

KEOKUK CO.  
COLD-IN-PLACE RECYCLING  
HMA RESURFACING/  
STP-021-1(42)--2C-54  
LETTING DATE 02-16-2021



Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

KEOKUK COUNTY

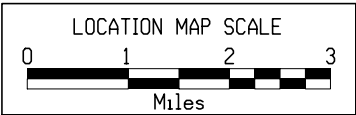
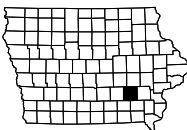
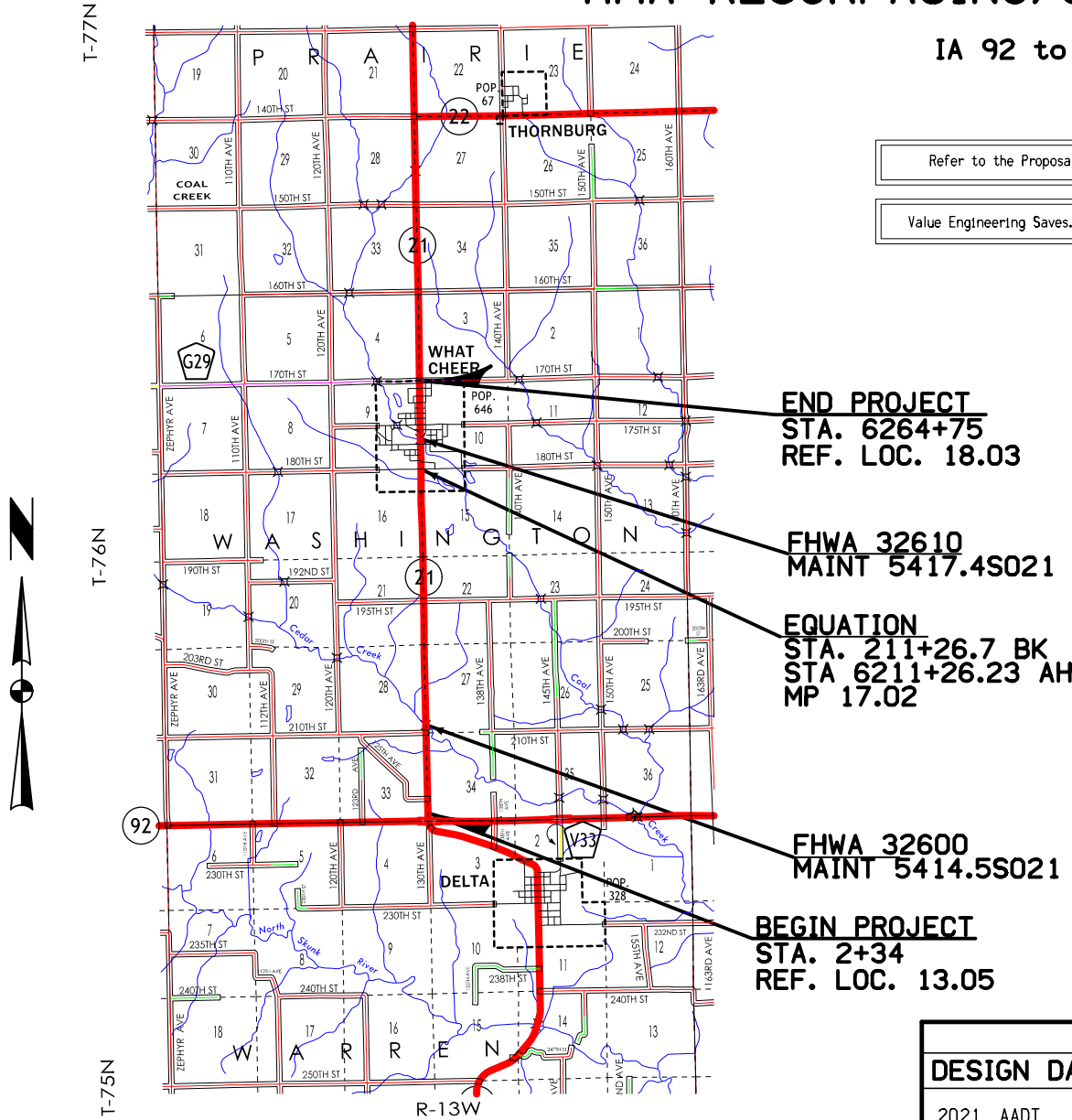
HMA RESURFACING/COLD-IN-PLACE RECYCLING

IA 92 to NCL of What Cheer

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.14 of the Specifications.



DESIGN DATA RURAL

2021	AADT	2013	V.P.D.
2041	AADT	2075	V.P.D.
2041	DHV	210	V.P.H.
	TRUCKS	13	%
Total			
Design ESALs			
905,820			

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Jonathan W. Bahr	Primary Signature Block
CS.1	Mark A. Dell	Geotechnical Design
RC.1	Seana K. Godbold	Landscape Design
V.1	David R. Evans	Structural Design

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.

Signature: Jonathan W. Bahr Date: 12-01-2020

Printed or Typed Name: Jonathan W. Bahr

My license renewal date is December 31, 2021

Pages or sheets covered by this seal: A.1-6, B.1-4, C.1-16, G.1, H.1-2, J.1-2, S.1-14, U.1-4

REVISIONS

PROJECT IDENTIFICATION NUMBER	TOTAL
20-54-021-010	77
PROJECT NUMBER	
STP-021-1(42)--2C-54	
R.O.W. PROJECT NUMBER	
STPN-021-1(43)--2J-54	
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INDEX OF SHEETS

No.	DESCRIPTION
<b>A Sheets</b>	<b>Title Sheets</b>
* A.1	Title Sheet and Location Map
* A.2 - 6	Strip Map
<b>B Sheets</b>	<b>Typical Cross Sections and Details</b>
B.1 - 4	Typical Cross Sections and Details
<b>C Sheets</b>	<b>Quantities and General Information</b>
C.1	Project Description
C.1 - 2	Estimated Project Quantities
C.2 - 3	Estimate Reference Information
C.4	Standard Road Plans
C.4	Index of Tabulations
C.4	General Notes
C.5 - 16	Tabulations
<b>CS Sheets</b>	<b>Soils Tabulations</b>
CS.1	Soils Tabulations
<b>E Sheets</b>	<b>Slide Repair Plan Sheet</b>
* E.1	Ia 21 Slide Repair Plan Sheet
<b>G Sheets</b>	<b>Survey Sheets</b>
G.1	Reference Ties and Bench Marks
<b>H Sheets</b>	<b>Right-of-Way Sheets</b>
* H.1 - 2	IA 21 Right-of-Way Sheets
<b>J Sheets</b>	<b>Traffic Control and Staging Sheets</b>
J.1	Traffic Control Plan & 511 Travel Restrictions
J.1	Coordinated Operations
* J.2	Traffic Control Plan Detail
<b>Q Sheets</b>	<b>Soils Sheets</b>
Q.1	IA 21 Slide Repair Sheet
<b>R Sheets</b>	<b>Erosion Control Sheets</b>
RC.1 - 3	Est. Quantities, PPP, General Notes and Tabulations
RR.1	Erosion Control Legend and Symbol Information Sheet
* RR.2 - 18	Drainage Basin and Erosion Control Device Maps
<b>S Sheets</b>	<b>Sidewalk Sheets</b>
* S.1	Sidewalk Legend & Symbol Information Sheet
* S.2 - 8	Sidewalk Plan Sheets
S.9 - 14	Sidewalk Tabulations
<b>U Sheets</b>	<b>500 Series, Mod.Stds. and Detail Sheets</b>
* U.1	Intersection Detail - NE Corner IA 21 and Broadway
* U.2	Intersection Detail - NW Corner IA 21 and Briney
* U.3	Type A Concrete Step With Handrail Detail
* U.4	Safety Rail Detail
<b>V Sheets</b>	<b>Bridge and Culvert Situation Plans</b>
* V.1	Estimated Bridge Quantities and General Notes
* V.2 - 4	Bridge Retrofit Details
* Color Plan Sheets	

