

DESIGN DATA RURAL				
20 24	AADT	830	V.P.D.	
20 50	AADT	1000	V.P.D.	
20 --	DHV	—	V.P.H.	
TRUCKS		9	%	
Total Design ESALs		—		

INDEX OF SEALS			
SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS
A.1	Kelly C. Bell	Primary Signature Block	X
X	X	X	X

PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN - Date: 9-10-2026

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
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A.2	Location Map Sheet
A.3 - 15	Concept
A.16	Design Criteria
B Sheets	Typical Cross Sections and Details
B.1 - 2	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
D.1	Plan & Profile Legend & Symbol Information Sheet
D.2 - 3	IA 83
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J Sheets	Traffic Control and Staging Sheets
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J.1	Staging Notes Stage
J.2	Traffic Control & Staging Legend & Symbol Info. Sheet
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W Sheets	Mainline Cross Sections
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W.2 - 5	Mainline Cross Sections



PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
CASS COUNTY
RCB Culvert Replacement

Compton Creek 0.1 mi W of Co Rd M56

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

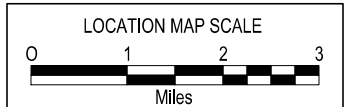
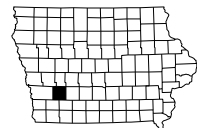
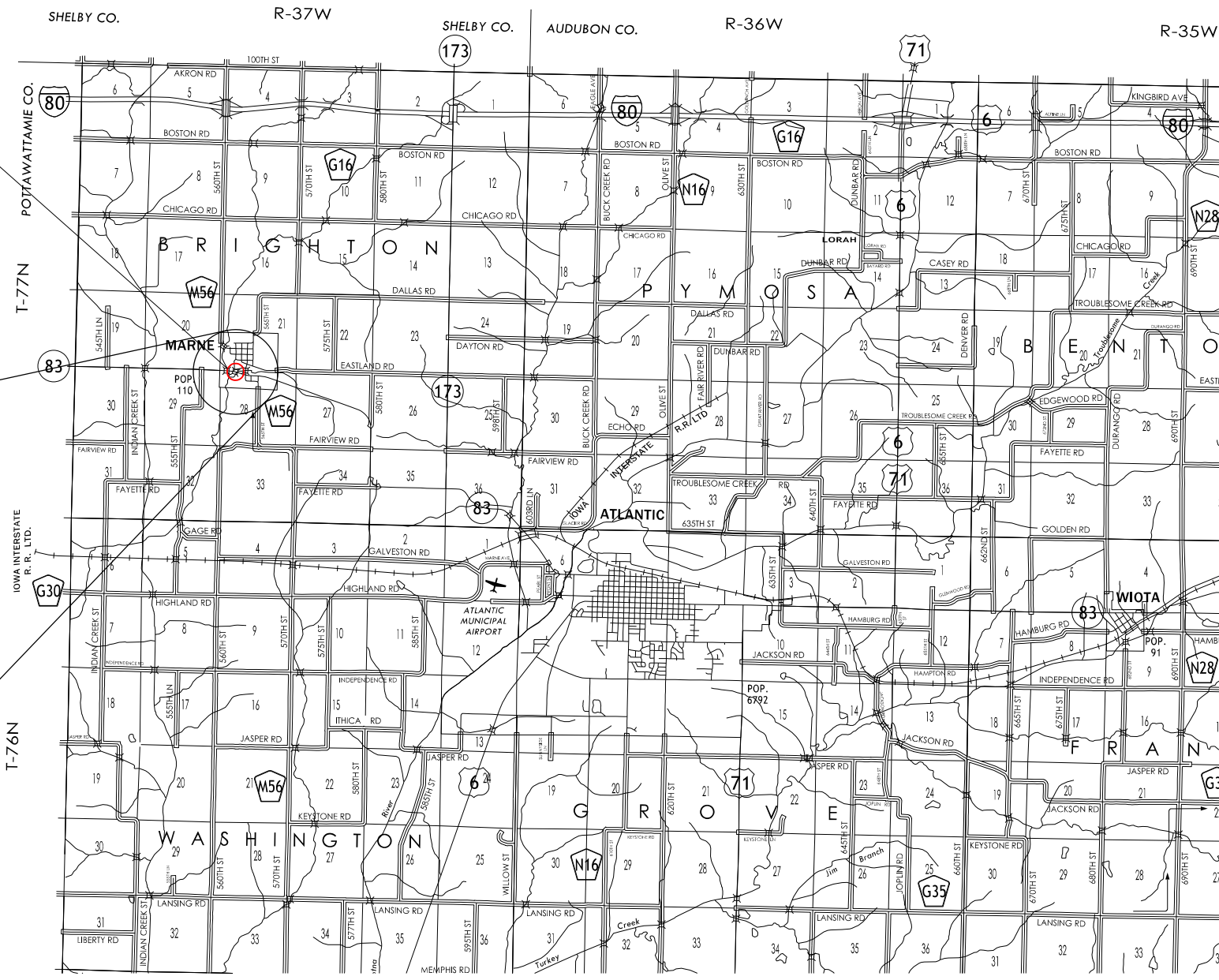
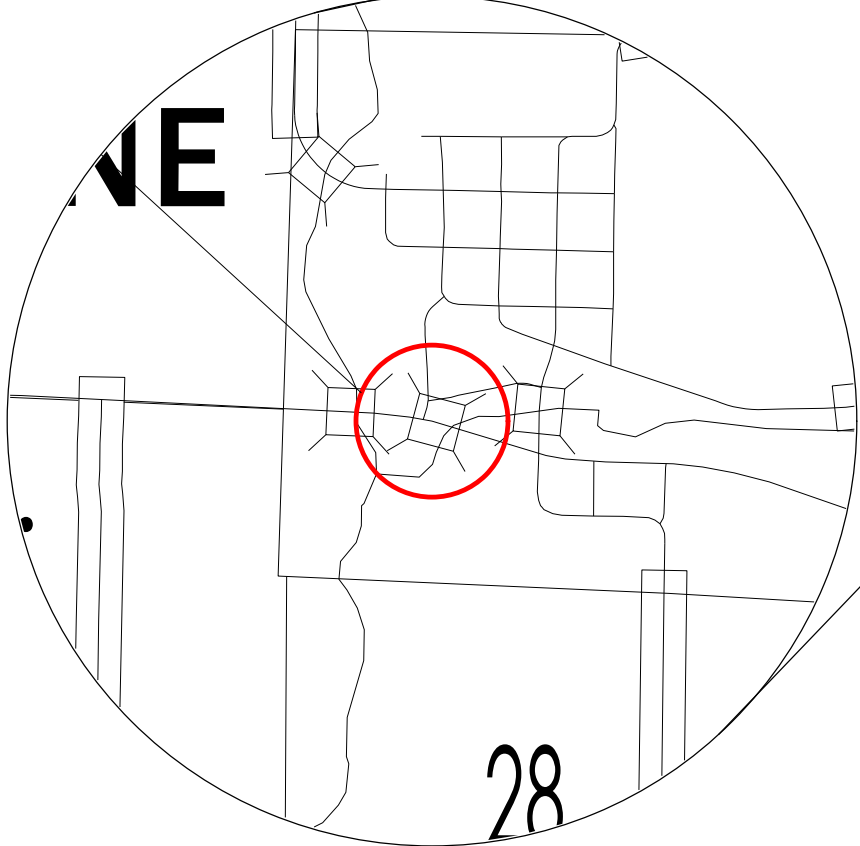
Value Engineering Saves. Refer to Article 1105.14 of the Specifications.



REVISIONS

TOTAL	
36	
PROJECT IDENTIFICATION NUMBER	
25-15-083-020	
PROJECT NUMBER	
BRFN-083-0(047)--39-15	
R.O.W. PROJECT NUMBER	
STPN-083-0(048)--2J-15	

Compton Creek
STA. 111+72.10
Existing FHWA# 17770
Existing Maint.# 1528.2S083
New Asset#



IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE: District 4
ATTENTION: Scott Schram
FROM: John E. Bartholomew
BUREAU: Design
SUBJECT: Project Concept Statement; (Final, D0)

DATE: January 12, 2026
PROJECT: Cass County
BRFN-083-0(047)--39-15
PIN: 25-15-083-020

This project involves the replacement of the IA 83 Culvert (1528.2S083) over Compton Creek 0.1 mi W of Co Rd M56.

A concept review was held on November 12, 2025. Those present included Scott Schram, Wes Mayberry, Nathaniel Epperson, Jason Sallach and Jim Galliart, from the District 4 Office; Linda Narigon, Jim Ellis and Christian Kennel from the Bridges and Structures Bureau; Chelsea Duncan, Claire Asberry and Samuel Sturtz from the Location and Environment Bureau; Josh Opheim and Scott Sweet from WHKS; Jason Holst, Paul Flattery, Yanxiao Jia, John Bartholomew and Joe Adams from the Design Bureau.

The three alternatives considered were:

- 1. Replace the original center section of the Twin 10’ X 10’ reinforced concrete box culvert with a Twin 10’ x 10’ RCB approximately 42’ long. Upstream and downstream extensions and headwalls will be UAC’d. **Estimated cost \$619,600.**
- 2. Replace the existing Twin 10’ X 10’ reinforced concrete box culvert with a new Twin 12’ X 12’ x 84’ RCB. **Estimated cost \$1,032,800.**
- 3. Replace the existing Twin 10’ X 10’ reinforced concrete box culvert with a 70’ CCS bridge. This was dismissed due to significantly higher cost.

Alternative 2 is the preferred alternative. Additional right of way/right of entry will be required. Traffic will be maintained by staged construction.

The Draft Project Concept Statement was sent out for review and comment with concerns to be resolved by Friday, January 9, 2026. Comments received during the review period have been considered and resolved.

JEB:jaa
Attach.
cc:

C. Purcell	K. D. Nicholson	Y. Jia
M. Dell	J. S. Nelson	M. Nop
M. A. Swenson	W. Musgrove	C. C. Poole
S. Majors	A. Poole	K. Brink
D. L. Newell	D. Breitbach	J. W. Laaser-Webb
W. A. Sorenson	E. C. Wright	M. E. Ross
A. A. Welch	J. Harris	M. Van Dyke
B. Hofer	G. Karssen	D. Johnson
A. Knight	S. Anderson	D. Stokes
J. Holst	R. Harris	B. Dolan
T. Lovan	M. Solberg	T. Gustafson
D. Dudley	L. Armstrong	B. Smith
L. Narigon	J. Hauber	S. Sersland
M. E. Khoda	M. Gordy	M. Todsén
J. Ellis	A. Yates	J. Keller
J. Sallach	J. Garton	O. Lechnowsky
J. Cihacek	D. Redmond	N. Epperson
S. Suhr	J. Woodcock	C. Asberry
W. Mayberry	C. Schwienebart	T. Frank
N. Mocha	B. Asberry	P. Flattery
FHWA		

FINAL PROJECT CONCEPT STATEMENT

IA 83 Culvert over Compton Creek 0.1 mi W of Co Rd M56

Cass County
BRFN-083-0(047)--39-15
PIN: 25-15-083-020
Maint. No. 1528.2S083
FHWA No. 17770

Highway Division
Design Bureau

John Bartholomew, P.E.
515-239-1540

January 12, 2026

I. STUDY AREA

A. Project Description

This project involves the replacement of the IA 83 culvert (Maint. No. 1528.2S083) over Compton Creek 0.1 mi W of Co Rd M56.

The three alternatives considered were:

1. Replace the original center section of the Twin 10' X 10' reinforced concrete box culvert with a Twin 10' x 10' RCB approximately 42' long. Upstream and downstream extensions and headwalls will be UAC'd. **Estimated cost \$619,600.**
2. Replace the existing Twin 10' X 10' reinforced concrete box culvert with a new Twin 12' X 12' X 84' RCB. **Estimated cost \$1,032,800.**
3. Replace the existing Twin 10' X 10' reinforced concrete box culvert with a 70' X 40' CCS bridge. This was dismissed due to significantly higher cost.

Alternative 2 is the preferred alternative due to District request to reduce chance of failure in older sections.

B. Need for Project

This is a 20' x 82' concrete box culvert bridge that was built in 1936 and reconstructed in 1991. The walls and bottom of the deck have several leaching cracks and areas delaminated. The wings also have several cracks with leaching and spalled area. Due to the condition, the culvert should be replaced.

Cass County
BRFN-083-0(047)--39-15
PIN: 25-15-083-020
Page 2



Left Profile



Right Profile

C. Present Facility

The existing structure is a 20' x 82', concrete box culvert bridge constructed in 1936 and reconstructed in 1991.

