BUENA VISTA Co. RCB Culvert Replacement-Single Box
BRF-003-2(63)--38-11
LETTING DATE 12-19-2017

IOWA DOT

*Highway Division*

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

# BUENA VISTA COUNTY

## RCB Culvert Replacement-Single Box

**Ditch 3.3 miles E of US 71**

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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

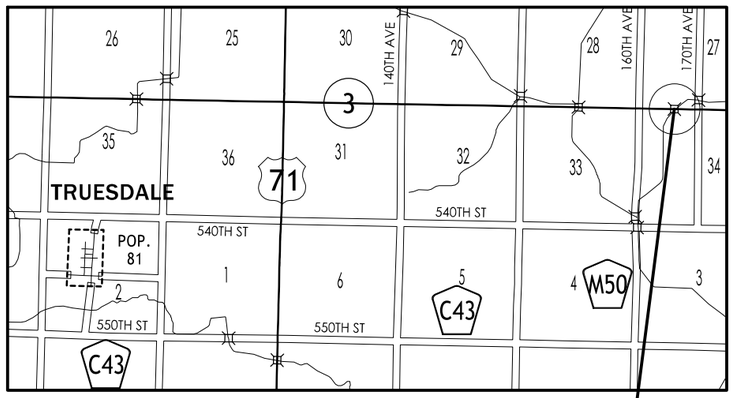
IOWA ONE CALL
1-800-292-8989 811
Know what's below. Call before you dig.
www.iowaonecall.com

REVISIONS

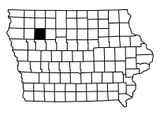
| TOTAL |
|---|
| PROJECT IDENTIFICATION NUMBER |
| 13-11-003-010 |
| PROJECT NUMBER |
| BRF-003-2(63)--38-11 |
| R.O.W. PROJECT NUMBER |
| NHSN-003-2(64)--2R-11 |

**INDEX OF SHEETS**






Project Location
M.P. 84.90
F.H.W.A. #16230



**DESIGN DATA RURAL**

| | | |
|---|---|---|
| 2018 AADT | 1800 | V.P.D. |
| 2038 AADT | 2400 | V.P.D. |
| 20-- DHV | -- | V.P.H. |
| TRUCKS | 33 | % |
| Total Design ESALs | -- | |

**INDEX OF SEALS**

| SHEET NO. | NAME | TYPE |
|---|---|---|
| A.1 | X | Primary Signature Block |
| | | |
| X | X | X |
| | | |
| | | |
| | | |
| | | |

**PRELIMINARY PLANS**

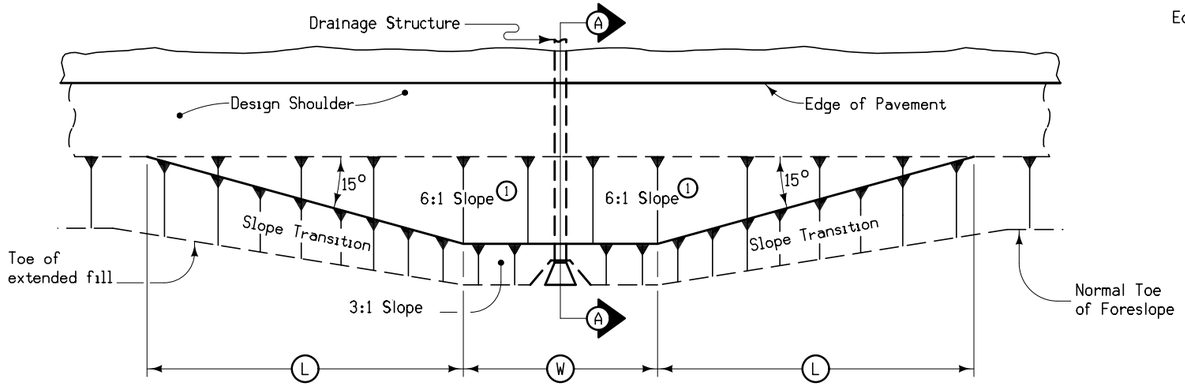
Subject to change by final design.

D5 PLAN – Date: 03-04-2016

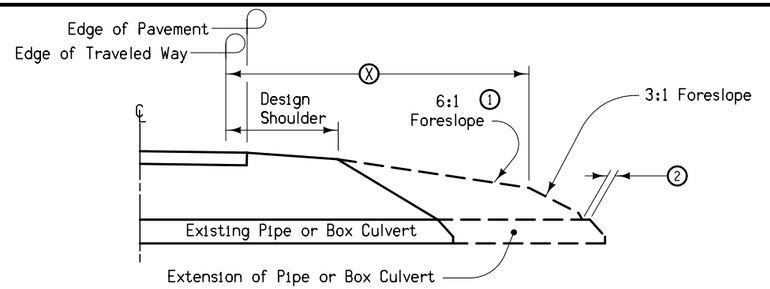
| FILE NO. 31295 | ENGLISH | DESIGN TEAM J1a \ Romsey \ Campbell | BUENA VISTA COUNTY | PROJECT NUMBER BRF-003-2(63)--38-11 | SHEET NUMBER A.1 |
|---|---|---|---|---|---|

4:19:22 PM 3/2/2016 examples pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\1100301013\Design\11003063A01.sht

4311
MODIFIED




PLAN VIEW




SECTION A-A

| STRUCTURE LOCATION | | Ⓦ | Ⓛ | Ⓧ |
|---|---|---|---|---|
| STATION | SIDE | Feet | Feet | Feet |
| 174+22.01 | Lt. | 60.30 | 82.10 | 30.00 |
| 173+35.74 | Rt. | 60.30 | 82.10 | 30.00 |
| | | | | |
| | | | | |

Notes:

At locations where an extended or newly constructed drainage structure extends beyond the normal foreslope cover, the foreslope shall be flattened as indicated so as to cover the structure. Minimum earth cover is 6".

① 6:1 Maximum - Slope may be flatter.
② 6" Minimum for pipe installations or to top of headwall on R.C.B.
Ⓦ = Pipe or R.C.B. width plus 20 feet each side.
Ⓧ = Clear Zone.

# DETAILS OF BARNROOF FORESLOPE AT DRAINAGE STRUCTURE

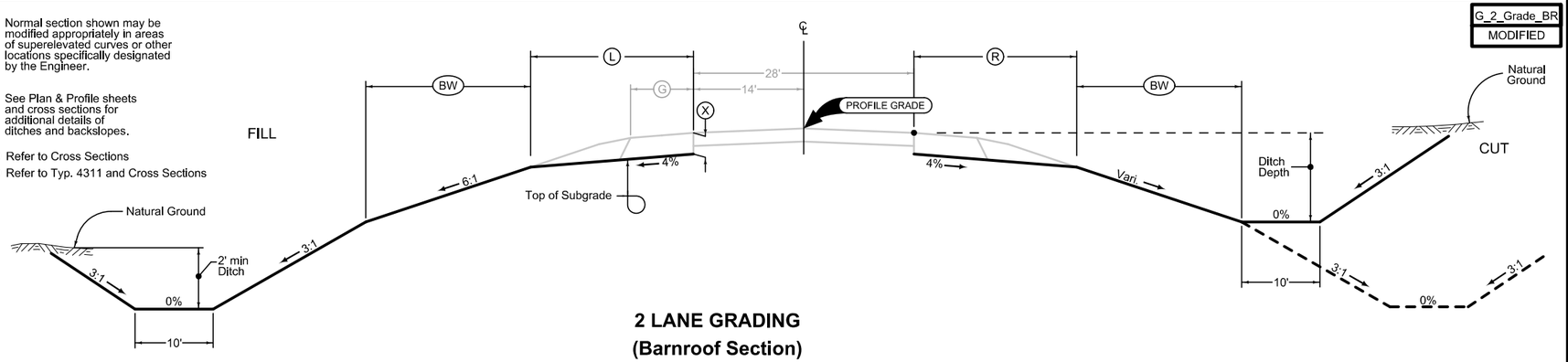
| LOCATION | | | DIMENSIONS | | | |
|---|---|---|---|---|---|---|
| ROAD IDENTIFICATION | STATION TO STATION | | Ⓛ Feet | Ⓡ Feet | Ⓧ Inches | Ⓑⓦ Feet |
| Ia. 3 | 173+00.00 | 175+30.00 | Vari. ① | Vari. ① | 6 | ② |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

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.

