BRIDGE REPLACEMENT – CCS
BROS–C024(116)––5F–24

LETTING DATE
11/15/2016

CRAWFORD COUNTY

TRAFFIC CONTROL PLAN

THIS ROAD WILL BE CLOSED TO THROUGH TRAFFIC DURING CONSTRUCTION. LOCAL TRAFFIC TO ADJACENT PROPERTIES WILL BE MAINTAINED AS PROVIDED FOR IN ARTICLE 1107.08 OF THE CURRENT STANDARD SPECIFICATIONS. TEMPORARY TRAFFIC CONTROL DEVICES FOR THE DETOUR ROUTE WILL BE PROVIDED, INSTALLED, AND MAINTAINED BY THE COUNTY.

SECTION 404 PERMIT AND CONDITIONS

281–1
10–18–16

CONSTRUCT THIS PROJECT ACCORDING TO THE REQUIREMENTS OF U.S. ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NO. 14, PERMIT NO. CEMVR–OD–P–2016–633. A COPY OF THIS PERMIT IS AVAILABLE FROM THE IOWA DOT WEBSITE (http://www.envpermits.iowadot.gov/). THE U.S. ARMY CORPS OF ENGINEERS RESERVES THE RIGHT TO VISIT THE SITE WITHOUT PRIOR NOTICE.

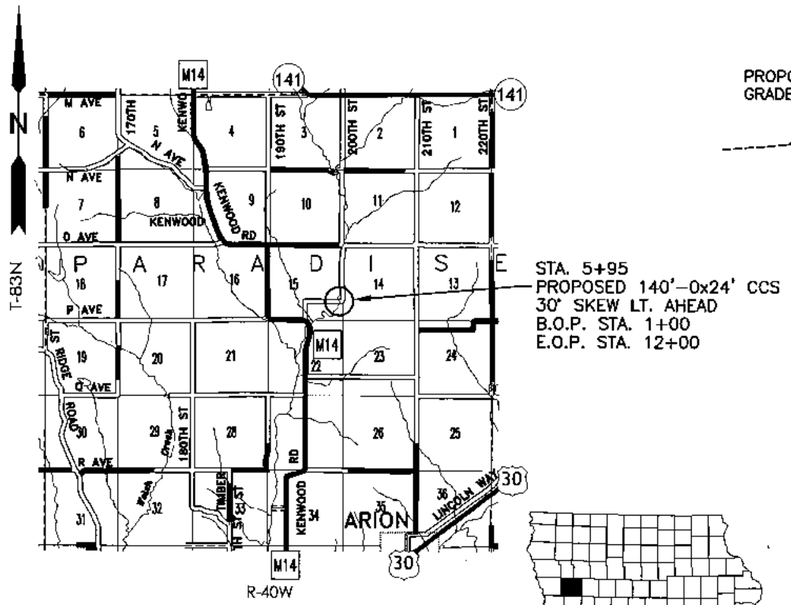
THIS PROJECT IS COVERED BY THE IOWA DEPARTMENT OF NATURAL RESOURCES NPDES GENERAL PERMIT NO. 2. THE CONTRACTOR SHALL CARRY OUT THE TERMS AND CONDITIONS OF GENERAL PERMIT NO. 2 AND THE STORM WATER POLLUTION PREVENTION PLAN WHICH IS A PART OF THESE CONTRACT DOCUMENTS. REFER TO SECTION 2602 OF THE STANDARD SPECIFICATIONS FOR ADDITIONAL INFORMATION.

DRAWING APPROVAL

ALL SHOP DRAWINGS THAT REQUIRE APPROVAL SHALL BE APPROVED BY THE CRAWFORD COUNTY ENGINEER.

ADDRESS: 1202 BROADWAY STE 1
DENISON, IOWA 51442–0458
TELEPHONE: (712)263–2449
EMAIL: paasman@crawfordcounty.org

THESE SHOP DRAWINGS SHALL NOT BE SENT TO IOWA D.O.T. OFFICE OF BRIDGE DESIGN.



STA. 5+95
PROPOSED 140'–0x24' CCS
30° SKEW LT. AHEAD
B.O.P. STA. 1+00
E.O.P. STA. 12+00

IOWADOT

Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

FARM-TO-MARKET SYSTEM

CRAWFORD COUNTY

PROJECT NO. BROS–C024(116)––5F–24

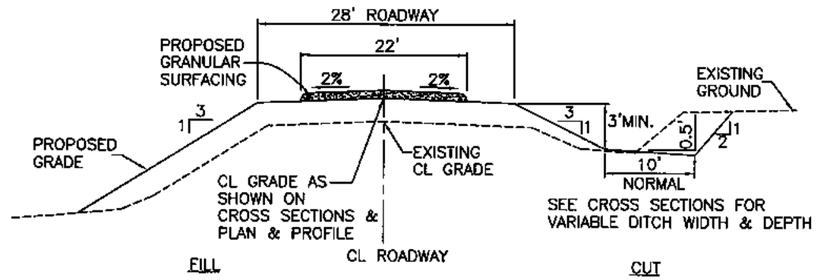
BRIDGE REPLACEMENT – CCS

200TH ST.:

FROM O AVE. TO KENWOOD RD.

SCALES: AS NOTED

REFER TO THE PROPOSAL FORM FOR LIST OF APPLICABLE SPECIFICATIONS.



TYPICAL CROSS SECTION

NOT TO SCALE

04–30–02		101–4
DESIGN DATA RURAL		
2012 AADT	20	V.P.D.
2036 AADT	30	V.P.D.
201X DHV	X	V.P.H.
TRUCKS	X	%
TOTAL DESIGN ESALs		

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A1	TROY J. GROTH	PRIMARY SIGNATURE BLOCK
Q1	JAMES A. BERTSCH	GEOTECHNICAL DESIGN

Approved

Steve Ellerman Vice
Kyle K Schmidt
Emily Sloan
C J Blum

BOARD OF SUPERVISORS

	TOTAL SHEETS
	20
PROJECT NUMBER	
BROS–C024(116)––5F–24	
R.O.W. PROJECT NUMBER	
PROJECT IDENTIFICATION NUMBER	
FHWA STRUCTURE NO. 128080	

INDEX OF SHEETS

STANDARD ROAD PLANS

STANDARD ROAD PLANS ARE LISTED ON PLAN SHEET C1.

STANDARD BRIDGE PLANS

STANDARD BRIDGE PLANS ARE LISTED ON PLAN SHEET C1.

UTILITY CONTACTS

NONE

IOWA ONE CALL
CALL BEFORE YOU DIG!
1-800-292-8989
www.iowaonecall.com
811

MILEAGE SUMMARY

LOCATION	LIN. FT.	MILES
BOP STA. 1+00 TO EOP STA. 12+00	1100.00	
DEDUCT BRIDGE AT STA. 5+95	143.46	
NET LENGTH OF ROADWAY	956.54	0.181

Approved

8/9/16
CRAWFORD COUNTY ENGINEER — DATE

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.

LICENSED PROFESSIONAL ENGINEER — TROY J. GROTH 14450 — IOWA

8/1/2016
TROY J. GROTH, P.E. #14450 — DATE

MY LICENSE RENEWAL DATE IS DECEMBER 31, 2017.

PAGES OR SHEETS COVERED BY THIS SEAL:
ALL EXCEPT Q1

SUNDQUIST ENGINEERING, P.C.
120 S. MAIN, P.O. BOX 226, DENISON, IOWA 51442
PHONE: (712)263-8118 FAX: (712)263-2181
SUNDQUISTENGINEERING.COM

LOCATION MAP SCALE
0 1 2 3
SCALE IN MILES

DESIGN TEAM: TJG/SAS/TKK	ENGLISH	SE PROJECT NO. : 05515	FHWA NO. 128080	CRAWFORD COUNTY	PROJECT NUMBER BROS–C024(116)––5F–24	SHEET NUMBER A1

CRAWFORD COUNTY

ESTIMATED PROJECT QUANTITIES

100-1A
07-15-97

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QTY.
1	2101-0850001	CLEARING AND GRUBBING	ACRE	5.7	
2	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	5351.0	
3	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CY	3440.6	
4	2312-8260051	GRANULAR SURFACING ON ROAD, CLASS A CRUSHED STONE	TON	403.6	
5	2401-6745625	REMOVAL OF EXISTING BRIDGE	LS	1.00	
6	2402-2720000	EXCAVATION, CLASS 20	CY	130	
7	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	CY	307.8	
8	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	73818	
9	2414-6424124	CONCRETE OPEN RAILING, TL-4	LF	302.9	
10	2417-1040024	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 24 IN. DIA.	LF	94	
11	2501-0201042	PILES, STEEL, HP 10 X 42	LF	630	
12	2501-0201253	PILES, STEEL, HP 12 X 53	LF	1250	
13	2501-5478053	CONCRETE ENCASEMENT OF STEEL H PILES, HP 12 X 53 (P10L TYPE 3)	LF	420.0	
14	2501-6335010	PREBORED HOLES	LF	120	
15	2507-3250005	ENGINEERING FABRIC	SY	1854.0	
16	2507-6800021	REVETMENT, CLASS B	TON	1868.4	
17	2518-6910000	SAFETY CLOSURE	EACH	2	
18	2524-9100030	OBJECT MARKER, TYPE 3	EACH	4	
19	2526-8285000	CONSTRUCTION SURVEY	LS	1.00	
20	2528-8445110	TRAFFIC CONTROL	LS	1.00	
21	2533-4980005	MOBILIZATION	LS	1.00	
22	2601-2640350	SPECIAL DITCH CONTROL, WOOD EXCELSIOR MAT	SQ	7.4	
23	2602-0000020	SILT FENCE	LF	737.5	
24	2602-0000030	SILT FENCE FOR DITCH CHECKS	LF	120.0	
25	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	1	

STANDARD ROAD PLANS

105-4
10-18-11

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

NUMBER	DATE	TITLE
EC-101	04-19-16	SPECIAL DITCH CONTROL
EC-201	10-18-16	SILT FENCE
EW-501	10-20-15	RURAL ENTRANCE
SI-173	04-19-16	OBJECT MARKERS
TC-1	04-16-13	WORK NOT AFFECTING TRAFFIC (TWO-LANE OR MULTI-LANE)
TC-252	04-19-16	ROUTES CLOSED TO TRAFFIC

INDEX OF TABULATIONS

111-25
10-18-11

TABULATION	TABULATION TITLE	SHEET NO.
100-1A	ESTIMATED PROJECT QUANTITIES	C1
100-4A	ESTIMATE REFERENCE INFORMATION	C1-C2
100-17	TABULATION OF SILT FENCES	C4
100-18	SILT FENCES FOR DITCH CHECKS	C4
102-3	ACCESS POINTS AND SAFETY RAMPS	C4
105-4	STANDARD ROAD PLANS	C1
108-13A	SAFETY CLOSURES	C4
110-12A	POLLUTION PREVENTION PLAN	C3
111-25	INDEX OF TABULATIONS	C1
	STANDARD BRIDGE PLANS	C1
	PLACEMENT OF QUANTITIES	C4
	TABULATION OF EARTHWORK QUANTITIES	C4

STANDARD BRIDGE PLANS

STANDARD	ISSUED	REVISED
J24-01-06	NOVEMBER, 2006	06-13
J24-16-06	NOVEMBER, 2006	06-12
J24-17-06	NOVEMBER, 2006	07-09
J24-20-06	NOVEMBER, 2006	06-12
J24-22-06	NOVEMBER, 2006	12-08
J24-23-06	NOVEMBER, 2006	05-14
J24-24-06	NOVEMBER, 2006	12-08
J24-36-06	NOVEMBER, 2006	06-13
J24-39-06	NOVEMBER, 2006	07-09
J24-40-06	NOVEMBER, 2006	12-08
J24-41-06	NOVEMBER, 2006	07-09
P10L	JANUARY, 2009	11-15

