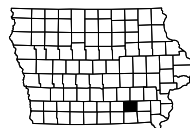


WAPELLO COUNTY

RCP REPLACEMENT  
BRF-063-2(172)--38-90

LETTING DATE  
12-16-2025



INDEX OF SHEETS	
No.	DESCRIPTION
<b>A Sheets</b>	<b>Title Sheets</b>
A.1	Title Sheet
A.2	Location Map Sheet
A.3 - 9	Concept
<b>B Sheets</b>	<b>Typical Cross Sections and Details</b>
B.1 - 3	Typical Cross Sections and Details
<b>D Sheets</b>	<b>Mainline Plan and Profile Sheets</b>
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2 - 3	US 63
<b>J Sheets</b>	<b>Traffic Control and Staging Sheets</b>
J.1	Traffic Control Plan
<b>W Sheets</b>	<b>Mainline Cross Sections</b>
* W.1	Cross Sections Legend & Symbol Information Sheet
* W.2 - 6	Mainline Cross Sections
	* Color Plan Sheets



PLANS OF PROPOSED IMPROVEMENT ON THE  
**PRIMARY ROAD SYSTEM**  
**WAPELLO COUNTY**  
**PCC Pavement - Grade and New**  
 Abandoned RR 0.8 mi N of Co Rd J15  
 (Bridge Removal)

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

21

PROJECT IDENTIFICATION NUMBER

21-90-063-010

PROJECT NUMBER

BRF-063-2(172)--38-90

R.O.W. PROJECT NUMBER

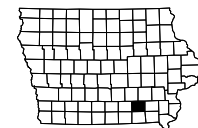
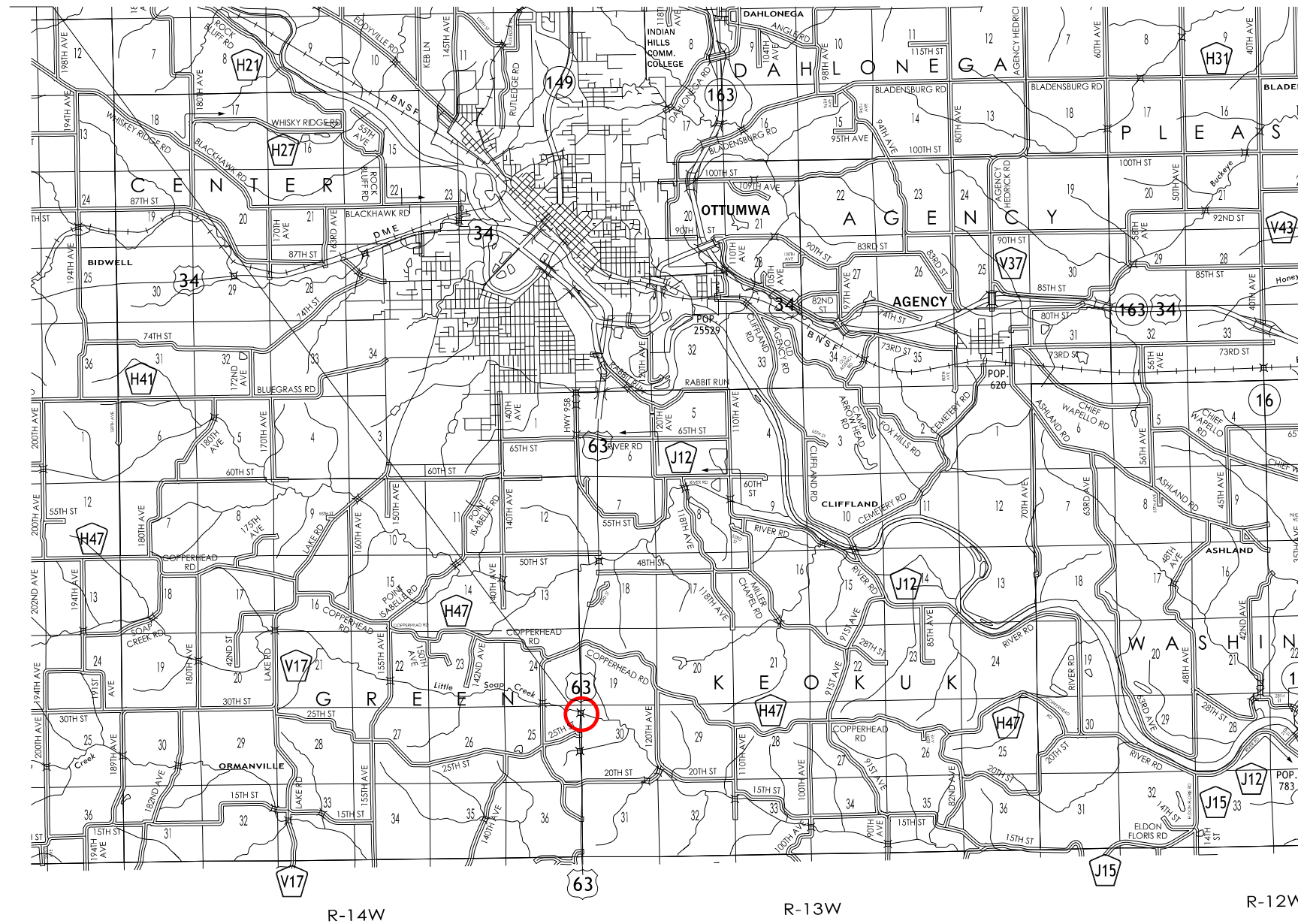
NHSN-063-2(173)--2R-90

PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN - Date: 11-15-2023

Project Location:  
 STA 72+52.39  
 FHWA 50590  
 MAINT. NO. 9028.1S063





FINAL PROJECT CONCEPT STATEMENT

Abandoned RR 4.8 mi N of Co Rd J15 on U.S. 63

Wapello County  
BRF-063-2(172)--38-90  
PIN: 21-90-063-010  
Maint. No. 9028.1S063  
FHWA No. 50590

Highway Division  
Design Bureau

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

December 28, 2022

Wapello County  
BRF-063-2(172)--38-90  
PIN: 21-90-063-010  
Page 2

B. Need for Project

The existing structure is a 150' x 30' steel beam bridge that was built in 1964 and is located over an abandoned railroad. Cast in place barrier rail was constructed in 1988. A bridge deck overlay was completed in 2000. Epoxy was injected into the deck in 2006 to last until removal, planned for 2014 with the Little Soap Creek bridge replacement. The removal was not completed at this time. The bridge deck was patched and injected in 2015. This removal is part of a larger U.S. 63 corridor work.

I. STUDY AREA

A. Project Description

This project involves the removal of the U.S. 63 bridge (Maint. No 9028.1S063) over abandoned railroad, 4.8 miles north of County Road J15.

The three alternatives considered were:

1. Install a 72", 4000D strength reinforced concrete pipe under the existing bridge using the flowable mortar method and only remove the bridge rails. **(Estimated cost \$1,083,300)**
2. Install a 72", 4000D strength reinforced concrete pipe and remove the existing bridge. This will require the closure of U.S. 63 and traffic to utilize an off-site detour. **(Estimated cost \$735,500)**
3. Install a 72", 4000D strength reinforced concrete pipe under the existing bridge using geofoam fill and only remove the bridge rails **(Estimated Cost \$1,864,100)**

Alternative 1 is the preferred alternative due to desire to maintain access through the bridge during construction and ability to leave the current pavement in place. If compressible soils are found to pose an issue after soil borings are collected, Alternative 3 will be selected instead.



