

BRIDGE REPLACEMENT - PPCB
BRF-002-9(32)--38-56
02-16-2021

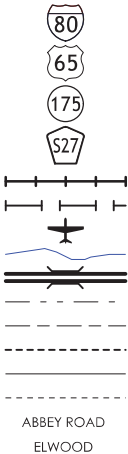
LEE COUNTY - DESIGN NO. 221

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

PRIMARY ROAD SYSTEM

LEE COUNTY

BRIDGE REPLACEMENT - PPCB

1A 2 BRIDGE OVER SUGAR CREEK

1.8 MILES WEST OF US 218

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.

REVISIONS



1-800-292-8989

www.iowaonecall.com



STANDARD ROAD PLANS

STANDARD ROAD PLANS ARE LISTED ON SHEET NUMBER C.3

DESIGN DATA RURAL

2021	AADT	1,900	V.P.D.
2041	AADT	2,100	V.P.D.
2041	DHV	-	V.P.H.
TRUCKS		8	%
Total Design ESALs		-	

TOTAL SHEETS
79
PROJECT NUMBER
BRF-002-9(32)--38-56
R.O.W. PROJECT NUMBER
PROJECT IDENTIFICATION NUMBER
16-56-002-010

INDEX OF SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
2	ESTIMATE SHEET - DESIGN NO. 221
2-31	DESIGN NO. 221
SPS.1-SPS.2	SOIL PROFILE SHEET
C.1	ESTIMATE SHEET FOR ROADWAY
A.1-W.11	ROADWAY SHEETS

INDEX OF SEALS

SHEET NO.	NAME	TYPE
I	DARIN G. BROWN	STRUCTURAL DESIGN
I	DAVID J. MULHOLLAND	HYDRAULIC DESIGN
SPS.1, CS.1	BHOOSHAN A. KARNIK	GEOTECHNICAL DESIGN
A.1	YANXIAO JIA	ROADWAY DESIGN
RC.1	SEANA K. GODBOLD	LANDSCAPE DESIGN

HYDRAULIC 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 J. Mulholland* Date 12-14-2020

Printed or Typed Name David J. Mulholland

My license renewal date is December 31, 2020

Pages or sheets covered by this seal: SHEETS 5 & 6 OF 79

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.

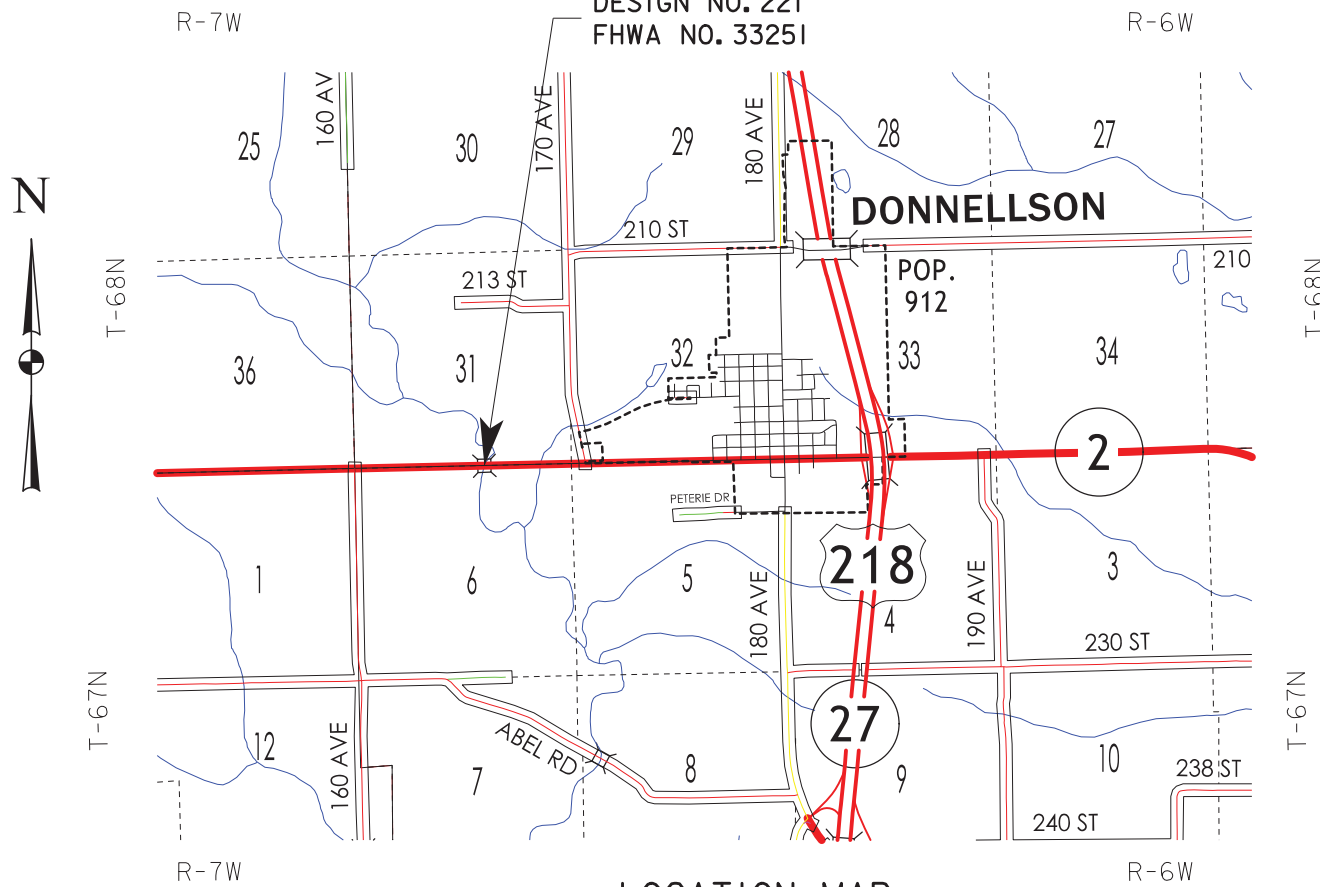
Signature *Darin G. Brown* Date 12-14-2020

Printed or Typed Name Darin G. Brown

My license renewal date is December 31, 2020

Pages or sheets covered by this seal: SHEETS 1 THRU 31 OF 79

DESIGN NO. 221
FHWA NO. 33251



LOCATION MAP

PROJECT DIRECTORY NAME: 5600201016

DESIGN TEAM: SCHEMMER

ENGLISH

IOWA DOT * BRIDGES AND STRUCTURES BUREAU

FILE NO. 31795

LEE COUNTY

PROJECT NUMBER BRF-002-9(32)--38-56

SHEET NUMBER 1

ESTIMATED BRIDGE QUANTITIES					
ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CY	1748	
2	2401-6745625	REMOVAL OF EXISTING BRIDGE	LS	1	
3	2402-2720000	EXCAVATION, CLASS 20	CY	142.7	
4	2402-2721000	EXCAVATION, CLASS 21	CY	93.6	
5	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	CY	472.4	
6	2404-7775000	REINFORCING STEEL	LB	13,706	
7	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	78,188	
8	2404-7775009	REINFORCING STEEL, STAINLESS STEEL	LB	3359	
9	2407-0562850	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTB50	EACH	12	
10	2407-0562900	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTB100	EACH	6	
11	2408-7800000	STRUCTURAL STEEL	LB	4811	
12	2414-6424110	CONCRETE BARRIER RAILING	LF	442	
13	2499-2300001	DECK DRAINS	LS	1	
14	2501-0201057	PILES, STEEL, HP 10 X 57	LF	1295	
15	2501-0201517	PILES, STEEL, HP 14 X 117	LF	2460	
16	2501-6335010	PREBORED HOLES	LF	140	
17	2507-3250005	ENGINEERING FABRIC	SY	3092	
18	2507-6800061	REVTMENT CLASS E	TON	2859	
19	2520-3350015	FIELD OFFICE	EA	1	
20	2526-8285000	CONSTRUCTION SURVEY	LS	1	
21	2533-4980005	MOBILIZATION	LS	1	

ESTIMATE REFERENCE INFORMATION		
ITEM NO.	ITEM CODE	DESCRIPTION
2	2401-6745625	REMOVAL OF EXISTING BRIDGE INCLUDES ALL WORK FOR REMOVAL AND DISPOSAL OF EXISTING REVETMENT, STEEL WELDED PLATE GIRDERS, AND CONCRETE BEAMS FOR BRIDGE (DESIGN NO 257).
3	2402-2720000	EXCAVATION, CLASS 20 INCLUDES EXCAVATION FOR BRIDGE ABUTMENTS, WINGS, AND PIERS ABOVE ELEVATION 620.00.
4	2402-2721000	EXCAVATION, CLASS 21 INCLUDES EXCAVATION FOR BRIDGE PIERS BELOW ELEVATION 620.00.
5	2403-0100010	STRUCTURAL CONCRETE (BRIDGE) INCLUDES ALL RESILIENT JOINT FILLER REQUIRED. INCLUDES FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), FLOODABLE BACKFILL, POROUS BACKFILL, GEOTEXTILE FABRIC, WATER FLOODING, AND SUBDRAIN OUTLET AT ABUTMENTS AND TOE OF BERM. INCLUDES FURNISHING AND PLACING 3 INCH DIAMETER PVC PLASTIC PIPE AND EXPANDING FOAM IN THE ABUTMENT WINGS.
9	2407-0562850	PRETENSIONED PRESTRESSED CONCRETE, BTB50 INCLUDES ABUTMENT AND PIER BEARING MATERIAL. INCLUDES CONTRACTOR FILLING OUT BEAM NUMBERS BY LOCATION AND BEAM SEAT ELEVATIONS IN "PPC BEAM DATA SPREADSHEET" AND FORWARDING ELECTRONIC SPREADSHEET TO THE ENGINEER.
10	2407-0562900	PRETENSIONED PRESTRESSED CONCRETE, BTB100 INCLUDES BENT BEARING MATERIAL. INCLUDES CONTRACTOR FILLING OUT BEAM NUMBERS BY LOCATION AND BEAM SEAT ELEVATIONS IN "PPC BEAM DATA SPREADSHEET" AND FORWARDING ELECTRONIC FSPREADSHEET TO THE ENGINEER.
11	2408-7800000	STRUCTURAL STEEL INCLUDES ALL COSTS FOR FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGMS.
12	2414-6424110	CONCRETE BARRIER RAILING INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS. INCLUDES 225.0 FT. OF 2" DIA. RIGID STEEL CONDUIT, IN SOUTH RAIL. IF PLACEMENT OF CONCRETE IS DONE BY THE 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.
13	2499-2300001	DECK DRAINS INCLUDES 4 NEW DECK DRAINS. REFER TO DESIGN SHEET 28 FOR LOCATIONS, AND DESIGN SHEET 11 FOR MATERIALS AND THE DETAILS OF THEIR CONSTRUCTION. MEASUREMENT WILL BE THE LUMP SUM FOR ALL DECK DRAINS REQUIRED AS SPECIFIED IN THE PLANS. THE PAYEMNT SHALL BE FULL COMPENSATION FOR FIURNISHING ALL MATERIAL, EQUIPMENT AND LABER AND FOR PERFORMANCE OF ALL WORK NECESSARY FOR FABRICATING AND INSTALLING THE DECK DRAINS AS PER PLAN.

ESTIMATE REFERENCE INFORMATION		
ITEM NO.	ITEM CODE	DESCRIPTION
14	2501-0201057	PILES, STEEL, HP 10 X 57. SEE DESIGN SHEET 14 FOR PILE DRIVING REQUIREMENTS.
15	2501-0201517	PILES, STEEL, HP 14 X 117. SEE DESIGN SHEET 8 FOR PILE DRIVING REQUIREMENTS.
16	2501-6335010	PREBORED HOLES INCLUDES COST OF LABOR AND MATERIALS OF BENTONITE SLURRY IN PREBORED HOLES.
17	2507-3250005	ENGINEERING FABRIC ENGINEERING FABRIC SHALL BE MATERIAL AS SPECIFIED FOR EMBANKMENT EROSION CONTROL IN ACCORDANCE WITH ARTICLE 4196.01, B, 3 OF THE STANDARD SPECIFICATIONS.
18	2507-6800061	REVTMENT CLASS E ESTIMATED AT 1.6 TON/CU YD.

NOTE:
ROADWAY QUANTITIES SHOWN
ELSEWHERE IN THESE PLANS.

DESIGN FOR 0° SKEW

204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

51'-0 END SPANS102'-0 INTERIOR SPAN

BRIDGE QUANTITES

STA. 391+20.61 (☒ 1A 2)NOVEMBER, 2020

LEE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 11 OF 30FILE NO. 31795DESIGN NO. 221

SUMMARY OF CONCRETE QUANTITIES

LOCATION	STRUCTURAL CONCRETE	HPC STRUCTURAL CONCRETE
WEST ABUT. FTG.	17.5	_____
EAST ABUT. FTG.	17.5	_____
BRIDGE DECK + ABUT. & PIER DIAPHRAGMS	284.7	_____
ABUTMENT WINGS	7.6	_____
PIER NO. 1	78.5	_____
PIER NO. 2	66.6	_____
TOTAL (CU. YDS.)	472.4	_____

SUMMARY OF REINFORCING STEEL

LOCATION	NON-COATED REINFORCING STEEL	STAINLESS STEEL REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
BRIDGE DECK + ABUT. FTG. **	145		69,602
ABUTMENT WINGS			792
BARRIER RAIL - SOUTH RAIL		1295.5	3406
BARRIER RAIL - NORTH RAIL		1295.5	3324
BARRIER RAIL END SECTION		4 AT 192	4 AT 266
PIER NO. 1	7155		
PIER NO. 2	6406		
** INCLUDES ABUTMENT AND PIER DIAPHRAGMS			
TOTAL (LBS.)	13,706	3359	78,188

SUMMARY OF EXCAVATION

LOCATION	CLASS 20 EXCAVATION	CLASS 21 EXCAVATION
WEST ABUTMENT	51.1	=====
EAST ABUTMENT	51.1	=====
PIER NO. 1	7.3	75.6
PIER NO. 2	33.2	18.0
TOTAL (CU. YDS.)	142.7	93.6

SUMMARY OF FOUNDATIONS

[illegible]

SUMMARY OF STRUCTURAL STEEL

LOCATION	TOTAL (LBS.)
DIAPHRAGMS	4811
TOTAL (LBS.)	4811

SUMMARY OF BEARINGS

[illegible]

DESIGN FOR 0° SKEW

204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

51'-0 END SPANS 102'-0 INTERIOR SPAN

SUMMARY QUANTITIES SHEET

STA. 391+20.61 (C/L) IA 2) NOVEMBER, 2020

LEE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 30 FILE NO. 31795 DESIGN NO. 221

GENERAL NOTES:

THIS DESIGN IS FOR THE REPLACEMENT OF THE EXISTING 4 SPAN 150’-0 x 28’-0 STEEL I-BEAM/CONCRETE BEAM BRIDGE DESIGN NO. 257 WITH A YEAR OF CONSTRUCTION OF 1957. ELECTRONIC PLANS OF THE EXISTING STRUCTURE ARE AVAILABLE TO THE CONTRACTOR AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS.

THE LUMP SUM BID FOR “REMOVAL OF EXISTING BRIDGE” SHALL INCLUDE REMOVAL OF EXISTING REVETMENT.

REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 240I, OF THE STANDARD SPECIFICATIONS.

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

ALL PLAN DIMENSIONS ARE HORIZONTAL UNLESS NOTED OTHERWISE

FAINT LINES ON PLANS INDICATE THE EXISTING STRUCTURE.

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.

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.

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.

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

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

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5G1 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

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 OF THE BRIDGE DECK WILL BE REQUIRED IN ACCORDANCE WITH ARTICLE 2412.03, D OF THE STANDARD SPECIFICATIONS. LONGITUDINAL GROOVING QUANTITIES FOR THIS PROJECT ARE INCLUDED IN THE ROADWAY PLANS.

AT THE CONTRACTORS 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.

A SCRAPE SAMPLE WAS TAKEN FROM AN AREA OF THIS BRIDGE TO GET AN INDICATION OF THE EXISTENCE OF AND LEVEL OF TOTAL LEAD AND TOTAL CHROMIUM. ANALYSIS OF TOTAL LEAD ON THIS SAMPLE WAS 287000 PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS 2400 PPM. THESE ANALYSES SHOW THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS. LEVELS INDICATED BY THESE TESTS COULD CREATE CONDITIONS ABOVE REGULATORY LIMITS FOR HEALTH AND SAFETY REQUIREMENTS. NO OTHER CONSTITUENTS WERE ANALYZED. THE BIDDER SHOULD NOT RELY ON THE IOWA DOT’S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS.

EXISTING TIMBER PILE IN THE FORESLOPES SHALL BE REMOVED TO 1’ BELOW PROPOSED FINISHED GRADE WITH THE REMAINING LENGTH LEFT IN PLACE.

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

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 (CAST-IN-PLACE OR SLIPFORMED METHOD).

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 SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

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 AASHTO LRFD SECTION 5, f’c = 4.0 KSI, EXCEPT PRESTRESSED BEAM CONCRETE AS NOTED.
PRESTRESSED CONCRETE BEAMS, SEE DESIGN SHEETS 18 THRU 21.
BRIDGE DECK CONCRETE 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).

BRIDGE DECK DIMENSIONS TABLE

NO.	ITEM	UNIT	QUANTITY
1	DECK LENGTH	L.F.	207.0
2	MINIMUM DECK WIDTH	L.F.	43.2
3	MAXIMUM DECK WIDTH	L.F.	43.2
4	DECK AREA	S.F.	8,936

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

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 ARTICLE 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_SubmittalDescription.pdf
Example: (090)_BlackHawk_Design915_DeckDrains.pdf

1	STEEL INTERMEDIATE DIAPHRAGMS
2	DECK DRAINS

TRAFFIC CONTROL PLAN

NOTE: REFER TO THE TRAFFIC CONTROL PLAN ON ROAD PLANS IN THESE PLANS

NOTE:
POLLUTION PREVENTION PLAN IS SHOWN ELSEWHERE IN THESE PLANS.

NOTE:
ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

DESIGN FOR 0° SKEW

204’-0 X 40’-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

51’-0 END SPANS102’-0 INTERIOR SPAN

GENERAL NOTES

STA. 391+20.61 @ 1A 2)NOVEMBER, 2020

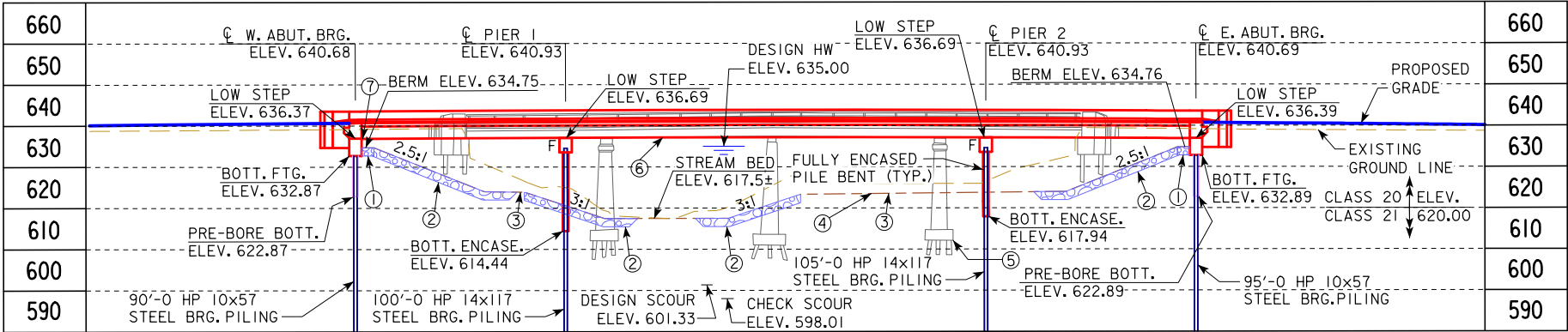
LEE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 30FILE NO. 31795DESIGN NO. 221

NOTES:
TOP OF BRIDGE DECK CROWN 0.03' BELOW PROFILE GRADE

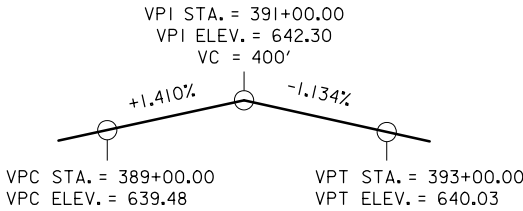
BENCHMARK: CP 101 N 6341876.68, E 24403336.58, FENO MONUMENT STAMPED #1, 1,364' EAST OF 160TH AVE AND 49' SOUTH OF IA 2 CENTERLINE. SET 4 INCHES BELOW GROUND SURFACE, ELEV. 688.98



1.5' +/- GRADE RAISE SHOWN

LONGITUDINAL SECTION ALONG CL APPROACH ROADWAY

- 1 BERM PROTECTION
CLASS E REVET. (2' THICK. MIN.)
UNDERLAIN W/ ENGR. FABRIC
- 2 BERM PROTECTION
CLASS E REVET. (2' THICK. MIN.)
UNDERLAIN W/ ENGR. FABRIC
- 3 BENCH ELEV. 624.00
- 4 GRADING SURFACE
- 5 EXISTING BRIDGE
150' X 28' I BEAM CONCRETE BEAM
DES. NOS. 2829 AND 257
TO BE REMOVED
- 6 REGULATORY LOW BEAM
- 7 OPERATIONAL LOW BEAM



PROPOSED PROFILE
GRADE IA 2

HYDRAULIC DATA

DRAINAGE AREA = 41.4 SQ. MI.
STREAM SLOPE = 4.8 FT./MI.
AVG. LOW WATER STAGE = 620.0

Q₅₀ = 11,700 CFS
STAGE = 635.00
REGULATORY LOW BEAM = 636.92
BACKWATER = 1.05 FT.
AVG. BRIDGE VELOCITY = 6.2 FPS

Q₁₀₀ = 14,100 CFS
STAGE = 635.81
OPERATIONAL LOW BEAM = 636.62
BACKWATER = 1.37 FT.
AVG. BRIDGE VELOCITY = 6.9 FPS

Q₂₀₀ = 16,800 CFS
STAGE = 636.59
CALCULATED DESIGN SCOUR = 601.33

Q₅₀₀ = 19,900 CFS
STAGE = 637.50
AVG. BRIDGE VELOCITY = 9.2 FPS
CALCULATED CHECK SCOUR = 598.01

ROADWAY OVERTOP 637.69
STA. 395+91.17

EXTREME HW STAGE = 632
DATE = UNKNOWN

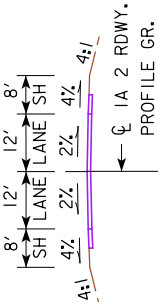
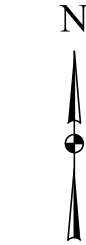
LOCATION

IA 2 OVER SUGAR CREEK
T-68N R-6W
SECTION 31
FRANKLIN TOWNSHIP
LEE COUNTY
BRIDGE MAINT. NO. 5646.9S002
FHWA NO. 33251
LATITUDE 40.639035°
LONGITUDE -91.591528°

