

| INDEX OF SHEETS |                                                  |
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|                 | * Color Plan Sheets                              |



PLANS OF PROPOSED IMPROVEMENT ON THE  
PRIMARY ROAD SYSTEM  
DELAWARE COUNTY  
Bridge-Unspecified  
Plum Creek 3.5 mi N of Co Rd D22

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

|                               |       |
|-------------------------------|-------|
| PROJECT IDENTIFICATION NUMBER | TOTAL |
|                               | 32    |
| 23-28-038-010                 |       |
| PROJECT NUMBER                |       |
| BRF-038-4(046)--38-28         |       |
| R.O.W. PROJECT NUMBER         |       |
|                               |       |
|                               |       |
|                               |       |

D05: Oct 3, 2025  
P09: Mar 4, 2026  
D04: Aug 24, 2027  
B03: Oct 5, 2027

| DESIGN DATA RURAL |        |       |        |
|-------------------|--------|-------|--------|
| 2023              | AADT   | 1290  | V.P.D. |
| 20                | - AADT | -     | V.P.D. |
| 20                | - DHV  | -     | V.P.H. |
| TRUCKS            |        | 20.16 | %      |
| Total             |        |       |        |
| Design ESALs      |        | -     |        |

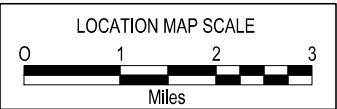
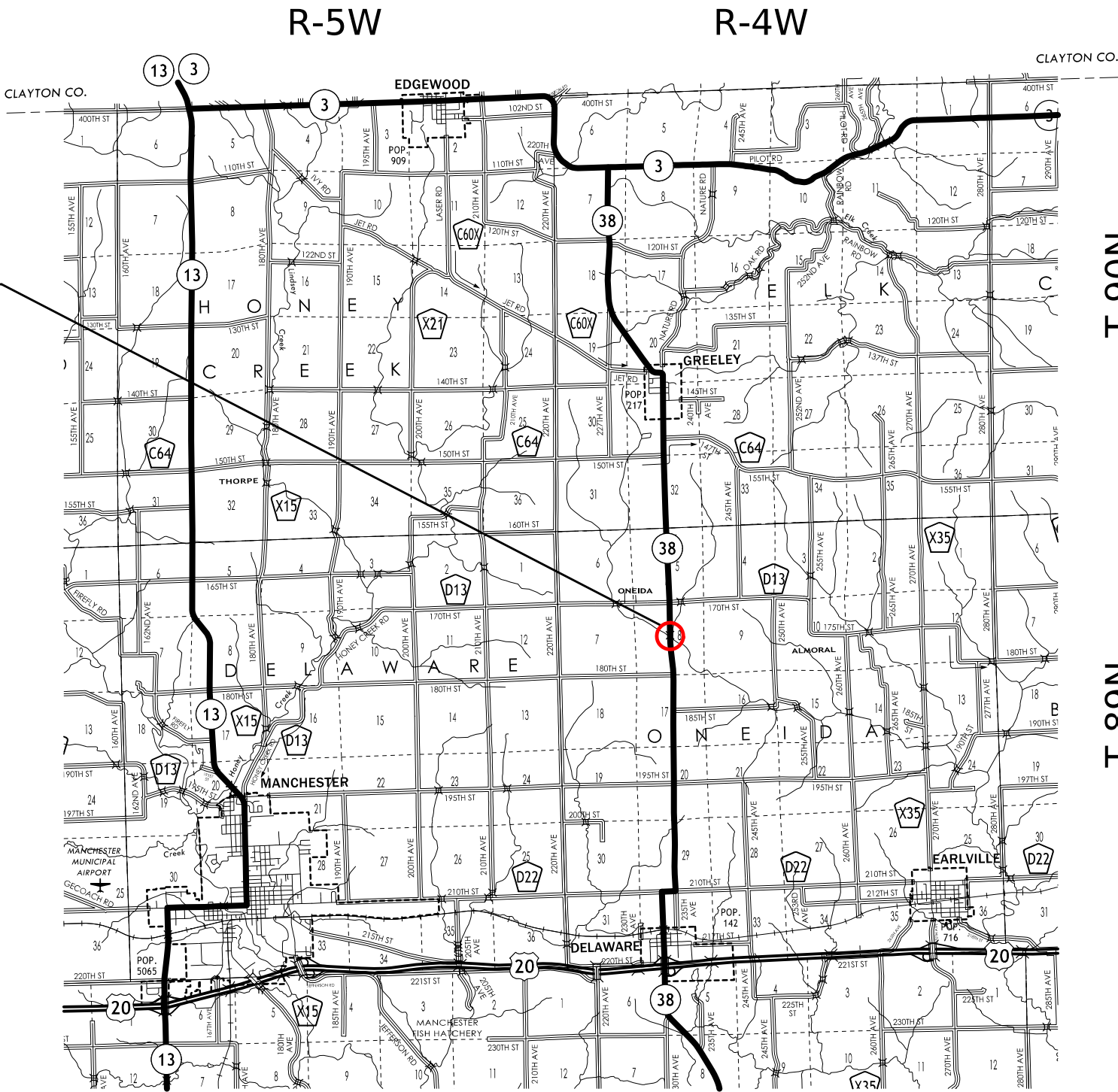
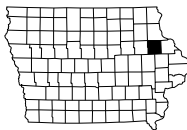
| INDEX OF SEALS |               |                         |                     |
|----------------|---------------|-------------------------|---------------------|
| SHEET NO.      | NAME          | TYPE                    | BID QUANTITY SHEETS |
| A.1            | Kelly C. Bell | Primary Signature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

PRELIMINARY PLANS

Subject to change by final design.

D2/D3 PLAN - Date: 7/16/2025

PROJECT LOCATION:  
BRIDGE  
IA-38 over Plum Creek  
FHWA# 23330 (EXST)  
MAINT. NO. 2890.2S038



IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE:

District 6

DATE:

February 5, 2025

ATTENTION:

Jim Schnoebelen

PROJECT:

Delaware County  
BRF-038-4(046)--38-28  
PIN: 23-28-038-010

FROM:

John E. Bartholomew

BUREAU:

Design

SUBJECT:

Project Concept Statement; **(Final, D0)**

This project involves the replacement of the IA 38 bridge (2890.2S038) over Plum Creek 3.5, mi North of County Road D22.

A concept review was held on August 8, 2024. Those present included Mitchell Wood, David Coon, Shane Martin, Tyler Starks and George Morrel from the District 6 Office; Jim Ellis and Abe Kuol from the Bridges and Structures Bureau; Erin Olson and Mark Sloppy from the Location and Environment Bureau; and John Bartholomew, Kevin Patel and Joe Adams from the Design Bureau.

The two alternatives considered were:

1.

Replace the existing 40’ x 30’ Continuous Concrete Slab Bridge with a Triple-12’-0 x 9’-0 x 88’RCB culvert. This was dismissed due to encroachment into a county park on the southwest corner. **Estimated cost \$1,019,200.**
2.

Replace the existing 40’ x 30’ Continuous Concrete Slab Bridge with 80’ x 40’ Continuous Concrete Slab Bridges (CCS). **Estimated cost \$1,232,800.**
3.

Replace the existing 40’ x 30’ Continuous Concrete Slab Bridge with a Triple-12’-0 x 9’-0 x 88’RCB culvert utilizing channel shaping. This was dismissed due to increased cost related to ROW, stream mitigation and channel shaping. **Estimated cost \$1,803,100.**

Alternative 2 is the preferred alternative due to the location of a county park on the southwest corner of the bridge. Additional right of way/right of entry may be required. Traffic will be maintained by an offsite detour.

The Draft Project Concept Statement was sent out for review and comment with concerns to be resolved by Wednesday, December 11, 2024. Comments received during the review period have been considered and resolved.

JEB: jaa  
Attach.  
cc:

C. Purcell  
J. S. Nelson  
D. E. Sprengeler  
A. Poole  
B. Bradley  
E. C. Wright  
J. Harris  
G. Karssen  
D. Stokes  
M. Todsén  
M. Solberg  
L. Armstrong  
R. Meyer  
M. E. Khoda  
C. Schwake  
J. Bacon  
B. Strucker  
J. Tibodeau  
S. Martin

K. D. Nicholson  
M. Nop  
C. C. Poole  
K. Brink  
J. W. Laaser-Webb  
M. E. Ross  
M. Van Dyke  
H. Naraghi  
M. Gillette  
B. Dolan  
T. Gustafson  
B. Smith  
J. Hauber  
K. Olson  
M. Wood  
M. Sloppy  
T. M. Storey  
D. Coon  
T. Starks

M. Dell  
M. A. Swenson  
S. Majors  
D. L. Newell  
W. A. Sorenson  
A. A. Welch  
B. Hofer  
S. Anderson  
R. Harris  
T. Lovan  
D. Dudley  
N, Abuissa  
S. Sersland  
J. Ellis  
G. Morrell  
D. Alvarez  
A. Bardgett  
A. Stanley  
FHWA



FINAL PROJECT CONCEPT STATEMENT

IA 38 Bridge over Plum Creek 3.5 mi North of County Road D22

Delaware County  
BRF-038-4(046)--38-28  
PIN: 23-28-038-010  
Maint. No. 2890.2S038  
FHWA No. 23330

Highway Division  
Design Bureau

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

February 5, 2025

Delaware County  
BRF-038-4(046)--38-28  
PIN: 23-28-038-010  
Page 2

leaching cracks, and a spalled area with exposed rebar. There have been extensive temporary repairs made to the substructure, slab deck and barrier rail curb. The bridge was designed for live loads below the current standards. Due to the condition, the bridge should be replaced.



With Route



Against Route



Left Profile



Right Profile

I. STUDY AREA

A. Project Description

This project involves the replacement of the IA 38 bridge (Maint. No. 2890.2S038) over Plum Creek.

The two alternatives considered were:

1. Replace the existing 40' x 30' Continuous Concrete Slab Bridge with a Triple-12'-0 x 9'-0 x 88'RCB culvert. This was dismissed due to encroachment into a county park on the southwest corner. **Estimated cost \$1,019,200.**
2. Replace the existing 40' x 30' Continuous Concrete Slab Bridge with 80' x 40' Continuous Concrete Slab Bridges (CCS). **Estimated cost \$1,232,800.**
3. Replace the existing 40' x 30' Continuous Concrete Slab Bridge with a Triple-12'-0 x 9'-0 x 88'RCB culvert utilizing channel shaping. This was dismissed due to increased cost related to ROW, stream mitigation and channel shaping. **Estimated cost \$1,803,100.**

Alternative 2 is the preferred alternative due to the location of a county park on the southwest corner of the bridge.

B. Need for Project

This is a 43' x 30' concrete slab bridge that was built in 1950 and overlaid in 1979 and 1997. The overlay has reached the end of its service life. The deck has several cracks with heavy leaching. The substructure has several large hollow areas, horizontal

C. Present Facility

The existing structure is a 40' x 30', Concrete Slab bridge constructed in 1950.

IA 38 in the project area is 22' wide 7" PCC pavement with 4' wide paved shoulders and 3:1 foreslopes, constructed in 1960. 3.5" HMA resurfacing was accomplished in 2016.

D. Traffic Estimates

The 2028 construction year and 2048 design year average daily traffic estimates are 1300 ADT with 20% trucks and 1400 ADT with 20% trucks, respectively.

E. Sufficiency Ratings

IA 38 is classified as an "Access" route and is a maintenance service level "C"



roadway. The Bridge Condition Index is 63.7 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, 2019 through December 31, 2023, there were 2 crashes including, 0 fatal crashes, 0 personal injury crashes, and 2 personal property crashes.

**PCR Value All Crashes (KABCO): -0.196536 crash/mile/year**

II. PROJECT CONCEPT

A. Feasible Alternatives

Alternative #2 - Replace with a bridge

The existing 40' x 30' Continuous Concrete Slab Bridge will be replaced with an 80' x 40' Continuous Concrete Slab Bridge (CCS).

The typical cross section adjacent to the bridge approach will consist of a 22' roadway (30' wide pavement) with 4' effective paved shoulders and 3:1 foreslopes.