IA 83 in the project area is 28' wide HMA pavement with 2' wide granular shoulders and 3:1 foreslopes, constructed in 1966. BAC & HMA resurfacing was accomplished in 1986 & 2009.

D. Traffic Estimates

The 2030 construction year and 2050 design year average daily traffic estimates are 1000 ADT with 9 % trucks and 1000 ADT with 9 % trucks, respectively.

E. Sufficiency Ratings

IA 83 is classified as an Access route and is a maintenance service level "C" roadway. The Bridge Condition Index is 45.6 and the Bridge Condition Rating is Fair.

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from January 1, 2024 through December 31, 2024, there were no crashes.

PCR Level All Crashes (KABCO): Negligible
PCR Value All Crashes (KABCO): -0.137201 crash/mile/year

II. PROJECT CONCEPT

A. Feasible Alternatives

Alternative #1 - Replace with Infill RCB

Replace the center section of the existing twin 10'-0" x 10'-0' Concrete box culvert with a twin 12' x 12' X 42' reinforced concrete box culvert (RCB).

The typical cross section will consist of a 24' roadway (28' wide pavement) with 6' effective shoulders (2' outside pavement, and 4' granular) and 3:1 foreslopes.

New pavement will be 8.5" PCC over 12" of modified Subbase.

This culvert will be constructed on the existing vertical and horizontal alignment. An off-site detour will be required during construction.

Apply erosion control and rural seeding and fertilizing to all disturbed areas.

It appears that right away will be required for this project, it is programmed for \$5,000.

RCB Items	Estimated Costs
New RCB Culvert (CIP)	\$ 153,000
RCB Removal	30,000
Revetment – Class B	93,000
Revetment – Class E	16,000
Excavation, Class 10, Channel	33,000
Engineering Fabric	7,000
Mobilization - 10%	36,000
M & C - 20%	72,000
Bridge Costs	\$ 473,000

Roadway Items	
Clear & Grub	\$6,300
Embankment in Place, Contractor Furnish	13,700
Excavation Class 13 Waste	2,400
Modified Subbase	4,000
Granular Shld, Type A	700
STD/S-F PCC Pav't, 8.5"	16,300
Removal of Pavement	3,800
Right of Way	5,000
Erosion Control	50,000
Seeding and Fertilizing	600
Mobilization - 5%	7,300
Traffic Control - 5%	7,300
M & C - 20%	29,200
Roadway costs	\$ 146,600

Project Total	\$619,600
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Alternative #2 - Replace with a culvert

Replace the existing twin 10'-0" x 10'-0' Concrete box culvert with a twin 12'-0 x 12'-0" x 84' reinforced concrete box culvert (RCB).

The typical cross section will consist of a 24' roadway (28' wide pavement) with 6' effective shoulders (2' outside pavement, and 4' granular) and 3:1 foreslopes.

New pavement will be 8.5" PCC over 12" of modified Subbase.

The roadway will be reconstructed on the existing vertical and horizontal alignment. The flow line of the box will be buried 2' below the existing flow line in the channel. This will allow the bottom of the box to silt in and provide a natural bottom for fish

passage. The existing ditches will need to be relocated to meet the inlet and outlet flowlines of the new RCB. Class E revetment will be placed at the ends of the RCB

Traffic will be maintained via staged construction utilizing temporary traffic signals.

Apply erosion control and rural seeding and fertilizing to all disturbed areas.

It appears that right away will be required for this project, it is programmed for \$5,000.

RCB Items	Estimated Costs
New RCB Culvert (CIP)	\$ 395,500
RCB Removal	64,000
Revetment – Class B	93,000
Revetment – Class E	16,000
Excavation, Class 10, Channel	33,000
Engineering Fabric	7,000
Staging - 15%	91,300
Mobilization - 10%	60,900
M & C - 20%	121,700
Bridge Costs	\$ 882,400
Roadway Items	
Clear & Grub	\$6,300
Embankment in Place, Contractor Furnish	13,700
Excavation Class 13 Waste	2,400
Modified Subbase	4,000
Granular Shld, Type A	700
STD/S-F PCC Pav't, 8.5"	16,300
Removal of Pavement	3,800
Temp Barrier rail	2,600
Right of Way	5,000
Erosion Control	50,000
Seeding and Fertilizing	600
Mobilization - 5%	7,500
Traffic Control - 5%	7,500
M & C - 20%	30,000
Roadway costs	\$ 150,400
Project Total	\$1,032,800

B. Detour Analysis

There will be no off-site detour. Traffic will be maintained via staged construction with traffic reduced down to one lane via the use of temporary traffic signals.

C. Recommendations

It is recommended that the present structure be replaced, as described in Alternative No. 2.

D. Construction Sequence

It is anticipated that all work on this project will be awarded to one prime contractor. The Bridges and Structures Bureau will coordinate the plan preparation with assistance from the Design Bureau.

E. ADA Accommodations

There are no bike paths or sidewalks adjacent to IA 83; therefore, no ADA accommodations are planned in conjunction with this project.

F. Special Considerations

This will not be a traffic critical project. Traffic critical projects identify key construction projects across the state that may cause significant safety or mobility issues to the traveling public. Mitigation strategies could include intelligent work zones, TIM plans, workday restrictions, night work, lane rental etc.

The ABC Rating Score of 24 is less than the first stage filter threshold of 50, therefore this RCB will not be considered further as a candidate for ABC construction.

No bike path or sidewalk will be required as part of this project.

Waterway is not on a state water trail or paddling route.

Right of Way appears to be required for this project.

The Location and Environment Bureau has reviewed this project and based on preliminary desktop observations, has determined that a Section 404 Permit will be required. It is expected that the work will be covered by Nationwide Permit 14.

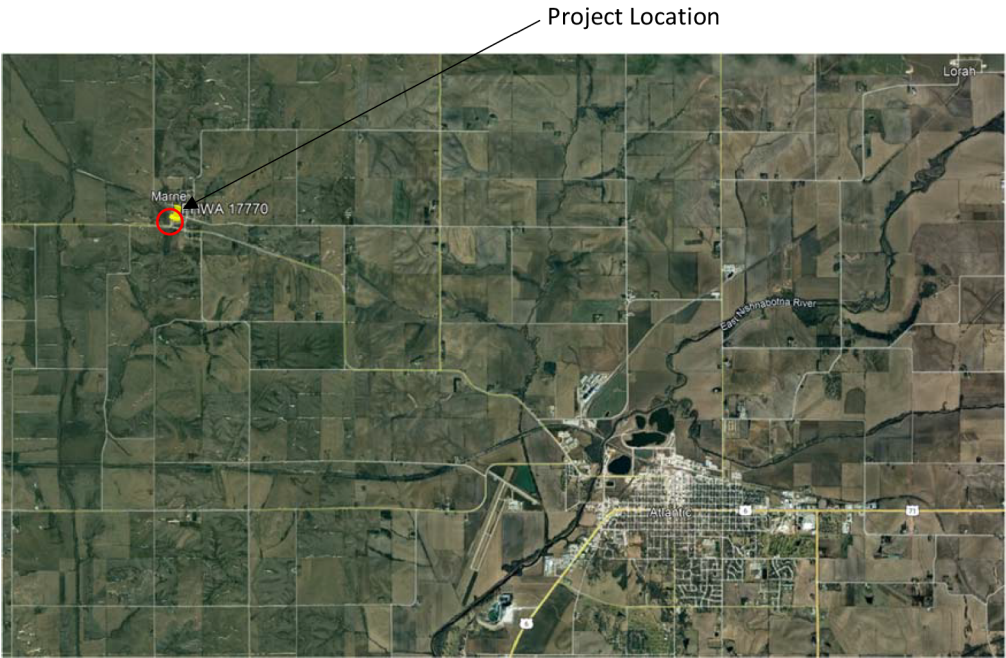
An Environmental Research Study Area (ERSA) has been developed for this project and can be viewed in the concept attachments.

G. Program Status

Site data has been developed by the Design Bureau. This project is listed in the 2026-2030 Iowa Transportation Improvement Program, with \$5,000 programmed for right of way in FY 2030, and \$977,000 for replacement in FY 2030. Costs for this project may be eligible for bridge replacement funds. A schedule of events will be developed following approval of the Project Concept.

JEB:jaa

CASS COUNTY



Compton Creek 0.1 mi W of Co Rd M56
BRFN-083-0(047)--39-15
PIN: 25-15-083-020



Bridge Bureau Attachment for Concept Statement

Date: December 4, 2025
By: Josh Opheim, WHKS
Location: IA 83 over Compton Creek, 0.1 mi W of Co Rd M56

County: Cass
Phase No.: BRFN-083-0(47)--39-15
Project Code: 25-15-083-020

1. Regulatory/Coordination
 - a. Iowa DNR Flood Plain permit = Yes
 - b. Iowa DNR Sovereign Lands permit = No
 - c. Local Record of Coordination = No
 - d. Flood Insurance Study = Yes - Zone A, Panel 19029C0153E, eff. 5/16/2017
 - e. Drainage District = No
 - f. Corps of Engineers Section 408 = No
 - g. State Water Trail or Paddling Route = No
 - h. Historic Structure = No
 - i. Federally owned land in vicinity = No
 - j. USGS or Iowa Flood Center (IFC) gage or sensor impacted? No
 - k. Obstruction Evaluation/Airport Airspace Analysis per FAA website = No
2. Hydrologic/Hydraulic Analysis/RIDB Dataset
 - a. Design discharge methodology = AEPD spreadsheet using StreamStats (USGS SIR 2015-5055)
 - b. Hydraulic analysis done = Yes, Iowa Culvert Hydraulics (pre-survey based on LiDAR)
 - c. If DA > 10 sq. mi. Riverine Infrastructure Database (RIDB) dataset is required with B1 submittal = No
3. Structure/Roadway Layout Considerations
 - a. Roadway alignment will match existing. Position of culvert will shift approximately 10' upstation to better align with stream due to longer length and longer wingwalls.
 - b. No change to roadway profile grade is required.
 - c. Culvert flowline will be lowered approximately 3.3'. Fill will increase approximately 1'.
 - d. Culvert placed at 0 degree skew relative to local tangent.
4. Special construction issues
 - a. Special design of outlet basin and Class B revetment will be required due to high outlet velocities and stream slope. Tree clearing and ROW acquisition south of IA 83 will be required.
 - b. Portions of existing culvert walls are supported on piling. Partial piling removal will be required to construct new culvert.
 - c. Ground shaping and Class E revetment around the inlet headwall will reduce multi-barrel sedimentation.
5. Special survey = No
6. Aesthetic enhancements = No

7. Maintenance of Traffic
 - a. Construction will be staged half at a time. See staging diagram. TBR, temporary shoring, detour pavement, and temporary shoulder/foreslope grading may be required.
 - b. Off-site detour is not desirable per the District. Best route includes county roads M47 to G30 to M56, 7 miles out of distance travel.

Special Survey:

None

Bridge Cost Estimate and Analysis for Concept Statement

Location:

County: Cass

Des. No.: TBD

Maint. No.: 1528.2S083

On IA 83 over Compton Creek

Section 21, T-77N, R-37W

Functional Class: Major Collector

By: J. Opheim, WHKS

Phase No.: BRFN-083-0(47)--39-15

Project Code: 25-15-083-020

FHWA No.: 17770

Sta.: 111+79

ADT: 830 vpd (2024), 14% trucks

Date: December 4, 2025

Existing Bridge:

Type: RCB

Pier Type: N/A

Spans: 20'x13' w/ Tw10x10 extn.

Skew: 0 degrees

Drainage Area: 2.03 sq. mi.

New/Reconstructed Roadway Width: 24'

Length x Width: 39' + 17'L & 22'R extn.

Abut. Type: N/A

Approach Pavement Width: 24'

General Comments:

- Original 20'x13'x39' box culvert, built in 1936, has no floor and outside walls on piling. The culvert was extended in 1991 with a Twin 10x10 RCB (17' left, 22' right) and flared wing headwalls.
- Existing headwalls are in good condition with only minor vertical cracking in the walls. The original center section is in fair to poor condition with leaching cracks. A small section of the near wall footing is exposed.
- Current length from back-to-back of parapets is 80' which meets required clear zone requirements (24' clear zone per Pre-Design Bridge Request).
- High outlet velocities and stream slope have resulted in a ~4' drop from streambed to top of curtain wall at the downstream end. An adequate energy dissipation device with correct size revetment and adequate length will mitigate the stream degradation downstream.
- Recommended replacement option is a Twin 12x12 RCB with the flowline lowered 2' to more closely match downstream streambed elevations. Exit velocities are slightly reduced. Revetment with additional ROW will be needed to protect the channel due to velocity.
- 50-yr outlet velocity = 12.7 ft/s (13.4 ft/s existing) and 100-yr outlet velocity = 13.4 ft/s (14.2 ft/s existing). These high velocities will be mitigated using an energy dissipator designed by the HEC-14 riprap basin method.
- The culvert causes no increase in water surface elevations above the natural headwater (backwater = 0') at the 50-yr, 100-yr and 500-yr flows.