FILE NO. 31865

ENGLISH

DESIGN TEAM HOLST \ BAHR \ JACKSON

KEOKUK COUNTY

PROJECT NUMBER

STP-021-1(42)--2C-54

SHEET NUMBER

A.1

3:43:09 PM 12/16/2020 jbahr1

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<div style="text-align: right;"> <b>100-1D</b>  <b>10-18-05</b> </div> <div style="text-align: center;"> <b>PROJECT DESCRIPTION</b> </div>	
<p>Project includes HMA Resurfacing and Cold-In-Place Recycling.          Also included is lane widening, shoulder widening, and ADA ramp improvements and parking area resurfacing in the City of What Cheer.</p>	

<div style="text-align: right;"> <b>100-1D</b>  <b>10-18-05</b> </div> <div style="text-align: center;"> <b>PROJECT DESCRIPTION</b> </div>	
<p>Project includes HMA Resurfacing and Cold-In-Place Recycling.          Also included is lane widening, shoulder widening, and ADA ramp improvements and parking area resurfacing in the City of What Cheer.</p>	

**SEE RC and V SHEETS FOR ADDITIONAL BID ITEMS AND QUANTITIES.**

ESTIMATED PROJECT QUANTITIES (UP TO A 5 DIVISION PROJECT)		Division 1: Iowa DOT and Federal Participation (RURAL) Division 2: Iowa DOT and Federal Participation (URBAN) Division 3: City of What Cheer per Agreement 2020-6-103 Division 4: 100% Iowa DOT
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ESTIMATED PROJECT QUANTITIES (UP TO A 5 DIVISION PROJECT)		Division 1: Iowa DOT and Federal Participation (RURAL) Division 2: Iowa DOT and Federal Participation (URBAN) Division 3: City of What Cheer per Agreement 2020-6-103 Division 4: 100% Iowa DOT
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ESTIMATED PROJECT QUANTITIES (UP TO A 5 DIVISION PROJECT)		Division 1: Iowa DOT and Federal Participation (RURAL) Division 2: Iowa DOT and Federal Participation (URBAN) Division 3: City of What Cheer per Agreement 2020-6-103 Division 4: 100% Iowa DOT
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Item No.	Item Code	Item	Unit	Quantities										
				Estimated					As Built					
				Division 1	Division 2	Division 3	Division 4	Division 5	Total	Division 1	Division 2	Division 3	Division 4	Division 5
1	2101-0850002	CLEARING AND GRUBBING	UNIT	39					39					
2	2102-0425070	SPECIAL BACKFILL	TON	3,029.2	112.5				3,141.7					
3	2102-2625000	EMBANKMENT-IN-PLACE	CY	23.4					23.4					
4	2102-2710090	EXCAVATION, CLASS 10, WASTE	CY	437.0					437.0					
5	2102-2713090	EXCAVATION, CLASS 13, WASTE	CY	812.2					812.2					
6	2105-8425005	TOPSOIL, FURNISH AND SPREAD	CY	100.8					100.8					
7	2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	4,465.7	194.0				4,659.7					
8	2122-5500060	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 6 IN.	SY	594.7					594.7					
9	2122-5500090	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 9 IN.	SY	986.5					986.5					
10	2128-0000200	CONTRACTOR STOCKPILED SHOULDER MATERIAL	TON				2,500.0		2,500.0					
11	2212-5070310	PATCHES, FULL-DEPTH REPAIR	SY	893.2	104.0				997.2					
12	2212-5070330	PATCHES BY COUNT (REPAIR)	EACH	89	14				103					
13	2213-2713300	EXCAVATION, CLASS 13, FOR WIDENING	CY	4,641.3	193.4				4,834.7					
14	2213-6745500	REMOVAL OF CURB	STA		2.50				2.50					
15	2213-8201030	BASE WIDENING, 3 IN. HOT MIX ASPHALT MIXTURE	SY	12,545.3	535.5				13,080.8					
16	2213-8201090	BASE WIDENING, 9 IN. HOT MIX ASPHALT MIXTURE	SY	8,630.2	357.0				8,987.2					
17	2214-5145150	PAVEMENT SCARIFICATION	SY	800.0	16,779.8	2,842.3			20,422.1					
18	2301-9091000	RUMBLE STRIP PANEL (PCC SURFACE)	EACH	2					2					
19	2303-0002380	HOT MIX ASPHALT MIXTURE INTERLAYER BASE COURSE, 3/8 IN. MIX	TON		1,063.900	180.400			1,244.300					
20	2303-1042500	HOT MIX ASPHALT HIGH TRAFFIC, INTERMEDIATE COURSE, 1/2 IN. M IX	TON	6,527.40	271.70				6,799.10					
21	2303-1043504	HOT MIX ASPHALT HIGH TRAFFIC, SURFACE COURSE, 1/2 IN. MIX, F RICTION L-4	TON	6,527.40	2,399.30	360.70			9,287.40					
22	2303-1258284	ASPHALT BINDER, PG 58-28H, HIGH TRAFFIC	TON	784.20	160.70	21.90			966.80					
23	2303-1258346	ASPHALT BINDER, PG 58-34E, EXTREMELY HIGH TRAFFIC	TON		80.20	13.80			94.00					
24	2303-6911000	HOT MIX ASPHALT PAVEMENT SAMPLES	LS	1.00					1.00					
25	2312-8260051	GRANULAR SURFACING ON ROAD, CLASS A CRUSHED STONE	TON	571.1					571.1					
26	2318-1001100	COLD IN-PLACE RECYCLED ASPHALT PAVEMENT	SY	54,585.9	2,258.2				56,844.1					
27	2318-1001220	ASPHALT STABILIZING AGENT (FOAMED ASPHALT)	TON	240.3	9.9				250.2					
28	2401-6745636	REMOVAL OF EXISTING HANDRAIL AND END POSTS	LS		1.00				1.00					
29	2402-2720100	EXCAVATION, CLASS 20, FOR ROADWAY PIPE CULVERT	CY	25.0					25.0					
30	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)	CY		2.0				2.0					
31	2414-6445100	STRUCTURAL STEEL PEDESTRIAN HAND RAILING	LF		50.0				50.0					
32	2416-1541036	REMOVE AND REINSTALL RIGID PIPE CULVERT LESS THAN OR EQUAL T O 36 IN.	LF	30					30					
33	2435-0600010	MANHOLE ADJUSTMENT, MINOR	EACH		13				13					
34	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	250.0					250.0					
35	2505-4008300	STEEL BEAM GUARDRAIL	LF	225.0					225.0					
36	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	EACH	4					4					
37	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	4					4					
38	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	4					4					
39	2507-2638620	MACADAM STONE SLOPE PROTECTION	SY	370.0					370.0					
40	2507-3250005	ENGINEERING FABRIC	SY	622.0					622.0					
41	2507-8029000	EROSION STONE	TON	559.2					559.2					
42	2511-6745900	REMOVAL OF SIDEWALK	SY		282.8				282.8					
43	2511-7526006	SIDEWALK, P.C. CONCRETE, 6 IN.	SY		96.1				96.1					
44	2511-7526008	SIDEWALK, P.C. CONCRETE, 8 IN.	SY		170.4				170.4					
45	2511-7528101	DETECTABLE WARNINGS	SF		182				182					
46	2512-1725256	CURB AND GUTTER, P.C. CONCRETE, 2.5 FT.	LF		315.3				315.3					
47	2512-1859000	CURB, SPECIAL, AS PER PLAN	LF		171.5				171.5					
48	2526-8285000	CONSTRUCTION SURVEY	LS	1.00					1.00					
49	2527-9263109	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	STA	2,154.09	386.24				2,540.33					
50	2527-9263131	WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS	STA	7.20	2.88				10.08					
51	2528-8400256	TEMPORARY TRAFFIC SIGNALS	EACH	3	2				5					
52	2528-8445110	TRAFFIC CONTROL	LS	1.00					1.00					
53	2528-8445113	FLAGGERS	EACH						See Proposal					
54	2528-8445115	PILOT CARS	EACH						See Proposal					
55	2529-0400057	HOT MIX ASPHALT (COMPOSITE SECTION)	TON	191.8	22.4				214.2					
56	2529-2242304	CD JOINT ASSEMBLY	EACH	7	21				28					
57	2529-5070110	PATCHES, FULL-DEPTH FINISH, BY AREA	SY	168.7					168.7					
58	2529-5070111	PATCHES, FULL-DEPTH FINISH, BY AREA (50 FEET OR GREATER IN LENGTH)	SY		414.0				414.0					
59	2529-5070120	PATCHES, FULL-DEPTH FINISH, BY COUNT	EACH	7	3				10					
60	2529-8174020	SUBBASE PATCH WITH EF JOINT	SY	61.3					61.3					
61	2529-8201000	JOINT ASSEMBLY, EF	EACH	5					5					
62	2533-4980005	MOBILIZATION	LS	1.00					1.00					
63	2548-0000100	MILLED SHOULDER RUMBLE STRIPS, HMA SURFACE	STA	391.4					391.4					
64	2548-0000110	ASPHALT EMULSION FOR FOG SEAL (SHOULDER RUMBLE STRIPS)	GAL	424.2					424.2					
65	2548-0000310	MILLED CENTERLINE RUMBLE STRIPS, HMA SURFACE	STA	195.7					195.7					
66	2555-0000010	DELIVER AND STOCKPILE SALVAGED MATERIALS	LS				1.00		1.00					
67	2590-0000020	PROJECT MANAGEMENT	LS	1.00					1.00					
68	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	1,200.0					1,200.0					
69	2602-0000350	REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE	LF	1,200.0					1,200.0					