ESTIMATE REFERENCE INFORMATION

100-4A
10-29-02

ITEM NO.	ITEM CODE	DESCRIPTION
1	2101-0850001	CLEARING AND GRUBBING INCLUDES THE AREA WITHIN THE LIMITS OF THE RIGHT-OF-WAY AND TEMPORARY EASEMENTS SHOWN ON PLAN SHEET V2.
2	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW INCLUDES 5351.0 C.Y. CUT, 3170.0 C.Y. FILL +35% SHRINK, AND 2181.0 C.Y. WASTE. REFER TO TABULATION OF EARTHWORK QUANTITIES ON PLAN SHEET C4. TYPE "A" COMPACTION WILL BE REQUIRED. BORROW MAY BE OBTAINED FROM SUITABLE CLASS 20 AND CLASS 10 CHANNEL EXCAVATIONS. THE CONTRACTOR SHALL PROVIDE ADDITIONAL NECESSARY BORROW. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED. QUANTITY INCLUDES EXCAVATION REQUIRED TO OBLITERATE OLD ROADBED. EXISTING SLOPES THAT ARE TO RECEIVE EMBANKMENT, REGARDLESS OF THEIR HEIGHT, SHALL BE PREPARED IN ACCORDANCE WITH ARTICLE 2107.03, C, 2, OF THE STANDARD SPECIFICATIONS. A SUFFICIENT VOLUME OF SOIL HIGH IN ORGANIC CONTENT IS AVAILABLE WITHIN THE EXCAVATION LIMITS OF THE PROJECT. THIS MATERIAL SHALL BE DEPOSITED AS THE FINAL LAYER TO A MINIMUM FINISHED DEPTH OF 4 INCHES ON THE PROPOSED ROADWAY FORESLOPES AND OTHER DISTURBED AREAS TO FACILITATE ESTABLISHMENT OF PERMANENT VEGETATIVE COVER. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THIS BID ITEM. PAYMENT FOR THIS ITEM WILL BE AT PLAN QUANTITY. CROSS SECTIONS WILL NOT BE TAKEN AFTER EXCAVATION FOR THE PURPOSE OF DETERMINING ACTUAL QUANTITIES.
3	2104-2710020	EXCAVATION, CLASS 10, CHANNEL INCLUDES 3440.6 C.Y. OF CUT, PLACEMENT OF 1895.4 C.Y. (1404.0 X 1.35) OF FILL ON THE CHANNEL BANKS, AND 1545.2 C.Y. WASTE. QUANTITY INCLUDES EXCAVATION REQUIRED TO INSTALL REVETMENT. QUANTITY INCLUDES EXCAVATION REQUIRED TO TRANSITION PROPOSED CHANNEL SLOPES INTO EXISTING SLOPES WITHIN THE LIMITS SHOWN ON PLAN SHEET V2. EXISTING SLOPES THAT ARE TO RECEIVE EMBANKMENT, REGARDLESS OF THEIR HEIGHT, SHALL BE PREPARED IN ACCORDANCE WITH ARTICLE 2107.03, C, 2, OF THE STANDARD SPECIFICATIONS. EXCESS MATERIAL AND UNSUITABLE MATERIAL NOT DESIRABLE TO BE INCORPORATED INTO THE WORK INVOLVED ON THIS PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE HAULED FROM THE SITE. THE COST OF HAULING AND DISPOSING OF THIS MATERIAL SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THE PRICE BID FOR CLASS 10 CHANNEL EXCAVATION. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED. PAYMENT FOR THIS ITEM WILL BE AT PLAN QUANTITY. CROSS SECTIONS WILL NOT BE TAKEN AFTER EXCAVATION FOR THE PURPOSE OF DETERMINING ACTUAL QUANTITIES.
4	2312-8260051	GRANULAR SURFACING ON ROAD, CLASS A CRUSHED STONE MATERIAL SHALL BE SPREAD BY THE CONTRACTOR AND THE CONTRACT UNIT PRICE PER TON SHALL INCLUDE THE COST OF SPREADING GRANULAR SURFACING ON ROADWAY SURFACE. RATE OF APPLICATION SHALL BE 2220 TONS PER MILE.
5	2401-6745625	REMOVAL OF EXISTING BRIDGE CONTRACTOR SHALL COORDINATE WITH COUNTY FOR REMOVAL OF TIMBER DECKING PLANK FROM ALL SPANS AND STEEL BEAMS FROM APPROACH SPANS. THESE MATERIALS SHALL BE REMOVED BY COUNTY FORCES AND REMAIN THE PROPERTY OF THE COUNTY. THE REMAINDER OF THE STRUCTURE SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR. ITEM INCLUDES REMOVAL OF ABANDONED PIER AT STA. 7+44, 69' RT. AND EXISTING H-PILE JETTY AT STA. 6+35, 16' LT. AS SHOWN ON PLAN SHEET V2 IN ACCORDANCE WITH ARTICLE 2401.03, C, OF THE STANDARD SPECIFICATIONS.
6	2402-2720000	EXCAVATION, CLASS 20 REFER TO ABUTMENT EXCAVATION DETAILS ON PLAN SHEET U1.
7	2403-0100010	STRUCTURAL CONCRETE (BRIDGE) REFER TO TABULATIONS ON PLAN SHEETS C4, U4, AND U5. ABUTMENT SUBDRAIN, BACKFILL PROCESS, AND WING ARMORING WILL NOT BE UTILIZED AT THIS STRUCTURE. ITEM INCLUDES CERTIFIED PLANT INSPECTION IN ACCORDANCE WITH SECTION 2521 OF THE STANDARD SPECIFICATIONS. NO HEAVY CONSTRUCTION EQUIPMENT WILL BE PERMITTED ON THE NEWLY CONSTRUCTED BRIDGE UNLESS LOADED ON A LEGAL TRAILER.
8	2404-7775005	REINFORCING STEEL, EPOXY COATED REFER TO TABULATIONS ON PLAN SHEETS C4, U4, AND U5. ALL REINFORCING STEEL SHALL BE EPOXY COATED. REFER TO PLAN SHEET U5 FOR BILL OF REINFORCING STEEL AND PLACEMENT FOR LONGITUDINAL REINFORCEMENT DETAIL. ALL OTHER DETAILS OF STANDARD BRIDGE PLANS J24-16-06 AND J24-17-06 SHALL REMAIN IN EFFECT.
9	2414-6424124	CONCRETE OPEN RAILING, TL-4 REFER TO PLAN SHEET U4 FOR END SECTION DETAILS.
10	2417-1040024	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 24 IN. DIA. REFER TO TAB. 102-3. ALL CORRUGATED METAL PIPE LARGER THAN 12 INCHES IN DIAMETER SHALL BE ANNULAR, RIVETED PIPE. "SPIRAL" PIPE WILL NOT BE ALLOWED FOR PIPE DIAMETERS LARGER THAN 12 INCHES. MINIMUM BAND WIDTH SHALL BE 24 INCHES.

ESTIMATE REFERENCE INFORMATION

100-4A
10-29-02

ITEM NO.	ITEM CODE	DESCRIPTION
11	2501-0201042	PILES, STEEL, HP 10 X 42
12	2501-0201253	PILES, STEEL, HP 12 X 53 WAVE EQUATION ANALYSIS WILL BE USED AT THE TIME OF PILE DRIVING TO DETERMINE PILE BEARING. THE CONTRACTOR SHALL SUBMIT ADEQUATE HAMMER INFORMATION SO THAT THE PROPER ANALYSIS CAN BE PERFORMED.
15	2507-3250005	ENGINEERING FABRIC MATERIAL SHALL BE AS SPECIFIED FOR EMBANKMENT EROSION CONTROL IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS. MATERIAL SHALL BE JOINED BY OVERLAPPING A MINIMUM OF 18 INCHES. REFER TO DETAILS ON PLAN SHEET U1. THE QUANTITY OF ENGINEERING FABRIC FOR WHICH PAYMENT WILL BE MADE, WHEN PLACED AS SHOWN IN THE CONTRACT DOCUMENTS, WILL BE THE QUANTITY SHOWN IN THE CONTRACT DOCUMENTS IN SQUARE YARDS. MATERIAL USED FOR LAP JOINTS IS INCIDENTAL.
16	2507-6800021	REVETMENT, CLASS B REFER TO DETAILS ON PLAN SHEETS U1 AND V2. DEWATERING REQUIRED TO INSTALL REVETMENT SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THE PRICE BID FOR THIS ITEM. THE CONTRACTOR WILL BE RESPONSIBLE FOR REMOVAL OF ALL REMNANTS OF REVETMENT STOCKPILES FROM FARM FIELDS UTILIZED BY CONTRACTOR IN THE PROJECT AREA. THIS WORK WILL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THE PRICE BID FOR THIS ITEM.
17	2518-6910000	SAFETY CLOSURE REFER TO TAB. 108-13A.
18	2524-9100030	OBJECT MARKER, TYPE 3 INSTALL ONE TYPE 3 OBJECT MARKER AT THE APPROACH END OF EACH ROUNDED END POST SO THE INSIDE EDGE OF THE MARKER IS IN LINE WITH THE INNER EDGE OF THE END POST. THE ENGINEER WILL COUNT EACH OBJECT MARKER INSTALLED. PAYMENT WILL BE THE CONTRACT UNIT PRICE FOR EACH OBJECT MARKER COUNTED. PAYMENT IS FULL COMPENSATION FOR FURNISHING, FABRICATING AND ERECTING THE OBJECT MARKERS COMPLETE, INCLUDING POSTS AND MARKER SIGNS, FURNISHING ALL NECESSARY FITTINGS AND ATTACHMENTS, AND ALL LABOR NECESSARY TO COMPLETE THE WORK.
22	2601-2640350	SPECIAL DITCH CONTROL, WOOD EXCELSIOR MAT REFER TO TAB. 100-22 AND DETAILS ON PLAN SHEET C4. APPLY SLOPE PROTECTION IN THE DIRECTION OF THE FLOW OF WATER. ITEM INCLUDES ANY NECESSARY SHAPING OF AREA TO RECEIVE SLOPE PROTECTION. WATERING WILL NOT BE REQUIRED. SEEDING, FERTILIZING, AND MULCHING WILL BE PERFORMED BY THE COUNTY. CONTRACTOR SHALL COORDINATE INSTALLATION OF THE WOOD EXCELSIOR MAT WITH THE COUNTY.
23	2602--0000020	SILT FENCE REFER TO TAB. 100-17. THE TABULATION INCLUDES ESTIMATED LOCATIONS FOR PLACEMENT OF SILT FENCE TO ADDRESS POSSIBLE EROSION DURING CONSTRUCTION. VERIFY THE SPECIFIC LOCATIONS WITH THE ENGINEER PRIOR TO BEGINNING PLACEMENT. BID ITEM INCLUDES 25% ADDITIONAL QUANTITY FOR FIELD ADJUSTMENT AND REPLACEMENTS.
24	2602-0000030	SILT FENCE FOR DITCH CHECKS REFER TO TAB. 100-17. THE TABULATION INCLUDES ESTIMATED LOCATIONS FOR PLACEMENT OF "SILT FENCE FOR DITCH CHECKS" TO ADDRESS EROSION TO BE ENCOUNTERED DURING CONSTRUCTION. VERIFY THE SPECIFIC LOCATIONS WITH THE ENGINEER PRIOR TO BEGINNING PLACEMENT. BID ITEM INCLUDES 50% ADDITIONAL QUANTITY FOR FIELD ADJUSTMENTS AND REPLACEMENTS.

GENERAL NOTES

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE ALL NECESSARY ARRANGEMENTS WITH ADJACENT PROPERTY OCCUPANTS FOR RESTRAINING LIVESTOCK FROM ENTERING THE RIGHT-OF-WAY DURING CONSTRUCTION.

CONTRACTOR IS TO USE DUE CAUTION IN WORKING OVER AND AROUND ALL TILE LINES. BREAKS IN THE TILE LINE DUE TO THE CONTRACTOR'S CARELESSNESS ARE TO BE REPLACED AT CONTRACTOR'S EXPENSE WITHOUT COST TO THE CONTRACTING AUTHORITY. ANY TILE LINES BROKEN OR DISTURBED BY CUT LINES WILL BE REPLACED AS DIRECTED BY THE ENGINEER IN CHARGE OF CONSTRUCTION AND AT THE CONTRACTING AUTHORITY'S EXPENSE.

WHERE PUBLIC UTILITY FIXTURES ARE SHOWN AS EXISTING ON THE PLANS OR ENCOUNTERED WITHIN THE CONSTRUCTION AREA, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE OWNERS OF THOSE UTILITIES PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. THE CONTRACTOR SHALL AFFORD ACCESS TO THESE FACILITIES FOR NECESSARY MODIFICATION OF SERVICES. UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND THEREFORE THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. IT IS POSSIBLE THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN OR SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THEIR EXISTENCE AND EXACT LOCATION AND TO AVOID DAMAGE THERETO. NO CLAIMS FOR ADDITIONAL COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR ANY INTERFERENCE OR DELAY CAUSED BY SUCH WORK.

CONTRACTOR SHALL NOTIFY ONE-CALL (1-800-292-8989) FOR UTILITY LOCATES PRIOR TO COMMENCING WORK.

SEEDING WILL BE ACCOMPLISHED BY THE COUNTY.

10-21-14 232-10
DISPOSE OF ALL WOOD MATERIAL GENERATED AS A RESULT OF CLEARING AND/OR GRUBBING ACCORDING TO THE IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP'S EMERALD ASH BORER (EAB) QUARANTINE ORDER. FOR MORE INFORMATION REFER TO http://www.iowatreepests.com/eab_regulations.html.

09-27-94 271-9
A SCRAPE SAMPLE WAS TAKEN FROM ONE AREA OF THIS BRIDGE TO GET AN INDICATION OF THE EXISTENCE OF THE LEVEL OF TOTAL CHROMIUM AND TOTAL LEAD. ANALYSIS OF TOTAL LEAD ON THIS SAMPLE WAS 291,000 PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS 94 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 CONTRACTING AUTHORITY'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS.

POLLUTION PREVENTION PLAN

110-12A
10-18-16

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

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

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

I. ROLES AND RESPONSIBILITES

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

B. Contractor/Subcontractor:
1. Affected contractors/subcontractors are co-permittees with the IDOT and will sign a certification statement adhering to the requirements of the NPDES permit and this PPP plan. Affected contractors/subcontractors are anyone responsible for sediment or erosion controls or involved in land disturbing activities. All co-permittees are legally required under the Clean Water Act and the Iowa Administrative Code to ensure compliance with the terms and conditions of this PPP.
2. Submit an Erosion Control Implementation Plan (ECIP) according to Specifications Section 2602 and any additional plan notes.
3. Install and maintain appropriate controls.
4. Supervise and implement good housekeeping practices.
5. Conduct joint required inspections of the site with inspection staff.
6. Comply with training and certification requirements of Specifications Section 2602.
7. Signature authority on Co-Permittee Certification Statements and storm water inspection reports.

C. RCE/Inspector:
1. Update PPP whenever there is a change in design, construction, operation or maintenance, which has a significant effect on the discharge of pollutants from the project.
2. Maintain an up-to-date record that identifies contractors and subcontractors as co-permittees.
3. Make these plans available to the DNR upon their request.
4. Conduct joint required inspections of the site with the contractor/subcontractor.
5. Complete an inspection report after each inspection.
6. Signature authority on storm water inspection reports and Notice of Discontinuation (NOD).

II. PROJECT SITE DESCRIPTION

A. This Pollution Prevention Plan (PPP) is for the construction of a Crawford County bridge on county road 200th Street over Paradise Creek.
B. This PPP covers approximately 6 acres with an estimated 3 acres being disturbed. The portion of the PPP covered by this contract has 3 acres disturbed.
C. The PPP is located in an area of one soil association (Monona-Ida-Napier). The estimated weighted average runoff coefficient number for this PPP after completion will be 0.24.
D. Storm Water Site Map - Multiple sources of information comprise the base storm water site map including:
1. Drainage patterns - Plan and Profile sheets and Situation plans.
2. Proposed Slopes - Cross Sections.
3. Areas of Soil Disturbance - construction limits shown on Plan and Profile sheets.
4. Location of Structural Controls - Tabulations on C sheets.
5. Locations of Non-structural Controls - Tabulations on C sheets.
6. Locations of Stabilization Practices - generally within construction limits shown on Plan and Profile sheets.
7. Surface Waters (including wetlands) - Project Location Map and Plan and Profile sheets.
8. Locations where storm water is discharged - Plan and Profile sheets.
E. The base site map is amended by contract modifications and progress payments (fieldbook entries) of completed erosion control work. Also, due to project phasing, erosion and sediment controls shown on project plans may not be installed until needed, based on site conditions. For example, silt fence ditch checks will typically not be installed until the ditch has been installed. Installed locations may also be modified from tabulation locations by field staff. Installed locations will be documented by fieldbook entries.
F. Runoff from this work will flow into Paradise Creek.