Figure 1: With route facing north



Figure 3: Left profile



Figure 2: Against route facing south



Figure 4: Right profile

C. Present Facility

The existing structure is a 150' x 30' steel beam bridge constructed in 1964.

U.S. 63 in the project area is 24' wide, 10" PCC pavement with 12' lanes, 10' wide earth shoulder shoulders, and 3:1 foreslopes, constructed in 1965. The roadway was resurfaced with 1.5" surface HMA and 3.0" base HMA in 2007. The roadway was widened and resurfaced with 1.5" surface HMA, 2.0" base HMA, and 3.0" subbase HMA in 2007.

D. Traffic Estimates

The 2026 construction year and 2046 design year average daily traffic estimates are approximately 6100 ADT with 10% trucks and 6500 ADT with 10% trucks, respectively.

E. Sufficiency Ratings

U.S. 63 is classified as a Commercial and Industrial route and is a maintenance service level "B" roadway. The federal bridge sufficiency rating is 77.4.

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from January 1, 2017 through December 31, 2021, there were 2 personal property crashes.

II. PROJECT CONCEPT

A. Feasible Alternatives

**Alternative #1: Install a 72", 4000D strength reinforced concrete pipe under the existing bridge using the flowable mortar method**

Maintain the existing structure and place a 150' long x 72" diameter 4000D reinforced concrete pipe (RCP) underneath the existing structure utilizing the flowable mortar method.

The typical cross section will consist of a 24' roadway with 10' granular shoulders and 3:1 foreslopes. The roadway will be maintained on the existing horizontal and vertical alignment. Current bridge approaches will be left in place. The existing ditches will need to be relocated to meet the flowlines of the new RCP culvert. After the RCP culvert has been constructed, flooded backfill/contractor furnished embankment in place will be placed over the pipe and then 5' of flowable mortar will be used to fill the remaining void up to the bridge deck. Once the new embankment for the shoulders and 3:1 foreslopes have been placed adjacent to the bridge, the existing concrete bridge barrier, curb, and guardrail can be removed.

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

Right of way may be required for this project.

Traffic will be maintained at all times with the exception of placement of the flowable mortar and bridge rail removal, during which time traffic will be reduced down to one lane via the use of flaggers.

<b>Bridge Items</b>	<u>Estimated Costs</u>
72" 4000D Strength RCP	\$105,000
Concrete Aprons, 72"	\$16,000
Bridge Rail Removal	\$10,000
Mobilization (5%)	\$8,100
M&C (20%)	\$32,300
<b>Bridge Costs</b>	<b>\$171,400</b>

<b>Roadway Items</b>	<u>Estimated Costs</u>
Flooded Backfill	\$120,900
Embankment in place, contractor furnished	\$130,800
Flowable Mortar	\$143,800
Guardrail Removal	\$3,400
Bridge Approaches	\$124,100
Seeding and Fertilizing	\$900

Erosion Control	\$63,900
Right of Way	\$5,000
Temporary Traffic Control – 5.0%	\$45,600
Mobilization - 10%	\$91,200
M & C - 20%	<u>\$182,300</u>
<b>Roadway Costs</b>	<b>\$911,900</b>
<b>Project Total</b>	<b>\$1,083,300</b>

**Alternative #2: Install a 72", 4000D strength reinforced concrete pipe and remove existing bridge deck and beams**

The existing 150' x 30' bridge will be removed and replaced with a 24' wide roadway with 10' granular shoulders and 3:1 foreslopes on the existing horizontal and vertical alignment. A 150' long x 72" diameter 4000D strength reinforced concrete pipe will be installed under the new roadway to maintain existing drainage.

The contractor will place and compact embankment under the existing bridge. Once as much embankment as possible has been placed and compacted, the roadway will be closed for the removal of the bridge deck, beams, adjacent bridge approach sections, placement of the remaining quantities of embankment, and construction of the new roadway.

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

Right of way may be required for this project.

Traffic will be maintained by an off-site detour to be set by the District 5 Office.

<b>Bridge Items</b>	<u>Estimated Cost</u>
Bridge Removal	\$54,000
72" 4000D Strength RCP	\$105,000
Concrete Apron, 72"	\$16,000
Mobilization (5%)	\$8,100
M&C (20%)	<u>\$32,300</u>
<b>Bridge Costs</b>	<b>\$215,400</b>

<b>Roadway Items</b>	<u>Estimated Cost</u>
Removal of Pavement	\$9,500
Modified Subbase	\$18,100
PCC Pavement (9")	\$65,700
Granular Shoulder, Type B	\$6,800
Flooded Backfill	\$4,800

Class 10 Blister, Two-Lane	\$23,800
Embankment in place, contractor furnished	\$196,600
Erosion Control	\$33,800
Right of Way	\$5,000
Traffic Control (5%)	\$26,000
Mobilization (5%)	\$26,000
M & C (20%)	<u>\$104,000</u>
<b>Roadway Costs</b>	<b>\$520,100</b>
<b>Project Total</b>	<b>\$735,500</b>

**Alternative #3: Install a 72", 4000D strength reinforced concrete pipe with geofoam fill and remove bridge rails**

Maintain the existing structure and place a 150' long x 72" diameter 4000D reinforced concrete pipe (RCP) underneath the existing structure using geofoam and flowable mortar method.

The typical cross section will consist of a 24' roadway with 10' granular shoulders and 3:1 foreslopes. The roadway will be maintained on the existing horizontal and vertical alignment. Current bridge approaches will be left in place. The existing ditches will need to be relocated to meet the flowlines of the new RCP culvert. After the RCP culvert has been constructed, contractor furnished embankment in place and geofoam will be placed over the pipe. 5' of flowable mortar will be used to fill the remaining void up to the bridge deck. Once the new embankment for the shoulders and 3:1 foreslopes have been placed adjacent to the bridge, the existing concrete bridge barrier, curb, and guardrail can be removed.

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

Right of way may be required for this project.

Traffic will be maintained at all times with the exception of placement of the flowable mortar/geofoam and bridge rail removal, during which time traffic will be reduced down to one lane via the use of flaggers.

<b>Bridge Items</b>	<u>Estimated Cost</u>
72" 4000D Strength RCP	\$105,000
Concrete Aprons, 72"	\$16,000
Bridge Rail Removal	\$10,000
Mobilization (5%)	\$8,100
M&C (20%)	<u>\$32,300</u>
<b>Bridge Costs</b>	<b>\$171,400</b>

<b>Roadway Items</b>	<u>Estimated Cost</u>
Geofoam	\$653,300
Geomembrane	\$43,300
Embankment in place, contractor furnished	\$130,800
Flowable Mortar	\$143,800
Guardrail Removal	\$3,400
Bridge Approach	\$128,100
Seeding and Fertilizing	\$900
Erosion Control	\$76,200
Right of Way	\$5,000
Temporary Traffic Control – 5.0%	\$84,700
Mobilization - 5%	\$84,700
M & C - 20%	<u>\$338,500</u>
<b>Roadway Costs</b>	<b>\$1,692,700</b>
 <b>Project Total</b>	 <b>\$1,864,100</b>

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 flaggers during placement of flowable mortar.

C. Recommendations

It is recommended that a reinforced concrete pipe be installed under the bridge utilizing the flowable mortar method, as described in Alternative No. 1. Based on soil boring data, Alternative 3 may be chosen to minimize issues associated with compressible soils.

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 U.S. 63; therefore, no ADA accommodations are planned in conjunction with this project.

F. Special Considerations

This will not be a traffic critical project.

No bike path or sidewalk will be required as part of this project. This bridge does not pass over any trails.

No additional survey will be required for this project.

Right of Way may be required for this project.

