IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE:	District 4	**DATE:**	August 18, 2014
ATTENTION:	Troy A. Jerman	**PROJECT:**	Mills County BRF-34-1(96)--38-65
FROM:	Kevin K. Patel		PIN: 13-65-034-030
OFFICE:	Design		

SUBJECT: Project Concept Statement; (Final, D0)

This project involves the replacement of the U.S. 34 bridge (Maint No. 6515.9S034) over the Wabash Trace Nature Trail (formerly the Wabash Railroad), 1.1 miles west of County Road L63.

A concept review was held on November 6, 2013. Those present included Orest Lechnowsky and Dave Dorsett from the District 4 Office; Chris King from the Office of Bridges and Structures; Marc Solberg from the Office of Location and Environment; and Kevin Patel and Amy Schleier from the Office of Design.

The two alternatives considered were:

1. To construct a 12 ft. x 10 ft. x 177 ft. reinforced concrete box culvert under the existing bridge. After the culvert has been constructed, Geofoam blocks and class 10 embankment will be used to fill the void between the RCB and bridge deck. The new RCB will be used to accommodate trail users. The estimated cost of this alternative is $1,507,300.

2. To replace the existing bridge with a 155 ft. x 47 ft. pretensioned prestressed concrete beam bridge. The estimated cost of this alternative is $1,545,500.

Alternative 1 is recommended due to future maintenance benefits and less disruption to the traveling public.

Additional right of way will not be required. There will be no off-site detour.

The Revised Draft Project Concept Statement was sent out for review and comment with concerns to be resolved by Wednesday, August 13, 2014. Comments received during the review period have been considered and resolved.

This project is recommended for construction in FY 2018. The Office of Design will coordinate plan preparation with assistance from the Office of Bridges and Structures.

KKP:als
Attach.
cc:

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

FINAL PROJECT CONCEPT STATEMENT

U.S. 34 Bridge over the Wabash Trace Nature Trail
(formerly Wabash Railroad)

Mills County
Proj. #BRF-034-1(96)--38-65
PIN: 13-65-034-030
Maint. No. 6515.9S034
FHWA No. 35890

Highway Division
Office of Design

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

August 18, 2014

I. STUDY AREA

A. Project Description

This project involves the replacement of the U.S. 34 bridge (Maint. No.6515.9S034) over the Wabash Trace Nature Trail (formerly the Wabash Railroad), 1.1 miles west of County Road L63.

The two alternatives considered were:

1. To construct a 12 ft. x 10 ft. x 177 ft. reinforced concrete box culvert under the existing bridge. After the culvert has been constructed, Geofoam blocks and class 10 embankment will be used to fill the void between the RCB and bridge deck. The new RCB will be used to accommodate trail users. The estimated cost of this alternative is $1,507,300.

2. To replace the existing bridge with a 155 ft. x 47 ft. pretensioned prestressed concrete beam bridge. The estimated cost of this alternative is $1,545,500.

Alternative 1 is recommended due to future maintenance benefits and less disruption to the traveling public.

Additional right of way will not be required. There will be no off-site detour.

B. Need for Project

This is a 131 ft. 10 in. x 30 ft. steel beam bridge which was constructed in 1930 and overlaid in 1995. The bridge is classified as functional obsolete due to the inadequate width. The bottom of the deck has large areas of cracking and leaching with rust staining. Delamination and spalls were found at both top and bottom of the deck. Section loss and rust were found at multiple beams. There are delamination, spalls and cracks at the abutments and pier caps. Considering the age and condition of the structure, deck replacement in conjunction with bridge repair and widening would not be an economical option; therefore, the structure should be replaced.


Existing bridge looking west


From Wabash Trace Nature Trail under existing bridge looking north

C. Present Facility

The existing structure is a 131 ft. 10 in. x 30 ft. continuous I-beam bridge constructed in 1965.

U. S. 34 in the project area is 24 ft. wide PCC pavement with 10 ft. wide shoulders (4 ft. paved, 6 ft. granular) and 3:1 foreslopes, constructed in 1965. There is a 13 ft. wide eastbound climbing lane that starts immediately east of the existing bridge. Hot mix asphalt resurfacing was accomplished in 1989 and 2005.

The Wabash Trace Nature Trail is a granular surfaced multi-purpose trail that was once part of the Wabash Railroad.

D. Traffic Estimates

The 2018 and 2038 average daily traffic estimates are 5,200 ADT with 13% trucks and 5,400 ADT with 15% trucks, respectively.

E. Sufficiency Ratings

U.S. 34 is classified as a "Commercial and Industrial" route and is a maintenance service level "B" road. The federal bridge sufficiency rating is 62. This roadway is on the National Highway System (NHS).

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from January 1, 2008 through December 31, 2012, there was one reported crash at the bridge which caused property damage only.

II. PROJECT CONCEPT

A. Alternative #1 - Replace with a reinforced concrete box culvert

Alternative 1 is to construct a 12 ft. x 10 ft. x 177 ft. reinforced concrete box culvert under the existing 131 ft. 10 in. x 30 ft. continuous I-beam bridge. The new RCB will be used to accommodate trail users. The typical roadway cross section will consist of a 24 ft. roadway with 10 ft. shoulders (4 ft. paved, 6 ft. granular) and 6:1/3:1 foreslopes.

The new RCB can be built under the existing bridge without disturbing the bridge. After the culvert has been constructed, Geofoam blocks and class 10 embankment will be used to fill the void between the RCB and bridge deck.

Geofoam blocks will be used rather than the conventional granular backfill and flowable mortar to fill the void under the existing bridge because soil borings have shown poor soil conditions under the trail exist to a depth of 28 ft. The large volume of flowable mortar and granular backfill would cause significant settlement (nearly 14") around the new RCB if conventional fill was used. Additionally, downdrag on the existing piles would likely result in a major reduction in pile capacity.

Once the new 6:1/3:1 foreslopes have been placed adjacent to the bridge, the existing concrete bridge barrier, curb, and guardrail will be removed. The existing bridge deck and bridge approach sections will be overlaid with 3 inches of HMA. During the resurfacing and removal of the existing concrete bridge barrier, curb, and guardrail, traffic will be maintained via staged construction with traffic reduced to one lane at a time using temporary traffic signals.

The existing metal wall adjacent to the berm slopes will be buried within the new fill material.

Apply erosion control and rural seeding and fertilizing to all disturbed areas. Right of way will not be required for this project.

Bridge Items	Estimated Costs
Reinforced concrete box culvert, 12' x 10' x 177'	$ 219,000
Mobilization - 10%	21,900
M & C - 20%	48,200
Bridge Costs	**$ 289,100**
Roadway Items	
HMA pavement, including binder	$ 13,000
Geofoam block	645,400
Embankment in place, contractor furnished	159,800
Granular shoulder	1,500
Guardrail removal	3,200
Clearing and grubbing	1,800
Seeding and fertilizing	1,000
Erosion control	5,000
Temporary concrete barrier rail	10,800
Temporary floodlighting	5,900
Temporary signals	4,500
Traffic control - 5%	42,600
Mobilization - 5%	42,600
M & C - 30%	281,100
Roadway Costs	**$ 1,218,200**
Project Total	**$1,507,300**

Alternative #2 - Replace with a 155 ft. x 47 ft. pretensioned, prestressed concrete beam bridge

Replace the existing 131 ft. 10 in. x 30 ft. continuous I-beam bridge with a 155 ft. x 47' pretensioned prestressed concrete beam bridge. The new bridge will be 3 ft. wider

than necessary to allow for staged construction. The bridge construction will be staged due to the long and undesirable detour.

The typical roadway cross section will consist of a 24 ft. roadway with 10 ft. shoulders (4 ft. paved, 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. 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. Construct bridge end drains on each end of the bridge.

Apply erosion control and rural seeding and fertilizing to all disturbed areas. The existing crib walls under the bridge will need to be removed to provide 3:1 berms.

It appears that no right of way will be required for this project.

One lane of traffic in each direction will be maintained via staged construction utilizing temporary traffic signals. Stage 1 will provide a 19 ft. lane for traffic with stage 2 providing a 12 ft. wide lane. As the lane width is less than 14.5 ft. in stage 2, special signing will be required.

Bridge Items	Estimated Costs
New Bridge	$ 751,000
Bridge Removal (including existing crib wall)	78,000
Staging	83,000
Mobilization - 10%	92,000
M & C - 20%	201,000
Bridge Costs	**$ 1,205,000**

Roadway Items	
Bridge Approaches	$69,200
Removal of Pavement	2,400
Special Backfill	3,000
Embankment in place, contractor furnished	67,600
Excavation Class 13 Waste	1,000
Guardrail (Includes Removal)	23,200
Paved Shoulders for Guardrail	22,400
Class 10 for Guardrail Blisters	12,000
Bridge End Drains	5,700
Temporary traffic signals	9,100
Temporary floodlights	5,900
Temporary concrete barrier rail	6,900

Clearing and Grubbing	3,700
Seeding and Fertilizing	1,000
Erosion Control	5,000
Traffic Control - 5%	11,900
Mobilization - 5%	11,900
M & C - 30%	78,600
Roadway costs	**$ 340,500**
Project Total	**$1,545,500**

B. Detour Analysis

There will be no off-site detour. In alternative 1, during the removal of the existing concrete bridge barrier, curb, and guardrail, and the placement of the HMA resurfacing, one lane of traffic will be maintained at time using temporary traffic signals.

In alternative 2, the existing bridge will be cut and reconstructed to allow for one lane of traffic to be maintained at all times using temporary traffic signals. As the lane width is less than 14.5 ft. in stage 2, special signing will be required.

C. Recommendations

It is recommended that the present structure be replaced as described in alternative 1

D. Construction Sequence

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

E. ADA Accommodations

There are no bike paths or sidewalks adjacent to U.S. 34. The new RCB will accommodate trail users under U.S. 34 and will meet ADA requirements.

F. Special Considerations

In alternative 1, the Wabash Trace Nature Trail will travel through the proposed RCB. Because of the length of the culvert, interior lighting will be required. It appears that the Wabash Trace Nature Trail will be responsible for the installation and future maintenance cost of the lighting. This section of the trail will be closed during installation of the culvert.

