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LETTING DATE
DECEMBER 15, 2026

BRIDGE REPLACEMENT - CCS
BROS-4702(609)--8J-14

CITY OF MANNING

SECTION 404 PERMIT AND CONDITIONS

CONSTRUCT THIS PROJECT ACCORDING TO THE REQUIREMENTS OF U.S. ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT 14, PERMIT NO. CEMVR-RD-2026- 0292. A COPY OF THIS PERMIT IS AVAILABLE FROM THE IOWA DOT WEBSITE (http://www.envpermits.lowadot.gov/). THE U.S. ARMY CORPS OF ENGINEERS RESERVES THE RIGHT TO VISIT THE SITE WITHOUT PRIOR NOTICE.

THIS PROJECT IS COVERED BY IOWA DNR FLOODPLAIN CONSTRUCTION PERMIT NO. (INSERT IOWA DNR PERMIT NUMBER).

FOR LIST OF STANDARD ROAD PLANS, REFER TO SHEET C.1.

FOR LIST OF STANDARD BRIDGE PLANS, REFER TO SHEET V.1.

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	**Title Sheets**
A.1	Title Sheet
A.2	Legend
B Sheets	**Typical Cross Sections and Details**
B.1	Typical Cross Sections and Details
C Sheets	**Quantities and General Information**
C.1	Estimated Project Quantities
C.2	Estimate Reference Information
C.3 - 4	Tabulations
CR Sheets	**Removal Sheets**
CR.1	Removals
D Sheets	**Mainline Plan and Profile Sheets**
D.1	Plan and Profile - East Street
G Sheets	**Survey Sheets**
G.1	Alignments, Reference Ties, and Bench Marks
H Sheets	**Right-of-Way Sheets**
H.1	Right-of-Way
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control Plan and Staging
J.2	Detour Route
L Sheets	**Geometric and Staking Sheets**
L.1 - 2	Geometrics, Staking, and Jointing
M Sheets	**Storm Sewer Sheets**
M.1	Storm Sewer Plan and Profile
Q Sheets	**Soils Sheets**
Q.1	Soil Borings Location Map
Q.2	Soil Borings
RR Sheets	**Erosion Control Plan Sheets**
RR.1	Erosion Control Plan
S Sheets	**Sidewalk Sheets**
S.1	Sidewalk Plan and Tabulations
V Sheets	**Bridge Situation Plan**
V.1	General Notes
V.2	Summary Quantities
V.3	Situation Plan
V.4	Site Plan
V.5 - 13	Details
W Sheets	**Mainline Cross Sections**
W.1	Cross Sections - East Street

IOWA | DOT

Transportation Development Division

PLANS OF PROPOSED IMPROVEMENT ON THE

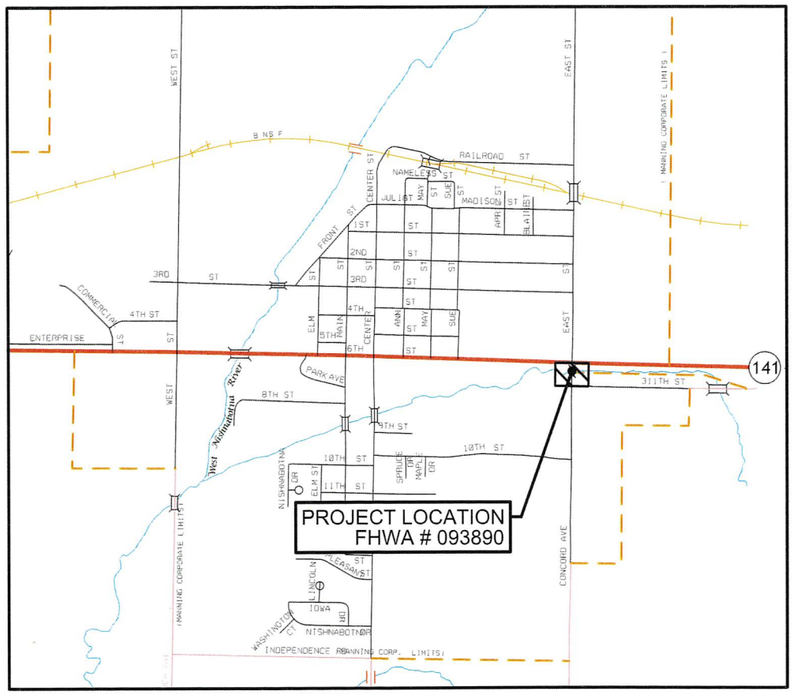
URBAN ROAD SYSTEM
CITY OF MANNING

BRIDGE REPLACEMENT - CCS

IN THE CITY OF MANNING, ON E ST, OVER WILLOW CREEK

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.



LOCATION MAP
NOT TO SCALE



IOWA STATE MAP
NOT TO SCALE

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	TOTAL
	34
PROJECT IDENTIFICATION NUMBER	
N/A	
IOWA DOT PROJECT NUMBER	
BROS-4702(609)--8J-14	

MILEAGE SUMMARY

DIV.	LOCATION	LIN. FT.	MILES
1	EAST STREET STA. 99+59.27 TO 102+78.78	319.51	0.06

CITY OF MANNING

Signed by:
4B1EF9E2ECC342A...
CITY ENGINEER OR DESIGNEE

9/15/2026
DATE

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	JONAH C. HEER	STRUCTURAL DESIGN
A.1	CODY F. FORCH	ROADWAY DESIGN
V.3	CHAD W. MEYER	HYDRAULIC DESIGN

STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER
JONAH C. HEER P28040
IOWA

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

Signature — 9/15/2026 Date

JONAH C. HEER, P.E.
Printed or Typed Name

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: V-SHEETS

ROADWAY DESIGN

LICENSED PROFESSIONAL ENGINEER
CODY F. FORCH P22843
IOWA

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

Signature — 9/15/26 Date

CODY F. FORCH, P.E.
Printed or Typed Name

My license renewal date is December 31, 2026

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

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MAIN 712.220.8121

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BROS-4702(609)--8J-14

REVISIONS

PROJECT INFO
2024006809

ENGINEER	DRAWN BY	CHECKED BY
CFF	JMT	CFF

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

TITLE SHEET

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DRAWING NO.
A.1

SURVEY SYMBOLS

- Interstate Highway Symbol
- U.S. Highway Symbol
- Iowa Highway Symbol
- County Road Highway Symbol
- Evergreen Tree
- Deciduous Tree
- Fruit Tree
- Shrub (Bushes)
- Timber
- Hedge
- Stump
- Swamp
- Rock Outcrop
- Broken Concrete
- Revetment (Rip Rap)
- Cemetery
- Grave
- Cave
- Sink Hole
- Board Fence
- Chain Link or Security Fence
- Wire Fence
- Terrace
- Earth Dam or Dike (Existing)
- Earth Dam or Dike (Proposed)
- Tile Outlet
- Edge of Water
- Existing Drainage
- Proposed Drainage
- Right of Way Rail or Lot Corner
- Concrete Monument
- Well
- Windmill
- Beehive Intake
- Existing Intake
- Proposed Intake
- Existing Utility Access (Manhole)
- Proposed Utility Access (Manhole)
- Fire Hydrant
- WH Water Hydrant (Rural)

- C Cistern
- LP L.P. Gas Tank (No Footing)
- UST Underground Storage Tank
- Latrine
- Luminaire
- Traffic Signal
- Traffic Signal with Luminaire
- TP Telephone Pedestal
- TVP Television Pedestal
- Telephone Pole
- Telephone Pole (Second Company)
- Telephone Pole (Third Company)
- Telephone Pole (Fourth Company)
- Telephone Pole (Fifth Company)
- Power Pole
- Power Pole (Second Company)
- Power Pole (Third Company)
- Power Pole (Fourth Company)
- Power Pole (Fifth Company)
- Electrical Highline Tower (Metal or Concrete)
- Telephone Riser Pole
- Power Riser Pole
- Telegraph Pole
- Satellite TV Dish
- WHU Water Hook Up
- RT Radio Tower
- TA Tower Anchor
- EB Electric Box
- TSB Telephone Switch Box
- SIGN Sign
- TCB Traffic Signal Control Box
- RRB Rail Road Signal Control Box
- Guardrail (Beam or Cable)
- GP Guard Post (one or two)
- Guard Post (over two)
- FP Filler Pipe
- GV Gas Valve
- WV Water Valve
- SL Speed Limit Sign
- MM Mile Marker Post

- W Existing Water Line
- W2 Existing Water Line (Second Company)
- SAN Existing Sanitary Sewer Line
- T Existing Telephone Line
- T2 Existing Telephone Line (Second Company)
- FO-1 Existing Fiber Optics Telephone Line
- ST. S Existing Storm Sewer Line
- G Existing Gas Line
- G-HP Existing High Pressure Gas Line
- G2 Existing Gas Line (Second Company)
- G2-HP Existing High Pressure Gas Line (Second Company)
- E Existing Power Line
- E2 Existing Power Line (Second Company)
- TV Cable Television Line

UTILITY QUALITY SERVICE LEVELS

Quality levels of utilities are shown in the parentheses with the utility type and when applicable, size. The quality levels are based on the CI / ASCE 38-02 standard.

Quality level (D) information is derived from existing utility records or oral recollections.

Quality level (C) information is obtained by surveying and plotting visible above-ground utility features and using professional judgement in correlating this information with quality d information.

Quality level (B) information is obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of subsurface utilities.

Quality level (A) is horizontal and vertical position of underground utilities obtained by actual exposure or verification of previously exposed subsurface utilities, as well as the type, size, condition, material, and other characteristics.

UTILITY WARNING

Neither the Owner 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.

UTILITY LEGEND

MidAmerican Gas
Dusty Rardin
(712) 792-7045
Dusty.Rardin@midamerican.com

Manning Municipal Gas Department /
Manning Municipal Light Plant
Jeremy Carroll
(712) 655-3905
Jeremy@manningia.com

Windstream Communications
Hugh Carroll
(314) 239-3728
Hugh.Carroll@uniti.com

Iowa Communications Network (ICN) /
Iowa Rural Health Telecommunications Program (IRHTP)
Luke Connor
(515) 725-4400
Luke.Connor@iowa.gov

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BROS-4702(609)--8J-14

REVISIONS

PROJECT INFO
2024006809

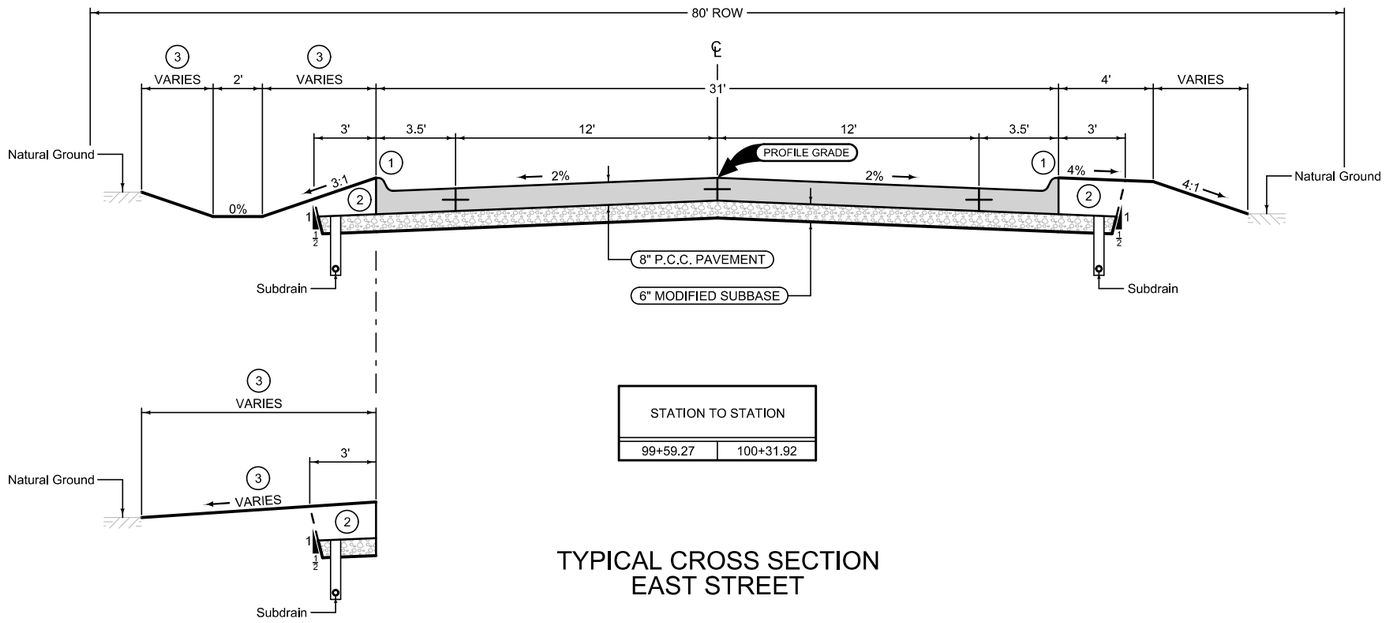
ENGINEER	DRAWN BY	CHECKED BY
CFF	JMT	CFF

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

LEGEND

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DRAWING NO.
A.2



STATION TO STATION	
99+59.27	100+31.92

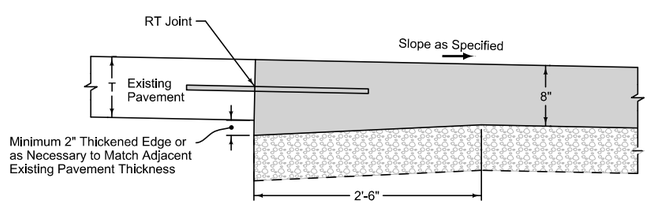
STATION TO STATION	
100+31.92	101+40.00

TYPICAL CROSS SECTION
EAST STREET

1. 6" STANDARD CURB. REFER TO PV-102 FOR ADDITIONAL INFORMATION.
2. EARTH SHOULDER FINISHING, EXCAVATE AND BACKFILL 3.0'.
3. REFER TO CROSS SECTIONS AND PROPOSED GRADING SURFACE ON RR-SHEETS.

NOTE:
NORMAL SECTIONS SHOWN MAY BE APPROPRIATELY MODIFIED FOR AREAS SPECIFICALLY DESIGNATED BY THE ENGINEER SUCH AS INTERSECTIONS. REFER TO OTHER DRAWINGS FOR ADDITIONAL INFORMATION.

MAINLINE JOINTING (REFER TO L-SHEETS):
TRANSVERSE JOINTS: CD
LONGITUDINAL JOINTS: L-2 OR BT-2



THICKENED PAVEMENT EDGE

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BROS-4702(609)--8J-14

REVISIONS

PROJECT INFO
2024006809

ENGINEER CFF | DRAWN BY JMT | CHECKED BY CFF

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

TYPICAL SECTIONS AND DETAILS

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DRAWING NO.
B.1

ESTIMATED PROJECT QUANTITIES

ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY
1	2102-2625000	EMBANKMENT-IN-PLACE	CY	196
2	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	190
3	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CY	1,332
4	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	236
5	2115-0100000	MODIFIED SUBBASE	CY	124
6	2123-7450020	SHOULDER FINISHING, EARTH	STA	3.6
7	2301-0690203	BRIDGE APPROACH, BR-203	SY	404
8	2301-1033080	STANDARD OR SLIP FORM PCC PAVEMENT, CLASS C, CLASS 3 DURABILITY, 8 IN.	SY	623
9	2301-6911722	PORTLAND CEMENT CONCRETE PAVEMENT SAMPLES	LS	1
10	2314-8257000	DUST CONTROL SURFACE TREATMENT	STA	20.5
11	2401-6745625	REMOVAL OF EXISTING BRIDGE	LS	1
12	2402-2720000	EXCAVATION, CLASS 20	CY	82.4
13	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	CY	207.7
14	2404-7775000	REINFORCING STEEL	LB	102
15	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	52,305
16	2414-6424119	CONCRETE BARRIER RAILING, AESTHETIC	LF	214
17	2414-6445100	STRUCTURAL STEEL PEDESTRIAN HAND RAILING	LF	156.25
18	2416-0100024	APRONS, CONCRETE, 24 IN. DIA.	EACH	1
19	2435-0140160	MANHOLE, STORM SEWER, SW-401, 60 IN	EACH	1
20	2435-0250100	INTAKE, SW-501	EACH	1
21	2435-0250300	INTAKE, SW-503	EACH	1
22	2435-0251224	INTAKE, SW-512, 24 IN.	EACH	1
23	2501-0201042	PILES, STEEL, HP 10 X 42	LF	1,485
24	2501-5478042	CONCRETE ENCASEMENT OF STEEL H PILES, HP 10 X 42 (P10L TYPE 3)	LF	245.9
25	2502-8212036	SUBDRAIN, LONGITUDINAL, (SHOULDER) 6 IN. DIA.	LF	360
26	2502-8221303	SUBDRAIN OUTLET, DR-303	EACH	4
27	2503-0114215	STORM SEWER GRAVITY MAIN, TRENCHED, RCP, 2000D (CLASS III), 15 IN.	LF	31
28	2503-0114218	STORM SEWER GRAVITY MAIN, TRENCHED, RCP, 2000D (CLASS III), 18 IN.	LF	47
29	2503-0114224	STORM SEWER GRAVITY MAIN, TRENCHED, RCP, 2000D (CLASS III), 24 IN.	LF	92
30	2503-0200036	REMOVE STORM SEWER PIPE LESS THAN OR EQUAL TO 36 IN.	LF	28
31	2507-4011100	CONCRETE GROUT FOR REVETMENT OR GABION	CY	160
32	2507-6800061	REVETMENT, CLASS E	TON	850
33	2510-6745850	REMOVAL OF PAVEMENT	SY	957
34	2511-6745900	REMOVAL OF SIDEWALK	SY	45
35	2511-7526006	SIDEWALK, P.C. CONCRETE, 6 IN.	SY	40
36	2511-7528101	DETECTABLE WARNINGS	SF	48
37	2515-2475007	DRIVEWAY, P.C. CONCRETE, 7 IN.	SY	80
38	2524-6765010	REMOVE AND REINSTALL SIGN AS PER PLAN	EACH	1
39	2524-9100030	OBJECT MARKER, TYPE 3	EACH	4
40	2526-8285010	CONSTRUCTION SURVEY, MONUMENT PRESERVATION	LS	1
41	2526-8285030	CONSTRUCTION SURVEY, RIGHT OF WAY	LS	1
42	2526-8285040	CONSTRUCTION SURVEY, LOCATION SURVEY	LS	1
43	2528-2518000	SAFETY CLOSURE	EACH	3
44	2528-8445110	TRAFFIC CONTROL	LS	1
45	2533-4980005	MOBILIZATION	LS	1
46	2552-0000300	TRENCH COMPACTION TESTING	LS	1
47	2599-9999005	REMOVE APRON	EACH	3
48	2601-2634105	MULCHING, BONDED FIBER MATRIX	ACRE	0.2
49	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	0.2
50	2602-0000020	SILT FENCE	LF	200
51	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	LF	200
52	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.	LF	200
53	2602-0000351	REMOVAL OF PERIMETER AND SLOPE OR DITCH CHECK SEDIMENT CONTROL DEVICE	LF	200

111_25
4/2/24

INDEX OF TABULATIONS

Line No.	Tabulation	Tabulation Title	Sheet No.
1		Estimated Project Quantities	C.1
2	105-04	Standards	C.1
3	111-25	Index of Tabulations	C.1
4		Estimate Reference Information	C.2 - C.3
5	100-24	PCC Pavement	C.3
6	102-03	Access Points and Safety Ramps	C.3
7	104-05A	Intakes and Utility Accesses	C.3
8	104-05B	Storm Sewer	C.3
9	104-09A	Longitudinal Subdrain Shoulder	C.4
10	110-01	Removal of Pavement	C.4
11	110-05	Sidewalk Removal	C.4
12	110-14	Sanitary or Storm Sewer Abandonment or Removal	C.4
13	190-62	Existing Signs to be Removed	C.4
14	112-06	Bridge Approach Section	C.4
15	113-01A	Sidewalks	C.4
16	190-25	Reference Location Signs and Delineators	C.4
17		Sidewalk Compliance	S.1

105_04
4/16/24

STANDARDS

The following Standards apply to construction work on this project.

Number	Date	Title
BR-205	10/20/2026	Double Reinforced 12" Approach (Slab Bridge)
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-121	4/18/2023	Connected Pipe Joints
DR-201	10/17/2023	Concrete Aprons
DR-213	10/18/2022	Pipe Apron Guard
DR-303	10/17/2017	Subdrains (Longitudinal)
EC-301	10/18/2022	Rock Erosion Control (REC)
MI-210	10/21/2025	PCC Driveways and Alleys
MI-220	4/15/2025	Detectable Warnings and Pedestrian Ramp
PV-101	10/20/2026	Joints
PV-102	10/21/2025	PCC Curb Details
SI-173	4/19/2016	Object Markers
SW-101	10/21/2025	Trench Bedding and Backfill Zones
SW-102	10/21/2025	Rigid Gravity Pipe Trench Bedding
SW-211	10/21/2025	Storm Sewer Pipe Connections
SW-401	10/21/2025	Circular Storm Sewer Manhole
SW-501	10/21/2025	Single Grate Intake
SW-503	10/21/2025	Single Grate Intake with Manhole
SW-514	10/21/2025	Boxouts for Grate Intakes
SW-603	10/21/2025	Castings for Grate Intakes
TC-228	4/18/2023	Lane Closure Involving TWLTL
TC-252	10/20/2026	Routes Closed to Traffic

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BROS-4702(609)--8J-14

REVISIONS

PROJECT INFO
2024006809

ENGINEER	DRAWN BY	CHECKED BY
CFF	JMT	CFF

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

ESTIMATED PROJECT QUANTITIES

P:\2024006809\04-Drawings\Dgn\Plans\SHT_2024006809_C01.dgn

DRAWING NO.
C.1

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	ITEM DESCRIPTION
1	2102-2625000	EMBANKMENT-IN-PLACE Quantity shall be plan quantity. Includes 190 CY cut and 445 CY adjusted fill which includes a 30% shrinkage factor. If suitable, existing onsite materials may be reincorporated into the project as fill upon approval from Engineer; otherwise, Contractor shall furnish 196 CY of suitable material to be used for fill which shall be paid for under 'Embankment-in-Place'. 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. Bidders shall satisfy themselves for all conditions of earthwork requirements in the submittal of a bid. All other earthwork is considered incidental, including any minor roadway grade raises and/or lowering and removal for installation of pavement, sidewalk, subbase, etc.
2	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW Same as previous item.
3	2104-2710020	EXCAVATION, CLASS 10, CHANNEL Includes 802 CY of excavation for bridge berm and channel grading and 530 CY of excavation required to embed the revetment (Class E rip rap). Quantity required to embed the revetment assumes bridge berm and channel grading are complete. Refer to V-Sheets for quantity itemization.
4	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD Estimated quantity is based on stripping and salvaging 8" of topsoil and placing 6.5" of topsoil. Includes 236 CY of topsoil stripping and 228 CY of topsoil placement which includes a 40% shrinkage factor. If excess topsoil exists, it shall be spread onsite. Item includes excavating, hauling, depositing, compacting, grading, and work necessary to conform to the lines, grades, and slopes shown on plans.
5	2115-0100000	MODIFIED SUBBASE Refer to B-Sheets and Tab 100-24 for locations and details. Subgrade compaction testing is required under mainline and sideroad pavement and shall be considered incidental to this item.
6	2123-7450020	SHOULDER FINISHING, EARTH This item includes backfill and finish grading behind all curbs.
7	2301-0690203	BRIDGE APPROACH, BR-203 Refer to L-Sheets and Tab 112-06 for locations and details.
8	2301-1033080	STANDARD OR SLIP FORM PCC PAVEMENT, CLASS C, CLASS 3 DURABILITY, 8 IN. Refer to B-, D-, and L-Sheets and Tab 100-24 for locations and details. Certified plant inspection is required and shall be considered incidental to this item. Refer to Section 2521 for additional information. Development of a maturity curve is required and shall be considered incidental to this item. Thickness requirements from Section 2301, Table 2301.05-2 shall apply.
9	2301-6911722	PORTLAND CEMENT CONCRETE PAVEMENT SAMPLES -
10	2314-8257000	DUST CONTROL SURFACE TREATMENT This item is intended to be used on 311th St due to vehicles accessing businesses via IA141. Contractor to coordinate with Owner regarding frequency and rate of application. Stations of surface treatment applied (full width of roadway) will be measured for payment. Payment will be made at the contract unit price per station of surface treatment applied (full width of roadway) and is full compensation for furnishing water and treatment materials and for handling, mixing, transporting, and application of materials to roadway surface.
11	2401-6745625	REMOVAL OF EXISTING BRIDGE Included for the removal of the existing 77'-0" x 28'-0" continuous concrete slab bridge (FHWA 093890).The existing structure and its components shall become the property of the Contractor. Item includes removal of existing object markers.
12	2402-2720000	EXCAVATION, CLASS 20 Quantity assumes bridge berm and roadway grading are complete. Refer to bridge standard J30-47-06 for limits of Class 20 Excavation. Refer to V-Sheets for quantity itemization.
13	2403-0100010	STRUCTURAL CONCRETE (BRIDGE) Includes all preformed joint filler required. Certified plant inspection is required for the concrete and is included in the cost of this item. No additional payment will be made for cold weather protection or heated materials, if needed. Includes furnishing and placing subdrain (including excavation), floodable backfill, porous backfill, geotextile fabric, water flooding, and subdrain outlet at abutments and toe of berm. Cost of excavating and backfilling outlet trench is included in this bid item. Includes furnishing and placing engineering fabric, macadam stone, 4" X 6" treated timbers, 1/2" diameter steel pins (or rebar), and all required excavating, shaping, and compacting for wing armoring. Includes furnishing and placing electrical conduit.
14	2404-7775000	REINFORCING STEEL Refer to V-Sheets and applicable bridge standards for quantity itemization.
15	2404-7775005	REINFORCING STEEL, EPOXY COATED Same as previous item.
16	2414-6424119	CONCRETE BARRIER RAILING, AESTHETIC Certified plant inspection is required for the concrete and is included in the price of this item. No additional payment will be made for cold weather protection or heated materials, if needed. Refer to V-Sheets for additional information.
17	2414-6445100	STRUCTURAL STEEL PEDESTRIAN HAND RAILING Refer to V-Sheets for additional information.
18	2416-0100024	APRONS, CONCRETE, 24 IN. DIA. Refer to M-Sheets and Tabs 104-05A and 104-05B for locations and details.
19	2435-0140160	MANHOLE, STORM SEWER, SW-401, 60 IN Refer to M-Sheets and Tabs 104-05A and 104-05B for locations and details. Casting shall be Type E.
20	2435-0250100	INTAKE, SW-501 Refer to M-Sheets and Tabs 104-05A and 104-05B for locations and details. Casting shall be Type Q.
21	2435-0250300	INTAKE, SW-503 Refer to M-Sheets and Tabs 104-05A and 104-05B for locations and details.
22	2435-0251224	INTAKE, SW-512, 24 IN. Same as previous item.
23	2501-0201042	PILES, STEEL, HP 10 X 42 Quantity itemization: 5-HP 10X42 at 55 feet south abutment, 5-HP 10X42 at 50 feet north abutment, 8-HP 10X42 at 60 feet Pier No. 1, 8-HP 10X42 at 60 feet Pier No. 2.
24	2501-5478042	CONCRETE ENCASEMENT OF STEEL H PILES, HP 10 X 42 (P10L TYPE 3) Encasement lengths were calculated using a uniform bottom of encasement elevation of 1315.50. Includes 8 encasements at Pier No. 1 and 8 encasements at Pier No. 2. Refer to V-Sheets for details. Certified plant inspection is required for the concrete and is included in the cost of this item. No additional payment will be made for cold weather protection or heated materials, if needed. Refer to Standard Bridge Plan P10L, Type 3.

