THE TOP OF BOTH TOP AND BOTTOM FLANGES OF ALL THE GIRDERS.

THE STEEL SHALL BE KEPT FREE OF OIL, GREASE, DIRT, CRAYON OR CHALK MARKS, CONCRETE SPATTER AND ANY OTHER FOREIGN MATTER THAT MAY AFFECT THE NATURAL OXIDATION OF THE STEEL. ANY FOREIGN MATTER REMAINING ON THE STEEL AFTER COMPLETION OF BRIDGE CONSTRUCTION SHALL BE REMOVED BY THE BRIDGE CONTRACTOR AS DIRECTED BY THE ENGINEER. THE RESULTANT SURFACE SHALL BE FREE OF ALL VISIBLE RESIDUES. ALL COSTS ASSOCIATED WITH CLEANING STEEL SURFACES SHALL BE BORNE BY THE BRIDGE CONTRACTOR.

SEAL MATERIAL FOR CAULKING SHALL BE NEUTRAL CURE AND NON SAG SILICONE. TWO PRODUCTS MEETING THESE CRITERIA ARE DOW 888, CRAFTCO ROAD SAVER SILICONE, OR CSL342 JOINT SEALANT.

FUTURE JACKING NOTES:

PROVISIONS FOR JACKING THE PROPOSED BRIDGE HAVE BEEN INCLUDED IN THIS DESIGN TO ALLOW FOR FUTURE BEARING MAINTENANCE.

THE JACKING STIFFENERS ARE DESIGNED BASED ON COMBINED DEAD AND LIVE LOAD REACTIONS TABULATED IN THE MOMENT AND REACTION TABLES LISTED IN THESE PLANS.

DESIGN ASSUMES JACKING WILL BE PERFORMED BY PLACING ONE JACK ON EACH SIDE OF THE BEARING ASSEMBLY AT CONTINUOUS SUPPORTS AND BY PLACING A SINGLE JACK IN FRONT OF THE BEARING ASSEMBLY AT END SUPPORTS.

JACKS ARE ASSUMED TO BE CENTERED UNDER THE WEB AND JACKING STIFFENER LOCATIONS SHOWN IN THESE PLANS. SHIM PLATES ARE ASSUMED TO BE USED TO PROVIDE A LEVEL JACKING SURFACE AND TO LIMIT BEARING STRESSES ON CONCRETE IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR PERFORMING THE JACKING TO SIZE AND DESIGN THE REQUIRED JACKING EQUIPMENT AND CRIBBING AND TO ESTABLISH THE PROCEDURE FOR JACKING AND BEARING REPLACEMENT OR REPAIRS SUBJECT TO APPROVAL OF THE ENGINEER. THE ACTUAL DESIGN LOADINGS SHALL BE BASED ON THE LOADINGS EXPECTED FROM THE CONTRACTOR'S PROPOSED JACKING AND MAINTENANCE OF TRAFFIC PLAN AND SHALL CONSIDER ANY ADDITIONAL DEAD LOAD PRODUCED BY IMPOSING DIFFERENTIAL DISPLACEMENTS.

WHEN JACKING AT EXPANSION JOINTS, CONSIDERATION SHOULD BE GIVEN TO PROTECTING ANY BARRIER PLATES, EMBEDDED CONDUIT, AND EXPANSION JOINTS THAT WILL REMAIN.

CONSIDERATION SHALL BE GIVEN TO ANY THERMAL MOVEMENTS AND VIBRATIONS THAT MAY OCCUR AS THE STRUCTURE IS SUPPORTED BY THE JACKS AND/OR CRIBBING.

FUTURE MAINTENANCE OPERATIONS SHALL BE CONDUCTED IN SUCH A MANNER AS TO PREVENT DAMAGE TO THE STRUCTURE.

GENERAL NOTES FOR TEXTURED CONCRETE FORM LINERS:

SEE INDIVIDUAL DESIGN SHEETS FOR SPECIFIC NOTES AND DETAILS DESCRIBING THE FEATURES WHICH INCORPORATE TEXTURED CONCRETE. WORK PERFORMED TO CREATE TEXTURED CONCRETE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR FORMWORK AND THE FOLLOWING:

FORM THE TEXTURED CONCRETE SURFACE USING A FORM LINER SYSTEM MADE OF HIGH-STRENGTH URETHANE ELASTOMER, PLASTIC OR FLEXIBLE FOAM MATERIALS CAPABLE OF WITHSTANDING ANTICIPATED CONCRETE POUR PRESSURES WITHOUT LEAKAGE OR CAUSING PHYSICAL DEFECTS. FORM LINERS SHALL EASILY ATTACH TO FORMS AND BE REMOVABLE WITHOUT CAUSING CONCRETE SURFACE DAMAGE. IF RECOMMENDED BY THE FORM LINER MANUFACTURER, USE STRUCTURAL BACKERS TO PREVENT DEFORMATION OF THE LINER DURING LOADING OF THE FORMS. THE LINERS SHALL BE DESIGNED TO FORM SURFACES CONFORMING TO THE DESIGN INTENT INCLUDING THE SHAPE, LINES AND DIMENSIONS SHOWN IN THE PLANS AND TO AVOID VISIBLE PATTERN REPEATS, MATCH PATTERN FEATURES AT FORM LINER JOINTS TO MINIMIZE PATTERN REPEATS AND MAKE THE FORMED CONCRETE SURFACE APPEAR UNIFORM AND CONTINUOUS WITHOUT VISIBLE SEAMS AND FORM MARKS. WHEN JOINTS ARE UNAVOIDABLE, MAKE JOINTS ALONG MAIN FEATURES OF THE PATTERN IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

FORM LINER EDGES FOLLOWING CURVES ARE TO BE CUT CLEANLY AND PARALLEL TO THE CURVE. USE ADEQUATE BLOCKING, SEALING AND OTHER MEANS IN ORDER TO MAINTAIN THE APPROPRIATE DEPTH AND CHARACTER OF TEXTURE AT CUT EDGES OF LINERS AND TO PREVENT MORTAR LEAKAGE.

DURING LOADING IN FORMS WITH CONCRETE, TAKE EXTRA CARE TO ADEQUATELY VIBRATE CONCRETE IN ORDER TO MAINTAIN ALL INTENDED FEATURES OF THE FORM LINER IN THE FINAL SURFACE AND TO PREVENT VOIDS. FOLLOWING REMOVAL OF FORMS, FINISH MINOR DEFECTS TO BLEND WITH THE BALANCE OF THE SURFACE TEXTURE. THE COMPLETED SURFACE SHALL BE FREE OF BLEMISHES, SURFACE VOIDS AND CONSPICUOUS FORM MARKS TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR SHALL CORRECT, AT HIS OWN COSTS, ANY SURFACE DEFECTS.

VERIFY THAT RELEASE AGENTS USED ARE COMPATIBLE WITH FORM LINER MATERIAL, AND ARE NON-STAINING. APPLY RELEASE AGENT IN ACCORDANCE WITH THE FORM LINER MANUFACTURER'S RECOMMENDATIONS.

IF USED, FORM TIES SHALL BE MADE OF NON-CORROSIVE MATERIALS WHEN THE PORTION PERMANENTLY EMBEDDED IN THE CONCRETE IS LESS THAN 1½ INCHES FROM THE FINISHED SURFACE. POSITION FORM TIES AND ACCESSORIES IN STONE PATTERN MORTAR JOINTS AND AT HIGH POINTS OF FINISHED WALL.

IF HEATING FORMS DURING COLD WEATHER CONSTRUCTION, TAKE SPECIAL CARE TO AVOID DAMAGING FORM LINERS. OVERHEATING CAN WARP OR MELT SOME FORM LINER MATERIALS.

STRIP FORMWORK USING TECHNIQUES IN ACCORDANCE WITH LINER MANUFACTURER'S RECOMMENDATIONS AFTER THE CONCRETE HAS ACHIEVED THE STRENGTHS AND CURE TIMES REQUIRED BY THE PLANS AND APPLICABLE SPECIFICATIONS. CLEAN AND REPAIR FORM LINER SURFACES PRIOR TO USE. DO NOT USE SPLIT, FRAYED, DELAMINATED OR OTHERWISE DAMAGED FORM LINERS.

ALL COSTS ASSOCIATED WITH CONCRETE TEXTURING AND FORM LINERS ARE TO BE INCLUDED IN THE BID ITEM, "HIGH PERFORMANCE STRUCTURAL CONCRETE".

TEXTURED CONCRETE MOCKUP PANEL NOTES:

PRIOR TO BEGINNING ANY PRODUCTION PIER OR ABUTMENT CONCRETE WORK THAT INCLUDES TEXTURE, A TEXTURED CONCRETE MOCKUP PANEL MUST BE REVIEWED AND APPROVED BY THE ENGINEER.

CONSTRUCT A 4-FOOT HIGH, BY 8-INCH WIDE (MIN.), BY 8-FOOT LONG MOCKUP PANEL IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND THESE PLANS. A 4-FOOT WIDE SECTION OF THE PANEL SHALL RECEIVE TEXTURE 'A', AND THE REMAINING SURFACE SHALL RECEIVE TEXTURE 'B'. SEE THE ABUTMENT AND PIER DETAILS SHEETS FOR DETAILS.

CAST THE MOCKUP PANEL(S) ON SITE, USING THE SAME FORMING METHODS, PROCEDURES, FORM LINERS, AND CONCRETE MIXTURE(S) AS ARE PROPOSED FOR THE PRODUCTION WORK. TEXTURED FACES SHALL BE VERTICAL DURING THE CASTING PROCESS. A SINGLE MAT OF NO.5 REINFORCING BARS IN TWO DIRECTIONS SHALL BE SET 2 INCHES CLEAR TO THE BOTTOM OF THE TEXTURED FACE. IF THE MOCKUP PANEL IS REJECTED, CONSTRUCT A NEW MOCKUP PANEL AS DIRECTED BY THE ENGINEER. BEGIN TEXTURED PIER AND ABUTMENT CONCRETE PRODUCTION WORK ONLY AFTER THE MOCKUP HAS BEEN APPROVED BY THE ENGINEER.

AFTER ALL PRODUCTION PIER CONCRETE WORK IS COMPLETE, THE MOCKUP PANEL(S) SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.

GENERAL NOTES FOR CONCRETE RUSTICATION:

STRIPS AND PANELS USED AS INSERTS WITHIN CONCRETE FORMS TO CREATE THE RUSTICATION FEATURES MAY BE MADE OF WOOD, STEEL, PLASTIC OR OTHER NONPOUROUS MATERIAL CAPABLE OF WITHSTANDING ANTICIPATED CONCRETE POUR PRESSURES WITHOUT PHYSICAL DEFECTS. WOOD INSERTS, IF USED SHALL BE FREE OF WARP, TWIST, CHECKS OR CRACKS AND SHALL BE PRESOAKED PRIOR TO PLACEMENT OF CONCRETE IN THE FORMS.

RUSTICATION INSERTS SHALL EASILY ATTACH TO FORMS AND SHALL NOT ALLOW LEAKAGE OF CONCRETE BETWEEN THE FORM AND THE INSERT. WHEN STEEL FORMS ARE USED, RUSTICATION STRIPS MAY BE RIGIDLY ATTACHED TO THE INSIDE SURFACES OF THE FORMS. WHEN STEEL FORMS ARE NOT USED, RUSTICATION STRIPS AND OTHER INSERTS FOR SMALL RECESSES ON EXPOSED CONCRETE SURFACES SHALL BE FASTENED TO THE FORMS IN A MANNER THAT WILL PERMIT THEM TO REMAIN IN PLACE WHEN THE FORMS ARE REMOVED. LEAVE INSERTS IN PLACE UNTIL THEY CAN BE REMOVED WITHOUT DAMAGE TO THE SURROUNDING CONCRETE.

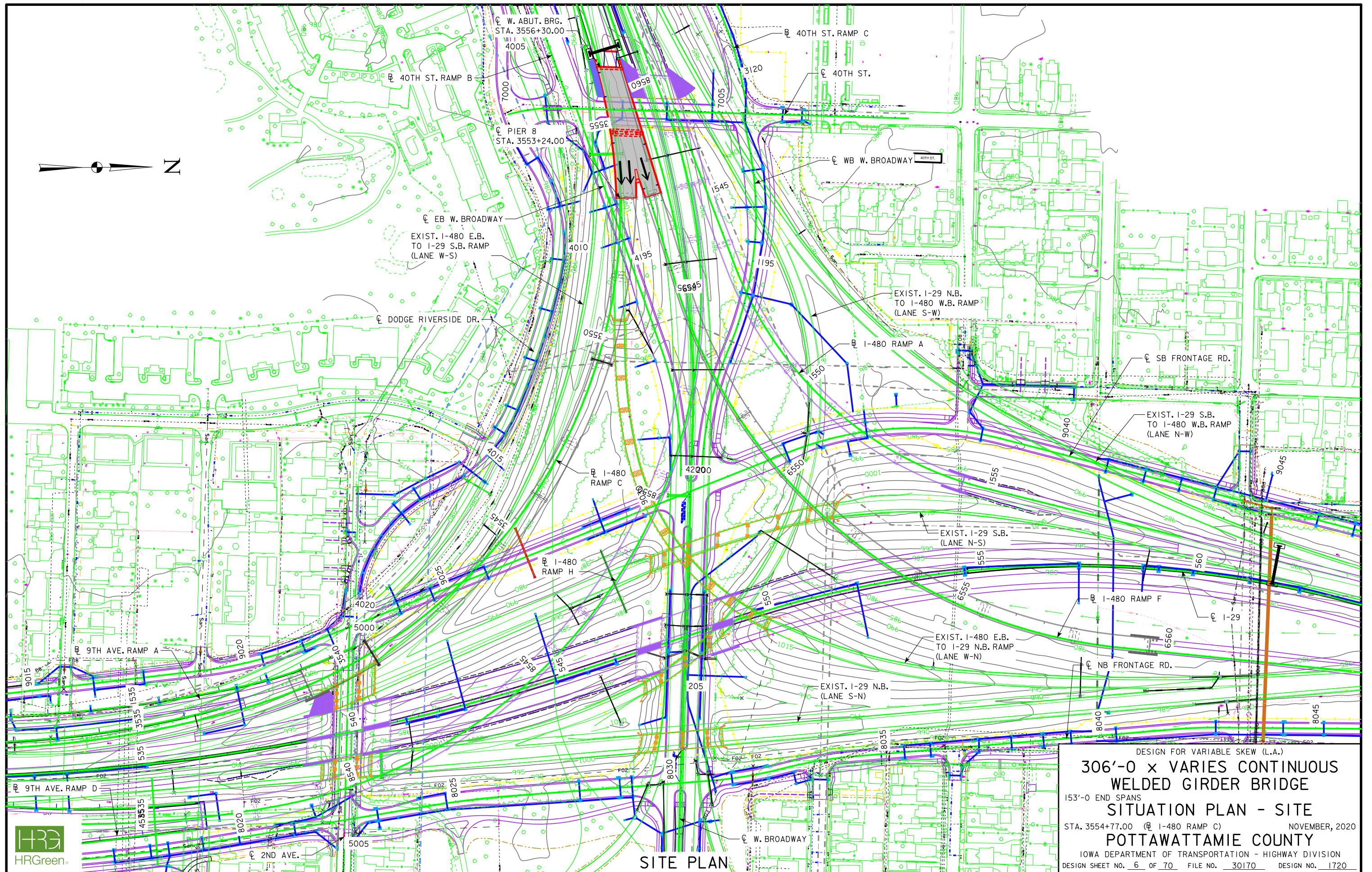
THE INSERTS SHALL BE DESIGNED TO FORM SURFACES AND FEATURES CONFORMING TO THE DESIGN INTENT INCLUDING THE SHAPE, LINES, DEPTHS, AND DIMENSIONS SHOWN IN THE PLANS. CREATE INSERTS USING A MINIMUM NUMBER OF SPLICE JOINTS IN THEIR LENGTH. SPLICES, IF USED, SHALL BE TIGHTLY JOINED SO AS NOT TO ALLOW GAPS OR LEAKS, AND SHALL NOT CREATE ANY CHANGE IN ALIGNMENT OR SHAPE OF THE RUSTICATION FEATURE.

FOR RUSTICATION FEATURES FOLLOWING THE PERIMETER OF ROUNDED SURFACES, IT MAY BE NECESSARY TO USE MULTIPLE LAYERS OF INSERT MATERIAL IN ORDER TO ACHIEVE THE RADIUS CURVE. THIS IS ACCEPTABLE, PROVIDED THAT THE FINAL SHAPE, LINE, DEPTH, AND DIMENSION OF THE FEATURES ARE MAINTAINED IN THE FINAL RESULT.

DURING LOADING OF FORMS WITH CONCRETE, TAKE EXTRA CARE TO ENSURE PROPER CONSOLIDATION OF CONCRETE AROUND ALL RUSTICATION INSERTS TO PRESERVE THE SHAPE, LINE AND DEPTH OF ALL INTENDED FEATURES IN THE FINAL CONCRETE SURFACE. FOLLOWING REMOVAL OF FORMS, REPAIR ALL DEFECTS TO ACHIEVE THE RUSTICATION FEATURES AS SPECIFIED IN THE PLANS, PATCH VOIDS, HONEYCOMB AREAS, ETC., IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. IF SURFACES WILL NOT RECEIVE A COLORED SEALER COATING, ADD WHITE CEMENT TO THE PATCHING MORTAR TO LIGHTEN IT IN ORDER TO MATCH SURROUNDING CONCRETE WHEN DRY. COMPLETED SURFACE SHALL BE FREE FROM BLEMISHES, SURFACE VOIDS AND CONSPICUOUS FORM MARKS TO THE SATISFACTION FOR THE ENGINEER. THE CONTRACTOR SHALL CORRECT, AT HIS OWN COST, ANY SURFACE DEFECTS.

ALL COSTS ASSOCIATED WITH CONCRETE RUSTICATION ARE TO BE INCLUDED IN THE BID ITEM "HIGH PERFORMACE STRUCTURAL CONCRETE".





SITE PLAN

DESIGN FOR VARIABLE SKEW (L.A.)
**306'-0" x VARIES CONTINUOUS
 WELDED GIRDER BRIDGE**
 153'-0" END SPANS
SITUATION PLAN - SITE
 STA. 3554+77.00 (at I-480 RAMP C)
POTTAWATTAMIE COUNTY
 NOVEMBER, 2020
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 6 OF 70 FILE NO. 30170 DESIGN NO. 1720

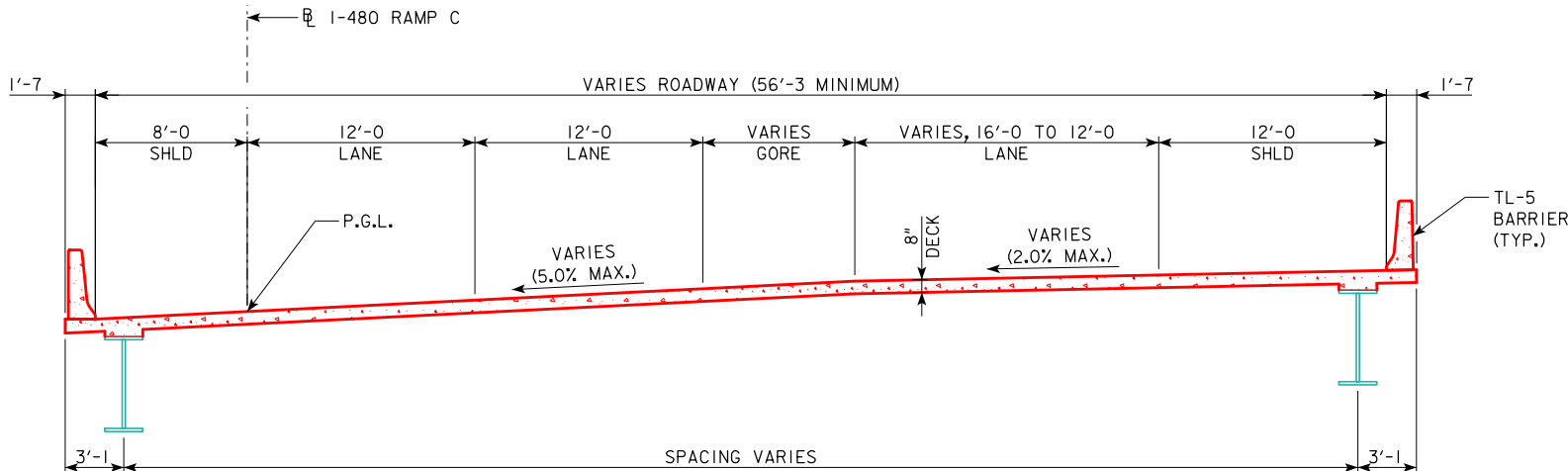
DESIGN TEAM HR GREEN, INC.

POTTAWATTAMIE COUNTY

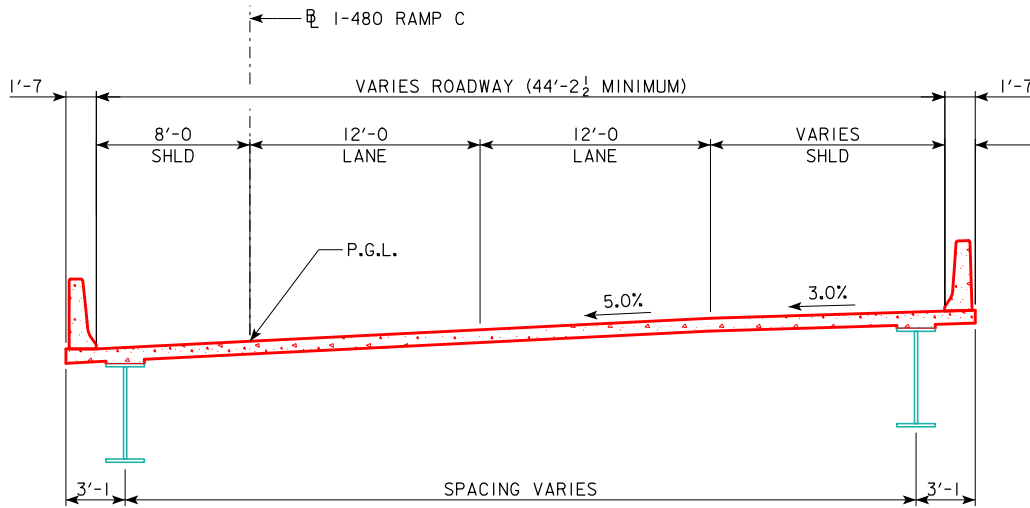
PROJECT NUMBER IM-480-I(166)0--I3-78

SHEET NUMBER 7

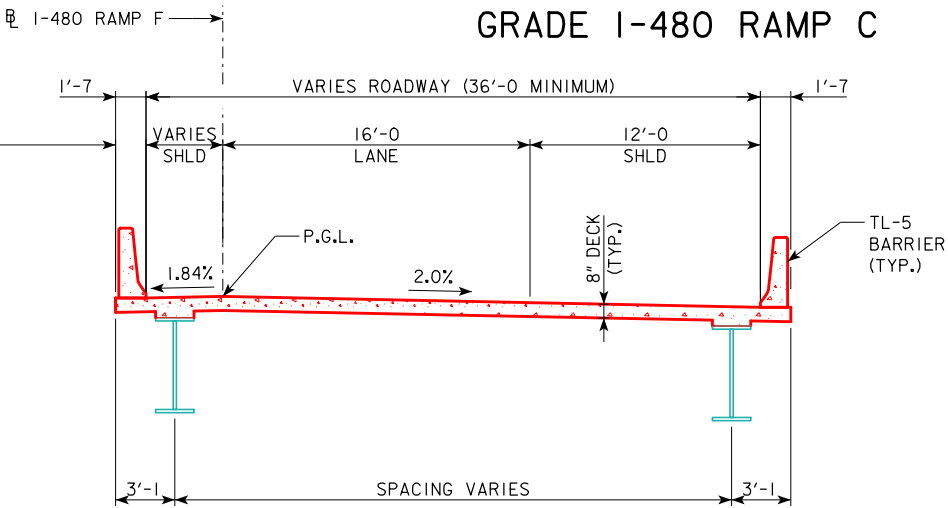
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TYPICAL SECTION
(NEAR PIER 9)
(LOOKING WEST)

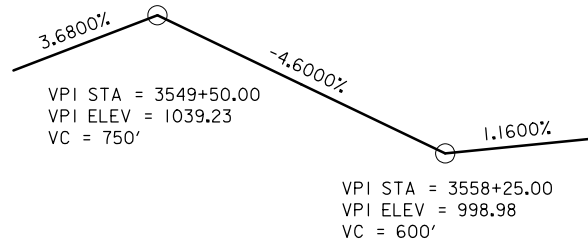


TYPICAL SECTION
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(LOOKING WEST)

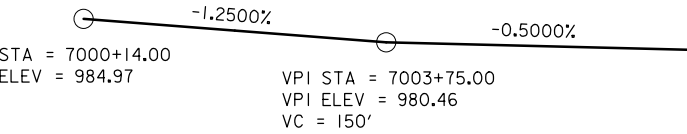


MINIMUM VERTICAL CLEARANCE

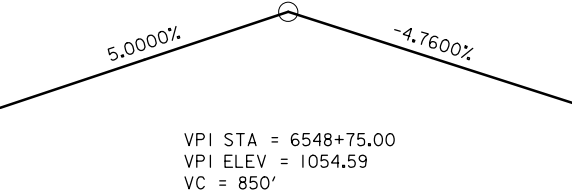
40TH ST.
OVERHEAD STATION = 3555+51.16, OFFSET 6.50' LT.
OVERHEAD ELEVATION = 1011.29
DEPTH OF SUPERSTRUCTURE = 6.75'
UNDERPASS STATION = 7002+30.35, OFFSET 18.50' LT.
UNDERPASS ELEVATION = 981.90
MINIMUM VERTICAL CLEARANCE = 22.64'



PROPOSED PROFILE
GRADE 40TH ST.



PROPOSED PROFILE
GRADE 40TH ST.



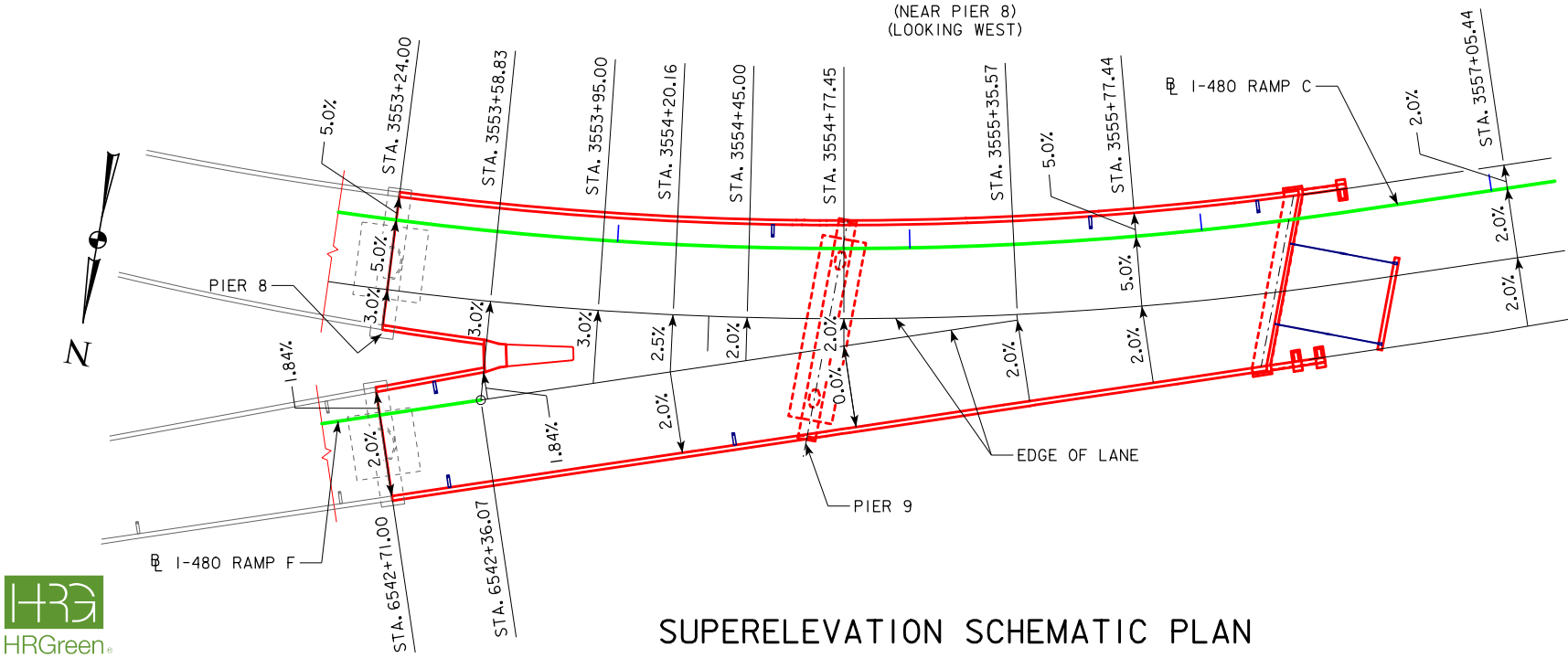
PROPOSED PROFILE
GRADE I-480 RAMP F

BERM SLOPE LOCATION TABLE			
POINTS	WEST ABUTMENT		
	STATION	OFFSET	ELEV.
A2	3555+46.11	59.02' RT	982.46
B2	3556+06.98	54.89' RT	998.59
W2	3556+35.92	54.06' RT	1009.49

BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE

TRAFFIC ESTIMATE

I-480 RAMP C & I-480 RAMP F			
2015 AADT	13,100	V.P.D.	
2040 AADT	15,900	V.P.D.	
2040 DHV	2,200	V.P.H.	
TRUCKS	8	%	
TOTAL DESIGN ESALs			



SUPERELEVATION SCHEMATIC PLAN

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0" x VARIES CONTINUOUS WELDED GIRDER BRIDGE

153'-0" END SPANS

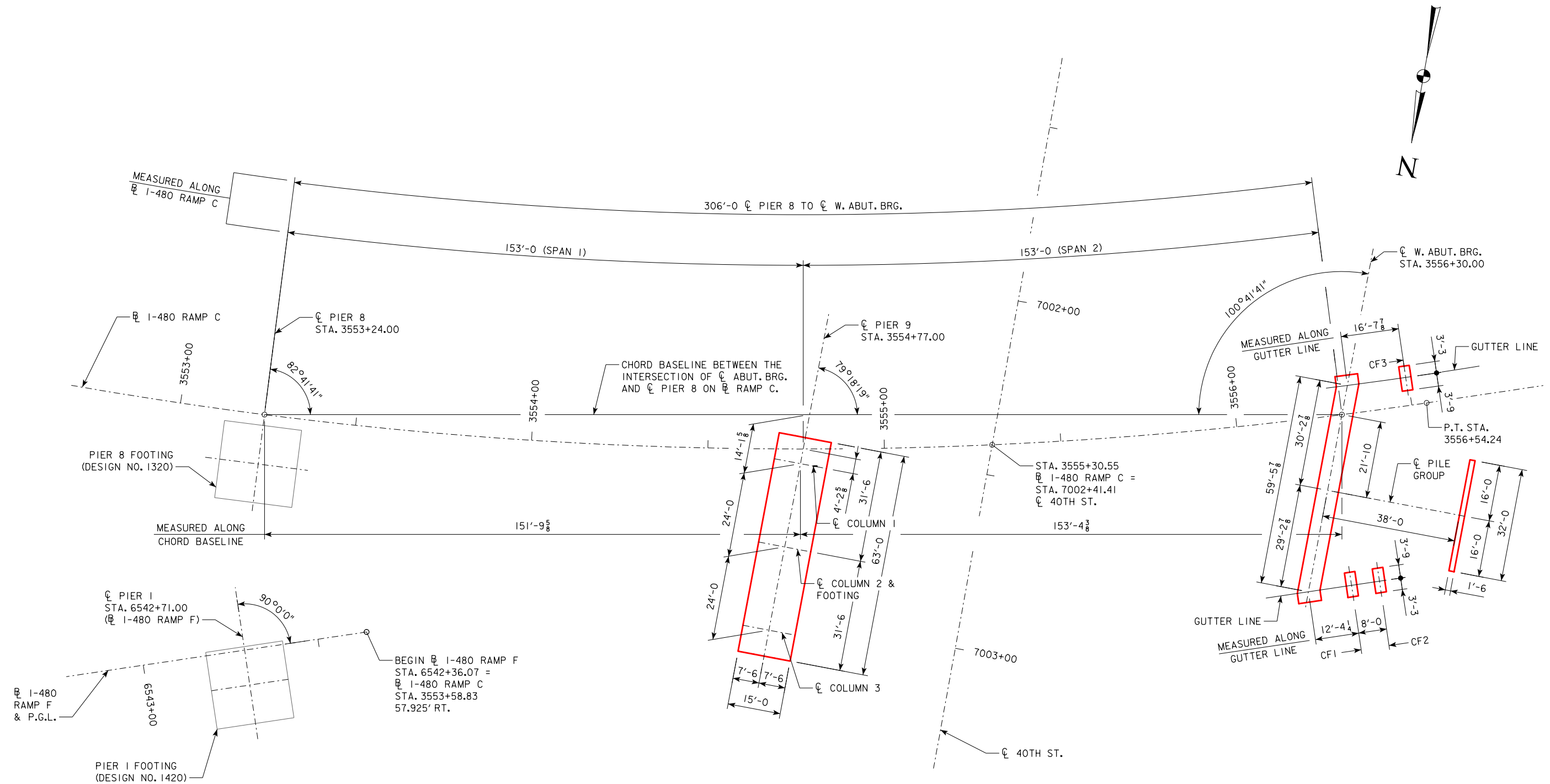
SITUATION PLAN - MISC.

STA. 3554+77.00 (I-480 RAMP C) NOVEMBER, 2020

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 70 FILE NO. 30170 DESIGN NO. 1720



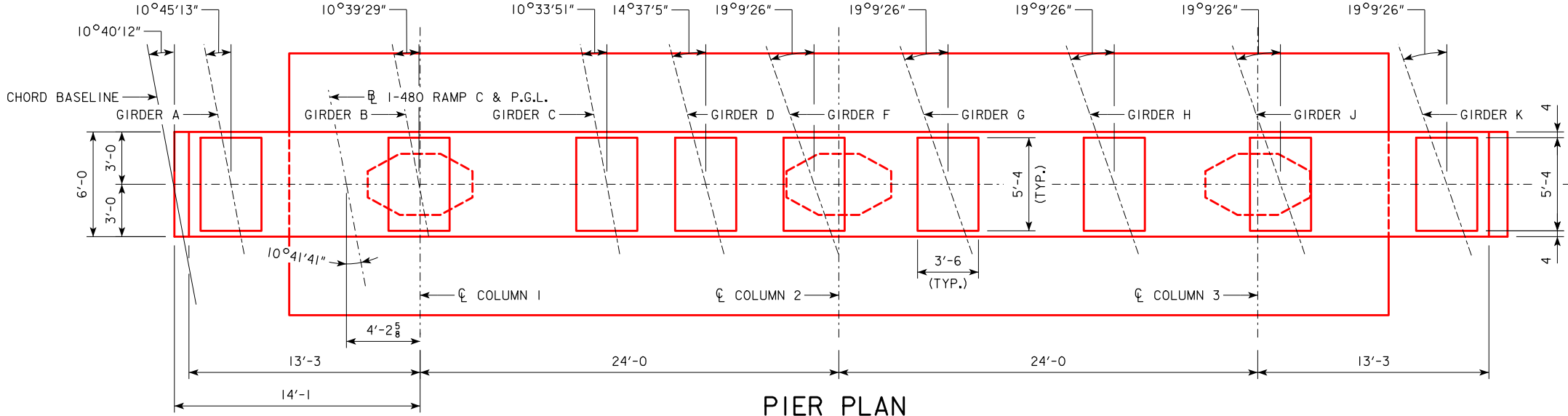
BRIDGE COORDINATES

LOCATION	CL PIER 1	CL PIER 8	CL PIER 9	CL W. ABUT. BRG
NORTH EDGE OF DECK	E=977397.8977 N=468869.4223	E=977410.0837 N=468812.1103	E=977261.0465 N=468827.5293	E=977111.1030 N=468781.6284
CL I-480 (RAMP C / RAMP F)	E=977406.5571 N=468841.1348	E=977410.9099 N=468774.3280	E=977258.5735 N=468761.2540	E=977109.1361 N=468728.9158
SOUTH EDGE OF DECK	E=977409.3635 N=468831.9670	E=977411.1194 N=468764.7470	E=977258.2098 N=468751.5066	E=977108.7602 N=468718.8420

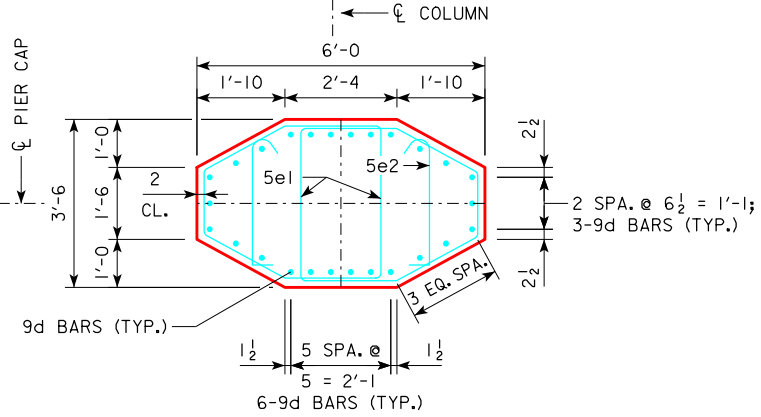
NOTE: AN ELECTRONIC FILE CONTAINING THE BRIDGE COORDINATE DATA IS AVAILABLE AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL VERIFY THESE COORDINATES WITH THE PROJECT HORIZONTAL CONTROL INFORMATION PROVIDED IN THE ROAD PLANS.

DESIGN FOR VARIABLE SKEW (L.A.)
**306'-0 x VARIES CONTINUOUS
 WELDED GIRDER BRIDGE**
 153'-0 END SPANS
STAKING DIAGRAM
 STA. 3554+77.00 (CL I-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 8 OF 70 FILE NO. 30170 DESIGN NO. 1720



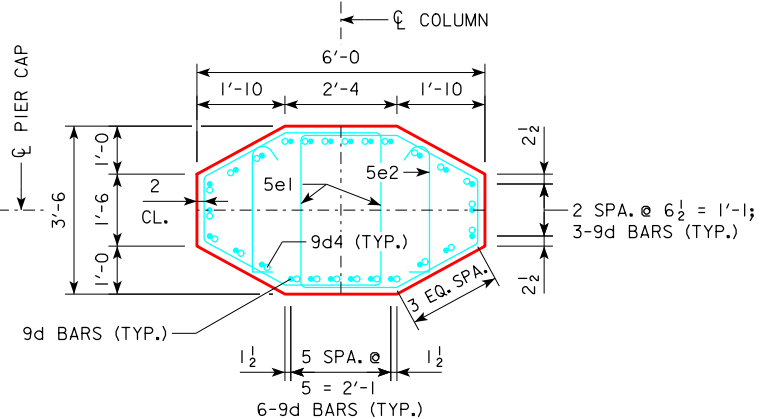


PIER PLAN



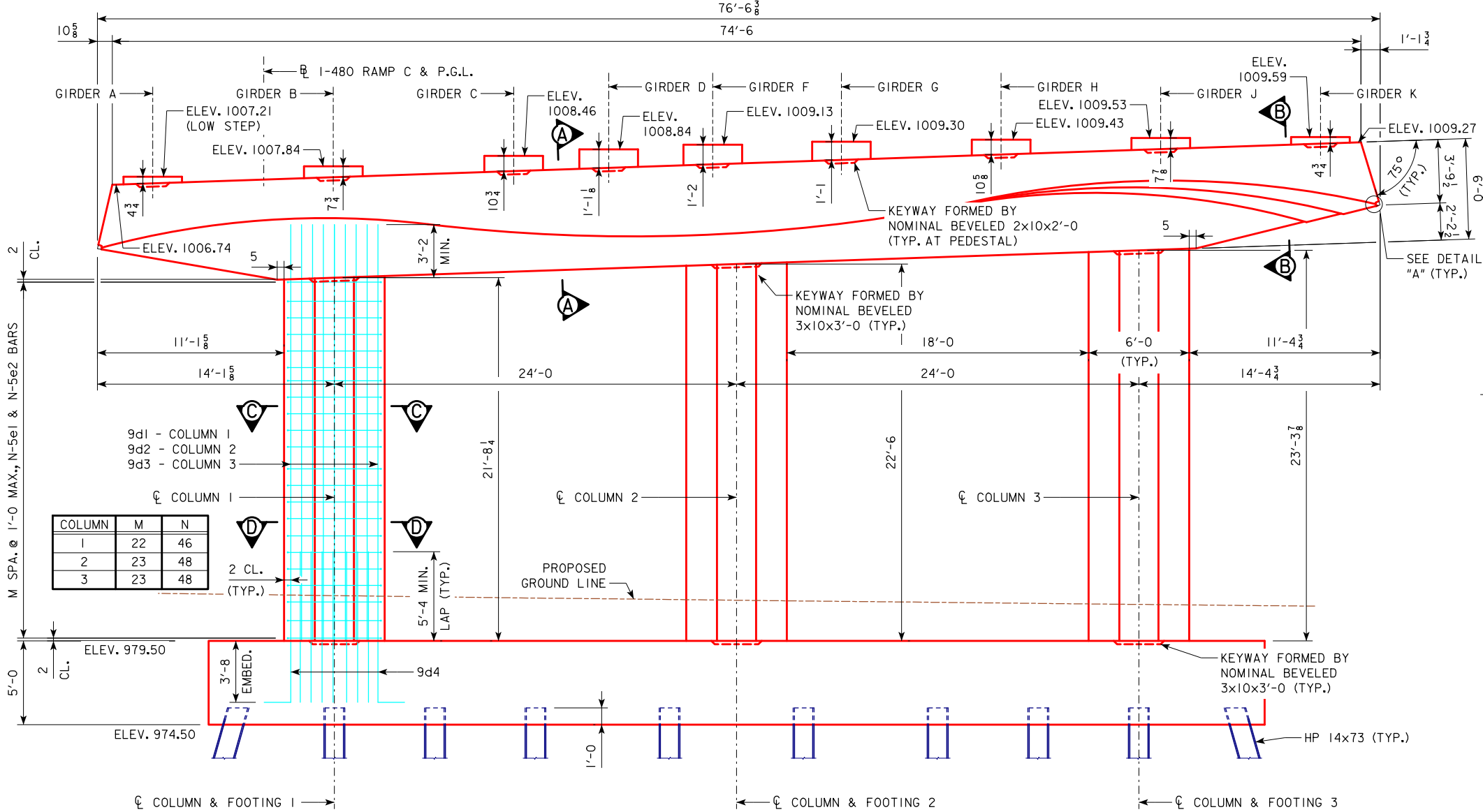
SECTION C-C

NOTE:
MINOR ADJUSTMENTS MAY BE MADE TO COLUMN/DOWEL
BAR SPACING TO ACCOMMODATE 5e2 PLACEMENT.
CONTRACTOR SHALL TEST PLACEMENT OF 5e1/5e2 TIES
PRIOR TO POURING FOOTING CONCRETE.



SECTION D-D

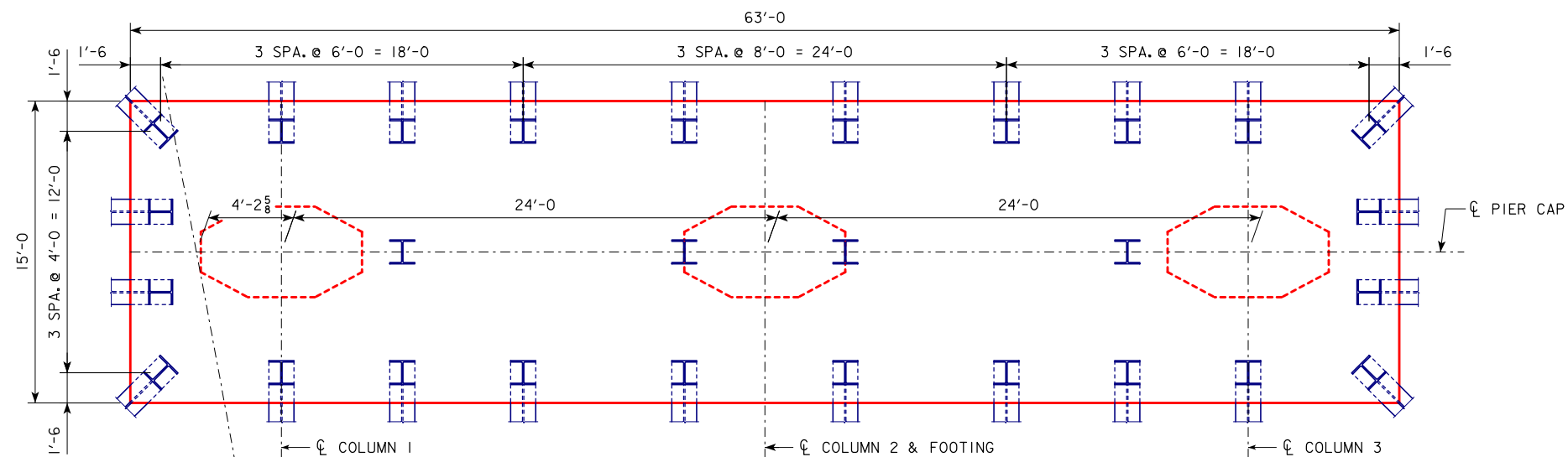
NOTES:
FOR SECTIONS A-A & B-B, SEE DESIGN SHEET 10.
FOR DETAIL "A", SEE DESIGN SHEET 13.
SEE DESIGN SHEET 12 FOR REINFORCING LIST, BENT BAR
DETAILS, QUANTITIES, AND ADDITIONAL NOTES.
FOR PIER LIGHTING DETAILS, SEE DESIGN SHEET 69.



PIER ELEVATION
(LOOKING UPSTATION)

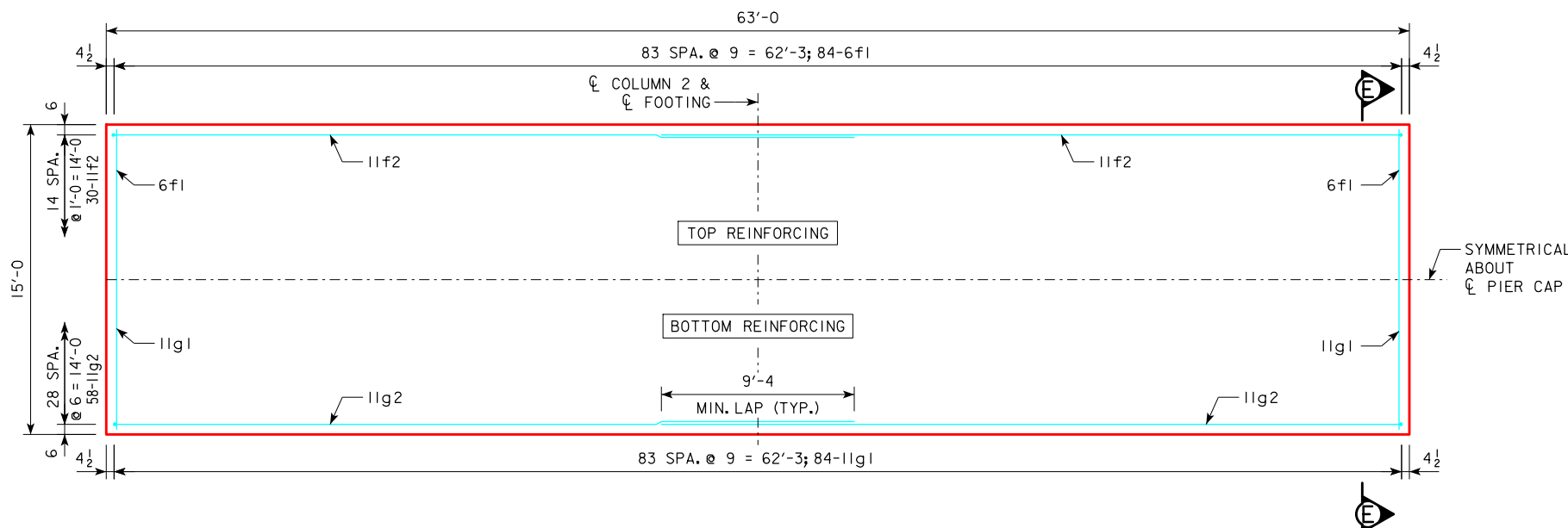
DESIGN FOR VARIABLE SKEW (L.A.)
**306'-0" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
153'-0" END SPANS
PIER 9 DETAILS
STA. 3554+77.00 (RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 9 OF 70 FILE NO. 30170 DESIGN NO. 1720



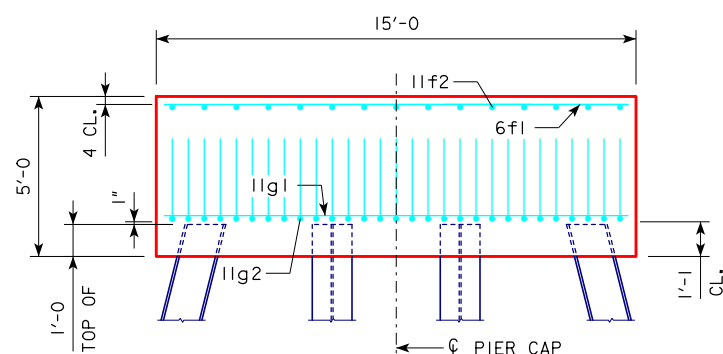


NOTE:
DIMENSIONS SHOWN ON PILE LAYOUT ARE AT
BOTTOM OF FOOTING. BATTER PILES (WHERE
INDICATED) AT 4:1 IN THE DIRECTION
SHOWN.

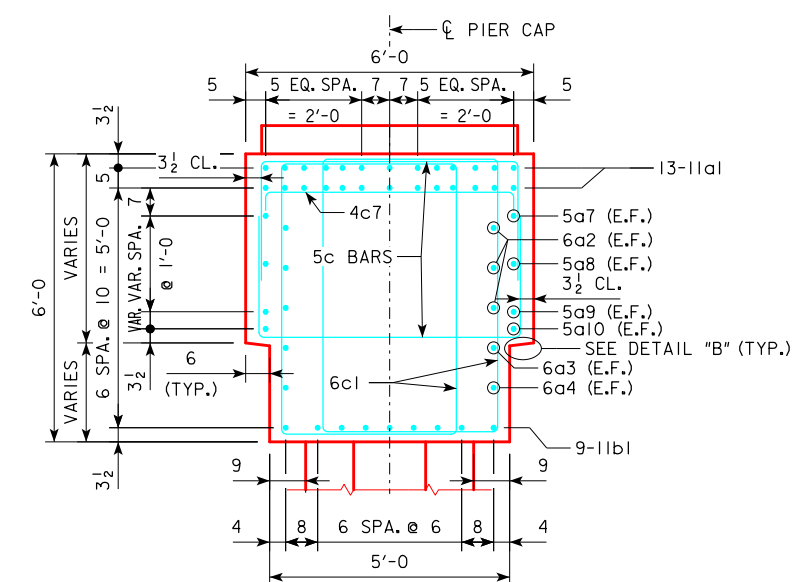
PILE LAYOUT
28 - HP 14x73 PILES REQUIRED



NOTE:
SHIFT TOP MAT FOOTING f1 & f2 BARS AS NECESSARY TO
ALLOW FOR PROPER PLACEMENT OF COLUMN DOWEL BARS.

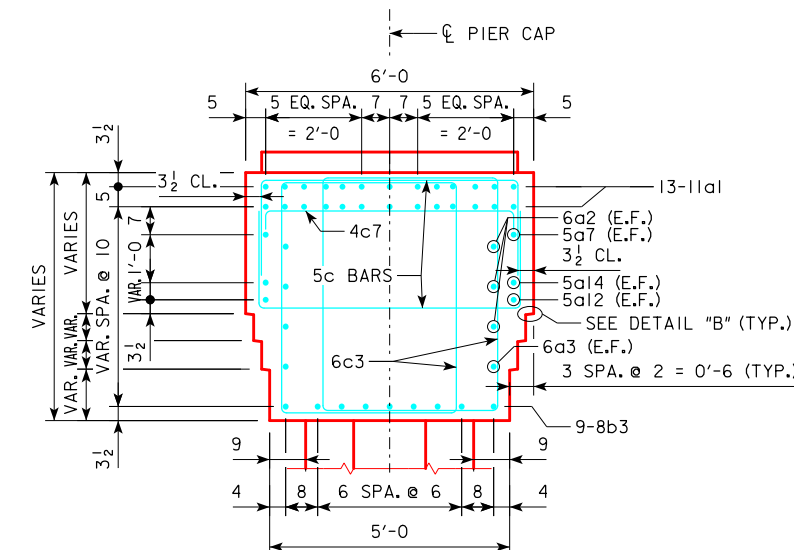


SECTION E-E

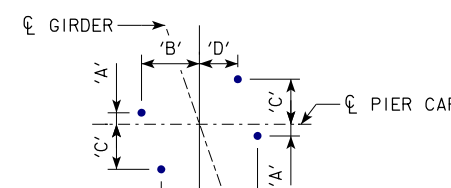


SECTION A-A

NOTE:
FOR DETAIL "B", SEE DESIGN SHEET 13.



SECTION B-B



ANCHOR BOLT LAYOUT

MAINTAIN 0'-6 MIN. EDGE DISTANCE ON ALL SIDES
(FOR ADDITIONAL DETAILS AND NOTES, SEE DESIGN SHEET 43)

REINFORCING ml & nl BARS MAY BE SHIFTED SLIGHTLY TO
CLEAR ANCHOR BOLTS.

NOTE:
SEE DESIGN SHEET 12 FOR REINFORCING LIST, BENT BAR
DETAILS, QUANTITIES, AND ADDITIONAL NOTES.

GIRDER	'A'	'B'	'C'	'D'
A-B	5	$1'-1\frac{15}{16}$	$9\frac{3}{4}$	$11\frac{1}{8}$
C	$5\frac{1}{16}$	$1'-1\frac{15}{16}$	$9\frac{11}{16}$	$11\frac{3}{8}$
D	$4\frac{1}{16}$	$1'-2\frac{1}{4}$	$10\frac{1}{2}$	$10\frac{7}{16}$
F-K	2	$1'-2\frac{1}{2}$	$11\frac{1}{4}$	$9\frac{9}{16}$

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE

153'-0" END SPANS

PIER 9 DETAILS

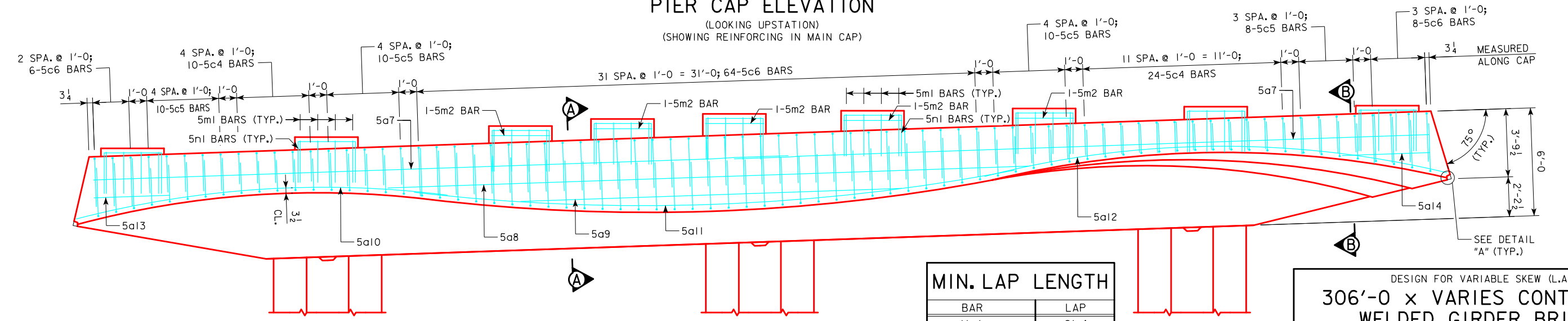
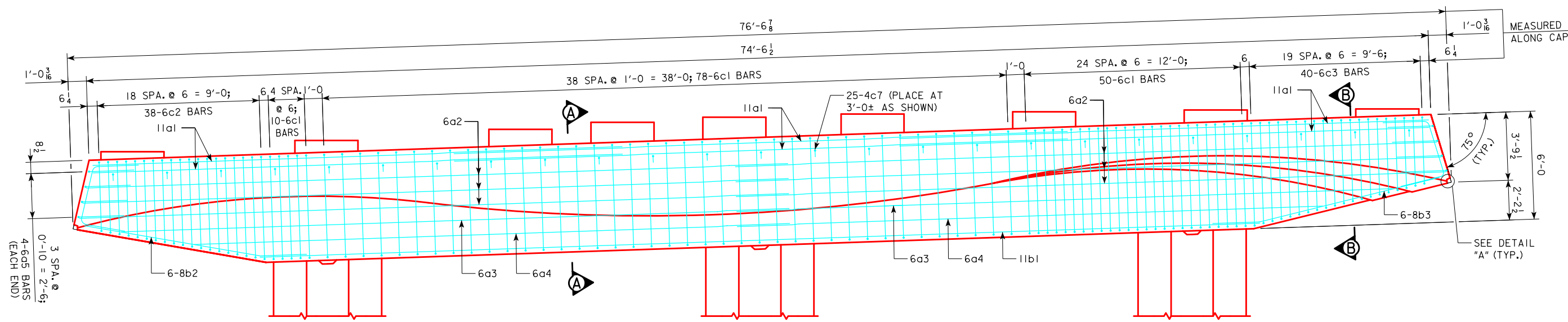
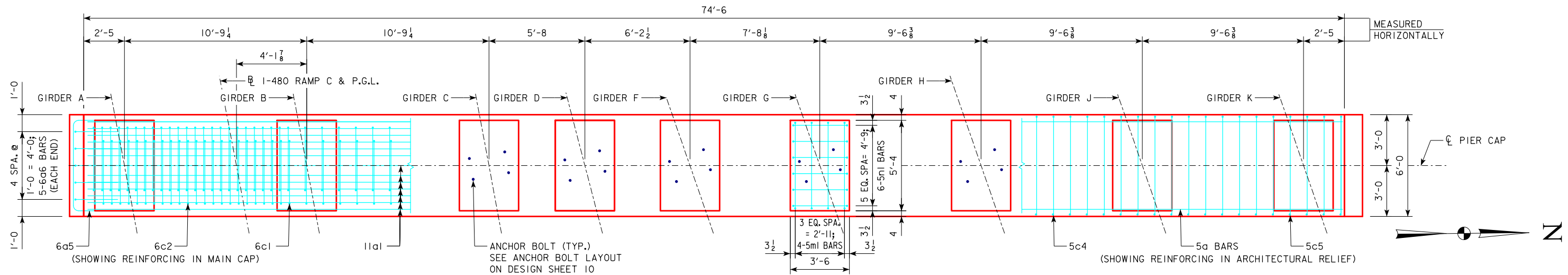
STA. 3554+77.00 (B I-480 RAMP C)

NOVEMBER, 2020

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 10 OF 70 FILE NO. 30170 DESIGN NO. 1720

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MIN. LAP LENGTH	
BAR	LAP
11a1	9'-4
6a2 - 6a4	2'-11
5a7	2'-5
5a10 - 5a12	2'-5
8b2 & 8b3	3'-5
5c4 - 5c6	1'-4

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE

153'-0 END SPANS

PIER 9 DETAILS

STA. 3554+77.00 (RAMP C) NOVEMBER, 2020

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 11 OF 70 FILE NO. 30170 DESIGN NO. 1720

PIER 9 PILING NOTES:

THE CONTRACT LENGTH OF 90 FEET FOR THE PIER 9 PILES IS BASED ON A NON-COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 329 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.55 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ALSO WERE DESIGNED FOR A FACTORED TENSION FORCE OF 24 KIPS.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A NON-COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.55 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF FOOTING.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER 9 PILES IS 258 TONS AT END OF DRIVE. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. IN NO CASE SHALL A PILE BE EMBEDDED LESS THAN 75 FEET. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

PIER NOTES:

ALL BATTERED PILE SHALL BE TRIMMED TO A HORIZONTAL LINE TO AID IN THE PLACEMENT OF REINFORCING.

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

DIMENSIONS SHOWN ARE AT THE BOTTOM OF THE FOOTING. PILES SHOULD BE BATTERED AT THE SLOPE AND IN THE DIRECTION SHOWN ON THE PILE LAYOUT DIAGRAM.

REINFORCING IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS POURED.

ALL EXPOSED CORNERS 90° OR SHARPER TO BE FILLETED WITH 3/4" DRESSED AND BEVELED STRIP.

CONSTRUCTION JOINTS ARE TO BE FORMED WITH DRESSED AND BEVELED STRIP. SEE PIER DETAILS FOR KEYWAY DIMENSIONS.

STEEL PILE POINTS ARE REQUIRED FOR THE STEEL H-PILES AT PIER 9.

FORMS FOR THE PIER CAP ON PIER 9 SHALL BE REMOVED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. EARLY FORM REMOVAL IS PROHIBITED.

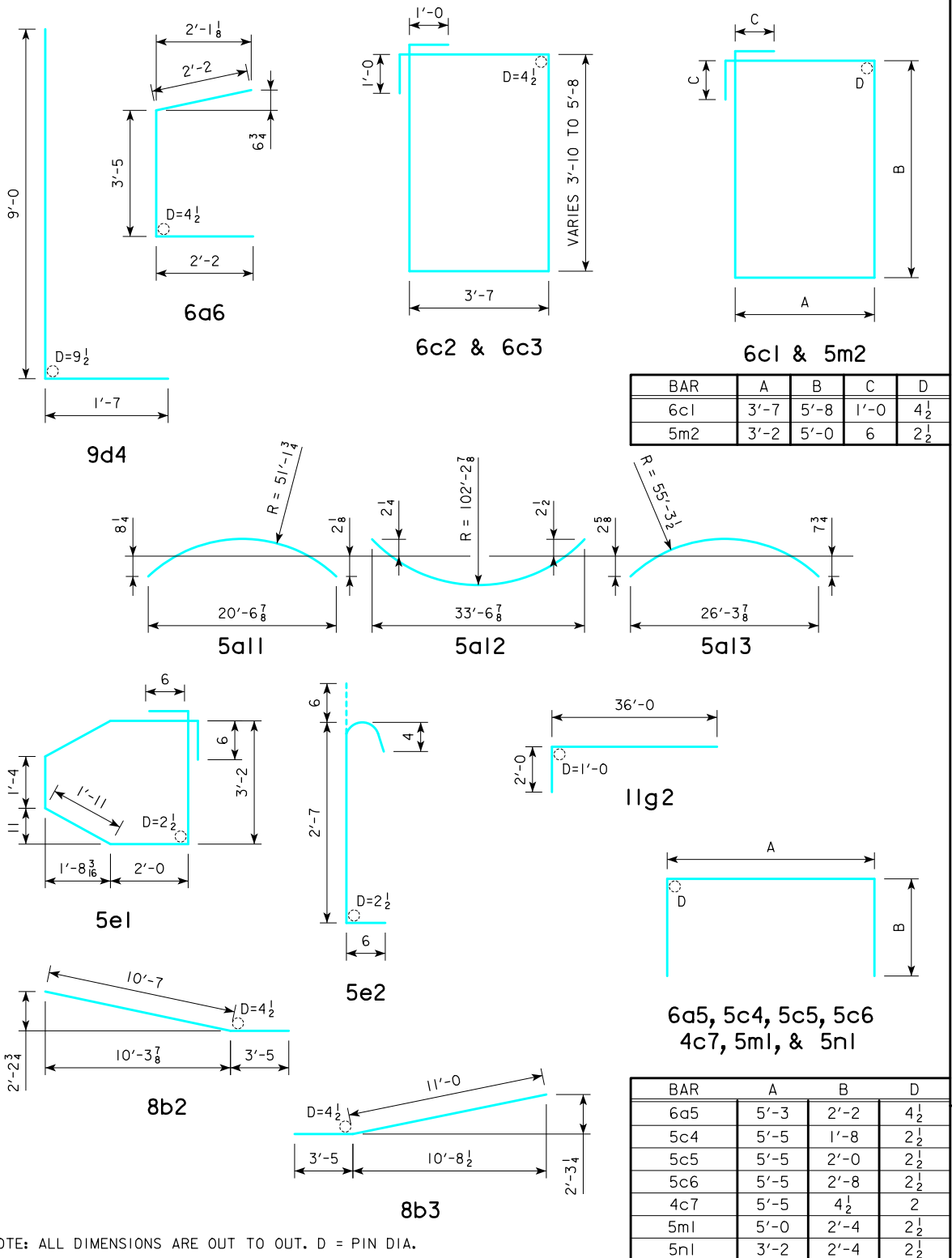
CONC. PLACEMENT QUANTITIES

LOCATION	QUANTITY
CAP & PEDESTALS (HIGH PERFORMANCE CONCRETE)*	93.8
COLUMN (HIGH PERFORMANCE CONCRETE)	43.3
FOOTING	175.0
TOTAL (CU. YDS.)	312.1

* QUANTITY IGNORES THE DEDUCTION OF CONCRETE VOLUME DUE TO THE FORM LINER.

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

BENT BAR DETAILS



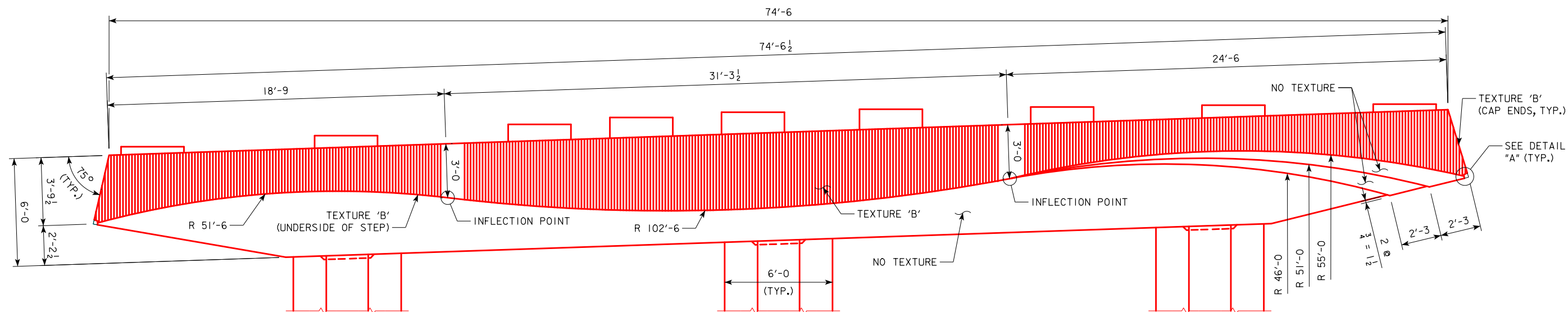
REINFORCING BAR LIST - PIER 9

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP LONGIT. TOP		78	31'-0	12,847
6a2	CAP LONGIT. SIDES		12	38'-11	701
6a3	CAP LONGIT. SIDES		4	36'-7	220
6a4	CAP LONGIT. SIDES		4	32'-7	196
6a5	CAP TRANSV. ENDS		8	9'-7	115
6a6	CAP VERTICAL ENDS		10	7'-9	116
5a7	CAP LONGIT. SIDES (RELIEF)		4	38'-7	161
5a8	CAP LONGIT. SIDES (RELIEF)		2	35'-8	74
5a9	CAP LONGIT. SIDES (RELIEF)		2	21'-6	45
5a10	CAP LONGIT. SIDES (RELIEF)		2	20'-9	43
5a11	CAP LONGIT. SIDES (RELIEF)		2	33'-9	70
5a12	CAP LONGIT. SIDES (RELIEF)		2	26'-8	56
5a13	CAP LONGIT. SIDES (RELIEF)		2	5'-6	11
5a14	CAP LONGIT. SIDES (RELIEF)		2	4'-5	9
11b1	CAP LONGIT. BOTTOM		9	54'-10	2,622
6b2	CAP LONGIT. BOTTOM END		9	14'-0	189
6b3	CAP LONGIT. BOTTOM END		9	14'-4	194
6c1	CAP HOOPS		138	20'-6	4,249
6c2	CAP HOOPS CANTILEVER		38	VARIES	1,065
6c3	CAP HOOPS CANTILEVER		40	VARIES	1,121
5c4	CAP HAIRPINS VERTICAL (RELIEF)		34	8'-9	310
5c5	CAP HAIRPINS VERTICAL (RELIEF)		38	9'-5	373
5c6	CAP HAIRPINS VERTICAL (RELIEF)		78	10'-9	875
4c7	CAP HAIRPINS TOP		25	6'-2	103
9d1	COLUMN VERTICAL		26	25'-0	2,210
9d2	COLUMN VERTICAL		26	25'-10	2,284
9d3	COLUMN VERTICAL		26	26'-8	2,357
9d4	FOOTING TO COLUMN DOWEL		78	10'-7	2,807
5e1	COLUMN HOOPS		142	13'-4	1,975
5e2	COLUMN TIES		142	3'-7	531
6f1	FOOTING TRANSV. TOP		84	14'-8	1,850
11f2	FOOTING LONGIT. TOP		30	36'-0	5,738
11g1	FOOTING TRANSV. BOTTOM		84	14'-8	6,546
11g2	FOOTING LONGIT. BOTTOM		58	38'-0	11,710
5m1	CAP PEDESTAL TRANSV.		36	9'-8	363
5m2	CAP PEDESTAL STIRRUP		5	17'-4	90
5n1	CAP PEDESTAL LONGIT.		54	7'-10	441
REINFORCING STEEL - TOTAL (LBS.)					64,667

DESIGN FOR VARIABLE SKEW (L.A.)
306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
153'-0 END SPANS

PIER 9 QUANTITIES
STA. 3554+77.00 (E 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 12 OF 70 FILE NO. 30170 DESIGN NO. 1720





PIER CAP AESTHETIC TREATMENT DIMENSIONS

(LOOKING UPSTATION)
(TYPICAL BOTH SIDES OF PIER CAP)

PIER CONCRETE TEXTURE NOTES:

THIS WORK CONSISTS OF APPLYING TEXTURED FINISHES ON ALL DESIGNATED CONCRETE SURFACES OF THE PIER CAPS SHOWN IN THIS PLAN. SEE "GENERAL NOTES FOR TEXTURED CONCRETE FORM LINERS" ON DESIGN SHEET 4 FOR MORE INFORMATION REGARDING THE USE OF FORM LINERS. THE TEXTURED CONCRETE MOCKUP PANEL MUST BE REVIEWED AND APPROVED BY THE ENGINEER BEFORE BEGINNING PRODUCTION CONCRETE WORK THAT INCLUDES TEXTURE.

THE FORM LINER USED TO PRODUCE TEXTURE 'B' AS SHOWN IN THE PLAN DETAILS SHALL PRODUCE A TEXTURED EFFECT OF VERTICAL, FRACTURED-FACE RIBS ON APPROXIMATELY 2-INCH CENTERS. MAXIMUM TEXTURE DEPTH SHALL BE 1 1/2 INCHES, AND MINIMUM TEXTURE DEPTH SHALL BE 1 3/8 INCHES.

OBTAIN TEXTURE 'B' FORM LINER MATERIALS FROM ONE OF THE FOLLOWING MANUFACTURERS:

1. ARCHITECTURAL POLYMERS (PATTERN NO. 204)
2. FITZGERALD FORMLINERS (PATTERN NO. 16959)
3. GREENSTREAK (PATTERN NO. 367)
4. SCOTT SYSTEM, INC. (PATTERN NO. 129A)
5. CUSTOM ROCK INTERNATIONAL (PATTERN NO. 206)
6. SUBMIT ALL OTHER UNLISTED MANUFACTURERS AND PATTERNS INCLUDING A 1 FOOT BY 1 FOOT SAMPLE OF PROPOSED FORM LINER TO THE IOWA DEPARTMENT OF TRANSPORTATION, BRIDGES & STRUCTURES BUREAU, AMES, IOWA. SAMPLE MAY BE EITHER ACTUAL FORM LINER MATERIALS OR FOAM CASTINGS. NO SAMPLES ARE REQUIRED TO BE SUBMITTED FOR MANUFACTURERS AND PATTERNS LISTED ABOVE.

PRIOR TO BEGINNING ANY PRODUCTION CONCRETE WORK THAT INCLUDES TEXTURE, SUBMIT MANUFACTURER'S CUT SHEETS FOR FORM LINERS.

DO NOT MIX FORM LINERS FROM DIFFERENT MANUFACTURERS WHEN FORMING ANY INDIVIDUAL TEXTURE ON THE PROJECT.

