

**ADAIR COUNTY**  
**BRIDGE REPLACEMENT**  
**BRFN-025-3(30)--39-01**

LETTING DATE  
**12/19/2017**

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## Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

# PRIMARY ROAD SYSTEM

# ADAIR COUNTY

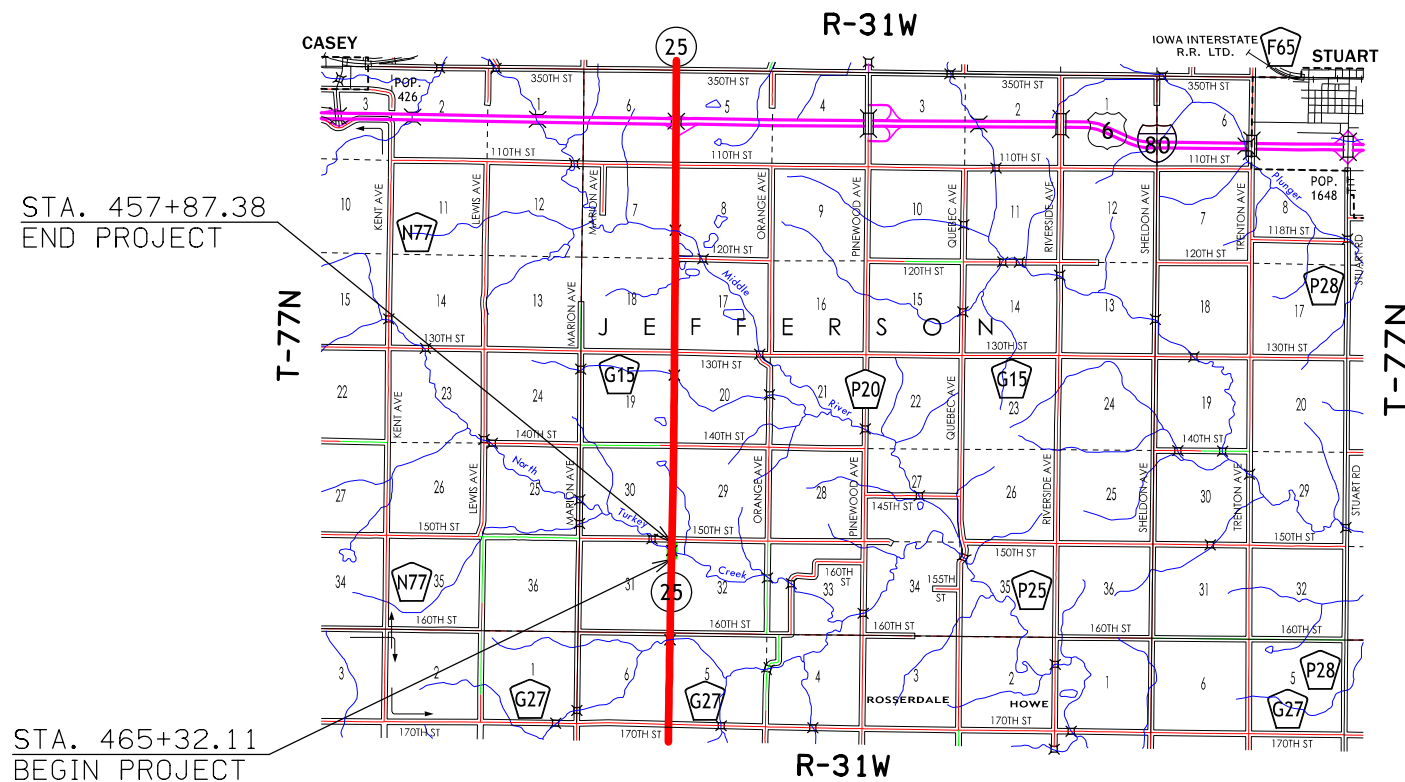
## BRIDGE REPLACEMENT

IA 25 over Turkey Creek  
 4.6 miles south of I-80

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



STA. 457+87.38  
 END PROJECT

STA. 465+32.11  
 BEGIN PROJECT

| DESIGN DATA RURAL |        |       |        |
|-------------------|--------|-------|--------|
| 2019              | AADT   | 2,300 | V.P.D. |
| 2039              | AADT   | 2,700 | V.P.D. |
| 2039              | DHV    | 486   | V.P.H. |
|                   | TRUCKS | 18    | %      |
|                   | Total  |       |        |
|                   | Design | ESALs | --     |

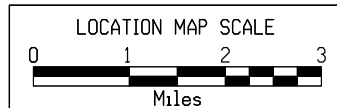
| INDEX OF SEALS |                |                         |
|----------------|----------------|-------------------------|
| SHEET NO.      | NAME           | TYPE                    |
| A.1            | Shane E. Swope | Primary Signature Block |
| X              | X              | X                       |
|                |                |                         |
|                |                |                         |
|                |                |                         |

# PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN - Date: 04/29/2016

| REVISIONS                     | TOTAL |
|-------------------------------|-------|
| PROJECT IDENTIFICATION NUMBER |       |
| 14-01-025-020                 |       |
| PROJECT NUMBER                |       |
| BRFN-025-3(30)--39-01         |       |
| R.O.W. PROJECT NUMBER         |       |



IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE: District 4 DATE: December 19, 2014
ATTENTION: Troy A. Jerman PROJECT: Adair County
FROM: Kevin K. Patel BRFN-025-3(30)--39-01
OFFICE: Design PIN: 14-01-025-020
SUBJECT: Project Concept Statement; (Final Approval, D0)

J. F. Adam J. R. Selmer M. J. Kennerly
K. D. Nicholson D. L. Maifield R. L. Stanley
M. D. Masteller B. R. Smith A. A. Welch
N. M. Miller C. C. Poole N. L. McDonald
G. A. Novey D. R. Claman P. Lu
A. Abu-Hawash B. C. Worrel J. S. McClain
M. A. Swenson P. C. Keen M. J. Sankey
R. A. Younie S. P. Anderson Z. T. Bitting
D. R. Tebben B. D. Hofer J. N. Garton
D. D. Matulac D. L. Newell B. E. Azeltine
M. E. Khoda S. J. Gent T. D. Crouch
J.W. Laaser-Webb W.A. Sorenson D. E. Sprengeler
E. C. Wright D. R. Stevens G. E. Feazell
S. M. Suhr J. L. Bane O. Lechnowsky
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L. Wielenga L. C. Funnell FHWA
M. E. Ross

This project involves the replacement of the IA 25 bridge (Maint. No 0169.5S025) over North Turkey Creek, 4.6 miles south of I-80.

The two alternatives considered are:

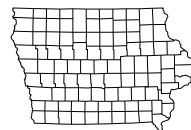
- 1. Replace the existing bridge with a 150 ft. x 44 ft. continuous concrete slab bridge, utilizing staged construction. In order to stage construct this bridge, a grade raise of 2.5 ft. is required. This grade raise will result in approximately 880 ft. of mainline reconstruction. The estimated cost of this alternative is \$1,941,000.
2. Replace the existing bridge with a 150 ft. x 40 ft. continuous concrete slab bridge, utilizing an off-site detour. The estimated cost of this alternative is \$1,089,200.

Alternative 2 is the preferred alternative due to lower construction costs. Additional right of way may be required. Traffic will be maintained by using an off-site detour.

The Draft Project Concept Statement was sent out for review and comment with concerns to be resolved by Wednesday, December 17, 2014. Comments received during the review period have been considered and resolved.

This project is recommended for construction in FY 2019. The Office of Bridges and Structures will coordinate plan preparation with assistance from the Office of Design.

KKP: als
Attach.
cc:



FINAL PROJECT CONCEPT STATEMENT

IA 25 Bridge over North Turkey Creek, 4.6 miles south of I-80

Adair County  
BRFN-025-3(30)--39-01  
PIN: 14-01-025-020  
Maint. No. 0166.1S025  
FHWA No. 12970

Highway Division  
Office of Design

Kevin K. Patel, P.E.  
515-239-1540

December 19, 2014

Adair County  
BRFN-025-3(30)--39-01  
PIN: 14-01-025-020  
Page 2

#12980), approximately 3.4 miles north of this bridge is also scheduled for replacement in FY 2019. This is a good opportunity to replace this bridge at the same time.



I. STUDY AREA

A. Project Description

This project involves the replacement of the IA 25 bridge (Maint. No 0169.5S025) over North Turkey Creek, 4.6 miles south of I-80.

The two alternatives considered are:

1. Replace the existing bridge with a 150 ft. x 44 ft. continuous concrete slab bridge, utilizing staged construction. In order to stage construct this bridge, a grade raise of 2.5 ft. is required. This grade raise will result in approximately 880 ft. of mainline reconstruction. The estimated cost of this alternative is \$1,941,000.
2. Replace the existing bridge with a 150 ft. x 40 ft. continuous concrete slab bridge, utilizing an off-site detour. The estimated cost of this alternative is \$1,089,200.

Alternative 2 is the preferred alternative due to lower construction costs. Additional right of way may be required. Traffic will be maintained by using an off-site detour.

B. Need for Project

This is a 125' x 26' steel bridge which was constructed in 1952 and overlaid in 1977. The bridge is classified as functional obsolete due to the inadequate width. The deck, deck overlay, superstructure and substructure are all at the end of their service life and deteriorations are found in all the structural components. Joint replacement is needed. In addition, the structure was designed for H20 load and needs to be strengthened to HS20. The bridge widening in conjunction with bridge strengthening and bridge repair would not be cost effective. Additionally, the Middle River bridge (FHWA

C. Present Facility

The existing structure is a 125 ft. x 26 ft. I-beam bridge constructed in 1952.

IA 25 in the project area is 22 ft. wide PCC pavement with 6 ft. wide granular shoulders and 3:1 foreslopes, constructed in 1956. HMA resurfacing was accomplished in 1968, 1978 and 1997.

D. Traffic Estimates

The 2019 and 2039 average daily traffic estimates are 2,300 ADT with 17% trucks and 2,700 ADT with 18% trucks, respectively.

E. Sufficiency Ratings

IA 25 is classified as an area development route and is a maintenance service level C road. The federal bridge sufficiency rating is 46.

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from January 1, 2009 through December 31, 2013, there were no crashes at the project site.

II. PROJECT CONCEPT

A. Feasible Alternatives

Alternative #1 - Replace with a bridge utilizing staged construction

Replace the existing 125 ft. x 26 ft. I-beam bridge with a 150 ft. x 44 ft. continuous concrete slab bridge. The staging option requires a grade raise of 2.5 ft. and the width of the bridge to be increased to 44 ft. This grade raise will result in approximately 880 ft. of mainline reconstruction.

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 and 8 ft. granular) and 6:1/3:1 foreslopes. The pavement will be placed on 6 in. of granular backfill and 12 in. of special backfill.

Construct new bridge approaches. Replace the existing guardrail with new guardrail and pave the shoulders 20 ft. beyond the ends of the guardrail. Class 10 will be necessary to flatten the existing foreslopes and to construct the new guardrail blisters. Place class E revetment for slope protection under the bridge. Construct bridge end drains on each corner of the bridge.

In order to stage construct this bridge, the bridge will need to be constructed 4 ft. wider than the bridge shown in alternative 2, which utilizes an off-site detour.

One lane of traffic in each direction will be maintained via staged construction utilizing temporary traffic signals. The proposed bridge could be constructed in two stages. The first stage requires the removal of 8.4 ft. of the existing bridge with a cut 4.6 ft. east of the centerline. A 15.3 ft. traffic lane could be utilized on the remainder of the existing bridge and a 14.4 ft. section of the proposed bridge would be constructed. Once the proposed section is built, traffic would be transferred to the new section and the remainder of the proposed bridge would be constructed. The width of the traffic lane in the second stage is 12.1 ft.

Steel sheet pile is proposed along the south abutment if the staging option is used. The south abutment is approximately 23 feet offset from the existing abutment. The vertical cut required for the new abutment will require temporary support.

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

Additional right of way may be required for this project.

|   | <u>Estimated Costs</u> |
|---|------------------------|
| <b>Bridge Items</b>                       |                        |
| New Bridge                                | \$ 577,700             |
| Bridge staged construction                | 57,800                 |
| Bridge Removal                            | 33,500                 |
| Revetment                                 | 54,000                 |
| Erosion stone                             | 5,100                  |
| Steel sheet pile                          | 18,000                 |
| Mobilization - 10%                        | 74,600                 |
| M & C - 15%                               | <u>123,100</u>         |
| <b>Bridge Costs</b>                       | <b>\$ 943,800</b>      |
| <b>Roadway Items</b>                      |                        |
| Bridge approaches                         | \$ 85,200              |
| Removal of Pavement                       | 10,600                 |
| Pavement                                  | 77,100                 |
| Special Backfill                          | 48,700                 |
| Granular subbase                          | 18,600                 |
| Embankment in place                       | 134,300                |
| Excavation Class 13 Waste                 | 500                    |
| Guardrail, including removal              | 21,500                 |
| Paved shoulder for guardrail              | 22,400                 |
| Class 10 blister for guardrail            | 12,000                 |
| Bridge end drains                         | 13,200                 |
| Longitudinal subdrains, including outlets | 10,200                 |
| Temporary concrete barrier rail           | 22,500                 |
| Temporary traffic signals                 | 8,700                  |
| Temporary floodlighting                   | 7,400                  |
| Erosion Control                           | 5,000                  |
| Wetland Mitigation                        | 50,000                 |
| Traffic Control - 5%                      | 27,400                 |
| Mobilization - 5%                         | 27,400                 |
| Staging - 30%                             | 164,400                |
| M & C - 30%                               | <u>230,100</u>         |
| <b>Roadway Costs</b>                      | <b>\$ 997,200</b>      |
| <b>Project Total</b>                      | <b>\$1,941,000</b>     |

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

Replace the existing 125 ft. x 26 ft. I-beam bridge with a 150 ft. x 40 ft. continuous concrete slab bridge.

The typical cross section adjacent to the bridge will consist of a 24 ft. roadway (28 ft. wide pavement) with 8 ft. effective shoulders (2 ft. outside pavement and 6 ft. granular) and 6:1/3:1 foreslopes.

This bridge will be constructed on the existing vertical and horizontal alignment. Construct new bridge approaches. No pavement reconstruction will be required beyond the new bridge approach sections. Replace the existing guardrail with new guardrail and pave the shoulders 20 ft. beyond the ends of the guardrail. Class 10 will be necessary to flatten the existing foreslopes and to construct the new guardrail blisters. Place class E revetment for slope protection under the bridge. Construct bridge end drains on each corner of the bridge.

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

Additional right of way may be required for this project.

Traffic will be maintained by an off-site detour.

| <b>Bridge Items</b> | <u>Estimated Costs</u> |
|---------------------|------------------------|
| New Bridge          | \$ 528,800             |
| Bridge Removal      | 33,500                 |
| Revetment           | 54,000                 |
| Erosion stone       | 5,100                  |
| Mobilization - 10%  | 62,100                 |
| M & C - 15%         | <u>105,500</u>         |
| <b>Bridge Costs</b> | <b>\$ 789,000</b>      |

| <b>Roadway Items</b>           |           |
|--------------------------------|-----------|
| Bridge approaches              | \$ 82,100 |
| Removal of Pavement            | 2,400     |
| Special Backfill               | 4,200     |
| Granular subbase               | 3,200     |
| Excavation Class 13 Waste      | 500       |
| Bridge end drains              | 13,200    |
| Guardrail, including removal   | 21,500    |
| Paved shoulder for guardrail   | 16,000    |
| Class 10 blister for guardrail | 11,800    |
| Erosion Control                | 5,000     |

|                          |                        |
|--------------------------|------------------------|
| Wetland Mitigation       | 50,000                 |
| Traffic Control - 5%     | 10,500                 |
| Mobilization - 5%        | 10,500                 |
| M & C - 30%              | <u>69,300</u>          |
| <b>Roadway Costs</b>     | <b>\$ 300,200</b>      |
| <br><b>Project Total</b> | <br><b>\$1,089,200</b> |

B. Detour Analysis

In alternative 1, there will be no off-site detour. Traffic will be maintained via staged construction with traffic reduced down to one lane via the use of temporary traffic signals.

In alternative 2, IA 25 will be closed and an offsite detour will be utilized. It is anticipated the detour will be in place for approximately 120 days. At the junction of I-80 and IA 25, the detour would follow I-80 east seven miles. At the junction with County Road P28, the detour will turn south for approximately 12 miles to the junction with IA 92. The detour continues on IA 92, one additional mile south then turns west for seven miles to meet IA 25 in Greenfield. Out of distance travel is 14 miles. The total out-of-distance user cost is anticipated to be \$806,000. The cost for county road maintenance will be \$21,500 as calculated by the Gas Tax Method. Detour signing costs will be \$10,000. This detour would also serve the Middle River bridge replacement 3.4 miles north of this bridge (BRFN-025-3(29)--39-01).

C. Recommendations

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

D. Construction Sequence

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

E. Accelerated Bridge Construction Analysis

An initial first stage accelerated bridge construction (ABC) rating score of 39 was calculated for this bridge. Typically in order to be considered a good candidate for

accelerated bridge construction an ABC score greater than 50 is required. Therefore, based upon the first stage rating score this bridge will be dismissed from further ABC consideration.

F. ADA Accommodations

There are no bike paths or sidewalks adjacent to IA 25; therefore, no ADA accommodations are planned in conjunction with this project.

