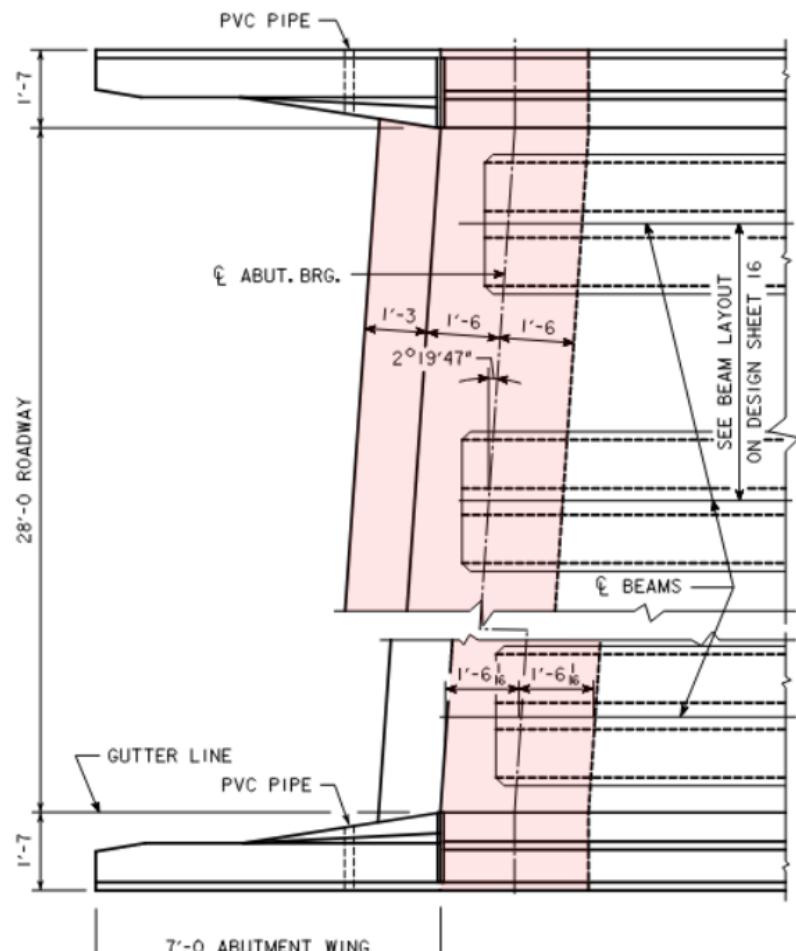
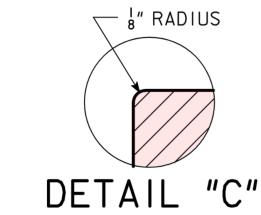


PART LONGITUDINAL SECTION NEAR GUTTER

(FOR DETAILS OF INTERMEDIATE DIAPHRAGM SEE DESIGN SHEETS 23 & 24)