THE PIER SURFACES AS DESIGNATED IN THE PLANS SHALL ALSO RECEIVE CONCRETE RUSTICATION. SEE "GENERAL NOTES FOR CONCRETE RUSTICATION" ON DESIGN SHEET 4 FOR MORE INFORMATION REGARDING APPROVED TECHNIQUES AND METHODS OF CONCRETE RUSTICATION

ALL COSTS ASSOCIATED WITH CONCRETE TEXTURE AND FORM LINERS, INCLUDING THE MOCKUP PANEL(S), ARE TO BE INCLUDED IN THE BID ITEM, "HIGH PERFORMANCE STRUCTURAL CONCRETE".

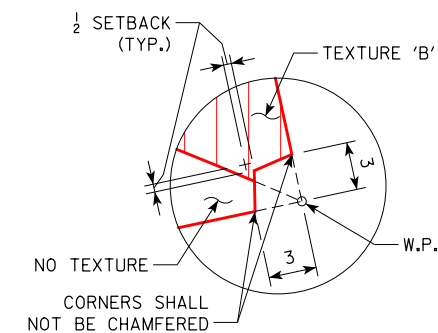
TEXTURED CONCRETE MOCKUP PANEL NOTES:

PRIOR TO BEGINNING ANY PRODUCTION PIER OR ABUTMENT CONCRETE WORK THAT INCLUDES TEXTURE, A TEXTURED CONCRETE MOCKUP PANEL MUST BE REVIEWED AND APPROVED BY THE ENGINEER.

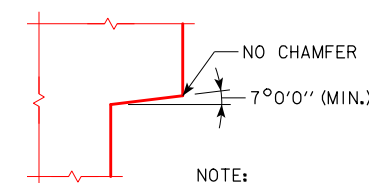
CONSTRUCT A 4 FOOT HIGH BY 8 INCH WIDE (MIN.), BY 8 FOOT LONG MOCKUP PANEL IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND THESE PLANS. A 4 FOOT WIDE SECTION OF THE PANEL SHALL RECEIVE TEXTURE 'A' (AS SHOWN IN THE ABUTMENT DETAILS), AND THE REMAINING SURFACE SHALL RECEIVE TEXTURE 'B'.

CAST THE MOCKUP PANEL(S) ON SITE, USING THE SAME FORMING METHODS, PROCEDURES, FORM LINERS, AND CONCRETE MIXTURE(S) AS ARE PROPOSED FOR THE PRODUCTION WORK. TEXTURED FACES SHALL BE VERTICAL DURING THE CASTING PROCESS. A SINGLE MAT OF NO. 5 REINFORCING BARS IN TWO DIRECTIONS SHALL BE SET 2 INCHES CLEAR TO THE BOTTOM OF THE TEXTURED FACE. IF THE MOCKUP PANEL IS REJECTED, CONSTRUCT A NEW MOCKUP PANEL AS DIRECTED BY THE ENGINEER. BEGIN TEXTURED PIER AND ABUTMENT CONCRETE PRODUCTION WORK ONLY AFTER THE MOCKUP HAS BEEN APPROVED BY THE ENGINEER.

AFTER ALL PRODUCTION PIER AND ABUTMENT CONCRETE WORK IS COMPLETE, THE MOCKUP PANEL(S) SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.



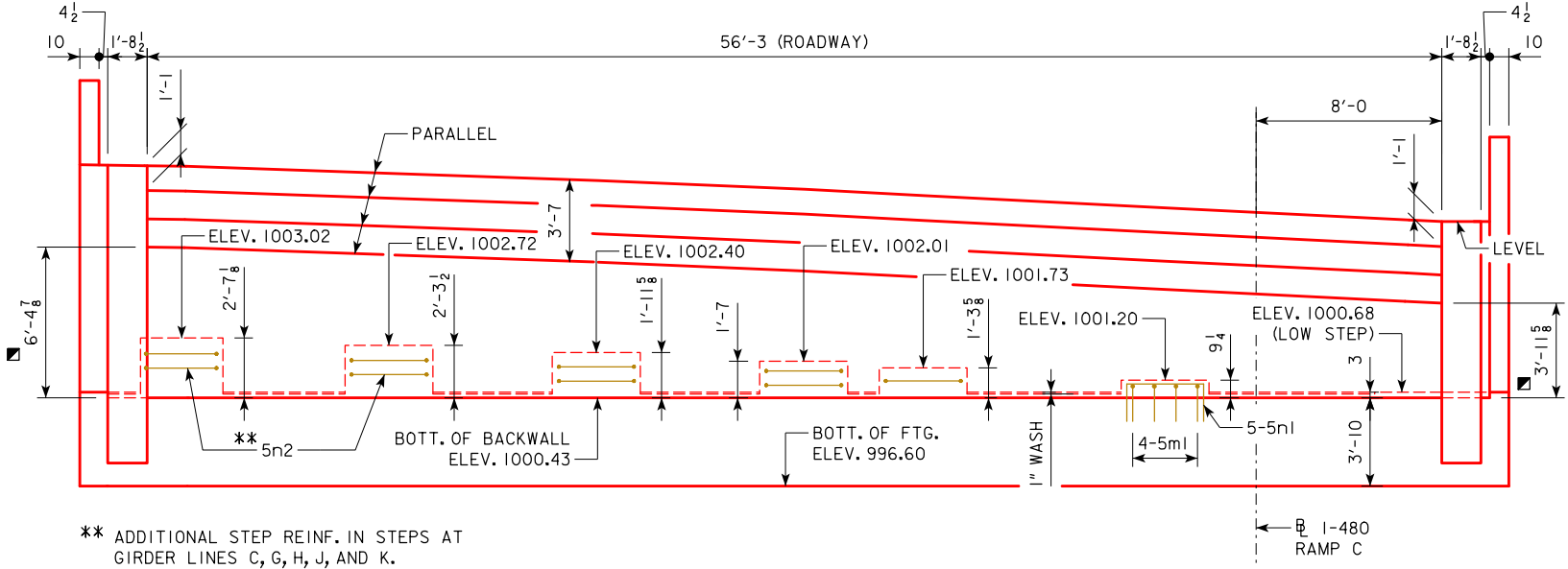
DETAIL "A"



DETAIL "B"

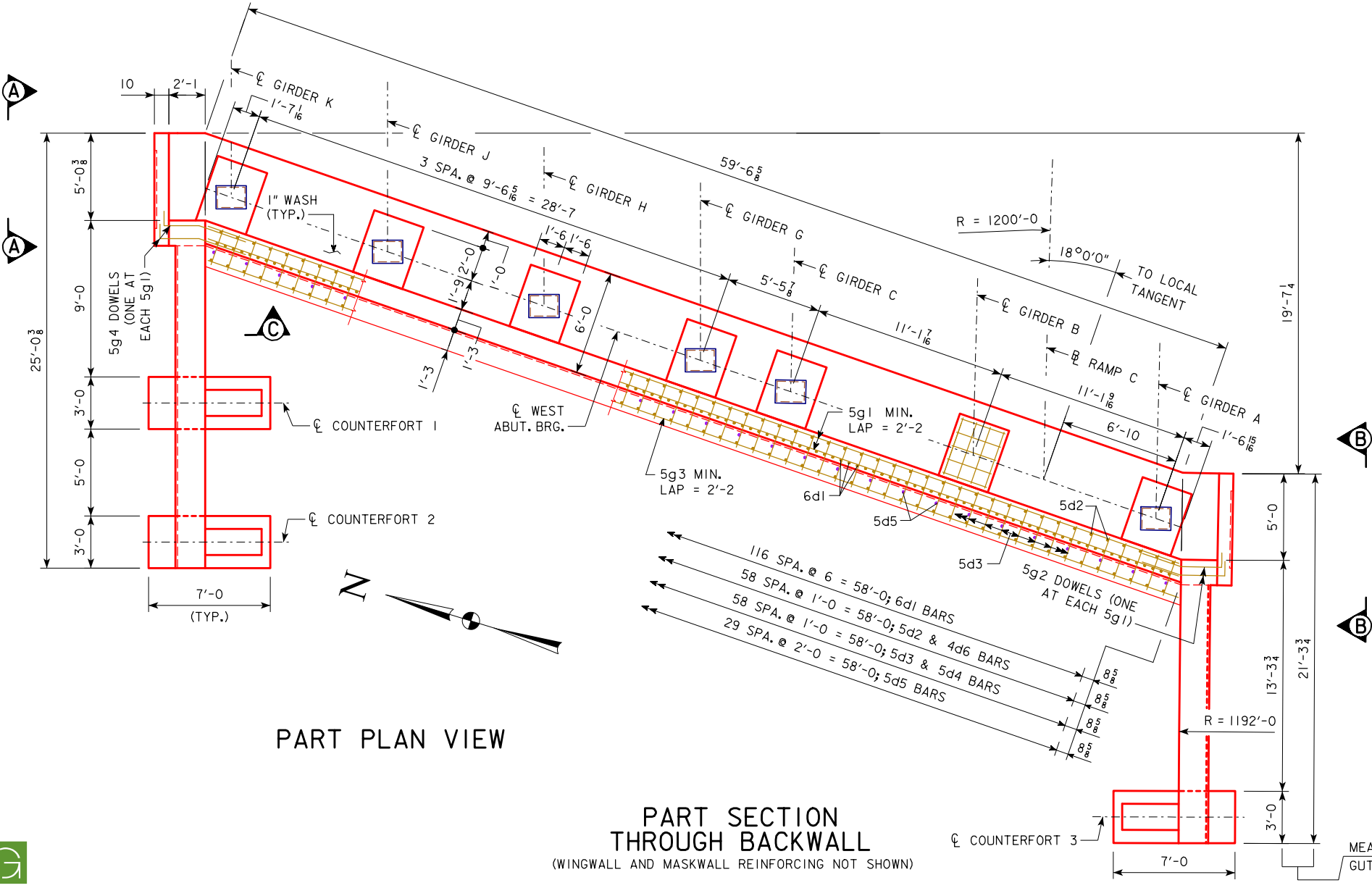
DESIGN FOR VARIABLE SKEW (L.A.)
**306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
153'-0 END SPANS
PIER AESTHETIC DETAILS
STA. 3554+77.00 (@ I-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
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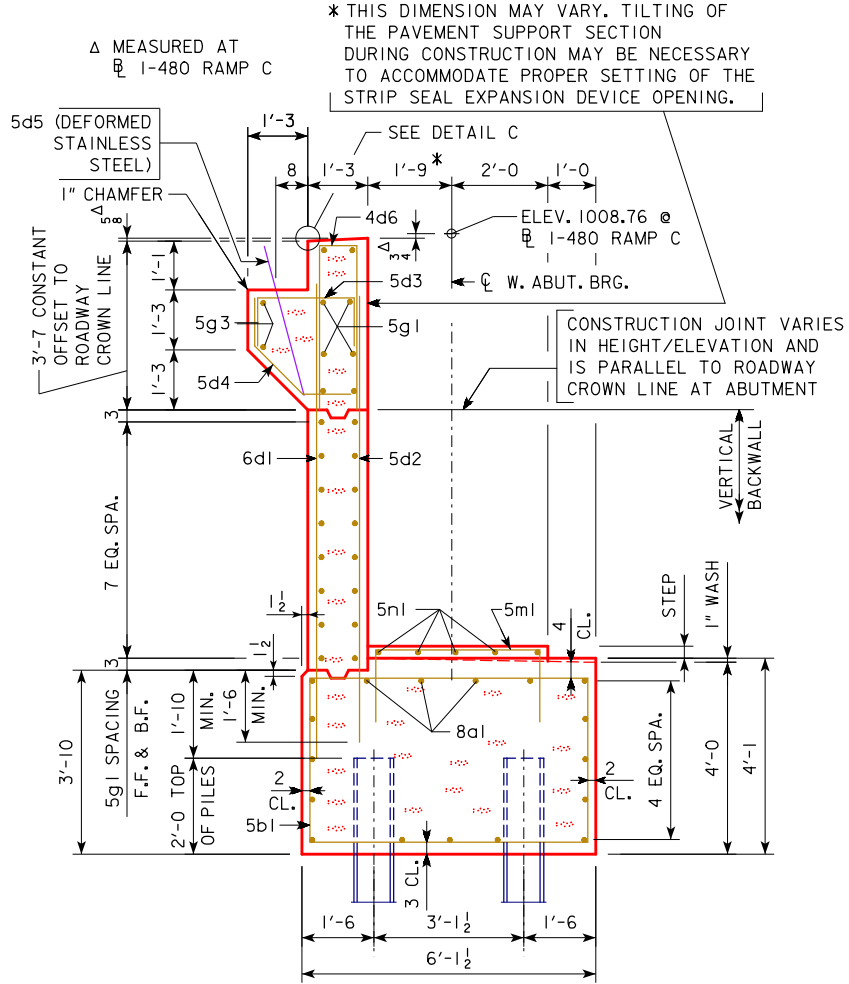
** ADDITIONAL STEP REINF. IN STEPS AT GIRDER LINES C, G, H, J, AND K.
■ MEASURED TO BOTTOM OF BACKWALL AT BACK FACE.

REAR ELEVATION

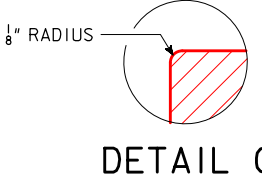


PART PLAN VIEW

PART SECTION THROUGH BACKWALL
(WINGWALL AND MASKWALL REINFORCING NOT SHOWN)



SECTION THROUGH ABUTMENT
EXPANSION DEVICE NOT SHOWN



NOTES:
FOR ABUTMENT NOTES, SEE DESIGN SHEET 19.
FOR VIEW A-A AND B-B, SEE DESIGN SHEET 16.
BARRIER RAILS NOT SHOWN IN ABUTMENT DETAILS.
REINFORCING BARS MUST BE PLACED TO CLEAR ANCHOR BOLTS.
SHIFT REINFORCING BARS SLIGHTLY AS REQUIRED.
REINFORCING BARS EXTENDING FROM SOUTH EXTENSION TO BARRIER ARE NOT SHOWN. SEE DESIGN SHEET 58 FOR DETAILS.

DESIGN FOR VARIABLE SKEW (L.A.)
306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
153'-0 END SPANS
WEST ABUTMENT DETAILS
STA. 3554+77.00 (E I-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
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DEADMAN ANCHOR NOTES:

REINFORCING STEEL LENGTHS ARE BASED ON NOMINAL LENGTHS OUT TO OUT.

ALL ANCHOR TEES, RODS, CLEVISSES, TURNBUCKLES, ETC. SHALL BE FABRICATED FROM ASTM A709 GRADE 36, ASTM A668 CLASS F OR EQUIVALENT STEEL AND GALVANIZED IN ACCORDANCE WITH ASTM A123. SHOP DRAWINGS WILL NOT BE REQUIRED. ALL CONCRETE SHALL BE CLASS C. ALL REINFORCING STEEL SHALL BE GRADE 60.

ALL METAL MEMBERS OF THE ANCHORAGE SYSTEM NOT EMBEDDED IN CONCRETE SHALL BE CLEANED AND RECEIVE A HEAVY COATING OF AN APPROVED BITUMINOUS PAINT.

FINE AGGREGATE SHALL BE IN ACCORDANCE WITH ARTICLE 4133.04, A OF THE STANDARD SPECIFICATIONS AND SHALL BE PLACED BELOW AND ABOVE THE ROD AND TURNBUCKLES.

PAYMENT FOR ALL MATERIALS, BACKFILL AND ANY OTHER INCIDENTAL WORK NECESSARY TO COMPLETE THE DEADMAN ANCHORAGE ASSEMBLY WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "CONCRETE DEADMAN ANCHOR".

CONSTRUCTION SEQUENCE NOTES:

COORDINATE WITH MSE WALL CONSTRUCTION.

CONSTRUCT ABUTMENT WITH ANCHOR TEES IN PLACE.

CONSTRUCT DEADMAN WITH ANCHOR TEES IN PLACE.

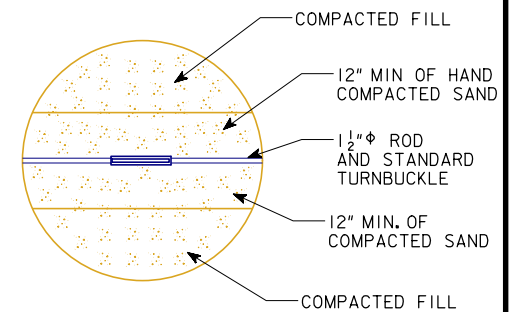
MACHINE COMPACT FILL UP TO ELEVATION OF $1\frac{1}{2}$ " ϕ ROD
AND TURNBUCKLE.

INSTALL $1\frac{1}{2}"\phi$ ROD, CLEVIS AND TURNBUCKLE ASSEMBLY.

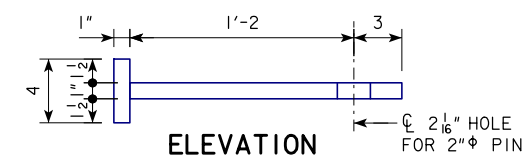
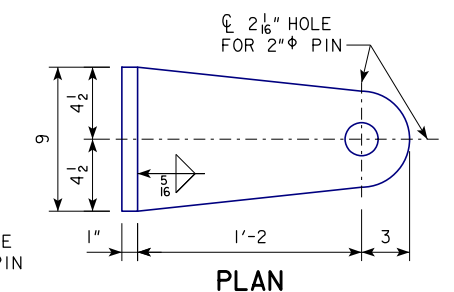
TIGHTEN TURNBUCKLE UNTIL SNUG.

HAND COMPACT FILL FOR 12" (MIN.) OVER $1\frac{1}{2}"\phi$ ROD AND TURNBUCKLE.

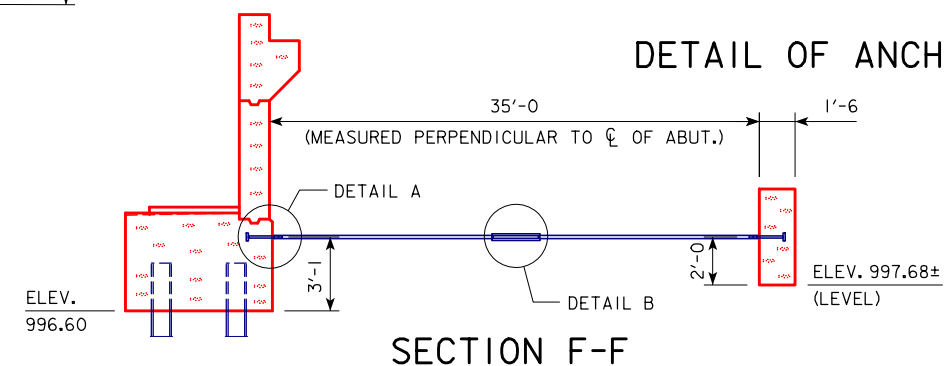
MACHINE COMPACT REMAINING FILL.



DETAIL B



DETAIL OF ANCHOR TEE





SECTION F-F

DEADMAN ANCHOR CONCRETE PLACEMENT SUMMARY

ITEM	QUANTITY
** CLASS C CONCRETE (C.Y.)	7.1

DEADMAN ANCHOR REINFORCING
BAR LIST W. ABUT.

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
4a2	DEADMAN LONGIT.		12	31'-8"	254
4b8	DEADMAN HOOP		64	10'-6"	449
** REINFORCING STEEL - TOTAL (LBS.)					703

** COST OF CONCRETE AND REINFORCING STEEL TO BE INCLUDED IN THE PRICE BID FOR "CONCRETE DEADMAN ANCHOR".

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE

153'-0 END SPANS

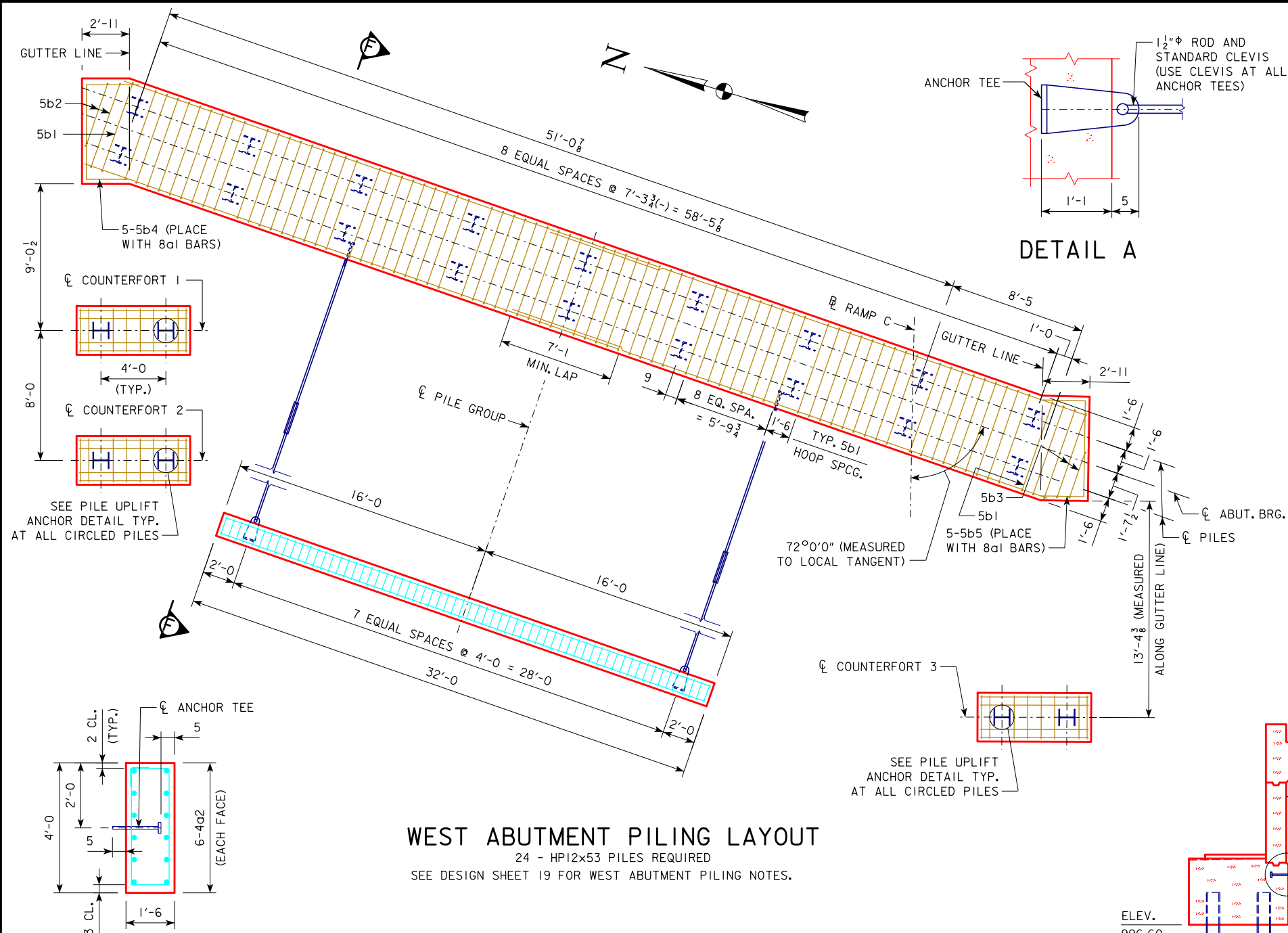
WEST ABUTMENT DETAILS

STA. 3554+77.00 (R/L 1-480 RAMP C) NOVEMBER, 2020

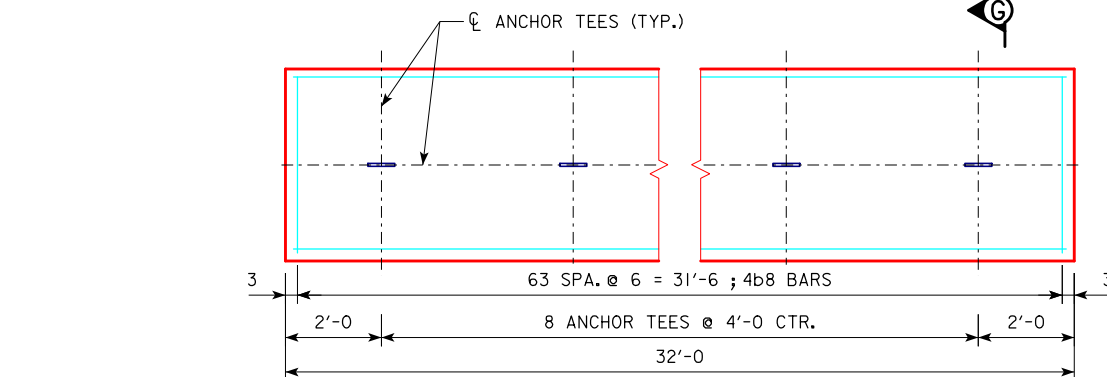
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

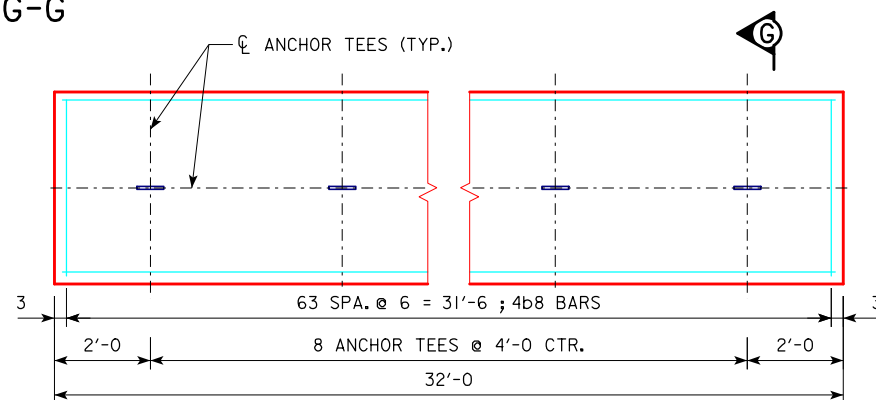
DESIGN SHEET NO. 15 OF 70 FILE NO. 30170 DESIGN NO. 1720



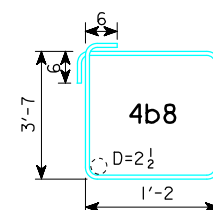
SECTION G-G



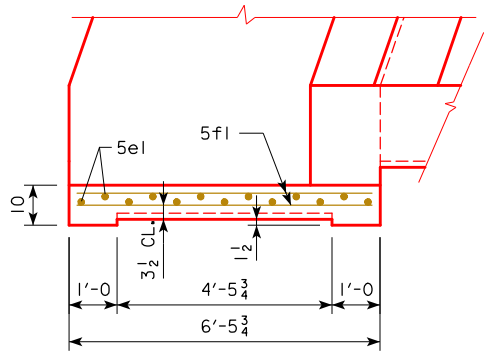
ELEVATION OF DEADMAN



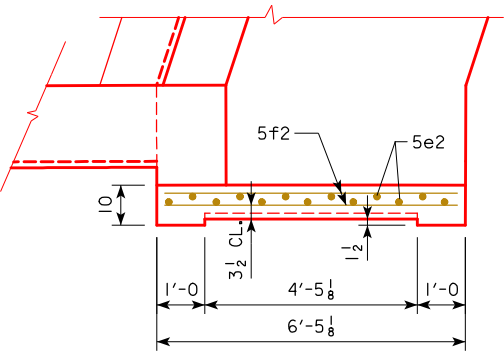
BENT BAR DETAILS



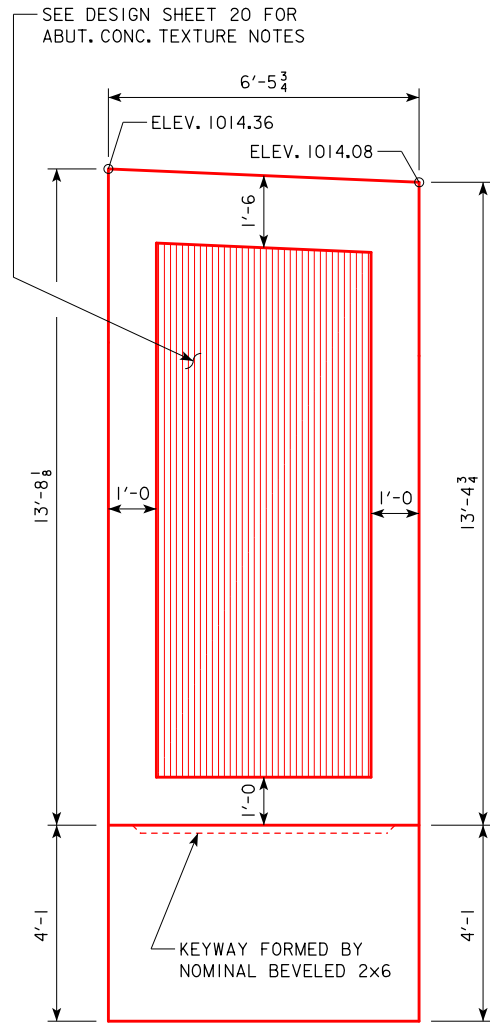
NOTE: ALL DIMENSIONS ARE
OUT TO OUT, D = PIN DIA.



PART SECTION C-C

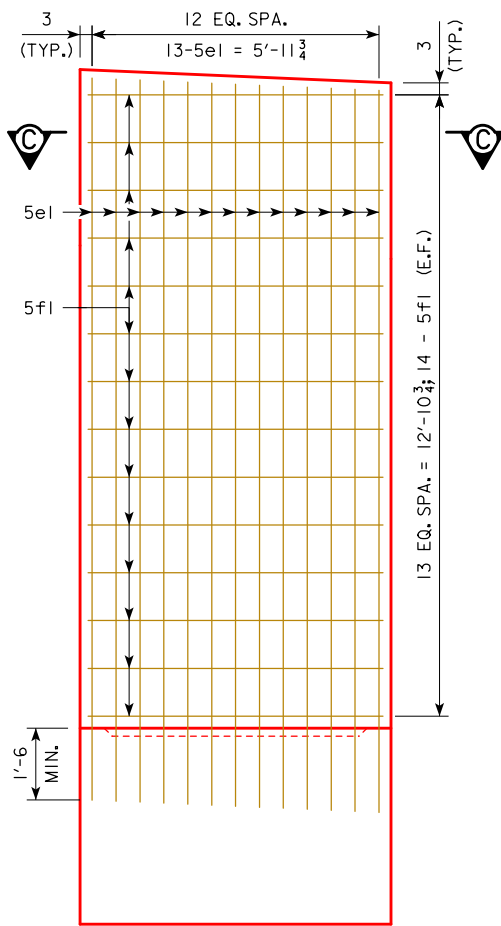


PART SECTION D-D

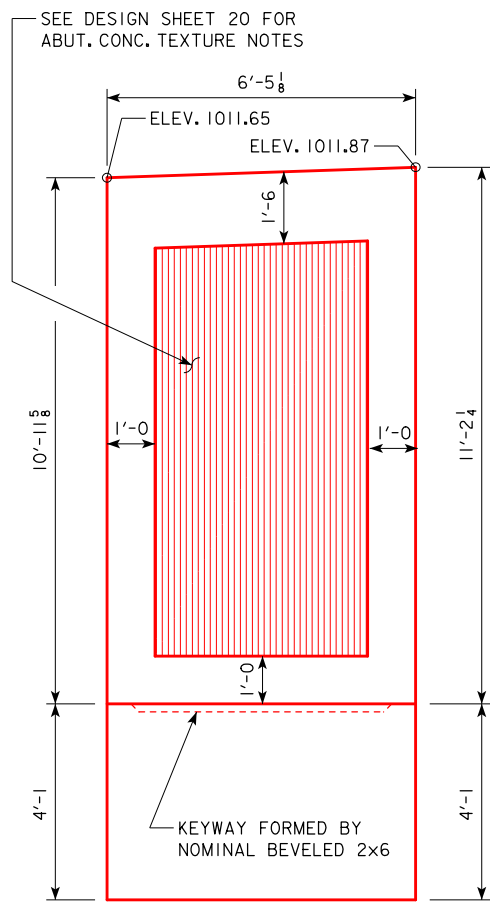


DIMENSIONS

VIEW A-A

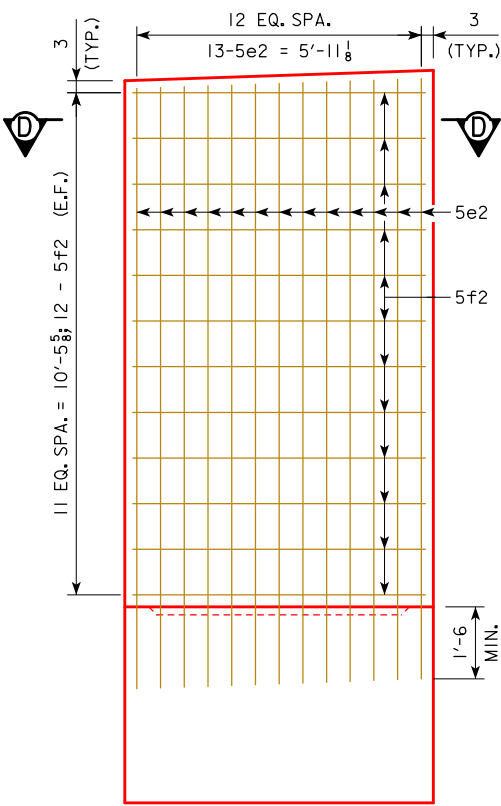


REINFORCING



DIMENSIONS

VIEW B-B

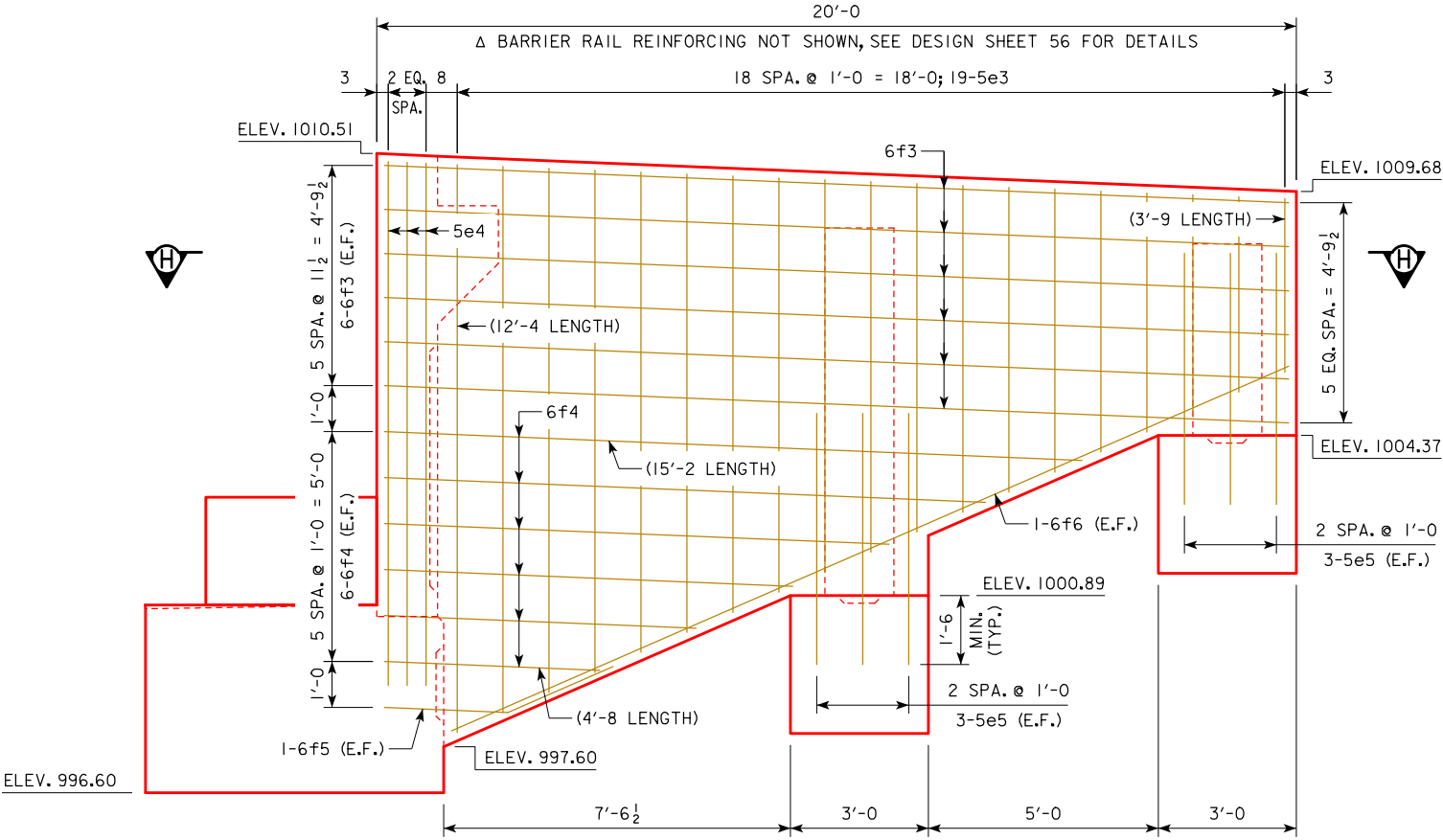


REINFORCING

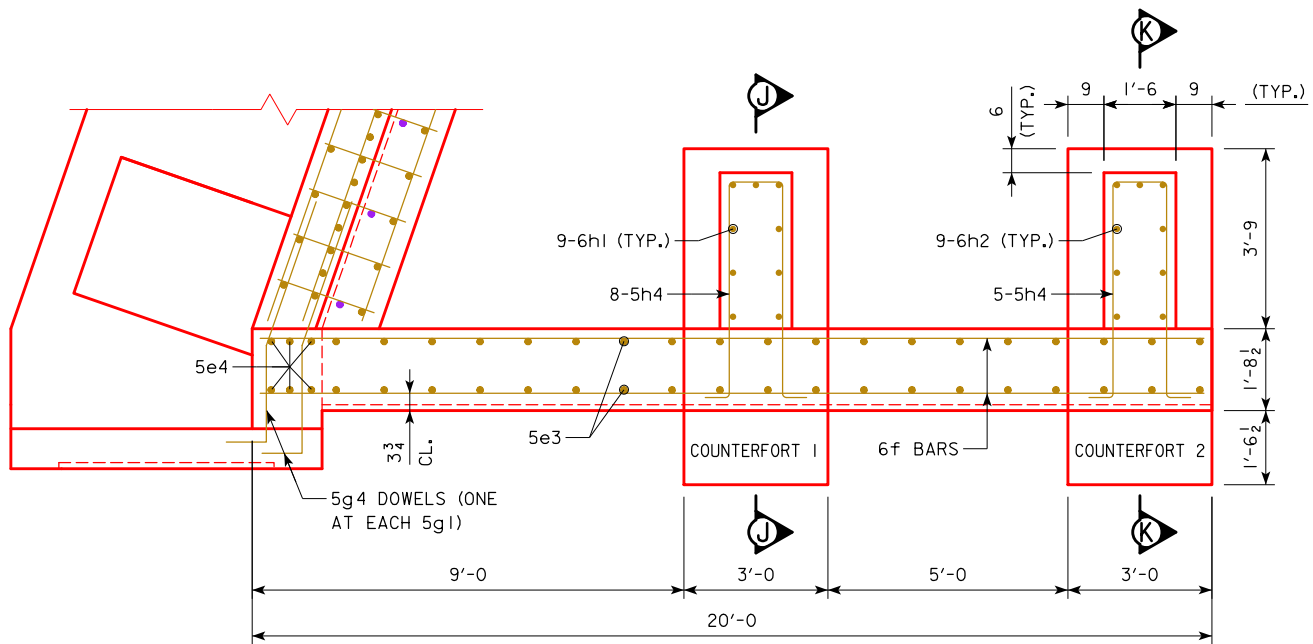
NOTE :
* BARRIER RAIL BARS TO BE PLACED WITH ABUTMENT INCLUDED IN BARRIER RAIL QUANTITIES. SEE BARRIER BAR SHEETS IN THESE PLANS FOR DETAILS OF THE 5c REINFORCING BARS.

DESIGN FOR VARIABLE SKEW (L.A.)
306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
153'-0 END SPANS
WEST ABUTMENT MASKWALL DETAILS
STA. 3554+77.00 (@ I-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 16 OF 70 FILE NO. 30170 DESIGN NO. 1720

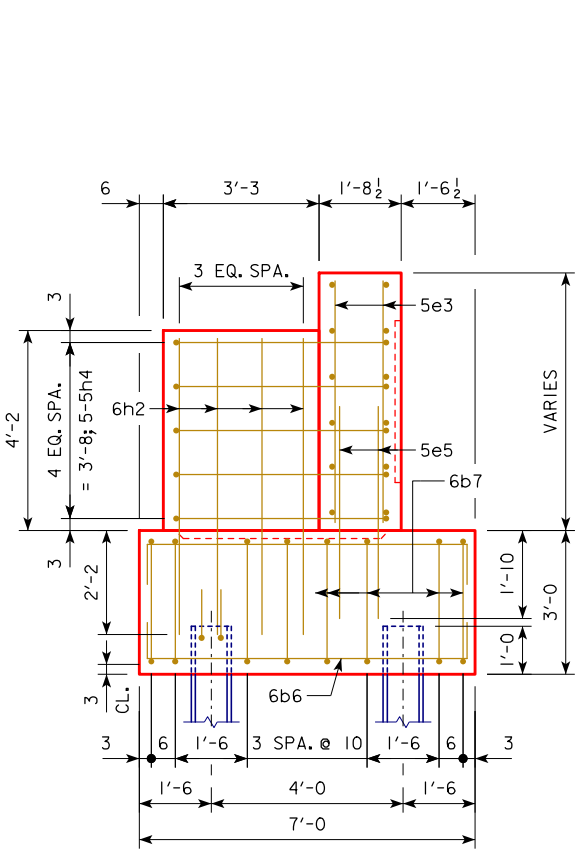




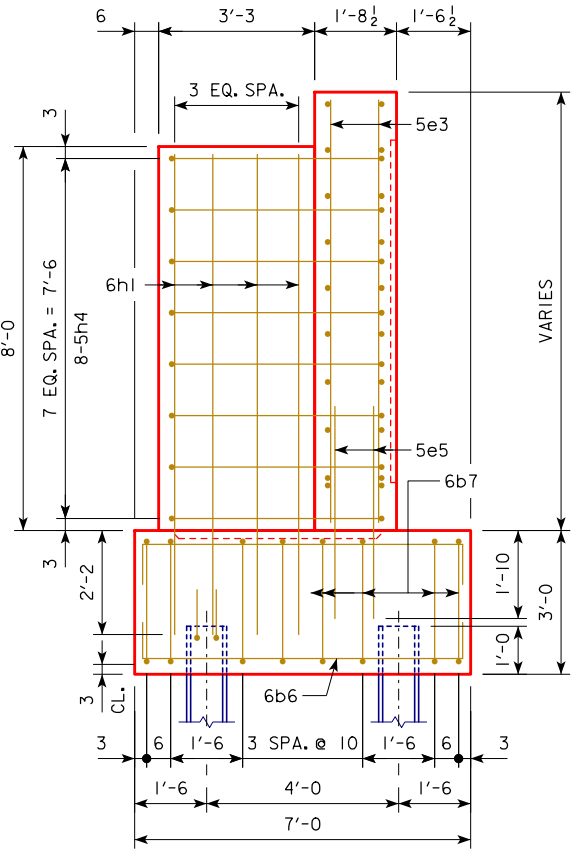
WINGWALL ELEVATION
(MASKWALL NOT SHOWN FOR CLARITY)



SECTION H-H
(BARRIER RAIL REINFORCING NOT SHOWN)



SECTION K-K

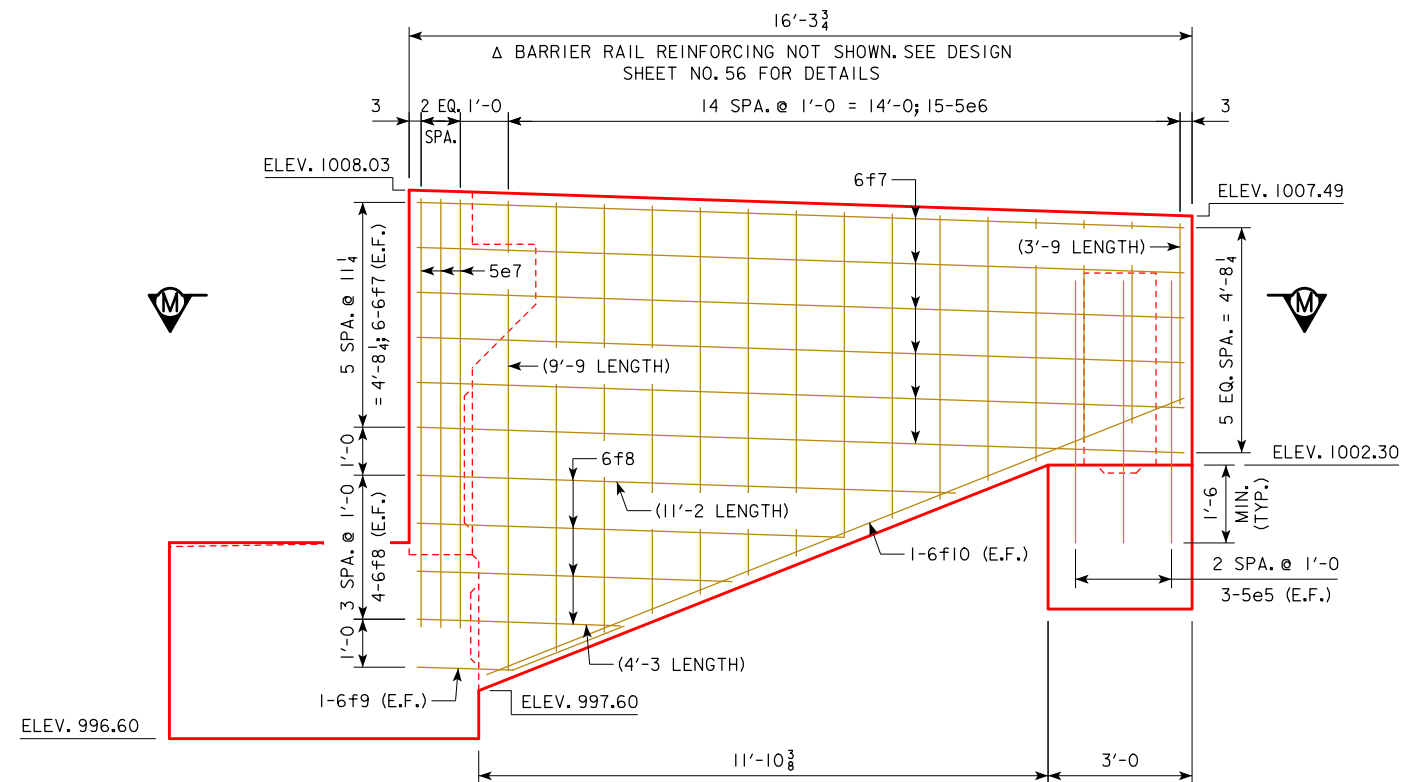


SECTION J-J

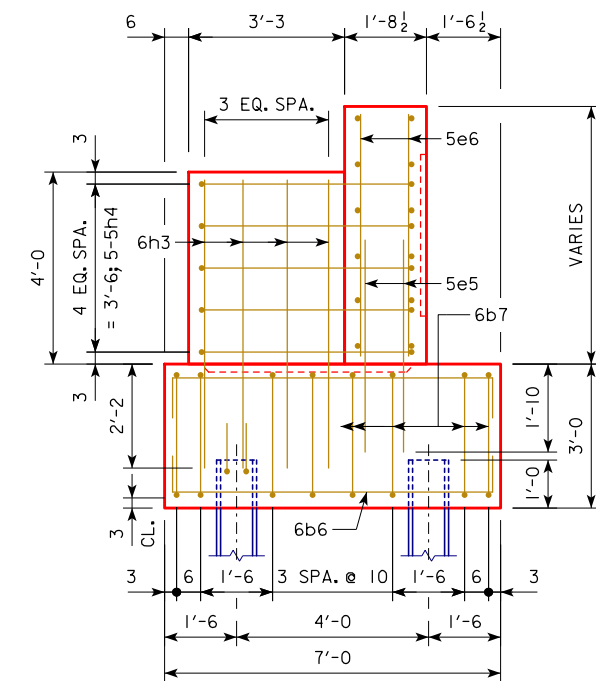
NOTE :
Δ ADDITIONAL REINFORCING BARS ARE TO BE PLACED IN THE ABUTMENT BACKWALL AND WING BUT ARE DETAILED WITH THE BARRIER RAIL SHEETS. THESE INCLUDES BARS 5c1, 5c2, 5c3 AND 5c4 IN THE BARRIER RAIL.

DESIGN FOR VARIABLE SKEW (L.A.)
306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
153'-0 END SPANS
WEST ABUTMENT N. WING DETAILS
STA. 3554+77.00 (@ 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 17 OF 70 FILE NO. 30170 DESIGN NO. 1720

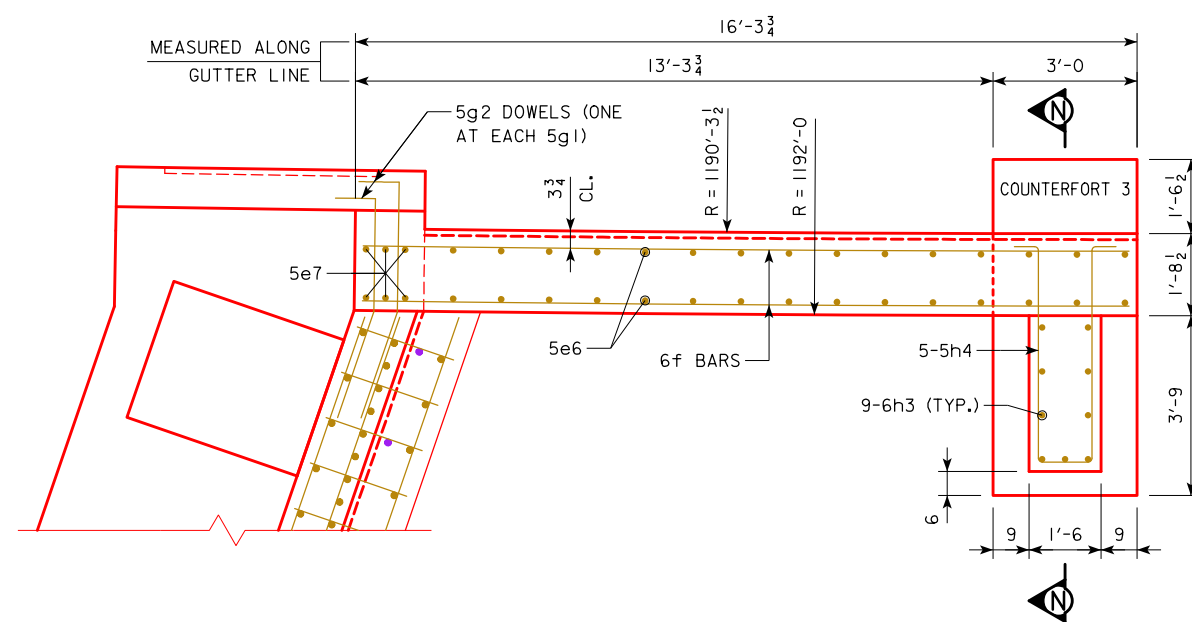




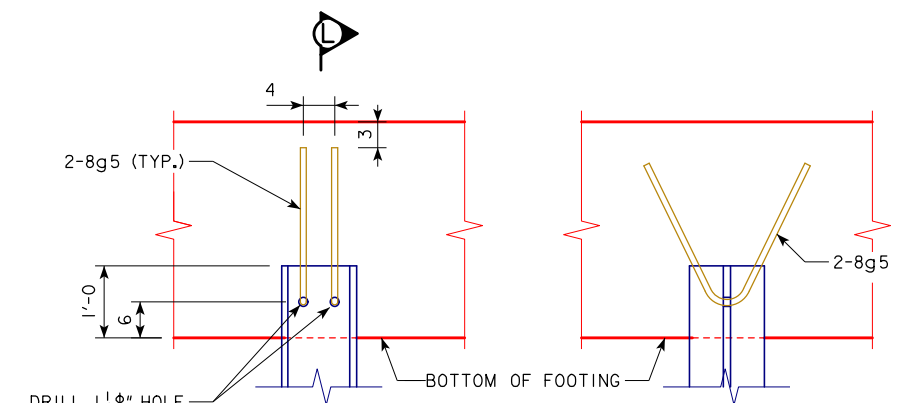
WINGWALL ELEVATION
(MASKWALL NOT SHOWN FOR CLARITY)



SECTION N-N



SECTION M-M
(BARRIER RAIL REINFORCING NOT SHOWN)



SECTION L-L
PILE UPLIFT ANCHOR DETAIL

NOTE :
Δ ADDITIONAL REINFORCING BARS ARE TO BE PLACED IN THE ABUTMENT BACKWALL AND WING BUT ARE DETAILED WITH THE BARRIER RAIL SHEETS. THESE INCLUDES BARS 5c1, 5c2, 5c3 AND 5c4 IN THE BARRIER RAIL.

DESIGN FOR VARIABLE SKEW (L.A.)
306'-0" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
153'-0" END SPANS
WEST ABUTMENT S. WING DETAILS
STA. 3554+77.00 (R/L 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 18 OF 70 FILE NO. 30170 DESIGN NO. 1720

ABUTMENT CONCRETE TEXTURE NOTES:

THIS WORK CONSISTS OF APPLYING TEXTURED FINISHES ON ALL DESIGNATED CONCRETE SURFACES OF THE ABUTMENT WING AND MASKWALL SURFACES AS SHOWN IN THIS PLAN. SEE "GENERAL NOTES FOR TEXTURED CONCRETE FORM LINERS" ON DESIGN SHEET 4 FOR MORE INFORMATION REGARDING THE USE OF FORM LINERS. THE TEXTURED CONCRETE MOCKUP PANEL MUST BE REVIEWED AND APPROVED BY THE ENGINEER BEFORE BEGINNING PRODUCTION CONCRETE WORK THAT INCLUDES TEXTURE. SEE "TEXTURED CONCRETE MOCKUP PANEL NOTES" ON DESIGN SHEET 4 FOR MORE INFORMATION.

THE FORM LINER USED TO PRODUCE TEXTURE 'A' AS SHOWN IN THE PLAN DETAILS SHALL PRODUCE A TEXTURED EFFECT OF REALISTIC ASHLAR STONE MASONRY SURFACE HAVING CUT STONES OF VARYING SIZE AND SHAPE. MAXIMUM DEPTH OF TEXTURE SHALL BE 1 1/2 INCHES. PLACE TEXTURE 'A' LINER IN FORMS SO THAT HORIZONTAL MORTAR JOINTS IN PATTERN ARE LEVEL.

OBTAIN TEXTURE 'A' FORM LINER MATERIALS FROM ONE OF THE FOLLOWING MANUFACTURES:

- 1. CUSTOMROCK INTERNATIONAL (PATTERN NO. I2020)
- 2. FITZGERALD FORMLINERS (PATTERN NO. I7000)
- 3. ARCHITECTURAL POLYMERS (PATTERN NO. 905)
- 4. SPEC FORMLINERS, INC. (PATTERN NO. I515)
- 5. SUBMIT ALL OTHER UNLISTED MANUFACTURERS AND PATTERNS INCLUDING A 1 FOOT BY 1 FOOT SAMPLE OF PROPOSED FORM LINER TO THE IOWA DEPARTMENT OF TRANSPORTATION, BRIDGES AND STRUCTURES BUREAU, AMES, IOWA. SAMPLE MAY BE EITHER ACTUAL FORM LINER MATERIALS OR FOAM CASTINGS. NO SAMPLES ARE REQUIRED TO BE SUBMITTED FOR MANUFACTURERS AND PATTERNS LISTED ABOVE.

THE FORM LINER USED TO PRODUCE TEXTURE 'B' AS SHOWN IN THE PLAN DETAILS SHALL PRODUCE A TEXTURED EFFECT OF VERTICAL, FRACTURED-FACE RIBS ON APPROXIMATELY 2-INCH CENTERS. MAXIMUM TEXTURE DEPTH SHALL BE 1 1/2 INCHES, AND MINIMUM TEXTURE DEPTH SHALL BE 1 3/8 INCHES.

OBTAIN TEXTURE 'B' FORM LINER MATERIALS FROM ONE OF THE FOLLOWING MANUFACTURERS:

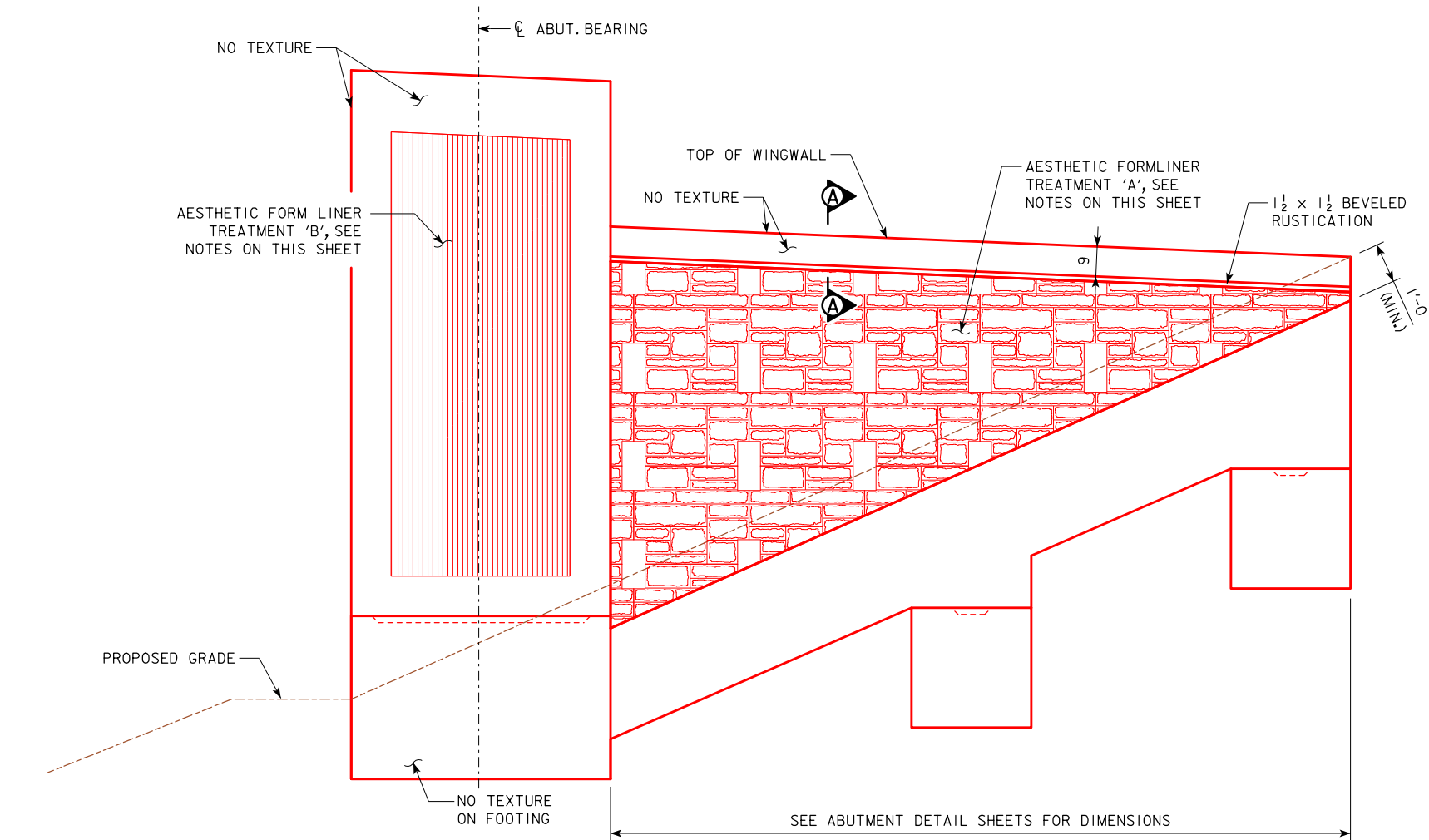
- 1. ARCHITECTURAL POLYMERS (PATTERN NO. 204)
- 2. FITZGERALD FORMLINERS (PATTERN NO. I6959)
- 3. GREENSTREAK (PATTERN NO. 367)
- 4. SCOTT SYSTEM, INC. (PATTERN NO. I29A)
- 5. CUSTOM ROCK INTERNATIONAL (PATTERN NO. 206)
- 6. SUBMIT ALL OTHER UNLISTED MANUFACTURERS AND PATTERNS INCLUDING A 1 FOOT BY 1 FOOT SAMPLE OF PROPOSED FORM LINER TO THE IOWA DEPARTMENT OF TRANSPORTATION, BRIDGES AND STRUCTURE BUREAU, AMES, IOWA. SAMPLE MAY BE EITHER ACTUAL FORM LINER MATERIALS OR FOAM CASTINGS. NO SAMPLES ARE REQUIRED TO BE SUBMITTED FOR MANUFACTURERS AND PATTERNS LISTED ABOVE.

PRIOR TO BEGINNING ANY PRODUCTION CONCRETE WORK THAT INCLUDES TEXTURE, SUBMIT MANUFACTURER'S CUT SHEETS FOR FORM LINERS.

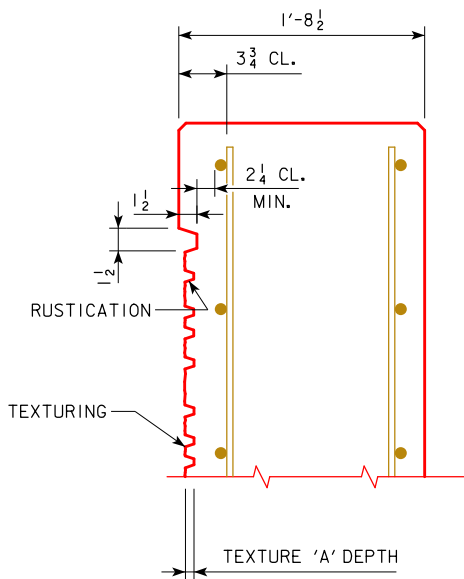
DO NOT MIX FORM LINERS FROM DIFFERENT MANUFACTURERS WHEN FORMING ANY INDIVIDUAL TEXTURE ON THE PROJECT.

THE ABUTMENT SURFACES AS DESIGNATED IN THE PLANS SHALL ALSO RECEIVE CONCRETE RUSTICATION. SEE "GENERAL NOTES FOR CONCRETE RUSTICATION" ON DESIGN SHEET 4 FOR MORE INFORMATION REGARDING APPROVED TECHNIQUES AND METHODS OF CONCRETE RUSTICATION.

ALL COSTS ASSOCIATED WITH CONCRETE TEXTURE, RUSTICATION AND FORM LINERS INCLUDING THE MOCKUP PANEL ARE TO BE INCLUDED IN THE BID ITEM, "HIGH PERFORMANCE STRUCTURAL CONCRETE".



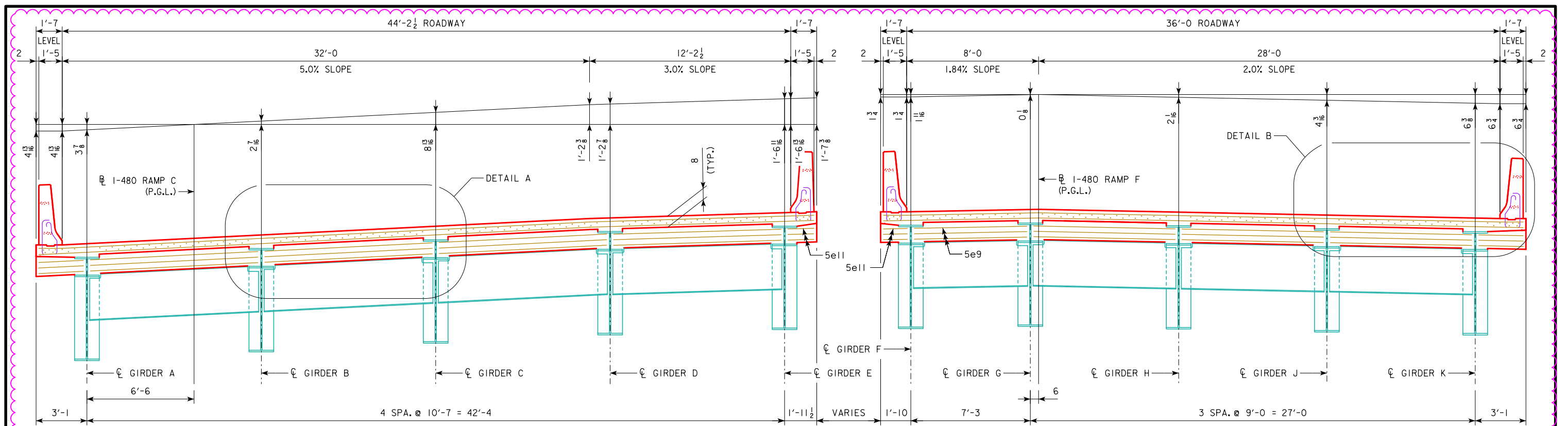
NORTH WINGWALL EXTERIOR ELEVATION
(SOUTH WINGWALL SIMILAR)
(BARRIER RAIL NOT SHOWN)



SECTION A-A
WINGWALL RUSTICATION
AND TEXTURING DETAIL

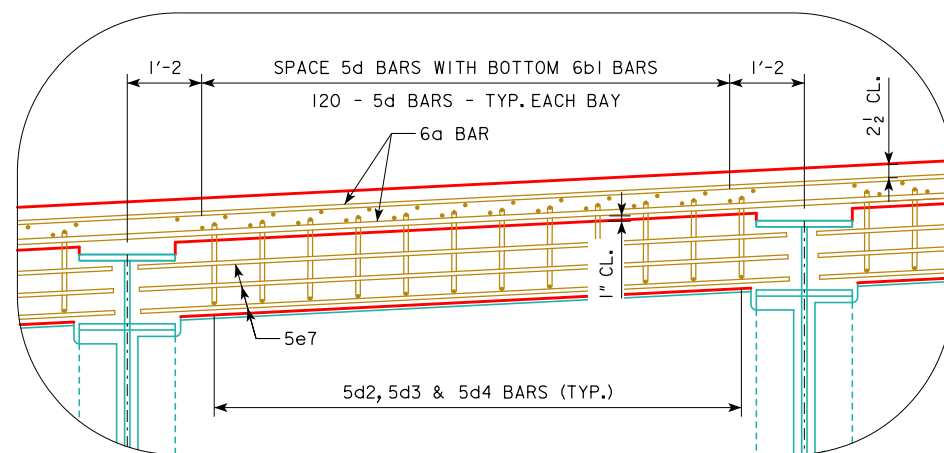


DESIGN FOR VARIABLE SKEW (L.A.)
306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
153'-0 END SPANS
W. ABUTMENT AESTHETIC DETAILS
STA. 3554+77.00 (CL 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 20 OF 70 FILE NO. 30170 DESIGN NO. 1720

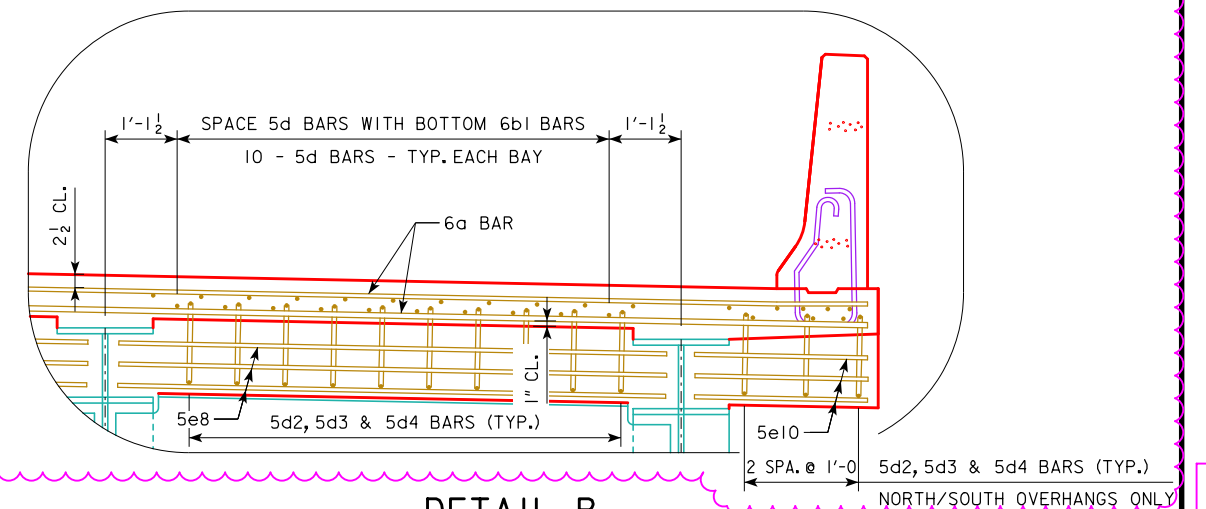


TRANSVERSE SECTION
AT PIER 8 END DIAPHRAGM

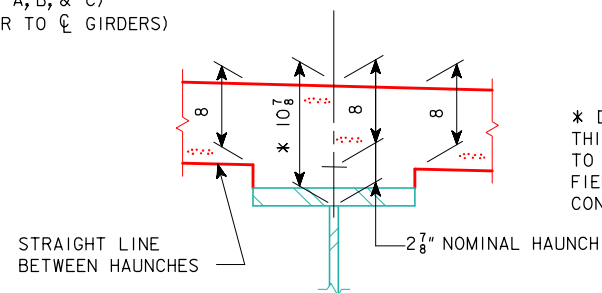
TRANSVERSE SECTION
AT PIER 1 END DIAPHRAGM



DETAIL A
(TYP. BETWEEN GIRDERS A, B, & C)
(BAR SPACINGS PERPENDICULAR TO GIRDERS)



DETAIL B
(TYP. BETWEEN GIRDERS G, H, J, & K AND AT NORTH & SOUTH OVERHANGS)
(BAR SPACINGS PERPENDICULAR TO GIRDERS)



TYP. DECK & HAUNCH DETAIL

* DIMENSION SHOWN IS MEASURED FROM TOP OF DECK TO TOP OF WEB, THEORETICALLY THIS IS A CONSTANT DIMENSION ALONG THE GIRDER AND IS USED BY THE DESIGNER TO SET BRIDGE SEAT ELEVATIONS AND ESTIMATE CONCRETE QUANTITIES. REFER TO THE FIELD HAUNCH DATA DETAIL SHEET FOR ADDITIONAL INFORMATION TO AID THE CONTRACTOR IN SETTING THE FIELD HAUNCHES REQUIRED FOR CONSTRUCTION.

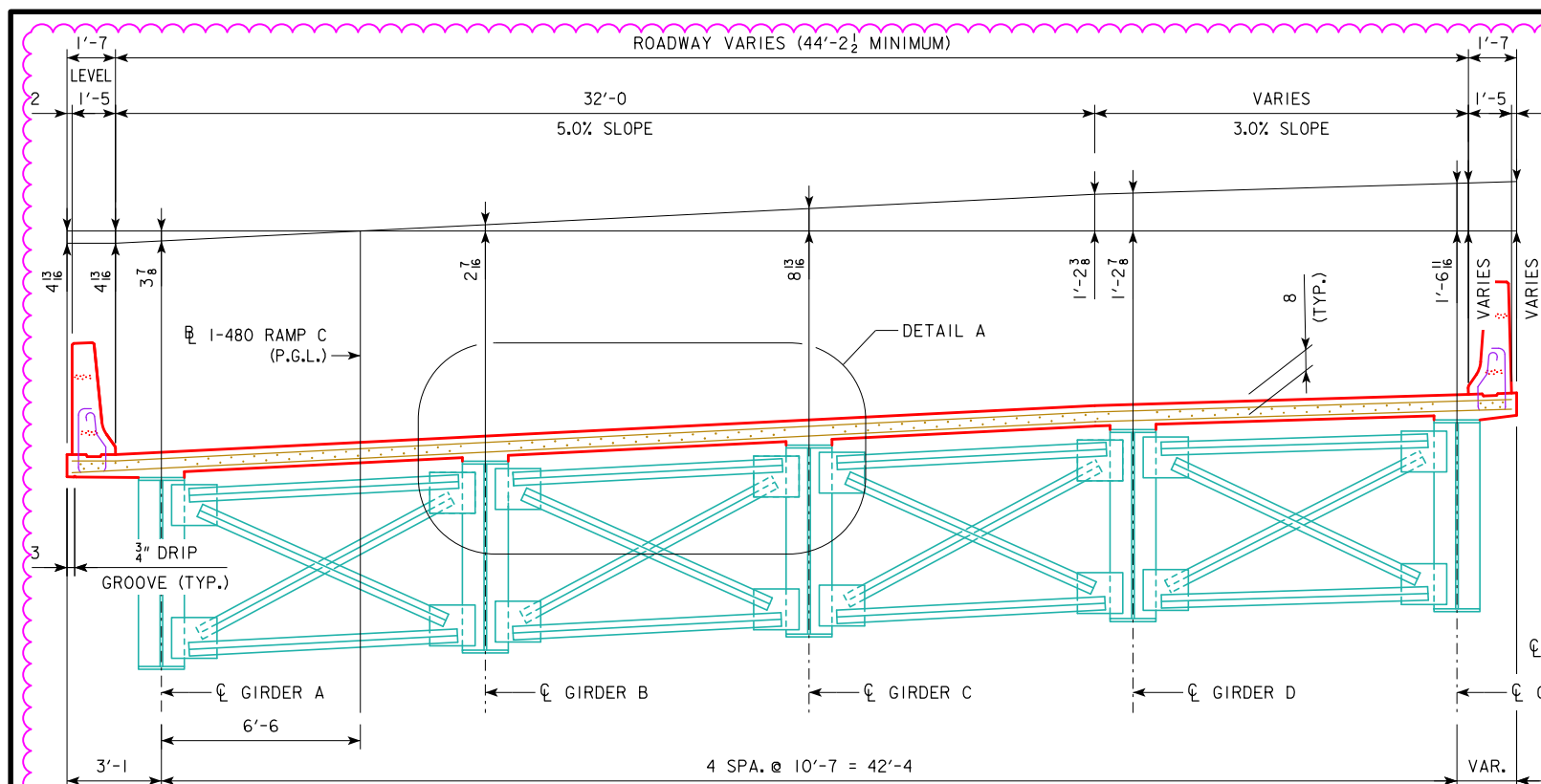
REVIS: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT.

REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.

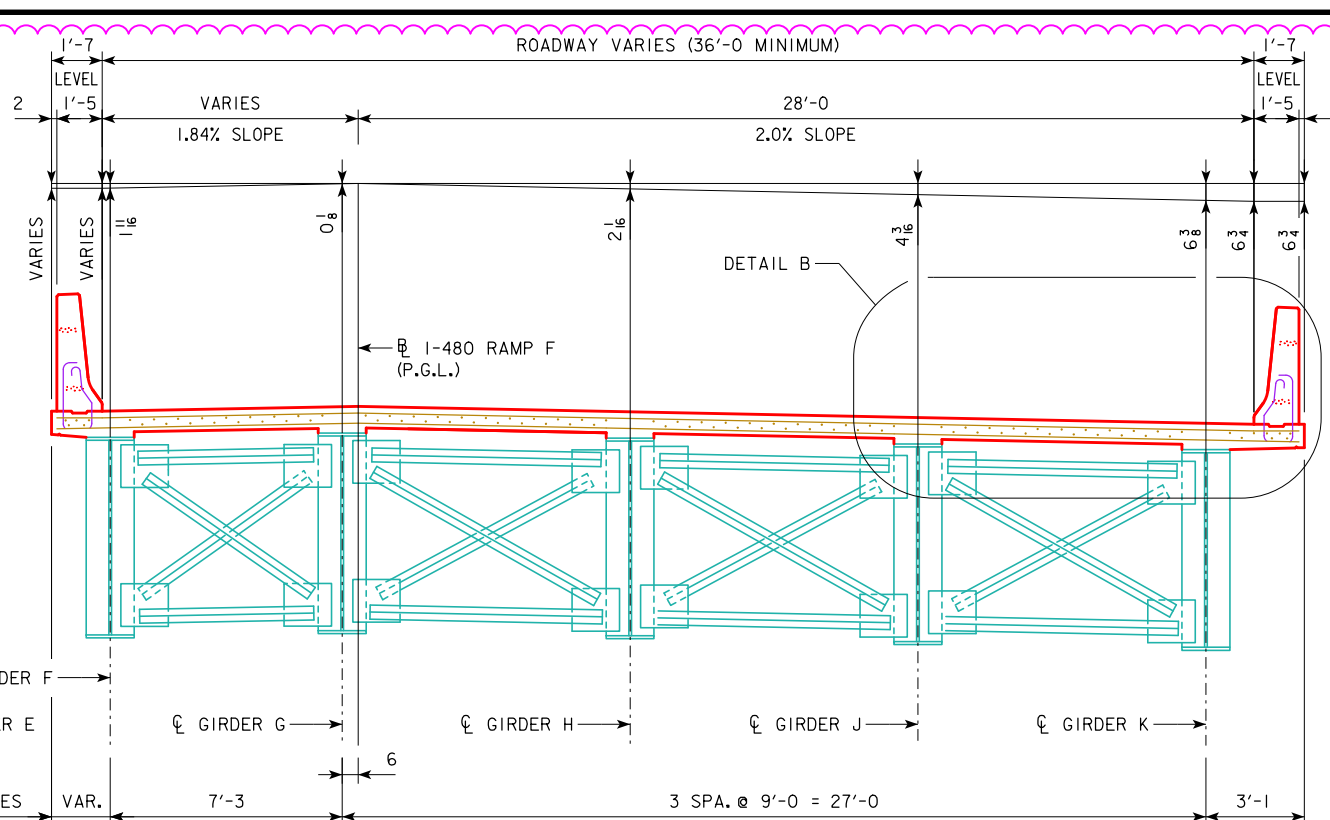


DESIGN FOR VARIABLE SKEW (L.A.)
306'-0" x VARIES CONTINUOUS WELDED GIRDER BRIDGE
153'-0" END SPANS
SUPERSTRUCTURE DETAILS
STA. 3554+77.00 (P.G. 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 21 OF 70 FILE NO. 30170 DESIGN NO. 1720

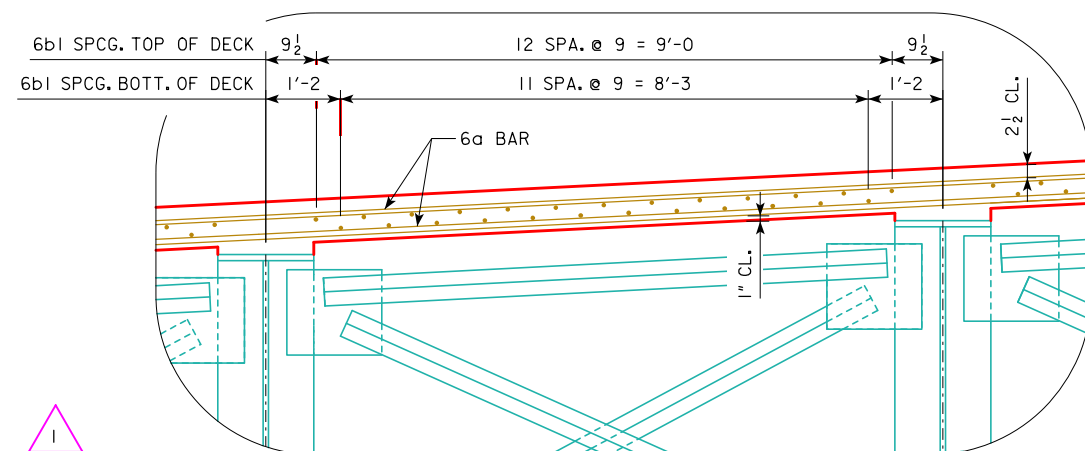
REVISED: JUNE 8, 2022



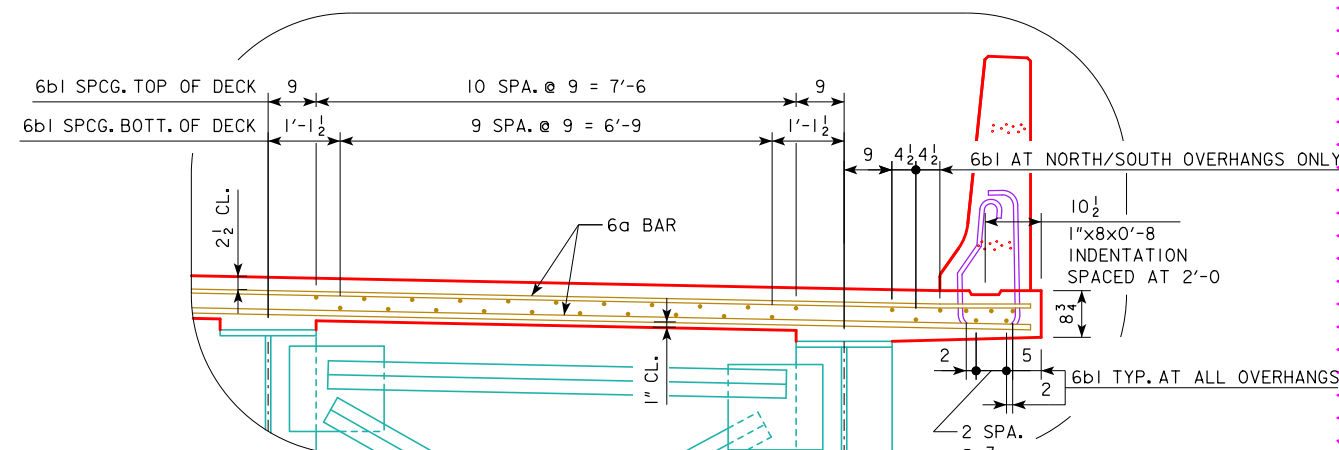
TRANSVERSE SECTION
CROSS FRAME NEAR PIER 8



TRANSVERSE SECTION
CROSS FRAME NEAR PIER 1



DETAIL A
(TYP. BETWEEN GIRDERS A, B, & C)
(BAR SPACINGS PERPENDICULAR TO GIRDERS)



DETAIL B
(TYP. BETWEEN GIRDERS G, H, J, & K AND AT NORTH & SOUTH OVERHANGS)
(BAR SPACINGS PERPENDICULAR TO GIRDERS)

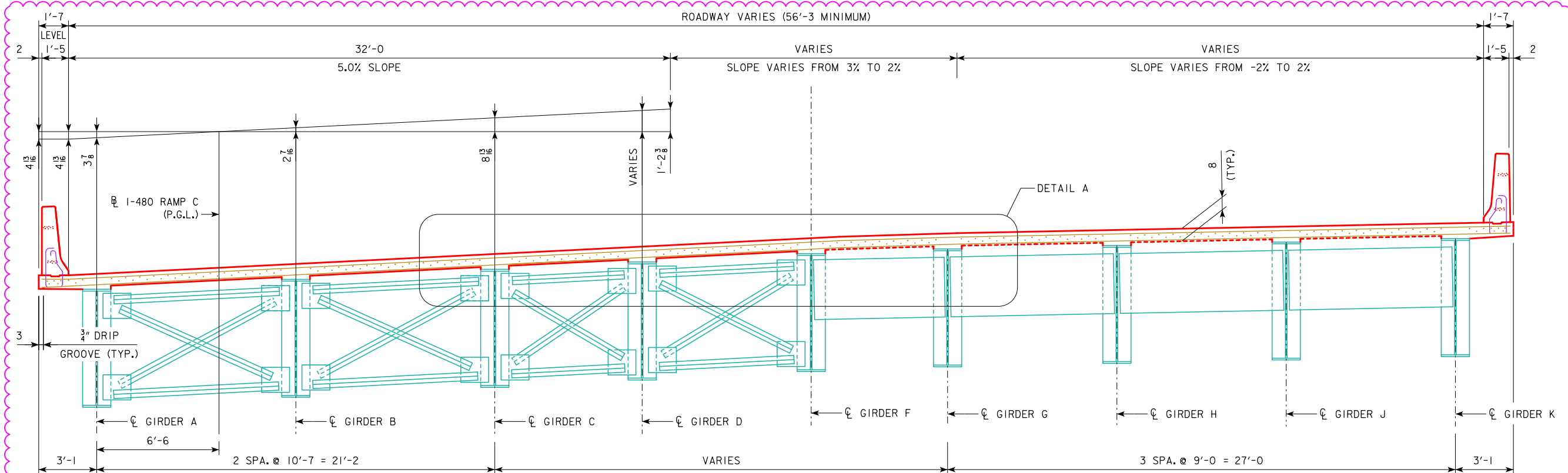


REVISED: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT.

REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.

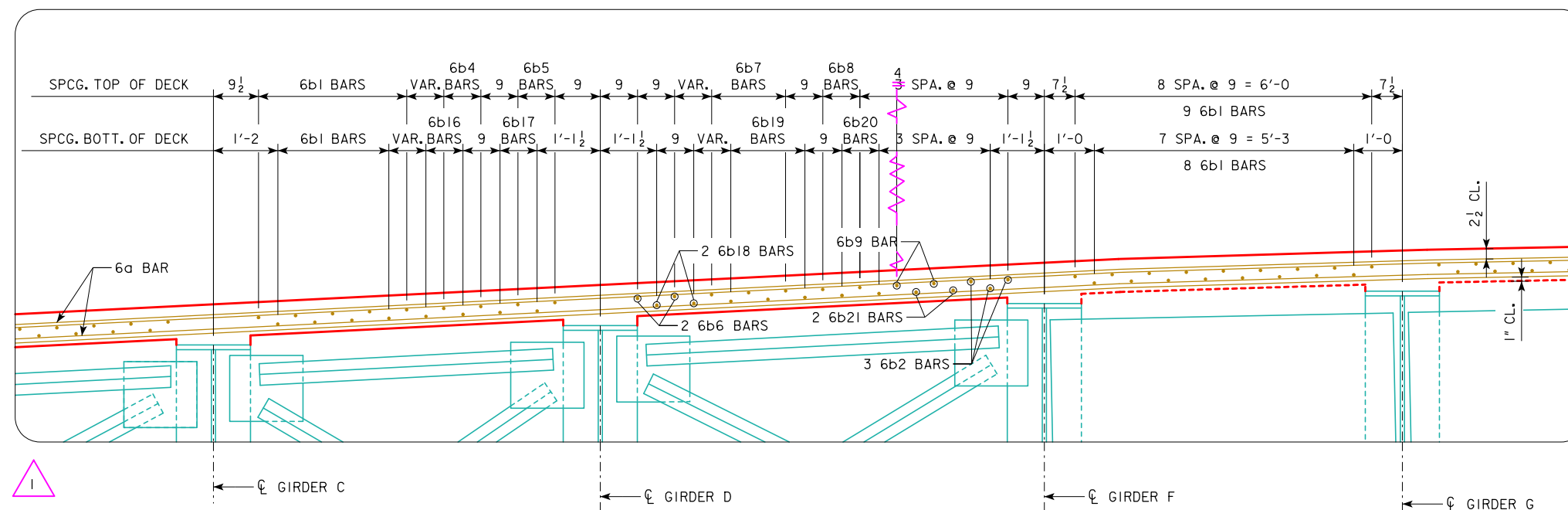


DESIGN FOR VARIABLE SKEW (L.A.)
306'-0" x VARIES CONTINUOUS WELDED GIRDER BRIDGE
153'-0" END SPANS
SUPERSTRUCTURE DETAILS
STA. 3554+77.00 (E 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 22 OF 70 FILE NO. 30170 DESIGN NO. 1720



HALF SECTION CROSS FRAME NEAR PIER 9

HALF SECTION NEAR PIER 9 DIAPHRAGM



DETAIL A

(BAR SPACINGS PERPENDICULAR TO CL GIRDERS)



REVISED: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT AND BAR SPACINGS.

REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.



DESIGN FOR VARIABLE SKEW (L.A.)

306'-0" x VARIES CONTINUOUS WELDED GIRDER BRIDGE

153'-0" END SPANS

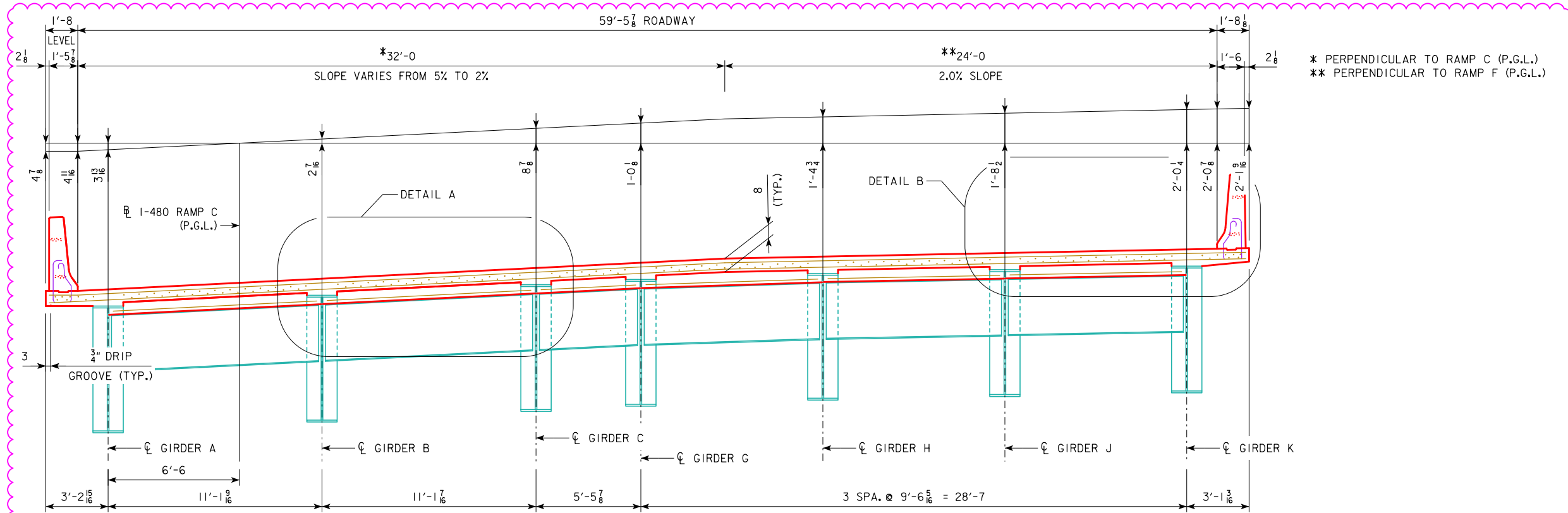
SUPERSTRUCTURE DETAILS

STA. 3554+77.00 (CL 1-480 RAMP C) NOVEMBER, 2020

POTTAWATTAMIE COUNTY

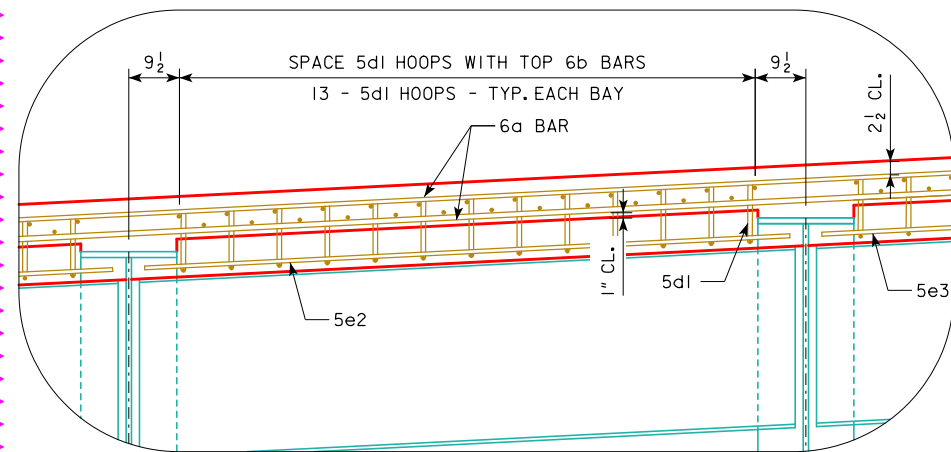
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 23 OF 70 FILE NO. 30170 DESIGN NO. 1720

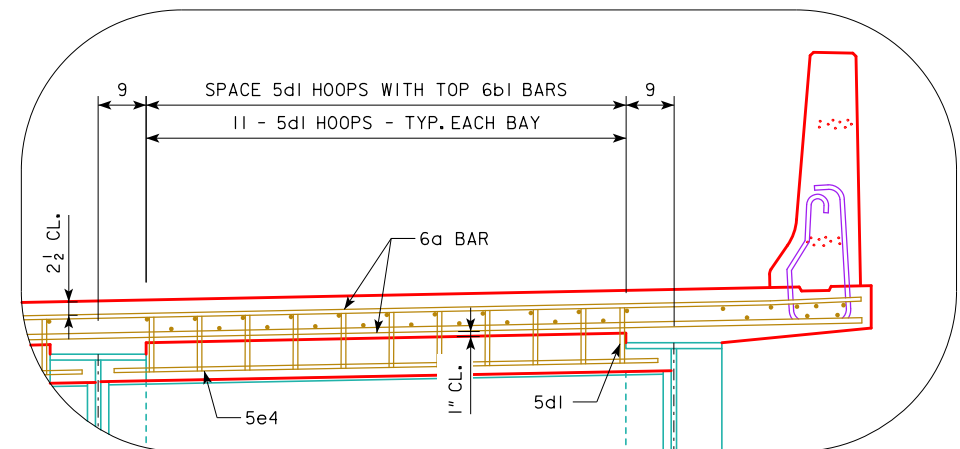


TRANSVERSE SECTION AT WEST ABUTMENT END DIAPHRAGM

(DIMENSIONS SHOWN ALONG CL OF W. ABUT. BRG. UNLESS NOTED OTHERWISE)



DETAIL A
(TYP. BETWEEN GIRDERS A, B, & C)
(BAR SPACINGS PERPENDICULAR TO CL GIRDERS)



DETAIL B
(TYP. BETWEEN GIRDERS G, H, J, & K)
(BAR SPACINGS PERPENDICULAR TO CL GIRDERS)

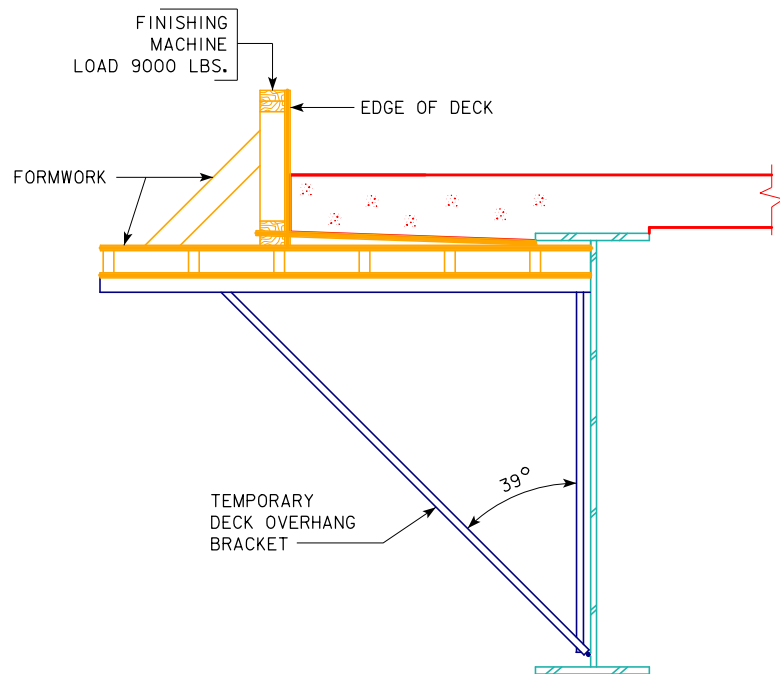


REVISED: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT.

REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.



DESIGN FOR VARIABLE SKEW (L.A.)
**306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
153'-0 END SPANS
SUPERSTRUCTURE DETAILS
STA. 3554+77.00 (CL 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 24 OF 70 FILE NO. 30170 DESIGN NO. 1720

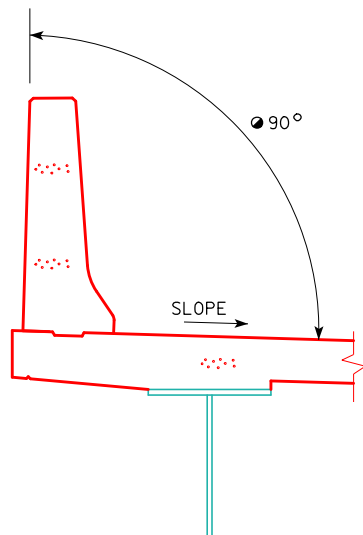


TEMPORARY DECK OVERHANG BRACKET DETAIL

OVERHANG BRACKET NOTES:

A MAXIMUM FINISHING MACHINE LOAD AND THE ANGLE OF THE DIAGONAL MEMBER OF THE OVERHANG BRACKET SHOWN WERE ASSUMED BY THE DESIGNER. THESE ASSUMPTIONS, IN ADDITION TO OTHER CONSTRUCTION LOADINGS, WERE USED TO CHECK THE STRENGTH OF THE EXTERIOR GIRDER DURING CRITICAL STAGES OF CONSTRUCTION. IF THE FINISHING MACHINE LOAD OR ANGLE OF THE DIAGONAL MEMBER OF THE OVERHANG BRACKET DEViate SIGNIFICANTLY FROM VALUES SHOWN, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THIS INFORMATION ON PROPOSED CONSTRUCTION EQUIPMENT TO BE USED.

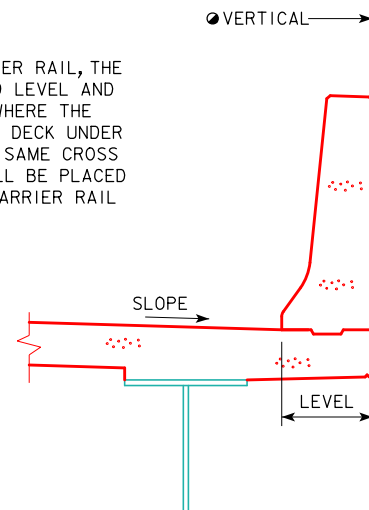
IF THE VERTICAL HEIGHT OF THE OVERHANG BRACKET IS ADJUSTABLE, THE BASE OF THE BRACKET IS TO BE LOCATED AS CLOSE AS POSSIBLE TO THE BOTTOM FLANGE OF THE GIRDER.



BARRIER RAIL ORIENTATION DETAIL

(SHOWING "DECK SLOPES AWAY FROM THE BARRIER RAIL")

WHERE THE DECK SLOPES TOWARDS THE BARRIER RAIL, THE DECK UNDER THE BARRIER RAIL SHALL BE PLACED LEVEL AND THE BARRIER RAIL SHALL BE PLACED VERTICAL. WHERE THE DECK SLOPES AWAY FROM THE BARRIER RAIL, THE DECK UNDER THE BARRIER RAIL SHALL BE PLACED ALONG THE SAME CROSS SLOPE AS THE DECK AND THE BARRIER RAIL SHALL BE PLACED PERPENDICULAR TO THE TOP OF THE DECK. SEE BARRIER RAIL ORIENTATION DETAILS, THIS SHEET.



BARRIER RAIL ORIENTATION DETAIL

(SHOWING "DECK SLOPES TOWARD THE BARRIER RAIL")

SUPERSTRUCTURE NOTES:

THE BRIDGE DECK AS SHOWN INCLUDES $\frac{1}{2}$ " INTEGRAL WEARING SURFACE. FORMS FOR THE BRIDGE DECK AND BARRIER RAIL ARE TO BE SUPPORTED BY THE GIRDERS.

CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.

TOP TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND $2\frac{1}{2}$ " CLEAR BELOW TOP OF DECK. BOTTOM TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 1" CLEAR ABOVE BOTTOM OF DECK. TOP AND BOTTOM REINFORCING STEEL IS TO BE SUPPORTED BY INDIVIDUAL BAR CHAIRS SPACED AT NOT MORE THAN 3'-0" CENTERS LONGITUDINALLY AND TRANSVERSELY, OR BY CONTINUOUS ROWS OF BAR HIGH CHAIRS OR DECK BOLSTERS SPACED 4'-0" APART. I.M.451.01 REQUIREMENT SHALL APPLY FOR BAR CHAIRS, HIGH BAR CHAIRS, AND DECK BOLSTERS.

ALL FIELD CONNECTIONS ARE TO BE BOLTED USING "HIGH TENSILE STRENGTH BOLTS". UNLESS OTHERWISE NOTED, ALL OPEN HOLES ARE TO BE $15/16"$ AND ALL BOLTS ARE TO BE $7/8"$.

BOTTOM FLANGES ARE TO BE PERPENDICULAR TO WEBS AT THE REACTION POINTS.

FILL PLATE THICKNESS SHOWN ON PLANS ARE BASED ON NOMINAL GIRDER DIMENSIONS. THESE THICKNESS ARE TO BE VERIFIED OR ADJUSTED DURING FABRICATION TO SECURE A CLOSE FIT. EACH FILL PLATE SHALL FIT TO THE NEAREST $1/16"$ IN THICKNESS AND SINGLE PLATES ARE REQUIRED AT EACH FILL LOCATION. GIRDERS ARE TO BE TRULY SQUARE AT SPLICE POINTS WITH FLANGES PERPENDICULAR TO WEBS.

THE DESIGN DRAWINGS INDICATE AWS PREQUALIFIED WELDED JOINTS. ALTERNATE JOINT DETAILS MAY BE SUBMITTED FOR APPROVAL.

MAGNETIC PARTICLE INSPECTION OF WELDS, IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, WILL BE REQUIRED.

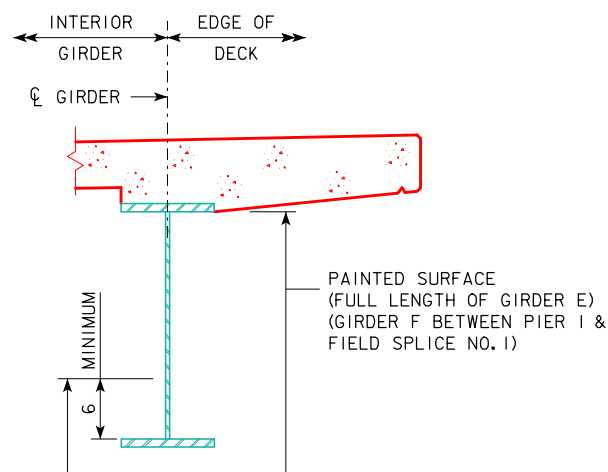
SHOP WELDED FLANGE SPLICES SHALL BE A MINIMUM OF 6 INCHES FROM A STIFFENER, 6 INCHES FROM A WEB SPLICE, AND 4 INCHES FROM A SHEAR CONNECTOR. WEB SPLICES SHALL BE A MINIMUM OF 6 INCHES FROM A STIFFENER. SPLICES SHALL NOT INTERFERE WITH ANY OTHER BRIDGE COMPONENTS. ALL SHOP WELDED SPLICES SHALL BE SHOWN ON THE SHOP DRAWINGS AND SUBJECT TO APPROVAL BY THE ENGINEER.

CHARPY V-NOTCH TOUGHNESS REQUIREMENTS IN ACCORDANCE WITH ARTICLE 4152.02, OF THE STANDARD SPECIFICATIONS SHALL APPLY TO ALL CROSS FRAMES AND CONNECTION STIFFENERS AT CROSS FRAMES.

THE BRIDGE CONTRACTOR MAY SHOP DRILL ANY CONNECTION THAT IS SHOWN AS FIELD DRILLED IF PERTINENT DIMENSIONS ARE ACCURATELY FIELD MEASURED AND THE BRIDGE CONTRACTOR CAN ENSURE PROPER FIT BETWEEN NEW AND EXISTING STRUCTURAL STEEL.

In response to CnRFI-146, on 6/28/22, HRG noted the intent of the design was to not paint the exterior girders A and K. Only the portions of the exterior girders E and F as noted in the plans, and the members of cross frame 12, as noted in CnRFI-128, are to be painted.

Girders E and F are to be painted to satisfy the BSB requirement for painting the fascia of exterior girders on the median side only where the median opening is 30' or less. No additional painting was required because the requirements of FHWA Technical Advisory T 5140.22, specifically the conditions for grade separations in "tunnel-like" conditions, were not met. The minimum vertical clearance is greater than 20', the ADTT is less than 10%, and the posted speed limit is less than 55 mph.



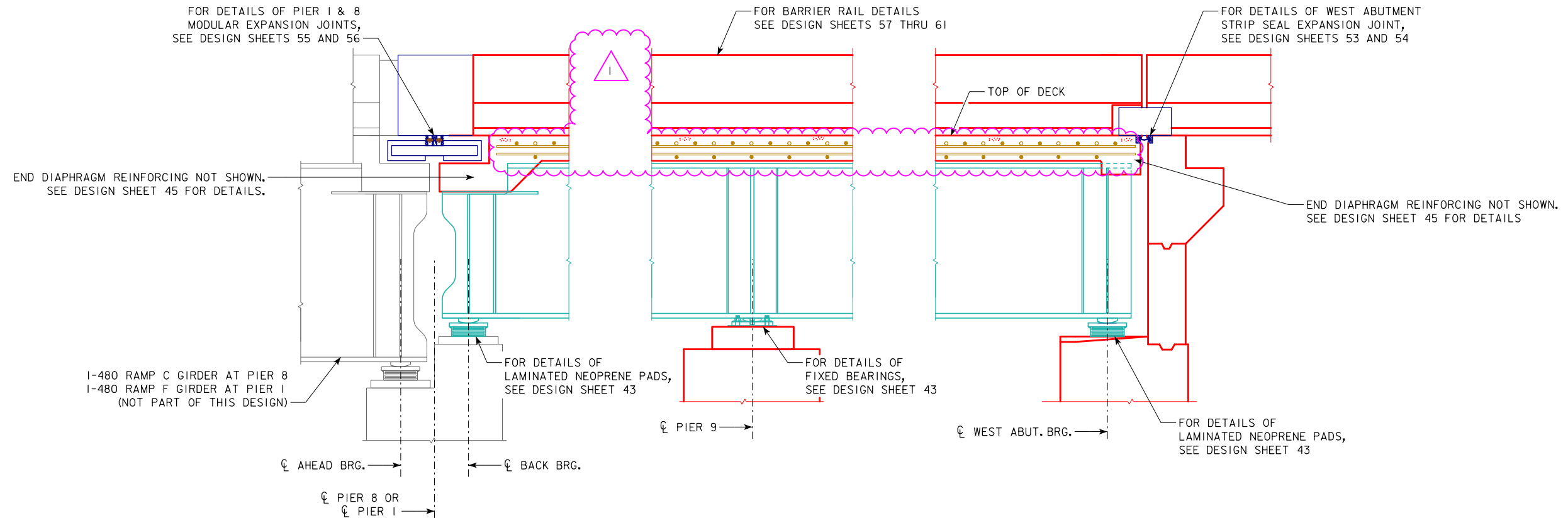
EXTERIOR GIRDER

LIMITS OF PAINTING DETAIL

(BARRIER RAIL NOT SHOWN)

In response to CnRFI-128, HRG recommended painting the members of cross-frame 12 in addition to the Girder E and Girder F between Pier 1 and FS 1. We did not recommend painting cross frames 4, 5, 13, and 14.





PART LONGITUDINAL SECTION NEAR BARRIER RAIL
(LOOKING AT SOUTH BARRIER) (PIER DIAPHRAGMS & ABUTMENT DIAPHRAGMS NOT SHOWN)

REVISION: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT.

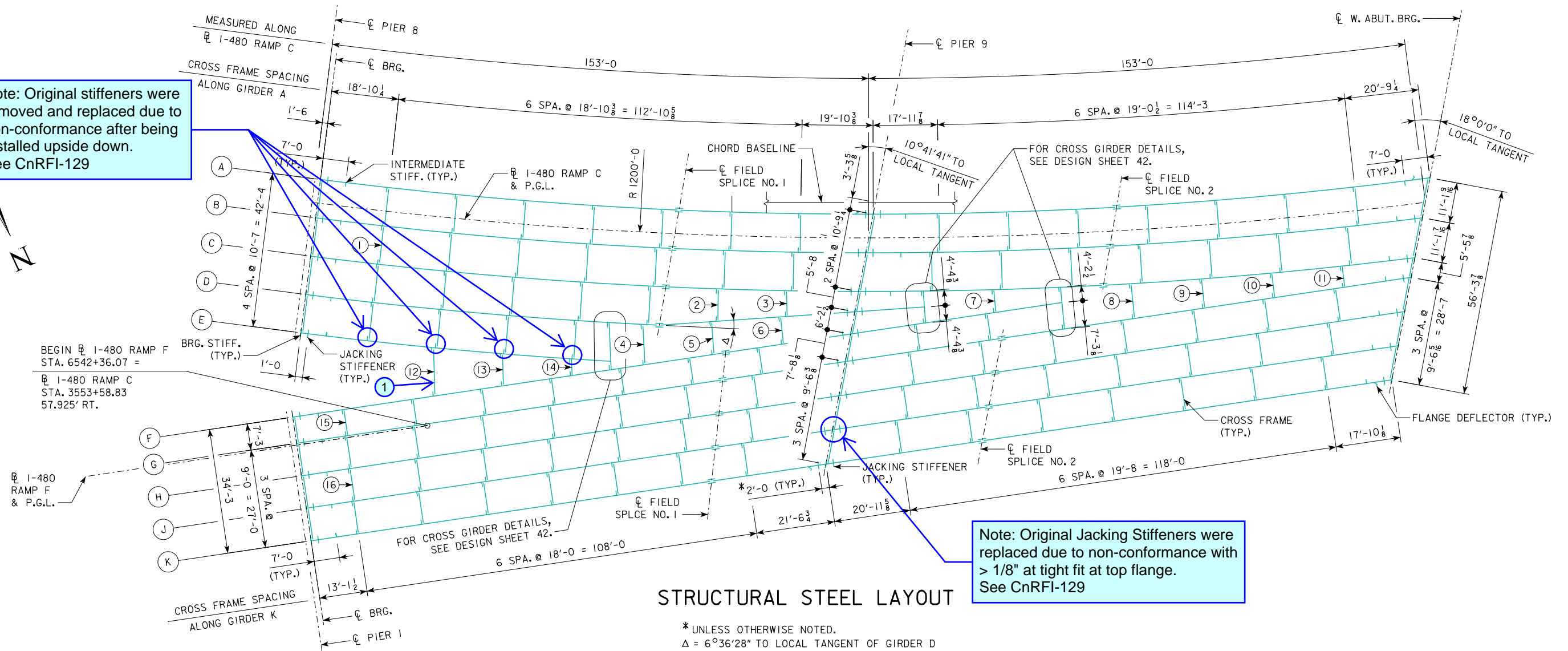
REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.



DESIGN FOR VARIABLE SKEW (L.A.)
306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
153'-0 END SPANS
LONGITUDINAL SECTION
STA. 3554+77.00 (CL I-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 26 OF 70 FILE NO. 30170 DESIGN NO. 1720

REVISED: JUNE 8, 2022

Note: Original stiffeners were removed and replaced due to non-conformance after being installed upside down. See CnRFI-129



GIRDER DATA

GIRDER	SPAN NO. 1			SPAN NO. 2		
	CL BRG. PIER 8 TO CL F.S. NO. 1	CL F.S. NO. 1 TO CL PIER 9	SPAN LENGTH	CL PIER 9 TO CL F.S. NO. 2	CL F.S. NO. 2 TO CL BRG. W. ABUT.	SPAN LENGTH
A	98'-7 ⁵ / ₁₆	53'-2 ⁷ / ₈	151'-10 ³ / ₁₆	66'-9 ³ / ₈	86'-3 ³ / ₁₆	153'-0 ¹¹ / ₁₆
B	98'-2 ¹ / ₂	53'-0 ² / ₈	151'-3	66'-11 ¹ / ₂	86'-0 ¹ / ₁₆	152'-11 ⁹ / ₁₆
C	97'-9 ¹ / ₈	52'-10 ¹ / ₁₆	150'-7 ³ / ₁₆	67'-1 ⁷ / ₈	85'-8 ³ / ₈	152'-10 ² / ₁₆
D	97'-3 ³ / ₄	53'-8 ⁵ / ₁₆	151'-0 ¹ / ₁₆	19'-1 ¹¹ / ₁₆ ***	---	19'-1 ¹¹ / ₁₆ ***
E	85'-3 ¹⁵ / ₁₆ **	---	85'-3 ¹⁵ / ₁₆ **	---	---	---
GIRDER	SPAN NO. 1			SPAN NO. 2		
	CL PIER 1 TO CL F.S. NO. 1	CL F.S. NO. 1 TO CL PIER 9	SPAN LENGTH	CL PIER 9 TO CL F.S. NO. 2	CL F.S. NO. 2 TO CL BRG. W. ABUT.	SPAN LENGTH
F	120'-0	34'-7 ¹ / ₁₆	154'-7 ¹ / ₁₆	58'-7***	---	58'-7***
G	118'-1 ¹ / ₈	33'-11 ³ / ₁₆	152'-0 ³ / ₈	43'-4	113'-5 ³ / ₄	156'-9 ³ / ₄
H	115'-8 ³ / ₄	33'-2 ⁹ / ₁₆	148'-11 ⁵ / ₁₆	43'-4	113'-5 ³ / ₄	156'-9 ³ / ₄
J	113'-4 ³ / ₈	32'-5 ¹ / ₁₆	145'-9 ³ / ₁₆	43'-4	113'-5 ³ / ₄	156'-9 ³ / ₄
K	111'-0	31'-8 ⁵ / ₁₆	142'-8 ⁵ / ₁₆	43'-4	113'-5 ³ / ₄	156'-9 ³ / ₄

** GIRDER STOPS BEFORE SPLICE

*** GIRDER STOPS AFTER CL PIER 9. NO SECOND SPLICE.

GIRDER RADIUS DATA

GIRDER	CL BRG. PIER 8 TO CL F.S. NO. 1	CL F.S. NO. 1 TO CL PIER 9	CL PIER 9 TO CL W. ABUT. BRG.
A	1193'-6	1193'-6	1193'-6
B	1204'-1	1204'-1	1204'-1
C	1214'-8	1214'-8	1214'-8
D	1225'-3	---	---
E	1235'-10	---	---

① In response to CnRFI-128, HRG recommended painting the members of cross-frame 12 in addition to the Girder E and Girder F between Pier 1 and FS 1. We did not recommend painting cross frames 4, 5, 13, and 14.

NOTES:

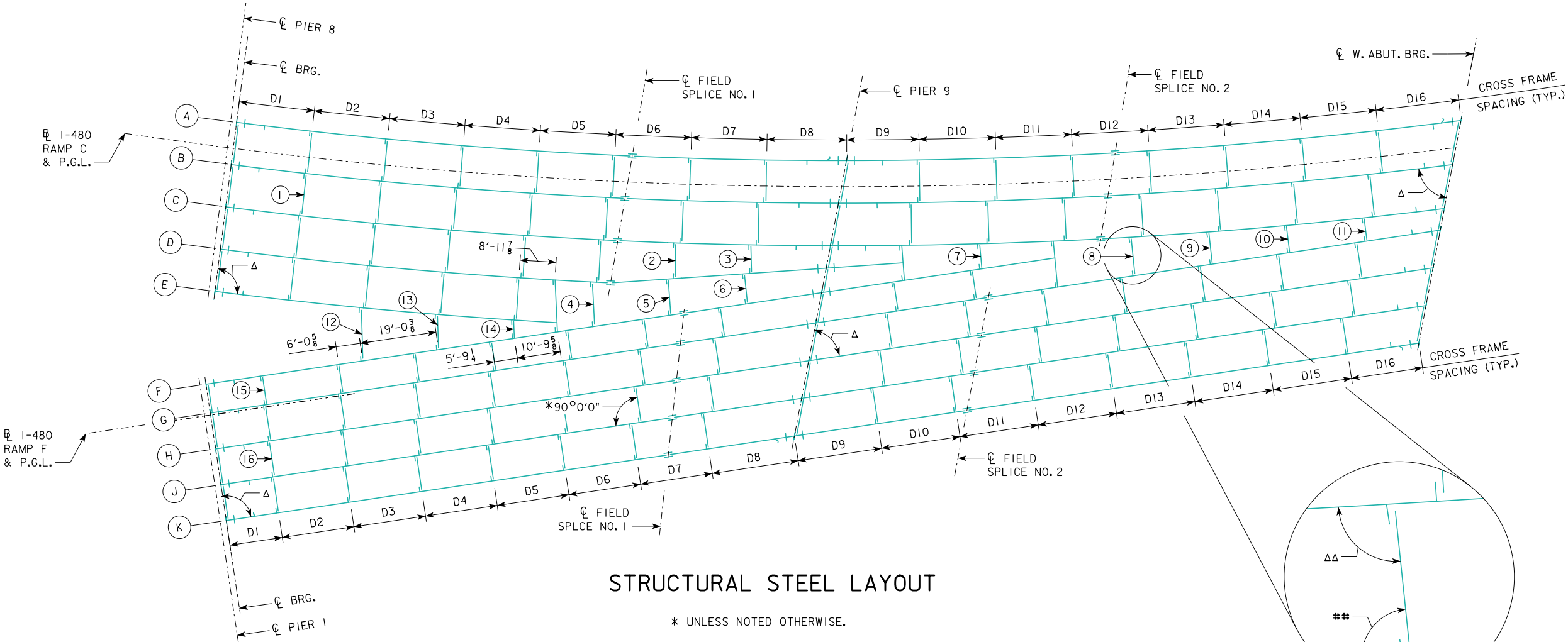
ALL CROSS FRAMES SHALL BE TYPE I UNLESS NOTED OTHERWISE.
ALL INTERMEDIATE STIFFENERS SHALL BE AT EQUAL SPACES BETWEEN CROSS FRAMES UNLESS NOTED OTHERWISE.
DIMENSIONS SHOWN ARE HORIZONTAL WITH NO ALLOWANCE FOR GRADE.
THE CONTRACTOR'S ERECTION PLANS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF IOWA. ERECTION PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO OR WITH STRUCTURAL STEEL SHOP DRAWINGS.
THE GIRDERS ARE TO BE FABRICATED FOR A STEEL DEAD LOAD FIT CONDITION. SEE SUPERSTRUCTURE DETAILS FOR PAINTING LIMITS.



BEARING STIFFENER ORIENTATION TABLE

LOCATION	GIRDER	Δ
WEST ABUTMENT	A	71°53'55"
	B	72°3'47"
	C	72°13'29"
	G, H, J, K	70°50'34"
PIER 9	A	79°14'47"
	B	79°20'31"
	C	79°26'9"
	D	70°50'34"
PIER 8	F, G, H, J, K	90°0'0"
	A, B, C, D, E	90°0'0"
PIER 1	F, G, H, J, K	90°0'0"

Δ MEASURED WITH RESPECT TO LOCAL TANGENT AND ℄ BRG. SEE WELDING DETAIL SHEETS.



STRUCTURAL STEEL LAYOUT

* UNLESS NOTED OTHERWISE.

TYPICAL CROSS FRAME ANGLE ORIENTATION

ANGLES MEASURED WITH RESPECT TO LOCAL TANGENT AND ℄ CROSS FRAME CHORDS (SEE CROSS FRAME STIFF. ORIENTATION TABLE)

CROSS FRAME SPACING DATA

BAY	SPCG. ALONG GIRDER	SPAN NO. 1								SPAN NO. 2							
		D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16
A-B	A	18'-10 1/4"	18'-10 3/8"	18'-10 3/8"	18'-10 3/8"	18'-10 3/8"	18'-10 3/8"	18'-10 3/8"	19'-10 3/8"	18'-0 1/2"	19'-0 1/2"	19'-0 1/2"	19'-0 1/2"	19'-0 1/2"	19'-0 1/2"	19'-0 1/2"	20'-9 1/4"
B-C	B	18'-9 3/8"	18'-9 1/2"	18'-9 3/8"	18'-9 3/8"	18'-9 3/8"	18'-9 3/8"	18'-9 3/8"	18'-9 1/4"	18'-0 1/2"	19'-0 3/8"	19'-0 3/8"	19'-0 3/8"	19'-0 3/8"	19'-0 3/8"	19'-0 3/8"	20'-8 3/4"
C-D	C	18'-8 1/2"	18'-8 1/2"	18'-8 1/2"	18'-8 1/2"	18'-8 1/2"	18'-7 3/8"	18'-8 1/2"	18'-9 1/8"	17'-8 3/8"	19'-4 3/8"	18'-3 3/8"	19'-4 1/8"	19'-4 1/4"	19'-4 3/8"	19'-4 3/8"	20'-1 1/4"
D-E/D-F	D	18'-7 1/2"	18'-7 5/8"	18'-7 1/2"	18'-7 1/2"	18'-3 1/4"	18'-10 3/8"	18'-11 1/2"	20'-4 5/8"	19'-1 3/4"	-	-	-	-	-	-	-
E-F	E	18'-9 3/8"	17'-9 1/2"	18'-11 1/4"	18'-11 5/8"	10'-9 1/2"	-	-	-	-	-	-	-	-	-	-	-
F-G	F	14'-2"	19'-2"	19'-2"	19'-2"	19'-2"	19'-2"	19'-2"	25'-5 1/4"	18'-1 3/4"	19'-8"	20'-9 1/4"	-	-	-	-	-
G-H	G	14'-2"	19'-2"	19'-2"	19'-2"	19'-2"	19'-2"	19'-2"	22'-10 7/8"	20'-8"	19'-8"	20'-4 3/4"	19'-5 1/8"	19'-5 1/8"	19'-5"	19'-4 7/8"	18'-4 7/8"
H-J	H	13'-10 5/8"	18'-9 5/8"	18'-9 5/8"	18'-9 5/8"	18'-9 5/8"	18'-9 5/8"	18'-9 5/8"	22'-3 3/8"	20'-11 5/8"	19'-8"	19'-8"	19'-8"	19'-8"	19'-8"	17'-10 1/8"	17'-10 1/8"
J-K	J	13'-5 5/8"	18'-4 7/8"	18'-4 7/8"	18'-4 7/8"	18'-4 7/8"	18'-4 7/8"	18'-4 7/8"	21'-11"	20'-11 5/8"	19'-8"	19'-8"	19'-8"	19'-8"	19'-8"	19'-8"	17'-10 1/8"
J-K	K	13'-1 1/2"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	21'-6 3/4"	20'-11 5/8"	19'-8"	19'-8"	19'-8"	19'-8"	19'-8"	19'-8"	17'-10 1/8"

CROSS FRAME STIFF. ORIENTATION TABLE

CROSS FRAME	ΔΔ	##
TYPE 1	90°0'0"	90°0'0"
TYPE 2	91°10'26"	94°41'38"
TYPE 3	92°34'0"	92°25'9"
TYPE 4	95°41'32"	95°39'59"
TYPE 5	90°22'11"	94°10'11"
TYPE 6	92°10'19"	92°22'3"
TYPE 7	93°25'38"	93°25'5"
TYPE 8	92°32'23"	92°31'47"
TYPE 9	92°4'54"	92°4'29"
TYPE 10	91°37'26"	91°37'10"
TYPE 11	91°9'59"	91°9'49"
TYPE 12	97°8'24"	96°51'42"
TYPE 13	96°34'22"	96°32'58"
TYPE 14	96°7'37"	96°6'56"
TYPE 15	90°0'0"	90°0'0"
TYPE 16	90°0'0"	90°0'0"

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE

153'-0 END SPANS

FRAMING PLAN

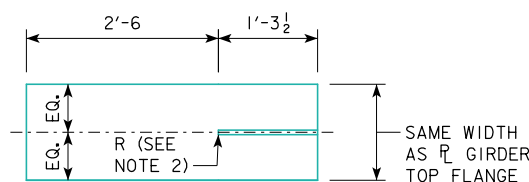
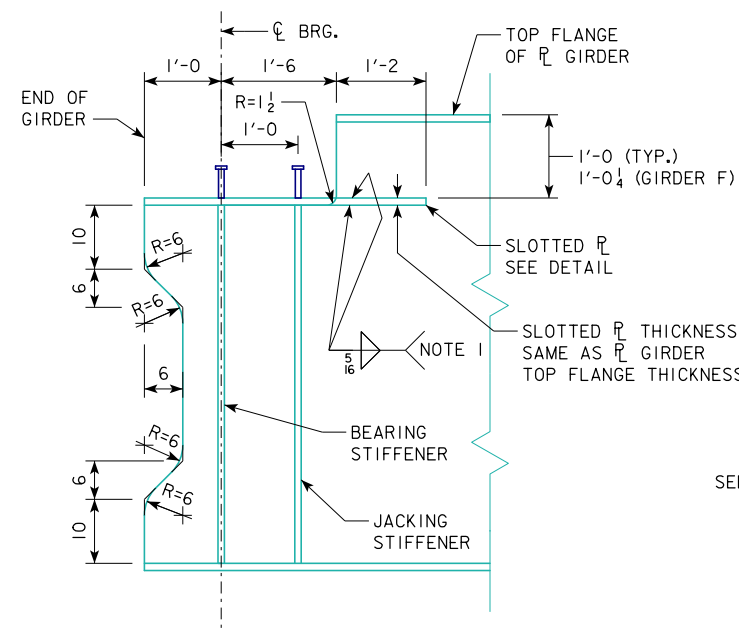
STA. 3554+77.00 (℄ 1-480 RAMP C) NOVEMBER, 2020

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

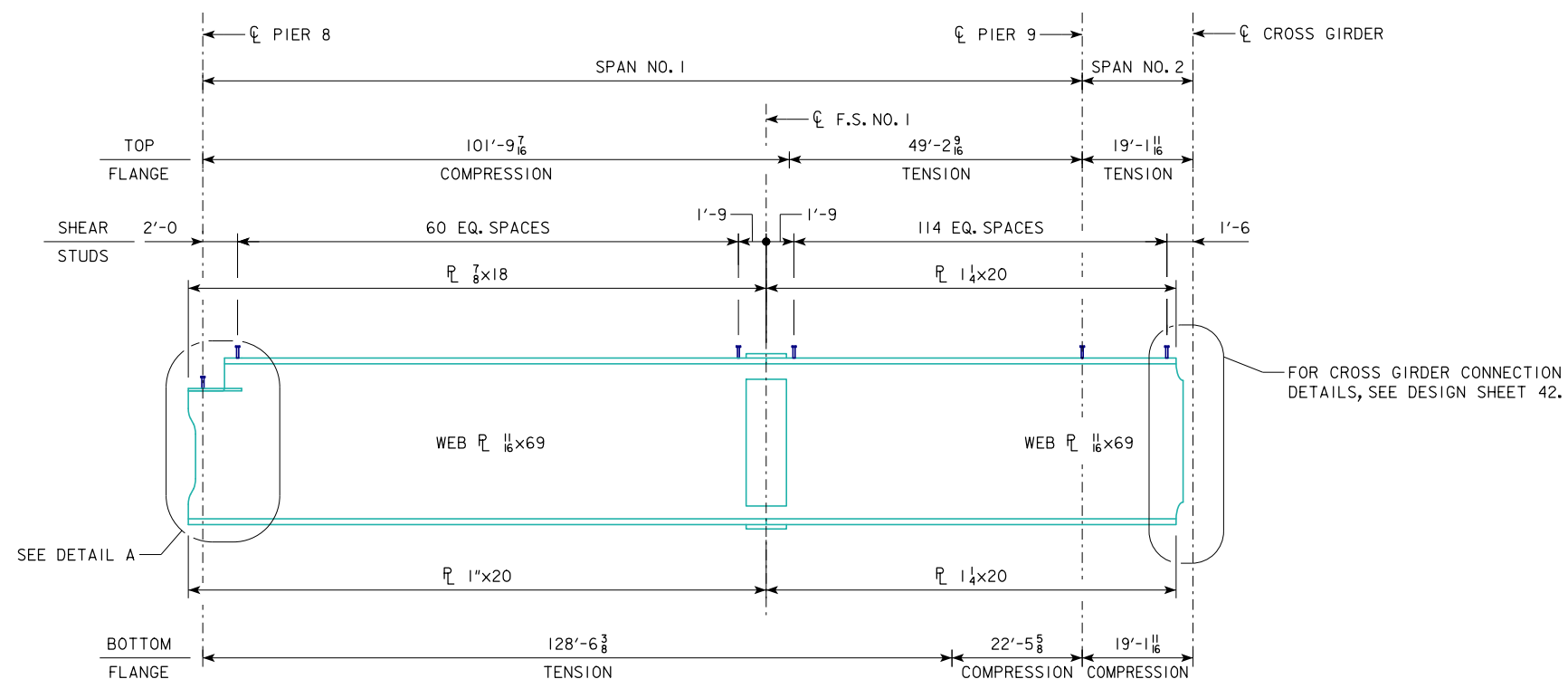
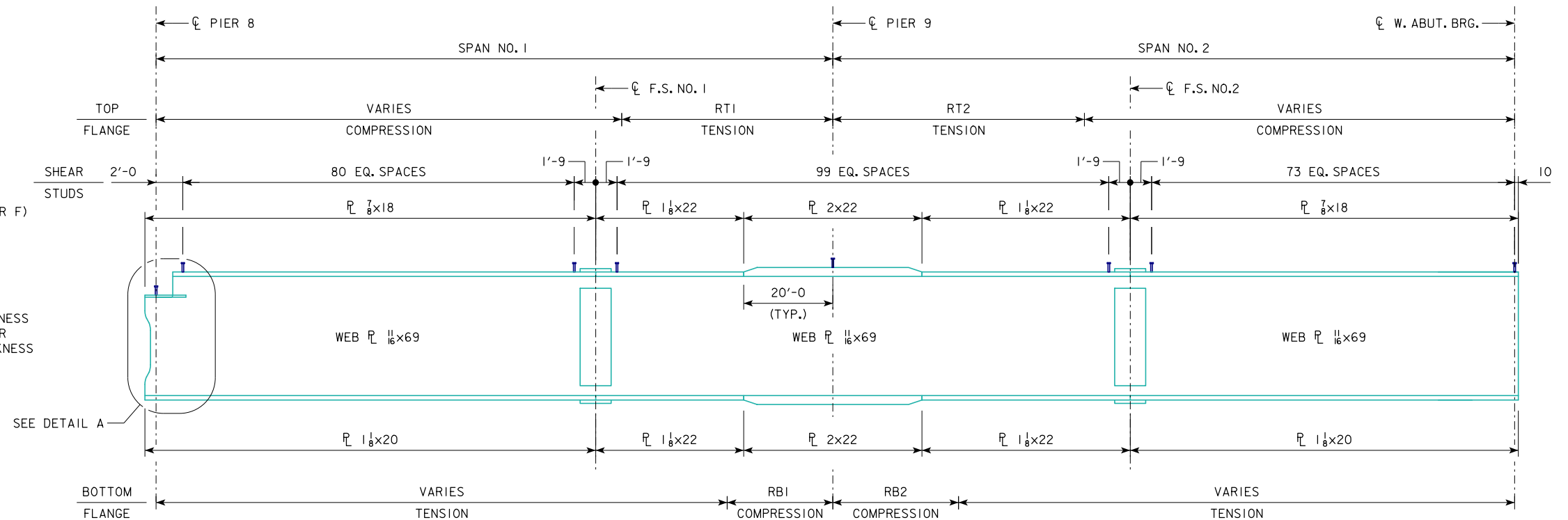
DESIGN SHEET NO. 28 OF 70 FILE NO. 30170 DESIGN NO. 1720





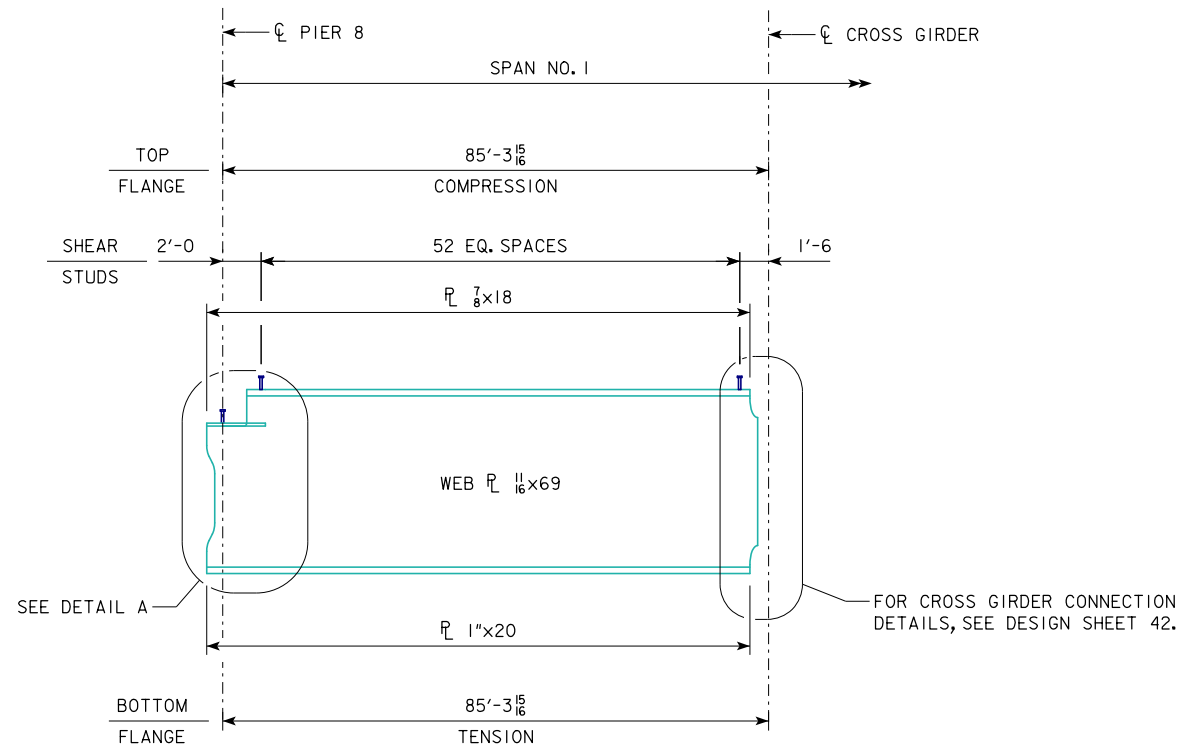
- NOTES:
1. TERMINATE WELD ON TOP FACE $\frac{1}{4}$ FROM EDGE OF WEB. FILL VOID WITH MOLTEN ZINC AFTER WELDING.
 2. GENERATE RADIUS BY DRILLING $\frac{3}{8}$ HOLE. GRIND AS REQUIRED TO FIT ONTO WEB.
 3. FIELD ADJUST SHEAR STUDS TO PROVIDE 4" CL. TO WELDED FLANGE SPLICE.

TENSION AND COMPRESSION ZONE DIMENSIONS				
GIRDER	RT1	RT2	RBI	RB2
A	50'-11	63'-1	24'-3	25'-5
B	47'-2	55'-4	25'-0	27'-7
C	45'-10	55'-4	24'-8	31'-7

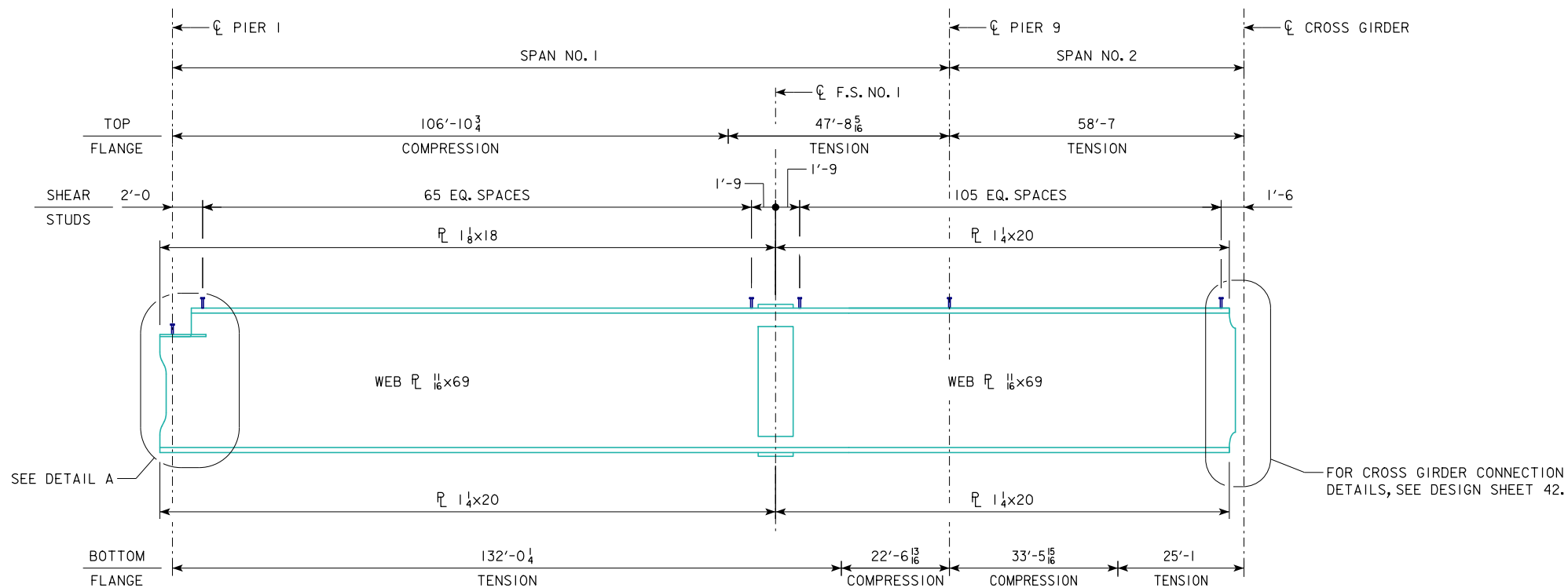


DESIGN FOR VARIABLE SKEW (L.A.)
306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
 153'-0 END SPANS
GIRDER ELEVATION
 STA. 3554+77.00 (CL 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 29 OF 70 FILE NO. 30170 DESIGN NO. 1720





GIRDER E ELEVATION

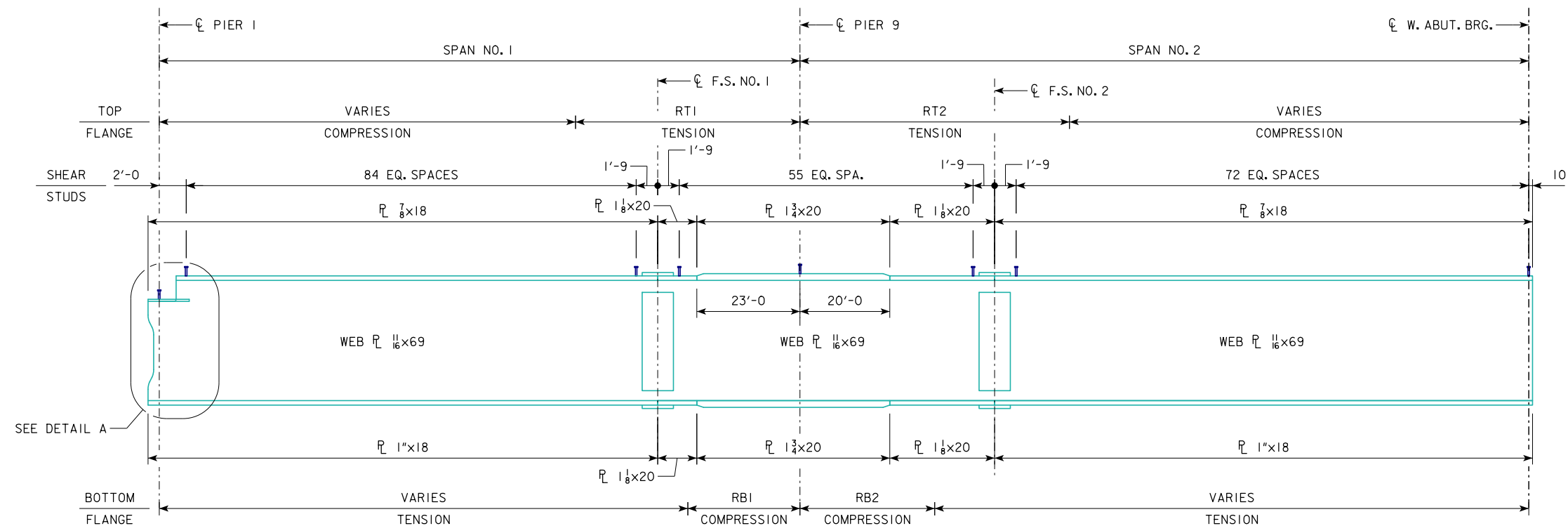


GIRDER F ELEVATION

NOTE:
FOR DETAIL A, SEE DESIGN SHEET 29.

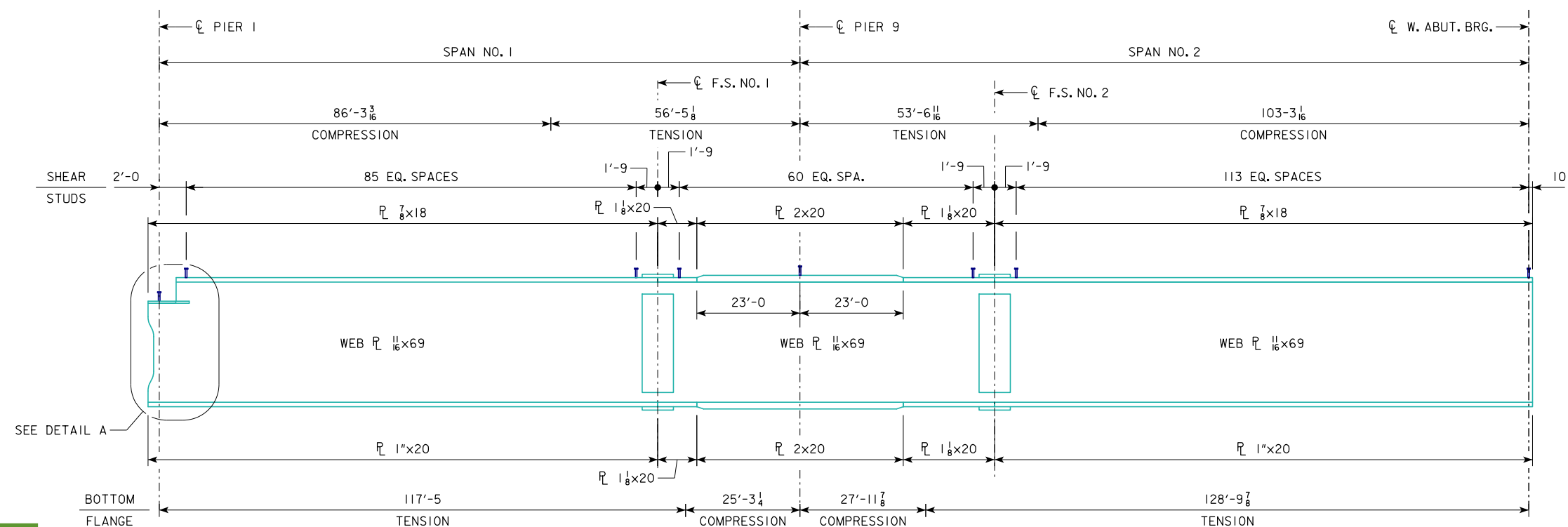


DESIGN FOR VARIABLE SKEW (L.A.)
**306'-0 x VARIES CONTINUOUS
 WELDED GIRDER BRIDGE**
 153'-0 END SPANS
GIRDER ELEVATION
 STA. 3554+77.00 (R 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 30 OF 70 FILE NO. 30170 DESIGN NO. 1720



GIRDER G, H, & J ELEVATION

TENSION AND COMPRESSION ZONE DIMENSIONS				
GIRDER	RT1	RT2	RB1	RB2
G	49'-5	64'-4	24'-6	29'-5
H	50'-3	56'-6	25'-4	27'-3
J	53'-1	54'-3	25'-5	26'-9



GIRDER K ELEVATION

NOTE:
FOR DETAIL A, SEE DESIGN SHEET 29.

