

GRADING
 IMN-029-6(279)130-0E-97
 WOODBURY CO.

INDEX OF SHEETS	
No.	DESCRIPTION
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A.1	Title Sheet and Location Map
A.2	Design Criteria Sheets
B Sheets	Typical Cross Sections and Details
B.1	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
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* D.2	I-29
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	* Color Plan Sheets



Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM WOODBURY COUNTY GRADING

County Road D-65/310th St. over I-29
2.2 miles North of IA 141

SCALES: As Noted

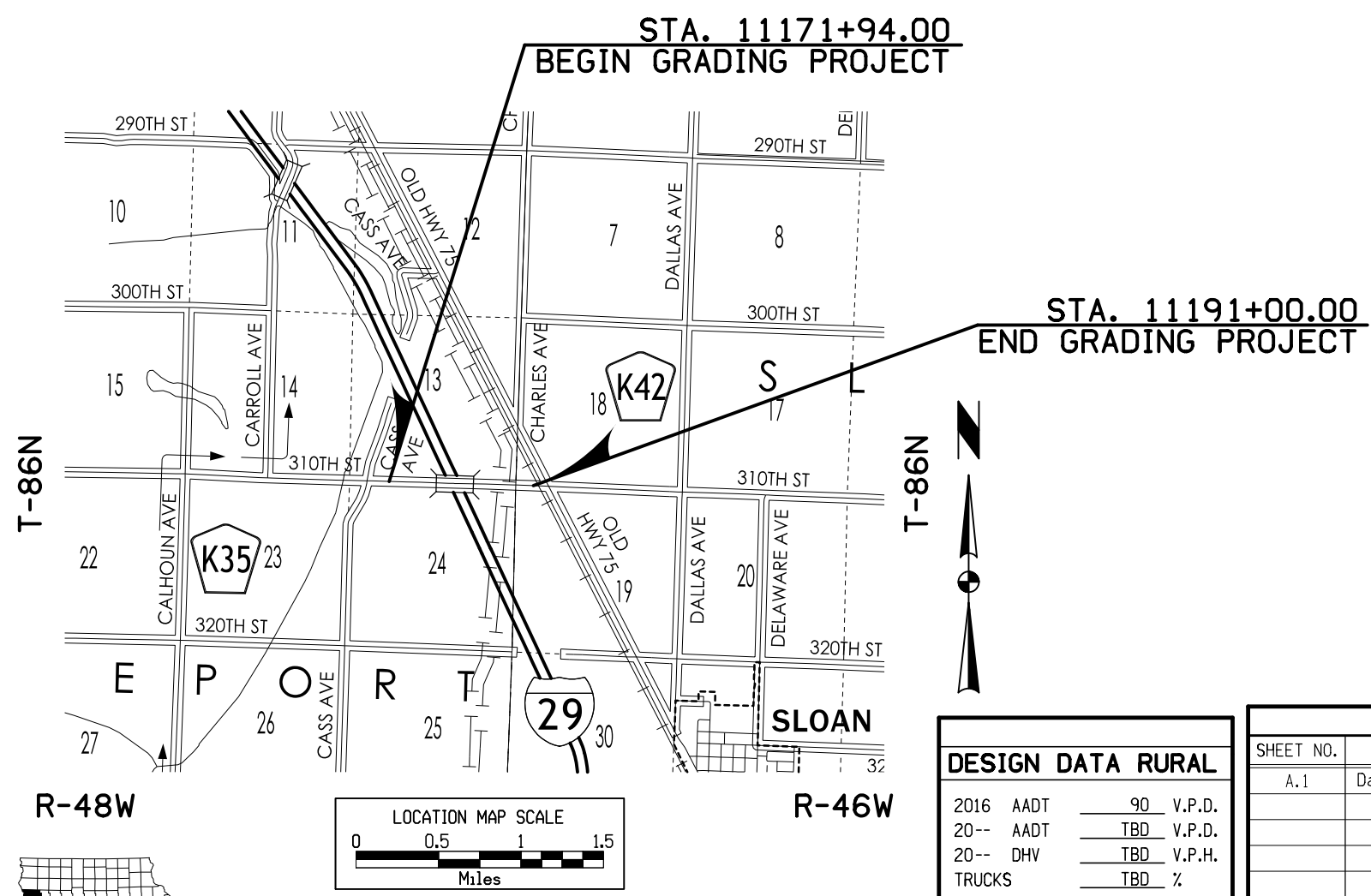
Refer to the Proposal Form for list of applicable specifications.

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



REVISIONS

TOTAL	33
PROJECT IDENTIFICATION NUMBER	16-97-029-040
PROJECT NUMBER	IMN-029-6(279)130-0E-97
R.O.W. PROJECT NUMBER	TBA



DESIGN DATA RURAL			
2016	AADT	90	V.P.D.
20--	AADT	TBD	V.P.D.
20--	DHV	TBD	V.P.H.
	TRUCKS	TBD	%
Total Design ESALs		TBD	

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Daniel J. Smith	Primary Signature Block

ROADWAY 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: Daniel J. Smith, P.E. Date: _____

Printed or Typed Name: Daniel J. Smith

My license renewal date is December 31, 2018

Pages or sheets covered by this seal: A.1-A.2, B.1, D.1-D.2, E.1-E.2, G.1-G.3, Q.1-Q.3, W.1, X.1-X.19

PRELIMINARY PLANS

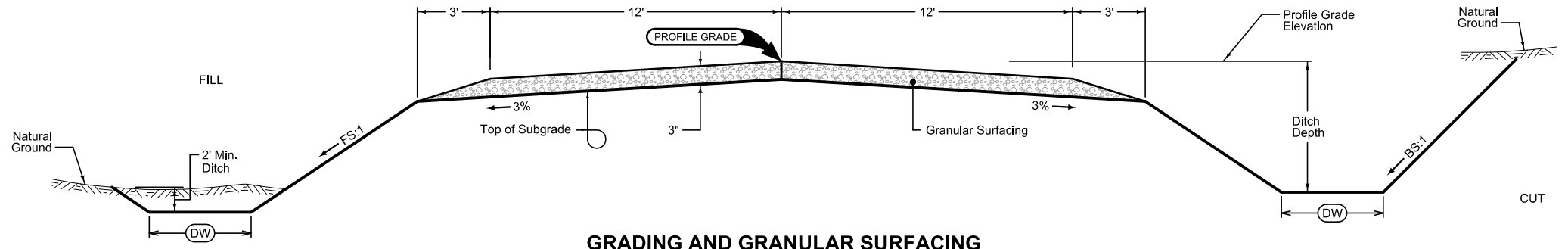
Subject to change by final design.

D2 PLAN - Date: Sept. 15, 2017

Design Criteria Worksheet

Roadway			
PIN Number	16-97-029-040	Submittal Date	9/15/2017
Project Number	IMN-029-6(279)130-0E-97	Revision Date	
District	District 3		
County	Woodbury		
Route	D-65		
Location	County Road D-65/310th St. over I-29. 2.2 Miles North of IA 141		
Work Type	Bridge Raising and Grading		
Segment Manager			
Designer	CH2M		
Design year ADT =	90		
Design Manual Section 1C-1 Last Updated: 05-26-17	Secondary Roads		
Design Elements	Project value	Local Systems I.M. 3.210 value	Remarks
Design speed (mph)	50	50	
Design lane width (ft.)	12 (a)	10	
Shoulder width (ft.)	3 (a)	3	
Bridge width - new (ft.)	NA	24	
Bridge width - existing (ft.)	24	20	
Maximum super elevation rate (%)	8%	8%	
Minimum radius (ft.)	758	758	
Stopping sight distance (ft.)	425	425	
Vertical curve length (ft.)	150 (b)	150	
Minimum rate of vertical curvature (K)	Crest	84 (c)	84
	Sag	96 (c)	96
Minimum gradient (%)	0.5% (b)	NA	
Maximum gradient (%)	6%	6	
Foreslope	3:1 (d)	2:1	
Backslope	3:1 (f)	NA	
Traverse slopes	8:1 (e)	NA	
Clearzone	8-10	8-10	See IM 3.215
Notes:			
a) Based on existing roadway approach top width of 30'			
b) Per Iowa DOT Design Manual Chapter 2B-1			
c) Per Iowa DOT Design Manual Chapter 6D-1			
d) See Project Concept Statement			
e) Per Iowa DOT Design Manual Chapter 3F-3			
f) Per Iowa DOT Design Manual Chapter 1C-1, Rural Two Lane: 3:1 preferred, 2.5:1 minimum acceptable			

LOCATION		DIMENSIONS		
ROAD IDENTIFICATION	STATION TO STATION	FS	BS	(DW) Feet
D-65	11171+94.00 11191+00.00	3	3	2



GRADING AND GRANULAR SURFACING

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.

SURVEY SYMBOLS

- CP Control Point
- BM Bench Mark
- EG Edge of Gravel Road
- GR Ground Shot
- BL Topo Breakline
- FWD Wood Fence
- D Centerline Draw or Stream (Down)
- PIP Pipe Culvert
- TDC Tree Deciduous
- TLNR Tree Line Right
- BRG Bridge
- GDC Guard Rail Cable
- EP Edge of Paved Roads (ML or SR)
- GDL Guard Rail Steel
- SIGN
- GU Gutter In Front of Curb
- CU Back of Curb
- BCL Bridge Centerline
- BD Bridge Deck
- SH Paved Shoulder
- C Centerline BL of Road (ML or SR)
- TLNL Tree Line Left
- FW Wire Fence
- EB Electrical Box
- Default_Point Default Point Feature
- GV Gas Valve
- BBB Bottom of Bridge Beam
- TOP Top of Bridge Pier
- BLS Bridge Low Steel
- SBR Size of Bridge
- Default_Chain Default Chain Feature

UTILITY LEGEND

- E(B) (Underground) Woodbury County Rural Electric Company
Contact: Nate Bauer
Phone: 712-873-3125
- G(B) Magellan Midstream Partners
Contact: Tim Kassen
Phone: 918-574-7351

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	

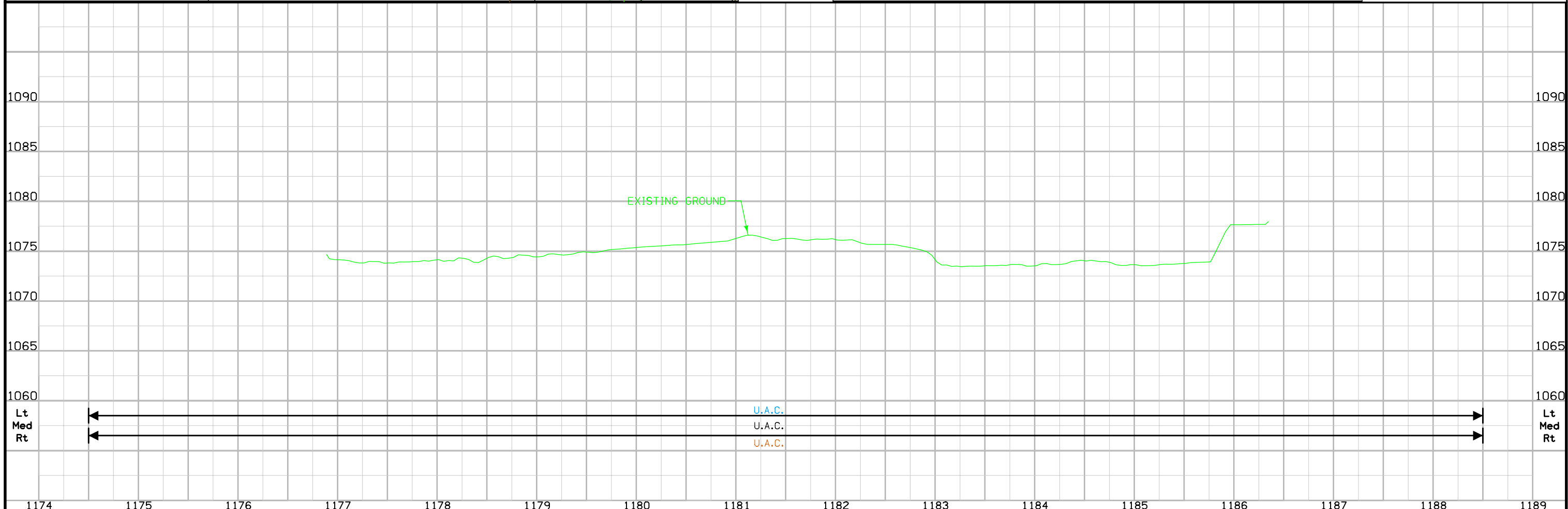
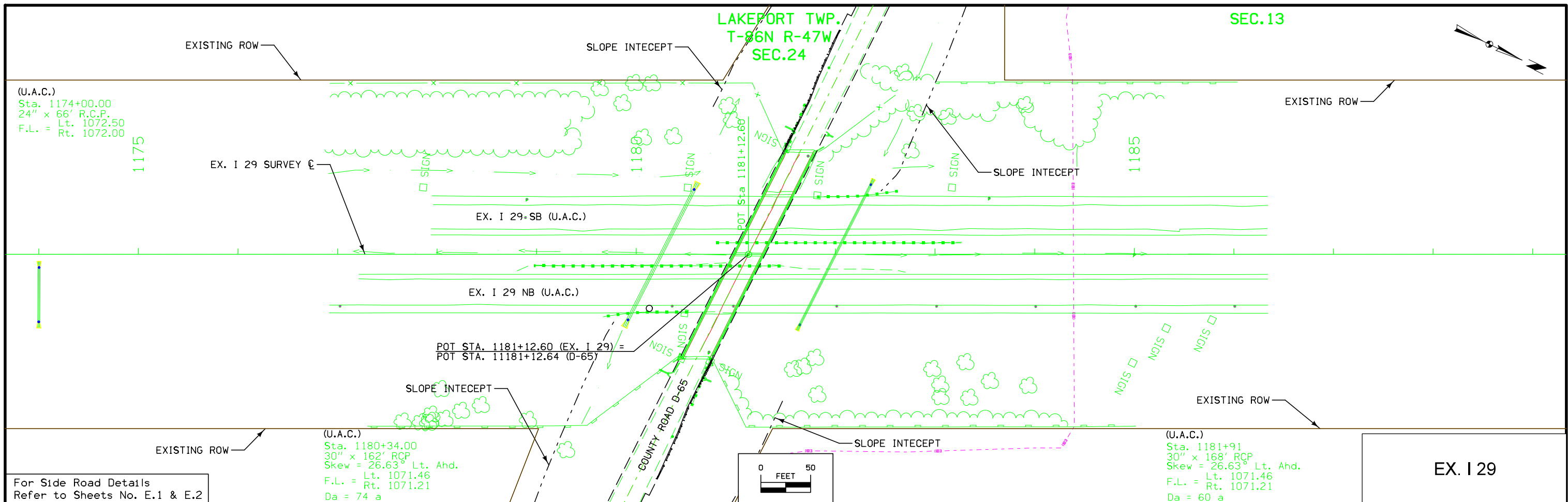
- Reference Point
- Station
- Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