III. CONTROLS

A. The contractor's ECIP specified in Article 2602.03 for accomplishment of storm water controls should clearly describe the intended sequence of major activities and for each activity define the control measure and the timing during the construction process that the measure will be implemented.
B. Preserve vegetation in areas not needed for construction.
C. Sections 2601 and 2602 of the Standard Specifications define requirements to implement erosion and sediment control measures. Actual quantities used and installed locations may vary from the Base PPP and amendment of the plan will be documented via fieldbook entries or by contract modification. Additional erosion and sediment control items may be required as determined by the inspector and/or contractor during storm water monitoring inspections. If the work involved is not applicable to any contract items, the work will be paid for according to Article 1109.03 paragraph B.

1. EROSION AND SEDIMENT CONTROLS
a. Stabilization Practices
1) Site plans will ensure that existing vegetation or natural buffers are preserved where attainable and disturbed portions of the site will be stabilized.
2) Stabilization practices shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased.
3) Temporary stabilizing seeding shall be completed as the disturbed areas are constructed. If construction activity is not planned to occur in a disturbed area for at least 21 days, the area shall be stabilized by temporary seeding or mulching within 14 days.
4) Permanent and Temporary Stabilization practices to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation.
5) Preservation of existing vegetation within right-of-way or easements will act as vegetative buffer strips.
6) Preservation of topsoil: Bid items to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plans or is referenced in Standard Specifications Section 2105.

b. Structural Practices
1) Structural practices will be implemented to divert flows from exposed soils and detain or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Additionally, structural practices may include: silt basins that provide 3600 cubic feet of storage per acre drained or equivalent sediment controls, outlet structures that withdraw water from surface when discharging basins, and controls to direct storm water to vegetated areas.

POLLUTION PREVENTION PLAN

110-12A
10-18-16

2) Structural practices to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan, as well as all other item specific Tabulations. Typical drawings detailing construction of the devices to be used on this project can be found on the B sheets of the plans or are referenced in the Standard Road Plans Tabulation.

c. Storm Water Management
1) Measures shall be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. This may include velocity dissipation devices at discharge locations and along length of outfall channel as necessary to provide a non-erosion velocity flow from structure to water course. If included with this project, these items are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan, as well as all other item specific Tabulations. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation. The installation of these devices may be subject to Section 404 of the Clean Water Act.

2. OTHER CONTROLS
a. Contractor disposal of unused construction materials and construction material wastes shall comply with applicable state and local waste disposal, sanitary sewer, or septic system regulations. In the event of a conflict with other governmental laws, rules and regulations, the more restrictive laws, rules or regulations shall apply.
1) Vehicle Entrances and Exits - Construct and maintain entrances and exits to prevent tracking of sediments onto roadways.
2) Material Delivery, Storage and Use - Implement practices to prevent discharge of construction materials during delivery, storage, and use.
3) Stockpile Management - Install controls to reduce or eliminate pollution of storm water from stockpiles of soil and paving.
4) Waste Disposal - Do not discharge any materials, including building materials, into waters of the state, except as authorized by a Section 404 permit.
5) Spill Prevention and Control - Implement procedures to contain and clean-up spills and prevent material discharges to the storm drain system and waters of the state.
6) Concrete Residuals and Washout Wastes - Designate temporary concrete washout facilities for rinsing out concrete trucks. Provide directions to truck drivers where designated washout facilities are located. Designated washout areas should be located at least 50 feet away from storm drains, streams or other water bodies. Care should be taken to ensure these facilities do not overflow during storm events.
7) Concrete Grooving/Grinding Slurry - Do not discharge slurry to a waterbody or storm drain. Slurry may be applied on foreslopes or removed from the project.
8) Vehicle and Equipment Storage and Maintenance Areas -- Perform on site fueling and maintenance in accordance with all environment laws such as proper storage of onside fuels and proper disposal of used engine oil or other fluids on site. Employ washing practices that prevent contamination of surface and ground water from wash water.
9) Litter Management - Ensure employees properly dispose of litter.
10) Dewatering - Properly treat water to remove suspended sediment before it re-enters a waterbody or discharges off-site. Measures are also to be taken to prevent scour erosion at dewatering discharge point.

3. APPROVED STATE OR LOCAL PLANS
During the course of this construction, it is possible that situations will arise where unknown materials will be encountered. When such situations are encountered, they will be handled according to all federal, state, and local regulations in effect at the time.

IV. MAINTENANCE PROCEDURES

The contractor is required to maintain all temporary erosion and sediment control measures in proper working order, including cleaning, repairing, or replacing them throughout the contract period. This shall begin when the features have lost 50% of their capacity.

V. INSPECTION REQUIREMENTS

A. Inspections shall be made jointly by the contractor and the contracting authority at least once every seven calendar days. Storm water monitoring inspections will include:
1. Date of the inspection.
2. Summary of the scope of the inspection.
3. Name and qualifications of the personnel making the inspection.
5. Review erosion and sediment control measures within disturbed areas for the effectiveness in preventing impacts to receiving waters.
6. Major observations related to the implementation of the PPP.
7. Identify corrective actions required to maintain or modify erosion and sediment control measures.
B. Include storm water monitoring inspection reports in the Amended PPP. Incorporate any additional erosion and sediment control measures determined as a result of the inspection. Immediately begin corrective actions on all deficiencies found within 3 calendar days of the inspection.

VI. NON-STORM WATER DISCHARGES

This includes subsurface drains (i.e. longitudinal and standard subdrains) and slope drains. The velocity of the discharge from these features may be controlled by the use of patio blocks, Class A stone, erosion stone or other appropriate materials. This also includes uncontaminated groundwater from dewatering operations, which will be controlled as discussed in Section III of the PPP.

VII. POTENTIAL SOURCES OF OFF RIGHT-OF-WAY (ROW) POLLUTION

Silts, sediment, and other forms of pollution may be transported onto highway right-of-way (ROW) as a result of a storm event. Potential sources of pollution located outside highway ROW are beyond the control of this PPP. Pollution within highway ROW will be conveyed and controlled per this PPP.

VIII. DEFINITIONS

A. Base PPP - Initial Pollution Prevention Plan.
B. Amended PPP - May include Plan Revisions or Contract Modifications for new items, storm water monitoring inspection reports, and fieldbook entries made by the Inspector.
C. IDR - Inspector's Daily Report - this contains the inspector's daily diary and bid item postings.
D. Controls - Methods, practices, or measures to minimize or prevent erosion, control sedimentation, control storm water, or minimize contaminants from other types of waste or materials. Also called Best Management Practices (BMPs).
E. Signature Authority - Representative from Designer, Contractor/Subcontractor, or RCE/Inspector authorized to sign various storm water documents.

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature

Paul J. Assman
Printed or Typed Name

Signature

TROY J. GROTH
Printed or Typed Name

REV.:

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SE PROJECT NO. 05515 DATE: 07/16 DRAWN BY: TKK REVIEWED BY: SAS APPROVED BY: TJG

CRAWFORD COUNTY PROJECT NO. BROS-C024(116)--5F-24

TABULATION OF SILT FENCES

Refer to EC-201

100-17
04-20-10

Location			Length	Remarks
Begin Station	End Station	Side	LF	
6+70	12+00	L	590	
SUBTOTAL			590	
+25% FOR REPLACEMENTS			147.5	
TOTAL			737.5	

SILT FENCES FOR DITCH CHECKS

Refer to EC-201

100-18
MODIFIED

Location Station	Side	Length	Remarks
		LF	
5+00	L	20	
5+00	R	20	
7+00	R	20	
8+00	R	20	
TOTAL		80	TABULATED QUANTITY
TOTAL +50%		120	BID QUANTITY

TABULATION OF EARTHWORK QUANTITIES

STA.	CUT	ADD. CUT	FILL +35%	ADD. FILL	TOTAL CUT	TOTAL FILL+35%	BALANCE
1+00							
2+00	258		38		258	38	
3+00	585		74		585	74	
4+00	830		50		830	50	
5+00	1162		383		1162	383	
5+25	329		184		329	184	
6+65							
7+00	501		282	390	501	672	
8+00	1043		730		1043	730	
9+00	483		434	240	483	674	
10+00	158		181		158	181	
11+00	2		129		2	129	
12+00	0		55		0	55	
TOTAL					5351	3170	

ACCESS POINTS AND SAFETY RAMPS

Refer to Cross-Sections

102-3
MODIFIED

Length of unclassified pipe calculated is based on using Reinforced Concrete 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 with this project.

Location		Type	(W)	(1)(2) (PR)	(2) (SR)	Pipe Culvert (3)					Driveway Surfacing Material	Remarks
Station	Side	A, B, C, Safety Ramp, or Predetermined*				(H)	Size	Pipe Length	Lt.	Rt.		
			FT	FT	FT	FT	IN	LF	LF	LF	TON	
7+00	R	C	20		15	6.6	24	50	23.5	26.5		
8+50	R	C	20		15	5.2	24	44	20.7	23.3		

PLACEMENT OF QUANTITIES
140'-0 x 24' CCS BRIDGE

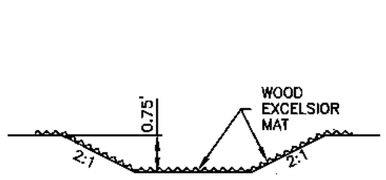
ITEM	UNIT	PIERS	SUPERSTRUCTURE & ABUTMENTS	TOTAL
STRUCTURAL CONCRETE (BRIDGE)	CY		307.8	307.8
REINFORCING STEEL, EPOXY COATED	LB		73737	73737

SAFETY CLOSURES

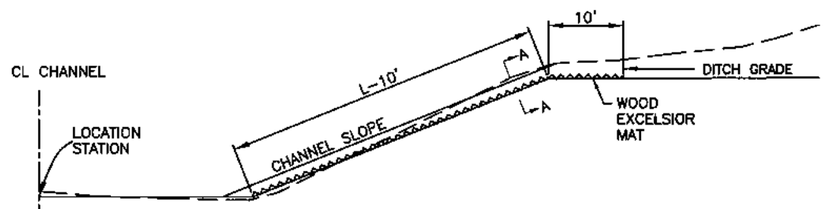
Refer to Section 2518 of the Standard Specifications

108-13A
08-01-08

STATION	CLOSURE TYPE		REMARKS
	Road Qty.	Hazard Qty.	
0+50		1	WEST END
12+50		1	NORTH END
TOTAL		2	



SECTION A-A



FLUME

DETAILS OF SPECIAL DITCH CONTROL

ROLLED EROSION CONTROL

Refer to EC-101, EC-103 and EC-104

100-22
04-21-15

Location				(L)	(W)	Turf Reinforcement Mat (TRM) (EC-104)				Slope Protection (EC-103)	Special Ditch Control (EC-101)	Remarks
Road Identification	Begin Station	End Station	Side			Type 1	Type 2	Type 3	Type 4			
				FT	FT	Squares	Squares	Squares	Squares	Squares	Squares	
200TH STREET	106+16.69		LT	46	16						7.4	
										TOTAL	7.4	

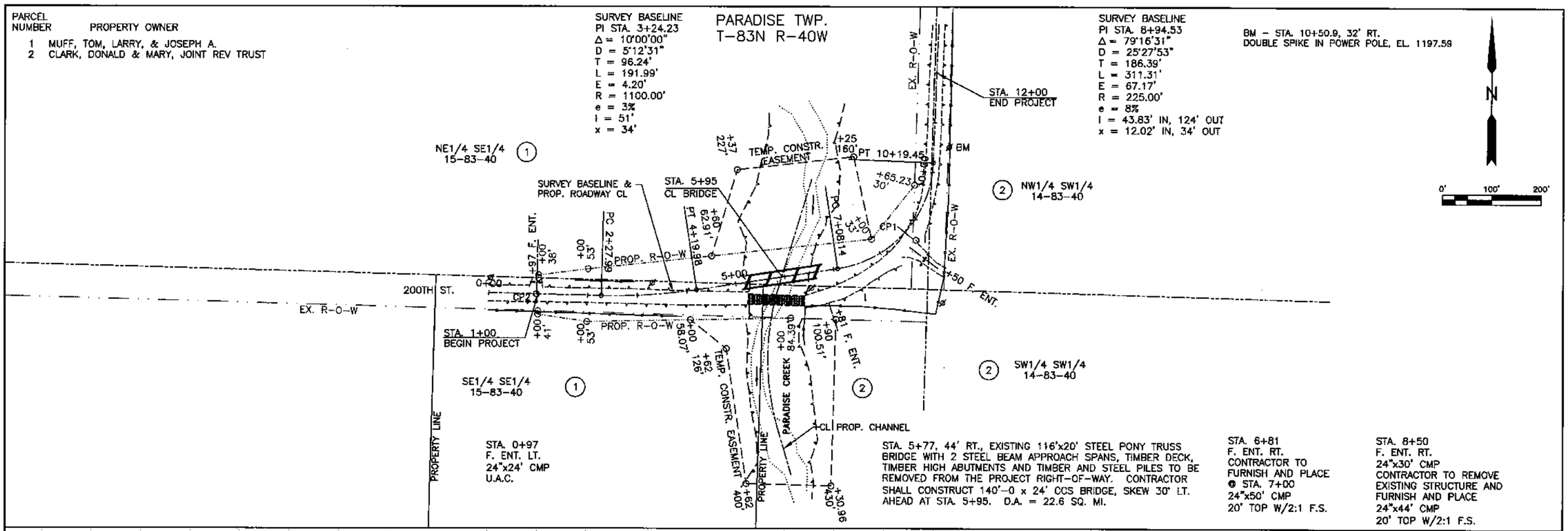
PARCEL NUMBER	PROPERTY OWNER
1	MUFF, TOM, LARRY, & JOSEPH A.
2	CLARK, DONALD & MARY, JOINT REV TRUST

SURVEY BASELINE
PI STA. 3+24.23
Δ = 10°00'00"
D = 5°12'31"
T = 96.24'
L = 191.99'
E = 4.20'
R = 1100.00'
e = 3%
I = 51'
x = 34'

PARADISE TWP.
T-83N R-40W

SURVEY BASELINE
PI STA. 8+94.53
Δ = 79°16'31"
D = 25°27'53"
T = 186.39'
L = 311.31'
E = 67.17'
R = 225.00'
e = 8%
I = 43.83' IN, 124' OUT
x = 12.02' IN, 34' OUT

BM – STA. 10+50.9, 32' RT.
DOUBLE SPIKE IN POWER POLE, EL. 1197.59



STA. 0+97
F. ENT. LT.
24"x24' CMP
U.A.C.