G. Special Considerations

This project will be constructed at the same time as the Middle River bridge replacement project (BRFN-25-3(29)--39-01) which is located approximately 3.4 miles to the north. The construction of both of these projects will use the same method of maintaining traffic which in this case will be an off-site detour.

In alternative 1 the bridge will be raised approximately 2.5 ft. The resulting sag vertical curve provides a K value of 81 which is less than the acceptable K value of 136 for a 60 mph design speed. In alternative 2, the existing sag vertical curve will be used as construction. This curve provides a K value of 67 and a stopping sight distance of approximately 320 ft. This is below the required stopping sight distance of 570 ft. However, the five year accident history has shown there have been no accidents at the project site.

In order to meet the preferred K value of 136 for a 60 mph design speed a grade raise of 10.6 ft. would be required resulting in 1550 ft. of pavement reconstruction.

Additional right of way may be required for this project.

Once the Office of Location and Environment has completed their review, comments will be incorporated into the final concept statement.

H. Program Status

Site data has been developed by the Office of Design. This project is listed in the 2015-2019 Iowa Transportation Improvement Program, with \$845,000 for replacement in FY 2019. Costs for this project may be eligible for bridge replacement funds. A schedule of events will be developed following approval of the Project Concept.

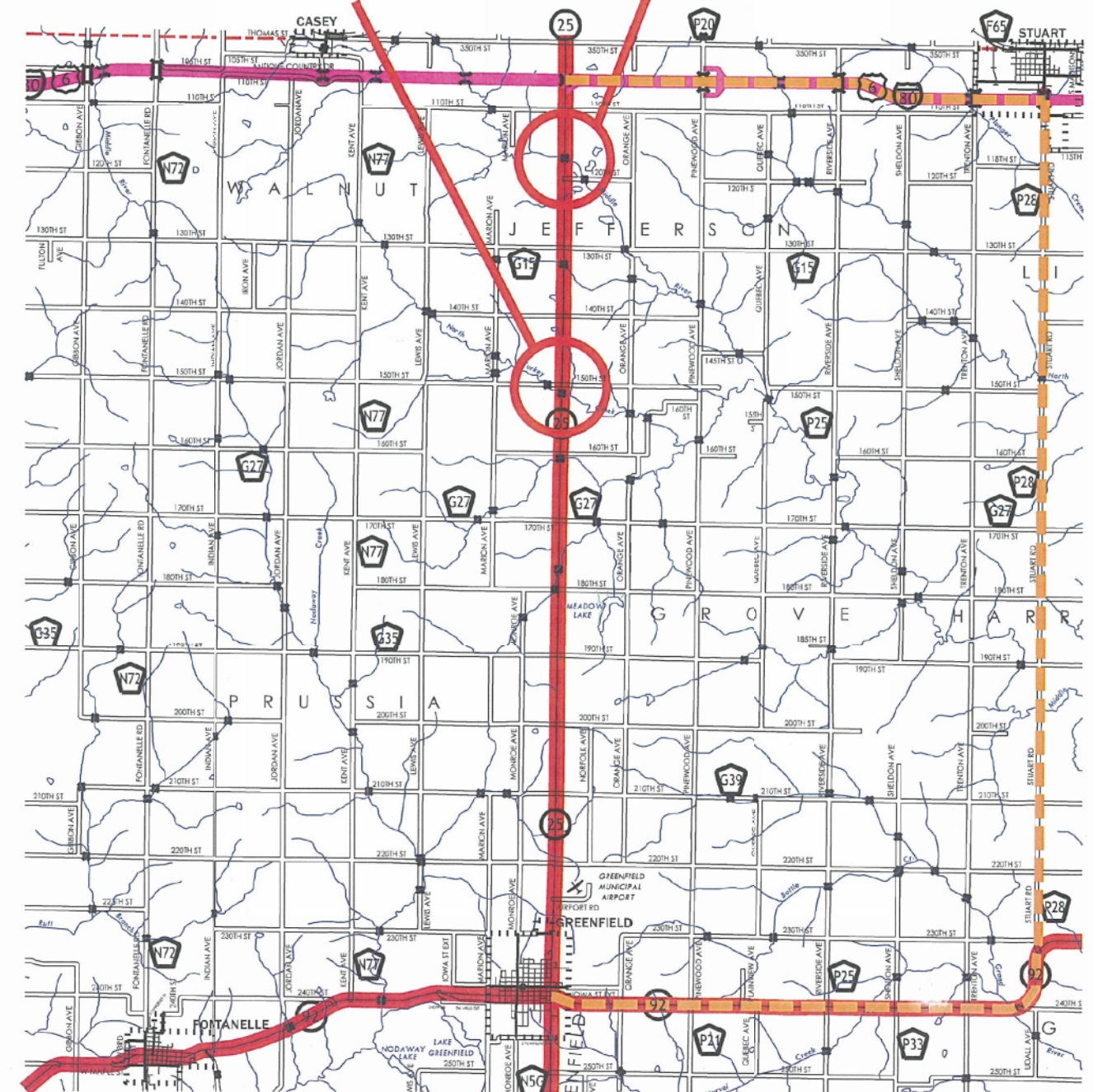
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# ADAIR COUNTY IA 25

Bridge over Middle River  
 1.2 miles south of I-80  
 BRFN-025-3(29)--39-01

Bridge over N. Turkey Creek  
 4.6 miles south of I-80  
 BRFN-025-3(30)--39-01

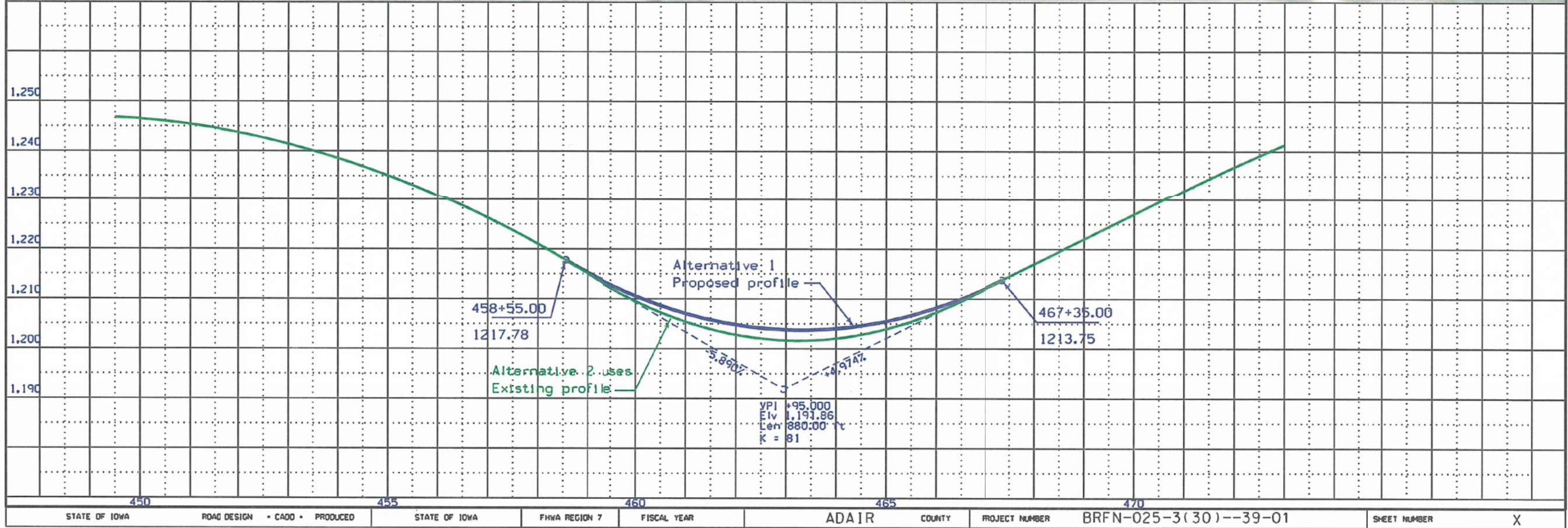
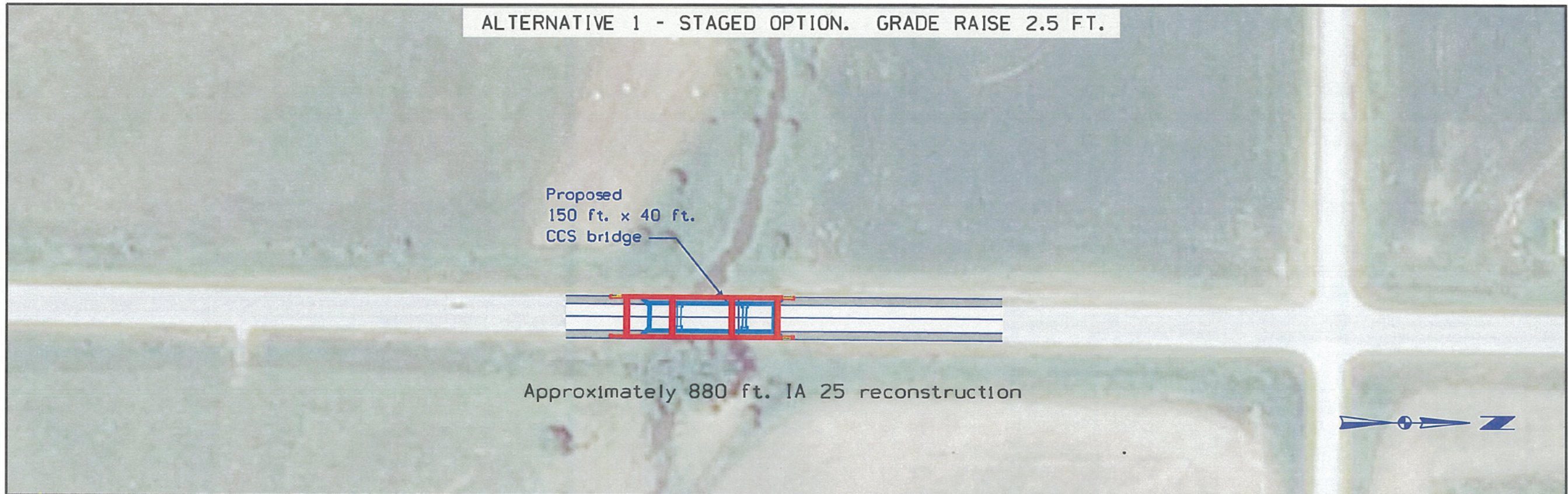
Proposed  
 detour





Adair County  
IA 25  
Bridge over N. Turkey Creek  
4.6 miles south of I-80  
BRFN-025-3(30)--39-01

ALTERNATIVE 1 - STAGED OPTION. GRADE RAISE 2.5 FT.



STATE OF IOWA ROAD DESIGN - CADD - PRODUCED STATE OF IOWA FHWA REGION 7 FISCAL YEAR ADAIR COUNTY PROJECT NUMBER BRFN-025-3(30)--39-01 SHEET NUMBER X



|   |  |  |                                     |
|---|--|--|-------------------------------------|
| <b>Roadway</b>  |  |  |                                     |
| PIN Number  | 14-01-025-020  | Assistant District Engineer  | Approval Date                       |
| Project Number  | BRFN-025-3(30)-39-01   | Office Director  |                                     |
| District  | District 4   |  |                                     |
| County  | Adair (1)  |  |                                     |
| Route   | IA 25  |  |                                     |
| Location  | 4.6 miles south of Interstate 80   |  |                                     |
| Work Type   |  |  |                                     |
| Segment Manager   |  |  |                                     |
| Designer  | Schemmer Associates  |  |                                     |
| Design Manual Section <a href="#">1C-1</a>  | Rural Two-Lane Highways (Rural Arterials)  |  |                                     |
| last update: 05-06-14   |  |  |                                     |
| Design Element  | Preferred  | Acceptable   | Project Values                      |
| Design speed (mph)  | 60   | 50   | 60 (55 Posted)                      |
| Maximum superelevation rate (Refer to Section <a href="#">2A.2</a> )  | 6%   | 8%   | NA                                  |
| Design lane width (ft)  | 12   | 12   | 12                                  |
| Full depth paved width (ft)   | 14   | 12   | 14                                  |
| Right turn lane (ft)  | 12   | 12   | NA                                  |
| Climbing Lane (ft)  | 12   | 12   | NA                                  |
| Left turn lane (ft)   | 12   | 10   | NA                                  |
| Pavement cross-slope (on tangent sections)  | Through lanes: 2%<br>Auxiliary and turn lanes: 3%<br>Crown break at centerline: 4%   | 1.5% minimum, 2% maximum<br>3% maximum<br>4% maximum   | 2%<br>NA<br>NA                      |
| 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 (Refer to Section <a href="#">3C-2</a> )  | Design speed = 50 or 55 mph: 6-inch sloped<br>Design speed ≥ 60 mph: 4-inch sloped   | 6-inch standard<br>6-inch sloped   | NA<br>NA                            |
| Foreslope (For fill areas greater than 40 ft, contact the Soils Design Section for assistance)                          | Adjacent to shoulder: 10:1 for 4' then 6:1<br>Beyond standard ditch depth and design clear zone: 3.5:1<br>Curbed roadways: 2%  | 3:1<br>3:1<br>not steeper than 3:1   | 10:1 for 4' then 6:1<br>3.5:1<br>NA |
| Backslope (For cut areas greater than 25 feet, contact the Soils Design Section for assistance with backslope benches.) | 3:1  | 2.5:1  | 3:1                                 |
| Transverse Slopes   | w/ drainage structures: 8:1<br>w/o drainage structures: 10:1   | 6:1<br>6:1   |                                     |
| Ditches (Refer to Section <a href="#">3C-1</a> )  | Outside ditch (depth x width) (ft): 5 x 10   |  |                                     |
| Bridge width—new  | Bridge length ≤ 200 ft: design lane widths + effective shoulder widths<br>Bridge length > 200 ft: design lane widths + effective shoulder widths                     | design lane widths + effective shoulder widths<br>design lane width + 4' right and left of the design lane widths              | 42'                                 |
| Bridge width—existing   | design lane widths + no less than 2 ft left and right  | design lane widths + 2 ft offset left and right  |                                     |
| Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)            | Over primary: 16.5<br>Over non-primary: 16.5 at interchange locations, 15 at all other locations<br>Over railroad: 23.3<br>Sign trusses and pedestrian bridges: 17.5 | 16<br>14<br>23.3<br>17.5   |                                     |
| Structural Capacity   | Contact Office of Bridges and Structures   | Contact Office of Bridges and Structures   |                                     |
| Level of Service  | B  | B  |                                     |

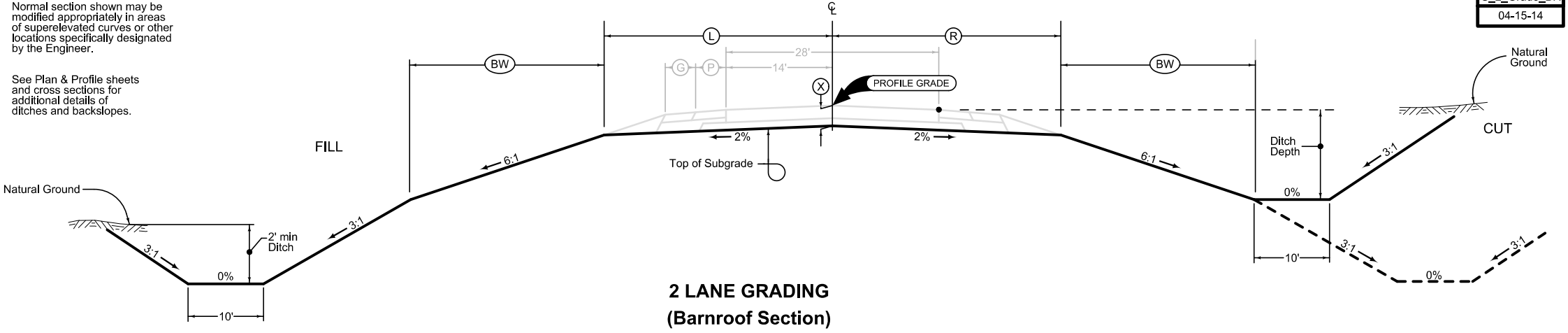
|  |                          |   |  |                          |             |
|--|--------------------------|---|--|--------------------------|-------------|
| Design year ADT = 2,700  |                          | Effective Shoulder Width and Type for Two-Lane Highways |  |                          |             |
| Design Manual Section <a href="#">1C-1</a><br>last update: 05-06-14  |                          | Preferred (values shown in feet)                        |  |                          |             |
|  |                          | Rural Roadways  |  | Urban Roadways           |             |
|  |                          | Effective Shoulder Width                                |  | Paved Width              |             |
| Turn lanes with shoulders  | 6                        | 6   | Turn lanes with shoulders              | 6                        | 0           |
| Turn lanes with curbs  | 6                        | See Section <a href="#">3C-2</a>                        | Turn lanes with curbs                  | 6                        | 0           |
| Climbing Lanes   | 6                        | 4   | Climbing Lanes                         | 4                        | 0           |
| Two-Lane Highways  | Effective Shoulder Width | Paved Width   | Two-Lane Highways                      | Effective Shoulder Width | Paved Width |
| Routes where bicycles are to be accommodated   | 10                       | 10  | Design year ADT > 2000 vpd             | 8                        | 2'          |
| On roadways approaching urban areas (due to increased bike traffic)  | 10                       | 10  | Design year ADT between 400 - 2000 vpd | 6                        | 2'          |
| On all curves with a superelevation rate of 7.0% or greater  | 10                       | 10  | Design year ADT < 400 vpd              | 4                        | 2'          |
| On roadways with design year ADT > 5000  | 10                       | 6   |  |                          |             |
| On all other NHS   | 10                       | 4   |  |                          |             |
| On non-NHS routes with design year ADT > 3000  | 10                       | 4   |  |                          |             |
| On non-NHS routes with design year ADT < 3000  | 8                        | 2*  |  |                          |             |
| *Requires safety edge-Refer to Section <a href="#">3C-6</a>  |                          |   |  |                          |             |
| Curb offsets should be located beyond the outer edge of the effective shoulder width in rural areas  |                          |   |  |                          |             |
| Refer to Section <a href="#">3C-2</a> for curb offsets in urban areas  |                          |   |  |                          |             |
| Notes:   |                          |   |  |                          |             |
| Sag vertical curve provides a K value of 67 and a stopping sight distance of approximately 320' which is less than the required 570'. IA 25 is not on the NHS system so no design exception is required. |                          |   |  |                          |             |