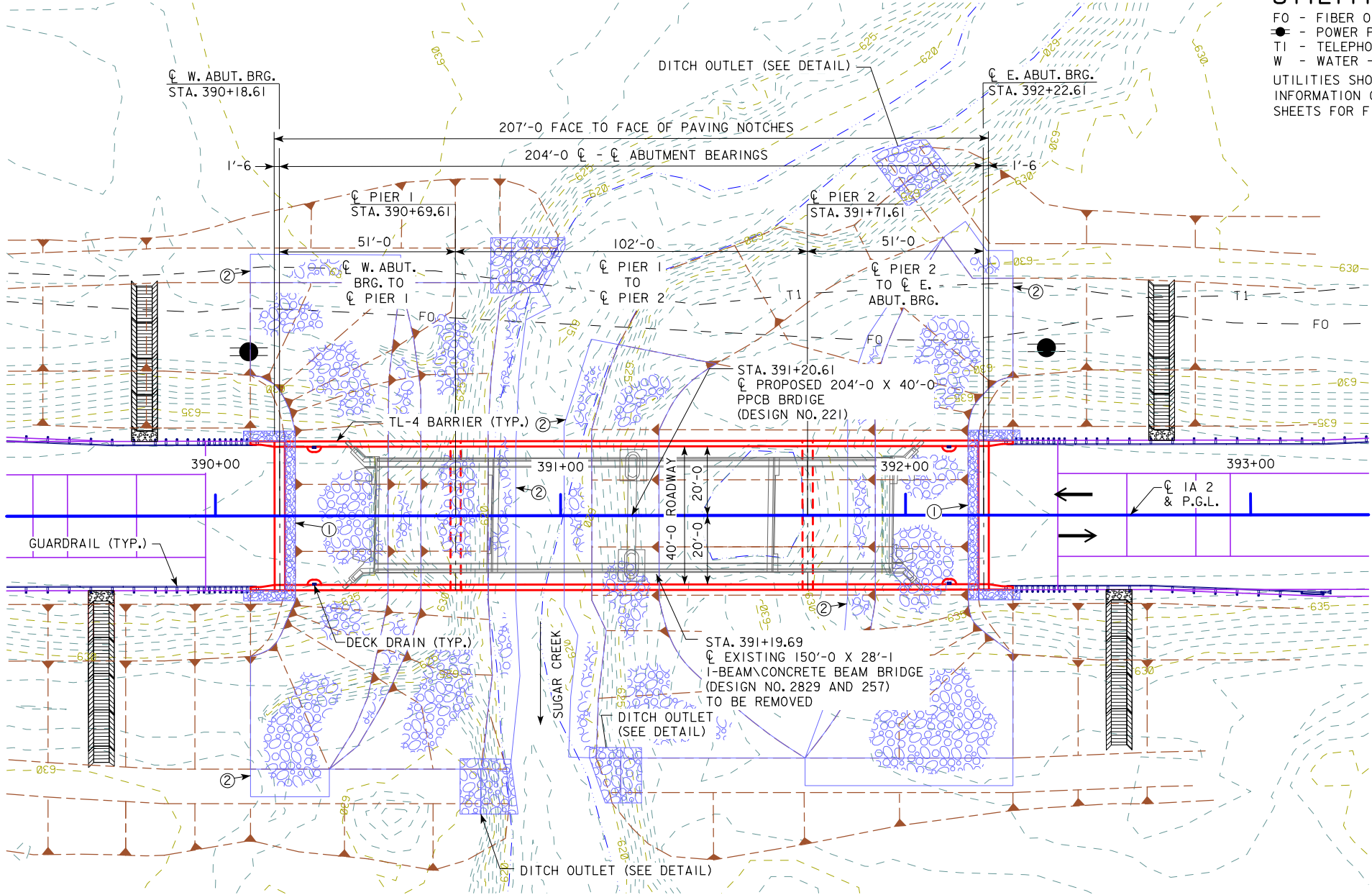
TRAFFIC ESTIMATE

2021 AADT	1,900	V.P.D.
2041 AADT	2,100	V.P.D.
2021 DHV		V.P.H.
TRUCKS	8	%
TOTAL DESIGN ESALS		

NOTE: SEE DESIGN SHEET 28 FOR
LOCATION OF DECK DRAINS



TYPICAL APPROACH SECTION



SITUATION PLAN

DESIGN FOR 0° SKEW

**204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**

51'-0 END SPANS 102'-0 INTERIOR SPAN

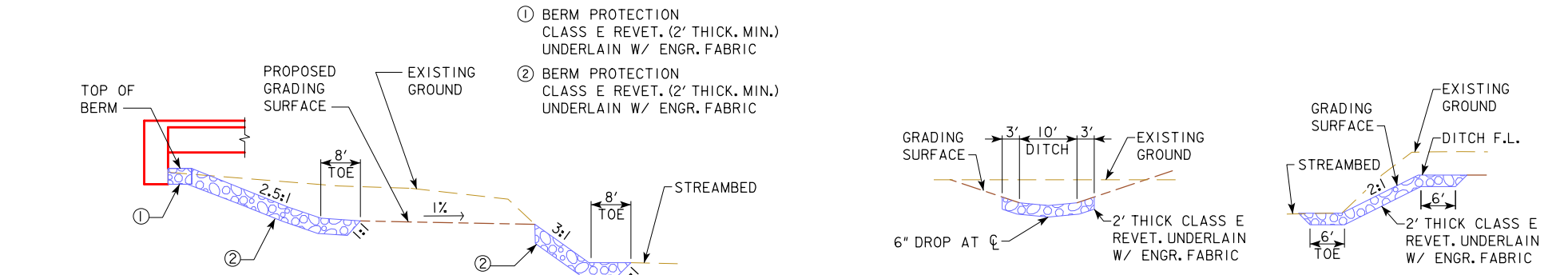
SITUATION PLAN

STA. 391+20.61 (CL IA 2) NOVEMBER, 2020

LEE COUNTY

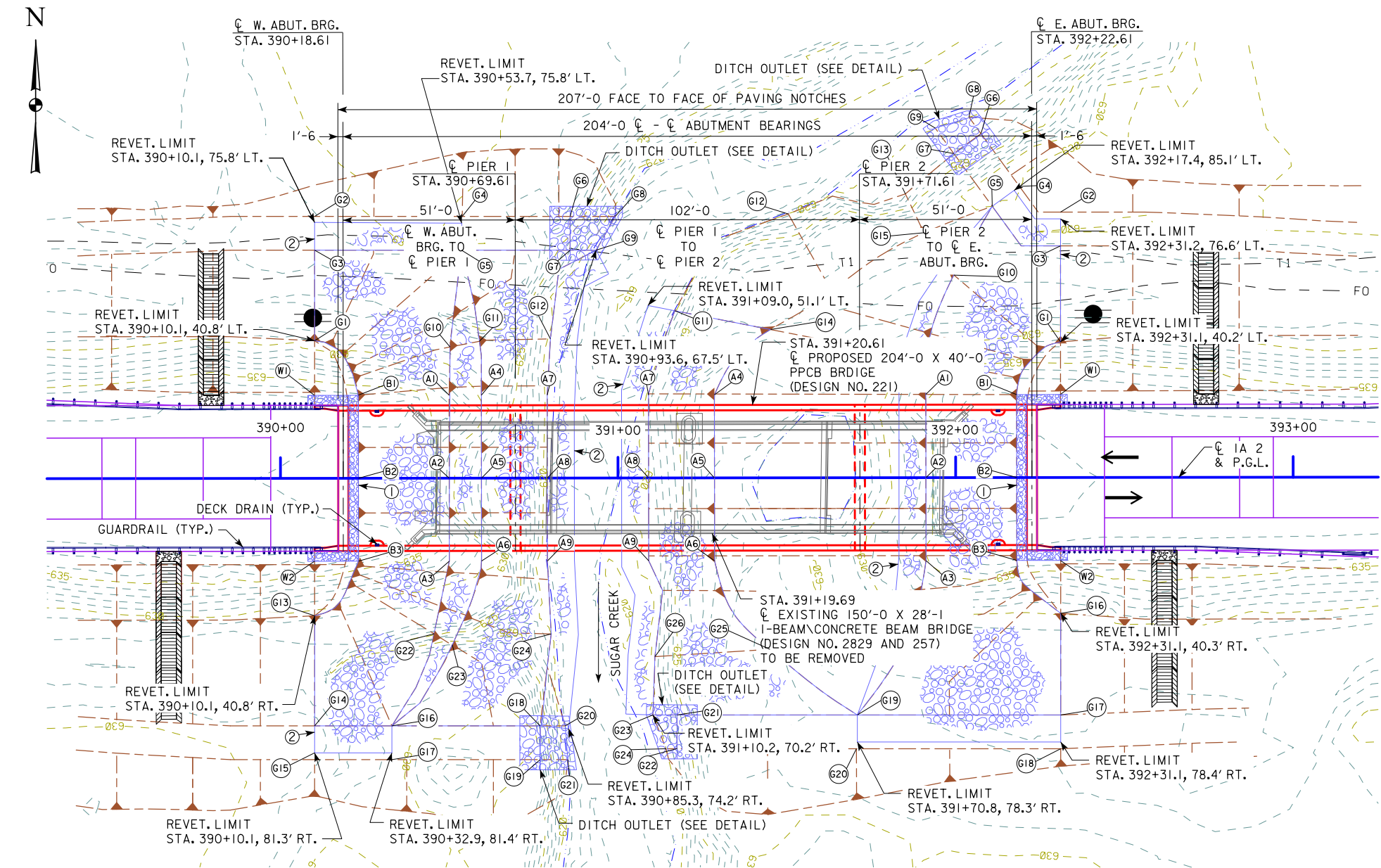
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 4 OF 30 FILE NO. 31795 DESIGN NO. 221

BENCHMARK: CP 101 N 6341876.68, E 24403336.58, FENO MONUMENT STAMPED #1, 1,364' EAST OF 160TH AVE AND 49' SOUTH OF 1A 2 CENTERLINE. SET 4 INCHES BELOW GROUND SURFACE, ELEV. 688.98



TYPICAL SECTION AT BRIDGE BERM
REVETMENT PROTECTION

TYPICAL SECTIONS AT DITCH OUTLET



SITE PLAN

BERM SLOPE LOCATION TABLE						
WEST ABUTMENT			EAST ABUTMENT			
STATION	OFFSET	ELEV	STATION	OFFSET	ELEV	
A1	390+49.98	24.58' LT	624.00	391+91.21	24.58' LT	624.00
A2	390+49.98	0	624.00	391+91.21	0	624.00
A3	390+49.98	24.58' RT	624.00	391+91.21	24.58' RT	624.00
A4	390+59.55	24.58' LT	623.90	391+28.55	24.58' LT	623.37
A5	390+59.55	0	623.90	391+28.55	0	623.37
A6	390+59.55	24.58' RT	623.90	391+28.55	24.58' RT	623.37
A7	390+79.05	24.58' LT	617.50	391+09.05	24.58' LT	617.50
A8	390+79.05	0	617.50	391+09.05	0	617.50
A9	390+79.05	24.58' RT	617.50	391+09.05	24.58' RT	617.50
B1	390+23.11	24.58' LT	634.75	392+18.11	24.58' LT	634.76
B2	390+23.11	0	634.75	392+18.11	0	634.76
B3	390+23.11	24.58' RT	634.75	392+18.11	24.58' RT	634.76
G1	390+10.13	40.16' LT	634.75	392+31.13	40.18' LT	634.76
G2	390+10.17	77.61' LT	626.77	392+31.13	78.64' LT	626.55
G3	390+10.17	67.61' LT	626.77	392+31.13	68.64' LT	626.55
G4	390+53.91	77.56' LT	624.00	392+19.03	86.22' LT	624.16
G5	390+53.91	67.56' LT	624.00	392+10.95	80.34' LT	624.16
G6	390+85.88	77.52' LT	623.00	392+07.62	101.89' LT	622.00
G7	390+85.88	67.52' LT	623.00	391+99.54	96.00' LT	622.00
G8	390+99.22	77.52' LT	619.00	392+04.09	106.74' LT	620.00
G9	390+93.60	67.52' LT	619.00	391+94.06	103.53' LT	620.00
G10	390+50.29	38.85' LT	624.00	391+99.58	60.01' LT	624.00
G11	390+58.98	40.53' LT	623.91	391+16.85	49.54' LT	619.50
G12	390+80.00	41.23' LT	617.00	391+50.49	78.24' LT	620.00
G13	390+10.13	40.16' RT	634.75	391+85.21	84.04' LT	622.00
G14	390+10.13	73.34' RT	624.84	391+45.23	43.94' LT	623.53
G15	390+10.13	83.34' RT	624.84	391+90.75	72.45' LT	623.85
G16	390+32.92	73.36' RT	624.21	392+31.13	40.18' RT	634.76
G17	390+32.92	83.36' RT	624.21	392+31.13	70.35' RT	626.27
G18	390+76.82	73.41' RT	623.00	392+31.13	80.35' RT	626.27
G19	390+76.82	83.41' RT	623.00	391+70.80	70.29' RT	624.00
G20	390+84.25	73.42' RT	619.00	391+80.80	80.29' RT	624.00
G21	390+85.05	83.42' RT	619.00	391+17.40	70.23' RT	622.00
G22	390+45.45	46.11' RT	624.00	391+17.40	80.23' RT	622.00
G23	390+50.84	49.40' RT	623.94	391+10.24	70.22' RT	620.00
G24	390+80.15	46.19' RT	620.04	391+14.13	80.22' RT	620.00
G25				391+44.95	50.83' RT	623.57
G26				391+10.88	52.98' RT	620.50
W1	390+10.13	24.58' LT	639.96	391+31.13	24.58' LT	639.98
W2	390+10.13	24.58' RT	639.96	391+31.13	24.58' RT	639.98

W - END WING / REVETMENT
BERM SLOPE TABLE ELEVATIONS REFLECT GRADING SURFACE

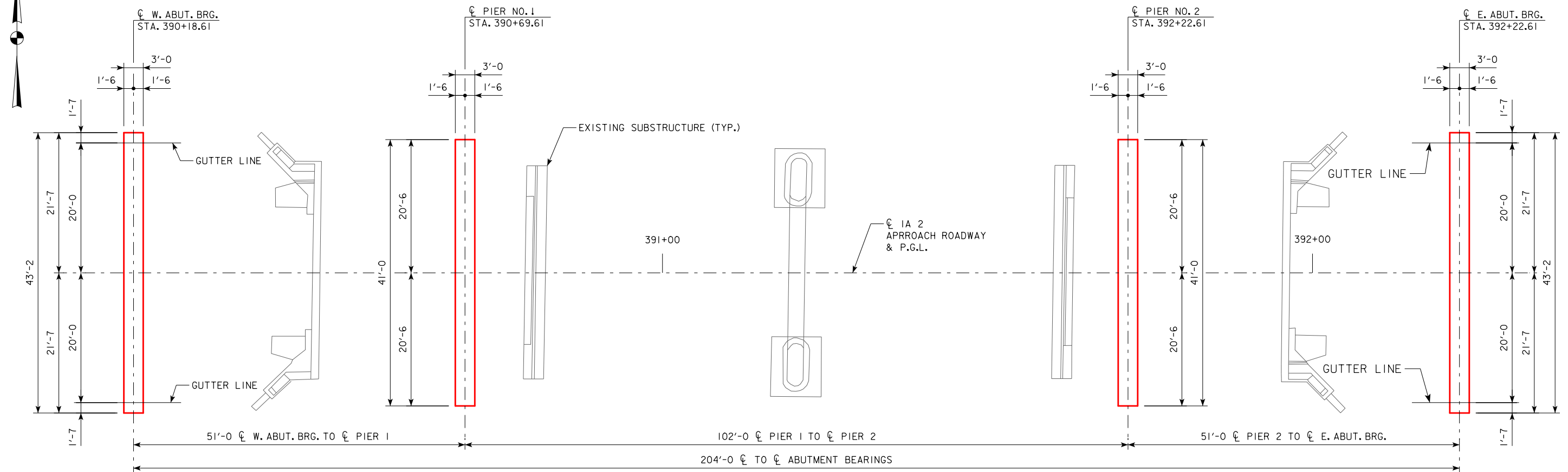
GRADING CONTROL:
WEST BERM: POINTS A7, A8, A9, G12 AND G24 ARE BERM GRADING CONTROL LINE
EAST BERM: POINTS A7, A8, A9, G11 AND G26 ARE BERM GRADING CONTROL LINE

ESTIMATED BERM ARMORING QUANTITIES			
LOCATION	REVETMENT CL. E (TON)	ENGINEERING FABRIC (SY)	EXCAVATION CL. 10, CHANNEL (CY)
BANK\BERM LINING - WEST ABUTMENT	1350	1440	823
BANK\BERM LINING - EAST ABUTMENT	1354	1450	829
WING ARMORING - WEST ABUTMENT	9	10	6
WING ARMORING - EAST ABUTMENT	9	10	6
DITCH OUTLETS - WEST ABUTMENT	74	97	45
DITCH OUTLETS - EAST ABUTMENT	63	85	39
TOTALS	2859	3092	1748

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.

DESIGN FOR 0° SKEW
**204'-0" X 40'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**
51'-0" END SPANS 102'-0" INTERIOR SPAN
SITE PLAN
STA. 391+20.61 (CL IA 2) NOVEMBER, 2020
LEE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 5 OF 30 FILE NO. 31795 DESIGN NO. 221

N



STAKING DIAGRAM

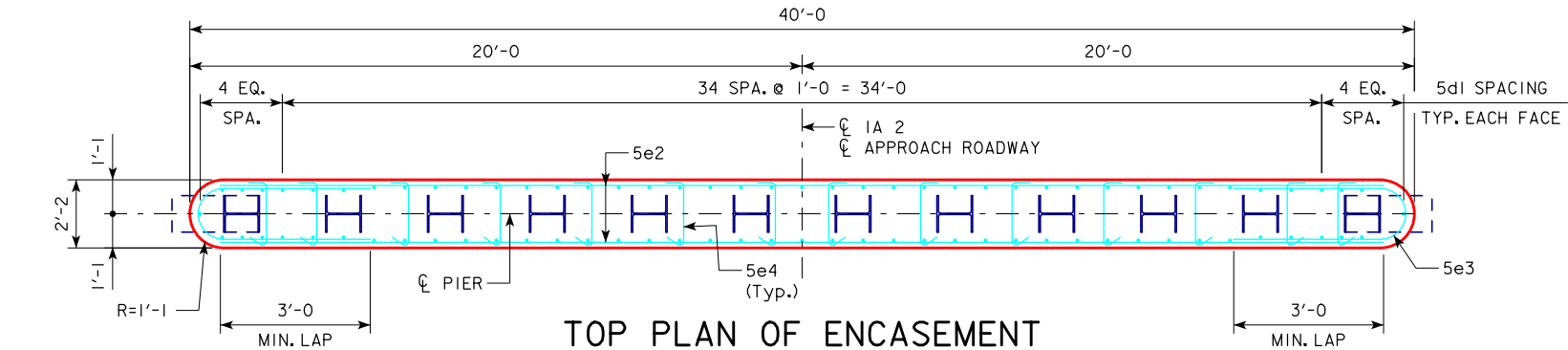
BRIDGE COORDINATES

LOCATION	CL W. ABUT. BRG.	CL PIER 1	CL PIER 2	CL E. ABUT. BRG.
NORTH EDGE OF DECK	E=24405110.351 N=6341939.453	E=24405161.351 N=6341939.214	E=24405263.350 N=6341938.734	E=24405314.349 N=6341938.494
CL APPROACH ROADWAY	E=24405110.250 N=6341917.871	E=24405161.249 N=6341917.631	E=24405263.248 N=6341917.151	E=24405314.248 N=6341916.912
SOUTH EDGE OF DECK	E=24405110.148 N=6341896.288	E=24405161.148 N=6341896.048	E=24405263.147 N=6341895.569	E=24405314.146 N=6341895.329

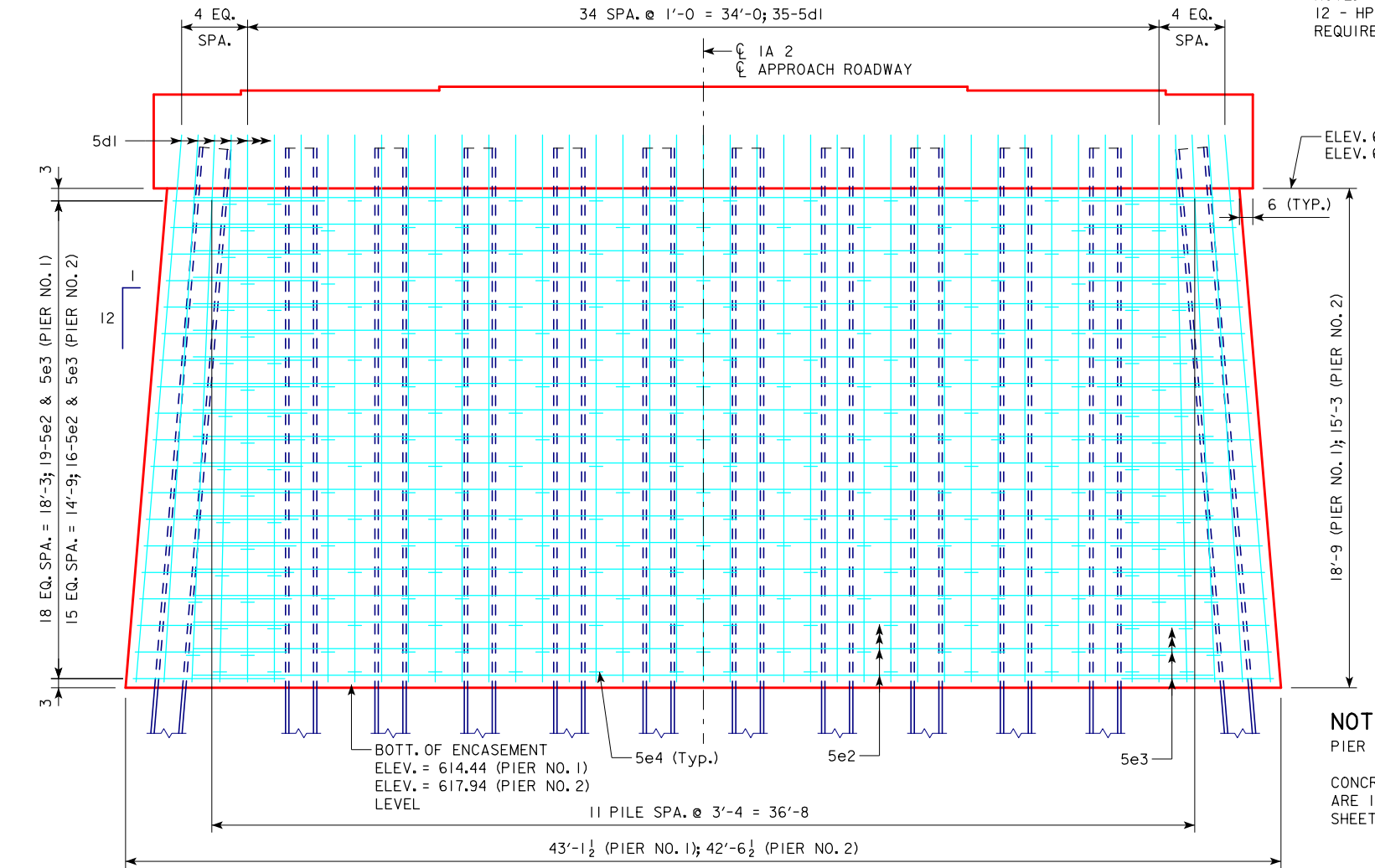
NOTE: AN ELECTRONIC FILE CONTAINING THE BRIDGE COORDINATE DATA IS AVAILABLE AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL VERIFY THESE COORDINATES WITH THE PROJECT HORIZONTAL CONTROL INFORMATION PROVIDED IN THE ROAD PLANS.

DESIGN FOR 0° SKEW
**204'-0" X 40'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**
51'-0" END SPANS 102'-0" INTERIOR SPAN
STAKING DIAGRAM
STA. 391+20.61 (CL IA 2) NOVEMBER, 2020
LEE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 6 OF 30 FILE NO. 31795 DESIGN NO. 221

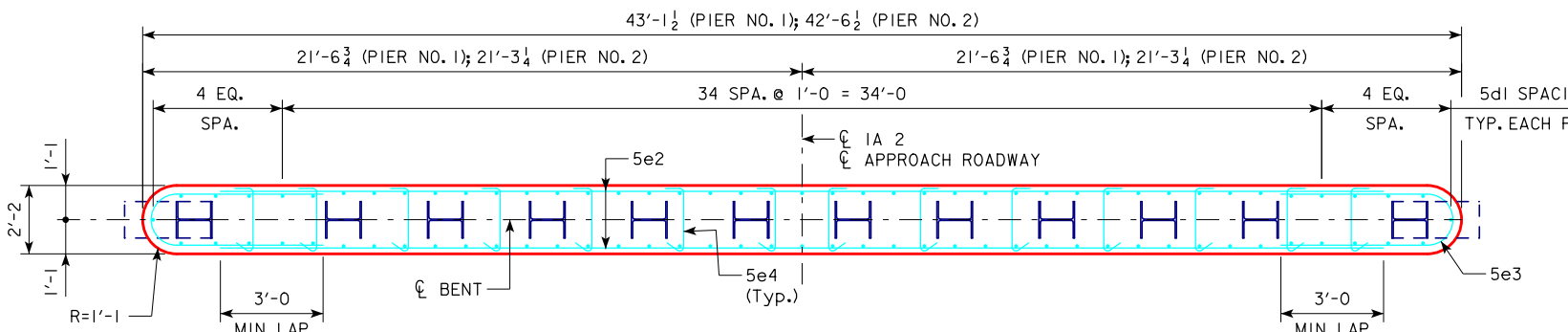
BENCHMARK: CP 101 N 6341876.68, E 24403336.58, FENO MONUMENT STAMPED #1, 1,364' EAST OF 160TH AVE AND 49' SOUTH OF IA 2 CENTERLINE. SET 4 INCHES BELOW GROUND SURFACE, ELEV. 688.98



TOP PLAN OF ENCASEMENT



TYPICAL ELEVATION OF ENCASEMENT



BOTTOM PLAN OF ENCASEMENT

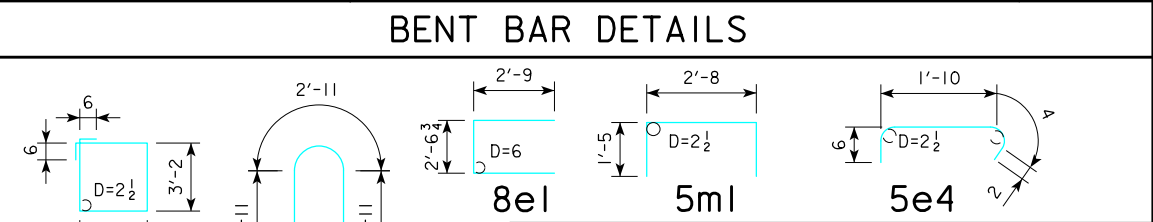
NOTE:
12 - HP 14 x 117 STEEL BEARING PILING
REQUIRED AT EACH PIER.

NOTES:
PIER NO. 1 SHOWN IN DETAILS; PIER NO. 2 SIMILAR.
CONCRETE AND REINFORCING STEEL QUANTITIES
ARE INCLUDED ON THE SUMMARY QUANTITIES
SHEET.