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	ITEM DESCRIPTION
25	2502-8212036	SUBDRAIN, LONGITUDINAL, (SHOULDER) 6 IN. DIA. Refer to B- and M-Sheets and Tab 104-09A for locations and details. Subdrain pipe material shall be corrugated PE Pipe, Type S.
26	2502-8221303	SUBDRAIN OUTLET, DR-303 Refer to M-Sheets and Tab 104-09A for locations and details.
27	2503-0114215	STORM SEWER GRAVITY MAIN, TRENCHED, RCP, 2000D (CLASS III), 15 IN. Refer to M-Sheets and Tab 104-05B for locations and details. Trench shoring and dewatering shall be considered incidental to this item. Rigid pipe bedding shall comply with Class R-1 in Standard Road Plan SW-102. Connections between proposed and existing pipe shall be Type PC-2 in Standard Road Plan SW-211 and is considered incidental to this item.
28	2503-0114218	STORM SEWER GRAVITY MAIN, TRENCHED, RCP, 2000D (CLASS III), 18 IN. Same as previous item.
29	2503-0114224	STORM SEWER GRAVITY MAIN, TRENCHED, RCP, 2000D (CLASS III), 24 IN. Same as previous item.
30	2503-0200036	REMOVE STORM SEWER PIPE LESS THAN OR EQUAL TO 36 IN. Refer to CR-Sheets and Tab 110-14 for locations and details. Bid item includes all cutting, excavation, backfill, compaction, hauling, disposal of pipe, materials, labor, equipment, and associated work to remove existing storm sewer / pipe culverts. All pipe shall become the property of the Contractor.
31	2507-4011100	CONCRETE GROUT FOR REVETMENT OR GABION Estimated at 5.4 CF per SY of revetment. All revetment shall be grouted. Refer to V-Sheets for quantity itemization.
32	2507-6800061	REVETMENT, CLASS E Estimated at 1.6 TON per CY. Refer to V-Sheets for quantity itemization.
33	2510-6745850	REMOVAL OF PAVEMENT Refer to CR-Sheets and Tab 110-01 for locations and details. If removal limits are within 2 feet of an existing joint, removals shall be extended to the joint. Contractor shall be responsible for replacing any damaged pavement beyond the removal limits at no cost to the Owner. Existing pavement on East St consists of approximately 8" of asphalt. Existing pavement on 311th St consists of approximately 7" of PCC. No adjustment of unit price or adjustment in excavation quantity will be made for varying depth and/or type of pavement.
34	2511-6745900	REMOVAL OF SIDEWALK Refer to CR-Sheets and Tab 110-05 for locations and details.
35	2511-7526006	SIDEWALK, P.C. CONCRETE, 6 IN. Refer to D- and L-Sheets and Tab 113-01A for locations and details. Certified plant inspection is required and shall be considered incidental to this item. Refer to Section 2521 for additional information.
36	2511-7528101	DETECTABLE WARNINGS Refer to D- and L-Sheets and Tab 113-01A for locations and details.
37	2515-2475007	DRIVEWAY, P.C. CONCRETE, 7 IN. Refer to D- and L-Sheets and Tab 102-03 for locations and details. Certified plant inspection is required and shall be considered incidental to this item. Refer to Section 2521 for additional information.
38	2524-6765010	REMOVE AND REINSTALL SIGN AS PER PLAN Refer to CR-Sheets and Tab 190-62 for locations and details. This item is for the removal and reinstallation of Type A sign assemblies, including sign panels, sign brackets, support structures, and hardware. Contract shall carefully dismantle each sign assembly. Each sign assembly removed and reinstalled will be measured for payment. Payment will be made at the contract unit price for each sign assembly removed and reinstalled.
39	2524-9100030	OBJECT MARKER, TYPE 3 Refer to Tab 190-25 for locations and details. Each object marker installed will be measured for payment. Payment will be made at the contract unit price for each object marker satisfactorily erected. Payment is full compensation for furnishing, fabricating, and erecting the signs complete, including all mounting hardware.
40	2526-8285010	CONSTRUCTION SURVEY, MONUMENT PRESERVATION -
41	2526-8285030	CONSTRUCTION SURVEY, RIGHT OF WAY -
42	2526-8285040	CONSTRUCTION SURVEY, LOCATION SURVEY -
43	2528-2518000	SAFETY CLOSURE Refer to J-Sheets for locations and details.
44	2528-8445110	TRAFFIC CONTROL Refer to J-Sheets for traffic control plan.
45	2533-4980005	MOBILIZATION Bid item includes mobilization and demobilization for General Contractor and all Subcontractors. Contractor to support, protect, and adjust existing utilities encountered during construction. Any items of work shown on the plans for which the Contractor believes are not adequately covered by individual pay items in the contract documents shall be included in the Contractor's bid price for Mobilization.
46	2552-0000300	TRENCH COMPACTION TESTING This item shall be used for all storm sewer installation.
47	2599-9999005	REMOVE APRON Refer to CR-Sheets for locations and details. Existing apron becomes property of Contractor. Each apron removed will be measured for payment. Payment will be made at the contract unit price for each apron removed and properly disposed. No adjustment of unit price will be made for varying apron size.
48	2601-2634105	MULCHING, BONDED FIBER MATRIX This item is intended to be used for all permanent seeding areas within the project limits. Item quantity equals the overall area of anticipated land that will be disturbed and not replaced with pavement or revetment.
49	2601-2636043	SEEDING AND FERTILIZING (RURAL) Same as previous item.
50	2602-0000020	SILT FENCE Estimated quantity based on placement of silt fence around perimeter of construction site, as well as within roadway ditch, to address possible erosion during construction. Verify specific locations with Engineer prior to beginning placement. All material shall be removed from the project once seeding areas have achieved 70% permanent vegetative growth.
51	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS Same as previous item.

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BROS-4702(609)--8J-14

REVISIONS

PROJECT INFO
2024006809

ENGINEER	DRAWN BY	CHECKED BY
CFF	JMT	CFF

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

ESTIMATE REFERENCE INFORMATION

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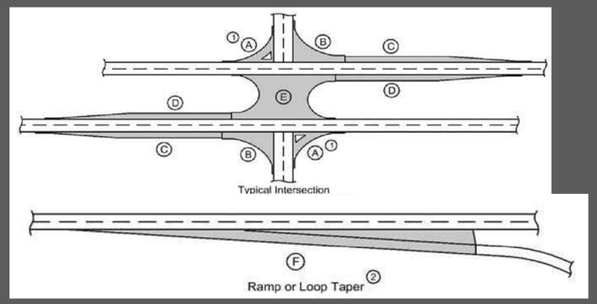
DRAWING NO.
C.2

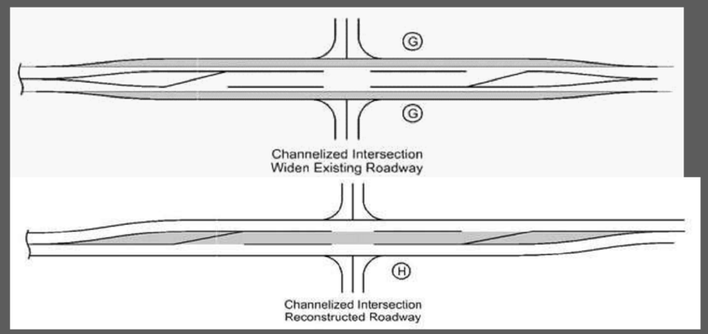
ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	ITEM DESCRIPTION
52	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA. Estimated quantity based on placement of perimeter and slope sediment control device along bridge berms. Verify specific locations with Engineer prior to beginning placement. All material shall be removed from the project once seeding areas have achieved 70% permanent vegetative growth.
53	2602-0000351	REMOVAL OF PERIMETER AND SLOPE OR DITCH CHECK SEDIMENT CONTROL DEVICE Same as previous item.

100_24
10/15/24

PCC PAVEMENT





(1) Does not include raised island area or curb. Refer to tabulation 112-4 for quantities.
(2) Refer to PV-410, PV-411, PV-412, and PV-414.
(3) Quantity includes Pavement Header.

Line No.	Road Identification	Direction Of Travel	Station From	Station To	Width (FT)	Length (FT)	Area (SY)	Area A(1) (SY) (3)	Area B (SY) (3)	Area C (SY) (3)	Area D (SY) (3)	Area E (SY) (3)	Area F(2) (SY) (3)	Area G (SY) (3)	Area H (SY) (3)	Area by Thickness - Thickness (IN)	Area by Thickness - Area (SY)	Polymer Grid (SY)	Modified Subbase (CY)	Granular Subbase (SY)	Remarks
1	East St	Both	99+59	100+70	Varies	111	500									8	500		96		Bridge approach pavement paid separately
2	East St	NB	102+42	102+79	Varies	37	52									8	52		12		Bridge approach pavement paid separately
3	East St	SB	102+43	102+80	Varies	37	71									8	71		16		Bridge approach pavement paid separately
															TOTALS:	8"	623		124		

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 ML-710.
(2) Refer to EW-501.
(3) Refer to EW-501 or EW-502.
*Predetermined for access point not constructed with this project.

Line No.	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
1	100+83.69	RT	Type C				58	18									PCC	80		7" PCC
																TOTALS:	PCC	80		7" PCC

104_05A
8/15/22

INTAKES AND UTILITY ACCESSES

*Not a bid item
**For SW-545

Line No.	Location	Type or Standard Road Plan*	Form Grade Elev.	Bottom Well Elev.	Extension Length** (FT)	Remarks
I-1	100+77.64, 15.50' RT	SW-501	1331.65	1327.51		Type Q Grate
I-2	100+77.64, 15.50' LT	SW-503	1331.65	1326.20		
I-3	100+31.70, 24.57' LT	SW-512, 24"	1329.98	1326.74		Inlet Elev. = 1329.98
MH-1	100+77.64, 33.49' LT	SW-401, 60"	1331.67	1325.99		
FES-1	101+45.25, 33.49' LT	DR-201, 24"				FL Elev. = 1326.15
	TOTALS:	SW-501	1			
		SW-503	1			
		SW-512, 24"	1			
		SW-401, 60"	1			
		DR-201, 24"	1			

104_05B
8/15/22

STORM SEWER

(1) Diameter or equivalent diameter
* Bid Item
** For SW-54
Design Length, Slope, and Flowlines are calculated from inside wall to inside wall along CL of pipe. An additional 2 ft length is added to each end of the Design Length to account for estimated length to center of structures.

Line Number	Intake / Utility Access No. From	Intake / Utility Access No. To	Class 'D'	Pipe Size (1) (IN)	Bid Length* (FT)	Design Length (FT)	Slope %	Connected Pipe Joint (DR-121)	Flow Line Inlet Elev.	Flow Line Outlet Elev.	Flow Line Other Elev.	Pipe Profile Sheet No.	Notes
P-1	I-1	I-2	2000	15"	31	27	1.15%		1328.01	1327.70			
P-2	I-3	I-2	2000	18"	47	44	1.00%		1327.24	1326.80			
P-3	I-2	MH-1	2000	24"	17	12	0.96%		1326.70	1326.59			
P-4		MH-1	2000	24"	7	4	1.59%		1326.66	1326.59			
P-5	MH-1	FES-1	2000	24"	68	65	0.52%		1326.49	1326.15			
			TOTALS:	15"	31								
				18"	47								
				24"	92								

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BROS-4702(609)--8J-14

REVISIONS

PROJECT INFO
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ENGINEER CFF | DRAWN BY JMT | CHECKED BY CFF

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

TABULATIONS

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DRAWING NO.
C.3

LONGITUDINAL SUBDRAIN SHOULDER

104_09A
12/8/22

*Not a bid item

Line No.	Road or Lane Identification	Station From	Station To	Side	Depth (IN) (D)	Subdrain Size (IN)	Length (FT)	Outlet Station	Outlet Type	Porous Backfill* (CY)	Remarks
1	East St	99+59.27	100+77.64	LT	30"	6"	118		DR-303	8.7	
2	East St	99+59.27	100+77.64	RT	30"	6"	118		DR-303	8.7	
3	East St	101+40.00	100+77.64	LT	30"	6"	62		DR-303	4.6	
4	East St	101+40.00	100+77.64	RT	30"	6"	62		DR-303	4.6	
					TOTALS:	6"	360		DR-303: 4	26.6	

SANITARY OR STORM SEWER ABANDONMENT OR REMOVAL

110_14
3/11/24

*Not a bid item

Line No.	Location Description	Sewer Type	Work Type	Diameter of Pipe	Length of Pipe (LF)	* Flowable Mortar or CLSM (CY)	Remarks
1	100+40, 25' LT to 100+68, 30' LT	Storm	Removal	15"	28		
TOTALS:					28		

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5

110_01
4/5/24

*Not a bid item

Line No.	Station From	Station To	Side	Pavement Type	Area (SY)	Saw Cut* (LF)	Remarks
1	99+59	101+47	Both	HMA, PCC	637	48	
2	100+75	100+93	RT	PCC	27	18	
3	102+24	102+79	Both	HMA	293	136	
				TOTALS:	957	202	

EXISTING SIGNS TO BE REMOVED

190_62
2/13/23

Line No.	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
1	R1-1	102+60	NB			1					
			TOTALS:			1					

BRIDGE APPROACH SECTION

Refer to the BR Series

112_06
2/22/24

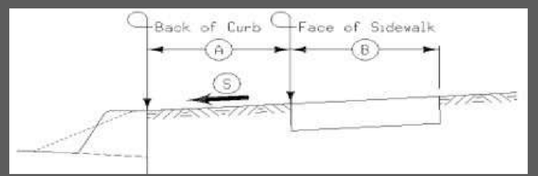
* Not a bid item

Line No.	Bridge Station	End	Skew Ahead Left (Degrees)	Skew Ahead Right (Degrees)	(T) Thickness (IN)	Pay Length (FT)	Non-Reinf. Area (SY)	Single-Reinf. Area (SY)	Double-Reinf. Area (SY)	SRP Approach	SRP Abutment Type	SRP Abutting Pavement	Perforated * 4" Subdrain (LF)	Subdrain * Outlet (STA)	Subdrain * Outlet Side	Porous * Backfill (CY)	Class 'A' * Crushed Stone Backfill (CY)	Modified * Subbase (TON)	Polymer * Grid (SY)	Special * Backfill (TON)	Remarks
1	101+85	South			12	70	103	69	69	BR-203	Moveable	PCC	31	100+78	LT			152	241		Outlet subdrain into intake
2	101+85	North			12	49	29	67	67	BR-203	Moveable	HMA	40	102+60	LT			103	163		Install subdrain at low point
					TOTALS:	119	132	136	136				71					255	404		

SIDEWALKS

See M I-220 and S Sheets

113.01A
8/15/22



Line No.	Road Identification	Station From	Station To	Side	A (FT)	B (FT)	S %	Sidewalk Thickness (IN)	Sidewalk Length (FT)	Sidewalk Width (FT)	Sidewalk Area (SY)	4" PCC Sidewalk (SY)	6" PCC Sidewalk (SY)	8" PCC Sidewalk (SY)	10" PCC Sidewalk (SY)	Detectable Warnings (SF)	Remarks
1	East St	100+47	100+55	RT				6	Varies	8	9		9			16	Refer to S-Sheets for compliance
2	East St	100+47	100+55	LT				6	Varies	8	23		23			16	Refer to S-Sheets for compliance
3	East St	102+64	102+73	LT				6	Varies	8	8		8			16	Refer to S-Sheets for compliance
												TOTALS:	40			48	

SIDEWALK REMOVAL

110_05
8/15/22

*Not a bid item

Line No.	Station From	Station To	Area (SY)	Saw Cut* (LF)	Remarks
1	100+47	100+55	12	8	
2	100+47	100+55	26	8	
3	102+64	102+73	7	8	
		TOTALS:	45	24	

REFERENCE LOCATION SIGNS AND DELINEATORS

Refer to SI-171, SI-172 and SI-173

190_25
2/10/23

Line No.	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
1	101+31.50	101+31.50	SW Bridge Corner																	1		
2	101+31.50	101+31.50	SE Bridge Corner																	1		
3	102+38.50	102+38.50	NW Bridge Corner																	1		
4	102+38.50	102+38.50	NE Bridge Corner																	1		
			TOTALS:																	4		

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REVISIONS

PROJECT INFO
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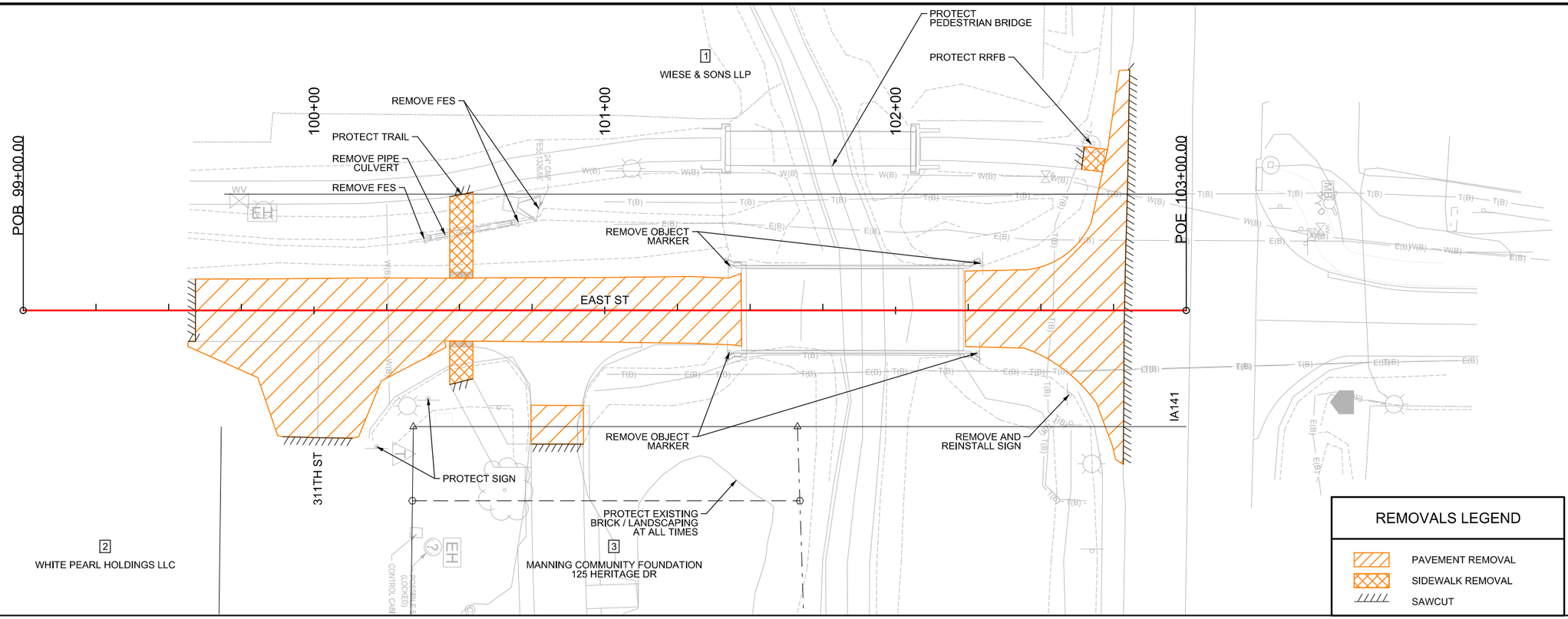
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BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