|  |  |  |      |      |      |      |                                       |   |      |      |      |                |      |      |
|--|--|--|------|------|------|------|---------------------------------------|---|------|------|------|----------------|------|------|
| Roadway Design Speed (mph) = 60  |  | Design Criteria for High Speed Roadways                          |      |      |      |      |                                       |   |      |      |      |                |      |      |
| Design Manual Section <a href="#">1C-1</a><br>last update: 05-06-14  |  | Preferred Criteria Design Speed, mph                             |      |      |      |      |                                       |   |      |      |      |                |      |      |
|  |  | Design Speed, mph  |      |      |      |      | Acceptable Criteria Design Speed, mph |   |      |      |      | Project Values |      |      |
|  |  | 50   | 55   | 60   | 65   | 70   | 75                                    | 50  | 55   | 60   | 65   | 70             | 75   |      |
| Shipping sight distance (ft) (Refer to Section <a href="#">6B.1</a> )  |  | 425  | 495  | 570  | 645  | 730  | 820                                   | 425   | 495  | 570  | 645  | 730            | 820  | 320  |
| Minimum horizontal curve radius (ft) (Method 5 superelevation and side friction distribution) (Refer to Sections <a href="#">2A.2</a> and <a href="#">2A.3</a> ) | e <sub>max</sub> = 6%<br>e <sub>max</sub> = 8% | 833  | 1060 | 1330 | 1660 | 2040 | 2500                                  | 833   | 1060 | 1330 | 1660 | 2040           | 2500 | NA   |
| Minimum vertical curve length (ft) (Refer to Section <a href="#">2B.1</a> )  | crest vertical curves                          | 150  | 165  | 180  | 195  | 210  | 225                                   | 150   | 165  | 180  | 195  | 210            | 225  | 775  |
| Minimum rate of vertical curvature (K)   | sag vertical curves                            | 84   | 114  | 151  | 193  | 247  | 312                                   | 84  | 114  | 151  | 193  | 247            | 312  | NA   |
| (Refer to Section <a href="#">2B.1</a> )   | roadways without fixed source lighting         | 96   | 115  | 136  | 157  | 181  | 206                                   | 96  | 115  | 136  | 157  | 181            | 206  | 66.9 |
|  | 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                             |      |      |      |                |      | 0.5  |
| Maximum gradient (%) (Refer to Section <a href="#">2B.1</a> )  | Urban roadways                                 | 4  |      |      |      |      |                                       | 3   |      |      |      |                |      | 3    |
|  | Rural roadways                                 |  |      |      |      |      |                                       |   |      |      |      |                |      |      |
|  | Interstates                                    |  |      |      |      |      |                                       |   |      |      |      |                |      |      |
| 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  |             |               |              |
|---------------------|--------------------|-----------|-------------|-------------|---------------|--------------|
| ROAD IDENTIFICATION | STATION TO STATION |           | (L)<br>Feet | (R)<br>Feet | (X)<br>Inches | (BW)<br>Feet |
| IA 25               | 458+35.91          | 460+94.80 | 28.3        | 28.3        | 16            | 12           |
| BRIDGE              |                    |           |             |             |               |              |
| IA 25               | 462+45.66          | 465+44.78 | 28.3        | 28.3        | 16            | 12           |
|                     |                    |           |             |             |               |              |
|                     |                    |           |             |             |               |              |
|                     |                    |           |             |             |               |              |
|                     |                    |           |             |             |               |              |
|                     |                    |           |             |             |               |              |
|                     |                    |           |             |             |               |              |
|                     |                    |           |             |             |               |              |
|                     |                    |           |             |             |               |              |
|                     |                    |           |             |             |               |              |
|                     |                    |           |             |             |               |              |
|                     |                    |           |             |             |               |              |
|                     |                    |           |             |             |               |              |

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.



G\_2\_Grade\_BR  
04-15-14

**Paved Shoulder at Guardrail**

PCC Shoulder Jointing:  
Longitudinal joint: BT-1 or BT-5  
Transverse joints: C at 20' spacing  
HMA Shoulder Jointing:  
Longitudinal joint: B

| 2_P_Guard_<br>10-21-14 |           |             |
|------------------------|-----------|-------------|
| STATION TO STATION     |           | (P)<br>Feet |
| 459+70.34              | 460+74.44 | Varies      |
| 463+06.02              | 464+18.33 | Varies      |

**Paved Shoulder at Guardrail**

PCC Shoulder Jointing:  
Longitudinal joint: BT-1 or BT-5  
Transverse joints: C at 20' spacing  
HMA Shoulder Jointing:  
Longitudinal joint: B

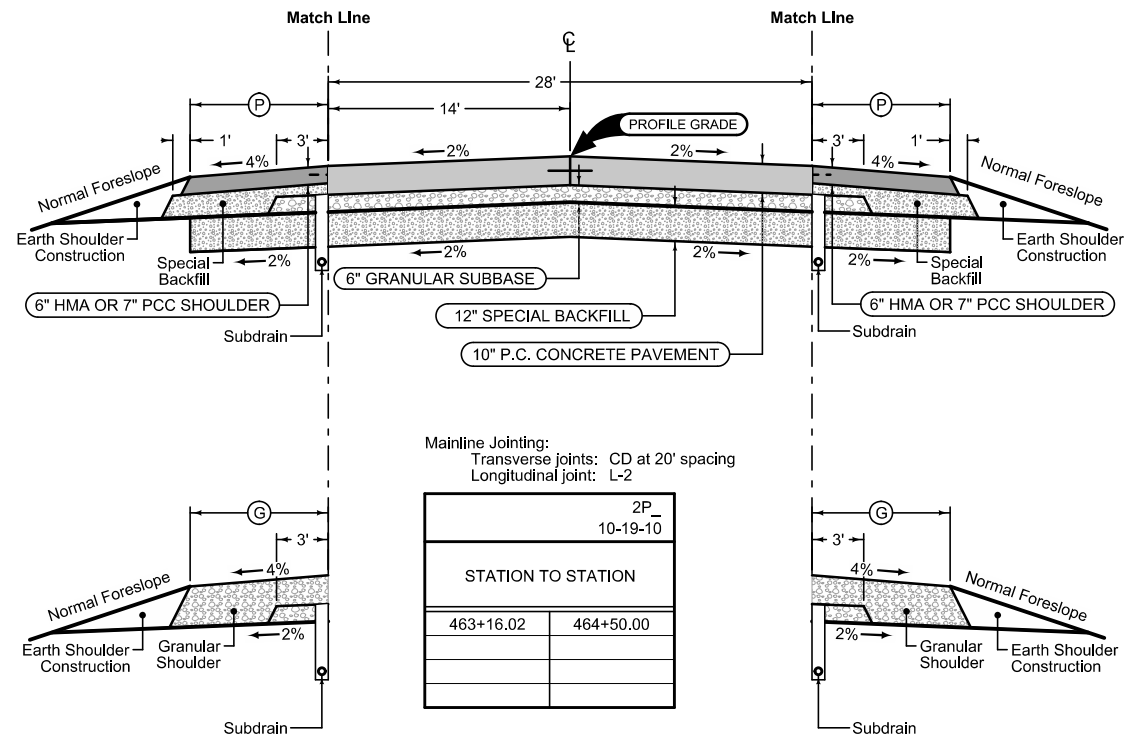
| 2_P_Guard_<br>10-21-14 |           |             |
|------------------------|-----------|-------------|
| STATION TO STATION     |           | (P)<br>Feet |
| 459+22.13              | 460+74.44 | Varies      |
| 462+86.02              | 463+70.11 | Varies      |

**Granular Shoulder (A&B)**

| 2_G_SR_<br>10-19-10 |           |             |
|---------------------|-----------|-------------|
| STATION TO STATION  |           | (G)<br>Feet |
| 458+83.58           | 459+70.34 | 6'          |
| 464+18.33           | 465+44.78 | 6'          |

**Granular Shoulder (A&B)**

| 2_G_SR_<br>10-19-10 |           |             |
|---------------------|-----------|-------------|
| STATION TO STATION  |           | (G)<br>Feet |
| 458+35.91           | 459+22.13 | 6'          |
| 463+70.11           | 465+44.78 | 6'          |

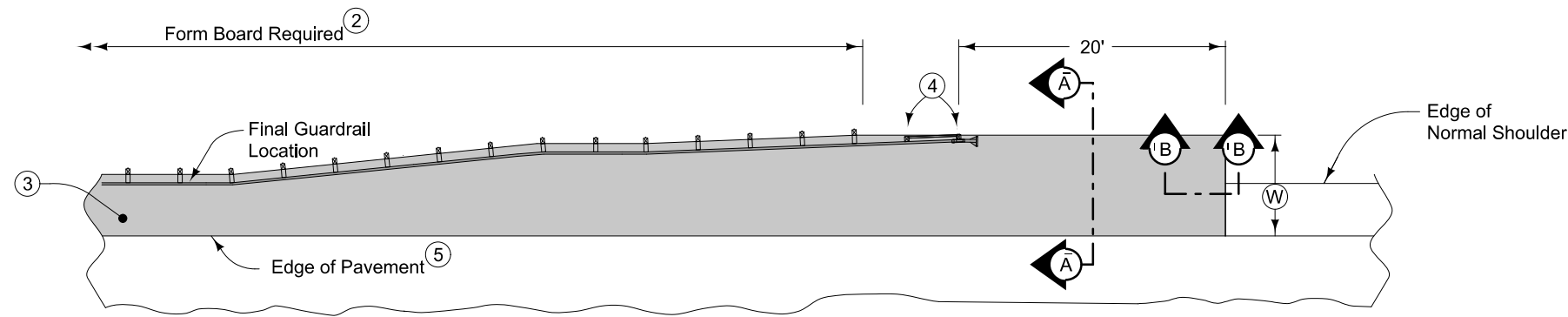


Mainline Jointing:  
Transverse joints: CD at 20' spacing  
Longitudinal joint: L-2

| 2P_<br>10-19-10    |           |
|--------------------|-----------|
| STATION TO STATION |           |
| 463+16.02          | 464+50.00 |
|                    |           |
|                    |           |
|                    |           |

See Tab 100-24 or 100-25 for pavement quantities.  
See Tab 112-9 for shoulder quantities.

**ROADWAY IDENTIFICATION**

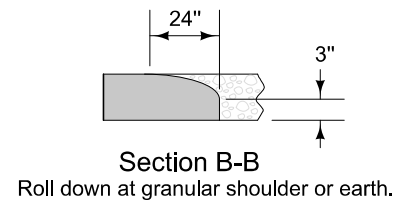
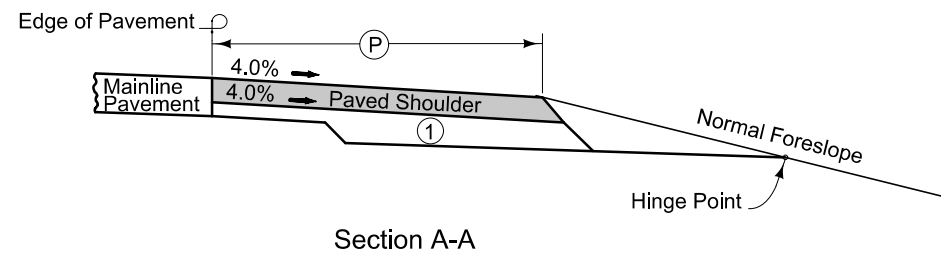
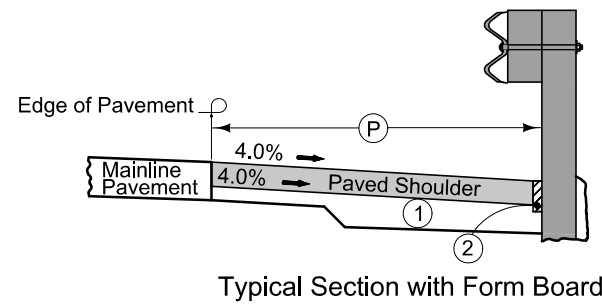


6" HMA Paved Shoulder at guardrail. 7" PCC may be substituted with the following jointing layout:

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 W/2 from edge of mainline pavement when W 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 & reinstallation of guardrail will be allowed with no additional payment.

Refer to Shoulder tabulation (112-9) for quantities.



- ① 6" subgrade treatment.
- ② When guardrail posts are installed prior to construction of paved shoulder, nail 1" x 6" untreated form boards along the face of guardrail posts for the length shown. This board is to prevent shoulder material from contacting the sides of the posts and altering the function of the guardrail. Form board not required for final 2 posts.
- ③ Continue paved shoulder to existing paved shoulder or 20' beyond the end of guardrail.
- ④ Shoulder may be notched for final 2 posts or post sleeves may be installed through pavement.
- ⑤ 'KT-1' joint for PCC shoulder.  
'B' joint for HMA shoulder.

PAVED SHOULDER AT GUARDRAIL

### SURVEY SYMBOLS

- CUL Culvert
- LIN Miscellaneous Line
- x — FW Wire Fence
- SIGN SI Sign
- TP TPD Telephone Pedestal
- PPA Power Pole Co. 1
- PIP Pipe Culvert
- TOP Top of Bridge Pier
- BRG Bridge
- GDL Guard Rail Steel
- COS Square Bridge Pier Column
- ▲▲▲▲▲▲▲▲ RIP Rip-Rap
- EW Edge of Water
- ← DU Centerline Draw or Stream (Up)
- D Centerline Draw or Stream (Down)
- SP Stream Profile
- EP Edge of Paved Roads (ML or SR)
- SNP Unpaved Shoulder
- EG Edge of Gravel Road
- ENU Edge Unpaved Entrance & Parking
- ENT Centerline BL of Entrance
- T1 - TLA Underground Telephone Line Co. 1
- FO - FOA Underground Fiber Optic Co. 1
- TW Top of Water

### UTILITY LEGEND

- East Central Iowa REC
- T1 - South Slope Telephone
- FO - South Slope Telephone

### 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. |  |
| Yellow       | (4)   | ■                | Highlight for Critical Notes or Features                               |
| Red          | (3)   | ▨                | Delineates Restricted Areas  |
| Lavender     | (9)   | ■                | Temporary Pavement Shading   |
| Gray, Light  | (48)  | ■                | Proposed Pavement Shading  |
| Gray, Med    | (80)  | ■                | Proposed Granular Shading  |
| Gray, Dark   | (112) | ■                | Proposed Grade and Pave Shading "In conjunction with a paving project" |
| Brown, Light | (236) | ■                | Grading Shading  |
| Tan          | (8)   | ■                | Proposed Sidewalk Shading  |
| Blue, Light  | (230) | ■                | Proposed Sidewalk Landing Shading                                      |
| Pink         | (11)  | ■                | Proposed Sidewalk Ramp Shading   |

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

| LINEWORK    |       | Design Color No. |                                 |
|-------------|-------|------------------|---------------------------------|
| Green       | (2)   | ■                | 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    |