REINFORCING BAR LIST - PIER NO. 1					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
9a1	CAP, TOP, LONGIT.		6	40'-8	830
8a2	CAP, SIDE, LONGIT.		4	40'-8	434
9b1	CAP, BOTT., LONGIT.		4	40'-8	553
5c1	CAP HOOPS		46	12'-8	608
5d1	WALL VERTICAL		84	20'-8	1811
8e1	CAP END BARS		4	8'-1	86
5e2	WALL HORIZ.		38	37'-10	1499
5e3	WALL HORIZ. ENDS		38	12'-9	505
5e4	WALL TIES		258	2'-10	762
5m1	CAP, STEP, TRANSVERSE		8	5'-6	46
5n1	CAP, STEP, LONGIT.		8	2'-6	21
TOTAL (LBS.)					7155

REINFORCING BAR LIST - PIER NO. 2					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
9a1	CAP, TOP, LONGIT.		6	40'-8	830
8a2	CAP, SIDE, LONGIT.		4	40'-8	434
9b1	CAP, BOTT., LONGIT.		4	40'-8	553
5c1	CAP HOOPS		46	12'-8	608
5d1	WALL VERTICAL		84	17'-2	1504
8e1	CAP END BARS		4	8'-1	86
5e2	WALL HORIZ.		32	37'-10	1263
5e3	WALL HORIZ. ENDS		32	12'-9	426
5e4	WALL TIES		215	2'-10	635
5m1	CAP, STEP, TRANSVERSE		8	5'-6	46
5n1	CAP, STEP, LONGIT.		8	2'-6	21
TOTAL (LBS.)					6406

CONCRETE PLACEMENT SUMMARY	
CONCRETE	TOTAL
PIER NO. 1	78.5
PIER NO. 2	66.6
TOTAL (CU. YDS.)	145.1



DESIGN FOR 0° SKEW
204'-0" X 40'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE
51'-0" END SPANS 102'-0" INTERIOR SPAN
PIER ENCASEMENT DETAILS
STA. 391+20.61 (CL IA 2) NOVEMBER, 2020
LEE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 7 OF 30 FILE NO. 31795 DESIGN NO. 221

PIER NO. 1 PILE NOTES:

THE CONTRACT LENGTH OF 100 FEET FOR THE PIER NO. 1 PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 215 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.70 FOR ROCK END BEARING.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A MIXED SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF ENCASEMENT. DESIGN SCOUR (200-YEAR) WAS ASSUMED TO AFFECT THE UPPER 10 FEET OF EMBEDDED PILE LENGTH AND CAUSE 26 KIPS OF DRIVING RESISTANCE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER NO. 1 PILES IS 178 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

PIER NO. 2 PILE NOTES:

THE CONTRACT LENGTH OF 105 FEET FOR THE PIER NO. 2 PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 215 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.70 FOR ROCK END BEARING.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.76 FOR SOIL. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF ENCASEMENT. DESIGN SCOUR (200-YEAR) WAS ASSUMED TO AFFECT THE UPPER 17 FEET OF EMBEDDED PILE LENGTH AND CAUSE 32 KIPS OF DRIVING RESISTANCE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER NO. 2 PILES IS 157 TONS AT END OF DRIVE. IF RETAPS ARE NECESSARY TO ACHIEVE BEARING, THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE IS 181 TONS AT ONE-DAY OR LATER RETAPS. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

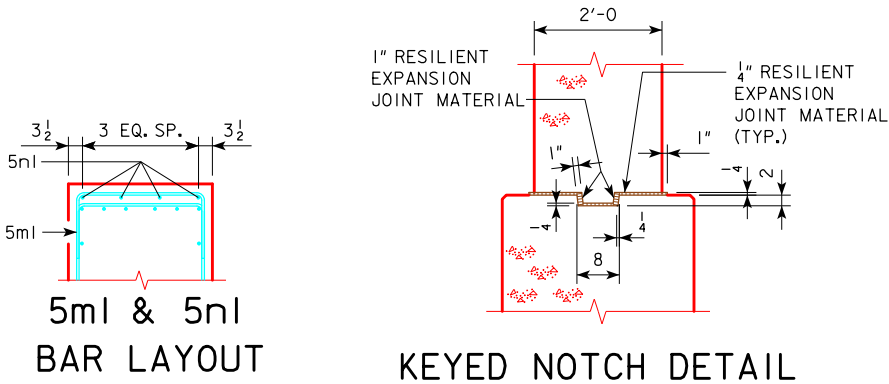
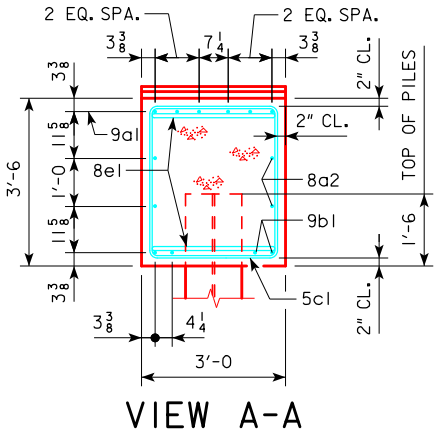
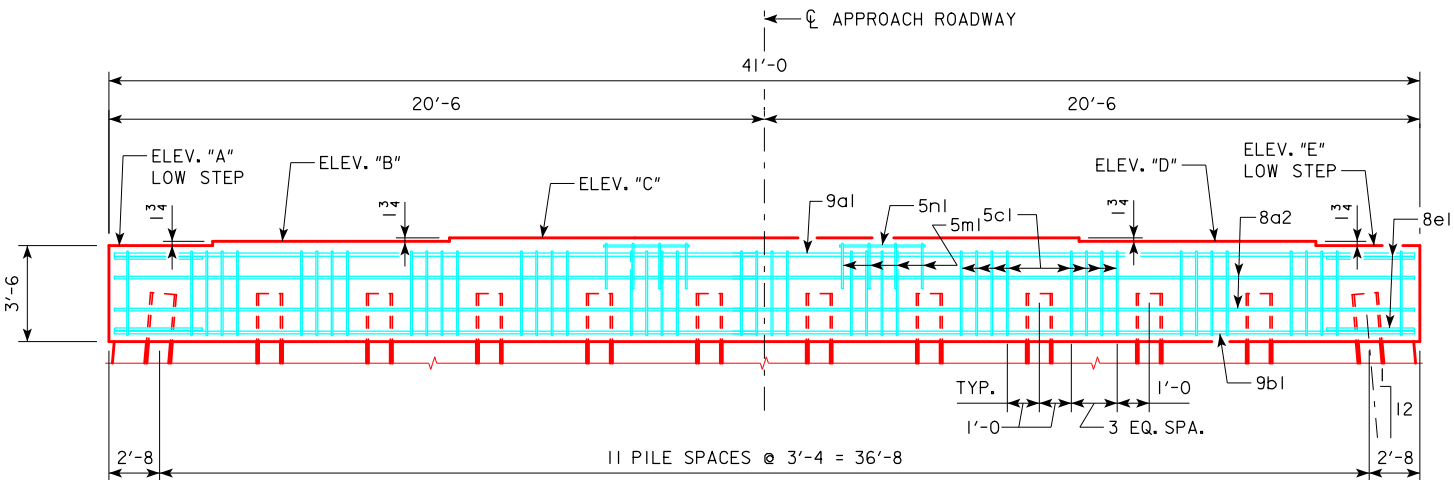
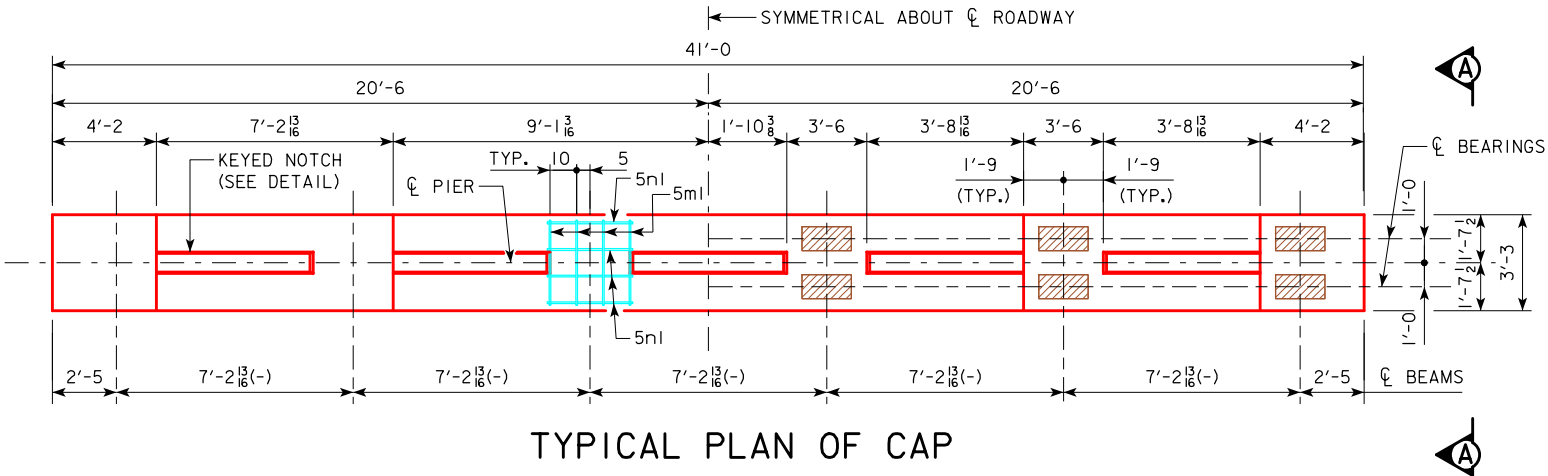


TABLE OF PIER ELEVATIONS		
POINT	PIER NO. 1	PIER NO. 2
ELEV. A	636.69	636.69
ELEV. B	636.84	636.84
ELEV. C	636.98	636.98
ELEV. D	636.84	636.84
ELEV. E	636.69	636.69
BOTT. CAP	633.19	633.19

DESIGN FOR 0° SKEW

204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

51'-0 END SPANS102'-0 INTERIOR SPAN

PIER CAP DETAILS

STA. 391+20.61 (CL 1A 2)NOVEMBER, 2020

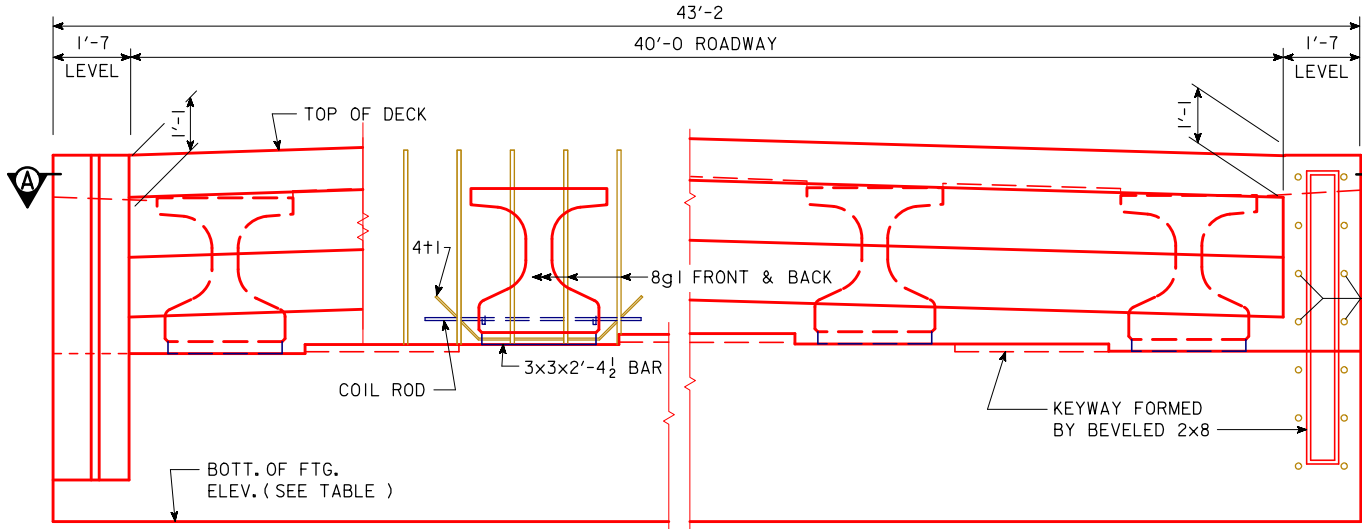
LEE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

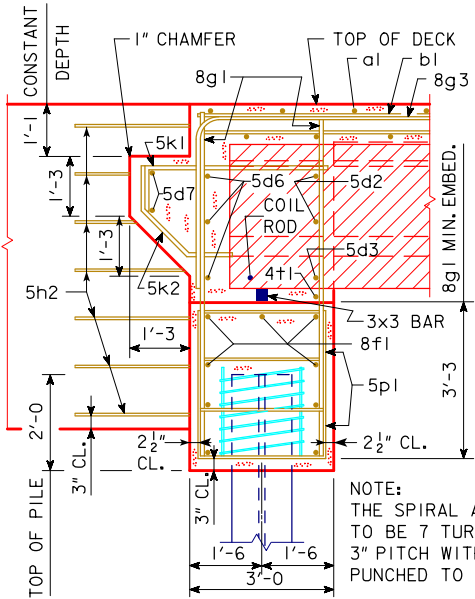
DESIGN SHEET NO. 8 OF 30FILE NO. 31795DESIGN NO. 221

CORRECTION 04-14 - ADDED CONCRETE QUANTITY TABLE & REFERRAL NOTE TO SUMMARY QUANTITY SHEET. REMOVED DESIGN BEARING NOTE FOR ABUT. PILING FROM ABUTMENT NOTES.
ENGLISHBTINTEGRALBRIDGES.DGN - 2078-BTB - THIS SHEET ISSUED 02-08.

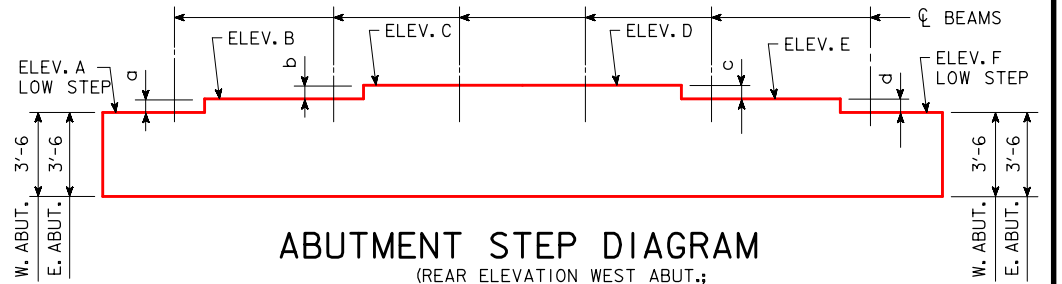
BENCHMARK: CP 101 N 6341876.68, E 24403336.58, FENO MONUMENT STAMPED #1, 1,364' EAST OF 160TH AVE AND 49' SOUTH OF IA 2 CENTERLINE. SET 4 INCHES BELOW GROUND SURFACE, ELEV. 688.98



PART REAR ELEVATION AT ABUTMENT



PART SECTION B-B

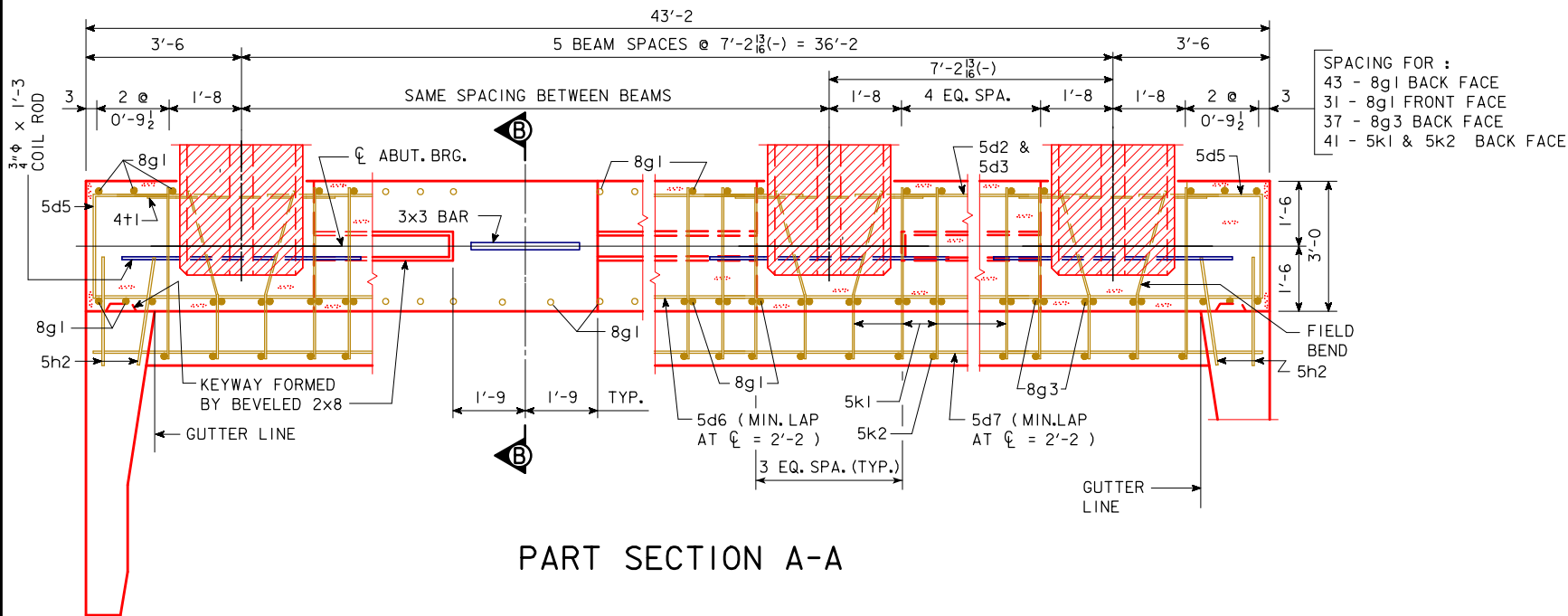


ABUTMENT STEP DIAGRAM

(REAR ELEVATION WEST ABUT.,
FRONT ELEVATION EAST ABUT.)

TABLE OF ABUTMENT ELEVATIONS		
POINT	WEST ABUT.	EAST ABUT.
ELEV. A	636.37	636.39
ELEV. B	636.52	636.53
ELEV. C	636.66	636.68
ELEV. D	636.66	636.68
ELEV. E	636.52	636.53
ELEV. F	636.37	636.39
BOTT. FTG. ELEV.	632.87	632.89

TABLE OF ABUTMENT STEPS		
STEP	WEST ABUT.	EAST ABUT.
a	1 3/4	1 3/4
b	1 3/4	1 3/4
c	1 3/4	1 3/4
d	1 3/4	1 3/4

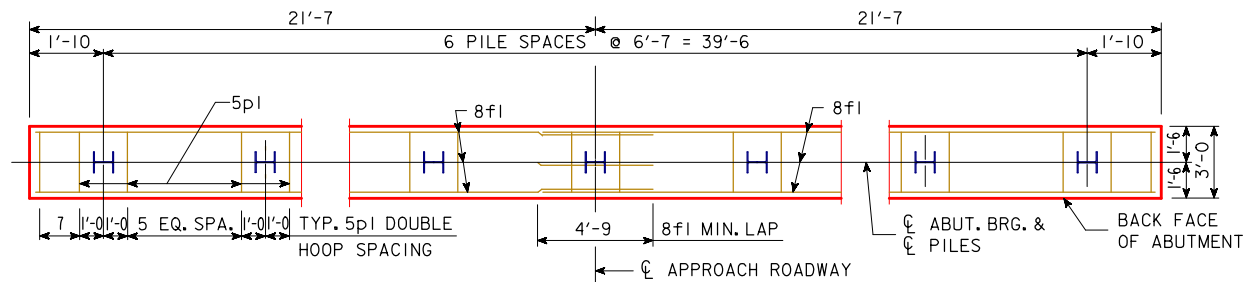


PART SECTION A-A

NOTE: PLACE 5h2 BAR AT
1:6 SLOPE TO MATCH
TRAFFIC SIDE OF ABUTMENT
WING FACE (BOTH SIDES
TYPICAL).

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.



ABUTMENT PILE PLAN

ABUTMENT CONCRETE QUANTITY

LOCATION	QUANTITY
WEST ABUTMENT FOOTING	17.5
EAST ABUTMENT FOOTING	17.5
TOTAL (CU. YDS.)	35.0

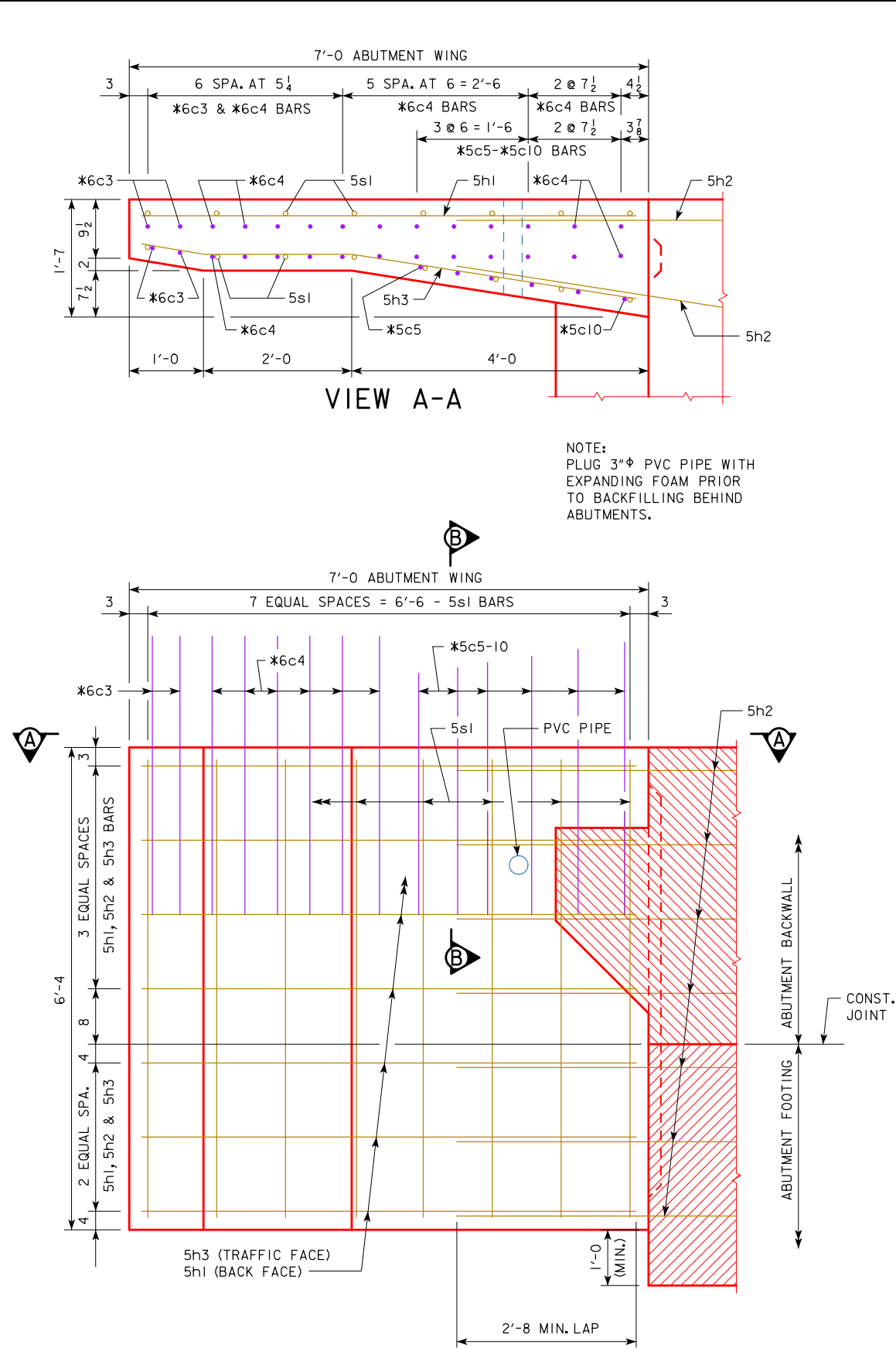
NOTE: CONCRETE QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

NOTE:
7 - HP 10 x 57 STEEL BEARING PILING
REQUIRED AT EACH ABUTMENT.

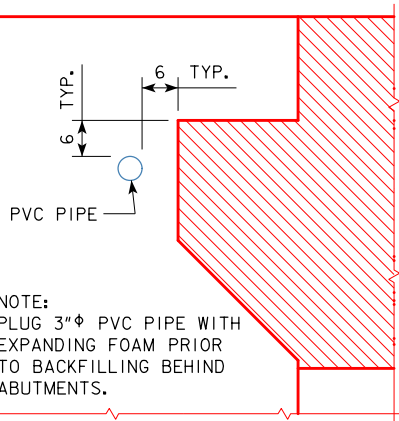
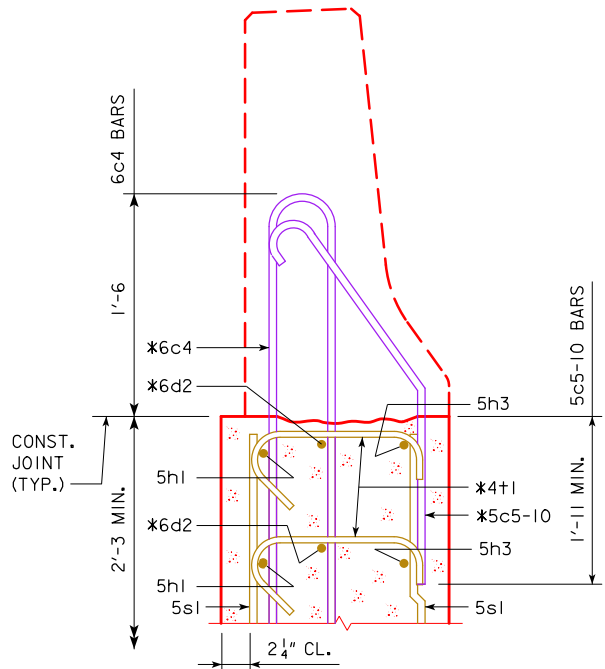
NOTE: BARRIER RAIL NOT SHOWN IN DETAILS.

DESIGN FOR 0° SKEW
**204'-0" X 40'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**
51'-0" END SPANS 102'-0" INTERIOR SPAN
ABUTMENT FOOTING DETAILS
STA. 391+20.61 (CL IA 2) NOVEMBER, 2020
LEE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 9 OF 30 FILE NO. 31795 DESIGN NO. 221

CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET.
ENGLISHMISCELLANEOUSBRIDGES.DGN - 2111 - THIS SHEET ISSUED 02-08.



ABUTMENT WING - ELEVATION VIEW

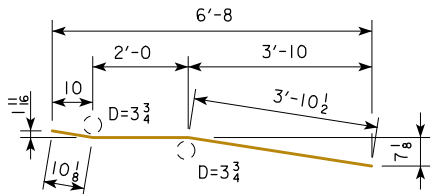


PVC PIPE LOCATION

REINFORCING BAR LIST - ONE ABUT. WING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5h1	HORIZONTAL BACK FACE		7	6'-8	49
5h3	HORIZONTAL TRAFFIC FACE		7	6'-9	49
5sl	VERTICAL BOTH FACES		16	6'-0	100

REINFORCING STEEL EPOXY COATED - TOTAL (LBS.) 198



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

BENT BAR DETAILS

CONCRETE PLACEMENT SUMMARY

CONCRETE	TOTAL
ONE ABUTMENT WING	1.9
TOTAL (CU. YDS.)	1.9

NOTE:

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

DESIGN FOR 0° SKEW

204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

51'-0 END SPANS 102'-0 INTERIOR SPAN

ABUTMENT WING DETAILS

STA. 391+20.61 (C 1A 2) NOVEMBER, 2020

LEE COUNTY

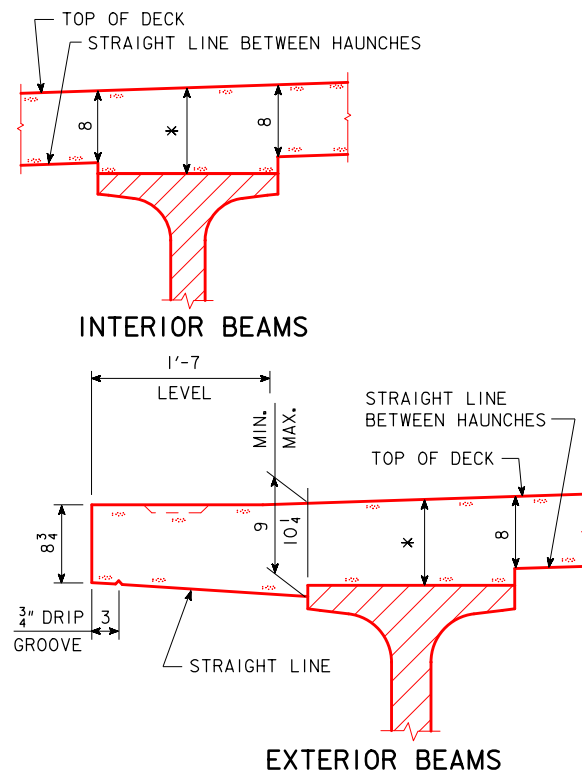
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 10 OF 30 FILE NO. 31795 DESIGN NO. 221

[illegible]

HALF SECTION NEAR PIER

DECK AREA = 29.22 SQ. FT.
DECK AREA DOES NOT
INCLUDE THE HAUNCH.



NOTE :
DRAINS ARE TO BE GALVANIZED. 4 DRAINS REQUIRED.
SEE "SUBDRAIN DETAILS" FOR LOCATION.
WEIGHT IS BASED ON ROLLED TUBE.