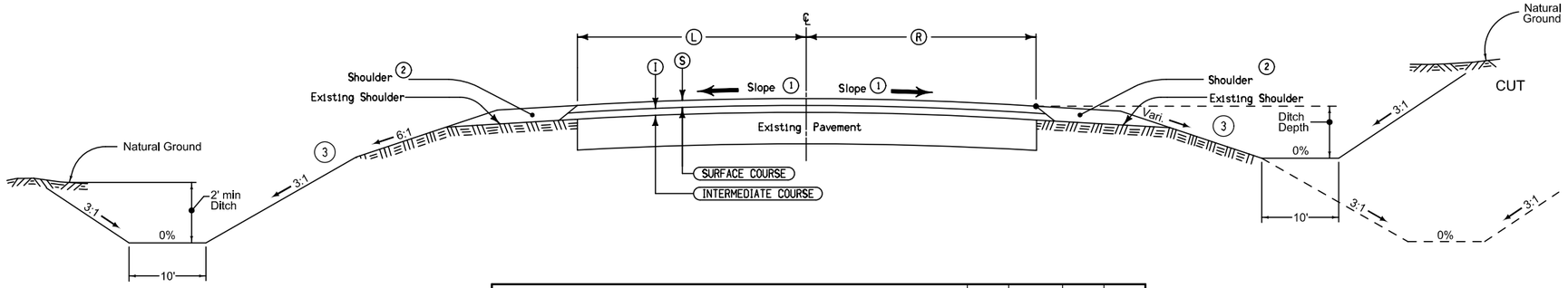
① Refer to Cross Sections
② Refer to Typ. 4311 and Cross Sections

G_2_Grade_BR
MODIFIED




2 LANE GRADING
(Barnroof Section)

2602
Modified




Notes:

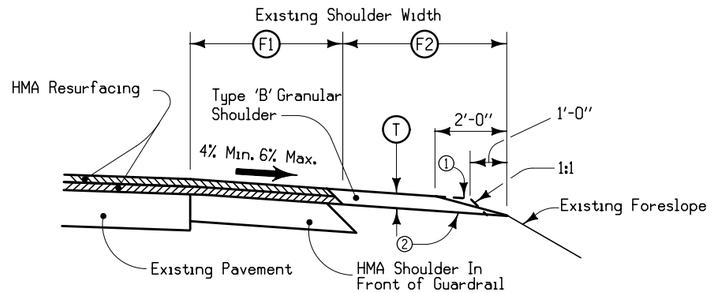
1. Match finished slope to existing pavement, except that the maximum allowable slope is 3.0 %, minimum allowable slope is 2.0 %. Section may be modified as directed by the Engineer through areas of special shaping.

   Refer to tabulation listing of superelevated curves and Standard Road Plans for additional requirements through superelevated curves.
2. Refer to shoulder typicals
3. Refer to Typical 4311 and cross sections for slope transitions.

## TYPICAL CROSS SECTION HMA RESURFACING

| LOCATION | | | S | I | L | R |
|---|---|---|---|---|---|---|
| ROAD IDENTIFICATION | STATION TO STATION | | Inches | Inches | Feet | Feet |
| Ia. 3 | 171+50.00 | 173+00.00 | 1.5 | 0.0-1.5 | 14.0 | 14.0 |
| Ia. 3 | 173+00.00 | 175+30.00 | 1.5 | 1.5 | 14.0 | 14.0 |
| Ia. 3 | 175+30.00 | 176+80.00 | 1.5 | 1.5-0.0 | 14.0 | 14.0 |
| | | | | | | |

7135
Modified



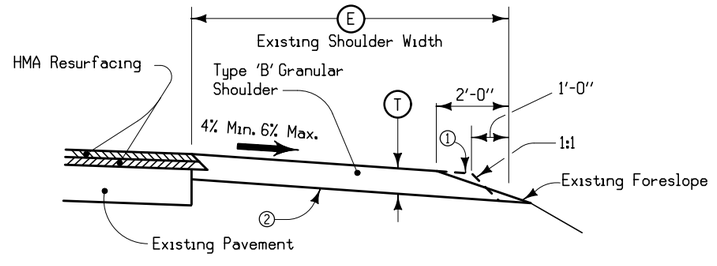

1. Place and compact material to the dashed lines; then blade and shape to foreslope that portion above the solid line in the outer 2' and roll with loaded truck tire.
2. Existing shoulder surface to be shaped to a uniform cross slope prior to placing granular shoulder material. Shape to ensure the thickness of the granular shoulder material is not less than the thickness of the resurfacing.

## HMA SHOULDER RESURFACING AND TYPE 'B' GRANULAR SHOULDER

ADJACENT TO HOT MIX ASPHALT RESURFACING

| LOCATION | | | SIDE | T | F1 | F2 |
|---|---|---|---|---|---|---|
| ROAD IDENTIFICATION | STATION TO STATION | | | Inches | Feet | Feet |
| Ia. 3 | 172+37.36 | 172+57.43 | Rt. | 3 | 4 | 2 |
| Ia. 3 | 172+57.43 | 173+35.11 | Rt. | 3 | 4-2 | 2-4 |
| Ia. 3 | 173+87.05 | 174+02.18 | Rt. | 3 | 2 | 4 |
| Ia. 3 | 174+02.18 | 174+40.00 | Rt. | 3 | 2-3.5 | 4-2.5 |
| Ia. 3 | 174+40.00 | 174+86.23 | Rt. | 3 | 3.5-5 | 2.5-5 |
| Ia. 3 | 172+67.17 | 173+30.51 | Lt. | 3 | 5-2 | 6-4 |
| Ia. 3 | 173+30.51 | 173+64.90 | Lt. | 3 | 2 | 4 |
| Ia. 3 | 174+16.99 | 174+39.58 | Lt. | 3 | 2 | 4 |
| Ia. 3 | 174+39.58 | 174+77.64 | Lt. | 3 | 2-6 | 4-0 |
| Ia. 3 | 174+77.64 | 175+55.00 | Lt. | 3 | 6 | 0 |
| Ia. 3 | 175+55.00 | 176+00.40 | Lt. | 3 | 6 | 0-7 |
| | | | | | | |

7135
10-15-13




1. Place and compact material to the dashed lines; then blade and shape to foreslope that portion above the solid line in the outer 2' and roll with loaded truck tire.
2. Existing shoulder surface to be shaped to a uniform cross slope prior to placing granular shoulder material. Shape to ensure the thickness of the granular shoulder material is not less than the thickness of the resurfacing.

## TYPICAL SECTION FOR TYPE 'B' GRANULAR SHOULDER

ADJACENT TO HOT MIX ASPHALT RESURFACING

| LOCATION | | | SIDE | T | E |
|---|---|---|---|---|---|
| ROAD IDENTIFICATION | STATION TO STATION | | | Inches | Feet |
| Ia. 3 | 171+50.00 | 171+85.00 | Rt. | 6 | 9.5-6 |
| Ia. 3 | 171+85.00 | 172+37.36 | Rt. | 6 | 6 |
| Bridge (FHWA 016230) | 173+35.11 | 173+87.05 | Rt. | 6 | 5 |
| Ia. 3 | 174+86.23 | 176+80.00 | Rt. | 6 | 10-11 |
| Ia. 3 | 171+50.00 | 172+67.17 | Lt. | 6 | 10-11 |
| Bridge (FHWA 016230) | 173+64.90 | 174+16.99 | Lt. | 6 | 5 |
| Ia. 3 | 176+00.40 | 176+55.48 | Lt. | 6 | 14-10 |
| Ia. 3 | 176+55.48 | 176+80.00 | Lt. | 6 | 10 |
| | | | | | |
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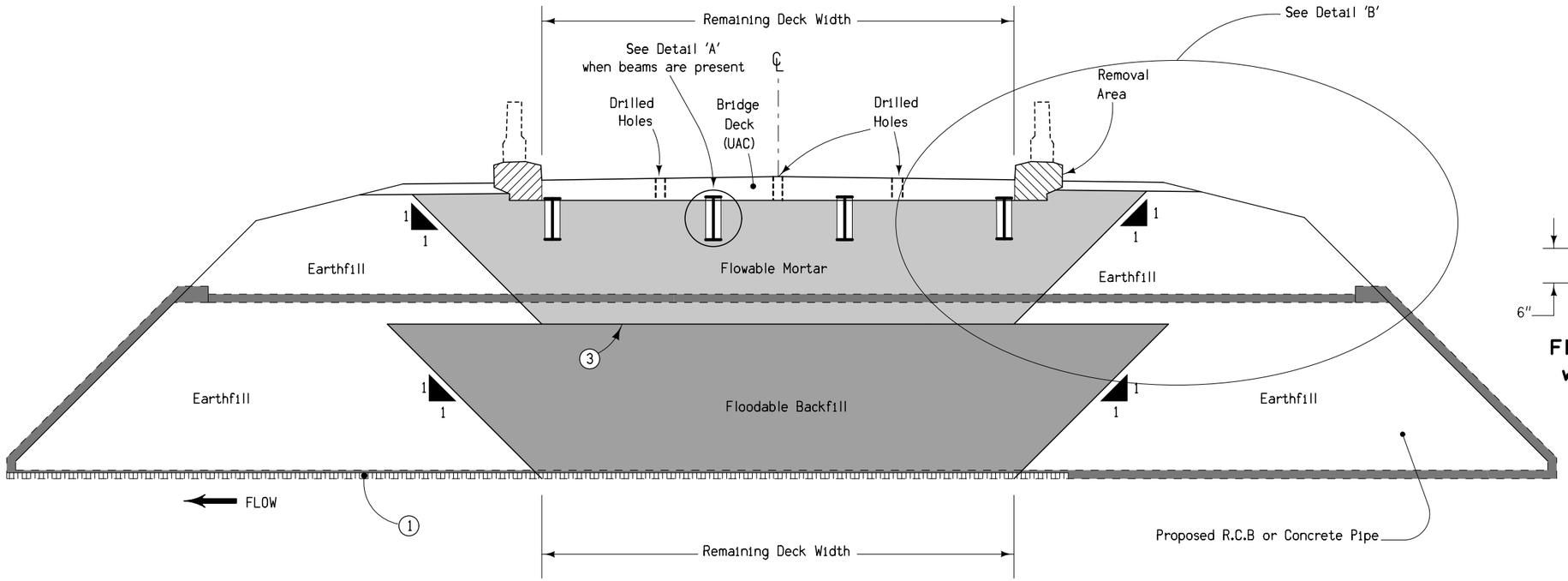
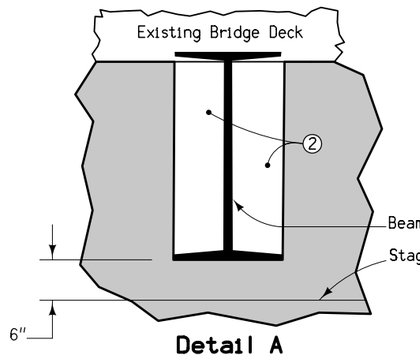
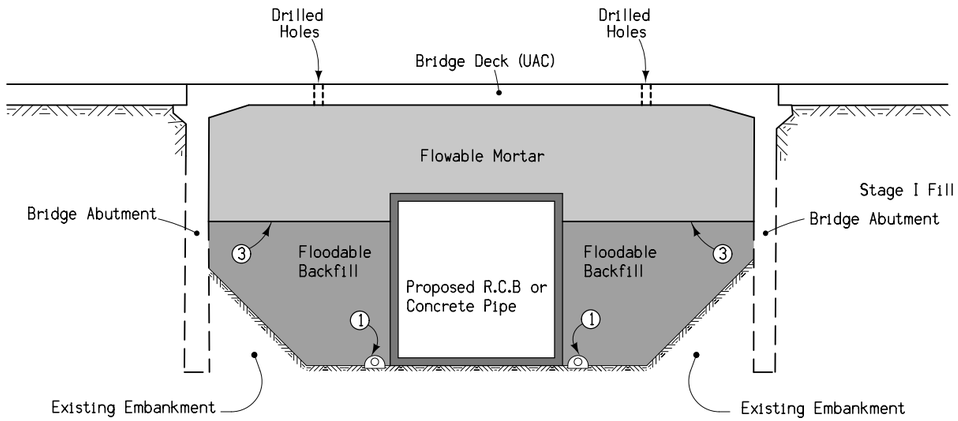
| | | | | | |