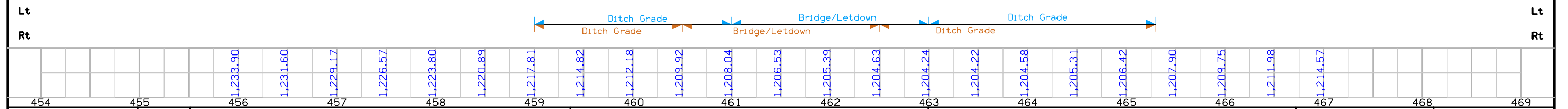
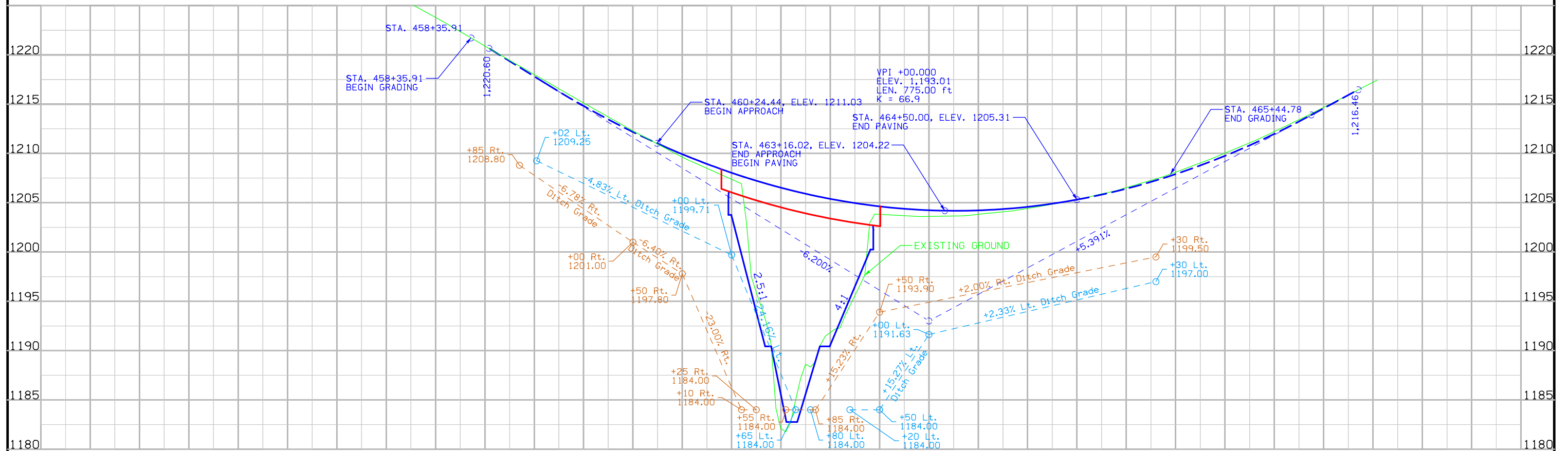
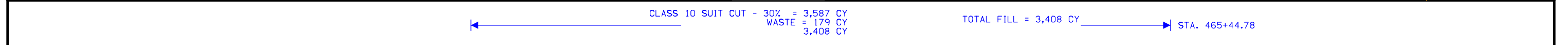
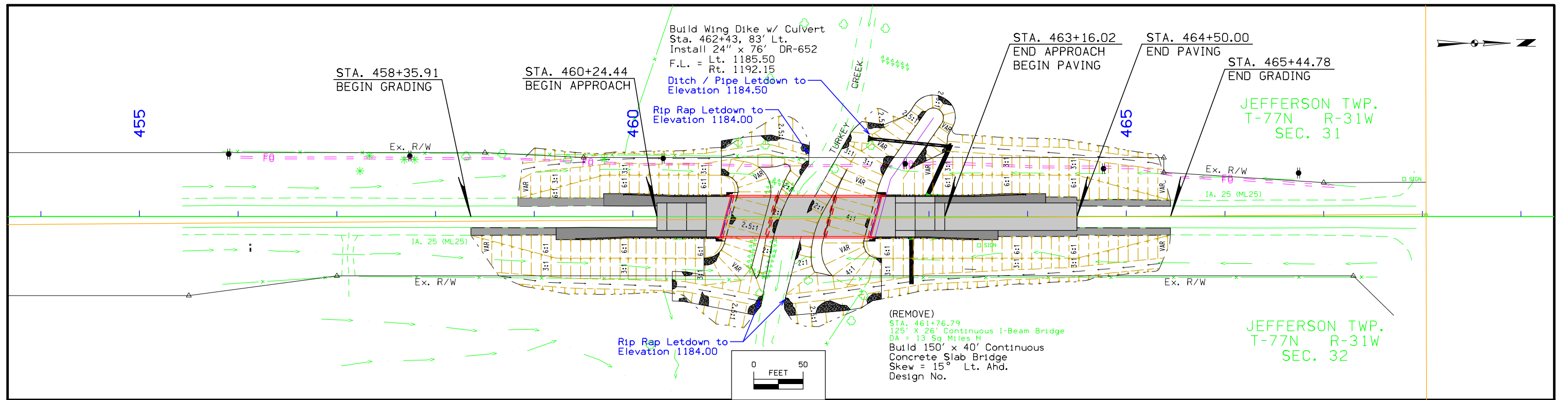
- Reference Point
- Station
- ▲ Section Corner
- — — — — Ground Line Intercept
- ▨ Saw Cut
- ▬ Guardrail
- Trench Drain
- HighTension Cable Guardrail
- ~ Sheet Pile
- ▨ Pavement Removal
- ▩ Clearing & Grubbing Area

### 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
- C/A Access Control
- Property Line

## PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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



|          |         |             |          |     |     |     |              |                |                       |     |     |     |              |     |     |
|----------|---------|-------------|----------|-----|-----|-----|--------------|----------------|-----------------------|-----|-----|-----|--------------|-----|-----|
| 454      | 455     | 456         | 457      | 458 | 459 | 460 | 461          | 462            | 463                   | 464 | 465 | 466 | 467          | 468 | 469 |
| FILE NO. | ENGLISH | DESIGN TEAM | Schemmer |     |     |     | ADAIR COUNTY | PROJECT NUMBER | BRFN-025-3(30)--39-01 |     |     |     | SHEET NUMBER | D.2 |     |

# Survey Information

**Adair County**  
**BRFN-025-3(30)39-01**  
**North Turkey Creek 4.6 Miles S of I-80**  
**PIN 14-01-025-020**  
**Sap-0846.1**

## Date(s) of Survey

Begin Date 02/26/2015  
 End Date 05/12/2015

## Horizontal Control

Horizontal Datum is NAD 83(2011) (EPOCH:2010.0000) relative to IaRTN reference stations. The project coordinate system is Iowa RCS Zone 7 (US Survey Feet). The horizontal control was established in the same static control survey as vertical control. Static observations were processed and adjusted to published IaRTN reference station positions. Reference station positions are tied to the national CORS system. Additional points were placed throughout the project using a GNSS Base-Rover setups relative to Pts. 1 and 2.

## Alignment Information

IA Hwy 25

The alignment for this survey is a retrace of As-built Plans Project # 898. Survey stationing was equated to the plan at PI Sta. 435+03.7, and was run ahead with no equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PI Sta. 435+03.7 This Survey  
 = PI Sta. 435+03.7 As-built Plans Project # 898

PI Sta. 515+05.87 This Survey  
 = PI Sta. 515+05.9 Ahead As-built Plans Project # 898

PI Sta. 678+22.20 This Survey  
 = PI Sta. 678+28.9 As-built Plans Project # 898

## Vertical Control

Vertical datum for this survey is NAVD88 (Computed using Geoid12A) GRS80 Ellipsoidal Height was computed at project Pts. 1 and 2 by conducting a six hour static observation. 6 NGS benchmarks were observed using 6 hour GPS static sessions. Additional benchmarks were placed throughout the project using GNSS Base-Rover setups.

This survey observed 2 As built plan heights to compare with observed survey height:

BM # 500 IHC BM Inlet Hdwl 5' x 5' RCB this survey  
 Elev.=1232.79  
 = BM # 52 @ Sta. 448+61AB Plans Proj # 898  
 Elev. = 1231.08 (Plan datum is not specified)

BM # 502 IHC BM Inlet Hdwl 4' x 4' RCB this survey  
 Elev. = 1195.21  
 = BM # 70 @ Sta. 619+86.2 AB Plans Proj # 898  
 Elev. = 1193.65 (Plan datum is not specified)

This survey observed 6 NGS heights to compare with observed survey height:

Bench Mark Disk Inlet Hdwl 12' x 14' RCB this survey  
 Elev. = 1221.85  
 = NGS BM Designation M 162  
 Elev. = 1221.93  
 (Datum NAVD88)

Bench Mark Disk Top Concrete Post this survey  
 Elev. = 1284.53  
 = NGS BM Designation N 162  
 Elev. = 1284.53  
 (Datum NAVD88)

Bench Mark Disk Inlet Hdwl 2' x 2' RCB this survey  
 Elev. = 1174.07  
 = NGS BM Designation P 103  
 Elev. = 1174.40  
 (Datum NAVD88)

Bench Mark Disk Top Concrete Post this survey  
 Elev. = 1336.80  
 = NGS BM Designation P 162  
 Elev. = 1336.83  
 (Datum NAVD88)

Bench Mark Disk Inlet Hdwl 4' x 4' RCB this survey  
 Elev. = 1230.37  
 = NGS BM Designation R 162  
 Elev. = 1230.40  
 (Datum NAVD88)

Bench Mark Disk Top Concrete Post this survey  
 Elev. = 1336.33  
 = NGS BM Designation T 103  
 Elev. = 1336.42  
 (Datum NAVD88)

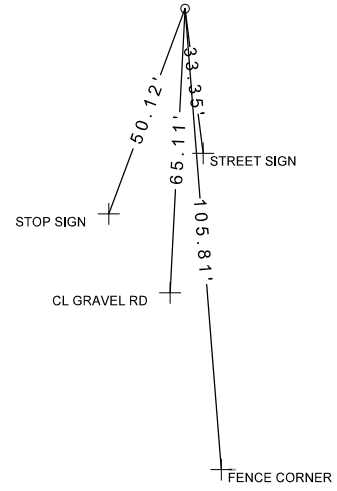
## Survey elevation analysis compared to area NGS benchmarks

NGS benchmark designated P 103 was not used in this analysis because the published elevation difference compared with observed survey elevation did not harmonize with the rest of the observed differences of the other NGS benchmarks. The observed differences between survey elevation and published elevation of the 5 NGS benchmarks used in this analysis range from 0 At NGS benchmark N 162 to survey elevation +0.09 ft. at NGS benchmark T 103. The average of the 5 benchmark differences is survey elevation +0.046 ft. Adding 0.046 ft. to survey elevations would better fit the 5 area benchmarks however the unadjusted survey elevations fit 3 of the 5 benchmarks within survey quality tolerances and therefore is assumed correct NAVD 88 elevation.

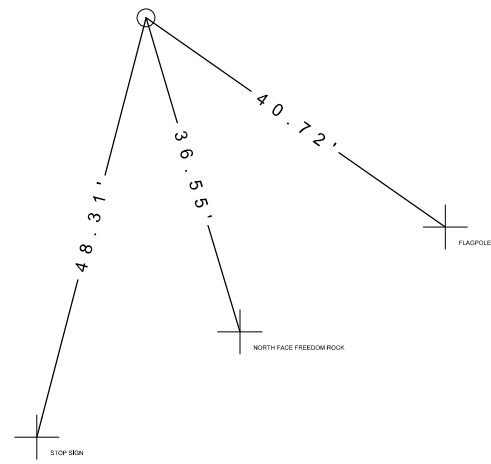
# VERTICAL CONTROL

| Point | North        | East          | Elevation | Station   | Offset    | Feature | Description  |
|-------|--------------|---------------|-----------|-----------|-----------|---------|--|
| 500   | 7228646.2280 | 17549539.4300 | 1232.790  | 448+66.84 | -49.448   | BM      | BM # 52 STA. 448+61 AB PLANS FN PROJ. # 898 > FD. IHCBM INLET HDWL 5 X 5 RCB   |
| 501   | 7229889.3160 | 17549610.9200 | 1209.471  | 461+10.38 | 13.788    | BM      | SE END BRG HANDRAIL @ NORTH TURKEY CREEK                                       |
| 502   | 7245758.5110 | 17549538.2370 | 1195.206  | 619+79.96 | -34.620   | BM      | BM # 70 STA. 619+86.2 AB PLANS FN PROJ. # 898 > FD. IHCBM INLET HDWL 4 X 4 RCB |
| 503   | 7247829.0020 | 17549575.3090 | 1193.906  | 640+50.21 | 14.330    | BM      | FD DOT PLUG SE END BRG WING @ MIDDLE RIVER                                     |
| 504   | 7230598.8350 | 17548566.2120 | 1206.565  | 468+12.95 | -1035.607 | BM      | FD DISK NE END BRG STAMPED BM ELEV 1204.83                                     |

CP STA. 468+68.81, 53.06 Rt.  
CP 1, Fd Feno Monument  
N=7230647.468 E=17549655.223

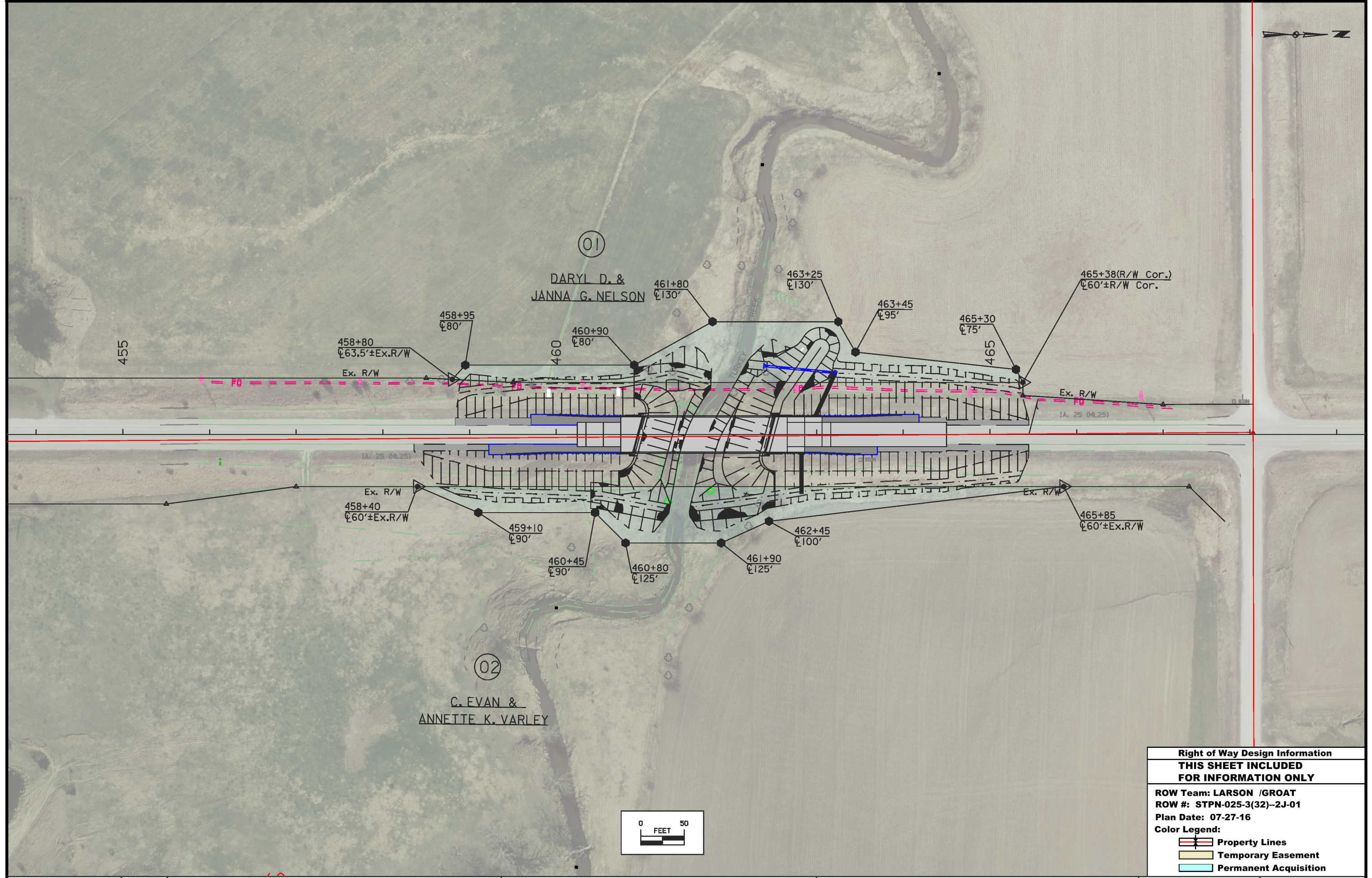
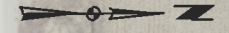


CP STA. 626+15.07, 56.48 Rt.  
CP 2, Fd Feno Monument  
N=7246394.131 E=17549625.691









|   |                       |
|---|-----------------------|
| <b>Right of Way Design Information</b>          |                       |
| <b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b> |                       |
| ROW Team: LARSON /GROAT                         |                       |
| ROW #: STPN-025-3(32)--2J-01                    |                       |
| Plan Date: 07-27-16                             |                       |
| Color Legend:                                   |                       |
|   | Property Lines        |
|   | Temporary Easement    |
|   | Permanent Acquisition |

108-23A  
08-01-08

### TRAFFIC CONTROL PLAN

Iowa 25 shall be closed to through traffic for the duration of this project. The Contractor is Responsible for the Installation and Removal of all Detour Signing.

Local access to all properties shall be maintained at all times during construction.

108-26A  
08-01-08









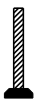
### STAGING NOTES

Iowa 25 will be closed to through traffic for the duration of this project. Construction will occur in a single stage. Detour signing shall be erected and maintained (as per Standard Road Plan TC-252) for the duration of the project, and removed by the contractor post construction.