DESIGN FOR VARIABLE SKEW (L.A.)
306'-0" x VARIES CONTINUOUS WELDED GIRDER BRIDGE
 153'-0" END SPANS
GIRDER ELEVATION
 STA. 3554+77.00 (CL 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 31 OF 70 FILE NO. 30170 DESIGN NO. 1720



MOMENT TABLE (FT-KIPS)

LOCATION	POSITIVE MOMENT SPAN NO. 1										NEGATIVE MOMENT PIER 9										POSITIVE MOMENT SPAN NO. 2									
	GIRD. A	GIRD. B	GIRD. C	GIRD. D	GIRD. E	GIRD. F	GIRD. G	GIRD. H	GIRD. J	GIRD. K	GIRD. A	GIRD. B	GIRD. C	GIRD. D	GIRD. E	GIRD. F	GIRD. G	GIRD. H	GIRD. J	GIRD. K	GIRD. A	GIRD. B	GIRD. C	GIRD. D	GIRD. E	GIRD. F	GIRD. G	GIRD. H	GIRD. J	GIRD. K
DC1	2293	2663	2681	1858	1756	1909	1660	2096	2098	2085	-3550	-3826	-3795	-2664	-	-2500	-3473	-3466	-3459	-3660	1862	2184	2231	-	-	44	1830	1696	1972	2266
DC2	288	266	207	178	142	141	162	199	235	270	-549	-481	-399	-237	-	-204	-300	-384	-457	-599	259	275	250	-	-	1	214	243	274	310
DW	300	331	307	309	259	280	257	271	272	269	-544	-582	-576	-396	-	-376	-508	-513	-509	-541	261	301	291	-	-	10	252	273	278	284
LL + IMPACT (TRUCK + LANE)	2546	2387	1948	2014	1489	2019	1736	1896	2237	2586	-3119	-2582	-2476	-1729	-	-1713	-2379	-2388	-2456	-3228	2773	2581	2547	-	-	805	2410	2633	2747	3168
LL + IMPACT (TANDEM + LANE)	2167	2036	1685	1735	1269	1727	1484	1638	1911	2192	-2280	-1809	-1817	-1209	-	-1226	-1695	-1715	-1811	-2327	2352	2195	2199	-	-	744	2111	2279	2328	2687
TOTAL	5427	5647	5143	4359	3646	4349	3815	4462	4842	5210	-7762	-7471	-7246	-5026	-	-4793	-6660	-6751	-6881	-8028	5155	5341	5319	-	-	860	4706	4845	5271	6028

REACTION TABLE (KIPS)

LOCATION	REACTION PIER 1 / PIER 8										REACTION PIER 9										REACTION WEST ABUT.									
	GIRD. A	GIRD. B	GIRD. C	GIRD. D	GIRD. E	GIRD. F	GIRD. G	GIRD. H	GIRD. J	GIRD. K	GIRD. A	GIRD. B	GIRD. C	GIRD. D	GIRD. E	GIRD. F	GIRD. G	GIRD. H	GIRD. J	GIRD. K	GIRD. A	GIRD. B	GIRD. C	GIRD. D	GIRD. E	GIRD. F	GIRD. G	GIRD. H	GIRD. J	GIRD. K
DC1	77	88	107	69	71	66	58	70	75	78	251	264	213	240	-	128	227	237	238	243	73	81	79	-	-	-	72	60	65	93
DC2	12	11	10	9	8	8	9	10	10	11	41	29	21	17	-	6	14	24	29	42	11	10	9	-	-	-	6	7	8	13
DW	10	11	11	11	10	9	9	9	10	10	35	36	32	35	-	20	34	34	33	31	10	11	10	-	-	-	9	10	10	10
LL + IMPACT (TRUCK + LANE)	107	118	96	103	81	74	84	92	109	105	233	206	159	154	-	112	160	179	210	222	100	112	79	-	-	-	86	87	107	130
LL + IMPACT (TANDEM + LANE)	95	110	86	97	72	65	79	84	104	93	171	173	126	128	-	93	129	145	169	167	85	101	71	-	-	-	78	76	97	109
TOTAL	206	228	224	192	170	157	160	181	204	204	560	535	425	446	-	266	435	474	510	538	194	214	177	-	-	-	173	164	190	246

MOMENT & REACTION NOTES:

MOMENTS AND REACTIONS ARE UNFACTORED.
DC1 COMPRISES ALL NON-COMPOSITE DEAD LOADS DUE TO GIRDER, CROSS
FRAMES, DIAPHRAGMS AND DECK DEAD WEIGHT.
DC2 COMPRISES DEAD LOAD DUE TO BARRIER RAILS.
DW COMPRISES COMPOSITE DEAD LOAD DUE TO FUTURE WEARING SURFACE.



DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE

153'-0 END SPANS

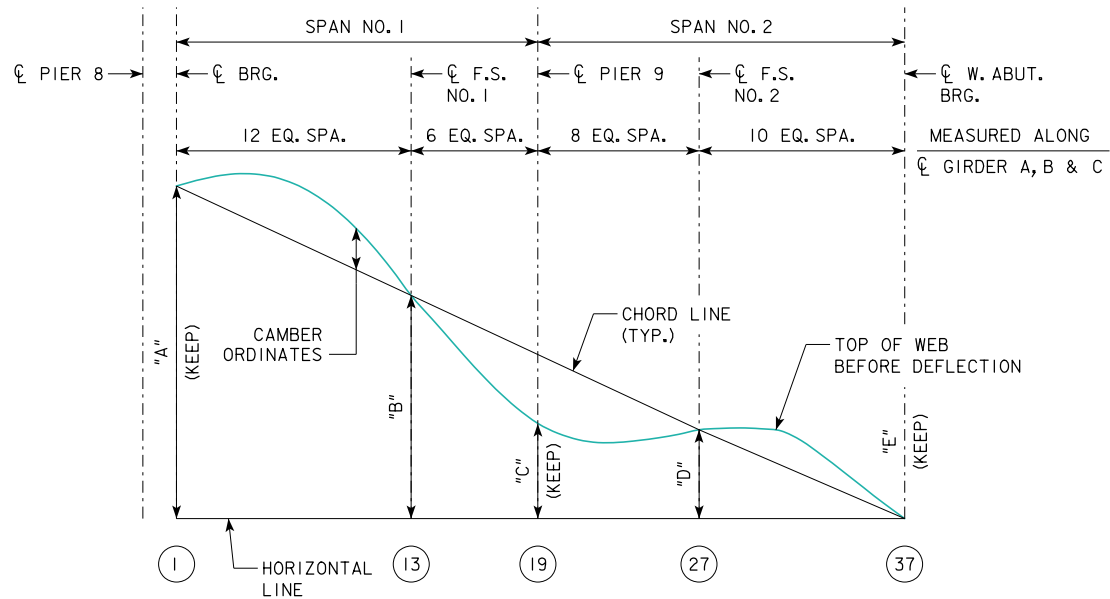
MOMENT & REACTION TABLE

STA. 3554+77.00 (E 1-480 RAMP C) NOVEMBER, 2020

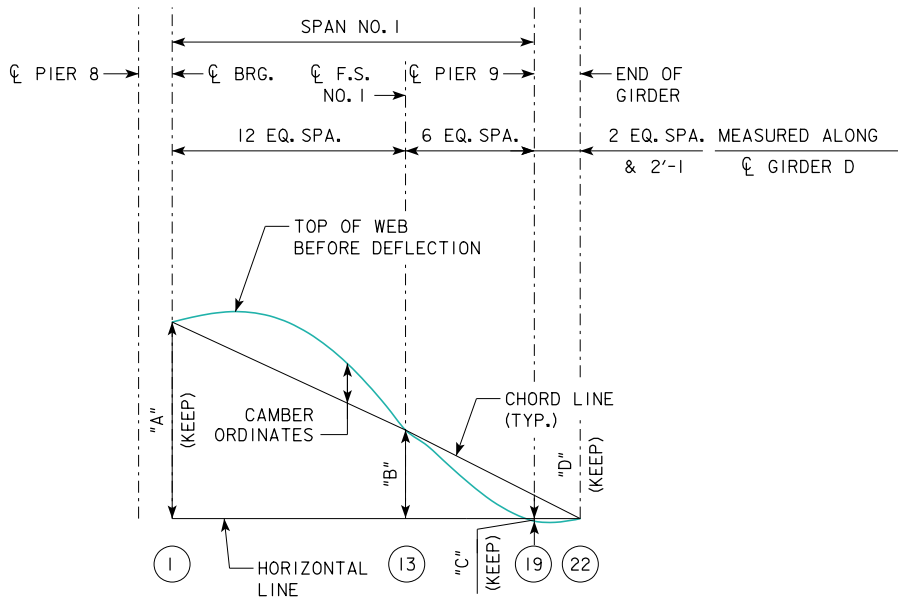
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

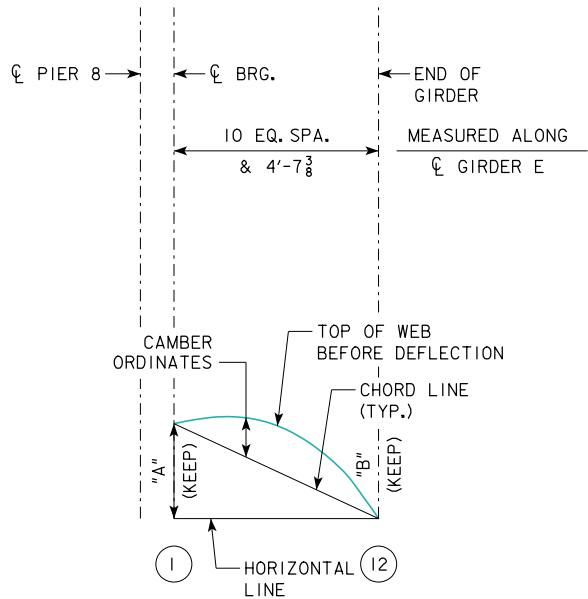
DESIGN SHEET NO. 32 OF 70 FILE NO. 30170 DESIGN NO. 1720



CAMBER & BLOCKING DIAGRAM
GIRDER A, B & C



CAMBER & BLOCKING DIAGRAM
GIRDER D



CAMBER & BLOCKING DIAGRAM
GIRDER E

CAMBER ORDINATES (INCHES)

LOCATION	CL BRG. PIER 8 CL BRG. PIER 1	SPAN NO. 1												CL F.S. NO. 1	SPAN NO. 1						CL BRG. PIER 9
	LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9	LINE 10	LINE 11	LINE 12	LINE 13	LINE 14	LINE 15	LINE 16	LINE 17	LINE 18	LINE 19		
GIRDER LINE A	0.00	0.32	0.62	0.87	1.07	1.20	1.26	1.23	1.12	0.94	0.68	0.36	0.00	-0.32	-0.68	-1.04	-1.35	-1.59	-1.73		
GIRDER LINE B	0.00	0.34	0.66	0.93	1.15	1.29	1.35	1.32	1.21	1.01	0.74	0.39	0.00	-0.34	-0.72	-1.10	-1.43	-1.68	-1.83		
GIRDER LINE C	0.00	0.36	0.70	0.98	1.20	1.35	1.42	1.39	1.27	1.07	0.78	0.42	0.00	-0.35	-0.75	-1.15	-1.50	-1.77	-1.94		
GIRDER LINE D	0.00	0.35	0.68	0.96	1.17	1.32	1.38	1.35	1.24	1.05	0.78	0.42	0.00	-0.05	-0.28	-0.53	-0.73	-0.82	-0.75		
GIRDER LINE E	0.00	0.32	0.61	0.86	1.05	1.17	1.20	1.15	1.01	0.78	0.29	0.00	-	-	-	-	-	-	-		
LOCATION	SPAN NO. 2								CL F.S. NO. 2	SPAN NO. 2								CL W.ABUT. BRG.			
	LINE 20	LINE 21	LINE 22	LINE 23	LINE 24	LINE 25	LINE 26	LINE 27	LINE 28	LINE 29	LINE 30	LINE 31	LINE 32	LINE 33	LINE 34	LINE 35	LINE 36	LINE 37			
GIRDER LINE A	-1.71	-1.59	-1.40	-1.16	-0.90	-0.65	-0.35	0.00	-0.16	-0.30	-0.44	-0.52	-0.49	-0.44	-0.39	-0.30	-0.18	0.00			
GIRDER LINE B	-1.81	-1.69	-1.48	-1.22	-0.94	-0.66	-0.35	0.00	0.04	0.08	0.12	0.16	0.09	0.03	-0.03	-0.07	-0.06	0.00			
GIRDER LINE C	-1.95	-1.86	-1.65	-1.36	-1.04	-0.71	-0.37	0.00	0.21	0.42	0.61	0.80	0.74	0.55	0.37	0.21	0.07	0.00			
GIRDER LINE D	-0.49	-0.11	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
GIRDER LINE E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			

BLOCKING DATA (FEET)

LOCATION	CL BRG. PIER 8 CL BRG. PIER 1	CL F.S. NO. 1	CL BRG. PIER 9	CL F.S. NO. 2	CL W. ABUT. BRG.
	"A"	"B"	"C"	"D"	"E"
GIRDER LINE A	13.47	8.91	6.30	3.38	0.00
GIRDER LINE B	13.48	8.98	6.39	3.49	0.00
GIRDER LINE C	13.47	9.03	6.47	3.59	0.00
GIRDER LINE D	7.95	3.57	0.86	0.00	-
GIRDER LINE E	3.84	*0.00	-	-	-

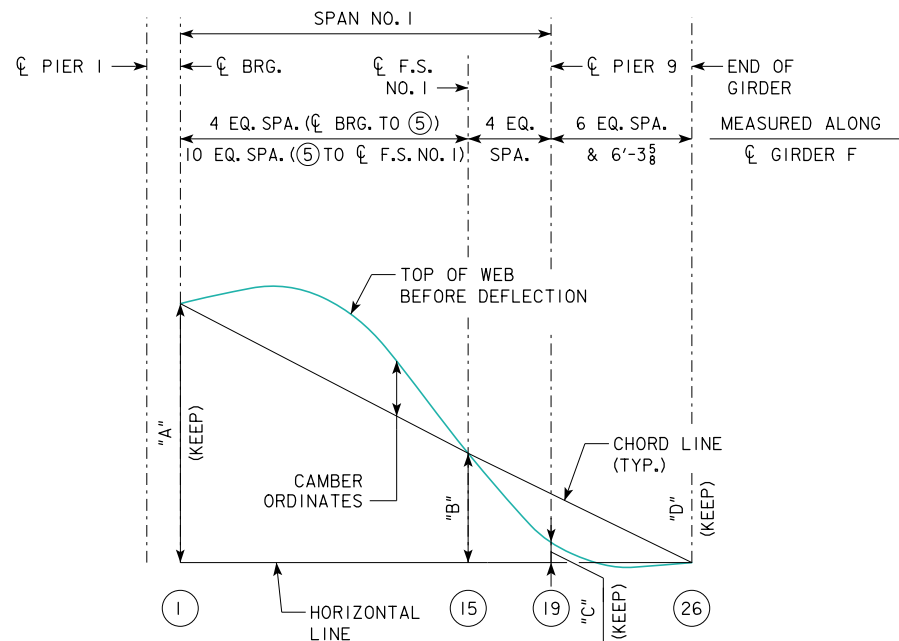
* GIRDER STOPS BEFORE SPLICE

NOTES:

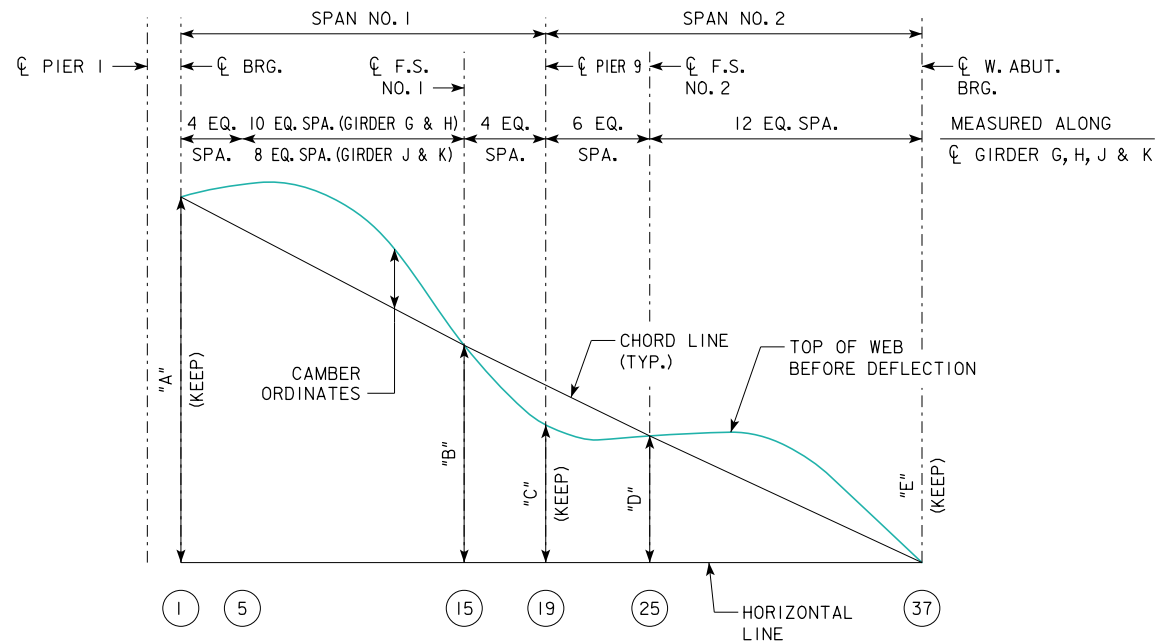
FOR DEFLECTION ORDINATES, SEE DESIGN SHEET 35.
CAMBER ORDINATES ARE MEASURED FROM A CHORD LINE BETWEEN FIELD SPLICES. UPWARD CAMBERS ARE POSITIVE.
DEFLECTION ORDINATES FOR CAMBER INCLUDE DEFLECTIONS DUE TO ALL DEAD LOADS EXCEPT FUTURE WEARING SURFACE. DOWNWARD DEFLECTIONS ARE POSITIVE.
TOP OF GIRDER ELEVATIONS FOR HAUNCH CALCULATIONS SHALL BE SURVEYED PRIOR TO THE PLACEMENT OF FORMS.
HAUNCH THICKENING DIAGRAM NOT PROVIDED BECAUSE THE HAUNCH DIMENSION FROM BOTTOM OF DECK TO TOP OF GIRDER WEB SHOULD THEORETICALLY BE A CONSTANT DIMENSION. (SEE TYPICAL DECK AND HAUNCH DETAIL, DESIGN SHEET 36). GIRDER WEB SHALL BE CUT TO COMPENSATE FOR DEAD LOAD DEFLECTION AND VERTICAL CURVE CORRECTION.
CAMBER VALUES MUST BE MAINTAINED AT THE CENTER LINE OF ABUTMENT AND PIER BEARINGS.
CAMBER VALUES ARE GIVEN FOR THE GIRDERS IN THE NO LOAD POSITION.
FOR INDIVIDUAL GIRDER SPAN LENGTHS AND DISTANCE TO FIELD SPLICES, SEE GIRDER FRAMING AND GIRDER ELEVATION SHEETS.
FOR LOCATION OF POINTS, SEE TOP OF DECK DIAGRAMS ON TOP OF DECK ELEVATIONS SHEETS.



DESIGN FOR VARIABLE SKEW (L.A.)
**306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
153'-0 END SPANS
CAMBER AND BLOCKING
STA. 3554+77.00 (CL I-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 33 OF 70 FILE NO. 30170 DESIGN NO. 1720



CAMBER & BLOCKING DIAGRAM
GIRDER F



CAMBER & BLOCKING DIAGRAM
GIRDER G, H, J & K

CAMBER ORDINATES (INCHES)

LOCATION	CL BRG. PIER 8 CL BRG. PIER 1	SPAN NO. 1													CL F.S. NO. 1	SPAN NO. 1			CL BRG. PIER 9	
	LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9	LINE 10	LINE 11	LINE 12	LINE 13	LINE 14	LINE 15	LINE 16	LINE 17	LINE 18	LINE 19	
GIRDER LINE F	0.00	0.45	0.88	1.26	1.59	1.86	2.03	2.14	2.17	2.02	1.64	1.23	0.81	0.39	0.00	-0.54	-0.94	-1.26	-1.46	
GIRDER LINE G	0.00	0.49	0.95	1.37	1.73	2.05	2.29	2.45	2.53	2.36	1.88	1.41	0.92	0.44	0.00	-0.60	-0.89	-1.12	-1.25	
GIRDER LINE H	0.00	0.44	0.86	1.23	1.54	1.80	1.98	2.09	2.12	1.96	1.44	0.92	0.43	0.19	0.00	-0.66	-0.98	-1.19	-1.29	
GIRDER LINE J	0.00	0.39	0.75	1.07	1.33	1.57	1.70	-	1.72	1.58	0.90	0.25	-	-0.09	0.00	-0.65	-1.05	-1.24	-1.33	
GIRDER LINE K	0.00	0.35	0.68	0.95	1.17	1.37	1.45	-	1.44	1.34	0.66	0.00	-	-0.44	0.00	-0.65	-1.07	-1.25	-1.33	
LOCATION	SPAN NO. 2					CL F.S. NO. 2	SPAN NO. 2												CL W. ABUT. BRG.	
	LINE 20	LINE 21	LINE 22	LINE 23	LINE 24	LINE 25	LINE 26	LINE 27	LINE 28	LINE 29	LINE 30	LINE 31	LINE 32	LINE 33	LINE 34	LINE 35	LINE 36	LINE 37		
GIRDER LINE F	-1.52	-1.44	-1.25	-0.95	-0.62	-0.27	0.00	-	-	-	-	-	-	-	-	-	-	-		
GIRDER LINE G	-1.22	-1.10	-0.90	-0.64	-0.34	0.00	0.29	0.58	0.89	1.20	1.27	1.32	1.41	0.99	0.61	0.31	0.10	0.00		
GIRDER LINE H	-1.24	-1.10	-0.89	-0.63	-0.32	0.00	0.48	0.94	1.45	1.56	1.67	1.80	1.92	1.64	1.15	0.70	0.31	0.00		
GIRDER LINE J	-1.27	-1.11	-0.90	-0.63	-0.32	0.00	0.76	1.48	2.19	2.40	2.40	2.40	2.39	2.19	1.57	0.98	0.45	0.00		
GIRDER LINE K	-1.26	-1.10	-0.89	-0.62	-0.32	0.00	1.02	2.01	2.94	3.42	3.29	3.14	2.99	2.84	2.07	1.32	0.63	0.00		

BLOCKING DATA (FEET)

LOCATION	CL BRG. PIER 8 CL BRG. PIER 1	CL F.S. NO. 1	CL BRG. PIER 9	CL F.S. NO. 2	CL W. ABUT. BRG.
	"A"	"B"	"C"	"D"	"E"
GIRDER LINE F	10.48	4.43	2.65	* 0.00	-
GIRDER LINE G	14.82	8.81	7.08	5.14	0.00
GIRDER LINE H	14.27	8.43	6.82	5.00	0.00
GIRDER LINE J	13.78	8.10	6.60	4.92	0.00
GIRDER LINE K	13.28	7.74	6.37	4.82	0.00

* GIRDER STOPS BEFORE SPLICE



DESIGN FOR VARIABLE SKEW (L.A.)
**306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
153'-0 END SPANS
CAMBER AND BLOCKING
STA. 3554+77.00 (CL 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 34 OF 70 FILE NO. 30170 DESIGN NO. 1720

DEFLECTION ORDINATES DUE TO WEIGHT OF DECK AND BARRIERS (DOWNWARD DEFLECTION ARE POSITIVE) (INCHES)																								
LOCATION	⌒ BRG. PIER 8 ⌒ BRG. PIER 1	SPAN NO. 1																	⌒ BRG. PIER 9					
	LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9	LINE 10	LINE 11	LINE 12	LINE 13	LINE 14	LINE 15	LINE 16	LINE 17	LINE 18	LINE 19					
GIRDER LINE A	0.00	0.29	0.57	0.83	1.05	1.22	1.34	1.42	1.44	1.41	1.34	1.23	* 1.09	0.90	0.67	0.44	0.24	0.08	0.00					
GIRDER LINE B	0.00	0.32	0.62	0.90	1.13	1.32	1.45	1.53	1.56	1.53	1.45	1.33	* 1.18	0.97	0.72	0.47	0.25	0.09	0.00					
GIRDER LINE C	0.00	0.34	0.66	0.95	1.20	1.40	1.55	1.63	1.66	1.63	1.55	1.43	* 1.26	1.04	0.77	0.51	0.28	0.10	0.00					
GIRDER LINE D	0.00	0.33	0.65	0.94	1.18	1.38	1.52	1.61	1.64	1.63	1.56	1.44	* 1.28	1.05	0.79	0.53	0.29	0.10	0.00					
GIRDER LINE E	0.00	0.32	0.62	0.89	1.12	1.31	1.44	1.52	1.55	1.53	1.48	1.44	-	-	-	-	-	-	-					
GIRDER LINE F	0.00	0.30	0.58	0.83	1.05	1.24	1.38	1.47	1.50	1.50	1.44	1.33	1.17	0.97	* 0.73	0.49	0.27	0.10	0.00					
GIRDER LINE G	0.00	0.30	0.58	0.83	1.05	1.23	1.36	1.44	1.47	1.45	1.38	1.27	1.11	0.90	* 0.67	0.44	0.24	0.09	0.00					
GIRDER LINE H	0.00	0.29	0.57	0.82	1.03	1.20	1.32	1.39	1.41	1.38	1.30	1.19	1.03	0.83	* 0.61	0.38	0.20	0.06	0.00					
GIRDER LINE J	0.00	0.28	0.55	0.79	0.99	1.17	1.28	-	1.32	1.28	1.18	1.03	-	0.81	* 0.54	0.34	0.17	0.05	0.00					
GIRDER LINE K	0.00	0.27	0.53	0.75	0.94	1.10	1.20	-	1.22	1.18	1.09	0.94	-	0.72	* 0.48	0.29	0.13	0.03	0.00					
LOCATION	SPAN NO. 2																	⌒ W. ABUT. BRG.						
	LINE 20	LINE 21	LINE 22	LINE 23	LINE 24	LINE 25	LINE 26	LINE 27	LINE 28	LINE 29	LINE 30	LINE 31	LINE 32	LINE 33	LINE 34	LINE 35	LINE 36	LINE 37						
GIRDER LINE A	0.03	0.13	0.28	0.47	0.66	0.84	1.01	*1.14	1.25	1.31	1.31	1.27	1.16	1.01	0.80	0.56	0.29	0.00						
GIRDER LINE B	0.03	0.14	0.30	0.50	0.71	0.91	1.08	*1.23	1.35	1.41	1.41	1.36	1.24	1.07	0.85	0.60	0.31	0.00						
GIRDER LINE C	0.01	0.10	0.27	0.48	0.72	0.95	1.16	*1.33	1.46	1.52	1.52	1.45	1.32	1.14	0.91	0.63	0.32	0.00						
GIRDER LINE D	0.02	0.10	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
GIRDER LINE E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
GIRDER LINE F	0.00	0.09	0.26	0.48	0.73	0.97	1.15	-	-	-	-	-	-	-	-	-	-	-						
GIRDER LINE G	0.01	0.09	0.22	0.38	0.58	* 0.80	1.08	1.32	1.50	1.60	1.62	1.57	1.45	1.27	1.02	0.71	0.37	0.00						
GIRDER LINE H	0.04	0.14	0.29	0.48	0.69	* 0.90	1.16	1.40	1.58	1.69	1.73	1.68	1.56	1.35	1.08	0.76	0.39	0.00						
GIRDER LINE J	0.05	0.17	0.34	0.54	0.76	* 0.98	1.25	1.48	1.66	1.77	1.80	1.75	1.62	1.41	1.13	0.79	0.41	0.00						
GIRDER LINE K	0.06	0.19	0.37	0.58	0.81	* 1.04	1.33	1.56	1.75	1.86	1.89	1.83	1.70	1.48	1.19	0.83	0.43	0.00						
DEFLECTION ORDINATES DUE TO WEIGHT OF STRUCTURAL STEEL (DOWNWARD DEFLECTION ARE POSITIVE) (INCHES)																								
LOCATION	⌒ BRG. PIER 8 ⌒ BRG. PIER 1	SPAN NO. 1																	⌒ BRG. PIER 9					
	LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9	LINE 10	LINE 11	LINE 12	LINE 13	LINE 14	LINE 15	LINE 16	LINE 17	LINE 18	LINE 19					
GIRDER LINE A	0.00	0.16	0.31	0.45	0.56	0.65	0.71	0.75	0.75	0.72	0.67	0.60	* 0.51	0.40	0.29	0.19	0.10	0.04	0.00					
GIRDER LINE B	0.00	0.17	0.33	0.48	0.61	0.71	0.78	0.82	0.83	0.80	0.75	0.68	* 0.58	0.47	0.34	0.23	0.13	0.05	0.00					
GIRDER LINE C	0.00	0.18	0.35	0.51	0.64	0.75	0.83	0.88	0.89	0.88	0.83	0.75	* 0.66	0.53	0.40	0.28	0.16	0.07	0.00					
GIRDER LINE D	0.00	0.19	0.36	0.52	0.66	0.78	0.86	0.92	0.94	0.93	0.90	0.83	* 0.73	0.60	0.46	0.31	0.18	0.07	0.00					
GIRDER LINE E	0.00	0.19	0.37	0.53	0.67	0.79	0.87	0.93	0.95	0.95	0.92	0.90	-	-	-	-	-	-	-					
GIRDER LINE F	0.00	0.19	0.37	0.54	0.68	0.80	0.89	0.94	0.97	0.96	0.92	0.84	0.73	0.60	* 0.45	0.31	0.18	0.08	0.00					
GIRDER LINE G	0.00	0.18	0.35	0.51	0.65	0.76	0.84	0.89	0.90	0.88	0.83	0.75	0.64	0.52	* 0.39	0.27	0.15	0.06	0.00					
GIRDER LINE H	0.00	0.17	0.33	0.47	0.59	0.69	0.75	0.79	0.79	0.76	0.71	0.63	0.53	0.42	* 0.31	0.20	0.11	0.04	0.00					
GIRDER LINE J	0.00	0.15	0.29	0.42	0.52	0.61	0.66	-	0.66	0.63	0.55	0.45	-	0.34	* 0.22	0.14	0.07	0.02	0.00					
GIRDER LINE K	0.00	0.13	0.26	0.36	0.45	0.51	0.54	-	0.53	0.49	0.42	0.33	-	0.23	* 0.13	0.07	0.03	0.00	0.00					
LOCATION	SPAN NO. 2																	⌒ W. ABUT. BRG.						
	LINE 20	LINE 21	LINE 22	LINE 23	LINE 24	LINE 25	LINE 26	LINE 27	LINE 28	LINE 29	LINE 30	LINE 31	LINE 32	LINE 33	LINE 34	LINE 35	LINE 36	LINE 37						
GIRDER LINE A	0.01	0.05	0.11	0.19	0.27	0.36	0.44	* 0.52	0.57	0.61	0.62	0.60	0.56	0.49	0.39	0.28	0.14	0.00						
GIRDER LINE B	0.00	0.03	0.08	0.15	0.24	0.33	0.43	* 0.51	0.57	0.62	0.64	0.62	0.58	0.51	0.41	0.28	0.15	0.00						
GIRDER LINE C	-0.02	-0.01	0.04	0.11	0.20	0.30	0.41	* 0.50	0.58	0.63	0.66	0.65	0.60	0.53	0.43	0.30	0.15	0.00						
GIRDER LINE D	-0.02	-0.01	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
GIRDER LINE E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
GIRDER LINE F	-0.03	-0.01	0.04	0.12	0.21	0.32	0.40	-	-	-	-	-	-	-	-	-	-	-						
GIRDER LINE G	-0.01	0.01	0.05	0.10	0.17	* 0.26	0.37	0.48	0.57	0.64	0.68	0.69	0.65	0.58	0.47	0.33	0.17	0.00						
GIRDER LINE H	0.01	0.04	0.09	0.16	0.24	* 0.33	0.45	0.56	0.65	0.72	0.75	0.74	0.70	0.62	0.50	0.35	0.18	0.00						
GIRDER LINE J	0.02	0.07	0.13	0.21	0.30	* 0.40	0.53	0.64	0.73	0.80	0.82	0.81	0.76	0.66	0.53	0.37	0.19	0.00						
GIRDER LINE K	0.04	0.09	0.17	0.26	0.36	* 0.46	0.60	0.72	0.81	0.88	0.90	0.89	0.83	0.73	0.59	0.41	0.21	0.00						
NOTE: * INDICATES DEFLECTION AT LOCATION OF FIELD SPLICE													<div>DESIGN FOR VARIABLE SKEW (L.A.) 306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE 153'-0 END SPANS CAMBER AND BLOCKING STA. 3554+77.00 (⌒ 1-480 RAMP C) POTTAWATTAMIE COUNTY IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION DESIGN SHEET NO. <u>35</u> OF <u>70</u> FILE NO. <u>30170</u> DESIGN NO. <u>1720</u></div>											
DESIGN TEAM HR GREEN, INC.												POTTAWATTAMIE COUNTY					PROJECT NUMBER IM-480-1(166)--13-78					SHEET NUMBER 36		

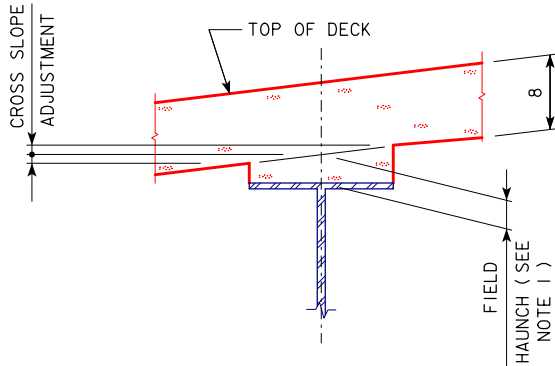
TABLE OF GIRDER LINE HAUNCH ELEVATIONS

LOCATION	℄ BRG. PIER 8 ℄ BRG. PIER 1	SPAN NO. 1																	℄ BRG. PIER 9
	LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9	LINE 10	LINE 11	LINE 12	LINE 13	LINE 14	LINE 15	LINE 16	LINE 17	LINE 18	LINE 19
GIRDER LINE A	1020.97	1020.61	1020.26	1019.90	1019.53	1019.17	1018.80	1018.43	1018.05	1017.66	1017.28	1016.89	* 1016.50	1016.07	1015.64	1015.21	1014.78	1014.36	1013.94
GIRDER LINE B	1021.50	1021.15	1020.80	1020.45	1020.09	1019.73	1019.37	1019.00	1018.63	1018.25	1017.87	1017.48	* 1017.09	1016.67	1016.25	1015.82	1015.40	1014.98	1014.56
GIRDER LINE C	1022.03	1021.69	1021.34	1021.00	1020.65	1020.29	1019.94	1019.57	1019.20	1018.83	1018.46	1018.07	* 1017.69	1017.27	1016.85	1016.43	1016.01	1015.59	1015.18
GIRDER LINE D	1022.53	1022.20	1021.86	1021.51	1021.17	1020.82	1020.47	1020.11	1019.75	1019.38	1019.01	1018.63	* 1018.26	1017.81	1017.34	1016.87	1016.41	1015.96	1015.51
GIRDER LINE E	1022.85	1022.52	1022.18	1021.84	1021.50	1021.16	1020.81	1020.45	1020.10	1019.73	1019.35	1019.13	-	-	-	-	-	-	-
GIRDER LINE F	1023.51	1023.11	1022.72	1022.32	1021.92	1021.51	1021.08	1020.66	1020.23	1019.79	1019.33	1018.87	1018.42	1017.96	* 1017.51	1017.07	1016.64	1016.22	1015.80
GIRDER LINE G	1023.64	1023.25	1022.85	1022.46	1022.06	1021.65	1021.24	1020.82	1020.41	1019.97	1019.51	1019.05	1018.60	1018.14	* 1017.69	1017.25	1016.83	1016.42	1016.01
GIRDER LINE H	1023.48	1023.09	1022.69	1022.29	1021.89	1021.50	1021.10	1020.69	1020.29	1019.87	1019.42	1018.97	1018.53	1018.11	* 1017.69	1017.28	1016.89	1016.51	1016.13
GIRDER LINE J	1023.30	1022.91	1022.51	1022.11	1021.71	1021.23	1020.74	-	1020.25	1019.74	1019.20	1018.66	-	1018.14	* 1017.66	1017.28	1016.92	1016.57	1016.23
GIRDER LINE K	1023.12	1022.72	1022.33	1021.93	1021.53	1021.06	1020.58	-	1020.10	1019.62	1019.09	1018.56	-	1018.05	* 1017.62	1017.27	1016.94	1016.62	1016.31

LOCATION	SPAN NO. 2																	℄ W. ABUT. BRG.	
	LINE 20	LINE 21	LINE 22	LINE 23	LINE 24	LINE 25	LINE 26	LINE 27	LINE 28	LINE 29	LINE 30	LINE 31	LINE 32	LINE 33	LINE 34	LINE 35	LINE 36	LINE 37	
GIRDER LINE A	1013.56	1013.18	1012.81	1012.44	1012.07	1011.70	1011.33	* 1010.97	1010.60	1010.23	1009.87	1009.51	1009.17	1008.83	1008.49	1008.15	1007.82	1007.50	
GIRDER LINE B	1014.18	1013.81	1013.44	1013.07	1012.71	1012.34	1011.97	* 1011.61	1011.25	1010.88	1010.52	1010.16	1009.80	1009.43	1009.07	1008.72	1008.37	1008.02	
GIRDER LINE C	1014.80	1014.43	1014.06	1013.70	1013.34	1012.97	1012.61	* 1012.26	1011.89	1011.53	1011.17	1010.81	1010.44	1010.05	1009.67	1009.30	1008.92	1008.56	
GIRDER LINE D	1015.10	1014.69	1014.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GIRDER LINE E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GIRDER LINE F	1015.38	1014.98	1014.58	1014.18	1013.79	1013.40	1013.12	-	-	-	-	-	-	-	-	-	-	-	
GIRDER LINE G	1015.67	1015.33	1015.00	1014.68	1014.35	* 1014.03	1013.61	1013.19	1012.77	1012.36	1011.92	1011.49	1011.07	1010.60	1010.14	1009.69	1009.25	1008.82	
GIRDER LINE H	1015.82	1015.51	1015.20	1014.89	1014.59	* 1014.29	1013.89	1013.50	1013.11	1012.69	1012.27	1011.85	1011.44	1011.00	1010.54	1010.09	1009.65	1009.21	
GIRDER LINE J	1015.94	1015.65	1015.37	1015.08	1014.80	* 1014.53	1014.16	1013.79	1013.42	1013.01	1012.59	1012.17	1011.76	1011.33	1010.87	1010.41	1009.96	1009.52	
GIRDER LINE K	1016.04	1015.78	1015.51	1015.25	1015.00	* 1014.74	1014.40	1014.06	1013.72	1013.34	1012.92	1012.50	1012.08	1011.66	1011.20	1010.74	1010.28	1009.84	

NOTE:

* INDICATES GIRDER LINE HAUNCH ELEVATION AT LOCATION OF FIELD SPLICE



FIELD HAUNCH DETAIL

NOTES:

1. TO CALCULATE FIELD HAUNCH REQUIRED AT EACH LOCATION, SURVEY THE BEAM TOPS CONSISTENT WITH THE SPACINGS SHOWN ON THE "TOP OF DECK ELEVATIONS LAYOUT". SUBTRACT THE SURVEYED BEAM SHOT FROM THE "GIRDER LINE HAUNCH ELEVATION". THIS VALUE WILL BE THE HAUNCH NEEDED (SEE "FIELD HAUNCH" IN HAUNCH DETAIL). THE "GIRDER LINE HAUNCH ELEVATION" INCLUDES ADJUSTMENTS FOR DECK THICKNESSES AND ANTICIPATED DEFLECTIONS. NO ADDITIONAL CALCULATIONS ARE REQUIRED. IF THE FIELD HAUNCH EXCEEDS THE MAXIMUMS AND MINIMUMS SHOWN IN INCHES AND DECIMALS OF FEET IN THE MISCELLANEOUS DATA TABLE, ADJUSTMENTS TO THE GRADE OR ADDITIONAL HAUNCH REINFORCEMENT WILL BE REQUIRED.
2. FIELD HAUNCHES ARE DETERMINED USING SURVEYED TOP OF GIRDER TOP FLANGE ELEVATIONS AND "GIRDER LINE HAUNCH ELEVATION" DATA. ALLOWABLE MAXIMUM AND MINIMUM "FIELD HAUNCH" VALUES ARE GIVEN IN THE "MISCELLANEOUS DATA" TABLE. "CROSS SLOPE ADJUSTMENT" VALUES WILL AID THE CONTRACTOR IN DETERMINING ACTUAL FORMED HAUNCH DIMENSIONS AT THE EDGES OF THE TOP FLANGE.
3. DOWNWARD DEFLECTIONS ARE POSITIVE.
4. HAUNCH LOCATIONS ARE AT THE SAME LOCATION AS THE ENCIRCLED LETTERS AND NUMBERS SHOWN ON TOP OF DECK ELEVATIONS SHEET.



DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE

153'-0 END SPANS

FIELD HAUNCH DATA

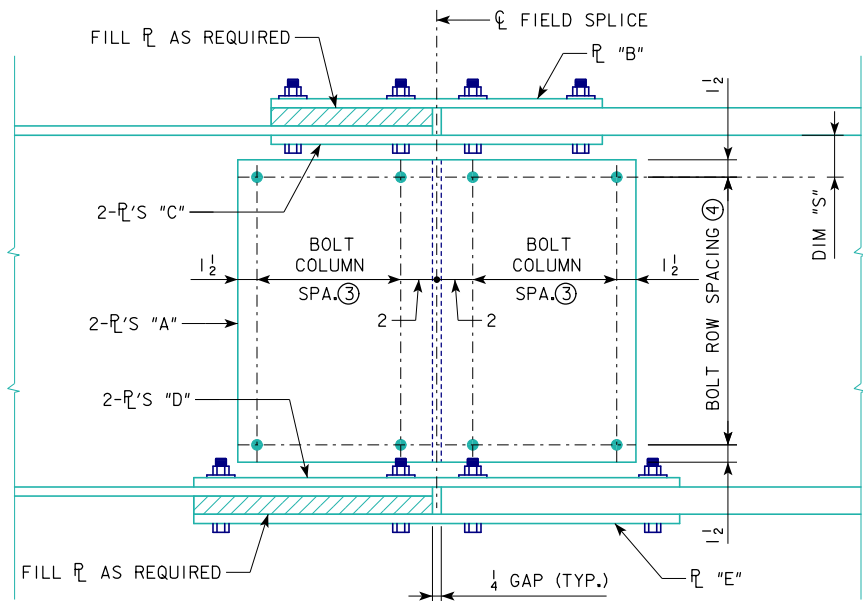
STA. 3554+77.00 (℄ I-480 RAMP C) NOVEMBER, 2020

POTTAWATTAMIE COUNTY

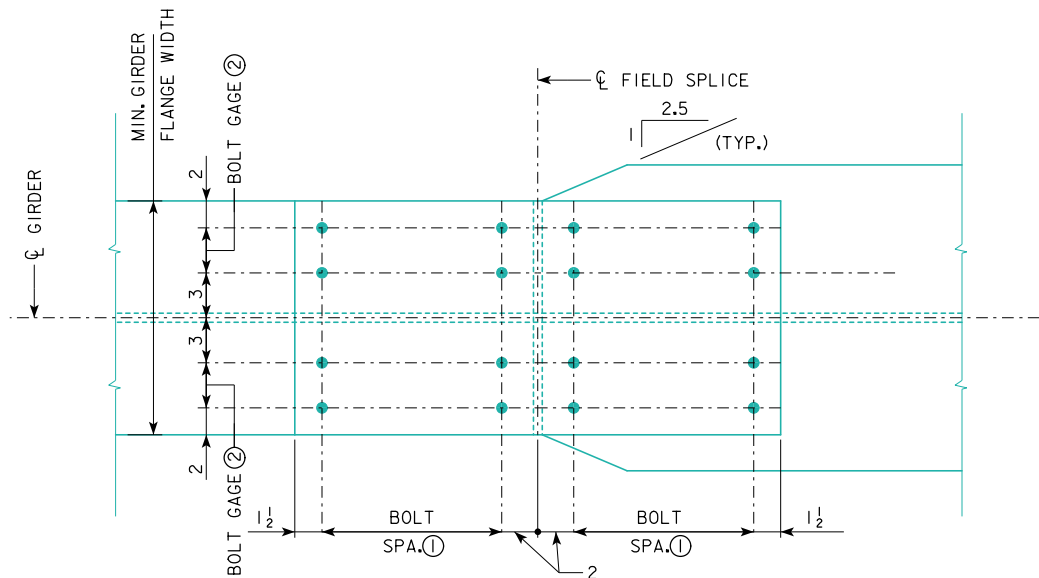
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 36 OF 70 FILE NO. 30170 DESIGN NO. 1720

[illegible]



FIELD SPLICE ELEVATION



FLANGE SPLICE PLAN

FIELD SPLICE - SCHEDULE												
FIELD SPLICE NO.	GIRDER	TOP FLANGE SPLICE										
		MIN. GIRDER FLANGE WIDTH	PLATE "B"			PLATE "C" (2 REQ'D)			BOLT SPACING			BOLT GAGE
									①			
			† (in.)	w (in.)	L	† (in.)	w (in.)	L	# OF SPC.	SPC. (in.)	L (in.)	
1 - 2	A, B, C, G, H, J, K	18	7 16	18	2'-7	1 2	8	2'-7	4	3	12	4
1	D	18	7 16	18	2'-7	1 2	8	2'-7	4	3	12	4
1	F	18	9 16	18	2'-7	5 8	8	2'-7	4	3	12	4

FIELD SPLICE - SCHEDULE											
FIELD SPLICE NO.	GIRDER	WEB PLATE SPLICE									
		WEB PLATE "A" (2 REQ'D)			BOLT COLUMN SPACING ③			BOLT ROW SPACING ④			DIM. S
		† (in.)	w (in.)	L	# OF SPC.	SPC. (in.)	L (in.)	# OF SPC.	SPC. (in.)	L	
I - 2	A, B, C, G, H, J, K	7 16	19	5'-3	2	3	6	16	3 3 4	5'-0	4 1 2
I	D, F	7 16	19	5'-3	2	3	6	16	3 3 4	5'-0	4 1 2

FIELD SPLICE - SCHEDULE												
FIELD SPLICE NO.	GIRDER	BOTTOM FLANGE SPLICE										
		MIN. GIRDER FLANGE WIDTH	PLATE "D" (2 REQ'D)			PLATE "E"			BOLT SPACING ①			BOLT GAGE ②
			† (in.)	w (in.)	L	† (in.)	w (in.)	L	# OF SPC.	SPC. (in.)	L (in.)	
1 - 2	A	20	$\frac{5}{8}$	9	3'-1	$\frac{9}{16}$	20	3'-1	5	3	15	5
1	B, C, F	20	$\frac{11}{16}$	9	3'-7	$\frac{5}{8}$	20	3'-7	6	3	18	5
2	B, C	20	$\frac{11}{16}$	9	4'-1	$\frac{5}{8}$	20	4'-1	7	3	21	5
1	D	20	$\frac{9}{16}$	9	3'-7	$\frac{1}{2}$	20	3'-7	6	3	18	5
1 - 2	G, H, J	18	$\frac{9}{16}$	8	3'-1	$\frac{1}{2}$	18	3'-1	5	3	15	4
1 - 2	K	20	$\frac{9}{16}$	9	2'-7	$\frac{1}{2}$	20	2'-7	4	3	12	5

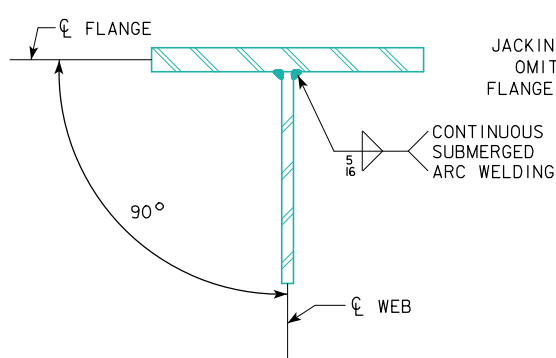
FIELD SPLICE NOTES:

FOR GENERAL NOTES, SEE DESIGN SHEETS 3 AND 4.
 FOR FRAMING PLAN, SEE DESIGN SHEETS 27 AND 28.
 ALL SPLICE MATERIAL TO BE AASHTO M270 GRADE 50W (ASTM-A709 GRADE 50W) STEEL.
 ALL BOLTS SHALL BE 7/8" DIA. AASHTO64 (ASTM A325) TYPE III, IN 15/16" DIA. HOLES.
 FOR WEATHERING STEEL NOTES, SEE DESIGN SHEET 4.

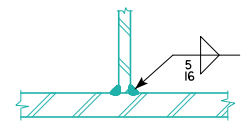
DESIGN FOR VARIABLE SKEW (L.A.)
306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
 153'-0 END SPANS
FIELD SPLICE DETAILS
 STA. 3554+77.00 (R 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 39 OF 70 FILE NO. 30170 DESIGN NO. 1720



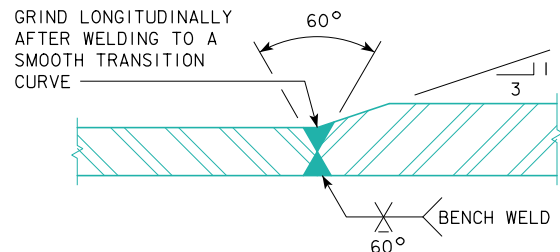
REVISED 04-12 - ADDED A THIRD CAULKING COMPANY TO THE LISTING FOR THE FLANGE DEFLECTOR.
ENGLISHBEAMS.DGN 1021W - THIS SHEET ISSUED 03-11.



FLANGE TO WEB
WELD DETAIL

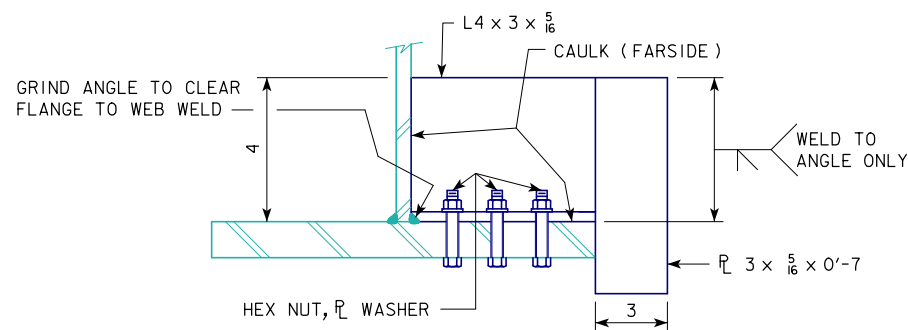


SECTION B-B



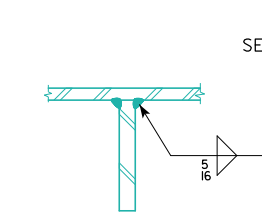
FLANGE PLATE TRANSITION
AT SHOP SPLICES

ALL FLANGE BUTT WELDED JOINTS SUBJECT TO TENSION OR REVERSAL OF STRESS ARE TO BE RADIOGRAPHED FULL WIDTH. ALL BUTT WELDED JOINTS SUBJECT TO COMPRESSION ONLY ARE TO BE RADIOGRAPHED FOR A MINIMUM OF 50 PERCENT OF THE WIDTH. FOR TENSION AND COMPRESSION LIMITS OF GIRDERS, SEE GIRDER ELEVATIONS.

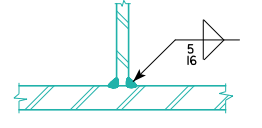


SECTION G-G

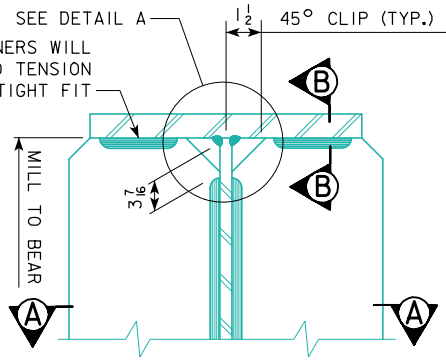
FLANGE DEFLECTORS ARE REQUIRED ON THE OUTSIDE OF THE EXTERIOR GIRDERS AT THE WEST ABUTMENT AND PIER 9 AS SHOWN ON THE STRUCTURAL STEEL LAYOUT.



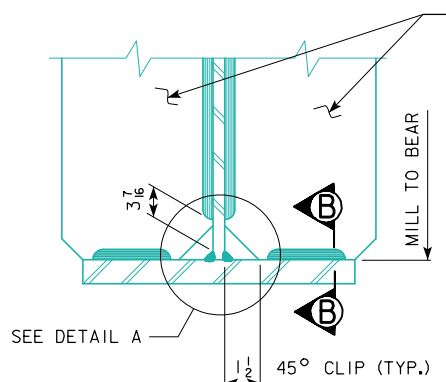
SECTION D-D



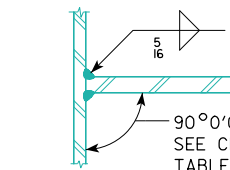
SECTION E-E



SECTION A-A

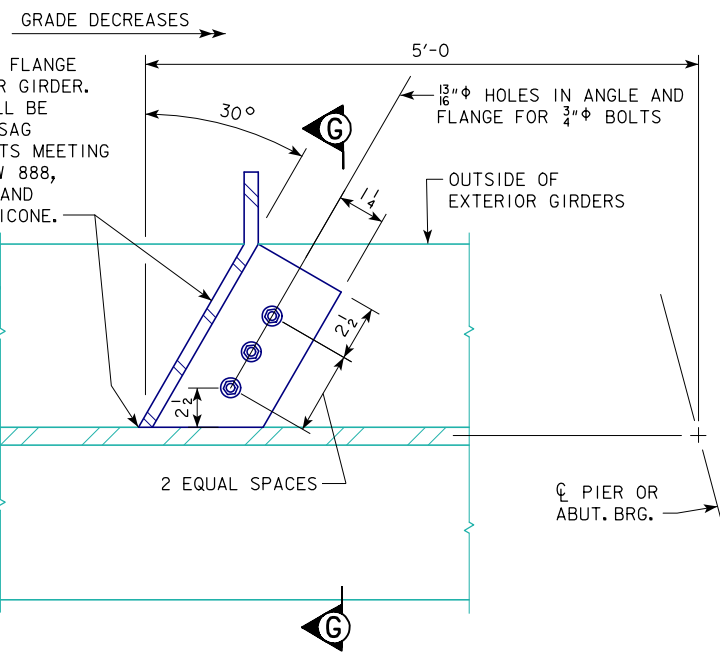


BEARING AND
JACKING STIFFENER

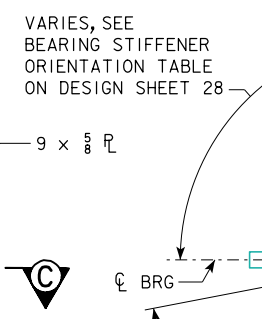


SECTION C-C

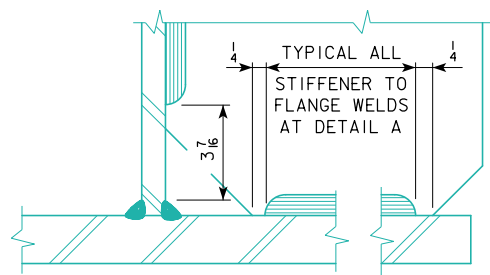
CROSS FRAME,
INTERMEDIATE OR
DIAPHRAGM STIFFENER



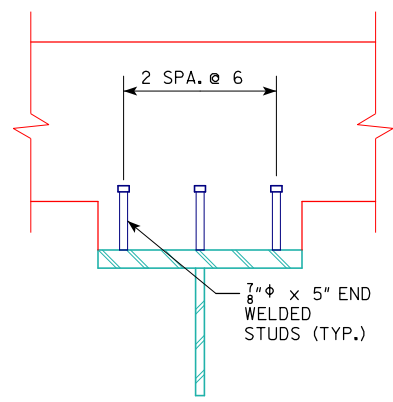
FLANGE DEFLECTOR DETAILS
(4 REQUIRED)



BRG. & JACKING STIFF.
WEST ABUTMENT, PIER 1 AND PIER 8



DETAIL A



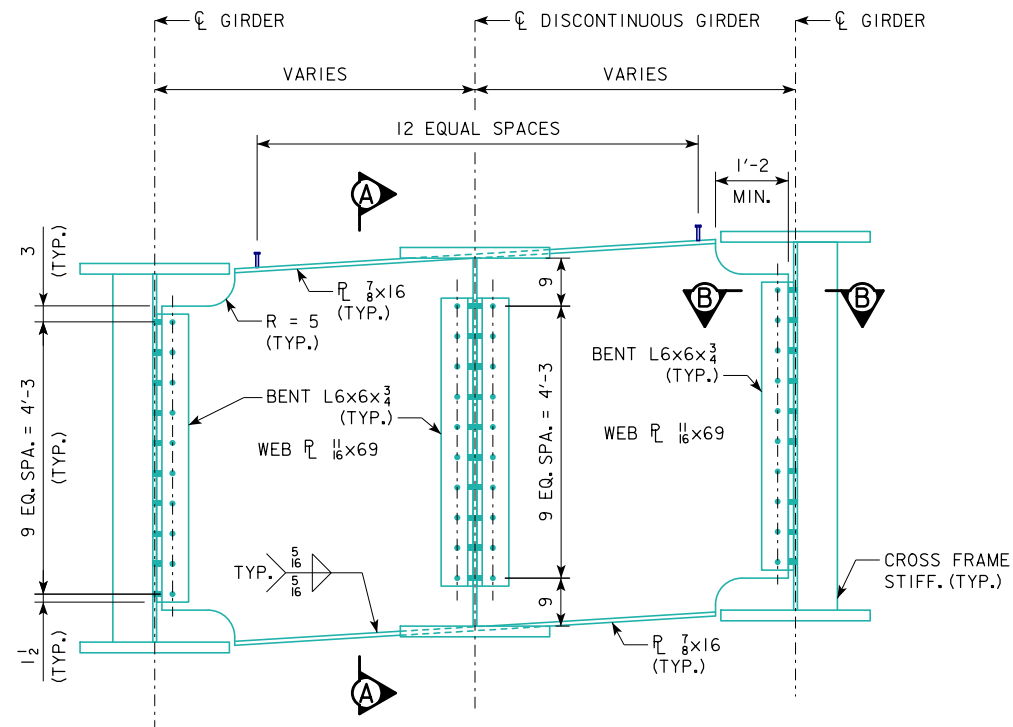
SHEAR STUD DETAILS

BEARING & JACKING
STIFFENER DATA TABLE

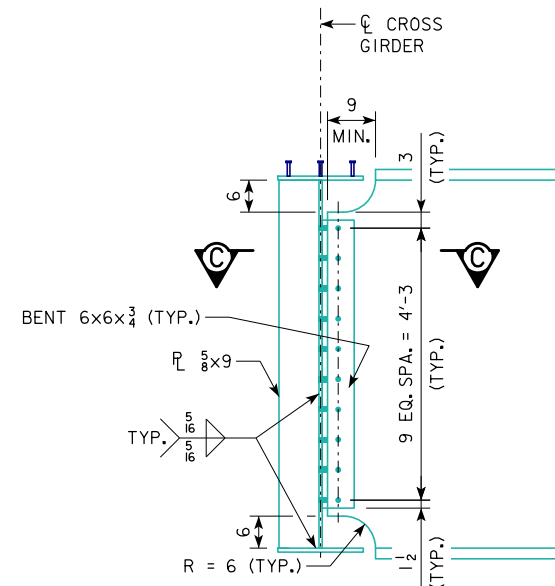
LOCATION	GIRDER	BEARING & JACKING STIFFENER SIZE
WEST ABUT.	A, B, C, G, H, J, K	PL 3/4 x 7 1/2
PIER 9	A, B, C, D, F, G, H, J, K	PL 1" x 9
PIER 8	A, B, C, D, E	PL 3/4 x 7 1/2
PIER 1	F, G, H, J, K	PL 3/4 x 7 1/2

NOTE:
THIS SHEET IS PRIMARILY FOR THE USE OF FABRICATOR'S WORKMEN AND IOWA DEPARTMENT OF TRANSPORTATION INSPECTORS IN INTERPRETING PLAN DETAILS. IT COVERS THE LOCATIONS OF WELD TERMINI THAT ARE NOT SPECIFIED BY TYPICAL WELD SYMBOLS. THE ACCEPTABILITY AND USE OF THE WELD TREATMENT SHOWN ON THIS SHEET FOR ANY SPECIFIC PROJECT IS THE RESPONSIBILITY OF THE DESIGNING ENGINEER.

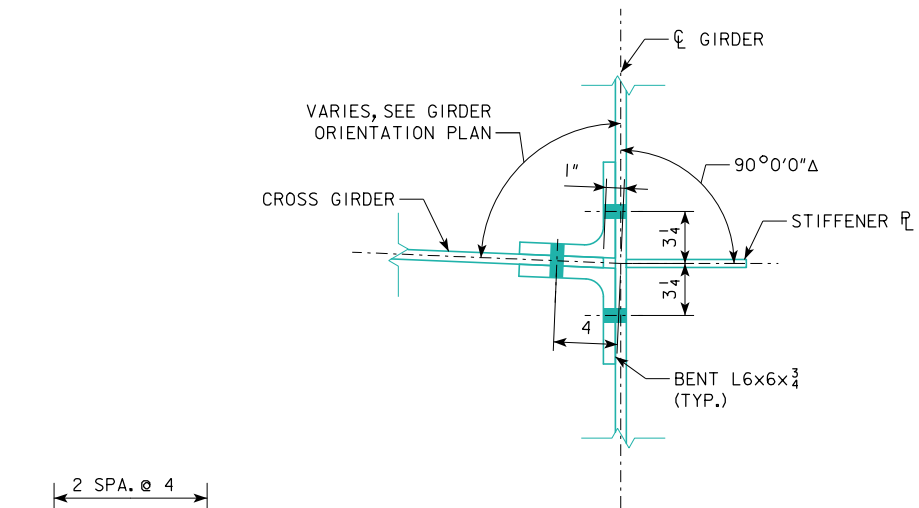
DESIGN FOR VARIABLE SKEW (L.A.)
**306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
153'-0 END SPANS
WELDING DETAILS
STA. 3554+77.00 (CL 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 40 OF 70 FILE NO. 30170 DESIGN NO. 1720



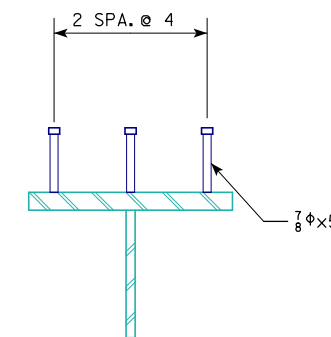
TYPICAL ELEVATION
(LOOKING AHEAD STATION)



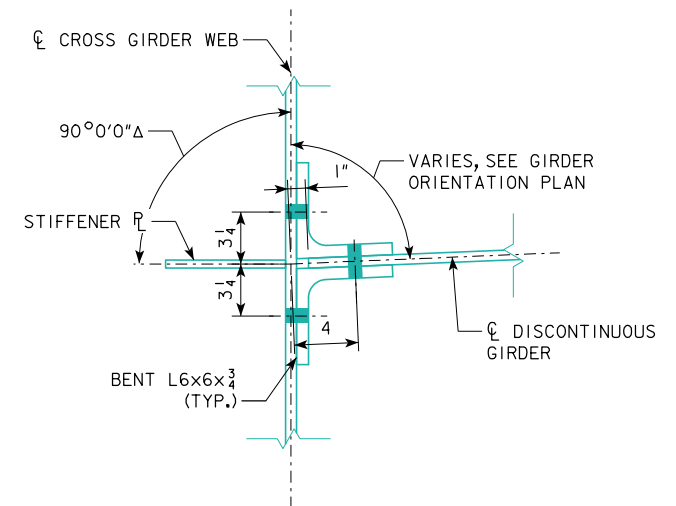
SECTION A-A



SECTION B-B

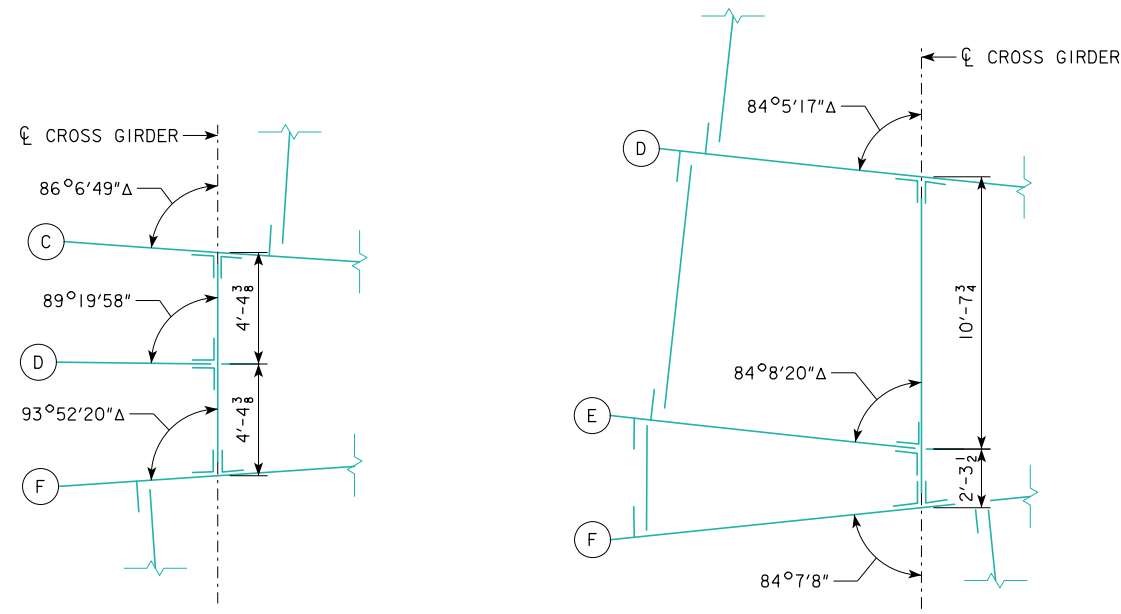


SHEAR STUD DETAIL



SECTION C-C

NOTES:
CROSS GIRDERS AND CONNECTIONS ANGLES SHALL MEET CHARPY V-NOTCH TOUGHNESS REQUIREMENTS IN ACCORDANCE WITH ARTICLE 4152.02.
Δ MEASURED WITH RESPECT TO LOCAL TANGENT.



DISCONTINUOUS GIRDER D

DISCONTINUOUS GIRDER E

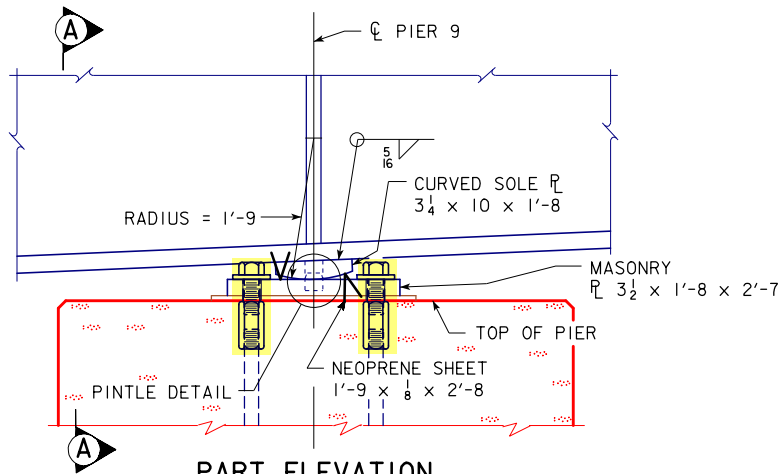
DISCONTINUOUS GIRDER F

CROSS GIRDER ORIENTATION PLAN

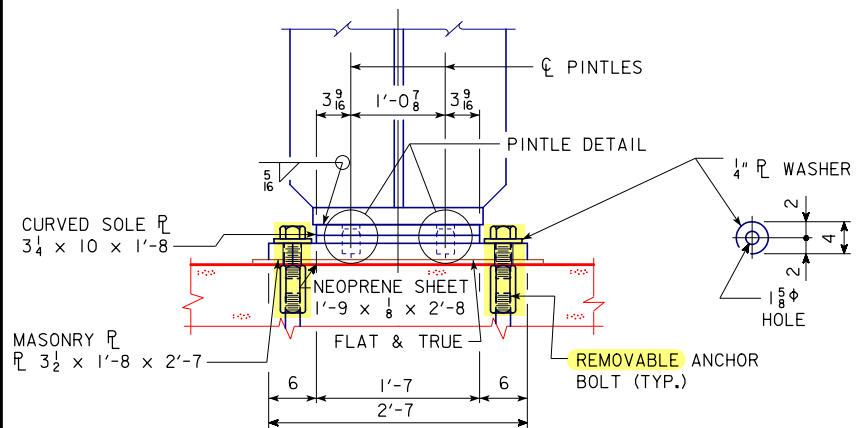


DESIGN FOR VARIABLE SKEW (L.A.)
306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
153'-0 END SPANS
CROSS GIRDER DETAILS
STA. 3554+77.00 (R 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 42 OF 70 FILE NO. 30170 DESIGN NO. 1720

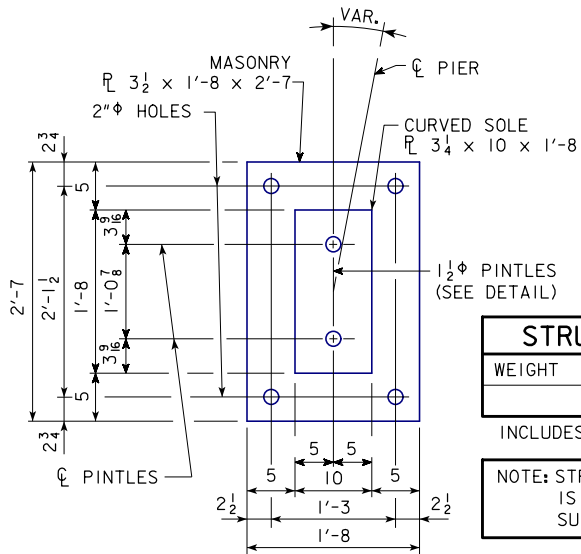
CORRECTION 05-14 - ADDED A STATEMENT TO ANCHOR BOLT SWEDGE DETAIL STATING THAT THE SHAPE OF THE INDENTATIONS MAY BE OBLONG OR ROUND IN SHAPE.
ENGLISHBEAMS.DGN 1010 - THIS SHEET ISSUED 09-03



PART ELEVATION



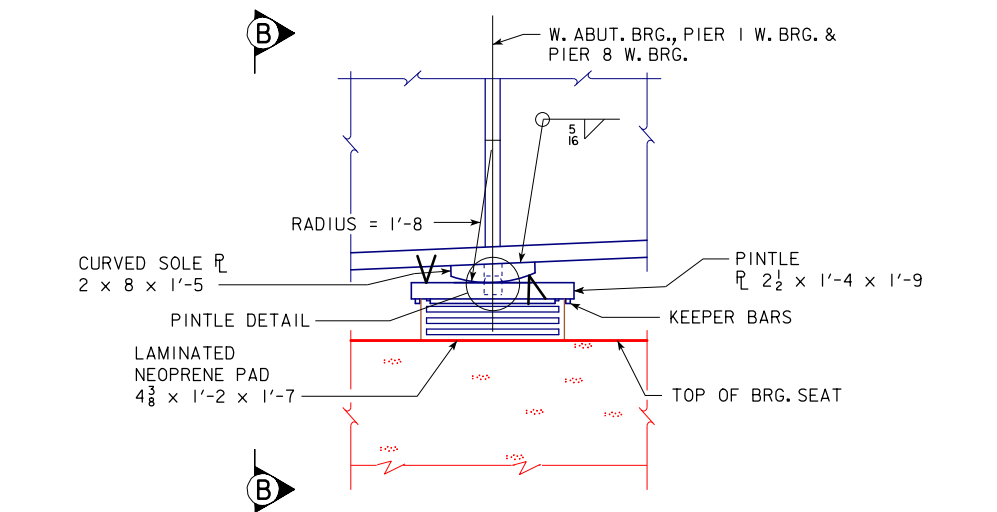
SECTION A-A



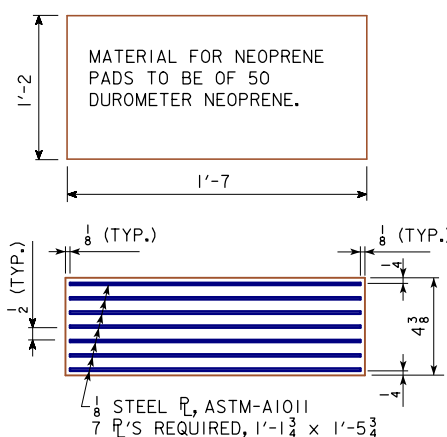
PLAN VIEW OF MASONRY AND SOLE PLATES
FIXED PIER 9

MASONRY PLATE / CURVED SOLE PLATE ASSEMBLY

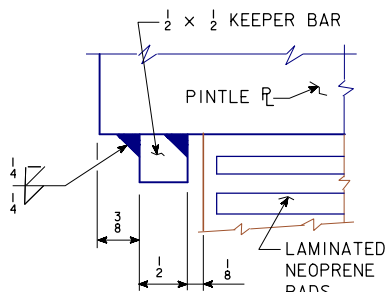
STRUCTURAL STEEL	
WEIGHT	7463 LBS.
INCLUDES CURVED SOLE PLATE	
NOTE: STRUCTURAL STEEL WEIGHT IS INCLUDED ON THE SUMMARY QUANTITIES SHEET.	