The Location and Environment Bureau has not reviewed this project at this time. Once their review is completed, comments will be incorporated into the final concept statement.

Soil borings for this project are scheduled to be collected in early spring of 2023. Evaluations for compressible soils have not yet been completed. In the event of the presence of compressible soils, a geofoam fill will be selected.

G. Program Status

Site data has been developed by the Design Bureau. This project is listed in the 2023-2027 Iowa Transportation Improvement Program, with \$1,310,000 programmed for grade & pave in FY 2026, and \$5,000 for right of way in FY 2026. 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:YG

Wapello County  
BRF-063-2(172)--38-90  
PIN: 21-90-063-010  
Page 9

Utilities

Lumen/CenturyLink  
Steve Parker  
(515) 265-0968 (Work)  
(507) 358-1978 (Mobile)  
[CTL-RDMV-IA@lumen.com](mailto:CTL-RDMV-IA@lumen.com)

Mediacom  
Fred Rhomberg  
(319) 395-9699, EXT 3462 (Work)  
(845) 248-7626 (Mobile)  
[frhomberg@mediacomcc.com](mailto:frhomberg@mediacomcc.com)

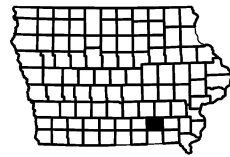
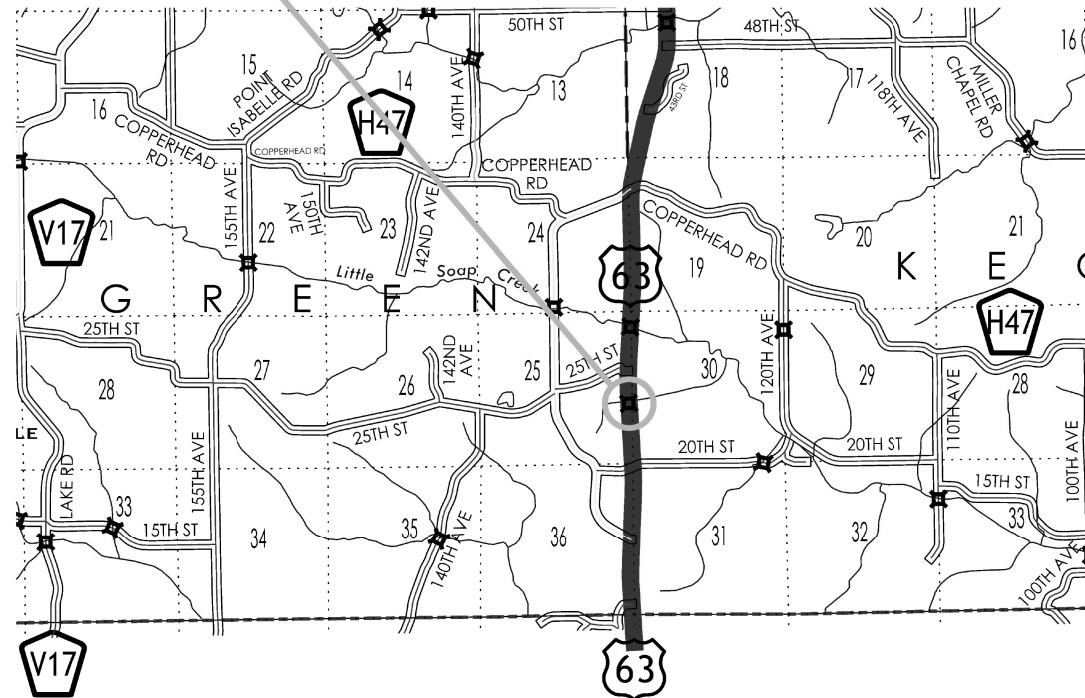
ICN (Iowa Communication Network)  
Mike Broderick  
(515) 725-4610 (Work)  
[mike.broderick@iowa.gov](mailto:mike.broderick@iowa.gov)

Wapello Rural Water Association  
Krista Huffman  
(641) 682-8351 (Work)  
[kristah@wapelloruralwater.com](mailto:kristah@wapelloruralwater.com)



# WAPELLO COUNTY

STA 72+52.39  
 FHWA 50590  
 MAINT. NO. 9028.1S063  
 DESIGN 1562



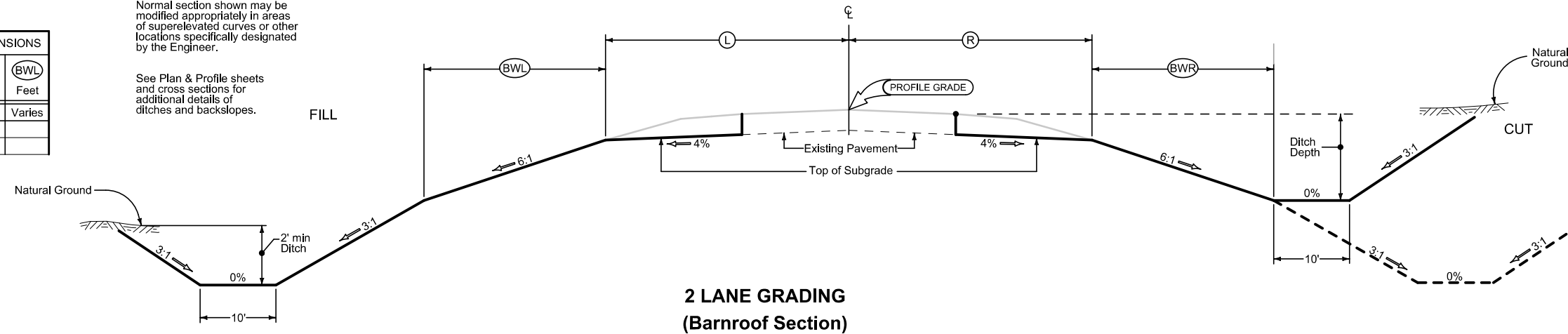
OVER ABANDONED R.R. 4.8 MILES N OF CO RD  
 J15 (BRIDGE REMOVAL)  
 BRF-063-2(172)-38-90  
 PIN: 21-90-063-010



LOCATION		DIMENSIONS	
STATION TO STATION		(L) Feet	(BWL) Feet
71+05.00	73+95.00	33.8	Varies

