

Monroe COUNTY

Bridge Replacement
BRF-034-6(104)--38-68

LETTING DATE
11/17/2026



PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
Monroe COUNTY
Bridge Replacement
U.S. 34 bridge over Coal Creek,
2.0 miles west of IA 5.
Location
SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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

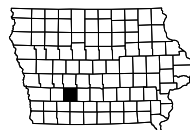


REVISIONS

| | |
|-------------------------------|-----------------------|
| TOTAL | .. |
| PROJECT IDENTIFICATION NUMBER | 21-68-034-030 |
| PROJECT NUMBER | BRF-034-6(104)--38-68 |
| R.O.W. PROJECT NUMBER | 12345 |
| | 56478 |
| | 98765 |

| INDEX OF SHEETS | |
|-----------------|---|
| No. | DESCRIPTION |
| A Sheets | Title Sheets |
| A.1 | Title Sheet |
| A.2 | Location Map Sheet |
| A.3 | Design Criteria |
| A.4 - 11 | Concept Statement |
| B Sheets | Typical Cross Sections and Details |
| B.1 - 2 | Typical Cross Sections and Details |
| D Sheets | Mainline Plan and Profile Sheets |
| * D.1 | Plan & Profile Legend & Symbol Information Sheet |
| * D.2 | "Mainline Name" |
| J Sheets | Traffic Control and Staging Sheets |
| * J.1 | Traffic Control Plan |
| * J.2 | Staging Notes Stage |
| * J.3 | Traffic Control & Staging Legend & Symbol Info. Sheet |
| * J.4 | Staging and Traffic Control Sheets Stage ?? |
| V Sheets | Bridge and Culvert Situation Plans |
| V.1 | Bridge and Culvert Situation Plans |
| W Sheets | Mainline Cross Sections |
| W.1 | Cross Sections Legend & Symbol Information Sheet |
| W.2 | Mainline Cross Sections |
| | * Color Plan Sheets |

| INDEX OF SHEETS | |
|-----------------|-------------|
| No. | DESCRIPTION |



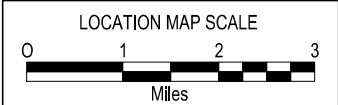
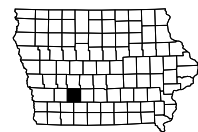
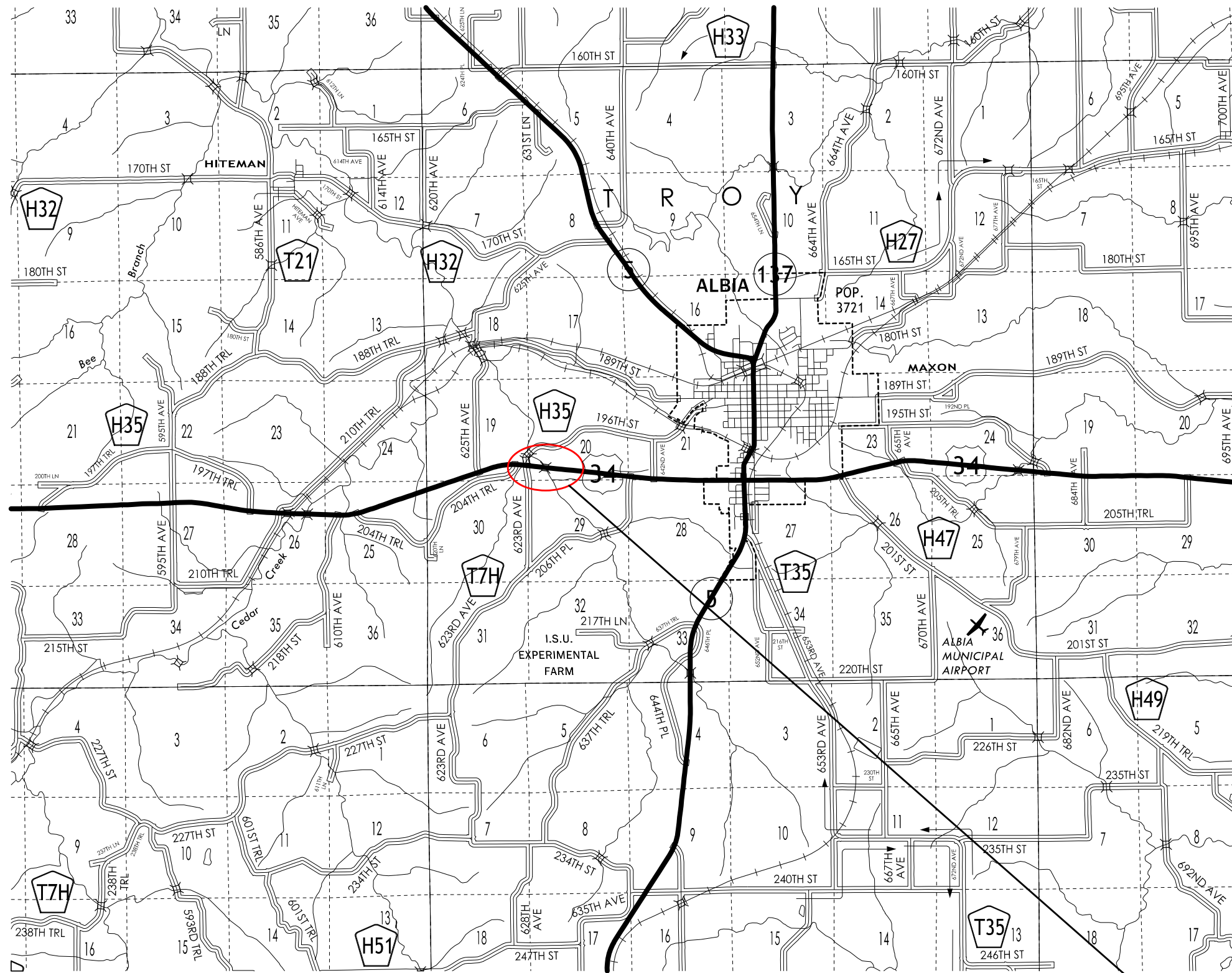
| | | | |
|--------------------------|--------|-------|--------|
| 101-4 04-30-02 | | | |
| DESIGN DATA RURAL | | | |
| 2026 | AADT | 2200 | V.P.D. |
| 2046 | AADT | 2200 | V.P.D. |
| 20 | DHV | | V.P.H. |
| | TRUCKS | 25 | % |
| | Total | | |
| | Design | ESALs | |