DATA FOR ONE DRAIN	
BEAM SIZE	BTB
DRAIN WEIGHT (LBS.)	92
DRAIN LENGTH (FT.)	4'-8 ³ / ₄

NOTE: FOR DETAILS OF INTERMEDIATE DIAPHRAGMS SEE DESIGN SHEETS 22 & 23.

SUPERSTRUCTURE NOTES:

THE BRIDGE DECK AS SHOWN INCLUDES 1/2" INTEGRAL WEARING SURFACE.

THE PIER AND ABUTMENT DIAPHRAGM CONCRETE IS TO BE PLACED MONOLITHICALLY WITH THE BRIDGE DECK.

COST OF ALL RESILIENT EXPANSION JOINT FILLER MATERIAL IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)".

ALL BEAMS ARE TO BE SET VERTICAL.

FORMS FOR THE DECK AND BARRIER RAIL ARE TO BE SUPPORTED BY THE PRESTRESSED CONCRETE BEAMS.

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

ALL DECK AND DIAPHRAGM REINFORCING IS TO BE WIRED IN PLACE AND ADEQUATELY SUPPORTED BEFORE CONCRETE IS PLACED.

TOP TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 2 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 REQUIREMENTS SHALL APPLY FOR BAR CHAIRS, BAR HIGH CHAIRS, AND DECK BOLSTERS.

COST OF BEARING MATERIAL IS TO BE INCLUDED IN THE PRICE BID FOR "PRETENSIONED PRESTRESSED CONCRETE BEAMS".

TRANSVERSE DECK REINFORCING MAY BE SPLICED WITH ONE LAP LOCATED AS FOLLOWS:

TOP BAR - LAP MIDWAY BETWEEN BEAMS (MIN. LAP = 1'-10").

BOTTOM BARS - LAP OVER BEAMS (MIN. LAP = 1'-10").

PAYMENT FOR REINFORCING BARS SHALL BE BASED ON NO SPLICES, AND NO ALLOWANCE SHALL BE MADE FOR THE ADDITIONAL LENGTH OF BAR REQUIRED FOR THE USE OF SPLICES.

DESIGN FOR 0° SKEW
204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE
51'-0 END SPANS 102'-0 INTERIOR SPAN
BRIDGE DECK CROSS SECTION
STA. 391+20.61 (C IA 2) NOVEMBER, 2020
LEE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 11 OF 30 FILE NO. 31795 DESIGN NO. 221



TABLE OF WING ELEVATIONS			
LOCATION	DIM "C"	ELEV. A	ELEV. B
S.W. CORNER	1'-0 $\frac{1}{2}$	640.30	640.25
N.W. CORNER	1'-0 $\frac{1}{2}$	640.30	640.25
S.E. CORNER	1'-0 $\frac{1}{2}$	640.31	640.26
N.E. CORNER	1'-0 $\frac{1}{2}$	640.31	640.26



FIXED PIER NEOPRENE PAD



DESIGN FOR 0° SKEW

204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

51'-0 END SPANS 102'-0 INTERIOR SPAN

ABUT. & PIER DIAPHRAGM DETAILS

STA. 391+20.61 (C 1A 2) NOVEMBER, 2020

LEE COUNTY

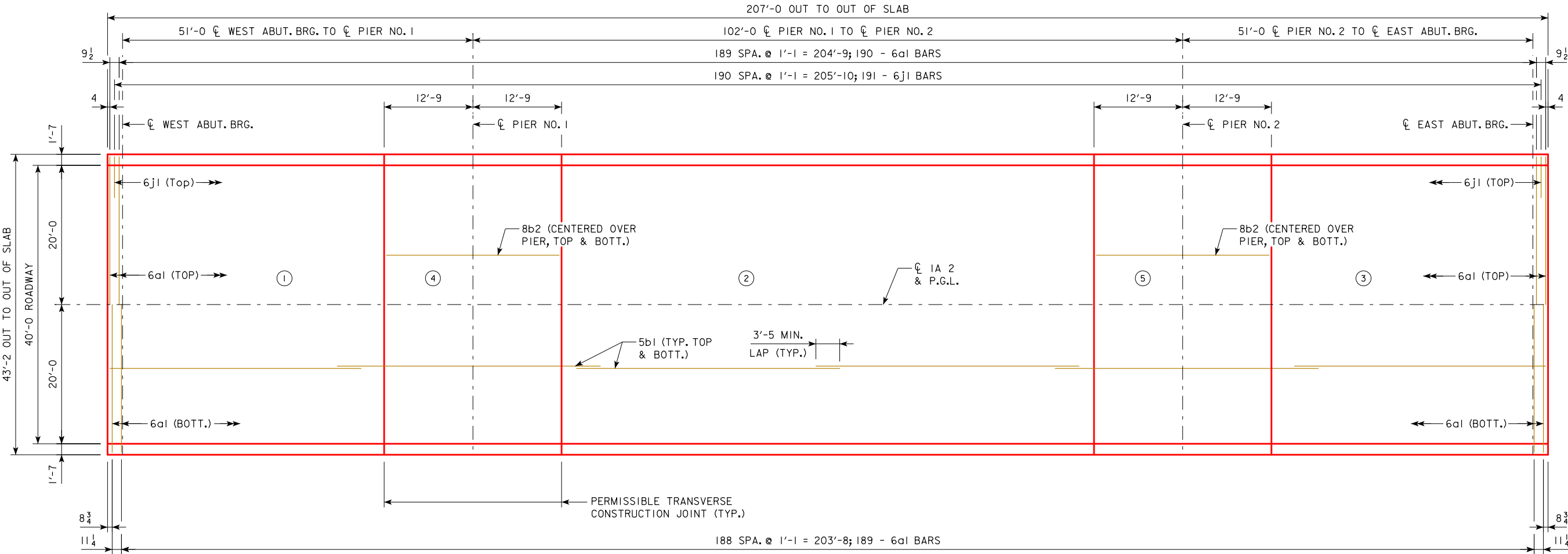
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 12 OF 30 FILE NO. 31795 DESIGN NO. 221

CONCRETE PLACEMENT DIAGRAM

NOTE: CONCRETE DECK SHALL BE PLACED IN SECTIONS AND SEQUENCES INDICATED. (AN APPROVED ALTERNATE PROCEDURE IS TO PLACE THE CONCRETE DECK IN ONE CONTINUOUS POUR BEGINNING AT ONE END OF THE BRIDGE.) 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.

DECK CONCRETE SECTIONS SHALL CURE FOR A MINIMUM OF 48 HOURS AND SHALL ACHIEVE A MINIMUM STRENGTH OF 75% OF THE 28 DAY DECK CONCRETE STRENGTH PRIOR TO REMOVING DECK HEADERS AND BEGINNING AN ADJACENT POUR.



REINFORCING LAYOUT

DESIGN FOR 0° SKEW

**204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**

51'-0 END SPANS 102'-0 INTERIOR SPAN

SUPERSTRUCTURE DETAILS

STA. 391+20.61 (CL 1A 2) NOVEMBER, 2020

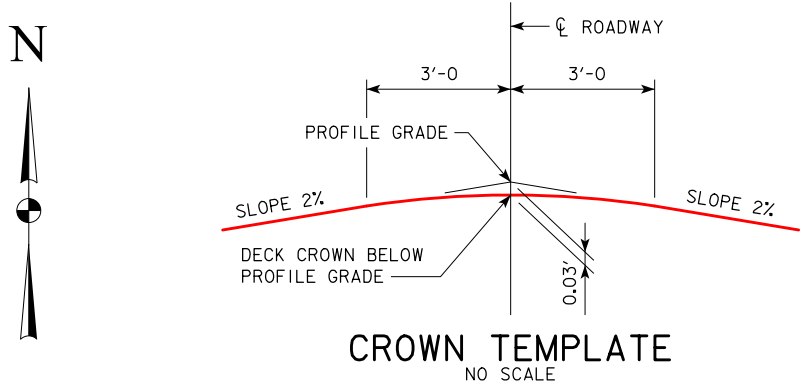
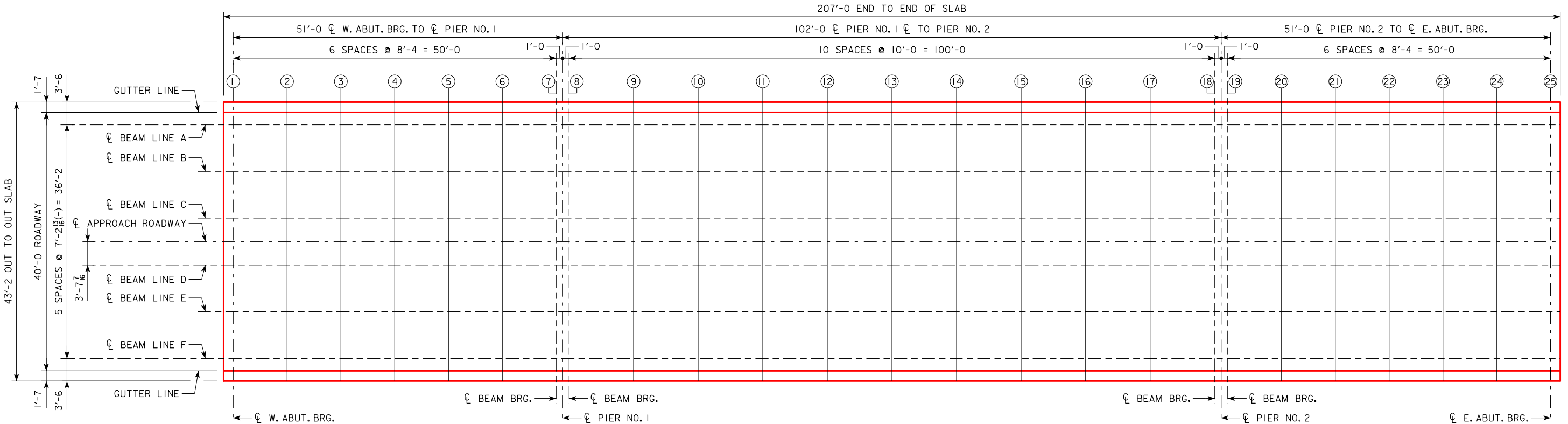
LEE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 13 OF 30 FILE NO. 31795 DESIGN NO. 221

BENCHMARK: CP 101 N 6341876.68, E 24403336.58, FENO MONUMENT STAMPED #1, 1,364' EAST OF 160TH AVE AND 49' SOUTH OF IA 2 CENTERLINE. SET 4 INCHES BELOW GROUND SURFACE, ELEV. 688.98

TOP OF SLAB ELEVATIONS																									
BEAM LINE	℄ W. ABUT. BEARING						℄ PIER NO. 1 BEARINGS											℄ PIER NO. 2 BEARINGS							℄ E. ABUT. BEARING
	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	LINE 20	LINE 21	LINE 22	LINE 23	LINE 24	LINE 25
NORTH GUTTER LINE	640.31	640.36	640.41	640.45	640.49	640.52	640.55	640.56	640.59	640.61	640.63	640.64	640.64	640.64	640.63	640.62	640.59	640.57	640.56	640.53	640.50	640.46	640.42	640.37	640.32
GIRDER A	640.34	640.40	640.44	640.49	640.53	640.56	640.59	640.60	640.63	640.65	640.67	640.68	640.68	640.68	640.67	640.65	640.63	640.61	640.60	640.57	640.54	640.50	640.46	640.41	640.36
GIRDER B	640.49	640.54	640.59	640.63	640.67	640.71	640.74	640.74	640.77	640.80	640.81	640.82	640.83	640.82	640.81	640.80	640.78	640.75	640.74	640.71	640.68	640.64	640.60	640.55	640.50
GIRDER C	640.63	640.69	640.73	640.78	640.82	640.85	640.88	640.89	640.92	640.94	640.96	640.97	640.97	640.97	640.96	640.94	640.92	640.89	640.89	640.86	640.83	640.79	640.74	640.70	640.65
℄ APPROACH RDWY. & P.G.L.	640.68	640.73	640.78	640.82	640.86	640.89	640.92	640.93	640.96	640.98	641.00	641.01	641.01	641.01	641.00	640.99	640.96	640.94	640.93	640.90	640.87	640.83	640.79	640.74	640.69
GIRDER D	640.63	640.69	640.73	640.78	640.82	640.85	640.88	640.89	640.92	640.94	640.96	640.97	640.97	640.97	640.96	640.94	640.92	640.89	640.89	640.86	640.83	640.79	640.74	640.70	640.65
GIRDER E	640.49	640.54	640.59	640.63	640.67	640.71	640.74	640.74	640.77	640.80	640.81	640.82	640.83	640.82	640.81	640.80	640.78	640.75	640.74	640.71	640.68	640.64	640.60	640.55	640.50
GIRDER F	640.34	640.40	640.44	640.49	640.53	640.56	640.59	640.60	640.63	640.65	640.67	640.68	640.68	640.68	640.67	640.65	640.63	640.61	640.60	640.57	640.54	640.50	640.46	640.41	640.36
SOUTH GUTTER LINE	640.31	640.36	640.41	640.45	640.49	640.52	640.55	640.56	640.59	640.61	640.63	640.64	640.64	640.64	640.63	640.62	640.59	640.57	640.56	640.53	640.50	640.46	640.42	640.37	640.32



DESIGN FOR 0° SKEW

204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

51'-0 END SPANS102'-0 INTERIOR SPAN

TOP OF SLAB ELEVATIONS

STA. 391+20.61 (℄ IA 2)

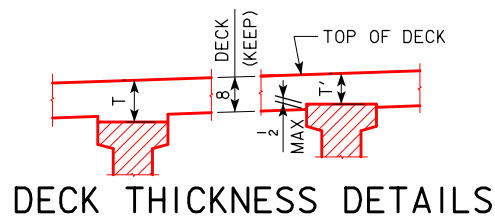
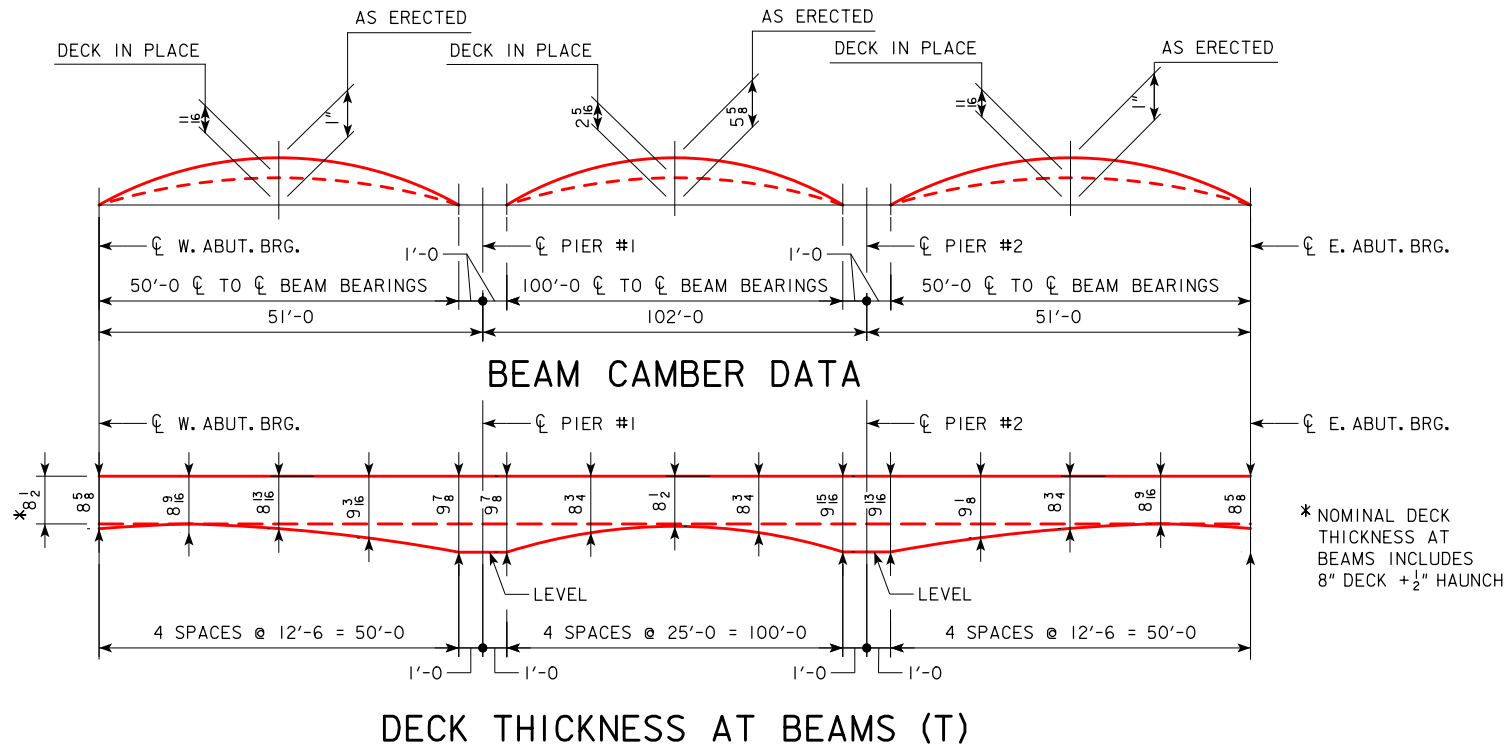
NOVEMBER, 2020

LEE COUNTY

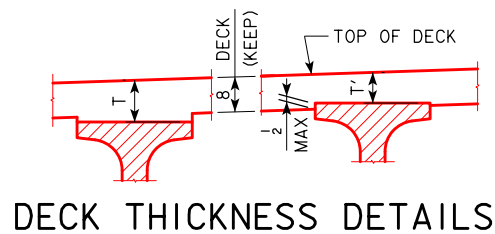
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 15 OF 30FILE NO. 31795DESIGN NO. 221

REVISED 06-2017 - REMOVED CENTER 6b BAR FROM UNDER "#4 BAR IN BEAM" IN "SECTION THRU SLAB HAUNCH" DETAIL. (WAS THREE 6b BARS NOW TWO).
REVISED 07-2019: CHANGED ALL REFERENCES OF "SLAB" TO "DECK".
ENGLISHMISCELLANEOUSBRIDGES.DGN - 1065 - THIS SHEET ISSUED 02-08.



NOTE: THE DECK THICKNESS (T) AT BEAMS IS BASED ON THE ANTICIPATED BEAM CAMBER AND DEFLECTIONS. THESE VALUES ARE USED BY THE DESIGNER TO SET BEAM ELEVATIONS AND ESTIMATE CONCRETE QUANTITIES. REFER TO THE HAUNCH DATA DETAILS SHEET FOR ADDITIONAL INFORMATION TO AID THE CONTRACTOR IN SETTING THE FIELD HAUNCHES REQUIRED FOR CONSTRUCTION.



DESIGN FOR 0° SKEW
204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE
51'-0 END SPANS 102'-0 INTERIOR SPAN
DECK THICKNESS DETAILS
STA. 391+20.61 (CL 1A 2) NOVEMBER, 2020
LEE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 16 OF 30 FILE NO. 31795 DESIGN NO. 221

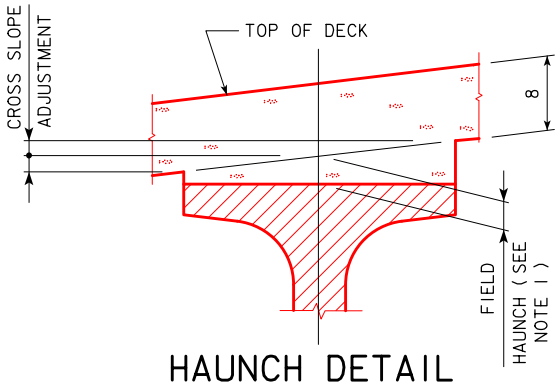
REVISED 06-12 - THE ALLOWABLE FIELD HAUNCH MAX. & MIN. WAS CHANGED TO INCHES & DECIMALS OF FEET. NOTE & NOTE 1 WERE CHANGED. THE SLAB HAUNCH LOCATIONS EXAMPLE WAS REPLACED WITH A NOTE.
REVISED 07-2019: CHANGED ALL REFERENCES OF "SLAB" TO "DECK".
ENGLISH\MISCELLANEOUS\BRIDGES.DGN - 1066 - THIS SHEET ISSUED 02-08.

BENCHMARK: CP 101 N 6341876.68, E 24403336.58, FENO MONUMENT STAMPED #1, 1,364' EAST OF 160TH AVE AND 49' SOUTH OF 1A 2 CENTERLINE. SET 4 INCHES BELOW GROUND SURFACE, ELEV. 688.98

TABLE OF BEAM LINE SLAB HAUNCH ELEVATIONS																										
BEAM LINE	℄ W. ABUT. BEARING						℄ PIER NO. 1 BEARINGS											℄ PIER NO. 2 BEARINGS								℄ E. ABUT. BEARING
	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	LINE 20	LINE 21	LINE 22	LINE 23	LINE 24	LINE 25	
A	639.68	639.74	639.80	639.84	639.88	639.91	639.93	639.93	640.05	640.15	640.22	640.27	640.29	640.27	640.23	640.15	640.05	639.94	639.93	639.92	639.89	639.86	639.81	639.75	639.69	
B	639.82	639.89	639.94	639.99	640.03	640.05	640.07	640.08	640.19	640.29	640.37	640.42	640.43	640.42	640.37	640.30	640.20	640.08	640.08	640.06	640.04	640.00	639.95	639.90	639.84	
C	639.97	640.03	640.09	640.13	640.17	640.20	640.21	640.22	640.34	640.44	640.51	640.56	640.58	640.56	640.52	640.44	640.34	640.23	640.22	640.20	640.18	640.14	640.10	640.04	639.98	
D	639.97	640.03	640.09	640.13	640.17	640.20	640.21	640.22	640.34	640.44	640.51	640.56	640.58	640.56	640.52	640.44	640.34	640.23	640.22	640.20	640.18	640.14	640.10	640.04	639.98	
E	639.82	639.89	639.94	639.99	640.03	640.05	640.07	640.08	640.19	640.29	640.37	640.42	640.43	640.42	640.37	640.30	640.20	640.08	640.08	640.06	640.04	640.00	639.95	639.90	639.84	
F	639.68	639.74	639.80	639.84	639.88	639.91	639.93	639.93	640.05	640.15	640.22	640.27	640.29	640.27	640.23	640.15	640.05	639.94	639.93	639.92	639.89	639.86	639.81	639.75	639.69	

MISCELLANEOUS DATA TABLE																												
	BEAM LINE		℄ W. ABUT. BEARING							℄ PIER NO. 1 BEARINGS											℄ PIER NO. 2 BEARINGS							℄ E. ABUT. BEARING
			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	LINE 20	LINE 21	LINE 22	LINE 23	LINE 24	LINE 25	
ANTICIPATED DEFLECTION DUE TO DECK (IN.)	ALL		0	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{1}{4}$	$\frac{1}{8}$	0	0	$1\frac{1}{16}$	$1\frac{15}{16}$	$2\frac{1}{16}$	$3\frac{1}{8}$	$3\frac{5}{16}$	$3\frac{1}{8}$	$2\frac{1}{16}$	$1\frac{15}{16}$	$1\frac{1}{16}$	0	0	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{1}{4}$	$\frac{1}{8}$	0	
CROSS SLOPE ADJUSTMENTS (IN.)	A, B, C, D, E & F		$\frac{5}{16}$																									
ALLOWABLE FIELD HAUNCH (IN. & FT.)	MAX.	ALL	$2\frac{1}{2}$ (0.208)																									
	MIN.	ALL	$-\frac{3}{16}$ (-0.0138)																									

NOTE:
HAUNCH LOCATIONS ARE AT THE SAME LOCATION AS THE ENCIRCLED LETTERS AND NUMBERS SHOWN ON DECK ELEVATIONS SHEET.



NOTE:
BRIDGE SEAT ELEVATIONS ARE SET BASED ON THEORETICAL CAMBER AND BEAM DEFLECTIONS. THESE BRIDGE SEATS WILL PROVIDE A THEORETICAL BEAM HAUNCH WITHIN DESIGN PARAMETERS. FIELD HAUNCHES ARE DETERMINED USING SURVEYED TOP OF BEAM ELEVATIONS AND "BEAM LINE HAUNCH ELEVATION" DATA. ALLOWABLE MAXIMUM AND MINIMUM "FIELD HAUNCH" VALUES ARE GIVEN IN INCHES AND DECIMALS OF FEET 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.

NOTE 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 "BEAM LINE HAUNCH ELEVATION". THIS VALUE WILL BE THE HAUNCH NEEDED (SEE "FIELD HAUNCH" IN HAUNCH DETAIL). THE "BEAM 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.

DESIGN FOR 0° SKEW

204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

51'-0 END SPANS102'-0 INTERIOR SPAN

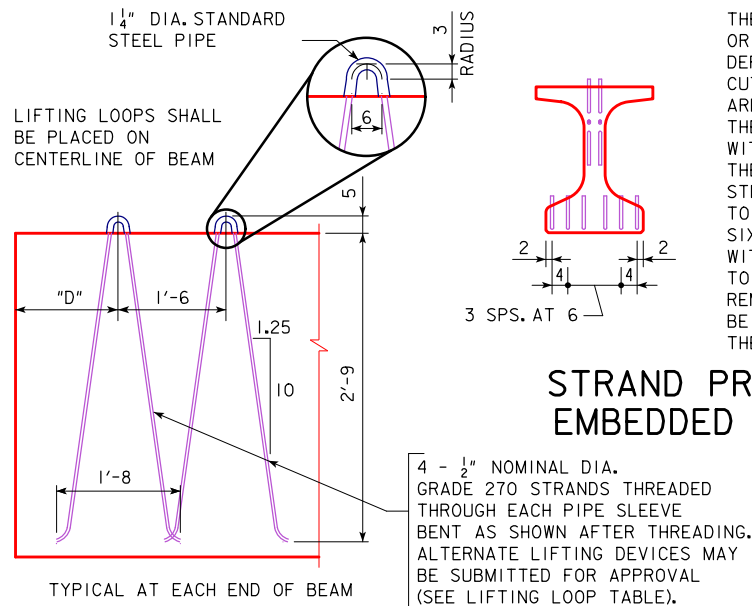
DECK HAUNCH DATA DETAILS

STA. 391+20.61 (℄ 1A 2)NOVEMBER, 2020

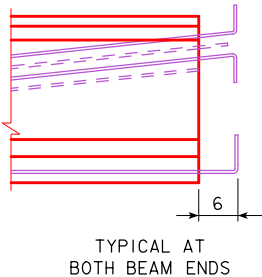
LEE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 17 OF 30FILE NO. 31795DESIGN NO. 221



THE TOP AND BOTTOM FOR 2 ROWS OR THE TOP AND 3rd ROWS OF DEFLECTED STRANDS ARE TO BE CUT WITH 1'-6 PROJECTIONS WHICH ARE TO BE SHOP BENT AS SHOWN. THE SECOND ROW IS TO BE CUT WITH A 5" PROJECTION AND THE REMAINING TOP DEFLECTED STRANDS IN ROWS 4 AND BELOW ARE TO BE CUT FLUSH WITH BEAM FACE. SIX BOTTOM STRANDS ARE TO BE CUT WITH 1'-6 PROJECTIONS WHICH ARE TO BE SHOP BENT AS SHOWN. THE REMAINING BOTTOM STRANDS ARE TO BE CUT OFF REASONABLY FLUSH WITH THE CONCRETE.