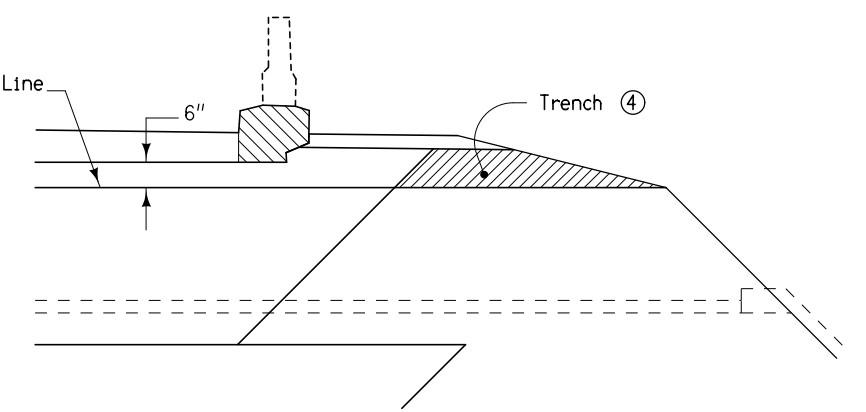
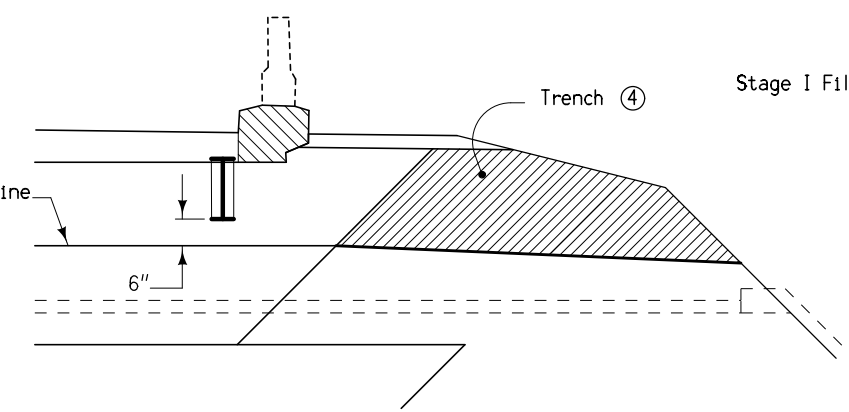
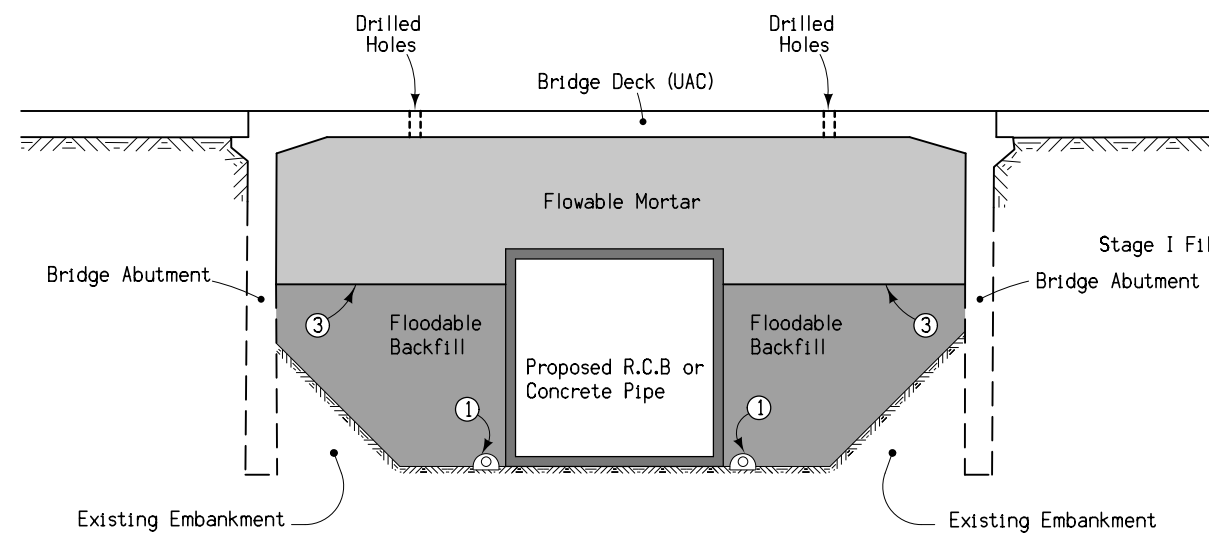
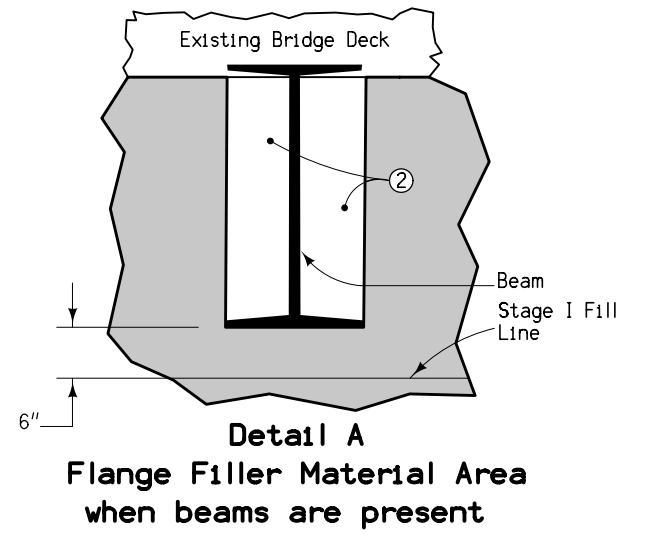
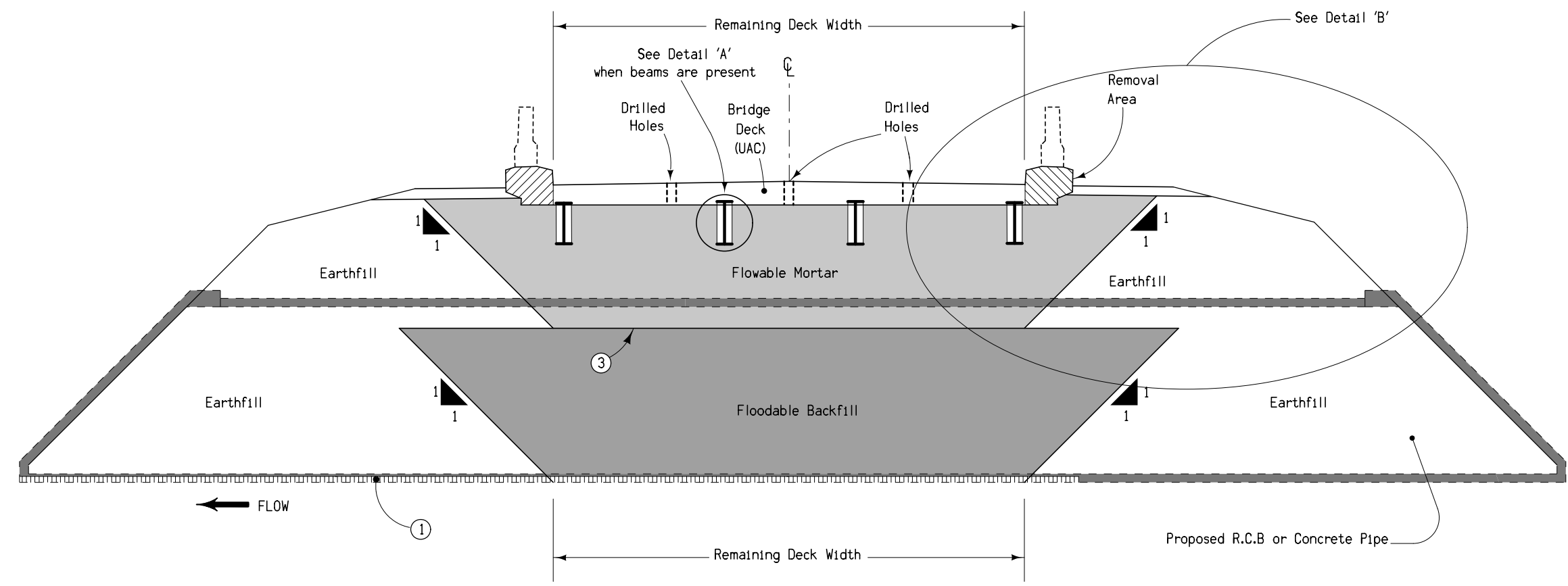
Normal section shown may be modified appropriately in areas of super-elevated curves or other locations specifically designated by the Engineer.

See Plan & Profile sheets and cross sections for additional details of ditches and backslopes.