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

PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN-Date: 6/29/23



PROJECT LOCATION

| Roadway | US 34 | | | |
|--|--|--|--|----------------|
| File Number | P683403021 | | | |
| Project Number | 181704-2(10-19-18) | | | |
| District | Region 5 | Assistant District Engineer | | |
| County | Washoe | Office Director | | |
| Road | US 34 | | | |
| Location | Local Creek 2.0 miles west of I-5 | | | |
| Work Type | Bridge Replacement | | | |
| Program Manager | | | | |
| Designer | | | | |
| Rural Two-Lane Highways: (Rural Arterials) | | | | |
| Design Element | Preferred | Acceptable | | Project Values |
| | | Minimum | Maximum | |
| Design speed (mph) | 35 | 35 | 35 | |
| Minimum superelevation (SE) (Refer to Section 302.2) | 2% | 2% | 2% | |
| Design lane width (ft) | 12 | 12 | 12 | |
| Full depth paved width (ft) | 12 | 12 | 12 | |
| Right-of-way (ft) | 12 | 12 | 12 | |
| Clearing Lane (ft) | 12 | 12 | 12 | |
| Full Lane (ft) | 12 | 12 | 12 | |
| Pavement cross-slope (on targeted sections) | Through lanes | 1.0% minimum, 2% maximum | | |
| | Subway and turn lanes | 2% maximum | | |
| | Clearing break at centerline | 2% maximum | | |
| Shoulder cross-slope (on targeted sections) | | 4% | | |
| | | Shoulder cross-slope cannot be less than the adjacent lane, 0% slope for paved or granular shoulders, 2% min for earth shoulders | | |
| Curb type (Refer to Section 302.2) | Design speed ≤ 35 mph | Beach sloped | Beach sloped | |
| | Design speed > 35 mph | Beach sloped | Beach sloped | |
| Pavement (For all areas greater than 40 ft, contact the State Design Section for assistance) | All areas in shoulder | 18:1 hot mix | 3:1 | 2:1 or 1 |
| | Beyond standard width depth and design clear zone | 3:1 | 3:1 | 3:1 |
| Roadside (For all areas greater than 20 feet, contact the State Design Section for assistance with benching benches) | Grass | 2% | not steeper than 3:1 | |
| | 3:1 slope | 3:1 | 3:1 | 3:1 |
| Transverse Slopes | On drainage structures with drainage structures | 1:1 | 1:1 | |
| | On drainage structures with drainage structures | 10:1 | 10:1 | |
| Clearance (Refer to Section 302.2) | Subway clear (depth + width) (ft) | 5 x 10 | -- | 5 x 10 |
| Design width-clear* | Bridge length < 200 ft | design lane width + effective shoulder width | design lane width + effective shoulder width | 18 |
| | Bridge length > 200 ft | design lane width + effective shoulder width | design lane width + 4' right and left of the design lane width | 18 |
| Design width-rolling* | design lane width + no less than 3 ft left and right | design lane width + 3 ft, offset left and right | design lane width + 3 ft, offset left and right | 18 |
| | | 18:1 | 18 | |
| Vertical clearance (ft) | Over primary | 18.0 at interchange locations, 15 at all other locations | 18 | |
| Minimum clearances (Refer to Section 302.2) | Over structures | 18.0 at interchange locations, 15 at all other locations | 18 | |
| | Over railroad | 23.0 | 23.0 | |
| Structural Capacity | Open bridges and pedestrian bridges | 18.0 | 18 | |
| | Concrete bridges | Control Office calculations and structures | Control Office calculations and structures | |
| Level of Service | | | | |

| Design year ADT = 2,200 | | | | | |
|--|----------------------------------|-------------|-----------------------------------|-------------|----------------|
| Effective Shoulder Width and Type for Two-Lane Highways | | | | | |
| Preferred (values shown in feet) | | | Acceptable (values shown in feet) | | |
| Design Element | Preferred (values shown in feet) | | Acceptable (values shown in feet) | | Project Values |
| | Effective Shoulder Width | Paved Width | Effective Shoulder Width | Paved Width | |
| Two-Lane Highways | 8 | 4 | 8 | 4 | |
| Design year ADT > 3000 vpd | 8 | 4 | 8 | 4 | |
| Design year ADT between 600 - 3000 vpd | 6 | 4 | 6 | 4 | |
| Design year ADT < 600 vpd | 4 | 4 | 4 | 4 | |

Shoulders will be 10 ft paved, 8 ft granular LMC. The existing shoulders past the new guardrail shoulders are 16 ft effective (3 ft paved, 13 ft granular LMC).

| Roadway Design Speed (mph) = | | | | | | | | | | | | | | |
|---|------------------------|----------------|------------------------------|-----|-----|-----|-----|-------------------------------|-----|-----|-----|-----|----------------|-----|
| Design Criteria for High Speed Roadways | | | | | | | | | | | | | | |
| Design Element | Design Notes | Project Values | Preferred Design Speed (mph) | | | | | Acceptable Design Speed (mph) | | | | | Project Values | |
| | | | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | | |
| Minimum horizontal curve (ft) (Refer to Section 302.2) | Refer to Section 302.2 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| Minimum vertical curve length (ft) (Refer to Section 302.2) | Refer to Section 302.2 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 |
| Minimum width of vertical curves (ft) | Refer to Section 302.2 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Minimum grade (ft) | Refer to Section 302.2 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |

FINAL PROJECT CONCEPT STATEMENT

U.S. 34 bridge over Coal Creek, 2.0 miles west of IA 5.

Monroe County
BRF-034-6(104)--38-68
PIN: 21-68-034-030
Maint. No. 6865.8S034
FHWA No. 37400

Highway Division
Design Bureau

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

September 13, 2022

Monroe County
BRF-034-6(104)--38-68
PIN: 21-68-034-030
Page 2



Facing east 2015



North side of bridge 2021

I. STUDY AREA

A. Project Description

This project involves the replacement of the U.S. 34 bridge (Maint. No. 6865.8S034) over Coal Creek, 2.0 miles west of IA 5.

There were three alternatives considered to replace the existing 150 ft. x 30 ft., continuous steel I-beam bridge with a 185 ft. x 44 ft. pretensioned prestressed concrete bridge, utilizing:

1. Staged construction
2. Off-site detour
3. Accelerated bridge construction (ABC)

Alternative 1 is the preferred alternative due to less disruption to the traveling public. Alternative 2 was dismissed due to the lengthy detour route creating a burden for the traveling public, and Alternative 3 was dismissed due to limited area for ABC construction along with a lengthy detour route creating a burden to traveling public.

B. Need for Project

The existing structure is a 150 ft. x 30 ft. steel beam bridge that was built in 1964. An overlay was added in 1994 and has reached the end of its service life. The deck has cracking and hollows with damp areas on the bottom of the deck. The ends of the steel beams have section loss and sever rust. Due to the overall condition of the bridge, a replacement is recommended.

C. Present Facility

The existing structure is a 150 ft. x 30 ft. continuous Steel I-beam bridge constructed in 1964.

U.S. 34 in the project area is 24 ft. wide PCC pavement with 10 ft. wide earth shoulders and 2 1/4 :1 foreslopes, constructed in 1964. HMA resurfacing of 3 in. was accomplished in 1983. In 2003 this section of roadway was resurfaced with 3.5 inches of HMA and widened to provide 12 ft. lanes and 10 ft. effective shoulders (2 ft. paved shoulder and 8 ft. granular shoulder).

D. Traffic Estimates

The 2026 construction year and 2046 design year average daily traffic estimates are 2,200 ADT with 25% trucks and 2,200 ADT with 25% trucks, respectively.

E. Sufficiency Ratings

U.S. 34 is classified as a commercial and industrial route and is a maintenance service level 'B' roadway. The federal bridge sufficiency rating is 67.7.