STA. 5+77, 44' RT., EXISTING 116'x20' STEEL PONY TRUSS BRIDGE WITH 2 STEEL BEAM APPROACH SPANS, TIMBER DECK, TIMBER HIGH ABUTMENTS AND TIMBER AND STEEL PILES TO BE REMOVED FROM THE PROJECT RIGHT-OF-WAY. CONTRACTOR SHALL CONSTRUCT 140'-0 x 24' CCS BRIDGE, SKEW 30° LT. AHEAD AT STA. 5+95. D.A. = 22.6 SQ. MI.

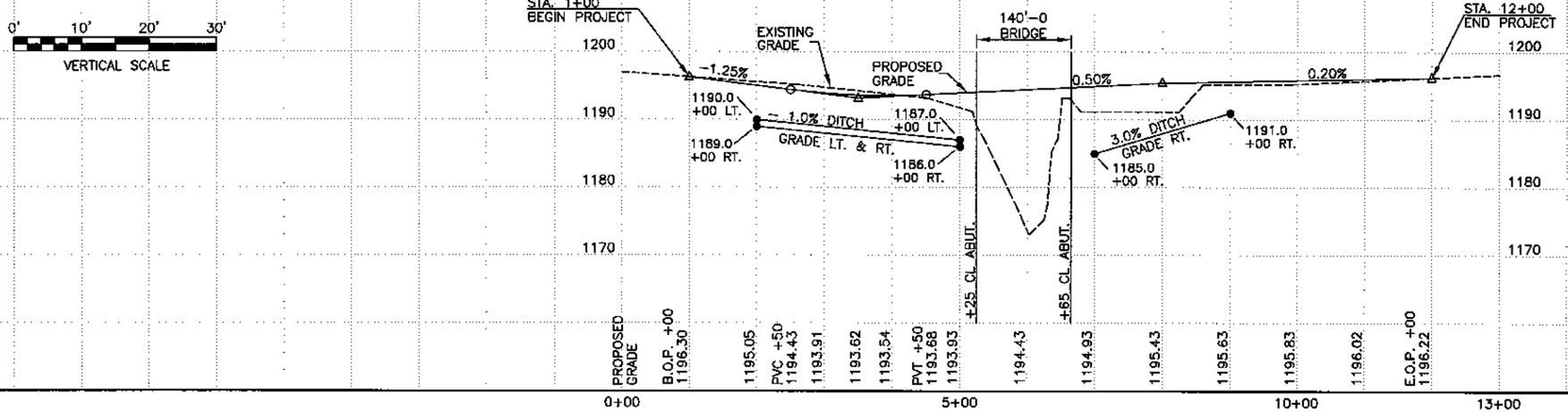
STA. 6+81
F. ENT. RT.
CONTRACTOR TO FURNISH AND PLACE
@ STA. 7+00
24"x50' CMP
20' TOP W/2:1 F.S.

STA. 8+50
F. ENT. RT.
24"x30' CMP
CONTRACTOR TO REMOVE EXISTING STRUCTURE AND FURNISH AND PLACE
24"x44' CMP
20' TOP W/2:1 F.S.

FOR SITUATION PLAN
SEE SHEET V1

PVI STA. 3+50
EL. = 1193.18
V.C. = 200'
M.O. = 0.44'
D.S. = 55 MPH
K = 114.29

PVI STA. 8+00
EL. = 1195.43
V.C. = 0'



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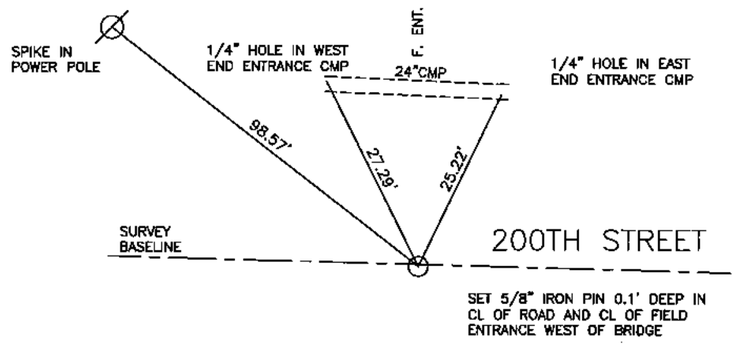
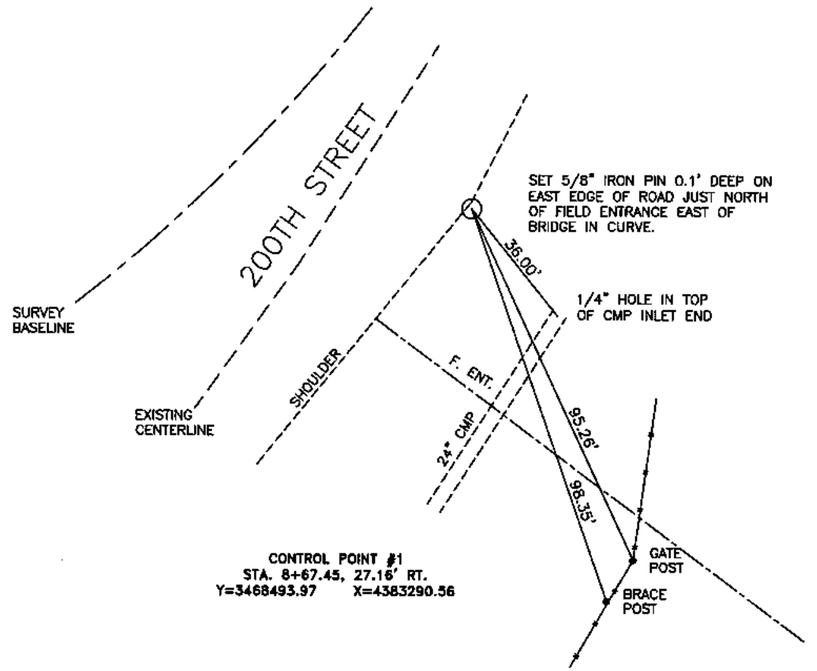
REV:

GENERAL INFORMATION
THIS SURVEY IS IN ENGLISH UNITS.

BM – STA. 10+50.9, 32' RT.
DOUBLE SPIKE IN POWER POLE EL. 1197.59



CONTROL POINT #2
STA. 0+96.59, 0.28' RT.
Y=3468384.57 X=4382525.70



CONTROL POINT #1
STA. 8+67.45, 27.16' RT.
Y=3468493.97 X=4383290.56

ALIGNMENT COORDINATES

101–16
10–20–09

Name	Location	Point on Tangent			Begin Spiral			Begin Curve			Simple Curve PI or Master PI of SCS			End Curve			End Spiral		
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
200TH ST.		0+00.00	3468387.25	4382429.15				2+27.99	3468381.57	4382657.07	3+24.23	3468379.17	4382753.26	4+19.98	3468393.51	4382848.44			
								7+08.14	3468436.45	4383133.38	8+94.53	3468464.22	4383317.69	10+19.45	3468650.48	4383324.69			
		12+97.99	3468928.82	4383335.16															
PARADISE CR.		102+00.00	3468033.61	4383036.74				102+82.51	3468112.94	4383013.38	104+32.51	3468256.61	4382970.92	105+73.97	3468400.29	4383014.67			
		105+94.00	3468419.44	4383020.51															
		108+00.00	3468616.49	4383080.59															

DETAILS OF REFERENCE INFORMATION

All References Plumb Distances
(unless otherwise noted)

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SE PROJECT NO. 05515 DATE: 07/16 DRAWN BY: TKK REVIEWED BY: SAS APPROVED BY: TJG

CRAWFORD COUNTY PROJECT NO. BROS-C024(116)--5F-24

LOG OF EXPLORATORY BORING

Sheet 1 of 1

Job Number: G4753
Project: 200th Street Bridge Replacement
Date Started: 6/10/16
Date Completed: 6/10/16
Boring No.: B-1
Boring Location: Crawford County, IA
Drill Type: Hollow Stem
Ground Elev.: 1192.7

Shelby Tube | Standard Split Spoon | Water Level ATD
Modified California | Grab Sample | Water Level After 7 Days

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	USCS	Blow Counts SPT (N) Blows/Foot	Moisture Content, %	Dry Density (PCF)	% Saturation	Hand Penetrometer (TSF)	Unconfined Comp. Strength (TSF)	Liquid Limit %	Plastic Limit %	Plasticity Index %	Resistivity (Ohm-cm)
			12-Inch Root and Disturbed Zone											
			STIFF SILTY CLAY, Dark Brown	CL	1-3-3 N= 6	32								
5					1-2-2 N= 4	31								
			SOFT SILTY CLAY, Dark Brown	CL	1-1-1 N= 2	28								
10			(Dark Gray Brown)		1-1-1 N= 2	27								
			SILTY SAND, Dark Gray Brown	SM	1-2-2 N= 4									
15														
20			GRAVELLY SAND, Gray Brown	SP	2-7-8 N= 15									
			(Gravel/Possible Cobble)											
25			VERY FIRM GLACIAL CLAY, Dark Gray	CL	5-12-11 N= 23	19								
30			COHESIVE MATERIAL, Medium Gray	ML	5-21-21 N= 42									
35			VERY FIRM GLACIAL CLAY, Dark Gray	CL	3-11-12 N= 23									
40					7-16-16 N= 32									
45					6-14-16 N= 30									
50					5-16-17 N= 33									
55					3-13-15 N= 28									
60			GLACIAL MATERIAL, Olive Gray	CL	10-17-20 N= 37									
65			VERY FIRM GLACIAL CLAY, Light Brown	CL	9-17-14 N= 31									
			END OF BORING AT 66.5 FEET FREE WATER WAS ENCOUNTERED AT 13.5 FEET AT TIME OF DRILLING											

LOG OF BORING G4753.GPJ CERTIFIED TESTING.GDT 8/3/16

LOG OF EXPLORATORY BORING

Sheet 1 of 1

Job Number: G4753
Project: 200th Street Bridge Replacement
Date Started: 6/10/16
Date Completed: 6/10/16
Boring No.: B-2
Boring Location: Crawford County, IA
Drill Type: Hollow Stem
Ground Elev.: 1190.9

Shelby Tube | Standard Split Spoon | Water Level ATD
Modified California | Grab Sample | Water Level After 7 Days

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	USCS	Blow Counts SPT (N) Blows/Foot	Moisture Content, %	Dry Density (PCF)	% Saturation	Hand Penetrometer (TSF)	Unconfined Comp. Strength (TSF)	Liquid Limit %	Plastic Limit %	Plasticity Index %	Resistivity (Ohm-cm)
			12-Inch Root Zone											
			STIFF SILTY CLAY, Dark Brown	CL		22	93	75	4.00					
5					3-2-3 N= 5	22								
			(Dark Gray Brown)			27	94	95	0.50	1.00				
10					0-2-3 N= 5	26								
15			GRAVELLY SAND, Grayish Yellow Brown	SP	11-13-11 N= 24									
20			VERY FIRM GLACIAL CLAY, Dark Gray	CL	2-6-9 N= 17									
25					2-8-9 N= 17	16								
30					6-16-16 N= 32									
35					7-12-10 N= 22									
40					7-16-16 N= 32									
45					8-17-13 N= 30									
50			(Medium Gray)		5-12-14 N= 26									
55					6-13-15 N= 28									
60			GLACIAL MATERIAL, Medium Gray		9-24-36 N= 60									
			END OF BORING AT 61.5 FEET FREE WATER WAS ENCOUNTERED AT 13.5 FEET AT TIME OF DRILLING											

LOG OF BORING G4753.GPJ CERTIFIED TESTING.GDT 8/3/16

GEOTECHNICAL INFORMATION PROVIDED HEREWITH IS THE SOLE RESPONSIBILITY OF CERTIFIED TESTING SERVICES, INC., WHOSE GEOTECHNICAL REPORT DATED JUNE 15, 2016, COMPLETE WITH THE LICENSED ENGINEER'S SEAL AND CERTIFICATION, IS AVAILABLE FOR VIEWING.

SOUNDING DATA

NOTE: THESE SOUNDINGS WERE MADE FOR DESIGN PURPOSES AND ARE NOT GUARANTEED FOR CONSTRUCTION.

SOUNDINGS WERE TAKEN ON JUNE 10, 2016.

SEE SHEET V1 FOR BORING LOCATIONS.

LICENSED PROFESSIONAL ENGINEER JAMES A. BERTSCH 12121 IOWA

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

James A. Bertsch 8-3-2016

JAMES A. BERTSCH, P.E. #12121 DATE

MY LICENSE RENEWAL DATE IS DECEMBER 31, 2016.