Bridge Concept Statement

Cass County

Project Number BRFN-083-0(47)--39-15

- Other structure options considered:
 - Replace the original center portion of the culvert with a Twin 10x10 RCB approximately 42' long. Upstream and downstream extensions and headwalls will be U.A.C'd. This option was deemed undesirable due to the uncertainty and risk involved in saving portions of the culvert.
 - 70' CCS bridge. Outlet velocities would be reduced and may require less revetment and ROW. Allows stream degradation to propagate upstream. Significantly higher cost.

Option A - New RCB (Recommended) -

Type: RCB

Pier Type: N/A

Spans: N/A

Stage Traffic: Stage construction at centerline

Length x Width: Twin 12'x12'x84'

Abutment Type: N/A

Skew: 0 degrees

Costs:

Remove Exist. Culvert	= \$	64,000
RCB Culvert (CIP) @ \$900/CY incl. concrete, reinforcing, minor grading	= \$	395,500
Revetment, Class B	= \$	93,000
Revetment, Class E	= \$	16,000
Excavation, Class 10, Channel	= \$	33,000
Engineering Fabric	= \$	7,000
Staging (15%)	= \$	90,000
Mobilization (10%)	= \$	70,000
Contingency and Misc. (20%)	= \$	154,000
		=====
Total Option A	\$	922,500

Bridge Concept Statement

Cass County
Project Number BRFN-083-0 (47) --39-15

Option B - Infill RCB

Type: Twin 10x10 RCB infill Length x Width: 42' (infill length)
Pier Type: N/A Abutment Type: N/A
Spans: N/A Skew: 0 degrees
Stage Traffic: Off-site detour

Costs:		
Remove Exist. Culvert	= \$	30,000
RCB Culvert (CIP) @ \$1600/CY incl. concrete, reinforcing, minor grading	= \$	153,000
Revetment - Class B	= \$	93,000
Revetment - Class E	= \$	16,000
Excavation, Class 10, Channel	= \$	33,000
Engineering Fabric	= \$	7,000
Temporary Shoring	= \$	25,000
Mobilization (10%)	= \$	36,000
Contingency and Misc. (20%)	= \$	78,000
=====		
Total Option B	\$	471,000

Option C - New CCS Bridge

Type: CCS Length x Width: 70' x 40'
Pier Type: Pile Bent Abutment Type: Integral
Spans: 21'-28'-21' Skew: 0 degrees
Stage Traffic: Off-site detour

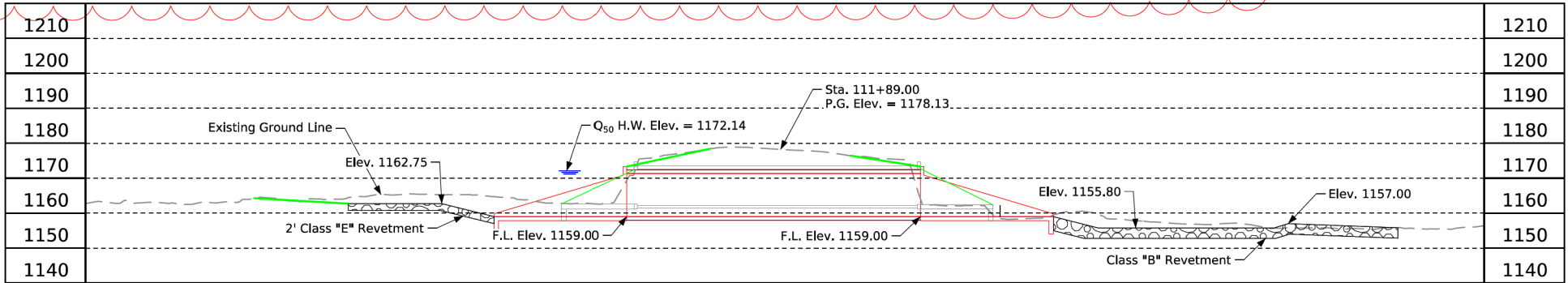
Costs:		
Remove Exist. Culvert - 1600 sf @ \$20/sf	= \$	32,000
70' x 40' CCS Bridge - 3058 sf @ \$170/sf	= \$	520,000
Revetment, Class E	= \$	27,500
Mobilization (10%)	= \$	58,000
Contingency and Misc. (20%)	= \$	127,000
=====		
Total Option C	\$	764,500

Accelerated Bridge Construction (ABC):

The calculated ABC Rating Score based on Iowa DOT BDM Chapter 8 criteria and 7 miles out of distance travel is 24.

Traditional construction may be appropriate. If issues arise relative to an off-site detour, or upon District request, an accelerated bridge option may be provided for evaluation.

Control Point: 781800331 CP SET FENO MONUMENT IN NORTH ROW OF I-80 APPROX 50 FT NORTH OF AC SHOULDER & APPROX 35 FT SOUTH OF ROW FENCELINE, N=7055334.202, E=16571115.199, EL.=1313.069
781800343 CP SET FENO MONUMENT IN NW QUAD I-80 & CO RD M16 155 FT WEST OF CL M16 AND 45 FEET NORTH WESTBOUND ON RAMP, N=7055546.614, E=16577149.141, EL.=1321.183



0.00 %
VPI Sta. = 111+39.00 VPI Elev. = 1178.13
VPI Sta. = 112+39.00 VPI Elev. = 1178.13

**Existing Profile
Grade On $\mathbb{C}$ IA 83**

Alternative #2

Utilities Note:

Utilities shown on this sheet are for information only. See Road Design sheets for utility information. Conflicts with existing utilities and need for potential relocations to be confirmed in Final Design.

General Utility Symbols:

TBD - Pending Survey

Traffic Data

2024 AADT 830 V.P.D.
TRUCKS 14 %

**Estimated Revetment Quantities
Included With Road Plans**

Location	Revetment Class "E" (Ton)	Revetment Class "B" (Ton)	Engineering Fabric (SY)	CL 10 Channel Excavation (CY)
Inlet	479.8		554.2	319.9
Outlet		1619.5	1116.4	1132.4
Totals	479.8	1619.5	1670.6	1452.3

Excavation quantity calculated from grading surface. Excavation quantity is for embedded revetment core out only, and does not include excavation to the grading surface. Excavation quantity to the grading surface is determined by Road Design and included in the Road Plans. Quantities shown for information only. See Road Sheets.

Grading Control/Revetment Layout:

- G1

Sta. 112+26.38, 82.42' Lt.
- G2

Sta. 112+39.23, 110.55' Lt.
- G3

Sta. 112+31.68, 142.60' Lt.
- G4

Sta. 111+52.41, 82.22' Lt.
- G5

Sta. 111+51.64, 77.71' Rt.
- G6

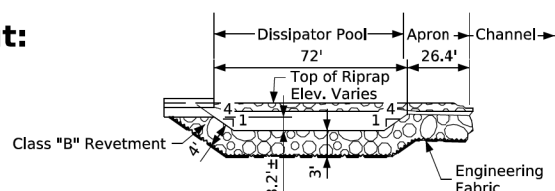
Sta. 111+75.75, 171.13' Rt.
- G7

Sta. 112+08.57, 175+81' Rt.
- G8

Sta. 112+27.57, 77.69' Rt.
- G9

Sta. 112+00.89, 143.92' Rt.
- G10

Sta. 112+01.98, 148.61' Rt.



Profile of Outlet Protection

Location:

IA 83 Over Compton Creek
T-77N R-37W
Section 28
Brighton Township
Cass County
FHWA No. 17770
Maint. No. 1528.2S083
Latitude: 41.446754
Longitude: -95.114364

Hydraulic Design

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

Signature: Brian J. Birkland Date: _____
My license renewal date is December 31, 2026

Pages or sheets covered by this seal: V.1

Hydraulic Data

RIDB: CampC_Cass Trib3 0.13
Drainage Area = 2.03 Sq. Mi.
Site Stream Slope = 1.37% (72.3ft./mi.)
No Tailwater Effects on Culvert
No Headwater (Backwater) Effects from Culvert
Per USGS Report 2015-5055, Discharges Are From USGS Report 87-4132 Region 2
Single Variable Regression Equations

Q₅₀ (Design) = 1,480 cfs
Headwater (HW) Elevation = 1172.14
Exit Velocity = 12.7 fps

Q₁₀₀ = 1,790 cfs
HW Elevation = 1172.80
Exit Velocity = 13.4 fps

Q₂₀₀ = 2,200 cfs
HW Elevation = 1173.61
Exit Velocity = 14.4 fps

Q₅₀₀ = 2,700 cfs
HW Elevation = 1174.42
Exit Velocity = 15.4 fps

General Notes:

--This design is for the replacement of the existing Twin 10'x10'x80' Reinforced Concrete Box Culvert, Cass Design No. 1263 & 689, FHWA No. 17770, Maint. No. 1528.2S083.

Plan Notes:

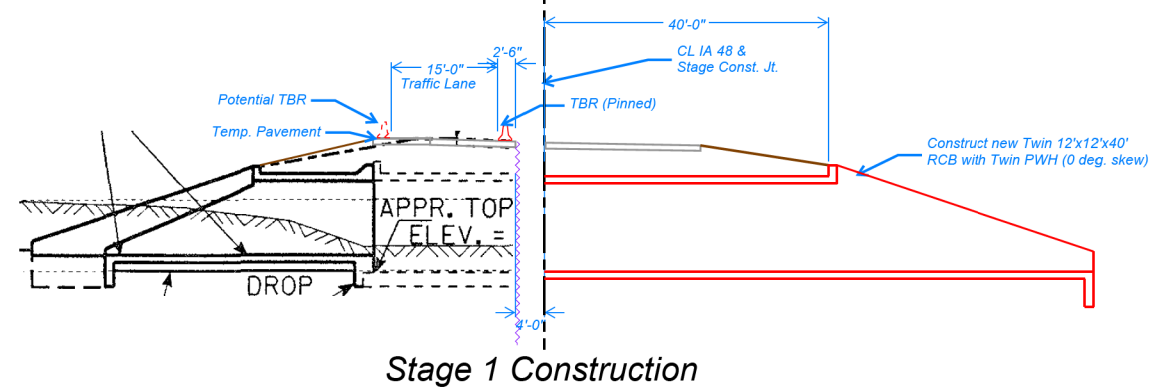
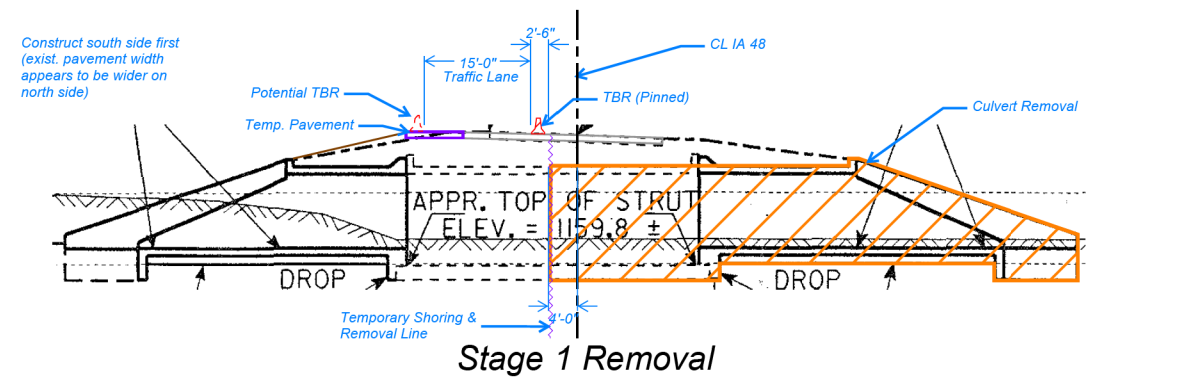
--Revetment stone is embedded.
--Faint lines indicate existing contours.
--Flow line of the culvert has been set approximately 3.75' below the upstream streambed.