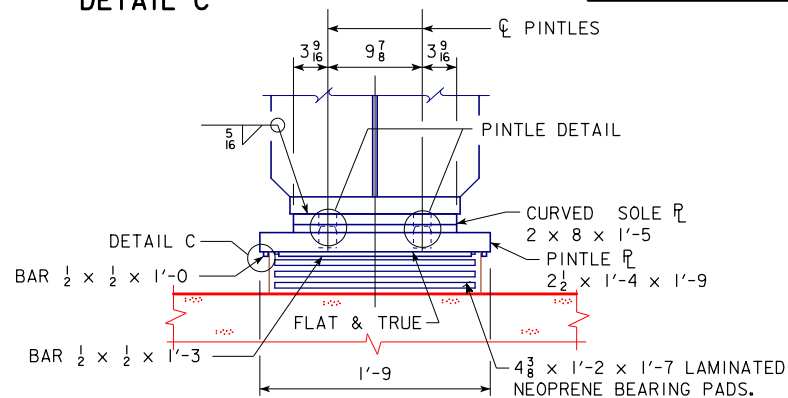
PART ELEVATION



LAMINATED NEOPRENE PADS

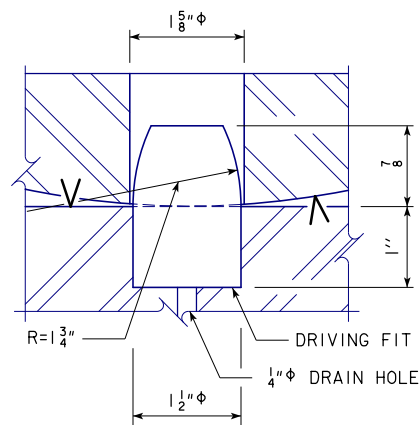


DETAIL C

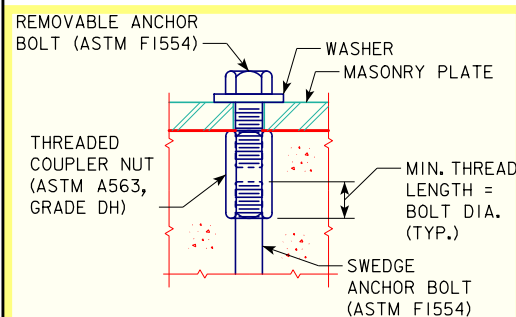


SECTION B-B

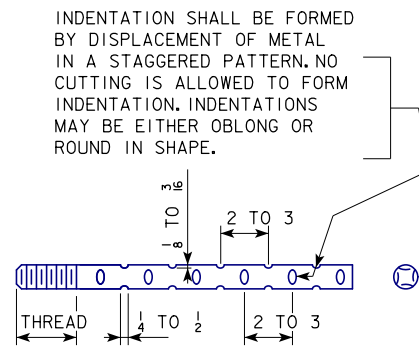
EXPANSION PIER 1/EXPANSION PIER 8/WEST ABUTMENT LAMINATED NEOPRENE PAD / CURVED SOLE PLATE ASSEMBLY



PINTLE DETAIL



REMOVABLE ANCHOR
BOLT DETAIL



ANCHOR BOLT
SWEDGE DETAIL

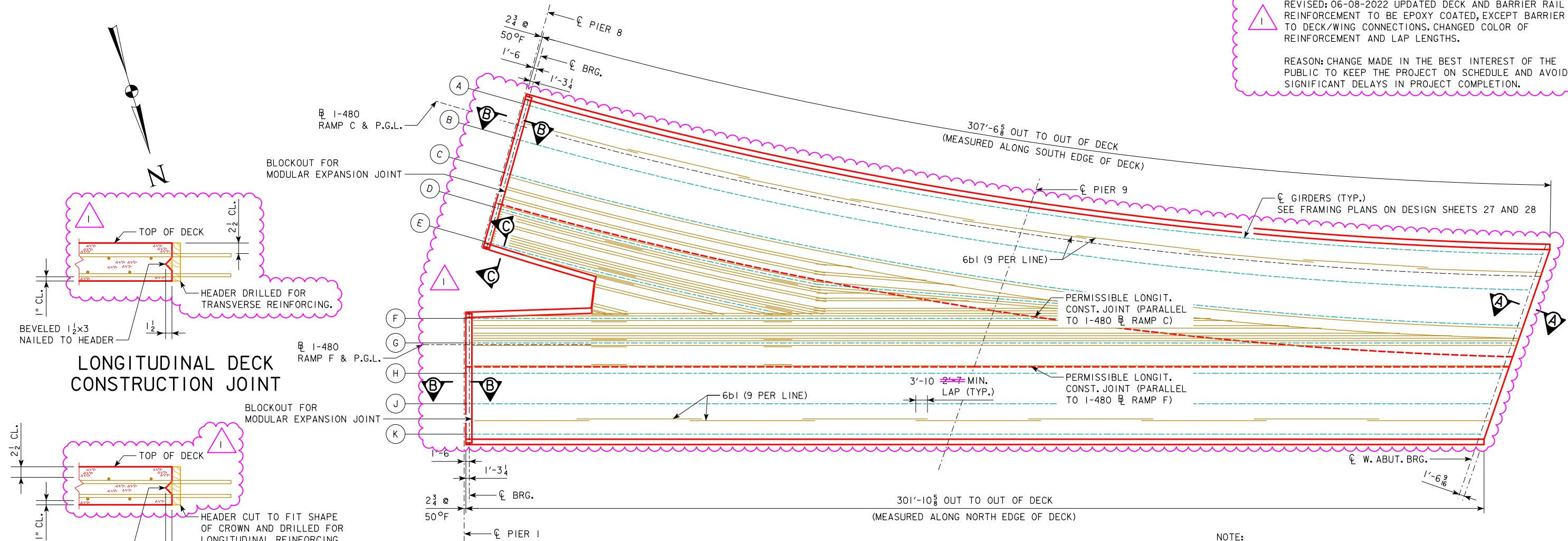
BEARING NOTES:

SURFACES MARKED "V" SHALL BE FINISHED ANSI 250.
MASONRY PLATES ARE TO BE SET ON A 1/8 INCH NEOPRENE SHEET.
THE 1/8 INCH NEOPRENE SHEETS ARE TO BE 50, 60, OR 70 DUROMETER HARDNESS AND SHALL BE 1 INCH GREATER IN LENGTH AND WIDTH THAN THE BOTTOM SURFACE OF THE MASONRY PLATES OR STEEL BEARINGS.
PINTLE PLATES, SOLE PLATES, ANCHOR BOLTS, AND MASONRY PLATES ARE A PART OF THE SUPERSTRUCTURE STRUCTURAL STEEL QUANTITY. COST OF NEOPRENE BEARING PADS AND 1/8 INCH NEOPRENE SHEETS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "STRUCTURAL STEEL".
THE PINTLE PLATES, KEEPER BARS, AND MASONRY PLATES SHALL BE GALVANIZED. WELDING SHALL BE COMPLETED PRIOR TO GALVANIZING. THE SURFACES OF THE PINTLE PLATE IN CONTACT WITH THE CURVED SOLE PLATE AND THE LAMINATED NEOPRENE PAD SHALL BE FREE OF PROJECTIONS DUE TO GALVANIZING.
CURVED SOLE PLATES SHALL COMPLY WITH ASTM A709 GRADE 50W AND PAINTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
KEEPER BARS, PINTLE PLATES AND MASONRY PLATES SHALL COMPLY WITH ASTM A709 GRADE 50.
ANCHOR BOLTS, NUTS AND WASHERS SHALL MEET THE REQUIREMENTS OF I.M. 453.08.
THE COST OF FURNISHING AND INSTALLING THE THREADED COUPLER NUTS SHALL BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL STEEL".

DESIGN FOR VARIABLE SKEW (L.A.)	
306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE	
153'-0 END SPANS	
BEARING DETAILS	
STA. 3554+77.00 (RAMP 1-480 RAMP C)	NOVEMBER, 2020
POTTAWATTAMIE COUNTY	
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION	
DESIGN SHEET NO. 43 OF 70	FILE NO. 30170 DESIGN NO. 1720

REVISD: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT AND LAP LENGTHS.

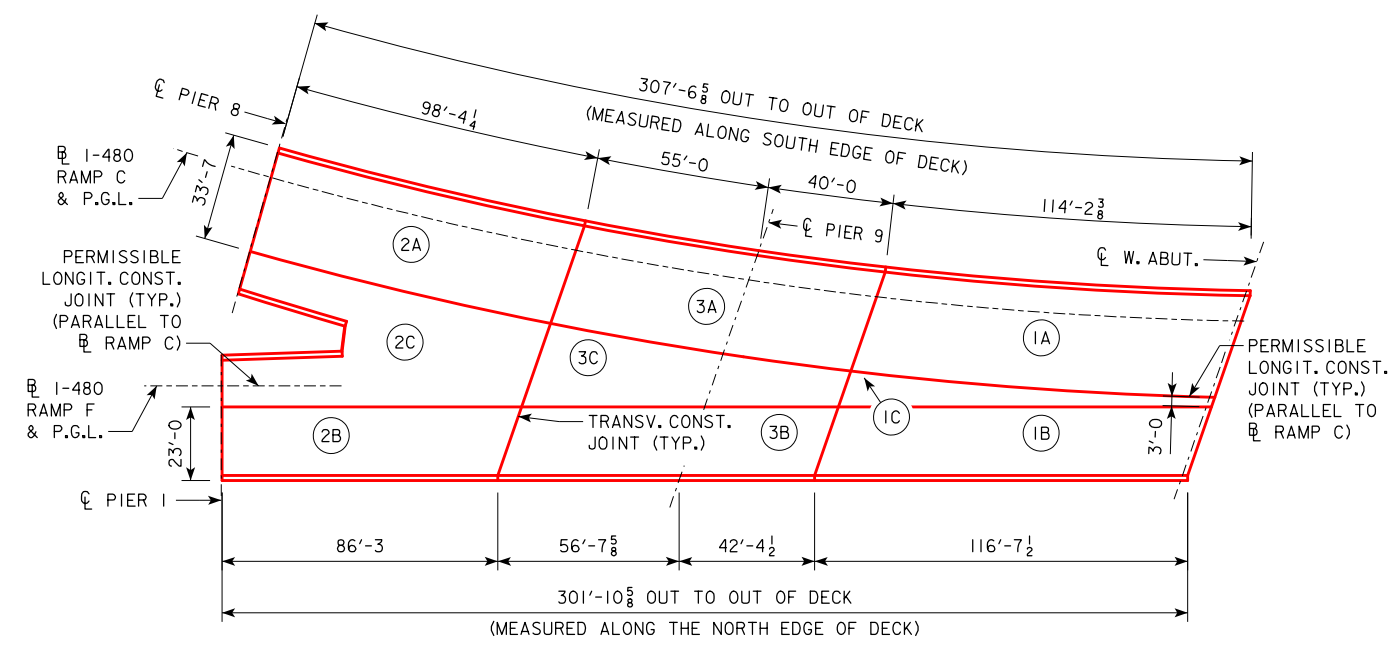
REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.



TOP LONGITUDINAL REINFORCING LAYOUT

NOTE:
FOR SECTIONS A-A & B-B, SEE DESIGN SHEET 45.
FOR SECTION C-C, SEE DESIGN SHEET 48.
FOR REINFORCING DETAILS BETWEEN GIRDER LINE C AND RAMP F LONGITUDINAL CONSTRUCTION JOINT, SEE DESIGN SHEET 46.

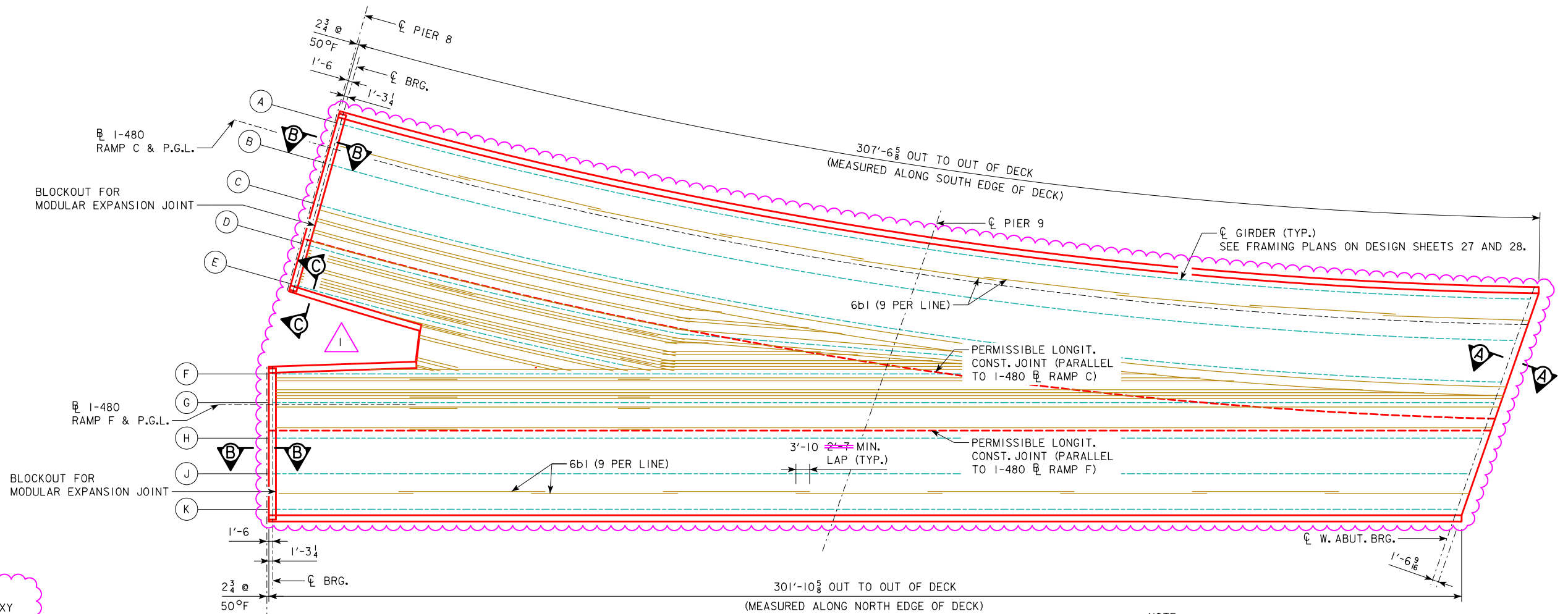
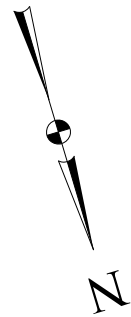
NOTES:
CONCRETE DECK SHALL BE PLACED IN SECTIONS AND SEQUENCES INDICATED. ALTERNATE PROCEDURES FOR PLACING DECK CONCRETE MAY BE SUBMITTED FOR APPROVAL TOGETHER WITH A STATEMENT OF THE PROPOSED METHOD AND EVIDENCE THAT THE CONTRACTOR POSSESSES THE NECESSARY EQUIPMENT AND FACILITIES TO ACCOMPLISH THE REQUIRED RESULTS. THE BRIDGE ENGINEER SHALL REVIEW ANY ALTERNATE PROCEDURES. THE COST OF ANY ADDITIONAL ANALYSIS AND PLAN MODIFICATIONS SHALL BE PAID FOR BY THE CONTRACTOR. THE ENGINEER SHALL DETERMINE IF A RETARDING ADMIXTURE IS REQUIRED TO MAINTAIN PLASTICITY OF THE CONCRETE DECK DURING PLACEMENT.
THERE SHALL BE A 2-DAY WAITING PERIOD BETWEEN SUBSEQUENT POURS, AND CONCRETE HAS REACHED A STRENGTH OF 0.75 f'c.
FOR DECK DRAIN LOCATIONS, SEE DESIGN SHEET 63.
ALL DIMENSIONS SHOWN ARE MEASURED IN A HORIZONTAL PLANE UNLESS NOTED OTHERWISE.



CONCRETE PLACEMENT DIAGRAM

DESIGN FOR VARIABLE SKEW (L.A.)
306'-0" x VARIES CONTINUOUS WELDED GIRDER BRIDGE
153'-0" END SPANS
DECK PLAN AND REINFORCING
STA. 3554+77.00 (E 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 44 OF 70 FILE NO. 30170 DESIGN NO. 1720

REVISED: JUNE 8, 2022

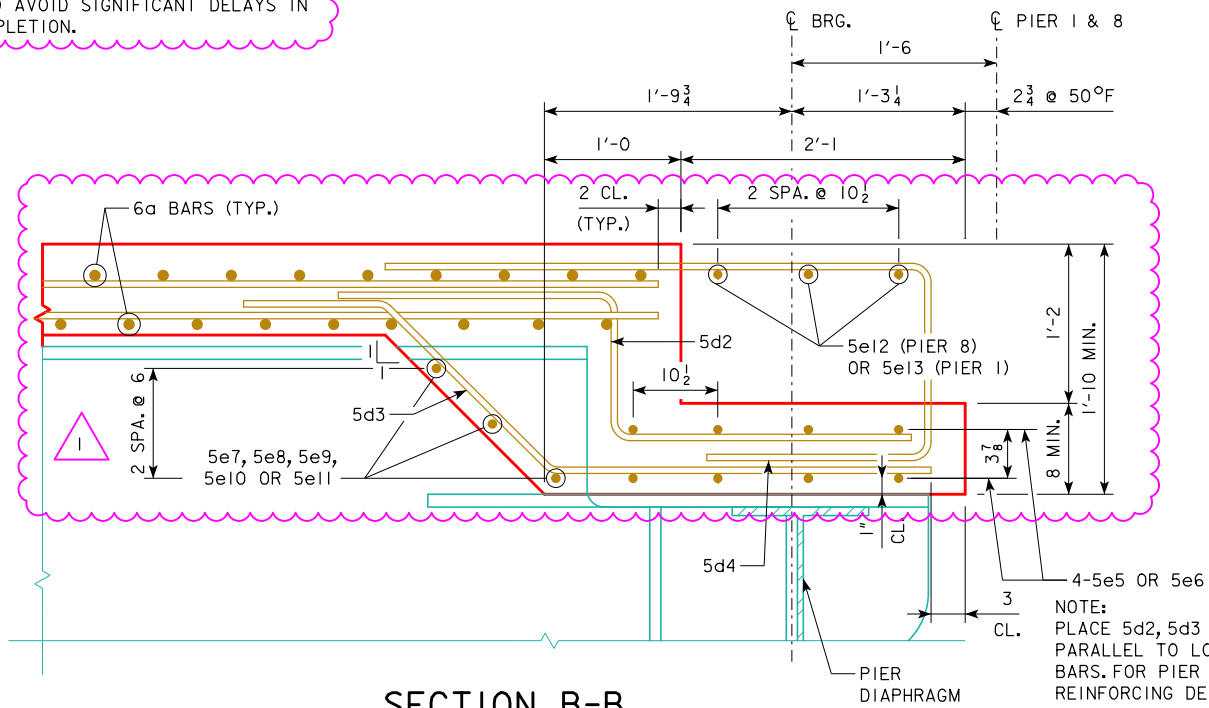


BOTTOM LONGITUDINAL REINFORCING LAYOUT

REVISED: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT AND LAP LENGTHS.

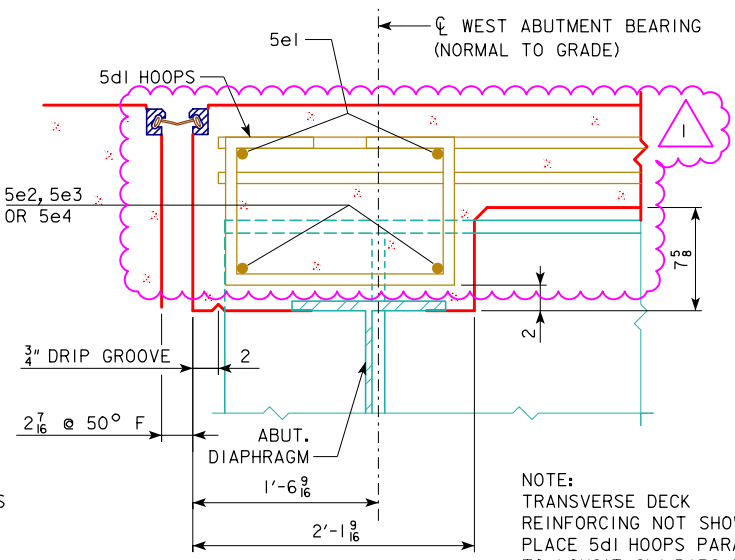
REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.

NOTE:
FOR SECTION C-C, SEE DESIGN SHEET 48.
FOR REINFORCING DETAILS BETWEEN GIRDER LINE C AND RAMP F LONGITUDINAL CONSTRUCTION JOINT, SEE DESIGN SHEET 47.



SECTION B-B
(NORMAL TO PIER)

NOTE:
PLACE 5d2, 5d3 & 5d4 BARS PARALLEL TO LONGIT. 6b1 BARS. FOR PIER BLOCKOUT REINFORCING DETAILS, SEE DESIGN SHEET 21.



SECTION A-A
(NORMAL TO ABUTMENT)

NOTE:
TRANSVERSE DECK REINFORCING NOT SHOWN. PLACE 5d1 HOOPS PARALLEL TO LONGIT. 6b1 BARS. FOR REINFORCING BAR SPACING, SEE DESIGN SHEET 24.

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE

153'-0 END SPANS

DECK PLAN AND REINFORCING

STA. 3554+77.00 (RAMP C) NOVEMBER, 2020

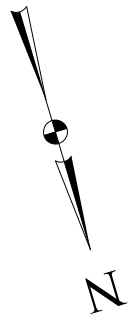
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 45 OF 70 FILE NO. 30170 DESIGN NO. 1720

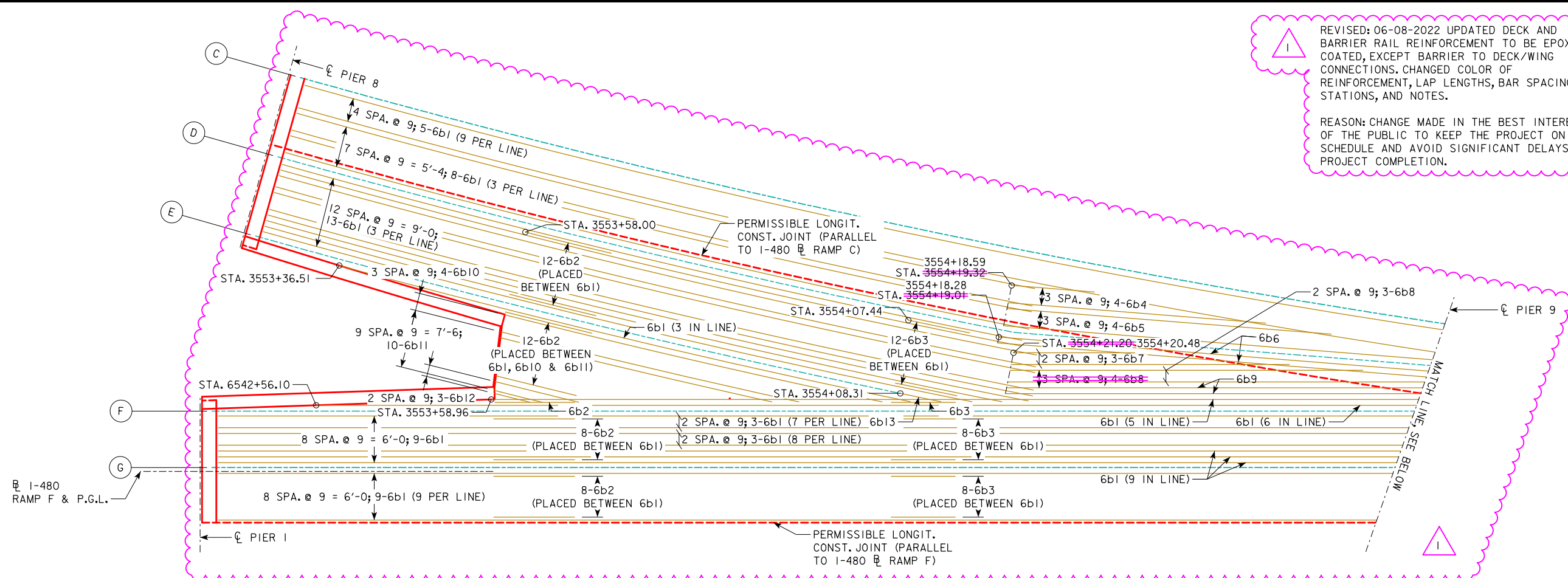


REVISED: JUNE 8, 2022

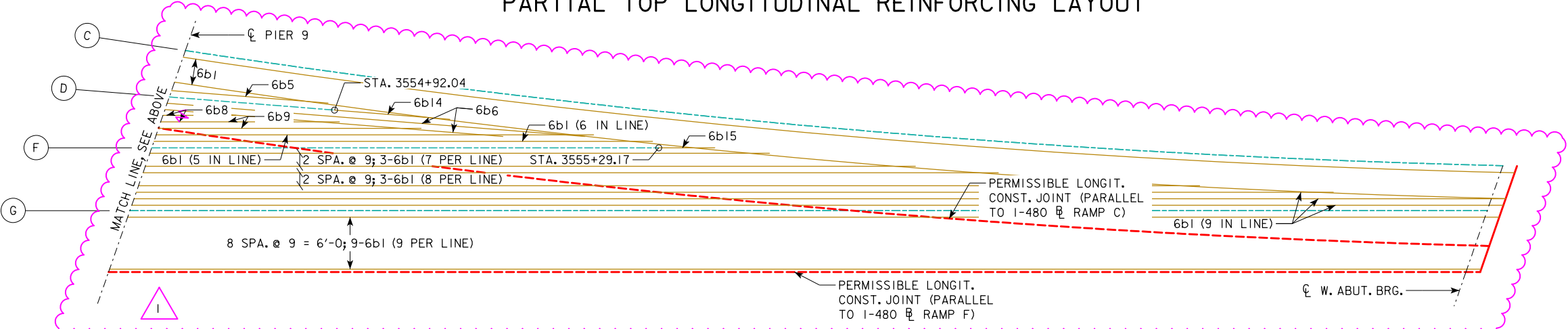


REVISED: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT, LAP LENGTHS, BAR SPACINGS, STATIONS, AND NOTES.

REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.



PARTIAL TOP LONGITUDINAL REINFORCING LAYOUT



PARTIAL TOP LONGITUDINAL REINFORCING LAYOUT

REINFORCING BAR NOTES:

- 6b2 - PLACED BETWEEN 6b1, 6b10 & 6b11
- 6b3 - PLACED BETWEEN 6b1
- 6b4 - EXTENDED 1'-6" PAST 6b1 ON BOTH ENDS
- 6b5 - LAPPED WITH 1-6b1 BAR AND EXTENDED 1'-6" PAST 6b1
- 6b6 - LAPPED WITH 2-6b1 BARS AND EXTENDED 1'-6" PAST 6b1 ON BOTH ENDS
- 6b7 - EXTENDED 1'-6" PAST 6b1 & 6b6
- 6b8 - LAPPED WITH 1-6b1 BAR AND EXTENDED 1'-6" PAST 6b1 & 6b6
- 6b9 - LAPPED WITH 2-6b1 BARS AND EXTENDED 1'-6" PAST 6b1 ON BOTH ENDS
- 6b10 - LAPPED WITH 1-6b1 BAR AND EXTENDED 1'-6" PAST 6b1 ON ONE END
- 6b11 - EXTENDED 1'-6" PAST 6b1 ON ONE END
- 6b12 - PLACED BETWEEN 6b11 AND EXTENDED 1'-6" PAST 6b1 ON ONE END
- 6b13 - EXTENDED 1'-6" PAST 6b1 ON ONE END
- 6b14 - EXTENDED 1'-6" PAST 6b1 ON ONE END
- 6b15 - EXTENDED 1'-6" PAST 6b1 ON ONE END

- 6b4 - EXTENDED 2'-3" PAST 6b1 ON BOTH ENDS
- 6b5 - LAPPED WITH 1-6b1 BAR AND EXTENDED 2'-3" PAST 6b1
- 6b6 - LAPPED WITH 2-6b1 BARS AND EXTENDED 2'-3" PAST 6b1 ON BOTH ENDS
- 6b7 - EXTENDED 2'-3" PAST 6b1 & 6b6
- 6b8 - LAPPED WITH 1-6b1 BAR AND EXTENDED 2'-3" PAST 6b1 & 6b6
- 6b9 - LAPPED WITH 2-6b1 BARS AND EXTENDED 2'-3" PAST 6b1 ON BOTH ENDS
- 6b10 - LAPPED WITH 1-6b1 BAR AND EXTENDED 2'-3" PAST 6b1 ON ONE END
- 6b11 - EXTENDED 2'-3" PAST 6b1 ON ONE END
- 6b12 - PLACED BETWEEN 6b11 AND EXTENDED 2'-3" PAST 6b1 ON ONE END
- 6b13 - EXTENDED 2'-3" PAST 6b1 ON ONE END
- 6b14 - EXTENDED 2'-3" PAST 6b1 ON ONE END
- 6b15 - EXTENDED 2'-3" PAST 6b1 ON ONE END



DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE

153'-0 END SPANS

DECK PLAN AND REINFORCING

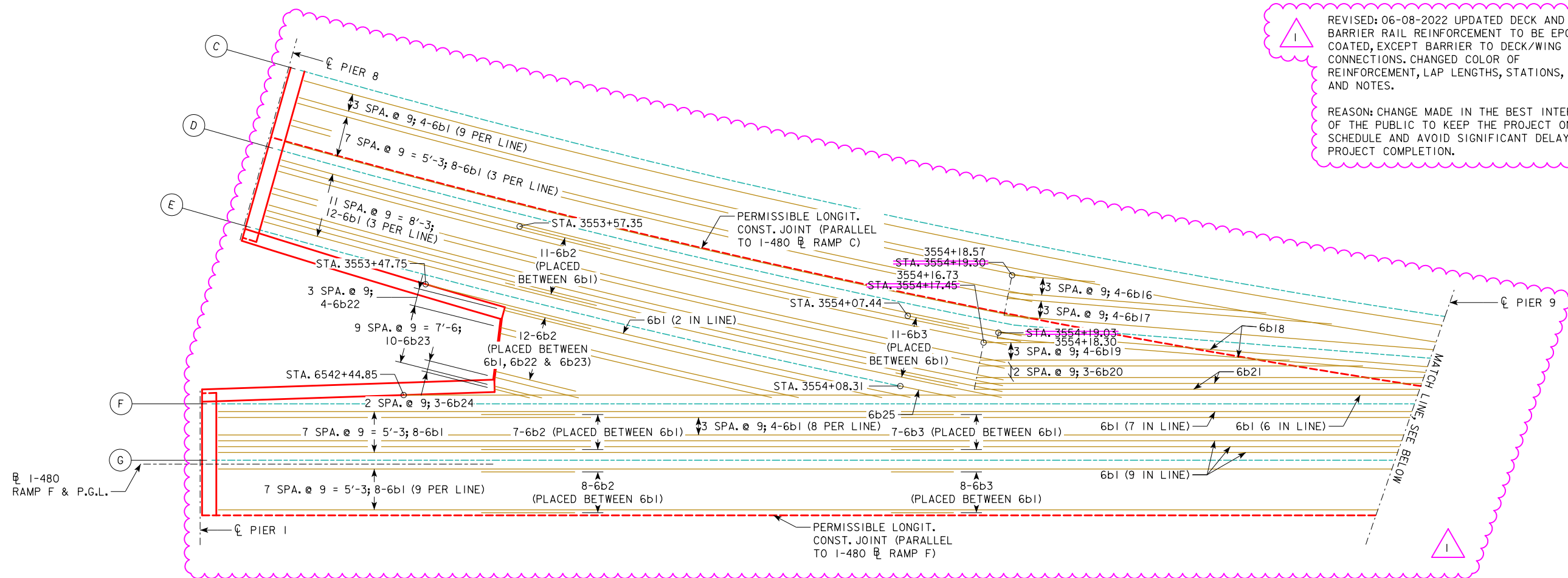
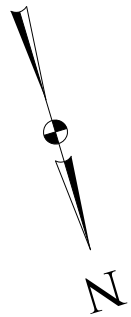
STA. 3554+77.00 (I-480 RAMP C) NOVEMBER, 2020

POTTAWATTAMIE COUNTY

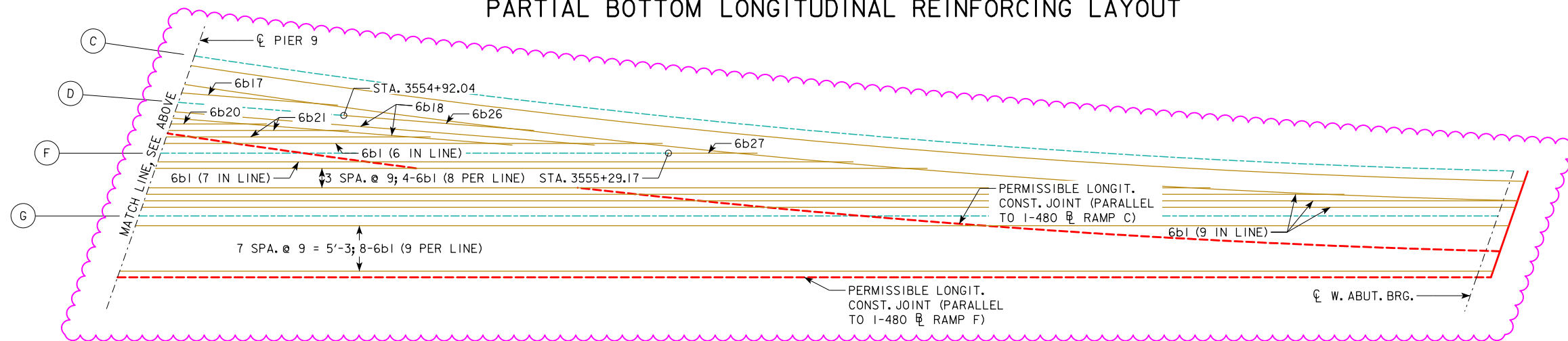
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 46 OF 70 FILE NO. 30170 DESIGN NO. 1720

REVISED: JUNE 8, 2022



PARTIAL BOTTOM LONGITUDINAL REINFORCING LAYOUT



PARTIAL BOTTOM LONGITUDINAL REINFORCING LAYOUT

REINFORCING BAR NOTES:

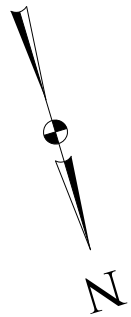
- 6b2 - PLACED BETWEEN 6b1, 6b22, & 6b23
- 6b3 - PLACED BETWEEN 6b1
- 6b16 - EXTENDED 1'-6" PAST 6b1 ON BOTH ENDS
- 6b17 - LAPPED WITH 1-6b1 BAR AND EXTENDED 2'-3" PAST 6b1 ON BOTH ENDS
- 6b18 - LAPPED WITH 2-6b1 BARS AND EXTENDED 2'-3" PAST 6b1 ON BOTH ENDS
- 6b19 - EXTENDED 1'-6" PAST 6b1 & 6b18
- 6b20 - LAPPED WITH 1-6b1 BAR AND EXTENDED 2'-3" PAST 6b1 & 6b18
- 6b21 - LAPPED WITH 2-6b1 BARS AND EXTENDED 1'-6" PAST 6b1 ON BOTH ENDS
- 6b22 - LAPPED WITH 1-6b1 BAR AND EXTENDED 2'-3" PAST 6b1 ON ONE END
- 6b23 - EXTENDED 1'-6" PAST 6b1 ON ONE END
- 6b24 - PLACED BETWEEN 6b23 AND EXTENDED 1'-6" PAST 6b1 ON ONE END
- 6b25 - EXTENDED 1'-6" PAST 6b1 ON ONE END
- 6b26 - EXTENDED 1'-6" PAST 6b1 ON ONE END
- 6b27 - EXTENDED 1'-6" PAST 6b1 ON ONE END

- 6b16 - EXTENDED 2'-3" PAST 6b1 ON BOTH ENDS
- 6b17 - LAPPED WITH 1-6b1 BAR AND EXTENDED 2'-3" PAST 6b1 ON BOTH ENDS
- 6b18 - LAPPED WITH 2-6b1 BARS AND EXTENDED 2'-3" PAST 6b1 ON BOTH ENDS
- 6b19 - EXTENDED 2'-3" PAST 6b1 & 6b18
- 6b20 - LAPPED WITH 1-6b1 BAR AND EXTENDED 2'-3" PAST 6b1 & 6b18
- 6b21 - LAPPED WITH 2-6b1 BARS AND EXTENDED 2'-3" PAST 6b1 ON BOTH ENDS
- 6b22 - LAPPED WITH 1-6b1 BAR AND EXTENDED 2'-3" PAST 6b1 ON ONE END
- 6b23 - EXTENDED 2'-3" PAST 6b1 ON ONE END
- 6b24 - PLACED BETWEEN 6b23 AND EXTENDED 2'-3" PAST 6b1 ON ONE END
- 6b25 - EXTENDED 2'-3" PAST 6b1 ON ONE END
- 6b26 - EXTENDED 2'-3" PAST 6b1 ON ONE END
- 6b27 - EXTENDED 2'-3" PAST 6b1 ON ONE END



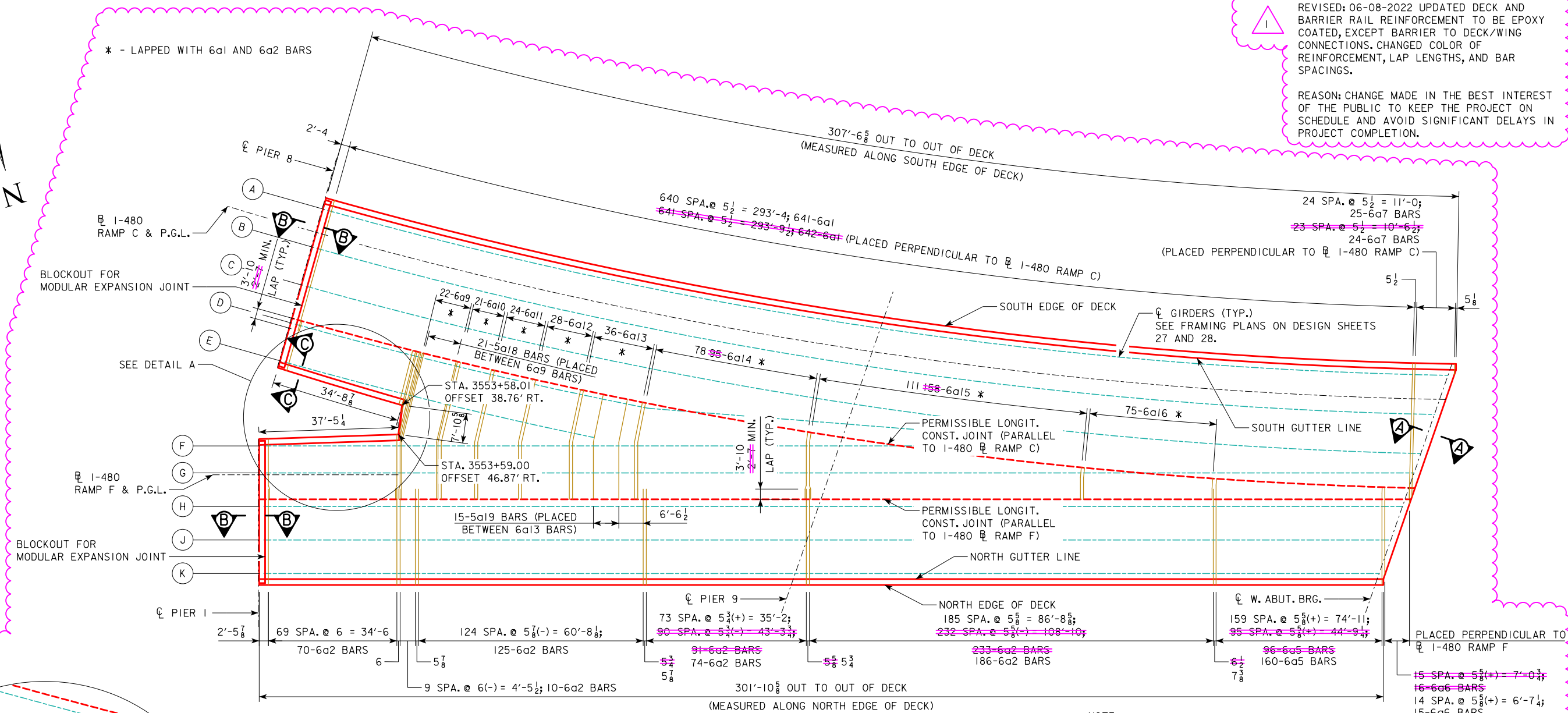
DESIGN FOR VARIABLE SKEW (L.A.)
**306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
153'-0 END SPANS
DECK PLAN AND REINFORCING
STA. 3554+77.00 (I-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 47 OF 70 FILE NO. 30170 DESIGN NO. 1720

REVISED: JUNE 8, 2022



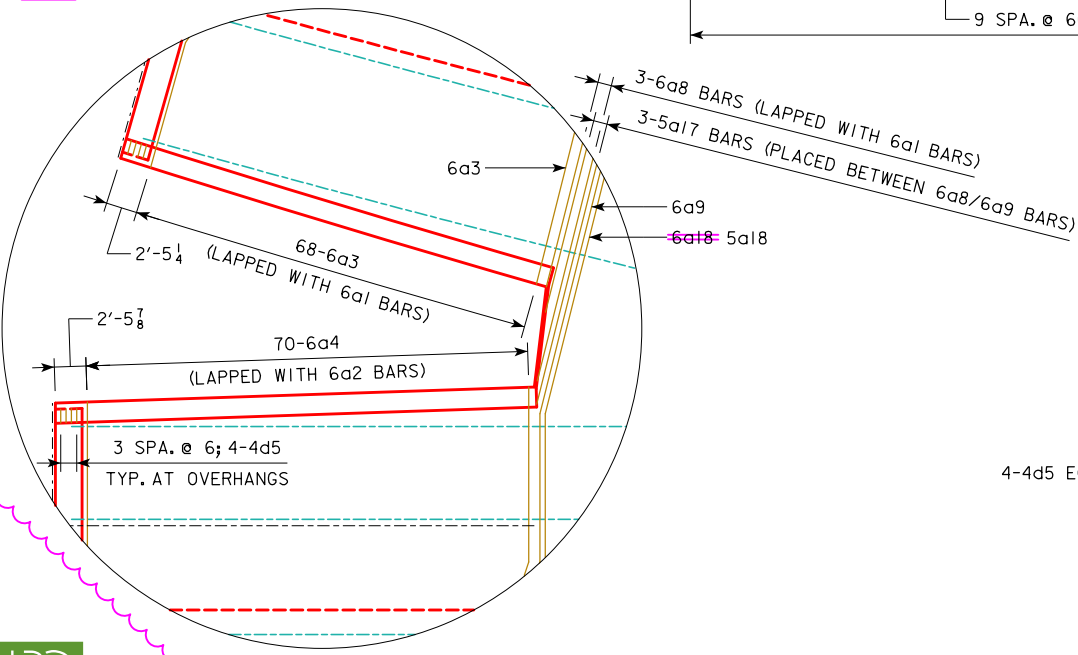
REVISED: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT, LAP LENGTHS, AND BAR SPACINGS.

REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.

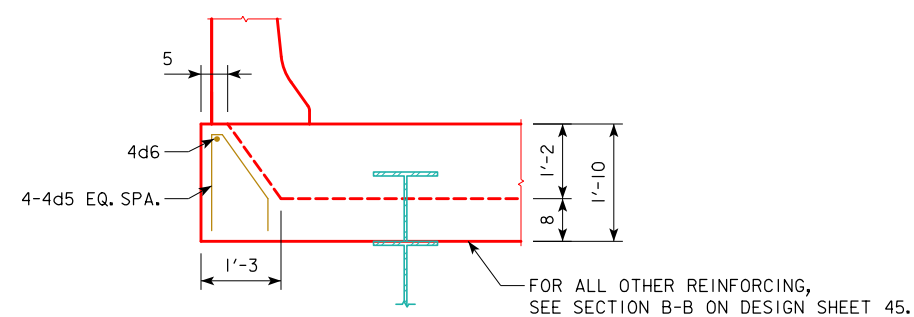


NOTE:
FOR SECTIONS A-A & B-B, SEE DESIGN SHEET 45.

TOP TRANSVERSE REINFORCING LAYOUT



DETAIL A



SECTION C-C

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE

153'-0 END SPANS

DECK PLAN AND REINFORCING

STA. 3554+77.00 (CL I-480 RAMP C)

NOVEMBER, 2020

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

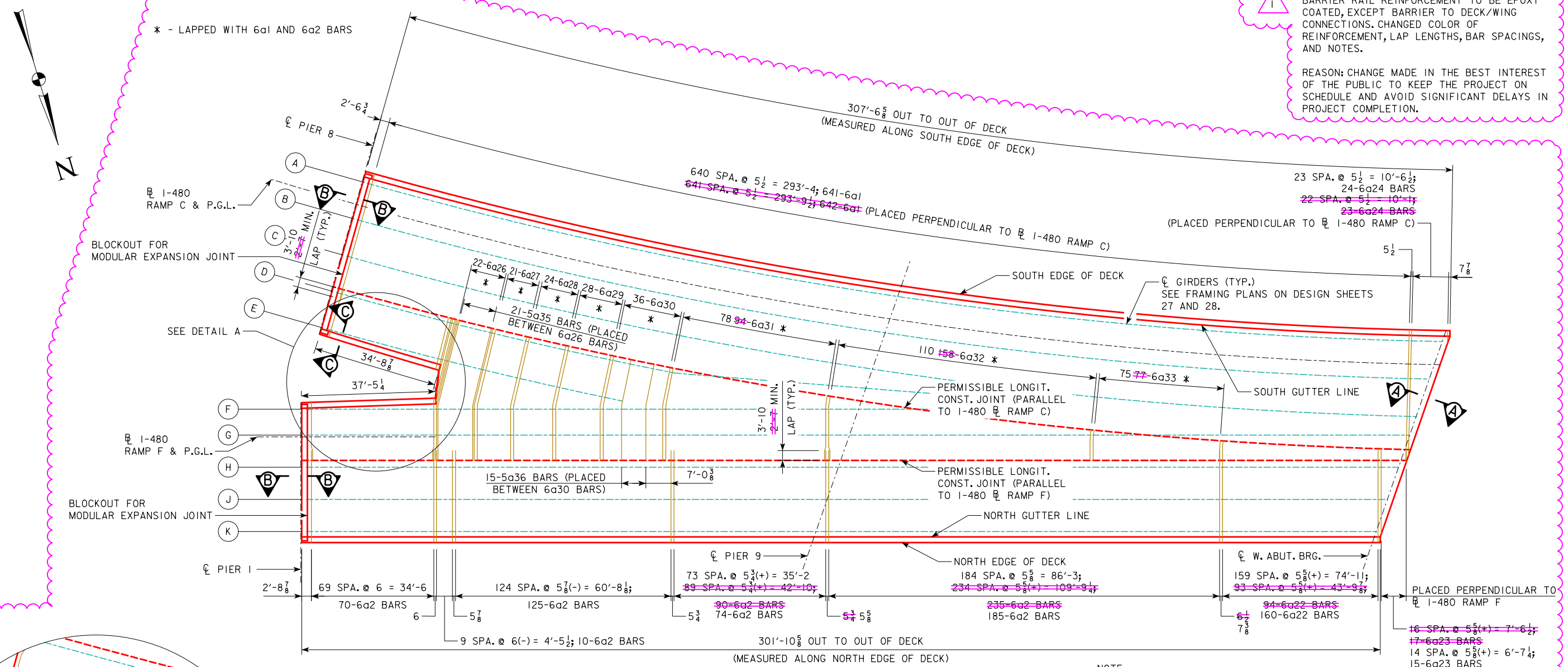
DESIGN SHEET NO. 48 OF 70 FILE NO. 30170 DESIGN NO. 1720



REVISED: JUNE 8, 2022

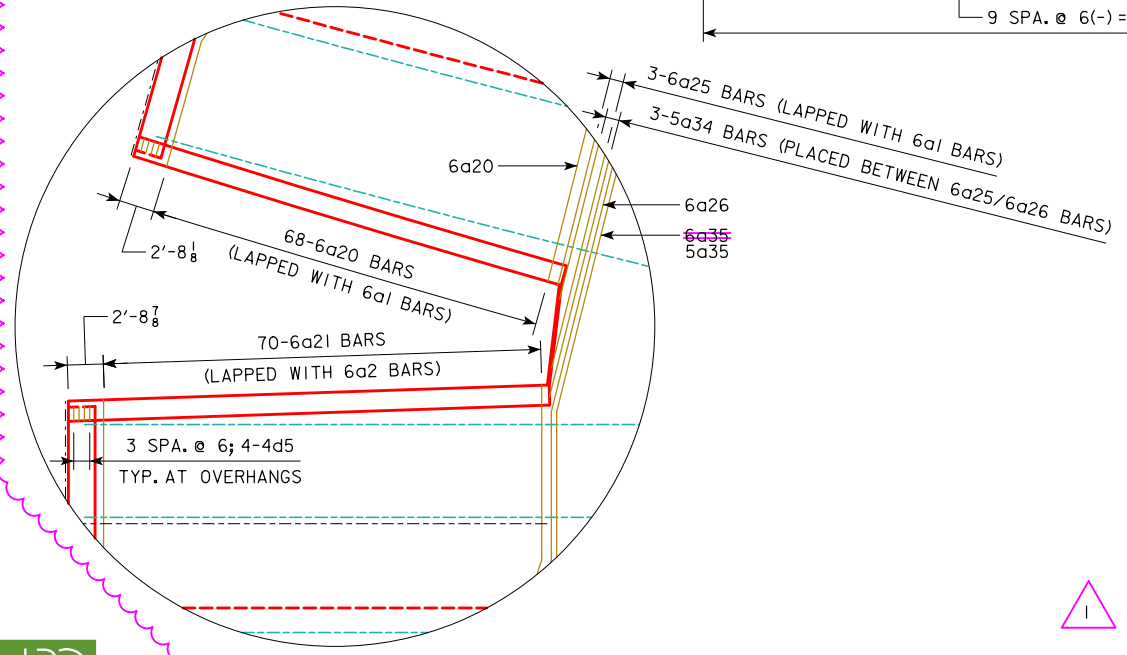
REVISD: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT, LAP LENGTHS, BAR SPACINGS, AND NOTES.

REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.



NOTE:
FOR SECTIONS A-A & B-B, SEE DESIGN SHEET 45.
FOR SECTION C-C, SEE DESIGN SHEET 48.

BOTTOM TRANSVERSE REINFORCING LAYOUT



DETAIL A

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE

153'-0 END SPANS

DECK PLAN AND REINFORCING

STA. 3554+77.00 (CL I-480 RAMP C) NOVEMBER, 2020

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 49 OF 70 FILE NO. 30170 DESIGN NO. 1720

REVISED: JUNE 8, 2022

REINFORCING BAR LIST

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6a1	DECK, TRANSV. TOP & BOTTOM		1284	36'-2	69,750
6a2	DECK, TRANSV. TOP & BOTTOM		1039	25'-7	39,925
6a3	DECK, TRANSV. TOP		68	VARIES	694
6a4	DECK, TRANSV. TOP		70	VARIES	841
6a5	DECK, TRANSV. TOP		96	VARIES	2,037
6a6	DECK, TRANSV. TOP		16	VARIES	286
6a7	DECK, TRANSV. TOP		24	VARIES	643
6a8	DECK, TRANSV. TOP		3	VARIES	33
6a9	DECK, TRANSV. TOP		22	VARIES	658
6a10	DECK, TRANSV. TOP		21	VARIES	587
6a11	DECK, TRANSV. TOP		24	VARIES	628
6a12	DECK, TRANSV. TOP		28	VARIES	678
6a13	DECK, TRANSV. TOP		36	VARIES	793
6a14	DECK, TRANSV. TOP		95	VARIES	1,837
6a15	DECK, TRANSV. TOP		158	VARIES	2,106
6a16	DECK, TRANSV. TOP		75	VARIES	460
5a17	DECK, TRANSV. TOP		3	VARIES	26
5a18	DECK, TRANSV. TOP		21	VARIES	435
5a19	DECK, TRANSV. TOP		15	VARIES	220
6a20	DECK, TRANSV. BOTTOM		68	VARIES	694
6a21	DECK, TRANSV. BOTTOM		70	VARIES	837
6a22	DECK, TRANSV. BOTTOM		94	VARIES	1,988
6a23	DECK, TRANSV. BOTTOM		17	VARIES	311
6a24	DECK, TRANSV. BOTTOM		23	VARIES	605
6a25	DECK, TRANSV. BOTTOM		3	VARIES	37
6a26	DECK, TRANSV. BOTTOM		22	VARIES	657
6a27	DECK, TRANSV. BOTTOM		21	VARIES	586
6a28	DECK, TRANSV. BOTTOM		24	VARIES	626
6a29	DECK, TRANSV. BOTTOM		28	VARIES	676
6a30	DECK, TRANSV. BOTTOM		36	VARIES	791
6a31	DECK, TRANSV. BOTTOM		94	VARIES	1,818
6a32	DECK, TRANSV. BOTTOM		158	VARIES	2,106
6a33	DECK, TRANSV. BOTTOM		77	VARIES	477
5a34	DECK, TRANSV. BOTTOM		3	VARIES	28
5a35	DECK, TRANSV. BOTTOM		21	VARIES	434
5a36	DECK, TRANSV. BOTTOM		15	VARIES	220
5a37	DECK AT DRAINS		24	3'-0	75

STAINLESS BARS

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6b1	DECK, LONGIT. TOP & BOTTOM		1549	36'-3	84,339
6b2	DECK, LONGIT. TOP & BOTTOM		79	12'-0	1,424
6b3	DECK, LONGIT. TOP & BOTTOM		55	8'-0	661
6b4	DECK, LONGIT. TOP		4	VARIES	78
6b5	DECK, LONGIT. TOP		4	VARIES	66
6b6	DECK, LONGIT. TOP		2	VARIES	102
6b7	DECK, LONGIT. TOP		3	VARIES	86
6b8	DECK, LONGIT. TOP		4	VARIES	88
6b9	DECK, LONGIT. TOP		1	15'-11	24
6b10	DECK, LONGIT. TOP		4	VARIES	132
6b11	DECK, LONGIT. TOP		10	VARIES	160
6b12	DECK, LONGIT. TOP		3	VARIES	43
6b13	DECK, LONGIT. TOP		1	5'-7	8
6b14	DECK, LONGIT. TOP		1	12'-7	19
6b15	DECK, LONGIT. TOP		1	5'-9	9
6b16	DECK, LONGIT. BOTTOM		4	VARIES	93
6b17	DECK, LONGIT. BOTTOM		4	VARIES	69
6b18	DECK, LONGIT. BOTTOM		2	VARIES	70
6b19	DECK, LONGIT. BOTTOM		4	VARIES	152
6b20	DECK, LONGIT. BOTTOM		3	VARIES	67
6b21	DECK, LONGIT. BOTTOM		2	VARIES	18
6b22	DECK, LONGIT. BOTTOM		4	VARIES	22
6b23	DECK, LONGIT. BOTTOM		10	VARIES	71
6b24	DECK, LONGIT. BOTTOM		3	VARIES	13
6b25	DECK, LONGIT. BOTTOM		1	7'-6	11
6b26	DECK, LONGIT. BOTTOM		1	21'-3	32
6b27	DECK, LONGIT. BOTTOM		1	9'-6	14
5d1	ABUTMENT DIAPHRAGM, HOOPS		65	4'-3	288
5d2	DECK AT BLOCKOUT, STIRRUPS		92	5'-8	544
5d3	DECK AT BLOCKOUT, STIRRUPS		92	6'-2	592
5d4	EXPANSION JOINT BLOCKOUT, STIRRUPS		92	7'-4	704
4d5	END DAM DIAPHRAGM		16	3'-5	37
4d6	END DAM DIAPHRAGM		4	4'-6	12
5e1	END DAM DIAPHRAGM, LONGIT. TOP		4	32'-10	137
5e2	END DAM DIAPHRAGM, LONGIT. BOTTOM		4	10'-10	45
5e3	END DAM DIAPHRAGM, LONGIT. BOTTOM		2	5'-2	11
5e4	END DAM DIAPHRAGM, LONGIT. BOTTOM		6	9'-3	58
5e5	DECK AT BLOCKOUT, TRANSV. TOP & BOTTOM		16	24'-8	412
5e6	DECK AT BLOCKOUT, TRANSV. TOP & BOTTOM		8	38'-10	324
5e7	DECK AT BLOCKOUT, TRANSV. TOP & BOTTOM		12	10'-8	134
5e8	DECK AT BLOCKOUT, TRANSV. TOP & BOTTOM		9	9'-2	86
5e9	DECK AT BLOCKOUT, TRANSV. TOP & BOTTOM		3	7'-5	23
5e10	DECK AT BLOCKOUT, TRANSV. TOP & BOTTOM		6	3'-8	23
5e11	DECK AT BLOCKOUT, TRANSV. TOP & BOTTOM		6	2'-10	18
5e12	EXPANSION JOINT BLOCKOUT, TRANSV. TOP		6	24'-8	154
5e13	EXPANSION JOINT BLOCKOUT, TRANSV. TOP		3	38'-10	122
REINFORCING STEEL STAINLESS STEEL - TOTAL (LBS.)				227,198	

VARYING BAR LENGTHS

BAR	MIN.	MAX.	BAR	MIN.	MAX.	BAR	MIN.	MAX.
6a3	13'-7	14'-8	6a20	13'-7	14'-8	6b4	10'-3	32'-9
6a4	16'-0	17'-1	6a21	15'-11	17'-2	6b5	7'-8	39'-4
6a5	26'-0	28'-3	6a22	26'-0	28'-2	6b6	26'-8	36'-0
6a6	3'-4	23'-10	6a23	2'-8	24'-4	6b7	16'-1	35'-4
6a7	2'-7	35'-8	6a24	3'-3	35'-0	6b8	11'-3	40'-0
6a8	14'-8	22'-0	6a25	16'-4	23'-2	6b10	5'-11	16'-5
6a9	37'-4	39'-10	6a26	37'-3	39'-9	6b11	6'-7	36'-2
6a10	34'-11	37'-3	6a27	34'-11	37'-2	6b12	5'-0	11'-4
6a11	32'-4	34'-10	6a28	32'-3	34'-9	6b16	10'-3	32'-9
6a12	29'-5	32'-3	6a29	29'-4	32'-2	6b17	7'-8	39'-4
6a13	25'-11	29'-4	6a30	25'-10	29'-3	6b18	26'-8	36'-1
6a14	17'-10	25'-9	6a31	17'-10	25'-9	6b19	10'-6	39'-3
6a15	8'-3	17'-9	6a32	8'-3	17'-9	6b20	15'-2	34'-5
6a16	5'-3	8'-2	6a33	5'-3	8'-3	6b21	10'-4	19'-11
5a17	16'-4	23'-2	5a34	18'-2	24'-0	6b22	5'-11	16'-5
5a18	37'-5	39'-9	5a35	37'-4	39'-8	6b23	6'-6	36'-2
5a19	26'-9	28'-2	5a36	26'-10	28'-2	6b24	4'-11	11'-4

BENT BAR DETAILS

BAR	A	B	C	E	F	G	Φ
6a9	22'-2	24'-8	21'-6 1/4	23'-11 3/8	5'-3 13/16	5'-11 1/16	76.1
6a10	19'-9	22'-1	19'-2 9/16	21'-5 13/16	4'-6 13/16	5'-1 5/16	76.6
6a11	17'-2	19'-8	16'-8 13/16	19'-2 1/16	3'-9 5/16	4'-4 5/8	77.1
6a12	14'-3	17'-1	13'-11 1/16	16'-8 1/4	3'-0 1/2	3'-7 3/4	77.7
6a13	10'-9	14'-2	10'-6 5/8	13'-10 1/2	2'-2 1/16	2'-10 1/16	78.4
6a14	2'-8	10'-7	2'-7 1/16	10'-4 3/4	5 5/16	1'-11 11/16	79.3
5a18	22'-3	24'-7	21'-7 1/2	22'-10 1/8	5'-2 1/8	5'-11 11/16	76.4
5a19	11'-7	13'-0	11'-4 1/4	12'-8 3/4	2'-3 1/2	2'-7 1/16	78.6
6a26	22'-1	24'-7	21'-5 1/4	23'-10 3/8	5'-3 9/16	5'-10 3/4	76.1
6a27	19'-9	22'-0	19'-2 9/16	21'-4 7/8	4'-6 13/16	5'-1	76.6
6a28	17'-1	19'-7	16'-7 7/8	19'-1 1/16	3'-9 1/16	4'-4 3/8	77.1
6a29	14'-2	17'-0	13'-10 1/16	16'-7 5/16	3'-0 4	3'-7 1/2	77.7
6a30	10'-8	14'-1	10'-5 3/8	13'-9 1/2	2'-1 13/16	2'-10 1/16	78.4
6a31	2'-8	10'-7	2'-7 1/16	10'-4 3/4	5 5/16	1'-11 11/16	79.3
5a35	22'-2	24'-6	21'-6 1/2	23'-9 3/16	5'-2 5/8	5'-11 3/8	75.9
5a36	11'-8	13'-0	11'-5 1/4	12'-8 3/4	2'-3 3/4	2'-7 3/4	78.3

VOID

REVISED: 06-08-2022
THIS SHEET VOIDED.

REASON: EXCESSIVE CHANGES
CREATED UNCLEAR REINFORCING
STEEL QUANTITY TABLE.

DESIGN FOR VARIABLE SKEW (L.A.)
306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
153'-0 END SPANS
DECK REINF. BAR LIST & QUANT.
STA. 3554+77.00 (E 1-480 RAMP C)
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 50 OF 70 FILE NO. 30170 DESIGN NO. 1720

STAINLESS BARS

REINFORCING BAR LIST

BENT BAR DETAILS

VARYING BAR LENGTHS

VOID

REVISED: 06-08-2022
THIS SHEET VOIDED.

REASON: EXCESSIVE CHANGES
CREATED UNCLEAR REINFORCING
STEEL QUANTITY TABLE.

DESIGN FOR VARIABLE SKEW (L.A.)
306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
153'-0 END SPANS
DECK REINF. BAR LIST & QUANT.
STA. 3554+77.00 (E 1-480 RAMP C)
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 50 OF 70 FILE NO. 30170 DESIGN NO. 1720

DESIGN TEAM

HR GREEN, INC.

POTTAWATTAMIE COUNTY

PROJECT NUMBER

IM-480-1(166)0--13-78

SHEET NUMBER

51

6/7/2022

7:54:06 AM

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REVISED: JUNE 8, 2022

REINFORCING BAR LIST

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6a1	DECK, TRANSV. TOP & BOTTOM		1282	37'-3	71,727
6a2	DECK, TRANSV. TOP & BOTTOM		929	26'-8	37,210
6a3	DECK, TRANSV. TOP		68	VARIES	1,443
6a4	DECK, TRANSV. TOP		70	VARIES	1,739
6a5	DECK, TRANSV. TOP		160	VARIES	6,799
6a6	DECK, TRANSV. TOP		15	VARIES	316
6a7	DECK, TRANSV. TOP		25	VARIES	731
6a8	DECK, TRANSV. TOP		3	VARIES	83
6a9	DECK, TRANSV. TOP		22	VARIES	1,275
6a10	DECK, TRANSV. TOP		21	VARIES	1,138
6a11	DECK, TRANSV. TOP		24	VARIES	1,211
6a12	DECK, TRANSV. TOP		28	VARIES	1,297
6a13	DECK, TRANSV. TOP		36	VARIES	1,494
6a14	DECK, TRANSV. TOP		78	VARIES	2,616
6a15	DECK, TRANSV. TOP		111	VARIES	2,543
6a16	DECK, TRANSV. TOP		75	VARIES	1,080
5a17	DECK, TRANSV. TOP		3	VARIES	62
5a18	DECK, TRANSV. TOP		21	VARIES	845
5a19	DECK, TRANSV. TOP		15	VARIES	430
6a20	DECK, TRANSV. BOTTOM		68	VARIES	1,443
6a21	DECK, TRANSV. BOTTOM		70	VARIES	1,739
6a22	DECK, TRANSV. BOTTOM		160	VARIES	6,799
6a23	DECK, TRANSV. BOTTOM		15	VARIES	331
6a24	DECK, TRANSV. BOTTOM		24	VARIES	700
6a25	DECK, TRANSV. BOTTOM		3	VARIES	89
6a26	DECK, TRANSV. BOTTOM		22	VARIES	1,272
6a27	DECK, TRANSV. BOTTOM		21	VARIES	1,137
6a28	DECK, TRANSV. BOTTOM		24	VARIES	1,208
6a29	DECK, TRANSV. BOTTOM		28	VARIES	1,293
6a30	DECK, TRANSV. BOTTOM		36	VARIES	1,489
6a31	DECK, TRANSV. BOTTOM		78	VARIES	2,616
6a32	DECK, TRANSV. BOTTOM		110	VARIES	2,520
6a33	DECK, TRANSV. BOTTOM		75	VARIES	1,080
5a34	DECK, TRANSV. BOTTOM		3	VARIES	66
5a35	DECK, TRANSV. BOTTOM		21	VARIES	843
5a36	DECK, TRANSV. BOTTOM		15	VARIES	430
5a37	DECK AT DRAINS		24	3'-0	75

VARYING BAR LENGTHS

BAR	MIN.	MAX.	BAR	MIN.	MAX.	BAR	MIN.	MAX.
6a3	13'-7	14'-8	6a21	15'-11	17'-2	6b6	27'-2	36'-6
6a4	16'-0	17'-1	6a22	25'-11	30'-8	6b7	17'-7	36'-10
6a5	25'-11	30'-8	6a23	5'-1	24'-4	6b8	12'-3	31'-5
6a6	4'-5	23'-8	6a24	2'-10	36'-0	6b9	6'-10	16'-5
6a7	2'-2	36'-9	6a25	16'-4	23'-2	6b10	6'-2	16'-8
6a8	14'-8	22'-0	6a26	37'-3	39'-9	6b11	7'-4	36'-11
6a9	37'-4	39'-10	6a27	34'-11	37'-2	6b12	5'-9	12'-1
6a10	34'-11	37'-3	6a28	32'-3	34'-9	6b16	11'-9	34'-3
6a11	32'-4	34'-10	6a29	29'-4	32'-2	6b17	8'-8	40'-0
6a12	29'-5	32'-3	6a30	25'-10	29'-3	6b18	27'-2	36'-7
6a13	25'-11	29'-4	6a31	19'-0	25'-8	6b19	12'-0	31'-2
6a14	19'-0	25'-8	6a32	11'-6	19'-0	6b20	6'-7	35'-5
6a15	11'-6	19'-0	6a33	7'-8	11'-6	6b21	10'-10	20'-5
6a16	7'-8	11'-6	5a34	18'-2	24'-0	6b22	6'-2	16'-8
5a17	16'-4	23'-2	5a35	37'-4	39'-8	6b23	7'-3	36'-11
5a18	37'-5	39'-9	5a36	26'-10	28'-2	6b24	5'-8	12'-1
5a19	26'-9	28'-2	6b4	11'-9	34'-3			
6a20	13'-7	14'-8	6b5	8'-8	40'-0			

NOTE: LENGTHS SHOWN CORRESPOND TO TOTAL BAR LENGTHS.

EPOXY COATED BARS

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6b1	DECK, LONGIT. TOP & BOTTOM		1574	38'-0	89,838
6b2	DECK, LONGIT. TOP & BOTTOM		79	12'-0	1,424
6b3	DECK, LONGIT. TOP & BOTTOM		55	8'-0	661
6b4	DECK, LONGIT. TOP		4	VARIES	138
6b5	DECK, LONGIT. TOP		4	VARIES	146
6b6	DECK, LONGIT. TOP		2	VARIES	96
6b7	DECK, LONGIT. TOP		3	VARIES	123
6b8	DECK, LONGIT. TOP		3	VARIES	98
6b9	DECK, LONGIT. TOP		2	VARIES	35
6b10	DECK, LONGIT. TOP		4	VARIES	69
6b11	DECK, LONGIT. TOP		10	VARIES	332
6b12	DECK, LONGIT. TOP		3	VARIES	40
6b13	DECK, LONGIT. TOP		1	6'-4	10
6b14	DECK, LONGIT. TOP		1	13'-4	20
6b15	DECK, LONGIT. TOP		1	6'-6	10
6b16	DECK, LONGIT. BOTTOM		4	VARIES	138
6b17	DECK, LONGIT. BOTTOM		4	VARIES	146
6b18	DECK, LONGIT. BOTTOM		2	VARIES	96
6b19	DECK, LONGIT. BOTTOM		3	VARIES	97
6b20	DECK, LONGIT. BOTTOM		4	VARIES	126
6b21	DECK, LONGIT. BOTTOM		2	VARIES	47
6b22	DECK, LONGIT. BOTTOM		4	VARIES	69
6b23	DECK, LONGIT. BOTTOM		10	VARIES	332
6b24	DECK, LONGIT. BOTTOM		3	VARIES	40
6b25	DECK, LONGIT. BOTTOM		1	8'-3	12
6b26	DECK, LONGIT. BOTTOM		1	22'-0	33
6b27	DECK, LONGIT. BOTTOM		1	10'-3	15
5d1	ABUTMENT DIAPHRAGM, HOOPS		65	4'-3	288
5d2	DECK AT BLOCKOUT, STIRRUPS		92	5'-8	544
5d3	DECK AT BLOCKOUT, STIRRUPS		92	6'-2	592
5d4	EXPANSION JOINT BLOCKOUT, STIRRUPS		92	7'-4	704
4d5	END DAM DIAPHRAGM		16	3'-5	37
4d6	END DAM DIAPHRAGM		4	4'-6	12
5e1	END DAM DIAPHRAGM, LONGIT. TOP		4	32'-10	137
5e2	END DAM DIAPHRAGM, LONGIT. BOTTOM		4	10'-10	45
5e3	END DAM DIAPHRAGM, LONGIT. BOTTOM		2	5'-2	11
5e4	END DAM DIAPHRAGM, LONGIT. BOTTOM		6	9'-3	58
5e5	DECK AT BLOCKOUT, TRANSV. TOP & BOTTOM		16	24'-8	412
5e6	DECK AT BLOCKOUT, TRANSV. TOP & BOTTOM		8	38'-10	324
5e7	DECK AT BLOCKOUT, TRANSV. TOP & BOTTOM		12	10'-8	134
5e8	DECK AT BLOCKOUT, TRANSV. TOP & BOTTOM		9	9'-2	86
5e9	DECK AT BLOCKOUT, TRANSV. TOP & BOTTOM		3	7'-5	23
5e10	DECK AT BLOCKOUT, TRANSV. TOP & BOTTOM		6	3'-8	23
5e11	DECK AT BLOCKOUT, TRANSV. TOP & BOTTOM		6	2'-10	18
5e12	EXPANSION JOINT BLOCKOUT, TRANSV. TOP		6	24'-8	154
5e13	EXPANSION JOINT BLOCKOUT, TRANSV. TOP		3	38'-10	122
REINFORCING STEEL - TOTAL (LBS.)				257,084	

BENT BAR DETAILS

NOTE:
FOR 5a BARS, D = 3 3/4
FOR 6a BARS, D = 4 1/2

6a9 - 6a14
5a18 & 5a19
6a26 - 6a31
5a35 & 5a36

BAR	A	B	C	E	F	G	Φ
6a9	22'-2	24'-8	21'-6 1/4	23'-11 3/8	5'-3 13/16	5'-11 1/16	76.1
6a10	19'-9	22'-1	19'-2 9/16	21'-5 13/16	4'-6 13/16	5'-1 5/16	76.6
6a11	17'-2	19'-8	16'-8 13/16	19'-2 1/16	3'-9 5/16	4'-4 5/8	77.1
6a12	14'-3	17'-1	13'-11 1/16	16'-8 1/4	3'-0 1/2	3'-7 3/4	77.7
6a13	10'-9	14'-2	10'-6 5/8	13'-10 1/2	2'-2 1/16	2'-10 3/8	78.4
6a14	3'-10	10'-6	3'-9 1/4	10'-3 3/4	8 1/2	1'-11 3/8	79.3
5a18	22'-3	24'-7	21'-7 1/2	22'-10 1/8	5'-2 1/8	5'-11 11/16	76.4
5a19	11'-7	13'-0	11'-4 1/4	12'-8 3/4	2'-3 1/2	2'-7 1/16	78.6
6a26	22'-1	24'-7	21'-5 1/4	23'-10 3/8	5'-3 9/16	5'-10 3/4	76.1
6a27	19'-9	22'-0	19'-2 9/16	21'-4 7/8	4'-6 13/16	5'-1	76.6
6a28	17'-1	19'-7	16'-7 7/8	19'-1 1/16	3'-9 1/16	4'-4 3/8	77.1
6a29	14'-2	17'-0	13'-10 1/16	16'-7 5/16	3'-0 1/4	3'-7 1/2	77.7
6a30	10'-8	14'-1	10'-5 3/8	13'-9 1/2	2'-1 13/16	2'-10 1/16	78.4
6a31	3'-10	10'-6	3'-9 1/4	10'-3 3/4	8 1/2	1'-11 3/8	79.3
5a35	22'-2	24'-6	21'-6 1/2	23'-9 3/16	5'-2 5/8	5'-11 3/8	75.9
5a36	11'-8	13'-0	11'-5 1/4	12'-8 3/4	2'-3 1/4	2'-7 3/4	78.3

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

REVISOR: 06-08-2022 THIS SHEET ADDED TO SHOW UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. UPDATED INCORRECT BAR WEIGHTS, CHANGED REINFORCING STEEL QUANTITIES, COLOR OF REINFORCEMENT, AND BAR LENGTHS.

REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION. CORRECTED WEIGHTS OF MULTIPLE DECK BARS.

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE

153'-0 END SPANS

DECK REINF. BAR LIST & QUANT.