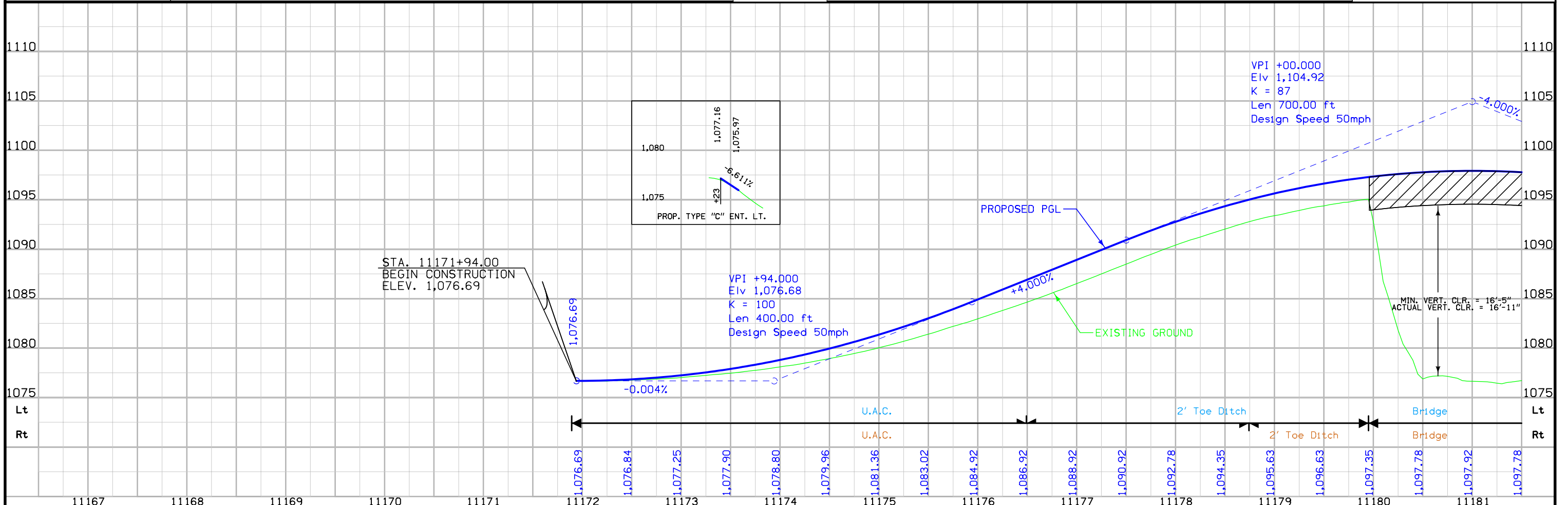
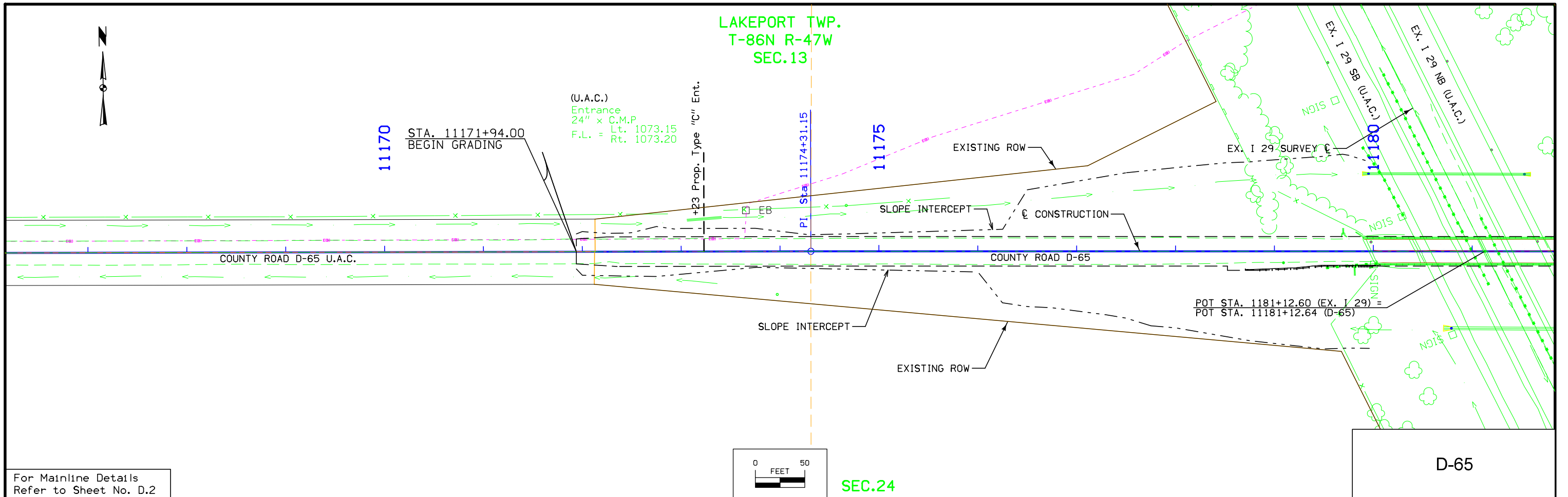
RIGHT-OF-WAY LEGEND

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

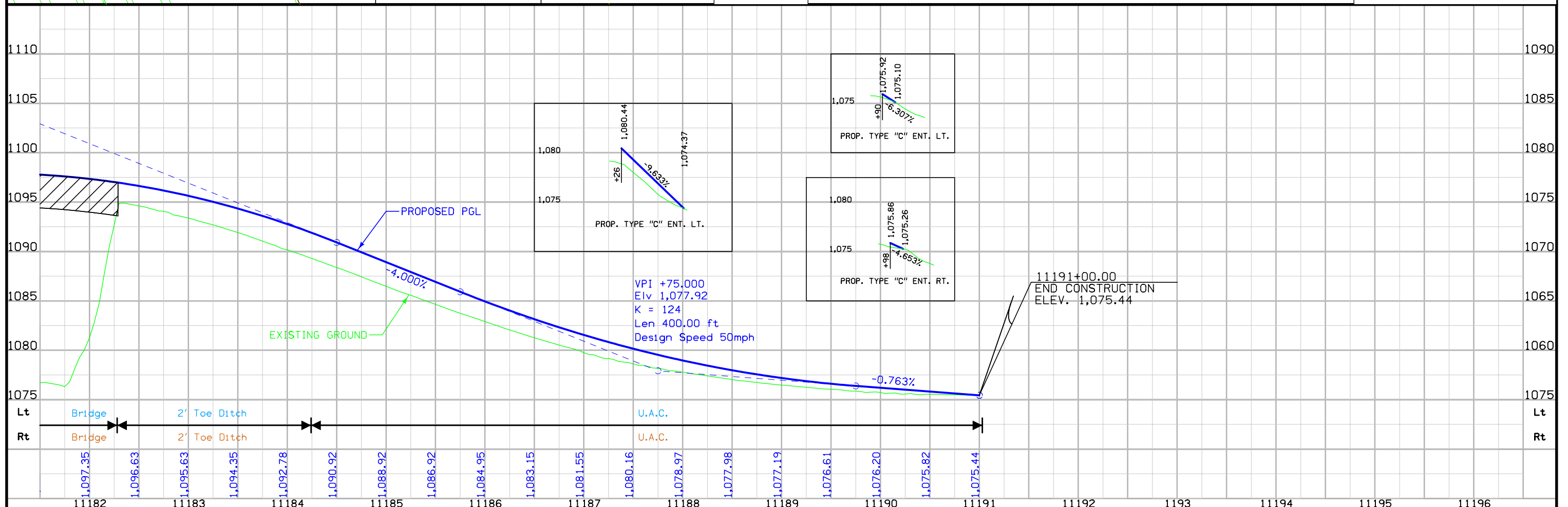
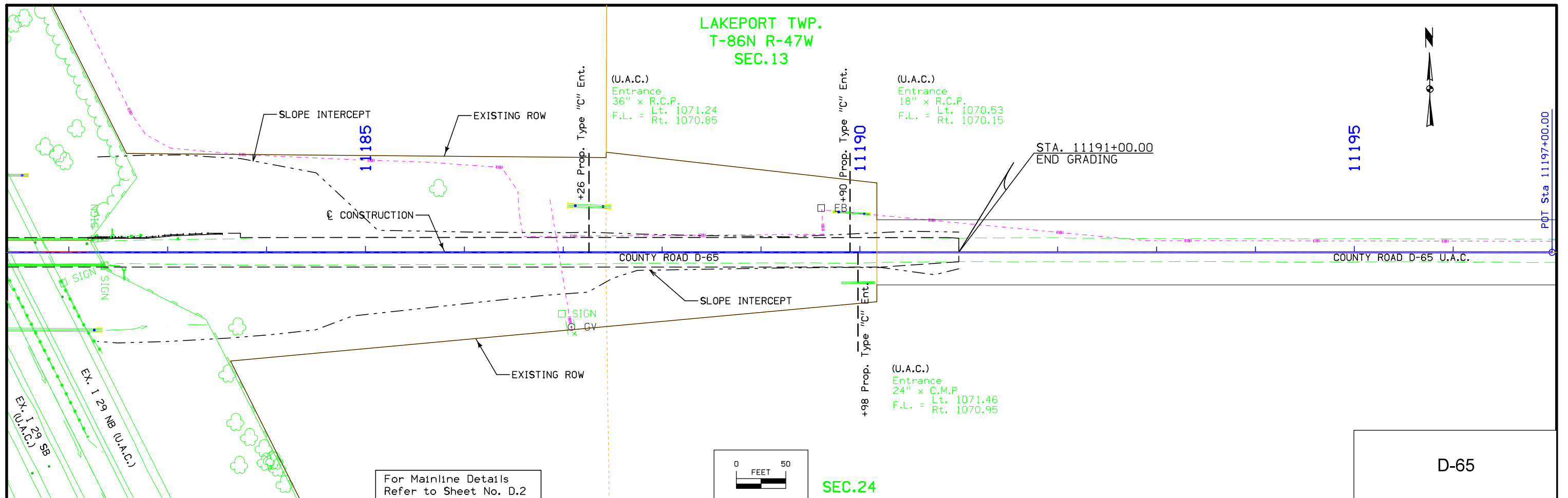
PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES D & E)





1:42:20 PM 9/15/2017 mander23 pw:\projectwise.ch2m.com:DEN001\Documents\684571 - IOWA ON CALL BRIDGE\Work in Progress\9702904016-D65\Design\SHT_97029279Z04E01.dgn



Survey Information

WOODBURY COUNTY
IMN-029-6(280)132-0E-97
290TH STREET AND CARROLL AVENUE K-35

General Information

Measurement units for this survey are US survey feet. This survey is for proposed Bridge reconstruction and reconstruction of County Road 310th Street over I-29. Project datum and control information is provided by Shive-Hattery, Inc..

Vertical Control

BENCH MARK SE COR BRIDGE WING WALL IHC CAP FROM IOWA DOT PLANS. VERTICAL DATUM: NAVD88

Horizontal Control

HORIZONTAL DATUM: NAD83(2011) EPOCH 2013.00
1a. Regional Coordinate System Zone 4