TABULATIONS

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DRAWING NO.
C.4



REMOVALS LEGEND

- PAVEMENT REMOVAL
- SIDEWALK REMOVAL
- SAWCUT

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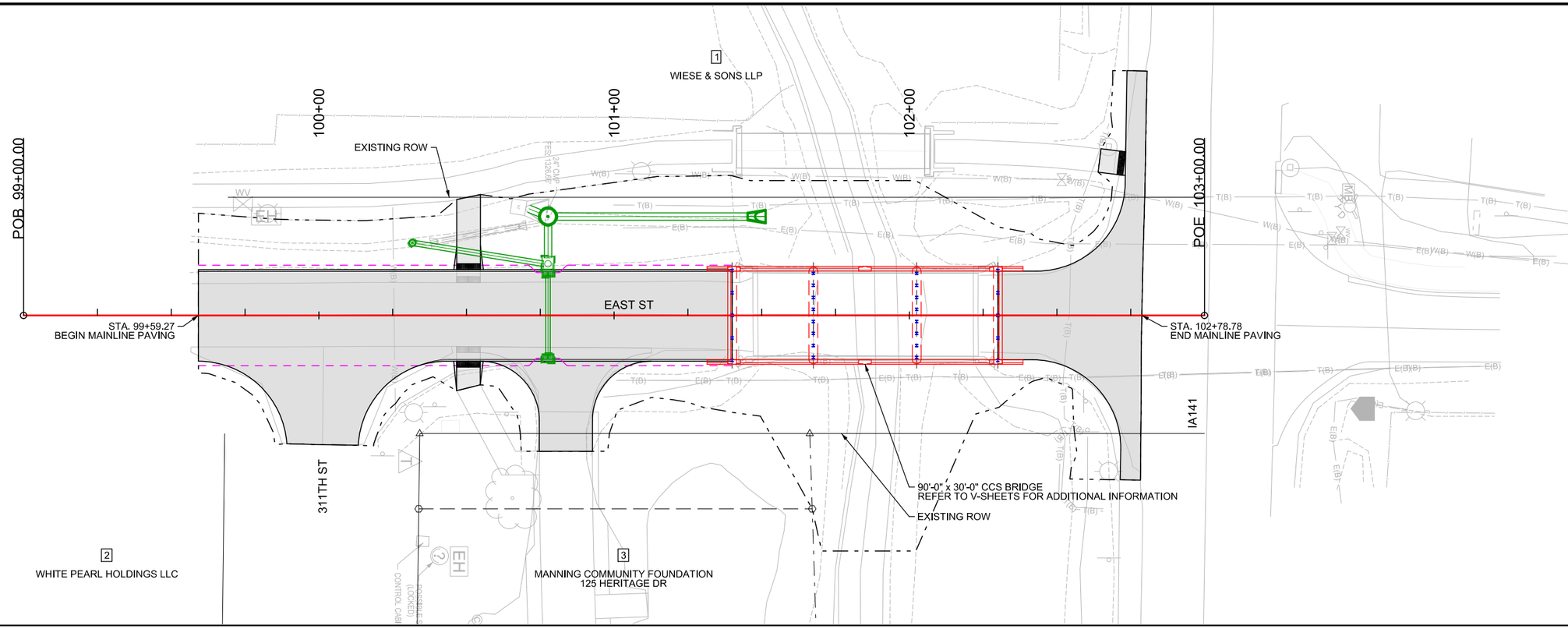
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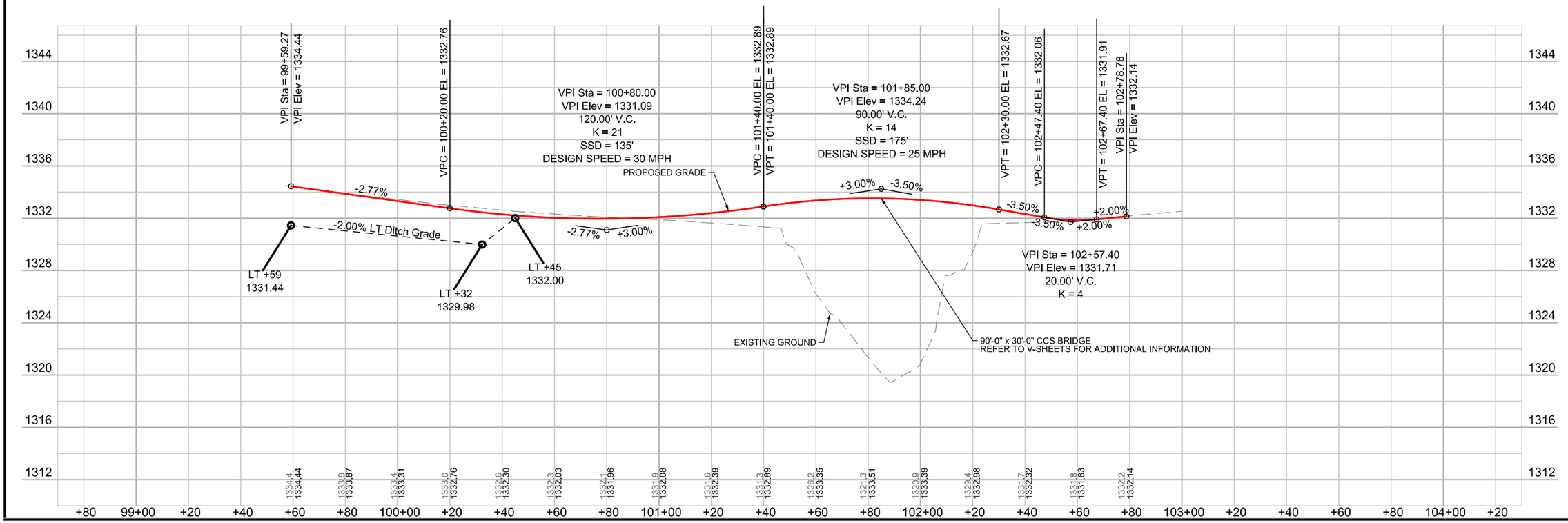
BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
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REMOVALS

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DRAWING NO.
CR.1





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BROS-4702(609)--8J-14

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REVISIONS

PROJECT INFO
2024006809

ENGINEER	DRAWN BY	CHECKED BY
CFF	JMT	CFF

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

PLAN AND PROFILE - EAST STREET

DRAWING NO.
D.1

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HORIZONTAL AND VERTICAL CONTROL

CP# BM#

POINT NAME	NORTHING	EASTING	ELEVATION	DESCRIPTION
300	7403528.58	17385567.73	1330.32	CP REBAR BPC
301	7403541.98	17385875.91	1334.57	CP REBAR BPC
302	7403650.19	17385394.95	1331.64	CP REBAR BPC
303	7403741.30	17385495.69	1328.86	CP / 1/2IN RBR BLUE MEC CAP
304	7403716.72	17385420.59	1325.97	CP / 1/2IN RBR BLUE MEC CAP
305	7403779.16	17385420.05	1329.10	CP / 1/2IN RBR BLUE MEC CAP
306	7403757.37	17385364.77	1329.07	CP / 1/2IN RBR BLUE MEC CAP
307	7403985.77	17385428.29	1332.76	CP / 1/2IN RBR BLUE MEC CAP
308	7403912.96	17385545.59	1328.53	CP / 1/2IN RBR BLUE MEC CAP
BM1	7403919.66	17385415.20	1334.59	BM / CTR HOLE IN A OF ALBERT ON FIRE HYDRANT

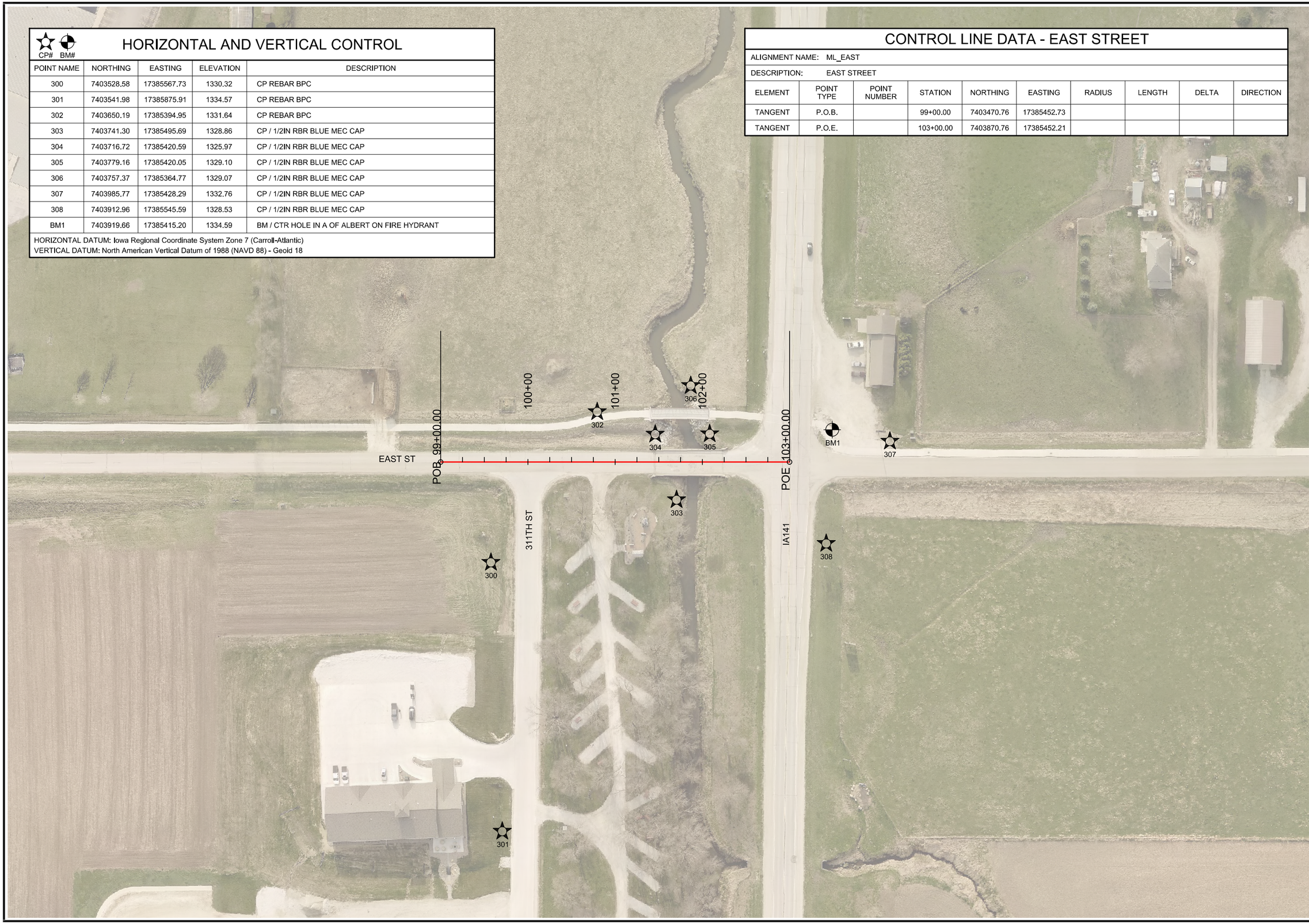
HORIZONTAL DATUM: Iowa Regional Coordinate System Zone 7 (Carroll-Atlantic)
VERTICAL DATUM: North American Vertical Datum of 1988 (NAVD 88) - Geoid 18

CONTROL LINE DATA - EAST STREET

ALIGNMENT NAME: ML_EAST

DESCRIPTION: EAST STREET

ELEMENT	POINT TYPE	POINT NUMBER	STATION	NORTHING	EASTING	RADIUS	LENGTH	DELTA	DIRECTION
TANGENT	P.O.B.		99+00.00	7403470.76	17385452.73				
TANGENT	P.O.E.		103+00.00	7403870.76	17385452.21				



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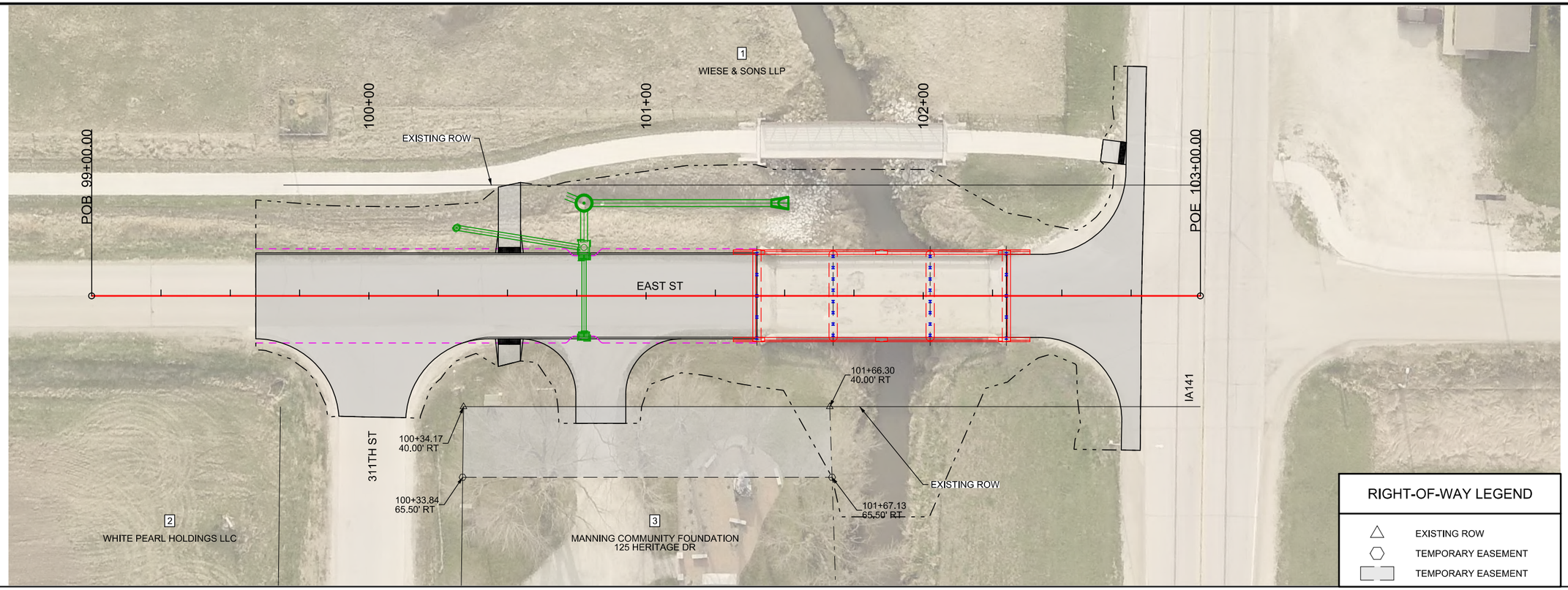
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BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

ALIGNMENTS, REFERENCE TIES, AND BENCH MARKS

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DRAWING NO.
G.1



RIGHT-OF-WAY LEGEND

- EXISTING ROW
- TEMPORARY EASEMENT
- TEMPORARY EASEMENT

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BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

RIGHT-OF-WAY

DRAWING NO.
H.1

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108_23A
8/15/22

TRAFFIC CONTROL PLAN

1.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 per 761 of the Iowa Administrative Code (IAC), Chapter 130.

2.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 items. Sign and barricade furnishing, erecting, removing, washing, and maintenance shall be considered incidental to traffic control and shall be required as directed by the ENGINEER.

3.This traffic control plan shows general staging, signing, and traffic control. Additional traffic control may be required for specific situations not shown in the staging plans. It is the CONTRACTOR's responsibility to determine and install all traffic control.

4.All traffic control devices shall be furnished, erected, maintained, cleaned, and removed by the CONTRACTOR. The proposed signing may be modified to meet field conditions, prevent obstructions, and to accommodate construction scheduling upon approval of the ENGINEER. Permanent traffic control signs that conflict with specific layouts shown on these plans are to be covered as directed by the ENGINEER. Damaged signs shall be replaced by the CONTRACTOR at no expense to the OWNER.

5.The CONTRACTOR shall erect all warning signs on steel or wooden posts. Portable mountings for warning signs may be used for temporary installations for 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 2 feet clear of the roadway.

6.The location for storage of materials and equipment by the CONTRACTOR during working and non-working hours shall be as approved by the OWNER at the Pre-Construction Meeting and the CONTRACTOR shall provide a written agreement with the property owner, if applicable.

7.It shall be the 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 always be so constructed as to cause the minimum obstruction and inconvenience to the public and to local residents.

8.The CONTRACTOR shall provide, prior to construction, the name and 24-hour phone number for the CONTRACTOR's responsible party in charge of traffic control. The project site must be patrolled a minimum of two (2) times each 24-hour period to check and reinstall, if necessary, traffic control devices. All extra standard traffic control, signs, barricades, cones, etc. that are required will be delivered and installed at the project site within four (4) hours of notification, including weekends and holidays.

9.Proposed changes in the traffic control plan, private property access, or alternate signing details to coincide with the schedule or operations for any variations shall be submitted in writing and reviewed with the ENGINEER at least 24 hours before changes are made in the field.

10.The CONTRACTOR shall be responsible for establishing and maintaining temporary access routes and detour routes. CONTRACTOR shall maintain access to all properties at all times.

11.The CONTRACTOR shall coordinate traffic control with other projects in the area.

12.The CONTRACTOR shall notify the ENGINEER and OWNER a minimum of seven (7) days prior to temporary road closures and changes in traffic patterns during construction.

13.Sidewalk closures shall include Type II or Type III barricade with warning lights, as needed based on the width, meeting the requirements of NCHRP report 350 along the entire width of the path. An additional ground level rail that is as maximum 2-inches off of the ground will be added to the Type II or Type III barricades per Public Right-of-Way Accessibility Guidelines (PROWAG), Section R205. Signage and temporary pedestrian access route through the construction area shall meet the requirements of PROWAG. The CONTRACTOR must provide 10 calendar days advance notification of pedestrian path closures to the Iowa Department of the Blind (Richard.Sorey@state.ia.us), The National Federation of the Blind of Iowa (afbiowa@questoffice.net), the City of Manning, and the ENGINEER.

14.The CONTRACTOR shall maintain at least one (1) access to all businesses, industries, adjacent farm fields, and residences during normal working hours by staging work accordingly. Coordinate construction at private property with the OWNER and the ENGINEER. The CONTRACTOR shall be responsible for maintaining access to individual properties during construction. The CONTRACTOR shall coordinate with area residents/property owners prior to changing access to adjacent properties. The project plans assume that vehicular access to adjacent properties is maintained at all times during construction. There may be residents who must access their property via vehicle, as they are unable to park elsewhere and walk to their property. The CONTRACTOR shall notify the ENGINEER a minimum of three (3) business days in advance for lane closure and shall receive approval before closing any lane to traffic. The CONTRACTOR shall notify the ENGINEER a minimum of seven (7) calendar days in advance for street closure and shall receive approval before closing any street to traffic.

108_26A
8/15/22

STAGING NOTES

GENERAL STAGING NOTES

1. Construction staging and traffic control plans shown in the J-Sheets are provided to show anticipated signing, maintenance of access, and traffic placement during construction. The Contractor may present alternate staging and traffic control plans for consideration by the Engineer, including revisions to construction sequencing and beginning/end locations for each stage.

2. The intent of the staging plan is to not limit the contractor but rather provide the appropriate traffic control needed throughout the duration of the project depending on where the contractor is working.

3. Short portions of the safety fence may be moved to allow temporary access during the working day hours. All safety fence shall be replaced and firmly secured at the end of each day. This work is incidental to the 'Traffic Control' bid item.

4. Coordinate all construction with utility companies. Existing utilities encountered during construction shall be protected and utility owner representatives shall be immediately notified.

5. The East St / 311th St intersection shall remain open until May 29, 2027. The respective intersection must be restored and open to normal traffic by August 13, 2027.

6. The school driveway along East St approximately 575 ft north of the East St / 10th St intersection shall remain open to traffic at all times.

7. The trail crossing in the southwest corner of the IA 141 / East St intersection shall remain open at all times except for when pavement tie-in work and trail ramp reconstruction occurs along IA141.

8. For pavement tie-in work along IA141, temporary traffic control shall be installed in accordance with Standard Road Plan TC-228 to shift eastbound traffic on IA141 onto Continuous Two-Way Left-Turn Lane (TWLTL) during construction in this area.

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BROS-4702(609)--8J-14

REVISIONS

PROJECT INFO
2024006809

ENGINEER CFF | DRAWN BY JMT | CHECKED BY CFF

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

TRAFFIC CONTROL PLAN AND STAGING

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DRAWING NO.
J.1

DETOUR ROUTE



W20-1 *

Ⓐ



W20-3 *

Ⓑ



M4-8, W20-2 *

Ⓒ



M4-8, M4-9R *

Ⓓ



M4-8, M4-9 *

Ⓔ



M4-8, M4-9L *

Ⓕ



R11-2 *

Ⓖ



R11-4 *

Ⓗ



TYPE III BARRICADE

Ⓘ

* REFER TO TABLE BELOW FOR SIGN SIZES

SIGN DESIGNATION	CONVENTIONAL ROAD
W20-1	48" x 48"
W20-3	48" x 48"
W20-2	48" x 48"
M4-8	24" x 12"
M4-9R	30" x 24"
M4-9	30" x 24"
M4-9L	30" x 24"
R11-2	48" x 30"
R11-4	60" x 30"

EAST ST

IA141

311TH ST

WORK AREA

DETOUR ROUTE

10TH ST

CENTER ST

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BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

TRAFFIC CONTROL PLAN AND STAGING
DETOUR ROUTE

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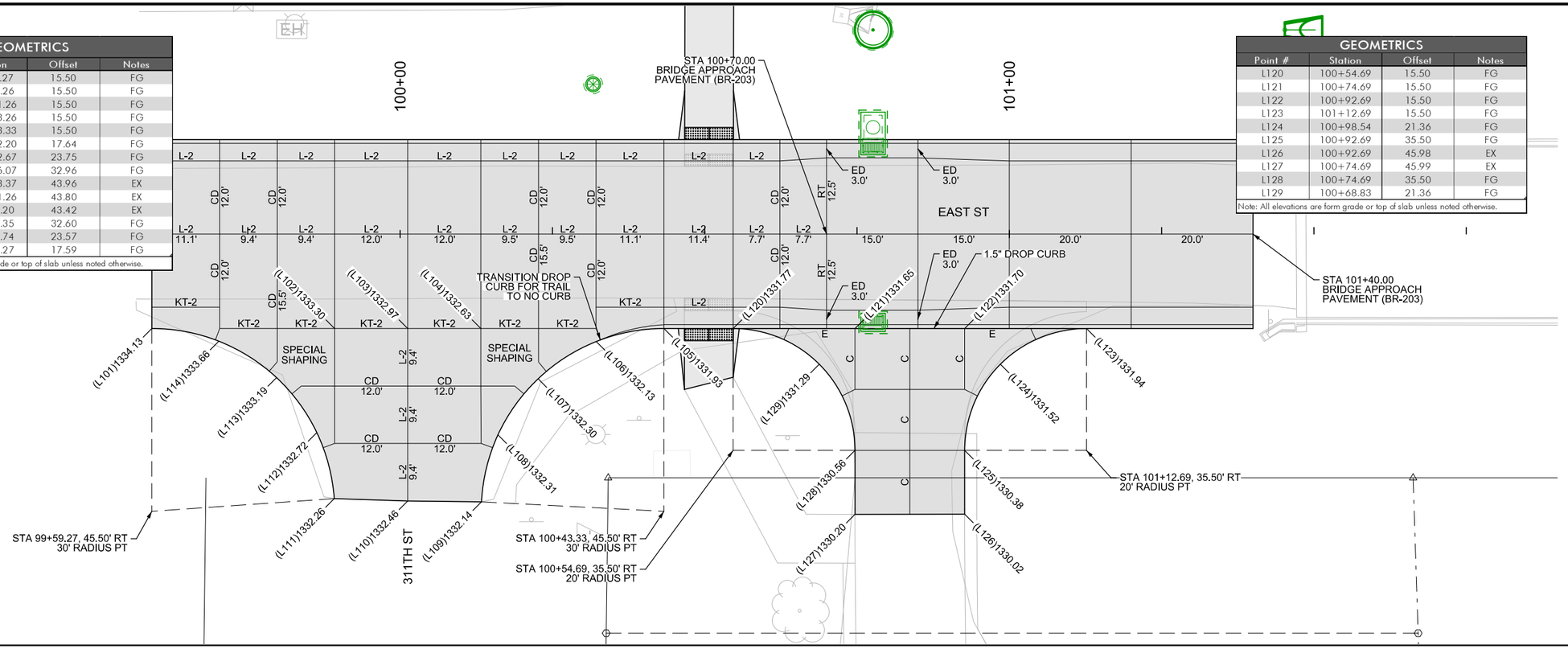
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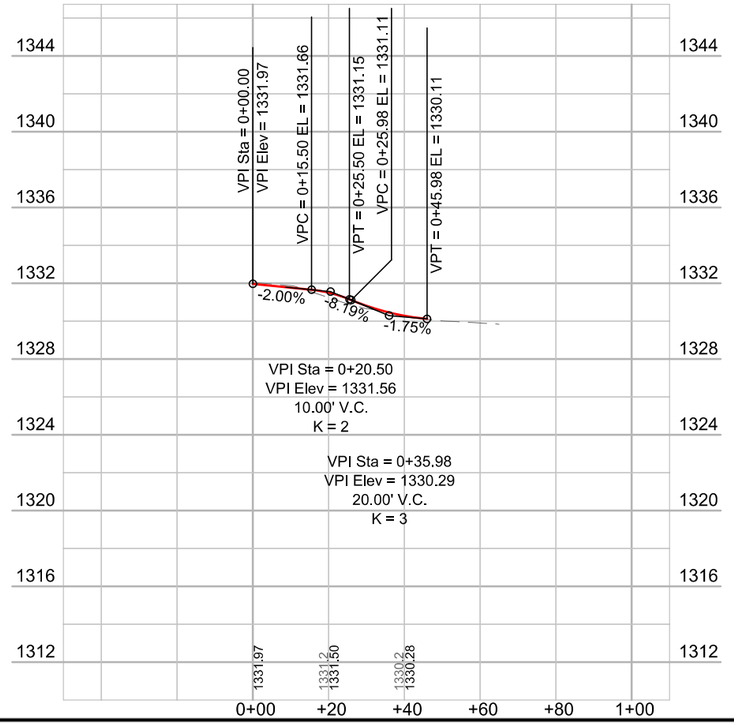
GEOMETRICS			
Point #	Station	Offset	Notes
L101	99+59.27	15.50	FG
L102	99+89.26	15.50	FG
L103	100+01.26	15.50	FG
L104	100+13.26	15.50	FG
L105	100+43.33	15.50	FG
L106	100+32.20	17.64	FG
L107	100+22.67	23.75	FG
L108	100+16.07	32.96	FG
L109	100+13.37	43.96	EX
L110	100+01.26	43.80	EX
L111	99+89.20	43.42	EX
L112	99+86.35	32.60	FG
L113	99+79.74	23.57	FG
L114	99+70.27	17.59	FG

Note: All elevations are form grade or top of slab unless noted otherwise.