PART END VIEW AT ABUTMENT



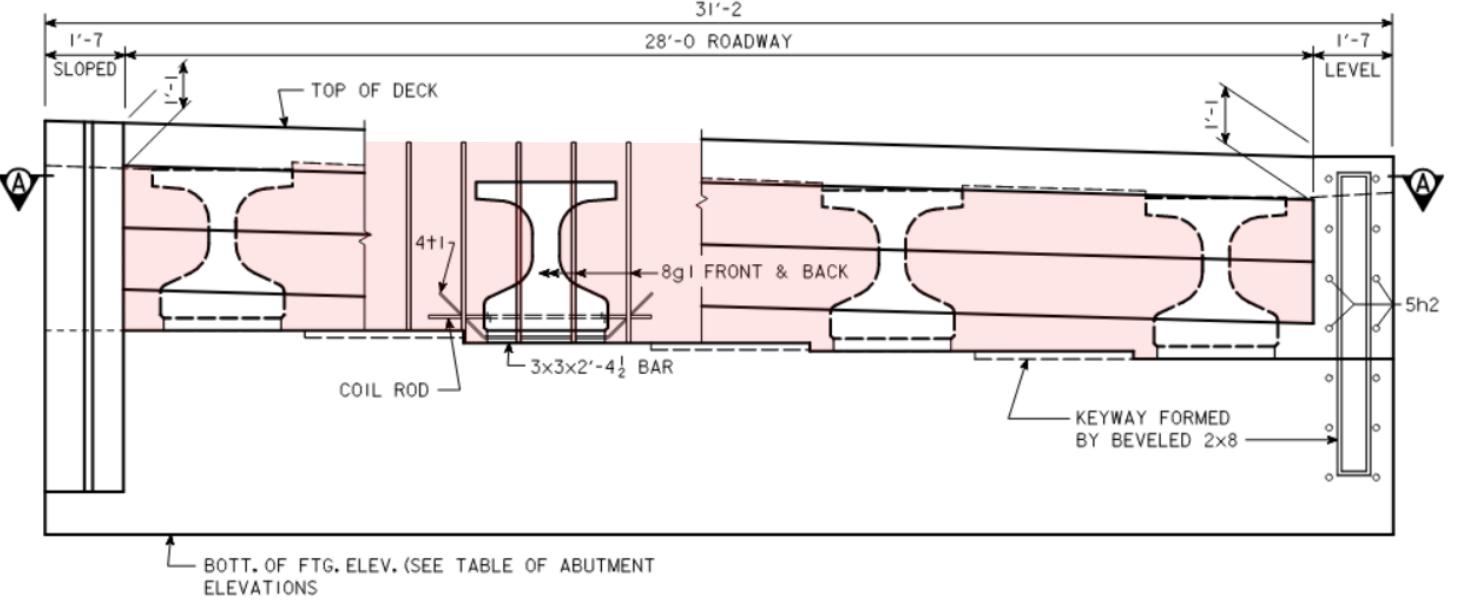
## PART PLAN

## NOTES:

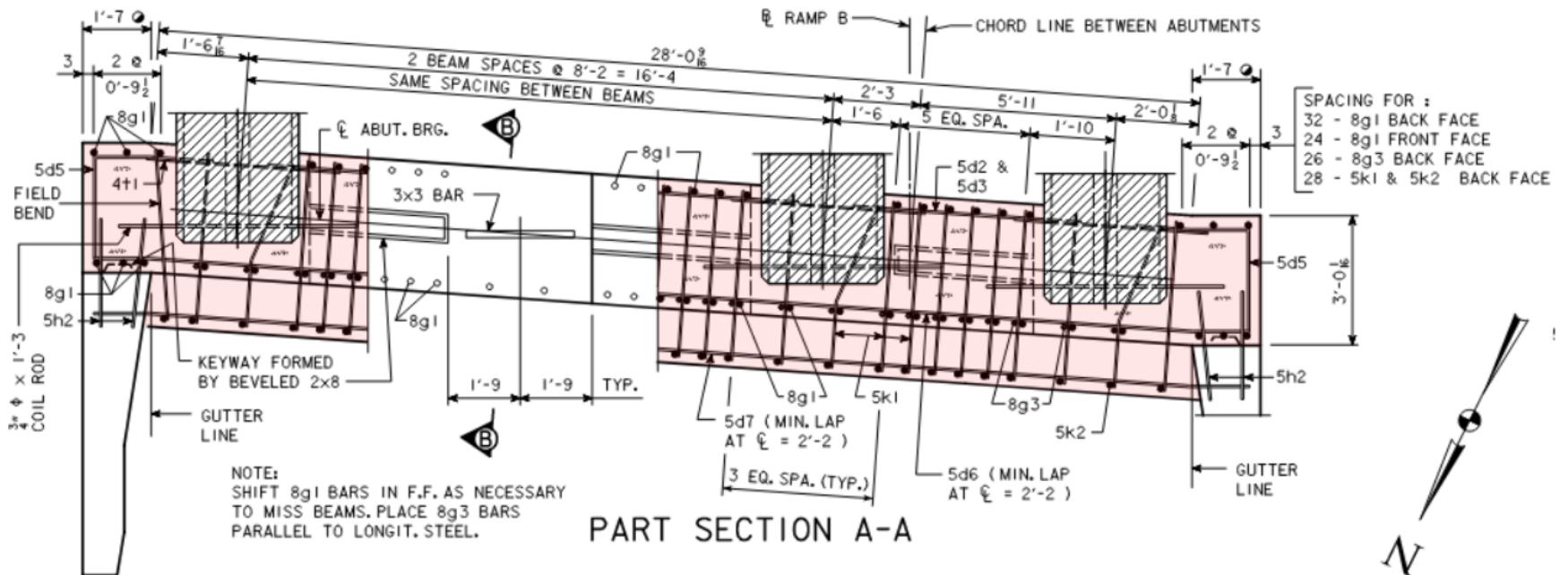