FILE NO.	ENGLISH	DESIGN TEAM	HOLST\BAHR\JACKSON	KEOKUK COUNTY	PROJECT NUMBER	STP-021-1(42) - -2C-54	SHEET NUMBER	C.1
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[illegible]

Item No.	Item Code	Description
1	2101-0850002	<b>CLEARING AND GRUBBING</b> Refer to Tab. 110-17 on C Sheets.
-	-	-
2	2102-0425070	<b>SPECIAL BACKFILL</b> Refer to Tab. 106-5 on C Sheets.
		Includes 2,718.5 Tons from Tab. 106-5 on C Sheets. Includes 310.7 Tons from Tab. 112-9 on C Sheets.
-	-	-
3	2102-2625000	<b>EMBANKMENT-IN-PLACE</b> Refer to Tab 107-23 on C Sheets.
-	-	-
4	2102-2710090	<b>EXCAVATION, CLASS 10, WASTE</b> Refer to Tab. 103-12 on CS-Sheets.
-	-	-
5	2102-2713090	<b>EXCAVATION, CLASS 13, WASTE</b> Includes 302.0 CY from Detail 7117-M on B Sheets. Includes 510.2 CY from Tab 112-9 on C Sheets.
-	-	-
6	2105-8425005	<b>TOPSOIL, FURNISH AND SPREAD</b> Refer to Tab 107-23 on C Sheets. Minimum thickness of topsoil shall be 6 inches.
-	-	-
7	2121-7425020	<b>GRANULAR SHOULDERS, TYPE B</b> Refer to Tab. 112-9 on C Sheets. Item includes 15% contingency.
-	-	-
8	2122-5500060	<b>PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 6 IN.</b>
9	2122-5500090	<b>PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 9 IN.</b> Refer to Tab. 112-9 on C sheets.
-	-	-
10	2128-0000200	<b>CONTRACTOR STOCKPILED SHOULDER MATERIAL</b> Refer to Tab 110-13 on C-Sheets. Refer to Developmental Specification DS-15007.
-	-	-
11	2212-5070310	<b>PATCHES, FULL-DEPTH REPAIR</b>
12	2212-5070330	<b>PATCHES BY COUNT (REPAIR)</b> Refer to Tab. 102-6C on C Sheets. Items include 15% contingency.
-	-	-
13	2213-2713300	<b>EXCAVATION, CLASS 13, FOR WIDENING</b> Refer to Tab. 106-5 on C Sheets.
-	-	-
14	2213-6745500	<b>REMOVAL OF CURB</b> Refer to Tab. 110-4 on C Sheet.
-	-	-

Item No.	Item Code	Description
15	2213-8201030	BASE WIDENING, 3 IN. HOT MIX ASPHALT MIXTURE
16	2213-8201090	BASE WIDENING, 9 IN. HOT MIX ASPHALT MIXTURE
-	-	Refer to Tab. 106-5 on C Sheets.
17	2214-5145150	PAVEMENT SCARIFICATION
-	-	Refer to Tab. 102-16 on C Sheets.
-	-	Refer to Tab. 100-25 on C Sheets.
18	2301-9091000	RUMBLE STRIP PANEL (PCC SURFACE)
-	-	Refer to Tab. 102-6C on C Sheets. Items include 15% contingency.
19	2303-0002380	HOT MIX ASPHALT MIXTURE INTERLAYER BASE COURSE, 3/8 IN. MIX
20	2303-1042500	HOT MIX ASPHALT HIGH TRAFFIC, INTERMEDIATE COURSE, 1/2 IN. M IX
21	2303-1043504	HOT MIX ASPHALT HIGH TRAFFIC, SURFACE COURSE, 1/2 IN. MIX, F RICTION L-4
22	2303-1258284	ASPHALT BINDER, PG 58-28H, HIGH TRAFFIC
23	2303-1258346	ASPHALT BINDER, PG 58-34E, EXTREMELY HIGH TRAFFIC
-	-	Refer to Tab. 100-25 on C Sheets.
-	-	Item includes 15% contingency.
-	2303-0002380	HOT MIX ASPHALT MIXTURE INTERLAYER BASE COURSE, 3/8 IN. MIX
-	-	Refer to Supplemental Specification SS-15010 (HOT MIX ASPHALT INTERLAYER) for this item.
24	2303-6911000	HOT MIX ASPHALT PAVEMENT SAMPLES
-	-	- -
25	2312-8260051	GRANULAR SURFACING ON ROAD, CLASS A CRUSHED STONE
-	-	Refer to Detail 7117-M on B Sheets.
26	2318-1001100	COLD IN-PLACE RECYCLED ASPHALT PAVEMENT
27	2318-1001220	ASPHALT STABILIZING AGENT (FOAMED ASPHALT)
-	-	Refer to Tab. 100-25 on C Sheets.
-	-	Item includes 15% contingency.
28	2401-6745636	REMOVAL OF EXISTING HANDRAIL AND END POSTS
-	-	Removal of Existing Handrails at Two Locations. See S and U sheets:
-	-	ADA Quadrant 9: NEC of IA 21 and Broadway.
-	-	ADA Quadrant 11: NWC of IA 21 and Briney.
29	2402-2720100	EXCAVATION, CLASS 20, FOR ROADWAY PIPE CULVERT
-	-	Refer to Tab. 3R-CULV on C Sheets.
30	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)
-	-	For the Use of Construction of New Stairs, see S and U sheets:
-	-	ADA Quadrant 9: NEC of IA 21 and Broadway.
-	-	ADA Quadrant 11: NWC of IA 21 and Briney.
-	-	-

