LETTING DATE 5/19/2020

BRIDGE REPLACEMENT - PPCB
BRF-034-9(224)--38-44

HENRY COUNTY - DESIGN 220/520

LEGEND

- INTERSTATE HIGHWAY
- PRIMARY HIGHWAY-DIVIDED
- PRIMARY HIGHWAY
- PORTLAND CEMENT CONCRETE ROAD
- ASPHALT ROAD
- BITUMINOUS ROAD
- GRAVEL ROAD
- EARTHEN ROAD
- INTERSTATE HIGHWAY (80)
- UNITED STATES HIGHWAY (65)
- STATE HIGHWAY (175)
- COUNTY HIGHWAY (S27)
- RAILROAD
- PIPELINE
- AIRPORT
- HYDROLOGY
- BRIDGE
- STATE BOUNDARY
- COUNTY BOUNDARY
- CORPORATE BOUNDARY
- TOWNSHIP LINE
- SECTION LINE
- ROAD NAMES (ABBEY ROAD)
- UNINCORPORATED PLACE (ELWOOD)

IOWA DOT
Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

PRIMARY ROAD SYSTEM

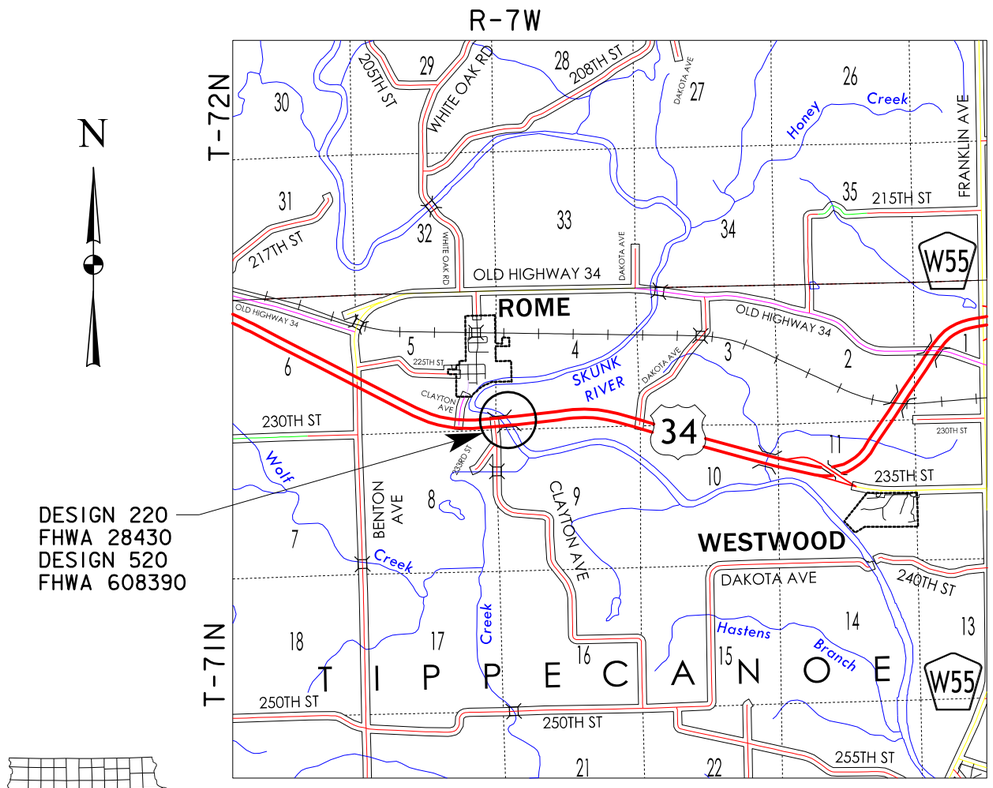
HENRY COUNTY

BRIDGE REPLACEMENT - PPCB

US 34 OVER SKUNK RIVER (E.B.)

3.8 MILES EAST OF JCT. SR W40

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.



LOCATION MAP

PROJECT DIRECTORY NAME: 4403401016

ENGLISH STANDARD BRIDGE PLANS

STANDARD	ISSUED	REVISED

REVISIONS

	TOTAL SHEETS
	97
PROJECT NUMBER	
BRF-034-9(224)--38-44	
R.O.W. PROJECT NUMBER	
PROJECT IDENTIFICATION NUMBER	
16-44-034-010	

INDEX OF SHEETS

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811 Know what's below. Call before you dig.

STANDARD ROAD PLANS

STANDARD ROAD PLANS ARE LISTED ON SHEET NUMBER C.2

DESIGN DATA RURAL

REFER TO INDIVIDUAL SITUATION PLANS FOR TRAFFIC DATA INFORMATION

INDEX OF SEALS

SHEET NO.	NAME	TYPE
1	ANTHONY J. BOWER	STRUCTURAL DESIGN
5	MARK D. WERNER	HYDRAULIC DESIGN
SPS.1	JUSTIN D. HUMKE	GEOTECHNICAL DESIGN
A.1	TAYLOR R. THEULEN	ROADWAY DESIGN
CS.1	MARK A. DELL	GEOTECHNICAL DESIGN

STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER
Anthony J. Bower
19231
IOWA

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

Signature 2/28/2020 Date

Anthony J. Bower
Printed or Typed Name

My license renewal date is December 31, 2020

Pages or sheets covered by this seal: SHEETS 1 THRU 49

DESIGN TEAM Stanley Consultants Inc. | ENGLISH | IOWA DOT * OFFICE OF BRIDGES AND STRUCTURES | FILE NO. 31646 | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER

ESTIMATED BRIDGE QUANTITIES - DESIGN 220

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1.	2101-1001005	REMOVAL OF FLOOD DEBRIS	TON	100	
2.	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CY	4370.0	
3.	2401-6745625	REMOVAL OF EXISTING BRIDGE	LS	1.00	
4.	2402-2720000	EXCAVATION, CLASS 20	CY	380	
5.	2402-2721000	EXCAVATION, CLASS 21	CY	648	
6.	2402-2722000	EXCAVATION, CLASS 22	CY	258	
7.	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	CY	669.1	
8.	2403-7000210	HIGH PERFORMANCE STRUCTURAL CONCRETE	CY	727.3	
9.	2404-7775000	REINFORCING STEEL	LB	86,641	
10.	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	220,116	
11.	2404-7775009	REINFORCING STEEL, STAINLESS STEEL	LB	8,156	
12.	2407-0564330	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTE130	EACH	5	
13	2407-0564340	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTE140	EACH	15	
14.	2408-7800000	STRUCTURAL STEEL	LB	33,167	
15.	2413-1200000	STEEL EXTRUSION JOINT WITH NEOPRENE	LF	88.2	
16.	2413-1200100	NEOPRENE GLAND INSTALLATION AND TESTING	LF	88.2	
17.	2414-6424110	CONCRETE BARRIER RAILING	LF	1,179.4	
18.	2501-0201057	PILES, STEEL, HP 10x57	LF	1,350	
19.	2507-2638650	BRIDGE WING ARMORING - EROSION STONE	SY	28.0	
20.	2507-3250005	ENGINEERING FABRIC	SY	5,970.0	
21.	2507-6800061	REVETMENT, CLASS E	TON	4,890.0	
22.	2507-8029000	EROSION STONE	TON	110.0	
23.	2526-8285000	CONSTRUCTION SURVEY	LS	1.00	
24.	2533-4980005	MOBILIZATION	LS	1.00	

ROADWAY QUANTITIES
SHOWN ON SHEET C.1

ESTIMATE REFERENCE INFORMATION

ITEM NO.	DESCRIPTION
1.	INCLUDES ALL WORK FOR CUTTING, REMOVAL, AND OFF-SITE DISPOSAL OF FLOOD DEBRIS AGAINST THE UPSTREAM FACE OF EXISTING PIERS. REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE SPECIFICATIONS. THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE FOR REMOVAL OF FLOOD DEBRIS. THE PAYMENT FOR REMOVAL OF FLOOD DEBRIS SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EQUIPMENT, AND LABOR AND FOR PERFORMANCE OF ALL WORK NECESSARY FOR PROPER REMOVAL FROM THE PROJECT.
2.	INCLUDES EXCAVATION FOR REVETMENT FOR BERM LINING NEAR BOTH ABUTMENTS AND ALONG THE WEST BANK OF THE EXISTING CHANNEL AS SHOWN ON DESIGN SHEET 5.
3.	INCLUDES REMOVAL OF EXISTING SUBSTRUCTURES TO 1' BELOW THE NATURAL STREAM BOTTOM OR NATURAL GROUND SURFACE AND PLACEMENT OF BACKFILL MATERIAL.
4.	INCLUDES EXCAVATION FOR BRIDGE ABUTMENTS AND WINGS.
5.	INCLUDES EXCAVATION FOR BRIDGE PIERS.
6.	INCLUDES EXCAVATION FOR BRIDGE PIERS.
7.	INCLUDES THE CONCRETE FOR THE ABUTMENT FOOTINGS, BACKWALLS, PIERS, WING EXTENSIONS, AND MASKWALLS. INCLUDES FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), FLOODABLE BACKFILL, POROUS BACKFILL, GEOTEXTILE FABRIC, WATER FLOODING, AND SUBDRAIN OUTLETS AT ABUTMENTS. INCLUDES FURNISHING AND PLACING 3 INCH DIAMETER PVC PLASTIC PIPE AND EXPANDING FOAM IN THE ABUTMENT WINGS. INCLUDES FURNISHING AND APPLYING CONCRETE SEALER TO ABUTMENT BRIDGE SEATS AND ON BEAM ENDS AT ABUTMENTS. INCLUDES ALL RESILIENT JOINT FILLER REQUIRED.
8.	THIS BID ITEM INCLUDES THE CONCRETE FOR THE SLAB, ABUTMENT, PIER DIAPHRAGMS, AND WINGWALLS. REFER TO THE DEVELOPMENTAL SPECIFICATION FOR HIGH PERFORMANCE CONCRETE FOR STRUCTURES FOR ADDITIONAL INFORMATION.
12./13.	INCLUDES PIER AND ABUTMENT BEARING MATERIAL AND COIL TIES. INCLUDES ANCHORED CURVED SOLE PLATES AT PIERS AND ABUTMENS. INCLUDES NEOPRENE PADS AND LAMINATED NEOPRENE BEARING PADS. NONSTANDARD STIRRUP LENGTHS ARE USED FOR BEAMS. INCLUDES CONTRACTOR FILLING OUT BEAM NUMBERS BY LOCATION AND BEAM SEAT ELEVATIONS IN "PCC BEAM DATA SPREADSHEET" AND FORWARDING ELECTRONIC SPREADSHEET TO THE ENGINEER.
14.	INCLUDES ALL COST FOR FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGMS. INCLUDES COST TO FURNISH AND INSTALL DECK DRAINS.
15.	INCLUDES ALL NECESSARY HARDWARE AND ACCESSORIES INCLUDING THE ANCHORAGE SYSTEM, TEMPORARY ERECTION MATERIAL AND THE $\frac{3}{8}$" BARRIER PLATES WITH THEIR ANCHORAGE SYSTEM. EXCLUDES INSTALLATION OF NEOPRENE GLAND. EXPANSION CONDITIONS DO NOT ALLOW THE USE OF THE DS BROWN JOINT FOR THIS INSTALLATION.
16.	INCLUDES INSTALLATION OF NEOPRENE GLAND AND WATER TESTING OF JOINT.
17.	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 CONCRETE. INCLUDES 1,160 FEET OF 2 INCH DIAMETER RIGID STEEL CONDUIT. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING RIGID STEEL CONDUIT, JUNCTION BOXES AND EXPANSION FITTINGS.
18.	INCLUDES FURNISHING AND INSTALLING STEEL PILE POINTS. PILING SHALL BE GRADE 50. SPLICES BETWEEN INDIVIDUAL LENGTHS OF PILE SHALL CONSIST OF FULL PENETRATION WELDS IN ACCORDANCE WITH SECTION 2501.03,P,2 OF THE STANDARD SPECIFICATIONS.
19.	INCLUDES FURNISHING AND PLACING ENGINEERING FABRIC, EROSION STONE, AND ALL REQUIRED EXCAVATING, SHAPING AND COMPACTING FOR WING ARMORING.
20.	ENGINEERING FABRIC SHALL BE MATERIAL AS SPECIFIED FOR REVETMENT, ARTICLE 4196.01,B,6 AND EMBANKMENT EROSION CONTROL, ARTICLE 4196.01,B,3 OF THE STANDARD SPECIFICATIONS.
21.	ESTIMATED AT 1.6 TON/CY. BROKEN CONCRETE WILL NOT BE ALLOWED AS A SUBSTITUTE FOR REVETMENT.
22.	ESTIMATED AT 1.6 TON/CY.

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

ESTIMATED QUANTITIES

STATION 960+00.06, RT. 89.00' MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 39 FILE NO. 31646 DESIGN NO. 220

2/28/2020 10:11:39 AM 9039 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\4403401016\BRFinal\Stanley\BRG_44034224.dgn 440220S001 11x17_pdf.pltcfg

SUMMARY OF CONCRETE QUANTITIES

LOCATION	STRUCTURAL CONCRETE	HPC STRUCTURAL CONCRETE
WEST ABUT. FTG. + BKWL. + WING EXT. + MASKWALL	65.6	———
EAST ABUT. FTG. + BKWL. + WING EXT. + MASKWALL	65.3	———
BRIDGE DECK + ABUT. & PIER DIAPHRAGMS	———	716.5
ABUTMENT WINGS 4 @ 2.7	———	10.8
PIER #1	180.2	———
PIER #2	176.0	———
PIER #3	182.0	———
TOTAL (CU. YDS.)	669.1	727.3

SUMMARY OF REINFORCING STEEL

LOCATION	NON-COATED REINFORCING STEEL	STAINLESS STEEL REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
WEST ABUT. FTG. + BKWL. + WING EXT. + MASKWALL	———	77	7,566
EAST ABUT. FTG. + BKWL. + WING EXT. + MASKWALL	———	77	7,566
BRIDGE DECK **	———	———	183,927
ABUTMENT WINGS 4 @ 292	———	———	1,168
BARRIER RAIL - NORTH RAIL	———	3,617	9,564
BARRIER RAIL - SOUTH RAIL	———	3,617	9,261
BARRIER RAIL END SECTION	———	4 AT 192	4 AT 266
PIER #1	28,982	———	———
PIER #2	28,429	———	———
PIER #3	29,230	———	———
** INCLUDES ABUTMENT & PIER DIAPHRAGMS FOR PCC	———	———	———
TOTAL (LBS.)	86,641	8,156	220,116

SUMMARY OF EXCAVATION

LOCATION	CLASS 20 EXCAVATION	CLASS 21 EXCAVATION	CLASS 22 EXCAVATION
WEST ABUTMENT	190	———	———
EAST ABUTMENT	190	———	———
PIER #1	———	648	58
PIER #2	———	———	111
PIER #3	———	———	89
BERM LINING - WEST ABUT. #	———	———	———
BERM LINING - EAST ABUT. #	———	———	———
EX. CHANNEL - WEST BANK #	———	———	———
TOTAL (CU. YDS.)	380	648	258

SEE SITE PLAN SHEET FOR CLASS 10 EXCAVATION.

SUMMARY OF FOUNDATIONS

LOCATION	SUBSTRUCTURE TYPE	FOUNDATION TYPE	NUMBER	LENGTH (LIN. FT.)	TOTAL (LIN. FT.)
WEST ABUTMENT	STUB ABUTMENT	HP10x57	15	35	525
EAST ABUTMENT	STUB ABUTMENT	HP10x57	15	55	825
PIER #1	TEE PIER	SPREAD FOOTING	———	———	———
PIER #2	TEE PIER	SPREAD FOOTING	———	———	———
PIER #3	TEE PIER	SPREAD FOOTING	———	———	———

SUMMARY OF STRUCTURAL STEEL

LOCATION		TOTAL (LBS.)
BRIDGE DECK DRAINS	24 @ 136	3,264.0
DIAPHRAGMS		19,537.9
ABUTMENT BEARING STEEL ASSEMBLIES	10 @ 345.5	3,455.0
PIER BEARING STEEL ASSEMBLIES	20 @ 345.5	6,910.0
TOTAL (LBS.)		33,166.9

SUMMARY OF BEARINGS

LOCATION	BEARING TYPE	NUMBER	ASSOCIATED BID ITEM
WEST ABUTMENT	14 x $4\frac{1}{8}$ x 2'-4 LAMINATED NEOPRENE PAD / CURVED SOLE PL ASSEMBLY	5	Δ INCIDENTAL ITEM
EAST ABUTMENT	14 x $4\frac{1}{8}$ x 2'-4 LAMINATED NEOPRENE PAD / CURVED SOLE PL ASSEMBLY	5	Δ INCIDENTAL ITEM
PIER #1	14 x $3\frac{1}{4}$ x 2'-4 LAMINATED NEOPRENE PAD / CURVED SOLE PL ASSEMBLY	10	Δ INCIDENTAL ITEM
PIER #2	PLAIN NEOPRENE 1"	10	INCIDENTAL ITEM
PIER #3	14 x $3\frac{1}{4}$ x 2'-4 LAMINATED NEOPRENE PAD / CURVED SOLE PL ASSEMBLY	10	Δ INCIDENTAL ITEM

Δ CURVED SOLE PLATES ARE INCIDENTAL TO PPC BEAMS.

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

SUMMARY QUANTITIES SHEET

STATION 960+00.06, RT. 89.00' MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 39 FILE NO. 31646 DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc. | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 3

GENERAL NOTES:

IT IS THE INTENT OF THIS DESIGN TO CONSTRUCT A NEW 4-SPAN 556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE ON EASTBOUND US 34 OVER THE SKUNK RIVER.

THIS DESIGN IS FOR THE REPLACEMENT OF THE EXISTING 520'-6 x 28'-0 CONTINUOUS I-BEAM BRIDGE, DESIGN NO. 2756 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

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

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

CLASS 20 EXCAVATION MATERIAL UNSUITABLE FOR BACKFILLING SHALL BE DISPOSED OF IN A MANNER THAT WILL LEAVE THE SITE IN A NEAT CONDITION. 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.

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

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

SEE ROADWAY PLANS FOR GUARDRAIL BID ITEMS AND NOTES.

THE ROAD WILL BE CLOSED TO TRAFFIC DURING CONSTRUCTION. SEE TRAFFIC CONTROL PLAN NOTE ON THIS SHEET.

NO WAITING TIME REQUIRED BETWEEN COMPLETION OF ABUTMENT FILL AND DRIVING PILES.

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).

CONCRETE FORMS ARE REQUIRED TO REMAIN IN PLACE 5 DAYS OR LONGER IN ACCORDANCE WITH ARTICLE 2403.03,M,2, OF THE STANDARD SPECIFICATIONS, EXCEPT THE MINIMUM CONCRETE FLEXURAL STRENGTH REQUIRED BEFORE REMOVAL OF FORMS SHALL BE 575 PSI.

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.

THE BRIDGE CONTRACTOR IS TO INSTALL SUBDRAINS BEHIND THE ABUTMENTS AS DETAILED. THE SUBDRAINS SHALL BE 4" DIAMETER PERFORATED SUBDRAIN (POLYETHYLENE CORRUGATED TUBING). THE SUBDRAIN SHALL INCLUDE A METAL PIPE OUTLET SECTION WITH A REMOVABLE RODENT GUARD AS DETAILED IN THESE PLANS.

SEE ROADWAY PLANS FOR LONGITUDINAL GROOVING BID ITEMS AND NOTES.

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 348 PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS 172 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.

FAINT LINES ON PLANS INDICATE THE EXISTING STRUCTURE.

THE LUMP SUM BID FOR "REMOVAL OF EXISTING BRIDGE" SHALL INCLUDE REMOVAL AND DISPOSAL OF THE EXISTING BRIDGE. ALL SALVAGEABLE MATERIAL AND UNSALVAGEABLE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR. THE EXISTING STRUCTURE SHALL BE REMOVED TO AN ELEVATION AT LEAST 1 FOOT BELOW FINISHED GROUNDLINE AND TO THE EXTENT THAT IT WILL NOT INTERFERE WITH THE NEW CONSTRUCTION.

REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS.

2" DIAMETER VENT HOLES TO BE PROVIDED IN ALL BTE130 BEAMS IN SPAN #4. SEE DESIGN SHEET 22 FOR LOCATIONS AT BEAM THIRD POINTS.

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.

SUBDRAIN SLOPED DOWNWARD 2% PER FOOT FROM CENTERLINE APPROACH ROADWAY TO EXTEND THRU FILL (TYPICAL BOTH ABUTMENTS).

SOVEREIGN LANDS CONSTRUCTION PERMIT 16295 SHALL APPLY TO WORK ON THIS PROJECT. THE IOWA DNR CONSERVATION OFFICER FOR THE AREA SHALL BE CONTACTED. AT LEAST 48 HOURS PRIOR TO COMMENCING WORK CONTACT SETH MOORE AT 515-725-8464.

THIS STRUCTURE IS TO BE BUILT UNDER THE CONDITIONS OF DNR FLOOD PLAIN DEVELOPMENT PERMIT NUMBER 47653.

CLASS 20 EXCAVATION QUANTITIES ARE BASED ON THE ASSUMPTION THAT THE CHANNEL EXCAVATION IS COMPLETED PRIOR TO STARTING CONSTRUCTION OF THE ABUTMENTS AND PIERS.

CONCRETE SEALER IS TO BE APPLIED TO THE EXPOSED BRIDGE SEAT AND WASH SURFACES AT THE ABUTMENTS.

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

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

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

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.

DEVELOPMENTAL SPECIFICATIONS FOR FLOOD DEBRIS REMOVAL
DEVELOPMENTAL SPECIFICATIONS FOR HIGH PERFORMANCE CONCRETE

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 SHEET 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).

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	STRUCTURAL STEEL - DIAPHRAGMS
2	DECK DRAINS
3	EXPANSION DEVICE
4	BARRIER PLATES
5	LAMINATED NEOPRENE PAD/ CURVE SOLE PLATE ASSEMBLY

BRIDGE DECK DIMENSIONS TABLE

NO.	ITEM	UNIT	QUANTITY
1	DECK LENGTH	L.F.	561.3
2	MINIMUM DECK WIDTH	L.F.	43.2
3	MAXIMUM DECK WIDTH	L.F.	43.2
4	DECK AREA	S.F.	24250

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.

NOTE:
ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

POLLUTION PREVENTION PLAN SHOWN ELSEWHERE IN THESE PLANS.

TRAFFIC CONTROL PLAN

NOTE: THE ROADWAY WILL BE CLOSED TO THRU TRAFFIC. TRAFFIC CONTROL WILL BE THE RESPONSIBILITY OF THE ROAD CONTRACTOR AS SHOWN ON THE ROAD PLANS.

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

GENERAL NOTES

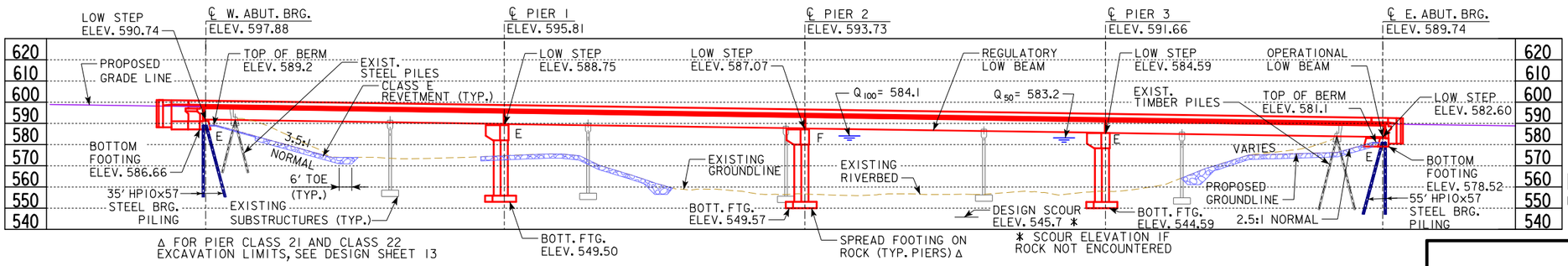
STATION 960+00.06, RT. 89.00' MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

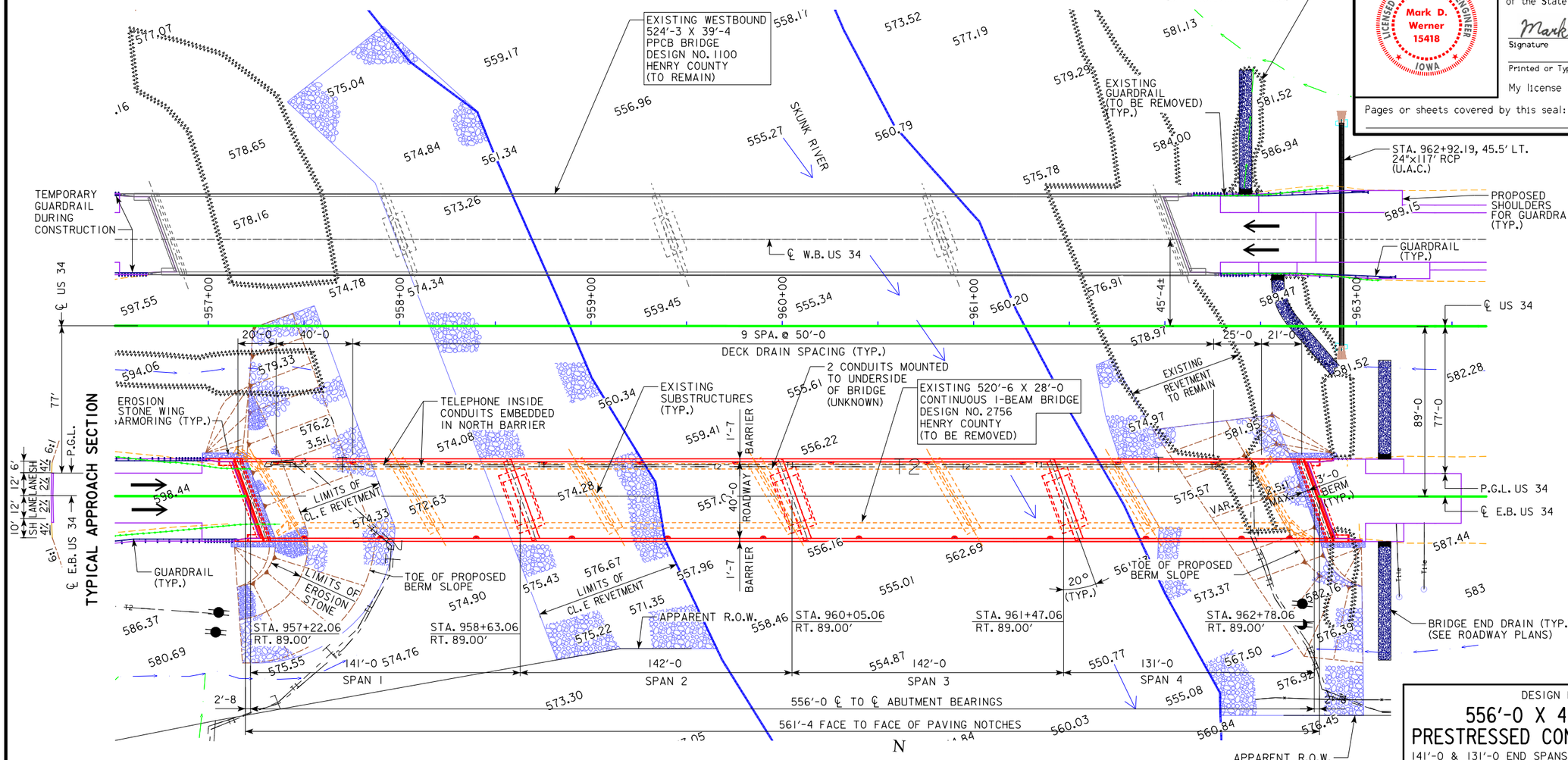
DESIGN SHEET NO. 3 OF 39 FILE NO. 31646 DESIGN NO. 220

2/27/2020 2:27:19 PM 9127 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\4403401016\BRFinal\Stanley\BRG_44034224.dgn 440220S003 11x17_pdf.pltcfg



LONGITUDINAL SECTION ALONG ℄ E.B. US 34

(SEE SECTION THRU EMBEDDED REVETMENT BERM DETAILS ON DESIGN SHEET 5)



TYPICAL APPROACH SECTION

TRAFFIC ESTIMATE

2021 AADT	7900	V.P.D.
2041 AADT	11800	V.P.D.
TRUCKS	17	%

SITUATION PLAN

N

UTILITIES LEGEND:

— T — TELEPHONE LINE - ICN

— T2 — TELEPHONE LINE - WINDSTREAM

BENCH MARK NO. 322 - N:6469785.28 E:2437080l.27 - BM ⅝" DIA. DRIVEN ALUMINUM ROD WITH 2.5" DIA. ALUMINUM CAP

-1.4642%

VPI STA. 956+47.29
VPI ELEV. 598.76

VPI STA. 963+54.29
VPI ELEV. 588.41

PROPOSED PROFILE GRADE US 34

NOTES:

1. ALL UNITS ARE IN FEET UNLESS NOTED OTHERWISE.

HYDRAULIC DESIGN

LICENSED PROFESSIONAL ENGINEER — Mark D. Werner 15418 — IOWA

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

Mark D Werner — 10/1/2018
Signature — Date

Mark D. Werner
Printed or Typed Name

My license renewal date is December 31, 2021

Pages or sheets covered by this seal: 5 & 6

HYDRAULIC DATA

DRAINAGE AREA = 3430 SQ. MI.
STREAM SLOPE = 1.056 FT./MI.
AVG. LOW WATER STAGE = 565.0

Q_{25} = 39,100 CFS
STAGE = 582.3

Q_{50} = 43,850 CFS
STAGE = 583.2
REGULATORY LOW BEAM = 586.5
BACKWATER = 0.01 FT.

Q_{100} = 48,300 CFS
STAGE = 584.1
OPERATIONAL LOW BEAM = 583.4
BACKWATER = 0.01 FT.
AVG. BRIDGE VELOCITY = 5.8 FPS

Q_{200} = 55,500 CFS
STAGE = 585.0
CALCULATED DESIGN SCOUR = 545.7

Q_{500} = 58,850 CFS
STAGE = 585.7
AVG. BRIDGE VELOCITY = 6.5 FPS
CALCULATED CHECK SCOUR = 545.7

ROADWAY OVERTOP ELEV STA. 587.2
STA. 965+78.90

EXTREME HW STAGE = APPROX. 586.8
DATE = APRIL 1973

LOCATION

E.B. US 34 OVER SKUNK RIVER
T-71N R-7W
SECTION 4 & 5
TIPPECANOE TOWNSHIP
HENRY COUNTY
FHWA NO. 28431
BRIDGE MAINT. NO. 4426.7R034
LATITUDE: 40.975053°
LONGITUDE: -91.677947°

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

SITUATION PLAN

STATION 960+00.06, RT. 89.00' — MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 39 — FILE NO. 31646 — DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc. | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 5

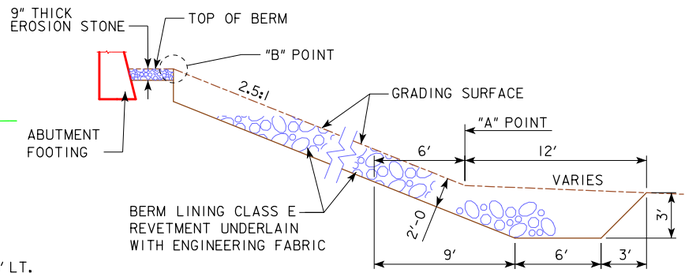
2/17/2020 5:24:36 PM 9039 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\4403401016\BRFinal\Stanley\BRG_44034224.dgn 440220S004 11x17_pdf.pltcfg

BENCH MARK NO. 322 - N:6469785.28 E:24370801.27 - BM 5/8" DIA. DRIVEN ALUMINUM ROD WITH 2.5" DIA. ALUMINUM CAP

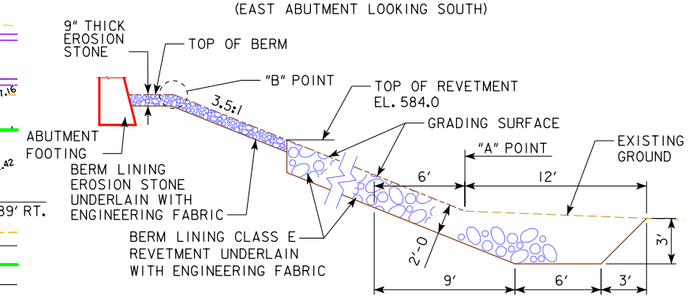
BERM SLOPE LOCATION TABLE

POINTS	WEST ABUTMENT			EAST ABUTMENT		
	STATION	OFFSET	ELEV.	STATION	OFFSET	ELEV.
A1	957+86.9	115.58' RT.	575.0	962+69.4	115.58' RT.	575.0
A2	957+70.7	66.42' RT.	575.0	962+41.6	66.42' RT.	575.0
B1	957+35.0	115.58' RT.	589.2	962+82.0	115.58' RT.	581.1
B2	957+20.5	66.42' RT.	589.2	962+64.8	66.42' RT.	581.1
W1	957+14.0	115.58' RT.	597.5	963+02.7	115.58' RT.	588.9
W2	956+98.9	66.42' RT.	597.8	962+87.6	66.42' RT.	589.2

BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE



SECTION THRU EMBEDDED REVETMENT BERM
(EAST ABUTMENT LOOKING SOUTH)



SECTION THRU EMBEDDED REVETMENT BERM
(WEST ABUTMENT LOOKING NORTH)

24" X 241' CMP (U.A.C.)
PRIVATE ENTRANCE
STA. 954+06.06, 45.2' LT. 24" X 72' RCP W/ 24" X 66' CMP EXT. (U.A.C.)
EXIST. MEDIAN ROCK TO REMAIN OR BE REPLACED AT NO COST TO STATE
REVETMENT LIMIT STA. 957+41, 117' LT.
REVETMENT LIMIT STA. 957+91, 156' LT.
REVETMENT LIMIT STA. 957+87, 75' LT.
REVETMENT LIMIT STA. 958+40, 113' LT.
REVETMENT LIMIT STA. 957+23, 1' RT.
REVETMENT LIMIT STA. 957+55, 11' LT.
SKUNK RIVER
REVETMENT LIMIT STA. 961+72, 17' RT.
EXISTING REVETMENT ALONG RIVER BANK TO REMAIN
℄ W.B. US 34
EXISTING ROCK FLUME TO BE REMOVED (TYP.) (SEE ROADWAY PLANS)
STA. 962+92.19, 45.5' LT. 24" X 117' RCP (U.A.C.)
REVETMENT LIMIT STA. 962+57, 46' RT.
REVETMENT LIMIT STA. 961+94, 54' RT.
℄ US 34
℄ E.B. US 34
℄ E. ABUT. BRG. STA. 962+78.06, 89' RT.
℄ W. ABUT. BRG. STA. 957+22.06, 89' RT.
EXISTING 520'-6 X 28'-0 CONTINUOUS I-BEAM BRIDGE DESIGN NO. 2756 HENRY COUNTY (TO BE REMOVED)
REVETMENT LIMIT STA. 957+15, 136' RT.
REVETMENT LIMIT STA. 957+18, 176' RT.
REVETMENT LIMIT STA. 959+65, 169' RT.
REVETMENT LIMIT STA. 963+03, 136' RT.
REVETMENT LIMIT STA. 963+03, 203' RT.
APPARENT R.O.W.
STA. 955+20.5, 168.6' RT. 24" X 66' RCP W/ 24" X 33' CMP EXT. (U.A.C.)
REVETMENT LIMIT STA. 958+82, 174' RT.
REVETMENT LIMIT STA. 962+29, 203' RT.
CLAYTON AVENUE
G-HP
955+00
959+00
961+00
962+00
964+00
B2
A2
W2
A1
B1
W1

SITE PLAN

N

ESTIMATED BERM ARMORING QUANTITIES

LOCATION	REVETMENT CL. E (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	EXCAVATION CL. 10 (CY)
BERM LINING - WEST ABUT.	860	100	1260	815
BERM LINING - EAST ABUT.	1460	10	1720	1295
EX. CHANNEL - WEST BANK	2570	0	2990	2260
TOTALS	4890	110	5970	4370

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.

UTILITIES LEGEND:

- T — TELEPHONE LINE - ICN
- T2 — TELEPHONE LINE - WINDSTREAM
- G-HP — GAS LINE - ANR PIPELINE CO.

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

SITUATION PLAN - SITE

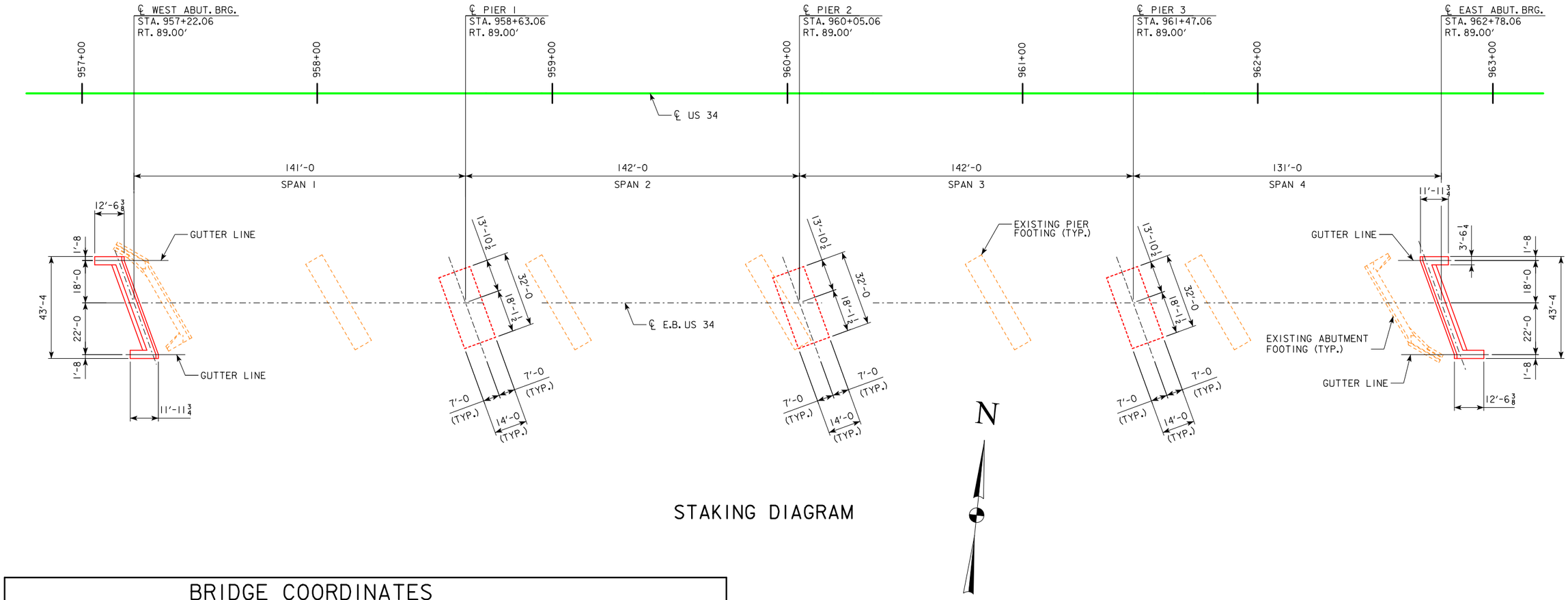
STATION 960+00.06, RT. 89.00' — MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 39 FILE NO. 31646 DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc. | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 6



STAKING DIAGRAM

BRIDGE COORDINATES

LOCATION	℄ W. ABUT. BRG.	℄ PIER 1	℄ PIER 2	℄ PIER 3	℄ E. ABUT. BRG.
NORTH EDGE OF DECK	N=6464439.312 E=24381475.762	N=6464450.685 E=24381616.300	N=6464462.140 E=24381757.837	N=6464473.594 E=24381899.375	N=6464484.161 E=24382029.950
℄ APPROACH ROADWAY	N=6464420.368 E=24381484.446	N=6464431.741 E=24381624.984	N=6464443.195 E=24381766.521	N=6464454.649 E=24381908.059	N=6464465.217 E=24382038.634
SOUTH EDGE OF DECK	N=6464397.553 E=24381494.904	N=6464408.927 E=24381635.442	N=6464420.381 E=24381776.979	N=6464431.835 E=24381918.517	N=6464442.402 E=24382049.092

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 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

STAKING DIAGRAM

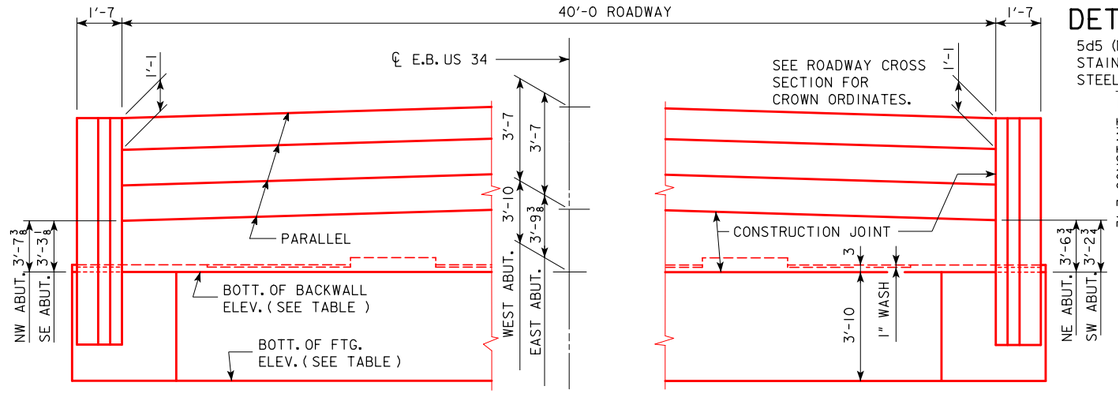
STATION 960+00.06, RT. 89.00' MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

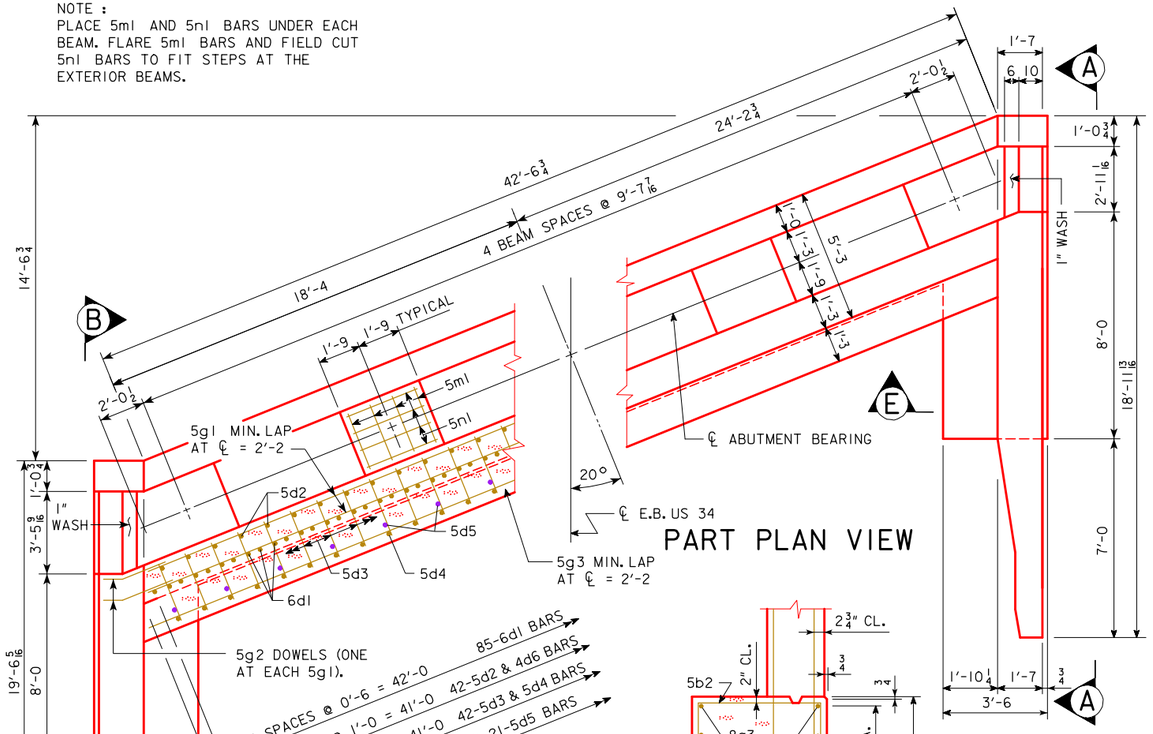
DESIGN SHEET NO. 6 OF 39 FILE NO. 31646 DESIGN NO. 220

BENCH MARK NO. 322 - N:6469785.28 E:24370801.27
BM $\frac{5}{8}$" DIA. DRIVEN ALUMINUM ROD WITH 2.5" DIA. ALUMINUM CAP.



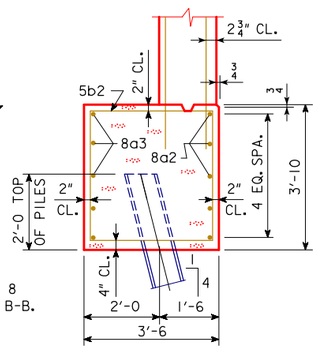
REAR ELEVATION

NOTE :
PLACE 5ml AND 5nl BARS UNDER EACH BEAM. FLARE 5ml BARS AND FIELD CUT 5nl BARS TO FIT STEPS AT THE EXTERIOR BEAMS.



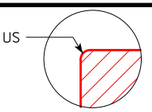
PART PLAN VIEW

PART SECTION THROUGH BACKWALL



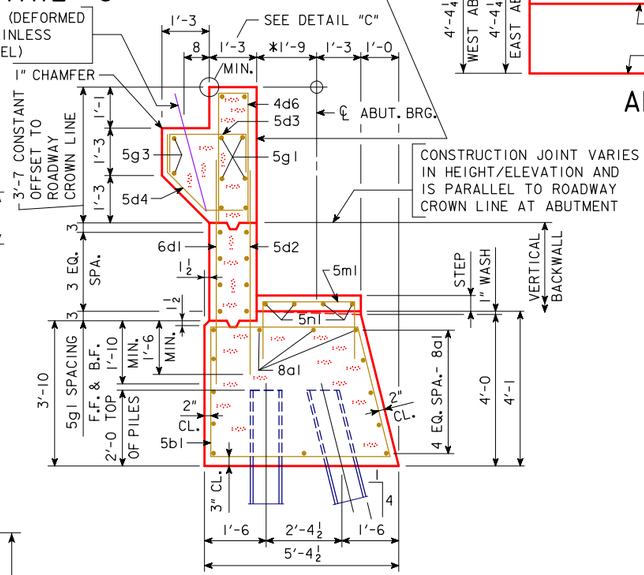
NOTE :
SEE DESIGN SHEET 8 FOR VIEWS A-A & B-B.

SECTION E-E



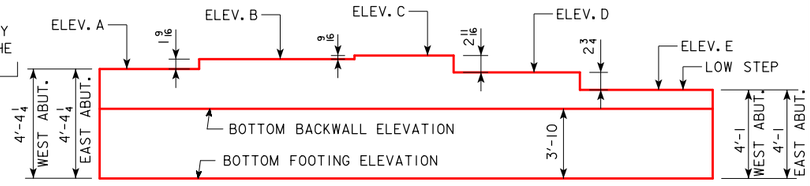
DETAIL "C"

* THIS DIMENSION MAY VARY. TILTING OF THE PAVEMENT SUPPORT SECTION DURING CONSTRUCTION MAY BE NECESSARY TO ACCOMMODATE PROPER SETTING OF THE STRIP SEAL EXPANSION DEVICE OPENING.



SECTION THROUGH ABUTMENT

EXPANSION DEVICE NOT SHOWN



ABUTMENT STEP DIAGRAM

REAR ELEVATION - WEST ABUT.
FRONT ELEVATION - EAST ABUT.

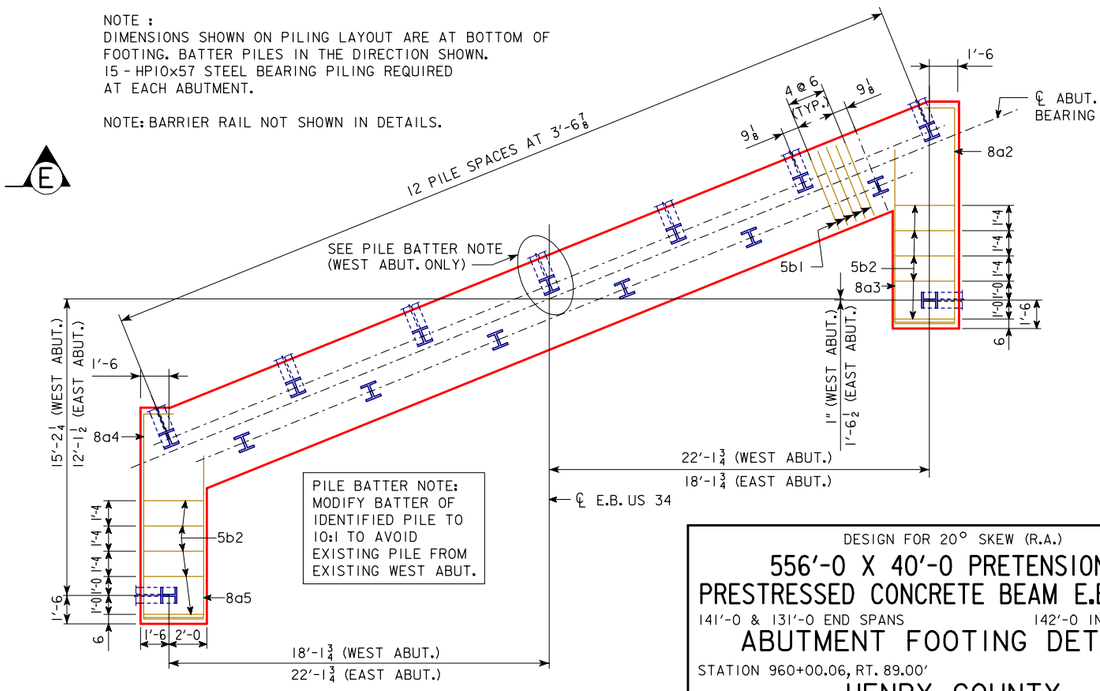
TABLE OF ABUTMENT ELEVATIONS

POINT	WEST ABUTMENT	EAST ABUTMENT
ELEV. A	591.01	582.87
ELEV. B	591.15	583.01
ELEV. C	591.20	583.05
ELEV. D	590.97	582.83
ELEV. E (LOW STEP)	590.74	582.60
BOTT.BACKWALL ELEV.	590.49	582.35
BOTT. FTG. ELEV.	586.66	578.52

NOTE:
FOR ABUTMENT PILE NOTES, SEE DESIGN SHEET 10.

NOTE :
DIMENSIONS SHOWN ON PILING LAYOUT ARE AT BOTTOM OF FOOTING. BATTER PILES IN THE DIRECTION SHOWN.
15 - HP10x57 STEEL BEARING PILING REQUIRED AT EACH ABUTMENT.

NOTE: BARRIER RAIL NOT SHOWN IN DETAILS.



PILING LAYOUT

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

ABUTMENT FOOTING DETAILS

STATION 960+00.06, RT. 89.00' — MARCH 2020

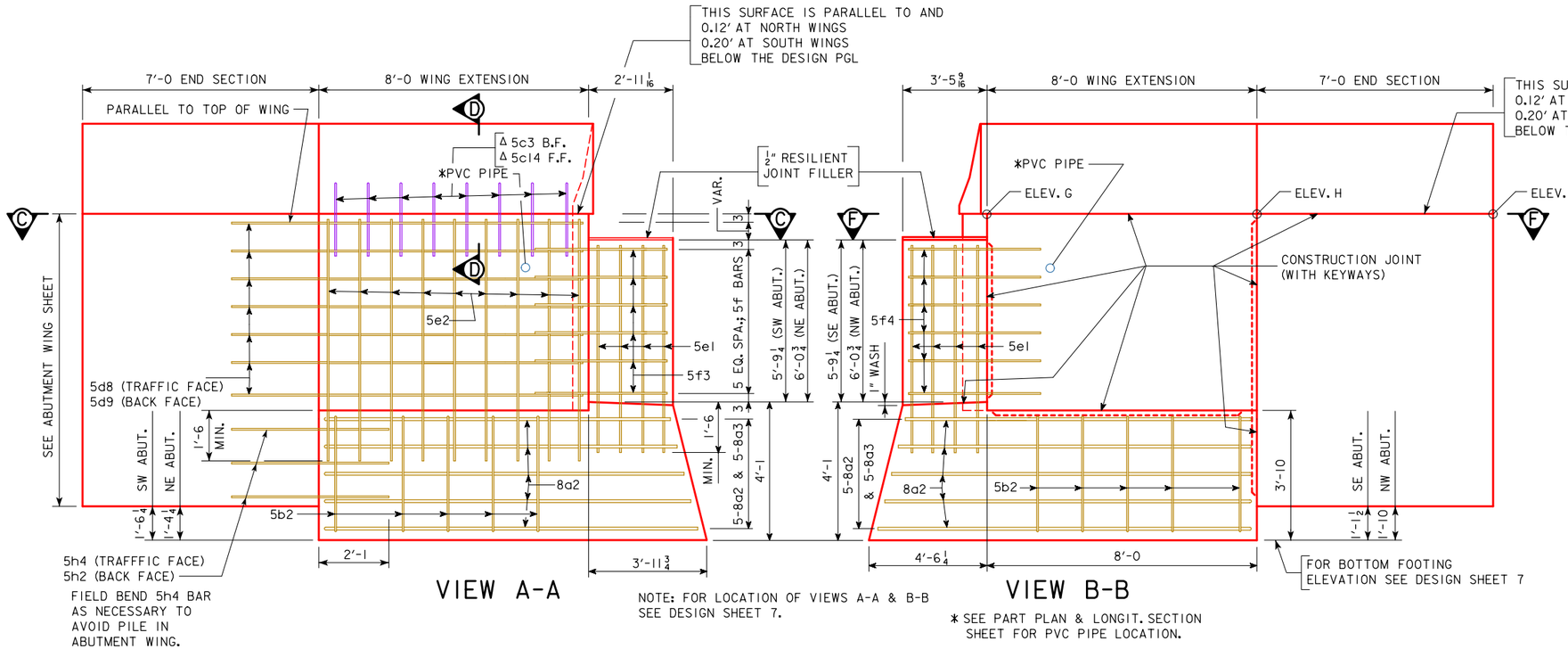
HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 39 — FILE NO. 31646 — DESIGN NO. 220

REVISED 10-10 - ADDED 2 ADDITIONAL 5g1 BARS IN LOWER BACKWALL.
ENGLISHBTSTUBABUTMENTBRIDGES.DGN - 2095-BTE - THIS SHEET ISSUED 07-08.

BENCH MARK NO. 322 - N:6469785.28 E:24370801.27
BM $\frac{5}{8}$" DIA. DRIVEN ALUMINUM ROD WITH 2.5" DIA. ALUMINUM CAP.

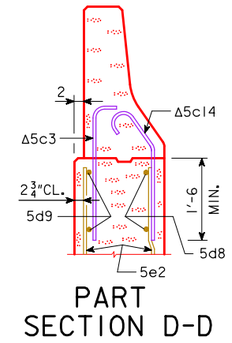


VIEW A-A

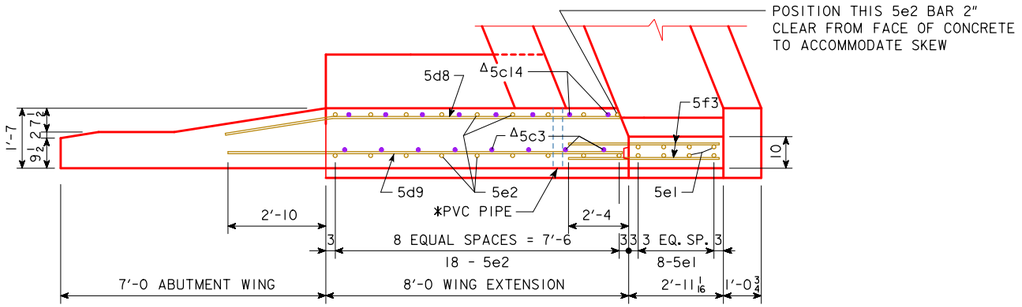
NOTE: FOR LOCATION OF VIEWS A-A & B-B SEE DESIGN SHEET 7.

VIEW B-B

* SEE PART PLAN & LONGIT. SECTION SHEET FOR PVC PIPE LOCATION.



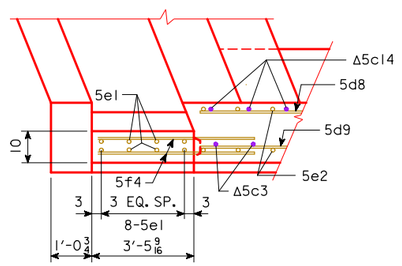
PART SECTION D-D



SECTION C-C

NOTE: BARRIER RAIL NOT SHOWN IN SECTION C-C.

Δ NOTE: SEE DESIGN SHEET 33 IN THESE PLANS FOR DETAILS OF BARRIER RAIL WING EXTENSIONS. REINFORCING BARS 5c3 AND 5c14 ARE INCLUDED IN THE BARRIER RAIL QUANTITIES.



PART SECTION F-F

TABLE OF WINGWALL ELEVATIONS			
LOCATION	ELEV. G	ELEV. H	ELEV. I
NORTHWEST WING	597.69	597.80	597.91
SOUTHWEST WING	597.39	597.50	597.60
NORTHEAST WING	589.50	589.38	589.28
SOUTHEAST WING	589.28	589.16	589.06

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

ABUTMENT WING EXT. DETAILS

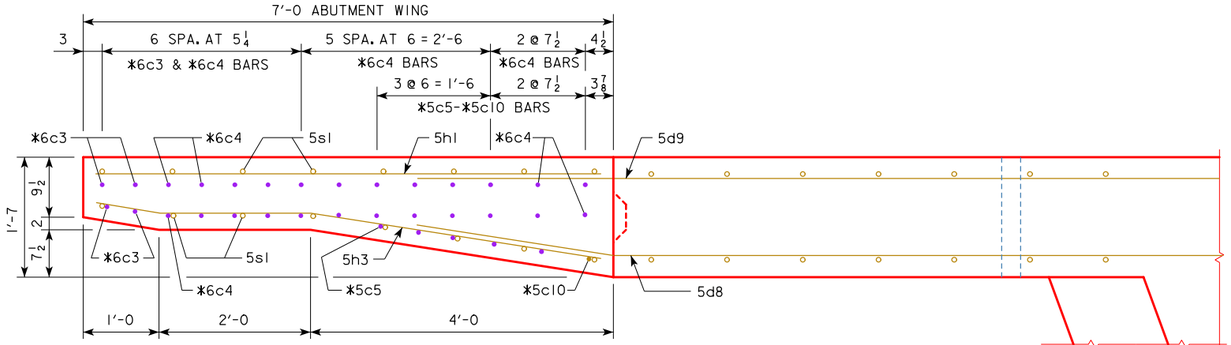
STATION 960+00.06, RT. 89.00' MARCH 2020

HENRY COUNTY

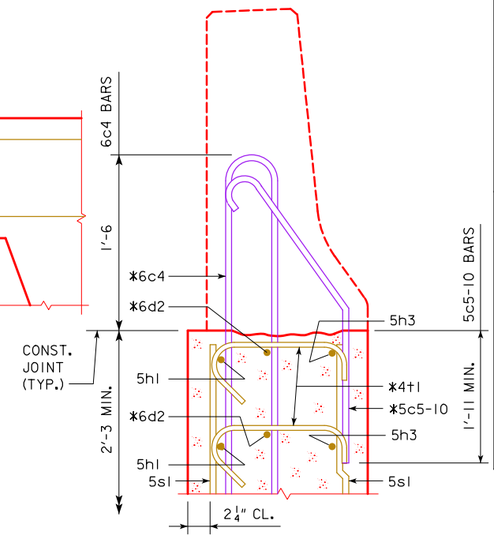
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 8 OF 39 FILE NO. 31646 DESIGN NO. 220

CORRECTION 04-14 - CHANGED NOTE ABOUT BARRIER RAIL BARS 5c3 & 5c14 TO BARRIER RAIL QTYS. INSTEAD OF BRIDGE DECK QTYS.
ENGLISHBTSTUBABUTMENTBRIDGES.DGN - 2102-BTE - THIS SHEET ISSUED 07-08.



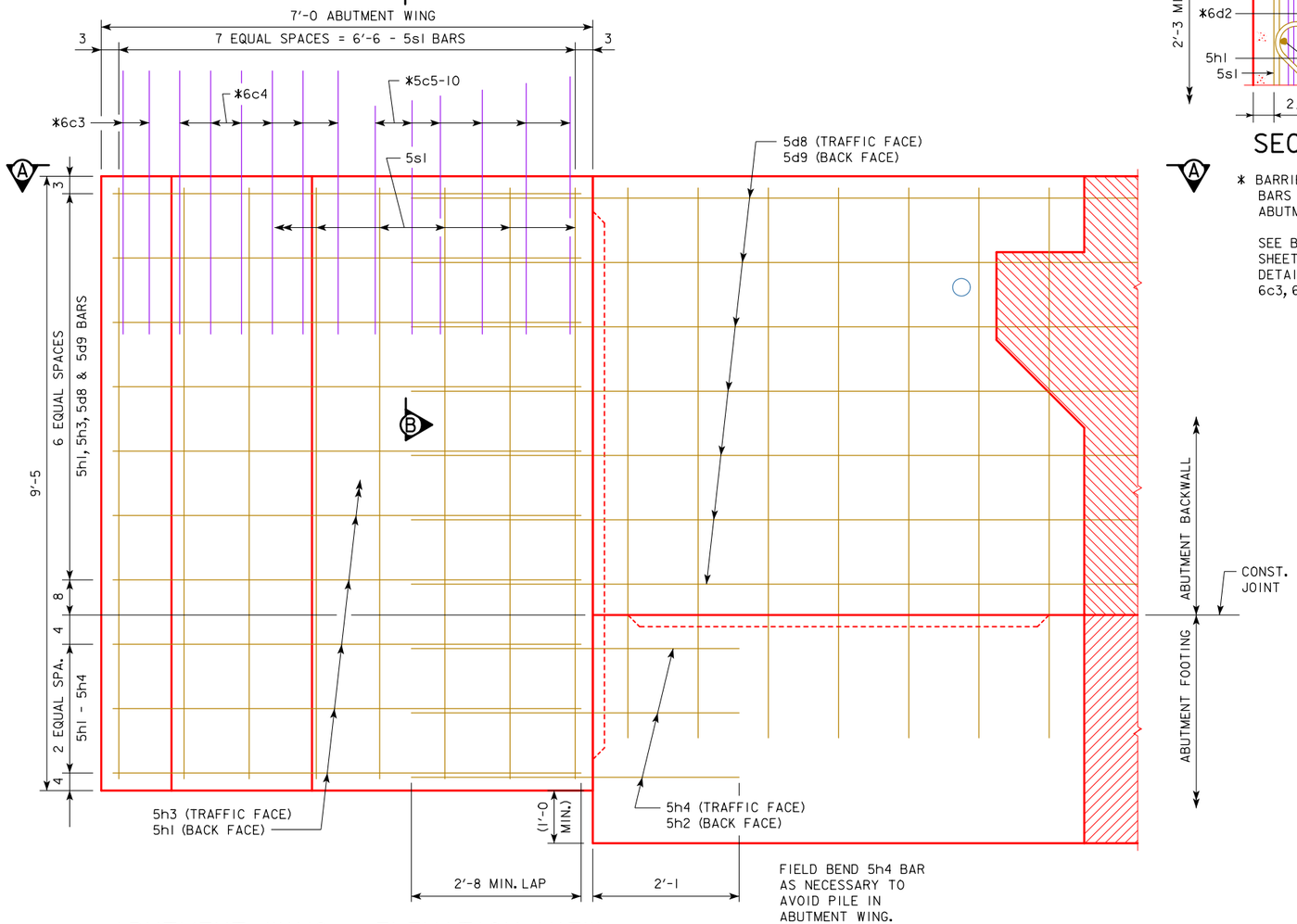
VIEW A-A



SECTION B-B

* BARRIER RAIL END SECTION BARS TO BE PLACED WITH ABUTMENT WING.