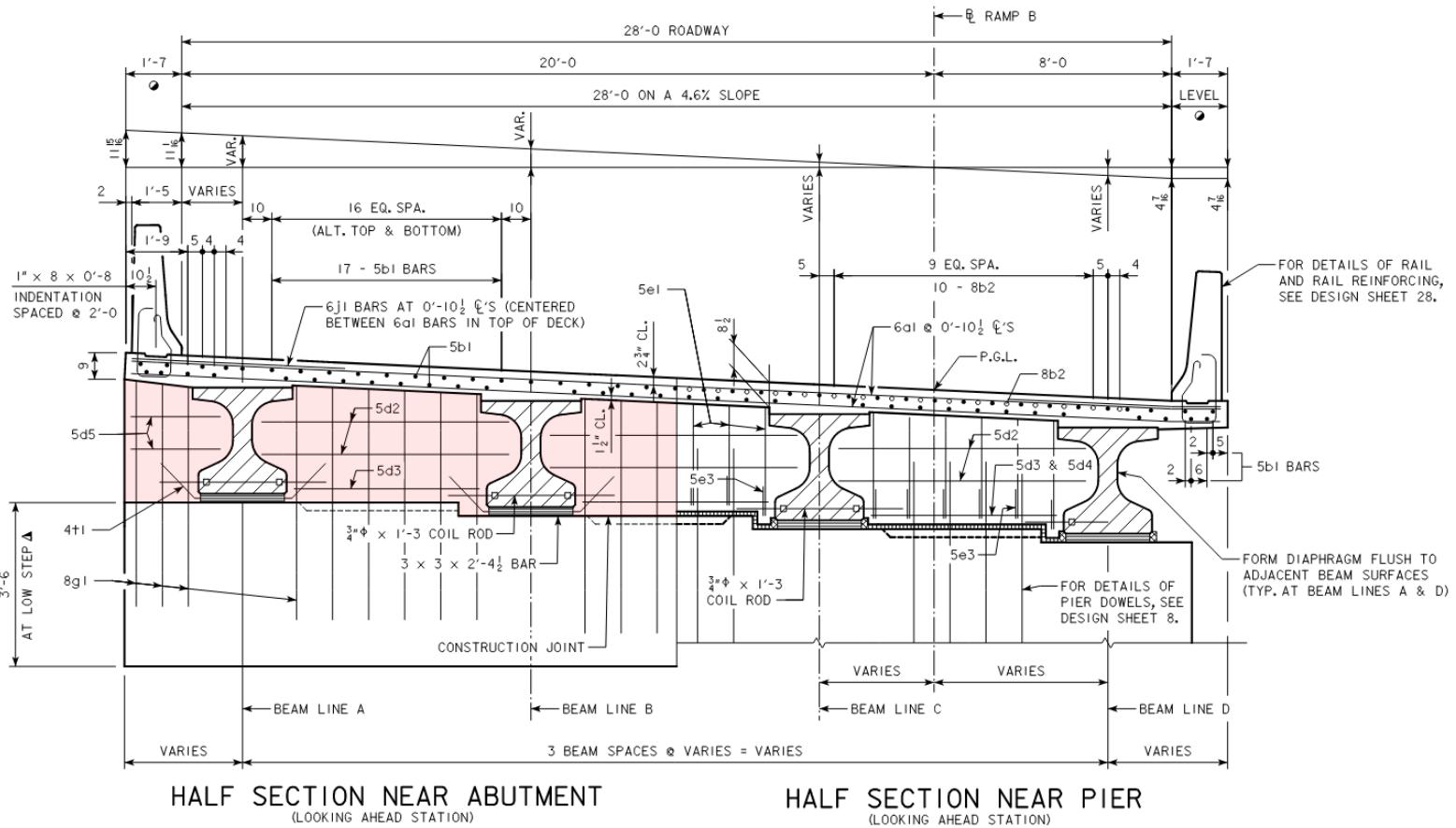
1. For the full plan set and additional structure information, see Br1-Precast and Cast Concrete-Iowa DOT.pdf.

