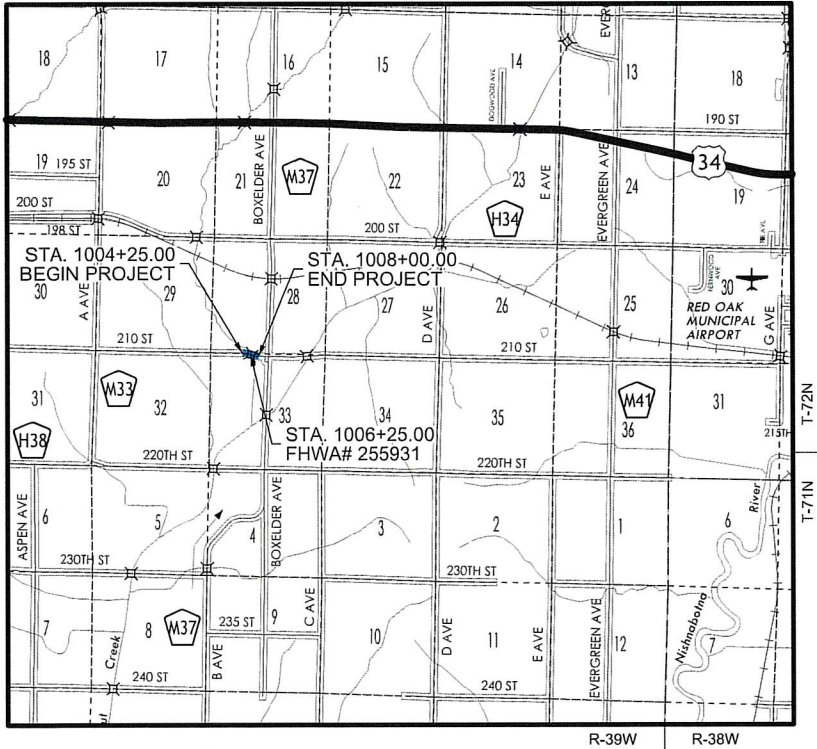


INDEX OF SHEETS	
NO.	DESCRIPTION
A.1	TITLE SHEET
A.2	GENERAL LEGEND
B.1	TYPICAL CROSS SECTIONS AND DETAILS
C.1	ESTIMATED PROJECT QUANTITIES
C.2	ESTIMATE REFERENCE INFORMATION
C.3 - C.4	TABULATIONS
C.5	GENERAL NOTES
D.1	210TH STREET PLAN & PROFILE
F.1	REMOVALS
G.1	REFERENCE TIES & BENCH MARKS
H.1	RIGHT-OF-WAY
J.1	TRAFFIC CONTROL NOTES
J.2	DETOUR ROUTE
Q.1 - Q.2	SOIL BORING LOGS
RC.1	EROSION CONTROL TABULATIONS
RR.1	EROSION AND SEDIMENT CONTROL PLAN
V.1 - V.22	BRIDGE SHEETS
W.1 - W.4	210TH STREET CROSS SECTIONS



LOCATION MAP
NOT TO SCALE



IOWA | DOT

SECONDARY ROAD SYSTEM MONTGOMERY COUNTY

BRIDGE REPLACEMENT - PPCB

On 210th ST, Over MINOR DRAINAGE, S33, T72, R39

SCALES: As Noted

REFER TO THE PROPOSAL FORM FOR LIST OF APPLICABLE SPECIFICATIONS

VALUE ENGINEERING SAVES. REFER TO ARTICLE 1105.13 OF THE SPECIFICATIONS.

FOR LIST OF UTILITY CONTACTS,
REFER TO SHEET A.2.

FOR LIST OF APPLICABLE
STANDARD ROAD PLANS, REFER
TO SHEET C.3.

MILEAGE SUMMARY

DIV.	LOCATION	LIN. FT.	MILES
1	210TH ST STA. 1004+25.00 TO STA. 1008+00.00 DEDUCT BRIDGE @ STA. 1006+25.00	375 150	0.07 0.03
TOTAL LENGTH OF ROADWAY		225	0.04
TOTAL LENGTH OF BRIDGE		150	0.03
TOTAL:		375	0.07

DESIGN DATA RURAL

2016	AADT	60	V.P.D.
20 --	AADT	--	V.P.D.
20 --	DHV	--	V.P.H.
TRUCKS		--	%
Total			
Design ESALs		--	

TOTAL	44
PROJECT IDENTIFICATION NUMBER	
IOWA DOT PROJECT NUMBER	
BROS-C069(84)--8J-69	

McCLURE
823 N Carroll St.
Carroll, IA 51401
main 712.220.8121
Ankeny, IA | Carroll, IA | Clive, IA
Cedar Rapids, IA | Coralville, IA
Fort Dodge, IA | Sioux City, IA
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IOWA DOT PROJECT NUMBER
BROS-C069(84)--8J-69

SECTION 404 PERMIT AND CONDITIONS

CONSTRUCT THIS PROJECT ACCORDING TO THE REQUIREMENTS OF U.S. ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT 14. THE U.S. ARMY CORPS OF ENGINEERS RESERVES THE RIGHT TO VISIT THE SITE WITHOUT PRIOR NOTICE.

MONTGOMERY COUNTY, IOWA

REVIEWED:

Karen Albert 7/28/26
KAREN ALBERT, COUNTY ENGINEER DATE

Charla Schmid 7/28/26
CHARLA SCHMID, SUPERVISOR, CHAIR DISTRICT 1 DATE

Mike Olsen 7/28/26
MIKE OLSEN, SUPERVISOR DISTRICT 2 DATE

Bryant Amos
BRYANT AMOS, SUPERVISOR, VICE-CHAIR DISTRICT 3 DATE

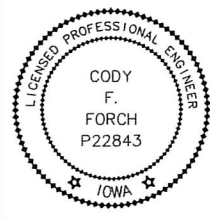
MARK PETERSON, DISTRICT 4 SUPERVISOR DISTRICT 4 DATE

Alex Burton 7/28/26
ALEX BURTON, SUPERVISOR DISTRICT 5 DATE

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	CODY F. FORCH, P.E.	PRIMARY SIGNATURE BLOCK
V.1	JONAH HEER, P.E.	STRUCTURAL SIGNATURE BLOCK
V.3	MEGAN LEHMAN, P.E.	HYDRAULIC SIGNATURE BLOCK

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.

Cody Forch 7/22/26
Signature: CODY F. FORCH, P.E. Date

Printed or Typed Name

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: ALL SHEETS EXCEPT V SHEETS

210TH STREET BRIDGE CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

TITLE SHEET

DRAWING NO.

A.1

GENERAL LEGEND

EXISTING	PROPOSED	
		SANITARY SEWER MAIN
		SANITARY SEWER SERVICE
		SANITARY SEWER FORCE MAIN
		STORM SEWER PIPE OR CULVERT
		SUBDRAIN/TILE
		WATER MAIN
		WATER SERVICE
		UNDERGROUND ELECTRIC
		OVERHEAD ELECTRIC
		UNDERGROUND TELEPHONE
		UNDERGROUND FIBER OPTIC
		UNDERGROUND CABLE TV
		GAS MAIN OR SERVICE
		CONTOUR MINOR
		CONTOUR MAJOR
		PROPERTY LINE / LOT LINE
		RIGHT OF WAY LINE
		SECTION LINE
		TEMPORARY EASEMENT
		PERMANENT EASEMENT
		GUARD RAIL
		FIELD FENCE
		ROAD CENTERLINE
		CONSTRUCTION LIMITS
		AG LINE
		WATERWAY FLOW LINE

UTILITY QUALITY SERVICE LEVELS

UTILITY QUALITY LEVELS ARE BASED ON THE CI/ASCE 38-02 STANDARD

UTILITY QUALITY LEVEL A:

PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES OBTAINED BY THE ACTUAL EXPOSURE (OR VERIFICATION OF PREVIOUSLY EXPOSED AND SURVEYED UTILITIES) AND SUBSEQUENT MEASUREMENT OF SUBSURFACE UTILITIES.

UTILITY QUALITY LEVEL B:

INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF SUBSURFACE UTILITIES.

UTILITY QUALITY LEVEL C:

INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGMENT IN CORRELATING THIS INFORMATION TO QUALITY LEVEL D INFORMATION.

UTILITY QUALITY LEVEL D:

INFORMATION DERIVED FROM EXISTING RECORDS OR ORAL RECOLLECTIONS.

EXAMPLES:

— — — E1(A) — — —	UNDERGROUND ELECTRIC - QUALITY SERVICE LEVEL A
— — — E1(B) — — —	UNDERGROUND ELECTRIC - QUALITY SERVICE LEVEL B
— — — E1(C) — — —	UNDERGROUND ELECTRIC - QUALITY SERVICE LEVEL C
— — — E1(D) — — —	UNDERGROUND ELECTRIC - QUALITY SERVICE LEVEL D

EXISTING UTILITIES WARNING

NEITHER THE OWNER NOR ENGINEER ASSUMES ANY RESPONSIBILITY FOR UTILITY LOCATIONS BEING ACCURATELY SHOWN OR NOT SHOWN IN THE PLANS. A REQUEST FOR UTILITY LOCATE WAS MADE FOR THIS PROJECT PURSUANT OF THE ONE-CALL NOTIFICATION SYSTEM ACT. UTILITIES SHOWN ARE FROM FIELD MARKINGS PROVIDED IN THE FIELD BY THE UTILITY PROVIDERS. THE EXACT LOCATION AND/OR SIZE OF UNDERGROUND FEATURES MAY NOT BE ACCURATELY, COMPLETELY, OR RELIABLY DEPICTED. FIELD VERIFICATION OF UTILITIES MAY BE REQUIRED. CONTRACTOR(S) SHALL NOTIFY THE RESPECTIVE UTILITY COMPANIES BEFORE COMMENCING ANY WORK.

EXISTING	PROPOSED	
		SANITARY SEWER MANHOLE
		SANITARY SEWER CLEANOUT
		AIR RELEASE MANHOLE/DRAIN MANHOLE
		STORM SEWER MANHOLE
		STORM SEWER CLEANOUT
		STORM SEWER INTAKE
		STORM SEWER BEEHIVE INTAKE
		FLARED END SECTION
		FIRE HYDRANT
		WATER VALVE
		WATER VALVE MANHOLE
		CURB STOP
		WATER METER MANHOLE
		YARD HYDRANT
		ELECTRIC MANHOLE / VAULT
		ELECTRIC PEDESTAL / TRANSFORMER
		OUTDOOR ELECTRIC POWER OUTLET
		POWER POLE
		POWER POLE w/ STREET LIGHT
		STREET LIGHT POLE
		GUY WIRE
		FLOODLIGHT
		FIBER OPTIC MARKER
		TRAFFIC SIGNAL
		TRAFFIC SIGNAL BOX
		TRAFFIC SIGNAL MANHOLE / VAULT
		RAILROAD CROSSING SIGNAL
		TELEPHONE MANHOLE / VAULT
		TELEPHONE PEDESTAL
		CABLE TV MANHOLE / VAULT
		CABLE TV PEDESTAL
		GAS VALVE
		IRRIGATION HANDHOLE
		BOLLARD (BUMPER POST)
		ROADWAY SIGN
		MAILBOX
		WELL
		DECIDUOUS TREE
		EVERGREEN TREE
		SHRUB OR BUSH
		TREE OR SHRUB LINE
		STUMP
		MONITORING WELL
		SOIL BORINGS
		FLAG POLE
		SATELLITE DISH
		SLOPE INDICATORS
		CONTROL POINT
		BENCH MARK
		SECTION CORNER
		IRON PIN SET
		IRON PIN FOUND

ABBREVIATIONS

T/S	TOP OF SLAB	TOP	TOP OF SLOPE
BC	BACK OF CURB	BOT	BOTTOM OF SLOPE
TC	TOP OF CURB	EP	EDGE OF PAVING
FG	FORM GRADE	BOP	BEGINNING OF PROJECT
FL	FLOWLINE	EOP	END OF PROJECT
CL	CENTERLINE	UAC	USE AS CONSTRUCTED
C	CUT		
F	FILL		

SHADING/HATCHING

	PROPOSED SIDEWALK/TRAIL		PCC PAVEMENT
	PROPOSED GRANULAR DRIVEWAY		PCC CURB AND GUTTER
	PROPOSED PAVEMENT PATCH SHADING		PROPOSED PCC DRIVEWAY

UTILITY CONTACTS & LEGEND

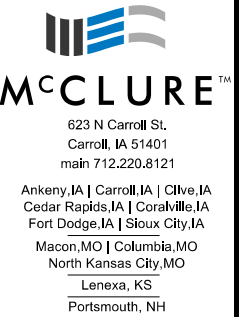
CENTURYLINK
SADIE HULL
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sadie.hull@lumen.com

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(712) 829-2111
plant@fmtcnet.com

MIDAMERICAN ELECTRIC
DAVID FITCH
(712) 366-5669
dlfitch@midamerican.com

SW REGIONAL WATER DISTRICT
JEREMY FASTENAU
(712) 542-3259
jfastenau@swregional.net

OMNITEL COMMUNICATIONS
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(641) 765-4201
osevern@omnitel.biz



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IOWA DOT PROJECT NUMBER
BROS-C069()-8J-69

REVISIONS

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PROJECT INFO
2024000585

ENGINEER	DRAWN BY	CHECKED BY
CFF	JMT	-

2210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

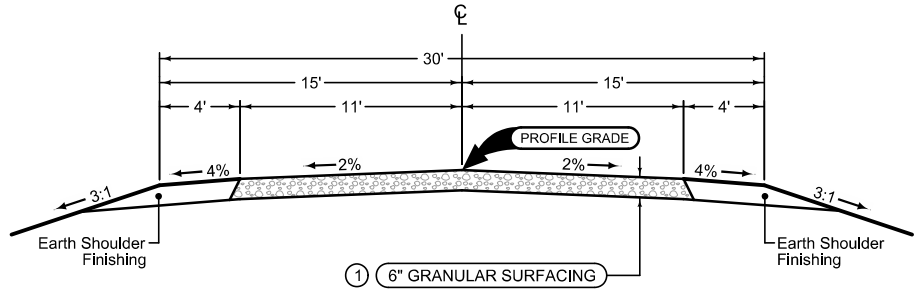
GENERAL LEGEND

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Earth Shoulder

BEGIN STATION	END STATION
1004+25.00	1005+36.88
1005+36.88	1008+00.00



Earth Shoulder

BEGIN STATION	END STATION
1004+25.00	1005+58.88
1007+13.12	1008+00.00

Mainline

BEGIN STATION	END STATION
1004+25.00	1005+47.88
1007+02.12	1008+00.00

NOTE:
Normal sections shown may be appropriately modified for areas specifically designated by the Engineer, such as tapers and cross slope transitions. Refer to L Sheets for geometrics and W Sheets for cross sections.

① Class A Crushed Stone

TYPICAL CROSS SECTION
GRANULAR SURFACING
210TH STREET
NO SCALE



McCLURE

623 N Carroll St.
Carroll, IA 51401
main 712.220.8121

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IOWA DOT PROJECT NUMBER
BROS-C069()-8J-69

REVISIONS		
PROJECT INFO		
2024000585		
ENGINEER	DRAWN BY	CHECKED BY
CFF	JMT	-

210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

TYPICAL CROSS SECTIONS AND DETAILS

ESTIMATED PROJECT QUANTITIES					
100_01A 9 / 20 / 22					
Item No.	Item Code	Item	Unit	Total	As Built Qty.
1	2101-0850001	CLEARING AND GRUBBING	ACRE	0.01	
2	2101-0850002	CLEARING AND GRUBBING	UNIT	22	
3	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	200	
4	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CY	1019	
5	2105-8425015	TOPSOIL, STRIP, SALVAGE, AND SPREAD	CY	207	
6	2109-8225100	SPECIAL COMPACTION OF SUBGRADE	STA	2.2	
7	2123-7450020	SHOULDER FINISHING, EARTH	STA	4.4	
8	2312-8260081	GRANULAR SURFACING ON ROAD, CLASS D CRUSHED STONE	TON	182	
9	2401-6745625	REMOVAL OF EXISTING BRIDGE	LS	1	
10	2402-2720000	EXCAVATION, CLASS 20	CY	112.4	
11	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	CY	276.9	
12	2404-7775000	REINFORCING STEEL	LB	226	
13	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	66266	
14	2407-0564350	BEAM, PRETENSIONED PRESTRESSED CONCRETE, BTE150	EACH	4	
15	2408-7800000	STRUCTURAL STEEL	LB	3546	
16	2414-6424124	CONCRETE OPEN RAILING, TL-4	LF	362	
17	2416-0100015	APRONS, CONCRETE, 15 IN. DIA.	EACH	2	
18	2416-1160015	CULVERT, CONCRETE ENTRANCE PIPE, 15 IN. DIA.	LF	27	
19	2501-0201274	PILES, STEEL, HP 12 X 74	LF	1705	
20	2501-6335010	PREBORED HOLES	LF	220	
21	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	63	
22	2507-2638650	BRIDGE WING ARMORING - EROSION STONE	SY	26.2	
23	2507-6850053	REVETMENT, SPECIAL	TON	1140	
24	2524-6765210	REMOVAL OF TYPE A SIGN ASSEMBLY	EACH	2	
25	2524-9100030	OBJECT MARKER, TYPE 3	EACH	4	
26	2528-2518000	SAFETY CLOSURE	EACH	2	
27	2528-8445110	TRAFFIC CONTROL	LS	1	
28	2533-4980005	MOBILIZATION	LS	1	
29	2601-2634100	MULCHING	ACRE	0.2	
30	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	0.17	
31	2601-2636044	SEEDING AND FERTILIZING (URBAN)	ACRE	0.03	
32	2601-2642100	STABILIZING CROP - SEEDING AND FERTILIZING	ACRE	0.17	
33	2601-2642120	STABILIZING CROP - SEEDING AND FERTILIZING (URBAN)	ACRE	0.03	
34	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	640	
35	2602-0000351	REMOVAL OF PERIMETER AND SLOPE OR DITCH CHECK SEDIMENT CONTROL DE	LF	660	
36	2602-0000362	DITCH CHECK SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	20	
37	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	1	
38	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL	EACH	1	



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IOWA DOT PROJECT NUMBER
BROS-C069(84)–8J-69

REVISIONS

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ESTIMATE REFERENCE INFORMATION			100_04A 6 / 2 / 23
Item No.	Item Code	Description	
1	2101-0850001	CLEARING AND GRUBBING	
2	2101-0850002	CLEARING AND GRUBBING Refer to Tabulation 110-17 and Sheet F.1 for locations and details. All material that is removed from the project shall become the property of the Contractor. Bid item includes, but is not limited to, removal of trees and stumps. Contractor shall confirm all tree removals and stump removals with the Engineer prior to beginning work. Removals of trees and stumps less than 6-inches in diameter are incidental.	
3	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	
4	2104-2710020	EXCAVATION, CLASS 10, CHANNEL Quantities paid shall be plan quantity. Item includes excavating, hauling, depositing, compacting, grading, and work necessary to conform to the lines, grades, and slopes as shown on the plans. Unit price includes placement of the excavated materials as compacted. Compacted fill quantities include an assumed 30% shrink factor. Suitable material excavated under Excavation, Class 10, Channel may be used to construct roadway embankment and other fill areas shown in the plans. Bidders shall determine quantities and satisfy themselves for all conditions of earthwork requirements in the submittal of a bid. Contractor shall be responsible for disposal of waste excavation. No payment will be made of overhaul. Contractor is responsible for locating a stockpile location on-site. If on-site location is not available, then removal, stockpiling, hauling, and placing Class 10 material is incidental to this project and shall not be paid separately. Class 10, Roadway and Borrow, Cut = 200 CY Class 10, Channel, Cut = 1019 CY Class 10, Roadway and Borrow, Fill (w/ Shrinkage) = 232 CY Total (Waste) = 987 CY	
5	2105-8425015	TOPSOIL, STRIP, SALVAGE, AND SPREAD Quantity includes placement of stripped topsoil material. Material shall be stripped and respread at a uniform depth of 8 inches. Payment will be made for plan quantity only, no measurement will be made. Bidders shall determine quantities and satisfy themselves for all conditions of topsoil requirements of a bid. Contractor may waste excess topsoil on-site. Topsoil to be respread shall be free of rock and debris and be suitable for the growth of grass. Topsoil stockpile location shall be approved by the Engineer. No payment will be made for overhaul. Contractor is responsible for locating a stockpile location on-site. If on-site location is not available, then removal, stockpiling, hauling, and placing topsoil is incidental to this project and shall not be paid separately. Topsoil Strip = 207 CY Topsoil Spread = 190 CY Toposil (Waste) = 17 CY	
6	2109-8225100	SPECIAL COMPACTION OF SUBGRADE Subgrade preparation shall be 12-inches in depth as detailed in the B-Sheets. Subgrade shall not sit longer than 14 days or after rainfall event without re-proofrolling or retesting. Contractor shall notify Engineer 24 hours prior to proofrolling subgrade. Proofrolling of the subgrade is incidental to this bid item. Payment includes process control sampling, testing, and inspection.	
7	2123-7450020	SHOULDER FINISHING, EARTH Refer to Sheet B.1 for locations and details. The volume of earth shoulder is included in the Class 10 Excavation quantity.	
8	2312-8260081	GRANULAR SURFACING ON ROAD, CLASS D CRUSHED STONE Refer to Sheet B.1, Sheet D.1, and W Sheets for roadway locations and details. Refer to Tabulation 102-03, Sheet D.1, and W Sheets for driveway locations and details. Quantity based on a uniform depth of 6 inches and a unit weight of 140 lbs/cf. Quantity includes 169 tons for roadway and 13 tons for driveway at Sta. 1007+56.86. Class 'D' crushed stone surfacing shall meet the quality requirements of Class 'A' crushed stone and the gradation requirements of modified subbase.	
9	2401-6745625	REMOVAL OF EXISTING BRIDGE Remove substructures to a depth of 2 feet below finished grade. An inspection for the presence of asbestos-containing materials was performed on the existing bridge and no asbestos-containing materials were indentified. The existing structure and its components shall become the property of the Contractor.	
10	2402-2720000	EXCAVATION, CLASS 20 Excavation quantity assumes bridge berm and roadway grading have been completed. Refer to Sheet V.20 for limits of Class 20 Excavation and to Sheet V.1 for quantity itemization.	
11	2403-0100010	STRUCTURAL CONCRETE (BRIDGE) All concrete shall be Class "C". Certified plant inspection for the concrete is required and shall be included in the cost of this item. Includes furnishing and placing subdrain (including excavation), floodable backfill, porous backfill, geotextile fabric, water flooding and subdrain outlets at abutments. No fly ash allowed. Includes cost of furnishing and placing temporary paving block and tar paper.	
12	2404-7775000	REINFORCING STEEL Refer to Sheet V.1 for quantity itemization.	
13	2404-7775005	REINFORCING STEEL, EPOXY COATED Refer to Sheet V.1 for quantity itemization.	
14	2407-0564350	BEAM, PRETENSIONED PRESTRESSED CONCRETE, BTE1 50 Includes cost of all coil ties, and furnishing and placing of bearing materials at abutments. Vent holes are used for this beam. Includes Contractor filling out beam numbers by location and beam seat elevations in "PPC Beam Data Spreadsheet" and forwarding electronic spreadsheet to Engineer.	
15	2408-7800000	STRUCTURAL STEEL Includes cost of furnishing and sintalling intermediate diaphragms. Refer to Sheet V.17 for intermediate diaphragm details and to Sheet V.1 for quantity itemization.	

ESTIMATE REFERENCE INFORMATION			100_04A 6 / 2 / 23
Item No.	Item Code	Description	
16	2414-6424124	CONCRETE OPEN RAILING, TL-4 All concrete shall be Class "C". Certified plant inspection for the concrete is required and shall be included in the cost of this item. Refer to Sheets V.17 and V.18 for open railing details and quantity itemization.	
17	2416-0100015	APRONS, CONCRETE, 15 IN. DIA. Refer to Tabulation 102-03 and Sheet D.1 for locations and details.	
18	2416-1160015	CULVERT, CONCRETE ENTRANCE PIPE, 15 IN. DIA. Refer to Tabulation 102-03 and Sheet D.1 for locations and details. Use Class C bedding and backfill.	
19	2501-0201274	PILES, STEEL, HP 12 X 74 Quantity itemization: 11-HP 12x74 at 80 feet west abutment, 11-HP 12x74 at 75 feet east abutment.	
20	2501-6335010	PREBORED HOLES Quantity itemization: 11 prebored holes at 10 feet west abutment, 11 prebored holes at 10 feet east abutment.	
21	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL Refer to Sheet F.1 for locations.	
22	2507-2638650	BRIDGE WING ARMORING - EROSION STONE Refer to Sheet V.21 for bridge wing armoring details. Includes furnishing and placing engineering fabric, erosion stone, and all required excavating, shaping, and compacting.	
23	2507-6850053	REVTMENT, SPECIAL Refer to Sheet V.4 for details and quantity itemization. Estimated at 1.6 TON/CY. Plan thickness is 2.0'. This material shall not be used by the Contractor to facilitate construction elsewhere on the project. Revetment material placed to facilitate construction and then reclaimed will not be measured or included in the quantity placed for this bid item. This material shall be Dolomite or Quartzite from an approved source as described in materials I.M. 409 and meeting the requirements of Section 4130 of the Standard Specifications for Class "E" revetment. Method of measurement and basis of payment shall be in accordance with Section 2507 of the Standard Specifications for Class "E" revetment.	
24	2524-6765210	REMOVAL OF TYPE A SIGN ASSEMBLY Refer to Tabulation 190-62 and Sheet F.1 for locations and details.	
25	2524-9100030	OBJECT MARKER, TYPE 3 Refer to Tabulation 190-25 and Sheet D.1 for locations and details.	
26	2528-2518000	SAFETY CLOSURE Refer to Tabulatuion 108-13A and J Sheets for locations and details.	
27	2528-8445110	TRAFFIC CONTROL Refer to J Sheets for Traffic Control Notes and Detour Route.	
28	2533-4980005	MOBILIZATION --	
29	2601-2634100	MULCHING Perform mulching according to Article 2601.03, E, 2, of the Standard Specifications. Anchor mulch into the soil using mulch anchoring equipment with a minimum of two passes. Item is included for areas requiring reshaping and seedbed preparation. Use mulch that is Certified Noxious Weed Seed Free Mulch as certified by the Iowa Crop Improvement Association or adjacent states Crop Improvement Association. Mulch Rate: 1 1/2 tons of dry cereal straw or native grass straw per acre.	
30	2601-2636043	SEEDING AND FERTILIZING (RURAL) Refer to Sheet RR.1 for seeding limits. Prepare seedbed, fertilize, and seed all rural disturbed areas according to Article 2601.03, C, 3, of the Standard Specifications.	
31	2601-2636044	SEEDING AND FERTILIZING (URBAN) Refer to Sheet RR.1 for seeding limits. Prepare seedbed, fertilize, and seed all urban disturbed areas according to Article 2601.03, C, 4, of the Standard Specifications.	
32	2601-2642100	STABILIZING CROP - SEEDING AND FERTILIZING Refer to Sheet RR.1 for seeding limits. Seed and fertilize all rural disturbed areas according to Article 2601.03, C, 1, of the Standard Specifications.	
33	2601-2642120	STABILIZING CROP - SEEDING AND FERTILIZING (URBAN) Refer to Sheet RR.1 for seeding limits. Seed and fertilize all urban disturbed areas according to Article 2601.03, C, 2, of the Standard Specifications.	
34	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	
35	2602-0000351	REMOVAL OF PERIMETER AND SLOPE OR DITCH CHECK SEDIMENT CONTROL DEVICE	
36	2602-0000362	DITCH CHECK SEDIMENT CONTROL DEVICE, 12 IN. DIA. Refer to Tabulation 100-19 and Sheet RR.1 for details.	
37	2602-0010010	MOBILIZATIONS, EROSION CONTROL --	
38	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL --	



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IOWA DOT PROJECT NUMBER
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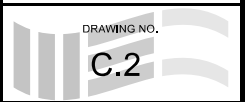
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210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

ESTIMATE REFERENCE INFORMATION

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DRAWING NO.
C.2

INDEX OF TABULATIONS			111.25 4 / 2 / 24
Tabulation	Tabulation Title	Sheet No.	
100-01A	ESTIMATED PROJECT QUANTITIES	C.1	
100-04A	ESTIMATE REFERENCE INFORMATION	C.2	
105-04	STANDARDS	C.3	
100-26	INCIDENTAL ITEMS	C.3	
103-10	TOPSOIL STRIPPING AND PLACEMENT	C.3	
108-13A	SAFETY CLOSURES	C.3	
110-07A	REMOVAL OF STEEL BEAM GUARDRAIL	C.3	
110-17	CLEARING AND GRUBBING	C.4	
102-03	ACCESS POINTS AND SAFETY RAMPS	C.4	
190-25	REFERENCE LOCATIONS SIGNS AND DELINEATORS	C.4	
190-62	EXISTING SIGNS TO BE REMOVED	C.4	
100-19	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE	RC.1	

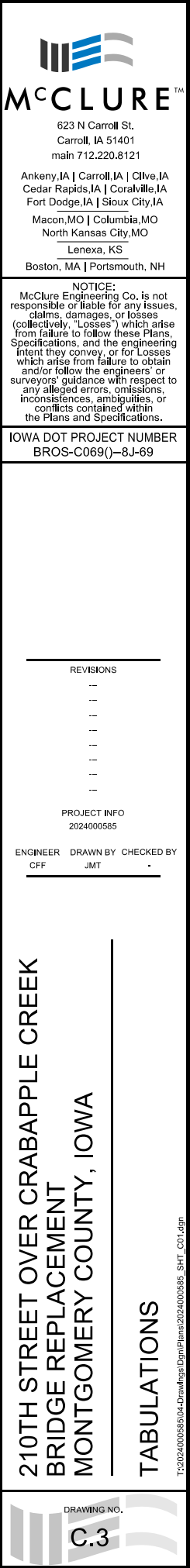
STANDARDS			105.04 4 / 16 / 24
The following Standards apply to construction work on this project.			
Number	Date	Title	
DR-101	4/18/2017	PIPE CULVERT (BEDDING AND BACKFILL)	
DR-102	4/21/2015	PIPE CULVERT (COVER AND CAMBER)	
DR-103	4/21/2015	PIPE CULVERT (INSTALLATION DETAILS)	
DR-104	4/19/2016	DEPTH OF COVER TABLES FOR CONCRETE AND CORRUGATED PIPE	
DR-201	10/17/2023	CONCRETE APRONS	
DR-601	4/18/2017	REINFORCED CONCRETE PIPE CULVERT	
EC-204	10/19/2021	PERIMETER, SLOPE AND DITCH CHECK SEDIMENT CONTROL DEVICES	
EC-502	4/21/2015	SEEDING IN RURAL AREAS	
EW-101	10/17/2017	EMBANKMENT AND REBUILDING EMBANKMENTS	
EW-202	4/19/2016	BRIDGE BERM GRADING WITHOUT RECOVERABLE SLOPE (NON-BARNROOF) SECTION	
EW-501	10/17/2023	RURAL ENTRANCES	
SI-173	4/19/2016	OBJECT MARKERS	
TC-252	10/20/2026	ROUTES CLOSED TO TRAFFIC	

INCIDENTAL ITEMS						100.26 8 / 15 / 22
Special or unique items where method of measurement / basis of payment is not indicated in the specifications or other contract documents.						
Incidental Item	Unit	Quantity	Incidental to Item Code	Incidental to Item	Remarks	
REMOVAL OF GRANULAR SURFACING	SY	555	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW		
REMOVAL OF CULVERT, 6 IN. DIA.	LF	29	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW		
REMOVAL OF OBJECT MARKER	EACH	13	2102-2710070	EXCAVATION CLASS 10, ROADWAY AND BORROW		

TOPSOIL STRIPPING AND PLACEMENT							103.10 8 / 15 / 22
Road Identification	Dir. Of Traffic	Station From	Station To	Topsoil Stripping Thickness (IN)	Topsoil Placement Thickness (IN)	Remarks	
210TH ST	B	1004+25.00	1005+50.00	8	8		
210TH ST	B	1007+02.12	1008+00.00	8	8		

SAFETY CLOSURES				108.13A 10 / 4 / 23
Refer to Section 2518 of the Standard Specifications				
Station	Road Closure Qty.	Hazard Closure Qty.	Remarks	
1001+00.00	1			
1009+00.00	1			

REMOVAL OF STEEL BEAM GUARDRAIL						110.07A 8 / 15 / 22
(1) Lane(s) to which the installation is adjacent. (2) Includes length of End Terminals and End Anchors.						
No.	Direction of Traffic (1)	Station From	Station To	Side	Removal of Guardrail (2) (LF)	
1	WB	1006+43.99	1006+76.12	LT	33	
2	EB	1006+66.24	1006+96.22	RT	30	
TOTAL:					63	



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210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

TABULATIONS



DRAWING NO.
C.3

CLEARING AND GRUBBING																						110.17 6 / 12 / 23
Station From	Station To	Direction of Traffic	Work and Material Type	>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"	Other Materials Length (FT)	Other Materials Width (FT)	Estimated Units	Estimated Area (Acres)	Estimated Herbicide Application (EA)	Remarks
1004+25.00	1005+19.91	EB	Trees - Clearing and Grubbing																	0.01		
1007+77.41		EB	Trees - Clearing and Grubbing						1										22			
TOTALS:									1										22	0.01		

102_03

10 / 15 / 24

ACCESS POINTS AND SAFETY RAMPS

Refer to Cross-Sections

Length of Unclassified Pipe calculated is based on using Corrugated Metal Pipe.

