TOTAL SHEETS - 8

PROJECT NUMBER:BRS-C042(122)--60-42

BRS-C042(122)--60-42

LETTING DATE November 17, 2026

HARDIN COUNTY
BRIDGE REPLACEMENT - CCS

UTILITY CONTACTS		
UTILITY	CONTACT	PHONE #
TELEPHONE	HEART OF IOWA COMMUNICATIONS	641-486-2211
ELECTRIC	ALLIANT ENERGY - TERRY SHAFFAR	641-754-5829
ELECTRIC	MIDLAND POWER COOPERATIVE	1-800-833-8876
ELECTRIC	CENTURYLINK	1-800-283-4237

SECTION 404 PERMIT AND CONDITIONS 281-1 10-18-16

CONSTRUCT THIS PROJECT ACCORDING TO THE REQUIREMENTS OF U.S. ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NO. 14, PERMIT NO. CEMVR-RD-2025-0960. 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.

AN IOWA DNR FLOODPLAIN CONSTRUCTION PERMIT IS NOT REQUIRED FOR THIS PROJECT.

IOWA DEPARTMENT OF TRANSPORTATION

HIGHWAY DIVISION

PLANS OF PROPOSED IMPROVEMENT ON THE

FARM TO MARKET SYSTEM

HARDIN COUNTY

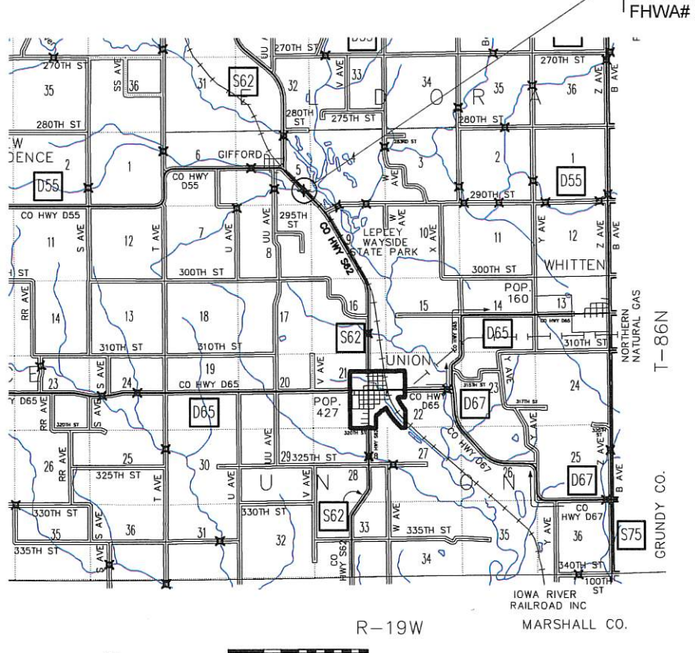
BRIDGE REPLACEMENT - CCS

On S62, OVER SMALL STREAM, FROM
D55 SOUTH 0.5 MILES, IN SE SECTION 5
T86N-R19W

REFER TO THE PROPOSAL FORM FOR LIST OF APPLICABLE SPECIFICATIONS.

PROJECT TRAFFIC CONTROL PLAN

THIS ROAD WILL BE CLOSED TO THROUGH TRAFFIC DURING CONSTRUCTION. LOCAL TRAFFIC TO ADJACENT PROPERTIES WILL BE MAINTAINED. ALL BARRICADES, SIGNS, AND SAFETY CLOSURES SHALL BE FURNISHED, PLACED, AND MAINTAINED BY THE CONTRACTOR. TRAFFIC WILL BE MAINTAINED ON A DETOUR ROUTE. HARDIN COUNTY WILL PROVIDE, MAINTAIN, AND REMOVE DETOUR ROUTE.
NO PEDESTRIAN FACILITIES ARE PRESENT WITHIN THE PROJECT LIMITS.
TRAFFIC CONTROL DEVICES, PROCEDURES, LAYOUTS, SIGNING, AND PAVEMENT MARKINGS INSTALLED WITHIN THE LIMITS OF THIS PROJECT SHALL CONFORM TO THE "MANUAL ON UNIFORM TAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AS ADOPTED BY THE DEPARTMENT PER 761 OF THE IOWA ADMINISTRATIVE CODE (IAC) CHAPTER 130.



2022 AADT 854 V.P.D.

INDEX OF SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
2	ESTIMATE OF QUANTITIES AND REFERENCE NOTES
3	SITUATION PLAN AND LONGITUDINAL SECTION
4	PLAN & PROFILE
5	SOUNDING DATA
6	SUPERSTRUCTURE DETAILS
7	TABULATIONS
8	TABULATIONS

MILEAGE SUMMARY

DIV.	LOCATION	LIN.FT.	MILES
	STA 162+55 - 165+05	250.00	0.047
	BRIDGE AT STA. 163+70	70.00	
	TOTAL PROJECT		0.076

IOWA ONE CALL
800 / 292-8989
TOLL FREE
CALL - BEFORE - YOU - DIG

DRAWING APPROVAL

ALL SHOP DRAWINGS AND FALSEWORK DRAWINGS THAT REQUIRE APPROVAL SHALL BE SUBMITTED TO AND SIGNED BY A LICENSED ENGINEER. THE APPROVED DRAWINGS SHALL THEN BE SUBMITTED TO HARDIN COUNTY ENGINEERS OFFICE, FOR REVIEW AND APPROVAL.

ADDRESS : 708 16TH ST.
ELDORA, IA 50627
TELEPHONE: 641.858.5058

SHOP DRAWINGS SHALL BE INDEPENDENT DRAWINGS WITH ADEQUATE DIMENSIONING FOR FABRICATION OF INDIVIDUAL PIECES OF EACH COMPONENT. PHOTOCOPIES OF PLAN DRAWINGS AND NON-CONTRACTOR APPROVED PLANS WILL BE REJECTED.

THESE DRAWINGS SHALL NOT BE SENT TO IOWA D.O.T. OFFICE OF BRIDGES AND STRUCTURES.