Unit Test Instruction for the Design-to-Construction Data Exchange			 TPF-5(372)
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1	10/24/23	.	
No.	Date	Issue / Revision Notes	
Unit Test Description			Unit Test / Sheet No.
Level 1 Diaphragm 01			L1-Br01-Diaphragm01 / 01
Drawn By DHC		Reviewed By MJY	

L1-Br01-Diaphragm01 / 01



PART REAR ELEVATION AT NORTH ABUTMENT



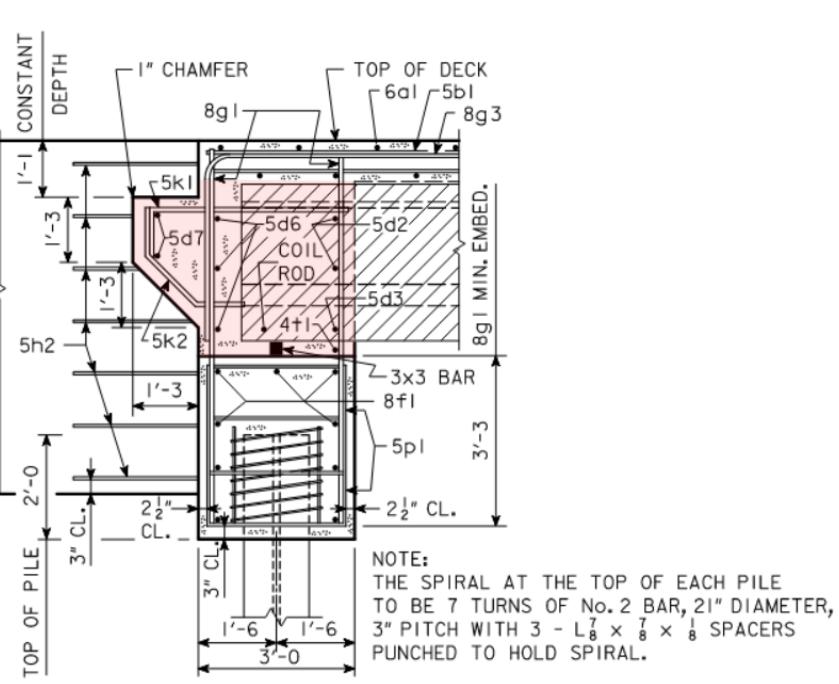
PART SECTION A-A

#### ABUTMENT NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.  
IF NECESSARY TO PREVENT DAMAGE TO THE END OF THE BRIDGE DECK OR BACKWALL FROM CONSTRUCTION EQUIPMENT, AN APPROPRIATE METHOD OF PROTECTION APPROVED BY THE ENGINEER SHALL BE PROVIDED BY THE BRIDGE CONTRACTOR AT NO EXTRA COST TO THE STATE.  
BARRIER RAIL NOT SHOWN IN DETAILS.