STRAND PROJECTION AT BEAM ENDS WHEN EMBEDDED IN CONCRETE END DIAPHRAGMS

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE TO BE
IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN
SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2007.
REINFORCING STEEL IN ACCORDANCE WITH SECTION 5, GRADE 60.
CONCRETE IN ACCORDANCE WITH SECTION 5.
PRESTRESSING STEEL IN ACCORDANCE WITH SECTION 5, GRADE 270.

SPECIFICATIONS:

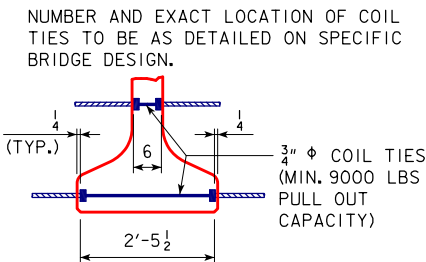
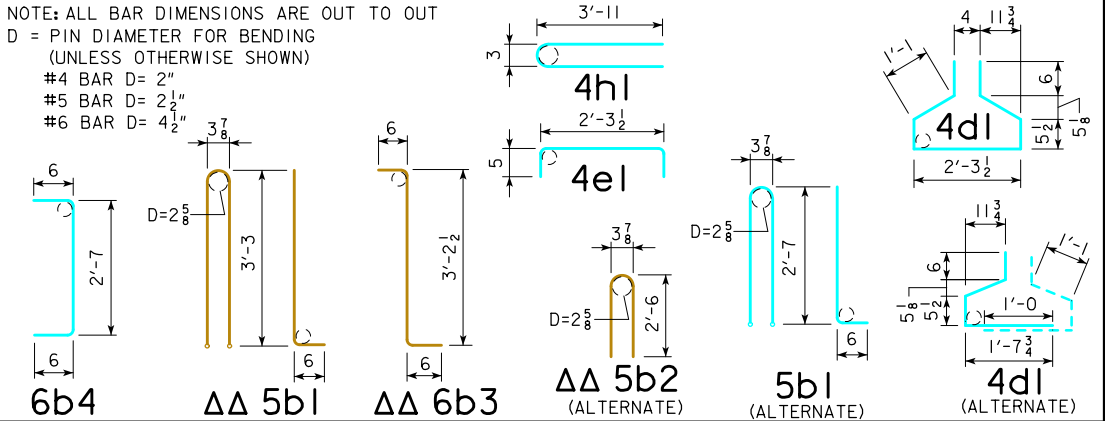
CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA
DEPARTMENT OF TRANSPORTATION, CURRENT SERIES, WITH
CURRENT APPLICABLE SPECIAL PROVISIONS AND SUPPLE-
MENTAL SPECIFICATIONS.
DESIGN: A.A.S.H.T.O. LRFD, SERIES OF 2007, WITH MINOR MODIFICATIONS.

ALTERNATE BAR NOTES:

ALTERNATE BARS SHOWN IN BENT BAR DETAILS MAY BE USED IN LIEU OF REINFORCING BARS SHOWN IN BAR LIST. NO ADDITIONAL PAYMENT SHALL BE MADE FOR USE OF ALTERNATE BARS.










BENT BAR DETAILS

NOTE: ALL BAR DIMENSIONS ARE OUT TO OUT
D = PIN DIAMETER FOR BENDING
(UNLESS OTHERWISE SHOWN)



COIL TIE DETAIL

ΔΔ 5b1 AND 6b3 BARS TO BE EPOXY COATED
* 6b3 AND 6b4 BARS TO BE USED IN PAIRS

REINFORCING BAR LIST			
BEAM		BTB50	
BAR	SHAPE	NO.	LENGTH
5a1		12	26'-8"
5a2		—	—
5b1		35	7'-8"
6b3		36	4'-3"
6b4		4	3'-7"
4c1		67	2'-7"
4d1		55	6'-5"
4e1		24	3'-2"
4h1		4	8'-0"

BTB BEAM DATA																	
BTB BEAM	SPAN LENGTH ℓ _c -ℓ _b BEARING	OVERALL BEAM LENGTH (L)	CONCRETE STRENGTH		STRAND SIZE DIA. (in)	NO. OF STRAND		TOTAL INITIAL PRESTRESS kips ③	HOLD DOWN FORCE-kips	CAMBER (in)		DEFLECTION (in) Δ _D		PERMISSIBLE MAXIMUM SPACING	WEIGHT (TONS)	CONCRETE (CU YD.)	REINFORCING STEEL (WEIGHT-LBS)
			f'ci (ksi)	f'c (ksi)		STRAIGHT	DEFLECTED			AT RELEASE	AFTER LOSSES	IMMEDIATE ① (ELASTIC) Δ _i	TIME ② (PLASTIC) Δ _T				
HL-93 LOADING																	
STEEL DIAPHRAGM																	
BTB50	50'-0	51'-4	4.5	5.0	0.60	14	—	596	—	0.55	0.98	0.31	0.08	9'-3	16.9	8.3	1288

BEAM NOTES:

THESE BEAMS ARE DESIGNED FOR AASHTO LIVE LOADS AS INDICATED IN ABOVE TABLE WITH AN ALLOWANCE OF 20 LBS PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.

ALL PPC BEAMS SHALL USE HIGH PERFORMANCE CONCRETE (HPC) IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

HOLD DOWN POINTS FOR DEFLECTED STRANDS MAY BE
MOVED TOWARD ENDS OF BEAM A DISTANCE OF 0.05 L MAXIMUM
AT PRODUCER'S OPTION.

ALL PRESTRESSING STRANDS EXCEPT LIFTING LOOP STRANDS SHALL BE 0.60 in. NOMINAL DIAMETER (NOMINAL STEEL AREA = 0.217 in²) AND CONFORM TO ASTM A416 GRADE 270 LOW RELAXATION STRANDS. MINIMUM STRAND BREAKING STRENGTH SHALL BE 58.6 kips.

TOPS OF BEAMS ARE TO BE STRUCK OFF LEVEL AND FINISHED AS PER MATERIALS IM570.

BEARINGS SHALL BE AS DETAILED ON OTHER DESIGN SHEETS

BEAMS TO BE USED IN BRIDGES MADE CONTINUOUS BY THE POURED IN PLACE FLOOR, ARE TO BE AT LEAST 28 DAYS OLD BEFORE THE FLOOR IS PLACED UNLESS A SHORTER CURING TIME IS APPROVED BY THE BRIDGE ENGINEER.

THE PORTIONS OF THE PRESTRESSED BEAMS THAT ARE TO BE EMBEDDED IN THE ABUTMENT AND PIER DIAPHRAGMS SHALL BE ROUGHENED FOR A DISTANCE OF 10" FROM THE BEAM END BY SANDBLASTING OR OTHER APPROVED METHODS TO PROVIDE SUITABLE BOND BETWEEN THE BEAM AND THE DIAPHRAGM IN ACCORDANCE WITH ARTICLE 2403.03, 1, OF THE STANDARD SPECIFICATIONS.

ALL BEAMS ARE TO BE INCREASED IN LENGTH TO COMPENSATE FOR ELASTIC SHORTENING, CREEP AND SHRINKAGE.

FOR TRANSPORTING, THE ALLOWABLE OVERHANG IS SHOWN IN THE LIFTING LOOP AND OVERHANG TABLE.

HOLES MUST BE CAST IN THE WEB TO ACCOMMODATE THE STEEL DIAPHRAGM ATTACHMENTS AS DETAILED ON THE STEEL DIAPHRAGM DETAIL SHEET.

① DEFLECTIONS AT MID-SPAN DUE TO WEIGHT OF SLAB AND DIAPHRAGM.
THE DEFLECTIONS SHOWN ARE FOR A SLAB (8 in) AND HAUNCH (1.5 in)
WEIGHT OF:

0.98 kips/ft FOR 9'-3 BEAM SPACING

AND ONE STEEL DIAPHRAGM (0.500 kips) AT ϕ OF SPAN.

FOR DIFFERENT SLAB AND DIAPHRAGM WEIGHTS, DEFLECTIONS WILL BE DIRECTLY PROPORTIONAL.

② DEFLECTIONS DUE TO THE COMBINED EFFECT OF CREEP DUE TO WEIGHT OF SLAB AND SHRINKAGE OF SLAB.

TOTAL BEAM DEFLECTIONS AT C OF SPAN, Δ_0 , DUE TO WEIGHT OF SLAB AND DIAPHRAGMS FOR DETAILING PURPOSE:

(A) $\Delta_D = \Delta_I + \Delta_T$ FOR SIMPLE SPAN.
(B) $\Delta_D = \Delta_I + \frac{3}{4}\Delta_T$ FOR END SPANS OF CONTINUOUS BRIDGE.

(C) $\Delta_D = \Delta_1 + \frac{1}{2}\Delta_T$ FOR INTERIOR SPANS OF CONTINUOUS BRIDGE.

AND $A_s = 0.217 \text{ in}^2$.

CALCULATED DESIGN CAMBERS HAVE BEEN REDUCED FROM THEIR THEORETICAL VALUES BY 15% TO AID CONSTRUCTABILITY.

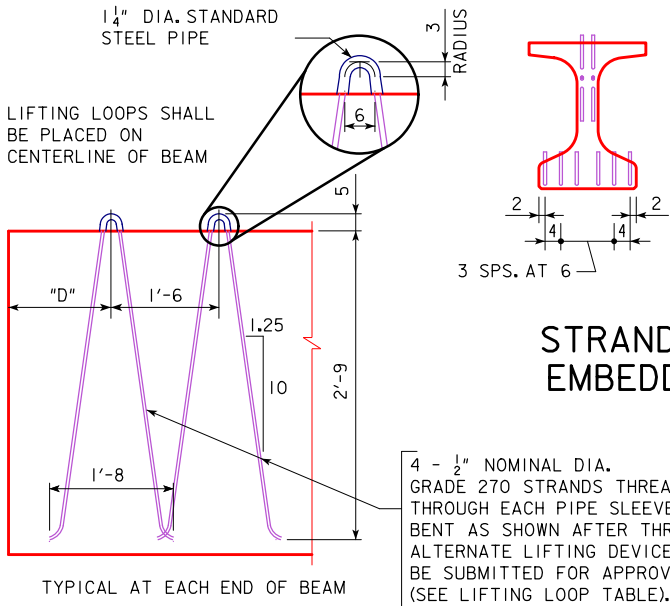
BEAM NOTES: (CONTINUED)

MINIMUM CONCRETE f'_c (AT 28 DAYS) AND MINIMUM f'_ci AT RELEASE ARE LOCATED IN THE BTB BEAM DATA TABLE ABOVE.

FOUR 0.60 IN. DIAMETER STRANDS STRESSED TO NOT MORE THAN 5000 LBS EACH MAY BE USED IN LIEU OF BARS 5a1 AND 5a2 IN THE TOP FLANGE.

DESIGN TEAM: SCHEMMER	BULB TEE "B" BEAMS	STANDARD SHEET 4750	LEE COUNTY	PROJECT NUMBER: BR-002-9(32)--38-56	SHEET NUMBER 19
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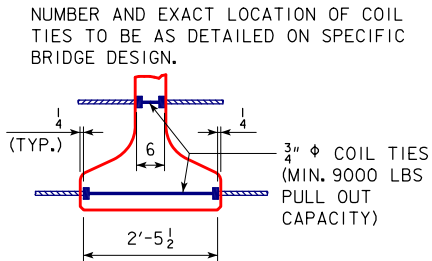
CORRECTION 12-13 - COIL TIE DETAIL WAS CHANGED TO REFLECT THE DISTANCE BETWEEN COIL TIE ANCHORS EMBEDDED ¼ INCH. REMOVED ARTICLE 2407.13 SPEC. NOTE UNDER LIFTING LOOP TABLE. ENGLISHBEAMS.DGN - 4765 - THIS SHEET ISSUED 02-08.



LIFTING LOOP DETAIL

LIFTING LOOP AND OVERHANG TABLE				
BEAMS	LIFTING LOOPS EACH END	# OF STRANDS PER LOOP	D	BEAM OVERHANG (FT)
BTB100-BTB105	2	4	6'-3	12

LIFTING LOOPS SHALL CARRY LOADS EQUALLY.



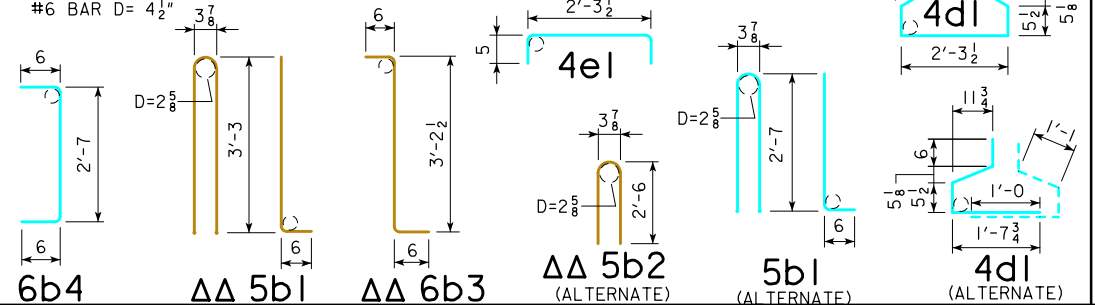
COIL TIE DETAIL

ΔΔ 5b1 AND 6b3 BARS TO BE EPOXY COATED
* 6b3 AND 6b4 BARS TO BE USED IN PAIRS

REINFORCING BAR LIST				BENT BAR DETAILS			
BEAM		BTB100		BEAM	NOTE: ALL BAR DIMENSIONS ARE OUT TO OUT D = PIN DIAMETER FOR BENDING (UNLESS OTHERWISE SHOWN) #4 BAR D= 2" #5 BAR D= 2 1/2" #6 BAR D= 4 1/2"		
BAR	SHAPE	NO.	LENGTH	BAR			
5a1		12	32'-9	5a1			
5a2		6	40'-0	5a2			
5b1		79	7'-8	5b1			
6b3		32	4'-3	6b3			
6b4		16	3'-7	6b4			
4c1		121	2'-7	4c1			
4d1		101	6'-5	4d1			
4e1		26	3'-2	4e1			
4h1		4	8'-0	4h1			

BENT BAR DETAILS

NOTE: ALL BAR DIMENSIONS ARE OUT TO OUT
D = PIN DIAMETER FOR BENDING
(UNLESS OTHERWISE SHOWN)
#4 BAR D= 2"
#5 BAR D= 2 1/2"
#6 BAR D= 4 1/2"



BTB BEAM DATA

BTB BEAM	SPAN LENGTH ℄-℄ BEARING	OVERALL BEAM LENGTH (L)	CONCRETE STRENGTH		STRAND SIZE DIA. (in)	NO. OF STRAND		TOTAL INITIAL PRESTRESS kips ③	HOLD DOWN FORCE-kips	CAMBER (in)		DEFLECTION (in) Δ _D		PERMISSIBLE MAXIMUM SPACING	WEIGHT (TONS)	CONCRETE (CU YD.)	REINFORCING STEEL (WEIGHT-LBS)
			f'ci (ksi)	f'c (ksi)		STRAIGHT	DEFLECTED			AT RELEASE	AFTER LOSSES	IMMEDIATE ① (ELASTIC) Δ _i	TIME ② (PLASTIC) Δ _T				
														STEEL DIAPHRAGM			
												HL-93 LOADING					
													STEEL DIAPHRAGM				
④ BTB100	100'-0	101'-4	8.0	9.0	0.60	32	12	1871	20.9	3.19	5.63	3.44	0.86	8'-6	33.3	16.5	2300

- ① DEFLECTIONS AT MID-SPAN DUE TO WEIGHT OF SLAB AND DIAPHRAGM. THE DEFLECTIONS SHOWN ARE FOR A SLAB (8 in) AND HAUNCH (1.5 in) WEIGHT OF:
- 0.93 kips/ft FOR 8'-6 BEAM SPACING
0.80 kips/ft FOR 7'-4 BEAM SPACING
- AND ONE STEEL DIAPHRAGM (0.500 kips) AT $\frac{L}{4}$ OF SPAN. FOR DIFFERENT SLAB AND DIAPHRAGM WEIGHTS, DEFLECTIONS WILL BE DIRECTLY PROPORTIONAL.
- ② DEFLECTIONS DUE TO THE COMBINED EFFECT OF CREEP DUE TO WEIGHT OF SLAB AND SHRINKAGE OF SLAB.
- TOTAL BEAM DEFLECTIONS AT $\frac{L}{4}$ OF SPAN, Δ_0 , DUE TO WEIGHT OF SLAB AND DIAPHRAGMS FOR DETAILING PURPOSE:
- (A) $\Delta_0 = \Delta_i + \Delta_T$ FOR SIMPLE SPAN.
(B) $\Delta_0 = \Delta_i + \frac{3}{4} \Delta_T$ FOR END SPANS OF CONTINUOUS BRIDGE.
(C) $\Delta_0 = \Delta_i + \frac{1}{2} \Delta_T$ FOR INTERIOR SPANS OF CONTINUOUS BRIDGE.
- ③ TOTAL INITIAL PRESTRESS IS BASED ON 72.6% f's, f's. = 270 ksi. AND $A_s = 0.217 \text{ in}^2$.
- ④ REQUIRES 4000 psi COMPRESSIVE STRENGTH FOR CAST-IN-PLACE SLAB CONCRETE.

CALCULATED DESIGN CAMBERS HAVE BEEN REDUCED FROM THEIR THEORETICAL VALUES BY 15% TO AID CONSTRUCTABILITY.

BEAM NOTES:

THESE BEAMS ARE DESIGNED FOR AASHTO LIVE LOADS AS INDICATED IN ABOVE TABLE WITH AN ALLOWANCE OF 20 LBS PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.

ALL PPC BEAMS SHALL USE HIGH PERFORMANCE CONCRETE (HPC) IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

HOLD DOWN POINTS FOR DEFLECTED STRANDS MAY BE MOVED TOWARD ENDS OF BEAM A DISTANCE OF 0.05 L MAXIMUM AT PRODUCER'S OPTION.

ALL PRESTRESSING STRANDS EXCEPT LIFTING LOOP STRANDS SHALL BE 0.60 in. NOMINAL DIAMETER (NOMINAL STEEL AREA = 0.217 in²) AND CONFORM TO ASTM A416 GRADE 270 LOW RELAXATION STRANDS. MINIMUM STRAND BREAKING STRENGTH SHALL BE 58.6 kips.

TOPS OF BEAMS ARE TO BE STRUCK OFF LEVEL AND FINISHED AS PER MATERIALS IM570.

BEARINGS SHALL BE AS DETAILED ON OTHER DESIGN SHEETS. BEAMS TO BE USED IN BRIDGES MADE CONTINUOUS BY

THE POURED IN PLACE FLOOR, ARE TO BE AT LEAST 28 DAYS OLD BEFORE THE FLOOR IS PLACED UNLESS A SHORTER CURING TIME IS APPROVED BY THE BRIDGE ENGINEER.

THE PORTIONS OF THE PRESTRESSED BEAMS THAT ARE TO BE EMBEDDED IN THE ABUTMENT AND PIER DIAPHRAGMS SHALL BE ROUGHENED FOR A DISTANCE OF 10" FROM THE BEAM END BY SANDBLASTING OR OTHER APPROVED METHODS TO PROVIDE SUITABLE BOND BETWEEN THE BEAM AND THE DIAPHRAGM IN ACCORDANCE WITH ARTICLE 2403.03, I, OF THE STANDARD SPECIFICATIONS.

ALL BEAMS ARE TO BE INCREASED IN LENGTH TO COMPENSATE FOR ELASTIC SHORTENING, CREEP AND SHRINKAGE.

FOR TRANSPORTING, THE ALLOWABLE OVERHANG IS SHOWN IN THE LIFTING LOOP AND OVERHANG TABLE.

THE CONTRACTOR SHALL ASSURE THE LATERAL STABILITY OF THE BEAMS DURING HANDLING, TRANSPORTING AND ERECTION BY PROVIDING TEMPORARY BRACING AS NEEDED.

HOLES MUST BE CAST IN THE WEB TO ACCOMMODATE THE STEEL DIAPHRAGM ATTACHMENTS AS DETAILED ON THE STEEL DIAPHRAGM DETAIL SHEET.

MINIMUM CONCRETE f'c (AT 28 DAYS) AND MINIMUM f'ci AT RELEASE ARE LOCATED IN THE BTB BEAM DATA TABLE ABOVE.

FOUR 0.60 IN. DIAMETER STRANDS STRESSED TO NOT MORE THAN 5000 lbs EACH MAY BE USED IN LIEU OF BARS 5a1 AND 5a2 IN THE TOP FLANGE.

DESIGN FOR 0° SKEW

**204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**

51'-0 END SPANS 102'-0 INTERIOR SPAN

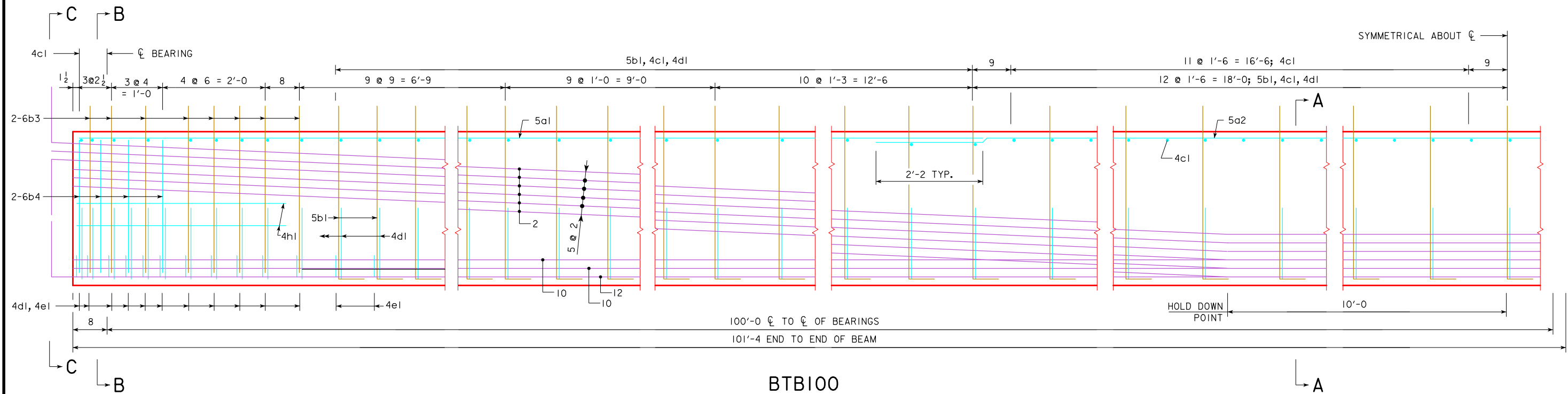
BTB100 BEAM DETAILS

STA. 391+20.61 (CL 1A 2) NOVEMBER, 2020

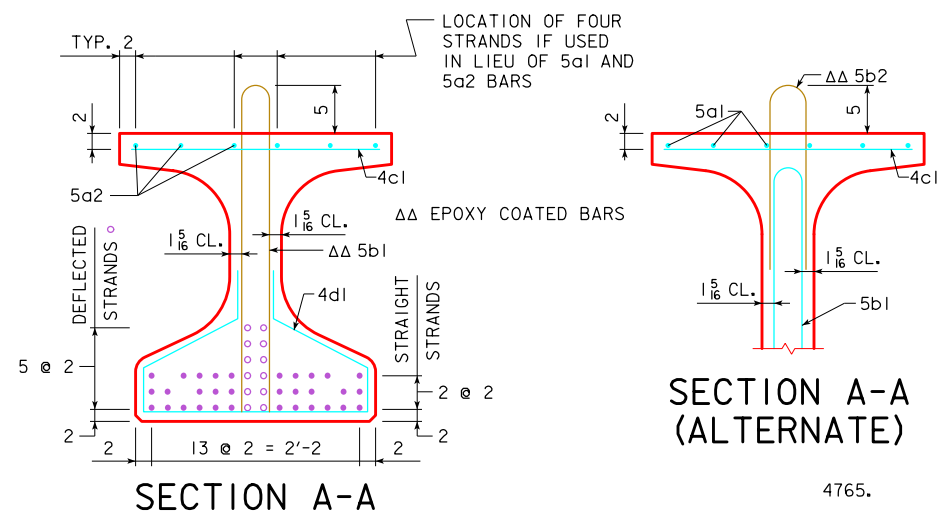
LEE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 20 OF 30 FILE NO. 31795 DESIGN NO. 221

ENGLISHBEAMS.DGN - 4766 - THIS SHEET ISSUED 02-08.

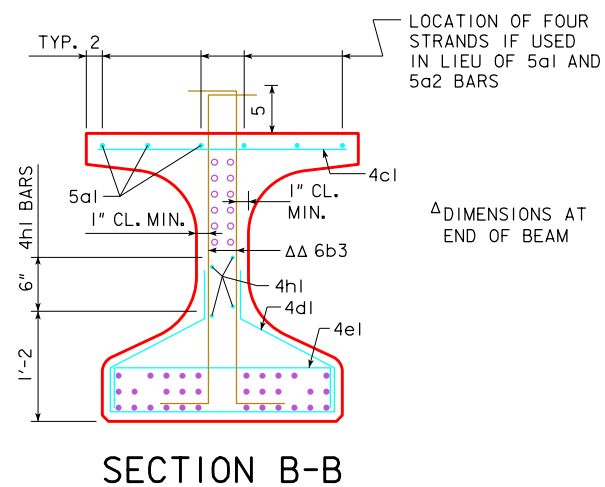


TOP FLANGE LONGITUDINAL BAR LAYOUT

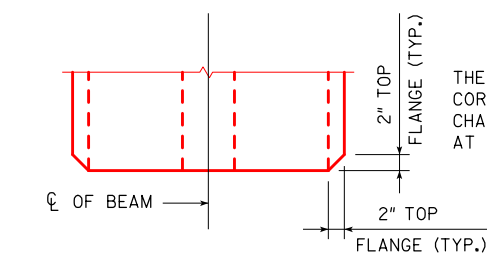


SECTION A-A
(ALTERNATE)

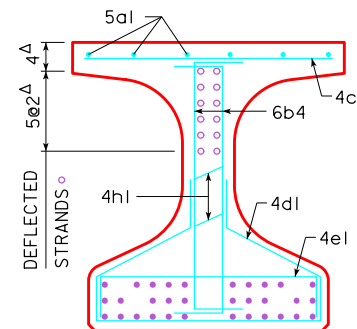
4765.