Designer Notes

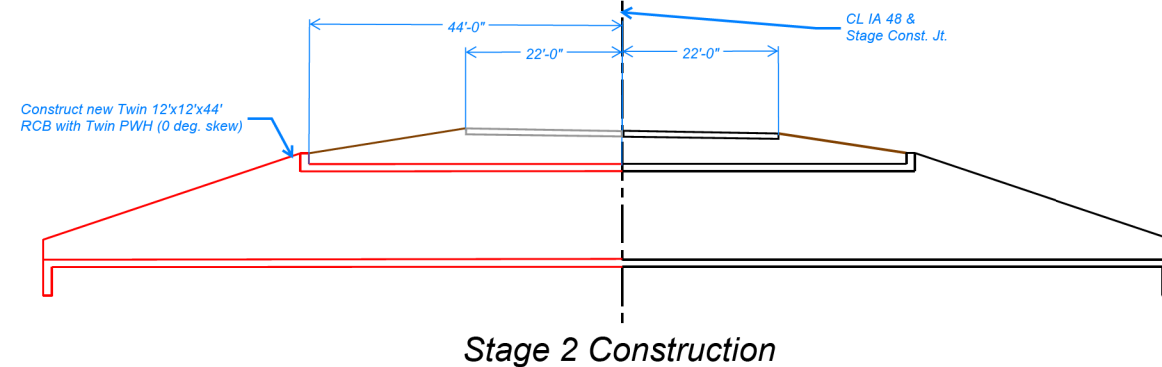
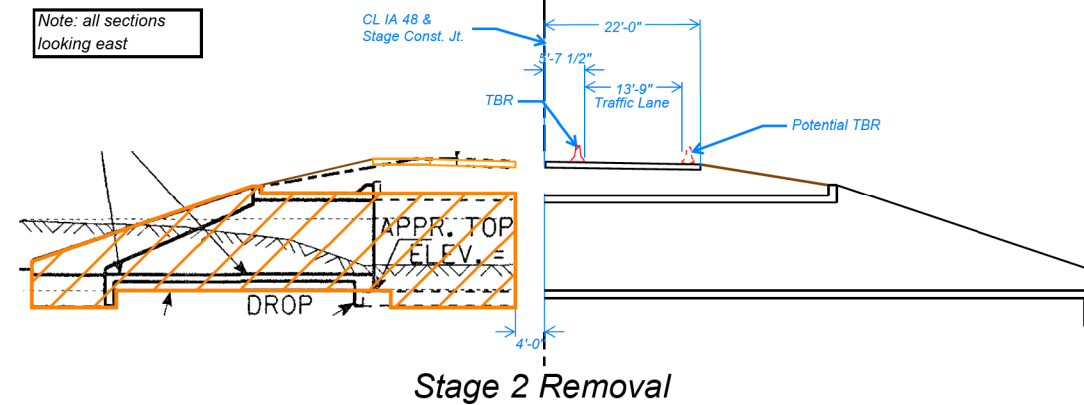
--Culvert location, fill, and elevations are pending topographic survey and establishment of existing and proposed alignment.
--Conflicts with original box culvert foundations are possible. Portions of existing culvert walls are supported on piling. Partial piling removal will be required to construct new culvert.

Preliminary
Design For 0 Degree Skew
Twin 12'x12'x84' Reinforced Concrete Box Culvert
Situation Plan
STA. 111+89.00 (IA 83) Turn-in Date: December, 2025
Cass County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 7777 Design Sheet No. 1 of 1 FHWA/Asset 17770
SHEET NUMBER V.1

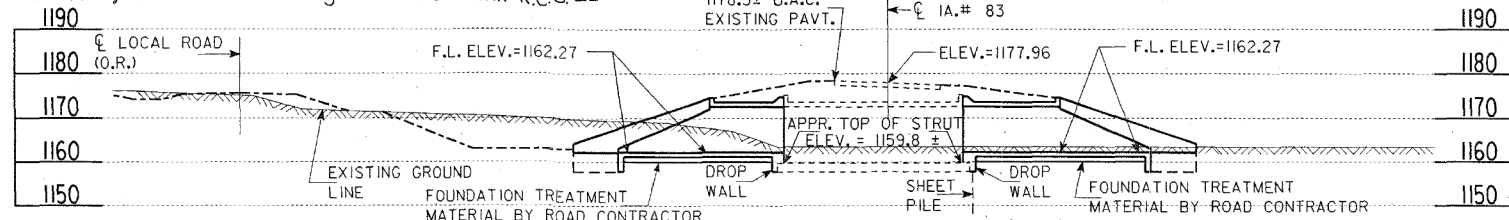
Draft Staging Diagram - IA 83 over Compton Creek
RCB Replacement
BRFN-083-0(047)--39-15



Note: all sections
looking east



BENCH MARK: NO. 108; STA. 109+88.108' LT., FOUND. R.R. SPK. IN N. SIDE P. POLE, ELEV. 1174.76;
BENCH MARK: NO. 108; Sta. 111+71.41' RT., D.O.T. Plug N. Headwall Twin R.C.B. ELEV. 1175.10



LONGITUDINAL SECTION ALONG CULVERT

SPECIFICATIONS:
DESIGN: AASHTO SERIES OF 1989.
CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION SPECIFICATION, SERIES OF 1984, PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

DESIGN STRESSES:
DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1989. REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60. CONCRETE IN ACCORDANCE WITH SECTION 8, $f'_c = 3,500$ PSI.

HYDRAULIC DATA

DRAINAGE AREA = 1300 AC. VERY HILLY
 $Q_{50} = 1500$ CFS
DESIGN STAGE = 1172.9
 $Q_{100} = 1725$ CFS
DESIGN STAGE = 1173.8
 $Q_{500} = 2000$ CFS
DESIGN H.W. ELEV. = 1174.8

NOTE: FOR "GENERAL NOTES" AND "DROP WALL" DETAILS" SEE DESIGN SHEET 2.

TRAFFIC CONTROL PLAN

1. IOWA NO. 83 WILL BE CLOSED TO THROUGH TRAFFIC.
2. CONSTRUCTION OF COMPTON CREEK R.C.B. EXTENSION SHALL NOT BEGIN UNTIL IA. 83 HAS BEEN CLOSED DUE TO CONSTRUCTION OF CAMP CREEK BRIDGE.
3. A STAGGERED BARRICADE WILL BE REQUIRED AT STA. 115+00, WITH A "ROAD CLOSED TO THRU TRAFFIC" SIGNED FACING WESTBOUND TRAFFIC. THIS TO BE DONE BY ROAD CONTRACTOR.
4. THE LOCATION FOR STORAGE OF EQUIPMENT BY THE CONTRACTOR DURING NON-WORKING HOURS SHALL BE APPROVED BY THE ENGINEER IN CHARGE OF CONSTRUCTION.
5. PROPOSED CHANGES TO THE TRAFFIC CONTROL PLAN SHALL BE REVIEWED WITH THE OFFICE OF CONSTRUCTION BEFORE CHANGES ARE MADE.

SUMMARY OF REINFORCING STEEL

LOCATION	QUANTITY	TOTAL
HEADWALLS 10'x10' 0° SKEW (2 REQ'D.)	2 AT 7357	14,714
17'-0" BARREL EXTENSION (1 REQ'D.)	6082	6082
22'-0" BARREL EXTENSION (1 REQ'D.)	7871	7871
DROP WALL	2 AT 439	878
3"x2'-6" DOWELS IN WALLS (44 REQ'D.)		115
3"x5'-3" SLAB TO PARAPET DOWELS (46 REQ'D.)		252
TOTAL (LBS.)		29,912

CONCRETE PLACEMENT QUANTITIES

LOCATION	FOOTING	WALLS	SLAB	TOTAL
HEADWALLS 10'x10' 0° SKEW (2 REQ'D.)	2 AT 38.9 = 77.8	2 AT 16.9=33.8	*2 AT 4.1 = 8.2	119.8
17'-0 BARREL EXTENSION (1 REQ'D.)	13.1	15.1	11.1	39.3
22'-0 BARREL EXTENSION (1 REQ'D.)	16.9	19.6	14.3	50.8
DROP WALL	2 AT 6.1 = 12.2	_____	_____	12.2
TOTAL (CU. YDS.)	120.0	68.5	33.6	222.1

* INCLUDES PARAPET, TOP OF WINGWALL AND SLAB FILLET, (1.8 CU. YDS.)

TOTAL ESTIMATED CULVERT QUANTITIES

ITEM NO.	ITEM	UNITS	QUANTITY
1	STRUCTURAL CONCRETE	CU. YDS.	222.1
2	REINFORCING STEEL	LBS.	29,912
3	CLASS 20 EXCAVATION	CU. YDS.	570
4	PILING, STEEL SHEET	SO. FT.	187

- ITEM NO. ESTIMATE REFERENCE INFORMATION:
1. ALL STRUCTURAL CONCRETE TO BE CLASS "C".
 3. INCLUDES 185 CU. YDS. FOR EXCAVATING 2 FT. BELOW THE FLOOR FOR FOUNDATION TREATMENT.

DESIGN FOR EXTENSION OF 0° SKEW TWIN 10'x10' REINFORCED CONCRETE BOX CULVERT SITUATION PLAN

STATION: 111+71.00 (C. IOWA # 83) AUGUST, 1990
CASS COUNTY

IOWA DEPARTMENT OF TRANSPORTATION--HIGHWAY DIVISION
DESIGN SHEET NO. 1 OF 2 FILE NO. 27836 DESIGN NO. 689

LOCATION

IA.#83 OVER SMALL CREEK
T-77 N R-37 W
SECTION 21
BRIGHTON TOWNSHIP
CASS COUNTY
BRIDGE MAINT. NO. 1528.25083

TRAFFIC ESTIMATE

1991: 660 VPD
2011: 720 VPD
10% TRUCKS

SURVEY IA.# 83 CURVE DATA:

$\Delta = 14^\circ 46' 00''$ RT.
 $D = 2^\circ 30' 00''$
 $T = 296.98'$
 $L = 590.67'$
 $E = 19.16'$
 $R = 2291.83'$

SITUATION PLAN

SECTION LEADER G. NOVEY

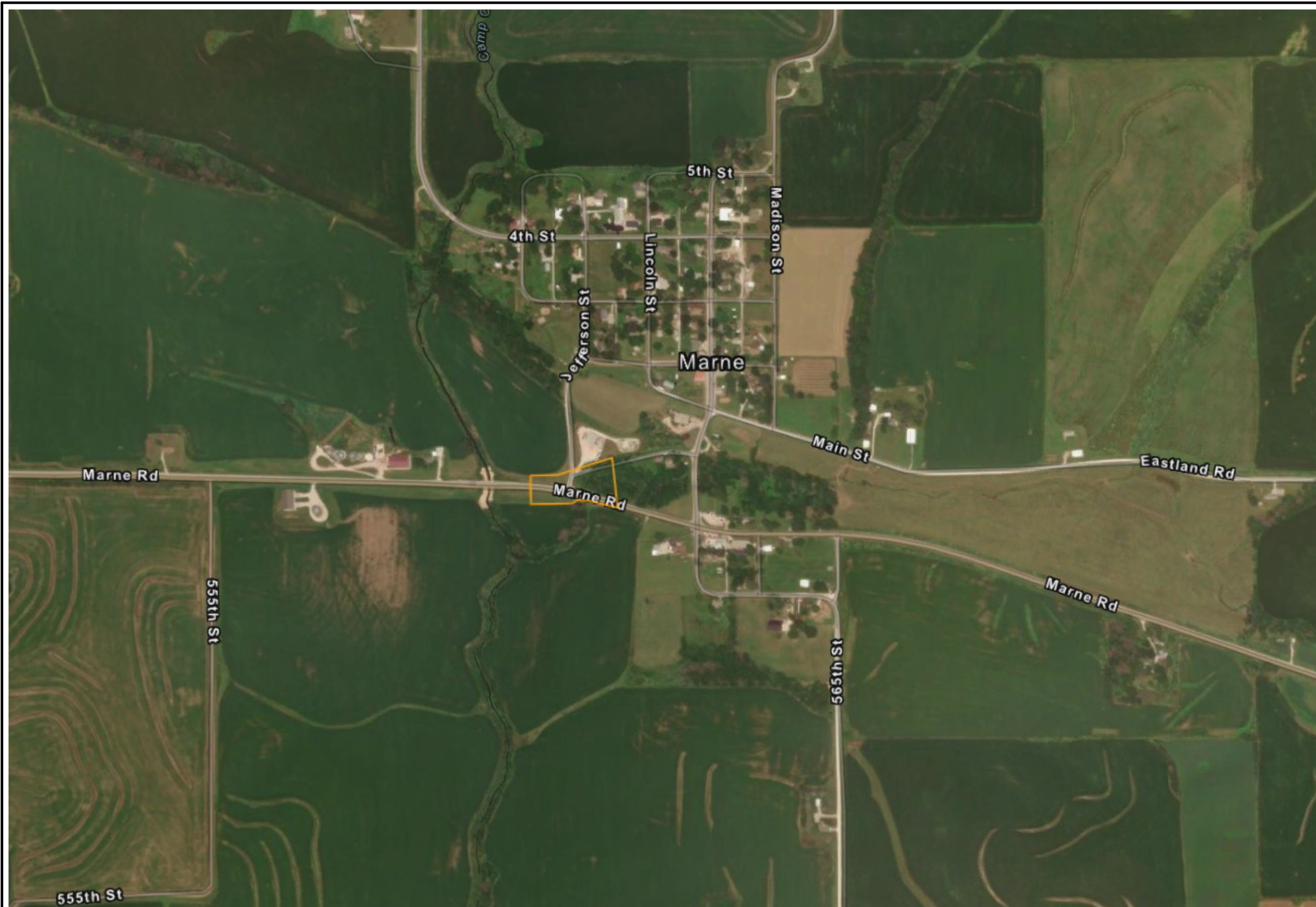
LOCAL ROAD (O.R.) CURVE DATA:

$\Delta = 12^\circ 59' 46.87''$ LT.
 $D = 6^\circ 30' 00''$
 $T = 100.40'$
 $L = 199.94'$
 $E = 5.7'$
 $R = 881.47'$

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

DESIGNED BY M. FREIER TRACED BY N.M. ABOUSSA
DATE 8/23/90 CHECKED BY
REG. NO. 8704

H15689.S01 DEVICE : ZGAI(200,003)ARCH. TAPE No. _____ DATE _____



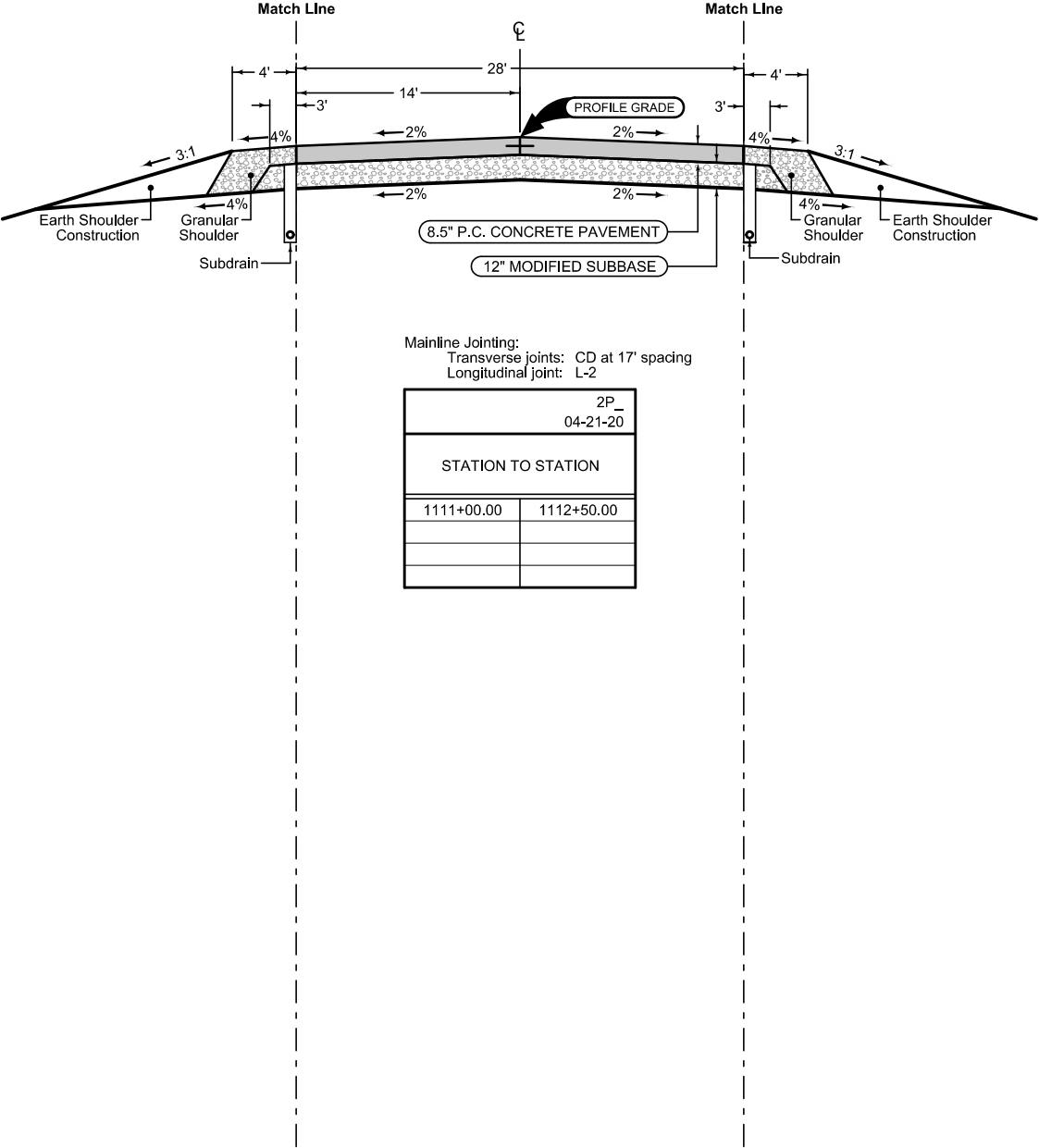
Utility contacts for Cass County, BRFN-083-0(047)--39-15 (RCB Culvert-Unspecified)
Location: RCB Culvert-Unspecified

Atlantic Municipal Utilities Electric Distribution
Brad Strouth, Line Superintendent
15 W 3rd PO Box 517 Atlantic, IA, 50022
ph: 7122431395 cell: 5152508455
BStrouth@amu1.net

Marne & Elk Horn Telephone Company Fiber Distribution
Jim Lindgren, Outside Plant Manager
4242 Main str. Elk Horn, IA, 51531
ph: 7127646161 cell: 7122490159
jim@metcteam.com

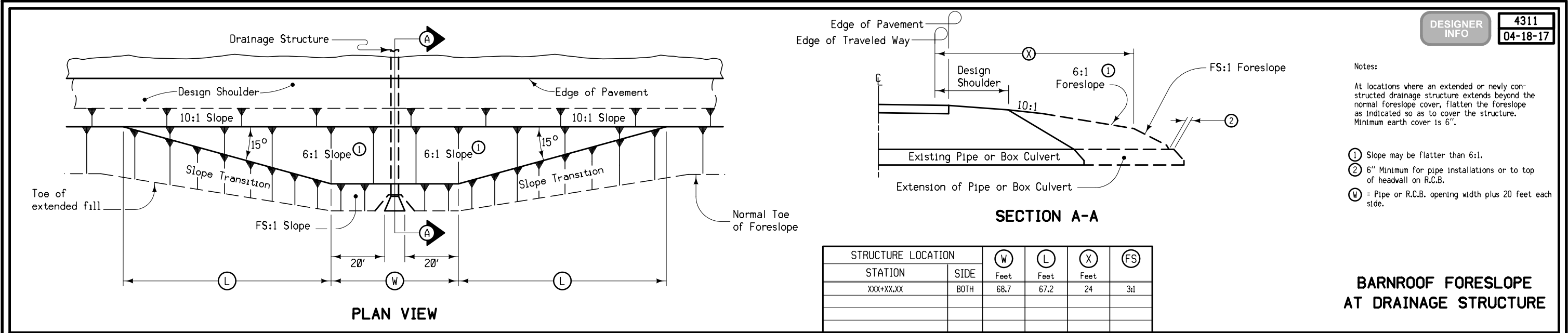
MidAmerican Energy Company Electric Distribution
Scott Behrens, Lead, Electric Distribution Engineering SW
Iowa
3003 S. 11th St Council Bluffs, IA, 51501
ph: (712) 366-5636 cell: (402) 657-1059
scott.behrens@midamerican.com

MidAmerican Energy Company Gas Distribution
Tyler Ahlquist, Gas Distribution Engineer II
223 S Iowa St Sioux City, IA, 51104
ph: (712) 277-7832 cell: (712) 294-4356
tjahlquist@midamerican.com

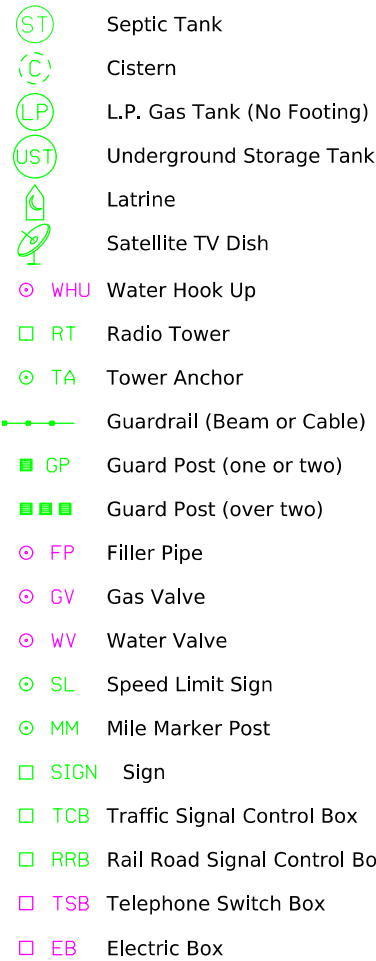


Mainline Jointing:
Transverse joints: CD at 17' spacing
Longitudinal joint: L-2

2P_04-21-20	
STATION TO STATION	
1111+00.00	1112+50.00



	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)
	Tile Outlet
	Edge of Water
	Existing Drainage
	Right of Way Rail or Lot Corner
	Concrete Monument
	Well
	Windmill
	Beehive Intake
	Existing Intake
	Existing Utility Access (Manhole)
	Fire Hydrant
	Water Hydrant (Rural)



SURVEYED UTILITY OWNER SYMBOLS

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

Remark Abbreviations

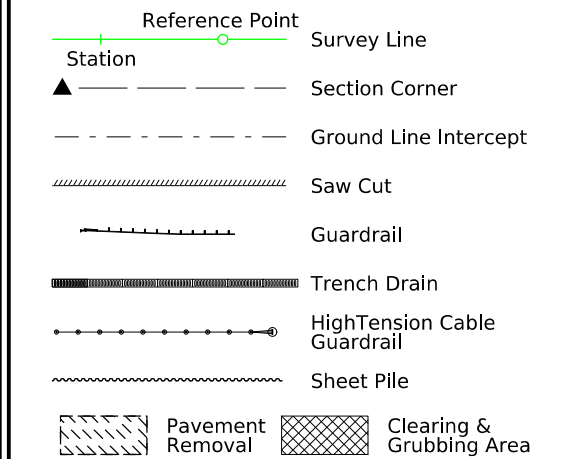
QLA Quality Level A Highest guideline quality level