#### NOTES:

MEASURED RADIAL TO RAMP B.



PART SECTION B-B

Unit Test Instruction for the Design-to-Construction Data Exchange

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.	.	.
1	1/08/24	.

No. Date Issue / Revision Notes

Unit Test Description

Level 1 Diaphragm 01

Drawn By

DHC

Reviewed By

MJY

**BIM**  
FOR  
BRIDGES  
AND STRUCTURES  
TPF-5(372)

**HDR** **jō** consulting

L1-Br01-Diaphragm01 / 02

## SPECIFICATIONS:

DESIGN:	AASHTO LRFD 8TH ED, SERIES OF 2017, 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, INCLUDING THE FOLLOWING SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT: -“DEVELOPMENTAL SPECIFICATIONS FOR HIGH PERFORMANCE CONCRETE FOR STRUCTURES”, -“DEVELOPMENTAL SPECIFICATIONS FOR MAINTENANCE WORK ON RAILROAD RIGHT-OF-WAY (UNION PACIFIC RAILROAD)”, -“SPECIAL PROVISIONS FOR E-BUILDER”.

## DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH ED, SERIES OF 2017, EXCEPT AS NOTED IN THE CURRENT 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 LRFD AASHTO SECTION 5, f'c = 4.0 KSI, EXCEPT PRESTRESSED BEAM CONCRETE AS NOTED.
- PRESTRESSED CONCRETE BEAMS, SEE DESIGN SHEET 19.
- STRUCTURAL STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 6, ASTM A709 GRADE 50 (AASHTO M270 GRADE 50), EXCEPT AS NOTED.

## GENERAL NOTES:

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

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.

THE BRIDGE CONTRACTOR SHALL WORK IN SUCH A MANNER THAT EQUIPMENT AND MATERIALS SHALL NOT BE ALLOWED TO INTERFERE WITH TRAIN TRAFFIC OR BE ALLOWED TO FALL ON THE RAILROAD TRACKS. INTERFERENCE ABOVE THE RAILROAD TRACK AREA SHALL BE COORDINATED WITH THE RAILROAD.

Faint lines on plans indicate the existing structure.

EXCAVATION QUANTITIES FOR THE PIERS ARE BASED ON THE ASSUMPTION THAT 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.

THE BRIDGE CONTRACTOR SHALL PREBORE HOLES FOR ABUTMENT PILES. HOLES SHALL BE BORED TO THE ELEVATIONS SHOWN ON THE "LONGITUDINAL SECTION ALONG B RAMP B" ON DESIGN SHEET 4. PILES SHALL BE DRIVEN THROUGH THE HOLES TO AT LEAST THE SPECIFIED DESIGN BEARING.

ABUTMENT PILES SHALL NOT BE DRIVEN FOR A MINIMUM OF 75 DAYS FOLLOWING COMPLETION OF APPROACH FILLS. THE TIME PERIOD BETWEEN COMPLETION OF FILLS AND DRIVING PILES MAY BE CHANGED AS ORDERED BY THE ENGINEER BASED UPON REVIEW OF SETTLEMENT PLATES.

THE APPROACH FILLS AS SHOWN ARE TO BE DONE AS PART OF THE TIED PROJECT IM-035-3(194)87--13-77 AND ARE TO BE IN PLACE BEFORE ABUTMENT PILES ARE DRIVEN. THE BRIDGE CONTRACTOR IS TO LEVEL OFF AND SHAPE THE BERMS TO THE ELEVATIONS AND DIMENSIONS SHOWN. DRESSING OF SLOPES OUTSIDE THE BRIDGE AREA NOT DISTURBED BY THE BRIDGE CONTRACTOR SHALL BE PAID FOR AS EXTRA WORK.