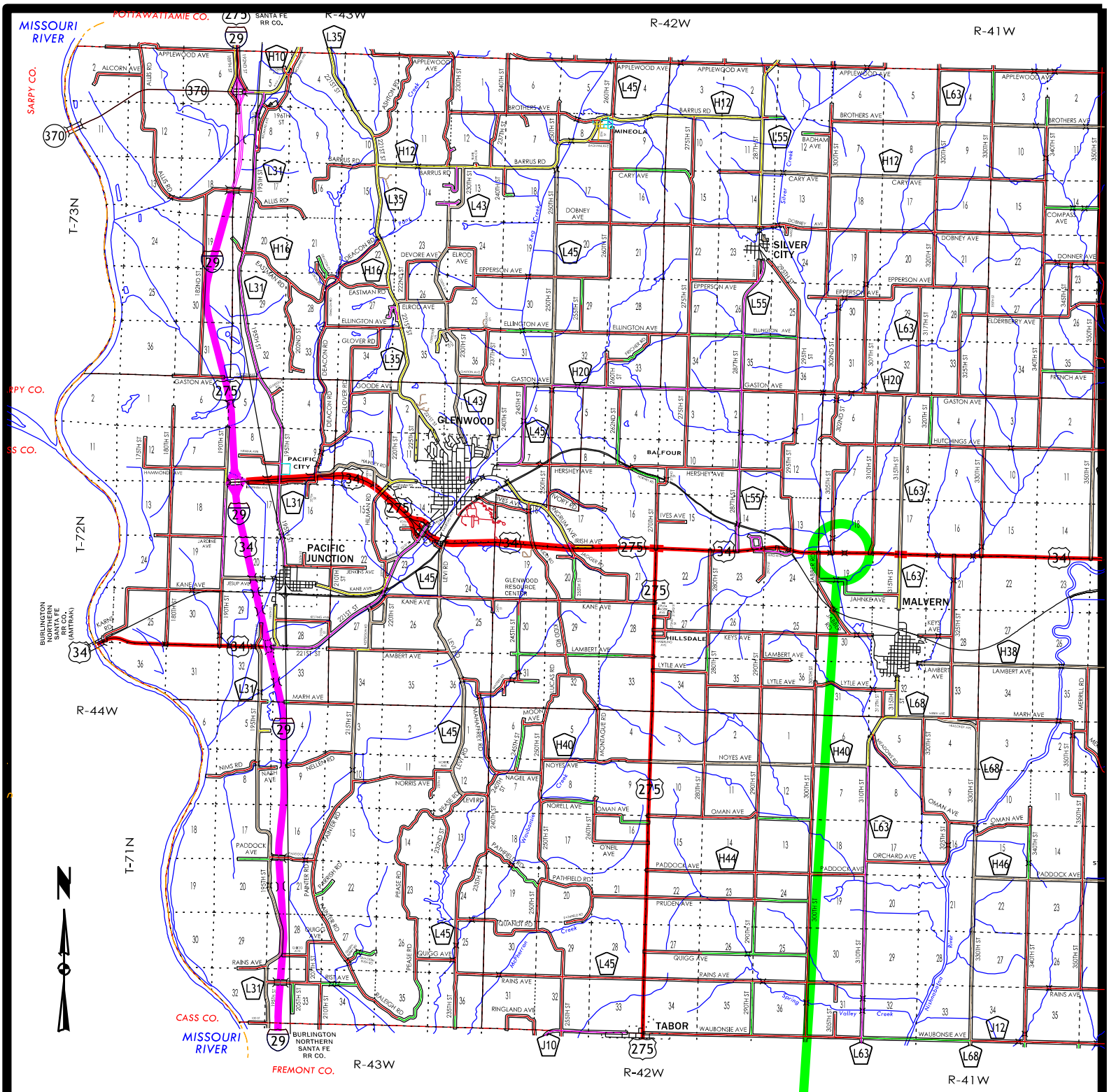
Right of Way will not be required for this project.

The Office of Location and Environment has reviewed this project and no special concerns were noted.

F. Program Status

Site data has been developed by the Office of Design. This project is listed in the 2014-2018 Iowa Transportation Improvement Program, with $750,000 programmed for replacement in FY 2018. Costs for this project may be eligible for bridge replacement funds. A schedule of events will be developed following approval of the Project Concept.

KKP: als



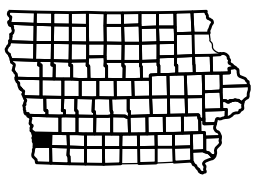
MILLS COUNTY

US 34 Bridge over Wabash Trail

1.1 mi. west of Co. Rd. L63

T–72N R–41W

Silver Creek Twp. Sec. 18 & 19



MILLS COUNTY

US 34 Bridge over Wabash Trail (abandoned RR)
1.1 mi. west of Co. Rd. L63
Maint. 6515.9S034
FHWA #35890

LETTING DATE 12-19-2017

MILLS Co. RCB CULVER REPLACEMENT - SINGLE BOX BRF-034-1(96)--38-65

PRODUCTION SCHEDULE			
EVENT		Proposed Date	Completed Date
D-1	Survey	11-28-2014	02-11-2015
D-2	Field Exam	04-10-2015	
D-3	To Prelim. Culverts	04-17-2015	
B-1	Structures Layout	07-10-2015	
D-5	To Right of Way	07-30-2015	
D-4	Design Plans to Bridge	08-22-2017	

IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

MILLS COUNTY

RCB CULVER REPLACEMENT - SINGLE BOX

Wabash Trace Nature Trail 1.1 M1 W of Co Rd L63

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

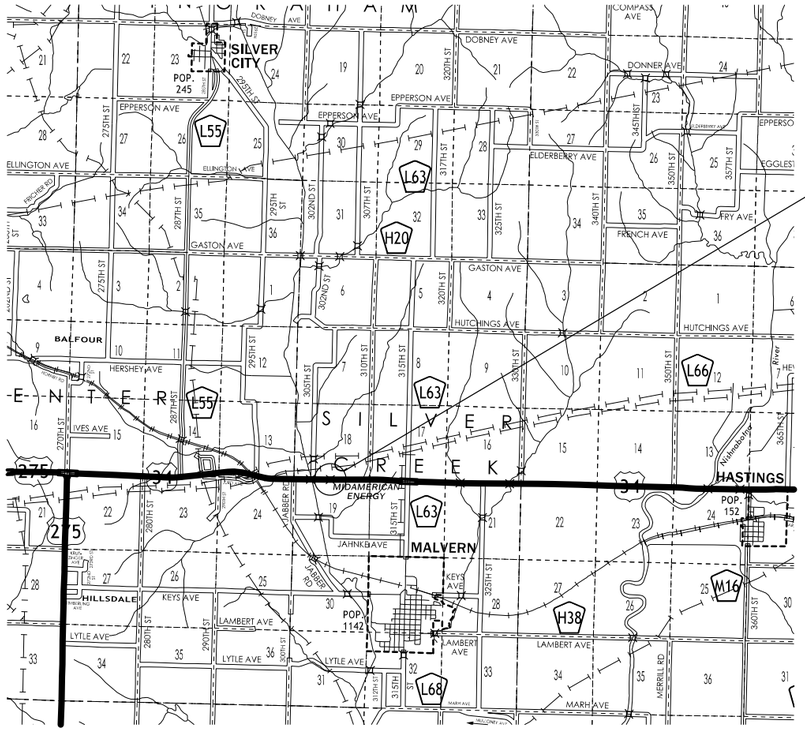
Value Engineering Saves. Refer to Article 1105.15 of the Specifications.

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

REVISIONS

TOTAL 22
PROJECT IDENTIFICATION NUMBER
13-65-034-030
PROJECT NUMBER
BRF-034-1(96)--38-65
R.O.W. PROJECT NUMBER

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	**Title Sheets**
A.1	Title Sheet
A.1	Location Map Sheet
B Sheets	**Typical Cross Sections and Details**
B.1 - 2	Typical Cross Sections and Details
D Sheets	**Mainline Plan and Profile Sheets**
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2 - 3	US 34
G Sheets	**Survey Sheets**
G.1	Survey Data and Bench Marks
G.2	Reference Ties
G.3	Horizontal Control Tab. For all alignments
G.4	Curve Data and Super for all Alignments
W Sheets	**Mainline Cross Sections**
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 11	Mainline Cross Sections
	* Color Plan Sheets



PROJECT LOCATION
Sta. 984+01
M.P.15.63
Maint. No. 6516.9S034
FHWA# 35890

DESIGN DATA RURAL		
2018 AADT	5,200	V.P.D.
2038 AADT	5,400	V.P.D.
20-- DHV	--	V.P.H.
TRUCKS	13-15	%
Total Design ESALs	--	

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Paul W. Flattery	Primary Signature Block
X	X	X

PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN – Date: 04–17–2015

FILE NO.	ENGLISH	DESIGN TEAM Flattery \ Smejkal	MILLS COUNTY	PROJECT NUMBER BRF-034-1(96)--38-65	SHEET NUMBER A.1

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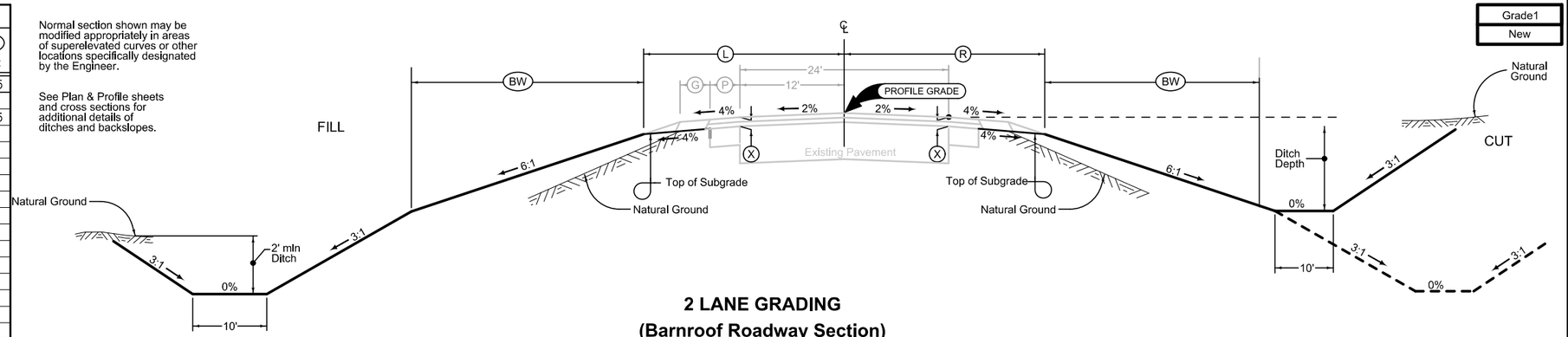
LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	(BW) Feet
US 34	931+30	983+26.95	23.95	23.95	3	18.05
US 34	984+61.70	986+60	23.95	23.95	3	18.05

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

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

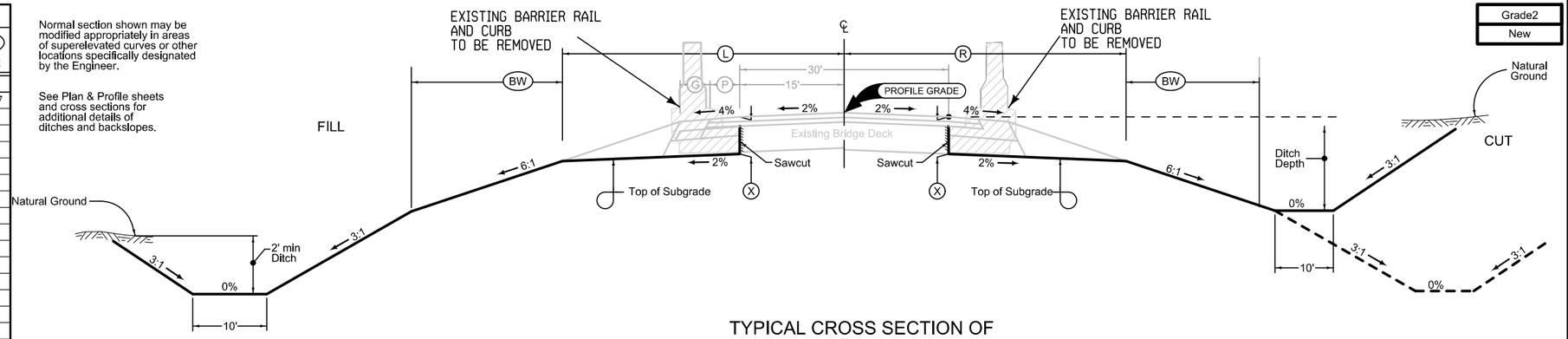


2 LANE GRADING
(Barnroof Roadway Section)

LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	(BW) Feet
US 34	983+26.95	984+61.70	25.73	25.73	12	16.27

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.