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 zero crashes.

II. PROJECT CONCEPT

A. Feasible Alternatives

Alternative #1 - Replace bridge utilizing staged construction

The existing 150 ft. x 30 ft., continuous steel I-beam bridge will be replaced with a three span, 185 ft. x 44 ft., pretensioned prestressed concrete bridge.

The typical cross section adjacent to the bridge will consist of a 24 ft. roadway (28 ft. wide pavement) with 10 ft. effective shoulders (2 ft. outside pavement, 8 ft. granular) and 2 ½ :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 ft. beyond the ends of the guardrail. Class 10 will be necessary to construct the new guardrail blisters. The existing 2 ½ :1 foreslopes will be used as constructed. The foreslopes will be behind the newly proposed guardrails. Class E revetment will be placed under the bridge for slope protection. New bridge end drains will be constructed on the west end of the bridge.

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

Traffic will be maintained by staged construction. Staging is detailed below in the staging analysis.

| Bridge Items | <u>Estimated Costs</u> |
|-------------------------|------------------------|
| New Bridge | \$ 1,021,600 |
| Bridge Removal | 55,700 |
| Revetment | 24,000 |
| Asbestos Removal (Is) | 5,000 |
| Staged Construction 10% | 110,700 |
| Mobilization - 10% | 121,700 |
| M & C - 20% | <u>267,800</u> |
| Bridge Costs | \$ 1,606,500 |

| Roadway Items | |
|---------------------------------|---------------------|
| Bridge Approaches | \$111,000 |
| Removal of Pavement | 15,800 |
| Excavation Class 13 Waste | 27,000 |
| Temporary Pavement | 381,100 |
| Guardrail (Includes Removal) | 18,300 |
| Paved Shoulders for Guardrail | 46,000 |
| Class 10 for Guardrail Blisters | 18,100 |
| Bridge End Drains | 7,400 |
| Temporary Barrier Rail | 19,500 |
| Temporary Crash Cushion | 5,000 |
| Temporary Traffic Signal | 12,300 |
| Seeding and Fertilizing | 1,400 |
| Erosion Control | 50,000 |
| Traffic Control - 5% | 50,900 |
| Mobilization - 5% | 50,900 |
| M & C - 20% | <u>203,600</u> |
| Roadway costs | \$ 1,018,100 |

Project Total **\$2,624,600**

Alternative #2 - Replace bridge utilizing an off-site detour

This alternative is similar to Alternative one, but an off-site detour route would be utilized instead of staged construction.

This alternative was discussed and dismissed due to the excessive length for a detour causing a burden to the traveling public.

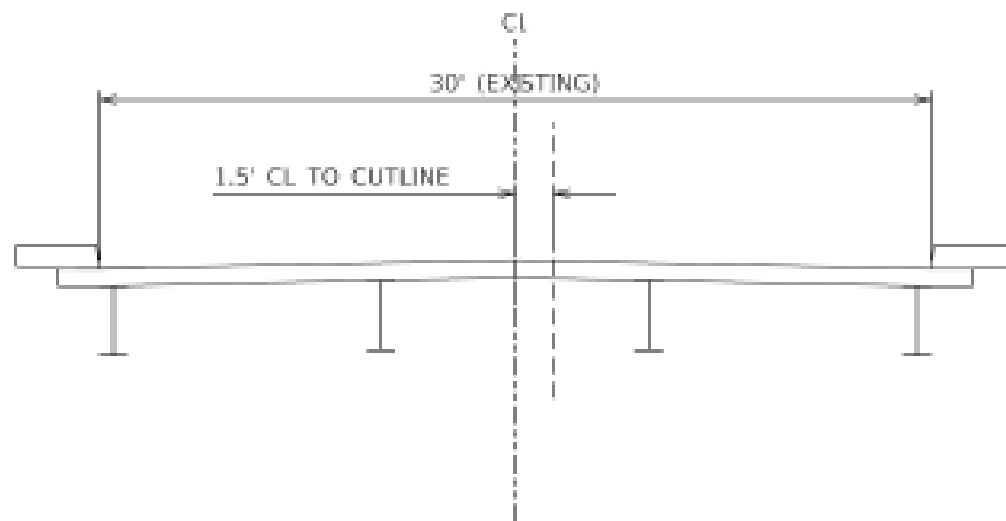
Alternative #3 - Replace bridge utilizing accelerated bridge construction (ABC)

This alternative is similar to Alternative one, but ABC would be utilized instead of staged construction.

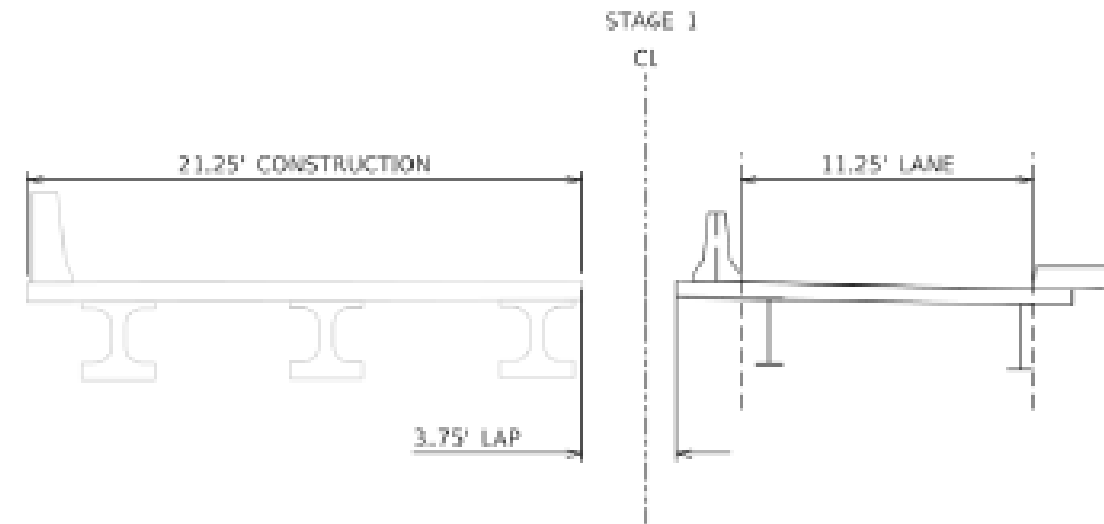
ABC was discussed and dismissed due to the fact that there is limited space to construct the bridge and a lengthy off-site detour route would need to be utilized, which is a burden to the traveling public.