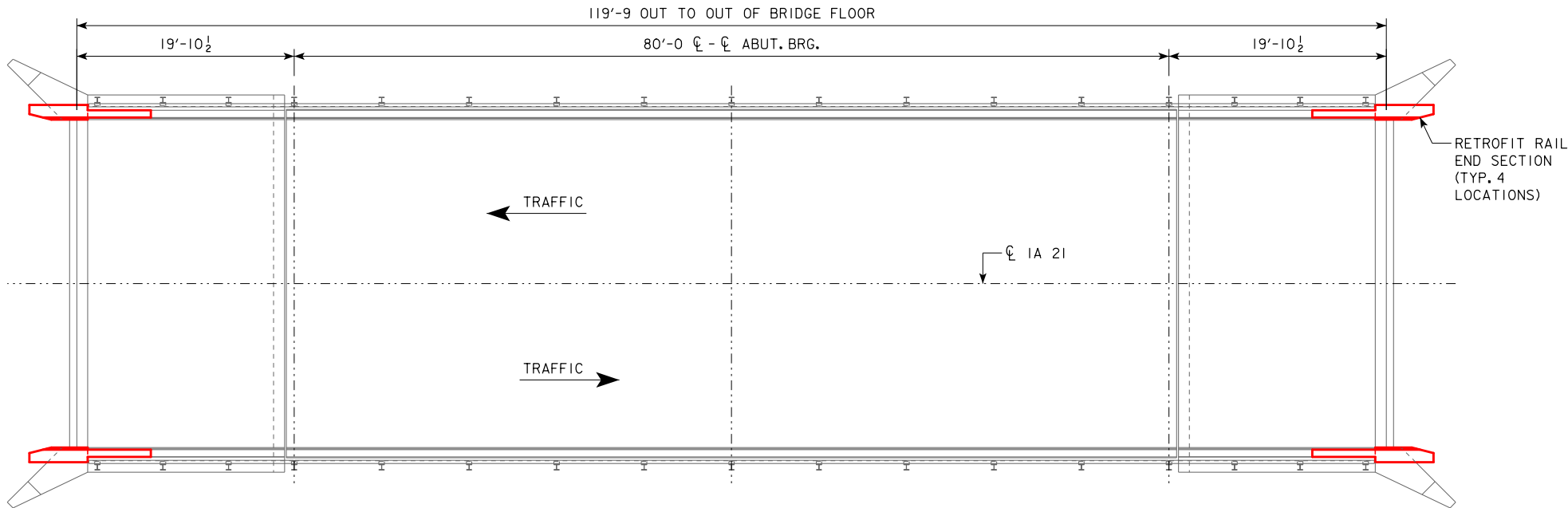






ESTIMATED BRIDGE RAIL RETROFIT QUANTITIES					
ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUAN.
1	2401-6750001	REMOVALS, AS PER PLAN	LS	1.00	
2	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)	CY	3.9	
3	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	784	

ESTIMATE REFERENCE INFORMATION		
ITEM NO.	ITEM CODE	DESCRIPTION
1	2401-6750001	REMOVALS, AS PER PLAN Includes all work for removal and off-site disposal of concrete, reinforcing and wood shims. Removal of scheduled items shall be in accordance with Section 2401, of the Standard Specifications. Any damage to material not to be removed shall be the responsibility of the Contractor and repaired at no extra cost to the state.
2	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS) Includes furnishing and installing 1 inch diameter plastic conduit.  Includes cleaning existing concrete rail, furnishing and placing concrete sealer.  Includes cost of setting dowel bars in concrete.  Includes cost of new wood shims and $\frac{7}{8}$ " diameter galvanized bolt with concrete insert in transition portion of rail.
3	2404-7775005	REINFORCING STEEL, EPOXY COATED



SITUATION PLAN



### SPECIFICATIONS:

DESIGN: AASHTO SERIES OF 2002.  
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.

### DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2002.  
REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.  
CONCRETE IN ACCORDANCE WITH SECTION 8,  $f'c = 4.0$  KSI.

### LOCATION:

IA 21 OVER CEDAR CREEK  
T-76N R-13W  
SECTIONS 27 & 28  
WASHINGTON TOWNSHIP  
KEOKUK COUNTY  
BRIDGE MAINT. NO. 5414.5S021  
FHWA NO. 032600  
LATITUDE 41.3519958°  
LONGITUDE -92.35435673°

### TRAFFIC CONTROL PLAN

NOTE: THE ROADWAY WILL BE OPEN TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN ON THE ROAD PLAN IN THESE PLANS.

#### NOTE:

ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

### DESIGN HISTORY AT THIS SITE

(INCLUDES THIS DESIGN)

DES. NO.	TYPE OF WORK
1448	ORIGINAL DESIGN
188	BRIDGE DECK OVERLAY
--	BRIDGE PAINTING (2020)
120	RETROFIT RAIL END SECTIONS

### GENERAL NOTES:

IT IS THE INTENT OF THIS DESIGN TO CONSTRUCT 4 RETROFIT RAIL END SECTIONS ON THE EXISTING 80'-0" x 30'-0" STEEL DECK GIRDER BRIDGE OVER CEDAR CREEK. ELECTRONIC COPIES OF ORIGINAL DESIGN PLANS ARE AVAILABLE TO THE CONTRACTOR AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. DIMENSIONS SHOWN ON THESE PLANS ARE BASED ON DESIGN PLANS (ORIGINAL DESIGN NO. 1448).

FAINT LINES ON PLANS INDICATE THE EXISTING STRUCTURE.

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 STARTING DATE.

THE LUMP SUM BID FOR "REMOVALS, AS PER PLAN" SHALL INCLUDE ALL COSTS ASSOCIATED WITH REMOVING THE END SECTIONS OF THE EXISTING RETROFIT CONCRETE RAIL AND CUTTING OFF AND PAINTING OF THE EXISTING REINFORCING IF REQUIRED. REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO ANY STEEL OR CONCRETE NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED AT NO EXTRA COST TO THE STATE.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (501 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 DIMENSIONS AND DETAILS SHOWN ON THESE PLANS PERTINENT TO NEW CONSTRUCTION SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR BEFORE STARTING CONSTRUCTION.

EXISTING REINFORCING AT THE ENDS OF THE EXISTING RETROFIT BARRIER RAIL SECTION IS TO BE CAREFULLY EXPOSED AND INCORPORATED INTO NEW TRANSITION SECTIONS. INITIATE THE CONCRETE REMOVAL LINES WITH A  $\frac{3}{4}$ " SAW CUT.

EXISTING BRIDGE RAIL IS NOT TO BE REMOVED UNTIL AUTHORIZED BY THE ENGINEER.

REMOVE EXISTING END PORTIONS OF THE EXISTING RETROFIT CONCRETE RAIL DOWN TO TOP OF CURB. AND REMOVE THE EDGE OF EXISTING END POSTS. EXISTING REINFORCING WHICH WILL HAVE LESS THAN 2" OF CONCRETE COVER FROM NEW CONSTRUCTION SHALL BE CUT OFF FLUSH WITH OR SLIGHTLY BELOW SURFACE OF CURB AND REMAINING EXPOSED ENDS COATED WITH 2 COATS OF ZINC RICH PAINT.