Lance Granzow — Chairperson

BJ Hoffman

Renee McClellan

Approved Board of Supervisors

LICENSED PROFESSIONAL ENGINEER — IOWA

TAYLOR CASEY ROLL 23210

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 8-12-26 Date

TAYLOR CASEY ROLL
Printed or Typed Name

My license renewal date is: December 31, 2027

Pages or sheets covered by this seal: Sheets 1 thru 8

ESTIMATED PROJECT QUANTITIES

Item No.	Item Code	Item	Unit	2 ABUTS	2 PIERS	SUPER	Total	As Built Qty.
1	2102-0850002	Clearing and Grubbing	Unit				47.1	
2	2102-2625000	Embankment in Place	C.Y.				692.3	
3	2102-2710070	Excavation, Class 10, roadway and Borrow	C.Y.				297.0	
4	2104-2710020	Excavation, Class 10, Channel	C.Y.				483.0	
5	2105-8425015	Topsoil, Strip, Salvage and Spread	C.Y.				172.8	
6	2115-0100000	Modified Subbase	C.Y.				50.0	
7	2121-7425020	Granular Shoulders, Type B	Ton				175.0	
8	2123-7450020	Shoulder Finishing, Earth	Sta				6.5	
9	2301-0690210	Bridge Approach, Two Lane	S.Y.				485.8	
10	2401-6745625	Removal of Existing Bridge	L.S.				1.0	
11	2402-2720000	Excavation, Class 20	C.Y.				101.1	
12	2403-0100010	Structural Concrete (Bridge)	C.Y.	23		131.9	154.9	
13	2404-7775005	Reinforcing Steel, Epoxy Coated	LBS.	3158		37723	40881.0	
14	2414-6424124	Concrete Open Railing, TL-4	L.F.				162.2	
15	2501-0201042	Piles, Steel, HP 10 x 42	L.F.	10 @ 40'	14 @ 50'		1100.0	
16	2501-5478042	Concrete Encasement of Steel H Piles, HP 10x42 (P10L Type 3)	L.F.		14 @ 20.0'		280.0	
17	2505-4008120	Removal of Steel Beam Guardrail	L.F.				260.0	
18	2505-4008300	Steel Beam Guardrail	L.F.				50.0	
19	2505-4008410	Steel Beam Guardrail Barrier Transition Section, BA-201	Each				4.0	
20	2505-4021010	Steel Beam Guardrail End Anchor, Bolted	Each				4.0	
21	2505-4021720	Steel Beam Guardrail Tangent End Terminal, BA-205	Each				4.0	
22	2507-3250005	Engineering Fabric	S.Y.				650.0	
23	2507-6800061	Revetment, Class E	Ton				514.0	
24	2510-6745850	Removal of Pavement	S.Y.				503.6	
25	2526-8285020	Construction Survey, Control Point Survey	L.S.				1.0	
26	2526-8285040	Construction Survey, Location Survey	L.S.				1.0	
27	2527-9263209	Painted Pavement Marking, Waterborne or Solvent-based	Sta				4.3	
28	2528-2518000	Safety Closure	Each				2.0	
29	2528-8445110	Traffic Control	L.S.				1.0	
30	2533-4980005	Mobilization	L.S.				1.0	

GENERAL NOTES

ACCESS SHALL BE MAINTAINED TO INDIVIDUAL PROPERTIES DURING CONSTRUCTION. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONSTRUCTION SURVEY. THE CONTRACTOR IS RESPONSIBLE FOR CONDUCTING AN INDEPENDENT CHECK OF ALL CONSTRUCTION STAKES PLACED FOR THE PROJECT. THIS INDEPENDENT CHECK SHALL BE SUFFICIENT TO UNDERSTAND THE PLACEMENT AND INTENT OF THE STAKES.

EROSION CONTROL, RURAL GRASS SEEDING, FERTILIZING, AND MULCHING SHALL BE DONE BY HARDIN COUNTY IRVM DEPARTMENT.

THE CONTRACTOR IS ENCOURAGED TO TAKE FULL ADVANTAGE OF SPECIFICATION 1105.14 - VALUE ENGINEERING INCENTIVE PROPOSAL.

COUNTY BRIDGE STANDARDS ARE AVAILABLE FROM THE IOWA DEPARTMENT OF TRANSPORTATION.

STANDARD ROAD PLAN EW-401 IS LISTED IN THE STANDARD ROAD PLAN TABULATION; HOWEVER, IT IS INCLUDED FOR INFORMATIONAL PURPOSES ONLY SINCE IT IS AN OPTION. NO QUANTITIES ASSOCIATED WITH CONSTRUCTION OF EW-401 ARE INCLUDED IN ANY BID ITEMS.

PILE NOTES

THIS PROJECT USES THE LOAD AND RESISTANCE FACTOR DESIGN (LRFD) METHODOLOGY FOR DETERMINING CONTRACT PILE LENGTH AND NOMINAL AXIAL BEARING RESISTANCE. NOMINAL AXIAL BEARING RESISTANCES WILL BE LARGER THAN BEARING VALUES IN THE PAST, BUT CONSTRUCTION CONTROL BLOW COUNTS WILL BE APPROXIMATELY THE SAME. A WEAP ANALYSIS AND BEARING GRAPH WILL BE PROVIDED BY THE COUNTY THAT GIVES THE RELATIONSHIP BETWEEN REQUIRED NOMINAL AXIAL BEARING RESISTANCE AND BLOW COUNT.
FOR THE CONTRACTOR'S BIDDING PURPOSES, PARTICULARLY FOR THE SIZING OF THE PILE DRIVING HAMMER, THE APPROXIMATE PREVIOUS DESIGN METHODOLOGY BEARING VALUES AT END OF DRIVE (EOD) ARE GIVEN BELOW. THESE VALUES SHALL NOT BE USED FOR CONSTRUCTION CONTROL AND ARE GIVEN ONLY FOR COMPARATIVE PURPOSES.

