

**RCB CULVERT REPLACEMENT - SINGLE BOX  
PIPE CULVERTS**  
**STPN-136-1(73)--2J-23**  
**CLINTON COUNTY**

LETTING DATE  
 01/16/2019



**Highway Division**

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM  
**CLINTON COUNTY**

**RCB CULVERT REPLACEMENT - SINGLE BOX, PIPE CULVERTS**

REPAIR OR REPLACEMENT OF VARIOUS CULVERTS  
 ALONG THE IA-136 CORRIDOR BETWEEN  
 THE CITIES OF CLINTON AND CHARLOTTE

SCALES: As Noted

REVISIONS

TOTAL  
104

PROJECT IDENTIFICATION NUMBER

13-23-136-010

PROJECT NUMBER

STPN-136-1(73)--2J-23

R.O.W. PROJECT NUMBER

INDEX OF SHEETS	
No.	DESCRIPTION
<b>A Sheets</b>	<b>Title Sheets</b>
A.1	Title Sheet
A.2	Location Map Sheet
<b>B Sheets</b>	<b>Typical Cross Sections and Details</b>
B.1 - 2	Typical Cross Sections and Details
<b>C Sheets</b>	<b>Quantities and General Information</b>
C.4	Tabulations (beg. with tab. of incidentals if needed)
<b>D Sheets</b>	<b>Mainline Plan and Profile Sheets</b>
* D.1 - 14	"Mainline Name"
<b>G Sheets</b>	<b>Survey Sheets</b>
G.1 - 5	Reference Ties and Bench Marks
<b>J Sheets</b>	<b>Traffic Control and Staging Sheets</b>
* J.1	Traffic Control Plan
* J.2	Traffic Detour Details
<b>V Sheets</b>	<b>Bridge and Culvert Situation Plans</b>
V.1 - 8	Bridge and Culvert Situation Plans
<b>W Sheets</b>	<b>Mainline Cross Sections</b>
W.1 - 70	Mainline Cross Sections
	* Color Plan Sheets

Refer to the Proposal Form for list of applicable specifications.

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



For Project Location Map  
Refer to Sheet A.2

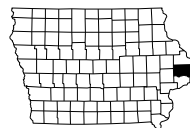
DESIGN DATA URBAN			
2016	AADT	2200	V.P.D.
20--	AADT	--	V.P.D.
20--	DHV	--	V.P.H.
	TRUCKS	6.5	%
	Total		
	Design ESALs	--	

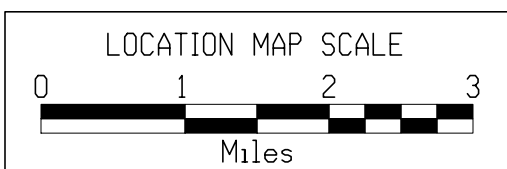
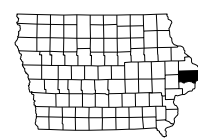
INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Steven Scott Sweet	Primary Signature Block
X	X	X

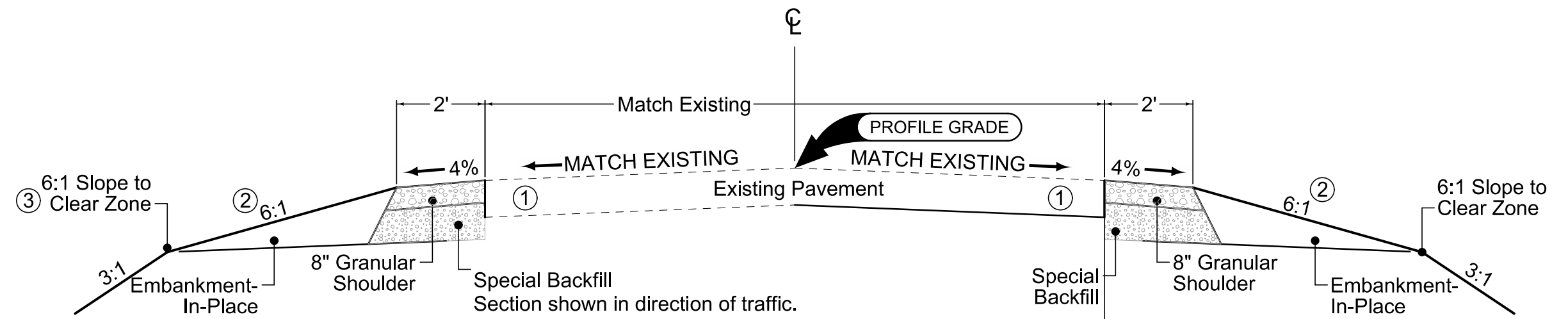
**PRELIMINARY PLANS**

Subject to change by final design.

**D5 PLAN - Date: 12-08-2017**

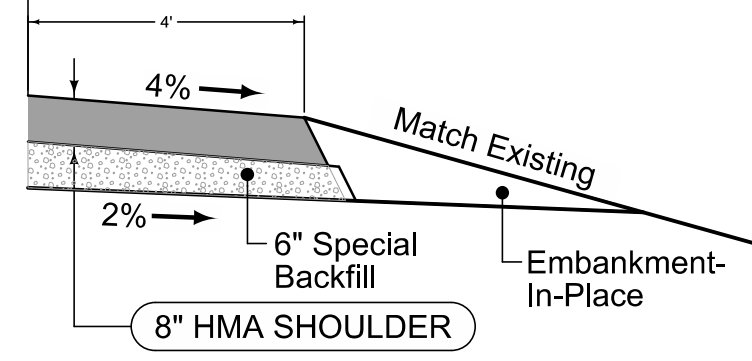






BEGIN STATION	END STATION
79+78	81+17
95+28	97+41
107+78	109+66
382+76	384+85
538+64	540+17
552+75	554+93
569+97	573+30
580+62	581+49
650+41	652+41
704+61	705+85
742+22	744+26
765+24	766+94
787+20	789+48
800+17	801+87
807+68	809+66
816+72	818+84
829+62	831+34
837+16	839+47
843+17	845+11
854+18	855+78
908+83	909+32

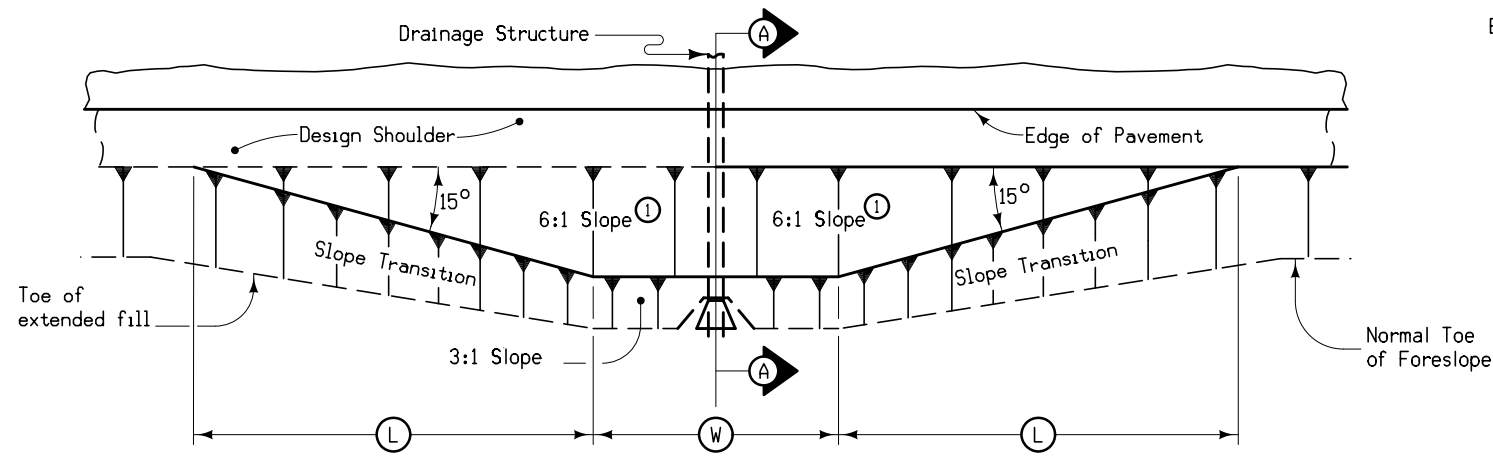
- ① Possible Full Depth PCC Patch. See D Sheets for locations.
- ② Slope may be flatter than 6:1.
- ③ Refer to Sheet No. B.2 for additional details.



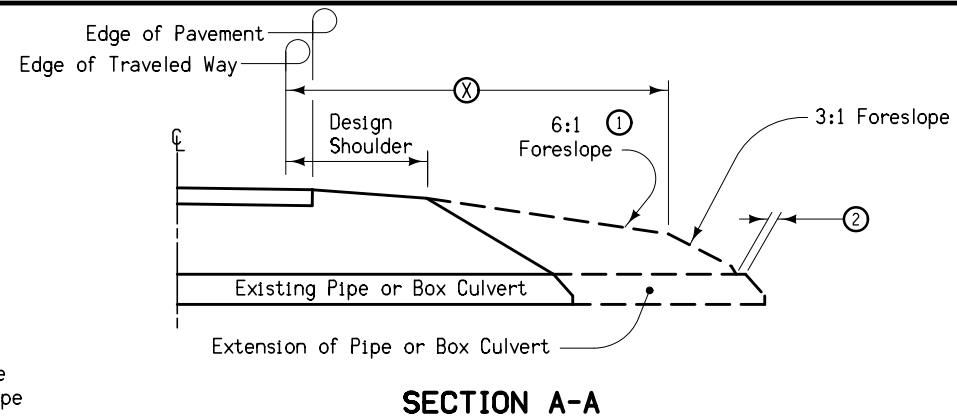
### HMA Shoulder

Shoulder Jointing:  
Longitudinal joint: B

STATION TO STATION	
684+50	685+20



PLAN VIEW



SECTION A-A

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".

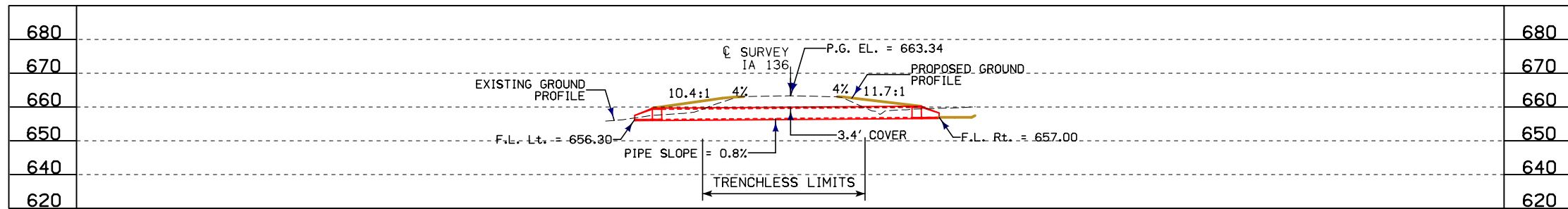
- ① 6:1 Maximum - Slope may be flatter.
- ② 6" Minimum for pipe installations or to top of headwall on R.C.B.

STRUCTURE LOCATION		(W)	(L)	(X)
STATION	SIDE	Feet	Feet	Feet
80+13.55	LT	29.5	57.4	18.0
80+13.55	RT	29.6	49.1	18.0
96+34.00	LT	43.9	56.4	22.0
96+34.00	RT	45.0	65.0	22.0
108+76.00	LT	44.5	54.1	22.0
108+76.00	RT	43.8	55.0	22.0
383+30.13	LT	31.3	55.9	22.0
383+30.13	RT	30.3	49.1	22.0
539+60.00	LT	44.0	48.6	22.0
539+60.00	RT	43.0	54.7	22.0
553+83.41	LT	45.9	88.8	22.0
553+83.41	RT	44.0	65.7	22.0
571+62.20	LT	45.6	20.5	21.0
571+62.20	RT	45.6	125.8	21.0
581+05.47	RT	45.6	20.5	22.0
651+43.00	LT	41.6	72.0	22.0
651+43.00	RT	43.2	69.5	22.0
704+69.66	RT	29.1	93.4	16.0
743+25.20	LT	50.6	80.1	18.0
743+25.20	RT	46.8	42.9	18.0

STRUCTURE LOCATION		(W)	(L)	(X)
STATION	SIDE	Feet	Feet	Feet
766+09.00	LT	43.7	46.2	18.0
766+09.00	RT	43.3	44.1	18.0
788+20.00	LT	22.5	52.7	18.0
788+20.00	RT	44.4	70.3	18.0
800+82.00	LT	35.8	42.3	18.0
800+82.00	RT	45.7	47.0	18.0
808+67.00	LT	48.5	31.5	18.0
808+67.00	RT	50.5	55.7	18.0
817+91.00	LT	45.6	59.5	18.0
817+91.00	RT	45.6	64.6	18.0
830+53.00	LT	43.4	64.3	18.0
830+53.00	RT	42.5	56.3	18.0
838+23.00	LT	48.6	55.4	18.0
838+23.00	RT	51.3	81.4	18.0
844+26.62	RT	51.3	70.9	18.0
855+00.00	LT	43.0	61.7	18.0
855+00.00	RT	42.1	52.1	18.0
909+07.20	RT	42.5	51.1	12.0

DETAILS OF  
BARNROOF FORESLOPE  
AT DRAINAGE STRUCTURE



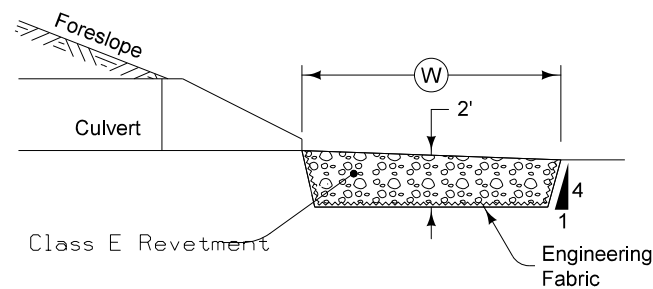


LONGITUDINAL SECTION ALONG  $\text{CL}$  PIPE

BENCH MARK NO. 523 = ELEV. 654.111, STA. 93+66.4 63.7 LT.  
SET RR SPIKE ON N. SIDE OF PP

NOTES:  
PIPE DIMENSIONS SHOWN IN PLAN VIEW  
ARE BASED ON LAYING LENGTH EXCEPT WHERE NOTED.  
  
TEMPORARY EASEMENT REQUIRED AT OUTLET END OF CULVERT FOR  
TRENCHLESS CONSTRUCTION. LIMITS OF EASEMENT TO BE DETERMINED.

① TRENCHLESS INSTALLATION LENGTH.

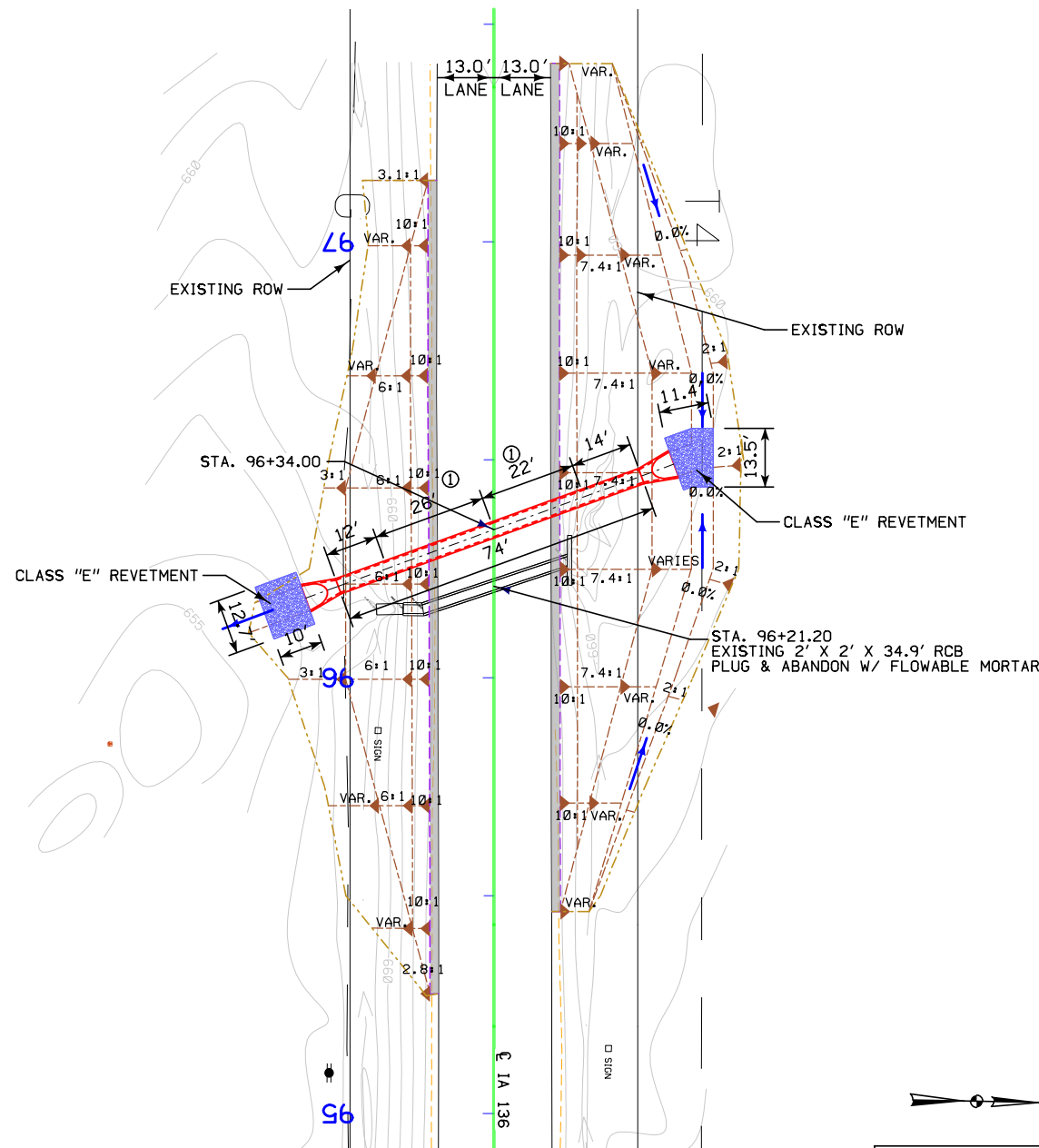


REVTMENT TYPICAL SECTION

ESTIMATED REVTMENT QUANTITIES

LOCATION	REVTMENT CL. E (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	13	26	9
OUTLET	13	23	9
TOTAL	26	49	18

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.  
QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.



PLAT PLAN

UTILITIES LEGEND

- GL1D Alliant Energy - Quality D1
- TL4D Century Link - Quality D1

HYDRAULIC DATA

DRAINAGE AREA = 26 ACRES ROLLING  
 $Q_u = 54$  CFS

LOCATION

T-82 N R-6 E  
SECTION 26/35  
HAMPSHIRE TOWNSHIP  
CLINTON COUNTY

PRELIMINARY

DESIGN FOR 20°0'0" SKEW RT. AHEAD

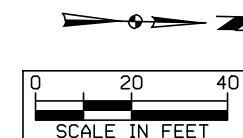
36" X 74' REINFORCED  
CONCRETE PIPE WITH APRONS

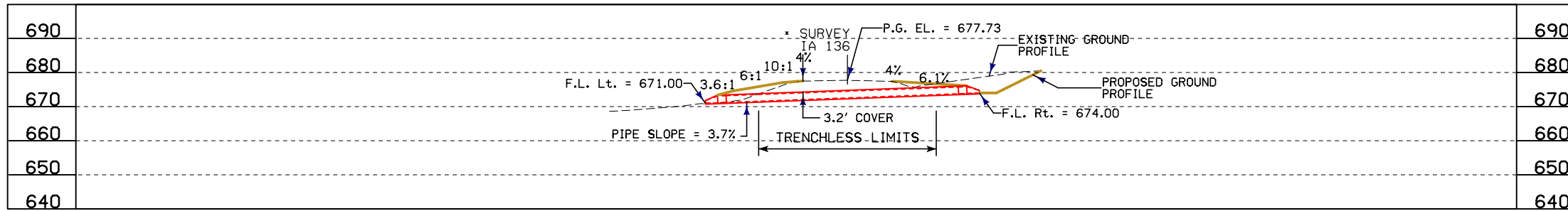
PLAT PLAN

STATION 96+34.00

FEBRUARY, 2018

CLINTON COUNTY





LONGITUDINAL SECTION ALONG  $\varnothing$  PIPE

BENCH MARK NO. 522 = ELEV. 673.514, STA. 108+31.6 36.2 LT.  
SET RR SPIKE ON N. SIDE OF PP

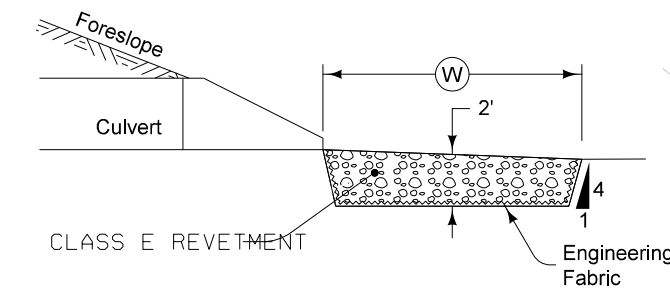
NOTES:  
PIPE DIMENSIONS SHOWN IN PLAN VIEW  
ARE BASED ON LAYING LENGTH EXCEPT WHERE NOTED.

TEMPORARY EASEMENT REQUIRED AT OUTLET END OF CULVERT FOR  
TRENCHLESS CONSTRUCTION. LIMITS OF EASEMENT TO BE DETERMINED.

① TRENCHLESS INSTALLATION LENGTH.

UTILITIES LEGEND

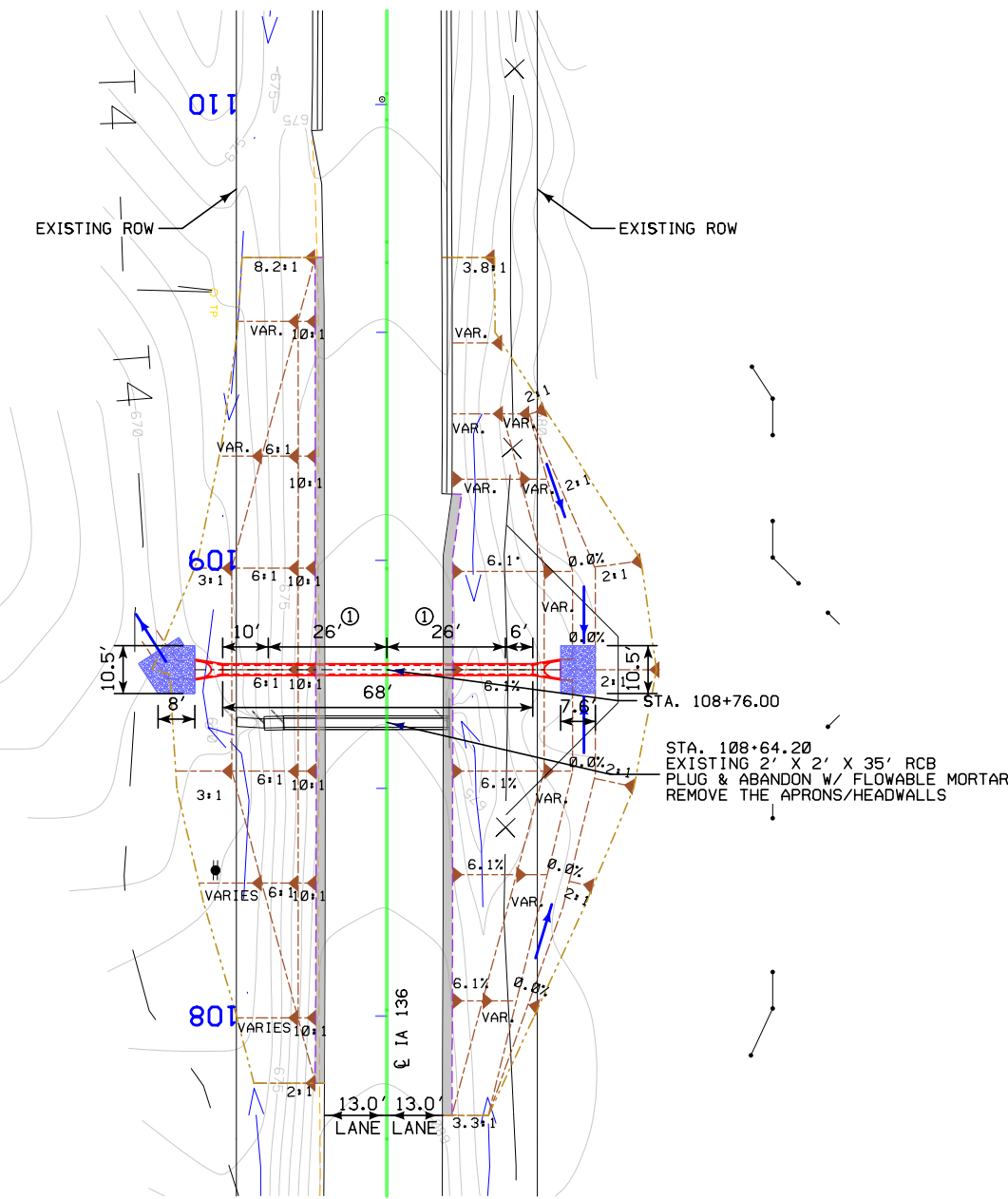
TL4D Century Link - Quality D1



REVETMENT TYPICAL SECTION

ESTIMATED REVETMENT QUANTITIES			
LOCATION	REVETMENT CL. E (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	8	16	6
OUTLET	11	16	8
TOTAL	19	32	14

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.  
QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.



PLAT PLAN

HYDRAULIC DATA

DRAINAGE AREA = 6 ACRES FLAT  
 $Q_u = 12$  CFS

LOCATION

T-82 N R-6 E  
SECTION 26/35  
HAMPSHIRE TOWNSHIP  
CLINTON COUNTY

PRELIMINARY

DESIGN FOR 0°SKEW

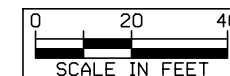
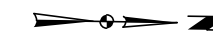
24" X 68' REINFORCED  
CONCRETE PIPE WITH APRONS

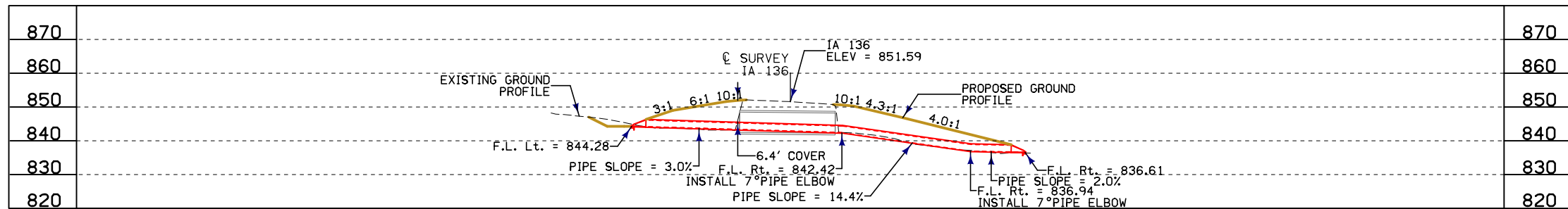
PLAT PLAN

STATION 108+76.00

FEBRUARY, 2018

CLINTON COUNTY





LONGITUDINAL SECTION ALONG  $\bar{C}$  PIPE

BENCH MARK NO. 521 = ELEV. 850.194, STA. 383+91.9 22.9 LT.  
 FD. SET RR SPIKE ON E SIDE OF PP

PIPE DIMENSIONS SHOWN IN PLAN VIEW  
 ARE BASED ON LAYING LENGTH EXCEPT WHERE NOTED.  
 LIMITS OF EASEMENT TO BE DETERMINED.

UTILITIES LEGEND

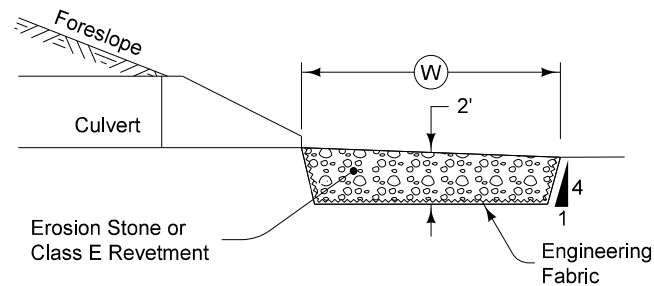
TL4D Century Link - Quality D1

HYDRAULIC DATA

DRAINAGE AREA = 2 Ac. FLAT  
 $Q_w = 5$  CFS

LOCATION

T-82 N R-6 E  
 SECTION 7  
 HAMPSHIRE TOWNSHIP  
 CLINTON COUNTY

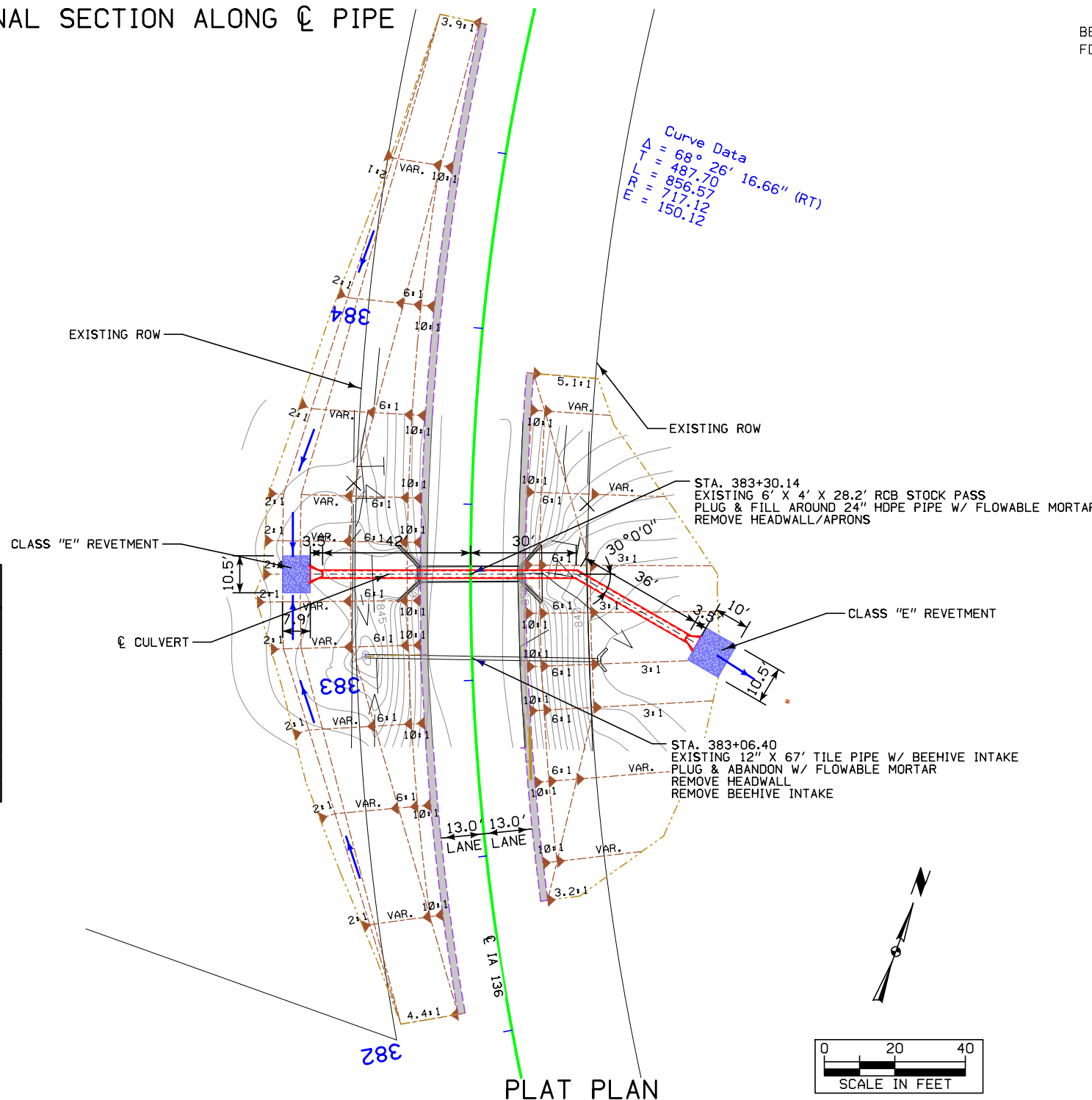


REVETMENT TYPICAL SECTION

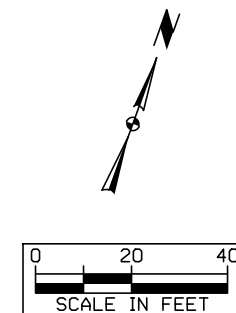
ESTIMATED REVETMENT QUANTITIES

LOCATION	REVETMENT CL. E (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	8	18	6
OUTLET	11	23	8
TOTAL	19	41	14

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.  
 QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.

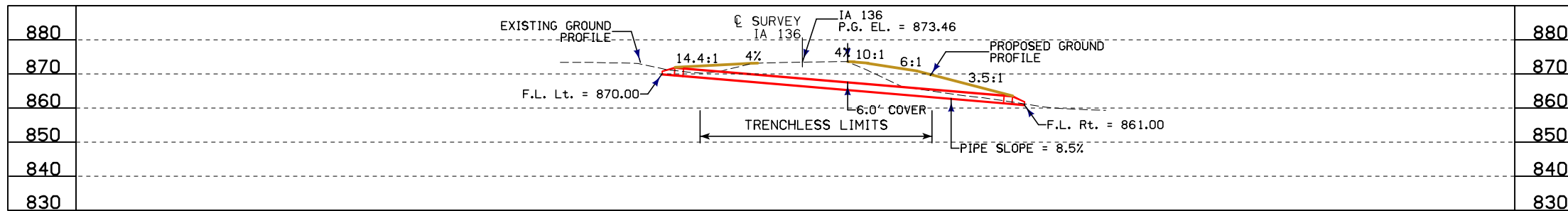


PLAT PLAN



PRELIMINARY  
 DESIGN FOR 0°SKEW  
 24" X 108' CORRUGATED POLYETHYLENE PIPE WITH CORRUGATED METAL APRONS  
 PLAT PLAN  
 STATION 383+30.14 FEBRUARY, 2018  
 CLINTON COUNTY





LONGITUDINAL SECTION ALONG  $\bar{C}$  PIPE

NOTES:  
 PIPE DIMENSIONS SHOWN IN PLAN VIEW  
 ARE BASED ON LAYING LENGTH EXCEPT WHERE NOTED.

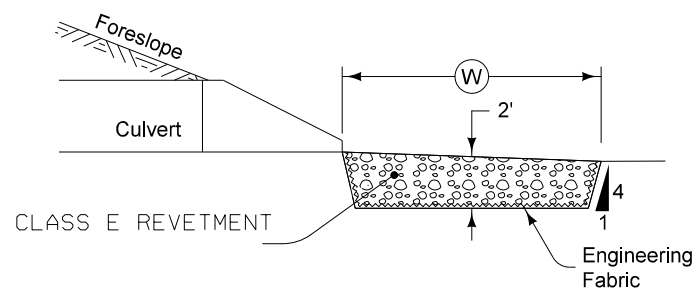
TEMPORARY EASEMENT REQUIRED AT OUTLET END OF CULVERT FOR  
 TRENCHLESS CONSTRUCTION. LIMITS OF EASEMENT TO BE DETERMINED.

① TRENCHLESS INSTALLATION LENGTH.

BENCH MARK NO. 520 = ELEV. 867.702, STA. 539+32.3 28.6 RT.  
 SET RR SPIKE ON SW. SIDE OF PP

UTILITIES LEGEND

TL1D Windstream McLeod - Quality D1

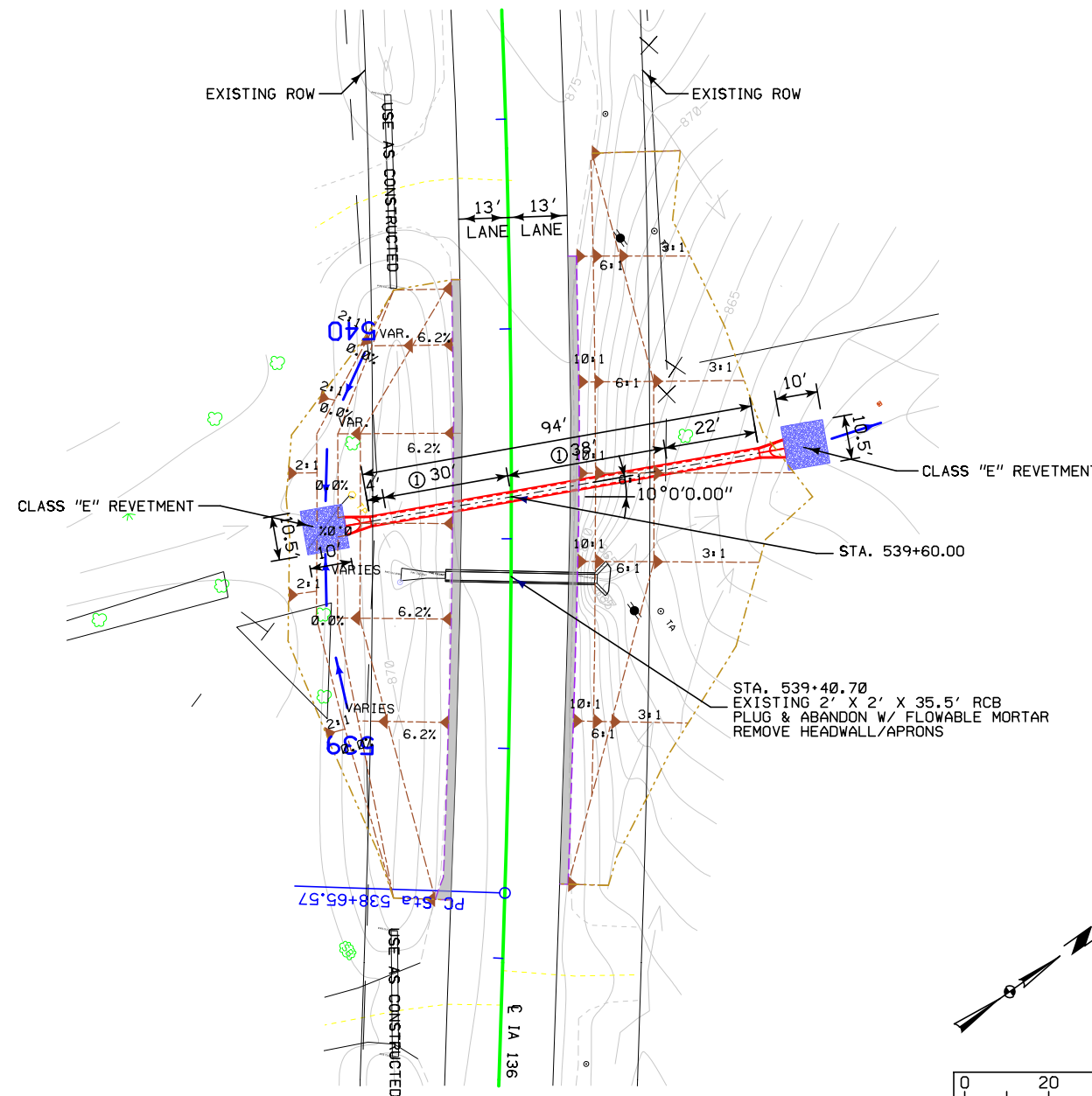


REVETMENT TYPICAL SECTION

ESTIMATED REVETMENT QUANTITIES

LOCATION	REVETMENT CL. E (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	11	19	8
OUTLET	11	19	8
TOTAL	22	38	16

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.  
 QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.



PLAT PLAN

HYDRAULIC DATA

DRAINAGE AREA = 2 ACRES FLAT  
 $Q_w = 5$  CFS

LOCATION

T-83 N R-5 E  
 SECTION 35  
 DEEP CREEK TOWNSHIP  
 CLINTON COUNTY

PRELIMINARY

DESIGN FOR 10°0'0" SKEW RT. AHEAD

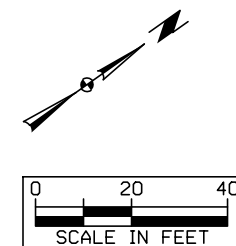
24" X 94' REINFORCED  
 CONCRETE PIPE WITH APRONS

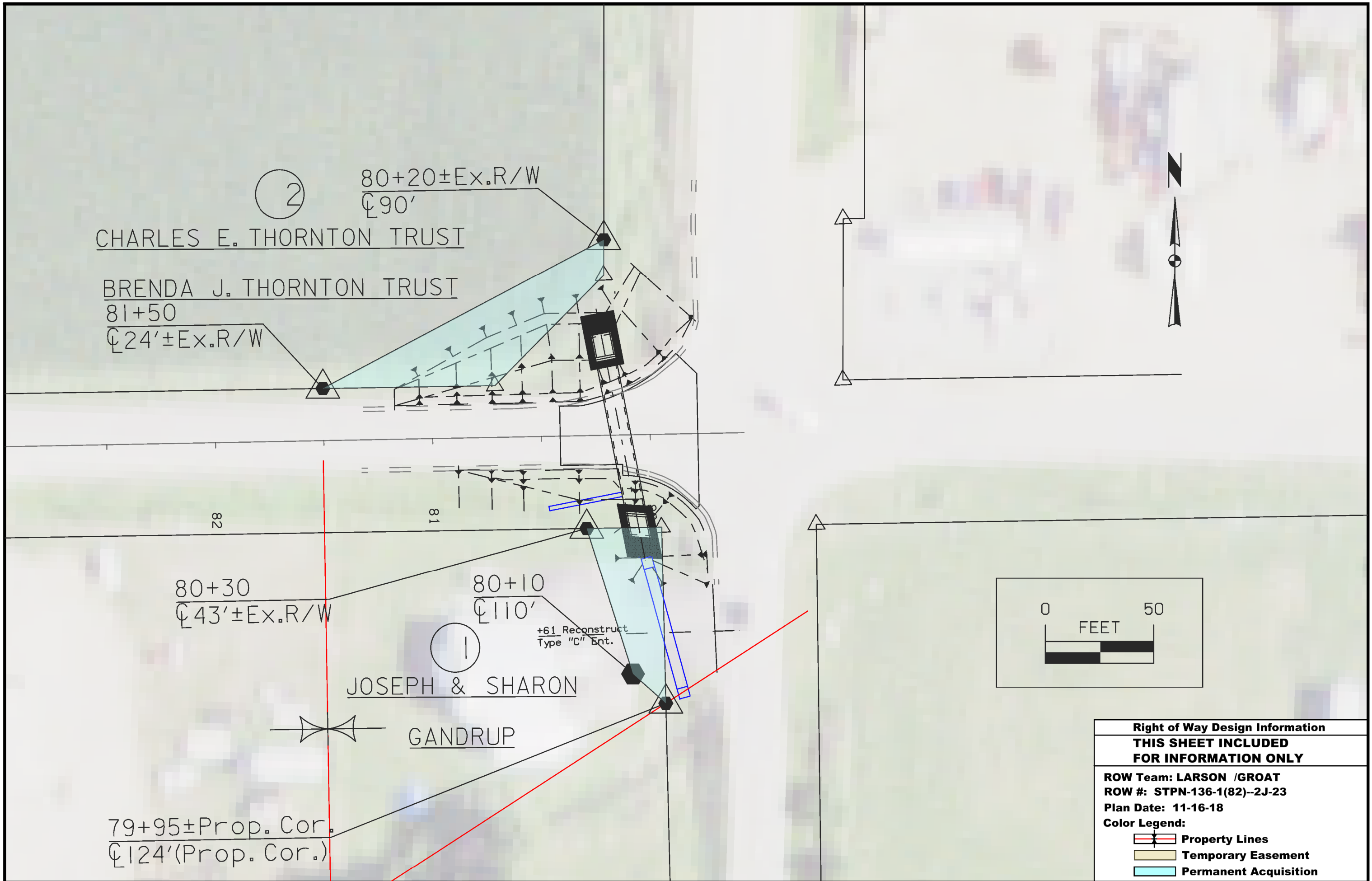
PLAT PLAN

STATION 539+60.00

FEBRUARY, 2018

CLINTON COUNTY





② 80+20±Ex.R/W  
 ⌀90'

CHARLES E. THORNTON TRUST

BRENDA J. THORNTON TRUST

81+50  
 ⌀24'±Ex.R/W

82

81

80+30  
 ⌀43'±Ex.R/W

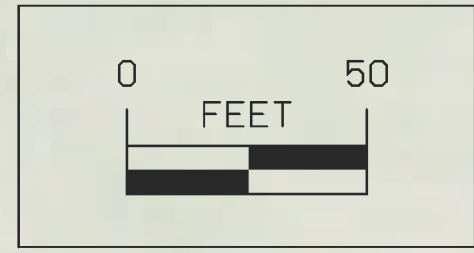
80+10  
 ⌀110'

+61 Reconstruct  
 Type "C" Ent.

①  
 JOSEPH & SHARON

GANDRUP

79+95±Prop. Cor.  
 ⌀124'(Prop. Cor.)

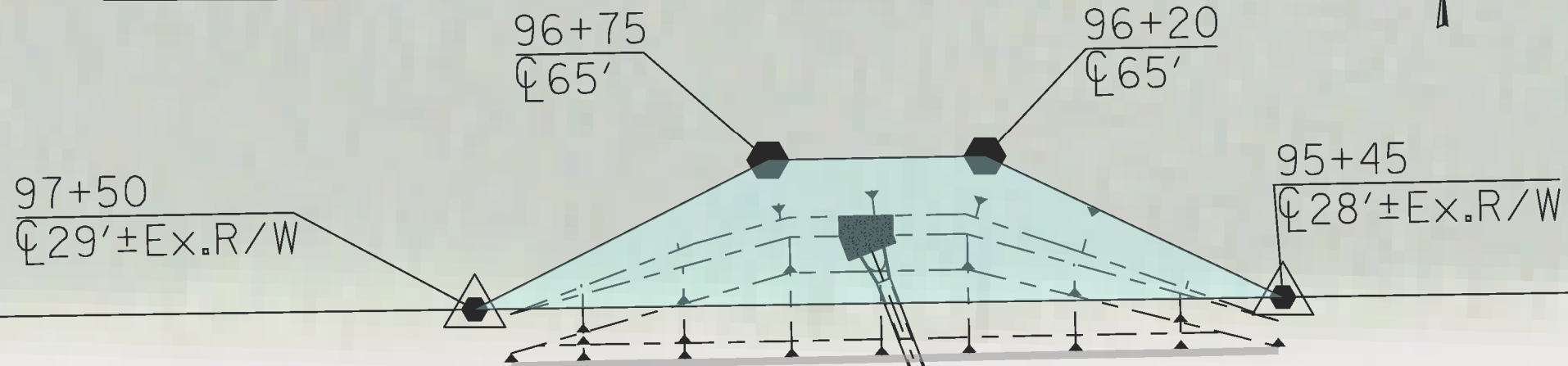


<b>Right of Way Design Information</b>	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: LARSON /GROAT	
ROW #: STPN-136-1(82)--2J-23	
Plan Date: 11-16-18	
<b>Color Legend:</b>	
	Property Lines
	Temporary Easement
	Permanent Acquisition

2

CHARLES E. THORNTON TRUST

BRENDA J. THORNTON TRUST



EA 136

1528

3

MARY F. SHOCKEY L.E.

MARTIN KROGMANN, ET. AL. (C.P.)