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

THE TOP AND INTERIOR FACES OF THE EXISTING CONCRETE RAILING ARE TO BE CLEANED AND SEALED IN ACCORDANCE WITH ARTICLE 2403.03, P OF THE STANDARD SPECIFICATIONS. IF NEW SECTIONS OF RAIL ARE CONSTRUCTED, THE NEW SECTIONS SHALL NOT BE SEALED. ALL COSTS ASSOCIATED WITH CLEANING AND SEALING OF THE CONCRETE RAILS SHALL BE INCLUDED IN THE UNIT PRICE BID ITEM "STRUCTURAL CONCRETE (MISCELLANEOUS)".

ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A  $\frac{3}{4}$ " DRESSED AND BEVELED STRIP.

ALL REINFORCING STEEL IS TO BE GRADE 60 AND EPOXY COATED.

### 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: *David R. Evans* Date: 10-5-2020

Printed or Typed Name: David R. Evans

My license renewal date is December 31, 2021

Pages or sheets covered by this seal: SHEETS V.1 THRU V.4

DESIGN FOR REPAIRS TO A 0° SKEW

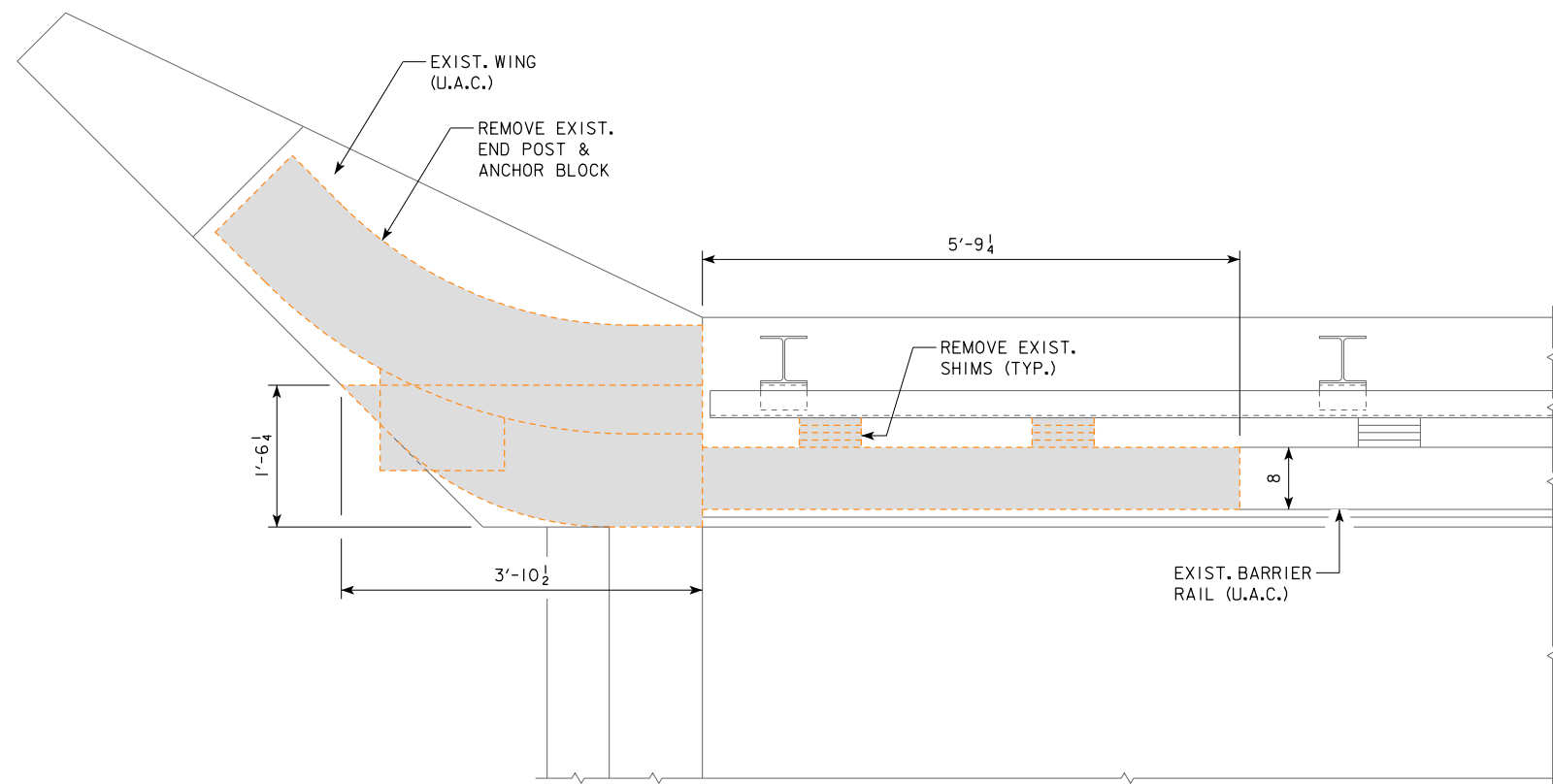
80' x 30' STEEL DECK GIRDER BRIDGE  
W / 19'-10 1/2" CONC. SLAB APPR. SPANS