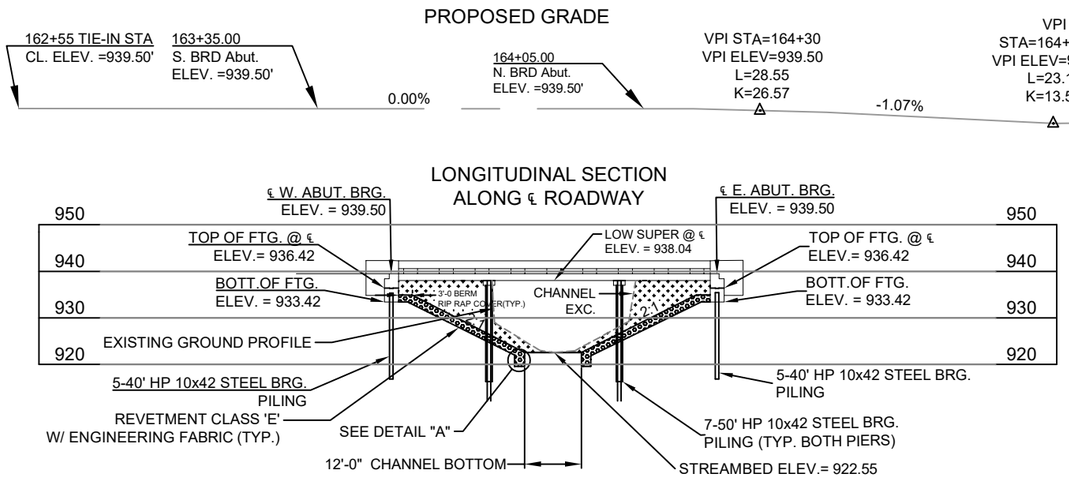
THE CONTRACT LENGTH OF 40 FEET FOR THE SOUTH ABUTMENT PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 75 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING.
THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION 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 THE FOOTING.
THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR THE SOUTH ABUTMENT PILES IS 56 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

THE CONTRACT LENGTH OF 40 FEET FOR THE NORTH ABUTMENT PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD OF PER PILE (PU) OF 75 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 COHESIVE 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 THE FOOTING.
THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR THE NORTH ABUTMENT PILES IS 56 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

THE CONTRACT LENGTH OF 50 FEET FOR THE BOTH PIER PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 90 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. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF ENCASEMENT.
THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR THE PIER PILES IS 66 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

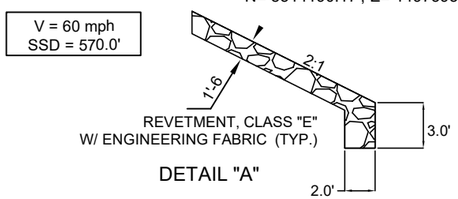
ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
1	2102-2625002	Quantity includes clearing and grubbing within the right-of-way and temporary construction easement limits. Quantity includes the removal of barbed wire fence. Includes trees less than 3" in diameter. Contractor shall burn or remove brush from the site.
2	2102-2625000	Quantity consists of the borrow to be placed for guardrail berms. Type A compaction is required. Contractor is to provide his own borrow for "Embankment-in-Place". The approach berms shall be built to the construction limits shown. Dressing of slopes outside the bridge area not disturbed by the Contractor will be paid for as extra work. The Contractor shall familiarize themselves with the provisions of the Iowa Law as it applies to removal and replacement of topsoil on borrow areas. No payment for overhaul shall be made on this project.
3	2102-2710070	Includes material for bridge approaches, abutment berms. Type "A" compaction will be required. Fill quantity includes an additional 35% for shrinkage. See tabulation on Sheet 7 for breakdown of excavation quantities.
4	2104-2710020	Includes the cost to clear the channel to the shape, depth, and extent for placement of revetment in the channel shown in the Situation Plan. Also includes the excavation of 2 channel islands near the birdge. Suitable channel excavation material shall be used to backfill the bridge and widen the guardrail berms. Backfill shall be compacted in accordance with Section 2107. Suitable soils shall be as defined by Article 2102.02, D, 2 of the Standard Specifications. Unsuitable or excess material shall become the property of the Contractor. Pay quantity shall be plan quantity except for obvious errors or omissions.
5	2105-8425015	The top 4 inches of the guardrail berms & rural driveway are to be salvaged & spread.
6	2115-0100000	This quantity covers up to the bottom limits of the bridge approach section modified subase pay limits.
7	2121-7425020	Granular shoulder material shall be placed at a thickness of 6 inches.
8	2123-7450020	Includes all work necessary to construct and shape shoulder areas.
9	2301-0690210	Reinforced section shall be done in two pours per lane. See BR-105 note 3 for details. The additional keyway needed shall be incidental to this bid item. See tabulation on sheet 7. Certified plant inspection is required.
10	2401-6745625	The existing bridge is a single span 44'x 30' Steel I-Beam bridge with concrete abutments and a concrete deck located at station 163+70. The lump sum bid for "Removal of Existing Bridge" shall include removal and disposal of the existing bridge as well as the concrete abutments. All salvageable material and unsalvageable material shall become 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' +/- below finished groundline and to the extent that it will not interfere with the new construction. Scrape samples of this bridge were taken to get an indication of the existence of and level of total chromium and total lead. The analysis of total chromium in the sample was 100 ppm. The analysis of total lead in the sample was 9.6 ppm. The analysis shows the existence of these two toxic constituents. The levels indicated by these tests could create conditions above regulatory limits for health safety requirements. Testing for asbestos was conducted on none was found. No other substances were analyzed. The bidder should not rely on the LPA's testing and analysis for any purpose other than an indication of the existence of these two constituents.
11	2402-2720000	Includes all labor, equipment, and incidentals required for the excavation relating to bridge abutment construction. The quantity shown is based on existing undisturbed conditions. Includes the cost on using suitable Class 20 Excavation to backfill the abutment and/or construct approach fills in accordance with Iowa DOT Road Standard EW-102. Cost for placing backfill material shall be included in the price bid for "Excavation, Class 20". Unsuitable or excess material shall become the property of the Contractor.
12	2403-0100010	All structural concrete for the bridge deck shall be class "C"; substitution of class "D" concrete is not allowed. Includes cost of furnishing and placing subdrain (including excavation) floodable backfill, porous backfill, subdrain outlet, and geotextile fabric at abutments. Water required for flooding will not be measured separately for payment. No additional payment will be allowed for heating and protection of concrete, if necessary. The deck shall be tined and sprayed with white pigmented curing compound immediately after finishing operations are completed and burlap placed within 30 minutes after the deck has been tined and sprayed. Water shall be applied to the burlap covering for a period of 4 calendar days. Includes the cost of tar paper, performed joint material, PVC pipe in wings and concrete sealer along edges of slab. Includes cost of furnishing and placing macadam stone, engineering fabric and timbers for wing protection as detailed on bridge standards.Certified plant inspection is required.
13	2404-7775005	All reinforcing steel shall be grade 60.
14	2414-6424124	Certified plant inspection is required. All structural concrete for the rail is to be Class C; substitution of Class D concrete is not allowed. No additional payment will be allowed for the heating and protection of concrete, if necessary.
15	2501-0201042	All piling shall be driven to full penetration if practical. See longitudinal section along CL roadway sheet 2 and piles notes. Includes 5 piles at each abutment and 7 piles at each pier. Bearing required equal to 56.0 tons on both abutments and 66 tons on both piers.
16	2501-5478042	The unit price bid for encasement shall be full payment for furnishing and placing material and, where necessary, excavation. Encasements shall extend down 20'-0" from the pier cap to an elevation below the scour depth. Any excavation necessary shall be considered incidental to the bid item. No additional payment will be allowed for the heating and protection of concrete, if necessary. Certified Plant inspection is required.
17	2505-4008120	All salvageable and unsalvageable material shall become the property of the contractor and shall be removed from the site by the contractor.
18	2505-4008120	See Tabulation 108-8A and Standard Road Plans.
19	2505-4008300	
20	2505-4021010	
21	2505-4021720	
22	2507-3250005	See Situation Plan for limits. Engineering fabric to be placed under all class E revetment and shall meet the requirements of Section 4196 of the Standard Specifications. If the engineering fabric is lapped, the laps shall be a minimum of two feet in length, shingle fashion with up slope piece on top.
23	2507-6800061	Revetment is to be placed at a thickness of approximately 1'-6". See Situation Plan for limits. The unit price for "Revetment, Class E" shall include the cost of labor, equipment, and material required to place Class E Revetment stone on channel banks. Amount of revetment needed was calculated at 110 pounds per cubic foot.
24	2510-6745850	See tabulation on sheet 8. Existing pavement is at an unknown thickness of HMA. Saw cuts are to be made at the station indicated or at the nearest transverse pavement joint, as directed by the engineer.
25	2526-8285020	The contractor is responsible for conducting an independent check of all construction stakes placed for the project. This independent check shall be sufficient to understand the placement and intent of the stakes.
26	2526-8285040	
27	25279263209	See tabulation on sheet 7. The location of "No Passing" zone lines shall be located in the field.
28	2528-2518000	See Tabulation 108-13A. Advanced warnings shall meet the requirements of Situation 1 (Rural) as portrayed on Standard Road Plan TC-252. The road will be close to traffic. See sheet 1 for traffic control plan.
29	2528-8445110	