B. Staging Analysis

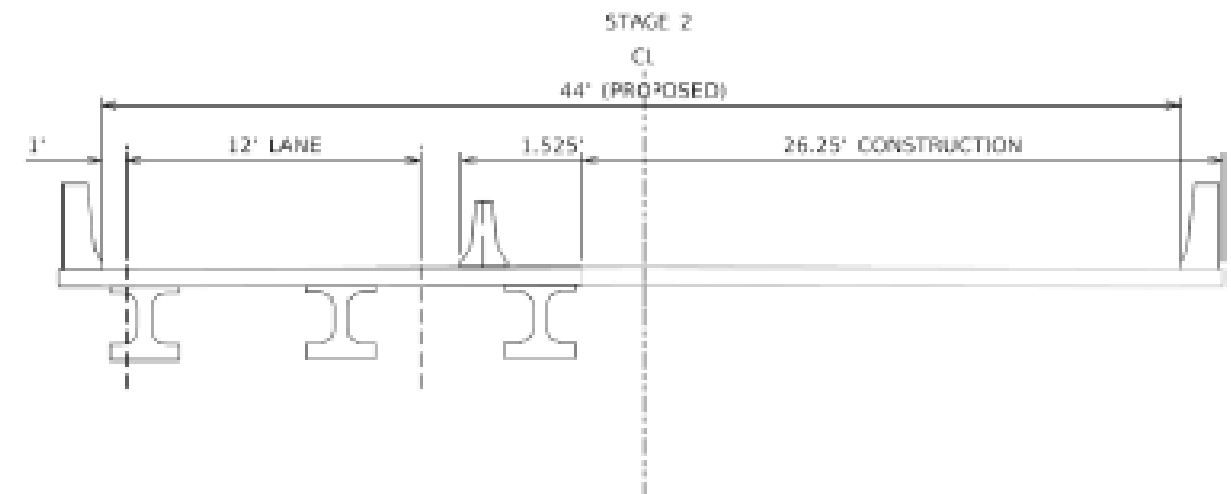
For Alternative No. 1, traffic will be maintained by staged construction with traffic reduced down to one lane via the use of temporary traffic signals. The proposed bridge would be constructed in two stages. A total of approximately 536 sq. yd. of temporary pavement will be needed to shift traffic during stages 1 and 2. (74 sq. yd. for stage one, 462 sq. yd. for stage 2)



Stage 1: Lane width would be 11.25 ft. wide. Tie-downs for temporary barrier rails (TBR) would be required in both Stages 1 & 2.



Stage 2: Lane width would be 12 ft. wide. Tie-downs for temporary barrier rails (TBR) would be required in both Stages 1 & 2. Additional beam line may be necessary to support TBR on deck cantilever in Stage 2.



Stage 3: Open to traffic

C. Recommendations

It is recommended that the present structure be replaced, as described in Alternative No. 1.

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. 34; 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 64 is more than the first stage filter threshold of 50, therefore this bridge was a candidate for ABC construction. (ABC dismissed due to lengthy detour and limited space for construction.

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

Riverine Infrastructure Database (RIDB) level survey will be needed for the 196th St. low roadway and bridge over Coal Creek.

Existing wing dike, located on the east upstream side, should be left in place due to the flood plain eccentricity at this site.

Utilities running along the north side of the bridge will need to be relocated during bridge construction and replaced upon bridge completion.

Right of Way is programmed for this project at \$5,000.

A regulated material issue has been identified for the U.S. 34 bridge. Asbestos was found in the remnants of joint filler at the outside corners of the abutments.

The Location and Environment Bureau has reviewed the bridge replacement project and based on preliminary desktop observations, has determined that a Section 404 Permit may be required. It is expected that the work will be covered by Nationwide Permit 14. Additional information will be needed to determine if wetland or stream mitigation is necessary for this project.

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 \$5,000 programmed for right of way in FY 2026 and \$2,456,000 for replacement 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:hsr

Utilities

Rathbun Regional Water Association
Kelly Carel
West Distribution Superintendent
16166 Hwy J-29
Centerville, IA 32344
(641) 647-2416
Kellycarel1962@gmail.com

Iowa Communications Network (ICN)
Mike Broderick
Sr. OSP Telecommunications Engineer
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Des Moines, IA 50319
(319) 723-4610
Mike.Broderick@iowa.gov

Windstream Communications
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Fiber Distribution, Telephone
Analyst II
4001 N. Rodney Farham Rd
Little Rock, AR 72212
(501) 748-6919
Bryan.Bogan@windstream.com

Windstream Communications
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Construction Manager, CLEC
9830 M St.
Omaha, IA 68127
(402) 827-6333
Mark.Hussman@windstream.com

Bridge Bureau Attachment for Concept Statement

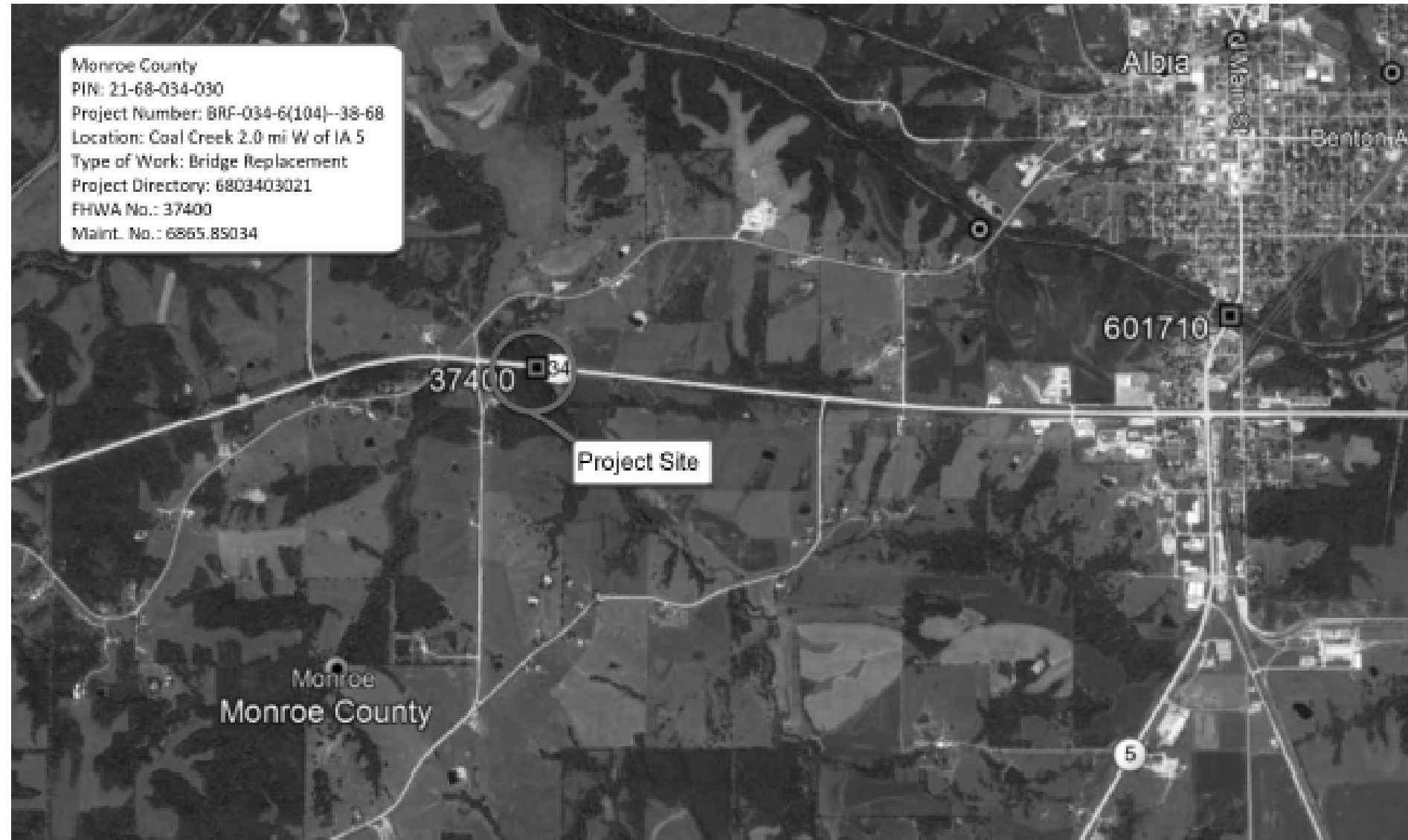
Date: July 22, 2022 (Revised)
By: L. Su
Location: US 34 over Coal Creek, 2.0 miles west of IA 5