LOCATION		DIMENSIONS	
STATION TO STATION		(R) Feet	(BWR) Feet
71+05.00	73+95.00	33.8	Varies

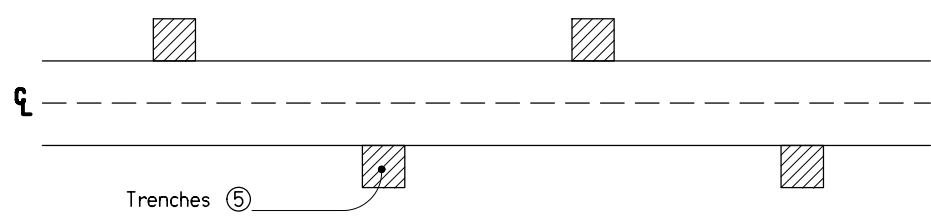
**2 LANE GRADING  
(Barnroof Section)**



Section along Centerline

Detail B (Beam Bridge)

Detail B (Slab Bridge)

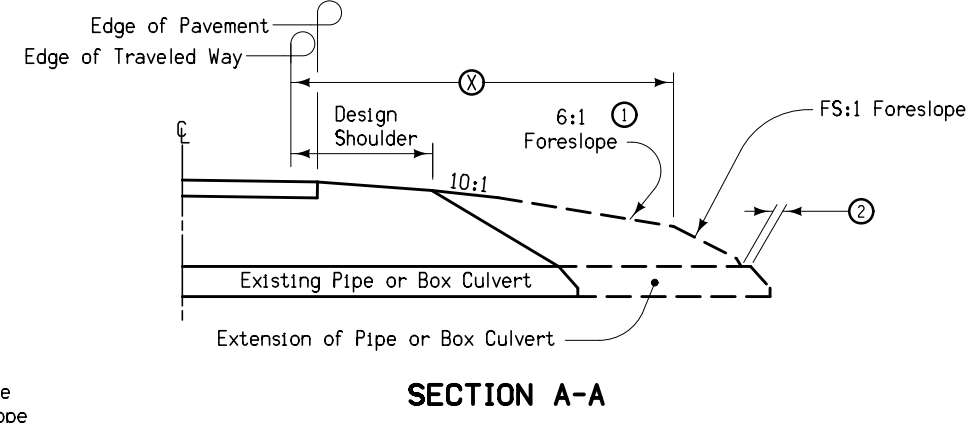
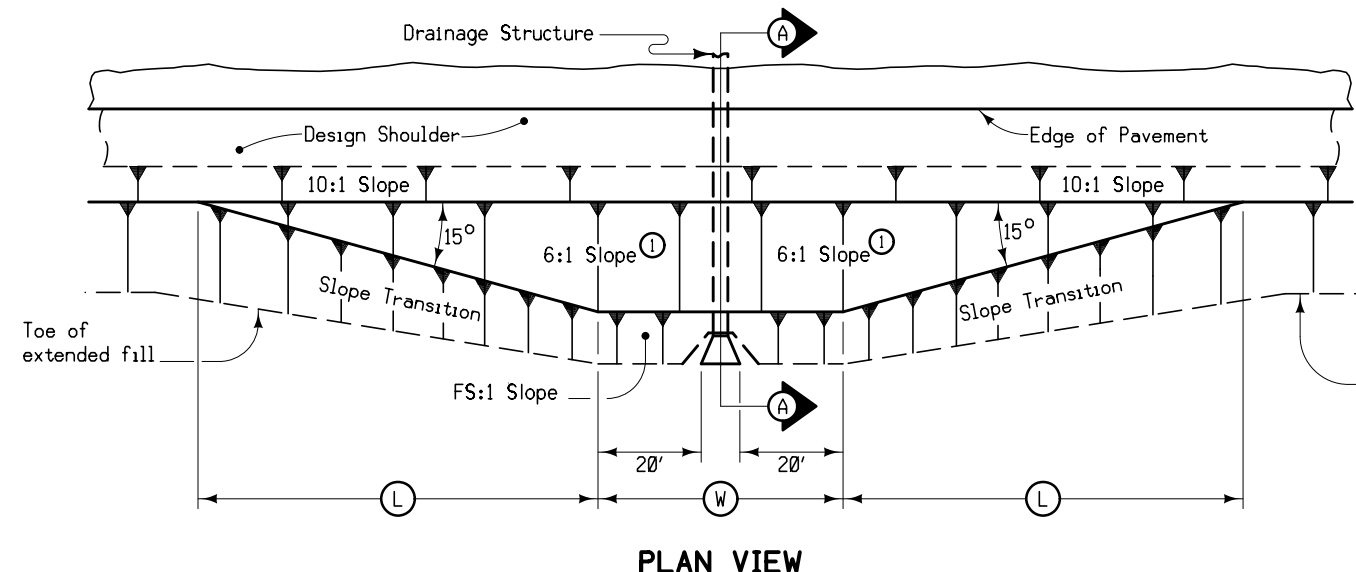


Trench Layout

- ① 4" Subdrain at flowline elevation of culvert with 4" cover of porous backfill.
- ② Place Flange Filler Material to fill pocket area between flanges to prevent flowable mortar from building up. Flange Filler Material is incidental to flowable mortar.
- ③ Fill void with the maximum amount of Floodable Backfill possible. Distance from Floodable Backfill to bridge beams (when present) or bridge deck shall not exceed 5'.
- ④ Cut trenches in the soil plug to provide drainage for the flowable mortar. Backfill the trenches with open graded crushed stone, gravel, or recycled PCC to allow water to drain. Backfill material is incidental to flowable mortar.
- ⑤ Place trenches at 20' spacing with a minimum of two trenches on each side of the roadway.

**FILL FOR CULVERT USED IN BRIDGE REPLACEMENTS**

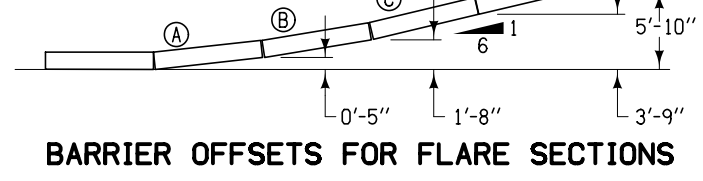
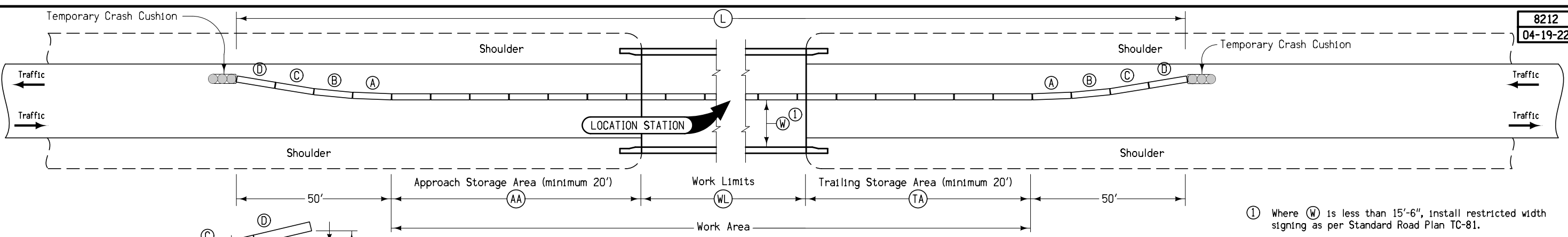
Denotes pay limits for flowable mortar  
Denotes pay limits for flooded backfill



- Notes:
- At locations where an extended or newly constructed drainage structure extends beyond the normal foreslope cover, flatten the foreslope as indicated so as to cover the structure. Minimum earth cover is 6".
  - ① Slope may be flatter than 6:1.
  - ② 6" Minimum for pipe installations or to top of headwall on R.C.B.
  - W = Pipe or R.C.B. opening width plus 20 feet each side.