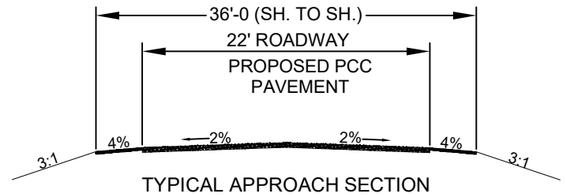


BM #1: PK NAIL @ STA. 160+92.24, 12.3' RT
N= 8513834.68', E= 14974259.37', ELEV.= 939.67'

BM #2: RR SPIKE (POWER POLE) @ STA. 165+04.46, 100.6' RT
N= 8514190.17', E= 14973953.15', ELEV.= 931.18'



DETAIL "A"



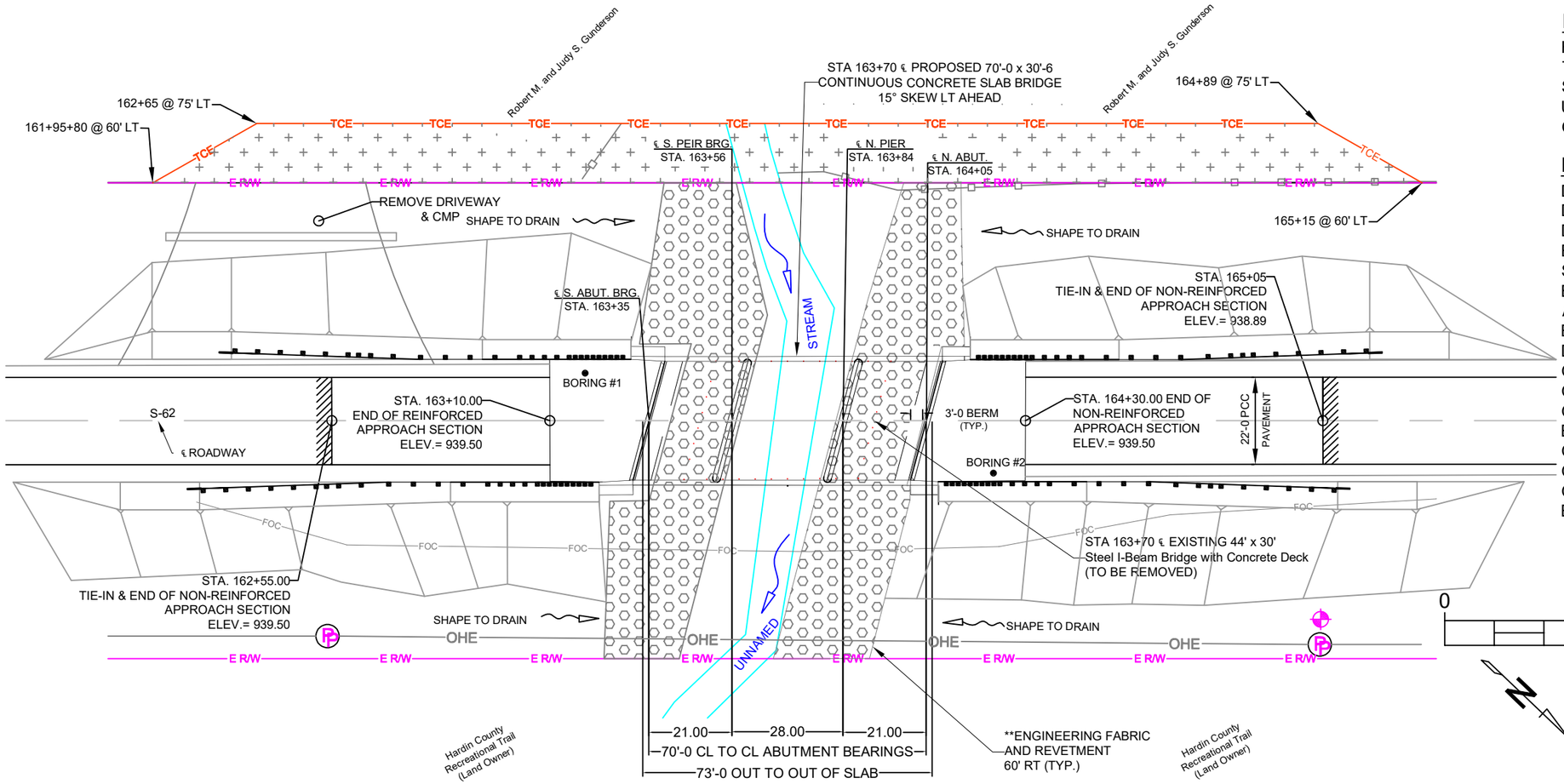
TYPICAL APPROACH SECTION

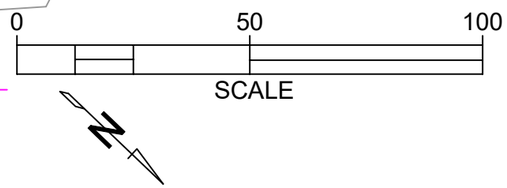
LOCATION

HARDIN COUNTY
T-86N, R-19W
SECTION 5
UNION TOWNSHIP
OVER UNNAMED CREEK

HYDRAULIC DATA

DRAINAGE AREA = 7.33 SQ. MI.
DESIGN DISCHARGE = 3,040 C.F.S
DESIGN HIGH WATER
ELEVATION = 937.36'
STREAM SLOPE = 0.003376 FT/FT
BRIDGE WATERWAY AREA = 660.62 SQ. FT.
ANTICIPATED Q50 SCOUR
ELEVATION = 922.55'
DESIGN VELOCITY= 4.60 FT./SEC.
Q10= 1,620 C.F.S
Q25=2,400 C.F.S.
Q50= 3,040 C.F.S., STAGE
ELEVATION = 934.10' (DESIGN)
Q100= 3,720 C.F.S.
Q200= 4,410 C.F.S.
Q500= 5,350C.F.S.
EX. H.W. ELEV= UNKNOWN





LEGEND

EX. ALIGNMENT

PROPOSED ALIGNMENT