QUANTITIES & GENERAL NOTES

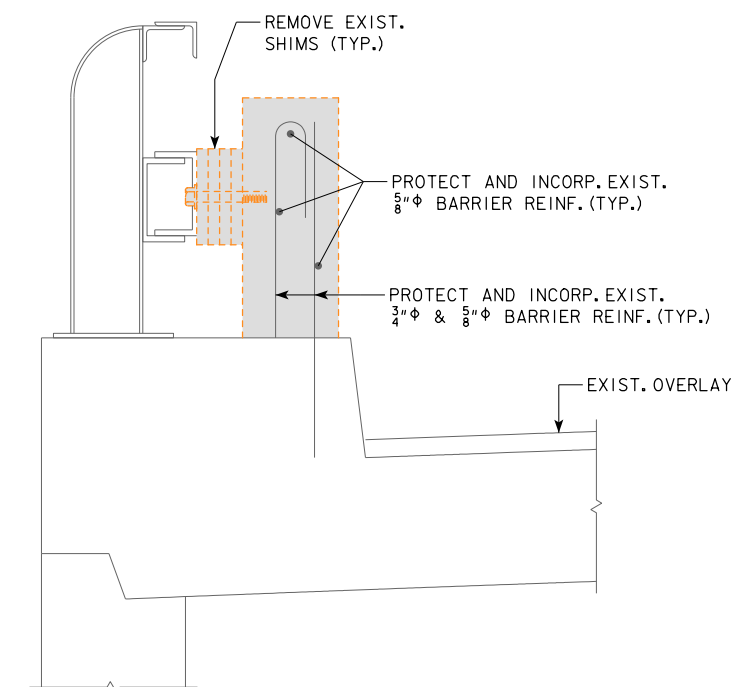
STA. 57+50 NOVEMBER, 2020

KEOKUK COUNTY

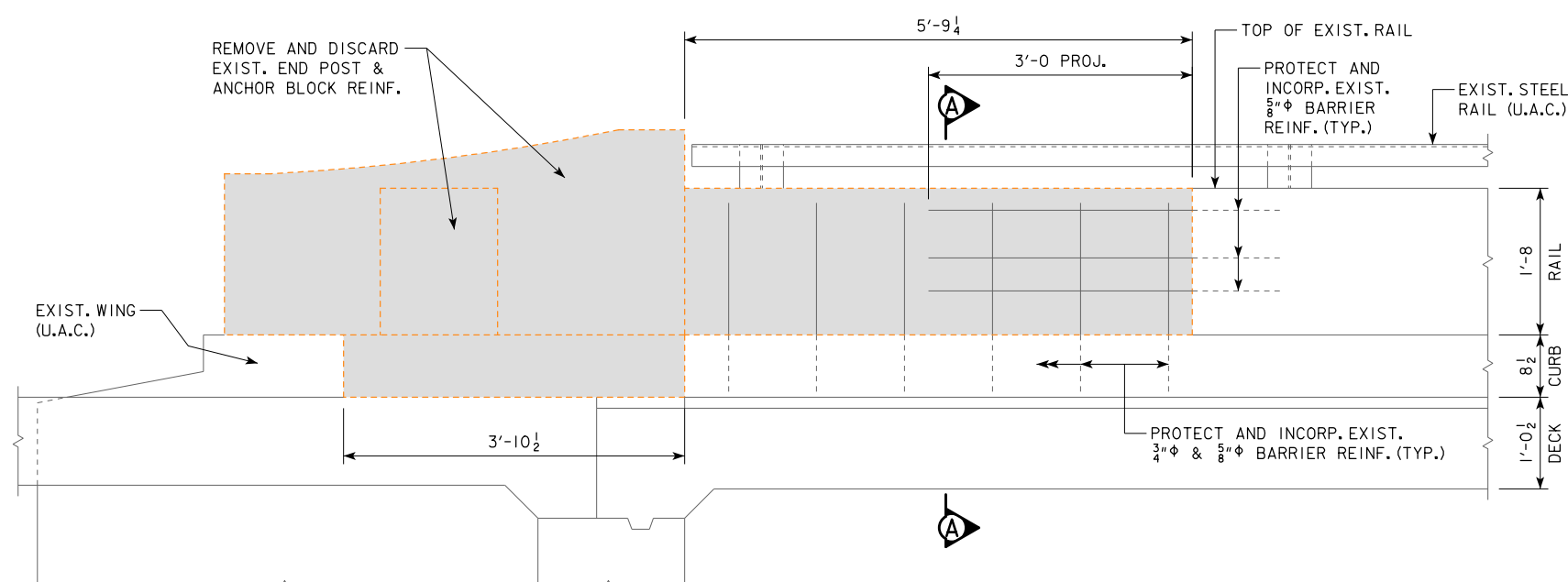
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
DESIGN SHEET NO. 1 OF 4 FILE NO. 31865 DESIGN NO. 120