STRUCTURE LOCATION		W	L	X	FS
STATION	SIDE	Feet	Feet	Feet	

**BARNROOF FORESLOPE AT DRAINAGE STRUCTURE**



Station	Side	AA	WL	TA	L	Anchored	W	Remarks
		Feet	Feet	Feet	Feet	X	Ft-Inches	

① Where W is less than 15'-6", install restricted width signing as per Standard Road Plan TC-81.

### SURVEY SYMBOLS

- Interstate Highway Symbol
- U.S. Highway Symbol
- Iowa Highway Symbol
- County Road Highway Symbol
- Evergreen Tree
- Deciduous Tree
- Fruit Tree
- Shrub (Bushes)
- Timber
- Hedge
- Stump
- Swamp
- Rock Outcrop
- Broken Concrete
- Revetment (Rip Rap)
- Cemetery
- Grave
- Cave
- Sink Hole
- Board Fence
- Chain Link or Security Fence
- Wire Fence
- Terrace
- Earth Dam or Dike (Existing)
- 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

### UTILITY LEGEND

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

- FO1D, IOWA COMMUNICATIONS NETWORK - Quality D
- FO2D, CENTURYLINK - Quality D
- WL1D, WAPELLO RURAL WATER - Quality D

### PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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.
Lavender	(9)	Temporary Pavement Shading
Yellow	(4)	Proposed Pavement Shading
Orange	(6)	Proposed Granular Shading
Orange	(70)	Proposed Shoulder Granular Shading
Yellow	(68)	Proposed Shoulder Paved Full Depth Shading
Yellow	(132)	Proposed Shoulder Paved Partial Depth Shading
Gray, Dark	(112)	Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)	Grading Shading
Orange, Light	(134)	Proposed Granular Entrance Shading
Yellow	(220)	Proposed Paved Entrance Shading
Tan	(8)	Proposed Sidewalk Shading
Blue, Light	(230)	Proposed Sidewalk Landing Shading
Pink	(11)	Proposed Sidewalk Ramp Shading
Green, Light	(225)	Existing Pavement Shading
Red	(3)	Proposed Structure Shading
Red	(3)	Delineates Restricted Areas

### PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

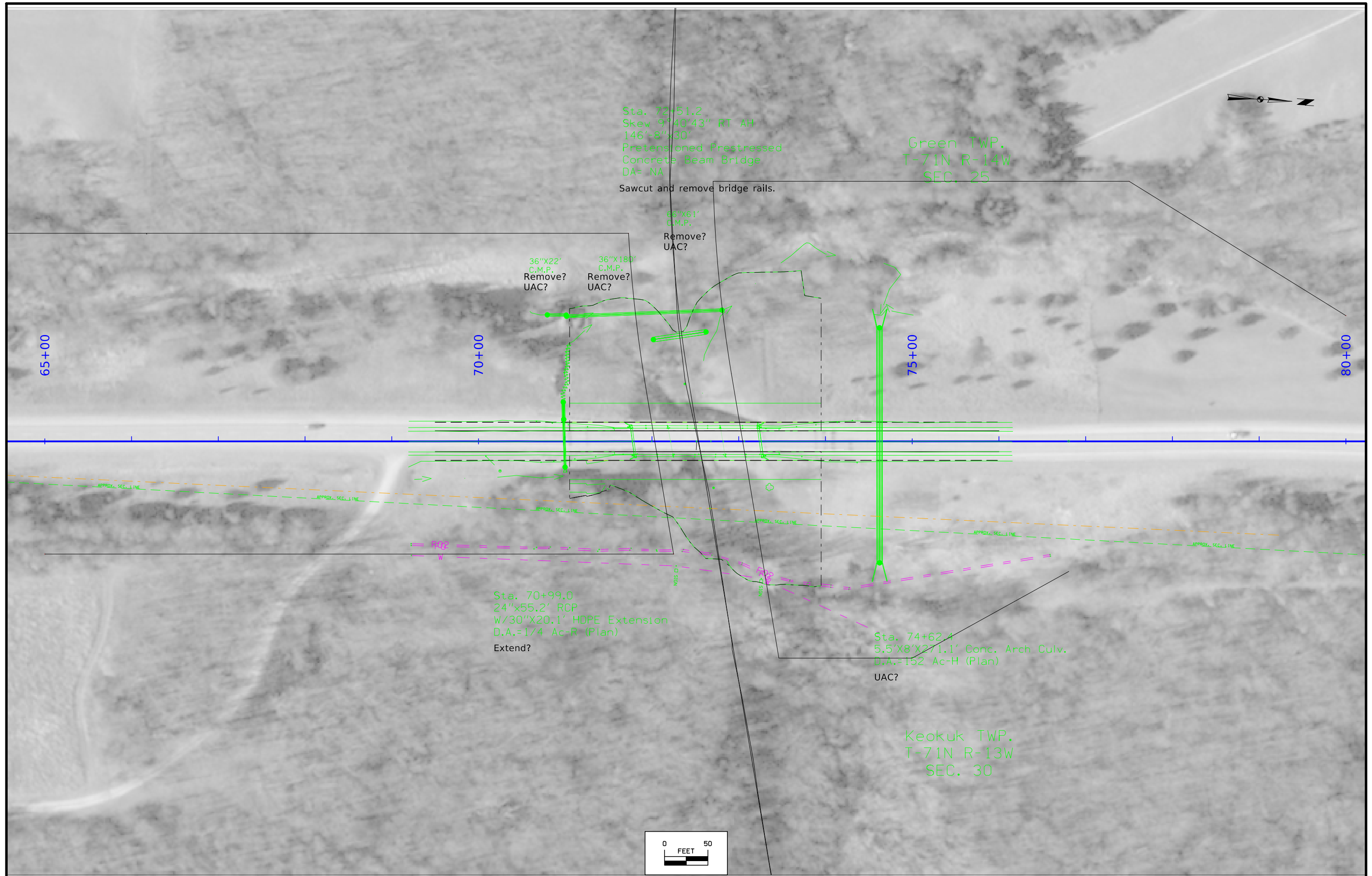
- Reference Point
- Station
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

### RIGHT-OF-WAY LEGEND

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

## PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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



**108-23A**  
08-01-08

### TRAFFIC CONTROL PLAN

Traffic on US 63 shall be maintained at all times.

One lane of traffic shall be maintained at all times via the use of TC-217 with TBR and Signals during the removal of bridge rail; and installation of the RCP, guardrail, and flowable mortar.