GEOMETRICS			
Point #	Station	Offset	Notes
L120	100+54.69	15.50	FG
L121	100+74.69	15.50	FG
L122	100+92.69	15.50	FG
L123	101+12.69	15.50	FG
L124	100+98.54	21.36	FG
L125	100+92.69	35.50	FG
L126	100+92.69	45.98	EX
L127	100+74.69	45.99	EX
L128	100+74.69	35.50	FG
L129	100+68.83	21.36	FG

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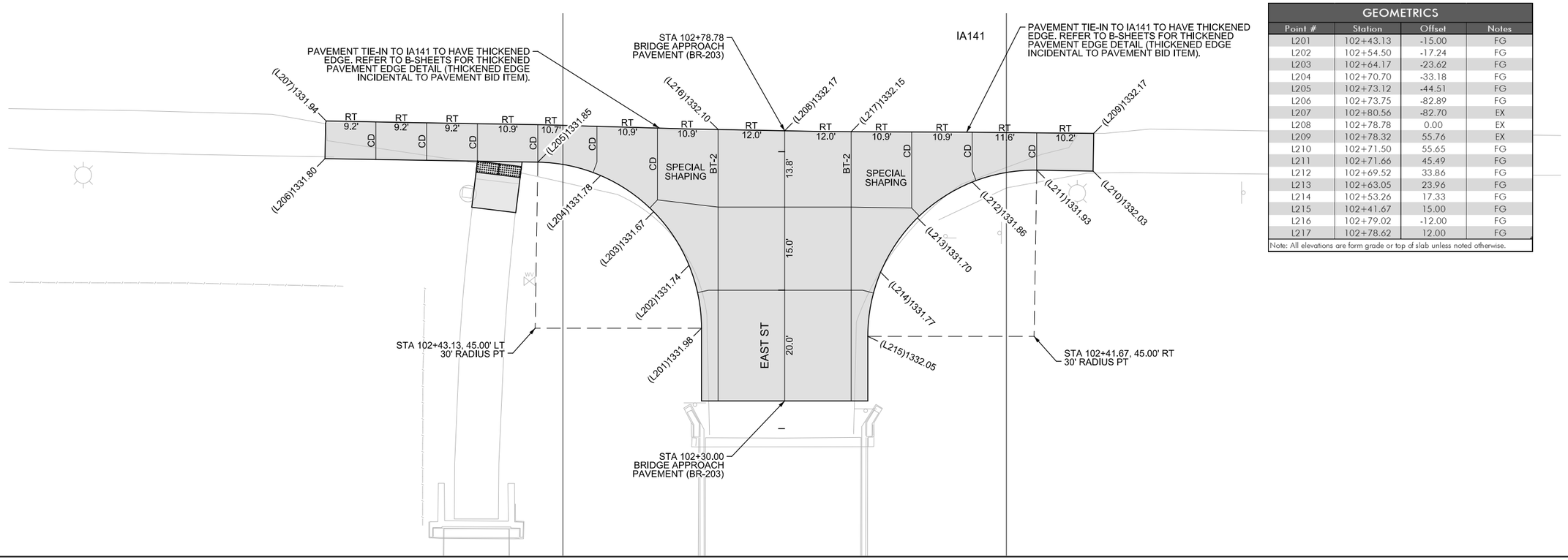
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BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

GEOMETRICS, STAKING, AND JOINTING

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DRAWING NO.
L.1



GEOMETRICS			
Point #	Station	Offset	Notes
L201	102+43.13	-15.00	FG
L202	102+54.50	-17.24	FG
L203	102+64.17	-23.62	FG
L204	102+70.70	-33.18	FG
L205	102+73.12	-44.51	FG
L206	102+73.75	-82.89	FG
L207	102+80.56	-82.70	EX
L208	102+78.78	0.00	EX
L209	102+78.32	55.76	EX
L210	102+71.50	55.65	FG
L211	102+71.66	45.49	FG
L212	102+69.52	33.86	FG
L213	102+63.05	23.96	FG
L214	102+53.26	17.33	FG
L215	102+41.67	15.00	FG
L216	102+79.02	-12.00	FG
L217	102+78.62	12.00	FG

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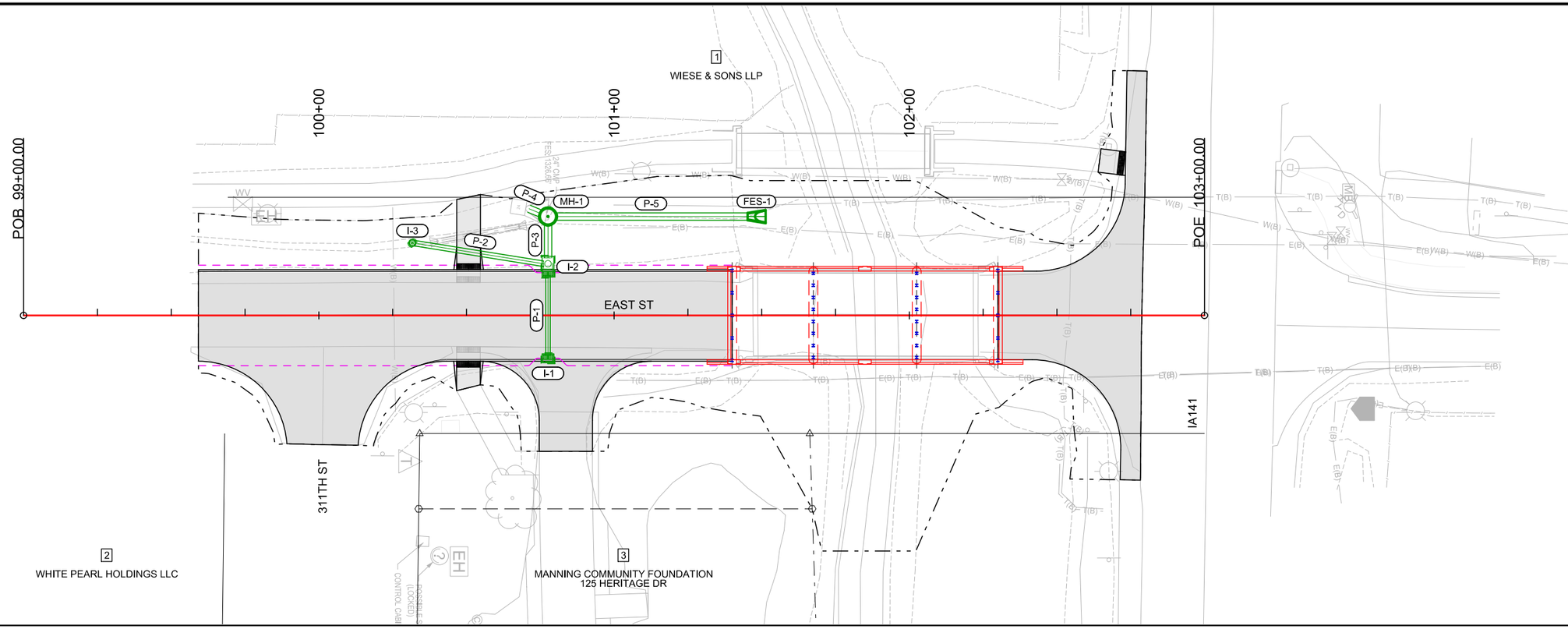
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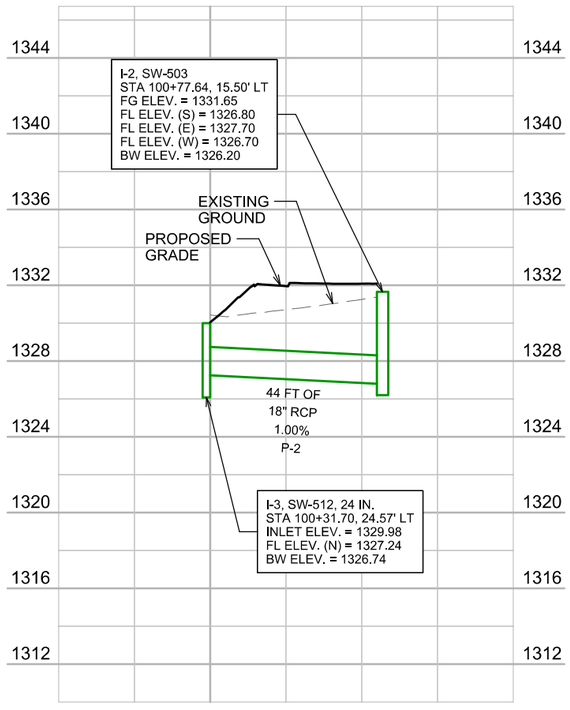
BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

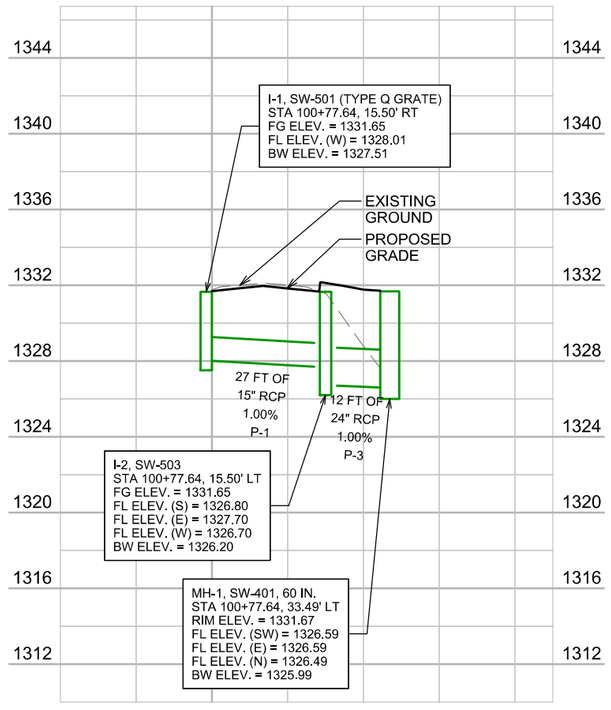
GEOMETRICS, STAKING, AND JOINTING

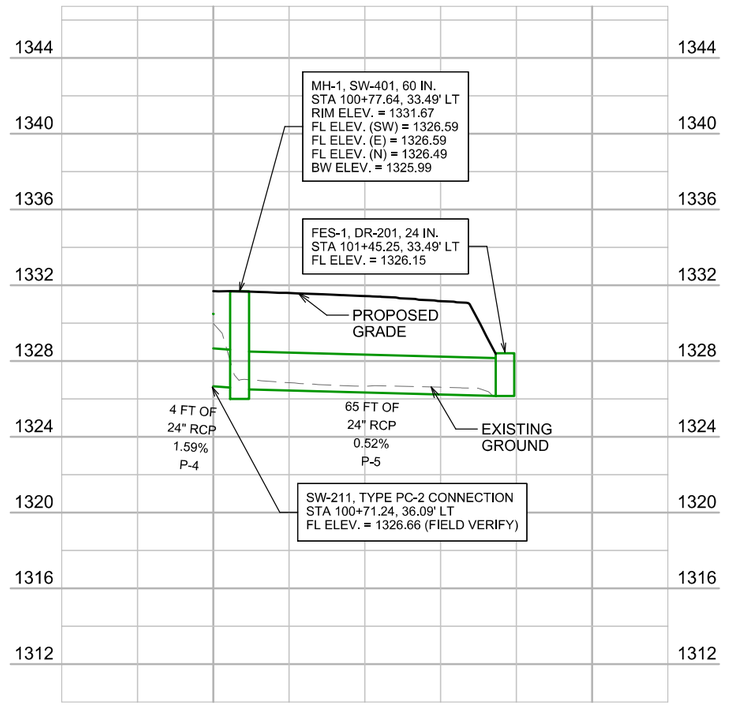
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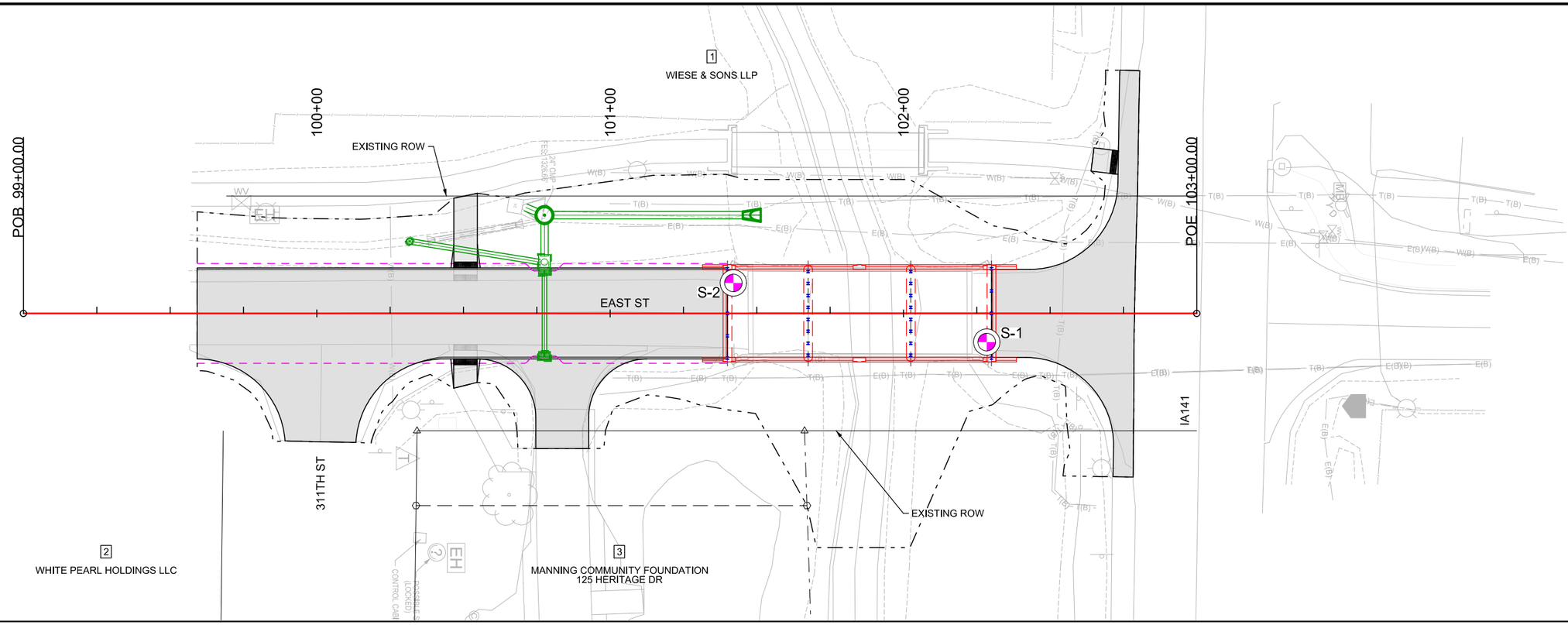
ENGINEER	DRAWN BY	CHECKED BY
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BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

STORM SEWER PLAN AND PROFILE

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BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

SOIL BORINGS LOCATION MAP

DRAWING NO.
Q.1

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LOG OF EXPLORATORY BORING

Sheet 1 of 1

Job Number: G7673
Project: East Street Bridge Replacement
Date Started: 5/6/25
Date Completed: 5/6/25

Boring No.: **S-1**
Boring Location: Manning, IA
Drill Type: Hollow Stem
Ground Elev.: 100.1

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

Depth in Feet	SOIL DESCRIPTION	USCS	Blow Counts SPT (N) Blows/Foot
	4-Inch Asphalt Layer		2-4-4 N= 8
	STIFF SILTY CLAY, Dark Brown, Fill		3-3-3 N= 6
10	STIFF SILTY CLAY, Medium Gray	CL	2-3-3 N= 6
15	(Light Gray, Oxidized)		0-2-3 N= 5
20	SILTY SAND, Light Gray (Wood)	SM	0-1-1 N= 2
25	CLAYEY SAND, Light Gray and Brown	SC	8-8-11 N= 19
	FIRM GLACIAL CLAY, Dark Gray	CL	3-4-6 N= 10
35	VERY FIRM GLACIAL CLAY, Dark Gray	CL	4-10-10 N= 20
40			6-9-11 N= 20
45	GLACIAL MATERIAL, Dark Gray	CL	12-15-20 N= 35
50			9-16-19 N= 35
55			6-15-16 N= 31
60			6-13-16 N= 29
65			8-15-19 N= 34
70			10-19-20 N= 39
75			22-26-50 N= 76
80	(Yellow Brown and Gray)		13-20-26 N= 46
	END OF BORING AT 80 FEET FREE WATER WAS ENCOUNTERED AT 23 FEET AT TIME OF DRILLING		

Remaining columns: Moisture Content, % | Dry Density (PCF) | % Saturation | Hand Penetrometer (TSF) | Unconfined Comp. Strength (TSF) | Liquid Limit % | Plastic Limit % | Plasticity Index % | Cone Penetrometer (Blows/ 1-3/4")

LOG OF BORING G7673.GPJ CERTIFIED TESTING.GDT 5/8/25

LOG OF EXPLORATORY BORING

Sheet 1 of 1

Job Number: G7673
Project: East Street Bridge Replacement
Date Started: 5/5/25
Date Completed: 5/5/25

Boring No.: **S-2**
Boring Location: Manning, IA
Drill Type: Hollow Stem
Ground Elev.: 99.6

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

Depth in Feet	SOIL DESCRIPTION	USCS	Blow Counts SPT (N) Blows/Foot
	4-Inch Asphalt Layer		2-2-3 N= 5
	STIFF SILTY CLAY, Dark Brown, Fill		4-3-3 N= 6
10	STIFF SILTY CLAY, Medium Brown	CL	2-3-3 N= 6
15	(Light Gray)		1-2-3 N= 5
20	(Sand Lense)		1-2-2 N= 4
25	FIRM GLACIAL CLAY, Dark Gray	CL	4-4-5 N= 9
			4-7-7 N= 14
35	VERY FIRM GLACIAL CLAY, Dark Gray	CL	6-9-10 N= 19
40			6-10-19 N= 29
45			6-12-13 N= 25
50	(Medium Gray)		7-10-18 N= 28
55	GLACIAL MATERIAL, Dark Gray	CL	8-15-19 N= 34
60			10-15-21 N= 36
65			7-15-18 N= 33
70			12-20-21 N= 41
75	(Yellow Brown and Gray)		14-30-36 N= 66
80	END OF BORING AT 80 FEET FREE WATER WAS ENCOUNTERED AT 22 FEET AT TIME OF DRILLING		13-19-21 N= 40

Remaining columns: Moisture Content, % | Dry Density (PCF) | % Saturation | Hand Penetrometer (TSF) | Unconfined Comp. Strength (TSF) | Liquid Limit % | Plastic Limit % | Plasticity Index % | Cone Penetrometer (Blows/ 1-3/4")

LOG OF BORING G7673.GPJ CERTIFIED TESTING.GDT 5/8/25

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REVISIONS

PROJECT INFO
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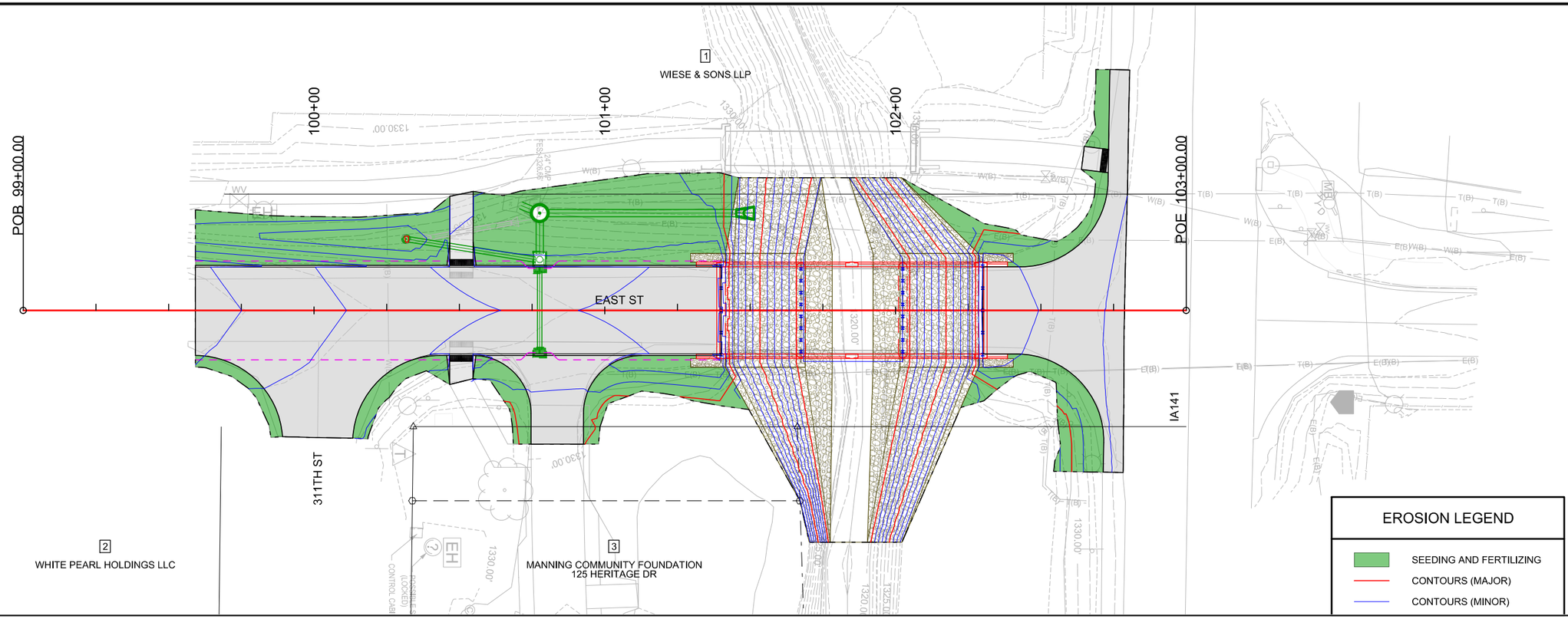
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BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