97+05  
65' ± Ex. R/W

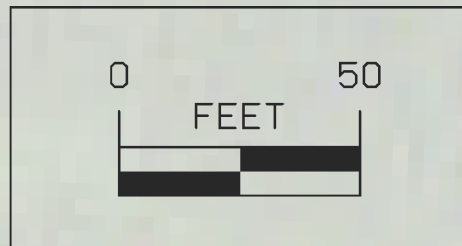
95+30  
65' ± Ex. R/W

95+50  
80'

96+25  
65'

96+45  
110'

TEMPORARY EASEMENT FOR  
PIPE JACKING

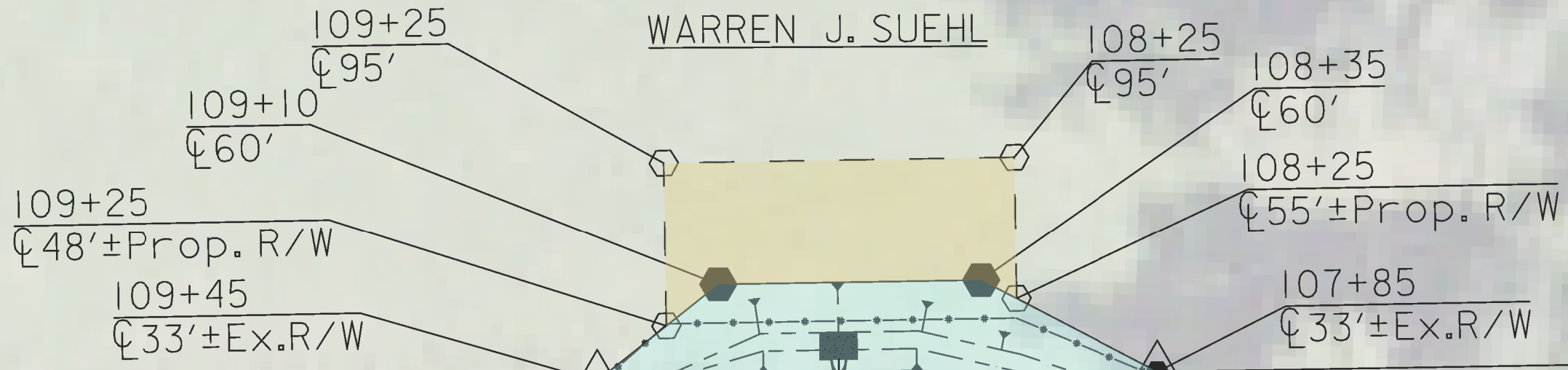


<b>Right of Way Design Information</b>	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: LARSON /GROAT	
ROW #: NHSN-136-1(92)--2J-23	
Plan Date: 01-07-19	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition

4

TEMPORARY EASEMENT FOR  
PIPE JACKING

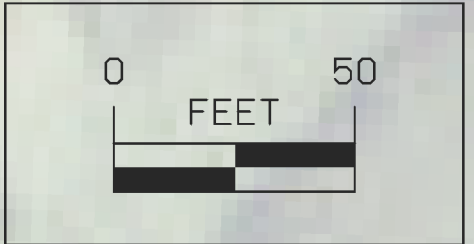
WARREN J. SUEHL



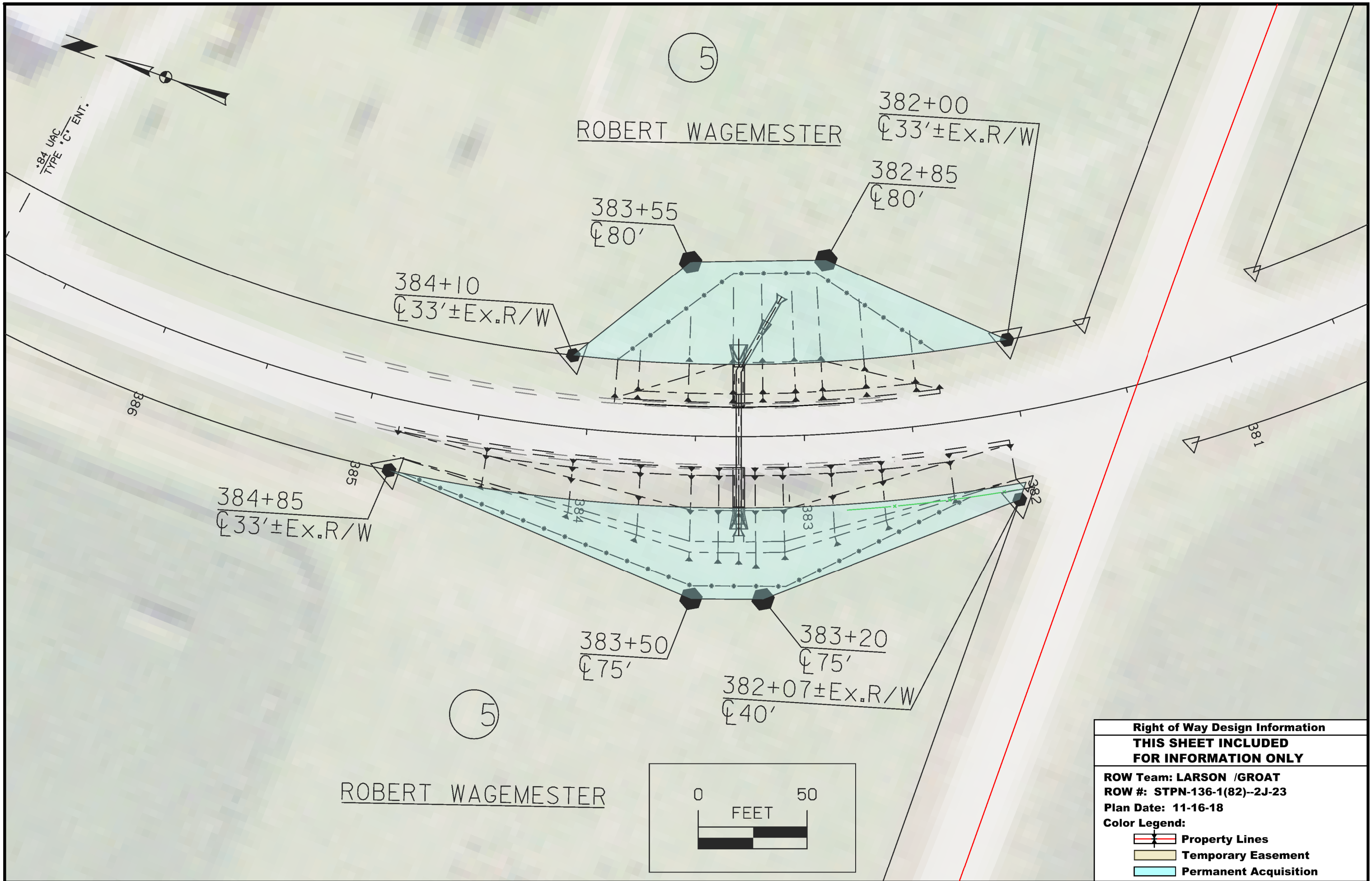
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

108+80  
⊘60' MARY F. SHOCKEY L.E.

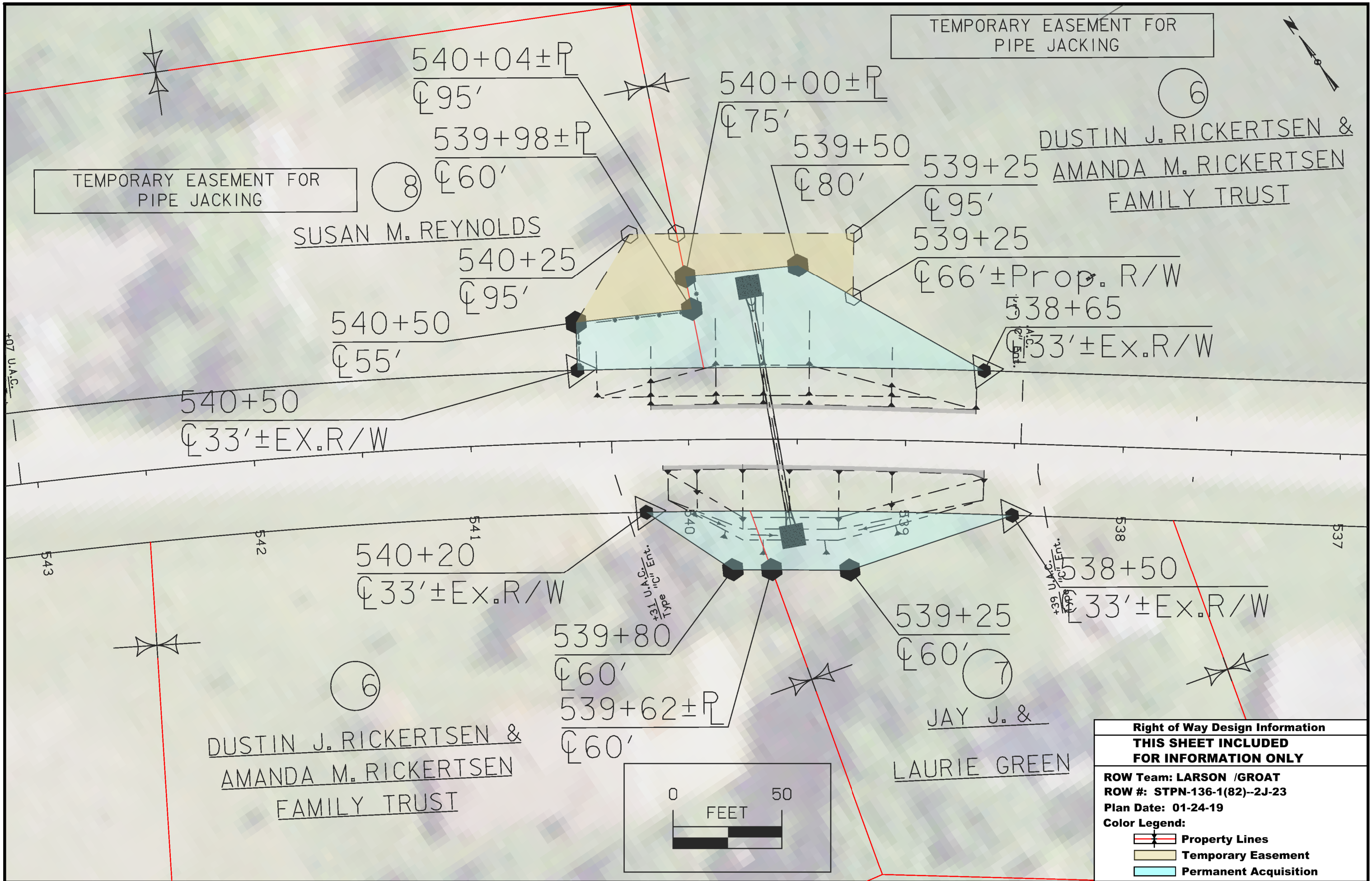
MARTIN KROGMANN, ET. AL. (C.P.)



<b>Right of Way Design Information</b>	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: LARSON /GROAT	
ROW #: STPN-136-1(82)--2J-23	
Plan Date: 06-08-18	
<b>Color Legend:</b>	
	Property Lines
	Temporary Easement
	Permanent Acquisition



<b>Right of Way Design Information</b>	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: LARSON /GROAT	
ROW #: STPN-136-1(82)--2J-23	
Plan Date: 11-16-18	
<b>Color Legend:</b>	
	Property Lines
	Temporary Easement
	Permanent Acquisition



TEMPORARY EASEMENT FOR  
PIPE JACKING

TEMPORARY EASEMENT FOR  
PIPE JACKING

DUSTIN J. RICKERTSEN &  
AMANDA M. RICKERTSEN  
FAMILY TRUST

SUSAN M. REYNOLDS

66'± Prop. R/W

538+65

33'± Ex. R/W

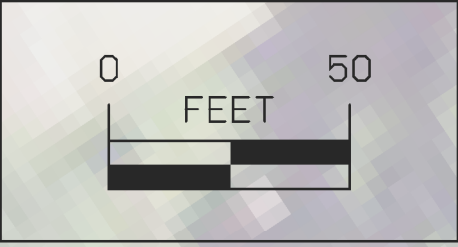
540+50  
33'± Ex. R/W

540+20  
33'± Ex. R/W

538+50  
33'± Ex. R/W

DUSTIN J. RICKERTSEN &  
AMANDA M. RICKERTSEN  
FAMILY TRUST

JAY J. &  
LAURIE GREEN



Right of Way Design Information	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: LARSON /GROAT	
ROW #: STPN-136-1(82)--2J-23	
Plan Date: 01-24-19	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition

⑥  
DUSTIN J. RICKERTSEN &  
 AMANDA M. RICKERTSEN  
 FAMILY TRUST

554+35  
 Ⓞ 65'

553+70  
 Ⓞ 70'

554+65  
 Ⓞ 33'±Ex.R/W

553+10  
 Ⓞ 33'±Ex.R/W

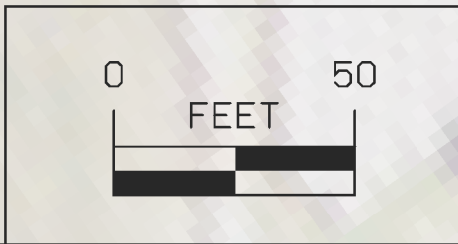
555+00  
 Ⓞ 33'±Ex.R/W

552+75  
 Ⓞ 33'±Ex.R/W

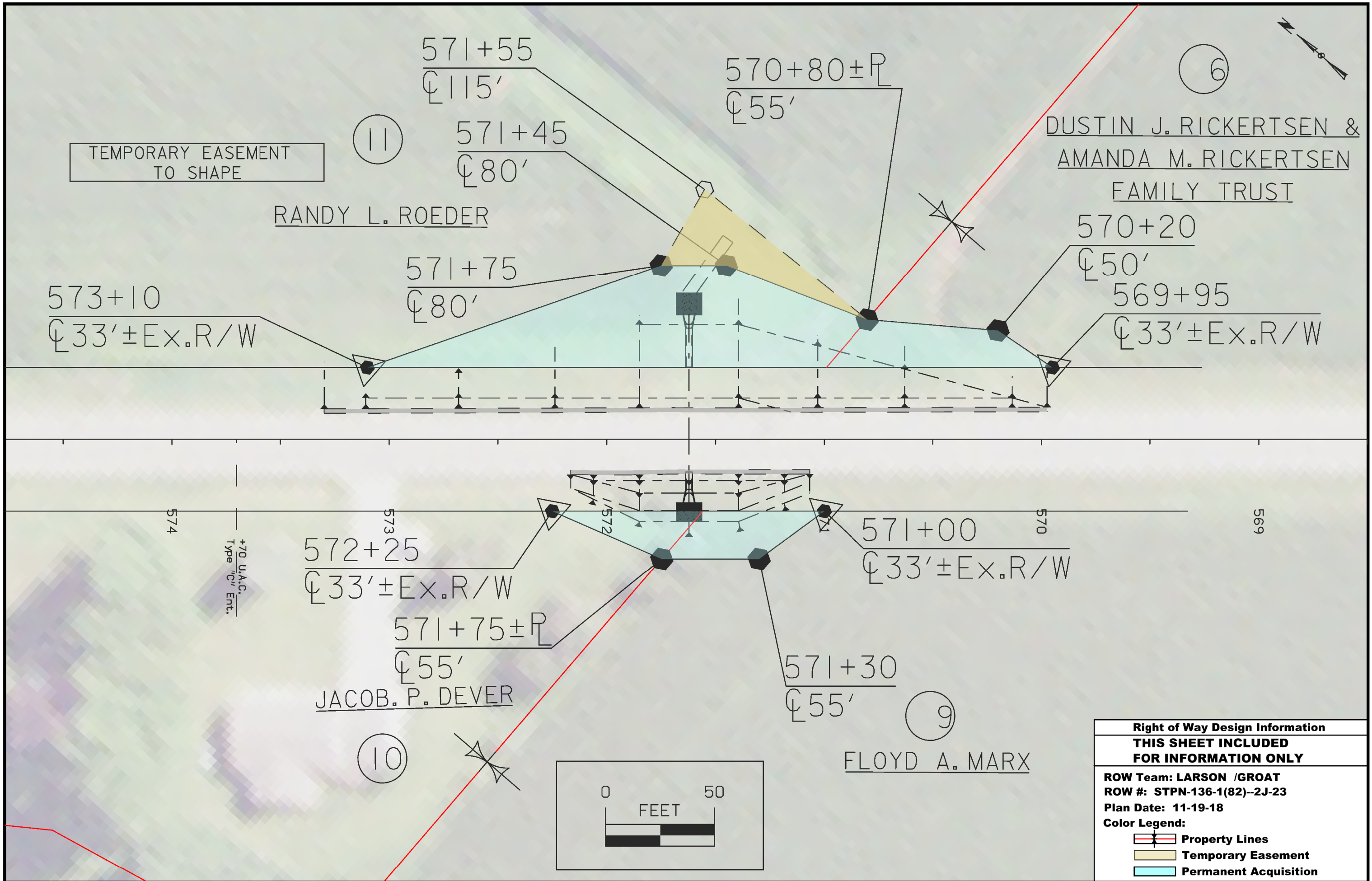
554+26.20  
 Ⓞ 55.65'

553+60  
 Ⓞ 80'

⑨  
FLOYD A. MARX



<b>Right of Way Design Information</b>	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: LARSON /GROAT	
ROW #: STPN-136-1(82)--2J-23	
Plan Date: 05-31-19	
<b>Color Legend:</b>	
	Property Lines
	Temporary Easement
	Permanent Acquisition



TEMPORARY EASEMENT  
TO SHAPE

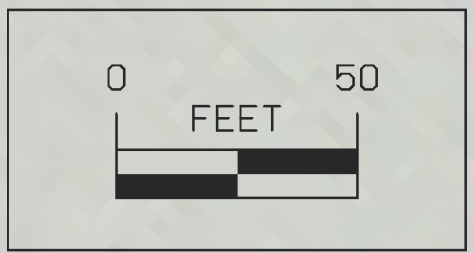
RANDY L. ROEDER

DUSTIN J. RICKERTSEN &  
AMANDA M. RICKERTSEN  
FAMILY TRUST

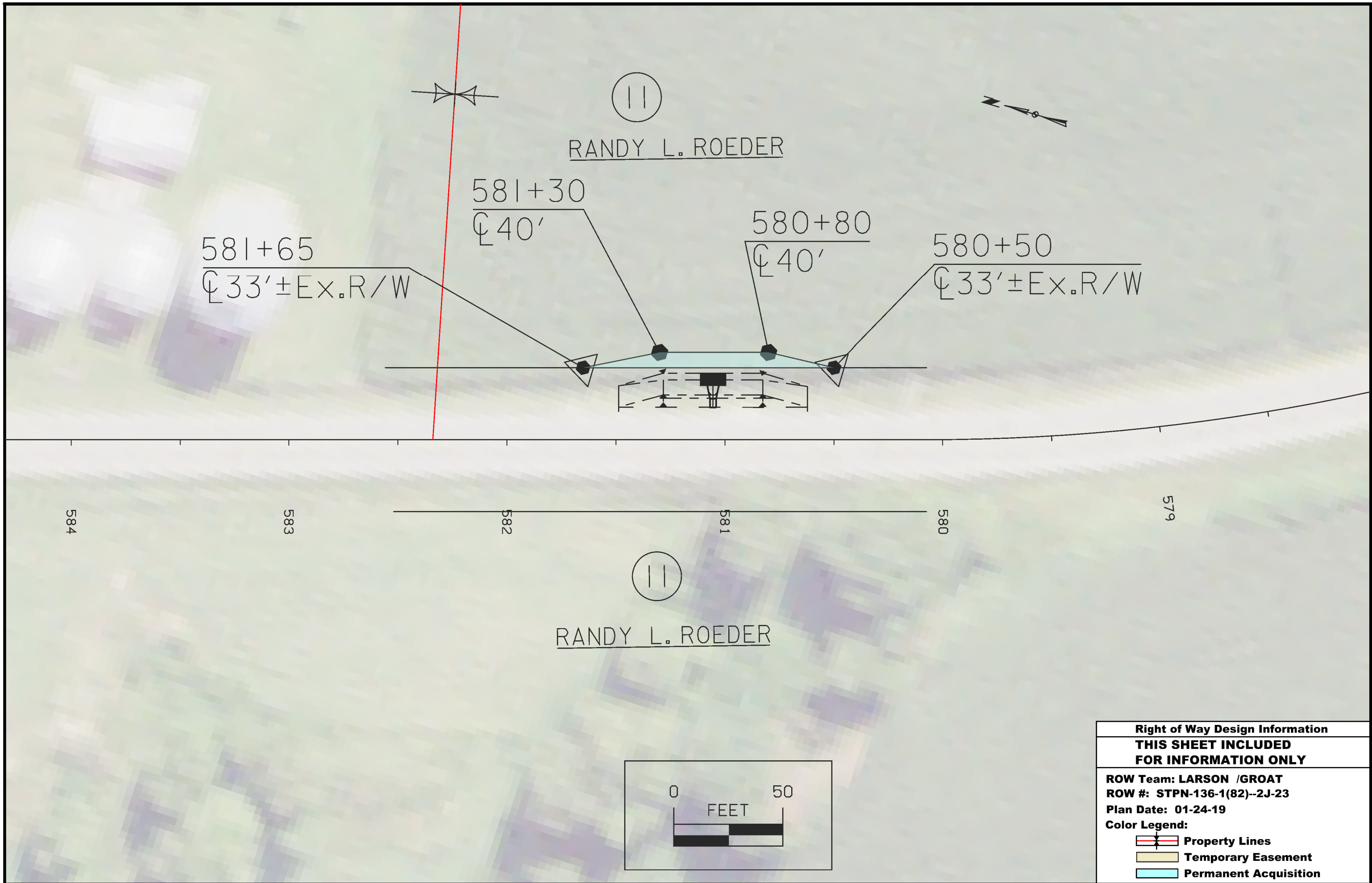
JACOB. P. DEVER

FLOYD A. MARX

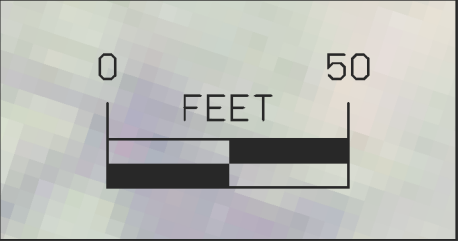
<b>Right of Way Design Information</b>	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: LARSON /GROAT	
ROW #: STPN-136-1(82)--2J-23	
Plan Date: 11-19-18	
<b>Color Legend:</b>	
	Property Lines
	Temporary Easement
	Permanent Acquisition





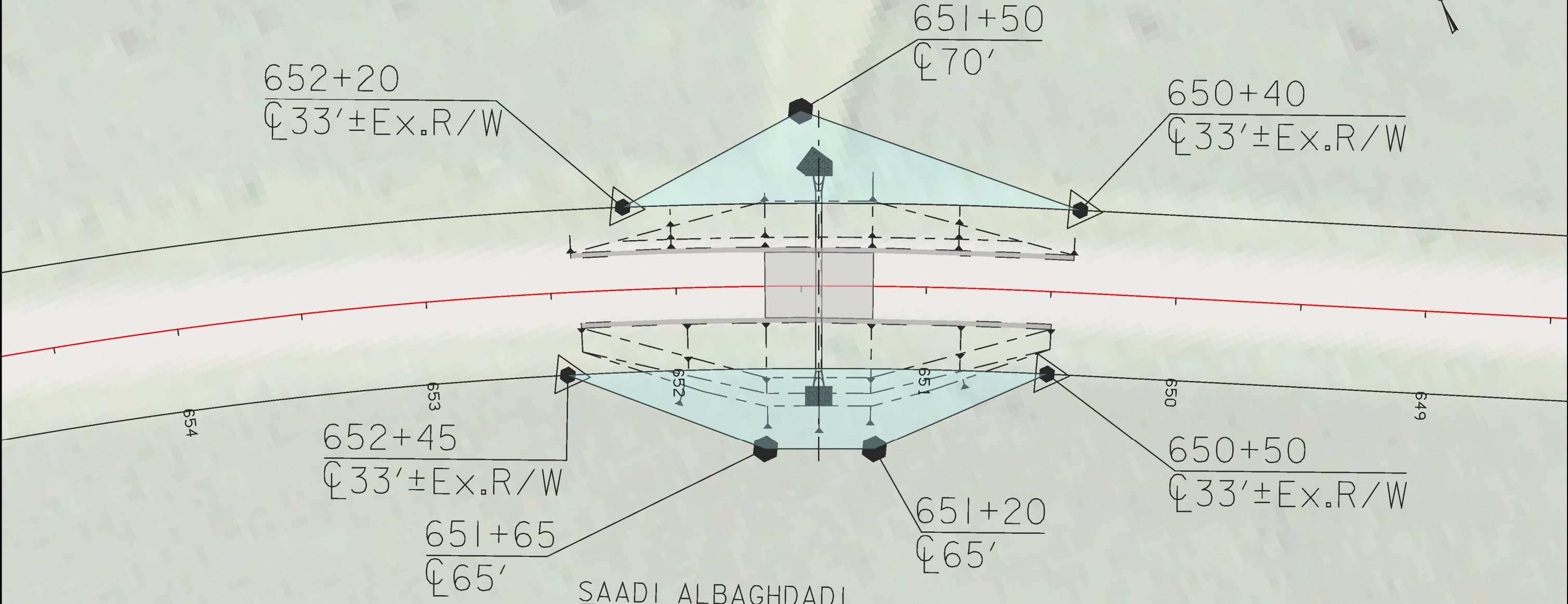


<b>Right of Way Design Information</b>	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: LARSON /GROAT	
ROW #: STPN-136-1(82)--2J-23	
Plan Date: 01-24-19	
<b>Color Legend:</b>	
	Property Lines
	Temporary Easement
	Permanent Acquisition



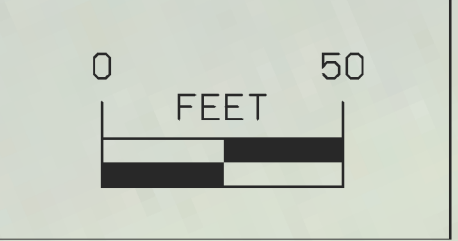
12

SHAWN A. & VALERIE S. RATHJE



SAADI ALBAGHDADI

13



<b>Right of Way Design Information</b>	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: LARSON /GROAT	
ROW #: STPN-136-1(82)--2J-23	
Plan Date: 11-16-18	
<b>Color Legend:</b>	
	Property Lines
	Temporary Easement
	Permanent Acquisition

ID

DRAINAGE DISTRICT #17 & #28

15

THE BIELENBERG  
LIVING TRUST

TEMPORARY EASEMENT TO  
SHAPE & CONST. ENTRANCE

DAVID & JULIA

MCCOY

14

705+75  
±33'±Ex.R/W

704+50  
±80'

704+45  
±33'±Ex.R/W

+67 U.A.C.  
Type "C" Ent.

+49 U.A.C.  
Type "C" Ent.

707

706

705

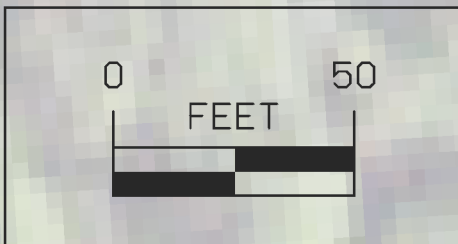
704

703

702

ID

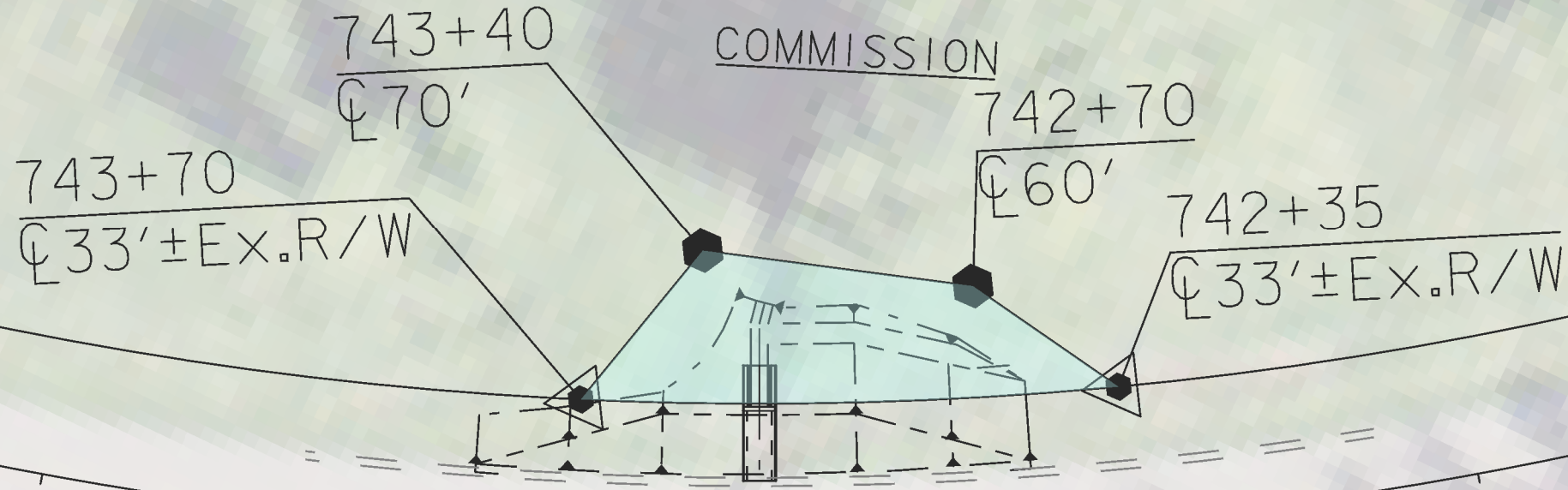
DRAINAGE DISTRICT #17 & #28



<b>Right of Way Design Information</b>	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: LARSON /GROAT	
ROW #: STPN-136-1(82)--2J-23	
Plan Date: 02-07-19	
<b>Color Legend:</b>	
	Property Lines
	Temporary Easement
	Permanent Acquisition

(16)

IOWA STATE CONSERVATION  
COMMISSION



(16)

IOWA STATE CONSERVATION  
COMMISSION



<b>Right of Way Design Information</b>	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: LARSON /GROAT	
ROW #: STPN-136-1(82)--2J-23	
Plan Date: 11-28-18	
<b>Color Legend:</b>	
	Property Lines
	Temporary Easement
	Permanent Acquisition

KENNETH & DARLENE HOLDGRAFER

766+25 766+00

⊘70' ⊘70'

765+60

⊘95'

TEMPORARY EASEMENT FOR  
PIPE JACKING

766+60

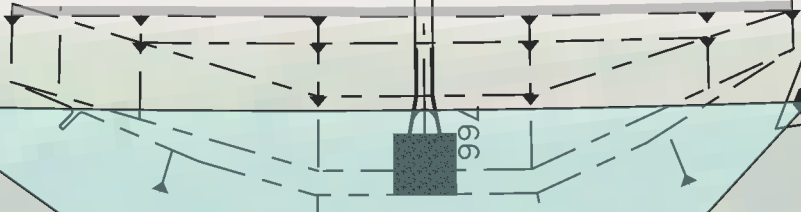
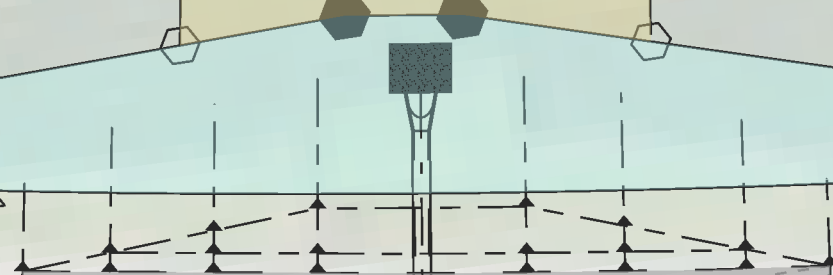
⊘95'

765+10

⊘55'

767+05

⊘55'



767+15

⊘33'±Ex.R/W

765+30

⊘33'±Ex.R/W

766+55

⊘75'

765+70

⊘75'

KENNETH & DARLENE HOLDGRAFER



Right of Way Design Information

**THIS SHEET INCLUDED  
FOR INFORMATION ONLY**

ROW Team: LARSON /GROAT

ROW #: STPN-136-1(82)--2J-23

Plan Date: 06-08-18

Color Legend:

⊘ Property Lines

Temporary Easement

Permanent Acquisition

18

BRUCE WILSON RESIDUARY TRUST

BRENT WILSON (C.P.)

TEMPORARY EASEMENT FOR PIPE JACKING

789+15

789+15  $\varnothing$ 60'  
 $\varnothing$ 47'±Prop.R/W  
789+65  
 $\varnothing$ 33'±Ex.R/W

788+73±P  
 $\varnothing$ 80'

788+68±P  
 $\varnothing$ 60'

17

TEMPORARY EASEMENT FOR PIPE JACKING

KENNETH & DARLENE HOLDGRAFER

788+15  
 $\varnothing$ 105'

788+40  
 $\varnothing$ 65'

787+90

$\varnothing$ 47'±Prop. R/W

787+50

$\varnothing$ 33'±Ex.R/W

791

790

789

787

786

788+25  
 $\varnothing$ 33'±Ex.R/W

788+05  
 $\varnothing$ 65'

U.A.C. Type  
+60' ± Ent.

787+65

$\varnothing$ 65'

787+10

$\varnothing$ 33'±Ex.R/W

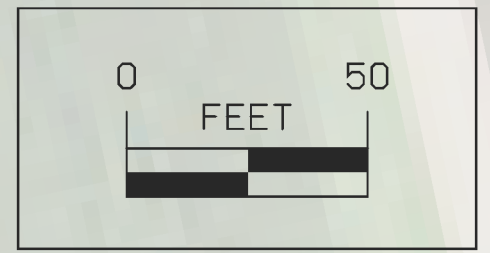
787+65

$\varnothing$ 95'

17

788+05 KENNETH & DARLENE HOLDGRAFER

TEMPORARY EASEMENT TO SHAPE CHANNEL



<b>Right of Way Design Information</b>
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>
<b>ROW Team: LARSON /GROAT</b>
<b>ROW #: STPN-136-1(82)--2J-23</b>
<b>Plan Date: 06-08-18</b>
<b>Color Legend:</b>
<b>Property Lines</b>
<b>Temporary Easement</b>
<b>Permanent Acquisition</b>



(18)

BRUCE WILSON RESIDUARY TRUST

BRENT WILSON (C.P.)

802+00  
±33'±Ex.R/W  
801+10  
±70'

800+20  
±33'±Ex.R/W

801+65  
±33'±Ex.R/W  
+04 U.A.C.  
Type 'C' Ent.

801+05  
±65'

+10 U.A.C.  
Type 'C' Ent.

799+55  
±33'±Ex.R/W

800+65  
±65'

799+95  
±110'

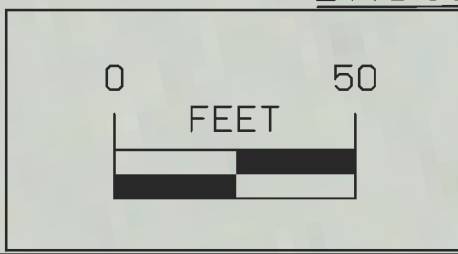
800+15  
±125'

(18)

BRUCE WILSON RESIDUARY TRUST

BRENT WILSON (C.P.)

TEMPORARY EASEMENT TO  
SHAPE CHANNEL



Right of Way Design Information	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: LARSON /GROAT	
ROW #: STPN-136-1(82)--2J-23	
Plan Date: 06-08-18	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition

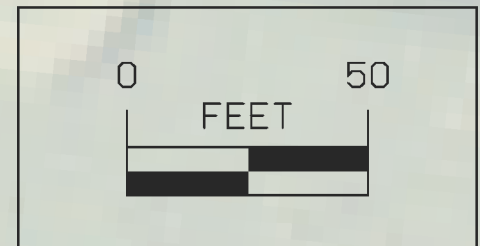
Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT  
ROW #: STPN-136-1(82)--2J-23  
Plan Date: 06-08-18

Color Legend:

-  Property Lines
-  Temporary Easement
-  Permanent Acquisition



18

BRUCE WILSON RESIDUARY TRUST

BRENT WILSON (C.P.)

808+80

808+50

±135'

±135'

808+80

808+50

807+95

809+30

±65'

±65'

±50'

±33'±Ex.R/W

807+85

±42'±Ex.R/W

TEMPORARY EASEMENT TO SHAPE CHANNEL

+74 U.A.C. Type 'C' Ent.

19

TERRY & RUTHANN

809+35

±33'±Ex.R/W

809+00

±55'

HAHN

TEMPORARY EASEMENT TO SHAPE CHANNEL

808+81±R

±55'

808+75±R

±75'

±115'

808+64±R

±115'

808+45

±115'

808+20

±65'

807+80±R/W Cor.

±24'(R/W Cor.)

TEMPORARY EASEMENT TO SHAPE CHANNEL

18

BRUCE WILSON RESIDUARY TRUST

BRENT WILSON (C.P.)





TEMPORARY EASEMENT TO SHAPE CHANNEL

21

BRIAN R. & JENNIFER M.

BLANCHARD

817+60

CL 70'

817+60

CL 53' ± Prop. R/W

816+70

CL 33' ± Ex. R/W

817+75

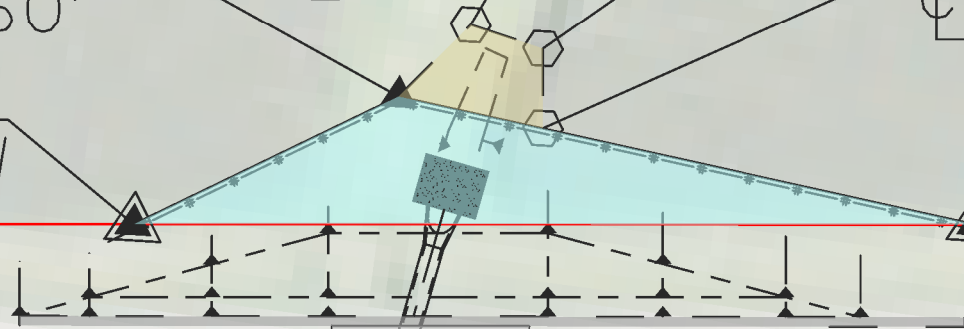
CL 75'

817+90

CL 60'

818+45

CL 33' ± Ex. R/W



821

818+90

CL 33' ± Ex. R/W

TEMPORARY EASEMENT TO SHAPE CHANNEL

818+40

CL 65'

818+40

CL 90'

20

STEVEN C. & JUDITH A.

PETERSEN

817+10

CL 33' ± Ex. R/W

817+15

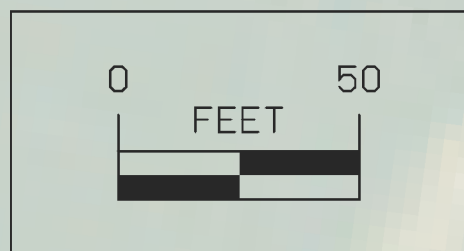
CL 45'

817+70

CL 65'

817+70

CL 90'

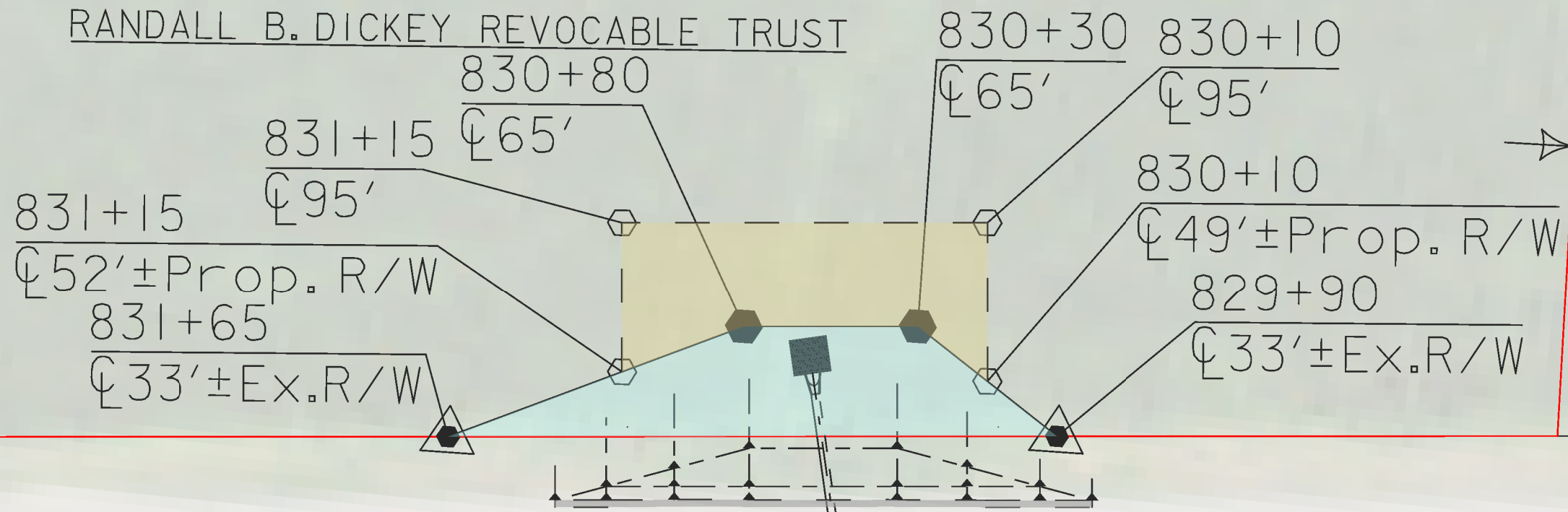


Right of Way Design Information	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: LARSON /GROAT	
ROW #: STPN-136-1(82)--2J-23	
Plan Date: 06-08-18	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition

(23)

TEMPORARY EASEMENT FOR PIPE JACKING

RANDALL B. DICKEY REVOCABLE TRUST



(22)

831+30  $\phi$ 33'± Ex. R/W

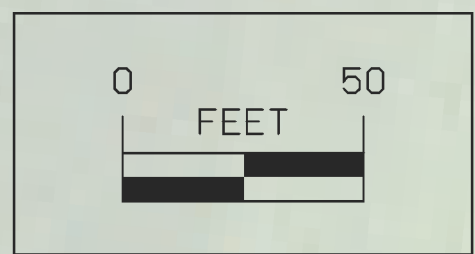
830+80  $\phi$ 60'

BIELENBERG LIVING TRUST

829+55  $\phi$ 33'± Ex. R/W

829+70  $\phi$ 50'

830+25  $\phi$ 60'



**Right of Way Design Information**

**THIS SHEET INCLUDED FOR INFORMATION ONLY**

ROW Team: LARSON /GROAT  
 ROW #: STPN-136-1(82)--2J-23  
 Plan Date: 06-08-18

**Color Legend:**

- Property Lines
- Temporary Easement
- Permanent Acquisition

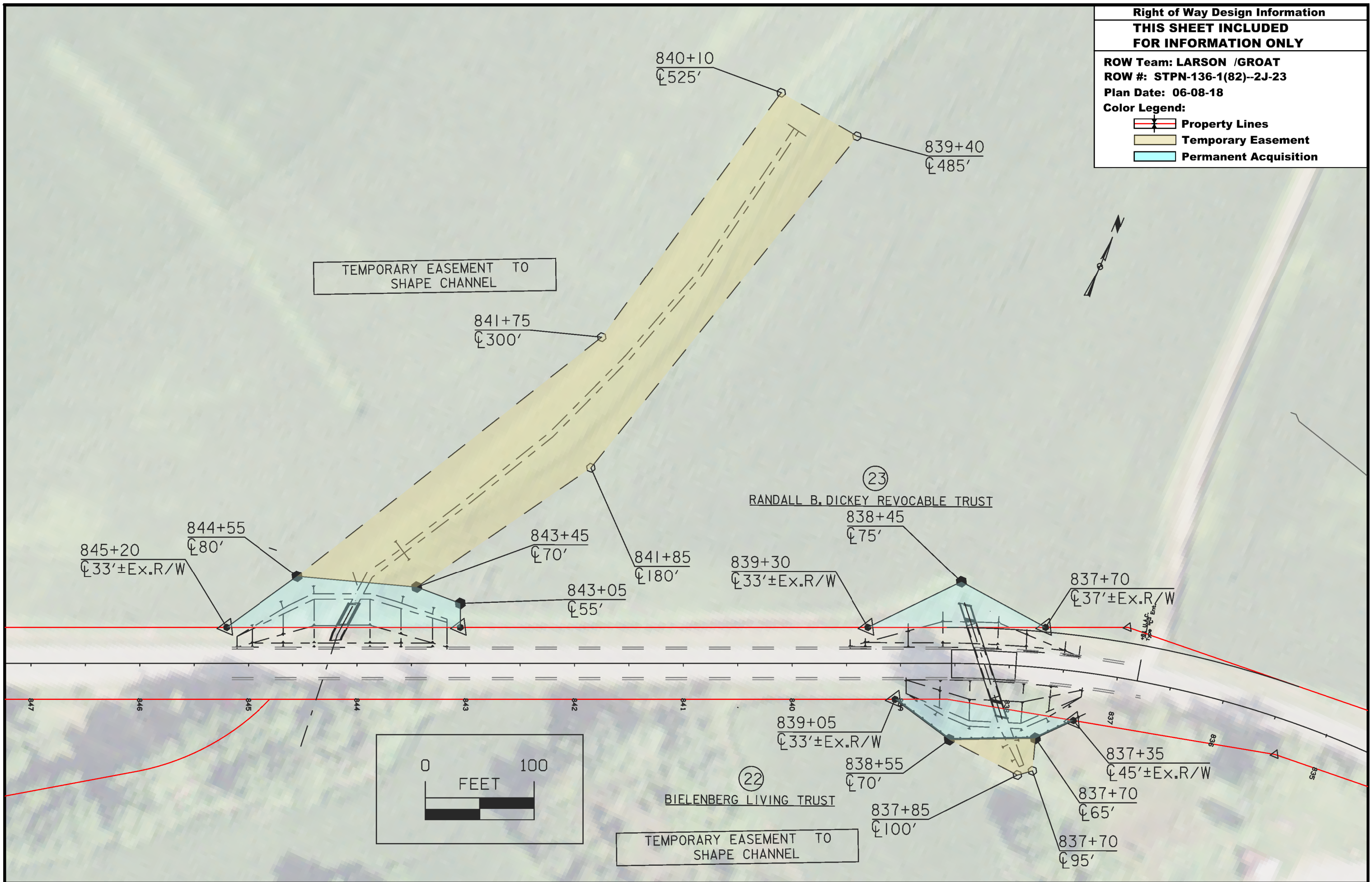
Right of Way Design Information

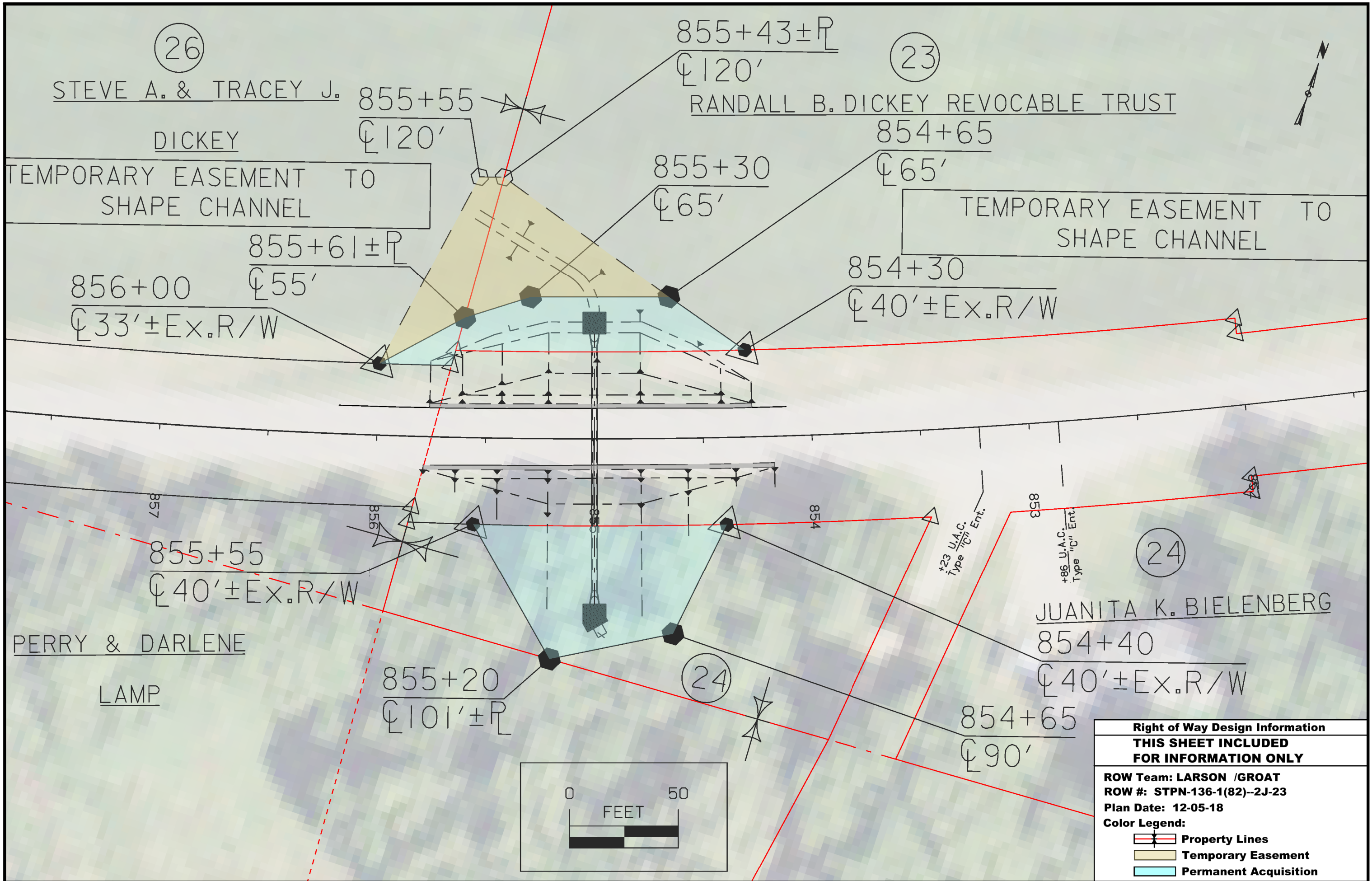
**THIS SHEET INCLUDED  
FOR INFORMATION ONLY**