SECTION B-B



TOP VIEW

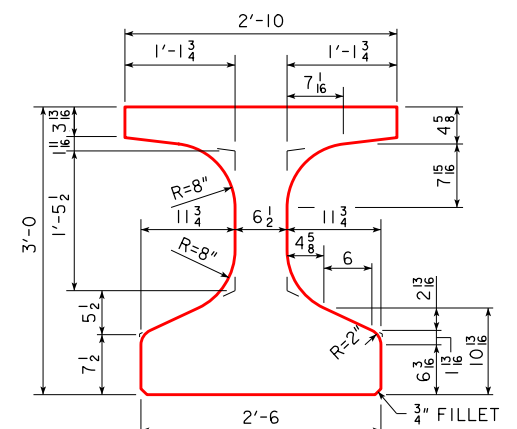


SECTION C-C

THE TOP FLANGE BEAM CORNERS ARE TO BE CHAMFERED 2" AS SHOWN AT BOTH ENDS OF THE BEAM.

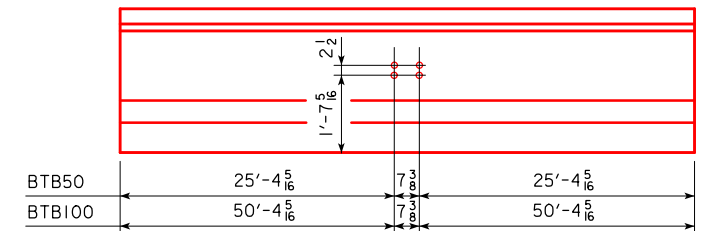
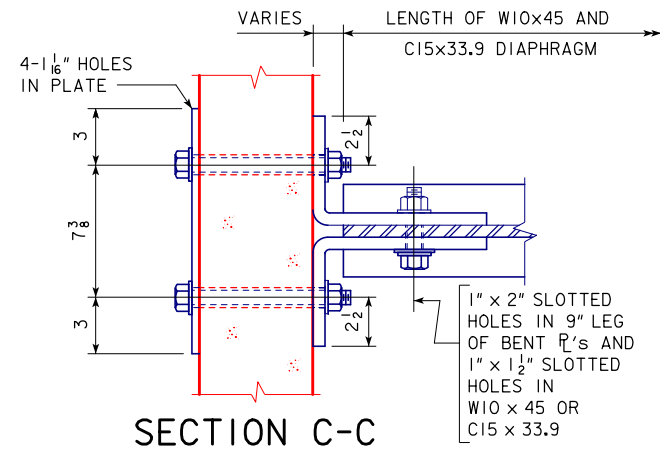
AREA = 631.7 in²
y_b = 17.14 in.
I = 99,980 in⁴

BEAM SECTION
PROPERTIES



BTB BEAM CROSS
SECTION

DESIGN FOR 0° SKEW
204'-0" X 40'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE
51'-0" END SPANS 102'-0" INTERIOR SPAN
BTB100 BEAM DETAILS
STA. 391+20.61 (CL 1A 2) NOVEMBER, 2020
LEE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 21 OF 30 FILE NO. 31795 DESIGN NO. 221



NOTES:

ALL DIAPHRAGM MATERIALS, INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.

SHOP DRAWINGS OF THE STEEL DIAPHRAGMS SHOWING LAYOUT AND DETAILS OF THE DIAPHRAGMS SHALL BE SUBMITTED FOR APPROVAL.

ALL COSTS FOR FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGMS SHALL BE INCLUDED IN THE PRICE BID FOR STRUCTURAL STEEL.

THE $1\frac{1}{2}"\phi$ HOLES FOR THE $\frac{7}{8}"\phi$ H.S. BOLTS
SHALL BE CAST INTO THE WEB. DRILLING IS NOT ALLOWED.

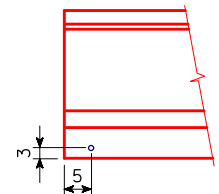
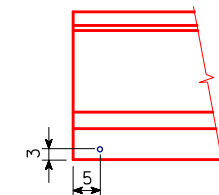
THE $\frac{7}{8}$ " Φ H.S. BOLTS THROUGH THE WEB SHALL HAVE A
THREAD LENGTH OF 3" MIN. AND 4" MAX. AND SHALL MEET
THE REQUIREMENTS OF ASTM A449.

ALL BOLTS ARE TO BE TIGHTENED PRIOR TO PLACING
BRIDGE FLOOR CONCRETE.

STRUCTURAL STEEL		
WEIGHT	4811	LBS.

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

BULB TEE "B" BEAM INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL			
ONE BEAM CONNECTION (DETAIL "F" AND/OR DETAIL "G")			WEIGHT
		NO. OF BEAM CONNECTIONS	
4 - $\frac{7}{8}" \phi \times 9\frac{1}{4}$ H.S. BOLTS WITH NUTS & WASHERS = 9.6 LBS.		18	173
ONE DETAIL "G"	4 - BENT $\overline{C} 9 \times 6 \times \frac{1}{2} \times 0'-11$ = 93.6 LBS.	12	1123
ONE DETAIL "F"	1 - BACKING $\overline{C} 5 \times \frac{3}{8} \times 1'-1\frac{3}{8}$ = 7.1 LBS.	6	42
	2 - BENT $\overline{C} 9 \times 6 \times \frac{1}{2} \times 0'-11$ = 46.8 LBS.	6	281
ONE DIAPHRAGM			
		NUMBER OF DIAPHRAGMS	
6 - $\frac{7}{8}" \phi \times 3"$ H.S. BOLTS WITH NUTS & WASHERS = 7.8 LBS.		15	117
	LENGTH OF MEMBER		
1 - $C15 \times 33.9$ = 33.9 LBS./FT.	6'-0 $\frac{9}{16}$	15	3075
INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL - TOTAL (LBS.)			4811



BEAM COIL TIE LOCATIONS

DESIGN FOR 0° SKEW

204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

51'-0 END SPANS 102'-0 INTERIOR SPAN

STEEL INTERME. DIAPH. DETAILS

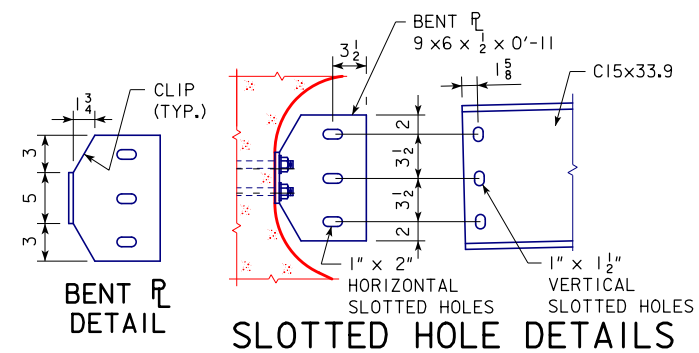
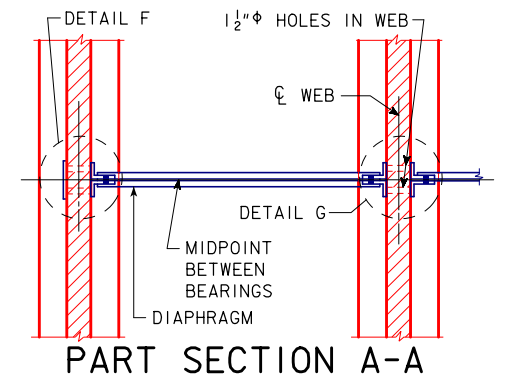
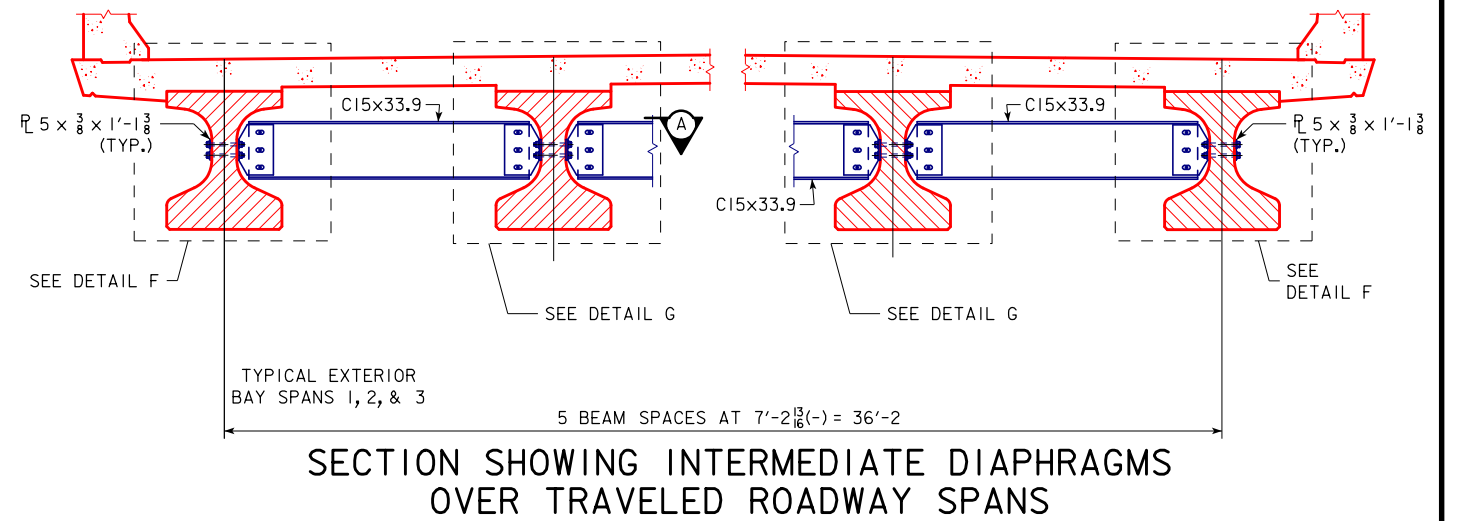
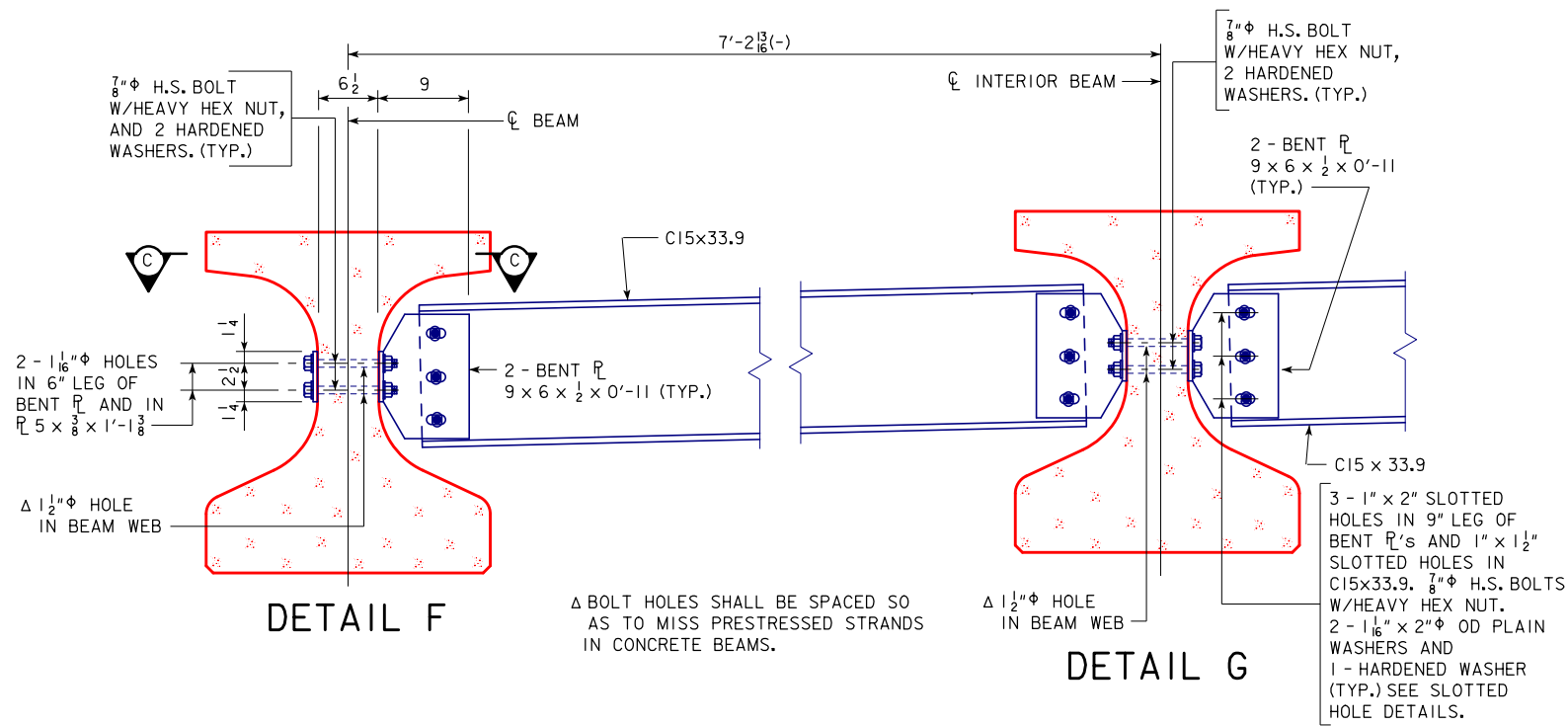
STA. 391+20.61 (☒ 1A 2) NOVEMBER, 2020

LEE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 22 OF 30 FILE NO. 31795 DESIGN NO. 221

ENGLISHBEAMS.DGN - 1036-2-BTB - THIS SHEET ISSUED 06-14, SHEET 2 OF 2.



DESIGN FOR 0° SKEW

**204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**

51'-0 END SPANS 102'-0 INTERIOR SPAN

STEEL INTERM. DIAPH. DETAILS

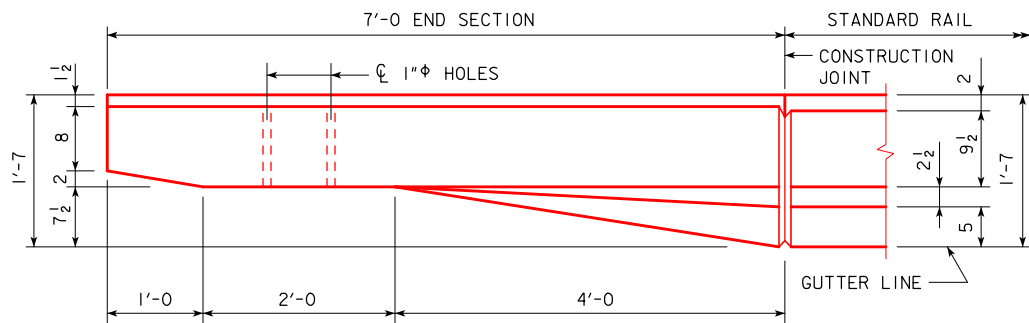
STA. 391+20.61 (CL 1A 2) NOVEMBER, 2020

LEE COUNTY

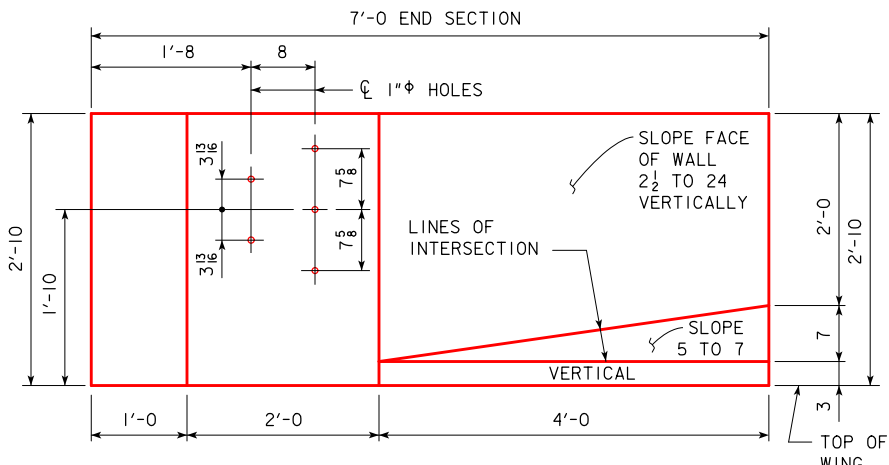
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 23 OF 30 FILE NO. 31795 DESIGN NO. 221

ENGLISHDECKRAILBRIDGES.DGN 1017S - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 6c3, 6c4 & 5c5-10 BARS TO STAINLESS STEEL.

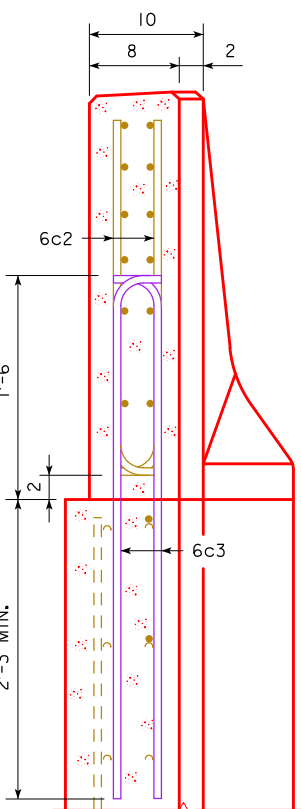


PART PLAN VIEW

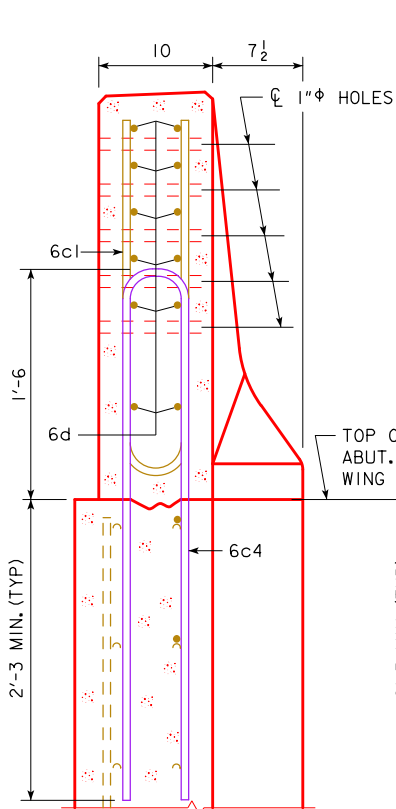


PART ELEVATION VIEW

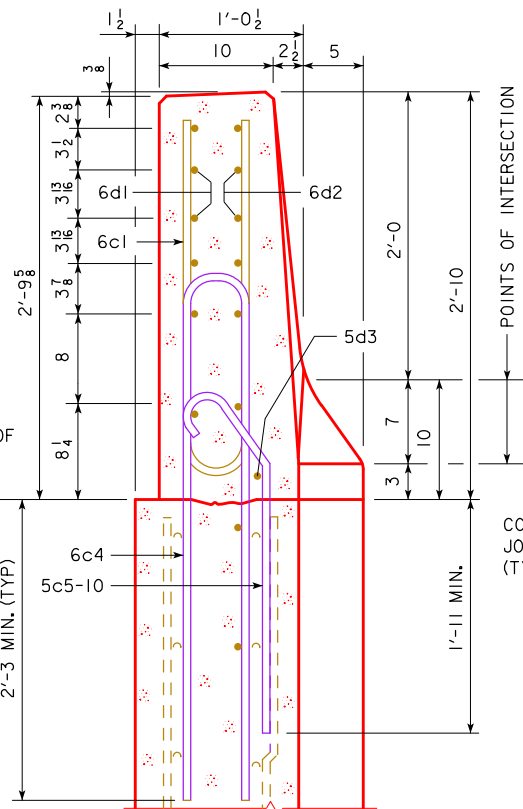
PROVIDE 5 HOLES FORMED WITH 1" PLASTIC CONDUIT. COST TO BE INCLUDED IN PRICE BID FOR CONCRETE BARRIER RAILING.



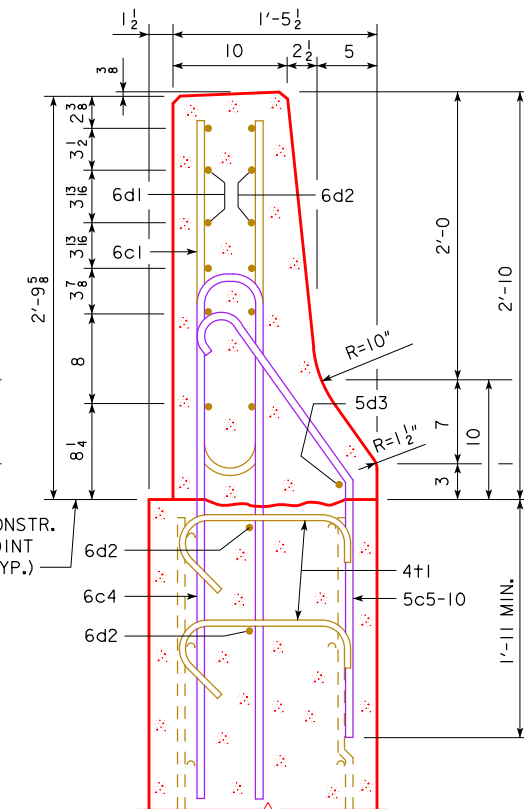
VIEW A-A



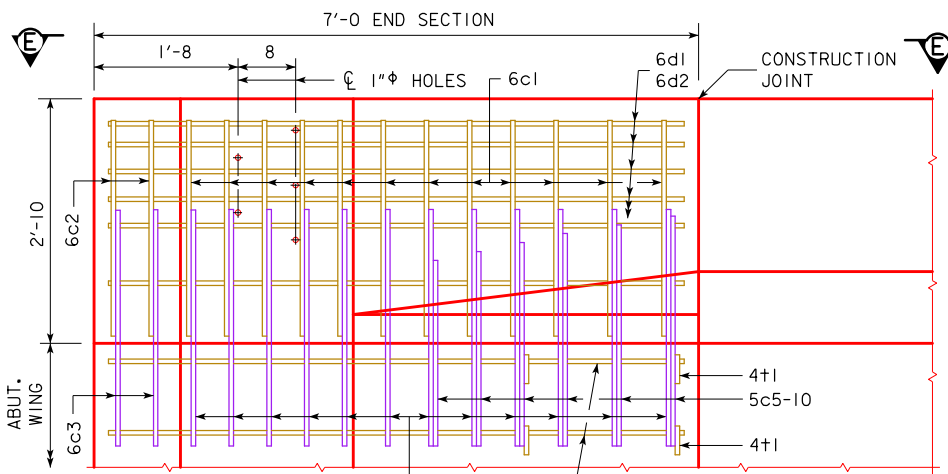
SECTION B-B



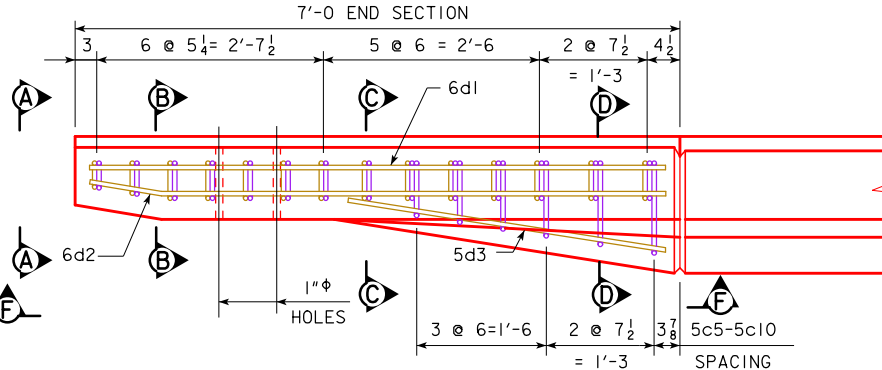
SECTION C-C



SECTION D-D



PART VIEW F-F



PART VIEW E-E

EPOXY COATED REINF. STEEL - ONE END SECT.

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

STAINLESS STEEL REINF. STEEL - ONE END SECT.

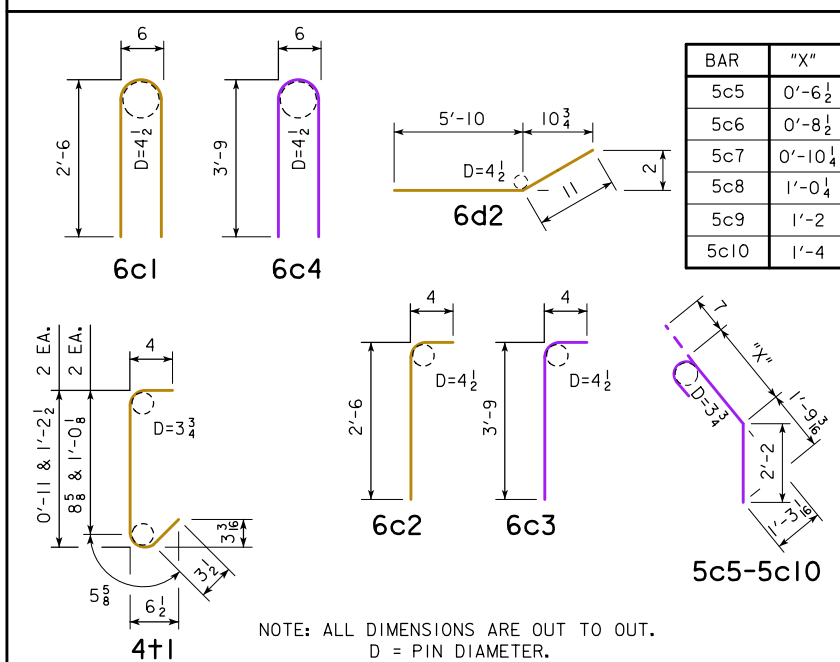
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6c3	RAIL, VERTICAL		4	4'-1	25
6c4	RAIL, VERTICAL		12	8'-0	144
5c5-10	RAIL, VERTICAL		6	VARIES	23
STAINLESS STEEL TOTAL WEIGHT (LBS.)					192

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

CONCRETE PLACEMENT SUMMARY

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

BENT BAR DETAILS



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

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

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

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

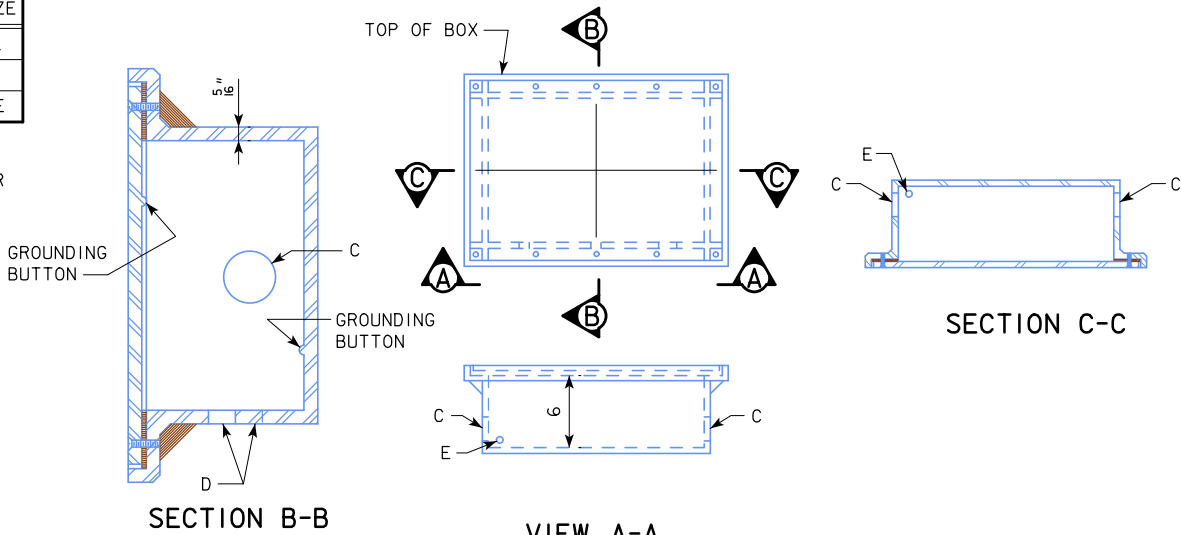
NOTE: DASHED LINES BELOW THE TOP OF WING ARE THE ABUTMENT WING REINFORCING STEEL. SEE WING ABUTMENT SHEET FOR PLACEMENT.