SOIL BORINGS

DRAWING NO.
Q.2

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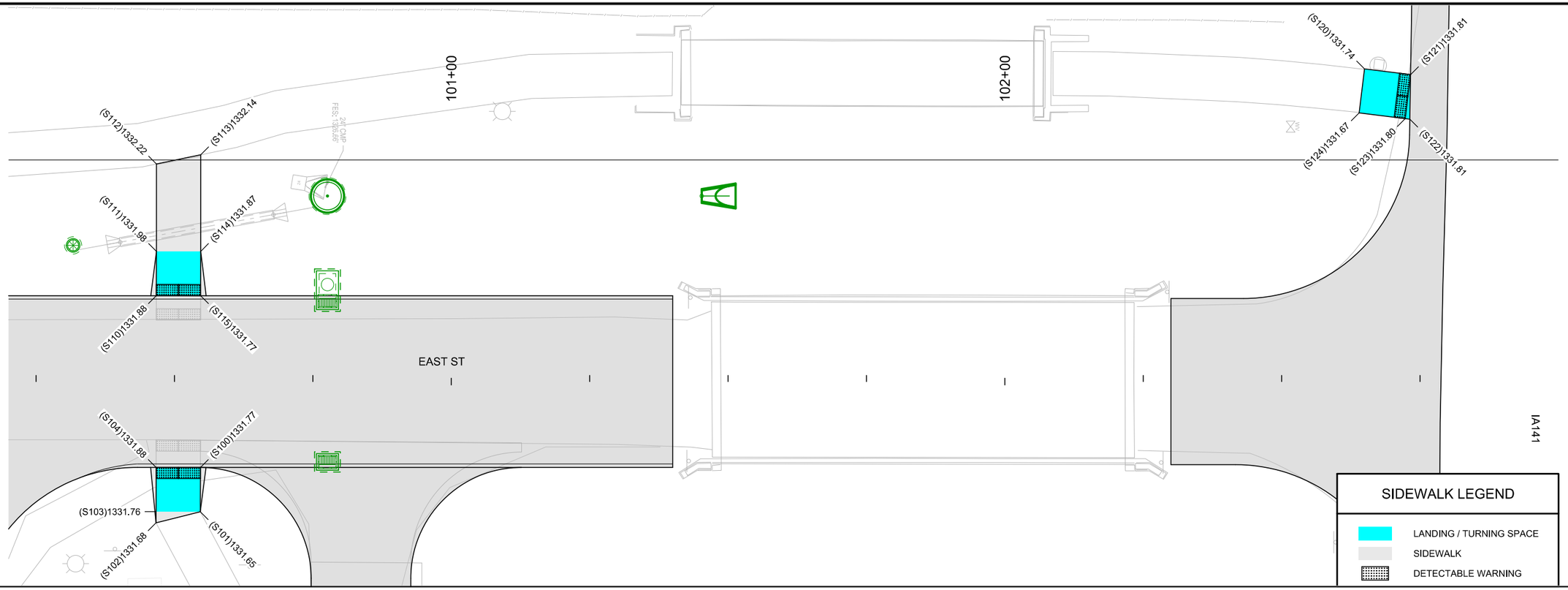
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BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

EROSION CONTROL PLAN

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DRAWING NO.
RR.1



SIDEWALK COMPLIANCE

*Does not include curb

FOR INFORMATION ONLY: POINT	STATION	OFFSET	ELEVATION	POINT TO POINT		SIDEWALK DESIGNATION	PCC SIDEWALK*	DISTANCE* FT	ELEV. DIFF. FT	SLOPE %	Low	High	ACCEPTABLE CONSTRUCTION RANGE	STAKING REQ'D?	MEASURED SLOPE %	INITIALS	REMARKS
S100	100+54.69	15.50	1331.77	S100	S101	Landing/Turning Space	6	8.00	0.12	1.5%	0.1%	2.0%	0.1% to 2.0%				
S101	100+54.68	23.50	1331.65	S100	S104	Crosswalk Cross Slope - No Yield Conditions	6	8.00	0.11	1.4%	0.0%	5.0%	0.0% to 5.0%				
S102	100+46.67	25.51	1331.68	S101	S102	Sidewalk Cross Slope	6	8.25	0.03	0.4%	0.5%	2.0%	0.5% to 2.0%				
S103	100+46.68	23.49	1331.76	S101	S103	Landing/Turning Space	6	8.00	0.11	1.4%	0.1%	2.0%	0.1% to 2.0%				
S104	100+46.69	15.50	1331.88	S102	S103	Sidewalk Running Slope	6	2.02	0.08	4.0%	0.5%	5.0%	0.5% to 5.0%				
				S103	S104	Landing/Turning Space	6	8.00	0.12	1.5%	0.1%	2.0%	0.1% to 2.0%				
S110	100+46.73	-15.50	1331.88	S110	S111	Landing/Turning Space	6	8.00	0.10	1.2%	0.1%	2.0%	0.1% to 2.0%				
S111	100+46.74	-23.50	1331.98	S110	S115	Crosswalk Cross Slope - No Yield Conditions	6	8.00	0.11	1.4%	0.0%	5.0%	0.0% to 5.0%				
S112	100+46.76	-39.26	1332.22	S111	S112	Sidewalk Running Slope	6	15.77	0.24	1.5%	0.5%	5.0%	0.5% to 5.0%				
S113	100+54.76	-40.93	1332.14	S111	S114	Landing/Turning Space	6	8.00	0.11	1.4%	0.1%	2.0%	0.1% to 2.0%				
S114	100+54.74	-23.49	1331.87	S112	S113	Match Existing Cross Slope	6	8.17	0.08	1.0%	1.0%	1.0%	Match Existing				
S115	100+54.73	-15.50	1331.77	S113	S114	Sidewalk Running Slope	6	17.44	0.27	1.5%	0.5%	5.0%	0.5% to 5.0%				
				S114	S115	Landing/Turning Space	6	8.00	0.10	1.2%	0.1%	2.0%	0.1% to 2.0%				
S120	102+64.98	-56.43	1331.74	S120	S121	Landing/Turning Space	6	8.39	0.07	0.8%	0.1%	2.0%	0.1% to 2.0%				
S121	102+73.30	-55.41	1331.81	S120	S124	Match Existing Cross Slope	6	8.00	0.07	0.9%	0.9%	0.9%	Match Existing				
S122	102+73.17	-47.36	1331.81	S121	S122	Crosswalk Cross Slope - No Yield Conditions	6	8.05	0.00	0.0%	0.0%	5.0%	0.0% to 5.0%				
S123	102+72.32	-47.47	1331.80	S121	S123	Landing/Turning Space	6	8.00	0.01	0.1%	0.1%	2.0%	0.1% to 2.0%				
S124	102+64.00	-48.49	1331.67	S122	S123	Landing/Turning Space	6	0.86	0.01	1.2%	0.1%	2.0%	0.1% to 2.0%				
				S123	S124	Landing/Turning Space	6	8.39	0.13	1.5%	0.1%	2.0%	0.1% to 2.0%				

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REVISIONS

PROJECT INFO
2024006809

ENGINEER	DRAWN BY	CHECKED BY
CFF	JMT	CFF

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

SIDEWALK PLAN AND TABULATIONS

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DRAWING NO.
S.1

Specifications:

Design:
AASHTO LRFD, Series of 2004 with Interim 2005.

Construction:
Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, current revision, plus applicable General Supplemental Specifications, DevelopmentalSpecifications, Supplemental Specifications and Special Provisions shall apply to construction work on this project.

Design Stresses:

Design stresses for the following materials are in accordance with the AASHTO LRFD Bridge Design Specifications, 3rd Ed., Series of 2004.
Reinforcing steel in accordance with LRFD AASHTO Section 5, Grade 60.
Concrete in accordance with LRFD AASHTO Section 5, f'c = 3,500 psi,
Structural steel in accordance with LRFD AASHTO Section 6. ASTM A709 Grade 36 or Grade 50 (AASHTO M270 Grade 36 or Grade 50).
n = 9 for tension steel
2n = 18 for compression steel
HL-93 live load plus 20 lbs. per sq. ft. for future wearing surface.
End span length is used to calculate equivalent width in live load distribution.
Six foot of approach slab dead & live load included in abutment loads. Control of cracking by distribution of reinforcement for slab design based on pre-2005 LRFD Interims.

General Notes:

It is the intent of this design to construct a new 90'-0 x 30'-0" continuous concrete slab bridge on East Street over Willow Creek.

This design is for the replacement of the existing 77' x 28' continuous concrete slab bridge, FHWA No. 093890.

The lump sum bid item "Removal of Existing Bridge" shall include removal of the existing 77' x 28' continuous concrete slab 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 $\frac{5}{8}$ inch diameter bar). English reinforcing steel received in the field may display the following "Bar Designation". The "Bar Designation" is the stamped impression on the reinforcing bars, and is equivalent to the bar diameter in millimeters.

English Size	3	4	5	6	7	8	9	10	11
Bar Designation	10	13	16	19	22	25	29	32	36

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 floor slab as shown includes $\frac{1}{2}$" integral wearing surface.

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 31,000 parts per million (ppm). Analysis of total chromium on this sample was 390,000 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 City's testing and analysis for any purpose other than as an indication of the existence of these two toxic constituents.

South Abutment Pile Driving Notes:

The contract length of 55 feet for the south abutment piles is based on a cohesive soil classification, a total factored axial load per pile (Pu) of 85 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 footing.

The required nominal axial bearing resistance for south abutment piles is 77 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.

Pier 1 Pile Driving Notes:

The contract length of 60 feet for the Pier 1 piles is based on a cohesive soil classification, a total factored axial load per pile (Pu) of 97 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 encasement. Design scour (200-year) was assumed to affect the upper 4 feet of embedded pile length and cause 4 kips of driving resistance.

The required nominal axial bearing resistance for Pier 1 piles is 90 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.

Pier 2 Pile Driving Notes:

The contract length of 60 feet for the Pier 2 piles is based on a cohesive soil classification, a total factored axial load per pile (Pu) of 97 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 encasement. Design scour (200-year) was assumed to affect the upper 4 feet of embedded pile length and cause 4 kips of driving resistance.

The required nominal axial bearing resistance for Pier 2 piles is 90 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.

North Abutment Pile Driving Notes:

The contract length of 50 feet for the north abutment piles is based on a cohesive soil classification, a total factored axial load per pile (Pu) of 85 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 footing.

The required nominal axial bearing resistance for north abutment piles is 77 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.

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	Falsework	(609)_Manning_Falsework.pdf	Yes
2	Steel Handrail	(609)_Manning_Steel_Handrail.pdf	No
3	Deck Drains	(609)_Manning_Deck_Drains.pdf	No
No.	Calculation Description	Calculation File Name Convention For Submittal	Certified by Iowa P.E. (Yes/No)
1	Falsework Calculations	(609)_Manning_FalseworkCalculations.pdf	Yes

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.

Bridge Deck Dimension Table

No.	Item	Unit	Quantity
1	Deck Length	L.F.	90.83
2	Minimum Deck Width	L.F.	33.17
3	Maximum Deck Width	L.F.	33.17
4	Deck Area	S.F.	3,013

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.

English Standard Bridge Plans

Standard	Issued	Revised
J30-01-06	11-06	09-20
J30-21-06	11-06	09-20
J30-23-06	11-06	09-20
J30-24-06	11-06	09-20
J30-39-06	11-06	09-20
J30-45-06	11-06	09-20
J30-46-06	11-06	09-20
J30-47-06	12-08	09-20
P10L	01-09	06-25

Traffic Control Plan

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

Design For 0 Degree
90'-0" x 30'-0" Continuous Concrete Slab Bridge
27'-6" End Spans 35'-0" Interior Span
General Notes
STA. 101+85.00 (East St.) Turn-in Date: Aug. 2026
Manning, Iowa

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PROJECT NUMBER
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REVISIONS

PROJECT INFO
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ENGINEER	DRAWN BY	CHECKED BY
CWM	JLK	CWM

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

GENERAL NOTES

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DRAWING NO.
V.1

Summary of Concrete Quantities

Location	Structural Concrete	Fiber Reinf. Struct. Conc.
South Abutment Footing	11.1	———
North Abutment Footing	11.1	———
Superstructure (Including Abutment Wings)	181.6	———
Light Pole Base (4 Bases)	3.9	———
Total (Cu. Yds.)	207.7	———
** For Information Only, Not Included in Bid Item **		
Standard Traffic Rail Section (0.083 Cu. Yds. / Ft.)	13.3	———
Traffic Rail End Section (4 @ 0.49 Cu. Yds.)	2.0	———
Traffic Rail Pilaster (6 @ 0.81 Cu. Yds.)	4.9	———

Summary of Reinforcing Steel

Location	Non-Coated Reinforcing Steel	Stainless Steel Reinforcing Steel	Epoxy Coated Reinforcing Steel
South Abutment Footing	51	———	1,507
North Abutment Footing	51	———	1,507
Superstructure (With Monolithic Pier Cap)	———	———	43,014
Light Pole Base (4 Bases)	———	———	920
Standard Traffic Rail Section (Including Pilasters)	———	———	4,708
Traffic Rail End Section (4 End Sections)	———	———	649
Total (Lbs.)	102	———	52,305

Summary of Excavation

Location	Class 20 Excavation	Class 21 Excavation
South Abutment	41.2	———
North Abutment	41.2	———
Total (Cu. Yds.)	82.4	———

Summary of Foundations

Location	Substructure Type	Foundation Type	Number	Length (Lin. Ft.)	Total (Lin. Ft.)
South Abutment	Integral Abutment	HP10x42	5	55	275
North Abutment	Integral Abutment	HP10x42	5	50	250
Pier No. 1	P10L Type 3	HP10x42	8	60	480
Pier No. 2	P10L Type 3	HP10x42	8	60	480

Design For 0 Degree

90'-0" x 30'-0" Continuous Concrete Slab Bridge

27'-6" End Spans 35'-0" Interior Span

Summary Quantities

STA. 101+85.00 (East St.) Turn-in Date: Aug. 2026

Manning, Iowa

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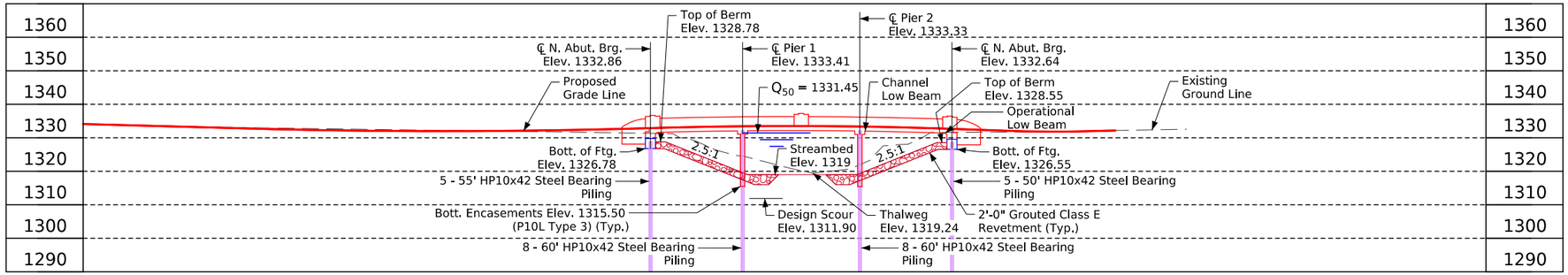
BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

SUMMARY QUANTITIES

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DRAWING NO.
V.2

Control Point: BM1, BM / CTR HOLE IN A OF ALBERT ON FIRE HYDRANT, Elev. 1334.59, N.7403919.66, E. 17385415.20



Longitudinal Section Along ℄ Approach Roadway

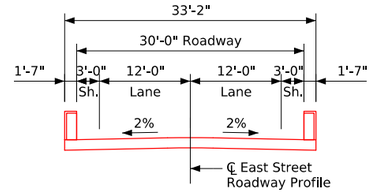
VPI Sta. = 101+85.00
VPI Elev. = 1334.24
VC = 90'

-1.51 % 3.00 % -3.50 % 2.00 %

VPI Sta. = 101+00.00
VPI Elev. = 1331.69
VC = 80'

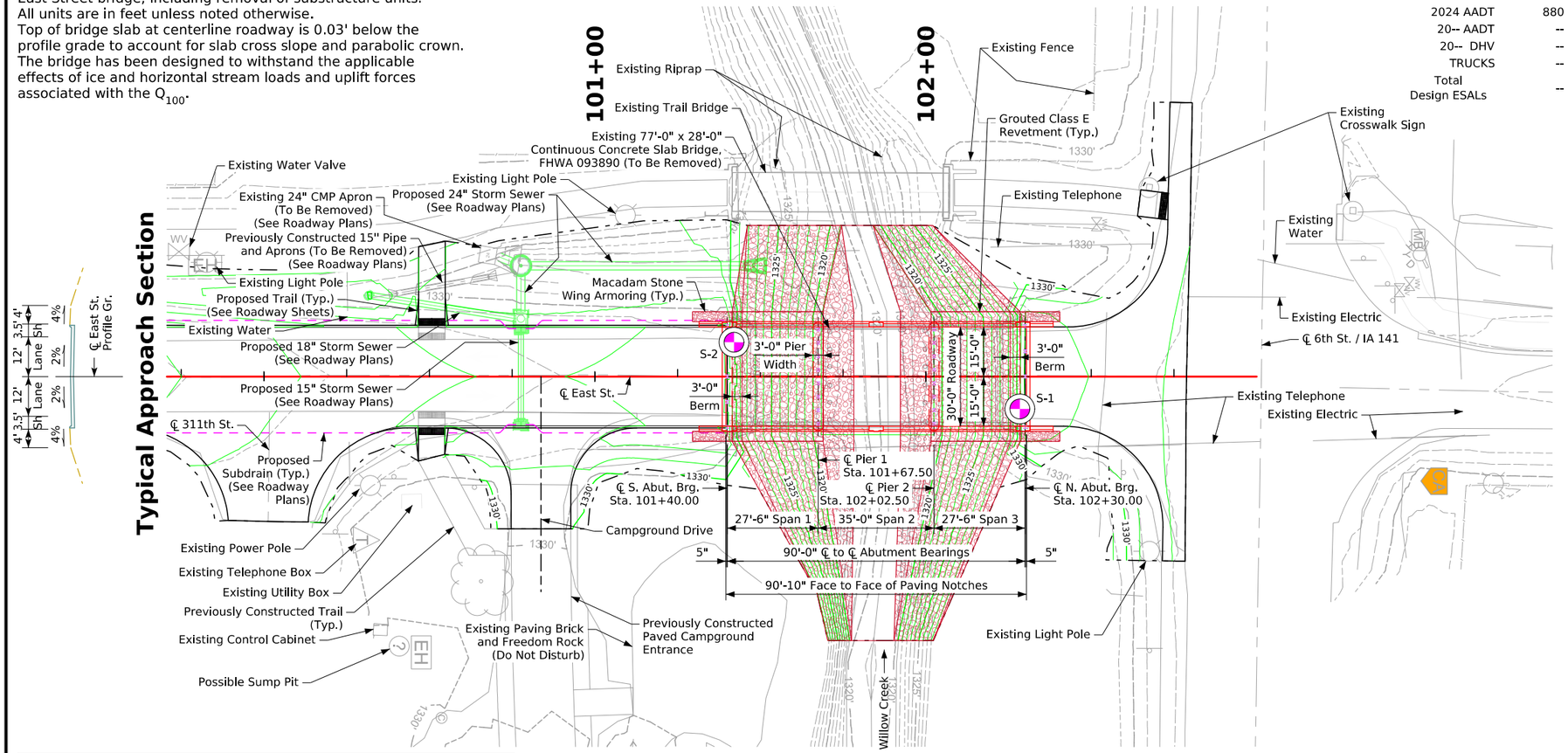
VPI Sta. = 102+57.40
VPI Elev. = 1331.71
VC = 20'

Proposed Profile Grade East Street



Typical Bridge Section

Notes:
This design is for the replacement of the existing 77' x 28' Continuous Concrete Slab Bridge, FHWA No. 093890.
Work under this design shall include removal of East Street bridge, including removal of substructure units.
All units are in feet unless noted otherwise.
Top of bridge slab at centerline roadway is 0.03' below the profile grade to account for slab cross slope and parabolic crown.
The bridge has been designed to withstand the applicable effects of ice and horizontal stream loads and uplift forces associated with the Q_{100}.



Typical Approach Section

Traffic Estimate

2024 AADT	880 V.P.D.
20-- AADT	-- V.P.D.
20-- DHV	-- V.P.H.
TRUCKS	-- %
Total Design ESALs	--

Hydraulic Data

Drainage Area = 10.32 Sq. Mi.
Stream Slope (HGL) = 17.30 ft./Mi.

Operational Low Beam = 1331.05
Channel Low Beam = 1331.65

Q_{50} = 2,450 cfs
Stage = 1331.45
Operational Freeboard = N/A
Avg. Bridge Velocity = 5.30 fps

Q_{100} = 2,932 cfs
Stage = 1332.23
Operational Freeboard = N/A
Backwater = 1.09 ft.
Avg. Bridge Velocity = 5.50 fps

Q_{200} = 3,150 cfs
Stage = 1332.54
Calculated Design Scour = 1311.90

Q_{500} = 3,600 cfs
Stage = 1332.96
Avg. Bridge Velocity = 5.73 fps
Calculated Check Scour = 1311.80

Roadway Overtop 1332.37
Sta. 102+30

Utilities Note:

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

General Utility Symbols:

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

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.

Chad W. Meyer — 09-15-2025
Signature — Date

Chad W. Meyer
Printed or Typed Name

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: Sheet V.3 Hydraulic Data

LICENSED PROFESSIONAL ENGINEER — Chad W. Meyer 17394 — IOWA

Situation Plan

Location

East Street over Willow Creek
In City of Manning
T-82N R-36W
Section 20/21
Ewoldt Township
Carroll County
FHWA No. 093890
Latitude 41.906211°
Longitude -95.054107°

Design For 0 Degree
90'-0" x 30'-0" Continuous Concrete Slab Bridge
27'-6" End Spans — 35'-0" Interior Span
Situation Plan
STA. 101+85.00 (East St.) — Turn-in Date: Aug. 2026
Manning, Iowa

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Carroll, IA 51401
Main 712.220.8121
Ankeny,IA | Carroll,IA | Clive,IA
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Fort Dodge,IA | Sioux City,IA
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PROJECT NUMBER
BROS-4702(609)--8J-14

REVISIONS

PROJECT INFO
2024006809

ENGINEER	DRAWN BY	CHECKED BY
CWM	JLK	CWM

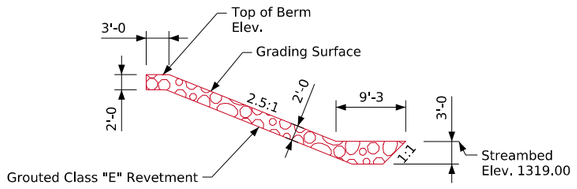
BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

SITUATION PLAN

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DRAWING NO.
V.3

Control Point: BM1, BM / CTR HOLE IN A OF ALBERT ON FIRE HYDRANT, Elev. 1334.59, N.7403919.66, E. 17385415.20



Section Thru Embedded Revetment Berm

Estimated Berm Armoring Quantities

Location	Revetment CL. E (Ton)	Grout (CY)	CL. 10 Channel Excavation (CY)
Berm Lining - South Abutment	425	80	265
Berm Lining - North Abutment	425	80	265
Totals	850	160	530

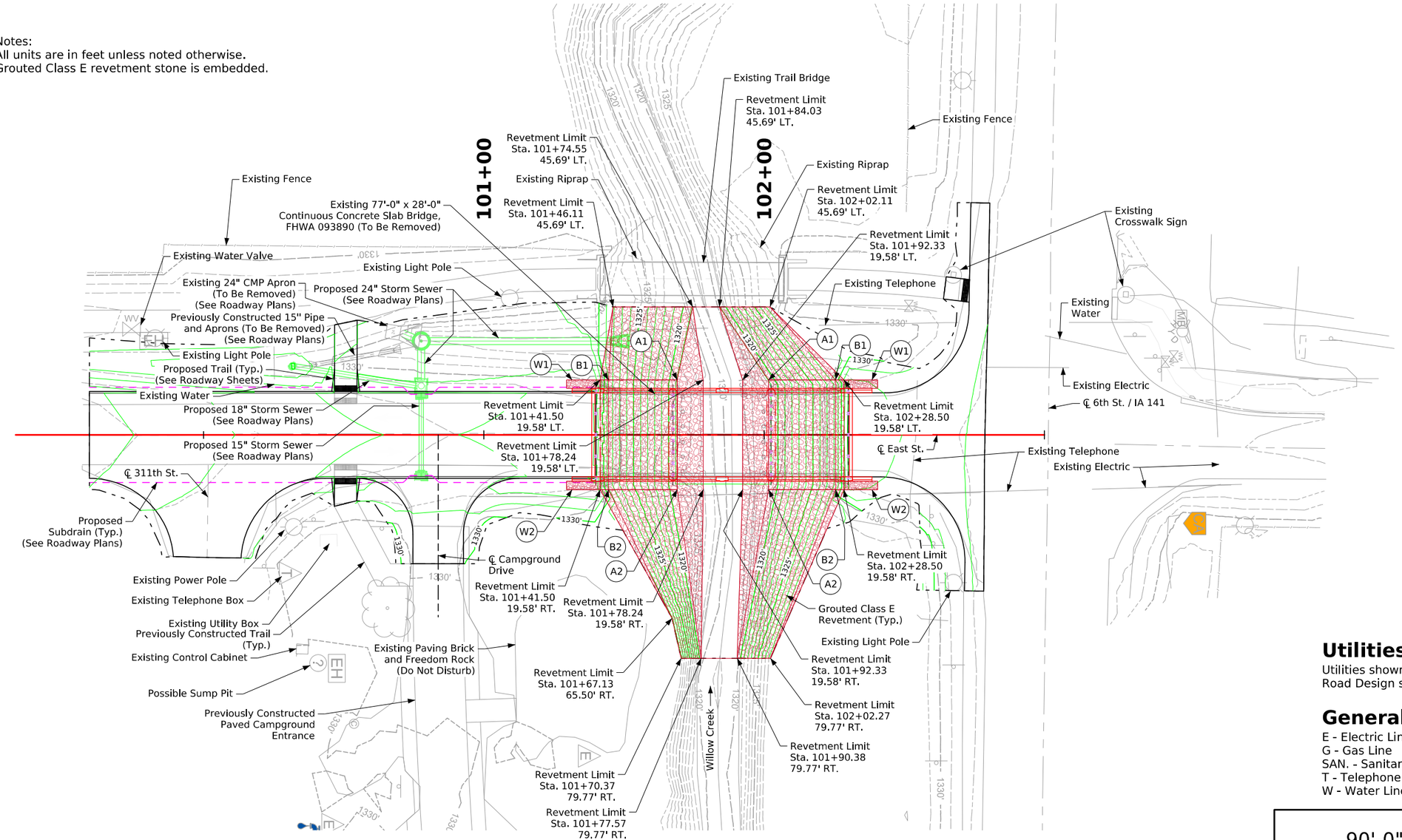
Excavation quantity calculated from grading surface.
Revetment estimated at 1.6 ton/cu. yd.
Grout quantity estimated by using 5.4 cu. ft. per sq. yd. of revetment.