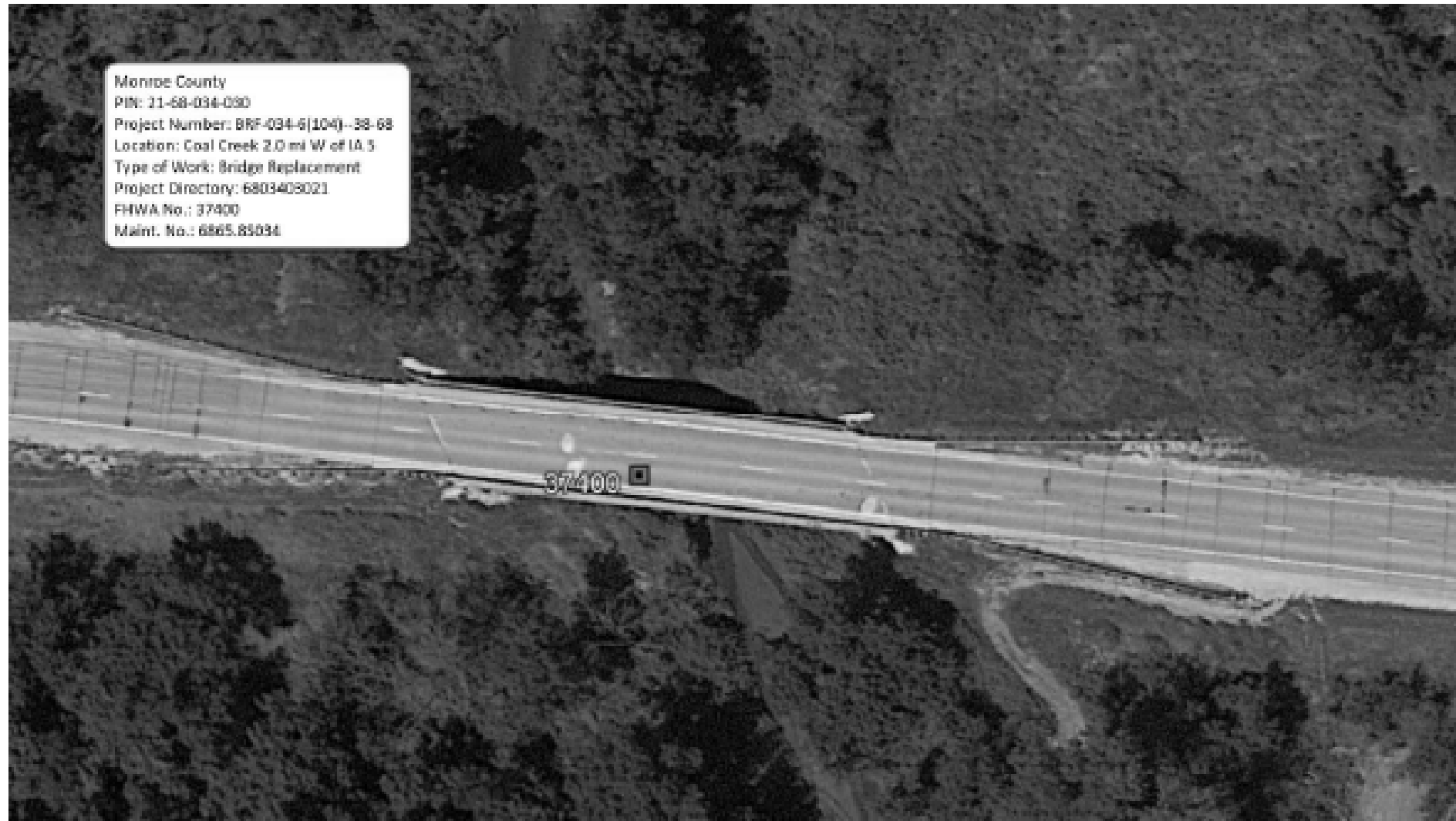
County: Monroe County
Phase No.: BRF-034-6(104)--38-68
Project Code: 21-68-034-030

1. Regulatory/Coordination
 - a. Iowa DNR Flood Plain permit - No (DA-13.3 < 100 sq. mi. rural area)
 - b. Iowa DNR Sovereign Lands permit - No
 - c. Local Record of Coordination - Yes
 - d. Flood Insurance Study - Yes, Zone A, Panel 19135C0175B, February 16, 2018
 - e. Drainage District - No
 - f. Corps of Engineers Section 408 - No
 - g. State Water Trail or Paddling Route - No
2. Hydrologic/Hydraulic Analysis/RIDB Dataset
 - a. Design discharges determined - Yes, Gage Data WIE
 - b. Hydraulic analysis done - Yes, GeoHECRAS
 - c. Riverine Infrastructure Database (RIDB) - Yes, RIDB dataset will be required. RIDB network location is CoalC_Monr_2.14
 - d. 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.
4. Special construction issues
 - a. Due to the flood plain eccentricity at this site, the existing wing dike located on the east upstream side should be left in place.
5. Special survey - Yes
6. Aesthetic enhancements - No
7. Other
Options for an off-site detour, staged construction and ABC have been included. Using an assumed out of distance travel of 70, the resulting ABC Rating Score was 64. Since the rating score is over the threshold of 50, this bridge is a candidate for accelerated bridge construction. Maintenance of traffic was discussed with the District. Due to out of distance travel for available detour options, the District would prefer to stage construction.

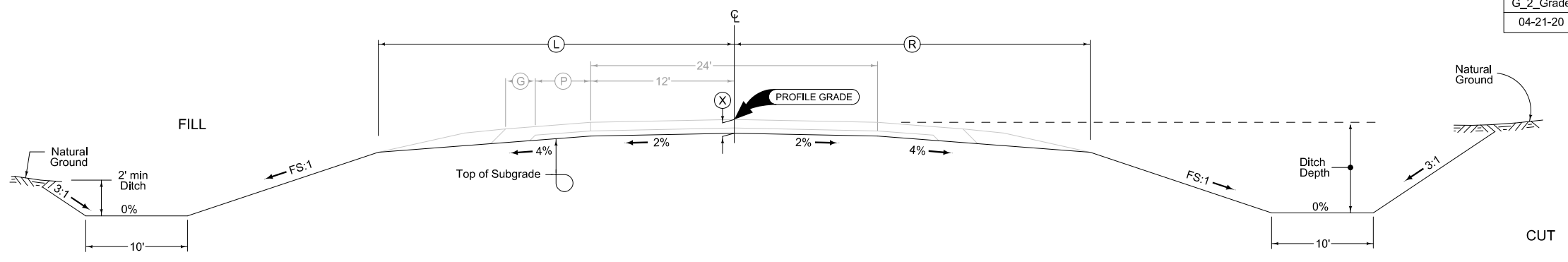
Special Survey:

RIDB level survey will be needed for the 196th St. low roadway and bridge over Coal Creek.