ROW Team: LARSON /GROAT  
ROW #: STPN-136-1(82)--2J-23  
Plan Date: 06-08-18

Color Legend:

-  Property Lines
-  Temporary Easement
-  Permanent Acquisition





(26)  
 STEVE A. & TRACEY J.  
 DICKEY

855+43±R  
 Ⓞ120'  
 RANDALL B. DICKEY REVOCABLE TRUST

(23)  
 854+65  
 Ⓞ65'

TEMPORARY EASEMENT TO  
 SHAPE CHANNEL

TEMPORARY EASEMENT TO  
 SHAPE CHANNEL

855+61±R  
 Ⓞ55'  
 856+00  
 Ⓞ33'±Ex.R/W

854+30  
 Ⓞ40'±Ex.R/W

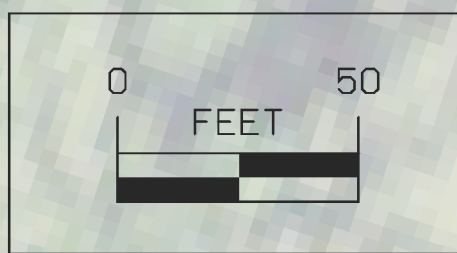
855+55  
 Ⓞ40'±Ex.R/W

PERRY & DARLENE  
 LAMP

855+20  
 Ⓞ101'±R

(24)  
 JUANITA K. BIELENBERG  
 854+40  
 Ⓞ40'±Ex.R/W

854+65  
 Ⓞ90'

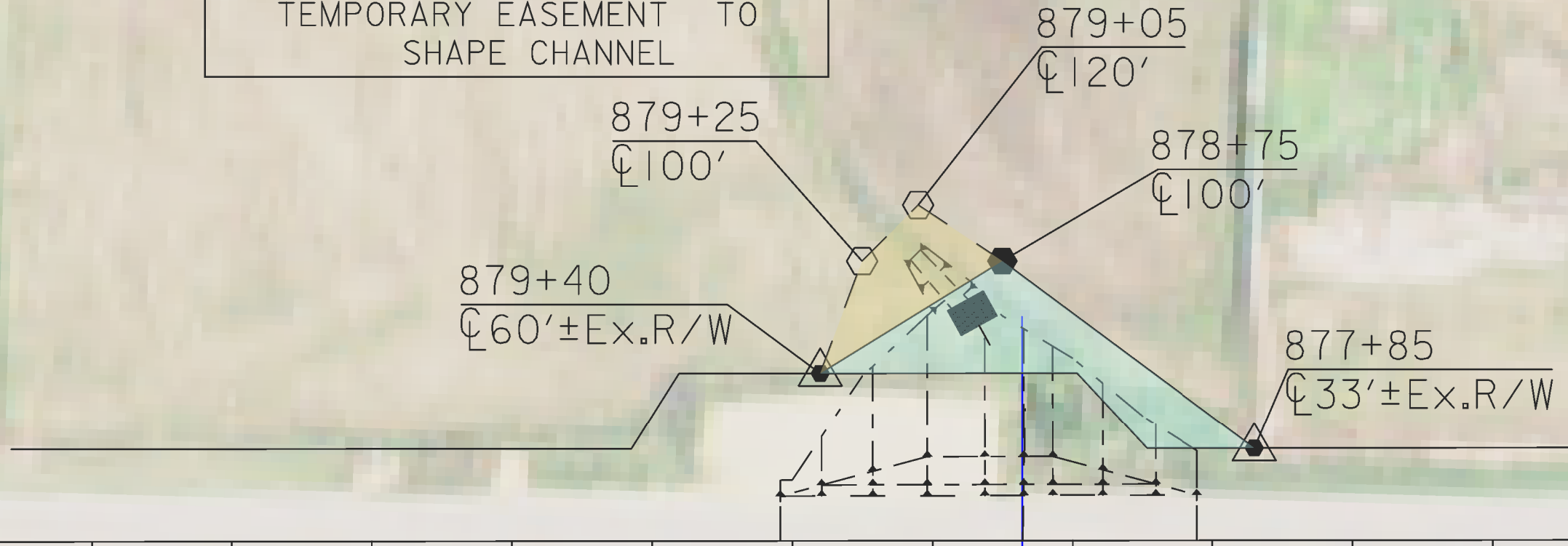


<b>Right of Way Design Information</b>	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: LARSON /GROAT	
ROW #: STPN-136-1(82)--2J-23	
Plan Date: 12-05-18	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition

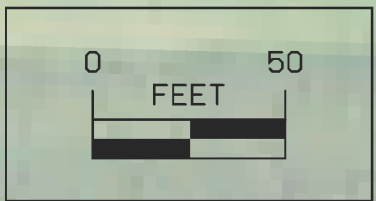


(26)  
 STEVE A. & TRACEY J.  
 DICKEY

TEMPORARY EASEMENT TO  
 SHAPE CHANNEL



882                      881                      880                      879                      878                      877                      876



PERRY & DARLENE  
 LAMP

<b>Right of Way Design Information</b>	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: LARSON /GROAT	
ROW #: STPN-136-1(82)--2J-23	
Plan Date: 12-05-18	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition

(23)

RANDALL B. DICKEY REVOCABLE TRUST

909+90  
 33' ± Ex. R/W

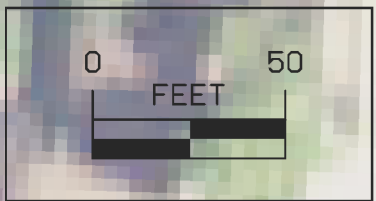
909+40  
 50'

908+90  
 50'

908+40  
 33' ± Ex. R/W

IA 136

+75 U.A.C.  
Type "C" Ent.

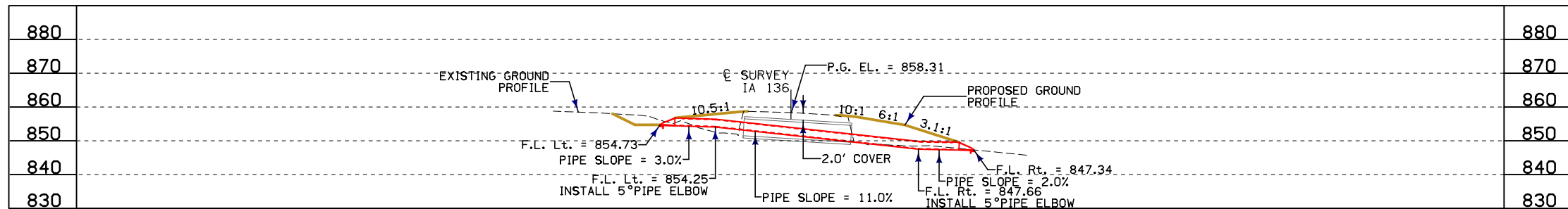


**Right of Way Design Information**  
**THIS SHEET INCLUDED FOR INFORMATION ONLY**

ROW Team: LARSON /GROAT  
 ROW #: STPN-136-1(82)--2J-23  
 Plan Date: 10-30-18

**Color Legend:**

- Property Lines
- Temporary Easement
- Permanent Acquisition

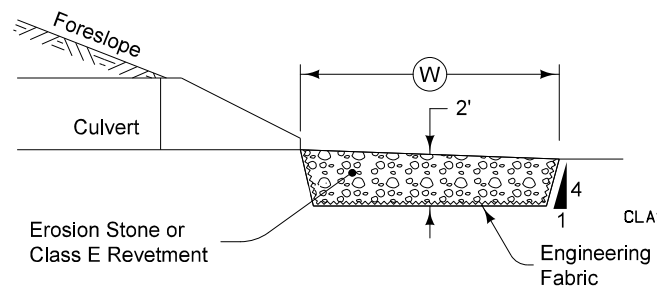
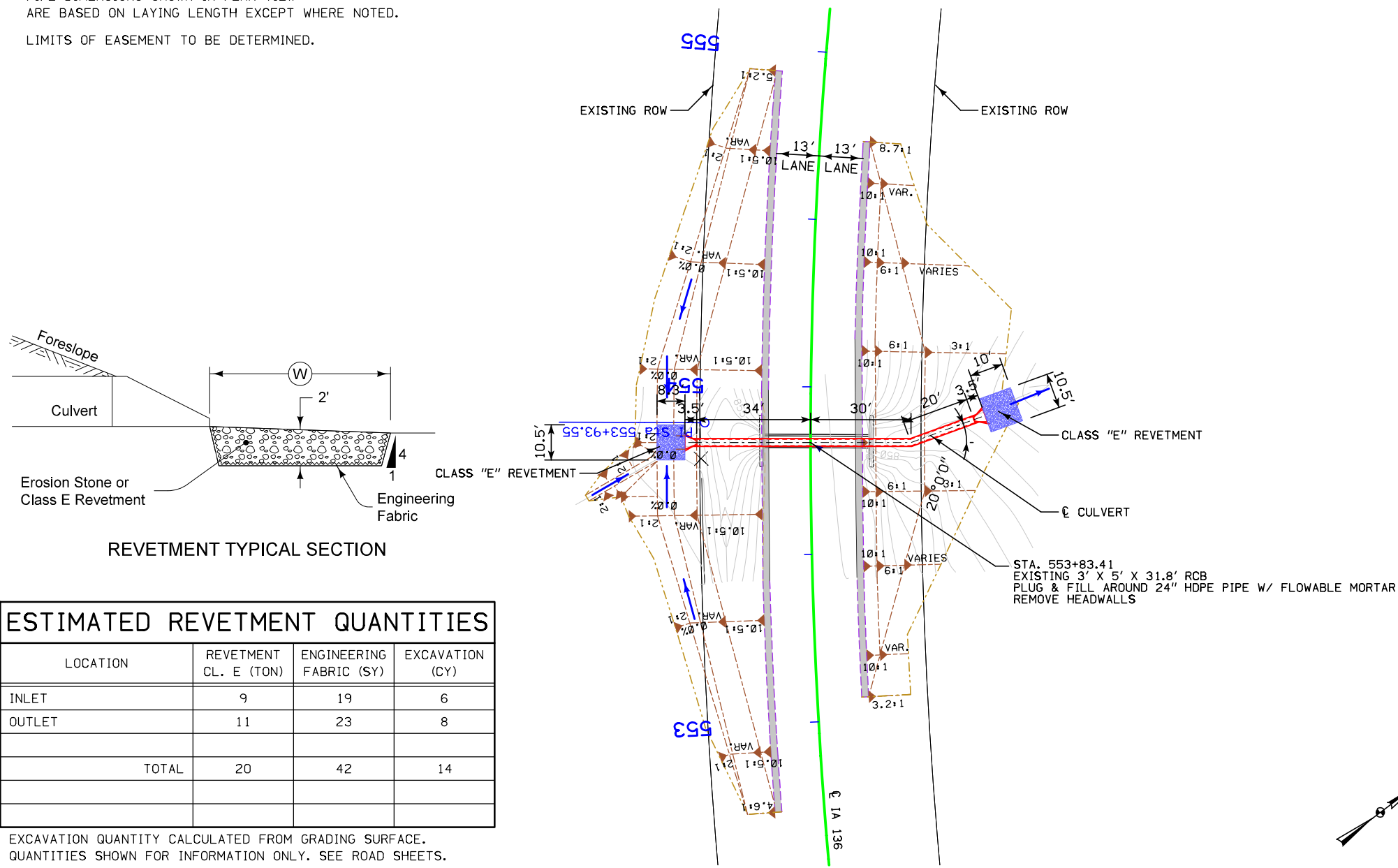


LONGITUDINAL SECTION ALONG C PIPE

BENCH MARK NO. 519 = ELEV. 854.487, STA. 554+20.90 30.7 RT.  
 SET RR SPIKE ON S. SIDE OF PP

PIPE DIMENSIONS SHOWN IN PLAN VIEW  
 ARE BASED ON LAYING LENGTH EXCEPT WHERE NOTED.  
 LIMITS OF EASEMENT TO BE DETERMINED.

UTILITIES LEGEND



REVETMENT TYPICAL SECTION

ESTIMATED REVETMENT QUANTITIES

LOCATION	REVETMENT CL. E (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	9	19	6
OUTLET	11	23	8
TOTAL	20	42	14

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.  
 QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.

HYDRAULIC DATA

DRAINAGE AREA = 3 ACRES  
 $Q_w = 11$  CFS

LOCATION

T-83 N R-5 E  
 SECTION 35  
 DEEP CREEK TOWNSHIP  
 CLINTON COUNTY

PRELIMINARY

DESIGN FOR 0° SKEW

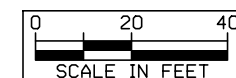
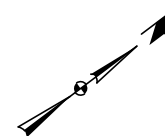
24" X 84' CORRUGATED  
 POLYETHYLENE PIPE WITH  
 CORRUGATED METAL APRONS

PLAT PLAN

STATION 553+83.41

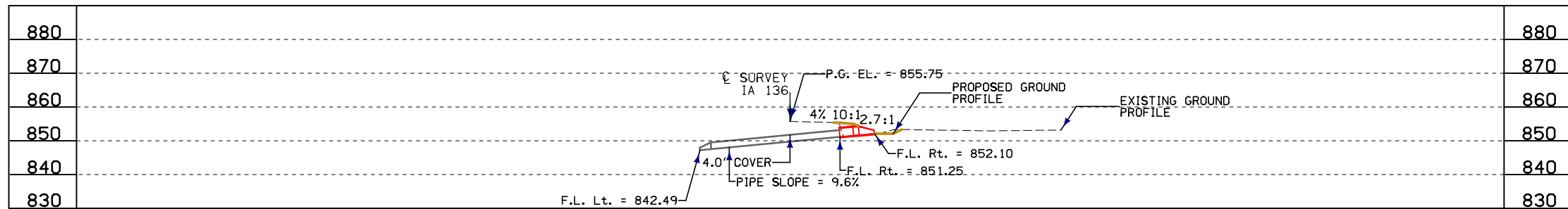
FEBRUARY, 2018

CLINTON COUNTY







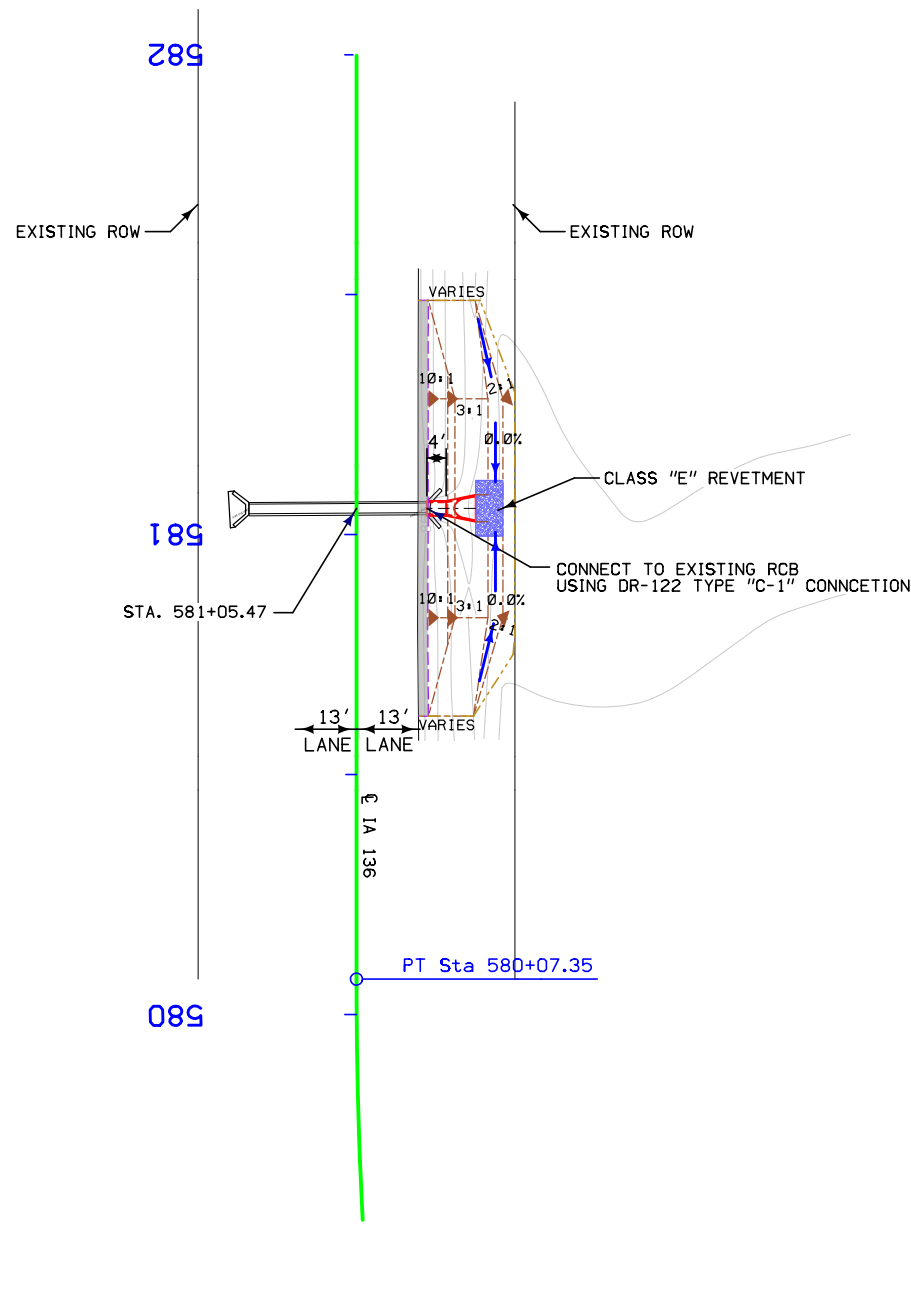
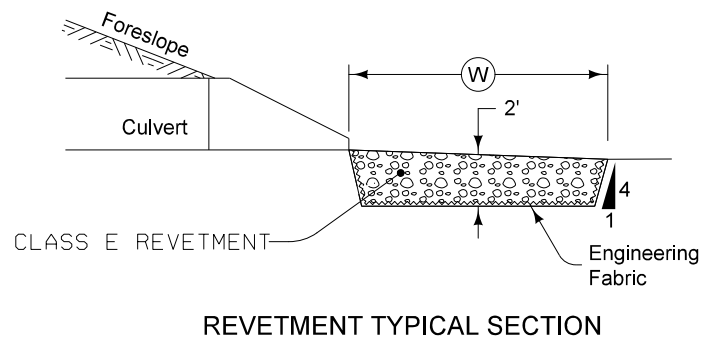


LONGITUDINAL SECTION ALONG  $\text{C}$  PIPE

BENCH MARK NO. 517 = ELEV. 856.398, STA. 580+11.3 30.2 RT.  
SET RR SPIKE ON W. SIDE OF PP

NOTE:  
PIPE DIMENSIONS SHOWN IN PLAN VIEW  
ARE BASED ON LAYING LENGTH EXCEPT WHERE NOTED.  
LIMITS OF EASEMENT TO BE DETERMINED.

UTILITIES LEGEND



HYDRAULIC DATA

DRAINAGE AREA = 2 ACRES FLAT  
 $Q_w = 5$  CFS

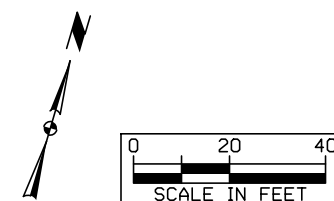
LOCATION

T-83 N R-5 E  
SECTION 35  
DEEP CREEK TOWNSHIP  
CLINTON COUNTY

ESTIMATED REVETMENT QUANTITIES

LOCATION	REVETMENT CL. E (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	9	14	7
TOTAL	9	14	7

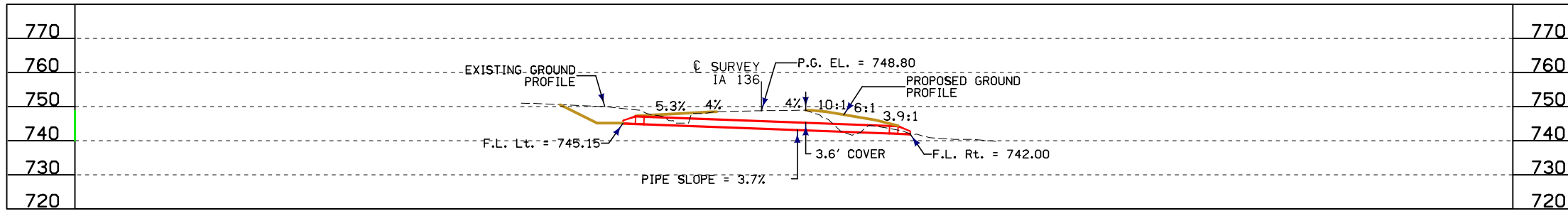
EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.  
QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.



DESIGN FOR 0°SKEW

**30" X 4' REINFORCED CONCRETE PIPE EXTENSION WITH APRON RT.**

PLAT PLAN  
STATION 581+05.47  
CLINTON COUNTY  
FEBRUARY, 2018



BENCH MARK NO. 516 = ELEV. 748.673, STA. 649+95.4 29.3 RT.  
SET RR SPIKE ON S. SIDE OF PP

**LONGITUDINAL SECTION ALONG C PIPE**

**UTILITIES LEGEND**

TL2D Preston Telephone - Quality D1

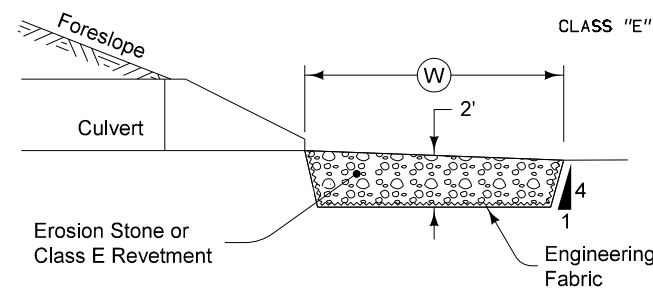
NOTE:  
PIPE DIMENSIONS SHOWN IN PLAN VIEW  
ARE BASED ON LAYING LENGTH EXCEPT WHERE NOTED.  
LIMITS OF EASEMENT TO BE DETERMINED.

**HYDRAULIC DATA**

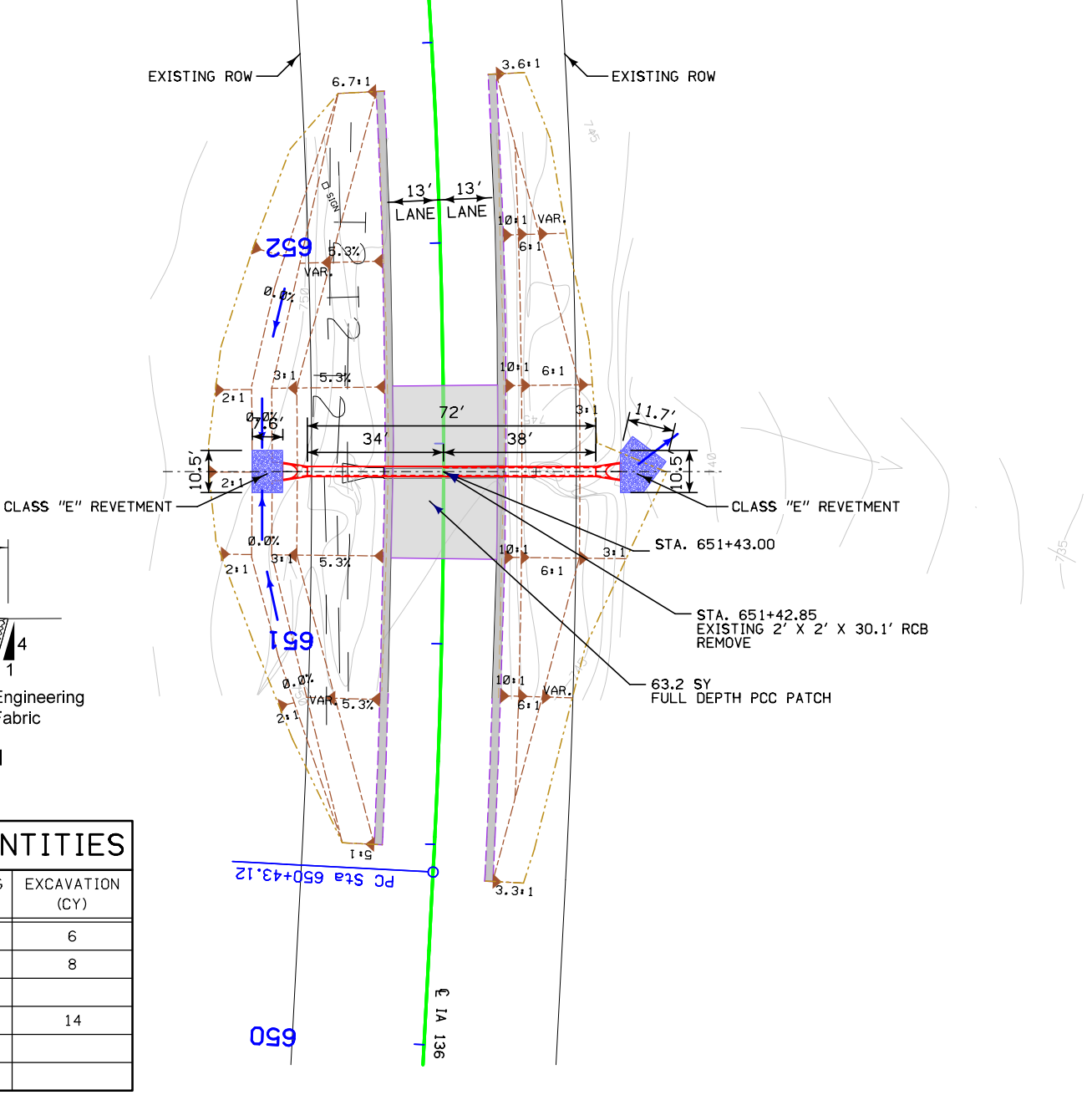
DRAINAGE AREA = 6 ACRES FLAT  
 $Q_u = 12$  CFS

**LOCATION**

T-83 N R-5 E  
SECTION 27  
DEEP CREEK TOWNSHIP  
CLINTON COUNTY



REVETMENT TYPICAL SECTION

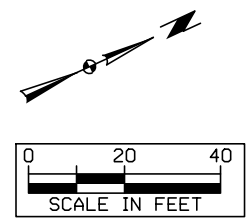


PLAT PLAN

**ESTIMATED REVETMENT QUANTITIES**

LOCATION	REVETMENT CL. E (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	8	16	6
OUTLET	11	22	8
TOTAL	19	38	14

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.  
QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.



PRELIMINARY  
DESIGN FOR 0° SKEW  
**24" X 72' REINFORCED CONCRETE PIPE WITH APRONS**  
PLAT PLAN  
STATION 651+43.00      FEBRUARY, 2018  
CLINTON COUNTY

T-83 N R-5 E  
SECTION 28  
DEEP CREEK TOWNSHIP  
CITY OF GOOSE LAKE

MAIN ST.

EXISTING ROW

STA. 685+14.27, 10.50' LT.  
CONSTRUCT 10' X 6'  
FULL DEPTH PCC PATCH

REPLACE 6' EXISTING CMP PIPE  
W/ 6' 15" 2000D RCP  
INLET F.L. ELEV. = 679.54  
OUTLET F.L. ELEV. = MATCH EXISTING

REPLACE 6' EXISTING CMP PIPE  
W/ 6' 15" 2000D RCP  
OUTLET F.L. ELEV. = 679.61  
INLET F.L. ELEV. = MATCH EXISTING

PAVE TO EDGE OF  
PROPOSED INTAKE

□ SIGN

STA. 684+50.00 TO 685+19.69  
CONSTRUCT 8" HMA SHOULDER  
SEE DETAIL WHKS-1 ON SHEET B.1.

IA 136

685

STA. 685+14.27, 19.59' LT.  
EXISTING AREA INTAKE  
REPLACE W/ 42" X 42" SW-513 INTAKE  
F.G. ELEV. = 682.68  
EAST INLET F.L. ELEV. = 679.61  
NORTH OUTLET F.L. ELEV. = 679.54  
B.W. ELEV. = 679.04

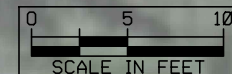
St.S.3(C)

EXISTING ROW

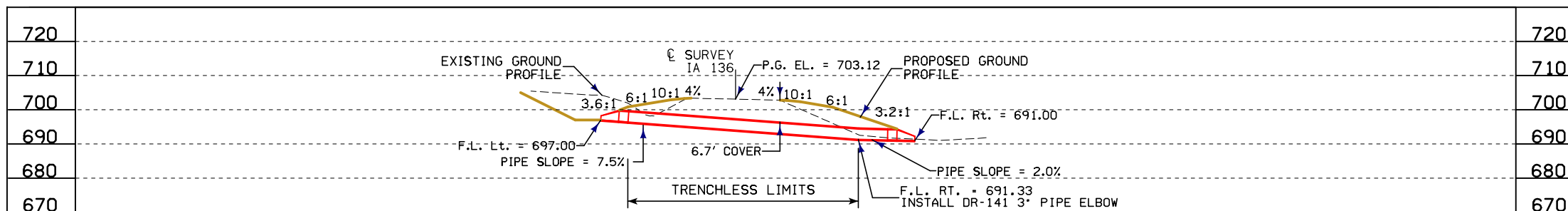
684

UTILITIES LEGEND

- St.S.3(C) ST3C City of Goose Lake - Quality C
- WL3D City of Goose Lake - Quality D1



CITY OF GOOSE LAKE  
INTAKE REPLACEMENT



LONGITUDINAL SECTION ALONG C PIPE

BENCH MARK NO. 513, STA. 766+34.8 X ON INLET HEADWALL 19.45 LT, EL=700.146

NOTES:  
 PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH EXCEPT WHERE NOTED.  
 TEMPORARY EASEMENT REQUIRED AT OUTLET END OF CULVERT FOR TRENCHLESS CONSTRUCTION. LIMITS OF EASEMENT TO BE DETERMINED.

① TRENCHLESS INSTALLATION LENGTH.

UTILITIES LEGEND

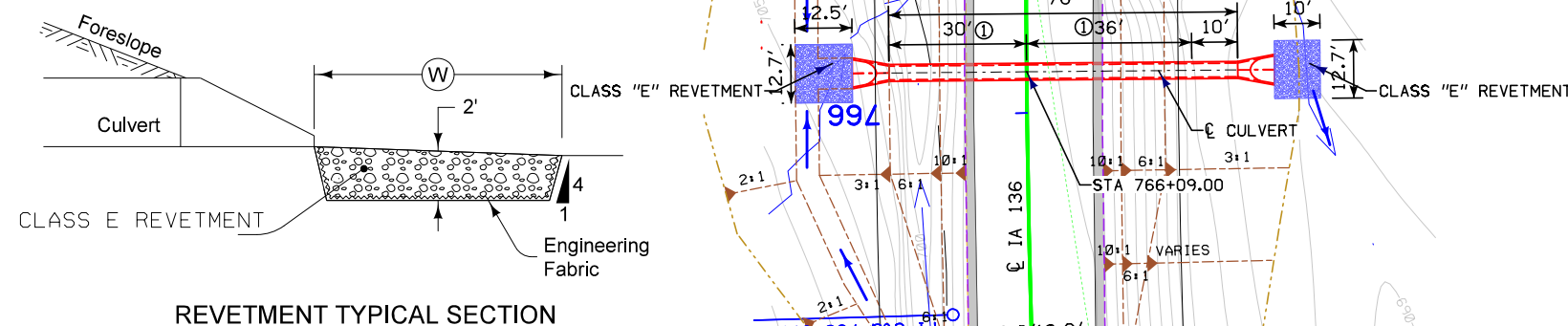
— TELEPHONE

HYDRAULIC DATA

DRAINAGE AREA = 30 Ac. FLAT  
 $Q_w = 40$  CFS

LOCATION

T-83 N R-5 E  
 SECTION 29  
 DEEP CREEK TOWNSHIP  
 CLINTON COUNTY

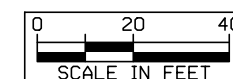
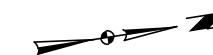


REVETMENT TYPICAL SECTION

ESTIMATED REVETMENT QUANTITIES

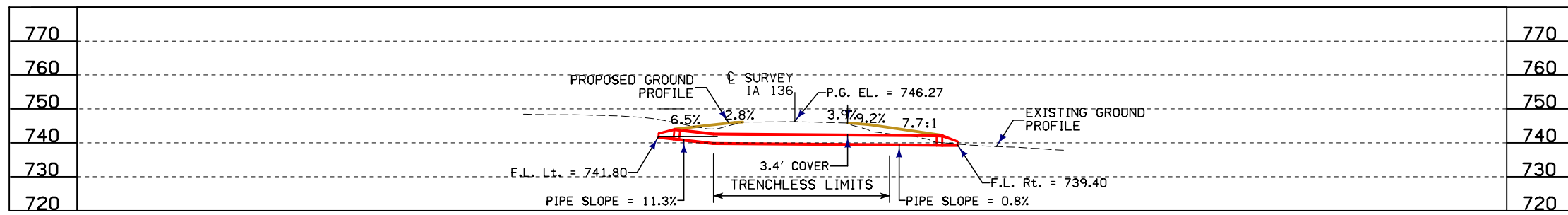
LOCATION	REVETMENT CL. E (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	17	27	12
OUTLET	13	23	9
TOTAL	30	50	21

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE. QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.



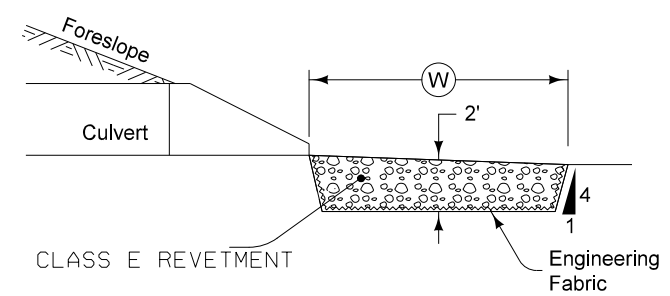
PRELIMINARY

DESIGN FOR 0° SKEW  
**36" X 76' REINFORCED CONCRETE PIPE WITH APRONS**  
 PLAT PLAN  
 STATION 766+09.00 FEBRUARY, 2018  
 CLINTON COUNTY



LONGITUDINAL SECTION ALONG C PIPE

NOTES:  
 PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH EXCEPT WHERE NOTED.  
 TEMPORARY EASEMENT REQUIRED AT OUTLET END OF CULVERT FOR TRENCHLESS CONSTRUCTION. LIMITS OF EASEMENT TO BE DETERMINED.  
 ① TRENCHLESS INSTALLATION LENGTH.

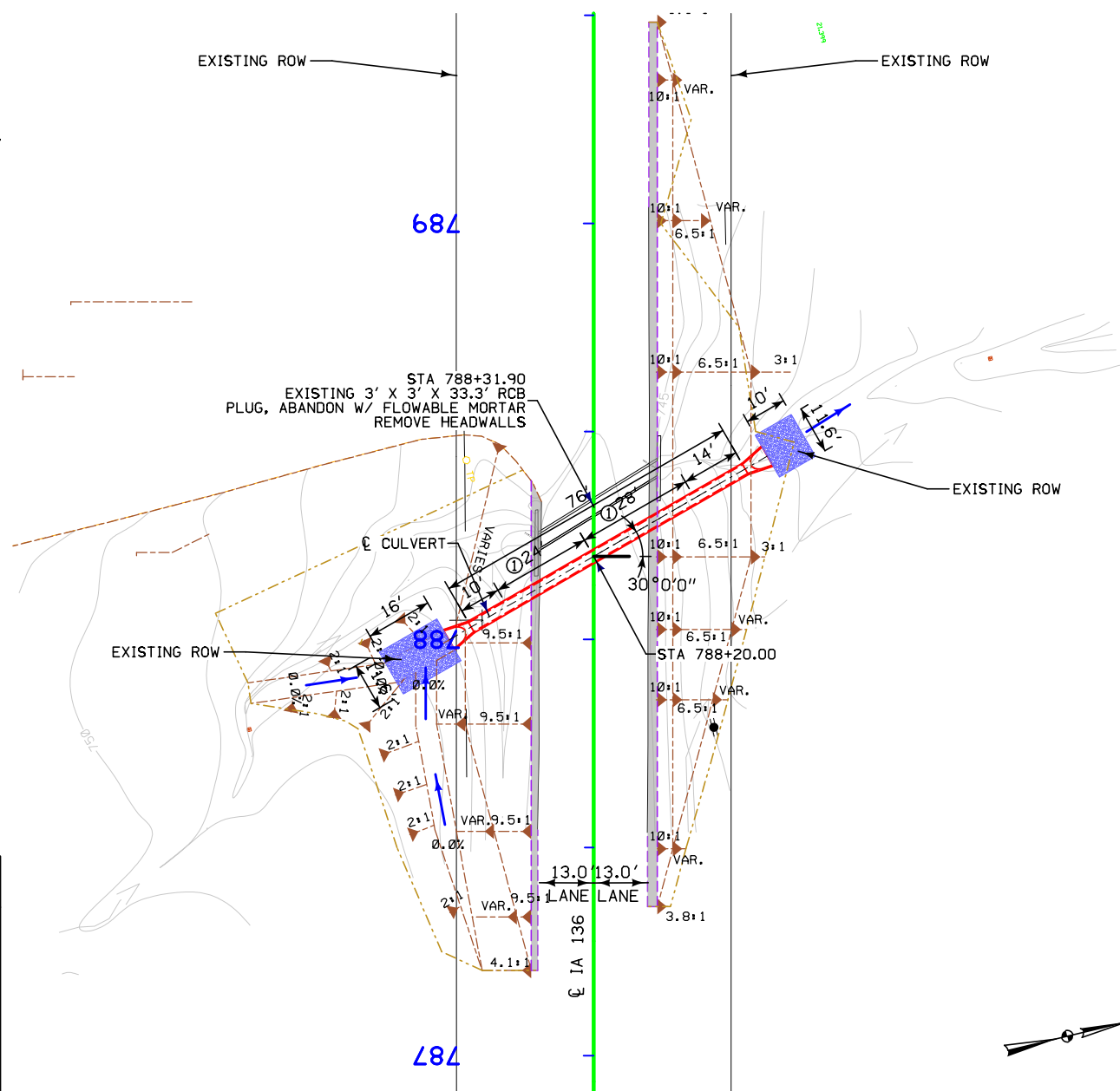


REVETMENT TYPICAL SECTION

ESTIMATED REVETMENT QUANTITIES

LOCATION	REVETMENT CL. E (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	20	31	14
OUTLET	12	21	9
TOTAL	32	52	23

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE. QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.



UTILITIES LEGEND

— TELEPHONE

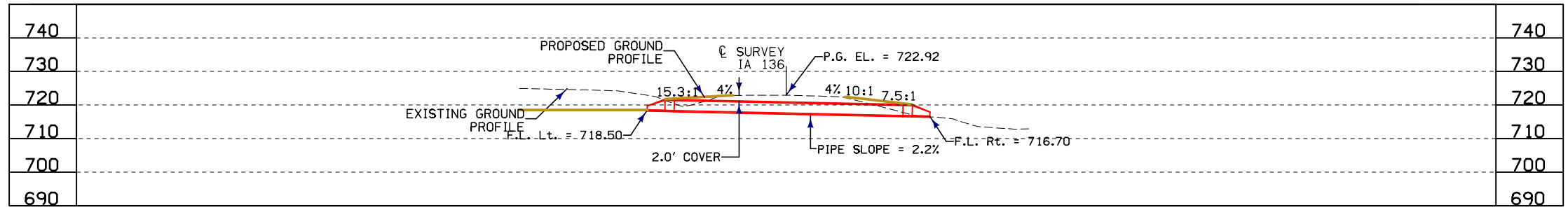
HYDRAULIC DATA

DRAINAGE AREA = 15 Ac. FLAT-ROLLING  
 $Q_{10} = 23$  CFS

LOCATION

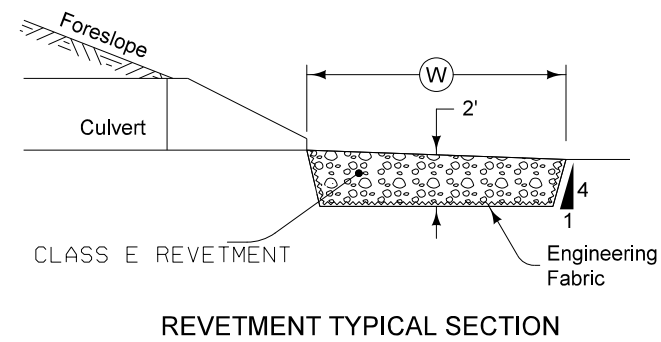
T-83 N R-5 E  
 SECTION 30  
 DEEP CREEK TOWNSHIP  
 CLINTON COUNTY

PRELIMINARY  
 DESIGN FOR 30°0'0" SKEW RT. AHEAD  
**30" X 76' REINFORCED CONCRETE PIPE WITH APRONS**  
 PLAT PLAN  
 STATION 788+20.00 FEBRUARY, 2018  
 CLINTON COUNTY



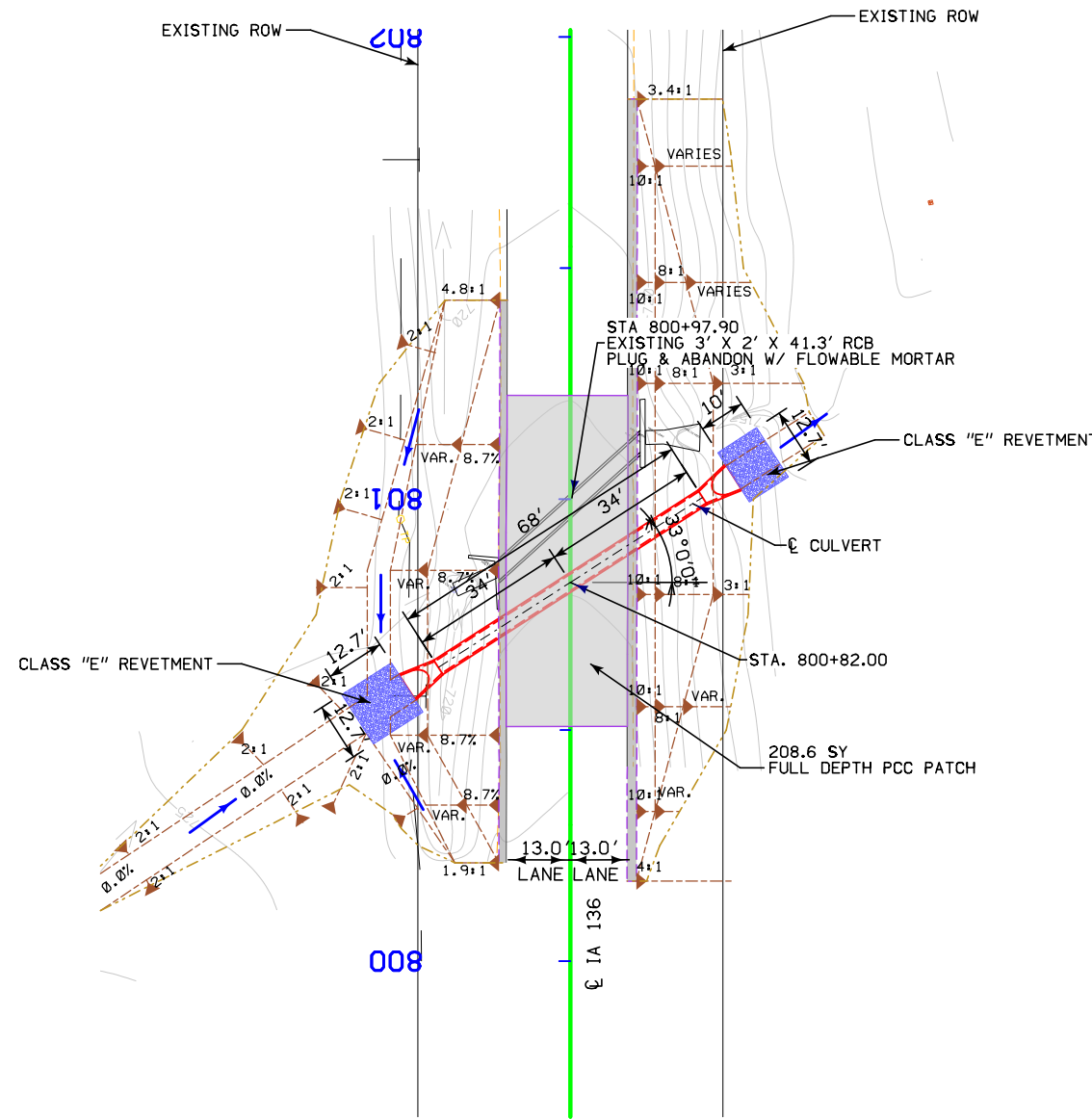
LONGITUDINAL SECTION ALONG C PIPE

NOTE:  
 PIPE DIMENSIONS SHOWN IN PLAN VIEW  
 ARE BASED ON LAYING LENGTH EXCEPT WHERE NOTED.  
 LIMITS OF EASEMENT TO BE DETERMINED.



ESTIMATED REVTMENT QUANTITIES			
LOCATION	REVTMENT CL. E (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	17	27	12
OUTLET	13	23	9
TOTAL	30	50	21

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.  
 QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.