Berm Slope Location Table

Points	South Abutment			North Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	101+68.95	19.58' LT	1319.00	102+01.63	19.58' LT	1319.00
A2	101+68.95	19.58' RT	1319.00	102+01.63	19.58' RT	1319.00
B1	101+44.50	19.58' LT	1328.78	102+25.50	19.58' LT	1328.55
B2	101+44.50	19.58' RT	1328.78	102+25.50	19.58' RT	1328.55
W1	101+31.50	19.58' LT	1332.21	102+38.50	19.58' LT	1331.92
W2	101+31.50	19.58' RT	1332.21	102+38.50	19.58' RT	1331.92

Berm slope elevations reflect the grading surface.

Notes:
All units are in feet unless noted otherwise.
Grouted Class E revetment stone is embedded.



Site Plan

Utilities Note:

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

General Utility Symbols:

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G - Gas Line	GHP - Gas High Pressure
SAN. - Sanitary Sewer	ST S - Storm Sewer
T - Telephone Line	TV - TV
W - Water Line	- Power Poles

Design For 0 Degree
90'-0" x 30'-0" Continuous Concrete Slab Bridge
27'-6" End Spans 35'-0" Interior Span
Site Plan
STA. 101+85.00 (East St.) Turn-in Date: Aug. 2026
Manning, Iowa

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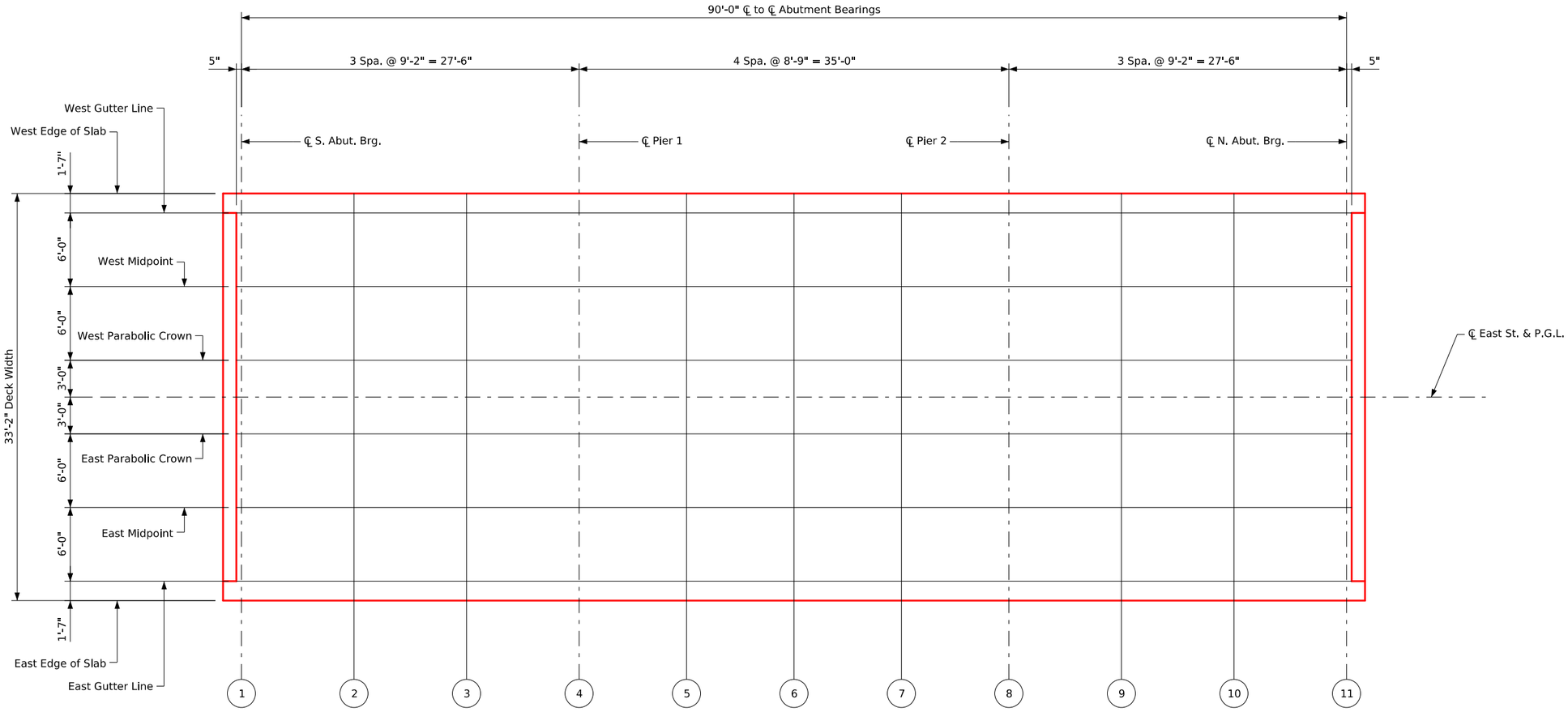
BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

SITE PLAN

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DRAWING NO.
V.4

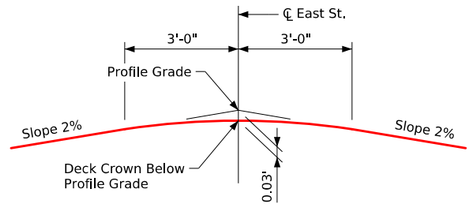
Control Point: BM1, BM / CTR HOLE IN A OF ALBERT ON FIRE HYDRANT, Elev. 1334.59, N.7403919.66, E. 17385415.20



Location of Top of Slab Elevations

Top of Slab Elevations											
	℄ S. Abut. Bearing			℄ Pier 1 Bearing				℄ Pier 2 Bearing			℄ N. 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
West Edge of Slab	1332.59	1332.83	1333.02	1333.14	1333.20	1333.21	1333.16	1333.05	1332.89	1332.66	1332.37
West Gutter Line	1332.59	1332.83	1333.02	1333.14	1333.20	1333.21	1333.16	1333.05	1332.89	1332.66	1332.37
West Midpoint	1332.71	1332.95	1333.14	1333.26	1333.32	1333.33	1333.28	1333.17	1333.01	1332.78	1332.49
West Parabolic Crown	1332.83	1333.07	1333.26	1333.38	1333.44	1333.45	1333.40	1333.29	1333.13	1332.90	1332.61
℄ East St.	1332.86	1333.11	1333.29	1333.41	1333.47	1333.48	1333.43	1333.33	1333.16	1332.93	1332.64
East Parabolic Crown	1332.83	1333.07	1333.26	1333.38	1333.44	1333.45	1333.40	1333.29	1333.13	1332.90	1332.61
East Midpoint	1332.71	1332.95	1333.14	1333.26	1333.32	1333.33	1333.28	1333.17	1333.01	1332.78	1332.49
East Gutterline	1332.59	1332.83	1333.02	1333.14	1333.20	1333.21	1333.16	1333.05	1332.89	1332.66	1332.37
East Edge of Slab	1332.59	1332.83	1333.02	1333.14	1333.20	1333.21	1333.16	1333.05	1332.89	1332.66	1332.37

Note:
The top of slab elevations for the high point on the bridge slab are 0.03 feet below the high point on the approach roadway to account for the rounding of the slab with a parabolic template at the cross slope intersection.



Crown Template
No Scale

Design For 0 Degree
90'-0" x 30'-0" Continuous Concrete Slab Bridge
27'-6" End Spans 35'-0" Interior Span
Top of Slab Elevations
STA. 101+85.00 (East St.) Turn-in Date: Aug. 2026
Manning, Iowa

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PROJECT INFO
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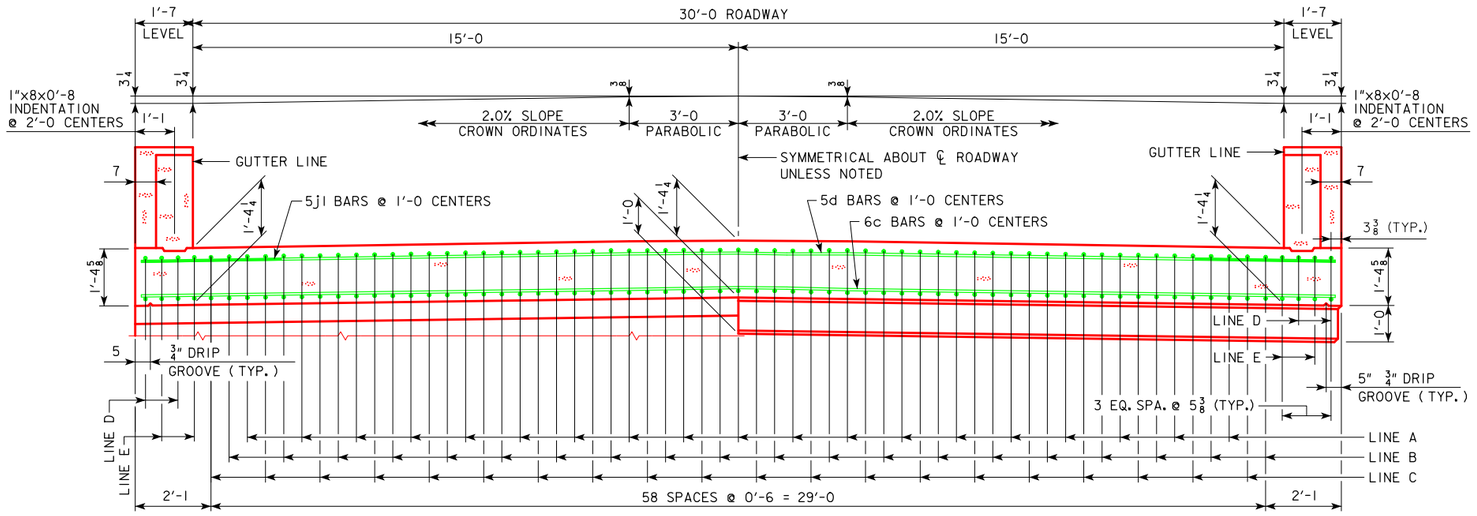
ENGINEER	DRAWN BY	CHECKED BY
CWM	JLK	CWM

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

TOP OF SLAB ELEVATIONS

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DRAWING NO.
V.5

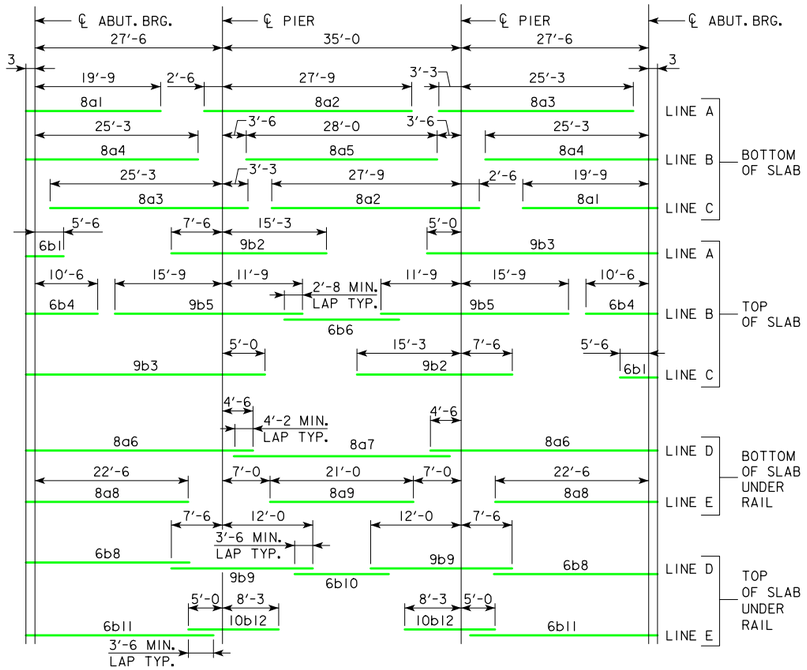


HALF SECTION NEAR ABUTMENT

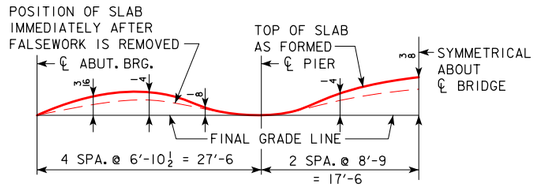
HALF SECTION NEAR PIER

NOTE: TOP LONGITUDINAL REINFORCING STEEL IS TO BE PARALLEL TO AND 2½" CLEAR BELOW TOP OF SLAB. BOTTOM LONGITUDINAL REINFORCING STEEL IS TO BE PARALLEL TO AND 1½" CLEAR ABOVE BOTTOM OF SLAB. REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE AND ADEQUATELY SUPPORTED ON BAR CHAIRS BEFORE CONCRETE IS POURED. I.M. 451.01 REQUIREMENTS SHALL APPLY FOR BAR CHAIRS.

SLAB CROSS-SECTIONAL AREA = 44.97 SQ. FT.



PLACEMENT FOR LONGITUDINAL REINFORCEMENT



FORM CAMBER DIAGRAM

THIS DIAGRAM SHOWS THE FORM CAMBER REQUIRED TO COMPENSATE FOR THE ANTICIPATED ULTIMATE DEAD LOAD DEFLECTION. THE ABOVE DIMENSIONS DO NOT INCLUDE ANY ALLOWANCE FOR FORM DEFLECTION OR FALSEWORK SETTLEMENT.

Design For 0 Degree

90'-0" x 30'-0" Continuous Concrete Slab Bridge

27'-6" End Spans — 35'-0" Interior Span

Superstructure Details

STA. 101+85.00 (East St.) — Turn-in Date: Aug. 2026

Manning, Iowa

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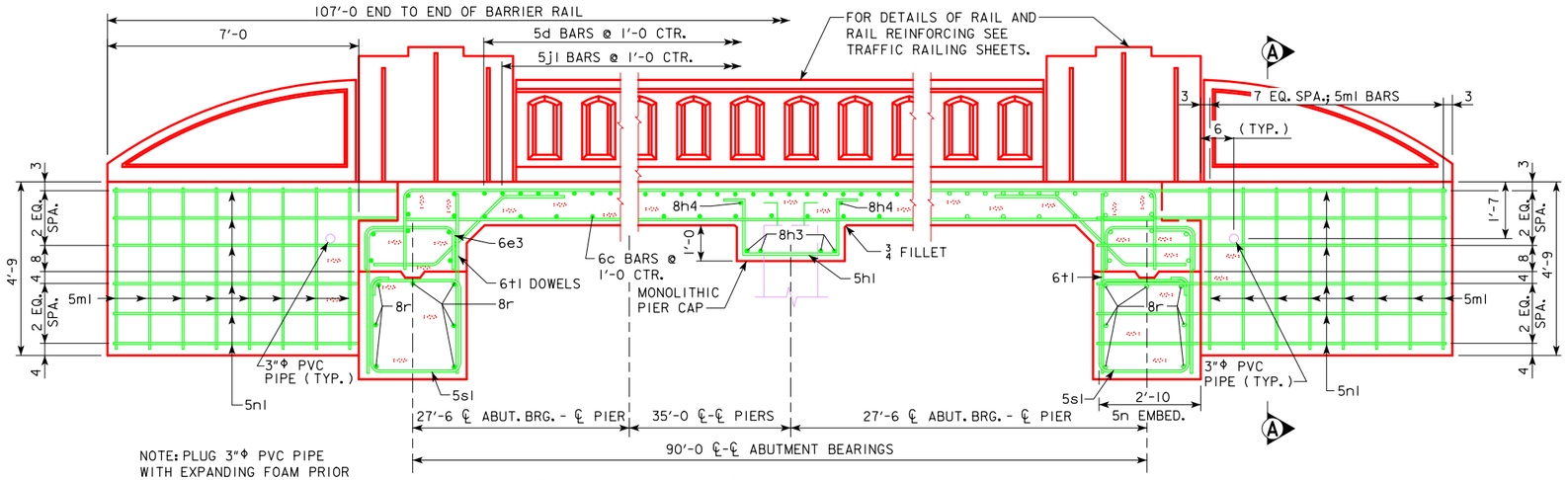
ENGINEER CWM | DRAWN BY JLK | CHECKED BY CWM

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

SUPERSTRUCTURE DETAILS

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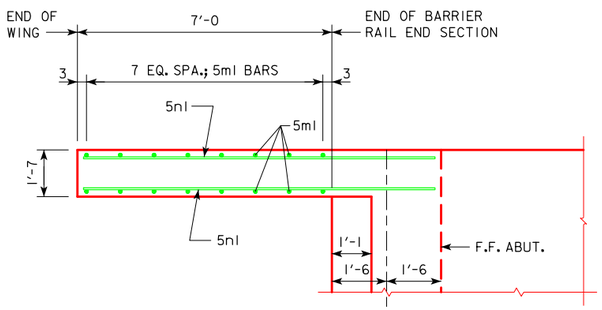
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V.6



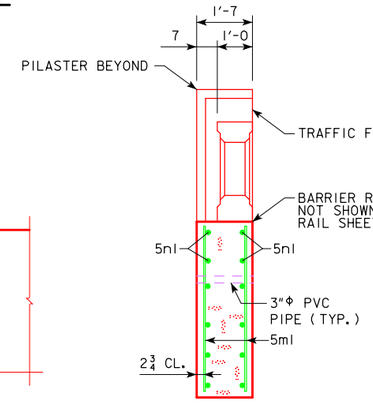
NOTE: PLUG 3"Φ PVC PIPE WITH EXPANDING FOAM PRIOR TO BACKFILLING BEHIND ABUTMENTS.

PART LONGITUDINAL SECTION NEAR GUTTER LINE

(LOOKING AT TRAFFIC FACE)



PART PLAN
(RAILING NOT SHOWN)



SECTION A-A

SUPERSTRUCTURE NOTES:

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

THE SLAB AS SHOWN INCLUDES A $\frac{1}{2}$ INCH INTEGRAL WEARING SURFACE.

THE MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN. ALL REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE. SEE "BAR CHAIR NOTE".

ALL REINFORCING SHALL BE GRADE 60.

THE CONCRETE SLAB IS TO BE PLACED WITH A MINIMUM OF CONSTRUCTION JOINTS. PROCEDURES FOR PLACING SLAB CONCRETE SHALL BE SUBMITTED FOR APPROVAL TOGETHER WITH A STATEMENT OF THE PROPOSED METHOD AND EVIDENCE THAT THE CONTRACTOR POSSESSES THE NECESSARY EQUIPMENT AND FACILITIES TO ACCOMPLISH THE REQUIRED RESULT. SLAB FALSEWORK SHALL BE REMOVED PRIOR TO CONSTRUCTION OF THE BARRIER RAILS, UNLESS SLAB CONSTRUCTION IS STAGED.

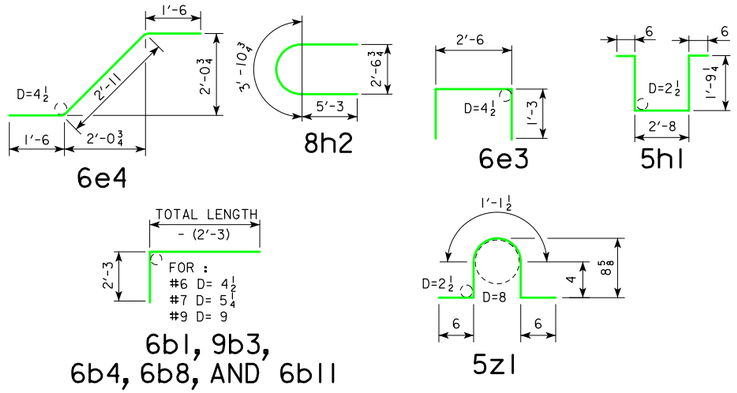
NOTE THAT WHEN PORTLAND CEMENT APPROACH PAVEMENT IS PLACED, COMPRESSIBLE JOINT MATERIAL MUST BE USED BETWEEN PAVEMENT AND END OF BRIDGE.

COST OF FURNISHING AND PLACING 3"Φ PVC PIPE IN EACH WING IS INCLUDED IN THE PRICE BID FOR STRUCTURAL CONCRETE.

BAR CHAIR NOTE:

TOP MAT OF REINFORCING STEEL IS TO BE SUPPORTED BY INDIVIDUAL BAR CHAIRS SPACED AT NOT MORE THAN 3'-0 CENTERS LONGITUDINALLY AND TRANSVERSELY. THE BOTTOM MAT OF 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 SLAB BOLSTERS SPACED 4'-0 APART. I.M. 451.01 REQUIREMENTS SHALL APPLY FOR BAR CHAIRS, BAR HIGH CHAIRS, AND SLAB BOLSTERS.