4317
10-16-12

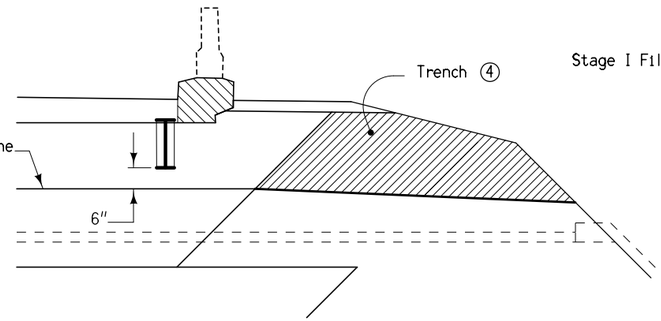


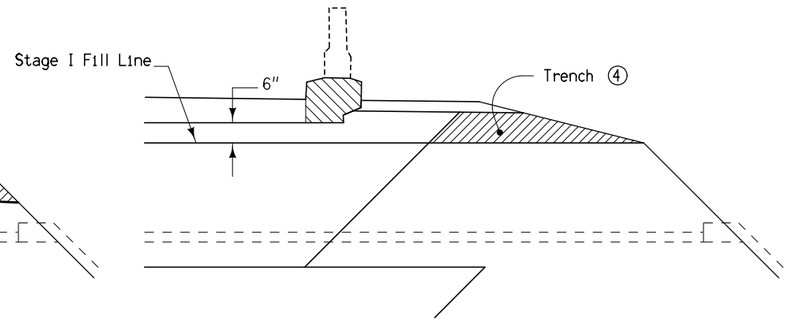

**Detail A**
**Flange Filler Material Area when beams are present**




**Section along Centerline**



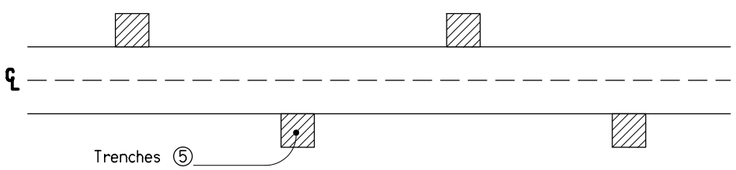

**Detail B (Beam Bridge)**




**Detail B (Slab Bridge)**

Denotes pay limits for flowable mortar

Denotes pay limits for flooded backfill




**Trench Layout**

① 4" Subdrain at flowline elevation of culvert with 4" cover of porous backfill.

② Place Flange Filler Material to fill pocket area between flanges to prevent flowable mortar from building up. Flange Filler Material is incidental to flowable mortar.

③ Fill void with the maximum amount of Floodable Backfill possible. Distance from Floodable Backfill to bridge beams (when present) or bridge deck shall not exceed 5'.

④ Cut trenches in the soil plug to provide drainage for the flowable mortar. Backfill the trenches with open graded crushed stone, gravel, or recycled PCC to allow water to drain. Backfill material is incidental to flowable mortar.

⑤ Place trenches at 20' spacing with a minimum of two trenches on each side of the roadway.

# FILL FOR CULVERT USED IN BRIDGE REPLACEMENTS

## SURVEY SYMBOLS

- FW Wire Fence
- GDL Guard Rail Steel
- BRG Bridge
- PIP Pipe Culvert
- OUT Tile Outlet
- TIL Tile Line
- LIN Miscellaneous Line
- TLNL Tree Line Left
- TLNR Tree Line Right
- PRO Profile Shot
- ENU Edge Unpaved Entrance & Parking
- EP Edge of Paved Roads (ML or SR)
- ENT Centerline BL of Entrance
- DU Centerline Draw or Stream (Up)
- SNP Unpaved Shoulder
- BNK Stream Bank
- D Centerline Draw or Stream (Down)
- SP Stream Profile
- CU Back of Curb
- GU Gutter In Front of Curb
- EW Edge of Water
- SOP Size of Pipe or Culvert
- TW Top of Water
- BD Bridge Deck
- BCL Bridge Centerline
- SBR Size of Bridge
- BLS Bridge Low Steel
- BL Topo Breakline
- C Centerline BL of Road (ML or SR)
- MM Mile Marker Post
- W – Iowa Lakes Regional Water (QLD)
- FO – Century Link (QLD)

## UTILITY LEGEND

This ia a POINT 25 Project and is subject to the provisions of IAC 761-114.25

- W – Iowa Lakes Regional Water
- FO – CenturyLink


Iowa Lakes Regional Water
Kelly Graplar  Design Coordinator\Cadd Technician
1301 38th Avenue West  Box 555
Spencer, IA. 5130-0555
712-262-8847
kelly.graplar@ilrw.org

CenturyLink
Carroll Wheaton  Manager
7404 N 78th Street
Omaha, NE. 68122
402-572-5887
Carroll.Wheaton@centurylink.com


## 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 — Survey Line
- 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)**

Sta. 174+34.80, 106.30' Lt.
Install 24" x 39' DR-651 CMP RDWY Pipe
w/ 2 Aprons
Inlet Sta. 174+09.70, 131.40' Lt, F.L.= 1274.60
Outlet Sta. 174+42.22, 98.88' Lt, F.L.= 1274.00

Lincoln TWP.
T-92N R-36W
SEC. 27

Sta. 171+50.00
Begin Project
(ML_003)

24" X 82.30 C.M.P.
(Remove)

Sta. 174+32.87, 100.55' Lt.
18" X 30.53 CMP
D.A. = 6 A - F
(Remove)

Ditch

Sta. 174+98.36, 44.07 Lt.
24" X 20.19 CMP
D.A. = 4 A - R
(Remove)

Sta. 174+99.00, 58.00' Lt.
Install 24" x 99' DR-651 CMP RDWY Pipe
w/ 1 Inlet Apron
Inlet Sta. 175+52.31, 46.67' Lt, F.L.= 1276.70
Outlet Sta. 174+52.05, 67.98' Lt, F.L.= 1270.80

Sta. 173+17.90' 47.50' Lt.
Install 24" x 147' DR-651 CMP RDWY Pipe
w/ 1 Inlet Apron
Inlet Sta. 172+79.55, 44.14' Lt, F.L.= 1275.60
Outlet Sta. 174+29.47, 57.26' Lt, F.L.= 1274.30

Sta. 176+80.00
End Project
(ML_003)

170 175 180

FO FO FO FO

IA 3

APPROX. SEC. LINE APPROX. SEC. LINE APPROX. SEC. LINE

24" X 25.31 Conc Pipe

Sta. 172+42.77, 43.73 Rt.
15" X 59.44 CMP W/ FLAP GATE
D.A. = 3 A - F
(Remove)

Sta. 174+00.45, 43.55 Rt.
24" X 20.55 CMP
D.A. = 7 A - R
(Remove)

24" X 28.78 Conc Pipe

Sta. 172+59.00, 67.00' Rt.
Install 24" x 37' DR-651 CMP RDWY Pipe
w/ 2 Aprons
Inlet Sta. 172+28.89, 52.31' Rt, F.L.= 1276.40
Outlet Sta. 172+68.44, 71.60' Rt, F.L.= 1275.50