BENCH MARK NO. 510, STA. 802+77.4 SET RR SPK  
 S SIDE PP 29.9 RT., EL=717.239

UTILITIES LEGEND

TELEPHONE

HYDRAULIC DATA

DRAINAGE AREA = 25 Ac. ROLLING  
 $Q_w = 52$  CFS

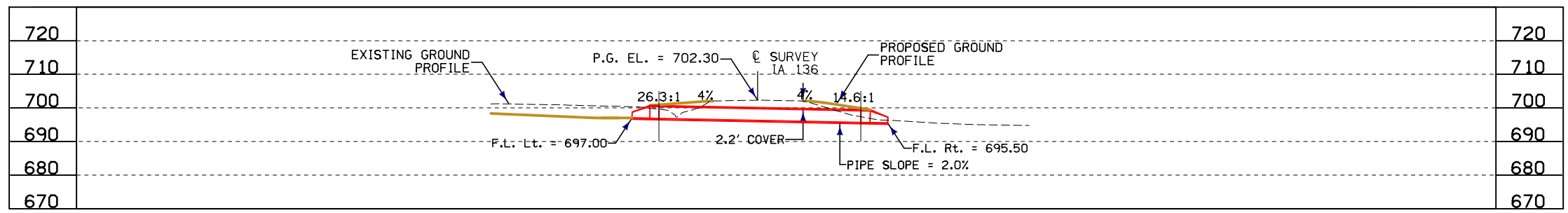
LOCATION

T-83 N R-5 E  
 SECTION 30  
 DEEP CREEK TOWNSHIP  
 CLINTON COUNTY

PRELIMINARY

DESIGN FOR 33°0'0" SKEW RT. AHEAD  
**36" X 68' REINFORCED  
 CONCRETE PIPE WITH APRONS**  
 PLAT PLAN  
 STATION 800+82 FEBRUARY, 2018  
 CLINTON COUNTY

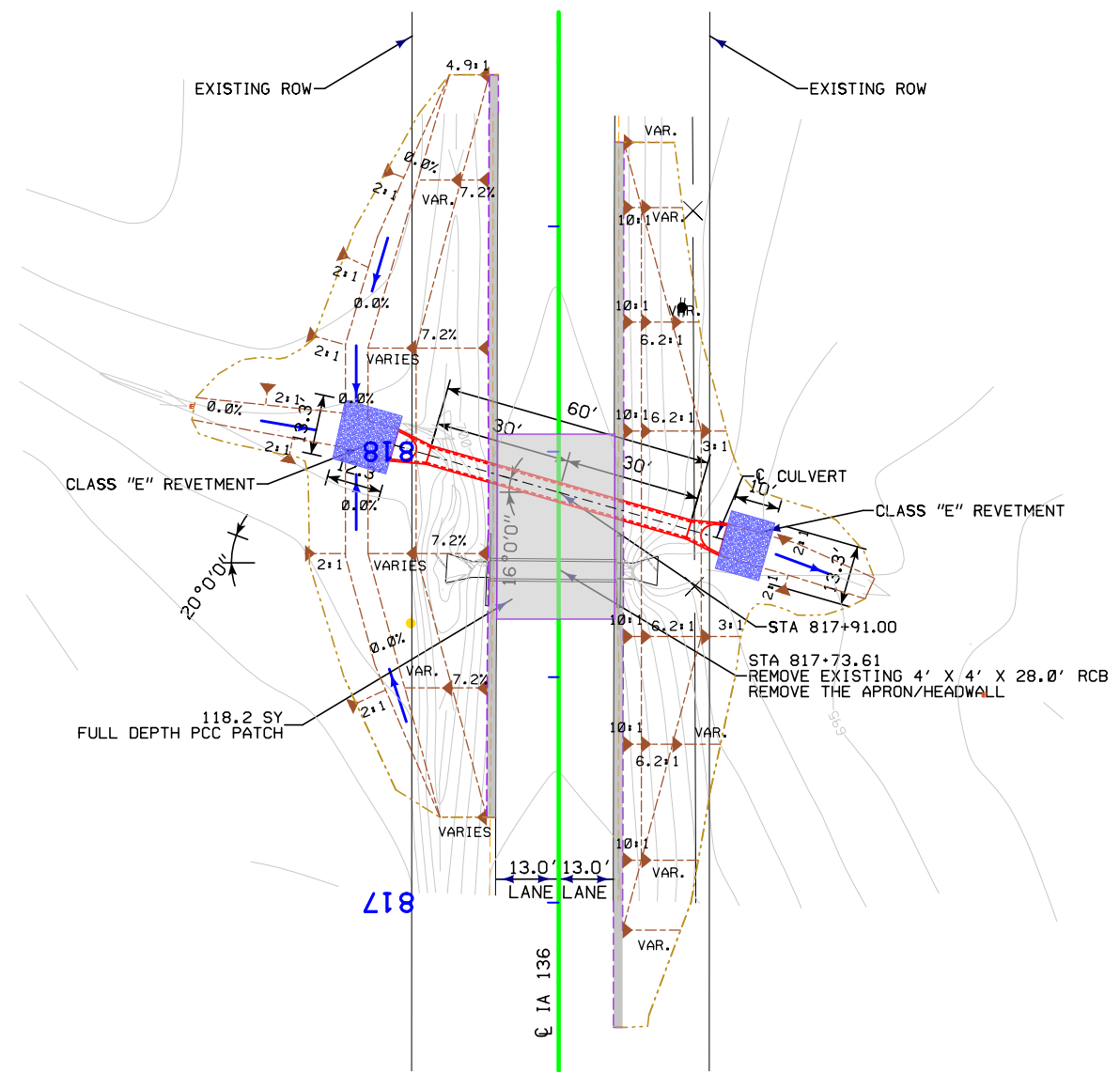




LONGITUDINAL SECTION ALONG CL PIPE

NOTES:  
 PIPE DIMENSIONS SHOWN IN PLAN VIEW  
 ARE BASED ON LAYING LENGTH EXCEPT WHERE NOTED.  
 LIMITS OF EASEMENT TO BE DETERMINED.

BENCH MARK NO. 508, STA. 817+61.7 SET RR SPK  
 N SIDE PP 32.7' LT., EL=702.169

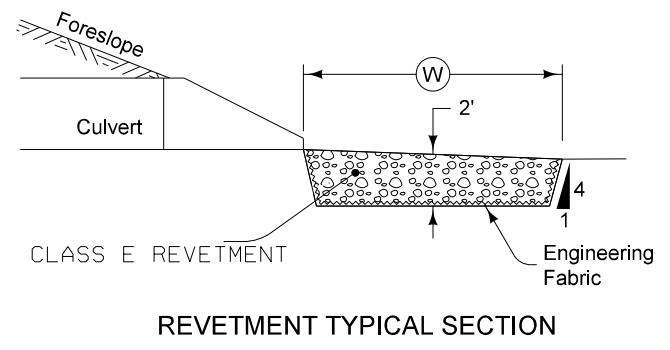


HYDRAULIC DATA

DRAINAGE AREA = 33 Ac. ROLLING  
 $Q_u = 64$  CFS

LOCATION

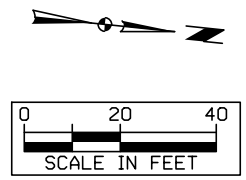
T-83 N R-5 E  
 SECTION 30  
 DEEP CREEK TOWNSHIP  
 CLINTON COUNTY



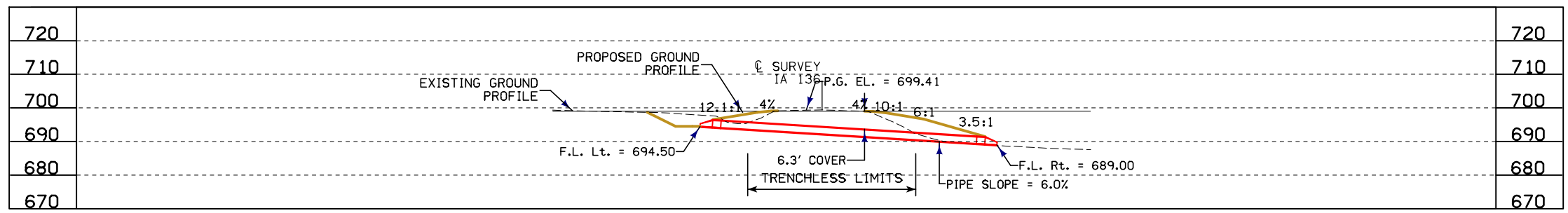
ESTIMATED REVETMENT QUANTITIES

LOCATION	REVETMENT CL. E (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	18	28	12
OUTLET	14	23	9
TOTAL	32	51	21

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.  
 QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.



DESIGN FOR 16° 0' 0" SKEW LT AHEAD  
**42" X 60' REINFORCED CONCRETE PIPE WITH APRONS**  
 PLAT PLAN  
 STATION 817+91.00      FEBRUARY, 2018  
 CLINTON COUNTY



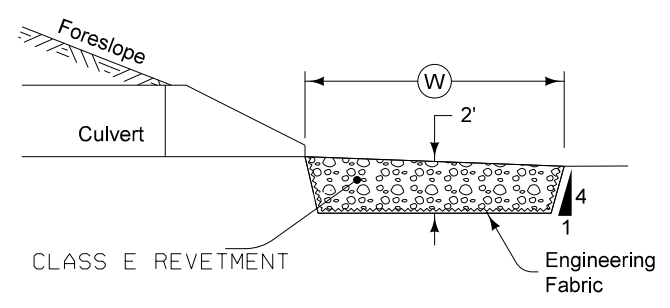
LONGITUDINAL SECTION ALONG  $\phi$  PIPE

NOTES:  
 PIPE DIMENSIONS SHOWN IN PLAN VIEW  
 ARE BASED ON LAYING LENGTH EXCEPT WHERE NOTED.

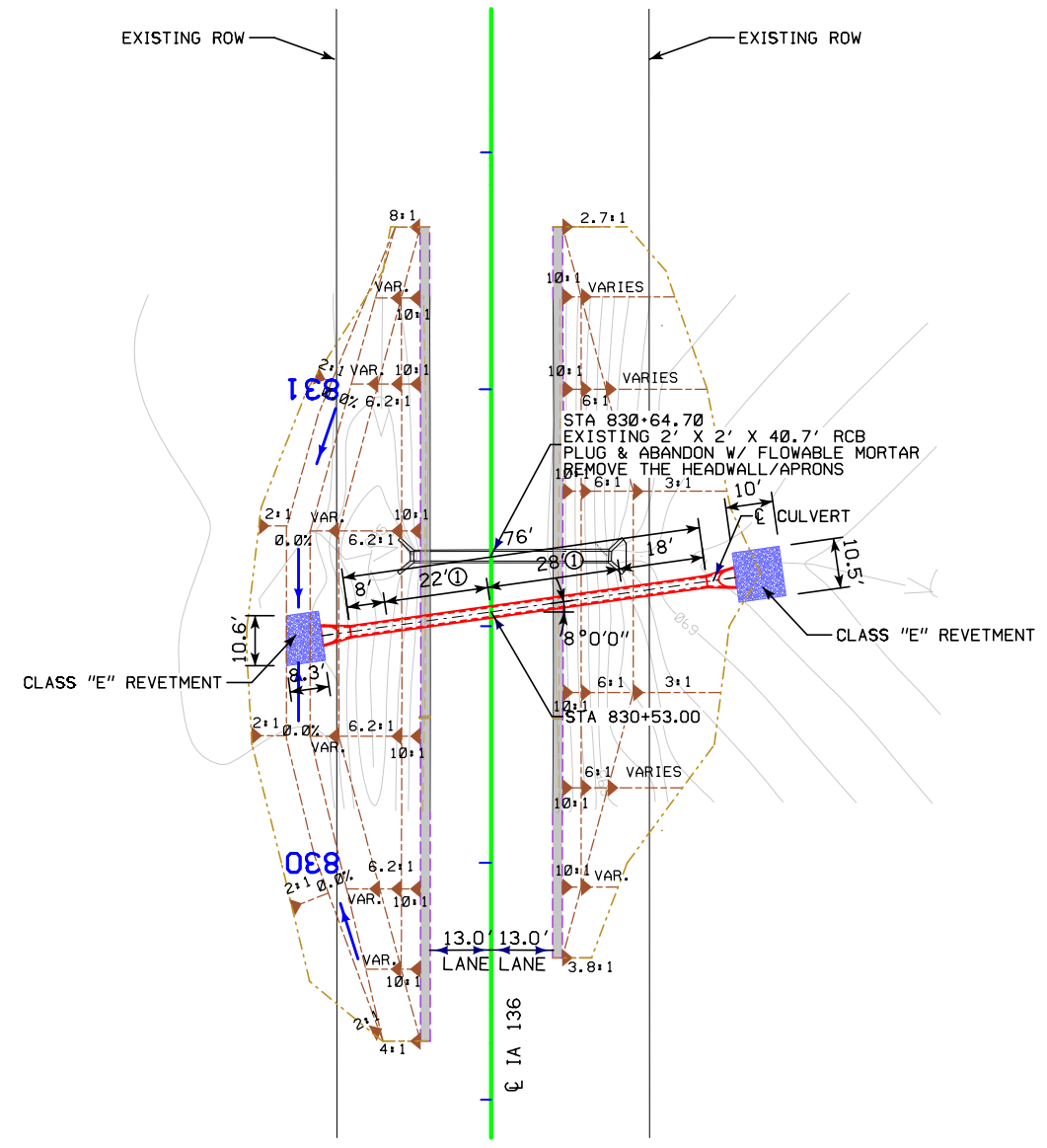
TEMPORARY EASEMENT REQUIRED AT OUTLET END OF CULVERT FOR  
 TRENCHLESS CONSTRUCTION. LIMITS OF EASEMENT TO BE DETERMINED.

① TRENCHLESS INSTALLATION LENGTH.

BENCH MARK NO. 507, STA. 831+58.8 SET RR SPK  
 S SIDE PP 29.1 RT., EL=695.654



REVETMENT TYPICAL SECTION



HYDRAULIC DATA

DRAINAGE AREA = 12 Ac. FLAT  
 $Q_w = 20$  CFS

LOCATION

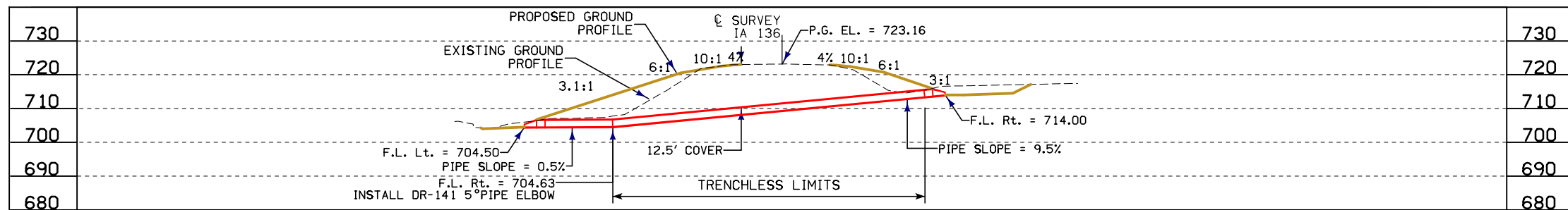
T-83 N R-4 E  
 SECTION 25  
 WATERFORD TOWNSHIP  
 CLINTON COUNTY

ESTIMATED REVETMENT QUANTITIES			
LOCATION	REVETMENT CL. E (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	8	17	6
OUTLET	11	19	8
TOTAL	19	36	14

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.  
 QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.

DESIGN FOR 8°0'0" SKEW RT AHEAD  
**24" X 76' REINFORCED CONCRETE PIPE WITH APRONS**  
 PLAT PLAN  
 STATION 830+53.00 FEBRUARY, 2018  
 CLINTON COUNTY





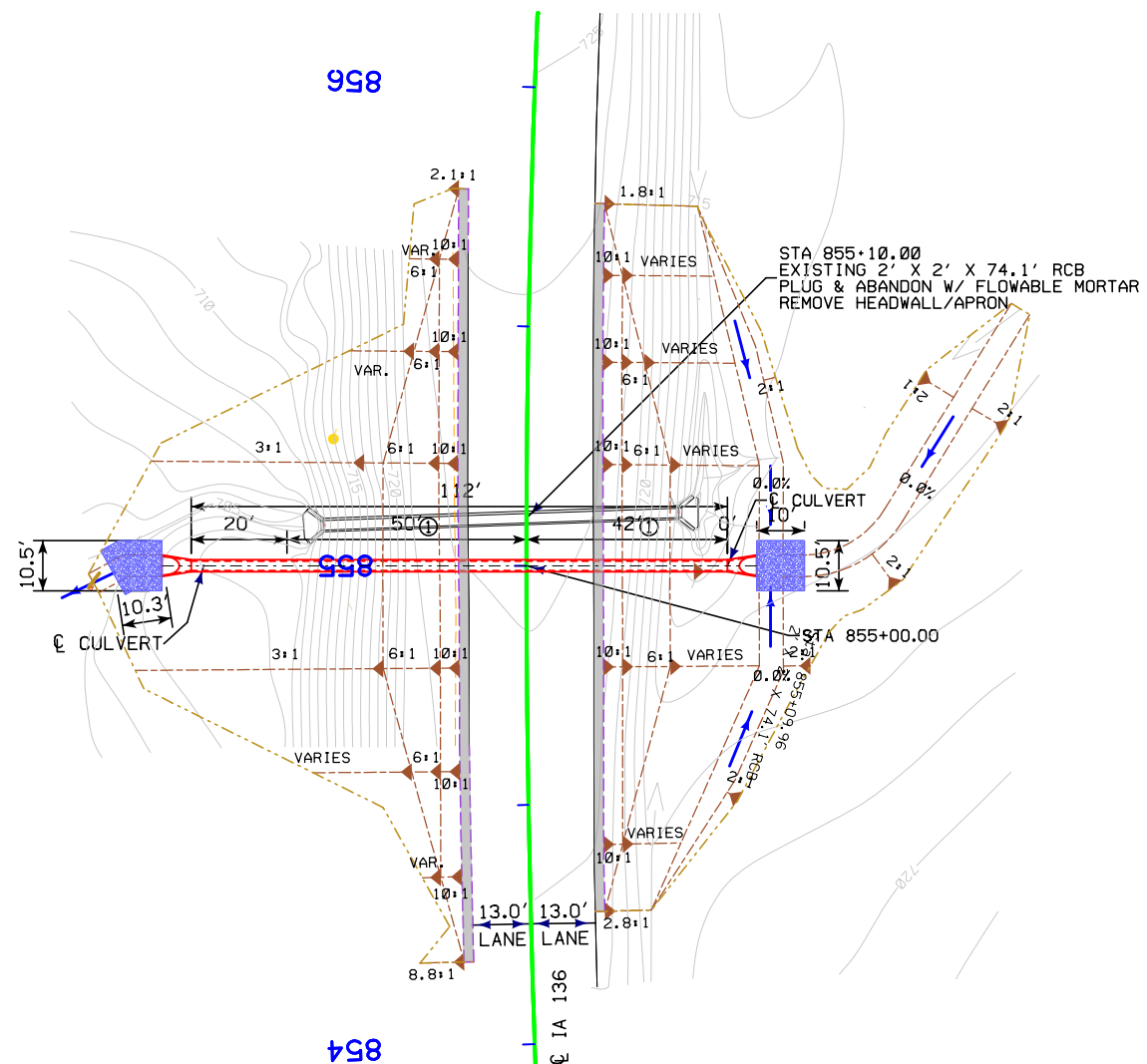
LONGITUDINAL SECTION ALONG C PIPE

BENCH MARK NO. 501, STA. 855+25.8 SET RR SPK  
N SIDE PP 40.2 LT, EL=714.189

NOTES:  
PIPE DIMENSIONS SHOWN IN PLAN VIEW  
ARE BASED ON LAYING LENGTH EXCEPT WHERE NOTED.

TEMPORARY EASEMENT REQUIRED AT OUTLET END OF CULVERT FOR  
TRENCHLESS CONSTRUCTION. LIMITS OF EASEMENT TO BE DETERMINED.

① TRENCHLESS INSTALLATION LENGTH.

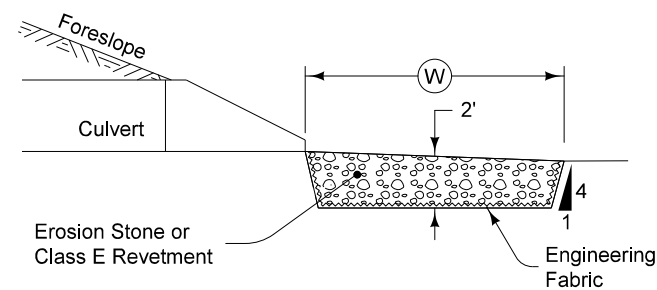


HYDRAULIC DATA

DRAINAGE AREA = 6 Ac. ROLLING  
Q<sub>u</sub> = 17 CFS

LOCATION

T-83 N R-4 E  
SECTION 25  
WATERFORD TOWNSHIP  
CLINTON COUNTY

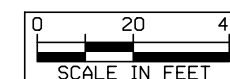
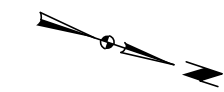


REVTMENT TYPICAL SECTION

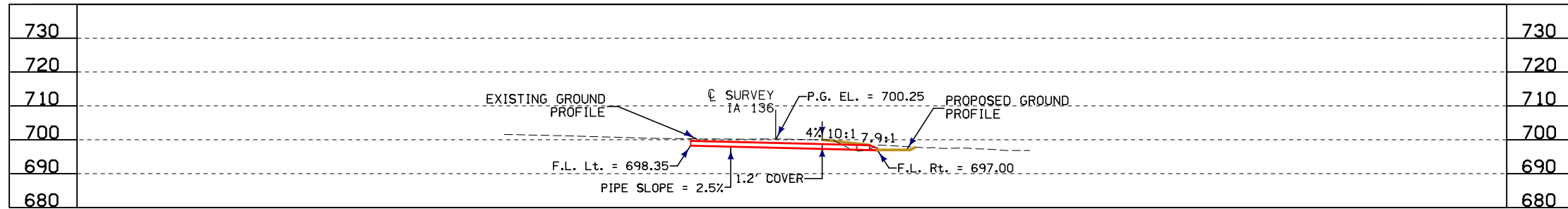
ESTIMATED REVTMENT QUANTITIES

LOCATION	REVTMENT CL. E (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	11	20	8
OUTLET	12	19	8
TOTAL	23	39	16

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.  
QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.



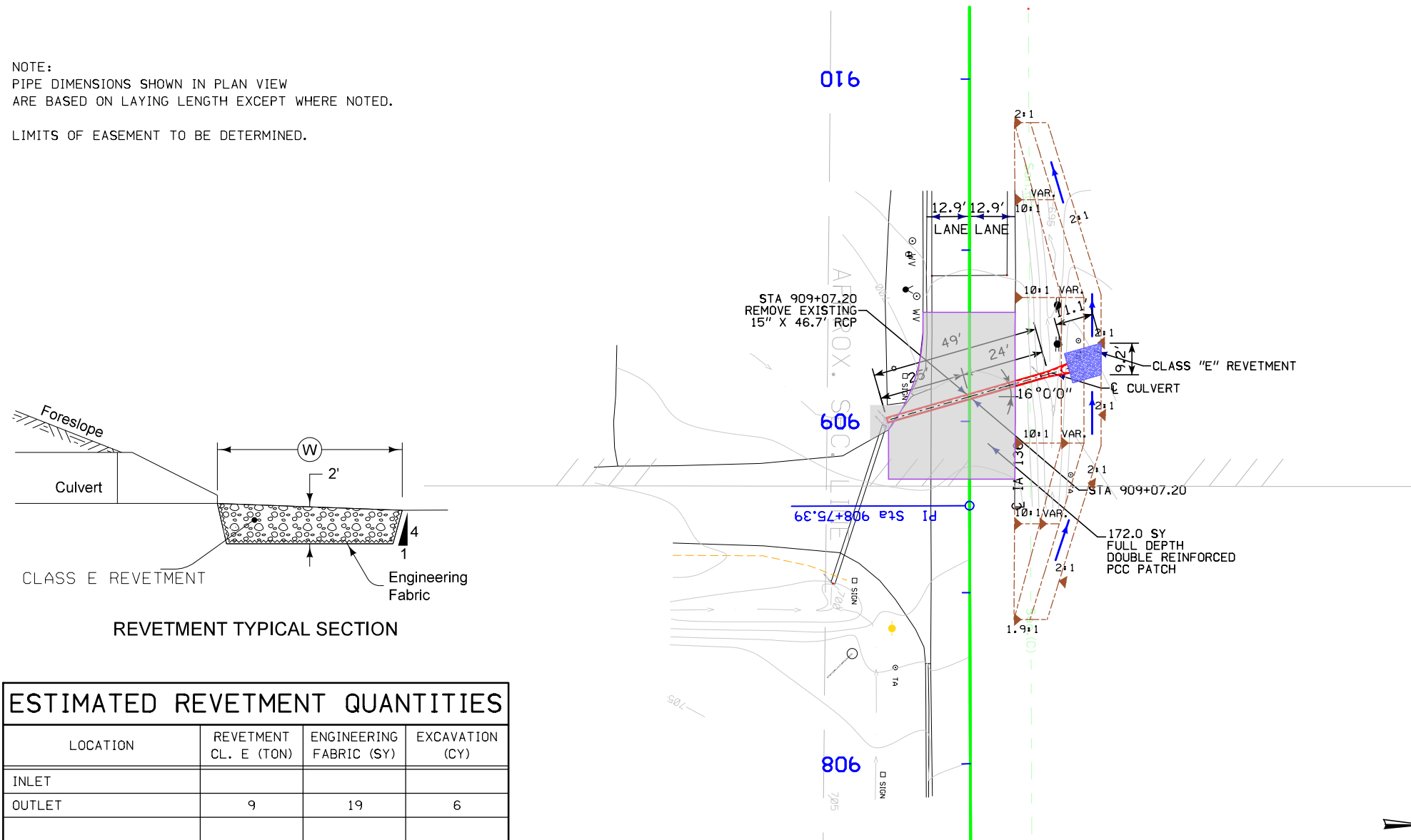
DESIGN FOR 0° SKEW  
**24" X 112' REINFORCED  
CONCRETE PIPE WITH APRONS**  
PLAT PLAN  
STATION 855+00.00 FEBRUARY, 2018  
CLINTON COUNTY



LONGITUDINAL SECTION ALONG  $\phi$  PIPE

BENCH MARK NO. 500, STA. 909+33.8 SET RR SPK  
S SIDE PP 25.6 RT, EL=697.272

NOTE:  
PIPE DIMENSIONS SHOWN IN PLAN VIEW  
ARE BASED ON LAYING LENGTH EXCEPT WHERE NOTED.  
  
LIMITS OF EASEMENT TO BE DETERMINED.

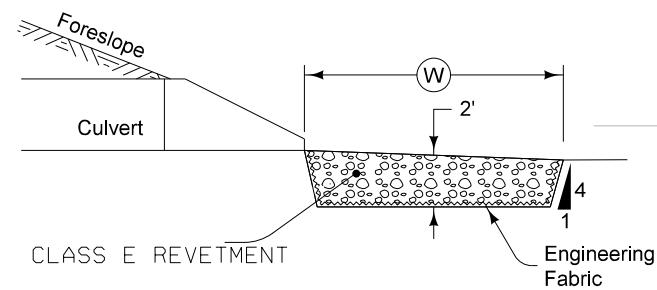


HYDRAULIC DATA

DRAINAGE AREA = 6 Ac. ROLLING  
 $Q_u = 12$  CFS

LOCATION

T-83 N R-4 E  
SECTION 26  
WATERFORD TOWNSHIP  
CLINTON COUNTY



REVETMENT TYPICAL SECTION

ESTIMATED REVETMENT QUANTITIES

LOCATION	REVETMENT CL. E (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET			
OUTLET	9	19	6
TOTAL	9	19	6

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.  
QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.

DESIGN FOR 16° SKEW  
**15" X 49.0' REINFORCED CONCRETE PIPE WITH APRONS**  
PLAT PLAN  
STATION 909+07.20 FEBRUARY, 2018  
CLINTON COUNTY

## Survey Information

Clinton County  
 STPN-136-1(73)--2J-23  
 Ia 136 - Culvert Surveys from Approximately 2.4 Miles West of US 67 Northwest to Charlotte  
 SAP 0766.1

### General Information

Measurement units for this survey are US survey feet. This survey is for pending structural repairs or replacement or culvert extensions at 22 separate locations along a 14 mile corridor. The project is on Zone 11 IaRCS coordinates. This project is full field survey at each of the 22 sites.

### Vertical Control

Vertical datum for this survey is relative to NAVD88 Opus Datum. Four-hour static sessions were observed on six control points near this project. The processed orthometric height was held fixed in a constrained vertical adjustment.

### Horizontal Control

Four plus hours of Opus observations were used to verify the values of six points named CP101, CP103, CP104, CP107, CP109, CP128. These Opus solutions were converted to Zone 11 IaRCS coordinates for the purpose of this survey. Additional supplemental control points were placed throughout the project.

### Alignment Information

Four alignments were created. Roadway splits were used to generate PI locations. Nails were both found and set along the roadway splits, these points were observed in this survey. Occasionally we were unable to locate existing control. In these areas the horizontal alignment for this survey was established using roadway splits along the existing pavement. Stationing was carried forward and backward from the plan stationing.

Alignment 1 - Sta 45+20 +/- to Sta 145+17+/-

PI Sta 79+56.9 Fd PK Nail This Survey  
 = PI Sta 79+56.9 FA-189 Grade and Paving Plan  
 Stationing carried backward and forward from this PI

Alignment 2 - Sta 375+42.737 to Sta 397+53.041

PI Sta 384+25.10 Computed location This Survey  
 = PI Sta 384+25.10 FA-204-352 Paving Plan  
 Stationing carried backward and forward from this PI using roadway splits

Alignment 3 - Sta 518+20 to Sta 599+77+/-

PI Sta 528+39.6 Computed location This Survey  
 = PI Sta 528+39.6 FA-204-352 Paving Plan  
 Stationing carried backward and forward from this PI using roadway splits

Alignment 4 - Sta 600+14.5 to Sta 910+/- Best fit alignment using Rdwy splits

PI Sta 607+66.895 Computed location This Survey  
 = PI Sta 607+68.1 FA-204-352 Paving Plan

Stationing carried forward from this PI using roadway splits

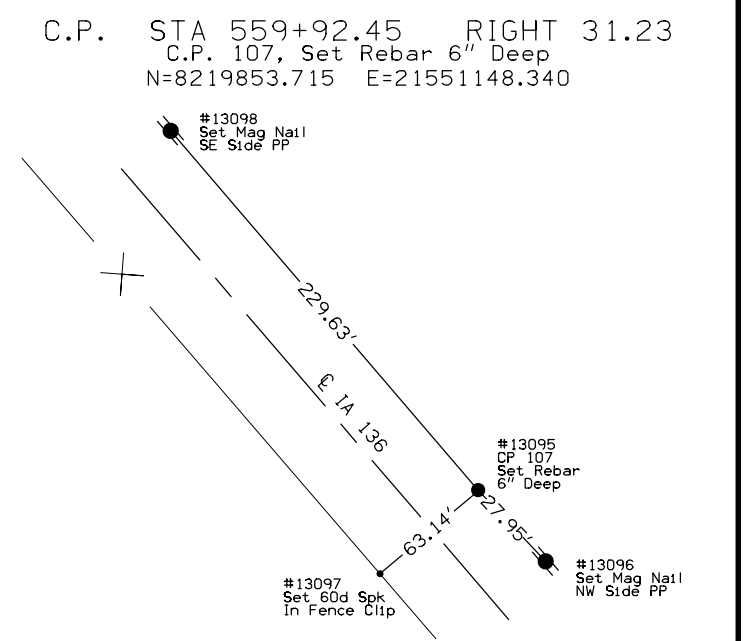
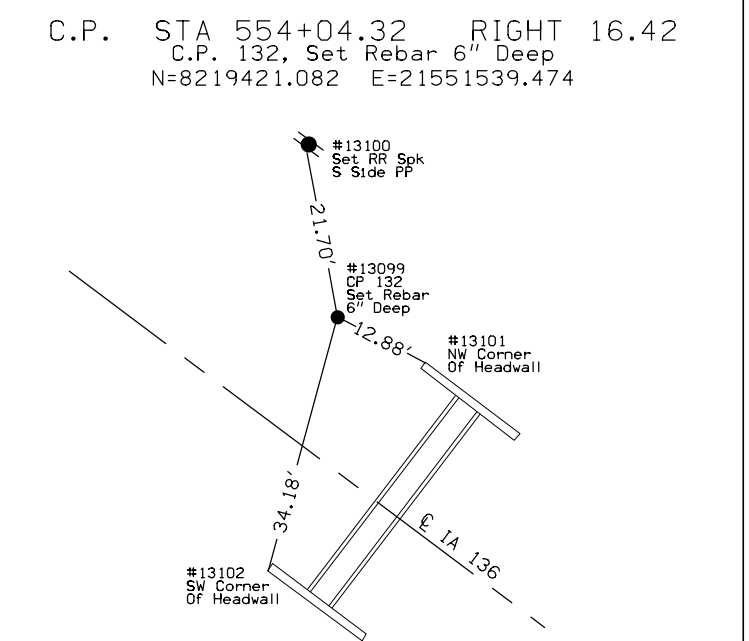
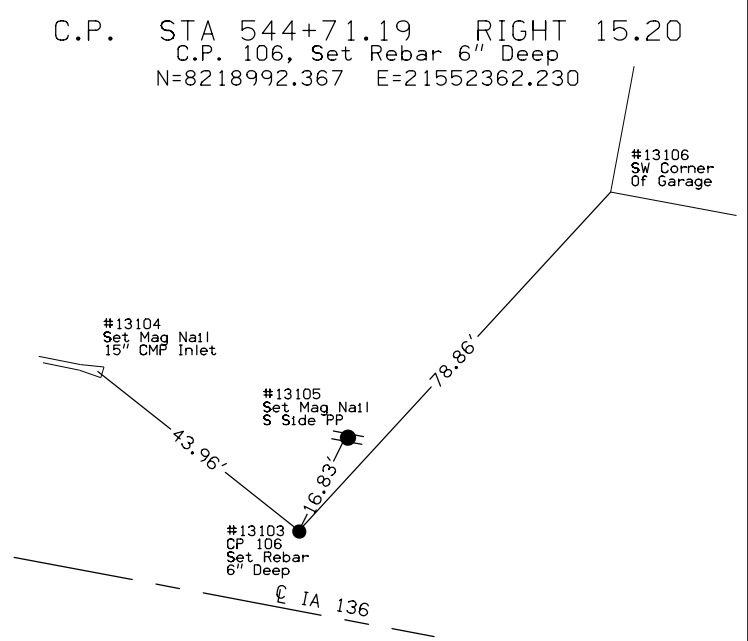
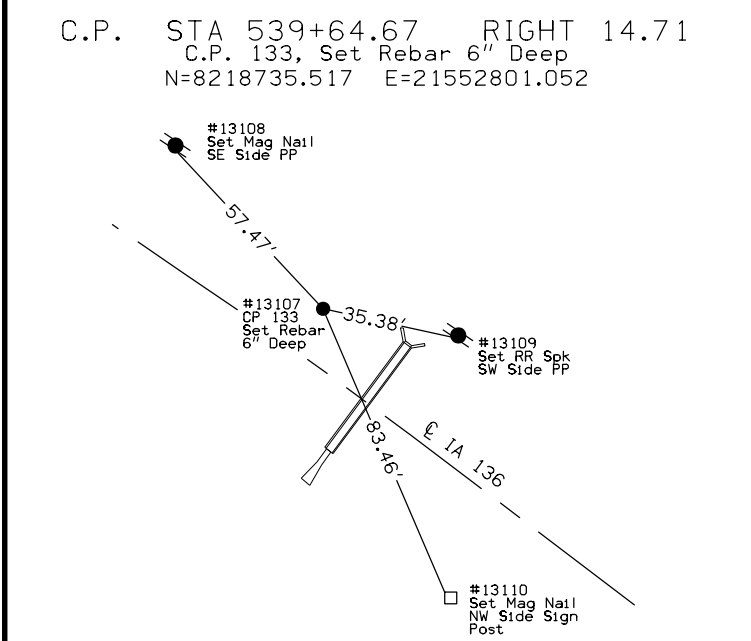
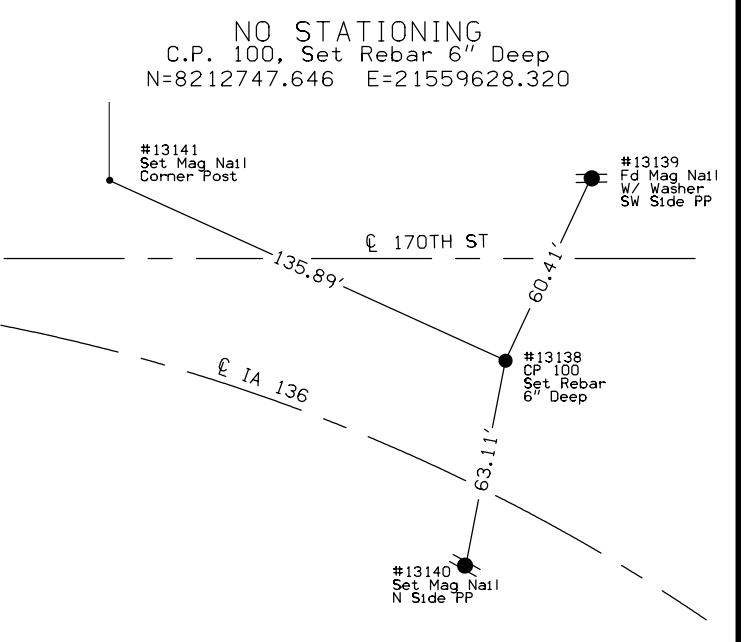
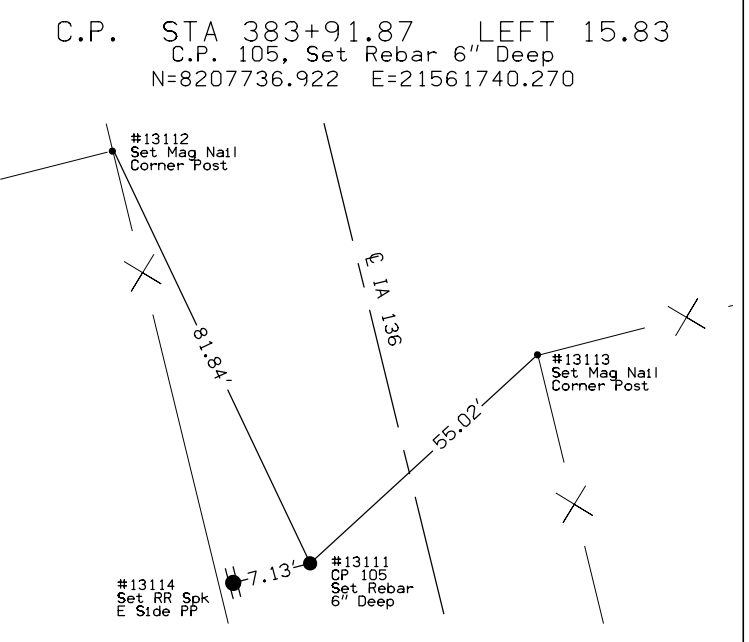
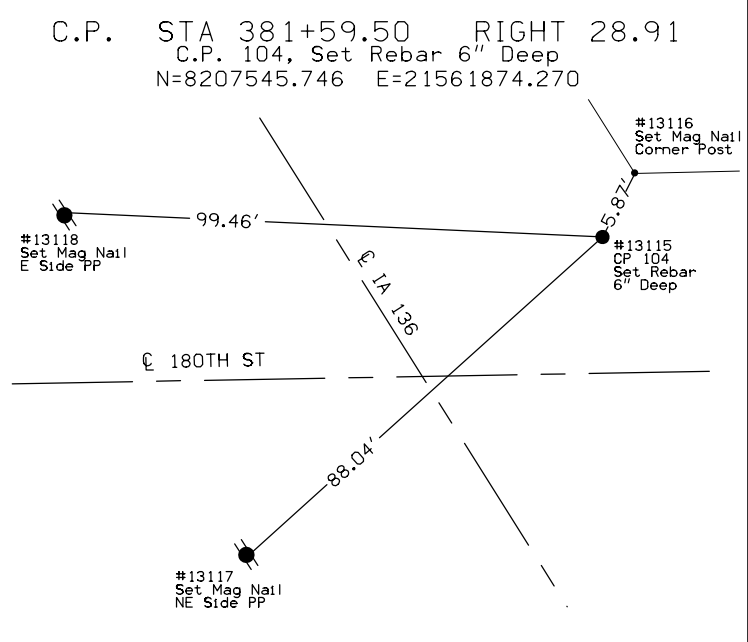
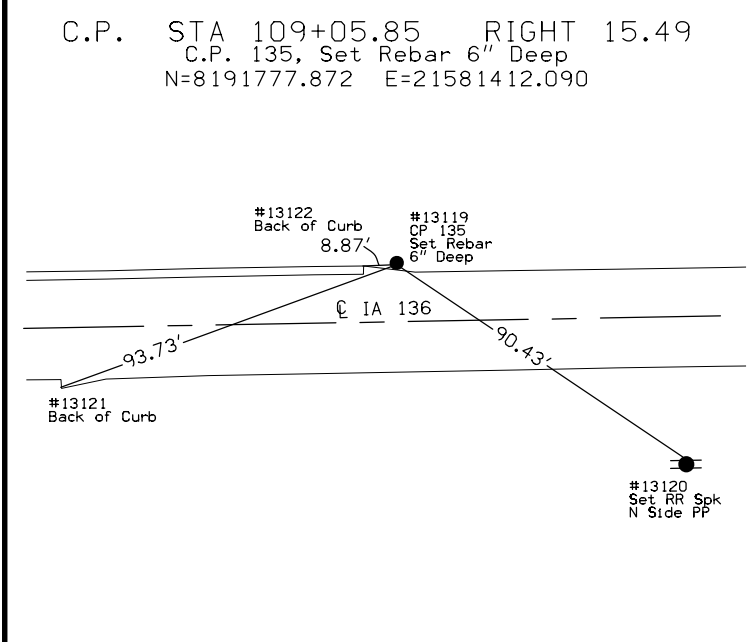
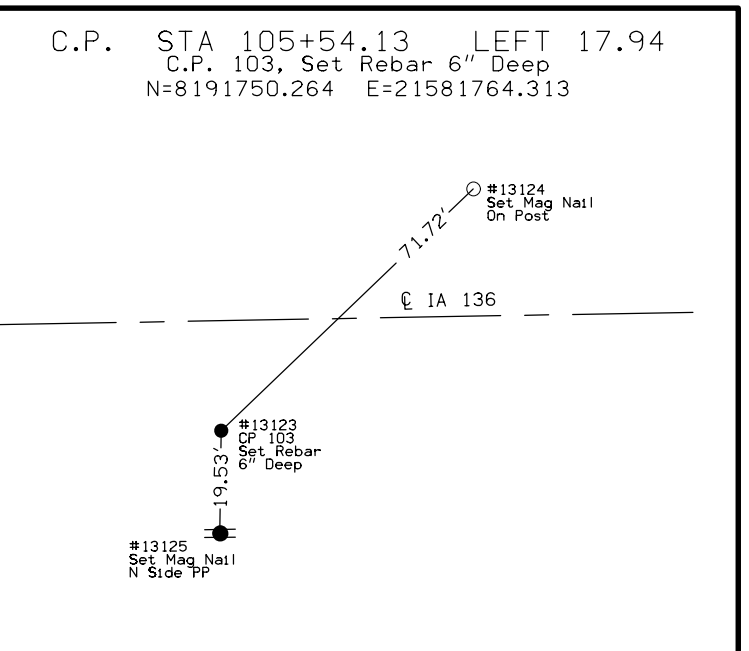
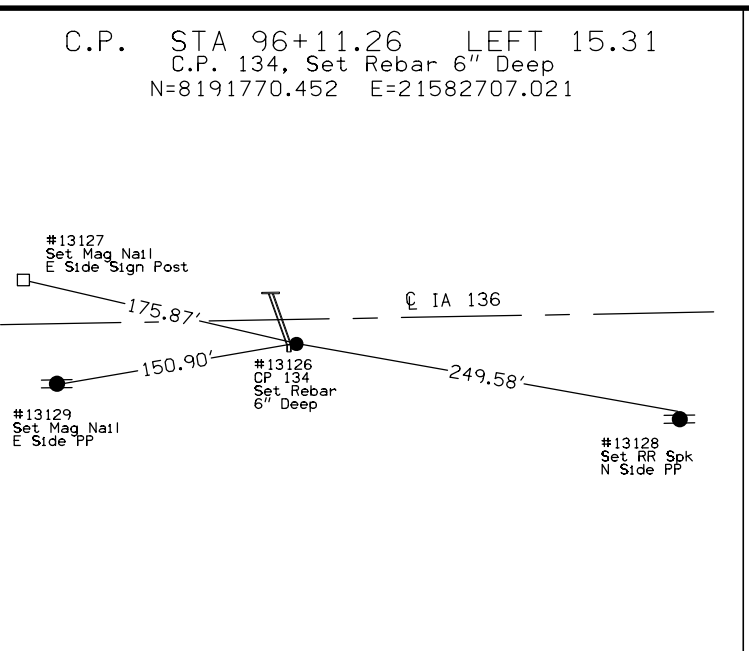
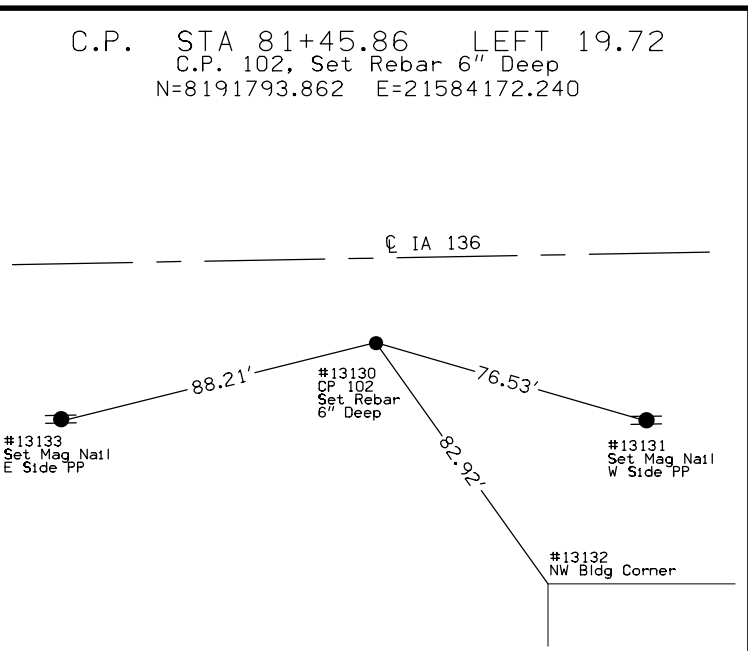
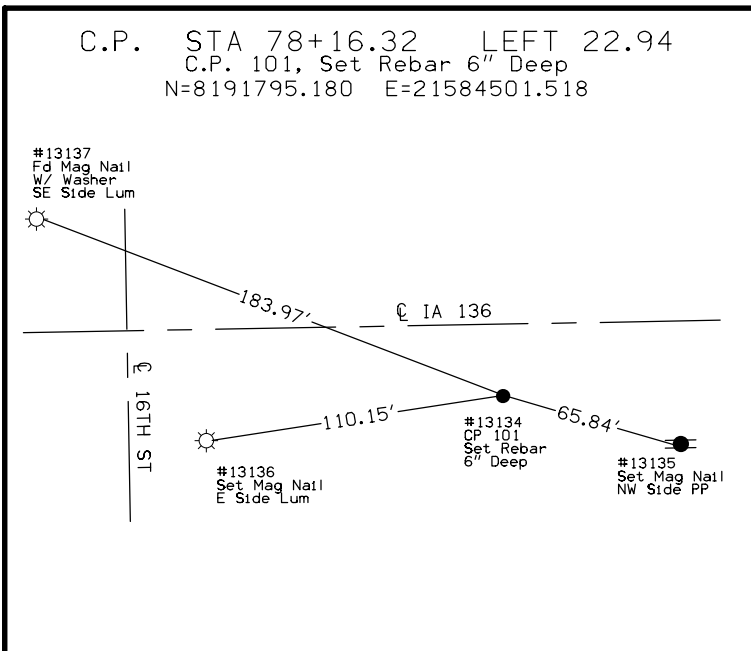
## VERTICAL CONTROL