QLD Quality Level D Lowest guideline quality level



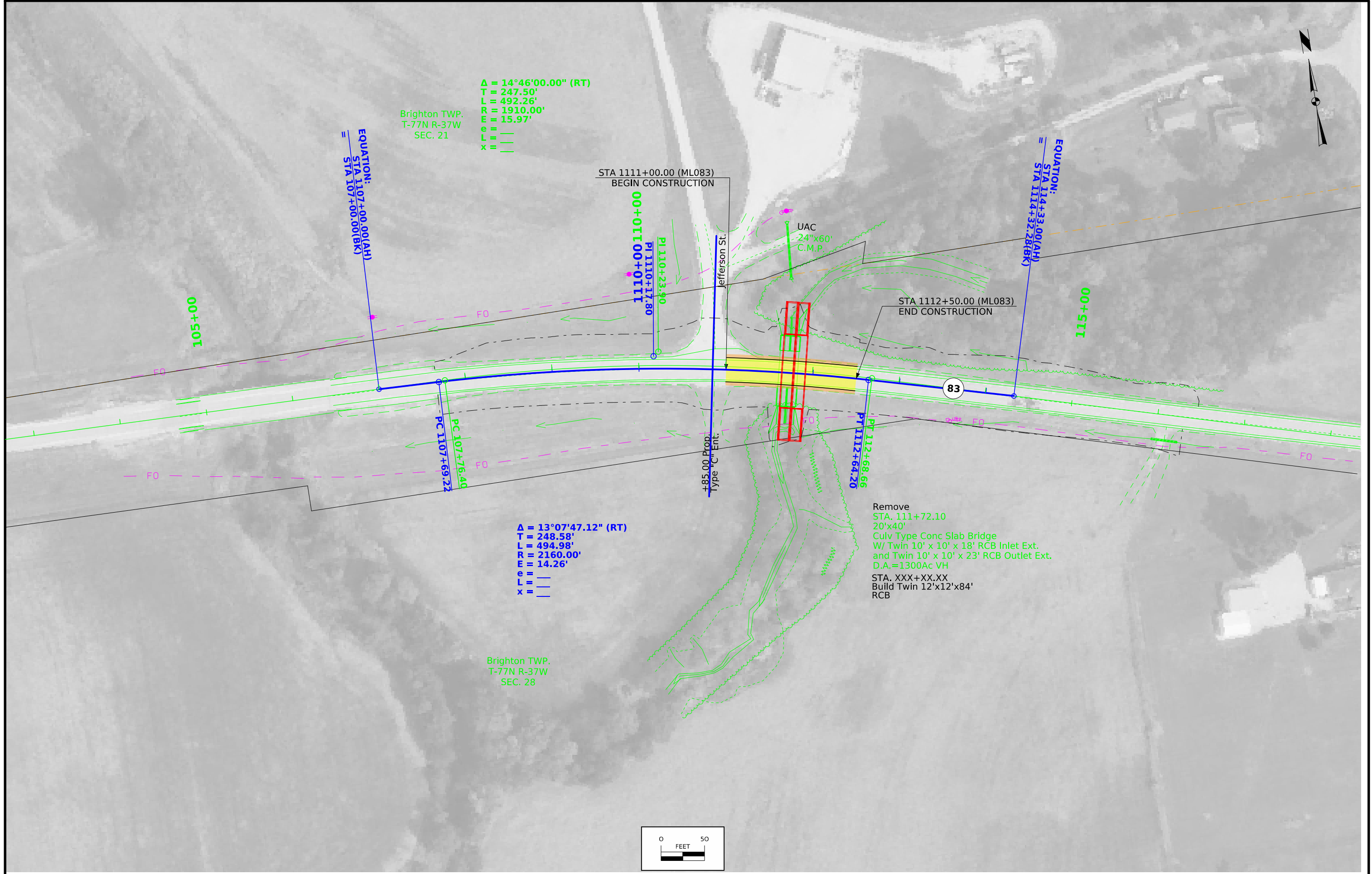
LINEWORK		Design Color No.		
Green	(2)		Existing Topographic Features and Labels	
Blue	(1)		Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation	
Magenta	(5)		Existing Utilities	
SHADING		Design Color No.		Transparency
Pink, Dark	(13)		Temporary Pavement Shading	50%
Yellow	(4)		Proposed Pavement Shading	50%
Orange	(6)		Proposed Granular Shading	50%
Orange	(70)		Proposed Shoulder Granular Shading	50%
Yellow	(68)		Proposed Shoulder Paved Full Depth Shading	50%
Yellow	(132)		Proposed Shoulder Paved Partial Depth Shading	50%
Brown, Light	(236)		Grading Shading	50%
Orange, Light	(134)		Proposed Granular Entrance Shading	50%
Yellow	(220)		Proposed Paved Entrance Shading	50%
Tan	(8)		Proposed Sidewalk Shading	50%
Blue, Light	(230)		Proposed Sidewalk Landing Shading	50%
Pink	(11)		Proposed Sidewalk Ramp Shading	50%
Red	(3)		Proposed Structure Shading	50%
Red	(3)		Delineates Restricted Areas	0%

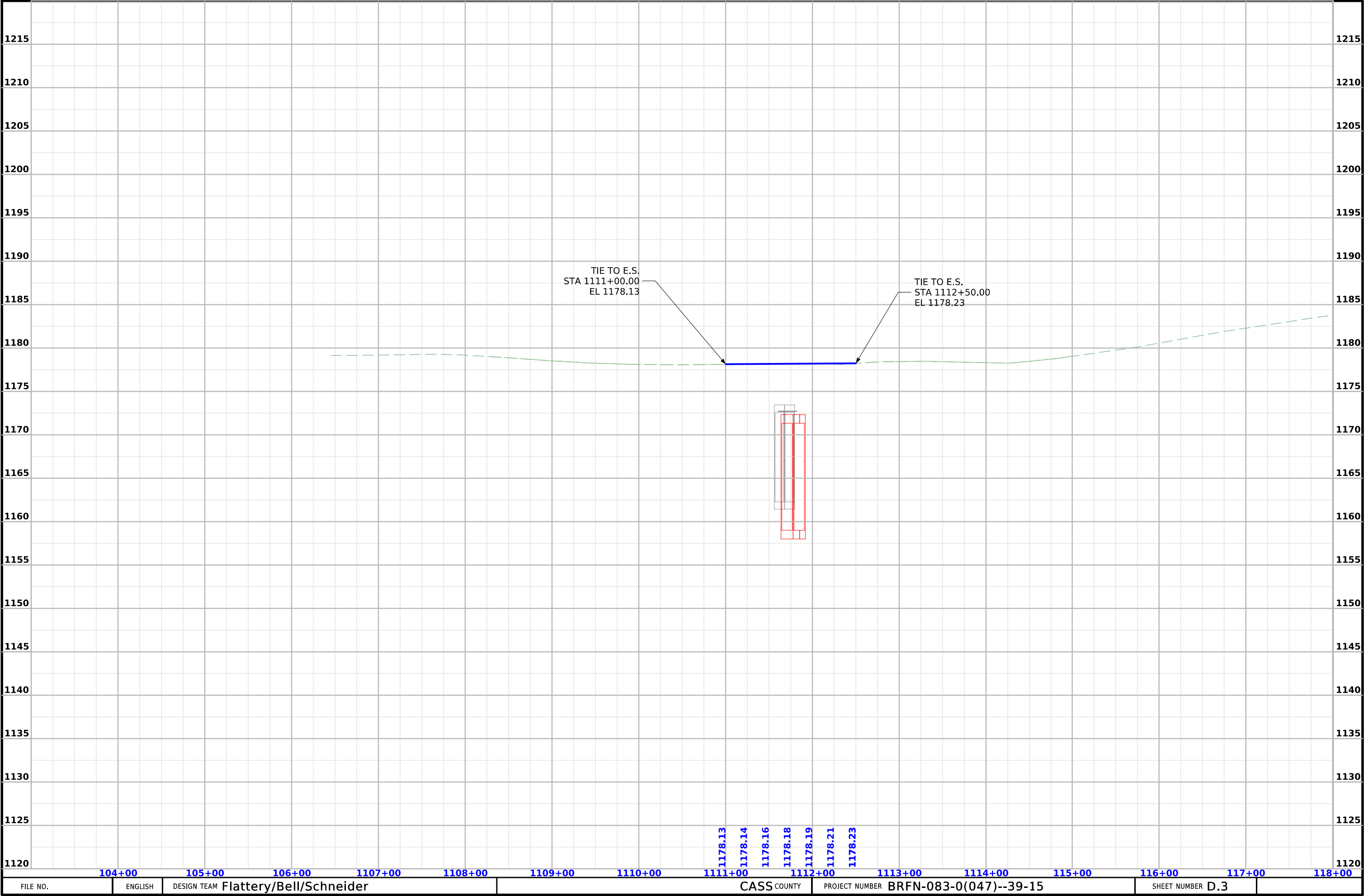
LINEWORK	Design Color No.	
Green	(10)	Existing Ground Line Profile
Blue	(1)	Proposed Profile and Annotation
Magenta	(5)	Existing Utilities
Blue, Light	(230)	Proposed Ditch Grades, Left
Black	(0)	Proposed Ditch Grades, Median
Rust	(14)	Proposed Ditch Grades, Right



	Proposed Right-of-Way Symbol
	Proposed Right-of-Way Line
	Existing Right of Way
	Existing and Proposed Right-of-Way
	Easement and Existing Right-of-Way
	Easement (Temporary) Symbol
	Easement (Temporary) Line
	Easement
	Access Control
	Property Line Symbol
	Property Line

(COVERS SHEET SERIES D, E, F, & K)





Survey Information

SURVEY INDEX

County: Cass
PIN: 25-15-083-020
Project Number: BRFN-083-0(047)--39-15
Location: Compton Creek 0.1 mi W of Co Rd M56
Type of Work: 3001-RCB Culvert-Unspecified
Project Directory: 1508302025

Survey Personnel

Paul Harry – Survey Party Chief
Bob Fredrickson – Assistant Survey Party Chief

Date(s) of Survey

Begin Date 04/20/2026
End Date 05/12/2026

General Information

This survey is for Hwy 83 culvert replacement at Compton Creek in Marne. This project is a Full Field DTM survey.

Utility Information

For logging data and other utility details see Utility Survey and Ownership Report in the Utility folder of the PrelimSurvey project directory.

Project Control

Coordinates were determined for primary project control points by conducting concurrent six-hour static observations. Post processing is constrained to nearby Iowa Real Time Network reference stations. For additional details of the control survey, contact the Preliminary Survey department.

PROJECT DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 ADJUSTMENT)
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 07
(U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u3

Alignment Information

The horizontal alignment for Hwy 83 this survey was provided by the District 4 ROW Office.

CONTROL POINT VICINITY MAP

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



HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment) - Iowa RCS Zone 07 (U.S. Survey Foot)

VERT. DATUM: NAVD88 - Geoid Model: 2018u3

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

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING
HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment)
Ia. Regional Coordinate System Zone 07 (U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2018u3

Point Name	Northing	Easting	Elevation	Code - Description
150830260	7236595.01	17357057.23	1297.19	CP FD IOWA DOT FENO MON AS DESCRIBED
150830275	7236516.48	17364562.32	1273.55	CP FD IOWA DOT FENO MON AS DESCRIBED
150830281	7237081.48	17368058.82	1190.13	CP SET IOWA DOT FENO MON
MARNE	7255297.25	17366786.30	1316.08	CP FD NGSMON AS DESCRIBED
WASHAZMK	7230574.61	17377676.31	1333.22	CP FD NGSMON AS DESCRIBED

108-25
10-21-14

511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
			None anticipated									

108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic on IA 83 shall be maintained at all times via staging and temporary pavement
Jefferson Street at IA 83 will be closed

111-01
04-17-12

COORDINATED OPERATIONS

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

Project	Type of Work
To be determined	

108-26A
08-01-08

STAGING NOTES

STAGE 1:
Traffic:
Maintain traffic on IA 83
Shoulder closure per TC-202
Shoulder closure per TC-202
Close Jefferson Street at IA 83

Construction:
Temporary pavement westbound IA 83 from bridge to approx STA. 115+50.00
Temporary pavement eastbound IA 83 from bridge to approx STA. 1111+00.00
Temporary pavement EB IA 83 from approx STA. 1111+00.00 to approx STA. 115+50.00

STAGE 2:
Traffic:
Lane closure with signals per TC-217

Construction:
IA 83 EB from approx STA. 1111+00.00 to approx. STA. 1112+50.00

STAGE 3:
Traffic:
Lane closure with signals per TC-217

Construction:
IA 83 WB from approx. STA. 1111+00.00 to approx. STA. 1112+50.00

ork\pwmain\

DESIGN TEAM **Flattery\Bell\Schneider**

CASS COUNTY

PROJECT NUMBER **BRFN-083-0(047)--39-15**

SHEET NUMBER **J.1**

9/8/2026 9:28:31 AM jschnei c:\pw_work\pwmain\idotcentral_jschnei\d2704223\J01_15083047Z07.xlsm

CROSS SECTION VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS		
SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Med	(237)	Future Proposed Pavement Shading

CROSS SECTION VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS			
	Pavement Removal		Proposed Granular Shoulder
	Proposed Granular Subbase		Temporary Shoulder
	Proposed Special Backfill		Existing Shoulder Strengthening
	Temporary Barrier Rail		Permanent Barrier Rail
			Channelizing Device

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

SHADING	Design Color No.		
Green, Light	(225)	Existing Pavement Shading	
Gray, Light	(48)	Previously Constructed Pavement Shading	
Orange	(6)	Proposed Granular Surface Shading	
Gray, Med	(80)	Previously Constructed Granular Surface Shading	
Blue, Light	(230)	Proposed Pavement Shading	
Pink, Dark	(13)	Temporary Pavement Shading	
Brown, Light	(236)	Proposed Grading Limits Shading	
Lavender	(9)	Previously Constructed Temporary Pavement Shading	
Red	(3)	Proposed Bridge Shading and Sign Trusses	
Black w/Gray, Light Fill	(0,48)	Previously Constructed Structure	