This bridge will be constructed on the existing vertical and horizontal alignment. New bridge approaches will be constructed. The existing guardrail will be replaced with new guardrail and the shoulders will be paved 20' beyond the ends of the guardrail. Class 10 will be necessary to flatten the existing foreslopes and to construct the new guardrail blisters. Class E revetment will be placed under the bridge for slope protection. New bridge end drains will be constructed on both ends of the bridge.

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

It appears right of way may be required for this project.

Traffic will be maintained by an off-site detour.

| Bridge Items       | Estimated Costs   |
|--------------------|-------------------|
| New Bridge         | \$ 453,800        |
| Bridge Removal     | 14,600            |
| Revetment          | 50,000            |
| Mobilization - 10% | 52,000            |
| M & C - 15%        | 114,000           |
| Bridge Costs       | <b>\$ 684,400</b> |

| Roadway Items                             |                   |
|-------------------------------------------|-------------------|
| Clearing and Grubbing                     | \$6,700           |
| Embankment in place, contractor furnished | 1,700             |
| Excavation Class 13 Waste                 | 11,600            |
| Bridge Approaches, BR-203                 | 151,000           |
| Bridge End Drains, DR-402                 | 14,600            |
| Removal of Guardrail                      | 5,500             |
| Removal of Pavement                       | 10,700            |
| Erosion Control                           | 50,000            |
| Wetland Mitigation                        | 50,000            |
| Right of Way                              | 10,000            |
| Seeding and Fertilizing                   | 1,600             |
| Composite-Paved Shoulders Two Lane        | 32,700            |
| Composite-Class 10 Blisters Two Lane      | 23,000            |
| Composite-Guardrail Two Lane              | 14,800            |
| Mobilization - 5%                         | 27,400            |
| Traffic Control - 5%                      | 27,400            |
| M & C - 20%                               | 109,700           |
| Roadway costs                             | <b>\$ 548,400</b> |

|               |                    |
|---------------|--------------------|
| Project Total | <b>\$1,232,800</b> |
|---------------|--------------------|

B. Detour Analysis

IA 38 will be closed, and an offsite detour will be utilized. It is anticipated the detour will be in place for approximately 180 days. The detour would follow U.S. 20 west at the junction of U.S. 20 and IA 38 to IA 13, then north on IA 13 to IA 3 then east to the junction of IA 38. Out of distance travel is 27.31 miles. The total distance user cost is anticipated to be \$1,677,517. Detour signing costs will be \$10,000.

C. Recommendations

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

DELAWARE COUNTY

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 38; therefore, no ADA accommodations are planned in conjunction with this project.

F. Special Considerations

This will not be a traffic critical project.

The ABC Rating Score of 6 is less than the first stage filter threshold of 50, therefore this bridge 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.

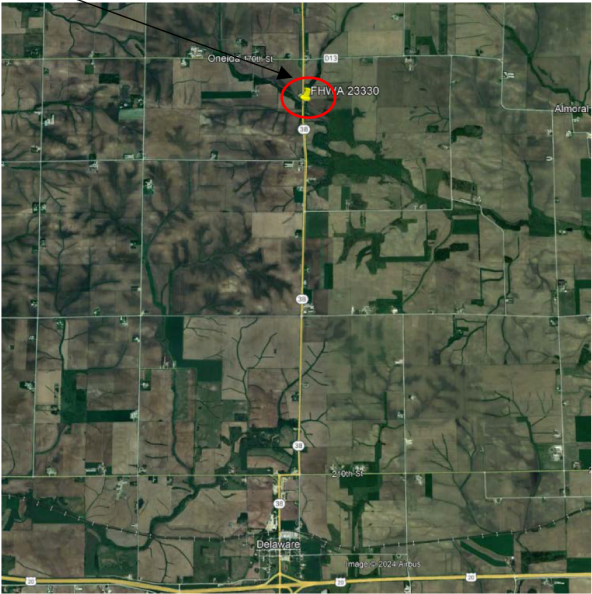
The Location and Environment Bureau has reviewed this project and based on preliminary desktop observations, has determined that a Section 404 Permit will be required, and fieldwork will be needed to verify presence of waters of the United States, other than Plum Creek. It is expected that the work will be covered by Nationwide Permit 14.

G. Program Status

Site data has been developed by the Design Bureau. This project is listed in the 2025-2029 Iowa Transportation Improvement Program, with \$10,000 programmed for right of way in FY 2028, and \$940,000 for replacement in FY 2028. 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

PROJECT LOC  
MILEPOST 90.2



On IA 38, Plum Creek 3.5 mi N of Co Rd D22  
BRF-038-4(046)--38-28  
PIN: 23-28-038-010



Bridge Bureau Attachment for Concept Statement

Date: 06/ 04/ 2024  
By: Abraham Kuol  
Location: IA 38, over Plum Creek 3.5 mi. N. of Co. Rd. D22

County: Delaware County  
Phase No.: BRF-038-4(046)--38-28  
Project Code: 2328038010

State None or list special requirements above the normal bridge survey here.  
For example, lowest ground floor elevations for structures, survey of up or downstream structures, etc. None

pw://NTPwint1.dot.int.lan:PWMain/Documents/Projects/ProductionTestDirectories/TestDirectory05/Bridge/(HEADWALLS)\_Development/Triple&space;CIP\_PWH&space;0°&space;Skew.dgn

1. Regulatory/Coordination
- a. Iowa DNR Flood Plain permit = No

b. Iowa DNR Sovereign Lands permit = No

c. Local Record of Coordination = Yes

d. Flood Insurance Study = <Yes or No> <if Yes Zone A/19157C0205B/5/19/2014>

e. Drainage District = <No - Note Shape File Available>

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  
(Consult USGS website for USGS gages, Iowa Flood Information System website, stream gauge layer for IFC sites)
2. Hydrologic/Hydraulic Analysis/RIDB Dataset
- a. Design discharges determined = Yes, <13-5086>

b. Hydraulic analysis done = Yes, Iowa Culvert Analysis

c. If DA > 10 sq. mi. Riverine Infrastructure Database (RIDB) dataset is required with B1 submittal = NO, concept

d. If RIDB required = NO> Project development hydraulic analysis will comply with the RIDB Guidelines at a minimum.
3. Structure/Roadway Layout Considerations
- a. Roadway profile grade raise is not anticipated. Yes, a 9'' grade raise is proposed in order to meet the cover requirements
4. Special construction issues
- a. Shallow bedrock may require consideration of wall piers with spread footing on rock in lieu of pile bent piers.

b. It is desirable for new structure foundations to avoid existing foundations when possible
5. Special survey = No
6. Aesthetic enhancements = NO
7. Other
- a. Maintenance of Traffic - Off site detour,

b. List key design constraints or useful information to pass on to the preliminary designer. none

Special Survey:



Culvert Cost Estimate and Analysis for Concept Statement

Location: IA 38 over Plum Creek 3.5mi. N. of Co. Rd. D22

County: Delaware County Phase No.: BRF-038-4(046)--38-28  
Des. No.: Project Code: 2803801023  
Maint. No.: 2890.2S038 FHWA No.: 45760 (old)  
IA 38 over Plum Creek Sta.: 1011+65  
Section #8, T-89N, R-4W  
Functional Class: 06, Minor Arterial ADT: 1400  
By: A.K/M.D Date: 08/08/2024

Existing Bridge:

Type: CCS Length x Width: 40' x 30'  
Pier Type:? Abut. Type: Integral  
Spans: 20, 20 Approach Pavement Width: 40'  
Skew: 0 deg  
Drainage Area: 5.78 sq. mi.  
New/Reconstructed Roadway Width: 40'

- Option A : Triple-12'-0 x 9'-0 x 88'RCB culvert

General Comments:

- The existing bridge is a 40' x 30'Concrete slab.
- Hydraulic analysis was conducted for the site using Iowa culvert program.
- The proposed structure is a triple 12'x 9', RCB
- 9 inches of grade raise is needed to meet the cover requirements of 2ft.
- The proposed replacement of the existing bridge is for an offsite detour.
- The proposed structure is 0-degree skew based on the available plan information and the final design skew may be adjusted based on survey field data.
- The backwater will not affect any upstream structures and the existing land use upstream is agricultural (low damage potential). Upstream flood water surface elevations have not been established for this area.
- A flood hazard boundary map has been published this area and the project is within zone A flood hazard area.
- A bridge proposal is possible but likely to be more costly.
- Detour route options are to be determined.
- An alternative option is a 70' x 40' Continuous concrete slab bridge

Type: Box culvert, RCB Length x Width: Triple-12'-0 x 9'-0 x 88'  
Pier Type: Abutment Type: Integral  
Spans: Skew: 0-degree skew  
Stage Traffic: Off-site detour

Costs:

Culvert Concept Statement

Delaware County  
Project Number BRF-038-4(046)--38-28

RCB-Culvert - Triple 12' x 9' 311.34 CY @ \$900/Cy = \$ 280,200  
Remove Exist. Bridge 40'x 30' sf @ \$10.00/sf = \$ 12,000  
Headwall, 0-degree skew, 2 Each, 161.8 Cy @ \$900/Cy = \$ 145,600  
Revetment = \$ 51,340  
Mobilization (10%) = \$ 48,900  
Contingency and Misc. (20%) = \$ 107,600  
=====

Total Option A \$ 645,700

- Option B: 80' x 40' CCS Bridge

General Comments:

- Hydraulic analysis was conducted for the site using IOWA Bridge Back water IABB.
- The proposed structure is 80' x 40' continuous concrete slab bridge.
- NO grade raise is needed, Freeboard = 5.28' > 3' at Q50
- We anticipate a decrease in backwater at Q100, from 2.57' in the existing condition to 2.2'. However, this is still higher than the desirable backwater of 1.5' in the low-damage potential area.
- A flood hazard boundary map has been published this area and the project is within zone A flood hazard area.
- The proposed structure is 0-degree skew based on the available plan information and the final design skew may be adjusted based on survey field data.
- The proposed replacement of the existing bridge is for an offsite detour, due to construction difficulties on CCS bridges (BDM 3.6.9)
- Detour route options are to be determined.

Type: CCS bridge, Length x Width: 80'-0 x 40'-0  
Pier Type: T- pier Abutment Type: Integral  
Spans: 24'-6'', 31'-0, 24'-6'' Skew: 0-degree skew  
Stage Traffic: Off-site detour

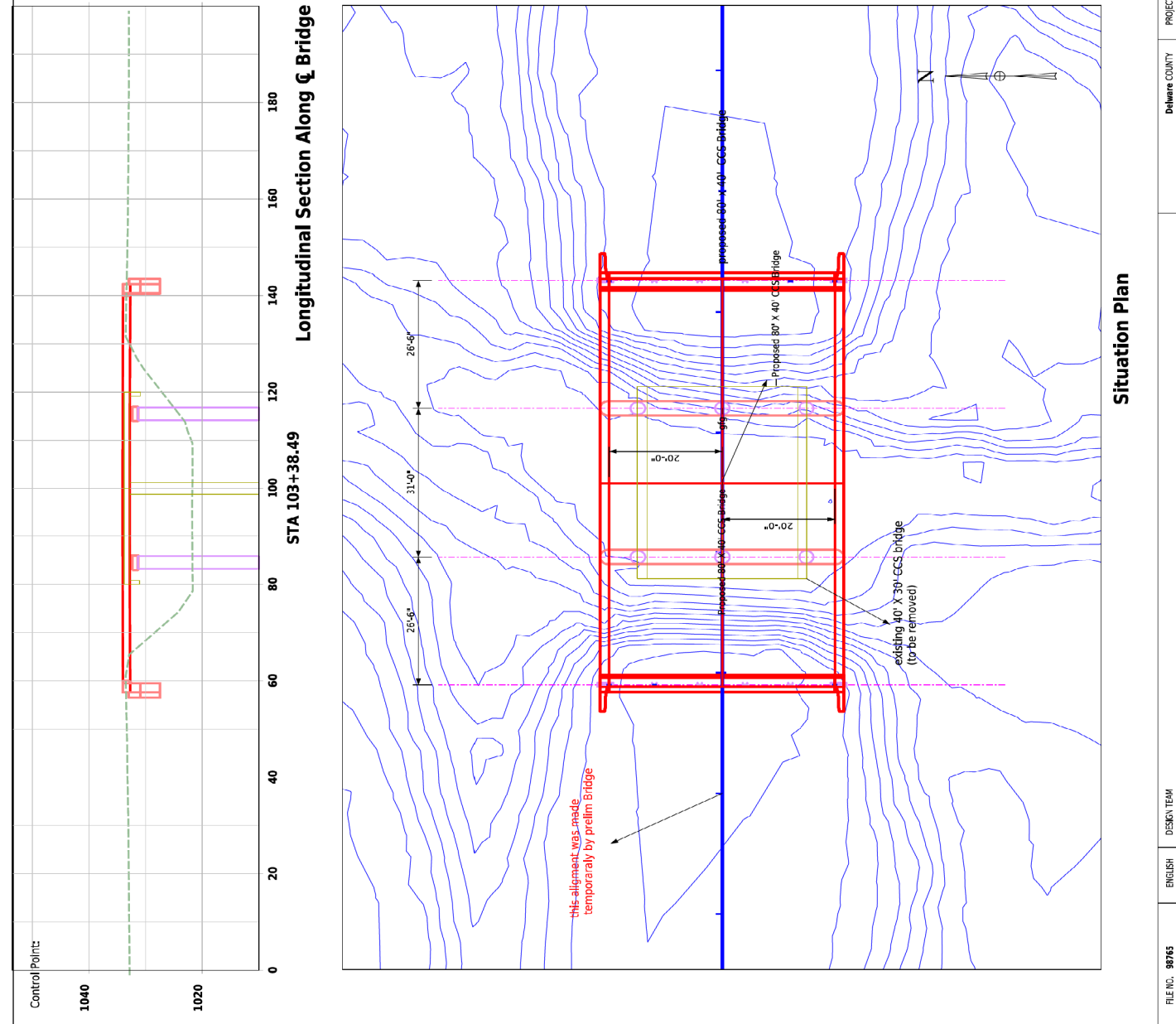
CCS bridge; 80.8' x 43.2' @ 130/sf =\$ 453,800  
Remove existing bridge: Bridge 1462 sf @ \$10.00/sf =\$ 14,600  
Revetment 1,000 tons @ \$50/ton =\$ 50,000  
Mobilization (10%) =\$ 52000  
Contingency and Misc. (20%) =\$ 114,000