DESIGN FOR 0° SKEW
204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE
51'-0 END SPANS 102'-0 INTERIOR SPAN
BARRIER RAIL END SECTION
STA. 391+20.61 (± 1A 2) NOVEMBER, 2020
LEE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 24 OF 30 FILE NO. 31795 DESIGN NO. 221

REVISED 09-14 - ADD STAINLESS STEEL NOTE TO THE LIGHTING NOTES.
REVISED 09-2016 - ADDED STANDARD SPECIFICATIONS 4185.02.B.2 IN LIGHTING NOTES. CHANGED BAR MARK FROM "x" to "p".
ENGLISHDECKRAILBRIDGES.DGN 1030AS1 - THIS SHEET REDRAWN 9-8-88

BOSSSED FOR	HOLE	FOR CONDUIT SIZE
5 THREADS	C	2" ϕ RIGID STEEL
NONE	E	$\frac{1}{2}$ " ϕ COPPER PIPE

NOTE:
THE GROUNDING BUTTONS ARE TO BE BLIND DRILLED AND TAPPED FOR $\frac{3}{8}$ " ϕ \times 0'-0 $\frac{3}{4}$ BOLTS.



LI-104 JUNCTION BOX
WATERTIGHT, CAST IRON - FLUSH MOUNT

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.
ALL "C" ENTRANCE HOLES IN JUNCTION BOXES 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 $\frac{1}{4}$ ". DRAIN PIPE END SHALL BE FLUSH WITH INSIDE SURFACE OF BOX. 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. HOLES FOR DRAIN PIPE SHALL BE PLACED IN THE LOW CORNER OF THE BOX, WITH A MINIMUM CLEARANCE OF 1" BETWEEN THE EDGE OF THE HOLE AND THE INSIDE SURFACE OF THE BOX WALL. TYPICAL DETAILS ARE SHOWN ON THIS SHEET.
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.
STAINLESS-STEEL REINFORCEMENT SHALL NOT BE ALLOWED TO BE IN CONTACT WITH THE UNCOATED REINFORCEMENT, BARE METAL FORMING HARDWARE, OR TO GALVANIZED ATTACHMENTS OR GALVANIZED CONDUIT.

DESIGN FOR 0° SKEW

204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

51'-0 END SPANS102'-0 INTERIOR SPAN

CONDUIT DETAILS

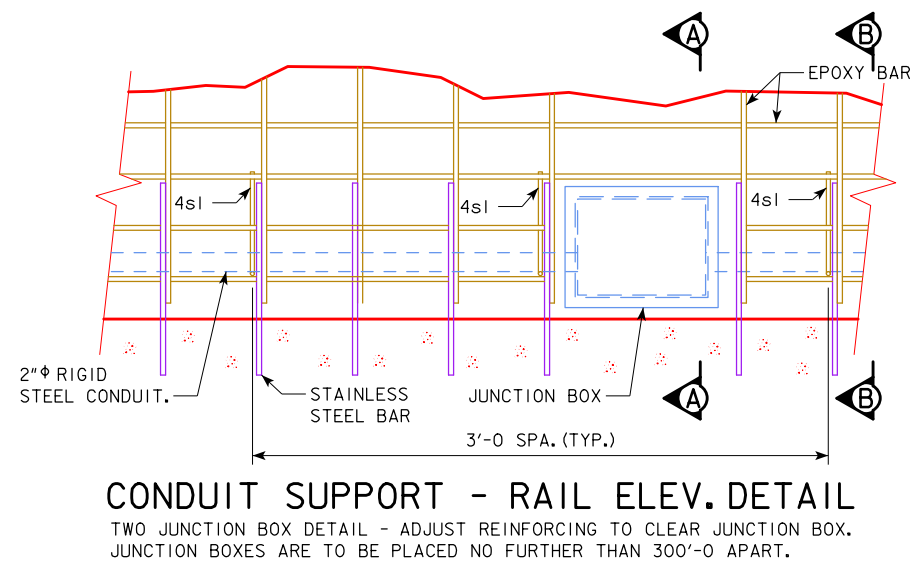
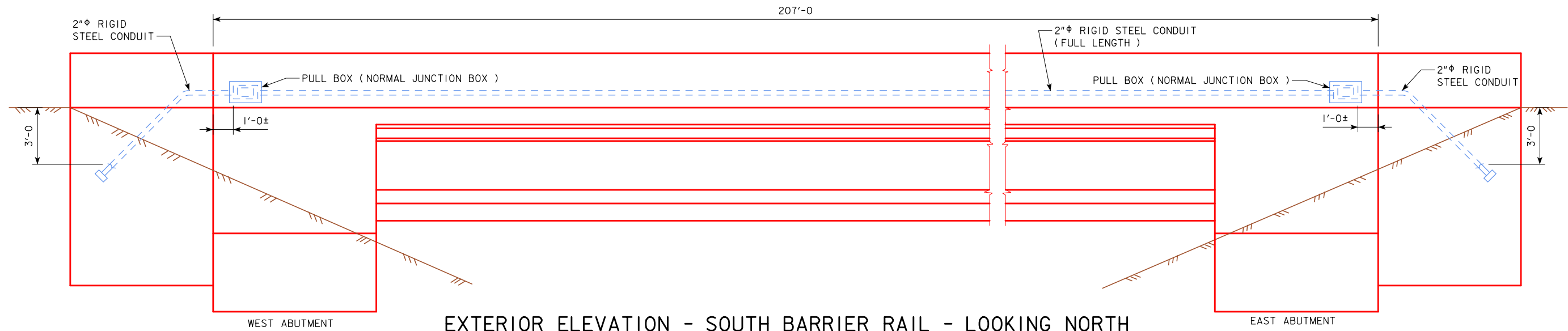
STA. 391+20.61 (℄ 1A 2)NOVEMBER, 2020

LEE COUNTY

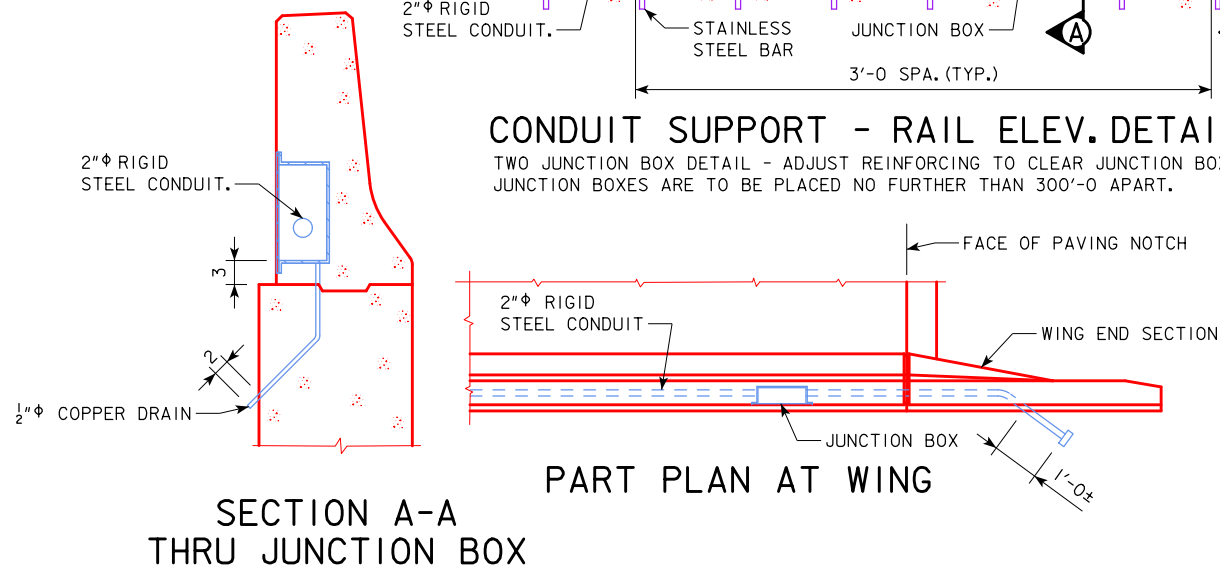
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 26 OF 30FILE NO. 31795DESIGN NO. 221

REVISION 05-11 - ADDED THE WORD 'MINIMUM' TO THE 3 1/2 INCH DIMENSION FOR THE LOCATION OF THE 2 INCH CONDUIT IN THE BARRIER RAIL.
REVISED 09-2016 - ADDED CONDUIT SUPPORT RAIL DETAIL TO KEEP CONDUIT ISOLATED FROM THE STAINLESS STEEL REINFORCING.
ENGLISHDECKRAILBRIDGES.DGN 1030AS2 - THIS SHEET ISSUED 09-03.

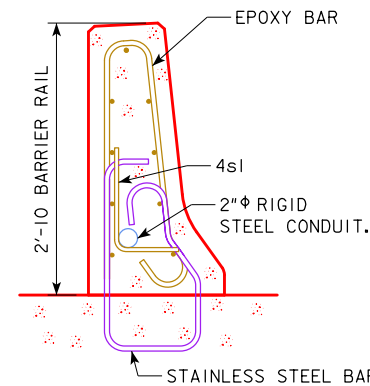


CONDUIT SUPPORT - RAIL ELEV. DETAIL
TWO JUNCTION BOX DETAIL - ADJUST REINFORCING TO CLEAR JUNCTION BOX.
JUNCTION BOXES ARE TO BE PLACED NO FURTHER THAN 300'-0" APART.



**SECTION A-A
THRU JUNCTION BOX**

PART PLAN AT WING

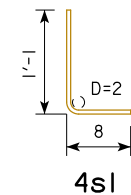


SECTION B-B - CONDUIT SUPPORT
ONLY USED IN RAIL WITH CONDUIT, USE 3'-0" SPACING. GALVANIZED CONDUIT
SHALL NOT COME INTO CONTACT WITH THE STAINLESS STEEL REINFORCING.
LOWER CONDUIT CAN ONLY BE 2" DIAMETER.
(70 REQUIRED)

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

FOR JUNCTION BOX DETAILS, SEE DESIGN SHEET 26.

EPOXY REINFORCING STEEL-ONE RAIL					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
4s1	RAIL CONDUIT		70	1'-9"	82
TOTAL WEIGHT (LBS.)					82



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

DESIGN FOR 0° SKEW
**204'-0" X 40'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**
51'-0" END SPANS 102'-0" INTERIOR SPAN
CONDUIT DETAILS
STA. 391+20.61 (C 1A 2) NOVEMBER, 2020
LEE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 27 OF 30 FILE NO. 31795 DESIGN NO. 221

REVISED 10-14 - TWO ADDITIONAL FORESLOPE PROTECTION DETAILS WERE ADDED OUTSIDE OF THE BORDER TO SHOW REVETMENT UP TO BACK OF ABUTMENT FOOTING.
ENGLISHFORESLOPEPROTECTIONBRIDGES.DGN 1007C - THIS SHEET ISSUED 06-02 FOR WATER CROSSINGS.

BENCHMARK: CP 101 N 6341876.68, E 24403336.58, FENO MONUMENT STAMPED #1, 1,364' EAST OF 160TH AVE AND 49' SOUTH OF 1A 2 CENTERLINE. SET 4 INCHES BELOW GROUND SURFACE, ELEV. 688.98

SUBDRAIN NOTES :

THIS PLAN SHEET SHOWS DETAILS FOR PLACING ALL SUBDRAINS AND SUBDRAIN OUTLETS REQUIRED FOR THIS STRUCTURE.

THE SUBDRAINS SHALL BE 4" IN DIAMETER AND SHALL BE IN ACCORDANCE WITH ARTICLE 4143.01, B, OF THE STANDARD SPECIFICATIONS.

THE SUBDRAIN OUTLET SHALL CONSIST OF A LENGTH OF PIPE WITH A REMOVABLE RODENT GUARD AS DETAILED ON THIS SHEET. THE LENGTH OF THE OUTLET PIPE SHALL BE DETERMINED BY THE REVETMENT AND IT'S PLACEMENT LOCATION. THE CONTRACTOR IS TO INSURE THE OUTLET PIPE IS ADEQUATELY STRONG ENOUGH AND WILL NOT BE DAMAGED WHEN REVETMENT IS PLACED. A CHECK WILL BE MADE AT THE SUBDRAIN OUTLET TO INSURE THAT THE SUBDRAIN IS NOT DAMAGED AND IS DRAINING PROPERLY DURING THE BACKFILL FLOODING PROCESS. IF A METAL OUTLET PIPE IS USED, IT SHALL BE 6 INCHES IN DIAMETER AND COUPLED TO THE 4 INCH DIAMETER SUBDRAIN IN ONE OF THE TWO FOLLOWING WAYS.

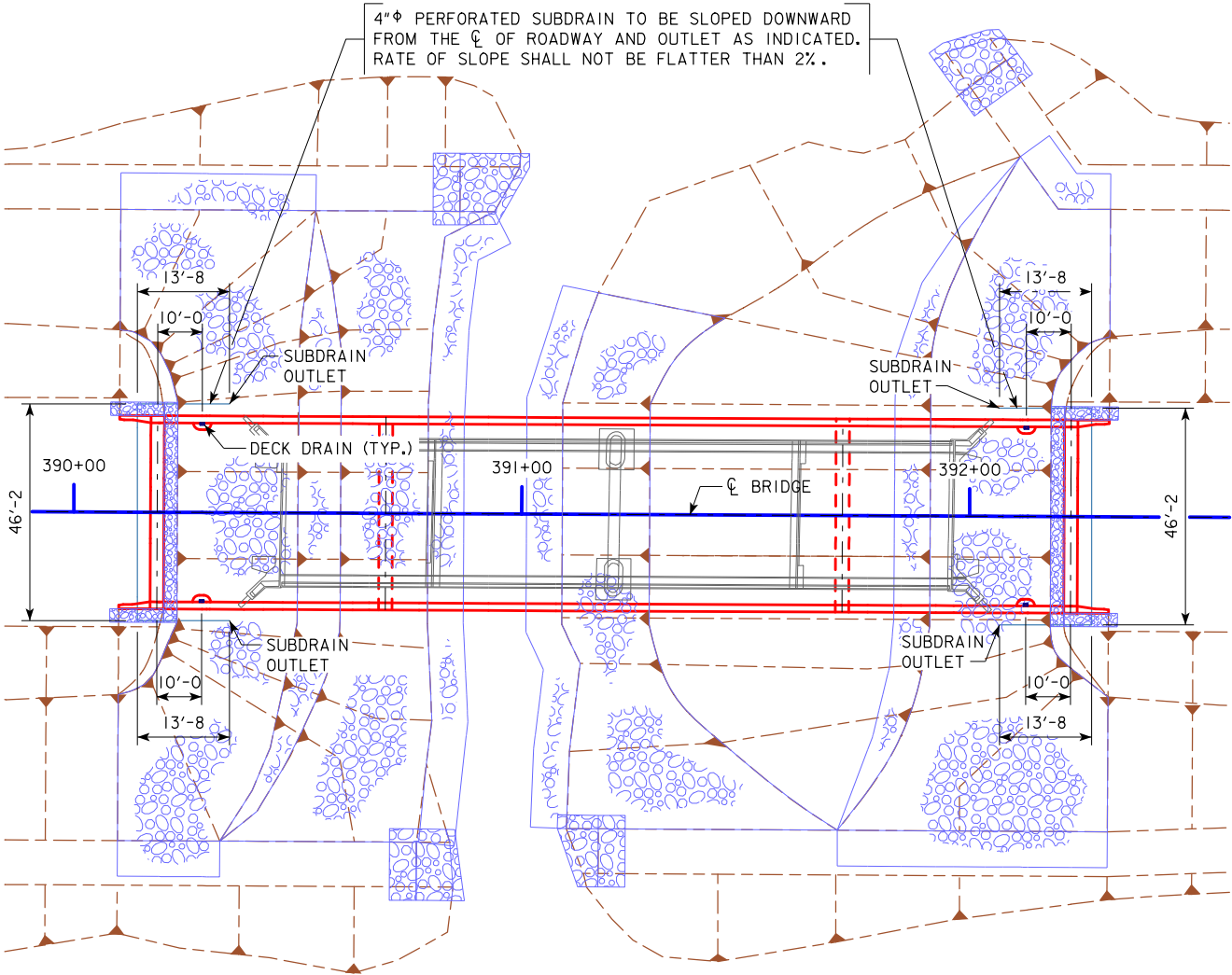
1. USE AN INSIDE FIT REDUCER COUPLER (COUPLER MUST BE INSERTED A MINIMUM OF 1'-0 INTO THE METAL OUTLET PIPE).
2. INSERT 1'-0 OF THE 4" SUBDRAIN INTO THE 6" METAL OUTLET PIPE, THEN FULLY SEAL THE ENTIRE OPENING WITH GROUT.

THE COST OF FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), GRANULAR BACKFILL, POROUS BACKFILL, AND SUBDRAIN OUTLET IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)". NO EXTRA PAYMENT WILL BE MADE.

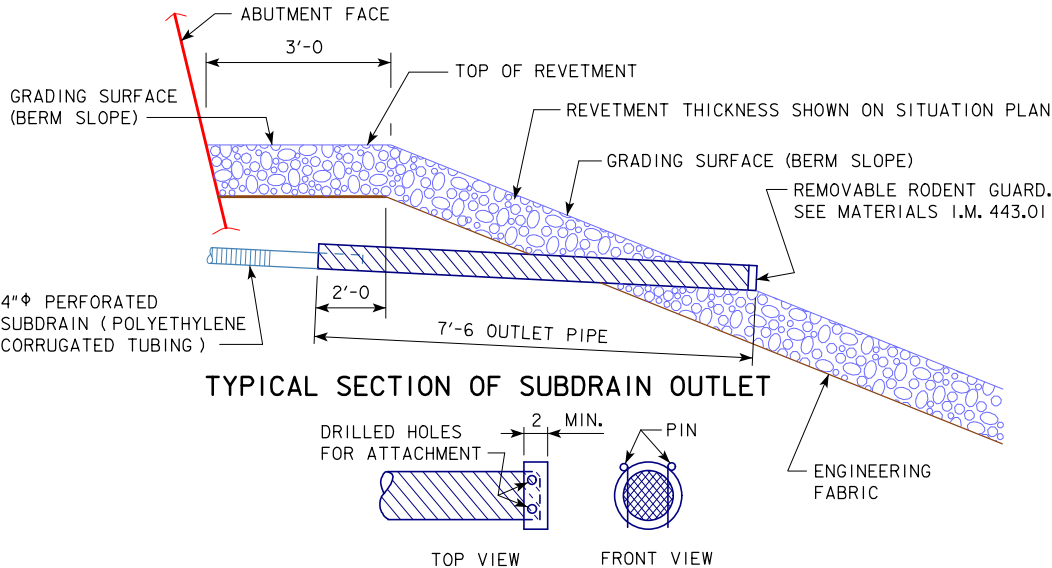
THE DIMENSIONS SHOWN FOR THE PROPOSED SUBDRAINS ARE BASED ON THE PROPOSED GRADING LAYOUT OF BRIDGE BERMS. THE DIMENSIONS SHOWN ARE FOR ESTIMATING ONLY. REQUIRED LENGTHS AND GENERAL LOCATIONS OF SUBDRAINS ARE SUBJECT TO CHANGE DUE TO FIELD ADJUSTMENTS OF THE GRADING LAYOUT.

SUBDRAIN OUTLET ELEVATIONS

LOCATION	ELEVATION
WEST ABUTMENT	632.68
EAST ABUTMENT	632.70



SITUATION PLAN
SHOWING SUBDRAIN LOCATIONS



REMOVABLE RODENT GUARD DETAILS
REVTMENT STONE (EMBEDDED) OUTLET DETAILS



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

DESIGN FOR 0° SKEW

**204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE**

51'-0 END SPANS 102'-0 INTERIOR SPAN

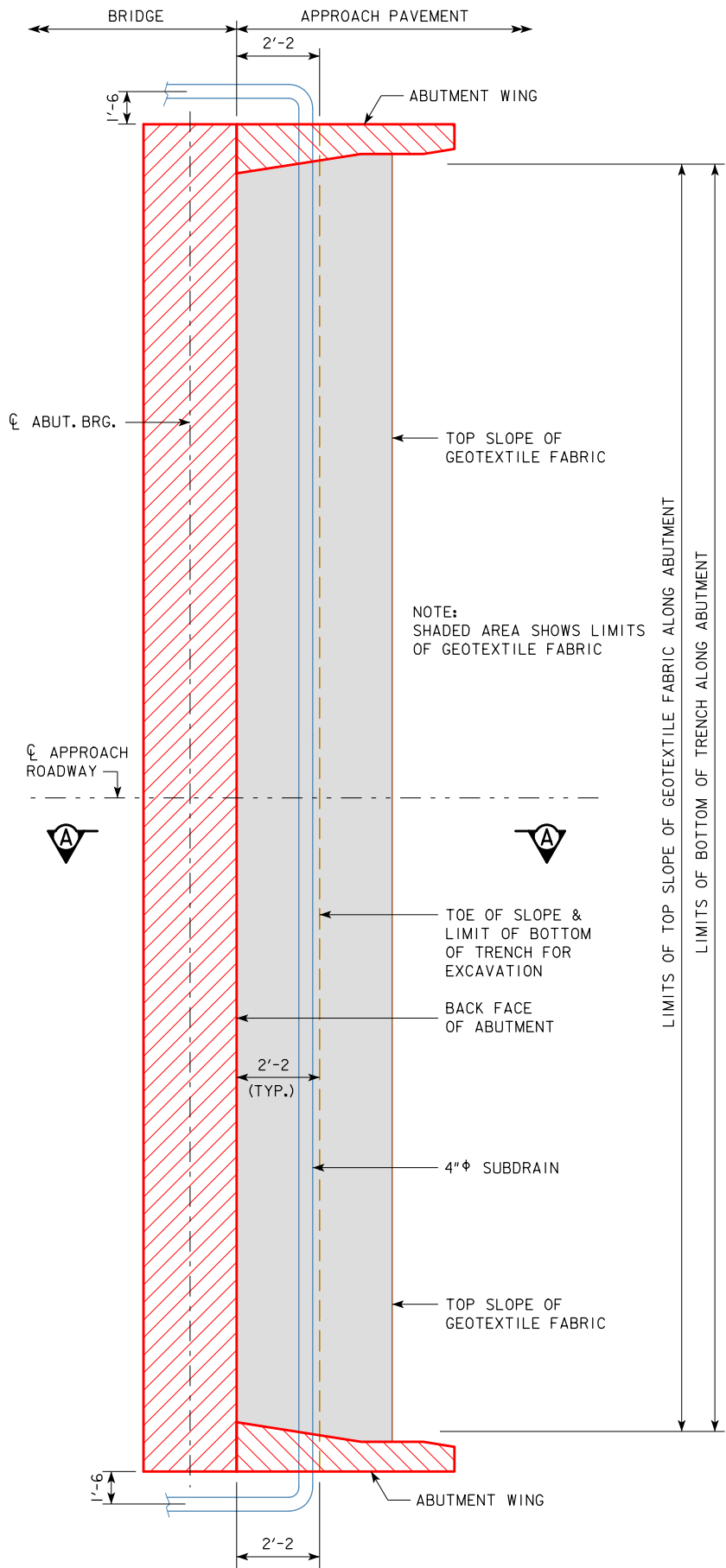
SUBDRAIN DETAILS

STA. 391+20.61 (CL 1A 2) NOVEMBER, 2020

LEE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 28 OF 30 FILE NO. 31795 DESIGN NO. 221

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").
ENGLISHFORESLOPEPROTECTIONBRIDGES.DGN - 1007D - THIS SHEET ISSUED 08-07.



ABUTMENT PLAN WITHOUT WING EXTENSIONS

ABUTMENT BACKFILL PROCESS:

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.

THE REMAINING WORK INVOLVES BACKFILLING WITH FLOODABLE BACKFILL, SURFACE FLOODING, AND VIBRATORY COMPACTION. THE FLOODABLE BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE FLOODABLE BACKFILL SHALL BE PLACED IN INDIVIDUAL LIFTS, SURFACE FLOODED, AND COMPACTED WITH VIBRATORY COMPACTION TO ENSURE FULL CONSOLIDATION. LIMIT THE LOOSE LIFTS TO NO MORE THAN 2 FEET OF THICKNESS.

START SURFACE FLOODING FOR EACH FLOODABLE BACKFILL LIFT AT THE HIGH POINT OF THE SUBDRAIN AND PROGRESS TO THE LOW POINT WHERE THE SUBDRAIN EXITS THE FABRIC. TO ENSURE UNIFORM SURFACE FLOODING, WATER RUNNING FULL IN A 2-INCH DIAMETER HOSE SHOULD BE SPRAYED IN SUCCESSIVE 6-FOOT TO 8-FOOT INCREMENTS FOR 5 MINUTES WITHIN EACH INCREMENT.

FLOODABLE BACKFILL LIFT PLACEMENT, FLOODING, AND COMPACTION SHALL PROGRESS UNTIL THE REQUIRED FULL THICKNESS OF THE ABUTMENT BACKFILL HAS BEEN COMPLETED.

WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, FLOODABLE BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS WILL NOT BE MEASURED SEPARATELY FOR PAYMENT.