V = 60 mph
SSD = 570.0'

Profile View of CL Alignment

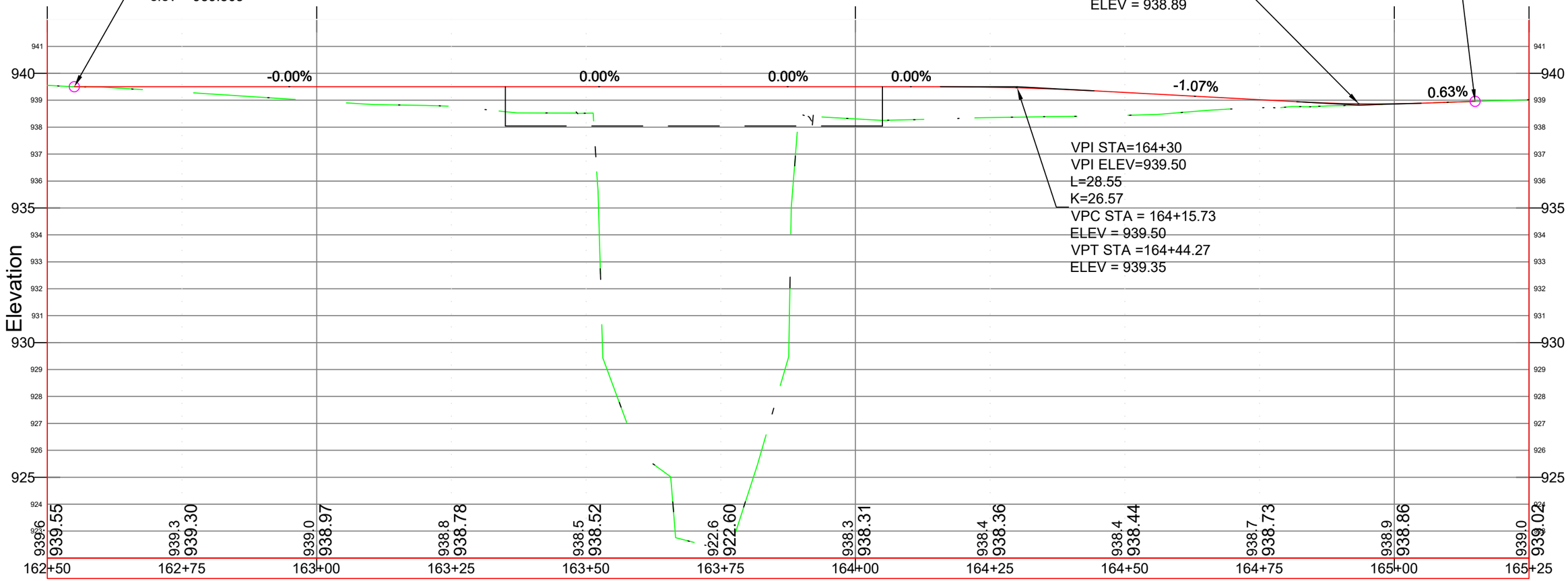
PV - (14)
Station=162+55.00
elev = 939.503

VPI STA=164+93.45
VPI ELEV=938.82
L=23.11
K=13.52
VPC STA = 164+81.89
ELEV = 938.94
VPT STA =165+05
ELEV = 938.89

PV - (14)
Station=165+15.00
elev = 938.955

VPI STA=164+30
VPI ELEV=939.50
L=28.55
K=26.57
VPC STA = 164+15.73
ELEV = 939.50
VPT STA =164+44.27
ELEV = 939.35

-0.00% 0.00% 0.00% 0.00% -1.07% 0.63%



70'-0 x 30'-6 CONTINUOUS CONCRETE SLAB BRIDGE

STA 163+70 15° SKEW (LT) AHEAD

HARDIN COUNTY IOWA

PROFILE VIEW

BORING LOG NO. 1

Page 1 of 1

PROJECT: Bridge 16075 Replacement

CLIENT: Hardin County Engineers Office
Eldora, Iowa

SITE: Co. Hwy S62, about 1/2 mile NW of 290th St
Union Township, Hardin County, Iowa

LOCATION South abutment; 29' S of abutment and 12' W of centerline
Latitude: 42.28397° Longitude: -93.081555°
Surface Elev.: 938.5 (Ft.)

DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS
0.5	938	**ASPHALTIC CEMENT CONCRETE**					
1.0	937.5	**FILL - SAND**, fine to coarse, brown					
		IDOT - STIFF SANDY CLAY FILL					
		FILL - SANDY LEAN CLAY, trace organics, dark brown and brown, moist					
			5			8	2-2-3 N=5
			10			8	3-3-4 N=7
11.0	927.5						
		IDOT - STIFF SANDY CLAY **LEAN TO FAT CLAY (CL/CH)**, with sand, gray, moist to wet	15			16	3-3-4 N=7 2000 (HP)
17.0	921.5						
		IDOT - STIFF SILTY CLAY **FAT CLAY (CH)**, trace sand and limestone gravel, red brown, wet	20			16	2-2-3 N=5 2000 (HP)
			25			17	3-3-3 N=6 4000 (HP)
			30			18	2-2-3 N=5 3500 (HP)
32.0	906.5			29.93			
		SANDSTONE*, uncemented, brown	35				50/4"
34.5	904						
		LIMESTONE*, highly weathered and broken, light brown					
36.5	902						
		Practical Auger Refusal at 36.5 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.
*Classification of rock materials has been estimated by the drill crew based on disturbed samples. Core samples and/or petrographic analysis may reveal other rock types.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with soil cuttings and bentonite chips upon completion.

Notes:

WATER LEVEL OBSERVATIONS
32' while drilling
14.5' after boring
Wet cave-in at 32.5'

Terracon
3105 Capital Way Ste 5
Cedar Falls, IA

Boring Started: 4/4/2016 | Boring Completed: 4/4/2016
Drill Rig: # 872 | Driller: WE
Project No.: 13165017.04 | Exhibit: A-5

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 13165017.04.GPJ TERRACON2015.GDT 4/11/16

BORING LOG NO. 2

Page 1 of 1

PROJECT: Bridge 16075 Replacement

CLIENT: Hardin County Engineers Office
Eldora, Iowa

SITE: Co. Hwy S62, about 1/2 mile NW of 290th St
Union Township, Hardin County, Iowa

LOCATION North abutment; 30' N of abutment and 12' E of centerline
Latitude: 42.284198° Longitude: -93.081748°
Surface Elev.: 938.0 (Ft.)

DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS
0.5	937.5	**ASPHALTIC CEMENT CONCRETE**					
1.0	937	**FILL - SAND**, fine to coarse, brown					
		IDOT - STIFF SANDY CLAY FILL					
		FILL - SANDY LEAN CLAY, trace organics, dark brown and brown, moist					
			5			9	1-2-2 N=4 500 (HP)
			10			9	1-3-2 N=5 500 (HP)
11.0	927						
		IDOT - STIFF SANDY CLAY **LEAN TO FAT CLAY (CL/CH)**, trace sand, dark brown, moist to wet	15			19	2-2-2 N=4 500 (HP)
18.0	920						
		IDOT - FIRM SILTY CLAY **FAT CLAY (CH)**, trace sand, dark brown, wet	20			14	3-8-7 N=15 2500 (HP)
23.0	915						
		IDOT - GRANULAR MATERIAL **SILTY SAND (SM)**, fine, gray and dark gray, wet	25			18	31-48-50/5"
26.0	912						
		IDOT - GRAVELY SAND **SILT (ML)**, trace organics, dark gray, wet	30			13	16-17-12 N=29
32.5	905.5						
		SANDSTONE*, uncemented, with limestone gravel, brown	35			10	2-6-7 N=13
38.2	900						
		Practical Bit Refusal at 38.2 Feet				0	50/0"

Stratification lines are approximate. In-situ, the transition may be gradual.
*Classification of rock materials has been estimated by the drill crew based on disturbed samples. Core samples and/or petrographic analysis may reveal other rock types.

Hammer Type: Automatic

Advancement Method:
Hollow stem auger to 19 feet then mud-rotary to boring termination

Abandonment Method:
Boring backfilled with soil cuttings and bentonite chips upon completion.

Notes:

WATER LEVEL OBSERVATIONS
None until mud-rotary
14' after boring

Terracon
3105 Capital Way Ste 5
Cedar Falls, IA

Boring Started: 4/4/2016 | Boring Completed: 4/4/2016
Drill Rig: # 872 | Driller: WE
Project No.: 13165017.04 | Exhibit: A-6

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 13165017.04.GPJ TERRACON2015.GDT 4/11/16

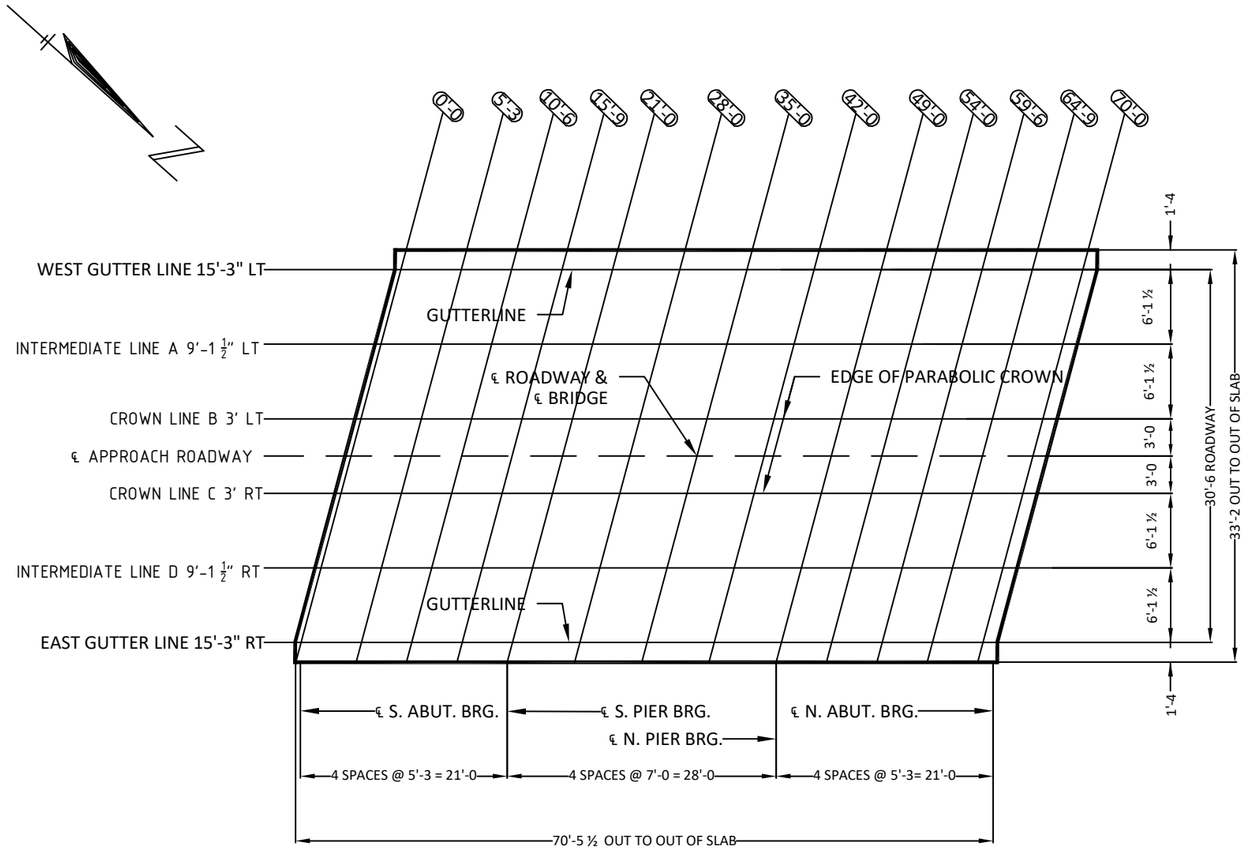
70'-0 x 30'-6 CONTINUOUS CONCRETE SLAB BRIDGE