(1) Refer to MI-210.

(2) Refer to EW-501.

(3) Refer to EW-501 or EW-502.

*Predetermined for access point not constructed w ith this project.

Station	Side	Access Type	Descriptor	Case	Curb Type	Curb Length (1) (LF)	Width (FT)	PR (1) (2) (FT)	SR (2) (FT)	Pipe Culvert (H) (3) (FT)	Pipe Culvert Size (3) (IN)	Culvert Length (3) (LF)	Pipe Culvert Lt. (3) (LF)	Pipe Culvert Rt. (3) (LF)	Culvert Aprons (3) (No.)	Driveway Surface Type	Driveway Surface Area (SY)	Driveway Surfacing Material (TON)	Remarks
1007+56.86	RT	RESIDENTIAL	GRANULAR	-	-	-	12	15	11	1	15	27	15	12	2	CLASS A		13	
												27	15	12	2		0	13	

190.25
2/10/23

REFERENCE LOCATION SIGNS AND DELINEATORS																					
Refer to SI-17.1, SI-17.2 and SI-17.3.																					
Station From	Station To	Location	Reference Location Sign Type	Quantity (EA)	Enhanced Reference Location Sign Type	Quantity (EA)	Intermediate Reference Location Sign Type	Quantity (EA)	Type I Delineator White (EA)	Type I Delineator Yellow (EA)	Type IA Delineator White (EA)	Type IA Delineator Yellow (EA)	Type II Delineator White (EA)	Type II Delineator Yellow (EA)	Type III Delineator White (EA)	Type III Delineator Yellow (EA)	Object Marker Type 1 (EA)	Object Marker Type 2 (EA)	Object Marker Type 3 (EA)	Installation Type	Installation Offset
1005+18.25		WB																	1	SOIL	5
1005+48.75		EB																	1	SOIL	5
1007+01.25		WB																	1	SOIL	5
1007+31.56		EB																	1	SOIL	5
TOTALS:																			4		

EXISTING SIGNS TO BE REMOVED											190.62 2 / 13 / 23
Sign Number or Description	Location Station	Direction of Travel	Type 'A' Sign Assembly (RA) (EA)	Type 'B' Sign Assembly (RB) (EA)	Type 'A' Remove and Reinstall (RR) (EA)	Type 'B' Remove and Reinstall (RF) (EA)	Concrete Foundation (RS) (EA)	Support Structure & Foundation (RS) (EA)	Applicable Signing Notes	Remarks	
R12-5	1005+12.44	EB	1								
R12-5	1006+86.66	WB	1								
TOTALS:			2								



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IOWA DOT PROJECT NUMBER
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PROJECT INFO

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210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

TABULATIONS



DRAWING NO.
C.4

CLEARING, GRUBBING, GRADING & EMBANKMENT

ALL LIGHT POLES, UTILITIES, AND TREES SHALL BE PROTECTED UNLESS NOTED OTHERWISE.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE WASTE AREAS OR DISPOSAL SITES FOR EXCESS MATERIAL (EXCAVATED MATERIAL, BROKEN CONCRETE, VEGETATION OR PAVEMENTS) WHICH IS NOT DESIRABLE TO BE INCORPORATED INTO THE WORK INVOLVED ON THIS PROJECT. NO PAYMENT FOR OVERHAUL OR DUMPING FEES WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES. NO MATERIAL WILL BE PLACED WITHIN THE RIGHT-OF-WAY, UNLESS SPECIFICALLY STATED IN THE PLANS OR APPROVED BY THE ENGINEER. ANY HOLES OR TRENCHES THAT ARE OPEN AT THE END OF THE DAY'S WORK MUST BE FENCED WITH SAFETY FENCE (INCIDENTAL).

CONTRACTOR SHALL MAINTAIN ALL PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE REMOVED FROM ANY PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC, SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.

CONTRACTOR SHALL CONFINE THEIR GRADING OPERATIONS TO THE CONSTRUCTION LIMITS AS SHOWN ON THE PLANS UNLESS AUTHORIZED BY THE ENGINEER TO DO OTHERWISE. CONTRACTOR SHALL COMPENSATE PROPERTY OWNER FOR DAMAGES WHICH THEY CAUSE OUTSIDE AUTHORIZED LIMITS. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PRESERVE AND PROTECT ANY FENCES AND TREES, WITHIN THE CONSTRUCTION LIMITS, WHICH MAY BE REQUIRED TO REMAIN BY THE OWNER. CONTRACTOR SHALL NOT DISTURB DESIRABLE GRASS AREAS AND DESIRABLE TREES OUTSIDE THE CONSTRUCTION LIMITS. THE CONTRACTOR SHALL ACCESS THE SITE IN A MANNER THAT DOES NOT DAMAGE AREAS THAT ARE NOT DESIGNATED TO BE REPLACED. ANY DAMAGE TO THESE SURFACES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE AS APPROVED BY THE ENGINEER.

IF CONTRACTOR FAILS TO CONTROL EROSION, POLLUTION AND/OR SILTATION, OWNER RESERVES THE RIGHT TO EMPLOY OUTSIDE ASSISTANCE TO PROVIDE THE NECESSARY CORRECTIVE MEASURES. SUCH INCURRED COSTS PLUS PROJECT ENGINEERING COSTS WILL BE CHARGED TO THE CONTRACTOR, AND APPROPRIATE DEDUCTIONS WILL BE MADE FROM THE CONTRACTOR'S MONTHLY PROGRESS ESTIMATE. THIS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.

CONTRACTOR WILL NOT BE PERMITTED TO PARK OR SERVICE VEHICLES AND EQUIPMENT OR USE CONSTRUCTION SITE FOR STORAGE OF MATERIALS. STORAGE, PARKING AND SERVICE AREA(S) WILL BE SUBJECT TO THE APPROVAL OF ENGINEER AND OWNER.

UTILITIES GENERAL

LOCATIONS OF BURIED UNDERGROUND FACILITIES ARE APPROXIMATE, ENGINEER DOES NOT WARRANT, EITHER EXPRESSLY OR BY IMPLICATION, THE ACCURACY OF THE LOCATIONS SHOWN. EXACT LOCATION AND ELEVATIONS OF ALL UTILITIES SHALL BE DETERMINED BY CONTRACTOR AT THE TIME OF CONSTRUCTION. IT SHALL BE THE DUTY OF THE CONTRACTOR TO ASCERTAIN WHETHER ANY ADDITIONAL FACILITIES OTHER THAN THOSE SHOWN ON THE DRAWINGS MAY BE PRESENT. ENGINEER MAKES NO GUARANTEE THAT THE UTILITIES SHOWN COMPRISE ALL UTILITIES IN THE AREA.

CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES OF THE ACTUAL START DATE OF CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH EACH COMPANY OF THE ACTUAL UTILITY LOCATION IN THE FIELD AND WHICH UTILITY LINES MUST BE ADJUSTED. CONTRACTOR SHALL USE CAUTION IN WORKING NEAR ALL UTILITY LINES. UTILITIES DAMAGED DUE TO THE OPERATIONS OF THE CONTRACTOR SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE AND AT NO EXPENSE TO THE OWNER.

CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT FOR EXISTING UTILITY LINES THAT ARE ENCOUNTERED DURING CONSTRUCTION UNTIL BACKFILLING IS COMPLETE.

ALL COSTS FOR STAGING CONSTRUCTION FOR UTILITY INSTALLATION, PROVIDING TEMPORARY SUPPORTS FOR UTILITIES WITH ASSISTANCE FROM THE AFFECTED UTILITY COMPANY, AND COORDINATING WITH UTILITIES, INCLUDING DELAYS, SHALL BE INCIDENTAL TO THE CONTRACT. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.

TRENCH, BACKFILL & TUNNELING

CONTRACTOR SHALL SUBMIT GRADATION REPORTS FOR FILL AND BEDDING MATERIALS PRIOR TO USE IN THE PROJECT.

CONTRACTOR SHALL LIMIT THE LENGTH OF OPEN TRENCH AT ANY GIVEN TIME. NO MORE THAN APPROXIMATELY 300 FEET OF OPEN TRENCH WILL BE ALLOWED PRIOR TO BACKFILLING. CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM CITY FOR VARIANCES FROM THIS OPEN TRENCH REQUIREMENT.

GENERAL

ALL CONSTRUCTION IS SUBJECT TO OBSERVATION BY ENGINEER AND/OR OWNER. CONTRACTOR SHALL NOTIFY ENGINEER, OWNER, AND UTILITY COMPANIES 1 WEEK PRIOR TO START OF CONSTRUCTION.

ALL CONSTRUCTION METHODS, PROCEDURES AND MATERIALS PROPOSED TO BE USED FOR THIS PROJECT SHALL COMPLY WITH IOWA DOT STANDARD SPECIFICATIONS. ANY ALTERNATE PROPOSED TO BE USED BY CONTRACTOR SHALL BE APPROVED BY THE CITY AND ENGINEER PRIOR TO CONSTRUCTION.

IF ARCHAEOLOGICAL REMAINS ARE UNCOVERED ON THE PROJECT, CONTRACTOR WILL NOTIFY ENGINEER IMMEDIATELY.

CONTRACTOR SHALL OBTAIN ANY AND ALL PERMITS FROM MONTGOMERY COUNTY, IF APPLICABLE, PRIOR TO ANY CONSTRUCTION WORK WITHIN THE PUBLIC RIGHT-OF-WAY.

IN THE EVENT OF A DISCREPANCY BETWEEN THE QUANTITY ESTIMATES AND THE DETAILED PLANS, THE DETAILED PLANS SHALL GOVERN.

TRAFFIC CONTROL

ALL TRAFFIC CONTROL SHALL BE PROVIDED IN ACCORDANCE WITH REQUIREMENTS SET FORTH IN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICE(MUTCD), FOR STREETS AND HIGHWAYS, AS ADOPTED BY THE DEPARTMENT PER 761 OF THE IOWA ADMINISTRATIVE CODE (IAC), CHAPTER 130.

IT SHALL BE CONTRACTOR'S RESPONSIBILITY FOR PROPER BARRICADING AND ADEQUATE PROTECTION OF ALL OPEN TRENCHES AND OTHER EXCAVATIONS. OBSTRUCTIONS, SUCH AS MATERIAL PILES AND EQUIPMENT, SHALL BE PROVIDED WITH WARNING SIGNS, BARRICADES AND LIGHTS. ALL BARRICADES AND OBSTRUCTIONS SHALL BE ILLUMINATED BY MEANS OF WARNING LIGHTS FROM SUNSET TO SUNRISE OR WHEN ANY OTHER LOW LIGHT CONDITIONS EXIST. MATERIAL STORED UPON OR ALONGSIDE PUBLIC STREETS SHALL BE SO PLACED AND THE WORK SHALL AT ALL TIMES BE SO CONSTRUCTED AS TO CAUSE THE MINIMUM OBSTRUCTION AND INCONVENIENCE TO THE PUBLIC AND TO LOCAL RESIDENTS.

REFER TO SHEET J.1 FOR ADDITIONAL TRAFFIC CONTROL NOTES.

SAW-CUT TREE ROOTS

ALL TREE ROOTS EXCEEDING 1-1/2" IN DIAMETER WHICH ARE MANGLED BY EQUIPMENT DURING GRADING OR EXCAVATION SHALL BE CUT CLEANLY WITH A SAW. NO ROOTS WHICH EXCEED THE SPECIFIED DIAMETER SHALL BE LEFT STRIPPED OR MANGLED PRIOR TO BACKFILLING. CUTTING OF ROOTS IS CONSIDERED INCIDENTAL TO EXCAVATION.

SITE CLEANUP

THE CONTRACTOR SHALL CLEAN ALL SURFACES PRIOR TO OPENING THE PROJECT TO THE PUBLIC. PICKUP BROOM OR STREET SWEEPER THAT CREATES A MINIMAL AMOUNT OF DUST SHALL BE USED FOR CLEANING. ALL COSTS FOR CLEANING SHALL BE INCIDENTAL TO THE CONTRACT.

PROJECT CONTACTS

MONTGOMERY COUNTY
KAREN ALBERT
406 W 4TH ST
RED OAK, IA 51566
712-623-5197

PROJECT MANAGER
CODY FORCH
623 N CARROLL ST
CARROLL, IOWA 51401
712-623-2579

NOTE:
NEITHER THE OWNER (MONTGOMERY COUNTY) NOR MCCLURE ENGINEERING COMPANY (ENGINEER) ASSUMES ANY RESPONSIBILITY FOR UTILITY LOCATIONS BEING ACCURATELY SHOWN OR NOT SHOWN ON THE PLANS. A REQUEST FOR UTILITY LOCATES WAS MADE FOR THIS PROJECT PURSUANT OF THE ONE-CALL NOTIFICATION SYSTEM ACT. UTILITIES SHOWN ARE FROM FIELD MARKINGS PROVIDED IN THE FIELD BY THE UTILITY PROVIDERS. THE EXACT LOCATION AND/OR SIZE OF UNDERGROUND FEATURES MAY NOT BE ACCURATELY, COMPLETELY, AND RELIABLY DEPICTED. FIELD VERIFICATION OF UTILITIES MAY BE REQUIRED. CONTRACTOR(S) SHALL NOTIFY THE RESPECTIVE UTILITY COMPANIES BEFORE COMMENCING ANY WORK.



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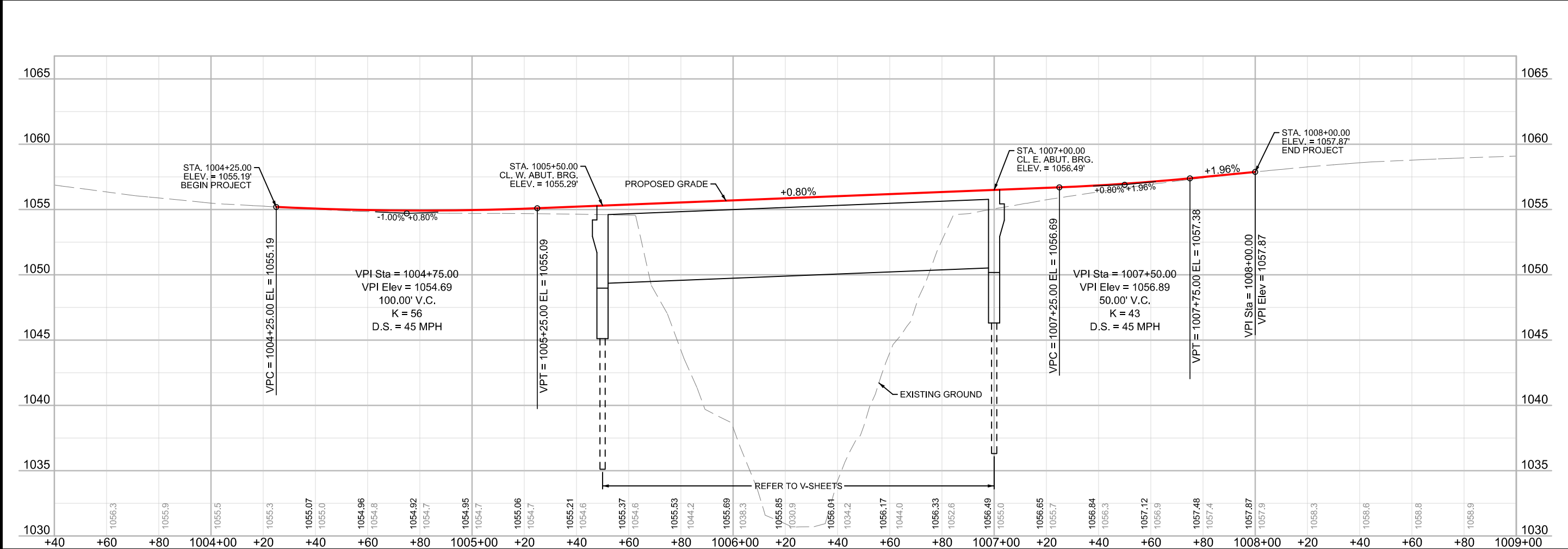
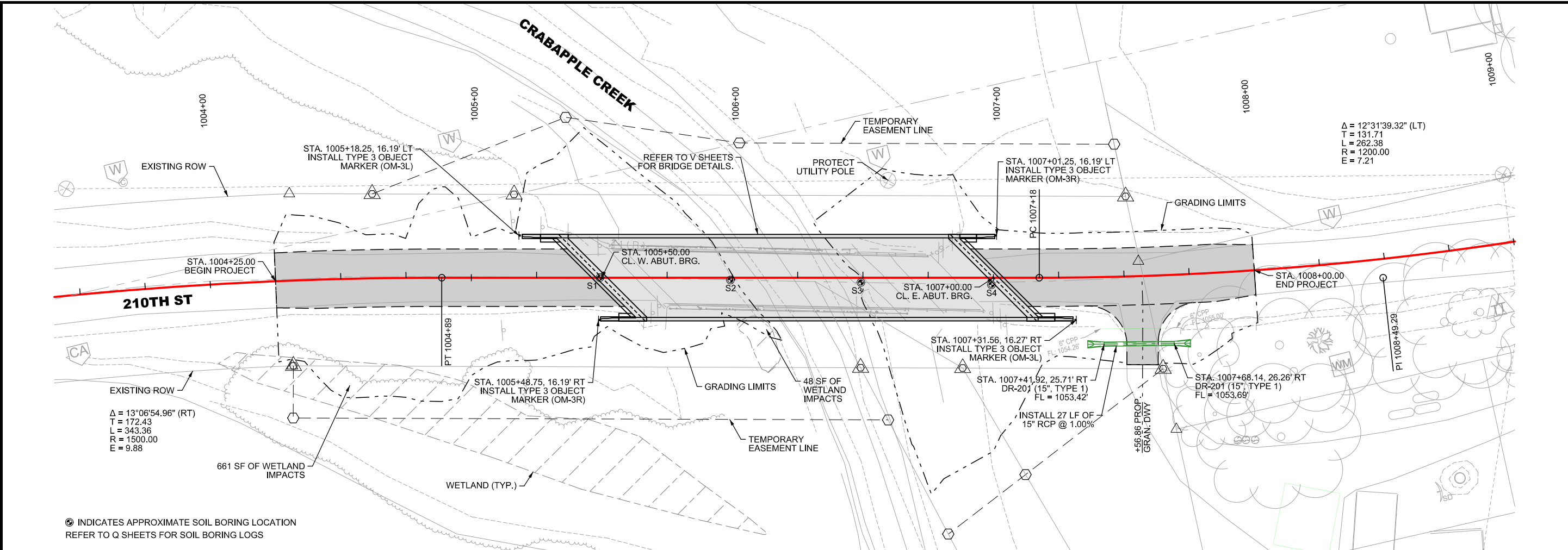
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IOWA DOT PROJECT NUMBER
BROS-C069()-8J-69

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ENGINEER	DRAWN	CHECKED BY	
CFE	JMT	-	

210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

GENERAL NOTES



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IOWA DOT PROJECT NUMBER
BROS-C069()-8J-69

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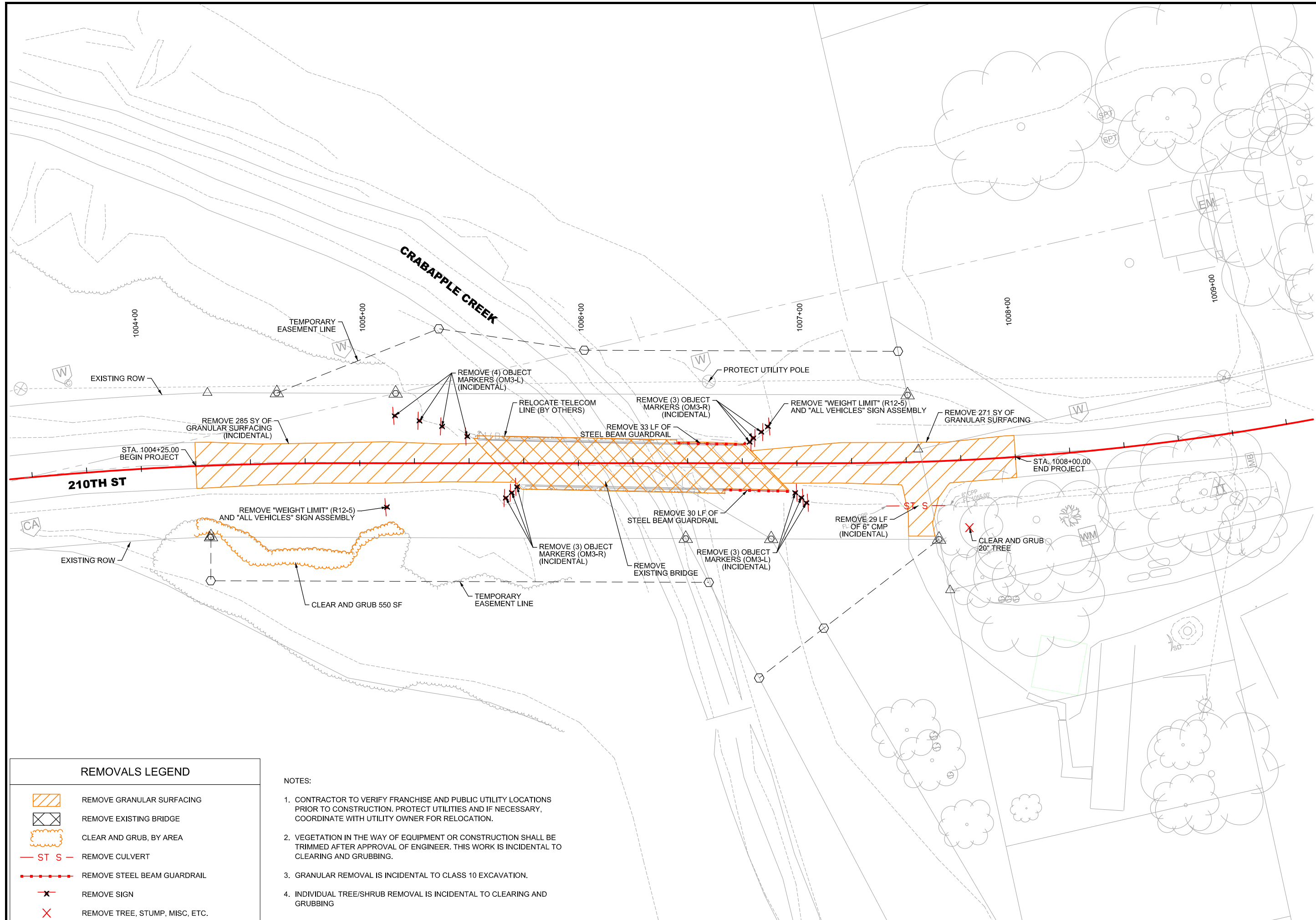
PROJECT INFO
2024000585

ENGINEER: CFF DRAWN BY: JMT CHECKED BY: -

210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

210TH STREET PLAN & PROFILE

DRAWING NO.
D.1

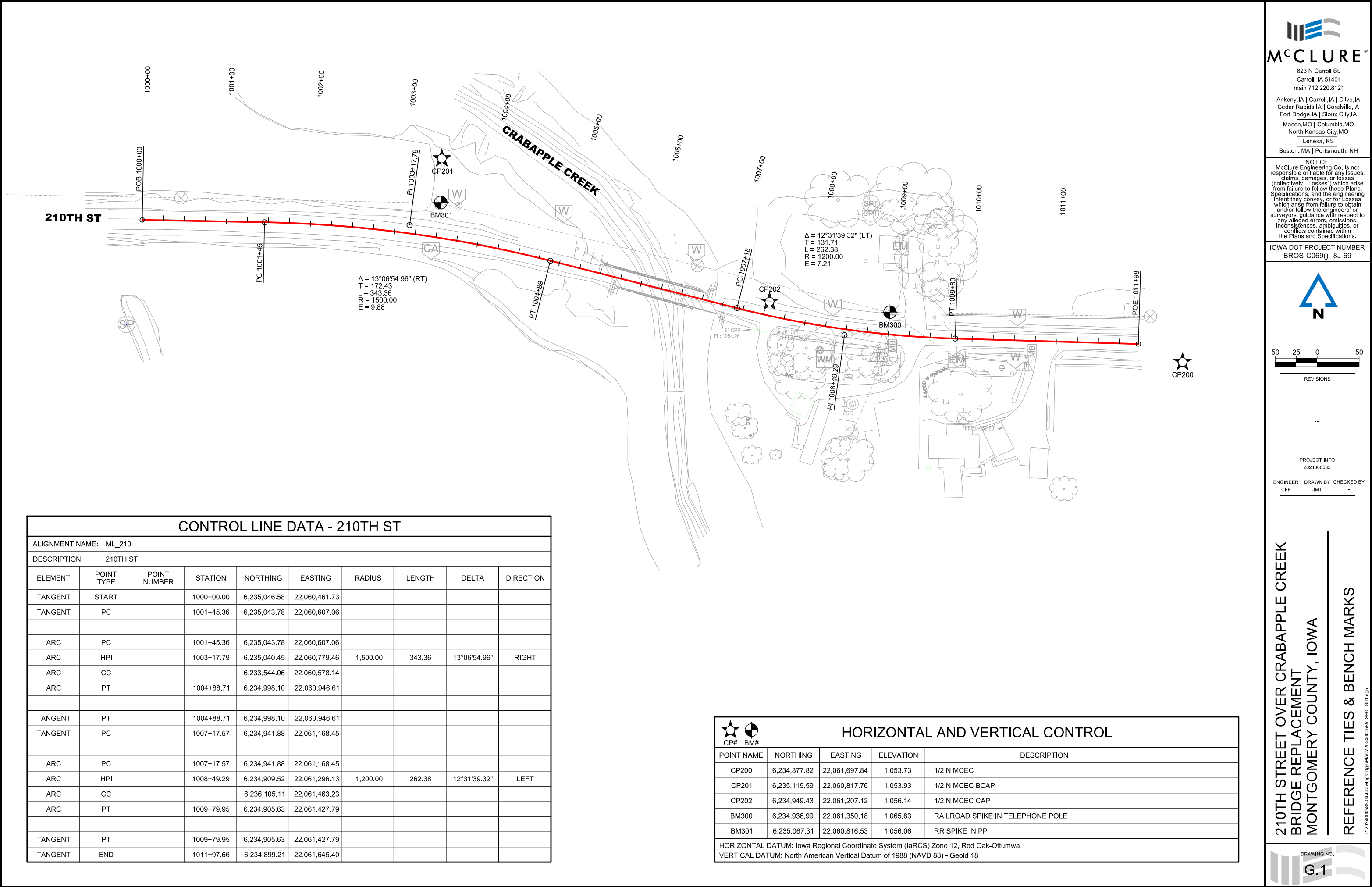


REMOVALS LEGEND

-  REMOVE GRANULAR SURFACING
-  REMOVE EXISTING BRIDGE
-  CLEAR AND GRUB, BY AREA
-  REMOVE CULVERT
-  REMOVE STEEL BEAM GUARDRAIL
-  REMOVE SIGN
-  REMOVE TREE, STUMP, MISC, ETC.