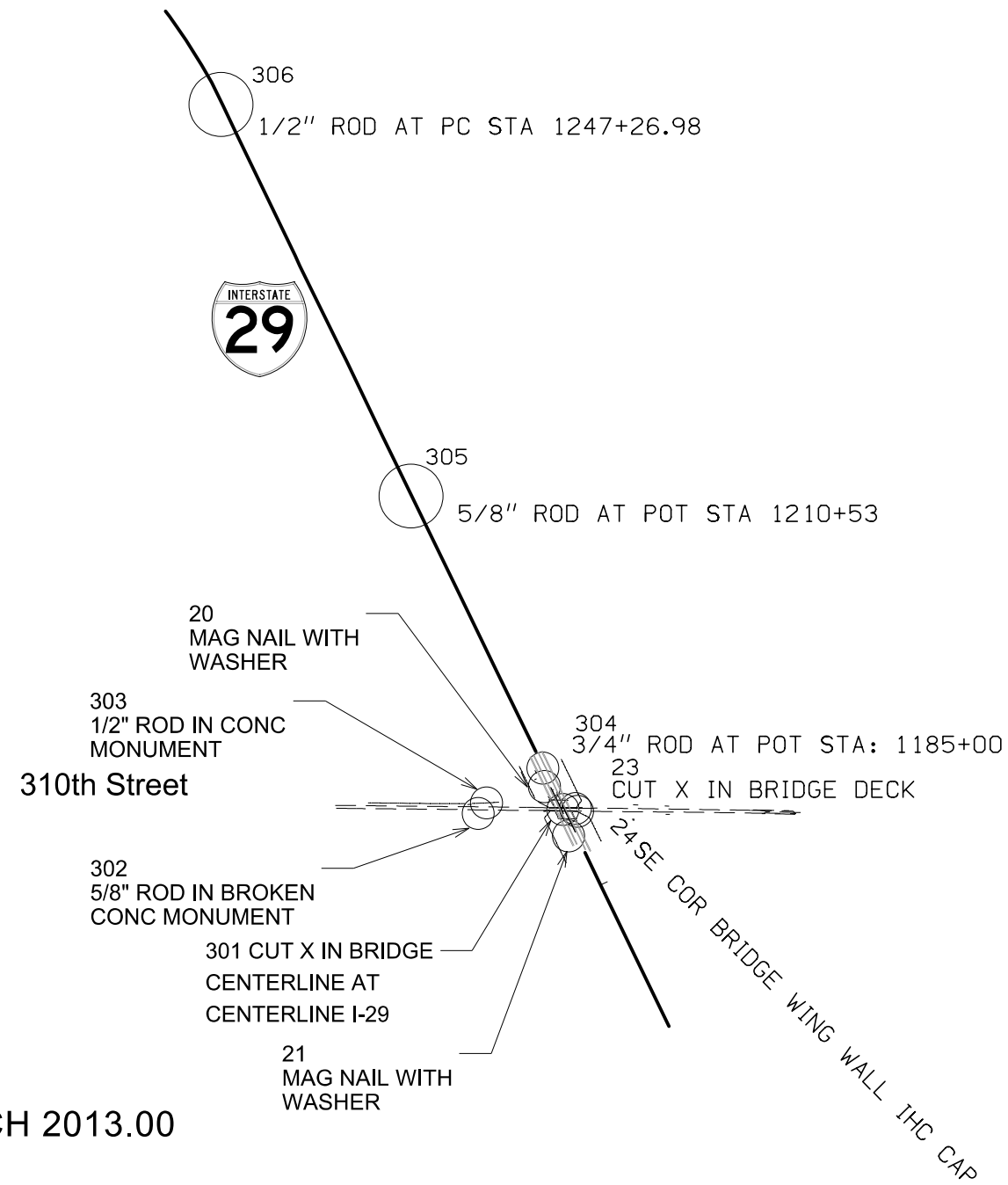
Point Name	Northing	Easting	Elevation	Description
20	8503033.3205	14113991.0755	1077.0160	CP20 MAG NAIL WITH WASHER
21	8502616.1902	14114194.7504	1076.7860	CP21 MAG NAIL WITH WASHER
23	8502847.6320	14114252.8689	1095.0770	CP23 CUT X IN BRIDGE DECK
24	8502824.1546	14114270.0427	1095.5000	BM24 SE COR BRIDGE WING WALL IHC CAP
301	8502840.3174	14114147.3783	1095.9050	CP301 CUT X IN BRIDGE CENTERLINE AT CENTERLINE I-29
302	8502806.0054	14113431.2650	1074.8460	CP302 5/8" ROD IN BROKEN CONC MONUMENT
304	8503189.0567	14113978.3282	1072.6140	CP304 3/4" ROD AT POT STA: 1185+00
305	8505485.9126	14112864.1354	1074.5840	CP305 5/8" ROD AT POT STA 1210+53
306	8508791.1188	14111260.1435	1074.6090	CP306 1/2" ROD AT PC STA 1247+26.98

Alignment Information

No horizontal alignment was created for this project.

CONTROL POINT VICINITY MAP

This map is a guide to the vicinity of the primary project control points
 Primary control is for use with RTK base stations and for RTN validation.
 Future surveys will use primary project control to establish temporary
 control as needed for construction or other surveying applications.



HORIZ. DATUM: NAD83(2011) EPOCH 2013.00

VERT. DATUM: NAVD88

1a. Regional Coordinate System Zone 4

Coordinate listing from next sheet will be used with 1aRTN for monument recovery. No other reference ties are given.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2013.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 4

Point Name	Northing	Easting	Elevation	Description
20	8503033.3205	14113991.0755	1077.0160	CP20 MAG NAIL WITH WASHER
21	8502616.1902	14114194.7504	1076.7860	CP21 MAG NAIL WITH WASHER
22	8494851.6364	14114158.9507	1095.0000	CP22 CUT X IN BRIDGE DECK
23	8502847.6320	14114252.8689	1095.0770	CP23 CUT X IN BRIDGE DECK
24	8502824.1546	14114270.0427	1095.5000	BM24 SE COR BRIDGE WING WALL IHC CAP
301	8502840.3174	14114147.3783	1095.9050	CP301 CUT X IN BRIDGE CENTERLINE AT CENTERLINE I-29
302	8502806.0054	14113431.2650	1074.8460	CP302 5/8" ROD IN BROKEN CONC MONUMENT
304	8503189.0567	14113978.3282	1072.6140	CP304 3/4" ROD AT POT STA: 1185+00
305	8505485.9126	14112864.1354	1074.5840	CP305 5/8" ROD AT POT STA 1210+53
306	8508791.1188	14111260.1435	1074.6090	CP306 1/2" ROD AT PC STA 1247+26.98

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	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
SRD65	D-65															
SRD351		11165+00.00	8,502,859.4411	14,112,534.7351												
SRD353		11174+31.15	8,502,849.2610	14,113,465.8340												
SRD354		11197+00.00	8,502,819.8193	14,115,734.4892												
ML029	EX. I-29															
1009		1123+01.60	8,497,612.2550	14,116,683.7990												
JS200		1181+12.60	8,502,840.4177	14,114,147.2627												
1008		1247+26.66	8,508,791.0960	14,111,260.1850												

SURVEY SYMBOLS

- CP Control Point
- BM Bench Mark
- EG Edge of Gravel Road
- GR Ground Shot
- BL Topo Breakline
- FWD Wood Fence
- D Centerline Draw or Stream (Down)
- PIP Pipe Culvert
- TDC Tree Deciduous
- TLNR Tree Line Right
- BRG Bridge
- GDC Guard Rail Cable
- EP Edge of Paved Roads (ML or SR)
- GDL Guard Rail Steel
- SIGN
- SI Sign
- GU Gutter In Front of Curb
- CU Back of Curb
- BCL Bridge Centerline
- BD Bridge Deck
- SH Paved Shoulder
- C Centerline BL of Road (ML or SR)
- TLNL Tree Line Left
- FW Wire Fence
- EB Electrical Box
- Default_Point Default Point Feature
- GV Gas Valve
- BBB Bottom of Bridge Beam
- TOP Top of Bridge Pier
- BLS Bridge Low Steel
- SBR Size of Bridge
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UTILITY LEGEND

- E(B) (Underground) Woodbury County Rural Electric Company
Contact: Nate Bauer
Phone: 712-873-3125
- G(B) Magellan Midstream Partners
Contact: Tim Kassen
Phone: 918-574-7351

PLAN VIEW COLOR LEGEND OF SOILS SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Purple (Halo)	(15)	Backslope Drains
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
SHADING		
Design Color No.		
Brown, Light	(236)	Core Out

PROFILE VIEW COLOR LEGEND OF SOILS SHEETS

LINEWORK	Design Color No.	
Blue	(1)	Proposed Alignment, Stationing, and Alignment Annotation
Green	(2)	Existing Ground Line Profile
Green, Med	(227)	Topsoil
Green, Med	(227)	Slope Dressing Only
Orange	(6)	Loam
Brown, Dark	(238)	Class 10
Brown, Med	(237)	Sand
Red	(3)	Unsuitable A
Pink, Dark	(13)	Unsuitable B
Pink	(11)	Unsuitable C
Red	(3)	Shale
Red	(3)	Waste
Gray, Light	(48)	Broken and Weathered Rock
Gray, Med	(80)	Rock
Gray, V.Dark	(128)	Boulders

PATTERN AND SYMBOL LEGEND OF SOILS SHEETS

Drill	Dig/Core	Soils Book No. _____
Water	Treatment	Date(s) Drilled _____
Dry	Sand Blanket	Sandstone
Sample	Soil Remediation Area	Unsuitable A
Plugged	Select Soil	Unsuitable B
Moisture	Select Sand	Unsuitable C
Shelby	Slope Dressing Only	Sandy Soil
Blow Count	Broken and Weathered Rock	Boulders
Dens. Core	Rock	Shale

Reference Point	Survey Line
Station	Section Corner
Ground Line Intercept	Saw Cut
Guardrail	Clearing & Grubbing Area
Pavement Removal	Blank
Blank	Blank

RIGHT-OF-WAY LEGEND

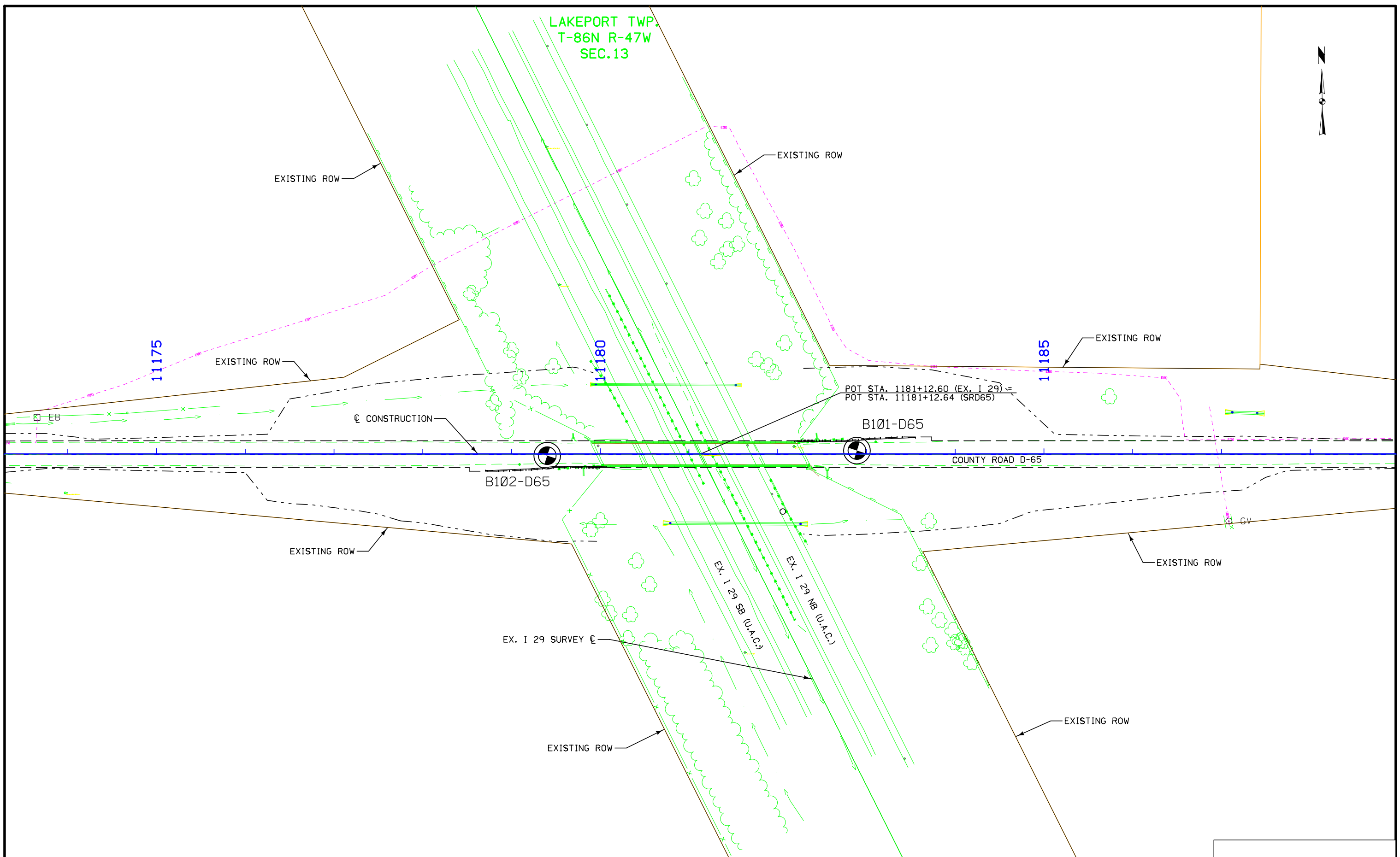
Proposed Right-of-Way
Existing and Proposed Right-of-Way
Easement and Existing Right-of-Way
Borrow
Easement (Temporary)
Easement
Excess
Access Control

NOTE: Sounding and test boring data shown in the plans were accumulated for designing and estimating purposes. Their appearance on the plans does not constitute a guarantee that conditions other than those indicated will be encountered. Details and notes shown elsewhere shall be used for roadway and structure construction.

SOILS LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES Q & R)

LAKEPORT TWP.
T-86N R-47W
SEC.13



POT STA. 1181+12.60 (EX. I 29) =
POT STA. 11181+12.64 (SRD65)

B101-D65

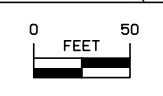
COUNTY ROAD D-65

B102-D65

EX. I 29 SB (U.A.C.)

EX. I 29 NB (U.A.C.)

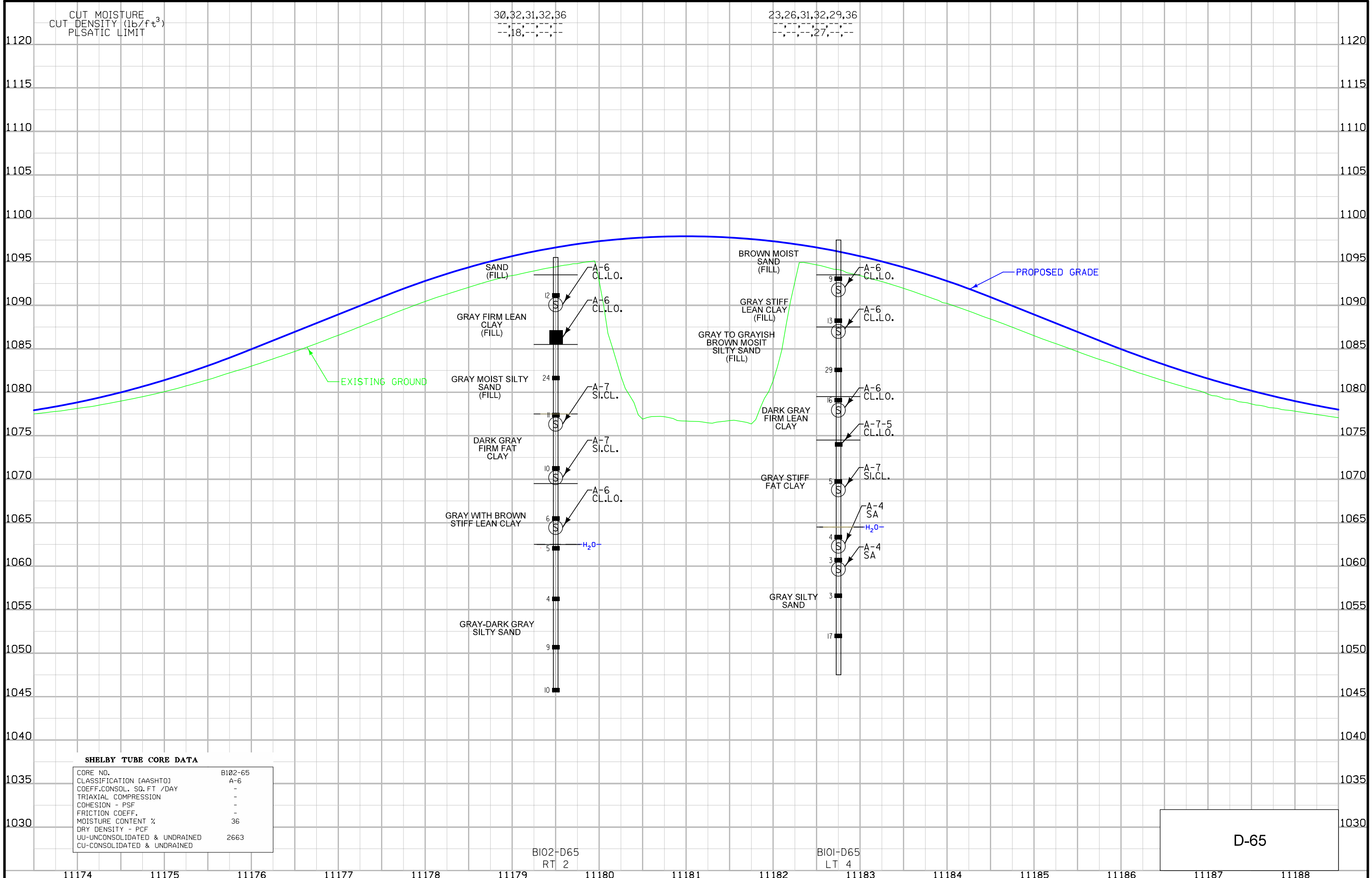
EX. I 29 SURVEY



SEC.24

D-65

For Profile Refer
to Sheet No. Q.3



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.