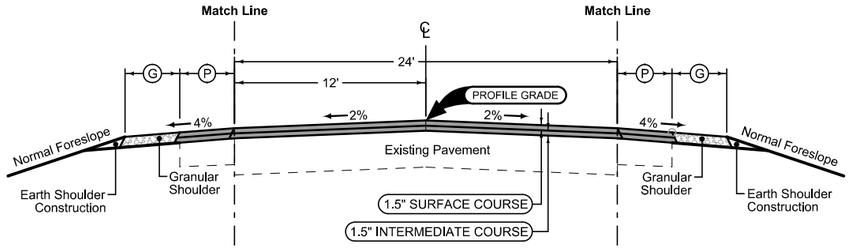
TYPICAL CROSS SECTION OF
SLAB BRIDGE BARRIER RAIL
AND CURB REMOVAL

FILE NO.	ENGLISH	DESIGN TEAM		COUNTY	PROJECT NUMBER	SHEET NUMBER B.1	

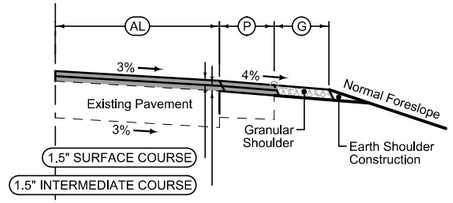
Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

2_C_Lt 10-15-13			
STATION TO STATION		(P) Feet	(G) Feet
931+30	983+26.95	4.0	6.0
984+61.70	986+60	4.0	6.0



Resurfacing 10-19-10	
STATION TO STATION	
931+30	983+26.95
984+61.70	986+60



Auxiliary Lane

Longitudinal joint: L or KT
Transverse joint: Match Mainline

AuxLaneRt 10-19-10				
STATION TO STATION		(AL) Feet	(P) Feet	(G) Feet
984+61.70	985+00	0	3.0	7.0
985+00	985+85	0 - 4.0	0	6.0
985+85	986+60	4 - 7.61	0	6.0

Combination Shoulder

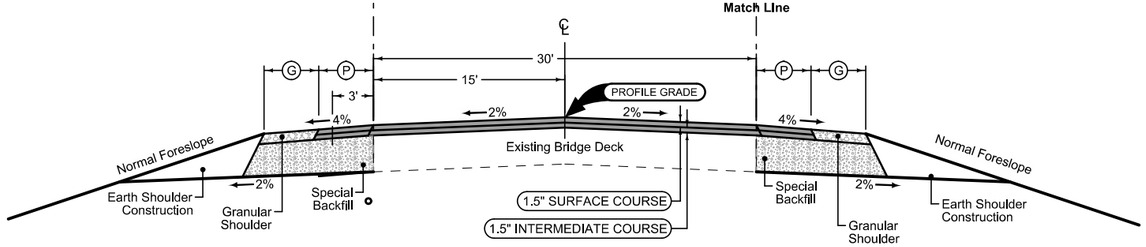
Shoulder Jointing:
Longitudinal joint: B

2_C_Rt 10-15-13			
STATION TO STATION		(P) Feet	(G) Feet
931+30	983+26.95	4.0	6.0

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

Bridge Shoulder Lt 10-15-13			
STATION TO STATION		(P) Feet	(G) Feet
983+26.95	984+61.70	1.0	6.0



Bridge Deck 10-19-10	
STATION TO STATION	
983+26.95	984+61.70

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

Bridge Shoulder Rt 10-15-13			
STATION TO STATION		(P) Feet	(G) Feet
983+26.95	984+61.70	1.0	6.0

See Tab 100-24 or 100-25 for pavement quantities.

See Tab 112-9 for shoulder quantities.

US Highway 34

SURVEY SYMBOLS

- GDL Guard Rail Steel
- MM Mile Marker Post
- BRG Bridge
- PIP Pipe Culvert
- SIGN SI Sign
- RET Retaining Walls
- EP Edge of Paved Roads (ML or SR)
- SH Paved Shoulder
- SNP Unpaved Shoulder
- ENU Edge Unpaved Entrance & Parking
- ENT Centerline BL of Entrance
- DU Centerline Draw or Stream (Up)
- D Centerline Draw or Stream (Down)
- EG Edge of Gravel Road
- EP Edge of Paved Roads (ML or SR)
- SNP Unpaved Shoulder
- SH Paved Shoulder
- CUL Culvert
- ENU Edge Unpaved Entrance & Parking
- TER Terrace
- TDC Tree Deciduous
- PPA Power Pole Co. 1
- T1 TL1D Telephone Line Co. 1 - Quality D
- FO FO1D Fiber Optic Co. 1 - Quality D

UTILITY LEGEND

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
SHADING	**Design Color No.**	
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 — Survey Line
- Station — Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

RIGHT-OF-WAY LEGEND

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

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO.	ENGLISH	DESIGN TEAM Flattery \ Smejkal	MILLS COUNTY	PROJECT NUMBER BRF-034-1(96)--38-65	SHEET NUMBER D.1

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Silver Creek TWP.
T-72N R-41W
SEC. 18

U.A.C.
Sta. 983+79.43, 134.00 Lt
36 X 49 Conc Pipe
D.A. = 13.5 Ac - R

FO

980

985

990

PC Sta 989+65.87

APPROX. SEC. LINE

34

SIGN

BEGIN RESURFACING
STA. 981+30.00

END RESURFACING
STA. 986+60.00

Remove Handrails
Sta. 983+94.13
132 X 30 I-Beam Bridge

Silver Creek TWP.
T-72N R-41W
SEC. 19

0 FEET 50

US_34

FILE NO.	ENGLISH	DESIGN TEAM Flattery \ Smejkal	MILLS COUNTY	PROJECT NUMBER BRF-034-1(96)--38-65	SHEET NUMBER D.2

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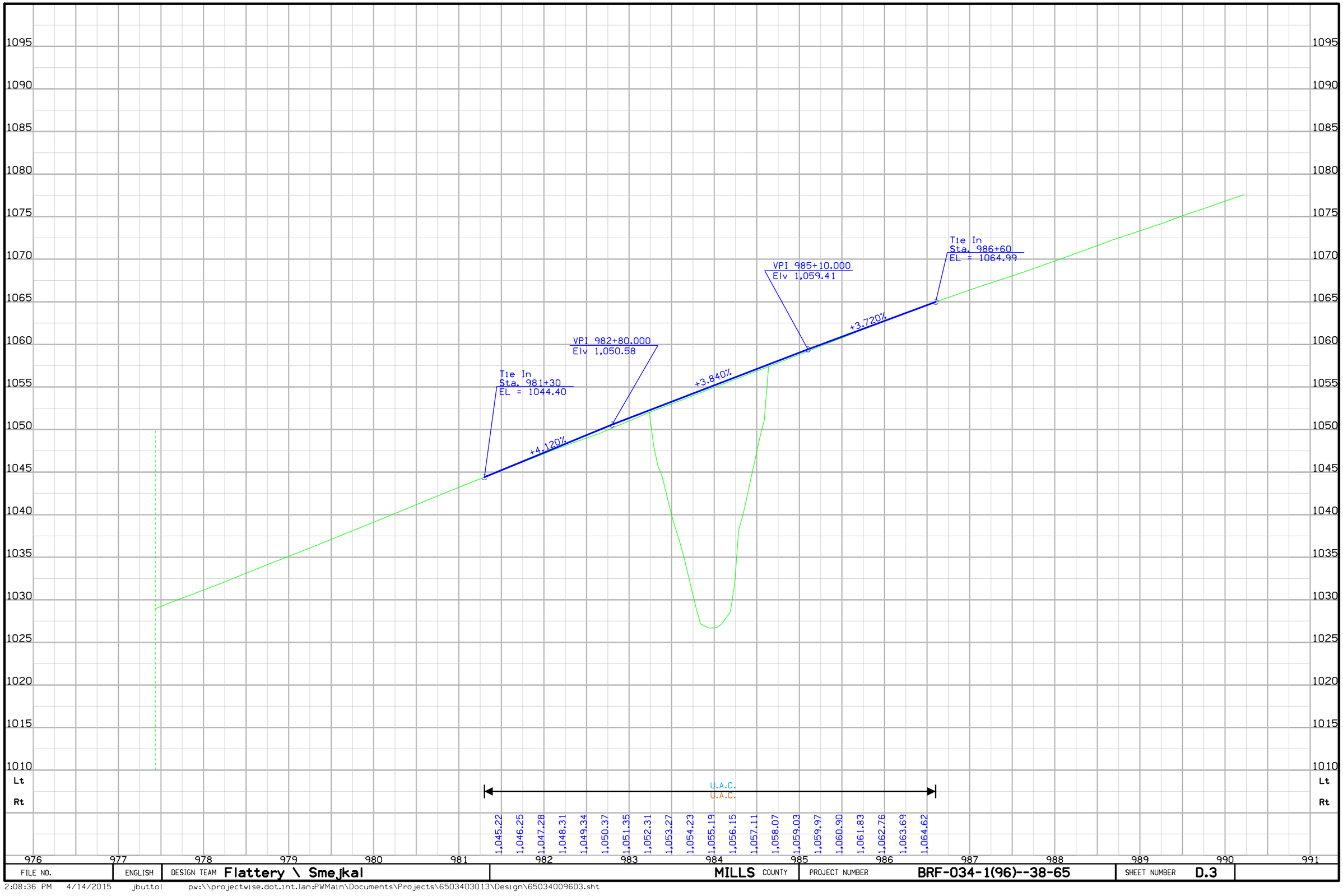