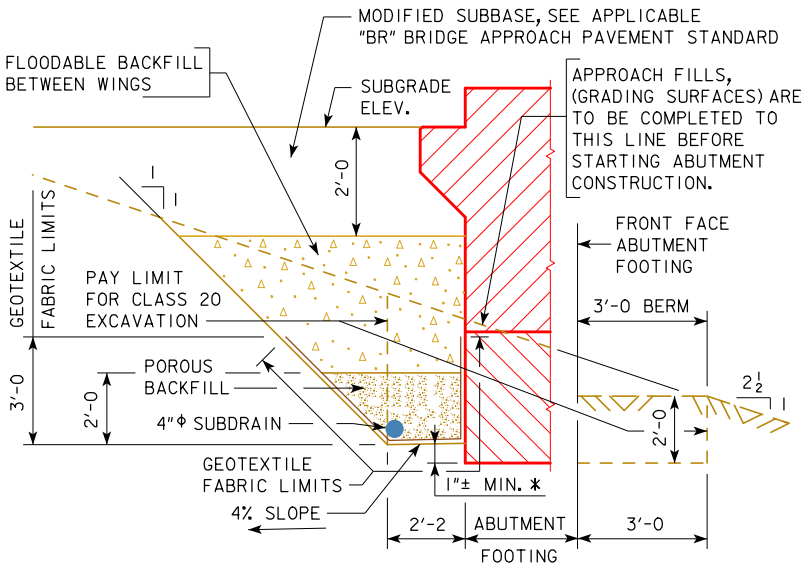
THE COST OF WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, FLOODABLE BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR STRUCTURAL CONCRETE.

NOTE:

SUBDRAIN SHALL SLOPE DOWNWARD 2% FROM CL APPROACH ROADWAY WHEN OUTLETTING BOTH SIDES OF THE ABUTMENT.

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.



SECTION A-A
BACKFILL DETAILS

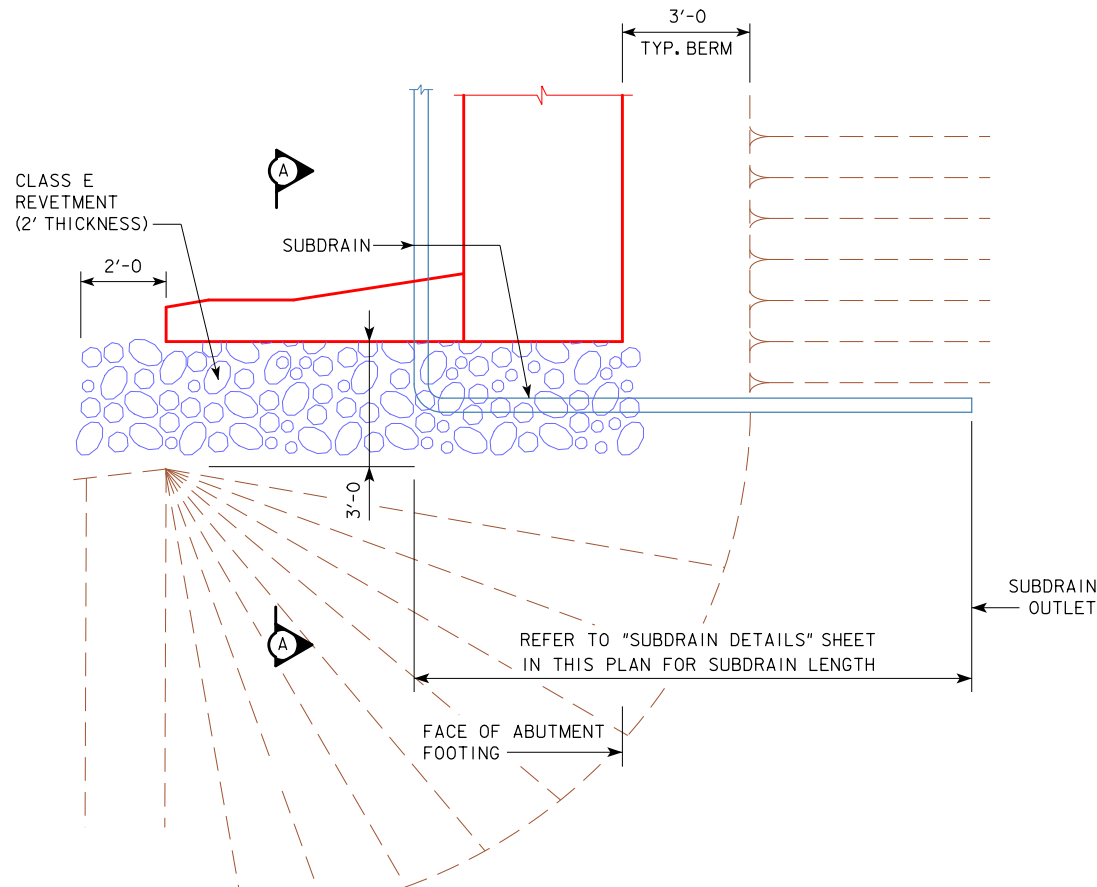
NOTE: GEOTEXTILE FABRIC WILL BE ATTACHED TO FACE OF ABUTMENT FOOTING AND WINGS.

* DIMENSION VARIES DUE TO 2% SUBDRAIN SLOPE.

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

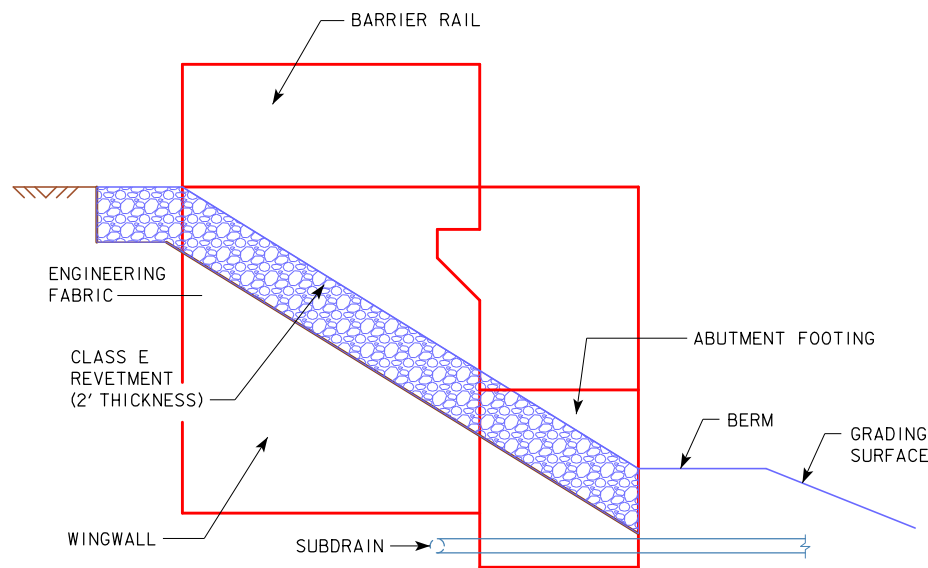
DESIGN FOR 0° SKEW
204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE
51'-0 END SPANS 102'-0 INTERIOR SPAN
ABUTMENT BACKFILL DETAILS
STA. 391+20.61 (CL 1A 2) AT B.F. OF ABUTS. NOVEMBER, 2020
LEE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 29 OF 30 FILE NO. 31795 DESIGN NO. 221

REVISED 06-14 - ADDED 2 FEET OF LENGTH OF EROSION STONE IN FRONT OF THE BRIDGE WING.
ENGLISHF0RESLOPEPROTECTIONBRIDGES.DGN 1005A - THIS SHEET ISSUED 06-02.

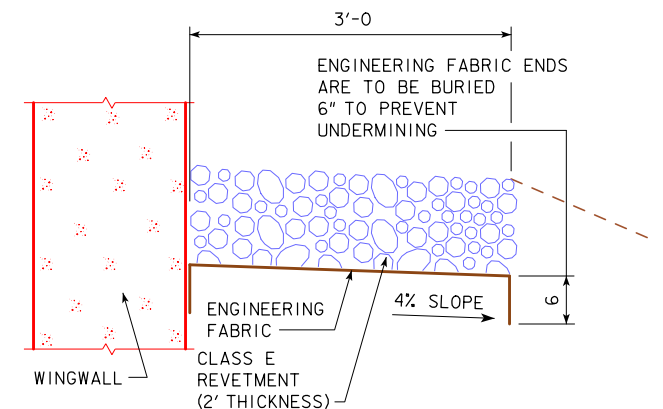


TOP VIEW OF WING ARMORING

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



PROFILE VIEW OF WING ARMORING
(SHOWN FOR INTEGRAL ABUTMENT)



SECTION A-A

GENERAL NOTES:

REVTMENT, CLASS E SHALL BE PLACED ALONG THE SIDES OF THE WINGS AND ABUTMENT FOOTING AS SHOWN IN SECTION A-A. THIS IS TYPICAL AT EACH CORNER OF THE BRIDGE UNLESS OTHERWISE NOTED IN THE PLANS. THE REVTMENT AT THESE LOCATIONS SHALL BE UNDERLAYED WITH ENGINEERING FABRIC IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS.

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

PAYMENT FOR THE BRIDGE WING ARMORING WILL BE INCLUDED IN THE BID ITEMS "REVTMENT, CLASS E," "ENGINEERING FABRIC," AND "EXCAVATION CLASS 10." SEE ESTIMATED BERM ARMORING QUANTITIES TABLE IN DESIGN SHEET 5.

DESIGN FOR 0° SKEW	
204'-0 X 40'-0 PRETENSIONED	
PRESTRESSED CONCRETE BEAM BRIDGE	
51'-0 END SPANS	102'-0 INTERIOR SPAN
BRIDGE WING ARMORING	
STA. 391+20.61 (C 1A 2)	NOVEMBER, 2020
LEE COUNTY	
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION	
DESIGN SHEET NO. 30 OF 30	FILE NO. 31795
DESIGN NO. 221	

LOCATION
IA 2 OVER SUGAR CREEK
T-68N R-6W
SECTION 31
FRANKLIN TOWNSHIP
LEE COUNTY
BRIDGE MAINT. NO. 5646.9S002
FHWA NO. 33251
LATITUDE 40.639035°
LONGITUDE -91.591528°

0 ENGLISH 40
SCALE IN FEET

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

W. ABUT. BRG.
STA. 390+18.61

E. ABUT. BRG.
STA. 392+22.61

PIER 1
STA. 390+69.61

PIER 2
STA. 391+71.61

SIGN

389

390

391

392

393

394

SB-1901
ELEV. 639.1

SB-1904
ELEV. 639.2

SB-1902
ELEV. 639.5

SB-1903
ELEV. 639.7

GEOTECHNICAL 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 Bhooshan A. Karnik Date 10/29/2020
Printed or Typed Name
My license renewal date is December 31, 2021

Pages or sheets covered by this seal: SPS.1 - SPS.2

DESIGN FOR 0° SKEW

204'-0 X 40'-0 PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE

51'-0 END SPANS

102'-0 CENTER SPAN

SOIL PROFILE SHEET

STATION 391+20.61

NOVEMBER 2020

LEE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 1 OF 2 FILE NO. 31795 DESIGN NO. 221

FILE NO. **31795**

ENGLISH

DESIGN TEAM

McClure

LEE COUNTY

PROJECT NUMBER

BRF-002-9(32)--38-56

SHEET NUMBER

SPS.1

10:26:29 AM 10/29/2020 jch

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SHELBY TUBE CORE DATA				
CORE NO.	SB-1901-A2	SB-1901-A5	SB-1904-C1	SB-1904-D2
DEPTH IN FEET	3.0 - 5.0	13.0 - 15.0	8.0 - 10.0	18.0 - 20.0
CLASSIFICATION (AASHTO)	A-6 (16)	--	--	A-6 (13)
COEFF.CONSO. (SQ. FT /DAY)	--	1.6	0.12	--
TRIAxIAL COMPRESSION	CU	--	--	CU
COHESION (PSF) (TOT./EFF.)	470/460	--	--	350/220
FRICTION ANGLE (DEG) (TOT./EFF.)	18.9/27.3	--	--	17.3/29.9
MOISTURE CONTENT (%)	21	18	35	24
DRY DENSITY (PCF)	104	108	82	97
CU-CONSOLIDATED UNDRAINED				
UU-UNCONSOLIDATED UNDRAINED				
UC-UNCONFINED COMPRESSION (c=1/2 Qu)				

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

IA 2 OVER SUGAR CREEK
T-68N R-6W
SECTION 31
FRANKLIN TOWNSHIP
LEE COUNTY
BRIDGE MAINT. NO. 5646.9S002
FHWA NO. 33251
LATITUDE 40.639035°
LONGITUDE -91.591528°

SB-1901

Layer	Thickness
A	20.8
B	5.0
C	5.0
D	5.0
E	50.0
F	13.0
TOTAL	98.8

SB-1902

Layer	Thickness
A	9.5
B	5.0
C	5.0
D	10.5
E	39.5
F	5.0
G	13.0
TOTAL	87.5

SB-1903

Layer	Thickness
A	17.2
B	21.5
C	10.0
D	29.5
E	8.0
TOTAL	86.2

SB-1904

Layer	Thickness
A	3.0
B	4.0
C	4.0
D	10.0
E	5.0
F	5.0
G	2.0
H	43.5
I	19.5
J	10.0
K	3.0
TOTAL	109.0

204'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

51'-0 END SPANS 102'-0 CENTER SPAN

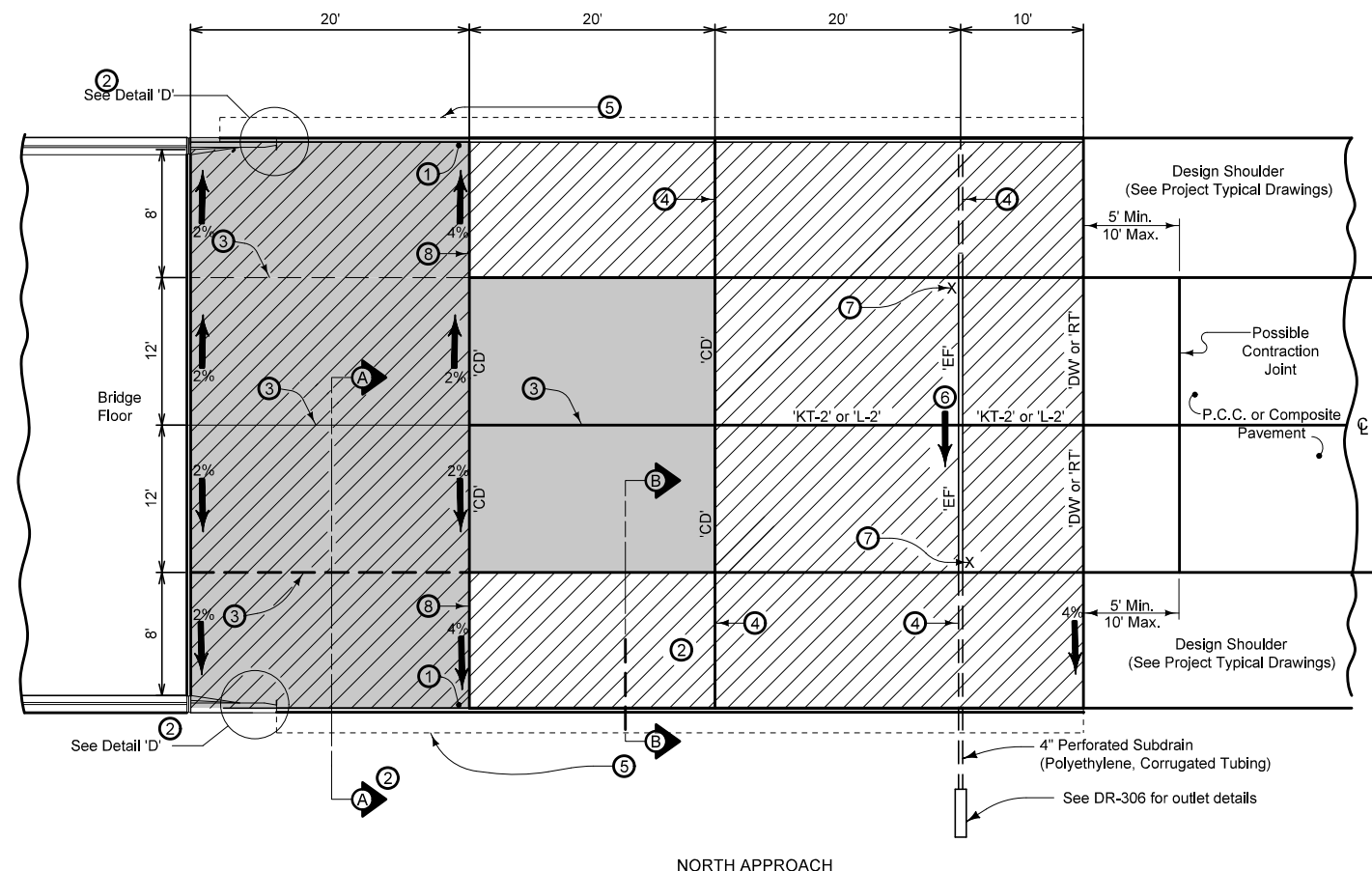
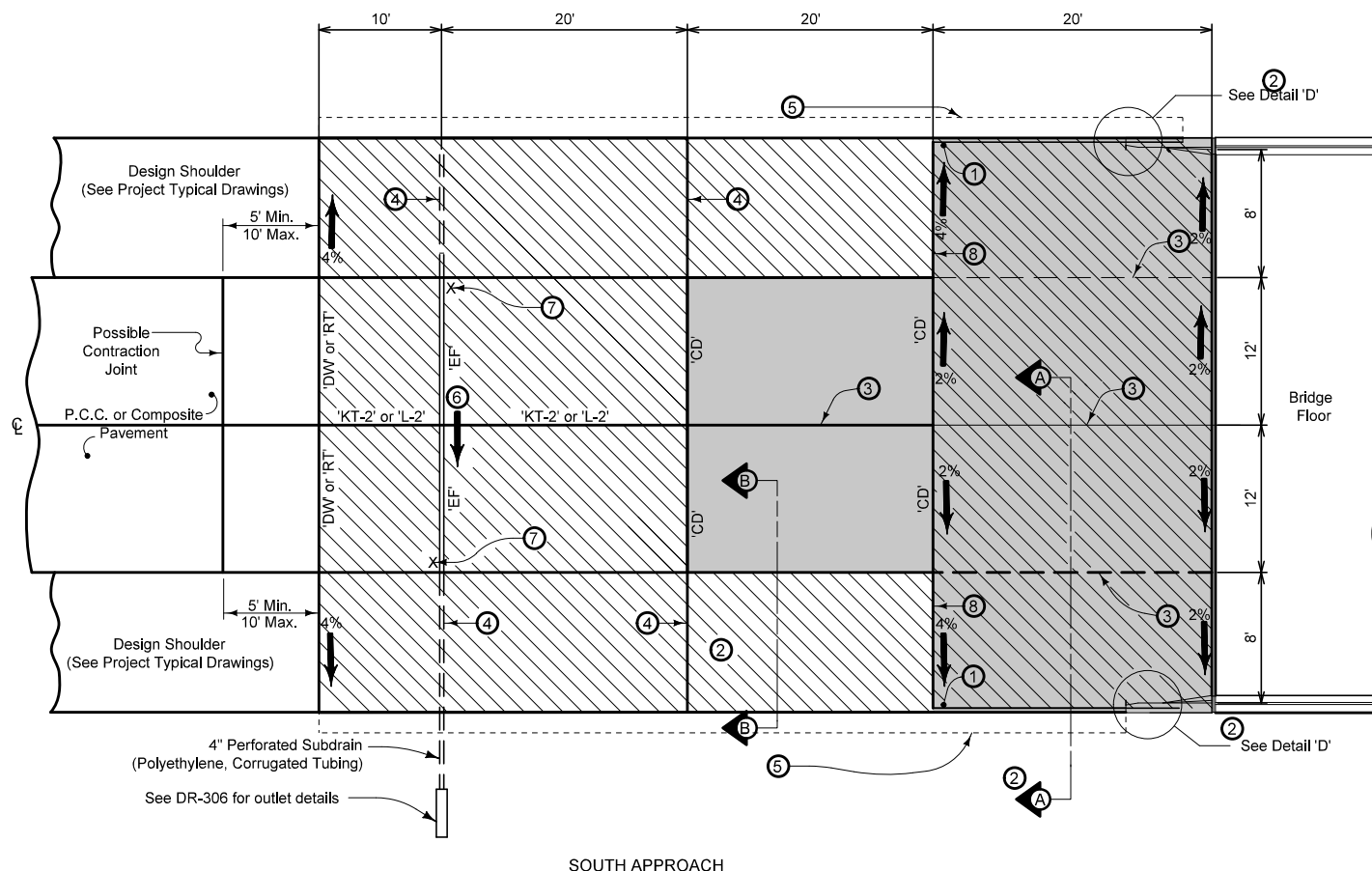
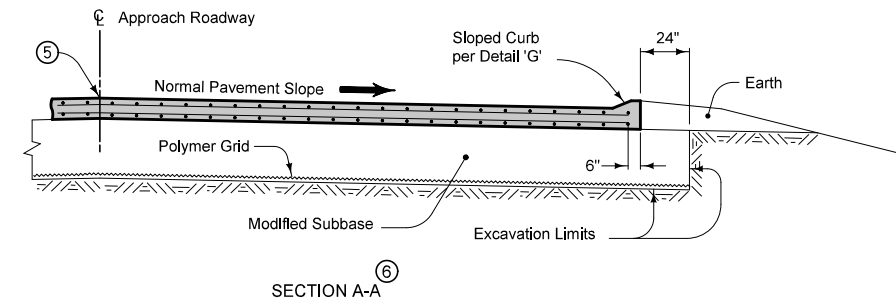
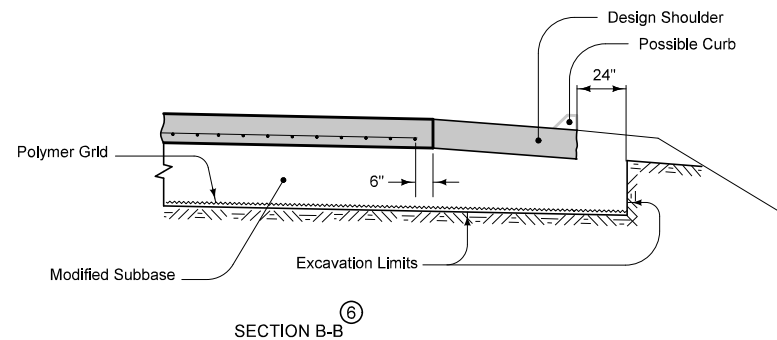
SOIL PROFILE SHEET

STATION 391+20.61 NOVEMBER 2020

LEE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 2 FILE NO. 31795 DESIGN NO. 221



For joint details, see PV-101.

Pay limits for contract item include the following areas:

- Double Reinforced Section
- Single Reinforced Section
- Non-Reinforced Section

- ① Build 4 inch Sloped Curb to end of Double Reinforced Section.
- ② See BR-201, BR-202, BR-203, or BR-204.
- ③ Longitudinal Joint (PV-101):
Single Pour - Saw cut joint per Detail B.
Two Pours - Use 'KS-1' joint (Single Reinforced Section).
Use 'KS-2' joint (Double Reinforced Section).
- ④ Extend 'CD' and 'EF' joints where PCC Shoulder.
- ⑤ Polymer Grid and excavation limits of Modified Subbase 2 feet outside of pavement edge. See BR-201, BR-202, BR-203, or BR-204.
- ⑥ Slope subdrain to drain.
- ⑦ Place an "X" in the plastic concrete near the 'EF' joint at the outside edge of pavement.
- ⑧ Place 'RD' Joint where PCC shoulder. Place 'B' joint otherwise.

BRIDGE APPROACH

100-1D
10-18-05

This project involves bridge replacement over Sugar Creek 1.9 mi W of US 218.

100-0A
10-28-97

[illegible]

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

INDEX OF TABULATIONS			111-25 10-18-11
Tabulation	Tabulation Title	Sheet No.	
C Sheets			
100-15	RELOCATION OF MAILBOXES	C.7	
112-6	BRIDGE APPROACH SECTION	C.6	
112-9	SHOULDERS	C.5	
108-13A	SAFETY CLOSURES	C.6	
108-22	PAVEMENT MARKING LINE TYPES	C.5	
110-1	REMOVAL OF PAVEMENT	C.4	
110-7A	REMOVAL OF STEEL BEAM GUARDRAIL	C.6	
110-17	CLEARING AND GRUBBING	C.7	
100-0A	ESTIMATED ROADWAY QUANTITIES (1 DIVISION PROJECT)	C.1	
100-1D	PROJECT DESCRIPTION	C.1	
100-4A	ESTIMATE REFERENCE INFORMATION	C.2	
100-24	PCC PAVEMENT	C.4	
100-27	PROPOSED POSTED SPEED LIMIT	C.4	
100-28	LONGITUDINAL GROOVING	C.7	
102-3	ACCESS POINTS AND SAFETY RAMPS	C.6	
102-5	EXISTING PAVEMENT	C.4	
102-6C	FULL-DEPTH PATCHES	C.8	
103-10	TOPSOIL STRIPPING AND PLACEMENT	C.7	
104-8A	SCOUR PROTECTION OR ROCK FLUME FOR BRIDGE END DRAIN	C.7	
105-4	STANDARD ROAD PLANS	C.3	
107-23	GRADING FOR GUARDRAIL INSTALLATIONS	C.6	
108-8A	STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION	C.7	
111-25	INDEX OF TABULATIONS	C.3	

UTILITIES		262-6 10-18-05
(NOT A POINT 25 PROJECT)		
This is NOT a POINT 25 project and is not subject to the provisions of IAC 761-115.25.		

STANDARD ROAD PLANS			105-4 10-18-11
The following Standard Road Plans apply to construction work on this project.			
Number	Date	Title	
BA-200	04-20-21	Steel Beam Guardrail Components	
BA-201	04-18-17	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)	
BA-202	10-20-15	Steel Beam Guardrail Bolted End Anchor	
BA-205	04-20-21	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)	
BA-250	04-20-21	Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post (MASH TL-3)	
BR-203	10-17-17	Double Reinforced 12" Approach	
DR-303	10-17-17	Subdrains (Longitudinal)	
DR-306	10-16-18	Precast Concrete Headwall for Subdrain Outlets	
DR-402	10-15-19	Rock Flume for Bridge End Drain	
EC-301	10-18-16	Rock Erosion Control (REC)	
EW-201	04-19-16	Bridge Berm Grading without Recoverable Slope (Barnroof Section)	
EW-301	04-20-21	Guardrail Grading	
EW-501	10-20-15	Rural Entrance	
PM-110	04-21-20	Line Types	
PR-103	04-21-20	Full Depth PCC Patch with Dowels	
PR-105	04-21-20	Full Depth Ramp PCC Patch with Dowels	
PV-101	04-21-20	Joints	
SI-173	04-19-16	Object Markers	
SI-211	10-18-16	Object Marker and Delineator Placement with Guardrail	
TC-1	10-15-19	Work Not Affecting Traffic (Two-Lane or Multi-Lane)	
TC-202	04-21-15	Work Within 15 ft of Traveled Way	
TC-252	04-21-20	Routes Closed to Traffic	