NOTES:

- CONTRACTOR TO VERIFY FRANCHISE AND PUBLIC UTILITY LOCATIONS PRIOR TO CONSTRUCTION. PROTECT UTILITIES AND IF NECESSARY, COORDINATE WITH UTILITY OWNER FOR RELOCATION.
- VEGETATION IN THE WAY OF EQUIPMENT OR CONSTRUCTION SHALL BE TRIMMED AFTER APPROVAL OF ENGINEER. THIS WORK IS INCIDENTAL TO CLEARING AND GRUBBING.
- GRANULAR REMOVAL IS INCIDENTAL TO CLASS 10 EXCAVATION.
- INDIVIDUAL TREE/SHRUB REMOVAL IS INCIDENTAL TO CLEARING AND GRUBBING



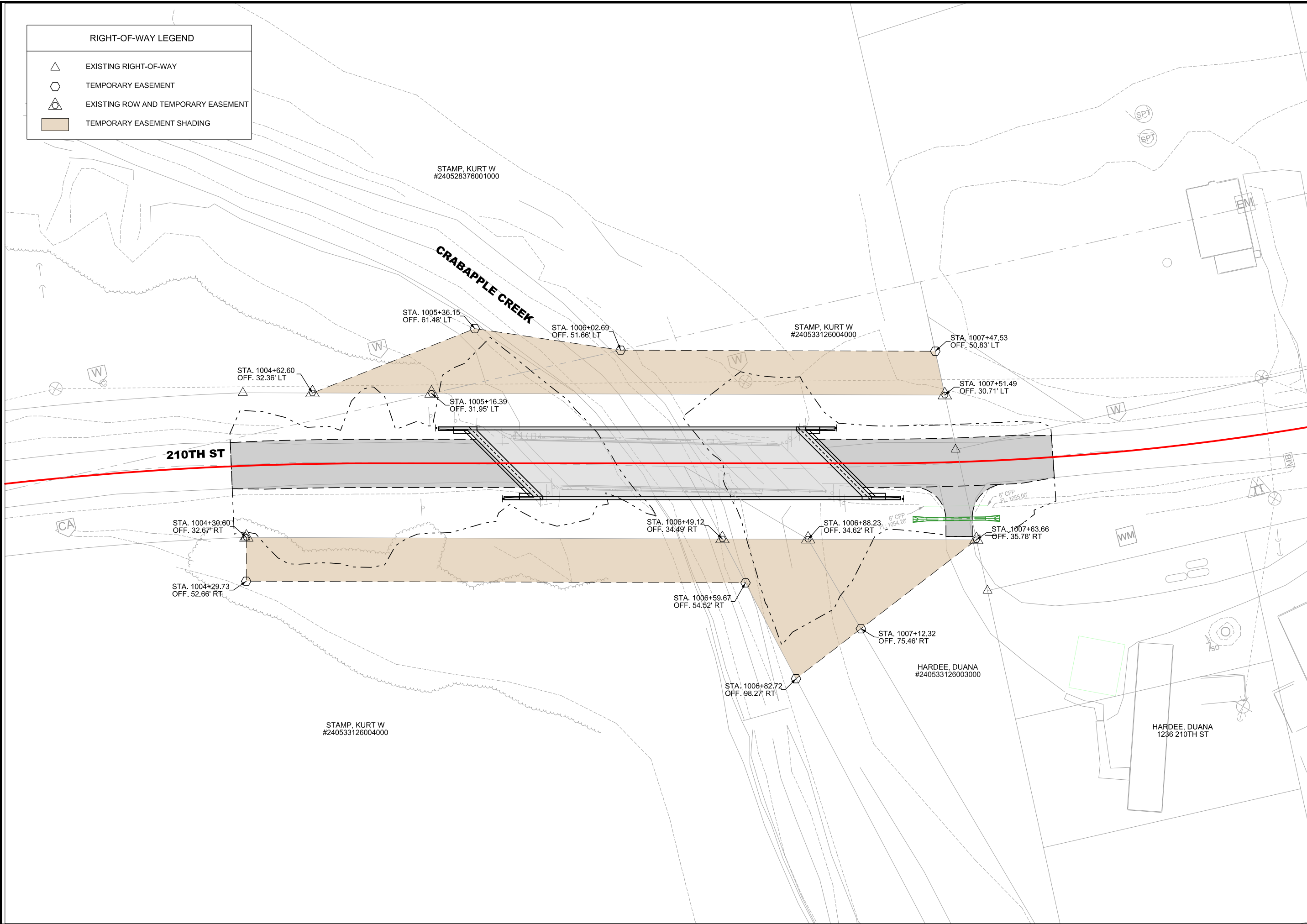
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CFF JMT

210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA
REFERENCE TIES & BENCH MARKS

RIGHT-OF-WAY LEGEND	
	EXISTING RIGHT-OF-WAY
	TEMPORARY EASEMENT
	EXISTING ROW AND TEMPORARY EASEMENT
	TEMPORARY EASEMENT SHADING




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IOWA DOT PROJECT NUMBER
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210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

RIGHT-OF-WAY

TRAFFIC CONTROL NOTES:

TRAFFIC CONTROL ON THIS PROJECT SHALL BE IN ACCORDANCE WITH PART 6 OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", AS ADOPTED BY THE DEPARTMENT OF TRANSPORTATION PER 761 OF THE IOWA ADMINISTRATIVE CODE (IAC), CHAPTER 130.

ALL TRAFFIC CONTROL DEVICES SHALL BE FURNISHED, ERECTED, MAINTAINED, AND REMOVED BY THE CONTRACTOR.

THE PROPOSED SIGNING MAY BE MODIFIED TO MEET FIELD CONDITIONS, PREVENT OBSTRUCTIONS, AND TO ACCOMMODATE CONSTRUCTION SCHEDULING UPON APPROVAL BY THE ENGINEER.

PERMANENT TRAFFIC CONTROL SIGNS THAT CONFLICT WITH SPECIFIC LAYOUTS SHOWN ON THESE PLANS ARE TO BE COVERED AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL ERECT ALL WARNING SIGNS ON STEEL OR WOODEN POSTS. PORTABLE MOUNTINGS FOR WARNING SIGNS MAY BE USED FOR TEMPORARY INSTALLATIONS OF LESS THAN THREE DAYS. PLACEMENT OF SIGNS ON EXISTING POSTS OR STRUCTURES WILL NOT BE ALLOWED. WHERE POSSIBLE, ALL TRAFFIC CONTROL SIGNS SHALL BE PLACED A MINIMUM OF 10 FEET CLEAR OF THE ROADWAY.

SIGN WASHING AND MAINTENANCE SHALL BE CONSIDERED INCIDENTAL TO TRAFFIC CONTROL AND SHALL BE REQUIRED AS DIRECTED BY THE ENGINEER.

THE LOCATION FOR STORAGE OF MATERIALS AND EQUIPMENT BY THE CONTRACTOR DURING WORKING AND NONWORKING HOURS SHALL BE AS APPROVED BY THE ENGINEER AND THE CONTRACTOR SHALL PROVIDE A WRITTEN AGREEMENT WITH THE PROPERTY OWNER, IF APPLICABLE.

THE CONTRACTOR SHALL SUBMIT REQUESTS IN WRITING TO THE COUNTY PRIOR TO ANY CHANGES TO TRAFFIC PATTERNS OR PRIVATE PROPERTY ACCESS.

THE CONTRACTOR SHALL PROVIDE A 24-HOUR PHONE NUMBER FOR THE CONTRACTOR'S RESPONSIBLE PARTY TO BE CONTACTED REGARDING TRAFFIC CONTROL.

THE CONTRACTOR SHALL COORDINATE TRAFFIC WITH OTHER PROJECTS IN THE AREA. SPECIAL CARE SHALL BE TAKEN TO ENSURE ACCESS TO ALL RESIDENTS DURING THE COMPLETION OF THIS PROJECT.

THE BID ITEM "TRAFFIC CONTROL" SHALL INCLUDE THE COST OF ALL TRAFFIC CONTROL MEASURES BY THE CONTRACTOR EXCEPT FOR THOSE WHICH ARE SEPARATE BID ITEMS OR ARE INCIDENTAL TO OTHER BID ITEMS.

THE TRAFFIC CONTROL SHALL BE CHECKED BY THE CONTRACTOR A MINIMUM OF TWO TIMES EACH DAY FOR THE DURATION OF THE PROJECT AND DEFICIENT CONDITIONS SHALL BE CORRECTED IMMEDIATELY. CONTRACTOR SHALL MAINTAIN A TRAFFIC CONTROL DAILY DIARY PER THE IOWA DOT CONSTRUCTION MANUAL.

210TH STREET AT THE CRABAPPLE CREEK CROSSING SHALL BE CLOSED TO TRAFFIC.

THIS LAYOUT DOES NOT INCLUDE ALL BARRICADES AS MAY BE REQUIRED BY SECTION 2518 OF THE STANDARD SPECIFICATIONS OR STANDARD ROAD PLAN TC-252.

ALL "STOP" AND OTHER REGULATORY SIGNS ON THE SIDE ROADS ARE NOT TO BE DISTURBED. IF A "STOP" OR OTHER REGULATORY SIGN MUST BE REMOVED, IT WILL BE RELOCATED BY THE COUNTY. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SIGNS AT NO COST TO THE COUNTY.

CONTRACTOR SHALL BE RESPONSIBLE TO ESTABLISH AND MAINTAIN DETOUR ROUTE.

CONTRACTOR SHALL MAINTAIN ACCESS TO PROPERTIES AT ALL TIMES.



Choose cell replacement tool for locations

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IOWA DOT PROJECT NUMBER
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210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

TRAFFIC CONTROL NOTES

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TYPE III BARRICADE
A



BRIDGE CLOSED
500 FEET AHEAD
LOCAL TRAFFIC ONLY

R11-3b
60" x 30"
D



ROAD CLOSED
1000 FT

W20-3
48" x 48"
G



DETOUR
M4-9R
30" x 24"
J



ROAD CLOSED

R11-2
48" x 30"
B



DETOUR

M4-10L
48" x 18"
E



ROAD CLOSED
1000 FT

W20-3
48" x 48"
H



END
DETOUR

M4-8A
24" x 18"
K



BRIDGE CLOSED
1 MILE AHEAD
LOCAL TRAFFIC ONLY

R11-3b
60" x 30"
C



DETOUR

M4-10L
48" x 18"
F



DETOUR

M4-9L
30" x 24"
I



ROAD WORK
AHEAD

W20-1
48" x 48"
L

NOTES:

1. PROVIDE 500' BETWEEN CONSECUTIVE SIGNS.
2. REFER TO STANDARD ROAD PLAN TC-252 FOR TYPE III BARRICADE AND SIGNING PLACEMENT DETAILS.
3. THE CONTRACTOR MAY ADJUST SIGNING LOCATIONS IN THE FIELD AS NECESSARY TO MAINTAIN SAFE AND LOGICAL TRAFFIC FLOW, SUBJECT TO ENGINEER APPROVAL.

DETOUR MAP LEGEND



DETOUR ROUTE AND TRAFFIC FLOW



TYPE III BARRICADE



TEMPORARY TRAFFIC SIGN



WORK AREA



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IOWA DOT PROJECT NUMBER
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PROJECT INFO
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CFF JMT -

210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

DETOUR ROUTE



DRAWING NO.
J.2

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Sheet 1 of 1



Job Number: **G7434**
Project: **Bridge Replacement**
Date Started: **7/9/24**
Date Completed: **7/9/24**

Boring No.: **S-3**
 Boring Location: **Montgomery Co.**
 Drill Type: **Hollow Stem**
 Ground Elev.: **100.0**

[illegible]

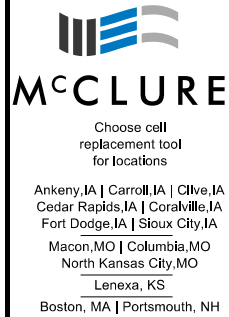
THE GEOTECHNICAL BORING LOGS PRESENTED ON THIS SHEET WERE PREPARED BY CERTIFIED TESTING SERVICES, INC. AS PART OF THE GEOTECHNICAL INVESTIGATION FOR THIS PROJECT. THE BORINGS, FIELD INVESTIGATIONS, SOIL CLASSIFICATIONS, LABORATORY TESTING, AND ASSOCIATED GEOTECHNICAL INTERPRETATIONS WERE PERFORMED BY CERTIFIED TESTING SERVICES, INC. THESE BORING LOGS ARE INCLUDED IN THE PROJECT PLANS FOR INFORMATIONAL AND REFERENCE PURPOSES. THE ENGINEER OF RECORD DID NOT PERFORM THE GEOTECHNICAL INVESTIGATION AND DOES NOT CERTIFY THE FIELD INVESTIGATION, BORING LOGS, SOIL CLASSIFICATIONS, LABORATORY TEST RESULTS, OR OTHER GEOTECHNICAL INFORMATION PREPARED BY CERTIFIED TESTING SERVICES, INC. THE ENGINEER OF RECORD'S SEAL ON THESE SHEETS CERTIFIES ONLY THE ENGINEERING WORK PERFORMED BY OR UNDER THE DIRECT PERSONAL SUPERVISION OF THE ENGINEER OF RECORD AND DOES NOT CERTIFY THE GEOTECHNICAL INVESTIGATION OR OTHER PROFESSIONAL SERVICES PERFORMED BY CERTIFIED TESTING SERVICES, INC. THE ORIGINAL GEOTECHNICAL REPORT, INCLUDING THE BORING LOGS, SHOULD BE REFERENCED FOR ADDITIONAL INFORMATION REGARDING SUBSURFACE CONDITIONS.

Sheet 1 of 1



Job Number: **G7434**
Project: **Bridge Replacement**
Date Started: **7/9/24**
Date Completed: **7/9/24**

Boring No.: **S-4**
 Boring Location: **Montgomery Co.**
 Drill Type: **Hollow Stem**
 Ground Elev.: **100.1**

[illegible]

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IOWA DOT PROJECT NUMBER
BROS-C069()-8J-69

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PROJECT INFO

2024000585

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CFF JMT *

2210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

SOIL BORING LOGS

[illegible]

DRAWING NO.
Q.2

PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE						
Possible Standards: EC-204						
Station From	Station To	Side	Sediment Control Device Type	Diameter Size	Length (LF)	Remarks
1004+17.07	1005+79.09	RT	PERIMETER	12	180	
1004+21.61	1005+28.68	LT	PERIMETER	12	120	
1005+20.67	1005+31.75	LT	PERIMETER	12	40	
1005+68.70	1005+80.49	RT	PERIMETER	12	30	
1006+45.74	1006+82.88	LT	PERIMETER	12	50	
1006+92.88	1007+19.74	LT	PERIMETER	12	80	
1006+99.89	1008+04.27	LT	PERIMETER	12	110	
1007+28.78		RT	DITCH CHECK	12	20	
1007+71.21		RT	INLET	12	30	
TOTAL:					660	



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IOWA DOT PROJECT NUMBER
BROS-C069()—8J-69

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PROJECT INFO

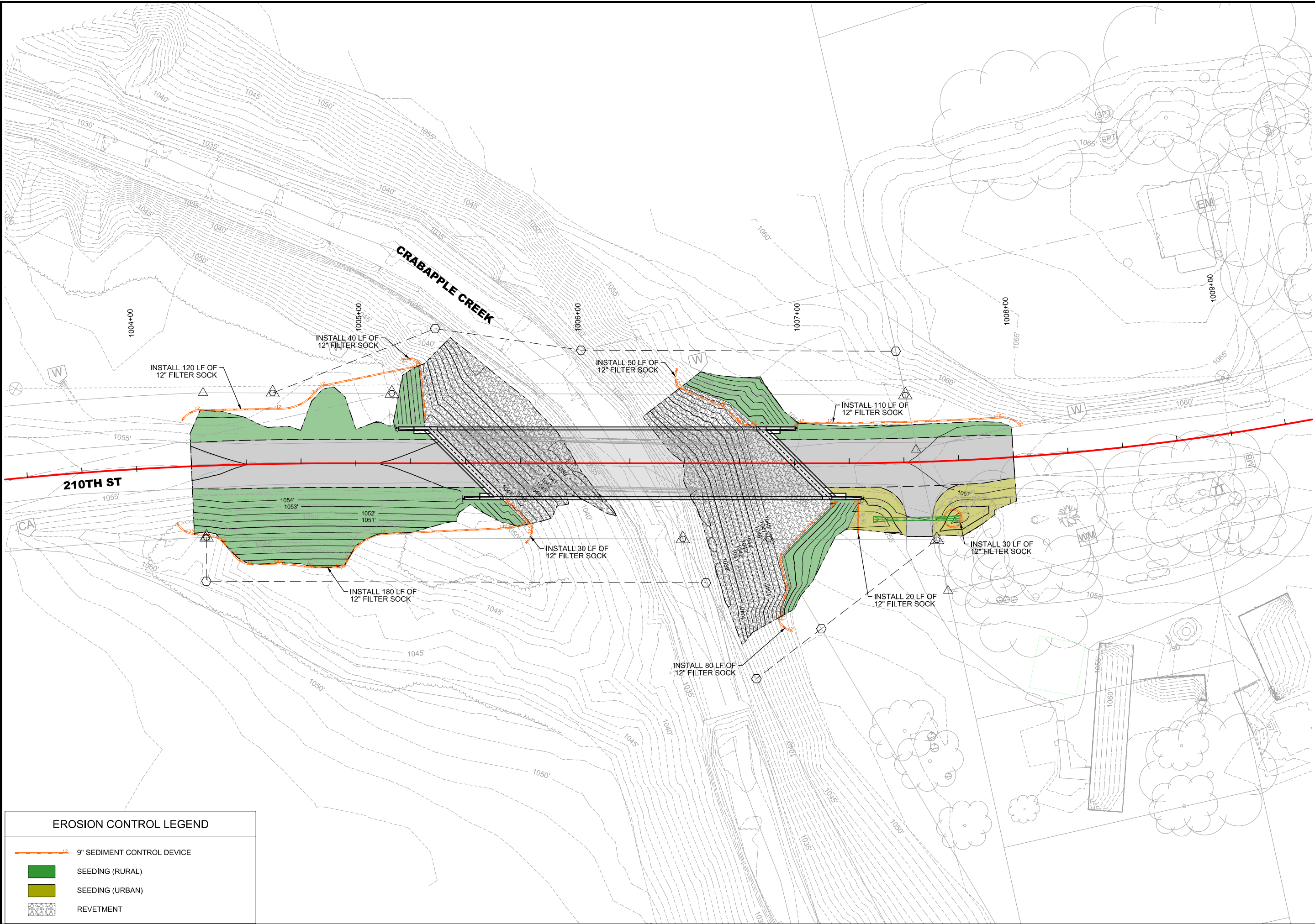
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210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

EROSION CONTROL TABULATIONS



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IOWA DOT PROJECT NUMBER
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210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

EROSION AND SEDIMENT CONTROL PLAN

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DRAWING NO.
RR.1

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 2023, plus applicable General Supplemental Specifications, Developmental Specifications, Supplemental Specifications and Special Provisions shall apply to construction work on this project.
"Developmental Specifications for Structural Concrete (4500 psi or Greater)"

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, and Bridge Deck Concrete f'c = 4.5 ksi.

Prestressed concrete beams, see Sheet V.15.

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).

General Notes:

It is the intent of this design to construct a new 150'-0" x 30'-6" Pretensioned Prestressed Concrete Beam bridge on a 45 degree skew on 210th Street over Crabapple Creek.

This design is for the replacement of the existing 118' x 21' Steel Truss bridge, FHWA No. 255931.

The lump sum bid for "Removal of Existing Bridge" shall include removal of the existing 118' x 21' Steel Truss bridge, including removal of the existing substructures to 2'-0" below finished grade. The Contractor will be responsible for removal and disposal offsite.

Removals shall be in accordance with Section 2401, of the Standard Specifications.

The County and Utility Companies whose facilities are shown on the plans or known to be within the construction limits shall be notified by the Bridge Contractor of the construction starting date.

This bridge is designed for HL-93 Loading, plus 20 lbs. per square foot of roadway for future wearing surface.

Excavation quantities for the abutments are based on the assumption that abutment slopes/fills are in place.

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.

All reinforcing bars and bars noted as dowels supplied for this structure shall be deformed reinforcement unless otherwise noted or shown.

These bridge plans label all reinforcing steel with english notation (5a1 is 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

Faint lines on plans indicate the existing structure.

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.

The Bridge Contractor shall prebore holes for abutment piles. Holes shall be bored to the elevations shown on the "Longitudinal Section Along Centerline Roadway" on Sheet V.3. Piles shall be driven through the holes to at least the specified design bearing.

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.

An inspection for the presence of asbestos containing materials was performed on the existing bridge. There were no asbestos containing materials found during the inspection.

If during demolition of the existing bridge any suspect materials for asbestos are uncovered, notify the Engineer immediately.

Bridge Deck Dimension Table			
No.	Item	Unit	Quantity
1	Deck Length	L.F.	154.2
2	Minimum Deck Width	L.F.	33.2
3	Maximum Deck Width	L.F.	33.2
4	Deck Area	S.F.	5,116

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.

Working Drawing and Calculation Submittals			
Working drawings and calculations shall be submitted for the following items shown in the table below. (Note additional working drawings and calculations may be required in accordance with Article 1105.03 of the Standard Specifications.)			
Submittal requirements for working drawings and calculations shall be in accordance with 1105.03 of the Standard Specifications for Highway and Bridge Construction of the Iowa Department of Transportation. The absence of a certification requirement for a submittal does not relieve the Contractor of the responsibility to attain certification.			
Calculation submittals in this table which are associated with working drawing submittals shall be submitted on the same day. Review time for calculation submittals shall be of the same duration as and run concurrently with review time for associated working drawings. The calculation submittals listed in the table are not meant to be an exhaustive list and do not relieve the Contractor from providing additional calculation submittals if requested by the Engineer.			
No.	Working Drawing Description	Working Drawing File Name Convention For Submittal	Certified by Iowa P.E. (Yes/No)
1	Steel Intermediate Diaphragms	Montgomery_IntermediateDiaphragms.pdf	No
No.	Calculation Description	Calculation File Name Convention For Submittal	Certified by Iowa P.E. (Yes/No)

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 160,000 parts per million (ppm). Analysis of total chromium on this sample was 31,000 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 County's testing and analysis for any purpose other than as an indication of the existence of these two toxic constituents.

The Contractor shall conduct their operations in such a manner that any paint removed during demolition is contained, collected, and disposed of in accordance with Section 2508, of the Standard Specifications. Before delivery of any scrap steel the Contractor shall provide a written notice to the receiving facility. This notice shall at a minimum include:

1. A notice that the scrap steel is coated with paint that has regulated materials at levels which could be hazardous to employees or the environment.
2. A Copy of the scrape sample provided in the contract documents.
3. A signature block for the receiving facility to confirm their receipt of this information.

A copy of this notice, signed by the receiving facility, shall be returned to the Engineer before any scrap steel is removed from the project. The cost of handling and disposal of any painted steel or removed paint is incidental to the removal bid item.

Traffic Control Plan
The roadway will be closed to thru traffic. Refer to the Traffic Control Plan shown elsewhere in these plans.

Design For 45 Degree RA Skew

150'-0" x 30'-6" Pretensioned Prestressed Concrete Beam Bridge

150'-0" Single Span

General Notes

STA. 1006+25.00 (210th St.)Turn-in Date: Sept 2026

Montgomery County



623 N Carroll St.
Carroll, IA 51401
main 712.220.8121

Ankeny,IA | Carroll,IA | Clive,IA
Cedar Rapids,IA | Coralville,IA
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IOWA DOT PROJECT NUMBER
BROS-C069(84)--8J-69

210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

GENERAL NOTES

T:2024000585\04-Drawings\DrawPlans\2024000585_SHT_V00.dgn



DRAWING NO.
V.2

Hydraulic Data

Drainage Area = 14.5 Sq. Mi.
Stream Slope (HGL) = 17.2 Ft./Mi.
Avg. Low Water Stage = 1039.96

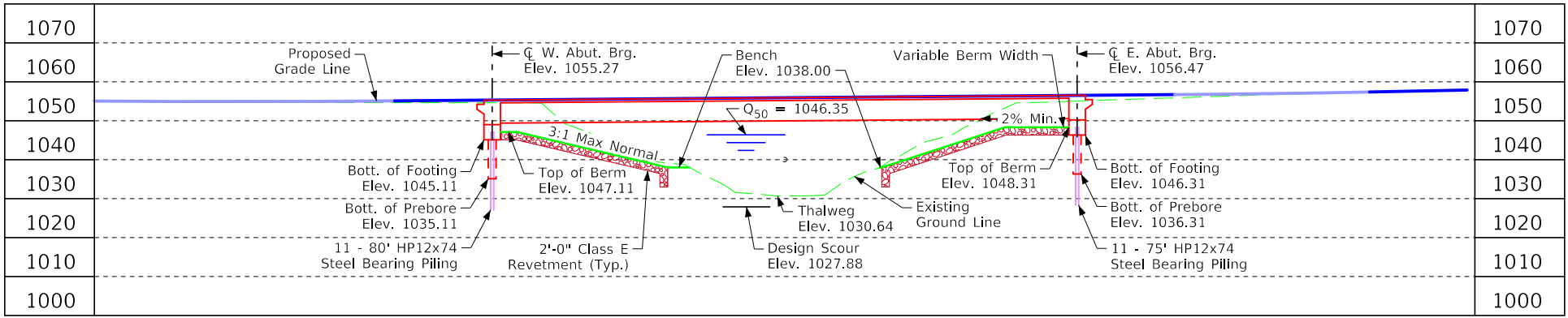
$Q_{50} = 5,010$ cfs
Stage = 1046.35
Regulatory Low Beam = 1049.41
Avg. Bridge Velocity = 10.68 fps

$Q_{100} = 5,980$ cfs
Stage = 1047.18
Operational Low Beam = 1049.41
Backwater = 0.56 Ft.
Avg. Bridge Velocity = 12.6 fps

$Q_{200} = 7,010$ cfs
Stage = 1048.43
Calculated Design Scour = 1027.88

$Q_{500} = 8,360$ cfs
Stage = 1050.05
Avg. Bridge Velocity = 14.3 fps
Calculated Check Scour = 1027.32

Roadway Overtop 1054.92
Sta. 1004+80.56



Longitudinal Section Along $\mathcal{Q}$ Approach Roadway

Control Point: CP202, CP / 1/2IN MCEC CAP,
Elev. 1056.14, N.6234949.43, E.22061207.12

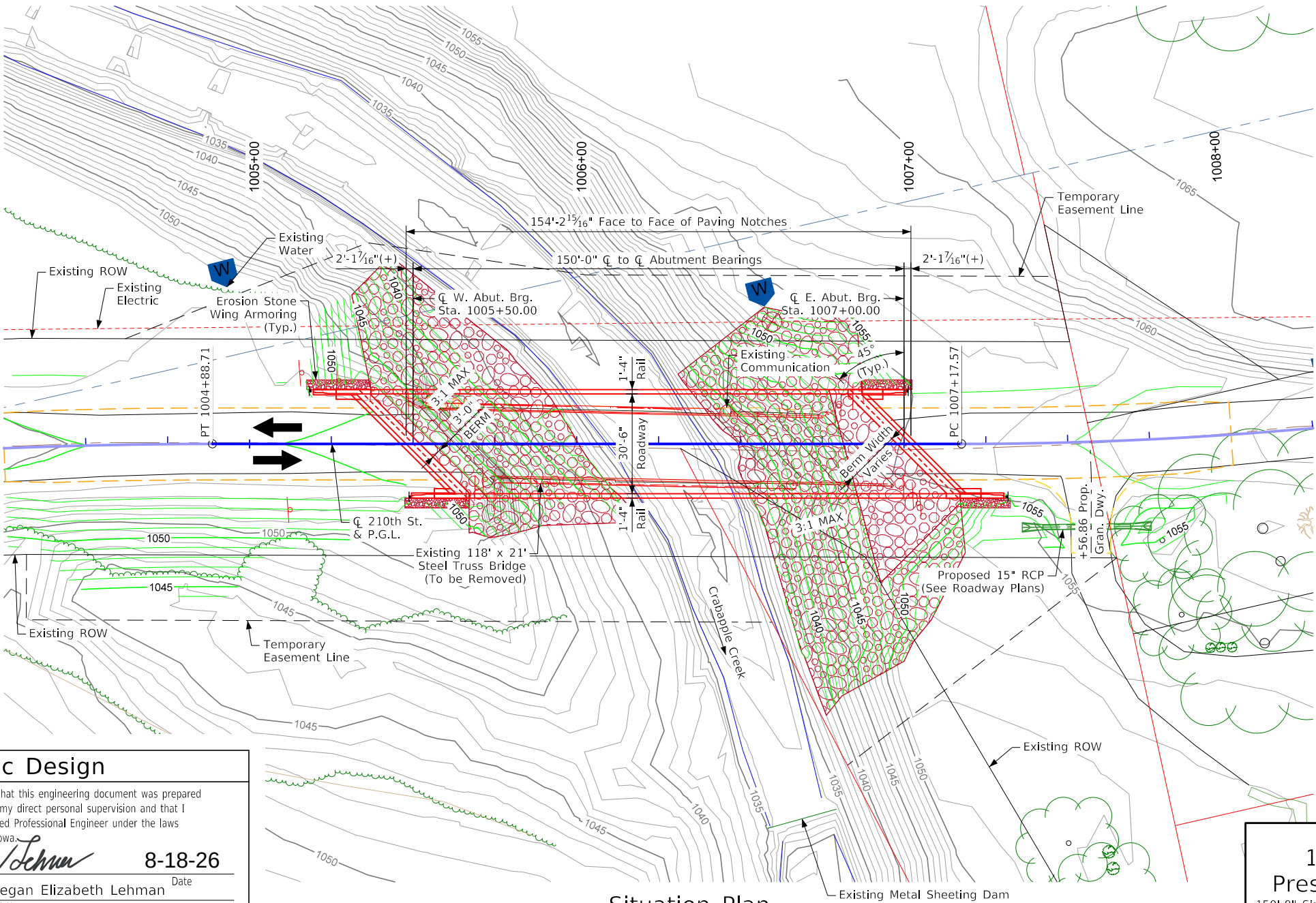
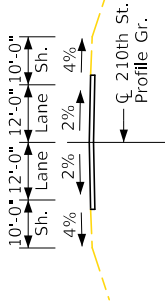
VPC
Sta. = 1007+25.00
Elev. = 1056.70

+0.80%

VPT
Sta. = 1005+25.00
Elev. = 1055.10

Proposed Profile
Grade 210th Street

Typical Approach Section



Situation Plan

Notes:
This design is for the replacement of the existing 118' x 21' Steel Truss bridge.
All units are in feet unless noted otherwise.
See sheet V.4 for overall site plan.
Top of bridge deck at centerline of roadway is 0.03' below the profile grade to account for parabolic crown.

Utilities Note:
Utilities shown on this sheet are for information only.
See Road Design sheets for final utility information.