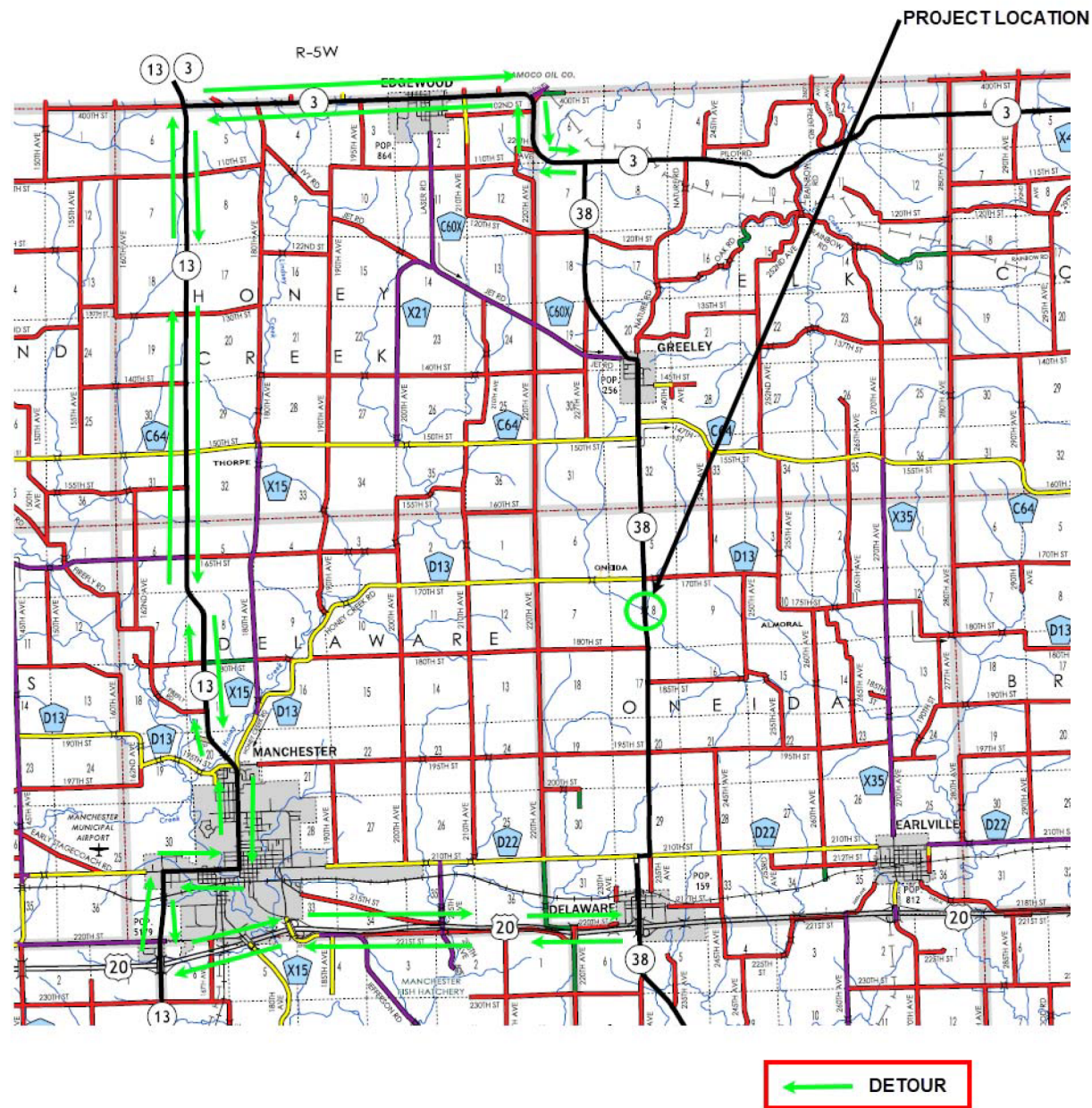
Total Option B

=\$ 684,400

Delaware County  
Project Number BRF-038-4 (046) --38-28

The calculated ABC Rating Score based on Iowa DOT BDM Chapter 8 criteria and 6 miles out of distance travel of is 21





**Delaware County**  
 Plum Creek 3.5 mi N of Co Rd D22  
 BRF-038-4(046)--38-28  
 PIN: 23-28-038-010



### Utilities

Maquoketa Valley REC  
 Nic Schulte  
[Nschulte@mvec.com](mailto:Nschulte@mvec.com)  
 319.462.3542

Windstream Communications (ILEC)  
 Dan Hogan  
[Dan.Hogan@windstream.com](mailto:Dan.Hogan@windstream.com)  
 563.920.2428



|                                                                                                                                     |                                                   |                                                          |                                                                                                                                |                |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|----------------|
| Roadway                                                                                                                             | IA 38                                             |                                                          |                                                                                                                                |                |
| PIN Number                                                                                                                          | 23-28-038-010                                     | Submittal Date                                           |                                                                                                                                |                |
| Project Number                                                                                                                      | BRF-038-4(046)--38-28                             |                                                          | Approval Date                                                                                                                  |                |
| District                                                                                                                            | District 6                                        | Assistant District Engineer                              | Jesse Tibodeau                                                                                                                 |                |
| County                                                                                                                              | DELAWARE                                          | or                                                       |                                                                                                                                |                |
| Route                                                                                                                               | 38                                                | Office Director                                          |                                                                                                                                |                |
| Location                                                                                                                            | Plum Creek 3.5 mi N of Co Rd D22                  |                                                          |                                                                                                                                |                |
| Work Type                                                                                                                           | Bridge replacement                                |                                                          |                                                                                                                                |                |
| Segment Manager                                                                                                                     |                                                   |                                                          |                                                                                                                                |                |
| Designer                                                                                                                            |                                                   |                                                          |                                                                                                                                |                |
| <a href="#">Design Manual Section 1C-1</a><br><a href="#">Last Updated: 04-29-19</a>                                                |                                                   |                                                          |                                                                                                                                |                |
| Rural Two-Lane Highways (Rural Arterials)                                                                                           |                                                   |                                                          |                                                                                                                                |                |
| Design Element                                                                                                                      |                                                   | Preferred                                                | Acceptable                                                                                                                     | Project Values |
| Design speed (mph)                                                                                                                  |                                                   | 60                                                       | 50                                                                                                                             | 60             |
| Maximum superelevation rate (Refer to Section <a href="#">2A-2</a> )                                                                |                                                   | 6%                                                       | 8%                                                                                                                             | NA             |
| Design lane width (ft)                                                                                                              |                                                   | 12                                                       | 12                                                                                                                             | 11             |
| Full depth paved width (ft)                                                                                                         |                                                   | 12                                                       | 12                                                                                                                             | 11             |
| Right turn lane (ft)                                                                                                                |                                                   | 12                                                       | 10                                                                                                                             | NA             |
| Climbing Lane (ft)                                                                                                                  |                                                   | 12                                                       | 12                                                                                                                             | NA             |
| Left turn lane (ft)                                                                                                                 |                                                   | 12                                                       | 10                                                                                                                             | NA             |
| Pavement cross-slope<br>(on tangent sections)                                                                                       | Through lanes                                     | 2%                                                       | 1.5% minimum, 2% maximum                                                                                                       | 2%             |
|                                                                                                                                     | Auxiliary and turn lanes                          | 3%                                                       | 3% maximum                                                                                                                     | NA             |
|                                                                                                                                     | Crown break at centerline                         | 4%                                                       | 4% maximum                                                                                                                     | 4%             |
| Shoulder cross-slope (on tangent sections)                                                                                          |                                                   | 4%                                                       | Shoulder cross-slope cannot be less than the adjacent lane, 6% max for paved or granular shoulders, 8% max for earth shoulders | 4%             |
| Curb type<br>(Refer to Section <a href="#">3C-2</a> )                                                                               | Design speed = 50 or 55 mph                       | 6-inch sloped                                            | 6-inch standard                                                                                                                | NA             |
|                                                                                                                                     | Design speed ≥ 60 mph                             | 4-inch sloped                                            | 6-inch sloped                                                                                                                  | NA             |
| Foreslope<br>(For fill areas greater than 40 ft, contact the Soils Design Section for assistance)                                   | Adjacent to shoulder                              | 10:1 for 4' then 6:1                                     | 3:1                                                                                                                            | 3:1            |
|                                                                                                                                     | Beyond standard ditch depth and design clear zone | 3.5:1                                                    | 3:1                                                                                                                            |                |
|                                                                                                                                     | Curbed roadways                                   | 2%                                                       | not steeper than 3:1                                                                                                           | NA             |
| Backslope (For cut areas greater than 25 feet, contact the Soils Design Section for assistance with backslope benches.)             |                                                   | 3:1                                                      | 2.5:1                                                                                                                          | 2.5:1          |
| Transverse Slopes                                                                                                                   | w/ drainage structures                            | 8:1                                                      | 6:1                                                                                                                            | NA             |
|                                                                                                                                     | w/o drainage structures                           | 10:1                                                     | 6:1                                                                                                                            | NA             |
| Ditches (Refer to Section <a href="#">3G-1</a> )                                                                                    |                                                   | 5 x 10                                                   | --                                                                                                                             | 5 X 10         |
| Bridge width—new*                                                                                                                   | Bridge length ≤ 200 ft                            | design lane widths + effective shoulder widths           | design lane widths + effective shoulder widths                                                                                 | NA             |
|                                                                                                                                     | Bridge length > 200 ft                            | design lane widths + effective shoulder widths           | design lane width + 4' right and left of the design lane widths                                                                | NA             |
| Bridge width—existing*                                                                                                              |                                                   | design lane widths + no less than 2 ft left and right    | design lane widths + 2 ft. offset left and right                                                                               | NA             |
| Vertical clearance (ft)<br>(above lanes, shoulders and 25 feet left and right of the center of railroad tracks)                     | Over primary                                      | 16.5                                                     | 16                                                                                                                             | NA             |
|                                                                                                                                     | Over non-primary                                  | 16.5 at interchange locations, 15 at all other locations | 14                                                                                                                             | NA             |
|                                                                                                                                     | Over railroad                                     | 23.3                                                     | 23.3                                                                                                                           | NA             |
|                                                                                                                                     | Sign trusses and pedestrian bridges               | 17.5                                                     | 17                                                                                                                             | NA             |
| Structural Capacity                                                                                                                 |                                                   | Contact Office of Bridges and Structures                 | Contact Office of Bridges and Structures                                                                                       | ----           |
| Level of Service                                                                                                                    |                                                   | B                                                        | B                                                                                                                              | C              |
| *FHWA notification via email is required if acceptable critera is not met on the NHS system (No formal design exeption is required) |                                                   |                                                          |                                                                                                                                |                |