FILE NO.	ENGLISH	DESIGN TEAM Flattery \ Smejkal	MILLS COUNTY	PROJECT NUMBER BRF-034-1(96)--38-65	SHEET NUMBER D.3

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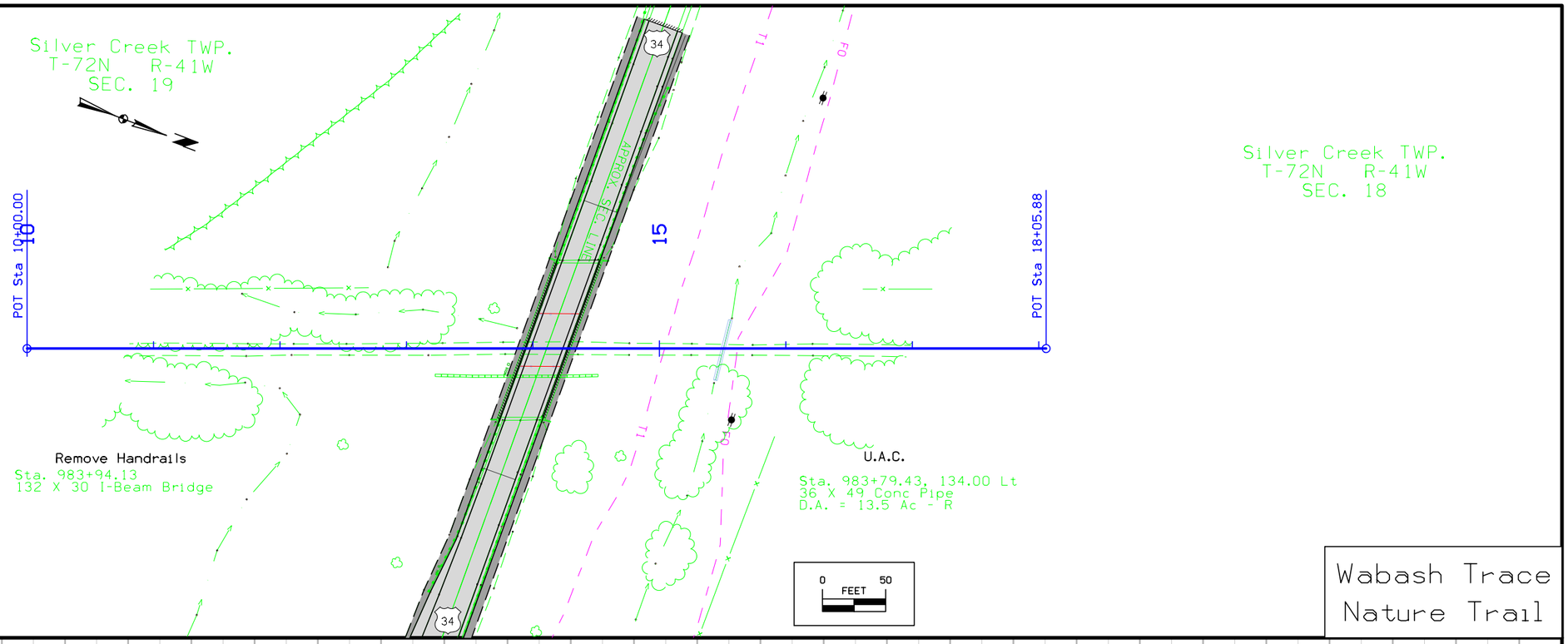

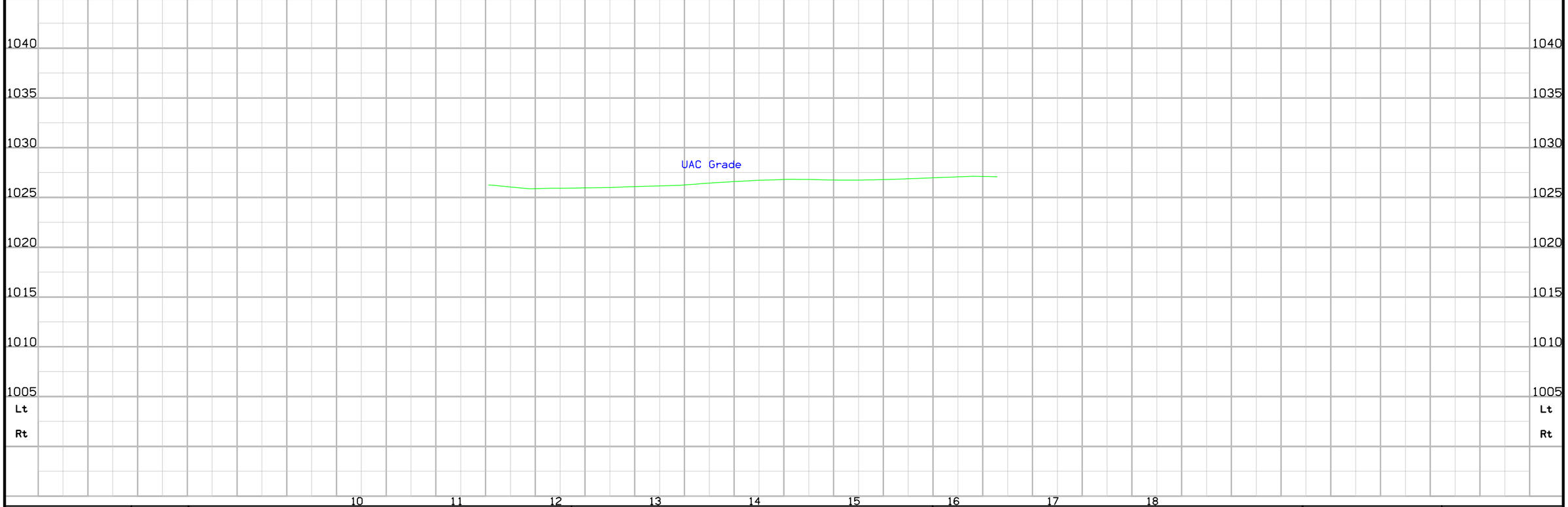

FILE NO.	ENGLISH	DESIGN TEAM Flattery \ Smejkal	MILLS COUNTY	PROJECT NUMBER BRF-034-1(96)--38-65	SHEET NUMBER E.1

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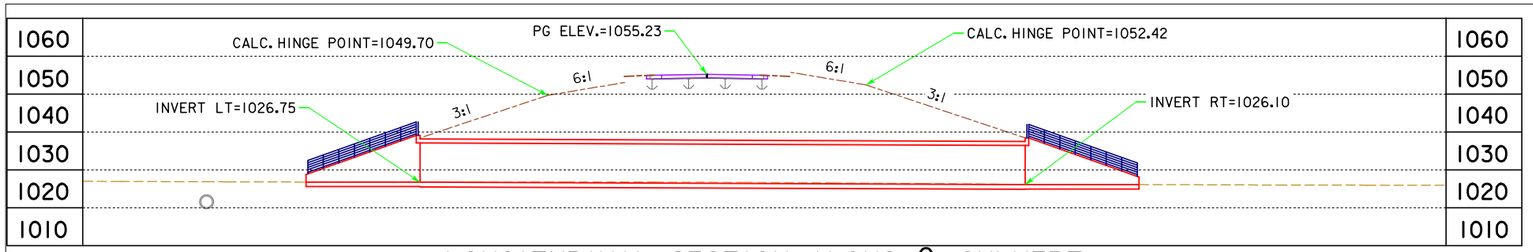


BENCH MARK NO. 501 - STA 983+33.38, 18.58' RT., IHC BUTTON ON SW WING - ELEV. 1052.46

STA. 983+94.13
132 X 30 I-BEAM BRIDGE
DESIGN #1262/229
PLACE PEDESTRIAN TUNNEL UNDER BRIDGE
GEOFOAM IN REST OF BRIDGE OPENING

3.840% 3.720%

PI STA 985+10.00 VC = 300'
PI ELEV 1059.41

UTILITIES LEGEND:

TI CENTURY LINK
FO INS

PROPOSED PROFILE GRADE ON U.S 34

PROFILE GRADE LINE (PGL) IS AT ℄ OF LANES.
U.A.C. GRADE OF TRAIL.

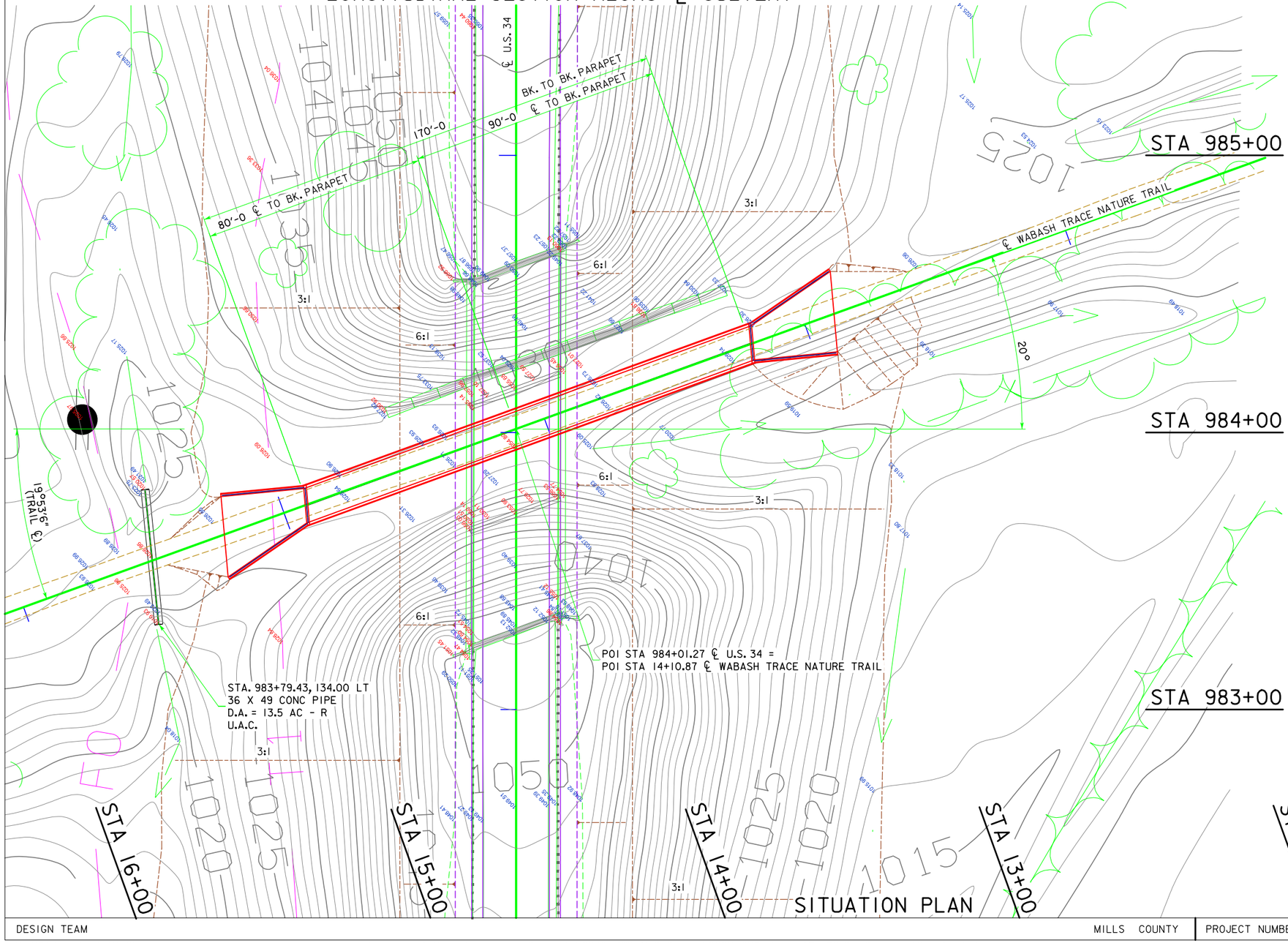
TRAFFIC ESTIMATE

2018 AADT	5200 V.P.D.
2038 AADT	5400 V.P.D.
20?? DHV	- V.P.H
TRUCKS	13-15 %
TOTAL DESIGN ESAL's	-

AT THE PEDESTRIAN TUNNEL -
THE TRAIL HAS A VARIABLE SUPERELEVATION, UP TO 3%.
THE SUPERELEVATION OF THE TUNNEL FLOOR IS 0%.
BEYOND THE WINGWALLS, GRADE TO TIE SMOOTHLY BACK INTO THE TRAIL CROSS SLOPE AND WIDTH.