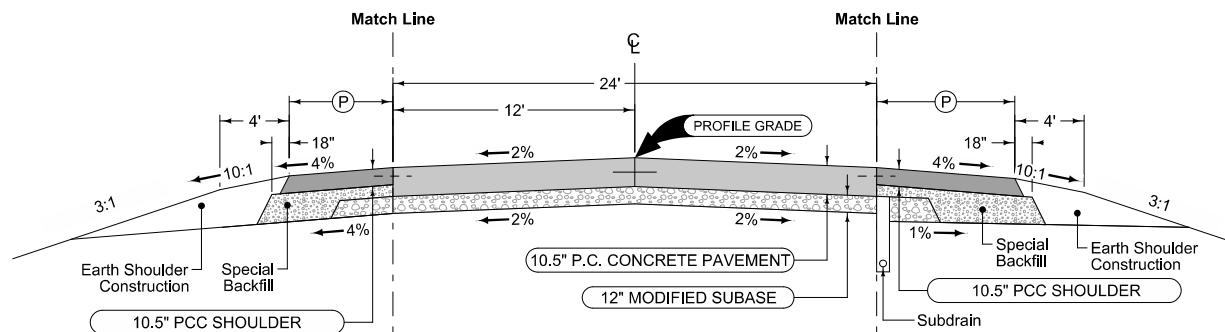
| LOCATION | | DIMENSIONS | | | |
|---------------------|---------------------|------------|-----------|-------------|-----|
| ROAD IDENTIFICATION | STATION TO STATION | Ⓐ Feet | Ⓑ Feet | Ⓒ Inches | FS |
| | 719+90.00 720+00.00 | 27.5 | 27.5 | 22.5 | 3:1 |
| | 720+00.00 720+25.88 | 29.32 | 29.32 | 22.5 | 3:1 |
| | 720+25.88 720+69.63 | Varies | Varies | 22.5 | 3:1 |
| | 720+69.63 721+33.81 | 27.5 | 27.5 | 22.5 | 3:1 |
| | 721+33.81 721+60.95 | NA | 27.5 | 22.5 | 3:1 |
| | 723+20.05 723+46.24 | 27.5 | NA | 22.5 | 3:1 |
| | 723+46.24 724+10.37 | 27.5 | 27.5 | 22.5 | 3:1 |
| | 724+10.37 724+53.73 | Varies | Varies | 22.5 | 3:1 |
| | 724+53.73 724+74.13 | 29.32 | 29.32 | 22.5 | 3:1 |
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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.

2 LANE GRADING



Paved Shoulder at Guardrail

PCC Shoulder Jointing:
 Longitudinal joint: BT-1 or BT-5
 Transverse joints: C at mainline spacing
 HMA Shoulder Jointing:
 Longitudinal joint: B

| STATION TO STATION | | (P) Feet |
|--------------------|-----------|-------------|
| 719+90.00 | 720+05.88 | Varies |
| 720+05.88 | 720+25.88 | 13.32 |
| 720+25.88 | 720+69.63 | Varies |
| 720+69.63 | 721+33.81 | 11.5 |
| 723+20.05 | 724+10.37 | 11.5 |
| 724+10.37 | 724+53.73 | Varies |
| 724+53.73 | 724+74.13 | 13.32 |
| 724+74.13 | 724+75.78 | Varies |

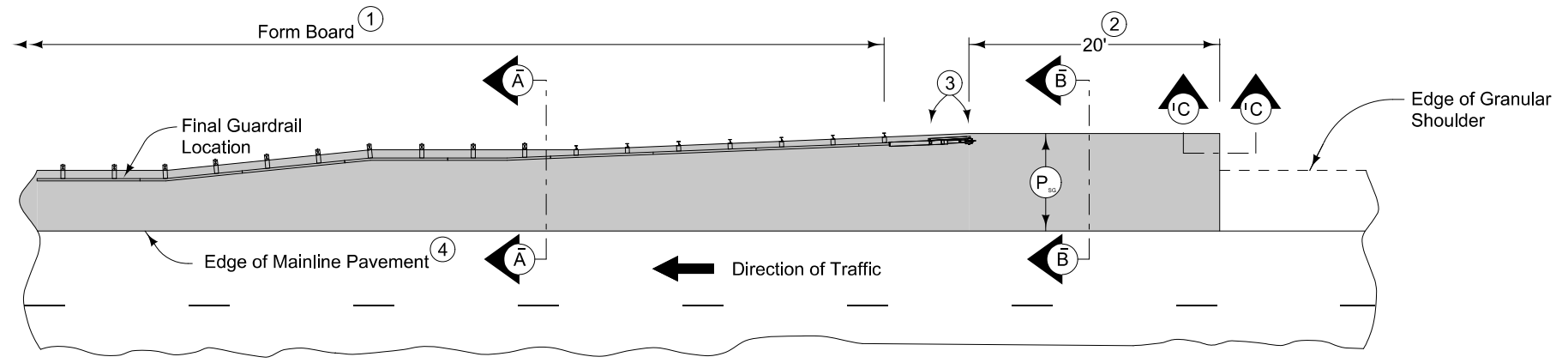
Mainline Jointing:
 Transverse joints: CD at 17' spacing
 Longitudinal joint: L-2

| STATION TO STATION | |
|--------------------|-----------|
| 719+80.00 | 721+60.95 |
| 723+19.10 | 724+75.82 |

Paved Shoulder at Guardrail

PCC Shoulder Jointing:
 Longitudinal joint: BT-1 or BT-5
 Transverse joints: C at mainline spacing
 HMA Shoulder Jointing:
 Longitudinal joint: B

| STATION TO STATION | | (P) Feet |
|--------------------|-----------|-------------|
| 719+90.00 | 720+05.88 | Varies |
| 720+05.88 | 720+25.88 | 13.32 |
| 720+25.88 | 720+69.63 | Varies |
| 720+69.63 | 721+60.95 | 11.5 |
| 723+46.24 | 724+10.37 | 11.5 |
| 724+10.37 | 724+53.73 | Varies |
| 724+53.73 | 724+74.13 | 13.32 |
| 724+74.13 | 724+75.78 | Varies |