Drainage

Sta. 173+85.20, 51.00' Rt.
Install 24" x 103' DR-651 CMP RDWY Pipe
w/ 1 Inlet Apron
Inlet Sta. 174+34.51, 46.69' Rt, F.L.= 1276.00
Outlet Sta. 173+28.42, 55.97' Rt, F.L.= 1274.10

Sta. 173+76.07
36 X 30 I-Beam Brg Skew 45°
D.A. = 9.5 Sq Miles - F From Plans
Remove Existing Concrete Bridge Barrier, Curb and Guardrail

Sta. 173+78.17
Build 12' x 11' x 122' RCB
Skew = 45° Lt. Ahd.
F.L. = Lt. 1265.00
Rt. 1264.90
Design No. 218

SEC. 34

0 FEET 50

1295 1290 1285 1280 1275 1270 1265 1260

Sta. 173+00
End Runout
Begin 3" HMA
Resurfacing

Sta. 175+30.00
End 3" HMA
Resurfacing
Begin Runout

Tie In
Sta. 171+50.00
Begin 50'-1" Runout

Tie In
Sta. 176+80.00
End 50'-1" Runout

+82 Rt.
1276.20

-0.21%
Rt.
Ditch
Grade

+30 Lt.
1276.10

-1.00%
Lt.
Ditch
Grade

+80 Lt.
1275.60

+29 Rt.
1276.10

+34 Rt.
1276.00

+2.42%
Rt.
Ditch Grade

+50 Rt.
1278.80

+3.44%
Lt.
Ditch
Grade

+00 Lt.
1278.35

+52 Lt.
1276.70

Lt
Rt

U.A.C.
U.A.C.
Ditch
Grade
Ditch
Grade
Ditch Grade
Ditch
Grade
U.A.C.
U.A.C.

170 +50 171 +50 172 +50 173 +50 174 +50 175 +50 176 +50 177 +50

| FILE NO. 31295 | ENGLISH | DESIGN TEAM Jia \ Romsey \ Campbell | BUENA VISTA COUNTY | PROJECT NUMBER BRF-003-2(63)--38-11 | SHEET NUMBER D.2 |
|---|---|---|---|---|---|

10:27:06 AM 3/3/2016 examples pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\1100301013\Design\11003063D02.sht

# Survey Information

Butler County
BRF-57-1(25)-39-12
Bridge Replacement over Phelps Creek
IA 57 0.3 miles east of east jct. of IA 14 at Parkersburg
PIN 12-12-057-020
Sap-0830

General Information

Measurement units for this survey are US survey feet. This survey is for a proposed Bridge replacement project over Phelps Creek on IA 57 at Parkersburg. Project datum and control information is provided by Design Survey Office. This project is a Partial DTM with Photo control.

Vertical Control

Vertical datum for this survey is NAVD88 computed using Geoid 12A. Datum was transferred to the project at points 100 and 102 from IaRTN reference stations using a static post processed network survey. BM 500 was located relative to Control points 100 and 102.

Horizontal Control

The project coordinate system is modified Iowa State Plane North Zone (U.S. Survey Feet) scaled around Pt. 102 at 3513900.962 N, 5120477.557 E, 983.635 EL. Horizontal datum is NAD83(2011) (Epoch 2013.00). Coordinates were transferred to the project at points 100 and 102 from IaRTN reference stations using a static post processed network survey. Pt. 101 was located relative to Point 100 and 102.

1/Combined Scale Factor of project= 1.000095256429

The 1/Combined Scale Factor, scaled about Pt. 102, may be used for GNSS stakeout and location to survey in the Project Coordinate system.

Alignment Information

The horizontal alignment for this survey is a retrace of 1929 Paving Plan 167-F for U.S.Road No.20 from Parkersburg east to the Grundy County Line. Survey stationing was equated to the plan PI at STA 100+00.0 and run ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PI Sta. 83+59.4 Back = PI Sta. 100+00.0 Ahead 1929 Paving Plan 167-F = Survey PI Sta. 100+00.00

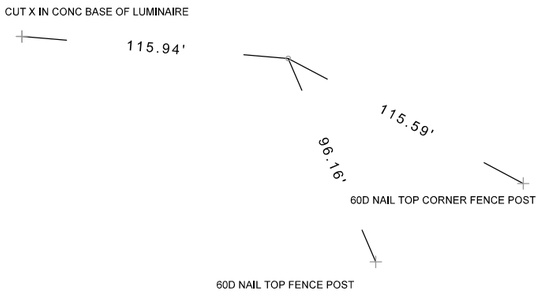
PI Sta 117+80.1 Paving Plan 167-F = Survey PI Sta.117+80.49

PI Sta. 134+06.8 Paving Plan 167-F = Survey PI Sta. 134+06.91

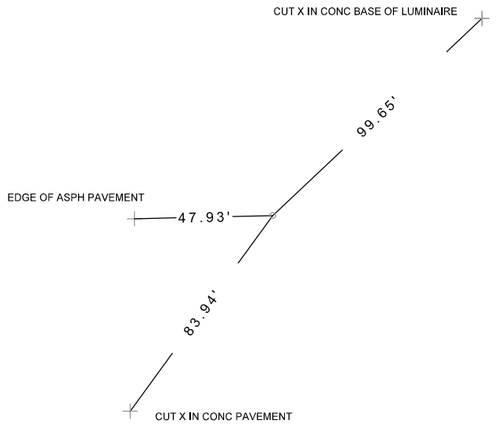
# VERTICAL CONTROL

| Point | North | East | Elevation | Station | Offset | Feature | Description |
|---|---|---|---|---|---|---|---|
| 100 | 3671641.253 | 5117629.417 | 986.157 | 100+62.91 | 104.379 | CP | FD 5/8IN RE-ROD |
| 101 | 3671700.080 | 5117817.494 | 983.909 | 102+51.21 | 46.278 | CP | SET 5/8IN RE-ROD |
| 102 | 3671724.046 | 5120477.557 | 983.635 | 129+11.11 | 39.879 | CP | SET FENO MONUMENT |

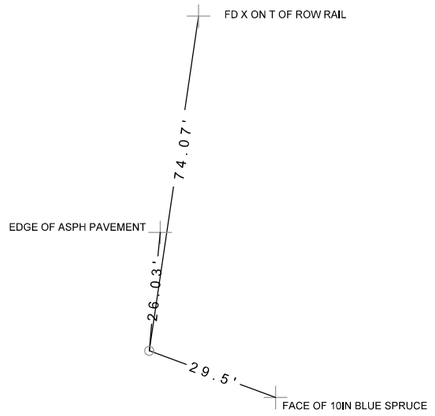
C.P. STA. 102+51.21, RT. 46.27
C.P. 101, SET 5/8IN RE-ROD
N 3671700.080, E 5117817.494




C.P. STA. 100+62.91, RT. 104.379
C.P. 100, FD 5/8IN RE-ROD
N 3671641.253, E 5117629.417




C.P. STA. 129+11.11, RT. 39.87
C.P. 102, SET FENO MONUMENT
N 3671724.046, E 5120477.557




| FILE NO. 31295 | ENGLISH | DESIGN TEAM J1a \ Romsey \ Campbell | BUENA VISTA COUNTY | PROJECT NUMBER BRF-003-2(63)--38-11 | SHEET NUMBER G.2 |
|---|---|---|---|---|---|

# ALIGNMENT COORDINATES

101-16
10-20-09

| Name | Location | Point on Tangent | | | Begin Spiral | | | Begin Curve | | | Simple Curve PI or Master PI of SCS | | | End Curve | | | End Spiral | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Station | Coordinates | | Station | Coordinates | | Station | Coordinates | | Station | Coordinates | | Station | Coordinates | | Station | Coordinates | |
| | | | Y (Northing) | X (Easting) | | Y (Northing) | X (Easting) | | Y (Northing) | X (Easting) | | Y (Northing) | X (Easting) | | Y (Northing) | X (Easting) | | Y (Northing) | X (Easting) |
| 204 | Ia. 3 | 78+69.00 | 3,740,104.87 | 4,485,644.32 | | | | | | | | | | | | | | | |
| 205 | Ia. 3 | 184+41.26 | 3,739,910.69 | 4,496,214.79 | | | | | | | | | | | | | | | |

| Buena Vista | ROW: NHSN-003-2(64)--2R-11 | | | | PIN | 13-11-003-010 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ditch 3.3 miles E of US 71 | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | STATE | | | COUNTY | | | CITY | | | | BORROW | | | | | | | |
| PARCEL NO. | OWNER NAME | FEE | EASE | | FEE | EASE | | FEE | EASE | | EXCESS | FEE | T.E. | MITIGATION | OTHER | HOUSE | BUILDING(S) | A/C ONLY | TOTAL ACQ. |
| 1 | Debra Nelson - Fee | | 0.58 AC | | | | | | | | | | | | | | | | |
| 1D | Drainage District #34 Lateral #3 - Fee | | | | | | | | | | | | | | | | | | |
| 2 | Dale Boettcher - Fee | | 0.36 AC | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| 3 Parcels | "TOTALS | 0 AC | 0.94 AC | | 0 AC | 0 AC | | 0 AC | 0 AC | | 0 AC | 0 AC | 0 AC | 0 AC | | | | | |
| | | 0 SF | | 0 SF | 0 SF | | 0 SF | 0 SF | | 0 SF | 0 SF | | | | | | | | |

(1D)

## DRAINAGE DISTRICT #34
## LATERAL #3

(1)

## DEBRA NELSON

172+40
℄60'±EX.R/W

174+00
℄155'