PROVIDE FOR CONTINUOUS LIGHTING THROUGH THE TUNNEL

LONGITUDINAL SECTION ALONG ℄ CULVERT



STA. 983+79.43, 134.00 LT
36 X 49 CONC PIPE
D.A. = 13.5 AC - R
U.A.C.

POI STA 984+01.27 ℄ U.S. 34 =
POI STA 14+10.87 ℄ WABASH TRACE NATURE TRAIL

DESIGN BASED ON DRAFT PEDESTRIAN TUNNEL STANDARDS DATED 02/19/15

LOCATION

U.S. 34 OVER WABASH TRACE NATURE TRAIL
T-72N R-41W
SECTION 18/19
SILVER CREEK TOWNSHIP
MILLS COUNTY
FHWA NO. N/A
BRIDGE MAINT. NO. 6515.9S034
LATITUDE 41.030635° N
LONGITUDE 95.604508° W

0 ENGLISH 40
SCALE IN FEET

PRELIMINARY

DESIGN FOR 20° RA SKEW

12' x 10'-4 x 170'-0 REINFORCED CONCRETE PEDESTRIAN TUNNEL

WITH 15° FLARED WING HEADWALLS

SITUATION PLAN

STATION: 984+01.27 ?

MILLS COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF ___ FILE NO. 31236 DESIGN NO. 118

DESIGN TEAM	MILLS COUNTY	PROJECT NUMBER BRF-34-1(96)--38-65	SHEET NUMBER

Survey Information

Mills County
BRF-034-1(96)--38-65
Abandon RR 1.1 mi W of Co Rd L63
PIN 13-65-034-030
Sap-0844

General Information

Measurement units for this survey are US survey feet. This survey is for proposed Bridge reconstruction and reconstruction of US 34 over the Wabash Trace Trail. 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 Geoid12A). GRS80 Ellipsoidal Height was computed at project Pt. 65010, by conducting a six hour static observation. Additional benchmarks were placed throughout the project using a GNSS Base-Rover setup relative to Pt. 65010.

This survey observed 1 NGS Control Monuments with published NAVD88 heights to compare to local ground control:

NGS 2nd. order mark designated P 97 has a published Elev. Of 1031.19
Survey Elev. = 1031.108

This survey observed 1 local area Mills County Control Monuments with published NAVD88 heights to compare to local ground control:

Mills County Control mark GPS 28 has a published Elev. of 1005.78
Survey Elev. = 1005.64

This survey observed 2 As-Built plan bench marks to compare to local ground control:

BM 31 Project FN-FGN-15(5) Elev. 1008.15
BM 500 Survey Elev. = 1011.127

BM 32 Project FN-FGN-15(5) Elev. 1049.60
BM 501 Survey Elev. = 1052.46

Horizontal Control

The project coordinate system for this survey is Iowa RCS Zone 6 (U.S. Survey
Alignment Information

The horizontal alignment for this survey is a retrace of As-built Plans No. FN-FGN-15(5) Survey stationing was equated to the plan POT at Sta. 958+96.52 and run ahead with one equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

POT Sta. 958+96.52 As-built Plans Project No. FN-FGN-15(5)
Survey POT Sta. 958+96.52

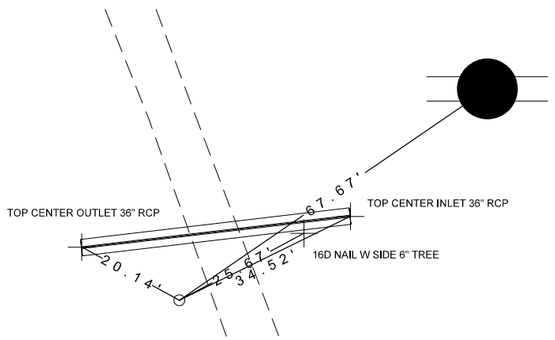
Station Equation 962+58.30 Back
= 961+93.79 Ahead

PI Sta. 992+94.07 As-built Plans Project No. FN-FGN-15(5)
Survey PI Sta. 992+87.21

VERTICAL CONTROL

Point	North	East	Elevation	Station	Offset	Feature	Description
500	6884401.2670	16534026.8200	1011.1270	968+82.61	18.2957	BM	500 IHC BUTTON ON SW WING
501	6884423.7680	16535477.4160	1052.4610	983+33.38	18.5787	BM	501 IHC BUTTON ON SW WING
65010	6884561.8040	16535490.1200	1026.1080	983+48.25	-119.2407	CP	SET FENO MONUMENT STAMPED 65010

CP STA. 983+48.25, 119.24 LT.
GPS 65010, Set FEN0 Monument Stamped 65010
N=6884561.804, E=16535490.120, Z=1026.108



FILE NO.	ENGLISH	DESIGN TEAM Flattery \ Smejkal	MILLS COUNTY	PROJECT NUMBER BRF-034-1(96)--38-65	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)
SUR34	US 34 ℄																		
202		961+93.79	6,884,408.74	16,533,337.80															
C1								989+65.87	6,884,452.28	16,536,109.53	992+87.21	6,884,457.32	16,536,430.83	996+08.54	6,884,466.58	16,536,752.04			
TRAIL	Wabash TRAIL ℄																		
9000		10+00.00	6,884,059.28	16,535,690.81															
9001		18+05.88	6,884,812.71	16,535,404.84															

FILE NO.	ENGLISH	DESIGN TEAM Flattery \ SmeJkal	MILLS COUNTY	PROJECT NUMBER BRF-034-1(96)--38-65	SHEET NUMBER G.3

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SPIRAL OR CIRCULAR CURVE DATA

101-17
04-19-11

Name	Location	Δ_{scs}	Horizontal Alignment Data													Remarks
			Spiral Data								Curve Data					
			θs	Ls	Ts	Es	Xc	Yc	L.T.	S.T.	Δ_c	T	L	R	E	
SUR34	US 34 ℄															
C1											0° 45′ 00.00″ LT	321.34′	642.67′	49,096.43′	1.05′	

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 — 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

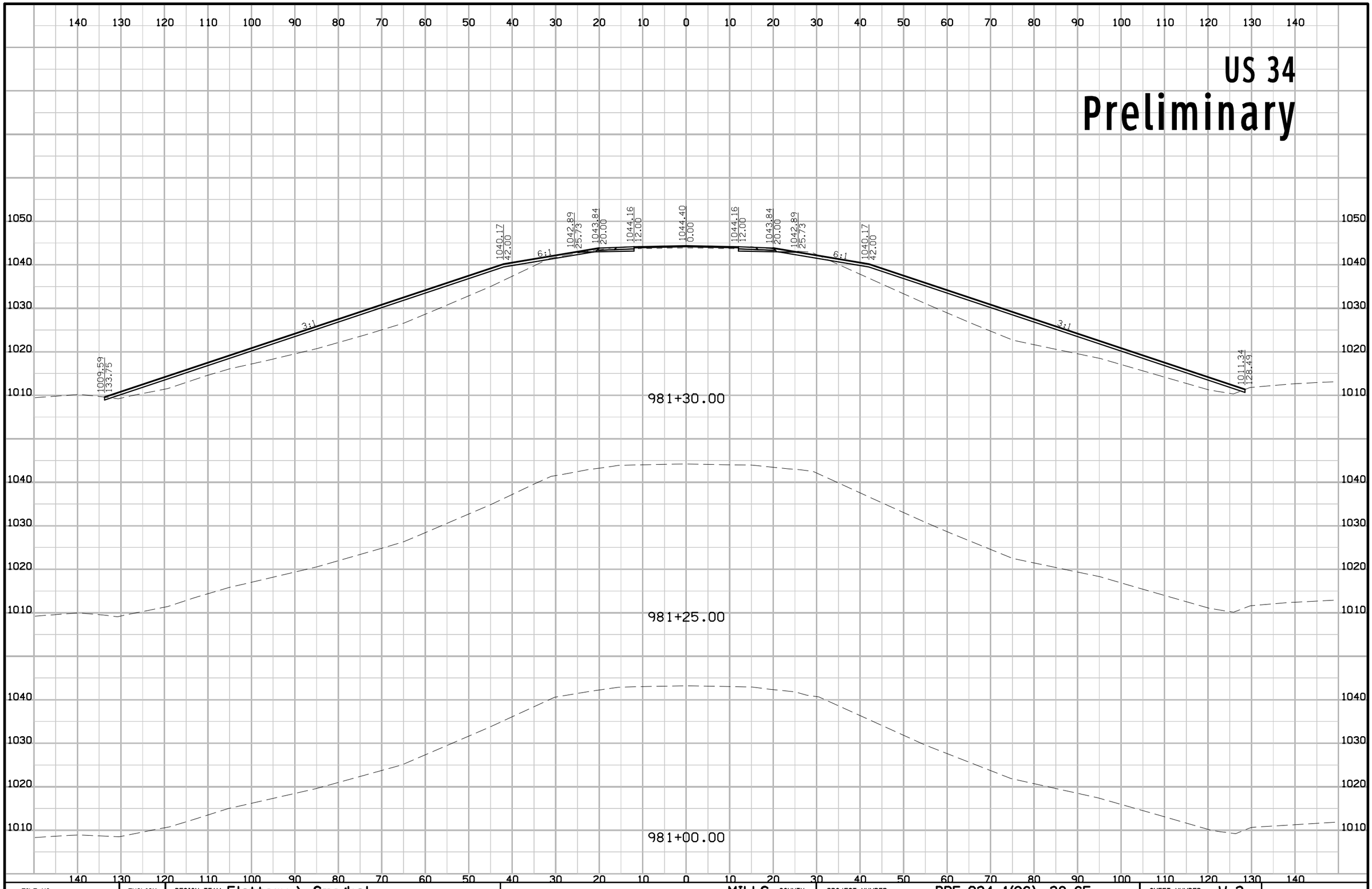
Proposed ROW — Proposed Right-of-Way Limit

Temporary ROW — Temporary Right-of-Way Limit

CROSS SECTION LEGEND AND SYMBOL INFORMATION SHEET

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

US 34
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM Flattery \ Smejkal	MILLS COUNTY	PROJECT NUMBER BRF-034-1(96)--38-65	SHEET NUMBER W.2