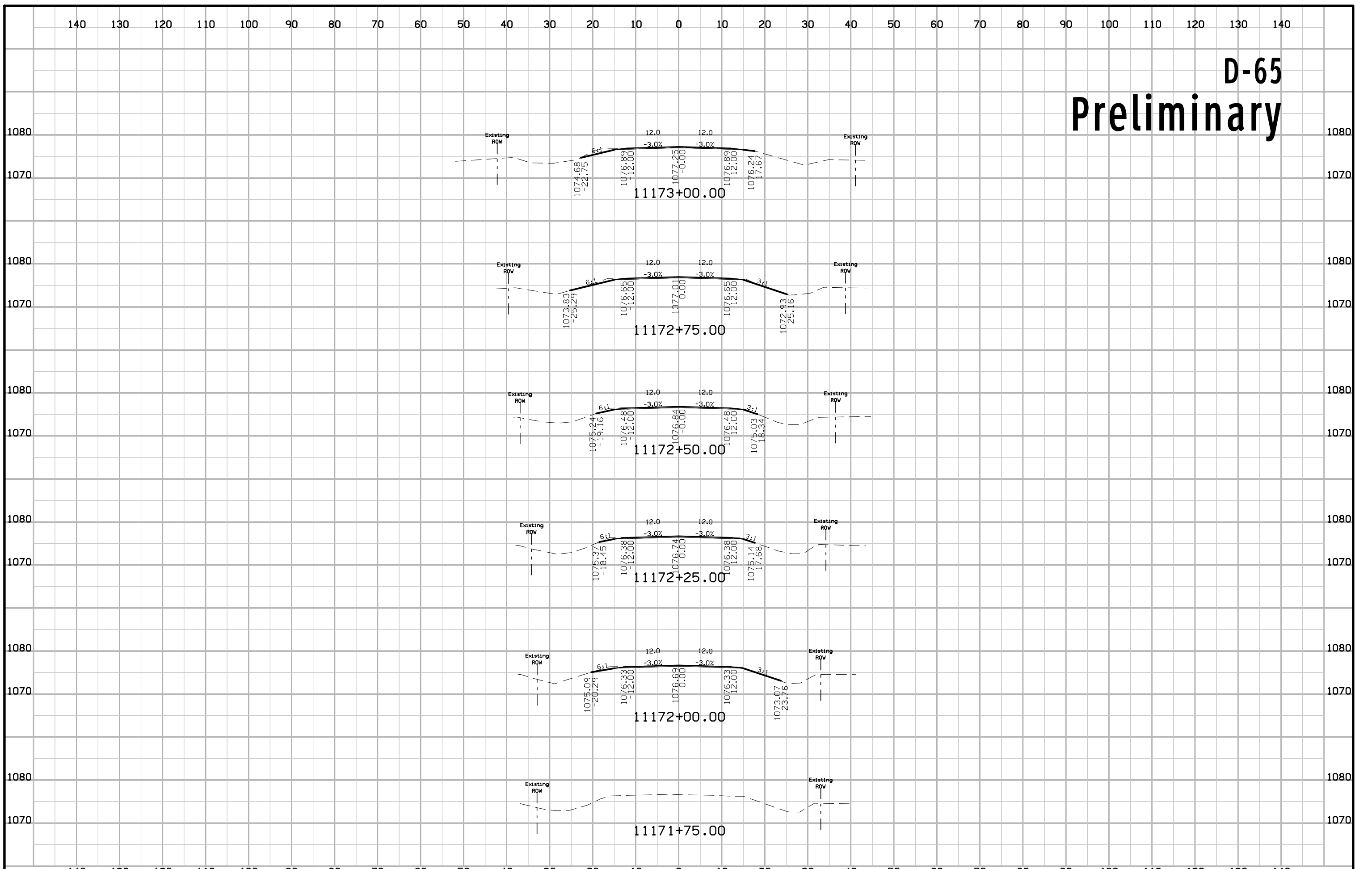
SYMBOL LEGEND OF CROSS SECTION SHEETS

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

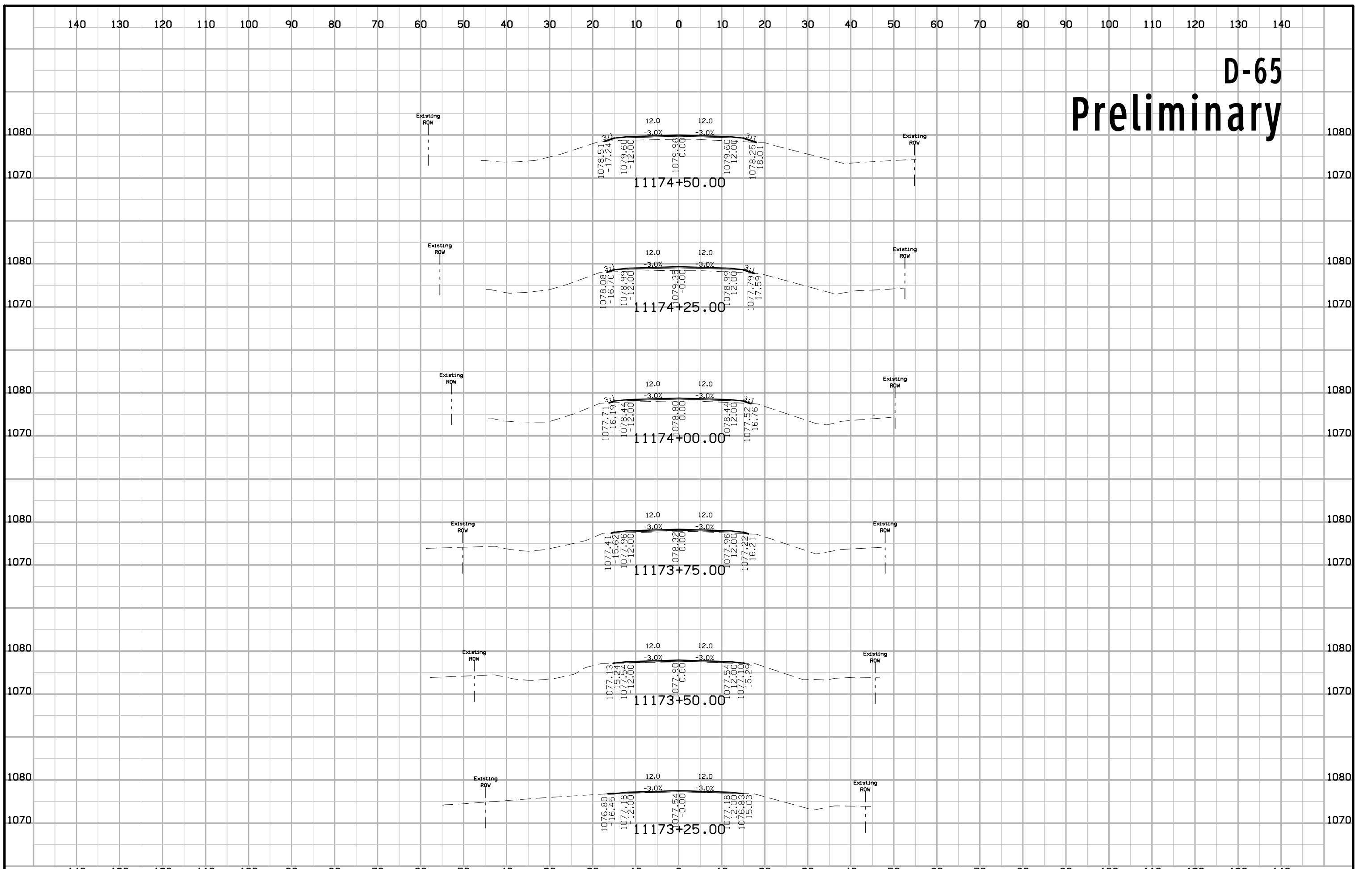
**CROSS SECTION
LEGEND AND SYMBOL
INFORMATION SHEET**

(COVERS SHEET SERIES W & X)