STA. 3554+77.00 (@ 1-480 RAMP C) NOVEMBER, 2020

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 50 OF 70 FILE NO. 30170 DESIGN NO. 1720

DESIGN TEAM HR GREEN, INC.

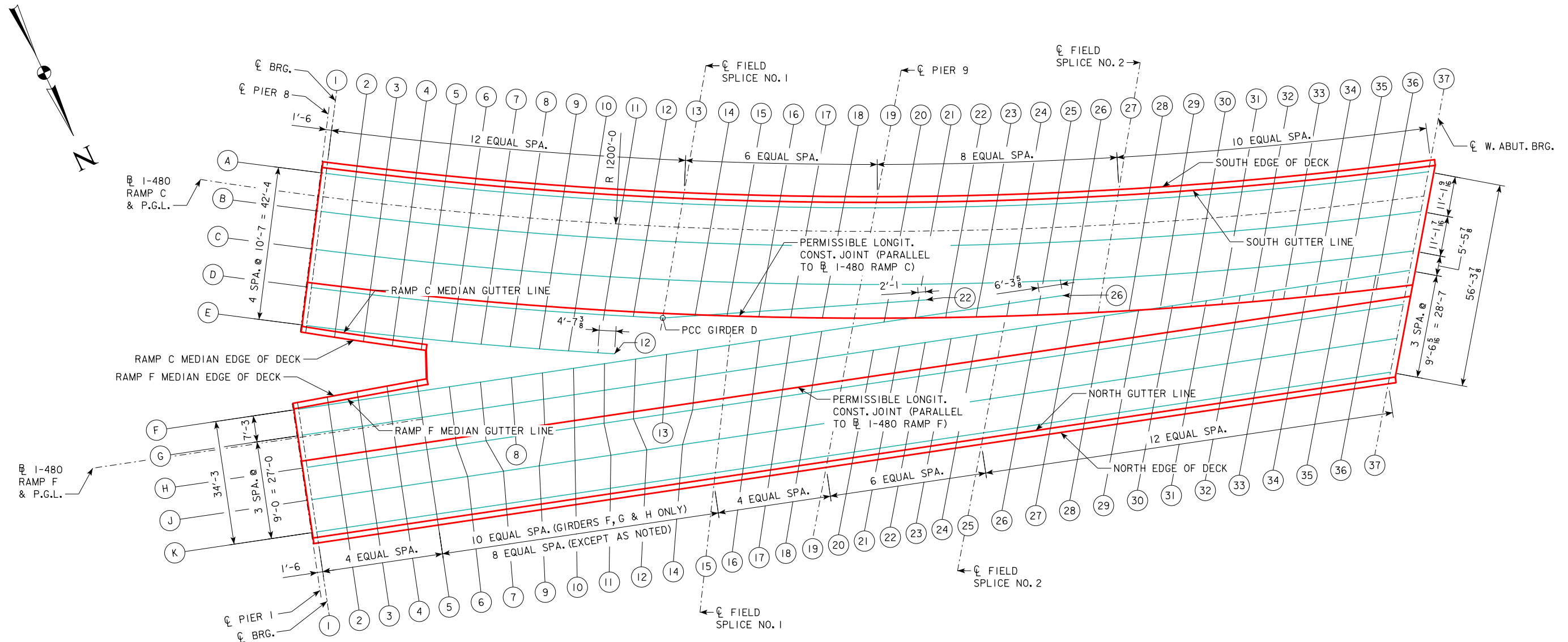
POTTAWATTAMIE COUNTY

PROJECT NUMBER IM-480-1(166)0--13-78

SHEET NUMBER 51A

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REVISED: JUNE 8, 2022



TOP OF DECK DIAGRAM

RAMP C LOCATION	LINE SPACING			
	LINES 1-13	LINES 13-19	LINES 19-27	LINES 27-37
SOUTH EDGE OF DECK	8'-2 ³ / ₄	8'-10 ⁵ / ₈	8'-10 ¹ / ₂	8'-10 ¹ / ₂
SOUTH GUTTER LINE	8'-2 ³ / ₄	8'-10 ¹ / ₂	8'-4 ¹ / ₈	8'-7 ⁵ / ₈
GIRDER LINE A	8'-2 ⁵ / ₈	8'-10 ¹ / ₂	8'-4 ¹ / ₈	8'-7 ¹ / ₂
GIRDER LINE B	8'-2 ¹ / ₄	8'-10 ¹ / ₈	8'-4 ³ / ₈	8'-7 ¹ / ₄
GIRDER LINE C	8'-1 ³ / ₄	8'-9 ⁵ / ₈	8'-4 ³ / ₄	8'-6 ⁷ / ₈
LONGITUDINAL JOINT	8'-1 ³ / ₈	8'-9 ³ / ₈	8'-5	8'-6 ¹ / ₂
GIRDER LINE D	8'-1 ¹ / ₄	8'-11 ³ / ₈	8'-6 ³ / ₈	-
GIRDER LINE E	8'-7/8	-	-	-
MEDIAN GUTTER LINE	8'-6/8	-	-	-
MEDIAN EDGE OF DECK	8'-6/8	-	-	-
GIRDER LINE F	-	-	8'-8 ⁵ / ₈	-

RAMP F LOCATION	LINE SPACING				
	LINES 1-5	LINES 5-15	LINES 15-19	LINES 19-25	LINES 25-37
MEDIAN EDGE OF DECK	8'-4 ³ / ₈	-	-	-	-
MEDIAN GUTTER LINE	8'-4 ³ / ₈	-	-	-	-
GIRDER LINE F	8'-4 ¹ / ₄	8'-7 ⁷ / ₈	8'-7 ³ / ₄	-	-
GIRDER LINE G	8'-4 ¹ / ₄	8'-5 ⁵ / ₈	8'-5 ⁷ / ₈	7'-2 ⁵ / ₈	9'-5 ¹ / ₂
LONGITUDINAL JOINT	8'-4 ¹ / ₄	8'-3 ³ / ₈	8'-4 ¹ / ₈	7'-2 ⁵ / ₈	9'-5 ¹ / ₂
GIRDER LINE H	8'-4 ¹ / ₄	8'-2 ³ / ₄	8'-3 ⁵ / ₈	7'-2 ⁵ / ₈	9'-5 ¹ / ₂
GIRDER LINE J	8'-4 ¹ / ₄	9'-11 ⁷ / ₈	8'-1 ³ / ₈	7'-2 ⁵ / ₈	9'-5 ¹ / ₂
GIRDER LINE K	8'-4 ¹ / ₄	9'-8 ³ / ₈	7'-11 ¹ / ₈	7'-2 ⁵ / ₈	9'-5 ¹ / ₂
NORTH GUTTER LINE	8'-4 ¹ / ₄	9'-7 ³ / ₄	7'-10 ³ / ₄	7'-2 ⁵ / ₈	9'-5 ¹ / ₂
NORTH EDGE OF DECK	8'-4 ¹ / ₄	9'-7 ¹ / ₈	7'-10 ¹ / ₄	7'-2 ⁵ / ₈	9'-5 ¹ / ₂

DESIGN FOR VARIABLE SKEW (L.A.)
**306'-0 x VARIES CONTINUOUS
 WELDED GIRDER BRIDGE**
 153'-0 END SPANS
TOP OF DECK DIAGRAM
 STA. 3554+77.00 (CL I-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 51 OF 70 FILE NO. 30170 DESIGN NO. 1720



TABLE OF TOP OF DECK ELEVATIONS																			
LOCATION	Ⓢ BRG. PIER 8 Ⓢ BRG. PIER 1	SPAN NO. 1																	Ⓢ BRG. PIER 9
	LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9	LINE 10	LINE 11	LINE 12	LINE 13	LINE 14	LINE 15	LINE 16	LINE 17	LINE 18	LINE 19
SOUTH EDGE OF DECK	1021.56	1021.18	1020.80	1020.42	1020.03	1019.65	1019.27	1018.89	1018.51	1018.12	1017.74	1017.36	1016.98	1016.57	1016.16	1015.74	1015.33	1014.92	1014.51
SOUTH GUTTER LINE	1021.56	1021.18	1020.80	1020.42	1020.04	1019.66	1019.27	1018.89	1018.51	1018.13	1017.75	1017.37	1016.99	1016.58	1016.17	1015.76	1015.34	1014.93	1014.52
GIRDER LINE A	1021.64	1021.26	1020.87	1020.49	1020.11	1019.73	1019.35	1018.97	1018.59	1018.21	1017.83	1017.45	*1017.07	1016.66	1016.25	1015.84	1015.43	1015.02	1014.61
GIRDER LINE B	1022.16	1021.79	1021.42	1021.04	1020.66	1020.29	1019.91	1019.54	1019.16	1018.79	1018.41	1018.04	*1017.66	1017.26	1016.85	1016.45	1016.04	1015.64	1015.23
GIRDER LINE C	1022.69	1022.32	1021.95	1021.58	1021.21	1020.84	1020.47	1020.10	1019.73	1019.36	1018.99	1018.62	*1018.25	1017.85	1017.45	1017.05	1016.65	1016.25	1015.85
RAMP C LONGITUDINAL JOINT	1023.16	1022.79	1022.42	1022.05	1021.70	1021.33	1020.97	1020.60	1020.23	1019.87	1019.50	1019.14	1018.77	1018.37	1017.98	1017.58	1017.19	1016.79	1016.39
GIRDER LINE D	1023.20	1022.83	1022.47	1022.10	1021.74	1021.37	1021.01	1020.64	1020.28	1019.91	1019.55	1019.18	*1018.82	1018.38	1017.94	1017.50	1017.05	1016.61	1016.18
GIRDER LINE E	1023.52	1023.16	1022.80	1022.44	1022.08	1021.72	1021.35	1020.99	1020.63	1020.27	1019.89	1019.68	-	-	-	-	-	-	-
RAMP C MEDIAN GUTTER LINE	1023.53	1023.18	1022.83	1022.47	1022.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAMP C MEDIAN EDGE OF DECK	1023.58	1023.23	1022.88	1022.52	1022.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAMP F MEDIAN EDGE OF DECK	1024.17	1023.75	1023.32	1022.90	1022.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAMP F MEDIAN GUTTER LINE	1024.17	1023.75	1023.32	1022.90	1022.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GIRDER LINE F	1024.17	1023.76	1023.34	1022.92	1022.50	1022.07	1021.64	1021.20	1020.77	1020.33	1019.88	1019.43	1018.99	1018.55	*1018.12	1017.70	1017.29	1016.87	1016.46
GIRDER LINE G	1024.31	1023.89	1023.47	1023.05	1022.64	1022.21	1021.79	1021.37	1020.95	1020.52	1020.06	1019.61	1019.17	1018.74	*1018.31	1017.88	1017.48	1017.08	1016.68
RAMP F LONGITUDINAL JOINT	1024.19	1023.77	1023.35	1022.93	1022.51	1022.10	1021.69	1021.28	1020.87	1020.44	1020.00	1019.56	1019.13	1018.72	1018.31	1017.91	1017.53	1017.15	1016.78
GIRDER LINE H	1024.15	1023.73	1023.31	1022.89	1022.48	1022.07	1021.66	1021.25	1020.84	1020.42	1019.98	1019.54	1019.11	1018.71	*1018.31	1017.91	1017.54	1017.17	1016.80
GIRDER LINE J	1023.97	1023.55	1023.13	1022.71	1022.30	1021.80	1021.30	-	1020.80	1020.30	1019.77	1019.24	-	1018.74	*1018.29	1017.92	1017.57	1017.24	1016.90
GIRDER LINE K	1023.79	1023.37	1022.95	1022.53	1022.12	1021.63	1021.15	-	1020.67	1020.19	1019.66	1019.15	-	1018.66	*1018.24	1017.91	1017.59	1017.29	1016.98
NORTH GUTTER LINE	1023.76	1023.34	1022.92	1022.50	1022.09	1021.60	1021.12	-	1020.64	1020.17	1019.65	1019.14	-	1018.65	1018.24	1017.91	1017.59	1017.29	1016.99
NORTH EDGE OF DECK	1023.76	1023.34	1022.92	1022.50	1022.09	1021.61	1021.13	-	1020.65	1020.18	1019.66	1019.15	-	1018.66	1018.25	1017.93	1017.61	1017.31	1017.01
LOCATION	SPAN NO. 2																	Ⓢ W. ABUT. BRG.	
	LINE 20	LINE 21	LINE 22	LINE 23	LINE 24	LINE 25	LINE 26	LINE 27	LINE 28	LINE 29	LINE 30	LINE 31	LINE 32	LINE 33	LINE 34	LINE 35	LINE 36	LINE 37	
SOUTH EDGE OF DECK	1014.12	1013.73	1013.35	1012.96	1012.57	1012.19	1011.81	1011.44	1011.06	1010.68	1010.32	1009.97	1009.64	1009.31	1008.99	1008.68	1008.37	1008.08	
SOUTH GUTTER LINE	1014.14	1013.75	1013.36	1012.98	1012.59	1012.20	1011.83	1011.45	1011.07	1010.70	1010.34	1009.99	1009.65	1009.33	1009.01	1008.69	1008.39	1008.09	
GIRDER LINE A	1014.22	1013.84	1013.45	1013.07	1012.68	1012.29	1011.92	*1011.54	1011.16	1010.79	1010.43	1010.08	1009.74	1009.41	1009.09	1008.77	1008.47	1008.17	
GIRDER LINE B	1014.85	1014.46	1014.08	1013.70	1013.31	1012.93	1012.55	*1012.18	1011.80	1011.43	1011.07	1010.72	1010.36	1010.01	1009.67	1009.33	1009.01	1008.69	
GIRDER LINE C	1015.47	1015.09	1014.71	1014.33	1013.94	1013.56	1013.18	*1012.81	1012.44	1012.07	1011.71	1011.36	1010.99	1010.63	1010.26	1009.91	1009.56	1009.22	
RAMP C LONGITUDINAL JOINT	1016.02	1015.64	1015.26	1014.88	1014.50	1014.12	1013.74	1013.37	1013.00	1012.63	1012.27	1011.92	1011.56	1011.18	1010.80	1010.43	1010.06	1009.71	
GIRDER LINE D	1015.76	1015.35	1015.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GIRDER LINE E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
RAMP C MEDIAN GUTTER LINE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
RAMP C MEDIAN EDGE OF DECK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
RAMP F MEDIAN EDGE OF DECK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
RAMP F MEDIAN GUTTER LINE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GIRDER LINE F	1016.05	1015.64	1015.22	1014.81	1014.40	1013.99	1013.69	-	-	-	-	-	-	-	-	-	-	-	
GIRDER LINE G	1016.33	1015.99	1015.65	1015.31	1014.97	*1014.63	1014.19	1013.75	1013.31	1012.89	1012.46	1012.03	1011.61	1011.16	1010.73	1010.30	1009.89	1009.49	
RAMP F LONGITUDINAL JOINT	1016.45	1016.13	1015.81	1015.49	1015.17	1014.75	1014.44	1013.99	1013.57	1013.14	1012.72	1012.31	1011.91	1011.48	1011.05	1010.63	1010.21	1009.81	
GIRDER LINE H	1016.48	1016.16	1015.84	1015.52	1015.20	*1014.88	1014.46	1014.05	1013.64	1013.21	1012.79	1012.38	1011.98	1011.55	1011.12	1010.70	1010.28	1009.88	
GIRDER LINE J	1016.60	1016.30	1016.00	1015.71	1015.41	*1015.11	1014.72	1014.33	1013.95	1013.53	1013.11	1012.69	1012.29	1011.88	1011.44	1011.01	1010.60	1010.19	
GIRDER LINE K	1016.70	1016.43	1016.15	1015.87	1015.60	*1015.32	1014.96	1014.60	1014.24	1013.86	1013.43	1013.01	1012.60	1012.20	1011.76	1011.33	1010.91	1010.50	
NORTH GUTTER LINE	1016.72	1016.45	1016.17	1015.90	1015.63	1015.35	1015.00	1014.64	1014.29	1013.91	1013.48	1013.06	1012.65	1012.26	1011.82	1011.39	1010.96	1010.56	
NORTH EDGE OF DECK	1016.74	1016.47	1016.20	1015.93	1015.66	1015.39	1015.04	1014.69	1014.34	1013.97	1013.54	1013.12	1012.71	1012.31	1011.88	1011.44	1011.02	1010.61	

NOTE:
* - INDICATES TOP OF DECK ELEVATION AT LOCATION
OF FIELD SPLICE

FOR TOP OF DECK DIAGRAM, SEE DESIGN SHEET 51.



DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE

153'-0 END SPANS

TOP OF DECK ELEVATIONS

STA. 3554+77.00 (Ⓢ 1-480 RAMP C)

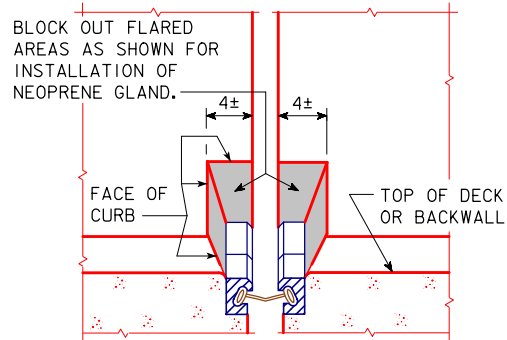
NOVEMBER, 2020

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

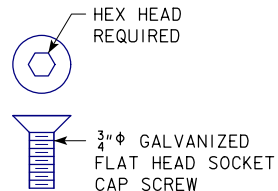
DESIGN SHEET NO. 52 OF 70 FILE NO. 30170 DESIGN NO. 1720

REVISION 08-13 - ADDED A CORRESPONDING MAXIMUM DECK TEMPERATURE COLUMN TO EXPANSION DEVICE TABLE. ADDED A SPLICE DETAIL TO THE PART PLAN VIEWS. ENGLISHDECKRAILBRIDGES.DGN 1026 - THIS SHEET ISSUED 03-02.

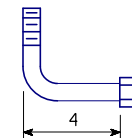


BLOCKOUT DETAIL
(DRAWN FOR 0° SKEW FOR ILLUSTRATIVE PURPOSES)

CONTRACTOR TO NOTE THAT THE CAP SCREW ANCHORAGE SYSTEM FOR THE 3/8" BARRIER PLATES ARE ALWAYS TO BE PLACED ON THE ONCOMING TRAFFIC SIDE.

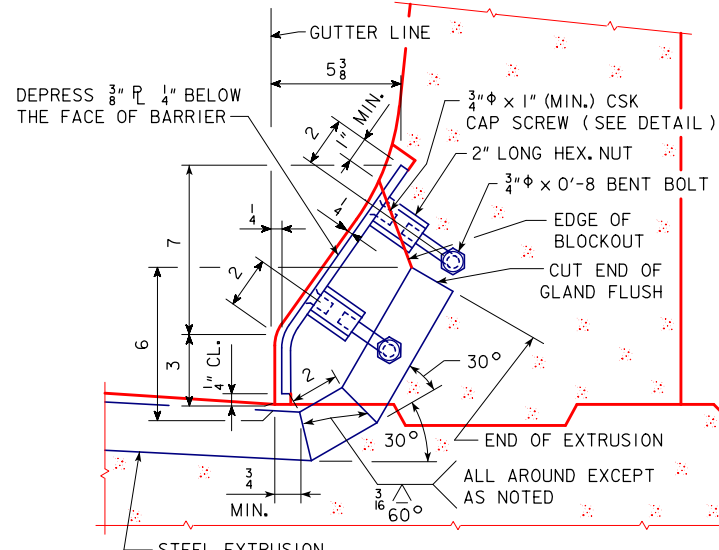


CAP SCREW DETAIL

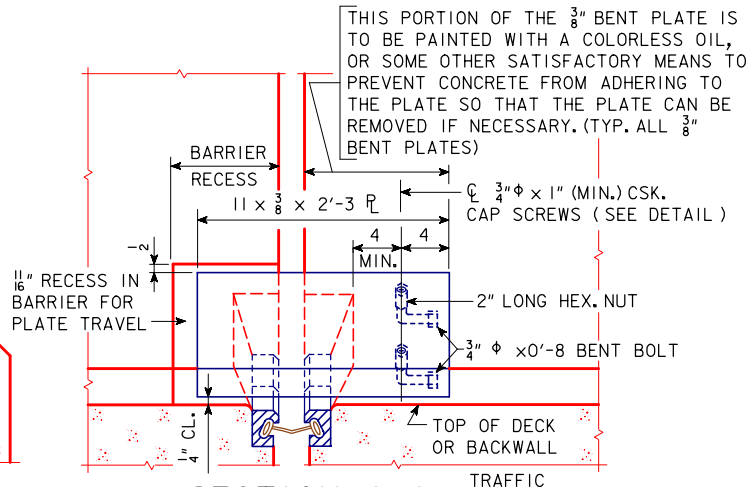


BENT BOLT DETAIL

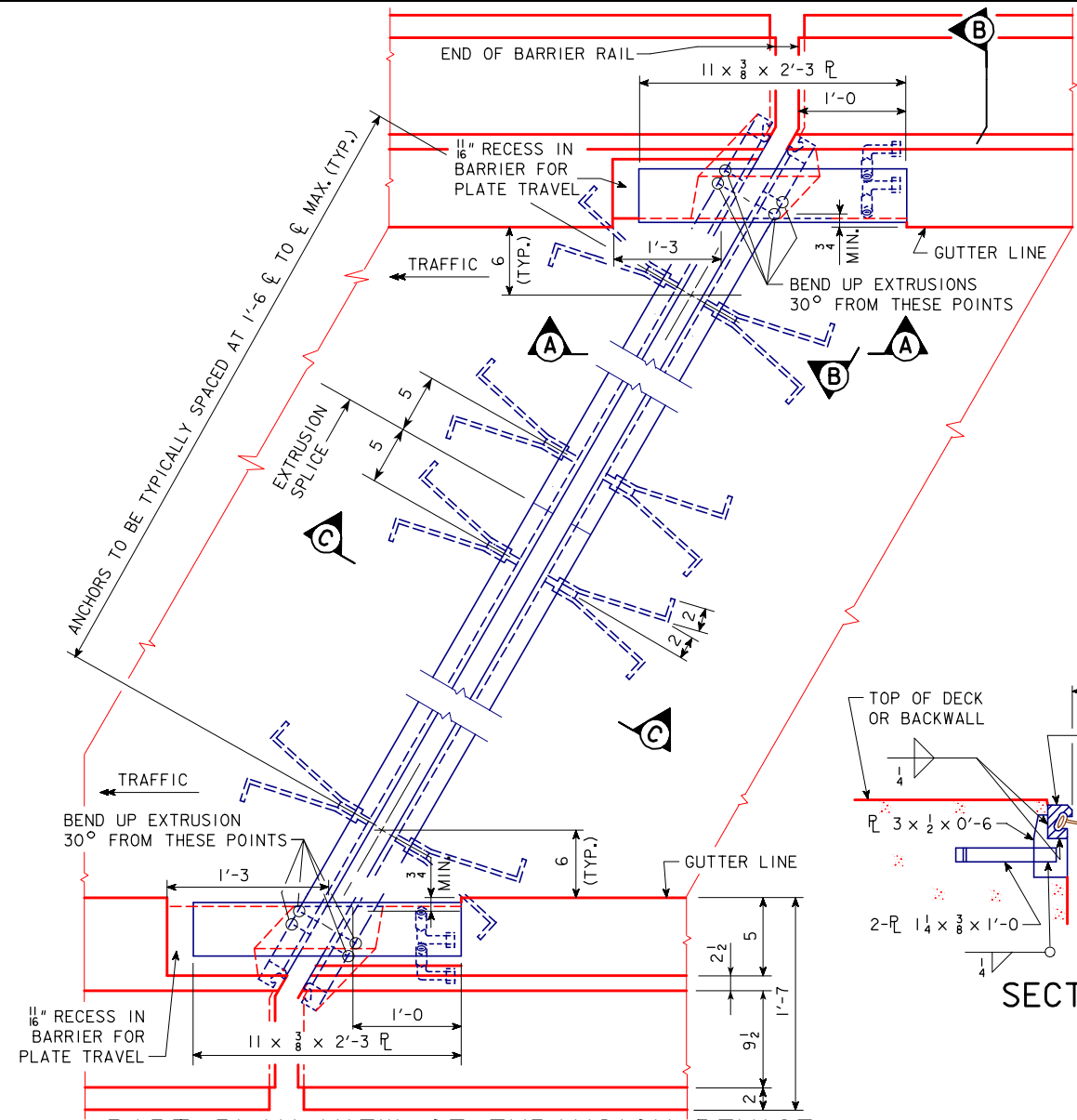
NOTE: IT IS INTENDED THAT THE 1/16" INCH RECESSED AREA BE FORMED SO THAT WHEN THE 3/8" BENT PLATE IS INSTALLED THE PLATE WILL BE ABLE TO MOVE FREELY IN THIS RECESSED AREA.



SECTION B-B



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

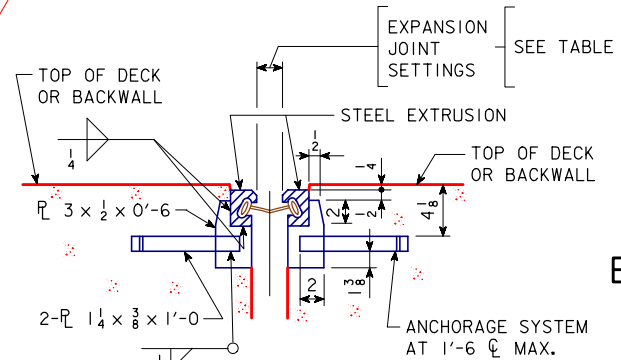


PART PLAN VIEW OF EXPANSION DEVICE AT WEST ABUTMENT, 18° L.A. SKEW

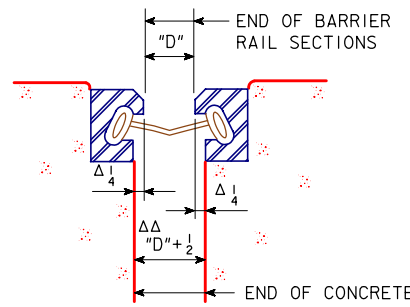
BARRIER PLATE NOTE:

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.



SECTION C-C



EXPANSION OPENING DETAIL

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

TABLE OF APPROVED EXPANSION DEVICES

MANUFACTURER	TYPE OF STEEL EXTRUSION	NEOPRENE GLAND	MINIMUM OPENING FOR GLAND INSTALLATION	CORRESPONDING MAXIMUM DECK TEMPERATURE	EXPANSION JOINT SETTINGS		
WATSON-BOWMAN & ACME CORP.	A	SE-300	1 1/2"	90° F.	1 1/2" AT 90° F.	1 5/16" AT 50° F.	2 7/16" AT 10° F.
D.S. BROWN CO.	SSA2	A2R-400	2"	90° F.	2" AT 90° F.	2 7/16" AT 50° F.	2 15/16" AT 10° F.
APPROVED EQUAL							

NOTE: SEE STANDARD SHEET 1026s2 ON DESIGN SHEET 53 FOR EXPANSION DEVICE NOTES CONTAINING THE STEEL EXTRUSION NOTES, NEOPRENE GLAND NOTES, AND WATERTIGHT INTEGRITY TESTING AND REPAIR NOTES.

DESIGN FOR VARIABLE SKEW (L.A.)
306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
153'-0 END SPANS
ABUT. STRIP SEAL JOINT DETAILS
STA. 3554+77.00 (CL 1-480 RAMP C)
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 53 OF 70 FILE NO. 30170 DESIGN NO. 1720
NOVEMBER, 2020

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.

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.

DESIGN FOR VARIABLE SKEW (L.A.)
**306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
153'-0 END SPANS
ABUT. STRIP SEAL JOINT DETAILS
STA. 3554+77.00 (R 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 54 OF 70 FILE NO. 30170 DESIGN NO. 1720

MODULAR EXPANSION DEVICE NOTES:

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

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

THE MODULAR EXPANSION DEVICE IS TO BE PARALLEL TO GRADE.

CAP SCREWS SHALL BE COUNTERSUNK 1/16" BELOW TOP OF THE PLATE.

THE MINIMUM GRADE OF STRUCTURAL STEEL FOR EXPANSION DEVICE SHALL BE ASTM A36.

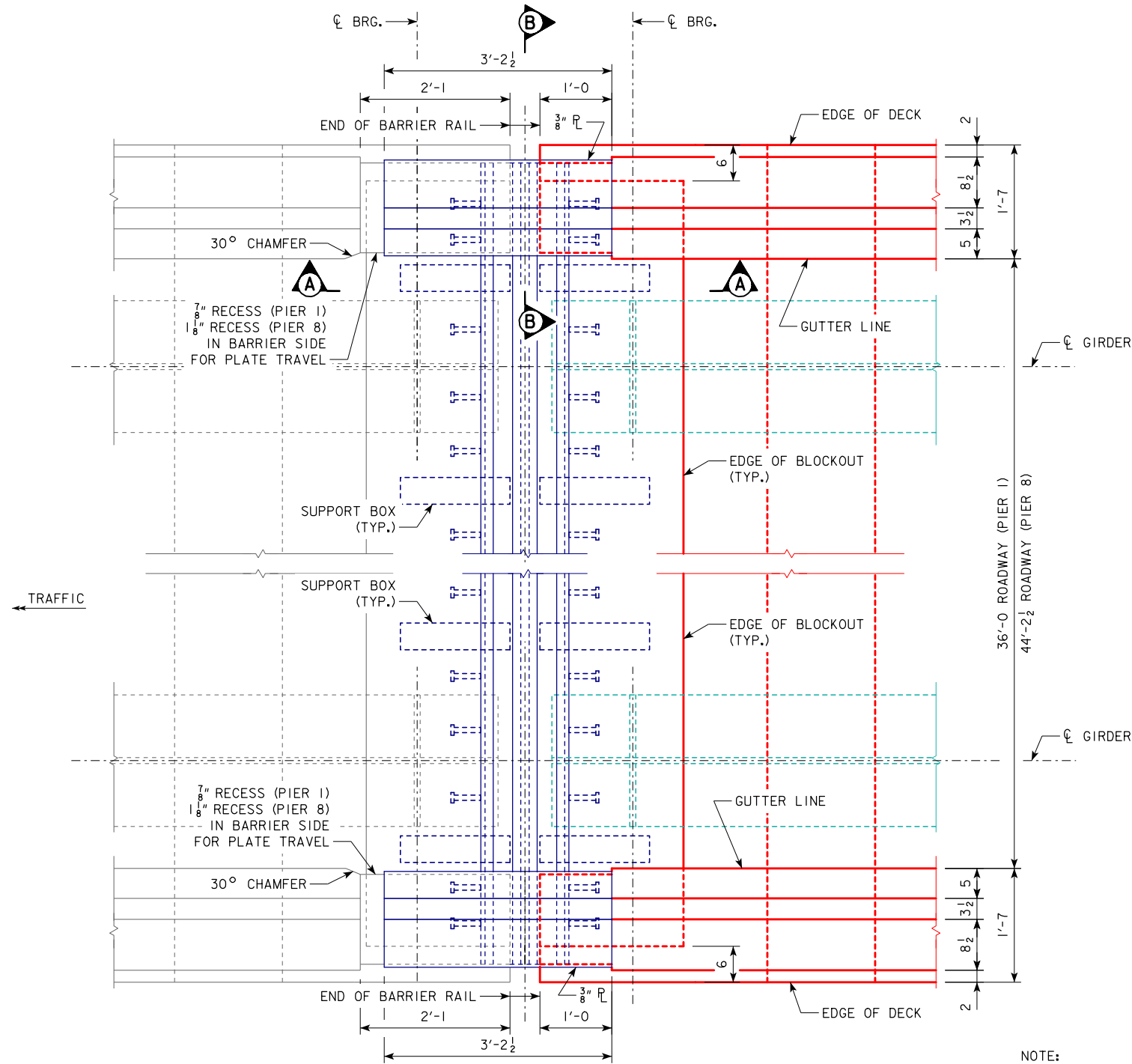
BLOCKOUT DETAILS MAY BE ALTERED FROM THOSE SHOWN PROVIDED THE GLAND MAY BE INSTALLED AND REMOVED IF NECESSARY AND THE CURB AREA REMAINS WATERTIGHT.

SHOP SPLICES OF THE MODULAR EXPANSION DEVICE RAILS 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.

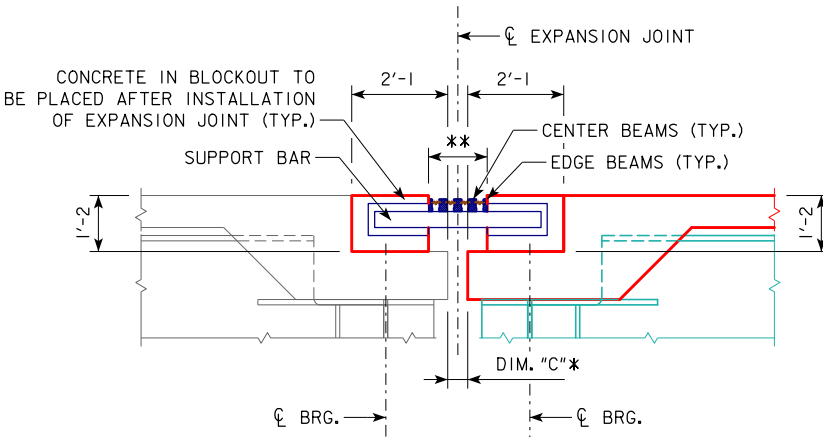
THE NUMBER OF FEET OF MODULAR EXPANSION DEVICE INSTALLED SHALL BE PAID FOR AT THE CONTRACT PRICE PER FOOT BASED ON PLAN QUANTITIES INCLUDED ON THESE OTHER PROJECTS: IM-029-3(192)54--13-78 (RAMP C) AND IM-029-3(221)54--13-79 (RAMP F). THE CONTRACT PRICE BID FOR "MODULAR EXPANSION JOINT ASSEMBLY" SHALL BE FULL COMPENSATION FOR FURNISHING AND INSTALLING THE MODULAR EXPANSION DEVICE RAILS, NEOPRENE GLANDS, SUPPORT BEAMS, BARRIER COVER PLATES AND ALL ASSOCIATED HARDWARE. THIS WORK WILL CONSIST OF FURNISHING ALL REQUIRED MATERIALS, (INCLUDING THE 3/8" PLATES AT THE CURBS AND THEIR ANCHORAGE SYSTEMS), AND THE INSTALLATION AND ADJUSTMENT OF THE MODULAR 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 MODULAR 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 MODULAR EXPANSION JOINTS ARE TO COMPLY WITH THE WRITTEN RECOMMENDATIONS OF THE MODULAR EXPANSION JOINT MANUFACTURER.

THERMAL MOVEMENTS OCCUR ALONG A LINE FROM THE FIXED PIER TO ADJACENT EXPANSION JOINT. ORIENTATION OF MOVEMENT FOR EXPANSION JOINTS IS: PIER 1: 83°57'16" AND PIER 8: 91°40'26" CLOCKWISE MEASURED FROM CL OF BEARING TO THERMAL MOVEMENT LINE. MANUFACTURER SHALL DESIGN THE EXPANSION DEVICE TO ACCOMMODATE THERMAL MOVEMENTS AND ELIMINATE RACKING.

MODULAR EXPANSION JOINT ASSEMBLIES SHALL BE INSTALLED AFTER THE GIRDER ERECTION AND DECK CONCRETE PLACEMENT IS COMPLETED FOR THE ENTIRE BRIDGE FOR PROJECTS IM-029-3(192)54--13-78 (RAMP C) AND IM-029-3(221)54--13-79 (RAMP F).



NOTE:
ANCHORAGE FOR MODULAR EXPANSION JOINT AND SPACING OF SUPPORT BRACKETS TO BE PROVIDED BY THE MODULAR EXPANSION JOINT MANUFACTURER.



EXPANSION DEVICE PLAN

MOVEMENT TABLE			
LOCATION	TOTAL MOVEMENT (IN)	TEMP. CHANGE FOR 1/8 INCH ADJUSTMENT (°F)	DIM "C" (IN)
PIER 1	5.14	3.6	5.5
PIER 8	6.17	3.0	5.5

NOTE:
DIMENSIONS MARKED THUS (*) ARE AT 50°F WITH 1/8" VARIATION FOR THE TEMPERATURE SHOWN IN THE MOVEMENT TABLE. INCREASE GAP FOR A DECREASE IN TEMPERATURE AND DECREASE GAP FOR AN INCREASE IN TEMPERATURE.

TEMPERATURES SHOWN ARE CONCRETE DECK TEMPERATURES ON THE UNDERSIDE OR SHADED PORTION OF THE DECK.

** DIMENSIONS TO BE SET BY JOINT MANUFACTURER.

DECK JOINT SEALS	
MANUFACTURER	DESIGNATION
D.S. BROWN	STEEL FLEX D-240
WATSON BOWMAN & ACME CORP.	WABO D-900

SECTION AT PIER

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE

153'-0 END SPANS

MODULAR EXPANSION JOINT DETAILS

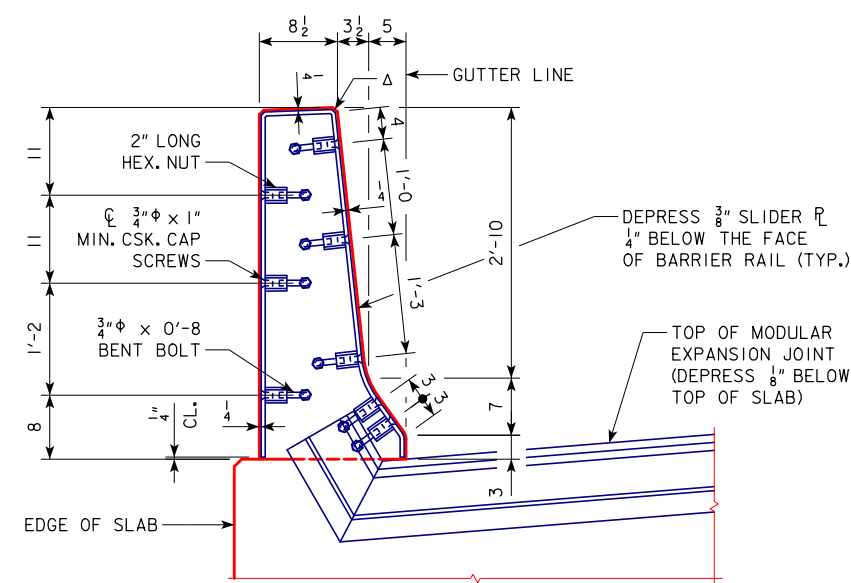
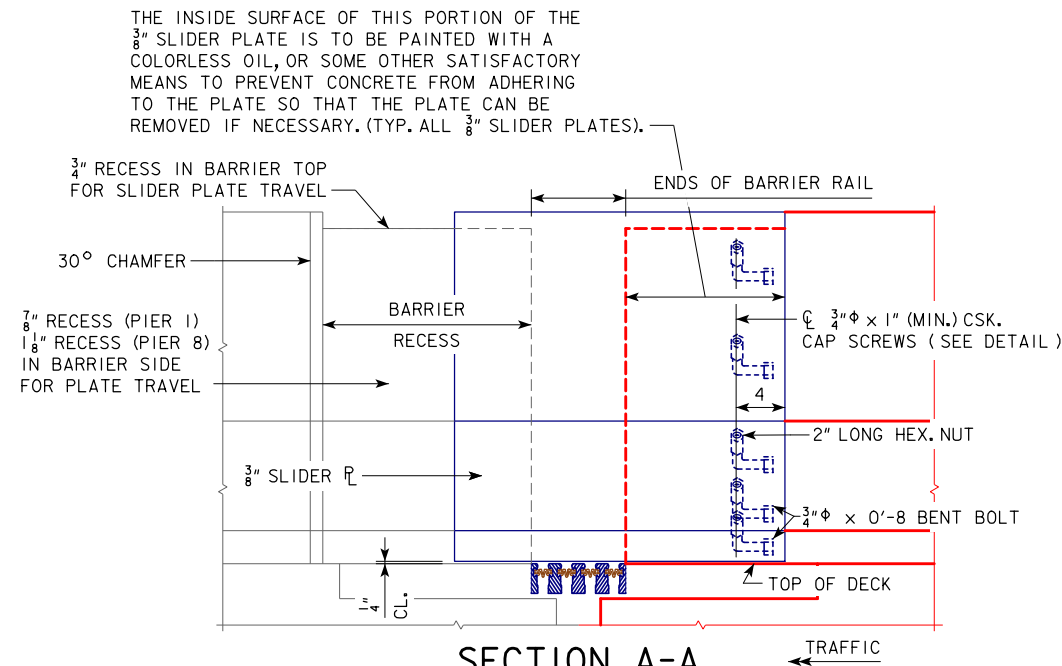
STA. 3554+77.00 (CL 1-480 RAMP C) NOVEMBER, 2020

POTTAWATTAMIE COUNTY

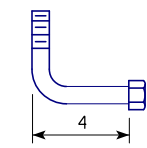
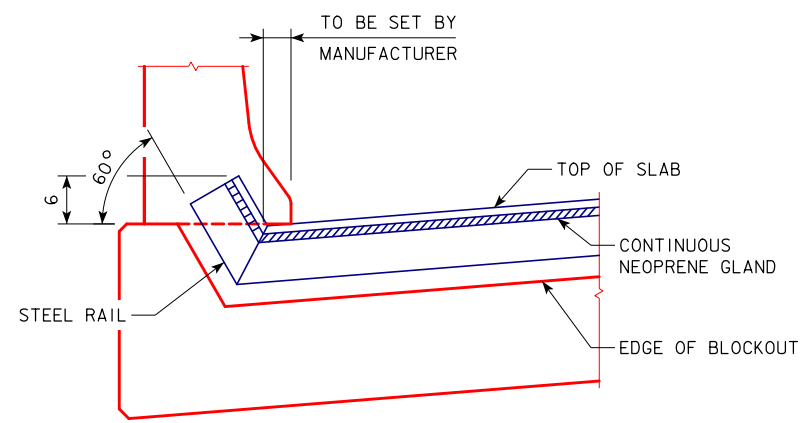
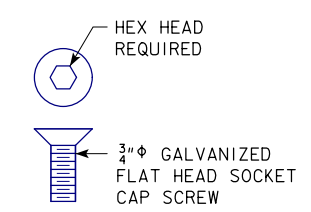
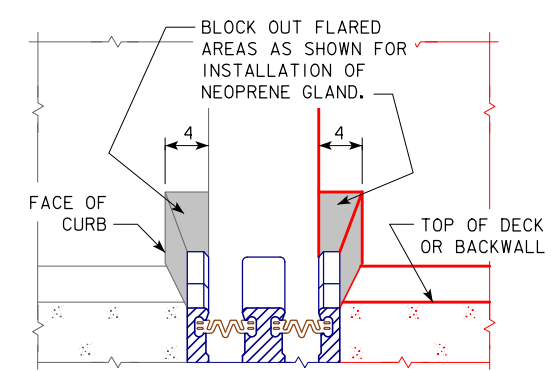
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 55 OF 70 FILE NO. 30170 DESIGN NO. 1720





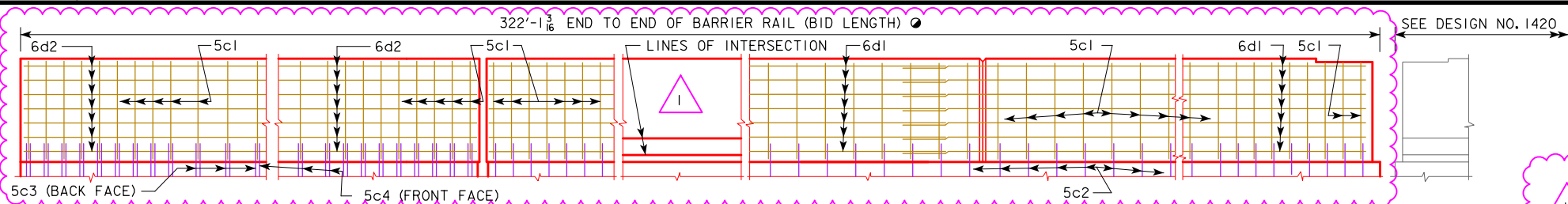
Δ CAULK (NO WELD). CAULKING MATERIAL SHALL BE NEUTRAL CURE AND NON-SAG SILICONE. TWO PRODUCTS MEETING THESE CRITERIA ARE DOW 888 OR CSL342 JOINT SEALANT.



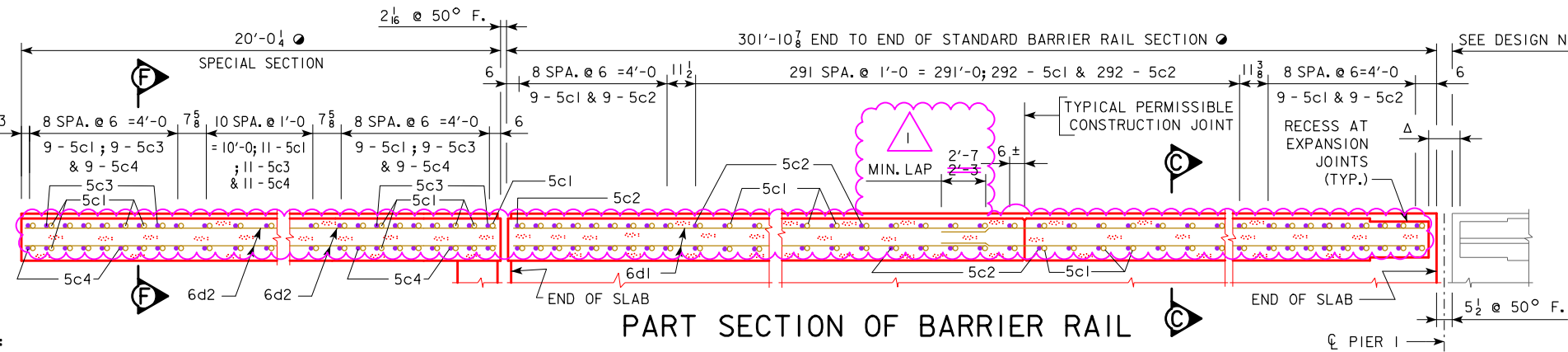
NOTES:
 THE MATERIAL USED FOR THE SLIDER PLATES IS TO BE ASTM A36 STEEL. THE BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A307. THE PLATES, BOLTS, NUTS AND CAP SCREWS ARE TO BE GALVANIZED IN ACCORDANCE WITH ARTICLE 4100.07 OF THE STANDARD SPECIFICATIONS.
 CONTRACTOR TO NOTE THAT THE CAP SCREW ANCHORAGE SYSTEM FOR THE $\frac{3}{8}$ " BARRIER PLATES ARE ALWAYS TO BE PLACED ON THE ONCOMING TRAFFIC SIDE.
 IT IS INTENDED THAT THE RECESSED AREA BE FORMED SO THAT WHEN THE $\frac{3}{8}$ " BENT PLATE IS INSTALLED THE PLATE WILL BE ABLE TO MOVE FREELY IN THIS RECESSED AREA.
 CAP SCREWS SHALL BE COUNTERSUNK $\frac{1}{16}$ " BELOW TOP OF PLATE.

DESIGN FOR VARIABLE SKEW (L.A.)
306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
 153'-0 END SPANS
MODULAR EXPANSION JOINT DETAILS
 STA. 3554+77.00 (RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 56 OF 70 FILE NO. 30170 DESIGN NO. 1720





ELEVATION OF BARRIER RAIL



PART SECTION OF BARRIER RAIL

NOTE:

- MEASURED ALONG GUTTER LINE. FOR BID LENGTH PURPOSES, ASSUME DIMENSION MEASURED TO END OF SLAB AT MODULAR EXPANSION JOINTS.

Δ DIMENSION TO BE SET BY JOINT MANUFACTURER.

REVISED: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED REINFORCING STEEL QUANTITIES, COLOR OF REINFORCEMENT, LAP LENGTHS, AND NOTES.

REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.

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 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, AESTHETIC" 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. SEE DESIGN SHEETS 102 AND 103 FOR BARRIER RAIL AESTHETIC TREATMENT DETAILS. 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.

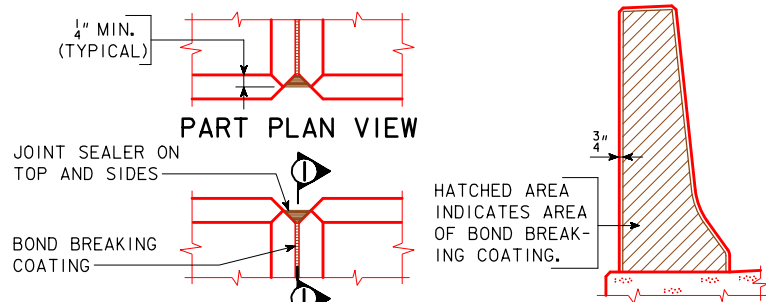
THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

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

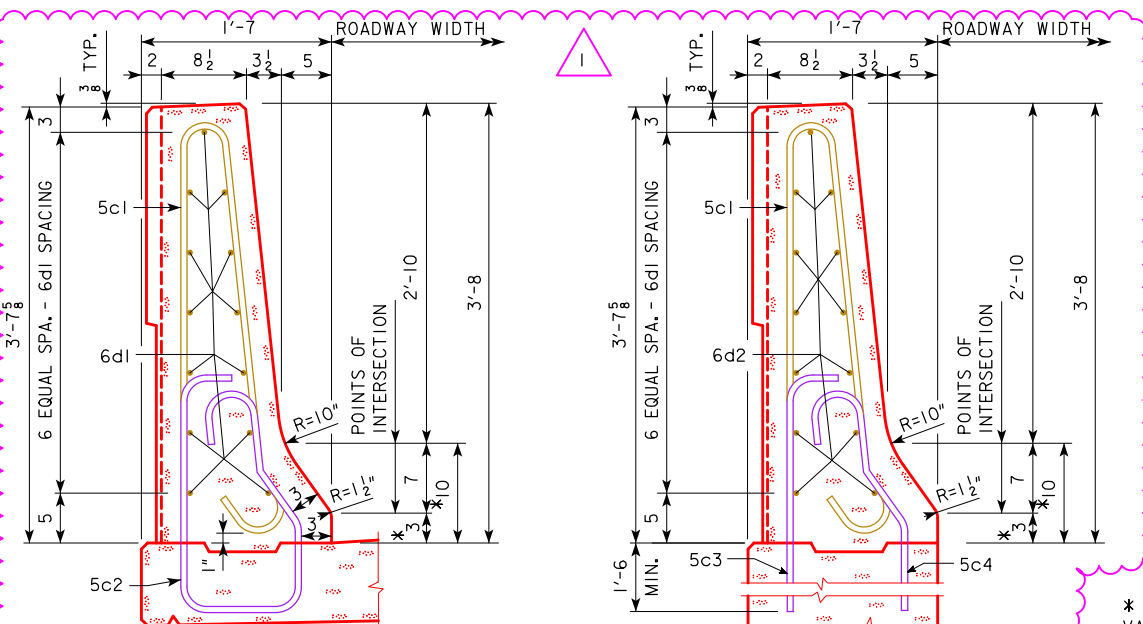
CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 3.46 SQUARE FEET. SEE "CONCRETE PLACEMENT SUMMARY" TABLES ON THIS SHEET AND DESIGN SHEET 58 FOR ADDITIONAL CONCRETE REQUIRED FOR AESTHETIC TREATMENT.

DUE TO THE INCLUSION OF CONCRETE TEXTURE AND SPECIAL SHAPING, SLIP FORMING OF THE TRAFFIC BARRIERS IS NOT ALLOWED.

THE CONDUIT IN THE DECK SHALL BE SECURELY WIRED TO THE TOP TRANSVERSE DECK REINFORCING. MAINTAIN 2 INCH MINIMUM CLEARANCE BETWEEN THE GALVANIZED CONDUIT AND ALL STAINLESS STEEL REINFORCING.



PART ELEVATION VIEW
BARRIER RAIL JOINT DETAILS

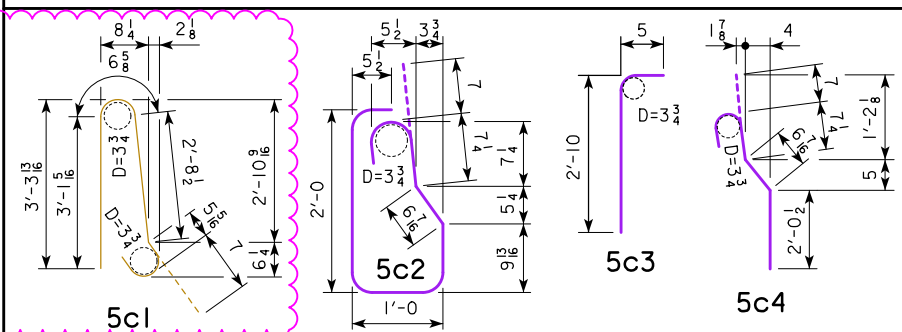


PART SECTION C-C

PART SECTION F-F

STAINLESS STEEL REINF. STEEL - NORTH RAIL						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c1	RAIL, VERTICAL		292	7'-5"	2,259
	5c2	RAIL, VERTICAL		292	6'-0"	1,827
	6d1	RAIL, LONGITUDINAL		104	39'-8"	6,196
SPECIAL SECTION	5c1	RAIL, VERTICAL		29	7'-5"	224
	5c3	RAIL, VERTICAL		29	3'-3"	98
	5c4	RAIL, VERTICAL		29	3'-10"	116
	6d2	RAIL, LONGITUDINAL		13	19'-8"	384
STAINLESS STEEL TOTAL (LBS.)						11,044

BENT BAR DETAILS



CONCRETE PLACEMENT SUMMARY

SECTION		QUANTITY
STANDARD SECTION	301.91' AT 0.1281 CU. YDS. PER FT.	38.7
SPECIAL SECTION	20.02' AT 0.1281 CU. YDS. PER FT.	2.6
AESTHETIC TREATMENT	321.93' AT 0.0113 CU. YDS. PER FT.	3.6
TOTAL (CU. YD.)		44.9

CONCRETE BARRIER RAIL QUANTITIES

ITEM	UNIT	TOTAL
CONCRETE BARRIER RAILING, AESTHETIC	LIN. FT.	322.1

VOLUME BASED ON ESTIMATED AVERAGE CROSS SECTIONAL AREA OF 0.306 SQ.FT. FOR AESTHETIC TREATMENT WITH NO DEDUCTION FOR FORM LINER.

EPOXY-COATED REINF. STEEL - NORTH RAIL

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c1	RAIL, VERTICAL		292	7'-5"	2,259
	6d1	RAIL, LONGITUDINAL		104	40'-0"	6,248
SPECIAL SECTION	5c1	RAIL, VERTICAL		29	7'-5"	224
	6d2	RAIL, LONGITUDINAL		13	19'-8"	384
STAINLESS STEEL TOTAL (LBS.)						9,115

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE

153'-0" END SPANS

NORTH BARRIER RAIL DETAILS

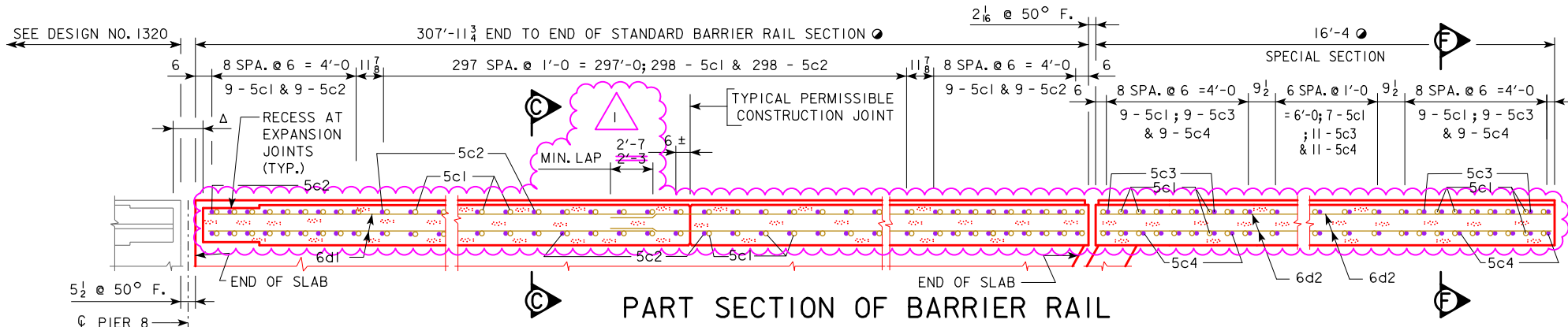
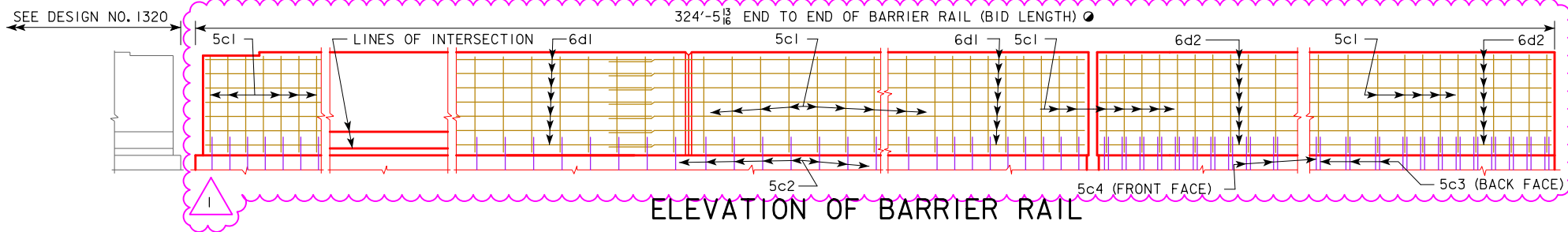
STA. 3554+77.00 (E 1-480 RAMP C)

NOVEMBER, 2020

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 57 OF 70 FILE NO. 30170 DESIGN NO. 1720

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

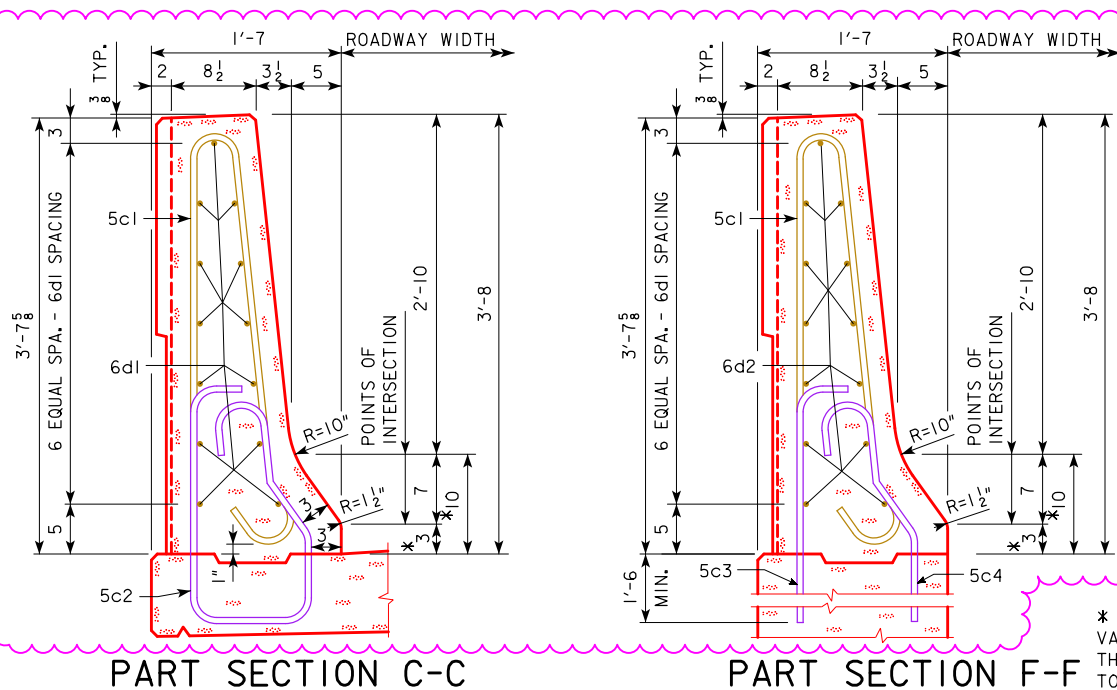
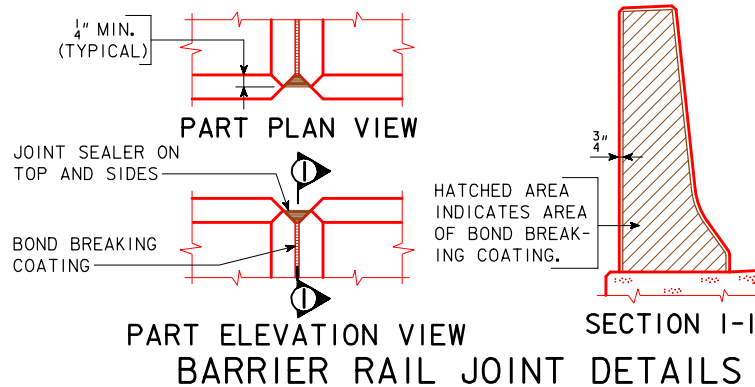


NOTE:

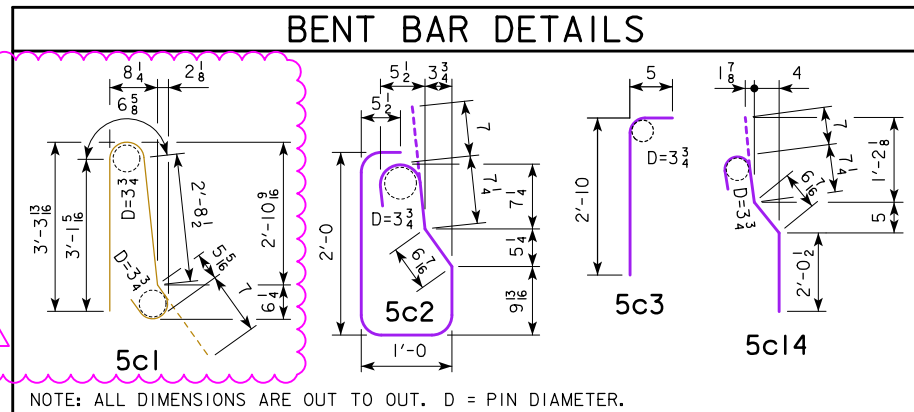
- MEASURED ALONG GUTTER LINE. FOR BID LENGTH PURPOSES, ASSUME DIMENSION MEASURED TO END OF SLAB AT MODULAR EXPANSION JOINTS.
- Δ DIMENSION TO BE SET BY JOINT MANUFACTURER.

BARRIER RAIL NOTES:
SEE DESIGN SHEET 57 FOR BARRIER RAIL NOTES.

EPOXY-COATED REINF. STEEL - SOUTH RAIL						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c1	RAIL, VERTICAL		316	7'-5	2,444
	6d1	RAIL, LONGITUDINAL		117	36'-7	6,429
SPECIAL SECTION	5c1	RAIL, VERTICAL		25	7'-5	193
	6d2	RAIL, LONGITUDINAL		13	16'-0	312
STAINLESS STEEL TOTAL (LBS.)						9,378



STAINLESS STEEL REINF. STEEL - SOUTH RAIL						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c1	RAIL, VERTICAL		316	7'-5	2,444
	5c2	RAIL, VERTICAL		316	6'-0	1,978
	6d1	RAIL, LONGITUDINAL		117	36'-3	6,370
SPECIAL SECTION	5c1	RAIL, VERTICAL		25	7'-5	193
	5c3	RAIL, VERTICAL		25	3'-3	85
	5c4	RAIL, VERTICAL		25	3'-10	100
	6d2	RAIL, LONGITUDINAL		13	16'-0	312
STAINLESS STEEL TOTAL (LBS.)						11,182



CONCRETE PLACEMENT SUMMARY		
SECTION		QUANTITY
STANDARD SECTION	307.98' AT 0.1281 CU. YDS. PER FT.	39.5
SPECIAL SECTION	16.33' AT 0.1281 CU. YDS. PER FT.	2.1
AESTHETIC TREATMENT	324.31' AT 0.0113 CU. YDS. PER FT.	3.7
TOTAL (CU. YD.)		45.3

CONCRETE BARRIER RAIL QUANTITIES		
ITEM	UNIT	TOTAL
CONCRETE BARRIER RAILING, AESTHETIC	LIN. FT.	324.5

■ VOLUME BASED ON ESTIMATED AVERAGE CROSS SECTIONAL AREA OF 0.306 SQ.FT. FOR AESTHETIC TREATMENT WITH NO DEDUCTION FOR FORM LINER.

REVISED: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED REINFORCING STEEL QUANTITIES, COLOR OF REINFORCEMENT, AND LAP LENGTHS.

REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0" x VARIES CONTINUOUS WELDED GIRDER BRIDGE

153'-0" END SPANS

SOUTH BARRIER RAIL DETAILS

STA. 3554+77.00 (AT 1-480 RAMP C)

NOVEMBER, 2020

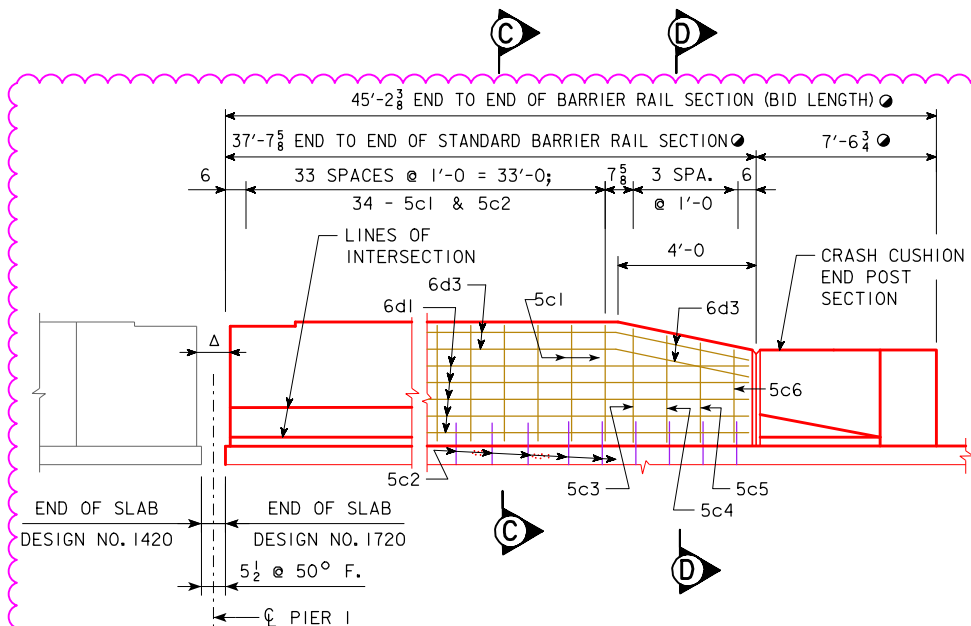
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

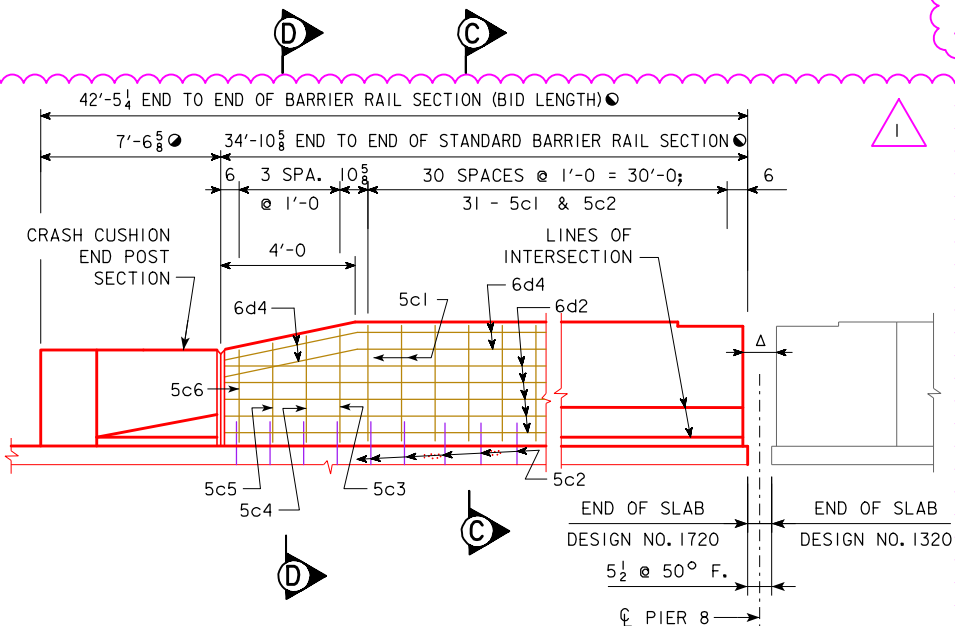
DESIGN SHEET NO. 58 OF 70 FILE NO. 30170 DESIGN NO. 1720

REVISED: JUNE 8, 2022

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



ELEVATION OF NORTH GORE BARRIER RAIL
(LOOKING SOUTH)



ELEVATION OF SOUTH GORE BARRIER RAIL
(LOOKING NORTH)

NOTE:
● MEASURED ALONG GUTTER LINE. FOR BID LENGTH PURPOSES, ASSUME DIMENSION MEASURED TO END OF SLAB AT MODULAR EXPANSION JOINTS.

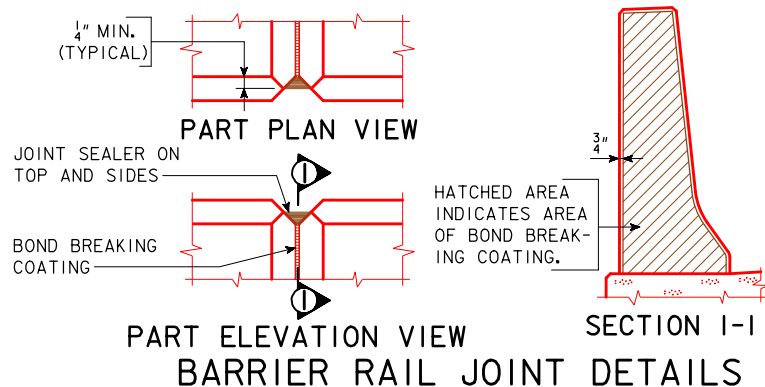
Δ DIMENSION TO BE SET BY JOINT MANUFACTURER.

BARRIER RAIL NOTES:

SEE DESIGN SHEET 57 FOR BARRIER RAIL NOTES.

REVISED: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED REINFORCING STEEL QUANTITIES AND COLOR OF REINFORCEMENT

REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.



EPOXY-COATED REINF. STEEL - TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c1	RAIL, VERTICAL		65	7'-5	503
	5c3	RAIL, VERTICAL, SLOPED ENDS		2	7'-3	15
	5c4	RAIL, VERTICAL, SLOPED ENDS		2	6'-10	14
	5c5	RAIL, VERTICAL, SLOPED ENDS		2	6'-5	13
	5c6	RAIL, VERTICAL, SLOPED ENDS		2	6'-0	13
	6d1	RAIL, LONGITUDINAL		10	37'-4	561
STANDARD SECTIONS	6d2	RAIL, LONGITUDINAL		10	34'-7	519
	6d3	RAIL, LONGIT., TOP SLOPED ENDS		3	37'-5	169
	6d4	RAIL, LONGIT., TOP SLOPED ENDS		3	34'-8	156
	TOTAL (LBS.)					1,963

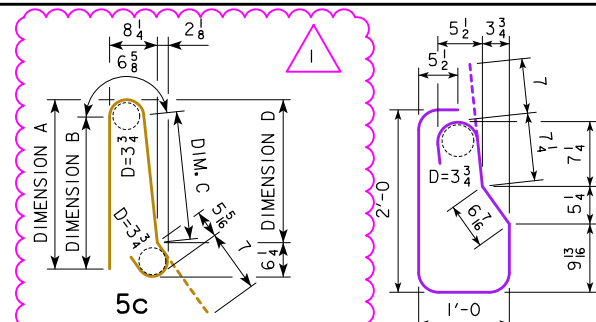
* DENOTES THE MAXIMUM VALUE FOR THIS DIMENSION. THIS DIMENSION MAY VARY DUE TO CONSTRUCTION INACCURACIES.

NOTES:
REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.
SEE DESIGN SHEET 60 FOR CRASH CUSHION END POST DETAILS.