### BENCHMARKS

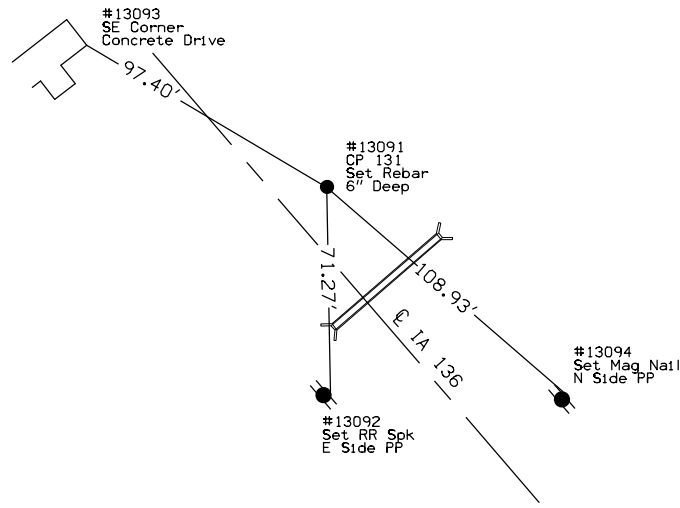
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No. 500 Sta.	909+33.884	25.554 Rt.	Y:8223243.843 X:21519629.888	Set RR Spk S Side PP-----	697.272
No. 501 Sta.	855+25.824	40.233 Lt.	Y:8223340.995 X:21525038.712	Set RR Spk N Side PP-----	714.189
No. 502 Sta.	854+85.207	28.43 Rt.	Y:8223418.329 X:21525058.469	SetRR Spk SW Side PP-----	717.449
No. 503 Sta.	844+36.052	28.24 Lt.	Y:8223760.158 X:21526049.131	Set MAG NAIL IN HDWL-----	681.730
No. 504 Sta.	844+19.011	21.633 Rt.	Y:8223812.718 X:21526045.245	Set MAG NAIL IN HDWL-----	680.853
No. 505 Sta.	838+27.690	14.700 Lt.	Y:8224010.639 X:21526603.187	Set MAG NAIL IN HDWL-----	687.052
No. 506 Sta.	837+62.698	26.101 Rt.	Y:8224070.796 X:21526651.319	Set RR Spk SW Side PP-----	688.949
No. 507 Sta.	831+58.843	29.136 Rt.	Y:8224143.044 X:21527255.621	Set RR Spk S Side PP-----	695.654
No. 508 Sta.	817+61.741	32.719 Lt.	Y:8224195.193 X:21528653.293	Fd RR Spk N Side PP-----	702.169
No. 509 Sta.	809+14.134	28.514 Rt.	Y:8224342.821 X:21529490.398	Set RR Spk S Side PP-----	704.675
No. 510 Sta.	802+77.395	29.891 Rt.	Y:8224256.736 X:21530127.032	Set RR Spk S Side PP-----	717.239
No. 511 Sta.	787+78.539	28.464 Rt.	Y:8223904.970 X:21531584.026	Set RR Spk S Side PP-----	743.899
No. 512 Sta.	767+78.742	31.969 Rt.	Y:8223442.472 X:21533528.574	Set RR Spk S Side PP-----	700.625

### BENCHMARKS

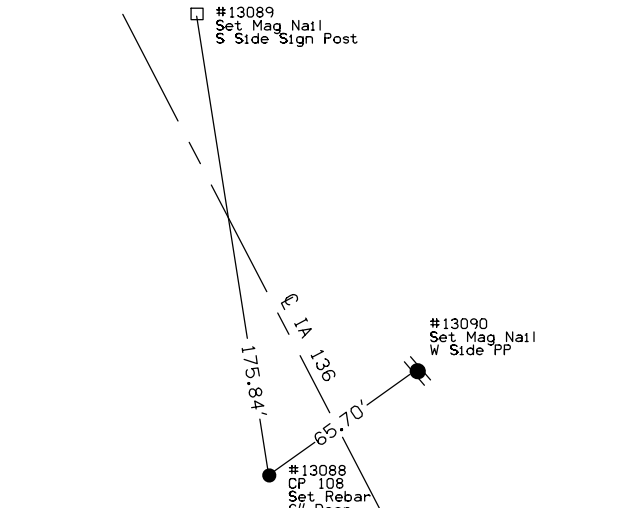
					ELEVATION
No. 513 Sta.	766+34.838	19.455 Lt.	Y:8223366.234 X:21533660.651	CUT X IN HDWL-----	700.146
No. 514 Sta.	743+43.531	29.605 Rt.	Y:8223424.456 X:21535931.892	Set RR Spk S Side PP-----	657.428
No. 515 Sta.	705+00.862	39.921 Rt.	Y:8225782.009 X:21538799.108	Fd RR Spk N Side PP-----	655.817
No. 516 Sta.	649+95.365	29.32 Rt.	Y:8224599.896 X:21544181.332	Set RR Spk S Side PP-----	748.673
No. 517 Sta.	580+11.346	30.232 Rt.	Y:8221416.582 X:21549907.841	Set RR Spk W Side PP-----	856.398
No. 518 Sta.	571+45.997	30.811 Lt.	Y:8220685.505 X:21550346.691	Set RR Spk E Side PP-----	857.712
No. 519 Sta.	554+20.886	30.743 Rt.	Y:8219442.420 X:21551535.519	Set RR Spk S Side PP-----	854.487
No. 520 Sta.	539+32.354	28.565 Rt.	Y:8218727.849 X:21552835.594	SetRR Spk SW Side PP-----	867.702
No. 521 Sta.	383+91.957	22.962 Lt.	Y:8207735.182 X:21561733.355	Set RR Spk E Side PP-----	850.194
No. 522 Sta.	108+31.627	36.152 Lt.	Y:8191727.461 X:21581487.160	Set RR Spk N Side PP-----	673.514
No. 523 Sta.	93+66.424	63.768 Lt.	Y:8191726.649 X:21582952.729	Set RR Spk N Side PP-----	654.111
No. 524 Sta.	684+77.242	20.631 Rt.	Y:8225370.416 X:21540785.719	Set RR Spk S Side PP-----	684.846
No. 525 Sta.	79+96.500	33.278 Rt.	Y:8191849.682 X:21584320.526	Fd NGS Disk on Inlet Hdwl 8 x 4 RCB-----	650.013
No. 526 Sta.	79+93.977	49.722 Lt.	Y:8191766.745 X:21584324.642	Fd RR Spk E Side PP-----	649.758



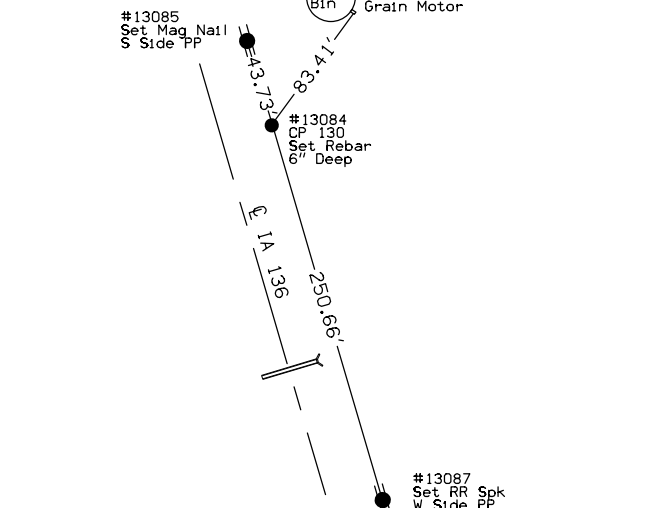
C.P. STA 572+00.76 RIGHT 14.81  
 C.P. 131, Set Rebar 6" Deep  
 N=8220756.766 E=21550345.361



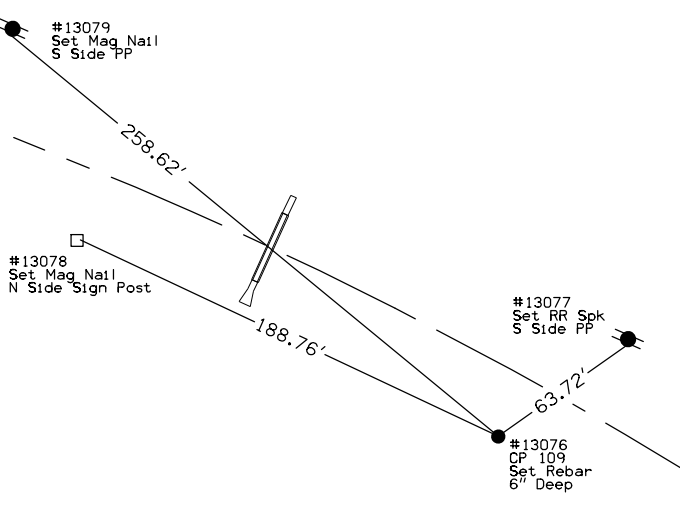
C.P. STA 577+15.33 LEFT 33.66  
 C.P. 108, Set Rebar 6" Deep  
 N=8221122.019 E=21549975.210



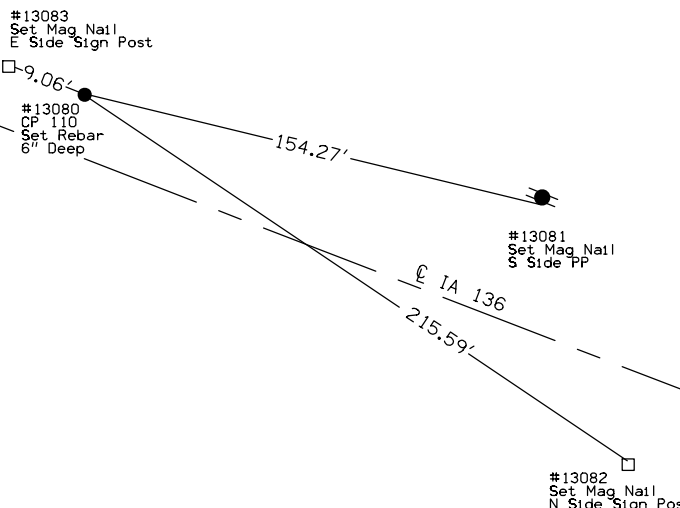
C.P. STA 582+62.00 RIGHT 30.12  
 C.P. 130, Set Rebar 6" Deep  
 N=8221657.101 E=21549837.281



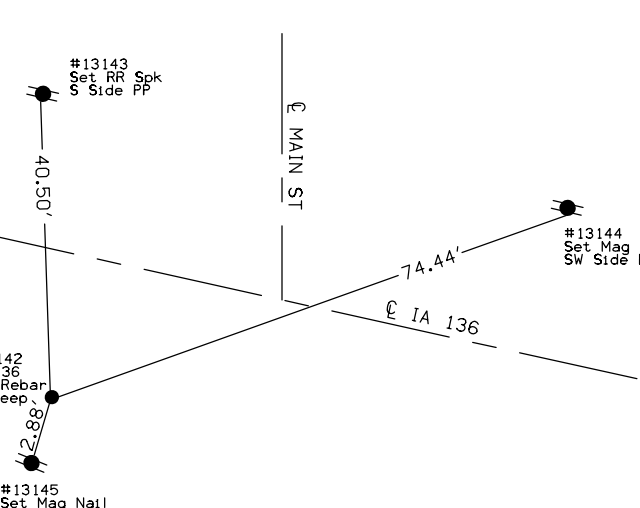
C.P. STA 650+24.37 LEFT 27.41  
 C.P. 109, Set Rebar 6" Deep  
 N=8224563.107 E=21544129.310



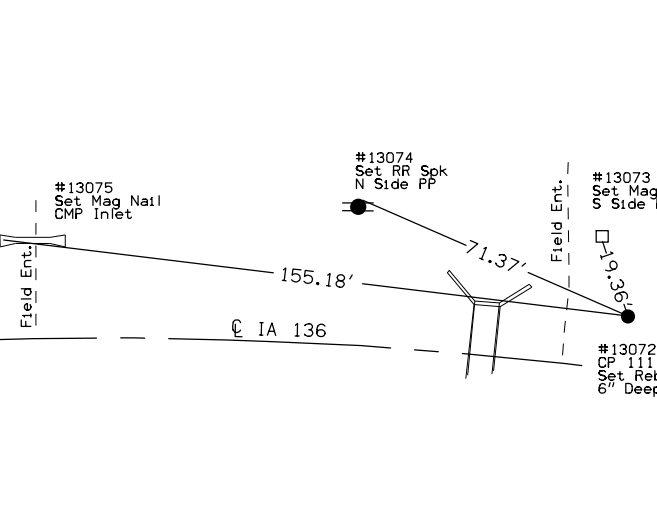
C.P. STA 654+24.50 RIGHT 26.55  
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 N=8224763.820 E=21543779.660



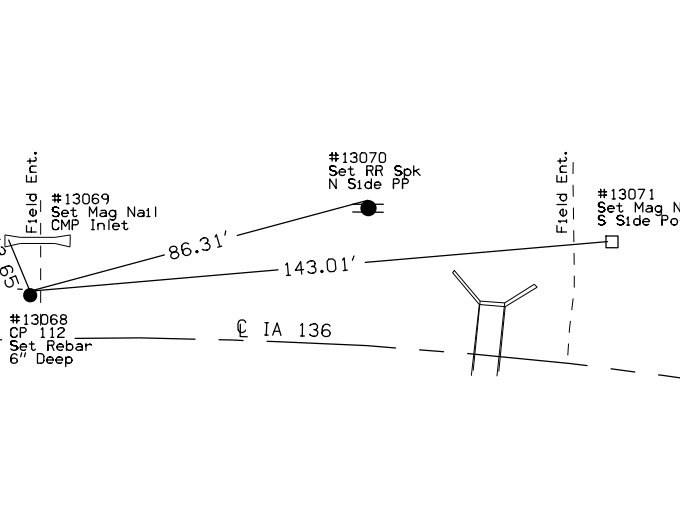
C.P. STA 684+67.90 LEFT 18.78  
 C.P. 136, Set Rebar 6" Deep  
 N=8225329.938 E=21540787.060



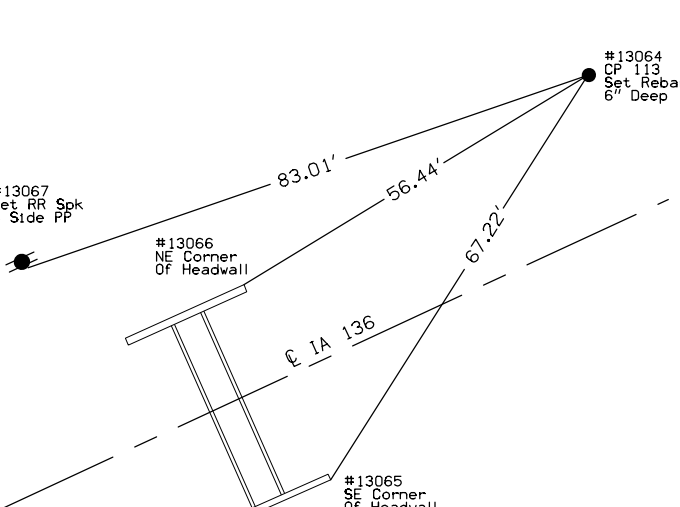
C.P. STA 704+35.04 RIGHT 17.59  
 C.P. 111, Set Rebar 6" Deep  
 N=8225753.475 E=21538864.530



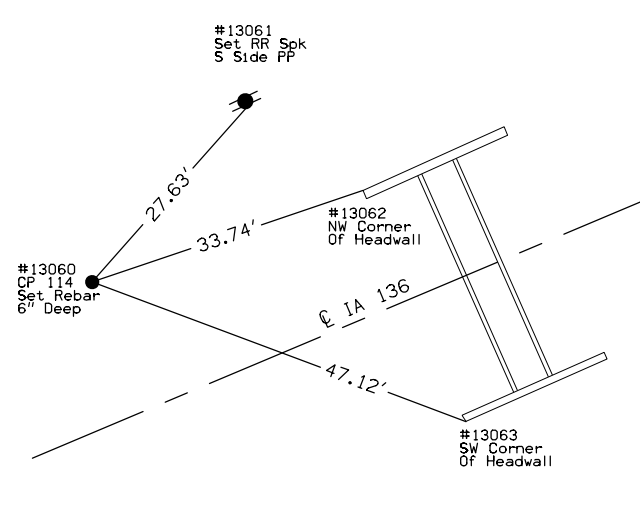
C.P. STA 705+81.49 RIGHT 16.12  
 C.P. 112, Set Rebar 6" Deep  
 N=8225759.608 E=21538715.760



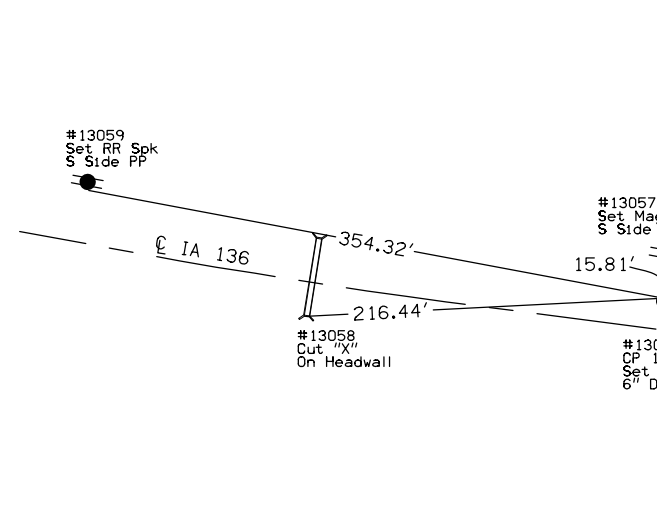
C.P. STA 742+58.75 RIGHT 20.71  
 C.P. 113, Set Rebar 6" Deep  
 N=8223451.439 E=21536010.390



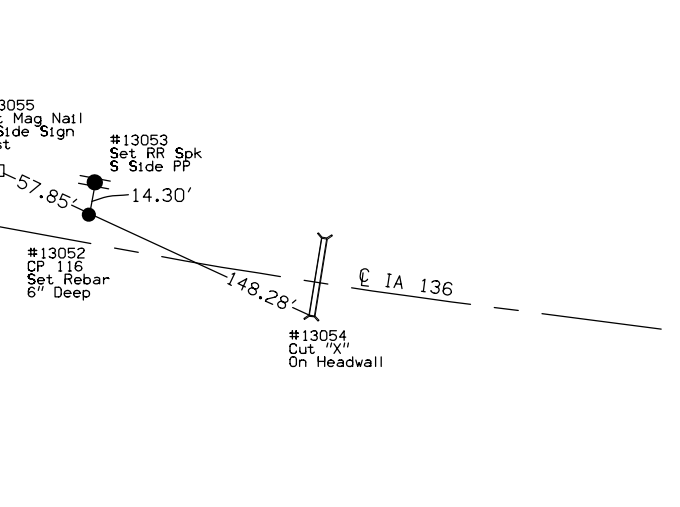
C.P. STA 743+68.86 RIGHT 17.24  
 C.P. 114, Set Rebar 6" Deep  
 N=8223403.792 E=21535913.550



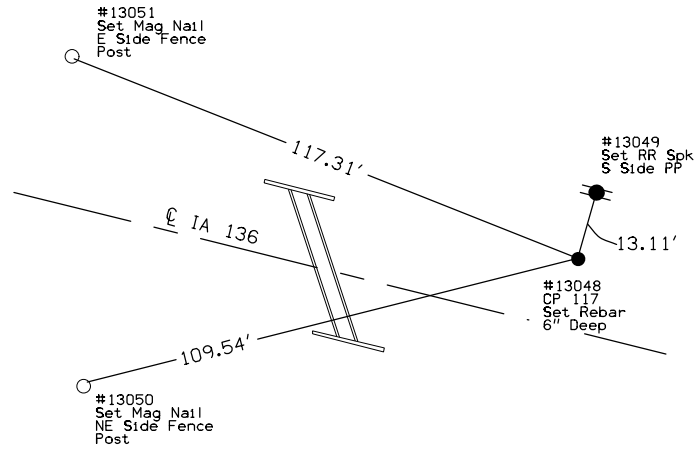
C.P. STA 764+21.48 RIGHT 16.70  
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 N=8223377.134 E=21533876.820



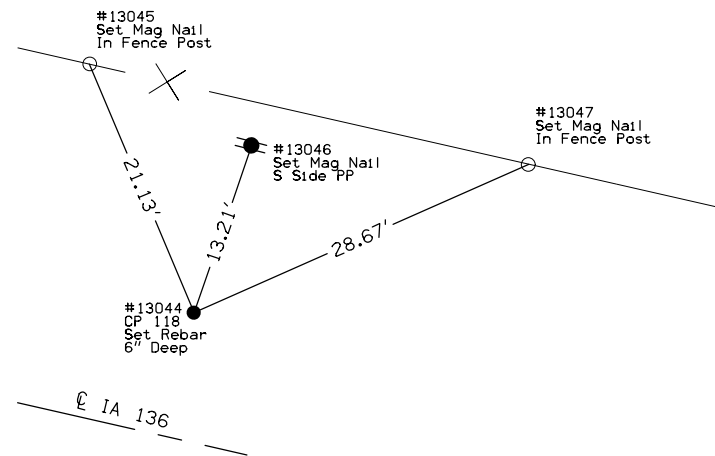
C.P. STA 767+78.37 RIGHT 17.68  
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 N=8223428.401 E=21533526.030



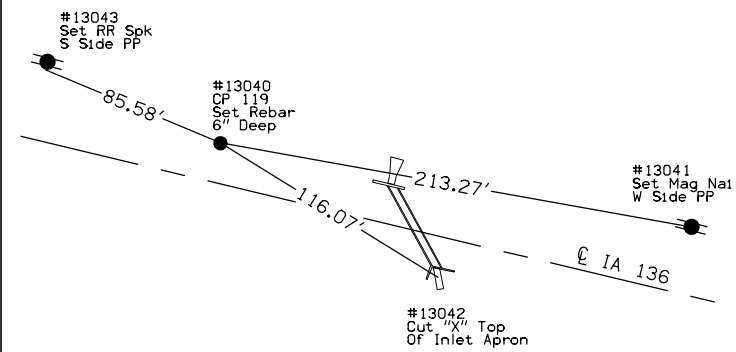
C.P. STA 787+79.06 RIGHT 15.36  
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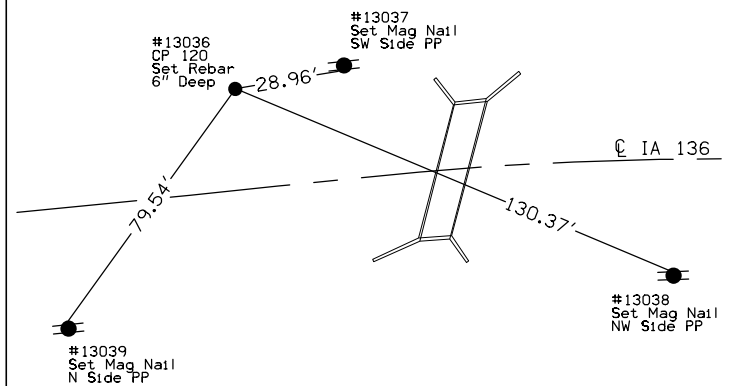
C.P. STA 793+81.02 RIGHT 15.59  
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 N=8224033.287 E=21530995.230



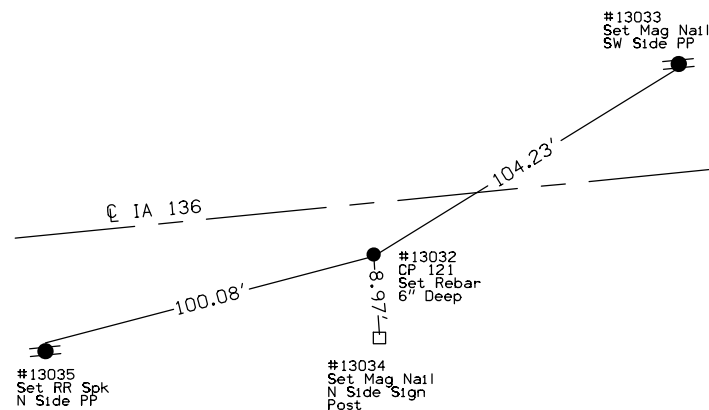
C.P. STA 801+92.90 RIGHT 16.29  
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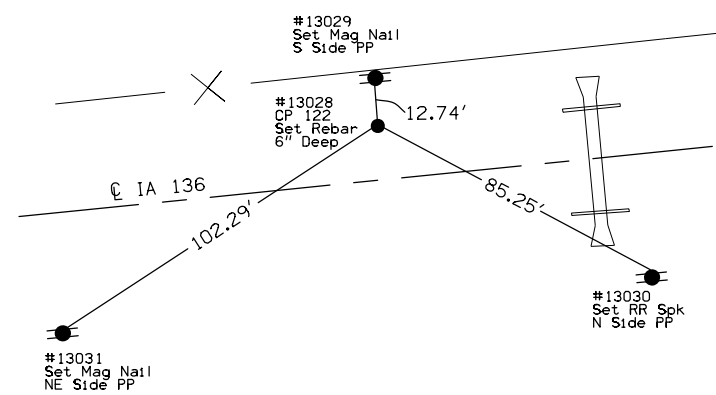
C.P. STA 809+42.83 RIGHT 26.60  
 C.P. 120, Set Rebar 6" Deep  
 N=8224337.993 E=21529461.840



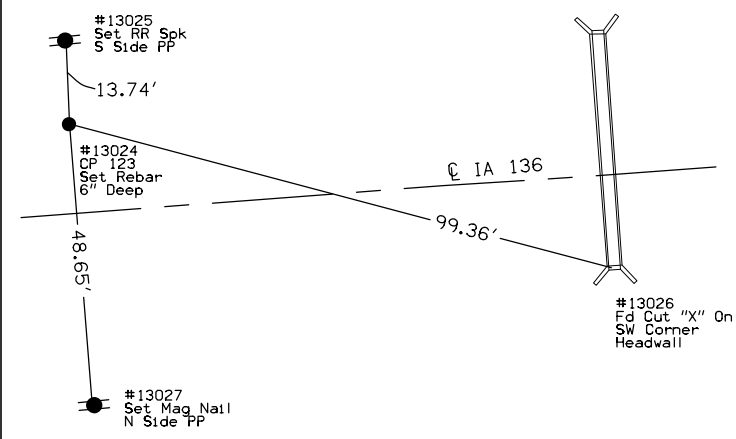
C.P. STA 816+62.87 LEFT 17.22  
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 N=8224220.730 E=21528750.060



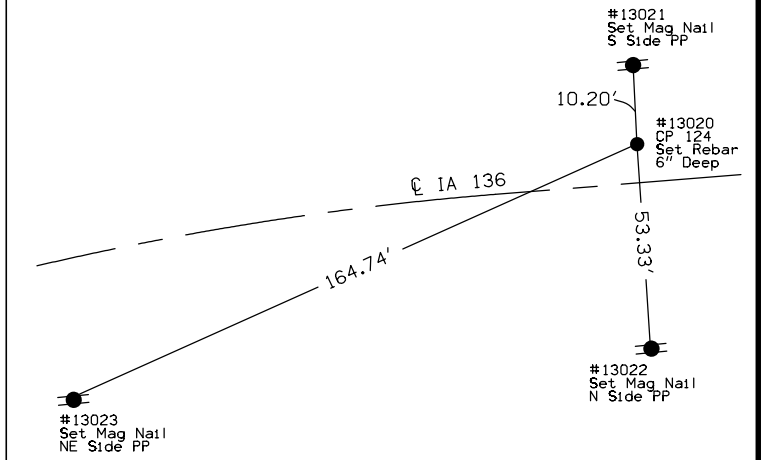
C.P. STA 818+32.51 RIGHT 14.80  
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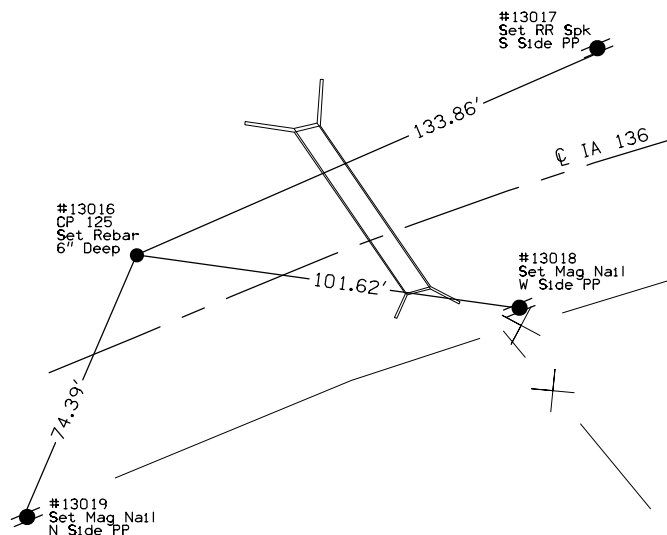
C.P. STA 831+59.26 RIGHT 15.40  
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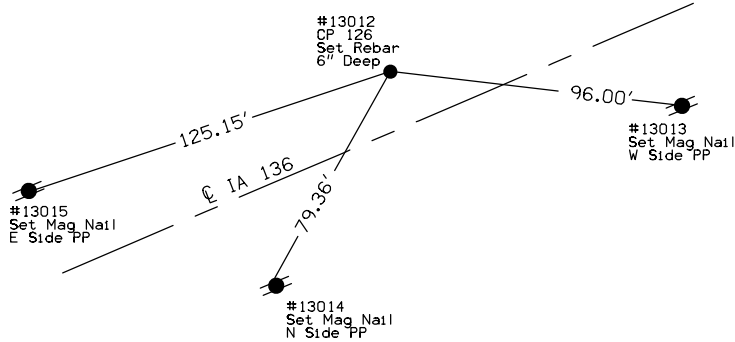
C.P. STA 834+99.96 RIGHT 17.29  
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 N=8224107.424 E=21526916.160



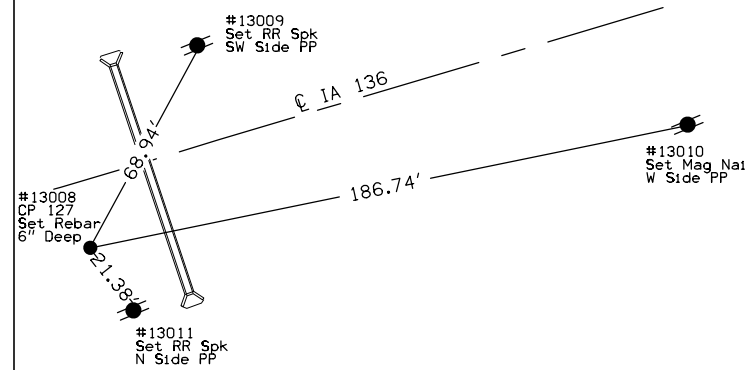
C.P. STA 838+94.13 RIGHT 20.01  
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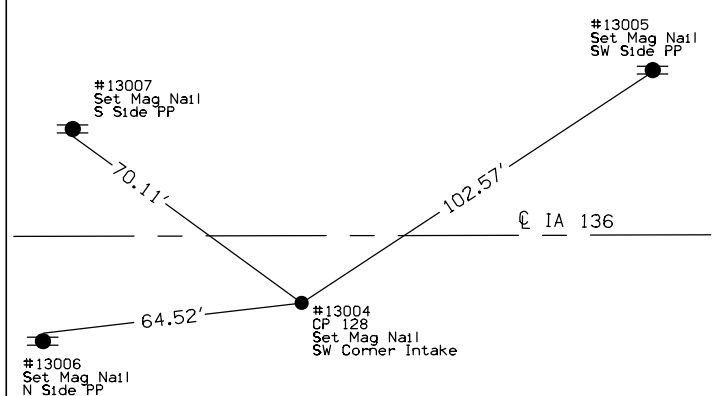
C.P. STA 844+64.08 RIGHT 18.37  
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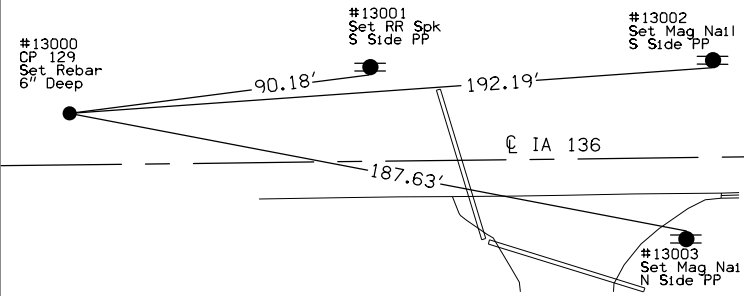
C.P. STA 855+33.88 LEFT 20.46  
 C.P. 127, Set Rebar 6" Deep  
 N=8223357.795 E=21525025.480



C.P. STA 907+75.59 LEFT 16.28  
 C.P. 128, Set Mag Nail  
 N=8223204.698 E=21519788.830



C.P. STA 910+23.49 RIGHT 15.42  
C.P. 129, Set Rebar 6" Deep  
N=8223232.387 E=21519540.440



108-23A  
08-01-08

### TRAFFIC CONTROL PLAN

Traffic will be reduced to one lane with flaggers for all trenchless installation/extension of culverts utilizing Standard Road Plan TC-212. The following culverts will require trenchless installation/extension:

- Sta. 96+34
- Sta. 108+76
- Sta. 383+30
- Sta. 539+60
- Sta. 553+83
- Sta. 571+62
- Sta. 581+05
- Sta. 704+70
- Sta. 743+25
- Sta. 766+09
- Sta. 830+53
- Sta. 844+27
- Sta. 855+00

Traffic will be reduced to one lane for open cut installation of culverts utilizing Standard Road Plan TC-211. Traffic will be staged so that one lane of traffic is open at all times. The following culverts will require open cut installation:

- Sta. 80+14
- Sta. 651+43
- Sta. 788+20
- Sta. 800+82
- Sta. 817+91
- Sta. 909+07

The open cut installation of culverts at Sta. 808+67 and Sta. 838+24 will require a road closure to complete construction. IA 136 will be closed utilizing Standard Road Plan TC-252, and traffic will be detoured along County Road Z24, F12, and Z36. See Sheet J.2 for additional informations regarding the detour route.

The District will be responsible for the installation, maintenance, and removal of all detour signage and devices.

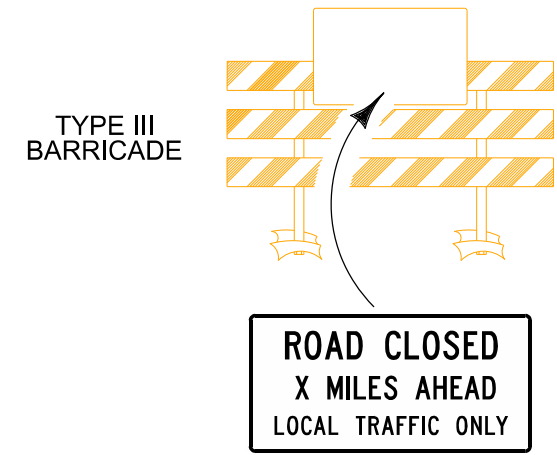
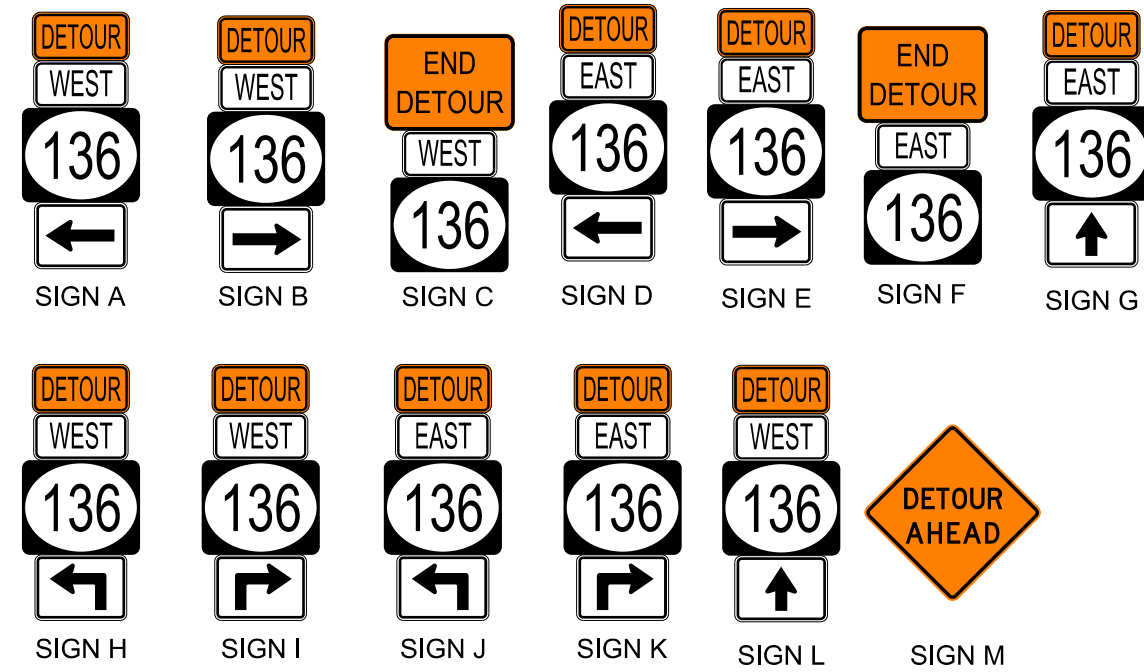
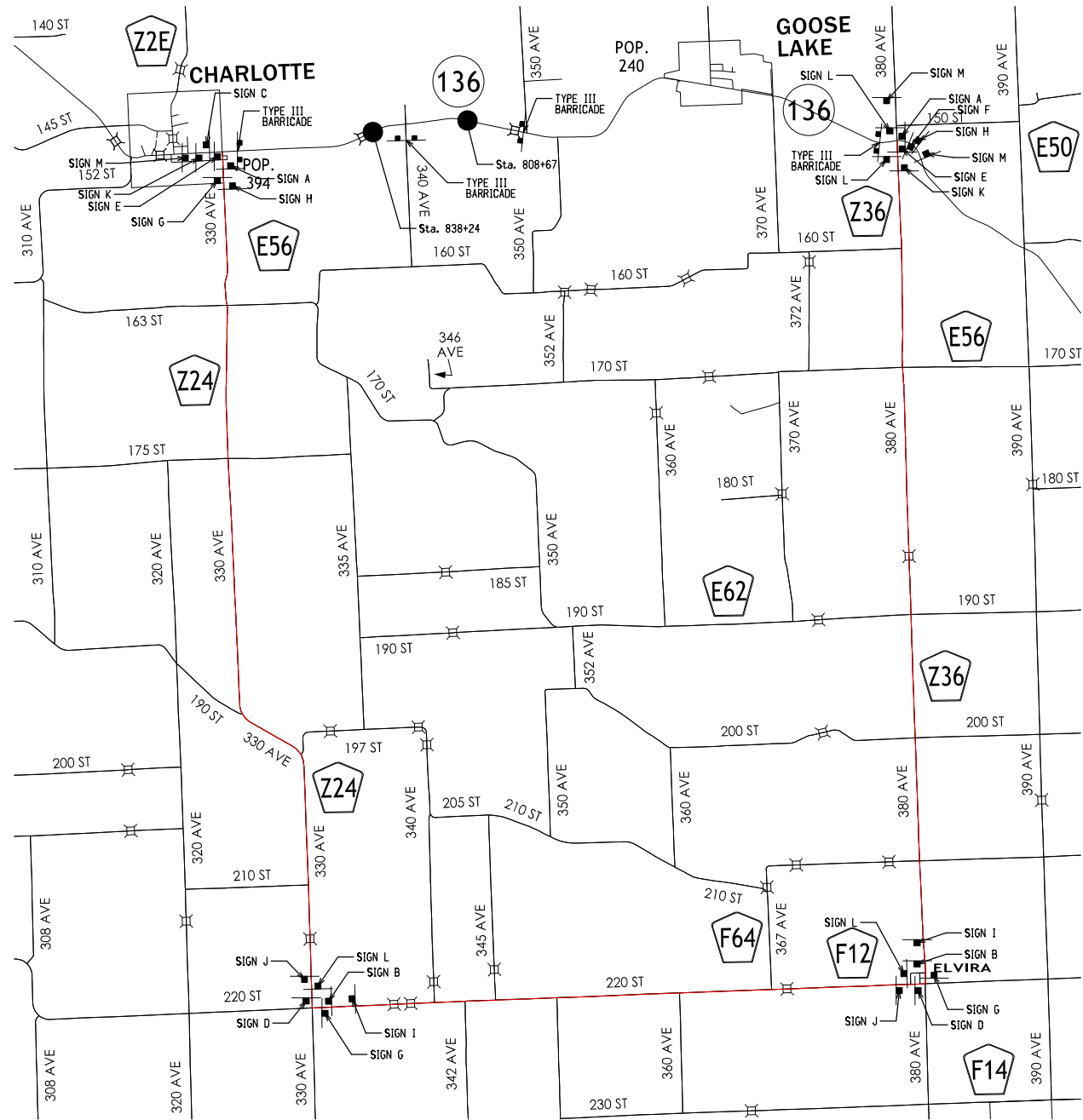
111-01  
04-17-12

### COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
NONE	





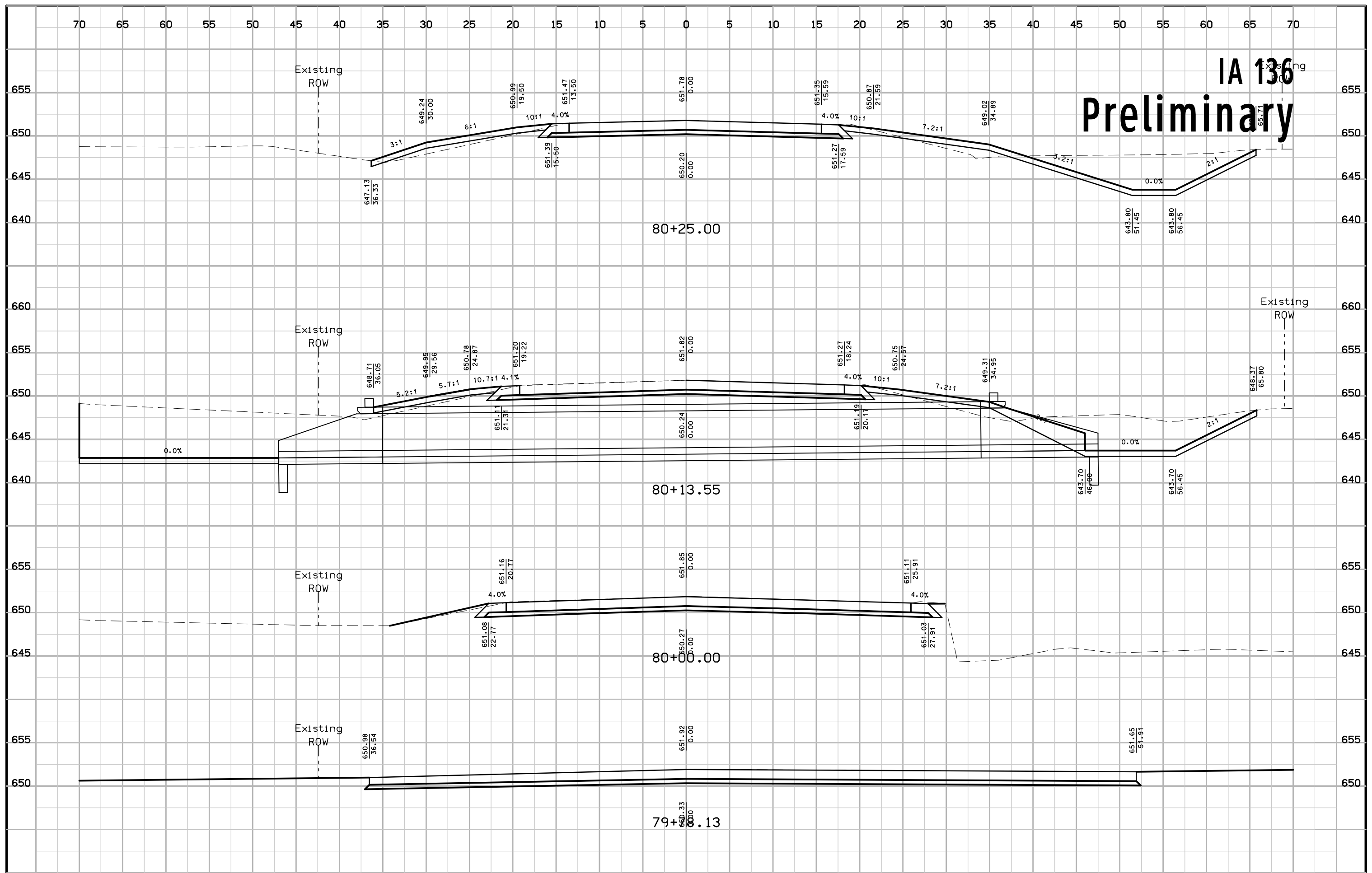
Sign Type	Quantity
M1-5	25
M3-2	12
M3-4	13
M4-8	23
M4-8a	2
M5-1	9
M6-1	8
M6-3	6
R11-3A	4
W20-2	3

Notes:

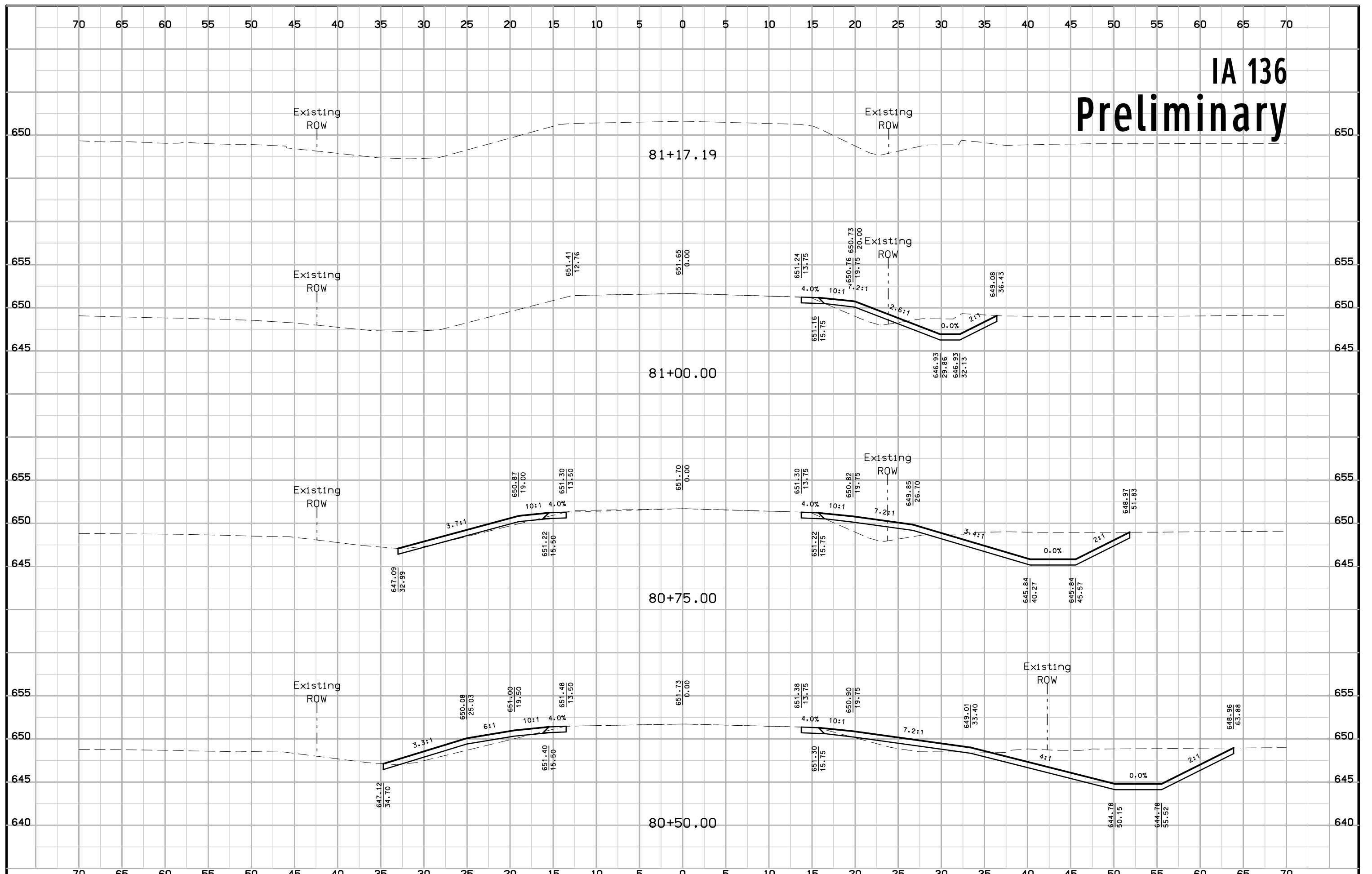
- 1). All work for Signing shall be included in "Traffic Control".