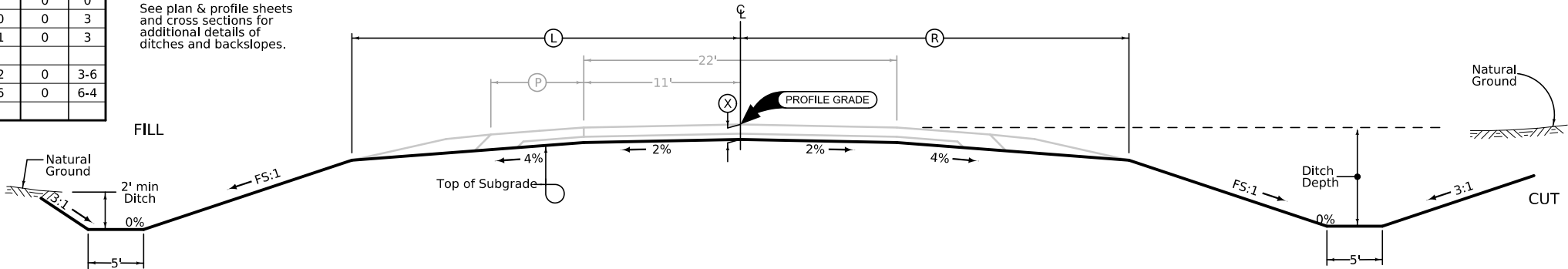


| Roadway Design Speed (mph) =                                                                               |                                                        |                                        | 55                                                               |      |      |      |      |      |                                                                   |      |      |      |      |      |                |
|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|----------------------------------------|------------------------------------------------------------------|------|------|------|------|------|-------------------------------------------------------------------|------|------|------|------|------|----------------|
| <a href="#">Design Manual Section 1C-1</a><br><a href="#">Last Updated: 04-29-19</a>                       |                                                        |                                        | Design Criteria for High Speed Roadways                          |      |      |      |      |      |                                                                   |      |      |      |      |      |                |
| Design Element                                                                                             |                                                        |                                        | Preferred Criteria                                               |      |      |      |      |      | Acceptable Criteria                                               |      |      |      |      |      | Project Values |
|                                                                                                            |                                                        |                                        | Design Speed, mph                                                |      |      |      |      |      | Design Speed, mph                                                 |      |      |      |      |      |                |
|                                                                                                            |                                                        |                                        | 50                                                               | 55   | 60   | 65   | 70   | 75   | 50                                                                | 55   | 60   | 65   | 70   | 75   |                |
| Stopping sight distance (ft) (Refer to Section <a href="#">6D-1</a> )                                      |                                                        |                                        | 425                                                              | 495  | 570  | 645  | 730  | 820  | 425                                                               | 495  | 570  | 645  | 730  | 820  | 570            |
| Minimum horizontal curve radius (ft)<br>(Refer to Sections <a href="#">2A-2</a> and <a href="#">2A-3</a> ) | Method 5 superelevation and side friction distribution | e <sub>max</sub> = 6%                  | 833                                                              | 1060 | 1330 | 1660 | 2040 | 2500 | 833                                                               | 1060 | 1330 | 1660 | 2040 | 2500 | UAC            |
|                                                                                                            |                                                        | e <sub>max</sub> = 8%                  | --                                                               | --   | --   | --   | --   | --   | 758                                                               | 960  | 1200 | 1480 | 1810 | 2210 | ----           |
| Minimum vertical curve length (ft) (Refer to Section <a href="#">2B-1</a> )                                |                                                        |                                        | 150                                                              | 165  | 180  | 195  | 210  | 225  | 150                                                               | 165  | 180  | 195  | 210  | 225  | 180            |
| Minimum rate of vertical curvature (K)<br><br>(Refer to Section <a href="#">2B-1</a> )                     | crest vertical curves                                  |                                        | 84                                                               | 114  | 151  | 193  | 247  | 312  | 84                                                                | 114  | 151  | 193  | 247  | 312  |                |
|                                                                                                            | sag vertical curves                                    | roadways without fixed-source lighting | 96                                                               | 115  | 136  | 157  | 181  | 206  | 96                                                                | 115  | 136  | 157  | 181  | 206  | ----           |
|                                                                                                            |                                                        | roadways with fixed-source lighting    | 96                                                               | 115  | 136  | 157  | 181  | 206  | 54                                                                | 66   | 78   | 91   | 106  | 121  | ----           |
| Minimum gradient (%)                                                                                       | (Refer to Section <a href="#">2B-1</a> )               |                                        | 0.5                                                              |      |      |      |      |      | 0.3% with a curb, 0.0% without a curb                             |      |      |      |      |      | 0              |
| Maximum gradient (%)                                                                                       | (Refer to Section <a href="#">2B-1</a> )               | Urban roadways                         | 4                                                                | 3    |      |      |      |      | 7                                                                 | 6    | 6    | --   | --   | --   | ----           |
|                                                                                                            |                                                        | Rural roadways                         |                                                                  |      |      |      |      |      | 5                                                                 | 5    | 4    | 4    | 4    | 4    | 4              |
|                                                                                                            |                                                        | Interstates                            |                                                                  |      |      |      |      |      | 5                                                                 | 5    | 4    | 4    | 4    | 4    | 4              |
| Clear zone                                                                                                 |                                                        |                                        | See "Preferred Clear Zone" table in Section <a href="#">8A-2</a> |      |      |      |      |      | See "Acceptable Clear Zone" table in Section <a href="#">8A-2</a> |      |      |      |      |      | 30             |

| LOCATION             |           | DIMENSIONS  |             |     |
|----------------------|-----------|-------------|-------------|-----|
| STATION TO STATION   |           | Ⓛ<br>Feet   | ⓧ<br>Inches | FS  |
| 185+10.00            | 185+48.20 | 18.00       | 0           | 0   |
| 185+48.20            | 185+73.64 | 18.00-30.70 | 0           | 3   |
| 185+73.64            | 186+25.00 | 30.70-28.81 | 0           | 3   |
| Bridges & Approaches |           |             |             |     |
| 188+55.00            | 189+04.50 | 28.57-36.42 | 0           | 3-6 |
| 189+04.50            | 189+50.00 | 36.42-20.56 | 0           | 6-4 |

Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.

See plan & profile sheets and cross sections for additional details of ditches and backslopes.



| LOCATION             |           | DIMENSIONS  |             |       |
|----------------------|-----------|-------------|-------------|-------|
| STATION TO STATION   |           | Ⓜ<br>Feet   | ⓧ<br>Inches | FS    |
| 185+00.00            | 185+48.13 | 21.70-30.23 | 0           | 4.7-3 |
| 185+48.13            | 185+68.15 | 30.23       | 0           | 3     |
| 185+68.15            | 186+25.00 | 30.23-28.07 | 0           | 3     |
| Bridges & Approaches |           |             |             |       |

G\_2\_Grade  
04-21-20

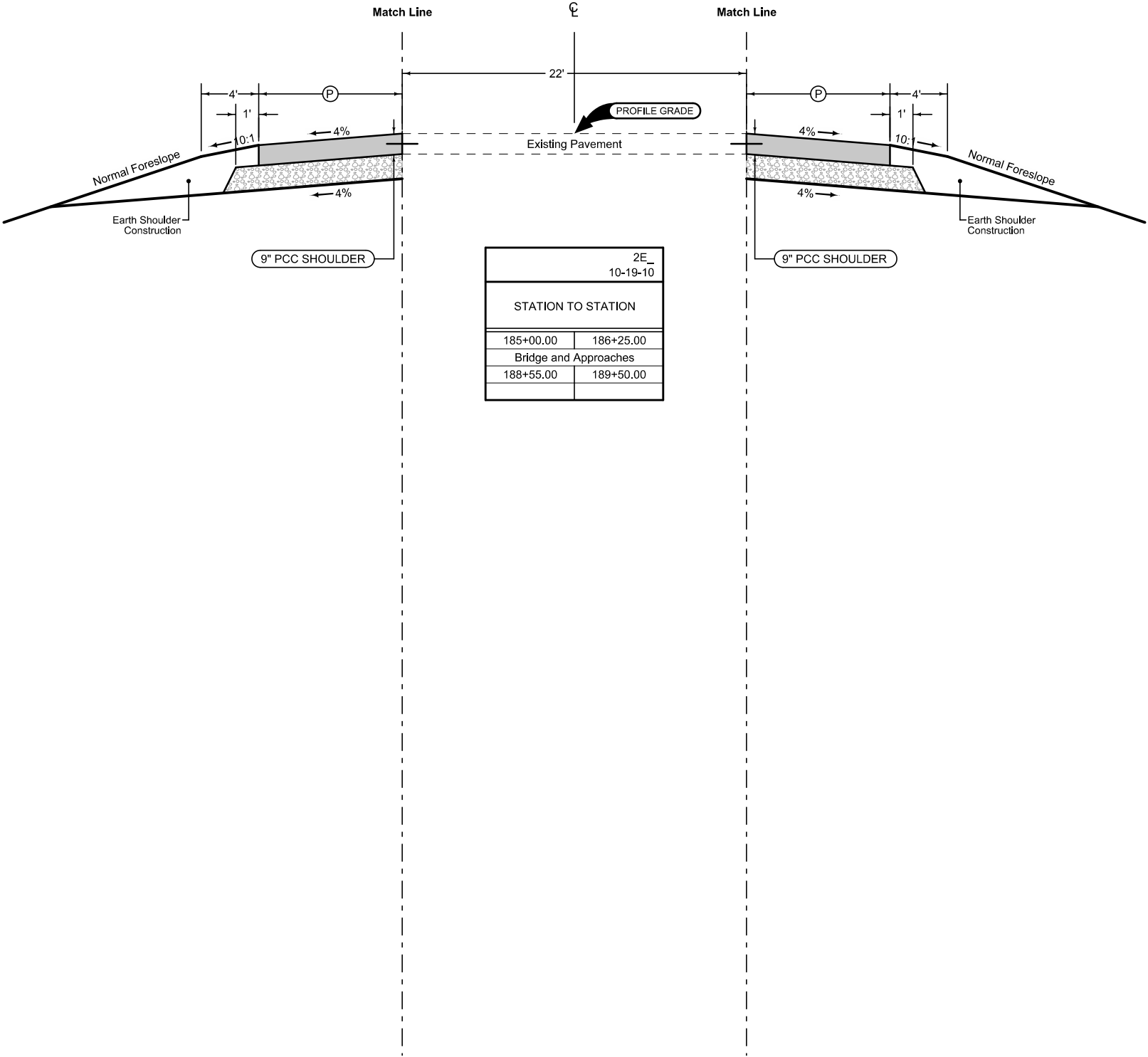
See Tab 112-9 for shoulder quantities.