**CROSS SECTION VIEW COLOR LEGEND  
OF TRAFFIC CONTROL AND STAGING SHEETS**

| SHADING      | Design Color No. |   |
|--------------|------------------|---|
| Green, Light | (225)            | Existing Pavement Shading                       |
| Gray, Light  | (48)             | Previously Constructed Pavement Shading         |
| Gray, Med    | (80)             | Previously Constructed Granular Surface Shading |
| Blue, Light  | (230)            | Proposed Pavement Shading                       |
| Lavender     | (9)              | Temporary Pavement Shading                      |
| Brown, Med   | (237)            | Future Proposed Pavement Shading                |

**CROSS SECTION VIEW PATTERN AND SYMBOL LEGEND  
OF TRAFFIC CONTROL AND STAGING SHEETS**




















|   |                           |   |                                 |
|---|---------------------------|---|---------------------------------|
|  | Pavement Removal          |  | Proposed Granular Shoulder      |
|  | Proposed Granular Subbase |  | Temporary Shoulder              |
|  | Proposed Special Backfill |  | Existing Shoulder Strengthening |
|  | Temporary Barrier Rail    |  | Permanent Barrier Rail          |
|   |                           |  | Channelizing Device             |

**PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS**

| LINEWORK     | Design Color No. |   |
|--------------|------------------|---|
| Green        | (2)              | Existing Topographic Features and Labels                            |
| Magenta      | (5)              | Pavement Marking Call Outs  |
| Blue         | (1)              | Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation |
| Yellow       | (4)              | Pavement Markings, Yellow   |
| Off White    | (254)            | Pavement Markings, White  |
| Violet       | (15)             | Temporary barrier rail, Unpinned                                    |
| Flush Orange | (228)            | Temporary barrier rail, Pinned                                      |

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

**PLAN VIEW PATTERN AND SYMBOL LEGEND  
OF TRAFFIC CONTROL AND STAGING SHEETS**

|   |                          |   |                              |
|---|--------------------------|---|------------------------------|
|    | Channelizing Device      |    | Crash Cushion (Temp or Perm) |
|    | Drum                     |    | Traffic Signal               |
|    | Temporary Lane Separator |    | Flagger                      |
|    | Tubular Marker           |    | Temporary Floodlighting      |
|   | Channelizer Marker       |   | Traffic Sign                 |
|  | Concrete Barrier Marker  |  | Type III Barricade           |
|  | Delineator               |  | Type A Warning Light         |
|  | Temporary Barrier Rail   |  | Direction of Traffic         |
|  | Pavement Removal         |  | Safety Closure               |
|  | Sand Barrel Layout       |   |                              |

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

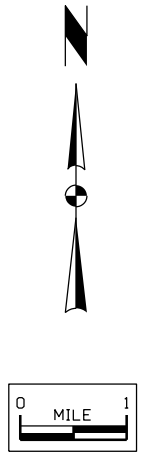
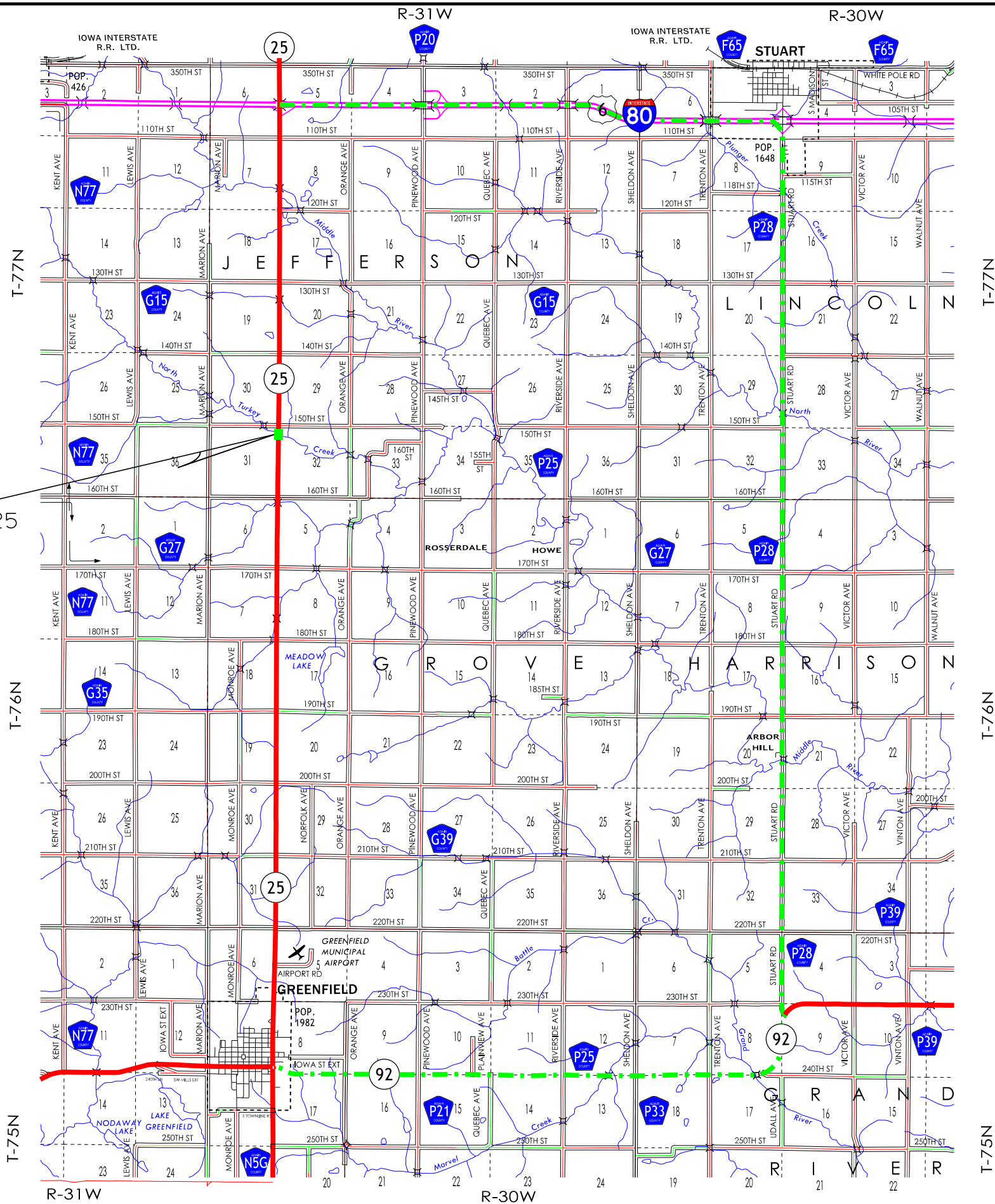
**TRAFFIC CONTROL  
AND  
STAGING  
LEGEND AND SYMBOL  
INFORMATION SHEET**

(COVERS SHEET SERIES J)

DETOUR LEGEND

- - - - - Detour Route
- Proposed Project

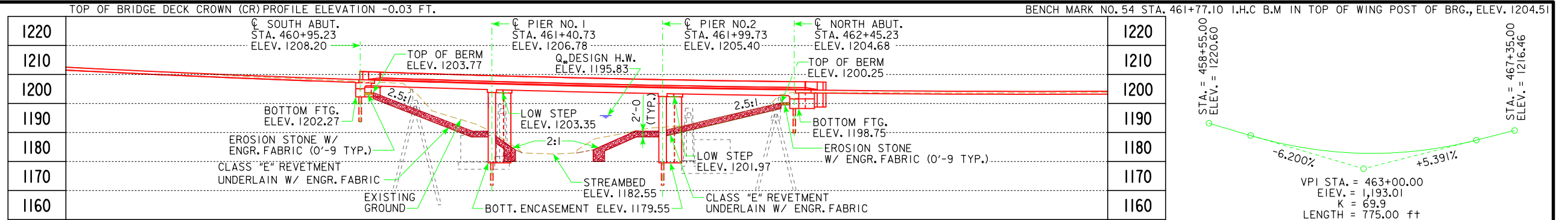
PROJECT LOCATION  
BRIDGE NO. 0169.5S025



DETOUR NOTE:  
THE CONTRACTOR IS RESPONSIBLE FOR THE  
INSTALLATION & REMOVAL OF ALL DETOUR SIGNING.

DETOUR AND  
TRAFFIC CONTROL

NOTES: ALL UNITS ARE IN FEET  
UNLESS OTHERWISE NOTED.  
TL-4 BARRIER RAIL PROPOSED  
PILE BENT PROPOSED



LONGITUDINAL SECTION ALONG CL APPROACH ROADWAY

PROPOSED PROFILE GRADE IA 25

TRAFFIC ESTIMATE

|                    |       |        |
|--------------------|-------|--------|
| 2019 AADT          | 2,300 | V.P.D. |
| 2039 AADT          | 2,700 | V.P.D. |
| 2039 DHV           | 270   | V.P.H. |
| TRUCKS             | 18    | %      |
| TOTAL DESIGN ESALS | -     |        |

HYDRAULIC DATA

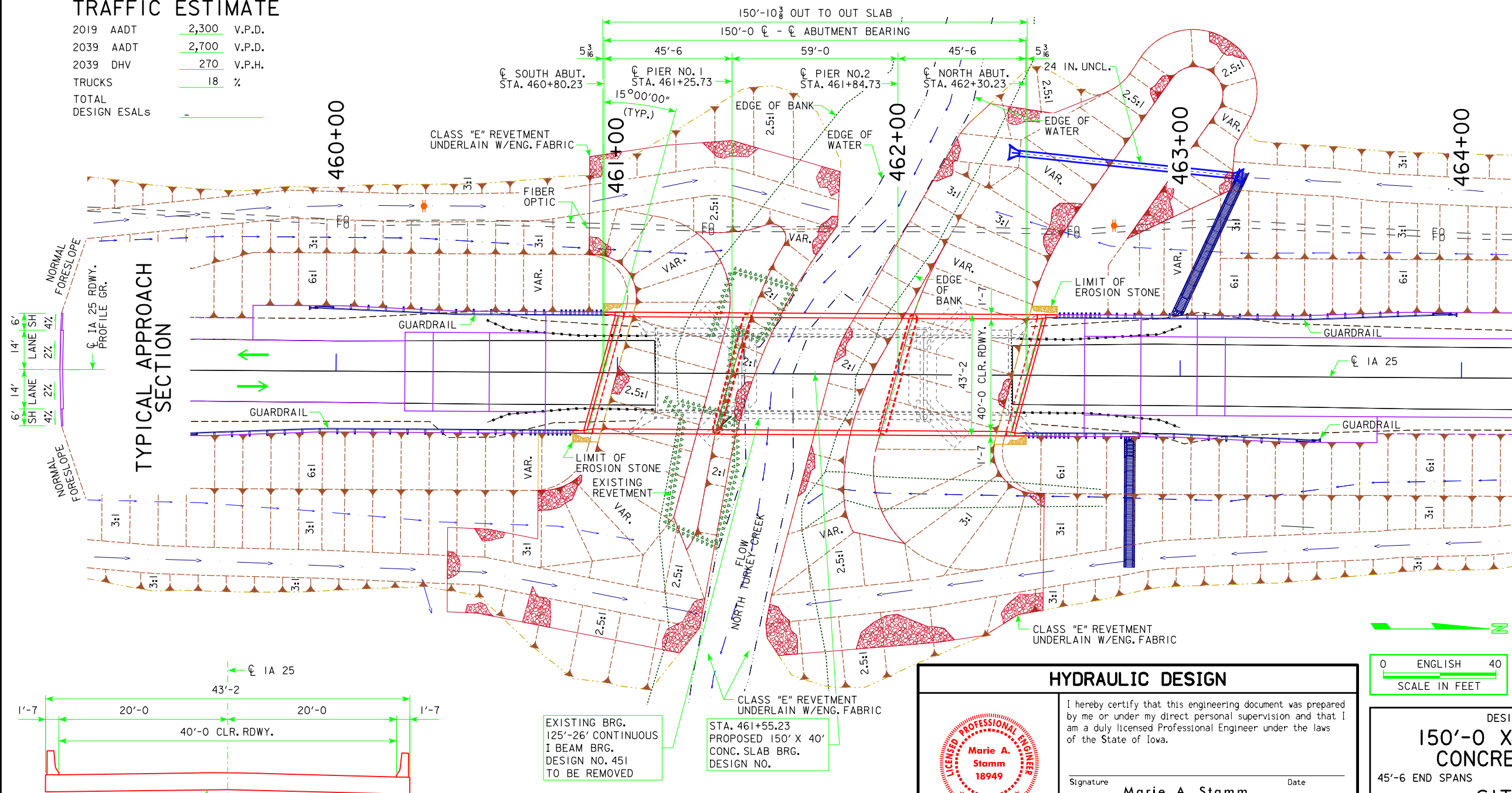
DRAINAGE AREA = 12.5 SQ. MI.  
STREAM SLOPE = 12.7 FT./MI.  
AVG. LOW WATER STAGE = 1184.06  
Q<sub>50</sub> = 6,030 CFS  
STAGE = 1195.83  
BACKWATER = 1.22 FT.  
AVG. BRIDGE VELOCITY = 8.9 FPS  
Q<sub>100</sub> = 7,380 CFS  
STAGE = 1198.62  
BACKWATER = 1.62 FT.  
Q<sub>200</sub> = 8,830 CFS  
STAGE = 1199.72  
CALCULATED DESIGN SCOUR = 1176.75  
Q<sub>500</sub> = 10,600 CFS  
STAGE = 1200.90  
AVG. BRIDGE VELOCITY = 8.3 FPS  
CALCULATED CHECK SCOUR = 1176.45  
ROADWAY OVERTOP 1204.18  
STA. 463+27.27  
EXTREME HW STAGE = 1183.3 (NGVD)  
DATE = 1942

UTILITIES LEGEND:

- FO BURIED FIBER OPTIC LINE
- POWER POLES

LOCATION

OVER NORTH TURKEY CREEK  
T-76N R-32W - R-31W  
SECTION 7-8  
JEFFERSON TOWNSHIP  
ADAIR COUNTY  
FHWA NO. 12970  
BRIDGE MAINT. NO. 0169.5S025  
LATITUDE 41.429906°  
LONGITUDE -94.452498°



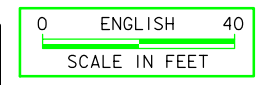
SITUATION PLAN

**HYDRAULIC DESIGN**

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

Signature: Marie A. Stamm Date: \_\_\_\_\_  
Printed or Typed Name: Marie A. Stamm  
My license renewal date is December 31, 2017

Pages or sheets covered by this seal: SHEET V.I



PRELIMINARY

DESIGN FOR 15° SKEW (L.A.)  
**150'-0" X 40'-0" CONTINUOUS CONCRETE SLAB BRIDGE**  
45'-6" END SPANS 59'-0" INTERIOR SPAN  
STA. 461+55.23 JANUARY, 2016  
**ADAIR COUNTY**  
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
DESIGN SHEET NO. 1 OF 2 FILE NO. - DESIGN NO. -

### REVETMENT LOCATION TABLE

| POINT | SOUTH ABUTMENT |          |         | POINT | NORTH ABUTMENT |           |         |
|-------|----------------|----------|---------|-------|----------------|-----------|---------|
|       | STATION        | OFFSET   | ELEV.   |       | STATION        | OFFSET    | ELEV.   |
| R1    | 460+72.03      | 42.00 RT | 1203.77 | R1    | 462+51.97      | 42.00 RT  | 1200.25 |
| R2    | 460+72.03      | 59.23 RT | 1199.30 | R2    | 462+51.75      | 83.47 RT  | 1196.51 |
| R3    | 460+40.00      | 55.31 RT | 1201.97 | R3    | 462+31.05      | 92.57 RT  | 1196.17 |
| R4    | 460+40.00      | 85.33 RT | 1198.48 | R4    | 462+14.82      | 95.07 RT  | 1193.58 |
| R5    | 461+22.70      | 99.48 RT | 1188.00 | R5    | 461+57.93      | 100.17 RT | 1188.00 |
| R6    | 461+29.70      | 90.58 RT | 1184.00 | R6    | 461+53.84      | 94.00 RT  | 1186.00 |
| R7    | 461+77.90      | 52.80 LT | 1184.00 | R7    | 461+53.30      | 89.03 RT  | 1184.00 |
| R8    | 461+78.73      | 72.01 LT | 1188.00 | R8    | 461+76.60      | 3.41 LT   | 1184.00 |
| R9    | 461+40.23      | 82.81 LT | 1192.32 | R9    | 461+81.48      | 15.47 LT  | 1184.00 |
| R10   | 461+16.62      | 81.01 LT | 1198.78 | R10   | 462+21.36      | 85.89 LT  | 1184.00 |
| R11   | 460+89.73      | 76.80 LT | 1201.80 | R11   | 462+31.97      | 96.53 LT  | 1188.66 |
| R12   | 460+89.73      | 42.00 LT | 1203.77 | R12   | 462+54.34      | 93.21 LT  | 1191.42 |
| -     | -              | -        | -       | R13   | 462+72.74      | 100.63 LT | 1193.69 |
| -     | -              | -        | -       | R14   | 462+82.07      | 108.32 LT | 1194.99 |
| -     | -              | -        | -       | R15   | 462+85.74      | 113.94 LT | 1194.90 |
| -     | -              | -        | -       | R16   | 463+17.59      | 118.69 LT | 1195.05 |
| -     | -              | -        | -       | R17   | 463+24.18      | 91.37 LT  | 1195.67 |
| -     | -              | -        | -       | R18   | 463+18.93      | 80.86 LT  | 1193.69 |
| -     | -              | -        | -       | R19   | 463+17.74      | 66.42 LT  | 1192.07 |
| -     | -              | -        | -       | R20   | 462+80.87      | 48.80 LT  | 1200.25 |