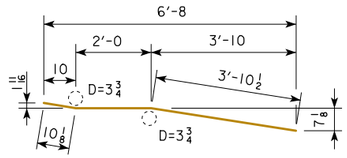
SEE BARRIER RAIL END SECTION SHEET IN THESE PLANS FOR DETAILS OF REINFORCING BARS 6c3, 6c4, 5c5-10, 6d2 & 4t1.



ABUTMENT WING - ELEVATION VIEW

REINFORCING BAR LIST - ONE ABUT. WING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5h1	HORIZONTAL BACK FACE		10	6'-8	70
5h3	HORIZONTAL TRAFFIC FACE		10	6'-9	70
5s1	VERTICAL BOTH FACES		16	9'-1	152
	REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)				292



5h3

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

BENT BAR DETAILS

HIGH PERFORMANCE CONCRETE PLACEMENT SUMMARY

CONCRETE	TOTAL
ONE ABUTMENT WING	2.7
TOTAL (CU. YDS.)	2.7

NOTE:

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

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

ABUTMENT WING DETAILS

STATION 960+00.06, RT. 89.00' MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 9 OF 39 FILE NO. 31646 DESIGN NO. 220

CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET.
ENGLISHMISCELLANEOUSBRIDGES.DGN - 2114-S - THIS SHEET ISSUED 02-08.

DESIGN TEAM Stanley Consultants Inc. | STANDARD SHEET 2114-S | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 10

2/27/2020 2:28:09 PM 9127 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\4403401016\BRFinal\Stanley\BRG_44034224.dgn 440220S009 11x17_pdf.pltcfg

ABUTMENT NOTES:

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

THE MASKWALL IS TO BE POURED BEFORE THE SUPERSTRUCTURE DECK IS POURED.

CONSTRUCTION JOINT KEYWAYS ARE TO BE FORMED WITH BEVELED 2x6's.

THE PORTION OF THE BACKWALL CONTAINING THE ABUTMENT ANCHORAGE OF THE EXPANSION DEVICE IS TO BE PLACED AFTER THE BRIDGE DECK IS PLACED.

CONCRETE SEALER IS TO BE APPLIED TO THE ABUTMENT BRIDGE SEAT IN ACCORDANCE WITH THE CURRENT IOWA D.O.T. STANDARD SPECIFICATIONS.

THE COST OF RESILIENT JOINT FILLER, AND COST OF FURNISHING AND PLACING CONCRETE SEALER IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)".

PAVING NOTCH DOWELS SHALL BE STAINLESS STEEL DEFORMED BAR GRADE 60, MEETING THE REQUIREMENTS OF MATERIALS I.M. 452.

IF NECESSARY TO PREVENT DAMAGE TO THE END OF THE BRIDGE DECK AND 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 NOTES:

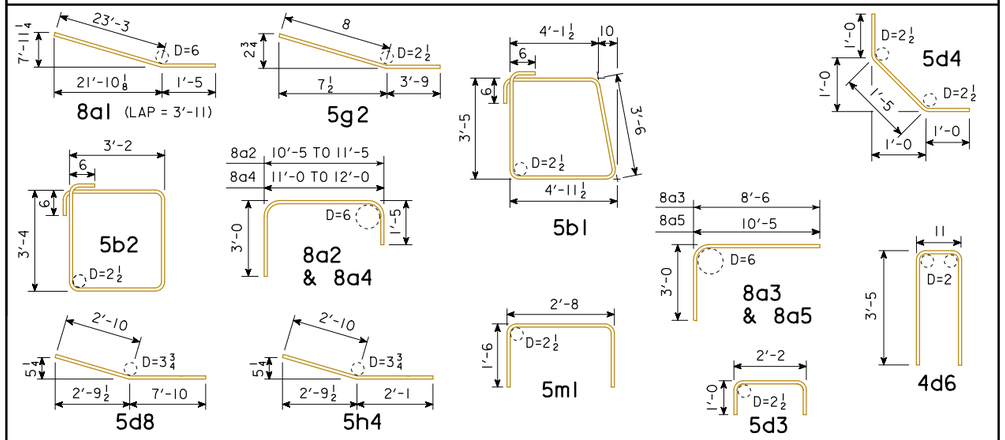
THE CONTRACT LENGTH OF 35 FEET FOR THE WEST ABUTMENT PILES AND 55 FEET FOR THE EAST ABUTMENT PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 165 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING.

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 AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF FOOTING.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR EAST AND WEST ABUTMENT PILES IS 120 TONS AT END OF DRIVE. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

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

BENT BAR DETAILS



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

REINFORCING BAR LIST - ONE ABUTMENT

	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
EPOXY COATED BARS	8a1	FOOTING LONGITUDINAL		26	24'-8	1712
	8a2	WING FOOTING		5	VARIES	205
	8a3	WING FOOTING		5	11'-6	154
	8a4	WING FOOTING		5	VARIES	212
	8a5	WING FOOTING		5	13'-5	179
	5b1	FOOTING HOOPS		60	17'-0	1064
	5b2	WING FOOTING HOOPS		10	14'-0	146
	6d1	BACKWALL VERTICAL B.F.		85	7'-10	1000
	5d2	BACKWALL VERTICAL F.F.		42	7'-0	307
	5d3	PAVING NOTCH		42	4'-2	183
	5d4	PAVING NOTCH		42	3'-5	150
	4d6	BACKWALL VERTICAL HOOP		42	7'-9	217
	5d8	WING EXTENSION FF HORIZONTAL		14	10'-8	156
	5d9	WING EXTENSION BF HORIZONTAL		14	10'-8	156
	5e1	MASKWALL VERTICAL		16	7'-4	122
	5e2	WING EXTENSION VERTICAL		28	8'-5	316
	5f3	MASKWALL HORIZONTAL		12	5'-0	63
	5f4	MASKWALL HORIZONTAL		12	5'-6	69
	5g1	BACKWALL LONGITUDINAL		32	22'-5	748
	5g2	BACKWALL DOWELS		32	4'-5	147
	5g3	PAVING NOTCH LONGITUDINAL		4	22'-5	94
	5h2	WING EXTENSION BF HORIZONTAL		6	4'-11	31
	5h4	WING EXTENSION FF HORIZONTAL		6	4'-11	31
	5m1	BEAM STEPS TRANSVERSE		12	5'-8	71
	5n1	BEAM STEPS LONGITUDINAL		12	2'-8	33
		REINFORCING STEEL - EPOXY COATED - TOTAL (LBS.)				7566
S.S. BARS	5d5	PAVING NOTCH DOWELS (STAINLESS STEEL)		21	3'-6	77
		STAINLESS STEEL - TOTAL (LBS.)				77

CONCRETE PLACEMENT QUANTITIES

LOCATION	WEST ABUT.	EAST ABUT.
FOOTING AND STEPS	39.7	39.7
BACKWALL BELOW CONSTR. JOINT	7.2	7.1
BACKWALL ABOVE CONSTR. JOINT	10.8	10.8
NORTH WING EXTENSION	3.4	3.3
SOUTH WING EXTENSION	3.3	3.2
NORTH WING MASKWALL	0.7	0.6
SOUTH WING MASKWALL	0.5	0.6
TOTAL (C.Y.)	65.6	65.3

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

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

ABUTMENT QUANTITIES

STATION 960+00.06, RT. 89.00' MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 10 OF 39 FILE NO. 31646 DESIGN NO. 220

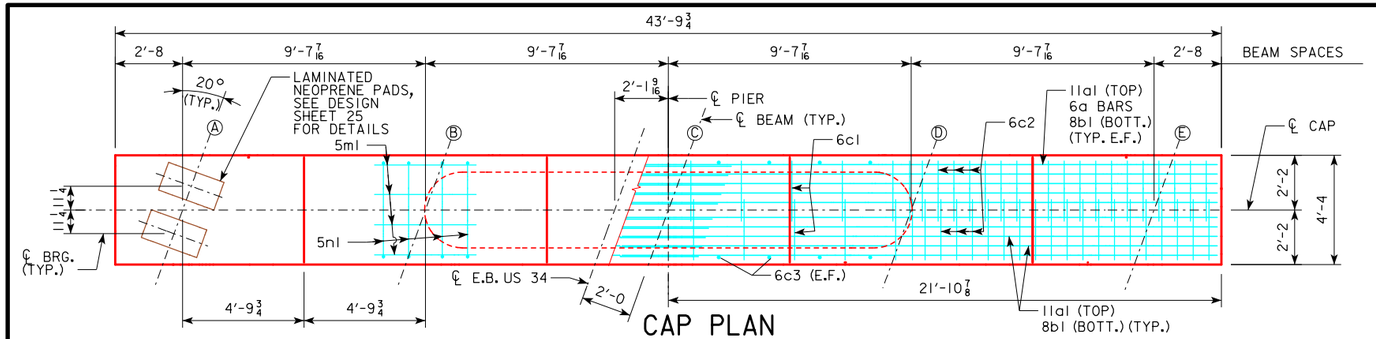
REVISED 07-14 - CHANGED THE 5m1 HORIZONTAL BAR LENGTH TO 2'-8 TO ACCOMMODATE THE 3'-0 TRANSVERSE DISTANCE OF THE BEAM STEPS.
ENGLISHBTSTUBABUTMENTBRIDGES.DGN - 2109-BTE - THIS SHEET ISSUED 07-08.

DESIGN TEAM Stanley Consultants Inc.	STANDARD SHEET 2109-BTE	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER 11

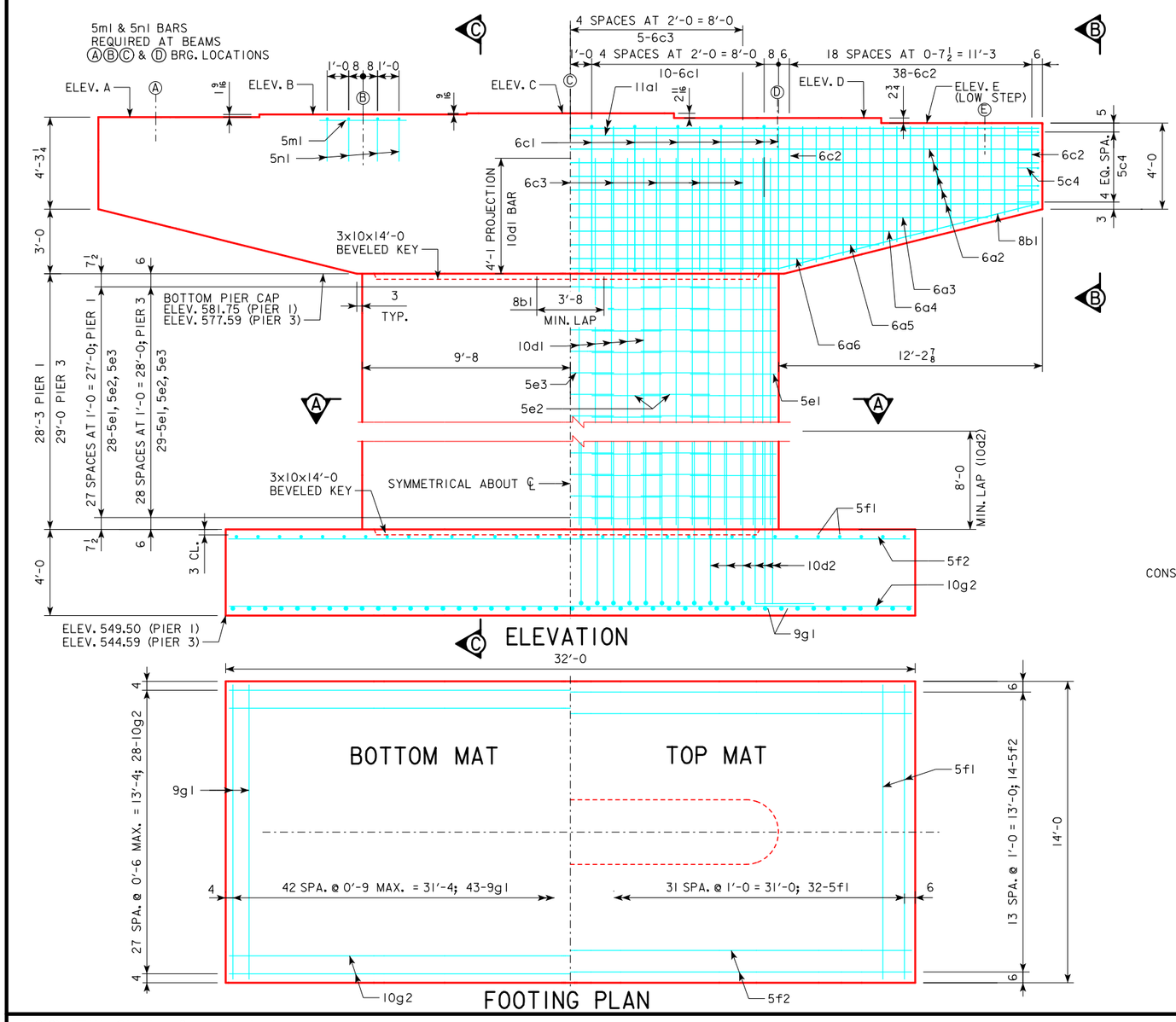
BENCH MARK NO. 322 - N:6469785.28 E:24370801.27
BM $\frac{5}{8}$" DIA. DRIVEN ALUMINUM ROD WITH 2.5" DIA. ALUMINUM CAP.

STEP ELEVATIONS

	BEAM A	BEAM B	BEAM C	BEAM D	BEAM E
PIER 1	589.02	589.15	589.20	588.98	588.75
PIER 3	584.86	585.00	585.04	584.82	584.59

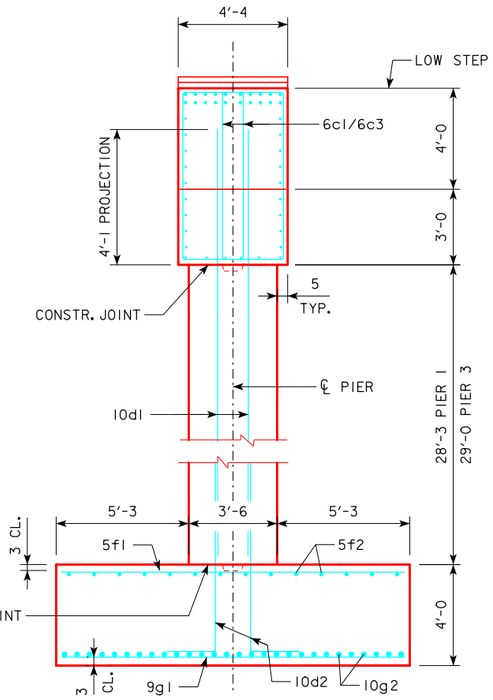


CAP PLAN

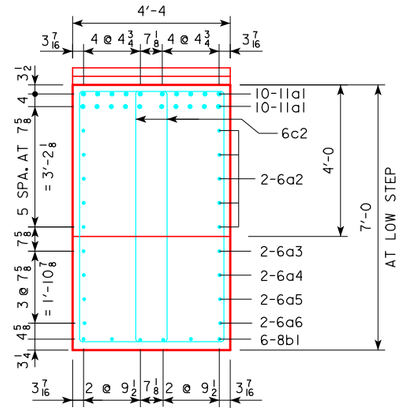


ELEVATION

FOOTING PLAN



SECTION C-C



VIEW B-B

NOTES:
SEE DESIGN SHEET 12 FOR FIXED PIER #2 DETAILS.
SEE DESIGN SHEET 13 FOR SECTION A-A, PIER NOTES, BAR LISTS, AND BENT BAR DETAILS.

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

PIERS 1 & 3 DETAILS

STATION 960+00.06, RT. 89.00' — MARCH 2020

HENRY COUNTY

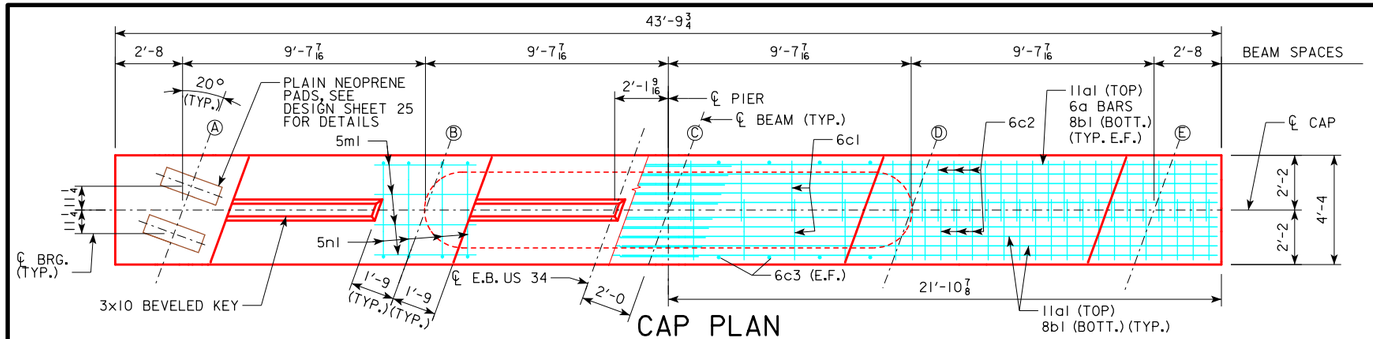
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 11 OF 39 FILE NO. 31646 DESIGN NO. 220

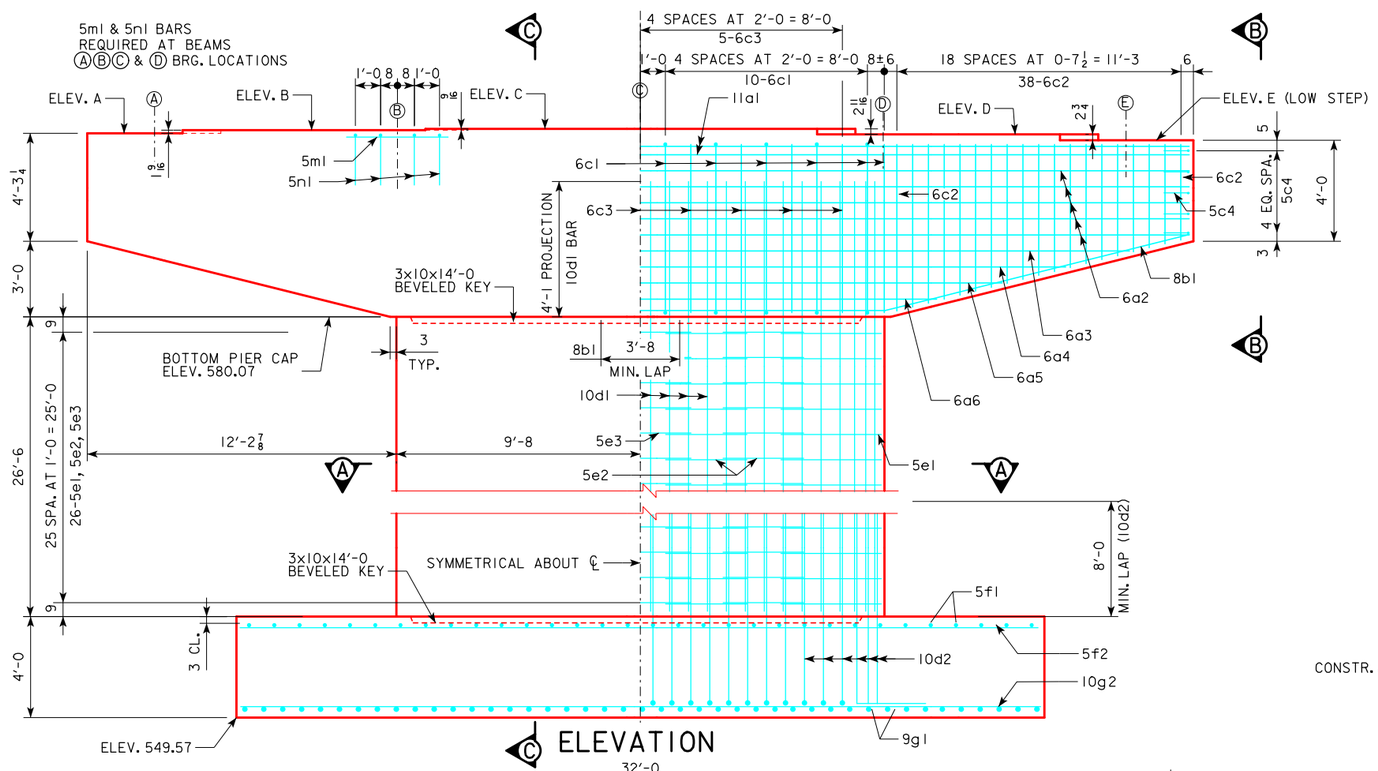
DESIGN TEAM Stanley Consultants Inc. | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 12

BENCH MARK NO. 322 - N:6469785.28 E:24370801.27
BM $\frac{5}{8}$" DIA. DRIVEN ALUMINUM ROD WITH 2.5" DIA. ALUMINUM CAP.

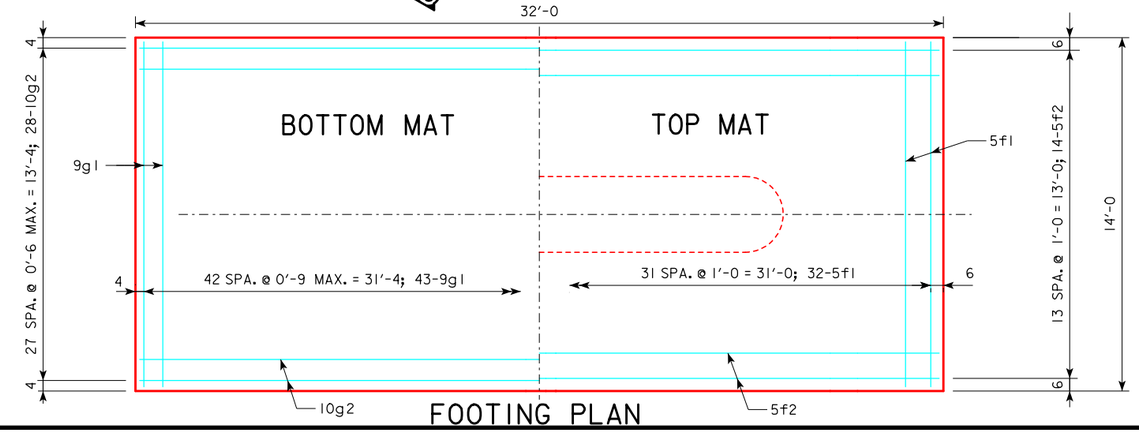
STEP ELEVATIONS					
	BEAM A	BEAM B	BEAM C	BEAM D	BEAM E
PIER 2	587.34	587.47	587.52	587.30	587.07



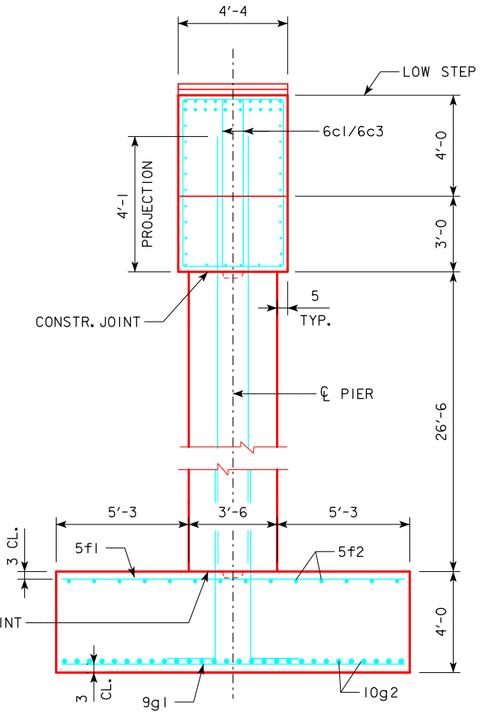
CAP PLAN



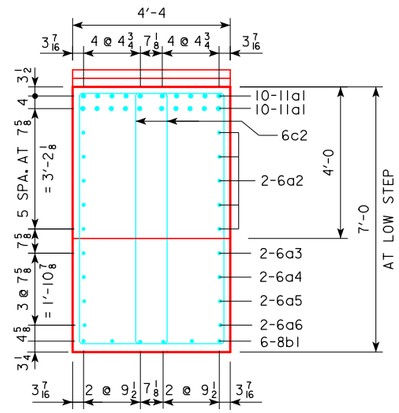
ELEVATION



FOOTING PLAN



SECTION C-C



VIEW B-B

NOTES:
SEE DESIGN SHEET 11 FOR EXPANSION PIERS #1 AND #3.
SEE DESIGN SHEET 13 FOR SECTION A-A, PIER NOTES, BAR LISTS, AND BENT BAR DETAILS.

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

PIER 2 DETAILS

STATION 960+00.06, RT. 89.00' MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 12 OF 39 FILE NO. 31646 DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc. | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 13

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BENCH MARK NO. 322 - N:6469785.28 E:24370801.27
BM $\frac{5}{8}$" DIA. DRIVEN ALUMINUM ROD WITH 2.5" DIA. ALUMINUM CAP.

PIER NOTES:

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

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

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

FOOTING MUST BE SEATED IN ROCK AS SHOWN IN "PIER EXCAVATION LIMITS" DETAIL.

THE DESIGN BEARING PRESSURE FOR THE PIER SPREAD FOOTINGS ARE BASED ON A NOMINAL BEARING RESISTANCE VALUE OF 18.0 KSF (SERVICE LIMIT STATE) AND 8.0 KSF (FACTORED LRFD STRENGTH I LIMIT STATE).

CONC. ESTIMATED QUANTITIES

LOCATION	PIER 1	PIER 2	PIER 3
CAP	45.8	45.8	45.8
COLUMN	68.0	63.8	69.8
FOOTING	66.4	66.4	66.4
TOTAL (CY)	180.2	176.0	182.0

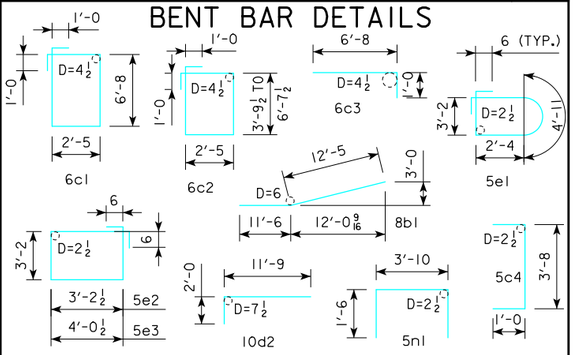
GROUND LINE ELEVATIONS

LOCATION	PIER 1	PIER 2	PIER 3
TOP OF GROUND	574.9	553.9	548.1
TOP OF ROCK	551.9	553.9	548.1

REINFORCING BAR LIST - PIER ONE

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP TOP & 2nd ROW, LONGITUDINAL		20	43'-5	4613
6a2	CAP, SIDES, LONGITUDINAL		10	43'-5	652
6a3	CAP, SIDES, LONGITUDINAL		2	38'-8	116
6a4	CAP, SIDES, LONGITUDINAL		2	33'-7	101
6a5	CAP, SIDES, LONGITUDINAL		2	28'-6	86
6a6	CAP, SIDES, LONGITUDINAL		2	23'-5	70
8b1	CAP, LONGITUDINAL, BOTTOM		12	23'-11	766
6c1	CAP, HOOPS		24	20'-2	727
6c2	CAP, HOOPS		76	VARIES	1969
6c3	CAP, STIRRUPS		18	7'-8	207
5c4	CAP END, TRANSVERSE		10	5'-8	59
10d1	PIER COLUMN, VERTICAL		54	32'-4	7513
10d2	PIER COLUMN, DOWEL		54	13'-9	3195
5e1	COLUMN, TIES END		56	13'-9	803
5e2	COLUMN, TIES		56	13'-9	803
5e3	COLUMN, TIES		28	15'-5	450
5f1	FOOTING, TRANSVERSE, TOP		32	13'-6	451
5f2	FOOTING, LONGITUDINAL, TOP		14	31'-6	460
9g1	FOOTING, TRANSVERSE, BOTTOM		43	13'-6	1974
10g2	FOOTING, LONGITUDINAL, BOTTOM		28	31'-6	3795
5m1	CAP, STEPS, LONGITUDINAL		16	3'-6	58
5n1	CAP, STEPS, TRANSVERSE		16	6'-10	114
				REINFORCING STEEL - TOTAL (LBS.)	28,982

BENT BAR DETAILS

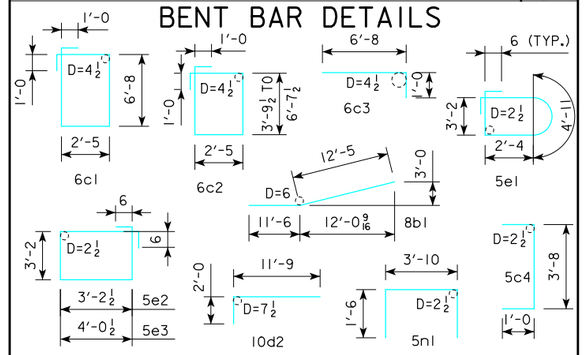


NOTE: ALL DIMENSIONS ARE OUT TO OUT. D= PIN DIAMETER.

REINFORCING BAR LIST - PIER TWO

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP TOP & 2nd ROW, LONGITUDINAL		20	43'-5	4613
6a2	CAP, SIDES, LONGITUDINAL		10	43'-5	652
6a3	CAP, SIDES, LONGITUDINAL		2	38'-8	116
6a4	CAP, SIDES, LONGITUDINAL		2	33'-7	101
6a5	CAP, SIDES, LONGITUDINAL		2	28'-6	86
6a6	CAP, SIDES, LONGITUDINAL		2	23'-5	70
8b1	CAP, LONGITUDINAL, BOTTOM		12	23'-11	766
6c1	CAP, HOOPS		24	20'-2	727
6c2	CAP, HOOPS		76	VARIES	1969
6c3	CAP, STIRRUPS		18	7'-8	207
5c4	CAP END, TRANSVERSE		10	5'-8	59
10d1	PIER COLUMN, VERTICAL		54	30'-7	7106
10d2	PIER COLUMN, DOWEL		54	13'-9	3195
5e1	COLUMN, TIES END		52	13'-9	746
5e2	COLUMN, TIES		52	13'-9	746
5e3	COLUMN, TIES		26	15'-5	418
5f1	FOOTING, TRANSVERSE, TOP		32	13'-6	451
5f2	FOOTING, LONGITUDINAL, TOP		14	31'-6	460
9g1	FOOTING, TRANSVERSE, BOTTOM		43	13'-6	1974
10g2	FOOTING, LONGITUDINAL, BOTTOM		28	31'-6	3795
5m1	CAP, STEPS, LONGITUDINAL		16	3'-6	58
5n1	CAP, STEPS, TRANSVERSE		16	6'-10	114
				REINFORCING STEEL - TOTAL (LBS.)	28,429

BENT BAR DETAILS

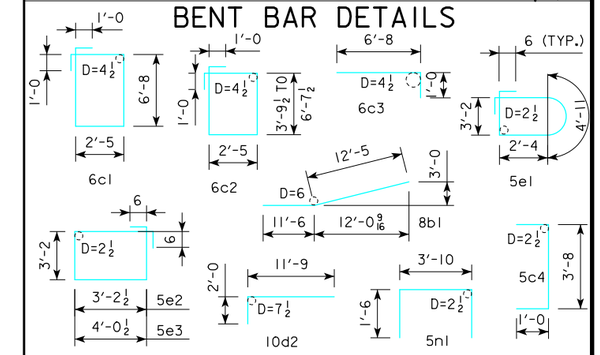


NOTE: ALL DIMENSIONS ARE OUT TO OUT. D= PIN DIAMETER.

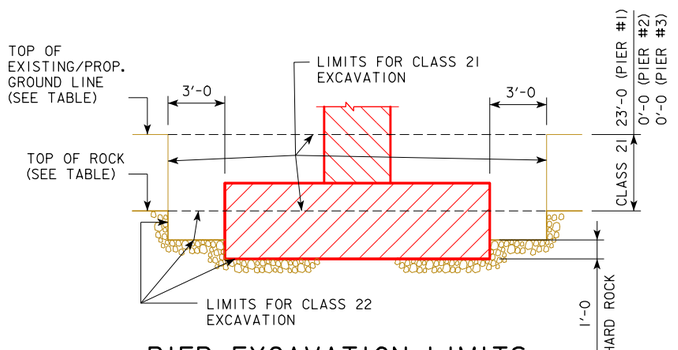
REINFORCING BAR LIST - PIER THREE

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP TOP & 2nd ROW, LONGITUDINAL		20	43'-5	4613
6a2	CAP, SIDES, LONGITUDINAL		10	43'-5	652
6a3	CAP, SIDES, LONGITUDINAL		2	38'-8	116
6a4	CAP, SIDES, LONGITUDINAL		2	33'-7	101
6a5	CAP, SIDES, LONGITUDINAL		2	28'-6	86
6a6	CAP, SIDES, LONGITUDINAL		2	23'-5	70
8b1	CAP, LONGITUDINAL, BOTTOM		12	23'-11	766
6c1	CAP, HOOPS		24	20'-2	727
6c2	CAP, HOOPS		76	VARIES	1969
6c3	CAP, STIRRUPS		18	7'-8	207
5c4	CAP END, TRANSVERSE		10	5'-8	59
10d1	PIER COLUMN, VERTICAL		54	33'-1	7687
10d2	PIER COLUMN, DOWEL		54	13'-9	3195
5e1	COLUMN, TIES END		58	13'-9	832
5e2	COLUMN, TIES		58	13'-9	832
5e3	COLUMN, TIES		29	15'-5	466
5f1	FOOTING, TRANSVERSE, TOP		32	13'-6	451
5f2	FOOTING, LONGITUDINAL, TOP		14	31'-6	460
9g1	FOOTING, TRANSVERSE, BOTTOM		43	13'-6	1974
10g2	FOOTING, LONGITUDINAL, BOTTOM		28	31'-6	3795
5m1	CAP, STEPS, LONGITUDINAL		16	3'-6	58
5n1	CAP, STEPS, TRANSVERSE		16	6'-10	114
				REINFORCING STEEL - TOTAL (LBS.)	29,230

BENT BAR DETAILS



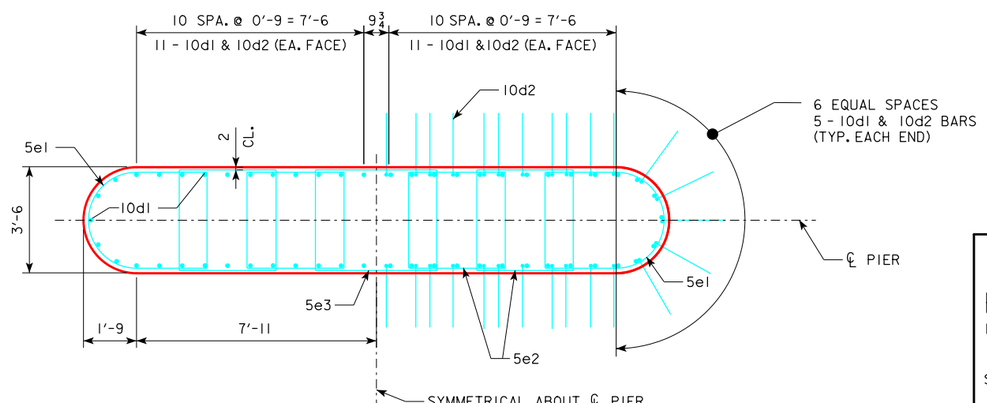
NOTE: ALL DIMENSIONS ARE OUT TO OUT. D= PIN DIAMETER.



PIER EXCAVATION LIMITS

(CLASS 21 AND CLASS 22 LIMITS SHOWN)

NOTE: TOP OF ROCK LOCATED AT TOP OF GROUND LINE AT PIER #2 & PIER #3



SECTION A-A

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

PIER QUANTITIES

STATION 960+00.06, RT. 89.00' MARCH 2020

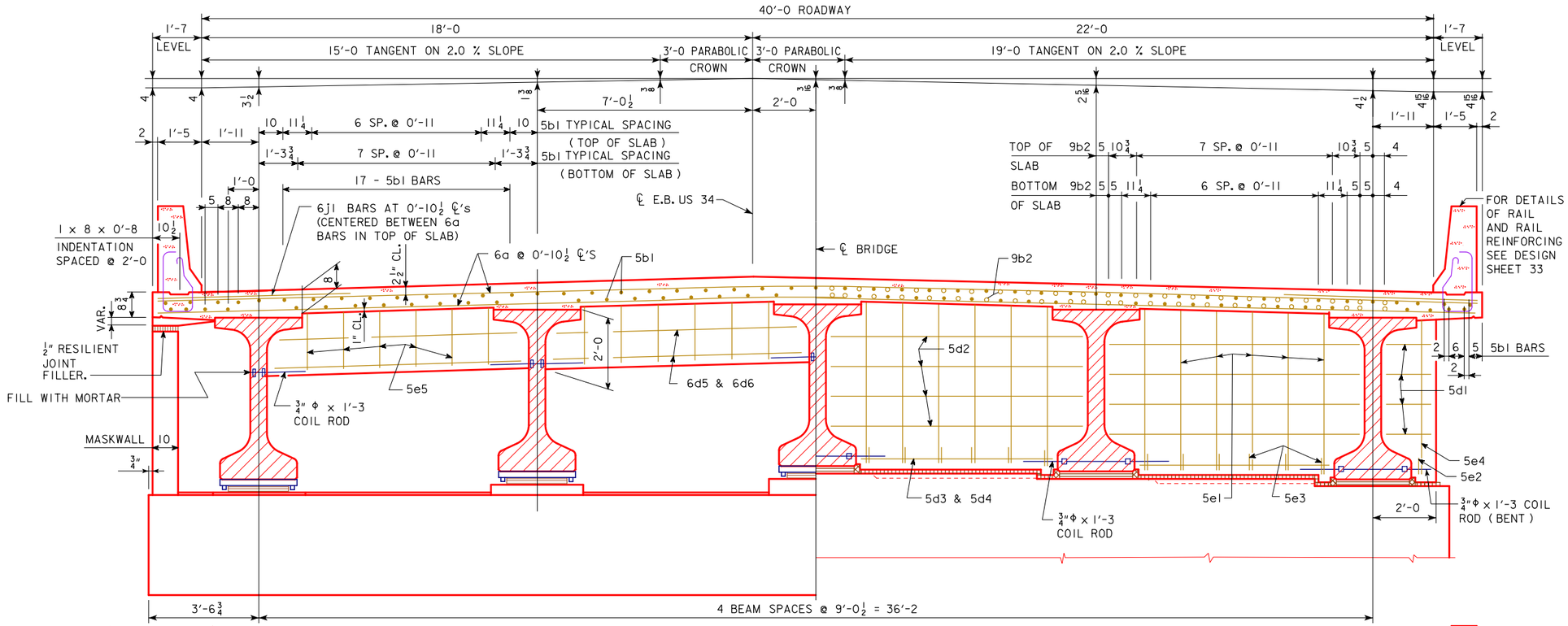
HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

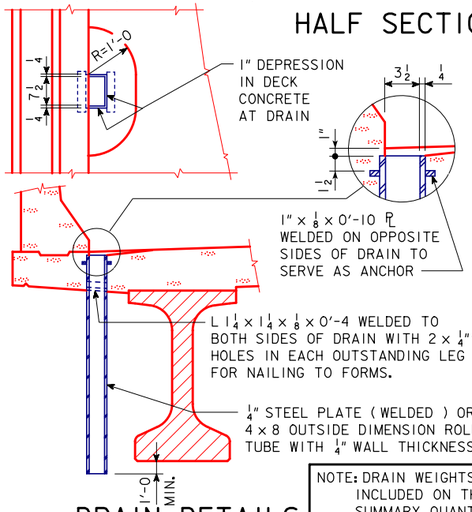
DESIGN SHEET NO. 13 OF 39 FILE NO. 31646 DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc. | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 14

CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET FOR THE DRAIN WEIGHT. NOTE ABOUT CHOICE OF EPOXY OR STAINLESS STEEL DECK TO BARRIER RAIL BARS.
ENGLISHBTSTUBABUTMENTBRIDGES.DGN - 4559-BTE-5 - THIS SHEET ISSUED 07-08.



HALF SECTION NEAR ABUTMENT

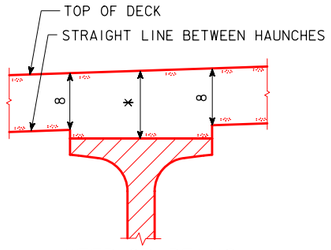


DRAIN DETAILS

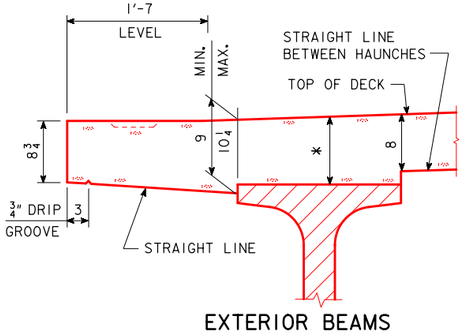
NOTE: DRAIN WEIGHTS ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

NOTE :
DRAINS ARE TO BE GALVANIZED. 24 DRAINS REQUIRED.
SEE "SITUATION PLAN" FOR LOCATION. WEIGHT OF DRAINS IS INCLUDED IN THE QUANTITY FOR "STRUCTURAL STEEL".
WEIGHT IS BASED ON ROLLED TUBE.

DATA FOR ONE DRAIN	
BEAM SIZE	BTE
DRAIN WEIGHT (LBS.)	136
DRAIN LENGTH (FT.)	6'-11¾



INTERIOR BEAMS



EXTERIOR BEAMS

TYPICAL DECK AND HAUNCH DETAIL

* FOR DECK THICKNESS OVER BEAMS SEE HAUNCH AND CAMBER DETAILS ON DESIGN SHEET 30.

SLAB AREA = 29.27 SQ. FT.
SLAB AREA DOES NOT INCLUDE THE HAUNCH.

NOTE: FOR DETAILS OF INTERMEDIATE DIAPHRAGMS SEE DESIGN SHEETS 19 AND 20.

SUPERSTRUCTURE NOTES:

THE BRIDGE DECK AS SHOWN INCLUDES ½" INTEGRAL WEARING SURFACE.

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

COST OF ALL RESILIENT 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 BRIDGE 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 2½" 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.

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

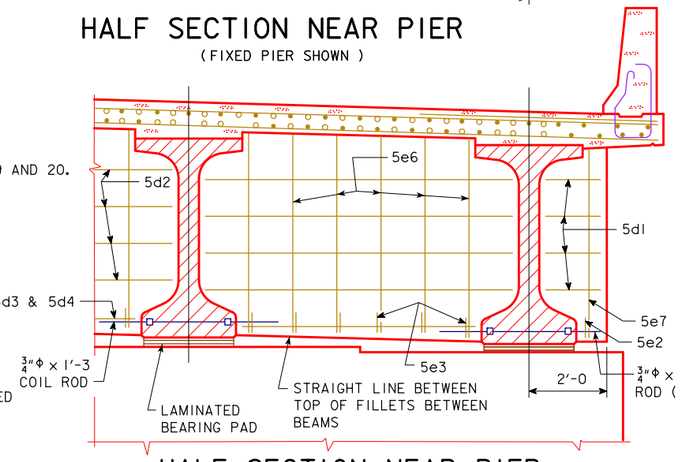
TOP BAR - LAP MIDWAY BETWEEN BEAMS (MIN. LAP = 1'-10).

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.

HALF SECTION NEAR PIER

(FIXED PIER SHOWN)



HALF SECTION NEAR PIER

(EXPANSION PIER SHOWN)

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

TRANSVERSE SECTION

STATION 960+00.06, RT. 89.00' — MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 14 OF 39 — FILE NO. 31646 — DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc.	STANDARD SHEET 4559-BTE-5	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER 15

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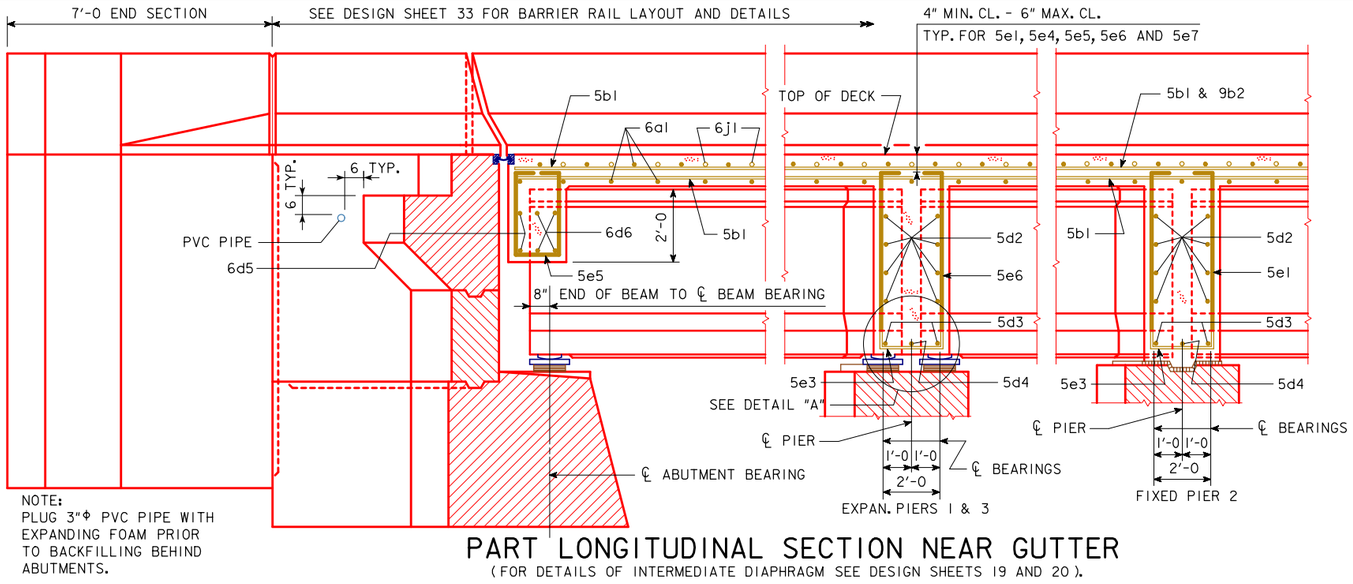
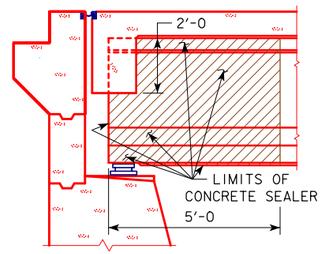


NOTE:
PLUG 3"Φ PVC PIPE WITH EXPANDING FOAM PRIOR TO BACKFILLING BEHIND ABUTMENTS.

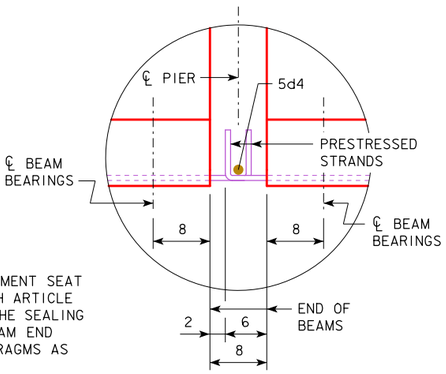
PART LONGITUDINAL SECTION NEAR GUTTER

(FOR DETAILS OF INTERMEDIATE DIAPHRAGM SEE DESIGN SHEETS 19 AND 20).

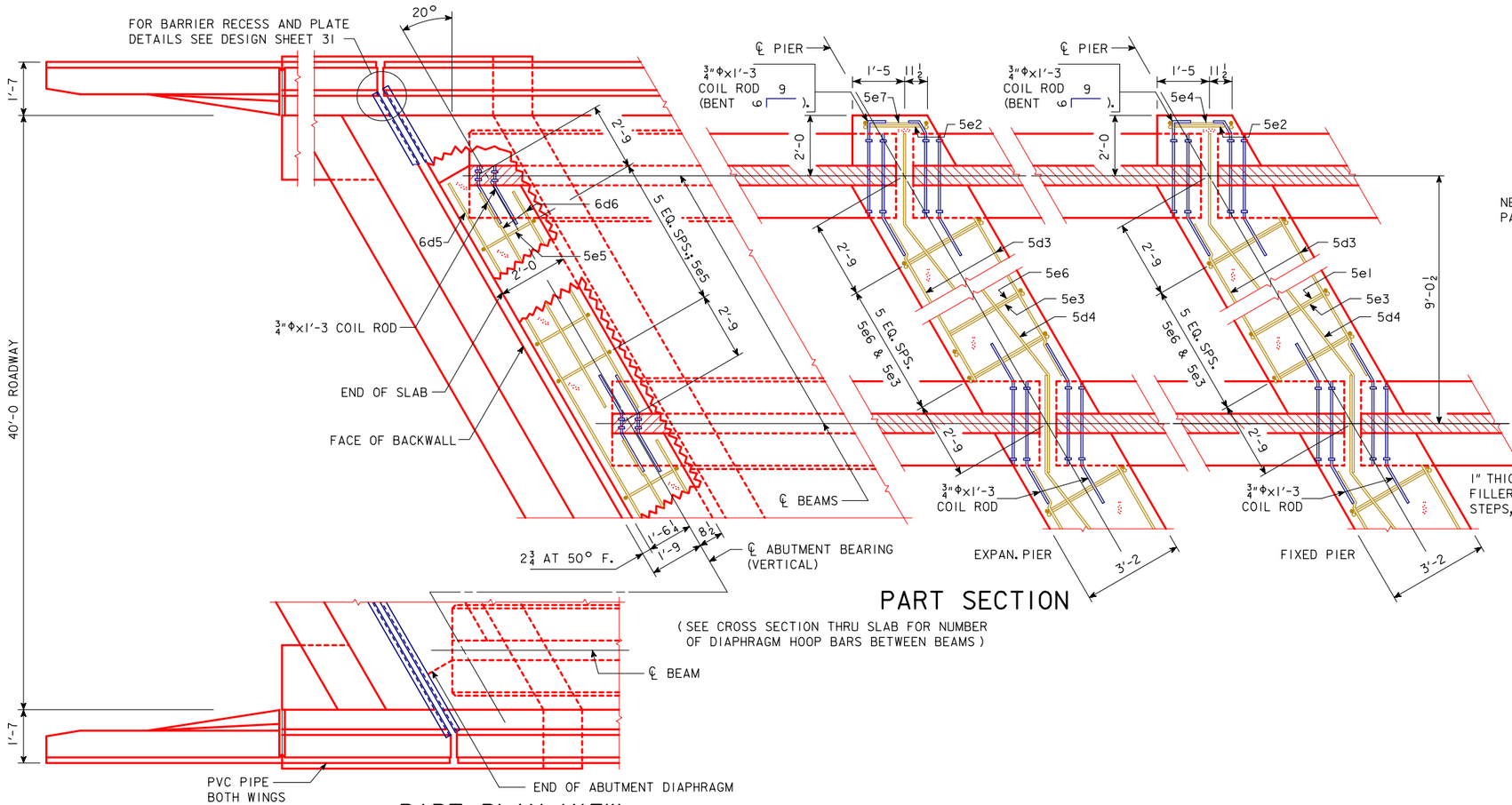


CONCRETE SEALER SHALL BE APPLIED TO THE ABUTMENT SEAT AND PRESTRESSED BEAM ENDS IN ACCORDANCE WITH ARTICLE 2403.03, P, 3, OF THE STANDARD SPECIFICATIONS. THE SEALING SHALL INCLUDE PORTIONS OF THE PRESTRESSED BEAM END THAT ARE NOT EMBEDDED IN THE ABUTMENT DIAPHRAGMS AS DETAILED ON THIS SHEET.

CONCRETE SEALER LIMITS FOR PRESTRESSED BEAM



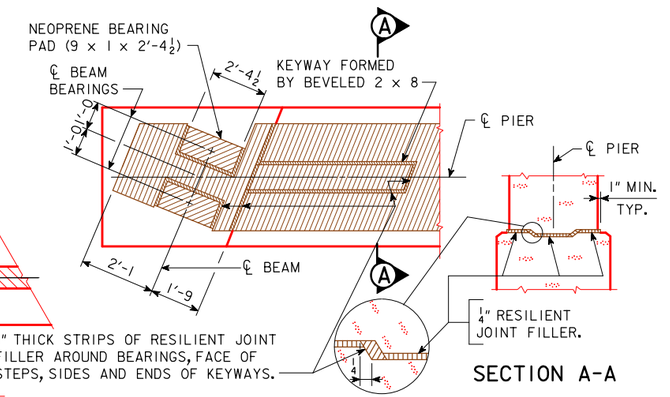
DETAIL "A"



PART SECTION

(SEE CROSS SECTION THRU SLAB FOR NUMBER OF DIAPHRAGM HOOP BARS BETWEEN BEAMS)

PART PLAN VIEW



PART PLAN

SECTION A-A

TOP OF FIXED PIER DETAILS

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

PART PLAN AND LONGITUDINAL SECTION

STATION 960+00.06, RT. 89.00' — MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 15 OF 39 — FILE NO. 31646 — DESIGN NO. 220

CORRECTION 10-10 - CONCRETE SEALER ARTICLE 2403.21 D CHANGED TO ARTICLE 2403.03, P, 3.
ENGLISHBTSTUBABUTMENTBRIDGES.DGN - 4548-BTCDE - THIS SHEET ISSUED 07-08.

DESIGN TEAM Stanley Consultants Inc.	STANDARD SHEET 4548-BTCDE	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER 16

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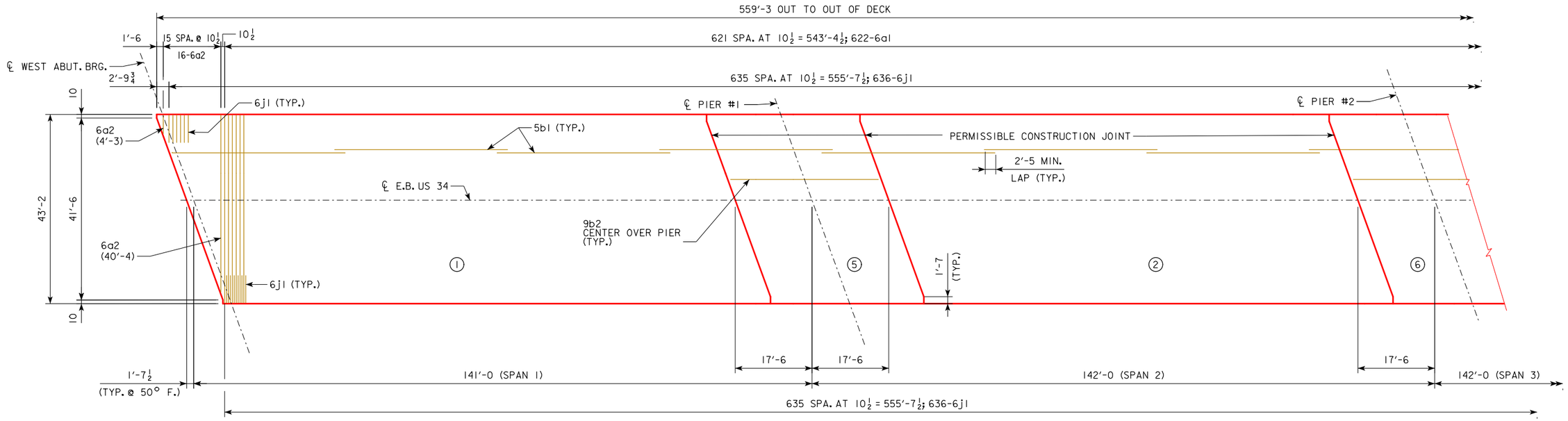
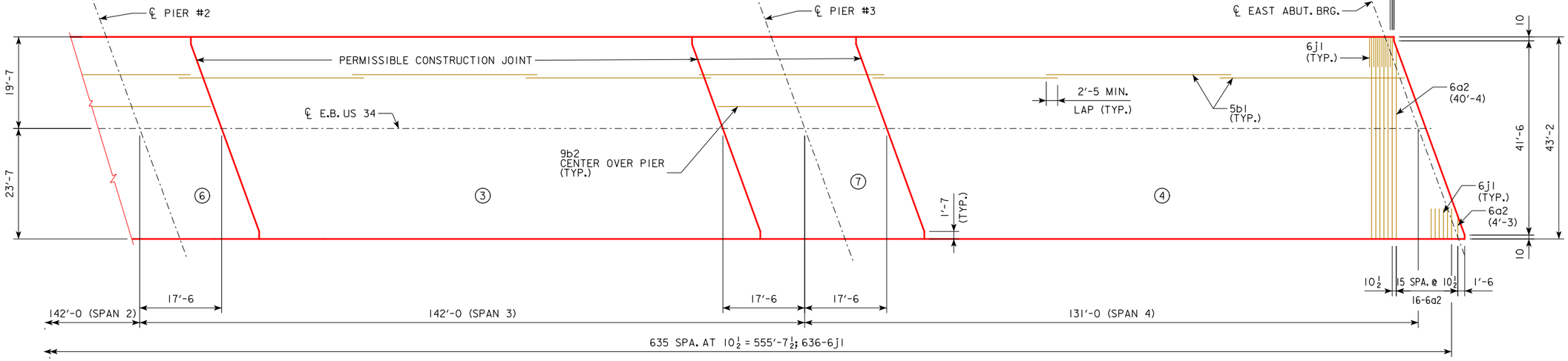


TOP DECK REINFORCING LAYOUT (SPAN 1 & SPAN 2)



TOP DECK REINFORCING LAYOUT (SPAN 3 & SPAN 4)

NOTE: CONCRETE DECK SHALL BE PLACED IN SECTIONS AND SEQUENCES INDICATED. PLACING THE CONCRETE DECK IN ONE CONTINUOUS POUR IS PROHIBITED AND WILL NOT BE CONSIDERED FOR APPROVAL AS AN ALTERNATE PROCEDURE. 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.

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

SUPERSTRUCTURE DETAILS

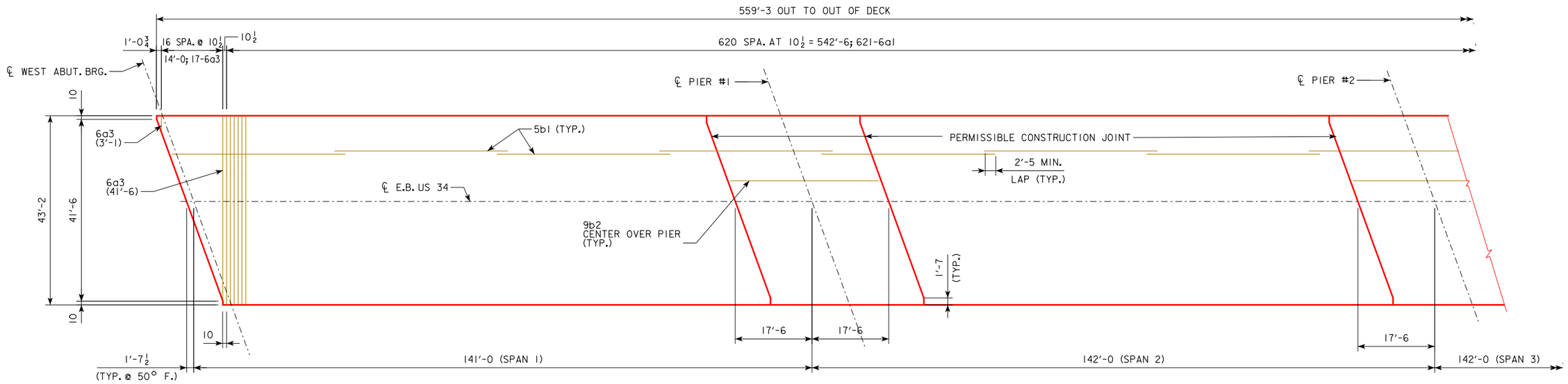
STATION 960+00.06, RT. 89.00' — MARCH 2020

HENRY COUNTY

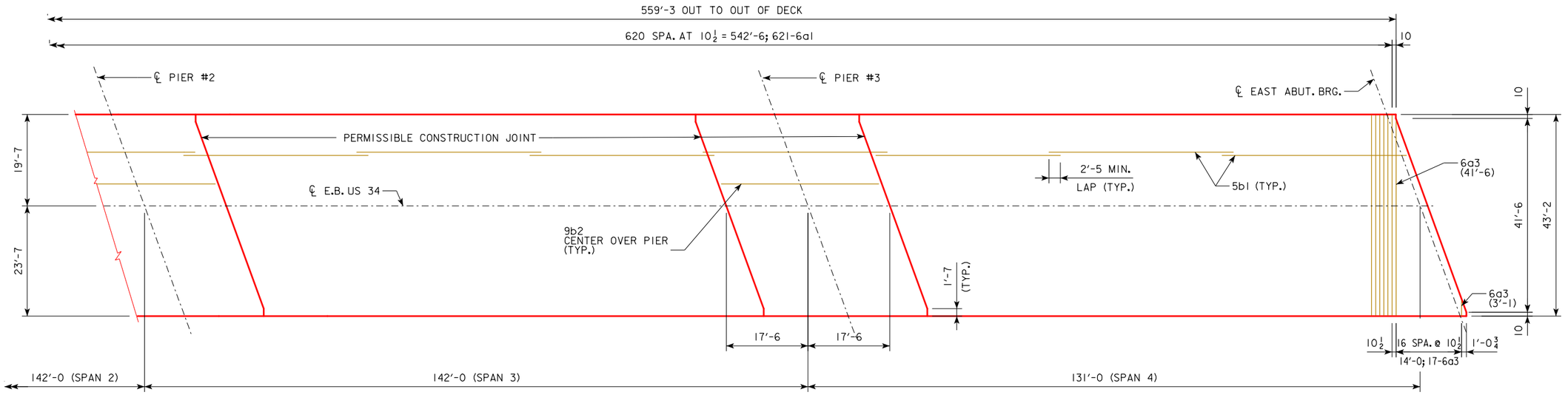
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 16 OF 39 — FILE NO. 31646 — DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc. | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 17



BOTTOM DECK REINFORCING LAYOUT (SPAN 1 & SPAN 2)



BOTTOM DECK REINFORCING LAYOUT (SPAN 3 & SPAN 4)

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

SUPERSTRUCTURE DETAILS

STATION 960+00.06, RT. 89.00' — MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 17 OF 39 FILE NO. 31646 DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc. | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 18

REVISED 07-2015 - CHANGED CONCRETE PLACEMENT NOTE TO ACCOUNT FOR THE POSSIBLE ADDITION OF A RETARDING ADMIXTURE TO THE CONCRETE.
ENGLISHBTSTUBABUTMENTBRIDGES.DGN - 4552-BTCDE - THIS SHEET ISSUED 07-08.