Iowa Highway 38

Full Depth PCC Shoulder

Shoulder Jointing:  
Longitudinal joint: BT-2 or L-2  
Transverse joints: C at 17' spacing

| 2_P_FullPCC_04-20-21  |           |             |
|-----------------------|-----------|-------------|
| STATION TO STATION    |           | (P)<br>Feet |
| 185+10.00             | 185+73.64 | 4.0         |
| 185+73.64             | 185+93.64 | 13.0        |
| 185+93.64             | 186+25.00 | 13.0-11.5   |
| Bridge and Approaches |           |             |
| 188+55.00             | 188+84.50 | 11.3-12.6   |
| 188+84.50             | 189+04.50 | 12.6        |
| 189+04.50             | 189+50.00 | 4.0         |



Full Depth PCC Shoulder

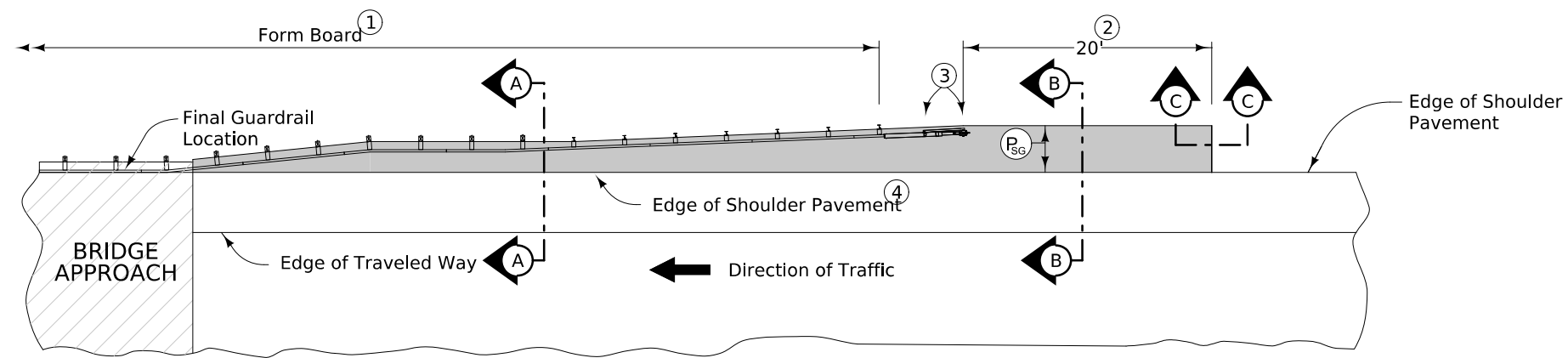
Shoulder Jointing:  
Longitudinal joint: BT-2 or L-2  
Transverse joints: C at 17' spacing

| 2_P_FullPCC_04-20-21  |           |             |
|-----------------------|-----------|-------------|
| STATION TO STATION    |           | (P)<br>Feet |
| 185+00.00             | 185+48.13 | 4.0         |
| 185+48.13             | 185+68.15 | 11.8        |
| 185+68.15             | 186+25.00 | 11.8-10.1   |
| Bridge and Approaches |           |             |
| 188+55.00             | 189+10.00 | 4.0         |

See Tab 112-9 for shoulder quantities.

Iowa Highway 38





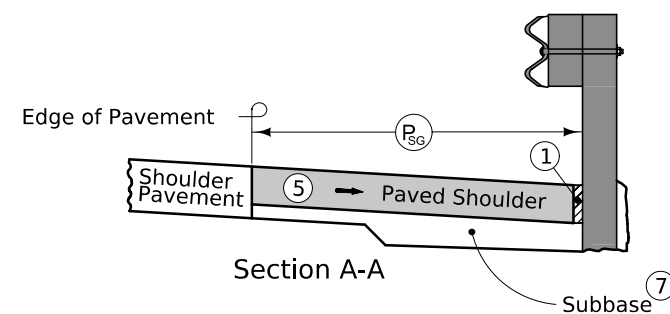
PLAN VIEW

9" PCC Paved Shoulder at guardrail with the following jointing layout:

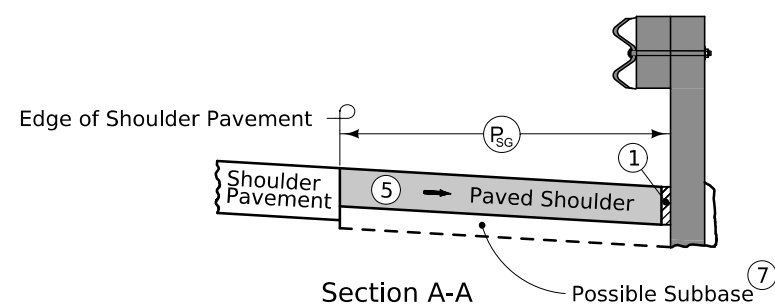
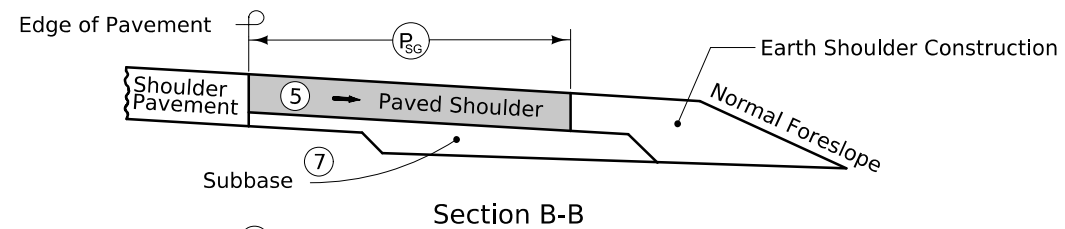
Match mainline pavement joint spacing. When mainline pavement is 8" or greater in thickness, place additional transverse 'C' joints in shoulder at mid-panel of the mainline pavement. Place longitudinal 'C' joint at P/2 from edge of mainline pavement when P is greater than 10' wide. Terminate longitudinal joint at transverse joint less than 10' in length.

Refer to Tabulation 112-9 for shoulder quantities.

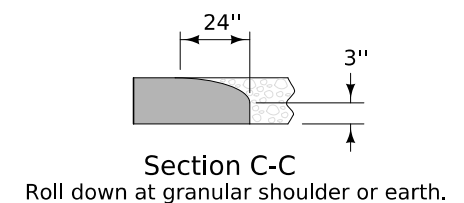
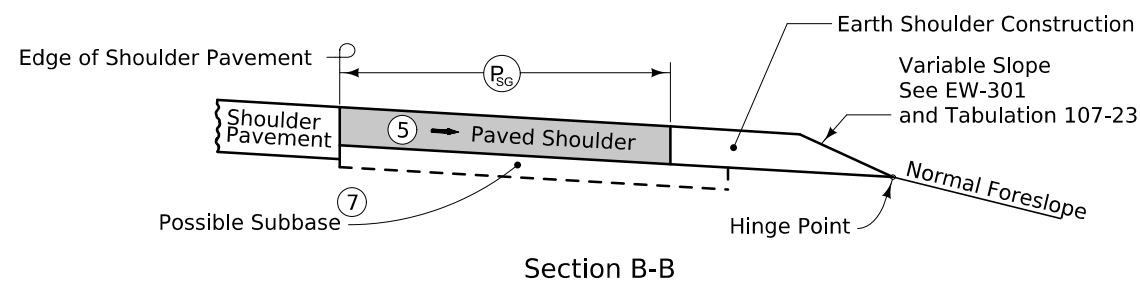
- ① When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.
- ② Continue paved shoulder 20 feet beyond the center of the first post.
- ③ Shoulder may be notched for first 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.
- ④ 'BT' joint (per PV-101) for PCC shoulder.
- ⑤ Match shoulder slope.
- ⑥ The Contractor has the option to pave the paved shoulder at guardrail and the partial width paved shoulder as one operation.
- ⑦ Refer to other details in the plan.



NEW CONSTRUCTION



EXISTING SHOULDER



PAVED SHOULDER AT GUARDRAIL  
(ADJACENT TO FULL WIDTH PAVED SHOULDER)

|  |                                   |
|--|-----------------------------------|
|  | 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)             |

|                                                                                   |                              |
|-----------------------------------------------------------------------------------|------------------------------|
|  | Septic Tank                  |
|  | Cistern                      |
|  | L.P. Gas Tank (No Footing)   |
|  | Underground Storage Tank     |
|  | Latrine                      |
|  | Satellite TV Dish            |
|  | Water Hook Up                |
|  | Radio Tower                  |
|  | Tower Anchor                 |
|  | Guardrail (Beam or Cable)    |
|  | Guard Post (one or two)      |
|  | Guard Post (over two)        |
|  | Filler Pipe                  |
|  | Gas Valve                    |
|  | Water Valve                  |
|  | Speed Limit Sign             |
|  | Mile Marker Post             |
|  | Sign                         |
|  | Traffic Signal Control Box   |
|  | Rail Road Signal Control Box |
|  | Telephone Switch Box         |
|  | Electric Box                 |

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

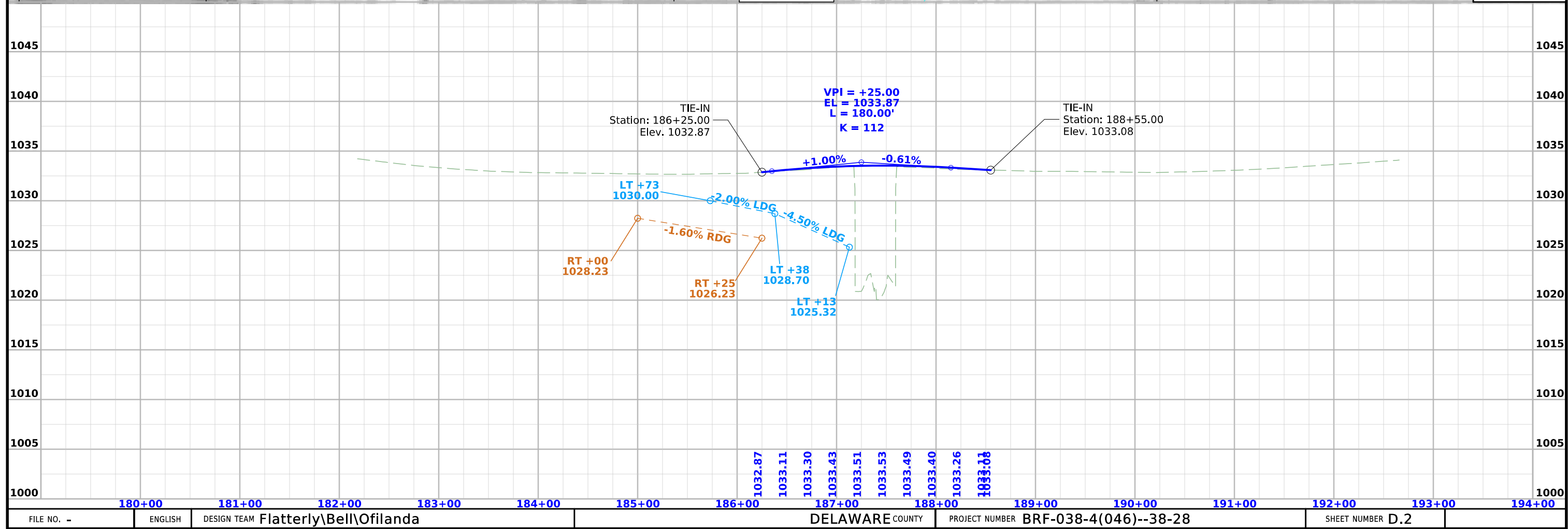
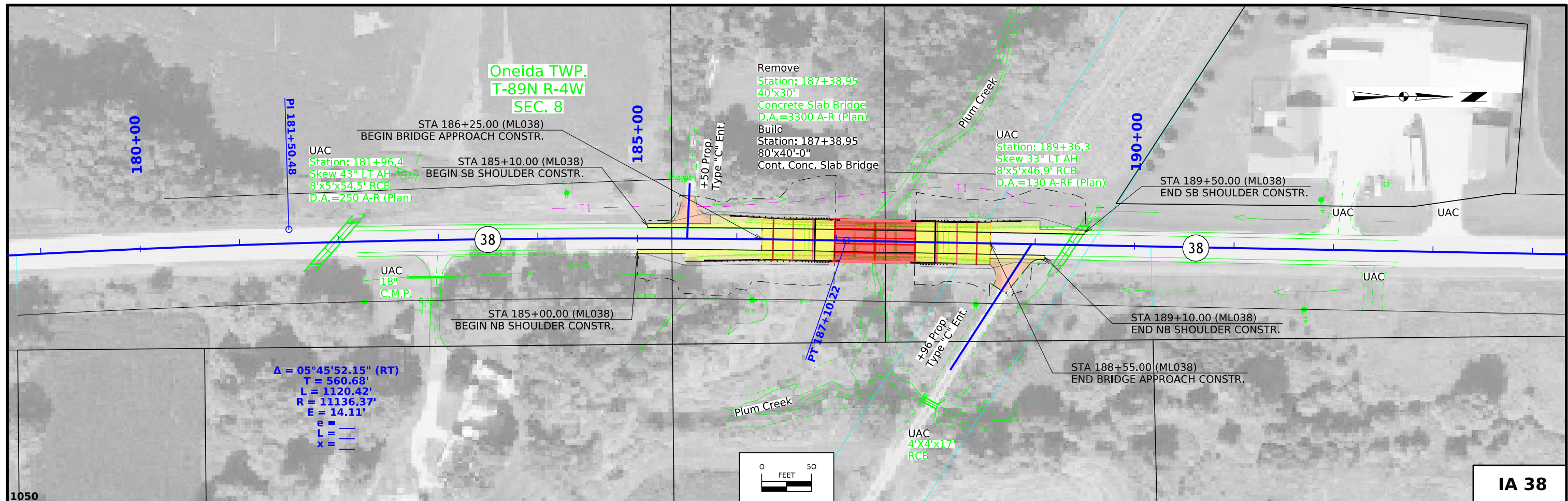
— T1 — Windstream Communications (ILEC)

| 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    |

|  |                             |  |                          |
|--|-----------------------------|--|--------------------------|
|  | Reference Point             |  | Survey Line              |
|  | Station                     |  | Section Corner           |
|  | Ground Line Intercept       |  | Saw Cut                  |
|  | Guardrail                   |  | Trench Drain             |
|  | HighTension Cable Guardrail |  | Sheet Pile               |
|  | Pavement Removal            |  | Clearing & Grubbing Area |