175+20
℄175'

176+05
℄60'±EX.R/W

Sta. 174+34.80, 106.30' Lt.
Install 24" x 39' DR-651 CMP RDWY Pipe
w/ 2 Aprons
Inlet Sta. 174+09.70, 131.40' Lt, F.L.= 1274.60
Outlet Sta. 174+42.22, 98.88' Lt, F.L.= 1274.00

Sta. 171+50.00
Begin Project
(ML_003)

(Remove)
Sta. 173+17.90' 47.50' Lt.
Install 24" x 147' DR-651 CMP RDWY Pipe
w/ 1 Inlet Apron
Inlet Sta. 172+79.55, 44.14' Lt, F.L.= 1275.60
Outlet Sta. 174+29.47, 57.26' Lt, F.L.= 1274.30

(Remove)
Sta. 174+98.36, 44.07 Lt.
" X 20.19 CMP
D.A. = 4 A - R
(Remove)

Lincoln TWP.
T-92N R-36W
SEC. 27

Sta. 174+99.00, 58.00' Lt.
Install 24" x 99' DR-651 CMP RDWY Pipe
w/ 1 Inlet Apron
Inlet Sta. 175+52.31, 46.67' Lt, F.L.= 1276.70
Outlet Sta. 174+52.05, 67.98' Lt, F.L.= 1270.80

Sta. 176+80.00
End Project
(ML_003)

170

180

FO

APPROX. SEC. LINE

IA 3

24" X 25.31 Conc Pipe

+65.74 Field Ent. (U.A.C.)

Sta. 172+42.77, 43.73 Rt.
15" X 59.44 CMP W/ FLAP GATE
D.A. = 3 A - F
(Remove)

Sta. 172+59.00, 87.00' Rt.
Install 24" x 37' DR-651 CMP RDWY Pipe
w/ 2 Aprons
Inlet Sta. 172+28.89, 52.31' Rt, F.L.= 1276.40
Outlet Sta. 172+68.44, 71.60' Rt, F.L.= 1275.50

(Remove)
Sta. 173+85.20, 51.00' Rt.
Install 24" x 103' DR-651 CMP RDWY Pipe
w/ 1 Inlet Apron
Inlet Sta. 174+34.51, 46.69' Rt, F.L.= 1276.00
Outlet Sta. 173+28.42, 55.97' Rt, F.L.= 1274.10

+59.19 Res. Ent. (U.A.C.)

24" X 28.78 Conc Pipe

Sta. 173+76.07
36 X 30 I-Beam Brg Skew 45°
D.A. = 9.5 Sq Miles - F From Plans
Remove Existing Concrete Bridge Barrier, Curb and Guardrail

Sta. 173+78.17
Build 12' x 11' x 122' RCB
Skew = 45° Lt. Ahd.
F.L. = Lt. 1265.00
Rt. 1264.90
Design No. 218

SEC. 34

171+90
℄60'±EX.R/W

172+00
℄100'

172+85
℄170'

174+50
℄60'±EX.R/W

(1D)

## DRAINAGE DISTRICT #34
## LATERAL #3

(2)

## DALE BOETTCHER &
## ROBERTA BOETTCHER

0 FEET 50

**Right of Way Design Information**

**THIS SHEET INCLUDED FOR INFORMATION ONLY**

**ROW Team: LARSON / CUVA**
**ROW #: NHSN-003-2(64)--2R-11**
**Plan Date: 5/31/16**
**Color Legend:**
- Property Lines
- Temporary Easement
- Permanent Acquisition

| | | | | | | |
|---|---|---|---|---|---|---|
| 31295 | | Jia \ Romsey \ Campbell | BUENA VISTA | BRF-003-2(63)--38-11 | H.1 | |

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108-23A
08-01-08

## TRAFFIC CONTROL PLAN

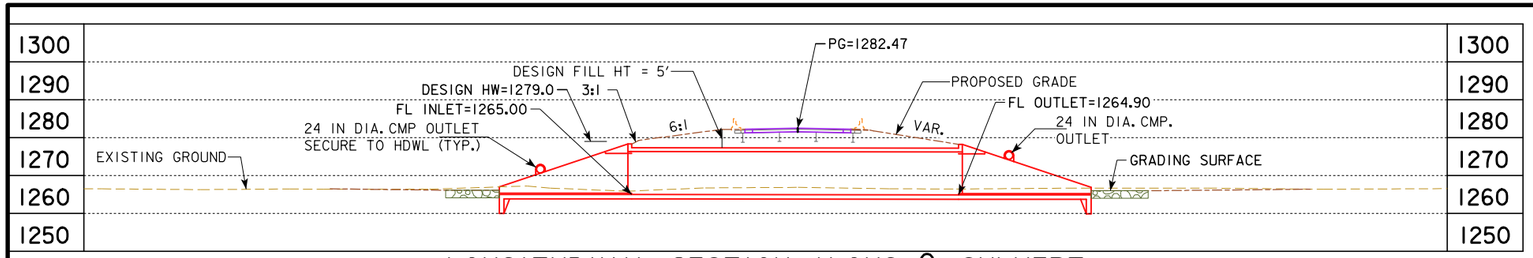
Traffic will be maintained on Ia. 3 at all times.

108-25
10-21-14

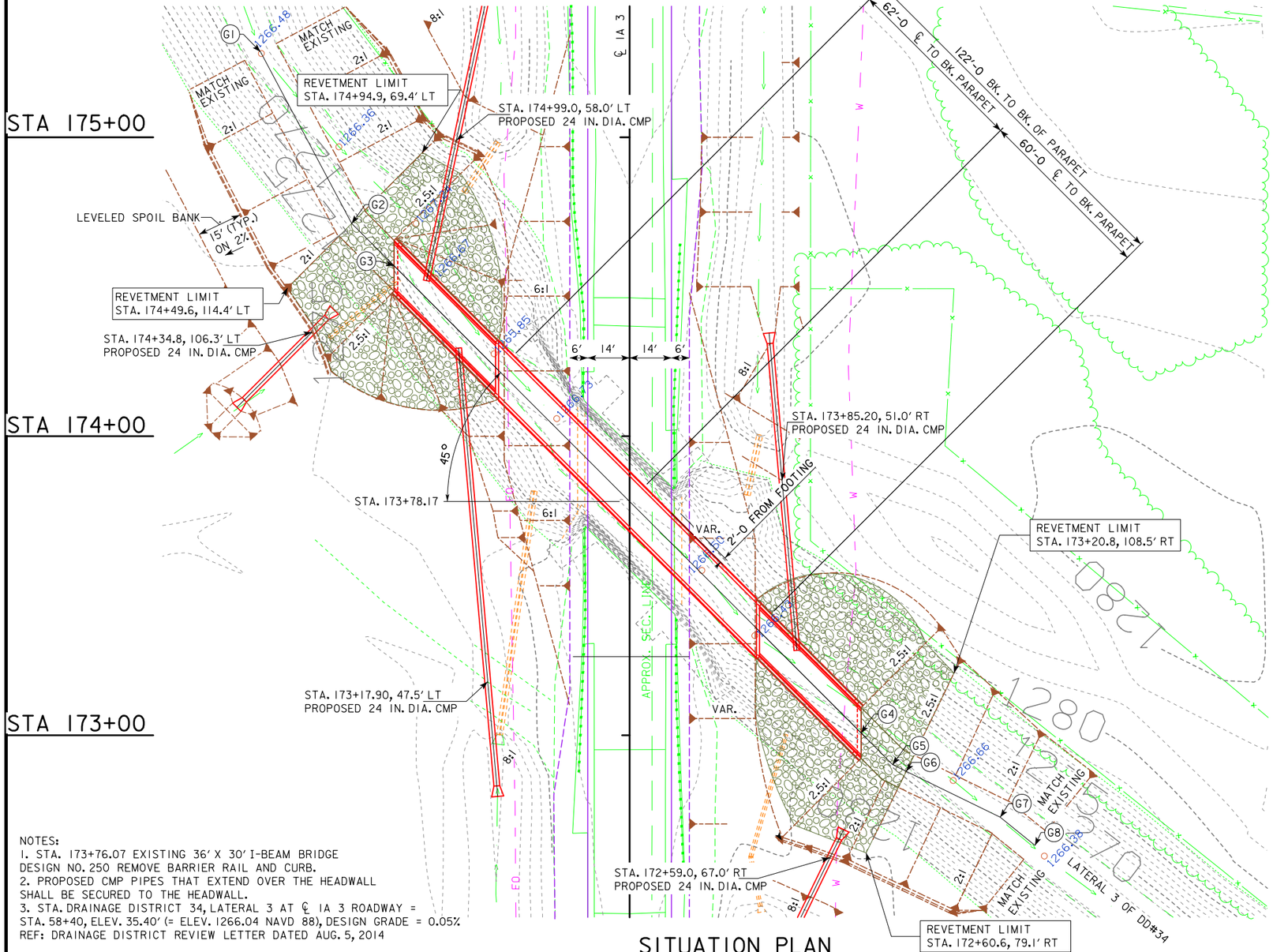
## 511 TRAVEL RESTRICTIONS

| Route | Direction | County | Location Description | Feature Crossed | Object Type | Maint. Bridge No., Structure ID, or FHWA No. | Type of Restriction | Existing Measurement | Construction Measurement | Construction Measurement as Signed | Projected As Built Measurement | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | No travel restrictions expected. | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