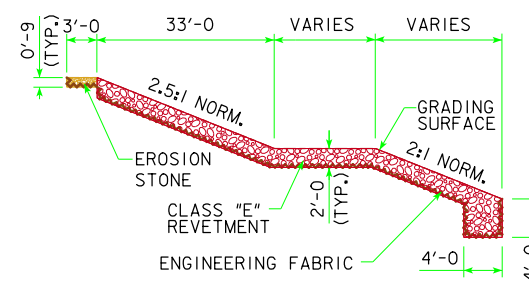
### BERM SLOPE LOCATION TABLE

| POINT | SOUTH ABUTMENT |          |         | NORTH ABUTMENT |          |         |
|-------|----------------|----------|---------|----------------|----------|---------|
|       | STATION        | OFFSET   | ELEV.   | STATION        | OFFSET   | ELEV.   |
| A1    | 461+59.82      | 24.58 LT | 1184.00 | 461+86.64      | 24.58 LT | 1184.00 |
| A2    | 461+41.63      | 24.58 RT | 1184.00 | 461+69.32      | 24.58 RT | 1184.00 |
| B1    | 461+06.47      | 24.58 LT | 1203.77 | 462+47.16      | 24.58 LT | 1200.25 |
| B2    | 460+93.30      | 24.58 RT | 1203.77 | 462+34.06      | 24.58 RT | 1200.25 |
| C1    | 461+49.09      | 24.58 LT | 1190.43 | 462+03.88      | 24.58 LT | 1190.43 |
| C2    | 461+34.31      | 24.58 RT | 1190.43 | 461+82.21      | 24.58 RT | 1190.43 |
| D1    | 461+39.90      | 24.58 LT | 1190.43 | 462+06.31      | 24.58 LT | 1190.43 |
| D2    | 461+27.46      | 24.58 RT | 1190.43 | 461+92.57      | 24.58 RT | 1190.43 |
| W1    | 460+95.04      | 24.58 LT | 1207.66 | 462+56.14      | 24.58 LT | 1204.01 |
| W2    | 460+84.32      | 24.58 RT | 1208.04 | 462+45.42      | 24.58 RT | 1204.13 |

CLASS "E" REVETMENT AND EROSION STONE ARE EMBEDDED  
ELEVATIONS SHOWN ARE GRADING SURFACE

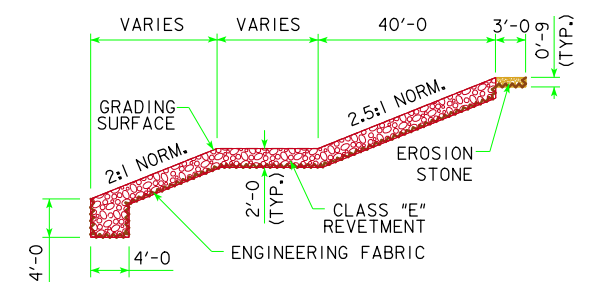
### ESTIMATED BERM ARMORING QUANTITIES

| LOCATION                     | REVETMENT CL. "E" (TON) | EROSION STONE (TON) | ENGINEERING FABRIC (SY) | EXCAVATION (CY) |
|------------------------------|-------------------------|---------------------|-------------------------|-----------------|
| BERM LINING - SOUTH ABUTMENT | 1422.700                | 8.700               | 1317.3                  | 878.2           |
| BERM LINING - NORTH ABUTMENT | 1802.300                | 8.700               | 1668.7                  | 1112.5          |
| <b>TOTALS</b>                | <b>3225.000</b>         | <b>17.400</b>       | <b>2986.0</b>           | <b>1990.7</b>   |



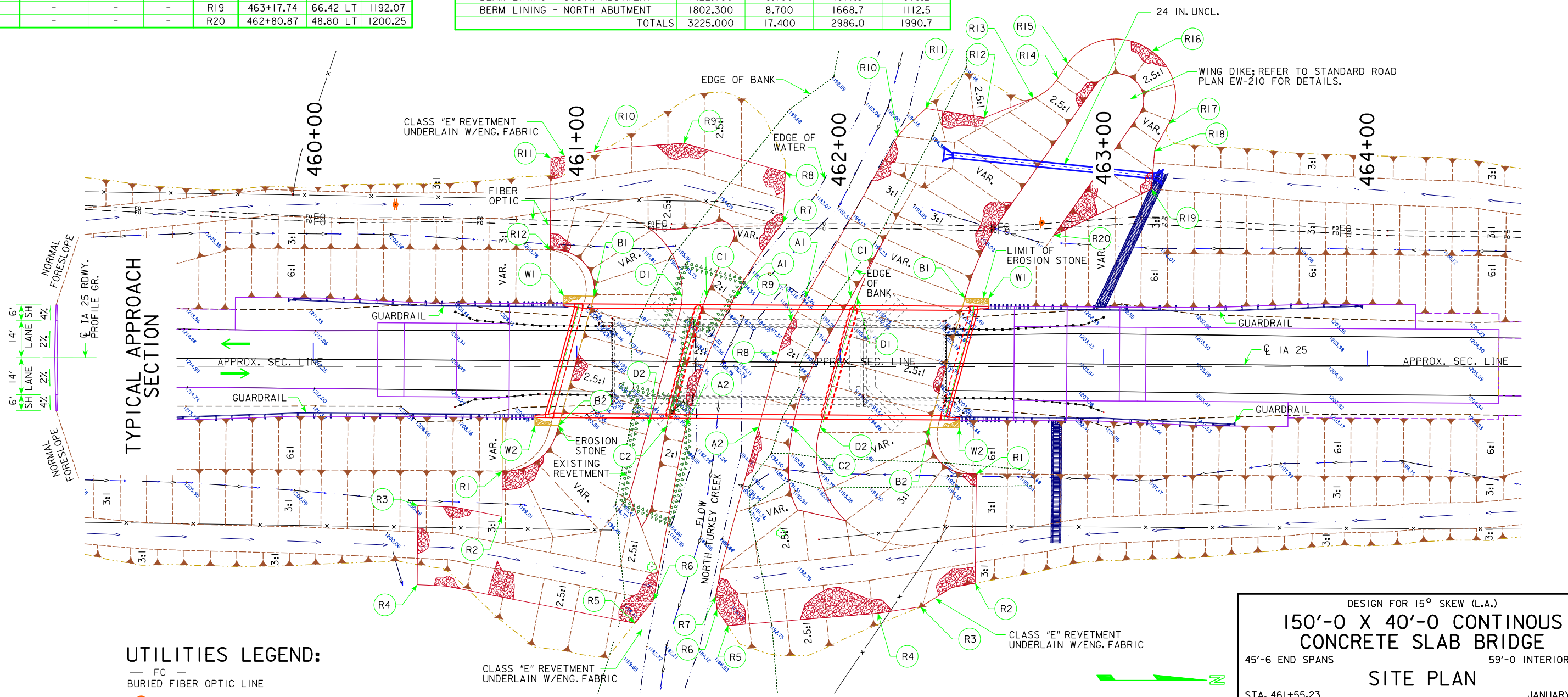
**SOUTH REVETMENT DETAIL**

(MEASURED PERPENDICULAR FROM ABUTMENT FACE AT CL BRIDGE)



**NORTH REVETMENT DETAIL**

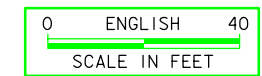
(MEASURED PERPENDICULAR FROM ABUTMENT FACE AT CL BRIDGE)



#### UTILITIES LEGEND:

- FO BURIED FIBER OPTIC LINE
- POWER POLES

### SITE PLAN



DESIGN FOR 15° SKEW (L.A.)  
**150'-0 X 40'-0 CONTINUOUS CONCRETE SLAB BRIDGE**  
 45'-6 END SPANS 59'-0 INTERIOR SPAN  
**SITE PLAN**  
 STA. 461+55.23 JANUARY, 2016  
**ADAIR COUNTY**  
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
 DESIGN SHEET NO. 2 OF 2 FILE NO. - DESIGN NO. -

**LINE STYLE LEGEND OF CROSS SECTION SHEETS (ROAD)**

- - - - - - Existing Ground Line
- Proposed Template
- Proposed Topsoil Placement
- - - - - - Additional Topsoil Removal
- Subgrade Treatment
- - - - - Granular Shoulder
- Pavement
- - - - - - Existing Pipe\RCB
- Proposed Pipe\RCB
- Proposed Dike
- All Elements Associated with Proposed Entrances

**LINE STYLE LEGEND OF CROSS SECTION SHEETS (SOILS)**

- TS——— Topsoil (Class 10)
- Slope Dressing Only
- CL 10——— Class 10 Materials
- SEL LO——— Select Loams And Clay-Loams
- SEL SA——— Select Sand
- UNS A——— Unsuitable Type A Disposal
- UNS B——— Unsuitable Type B Disposal
- UNS C——— Unsuitable Type C Disposal
- SHALE——— Shale
- WASTE——— Waste
- B&W LS——— Broken and Weathered Rock
- ROCK——— Solid Rock
- BLDRS——— Boulders

Note: All layer lines and descriptions identify layers above the line.

Note: Vertical or near vertical lines connecting soil layers at edges of cross sections are only for the purpose of calculating template quantities and do not depict soil stratification.

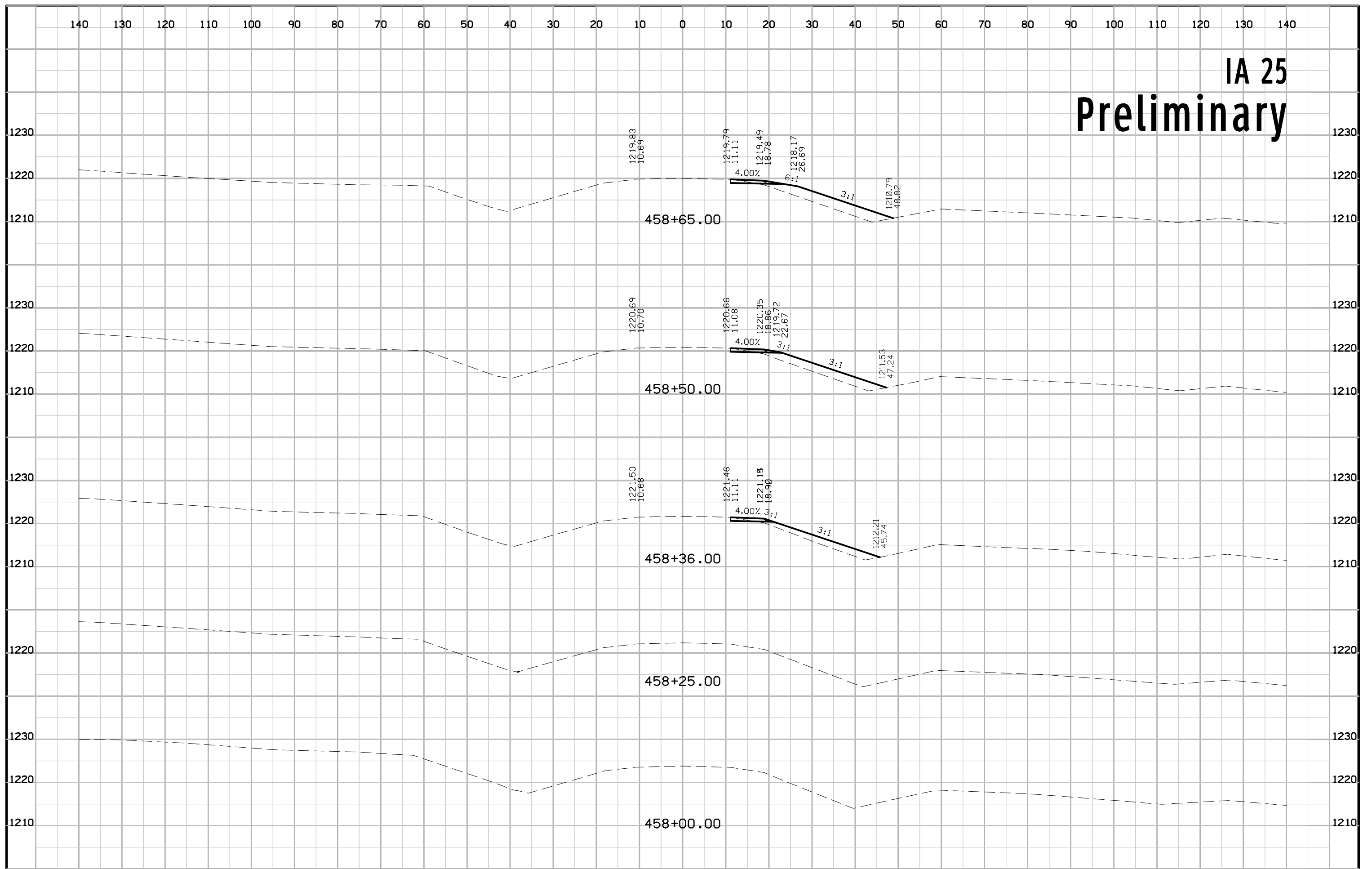
**SYMBOL LEGEND OF CROSS SECTION SHEETS**

- Existing ROW  
|  
Existing Right-of-Way Limit
- Proposed ROW  
|  
Proposed Right-of-Way Limit
- Temporary ROW  
|  
Temporary Right-of-Way Limit

**CROSS SECTION  
LEGEND AND SYMBOL  
INFORMATION SHEET**

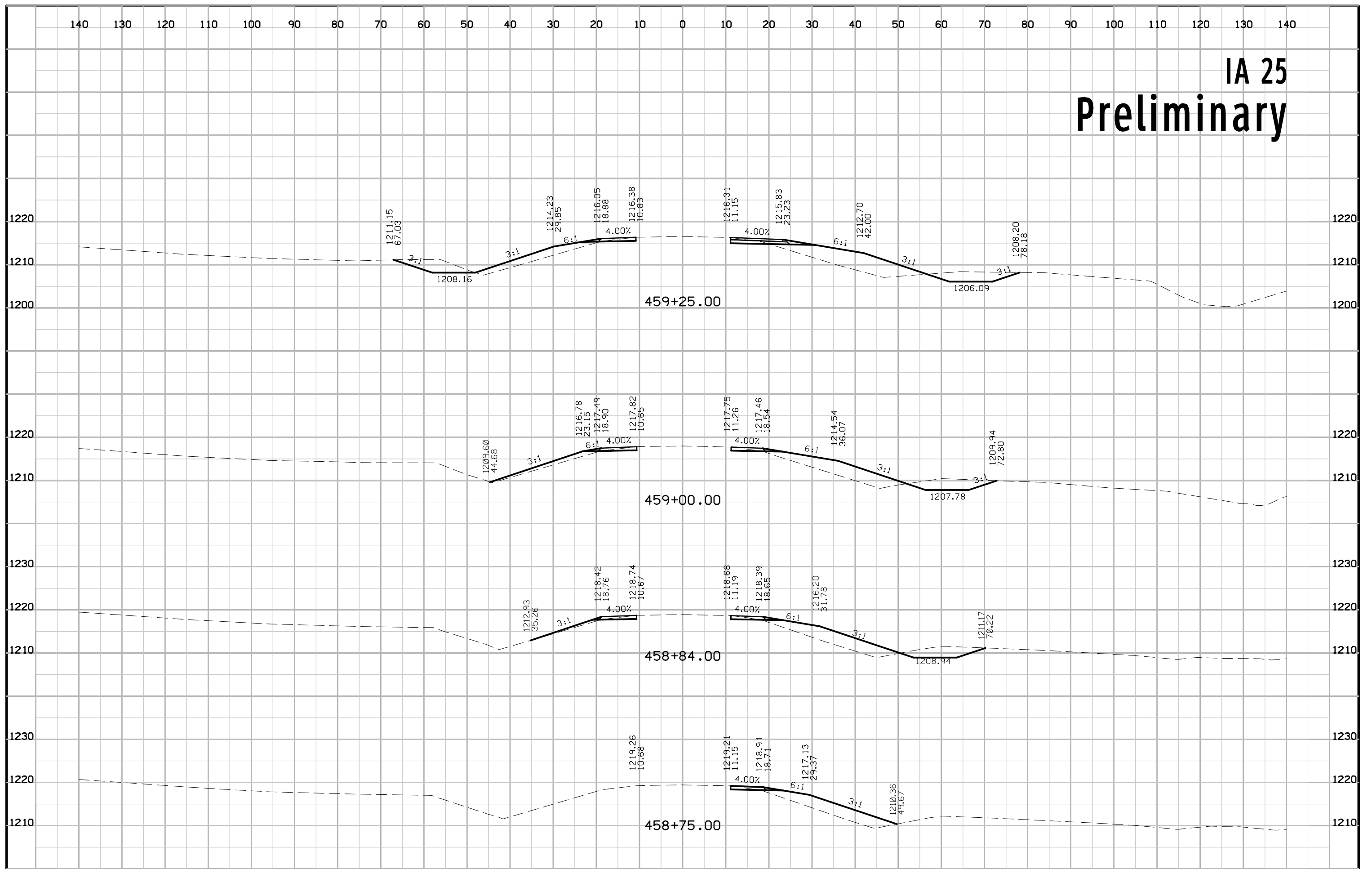
(COVERS SHEET SERIES W, X, Y, & Z)