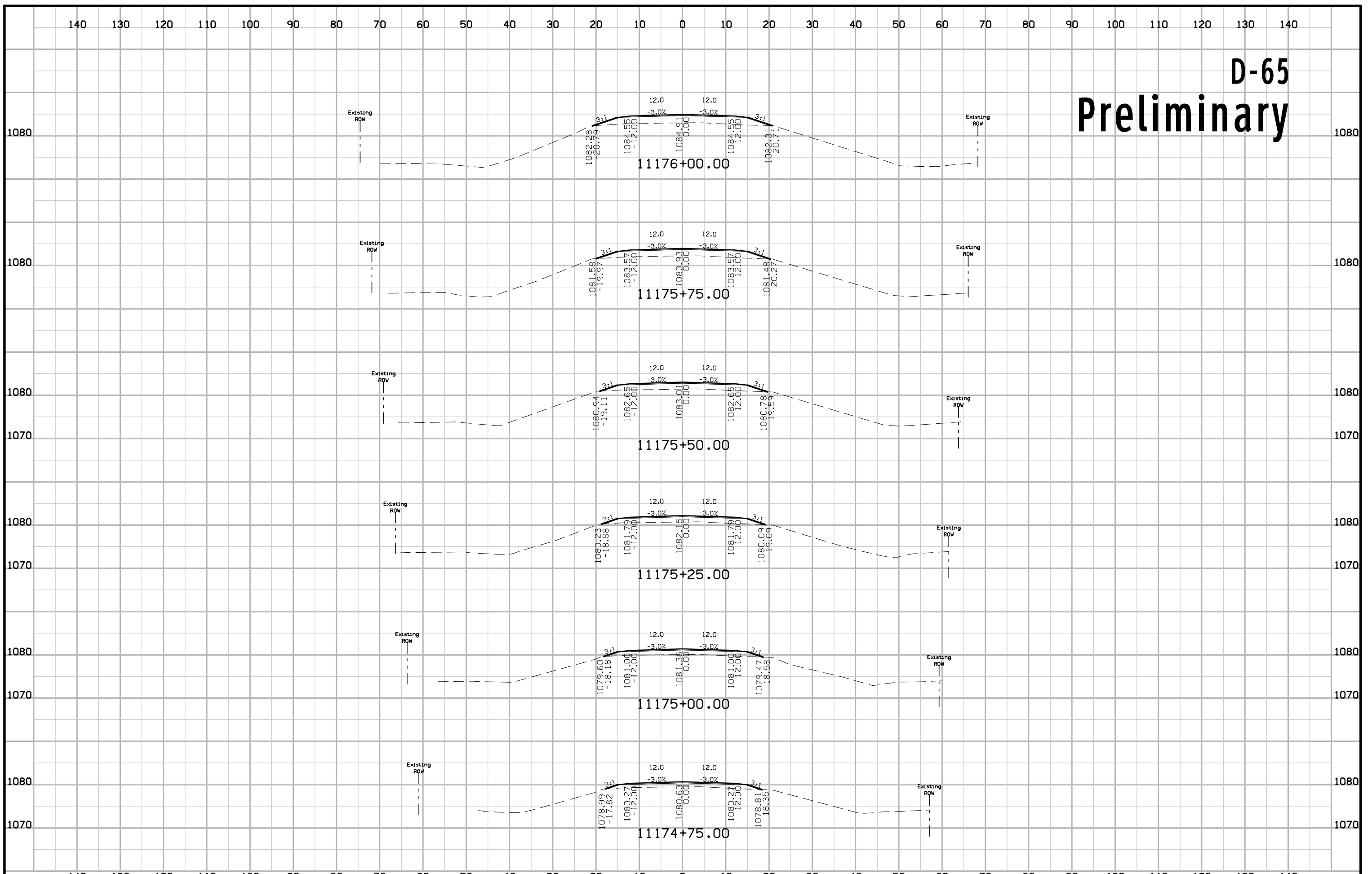
D-65 Preliminary



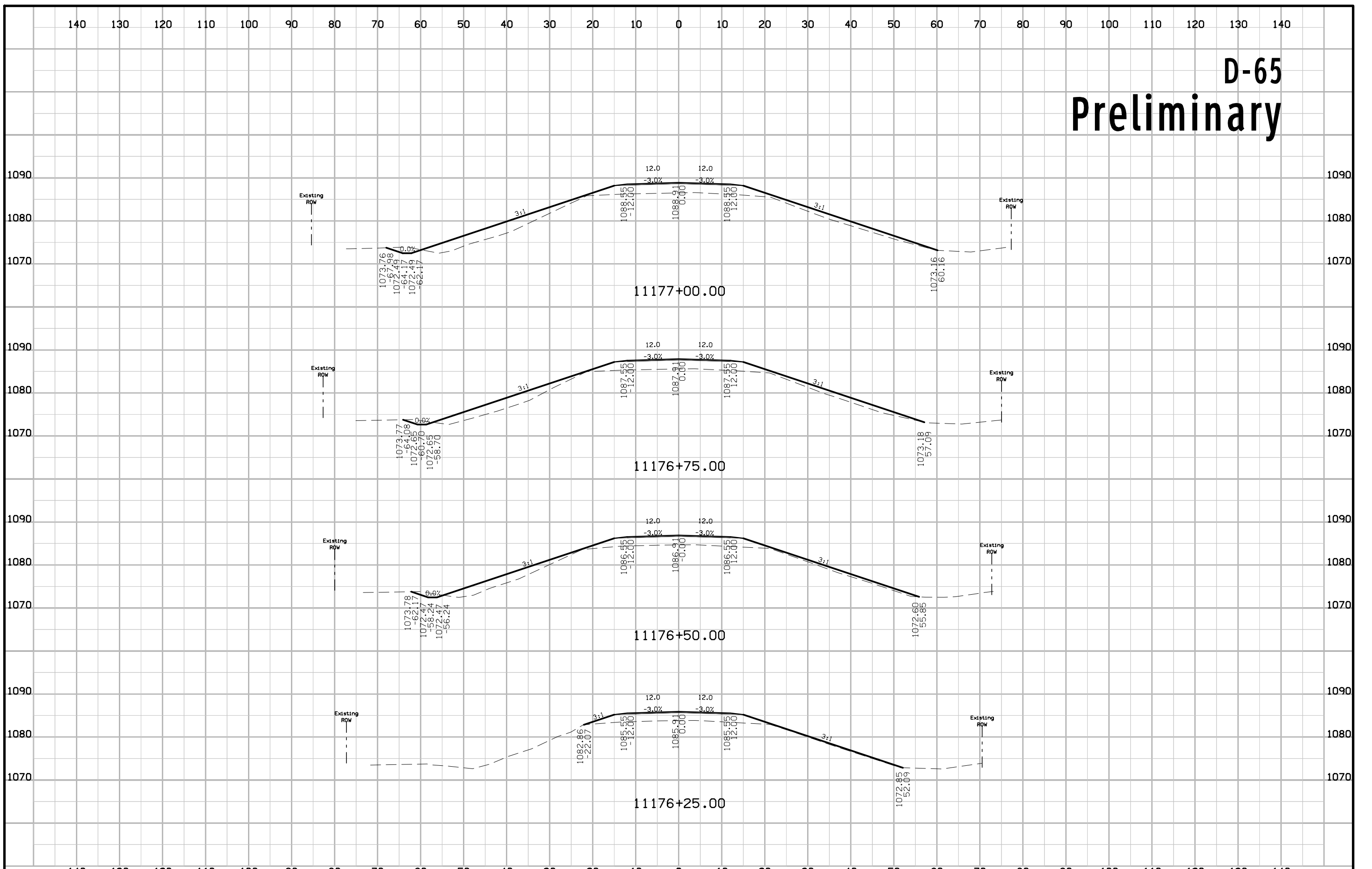
D-65 Preliminary



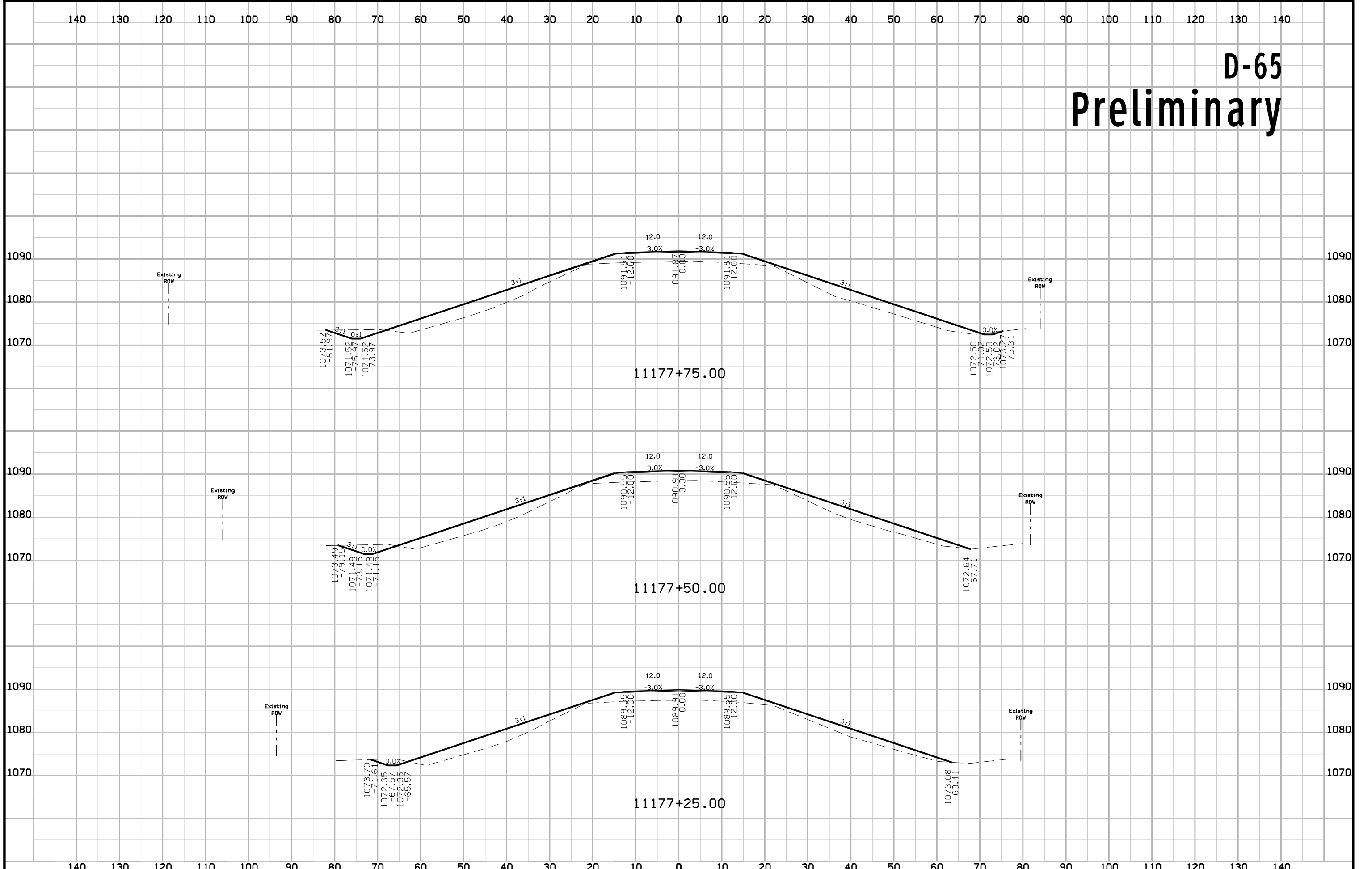
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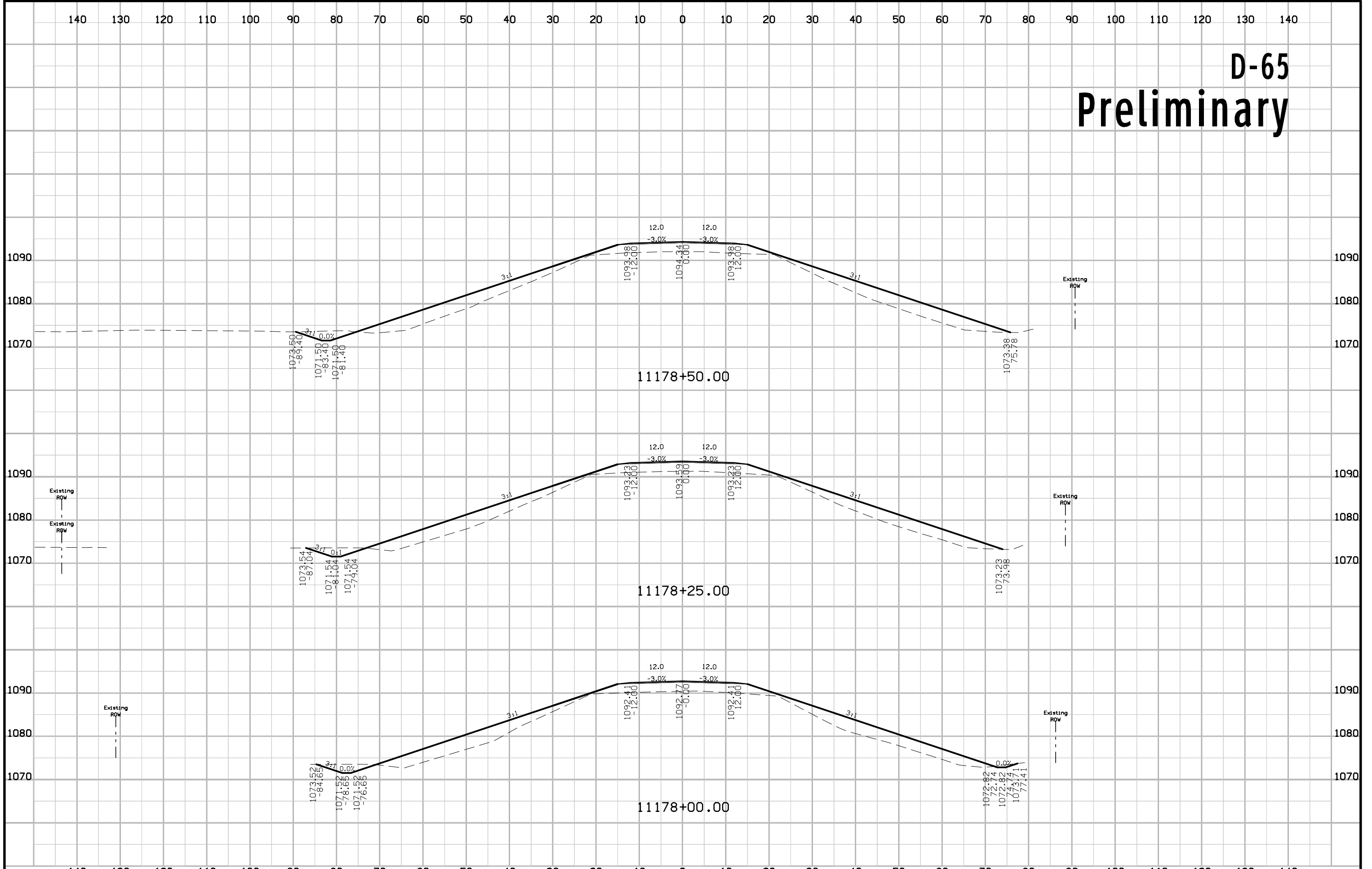
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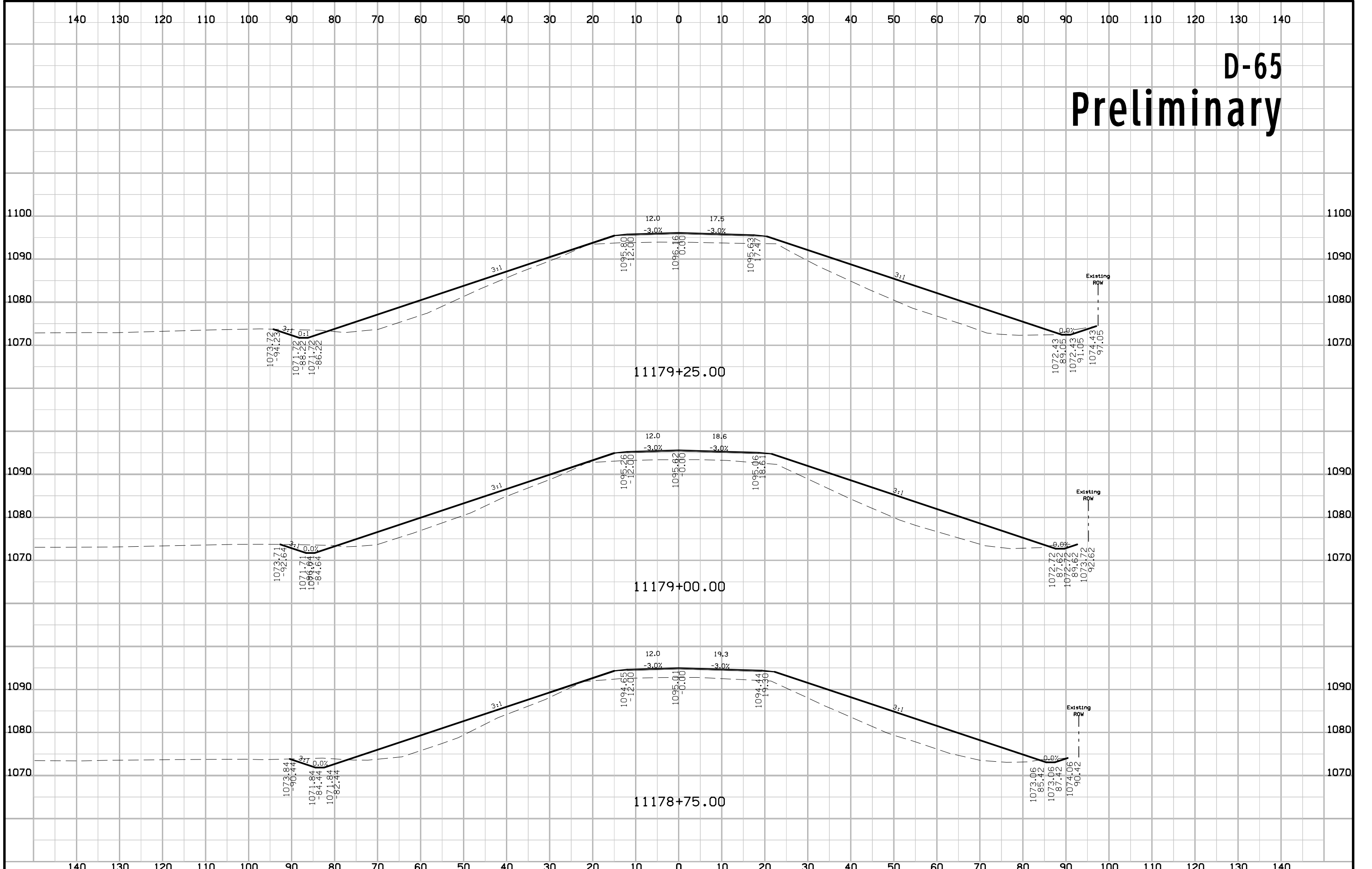