BENCH MARK NO. 502 - STA 173+35.50, 20.47' RT., FOUND 'X' SW WING WALL - ELEV. 1282.098




## LONGITUDINAL SECTION ALONG ℄ CULVERT




NOTES:
1. STA. 173+76.07 EXISTING 36' X 30' I-BEAM BRIDGE DESIGN NO. 250 REMOVE BARRIER RAIL AND CURB.
2. PROPOSED CMP PIPES THAT EXTEND OVER THE HEADWALL SHALL BE SECURED TO THE HEADWALL.
3. STA. DRAINAGE DISTRICT 34, LATERAL 3 AT ℄ IA 3 ROADWAY = STA. 58+40, ELEV. 35.40' (= ELEV. 1266.04 NAVD 88), DESIGN GRADE = 0.05%
REF: DRAINAGE DISTRICT REVIEW LETTER DATED AUG. 5, 2014

## SITUATION PLAN

## TRAFFIC ESTIMATE

| | |
|---|---|
| 2018 AADT | 1800 V.P.D. |
| 2038 AADT | 2400 V.P.D. |
| 20?? DHV | - V.P.H |
| TRUCKS | 33 % |
| TOTAL DESIGN ESAL's | - |

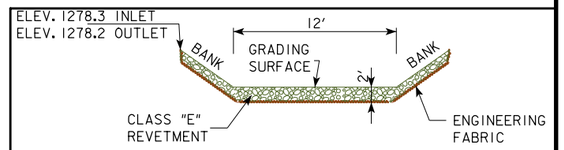
## UTILITIES LEGEND:

W IOWA LAKES REGIONAL WATER
FO CENTURYLINK

## PROFILE GRADE ON IA 3

PROFILE GRADE LINE (PGL) IS AT ℄ OF LANES.
U.A.C. EXISTING GRADE PLUS 3-INCH RESURFACE AT BRIDGE

CHANNEL GRADING CONTROL POINTS:
G1 : 175+28.54, 123.50' LT., ELEV. 1266.48
G2: 174+71.15, 92.98' LT., ELEV. 1266.11 (INLET REVET. LIMIT)
G3: 174+57.01, 78.84' LT., ELEV. 1266.10
G4: 173+00.74, 77.43' RT., ELEV. 1265.99
G5: 172+90.13, 88.03' RT., ELEV. 1265.98
G6: 172+87.94, 92.53' RT., ELEV. 1265.98 (OUTLET REVET. LIMIT)
G7: 172+72.60, 123.99' RT., ELEV. 1266.27
G8: 172+63.16, 135.64' RT., ELEV. 1266.40




TYPICAL DEFINED CHANNEL PROTECTION

## ESTIMATED REVETMENT QUANTITIES

| LOCATION | REVETMENT CL. E (TON) | ENGINEERING FABRIC (SY) | EXCAVATION (CY) |
|---|---|---|---|
| INLET | 447.9 | 472.2 | 280.0 |
| OUTLET | 467.3 | 491.5 | 292.0 |
| TOTALS | 915.2 | 963.7 | 572.0 |

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.
ASSUMES CHANNEL AND BANKS TO BE GRADED TO GRADING SURFACE PRIOR TO EXCAVATION, THEN RIPRAP PLACED.
QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.

## HYDRAULIC DATA

DRAINAGE AREA= 10 MI²
STREAM SLOPE= 2.64 FT./MI.

$Q_{50}$= 1030 CFS
MAXIMUM HEADWATER= 1279.0
OUTLET VELOCITY= 8.7 FT/SEC

$Q_{100}$= 1240 CFS
MAXIMUM HEADWATER= 1280.7

$Q_{500}$= 1750 CFS
Q OVERTOPPING= 1300 CFS
ROADWAY OVERTOP ELEV.= 1281.17
STA 171+50.00

SPOIL BANK (DIKE) GRADING
15' TOP WIDTH, SLOPE 2% LANDWARD
GRADE ELEV.'S ON CHANNEL SIDE:
NW QUAD. TOP ELEV. = 1278.6
NE QUAD. TOP ELEV. = 1281.68
SW QUAD. TOP ELEV. = 1280.45
SE QUAD. TOP ELEV. = VARIES 1281.0 TO 1280.57

## LOCATION

IA 3 OVER LATERAL 3 OF DD#34
T-92N R-36W
SECTION 27/34
LINCOLN TOWNSHIP
BUENA VISTA COUNTY
LATITUDE 42.748815° N
LONGITUDE 95.086489° W

0 ENGLISH 40
SCALE IN FEET

PRELIMINARY

DESIGN FOR 45° LA SKEW

# 12' x 11' x 122'-0 REINFORCED CONCRETE BOX CULVERT

WITH 45° HEADWALLS

## SITUATION PLAN

STATION: 173+78.17 ?

## BUENA VISTA COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF ___ FILE NO. 31295 DESIGN NO. 218

DESIGN TEAM | BUENA VISTA COUNTY | PROJECT NUMBER BRF-3-2(63)--38-11 | SHEET NUMBER V.1

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# Ia. 3
# Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

1290
1280
1270

1277.53
58.31
1275.90
53.42
1275.90
43.42
1279.71
32.00
1280.50
27.24
1280.89
23.00
1280.21
90.80
24" CMP
1275.25
122.45

172+50.00

1280.38
24.24
1280.77
20.00
1278.37
65.82
1276.11
48.93
1276.11
59.03

172+25.00

1280.25
24.24
1280.67
20.00
1279.18
29.00
1277.32
55.33
1276.16
41.75
1276.16
51.85

172+00.00

1280.13
24.24
1280.58
21.01

171+75.00

1280.08
24.10
1280.38
23.52

171+50.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

| FILE NO. 31295 | ENGLISH | DESIGN TEAM J1a \ Romsey \ Campbell | BUENA VISTA COUNTY | PROJECT NUMBER BRF-003-2(63)--38-11 | SHEET NUMBER W.1 |
|---|---|---|---|---|---|

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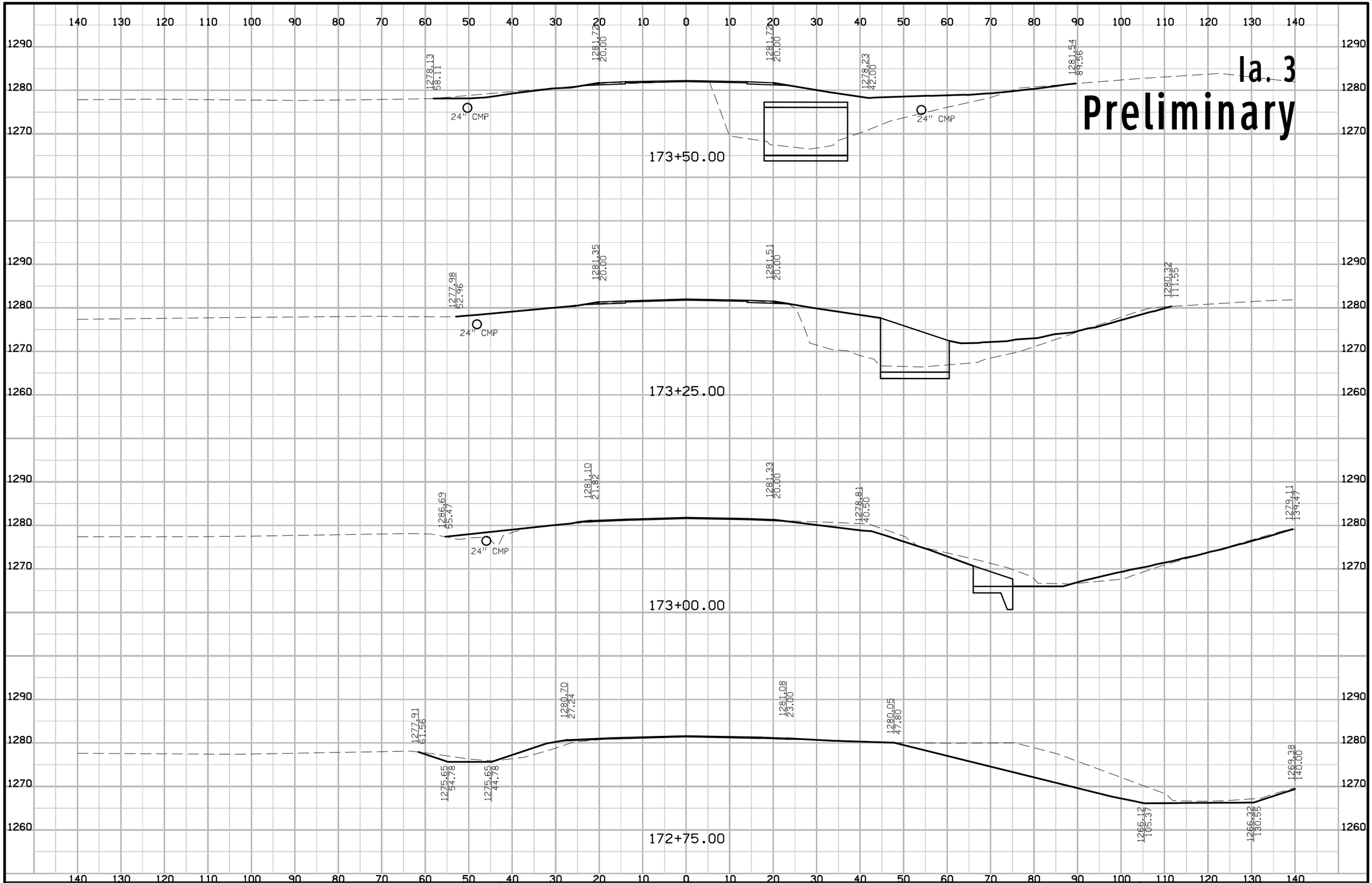
Ia. 3