REINFORCING BAR LIST - BRIDGE DECK

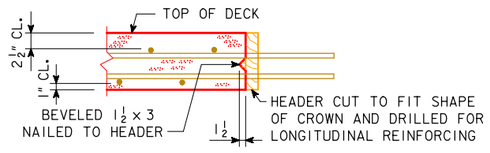
EPOXY COATED REINFORCING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6a1	DECK TRANSV. TOP & BOTT.		1243	42'-10	79969
6a2	SLAB TRANSV. TOP ENDS		32	VARIES	1071
6a3	SLAB TRANSV. BOTT. ENDS		34	VARIES	1138
5b1	DECK LONGIT. TOP & BOTT.		1335	39'-6	55000
9b2	DECK LONGIT. TOP & BOTTOM AT PIERS		264	34'-6	30967
5d1	PIER DIAPH. ENDS		24	4'-8	117
5d2	PIER DIAPH. LONGIT.		96	8'-8	434
5d3	PIER DIAPH. LONGIT.		24	6'-4	159
5d4	PIER DIAPH. LONGIT.		12	12'-3	153
6d5	ABUT. DIAPH.		4	38'-0	228
6d6	ABUT. DIAPH. LONGIT.		32	8'-8	417
5e1	PIER DIAPH. HOOPS		48	14'-10	743
5e2	PIER DIAPH. TIES ENDS		6	3'-1	19
5e3	PIER DIAPH. TIES		72	3'-11	294
5e4	PIER DIAPH. HOOPS ENDS		4	14'-0	58
5e5	ABUT. DIAPH. HOOPS		48	7'-2	359
5e6	EXPAN. PIER DIAPH. HOOPS		48	14'-10	743
5e7	EXPAN. PIER DIAPH. HOOPS ENDS		8	14'-0	117
6j1	DECK TRANSV. TOP (AT RAIL)		1272	6'-3	11941
	REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)				183927

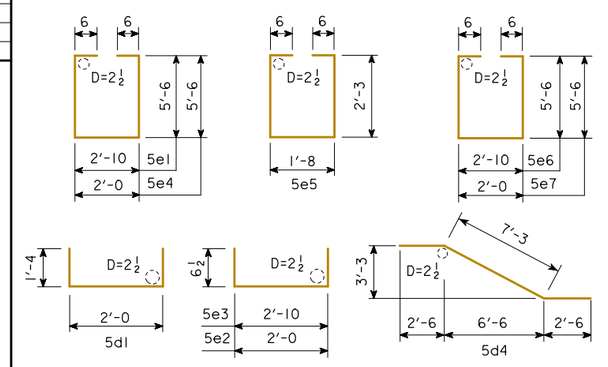
HIGH PERFORMANCE CONCRETE PLACEMENT QUANTITIES

LOCATION	QUANTITY
SECTION 1, DECK & ABUT. DIAPH.	146.3
SECTION 2, DECK	120.7
SECTION 3, DECK	120.7
SECTION 4, DECK & ABUT. DIAPH.	135.0
SECTION 5, DECK & PIER DIAPH.	64.6
SECTION 6, DECK & PIER DIAPH.	64.6
SECTION 7, DECK & PIER DIAPH.	64.6
TOTAL (CU. YDS.)	716.5

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



PERMISSIBLE TRANSVERSE DECK CONSTRUCTION JOINT



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

BENT BAR DETAILS

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

DECK, ABUT. & DIAPH. QUANTITIES

STATION 960+00.06, RT. 89.00' — MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 18 OF 39 — FILE NO. 31646 — DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc. | STANDARD SHEET 4552-BTCDE | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 19

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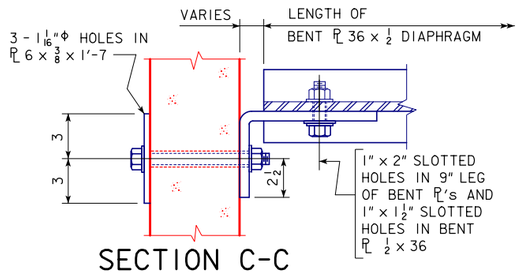
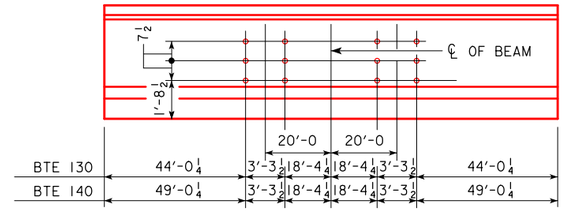


SECTION C-C

NOTE: SEE DESIGN SHEET 20 FOR LOCATION OF SECTION C-C.



INTERMEDIATE DIAPHRAGM BOLT HOLE LOCATIONS

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 1/2"Φ HOLES FOR THE 7/8"Φ H.S. BOLTS SHALL BE CAST INTO THE WEB. DRILLING IS NOT ALLOWED.

THE 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.

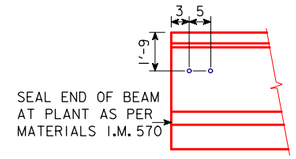
ALL BOLTS ARE TO BE TIGHTENED PRIOR TO PLACING BRIDGE FLOOR CONCRETE.

STRUCTURAL STEEL		
WEIGHT	19,537.9	LBS.

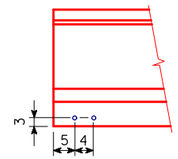
NOTE: STRUCTURAL STEEL WEIGHT IS INCLUDED ON THE SUMMARY QUANTITIES SHEET.

BULB TEE "E" BEAM INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL

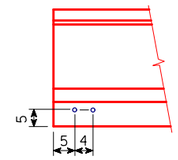
ONE BEAM CONNECTION (DETAIL "F")			WEIGHT
		NO. OF BEAM CONNECTIONS	
3 - 7/8"Φ x 9 1/4" H.S. BOLTS WITH NUTS & WASHERS = 7.2 LBS.		64	460.8
ONE DETAIL "F"	1 - BACKING PL 6 x 3/8 x 1'-7 = 12.1 LBS.	64	774.4
	1 - BENT PL 9 x 6 x 1/2 x 1'-7 = 40.4 LBS.	64	2,585.6
ONE DIAPHRAGM			
		NUMBER OF DIAPHRAGMS	
10 - 7/8"Φ x 2 1/4" H.S.BOLTS WITH NUTS & WASHERS = 9.7 LBS.		32	310.4
	LENGTH OF MEMBER		
1 - BENT PL 36 x 1/2 = 61.3 LBS./FT.	7'-10 1/4	32	15,406.7
INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL - TOTAL (LBS.)			19,537.9



STUB ABUT.



FIXED PIER



EXPANSION PIER

BEAM COIL TIE LOCATIONS

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

INTERMEDIATE DIAPHRAGMS

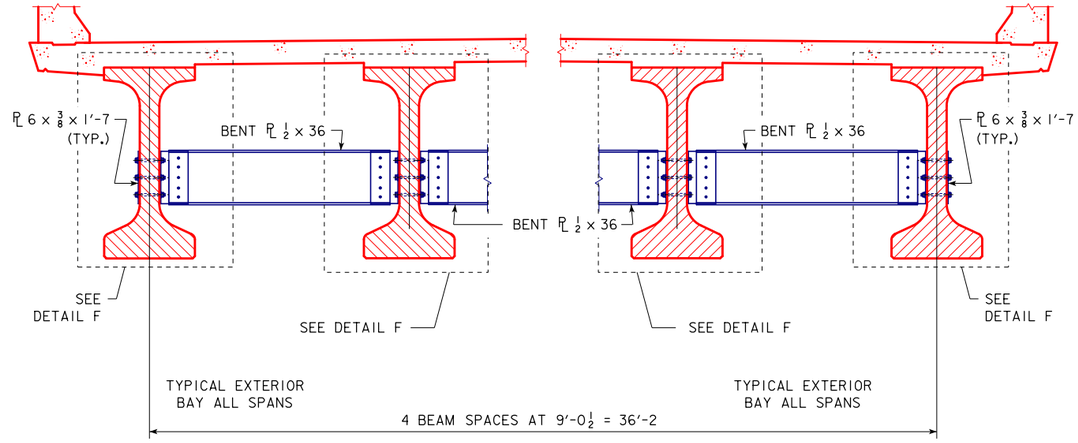
STATION 960+00.06, RT. 89.00' MARCH 2020

HENRY COUNTY

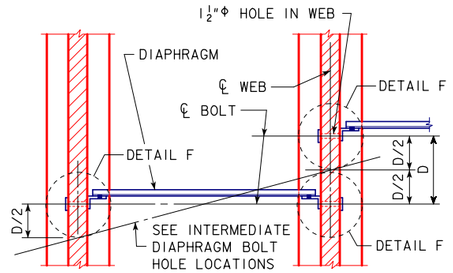
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 19 OF 39 FILE NO. 31646 DESIGN NO. 220

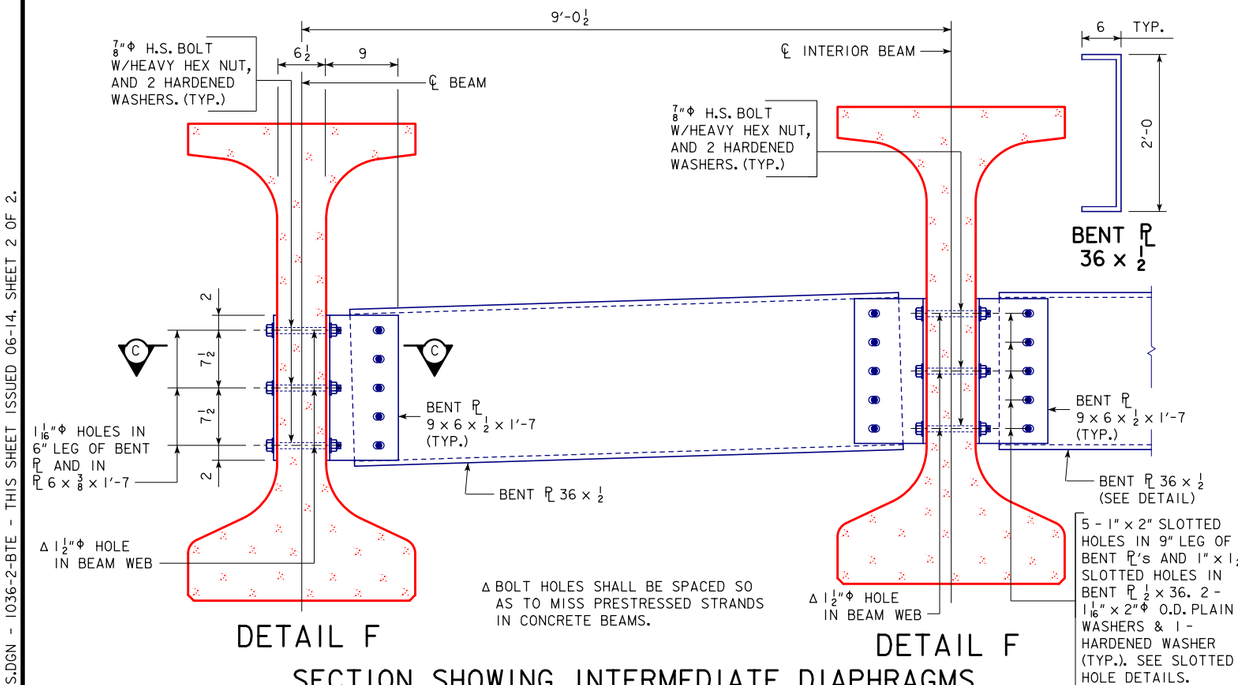
ENGLISHBEAMS.DGN - 1036-I-BTE - THIS SHEET ISSUED 06-14. SHEET 1 OF 2.



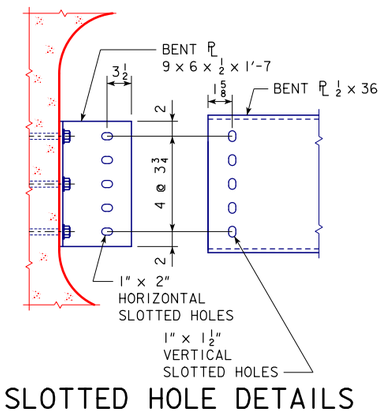
SECTION SHOWING INTERMEDIATE DIAPHRAGM



PART SECTION A-A



SECTION SHOWING INTERMEDIATE DIAPHRAGMS AT EXTERIOR BAY OVER WATERWAYS



SLOTTED HOLE DETAILS

NOTE: SEE DESIGN SHEET 19 FOR SECTION C-C.

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

INTERMEDIATE DIAPHRAGMS

STATION 960+00.06, RT. 89.00' — MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 20 OF 39 FILE NO. 31646 DESIGN NO. 220

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

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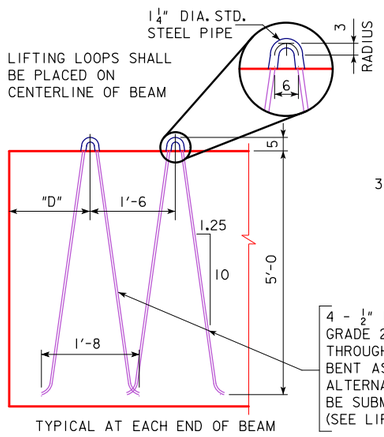
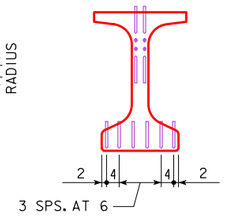
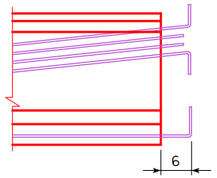


4 - ½" NOMINAL DIA. GRADE 270 STRANDS THREADED THROUGH EACH PIPE SLEEVE BENT AS SHOWN AFTER THREADING. ALTERNATE LIFTING DEVICES MAY BE SUBMITTED FOR APPROVAL (SEE LIFTING LOOP TABLE).

LIFTING LOOP DETAIL



THE TOP AND BOTTOM ROWS OF THE DEFLECTED STRANDS ARE TO BE CUT WITH 1'-6 PROJECTIONS WHICH ARE TO BE SHOP BENT AS SHOWN. THE REMAINING TOP DEFLECTED STRANDS ARE TO BE CUT WITH 5" PROJECTIONS.
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.



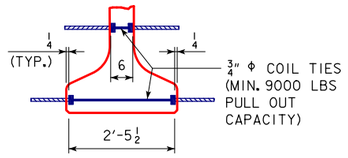
STRAND PROJECTION AT BEAM ENDS WHEN EMBEDDED IN CONCRETE END DIAPHRAGMS

LIFTING LOOP AND OVERHANG TABLE

BEAMS	LIFTING LOOPS EACH END	# OF STRANDS PER LOOP	D	BEAM OVERHANG (FT)
BTE130	2	4	9'-3	16
BTE140	2	4	9'-3	16

LIFTING LOOPS SHALL CARRY LOADS EQUALLY.

NUMBER AND EXACT LOCATION OF COIL TIES TO BE AS DETAILED ON SPECIFIC BRIDGE DESIGN.



COIL TIE DETAIL

BTE BEAM DATA

BTE BEAM	SPAN LENGTH ℄-℄ BEARING	OVERALL BEAM LENGTH (L)	CONCRETE STRENGTH f'ci (ksi)	CONCRETE STRENGTH f'c (ksi)	STRAND SIZE DIA. (in)	NO. OF STRAND STRAIGHT	NO. OF STRAND DEFLECTED	TOTAL INITIAL PRESTRESS ③ kips	HOLD DOWN FORCE-kips	CAMBER (in) AT RELEASE	CAMBER (in) AFTER LOSSES	DEFLECTION (in) Δ_D IMMEDIATE① (ELASTIC) Δ_I STEEL DIAPHRAGM	DEFLECTION (in) Δ_D TIME ② (PLASTIC) Δ_T STEEL DIAPHRAGM	PERMISSIBLE MAXIMUM SPACING HL-93 LOADING STEEL DIAPHRAGM	WEIGHT (TONS)	CONCRETE (CU YD.)	REINFORCING STEEL (WEIGHT-LBS)
BTE130	130'-0	131'-4	6.50	7.50	0.60	36	6	1788	21.8	2.59	4.55	2.71	0.68	9'-3	55.2	27.3	3647
BTE140	140'-0	141'-4	7.50	8.50	0.60	40	8	2042	26.0	2.97	5.21	3.42	0.85	9'-3	59.4	29.3	3897

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 ℄ OF SPAN FOR BTE60 TO BTE120, AND TWO STEEL DIAPHRAGMS (0.500 kips) PLACED 20'-0, ON EITHER SIDE, OF THE BEAM CENTERLINE FOR BTE125 TO BTE150. 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 ℄ OF SPAN, Δ_D , 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) $\Delta_D = \Delta_I + \frac{1}{2}\Delta_T$ FOR INTERIOR SPANS OF CONTINUOUS BRIDGE.
③ TOTAL INITIAL PRESTRESS IS BASED ON 72.6% f's, f's. = 270 ksi. AND As = 0.217 in².

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

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 SUPPLEMENTAL SPECIFICATIONS.
DESIGN: A.A.S.H.T.O. LRFD, SERIES OF 2007, WITH MINOR MODIFICATIONS.

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.
IF SOLE PLATE IS REQUIRED FOR BEARING, SOLE PLATE IS TO BE SET IN FORMS WHEN BEAM IS CAST AND FORMED OUT BELOW TO EXCLUDE CONCRETE AS DETAILED ON THE BEARING SHEET.
IF STUB ABUTMENTS ARE USED, ALL STRANDS AT THE ENDS OF BEAMS AT STUB ABUTMENTS SHALL BE CUT OFF REASONABLY FLUSH WITH THE CONCRETE.
WHEN EXPANSION JOINTS ARE USED, CONCRETE SEALER SHALL BE APPLIED TO THE PRESTRESSED BEAM END SECTIONS. THE SEALING SHALL BE IN ACCORDANCE WITH MATERIALS I.M. 570 (FABRICATOR APPLICATION) AND I.M. 491.12 (CONTRACTOR APPLICATION).
MINIMUM CONCRETE f'c (AT 28 DAYS) AND MINIMUM f'ci AT RELEASE ARE LOCATED IN THE BTE 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.

ALTERNATE BAR NOTES:

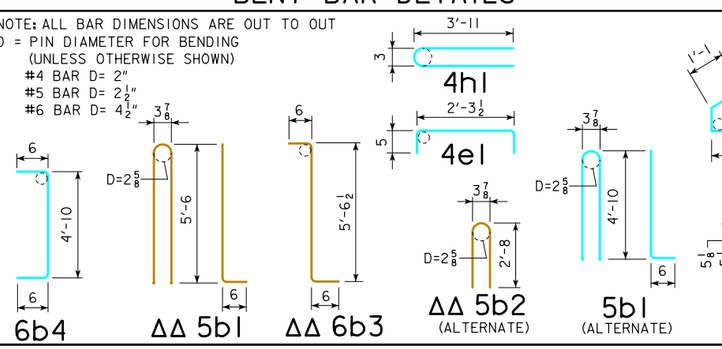
ALTERNATE BARS SHOWN IN BENT BAR DETAILS MAY BE USED IN LIEU OF REINFORCING BARS SHOWN IN BAR LIST. NO ADDITIONAL PAYMENT SHALL BE MADE FOR USE OF ALTERNATE BARS.

REINF. BAR LIST

	BEAM		BTE130		BTE140	
	BAR	SHAPE	NO.	LENGTH	NO.	LENGTH
	5a1		12	28'-10	12	33'-10
	5a2		12	40'-0	12	40'-0
ΔΔ	5b1		95	12'-2	105	12'-2
ΔΔ *	6b3		56	6'-6	56	6'-6
*	6b4		12	5'-10	12	5'-10
	4c1		161	2'-7	171	2'-7
	4d1		125	6'-5	135	6'-5
	4e1		34	3'-2	34	3'-2
	4h1		8	8'-0	8	8'-0

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= 2½"
#6 BAR D= 4½"



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

NOTE:
MODIFIED STIRRUP EXTENSIONS FOR 6b3 BARS.

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

BTE BEAM DETAILS

STATION 960+00.06, RT. 89.00' MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 21 OF 39 FILE NO. 31646 DESIGN NO. 220

REVISION 08-12 - I.M. REFERENCE NOTE FOR SEALING BEAM ENDS DISTINGUISHES BETWEEN THE FABRICATOR AND CONTRACTOR. DECK PANEL OPTION NOTE WAS DELETED.
ENGLISHBEAMS.DGN - 4770SI - THIS SHEET ISSUED 02-08.

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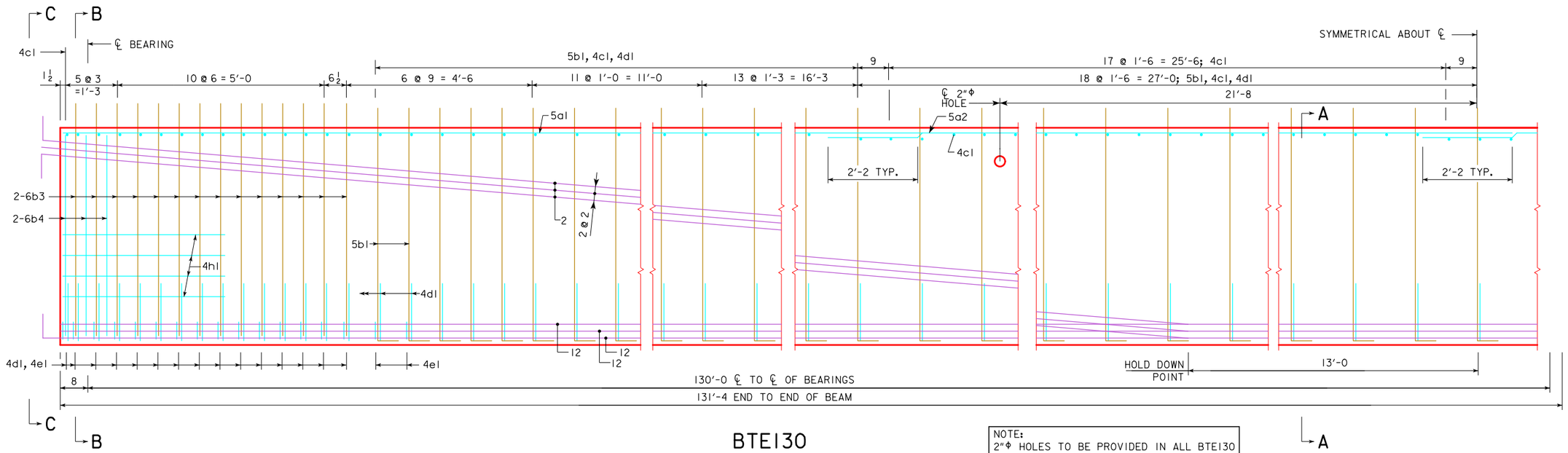
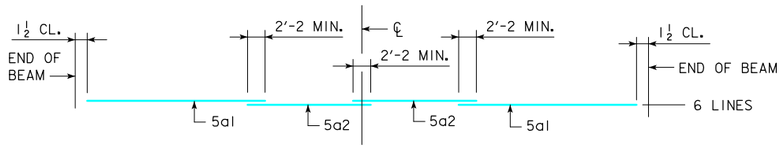


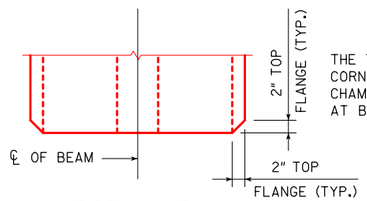
BTE130

NOTE:
2"Φ HOLES TO BE PROVIDED IN ALL BTE130 BEAMS. 2"Φ HOLES MAY BE PRODUCED WITH A REMOVEABLE FORM. HOLES MAY BE SHIFTED SLIGHTLY TO AVOID INTERFACE WITH REINFORCING.



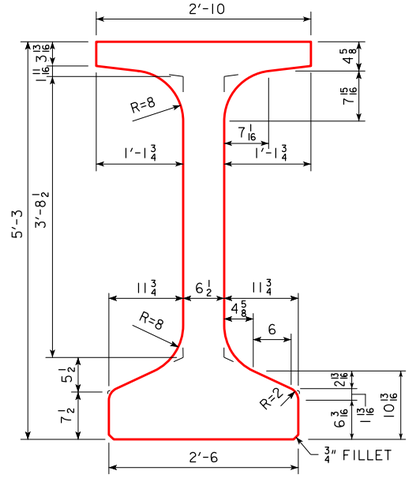
TOP FLANGE LONGITUDINAL BAR LAYOUT

NOTE:
MODIFIED STIRRUP EXTENSIONS FOR 6b3 BARS.



TOP VIEW

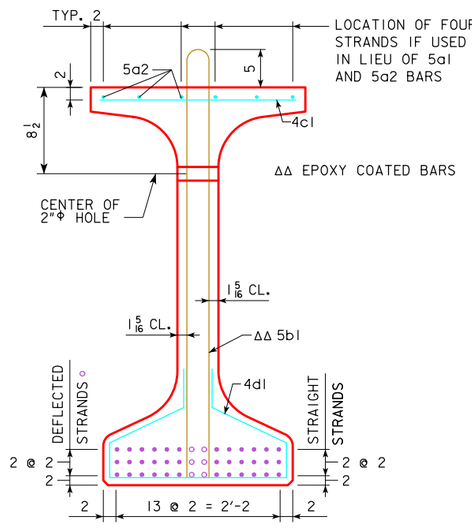
THE TOP FLANGE BEAM CORNERS ARE TO BE CHAMFERED 2" AS SHOWN AT BOTH ENDS OF THE BEAM.



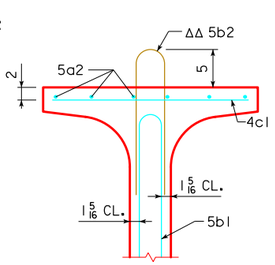
AREA = 807.4 in²
$\bar{y}_b$ = 28.75 in
I = 422,790 in⁴

BEAM SECTION PROPERTIES

BTE BEAM CROSS SECTION

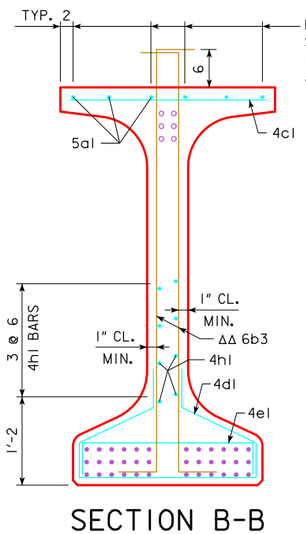


SECTION A-A



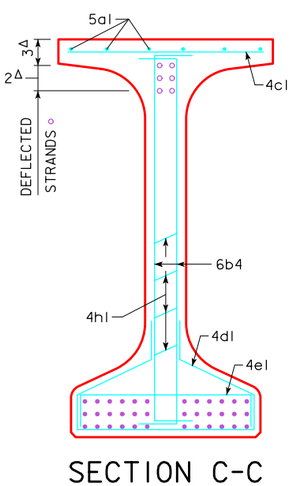
SECTION A-A (ALTERNATE)

SEE ALTERNATE BAR NOTE ON DESIGN SHEET 21.



SECTION B-B

ΔDIMENSIONS AT END OF BEAM



SECTION C-C

REVISED 05-12 - ALTERNATE SECTION A-A 5a1 BAR CHANGED TO 5a2.
ENGLISHBEAMS.DGN - 4785 - THIS SHEET ISSUED 02-08.

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

BTE130 BEAM DETAILS

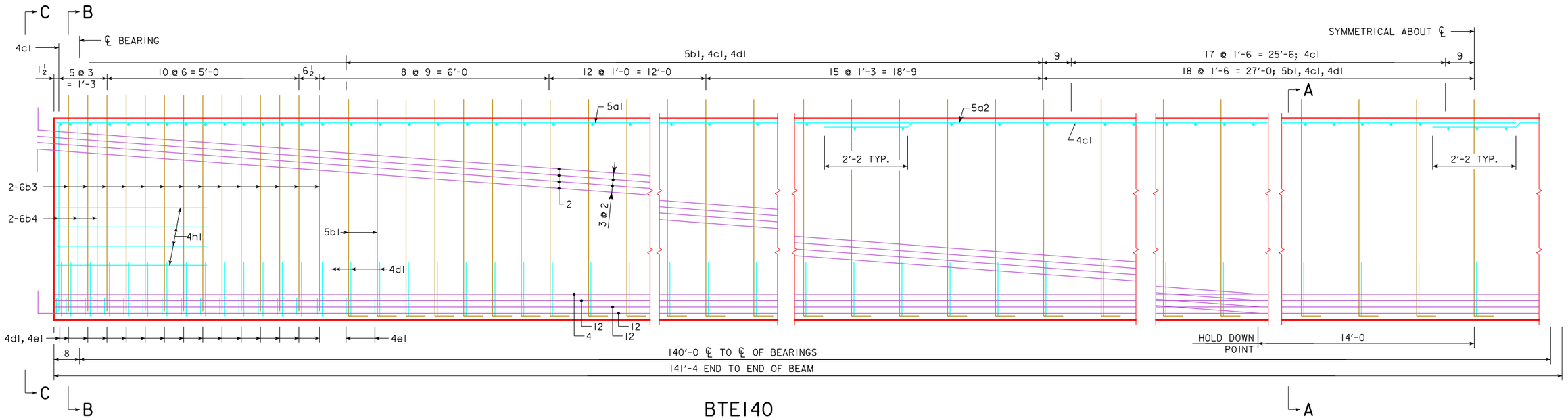
STATION 960+00.06, RT. 89.00' — MARCH 2020

HENRY COUNTY

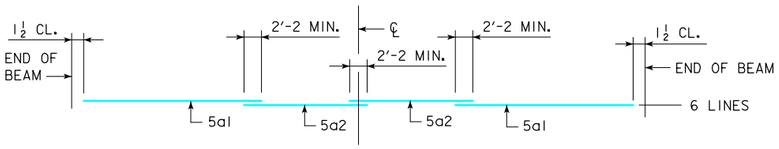
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 22 OF 39 — FILE NO. 31646 — DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc. | MODIFIED STANDARD SHEET 4785 | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 23

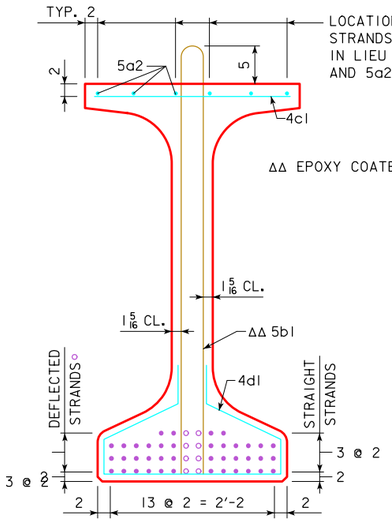


BTE140

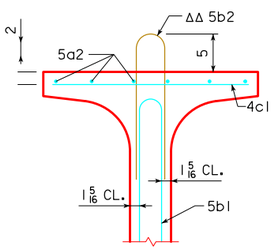


TOP FLANGE LONGITUDINAL BAR LAYOUT

NOTE:
MODIFIED STIRRUP EXTENSIONS FOR 6b3 BARS.

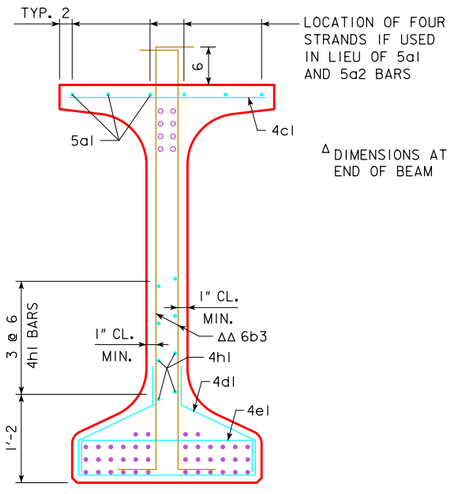


SECTION A-A

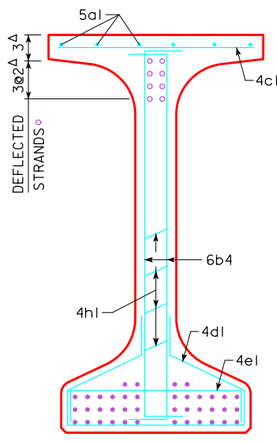


SECTION A-A (ALTERNATE)

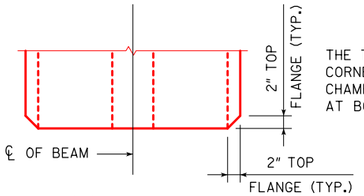
SEE ALTERNATE BAR NOTE ON DESIGN SHEET 21.



SECTION B-B



SECTION C-C

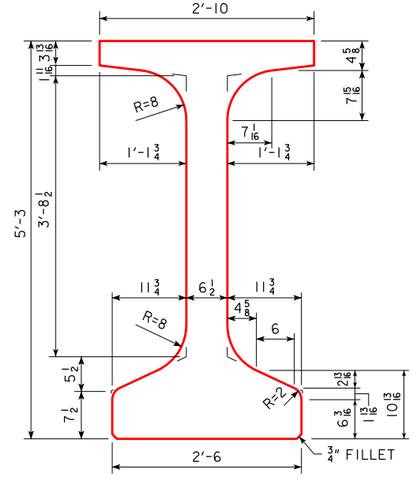


TOP VIEW

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

AREA = 807.4 in²
$\bar{y}_b$ = 28.75 in
I = 422,790 in⁴

BEAM SECTION PROPERTIES



BTE BEAM CROSS SECTION

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

BTE140 BEAM DETAILS

STATION 960+00.06, RT. 89.00' — MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 23 OF 39 FILE NO. 31646 DESIGN NO. 220

REVISED 05-12 - ALTERNATE SECTION A-A 5a1 BAR CHANGED TO 5a2.
ENGLISHBEAMS.DGN - 4787 - THIS SHEET ISSUED 02-08.

DESIGN TEAM Stanley Consultants Inc. | MODIFIED STANDARD SHEET 4787 | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 24

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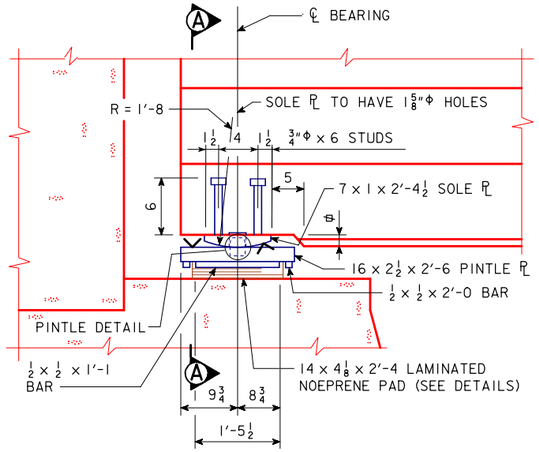
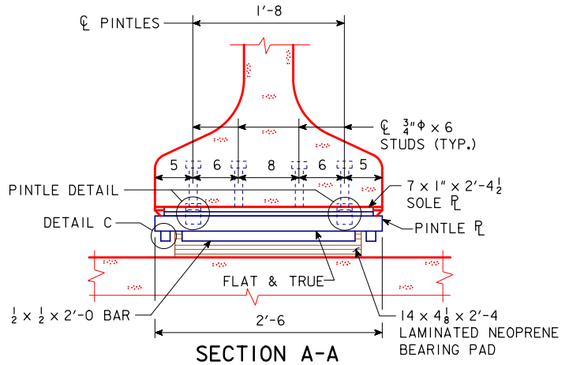


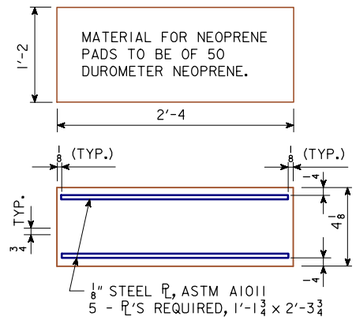
PART ELEVATION

ΦNOTCH BEAM END TO SOLE PL THICKNESS MAXIMUM 1"

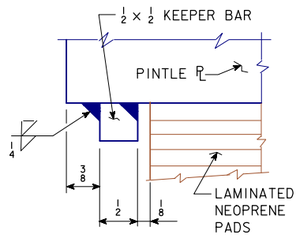


SECTION A-A

ABUTMENT BEARING BULB TEE BEAMS

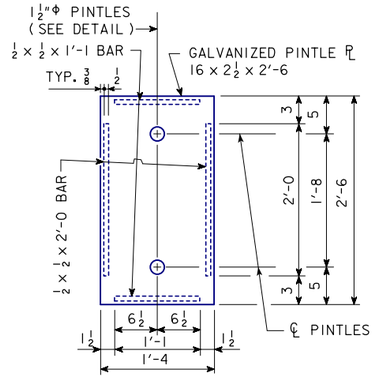


LAMINATED NEOPRENE PAD



DETAIL C

PINTLE DETAIL



PLAN OF PINTLE PLATE

LAMINATED NEOPRENE PAD / CURVED SOLE PL ASSEMBLY

ABUTMENT BEARING NOTES:

SURFACES MARKED "V" SHALL BE FINISHED ANSI 250.

PINTLE PLATES ARE A PART OF THE SUPERSTRUCTURE STRUCTURAL STEEL QUANTITY.

COST OF ANCHORED CURVED SOLE PLATES IS TO BE INCLUDED IN THE PRICE BID FOR PRETENSIONED PRESTRESSED CONCRETE BEAMS.

COST OF NEOPRENE BEARING PADS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM FOR PRETENSIONED PRESTRESSED CONCRETE BEAMS.

THE SOLE PLATES AND PINTLE PLATES SHALL BE GALVANIZED. ALL WELDING SHALL BE COMPLETED PRIOR TO GALVANIZING. THE SURFACE OF THE PINTLE PLATE IN CONTACT WITH THE LAMINATED NEOPRENE PADS SHALL BE FREE OF PROJECTIONS DUE TO THE GALVANIZING.

SOLE PLATES ARE TO BE SET IN FORMS WHEN BEAMS ARE CAST AND THE BOTTOM OF BEAMS FORMED OUT AS SHOWN TO EXCLUDE CONCRETE.

SOLE PLATES SHALL COMPLY WITH ONE OF THE FOLLOWING :

ASTM A514 GRADE B

ASTM A709 GRADE HPS 70W

STRUCTURAL STEEL	
WEIGHT	3,455.0 LBS.

DOES NOT INCLUDE CURVED SOLE PL

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

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

ABUTMENT BEARING DETAILS

STATION 960+00.06, RT. 89.00' MARCH 2020

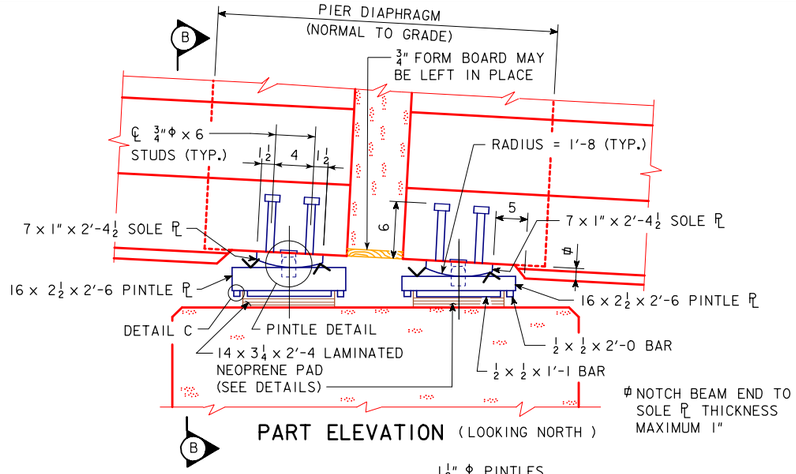
HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

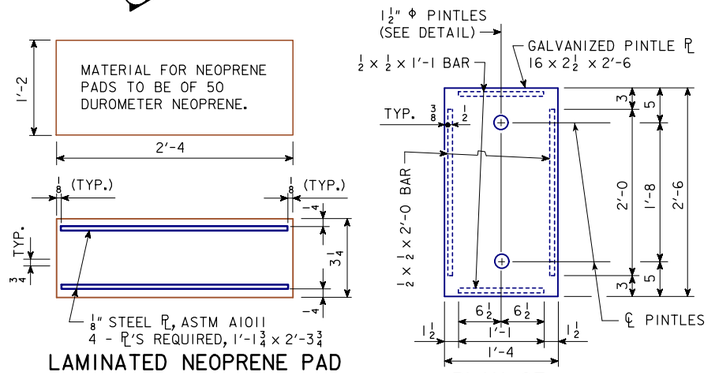
DESIGN SHEET NO. 24 OF 39 FILE NO. 31646 DESIGN NO. 220

CORRECTION 04-14 - ADDED WEIGHT TABLE & TITLES/DESCRIPTIONS TO AGREE WITH SUMMARY QUANTITIES SHEET.
ENGLISHBEAMS.DGN - 454IE - THIS SHEET ISSUED 03-08.

CORRECTION 04-14 - ADDED WEIGHT TABLE & TITLES/DESCRIPTIONS TO AGREE WITH SUMMARY QUANTITY SHEET. ADDED NOTE REFERRING TO SUMMARY QUANTITIES SHEET.
ENGLISHBEAMS.DGN - 454IH - THIS SHEET ISSUED 03-08.

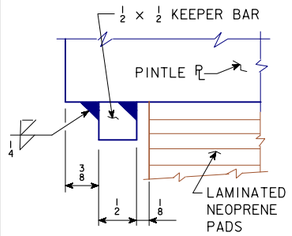


PART ELEVATION (LOOKING NORTH)

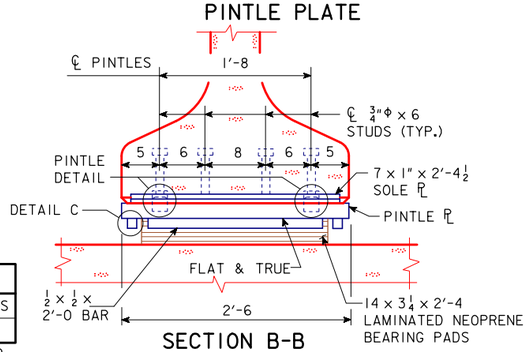


LAMINATED NEOPRENE PAD

PLAN OF PINTLE PLATE



DETAIL C



SECTION B-B
(DIAPHRAGM CONCRETE NOT SHOWN)

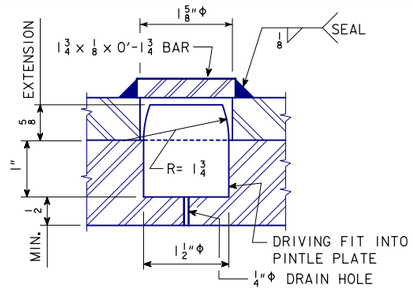
STRUCTURAL STEEL	
WEIGHT	6,910.0 LBS

DOES NOT INCLUDE CURVED SOLE PL

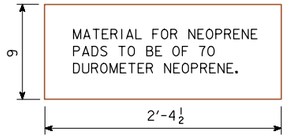
EXPANSION PIER BEARING NOTES:

SURFACES MARKED "V" SHALL BE FINISHED ANSI 250.
PINTLE PLATES ARE A PART OF THE SUPERSTRUCTURE STRUCTURAL STEEL QUANTITY.
COST OF ANCHORED CURVED SOLE PLATES IS TO BE INCLUDED IN THE PRICE BID FOR PRETENSIONED PRESTRESSED CONCRETE BEAMS. COST FOR NEOPRENE PADS SHALL BE CONSIDERED INCIDENTAL TO THE PRETENSIONED PRESTRESSED CONCRETE BEAM BID ITEM.
THE SOLE PLATES AND PINTLE PLATES SHALL BE GALVANIZED. ALL WELDING SHALL BE COMPLETED PRIOR TO GALVANIZING. THE SURFACE OF THE PINTLE PLATE IN CONTACT WITH THE LAMINATED NEOPRENE PADS SHALL BE FREE OF PROJECTIONS DUE TO THE GALVANIZING.
SOLE PLATES ARE TO BE SET IN FORMS WHEN BEAMS ARE CAST AND THE BOTTOM OF BEAMS FORMED OUT AS SHOWN TO EXCLUDE CONCRETE.
SOLE PLATES SHALL COMPLY WITH ONE OF THE FOLLOWING :
ASTM A514 GRADE B
ASTM A709 GRADE HPS 70W

EXPANSION PIER
LAMINATED NEOPRENE PAD / CURVED SOLE PL ASSEMBLY



PINTLE DETAIL



PLAIN NEOPRENE PAD

NOTE:
COST OF NEOPRENE PADS SHALL BE INCLUDED IN THE PRICE BID FOR "PRETENSIONED PRESTRESSED CONCRETE BEAMS".

FIXED PIER

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

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

PIER BEARING DETAILS

STATION 960+00.06, RT. 89.00' — MARCH 2020

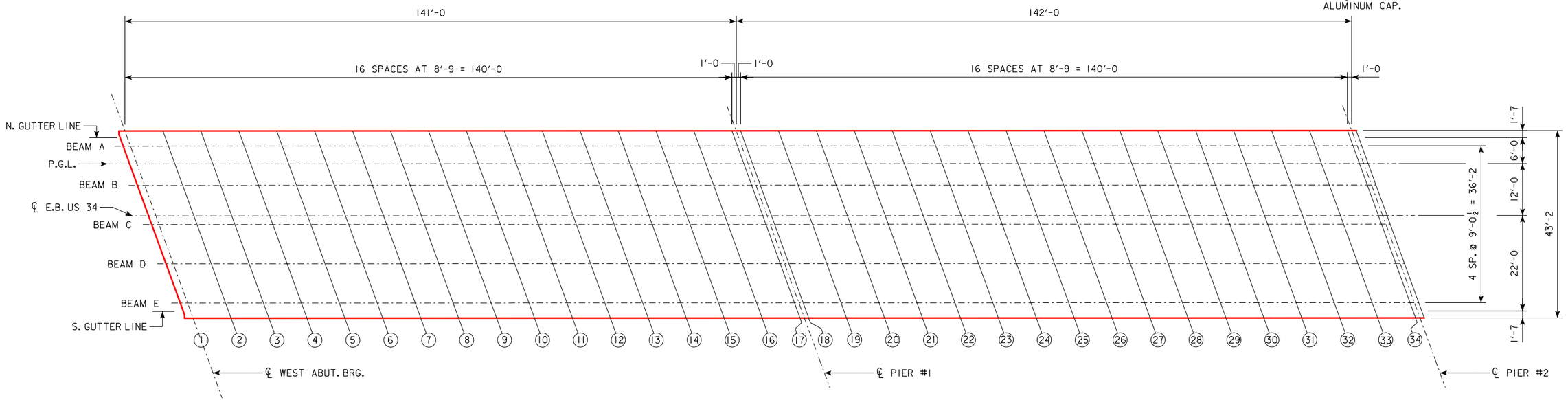
HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 25 OF 39 — FILE NO. 31646 — DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc. | STANDARD SHEET 454IH | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 26

BENCH MARK NO. 322 - N:6469785.28 E:24370801.27
BM $\frac{5}{8}$" DIA. DRIVEN ALUMINUM ROD WITH 2.5" DIA. ALUMINUM CAP.



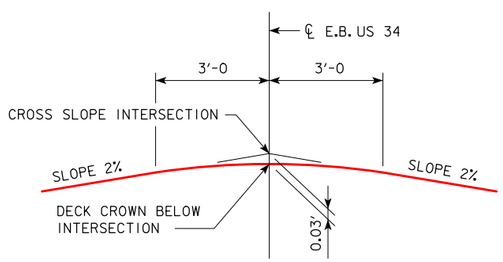
TOP OF SLAB PLAN (SPAN 1 & SPAN 2)

TOP OF SLAB ELEVATIONS

	℄ WEST ABUT.BRG.																℄ PIER #1 BEARING									
LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
NORTH GUTTER LINE	597.64	597.51	597.39	597.26	597.13	597.00	596.87	596.75	596.62	596.49	596.36	596.23	596.11	595.98	595.85	595.72	595.59	595.56	595.44	595.31	595.18	595.05	594.92	594.80	594.67	594.54	594.41
BEAM A	597.67	597.54	597.41	597.29	597.16	597.03	596.90	596.77	596.65	596.52	596.39	596.26	596.13	596.01	595.88	595.75	595.62	595.59	595.46	595.34	595.21	595.08	594.95	594.82	594.70	594.57	594.44
BEAM B	597.80	597.68	597.55	597.42	597.29	597.16	597.04	596.91	596.78	596.65	596.52	596.39	596.27	596.14	596.01	595.88	595.75	595.72	595.60	595.47	595.34	595.21	595.08	594.96	594.83	594.70	594.57
℄ E.B. US 34	597.88	597.75	597.62	597.49	597.37	597.24	597.11	596.98	596.85	596.73	596.60	596.47	596.34	596.21	596.08	595.96	595.83	595.80	595.67	595.54	595.41	595.29	595.16	595.03	594.90	594.77	594.65
BEAM C	597.85	597.72	597.60	597.47	597.34	597.21	597.08	596.96	596.83	596.70	596.57	596.44	596.31	596.19	596.06	595.93	595.80	595.77	595.64	595.52	595.39	595.26	595.13	595.00	594.88	594.75	594.62
BEAM D	597.63	597.50	597.37	597.24	597.11	596.99	596.86	596.73	596.60	596.47	596.35	596.22	596.09	595.96	595.83	595.71	595.58	595.55	595.42	595.29	595.16	595.04	594.91	594.78	594.65	594.52	594.40
BEAM E	597.40	597.27	597.14	597.01	596.89	596.76	596.63	596.50	596.37	596.25	596.12	595.99	595.86	595.73	595.60	595.48	595.35	595.32	595.19	595.06	594.93	594.81	594.68	594.55	594.42	594.29	594.17
SOUTH GUTTER LINE	597.35	597.22	597.09	596.97	596.84	596.71	596.58	596.45	596.32	596.20	596.07	595.94	595.81	595.68	595.56	595.43	595.30	595.27	595.14	595.01	594.89	594.76	594.63	594.50	594.37	594.25	594.12

TOP OF SLAB ELEVATIONS

						℄ PIER #2 BEARING	
28	29	30	31	32	33	34	LOCATION
594.28	594.15	594.03	593.90	593.77	593.64	593.51	NORTH GUTTER LINE
594.31	594.18	594.05	593.93	593.80	593.67	593.54	BEAM A
594.44	594.32	594.19	594.06	593.93	593.80	593.67	BEAM B
594.52	594.39	594.26	594.13	594.01	593.88	593.75	℄ E.B. US 34
594.49	594.36	594.24	594.11	593.98	593.85	593.72	BEAM C
594.27	594.14	594.01	593.88	593.75	593.63	593.50	BEAM D
594.04	593.91	593.78	593.65	593.53	593.40	593.27	BEAM E
593.99	593.86	593.73	593.61	593.48	593.35	593.22	SOUTH GUTTER LINE



CROWN TEMPLATE

NO SCALE

NOTE:
THE TOP OF SLAB ELEVATIONS FOR THE HIGH POINT ON THE BRIDGE DECK ARE 0.03 FEET BELOW THE HIGH POINT ON THE APPROACH ROADWAY TO ACCOUNT FOR THE ROUNDING OF THE DECK WITH A PARABOLIC TEMPLATE AT THE CROSS SLOPE INTERSECTION.

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

TOP OF SLAB ELEVATIONS

STATION 960+00.06, RT. 89.00' — MARCH 2020

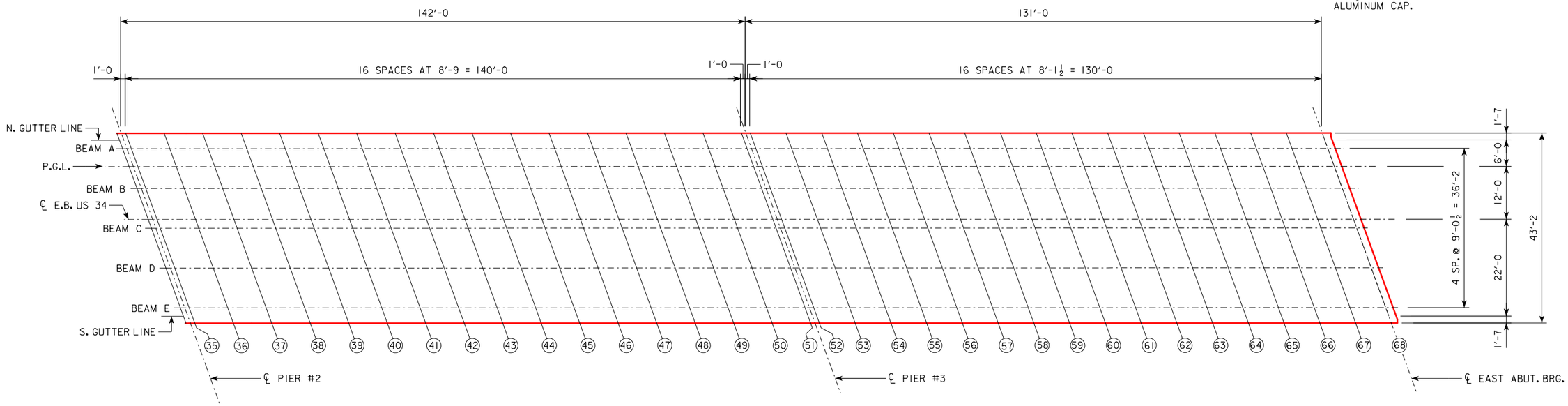
HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 26 OF 39 FILE NO. 31646 DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc. | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 27

BENCH MARK NO. 322 - N:6469785.28 E:24370801.27
BM $\frac{5}{8}$" DIA. DRIVEN ALUMINUM ROD WITH 2.5" DIA. ALUMINUM CAP.



TOP OF SLAB PLAN (SPAN 3 & SPAN 4)

TOP OF SLAB ELEVATIONS

	℄ PIER #2 BEARING																℄ PIER #3 BEARING									
LOCATION	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61
NORTH GUTTER LINE	593.48	593.36	593.23	593.10	592.97	592.84	592.72	592.59	592.46	592.33	592.20	592.08	591.95	591.82	591.69	591.56	591.43	591.41	591.29	591.17	591.05	590.93	590.81	590.69	590.57	590.45	590.33
BEAM A	593.51	593.38	593.26	593.13	593.00	592.87	592.74	592.62	592.49	592.36	592.23	592.10	591.98	591.85	591.72	591.59	591.46	591.43	591.31	591.20	591.08	590.96	590.84	590.72	590.60	590.48	590.36
BEAM B	593.65	593.52	593.39	593.26	593.13	593.00	592.88	592.75	592.62	592.49	592.36	592.24	592.11	591.98	591.85	591.72	591.60	591.57	591.45	591.33	591.21	591.09	590.97	590.85	590.73	590.61	590.50
℄ E.B. US 34	593.72	593.59	593.46	593.34	593.21	593.08	592.95	592.82	592.70	592.57	592.44	592.31	592.18	592.05	591.93	591.80	591.67	591.64	591.52	591.40	591.28	591.17	591.05	590.93	590.81	590.69	590.57
BEAM C	593.69	593.57	593.44	593.31	593.18	593.05	592.93	592.80	592.67	592.54	592.41	592.28	592.16	592.03	591.90	591.77	591.64	591.61	591.50	591.38	591.26	591.14	591.02	590.90	590.78	590.66	590.54
BEAM D	593.47	593.34	593.21	593.08	592.96	592.83	592.70	592.57	592.44	592.32	592.19	592.06	591.93	591.80	591.68	591.55	591.42	591.39	591.27	591.15	591.03	590.91	590.80	590.68	590.56	590.44	590.32
BEAM E	593.24	593.11	592.98	592.86	592.73	592.60	592.47	592.34	592.22	592.09	591.96	591.83	591.70	591.57	591.45	591.32	591.19	591.16	591.04	590.92	590.80	590.69	590.57	590.45	590.33	590.21	590.09
SOUTH GUTTER LINE	593.19	593.06	592.94	592.81	592.68	592.55	592.42	592.29	592.17	592.04	591.91	591.78	591.65	591.53	591.40	591.27	591.14	591.11	590.99	590.87	590.76	590.64	590.52	590.40	590.28	590.16	590.04

TOP OF SLAB ELEVATIONS

						℄ EAST ABUT. BRG.	
62	63	64	65	66	67	68	LOCATION
590.22	590.10	589.98	589.86	589.74	589.62	589.50	NORTH GUTTER LINE
590.24	590.13	590.01	589.89	589.77	589.65	589.53	BEAM A
590.38	590.26	590.14	590.02	589.90	589.78	589.66	BEAM B
590.45	590.33	590.21	590.09	589.98	589.86	589.74	℄ E.B. US 34
590.42	590.31	590.19	590.07	589.95	589.83	589.71	BEAM C
590.20	590.08	589.96	589.84	589.72	589.61	589.49	BEAM D
589.97	589.85	589.73	589.61	589.50	589.38	589.26	BEAM E
589.92	589.80	589.68	589.57	589.45	589.33	589.21	SOUTH GUTTER LINE

NOTE:
SEE DESIGN SHEET 26 FOR CROWN TEMPLATE DETAIL.

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

TOP OF SLAB ELEVATIONS

STATION 960+00.06, RT. 89.00' MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 27 OF 39 FILE NO. 31646 DESIGN NO. 220

BENCH MARK NO. 322 - N:6469785.28 E:24370801.27
BM $\frac{5}{8}$" DIA. DRIVEN ALUMINUM ROD WITH 2.5" DIA. ALUMINUM CAP.

TABLE OF BEAM LINE HAUNCH ELEVATIONS

	℄ WEST ABUT.BRG.																℄ PIER #1 BEARINGS									
LOCATION	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	LINE 26	LINE 27
BEAM A	597.00	596.94	596.88	596.81	596.73	596.64	596.54	596.43	596.31	596.18	596.03	595.87	595.70	595.52	595.34	595.15	594.95	594.93	594.86	594.79	594.72	594.64	594.55	594.45	594.34	594.21	594.08
BEAM B	597.14	597.07	597.01	596.94	596.86	596.77	596.67	596.56	596.44	596.31	596.16	596.00	595.84	595.66	595.47	595.28	595.09	595.06	594.99	594.92	594.85	594.77	594.68	594.58	594.47	594.35	594.21
BEAM C	597.19	597.12	597.06	596.99	596.91	596.82	596.72	596.61	596.49	596.36	596.21	596.05	595.88	595.71	595.52	595.33	595.14	595.11	595.04	594.97	594.90	594.82	594.73	594.63	594.52	594.39	594.26
BEAM D	596.96	596.90	596.83	596.76	596.68	596.60	596.50	596.39	596.27	596.13	595.99	595.83	595.66	595.48	595.30	595.10	594.91	594.88	594.82	594.75	594.67	594.59	594.50	594.40	594.29	594.17	594.04
BEAM E	596.73	596.67	596.60	596.53	596.45	596.37	596.27	596.16	596.04	595.90	595.76	595.60	595.43	595.25	595.07	594.88	594.68	594.65	594.59	594.52	594.44	594.36	594.27	594.17	594.06	593.94	593.81

TABLE OF BEAM LINE HAUNCH ELEVATIONS

							℄ PIER #2 BEARING	
LINE 28	LINE 29	LINE 30	LINE 31	LINE 32	LINE 33	LINE 34	LOCATION
593.93	593.78	593.61	593.44	593.25	593.07	592.88	BEAM A
594.07	593.91	593.74	593.57	593.39	593.20	593.01	BEAM B
594.12	593.96	593.79	593.62	593.43	593.25	593.06	BEAM C
593.89	593.73	593.57	593.39	593.21	593.02	592.83	BEAM D
593.66	593.50	593.34	593.16	592.98	592.79	592.60	BEAM E

MISCELLANEOUS DATA TABLE

	BEAM LINE		℄ WEST ABUT.BRG.														℄ PIER #1 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	LINE 26
ANTICIPATED DEFLECTION DUE TO SLAB (IN.)	ALL		0	$\frac{13}{16}$	$1\frac{9}{16}$	$2\frac{1}{4}$	$2\frac{13}{16}$	$3\frac{5}{16}$	$3\frac{11}{16}$	$3\frac{7}{8}$	$3\frac{15}{16}$	$3\frac{7}{8}$	$3\frac{11}{16}$	$3\frac{5}{16}$	$2\frac{13}{16}$	$2\frac{1}{4}$	$1\frac{9}{16}$	$\frac{13}{16}$	0	0	$\frac{3}{4}$	$1\frac{7}{16}$	$2\frac{1}{8}$	$2\frac{11}{16}$	$3\frac{1}{8}$	$3\frac{1}{2}$	$3\frac{11}{16}$	$3\frac{3}{4}$
CROSS SLOPE ADJUSTMENTS (IN.)	ALL		$\frac{5}{16}$																								
ALLOWABLE FIELD HAUNCH IN. & (FT.)	MIN.	ALL	$\frac{1}{4}$ (0.021)	$\frac{1}{4}$ (0.021)	$-\frac{3}{16}$ (-0.016)												$\frac{1}{4}$ (0.021)	$\frac{1}{4}$ (0.021)	$\frac{1}{4}$ (0.021)	$\frac{1}{4}$ (0.021)	$-\frac{3}{16}$ (-0.016)						
	MAX.	ALL	$3\frac{1}{4}$ (0.271)	$3\frac{1}{4}$ (0.271)	$2\frac{1}{2}$ (0.208)												$3\frac{1}{4}$ (0.271)	$3\frac{1}{4}$ (0.271)	$3\frac{1}{4}$ (0.271)	$3\frac{1}{4}$ (0.271)	$2\frac{1}{2}$ (0.208)						

MISCELLANEOUS DATA TABLE

							℄ PIER #2 BEARING	BEAM LINE		
LINE 27	LINE 28	LINE 29	LINE 30	LINE 31	LINE 32	LINE 33	LINE 34			
$3\frac{11}{16}$	$3\frac{1}{2}$	$3\frac{1}{8}$	$2\frac{11}{16}$	$2\frac{1}{8}$	$1\frac{7}{16}$	$\frac{3}{4}$	0	ALL		ANTICIPATED DEFLECTION DUE TO SLAB (IN.)
$\frac{5}{16}$								ALL		CROSS SLOPE ADJUSTMENTS (IN.)
$-\frac{3}{16}$ (-0.016)						$\frac{1}{4}$ (0.021)	$\frac{1}{4}$ (0.021)	MIN.	ALL	ALLOWABLE FIELD HAUNCH IN. & (FT.)
$2\frac{1}{2}$ (0.208)						$3\frac{1}{4}$ (0.271)	$3\frac{1}{4}$ (0.271)	MAX.	ALL	

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

HAUNCH DETAILS

STATION 960+00.06, RT. 89.00' MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 28 OF 39 FILE NO. 31646 DESIGN NO. 220

BENCH MARK NO. 322 - N:6469785.28 E:24370801.27
BM $\frac{5}{8}$" DIA. DRIVEN ALUMINUM ROD WITH 2.5" DIA. ALUMINUM CAP.