General Utility Symbols:
E - Electric Line
G - Gas Line
SAN. - Sanitary Sewer
T - Telephone Line
W - Water Line
FO - Fiber Optic Line
GHP - Gas High Pressure
ST S - Storm Sewer
TV - TV

Location
210th St. over
Crabapple Creek
T-72N R-39W
Section 28/33
Garfield Township
Montgomery County
FHWA No. 255931
Latitude 41.001689°
Longitude -95.340269°

Traffic Estimate
2016 AADT 60 V.P.D.
20-- AADT -- V.P.D.
20-- DHV -- V.P.H.
TRUCKS -- %
Total
Design ESALs --

Design For 45 Degree RA Skew
150'-0" x 30'-6" Prestressed
Concrete Beam Bridge
150'-0" Single Span
Situation Plan
STA. 1006+25.00 (210th St.) Turn-in Date: September 2026
Montgomery County

Hydraulic Design



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

Signature: *Megan Elizabeth Lehman* Date: 8-18-26

Printed or Typed Name: Megan Elizabeth Lehman

My license renewal date is December 31, 2027

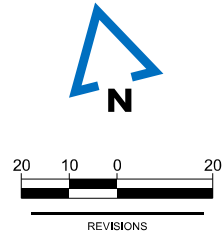
Pages or sheets covered by this seal:

Sheet V.3 Hydraulic Data

McCLURE
623 N Carroll St.
Carroll, IA 51401
main 712.220.8121
Ankeny, IA | Carroll, IA | Clive, IA
Cedar Rapids, IA | Coralville, IA
Fort Dodge, IA | Sioux City, IA
Macon, MO | Columbia, MO
North Kansas City, MO
Lenexa, KS
Boston, MA | Portsmouth, NH

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IOWA DOT PROJECT NUMBER
BROS-C069(84)-8J-69



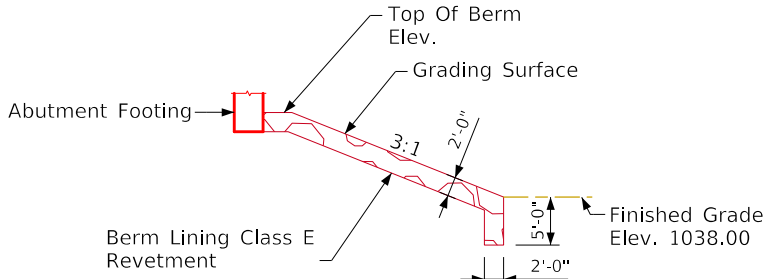
PROJECT INFO
2024000585
ENGINEER: JCH
DRAWN BY: JCH
CHECKED BY: CWM

210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

SITUATION PLAN

DRAWING NO.
V.3

Control Point: CP202, CP / 1/2IN MCEC CAP,
Elev. 1056.14, N.6234949.43, E.22061207.12



Section Thru Embedded Revetment Berm

Estimated Berm Armoring Quantities

Location	Revetment CL. E (Ton)	Erosion Stone (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Berm Lining - West	445	--	--	280
Berm Lining - East	695	--	--	435
Totals	1,140	--	--	715

Excavation quantity calculated from grading surface.
Revetment estimated at 1.6 Ton/CY.
Revetment quantity is included in bid item "Revetment, Special".

Berm Slope Location Table

Points	West Abutment			East Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	1005+86.99	19.58' LT	1038.00	1006+32.07	19.58' LT	1038.00
A2	1006+00.55	0.00'	1038.00	1006+49.25	0.00'	1038.00
A3	1006+16.31	19.58' RT	1038.00	1006+55.05	19.58' RT	1038.00
B1	1005+36.78	19.58' LT	1047.11	1006+76.25	19.58' LT	1048.31
B2	1005+56.36	0.00'	1047.11	1006+81.50	0.00'	1048.31
B3	1005+75.95	19.58' RT	1047.11	1006+86.74	19.58' RT	1048.31
W1	1005+19.50	19.58' LT	1054.60	1007+00.50	19.58' LT	1056.05
W2	1005+49.50	19.58' RT	1054.84	1007+30.29	19.65' RT	1056.29

Berm slope elevations reflect the grading surface.

Revetment Layout:

- (R1) 1005+31.30, 45.54' Lt.

(R2) 1005+43.13, 57.54' Lt.

(R3) 1005+78.80, 28.73' Lt.

(R4) 1005+92.17, 13.82' Lt.

(R5) 1006+03.97, 5.36' Rt.

(R6) 1006+17.09, 20.53' Rt.

(R7) 1006+18.95, 23.93' Rt.

(R8) 1005+89.37, 24.98' Rt.
- (R9) 1005+73.57, 28.69' Rt.

(R10) 1005+67.12, 27.25' Rt.

(R11) 1006+85.54, 37.55' Lt.

(R12) 1006+84.58, 39.49' Lt.

(R13) 1006+76.69, 39.10' Lt.

(R14) 1006+57.34, 41.83' Lt.

(R15) 1006+30.93, 21.34' Lt.

(R16) 1006+45.02, 3.76' Lt.
- (R17) 1006+49.20, 0.27' Lt.

(R18) 1006+49.35, 7.39' Rt.

(R19) 1006+57.59, 25.51' Rt.

(R20) 1006+68.77, 63.83' Rt.

(R21) 1006+76.26, 82.94' Rt.

(R22) 1006+81.03, 77.05' Rt.

(R23) 1007+00.00, 66.49' Rt.

(R24) 1007+08.37, 53.73' Rt.

(R25) 1007+18.67, 33.26' Rt.

Utilities Note:

Utilities shown on this sheet are for information only.
See Road Design sheets for final utility information.

General Utility Symbols:

- E - Electric Line

G - Gas Line

SAN. - Sanitary Sewer

T - Telephone Line

W - Water Line
- FO - Fiber Optic Line

GHP - Gas High Pressure

ST S - Storm Sewer

TV - TV

Design For 45 Degree RA Skew

150'-0" x 30'-6" Pretensioned
Prestressed Concrete Beam Bridge

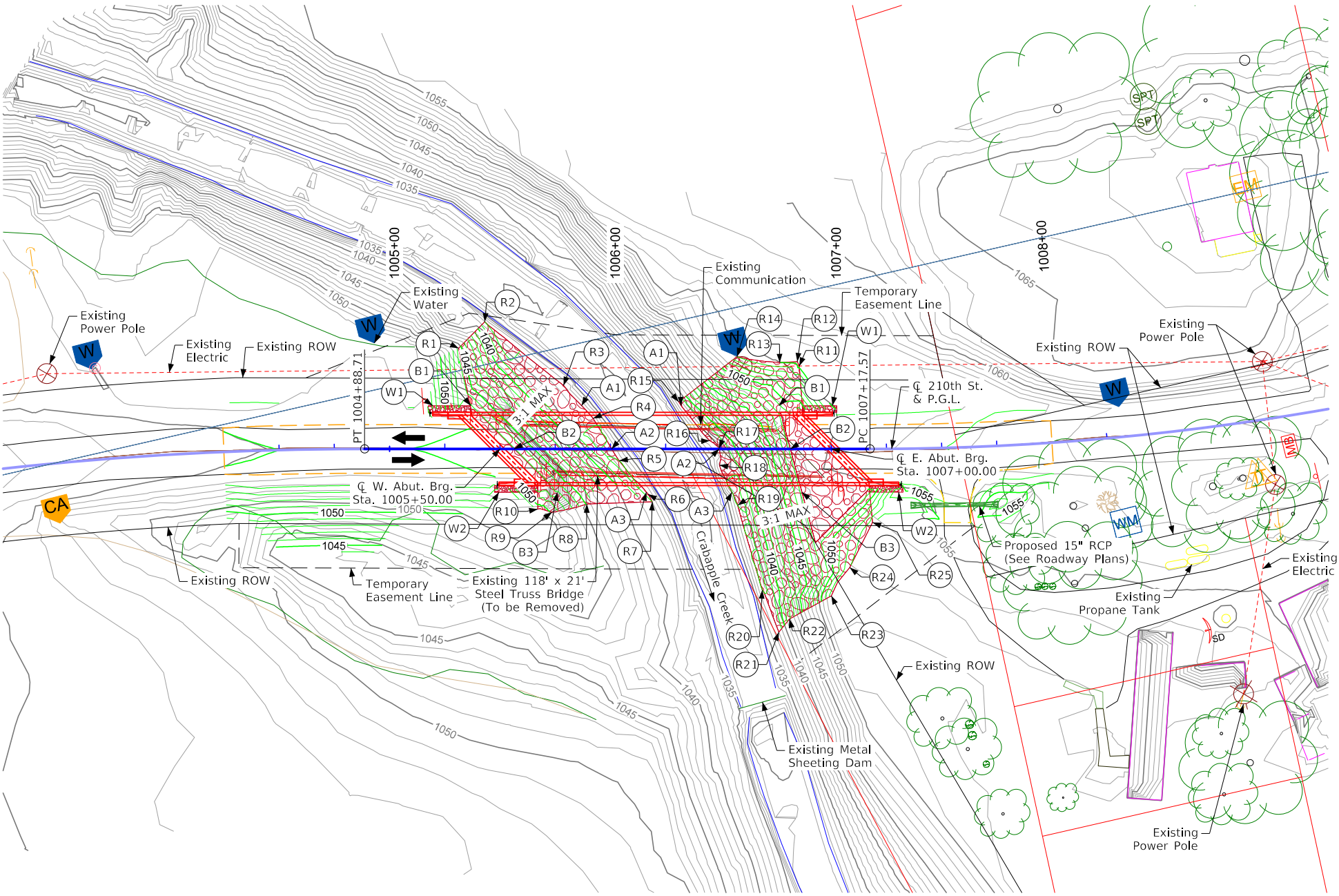
150'-0" Single Span

Site Plan

STA. 1006+25.00 (210th St.)

Turn-in Date: September 2026

Montgomery County



Site Plan

Notes:
All units are in feet unless noted otherwise.
See sheet V.3 for detailed plan.
Class E revetment stone is embedded.

623 N Carroll St.
Carroll, IA 51401
main 712.220.8121

Ankeny, IA | Carroll, IA | Clive, IA
Cedar Rapids, IA | Coralville, IA
Fort Dodge, IA | Sioux City, IA
Macon, MO | Columbia, MO
North Kansas City, MO
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IOWA DOT PROJECT NUMBER
BROS-C069(84)-8J-69

30 15 0 30

REVISIONS

PROJECT INFO
2024000585

ENGINEER JCH DRAWN BY JCH CHECKED BY CVM

210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

SITE PLAN

T:\2024\000585\04-Drawings\Drawings\2024000585_SHT_V01.dgn

DRAWING NO.
V.4

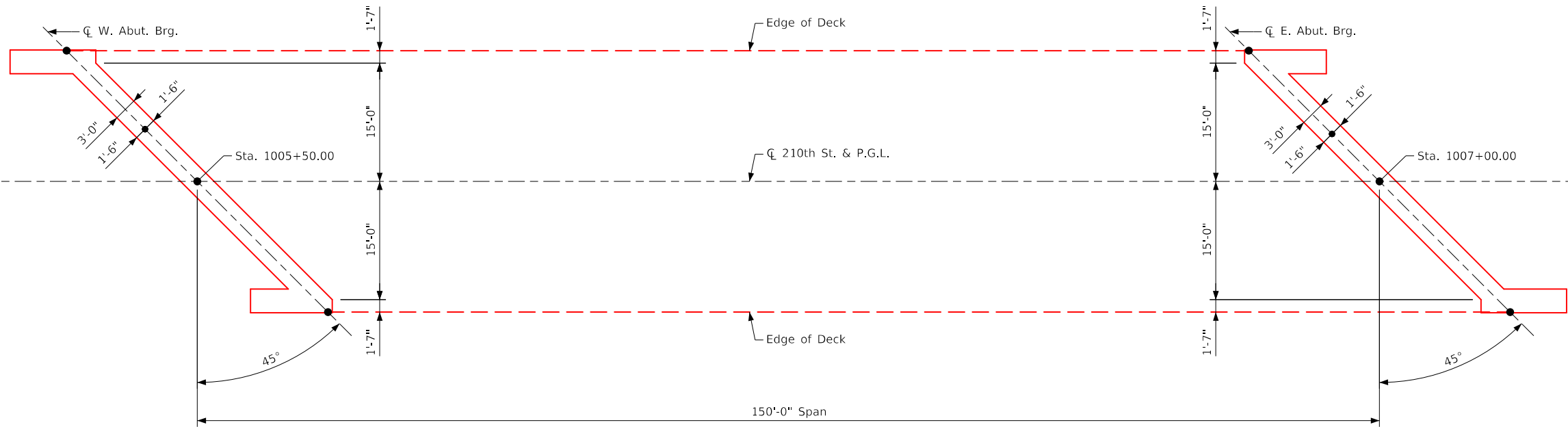


REVISIONS

PROJECT INFO		
2024000585		
ENGINEER	DRAWN BY	CHECKED BY
JCH	JKL	CVM

210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

STAKING DIAGRAM

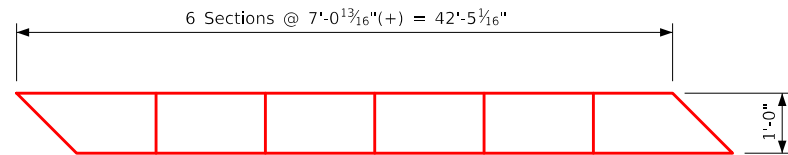


Staking Diagram

Bridge Coordinates		
Location	Q W. Abut. Brg.	Q E. Abut. Brg.
North Edge of Deck	X=22060994.0140 Y=6235003.1914	X=22061139.4181 Y=6234966.3449
Q Approach Roadway	X=22061006.0156 Y=6234983.0426	X=22061151.4198 Y=6234946.1960
South Edge of Deck	X=22061018.0173 Y=6234962.8937	X=22061163.4214 Y=6234926.0472

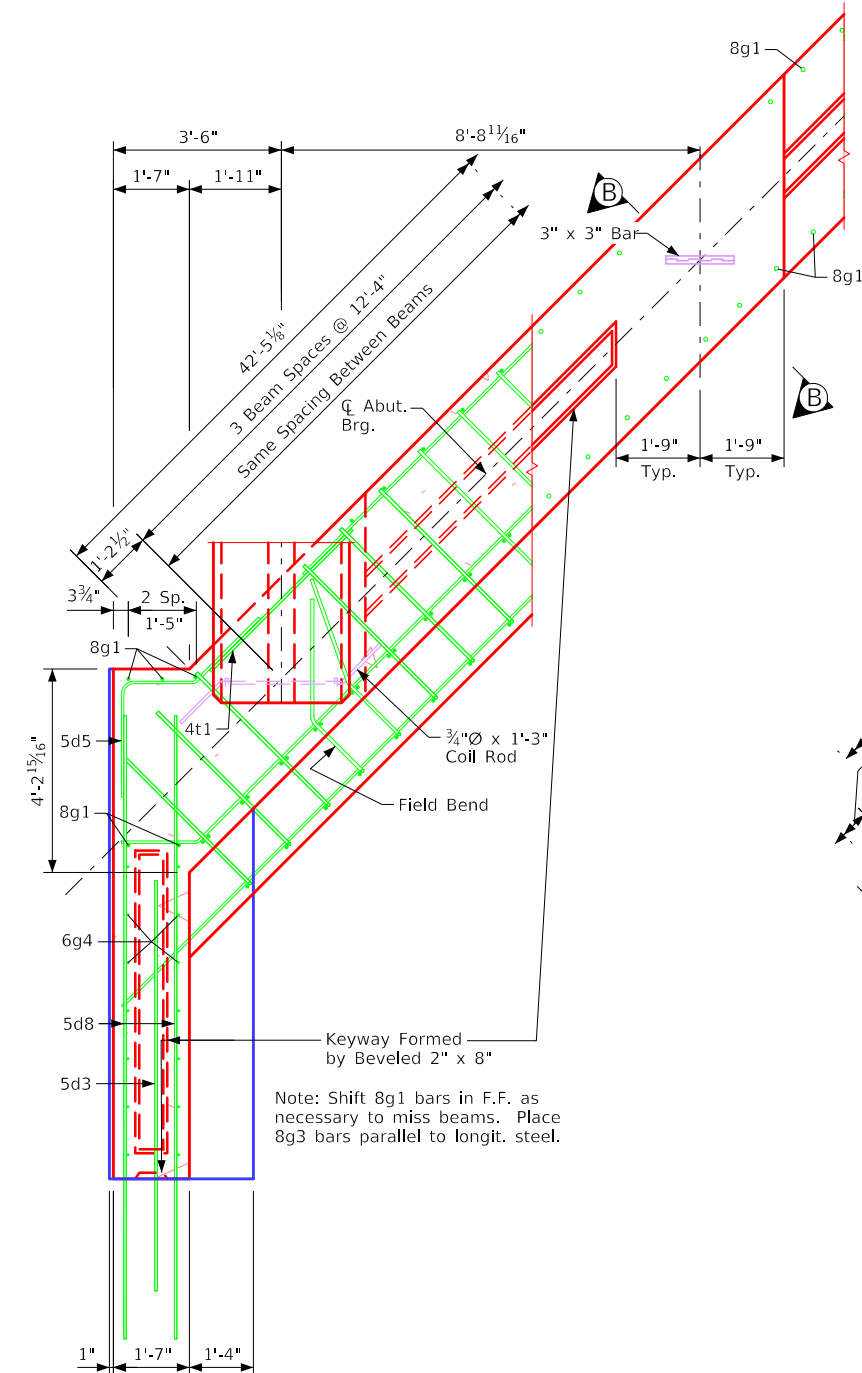
Note: An electronic file containing the bridge coordinate data is available as part of the e-files supplied with the contract documents. The contractor shall verify these coordinates with the project horizontal control information provided in the road plans.

Design For 45 Degree RA Skew
150'-0" x 30'-6" Prestensioned
Prestressed Concrete Beam Bridge
150'-0" Single Span
Staking Diagram
STA. 1006+25.00 (210th St.) Turn-in Date: Sept 2026
Montgomery County

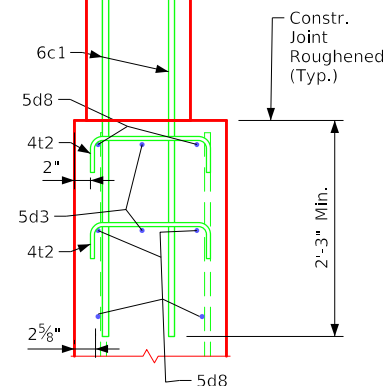


Plan of Temporary Paving Block

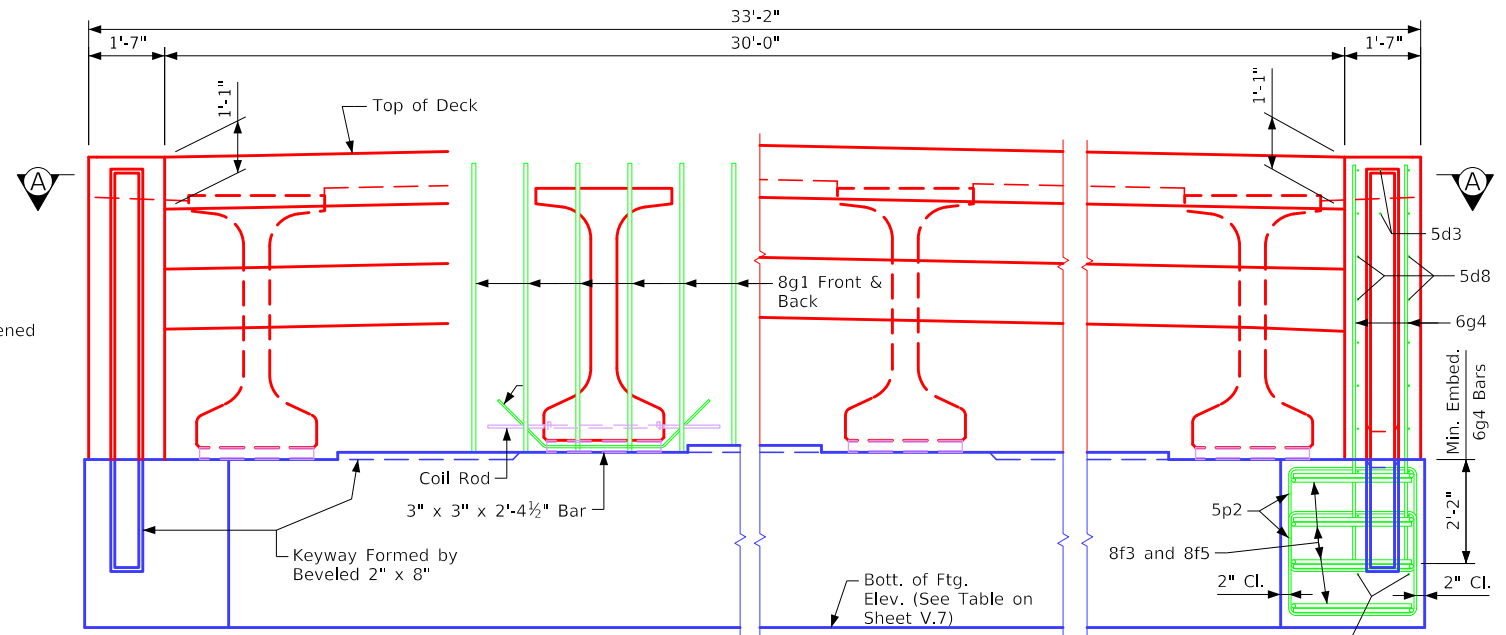
Note:
Line paving notch with tar paper before
placing the temporary paving block.



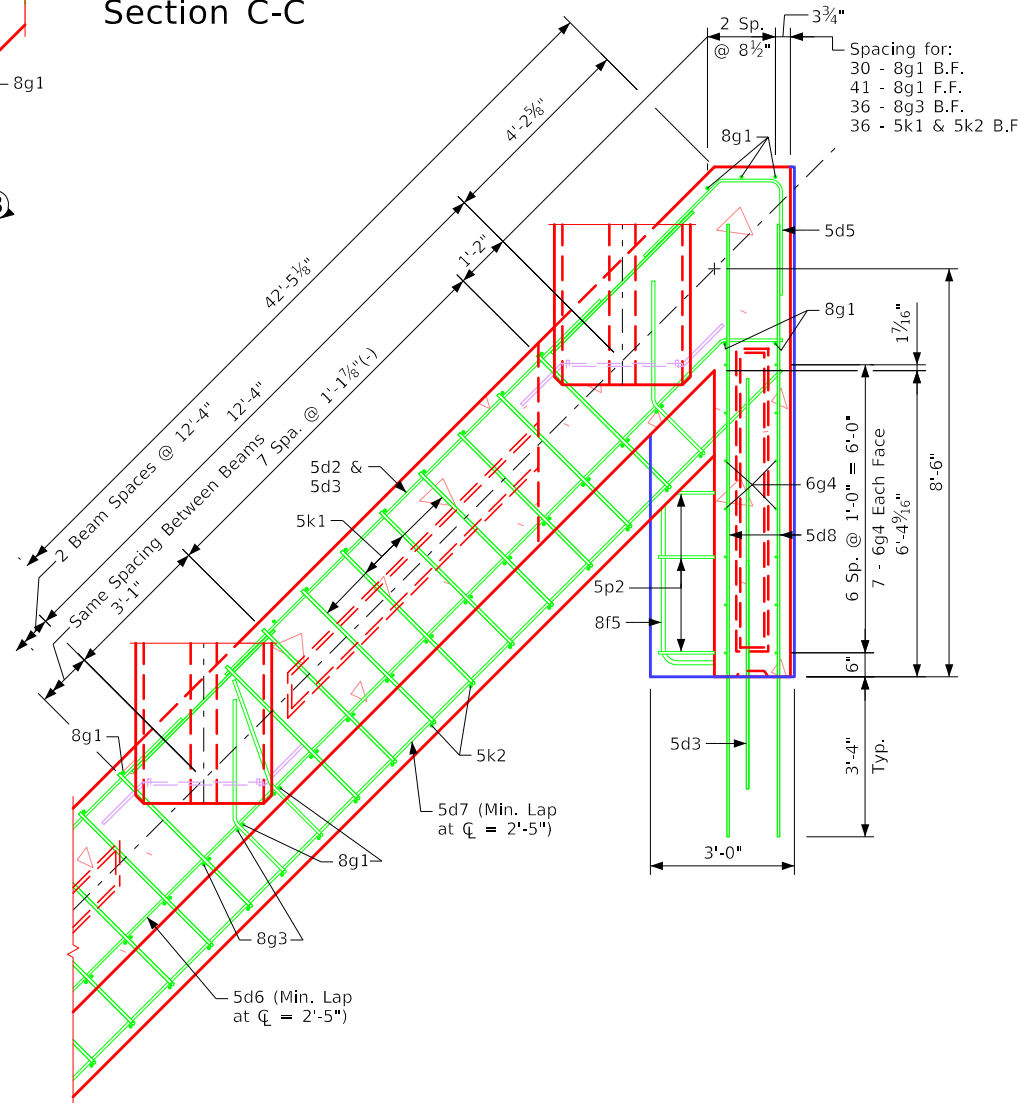
Part Section A-A



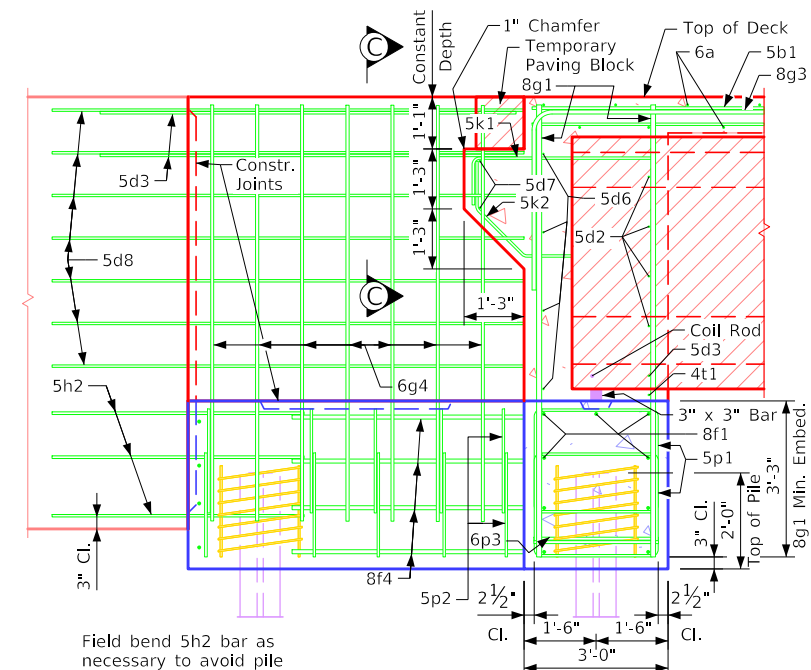
Part
Section C-C



Part Rear Elevation at Abutment
(Wings not Shown)



Part Section B-B



Note: The spiral at the top of each
pile to be 7 turns of no. 2 bar,
21\"/>

Design For 45 Degree RA Skew
150'-0\"/>

210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

ABUTMENT DETAILS

REVISIONS

PROJECT INFO
2024000585
ENGINEER JCH DRAWN BY JLK CHECKED BY CVM

DRAWING NO.
V.6

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Carroll, IA 51401
main 712.220.8121
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North Kansas City, MO
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Specifications, and the engineering
intent they convey, or for Losses
which arise from failure to obtain
and/or follow the engineers' or
surveyors' guidance with respect to
any alleged errors, omissions,
inconsistencies, ambiguities, or
conflicts contained within
the Plans and Specifications.

IOWA DOT PROJECT NUMBER
BROS-C069(84)-8J-69

Control Point: CP202, CP / 1/2IN MCEC CAP,
Elev. 1056.14, N.6234949.43, E.22061207.12

West Abutment Pile Driving Notes

The contract length of 80 feet for the west abutment piles is based on a cohesive soil classification, a total factored axial load per pile (Pu) of 173 kips, and a geotechnical resistance factor (phi) of 0.6.

The nominal axial bearing resistance for construction control was determined from a cohesive soil classification and a geotechnical resistance factor (phi) of 0.55. Piles are assumed to be driven from a start elevation at the bottom of prebore.

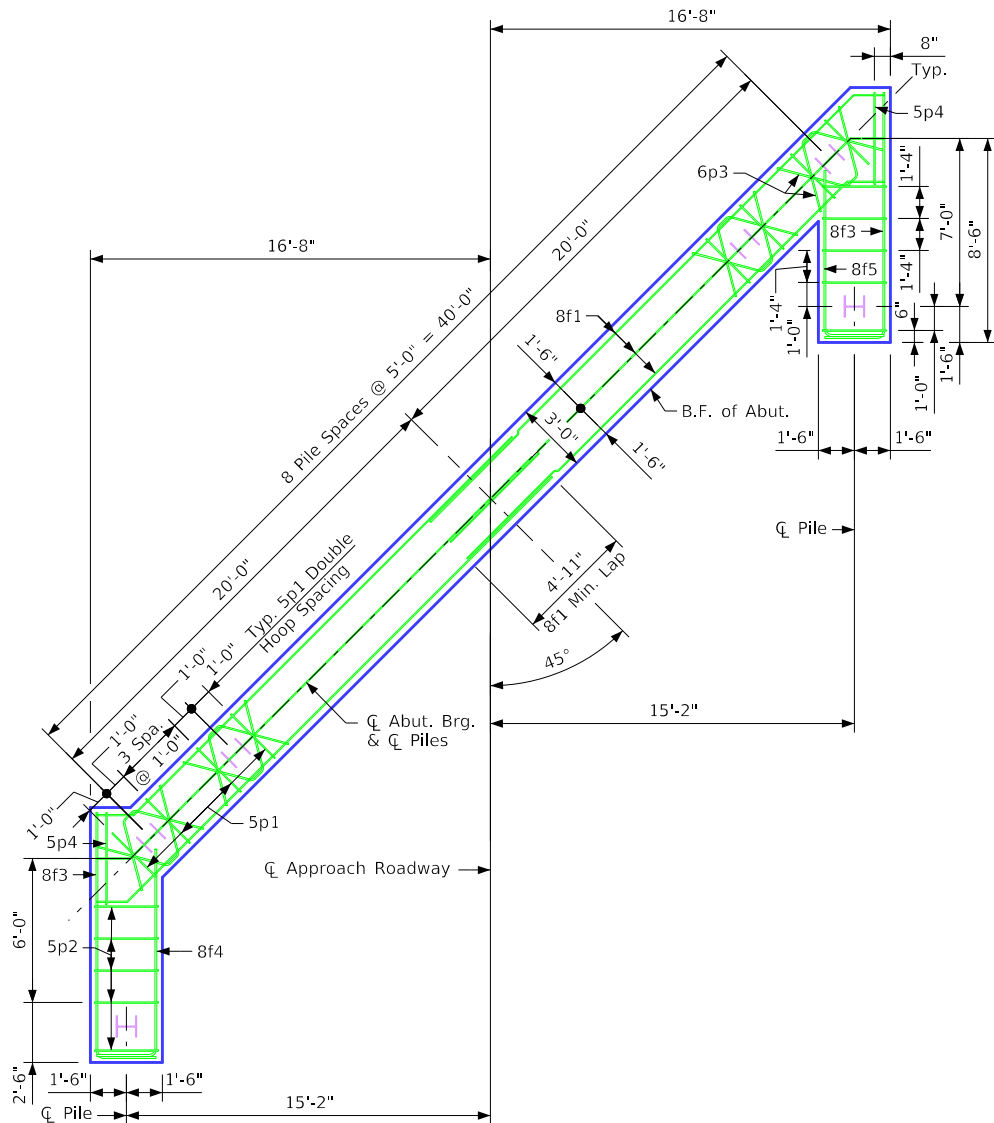
The required nominal axial bearing resistance for west abutment piles is 157 tons at end of drive or retap. The pile contract length shall be driven as per plan unless piles reach refusal. Construction control requires a modified Iowa DOT ENR formula.