Preliminary

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|---|---|---|---|---|---|

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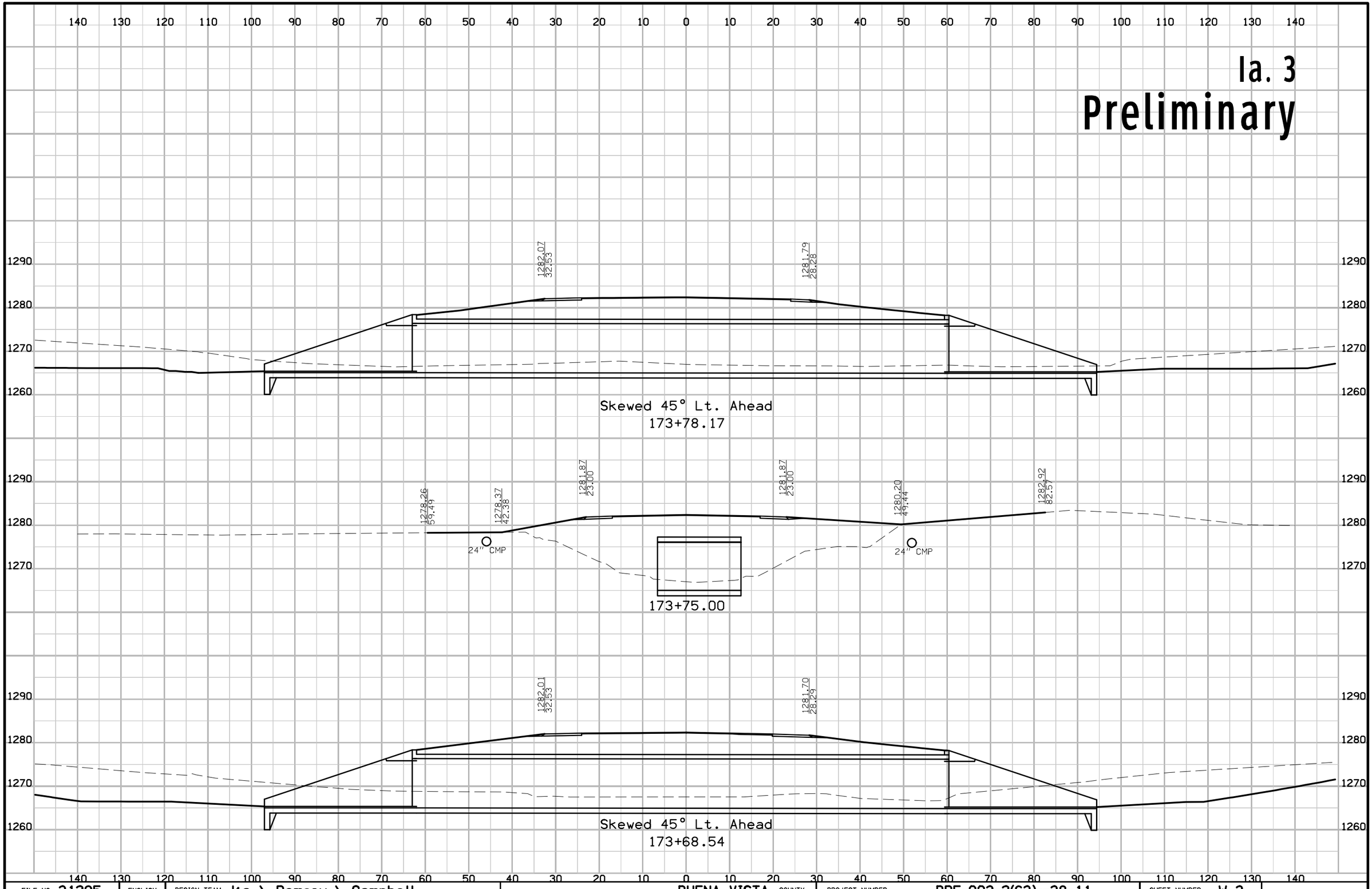
Ia. 3

# Preliminary

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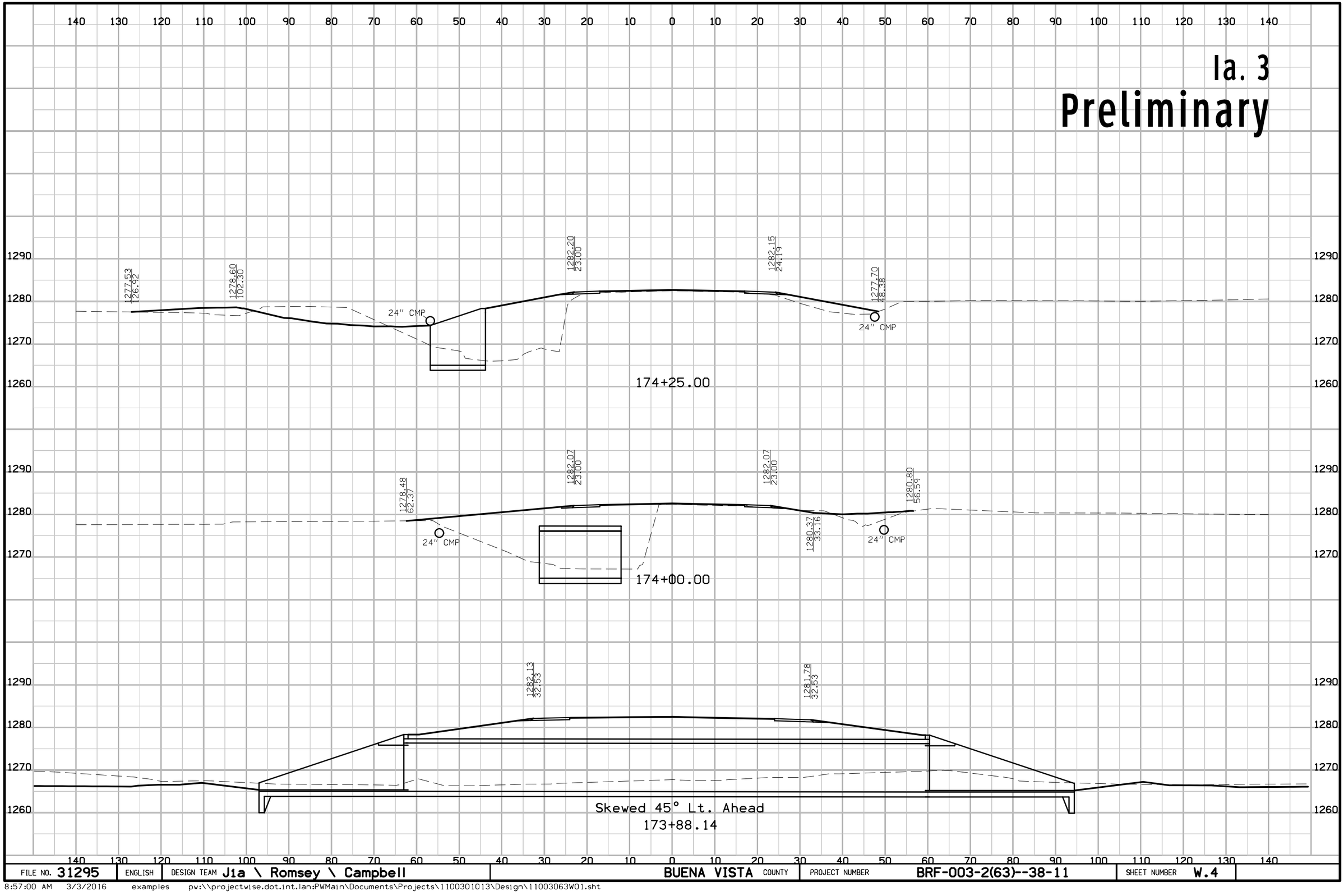
Ia. 3