INTEGRAL ABUTMENTS MONOLITHIC P10L PIERS
STA 163+70 15° SKEW LT AHEAD

HARDIN COUNTY IOWA

SOUNDING DATA

BENCH MARKS:
BM #1: PK NAIL @ STA. 160+92.24, 12.3' RT
N= 8513834.68', E= 14974259.37', ELEV.= 939.67'
BM #2: RR SPIKE (POWER POLE) @ STA. 165+04.46, 100.6' RT
N= 8514190.17', E= 14973953.15', ELEV.= 931.18'



TOP OF SLAB ELEVATIONS													
LOCATION	C.L. S. ABUT. BRG.				C.L. PIER #1				C.L. PIER #2				C.L. N. ABUT. BRG.
	0'-0	**5'-3**	**10'-6**	**15'-9**	**21'-0**	**28'-0**	**35'-0**	**42'-0**	**49'-0**	**54'-3**	**59'-6**	**64'-9**	**70'-0**
WEST GUTTER LINE	939.23	939.23	939.24	939.23	939.23	939.24	939.25	939.24	939.23	939.23	939.24	939.23	939.23
INTERMEDIATE LINE A	939.35	939.35	939.36	939.35	939.35	939.35	939.36	939.36	939.35	939.35	939.36	939.35	939.35
CROWN LINE B	939.47	939.47	939.48	939.47	939.47	939.48	939.49	939.48	939.47	939.47	939.48	939.47	939.47
C.L. APPROACH ROADWAY	939.50	939.51	939.51	939.51	939.50	939.51	939.52	939.51	939.50	939.51	939.51	939.51	939.50
CROWN LINE C	939.47	939.47	939.48	939.47	939.47	939.48	939.49	939.48	939.47	939.47	939.48	939.47	939.47
INTERMEDIATE LINE D	939.35	939.35	939.36	939.35	939.35	939.36	939.37	939.36	939.35	939.35	939.36	939.35	939.35
EAST GUTTER LINE	939.23	939.23	939.24	939.23	939.23	939.24	939.25	939.24	939.23	939.23	939.24	939.23	939.23

70'-0 x 30'-6 CONTINUOUS CONCRETE SLAB BRIDGE

STA 163+70 15 SKEW (LT) AHEAD

HARDIN COUNTY IOWA

SUPERSTRUCTURE DETAILS

(1) Lane(s) to which the installation is adjacent.

GRADING FOR GUARDRAIL INSTALLATIONS

Refer to EW-301.

107_23
8/15/22

Line No.	Direction of Traffic (1)	Station	Side	Foreslope at Guardrail	X1 (FT)	Y1 (FT)	X2 (FT)	Y2 (FT)	X3 (FT)	Y3 (FT)	X4 (FT)	Y4 (FT)	Z (FT)	Excavation Class 10 (CY)	Embankment-in-Place (CY)	Remarks
1.0	NB	1+63.35	Right		37.5	5.0					100.8	7.0	47.0		139.0	SE CORNER
2.0	SB	1+63.35	Right		37.5	5.0					100.8	7.0	47.0		95.8	SW CORNER
3.0	NB	1+64.05	Right		37.5	5.0					100.8	7.0	47.0		139.0	NE CORNER
4.0	SB	1+64.05	Right		37.5	5.0					100.8	7.0	47.0		139.0	NW CORNER

STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION

108_08A
4/25/25

(1) Lane(s) to which the obstacle is adjacent.
(2) Not a bid item. Incidental to guardrail installation. Possible Standards: BA-200, BA-201, BA-202, BA-205, BA-206, BA-209, 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.

Line No.	Direction of Travel (1)	Side	Station	Offset (FT)	Barrier Transition Section	Barrier Transition Section (EA)	End Terminal	End Terminal Count (EA)	VT1 (LF)	VF (LF)	VT2 (LF)	ET (LF)	BA-211 Station	BA-211 (Type)	SI-211 (Type) (2)	Delineator SI-172 Type 1 (EA) (2)	Object Marker Type 2 (EA) (2)	Object Marker Type 3 Lt (EA)(2)	Object Marker Type 3 Rt (EA)(2)	Bolted End Anchor BA-202 (Type)	Bolted End Anchor BA-202 (EA)	Post Adapter BA-210 (EA)	Steel Beam Guardrail BA-200 (LF)	Remarks
1.0	NB	Right	1+63.35	15.8	BA-201	1	BA-205	1	53.125			47.70			2		4		1	A			12.5	SE CORNER
2.0	SB	Right	1+63.35	15.8	BA-201	1	BA-205	1	53.125			47.70			2		4	1		A			12.5	SW CORNER
3.0	NB	Right	1+64.05	15.8	BA-201	1	BA-205	1	53.125			47.70			2		4	1		A			12.5	NE CORNER
4.0	SB	Right	1+64.05	15.8	BA-201	1	BA-205	1	53.125			47.70			2		4		1	A			12.5	NW CORNER