# IA 25 Preliminary

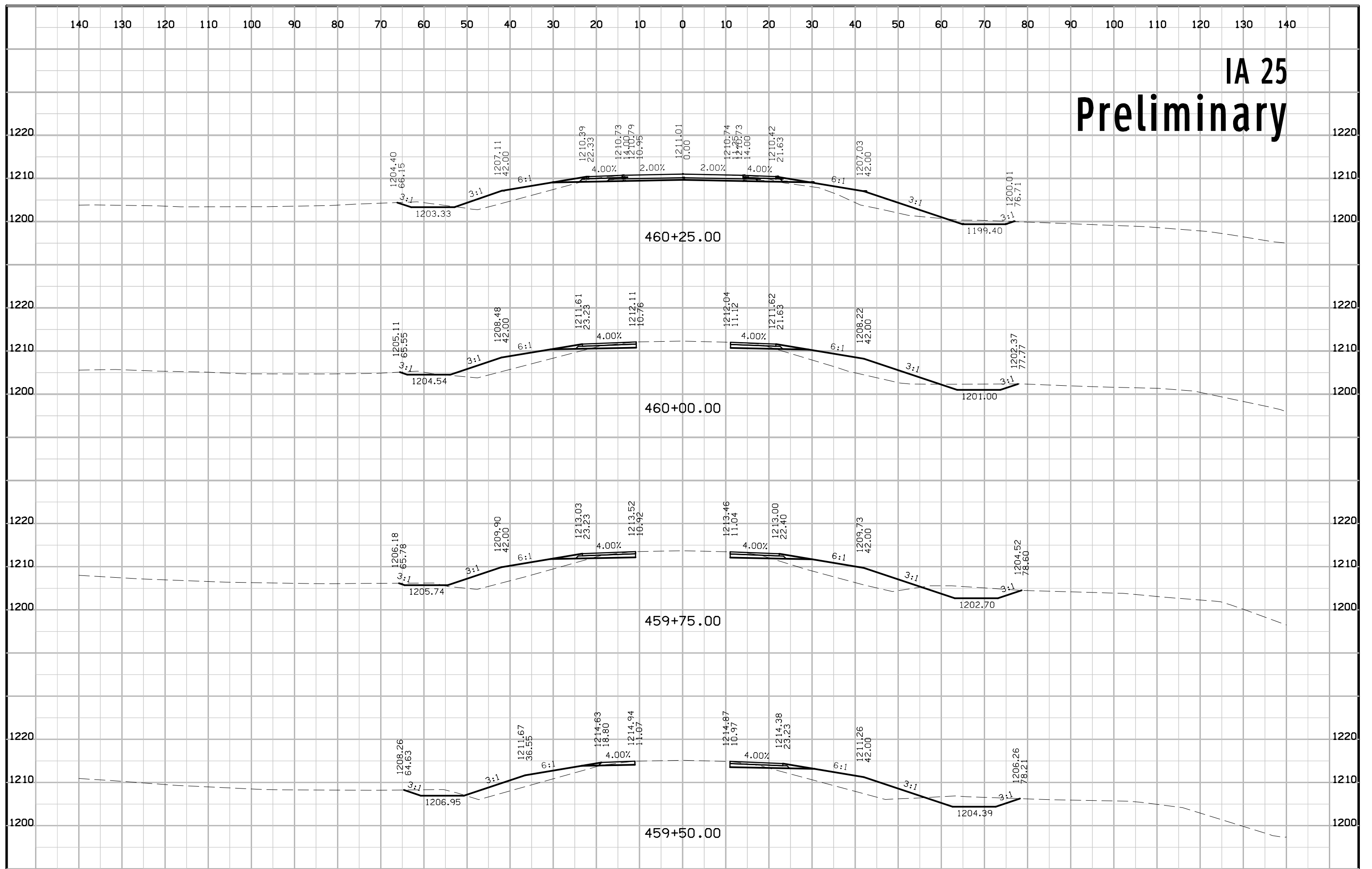




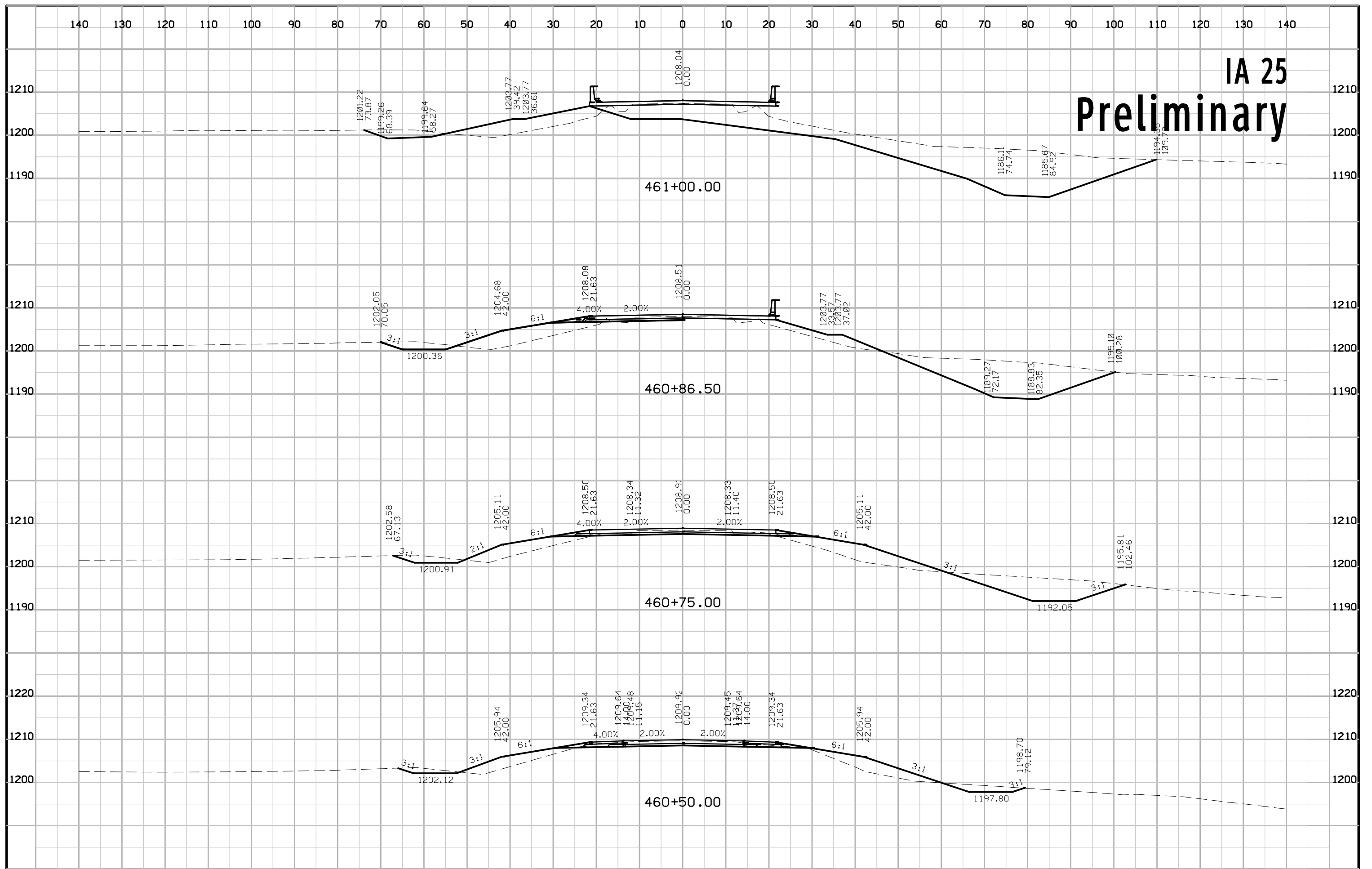
# IA 25 Preliminary



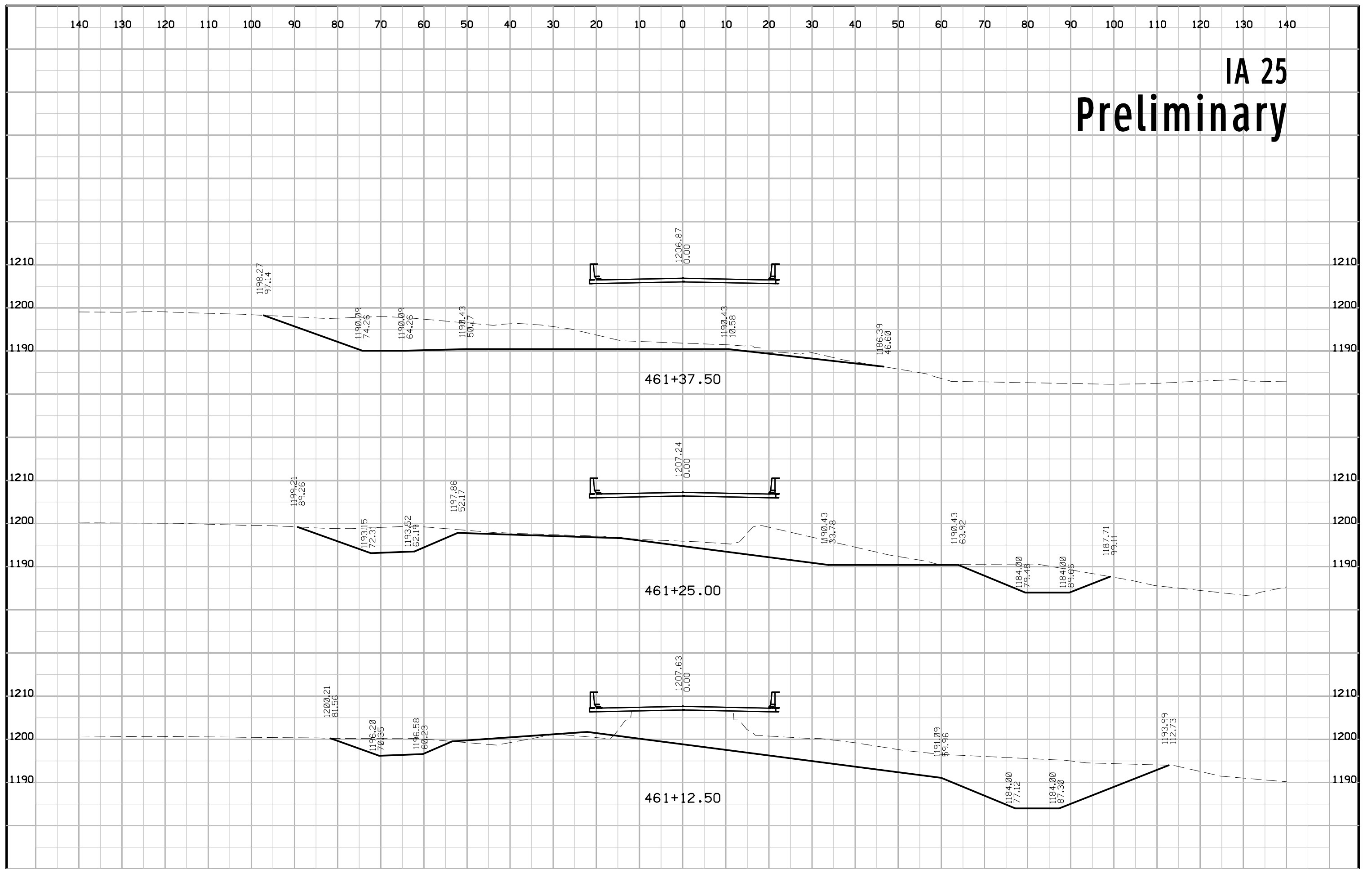
# IA 25 Preliminary



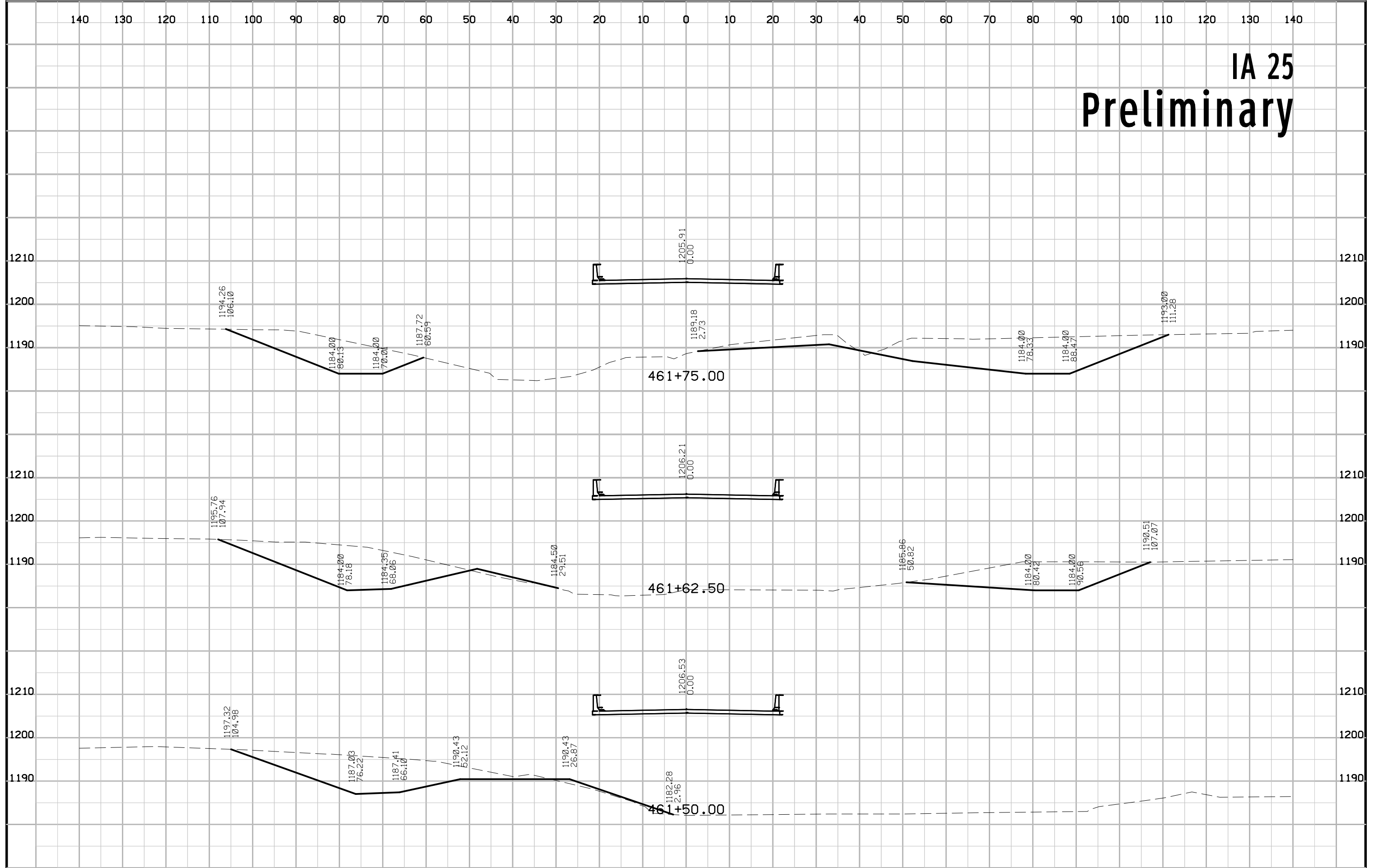
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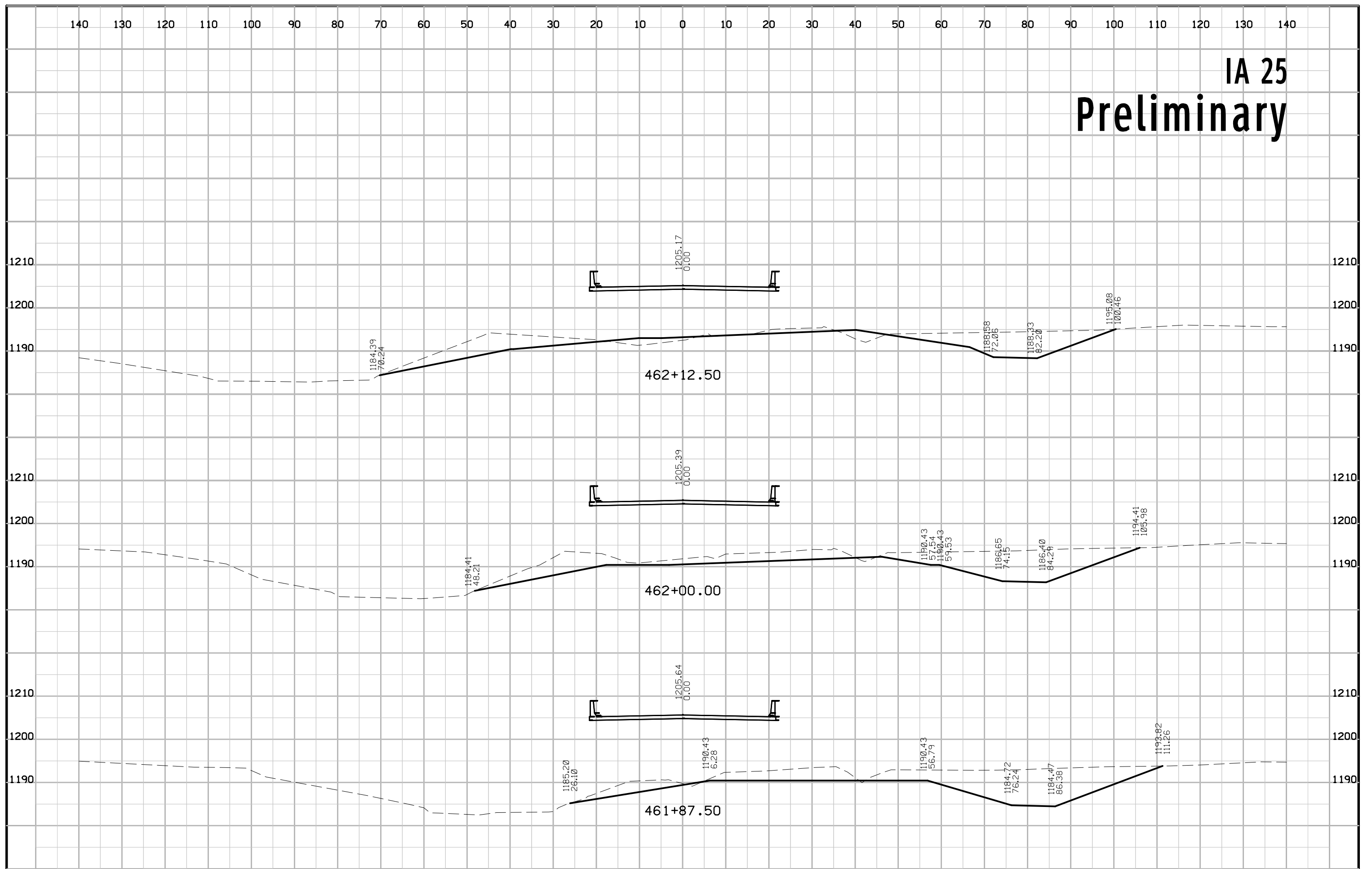