PLAN VIEW

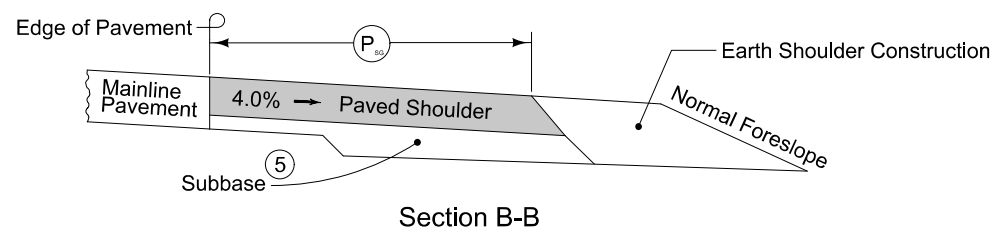
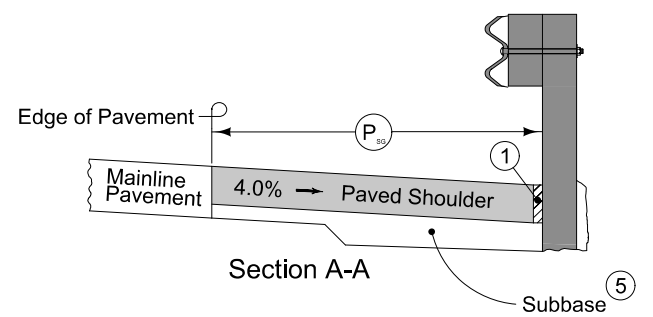
9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

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.

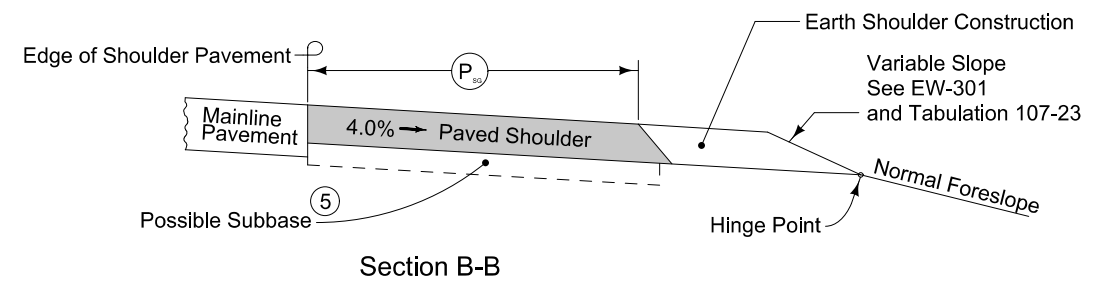
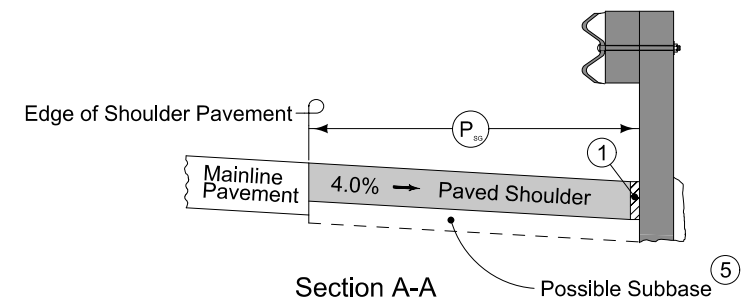
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

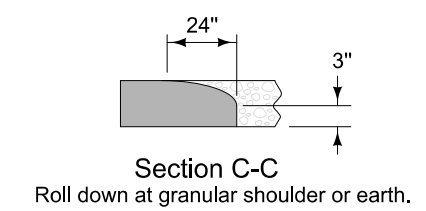
- ① PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.
- ② Continue paved shoulder 20 feet beyond the center of the first post.
- ③ Shoulder may be notched for first 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.
- ④ 'KT' joint (per PV-101) for PCC shoulder. 'B' joint (per PV-101) for HMA shoulder.
- ⑤ Refer to other details in the plan.



NEW CONSTRUCTION



EXISTING SHOULDER



PAVED SHOULDER AT GUARDRAIL (GRANULAR SHOULDER ADJACENT TO MAINLINE)

SURVEY SYMBOLS

- | | | | |
|--|-----------------------------------|--|------------------------------|
| | Interstate Highway Symbol | | Septic Tank |
| | U.S. Highway Symbol | | Cistern |
| | Iowa Highway Symbol | | L.P. Gas Tank (No Footing) |
| | County Road Highway Symbol | | Underground Storage Tank |
| | Evergreen Tree | | Latrine |
| | Deciduous Tree | | Satellite TV Dish |
| | Fruit Tree | | Water Hook Up |
| | Shrub (Bushes) | | Radio Tower |
| | Timber | | Tower Anchor |
| | Hedge | | Guardrail (Beam or Cable) |
| | Stump | | Guard Post (one or two) |
| | Swamp | | Guard Post (over two) |
| | Rock Outcrop | | Filler Pipe |
| | Broken Concrete | | Gas Valve |
| | Revetment (Rip Rap) | | Water Valve |
| | Cemetery | | Speed Limit Sign |
| | Grave | | Mile Marker Post |
| | Cave | | Sign |
| | Sink Hole | | Traffic Signal Control Box |
| | Board Fence | | Rail Road Signal Control Box |
| | Chain Link or Security Fence | | Telephone Switch Box |
| | Wire Fence | | Electric Box |
| | 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) | | |

UTILITY LEGEND

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 |

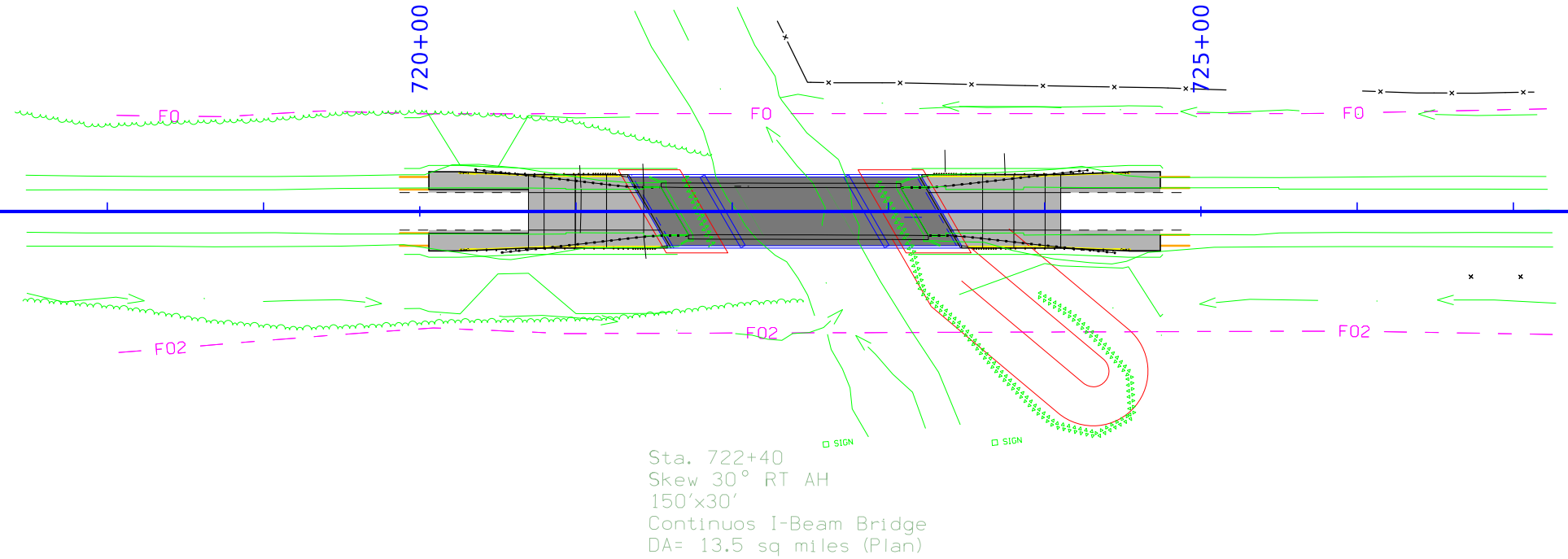
- | | | | |
|--|-----------------------------|--|--------------------------|
| | Reference Point | | Survey Line |
| | Station | | |
| | Section Corner | | |
| | Ground Line Intercept | | |
| | Saw Cut | | |
| | Guardrail | | |
| | Trench Drain | | |
| | HighTension Cable Guardrail | | |
| | Sheet Pile | | |
| | 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