STAINLESS REINF. STEEL - TWO RAILS

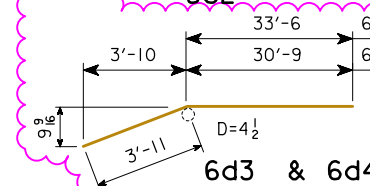
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c1	RAIL, VERTICAL		65	7'-5	503
	5c2	RAIL, VERTICAL		73	6'-0	457
	5c3	RAIL, VERTICAL, SLOPED ENDS		2	7'-3	15
	5c4	RAIL, VERTICAL, SLOPED ENDS		2	6'-10	14
	5c5	RAIL, VERTICAL, SLOPED ENDS		2	6'-5	13
	5c6	RAIL, VERTICAL, SLOPED ENDS		2	6'-0	13
STANDARD SECTIONS	6d1	RAIL, LONGITUDINAL		10	37'-4	561
	6d2	RAIL, LONGITUDINAL		10	34'-7	519
	6d3	RAIL, LONGIT., TOP SLOPED ENDS		3	37'-5	169
	6d4	RAIL, LONGIT., TOP SLOPED ENDS		3	34'-8	156
TOTAL (LBS.)					2,420	

BENT BAR DETAILS



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 5/16
5c4	3'-0 1/16	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



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

CONCRETE PLACEMENT SUMMARY

SECTION		QUANTITY
N. GORE RAIL, STANDARD SEC.	33.64' AT 0.1281 CU. YDS. PER FT.	4.3
S. GORE RAIL, STANDARD SEC.	30.89' AT 0.1281 CU. YDS. PER FT.	4.0
N. GORE RAIL, SLOPED END SEC.	4' AT 0.0841 CU. YDS. PER FT.	0.3
S. GORE RAIL, SLOPED END SEC.	4' AT 0.0841 CU. YDS. PER FT.	0.3
TOTAL (CU. YD.)		8.9

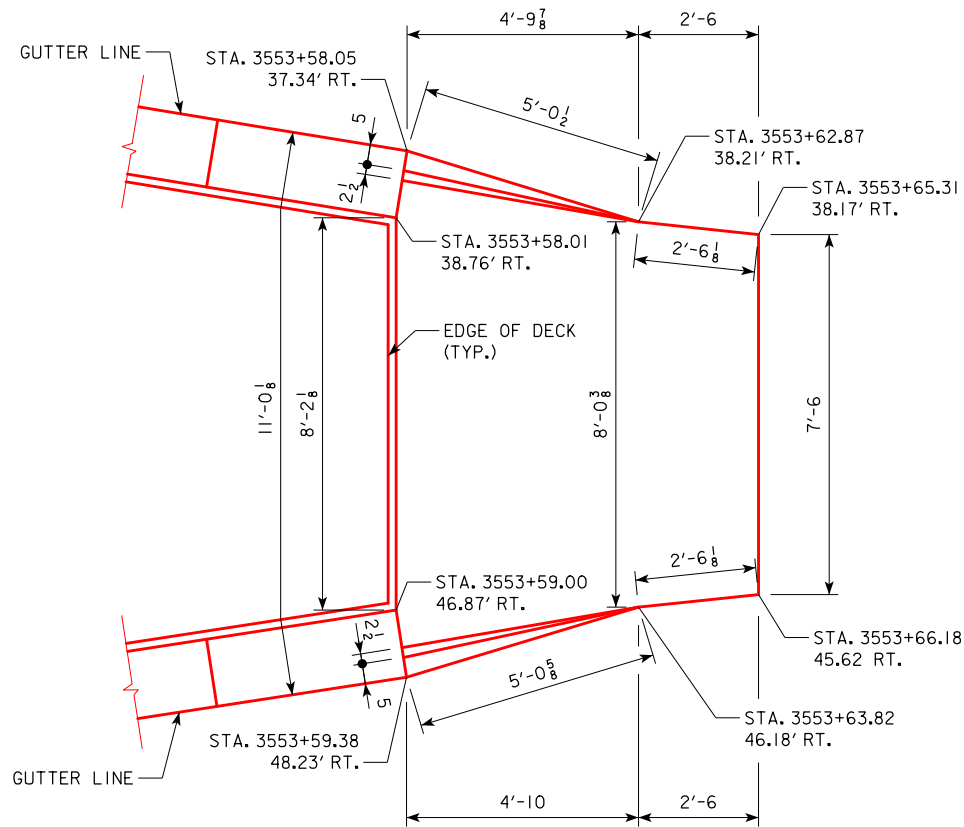
Δ DEDUCT 0.044 CU. YD. FOR ONE SLOPED END.

CONCRETE BARRIER RAIL QUANTITIES

ITEM	UNIT	TOTAL
N. GORE RAIL, CONCRETE BARRIER RAILING, 3'-8	LIN. FT.	45.2
S. GORE RAIL, CONCRETE BARRIER RAILING, 3'-8	LIN. FT.	42.4
TOTAL (LIN. FT.)		87.6

* INCLUDES CRASH CUSHION END POST.

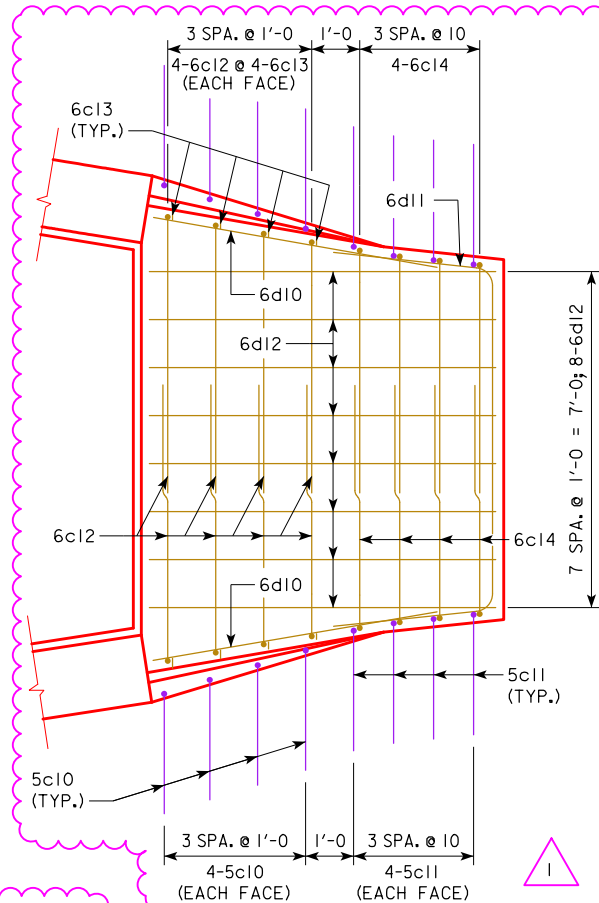
DESIGN FOR VARIABLE SKEW (L.A.)
306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
153'-0 END SPANS
MEDIAN BARRIER RAIL DETAILS
STA. 3554+77.00 (@ 1-480 RAMP C)
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 59 OF 70 FILE NO. 30170 DESIGN NO. 1720
NOVEMBER, 2020



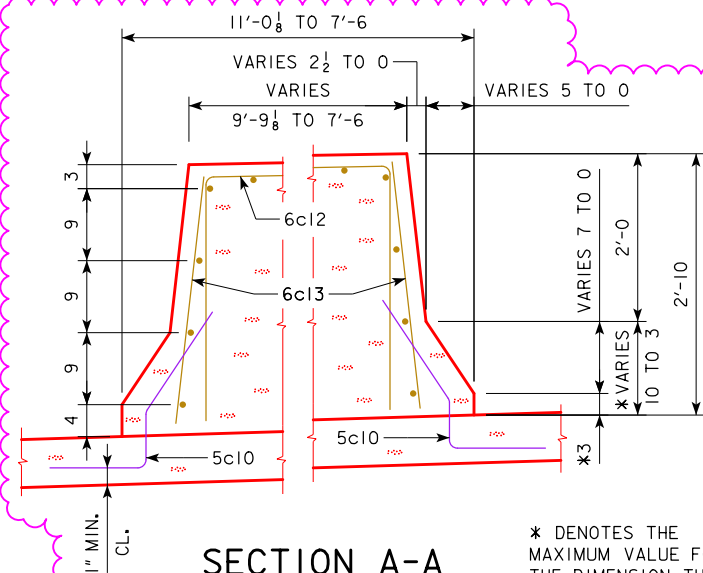
PLAN VIEW
(STA. AND OFFSET ALONG I-480 RAMP C)

REVISED: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED REINFORCING STEEL QUANTITIES AND COLOR OF REINFORCEMENT

REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.

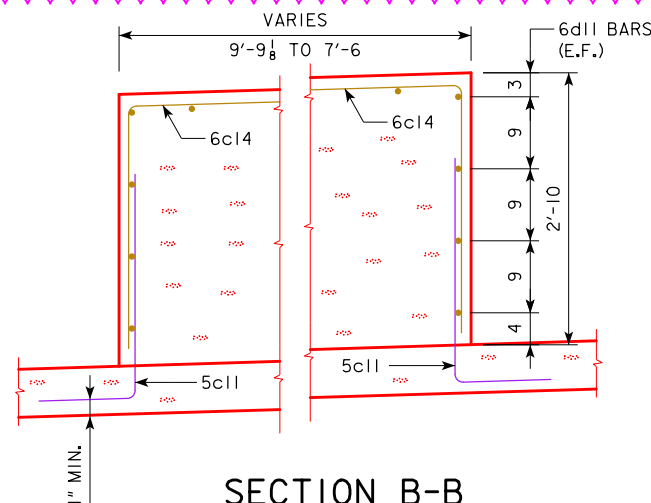


PLAN VIEW
(SHOWING REINFORCEMENT)

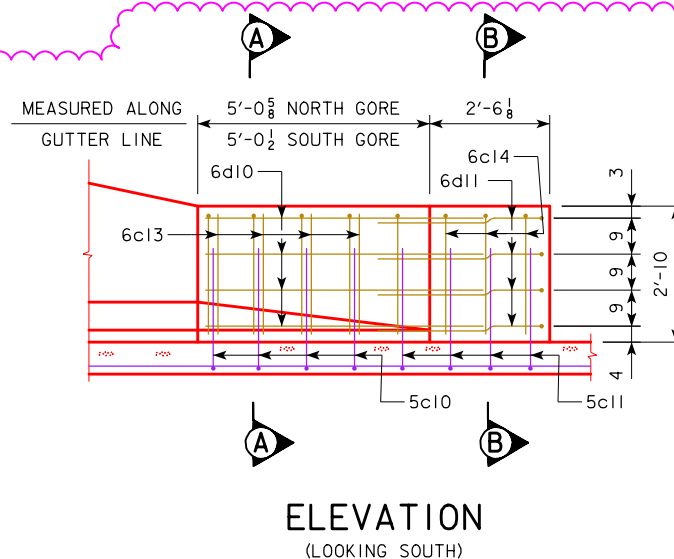


SECTION A-A
(SLAB REINFORCEMENT NOT SHOWN)

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



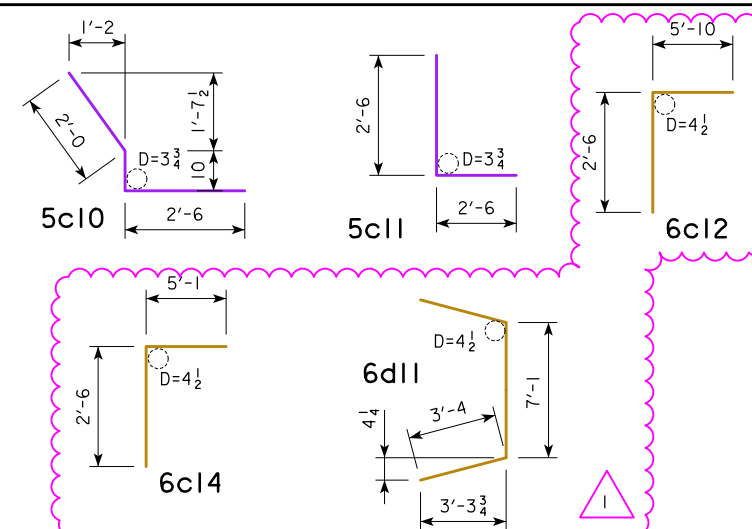
SECTION B-B
(SLAB REINFORCEMENT NOT SHOWN)



ELEVATION
(LOOKING SOUTH)

STAINLESS REINF. STEEL - CRASH CUSHION END POST						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
CRASH CUSHION END POST	5c10	END BLOCK, VERTICAL		8	5'-4	45
	5c11	END BLOCK, VERTICAL		8	5'-0	42
	6c12	END BLOCK, VERTICAL		8	8'-4	100
	6c13	END BLOCK, VERTICAL		8	2'-6	30
	6c14	END BLOCK, VERTICAL		8	7'-7	91
	6d10	END BLOCK, HORIZONTAL		8	6'-0	72
	6d11	END BLOCK, HORIZONTAL		4	13'-9	83
	6d12	END BLOCK, HORIZONTAL		8	7'-2	86
						87
						549
TOTAL (LBS.)						549

BENT BAR DETAILS



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

CONCRETE PLACEMENT SUMMARY

SECTION	QUANTITY
CRASH CUSHION END POST	6.8
TOTAL (CU. YD.)	6.8

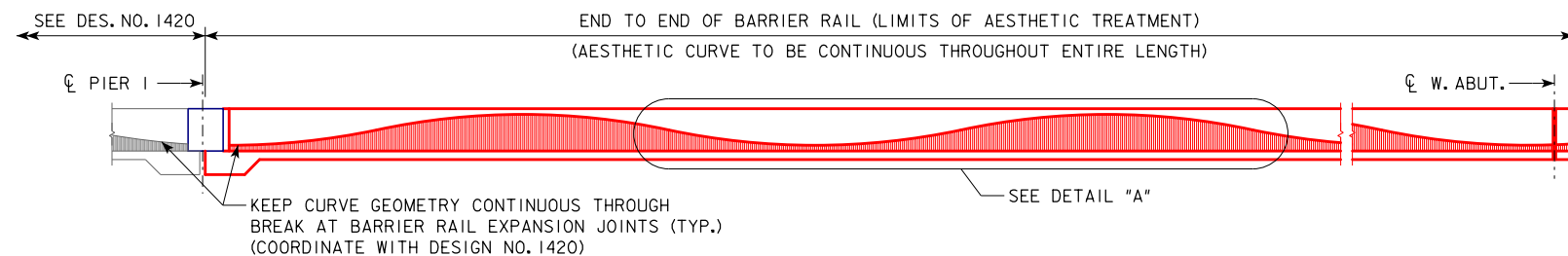
NOTES:
REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.
SEE DESIGN SHEET 57 FOR BARRIER RAIL NOTES.

EPOXY-COATED REINF. STEEL - CRASH CUSHION END POST

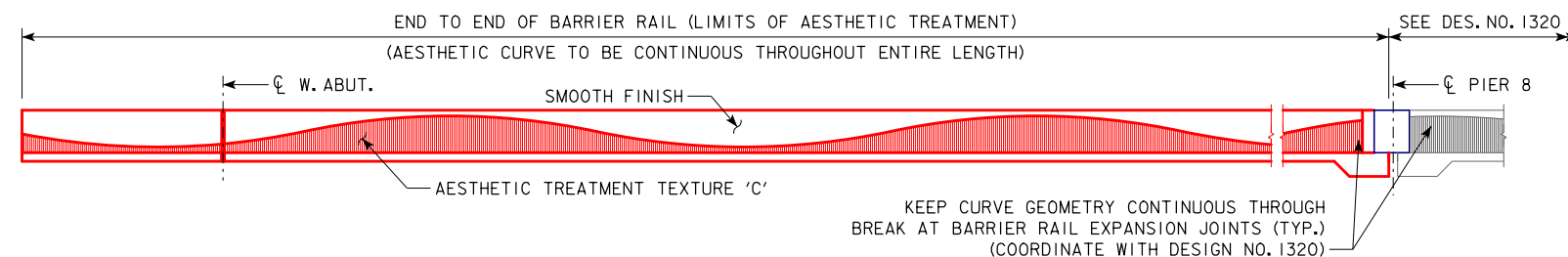
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
CRASH CUSHION END POST	6c12	END BLOCK, VERTICAL		8	8'-4	100
	6c13	END BLOCK, VERTICAL		8	2'-6	30
	6c14	END BLOCK, VERTICAL		8	7'-7	91
	6d10	END BLOCK, HORIZONTAL		8	6'-0	72
	6d11	END BLOCK, HORIZONTAL		4	13'-9	83
	6d12	END BLOCK, HORIZONTAL		8	7'-2	86
TOTAL (LBS.)						462

DESIGN FOR VARIABLE SKEW (L.A.)
306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
153'-0 END SPANS
CRASH CUSHION END POST DETAILS
STA. 3554+77.00 (I-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 60 OF 70 FILE NO. 30170 DESIGN NO. 1720

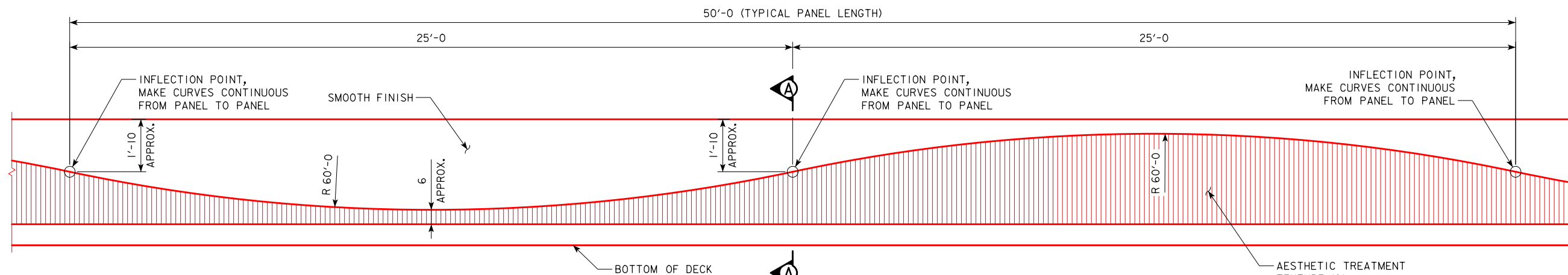




BARRIER RAIL AESTHETICS - LEFT BARRIER ELEVATION VIEW



BARRIER RAIL AESTHETICS - RIGHT BARRIER ELEVATION VIEW



NOTE:
ADDITIONAL CONCRETE FOR AESTHETIC TREATMENT SHALL
BE PLACED MONOLITHICALLY WITH STANDARD 3'-8 RAIL.

DETAIL A

BARRIER CONCRETE TEXTURE NOTES:

THIS WORK CONSISTS OF APPLYING TEXTURED FINISHES ON ALL DESIGNATED CONCRETE SURFACES OF THE BARRIERS AS SHOWN IN THIS PLAN. SEE "GENERAL NOTES FOR TEXTURED CONCRETE FORM LINERS" ON DESIGN SHEET 4 FOR MORE INFORMATION REGARDING THE USE OF FORM LINERS. THE TEXTURED BARRIER MOCKUP MUST BE REVIEWED AND APPROVED BY THE ENGINEER BEFORE BEGINNING PRODUCTION BARRIER CONCRETE WORK THAT INCLUDES TEXTURE.

THE FORM LINER USED TO PRODUCE TEXTURE 'C' AS SHOWN IN THE PLAN DETAILS SHALL PRODUCE A FRACTURED RIB TEXTURED EFFECT. MAXIMUM DEPTH OF TEXTURE SHALL BE 1/2 INCH. ORIENT FORM LINERS IN FORMS SO THAT STRIATIONS ARE SET PERPENDICULAR TO THE TOP OF BRIDGE DECK.

OBTAIN TEXTURE 'C' FORM LINER MATERIALS FROM ONE OF THE FOLLOWING MANUFACTURERS:

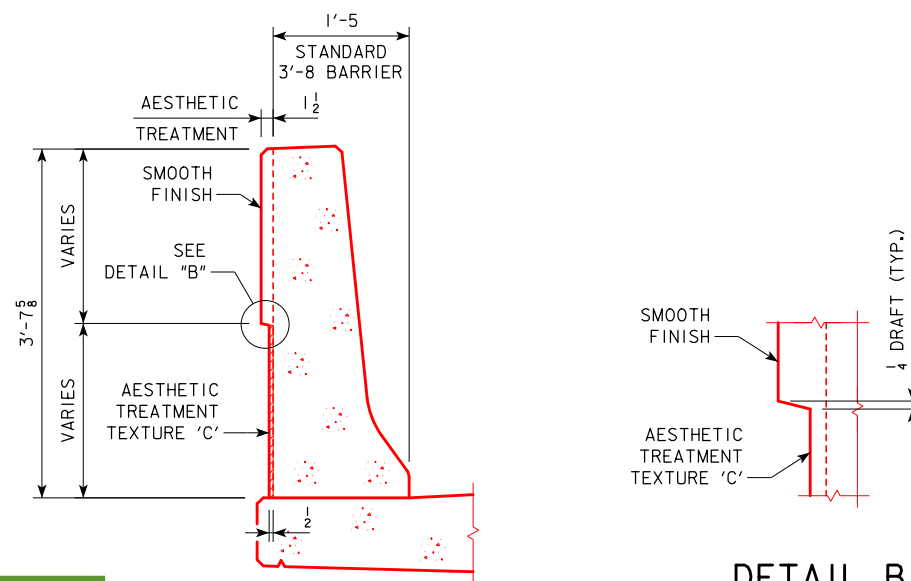
1. SCOTT SYSTEM, INC. (PATTERN NO. 149)
2. FITZGERALD FORM LINERS (PATTERN NO. 16960)
3. ARCHITECTURAL POLYMERS (PATTERN NO. 209)
4. SUBMIT ALL OTHER UNLISTED MANUFACTURERS AND PATTERNS INCLUDING A 1 FOOT BY 1 FOOT SAMPLE OF PROPOSED FORMLINER TO THE IOWA DEPARTMENT OF TRANSPORTATION, BRIDGES AND STRUCTURES BUREAU, AMES, IOWA. SAMPLE MAY BE EITHER ACTUAL FORMLINER MATERIALS OR FOAM CASTINGS. NO SAMPLES ARE REQUIRED TO BE SUBMITTED FOR MANUFACTURERS AND PATTERNS LISTED ABOVE.

TEXTURE 'C' FORM LINER MATERIALS SHALL MATCH THE FORM LINER USED ON THE BARRIER OF DESIGN NO. 1320 & 1420. NO SUBSTITUTIONS WILL BE ALLOWED.

PRIOR TO BEGINNING ANY PRODUCTION CONCRETE WORK THAT INCLUDES TEXTURE, SUBMIT MANUFACTURER'S CUT SHEETS FOR FORM LINERS. SUBMIT SHOP DRAWINGS THAT INDICATE POSITION OF LINERS WITHIN CONCRETE FORMS, LAYOUT OF JOINTS, AND BACKING MATERIAL TYPE AND THICKNESS IF REQUIRED.

DO NOT MIX FORM LINERS FROM DIFFERENT MANUFACTURERS WHEN FORMING ANY INDIVIDUAL TEXTURE ON THE PROJECT.

ALL COSTS ASSOCIATED WITH BARRIER CONCRETE TEXTURE AND FORM LINERS INCLUDING THE TEXTURED BARRIER MOCKUP ARE TO BE INCLUDED IN THE BID ITEM, "CONCRETE BARRIER RAIL, AESTHETIC".



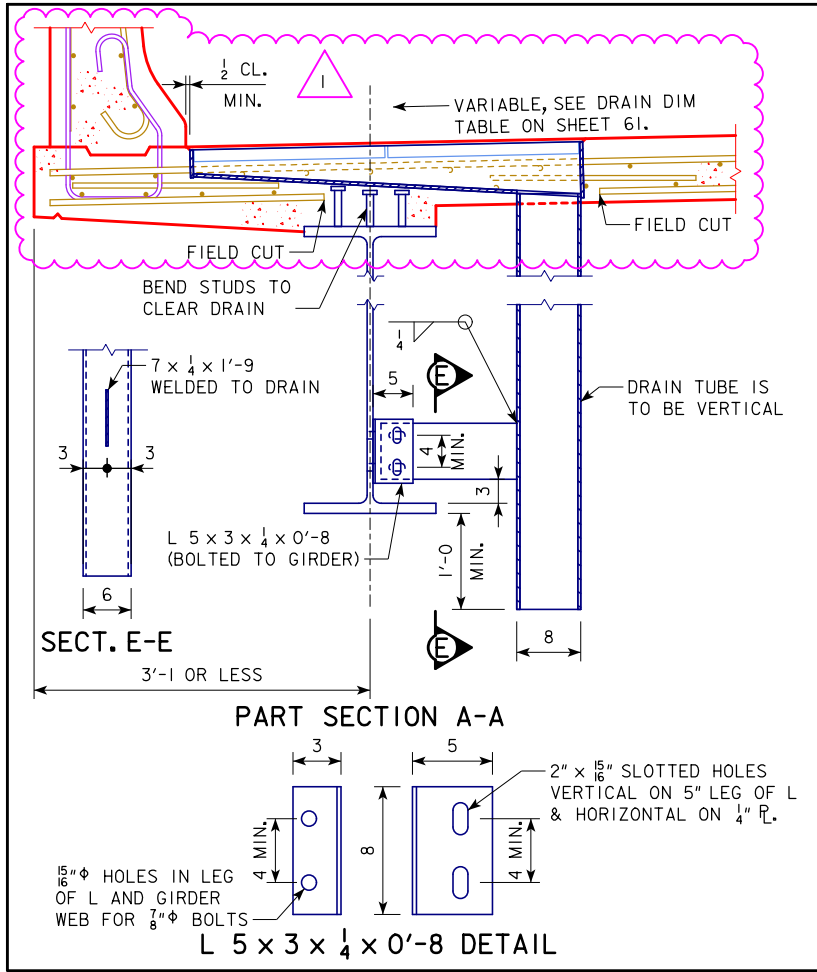
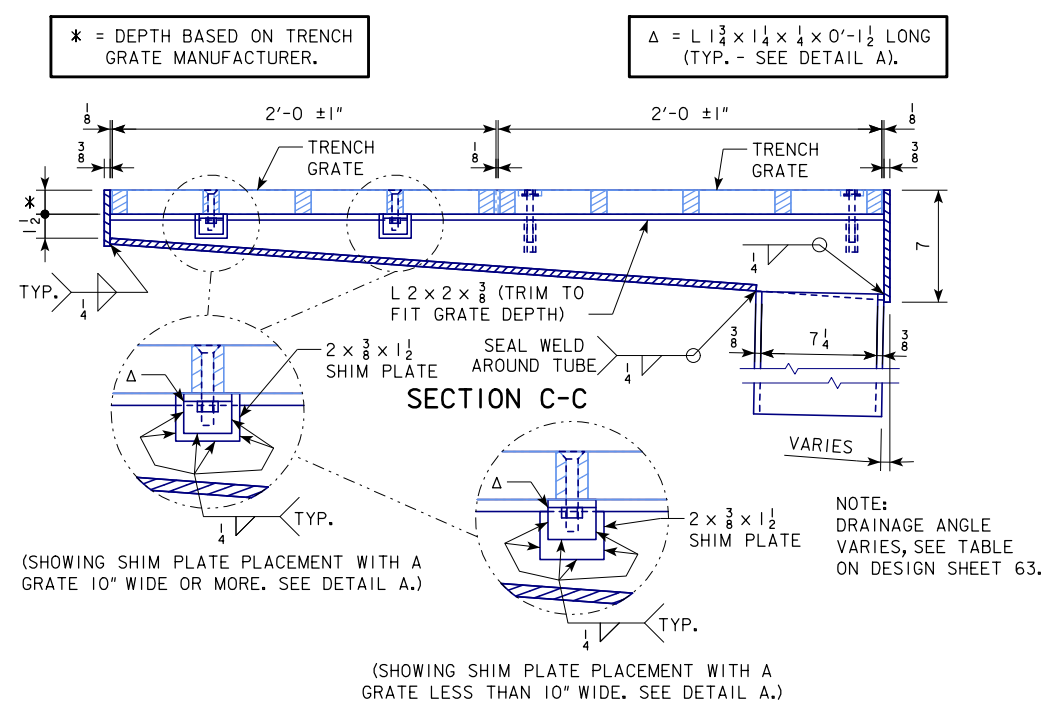
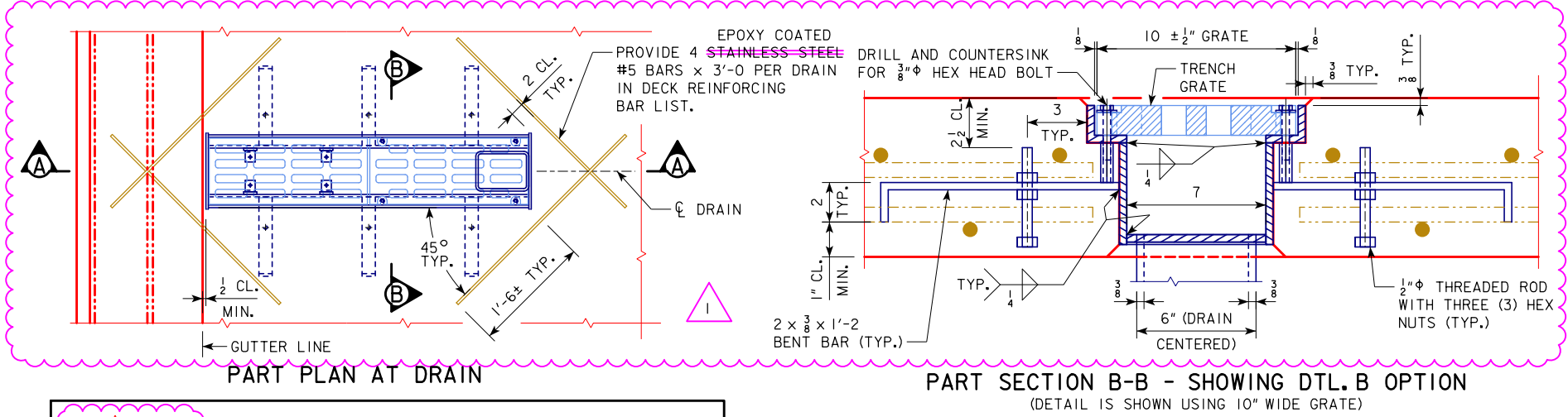
DETAIL B

SECTION A-A



DESIGN FOR VARIABLE SKEW (L.A.)
**306'-0 x VARIES CONTINUOUS
 WELDED GIRDER BRIDGE**
 153'-0 END SPANS
BARRIER RAIL AESTHETIC DETAILS
 STA. 3554+77.00 (CL 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 61 OF 70 FILE NO. 30170 DESIGN NO. 1720

REVISED 06-2017 - SHEET IS REDRAWN TO ACCOMMODATE THE USE OF A 6" x 8" x 3/8" DRAIN TUBE. (WAS 8" DIA. x 3/8" STRUCTURAL DRAIN TUBE MAY BE SUBSTITUTED WITH A 8" x 8" x 3/8" STRUCTURAL TUBE).
REVISED 04-2018 - ADDED ADDITIONAL WELD SYMBOL ARROWS TO DRAIN TRENCH DETAILS IN PART SECTIONS B-B.
REVISED 07-2019: UPDATED WELD SYMBOLS ON DRAIN TRENCH DETAILS IN PART "SECTION B-B & C-C" AND "PLAN VIEW OF DRAIN TRENCH" FOR CLARITY, ADDED "SEAL WELD AROUND TUBE" IN SECTION C-C.
ADDED "AAA" = DIMENSION TO BE PROVIDED ON SHOP DRAWINGS TO DOWN SPOUT BRACKET ON STEEL GIRDER DETAIL. CHANGED ALL REFERENCES OF "SLAB" TO "DECK".
ENGLISH\MISC\CELLANEOUS\BRIDGES.DGN 1054 - THIS SHEET REDRAWN 11-00.



DRAIN NOTES

THE DRAINS SHALL BE 3/8 INCH THICK STEEL. THE DRAIN ASSEMBLIES SHALL BE GALVANIZED AFTER FABRICATION. THE BID ITEM "DECK DRAIN" SHALL INCLUDE ALL COSTS ASSOCIATED WITH FABRICATING AND INSTALLING THE DECK DRAINS AS PER PLAN.

THE DRAIN TRENCH GRATES SHALL BE FERROUS CASTINGS. METAL USED IN THE MANUFACTURE OF CASTINGS SHALL CONFORM TO ASTM A48-83 CLASS 35B OR BETTER GRAY IRON CASTINGS IN ACCORDANCE WITH CURRENT IOWA D.O.T. STANDARD SPECIFICATIONS. FINISH OF CASTINGS SHALL BE SMOOTH AND FREE OF DEFECTS. TRENCH GRATES SHALL BE CAPABLE OF CARRYING AASHTO HL-93 LOADING. GALVANIZING OF THE TRENCH GRATES IS NOT REQUIRED.

DRAINS SHALL BE CENTERED OVER THE NEAREST BOTTOM TRANSVERSE DECK REINFORCING BAR FROM THE LOCATION DESIGNATED ON THE SITUATION PLAN. THE BOTTOM TRANSVERSE DECK REINFORCING BAR SHALL BE CUT OFF TO PROVIDE 1 INCH CLEARANCE FROM THE DRAIN. THE TOP TRANSVERSE DECK REINFORCING BARS ON EACH SIDE OF THE DRAIN, SHALL BE SPACED AS NECESSARY TO PROVIDE 1 INCH CLEARANCE FROM THE DRAIN. LONGITUDINAL DECK REINFORCING BARS THAT CONFLICT WITH THE DRAIN SHALL BE CUT OFF TO PROVIDE 2 INCH CLEARANCE FROM THE DRAIN. LONGITUDINAL DECK REINFORCING BARS SHALL BE SHIFTED AS NECESSARY TO ACCOMMODATE ANCHOR BARS.

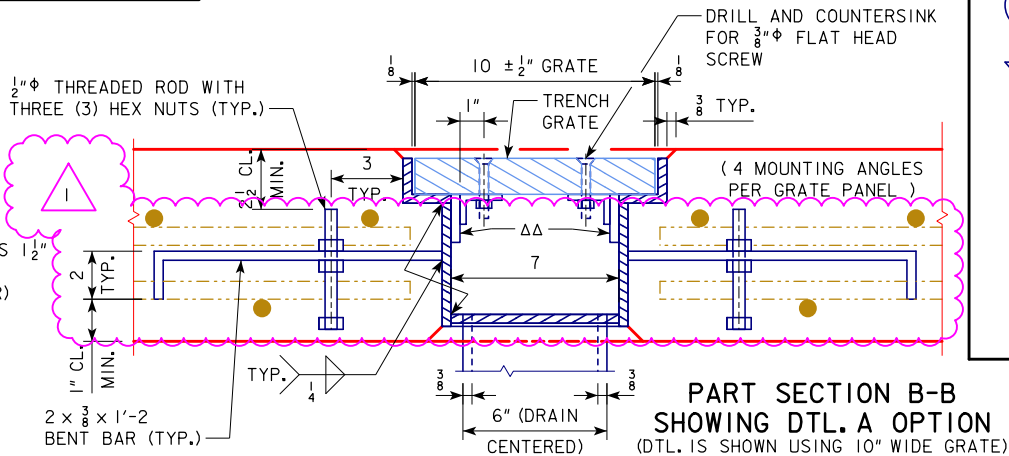
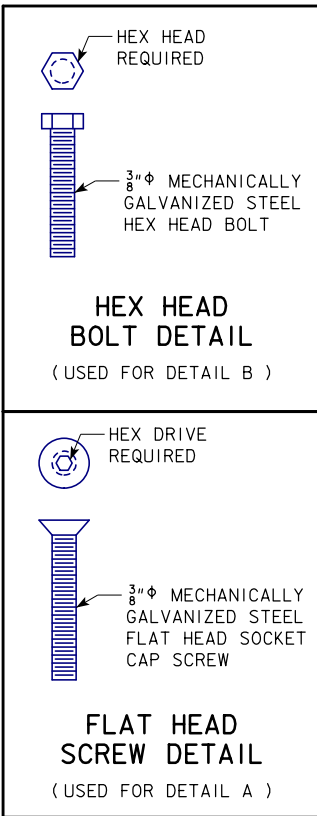
STAINLESS STEEL REINFORCEMENT SHALL NOT BE ALLOWED TO BE IN CONTACT WITH ANY PART OF THE GALVANIZED DECK DRAIN.

MATERIALS

PLATES, BARS, THREADED RODS AND ANGLES SHALL MEET THE REQUIREMENTS ASTM A709 GRADE 36. THE TUBE STEEL SHALL MEET THE REQUIREMENTS ASTM A500 GRADE B.

3/8" Φ MECHANICALLY GALVANIZED STEEL FLAT HEAD SCREW SHALL MEET THE REQUIREMENTS OF ASTM B695-04 (2009) AND ASTM F835-12.

3/8" Φ MECHANICALLY GALVANIZED STEEL HEX HEAD BOLT AND HEX NUT SHALL MEET THE REQUIREMENTS OF ASTM B695-04 (2009) AND ASTM A307-12 GRADE A.



DRAIN TRENCH GRATE DETAILS

(2 GRATES REQUIRED PER DRAIN)

NOTE: PATTERN AND DIRECTION OF GRATE OPENINGS SHALL BE SIMILAR TO THE PATTERN SHOWN.

REVISED: 06-08-2022
UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT AND NOTE.

REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.

SIDE VIEW D-D

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE

153'-0 END SPANS

AESTHETIC DECK DRAINS

STA. 3554+77.00 @ I-480 RAMP C) NOVEMBER, 2020

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

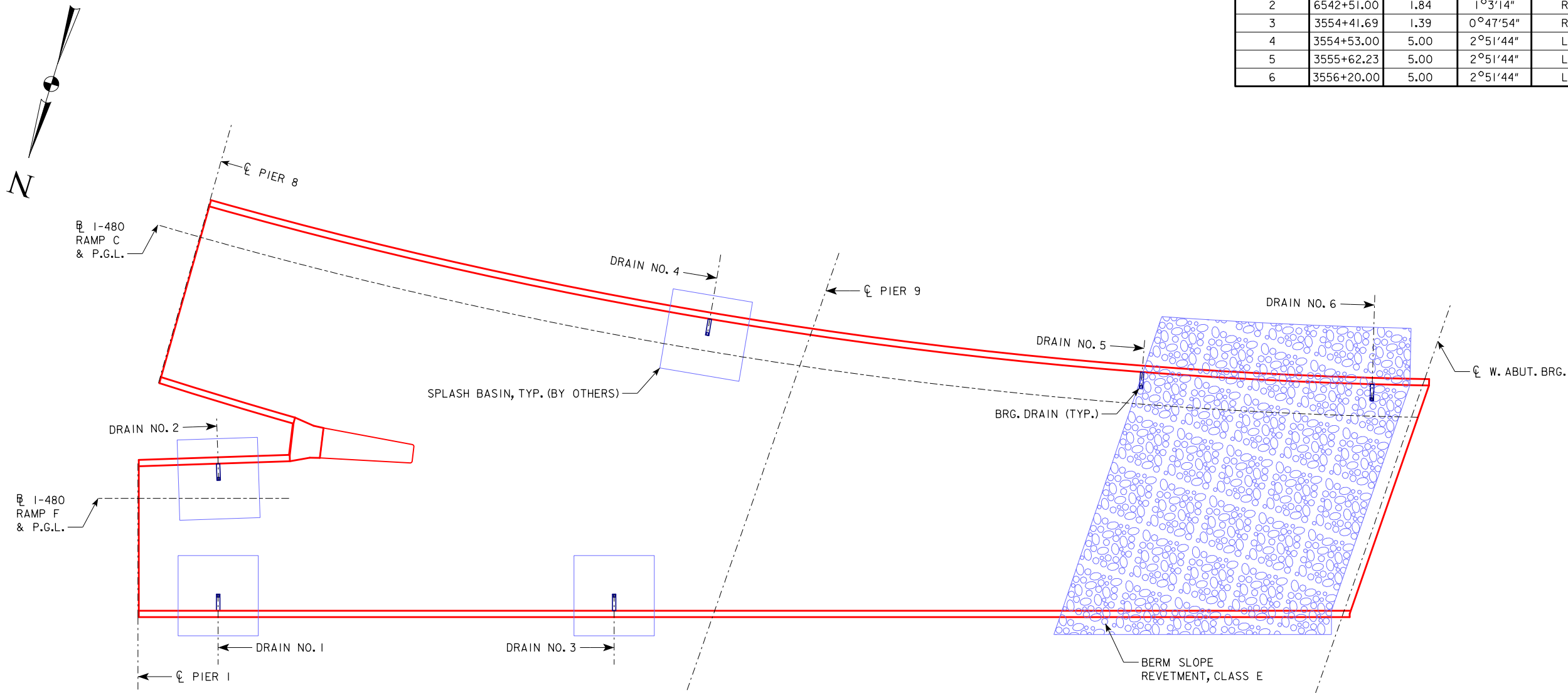
DESIGN SHEET NO. 62 OF 70 FILE NO. 30170 DESIGN NO. 1720

SPLASH BASIN NOTES:

THE COST OF FURNISHING AND PLACING SPLASH BASINS SHALL BE INCLUDED IN THE TIED (190) GRADE AND PAVE PROJECT.

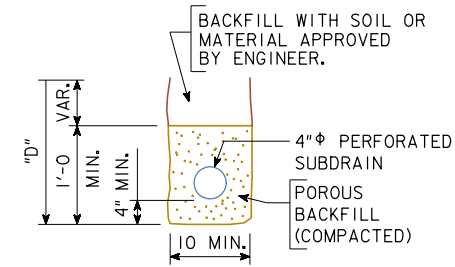
DRAIN DIMENSION TABLE

DRAIN NO.	STATION	DECK CROSS	ANGLE	OFFSET	OUTLET CONDITION	SPLASH BASIN
1	6542+51.00	2.00	1°8'44"	LT	OPEN	YES
2	6542+51.00	1.84	1°3'14"	RT	OPEN	YES
3	3554+41.69	1.39	0°47'54"	RT	OPEN	YES
4	3554+53.00	5.00	2°51'44"	LT	OPEN	YES
5	3555+62.23	5.00	2°51'44"	LT	OPEN	NO
6	3556+20.00	5.00	2°51'44"	LT	OPEN	NO



DECK PLAN SHOWING DRAIN LAYOUT

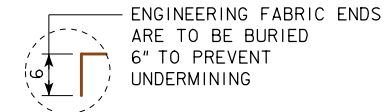




"D" = DEPTH REQUIRED TO PROVIDE PROPER
FLOW LINE FOR SUBDRAIN.

THE UPHILL END OF THE PERFORATED SUBDRAIN AT THE TOE OF SLOPE PROTECTION SHALL BE CAPPED AS APPROVED BY THE ENGINEER.

(REVETMENT STONE SLOPE PROTECTION)



LOCATION	ELEVATION
WEST ABUTMENT	996.40
INTAKE STR. ON W. SIDE OF 40TH ST.	978.50

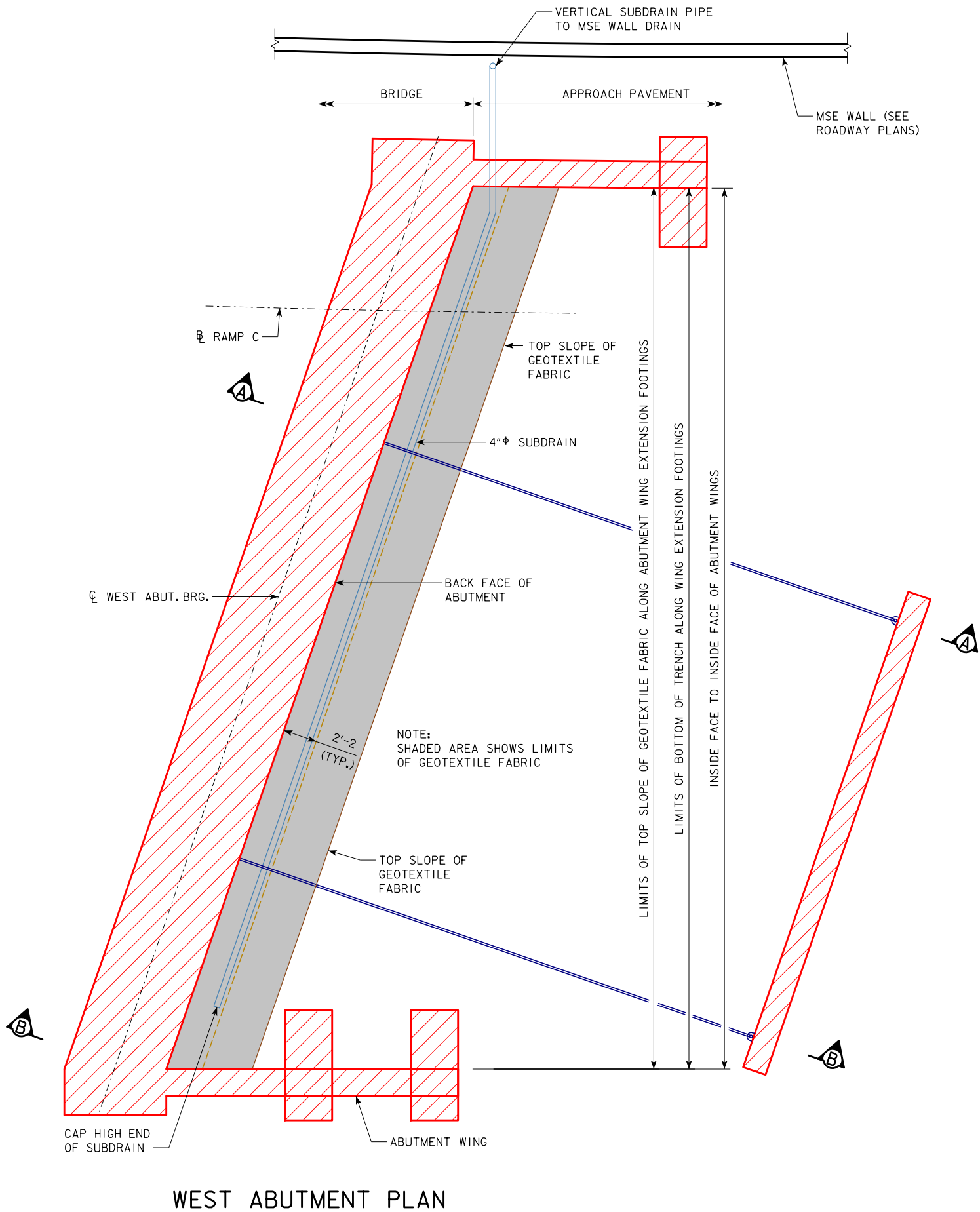
NOTE:
SECTION A-A IS SHOWN ON ABUTMENT
BACKFILL DETAILS SHEET.



SHOWING SUBDRAIN LOCATIONS

SHEET NUMBER	65
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REVISED 09-14 - THE TECHNICAL DATA INFORMATION TABLE WAS REMOVED AND IS LOCATED IN THE STANDARD SPECIFICATIONS. CHANGED SURFACE FLOODING TIME TO 5 MINUTE INCREMENTS.
REVISED 09-2016 - CHANGED THE BRIDGE APPROACH PAVEMENT STANDARD TO "BR" (WAS "RK").
ENGLISHFORSLOPEPROTECTIONBRIDGES.DGN - 1007E - THIS SHEET ISSUED 08-07.



ABUTMENT BACKFILL PROCESS:

PLACEMENT OF BACKFILL BY FLOODING IS NOT ALLOWED.

THE BASE OF THE EXCAVATION SUBGRADE BEHIND THE ABUTMENT IS TO BE GRADED WITH A 4% SLOPE AWAY FROM THE ABUTMENT FOOTING AND A 2% CROSS SLOPE IN THE DIRECTION OF THE SUBDRAIN OUTLET. THIS EXCAVATION SHAPING IS TO BE DONE PRIOR TO BEGINNING INSTALLATION OF THE GEOTEXTILE AND BACKFILL MATERIAL.

AFTER THE SUBGRADE HAS BEEN SHAPED, THE GEOTEXTILE FABRIC SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN. THE FABRIC IS INTENDED TO BE INSTALLED IN THE BASE OF THE EXCAVATION AND EXTENDED VERTICALLY UP THE ABUTMENT BACKWALL, ABUTMENT WING WALLS, AND EXCAVATION FACE TO A HEIGHT THAT WILL BE APPROXIMATELY 1 TO 2 FOOT HIGHER THAN THE HEIGHT OF THE POROUS BACKFILL PLACEMENT AS SHOWN IN THE "BACKFILL DETAILS" ON THIS SHEET. THE STRIPS OF THE FABRIC PLACED SHALL OVERLAP APPROXIMATELY 1 FOOT AND SHALL BE PINNED IN PLACE. THE FABRIC SHALL BE ATTACHED TO THE ABUTMENT BY USING LATH FOLDED IN THE FABRIC AND SECURED TO THE CONCRETE WITH SHALLOW CONCRETE NAILS. THE FABRIC PLACED AGAINST THE EXCAVATION FACE SHALL BE PINNED.

WHEN THE FABRIC IS IN PLACE, THE SUBDRAIN SHALL BE INSTALLED DIRECTLY ON THE FABRIC AT THE TOE OF THE REAR EXCAVATION SLOPE. A SLOT WILL NEED TO BE CUT IN THE FABRIC AT THE POINT WHERE THE SUBDRAIN EXITS THE FABRIC NEAR THE END OF THE ABUTMENT WING WALL.

POROUS BACKFILL IS THEN PLACED AND LEVELED, NO COMPACTION IS REQUIRED.

BACKFILL SHALL BE THE SAME MATERIAL AS PLACED FOR THE MSE WALL AND IT SHALL BE PLACED AND COMPACTED IN THE SAME WAY AS THE MSE WALL BACKFILL MATERIAL. SEE ROADWAY PLAN AS PART OF THE TIED IM-029-3(190)53--13-78 GRADE AND PAVE PROJECT FOR PAYMENT OF BACKFILL.

THE COST OF SUBDRAINS, POROUS BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR STRUCTURAL CONCRETE.

SUBDRAIN NOTES:

THE SUBDRAINS SHALL BE 4" IN DIAMETER AND SHALL BE IN ACCORDANCE WITH ARTICLE 4143.01, B, OF THE STANDARD SPECIFICATIONS. FOR SUBDRAIN OUTLET, SEE MSE WALL PLANS IN PROJECT IM-029-3(190)53--13-78.

THE COST OF FURNISHING AND PLACING SUBDRAIN (INCLUDING POROUS BACKFILL AND THE CONNECTION TO THE VERTICAL MSE WALL SUBDRAIN OUTLET) IS TO BE INCLUDED IN THE PRICE BID FOR STRUCTURAL CONCRETE. NO EXTRA PAYMENT WILL BE MADE.

THE DIMENSIONS SHOWN FOR THE PROPOSED SUBDRAIN ARE FOR ESTIMATION ONLY. REQUIRED LENGTHS AND GENERAL LOCATIONS OF SUBDRAINS ARE SUBJECT TO CHANGE DUE TO FIELD ADJUSTMENTS OF GRADING LAYOUT.

THE HIGH END OF THE PERFORATED SUBDRAIN SHALL BE CAPPED AS APPROVED BY THE ENGINEER. SEE MSE WALL PLANS AS PART OF THE TIED PROJECT IM-029-3(190)53--13-78.

NOTE:

SUBDRAIN SHALL SLOPE DOWNWARD 2% FROM HIGH END WHEN OUTLETTING AT ONE END OF THE ABUTMENT.

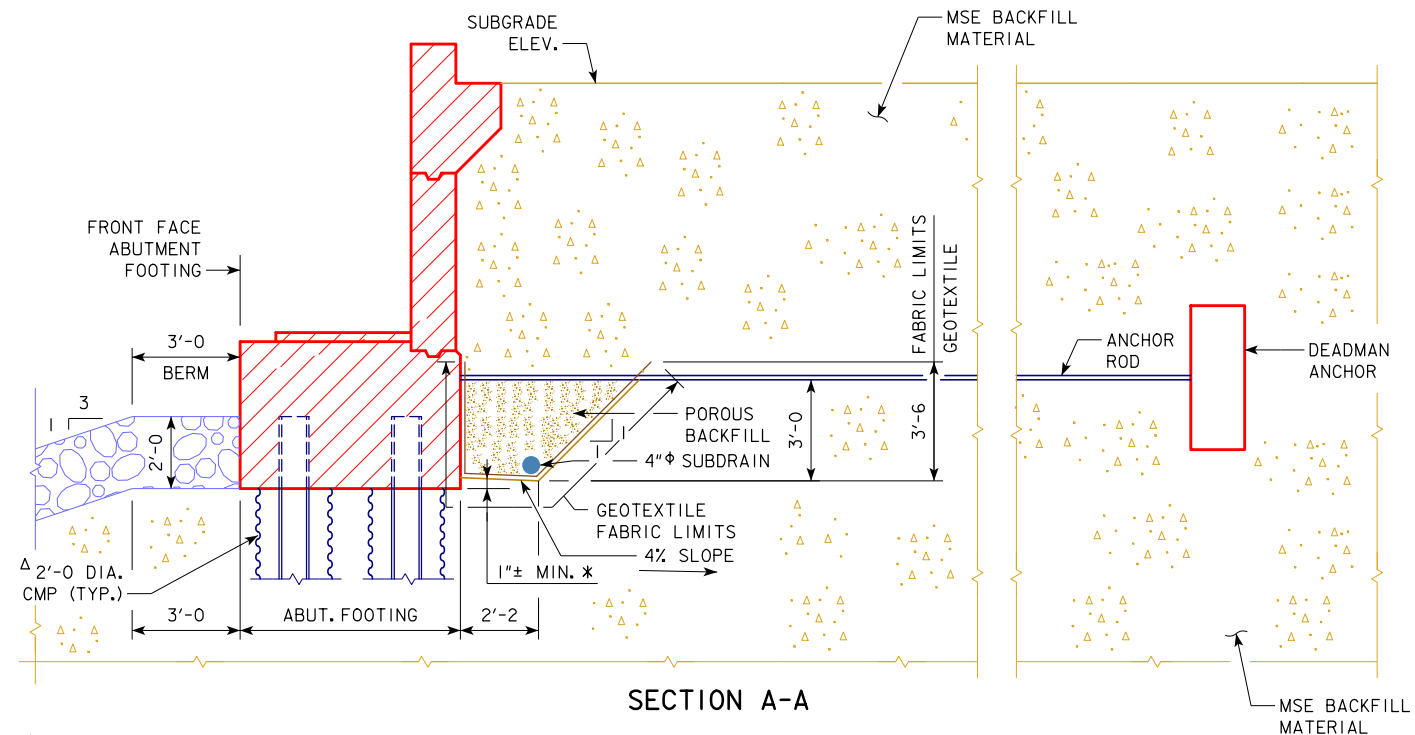
THE GEOTEXTILE FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01, B, 6 OF THE STANDARD SPECIFICATIONS. IF THE ENGINEERING FABRIC IS LAPPED THE LAPS SHALL BE A MINIMUM OF ONE FOOT IN LENGTH, SHINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP AND STAPLED FOR CONTINUITY.

FOR SECTION A-A, SECTION B-B AND BACKFILL SECTION SEE DESIGN SHEET 66.

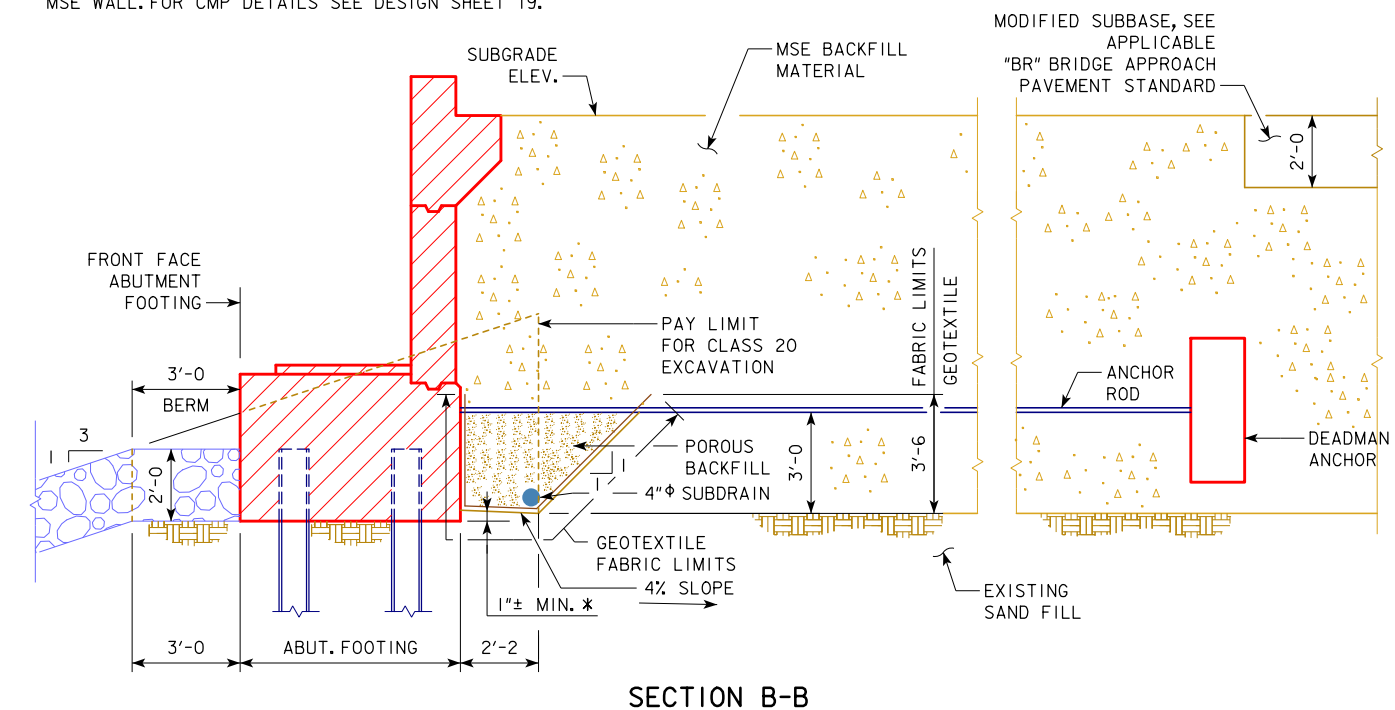
THESE BACKFILL DETAILS AND DEADMAN DETAILS WILL NEED TO BE COORDINATED WITH THE MSE WALL PROJECT IM-029-3(190)53--13-78.

NOTE:
SEE SUBDRAIN DETAILS SHEET FOR DETAILS NOT SHOWN ON THIS SHEET WHICH ARE PERTINENT TO THIS STRUCTURE.

DESIGN FOR VARIABLE SKEW (L.A.)
306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
153'-0 END SPANS
ABUTMENT BACKFILL DETAILS
STA. 3554+77.00 (R 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 65 OF 70 FILE NO. 30170 DESIGN NO. 1720



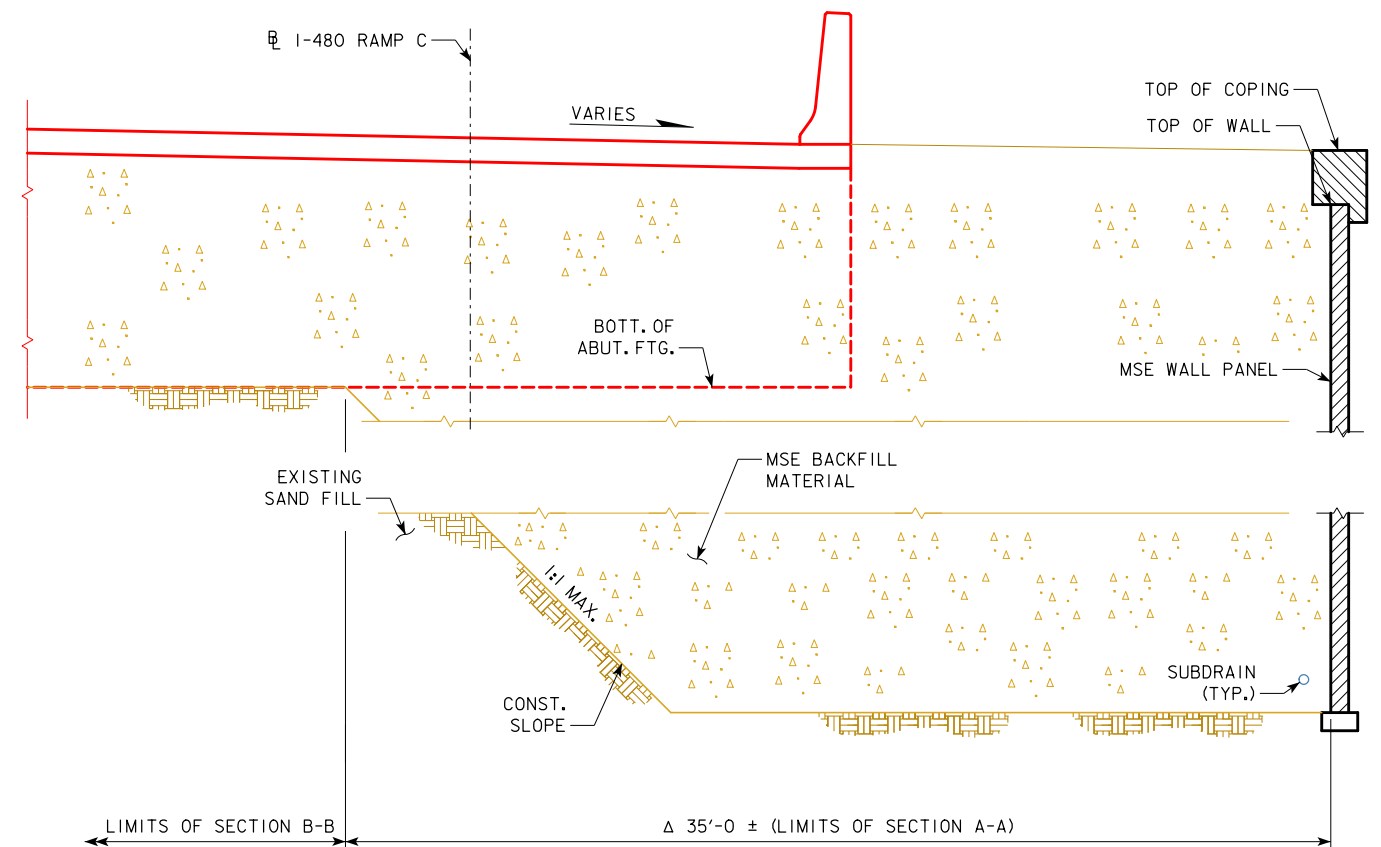
Δ CMP'S ARE REQUIRED BELOW THE ABUTMENT WITHIN THE MSE WALL STRAP ZONE AND THE SPECIAL BACKFILL OF THE MSE WALL. FOR CMP DETAILS SEE DESIGN SHEET 19.



BACKFILL DETAILS

NOTE: GEOTEXTILE FABRIC WILL BE ATTACHED TO FACE OF ABUTMENT FOOTING AND WINGS.

* DIMENSION VARIES DUE TO 2% SUBDRAIN SLOPE.



(LOOKING BACK STATION AND NORMAL TO R 1-480 RAMP C)
(PILES NOT SHOWN)

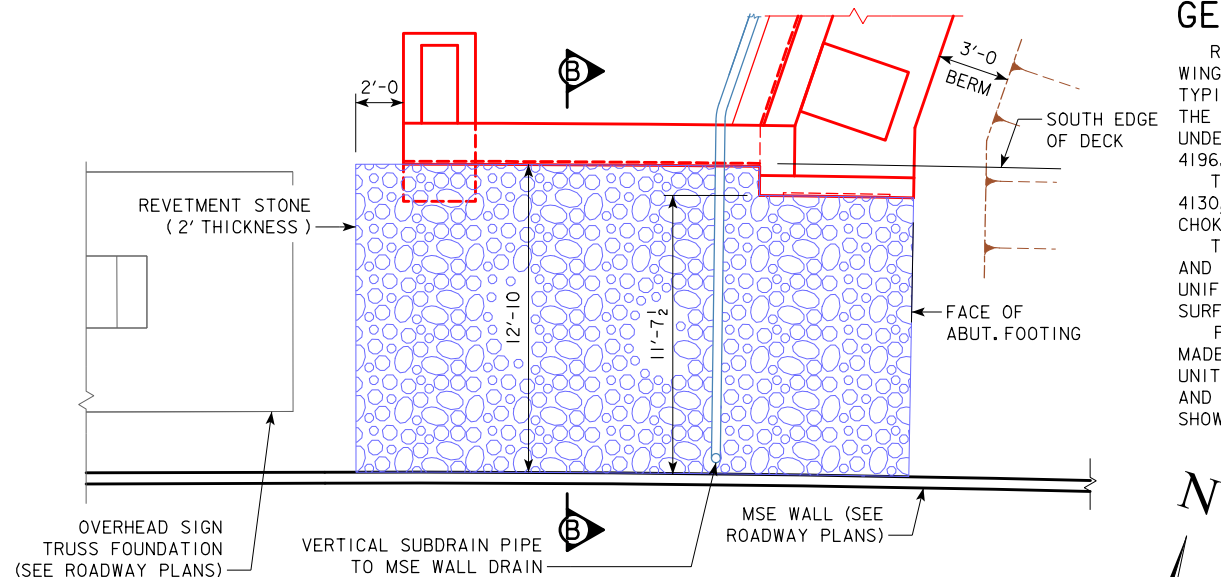
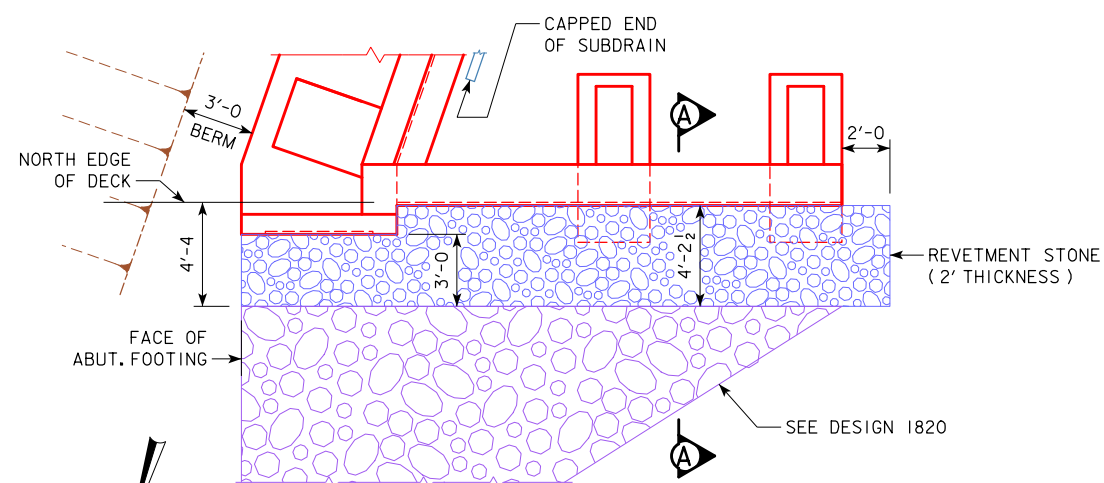
NOTE: DIMENSIONS WILL BE PROVIDED BY MSE WALL MANUFACTURER AS PART OF MSE WALL PROJECT IM-029-3(190)53--13-78.

Δ CLASS 20 EXCAVATION QUANTITY IS BASED ON THIS ASSUMED DIMENSION. ACTUAL DIMENSION WILL BE PROVIDED BY MSE WALL MANUFACTURER.

THESE BACKFILL DETAILS AND DEADMAN DETAILS WILL NEED TO BE COORDINATED THE MSE WALL PROJECT IM-029-3(190)53--13-78.

NOTE:
FOR SUBDRAIN NOTES SEE DESIGN SHEET 65.





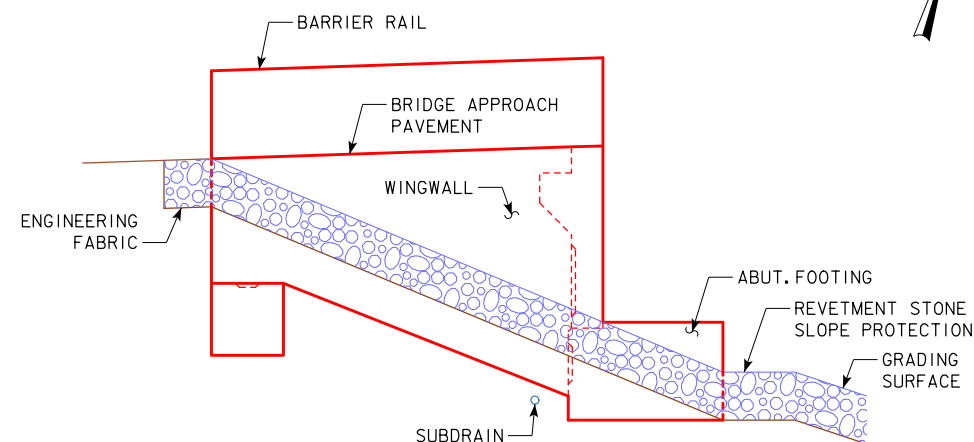
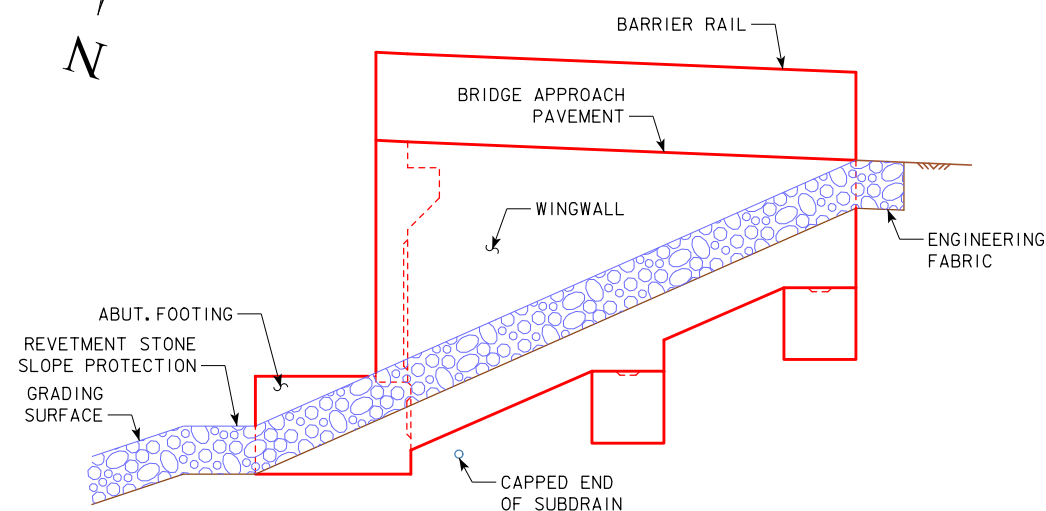
GENERAL NOTES:

REVTMENT STONE SHALL BE PLACED ALONG THE SIDE OF THE WING AND ABUTMENT FOOTING AS SHOWN IN SECTION A-A. THIS IS TYPICAL AT EACH CORNER OF THE BRIDGE ON THE WEST SIDE IN THE PLANS. THE REVTMENT STONE AT THESE LOCATIONS SHALL BE UNDERLAYED WITH ENGINEERING FABRIC IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS.

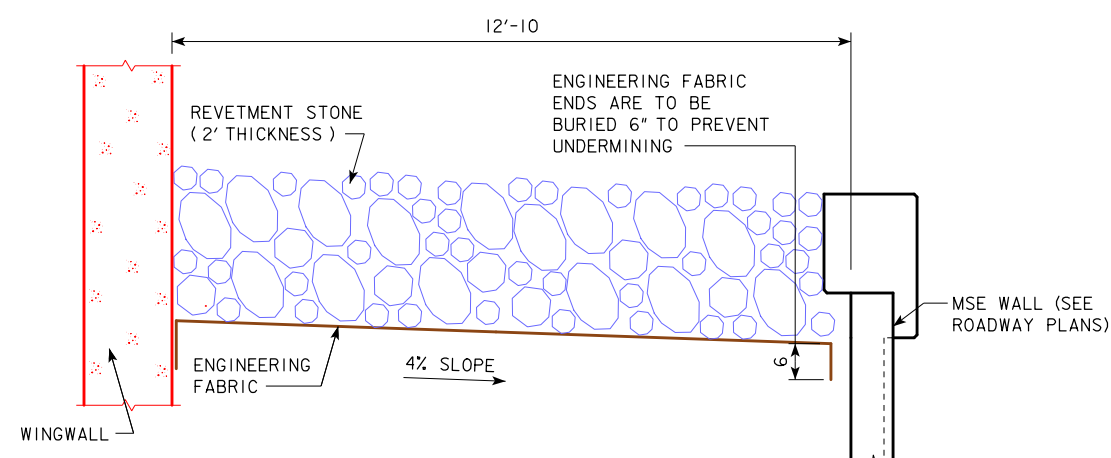
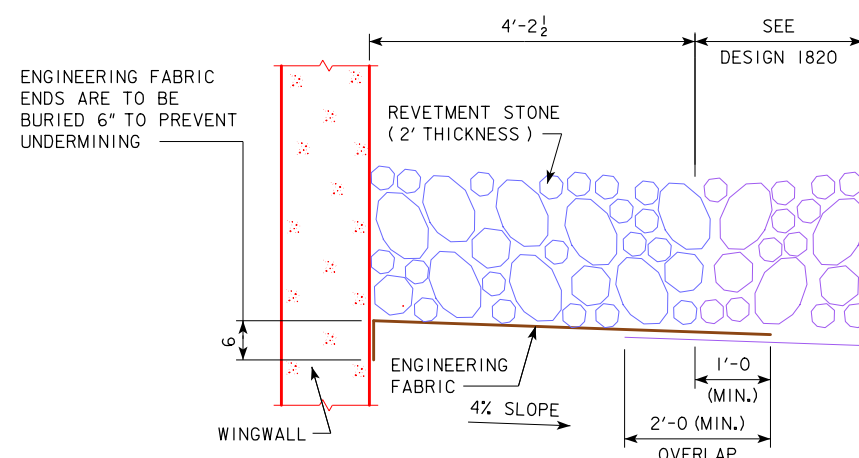
THE REVETMENT STONE SHALL BE IN ACCORDANCE WITH SECTION 4130, OF THE STANDARD SPECIFICATIONS, COARSE MATERIAL (NO CHOKE STONE IS ALLOWED).