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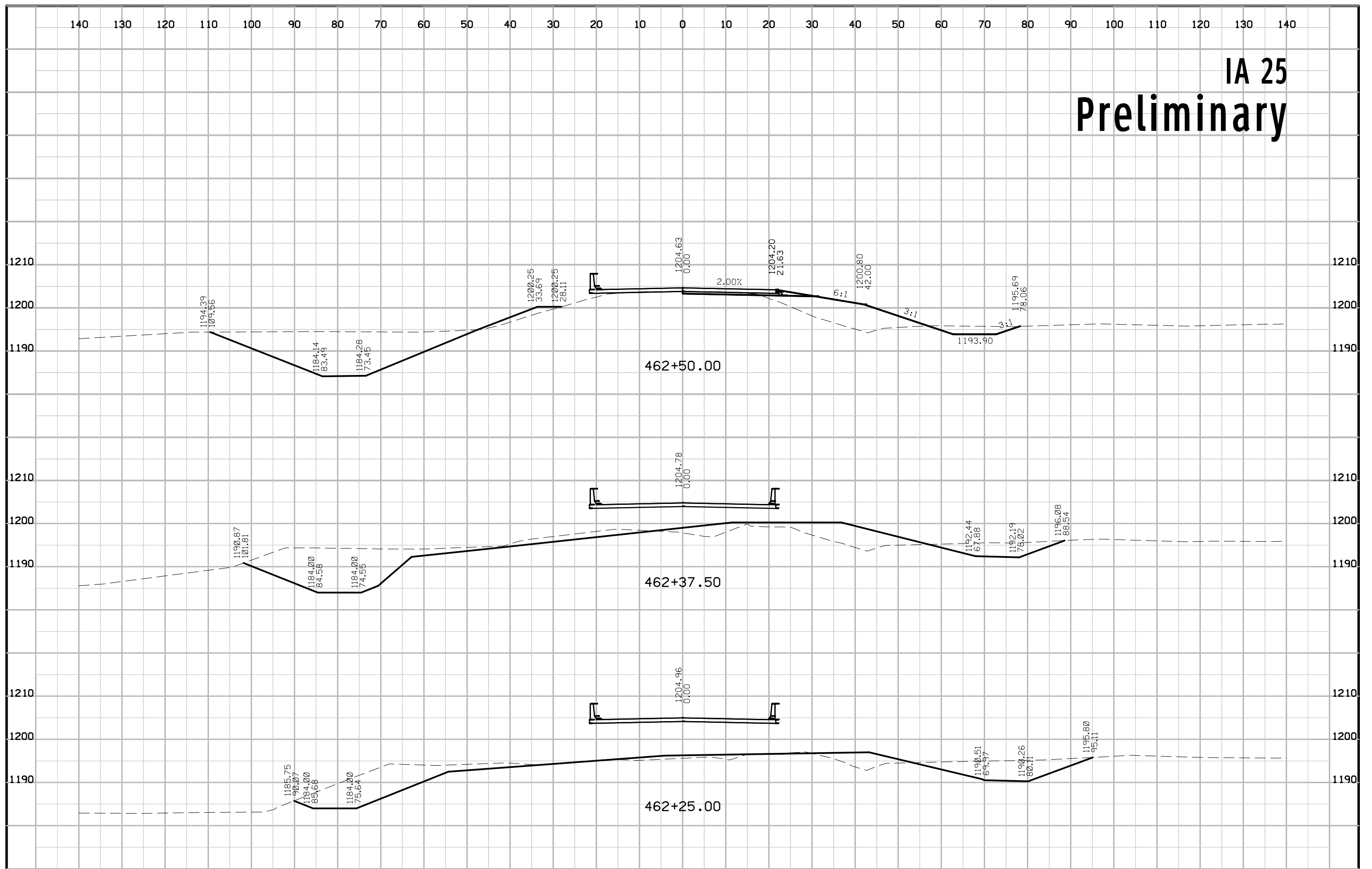
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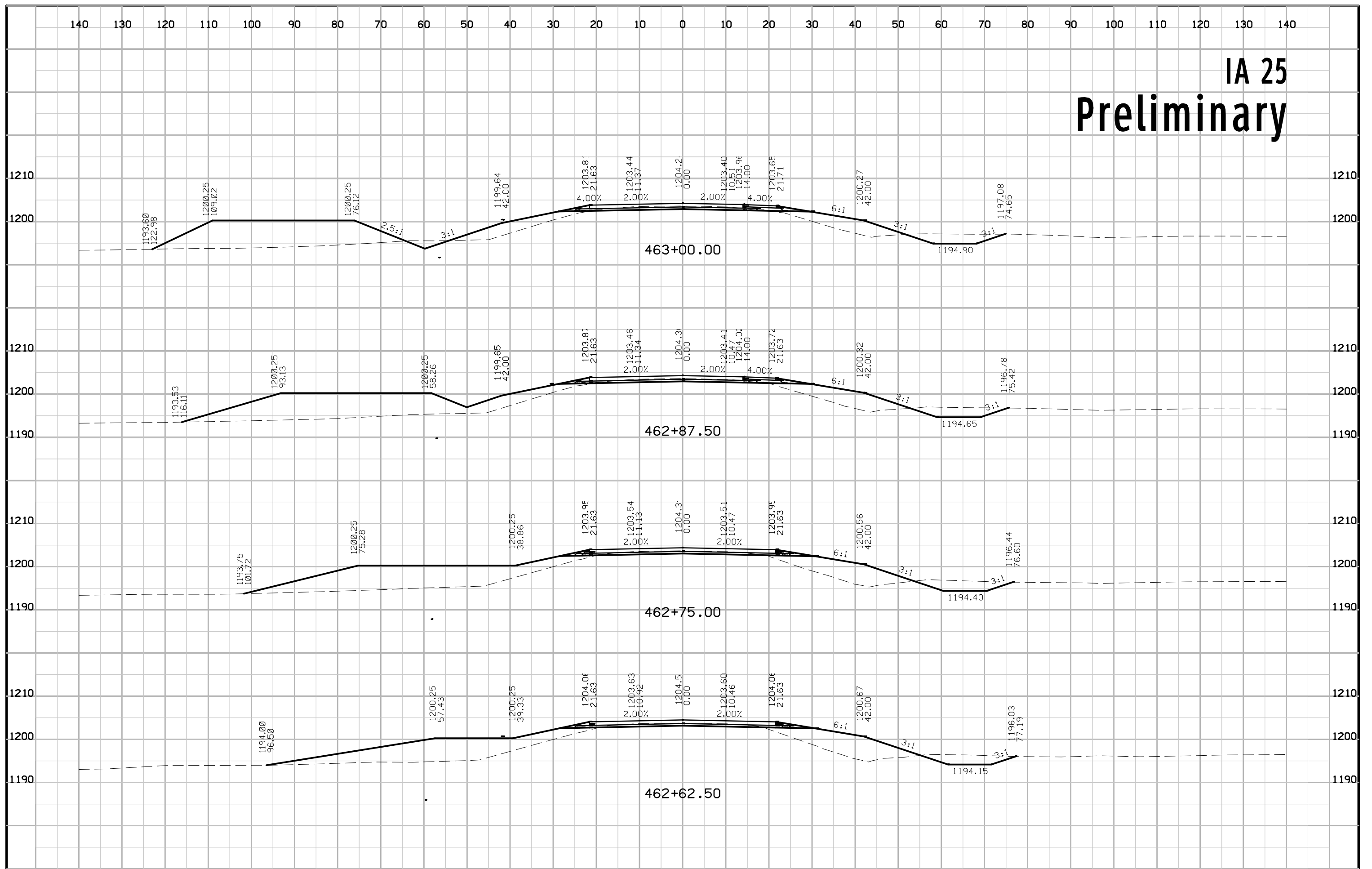
# IA 25 Preliminary



# IA 25 Preliminary

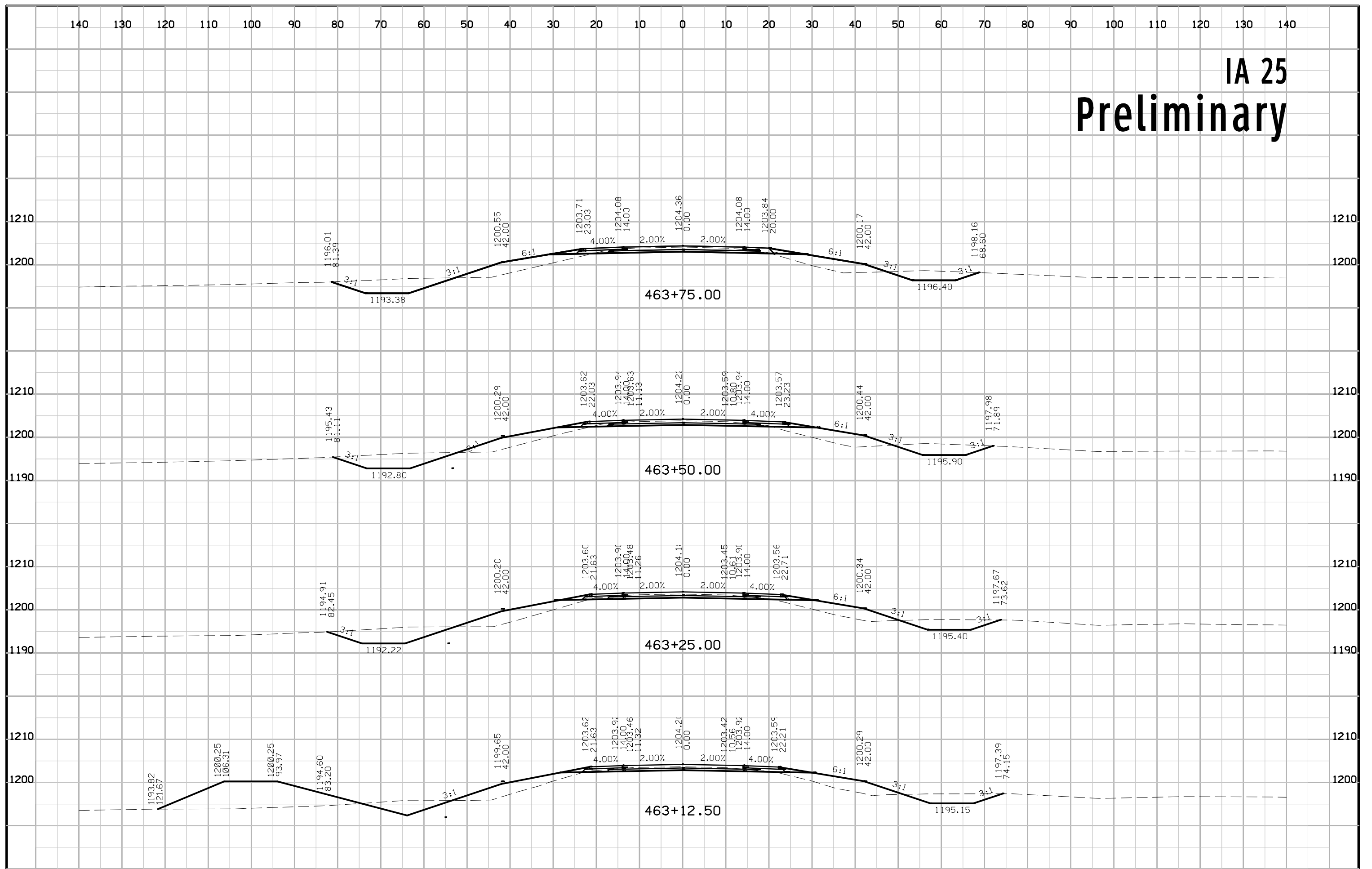


# IA 25 Preliminary

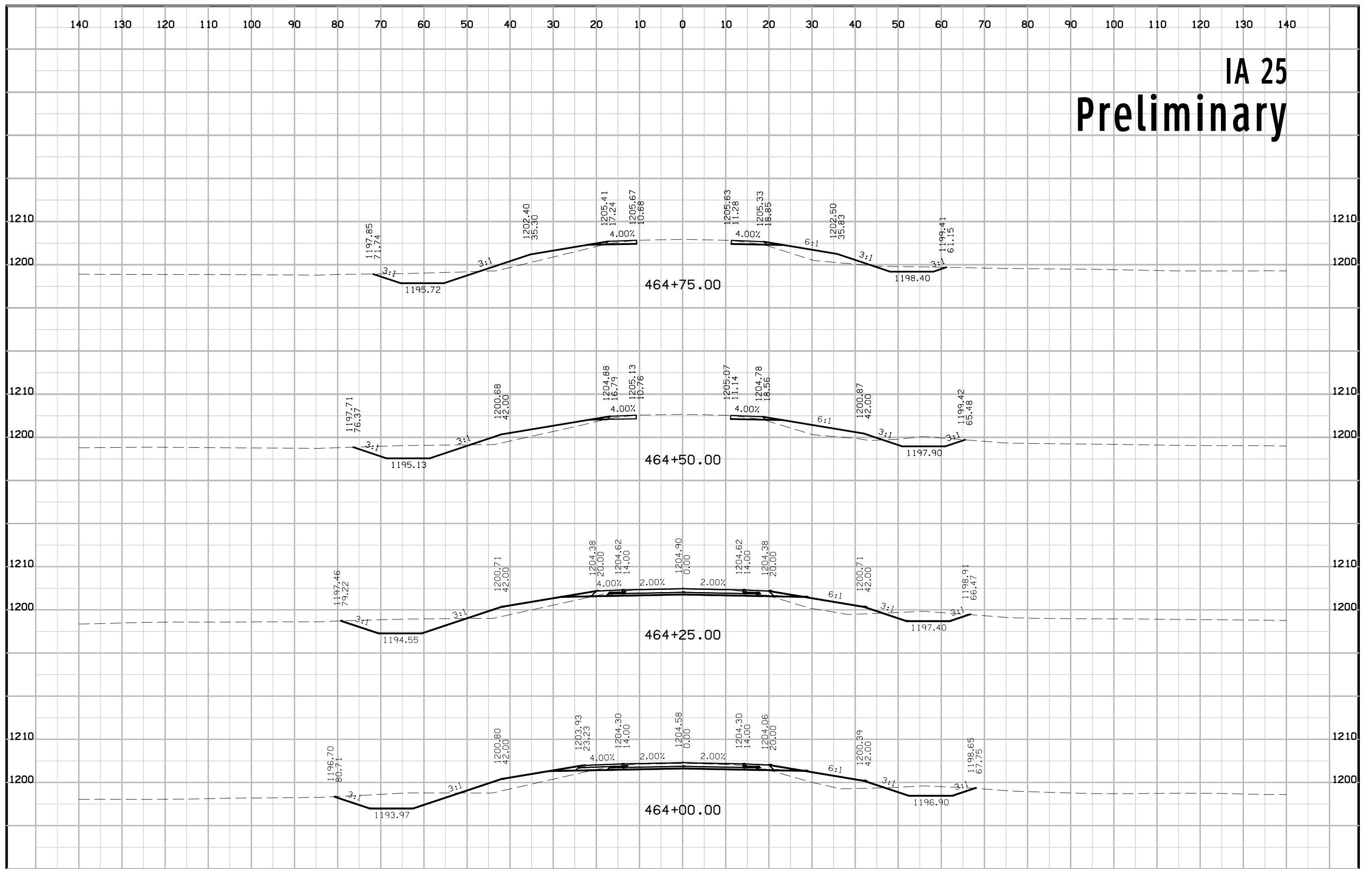




# IA 25 Preliminary



# IA 25 Preliminary



# IA 25 Preliminary