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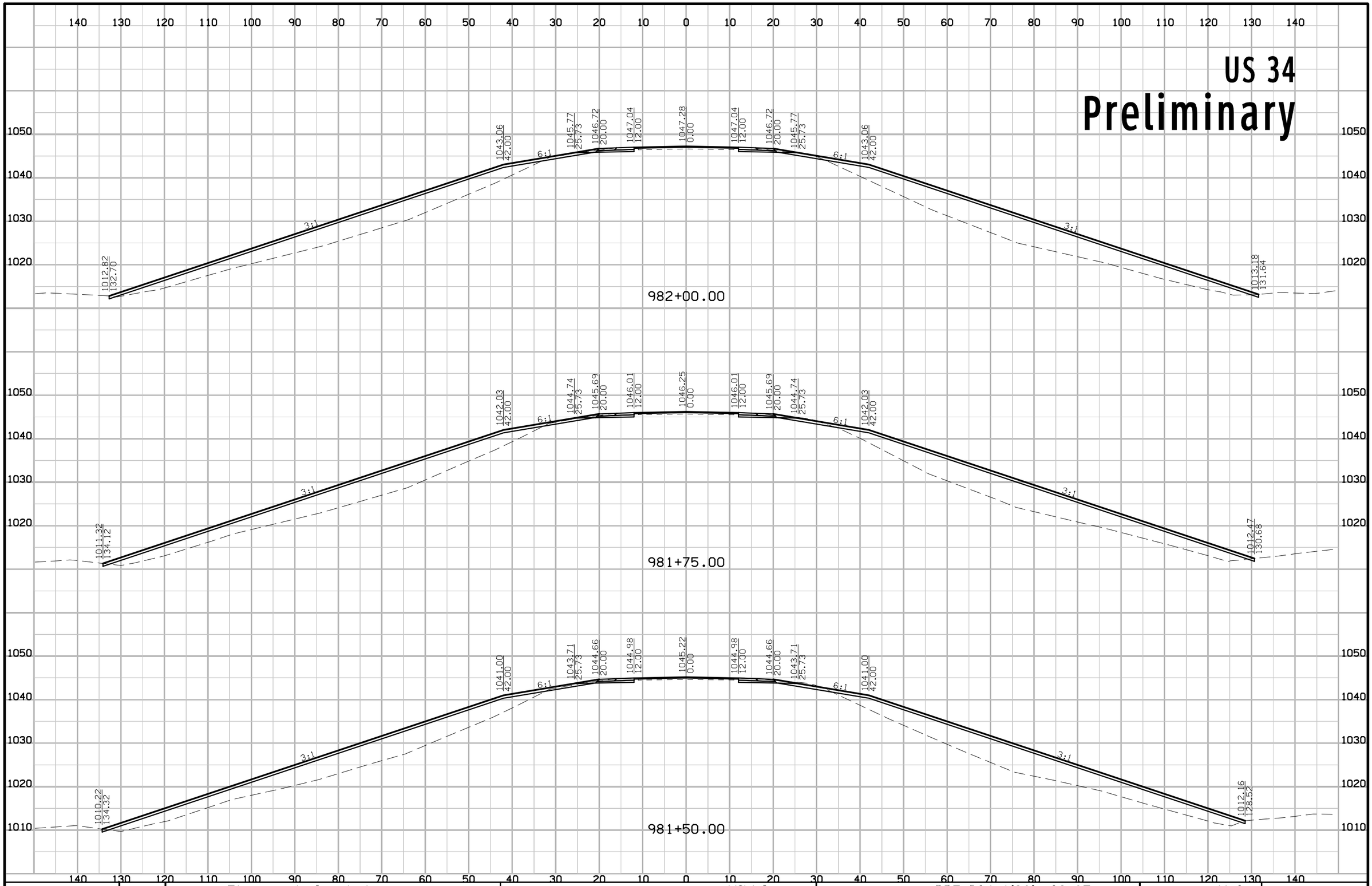
US 34
Preliminary



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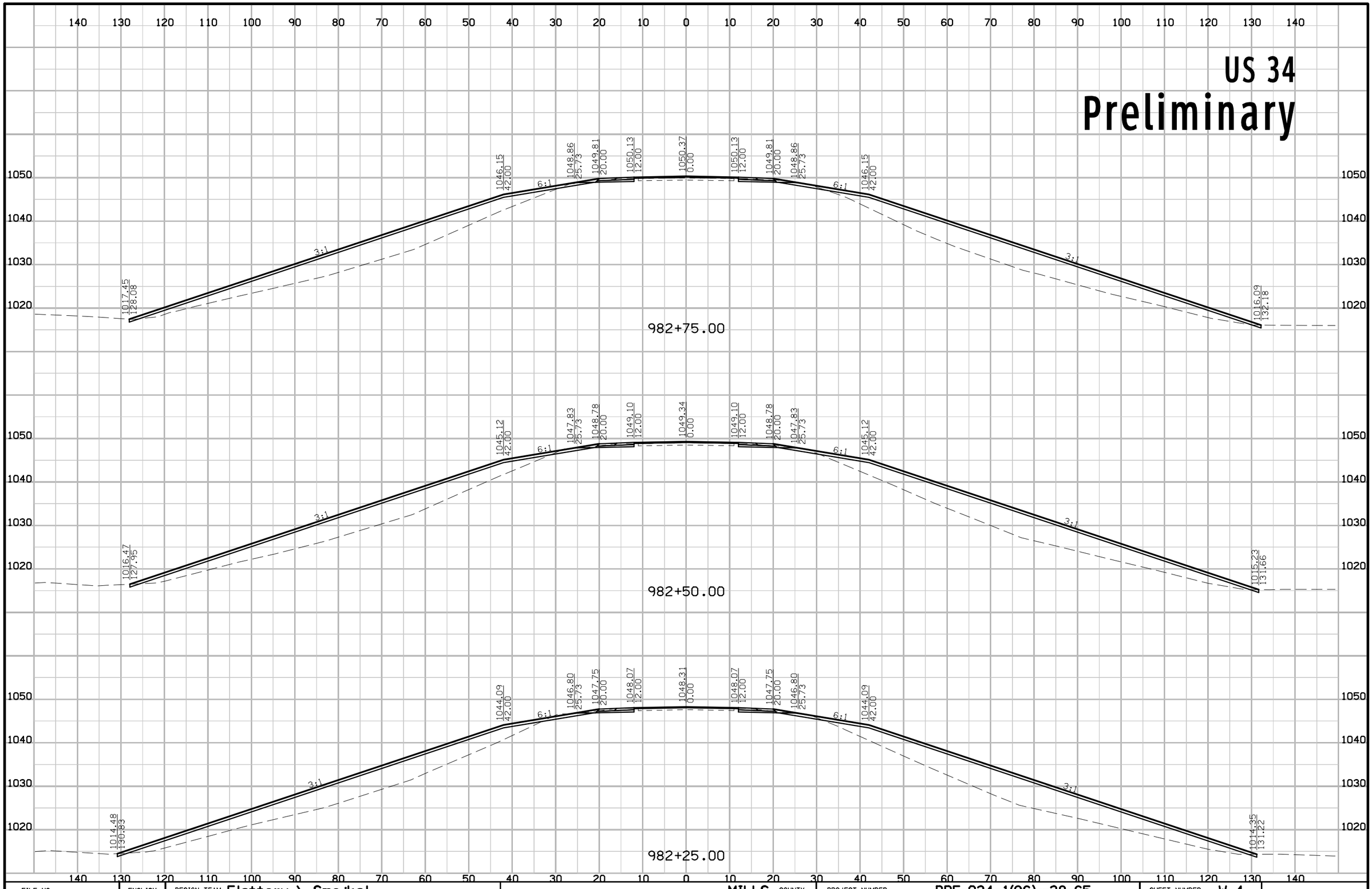
US 34
Preliminary



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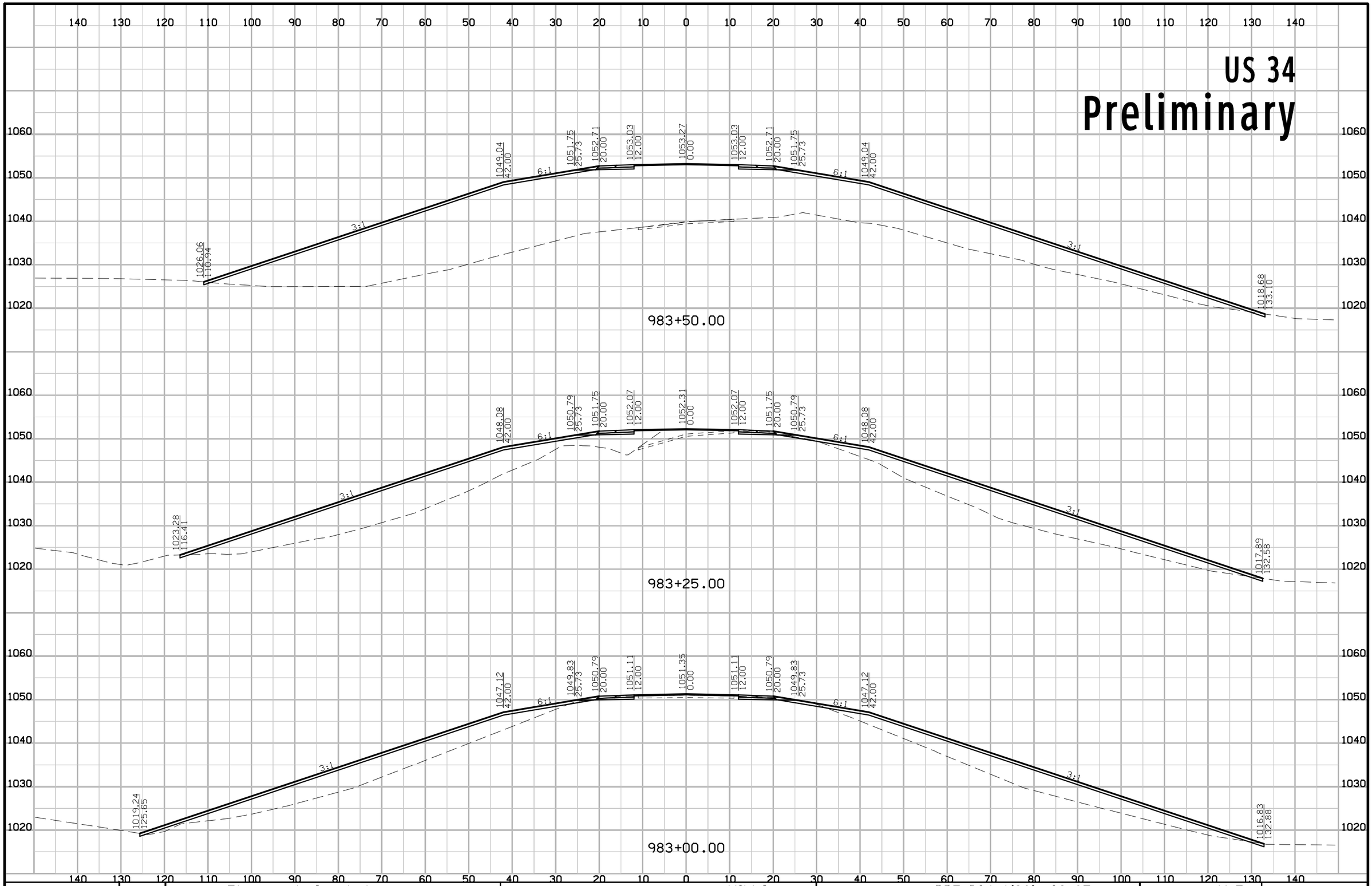
US 34
Preliminary