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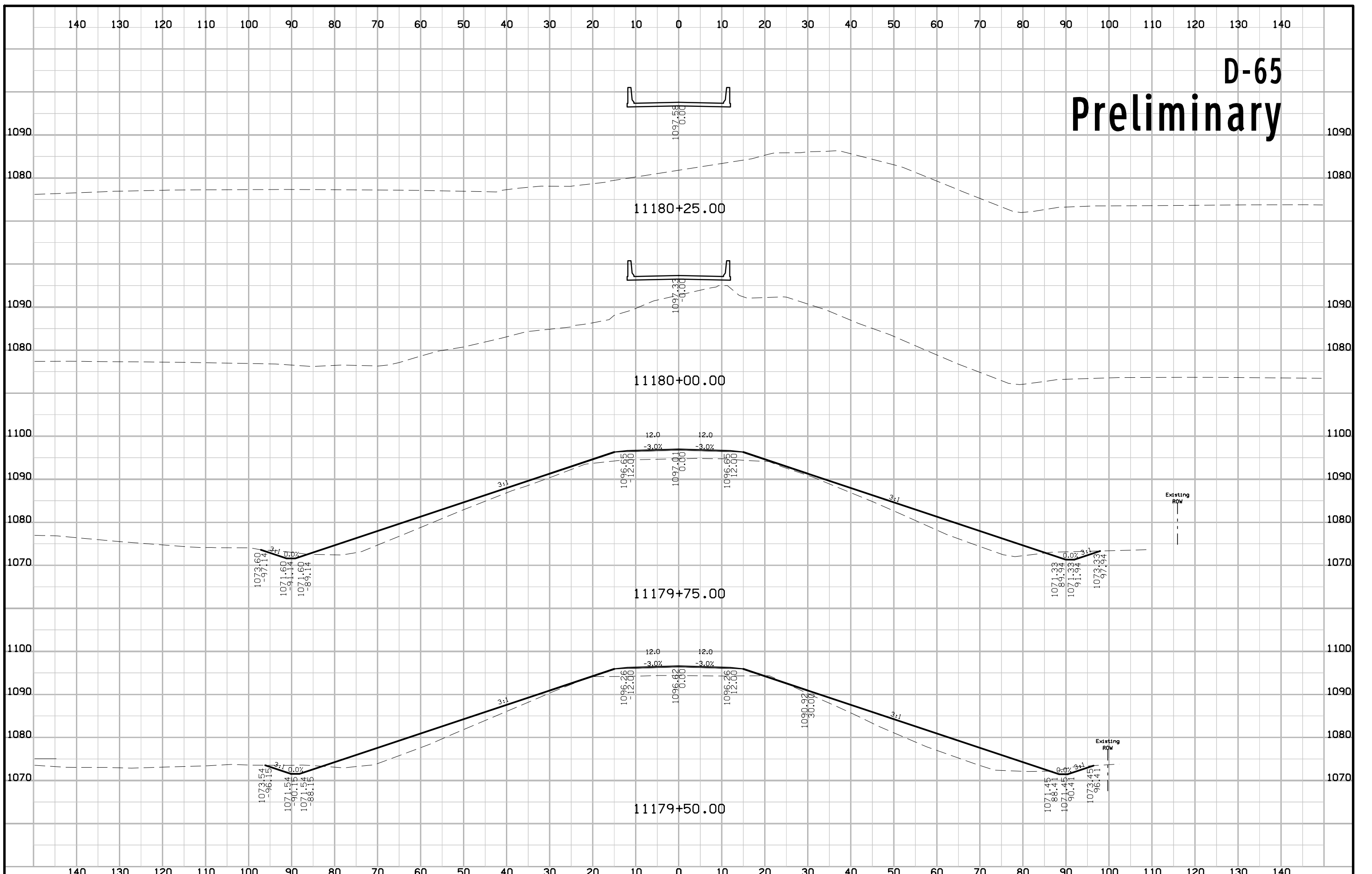
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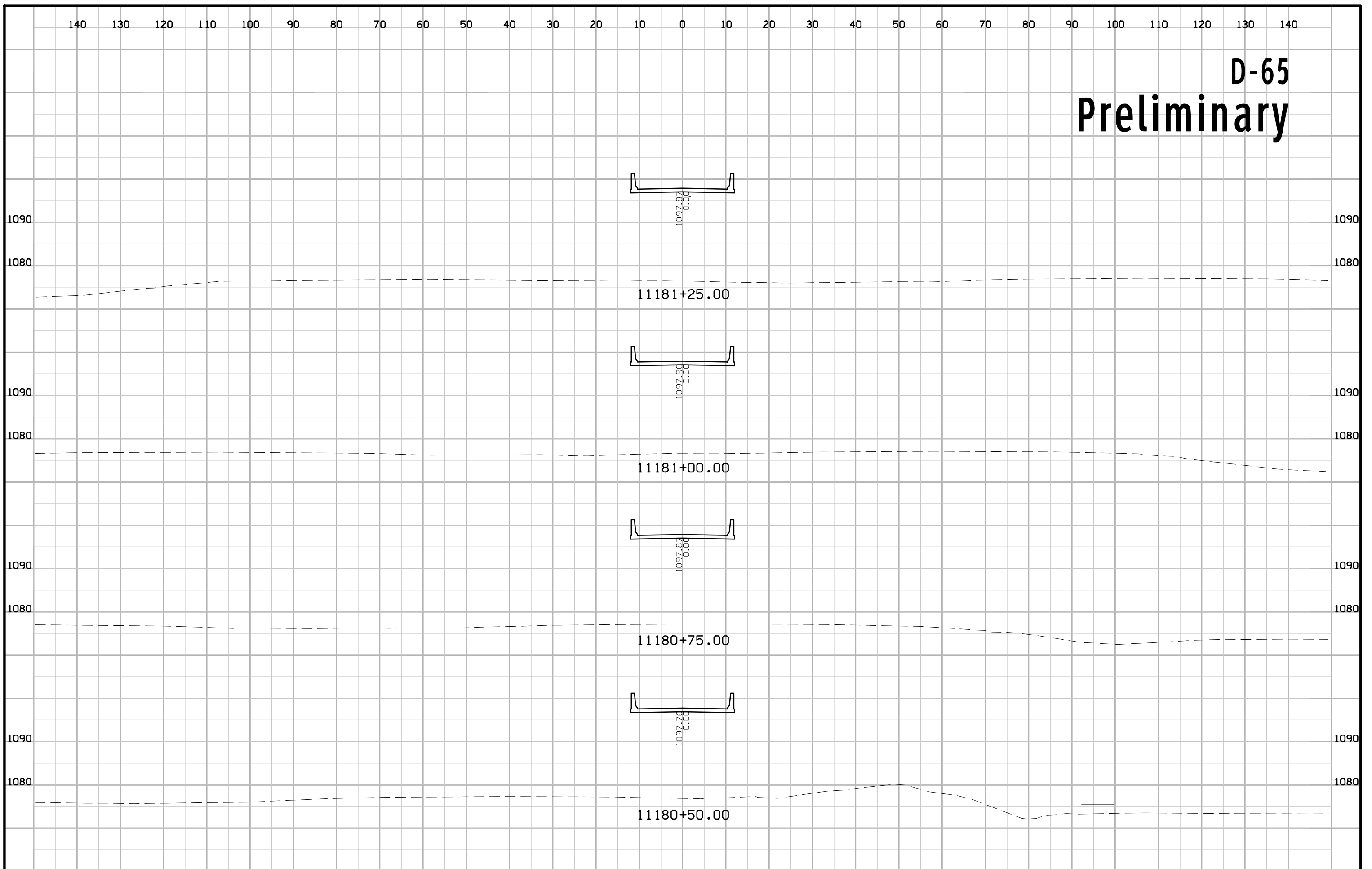
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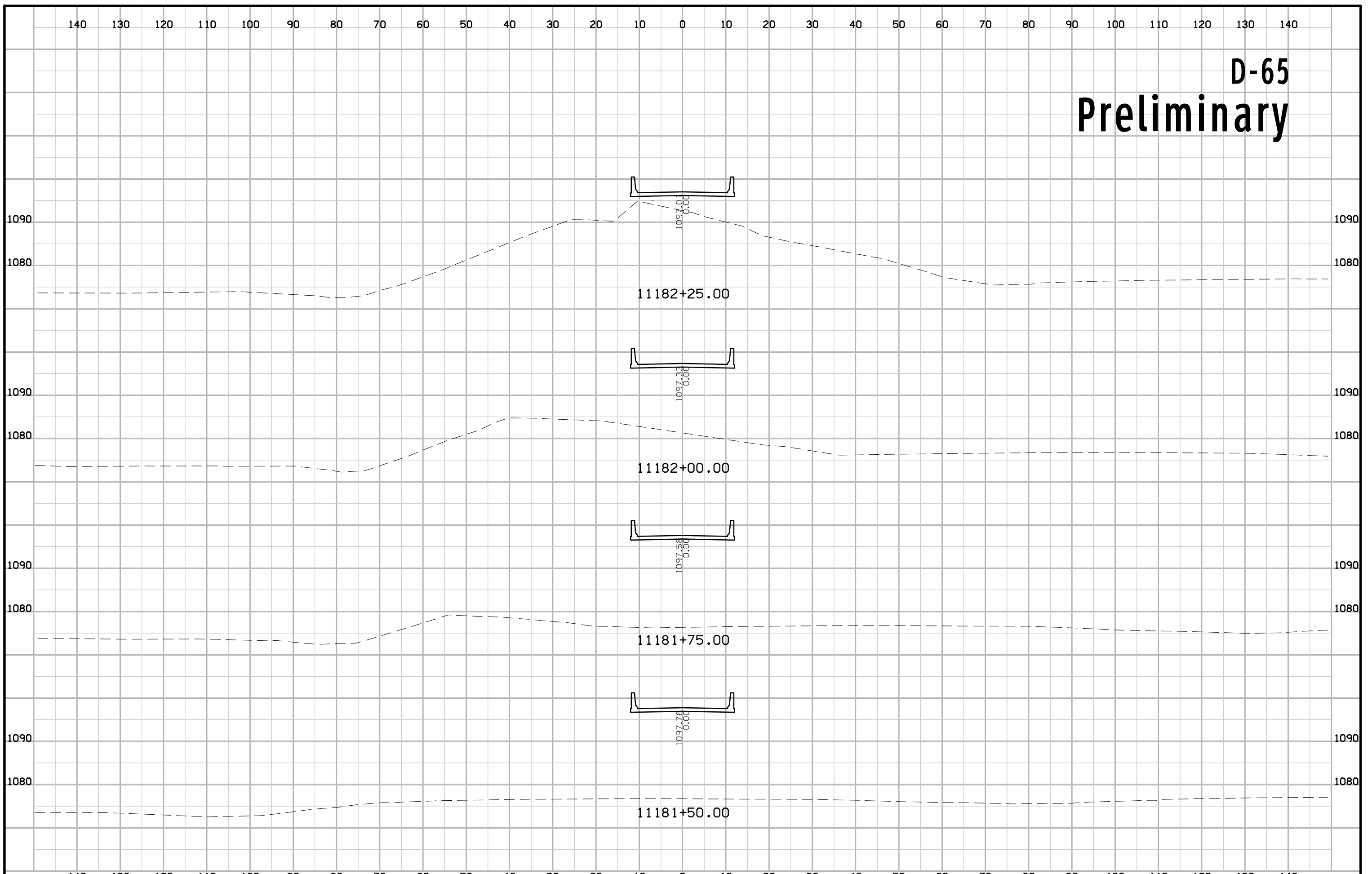
D-65 Preliminary