PAGES OR SHEETS COVERED BY THIS SEAL: Q1

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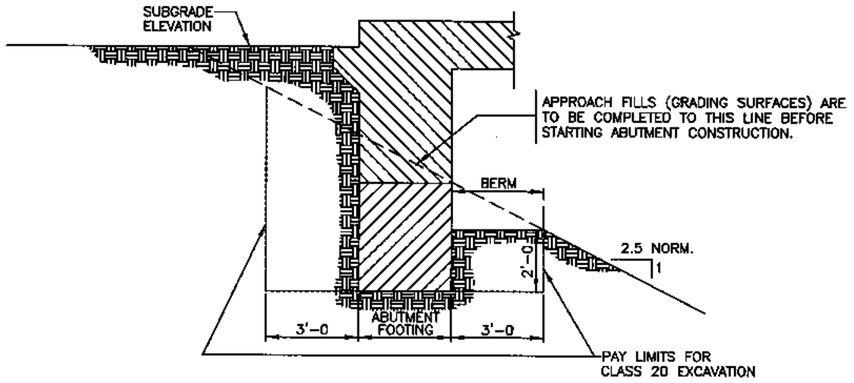
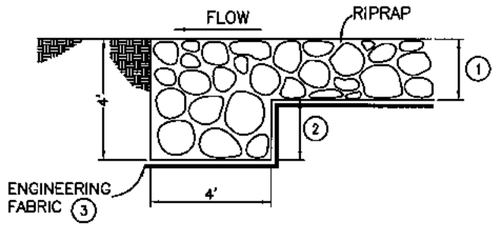
SE PROJECT NO. 05515 DATE: 07/16 DRAWN BY: TKK REVIEWED BY: SAS APPROVED BY: TJG

CRAWFORD COUNTY PROJECT NO. BROS-C024(116)--5F-24 SHEET Q1

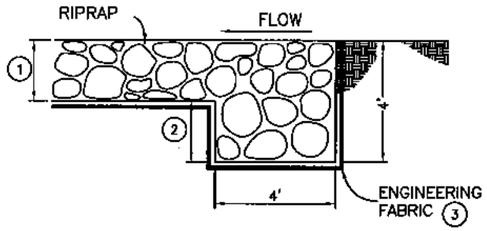


CLASS 20 EXCAVATION DETAIL

NOT TO SCALE

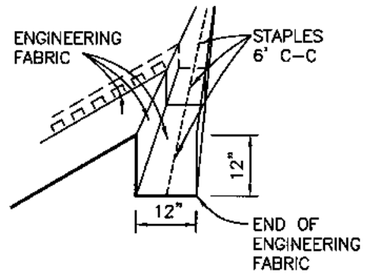


TYPICAL DOWNSTREAM

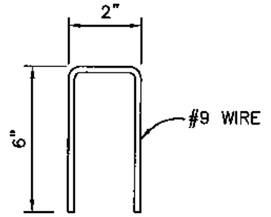


TYPICAL UPSTREAM

1. 2.5' ACROSS CHANNEL BOTTOM
   2.0' ON SIDE SLOPES
2. 1.5' ACROSS CHANNEL BOTTOM
   2.0' ON SIDE SLOPES
3. OMIT ENGINEERING FABRIC ACROSS CHANNEL BOTTOM



DETAIL OF TRENCH

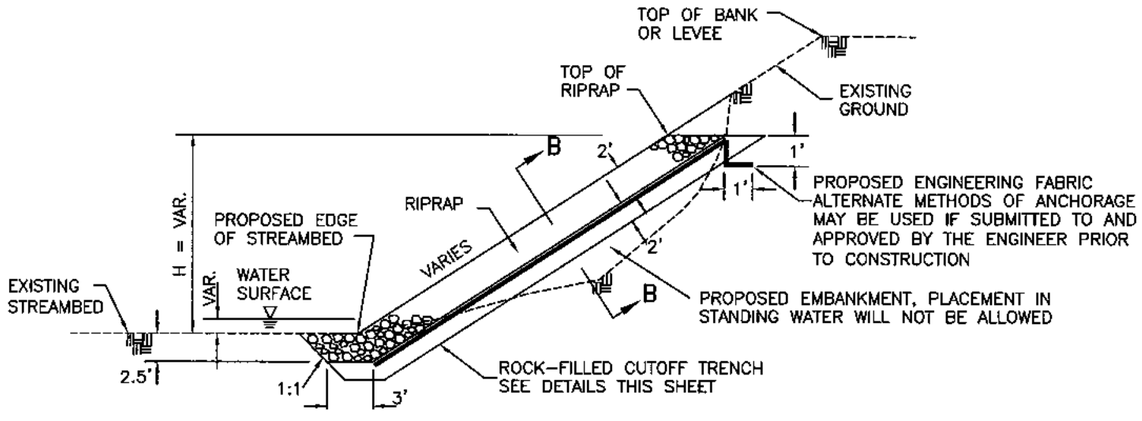


STAPLE

SECTION B-B

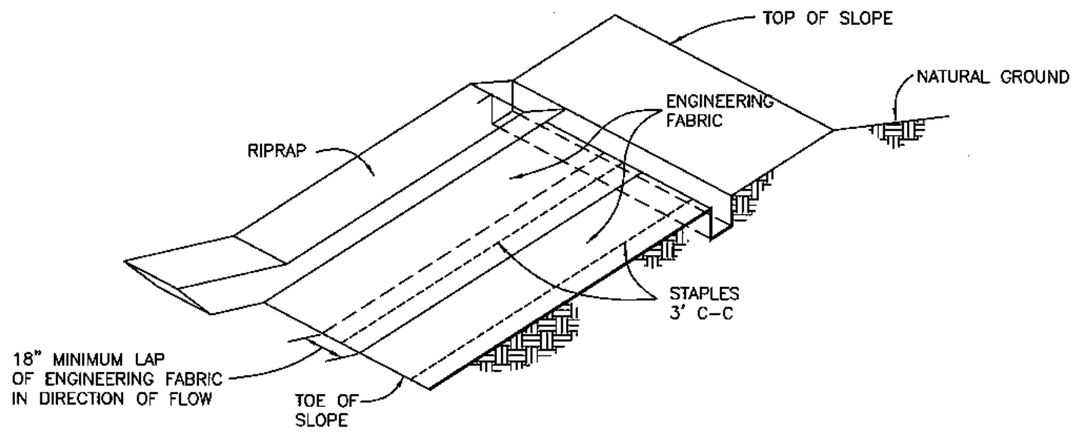
ROCK-FILLED CUTOFF TRENCH DETAILS

CONTINUOUS ACROSS BOTTOM WIDTH AND SIDE SLOPES
NO SCALE



TYPICAL HALF-CHANNEL BANK STABILIZATION SECTION

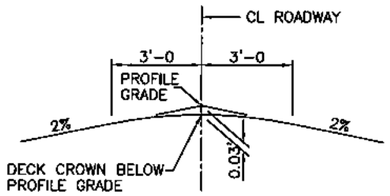
REFER TO CHANNEL CROSS SECTIONS FOR TOP OF RIPRAP ELEVATIONS
NO SCALE



EXCAVATE 12"x12" TRENCH ALONG TOP OF RIPRAP. PLACE END OF ENGINEERING FABRIC STRIPS INTO TRENCH WITH STAPLES AS SHOWN. BACKFILL WITH THE EXCAVATED MATERIAL AND COMPACT. THE ENGINEER MAY PERMIT THE USE OF THE WHEELS OF PNEUMATIC-TIRED EQUIPMENT FOR CONSOLIDATING THE TRENCH BACKFILL MATERIAL.

DETAILS OF PLACEMENT OF ENGINEERING FABRIC

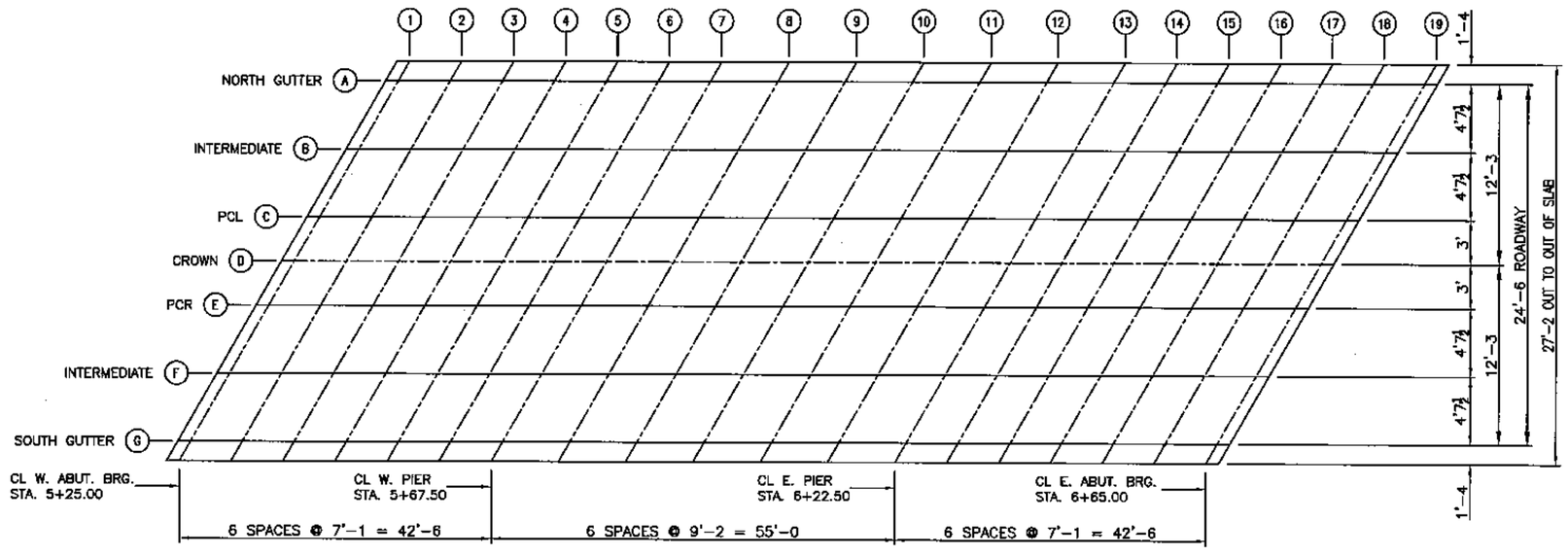
NO SCALE



CROWN TEMPLATE
NO SCALE

TOP OF SLAB ELEVATIONS

LOCATION	LINE	CL W. ABUT. BRG. ①	②	③	④	⑤	⑥	CL WEST PIER ⑦	⑧	⑨	⑩	⑪	⑫	CL EAST PIER ⑬	⑭	⑮	⑯	⑰	⑱	CL E. ABUT. BRG. ⑲
NORTH GUTTER	Ⓐ	1193.84	1193.88	1193.91	1193.95	1193.99	1194.02	1194.06	1194.10	1194.15	1194.19	1194.24	1194.29	1194.33	1194.37	1194.40	1194.44	1194.47	1194.51	1194.54
INTERMEDIATE	Ⓑ	1193.92	1193.96	1193.99	1194.05	1194.06	1194.10	1194.14	1194.18	1194.23	1194.27	1194.32	1194.36	1194.41	1194.45	1194.48	1194.52	1194.55	1194.59	1194.62
PARABOLIC CROWN LEFT (PCL)	Ⓒ	1194.00	1194.04	1194.07	1194.11	1194.14	1194.18	1194.21	1194.26	1194.31	1194.35	1194.40	1194.44	1194.49	1194.52	1194.56	1194.60	1194.63	1194.67	1194.70
CL BRIDGE & RDWY CROWN (CR)	Ⓓ	1194.02	1194.06	1194.09	1194.13	1194.16	1194.20	1194.24	1194.28	1194.33	1194.37	1194.42	1194.46	1194.51	1194.55	1194.58	1194.62	1194.65	1194.69	1194.72
PARABOLIC CROWN RIGHT (PCR)	Ⓔ	1193.98	1194.02	1194.06	1194.09	1194.13	1194.16	1194.20	1194.24	1194.29	1194.33	1194.38	1194.43	1194.47	1194.51	1194.54	1194.58	1194.61	1194.65	1194.68
INTERMEDIATE	Ⓕ	1193.88	1193.91	1193.95	1193.98	1194.02	1194.06	1194.09	1194.14	1194.18	1194.23	1194.27	1194.32	1194.37	1194.40	1194.44	1194.47	1194.51	1194.54	1194.58
SOUTH GUTTER	Ⓖ	1193.77	1193.81	1193.84	1193.88	1193.91	1193.95	1193.99	1194.03	1194.08	1194.12	1194.17	1194.21	1194.26	1194.30	1194.33	1194.37	1194.40	1194.44	1194.47



TOP OF SLAB ELEVATION LAYOUT

NO SCALE

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GENERAL LRFD PILE NOTE:

THIS PROJECT USES THE LOAD AND RESISTANCE FACTOR DESIGN (LRFD) METHODOLOGY FOR DETERMINING PILE CONTRACT LENGTH AND NOMINAL AXIAL BEARING RESISTANCE. NOMINAL AXIAL BEARING RESISTANCES WILL BE LARGER THAN BEARING VALUES IN THE PAST, BUT CONSTRUCTION CONTROL BLOW COUNTS WILL BE APPROXIMATELY THE SAME. A WEAP ANALYSIS AND BEARING GRAPH WILL BE PROVIDED BY THE ENGINEER THAT GIVES THE RELATIONSHIP BETWEEN REQUIRED NOMINAL AXIAL BEARING RESISTANCE AND BLOW COUNT.

WEST ABUTMENT PILE DESIGN NOTES:

THE CONTRACT LENGTH OF 55 FEET FOR THE WEST ABUTMENT PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 100 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.76. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PREBORE.

WEST ABUTMENT PILE DRIVING NOTE:

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR WEST ABUTMENT PILES IS 66 TONS AT END OF DRIVE. IF RETAPS ARE NECESSARY TO ACHIEVE BEARING, THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE IS 77 TONS AT ONE-DAY OR LATER RETAPS. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

WEST PIER PILE DESIGN NOTES:

THE CONTRACT LENGTH OF 60 FEET FOR THE WEST PIER PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 109 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.76. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF ENCASEMENT.

WEST PIER PILE DRIVING NOTE:

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR WEST PIER PILES IS 72 TONS AT END OF DRIVE. IF RETAPS ARE NECESSARY TO ACHIEVE BEARING, THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE IS 84 TONS AT ONE-DAY OR LATER RETAPS. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

EAST PIER PILE DESIGN NOTES:

THE CONTRACT LENGTH OF 65 FEET FOR THE EAST PIER PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 109 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.76. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF ENCASEMENT.

EAST PIER PILE DRIVING NOTE:

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR EAST PIER PILES IS 72 TONS AT END OF DRIVE. IF RETAPS ARE NECESSARY TO ACHIEVE BEARING, THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE IS 84 TONS AT ONE-DAY OR LATER RETAPS. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

EAST ABUTMENT PILE DESIGN NOTES:

THE CONTRACT LENGTH OF 50 FEET FOR THE EAST ABUTMENT PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 100 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.76. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PREBORE.