Road Standard Plans

Identification	Date	Sheets	Title
BA-200	10/20/26	5	Steel Beam Guardrail Components
BA-201	10/18/22	3	Steel Beam Guardrail Barrier Transistion Section (MASH TL-3)
BA-202	10/20/26	4	Steel Beam Guardrail Bolted End Anchor
BA-205	10/17/23	1	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-250	10/20/26	1	Steel Beam Guardrail Installation At Concrete Barrier Or Bridge Rail End Section (MASH TL-3)
BR-101	10/20/26	2	Bridge Approach Section (General Details)
BR-105	10/20/26	1	Bridge Approach Section (Two-Lane, HMA Pavement)
EW-301	10/20/26	4	Guardrail Grading
EW-401	10/20/15	1	Temporary Stream Crossing, Causeway or Equipment Pad
PM-110	10/15/24	4	Line Types
PV-101	10/20/26	8	Joints
SI-172	4/19/16	1	Delineators
SI-173	4/19/16	2	Object Markers
SI-211	10/18/22	3	Object Marker and Delineator Placement with Guardrail
TC-252	10/20/26	4	Routes Closed to Traffic

Bridge Standards

...n	Date	Title
	Sep-20	Index Sheet
...6	Sep-20	General Notes
...6	Sep-20	Superstructure Details 70'-0" Bridge (Epoxy Coated Reinforcing)
...6	Sep-20	Superstructure Details 70'-0" Bridge (Epoxy Coated Reinforcing)
	Sep-20	Superstructure Details All Bridges
	Sep-20	Superstructure Details All Bridges
	Sep-20	Monolithic Pier Cap Details All Bridges
	Sep-20	Monolithic Pier Cap Details All Bridges
	Sep-20	Abutment Details 15° Skew - Steel Piling
	Sep-20	Abutment Details Steel Piling
	Sep-20	Open Rail Details (TL-4)
	Sep-20	Open Rail Details (TL-4)
	Sep-20	Subdrain Details
	Sep-20	Wing Armoring Details
	Sep-20	Abutment Backfill Details (For 15° Skews)
	Jun-25	Concrete and Steel Piles (LRFD Trestle Pile Bents)

CLEARING AND GRUBBING

This Data Entry Sheet fills Tab 110-17 effective 04-18-17

Location: Station to Station or Ref. Loc. Sign to Ref. Loc. Sign or Description	Direction of Travel	Work and Material Type	Trees, Stumps, and Logs and Down Timber Material Diameters: 3"-6"	>6"-9"	>9"-12"	>12"-15"	>15"-18"	>18"-24"	>24"-30"	>30"-36"	>36"-42"	>42"-48"	>48"-60"	>60"-72"	>72"	Calculated Units	All Other Materials: Length FT	Width FT	Calculated Units	Estimated Quantities: Units	Area Acres	Herbicide Application Each	Remarks
N/A		Trees - Clearing and Grubbing																					
ROW		Brush - Clearing															100.0	45.0	0.8	36.0			Within TCE
N/A		Stumps - Grubbing																					
South Side of Bridge		Field Fence - Clearing															184.4		6.0	11.1			Within TCE
																			TOTALS:	47.1			

70'-0 x 30'-6 CONTINUOUS CONCRETE SLAB BRIDGE

STA 163+70 15 SKEW (LT) AHEAD

HARDIN COUNTY IOWA

TABULATIONS

BRIDGE APPROACH SECTION

* Not a bid item

Location				Approach Pavement					Standard Road Plans BR Series			Subdrain								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	* Modified Subbase	* Polymer Grid	* Special Backfill	
													STA	Side						
				Inches	FT	SY	SY	SY				LF			CY	CY	TON	SY	TON	
163+70	SOUTH	15		10	80	134.5	84		BR-105	Movable	HMA	52		Both	2		164.0	259		SOUTH APPROACH
163+70	NORTH	15		10	100	183.3	84		BR-105	Movable	HMA	52		Both	2		200.0	316		NORTH APPROACH

SUMMARY OF EARTHWORK QUANTITIES

EXCAVATION TYPE	RAW CUT CY	RAW FILL CY	WAST **CY	USABLE CUT CY	SHRINKAGE FACTOR	FILL + 35% SHRINKAGE CY	PAYMENT QUANITY CY
CLASS 10, ROADWAY AND BORROW	297			297	35%		297
CLASS 10, CHANNEL	483		483		35%		483
EXCAVATION, CLASS 20	101.1			101.1	0%		101.1

** ASSUME MATERIAL WILL BE UNSUITABLE AND WILL NEED TO BE WASTED ON SITE.

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5

* Not a Bid Item

This Data Entry Sheet fills Tab 110-1 effective 04-16-13

Begin Station	End Station	Side	Pavement Type	Length	Width	Area	Area	Saw Cut*	Remarks
				FT	FT	FT	SY	LF	
162+55.00	163+47.90	BOTH	HMA	92.9	22	2043.8	227.1	22.0	SOUTH END OF BRIDGE
163+91.88	165+05.00	BOTH	HMA	113.12	22	2488.64	276.5	22.0	NORTH END OF BRIDGE
						TOTAL	503.6	11.0	

REMOVAL OF STEEL BEAM GUARDRAIL

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

This Data Entry Sheet fills Tab 110-7A effective 04-17-12

Location					Removal of Guardrail (2)
No.	Direction of Traffic (1)	Station to Station		Side	LF
	SB	163+89.00	164+54.00	LT	65.0
	NB	163+89.00	164+54.00	RT	65.0
	SB	162+86.00	163+51.00	LT	65.0
	NB	162+86.00	163+51.00	RT	65.0

SAFETY CLOSURES

108-13A

10/04/23

Refer to Section 2518 of the Standard Specifications

Station	Road Closure Quantity	Hazard Closure Quantity	Remarks
Sta. 162+28	1	-	Per TC-252
Sta. 165+58	1	-	Per TC-252
D-55 Intersection	-	1	Per TC-252
190th St. Intersection	-	1	Per TC-252

70'-0 x 30'-6 CONTINUOUS CONCRETE SLAB BRIDGE

STA 163+70 15 SKEW (LT) AHEAD

HARDIN COUNTY IOWA

TABULATIONS