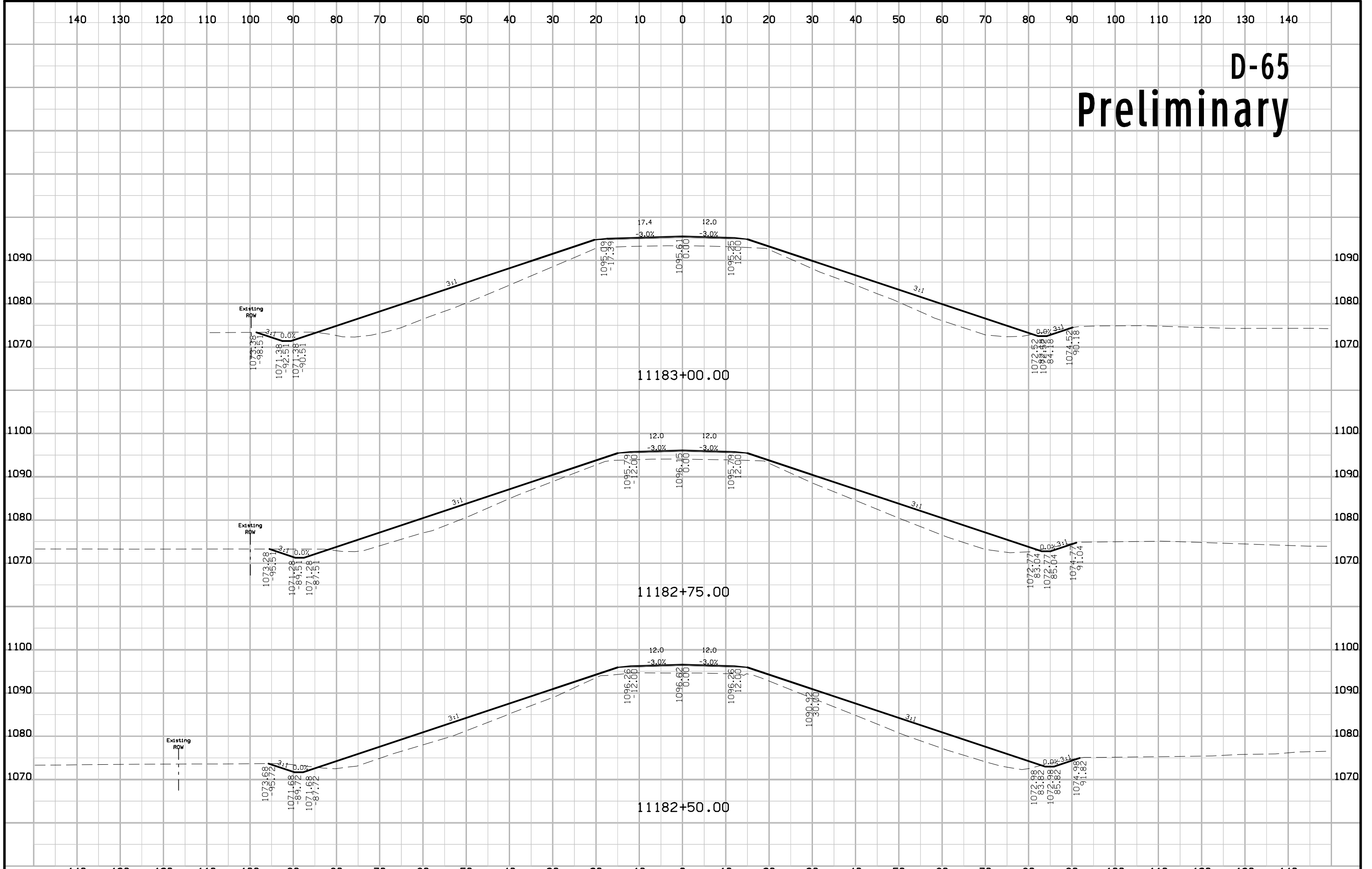
D-65 Preliminary



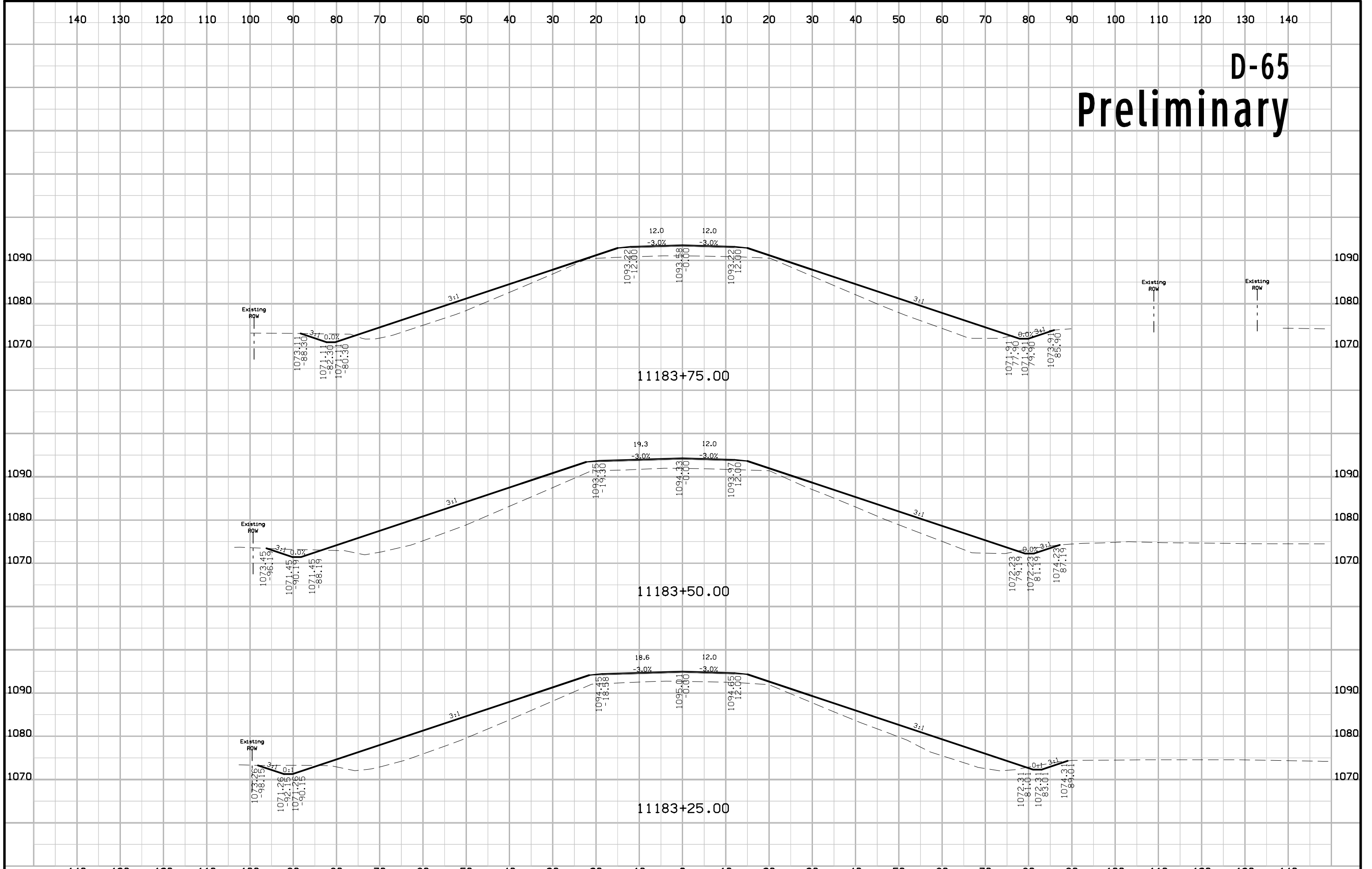
D-65 Preliminary



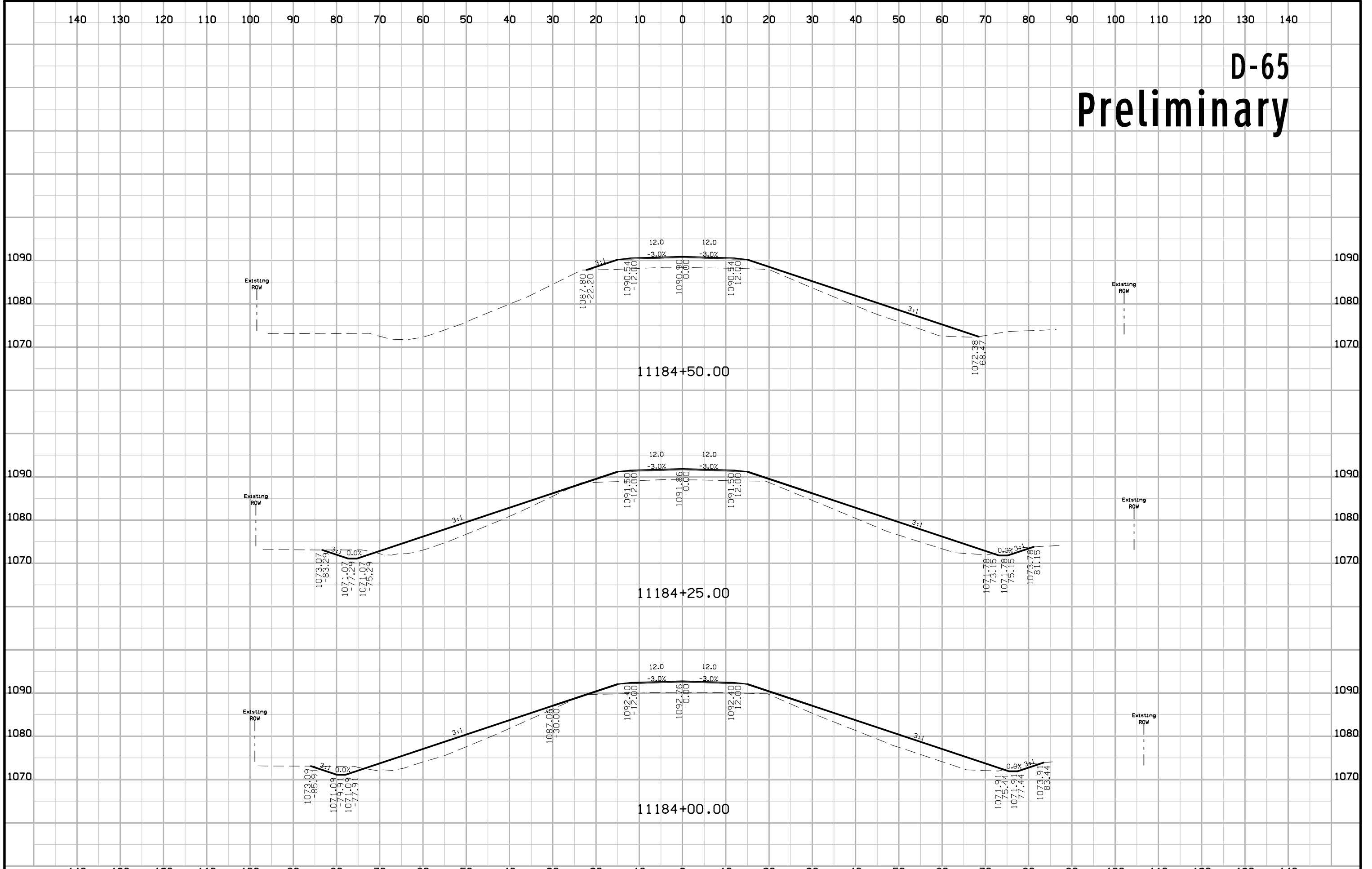
D-65 Preliminary



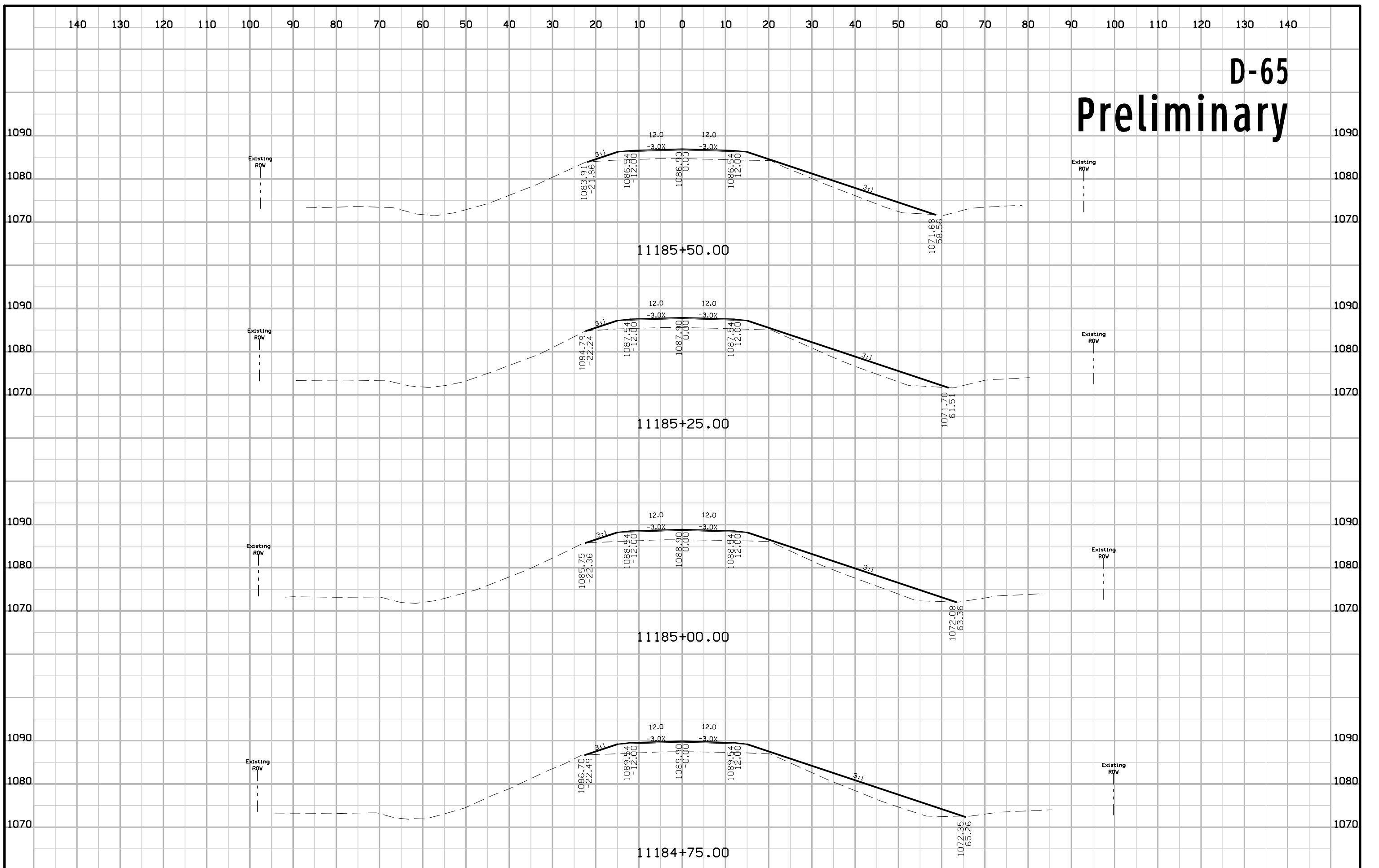
D-65 Preliminary



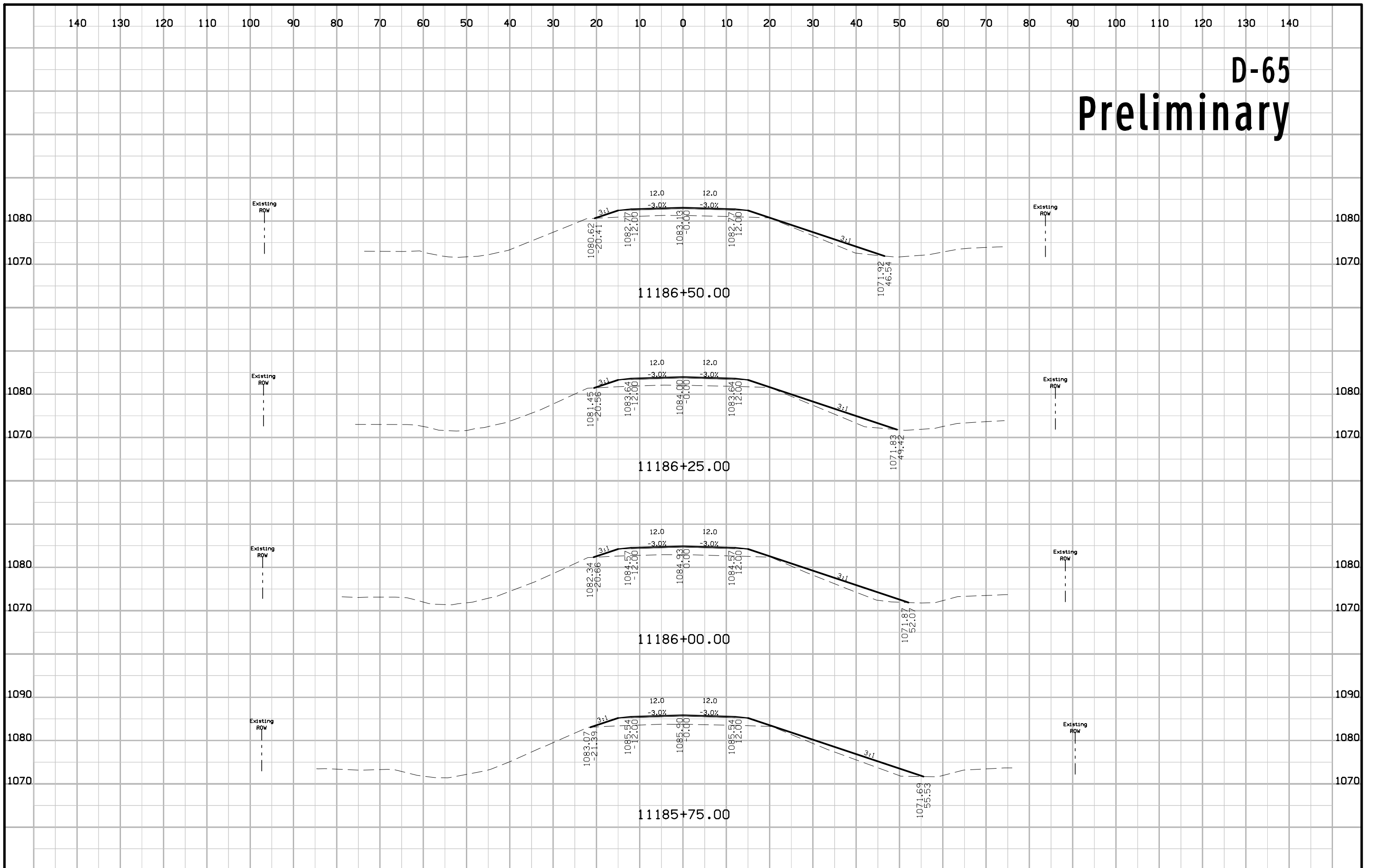