TABLE OF BEAM LINE HAUNCH ELEVATIONS

	℄ PIER #2 BEARING																℄ PIER #3 BEARING									
LOCATION	LINE 35	LINE 36	LINE 37	LINE 38	LINE 39	LINE 40	LINE 41	LINE 42	LINE 43	LINE 44	LINE 45	LINE 46	LINE 47	LINE 48	LINE 49	LINE 50	LINE 51	LINE 52	LINE 53	LINE 54	LINE 55	LINE 56	LINE 57	LINE 58	LINE 59	LINE 60	LINE 61
BEAM A	592.85	592.78	592.71	592.64	592.56	592.47	592.37	592.26	592.13	592.00	591.85	591.70	591.53	591.36	591.17	590.99	590.80	590.77	590.70	590.63	590.56	590.48	590.39	590.30	590.19	590.08	589.95
BEAM B	592.98	592.91	592.84	592.77	592.69	592.60	592.50	592.39	592.27	592.13	591.99	591.83	591.66	591.49	591.31	591.12	590.93	590.90	590.83	590.76	590.69	590.61	590.52	590.43	590.32	590.21	590.09
BEAM C	593.03	592.96	592.89	592.82	592.74	592.65	592.55	592.44	592.32	592.18	592.04	591.88	591.71	591.54	591.36	591.17	590.98	590.95	590.88	590.81	590.74	590.66	590.57	590.48	590.37	590.26	590.13
BEAM D	592.80	592.74	592.67	592.59	592.51	592.42	592.32	592.21	592.09	591.96	591.81	591.65	591.49	591.31	591.13	590.94	590.75	590.72	590.66	590.59	590.51	590.43	590.35	590.25	590.15	590.03	589.91
BEAM E	592.57	592.51	592.44	592.37	592.28	592.19	592.09	591.98	591.86	591.73	591.58	591.43	591.26	591.08	590.90	590.71	590.52	590.49	590.43	590.36	590.28	590.21	590.12	590.02	589.92	589.80	589.68

TABLE OF BEAM LINE HAUNCH ELEVATIONS

							℄ EAST ABUT. BEARING	
LINE 62	LINE 63	LINE 64	LINE 65	LINE 66	LINE 67	LINE 68	LOCATION
589.82	589.68	589.53	589.37	589.20	589.03	588.86	BEAM A
589.95	589.81	589.66	589.50	589.34	589.17	589.00	BEAM B
590.00	589.86	589.71	589.55	589.38	589.22	589.04	BEAM C
589.78	589.63	589.48	589.32	589.16	588.99	588.82	BEAM D
589.55	589.40	589.25	589.10	588.93	588.76	588.59	BEAM E

MISCELLANEOUS DATA TABLE

	BEAM LINE		℄ PIER #2 BEARING															℄ PIER #3 BEARING									
			LINE 35	LINE 36	LINE 37	LINE 38	LINE 39	LINE 40	LINE 41	LINE 42	LINE 43	LINE 44	LINE 45	LINE 46	LINE 47	LINE 48	LINE 49	LINE 50	LINE 51	LINE 52	LINE 53	LINE 54	LINE 55	LINE 56	LINE 57	LINE 58	LINE 59	LINE 60
ANTICIPATED DEFLECTION DUE TO SLAB (IN.)	ALL		0	$\frac{3}{4}$	$1\frac{7}{16}$	$2\frac{1}{8}$	$2\frac{11}{16}$	$3\frac{1}{8}$	$3\frac{1}{2}$	$3\frac{11}{16}$	$3\frac{3}{4}$	$3\frac{11}{16}$	$3\frac{1}{2}$	$3\frac{1}{8}$	$2\frac{11}{16}$	$2\frac{1}{8}$	$1\frac{7}{16}$	$\frac{3}{4}$	0	0	$\frac{5}{8}$	$1\frac{1}{4}$	$1\frac{3}{4}$	$2\frac{1}{4}$	$2\frac{5}{8}$	$2\frac{15}{16}$	$3\frac{1}{16}$	$3\frac{1}{8}$
CROSS SLOPE ADJUSTMENTS (IN.)	ALL		$\frac{5}{16}$																								
ALLOWABLE FIELD HAUNCH IN. & (FT.)	MIN.	ALL	$\frac{1}{4}$ (0.021)	$\frac{1}{4}$ (0.021)	$-\frac{3}{16}$ (-0.016)												$\frac{1}{4}$ (0.021)	$\frac{1}{4}$ (0.021)	$\frac{1}{4}$ (0.021)	$\frac{1}{4}$ (0.021)	$\frac{1}{4}$ (0.021)	$-\frac{3}{16}$ (-0.016)				
	MAX.	ALL	$3\frac{1}{4}$ (0.271)	$3\frac{1}{4}$ (0.271)	$2\frac{1}{2}$ (0.208)												$3\frac{1}{4}$ (0.271)	$3\frac{1}{4}$ (0.271)	$3\frac{1}{4}$ (0.271)	$3\frac{1}{4}$ (0.271)	$3\frac{1}{4}$ (0.271)	$2\frac{1}{2}$ (0.208)				

MISCELLANEOUS DATA TABLE

							℄ EAST ABUT.BRG.	BEAM LINE		
LINE 61	LINE 62	LINE 63	LINE 64	LINE 65	LINE 66	LINE 67	LINE 68			
$3\frac{1}{16}$	$2\frac{15}{16}$	$2\frac{5}{8}$	$2\frac{1}{4}$	$1\frac{3}{4}$	$1\frac{1}{4}$	$\frac{5}{8}$	0	ALL		ANTICIPATED DEFLECTION DUE TO SLAB (IN.)
$\frac{5}{16}$								ALL		CROSS SLOPE ADJUSTMENTS (IN.)
$-\frac{3}{16}$ (-0.016)						$\frac{1}{4}$ (0.021)	$\frac{1}{4}$ (0.021)	MIN.	ALL	ALLOWABLE FIELD HAUNCH IN. & (FT.)
$2\frac{1}{2}$ (0.208)						$3\frac{1}{4}$ (0.271)	$3\frac{1}{4}$ (0.271)	MAX.	ALL	

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

HAUNCH DETAILS

STATION 960+00.06, RT. 89.00' MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 29 OF 39 FILE NO. 31646 DESIGN NO. 220

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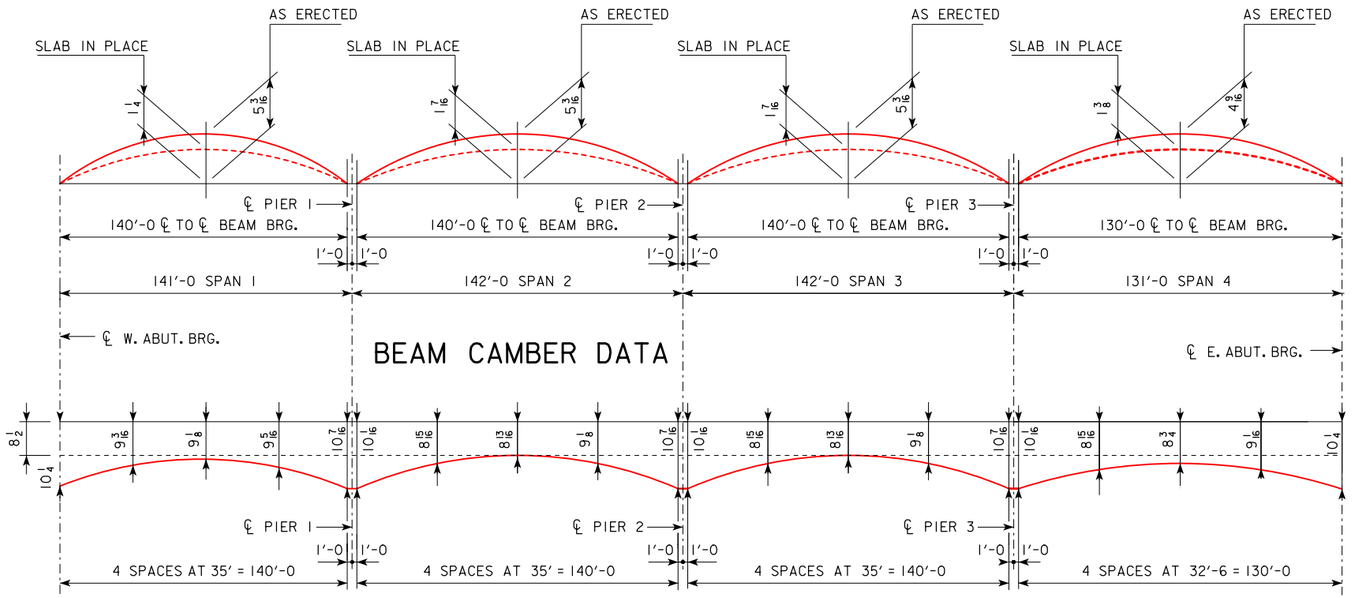
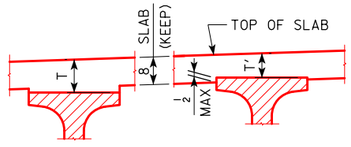
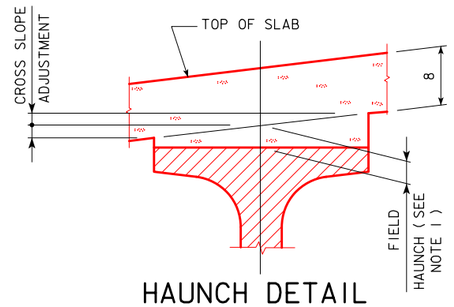


DECK THICKNESS AT BEAMS (T)



SLAB THICKNESS DETAILS

NOTE: THE SLAB 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.



HAUNCH DETAIL

NOTE 1:
TO CALCULATE FIELD HAUNCH REQUIRED AT EACH LOCATION, SURVEY THE BEAM TOPS CONSISTENT WITH THE SPACINGS SHOWN ON THE "TOP OF SLAB 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 SLAB 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.

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.

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

SLAB THICKNESS DIAGRAM & DETAILS

STATION 960+00.06, RT. 89.00' — MARCH 2020

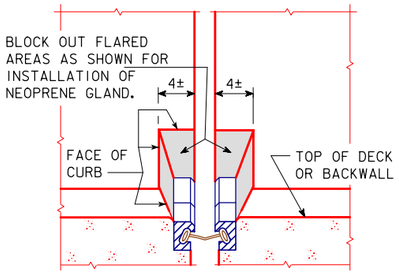
HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 30 OF 39 FILE NO. 31646 DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc. | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 31

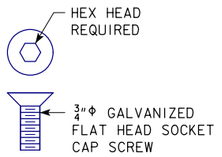
REVISION 08-13 - ADDED A CORRESPONDING MAXIMUM DECK TEMPERATURE COLUMN TO EXPANSION DEVICE TABLE. ADDED A SPLICE DETAIL TO THE PART PLAN VIEWS.
ENGLISHDECKRAILBRIDGES.DGN 1026 - THIS SHEET ISSUED 03-02.



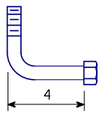
BLOCKOUT DETAIL

(DRAWN FOR 0° SKEW FOR ILLUSTRATIVE PURPOSES)

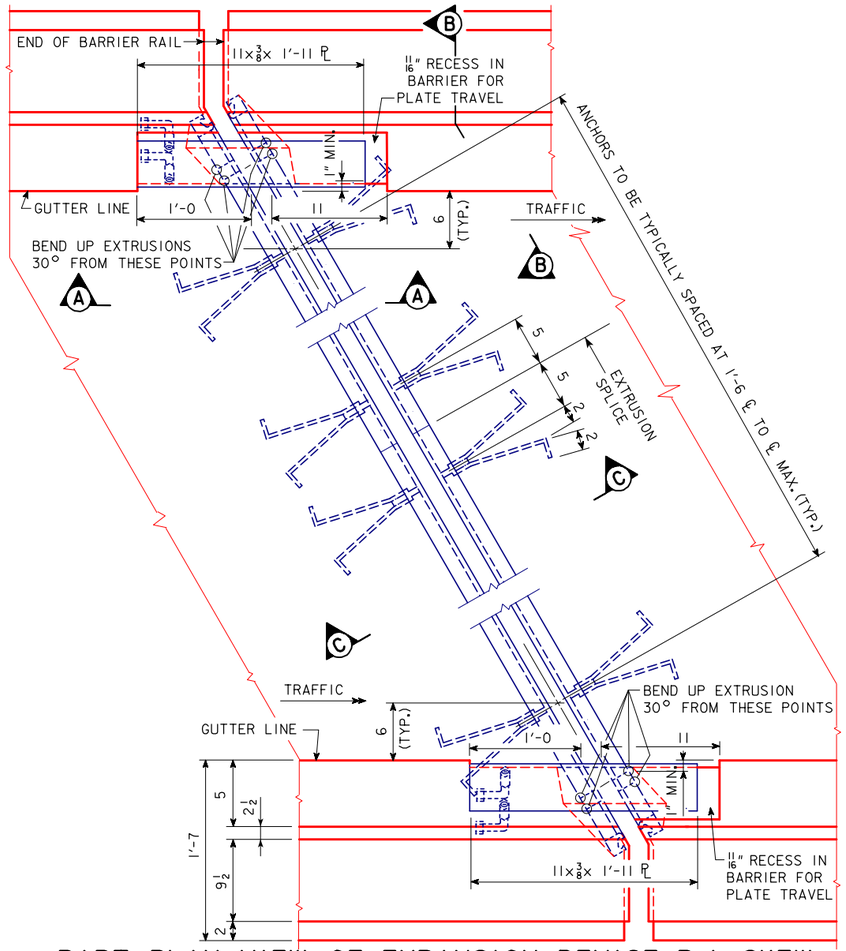
CONTRACTOR TO NOTE THAT THE CAP SCREW ANCHORAGE SYSTEM FOR THE $\frac{3}{8}$" BARRIER PLATES ARE ALWAYS TO BE PLACED ON THE ONCOMING TRAFFIC SIDE.



CAP SCREW DETAIL



BENT BOLT DETAIL

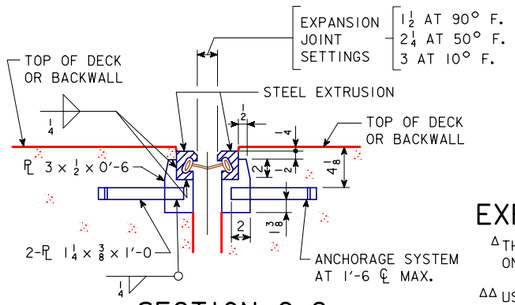


PART PLAN VIEW OF EXPANSION DEVICE R.A. SKEW

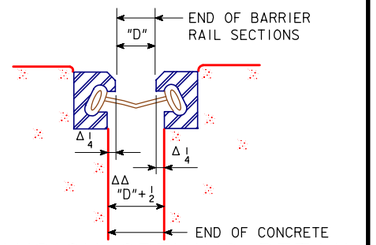
BARRIER PLATE NOTE:

THE MATERIAL USED FOR THE BARRIER PLATES IS TO BE ASTM A36 STEEL. THE BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A307. THE PLATES, BOLTS, NUTS AND CAP SCREWS ARE TO BE GALVANIZED IN ACCORDANCE WITH ARTICLE 4100.07 OF THE STANDARD SPECIFICATIONS.

NOTE: JOINT SETTINGS FOR OTHER TEMPERATURES ARE PROPORTIONAL. TEMPERATURES SHOWN ARE CONCRETE DECK TEMPERATURES ON THE UNDERSIDE OR SHADED PORTION OF THE DECK.



SECTION C-C



EXPANSION OPENING DETAIL

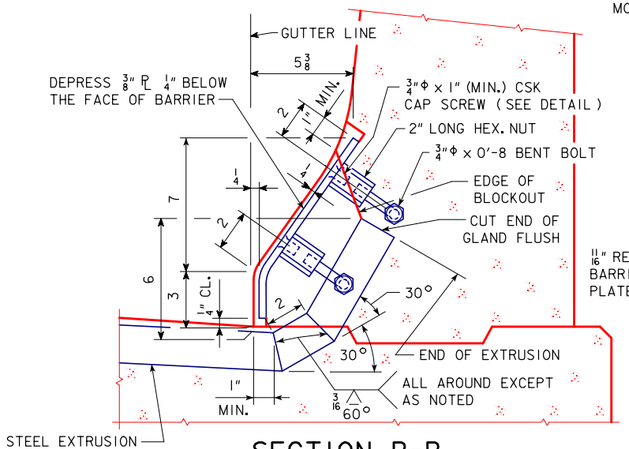
Δ THIS DIMENSION MAY VARY SLIGHTLY DEPENDING ON MANUFACTURER FURNISHING THE JOINT.

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

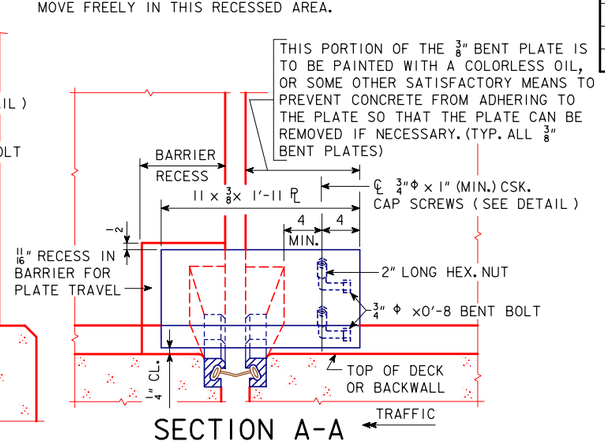
TABLE OF APPROVED EXPANSION DEVICES

MANUFACTURER	TYPE OF STEEL EXTRUSION	NEOPRENE GLAND	MINIMUM OPENING FOR GLAND INSTALLATION	CORRESPONDING MAXIMUM DECK TEMPERATURE
WATSON-BOWMAN & ACME CORP.	A	SE-400	1½"	90° F.
APPROVED EQUAL				

NOTE: IT IS INTENDED THAT THE 11/16 INCH RECESSED AREA BE FORMED SO THAT WHEN THE ⅜" BENT PLATE IS INSTALLED THE PLATE WILL BE ABLE TO MOVE FREELY IN THIS RECESSED AREA.



SECTION B-B



SECTION A-A

(DRAWN FOR 0° SKEW FOR ILLUSTRATIVE PURPOSES)

NOTE:
SEE DESIGN SHEET 32 FOR EXPANSION DEVICE NOTES CONTAINING THE STEEL EXTRUSION NOTES, NEOPRENE GLAND NOTES, AND WATERTIGHT INTEGRITY TESTING AND REPAIR NOTES.

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

EXPANSION DEVICE DETAILS

STATION 960+00.06, RT. 89.00' — MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 31 OF 39 — FILE NO. 31646 — DESIGN NO. 220

STEEL EXTRUSION NOTES:

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

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

THE EXPANSION DEVICE IS TO BE PARALLEL TO GRADE.

CAP SCREWS SHALL BE COUNTERSUNK $\frac{1}{16}$" BELOW TOP OF THE PLATE. THE MINIMUM GRADE OF STRUCTURAL STEEL FOR THE EXPANSION DEVICE SHALL BE ASTM A36.

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

SHOP SPLICES OF THE STEEL EXTRUSION WILL BE PERMITTED. PRIOR TO MAKING SHOP SPLICES STEEL EXTRUSION PIECES SHALL HAVE A MINIMUM LENGTH OF 15 FEET. THE INDIVIDUAL LENGTH OF PIECES SHALL BE CHOSEN SO THAT A MINIMUM NUMBER OF SPLICES IS REQUIRED. ALL PIECES SHALL BE JOINED WITH A PREQUALIFIED PARTIAL PENETRATION SINGLE GROOVE WELD DETAILED ON THE SHOP DRAWING. ALL SURFACES NOT IN CONTACT WITH CONCRETE ARE TO BE GROUND FLUSH. NO WELD SHALL BE PERMITTED IN THE INTERNAL SECTION OF THE EXTRUSION WHERE THE NEOPRENE GLAND IS TO BE INSTALLED.

THE NUMBER OF FEET OF STEEL EXTRUSION INSTALLED SHALL BE PAID FOR AT THE CONTRACT PRICE PER FOOT BASED ON PLAN QUANTITIES. THE PRICE BID FOR "STEEL EXTRUSION JOINT W/NEOPRENE" SHALL INCLUDE THE COST OF FURNISHING BUT NOT THE COST OF INSTALLING THE NEOPRENE GLAND. THE CONTRACT PRICE BID FOR "STEEL EXTRUSION JOINT W/NEOPRENE" SHALL BE FULL COMPENSATION FOR FURNISHING AND INSTALLING STEEL EXTRUSIONS. THIS WORK WILL CONSIST OF FURNISHING ALL REQUIRED MATERIALS, (INCLUDING THE $\frac{3}{8}$" PLATES AT THE CURBS AND THEIR ANCHORAGE SYSTEMS), AND THE INSTALLATION AND ADJUSTMENT OF THE EXPANSION JOINTS IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. THE FURNISHING AND INSTALLATION OF ALL NECESSARY HARDWARE AND ACCESSORIES AS SUPPLIED BY THE EXPANSION JOINT MANUFACTURER ARE TO BE INCLUDED IN THIS WORK, INCLUDING THE ANCHORAGE SYSTEM AND ANY TEMPORARY ERECTION MATERIAL. ALL WORK AND MATERIALS FOR THE INSTALLATION OF THE EXPANSION JOINTS ARE TO COMPLY WITH THE WRITTEN RECOMMENDATIONS OF THE EXPANSION JOINT MANUFACTURER.

NEOPRENE GLAND NOTES:

THE NEOPRENE GLAND IS TO BE PLACED AS ONE CONTINUOUS PIECE FROM END TO END OF THE STEEL EXTRUSION.

THE NEOPRENE GLAND SHALL CONFORM TO ASTM-2628 MODIFIED TO EXCLUDE RECOVER TEST AND COMPRESSION SET.

THE CONTRACTOR SHALL INSTALL THE GLAND ABOVE THE MINIMUM TEMPERATURE OF 45° AND THE MINIMUM JOINT OPENING AND CORRESPONDING MAXIMUM DECK TEMPERATURE SHOWN IN THESE PLANS. THE DECK TEMPERATURE SHALL BE MEASURED BY RECORDING THE SURFACE TEMPERATURES ON THE UNDERSIDE OF THE DECK ADJACENT TO THE JOINTS. IF THE DECK TEMPERATURE DOES NOT FALL WITHIN THE SPECIFIED TEMPERATURE RANGE BEFORE THE CONTRACTOR HAS COMPLETED ALL OTHER REQUIRED WORK, IT WILL BE NECESSARY FOR THE CONTRACTOR TO RETURN TO THE PROJECT SITE TO COMPLETE INSTALLATION AND TESTING OF THE NEOPRENE GLAND. IF THE CONTRACTOR IS REQUIRED TO RETURN TO THE PROJECT SITE AFTER ALL OTHER REQUIRED WORK HAS BEEN COMPLETED, THE CONTRACTOR SHALL COMPLETE INSTALLATION AND TESTING OF NEOPRENE GLAND AT NO EXTRA CHARGE TO THE STATE.

THE NUMBER OF FEET OF NEOPRENE GLAND INSTALLED SHALL BE PAID FOR AT THE CONTRACT PRICE PER FOOT BASED ON PLAN QUANTITIES. THE PRICE FOR "NEOPRENE GLAND INSTALLATION AND TESTING" SHALL BE FULL COMPENSATION FOR INSTALLING AND TESTING OF THE NEW NEOPRENE GLAND. THIS WORK WILL CONSIST OF CLEANING THE EXTRUSION, INSTALLATION OF THE NEOPRENE GLAND AND WATER TIGHT TESTING OF THE EXPANSION JOINT SYSTEM. ALL WORK AND MATERIALS NECESSARY FOR THE INSTALLATION OF THE NEOPRENE GLAND SHALL COMPLY WITH THE RECOMMENDATIONS OF THE EXPANSION JOINT MANUFACTURER. THE PRICE BID FOR "NEOPRENE GLAND INSTALLATION AND TESTING" SHALL INCLUDE ALL WATERTIGHT INTEGRITY TESTING, LEAK REPAIRS AS DIRECTED BY THE ENGINEER, AND SUBSEQUENT WATERTIGHT TESTING UNTIL A LEAK FREE INSTALLATION IS ACHIEVED.

WATERTIGHT INTEGRITY TESTING AND REPAIR NOTES:

AFTER INSTALLATION OF EACH NEOPRENE GLAND, THE CONTRACTOR SHALL PERFORM WATERTIGHT INTEGRITY TESTS AT THE DECK LEVEL TO DETECT ANY LEAKAGE. THE TESTS ARE TO CHECK FOR LEAKAGE AT THE UPTURNED ENDS OF THE EXPANSION DEVICE AND FOR LEAKAGE ALONG THE EXPANSION DEVICE ACROSS THE DECK AND ANY MEDIANS OR SIDEWALKS. THE CONTRACTOR MAY CONDUCT A SINGLE TEST OF THE ENTIRE DEVICE INCLUDING UPTURNED ENDS OR MAY CONDUCT SEPARATE TESTS OF UPTURNED ENDS AND ONE OR MORE TESTS OF OVERLAPPING LENGTHS BETWEEN THE UPTURNED ENDS.

AT EACH UPTURNED END OF THE EXPANSION DEVICE, THE CONTRACTOR SHALL BLOCK OUT ON THE DECK AT LEAST 3 FEET OF THE EXPANSION DEVICE LEADING TO THE UPTURNED END AND FLOOD THE AREA. A MINIMUM WATER DEPTH OF 3" SHALL BE MAINTAINED AT THE GUTTERLINE FOR AT LEAST 30 MINUTES. DURING THE TEST, THE INSPECTOR SHALL OBSERVE FOR ANY OVERFLOW AT THE UPTURNED END. AT THE CONCLUSION OF THE TEST THE INSPECTOR WILL EXAMINE THE UNDERSIDE OF THE JOINT FOR LEAKAGE. THE EXPANSION DEVICE IS CONSIDERED WATERTIGHT IF THE INSPECTOR OBSERVES NO OVERFLOW DURING THE TEST AND IF NO DRIPPING WATER OR WATER DROPLETS ARE VISIBLE IN THE UNDERDECK AREAS NEAR THE UPTURNED END.

THE CONTRACTOR SHALL TEST THE EXPANSION DEVICE BETWEEN UPTURNED ENDS BY BLOCKING OUT AND COVERING THE DEVICE WITH PONDED OR FLOWING WATER TO A DEPTH OF AT LEAST 1" AT ALL POINTS, FOR AT LEAST 30 MINUTES. VERTICAL CURB SURFACES MAY BE TESTED WITH AN UNNOZZLED HOSE DELIVERING APPROXIMATELY ONE GALLON PER MINUTE DIRECTED TO FLOW OVER THE ENTIRE CURB HEIGHT FOR 30 MINUTES. AT THE CONCLUSION OF THE TEST, THE INSPECTOR WILL EXAMINE THE UNDERSIDE OF THE JOINT FOR LEAKAGE. THE EXPANSION DEVICE IS CONSIDERED WATERTIGHT IF NO DRIPPING WATER OR WATER DROPLETS ARE VISIBLE IN THE UNDERDECK AREAS ALONG THE FULL LENGTH OF THE EXPANSION JOINT. DAMP CONCRETE THAT DOES NOT SHOW DRIPPING WATER OR WATER DROPLETS IS NOT CONSIDERED A SIGN OF LEAKAGE.

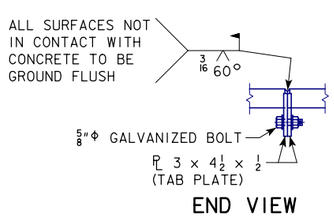
IF THE EXPANSION DEVICE LEAKS AT AN UPTURNED END OR ALONG ITS LENGTH, THE CONTRACTOR SHALL LOCATE THE LEAK(S) AND TAKE REPAIR MEASURES TO STOP THE LEAKAGE. THE REPAIR MEASURES SHALL BE AS RECOMMENDED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER PRIOR TO BEGINNING CORRECTIVE WORK.

IF MEASURES TO ELIMINATE LEAKAGE ARE TAKEN, THE CONTRACTOR SHALL PERFORM SUBSEQUENT WATERTIGHT INTEGRITY TESTS SUBJECT TO THE SAME CONDITIONS AS THE ORIGINAL TEST.

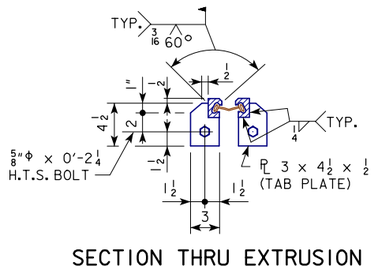
FIELD CONSTRUCTION NOTES:

IF THE STEEL EXTRUSION IS SPLICED IN THE FIELD, THE SPLICE LOCATION SHALL BE DETAILED ON THE SHOP DRAWINGS. THE CONNECTION DETAILS SHALL INCLUDE TAB PLATES AND PREPARED ENDS TO ACCOMMODATE THE NECESSARY WELDING. SEE DETAILS IN THESE PLANS.

GALVANIZED COATING DAMAGE BY FIELD WELDING SHALL BE REPAIRED IN ACCORDANCE WITH MATERIALS I.M. 410.



END VIEW



SECTION THRU EXTRUSION

FIELD SPLICE DETAIL

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

EXPANSION DEVICE NOTES

STATION 960+00.06, RT. 89.00' MARCH 2020

HENRY COUNTY

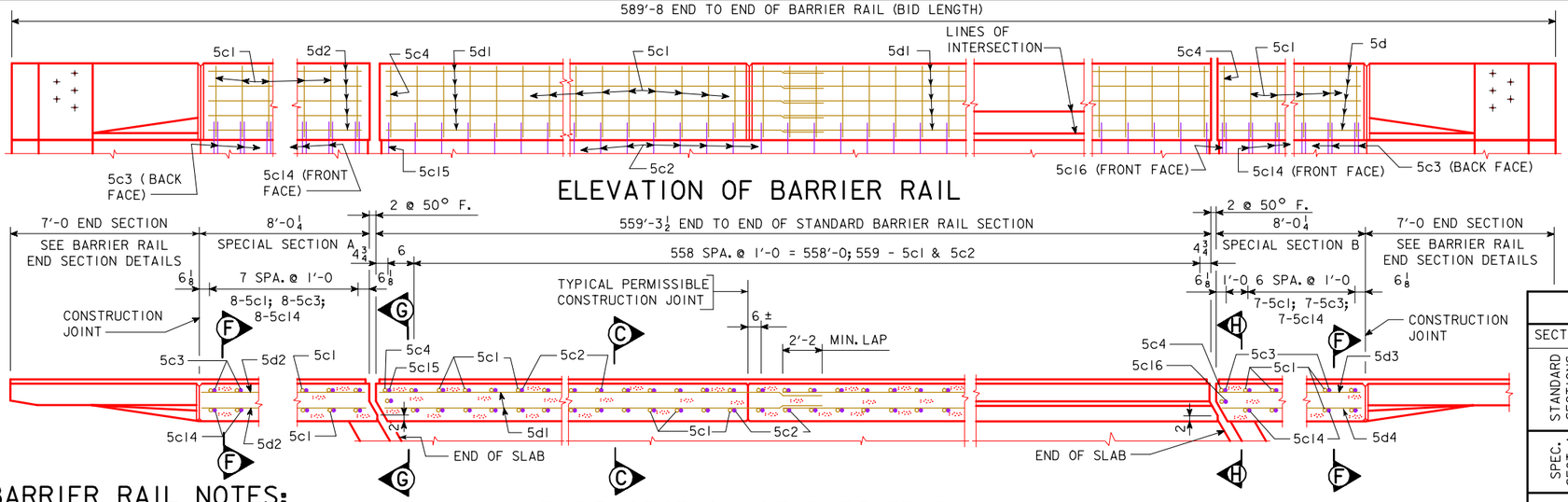
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

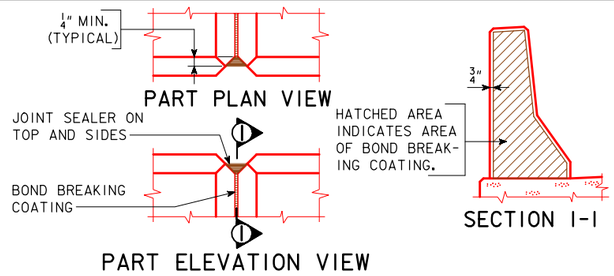
DESIGN SHEET NO. 32 OF 39 FILE NO. 31646 DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc.	STANDARD SHEET 1026s2	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER 33

REVISION 08-13 - STEEL EXTRUSION NOTE WAS ADDED TO SHOW A WELD DETAIL ON THE SHOP DRAWINGS FOR SPLICES.
AN ADDITIONAL NEOPRENE GLAND NOTE ABOUT THE CORRESPONDING MAXIMUM DECK TEMPERATURE WAS ADDED.
ENGLISHDECKRAILBRIDGES.DGN - 1026s2 - THIS SHEET ISSUED 11-08.

ENGLISHDECKRAILBRIDGES.DGN - 1018SA - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 5c2, 5c3, 5c14-16 BARS TO STAINLESS STEEL.





BARRIER RAIL JOINT DETAILS

BARRIER RAIL NOTES:

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

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER.

COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

ALL BARRIER RAIL REINFORCING STEEL IS TO BE EITHER EPOXY COATED OR STAINLESS STEEL AS SHOWN. THE STAINLESS STEEL REINFORCING STEEL SHALL BE DEFORMED BAR GRADE 60 MEETING THE REQUIREMENTS OF MATERIALS I.M. 452.

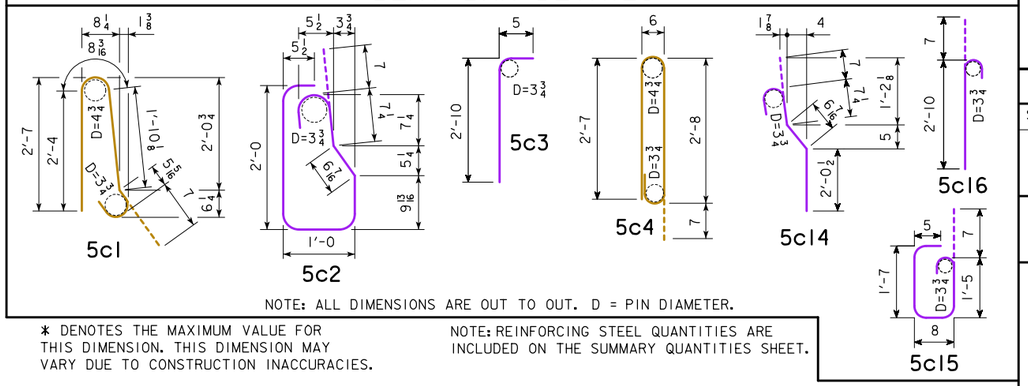
THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR CONCRETE BARRIER RAILING SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. 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. SEE DESIGN SHEET 36 FOR CONDUIT AND CONDUIT SUPPORT REINFORCING.

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

TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL ℄ GRADE.

CROSS SECTIONAL AREA OF THE STANDARD AND SPECIAL SECTIONS OF THE BARRIER RAIL = 2.84 SQUARE FEET.

BENT BAR DETAILS



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

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

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

EPOXY COATED REINF. STEEL - TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c1	RAIL, VERTICAL		1118	5'-11	6899
	5c4	RAIL, VERTICAL		2	6'-4	13
	5d1	RAIL, LONGITUDINAL		270	39'-6	11124
SPEC. SECT. A	5c1	RAIL, VERTICAL		16	5'-11	99
	5d2	RAIL, LONGITUDINAL		18	7'-8	144
SPECIAL SECTION B	5c1	RAIL, VERTICAL		14	5'-11	86
	5c4	RAIL, VERTICAL		2	6'-4	13
	5d3	RAIL, LONGITUDINAL		16	7'-8	128
	5d4	RAIL, LONGITUDINAL		2	7'-6	16
					EPOXY REINF. TOTAL WEIGHT (LBS.)	18522

STAINLESS STEEL REINF. STEEL - TWO RAILS

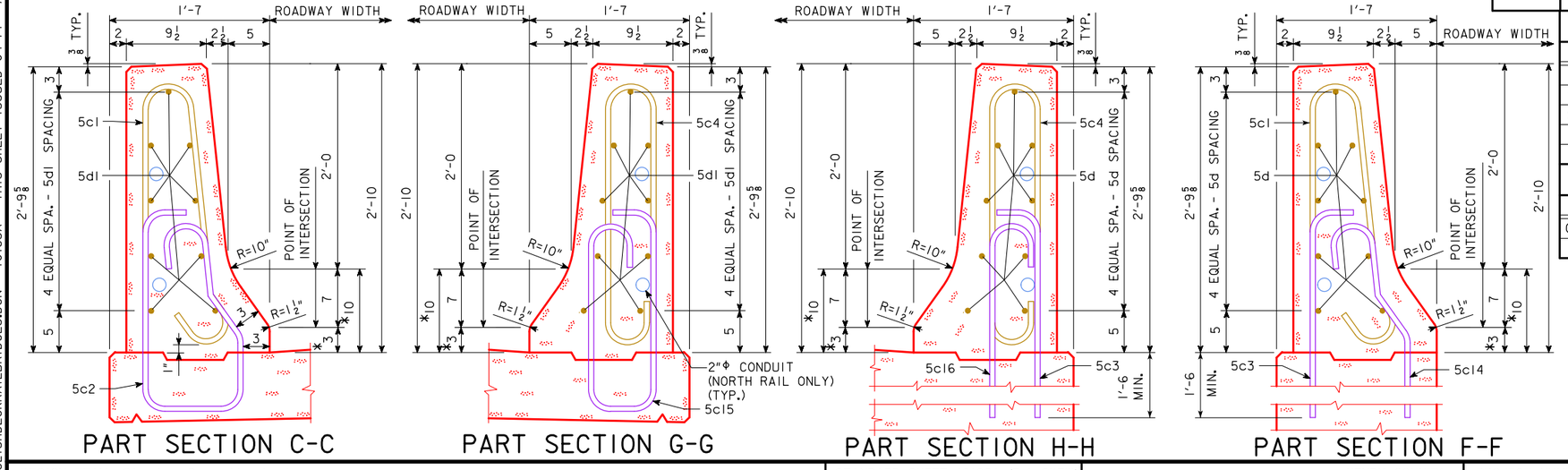
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STD. SECTS.	5c2	RAIL, VERTICAL		1118	6'-0	6996
	5c15	RAIL, VERTICAL		2	4'-8	10
SPEC. SECT. A	5c3	RAIL, VERTICAL		16	3'-3	54
	5c14	RAIL, VERTICAL		16	3'-10	64
SPECIAL SECTION B	5c3	RAIL, VERTICAL		14	3'-3	47
	5c14	RAIL, VERTICAL		14	3'-10	56
	5c16	RAIL, VERTICAL		2	3'-5	7
					STAINLESS STEEL TOTAL WEIGHT (LBS.)	7234

CONCRETE PLACEMENT SUMMARY

SECTION		TOTAL
STANDARD SECTION	1118.6 AT 0.1052 CU. YDS. PER FT.	117.7
SPECIAL SECTION A	16.0 AT 0.1052 CU. YDS. PER FT.	1.7
SPECIAL SECTION B	16.0 AT 0.1052 CU. YDS. PER FT.	1.7
	TOTAL (CU. YD.)	121.1

CONCRETE BARRIER RAIL QUANTITIES

ITEM		UNIT	QUANTITY
CONCRETE BARRIER RAILING	2 @ 589.7	LIN. FT.	1,179.4



DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

BARRIER RAIL DETAILS

STATION 960+00.06, RT. 89.00' — MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 33 OF 39 — FILE NO. 31646 — DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc. | STANDARD SHEET 1018SA (R.A. SKEW) | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 34

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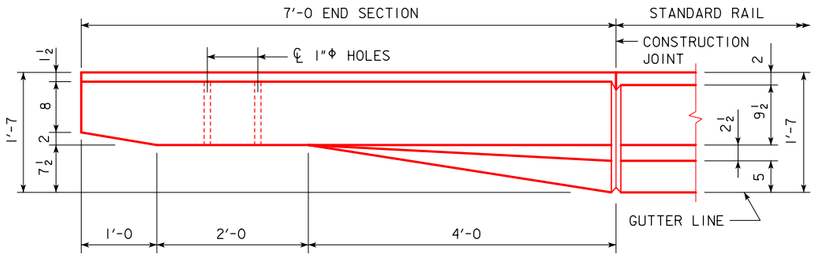
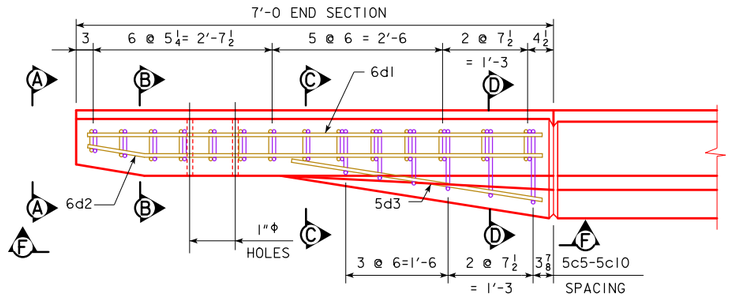
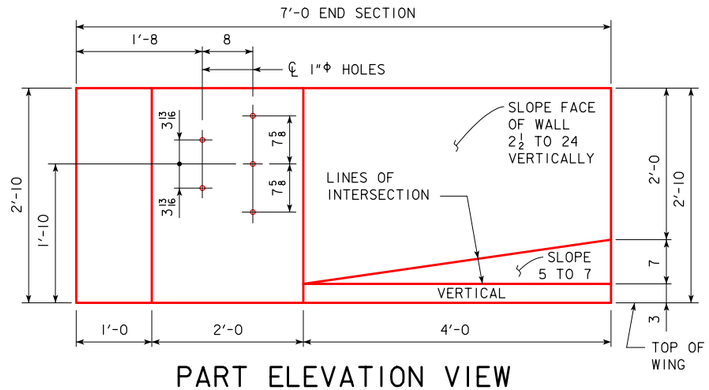


PART PLAN VIEW

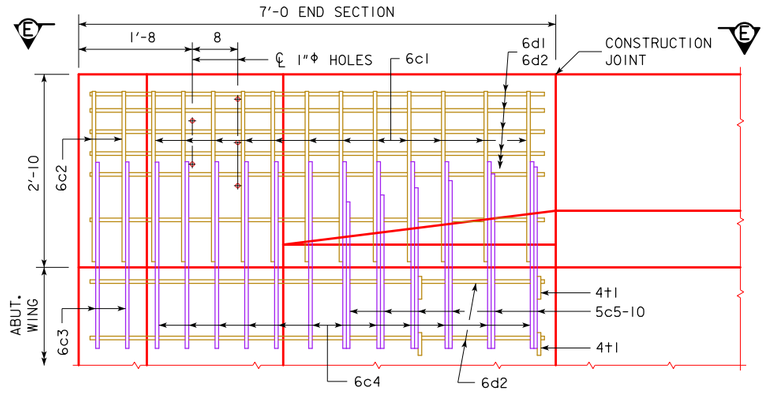


PART VIEW E-E

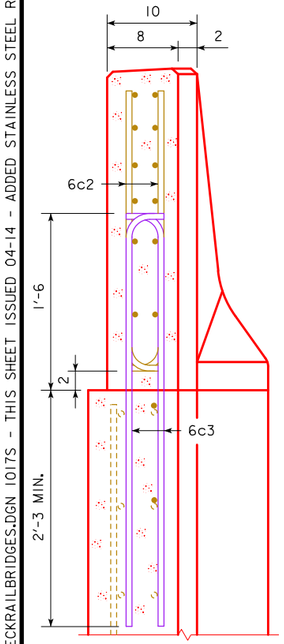


PART ELEVATION VIEW

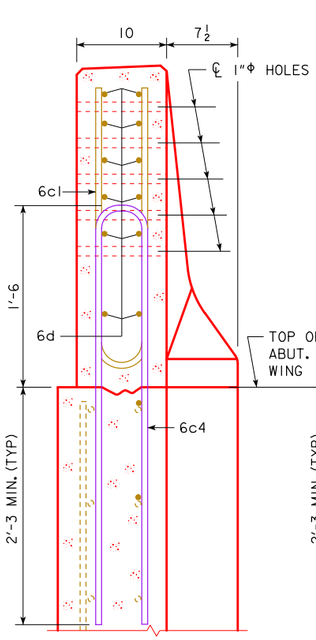
PROVIDE 5 HOLES FORMED WITH 1"Φ PLASTIC CONDUIT. COST TO BE INCLUDED IN PRICE BID FOR CONCRETE BARRIER RAILING.



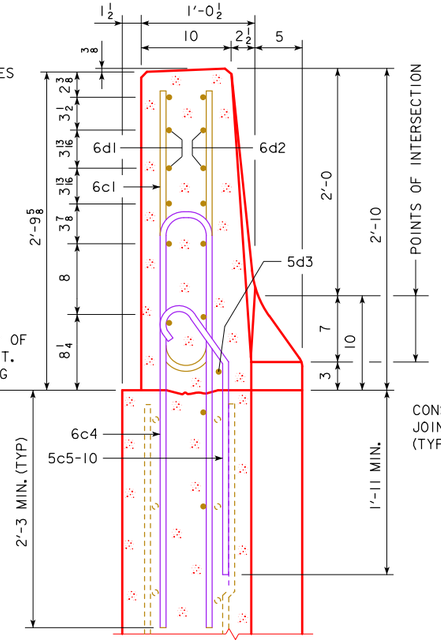
PART VIEW F-F



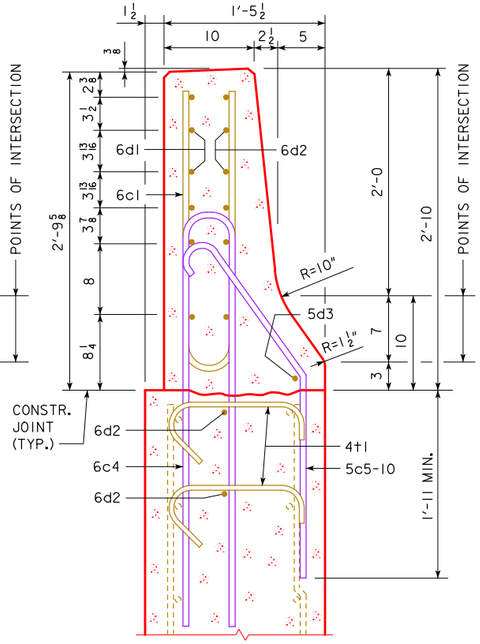
VIEW A-A



SECTION B-B



SECTION C-C



SECTION D-D

NOTE:
4t1 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 1½" 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 4t1 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.

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
4t1	RAIL, ABUTMENT WING TIE BARS		4	VARIES	5
			EPOXY REINF. TOTAL WEIGHT (LBS.)		266

STAINLESS STEEL REINF. STEEL - ONE END SECT.

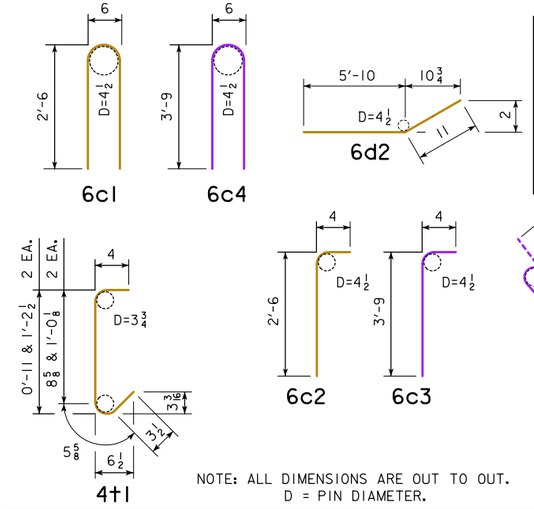
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6c3	RAIL, VERTICAL		4	4'-1	25
6c4	RAIL, VERTICAL		12	8'-0	144
5c5-10	RAIL, VERTICAL		6	VARIES	23
			STAINLESS STEEL TOTAL WEIGHT (LBS.)		192

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



BAR	"X"
5c5	0'-6½
5c6	0'-8½
5c7	0'-10¼
5c8	1'-0¼
5c9	1'-2
5c10	1'-4

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

BARRIER RAIL END SECTION DETAILS

STATION 960+00.06, RT. 89.00' — MARCH 2020

HENRY COUNTY

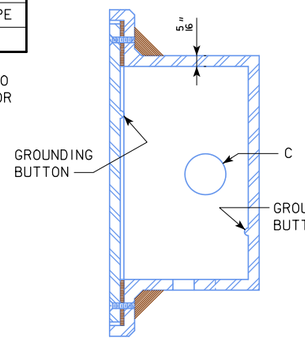
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 34 OF 39 — FILE NO. 31646 — DESIGN NO. 220

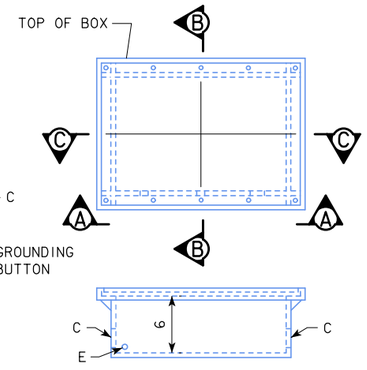
ENGLISHDECKRAILBRIDGES.DGN 1017S - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 6c3, 6c4 & 5c5-10 BARS TO STAINLESS STEEL.

BOSSED 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 x 0'-0$\frac{3}{4}$ BOLTS.

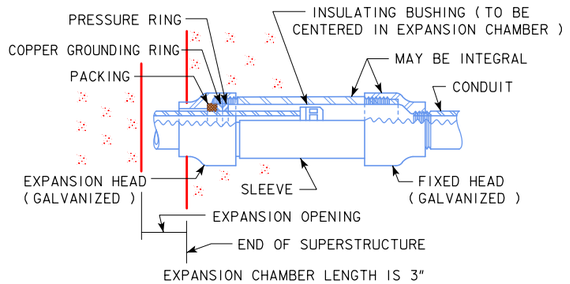


SECTION B-B



VIEW A-A

SECTION C-C



EXPANSION FITTING DETAIL

(4 REQUIRED)

LI-104 JUNCTION BOX

WATERTIGHT, CAST IRON - FLUSH MOUNT

CONDUIT 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.

EXPANSION FITTING SHALL BE AS SPECIFIED OR AS APPROVED BY THE ENGINEER. TYPICAL DETAILS ARE SHOWN ON THIS SHEET.

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 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

CONDUIT DETAILS

STATION 960+00.06, RT. 89.00' MARCH 2020

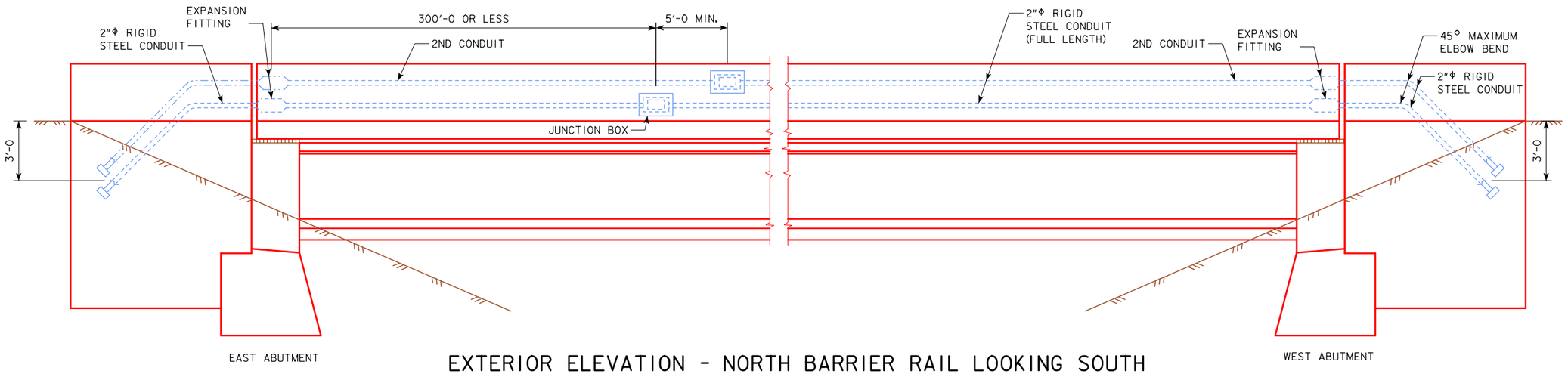
HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

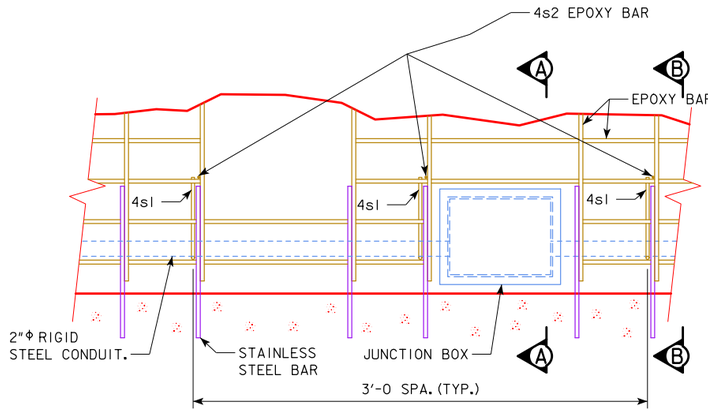
DESIGN SHEET NO. 35 OF 39 FILE NO. 31646 DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc. | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 36

REVISION 05-11 - ADDED THE WORD 'MINIMUM' TO THE 3½ 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.

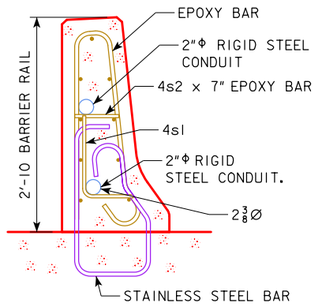


EXTERIOR ELEVATION - NORTH BARRIER RAIL LOOKING SOUTH



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.

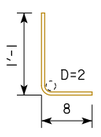


SECTION B-B - CONDUIT SUPPORT

ONLY USED IN RAIL WITH CONDUIT, USE 3'-0 SPACING. GALVANIZED CONDUIT SHALL NOT COME INTO CONTACT WITH THE STAINLESS STEEL REINFORCING.
(194 REQUIRED)

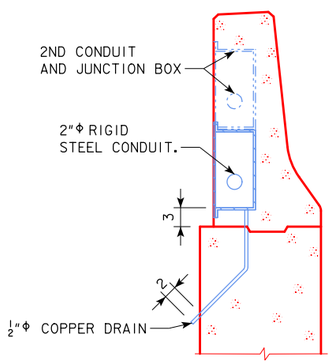
EPOXY REINFORCING STEEL-ONE RAIL

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
4s1	RAIL CONDUIT	⌐	194	1'-9	227
4s2	RAIL CONDUIT	—	194	0'-7	76
			TOTAL WEIGHT (LBS.)		303

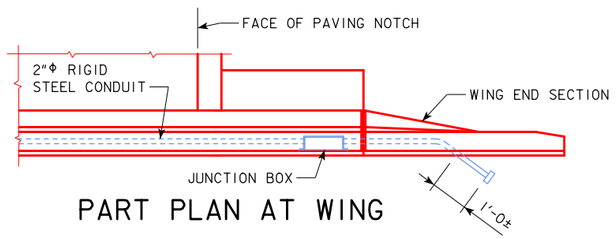


4s1

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



SECTION A-A THRU JUNCTION BOX



PART PLAN AT WING

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS 142'-0 INTERIOR SPANS

CONDUIT DETAILS

STATION 960+00.06, RT. 89.00' MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 36 OF 39 FILE NO. 31646 DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc.	STANDARD SHEET 1030As2	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER 37

SUBDRAIN NOTES :

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

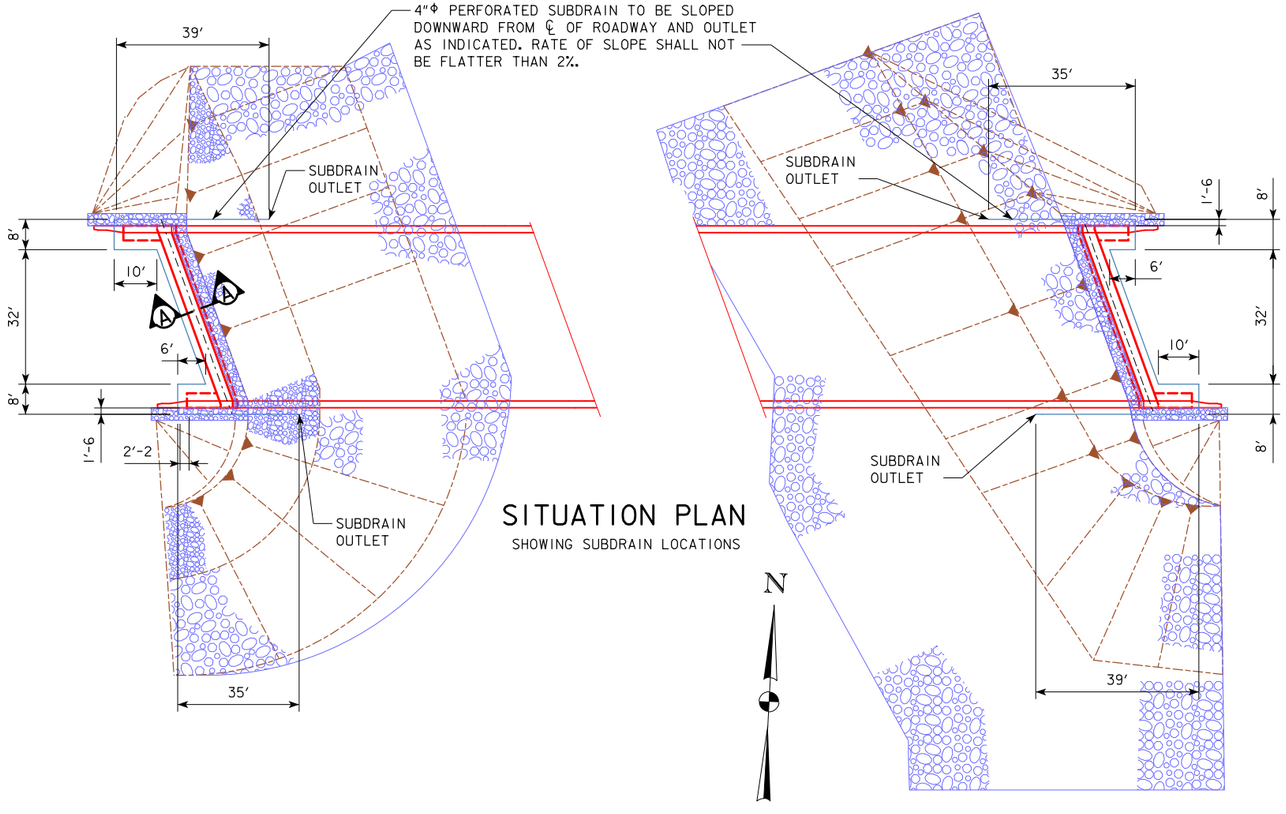
THE SUBDRAINS SHALL BE 4" IN DIAMETER AND SHALL BE IN ACCORDANCE WITH ARTICLE 4143.01, B, OF THE STANDARD SPECIFICATIONS.

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"Φ SUBDRAIN INTO THE 6"Φ METAL OUTLET PIPE, THEN FULLY SEAL THE ENTIRE OPENING WITH GROUT.

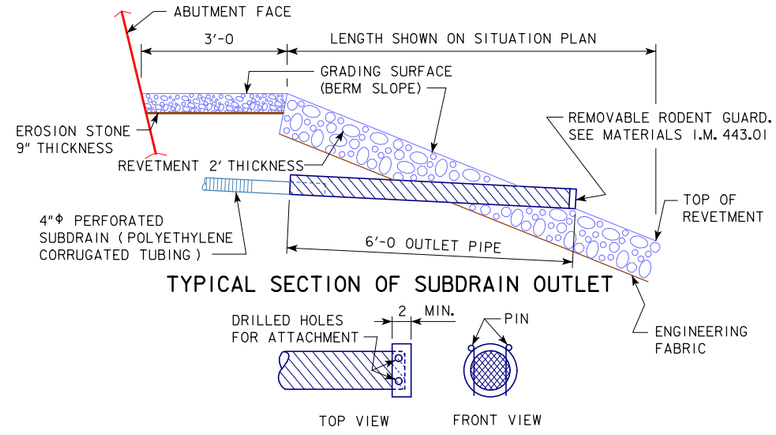
THE COST OF FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), GRANULAR BACKFILL, POROUS BACKFILL, AND SUBDRAIN OUTLET IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)". NO EXTRA PAYMENT WILL BE MADE.

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.