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



Survey Information

SURVEY INDEX

County: Delaware  
Project Code: 23-28-038-010  
Phase Number: BRF-038-4(046)--38-28  
Location: Plum Creek 3.5 mi N of Co Rd D22  
Type of Work: Bridge-Unspecified  
Project Directory: 2803801023

Survey Personnel

John Hahn – Survey Party Chief

Date(s) of Survey

Begin Date 11/18/2024  
End Date 03/26/2025

General Information

This survey is for the replacement of the IA 38 bridge (2890.2S038) over Plum Creek, 2.5 mi North of County Road D22. This survey request was for the IA38 corridor only. 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 3  
(U.S. SURVEY FOOT)  
VERTICAL DATUM: NAVD88  
GEOID MODEL: 2018u3

Alignment Information

The horizontal alignment for U.S. Hwy 18 this survey is a best-fit of As-built Plans No. RN-934. Survey stationing was equated to the plan PC at Sta. 175+89.8 and carried ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PC Sta. 175+89.8 As-built Plans Project No. FN-934  
Survey PC Sta. 175+89.8

PT Sta. 187+09.8 As-built Plans Project No. FN-934  
Survey PT Sta. 187+10.22

PC Sta. 208+75.8 As-built Plans Project No. FN-934  
Survey PT Sta. 208+76.54

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 3 (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.

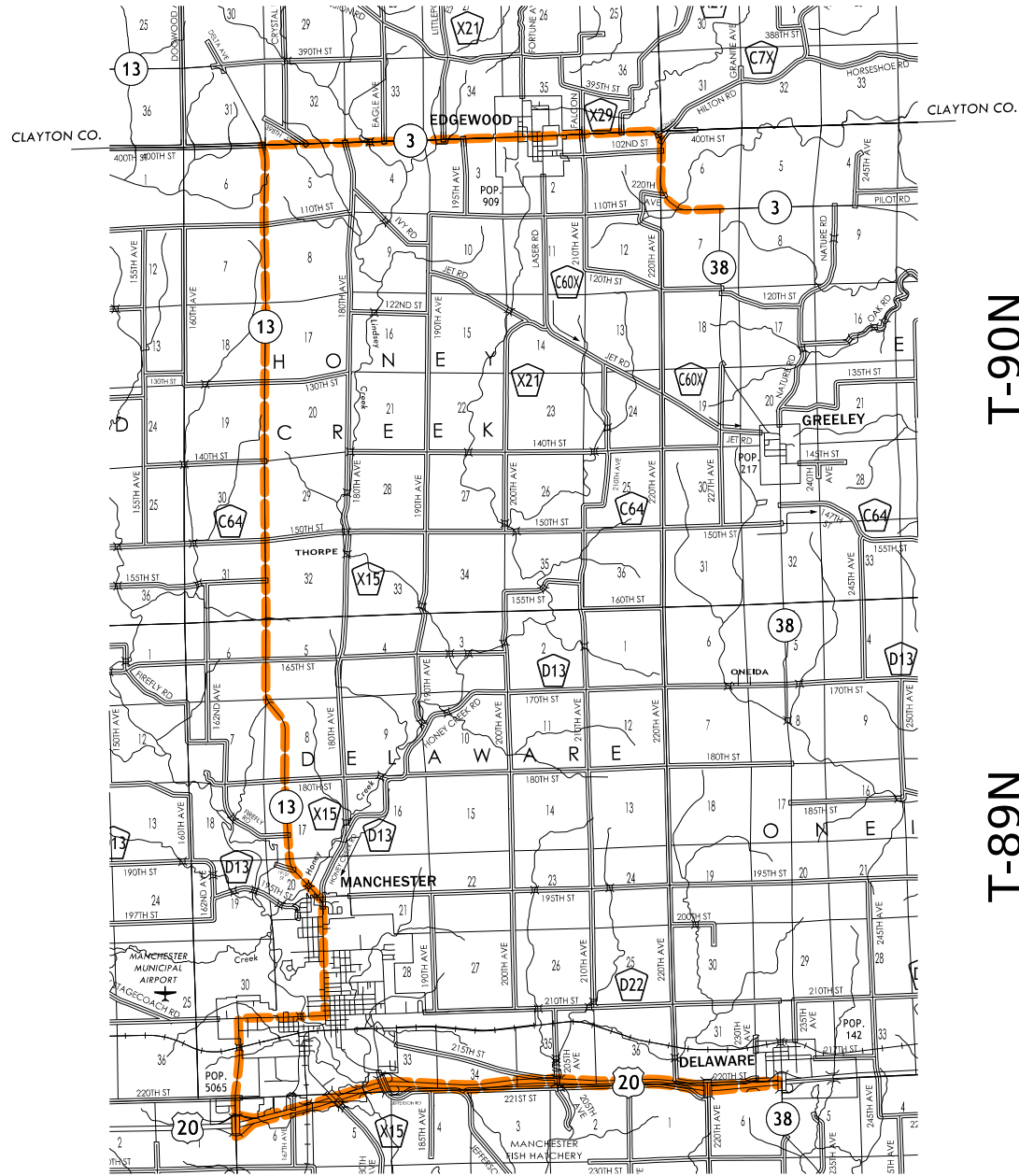


HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING  
HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment)  
Ia. Regional Coordinate System Zone 3 (U.S. Survey Foot)  
VERT. DATUM: NAVD88  
Geoid Model: 2018u3

| Point Name | Northing   | Easting     | Elevation | Code/Description                                                                   |
|------------|------------|-------------|-----------|------------------------------------------------------------------------------------|
| 24         | 9141131.27 | 13472401.63 | 1090.25   | CP FND DELAWARE COUNTY GPS CONTROL POINT 2001-24 AS<br>DESCRIBED IN GOOD CONDITION |
| 32         | 9124863.67 | 13453737.63 | 1051.45   | CP FND DELAWARE COUNTY GPS CONTROL POINT 2001-32 AS<br>DESCRIBED IN GOOD CONDITION |
| 33         | 9124870.85 | 13472177.55 | 1011.06   | CP FND DELAWARE COUNTY GPS CONTROL POINT 2001-33 AS<br>DESCRIBED IN GOOD CONDITION |
| CPN        | 9134379.60 | 13461860.22 | 1035.33   | CP SET IDOT FENO MONUMENT                                                          |
| CPS        | 9132021.60 | 13461953.34 | 1044.18   | CP SET IDOT FENO MONUMENT                                                          |

| <div>TRAFFIC CONTROL PLAN</div> <div>108-23A<br/>08-01-08</div> <div>IA 38 will be closed to thru traffic during construction.<br/>IA 38 shall be maintained via offsite detour. Detour will be signed and maintenance shall be done by the contractor. See JD.1 for detour.</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |              |         |                                    | <div>COORDINATED OPERATIONS</div> <div>111-01<br/>04-17-12</div> <div>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.</div> <table><tr><th>Project</th><th>Type of Work</th></tr><tr><td>None Provided</td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table> |                 | Project                                            | Type of Work                         | None Provided           |                             |                                          |                                      |         |       |           |        |                      |                 |             |                                                    |                        |                         |                             |                                          |                                      |         |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Type of Work |         |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |                                                    |                                      |                         |                             |                                          |                                      |         |       |           |        |                      |                 |             |                                                    |                        |                         |                             |                                          |                                      |         |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| None Provided                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |         |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |                                                    |                                      |                         |                             |                                          |                                      |         |       |           |        |                      |                 |             |                                                    |                        |                         |                             |                                          |                                      |         |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| <div>511 TRAVEL RESTRICTIONS</div> <div>108-25<br/>10-21-14</div> <table><tr><th>Route</th><th>Direction</th><th>County</th><th>Location Description</th><th>Feature Crossed</th><th>Object Type</th><th>Maint. Bridge No.,<br/>Structure ID,<br/>or FHWA No.</th><th>Type of<br/>Restriction</th><th>Existing<br/>Measurement</th><th>Construction<br/>Measurement</th><th>Construction<br/>Measurement<br/>as Signed</th><th>Projected<br/>As Built<br/>Measurement</th><th>Remarks</th></tr><tr><td></td><td></td><td></td><td>No Travel Restrictions Expected</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> |              |         |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |                                                    |                                      |                         |                             |                                          |                                      |         | Route | Direction | County | Location Description | Feature Crossed | Object Type | Maint. Bridge No.,<br>Structure ID,<br>or FHWA No. | Type of<br>Restriction | Existing<br>Measurement | Construction<br>Measurement | Construction<br>Measurement<br>as Signed | Projected<br>As Built<br>Measurement | Remarks |  |  |  | No Travel Restrictions Expected |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Route                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Direction    | County  | Location Description               | Feature Crossed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Object Type     | Maint. Bridge No.,<br>Structure ID,<br>or FHWA No. | Type of<br>Restriction               | Existing<br>Measurement | Construction<br>Measurement | Construction<br>Measurement<br>as Signed | Projected<br>As Built<br>Measurement | Remarks |       |           |        |                      |                 |             |                                                    |                        |                         |                             |                                          |                                      |         |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| FILE NO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              | ENGLISH | DESIGN TEAM Flattery\Bell\Ofilanda |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | DELAWARE COUNTY |                                                    | PROJECT NUMBER BRF-038-4(046)--38-28 |                         | SHEET NUMBER J.1            |                                          |                                      |         |       |           |        |                      |                 |             |                                                    |                        |                         |                             |                                          |                                      |         |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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T-90N

T-89N

R-5W

R-4W

NOT TO SCALE

**DETOUR**  
Plum Creek 3.5mi N of Co Rd D22  
BRF-038-4(046)--38-28  
PIN: 23-28-038-010

LEGEND

DETOUR ROUTE 

IA 38  
DETOUR ROUTE

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

NOTES:

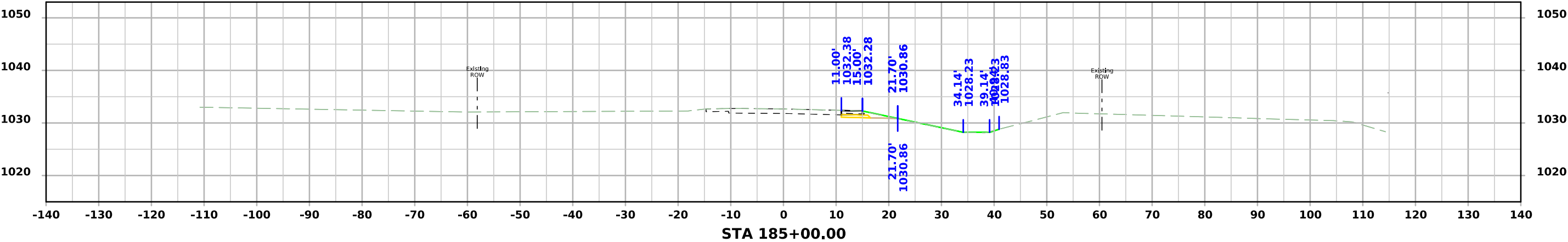
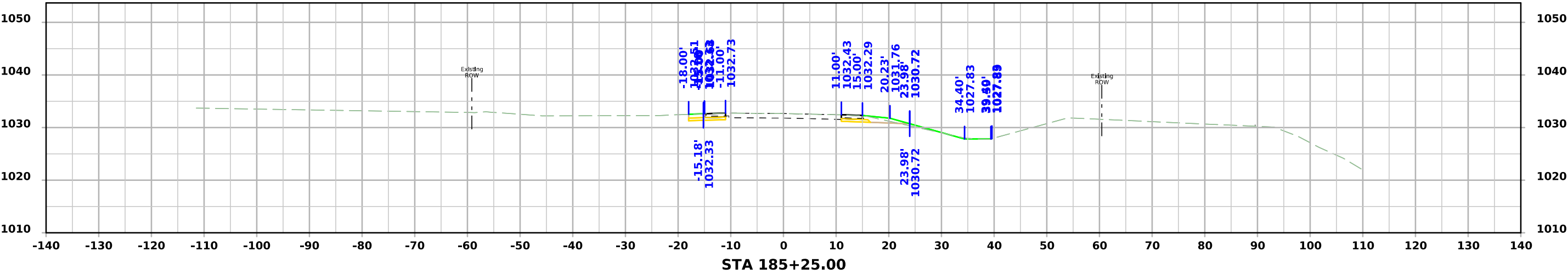
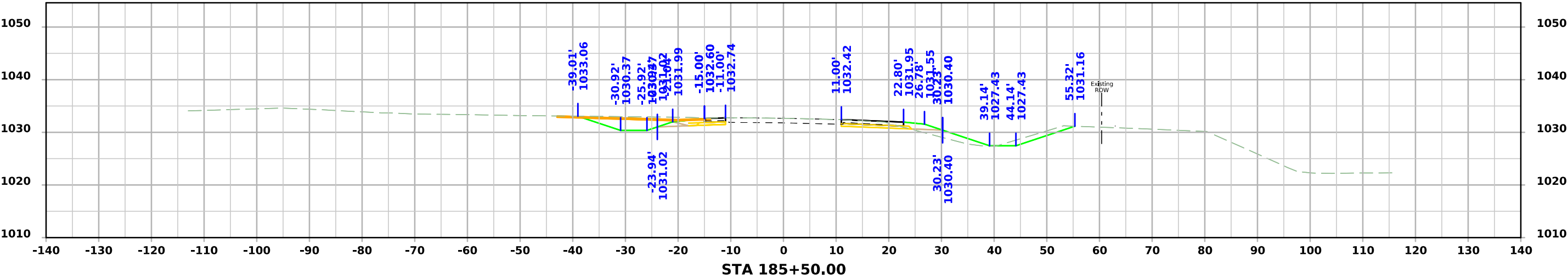
Text

NOTES:

Text

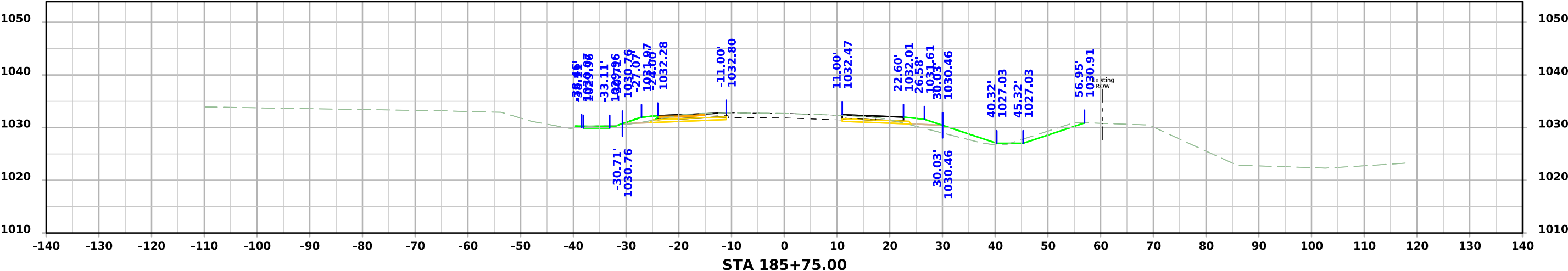
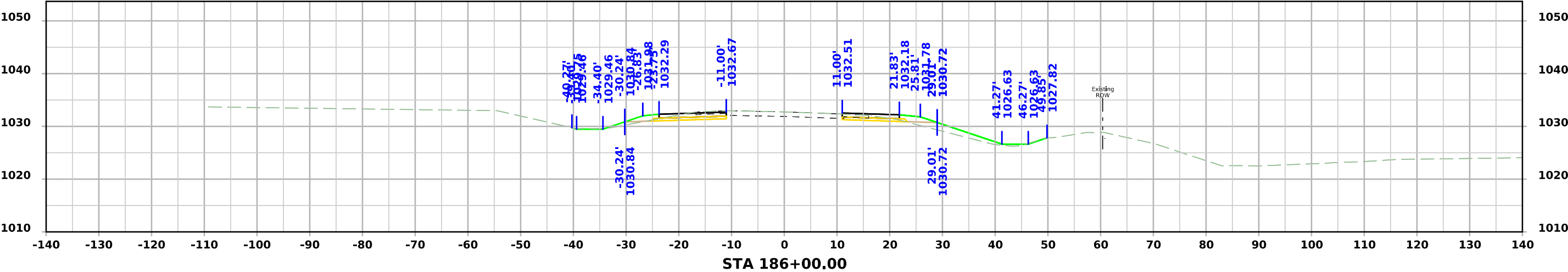
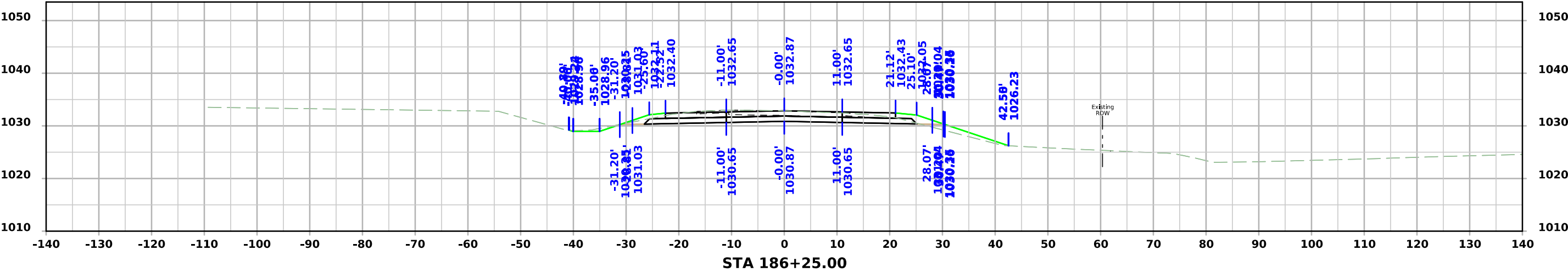
CROSS SECTIONS  
LEGEND AND INFORMATION SHEET

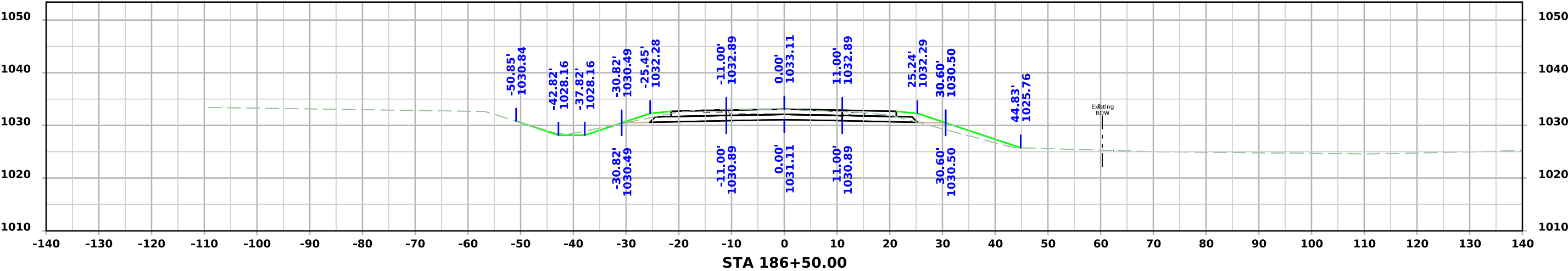
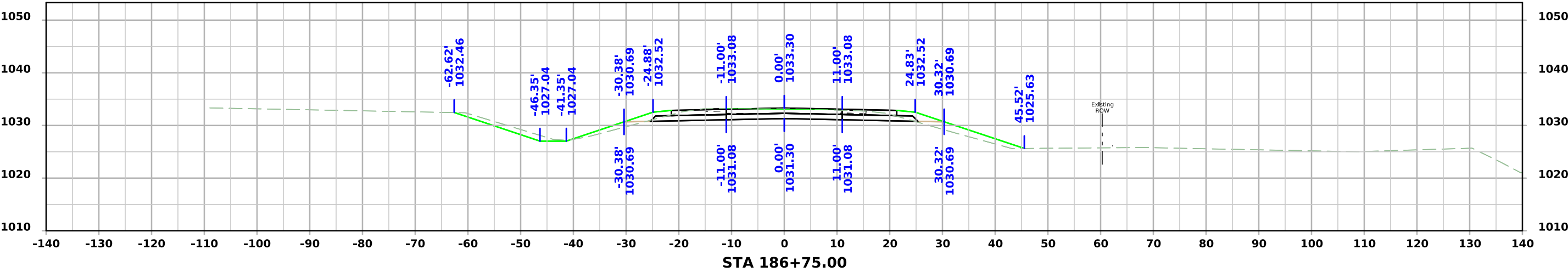
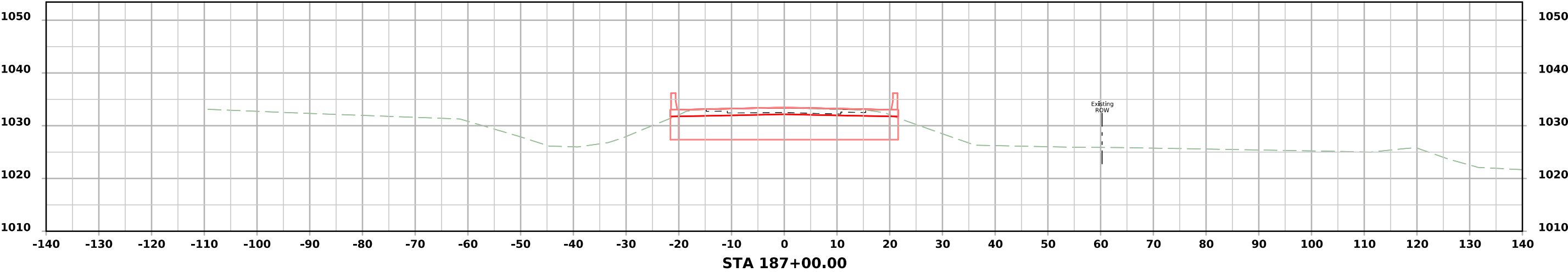
(COVERS SHEET SERIES W, X, Y, & Z)