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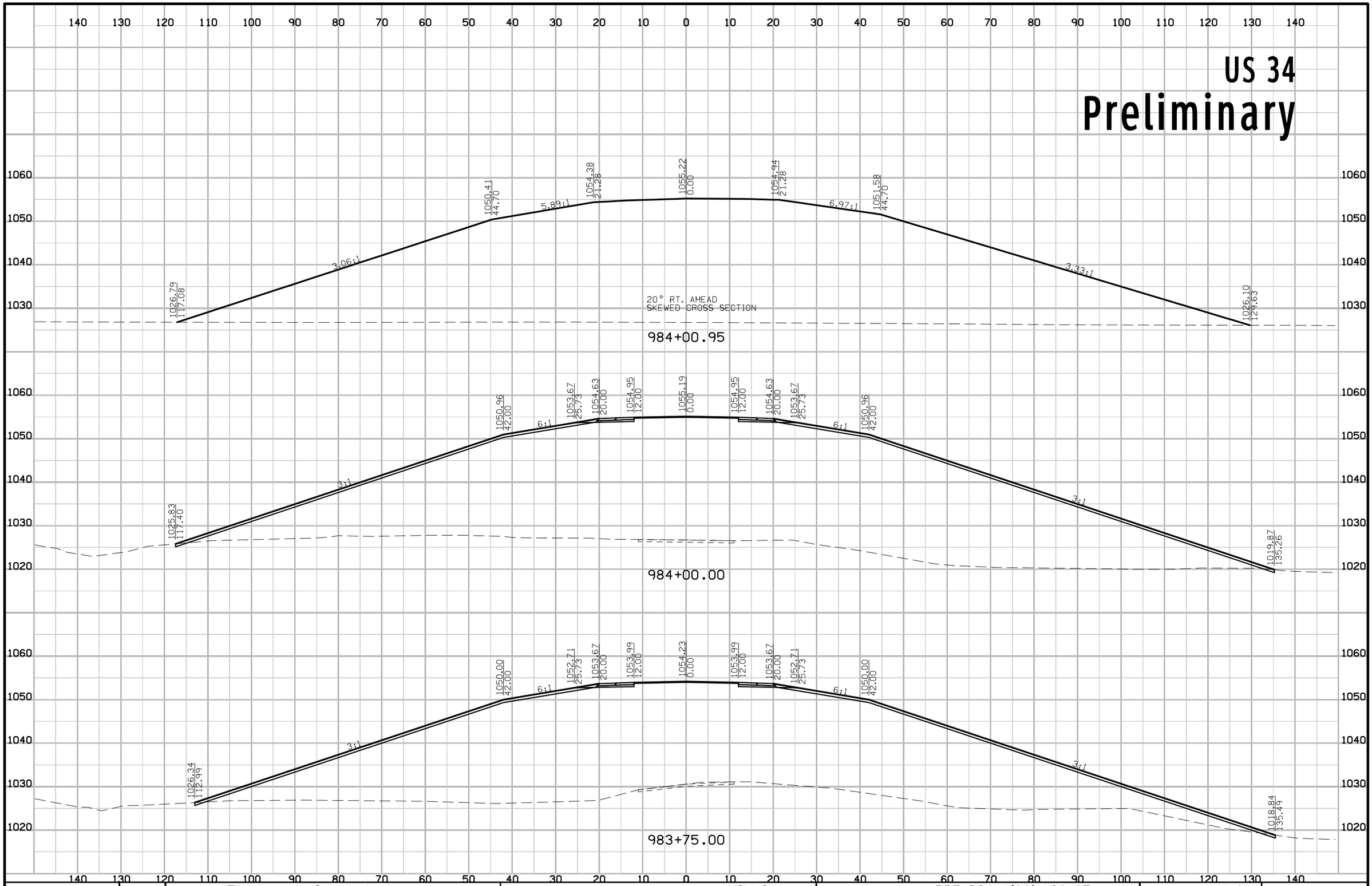
US 34
Preliminary



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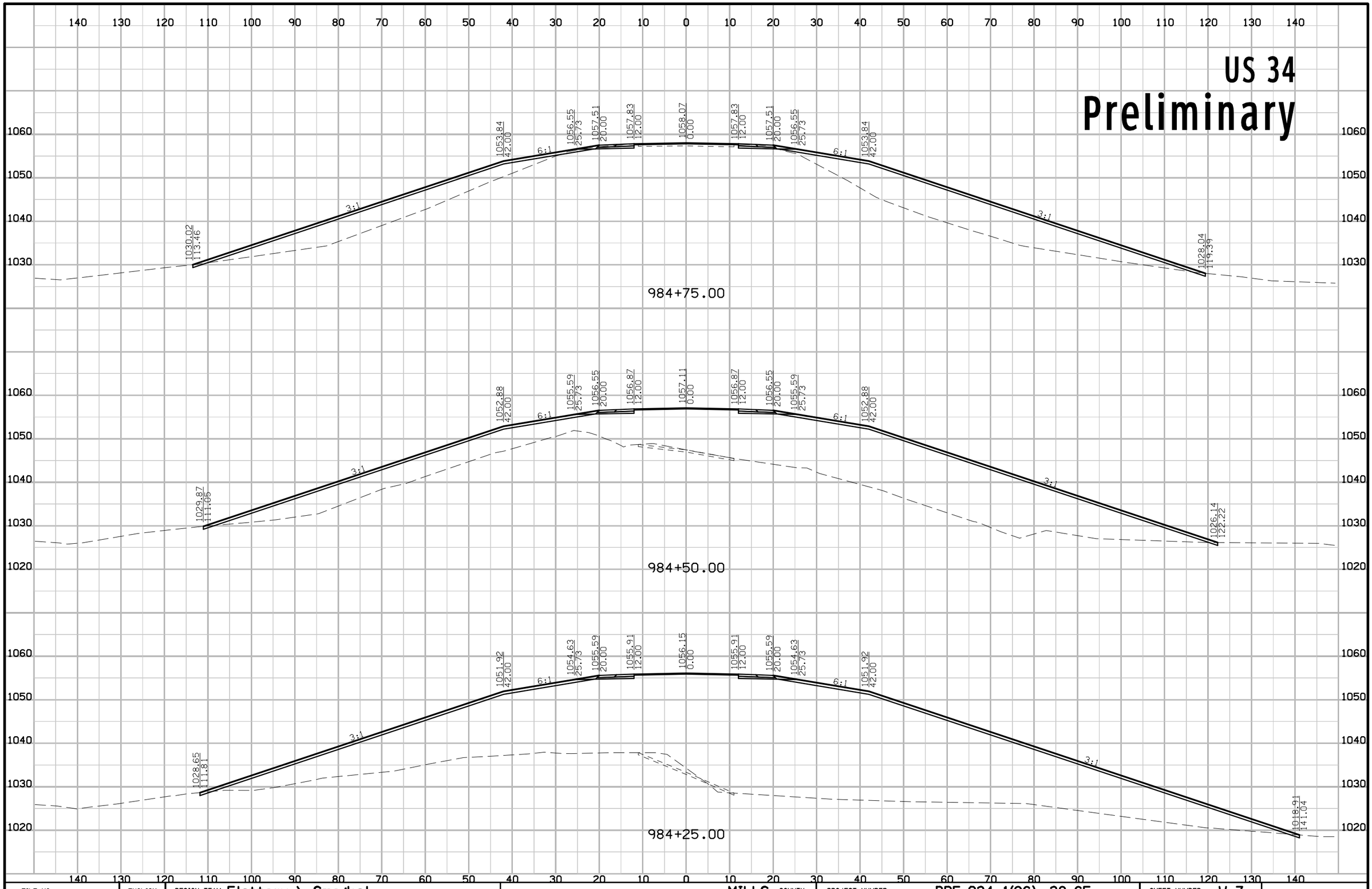
US 34
Preliminary



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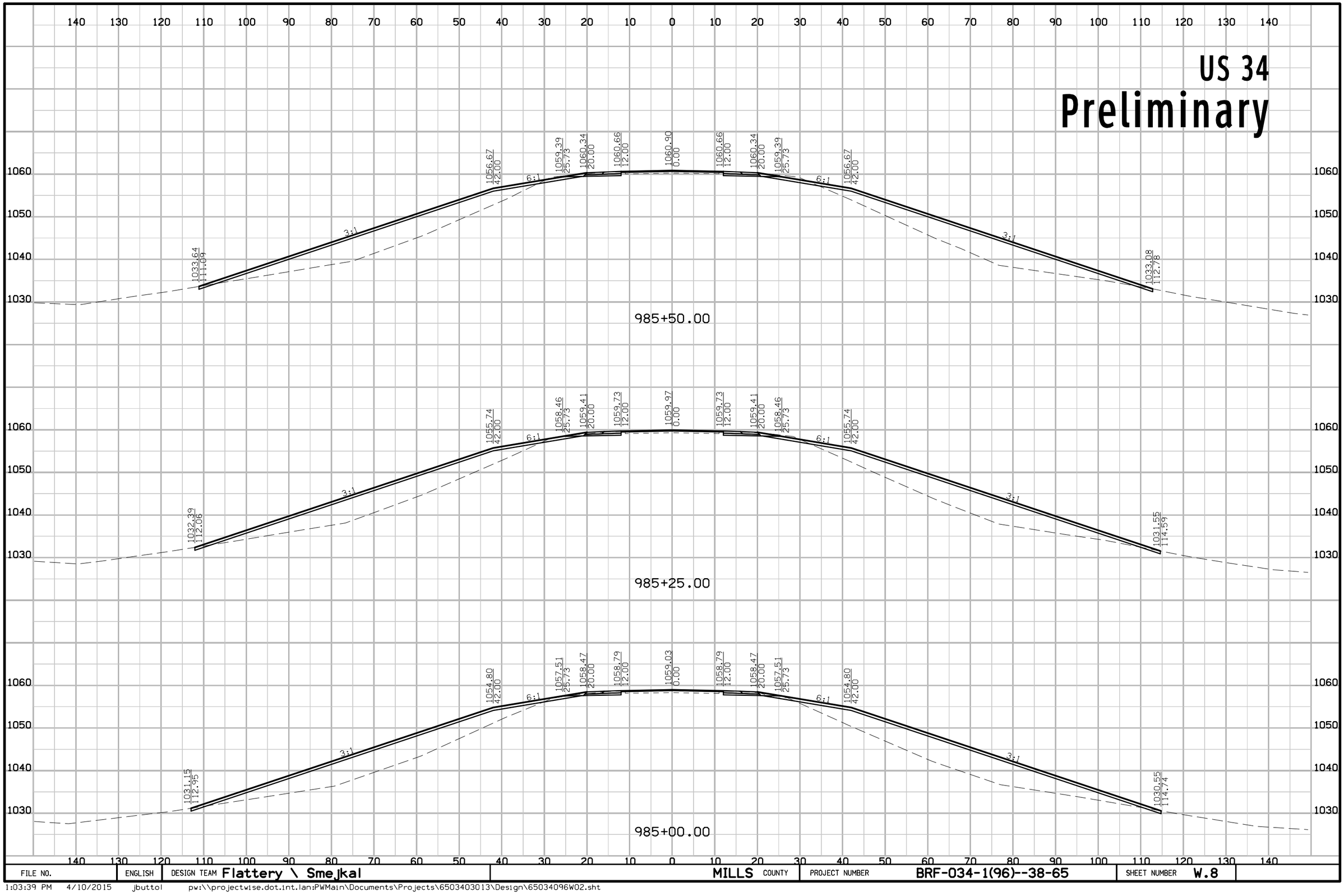
US 34
Preliminary