SITUATION PLAN

SHOWING SUBDRAIN LOCATIONS



TYPICAL SECTION OF SUBDRAIN OUTLET

REMOVABLE RODENT GUARD DETAILS

EROSION STONE (EMBEDDED) OUTLET DETAILS

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

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SUBDRAIN DETAILS

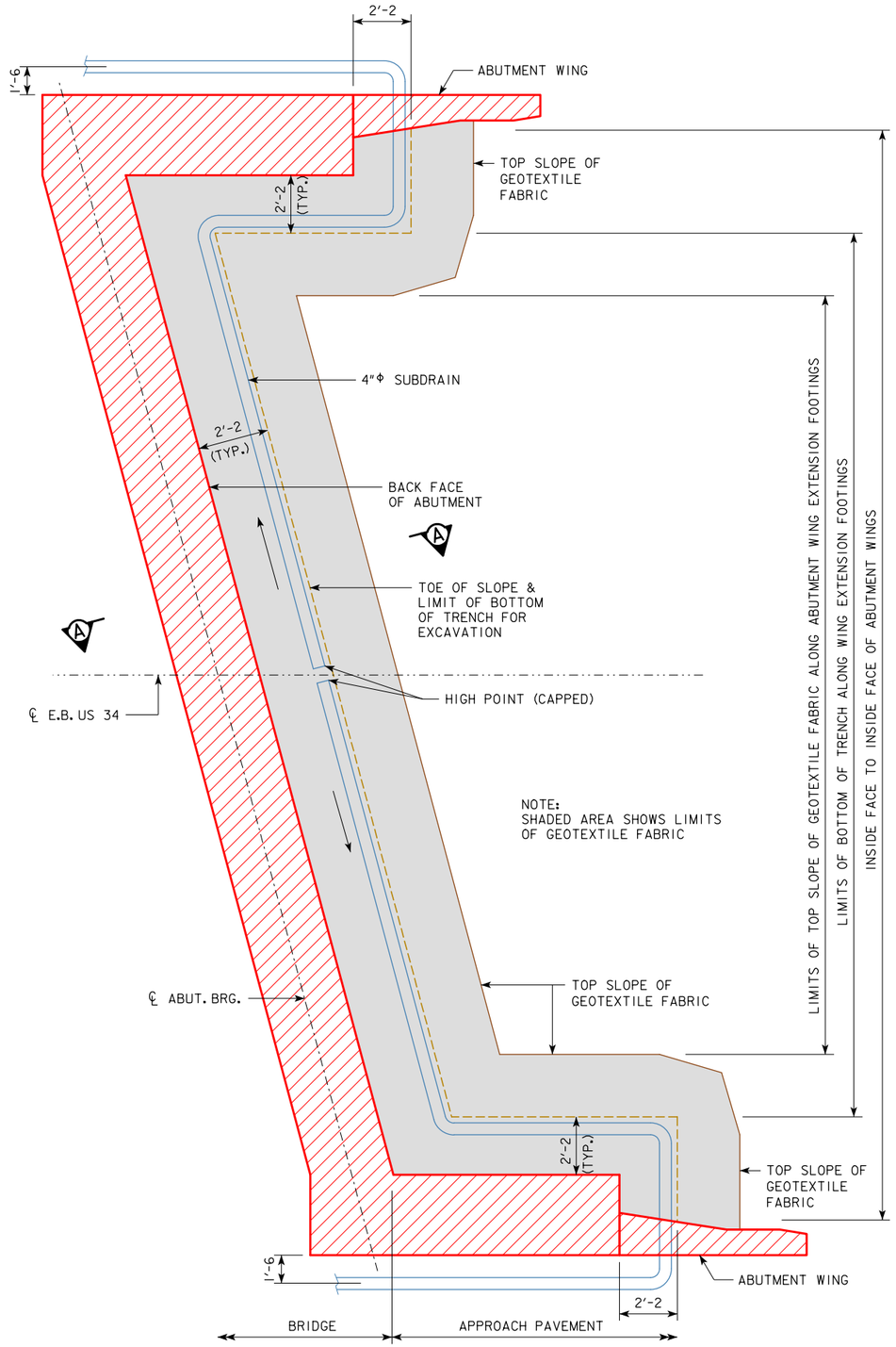
STATION 960+00.06, RT. 89.00' — MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 37 OF 39 FILE NO. 31646 DESIGN NO. 220

DESIGN TEAM Stanley Consultants Inc. | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 38



ABUTMENT PLAN WITH 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.

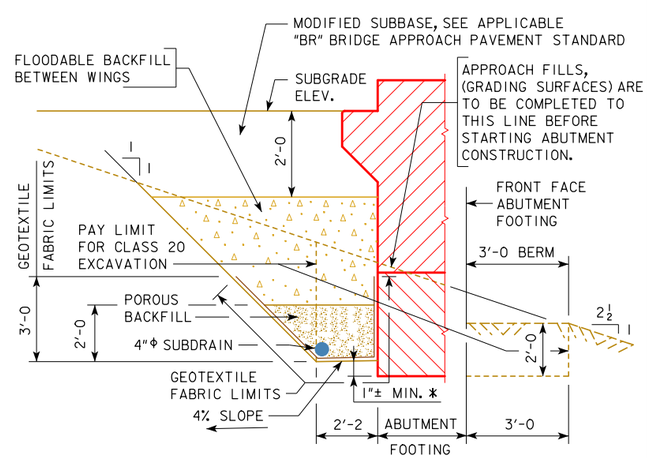
WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, FLOODABLE BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS WILL NOT BE MEASURED SEPARATELY FOR PAYMENT.

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 ℄ APPROACH ROADWAY WHEN OUTLETTING BOTH SIDES 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 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

ABUTMENT BACKFILL DETAILS

STATION 960+00.06, RT. 89.00' — MARCH 2020

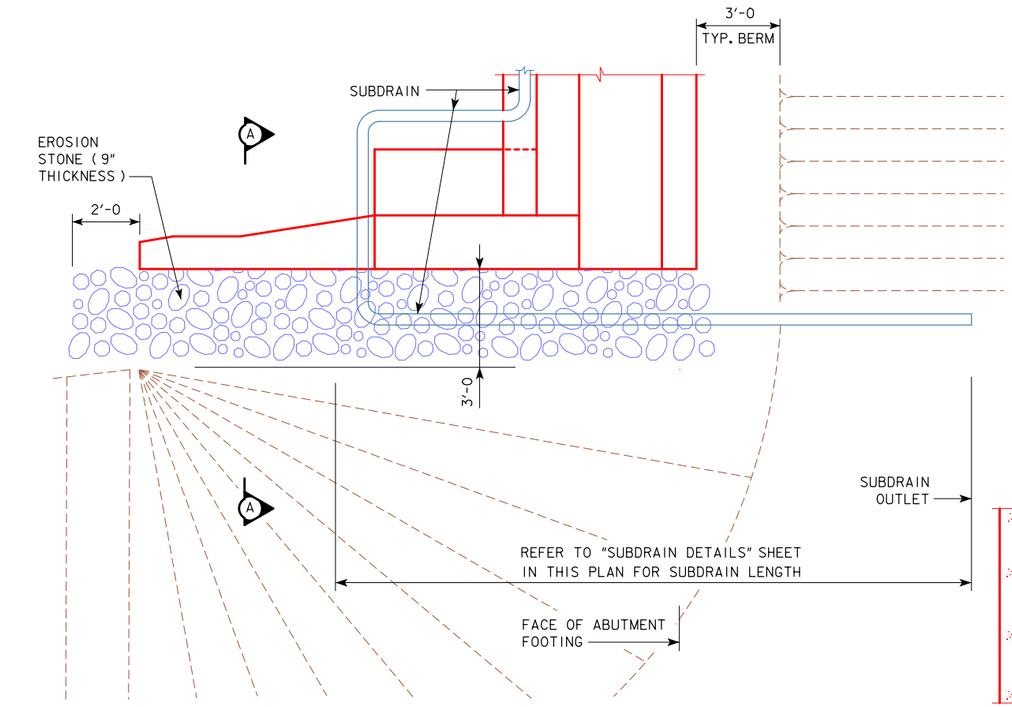
HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

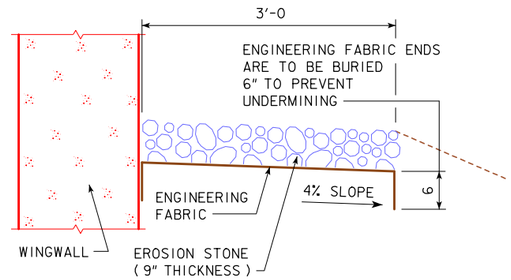
DESIGN SHEET NO. 38 OF 39 FILE NO. 31646 DESIGN NO. 220

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 - 1007E - THIS SHEET ISSUED 08-07.

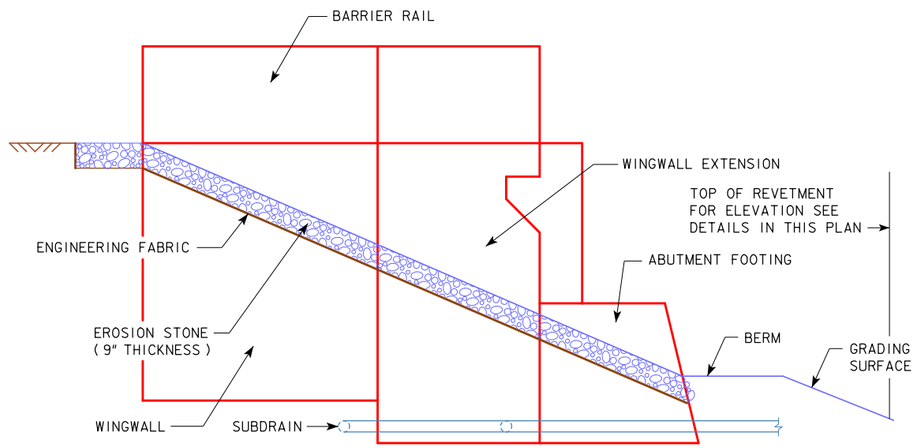
2/27/2020 2:31:01 PM 9127 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\4403401016\BRFinal\Stanley\BRG_44034224.dgn 440220S038 11x17_pdf.pltcfg



TOP VIEW OF WING ARMORING WITH WING EXTENSION



SECTION A-A



PROFILE VIEW OF WING ARMORING WITH WING EXTENSION

(STUB ABUTMENT WITH WING EXTENSIONS)

GENERAL NOTES:

EROSION STONE 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 EROSION STONE AT THESE LOCATIONS SHALL BE UNDERLAYED WITH ENGINEERING FABRIC IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS.

THE EROSION STONE SHALL BE IN ACCORDANCE WITH SECTION 4130, OF THE STANDARD SPECIFICATIONS. MATERIAL PASSING THE 3 INCH SCREEEN BUT 100% RETAINED ON A 1 INCH SCREEN MAY BE USED AS CHOKE STONE.

THE EROSION STONE SHALL BE DEPOSITED, SPREAD, CONSOLIDATED AND SHAPED BY MECHANICAL OR HAND METHODS THAT WILL PROVIDE UNIFORM 9" DEPTH AND DENSITY AND PROVIDE UNIFORM SURFACE APPEARANCE.

PAYMENT FOR THE BRIDGE WING ARMORING WILL BE BID PER SQUARE YARD. COST WILL INCLUDE ENGINEERING FABRIC, EROSION STONE, EXCAVATION, SHAPING, AND COMPACTION TO DIMENSIONS SHOWN IN THESE PLANS. BID ITEM SHALL BE "BRIDGE WING ARMORING - EROSION STONE".

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141'-0 & 131'-0 END SPANS — 142'-0 INTERIOR SPANS

BRIDGE WING ARMORING

STATION 960+00.06, RT. 89.00' — MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

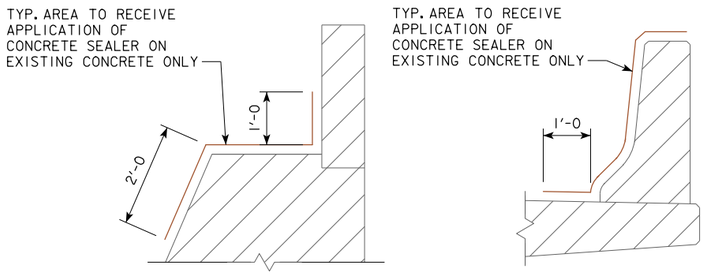
DESIGN SHEET NO. 39 OF 39 FILE NO. 31646 DESIGN NO. 220

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

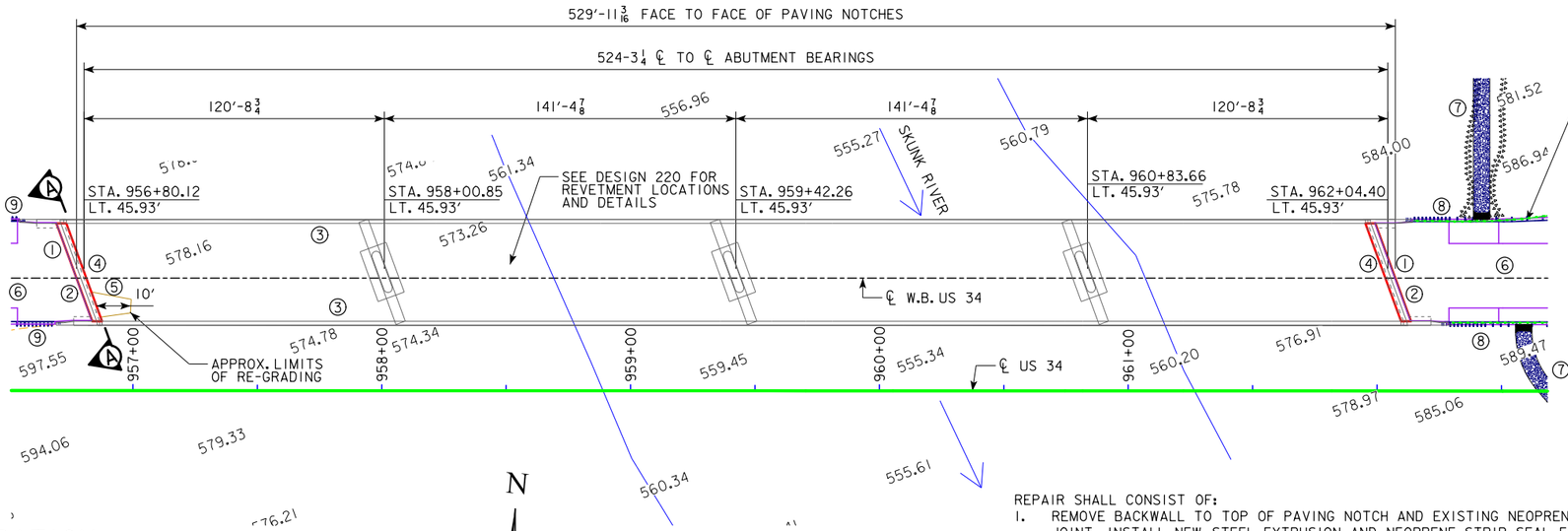
DESIGN TEAM Stanley Consultants Inc.	STANDARD SHEET 1005A	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER 40

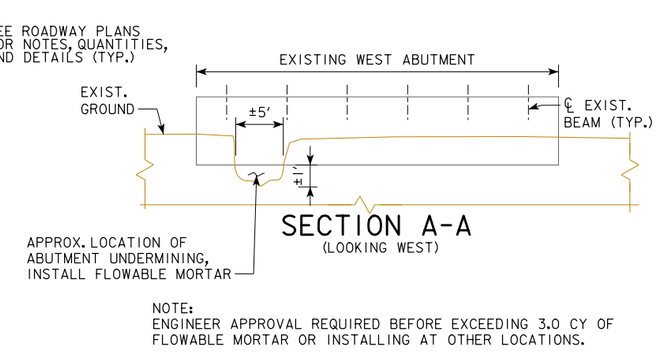
ESTIMATED BRIDGE QUANTITIES - DESIGN 520

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1.	2401-6750001	REMOVALS, AS PER PLAN	LS	1.00	
2.	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)	CY	22.0	
3.	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	1708	
4.	2413-1200000	STEEL EXTRUSION JOINT WITH NEOPRENE	LF	86.0	
5.	2413-1200100	NEOPRENE GLAND INSTALLATION AND TESTING	LF	86.0	
6.	2499-0800000	PAVING NOTCH REPLACEMENT	LF	83.8	
7.	2506-4984000	FLOWABLE MORTAR	CY	3.0	
8.	2533-4980005	MOBILIZATION	LS	1.00	



DETAIL OF CONCRETE SEALER AREA





SECTION A-A
(LOOKING WEST)

NOTE:
ENGINEER APPROVAL REQUIRED BEFORE EXCEEDING 3.0 CY OF FLOWABLE MORTAR OR INSTALLING AT OTHER LOCATIONS.

ESTIMATE REFERENCE INFORMATION

ITEM NO.	DESCRIPTION
1.	INCLUDES ITEMS AS DESCRIBED IN THE "GENERAL NOTES" ON DESIGN SHEET 2 AND "REMOVAL NOTES" ON DESIGN SHEET 4. DOES NOT INCLUDE REMOVAL OF GUARDRAIL. REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO MATERIAL NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRATOR AND REPAIRED AT NO EXTRA COST TO THE STATE.
2.	INCLUDES 0.4 CY OF CLASS O CONCRETE TO BE PLACED IN THE BARRIERS. CLASS O CONCRETE SHALL BE IN ACCORDANCE WITH SECTION 2426, OF THE STANDARD SPECIFICATIONS AND MATERIALS I.M. 529. SEE DESIGN SHEET 7 FOR CLASS O CONCRETE LIMITS.
4.	INCLUDES ALL NECESSARY HARDWARE AND ACCESSORIES INCLUDING THE ANCHORAGE SYSTEM, TEMPORARY ERECTION MATERIAL, AND THE $\frac{3}{8}$" STEEL BARRIER PLATES WITH THEIR ANCHORAGE. EXCLUDES INSTALLATION OF NEOPRENE GLAND.
5.	INCLUDES INSTALLATION OF NEOPRENE GLAND AND WATER TESTING OF JOINT.
6.	INCLUDES 6.2 CU YD OF STRUCTURAL CONCRETE CLASS C, 1,110 LBS OF EPOXY-COATED REINFORCING STEEL, 116 LBS OF STAINLESS STEEL REINFORCING, EXCAVATION, REMOVING AND DISPOSING OF THE EXISTING PAVING NOTCH AND CONCRETE REMOVED TO FORM THE SHEAR KEYWAYS, DRILLING HOLES FOR DOWEL BARS, AND POLYMER GROUT MATERIAL. WRITTEN APPROVAL SHALL BE OBTAINED PRIOR TO BEGINNING REMOVAL AT EACH ABUTMENT.
7.	INCLUDES FLOWABLE MORTAR UNDER EXISTING ABUTMENT. SEE SITUATION PLAN ON THIS SHEET FOR LOCATION. INCLUDES MINOR GRADING TO RETURN SLOPE TO ORIGINAL CONDITION WITHIN 10' OF ABUTMENT FACE.
8.	INCLUDES CLEANING EXISTING CONCRETE RAIL, ABUTMENT SEATS AND BACKWALLS, FURNISHING AND PLACING CONCRETE SEALER.

ROADWAY QUANTITIES SHOWN ON SHEET C.1

LOCATION

W.B. US 34 OVER SKUNK RIVER
T-71N R-7W
SECTION 4 & 5
TIPPECANOE TOWNSHIP
HENRY COUNTY
FHWA NO. 608390
BRIDGE MAINT. NO. 4426.7L034
LATITUDE 40.975472°
LONGITUDE -91.677245°

TRAFFIC ESTIMATE

2018 AADT 3,750 V.P.D.
TRUCKS 19 %
TOTAL DESIGN ESALs 2,080,000

N

SITUATION PLAN

REPAIR SHALL CONSIST OF:
1. REMOVE BACKWALL TO TOP OF PAVING NOTCH AND EXISTING NEOPRENE GLAND EXPANSION JOINT. INSTALL NEW STEEL EXTRUSION AND NEOPRENE STRIP SEAL EXPANSION JOINTS.
2. VERIFY NEED TO REMOVE AND RECONSTRUCT PAVING NOTCHES. WRITTEN APPROVAL REQUIRED BEFORE BEGINNING REMOVAL.
3. CLEAN AND SEAL BARRIER RAILS.
4. CLEAN AND SEAL ABUTMENT SEATS AND BACKWALL.
5. INSTALL FLOWABLE MORTAR UNDER WEST ABUTMENT BERM. PERFORM MINOR GRADING TO RETURN SLOPE TO ORIGINAL CONDITION WITHIN 10' OF ABUTMENT FACE.
6. REMOVE AND REPLACE BRIDGE APPROACHES WITH 70' STANDARD APPROACHES WITH NEW 'EF' JOINTS.
7. INSTALL ROCK FLUME BRIDGE END DRAINS AT EAST APPROACH.
8. REMOVE AND REPLACE GUARDRAIL IN ACCORDANCE WITH CURRENT STANDARDS.
9. INSTALL TEMPORARY GUARDRAIL AT WEST BRIDGE APPROACH FOR TRAFFIC STAGING.

DESIGN FOR 20° SKEW (R.A.)

524'-3 1/4 X 39'-4 1/2 PRETENSIONED PRESTRESSED CONCRETE BEAM W.B. BRIDGE

120'-8 3/4 END SPANS — 141'-4 7/8 INTERIOR SPANS

ESTIMATED QUANTITIES & SITUATION PLAN

STATION 959+42.26, LT. 45'-11 1/4 — MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 9 FILE NO. 31646 DESIGN NO. 520

DESIGN TEAM Stanley Consultants Inc. | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 41

GENERAL NOTES:

THIS DESIGN IS FOR REPAIRS TO THE EXISTING 524'-3¼ x 39'-4½ PRESTRESSED, PRETENSIONED CONCRETE BEAM BRIDGE ON WESTBOUND US 34 OVER SKUNK RIVER. ELECTRONIC COPIES OF ORIGINAL PLANS ARE AVAILABLE TO THE CONTRACTOR AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. DIMENSIONS SHOWN ON THESE PLANS ARE BASED ON DESIGN PLANS (DESIGN NO. 1100). REPAIR SHALL CONSIST OF:

1. REMOVE BACKWALL TO TOP OF PAVING NOTCH AND EXISTING NEOPRENE GLAND EXPANSION JOINT. INSTALL NEW STEEL EXTRUSION AND NEOPRENE STRIP SEAL EXPANSION JOINTS.
2. VERIFY NEED TO REMOVE AND RECONSTRUCT PAVING NOTCHES. WRITTEN APPROVAL REQUIRED BEFORE BEGINNING REMOVAL.
3. CLEAN AND SEAL BARRIER RAILS.
4. CLEAN AND SEAL ABUTMENT SEATS AND BACKWALL.
5. INSTALL FLOWABLE MORTAR UNDER WEST ABUTMENT BERM. PERFORM MINOR GRADING TO RETURN SLOPE TO ORIGINAL CONDITION WITHIN 10' OF ABUTMENT FACE.
6. REMOVE AND REPLACE BRIDGE APPROACHES WITH 70' STANDARD APPROACHES WITH NEW 'EF' JOINTS.
7. INSTALL ROCK FLUME BRIDGE END DRAINS AT EAST APPROACH.
8. REMOVE AND REPLACE GUARDRAIL IN ACCORDANCE WITH CURRENT STANDARDS.
9. INSTALL TEMPORARY GUARDRAIL AT WEST BRIDGE APPROACH FOR TRAFFIC STAGING.

ALL DIMENSIONS AND DETAILS SHOWN IN THESE PLANS PERTINENT TO NEW CONSTRUCTION SHALL BE VERIFIED IN THE FIELD BY THE BRIDGE CONTRACTOR BEFORE STARTING CONSTRUCTION.

FAINT LINES ON PLANS INDICATE EXISTING PORTIONS OF THE BRIDGE.

CONSTRUCTION SHALL BE DONE IN STAGES WITH AT LEAST ONE LANE TRAFFIC MAINTAINED AT ALL TIMES IN ACCORDANCE WITH "TRAFFIC CONTROL PLAN" NOTE.

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

WESTBOUND US 34 WILL BE OPEN TO TRAFFIC DURING CONSTRUCTION. SEE "TRAFFIC CONTROL PLAN" NOTE.

THE LUMP SUM BID FOR "REMOVALS, AS PER PLAN" INCLUDE ALL COSTS ASSOCIATED WITH REMOVING PORTIONS OF THE ABUTMENT BACKWALLS, PORTIONS OF THE DECK & CURBS AT THE ABUTMENTS, AND ABUTMENT DIAPHRAGMS. REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO OTHER PORTIONS OF THE EXISTING STRUCTURE NOT NOTED FOR REMOVAL SHALL BE THE RESPONSIBILITY OF THE BRIDGE CONTRACTOR AND SHALL BE REPAIRED AT NO EXTRA COST TO THE STATE.

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

IN ADDITION TO THE REQUIREMENTS OF ARTICLE 2413.03, G, OF THE STANDARD SPECIFICATIONS, BOTH ABUTMENT BRIDGE SEATS SHALL HAVE AN APPLICATION OF CONCRETE SEALER IN ACCORDANCE WITH ARTICLE 2403.03, P, 3, OF THE STANDARD SPECIFICATIONS.

CONSTRUCTION STAGES 1 & 2 SHALL NOT BE REVERSED.

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

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

CONCRETE REMOVAL SHALL BE INITIATED WITH A ¾" SAW CUT WHEREVER POSSIBLE.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5a1 IS ⅝ INCH DIAMETER BAR). ENGLISH REINFORCING STEEL RECEIVED IN THE FIELD MAY DISPLAY THE FOLLOWING "BAR DESIGNATION". THE "BAR DESIGNATION" IS THE STAMPED IMPRESSION ON THE REINFORCING BARS, AND IS EQUIVALENT TO THE BAR DIAMETER IN MILLIMETERS.

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

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

SPECIFICATIONS:

DESIGN: AASHTO SERIES OF 2002.
CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2002.
REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.
CONCRETE IN ACCORDANCE WITH SECTION 8, f'c = 4.0 KSI.
STRUCTURAL STEEL IN ACCORDANCE WITH SECTION 10 ASTM A709 GRADE 36, GRADE 50, AND GRADE 50W (AASHTO M270 GRADE 36, GRADE 50, AND GRADE 50W).

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	EXPANSION DEVICE
2	BARRIER PLATES

DESIGN HISTORY AT THIS SITE
(INCLUDES THIS DESIGN)

DES. NO.	TYPE OF WORK
1100	ORIGINAL DESIGN
520	BRIDGE JOINT REPAIR

POLLUTION PREVENTION PLAN SHOWN ELSEWHERE IN THESE PLANS.

TRAFFIC CONTROL PLAN
W.B. US 34 WILL BE OPEN TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN SHOWN ON ROADWAY SHEET J.1.

DESIGN FOR 20° SKEW (R.A.)

524'-3¼ X 39'-4½ PRETENSIONED PRESTRESSED CONCRETE BEAM W.B. BRIDGE

120'-8¾ END SPANS 141'-4⅞ INTERIOR SPANS

GENERAL NOTES

STATION 959+42.26, LT. 45'-11¼ MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 9 FILE NO. 31646 DESIGN NO. 520

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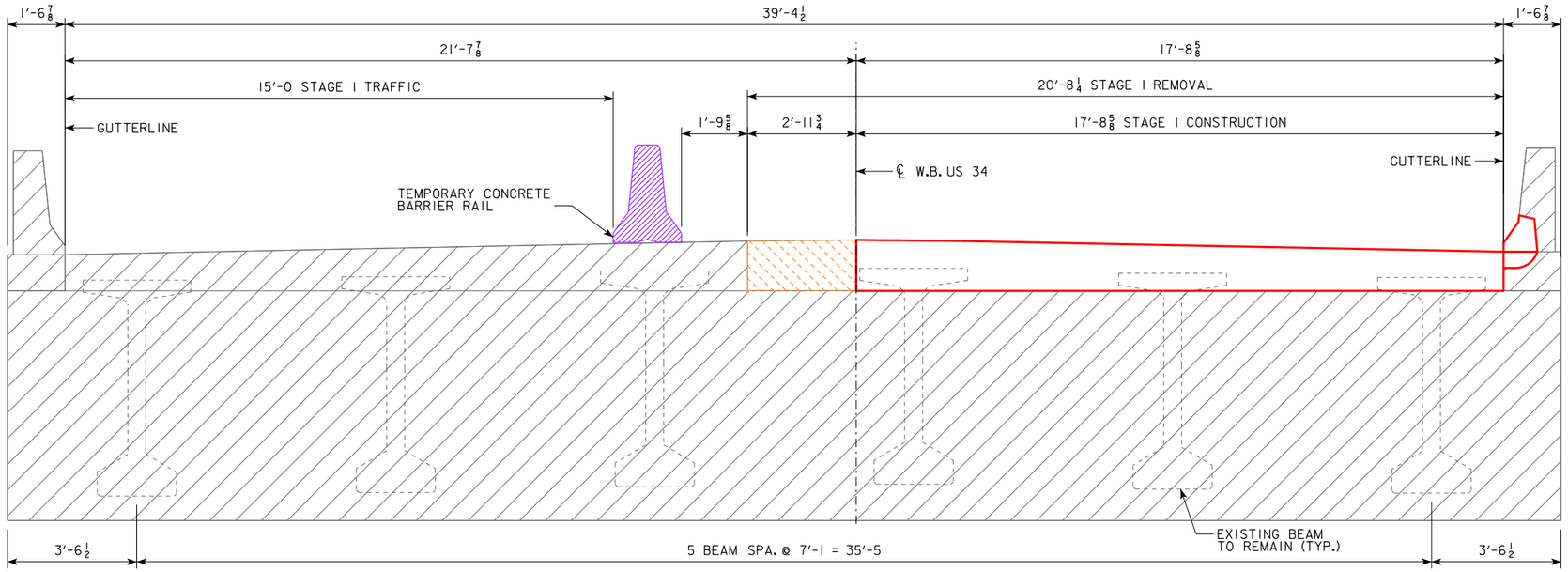
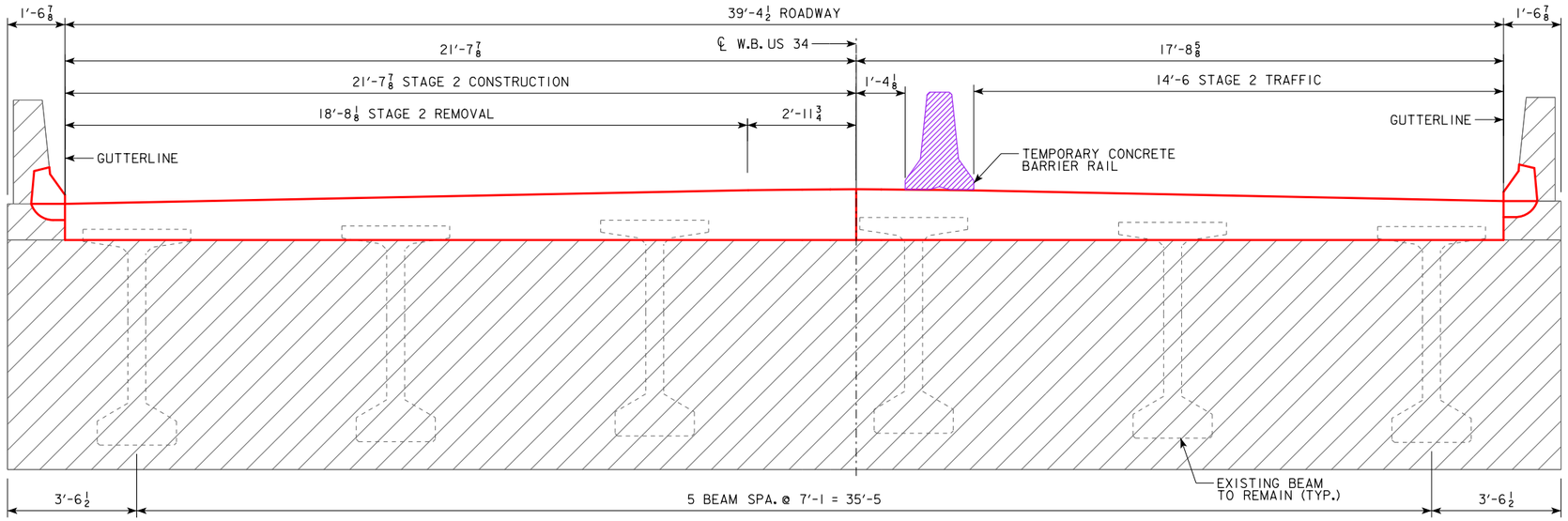


TYPICAL SECTION STAGE I CONSTRUCTION

(LOOKING EAST)



TYPICAL SECTION STAGE 2 CONSTRUCTION

(LOOKING EAST)

DESIGN FOR 20° SKEW (R.A.)

524'-3 1/4 X 39'-4 1/2 PRETENSIONED PRESTRESSED CONCRETE BEAM W.B. BRIDGE

120'-8 3/4 END SPANS 141'-4 7/8 INTERIOR SPANS

STAGING DETAILS

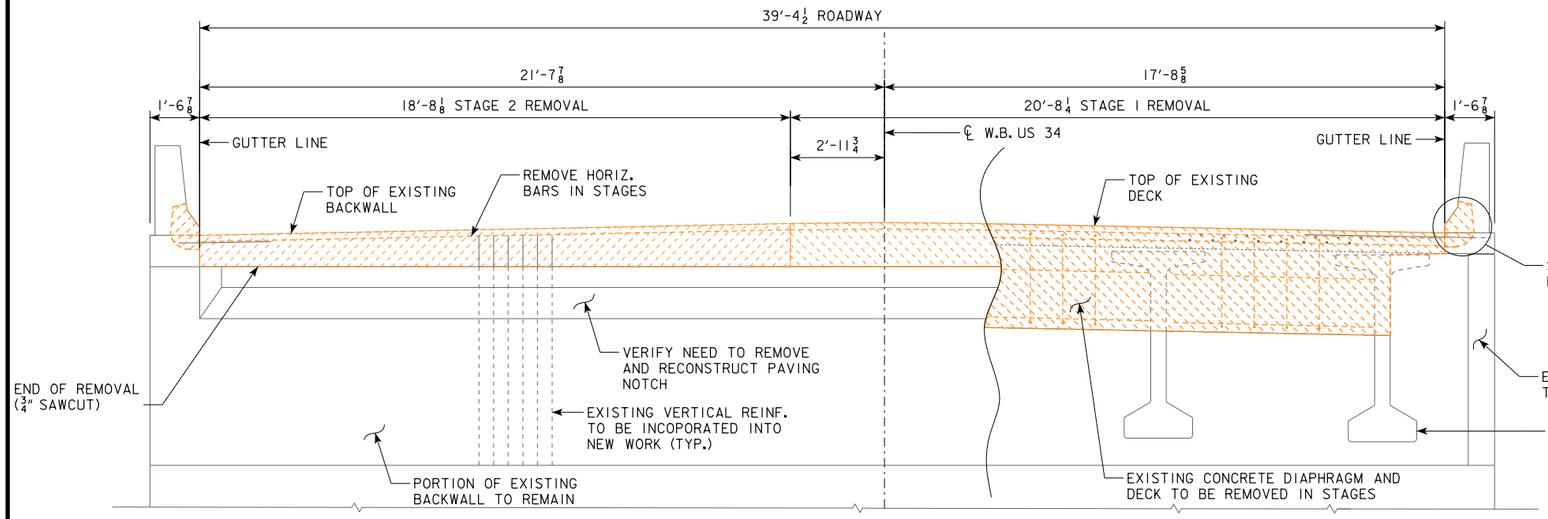
STATION 959+42.26, LT. 45'-11 1/4 MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

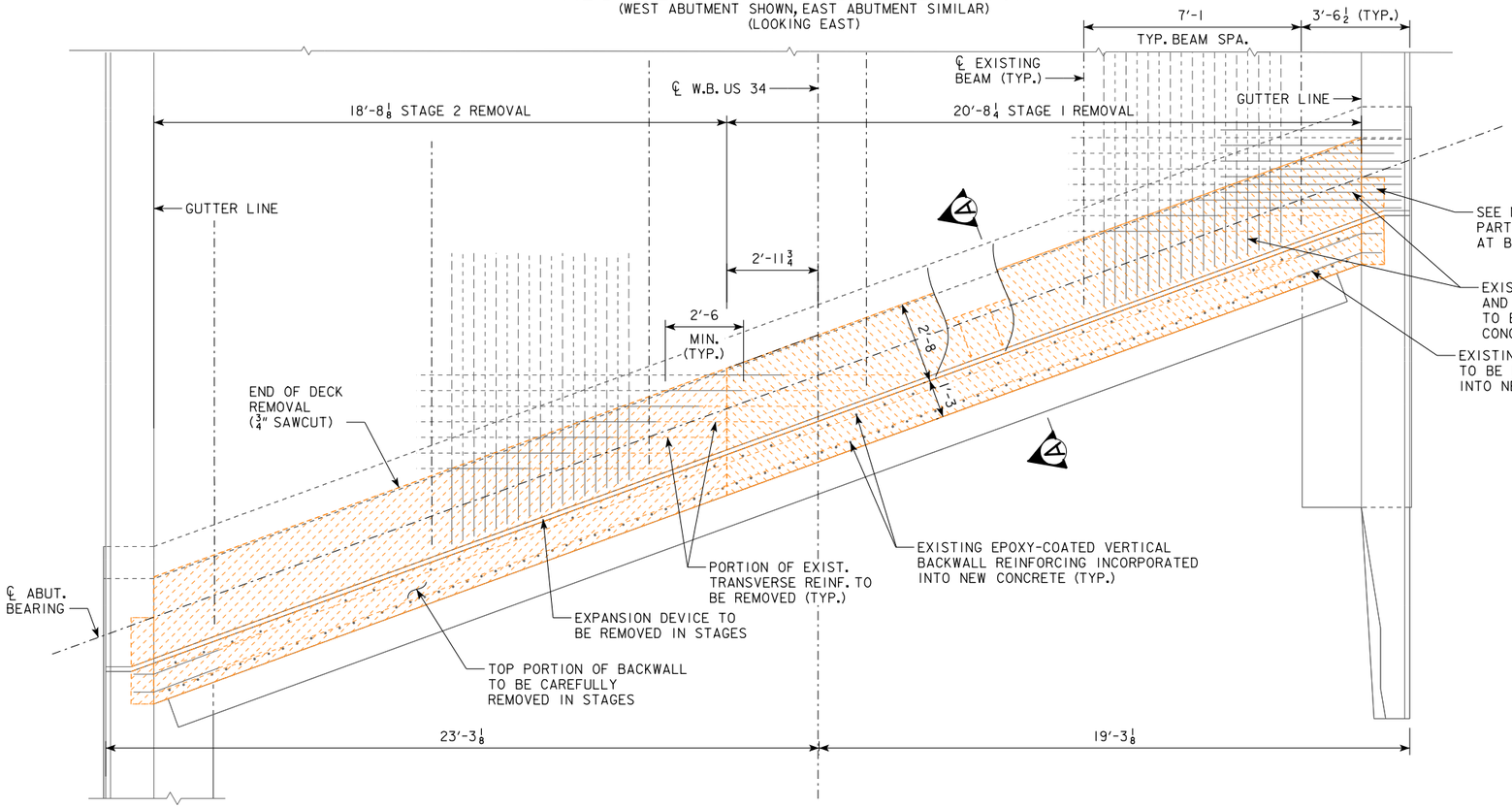
DESIGN SHEET NO. 3 OF 9 FILE NO. 31646 DESIGN NO. 520

DESIGN TEAM Stanley Consultants Inc. | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER 43



ABUTMENT BACKWALL ELEVATION

(WEST ABUTMENT SHOWN, EAST ABUTMENT SIMILAR)
(LOOKING EAST)



ABUTMENT PLAN VIEW

(WEST ABUTMENT SHOWN, EAST ABUTMENT SIMILAR)

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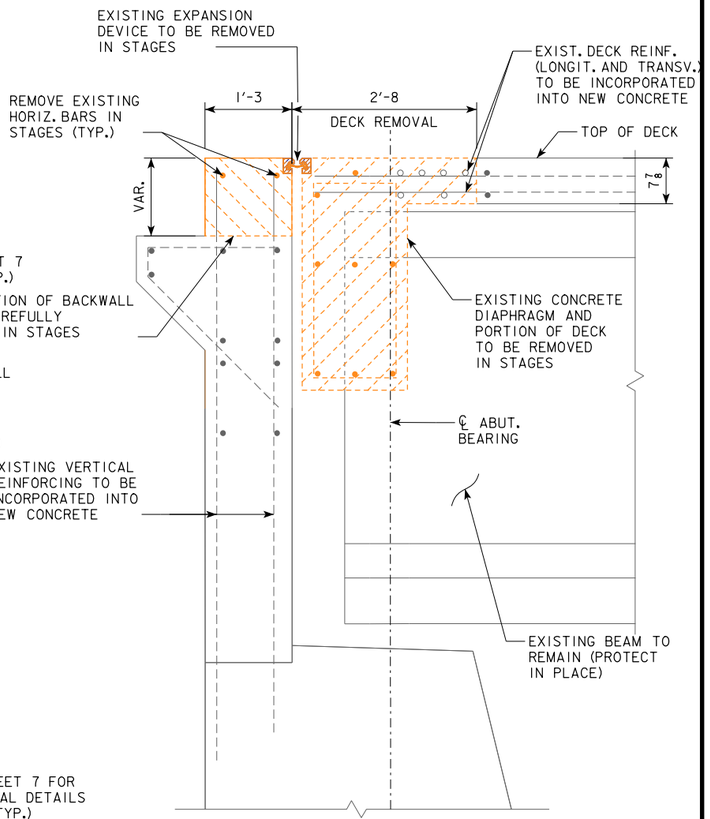


SECTION A-A

REMOVAL NOTES:

HATCHED AREAS INDICATE CONCRETE REMOVAL.

THIS SHEET SHOWS DETAILS OF THE PARTIAL ABUTMENT AND SUPERSTRUCTURE REMOVAL ON THE EXISTING BRIDGE. ALL PARTIAL REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS. ALL SUCH REMOVALS SHALL BE TO NEAT SAW CUTS TO PROVIDE CLEAN STRAIGHT SURFACES AT INTERFACES BETWEEN NEW CONCRETE AND REMAINING CONCRETE. THE REMOVAL SHALL BE DONE IN A MANNER WHICH WILL PREVENT ANY DAMAGE TO THE EXISTING STRUCTURE TO REMAIN. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE CAUSED, AND SHALL REPAIR ANY DAMAGED AREA TO ITS ORIGINAL CONDITION, AS DIRECTED BY THE ENGINEER, AT THE CONTRACTOR'S EXPENSE. ANY EXISTING REINFORCING STEEL WHICH IS TO BE "SAVED" THAT IS EXPOSED DURING REMOVAL OPERATIONS IS TO BE CAREFULLY PROTECTED, CLEANED AND INCORPORATED INTO NEW CONSTRUCTION UNLESS NOTED OTHERWISE.

START ALL REMOVALS WITH ¾" SAW CUT.

DESIGN FOR 20° SKEW (R.A.)

524'-3¼ X 39'-4½ PRETENSIONED PRESTRESSED CONCRETE BEAM W.B. BRIDGE

120'-8¾ END SPANS 141'-4⅞ INTERIOR SPANS

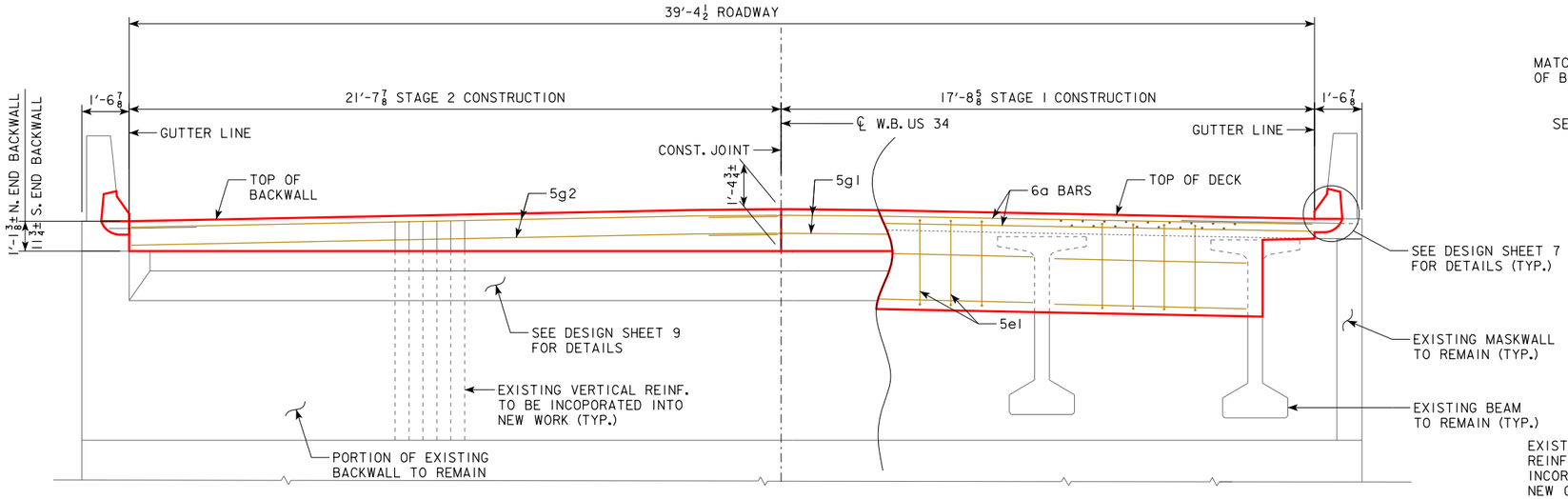
ABUTMENT REMOVALS

STATION 959+42.26, LT. 45'-11¼ MARCH 2020

HENRY COUNTY

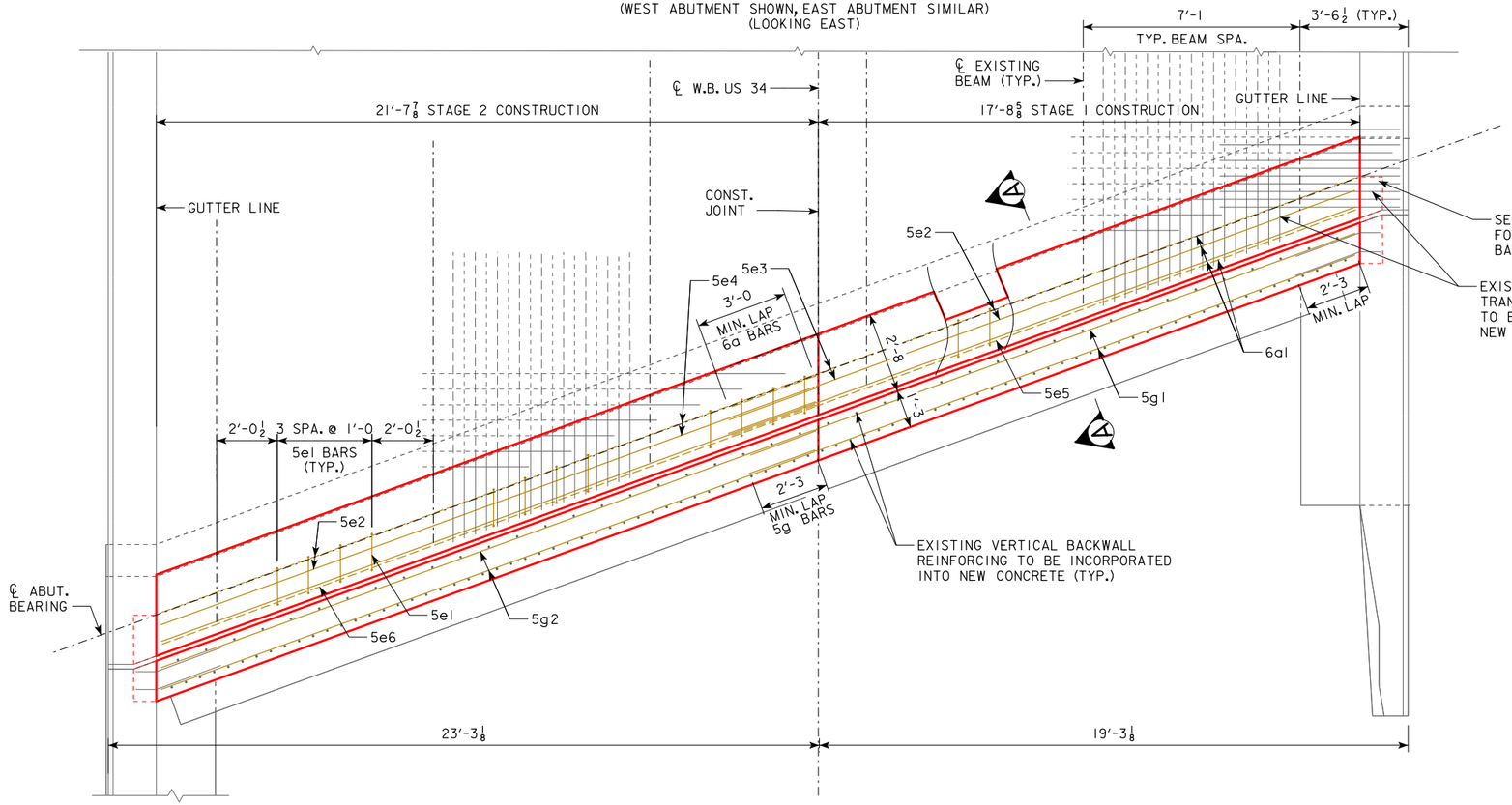
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 9 FILE NO. 31646 DESIGN NO. 520



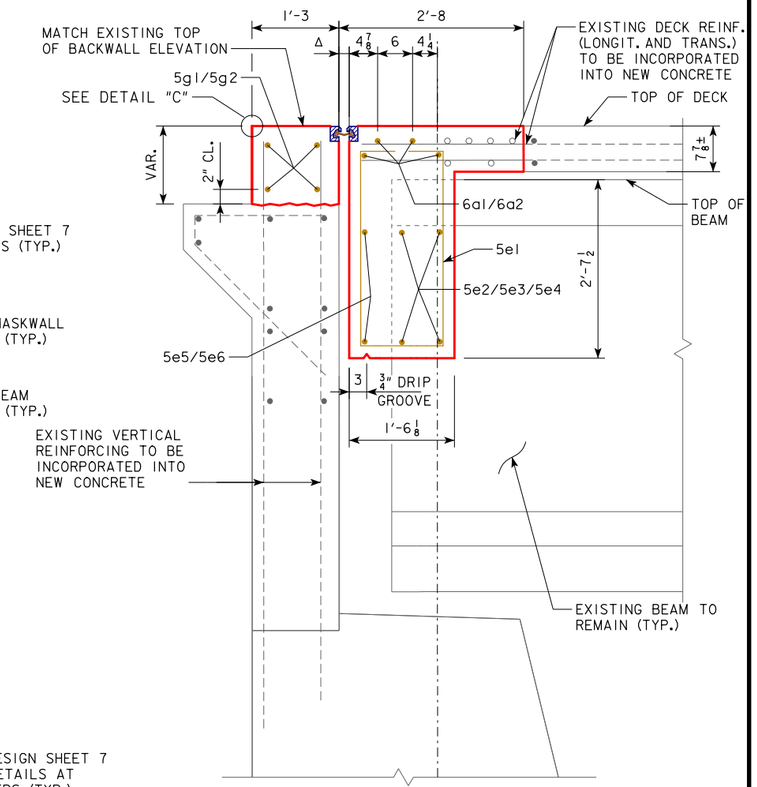
ABUTMENT BACKWALL ELEVATION

(WEST ABUTMENT SHOWN, EAST ABUTMENT SIMILAR)
(LOOKING EAST)



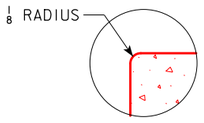
ABUTMENT PLAN VIEW

(WEST ABUTMENT SHOWN, EAST ABUTMENT SIMILAR)



SECTION A-A

Δ ADJUST AS NEEDED TO SET EXPANSION JOINT
SEE DESIGN SHEET 7 FOR TEMPERATURE SETTINGS



DETAIL "C"

NOTES:
1. SEE DESIGN SHEET 6 FOR ABUTMENT NOTES, BENT BAR DETAILS, AND BAR LIST.
2. PLACE 5e1 BARS PARALLEL TO EXISTING LONGITUDINAL REINFORCING TOP MAT.
3. CONSTRUCTION JOINT IN BACKWALL SHALL BE INTENTIONALLY ROUGHENED.

DESIGN FOR 20° SKEW (R.A.)

524'-3¼X 39'-4½ PRETENSIONED PRESTRESSED CONCRETE BEAM W.B. BRIDGE

120'-8¾ END SPANS 141'-4⅞ INTERIOR SPANS

ABUTMENT DETAILS

STATION 959+42.26, LT. 45'-11¼ MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 9 FILE NO. 31646 DESIGN NO. 520

ABUTMENT NOTES:

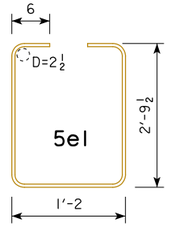
MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

CONCRETE SEALER SHALL BE APPLIED TO THE ABUTMENT BEARING SEAT IN ACCORDANCE WITH ARTICLE 2403.03, P, 3 OF THE STANDARD SPECIFICATIONS. IN ADDITION TO THE REQUIREMENTS OF ARTICLE 2403.03, P, 3, SEALER SHALL BE APPLIED TO THE WASH BETWEEN THE ABUTMENT SEAT STEPS AND AREAS SHOWN ON DESIGN SHEET 1.

THE COST OF FURNISHING AND PLACING CONCRETE SEALER IS TO BE INCLUDED IN THE PRICE BID FOR "MOBILIZATION".

THE TOP OF THE ABUTMENT BACKWALLS AS SHOWN SHALL BE CONSTRUCTED USING STRUCTURAL CONCRETE CLASS C. PROMPTLY AFTER THE CONCRETE HAS BEEN PLACED AND VIBRATED AS PROVIDED IN ARTICLES 2403.03, C, AND 2403.03, D, OF THE STANDARD SPECIFICATIONS, IT SHALL BE HAND FINISHED TO PROVIDE A SMOOTH SURFACE WITH THE PROPER CROWN. THE CONTRACTOR MAY ELECT TO USE FORMWORK WHICH IS MARKED OR TRIMMED TO THE CORRECT ELEVATION AND CROWN TO PROVIDE THE LIMITS FOR THE HAND FINISHING.

BENT BAR DETAILS



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

REINFORCING BAR LIST - WEST ABUTMENT AND DECK END

EPOXY COATED BARS

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6a1	DECK TRANSVERSE TOP & BOTT. - STAGE 1	——	4	21'-10	131
6a2	DECK TRANSVERSE TOP & BOTT. - STAGE 2	——	4	22'-8	136
5e1	ABUT. DIAPH. TIE	⊔	20	7'-9	162
5e2	ABUT. DIAPH. LONGIT. F.F.	——	16	6'-8	111
5e3	ABUT. DIAPH. LONGIT. F.F. - STAGE 1	——	4	4'-4	18
5e4	ABUT. DIAPH. LONGIT. F.F. - STAGE 2	——	4	5'-3	22
5e5	ABUT. DIAPH. LONGIT. B.F. - STAGE 1	——	2	21'-1	44
5e6	ABUT. DIAPH. LONGIT. B.F. - STAGE 2	——	2	22'-8	47
5g1	BACKWALL LONGIT. B.F. - STAGE 1	——	4	21'-1	88
5g2	BACKWALL LONGIT. B.F. - STAGE 2	——	4	22'-8	95
	REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)				854

REINFORCING BAR LIST - EAST ABUTMENT AND DECK END

EPOXY COATED BARS

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6a1	DECK TRANSVERSE TOP & BOTT. - STAGE 1	——	4	21'-10	131
6a2	DECK TRANSVERSE TOP & BOTT. - STAGE 2	——	4	22'-8	136
5e1	ABUT. DIAPH. TIE	⊔	20	7'-9	162
5e2	ABUT. DIAPH. LONGIT. F.F.	——	16	6'-8	111
5e3	ABUT. DIAPH. LONGIT. F.F. - STAGE 1	——	4	4'-4	18
5e4	ABUT. DIAPH. LONGIT. F.F. - STAGE 2	——	4	5'-3	22
5e5	ABUT. DIAPH. LONGIT. B.F. - STAGE 1	——	2	21'-1	44
5e6	ABUT. DIAPH. LONGIT. B.F. - STAGE 2	——	2	22'-8	47
5g1	BACKWALL LONGIT. B.F. - STAGE 1	——	4	21'-1	88
5g2	BACKWALL LONGIT. B.F. - STAGE 2	——	4	22'-8	95
	REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)				854

CONCRETE PLACEMENT QUANTITIES

	LOCATION	WEST ABUT.	EAST ABUT.
	BRIDGE DECK & DIAPHRAGM	8.2	8.2
	ABUTMENT BACKWALL	2.6	2.6
*	BARRIERS	0.2	0.2
	TOTAL (C.Y.)	11.0	11.0

NOTE:
* CLASS O CONCRETE TO BE PLACED IN THE BARRIERS. CLASS O CONCRETE SHALL BE IN ACCORDANCE WITH SECTION 2426, OF THE STANDARD SPECIFICATIONS AND MATERIALS I.M. 529. SEE DESIGN SHEET 7 FOR CLASS O CONCRETE LIMITS.

DESIGN FOR 20° SKEW (R.A.)

524'-3¼ X 39'-4½ PRETENSIONED PRESTRESSED CONCRETE BEAM W.B. BRIDGE

120'-8¾ END SPANS 141'-4⅞ INTERIOR SPANS

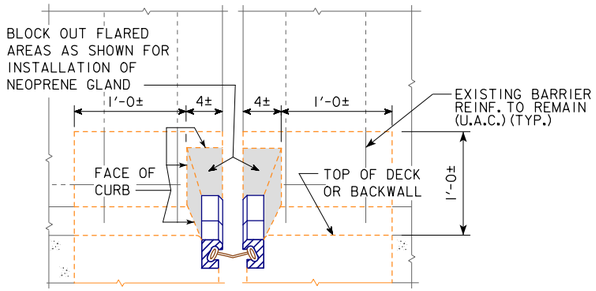
ABUTMENT DETAILS

STATION 959+42.26, LT. 45'-11¼ MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

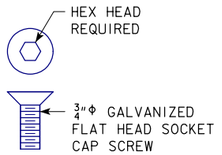
DESIGN SHEET NO. 6 OF 9 FILE NO. 31646 DESIGN NO. 520



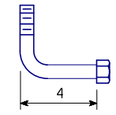
REMOVAL & BLOCKOUT DETAIL

(DRAWN FOR 0° SKEW FOR ILLUSTRATIVE PURPOSES)

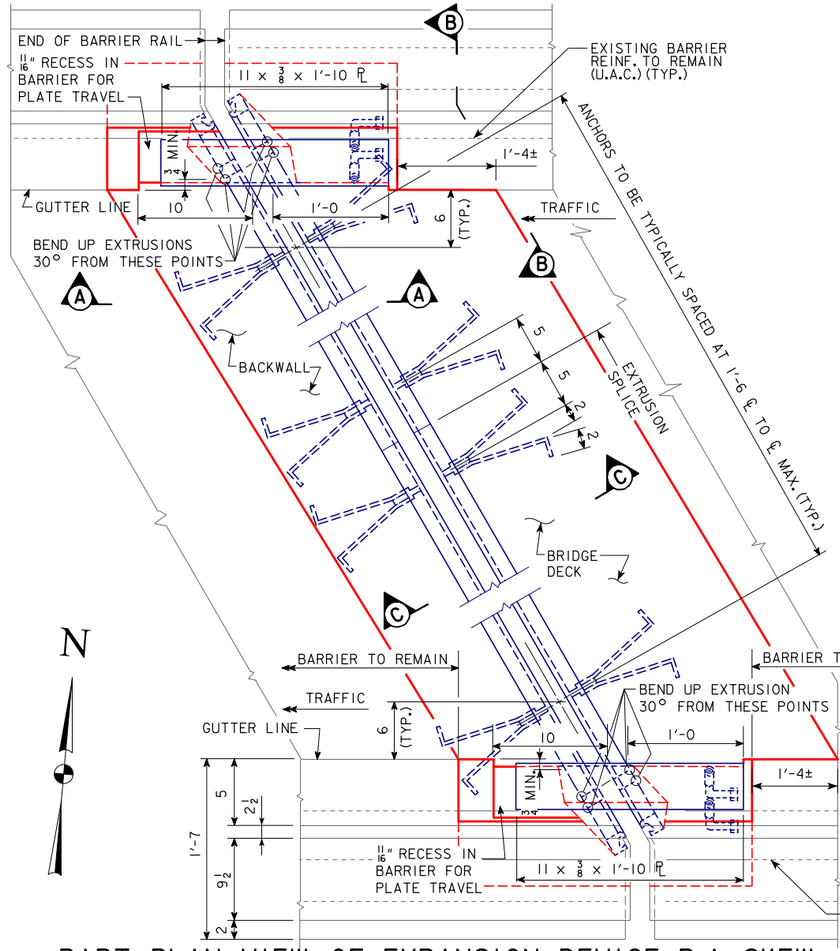
CONTRACTOR TO NOTE THAT THE CAP SCREW ANCHORAGE SYSTEM FOR THE $\frac{3}{8}$" BARRIER PLATES ARE ALWAYS TO BE PLACED ON THE ONCOMING TRAFFIC SIDE.



CAP SCREW DETAIL



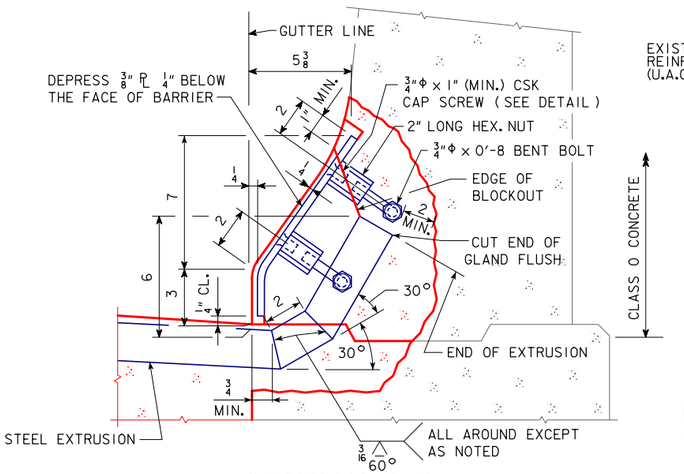
BENT BOLT DETAIL



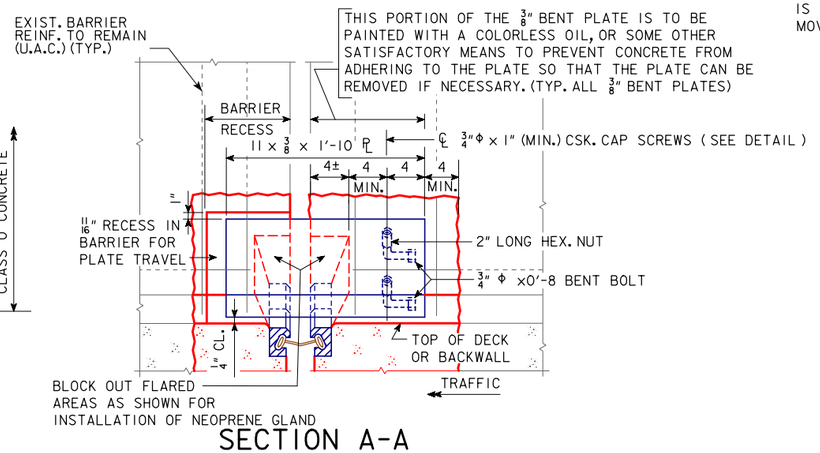
PART PLAN VIEW OF EXPANSION DEVICE R.A. SKEW

(WEST ABUTMENT SHOWN, EAST ABUTMENT SIMILAR)

NOTE: IT IS INTENDED THAT THE $\frac{11}{16}$ INCH RECESSED AREA BE FORMED SO THAT WHEN THE $\frac{3}{8}$" BENT PLATE IS INSTALLED THE PLATE WILL BE ABLE TO MOVE FREELY IN THIS RECESSED AREA.



SECTION B-B



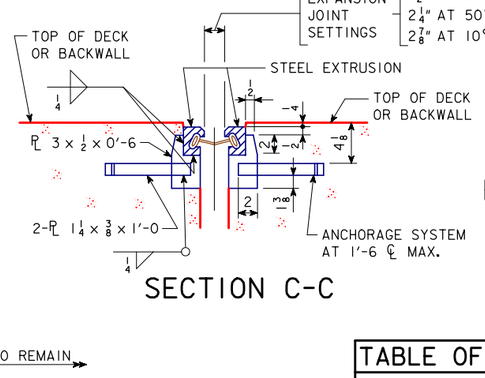
SECTION A-A

(DRAWN FOR 0° SKEW FOR ILLUSTRATIVE PURPOSES)

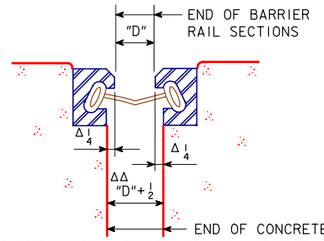
BARRIER PLATE NOTE:

THE MATERIAL USED FOR THE BARRIER PLATES IS TO BE ASTM A36 STEEL. THE BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A307. THE PLATES, BOLTS, NUTS AND CAP SCREWS ARE TO BE GALVANIZED IN ACCORDANCE WITH ARTICLE 4100.07 OF THE STANDARD SPECIFICATIONS.