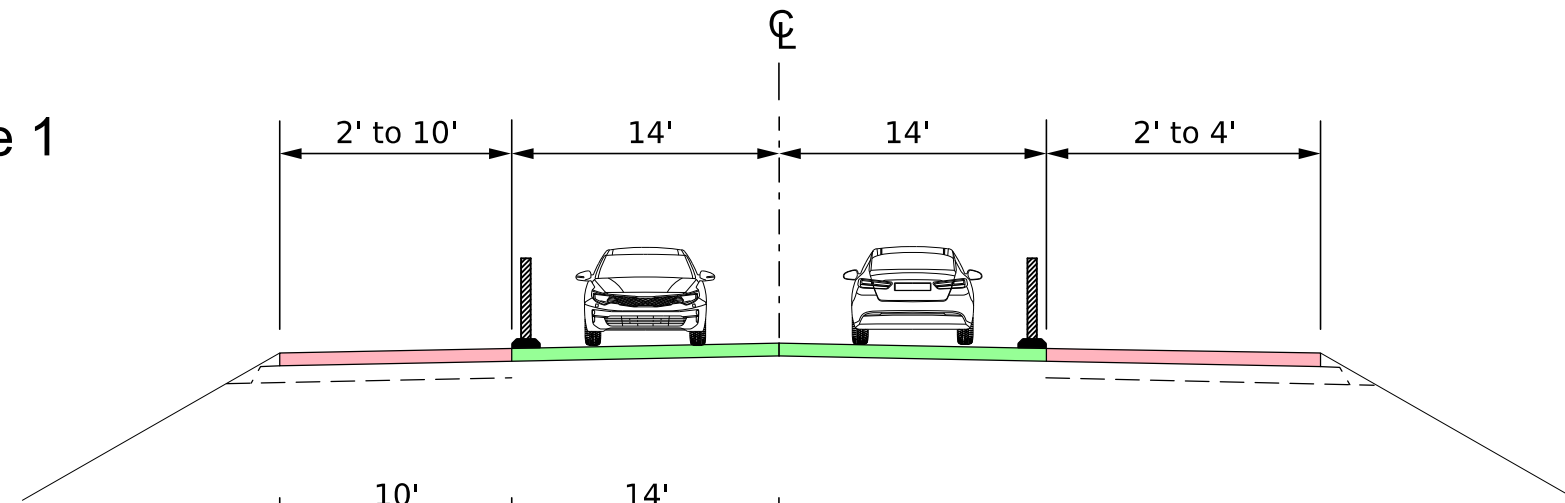
PLAN VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS			
	Channelizing Device		Crash Cushion (Temp or Perm)
	Drum		Traffic Signal
	Temporary Lane Separator		Flagger
	Tubular Marker		Temporary Floodlighting
	Channelizer Marker		Traffic Sign
	Concrete Barrier Marker		Type III Barricade
	Delineator		Type A Warning Light
	Temporary Barrier Rail		Direction of Traffic
	Pavement Removal		Safety Closure
	Sand Barrel Layout		Lane Identification

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

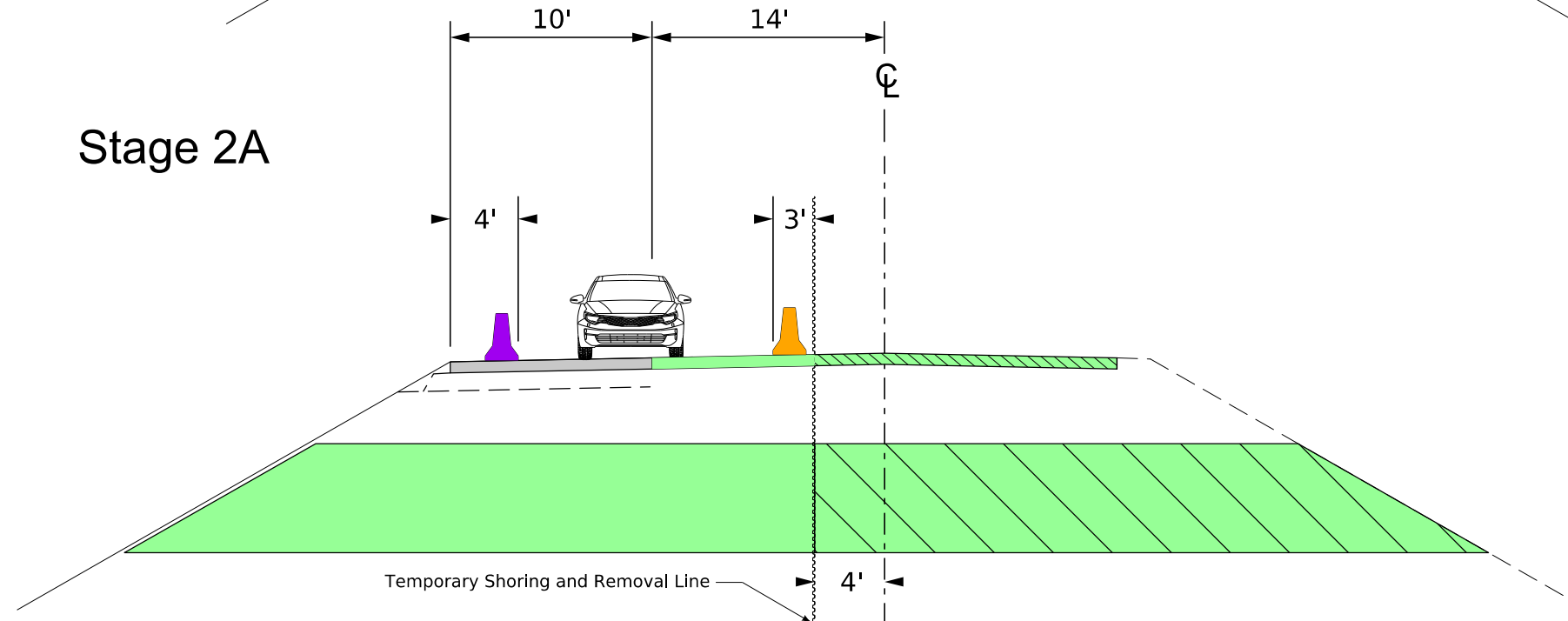
TRAFFIC CONTROL
AND
STAGING
LEGEND AND SYMBOL
INFORMATION SHEET

(COVERS SHEET SERIES J)