**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
None Provided	

**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
			No Travel Restrictions Expected									

## CROSS SECTION VIEW COLOR LEGEND

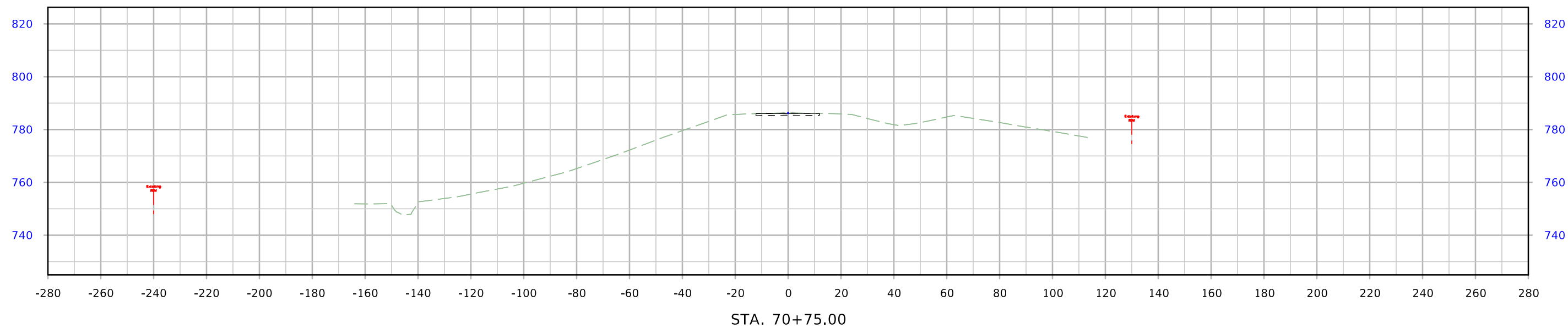
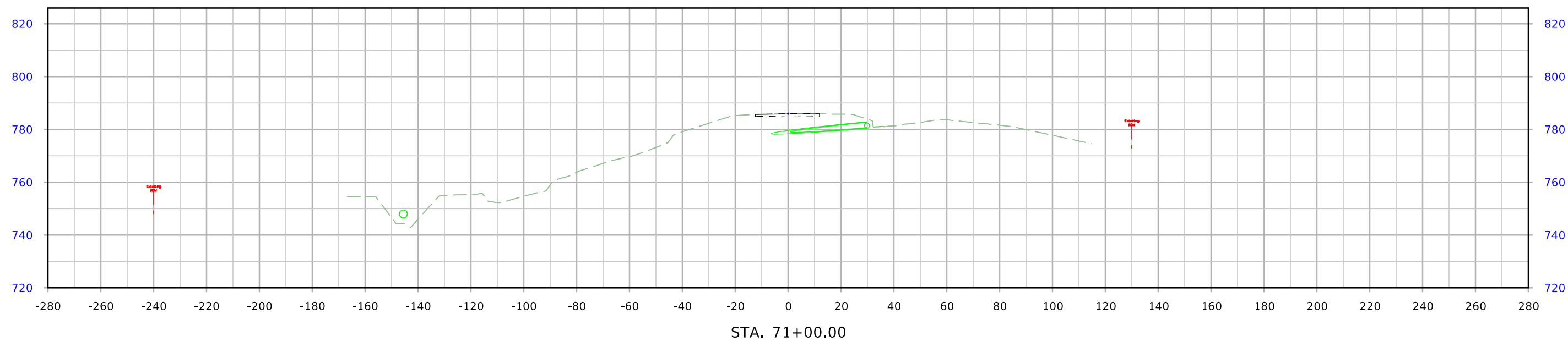
Design Color No.	Feature	Design Color No.	Feature
<b>Aggregate</b>			
(64)	Choke Stone	(112)	Noise Wall
(42)	Engineering Fabric	(112)	Noise Wall Footing
(8)	Flooded Backfill	(112)	Retaining Wall Back
(92)	Macadam Stone	(112)	Retaining Wall Back Excavate
(20)	Modified	(112)	Retaining Wall Face
(12)	Plowing 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	<b>Grading</b>	
(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	<b>Substrata</b>	
<b>Asphalt</b>			
(207)	HMA Base Course	(128)	Boulder Substrata
(207)	HMA Interim Course	(48)	Broken Weathered Substrata
(207)	HMA Surface Course	(3)	Core Out Substrata
<b>Concrete</b>			
(0)	Barrier Concrete	(203)	Existing Pavement Substrata
(0)	Barrier Concrete Footing	(6)	Loam Substrata
(0)	Curb Gutter	(80)	Rock Substrata
(48)	Flowable Mortar	(4)	Select Sand Substrata
(0)	Median Concrete	(3)	Shale Substrata
(0)	PCC Pavement	(10)	Topsoil Substrata
(0)	Sidewalk	<b>Unsuitable / Waste</b>	
<b>Shoulder</b>			
(209)	Shoulder HMA	(3)	Unsuitable Type A
(0)	Shoulder PCC	(13)	Unsuitable Type B
(6)	Shoulder Granular	(11)	Unsuitable Type C
(6)	Shoulder Granular	(3)	Waste
<b>Existing</b>			
(0)	Existing Pavement		

# CROSS SECTIONS LEGEND AND INFORMATION SHEET

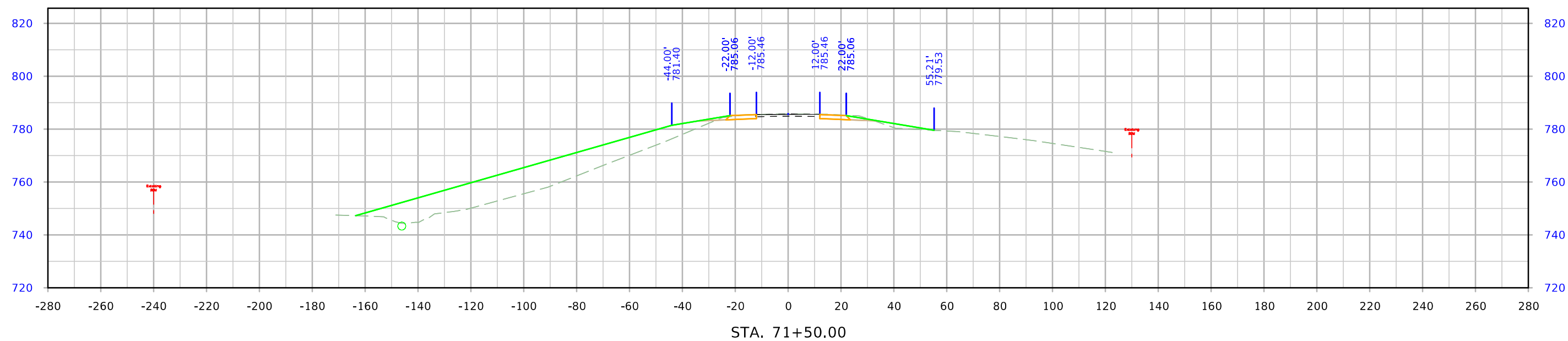
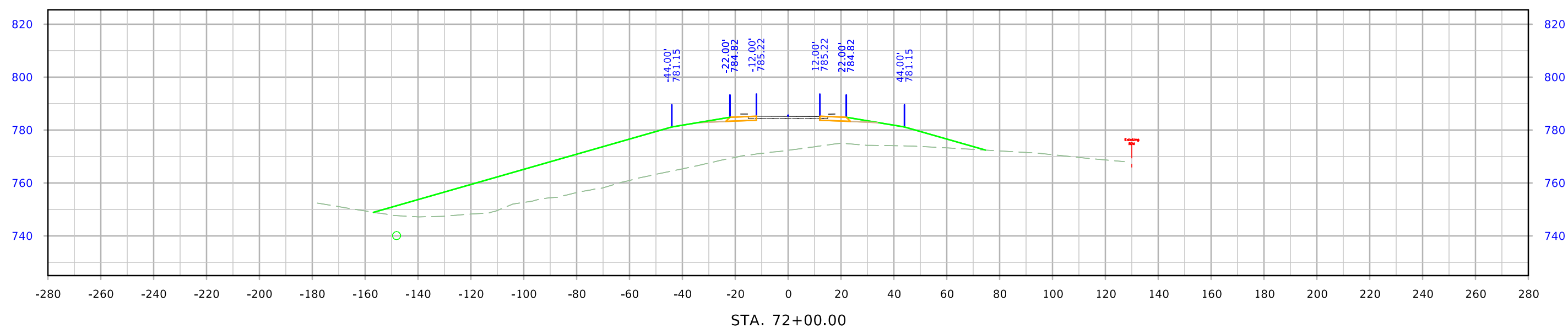
(COVERS SHEET SERIES W, X, Y, & Z)