NOTE: JOINT SETTINGS FOR OTHER TEMPERATURES ARE PROPORTIONAL. TEMPERATURES SHOWN ARE CONCRETE DECK TEMPERATURES ON THE UNDERSIDE OR SHADED PORTION OF THE DECK.



SECTION C-C



EXPANSION OPENING DETAIL

Δ THIS DIMENSION MAY VARY SLIGHTLY DEPENDING ON MANUFACTURER FURNISHING THE JOINT.

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

TABLE OF APPROVED EXPANSION DEVICES

MANUFACTURER	TYPE OF STEEL EXTRUSION	NEOPRENE GLAND	MINIMUM OPENING FOR GLAND INSTALLATION	CORRESPONDING MAXIMUM DECK TEMPERATURE
WATSON-BOWMAN & ACME CORP.	A	SE-400	1½"	90° F.
APPROVED EQUAL				

NOTE:
SEE DESIGN SHEET 8 FOR EXPANSION DEVICE NOTES CONTAINING THE STEEL EXTRUSION NOTES, NEOPRENE GLAND NOTES, AND WATERTIGHT INTEGRITY TESTING AND REPAIR NOTES.

NOTE:
1. THE CONCRETE IN THE BARRIER PORTION SHALL BE CLASS O STRUCTURAL CONCRETE. SEE SECTION B-B FOR LIMITS. SEE DESIGN SHEET 6 FOR QUANTITIES AND ADDITIONAL DETAILS.
2. ALL REINFORCING EXPOSED DURING REMOVAL SHALL BE CLEANED AND INCORPORATED INTO NEW WORK.

DESIGN FOR 20° SKEW (R.A.)

524'-3¼ X 39'-4½ PRETENSIONED PRESTRESSED CONCRETE BEAM W.B. BRIDGE

120'-8¾ END SPANS 141'-4⅞ INTERIOR SPANS

EXPANSION JOINT DETAILS

STATION 959+42.26, LT. 45'-11¼ MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 9 FILE NO. 31646 DESIGN NO. 520

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

2/28/2020 2:00:26 PM 9039 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\4403401016\BRFinal\Stanley\BRG_44034224.dgn 440520S007 11x17_pdf.pltcfg

STEEL EXTRUSION NOTES:

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

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

THE EXPANSION DEVICE IS TO BE PARALLEL TO GRADE.

CAP SCREWS SHALL BE COUNTERSUNK $\frac{1}{16}$" BELOW TOP OF THE PLATE. THE MINIMUM GRADE OF STRUCTURAL STEEL FOR THE EXPANSION DEVICE SHALL BE ASTM A36.

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

SHOP SPLICES OF THE STEEL EXTRUSION WILL BE PERMITTED. PRIOR TO MAKING SHOP SPLICES STEEL EXTRUSION PIECES SHALL HAVE A MINIMUM LENGTH OF 15 FEET. THE INDIVIDUAL LENGTH OF PIECES SHALL BE CHOSEN SO THAT A MINIMUM NUMBER OF SPLICES IS REQUIRED. ALL PIECES SHALL BE JOINED WITH A PREQUALIFIED PARTIAL PENETRATION SINGLE GROOVE WELD DETAILED ON THE SHOP DRAWING. ALL SURFACES NOT IN CONTACT WITH CONCRETE ARE TO BE GROUND FLUSH. NO WELD SHALL BE PERMITTED IN THE INTERNAL SECTION OF THE EXTRUSION WHERE THE NEOPRENE GLAND IS TO BE INSTALLED.

THE NUMBER OF FEET OF STEEL EXTRUSION INSTALLED SHALL BE PAID FOR AT THE CONTRACT PRICE PER FOOT BASED ON PLAN QUANTITIES. THE PRICE BID FOR "STEEL EXTRUSION JOINT W/NEOPRENE" SHALL INCLUDE THE COST OF FURNISHING BUT NOT THE COST OF INSTALLING THE NEOPRENE GLAND. THE CONTRACT PRICE BID FOR "STEEL EXTRUSION JOINT W/NEOPRENE" SHALL BE FULL COMPENSATION FOR FURNISHING AND INSTALLING STEEL EXTRUSIONS. THIS WORK WILL CONSIST OF FURNISHING ALL REQUIRED MATERIALS, (INCLUDING THE $\frac{3}{8}$" PLATES AT THE CURBS AND THEIR ANCHORAGE SYSTEMS), AND THE INSTALLATION AND ADJUSTMENT OF THE EXPANSION JOINTS IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. THE FURNISHING AND INSTALLATION OF ALL NECESSARY HARDWARE AND ACCESSORIES AS SUPPLIED BY THE EXPANSION JOINT MANUFACTURER ARE TO BE INCLUDED IN THIS WORK, INCLUDING THE ANCHORAGE SYSTEM AND ANY TEMPORARY ERECTION MATERIAL. ALL WORK AND MATERIALS FOR THE INSTALLATION OF THE EXPANSION JOINTS ARE TO COMPLY WITH THE WRITTEN RECOMMENDATIONS OF THE EXPANSION JOINT MANUFACTURER.

NEOPRENE GLAND NOTES:

THE NEOPRENE GLAND IS TO BE PLACED AS ONE CONTINUOUS PIECE FROM END TO END OF THE STEEL EXTRUSION.

THE NEOPRENE GLAND SHALL CONFORM TO ASTM-2628 MODIFIED TO EXCLUDE RECOVER TEST AND COMPRESSION SET.

THE CONTRACTOR SHALL INSTALL THE GLAND ABOVE THE MINIMUM TEMPERATURE OF 45° AND THE MINIMUM JOINT OPENING AND CORRESPONDING MAXIMUM DECK TEMPERATURE SHOWN IN THESE PLANS. THE DECK TEMPERATURE SHALL BE MEASURED BY RECORDING THE SURFACE TEMPERATURES ON THE UNDERSIDE OF THE DECK ADJACENT TO THE JOINTS. IF THE DECK TEMPERATURE DOES NOT FALL WITHIN THE SPECIFIED TEMPERATURE RANGE BEFORE THE CONTRACTOR HAS COMPLETED ALL OTHER REQUIRED WORK, IT WILL BE NECESSARY FOR THE CONTRACTOR TO RETURN TO THE PROJECT SITE TO COMPLETE INSTALLATION AND TESTING OF THE NEOPRENE GLAND. IF THE CONTRACTOR IS REQUIRED TO RETURN TO THE PROJECT SITE AFTER ALL OTHER REQUIRED WORK HAS BEEN COMPLETED, THE CONTRACTOR SHALL COMPLETE INSTALLATION AND TESTING OF NEOPRENE GLAND AT NO EXTRA CHARGE TO THE STATE.

THE NUMBER OF FEET OF NEOPRENE GLAND INSTALLED SHALL BE PAID FOR AT THE CONTRACT PRICE PER FOOT BASED ON PLAN QUANTITIES. THE PRICE FOR "NEOPRENE GLAND INSTALLATION AND TESTING" SHALL BE FULL COMPENSATION FOR INSTALLING AND TESTING OF THE NEW NEOPRENE GLAND. THIS WORK WILL CONSIST OF CLEANING THE EXTRUSION, INSTALLATION OF THE NEOPRENE GLAND AND WATER TIGHT TESTING OF THE EXPANSION JOINT SYSTEM. ALL WORK AND MATERIALS NECESSARY FOR THE INSTALLATION OF THE NEOPRENE GLAND SHALL COMPLY WITH THE RECOMMENDATIONS OF THE EXPANSION JOINT MANUFACTURER. THE PRICE BID FOR "NEOPRENE GLAND INSTALLATION AND TESTING" SHALL INCLUDE ALL WATERTIGHT INTEGRITY TESTING, LEAK REPAIRS AS DIRECTED BY THE ENGINEER, AND SUBSEQUENT WATERTIGHT TESTING UNTIL A LEAK FREE INSTALLATION IS ACHIEVED.

WATERTIGHT INTEGRITY TESTING AND REPAIR NOTES:

AFTER INSTALLATION OF EACH NEOPRENE GLAND, THE CONTRACTOR SHALL PERFORM WATERTIGHT INTEGRITY TESTS AT THE DECK LEVEL TO DETECT ANY LEAKAGE. THE TESTS ARE TO CHECK FOR LEAKAGE AT THE UPTURNED ENDS OF THE EXPANSION DEVICE AND FOR LEAKAGE ALONG THE EXPANSION DEVICE ACROSS THE DECK AND ANY MEDIANS OR SIDEWALKS. THE CONTRACTOR MAY CONDUCT A SINGLE TEST OF THE ENTIRE DEVICE INCLUDING UPTURNED ENDS OR MAY CONDUCT SEPARATE TESTS OF UPTURNED ENDS AND ONE OR MORE TESTS OF OVERLAPPING LENGTHS BETWEEN THE UPTURNED ENDS.

AT EACH UPTURNED END OF THE EXPANSION DEVICE, THE CONTRACTOR SHALL BLOCK OUT ON THE DECK AT LEAST 3 FEET OF THE EXPANSION DEVICE LEADING TO THE UPTURNED END AND FLOOD THE AREA. A MINIMUM WATER DEPTH OF 3" SHALL BE MAINTAINED AT THE GUTTERLINE FOR AT LEAST 30 MINUTES. DURING THE TEST, THE INSPECTOR SHALL OBSERVE FOR ANY OVERFLOW AT THE UPTURNED END. AT THE CONCLUSION OF THE TEST THE INSPECTOR WILL EXAMINE THE UNDERSIDE OF THE JOINT FOR LEAKAGE. THE EXPANSION DEVICE IS CONSIDERED WATERTIGHT IF THE INSPECTOR OBSERVES NO OVERFLOW DURING THE TEST AND IF NO DRIPPING WATER OR WATER DROPLETS ARE VISIBLE IN THE UNDERDECK AREAS NEAR THE UPTURNED END.

THE CONTRACTOR SHALL TEST THE EXPANSION DEVICE BETWEEN UPTURNED ENDS BY BLOCKING OUT AND COVERING THE DEVICE WITH PONDED OR FLOWING WATER TO A DEPTH OF AT LEAST 1" AT ALL POINTS, FOR AT LEAST 30 MINUTES. VERTICAL CURB SURFACES MAY BE TESTED WITH AN UNNOZZLED HOSE DELIVERING APPROXIMATELY ONE GALLON PER MINUTE DIRECTED TO FLOW OVER THE ENTIRE CURB HEIGHT FOR 30 MINUTES. AT THE CONCLUSION OF THE TEST, THE INSPECTOR WILL EXAMINE THE UNDERSIDE OF THE JOINT FOR LEAKAGE. THE EXPANSION DEVICE IS CONSIDERED WATERTIGHT IF NO DRIPPING WATER OR WATER DROPLETS ARE VISIBLE IN THE UNDERDECK AREAS ALONG THE FULL LENGTH OF THE EXPANSION JOINT. DAMP CONCRETE THAT DOES NOT SHOW DRIPPING WATER OR WATER DROPLETS IS NOT CONSIDERED A SIGN OF LEAKAGE.

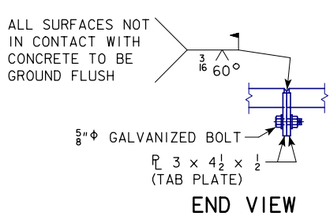
IF THE EXPANSION DEVICE LEAKS AT AN UPTURNED END OR ALONG ITS LENGTH, THE CONTRACTOR SHALL LOCATE THE LEAK(S) AND TAKE REPAIR MEASURES TO STOP THE LEAKAGE. THE REPAIR MEASURES SHALL BE AS RECOMMENDED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER PRIOR TO BEGINNING CORRECTIVE WORK.

IF MEASURES TO ELIMINATE LEAKAGE ARE TAKEN, THE CONTRACTOR SHALL PERFORM SUBSEQUENT WATERTIGHT INTEGRITY TESTS SUBJECT TO THE SAME CONDITIONS AS THE ORIGINAL TEST.

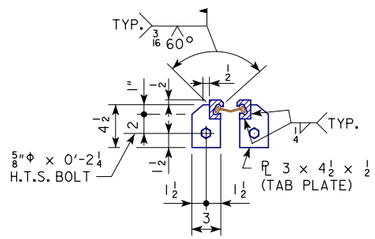
FIELD CONSTRUCTION NOTES:

IF THE STEEL EXTRUSION IS SPLICED IN THE FIELD, THE SPLICE LOCATION SHALL BE DETAILED ON THE SHOP DRAWINGS. THE CONNECTION DETAILS SHALL INCLUDE TAB PLATES AND PREPARED ENDS TO ACCOMMODATE THE NECESSARY WELDING. SEE DETAILS IN THESE PLANS.

GALVANIZED COATING DAMAGE BY FIELD WELDING SHALL BE REPAIRED IN ACCORDANCE WITH MATERIALS I.M. 410.



END VIEW



SECTION THRU EXTRUSION

FIELD SPLICE DETAIL

DESIGN FOR 20° SKEW (R.A.)

524'-3 1/4 X 39'-4 1/2 PRETENSIONED PRESTRESSED CONCRETE BEAM W.B. BRIDGE

120'-8 3/4 END SPANS 141'-4 7/8 INTERIOR SPANS

EXPANSION DEVICE NOTES

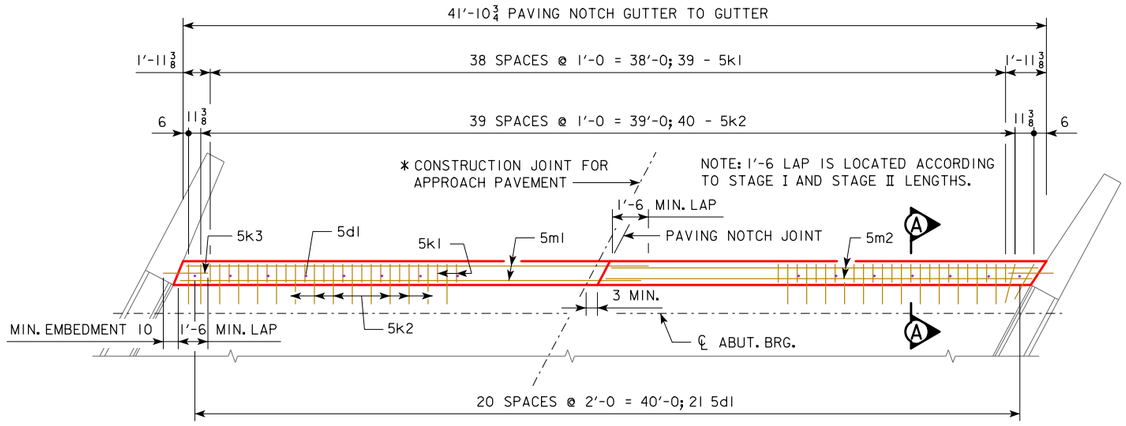
STATION 959+42.26, LT. 45'-11 1/4 MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 8 OF 9 FILE NO. 31646 DESIGN NO. 520

REVISION 08-13 - STEEL EXTRUSION NOTE WAS ADDED TO SHOW A WELD DETAIL ON THE SHOP DRAWINGS FOR SPLICES.
AN ADDITIONAL NEOPRENE GLAND NOTE ABOUT THE CORRESPONDING MAXIMUM DECK TEMPERATURE WAS ADDED.
ENGLISHDECKRAILBRIDGES.DGN - 1026s2 - THIS SHEET ISSUED 11-08.



NOTE: 5k3 BARS SHALL BE SET AS DOWELS EMBEDDED 10 INCHES MINIMUM INTO THE EXISTING BRIDGE WINGWALLS AND EXTENDING A MINIMUM OF 1'-6 INTO THE NEW PAVING NOTCH REPLACEMENT.

PART PLAN VIEW AT EAST ABUTMENT

(WEST ABUTMENT SIMILAR)

NOTE:
NEW PAVING NOTCH REPLACEMENT SHOULD EXTEND FROM BRIDGE WINGWALL TO BRIDGE WINGWALL.

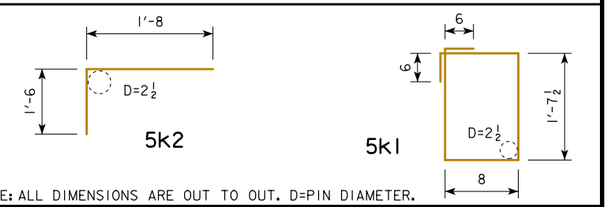
* CONSTRUCTION JOINT FOR NOTCH REPAIR TO EXTEND A MINIMUM OF 3 INCHES PAST CONSTRUCTION JOINT FOR PAVEMENT. PROVIDE 1'-6 MINIMUM LAP FOR REINFORCEMENT

NOTE:
WRITTEN APPROVAL FROM ENGINEER SHALL BE OBTAINED PRIOR TO REMOVING EXISTING PAVING NOTCH

REINFORCING BAR LIST - ONE PAVING NOTCH

	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
EPOXY COATED	5k1	HOOP		39	5'-7	227
	5k2	TIE		42	3'-2	139
	5k3	DOWEL		4	2'-6	10
	5m1	LONGITUDINAL STAGE I		4	23'-3	97
	5m2	LONGITUDINAL STAGE 2		4	19'-9	82
		TOTAL EPOXY COATED (LBS)				555
S.S.	5d1	PAVING NOTCH DOWEL		21	2'-8	58
		TOTAL STAINLESS STEEL (LBS)				58

BENT BAR DETAILS



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

NOTE A:

THE BOTTOM PORTION OF THE EXISTING #4 BARS SHALL BE CAREFULLY EXPOSED AND INCORPORATED INTO NEW WORK. THE BAR SHALL BE CUT OFF TO PROVIDE 2 INCHES OF COVER FROM THE TOP OF THE NEW PAVING NOTCH. THE TOP PORTION OF THE BAR SHALL BE CUT OFF FLUSH OR SLIGHTLY BELOW THE CONCRETE SURFACE AND THE ENDS PAINTED WITH 2 COATS OF ZINC RICH PAINT.

PAVING NOTCH REPLACEMENT NOTES:

THE PAVING NOTCH REPLACEMENT IS TO BE CLASS "C" STRUCTURAL CONCRETE. MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

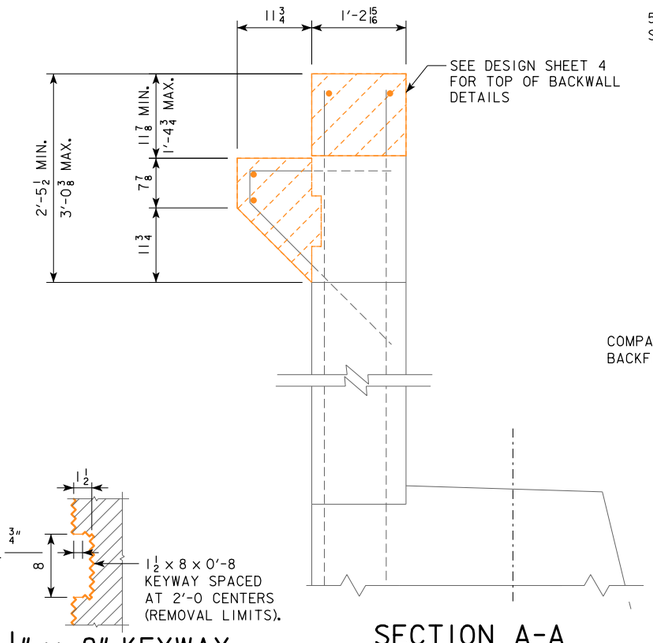
THE BID ITEM "PAVING NOTCH REPLACEMENT" LINEAR FEET, SHALL INCLUDE ALL COSTS OF LABOR AND MATERIALS ASSOCIATED WITH EXCAVATION, REMOVING AND DISPOSING OF THE EXISTING PAVING NOTCH, GRANULAR BACKFILL AND COMPACTION AS NEEDED, AND INSTALLING THE NEW PAVING NOTCH. THIS WORK SHALL INCLUDE, CUTTING OF EXISTING #4 BARS, PAINTING THE ENDS OF THE #4 BARS, REMOVING THE CONCRETE FOR THE SHEAR KEYWAYS, DRILLING THE HOLES FOR THE DEFORMED DOWELS AND CONSTRUCTING THE NEW NOTCH TO THE DIMENSIONS SHOWN. THE NEW NOTCH IS ESTIMATED AT 0.07 CUBIC YARDS PER FOOT OF STRUCTURAL CONCRETE AND 16.0 POUNDS OF EPOXY COATED REINFORCING STEEL PER FOOT.

REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS.

THE DETERMINATION OF NEED FOR PAVING NOTCH REPLACEMENT TO BE VERIFIED IN THE FIELD AFTER REMOVAL OF EXISTING BRIDGE APPROACH. WRITTEN APPROVAL FROM ENGINEER REQUIRED PRIOR TO BEGINNING REMOVAL AT EACH ABUTMENT FOR THE WESTBOUND BRIDGE.

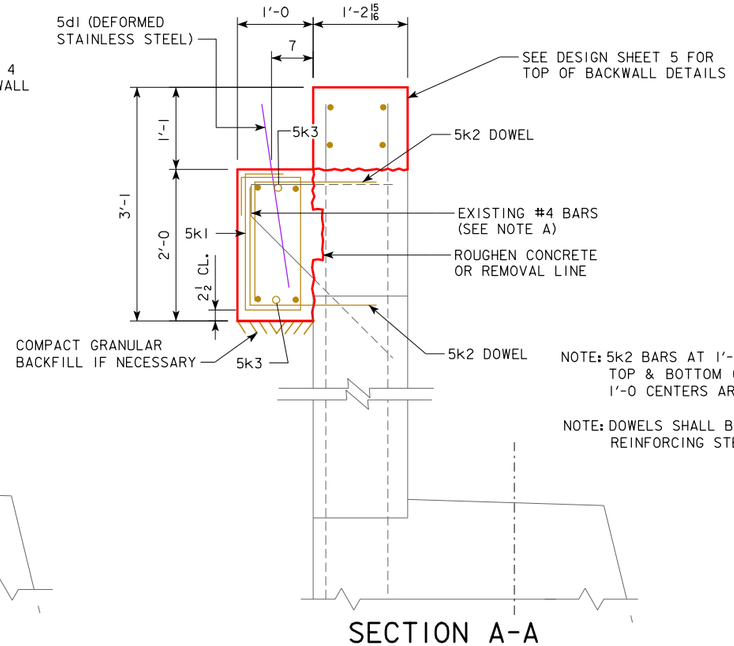
DOWEL SETTING NOTE:

THE DEFORMED 5k2 & 5k3 BARS SHALL BE SET AS DOWELS IN DRILLED HOLES. HOLES ARE TO BE 10" DEEP. A POLYMER GROUT SYSTEM SHALL BE USED TO INSTALL THE DEFORMED DOWEL BARS IN ACCORDANCE WITH ARTICLE 2301.03, E, OF THE STANDARD SPECIFICATIONS, AND THE GROUT MANUFACTURER'S RECOMMENDATIONS.



1 1/2" x 8" KEYWAY DETAIL

SECTION A-A REMOVAL



SECTION A-A

NOTE: 5k2 BARS AT 1'-0 CENTERS ARE TO BE PLACED AT THE TOP & BOTTOM OF THE PAVING NOTCH. THE 5k1 BARS AT 1'-0 CENTERS ARE CENTERED BETWEEN THE 5k2 BARS.

NOTE: DOWELS SHALL BE PLACED TO MISS ANY EXISTING REINFORCING STEEL EXPOSED DURING REMOVALS.

DESIGN FOR 20° SKEW (R.A.)

524'-3 1/4 X 39'-4 1/2 PRETENSIONED PRESTRESSED CONCRETE BEAM W.B. BRIDGE

120'-8 3/4 END SPANS — 141'-4 7/8 INTERIOR SPANS

PAVING NOTCH REPAIR

STATION 959+42.26, LT. 45'-11 1/4 — MARCH 2020

HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 9 OF 9 — FILE NO. 31646 — DESIGN NO. 520

REVISED 06-2017 - ADDED STATEMENT IN PAVING NOTCH REPLACEMENT NOTE PARAGRAPH "GRANULAR BACKFILL AND COMPACTION AS NEEDED,". UPDATED DESIGN HISTORY TABLE.
REVISED 07-2019: CHANGED BENT ENDS (HOOK LEG) OF 5k1 BAR TO 6" (WAS 4 1/2"), CHANGED ALL REFERENCES OF "SLAB" TO "DECK".
ENGLISHMISCELLANEOUSBRIDGES.DGN - 1068 - THIS SHEET ISSUED 04-09.

GEOTECHNICAL DESIGN

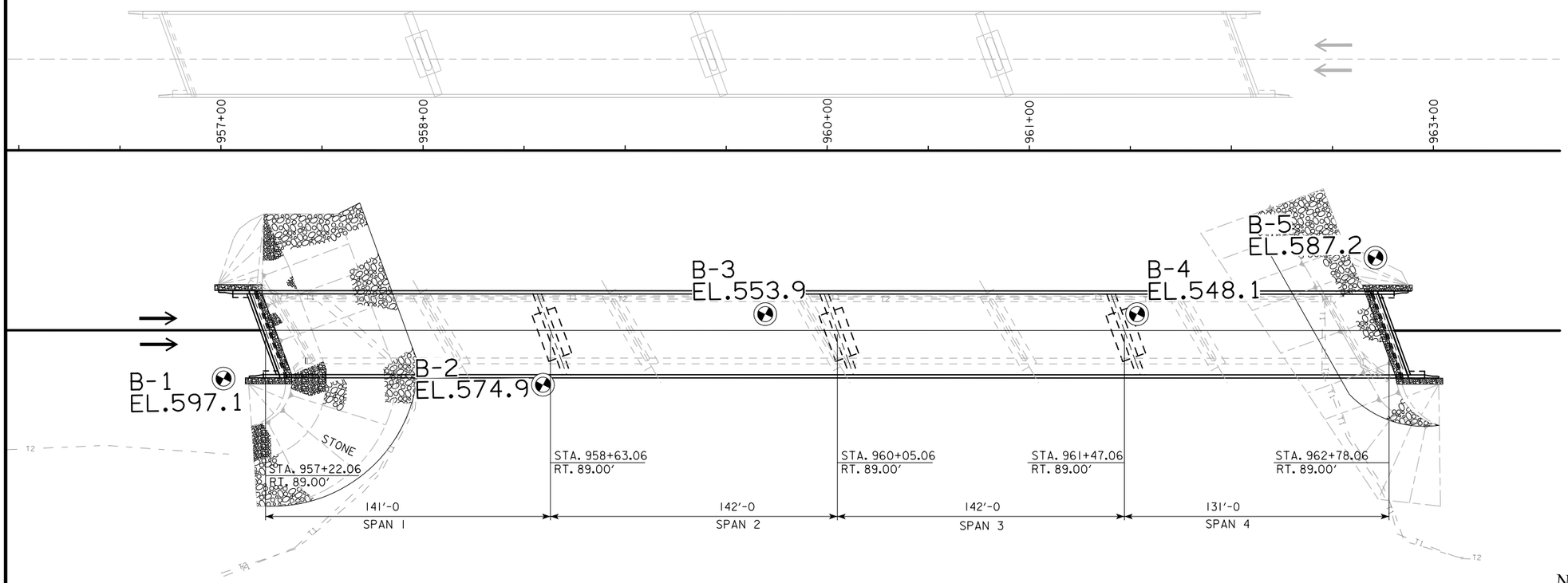
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature X Justin D. Humke Date 2-17-2020

Printed or Typed Name: Justin D. Humke

My license renewal date is December 31, 2021

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



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

0 ENGLISH 60
SCALE IN FEET

N

LOCATION

E.B. US 34 OVER SKUNK RIVER
T-71N R-7W
SECTION 4 & 5
TIPPECANOE TOWNSHIP
HENRY COUNTY
FHWA NO. 28431
BRIDGE MAINT. NO. 4426.7R034
LATITUDE: 40.975053°
LONGITUDE: -91.677947°

DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141' & 131' END SPANS (BTE BEAM TYPE) 142' INTERIOR SPANS

SOIL PROFILE SHEET

STATION 960+00.06, RT. 89.00'

HENRY COUNTY

DESIGN SHEET NO. 1 OF 3 FILE NO. 31646 DESIGN NO. 220

FILE NO. 31646	ENGLISH	DESIGN TEAM Braun Intertec	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER SPS.1

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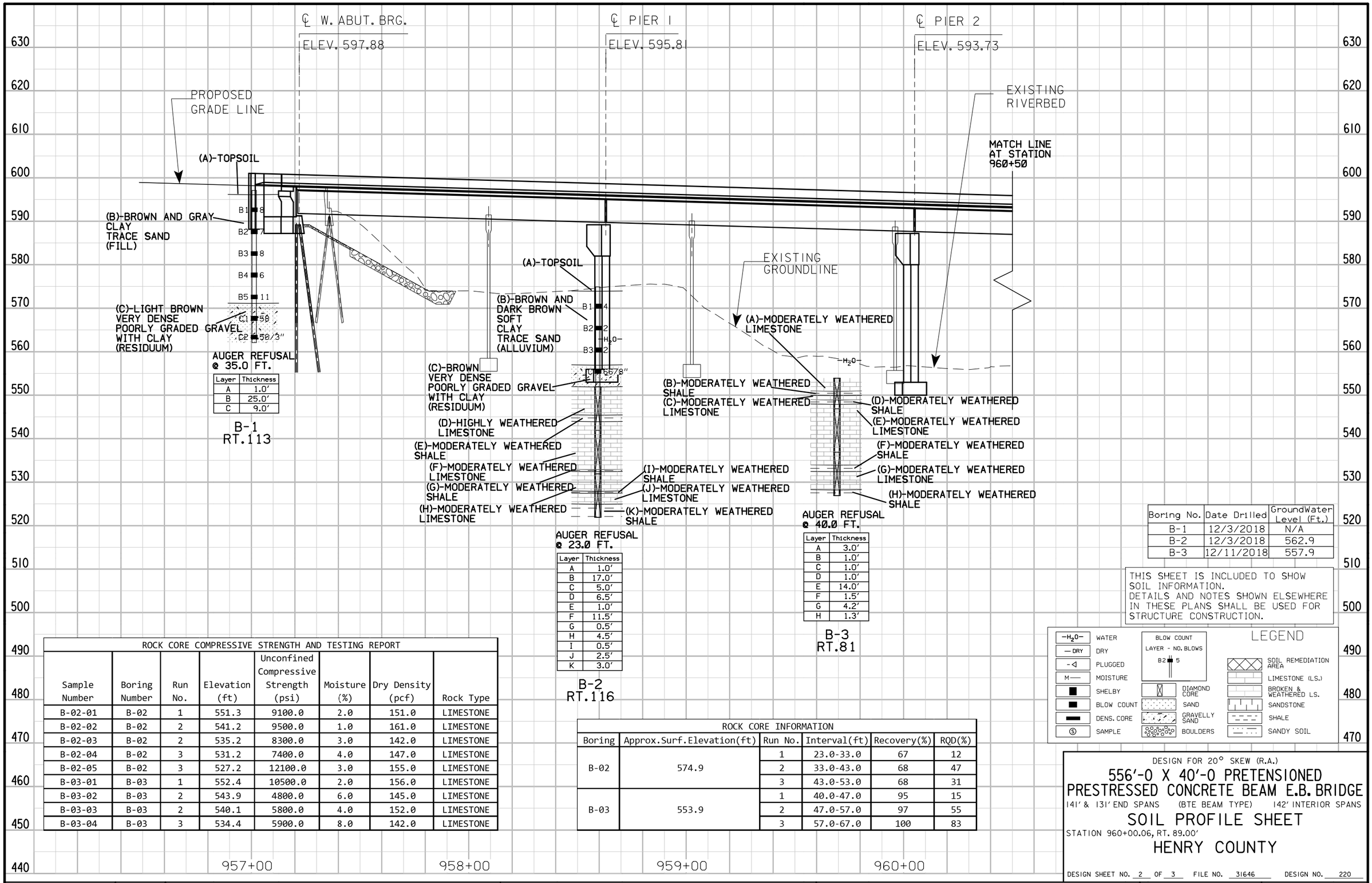

Boring No.	Date Drilled	GroundWater Level (Ft.)
B-1	12/3/2018	N/A
B-2	12/3/2018	562.9
B-3	12/11/2018	557.9

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LEGEND

—H_2O—	WATER	BLOW COUNT LAYER - NO. BLOWS B2 5	SOIL REMEDIATION AREA
— DRY	DRY		LIMESTONE (LS.)
-◁	PLUGGED	DIAMOND CORE	BROKEN & WEATHERED LS.
M—	MOISTURE	SAND	SANDSTONE
■	SHELBY	GRAVELLY SAND	SHALE
■	BLOW COUNT	BOULDERS	SANDY SOIL
▬	DENS. CORE		
Ⓢ	SAMPLE		

ROCK CORE COMPRESSIVE STRENGTH AND TESTING REPORT

Sample Number	Boring Number	Run No.	Elevation (ft)	Unconfined Compressive Strength (psi)	Moisture (%)	Dry Density (pcf)	Rock Type
B-02-01	B-02	1	551.3	9100.0	2.0	151.0	LIMESTONE
B-02-02	B-02	2	541.2	9500.0	1.0	161.0	LIMESTONE
B-02-03	B-02	2	535.2	8300.0	3.0	142.0	LIMESTONE
B-02-04	B-02	3	531.2	7400.0	4.0	147.0	LIMESTONE
B-02-05	B-02	3	527.2	12100.0	3.0	155.0	LIMESTONE
B-03-01	B-03	1	552.4	10500.0	2.0	156.0	LIMESTONE
B-03-02	B-03	2	543.9	4800.0	6.0	145.0	LIMESTONE
B-03-03	B-03	2	540.1	5800.0	4.0	152.0	LIMESTONE
B-03-04	B-03	3	534.4	5900.0	8.0	142.0	LIMESTONE

ROCK CORE INFORMATION

Boring	Approx.Surf.Elevation(ft)	Run No.	Interval(ft)	Recovery(%)	RQD(%)
B-02	574.9	1	23.0-33.0	67	12
		2	33.0-43.0	68	47
		3	43.0-53.0	68	31
B-03	553.9	1	40.0-47.0	95	15
		2	47.0-57.0	97	55
		3	57.0-67.0	100	83

DESIGN FOR 20° SKEW (R.A.)

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SOIL PROFILE SHEET

STATION 960+00.06, RT. 89.00'

HENRY COUNTY

DESIGN SHEET NO. 2 OF 3 FILE NO. 31646 DESIGN NO. 220

FILE NO. 31646	ENGLISH	DESIGN TEAM Braun Intertec	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER SPS.2

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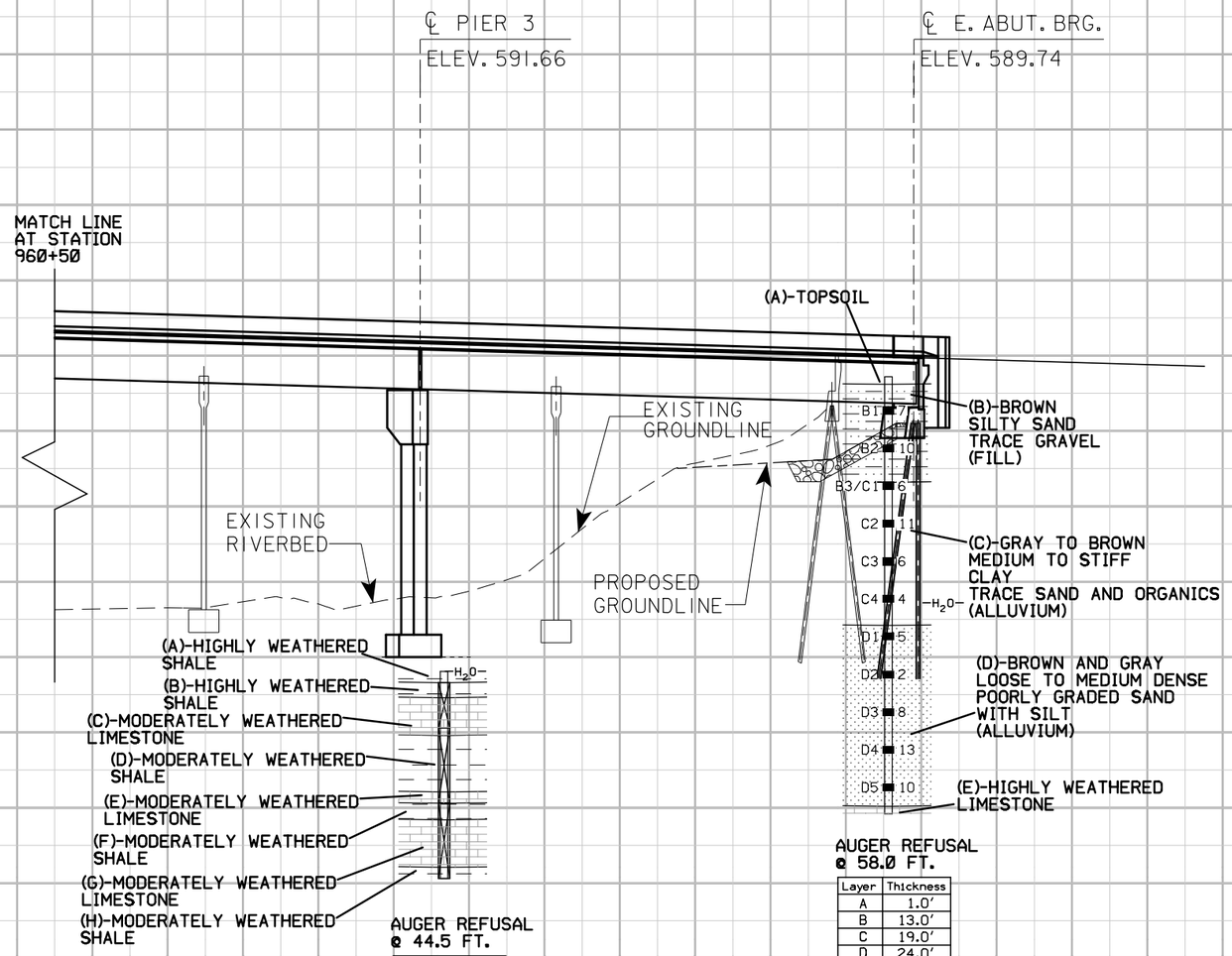

Layer	Thickness
A	1.5′
B	2.0′
C	5.0′
D	7.5′
E	1.5′
F	2.2′
G	6.8′
H	1.0′

Layer	Thickness
A	1.0′
B	13.0′
C	19.0′
D	24.0′
E	1.0′

Boring No.	Date Drilled	GroundWater Level (Ft.)
B-4	12/12/2018	557.9
B-5	12/6/2018	557.2

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LEGEND

$-H_2O-$	WATER	BLOW COUNT LAYER - NO. BLOWS (B2 5)	SOIL REMEDIATION AREA
— DRY	DRY		LIMESTONE (LS.)
-◁	PLUGGED	DIAMOND CORE	BROKEN & WEATHERED LS.
M—	MOISTURE	SAND	SANDSTONE
■	SHELBY	GRAVELLY SAND	SHALE
■	BLOW COUNT	BOULDERS	SANDY SOIL
▬	DENS. CORE		
Ⓢ	SAMPLE		

ROCK CORE COMPRESSIVE STRENGTH AND TESTING REPORT

Sample Number	Boring Number	Run No.	Elevation (ft)	Unconfined Compressive Strength (psi)	Moisture (%)	Dry Density (pcf)	Rock Type
B-04-01	B-04	1	543.5	8200.0	6.0	147.0	LIMESTONE
B-04-02	B-04	2	539.1	8700.0	7.0	145.0	LIMESTONE
B-04-03	B-04	2	530.6	8000.0	6.0	149.0	LIMESTONE
B-04-04	B-04	3	525.8	7200.0	4.0	155.0	LIMESTONE
B-04-05	B-04	3	521.9	8400.0	5.0	151.0	LIMESTONE

ROCK CORE INFORMATION

Boring	Approx.Surf.Elevation(ft)	Run No.	Interval(ft)	Recovery(%)	RQD(%)
B-04	548.1	1	44.5-50.5	51	7
		2	50.5-60.5	91	20
		3	60.5-70.5	100	63

DESIGN FOR 20° SKEW (R.A.)

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141′ & 131′ END SPANS (BTE BEAM TYPE) 142′ INTERIOR SPANS

SOIL PROFILE SHEET

STATION 960+00.06, RT. 89.00′

HENRY COUNTY

DESIGN SHEET NO. 3 OF 3 FILE NO. 31646 DESIGN NO. 220

FILE NO. 31646	ENGLISH	DESIGN TEAM Braun Intertec	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER SPS.3

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INDEX OF SHEETS

ROADWAY DESIGN

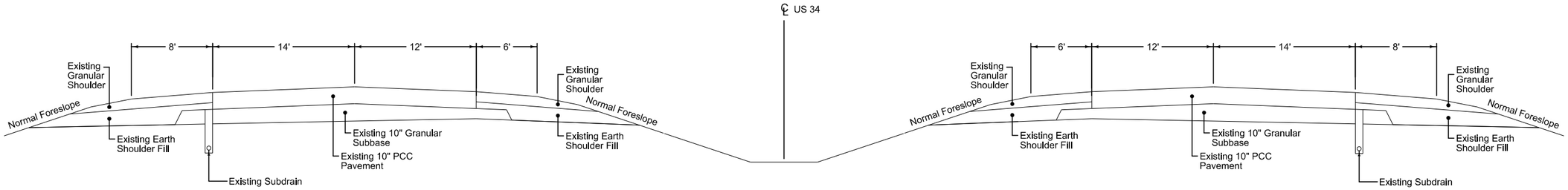
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature — Date: 02/28/20

Taylor R. Theulen
Printed or Typed Name

My license renewal date is December 31, 2021

Pages or sheets covered by this seal: A.1, B.1-B.3, C.1-C.8, D.1-D.9, F.1-F.4, G.1-G.4, J.1-J.6, RC.1-RC.3, RR.1-RR.5 and U.1



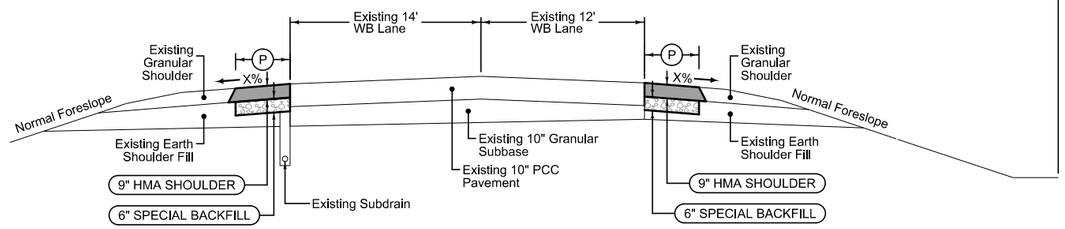
US 34 WB **US 34 EB**

EXISTING US 34

HMA Shoulder

Shoulder Jointing:
Longitudinal joint: B

	Direction of Travel	BEGIN STATION	END STATION	4_P_HMA_MODIFIED (P) Feet	(X) Slope
	WB	936+24.50	939+92.50	4	-4%
	WB	942+38.75	955+57.50	4	-4%
*	WB	955+57.50	956+33.50	10	-4%
*	WB	956+33.50	956+53.50	10	-4% to -2%
*	WB	962+49.00	962+69.00	10 to 10.5	-2% to -4%
*	WB	962+69.00	962+95.00	10.5 to 11.5	-4%
*	WB	962+95.00	963+24.00	11.5	-4%
	WB	963+24.00	969+23.50	4	-4%



* See Sheet B.3 for "Paved Shoulder at Guardrail" Details

** For Pavement Details at Bridge Approaches, Refer to BR-203
- Sta. 956+03.58 to Sta. 956+77.27
- Sta. 962+07.15 to Sta. 962+78.93

HMA Shoulder

Shoulder Jointing:
Longitudinal joint: B

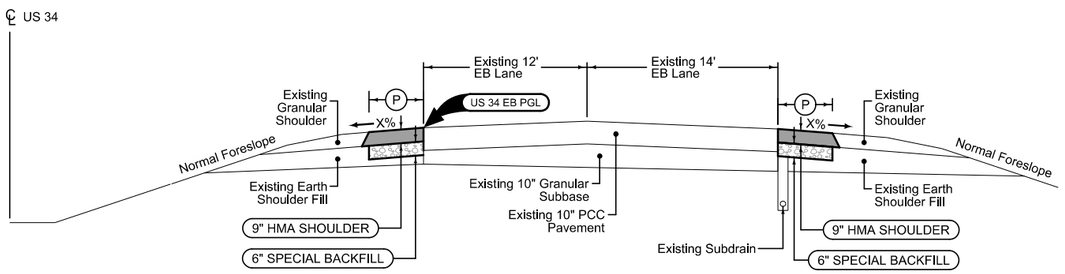
	Direction of Travel	BEGIN STATION	END STATION	4_P_HMA_MODIFIED (P) Feet	(X) Slope
	WB	940+48.50	940+85.25	4	-4%
	WB	941+76.00	954+29.00	4	-4%
	WB	956+17.00	956+53.50	4	-2%
*	WB	962+69.00	962+89.00	6.5 to 7.5	-2% to -4%
*	WB	962+89.00	963+11.25	7.5 to 8.5	-4%
*	WB	963+11.25	963+38.50	8.5	-4%
	WB	963+38.50	965+68.00	4	-4%

US 34 WB

HMA Shoulder

Shoulder Jointing:
Longitudinal joint: B

	Direction of Travel	BEGIN STATION	END STATION	4_P_HMA_MODIFIED (P) Feet	(X) Slope
	EB	920+54.00	922+30.00	4	-4%
*	EB	955+51.50	956+12.00	12.4 to 10	-4%
*	EB	956+12.00	956+22.50	10	-4%
*	EB	956+22.50	956+47.25	10 to 7.5	-4%
*	EB	956+47.25	956+76.75	7.5	-4%
*	EB	956+76.75	956+96.75	7.5	-4% to -2%



* See Sheet B.3 for "Paved Shoulder at Guardrail" Details

** For Pavement Details at Bridge Approaches, Refer to BR-203
- Sta. 956+46.74 to Sta. 957+18.87
- Sta. 962+81.25 to Sta. 963+54.84

HMA Shoulder

Shoulder Jointing:
Longitudinal joint: B

	Direction of Travel	BEGIN STATION	END STATION	4_P_HMA_MODIFIED (P) Feet	(X) Slope
*	EB	955+41.75	922+64.25	14	-4%
*	EB	922+64.25	956+14.50	14 to 12	-4%
*	EB	956+14.50	956+37.50	12	-4%
*	EB	956+37.50	956+62.25	12 to 9.5	-4%
*	EB	956+62.25	956+76.75	9.5	-4%
*	EB	956+76.75	956+96.75	9.5	-4% to -2%

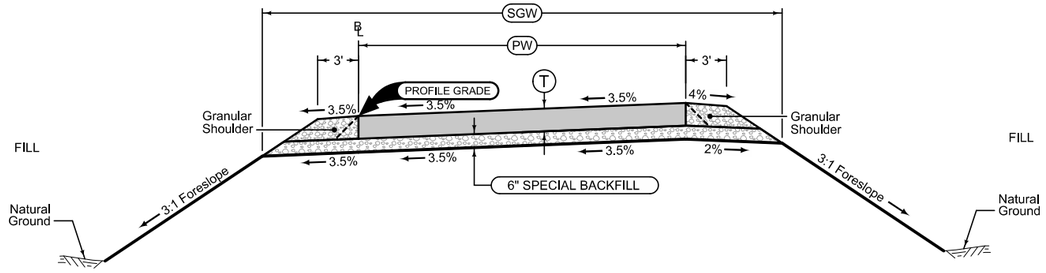
US 34 EB

LOCATION			DIMENSIONS					
			HMA			PCC		
ROAD IDENTIFICATION	STATION TO STATION		(PW) Feet	(T) Inches	(SGW) Feet	(PW) Feet	(T) Inches	(SGW) Feet
Detour Connection 1A	Refer to Sheet F.2 for location and details							
Detour Pavement 1	5922+30.00	5940+47.81	16	12	31.7	16	9	30
Detour Connection 1B	Refer to Sheet F.3 for location and details							

Quantity calculations based on vertical pavement edges.

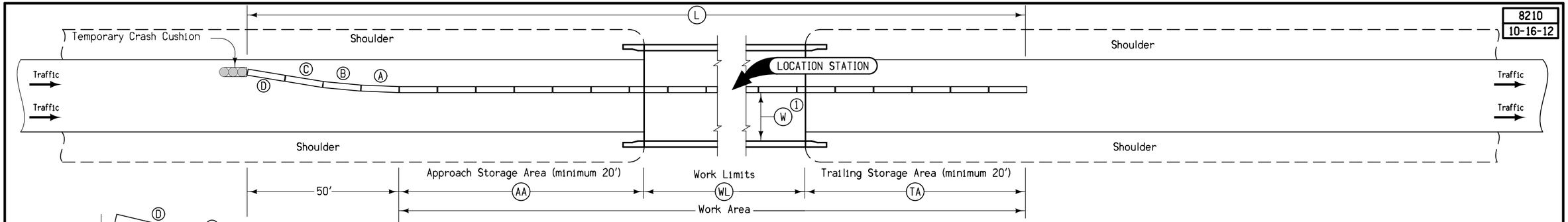
Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.

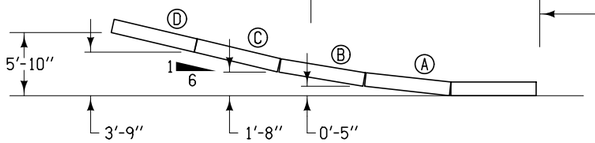
D_Detour
Modified



DETOUR PAVING

8210
10-16-12



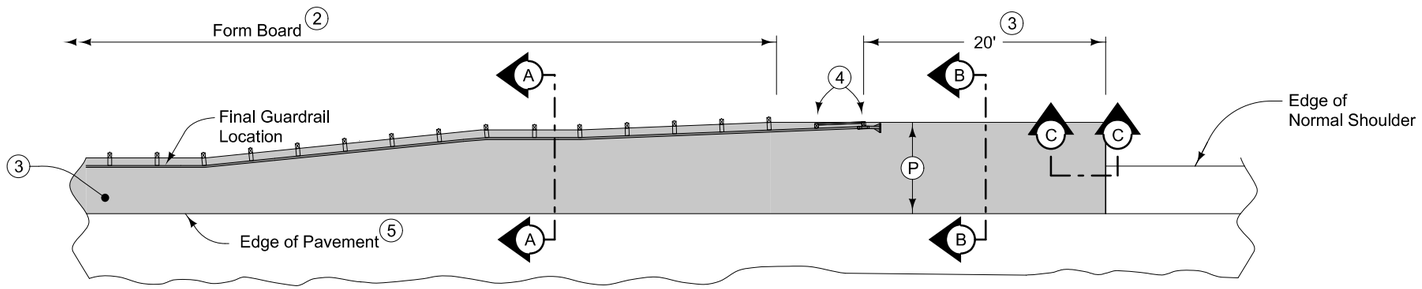


BARRIER OFFSETS FOR FLARE SECTIONS

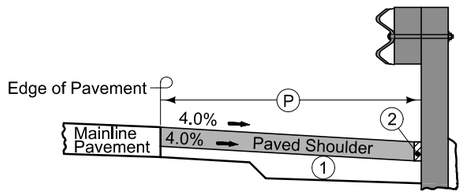
Station	Side	(AA) Feet	(WL) Feet	(TA) Feet	(L) Feet	Anchored	(W) (1) Ft-Inches	Remarks
959+42.23	Lt	27'	676'	27'	780'	N	15'-0"	Stage 1
959+42.23	Rt	27'	676'	27'	780'	N	14'-6"	Stage 2

(1) Where (W) is less than 14'-6", install restricted width signing as per Standard Road Plan TC-81.

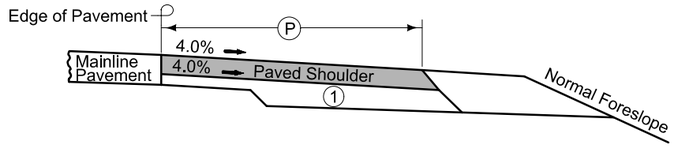
TEMPORARY CONCRETE BARRIER LAYOUT for One-Way Traffic



PLAN VIEW

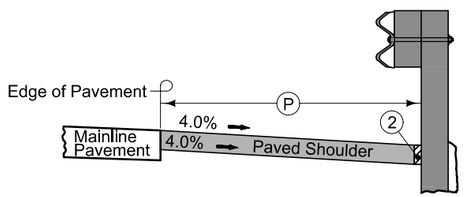


Section A-A

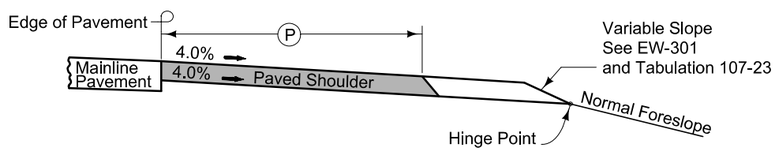


Section B-B

NEW CONSTRUCTION



Section A-A



Section B-B

EXISTING SHOULDER

DESIGNER INFO

7156
04-18-17

9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

Match mainline pavement joint spacing. When mainline pavement is 8" or greater in thickness, place additional transverse 'C' joints in shoulder at mid-panel of the mainline pavement. Place longitudinal 'C' joint at P/2 from edge of mainline pavement when P is greater than 10' wide. Terminate longitudinal joint at transverse joint less than 10' in length.

Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

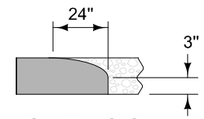
(1) For subgrade treatment, refer to other details in the plan.

(2) PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown. Refer to note 4 for final 2 posts.

(3) Continue paved shoulder to existing paved shoulder or 20 feet beyond the center of the first post.

(4) Shoulder may be notched for final 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.

(5) 'KT-1 joint for PCC shoulder.
'B' joint for HMA shoulder.



Section C-C
Roll down at granular shoulder or earth.

PAVED SHOULDER AT GUARDRAIL

100-1D
10-18-05

PROJECT DESCRIPTION

This project involves the replacement of the US 34 EB bridge (Maintenance Number 4426.7R034) and maintenance of the US 34 WB bridge (Maintenance Number 4426.7L034) over the Skunk River.

100-0A
10-28-97

ESTIMATED ROADWAY QUANTITIES
(1 DIVISION PROJECT)

Item No.	Item Code	Item	Unit	Total	As Built Qty.
1	2102-0425070	SPECIAL BACKFILL	TON	3141.0	
2	2102-2625000	EMBANKMENT-IN-PLACE	CY	3680.0	
3	2102-2713090	EXCAVATION, CLASS 13, WASTE	CY	6476.3	
4	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	3800.0	
5	2115-0100000	MODIFIED SUBBASE	CY	128.6	
6	2121-7425010	GRANULAR SHOULDER, TYPE A	TON	1020.0	
7	2122-5190501	PAVED SHOULDER, PCC (PAVED SHOULDER PANEL FOR BRIDGE END DRAIN)	SY	89.2	
8	2122-5500090	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 9 IN.	SY	2517.7	
9	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	5.70	
10	2301-0690203	BRIDGE APPROACH, BR-203	SY	1004.5	
11	2304-0100000	DETOUR PAVEMENT	SY	4440.0	
12	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE	SY	3330.7	
13	2416-1180024	CULVERT, CONCRETE ROADWAY PIPE, 24 IN. DIA.	LF	24	
14	2417-5895018	BEVELED PIPE AND GUARD, 18 INCH	EACH	4	
15	2422-1722018	CULVERT, UNCLASSIFIED ENTRANCE PIPE, 18 IN. DIA.	LF	380	
16	2503-0500402	BRIDGE END DRAIN, DR-402	EACH	4	
17	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	691.0	
18	2505-4008300	STEEL BEAM GUARDRAIL	LF	112.5	
19	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	EACH	6	
20	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	6	
21	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	6	
22	2510-6745850	REMOVAL OF PAVEMENT	SY	5714.0	
23	2518-6910000	SAFETY CLOSURE	EACH	14	
24	2527-9263109	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	STA	363.32	
25	2527-9263131	WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS	STA	108.04	
26	2527-9263137	PAINTED SYMBOLS AND LEGENDS, WATERBORNE OR SOLVENT-BASED	EACH	16	
27	2527-9263180	PAVEMENT MARKINGS REMOVED	STA	257.72	
28	2527-9263190	SYMBOLS AND LEGENDS REMOVED	EACH	16.0	
29	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	LF	1525.0	
30	2528-8400157	TEMPORARY FLOODLIGHTING LUMINAIRE	EACH	4	
31	2528-8445110	TRAFFIC CONTROL	LS	1.00	
32	2528-9109020	TEMPORARY LANE SEPARATOR SYSTEM	LF	5510.0	
33	2529-5070110	PATCHES, FULL-DEPTH FINISH, BY AREA	SY	20.0	
34	2529-5070120	PATCHES, FULL-DEPTH FINISH, BY COUNT	EACH	1	
35	2533-4980005	MOBILIZATION	LS	1.00	
36	2551-0000110	TEMPORARY CRASH CUSHION	EACH	2	
37	2555-0000010	DELIVER AND STOCKPILE SALVAGED MATERIALS	LS	1.00	
38	2601-2634100	MULCHING	ACRE	4.8	
39	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	2.4	
40	2601-2642100	STABILIZING CROP - SEEDING AND FERTILIZING	ACRE	2.4	
41	2602-0000020	SILT FENCE	LF	600.0	
42	2602-0000030	SILT FENCE FOR DITCH CHECKS	LF	1020.0	
43	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	LF	1620.0	
44	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK	LF	162.0	
45	2602-0000212	FLOATING SILT CURTAIN (HANGING)	LF	300.0	
46	2602-0000240	MAINTENANCE OF FLOATING SILT CURTAIN	LF	150.0	
47	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	3830.0	
48	2602-0000350	REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE	LF	3830.0	
49	2602-0010010	MOBILIZATION, EROSION CONTROL	EACH	1	
50	2602-0010020	MOBILIZATION, EMERGENCY EROSION CONTROL	EACH	1	

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
1	2102-0425070	SPECIAL BACKFILL
		REFER TO B SHEETS AND TAB. 112-8 AND TAB. SS-1 IN C SHEETS.
		RECLAIMED ASPHALT PAVEMENT (RAP) AND RECLAIMED HMA SHALL NOT BE USED FOR THE SPECIAL BACKFILL.
2	2102-2625000	EMBANKMENT-IN-PLACE
		REFER TO TAB. 107-23 AND TAB. 112-8 IN C SHEETS.
3	2102-2713090	EXCAVATION, CLASS 13, WASTE
		REFER TO TAB. 112-8, TAB. 112-9 AND TAB. SS-1 IN C SHEETS. MATERIAL MAY BE USED AS FILL IN AREAS APPROVED BY ENGINEER.
4	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD
		REFER TO TAB. 103-10 ON SHEET CS.1 FOR LOCATIONS AND DETAILS.
5	2115-0100000	MODIFIED SUBBASE
		REFER TO TAB. 112-9 IN C SHEETS.
6	2121-7425010	GRANULAR SHOULDER, TYPE A
		REFER TO F SHEETS, U SHEETS AND TAB. 112-8 IN C SHEETS.
7	2122-5190501	PAVED SHOULDER, PCC (PAVED SHOULDER PANEL FOR BRIDGE END DRAIN)
		REFER TO TAB. 104-8A IN C SHEETS. PCC SHOULDER THICKNESS = 8 IN.
8	2122-5500090	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 9 IN.
		REFER TO B SHEETS AND TAB. 112-9 AND TAB. SS-1 IN C SHEETS. USE PG 58-28S ASPHALT BINDER AT 6%.
		DRESSING UP OF GRANULAR SHOULDER ADJACENT TO SHOULDER STRENGTHENING AREAS LISTED IN TAB. SS-1 IS INCIDENTAL TO THIS BID ITEM AND WILL NOT BE PAID FOR SEPARATELY.
9	2123-7450000	SHOULDER CONSTRUCTION, EARTH
		REFER TO TAB. 112-9 IN C SHEETS.
10	2301-0690203	BRIDGE APPROACH, BR-203
		REFER TO TAB. 112-6 IN C SHEETS.
11	2304-0100000	DETOUR PAVEMENT
		REFER TO F SHEETS, U SHEETS AND TAB. 112-8 IN C SHEETS.
12	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE
		REFER TO TAB. 100-28 IN C SHEETS.
13	2416-1180024	CULVERT, CONCRETE ROADWAY PIPE, 24 IN. DIA.
		REFER TO F SHEETS AND TAB. 104-3 IN C SHEETS.
14	2417-5895018	BEVELED PIPE AND GUARD, 18 INCH
15	2422-1722018	CULVERT, UNCLASSIFIED ENTRANCE PIPE, 18 IN. DIA.
		REFER TO F SHEETS AND TAB. 112-8 IN C SHEETS.
16	2503-0500402	BRIDGE END DRAIN, DR-402
		REFER TO TAB. 104-8A IN C SHEETS. REMOVAL, HAULING AND DISPOSAL OF EXISTING ROCK FLUMES IS INCIDENTAL TO THIS BID ITEM. CONTRACTOR HAS THE OPTION TO SALVAGE AND REUSE MATERIAL FROM EXISTING FLUMES IF IT MEETS THE REQUIREMENTS OF STANDARD ROAD PLAN DR-402.
		CONTRACTOR HAS THE OPTION TO PARTIALLY REMOVE THE SE FLUME OF THE WB BRIDGE UNTIL WORK IS COMPLETE.
17	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL
		REFER TO TAB. 110-7A IN C SHEETS.
18	2505-4008300	STEEL BEAM GUARDRAIL
19	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201
20	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED
21	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205
		REFER TO TAB. 108-8A IN C SHEETS.
		LAPPING REQUIREMENTS FOR THE EAST SIDE OF WB BRIDGE:
		STAGE 1 - LAP GUARDRAIL AT SE CORNER IN THE DIRECTION OF WB TRAFFIC.
		STAGE 2 - LAP GUARDRAIL AT NE CORNER IN THE DIRECTION OF WB TRAFFIC.
		STAGE 3 - LAP GUARDRAIL AT SE CORNER IN THE DIRECTION OF EB TRAFFIC.
		STAGE 4 - NO CHANGES TO LAPPING
		STAGE 5 - LAP GUARDRAIL AT SE CORNER IN THE DIRECTION OF WB TRAFFIC.
22	2510-6745850	REMOVAL OF PAVEMENT
		REFER TO TABS. 110-1 AND 112-8 IN C SHEETS.
23	2518-6910000	SAFETY CLOSURE
		REFER TO J SHEETS AND TAB. 108-13A IN C SHEETS.
24	2527-9263109	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED
25	2527-9263131	WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS
		REFER TO TAB. 108-22 IN C SHEETS.
26	2527-9263137	PAINTED SYMBOLS AND LEGENDS, WATERBORNE OR SOLVENT-BASED
		REFER TO TAB. 108-29 IN C SHEETS.
27	2527-9263180	PAVEMENT MARKINGS REMOVED
		REFER TO TAB. 108-22 IN C SHEETS.