PART PLAN VIEW



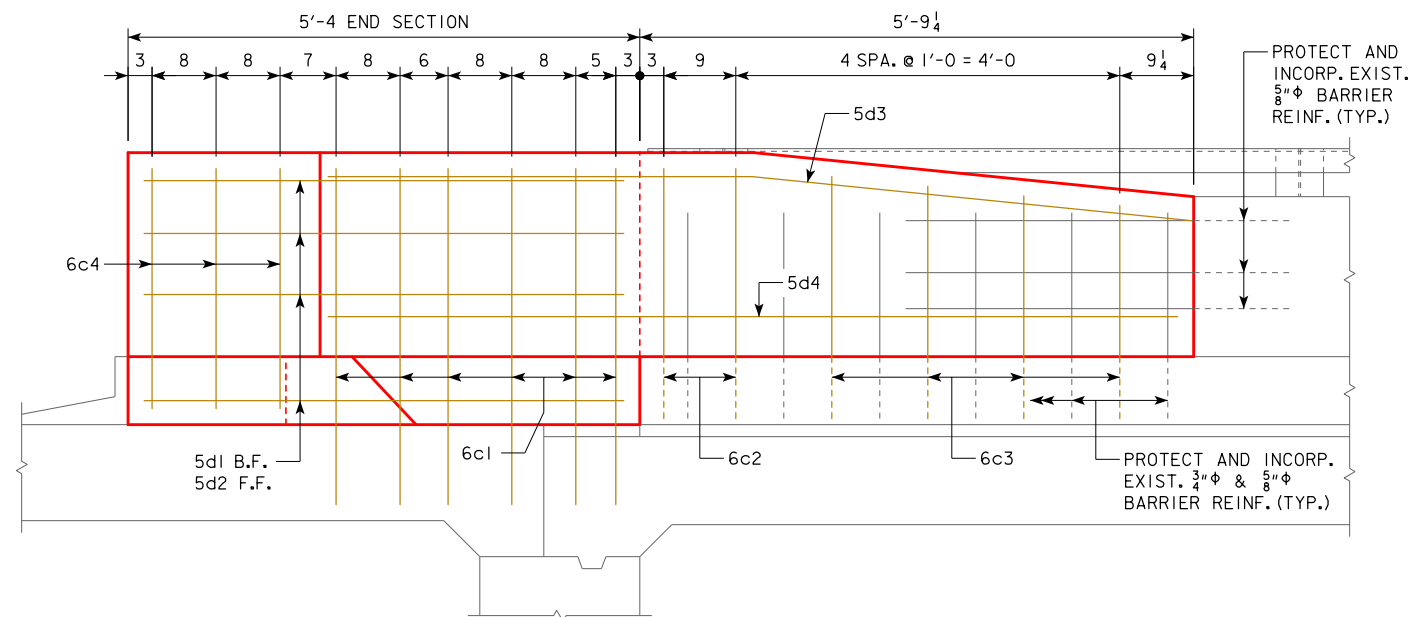
SECTION A-A



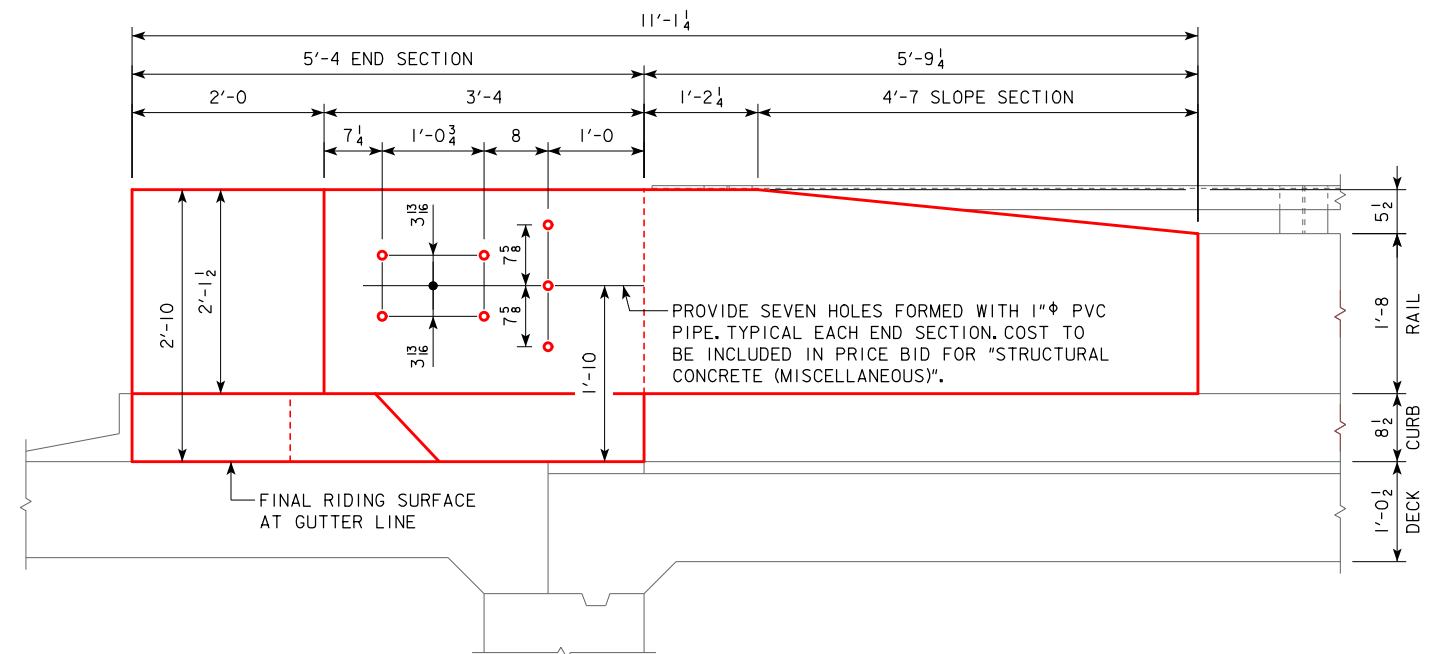
ELEVATION NEAR GUTTER LINE

LEGEND	
	INDICATES REMOVAL

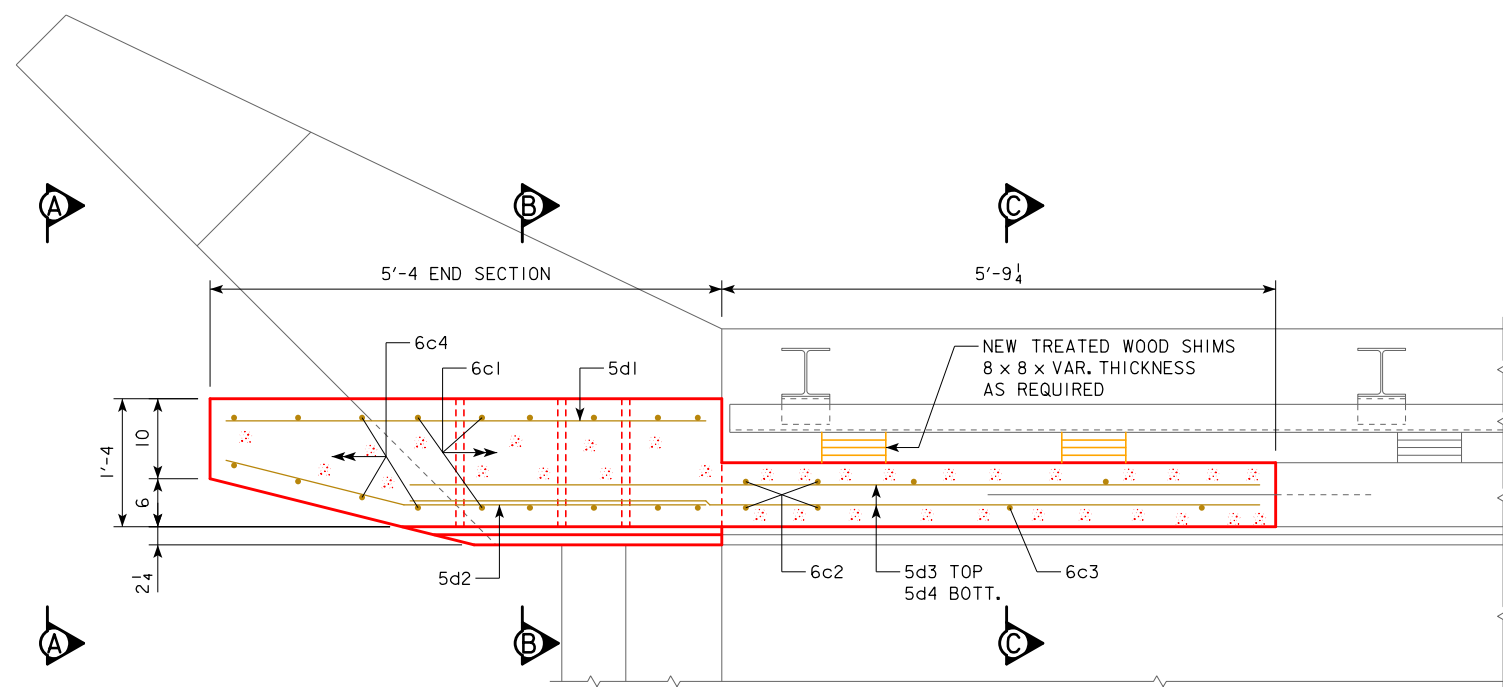
DESIGN FOR REPAIRS TO A 0° SKEW  
**80' x 30' STEEL DECK GIRDER BRIDGE**  
**W / 19'-10 $\frac{1}{2}$  CONC. SLAB APPR. SPANS**  
**REMOVAL DETAILS**  
 STA. 57+50 NOVEMBER, 2020  
**KEOKUK COUNTY**  
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
 DESIGN SHEET NO. 2 OF 4 FILE NO. 31865 DESIGN NO. 120



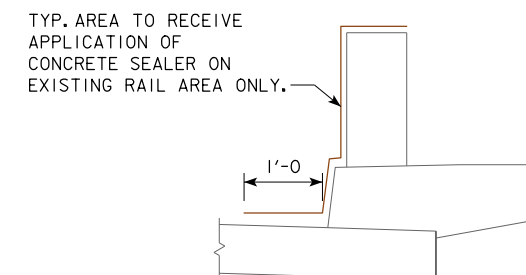
ELEVATION NEAR GUTTER LINE



ELEVATION NEAR GUTTER LINE  
(REINFORCING NOT SHOWN FOR CLARITY)



PART PLAN VIEW



DETAIL OF CONCRETE  
SEALER AREA

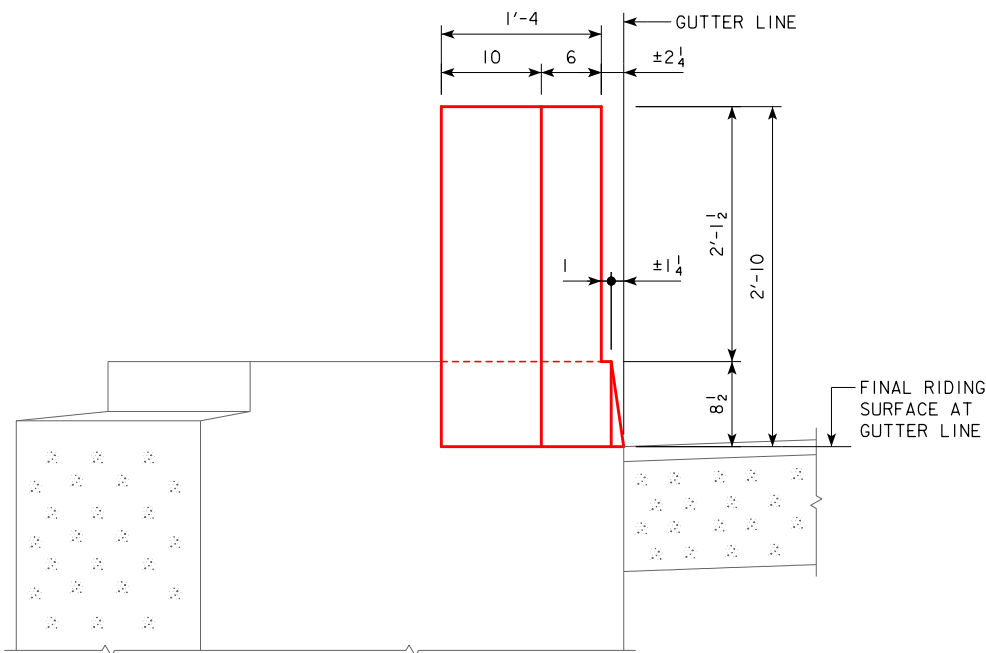
### CONCRETE SEALER NOTES

THE FACE OF BARRIER RAILS ARE TO BE CLEANED AND SEALED IN ACCORDANCE WITH ARTICLE 2403, P. 3, OF THE STANDARD SPECIFICATIONS. ALL NEWLY CONSTRUCTED PORTIONS OF THE BARRIER RAILS SHALL NOT BE SEALED. ALL COSTS ASSOCIATED WITH CLEANING AND SEALING ALL CONCRETE AREAS SHALL BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (MISCELLANEOUS)". SEE DETAILS SHOWN ON THESE PLANS FOR LOCATIONS OF CONCRETE SEALING.