BENT BAR DETAILS



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

BILL OF REINFORCING STEEL FOR SUPERSTRUCTURE

LOCATION	SHAPE	BAR	NO.	LENGTH	WEIGHT
SLAB LONGITUDINAL BOTTOM		8a1	39	20'-0	2083
SLAB LONGITUDINAL BOTTOM		8a2	39	30'-3	3150
SLAB LONGITUDINAL BOTTOM		8a3	39	28'-6	2968
SLAB LONGITUDINAL BOTTOM		8a4	40	25'-6	2723
SLAB LONGITUDINAL BOTTOM		8a5	20	28'-0	1495
SLAB LONGITUDINAL BOTTOM, AT RAIL		8a6	8	32'-3	689
SLAB LONGITUDINAL BOTTOM, AT RAIL		8a7	4	34'-4	367
SLAB LONGITUDINAL BOTTOM, AT RAIL		8a8	8	22'-9	486
SLAB LONGITUDINAL BOTTOM, AT RAIL		8a9	4	21'-0	224
SLAB LONGITUDINAL TOP		6b1	39	8'-0	469
SLAB LONGITUDINAL TOP		9b2	39	22'-9	3017
SLAB LONGITUDINAL TOP		9b3	39	35'-0	4641
SLAB LONGITUDINAL TOP		6b4	40	13'-0	781
SLAB LONGITUDINAL TOP		9b5	40	27'-6	3740
SLAB LONGITUDINAL TOP		6b6	20	16'-10	506
SLAB LONGITUDINAL TOP, AT RAIL		6b8	8	26'-0	312
SLAB LONGITUDINAL TOP, AT RAIL		9b9	8	19'-6	530
SLAB LONGITUDINAL TOP, AT RAIL		6b10	4	18'-0	108
SLAB LONGITUDINAL TOP, AT RAIL		6b11	8	28'-6	342
SLAB LONGITUDINAL TOP, AT RAIL		10b12	8	13'-3	456
SLAB TRANSVERSE, BOTTOM		6c1	87	32'-10	4290
SLAB TRANSVERSE, TOP		5d1	87	32'-10	2979
SLAB, TRANSVERSE AT ABUTMENT		8e1	18	32'-10	1578
SLAB, HAIRPINS, AT ABUTMENT		6e3	72	5'-0	541
SLAB, DIAGONALS, AT ABUTMENT		6e4	72	5'-11	640
PIER CAP HOOPS		5h1	56	7'-3	423
PIER CAP ENDS		8h2	4	14'-5	154
PIER CAP, BOTTOM LONGITUDINAL		8h3	8	29'-10	637
PIER CAP, TOP LONGITUDINAL		8h4	4	32'-10	351
TOP OF SLAB, TRANSVERSE, AT RAIL		5j1	172	8'-6	1525
WING, VERTICAL		5m1	64	4'-5	295
WING, HORIZONTAL		5n1	48	9'-8	484
** PAVING BLOCK LIFTING HOOPS		5z1	10	2'-10	30
				TOTAL - LBS.	43,014

** BARS MAY BE NON-COATED AT CONTRACTOR'S OPTION.

ESTIMATED QUANTITIES FOR SUPERSTRUCTURE

ITEM	QTY.
*STRUCTURAL CONCRETE (BRIDGE) C.Y.	181.6
REINFORCING STEEL EPOXY COATED LBS.	43,014

* INCLUDES 4 WINGS @ 1.95 C.Y. EACH AND 2 TEMPORARY PAVING BLOCKS; EXCLUDES RAIL CONCRETE.

Design For 0 Degree

90'-0" x 30'-0" Continuous Concrete Slab Bridge

27'-6" End Spans — 35'-0" Interior Span

Superstructure Details

STA. 101+85.00 (East St.) — Turn-in Date: Aug. 2026

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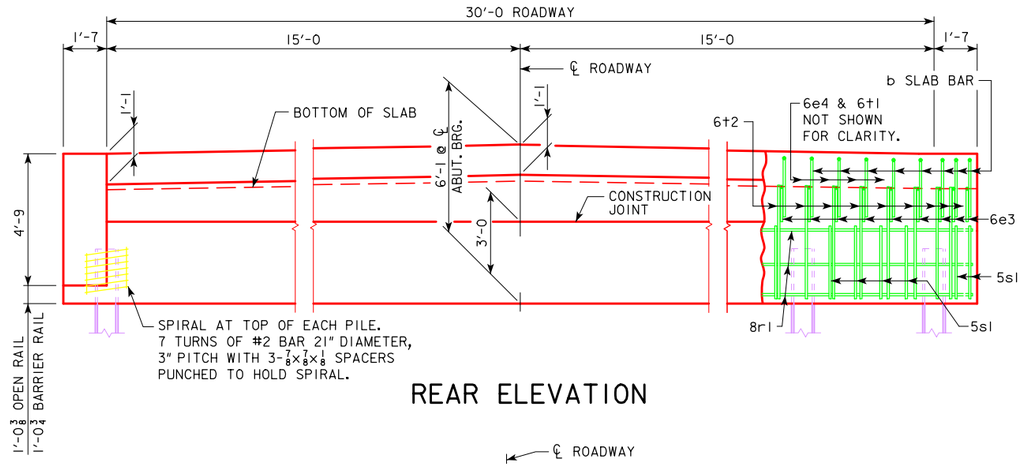
ENGINEER	DRAWN BY	CHECKED BY
CWM	JLK	CWM

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

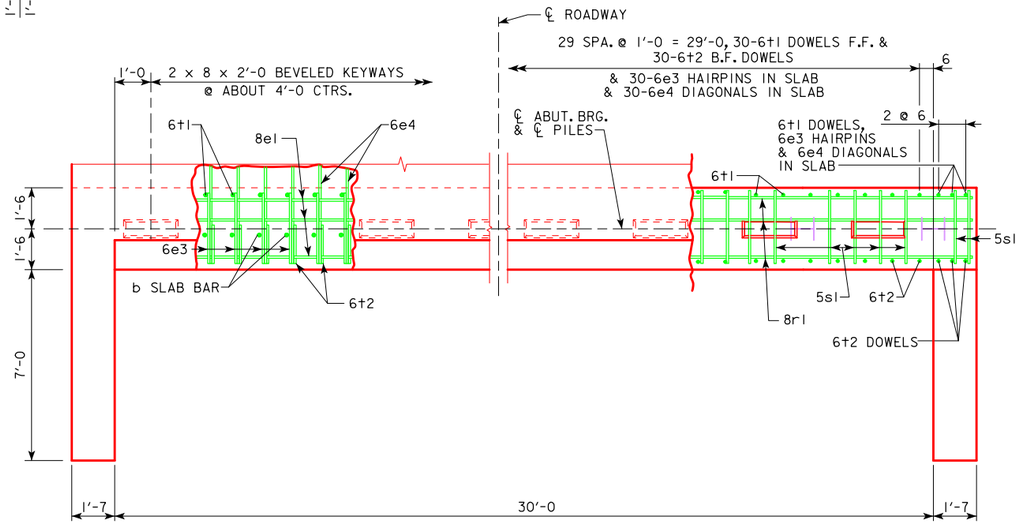
SUPERSTRUCTURE DETAILS

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DRAWING NO.
V.7



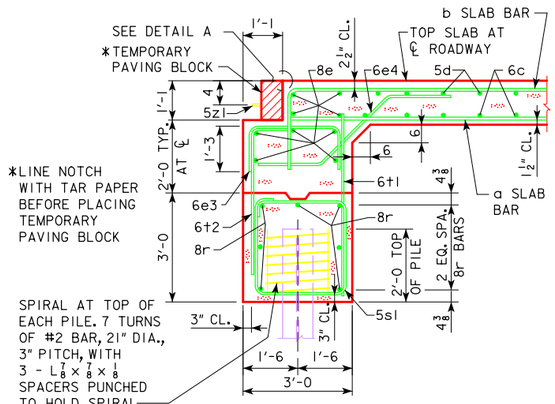
REAR ELEVATION



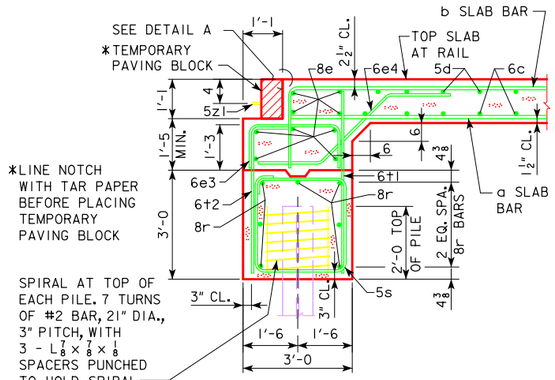
PLAN VIEW

NOTE: WING REINFORCING AND RAIL NOT SHOWN.

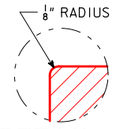
6e3, 6e4, AND 8e1 ARE INCLUDED WITH SUPERSTRUCTURE QUANTITIES.



SECTION NORMAL TO ABUTMENT AT ℄



SECTION NORMAL TO ABUTMENT AT GUTTERLINE



DETAIL A

ABUTMENT NOTES:

ALL PILING HP 10x42.

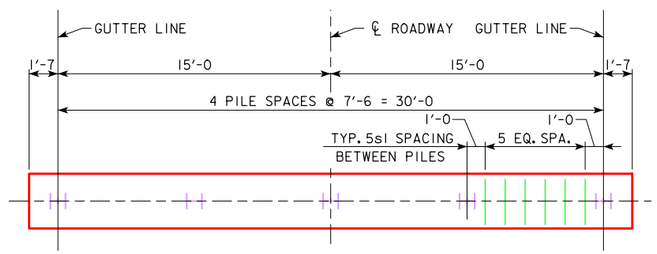
THE CONCRETE AND REINFORCING STEEL FOR THE WINGS IS INCLUDED WITH THE SUPERSTRUCTURE.

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

STEEL ABUTMENT PILES SHALL BE DRIVEN TO FULL PENETRATION IF PRACTICABLE BUT IN NO CASE TO A BEARING VALUE LESS THAN SHOWN ON GENERAL NOTES SHEET.

ALL REINFORCING STEEL IS TO BE GRADE 60.

ABUTMENT PILING WAS DESIGNED FOR HL-93 LOADING WITH AN ALLOWANCE FOR 20 LBS. PER SQ. FT. FUTURE WEARING SURFACE.



PILE PLAN

Design For 0 Degree

90'-0" x 30'-0" Continuous Concrete Slab Bridge

27'-6" End Spans — 35'-0" Interior Span

Abutment Details

STA. 101+85.00 (East St.) — Turn-in Date: Aug. 2026

Manning, Iowa

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main 712.220.8121
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PROJECT NUMBER
BROS-4702(609)--8J-14

REVISIONS

PROJECT INFO
2024006809

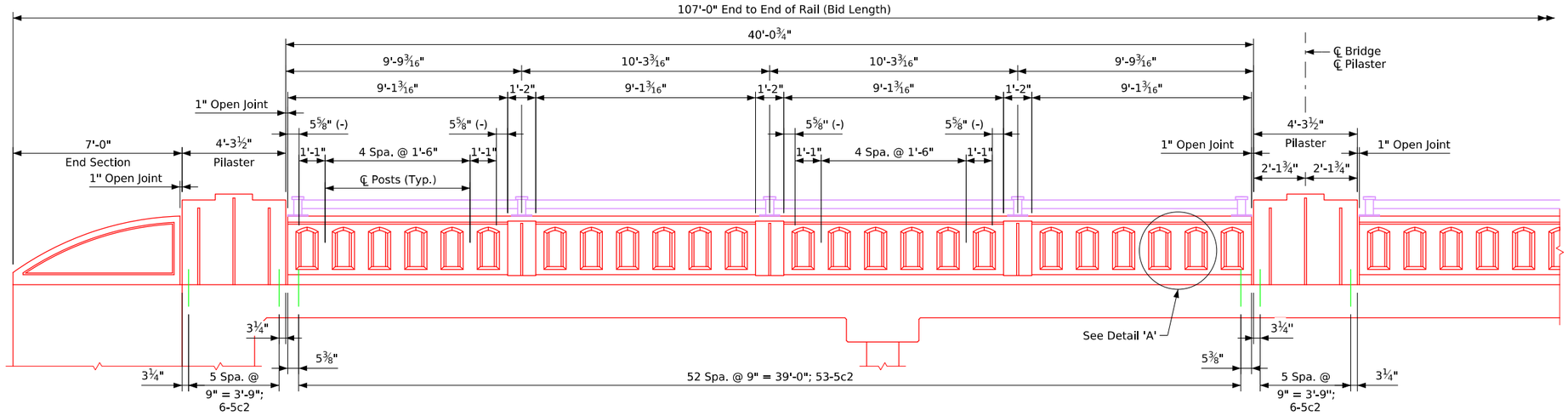
ENGINEER	DRAWN BY	CHECKED BY
CWM	JLK	CWM

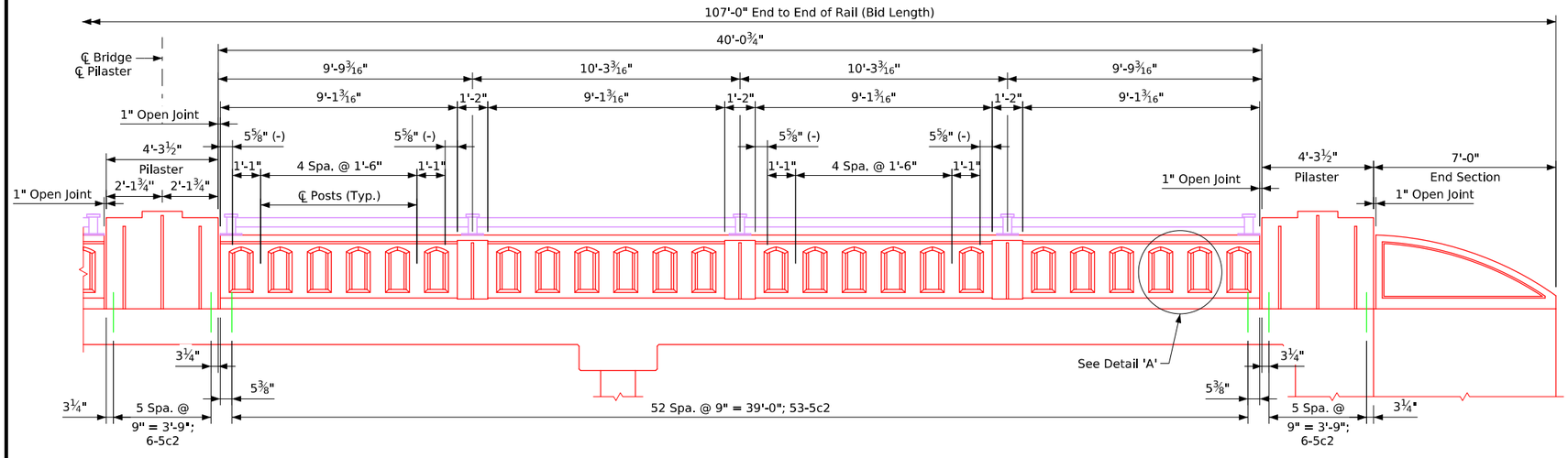
BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

ABUTMENT DETAILS

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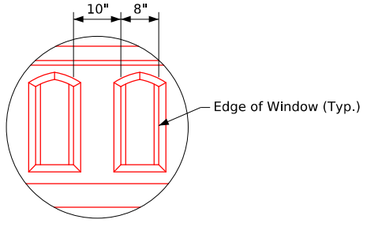
DRAWING NO.
V.8





Elevation of Concrete Traffic Railing

(Looking at Traffic Face)



Detail 'A'

Concrete Traffic Barrier Notes:

This barrier has been successfully evaluated by full scale impact tests conducted in accordance with NCHRP Report 230. Test documentation may be found in Research Report 1185-1, "Aesthetically Pleasing Concrete Beam and Post Bridge Rail–Texas Type T411", of Research Study 2-5-88/89-1185-1, "Aesthetically Pleasing Bridge Rails", Texas Transportation Institute March 1989.

Face of barrier shall be vertical transversely unless otherwise approved by the Engineer.

All concrete for traffic rail and pilasters shall be Class 'C'.

All surfaces of the traffic railings and pilasters shall require a smooth finish in the final result after form removal and performance of a Class 2 strip down surface finish in accordance with the Standard Specifications.

Concrete Traffic Barrier Notes, Cont'd:

If form ties are used in smooth finish areas, arrange ties to be regularly spaced and in a consistent geometric grid pattern. Do not locate ties within concrete rustications.

Perform patching of tie holes and other voids so that the patch matches or is slightly lighter than surrounding concrete when dry. Use white cement to lighten the patching mix. Before any patching shall occur, review patching mix and demonstrate patching techniques in the presence of the Engineer.

All costs associated with barrier concrete smooth finish are to be included in the bid item "Concrete Barrier Railing, Aesthetic".

The concrete traffic barrier is to be bid on a lineal foot basis measured from the end to end of barrier. The number of lineal feet of concrete barrier installed will be paid for at the contract price per lineal foot. Price bid for concrete barrier railing shall be full compensation for furnishing all material, excluding reinforcing steel, and all the equipment and labor required to erect the barrier in accordance with these plans and current specifications.

All exposed corners 90° or sharper shall be filleted with a ¾" dressed and beveled strip.

All reinforcing steel is to be Grade 60 and epoxy coated.

Alternative methods for forming the barrier rail windows, such as EPS or urethane blockouts, may be used with approval of the Engineer. These forms shall provide crisp lines and corners without voids. No additional payment will be made for alternative forming methods.

Joint sealer shall be light gray nonsag latex caulking sealer marked for outdoor use. No testing or certification is required. Cost is incidental to other construction.

Top of barrier rail is to be parallel to the theoretical profile grade.

Design For 0 Degree

90'-0" x 30'-0" Continuous Concrete Slab Bridge

27'-6" End Spans 35'-0" Interior Span

Traffic Railing Details

STA. 101+85.00 (East St.) Turn-in Date: Aug. 2026

Manning, Iowa

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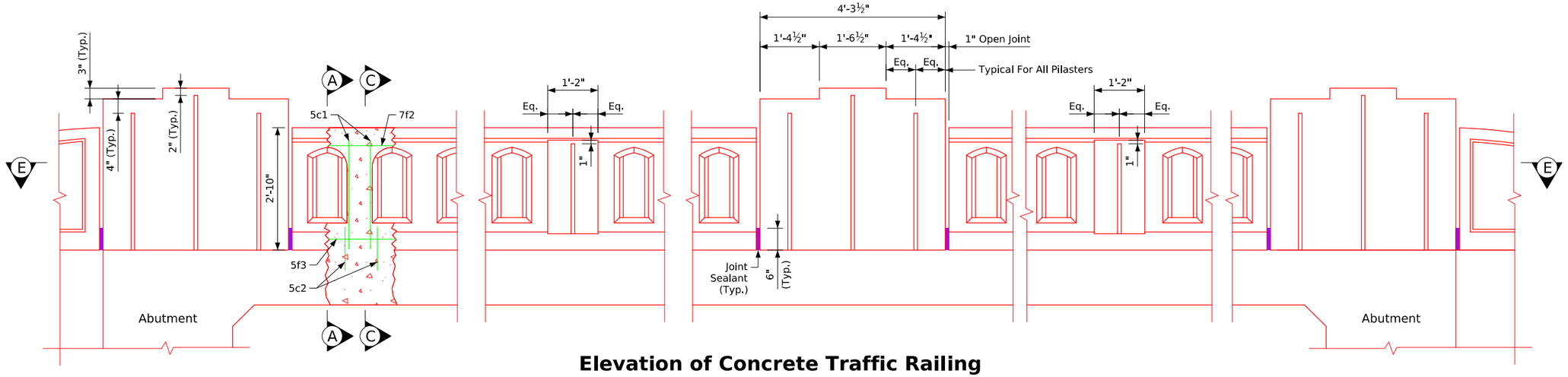
ENGINEER	DRAWN BY	CHECKED BY
CWM	JLK	CWM

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

TRAFFIC RAILING DETAILS

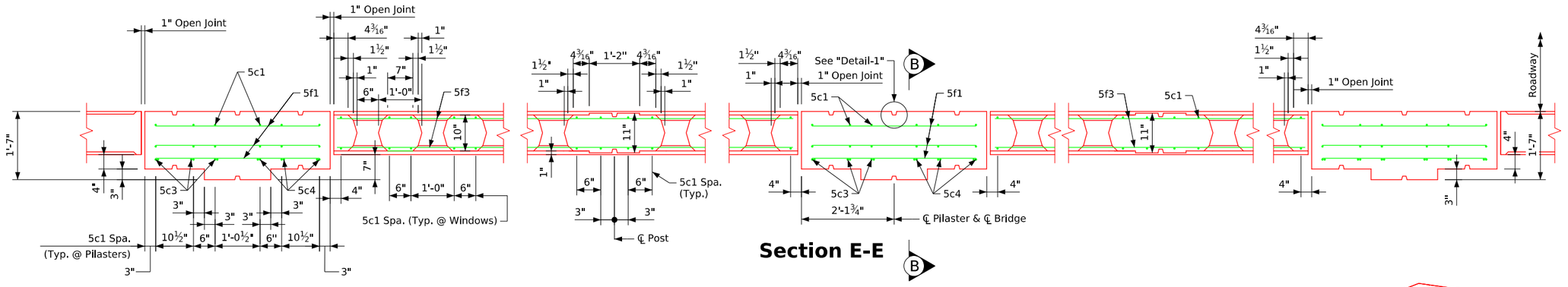
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DRAWING NO.
V.9

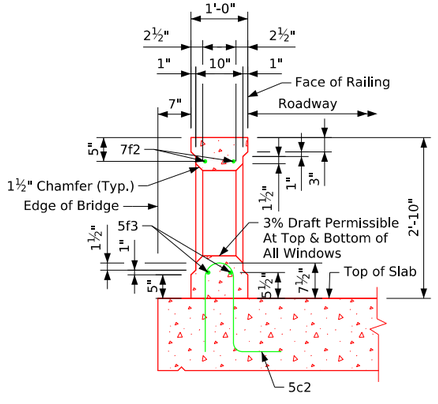


Elevation of Concrete Traffic Railing

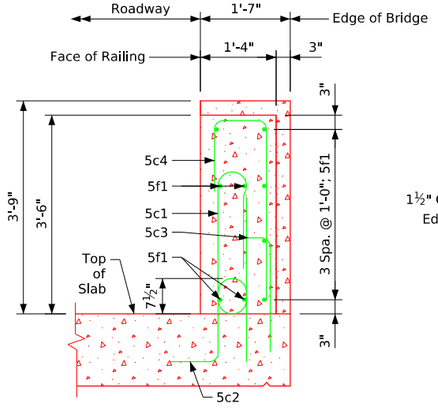
(Looking at Traffic Face)



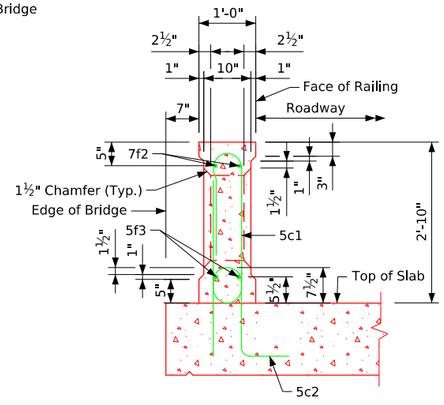
Section E-E



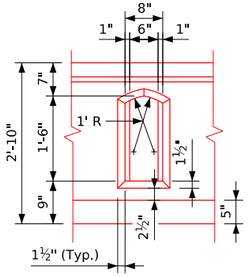
Section Through Window (A-A)



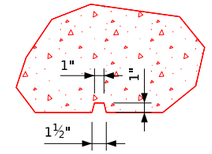
Section Through Pilaster On Slab (B-B)



Section Through Post (C-C)



Window Detail



Detail - 1

(Typical For All Pilasters & Posts)

Design For 0 Degree

90'-0" x 30'-0" Continuous Concrete Slab Bridge

27'-6" End Spans — 35'-0" Interior Span

Traffic Railing Details

STA. 101+85.00 (East St.) — Turn-in Date: Aug. 2026

Manning, Iowa

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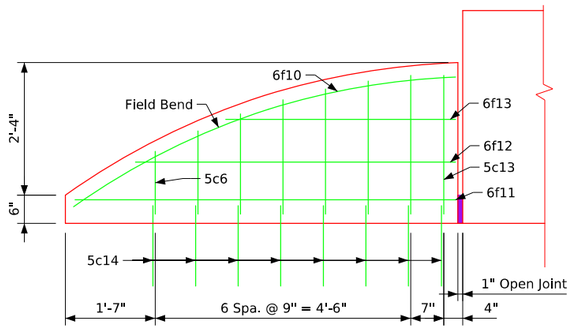
ENGINEER	DRAWN BY	CHECKED BY
CWM	JLK	CWM

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

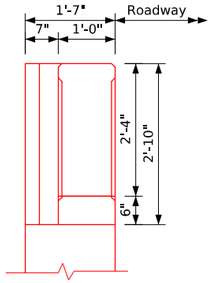
TRAFFIC RAILING DETAILS

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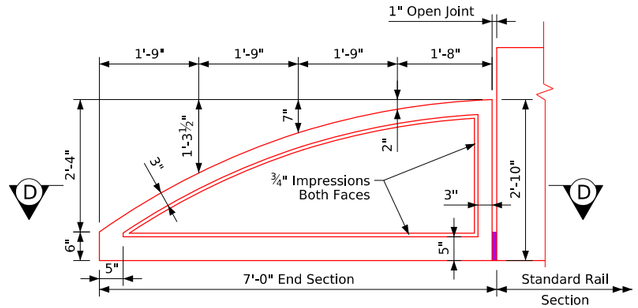
DRAWING NO.
V.10