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
28	2527-9263190	SYMBOLS AND LEGENDS REMOVED
		REFER TO TAB. 108-29 IN C SHEETS.
29	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE
		REFER TO B SHEETS AND TAB. 108-27 IN C SHEETS. ALL TEMPORARY BARRIER RAIL SHALL BE NOMINAL 12'-6 LONG CONCRETE
		UNITS.
30	2528-8400157	TEMPORARY FLOODLIGHTING LUMINAIRE
		REFER TO TAB. 108-27 IN C SHEETS.
31	2528-8445110	TRAFFIC CONTROL
		REFER TO J SHEETS.
32	2528-9109020	TEMPORARY LANE SEPARATOR SYSTEM
		REFER TO TAB. 108-35 IN C SHEETS AND J SHEETS FOR LOCATIONS.
33	2529-5070110	PATCHES, FULL-DEPTH FINISH, BY AREA
34	2529-5070120	PATCHES, FULL-DEPTH FINISH, BY COUNT
		REFER TO TAB. 102-6C IN C SHEETS.
		PATCHING QUANTITY INCLUDED FOR INSTALLATION OF TEMPORARY GUARDRAIL COMPONENTS AT SW CORNER OF THE WB BRIDGE.
35	2533-4980005	MOBILIZATION
36	2551-0000110	TEMPORARY CRASH CUSHION
		REFER TO TAB. 108-30 IN C SHEETS.
37	2555-0000010	DELIVER AND STOCKPILE SALVAGED MATERIALS
		REFER TO TAB. 110-13 IN C SHEETS.
38	2601-2634100	MULCHING
39	2601-2636043	SEEDING AND FERTILIZING (RURAL)
40	2601-2642100	STABILIZING CROP - SEEDING AND FERTILIZING
		REFER TO RR SHEETS FOR LOCATIONS.
41	2602-0000020	SILT FENCE
		REFER TO TAB. 100-17 IN RC SHEETS. THE TABULATION INCLUDES ESTIMATED LOCATIONS FOR PLACEMENT OF SILT FENCE TO
		ADDRESS POSSIBLE EROSION DURING CONSTRUCTION. VERIFY THE SPECIFIC LOCATIONS WITH THE ENGINEER PRIOR TO
		BEGINNING PLACEMENT. BID ITEM INCLUDES 25% ADDITIONAL QUANTITY FOR FIELD ADJUSTMENTS AND REPLACEMENTS.
42	2602-0000030	SILT FENCE FOR DITCH CHECKS
		REFER TO TAB. 100-18 IN RC SHEETS. THE TABULATION INCLUDES ESTIMATED LOCATIONS FOR PLACEMENT OF SILT FENCE FOR
		DITCH CHECKS TO ADDRESS POSSIBLE EROSION DURING CONSTRUCTION. VERIFY THE SPECIFIC LOCATIONS WITH THE ENGINEER
		PRIOR TO BEGINNING PLACEMENT. BID ITEM INCLUDES 50% ADDITIONAL QUANTITY FOR FIELD ADJUSTMENTS AND REPLACEMENTS.
43	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS
		THIS ITEM IS INCLUDED FOR SILT FENCE AND SILT FENCE FOR DITCH CHECK REMOVAL REQUIRED FOR STAGING REASONS, FOR
		REPLACEMENT (REPLACEMENT TO BE PAID SEPARATELY), OR FOR AREAS THAT HAVE ACHIEVED 70% PERMANENT GROWTH.
44	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK
		THIS ITEM IS INCLUDED FOR CLEANOUT AND REPAIR OF THE SILT FENCE AND SILT FENCE FOR DITCH CHECKS DURING THE
		PROJECT.
45	2602-0000212	FLOATING SILT CURTAIN (HANGING)
46	2602-0000240	MAINTENANCE OF FLOATING SILT CURTAIN
		REFER TO TAB. 100-10 IN RC SHEETS.
47	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.
48	2602-0000350	REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE
		REFER TO TAB. 100-19 IN RC SHEETS.
49	2602-0010010	MOBILIZATION, EROSION CONTROL
		QUANTITY IS FOR INSTALLATION AND MAINTENANCE OF EROSION CONTROL WITHIN THE PROJECT LIMITS.
50	2602-0010020	MOBILIZATION, EMERGENCY EROSION CONTROL
		QUANTITY IS FOR REPAIR OR REINSTALLATION OF EROSION CONTROL DUE TO EVENTS REQUIRING EMERGENCY MEASURES AS
		DETERMINED BY THE ENGINEER.

STANDARD ROAD PLANS

The following Standard Road Plans apply to construction work on this project.

Number	Date	Title
BA-200	04-16-19	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	04-19-16	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-250	10-18-16	Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post (MASH TL-3)
BA-401	10-15-19	Temporary Barrier Rail (Precast Concrete)
BA-500	04-19-16	Temporary Crash Cushions Sand Barrel
BR-203	10-17-17	Double Reinforced 12" Approach
BR-211	10-17-17	Bridge Approach (Abutting PCC or Composite Pavement)
DR-102	04-21-15	Pipe Culvert (Cover and Camber)
DR-103	04-21-15	Pipe Culvert (Installation Details)
DR-104	04-19-16	Depth of Cover Tables for Concrete and Corrugated Pipe
DR-121	10-17-17	Connected Pipe Joints
DR-201	04-21-20	Concrete Aprons
DR-212	04-21-20	Beveled Pipe and Guard
DR-213	04-21-20	Pipe Apron Guard
DR-306	10-16-18	Precast Concrete Headwall for Subdrain Outlets
DR-402	10-15-19	Rock Flume for Bridge End Drain
DR-504	04-21-20	Diagonal Placed Drain for Median Crossovers
DR-621	04-18-17	Pipe Extension
DR-651	04-18-17	Unclassified Pipe Culvert
EC-201	10-15-19	Silt Fence
EC-202	10-21-14	Floating Silt Curtain
EC-204	04-21-20	Perimeter and Slope Sediment Control Devices
EC-303	04-16-19	Stabilized Construction Entrance
EW-202	04-19-16	Bridge Berm Grading without Recoverable Slope (Non-Barnroof Section)
EW-301	10-20-15	Guardrail Grading
EW-401	10-20-15	Temporary Stream Crossing, Causeway, or Equipment Pad
EW-403	04-18-17	Temporary Erosion Control Measures
LI-130	10-17-17	Temporary Floodlighting Luminaires
PM-110	04-21-20	Line Types
PM-111	04-21-20	Symbols and Legends
PR-102	04-21-20	Full Depth PCC Patch without Dowels
PV-3	04-16-19	Safety Edge
PV-101	04-21-20	Joints
PV-102	04-21-20	PCC Curb Details
SI-173	04-19-16	Object Markers
SI-211	10-18-16	Object Marker and Delineator Placement with Guardrail
SI-881	04-16-19	Special Signs for Workzones
TC-1	10-15-19	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-402	04-21-15	Work Within 15 ft of Traveled Way
TC-418	04-21-20	Lane Closure on Divided Highway
TC-421	04-21-20	Lane Closure with TBR
TC-433	10-17-17	Pavement Marking Operations

102-5
04-18-17

EXISTING PAVEMENT

No.	Location					Year	Type	Project Number	Surface		Base		Subbase		Removal		Coarse Aggregate			Reinforcement	Remarks
	County	Route	Dir. of Travel	Begin Ref. Loc. Sign	End Ref. Loc. Sign				Type	Depth IN	Type	Depth IN	Type	Depth IN	Type	Depth IN	Source	Type	Durability Class	Type	
1	Henry	US 34	EB			2006			PCC	10			Granular	10							
2	Henry	US 34	WB			2006			PCC	10			Granular	10							

111-25
10-18-11

INDEX OF TABULATIONS

110-1
04-16-13

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5

* Not a Bid Item

Begin Station	End Station	Side	Pavement Type	Area SY	Saw Cut* LF	Remarks
956+46.00	957+43.00	Both	PCC	260.0	26.0	US 34 EB - West Approach
962+52.00	963+55.00	Both	PCC	289.8	26.0	US 34 EB - East Approach
955+88.00	956+84.00	Both	PCC	327.7	46.0	US 34 WB - West Approach
961+99.00	962+79.00	Both	PCC	291.2	26.0	US 34 WB - East Approach
955+57.50	956+71.50	O	HMA	50.7	4.0	US 34 WB - Shoulder Strengthening Removal
962+01.25	963+24.00	O	HMA	54.6	4.0	US 34 WB - Shoulder Strengthening Removal
			Total:	1274.0		

252-1
10-16-12

TEMPORARY CROSSINGS AND DETOURS

Blading, shaping, and other work in preparation for maintaining temporary crossings or detours is incidental to other work. Furnish and spread additional granular surfacing needed for temporary crossings or detours during construction at the contract price.

262-6
10-18-05

UTILITIES (NOT A POINT 25 PROJECT)

This is NOT a POINT 25 project and is not subject to the provisions of IAC 761-115.25.

108-35
04-17-12

TEMPORARY LANE SEPARATOR SYSTEM

See TC-61

Station to Station		Length LF	Remarks
931+39.00	980+71.00	4910	Refer to J Sheets
East Median Crossover		600	Refer to J Sheets

108-27
10-17-17

TEMPORARY FLOODLIGHTING LUMINAIRES

Possible Standard: LI-130

No.	Location Station	Offset	Number Lumin.	Remarks
1	924+30.00	75' Rt	1	West Median Crossover
1	938+48.00	110' Lt	1	West Median Crossover
1	967+68.00	90' Lt	1	East Median Crossover
1	976+82.00	115' Rt	1	East Median Crossover

108-13A
08-01-08

SAFETY CLOSURES

Refer to Section 2518 of the Standard Specifications

Station	Closure Type		Remarks
	Road Qty.	Hazard Qty.	
929+55.00	1		West Median Crossover
973+15.00	1		East Median Crossover
915+90.00	2		EB Med. Side/WB Med. Side
926+86.00	2		EB Med. Side/WB Med. Side
941+35.00	1		WB Med. Side
954+95.00	1		West Side of E. Clayton
955+35.00	1		East Side of E. Clayton
969+80.00	1		WB Med. Side
979+72.00	2		EB Med. Side/WB Med. Side
997+39.00	2		EB Med. Side/WB Med. Side
Total:	14		

281-3
10-17-17

STORM WATER BEST MANAGEMENT PRACTICES

When the following best management practices are used, they are intended to account for disturbed areas where storage volume cannot be provided:

232-10
04-18-17

EMERALD ASH BORER

Any living, dead, cut or fallen material of the ash (Fraxinus spp.) including trees, nursery stock, logs, firewood, stumps, roots, branches, and composted or uncomposted ash chips can be freely moved within the yellow areas of the most recent Federal EAB Quarantine & Authorized Transit.

https://www.aphis.usda.gov/plant_health/plant_pest_info/emerald_ash_b/downloads/eab_quarantine_map.pdf.

Obtain appropriate Compliance Agreements from USDA APHIS PPQ prior to moving any of the above listed ash articles to areas outside the yellow zone on the map.

For questions, concerns, and general assistance, contact:

USDA APHIS PPQ, Iowa office, 515-414-3295

Or

Iowa Department of Agriculture & Land Stewardship
515-725-1470
Entomology@IowaAgriculture.gov

281-1
10-18-16

SECTION 404 PERMIT AND CONDITIONS

Construct this project according to the requirements of U.S. Army Corps of Engineers Nationwide, Permit No. 2019-1083.
A copy of this permit is available from the Iowa DOT website (http://www.envpermits.iowadot.gov/). The U.S. Army Corps of Engineers reserves the right to visit the site without prior notice.

EROSION CONTROL (WETLAND GRASS SEEDING/404 PERMIT)

All temporary impacted areas must be restored to their pre-construction conditions, contours, and elevation. Impacted wetland areas shall be re-seeded with the appropriate wetland mixture to best restore the area to its natural conditions.

The 0.15 acre wetland area under the US 34 bridge between Station 957+00 and 958+00 shall be restored and re-seeded to its pre-constructed condition.

SEEDING MIXTURE:
Refer to Table 2601.03-6 in Section 2601 of the Standard Specifications.

FERTILIZER:
5 lbs. of 13-13-13 (or equivalent) commericial fertilizer per 1000 sq. ft.

MULCH:
70 lbs. of dry cereal straw per 1000 sq. ft. For areas disturbed, but not seeded by September 30th, scarify to a 3 inch depth and mulch. Consolidate all mulch into the soil with a mulch stabilizer.

Use Certified Noxious Weed Seed Free Mulch as determined by the Iowa Crop Improvement Association or adjacent state's Crop Improvement Association.

Preparing the seedbed and furnishing and applying seed, fertilizer, and mulch is incidental to mobilization and will not be paid for separately.

108-33
10-15-19

TEMPORARY BARRIER RAIL

Possible Standard: BA-401 Possible Detail: 560-7

* Not a bid item. Anchorage requirements are based on TBR locations shown in the plans. TBR alignments that vary from what is shown in the plans may result in additional TBR sections requiring anchorage.

No.	Station to Station		Length	(Select One) Concrete BA-401	(Select One) Steel 560-7	Anchored*	Modular Glare Screen System	Remarks
			LF			(Y/N)	(Y/N)	
1	955+76.00	963+57.00	762.5	X		N	N	Stage 1
2	955+76.00	963+57.00	762.5	X		N	N	Stage 2
		Total:	1525.0					

110-13
04-20-10

DELIVERY AND STOCKPILING

Item Description	Quantity	Units	Delivery Location	Contact Name & Number	Remarks
Steel Beam Guardrail & Components	190	LF	Mt. Pleasant Maintenance Shop	Doug Swan, (319) 385-8641	See Sheet D.5 for locations

108-30
04-16-13

CRASH CUSHIONS

* Bid Item
(1) Lane(s) to which the installation is adjacent.
(2) Complete this section when using the Temporary Crash Cushion bid item and Earthwork is needed for Sand Barrel placement. Refer to BA-500

No.	(1) Direction of Traffic	Location Station	Side	Obstacle Width	Crash Cushion (Select One)* Temporary	Temporary Redirective	Temporary Severe Use	Permanent	Permanent Severe Use	Sand Barrel Details (2) V Length	W Length	X Length	Y Length	Z Length	Earthwork* Excavation Class 10	Embankment in Place	Spare Parts Kit (Select One)* Permanent	Permanent Severe Use	Obstacle Description	Remarks
				FT						FT	FT	FT	FT	FT	CY	CY	EACH	EACH		
1	WB	963+57.00	Lt	2.00	1						24.25	5.25	3.25	12.00					Temporary Barrier Rail	Stage 1
2	WB	963+57.00	Rt	2.00	1						24.25	5.25	3.25	12.00					Temporary Barrier Rail	Stage 2
				Total:	2															

110-7A
04-17-12

REMOVAL OF STEEL BEAM GUARDRAIL

(1) Lane(s) to which the installation is adjacent.
(2) Includes length of End Terminals and End Anchors.

Location No.	(1) Direction of Traffic	Station to Station		Side	Removal of Guardrail (2)
					LF
1	EB	955+55.00	957+24.00	M	169.0
2	EB	955+64.00	957+40.00	O	176.0
3	WB	962+13.00	962+85.00	O	72.0
4	WB	962+28.00	963+12.00	M	84.0
5	WB	955+62.00	956+57.00	O	95.0
6	WB	955+76.00	956+71.00	M	95.0
				Total:	691.0

112-8
04-15-14

MEDIAN CROSSOVERS

Refer to PV-500 Series.

* Not a bid item

Road Ident.	Location Station	Standard Road Plan	Detour Pavement	Special Backfill	Granular Shoulder	Embankment in Place	Class 10 Excavation	Class 13 Excavation	Removal of Pavement	Saw Cut*	18" Unclassified Entrance Pipe	36" CMP Slotted Drain/ 6" Grate	Beveled Pipe and Guard	Remarks
		No.	SY	TON	TON	CY	CY	CY	SY	LF	LF	LF	No.	
West Crossover	931+39.00		2620.0	1500.0	600.0	2000.0		3120.0	2620.0		230.0		2	Refer to Sheets F.1 - F.3
East Crossover	97+25.00		1820.0	1050.0	420.0	1500.0		2280.0	1820.0		150.0		2	Refer to Sheet F.4 and Modified PV-513 on Sheet U.1
	Total:		4440.0	2550.0	1020.0	3500.0	0.0	5400.0	4440.0	0.0	380.0	0.0	4	

104-3
10-17-17

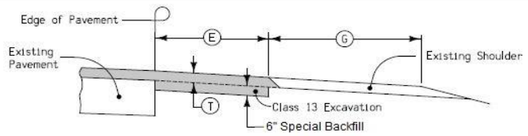
DRAINAGE STRUCTURE BY ROAD CONTRACTOR

Length of unclassified pipe calculated is based on using Reinforced Concrete Pipe.
* Not a bid item
(1) Diameter or equivalent diameter
(2) UNCL = Unclassified Pipe CMP = Corrugated Metal Pipe RCP = Reinforced Concrete Pipe LCP = Arch or Elliptical Low Clearance Pipe SARC = Steel Arch Pipe
(3) Backfill according to DR-101

Drainage Area	Location	Type	Size (1)	Kind Of Pipe (2)	Length New Const.	Bedding Class	Design Cover (H)	Camber* (DR-102)	Apron No.		Apron Guard* (DR-213)	Elbow* (DR-141)	Diaphragm* (DR-501)	Tee Section* (DR-142)	"D" Section* (DR-141)	Reducer*	Type 'C' Connections* (DR-122)		Connected Pipe Joint* (DR-121)	4" Perforated Subdrain*	Flow Line Elevations				Dimensions Lin. Ft. Total Lt.	Total Rt.	Extensions Lt.	Extensions Rt.	Skew Ahead Degrees Lt.	Skew Ahead Degrees Rt.	Dike Rt.	Dike Location Station	Dike Top Elevation	Dike Type	Class 20	Flowable Mortar	Floodable* Backfill (A)	Porous* Backfill (B)	Flooded Backfill (3) (A+B)	Remarks
ACRE			IN		LF		FT	FT	IN	OUT	No.	No.	No.	No.	No.	No.	Type	No.	Type	FT	Lt.	Rt.	Other	Other											CY	CY	CY	CY	CY	
Med.	970+46.62	Ext.	24	RCP	24																Match	583.10																Reuse apron

SS-1

SHOULDER STRENGTHENING



Joints:
HMA:
Longitudinal joint: B
PCC:
Longitudinal joint: BT-1 or BT-5
Transverse joint: C

Road Identification	Station to Station		Side	E	T	G	Special Backfill	Paved Shoulder, HMA, 9 in.	Class 13 Excavation	Remarks
				FT	IN	FT	TON	SY	CY	
US 34 WB	936+24.50	939+92.50	O	4.00	9.00		51.6	163.6	68.2	
US 34 WB	942+38.75	956+71.50	O	4.00	9.00		200.6	636.8	265.4	
US 34 WB	962+01.25	969+23.50	O	4.00	9.00		101.2	321.0	133.8	
US 34 WB	940+48.50	940+85.25	M	4.00	9.00		5.2	16.4	6.9	
US 34 WB	941+76.00	954+29.00	M	4.00	9.00		175.5	556.9	232.1	
US 34 WB	963+38.50	965+68.00	M	4.00	9.00		32.2	102.0	42.5	
US 34 EB	920+54.00	922+30.00	M	4.00	9.00		24.7	78.3	32.7	
						Total:	591.0	1875.0	781.6	

112-9
10-15-13

SHOULDERS

(1) Lane(s) to which the shoulder is adjacent.
(2) Bid Item
(3) Applies only for Paved Shoulders constructed on project with existing granular shoulders.
(4) Does not include shrink.

Calculations assume a HMA unit weight (lbs/cf) of 145, a Special Backfill unit weight (lbs/cf) of 140, and a Granular Shoulder unit weight (lbs/cf) of 140.

Location					P	G	L	Quantities															Remarks
Road Identification	(1) Direction Of Traffic	Station to Station		Side	Width	Width	Length	Class 13 Excavation (3)	Hot Mix Asphalt		Binder	Paved Shoulder	Reinforced Paved Shoulder	Special Backfill				Modified Subbase	Granular Shoulder		Earth Shoulder Construction Alternates			
														HMA Alternate		PCC Alternate					STA (2)	HMA	PCC
					FT	FT	FT	CY (2)	TON	TON/STA	TONS	SY (2)	SY (2)	TON (2)	TON/STA	TON (2)	TON/STA	CY (2)	TON (2)	TON/STA		CY (4)	CY (4)	
US 34	WB	955+57.50	956+53.50	O	10.0		96.0	48.9	57.768	60.175	3.466	106.7						21.3			1.0			
US 34	WB	962+49.00	962+95.00	O	10 to 11.5		46.0	25.0	29.682	64.525	1.781	54.9						10.9			0.5			
US 34	WB	962+95.00	963+24.00	O	11.5		29.0	16.8	19.764	68.150	1.186	37.1						7.3			0.3			
US 34	WB	956+17.00	956+53.50	M	6.5		36.5	12.7	15.084	41.325	0.905	26.4						5.8			0.4			
US 34	WB	962+69.00	963+11.25	M	6.5 to 8.5		42.3	16.6	19.604	46.400	1.176	35.2						7.4			0.4			
US 34	WB	963+11.25	963+38.50	M	8.5		27.3	12.0	14.225	52.200	0.853	25.7						5.3			0.3			
US 34	EB	955+41.75	955+64.25	O	14.0		22.5	15.6	18.433	81.925	1.106	35.0						6.7			0.2			
US 34	EB	955+64.25	956+14.50	O	14 to 12		50.3	32.6	38.253	76.125	2.295	72.6						14.0			0.5			
US 34	EB	956+14.50	956+37.50	O	12.0		23.0	13.9	16.342	71.050	0.980	30.7						6.0			0.2			
US 34	EB	956+37.50	956+62.25	O	12 to 9.5		24.8	13.5	15.970	64.525	0.958	29.6						5.9			0.2			
US 34	EB	956+62.25	956+96.75	O	9.5		34.5	16.8	19.760	57.275	1.186	36.4						7.3			0.3			
US 34	EB	955+51.50	956+12.00	M	12.4 to 10		60.5	34.2	40.354	66.700	2.421	75.3						14.8			0.6			
US 34	EB	956+12.00	956+22.50	M	10.0		10.5	5.4	6.318	60.175	0.379	11.7						2.3			0.1			
US 34	EB	956+22.50	956+47.25	M	10 to 7.5		24.8	11.2	13.278	53.650	0.797	24.1						4.9			0.2			
US 34	EB	956+47.25	956+96.75	M	7.5		49.5	19.5	22.968	46.400	1.378	41.3						8.7			0.5			
							Total:	294.7				642.7						128.6			5.7			

104-8A
10-17-17

SCOUR PROTECTION OR ROCK FLUME FOR BRIDGE END DRAIN

Refer to Standard Road Plan DR-401 and DR-402

Location			Bid Items		PCC Paved Shoulder			Scour Protection (DR-401)			Rock Flume (DR-402)			Remarks
Bridge Station	Bridge Corner	Distance DI-1 or DI-2	8" PCC Paved Shoulder	Bridge End Drain	Panels Required	Polymer Grid	Modified Subbase	Special Ditch Control, Wood Excelsior Mat	Turf Reinforced Mat (TRM), Type 2	Transition Mat	Macadam Stone Base	Engineering Fabric	Erosion Stone	
								EC-101	EC-104	EC-105				
		FT	SY	TYPE	A B C or D	SY	TONS	SQ	SQ	SF	TONS	SY	TONS	
960+00.00	NE	28.5	16.8	DR-402	A	21.3	21.000				1.500	70.0	45.000	US 34 EB
960+00.00	SE	13.4	21.2	DR-402	B	25.7	25.000				1.500	80.0	53.000	US 34 EB
959+42.00	NE	29.9	21.7	DR-402	A	26.2	25.000				1.500	85.0	58.000	US 34 WB
959+42.00	SE	32.5	29.5	DR-402	B, C	38.4	37.000				1.500	85.0	58.000	US 34 WB
		Total:	89.2	4										
Removal of Existing Rock Flumes														
962+41.00	NE										Incidental to Bridge End Drain, DR-402			US 34 WB
962+65.00	SE										Incidental to Bridge End Drain, DR-402			US 34 WB
962+93.00	NE										Incidental to Bridge End Drain, DR-402			US 34 EB
962+93.00	SE										Incidental to Bridge End Drain, DR-402			US 34 EB

108-8A
10-16-18

STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION

Possible Standards: BA-200, BA-201, BA-202, BA-205, BA-206, BA-210, BA-211, BA-221, BA-225, BA-250, BA-260, LS-625, LS-626, LS-630, LS-635, SI-172, SI-173 and SI-211.

(1) Lane(s) to which the obstacle is adjacent.
(2) Not a bid item. Incidental to guardrail installation.

Location				Layout Lengths				Long-Span System		Delineators and Object Markers (2)					Bid Items									
				BA-250, BA-260, LS-630, or LS-635														BA-250 or LS-630					BA-260 or LS-635		
No.	Direction of Traffic (1)	Side O = Outside M = Median	Station	Offset	VT1	VF	VT2	ET	BA-211 STATION	BA-211 TYPE	SI-211	Delineator SI-172 Type 1	Object Marker SI-173 Type 2	Object Marker SI-173 Type 3		Bolted End Anchor	Post Adapter	Steel Beam Guardrail	Barrier Transition Section	End Terminal				Barrier Transition Section	End Terminal	Remarks
																				Tangent	Flared	Tangent	Flared		Tangent	
				FT	LF	LF	LF	LF	STATION	TYPE	TYPE	White EACH	OM2-2 EACH	OM3-L EACH	OM3-R EACH	TYPE	EACH	EACH	EACH	BA-205 EACH	BA-206 EACH	LS-625 EACH	LS-626 EACH	BA-221 EACH	BA-225 EACH	
1	EB	M	956+98.50	70.2, Rt	53.125	25.00	12.50	47.7			3			1		A	1	50.0	1	1						
2	EB	O	957+13.50	111.8, Rt	53.125	25.00	25.00	47.7			3				1	A	1	62.5	1	1						
3	WB	O	962+14.00	68.0, Lt	40.625	0.00	0.00	47.7			3				1	A	1	0.0	1	1						
4	WB	M	962+28.00	27.8, Lt	40.625	0.00	0.00	47.7			3			1		A	1	0.0	1	1						
5	WB	O	956+54.50	68.0, Lt	40.625	0.00	0.00	47.7			3			1		A	1	0.0	1	1						Temporary
6	EB	M	956+68.50	27.8, Lt	40.625	0.00	0.00	47.7			3				1	A	1	0.0	1	1						Temporary
															Total:		6	112.5	6	6						

107-23
10-18-11

GRADING FOR GUARDRAIL INSTALLATIONS

(1) Lane(s) to which the installation is adjacent. Refer to EW-301

Location					Dimensions (Feet)									Earthwork		
No.	Direction of Traffic (1)	Station	Side	Foreslope at Guardrail	X1	Y1	X2	Y2	X3	Y3	X4	Y4	Z	Excavation Class 10	Embankment In Place	Remarks
														CY	CY	
1	EB	956+98.00	NW	10:1	50.9	5.0	75.8	7.5	88.3	7.5	138.2	9.3	13.0		60.0	
2	EB	957+13.00	SW	6:1/3:1	52.3	5.0	77.1	7.5	102.3	7.5	152.3	9.4	20.0		80.0	
3	WB	962+14.00	NE	10:1	40.3	5.0					90.2	7.0	47.0		20.0	
4	WB	962+28.00	SE	10:1	40.3	5.0					90.2	7.0	47.0		20.0	
													Total:	0.0	180.0	

100-28
10-19-10

LONGITUDINAL GROOVING

Location	Total SY	Remarks
US 34 EB	238.4	West Approach
US 34 EB	2312.0	Bridge
US 34 EB	262.9	East Approach
US 34 WB	250.1	West Approach
US 34 WB	267.3	East Approach
Total:	3330.7	

112-6
04-18-17

BRIDGE APPROACH SECTION

Refer to the BR Series.

* Not a bid item

Location				Approach Pavement					Standard Road Plans BR Series			Subdrain					* Modified Subbase	* Polymer Grid	* Special Backfill	Remarks
Bridge Station	End	Skew Ahead Degrees LEFT	Skew Ahead Degrees RIGHT	T Thickness	Pay Length	Non-Reinf. Pavement Area	Single-Reinf. Pavement Area	Double-Reinf. Pavement Area	Approach	Fixed or Movable Abutment	Abutting Pavement	* Perforated Subdrain 4"	* Subdrain Outlet		* Porous Backfill	* Class 'A' Crushed Stone Backfill				
													STA	Side						
				Inches	FT	SY	SY	SY				LF			CY	CY	TON	SY	TON	
959+42.00	West		20	12.0	73.7	86.7	57.8	105.2	BR-203	Fixed	BR-211	52.0	956+14.00	O	1.5	0.2	259.900	289.8		US 34 WB
959+42.00	East		20	12.0	71.8	86.7	57.8	105.5	BR-203	Fixed	BR-211	52.0	962+69.00	M	1.5	0.2	260.100	290.1		US 34 WB
960+00.00	West		20	12.0	72.1	86.7	57.8	107.9	BR-203	Fixed	BR-211	52.0	956+57.00	M	1.5	0.2	263.600	293.3		US 34 EB
960+00.00	East		20	12.0	73.6	86.7	57.8	107.9	BR-203	Fixed	BR-211	52.0	963+45.00	M	1.5	0.2	263.600	293.4		US 34 EB
							Total:	1004.5												

102-6C
04-18-17

FULL-DEPTH PATCHES

Possible Standards: PR-101, PR-102, PR-103, PR-104, PR-105 and PR-140.

Location				Dimension			PCC Patches												Remarks
Count	Station	Reference Location Sign	Lane	Length	Width	Patch Thickness	With Dowels PR-103	Without Dowels PR-102	C R C PR-104	Ramp with Dowels PR-105	HMA Patches	Composite HMA	Subbase Patches PR-140	Subbase Patch w/ 'EF' Joint PR-101	Patch Subdrain PR-101 or PR-140	'CD' Joints	'CT' Joints	'EF' Joints PR-101	Anchor Lugs Removal	
			L, R, or B	FT	FT	IN	SY	SY	SY	SY	SY	TON	SY	SY	No.	No.	No.	No.	No.	
1	956+00.00		R	30'-45'	4.0	10.0		20.0												Included for installation of temporary guardrail.

PAVEMENT MARKING LINE TYPES

See PM-110

*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - For estimating purposes only. No Passing Zone Lines will be located in the field.
***MNY4 - Factor of 1.00 as value includes number of 4-inch passes to cover median nose area.

BCY4: Broken Centerline (Yellow) @ 0.25 | DCY4: Double Centerline (Yellow) @ 2.00 | NPY4: No Passing Zone Line (Yellow) @ 1.25 | BLW4: Broken Lane Line (White) @ 0.25 | ELW4: Edge Line Right (White) @ 1.00
ELY4: Edge Line Left (Yellow) @ 1.00 | CHW8: Channelizing Line (White) @ 2.00 | CHY8: Channelizing Line (Yellow) @ 2.00

Location								Length by Line Type (Unfactored)														Remarks
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			BCY4*	DCY4	NPY4**	BLW4	ELW4	ELY4	CHW8	CHY8							
					L	C	R	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	
US 34 WB	963+06.00	985+11.00	WB	Removal of Paint	X								22.05									Stage 1
US 34 WB	963+06.00	985+11.00	WB	Removal of Paint		X					22.05											Stage 1
US 34 WB	963+06.00	985+11.00	WB	Removal of Paint			X					22.05										Stage 1
US 34 WB	963+06.00	977+61.00	WB	Wet Retroreflective Removable Tape		X									14.55							Stage 1
US 34 WB	963+06.00	977+61.00	WB	Removal of Removable Tape		X									14.55							Stage 1
US 34 WB	963+06.00	977+61.00	WB	Wet Retroreflective Removable Tape		X								14.55								Stage 2
US 34 WB	963+06.00	977+61.00	WB	Removal of Removable Tape		X								14.55								Stage 2
US 34 WB	963+06.00	985+11.00	WB	Waterborne/Solvent Paint	X								22.05									Stage 2
US 34 WB	963+06.00	985+11.00	WB	Waterborne/Solvent Paint		X					22.05											Stage 2
US 34 WB	963+06.00	985+11.00	WB	Waterborne/Solvent Paint			X					22.05										Stage 2
US 34 EB	897+00.00	929+65.00	EB	Removal of Paint	X								32.65									Stage 3
US 34 EB	897+00.00	929+65.00	EB	Removal of Paint		X					32.65											Stage 3
US 34 EB	897+00.00	929+65.00	EB	Removal of Paint			X					32.65										Stage 3
US 34 WB	931+39.00	996+53.00	WB	Removal of Paint		X					65.14											Stage 3
US 34 EB	904+50.00	922+30.00	EB	Wet Retroreflective Removable Tape			X							17.80								Stage 3
W. Crossover	922+30.00	940+49.00	EB	Waterborne/Solvent Paint			X							18.19								Stage 3
W. Crossover	922+30.00	940+49.00	EB	Waterborne/Solvent Paint	X										18.19							Stage 3
US 34 WB	931+39.00	980+71.00	BOTH	Waterborne/Solvent Paint		X			49.32													Stage 3
US 34 WB	980+71.00	987+83.00	WB	Wet Retroreflective Removable Tape		X									7.12							Stage 3
E. Crossover	965+68.00	978+82.00	EB	Waterborne/Solvent Paint			X							13.14								Stage 3
E. Crossover	965+68.00	978+82.00	EB	Waterborne/Solvent Paint	X										13.14							Stage 3
US 34 EB	904+50.00	922+30.00	EB	Removal of Removable Tape			X							17.80								Stage 5
US 34 EB	922+30.00	925+77.00	EB	Removal of Paint			X							3.47								Stage 5
US 34 EB	937+00.00	940+49.00	EB	Removal of Paint	X										3.49							Stage 5
US 34 WB	931+39.00	980+71.00	BOTH	Removal of Paint		X			49.32													Stage 5
US 34 WB	980+71.00	987+83.00	WB	Removal of Removable Tape		X									7.12							Stage 5
US 34 EB	975+92.00	978+82.00	EB	Removal of Paint			X							2.90								Stage 5
US 34 EB	897+00.00	929+65.00	EB	Waterborne/Solvent Paint	X								32.65									Stage 5
US 34 EB	897+00.00	929+65.00	EB	Waterborne/Solvent Paint		X					32.65											Stage 5
US 34 EB	897+00.00	929+65.00	EB	Waterborne/Solvent Paint			X					32.65										Stage 5
US 34 WB	931+39.00	996+53.00	WB	Waterborne/Solvent Paint		X					65.14											Stage 5
				Factored Total: Waterborne/Solvent Paint				-	98.64	-	29.96	54.70	54.70	62.66	62.66	-	-	-	-	-	-	-	
				Factored Total: Wet Retroreflective Removable Tape				-	-	-	-	-	-	64.70	43.34	-	-	-	-	-	-	-	
				Factored Total: Removal of Paint				-	98.64	-	29.96	54.70	54.70	12.74	6.98	-	-	-	-	-	-	-	
				Factored Total: Removal of Removable Tape				-	-	-	-	-	-	64.70	43.34	-	-	-	-	-	-	-	
				Bid Quantity: Painted Pavement Markings, Waterborne or Solvent-Based							363.32												
				Bid Quantity: Wet Retroreflective Removable Tape Markings							108.04												
				Bid Quantity: Pavement Markings Removed							257.72												
				Incidental Removal of Removable Tape							108.04												

PAVEMENT MARKING SYMBOLS AND LEGENDS

Refer to PM-111

Road Identification	Location Station	Side	STAW	RTAW	LTAW	CSRW	CSLW	CSTW	CRLW	FERW	LLRW	RLRW	RRCW	BLSW	WCSW	WPSB	SCHOOL SCLW	XING XNGW	STOP STPW	AHEAD AHDW	ONLY ONLW	BIKE BIKW	LANE LANW	EXIT XITW	Groove Cuts EACH	Remarks
US 34 WB	989+11.00	Lt									1															Stage 1
US 34 WB	990+11.00	Lt									1															Stage 1
US 34 WB	999+11.00	Lt									1															Stage 1
US 34 WB	1000+11.00	Lt									1															Stage 1
US 34 WB	989+11.00	Rt										1														Stage 2
US 34 WB	990+11.00	Rt										1														Stage 2
US 34 WB	999+11.00	Rt										1														Stage 2
US 34 WB	1000+11.00	Rt										1														Stage 2
US 34 EB	882+03.00	Rt										1														Stage 3
US 34 EB	883+03.00	Rt										1														Stage 3
US 34 EB	892+00.00	Rt										1														Stage 3
US 34 EB	893+00.00	Rt										1														Stage 3
US 34 WB	999+32.00	Lt									1															Stage 3
US 34 WB	1000+32.00	Lt									1															Stage 3
US 34 WB	1009+31.00	Lt									1															Stage 3
US 34 WB	1010+31.00	Lt									1															Stage 3
	Subtotal:										8	8														
	Total:											16														

103-7
08-01-08

SHRINKAGE DATA

Material	%	Remarks
Class 10	30%	
TopSoil	40%	
Boulders		2 CY

103-10
04-18-17

TOPSOIL STRIPPING AND PLACEMENT

Location				Topsoil Stripping Thickness	Topsoil Placement Thickness	Remarks
Road Identification	Dir. of Traffic	Begin Station	End Station	IN	IN	
Detour Pavement 1		5922+30.00	5940+47.81	12.0	8.0	
East Median Crossover		965+68.00	978+83.00	12.0	8.0	
Entire Project		BOP	EOP	12.0	8.0	

GEOTECHNICAL DESIGN

LICENSED PROFESSIONAL ENGINEER
Mark A. Dell
21208
IOWA

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

Mark A Dell 1/6/20
Signature Date

Mark A. Dell
Printed or Typed Name

My license renewal date is December 31, 2019

Pages or sheets covered by this seal: CS.1

SURVEY SYMBOLS

- WC Wild Card (Misc. Field Shot)
- CP Control Point
- GHP – GH1D High Pres Gas Co 1 - Quality D
- TP TPD Telephone Pedestal
- T1 – TL1D Telephone Line Co. 1 - Quality D
- T2 – TL2D Telephone Line Co. 2 - Quality D
- PPA Power Pole Co. 1
- EP Edge of Paved Roads (ML or SR)
- GU Gutter In Front of Curb
- CU Back of Curb
- BL Topo Breakline
- C Centerline BL of Road (ML or SR)
- DU Centerline Draw or Stream (Up)
- SNP Unpaved Shoulder
- ENU Edge Unpaved Entrance & Parking
- ENT Centerline BL of Entrance
- RIP Rip-Rap
- FW Wire Fence
- OUT Tile Outlet
- TILE TIL Tile Line
- ENP Edge Paved Entrance & Park Lot
- D Centerline Draw or Stream (Down)
- BM Bench Mark
- POT Tangent Point
- TS Spiral Point
- SC Spiral Point
- CS Curve Point
- ST Spiral Point
- REF Reference Tie Point
- BBB Bottom of Bridge Beam
- BRG Bridge
- PRO Profile Shot
- TOP Top of Bridge Pier
- SP Stream Profile
- EG Edge of Gravel Road
- PIP Pipe Culvert
- SOP Size of Pipe or Culvert
- BCL Bridge Centerline
- BD Bridge Deck
- SBR Size of Bridge
- GR Ground Shot
- CON Concrete or A/C Slab
- FENO FENO Monument

UTILITY LEGEND

Sub-Surface Utility Mapping Quality Level is in accordance with CI/ASCE 38-02 Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data.

Remark Abbreviations
QLA Quality Level A Highest guideline quality level
QLD Quality Level D Lowest guideline quality level

Access Energy Cooperative
Mark Fulton
907 E. Washington Street
Mt Pleasant, IA 52641
319-385-1577

GHP – ANR Pipeline Company - Quality D
David Huebner
P.O. Box 9
2795 Locust Avenue
Birmingham, IA 52535
319-498-4200 ext 2252

T1 – Iowa Communications Network - Quality D
Mike Broderick
400 E 14th Street
Grimes State Office Bldg
Des Moines, IA 50139

T2 – TP Windstream Communications (Iowa Telecom) - Quality D
Kelly Eggers
101 West Madison Street
Mt. Pleasant, IA 52641
(319) 385-5004

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
SHADING	**Design Color No.**	
Yellow	(4)	Highlight for Critical Notes or Features
Red	(3)	Delineates Restricted Areas
Lavender	(9)	Temporary Pavement Shading
Gray, Light	(48)	Proposed Pavement Shading
Gray, Med	(80)	Proposed Granular Shading
Gray, Dark	(112)	Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)	Grading Shading
Tan	(8)	Proposed Sidewalk Shading
Blue, Light	(230)	Proposed Sidewalk Landing Shading
Pink	(11)	Proposed Sidewalk Ramp Shading

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

- Reference Point / Station — Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

RIGHT-OF-WAY LEGEND

- Proposed Right-of-Way
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary)
- Easement
- C/A Access Control
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES D & F)

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER D.1

11:02:42 AM 2/14/2020 8725 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\44034010 16\Design\CADD_Files\Sheet_Files\SHT_44034224_D01.dgn

SCS PI Sta 936+61.24
Δ = 33° 19' 22.78" (LT)
Theta = 1° 45' 24.96"
Ls = 301.84
Ts = 1,624.10
Es = 216.49
P = 0.77
K = 150.91
Xc = 301.81
Yc = 3.08
LT = 201.23
ST = 100.62
LC = 301.82

Curve Data
Δ = 29° 48' 32.85" (LT)
T = 1,309.96
L = 2,560.56
R = 4,921.62
E = 171.35

Tippecanoe TWP.
T-71N R-7W
SEC. 5

SIGN

Clayton Avenue

Construction Limits (Typ)

935 936 937 938 939 940 941

℄ US 34

FILE

Sta. 936+52.52 RT 70'(SUR)
24"X90' RCP
D.A.=Median

PI Sta 936+48.9

0 20
FEET

For Crossover Details
Refer to Sheet No. F.1

US 34

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER D.2

11:02:45 AM 2/14/2020 8725 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\44034010 16\Design\CADD_Files\Sheet_Files\SHT_44034224_D01.dgn

Tippecanoe TWP.
T-71N R-7W
SEC. 5

Clayton Avenue

SIGN
SIGN
SIGN

Construction
Limits (Typ)

941
942
943
944
945
946
947

℄ US 34

TILE
TILE
TILE

0 20
FEET

US 34

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER D.3

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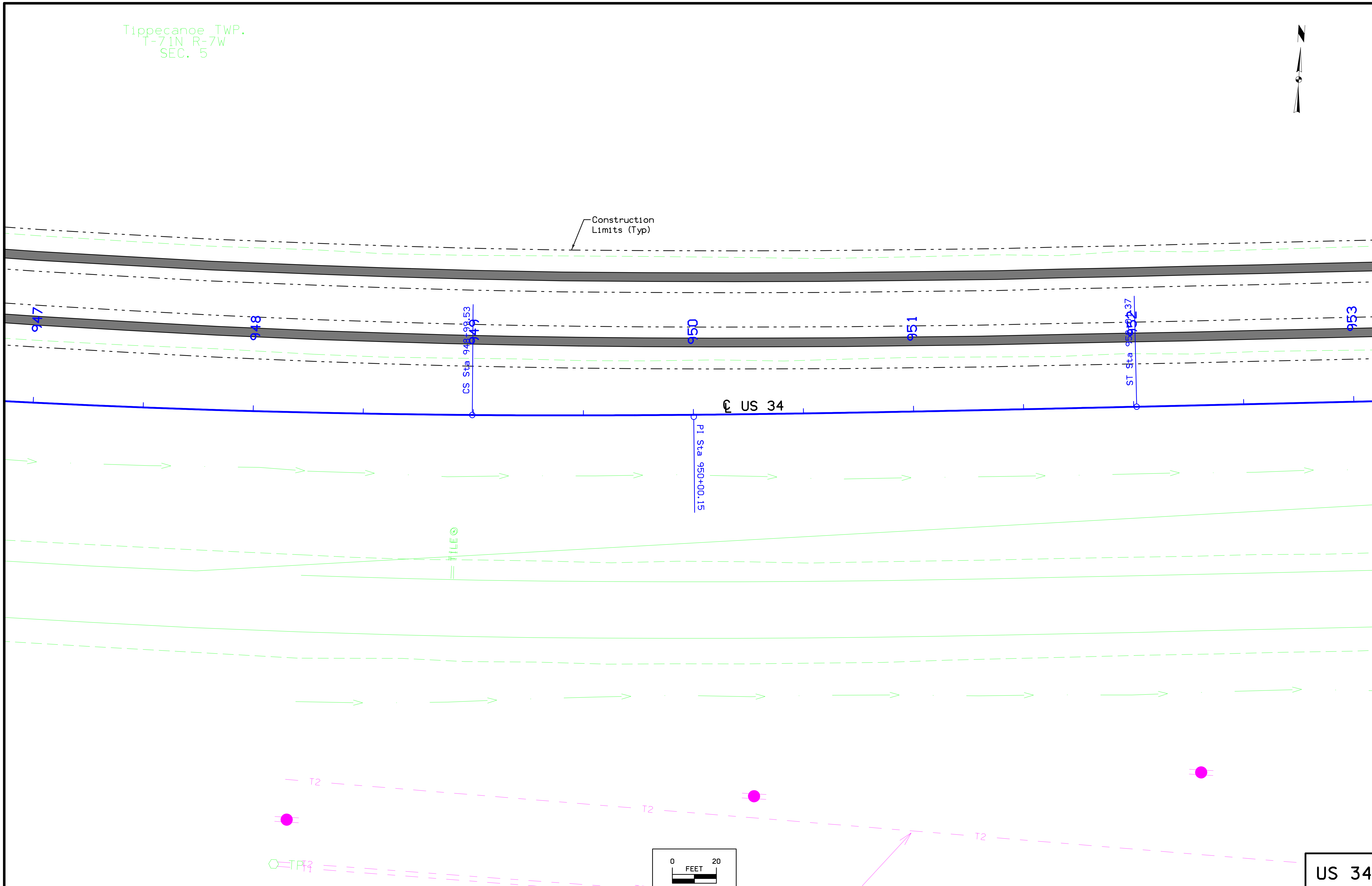

US 34

FILE NO. 31646 | ENGLISH | DESIGN TEAM Stanley Consultants Inc. | HENRY COUNTY | PROJECT NUMBER BRF-034-9(224)--38-44 | SHEET NUMBER D.4

Tippecanoe TWP.
T-71N R-7W
SEC. 5

Tippecanoe TWP.
T-71N R-7W
SEC. 4

Skunk River

Sta.954+06.06 LT 45°(SUR)
24"X72' RCP W/ 66' CMP EXT.
D.A.=Median

Sta. 956+03.58
Begin WB Bridge Approach

Install Temporary Guardrail.
At the End of the Project,
Remove and Deliver to Mt.
Pleasant Maintenance Shop.

953 954 955 956 957 958 959

℄ US 34

TILE

US 34 EB PGL

Sta. 956+46.75
Begin EB Bridge Approach

Clayton Avenue

Construction
Limits (Typ)

T2 TP

Sta.955+20.46 RT 169'(SUR)
24"X66' RCP W/ 33' CMP EXT.
D.A.=1.38 Ha-R (From Plans)

0 20
FEET

For Profile Details
Refer to Sheet No. D.6

US 34

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER D.5

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For Plan Details
Refer to Sheet No. D.5

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER D.6

11:02:55 AM 2/14/2020 8725 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\44034010 16\Design\CADD_Files\Sheet_Files\SHT_44034224_D01.dgn

Tippecanoe TWP.
T-71N R-7W
SEC. 4

Sta. 959+42 LT 46.17' (SUR)
BRG 2 524'X39' Prestressed Concrete Beam Bridge
Design No. 1100

Sta. 962+92.19 LT 46'(SUR)
24"X117' RCP
D.A.=Median

Sta. 962+78.93
End WB Bridge Approach

959 960 961 962 963 964 965

℄ US 34

Skunk River

US 34 EB PGL

Sta. 963+54.84
End EB Bridge Approach

Construction
Limits (Typ)

TILE

Sta. 959+97 RT 88.36' (SUR)
BRG 1 520'X28' Continuous I Beam Bridge
Design No. 1397

0 20
FEET

For Profile Details
Refer to Sheet No. D.8

US 34

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER D.7

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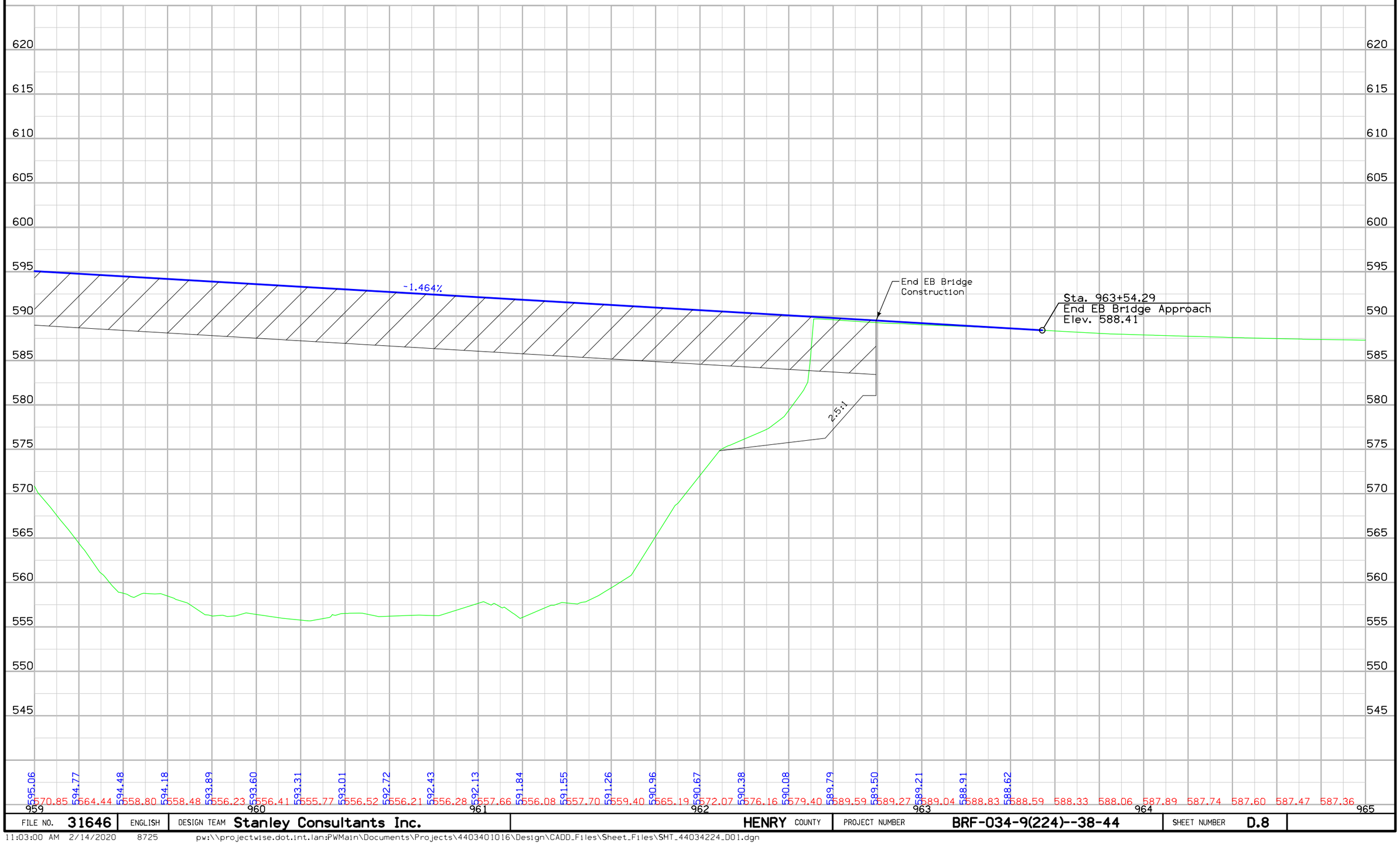
For Plan Details
Refer to Sheet No. D.7



FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER D.8

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Tippecanoe TWP.
T-71N R-7W
SEC. 4

N

Construction
Limits (Typ)

Sta. 970+46.62 LT 46'(SUR)
24"X70' RCP
D.A.=Median

965 966 967 968 969 970 971

℄ US 34

℄ TILE

24"X137' CMP

GHP

T2 T1

0 20
FEET

For Crossover Details
Refer to Sheet No. F.4

US 34

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER D.9

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DETOUR PAVEMENT 1
REMAINS AT 3.5%
CROSS-SLOPE
THROUGHOUT ENTIRE
DETOUR/CROSSOVER.

Curve Data
Δ = 20° 09' 04.20" (LT)
T = 621.91
L = 1,230.96
R = 3,500.00
E = 54.82
e = 3.5%
D.S. = 60mph
Superelevation Method 2

Tippecanoe TWP.
T-71N R-7W
SEC. 5

Curve Data
Δ = 2° 54' 11.93" (LT)
T = 124.94
L = 249.82
R = 4,930.10
E = 1.58

℄ US 34

POT Sta 5920+53.61

PC Sta 5922+30.00

Sta. 926+18 LT 76'(SUR)
24"X73' RCP
D.A.=Median

5925

5930

Sta. 5930+32, 8.0 Rt.
Install 18" Uncl. Ent.
Pipe Culvert

PT Sta 5934+60.96

5935

Construction
Limits (Typ)

5940

PC Sta 5940+47.81

Clayton Avenue

PT Sta 5942+97.63

RT Sta 5941+72.75

See Sheet F.2 for
Detour Connection 1A

PI Sta 5928+51.91

PC Sta. 5922+30.00
=ML Sta. 922+30.00
Begin Detour 1

POC Sta. 5926+85.08
Begin Full Width Pavement

Detour Pavement 1

POT Sta. 5936+28.65
End Full Width Pavement

Sta. 936+52.52 RT 70'(SUR)
24"X90' RCP
D.A.=Median

See Sheet F.3 for
Detour Connection 1B

PC Sta. 5940+47.81
=ML Sta. 940+48.59
End Detour 1

Tippecanoe TWP.
T-71N R-7W
SEC. 8

0 100 FEET

For Main Line Details
Refer to Sheet No. D.2

Detour Pavement 1

650 640 630 620 610 600 590 580

Sta. 5926+85.08
Begin Full Width Pavement
Elev. 616.77

-2.405%

-0.155%

VPI +50.000
Elv 612.80
Len 320.00 ft
K = 142
D.S. = 60mph

Sta. 5936+28.65
End Full Width Pavement
Elev. 611.59

Lt
Rt

No Ditch

Existing US 34 Median Ditch

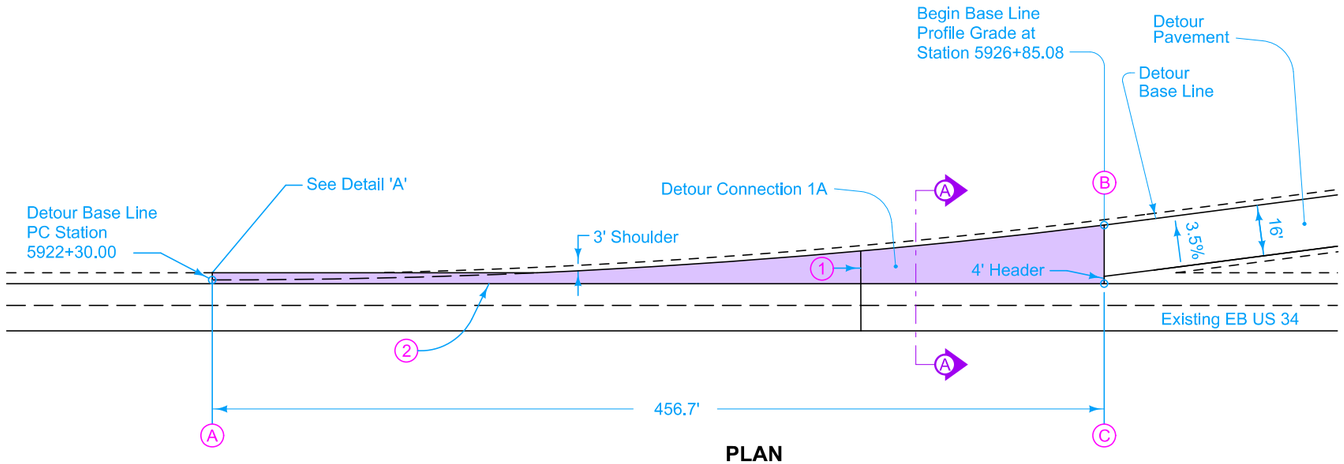
Existing US 34 Median Ditch

No Ditch

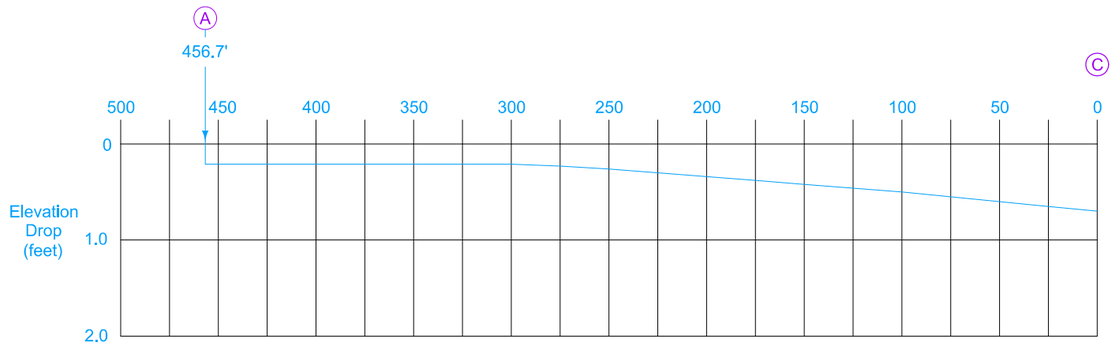
616.41 615.85 615.33 614.86 614.43 614.04 613.70 613.40 613.15 612.94 612.77 612.65 612.57 612.53 612.49 612.45 612.41 612.37 612.33 612.29 612.26 612.22 612.18 612.14 612.10 612.06 612.02 611.98 611.95 611.91 611.87 611.83 611.79 611.75 611.71 611.67 611.63 611.60

5925 5930 5935 5940

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER F.1



PLAN



NOTE: The algebraic difference between profile grade for Detour Base Line at (B) and relative profile grade of Existing U.S. 34 at (C) is 0.20%.

PROFILE

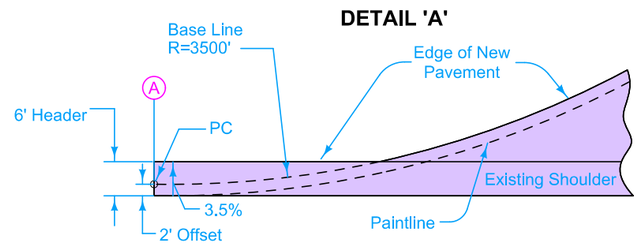
Construct detour connection pavement and subbase the same thickness as detour pavement and subbase.

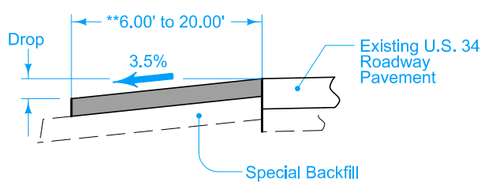
Detour connection pavement shown by shaded area is 510 square yards, which includes the 6' Header.

For joint details, see PV-101

(1) For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.

(2) 'KT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out.
'BT-3' joint if mainline pavement is existing.
'B' joint if Detour Pavement is HMA.





SECTION A-A

** Width includes Header.

TABLE OF OFFSETS AND DROPS FOR DETOUR PAVEMENT

DISTANCE (Ft.)	456.7	450	425	400	375	350	325	300	275	250	225	200	175	150	125	100	75	50	25	0
OFFSET (Ft.)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.64	7.54	8.56	9.66	10.74	11.91	13.09	14.41	15.69	17.02	18.44	20.00
DROP (Ft.)	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.23	0.26	0.30	0.34	0.38	0.42	0.46	0.50	0.55	0.60	0.65	0.70

NOTE: The elevations are established by a constant 3.5% slope across the appropriate detour widths based on a radius of 3,500.00'. Drop = (0.035) x (Offset).

MODIFIED
STANDARD ROAD PLAN

REVISION	
1	10-21-14

PV-418

SHEET 1 of 1

MODIFICATIONS: Changed radius to 3,500 ft for increased design speed.

ONE-LANE DETOUR CONNECTION 1A

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER F.2

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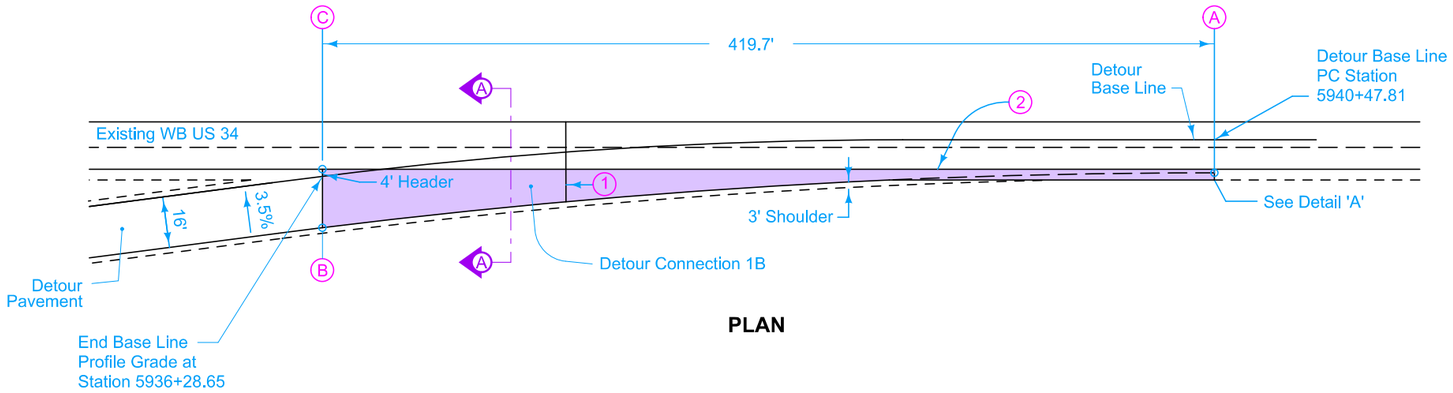
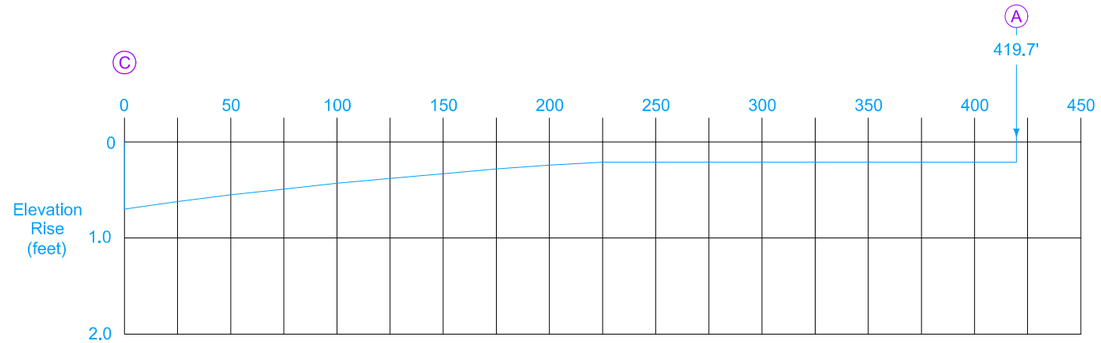


PLAN



NOTE: The algebraic difference between profile grade for Detour Base Line at (B) and relative profile grade of Existing U.S. 34 at (C) is 0.32%.