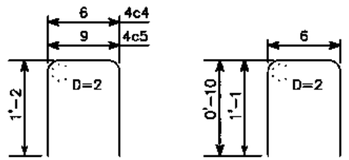
EAST ABUTMENT PILE DRIVING NOTE:

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR EAST ABUTMENT PILES IS 66 TONS AT END OF DRIVE. IF RETAPS ARE NECESSARY TO ACHIEVE BEARING, THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE IS 77 TONS AT ONE-DAY OR LATER RETAPS. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

REINFORCING STEEL—TWO OPEN RAILS

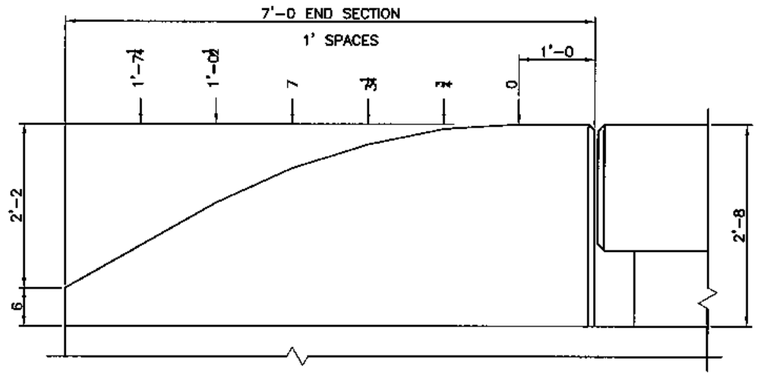
BRIDGE LENGTH			140'-0		
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6c1	VERTICAL, END SECTION & ABUT. DIAPH. EXT.	—	96	VARIES	606
6c3	VERTICAL, END SECTION	⌐	16	VARIES	75
4c4	VERTICAL HOOPS, END SECTION	⊓	12	2'-10	23
4c5	VERTICAL HOOPS, END SECTION	⊓	16	3'-1	33
4c6	VERTICAL HOOPS, END SECTION	⊓	8	VARIES	13
6d1	HORIZONTAL, END SECTION—BACK FACE	—	20	VARIES	154
6d2	HORIZONTAL, END SECTION—TRAFFIC FACE	~	28	VARIES	237
6d3	HORIZONTAL, END SECTION—BACK FACE	—	4	7'-1	43
6d4	HORIZONTAL, END SECTION—TRAFFIC FACE	~	4	7'-2	43
6h1	LONGITUDINAL, OPEN RAIL	—	48	37'-2	2,680
6j1	VERTICAL DOWELS, OPEN RAIL	⌐	296	5'-2	2,297
4j2	HOOP, INTERIOR POST	□	256	4'-8	798
4j3	HOOP, OPEN RAIL	□	446	5'-5	1,614
4j4	HOOP, END POST	□	32	6'-5	137
4t1	WING FOOTING TIE BARS	⌐	16	VARIES	21
	TOTAL LBS. ('INCLUDE WITH SUPERSTRUCTURE REINFORCING')				8,774

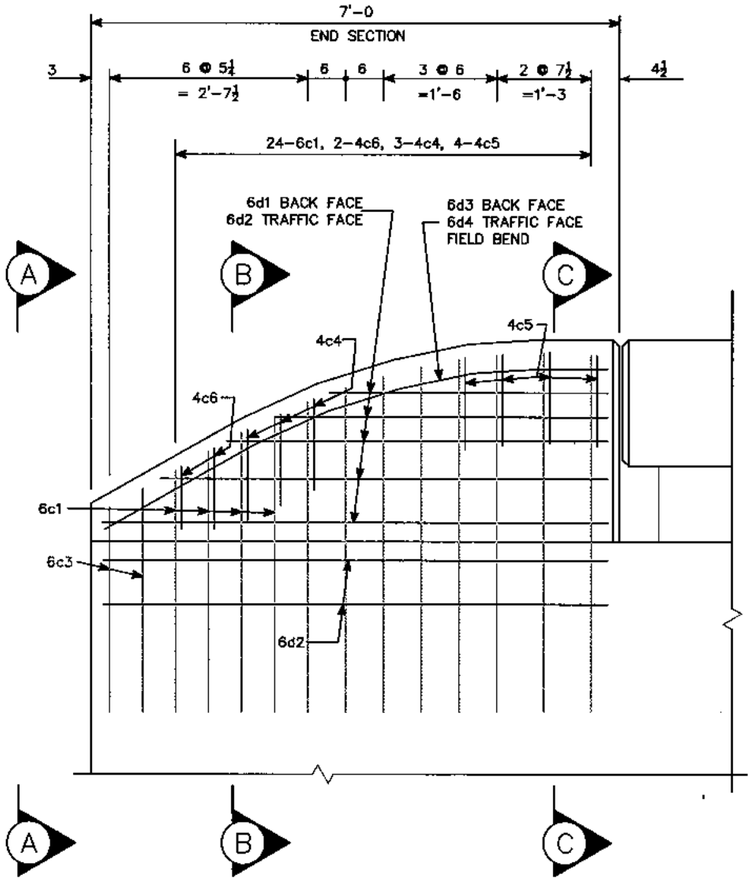
BENT BAR DETAILS



6d2 VARIABLE LENGTHS							
SHAPE	NO.	A	B	C	D	LENGTH	WEIGHT
~	12	10½	2'-0	1'-7½	2'-2½	6'-8¾	121
~	4	1½	2'-0	1'-7½	2'-2½	5'-11½	36
~	4	0	1'-3	1'-7½	2'-2½	5'-1	31
~	4	0	7½	1'-7½	2'-2½	4'-5½	27
~	4	0	0	1'-6½	2'-2½	3'-8¾	22
						TOTAL	237

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





ROUNDED END SECTION DETAILS

CONCRETE PLACEMENT QUANTITIES

NOTE: THESE VALUES TO BE USED FOR ALL SKEWS.

BRIDGE LENGTH	140'-0
*STANDARD SECTION CU. YDS.	24.4
END SECTION 4 @ 0.504 CU. YDS.	2.1
TOTAL CU. YDS.	26.5

*CONCRETE QUANTITIES SHOWN ARE BASED ON 45° SKEW BID LENGTHS.

NOTE:
ROUNDED END SECTION AS DETAILED ON THIS SHEET SHALL BE USED INSTEAD OF END SECTION SHOWN ON STD. SHEETS J24-40-06 AND J24-41-06. REFER TO STD. SHEETS J24-40-06 AND J24-41-06 FOR ADDITIONAL OPEN RAIL DETAILS.

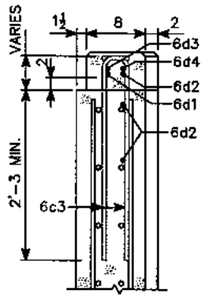
LISTED BARS

BAR 6c1
24 BARS AT 4'-9
72 BARS VAR. – 8 EA. LGTH.
3'-2, 3'-5, 3'-8, 3'-11, 4'-1, 4'-3, 4'-5
4'-7, 4'-8

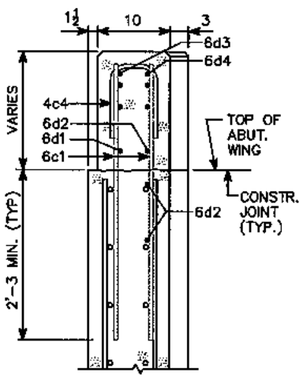
BAR 6c3
8 AT 3'-0
8 AT 3'-3

BAR 4c6
4 AT 2'-2
4 AT 2'-8

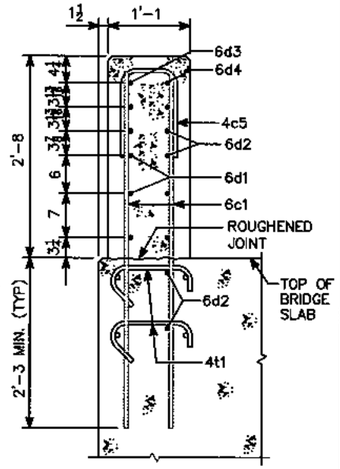
BAR 6d1
20 BARS VAR. – 4 EA. LGTH.
3'-8, 4'-5, 5'-0, 5'-11, 6'-8



VIEW A–A



SECTION B–B

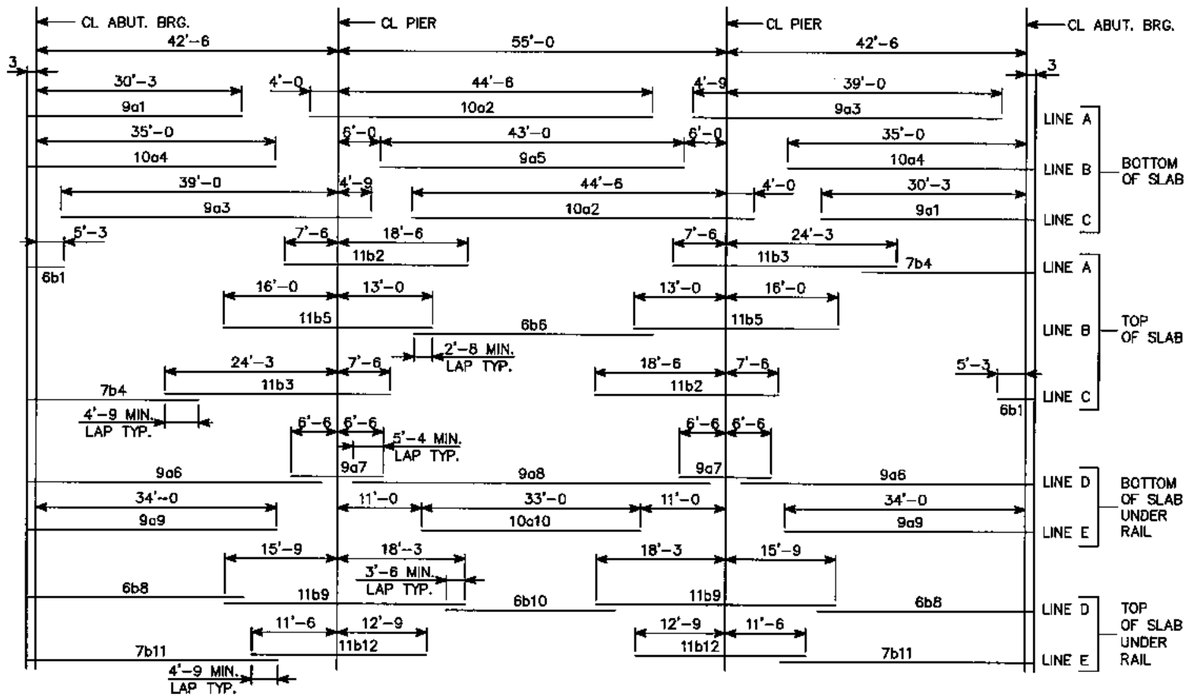


SECTION C–C

ROUNDED END POST DETAILS

BILL OF REINFORCING STEEL FOR SUPERSTRUCTURE – 140' BRIDGE

LOCATION \ SKEW	SHAPE	BAR	30° NO.	LENGTH	WEIGHT
SLAB LONGITUDINAL BOTTOM		9a1	31	30'–6	3215
SLAB LONGITUDINAL BOTTOM		10a2	31	48'–6	6470
SLAB LONGITUDINAL BOTTOM		9a3	31	43'–9	4612
SLAB LONGITUDINAL BOTTOM		10a4	32	35'–3	4854
SLAB LONGITUDINAL BOTTOM		9a5	16	43'–0	2340
SLAB LONGITUDINAL BOTTOM, AT RAIL		9a6	8	41'–7	1132
SLAB LONGITUDINAL BOTTOM, AT RAIL		9a7	8	13'–0	354
SLAB LONGITUDINAL BOTTOM, AT RAIL		9a8	4	52'–8	717
SLAB LONGITUDINAL BOTTOM, AT RAIL		9a9	8	34'–3	932
SLAB LONGITUDINAL BOTTOM, AT RAIL		10a10	4	33'–0	568
SLAB LONGITUDINAL TOP		6b1	31	7'–9	361
SLAB LONGITUDINAL TOP		11b2	31	26'–0	4283
SLAB LONGITUDINAL TOP		11b3	31	31'–9	5230
SLAB LONGITUDINAL TOP		7b4	31	25'–6	1616
SLAB LONGITUDINAL TOP		11b5	32	29'–0	4931
SLAB LONGITUDINAL TOP		6b6	16	34'–4	826
SLAB LONGITUDINAL TOP, AT RAIL		6b8	8	32'–9	394
SLAB LONGITUDINAL TOP, AT RAIL		11b9	8	34'–0	1446
SLAB LONGITUDINAL TOP, AT RAIL		6b10	4	25'–6	154
SLAB LONGITUDINAL TOP, AT RAIL		7b11	8	38'–3	626
SLAB LONGITUDINAL TOP, AT RAIL		11b12	8	24'–3	1031
SLAB TRANSVERSE, BOTTOM		6c1	126	26'–10	5079
SLAB TRANSVERSE ENDS, BOTTOM		6c2	24	VARIES	579
SLAB TRANSVERSE, TOP		5d1	126	26'–10	3527
SLAB TRANSVERSE ENDS, TOP		5d2	24	VARIES	402
SLAB, TRANSVERSE AT ABUTMENT		8e1	–	–	0
SLAB, TRANSVERSE AT ABUTMENT		8e2	18	30'–7	1470
SLAB, HAIRPINS, AT ABUTMENT		6e3	60	5'–5	489
SLAB, DIAGONALS, AT ABUTMENT		6e4	60	5'–11	534
PIER CAP HOOPS		5h1	36	8'–3	310
PIER CAP ENDS		8h2	4	14'–5	154
PIER CAP, BOTTOM LONGITUDINAL		8h3	8	27'–6	588
PIER CAP, TOP LONGITUDINAL		8h4	4	30'–11	331
TOP OF SLAB, TRANSVERSE, AT RAIL		5i1	272	8'–6	2412
WING, VERTICAL		5m1	40	4'–5	185
WING, HORIZONTAL BACK FACE		5n1	24	6'–8	167
WING, HORIZONTAL TRAFFIC FACE		5n3	24	6'–9	169
PAVING BLOCK LIFTING HOOPS		5x1	8	2'–10	24
SUB TOTAL – LBS.					62512
OPEN RAIL – SEE LIST ON SHEET U4					8693
TOTAL – LBS. WITH MONOLITHIC PIER CAP AND OPEN RAIL					71205



PLACEMENT FOR LONGITUDINAL REINFORCEMENT

ESTIMATED QUANTITIES FOR SUPERSTRUCTURE – 140' BRIDGE

WITH MONOLITHIC PIER CAP

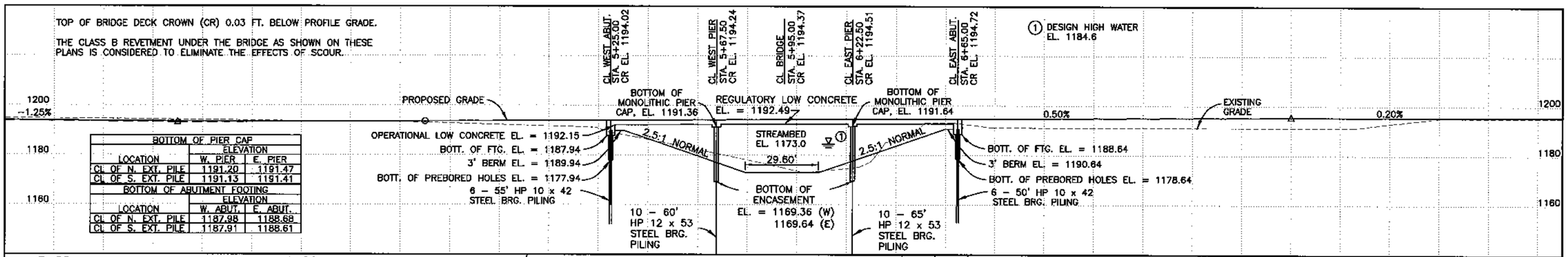
ITEM		SKEW	30°
OPEN RAIL	*STRUCTURAL CONCRETE ('BRIDGE')	C.Y.	287.5
	REINFORCING STEEL	LBS.	71205
OPEN RAIL		LIN. FT.	302.9