TRAFFIC DETOUR

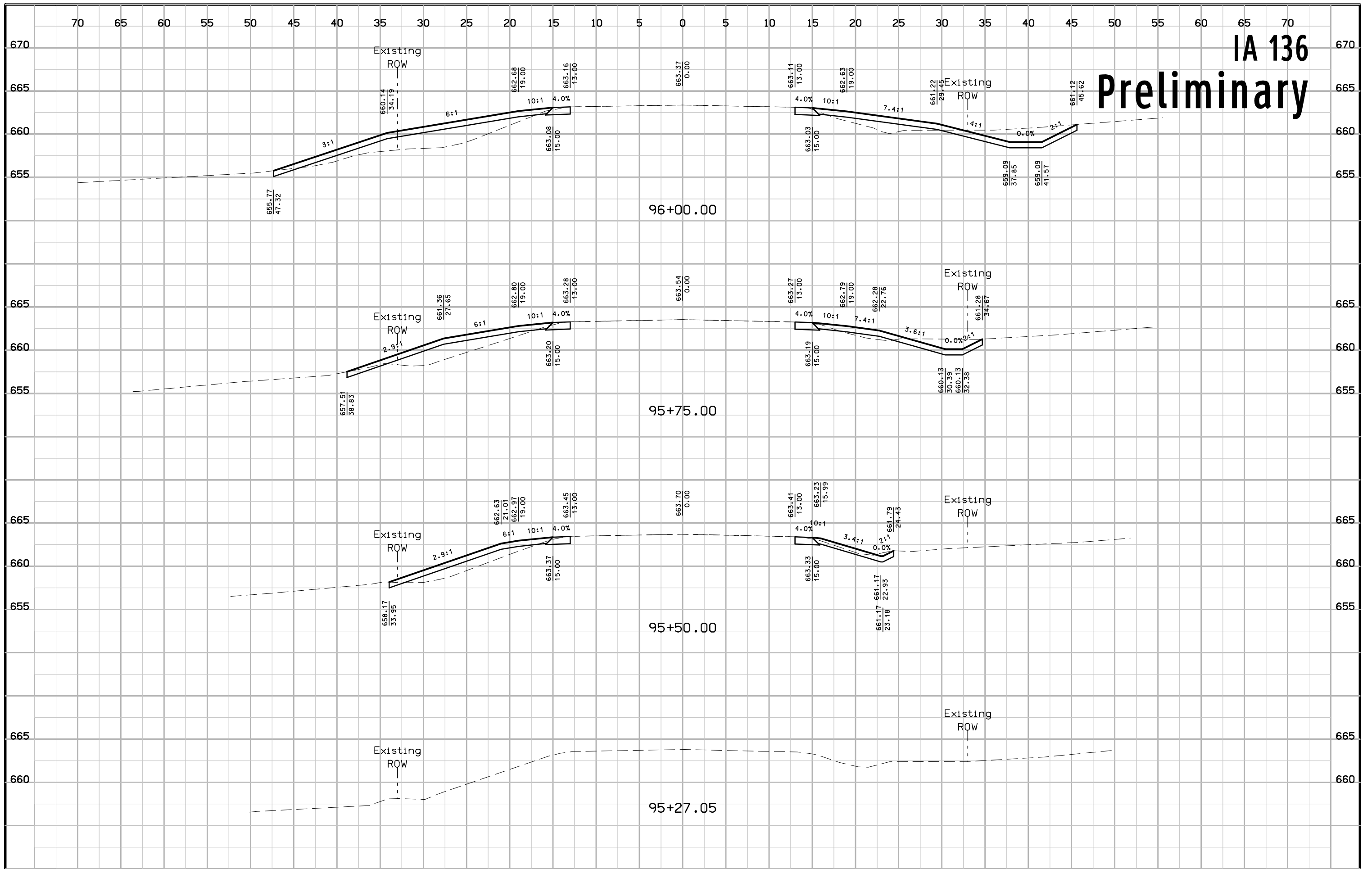
# IA 136 Preliminary



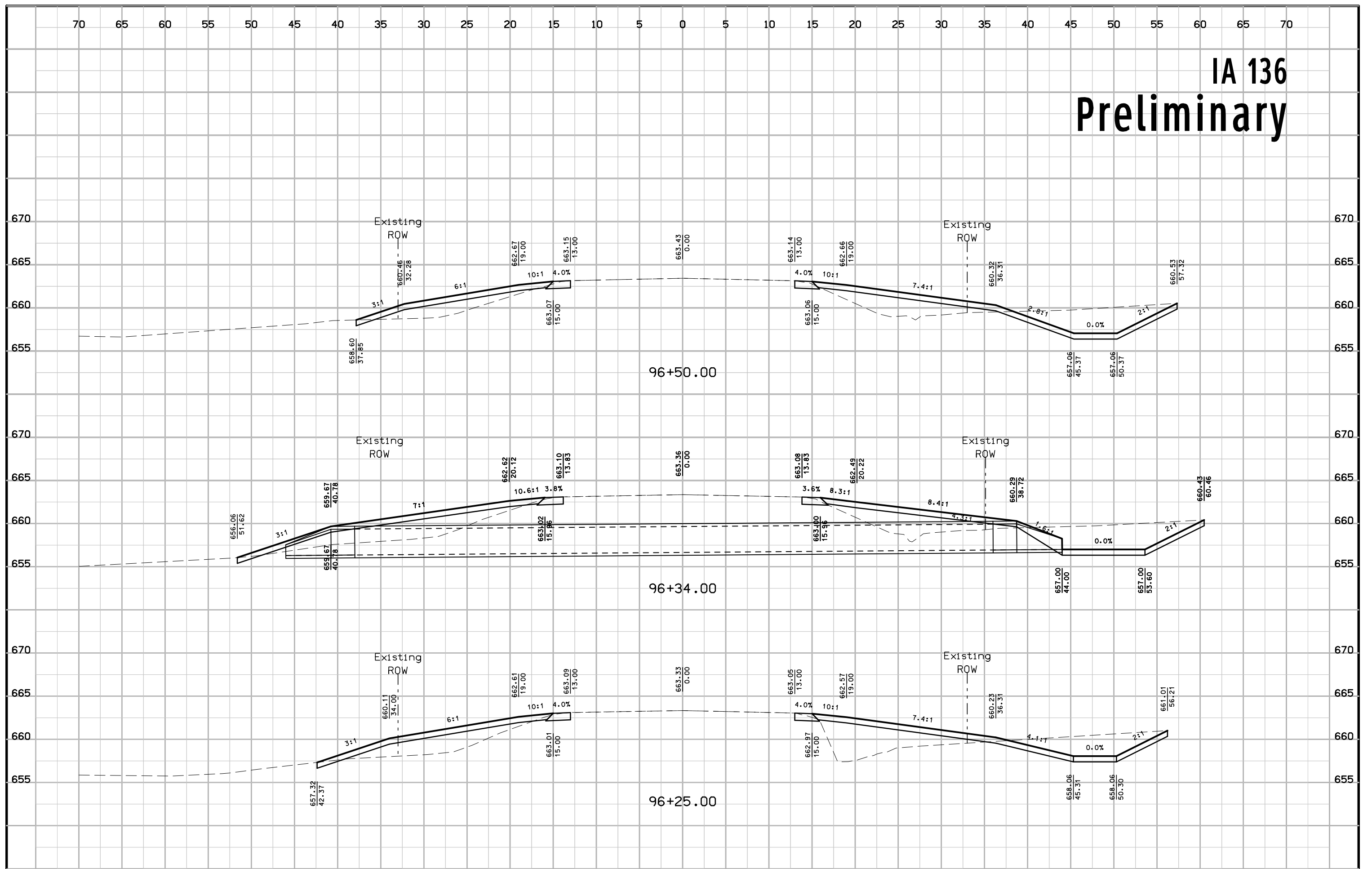
# IA 136 Preliminary



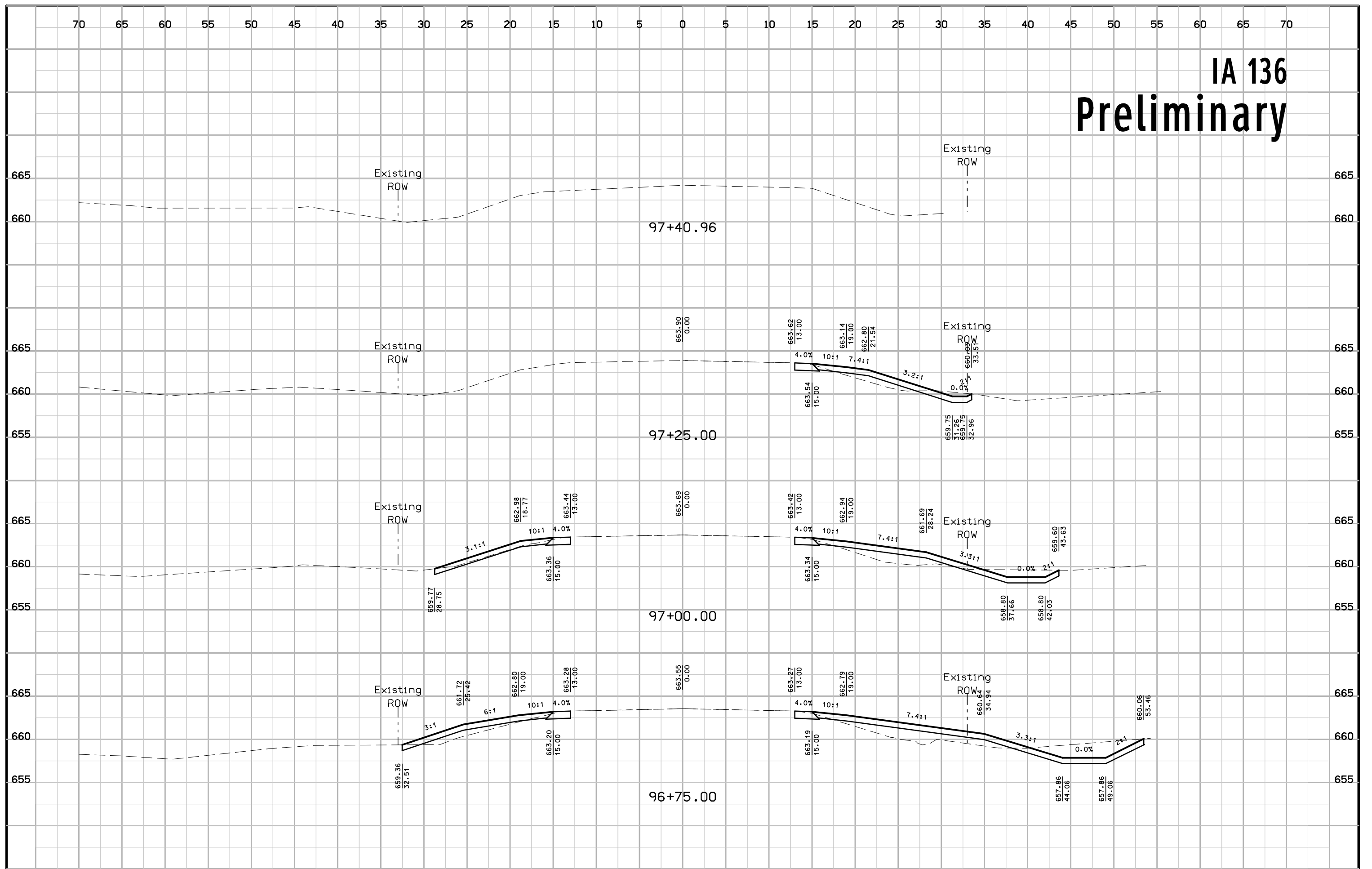
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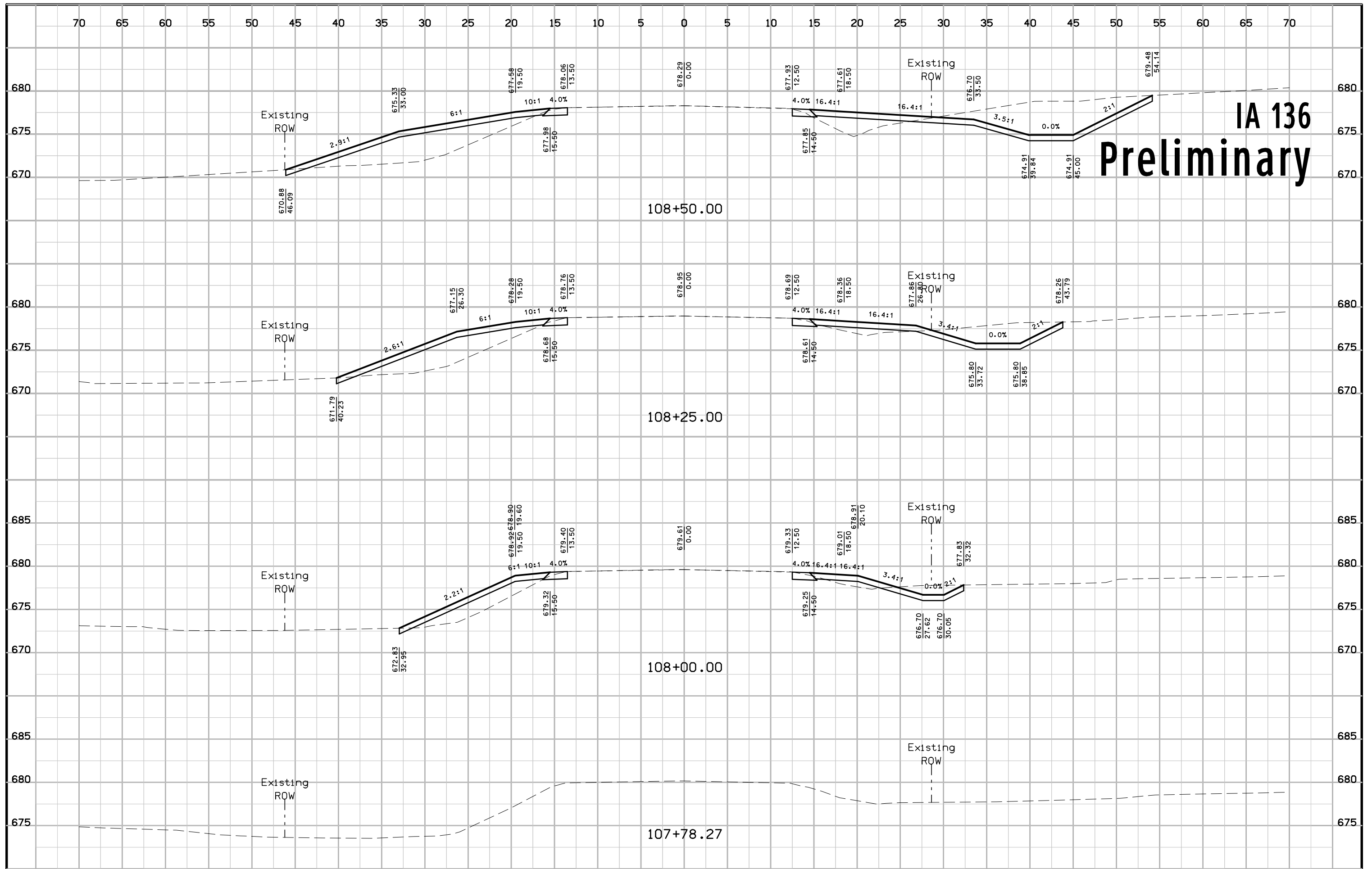
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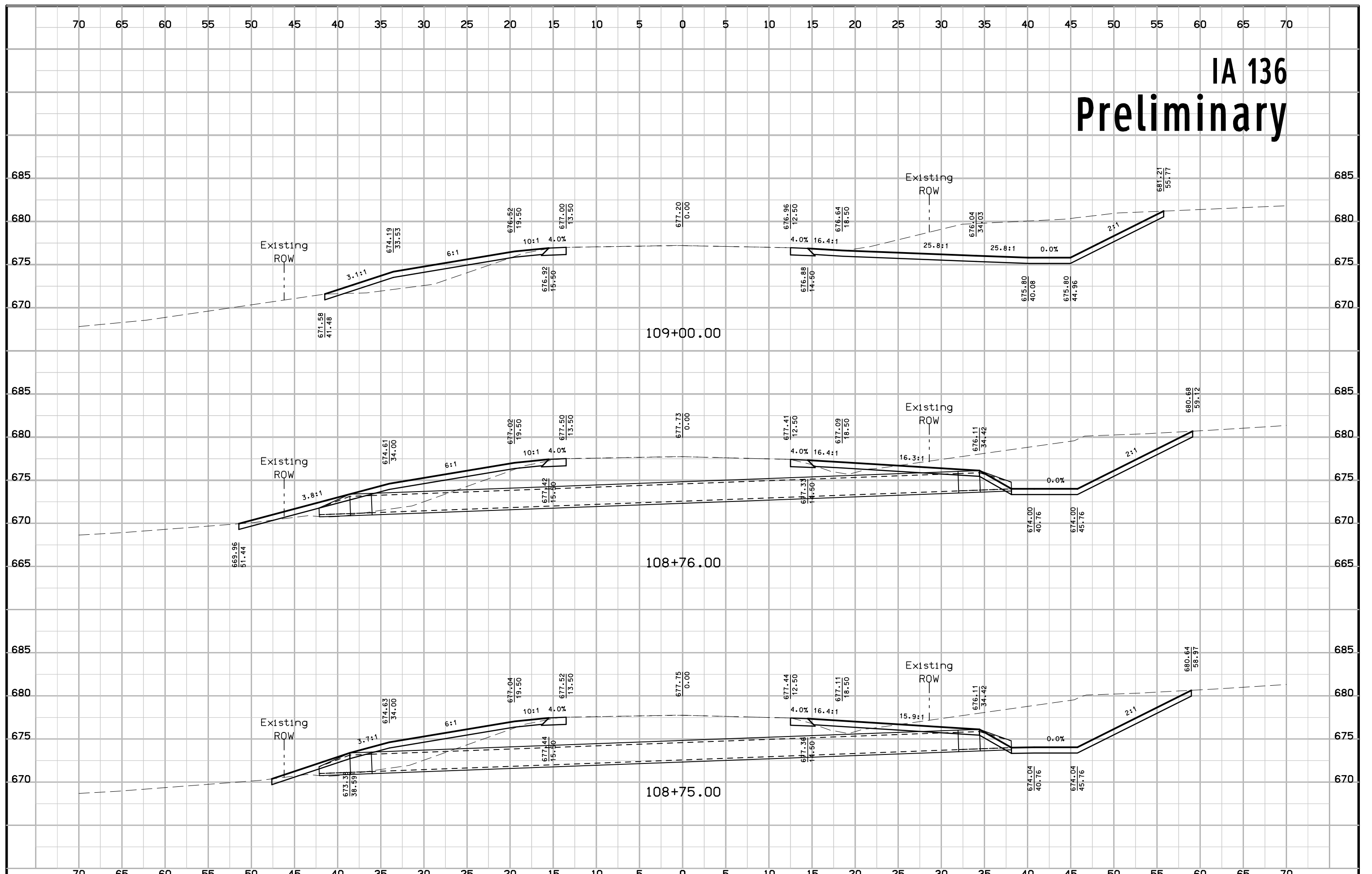
# IA 136 Preliminary



# IA 136 Preliminary

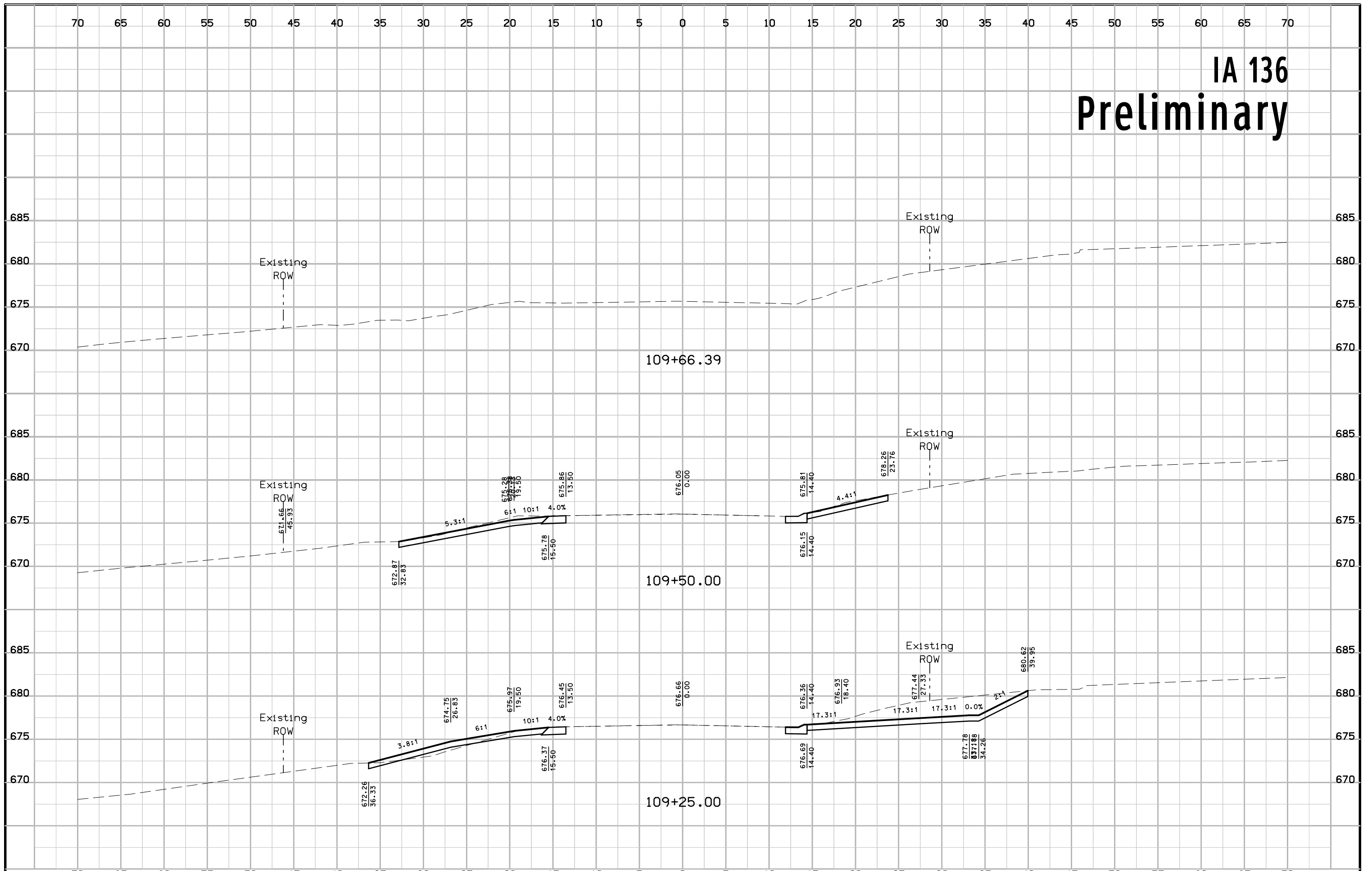


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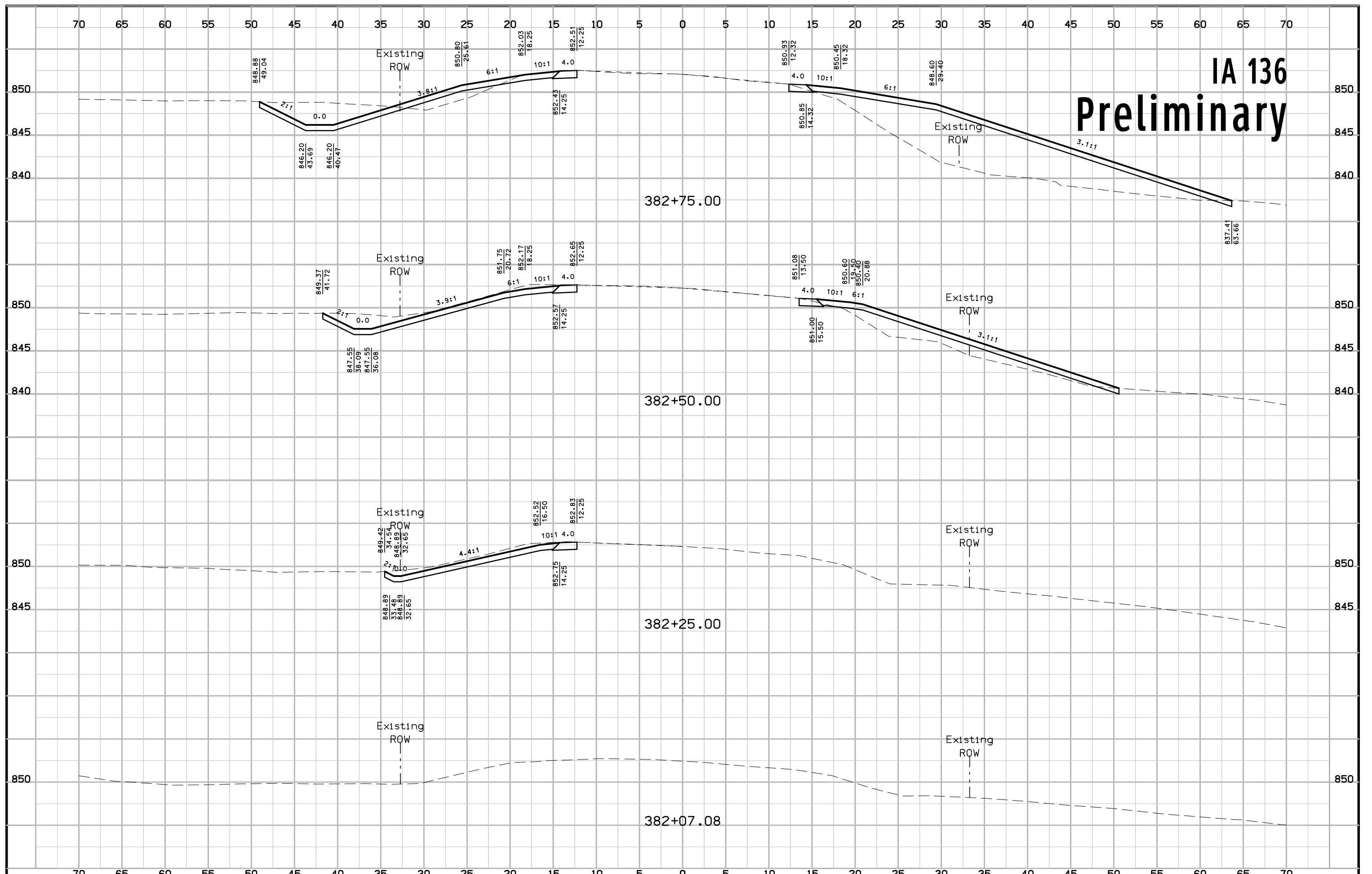




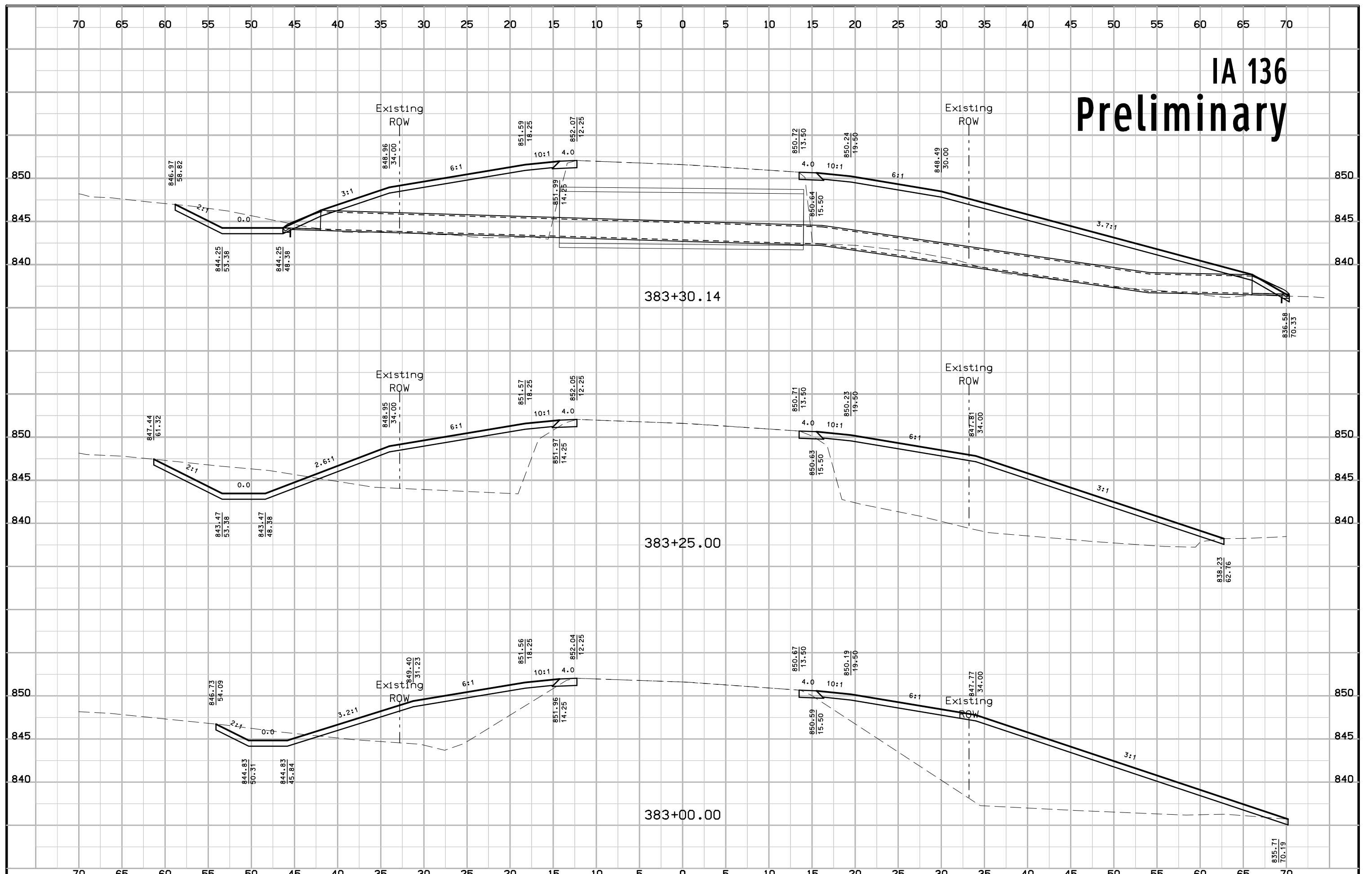
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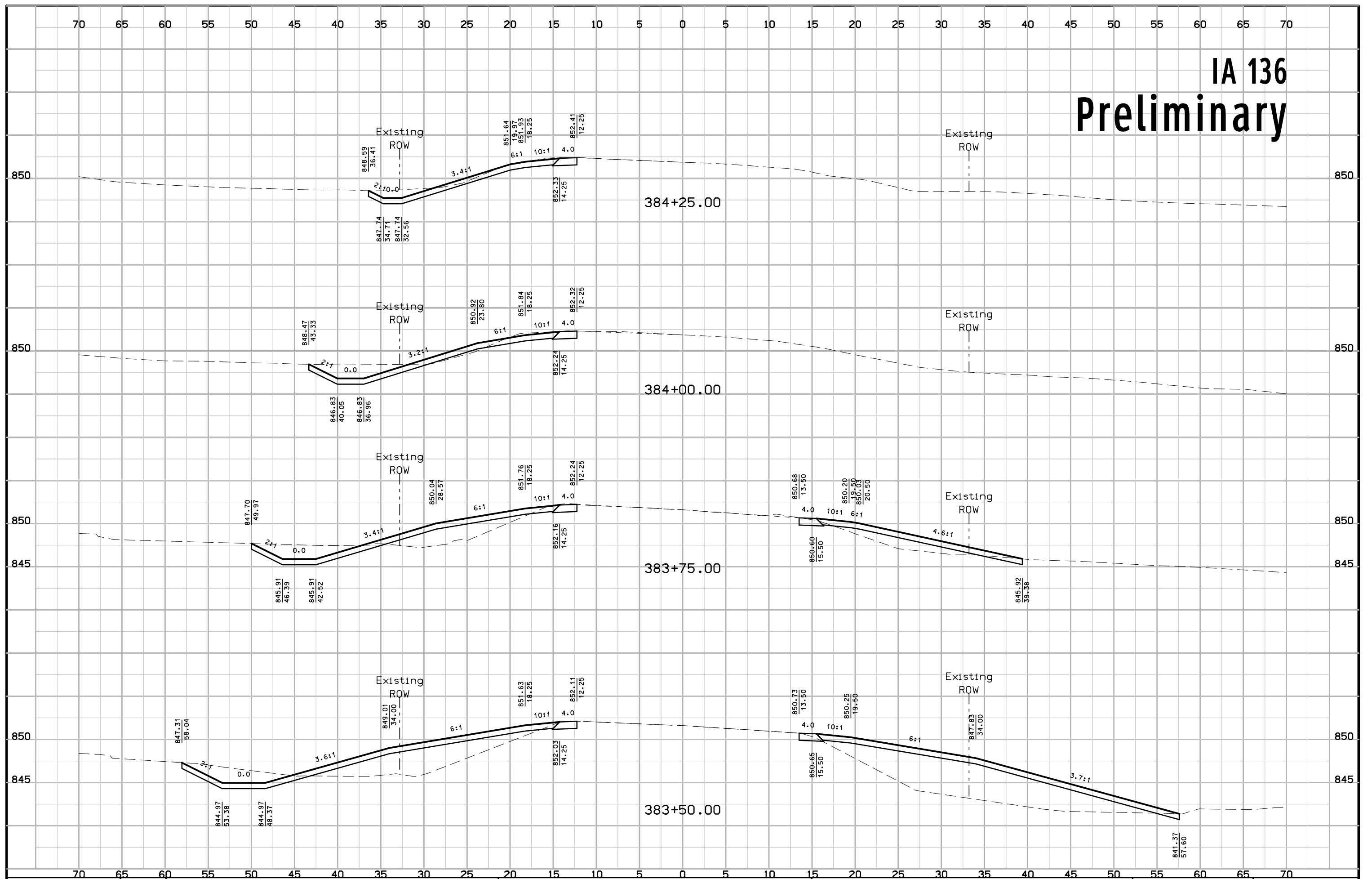
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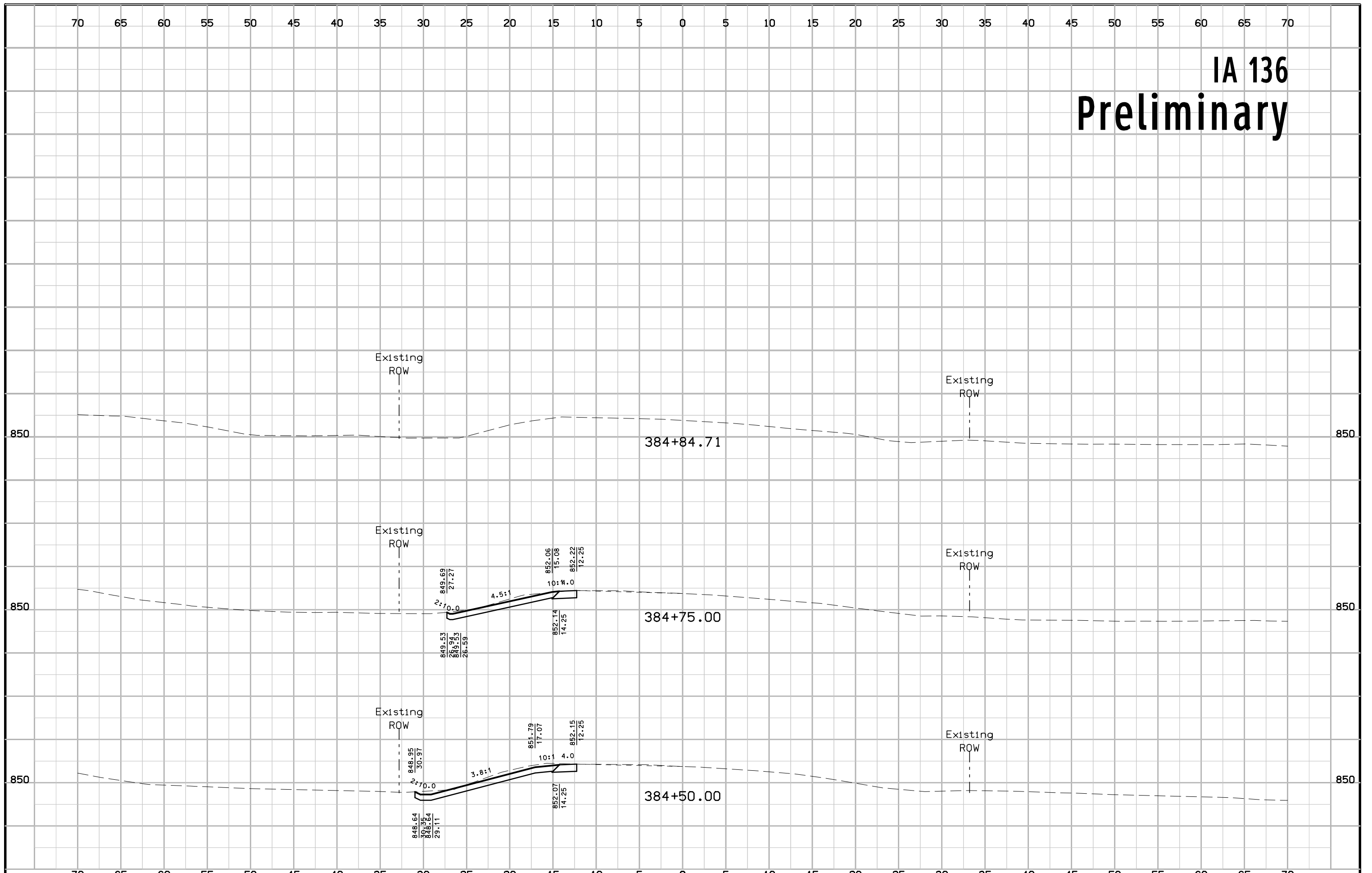
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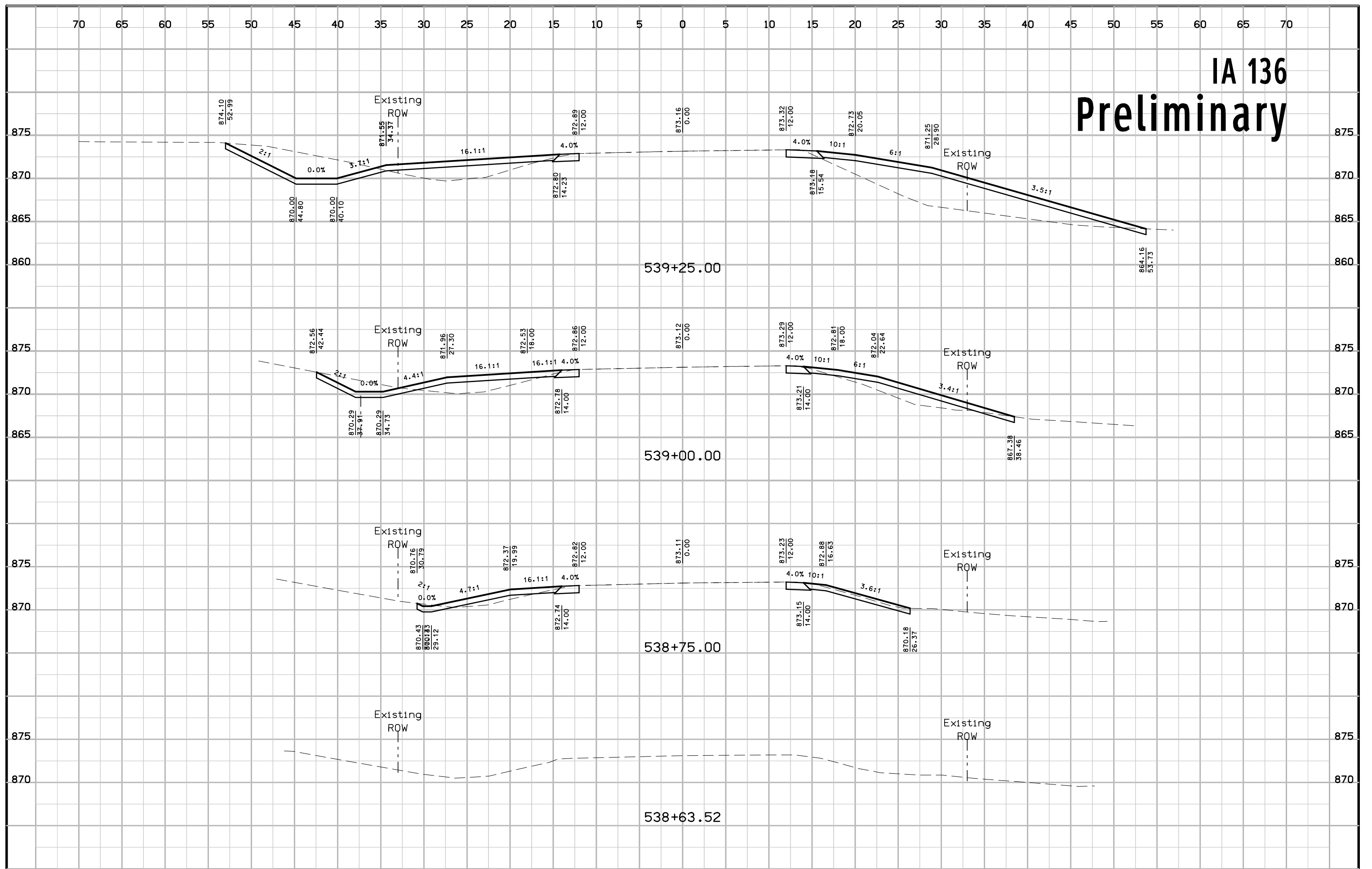
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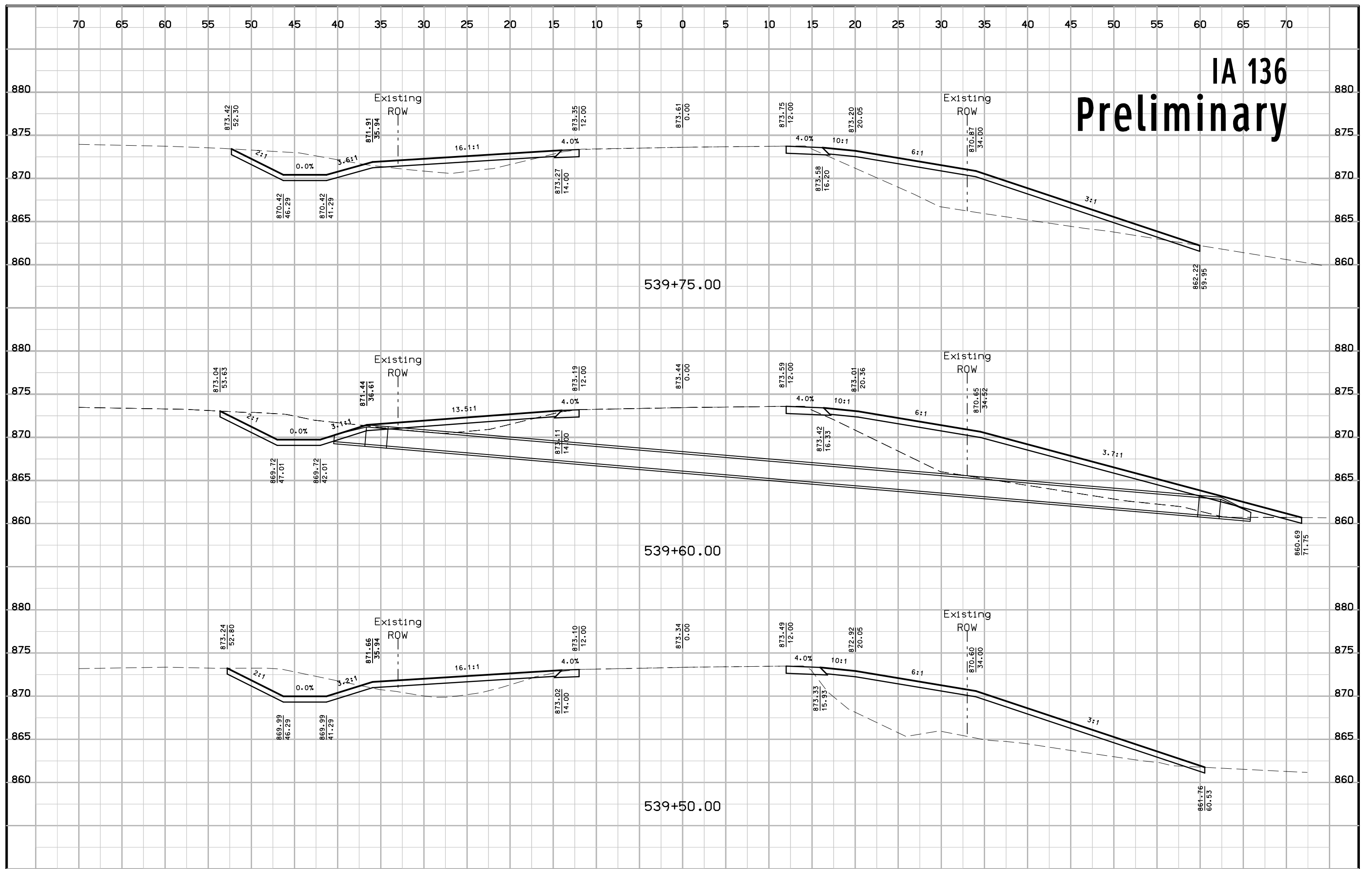
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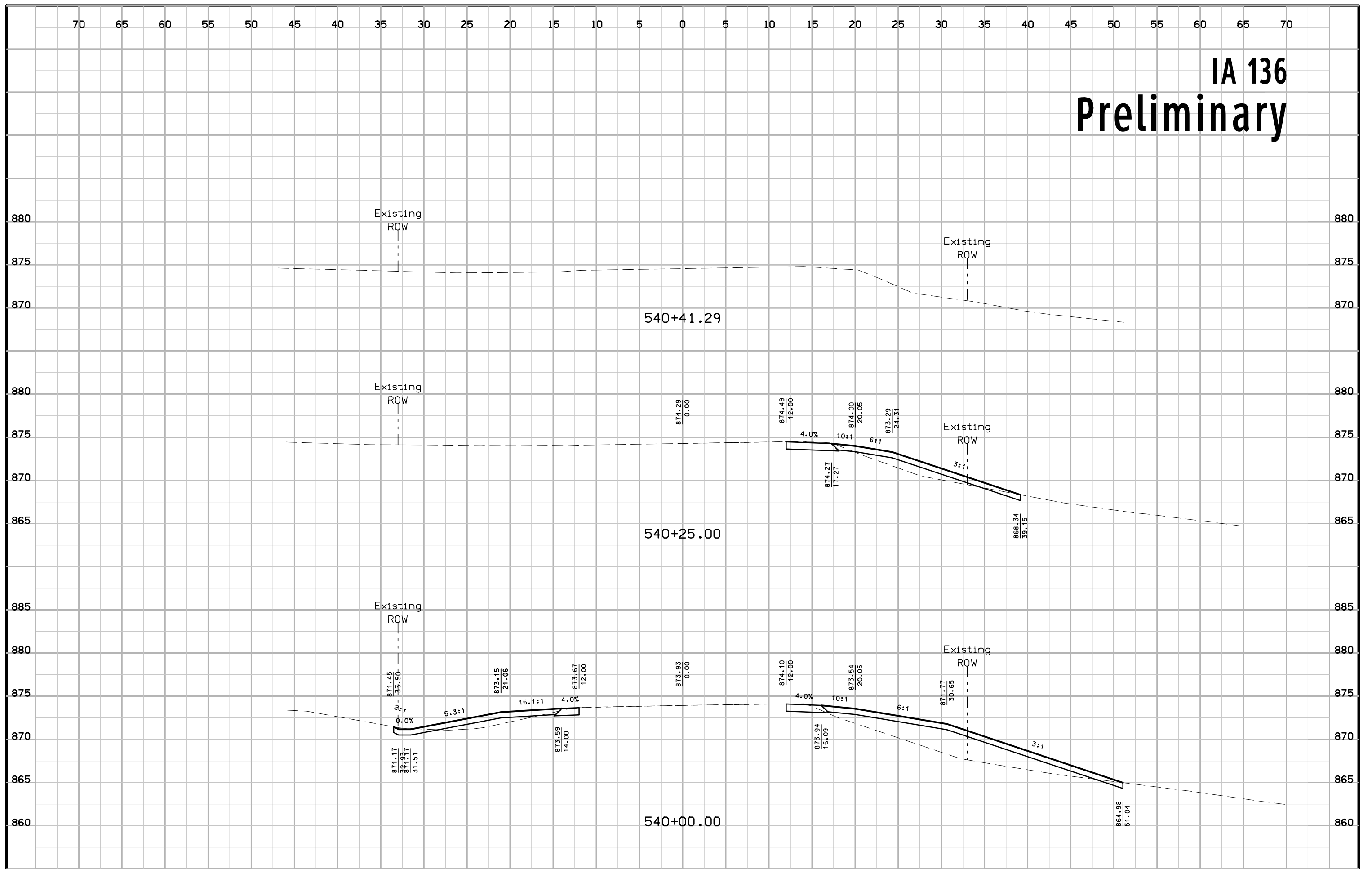
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# IA 136 Preliminary