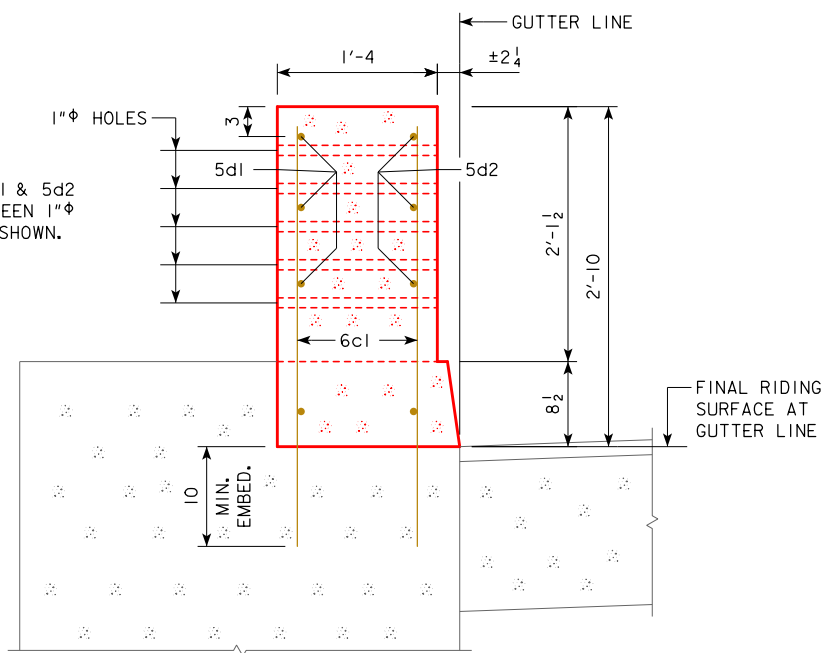
NOTE:  
FOR END VIEW A-A, SECTIONS  
B-B & C-C SEE DESIGN SHEET 4.

DESIGN FOR REPAIRS TO A 0° SKEW  
80' x 30' STEEL DECK GIRDER BRIDGE  
W / 19'-10 $\frac{1}{2}$  CONC. SLAB APPR. SPANS  
REPAIR DETAILS  
STA. 57+50 NOVEMBER, 2020  
KEOKUK COUNTY  
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
DESIGN SHEET NO. 3 OF 4 FILE NO. 31865 DESIGN NO. 120

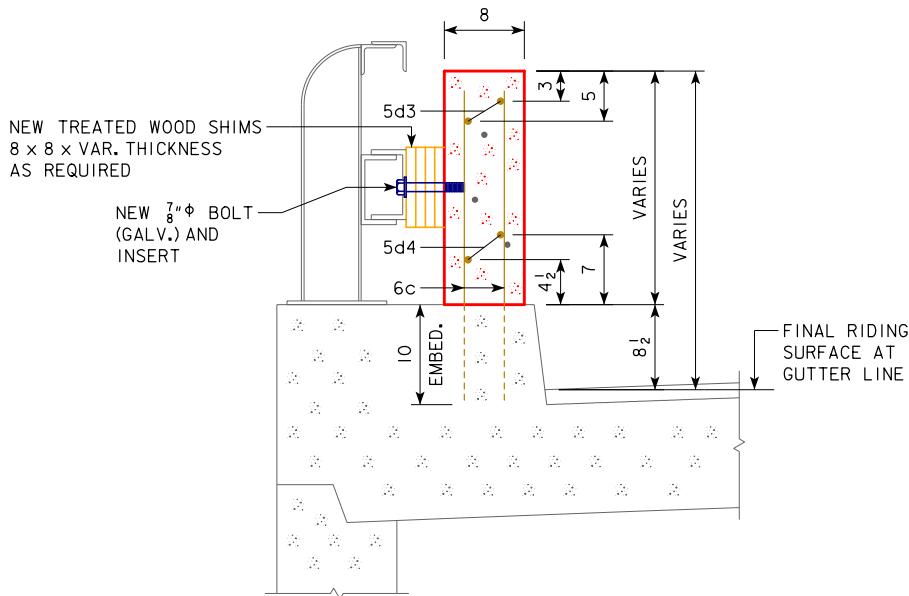




END VIEW A-A



SECTION B-B



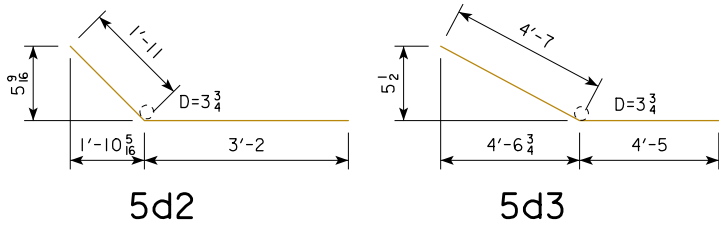
SECTION C-C

NOTE:  
CENTER 5d1 & 5d2  
BARS BETWEEN 1" HOLES AS SHOWN.

EPOXY COATED REINF. STEEL - ONE END SECTION

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6c1	END SECTION, VERTICAL		11	3'-6	58
6c2	TRANSITION SECTION, VERTICAL		4	2'-10	17
6c3	TRANSITION SECTION, VERTICAL		4	VARIES 2'-5 TO 2'-9	16
6c4	END SECTION, VERTICAL		7	2'-6	26
5d1	END SECTION, LONGIT., B.F.		4	5'-0	21
5d2	END SECTION, LONGIT., F.F.		4	5'-1	21
5d3	TRANSITION SECTION, LONGIT., TOP		2	9'-0	19
5d4	TRANSITION SECTION, LONGIT., BOT.		2	8'-10	18
TOTAL (LBS)					196

BENT BAR DETAILS



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

CONCRETE PLACEMENT QUANTITY - END SECTION

LOCATION	TOTAL (CY)
END SECTIONS	4 AT 0.71 CU. YDS. PER SECTION
TRANSITION BARRIER RAIL	4 AT 0.28 CU. YDS. PER SECTION
TOTAL (CY)	3.9

DOWEL SETTING NOTE :

THE 6c1, 6c2 & 6c3 BARS SHALL BE SET AS DOWELS IN DRILLED HOLES. HOLES ARE TO BE 10" DEEP. THE DOWELS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. EITHER OF THE FOLLOWING SYSTEMS MAY BE USED AS A BONDING AGENT FOR VERTICAL DOWELS, BUT ONLY SYSTEM "A" MAY BE USED FOR HORIZONTAL DOWELS:

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

THE PRICE BID FOR "STRUCTURAL CONCRETE (MISCELLANEOUS)" SHALL INCLUDE THE COST SETTING BARS AS DOWELS IN THE RETROFIT END SECTIONS.

NOTE:  
FOR LOCATION OF END VIEW A-A,  
SECTIONS B-B & C-C SEE DESIGN SHEET 3.

DESIGN FOR REPAIRS TO A 0° SKEW  
80' x 30' STEEL DECK GIRDER BRIDGE  
W / 19'-10 1/2" CONC. SLAB APPR. SPANS  
REPAIR DETAILS  
STA. 57+50  
KEOKUK COUNTY  
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
DESIGN SHEET NO. 4 OF 4 FILE NO. 31865 DESIGN NO. 120  
NOVEMBER, 2020