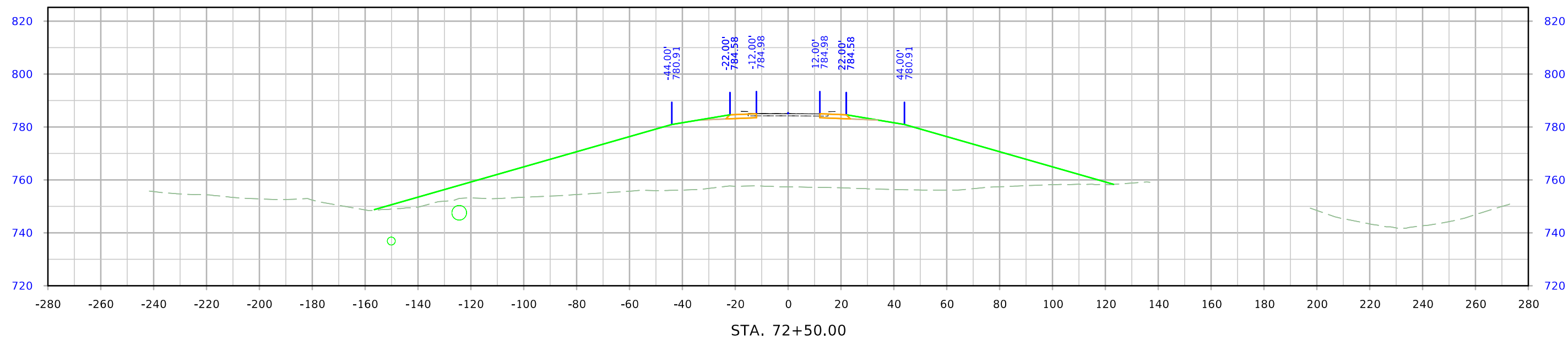
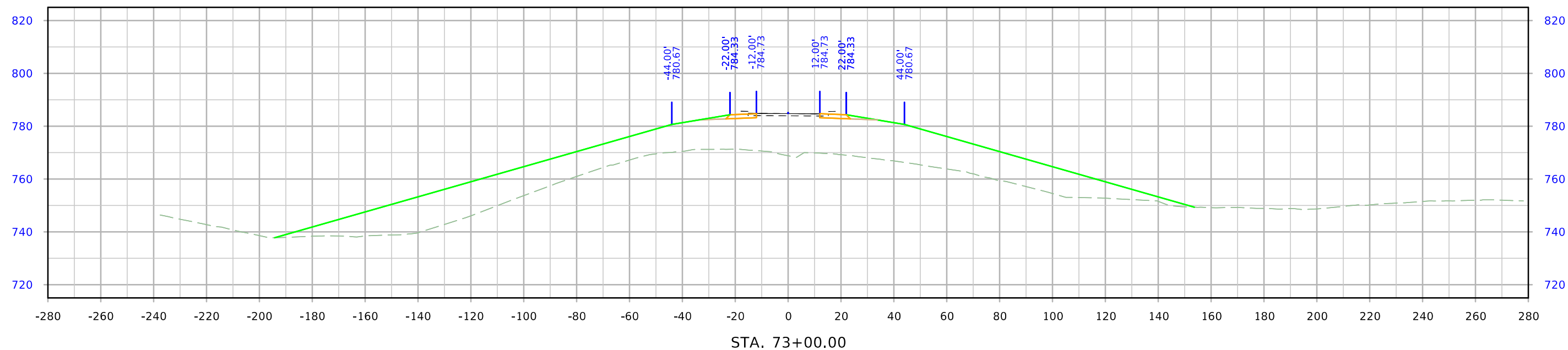
# US 63



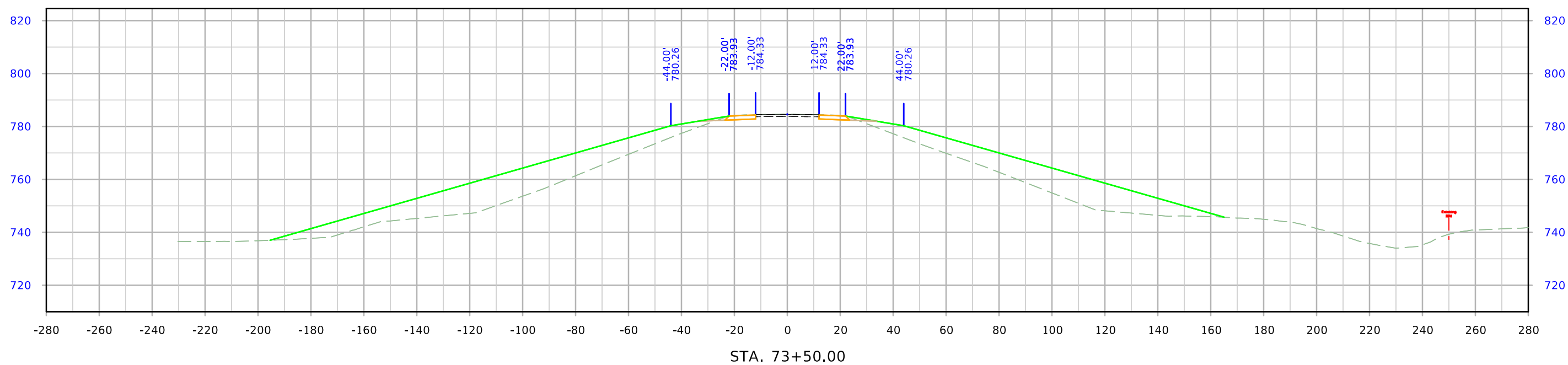
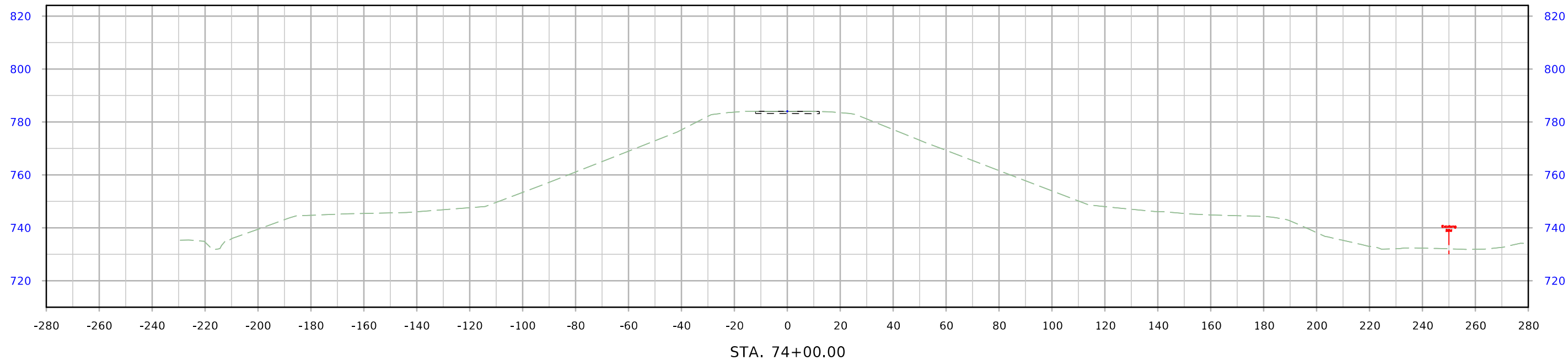
# US 63



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