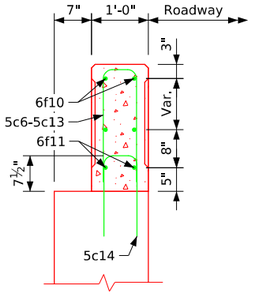
Section E-E



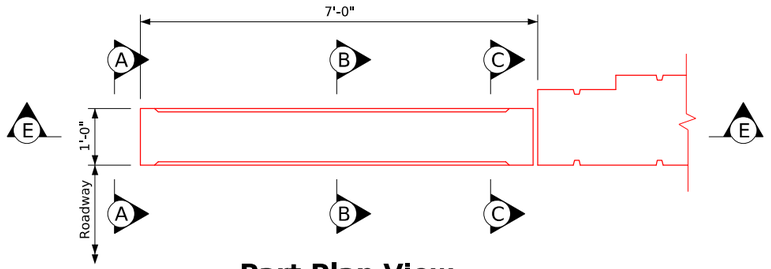
View A-A



Typical Part Elevation

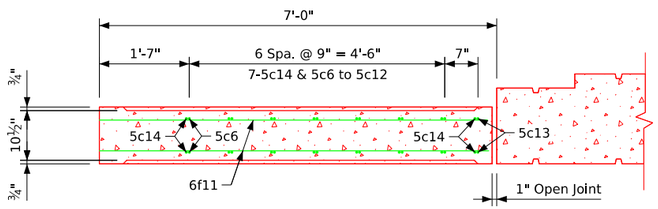


Section B-B



Part Plan View

Section C-C

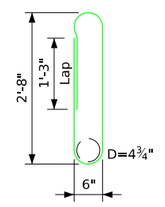


Section D-D

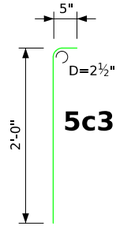
Epoxy Coated Reinf. Steel - Conc. Rails

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c1	Vertical		252	7'-4"	1,927
	5c2	Rail To Slab		248	5'-0"	1,293
	5c3	Pilaster, Vertical		36	2'-5"	91
	5c4	Pilaster, Vertical		36	5'-4"	200
	5f1	Pilaster, Longitudinal		54	3'-11"	221
	7f2	Longitudinal, Top		8	39'-6"	646
	5f3	Longitudinal, Bottom		8	39'-6"	330
4 End Sections	5c6	Vertical		4	2'-11"	12
	5c7	Vertical		4	3'-7"	15
	5c8	Vertical		4	4'-3"	18
	5c9	Vertical		4	4'-9"	20
	5c10	Vertical		4	5'-1"	21
	5c11	Vertical		4	5'-5"	23
	5c12	Vertical		4	5'-7"	23
	5c13	Vertical		4	5'-7"	23
	5c14	End Section To Wing		32	6'-7"	220
	6f10	Longitudinal		8	7'-1"	85
	6f11	Longitudinal		8	6'-7"	79
	6f12	Longitudinal		8	5'-4"	64
	6f13	Longitudinal		8	3'-10"	46
				Epoxy Steel Total (lbs.)		5,357

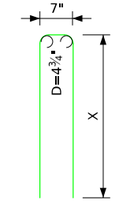
Bent Bar Details



5c1

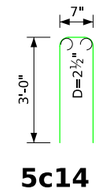


5c3

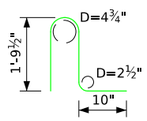


5c6-5c13

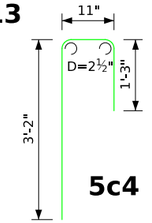
Bar	"X"	Length
5c6	1'-2"	2'-11"
5c7	1'-6"	3'-7"
5c8	1'-10"	4'-3"
5c9	2'-1"	4'-9"
5c10	2'-3"	5'-1"
5c11	2'-5"	5'-5"
5c12	2'-6"	5'-7"
5c13	2'-6"	5'-7"



5c14



5c2



5c4

Note: All Dimensions Are Out To Out. D = Pin Diameter.

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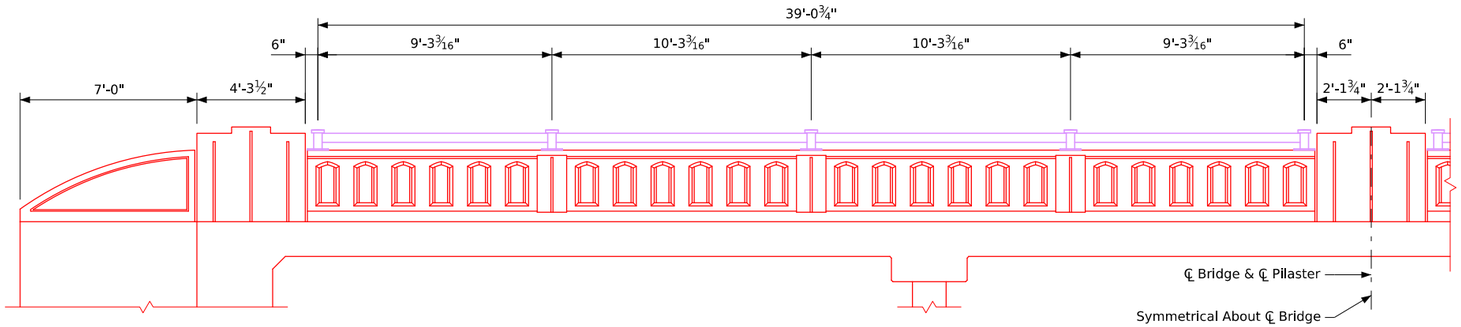
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90'-0" x 30'-0" Continuous
Concrete Slab Bridge
27'-6" End Spans 35'-0" Interior Span
Traffic Railing Details
STA. 101+85.00 (East St.) Turn-in Date: Aug. 2026
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BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

TRAFFIC RAILING DETAILS

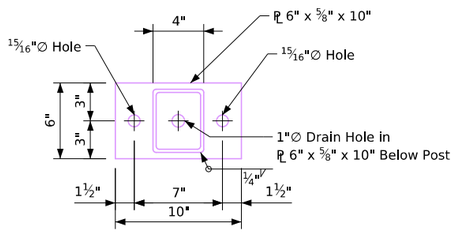
DRAWING NO.
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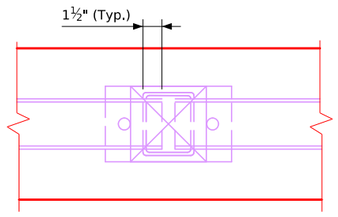


Elevation Of Concrete Traffic Railing With Steel Handrail

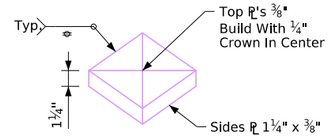
(Looking At The Traffic Face) (Dimensions Measured Along Centerline Of Rail)



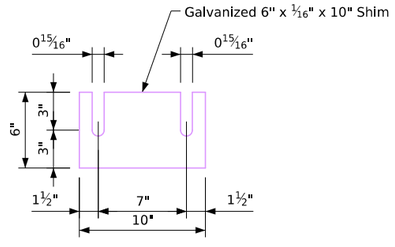
Traffic Rail Post Base Detail



Plan

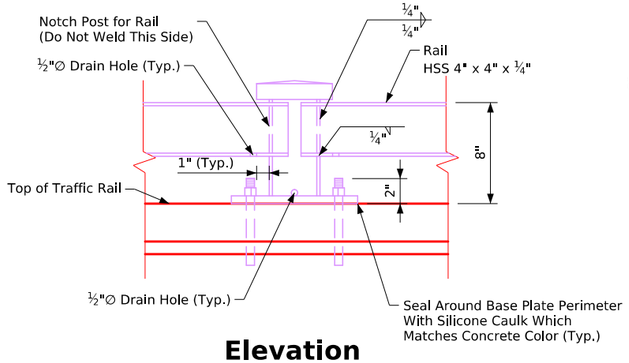


Post Cap Detail

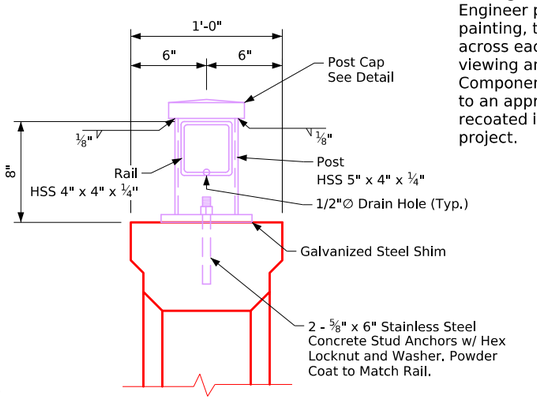


Traffic Rail Post Shim Detail

Provide 2 - 1⁄16" Galvanized Shims At Each Post. Use As Required.



Elevation



Part Section

Steel Handrail Notes

Materials for the tube rail and posts shall meet ASTM A500 grade B. Base plates shall meet the requirements of ASTM A709 Grade 36. Material for post cap shall meet ASTM A36 or may be cast iron.

The entire steel handrail and posts, including all connection hardware, shall be galvanized, prepared, and powder coated.

The stud concrete anchors shall be stainless steel and have a minimum pullout strength of 8000 pounds based on 4000 psi concrete. Anchors and all exposed hardware shall be powder coated to match the steel handrail color. Anchors shall be in accordance with Iowa D.O.T. I.M. 453.08. Materials to be used for concrete anchors are to be in accordance with Iowa D.O.T. I.M. 491.11. Anchors shall be installed in accordance with manufacturer's recommendations. Anchor bolt holes shall be filled with epoxy to the surface of concrete.

The steel handrail is to be bid on in a lineal foot basis measured from centerline to centerline of end post. The price bid for "Structural Steel Pedestrian Hand Railing" shall be full compensation for furnishing all material, including anchor bolts and shims, and all the equipment and labor required to erect the handrail in accordance with these plans and specifications.

The handrail shall be true to the line and comply with the best practice for construction of this type. All material fabricated shall exhibit flatness, smoothness, and freedom from surface blemishes. All posts shall be installed perpendicular to the slab.

Shop drawings shall be submitted for review by the Engineer. Steel handrail materials shall not be ordered until approved shop drawings are returned to the Contractor.

Steel railing components shall be abrasive blast cleaned to a minimum of SSPC-SP6 "Commercial Blast Cleaning" prior to hot-dip galvanizing. Galvanize components in accordance with ASTM A123. Do not quench or apply chromate conversion coatings to any galvanized components that will receive powder coating. Following galvanizing, powder coat components in accordance with Materials I.M. 568.

Preparation of galvanized surfaces for paint shall be in accordance with Materials I.M. 568, Appendix F. Complete "Paint Over Galvanized Surface Travel Log" in Appendix E.

All powder coating except field touch-up shall be performed in an approved shop in accordance with Materials I.M. 568.

Submit proposed preparation methods and product data for all coatings proposed for use to the Engineer for review and approval prior to powder coating. Powder coating shall match Federal Standard No. 595C Color Number 27038 (Black). Submit powder coating color sample to the Engineer for approval prior to ordering materials.

Protect all powder coated railing surfaces from damage during shipping, handling, and installation.

Following railing installation, repair any damage to the powder coated finish in accordance with the coating manufacturer's recommendations. Submit the powder coating manufacturer's written field repair and recoating procedures to the Engineer prior to touch-up operations. Following final installation and touch-up painting, the finished surfaces shall be uniform in color, sheen, texture, and hiding across each continuous surface area when viewed in natural daylight at normal viewing angles and from distances not less than 39 inches from surface. Components deemed unacceptable by the Engineer shall be removed and returned to an approved powder coating shop, and shall be completely stripped and recoated in accordance with the contract documents at no additional cost to the project.

Estimated Quantities

Item	Units	Quantity
Structural Steel Pedestrian Hand Railing	Lin. Ft.	156.25

Design For 0 Degree

90'-0" x 30'-0" Continuous Concrete Slab Bridge

27'-6" End Spans 35'-0" Interior Span

Steel Handrail Details

STA. 101+85.00 (East St.) Turn-in Date: Aug. 2026

Manning, Iowa

McCLURE™
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Carroll, IA 51401
main 712.220.8121
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PROJECT NUMBER
BROS-4702(609)--8J-14

REVISIONS

PROJECT INFO
2024006809

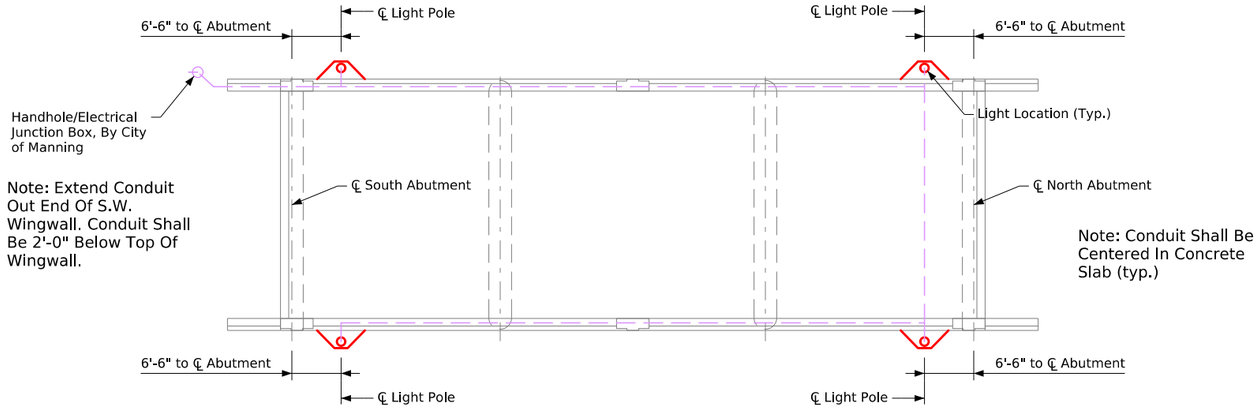
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CWM	JLK	CWM

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

STEEL HANDRAIL DETAILS

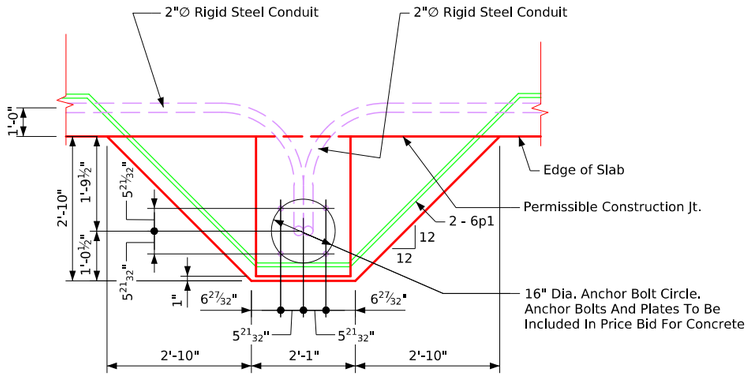
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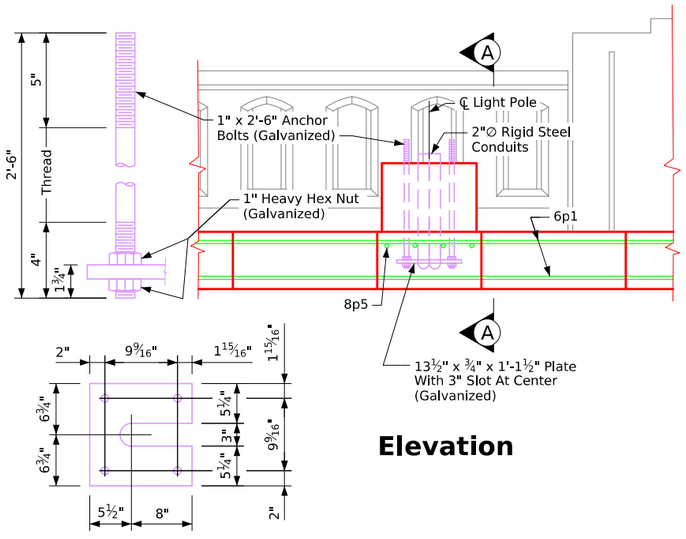
General Lighting Plan

(Not to Scale)



Plan of Pole Base

Base Reinforcing Bars Not Shown.



Elevation

Lighting Notes:

Construction shall conform to the current Iowa D.O.T. Standard and Supplemental Specifications and Special Provisions.

Cost of furnishing and installing poles, lights, and lighting conductor is not a part of this contract.

All anchor bolt material shall comply with the Requirements of Iowa D.O.T. Materials I.M. 453.08. Plate Material shall meet the requirements of ASTM A709 Grade 36.

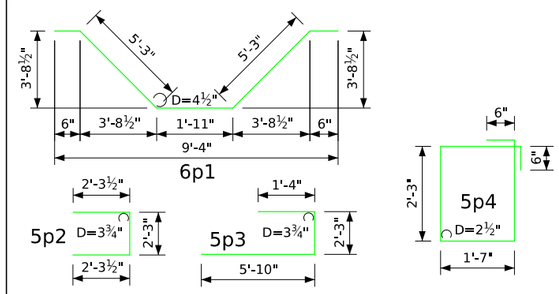
Welding of anchor bolts shall not be allowed. The Contractor shall obtain a template from the City of Manning for proper placement of the anchor bolts.

All reinforcing steel is to be epoxy coated and Grade 60.

Conduit installation shall comply with the Article "Electrical Ducts" in Section 2523 of the Standard Specifications. All conduit shall be rigid steel. All cost of furnishing and placing conduit shall be included in the price bid for "Structural Concrete (Bridge)". No extra payment will be made.

Epoxy Reinforcing Steel - One Base

Bar	Location	Shape	No.	Length	Weight
6p1	Slab Anchors		2	13'-5"	40
5p2	Pole Base To Slab		4	6'-10"	29
5p3	Pole Base To Slab		4	9'-5"	39
5p4	Pole Base Hoop		6	8'-8"	54
8p5	Slab Transverse		4	6'-4"	68
				Total Weight (Lbs.)	230

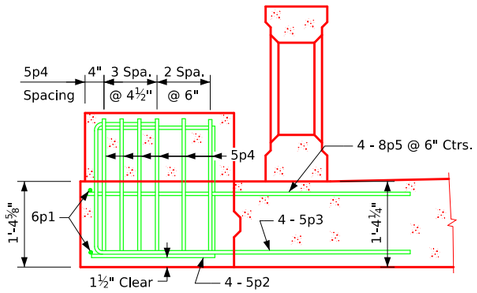


Note: All Dimensions Are Out To Out, D = Pin Diameter.

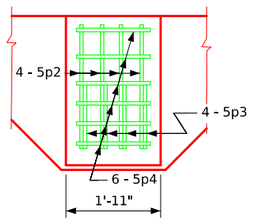
Lighting Quantities (4 Bases)

Item	Quantity
* Structural Concrete (Bridge)	3.9 Cu. Yd.
* Reinforcing Steel - Epoxy Coated	920 Lbs.

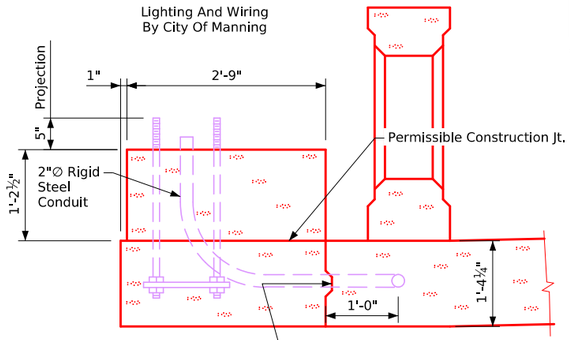
* Included With Superstructure Quantities.



Section Through Base Showing Reinforcing



Plan of Pole Base Reinforcing



Section A-A

Design For 0 Degree

90'-0" x 30'-0" Continuous Concrete Slab Bridge

27'-6" End Spans — 35'-0" Interior Span

Lighting Details

STA. 101+85.00 (East St.) — Turn-in Date: Aug. 2026

Manning, Iowa

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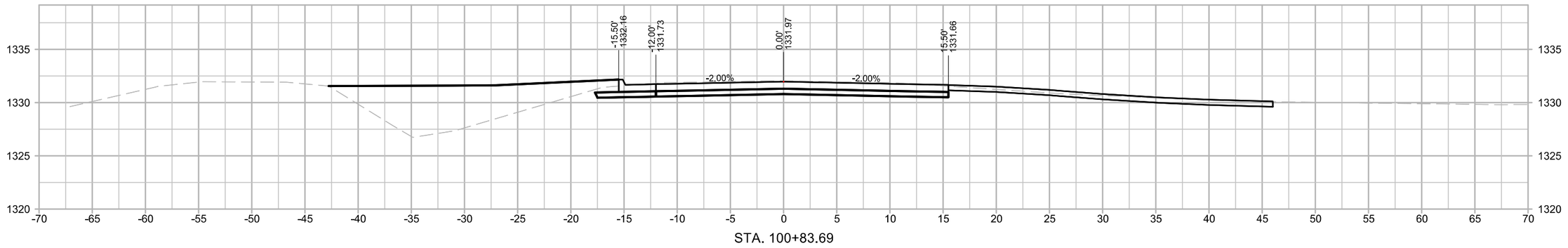
ENGINEER CWM | DRAWN BY JLK | CHECKED BY CWM

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
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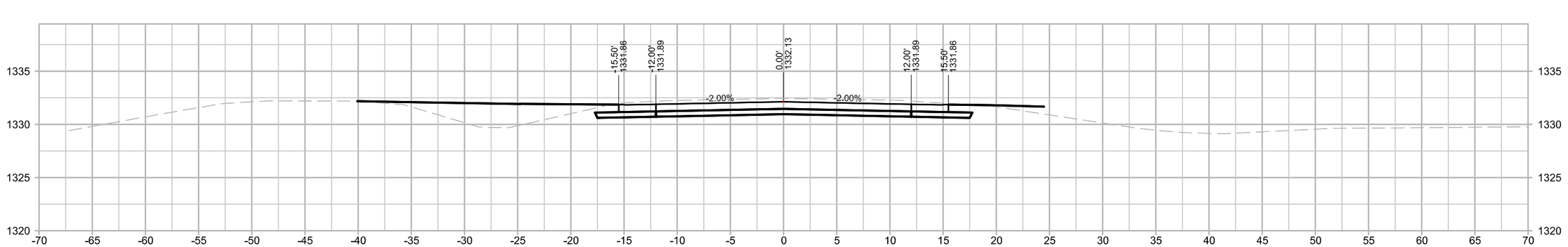
LIGHTING DETAILS

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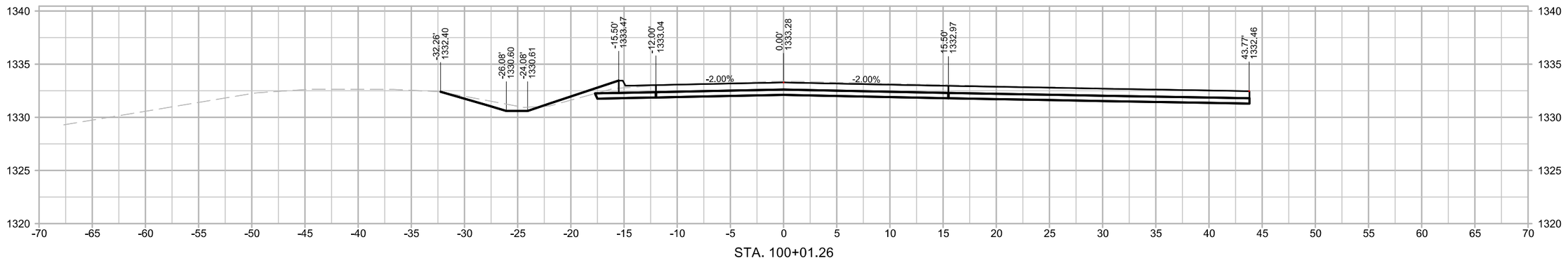
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STA. 100+83.69



STA. 100+50.75



STA. 100+01.26

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CFF	JMT	CFF

BRIDGE REPLACEMENT - CCS
EAST STREET OVER WILLOW CREEK
MANNING, IOWA

CROSS SECTIONS - EAST STREET

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