East Abutment Pile Driving Notes

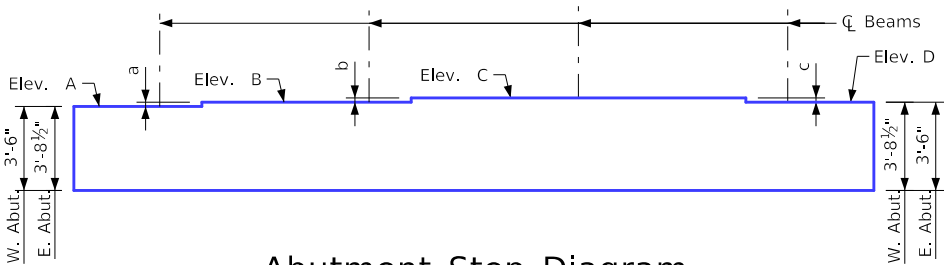
The contract length of 75 feet for the east abutment piles is based on a cohesive soil classification, a total factored axial load per pile (Pu) of 173 kips, and a geotechnical resistance factor (phi) of 0.6.

The nominal axial bearing resistance for construction control was determined from a cohesive soil classification and a geotechnical resistance factor (phi) of 0.55. Piles are assumed to be driven from a start elevation at the bottom of prebore.

The required nominal axial bearing resistance for east abutment piles is 157 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 modified Iowa DOT ENR formula.



Abutment Pile Plan



Abutment Step Diagram
(Rear Elevation)

Table of Abutment Elevations		
Point	West Abutment	East Abutment
Elev. A	1048.61	1050.02
Elev. B	1048.85	1050.12
Elev. C	1048.92	1050.05
Elev. D	1048.82	1049.81
Bottom Footing Elev.	1045.11	1046.31
Table of Abutment Steps		
Step	West Abutment	East Abutment
a	2 13⁄16	1 1⁄4
b	1 3⁄16	1 3⁄16
c	1 1⁄4	2 13⁄16

Abutment Concrete Quantity	
Location	Quantity
West Abutment Footing	24.6
East Abutment Footing	24.6
Total (Cu. Yds.)	49.2

Notes:
Concrete Quantities are included on the Summary Quantities sheet.
11 - HP 12 x 74 steel bearing piling required at each abutment.
Barrier rail not shown in details.

Abutment Notes:
Minimum clear distance from face of concrete to near reinforcing bar is to be 2" unless otherwise noted or shown.
If necessary to prevent damage to the end of the bridge deck 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 County.

Design For 45 Degree RA Skew

150'-0" x 30'-6" Pretensioned Prestressed Concrete Beam Bridge

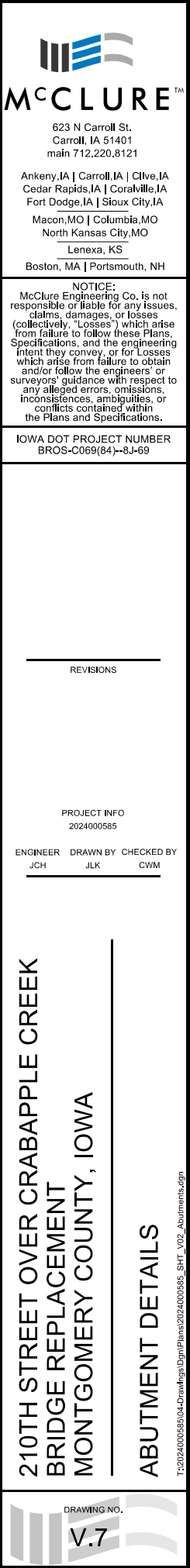
150'-0" Single Span

Abutment Details

STA. 1006+25.00 (210th St.)

Turn-in Date: Sept 2026

Montgomery County



623 N Carroll St,
Carroll, IA 51401
main 712.220.8121

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Macon,MO | Columbia,MO
North Kansas City,MO
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IOWA DOT PROJECT NUMBER
BROS-C069(84)-8J-69

REVISIONS

PROJECT INFO
2024000585

ENGINEER
JCH

DRAWN BY
JLK

CHECKED BY
CVM

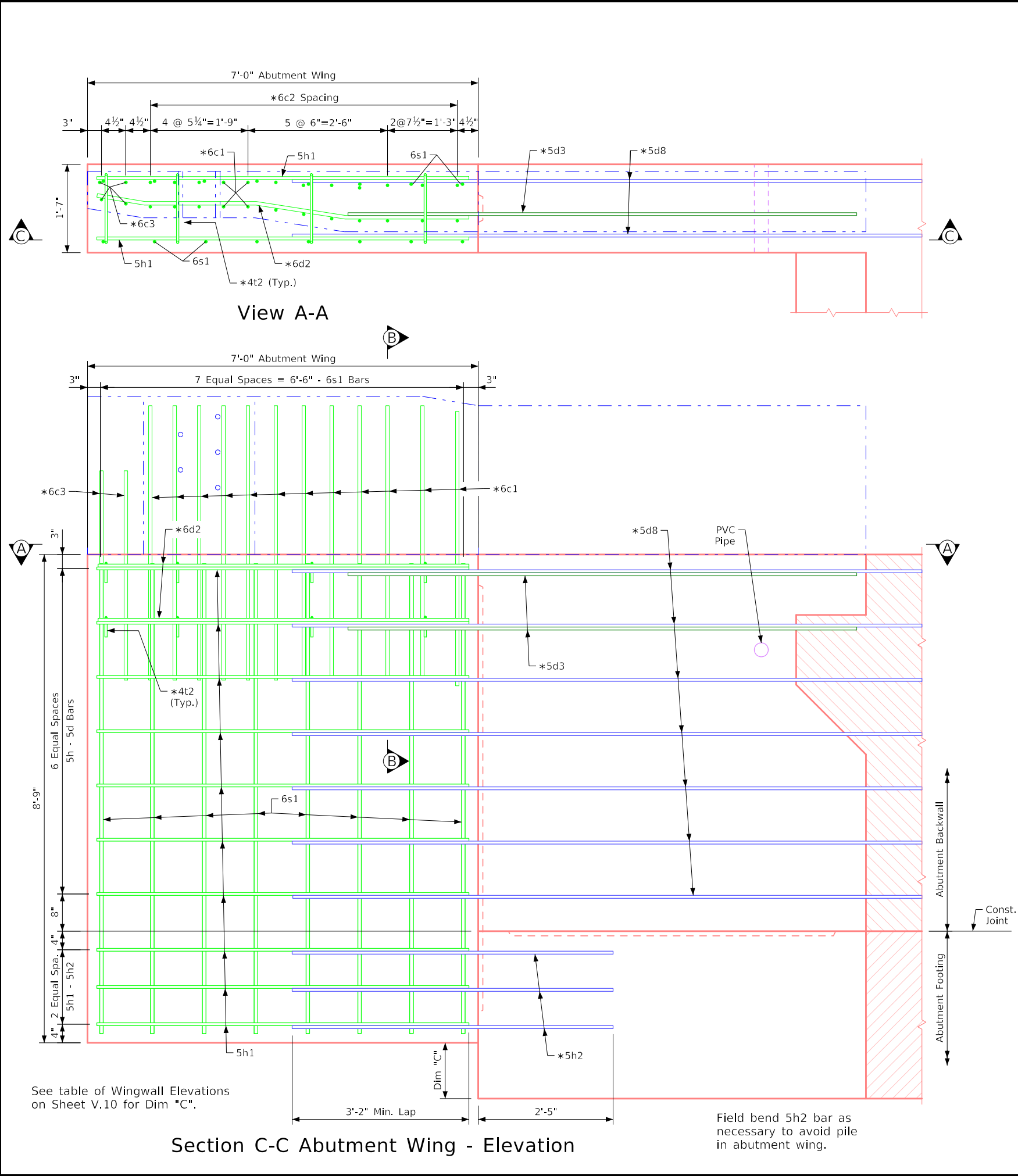
210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

ABUTMENT DETAILS

T:2024000585\04-Drawings\DrawPlans\2024000585_SHT_V02_Abutments.dgn

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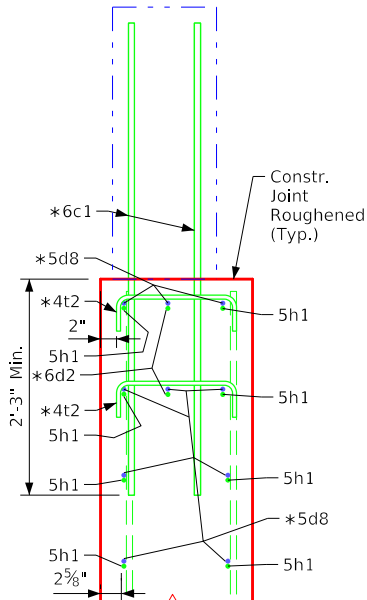
V.7



Reinforcing Bar List - One Abut. Wing					
Bar	Location	Shape	No.	Length	Weight
5h1	Horizontal Both Faces		20	6'-8"	139
6s1	Vertical Both Faces		16	8'-5"	202
Epoxy Reinforcing Total Weight (lbs.)					341

Concrete Placement Summary	
Section	Total
One Abutment Wing	3.6
Total (cu. yds.)	3.6

Note: Concrete and reinforcing steel quantities are included on the Summary Quantities Sheet.



*Barrier rail end section bars to be placed with abutment wing and abutment.

See Open Rail Details Sheet on Sheet V.19 for details of reinforcing bars 6c1, 6c3, 6d2, 5d3, and 4t2.

See Superstructure Quantities Sheet on Sheet V.14 for details of reinforcing bars 5h2 and 5d8.

Design For 45 Degree RA Skew

150'-0" x 30'-6" Prestressed Concrete Beam Bridge

150'-0" Single Span

Abutment Wing Details

STA. 1006+25.00 (210th St.) Turn-in Date: Sept 2026

Montgomery County

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210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

ABUTMENT WING DETAILS

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V.8

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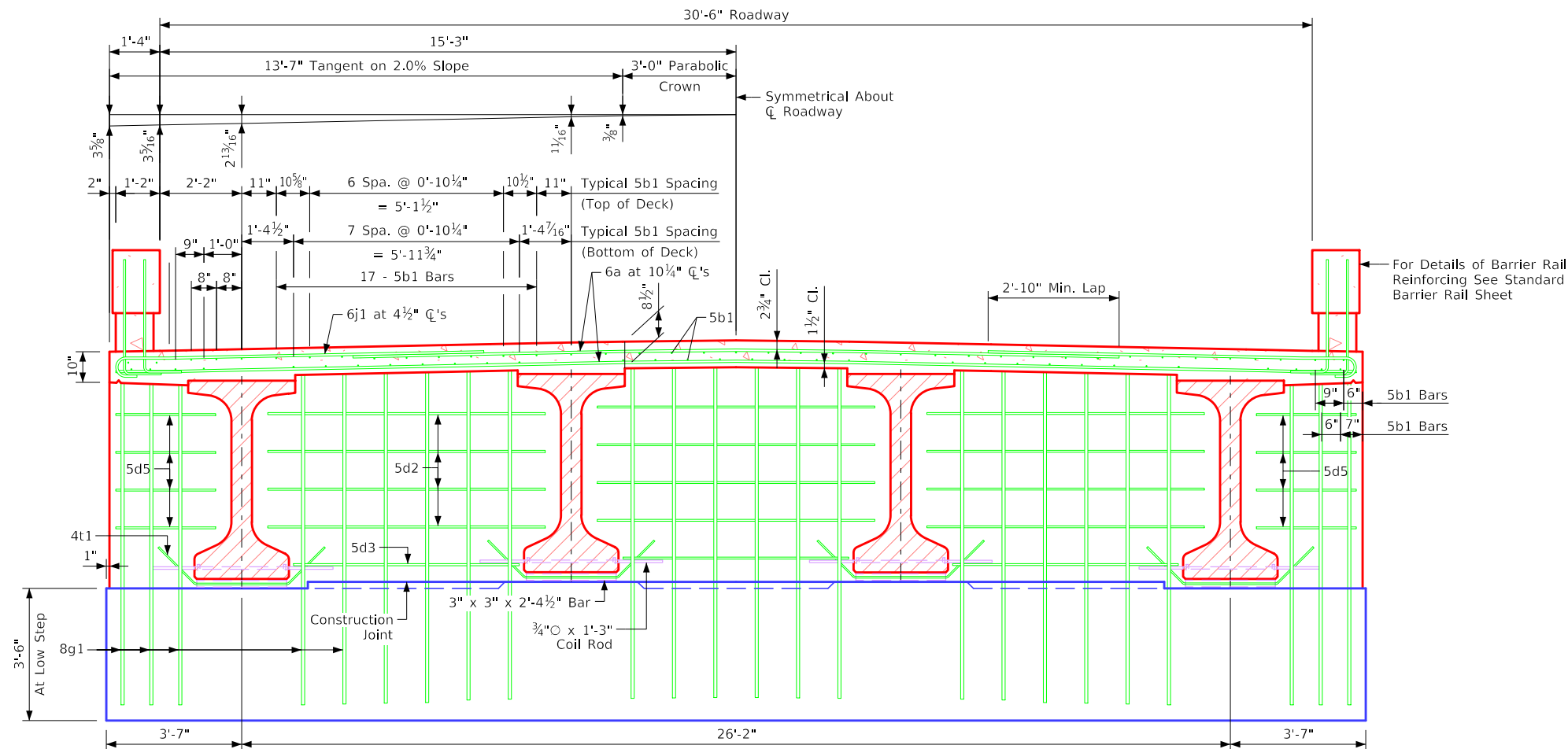
IOWA DOT PROJECT NUMBER
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210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA
BRIDGE DECK CROSS SECTION

DRAWING NO.
V.9



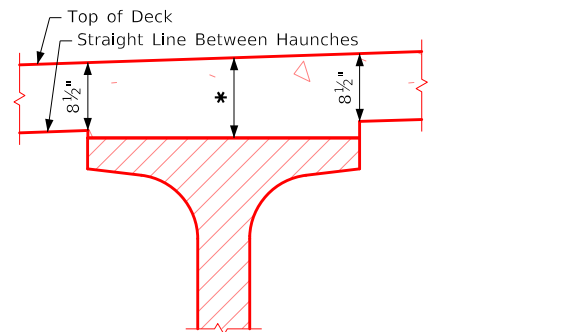
Section Near Abutment

Note: For details of
Intermediate Diaphragm
see Sheet V.17.

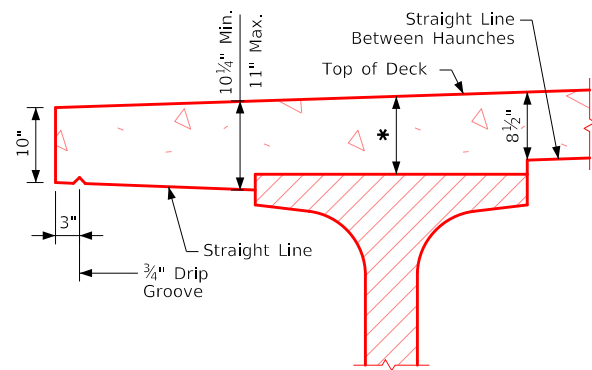
Superstructure Notes:

- The bridge deck as shown includes $\frac{3}{4}$ " 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 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" unless otherwise noted or shown.
- All deck and diaphragm reinforcing is to be wired in place and adequately supported before concrete is placed.
- Top transverse reinforcing steel is to be parallel to and $2\frac{3}{4}$ " clear below top of deck. Bottom transverse reinforcing steel is to be parallel to and $1\frac{1}{2}$ " 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 = 2'-10").
 - Bottom bars - lap over beams (min. lap = 3'-7").
- 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.
- Cost for bearing material is to be included in the price bid for "Prestensioned Prestressed Concrete Beams".

Deck area = 24.19 Sq. Ft.
Deck area does not
include the nominal
 $\frac{1}{2}$ " haunch.



Interior Beams

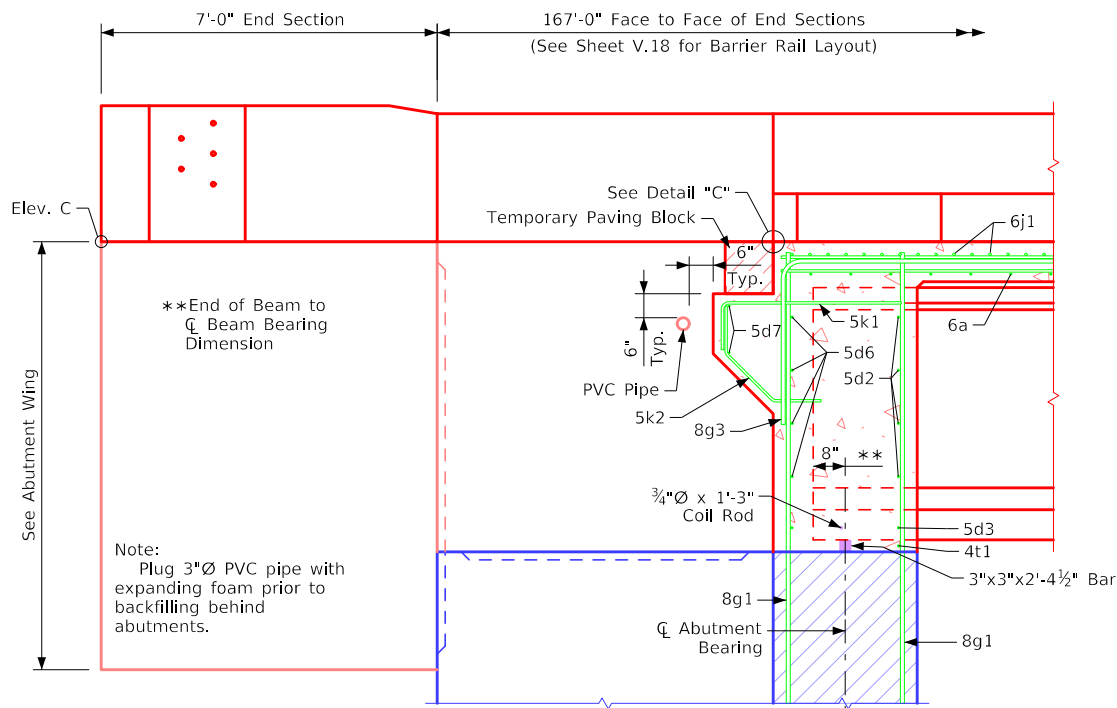


Exterior Beams

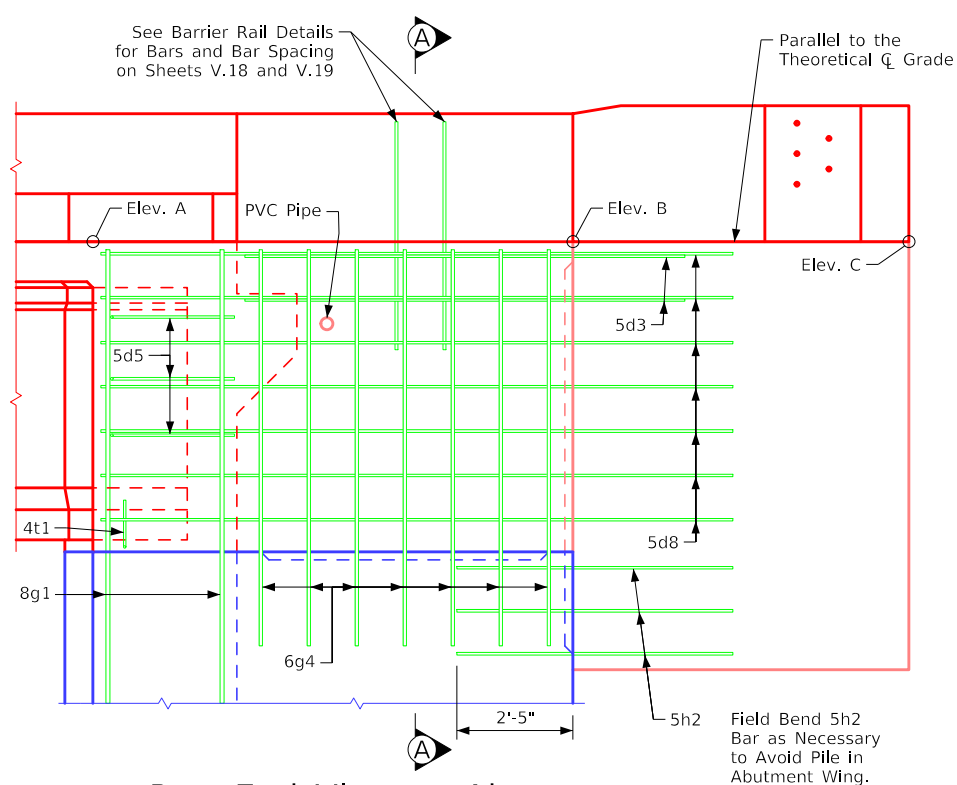
Typical Deck and Haunch Detail

* For Deck Thickness Over Beams See
"Haunch And Camber Details" on
Sheet V.13.

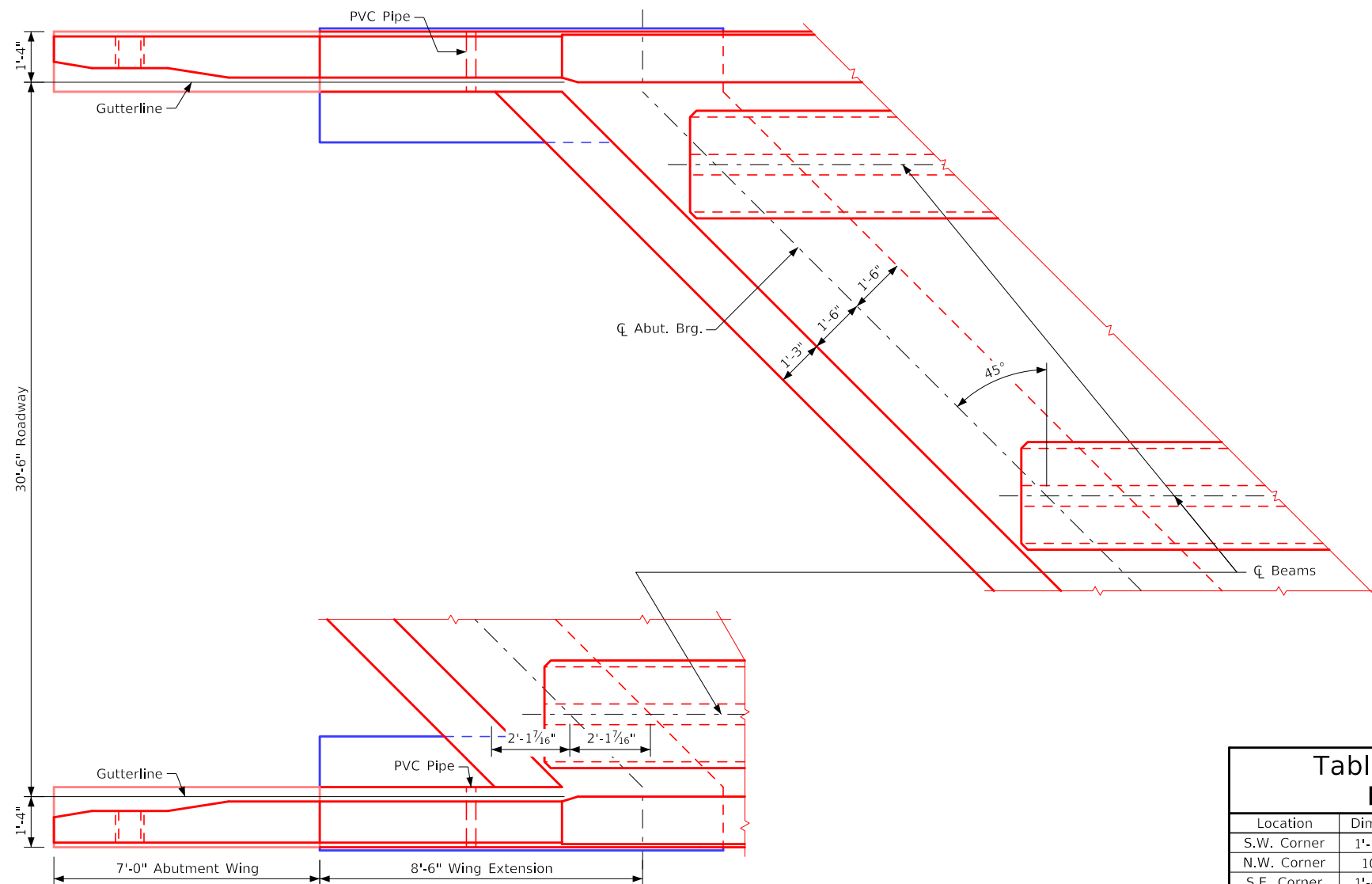
Design For 45 Degree RA Skew
150'-0" x 30'-6" Prestensioned
Prestressed Concrete Beam Bridge
150'-0" Single Span
Bridge Deck Cross Section
STA. 1006+25.00 (210th St.) Turn-in Date: Sept 2026
Montgomery County



Part Longitudinal Section Near Gutter
(For details of Intermediate Diaphragm see Sheet V.17)

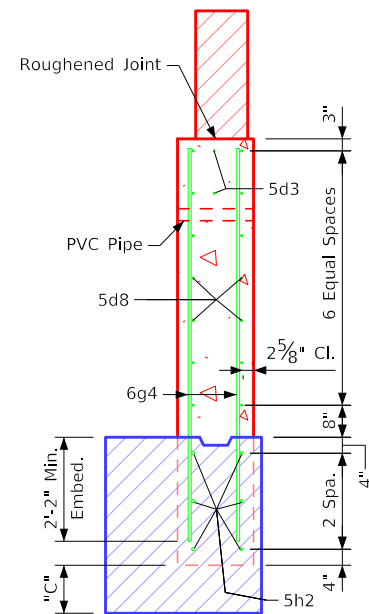


Part End View at Abutment



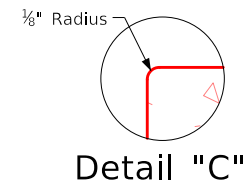
Part Plan

Table of Wingwall Elevations				
Location	Dim *C*	Elev. A	Elev. B	Elev. C
S.W. Corner	1'-1 1/8"	1055.10	1055.05	1054.99
N.W. Corner	10 3/4"	1054.86	1054.81	1054.75
S.E. Corner	1'-4 1/8"	1056.33	1056.38	1056.44
N.E. Corner	1'-1 1/8"	1056.09	1056.14	1056.20



Section A-A

Control Point: CP202, CP / 1/2IN MCEC CAP,
Elev. 1056.14, N.6234949.43, E.22061207.12



Detail "C"

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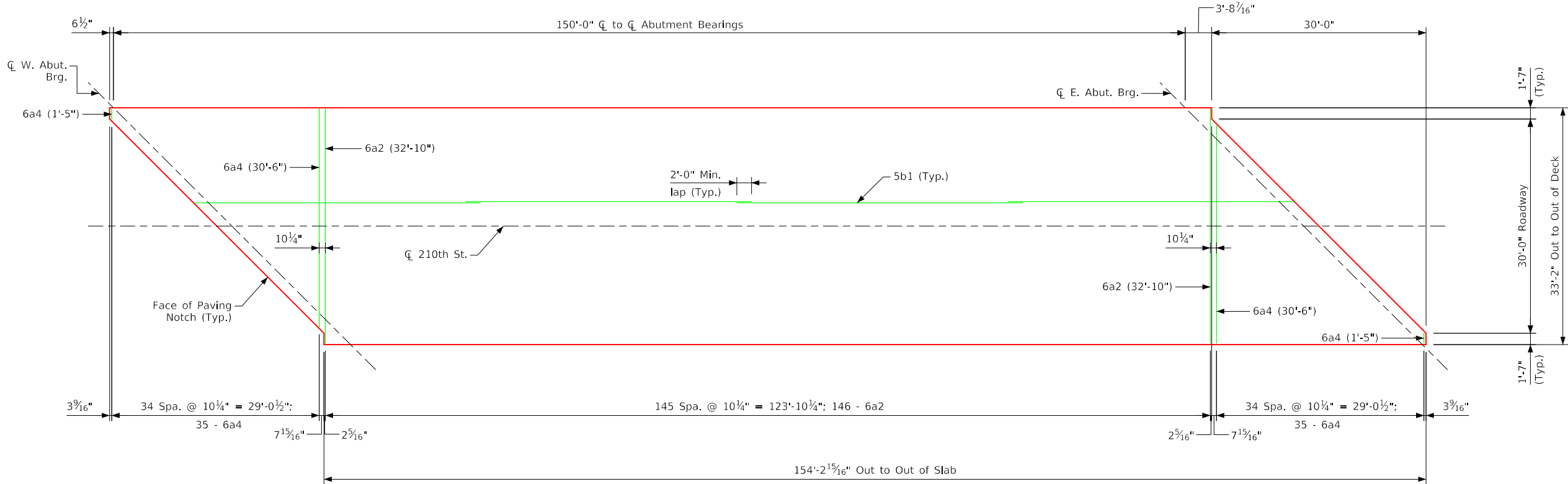
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PROJECT INFO
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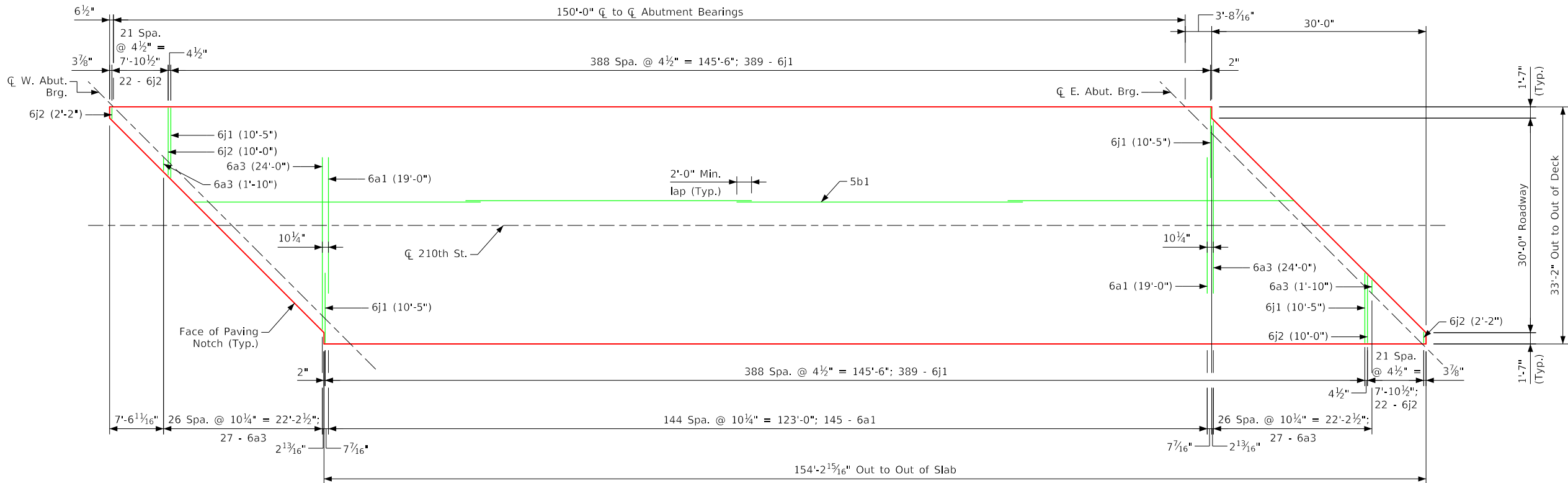
ENGINEER DRAWN BY CHECKED BY
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210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