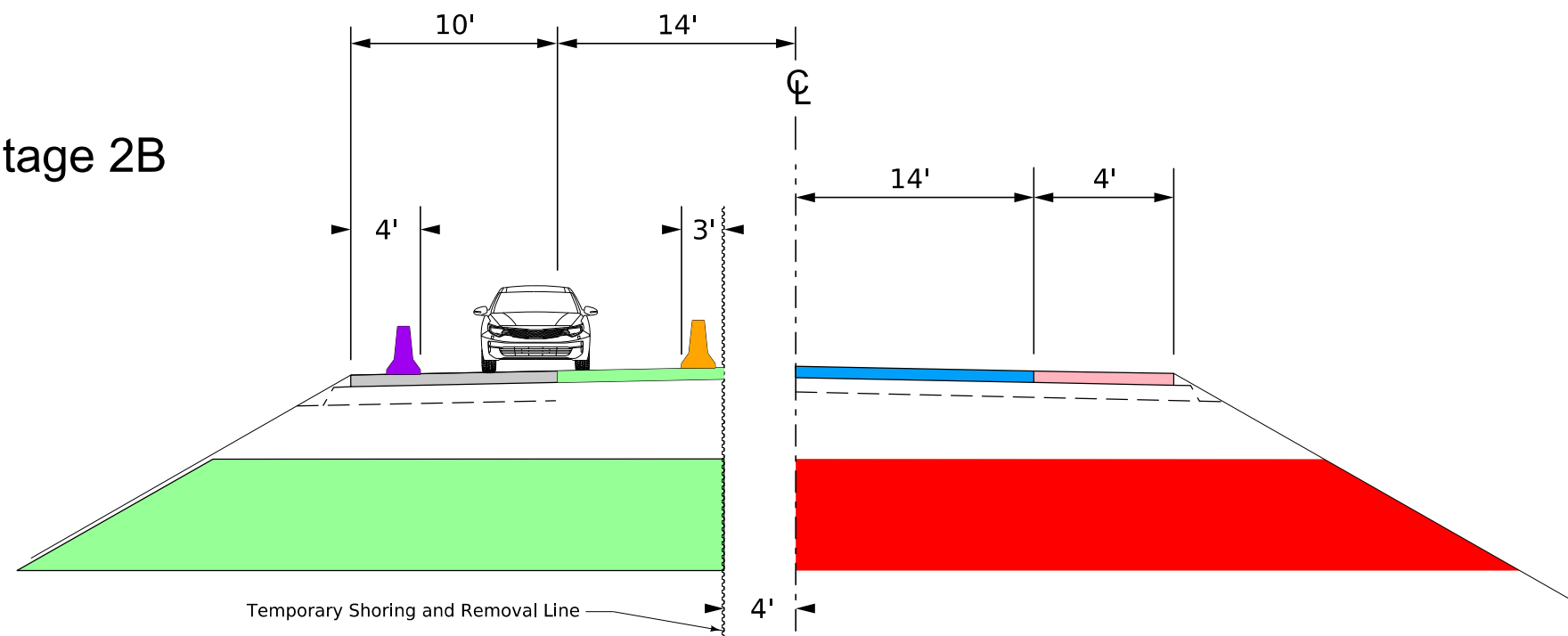
Stage 1



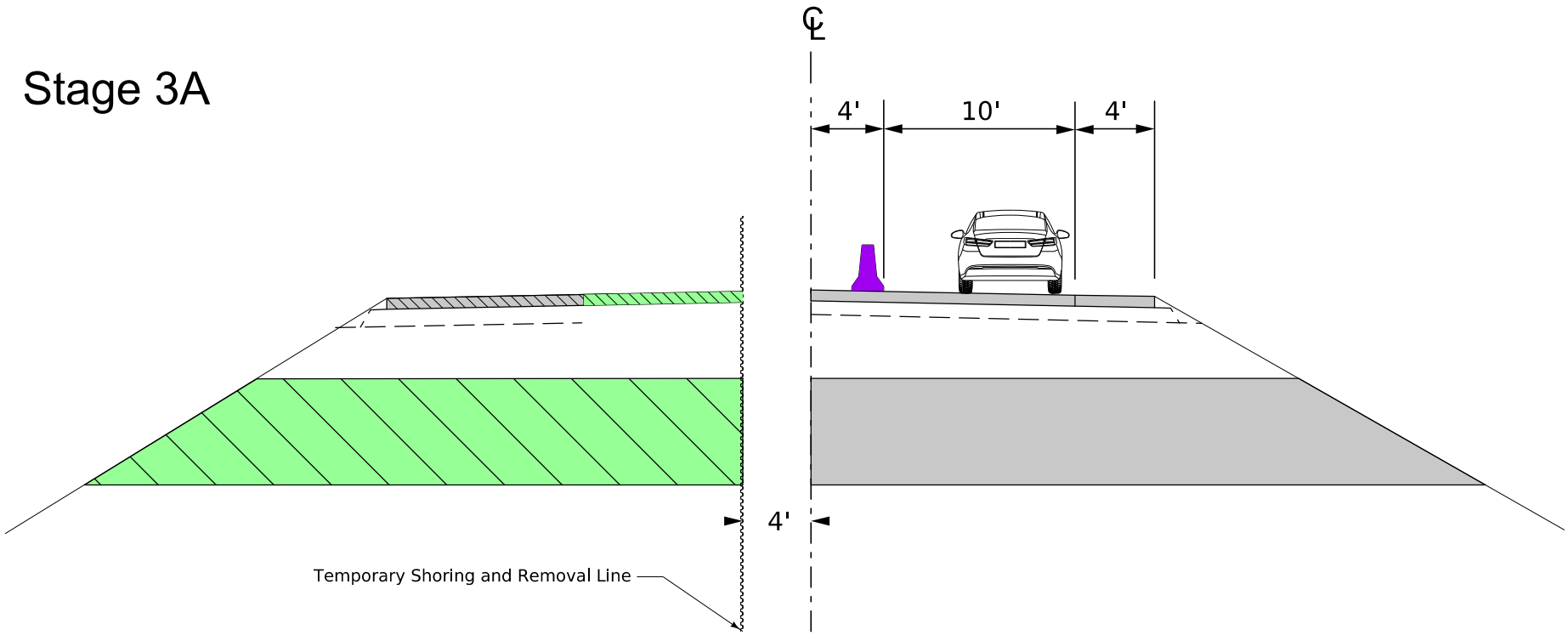
Stage 2A



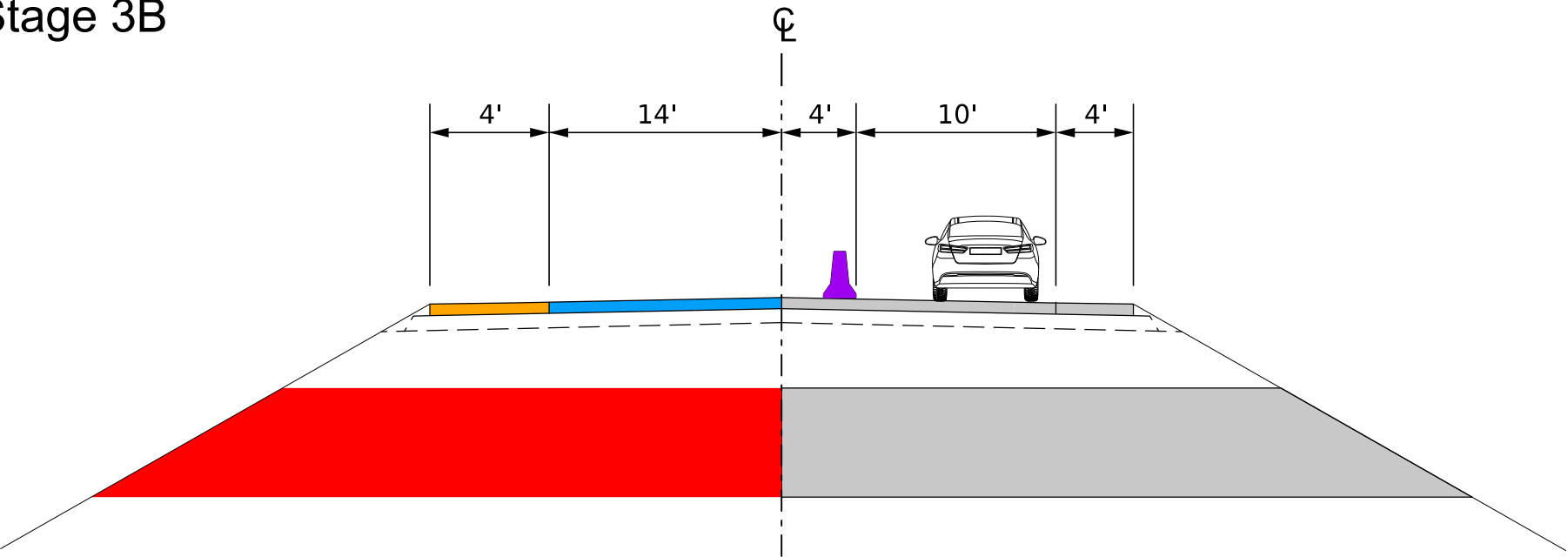
Stage 2B



Stage 3A



Stage 3B









CROSS SECTION VIEW COLOR LEGEND			
Design Color No.	Feature	Design Color No.	Feature
Aggregate		Grading	
(64)	Choke Stone	(8)	Behind Curb Cut
(42)	Engineering Fabric	(6)	Granular
(8)	Flooded Backfill	(13)	Granular Back Fill
(92)	Macadam Stone	(48)	Rock Undercut
(20)	Modified	(8)	Shoulder Earth Fill
(12)	Plowing Shaping	(2)	Side Slopes
(14)	Porous Backfill	(226)	Side Slopes Dressing
(8)	Revetment Class A	Substrata	
(6)	Revetment Class B	(128)	Boulder
(62)	Revetment Class C	(209)	Boulder Removed
(188)	Revetment Class D	(48)	Broken Weathered
(28)	Revetment Class E	(210)	Broken Weathered Removed
(12)	Shoulder Special Backfill	(3)	Core Out
(12)	Special Backfill	(115)	Core Out Remove Only
(20)	Subbase	(195)	Core Out Remove and Replace
(20)	Subbase Lower	(203)	Existing Pavement
(20)	Subbase Upper	(184)	Existing Pavement Remove Only
(118)	Subgrade Treatment	(200)	Existing Pavement Remove and Replace
Asphalt		(6)	Loam
(207)	HMA Base Course	(211)	Loam Removed
(207)	HMA Interim Course	(80)	Rock
(207)	HMA Surface Course	(212)	Rock Removed
Bridge		(4)	Select Sand
(0)	Bridge	(214)	Select Sand Removed
Concrete		(3)	Shale
(0)	Barrier Concrete	(215)	Shale Removed
(0)	Barrier Concrete Footing	(10)	Topsoil
(0)	Curb Gutter	(2)	Topsoil Remove Only
(48)	Flowable Mortar	(4)	Topsoil Remove and Replace
(0)	Median Concrete	Unsuitable / Waste	
(0)	PCC Pavement	(3)	Unsuitable Type A
(0)	Sidewalk	(216)	Unsuitable Type A Removed
Existing		(13)	Unsuitable Type B
(0)	Existing Pavement	(217)	Unsuitable Type B Removed
Shoulder		(11)	Unsuitable Type C
(209)	Shoulder HMA	(218)	Unsuitable Type C Removed
(0)	Shoulder PCC	(3)	Waste
(6)	Shoulder Granular	(219)	Waste Removed
Structural			
(112)	Noise Wall		
(112)	Noise Wall Footing		
(112)	Retaining Wall Back		
(112)	Retaining Wall Back Excavate		
(112)	Retaining Wall Face		
(112)	Retaining Wall Front Excavate		
(112)	Retaining Wall Front Footing		
(112)	Retaining Wall MSE Gutter		
(112)	Retaining Wall Reinforced Earth		

NOTES:

Text

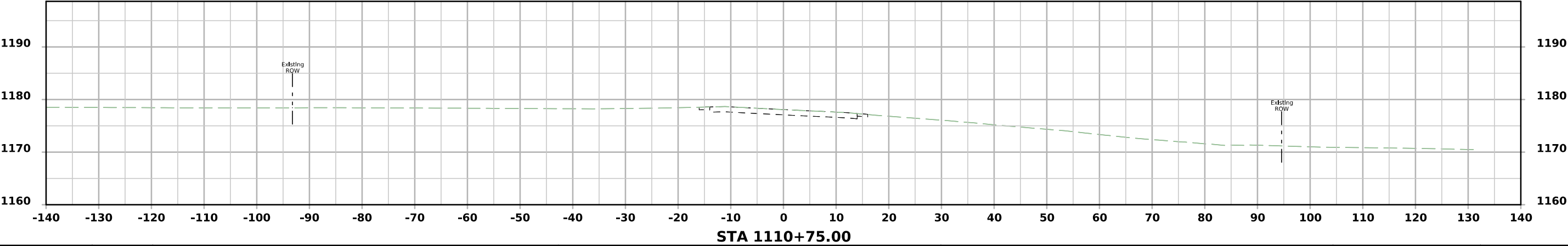
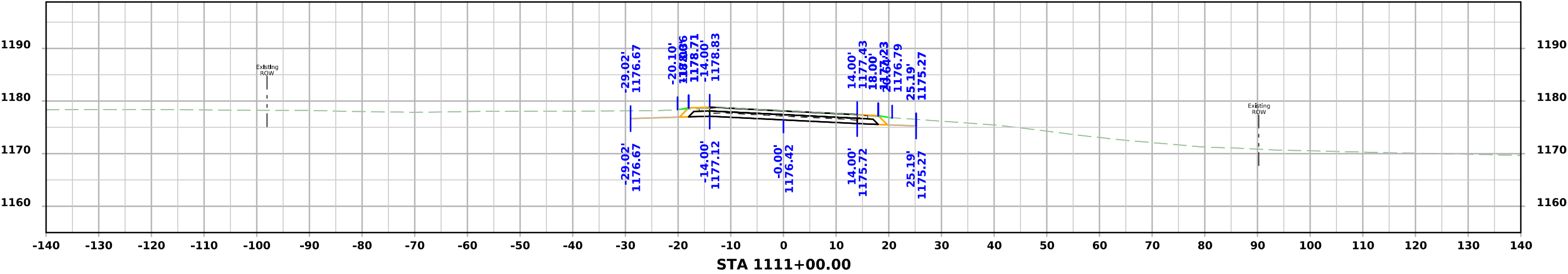
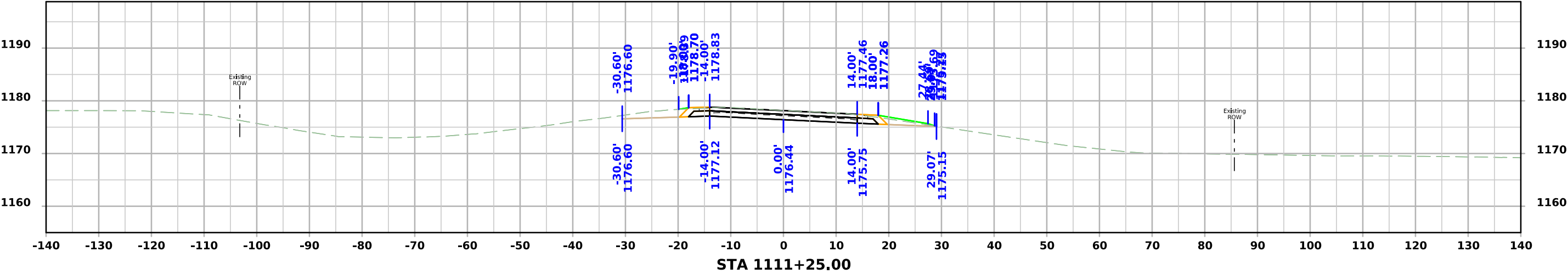
NOTES:

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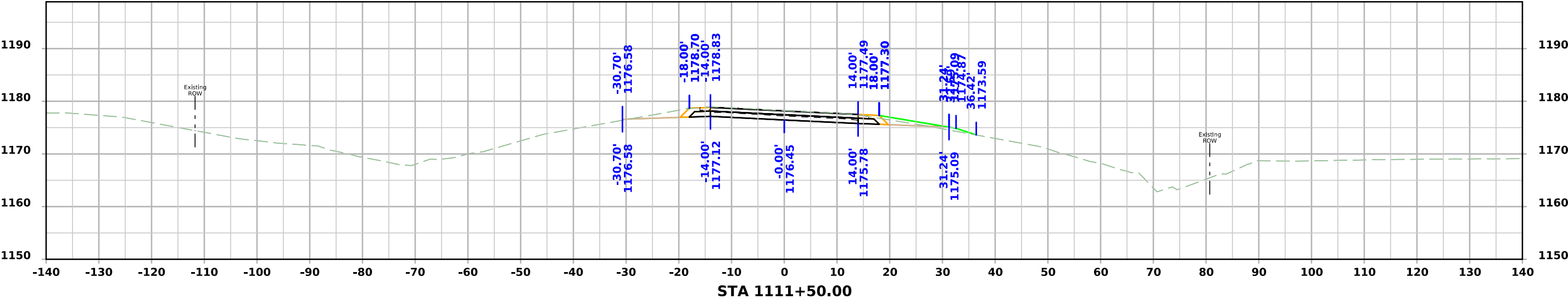
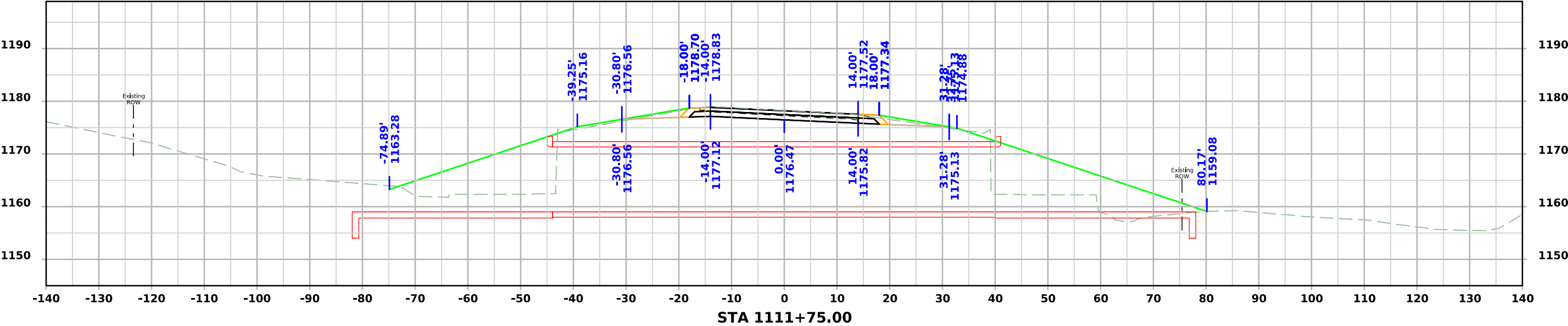
CROSS SECTIONS
LEGEND AND INFORMATION SHEET

(COVERS SHEET SERIES W, X, Y, & Z)

Iowa 83



Iowa 83



Iowa 83