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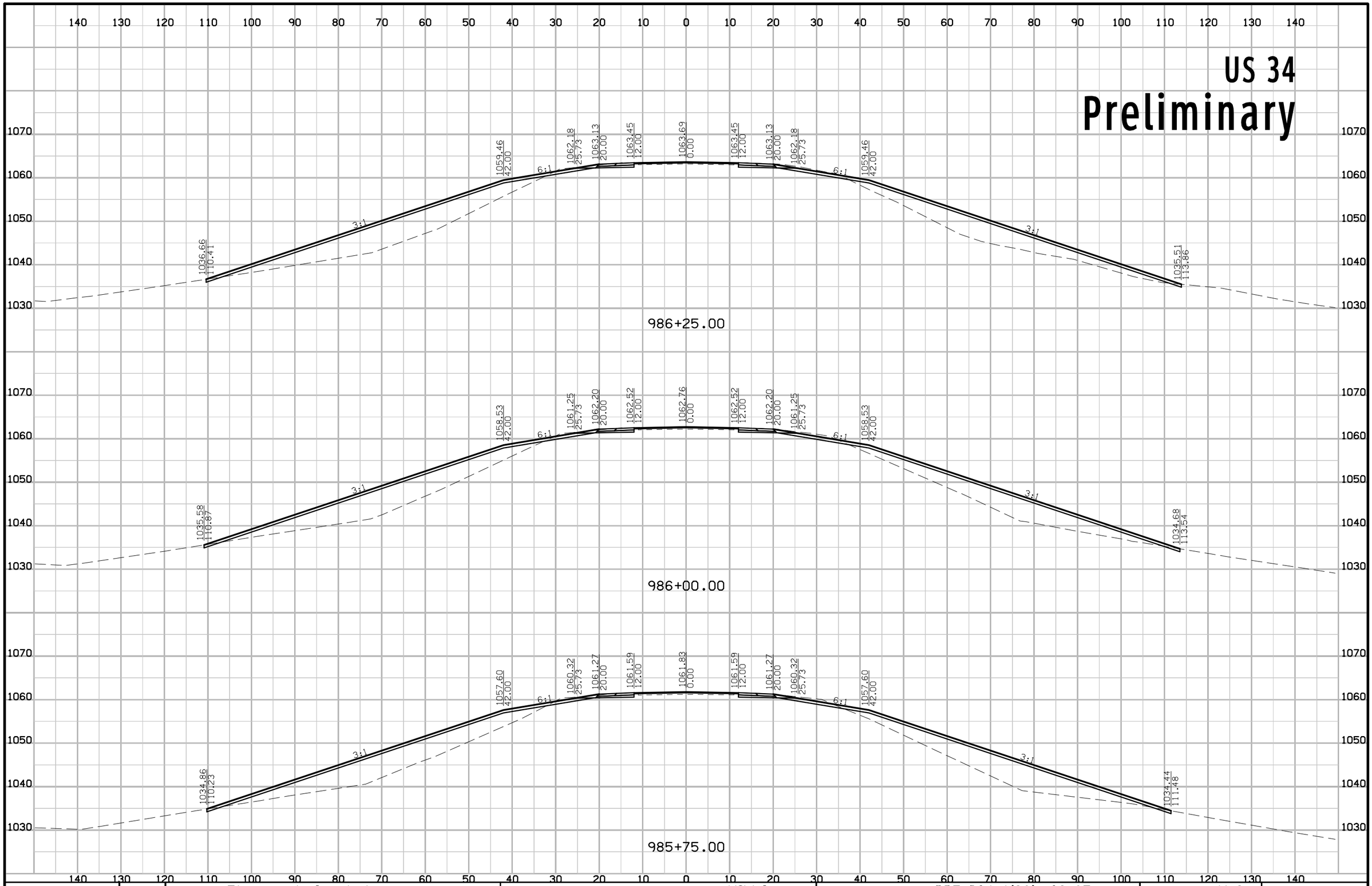
US 34
Preliminary



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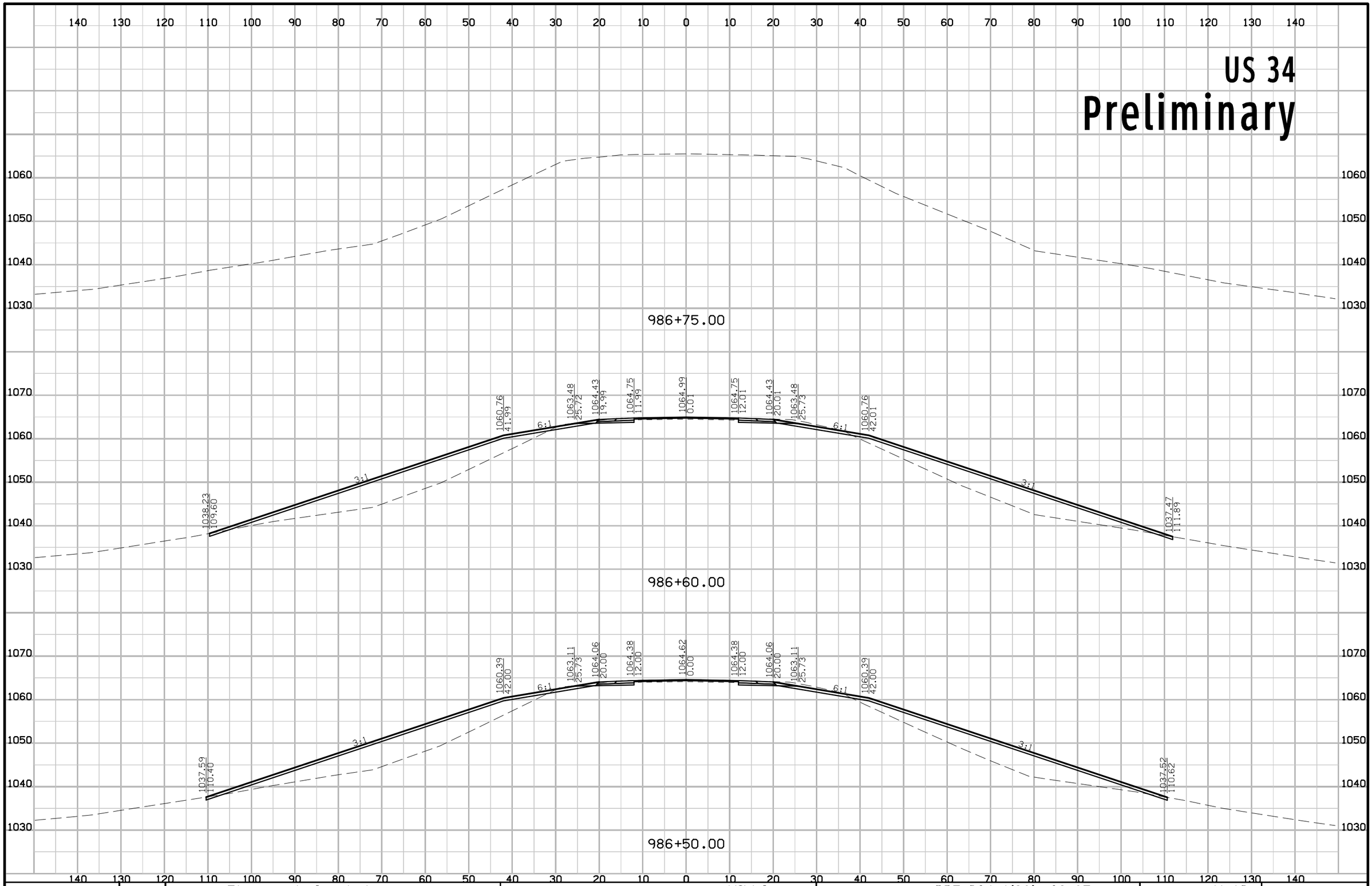
US 34
Preliminary



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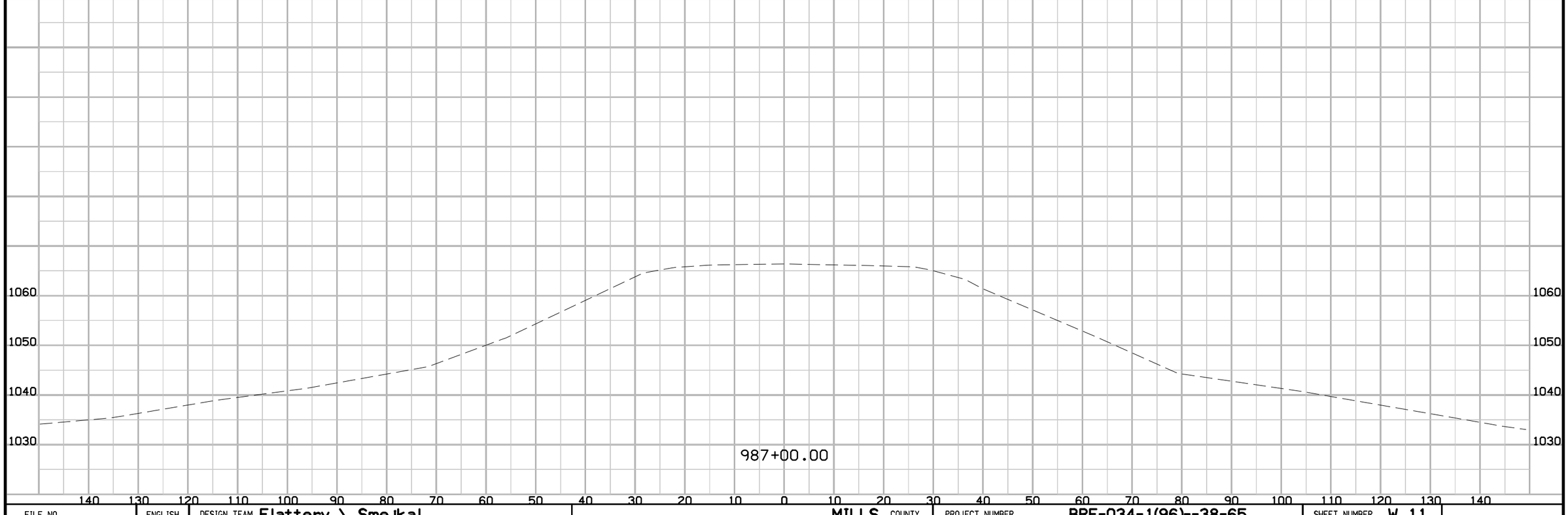
US 34
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM Flattery \ Smejkal	MILLS COUNTY	PROJECT NUMBER BRF-034-1(96)--38-65	SHEET NUMBER W.11

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