PART PLAN & LONGITUDINAL SECTION



Bottom Deck Reinforcing Layout



Top Deck Reinforcing Layout

Design For 45 Degree RA Skew
150'-0" x 30'-6" Pretensioned
Prestressed Concrete Beam Bridge
150'-0" Single Span
Deck Reinforcing Layout
STA. 1006+25.00 (210th St.) Turn-in Date: Sept 2026
Montgomery County



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IOWA DOT PROJECT NUMBER
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PROJECT INFO
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ENGINEER JCH DRAWN BY JLK CHECKED BY CWM

210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

DECK REINFORCING LAYOUT

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DRAWING NO.
V.11


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BROS-C069(84)-8J-69



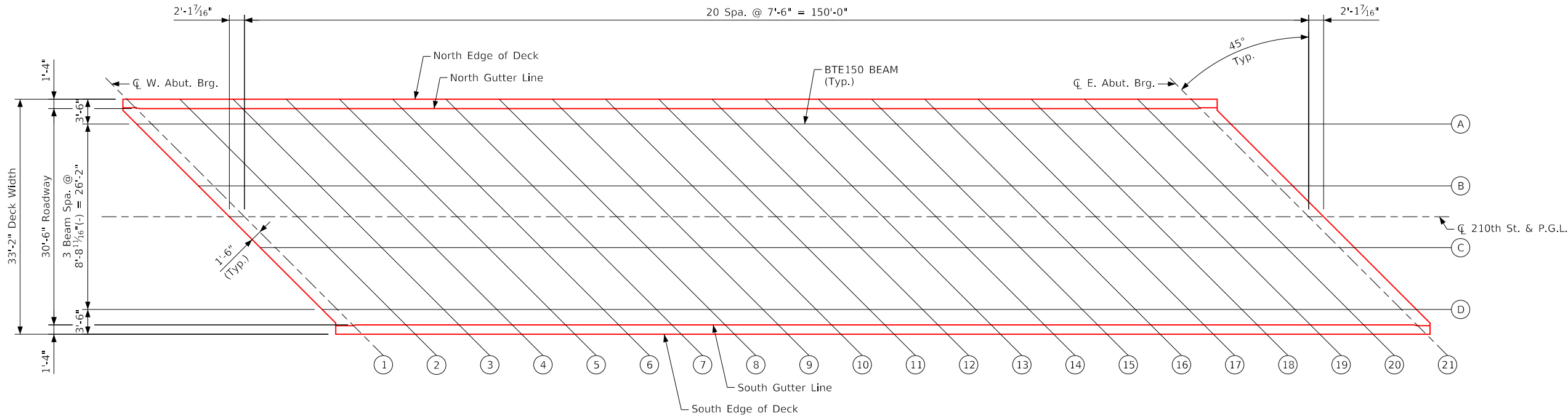
REVISIONS

PROJECT INFO
2024000585
ENGINEER JCH DRAWN BY JLK CHECKED BY CVM

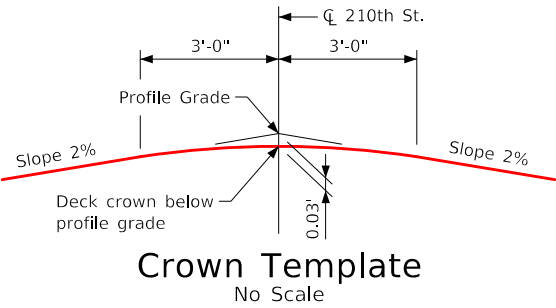
210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

TOP OF DECK ELEVATIONS


DRAWING NO.
V.12



Location of Top of Deck Elevations

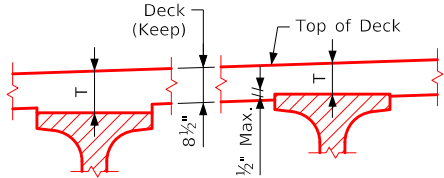


Top of Deck Elevations																					
	℄ W. Abut. Bearing																				℄ E. Abut. Bearing
Location	Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8	Line 9	Line 10	Line 11	Line 12	Line 13	Line 14	Line 15	Line 16	Line 17	Line 18	Line 19	Line 20	Line 21
North Edge of Deck	1054.83	1054.89	1054.95	1055.01	1055.07	1055.13	1055.19	1055.25	1055.31	1055.37	1055.43	1055.49	1055.55	1055.61	1055.67	1055.73	1055.79	1055.85	1055.91	1055.97	1056.03
North Gutter Line	1054.87	1054.93	1054.99	1055.05	1055.11	1055.17	1055.23	1055.29	1055.35	1055.41	1055.47	1055.53	1055.59	1055.65	1055.71	1055.77	1055.83	1055.89	1055.95	1056.01	1056.07
Beam Line A	1054.93	1054.99	1055.05	1055.11	1055.17	1055.23	1055.29	1055.35	1055.41	1055.47	1055.53	1055.59	1055.65	1055.71	1055.77	1055.83	1055.89	1055.95	1056.01	1056.07	1056.13
Beam Line B	1055.17	1055.23	1055.29	1055.35	1055.41	1055.47	1055.53	1055.59	1055.65	1055.71	1055.77	1055.83	1055.89	1055.95	1056.01	1056.07	1056.13	1056.19	1056.25	1056.31	1056.37
℄ 210th St.	1055.27	1055.33	1055.39	1055.45	1055.51	1055.57	1055.63	1055.69	1055.75	1055.81	1055.87	1055.93	1055.99	1056.05	1056.11	1056.17	1056.23	1056.29	1056.35	1056.41	1056.47
Beam Line C	1055.24	1055.30	1055.36	1055.42	1055.48	1055.54	1055.60	1055.66	1055.72	1055.78	1055.84	1055.90	1055.96	1056.02	1056.08	1056.14	1056.20	1056.26	1056.32	1056.38	1056.44
Beam Line D	1055.14	1055.20	1055.26	1055.32	1055.38	1055.44	1055.50	1055.56	1055.62	1055.68	1055.74	1055.80	1055.86	1055.92	1055.98	1056.04	1056.10	1056.16	1056.22	1056.28	1056.34
South Gutter Line	1055.11	1055.17	1055.23	1055.29	1055.35	1055.41	1055.47	1055.53	1055.59	1055.65	1055.71	1055.77	1055.83	1055.89	1055.95	1056.01	1056.07	1056.13	1056.19	1056.25	1056.31
South Edge of Deck	1055.10	1055.16	1055.22	1055.28	1055.34	1055.40	1055.46	1055.52	1055.58	1055.64	1055.70	1055.76	1055.82	1055.88	1055.94	1056.00	1056.06	1056.12	1056.18	1056.24	1056.30

Design For 45 Degree RA Skew
**150'-0" x 30'-6" Pretensioned
Prestressed Concrete Beam Bridge**
150'-0" Single Span
Top of Deck Elevations
STA. 1006+25.00 (210th St.) Turn-in Date: Sept 2026
Montgomery County

Beam Line Haunch Elevations																					
	℄ W. Abut. Bearing																				℄ E. Abut. Bearing
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
Beam Line A	1054.22	1054.36	1054.50	1054.64	1054.77	1054.89	1055.00	1055.10	1055.19	1055.27	1055.34	1055.39	1055.43	1055.46	1055.48	1055.49	1055.49	1055.48	1055.46	1055.44	1055.42
Beam Line B	1054.46	1054.61	1054.75	1054.88	1055.01	1055.13	1055.25	1055.35	1055.44	1055.52	1055.58	1055.64	1055.68	1055.71	1055.73	1055.73	1055.73	1055.72	1055.71	1055.69	1055.66
Beam Line C	1054.53	1054.68	1054.82	1054.95	1055.08	1055.20	1055.32	1055.42	1055.51	1055.59	1055.65	1055.71	1055.75	1055.78	1055.80	1055.80	1055.80	1055.79	1055.78	1055.76	1055.73
Beam Line D	1054.43	1054.57	1054.71	1054.85	1054.98	1055.10	1055.21	1055.31	1055.40	1055.48	1055.55	1055.60	1055.64	1055.67	1055.69	1055.70	1055.70	1055.69	1055.67	1055.65	1055.63

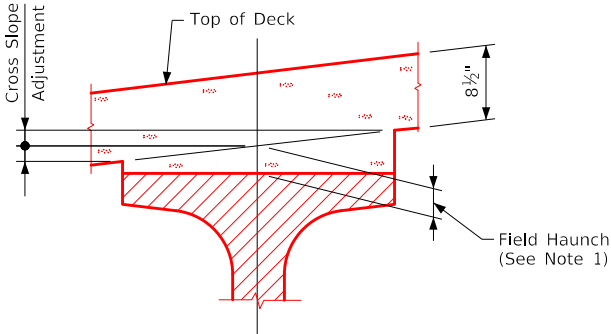
Miscellaneous Data Table																							
	Beam Line		℄ W. Abut. Bearing																				℄ E. Abut. Bearing
			Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8	Line 9	Line 10	Line 11	Line 12	Line 13	Line 14	Line 15	Line 16	Line 17	Line 18	Line 19	Line 20	Line 21
Anticipated Deflection Due to Deck (in.)	All		0	1	1 ¹⁵ ₁₆	2 ⁷ ₁₆	3 ¹¹ ₁₆	4 ⁷ ₁₆	5 ⁷ ₁₆	5 ⁷ ₁₆	5 ¹⁵ ₁₆	6 ⁷ ₁₆	6 ⁷ ₁₆	6 ⁷ ₁₆	5 ¹⁵ ₁₆	5 ⁷ ₁₆	5 ⁷ ₁₆	4 ⁷ ₁₆	3 ¹¹ ₁₆	2 ⁷ ₁₆	1 ¹⁵ ₁₆	1	0
Cross Slope Adjustments (in.)	All		5 ⁷ ₁₆																				
Allowable Field Haunch (in. & ft.)	Max.	All	2 ⁷ ₂ (0.208)																				
	Min.	All	-5 ⁷ ₁₆ (-0.013)																				



Deck Thickness Details

Note: The deck thickness (T) at beams is based on the anticipated beam camber and deflections. These values are used by the Designer to set beam elevations and estimate concrete quantities. Refer to the haunch data details sheet for additional information to aid the Contractor in setting the field haunches required for construction.

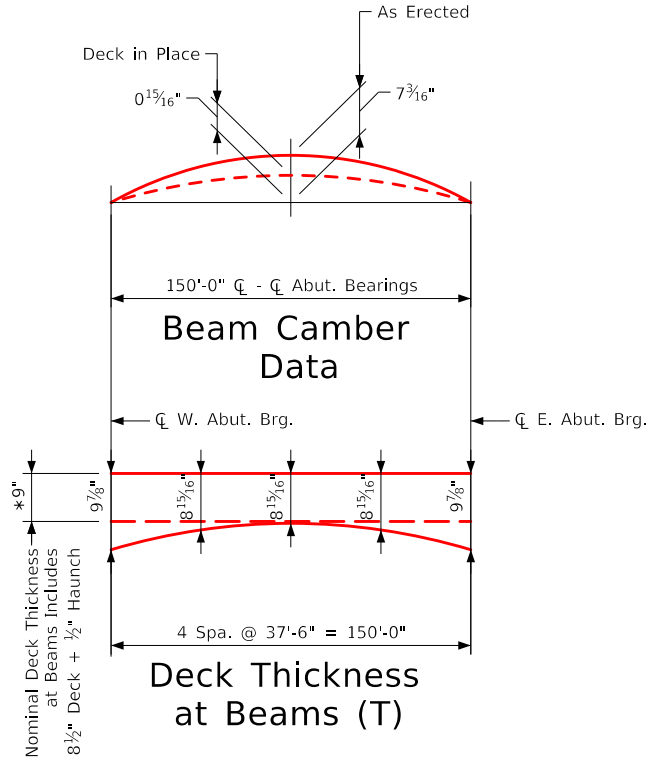
Note: Haunch locations are at the same location as the encircled letters and numbers shown on deck elevations sheet.



Haunch Detail

Note: Bridge seat elevations are set based on theoretical camber and beam deflections. These bridge seats will provide a theoretical beam haunch within design parameters. Field haunches are determined using surveyed top of beam elevations and "Beam Line Haunch Elevation" data. Allowable maximum and minimum "Field Haunch" values are given in inches and decimals of feet in the "Miscellaneous Data" table. "Cross slope adjustment" values will aid the Contractor in determining actual formed haunch dimensions at the edges of the top flange.

Note 1: To calculate field haunch required at each location, survey the beam tops consistent with the spacings shown on the "Top of Deck Elevations Layout". Subtract the surveyed beam shot from the "Beam Line Haunch Elevation". This value will be the haunch needed (see "Field Haunch" in haunch detail). The "Beam Line Haunch Elevation" includes adjustments for deck thicknesses and anticipated deflections. No additional calculations are required. If the field haunch exceeds the maximums and minimums shown in inches and decimals of feet in the miscellaneous data table, adjustments to the grade or additional haunch reinforcement will be required.



Design For 45 Degree RA Skew
150'-0" x 30'-6" Pretensioned
Prestressed Concrete Beam Bridge
150'-0" Single Span
Deck Haunch Data Details
STA. 1006+25.00 (210th St.) Turn-in Date: Sept 2026
Montgomery County



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NO.	DESCRIPTION	DATE
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PROJECT INFO
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ENGINEER: JCH DRAWN BY: JLK CHECKED BY: CVM

210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

DECK HAUNCH DATA DETAILS

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DRAWING NO.
V.13

Bent Bar Details

The image displays ten technical drawings of bent bar details, each showing a bent bar with its dimensions and reinforcement specifications. The drawings are arranged in three rows. The first row shows a rectangular bent bar (5p1, 5p2, 5p4) and two L-shaped bent bars (5d6, 8f1). The second row shows a horizontal bent bar (8g3), a vertical bent bar (5k1), and a complex bent bar (5k2). The third row shows three bent bars (4t1, 6p3, 8f3, 8f4, 8f5) and a bent bar with a hook (6j1 & 6j2). Each drawing includes dimensions for the bar length, width, and bend radius (D). The reinforcement specifications are listed below each drawing.

5p1, 5p2, & 5p4

8g3

5k1

5k2

4t1

6p3

8f3, 8f4, 8f5

6j1 & 6j2

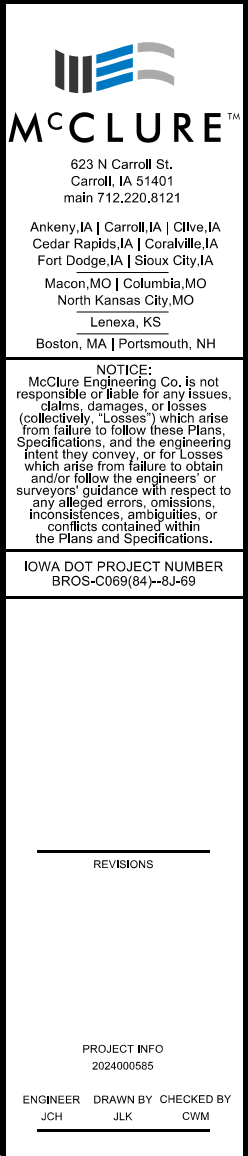
Note: All dimensions are out to out. D = Pin diameter

Concrete Placement Quantities	
Location	Quantity
Deck, Abutment Diaphragms, and Wing Extensions	213.3
Total (Cu. Yds.)	213.3

Note: Concrete and Reinforcing Steel Quantities are included on the Summary Quantities Sheet.

Non-Coated Reinforcing Steel - Deck, Abutment & Diaphragm					
Bar	Location	Shape	No.	Length	Weight
#2	Pile Spiral		22	38'-6"	141
	Spiral Spacers, L $\frac{7}{8}$ " x $\frac{1}{8}$ " x $\frac{1}{8}$ " x 0.70		66	1'-10"	85
Non-Coated Reinforcing Steel Total Weight (lbs.)					226

Epoxy Coated Reinforcing Steel - Deck, Abutment & Diaphragm					
Bar	Location	Shape	No.	Length	Weight
6a1	Deck Transv. Top		145	19'-0"	4,138
6a2	Deck Transv. Bott.		146	32'-10"	7,200
6a3	Deck Transv. Top Ends		54	Varies	1,048
6a4	Deck Transv. Bott. Ends		70	Varies	1,678
5b1	Deck Longit. Top & Bott.		284	40'-0"	11,848
5d2	Pier & Abut. Diaph. Longit.		24	11'-1"	277
5d3	Pier & Abut. Diaph. Longit.		6	8'-3"	52
5d5	Abut. Diaph. Ends		16	5'-5"	90
5d6	Abut. Diaph. Longit. B.F.		16	24'-0"	401
5d7	Paving Notch Longit.		8	24'-6"	204
5d8	Abut. Diaph. Wing Longit.		56	12'-8"	740
8f1	Abut. Footing Longit. Both F.		36	25'-3"	2,427
8f3	Abut. Extension Longit.		16	12'-9"	545
8f4	Abut. Extension Longit.		8	11'-3"	240
8f5	Abut. Extension Longit.		8	9'-1"	194
8g1	Abut. Vert. Both F.		142	9'-6"	3,602
8g3	Abut. Diaph. Vert. B.F.		72	15'-9"	3,028
6g4	Abut. Diaph. Wing Ext. Vert.		56	8'-5"	708
5h2	Abut. to Wing Anchor		24	5'-9"	144
6j1	Top of Deck Transv. (at Rail)		778	10'-5"	12,172
6j2	Top of Deck Transv. Ends (at Rail)		44	Varies	402
5k1	Paving Notch		72	4'-9"	357
5k2	Paving Notch		72	3'-5"	257
5p1	Abut. Hoops		136	10'-6"	1,489
5p2	Abut. Extension Hoops		40	10'-8"	445
6p3	Abut. Bott. at Piles		36	6'-8"	360
5p4	Abut. Hoops at Ends		8	13'-0"	108
4t1	Under Beams at Abutments		8	5'-8"	30
Epoxy Reinforcing Steel Total Weight (lbs.)					54,184



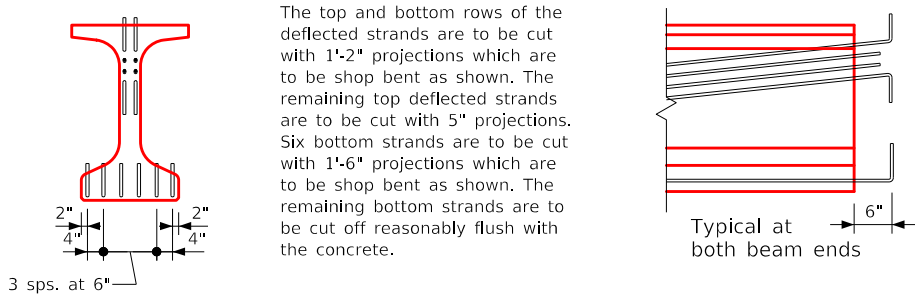
210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

SUPERSTRUCTURE QUANTITIES

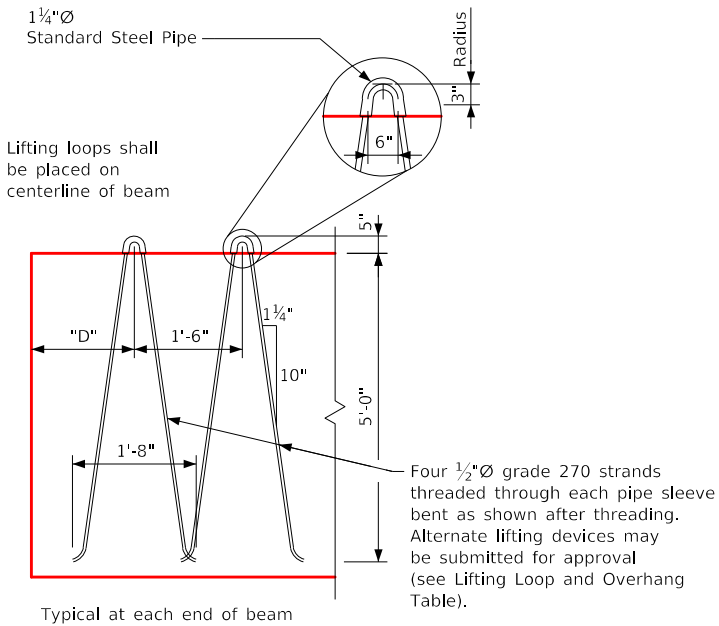
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DRAWING NO.
V.14

Design For 45 Degree RA Skew
150'-0" x 30'-6" Pretensioned
Prestressed Concrete Beam Bridge
150'-0" Single Span
Superstructure Quantities
STA. 1006+25.00 (210th St.) Turn-in Date: Sept 2021
Montgomery County



Strand Projection At Beam Ends When Embedded In Concrete End Diaphragms



Lifting Loop Detail

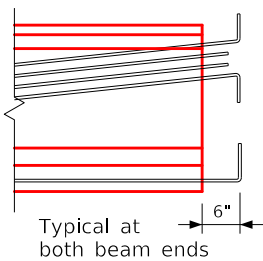
Lifting Loop and Overhang Table				
Beams	Lifting Loops Each End	# of Strands Per Loop	D	Beam Overhang (ft.)
BTE150	2	4	12'-3"	16

Lifting loops shall carry loads equally.

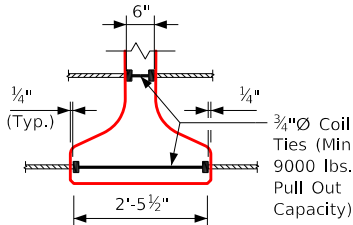
Reinforcing Bar List

Beam		BTE150	
Bar	Shape	No.	Length
5a1		12	22'-5"
5a2		18	40'-0"
5b1		115	12'-2"
6b3		52	6'-6"
6b4		20	5'-10"
4c1		183	2'-7"
4d1		147	6'-5"
4e1		36	3'-2"
4h1		8	8'-0"

ΔΔ 5b1 and 6b3 bars to be epoxy coated
* 6b3 and 6b4 bars to be used in pairs



Number and exact location of coil ties to be as detailed on specific bridge design.



Coil Tie Detail

BTE Beam Data

④ ⑤	BTE Beam	Span Length ℄-℄ Bearing	Overall Beam Length (L)	Concrete Strength		Strand Size Dia (in.)	Number of Strands		Total Initial Prestress (kips) ③	Hold Down Force (kips)	Camber (in.) ⑥		Deflection (in.) Δ _D		Permissible Maximum Spacing	Weight (tons)	Concrete (cu. yd.)	Reinforcing Steel (weight lb.)
				f'ci (ksi.)	f'c (ksi.)		Straight	Deflected			At Release	After Losses	Immediate ① (elastic) Δ _I	Time ② (plastic) Δ _T				
BTE150	150'-0"	151'-4"	7.50	9.50	0.60"	48	12	2553	33.7	4.48"	7.17"	5.17"	1.29"	9'-0½"	63.6	31.4	4239	

① Deflections at mid-span due to weight of deck and diaphragm. The deflections shown are for a deck (8.5") and haunch (1.5") weight of:
1.04 kips/ft. for 9'-3" beam spacing
1.01 kips/ft. for 9'-0 1/2" beam spacing
And two steel diaphragms (0.500 kips) placed 20'-0", on either side of the beam ℄. For different deck and diaphragm weights, deflections will be directly proportional.

② Deflections due to the combined effect of creep due to weight of deck and shrinkage of deck.
Total beam deflections at ℄ of span, Δ_D, due to weight of deck and diaphragms for detailing purpose:
(A) Δ_D=Δ_I + Δ_T for simple span.
(B) Δ_D=Δ_I + 3/4 Δ_T for end spans of continuous bridge.
(C) Δ_D=Δ_I + 1/2 Δ_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 in.².

④ Requires a 4500 psi., 28 day compressive strength for cast-in-place slab concrete.

⑤ Includes partial length debonded strands, see individual Beam Sheet for locations and details.

⑥ Calculated design cambers are based on multipliers developed from research in Iowa.

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 in.²) 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 I,M,570.

Bearings shall be as detailed on other design sheets.

Beams to be used in bridges made continuous by the poured in place deck, are to be at least 28 days old before the deck 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 beam during handling, transporting and erection by providing temporary bracing as needed.

Holes must be cast in the web to accommodate the steel diaphragm attachments as detailed on the Steel Diaphragm Detail Sheet.

Minimum concrete f'c (at 28 days) and minimum f'ci at release are located in the 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.

Design Stresses:

Design stresses for the following materials are to be in accordance with AASHTO LRFD Bridge Design Specifications, Series of 2017.

Reinforcing steel in accordance with Section 5, Grade 60.

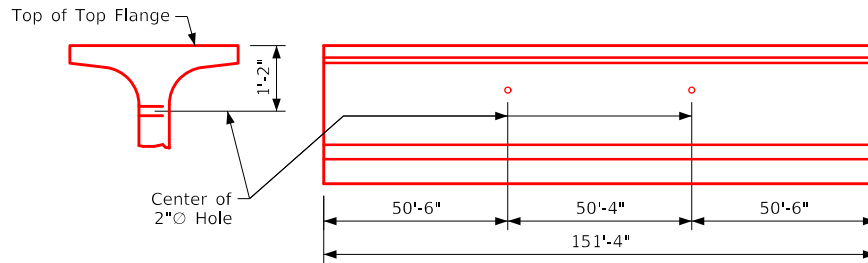
Concrete in accordance with Section 5.

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: AASHTO LRFD, Series of 2017 with minor modifications.



Vent Hole Detail

Note: 2"⌀ Holes to be provided in every prestressed beam. 2"⌀ holes may be produced with a removable or non-removable form. They may be shifted slightly to avoid interference with reinforcing, strands, and diaphragm connections.

Design For 45 Degree RA Skew
150'-0" x 30'-6" Pretensioned
Prestressed Concrete Beam Bridge
150'-0" Single Span
BTE Beam Details
STA. 1006+25.00 (210th St.) Turn-in Date: Sept 2026
Montgomery County

McCLURE
623 N Carroll St.
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main 712.220.8121
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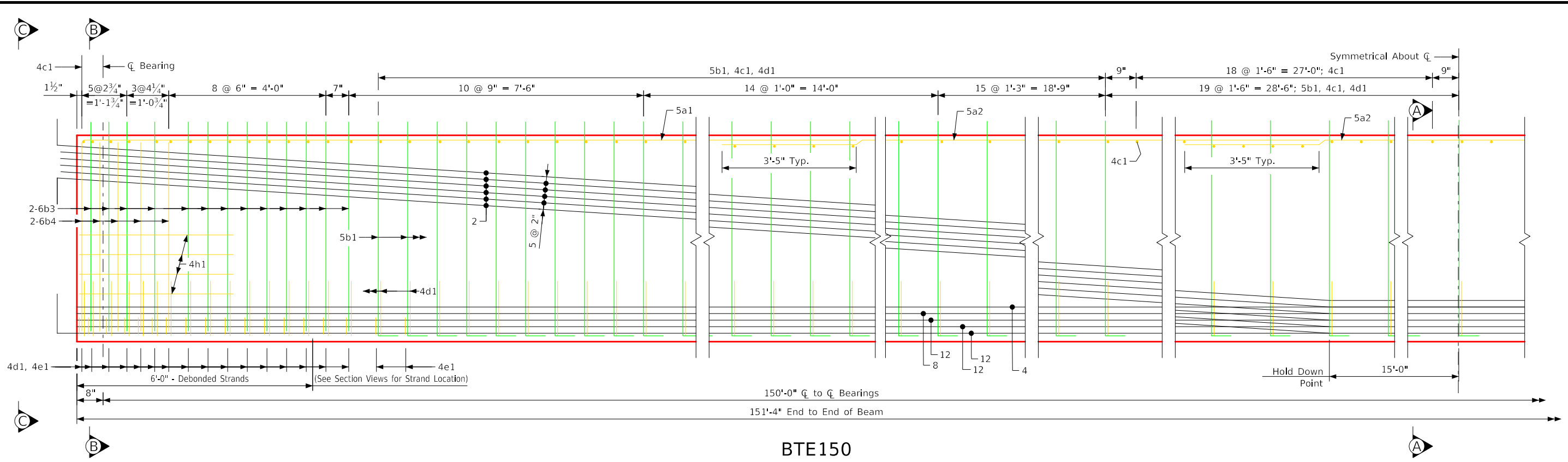
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IOWA DOT PROJECT NUMBER
BROS-C069(84)-8J-69

REVISIONS		
PROJECT INFO		
2024000585		
ENGINEER	DRAWN BY	CHECKED BY
JCH	JLK	CWM

210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA
BTE BEAM DETAILS

DRAWING NO.
V.15

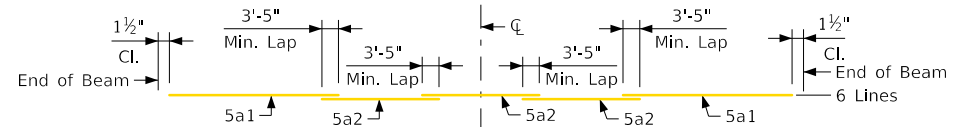


BTE150

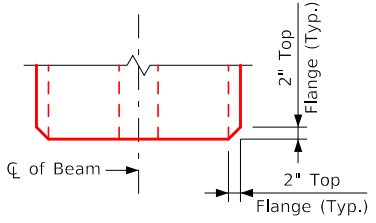
Note: Vent hole requirements on Sheet V.15.