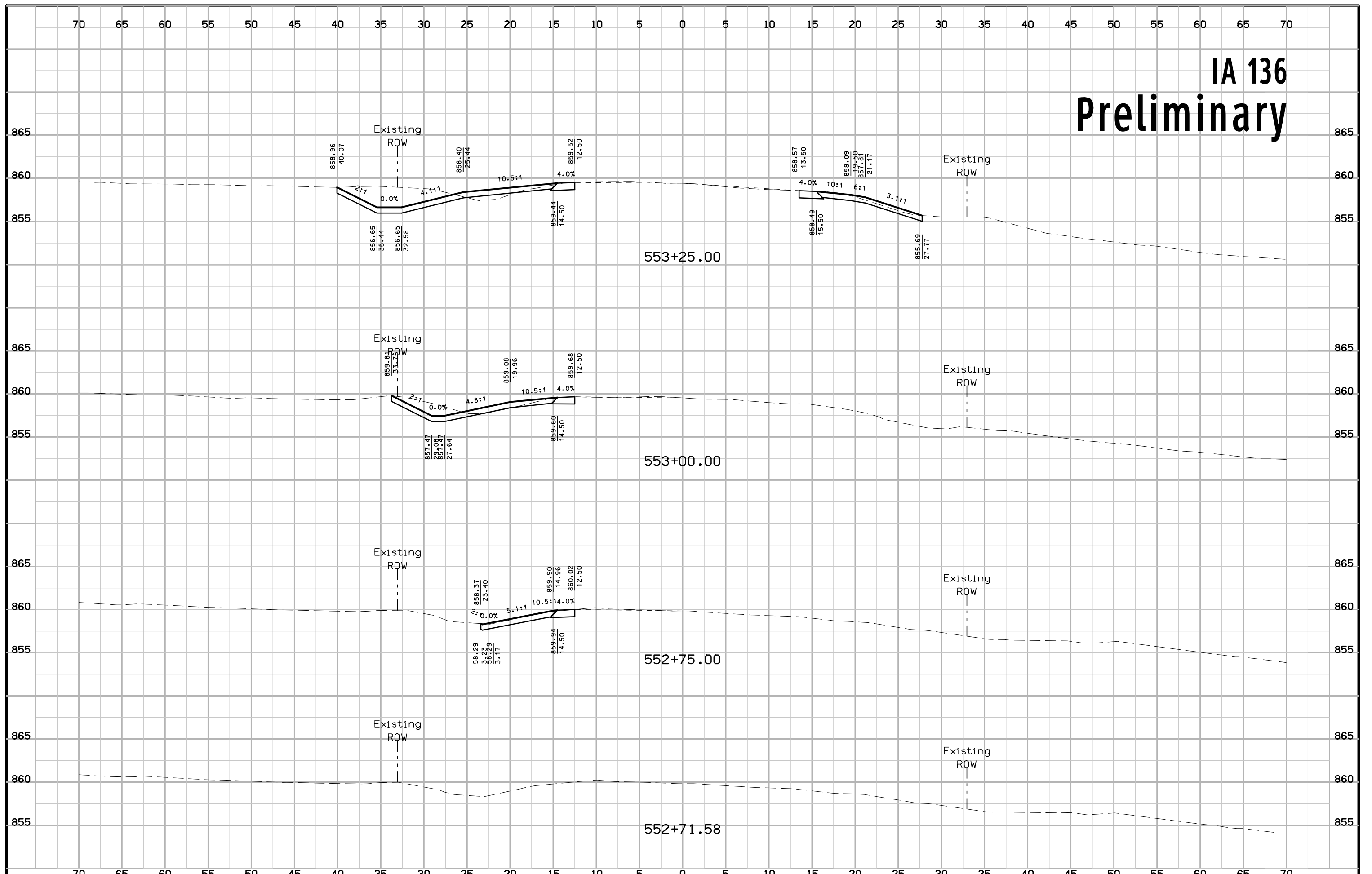


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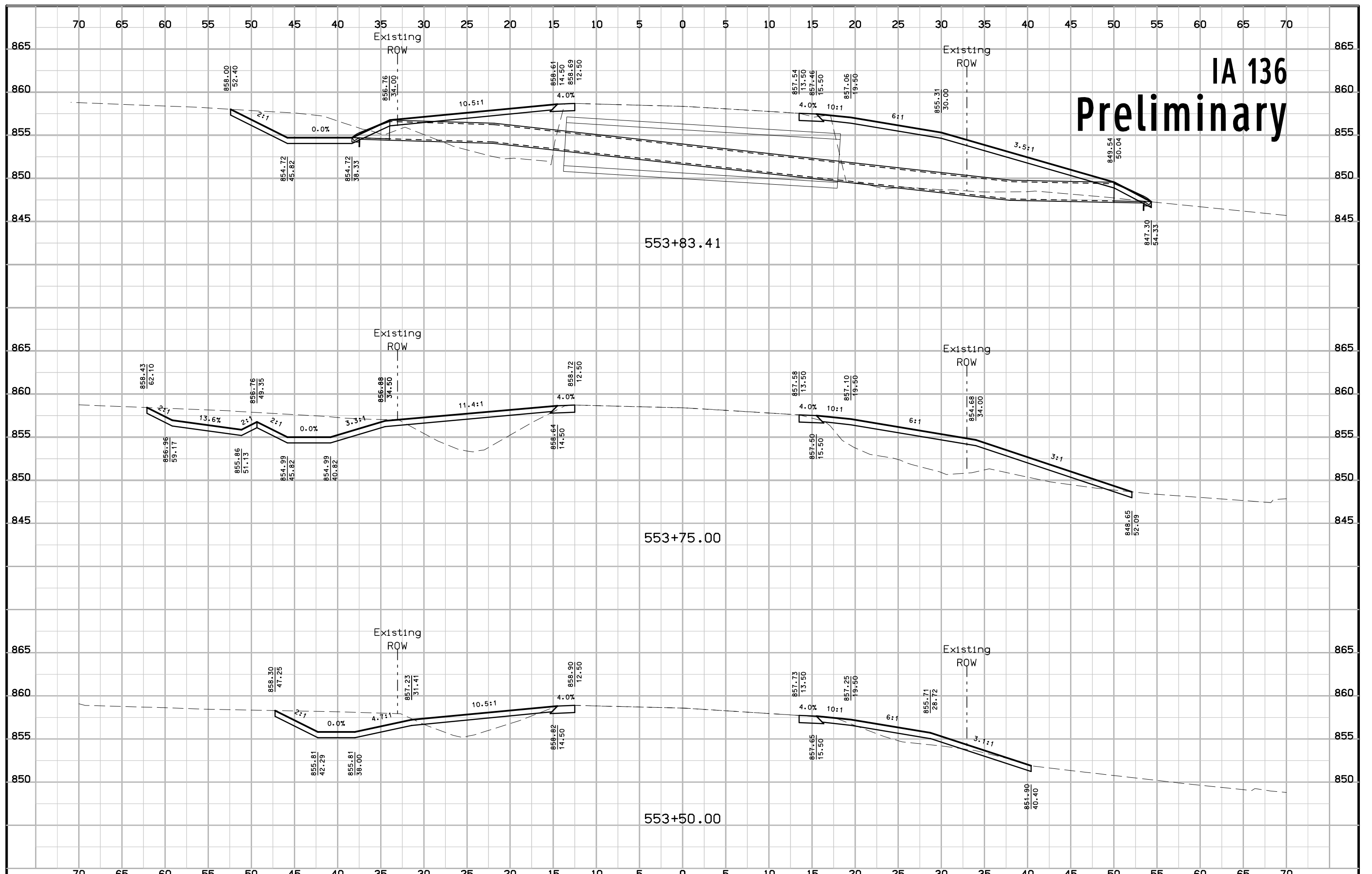




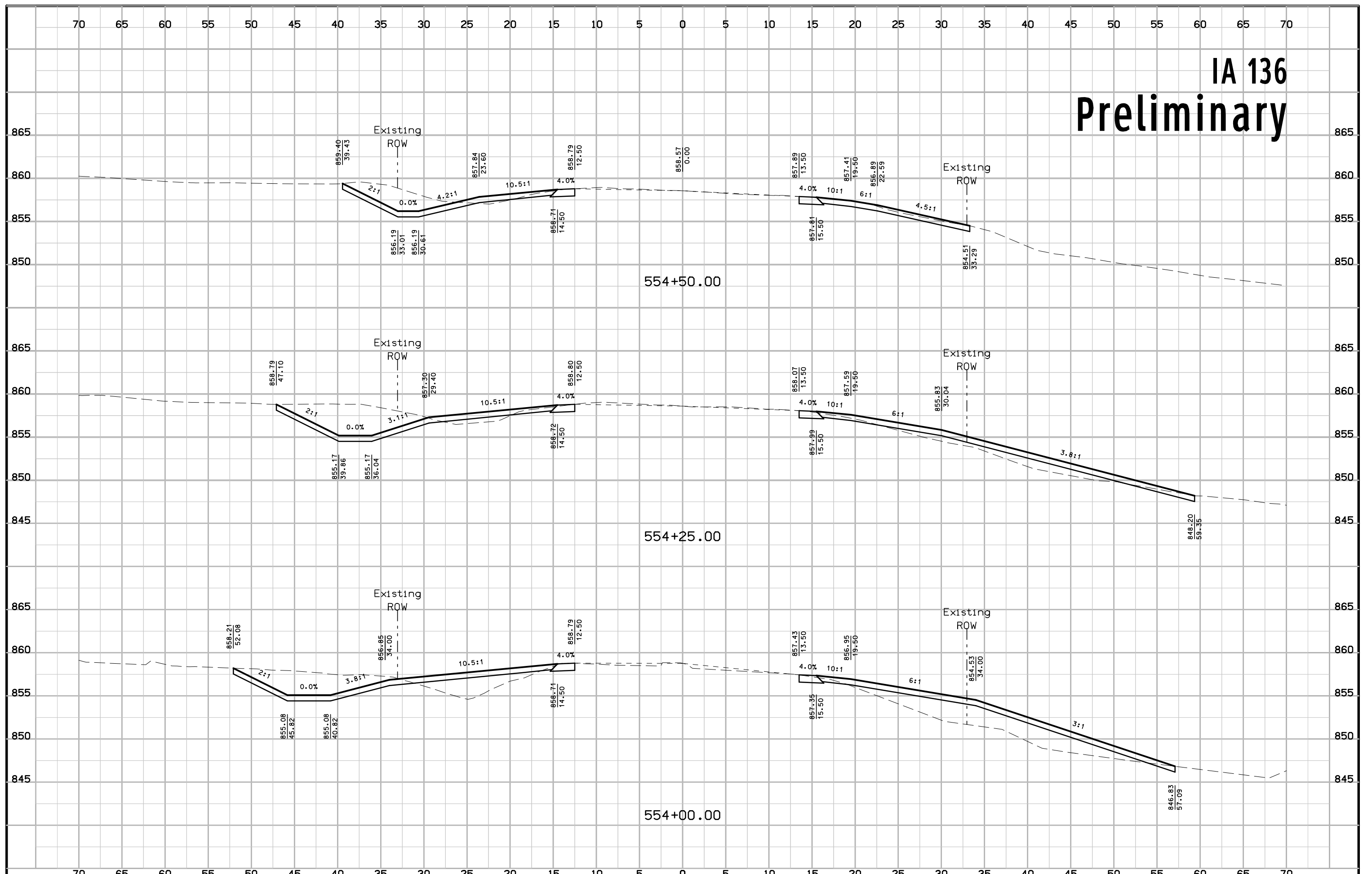
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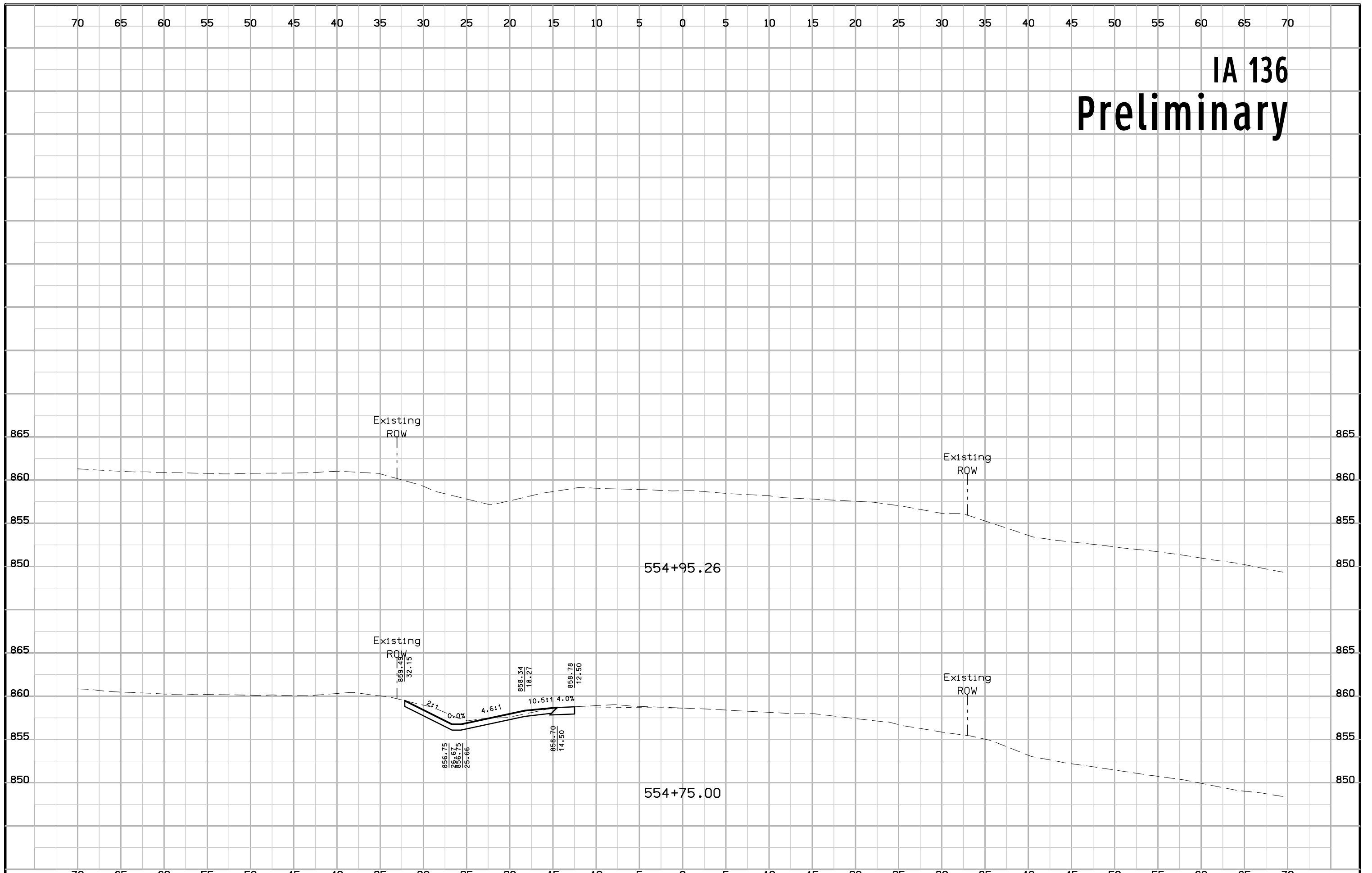
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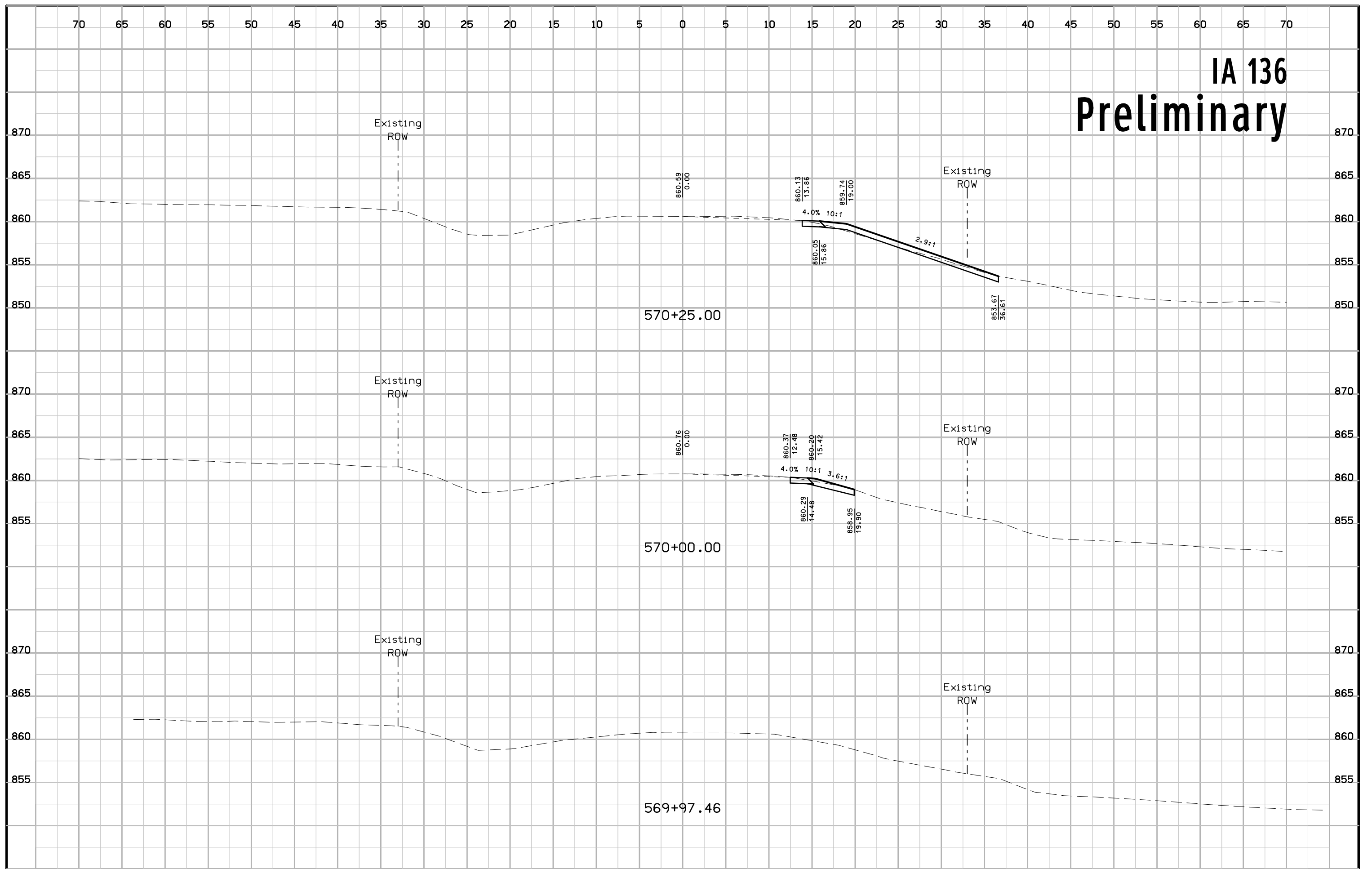
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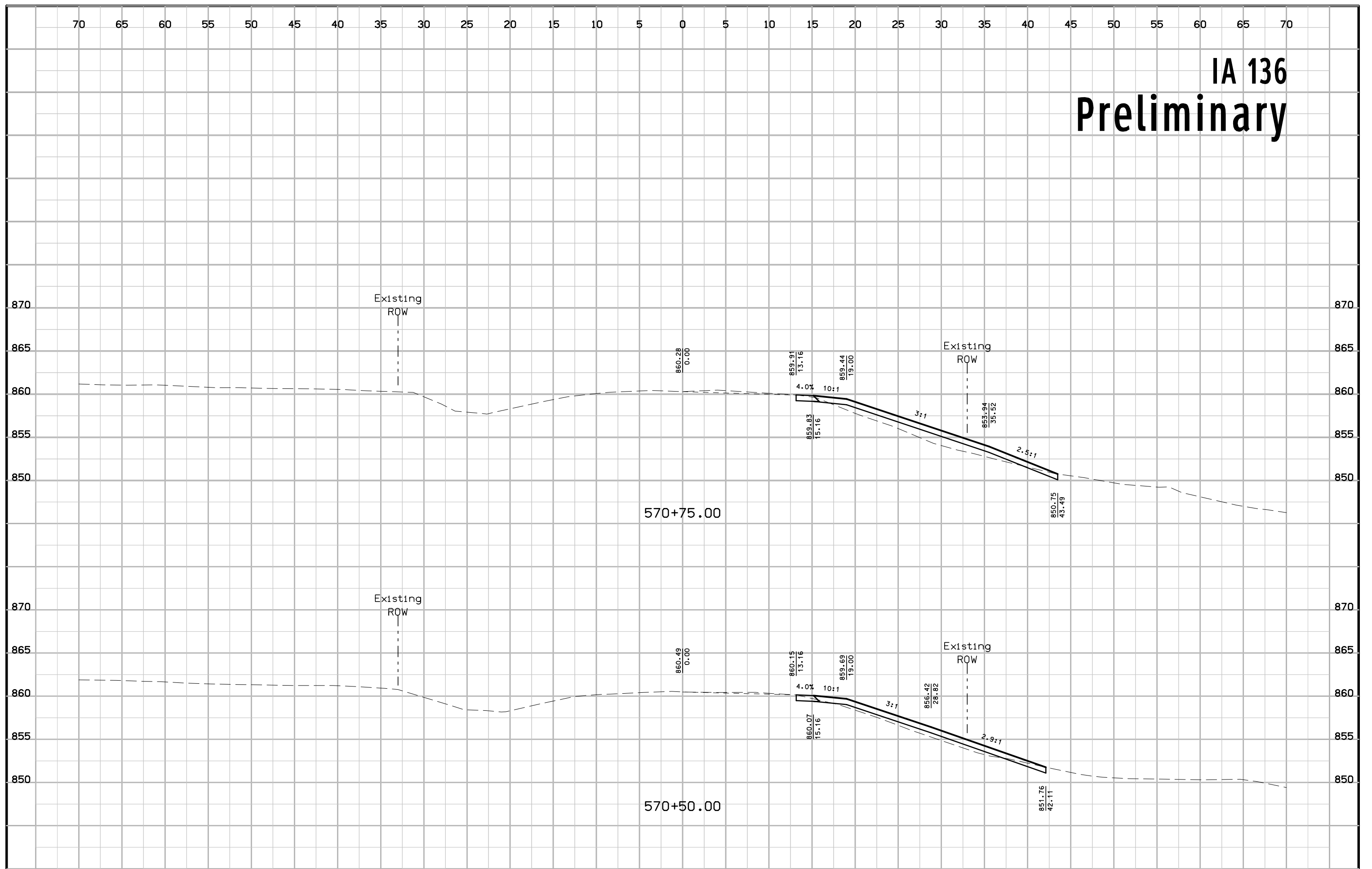
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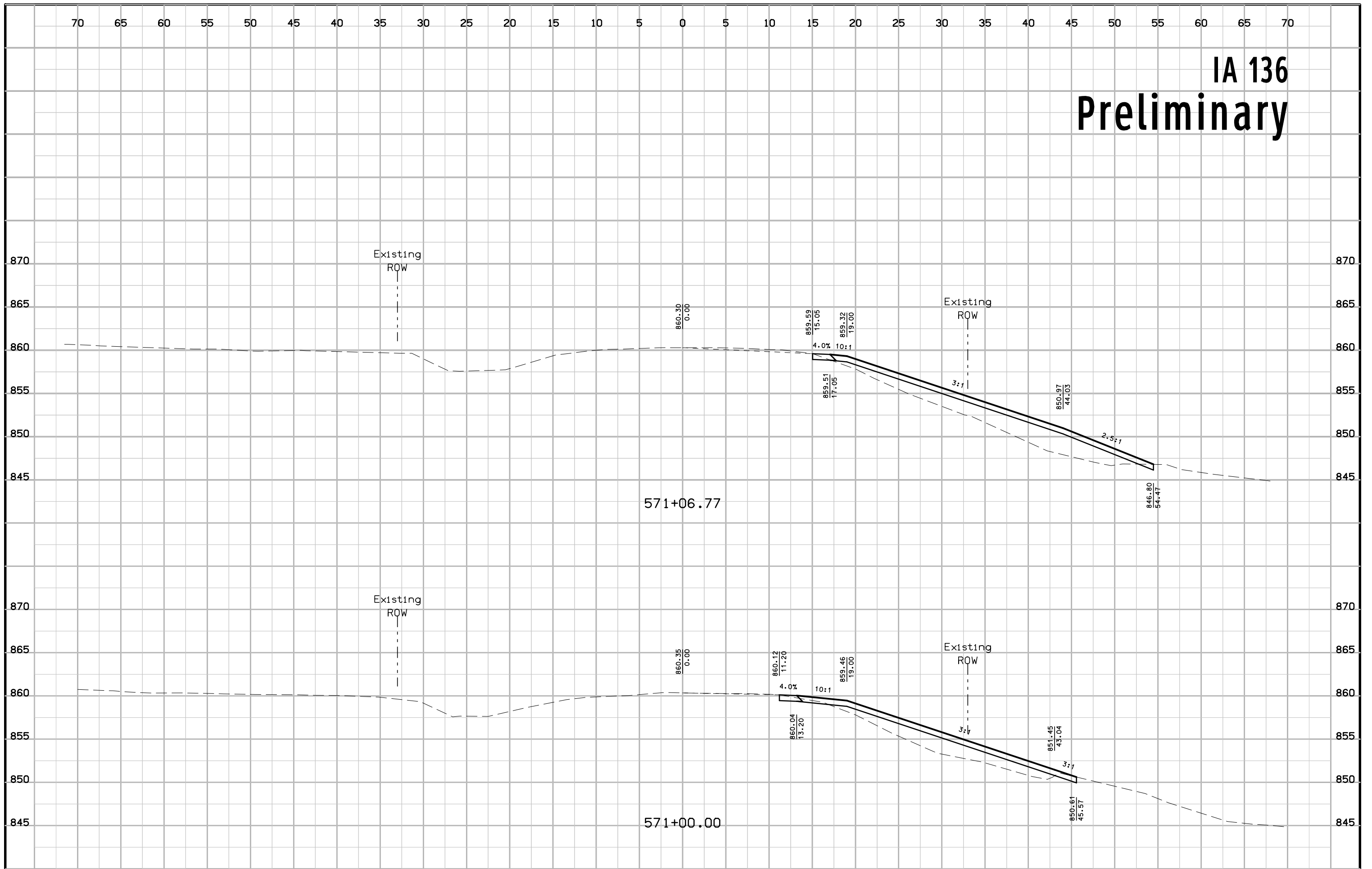
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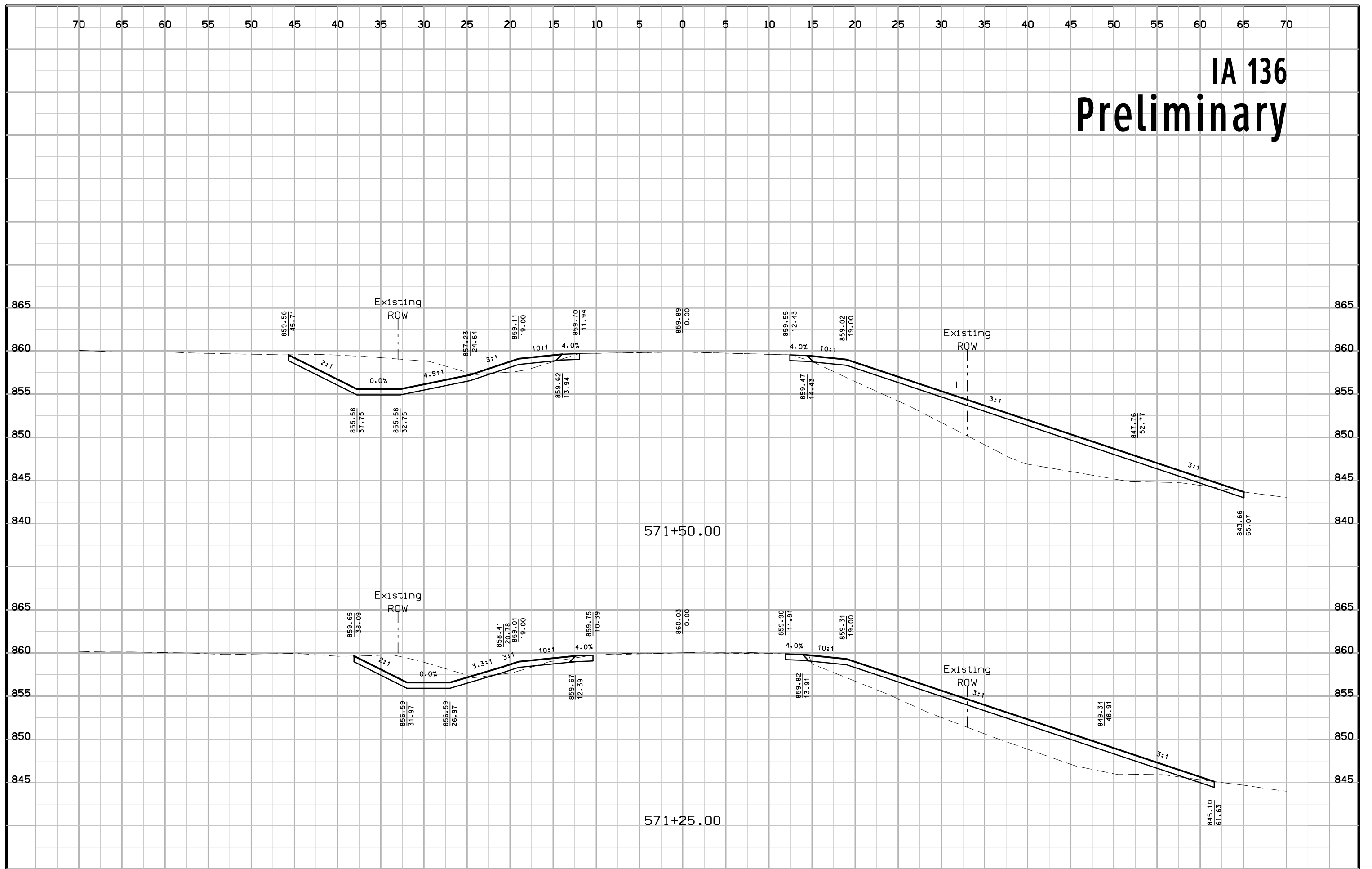
# IA 136 Preliminary



# IA 136 Preliminary

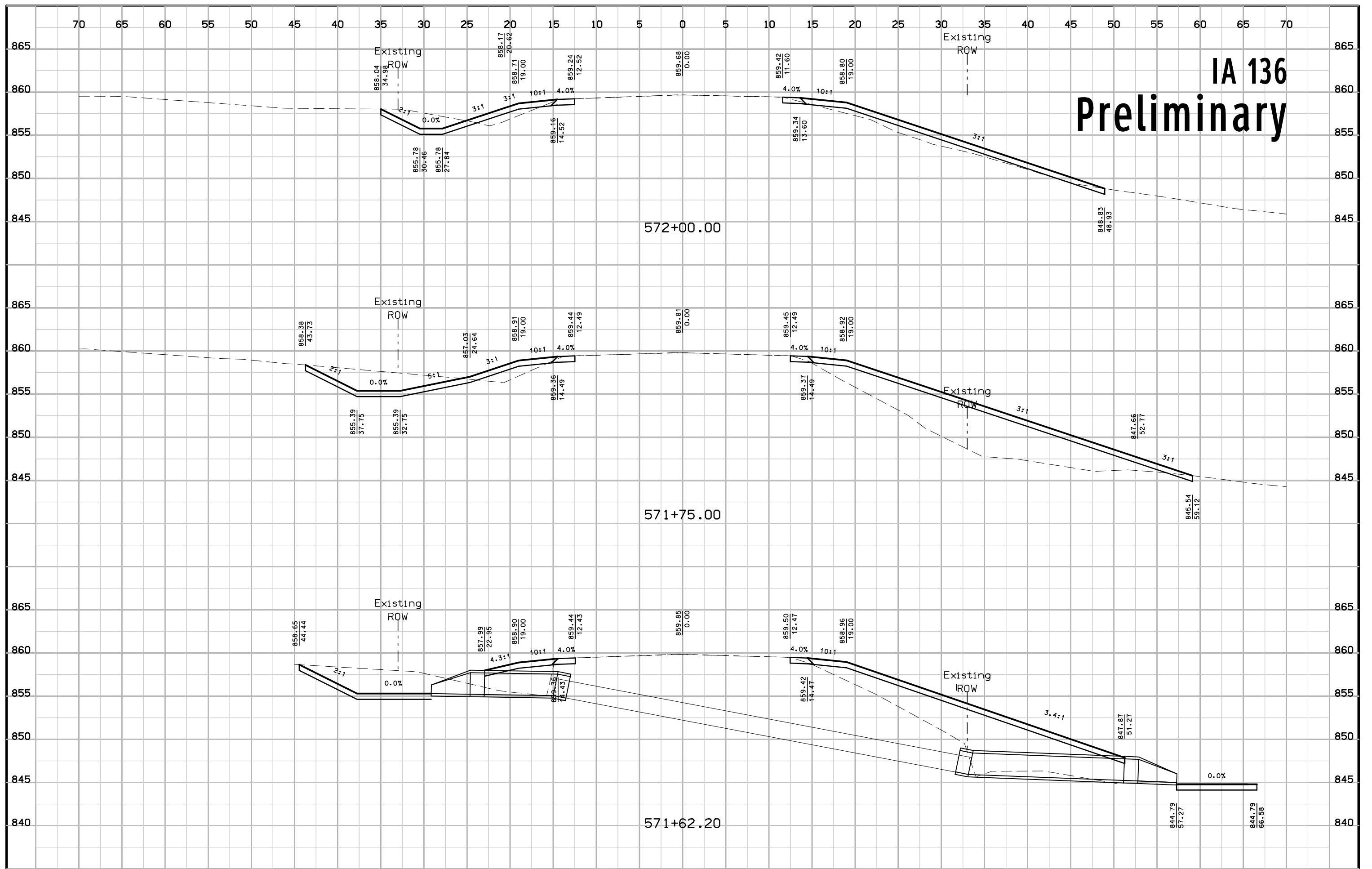


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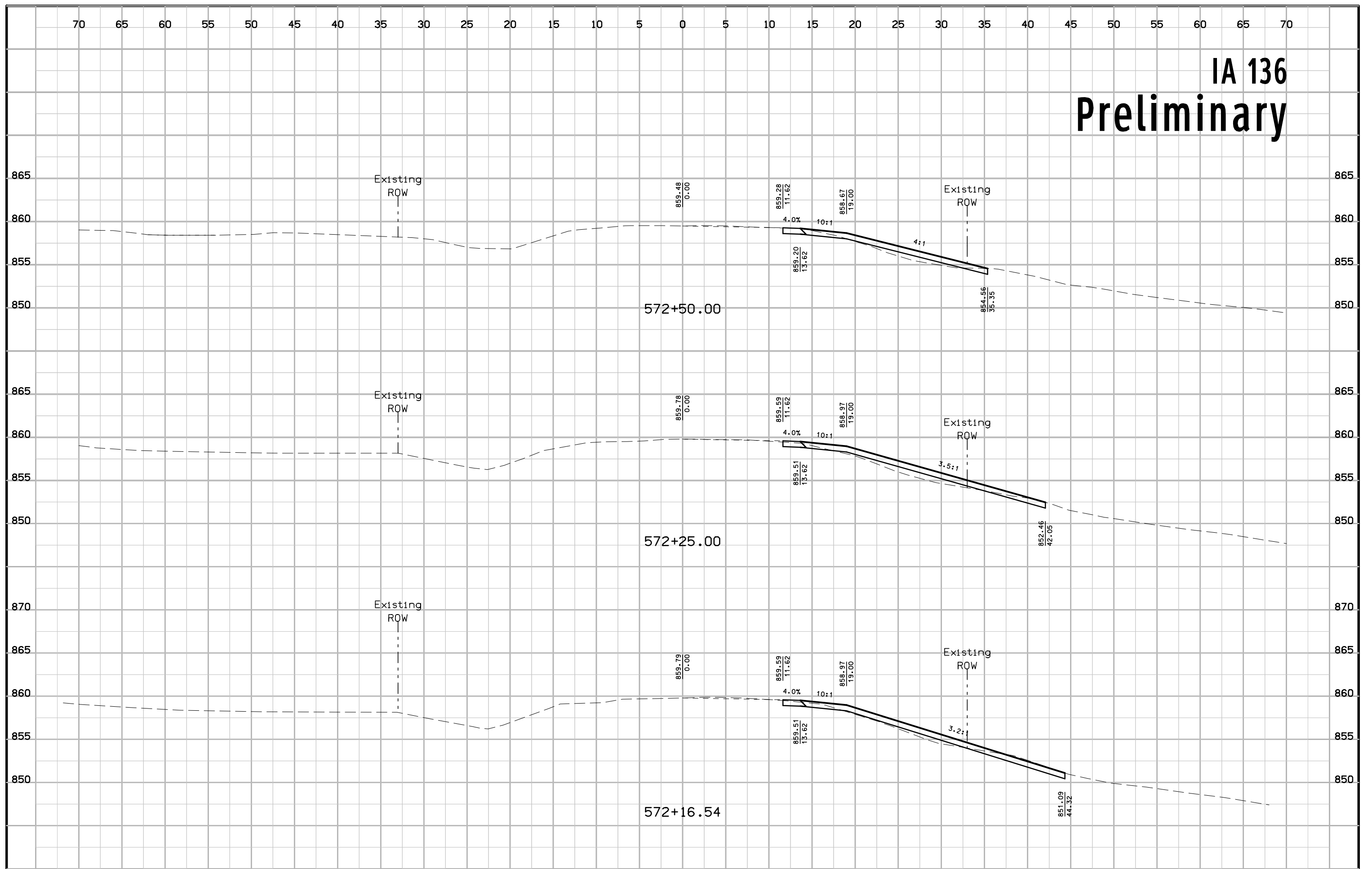