D-65 Preliminary



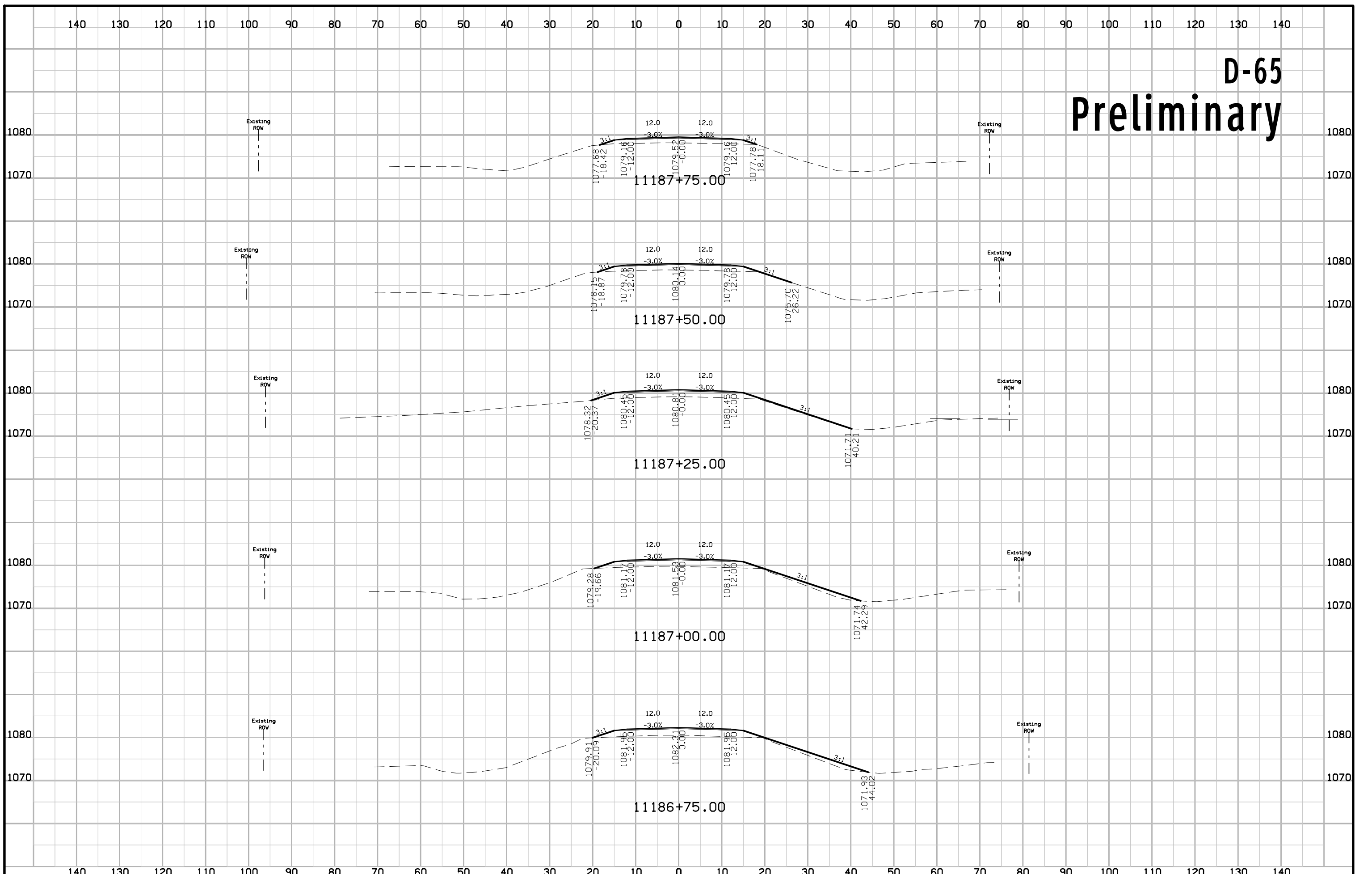
D-65 Preliminary



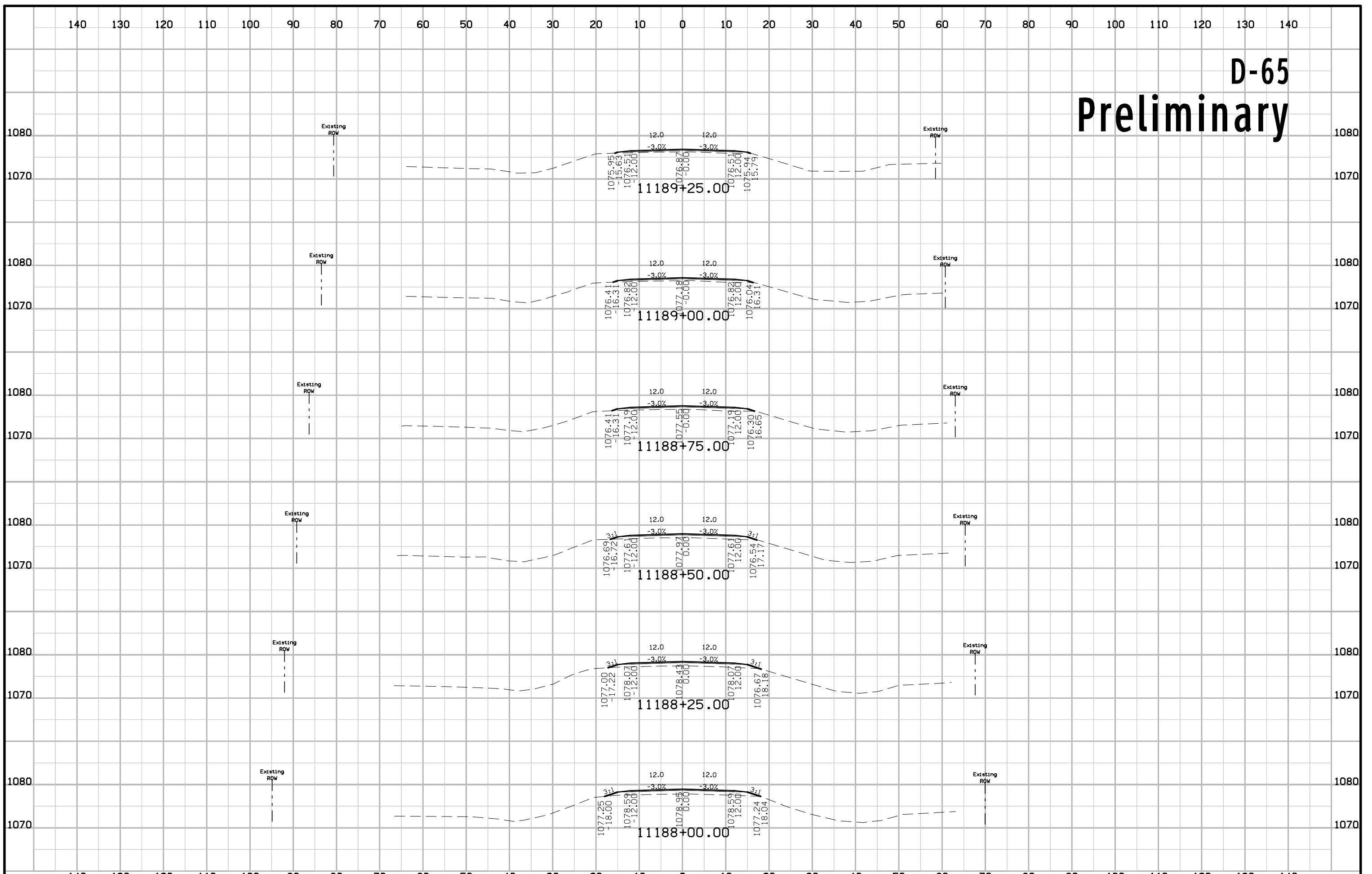
D-65 Preliminary



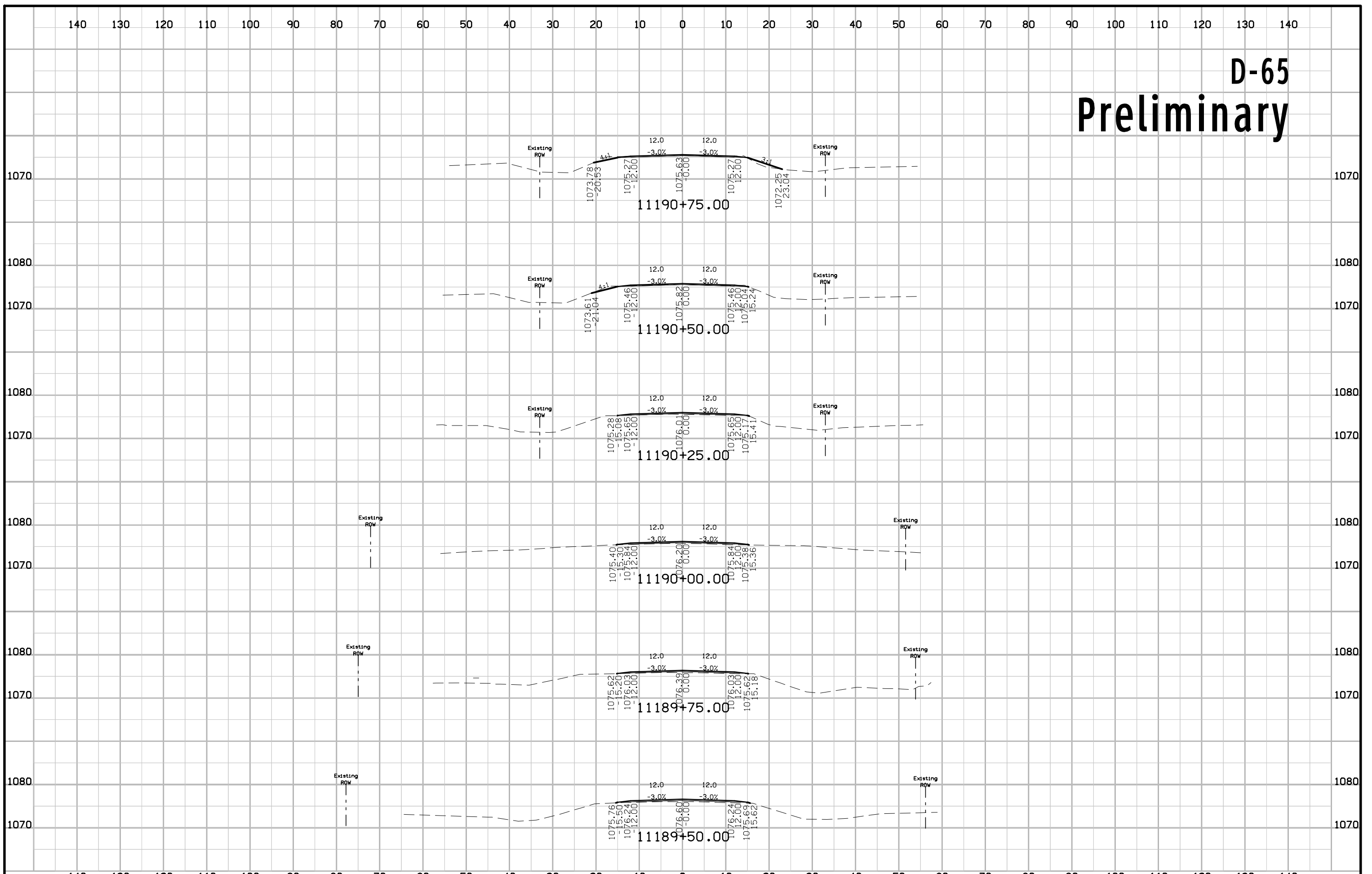
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D-65 Preliminary