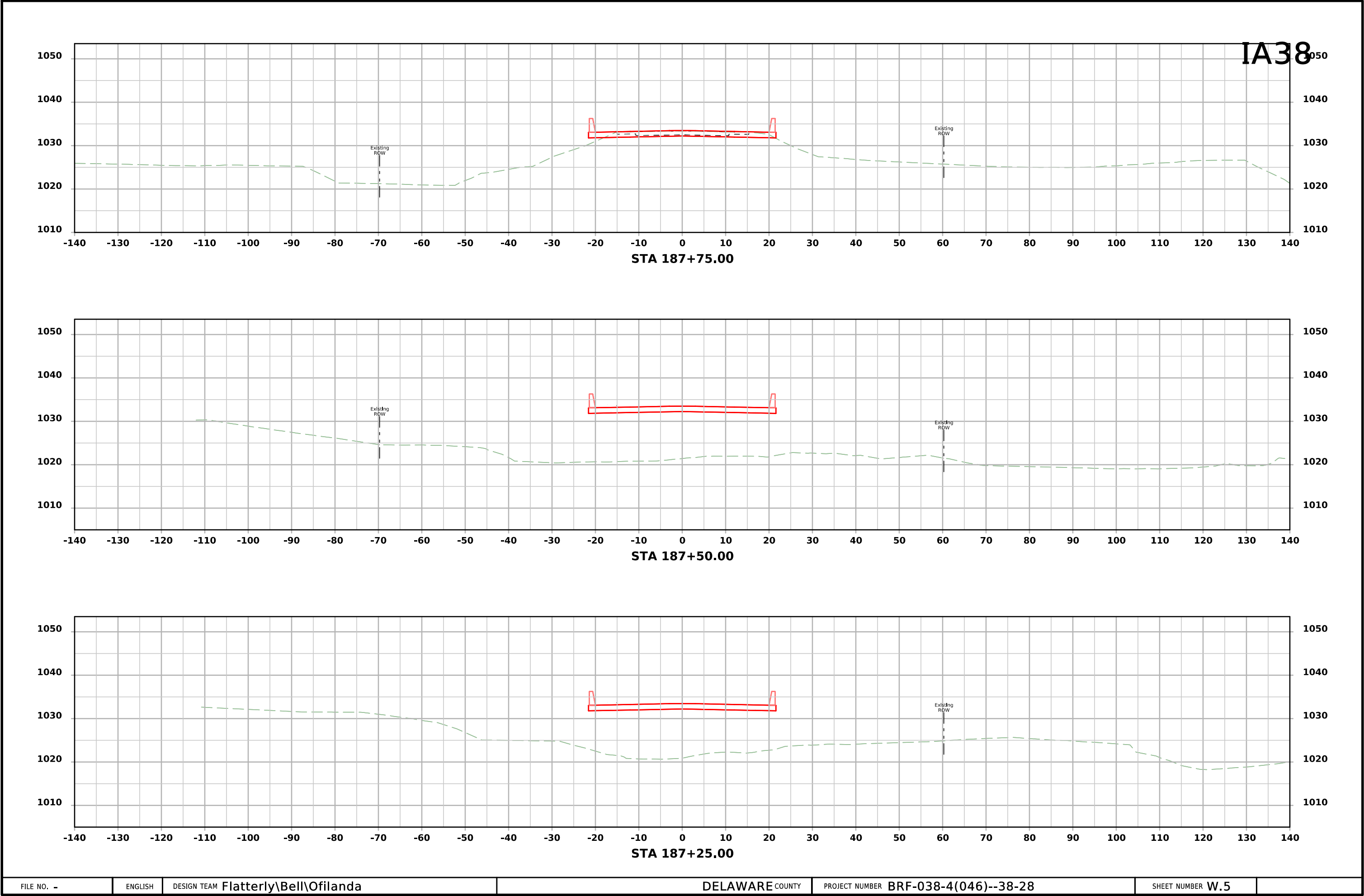


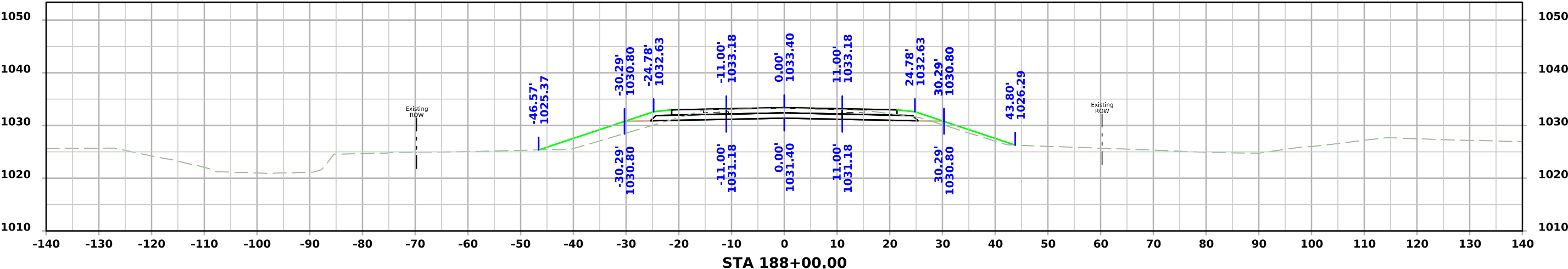
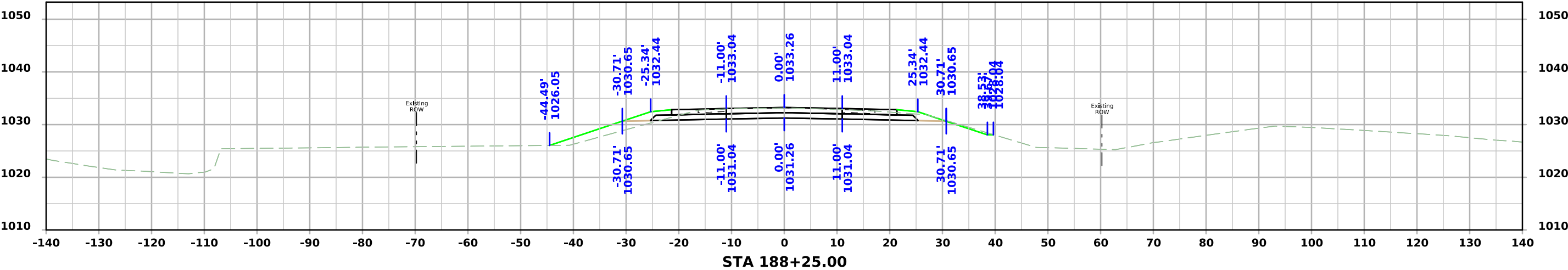
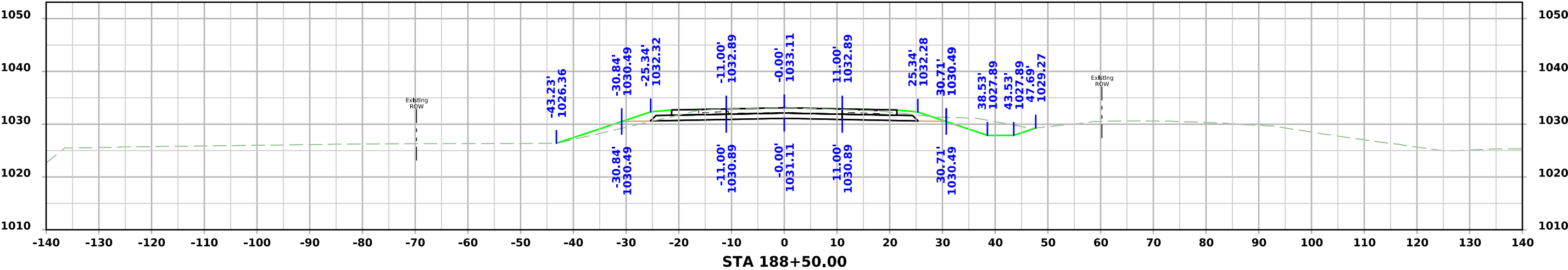


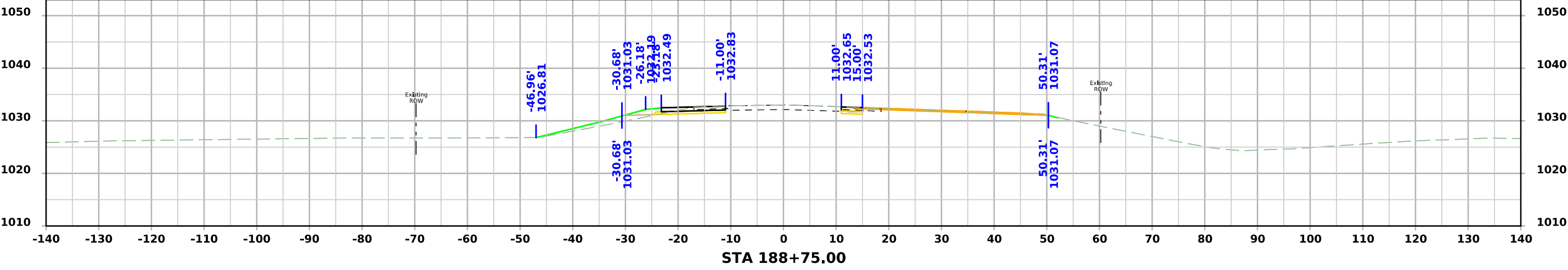
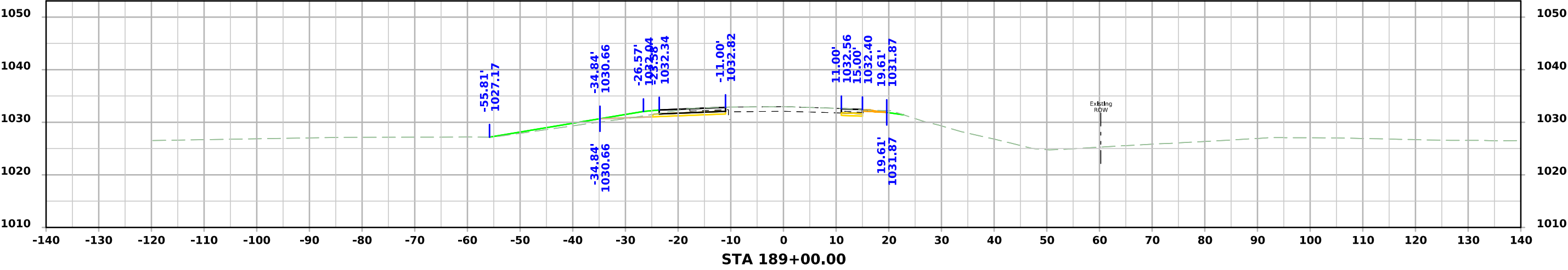
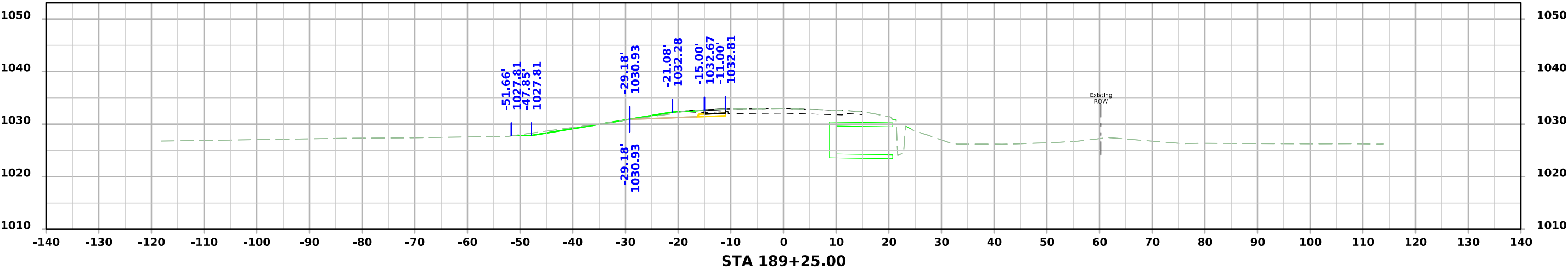
IA38

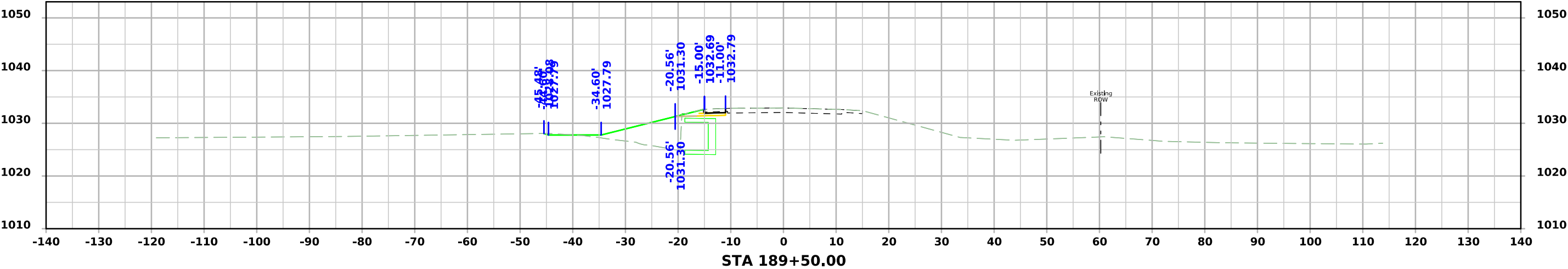














IA 38 Entrances