Area = 807.4 in.²
 $\bar{y}_b = 28.75$ in.
 $I = 422.790$ in.⁴

Beam Section Properties

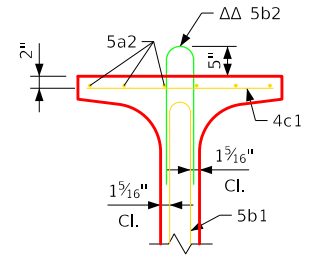


Top Flange Longitudinal Bar Layout

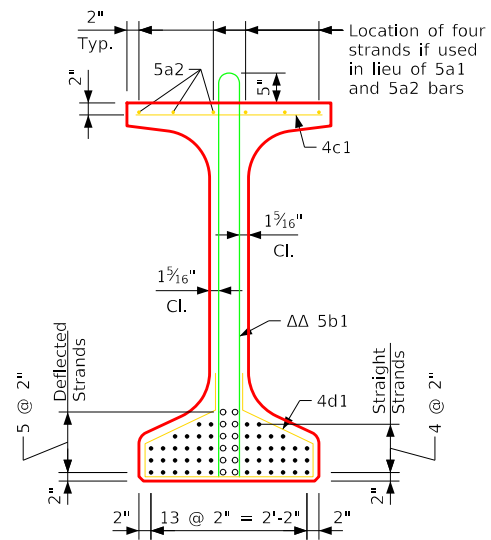


Top View

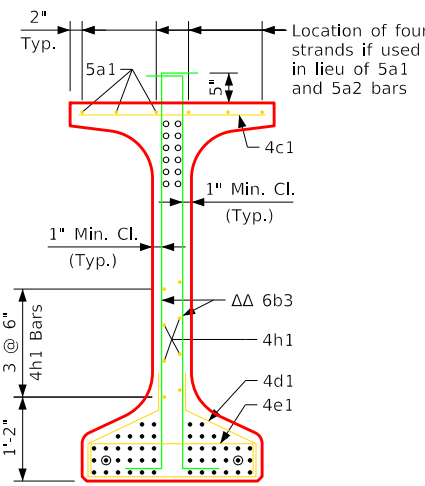
The top flange beam corners are to be chamfered 2" as shown at both ends of the beam. See Alternate Bar Note on Sheet V.15.



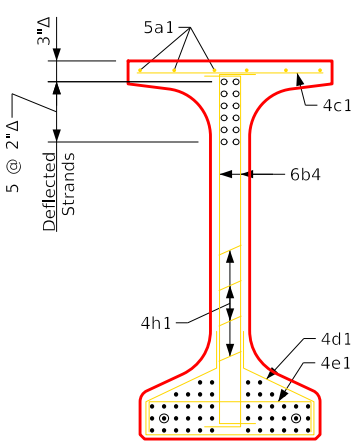
Section A-A (Alternate)



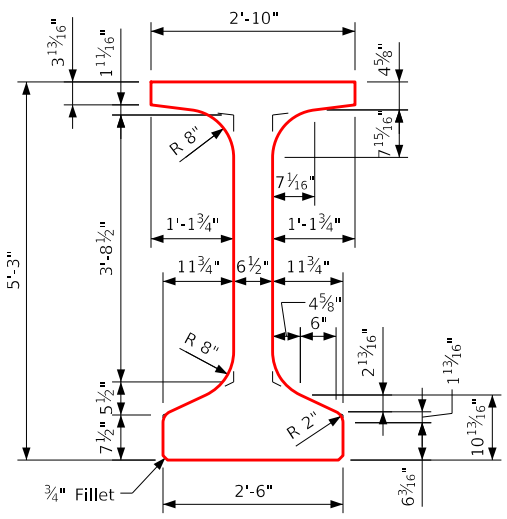
Section A-A



Section B-B



View C-C



BTE Beam Cross Section

Design For 45 Degree RA Skew
150'-0" x 30'-6" Prestressed Concrete Beam Bridge
150'-0" Single Span
BTE150 Beam Details
STA. 1006+25.00 (210th St.) Turn-in Date: Sept 2026
Montgomery County

623 N Carroll St.
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IOWA DOT PROJECT NUMBER
BROS-C069(84)-8J-69

REVISIONS

NO.	DESCRIPTION
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PROJECT INFO
2024000585

ENGINEER: JCH DRAWN BY: JLK CHECKED BY: CVM

210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

BTE150 BEAM DETAILS

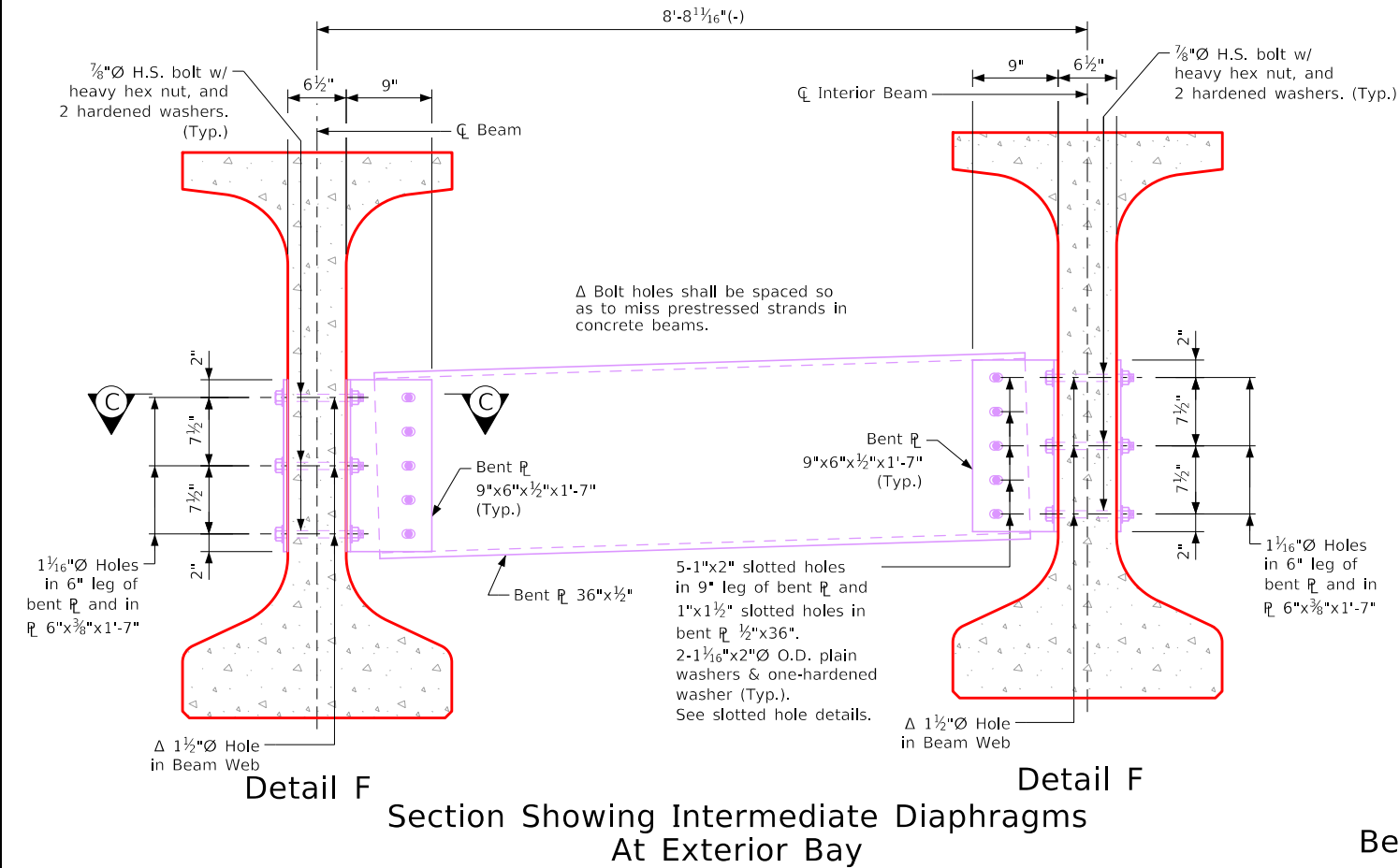
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DRAWING NO.
V.16

Bulb Tee "E" Beam Intermediate Diaphragm Structural Steel			
One Beam Connection (Detail "F")			Weight
Three - 7/8"Ø X 9 1/4" H.S. Bolts with Nuts & Washers = 7.2 Lbs.		No. of Beam Connections 12	86
One Detail "F"	One - Backing PL 6" x 3/8" x 1'-7" = 12.1 Lbs.	12	145
	One - Bent PL 9" x 6" x 1/2" x 1'-7" = 40.4 Lbs.	12	485
One Diaphragm			
Ten - 7/8"Ø X 2 1/4" H.S. Bolts with Nuts & Washers = 9.7 Lbs.		Number of Diaphragms 6	58
One - Bent PL 36x1/2" = 61.3 Lbs./Ft.			
Length of Member 7'-6 1/6"			
One - Bent PL 36x1/2" = 61.3 Lbs./Ft.			2,772
Intermediate Diaphragm Structural Steel - Total (Lbs.)			3,546

STRUCTURAL STEEL	
Weight	3,546 lbs.

NOTE: Structural Steel weight is included on the Summary Quantities Sheet.



Notes:

All diaphragm materials, including bolts, nuts and washers shall be galvanized.

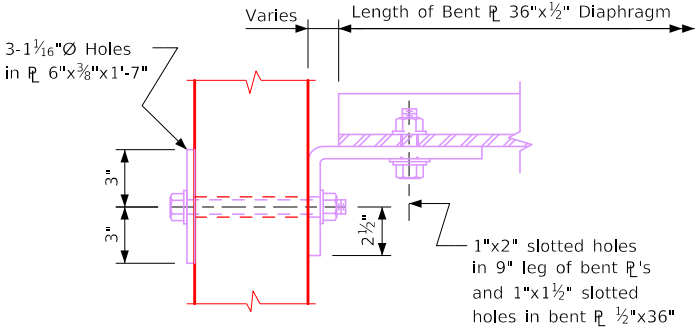
Shop drawings of the steel diaphragms showing layout and details of the diaphragms shall be submitted for approval.

All costs for furnishing and installing steel intermediate diaphragms shall be included in the price bid for Structural Steel.

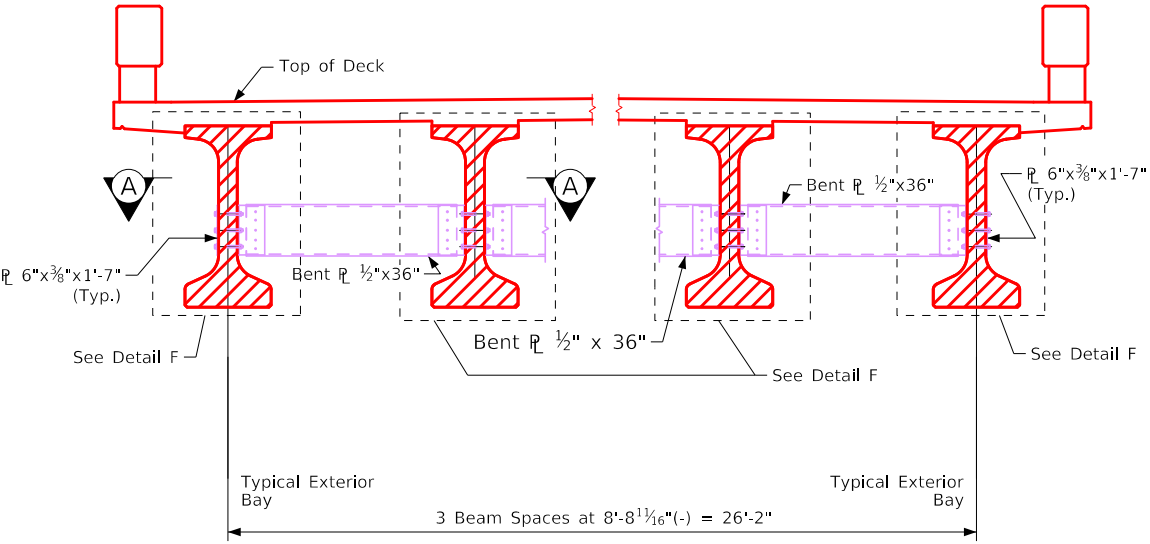
The 1 1/2"Ø holes for the 7/8"Ø H.S. bolts shall be cast into the web. Drilling is not allowed.

The 7/8"Ø 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.

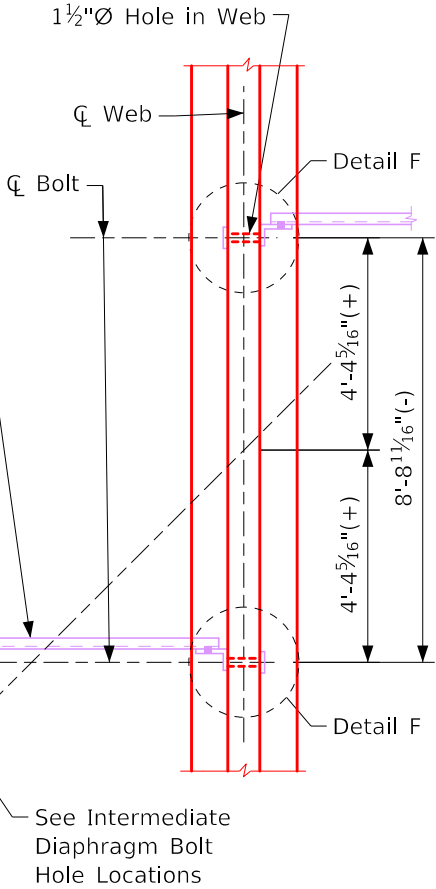
All bolts are to be tightened prior to placing bridge deck concrete.



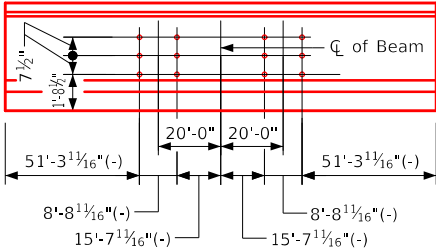
Section C-C



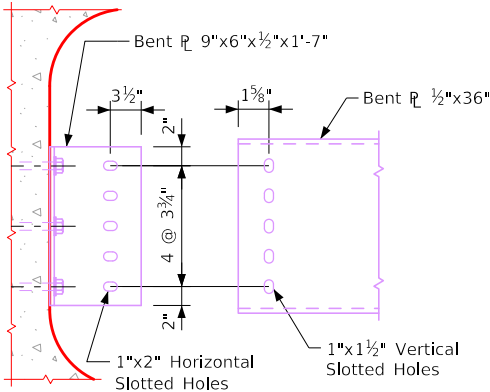
Section Showing Intermediate Diaphragms



Part Section A-A



Intermediate Diaphragm Bolt Hole Locations



Slotted Hole Details

Design For 45 Degree RA Skew
150'-0" x 30'-6" Pretensioned
Prestressed Concrete Beam Bridge
150'-0" Single Span
Steel Intern. Diaphragm - BTE Beam
STA. 1006+25.00 (210th St.) Turn-in Date: Sept 2026
Montgomery County

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IOWA DOT PROJECT NUMBER
BROS-C069(84)-8J-69

REVISIONS

NO.	DESCRIPTION
-----	-------------

PROJECT INFO
2024000585

ENGINEER: JCH
DRAWN BY: JLK
CHECKED BY: CWM

210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

STEEL INTERM. DIAPHRAGM - BTE BEAM

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DRAWING NO.
V.17

REVISIONS

PROJECT INFO
2024000585

ENGINEER DRAWN BY CHECKED BY
JCH JLK CVM

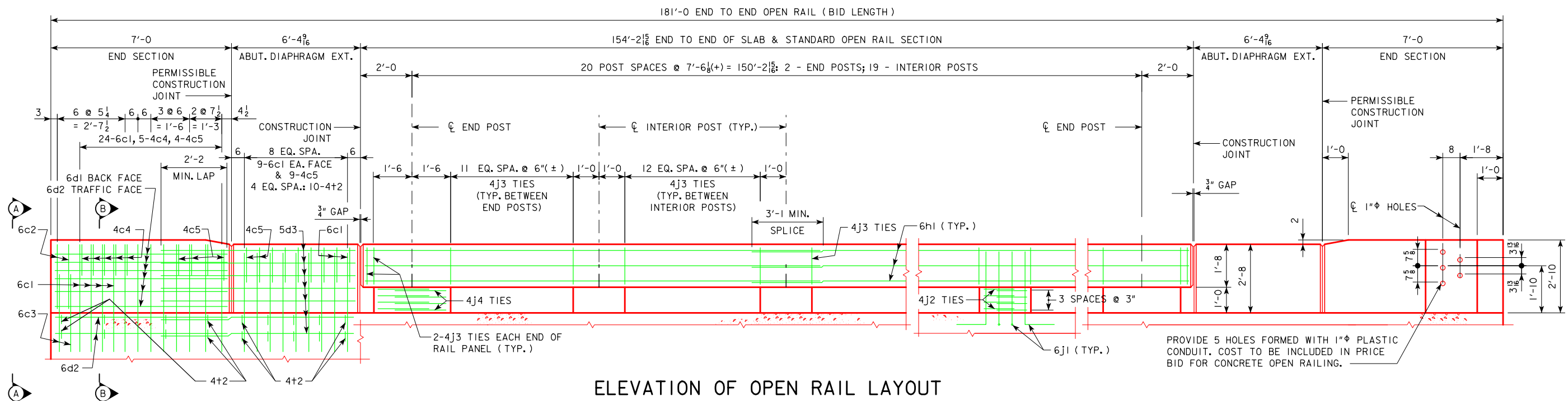
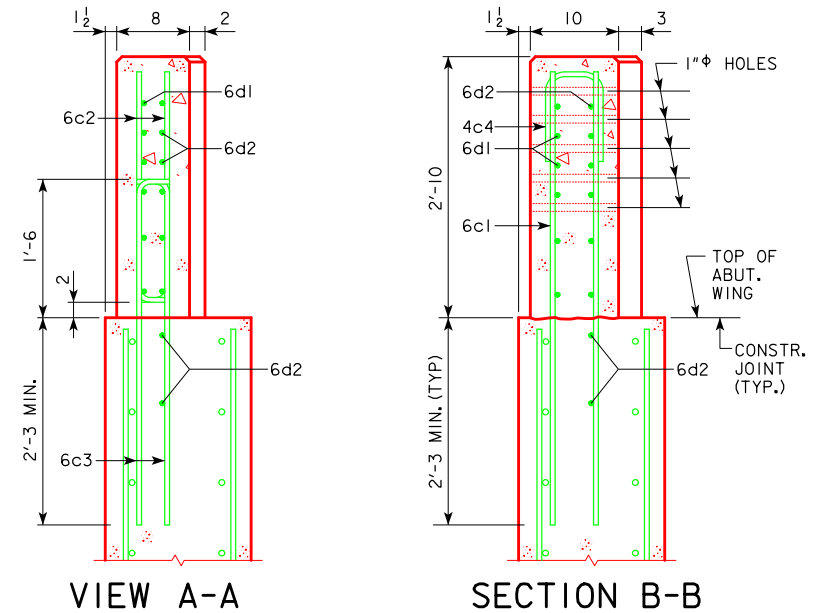
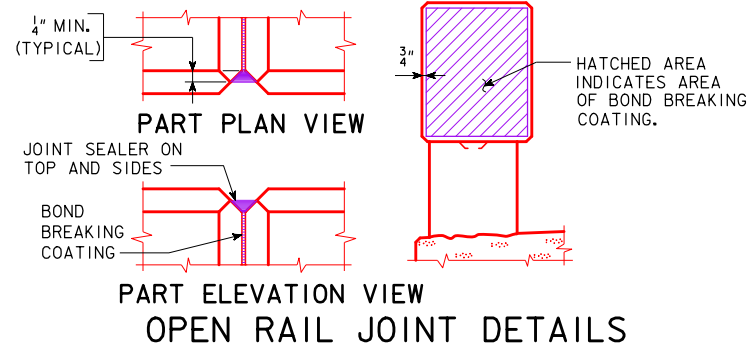
210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

OPEN RAIL DETAILS

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DRAWING NO.

V.18



OPEN RAIL NOTES:

- CONSTRUCTION JOINT BETWEEN TOP OF WING AND RAIL IS ROUGHENED CONCRETE.
- MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
- COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.
- ALL OPEN RAIL REINFORCING STEEL IS TO BE INCLUDED WITH THE SUPERSTRUCTURE REINFORCING STEEL.
- THE CAST-IN-PLACE OPEN RAIL SHALL USE CLASS C MIX. CLASS D CONCRETE IS NOT PERMITTED.
- TOP OF THE OPEN RAIL IS TO BE PARALLEL TO THEORETICAL $\bar{C}$ GRADE.

Design For 45 Degree RA Skew
150'-0" x 30'-6" Prestressed Concrete Beam Bridge
150'-0" Single Span
Open Rail Details
STA. 1006+25.00 (210th St.) Turn-in Date: Sept 2026
Montgomery County

REINFORCING STEEL-TWO OPEN RAILS					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6c1	VERTICAL, END SECTION & ABUT. DIAPH. EXT.		168	4'-11	1,241
6c2	VERTICAL, END SECTION		16	2'-10	68
6c3	VERTICAL, END SECTION		16	4'-1	98
4c4	VERTICAL HOOPS, END SECTION		20	2'-10	38
4c5	VERT. HOOPS, END SEC. & ABUT. DIAPH. EXT.		52	3'-1	107
6d1	HORIZONTAL, END SECTION-BACK FACE		24	6'-8	240
6d2	HORIZONTAL, END SECTION-TRAFFIC FACE		32	6'-9	324
5d3 *	HORIZONTAL, ABUT. DIAPH. EXT.-BOTH FACES		48	8'-7	430
6h1	LONGITUDINAL, OPEN RAIL		60	33'-5	3,012
6j1	VERTICAL DOWELS, OPEN RAIL		344	4'-0	2,067
4j2	HOOP, INTERIOR POST		304	4'-9	965
4j3	HOOP, OPEN RAIL		524	5'-5	1,896
4j4	HOOP, END POST		32	6'-7	141
4+2	WING FOOTING TIE BARS		72	1'-11	92
TOTAL LBS. (INCLUDE WITH SUPERSTRUCTURE REINFORCING)					10,718

NOTE: ALL BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED IF EPOXY COATING

BENT BAR DETAILS

4c4 & 4c5

6c2 & 6c3

4+2

6j1

4j2, 4j3, 4j4

6d2

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

NOTE: 4j2, 4j3, 4j4
ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

CONCRETE PLACEMENT SUMMARY		
SECTION		TOTAL
OPEN RAIL SECTION	2 @ 0.077 CU. YDS. PER FT.	23.8
OPEN RAIL-END SECTION	4 @ 0.687 CU. YDS.	2.7
OPEN RAIL-ABUT. DIAPH. SECTION	4 @ 0.107 CU. YDS. PER FT.	2.7
OPEN RAIL-END POSTS	4 @ 0.11 CU. YDS.	0.4
OPEN RAIL-INTERIOR POSTS	2 x 19 @ 0.07 CU. YDS.	2.7
TOTAL (C.Y.)		32.3

OPEN CONCRETE RAIL, TL-4 QUANTITIES		
ITEM	UNIT	QUANTITY
OPEN CONCRETE RAILING, TL-4	L.F.	362.0

* TRAFFIC FACE 5d3 BARS MAY REQUIRE FIELD CUTTING OR BENDING FOR HIGHER SKEW BRIDGES.

The image contains four technical drawings of bridge deck reinforcement, arranged in a 2x2 grid. The top row shows 'PART PLAN VIEW' for 'END POST' and 'INTERIOR POST'. The bottom row shows 'PART PLAN SECTION' for 'END POST' and 'INTERIOR POST'. Each drawing depicts a rectangular reinforcement layout with green bars (No. 5) and red dashed lines. Dimensions include 6' J (TYP.), 3'-0, 4 EQ. SPA., 1'-0, 2'-0, 3 EQ. SPA., 1 1/2" CL., and TYP. The drawings illustrate the placement of reinforcement bars relative to the deck edges and the centerline (CL.).

END POST

INTERIOR POST

PART PLAN VIEW

END POST

INTERIOR POST

PART PLAN SECTION

Technical drawing of a three-post connection, showing side and end views with dimensions and labels.

Labels:

- 6h1
- 4j3
- 1 1/2" CL. (TYP.)
- OPTIONAL JOINT 1" x 4 x 1'-0 BEVELED KEYWAY (TYP.)
- 4j2 (INTERIOR POST)
- 4j4 (END POST)
- 6j1
- ROUGHENED JOINT

Dimensions:

- 1'-3
- 1'-8
- 2'-8
- 1'-0
- 2
- 1"
- 1'-0
- 2

Diagram illustrating the construction of a post and rail fence section. The diagram shows a cross-section of a fence with a chamfer rail and a post. The rail is labeled "CHAMFER RAIL 3/4\" TOP AND SIDES (TYP. EACH POST)". The post is labeled "POST". The edge of the post is labeled "EDGE OF POST". The diagram shows the rail being attached to the post with a bolt and nut.

PART PLAN VIEW

7'-0" END SECTION

6'-4 $\frac{9}{16}$ " ABUT. DIAPHRAGM EXT.

3" GAP

1'-0" 2'-0" 1'-7 $\frac{3}{16}$ " 2'-4 $\frac{13}{16}$ "

3 6 SPA. @ 5 5 SPA. @ 6 1'-3" 4 6 8 EQUAL SPACES 6c1 & 4c5

= 2'-7 $\frac{1}{2}$ " = 2'-6" 2'-2" MIN. LAP

6d1 6d2 5d3 6c1 4c5

OPT 1" =

Figure 10.10 is an elevation view of a bridge deck. The diagram shows the transition from the end section to the abutment diaphragm extension. Key dimensions and labels include:

- End Section:** A length of 7'-0" is indicated for the main span section.
- Abutment Diaphragm Extension:** A length of 6'-4 ⁹/₁₆" is indicated for the extension section.
- Gap:** A 3/4" gap is shown between the end section and the abutment diaphragm extension.
- Deck Width:** The total width of the deck is 4 1/2".
- Deck Height:** The height of the deck is 1'-1 1/2".
- Abutment Height:** The height of the abutment is 1'-0".
- Labels:** The diagram is labeled with "END SECTION" and "ABUT. DIAPHRAGM EXT.".
- Section Lines:** The diagram uses section lines (A-A, B-B, C-C, D-D, E-E) to indicate the locations of the cross-sections shown in Figure 10.9.

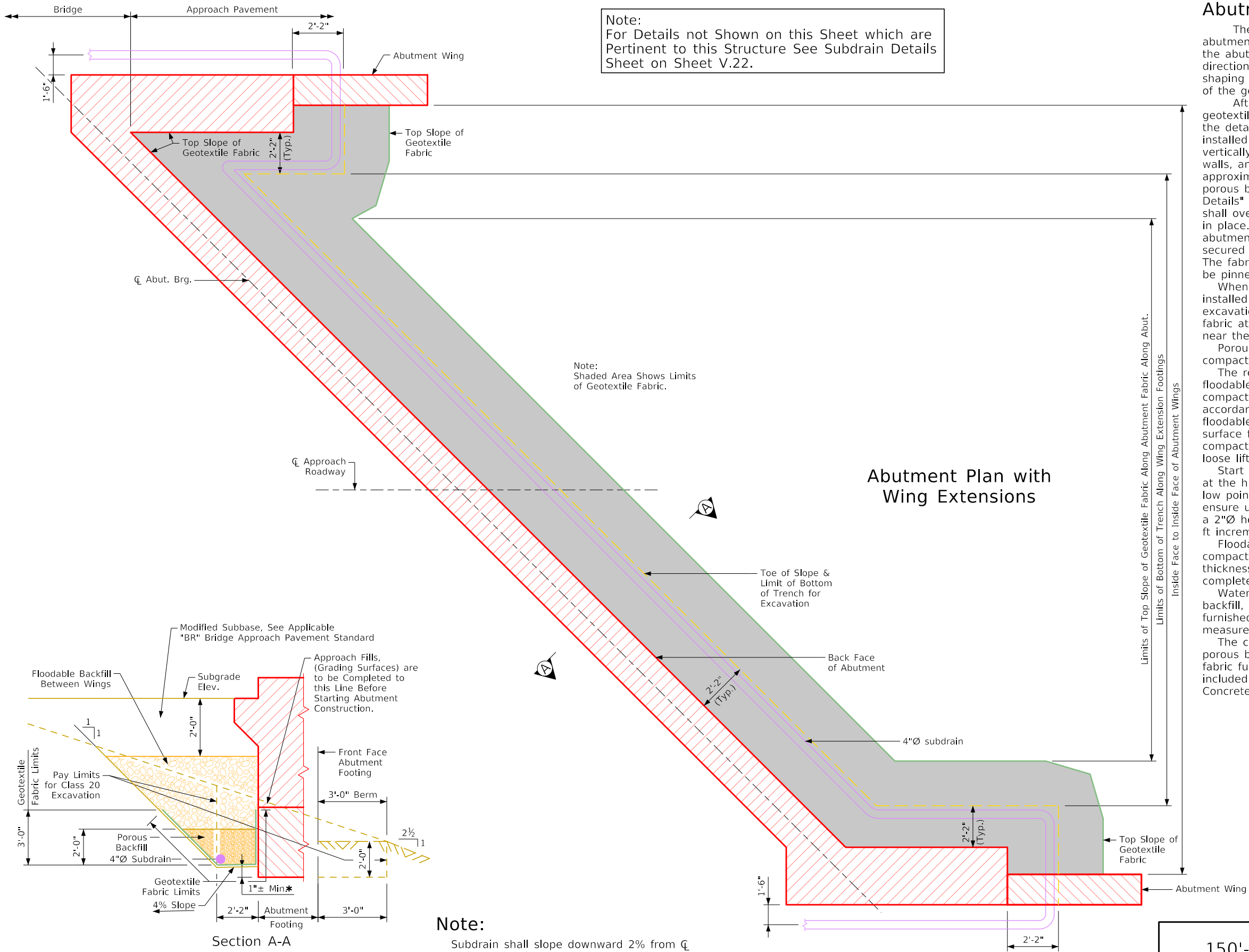
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JCH JLK CWM

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V.19

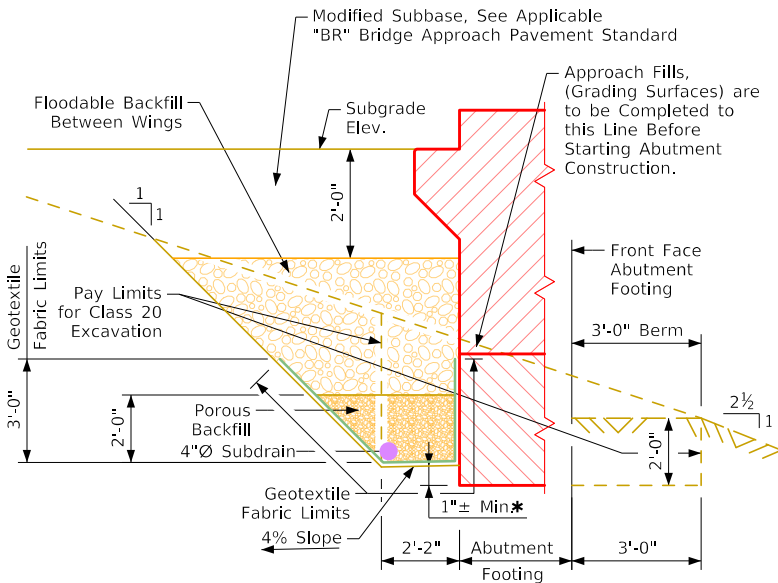
Design For 45 Degree RA Skew
150'-0" x 30'-6" Pretensioned
Prestressed Concrete Beam Bridge
150'-0" Single Span
Open Rail Details
STA. 1006+25.00 (210th St.) Turn-in Date: Sept 2026
Montgomery County



Note:
For Details not Shown on this Sheet which are Pertinent to this Structure See Subdrain Details Sheet on Sheet V.22.