CONCRETE BARRIER RAILS PLACED USING THE SLIPFORM METHOD WILL REQUIRE THE USED 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 (CAST-IN-PLACE OR SLIPFORMED METHOD).

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

ALL EXPOSED CONCRETE CORNERS, 90 DEGREES OR SHARPER TO BE FILLETED WITH A  $\frac{3}{4}$ " DRESSED AND BEVELED STRIP, UNLESS NOTED OTHERWISE.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5al is  $\frac{5}{8}$  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

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

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.

DURING CONSTRUCTION OF THIS PROJECT THE BRIDGE CONTRACTOR WILL BE REQUIRED TO COORDINATE OPERATIONS WITH THOSE OF OTHER CONTRACTORS WORKING WITHIN THE SAME AREA. OTHER WORK IN PROGRESS DURING THE SAME PERIOD OF TIME IS SHOWN ON SHEET J.I. OF THESE PLANS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING STABILITY OF PRESTRESSED CONCRETE BEAMS DURING ERECTION AND CONSTRUCTION UP THROUGH THE CONCRETE BRIDGE DECK REACHING ITS FULL 28-DAY STRENGTH. THE CONTRACTOR SHALL PROVIDE SUFFICIENT TEMPORARY ANCHOR BRACING AT BEAM ENDS AND TEMPORARY INTERMEDIATE BRACING AS NEEDED TO ENSURE PRESTRESSED BEAM STABILITY. PARTIALLY OR FULLY INSTALLED PERMANENT BRACING AS SHOWN IN THESE DESIGN PLANS SHALL NOT BE ASSUMED SUFFICIENT TO BRACE PRESTRESSED BEAMS DURING ERECTION AND CONSTRUCTION. TEMPORARY BRACING SHALL NOT BE WELDED TO PRESTRESSED BEAM STIRRUPS.

LONGITUDINAL GROOVING SHOWN ELSEWHERE IN THESE PLANS.

## SHOP DRAWING SUBMITTALS

SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS SHOWN IN THE TABLE BELOW. (NOTE ADDITIONAL SHOP DRAWINGS MAY BE REQUIRED IN ACCORDANCE WITH ARTICLE 1105.03 OF THE STANDARD SPECIFICATIONS.)

SUBMITTAL REQUIREMENTS FOR SHOP DRAWINGS SHOULD BE IN ACCORDANCE WITH 1105.03 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION OF THE IOWA DEPARTMENT OF TRANSPORTATION.

SHOP DRAWINGS SHALL BE SUBMITTED WITH THE FOLLOWING NAMING CONVENTION:  
(Paren)\_County\_DesignNumber\_Submittal Description.pdf  
Example: (70).Polk\_Design2218.SteelDiaphragms.pdf

I	STEEL DIAPHRAGMS
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## BRIDGE DECK DIMENSIONS TABLE

	ITEM	UNITS	QUANTITY
1	DECK LENGTH	L.F.	217.0
2	MINIMUM DECK WIDTH	L.F.	31.2
3	MAXIMUM DECK WIDTH	L.F.	31.2
4	DECK AREA	S.F.	6,763

1. DECK LENGTH IS MEASURED FROM FACE-TO-FACE OF PAVING NOTCHES ALONG THE BRIDGE BASELINE.
- 2,3. DECK WIDTHS ARE MEASURED FROM OUT-TO-OUT OF DECK PERPENDICULAR TO THE BRIDGE BASELINE.
4. DECK AREA IS TO BE BASED ON THE FACE-TO-FACE PAVING NOTCH DISTANCE AND OUT-TO-OUT DECK DIMENSIONS.