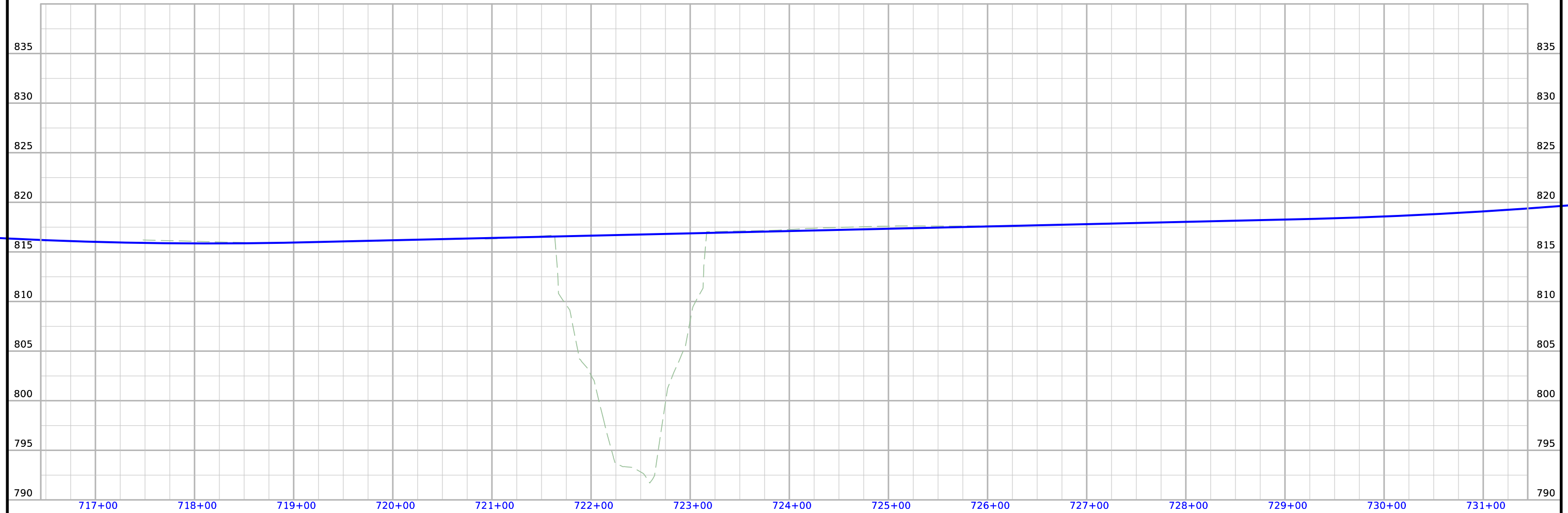
PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

Troy TWP.
T-72N R-17W
SEC. 20



Sta. 722+40
Skew 30° RT AH
150'x30'
Continuous I-Beam Bridge
DA= 13.5 sq miles (Plan)



Survey Information

SURVEY INDEX

Monroe County

PIN: 21-68-034-030

Project Number: BRF-034-6(104)--38-68

Location: Coal Creek 2.0 mi W of IA 5

Type of Work: Bridge Replacement

Project Directory: 6803403021

Survey Personnel

Myron Fox – Survey Party Chief

Samuel Schilb – Assistant Survey Party Chief

Date(s) of Survey

Begin Date 10/10/2022

End Date 10/20/2022

General Information

Project datum and control information is provided by the Design Survey Office. Measurement units for this survey are US survey feet. This project involves the replacement of the U.S. 34 bridge (Maint. No. 6865.8S034) over Coal Creek, 2.0 miles west of IA 5. This survey request was for the US Hwy 34 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

Nearby Iowa Real Time Network reference stations were utilized to obtain horizontal and vertical control on primary project control points. Three five-minute observations were taken with a minimum two-hour time span between and used in a weighted average to obtain final coordinate values. 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 12

(U.S. SURVEY FOOT)

VERTICAL DATUM: NAVD88

GEOID MODEL: 2018u3

Alignment Information

The horizontal alignment for U.S. Hwy 34 this survey is a retrace of As-built Plans No. FN-FGN-1027. Survey stationing was equated to the plan Bridge Centerline at Sta. 722+40 and ran back and ahead without equation throughout the survey. Survey stationing relates to as built plan stationing as follows:

PI Sta. 701+50 (Plan)

Survey PI Sta. 701+41.32

PI Sta. 779+50 (Plan)

Survey PI Sta. 779+39.24

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 12 (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 12 (U.S. Survey Foot)
 VERT. DATUM: NAVD88
 Geoid Model: 2018u3

| Point Name | Northing | Easting | Elevation | Code Description |
|------------|------------|-------------|-----------|---|
| 6031 | 6248064.74 | 22747844.83 | 927.71 | CP GPS MONROE COUNTY 6031 ALUM DISK IN CONC MON AS DESCRIBED IN GOOD CONDITION |
| 6032 | 6237253.13 | 22745572.19 | 930.71 | CP GPS MONROE COUNTY 6032 ALUM DISK IN CONC MON AS DESCRIBED IN GOOD CONDITION |
| 6033 | 6227237.81 | 22744704.70 | 976.80 | CP GPS MONROE COUNTY 6033 ALUM DISK IN CONC MON AS DESCRIBED IN GOOD CONDITION |
| 301 | 6238019.27 | 22748425.66 | 824.10 | CP SET 5/8" X 42" REBAR SET 4" BELOW SURFACE FROM THE INTERSECTION OF HWY 34 AND 196TH ST PROCEED E ALONG HWY 34 75' POINT IS 70' S OF THE CL OF HWY 34 |
| 302 | 6237933.58 | 22750488.25 | 818.28 | CP SET 5/8" X 42" REBAR SET 4" BELOW SURFACE FROM THE INTERSECTION OF HWY 34 AND 196TH ST PROCEED E ALONG HWY 34 2132' POINT IS 50' N OF THE CL OF HWY 34 NEXT TO FIELD ENT |