PROFILE

Construct detour connection pavement and subbase the same thickness as detour pavement and subbase.

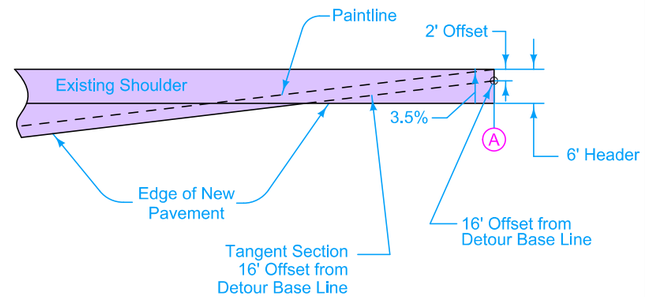
Detour connection pavement shown by shaded area is 430 square yards, which includes the 6' Header.

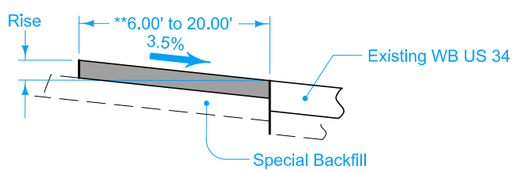
For joint details, see PV-101

(1) For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.

(2) 'KT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out.
'BT-3' joint if mainline pavement is existing.
'B' joint if Detour Pavement is HMA.

DETAIL 'A'





SECTION A-A

** Width includes Header.

TABLE OF OFFSETS AND RISE FOR DETOUR PAVEMENT																		
DISTANCE (Ft.)	0	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	419.7
OFFSET (Ft.)	20.00	17.84	15.81	13.93	12.40	10.88	9.43	8.11	6.88	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
RISE (Ft.)	0.70	0.62	0.55	0.49	0.43	0.38	0.33	0.28	0.24	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21

NOTE: The elevations are established by a constant 3.5% slope across the appropriate detour widths based on a tangent section. Rise = (0.035) x (Offset).

MODIFIED STANDARD ROAD PLAN

REVISION 1 10-21-14

PV-418

SHEET 1 of 1

MODIFICATIONS: Changed detour alignment for increased design speed and to match existing mainline superelevated curves.

ONE-LANE DETOUR CONNECTION 1B

Tippecanoe TWP.
T-71N R-7W
SEC. 4

Sta. 959+42 LT 46.17' (SUR)
BRG 2 524'X39' Prestressed Concrete Beam Bridge
Design No. 1100

955 960 965 970 975 980

Sta. 962+92.19 LT 46'(SUR)
24"X117' RCP
D.A.=Median

Sta. 970+46.62 LT 46'(SUR)
24"X70' RCP
D.A.=Median

US 34 POT Sta. 972+25.00, 21.3' Rt.
Median Crossover Location Station
Refer to PV-513 on Sheet U.1

Sta. 980+18.74
48"x306' RCP
D.A.=13.42 A-H (From Plan)

POT Sta 983+18.14

℄ US 34

Extend 24"
Median Pipe

Sta. 972+63, 27.6 Rt.
Install 18" Uncl. Ent.
Pipe Culvert

Construction
Limits (Typ)

24"X137' CMP

GHP

Clayton Avenue

APPROX. SEC. LINE

Sta. 959+97 RT 88.36' (SUR)
BRG 1 520'X28' Continuous I Beam Bridge
Design No. 1397

Tippecanoe TWP.
T-71N R-7W
SEC. 9

0 FEET 100

For Main Line Details
Refer to Sheet No. D.5-D.9

US 34 - East Median Crossover

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER F.4

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Survey Information

County: Henry
SAP 908.0
PIN: 16-44-034-010
Project Number: BRF-034-9(224)--38-44
Location: Skunk River 3.8 mi E of Co Rd W40 (EB)
Type of Work: Bridge-Unspecified
Project Directory: 4403401016
IaRCS Zone 14

General Information

Measurement units for this survey are US survey feet. Project datum and control information is provided by Design Survey Office. This project is a Partial DTM with Photo control. This survey is for a bridge project over the Skunk River, 3.8 miles East
of County Road W40 (EB).

Vertical Control

Vertical datum for this survey is NAVD88 (Computed using Geoid12A). Benchmarks were placed throughout the project using post processed static observations relative to IaRTN Base Network. A minimum of 6hrs of data was simultaneously collected on each of these primary control points.

X 124 is a NGS vertical control monument. It was checked only for vertical tolerance. The difference of 0.13 ft. is within acceptable tolerance.

Z124 RESET is a NGS vertical control monument. It was checked only for vertical tolerance. The difference of 0.03 ft. is within acceptable tolerance.

Horizontal Control

The project coordinate system for this survey is IaRCS Zone 14 (U.S. Survey Feet). This survey control is relative to IaRTN reference stations. IaRTN Reference Station coordinates are relative to the National Reference Station network datum: NAD83 (2011) for Epoch 2010.00.

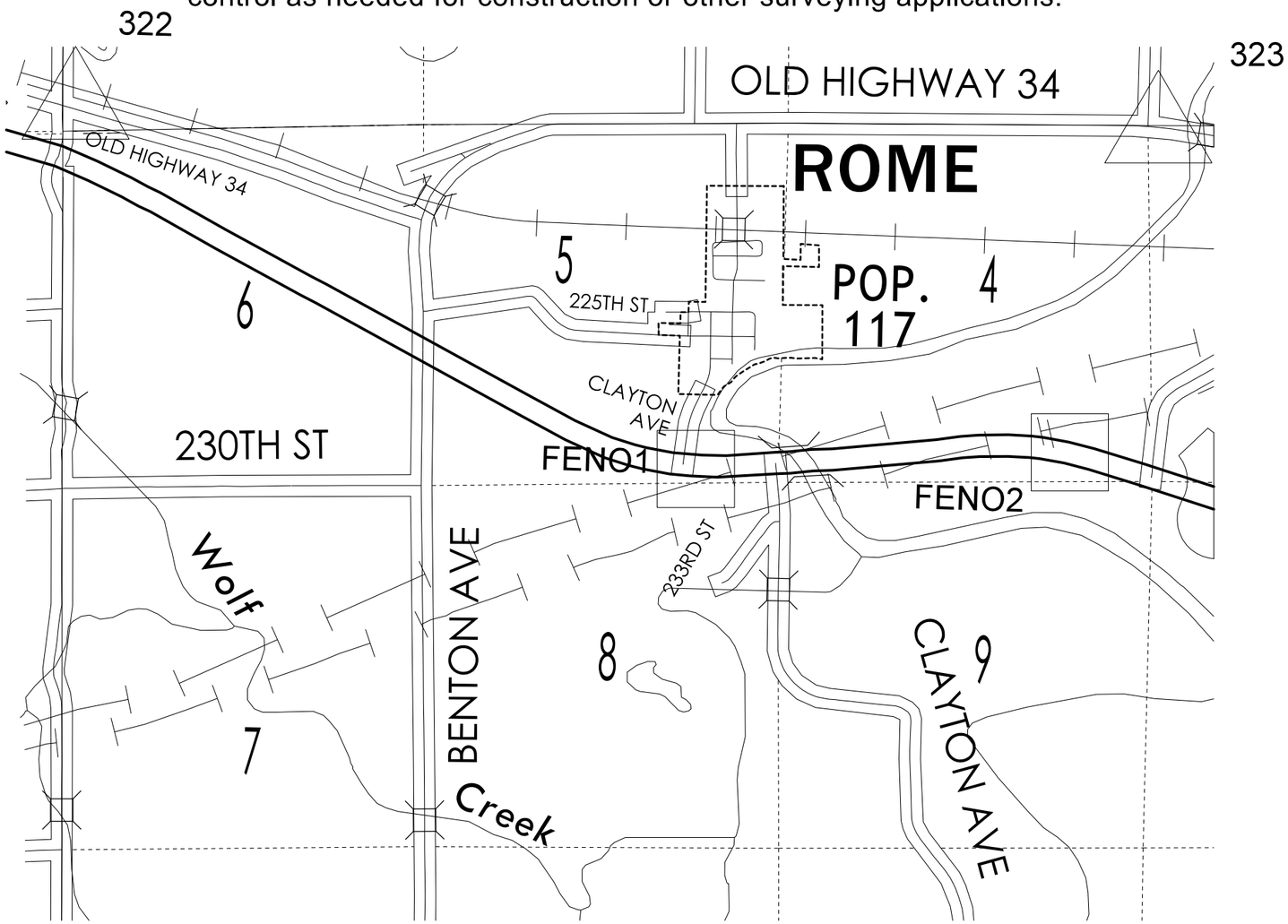
Henry County Control Pt. 322 is checked for vertical and horizontal tolerance. The horizontal difference is about 0.2 ft. and the vertical difference is about 0.1 ft.
Henry County Control Pt. 323 is checked for vertical and horizontal tolerance. The horizontal difference is about 0.1 ft. and the vertical difference is about 0.1 ft.
Note: The County mark system is using NAD83(96) datum so there is an expected difference in coordinates.

Alignment Information

The horizontal alignment for this survey is a retrace of As-built Plans No. NHSX-34-8(72)--3H-51 and best fit to existing monumentation. Survey stationing was equated to the plan POT at Sta 274+11.901 (metric), converted to Sta 899+34.06 (standard) and ran ahead without equation throughout the survey.

CONTROL POINT VICINITY MAP

This map is a guide to the vicinity of the primary project control points
Primary control is for use with RTK base stations and for RTN validation.
Future surveys will use primary project control to establish temporary control as needed for construction or other surveying applications.



HORIZ. DATUM: NAD83(2011) EPOCH 2013.00
VERT. DATUM: NAVD88
Ia. Regional Coordinate System Zone 14

Coordinate listing from next sheet will be used with IaRTN for monument recovery. No other reference ties are given.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2013.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 14

Point Name	Northing	Easting	Elevation	Feature Definition
FENO1	6464425.28	24379946.63	610.09	FENO MONUMENT STAMPED #1 53.5' EAST OF CENTERLINE MEDIAN CROSSOVER CLAYTON AVE 42' NORTH OF CENTERLINE HWY 34 EBL AND 94' SOUTH OF CENTERLINE HWY 34 WBL 4" BELOW THE SURFACE
FENO2	6464670.29	24385454.45	655.78	FENO MONUMENT STAMPED #2 26.5' WEST OF CENTERLINE MEDIAN CROSSOVER 42' NORTH OF CENTERLINE HWY 34 EBL AND 94' SOUTH OF CENTERLINE HWY 34 WBL 4' BELOW THE SURFACE
322	6469785.28	24370801.27	684.02	BM HENRY CO. MONUMENT 5/8" DIA DRIVEN ALUMINUM ROD WITH A 2-1/2" DIA ALUMINUM CAP AND PERMANENT MAGNET ENCASED IN A 5" DIA PVC PIPE WITH AN ALUMINUM ACCESS COVER
323	6469388.43	24386759.09	584.42	BM HENRY CO. MONUMENT 5/8" DIA DRIVEN ALUMINUM ROD WITH A 2-1/2" DIA ALUMINUM CAP AND PERMANENT MAGNET ENCASED IN A 5" DIA PVC PIPE WITH AN ALUMINUM ACCESS COVER

ALIGNMENT COORDINATES

Name	Location	Point on Tangent			Begin Spiral			Begin Curve			Simple Curve PI or Master PI of SCS			End Curve			End Spiral		
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
P1	US 34	846+00.00	6468686.97	24371391.16															
P2	US 34				920+37.14	6465115.91	24377914.85				922+38.37	6465019.28	24378091.36				923+38.97	6464973.70	24378181.07
P3	US 34							923+38.97	6464973.70	24378181.07	936+48.94	6464380.22	24379348.88	948+99.53	6464445.81	24380657.20			
P4	US 34				948+99.53	6464445.81	24380657.20				950+00.15	6464450.84	24380757.69				952+01.37	6464467.08	24380958.27
P5	US 34				981+88.94	6464708.06	24383936.10				985+22.32	6464734.96	24384268.40				986+88.94	6464739.16	24384435.07
P6	US 34							986+88.94	6464739.16	24384435.07	993+66.56	6464756.23	24385112.48	1000+34.08	6464573.05	24385764.87			
P7	US 34				1000+34.08	6464573.05	24385764.87				1001+00.75	6464555.03	24385829.06				1002+34.08	6464516.15	24385956.60
P8	US 34	1060+50.00	6462819.96	24391519.68															
P9	US 34 EB PGL	954+50.00	6464410.38	24381212.30															
P10	US 34 EB PGL	965+50.00	6464499.11	24382308.72															
P11	US 34 DET 1	5920+53.61	6465077.76	24377913.23															
P12	US 34 DET 1							5922+30.00	6464995.01	24378069.00	5928+51.91	6464703.24	24378618.22	5934+60.96	6464618.54	24379234.33			
P13	US 34 DET 1							5940+47.81	6464538.61	24379815.71	5941+72.75	6464521.60	24379939.48	5942+97.63	6464510.87	24380063.96			

SPIRAL OR CIRCULAR CURVE DATA

Name	Location	ΔSCS	Horizontal Alignment Data													Remarks
			Spiral Data								Curve Data					
			θS	Ls	Ts	Es	Xc	Yc	L.T.	S.T.	ΔC	T	L	R	E	
C1	US 34	33°19'22.8"	1°45'25.0"	301.84	1624.10	216.49	301.81	3.09	201.23	100.62	29°48'32.9"	1309.96	2560.56	4921.62	171.35	
C2	US 34	21°34'59.5"	3°10'59.2"	500.00	1102.87	82.39	499.85	9.26	333.39	166.72	17°07'36.7"	677.62	1345.14	4500.00	50.73	
C3	US 34 DET 1										20°09'04.2"	621.91	1230.97	3500.00	54.82	
C4	US 34 DET 1										2°54'11.9"	124.94	249.82	4930.10	1.58	

511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
US 34	WB	Henry	3.8 mi. E of Jct. SR W40	Skunk River	Barrier	Maint. 4426.7L034	Horizontal	N/A	15'-0"	N/A		Stg 1
US 34	WB	Henry	3.8 mi. E of Jct. SR W40	Skunk River	Barrier	Maint. 4426.7L034	Horizontal	N/A	14'-6"	N/A		Stg 2

TRAFFIC CONTROL PLAN

US 34
- Maintain US 34 two-lane, two-way traffic at all times utilizing median crossovers and Standard Road Plans as noted in the Staging Plan.

W. Clayton Avenue
- Maintain traffic to WB US 34 with right-in, right-out; maintain traffic to EB US 34 with U-turn at Benton Avenue.

E. Clayton Avenue
- Maintain traffic to EB US 34 with right-in, right-out; maintain traffic to WB US 34 with U-turn at Dakota Avenue.

Median Crossings
- Close median crossings as shown on Sheets J.3 - J.6 for duration of the project.

Private Entrances
- Maintain access to US 34 for the duration of the project.

**** No work shall be done from September 2nd, 2020 to September 7th, 2020 (Labor Day) due to Old Threshers Reunion ****

COORDINATED OPERATIONS

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

Project	Type of Work
None	

STAGING NOTES

Stage 1:
Construction:
 - Construct shoulder strengthening on north side of US 34 WB.
Traffic Control:
 - Shift US 34 WB traffic north and close inside lane per Standard Road Plan TC-421.
Construction:
 - Construct south half of US 34 WB bridge approaches, shoulders and guardrail on east and west sides of bridge.
 - Construct shoulder strengthening on south side of US 34 WB.

Stage 2:
Traffic Control:
 - Shift US 34 WB traffic south and close outside lane per Standard Road Plan TC-421.
Construction:
 - Construct north half of US 34 WB bridge approaches, shoulders and guardrail on east and west sides of bridge.
Traffic Control:
 - Remove traffic control and open all lanes of US 34 WB traffic.

Stage 3:
Traffic Control:
- Close median crossings as identified in the Traffic Control Plan.
- Close US 34 EB/WB inside lanes per Standard Road Plan TC-418.
Construction:
- Construct both crossovers in locations shown on F Sheets.
Traffic Control:
- Install traffic control as shown on Sheets J.3 - J.6.
- Install temporary lane separator devices in locations shown on Sheets J.3 - J.6.

Stage 4:
Construction:
- Construct new EB bridge and roadway approaches.

Stage 5:
Traffic Control:
- Remove traffic control.
- Close US 34 EB/WB inside lanes per Standard Road Plan TC-418.
Construction:
- Remove median crossovers and temporary guardrail located on the west side of the US 34 WB bridge.
Traffic Control:
- Remove traffic control and open all lanes to traffic.

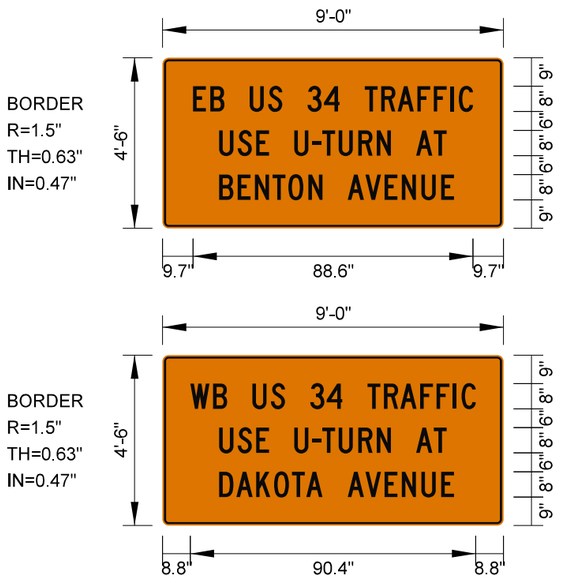
GENERAL NOTES AND DETAILS

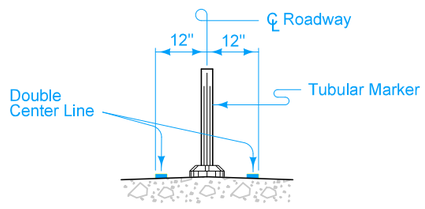
1. Refer to SI-881 for sign details.
2. Refer to PM-111 for arrow details.
3. Space Speed Limit signs at one-mile intervals.
4. Install an additional supplemental plaque with the message NEXT X MILES on the Two-Way Traffic symbol sign assembly on the right side of the roadway to inform motorists of the remaining length of two-lane traffic. Round X to the nearest whole-mile increment.
5. Temporary Crash Cushion. Refer to BA-500 for approved sand barrel layouts.
6. Use a 4 foot wide Type III Barricade.
7. For roadways with a posted speed limit of 60 mph or greater before road work:

   Place SPEED LIMIT AHEAD sign and SPEED LIMIT 55 sign prior to the lane closure as shown. Place SPEED LIMIT 65 or 70 beyond the work area as shown.

   Remove or cover all existing signs that conflict with 55 mph speed limit while 55 mph speed limit is in effect.

   Place Speed Feedback Sign at the end of the merge taper.
8. Add below R11-2 already included in Safety Closure.





PLACEMENT OF
DOUBLE YELLOW CENTERLINE

PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Magenta	(5)	Pavement Marking Call Outs
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Yellow	(4)	Pavement Markings, Yellow
Off White	(254)	Pavement Markings, White
Violet	(15)	Temporary barrier rail, Unpinned
Flush Orange	(228)	Temporary barrier rail, Pinned

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Proposed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Light	(236)	Proposed Grading Limits Shading
Pink, Dark	(13)	Proposed MSE or CIP Wall Shading
Red	(3)	Proposed Bridge Shading and Sign Trusses
Black w/Gray, Light Fill	(0,48)	Previously Constructed Structure

PLAN VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

●	Channelizing Device		Crash Cushion (Temp or Perm)
×	Drum		Traffic Signal
▣	Temporary Lane Separator		Flagger
◆	Tubular Marker		Temporary Floodlighting
♦	Single White Delineators		Traffic Sign
△	Concrete Barrier Marker		Type III Barricade
⟨	Delineator		Type A Warning Light
	Temporary Barrier Rail		Direction of Traffic
	Pavement Removal		Safety Closure (Refer to TC-252)
	Sand Barrel Layout		Crash Cushion
	Speed Feedback Sign		
	Arrow Board		

NOTE: Device spacing according to Standard Road Plans unless specifically dimensioned.

TRAFFIC CONTROL AND STAGING LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES J)

850
855
860
865
870
875
℄ US 34
800'
800'
800'
ROAD WORK AHEAD
W20-1
48" x 48"
SPEED LIMIT 55
W3-5
48" x 48"
0 100
FEET
SPEED LIMIT 55
R2-1
48" x 60"
RIGHT LANE CLOSED AHEAD
W20-5
48" x 48"
880
885
890
895
900
905
Benton Avenue
W4-2
48" x 48"
℄ US 34
U-TURN AT BENTON AVE
500'
100'
400'
500'
100'
400'
750'
350'
780'
MERGE
W4-2M
48" x 48"
BEGIN EB US 34 PAVEMENT MARKING REMOVAL LIMITS
0 100
FEET

Traffic Control - Stage 3

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER J.3

1:21:00 PM 2/13/2020 8725 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\44034010l6\Design\CADD_Files\Sheet_Files\SHT_44034224_J03.dgn

910
915
920
925
930
935
940
940
945
950
955
960
965

SPEED LIMIT 55
R2-1
48" x 60"

65' C/C

R3-2
36" x 36"

W1-4L
48" x 48"

℄ US 34

END ROAD WORK
G20-2A
48" x 24"

40' C/C

500'

500'

40' C/C

BEGIN WB US 34 PAVEMENT MARKING REMOVAL LIMITS

END EB US 34 PAVEMENT MARKING REMOVAL LIMITS

W1-6
48" x 24"

DO NOT PASS
R4-1
36" x 48"

0 FEET 100

EB US 34 TRAFFIC USE U-TURN AT BENTON AVENUE
SEE J.02 FOR DETAILS

DO NOT PASS
R4-1
36" x 48"

W. Clayton Avenue

R3-2
36" x 36"

SPEED LIMIT 55
R2-1
48" x 60"

600'

400'

W1-4R
48" x 48"

1000'

W6-3
48" x 48"

℄ US 34

TWO WAY TRAFFIC NEXT 1 MILES
G20-21
144" x 42"

E. Clayton Avenue

R3-2
36" x 36"

WB US 34 TRAFFIC USE U-TURN AT DAKOTA AVENUE
SEE J.02 FOR DETAILS

0 FEET 100

Traffic Control - Stage 3

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER J.4

3:40:01 PM 2/22/2020 8725 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\44034010l6\Design\CADD_Files\Sheet_Files\SHT_44034224_J03.dgn

DO NOT ENTER
R5-1
30" x 30"

W6-3
48" x 48"

970

500'

TWO WAY TRAFFIC
NEXT 1 MILES

975

G20-21
144" x 42"

500'

R3-2
36" x 36"

980

SPEED
LIMIT
55

R2-1
48" x 60"

985

700'

990

℄ US 34

995

R3-2
36" x 36"

1150'

65' C/C

500'

END WB US 34 PAVEMENT
MARKING REMOVAL LIMITS

40' C/C

END
ROAD WORK

G20-2A
48" x 24"

R3-2
36" x 36"

DO
NOT
PASS

Mount on back
of barricade;
back-to-back
with R4-7B sign.

R4-7B
36" x 48"

R4-1
36" x 48"

0 FEET 100

1000

W4-2
48" x 48"

1005

1010

Dakota Avenue

1000'

U-TURN AT DAKOTA AVE

1015

LEFT LANE
CLOSED
AHEAD

W20-5
48" x 48"

1020

800'

SPEED
LIMIT
55

R2-1
48" x 60"

1025

800'

℄ US 34

100'

500'

100'

500'

MERGE

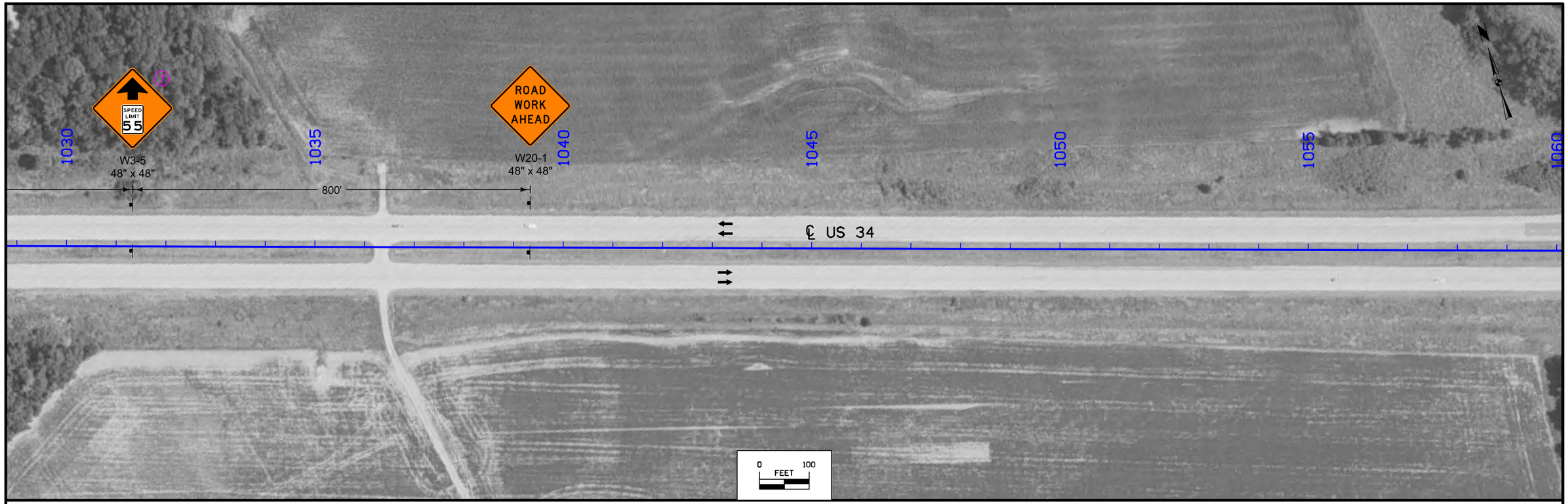
W4-2M
48" x 48"

0 FEET 100

Traffic Control - Stage 3

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER J.5

3:40:24 PM 2/22/2020 8725 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\44034010l6\Design\CADD_Files\Sheet_Files\SHT_44034224_J03.dgn



Traffic Control - Stage 3

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER J.6

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POLLUTION PREVENTION PLAN

This project is regulated by the requirements of the Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) General Permit No. 2 OR an Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) individual storm water permit. The Contractor shall carry out the terms and conditions of this permit and the Pollution Prevention Plan (PPP).

This Base PPP includes information on Roles and Responsibilities, Project Site Description, Controls, Maintenance Procedures, Inspection Requirements, Non-Storm Water Controls, Potential Sources of Off Right-of-Way Pollution, and Definitions. This plan references other documents rather than repeating the information contained in the documents. A copy of this Base Pollution Prevention Plan, amended as needed per plan revisions or by contract modification, will be readily available for review.

All contractors shall conduct their operations in a manner that controls pollutants, minimizes erosion, and prevents sediments from entering waters of the state and leaving the highway right-of-way. The prime contractor shall be responsible for compliance and implementation of the PPP for their entire contract. This responsibility shall be further shared with subcontractors whose work is a source of potential pollution as defined in this PPP.

I. ROLES AND RESPONSIBILITES

A. Designer:
1. Prepares Base PPP included in the project plan.
2. Prepares Notice of Intent (NOI) submitted to Iowa DNR.
3. Is signature authority on the Base PPP.

B. Contractor:
1. Signs a co-permittee certification statement adhering to the requirements of the NPDES permit and this PPP. All co-permittees are legally required under the Clean Water Act and the Iowa Administrative Code to ensure compliance with the terms and conditions of this PPP.
2. Designates a Water Pollution Control Manager (WPCM), who has the duties and responsibilities as defined in Section 2602 of the Standard Specifications.
3. Submits an Erosion Control Implementation Plan (ECIP) and ECIP updates according to Section 2602 of the Standard Specifications.
4. Installs and maintains appropriate controls. This work may be subcontracted.
5. Supervises and implements good housekeeping practices.
6. Conducts joint required inspections of the site with inspection staff. When Contractor is not mobilized on site, Contractor may delegate this responsibility to a trained or certified subcontractor. Contracting Authority also may waive joint inspection requirement during winter shutdown. In both circumstances, WPCM (or trained or certified delegate from the Contractor) is still responsible to review and sign inspection reports.
7. Complies with training and certification requirements of Section 2602 of the Standard Specifications.

C. Subcontractors:
1. Sign a co-permittee certification statement adhering to the requirements of the NPDES permit and this PPP if responsible for sediment or erosion controls or involved in land disturbing activities. All co-permittees are legally required under the Clean Water Act and the Iowa Administrative Code to ensure compliance with the terms and conditions of this PPP.
2. Implement good housekeeping practices.

D. RCE/Project Engineer:
1. Is Project Storm Water Manager.
2. On projects where DOT is the Contracting Authority, is current with erosion control training or certification.
3. Takes actions necessary to ensure compliance with storm water requirements including, where appropriate, issuing stop work orders, and directing additional inspections at construction project sites that are experiencing problems with achieving permit compliance.
4. Orders the taking of measures to cease, correct, prevent, or minimize the consequences of non-compliance with the storm water requirements of the Applicable Permit.
5. Supervises all work necessary to meet storm water requirements at the Project, including work performed by contractors and subcontractors.
6. Requires employees, contractors, and subcontractors to take appropriate responsive action to comply with storm water requirements, including requiring any such person to cease or correct a violation of storm water requirements, and to order or recommend such other actions as necessary to meet storm water requirements.
7. Is familiar with the Project PPP and storm water site map.
8. On projects where DOT is Contracting Authority, is responsible for periodically monitoring inspection reports to determine whether deficiencies identified in inspection reports were adequately and timely addressed, and if not, has the authority and responsibility to direct immediate actions to correct the deficiencies.
9. Is the point of contact for the Project for regulatory officials, Inspector, contractors, and subcontractors regarding storm water requirements.
10. Is signature authority on Notice of Discontinuation.

E. Inspector:
1. Updates PPP whenever there is a change in design, construction, operation, or maintenance which has a significant effect on the discharge of pollutants from the project.
2. Maintains an up-to-date record that identifies contractors and subcontractors as co-permittees.
3. Makes these plans available to the DNR upon their request.
4. Conducts joint required inspections of the site with the contractor/subcontractor.
5. Completes an inspection report after each inspection.
6. Is signature authority on storm water inspection reports.

II. PROJECT SITE DESCRIPTION

A. This Pollution Prevention Plan (PPP) is for the replacement of the US 34 EB bridge (Maintenance Number 4426.7R034) and maintenance of the US 34 WB bridge (Maintenance Number 4426.7L034) over the Skunk River.

B. This PPP covers approximately 40 acres with an estimated 7.1 acres being disturbed. The portion of the PPP covered by this contract has 7.1 acres disturbed.

C. The PPP is located in an area of one soil association Grundy - Haig - Arispe - Gara. The estimated weighted average runoff coefficient number for this PPP after completion will be 0.33.

D. Storm Water Site Map is located in the R sheets. Proposed slopes are shown in cross sections, details, or standard road plans. Supplemental information is located in the Tabulations in the C or RC sheets.

E. The base storm water site map is amended by contract modifications and progress payments (fieldbook entries) of completed erosion control work. Also, due to project phasing, erosion and sediment controls shown on project plans may not be installed until needed, based on site conditions. For example, silt fence ditch checks will typically not be installed until the ditch has been installed. Installed locations may also be modified from tabulation locations by field staff. Installed locations will be documented by fieldbook entries.

F. Runoff from this work will flow into the Skunk River.

110-12
04-21-20

POLLUTION PREVENTION PLAN

III. CONTROLS

A. The Contractor's ECIP specified in Article 2602.03 of the Standard Specifications for accomplishment of storm water controls should clearly describe the intended sequence of major activities, and for each activity define the control measure and the timing during the construction process that the measure will be implemented.

B. Preserve vegetation in areas not needed for construction.

C. Sections 2601 and 2602 of the Standard Specifications define requirements to implement erosion and sediment control measures. Actual quantities used and installed locations may vary from the Base PPP and amendment of the plan will be documented via fieldbook entries or by contract modification. Additional erosion and sediment control items may be required as determined by the inspector and/or contractor during storm water monitoring inspections. If the work involved is not applicable to any contract items, the work will be paid for according to Article 1109.03 paragraph B of the Standard Specifications.

1. EROSION AND SEDIMENT CONTROLS

a. Stabilization Practices
1) Site plans will ensure that existing vegetation or natural buffers are preserved where attainable and disturbed portions of the site will be stabilized.
2) Initialize stabilization of disturbed areas immediately after clearing, grading, excavating, or other earth disturbing activities have:
a) Permanently ceased on any portion of the site, or
b) Temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days.
3) Staged permanent and/or temporary stabilizing seeding and mulching shall be completed as the disturbed areas are completed. Incomplete areas shall be stabilized according to paragraph III, C, 1, a, 2, b above.
4) Permanent and Temporary Stabilization practices to be used for this project are located in the storm water site map (when included), Estimated Project Quantities (100-0A, 100-1A, or 100-1C), and Estimate Reference Information (100-4A) located in the C sheets. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation (105-4) in the C sheets.
5) Preservation of existing vegetation within right-of-way or easements will act as vegetative buffer strips.
6) Preservation of topsoil: Bid items to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located in the C sheets. Additional information may be found in the Tabulations in the C or T Tabulation sheets, or is referenced in Section 2105 of the Standard Specifications.

b. Structural Practices
1) Structural practices will be implemented to divert flows from exposed soils and detain or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Additionally, structural practices may include: silt basins that provide 3600 cubic feet of storage per acre drained or equivalent sediment controls, outlet structures that withdraw water from surface when discharging basins, and controls to direct storm water to vegetated areas.
2) Structural practices to be used for this project are located in the storm water site map (when included), Estimated Project Quantities (100-0A, 100-1A, or 100-1C), and Estimate Reference Information (100-4A) located in the C sheets, as well as all other item specific Tabulations. Typical drawings detailing construction of the devices to be used on this project can be found on the B sheets or are referenced in the Standard Road Plans Tabulation (105-4) located in the C sheets.

c. Storm Water Management
1) Measures shall be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. This may include velocity dissipation devices at discharge locations and along length of outfall channel as necessary to provide a non-erosion velocity flow from structure to water course. If included with this project, these items are located in the storm water site map (when included) and Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located in the C sheets, as well as all other item specific Tabulations. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation. The installation of these devices may be subject to Section 404 of the Clean Water Act.

2. OTHER CONTROLS

a. Contractor disposal of unused construction materials and construction material wastes shall comply with applicable state and local waste disposal, sanitary sewer, or septic system regulations. In the event of a conflict with other governmental laws, rules and regulations, the more restrictive laws, rules or regulations shall apply.
1) Vehicle Entrances and Exits - Construct and maintain entrances and exits to prevent tracking of sediments onto roadways.
2) Material Delivery, Storage and Use - Implement practices to prevent discharge of construction materials during delivery, storage, and use.
3) Stockpile Management - Install controls to reduce or eliminate pollution of storm water from stockpiles of soil and paving.
4) Waste Disposal - Do not discharge any materials, including building materials, into waters of the state, except as authorized by a Section 404 permit.
5) Spill Prevention and Control - Implement chemical spill and leak prevention and response procedures to contain and clean-up spills and prevent material discharges to the storm drain system and waters of the state.
6) Concrete Residuals and Washout Wastes - Waste shall not be discharged to a surface water and is not allowed to adversely affect a water of the state. Designate temporary concrete washout facilities for rinsing out concrete trucks. Provide directions to truck drivers where designated washout facilities are located. Designated washout areas should be located at least 50 feet away from storm drains, streams or other water bodies. Care should be taken to ensure these facilities do not overflow during storm events.
7) Concrete Grooving/Grinding Slurry – Do not discharge slurry to a waterbody or storm drain. Slurry may be applied on foreslopes or removed from the project.
8) Vehicle and Equipment Storage and Maintenance Areas - Perform on site fueling and maintenance in accordance with all environment laws such as proper storage of onsite fuels and proper disposal of used engine oil or other fluids on site. Employ washing practices that prevent contamination of surface and ground water from wash water. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge.
9) Litter Management - Ensure employees properly dispose of litter. Minimize exposure of trash if exposure to precipitation or storm water would result in a discharge of pollutants.
10) Dewatering – Properly treat water to remove suspended sediment before it re-enters a waterbody or discharges off-site. Measures are also to be taken to prevent scour erosion at dewatering discharge point.

3. APPROVED STATE OR LOCAL PLANS
During the course of this construction, it is possible that situations will arise where unknown materials will be encountered. When such situations are encountered, they will be handled according to all federal, state, and local regulations in effect at the time.

IV. MAINTENANCE PROCEDURES
The Contractor is required to maintain all temporary erosion and sediment control measures in proper working order, including cleaning, repairing, or replacing them throughout the contract period. This shall begin when the features have lost 50% of their capacity.

POLLUTION PREVENTION PLAN

V. INSPECTION REQUIREMENTS
- A. Inspections shall be made jointly by the Contractor and the Contracting Authority at least once every seven calendar days. Storm water monitoring inspections will include:
  1. Date of the inspection.
  2. Summary of the scope of the inspection.
  3. Name and qualifications of the personnel making the inspection.
  5. Review of erosion and sediment control measures within disturbed areas for the effectiveness in preventing impacts to receiving waters.
  6. Major observations related to the implementation of the PPP.
  7. Identification of corrective actions required to maintain or modify erosion and sediment control measures.
- B. Include storm water monitoring inspection reports in the Amended PPP. Incorporate any additional erosion and sediment control measures determined as a result of the inspection. Immediately begin corrective actions on all deficiencies found within 3 calendar days of the inspection and complete within 7 calendar days following the inspection. If it is determined that making the corrections less than 72 hours after the inspection is impracticable, it should be documented why it is impracticable and indicate an estimated date by which the corrections will be made.

VI. NON-STORM WATER DISCHARGES

This includes subsurface drains (i.e. longitudinal and standard subdrains) and slope drains. The velocity of the discharge from these features may be controlled by the use of headwalls or blocks, Class A stone, erosion stone or other appropriate materials. This also includes uncontaminated groundwater from dewatering operations, which will be controlled as discussed in Section III of the PPP.

VII. POTENTIAL SOURCES OF OFF RIGHT-OF-WAY (ROW) POLLUTION

Silts, sediment, and other forms of pollution may be transported onto highway right-of-way (ROW) as a result of a storm event. Potential sources of pollution located outside highway ROW are beyond the control of this PPP. Pollution within highway ROW will be conveyed and controlled per this PPP.

VIII. DEFINITIONS
- A. Base PPP - Initial Pollution Prevention Plan.
- B. Amended PPP - May include Plan Revisions or Contract Modifications for new items, storm water monitoring inspection reports, and fieldbook entries made by the inspector.
- C. IDR - Inspector’s Daily Report – this contains the inspector’s daily diary and bid item postings.
- D. Controls - Methods, practices, or measures to minimize or prevent erosion, control sedimentation, control storm water, or minimize contaminants from other types of waste or materials. Also called Best Management Practices (BMPs).
- E. Signature Authority - Representative authorized to sign various storm water documents.

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Taylor Theulen
Signature

Taylor Theulen
Printed or Typed Name

Iowa DOT Jim Phillips
Signature

Jim Phillips
2/27/2020

100-34
10-17-17

STORMWATER DRAINAGE BASIN AND STORAGE

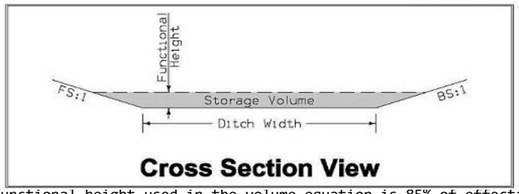
Refer to EC Standards and 570s Details.

Drainage Basin Location						Summary of Stormwater Storage						
Basin No.	Station to Station		Side	Discharge Point Station	Discharge Point Side	Total Disturbed Area	Disturbed Area with Storage Provided	Disturbed Area without Storage Provided	Best Management Practice	Total Storage Volume Provided	Total Storage Volume Required	Storage Volume Met?	Remarks
						Acres	Acres	Acres		CF	CF	Yes/No	
1	920+49.00	926+86.00	Rt	926+19.00	Lt	0.4	0.4	0.0	Silt Fence for Ditch Check (EC-201)	1554.2	1440.0	Yes	
2	926+86.00	940+90.00	Both	936+51.00	Rt	1.4	1.4	0.0	Silt Fence for Ditch Check (EC-201)	9911.9	5040.0	Yes	
3	936+19.00	939+98.00	Lt	940+61.00	Lt	0.2	0.0	0.2	Vegetated Buffer	0.0	0.0	N/A	
4	941+71.00	956+83.00	Lt	956+64.00	Lt	0.8	0.0	0.8	Vegetated Buffer	0.0	0.0	N/A	
5	942+33.00	950+97.00	Lt	946+29.00	Lt	0.4	0.0	0.4	Vegetated Buffer	0.0	0.0	N/A	
6	955+46.00	957+92.00	Both	957+60.00	Rt	0.2	0.0	0.2	Vegetated Buffer	0.0	0.0	N/A	
7	955+37.00	957+98.00	Rt	957+47.00	Rt	0.3	0.0	0.3	Vegetated Buffer	0.0	0.0	N/A	
8	961+69.00	963+64.00	Rt	961+94.00	Rt	0.3	0.0	0.3	Vegetated Buffer	0.0	0.0	N/A	
9	961+90.00	969+87.00	Both	962+35.00	Lt	1.0	1.0	0.0	Silt Fence for Ditch Check (EC-201)	3712.7	3600.0	Yes	
10	969+87.00	978+87.00	Both	970+46.00	Lt	0.9	0.9	0.0	Silt Fence for Ditch Check (EC-201)	3471.0	3240.0	Yes	
					Total:	5.9	3.7	2.2		18649.9	13320.0		

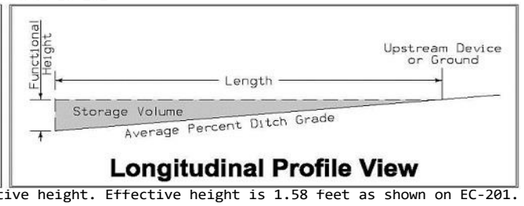
100-18
10-16-18

SILT FENCES FOR DITCH CHECKS

Possible Standard: EC-201



Cross Section View



Longitudinal Profile View

* The functional height used in the volume equation is 85% of effective height. Effective height is 1.58 feet as shown on EC-201.
* Volume equation: [0.5*Spacing*(0.5*H^2*FS+DW*H+0.5*H^2*BS)]

Basin No.	Type	Location Station	Location Side	Bid Items Installation	Bid Items Maintenance	Bid Items Removal	Stormwater Storage Volume Summary Foreslope	Backslope	Ditch Width	Avg.% Slope Ditch Grade	Volume*	Remarks
				LF	LF	LF	FS:1	BS:1	FT		CF	
1	1	925+00.00	Lt	40.0	4.0	40.0	10.0	10.0	2.0	3.0%	518.1	
1	1	925+50.00	Lt	40.0	4.0	40.0	10.0	10.0	2.0	3.0%	518.1	
1	1	926+00.00	Lt	40.0	4.0	40.0	10.0	10.0	2.0	3.0%	518.1	
2	1	936+38.00	Rt	40.0	4.0	40.0	10.0	10.0	10.0	0.1%	4956.0	
2	1	936+66.00	Rt	40.0	4.0	40.0	10.0	10.0	10.0	0.4%	4956.0	
9	1	963+30.00	Rt	40.0	4.0	40.0	10.0	10.0	5.0	3.0%	618.8	
9	1	963+80.00	Rt	40.0	4.0	40.0	10.0	10.0	5.0	3.0%	618.8	
9	1	964+30.00	Rt	40.0	4.0	40.0	10.0	10.0	5.0	3.0%	618.8	
9	1	964+80.00	Rt	40.0	4.0	40.0	10.0	10.0	5.0	3.0%	618.8	
9	1	965+30.00	Rt	40.0	4.0	40.0	10.0	10.0	5.0	3.0%	618.8	
9	1	965+80.00	Rt	40.0	4.0	40.0	10.0	10.0	5.0	3.0%	618.8	
10	1	975+10.00	Rt	40.0	4.0	40.0	10.0	10.0	2.0	1.7%	777.1	
10	1	975+85.00	Rt	40.0	4.0	40.0	10.0	10.0	2.0	2.1%	621.7	
10	1	976+45.00	Rt	40.0	4.0	40.0	10.0	10.0	2.0	2.6%	518.1	
10	1	976+95.00	Rt	40.0	4.0	40.0	10.0	10.0	2.0	2.7%	518.1	
10	1	977+45.00	Rt	40.0	4.0	40.0	10.0	10.0	2.0	3.0%	518.1	
10	1	977+95.00	Rt	40.0	4.0	40.0	10.0	10.0	2.0	3.0%	518.1	
		Total:		680.0	68.0	680.0						

100-17
04-20-10

TABULATION OF SILT FENCES

Refer to EC-201

Location Begin Station	Location End Station	Location Side	Length	Remarks
			LF	
--	--	Rt	240.0	Skunk River - W. Bank
--	--	Rt	240.0	Skunk River - E. Bank
	Total:		480.0	

100-10
10-21-14

FLOATING SILT CURTAINS

Refer to EC-202

Station	Hanging	Containment	Clean-out (Containment)	Maintenance of Floating Silt Curtain	Remarks
	LF	LF	LF	LF	
961+20.00	300.0			150.0	

100-19
04-19-16

PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE

Possible Standards: EC-204

Location Begin Station	Location End Station	Location Side	Length of Installation 9 inch Dia	12 inch Dia	20 inch Dia	Remarks
			LF	LF	LF	
936+15.00	940+00.00	Lt		385.0		
941+70.00	954+35.00	Lt		1265.0		
942+30.00	955+15.00	Lt		1285.0		
955+40.00	956+75.00	Lt		135.0		
961+70.00	969+30.00	Lt		760.0		
	Total:			3830.0		

LINE STYLE LEGEND OF EROSION CONTROL SHEETS

- Silt Fence
- Perimeter and Slope Sediment Control Device (9")
- Perimeter and Slope Sediment Control Device (12")
- Perimeter and Slope Sediment Control Device (20")
- Open-Throat Curb Intake Sediment Filter
- Concentrated Flow
- Sheet Flow

CELL LEGEND OF EROSION CONTROL SHEETS

- Temporary Sediment Control basin
- Erosion Control for Circular Intake or Manhole Well
- Erosion Control for Rectangular Intake or Manhole Well
- Grate Intake Sediment Filter Bag
- Silt Basin
- Silt Fence Tail
- Stormwater Drainage Basin Discharge Point

PLAN VIEW COLOR LEGEND OF EROSION CONTROL SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
Black	(0)	Permanent Erosion Control Features
Blaze Orange	(222)	Temporary Erosion Control Features

SHADING	Design Color No.		Transparency
Citron	(234)	Mulching, All Types	50%
Light Brown	(238)	Special Ditch Control, Wood Excelsior Mat	0%

PATTERN LEGEND OF EROSION CONTROL SHEETS

- Seeding and Fertilizing
- Seeding and Fertilizing (Rural) (R)
- Seeding and Fertilizing (Urban) (U)
- Native Grass Seeding (N)
- Salt Tolerant Seeding (ST)
- Wetland Grass Seeding (WL)
- Wildflower Seeding (WF)
- Sodding (SOD)
- Turf Reinforcement Mat Type 1
- Turf Reinforcement Mat Type 2
- Turf Reinforcement Mat Type 3
- Turf Reinforcement Mat Type 4
- Slope Protection, Wood Excelsior Mat
- Transition Mat
- Rock Features, Permanent
- Rock Features, Temporary

EROSION CONTROL LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES R)

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER RR.1	

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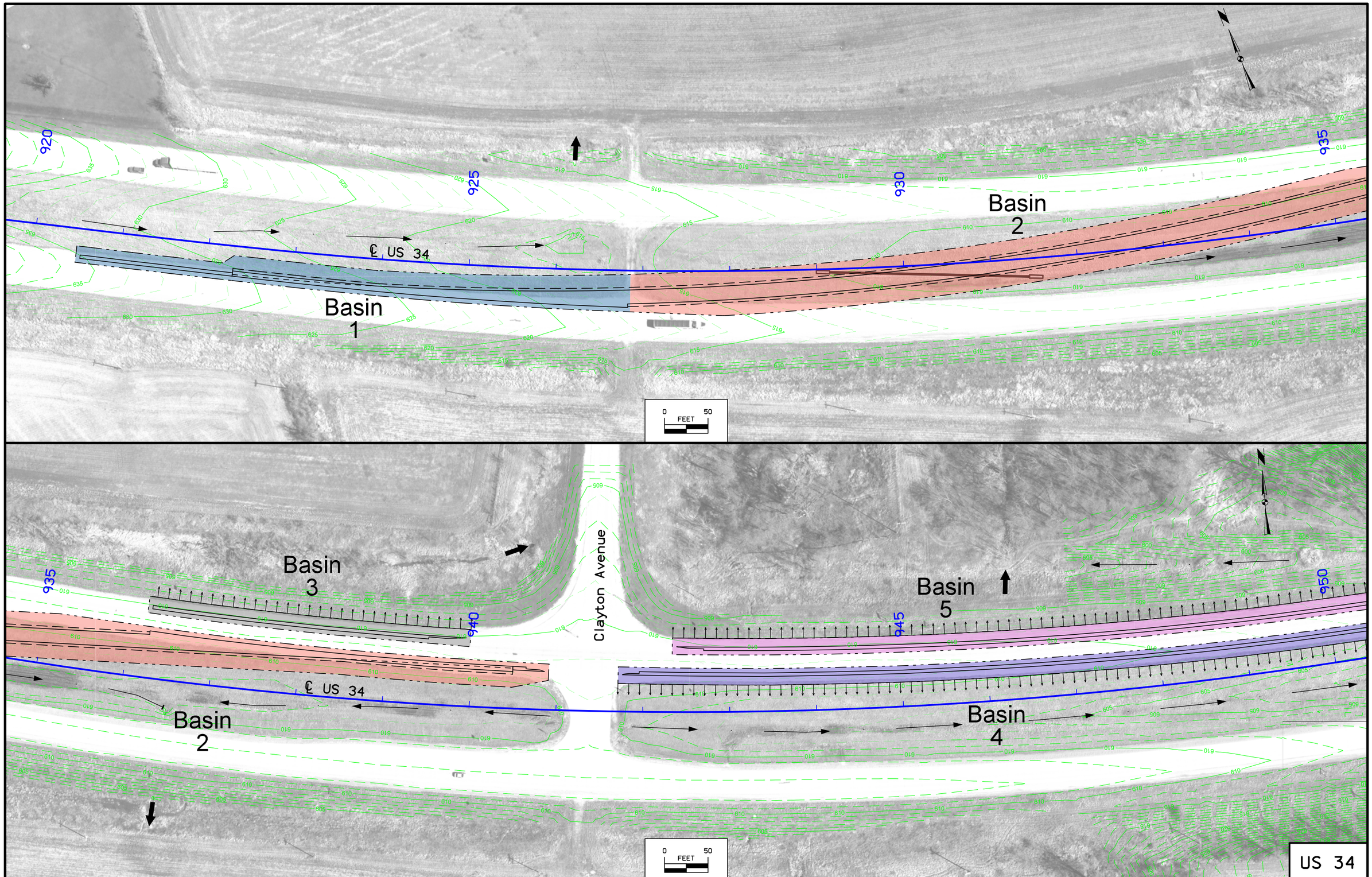

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Basin 4

Basin 4

Skunk River

950

955

960

965

℄ US 34

Basin 6

Basin 7

Basin 8

Basin 9

Clayton Avenue

0 FEET 50

Basin 9

Basin 9

970

975

980

℄ US 34

Basin 10

0 FEET 50

US 34

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER RR.3

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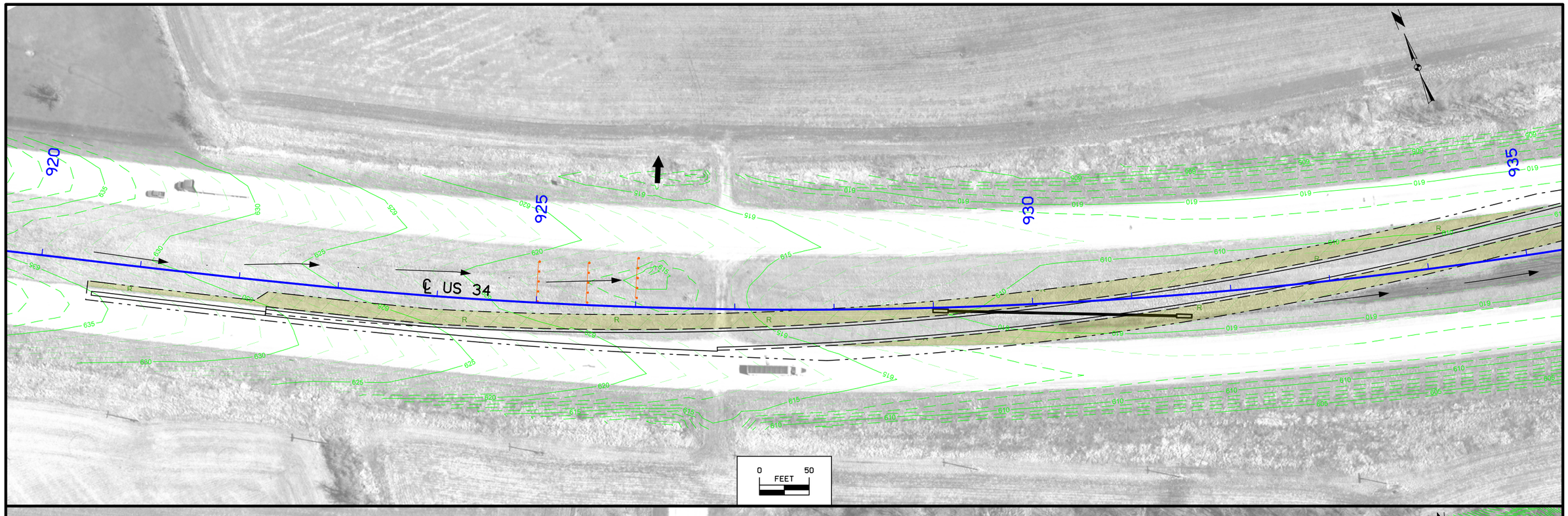

US 34

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Skunk River

Clayton Avenue

℄ US 34

950 955 960 965

965 970 975 980

0 50 FEET

0 50 FEET

US 34

FILE NO. 31646	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER BRF-034-9(224)--38-44	SHEET NUMBER RR.5

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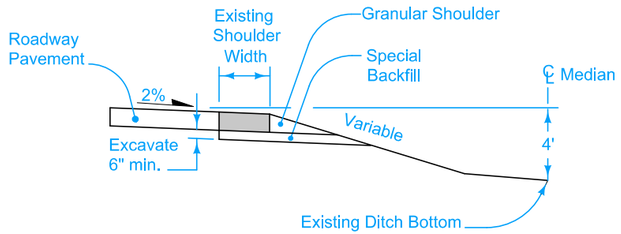
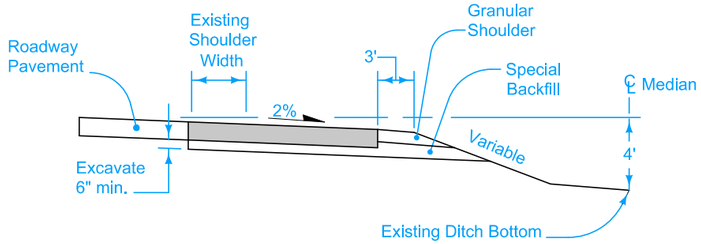
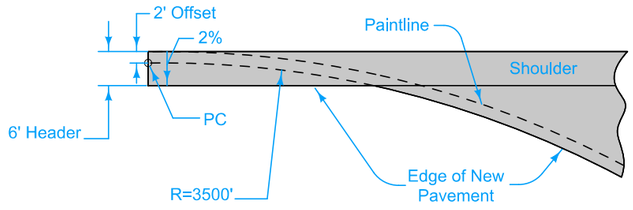


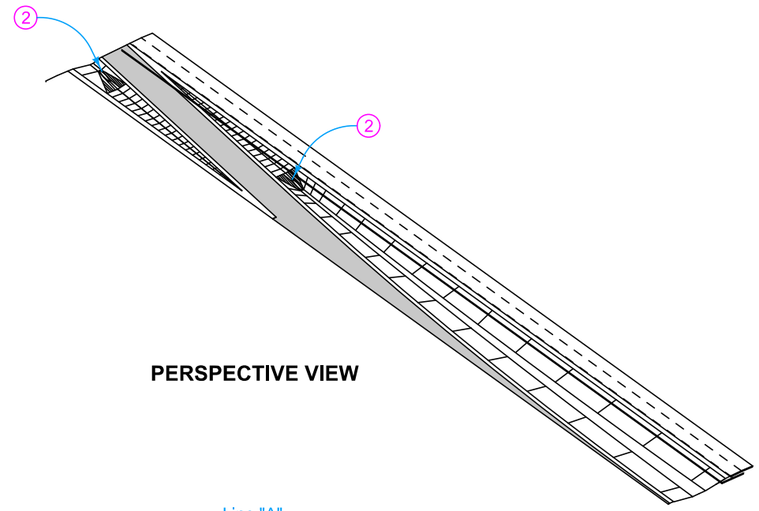
SECTION A-A



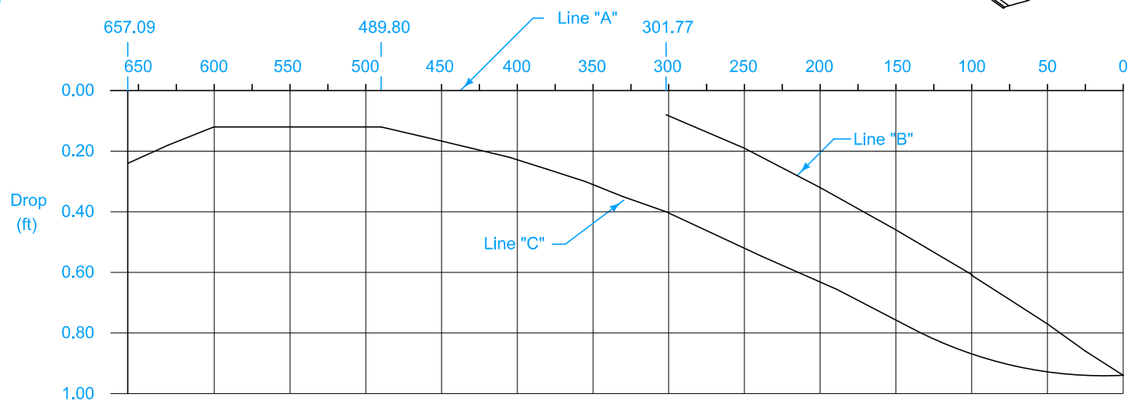
SECTION B-B



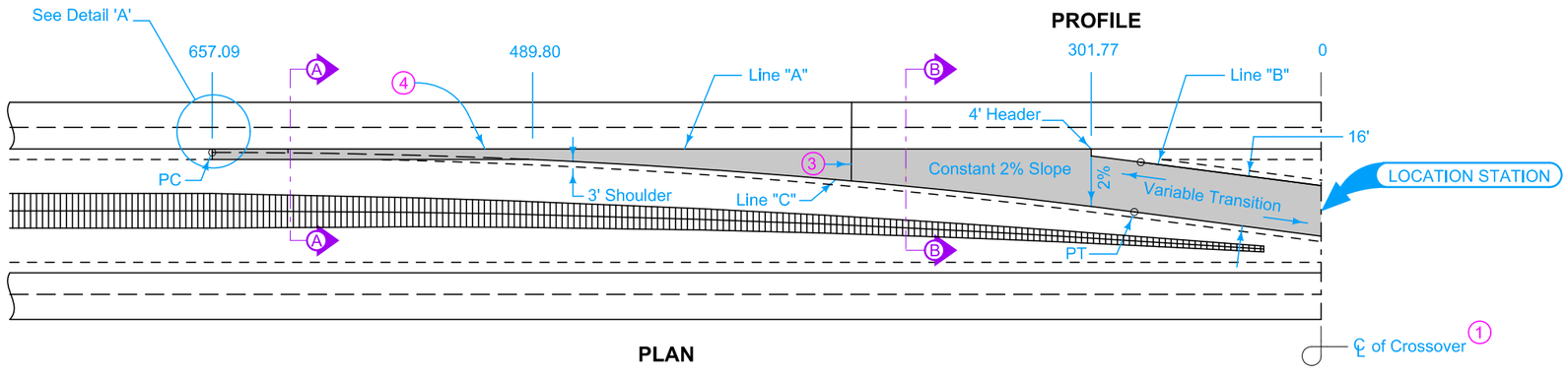
DETAIL 'A'



PERSPECTIVE VIEW



PROFILE



PLAN

TABLE OF OFFSETS AND DROPS

Distance (Feet)	626.81	600	575	550	500	489.80	450	425	400	375	350	325	301.77	250	200	150	100	75	50	25	0
Offset A to C (Feet)	6.00	6.00	6.00	6.00	6.00	6.00	8.13	9.70	11.46	13.39	15.50	17.79	20.08	25.76	31.98	38.93	46.62	50.72	54.85	59.98	63.11
Drop A to C (Feet)	0.24	0.18	0.13	0.12	0.12	0.12	0.16	0.19	0.23	0.27	0.31	0.36	0.40	0.52	0.63	0.76	0.87	0.90	0.93	0.94	0.94
Drop A to B (Feet)													0.08	0.19	0.32	0.46	0.61	0.69	0.77	0.86	0.94

Detour Pavement options: 9" PCC or 12" HMA

For joint details, see PV-101.

1. Median crossover is symmetrical about centerline.
2. Median pipe for crossover. See Detail 500-19.
3. For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
4. 'KT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out.
   'BT-3' joint if mainline pavement is existing.
   'B' joint if Detour Pavement is HMA.

DESIGN QUANTITY TABLE

Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
1820	1050	*420

*Quantity based on 9" shoulder depth.

Detour Pavement

Possible Contract Items:
- Detour Pavement
- Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Excavation, Class 13, Roadway and Borrow
- Granular Shoulder, Type A
- Removal of Pavement
- Special Backfill

Possible Tabulation:
- 112-8

MODIFIED

STANDARD ROAD PLAN

REVISION: New 04-15-14

PV-513

SHEET 1 of 1

MODIFICATIONS: Lengthened the tangent section between centerline of crossover and the PT to accommodate a 110' median.

MEDIAN CROSSOVER (110' MEDIAN) 16' WIDE 1 LANE

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