THE REVETMENT STONE SHALL BE DEPOSITED, SPREAD, CONSOLIDATED AND SHAPED BY MECHANICAL OR HAND METHODS THAT WILL PROVIDE UNIFORM 2'-0" DEPTH AND DENSITY AND PROVIDE UNIFORM SURFACE APPEARANCE.

PAYMENT FOR "REVTMENT STONE SLOPE PROTECTION" WILL BE MADE ON A PER TON BASIS FOR THE BRIDGE WING ARMORING. THE UNIT PRICE BID PER TON SHALL INCLUDE ALL COSTS FOR MATERIAL AND LABOR REQUIRED TO CONSTRUCT THE BRIDGE WING ARMORING SHOWN ON THESE PLANS.



A CHECK SHALL BE MADE AT THE
SUBDRAIN OUTLET TO INSURE THAT
IT IS DRAINING PROPERLY.



ESTIMATED QUANTITIES		
DESCRIPTION	LOCATION	QUANTITY
REVETMENT STONE SLOPE PROTECTION	NORTH WING	12.7 S.Y.
REVETMENT STONE SLOPE PROTECTION	SOUTH WING	34.7 S.Y.
TOTAL		47.4 S.Y.

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE

153'-0 END SPANS

BRIDGE WING ARMORING

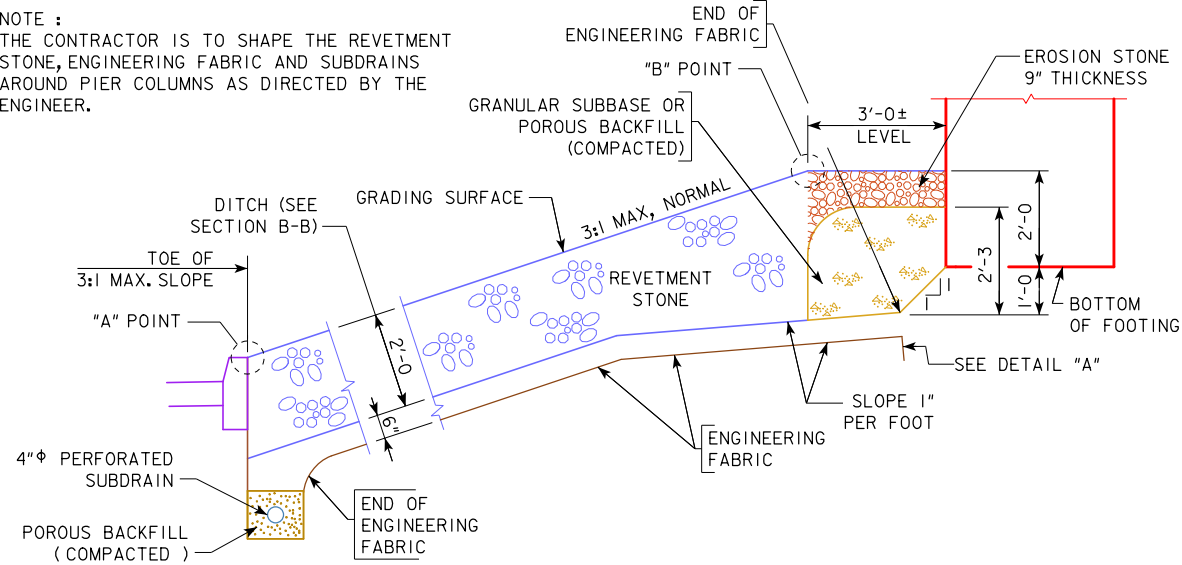
STA. 3554+77.00 (R 1-480 RAMP C) NOVEMBER, 2020

POTTAWATTAMIE COUNTY

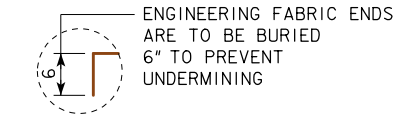
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 67 OF 70 FILE NO. 30170 DESIGN NO. 1720

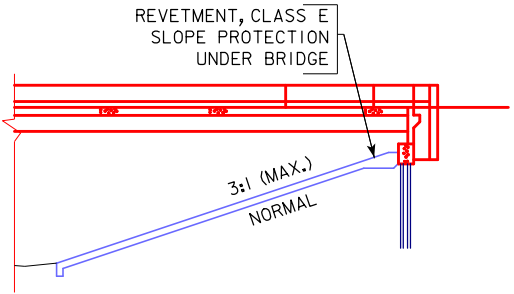
NOTE :
THE CONTRACTOR IS TO SHAPE THE REVETMENT
STONE, ENGINEERING FABRIC AND SUBDRAINS
AROUND PIER COLUMNS AS DIRECTED BY THE
ENGINEER.



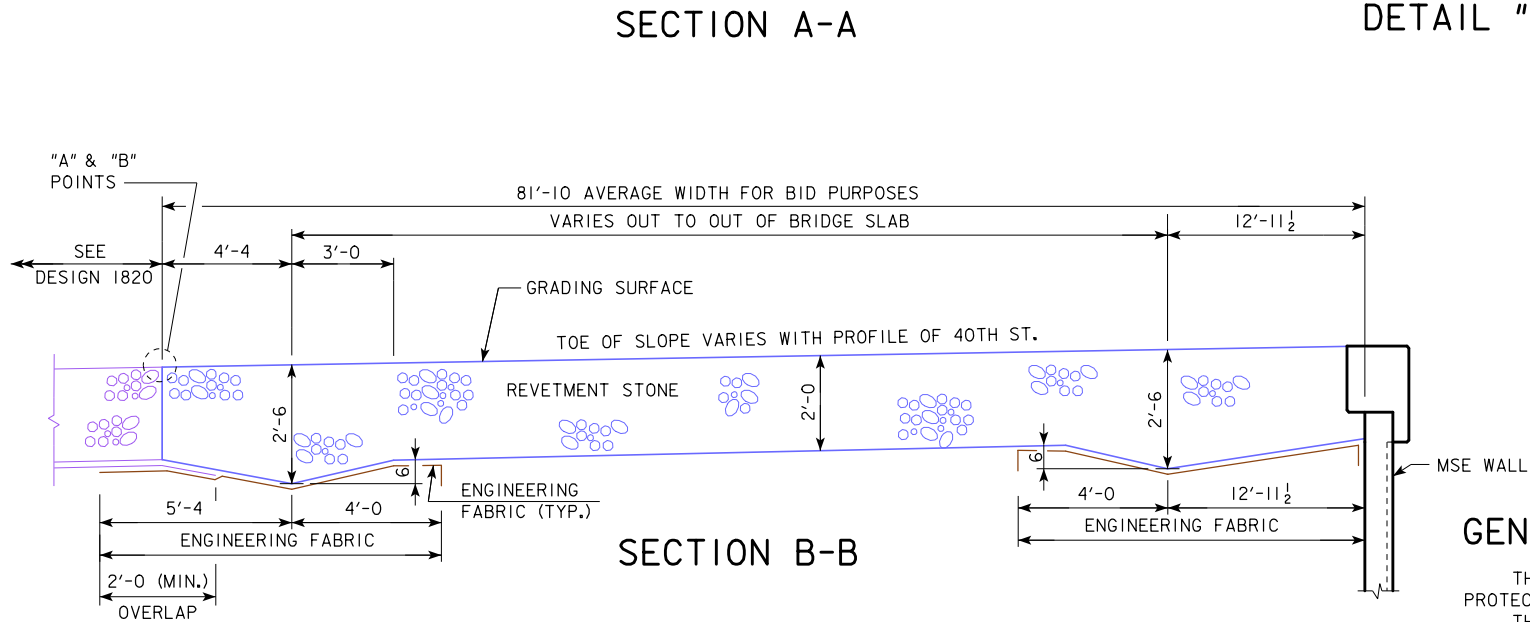
FOR ELEVATION AND LOCATION OF
"A" AND "B" POINTS SEE DESIGN
SHEET 5.



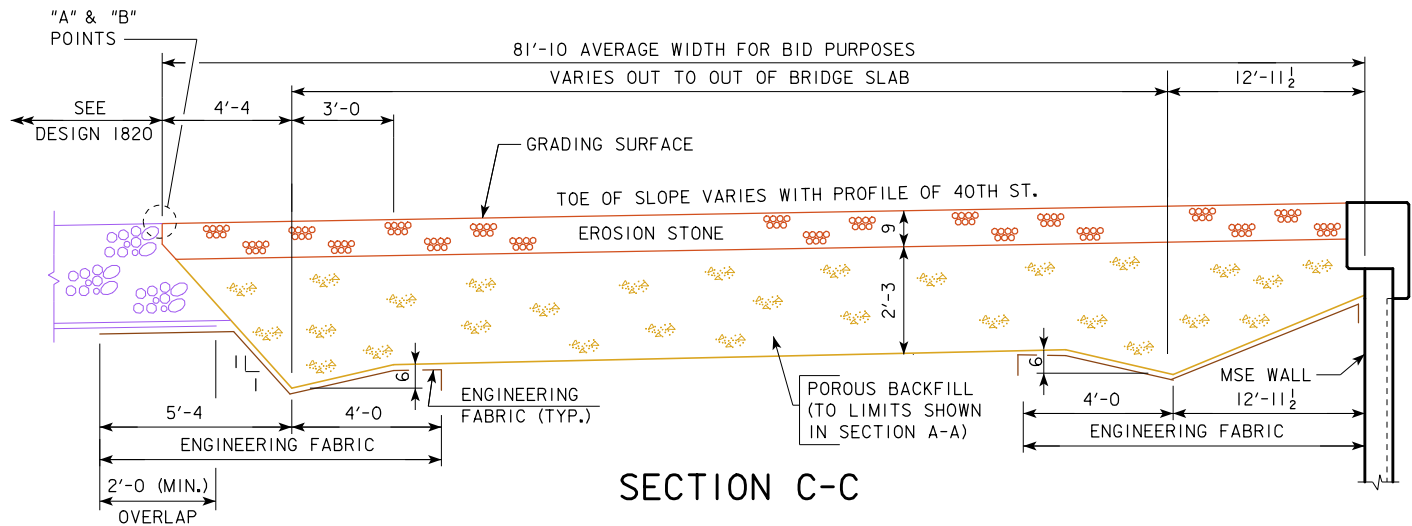
DETAIL "A"



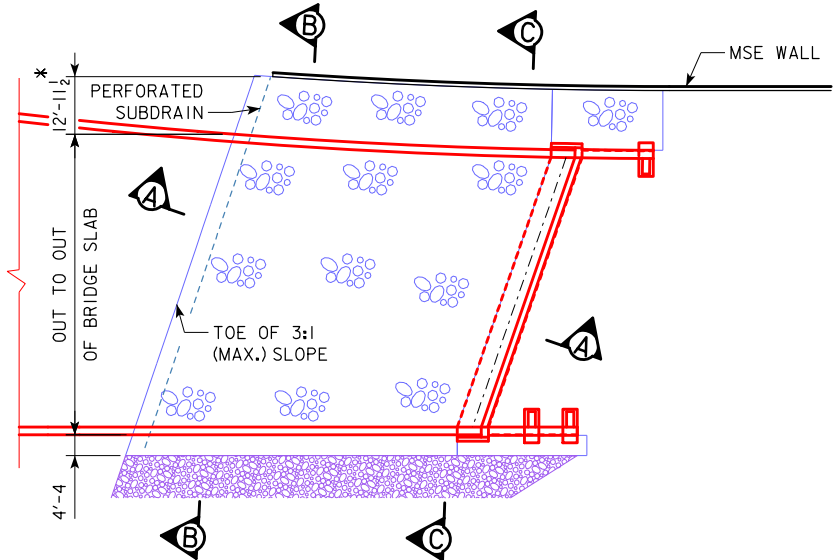
LONGITUDINAL SECTION ALONG
RAMP C APPROACH ROADWAY



SECTION B-B



SECTION C-C



SLOPE PROTECTION LAYOUT

GENERAL NOTES:

THIS PLAN SHEET SHOWS DETAILS FOR PLACING A "REVTMENT STONE SLOPE PROTECTION" UNDER OVERHEAD STRUCTURES.

THE BRIDGE BERM FORESLOPE SHALL BE COMPACTED AND SHAPED AS SHOWN ON THIS SHEET, SHAPING WILL INCLUDE EXCAVATION, FROM THE GRADING SURFACE SHOWN, THE SITUATION PLAN, AND AS DIRECTED BY THE ENGINEER. THE BERM FORESLOPE SHALL BE FIRM WHEN THE ENGINEERING FABRIC AND REVETMENT STONE ARE PLACED.

THE ENGINEERING FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS. IF THE ENGINEERING FABRIC IS LAPPED, THE LAPS SHALL BE A MINIMUM OF ONE FOOT IN LENGTH, SHINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP AND STAPLED FOR CONTINUITY.

THE EROSION STONE PLACED AT THE TOP OF BERM SHALL BE IN ACCORDANCE WITH SECTION 4130 OF THE STANDARD SPECIFICATIONS. MATERIAL PASSING THE 3 INCH SCREEN BUT 100 PERCENT RETAINED ON A 1 INCH SCREEN MAY BE USED AS CHOKO STONE.

THE REVETMENT STONE AND EROSION STONE SHALL BE CLASS E IN ACCORDANCE WITH SECTION 4130 OF THE STANDARD SPECIFICATIONS AND SHALL BE EMBEDDED 2'-0 THICK.

THE REVETMENT STONE AND EROSION STONE SHALL BE DEPOSITED, SPREAD, CONSOLIDATED AND SHAPED BY MECHANICAL OR HAND METHODS THAT WILL PROVIDE UNIFORM DEPTH AND DENSITY AND PROVIDE UNIFORM SURFACE APPEARANCE.

PAYMENT FOR "REVTMENT STONE SLOPE PROTECTION" WILL BE MADE ON A PER SY BASIS FOR SLOPE PROTECTION CONSTRUCTED. THE UNIT PRICE BID PER SY SHALL INCLUDE ALL COSTS FOR MATERIAL AND LABOR REQUIRED TO CONSTRUCT THE SLOPE PROTECTION SHOWN ON THESE PLANS.

THE BERM FORESLOPE SHAPING AND COMPACTING AND THE DISPOSAL OF EXCESS SOIL FROM SHAPING OR TRENCHING SHALL BE CONSIDERED INCIDENTAL TO PLACING THE SLOPE PROTECTION.

WHERE EROSION CONTROL WORK HAS BEEN COMPLETED THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY PLANT MATERIALS DESTROYED ADJACENT TO THE SLOPE PROTECTION AREA. THE CONTRACTOR SHALL REPLANT, RESEED AND REMULCH ALL DISTURBED AREAS, DESIGNATED BY THE ENGINEER, IN ACCORDANCE WITH SECTION 2601, OF THE STANDARD SPECIFICATIONS, AT THE CONTRACTOR'S EXPENSE.

THE BRIDGE CONTRACTOR IS TO INSTALL SUBDRAINS AS DETAILED ON THE SUBDRAIN DETAILS SHEET.

ESTIMATED QUANTITIES

DESCRIPTION	LOCATION	QUANTITY
REVTMENT STONE SLOPE PROTECTION	WEST ABUT.	593.5 S.Y.
	TOTAL	593.5 S.Y.

ITEMS TO BE INCLUDED IN "REVTMENT STONE SLOPE PROTECTION":

- EXCAVATING, SHAPING AND COMPACTING
- ENGINEERING FABRIC
- CLASS E REVETMENT STONE
- POROUS BACKFILL OR GRANULAR SUBBASE BACKFILL AT FRONT FACE ABUTMENT FOOTING
- EROSION STONE

DESIGN FOR VARIABLE SKEW (L.A.)

306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE

153'-0 END SPANS

REVTMENT STONE SLOPE PROTECTION

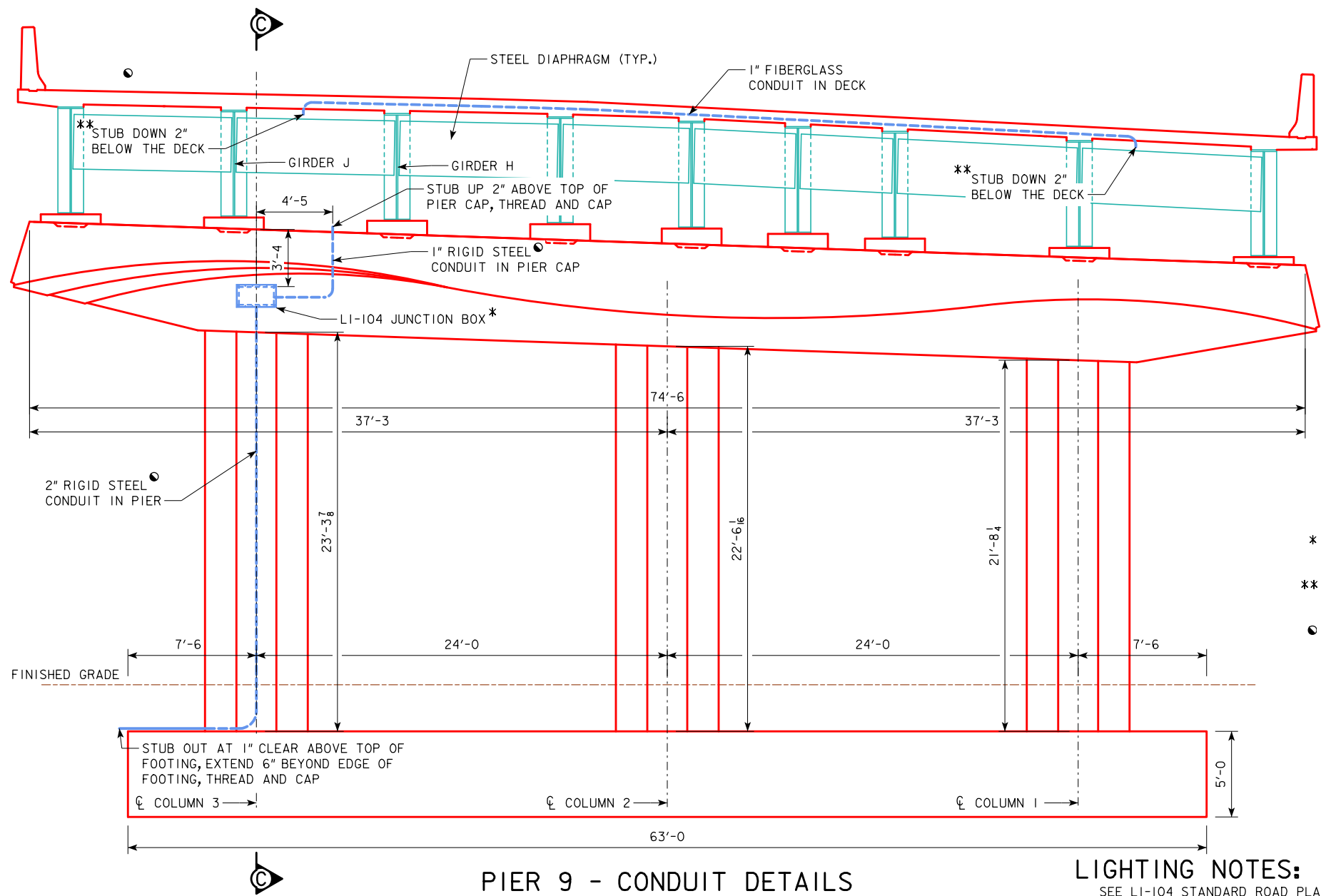
STA. 3554+77.00 @ 1-480 RAMP C) NOVEMBER, 2020

POTTAWATTAMIE COUNTY

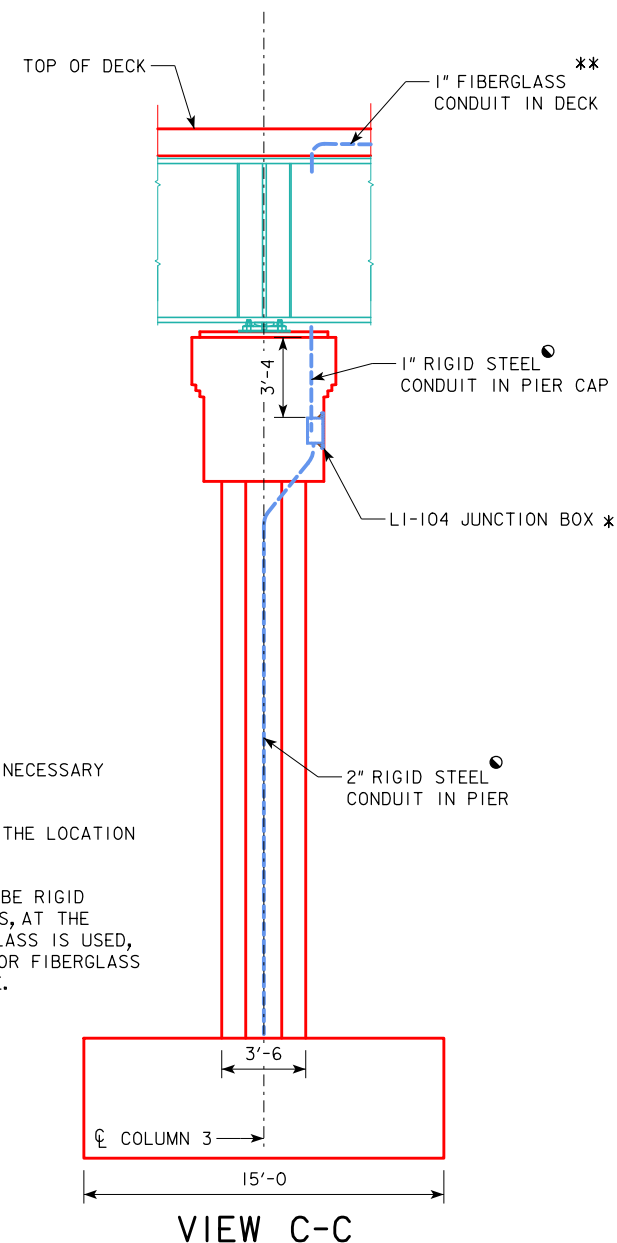
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 68 OF 70 FILE NO. 30170 DESIGN NO. 1720

REVISED 10-12 - LOCATED THE "A" AND "B" POINTS IN SECTION A-A.
ENGLISH FOR PROTECTION BRIDGES.DGN 1006C - THIS SHEET ISSUED 9-16-92



PIER 9 - CONDUIT DETAILS
(LOOKING DOWNSTATION)



VIEW C-C

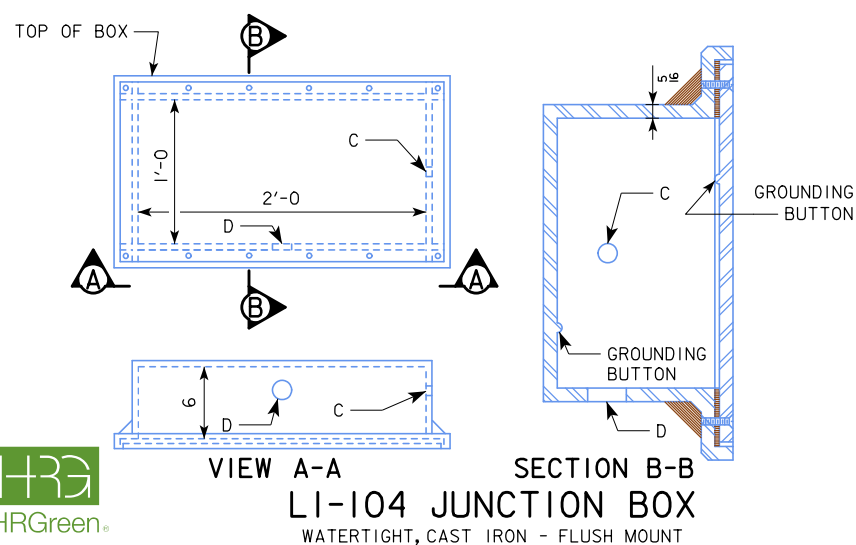
- * TRIM 6a3 BAR AND 6c1 BARS AS NECESSARY TO ACCOMMODATE JUNCTION BOX
- ** REFER TO DESIGN SHEET 70 FOR THE LOCATION OF CONDUIT STUB-DOWN POINT
- CONDUIT EMBEDDED IN PIER MAY BE RIGID GALVANIZED STEEL OR FIBERGLASS, AT THE CONTRACTOR'S OPTION. IF FIBERGLASS IS USED, REFER TO SPECIAL PROVISIONS FOR FIBERGLASS CONDUIT EMBEDDED IN STRUCTURE.

LIGHTING NOTES:

SEE LI-104 STANDARD ROAD PLAN FOR ADDITIONAL INFORMATION ON JUNCTION BOXES.
CONSTRUCTION SHALL CONFORM TO THE CURRENT IOWA D.O.T. STANDARD AND SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.
CONDUIT INSTALLATION SHALL BE IN ACCORDANCE WITH ARTICLE 2523.03, N, OF THE STANDARD SPECIFICATIONS. PROVIDE FIBERGLASS CONDUIT AS SPECIFIED IN SPECIAL PROVISION.
ALL ENTRANCE HOLES IN JUNCTION BOXES INDICATED TO BE THREADED SHALL BE DRILLED AND TAPPED FOR THE SPECIFIED CONDUIT SIZE. ALL OTHER HOLES SHALL HAVE A CONCRETE-TIGHT SLIP FIT. CONDUIT ENDS SHALL NOT PROTRUDE INTO JUNCTION BOX MORE THAN 1/4". GROUNDING BUTTONS SHALL BE LOCATED APPROXIMATELY 3" FROM THE INSIDE SURFACE OF THE BOX WALL, AND NOT CLOSER THAN 3" TO THE EDGE OF ANY HOLE IN THE BOX FLOOR. TYPICAL DETAILS ARE SHOWN ON THIS SHEET.
THE RIGID STEEL CONDUIT, FIBERGLASS CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF "HIGH PERFORMANCE STRUCTURAL CONCRETE".
COST OF FURNISHING AND INSTALLING POLES, LIGHTS, AND LIGHTING CONDUCTOR IS NOT A PART OF THIS CONTRACT.
ALL REINFORCING STEEL IN THE PIERS IS TO BE NON-EPOXY COATED AND GRADE 60. ALL REINFORCING STEEL IN THE BRIDGE DECK IS TO BE STAINLESS-STEEL. EPOXY COATED.
STAINLESS-STEEL REINFORCEMENT SHALL NOT BE ALLOWED TO BE IN CONTACT WITH UNCOATED REINFORCEMENT, BARE METAL FORMING HARDWARE, OR GALVANIZED ATTACHMENTS OR GALVANIZED CONDUIT.
JUNCTION BOXES TO BE PLACED WITHIN THE SMOOTH FINISHED AREA OF THE PIER CAP, SEE PIER DETAILS.
PIER AESTHETICS AND REINFORCING ARE NOT SHOWN IN THIS SHEET FOR CLARITY.

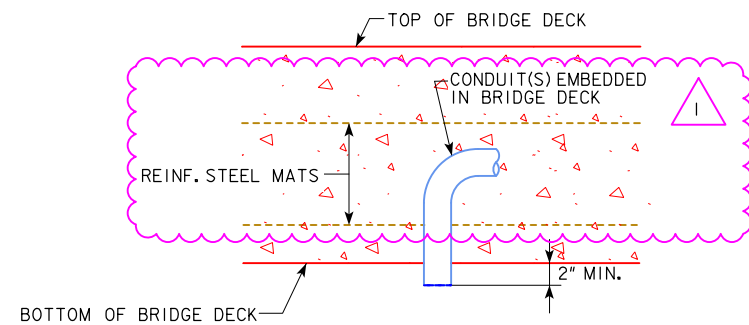
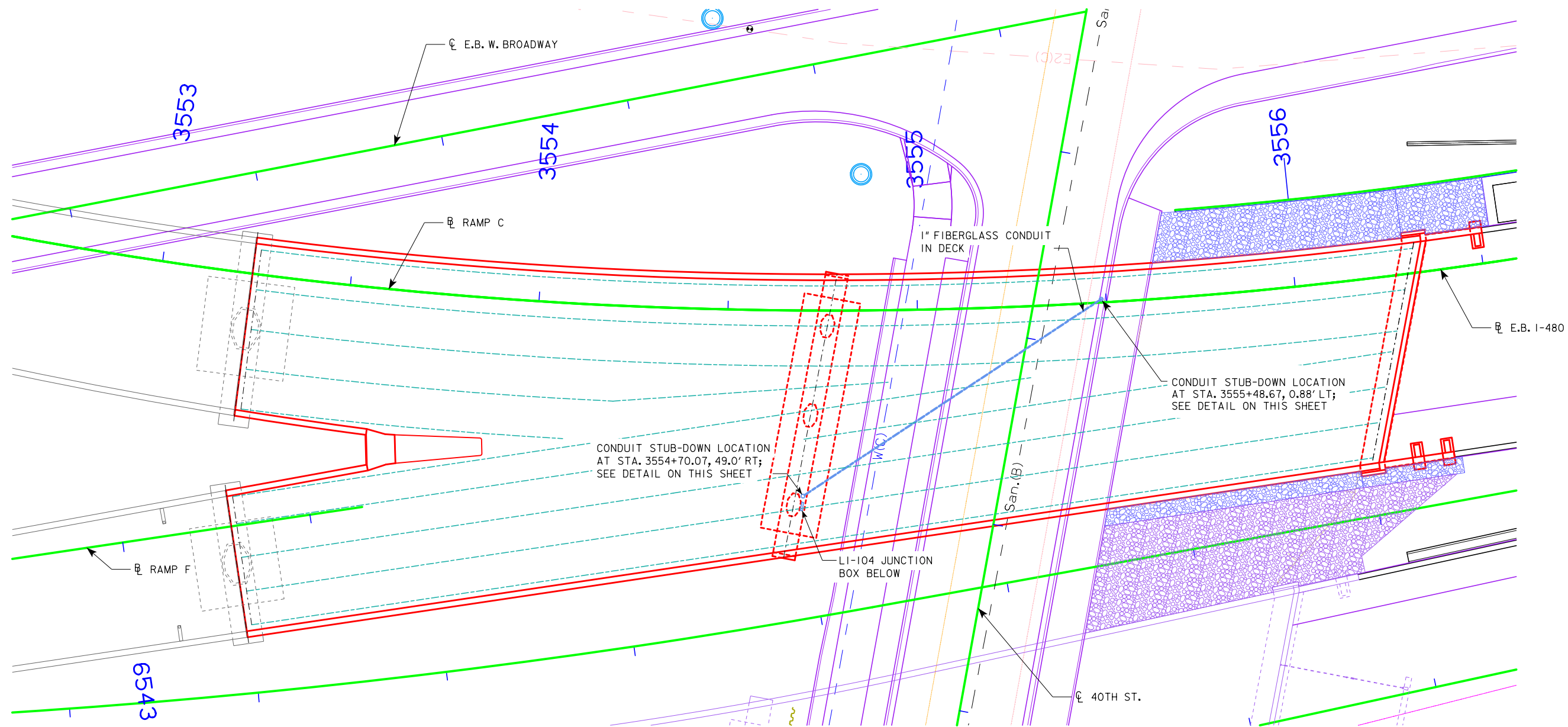
REVISED: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED NOTE.

REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.



BOSSSED FOR	HOLE	FOR CONDUIT SIZE
5 THREADS	C	1" RIGID STEEL
5 THREADS	D	2" RIGID STEEL

DESIGN FOR VARIABLE SKEW (L.A.)
306'-0" x VARIES CONTINUOUS WELDED GIRDER BRIDGE
 153'-0" END SPANS
LIGHTING DETAILS
 STA. 3554+77.00 (@ I-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 69 OF 70 FILE NO. 30170 DESIGN NO. 1720



REVISED: 06-08-2022 UPDATED DECK AND BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED, EXCEPT BARRIER TO DECK/WING CONNECTIONS. CHANGED COLOR OF REINFORCEMENT.

REASON: CHANGE MADE IN THE BEST INTEREST OF THE PUBLIC TO KEEP THE PROJECT ON SCHEDULE AND AVOID SIGNIFICANT DELAYS IN PROJECT COMPLETION.

DESIGN FOR VARIABLE SKEW (L.A.)
306'-0" x VARIES CONTINUOUS WELDED GIRDER BRIDGE
 153'-0" END SPANS
LIGHTING DETAILS
 STA. 3554+77.00 (E 1-480 RAMP C) NOVEMBER, 2020
POTTAWATTAMIE COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 70 OF 70 FILE NO. 30170 DESIGN NO. 1720



GEOTECHNICAL DESIGN

DONALD J. HAMMOND

22956

IOWA

PROFESSIONAL ENGINEER

172

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.

Signature

Donald J. Hammond

Date

06-05-2020

Printed or Typed Name

Donald J. Hammond

My license renewal date is December 31, 2020

Pages or sheets covered by this seal: SPS.1 - SPS.3

The main plan view shows the bridge layout with various components labeled. Key features include:

- Settlement Plates:** SP-82 (STA. 3556+76 Lt. 2.0) and SP-81 (STA. 3556+76 Rt. 25.5).
- Piers:** PIER NO. 8 (STA. 3553+24.00), PIER NO. 9 (STA. 3554+77.00), and PIER NO. 1 (STA. 6542+71.00).
- Ramps:** I-480 RAMP C & P.G.L., I-480 RAMP F & P.G.L., I-480 RAMP H & P.G.L., and I-480 RAMP C = STA. 7002+41.41.
- Streets:** EB W. BROADWAY & P.G.L., 40TH ST. RAMP B & P.G.L., and EXIST. WB W. BROADWAY TO BE REMOVED.
- Design References:** SEE DESIGN NO. 1320, 1420, 1520, 1720, and 1820.
- Other Labels:** EXIST. LANE W-S TO BE REMOVED, EXIST. LANE W-N TO BE REMOVED, DEADMAN ANCHORAGE TO BE INSTALLED CONCURRENT WITH ABUTMENT, and BUMP-OUT IN WALL 5370 FOR OVERHEAD SIGN TOWER (SEE SPS.3).

A north arrow pointing upwards and a scale bar labeled "0 ENGLISH 40 SCALE IN FEET".

LOCATION
I-480 E.B. CONNECTOR (US 6 E.B.) TO I-480 RAMP C & I-480 RAMP F OVER 40TH ST. T-75N R-44W SECTION 28 KANE TOWNSHIP POTTAWATTAMIE COUNTY FHWA NO. 700965 LATITUDE 41.261388° LONGITUDE -95.912442°

THIS SHEET IS INCLUDED TO SHOW SOIL BORING INFORMATION ONLY. DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR CONSTRUCTION.

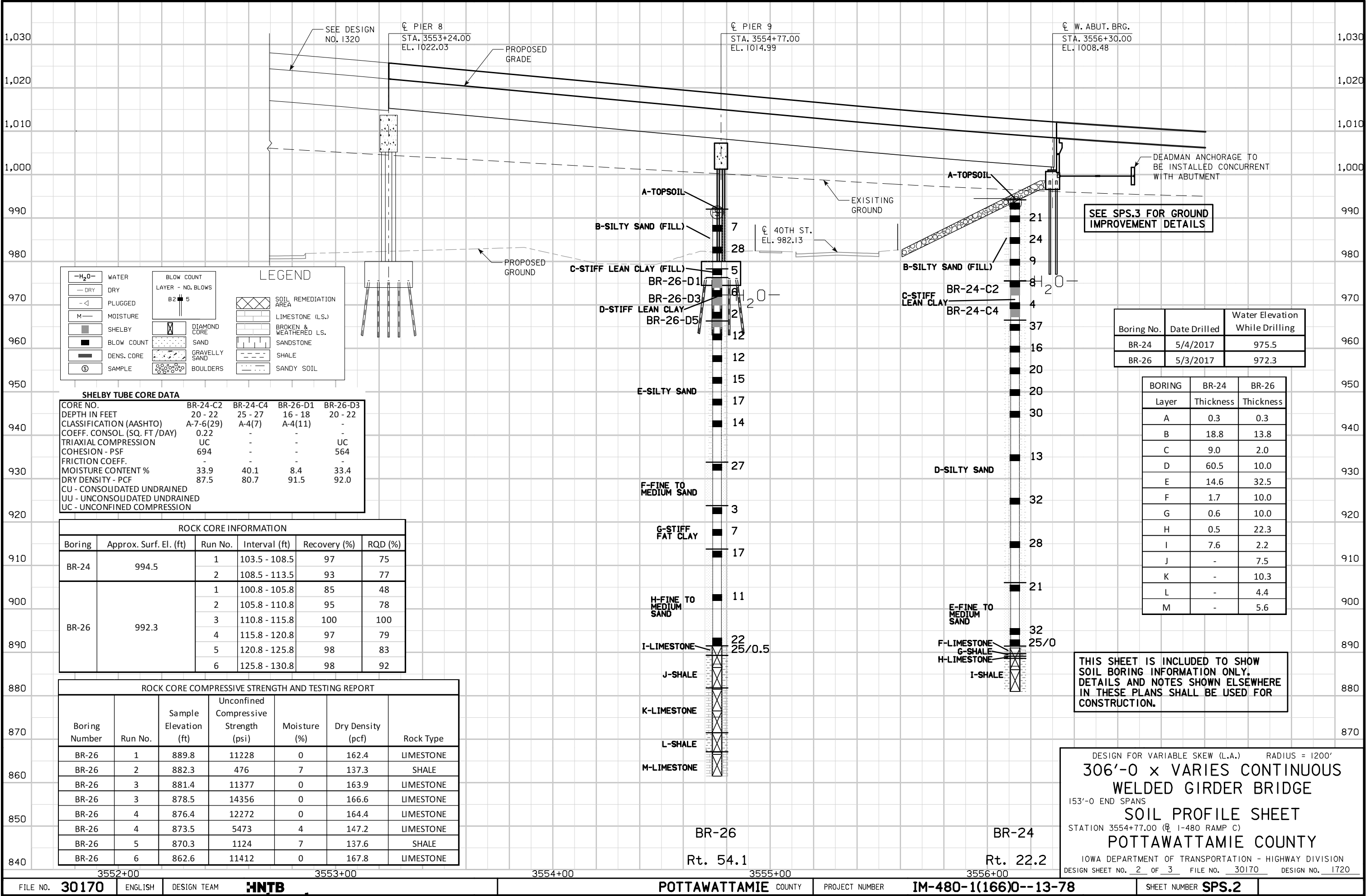
A key plan showing the bridge location relative to the surrounding road network, with a north arrow and the text "LOCATION OF BRIDGE" and "KEY PLAN".

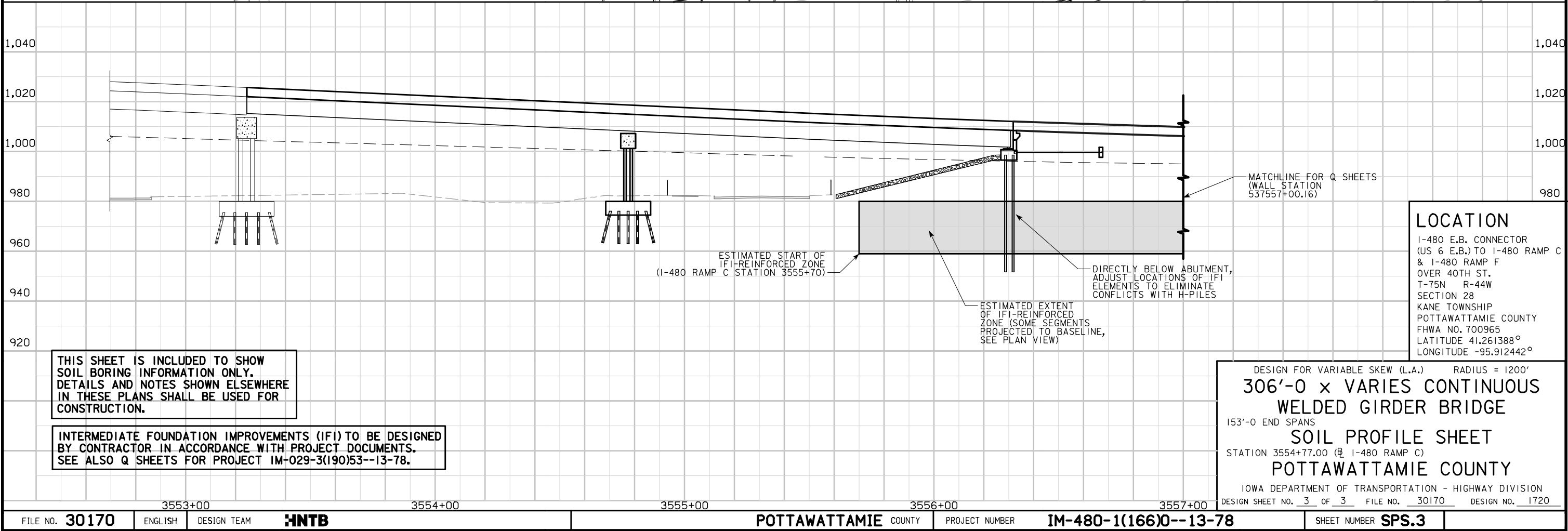
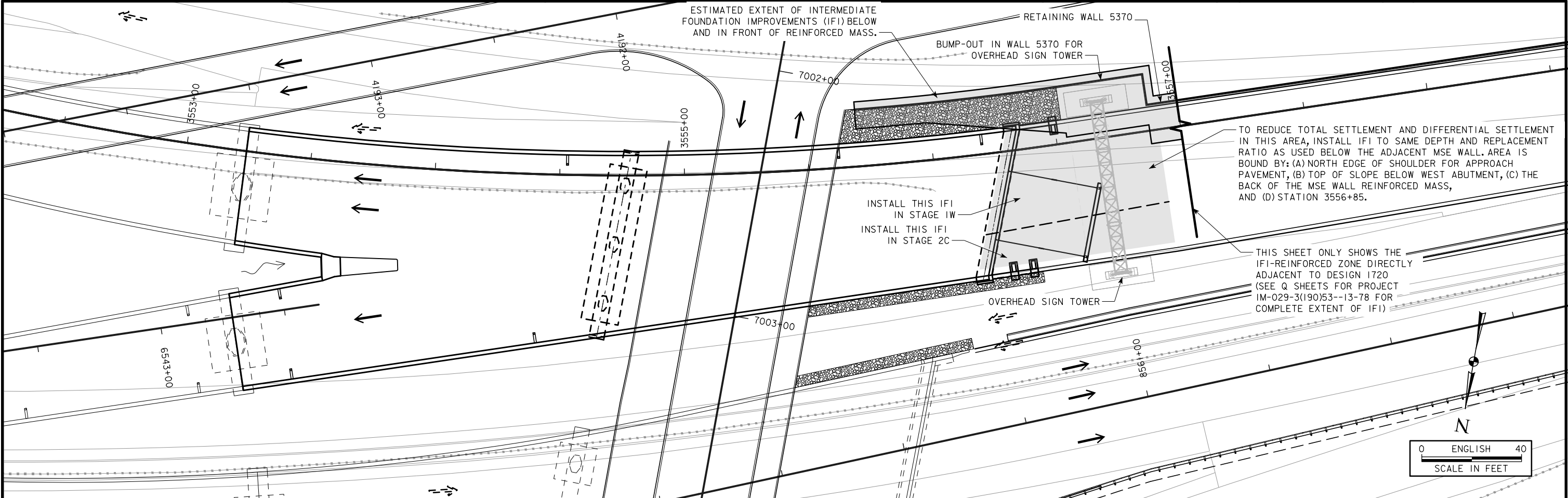
ALL SETTLEMENT PLATES TO BE INSTALLED UNDER PROJECT NO. IM-029-3(190)53--13-78

SETTLEMENT PLATES
SEE STANDARD ROAD PLAN EW-212 AND SECTION 2106 OF THE STANDARD SPECIFICATION FOR SETTLEMENT PLATE DETAILS.


DESIGN FOR VARIABLE SKEW (L.A.) RADIUS = 1200'
306'-0 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
153'-0 END SPANS
SOIL PROFILE SHEET
STATION 3554+77.00 (E I-480 RAMP C)
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 1 OF 3 FILE NO. 30170 DESIGN NO. 1720

FILE NO. 30170	ENGLISH	DESIGN TEAM HNTB	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-480-1(1660)--13-78	SHEET NUMBER SPS.1
6/4/2020 2:47:00 PM amccaskill pw:\pw-int.hntb.org\PWCentralDiv\Documents\Kansas City Projects\61945 CBIS Segment 4\Geotech\Drawings\SPS sheets\78029166-SPS-1720.sht TSL-78-1720.Plan 11x17.pdf.pltcf					



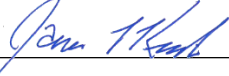


INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets A.1	Title Sheets Title Sheet
B Sheets B.1	Typical Cross Sections and Details Typical Cross Sections and Details
C Sheets C.1 C.2	Quantities And General Information Project Description and General Information Tabulations
G Sheets G.1	Survey Sheets Reference Ties, Bench Marks and Alignment Data
J Sheets J.1	Traffic Control and Staging Sheets Traffic Control Plan
K Sheets *K.1 *K.2-K.3	Ramp Plan and Profile Sheets Plan and Profile Legend and Symbol Info Sheet I-480 Ramp C
L Sheets *L.1 *L.2	Geometric, Staking and Jointing Sheets Staking Details Jointing and Bridge Approach Details
* Color Plan Sheet	



ROADWAY 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.



11/4/2020

Signature

Date

James L. Kinder

Printed or Typed Name

My license Renewal date is December 31, 2020

Page or sheets covered by this seal: A.1, B.1, C.1-C.2, G.1, J.1, K.1-K.3, L.1-L.2

SEE GRADING AND PAVING PROJECT IM-029-3(190)53--13-78 FOR ADDITIONAL TYPICAL SECTIONS

PROJECT DESCRIPTION

This project includes the construction of the I-480 Ramp C/F bridge (Design No. 1720), the construction of bridge approach slabs and longitudinal grooving. Approach embankment, Retaining Walls, Construction Staging and all other related work are included in the Grade and Paving project IM-029-3(190)53--13-78.

100-1D
10-18-05

ESTIMATED ROADWAY QUANTITIES (1 DIVISION PROJECT)

100-0A
10-28-97

Item No.	Item Code	Item	Unit	Total	As Built Qty.
1	2301-0690203	BRIDGE APPROACH, BR-203	SY	359.6	
2	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE	SY	2632.2	
3	2513-0001020	CONCRETE BARRIER BA-102	LF	15.7	

ESTIMATE REFERENCE INFORMATION

100-4A
10-29-02

[illegible]

STANDARD ROAD PLANS

105-4
10-18-11

The following Standard Road Plans apply to construction work on this project.		
Number	Date	Title
BA-102	04-21-20	44" Concrete Barrier (Half Section)
BA-150	10-15-19	Side Obstacle Protection with Concrete Barrier and Guardrail
BR-203	10-17-17	Double Reinforced 12" Approach
BR-211	10-17-17	Bridge Approach (Abutting PCC or Composite Pavement)
BR-213	04-21-15	Bridge Approach (Abutting Pavement)
PV-101	04-21-20	Joints
TC-1	10-15-19	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
Note: Additional applicable Standard Road Plans can be found in grading and paving project IM-029-3(190)53--13-78		

INDEX OF TABULATIONS

111-25
0-18-11

[illegible]

UTILITIES (POINT 25 PROJECT)

262-5
10-18-05

This is a POINT 25 project and is subject to the provisions of IAC 761-115.25.

SECTION 404 PERMIT AND CONDITIONS

281-1
10-18-16

Construct this project according to the requirements of U.S. Army Corps of Engineers NWP 14, Permit No. _____. A copy of this permit is available from the Iowa DOT website (<http://www.envpermits.iowadot.gov/>). The U.S. Army Corps of Engineers reserves the right to visit the site without prior notice.

POLLUTION PREVENTION PLAN

110-12A
04-16-19

See Project No. IM-029-3(190)53--13-78

SEE GRADING AND PAVING PROJECT IM-029-3(190)53--13-78 FOR SURVEY AND ALIGNMENT INFORMATION

108-23A
08-01-08

TRAFFIC CONTROL PLAN

See Project No. IM-029-3(190)53--13-78

108-26A
08-01-08

STAGING NOTES

See Project No. IM-029-3(190)53--13-78

111-01
04-17-12

COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
IM-029-3(70)53--13-78	Design No. 520 & 620
IM-029-3(71)54--13-78	Design No. 720 & 820
IM-029-3(73)54--13-78	Design No. 920 & 1020
IM-029-3(74)54--13-78	Design No. 1120 & 1220
IM-029-3(192)54--13-78	Design No. 1320
IM-029-3(221)54--13-78	Design No. 1420
IM-029-3(193)54--13-78	Design No. 1520
IM-029-3(222)54--13-78	Design No. 1620
IM-480-1(167)0--13-78	Design No. 1820
IM-029-3(190)53--13-78	Grade and Paving
IM-029-3(218)53--13-78	Signing
IM-029-3(219)53--13-78	Signals
IM-029-3(220)53--13-78	Lighting

108-25
10-21-14

511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
See Project No. IM-029-3(190)53--13-78												

SURVEY SYMBOLS

- IN Storm Sewer Intake
- MH Utility Access (Manhole)
- PIP Pipe Culvert
- MIS Miscellaneous
- INB Storm Sewer Beehive Intake
- PLG Location of General Photo
- OUT Tile Outlet
- BRG Bridge
- CON Concrete or A/C Slab
- CU Back of Curb
- GU Gutter In Front of Curb
- EP Edge of Paved Roads (ML or SR)
- UE Utility Elevation
- WV Water Valve
- FHD Fire Hydrants
- LIN Miscellaneous Line
- SI Sign
- TLNR Tree Line Right
- LUM Luminaire
- UB Utility Box
- FCL Chain Link and Security Fence
- TDC Tree Deciduous
- TPD Telephone Pedestal
- GP Guard Post (Less Than 4 Posts)
- HDG Hedge Row
- RET Retaining Walls
- UV Underground Utility Vault
- GDL Guard Rail Steel
- GPR Guard Post (4 or More Posts)
- FWD Wood Fence
- SHR Shrub
- EB Electrical Box
- TEV Evergreen Tree
- STP Stump
- TLNL Tree Line Left
- FW Wire Fence
- SL Speed Limit Sign
- LC Lot Corner
- SNP Unpaved Shoulder
- SWK Sidewalk
- ENP Edge Paved Entrance & Park Lot
- ENU Edge Unpaved Entrance & Parking
- EG Edge of Gravel Road
- ENT Centerline BL of Entrance
- DU Centerline Draw or Stream (Up)
- TW Top of Water

SURVEYED UTILITY OWNER SYMBOLS

- EB Electrical Box
- FHD Fire Hydrant
- GV Gas Valve
- IN Storm Sewer Intake
- LUM Luminaire
- MH Utility Access (Manhole)
- PPA Power Pole
- TCB Traffic Signal Box
- TPC Telephone Pole AT&T
- TPD Telephone Pedestal
- UB Utility Box
- Water Valve
- AT&T
Lenny Vohs
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lv2121@att.com
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Andy Wicks
Public Works Operations
1001 10th Avenue
Council Bluffs, IA 51501
712-328-4645
awicks@councilbluffs-ia.gov
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- City of Council Bluffs - Sanitary Sewer
Dave Vermillion
City of Council Bluffs Public Works
209 Pearl Street
Council Bluffs, IA 51503
712-328-4635 ex 3153#
dvermillion@councilbluffs-ia.gov
- TeleCom
Unknown
- Unite Private Network (UPN)
Shanon Morris
402-575-1239
shanon.morris@upnfiber.com
- City of Council Bluffs - Storm Sewer
Dave Vermillion
City of Council Bluffs Public Works
209 Pearl Street
Council Bluffs, IA 51503
712-328-4635 ex 3153#
dvermillion@councilbluffs-ia.gov
- Windstream
Derek Stork
9850 M Street
Omaha, NE 68127
402-827-6355
derek.w.stork@windstream.com
- Council Bluffs Water Works
Brian Cady
2000 N. 25th St.
P.O. Box 309
Council Bluffs, IA 51502
712-328-1006 x.1039
bcady@cbwaterworks.com
- Unknown
- Indicates Utility As Abandoned
- Cox Communications
Andrew Aschenbrener
3031 N 120th Street
Omaha, NE 68164
402-934-0395
andrew.aschenbrener@cox.com

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
Rust	(206)	Class E Revetment
Lavender	(207)	Macadam Stone Slope Protection
Gray, Light-White (48-0)		Mill and Overlay

SHADING	Design Color No.	
Yellow	(4)	Highlight for Critical Notes or Features
Red	(3)	Delineates Restricted Areas
Lavender	(9)	Temporary Pavement Shading
Gray, Light	(48)	Proposed Pavement Shading
Gray, Med	(80)	Proposed Granular Shading
Gray, Dark	(112)	Proposed Bridge Shading
Brown, Light	(236)	Grading Shading
Tan	(8)	Proposed Sidewalk Shading
Blue, Light	(230)	Proposed Sidewalk Landing Shading
Pink	(11)	Proposed Sidewalk Ramp Shading

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Ground Line Profile
Blue	(1)	Proposed Profile and Annotation
Magenta	(5)	Existing Utilities
Blue, Light	(230)	Proposed Ditch Grades, Left
Black	(0)	Proposed Ditch Grades, Median
Rust	(14)	Proposed Ditch Grades, Right
Gray, Dark	(112)	Proposed Bridge Shading

Reference Point

Station

Reference Point

Survey Line

Section Corner

Ground Line Intercept

Saw Cut

Guardrail

Trench Drain

HighTension Cable Guardrail

Sheet Pile

Pavement Removal

Clearing & Grubbing Area

Proposed Right-of-Way

Existing Right of Way

Exlsting and Proposed Right-of-Way

Easement and Existing Right-of-Way

Easement (Temporary)

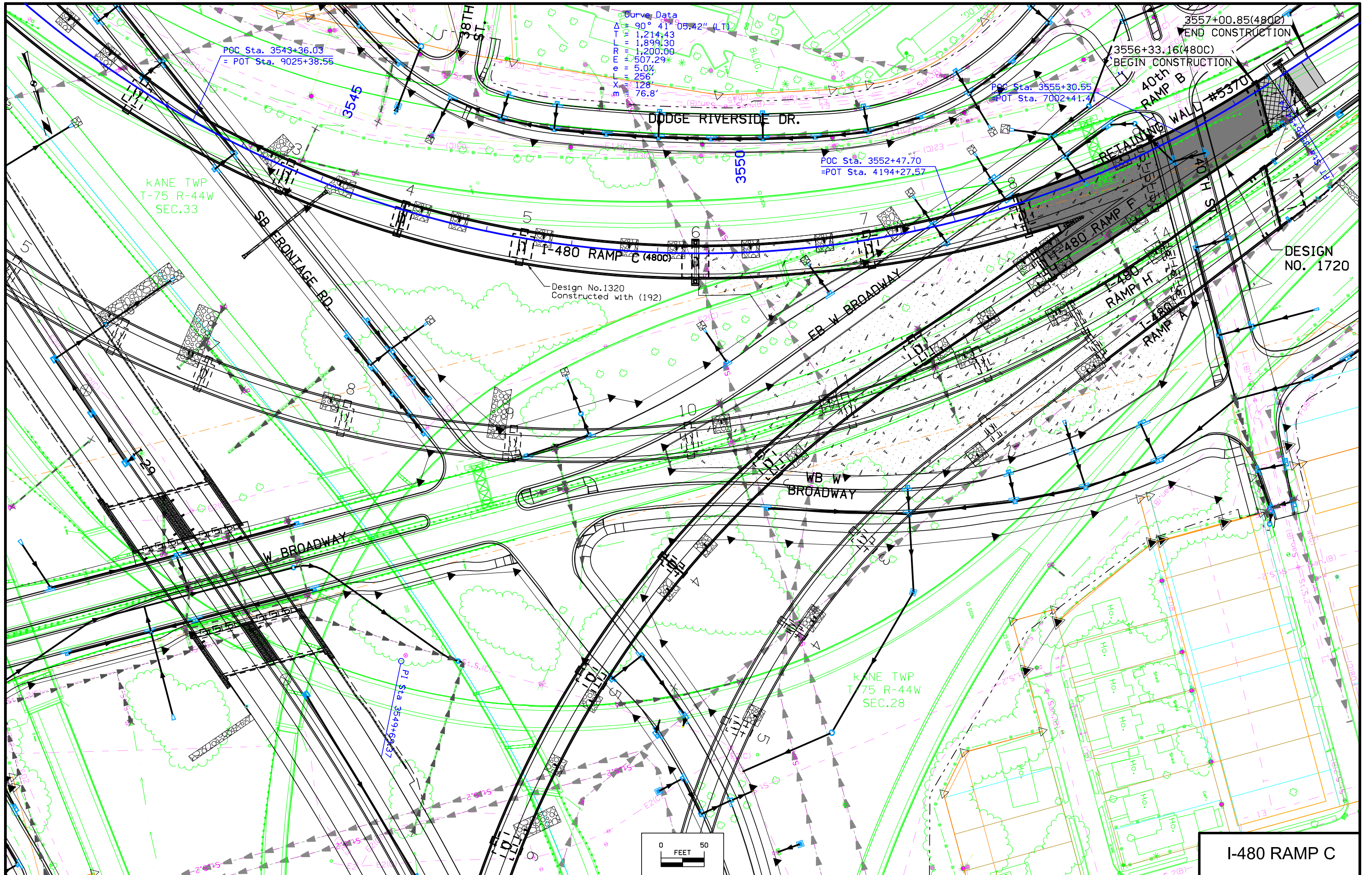
Easement

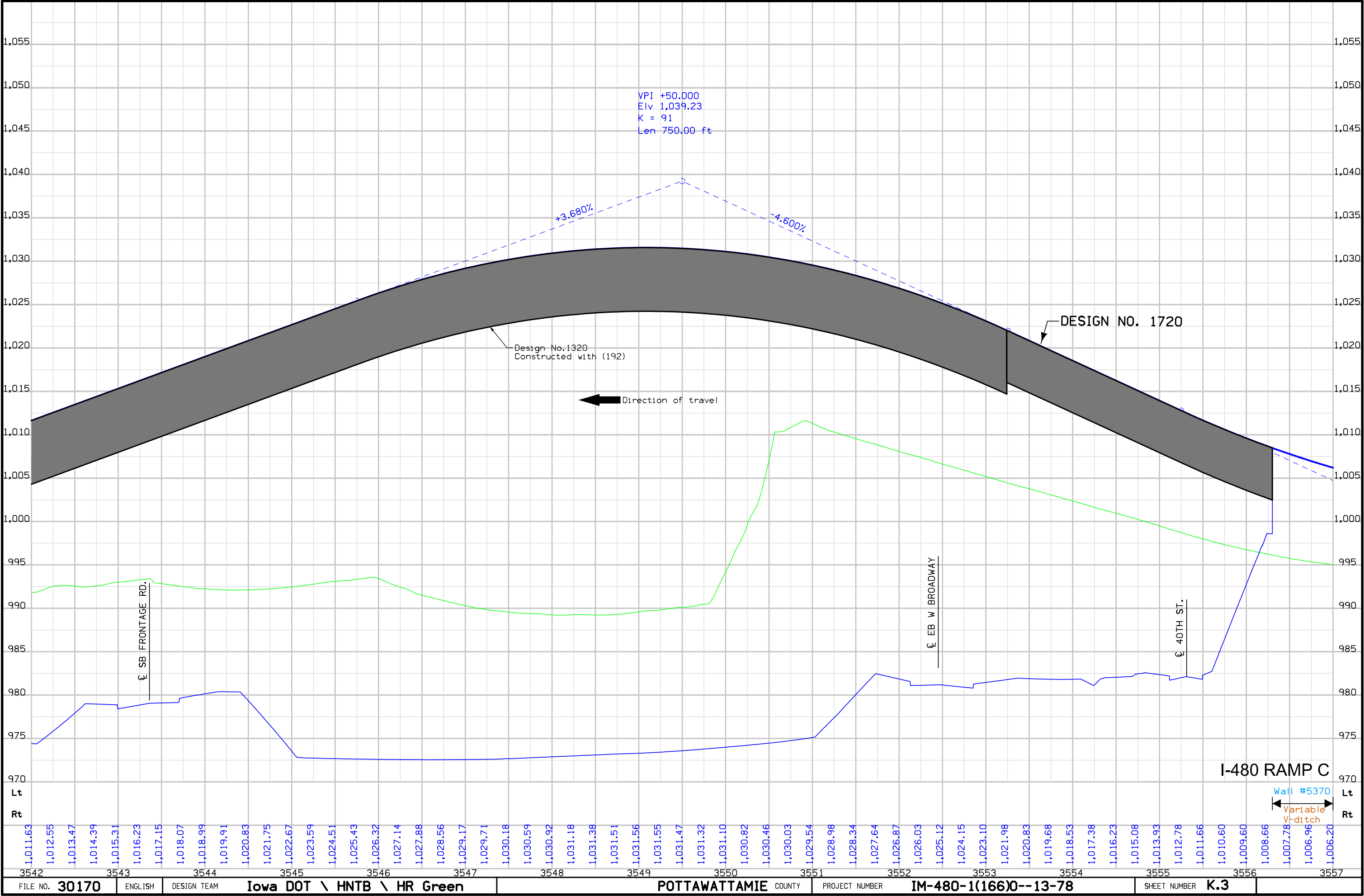
Access Control

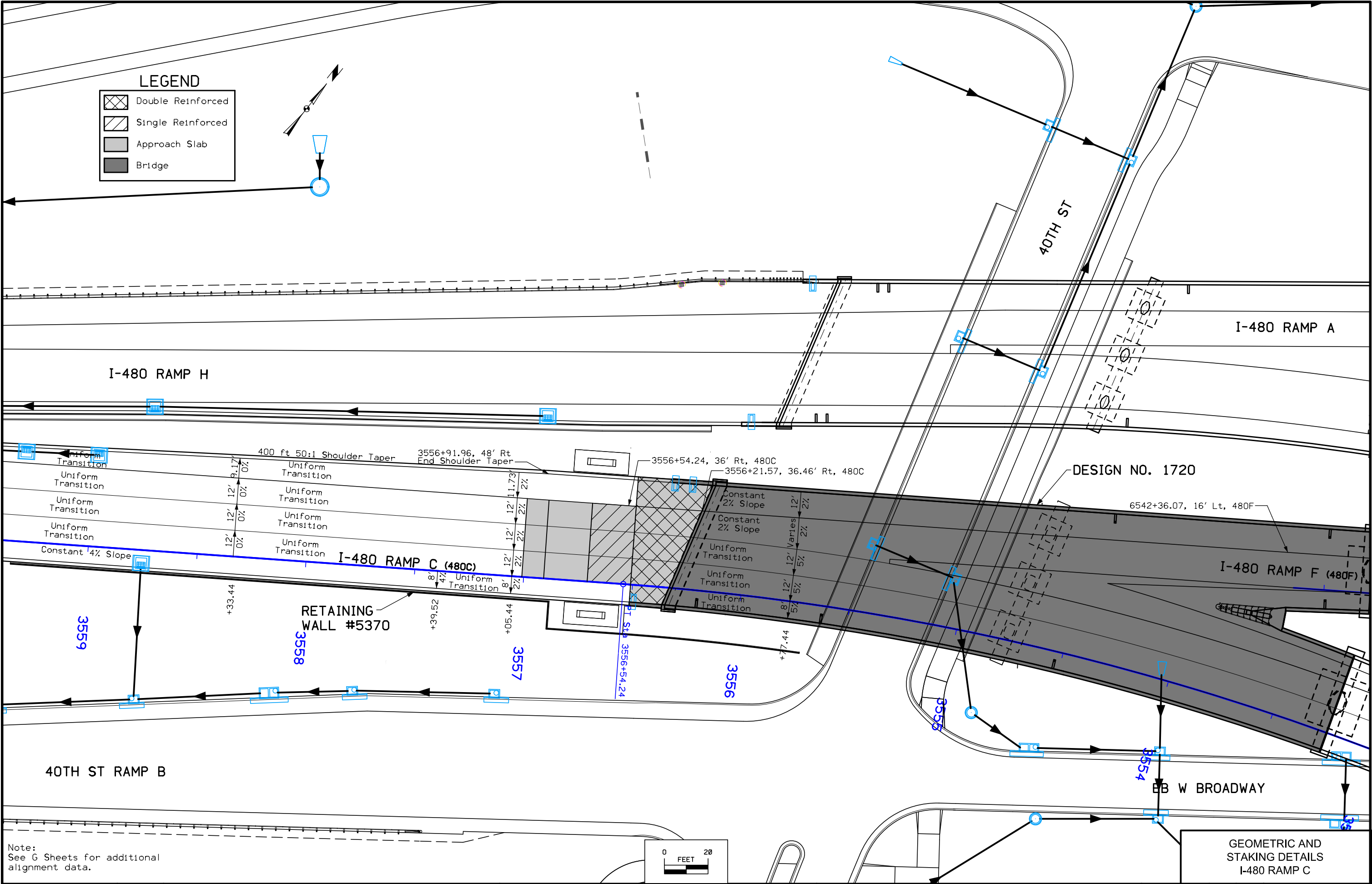
Property Line

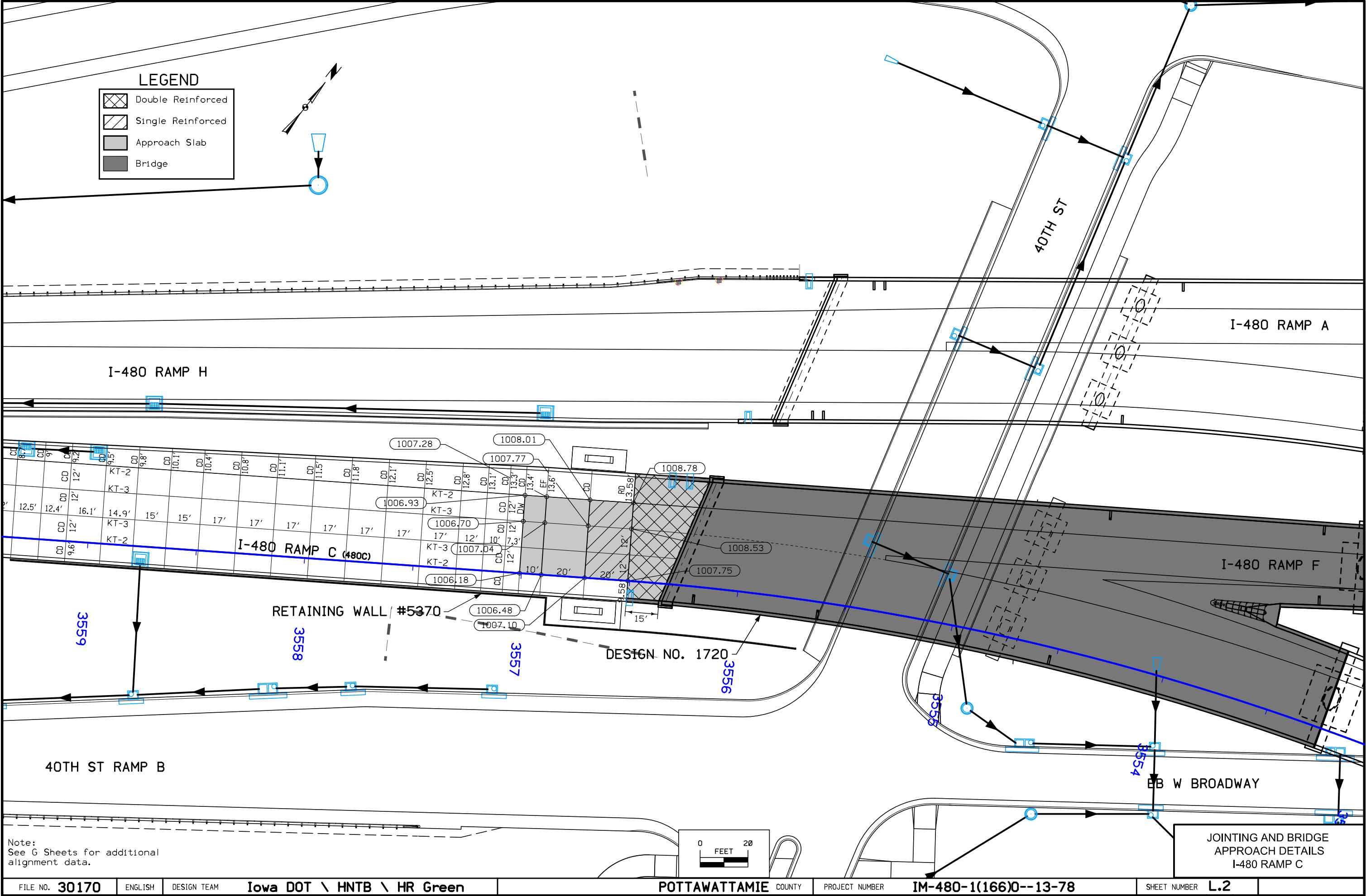
PLAN AND PROFILE
LEGEND AND SYMBOL
INFORMATION SHEET

(COVERS SHEET SERIES D, E, & K)











WEIGHT	7463	LBS.
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INCLUDES CURVED SOLE R

NOTE: STRUCTURAL STEEL WEIGHT
IS INCLUDED ON THE
SUMMARY QUANTITIES SHEET.

MASONRY R_L / CURVED SOLE R_L ASSEMBLY



EXPANSION PIER 1/EXPANSION PIER 8/WEST ABUTMENT
LAMINATED NEOPRENE PAD / CURVED SOLE PLATE ASSEMBLY



The diagram illustrates the geometry of a worm gear tooth. Key dimensions are labeled:

- ADDENDUM**: The radial distance from the pitch circle to the top of the tooth.
- DEDENDUM**: The radial distance from the pitch circle to the bottom of the tooth.
- PITCH DIAMETER**: The diameter of the pitch circle.
- TOOTH**: The entire gear tooth profile.
- ADDENDUM CIRCLE**: The circle passing through the top of the tooth.
- DEDENDUM CIRCLE**: The circle passing through the bottom of the tooth.
- PITCH CIRCLE**: The circle tangent to the addendum and dedendum circles.
- TOOTH SPACE**: The gap between two adjacent teeth.
- ADDENDUM CIRCLE**: The circle passing through the top of the tooth.
- DEDENDUM CIRCLE**: The circle passing through the bottom of the tooth.
- PITCH CIRCLE**: The circle tangent to the addendum and dedendum circles.
- TOOTH**: The entire gear tooth profile.
- TOOTH SPACE**: The gap between two adjacent teeth.

ANCHOR BOLT SWEDGE DETAIL

BEARING NOTES:

SURFACES MARKED "V" SHALL BE FINISHED ANSI 250.
MASONRY PLATES ARE TO BE SET ON A 1/2 INCH NEOPRENE SHEET.
THE 1/2 INCH NEOPRENE SHEETS ARE TO BE 50, 60, OR 70 DUROMETER HARDNESS
AND SHALL BE 1 INCH GREATER IN LENGTH AND WIDTH THAN THE BOTTOM
SURFACE OF THE MASONRY PLATES OR STEEL BEARINGS.
PINTLE PLATES, SOLE PLATES, ANCHOR BOLTS, AND MASONRY PLATES ARE A
PART OF THE SUPERSTRUCTURE STRUCTURAL STEEL QUANTITY. COST OF NEOPRENE
BEARING PADS AND 1/2 INCH NEOPRENE SHEETS SHALL BE CONSIDERED INCIDENTAL
TO THE BID ITEM "STRUCTURAL STEEL".
THE PINTLE PLATES, KEEPER BARS, AND MASONRY PLATES SHALL BE GALVANIZED.
WELDING SHALL BE COMPLETED PRIOR TO GALVANIZING. THE SURFACES OF THE
PINTLE PLATE IN CONTACT WITH THE CURVED SOLE PLATE AND THE LAMINATED
NEOPRENE PAD SHALL BE FREE OF PROJECTIONS DUE TO GALVANIZING.
CURVED SOLE PLATES SHALL COMPLY WITH ASTM A709 GRADE 50W AND
PAINTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
KEEPER BARS, PINTLE PLATES AND MASONRY PLATES SHALL COMPLY WITH
ASTM A709 GRADE 50.
ANCHOR BOLTS, NUTS AND WASHERS SHALL MEET THE REQUIREMENTS
OF I.M. 453.08.

DESIGN FOR VARIABLE SKEW (L.A.)
306'-0" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE

153'-0" **- VOID -** 2020
STA. 35+00 **REPLACED BY ADDENDUM NO. 2**
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 43 OF 70 FILE NO. 30170 DESIGN NO. 1720