FORMS FOR PIER CAPS ON PIER NOS. 1 AND 2 MAY BE REMOVED WITH THE APPROVAL OF THE ENGINEER WHEN THE FOLLOWING TWO CONDITIONS HAVE BEEN MET:

- PIER CAP CONCRETE HAS BEEN IN PLACE FOR A MINIMUM OF 2 CALENDAR DAYS EXCLUDING DAYS THAT THE CONCRETE SURFACE IS SUBJECT TO TEMPERATURES AT OR BELOW 40°F AND
- THE PIER CAP CONCRETE STRENGTH IS AT LEAST 2.50 KSI.

CONCRETE STRENGTH SHALL BE VERIFIED BY FLEXURAL STRENGTH ACCORDING TO MATERIALS I.M. 316 WITH A MINIMUM FLEXURAL STRENGTH OF 0.343 KSI OR BY THE MATURITY METHOD ACCORDING TO MATERIALS I.M. 383. CURING OF PIER CAP CONCRETE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. PIER CAP CONCRETE SHALL ATTAIN A MINIMUM CONCRETE STRENGTH OF 4.00 KSI BEFORE BEING SUBJECTED TO EXTERIOR LOADS. PIER CAP CONCRETE SHALL BE SUBJECTED TO EXTERIOR LOADS IN ACCORDANCE WITH ARTICLE 2403.03, N, OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION TRANSPARENT STAY-IN-PLACE DECK FORMS MAY BE USED FOR THIS PROJECT. THE STAY-IN-PLACE FORMS SHALL HAVE A MINIMUM AVERAGE TRANSPARENCY OF 70%. ALL STRUCTURAL STEEL MEMBERS USED IN THE FORM ASSEMBLY (INCLUDING COLD-FORMED AND ROLLED) SHALL BE CORROSION PROTECTED. THE FORM ASSEMBLY SHALL HAVE A MAXIMUM UNIT WEIGHT OF 3.5 PSF OVER THE FULL FORM PANEL AREA. SHOP DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED FOR THE ENGINEER'S REVIEW. THE TRANSPARENT STAY-IN-PLACE FORM MATERIAL AND INSTALLATION COST SHALL BE INCLUDED IN THE PAY ITEM FOR STRUCTURAL CONCRETE (BRIDGE), WITH NO ADDITIONAL COST TO THE STATE.

## 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 NONPOROUS 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 RIDIGLY 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. DO NOT LOCATE FORM TIES WITHIN CONCRETE RUSTICATIONS.

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 OR BE SLIGHTLY LIGHTER THAN SURROUNDING CONCRETE WHEN DRY. COMPLETED SURFACE SHALL BE FREE FROM BLEMISHES, SURFACE Voids AND CONSPICUOUS FORM MARKS TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR SHALL CORRECT ANY SURFACE DEFECTS TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE PROJECT.

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

ALL PLAN DIMENSIONS ARE HORIZONTAL UNLESS NOTED OTHERWISE.

THE TIED ROAD PLANS, PROJECT NO. IM-035-3(194)87--13-77 CONTAIN THE POLLUTION PREVENTION PLAN.

### TRAFFIC CONTROL PLAN:

THE STRUCTURE IS BEING CONSTRUCTED ON A RELOCATION AND THE ROAD WILL NOT BE OPEN TO TRAFFIC UNTIL AFTER COMPLETION OF CONSTRUCTION. SEE TIED PROJECT IM-035-3(194)87--13-77 FOR THE TRAFFIC CONTROL PLAN.

NO CONSTRUCTION ACTIVITY IS ALLOWED IN THE AREA SOUTH OF THE EXISTING UPRR TRACK UNTIL AFTER JANUARY 1ST, 2023. THIS INCLUDES GRADING AND ANY WORK RELATED TO THE CONSTRUCTION OF THE SOUTH ABUTMENT AND PIER NO. 2.

Unit Test Instruction for the Design-to-Construction Data Exchange		
No.	Date	
1	10/24/23	
Unit Test Description		Unit Test / Sheet No.
Level 1 Diaphragm 01		
Drawn By	Reviewed By	
DHC	MJY	

**L1-Br01-Diaphragm01 / 03**