# Preliminary

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|---|---|---|---|---|---|

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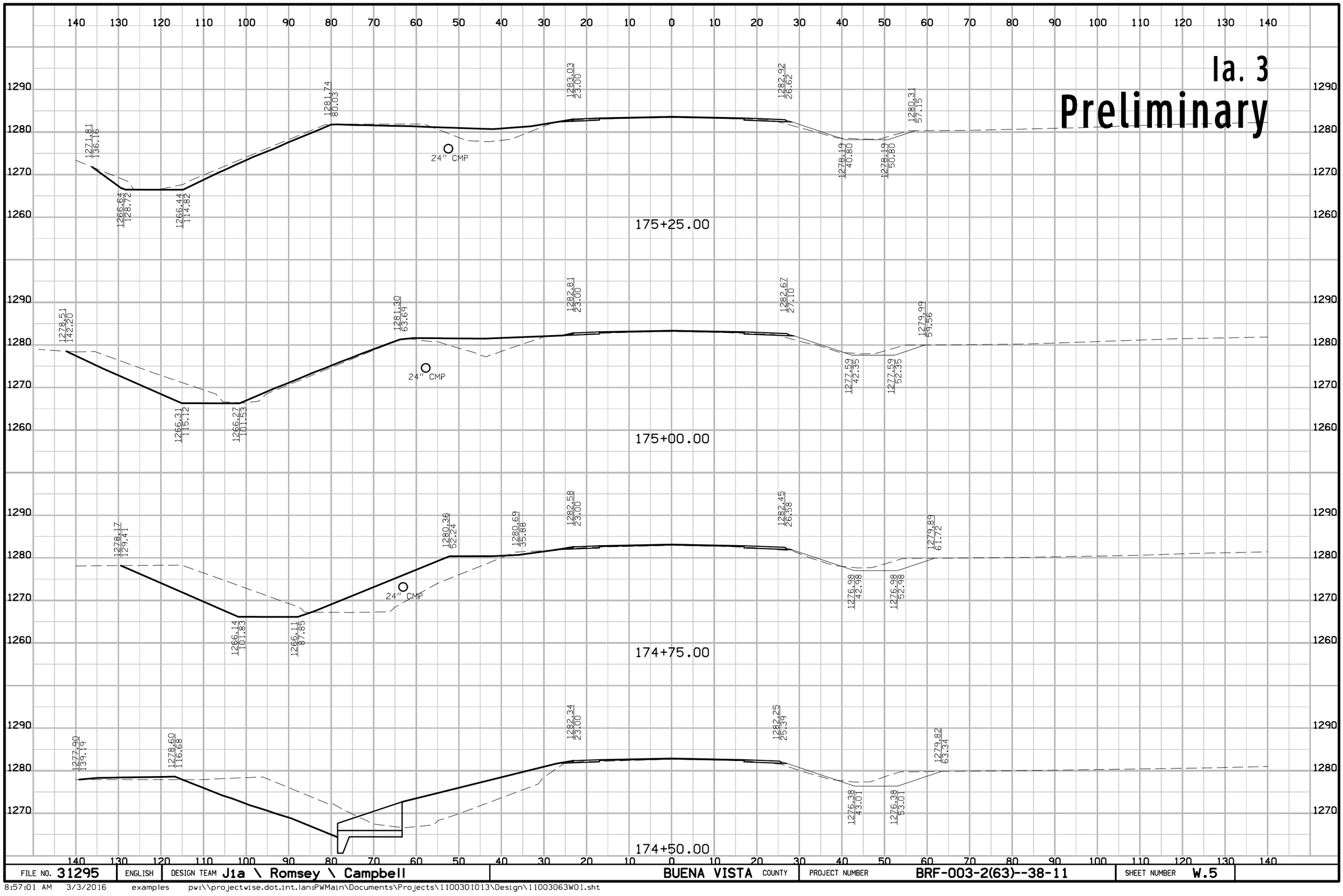
# Ia. 3
# Preliminary

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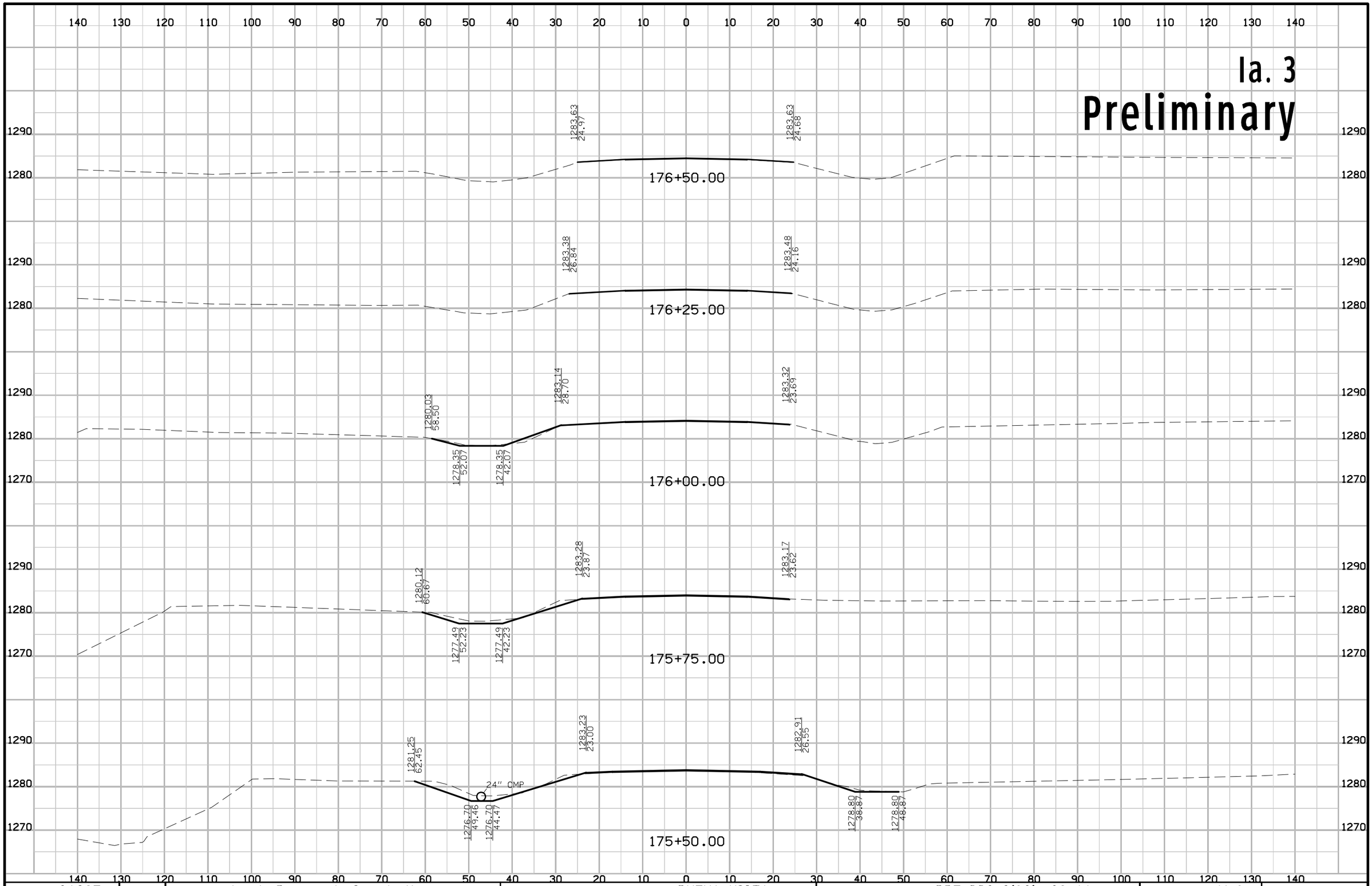
|---|---|---|---|---|---|

# Ia. 3
# Preliminary

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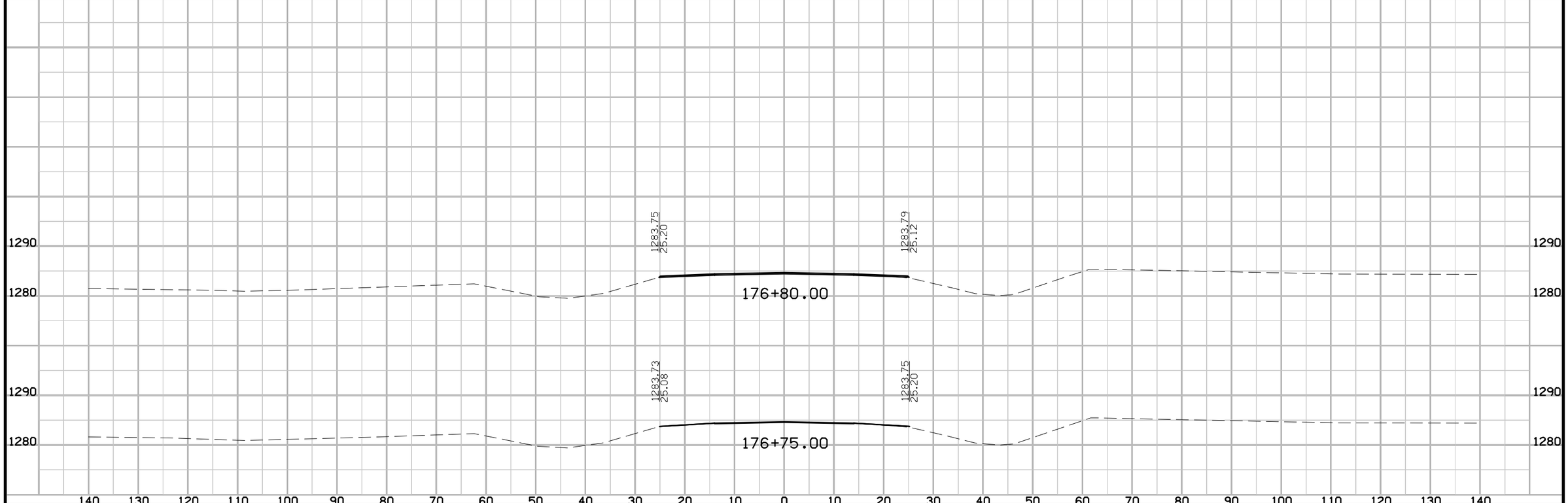
Ia. 3

# Preliminary

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|---|---|---|---|---|---|

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