Note:
Shaded Area Shows Limits of Geotextile Fabric.

Abutment Plan with Wing Extensions



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:

Subdrain shall slope downward 2% from CL 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 1 ft in length, shingle fashion with up slope lap piece on top and stapled for continuity.

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 ft 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 ft 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 ft of thickness.

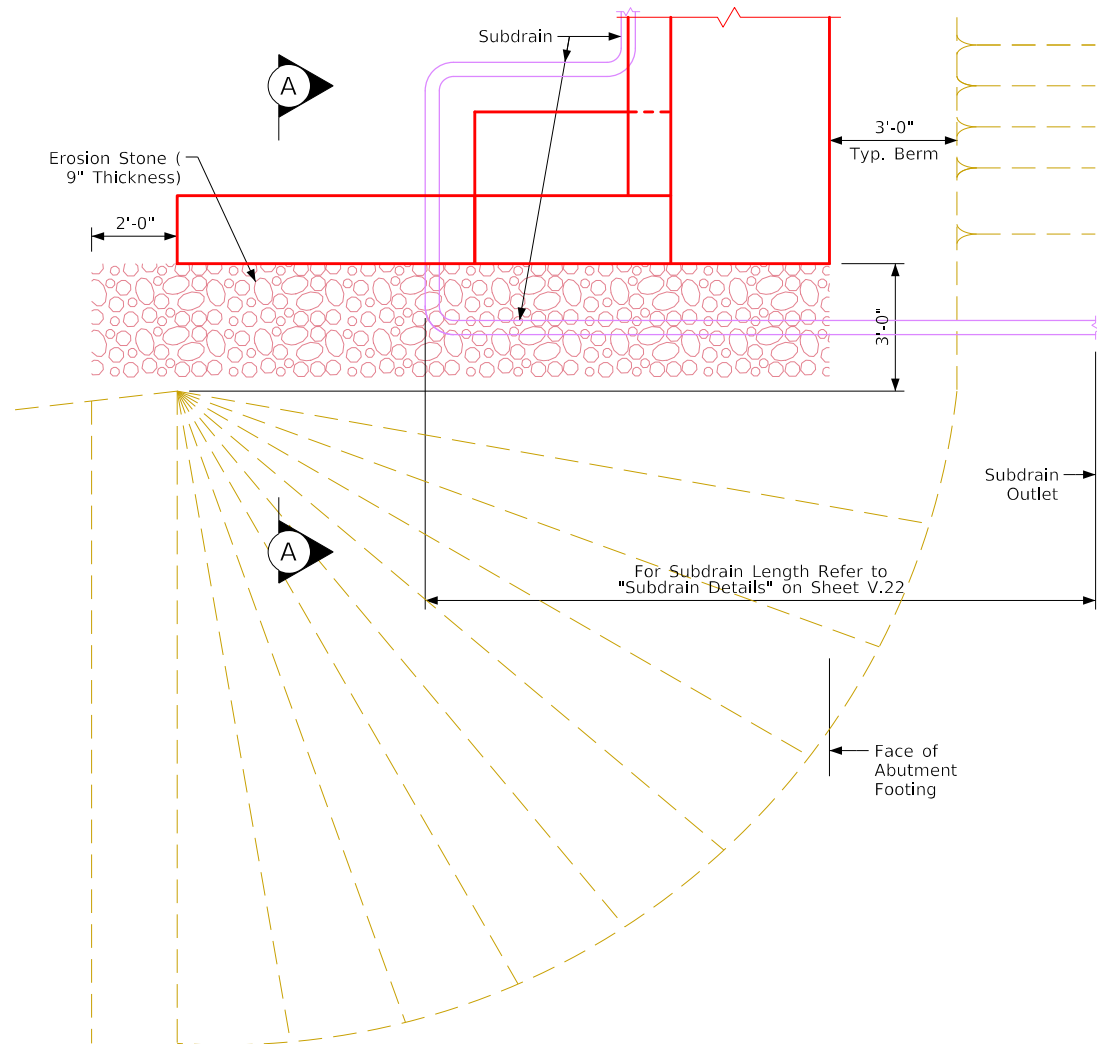
Start surface flooding for each floodable backfill lift at the high point of the subdrain and progress to the low point where the subdrain exits the fabric. To ensure uniform surface flooding, water running full in a 2"Ø hose should be sprayed in successive 6 ft to 8 ft increments for 5 minutes within each increment.

Floodable backfill lift placement, flooding, and compaction shall progress until the required full thickness of the abutment backfill has been completed.

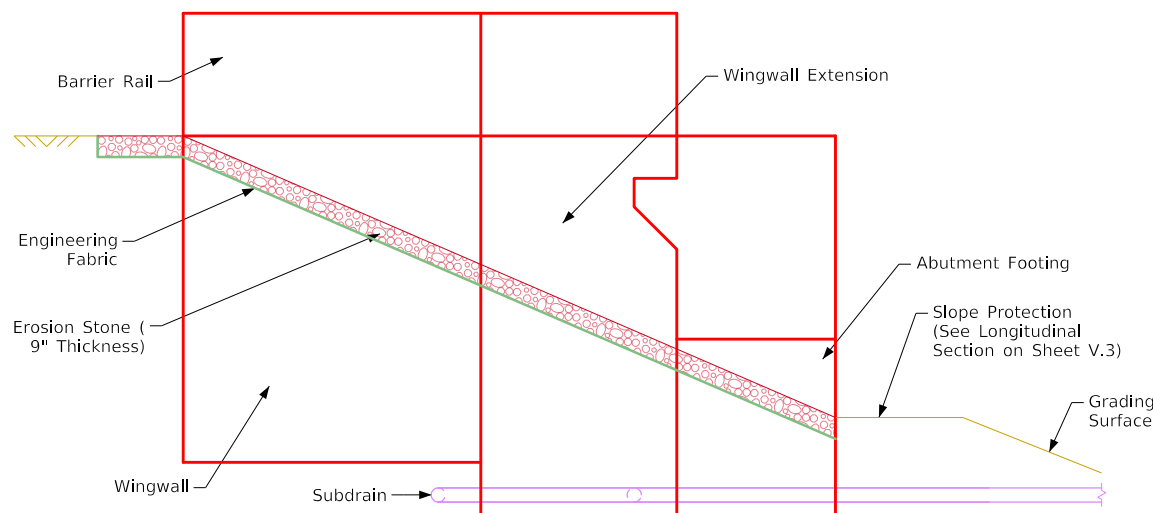
Water required for flooding, subdrains, porous backfill, floodable backfill, and geotextile fabric furnished at the bridge abutments will not be measured separately for payment.

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".

Design For 45 Degree RA Skew
150'-0" x 30'-6" Pretensioned
Prestressed Concrete Beam Bridge
150'-0" Single Span
Abutment Backfill Details
STA. 1006+25.00 (210th St.) Turn-in Date: Sept 2026
Montgomery County

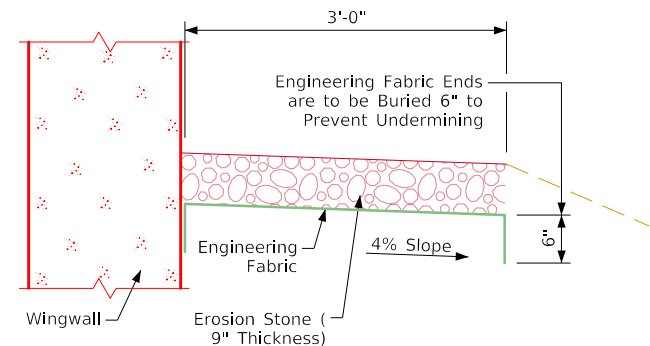


Top View of Wing Armoring with Wing Extension



Profile View of Wing Armoring with Wing Extension
(Integral Abutment with Wing Extensions)

A Check Shall be Made at the Subdrain Outlet to Ensure that it is Draining Properly During the Backfill Flooding Process.



Section A-A

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 underlaid 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 screen 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 inch 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 45 Degree RA Skew
150'-0" x 30'-6" Pretensioned
Prestressed Concrete Beam Bridge
150'-0" Single Span
Bridge Wing Armoring
STA. 1006+25.00 (210th St.) Turn-in Date: Sept 2026
Montgomery County

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210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

BRIDGE WING ARMORING

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DRAWING NO.

V.21

Note: Section A-A is shown on Abutment Backfill Details Sheet on Sheet V.20.

Control Point: CP202, CP / 1/2IN MCEC CAP, Elev. 1056.14, N.6234949.43, E.22061207.12

Subdrain Notes:

This plan sheet shows details for placing all subdrains and subdrain outlets required for this structure.

The subdrains shall be 4"Ø 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 ensure the outlet pipe is adequately strong and will not be damaged when revetment is placed. A check will be made at the subdrain outlet to ensure 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"Ø and coupled to the 4"Ø subdrain in one of the two following ways.

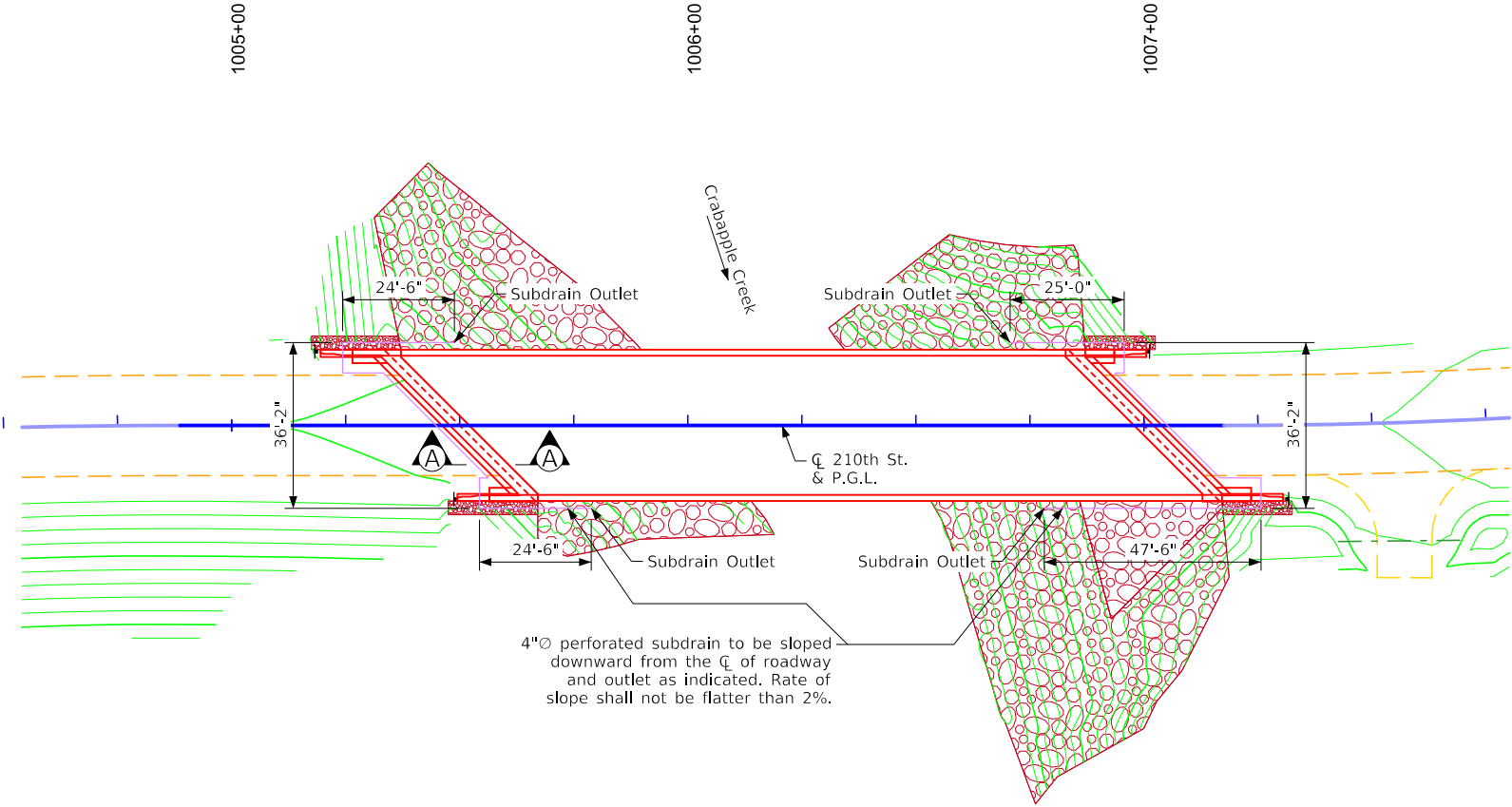
-Use an inside fit reducer coupler (coupler must be inserted a minimum of 1'-0" into the metal outlet pipe).

-Insert 1'-0" of the 4"Ø subdrain into the 6"Ø metal outlet pipe, then fully seal the entire opening with grout.

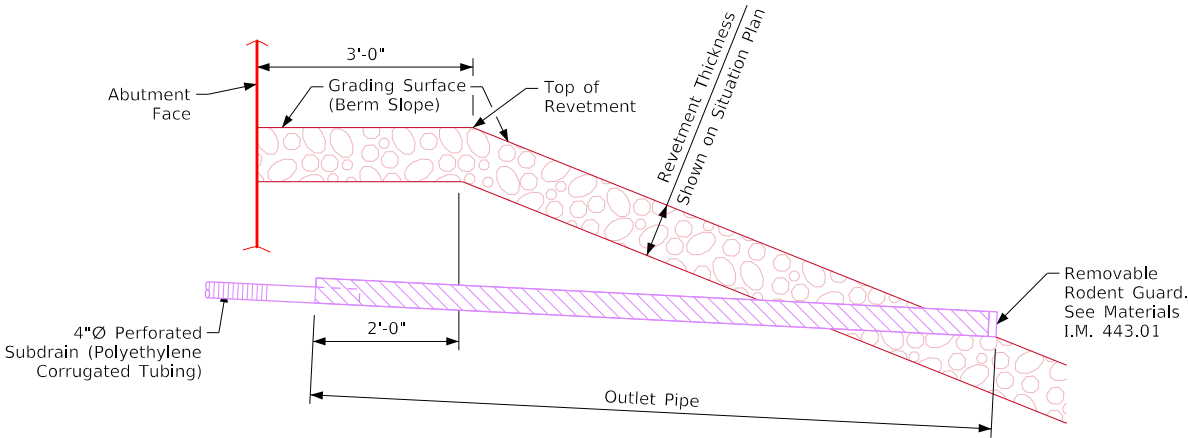
The cost of furnishing and placing subdrain (including excavation), granular backfill, porous backfill, and subdrain outlet is to be included in the price bid for "Structural Concrete (Bridge)". No extra payment will be made.

The dimensions shown for the proposed subdrains are based on the proposed grading layout of bridge berms. The dimensions shown are for estimating only. Required lengths and general locations of subdrains are subject to change due to field adjustments of the grading layout.

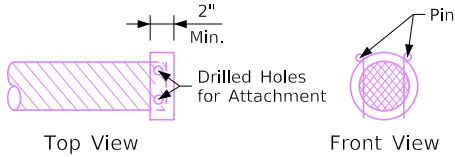
Subdrain Outlet Elevations	
Location	Elevation
West Abutment, North Subdrain	1044.70
West Abutment, South Subdrain	1044.70
East Abutment, North Subdrain	1045.80
East Abutment, South Subdrain	1045.40



Situation Plan
Showing Subdrain Locations



Typical Section of Subdrain Outlet



Removable Rodent Guard Details

Revetment Stone (Embedded) Outlet Details

Design For 45 Degree RA Skew

150'-0" x 30'-6" Pretensioned
Prestressed Concrete Beam Bridge

150'-0" Single Span

Subdrain Details

STA. 1006+25.00 (210th St.)

Turn-in Date: Sept 2026

Montgomery County

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Carroll, IA 51401
main 712.220.8121

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Macon, MO | Columbia, MO
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Lenexa, KS
Boston, MA | Portsmouth, NH

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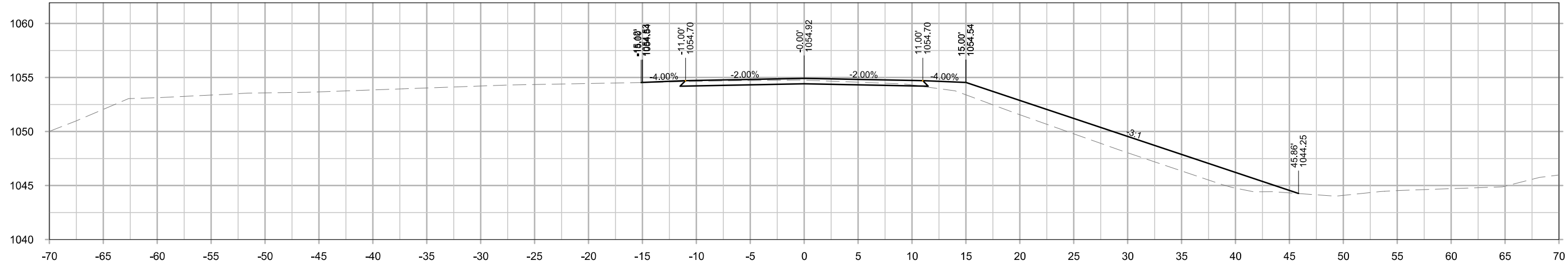
PROJECT INFO
2024000585

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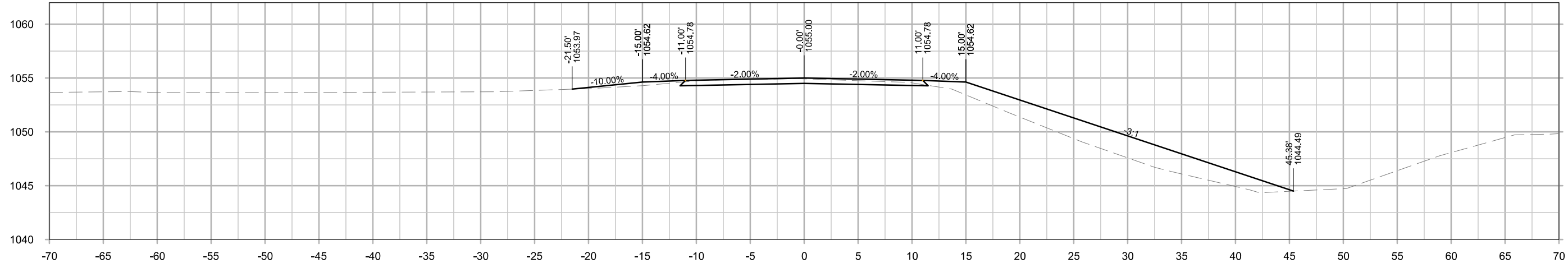
210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

SUBDRAIN DETAILS

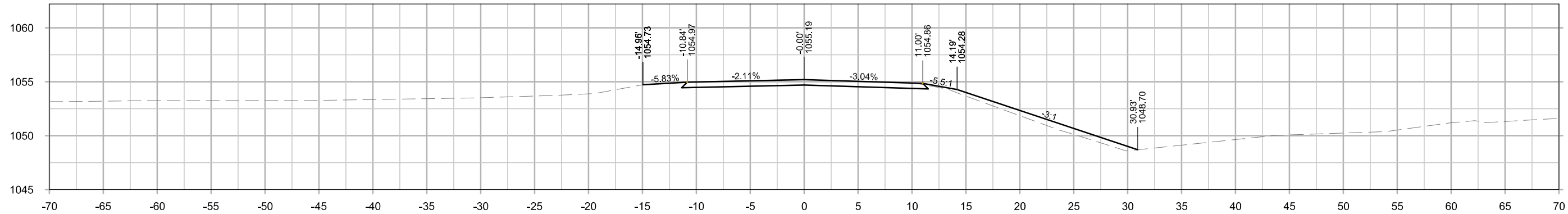
DRAWING NO.
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STA. 1004+75.00



STA. 1004+50.00



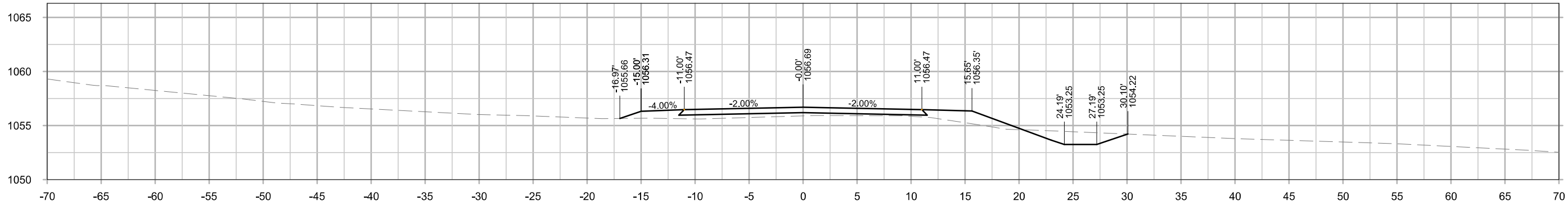
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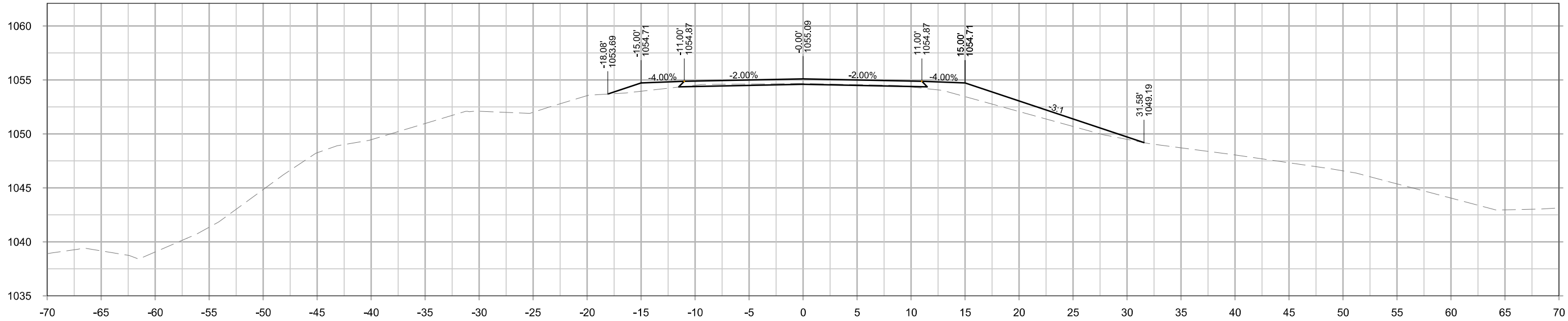
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CFF	JMT	-

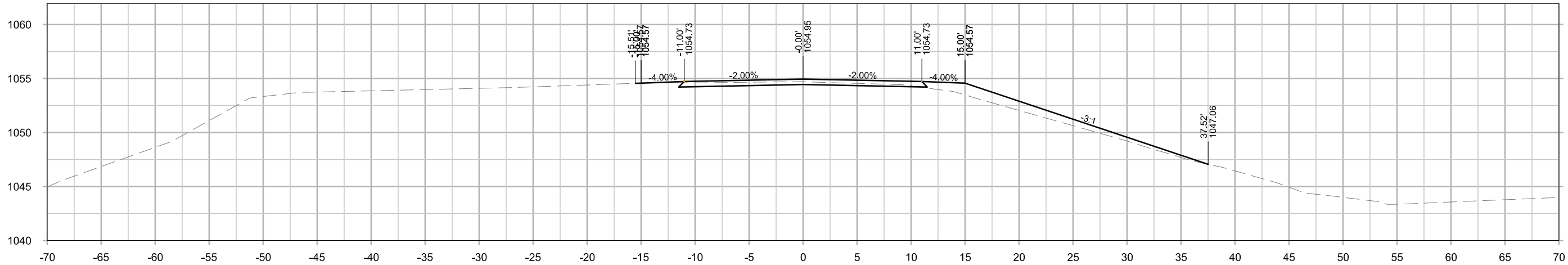
210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA
210TH STREET CROSS SECTIONS



STA. 1007+25.00



STA. 1005+25.00



STA. 1005+00.00



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210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

210TH STREET CROSS SECTIONS

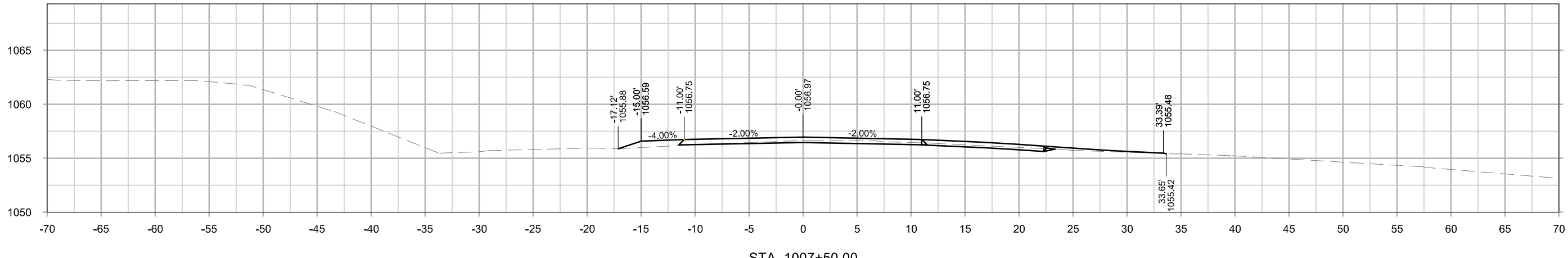
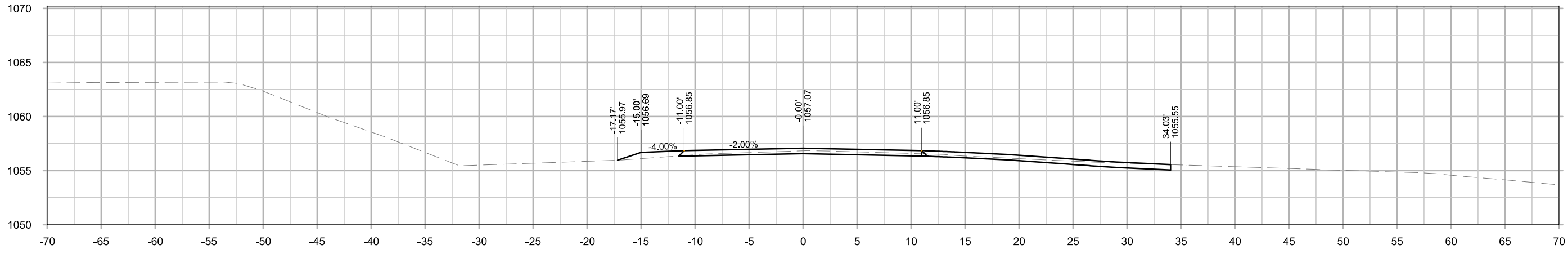
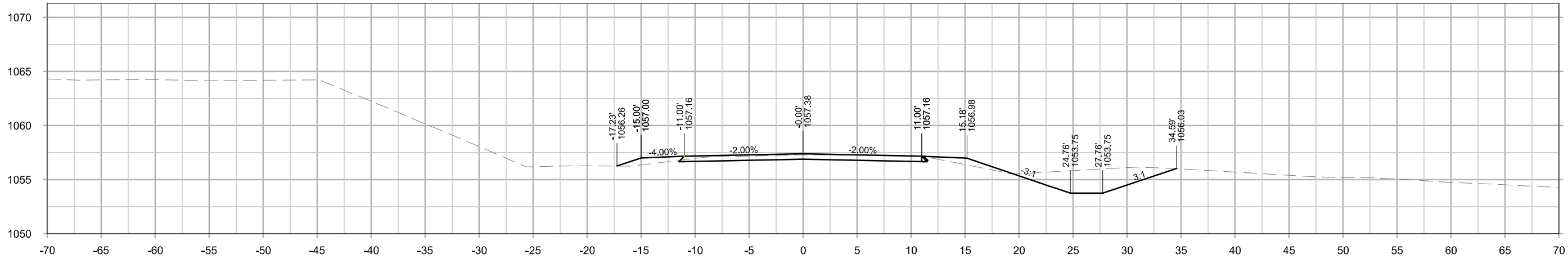
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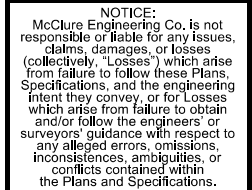
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CFE	JMT	-

210TH STREET OVER CRABAPPLE CREEK
BRIDGE REPLACEMENT
MONTGOMERY COUNTY, IOWA

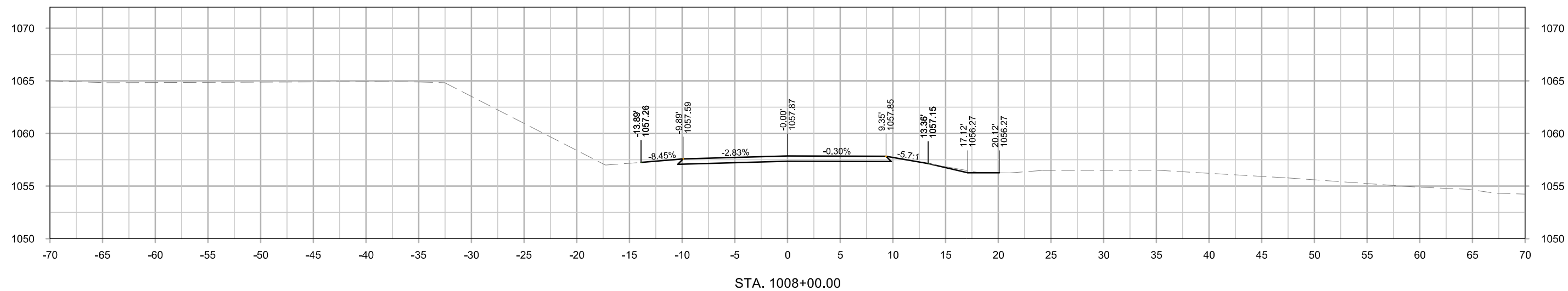
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