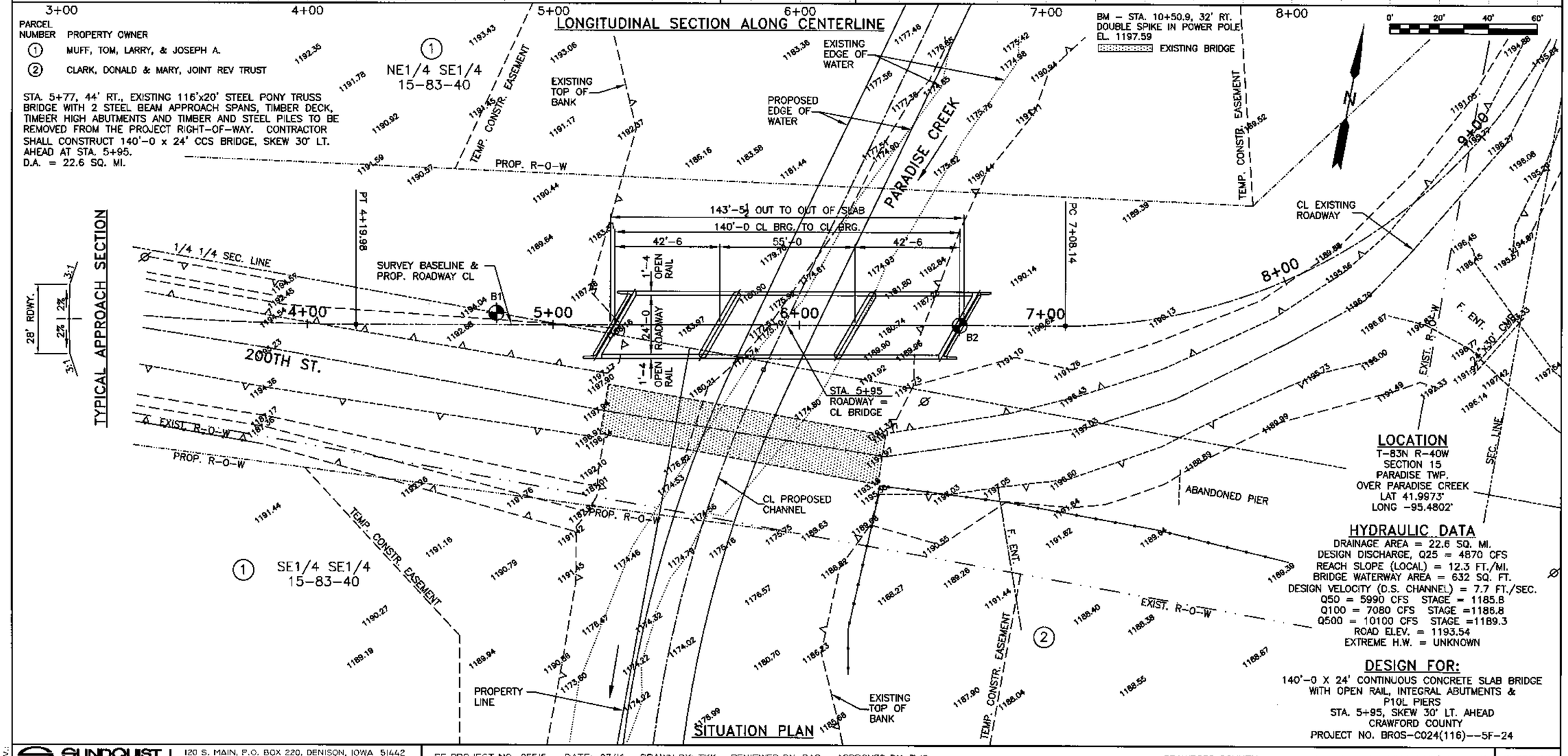
* INCLUDES 4 WINGS @ 0.68 C.Y. EACH AND 2 TEMPORARY PAVING BLOCKS; EXCLUDES RAIL CONCRETE.

TOP OF BRIDGE DECK CROWN (CR) 0.03 FT. BELOW PROFILE GRADE.

THE CLASS B REVETMENT UNDER THE BRIDGE AS SHOWN ON THESE PLANS IS CONSIDERED TO ELIMINATE THE EFFECTS OF SCOUR.

BOTTOM OF PIER CAP		
	ELEVATION	
LOCATION	W. PIER	E. PIER
CL OF N. EXT. PILE	1191.20	1191.47
CL OF S. EXT. PILE	1191.13	1191.41
BOTTOM OF ABUTMENT FOOTING		
	ELEVATION	
LOCATION	W. ABUT.	E. ABUT.
CL OF N. EXT. PILE	1187.98	1188.68
CL OF S. EXT. PILE	1187.91	1188.61





LOCATION

T-83N R-40W
SECTION 15
PARADISE TWP.
OVER PARADISE CREEK
LAT 41.9973°
LONG -95.4802°

HYDRAULIC DATA

DRAINAGE AREA = 22.6 SQ. MI.
DESIGN DISCHARGE, Q25 = 4870 CFS
REACH SLOPE (LOCAL) = 12.3 FT./MI.
BRIDGE WATERWAY AREA = 632 SQ. FT.
DESIGN VELOCITY (D.S. CHANNEL) = 7.7 FT./SEC.
Q50 = 5990 CFS STAGE = 1185.8
Q100 = 7080 CFS STAGE =1186.8
Q500 = 10100 CFS STAGE =1189.3
ROAD ELEV. = 1193.54
EXTREME H.W. = UNKNOWN

DESIGN FOR:

140'-0 X 24' CONTINUOUS CONCRETE SLAB BRIDGE WITH OPEN RAIL, INTEGRAL ABUTMENTS & P10L PIERS
STA. 5+95, SKEW 30° LT. AHEAD
CRAWFORD COUNTY
PROJECT NO. BROS-C024(116)--5F-24

REV.

SUNDQUIST ENGINEERING, P.C. | 120 S. MAIN, P.O. BOX 220, DENISON, IOWA 51442 | P712 263 8118 F712 263 2181 SUNDQUISTENGINEERING.COM

SE PROJECT NO. 05515 DATE: 07/16 DRAWN BY: TKK REVIEWED BY: SAS APPROVED BY: TJG

CRAWFORD COUNTY PROJECT NO. BROS-C024(116)--5F-24

PARCEL NUMBER — PROPERTY OWNER

1. MUFF, TOM, LARRY, & JOSEPH A.
2. CLARK, DONALD & MARY, JOINT REV TRUST

PROP. CHANNEL CL
P.I. STA. 104+32.51
Δ = 33°24'06"
D = 11°27'37"
T = 150.00'
L = 291.46'
E = 22.02'
R = 499.95'

① SE1/4 SE1/4 15-83-40

① NE1/4 SE1/4 15-83-40

N

0' 20' 40' 60'

EXISTING BRIDGE
PROPOSED CLASS B REVETMENT

PT 4+19.98

SURVEY BASELINE & PROP. ROADWAY CL

EX. R-O-W & SECTION LINE 5+00

PROP. R-O-W

PROP. R-O-W

TEMP. CONSTR. EASEMENT

TEMP. CONSTR. EASEMENT

PROPOSED TOP OF BANK (TYP.)

EXISTING TOP OF BANK

PROPERTY LINE

STA. 5+94 ROADWAY = STA. 105+94 CHANNEL

PROPOSED TOE OF BANK

102+00

103+00

104+00

105+00

106+00

107+00

108+00

PARADISE CREEK

CL PROPOSED CHANNEL

PC 102+82.51

EXISTING TOP OF BANK

+86.4

+52.3

+06.6

106+16.69 CL FLUME LT

25°31'37.4"

+26

SHAPE INTO EXISTING CHANNEL SLOPES AS DIRECTED BY THE ENGINEER (TYP.)

EXISTING EDGE OF WATER

H PILE JETTY

+07.3

+41

+02.4

PT 105+75.97

+90

PC 7+08.14

F. ENT.

TEMP. CONSTR. EASEMENT

② EX. R-O-W

ABANDONED PIER

TEMP. CONSTR. EASEMENT

CHANNEL PLAN

SITUATION PLAN – SITE

REV:

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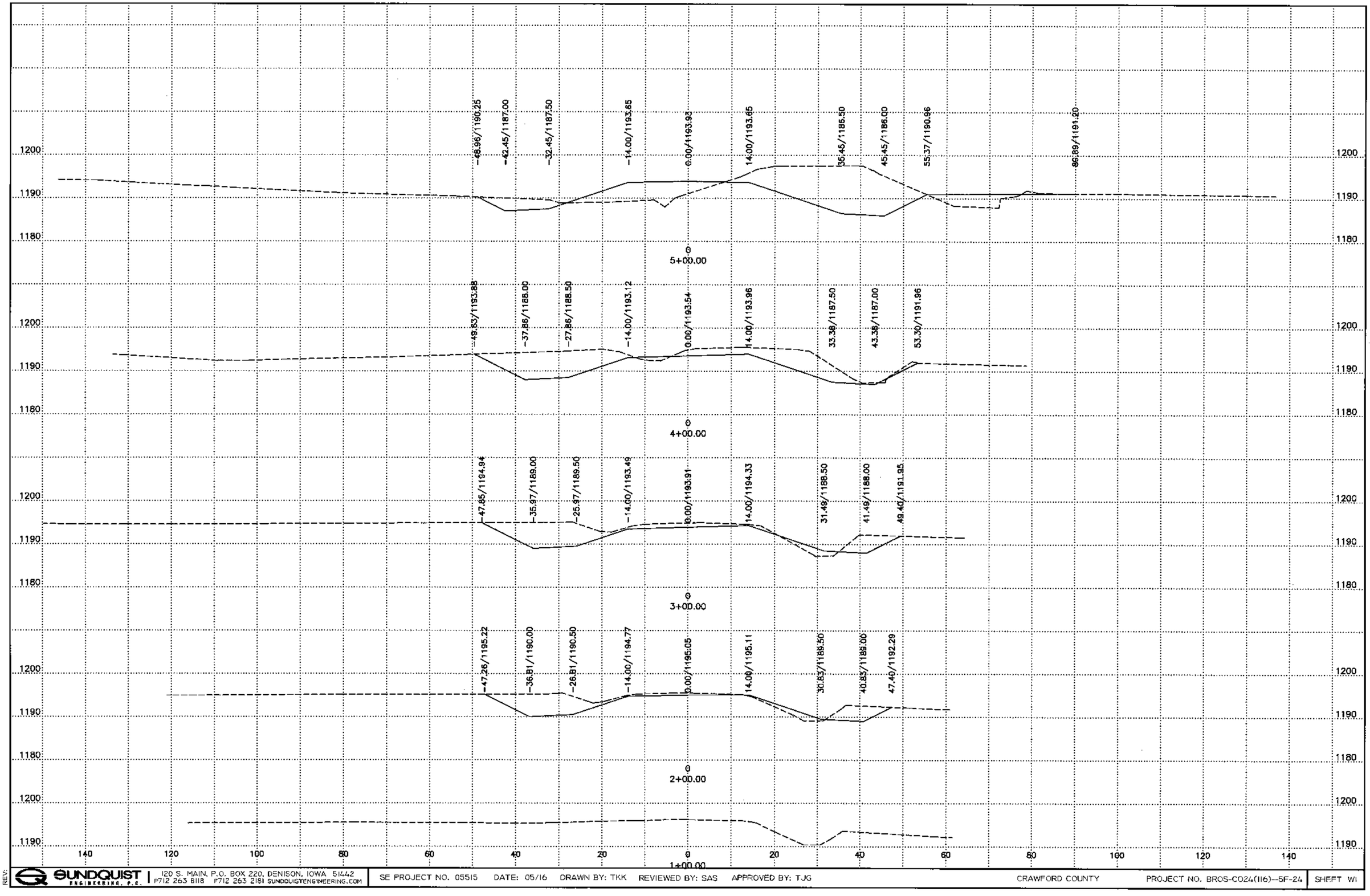
SE PROJECT NO. 05515 DATE: 07/16 DRAWN BY: TKK REVIEWED BY: SAS APPROVED BY: TJG

CRAWFORD COUNTY PROJECT NO. BROS-C024(116)--5F-24

SHEET V2



REV:

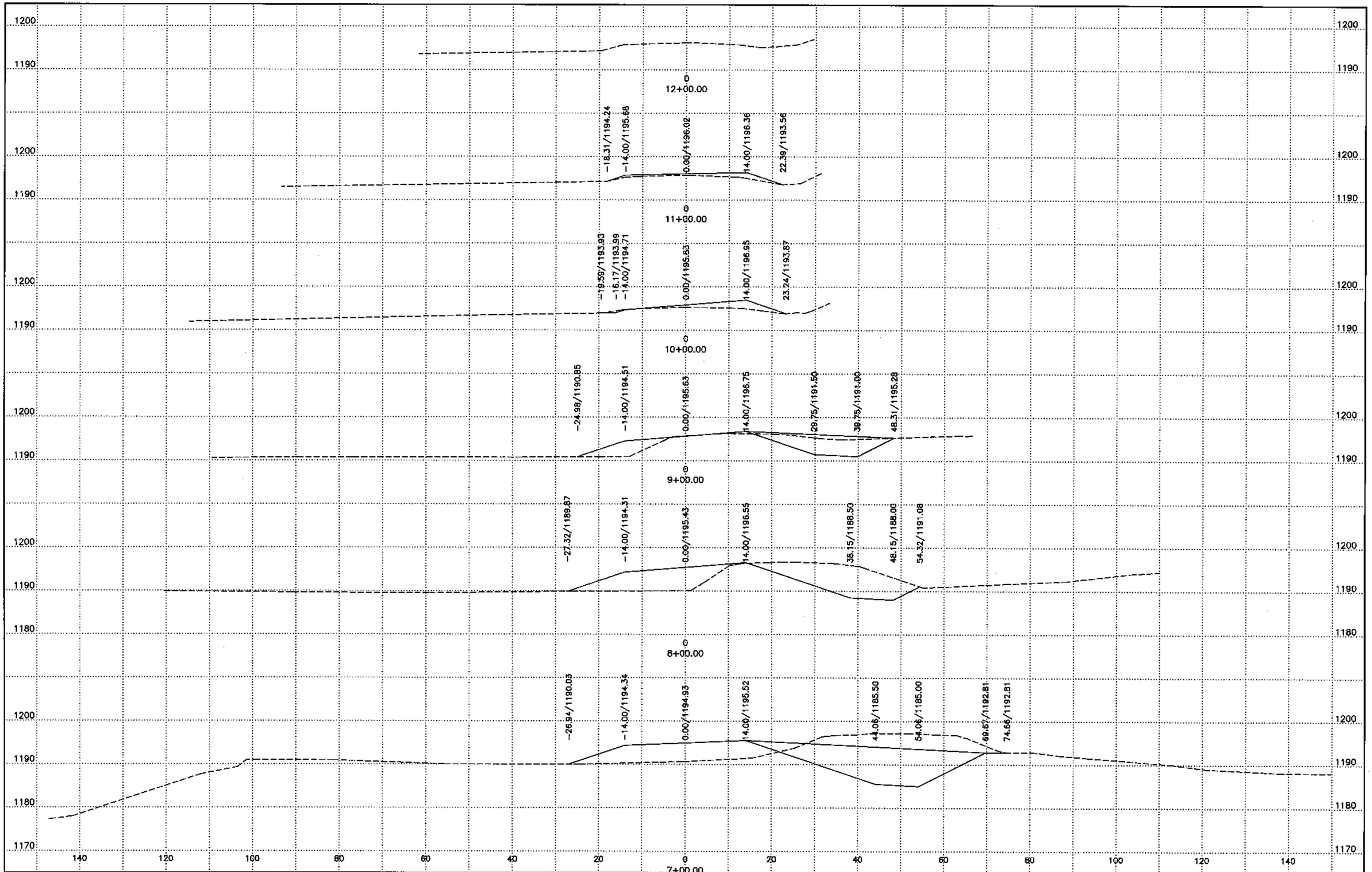
SUNDQUIST ENGINEERING, P.C. | 120 S. MAIN, P.O. BOX 220, DENISON, IOWA 51442 P712 263 8118 F712 263 2181 SUNDQUISTENGINEERING.COM

SE PROJECT NO. 05515 DATE: 05/16 DRAWN BY: TKK REVIEWED BY: SAS APPROVED BY: TJG

CRAWFORD COUNTY

PROJECT NO. BROS-C024(116)--5F-24

SHEET NO.



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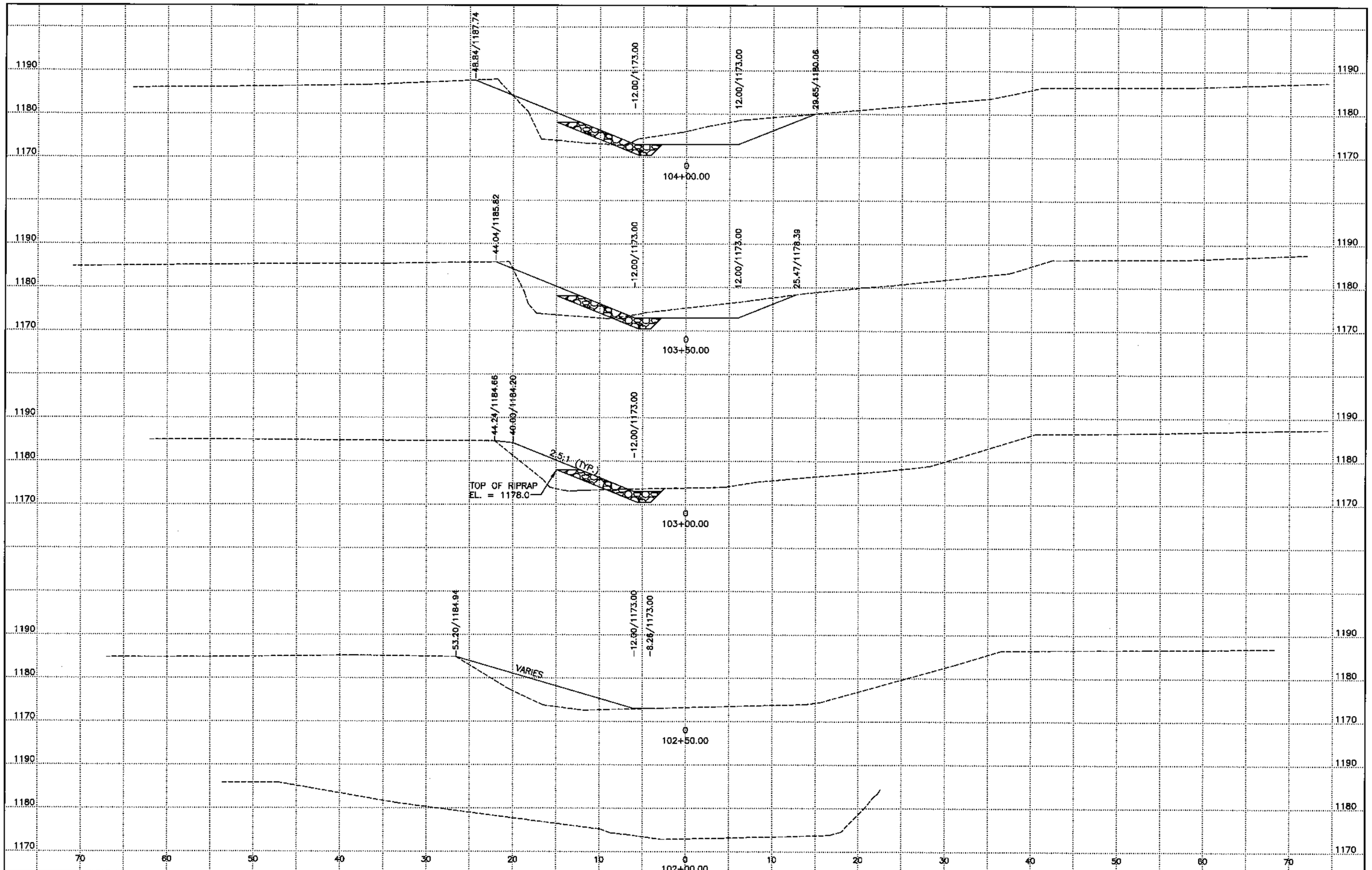
SUNDQUIST ENGINEERING, P.C. | 120 S. MAIN, P.O. BOX 220, DENISON, IOWA 51442 | P712 263 8118 F712 263 2181 SUNDQUISTENGINEERING.COM

SE PROJECT NO. 05515 DATE: 05/16 DRAWN BY: TKK REVIEWED BY: SAS APPROVED BY: TJG

CRAWFORD COUNTY

PROJECT NO. BROS-C024(116)--5F-24

SHEET W2



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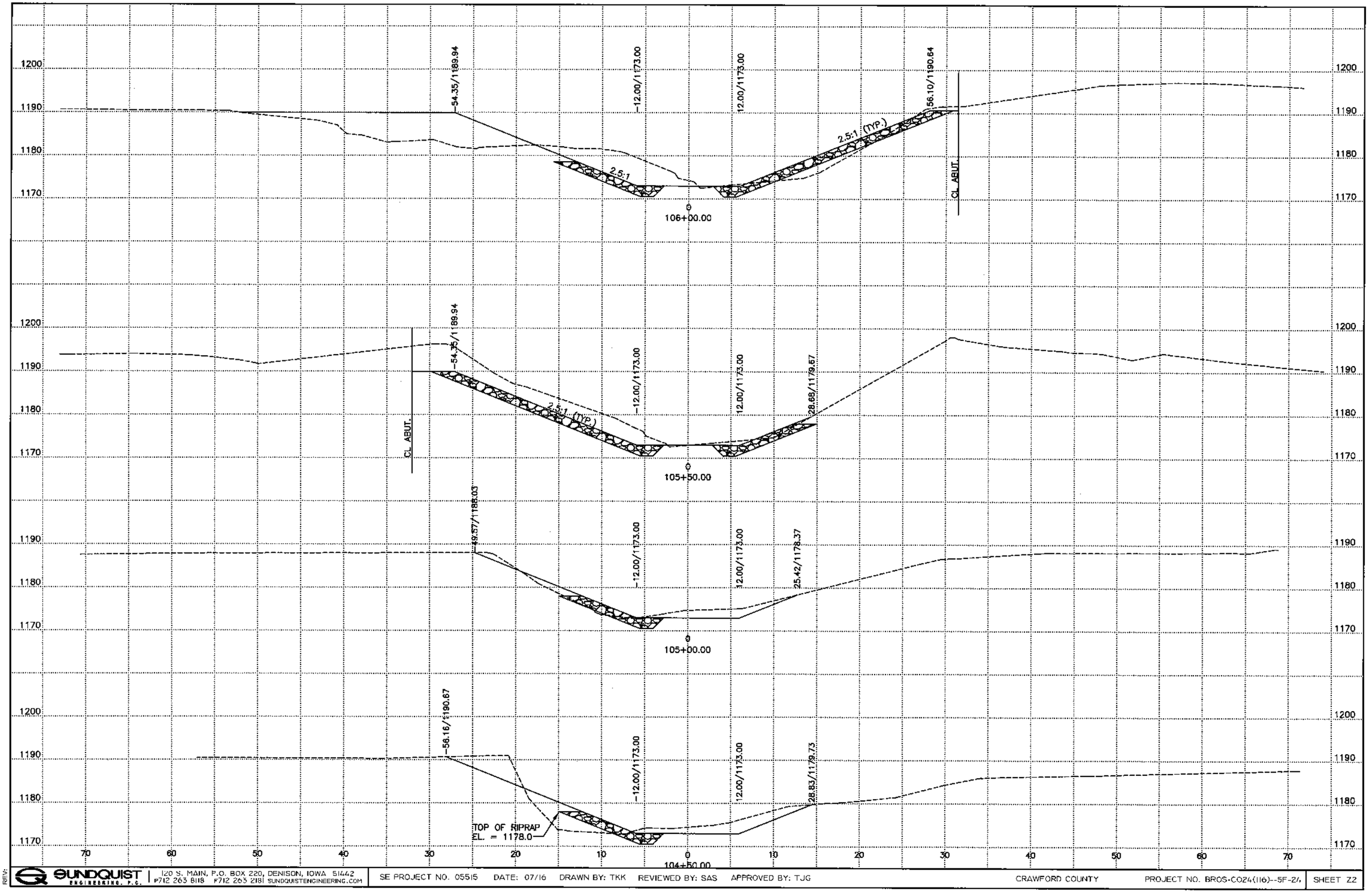
CRAWFORD COUNTY PROJECT NO. BROS-C024(116)--5F-24

SHEET 21



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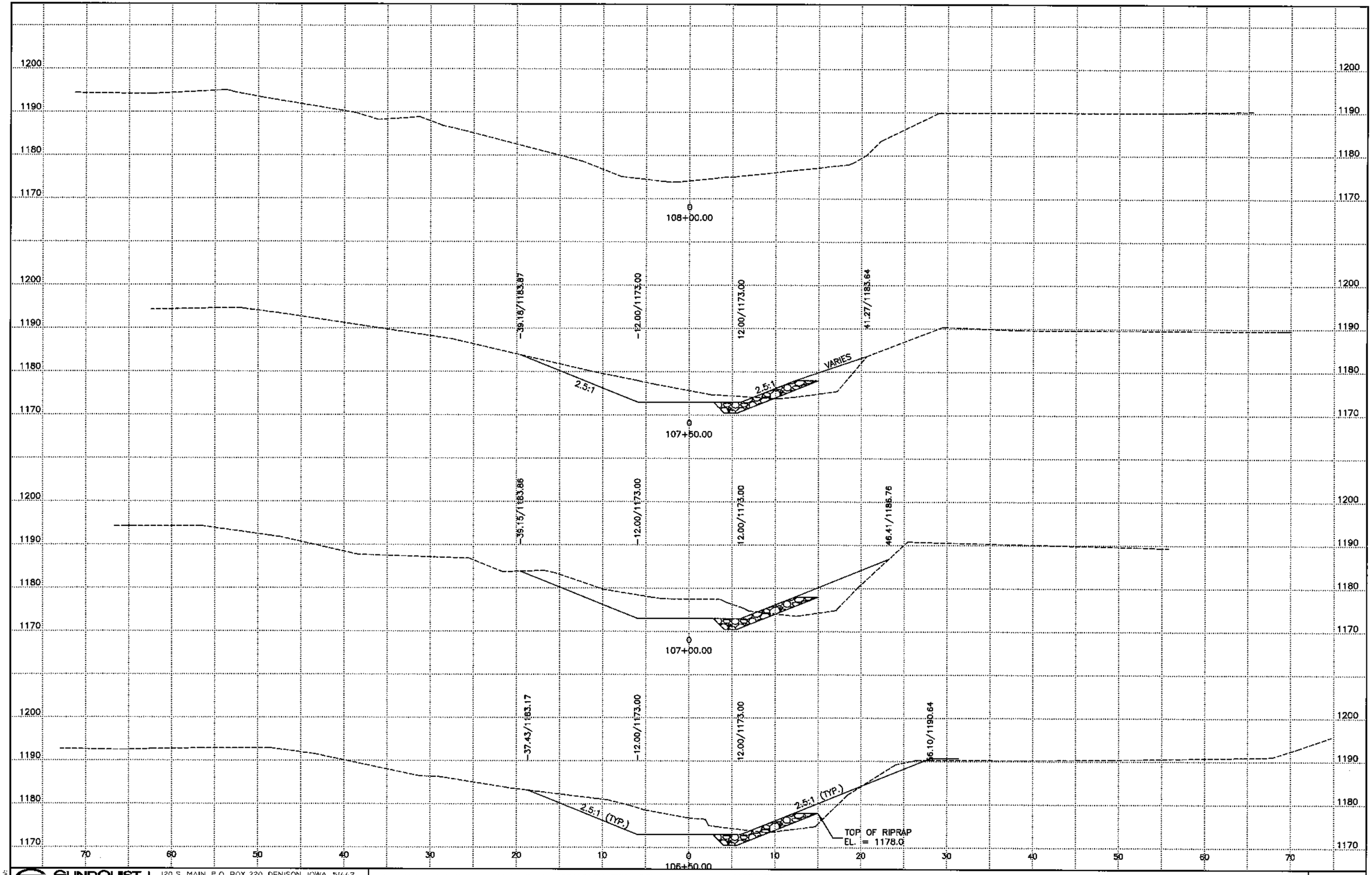
CRAWFORD COUNTY PROJECT NO. BROS-C024(116)--5F-24

SHEET Z2



REV:

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