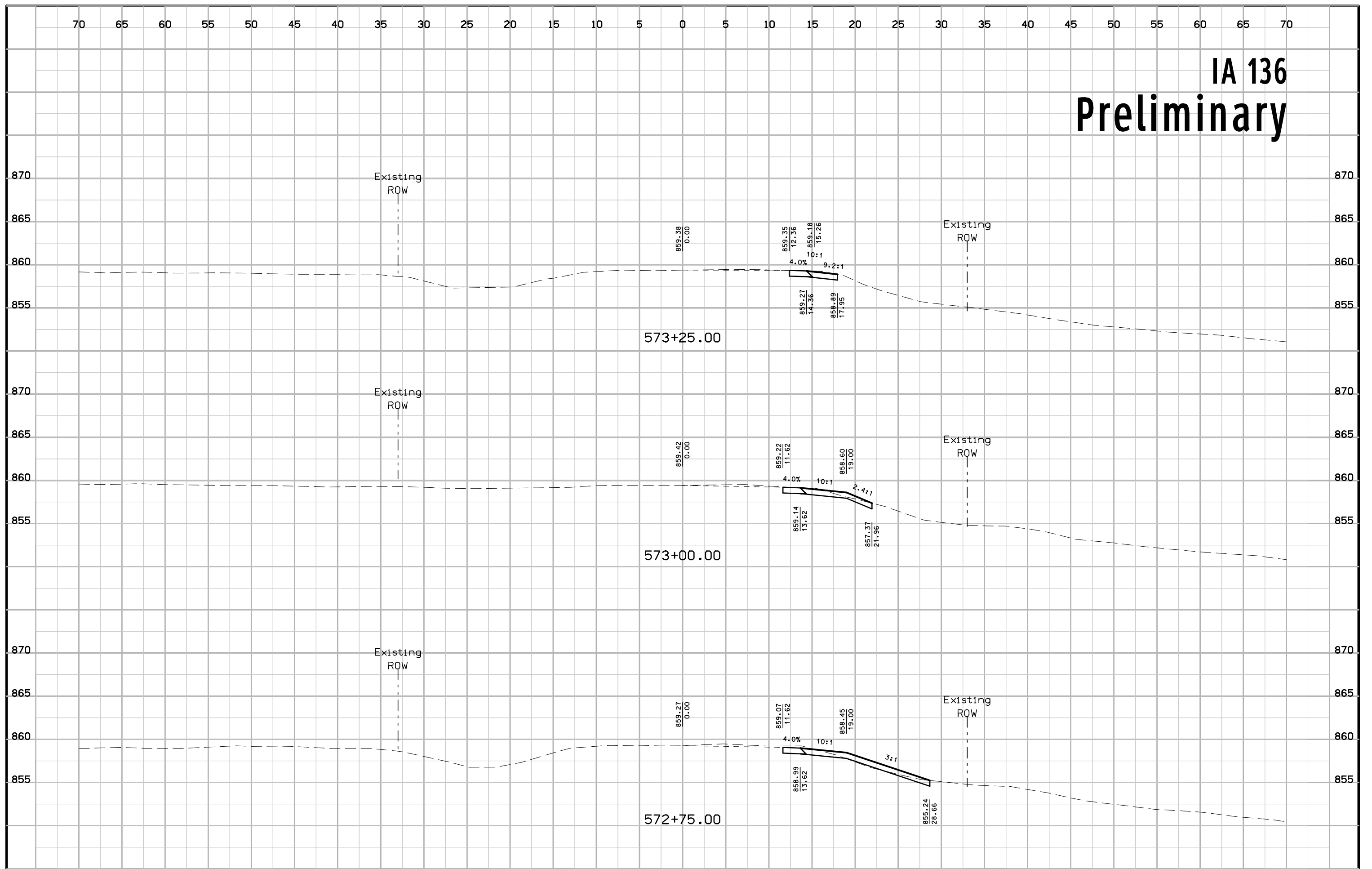
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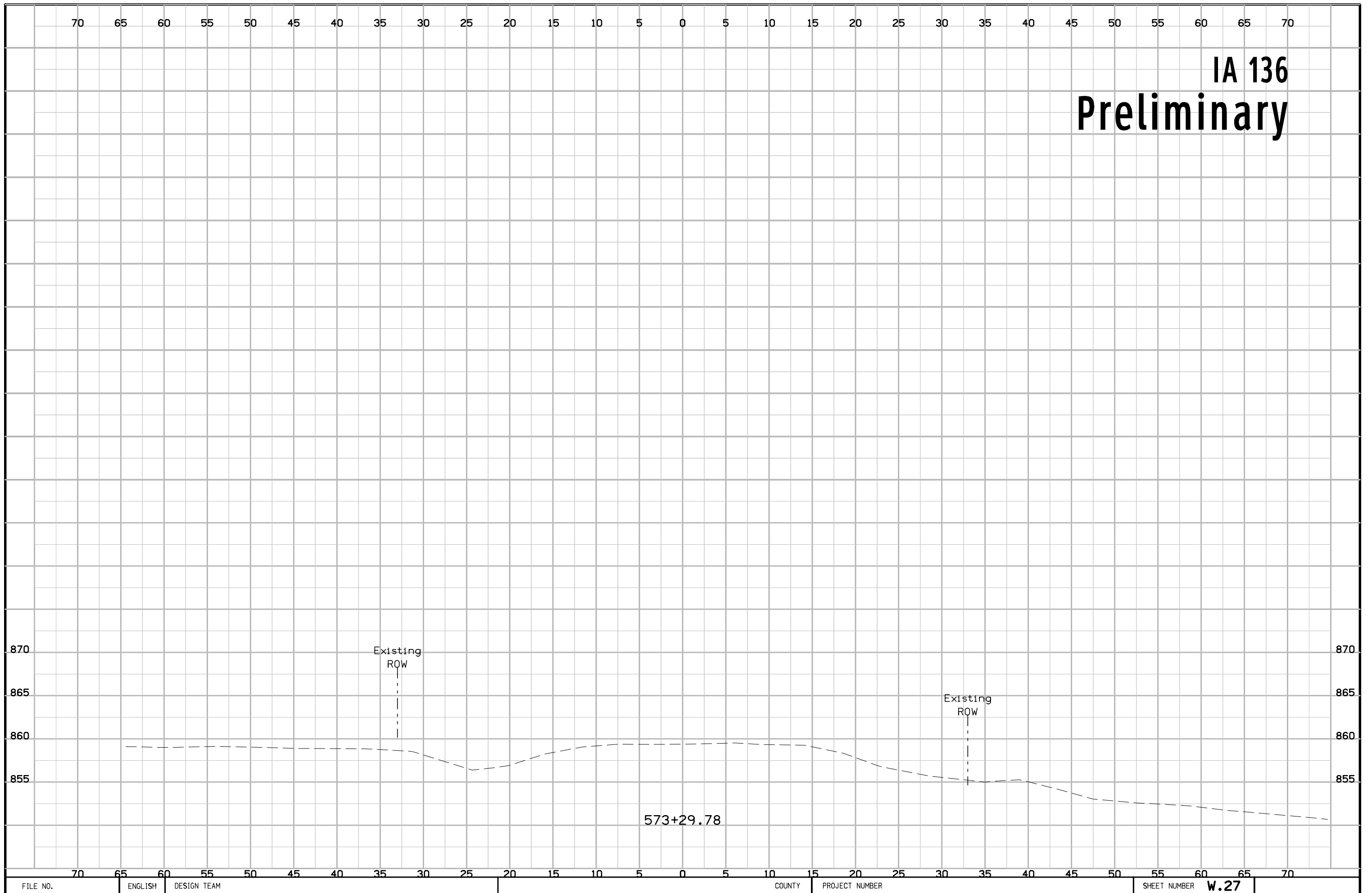
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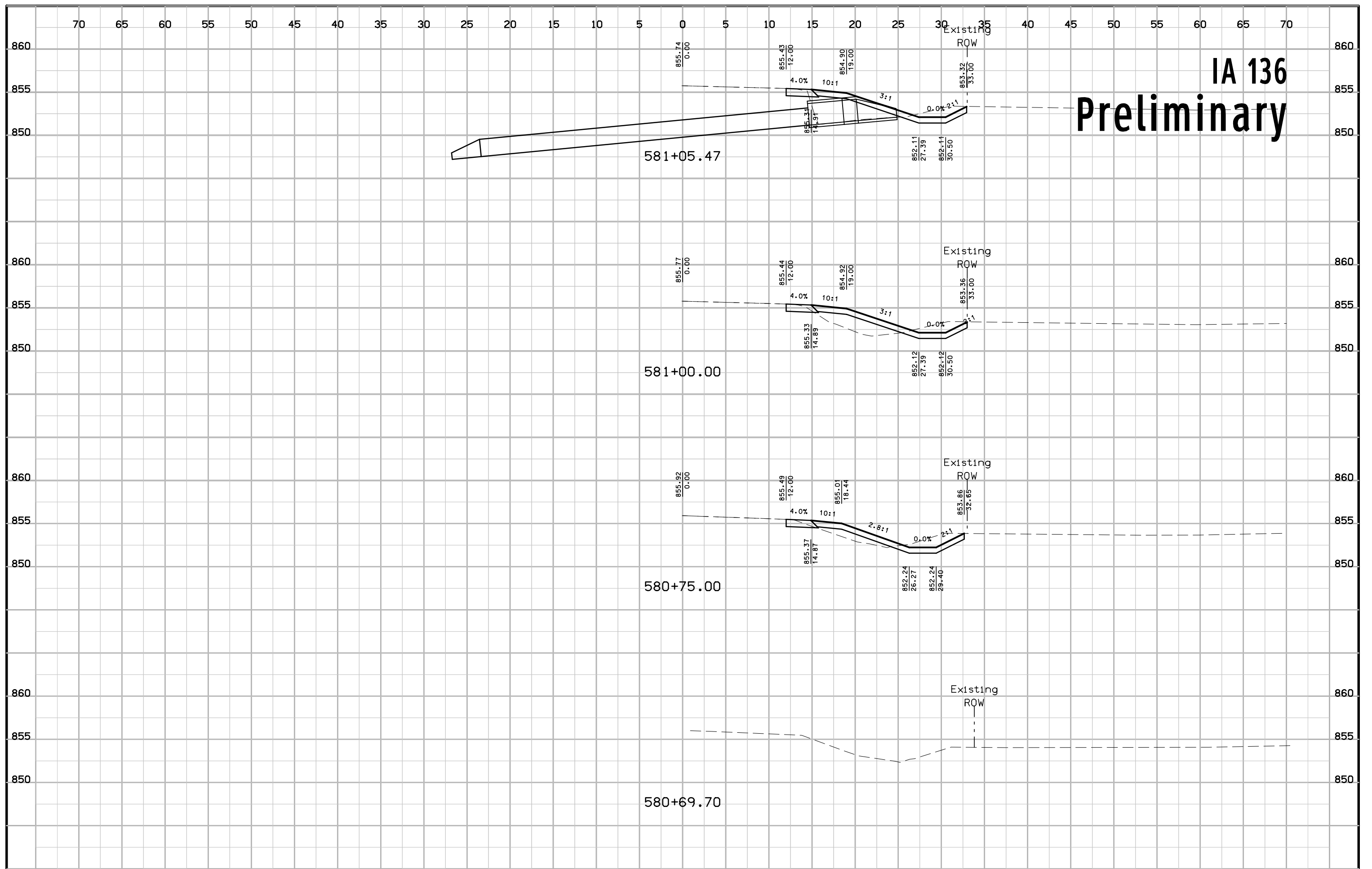
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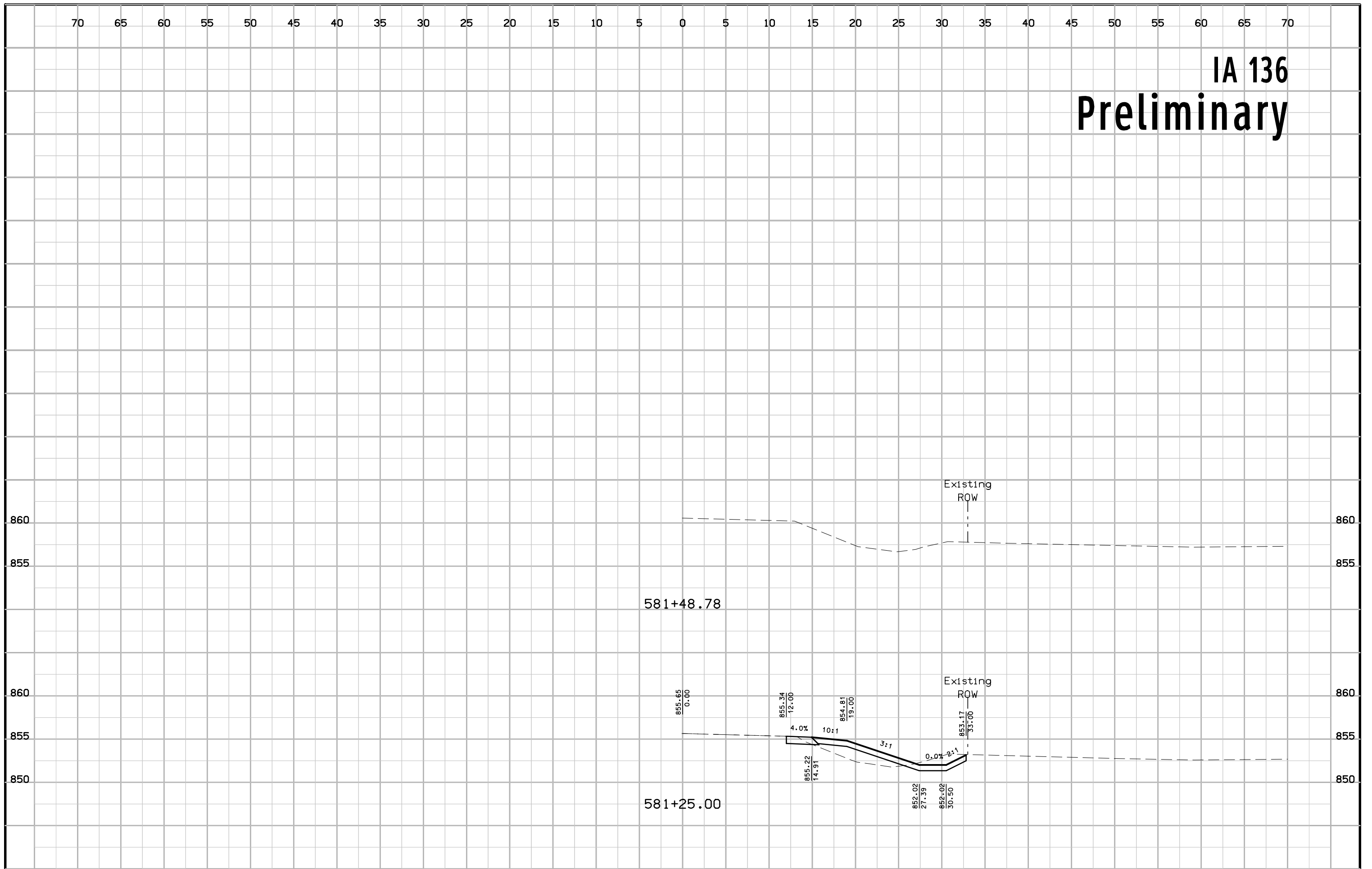
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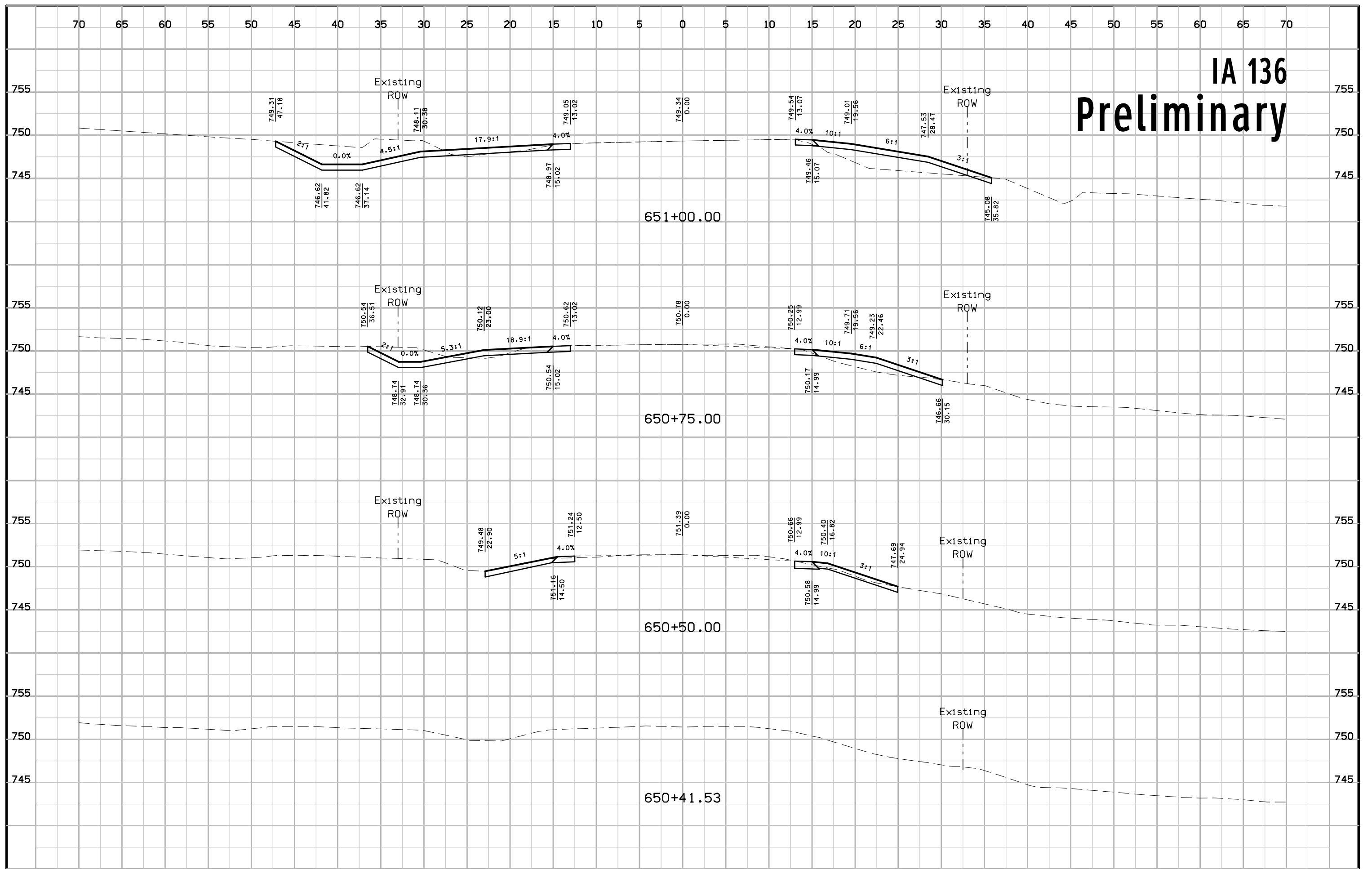
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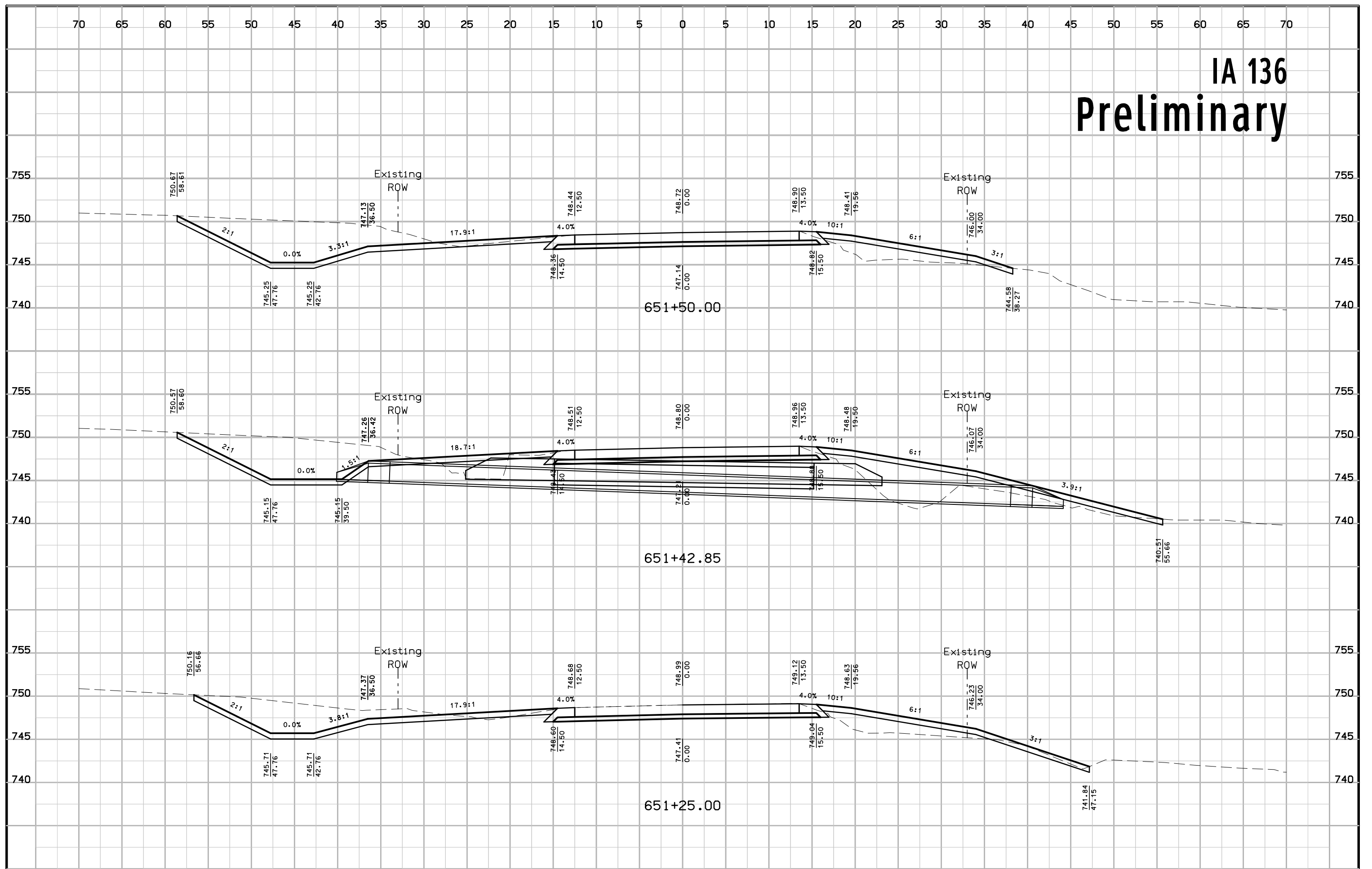
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# IA 136 Preliminary

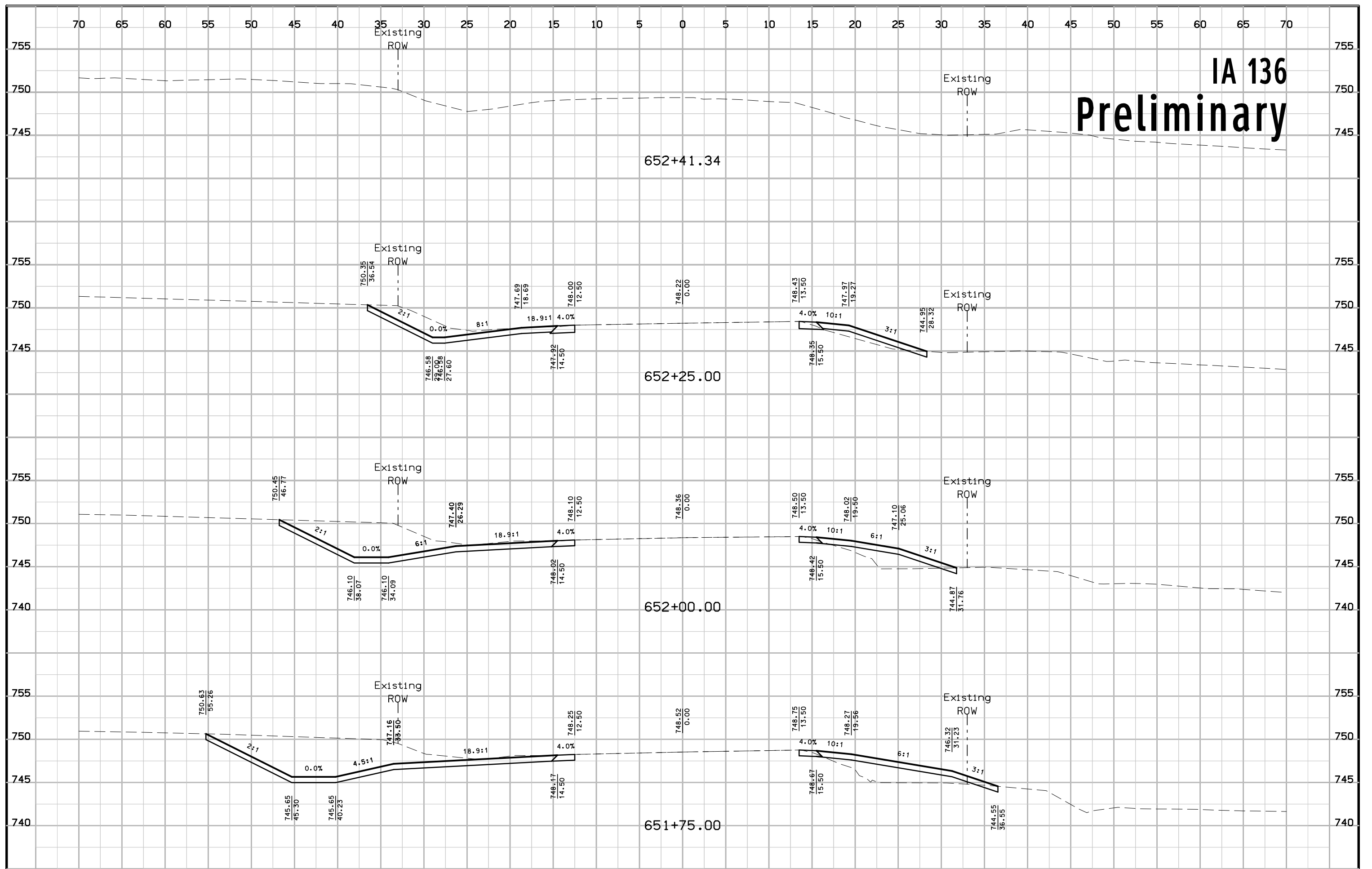


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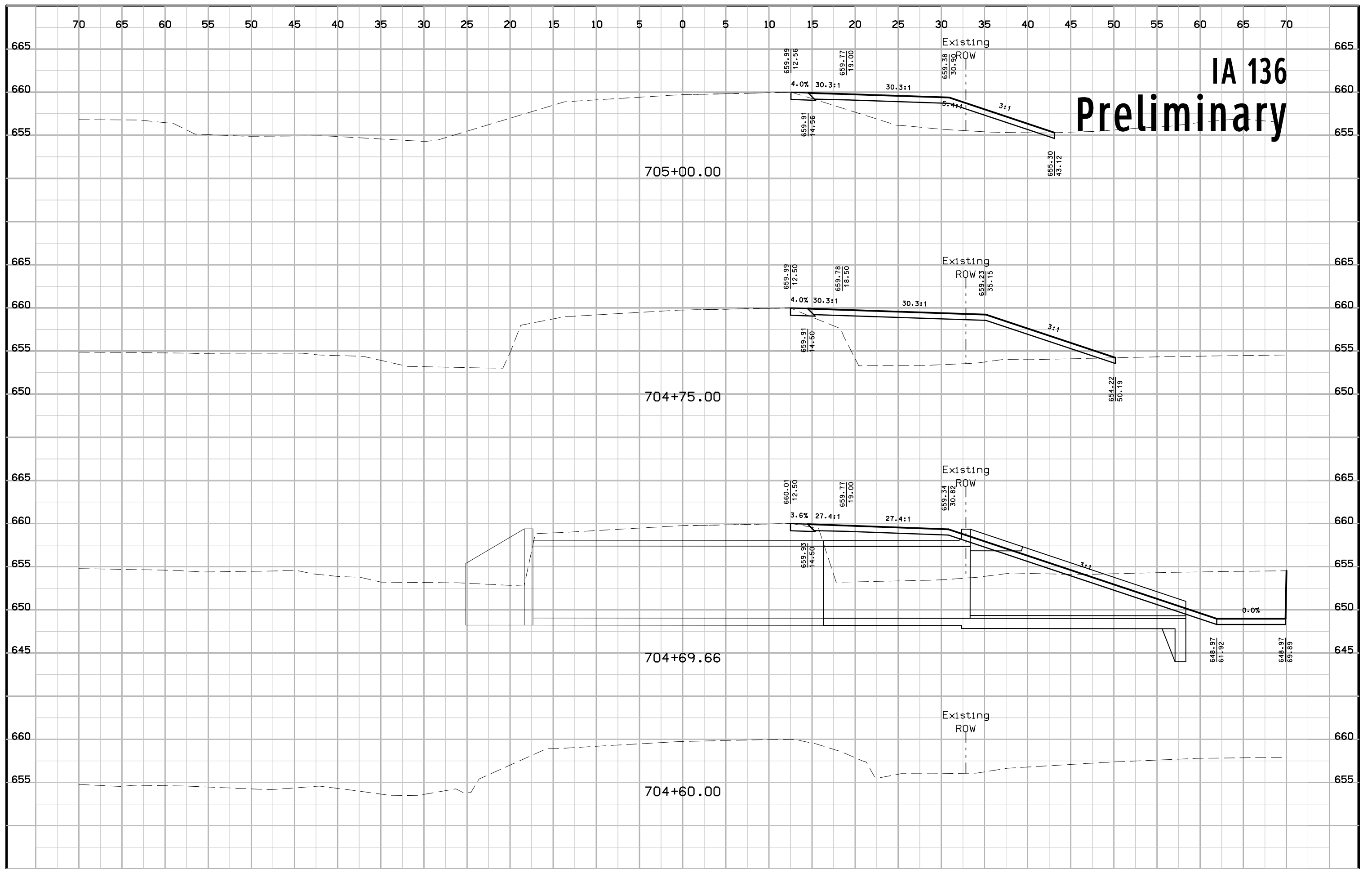




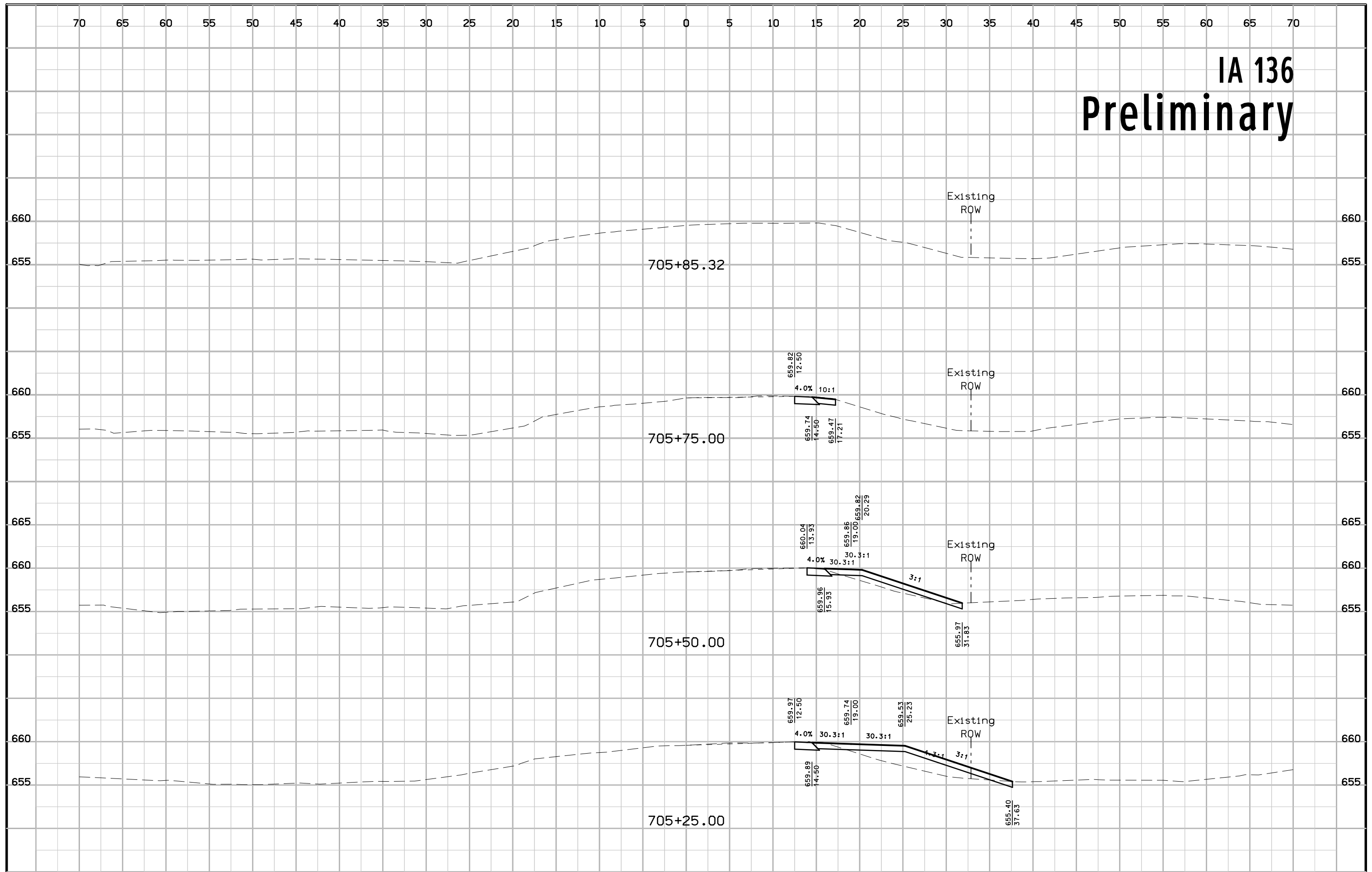
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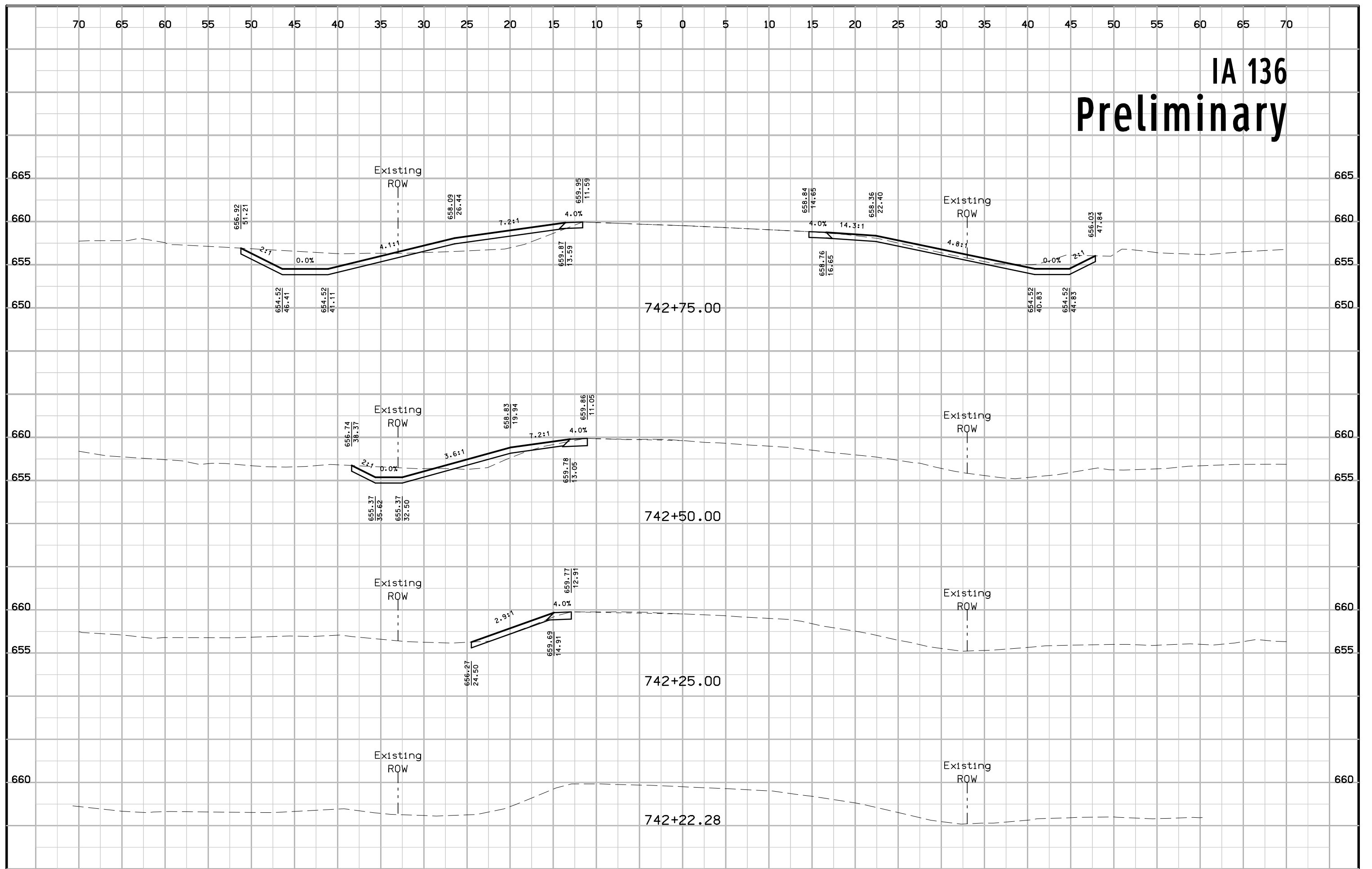
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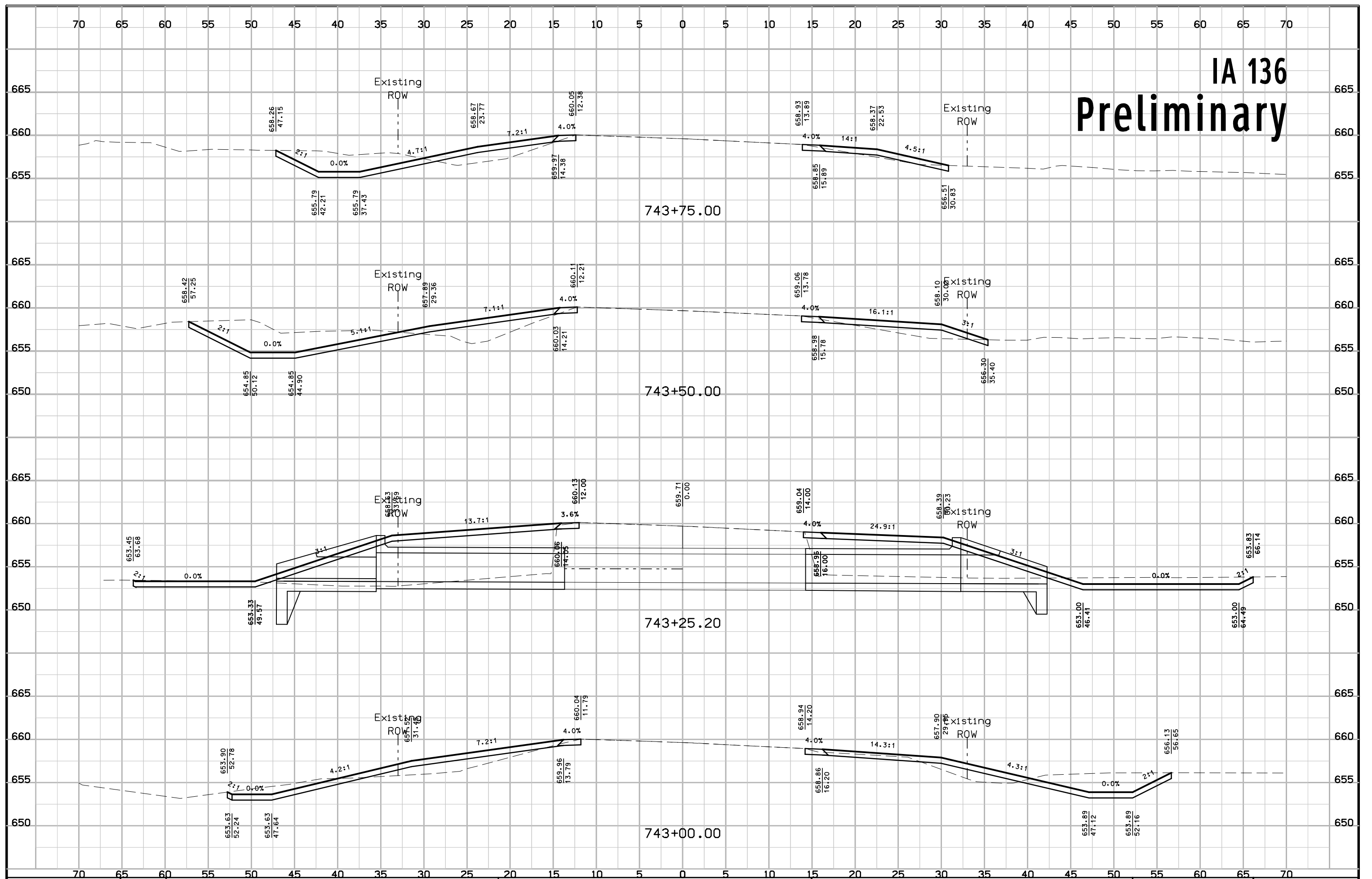
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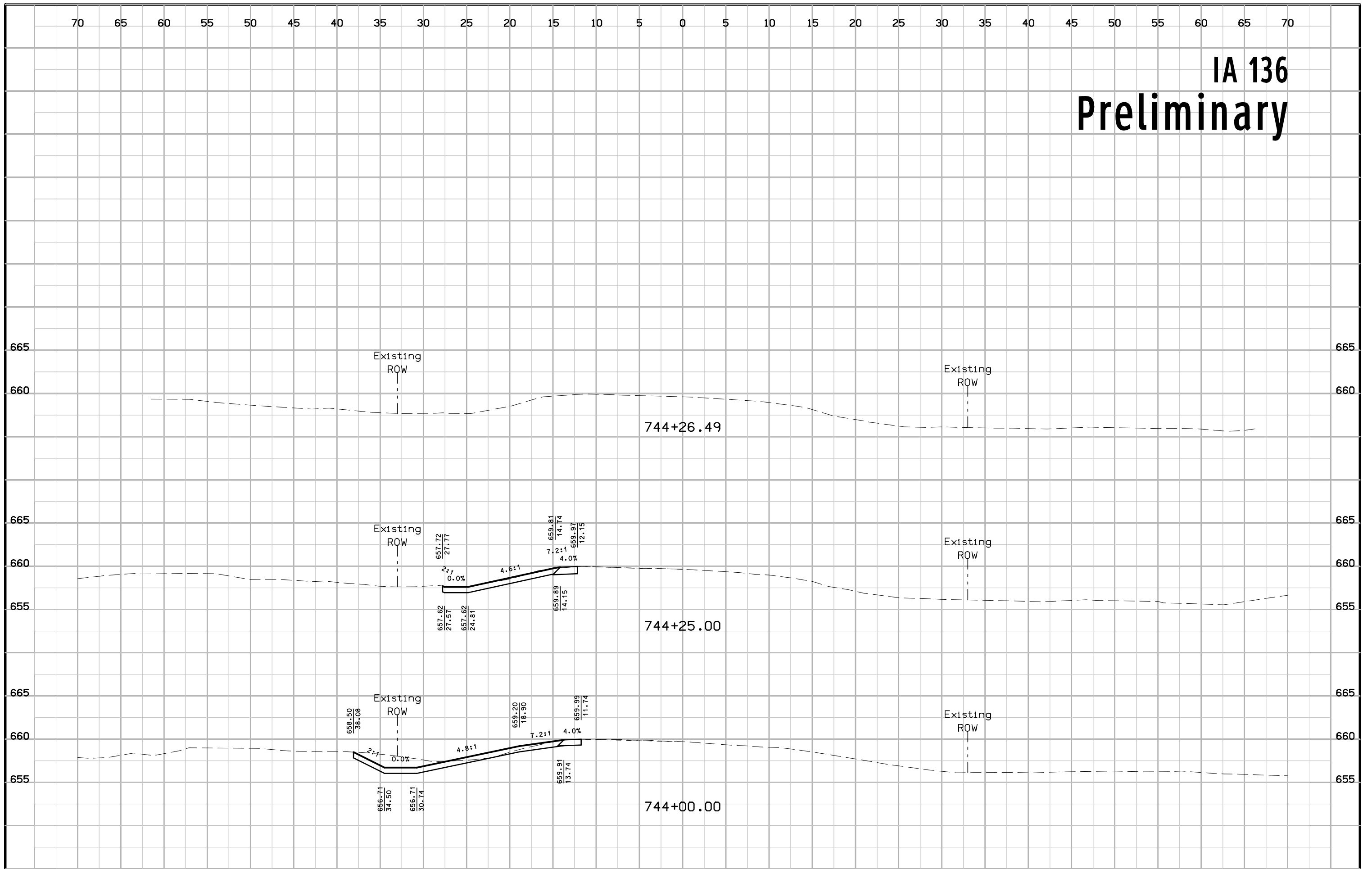
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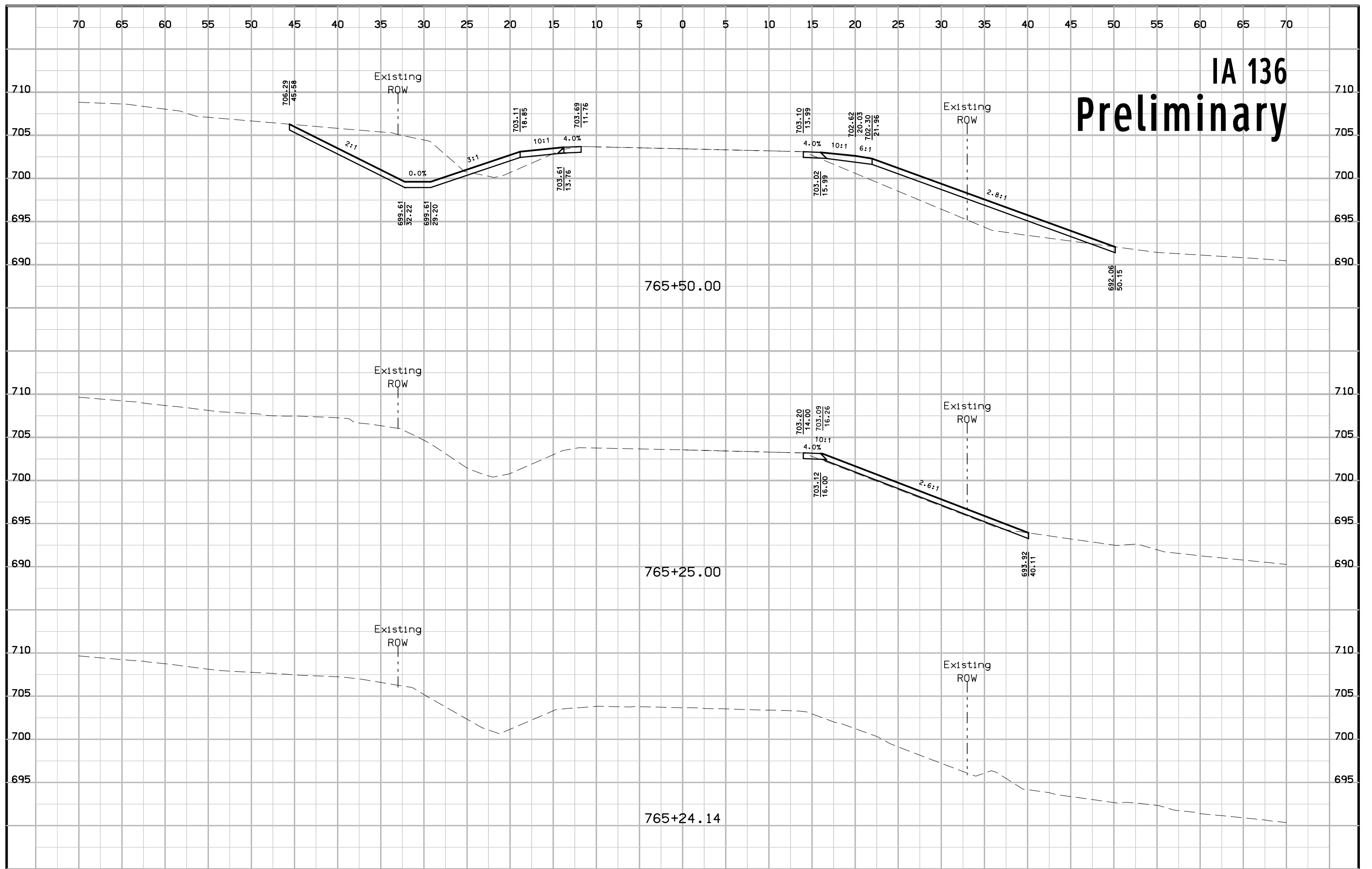
# IA 136 Preliminary



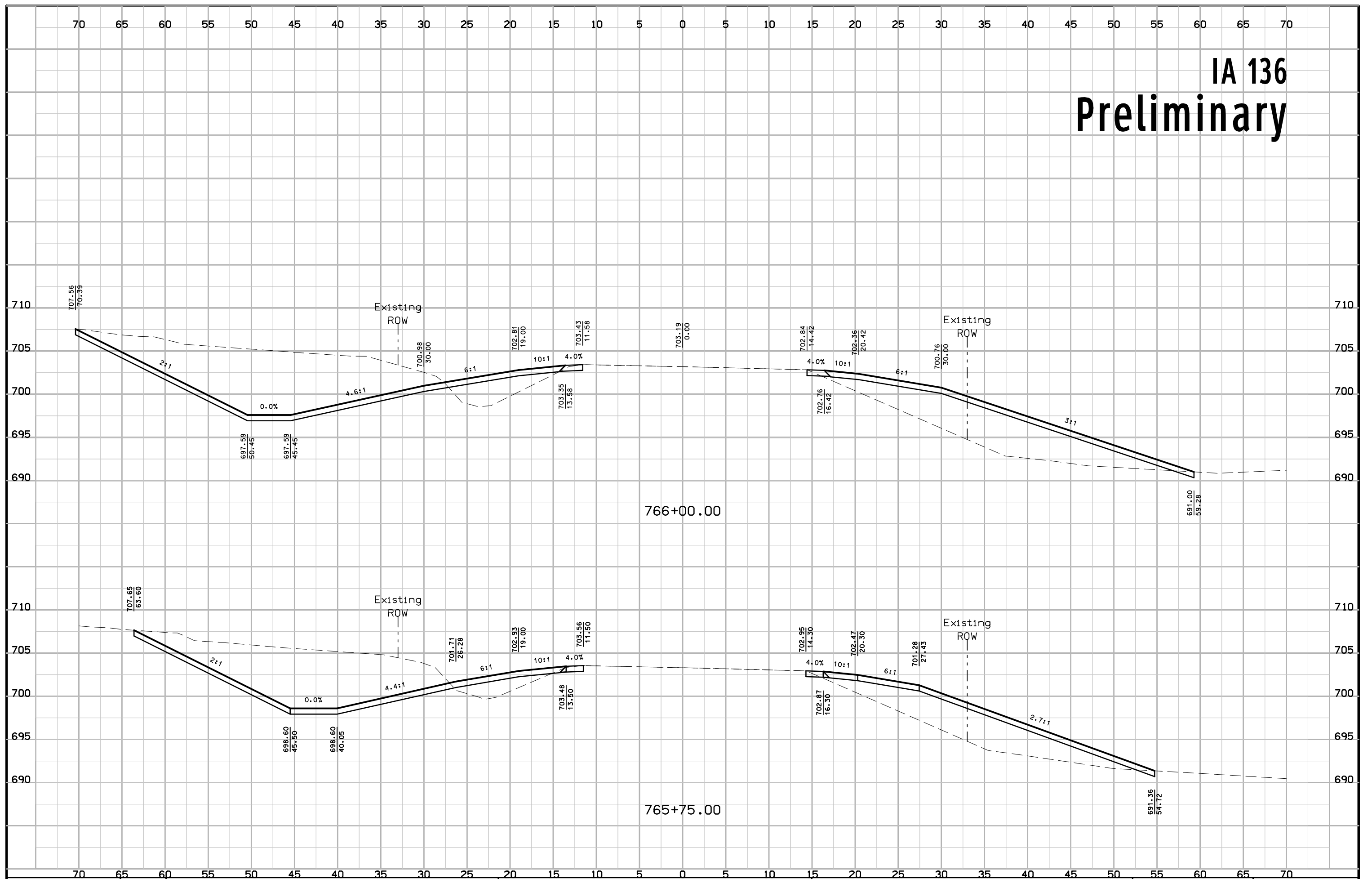
# IA 136 Preliminary



# IA 136 Preliminary

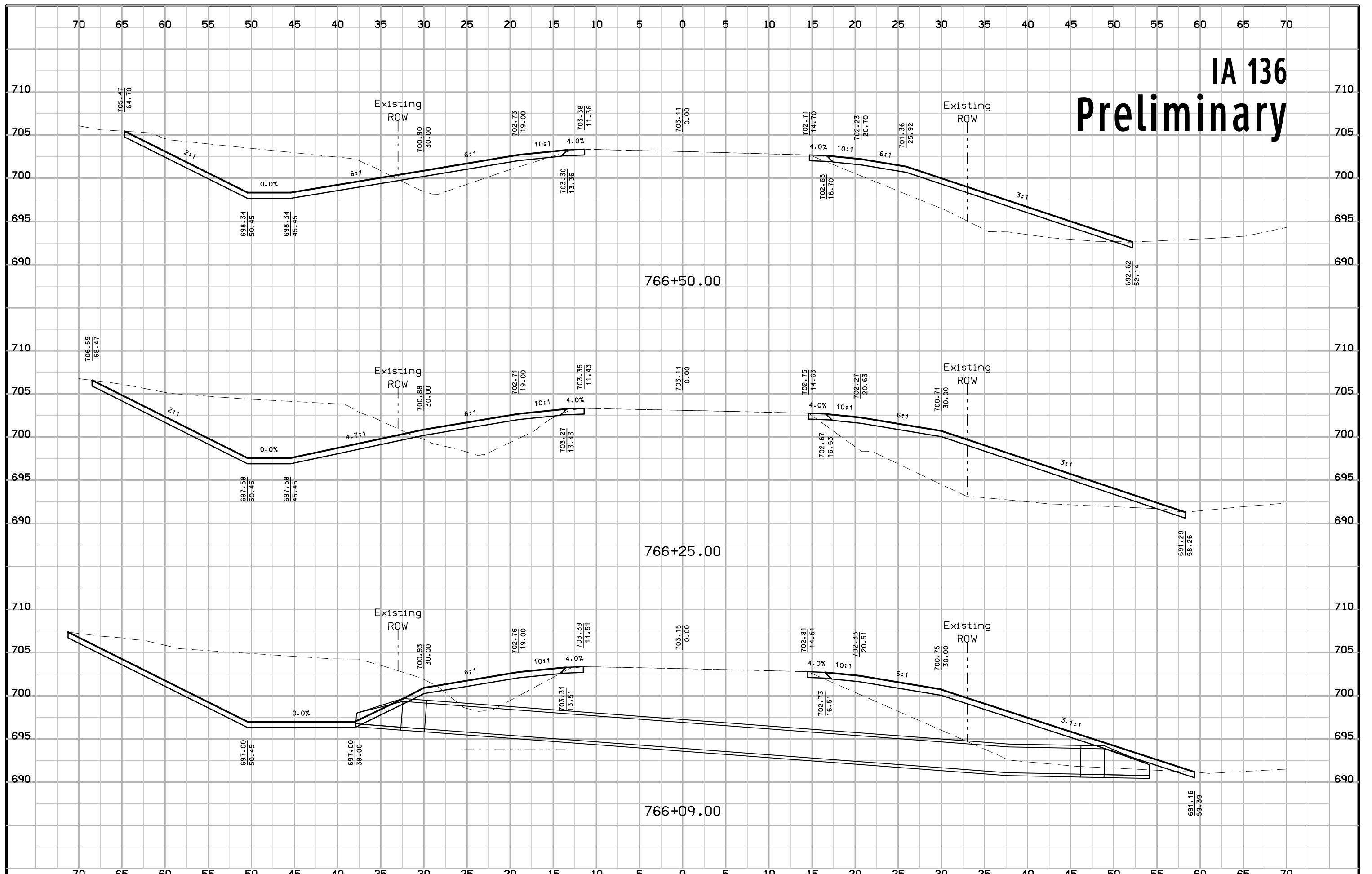


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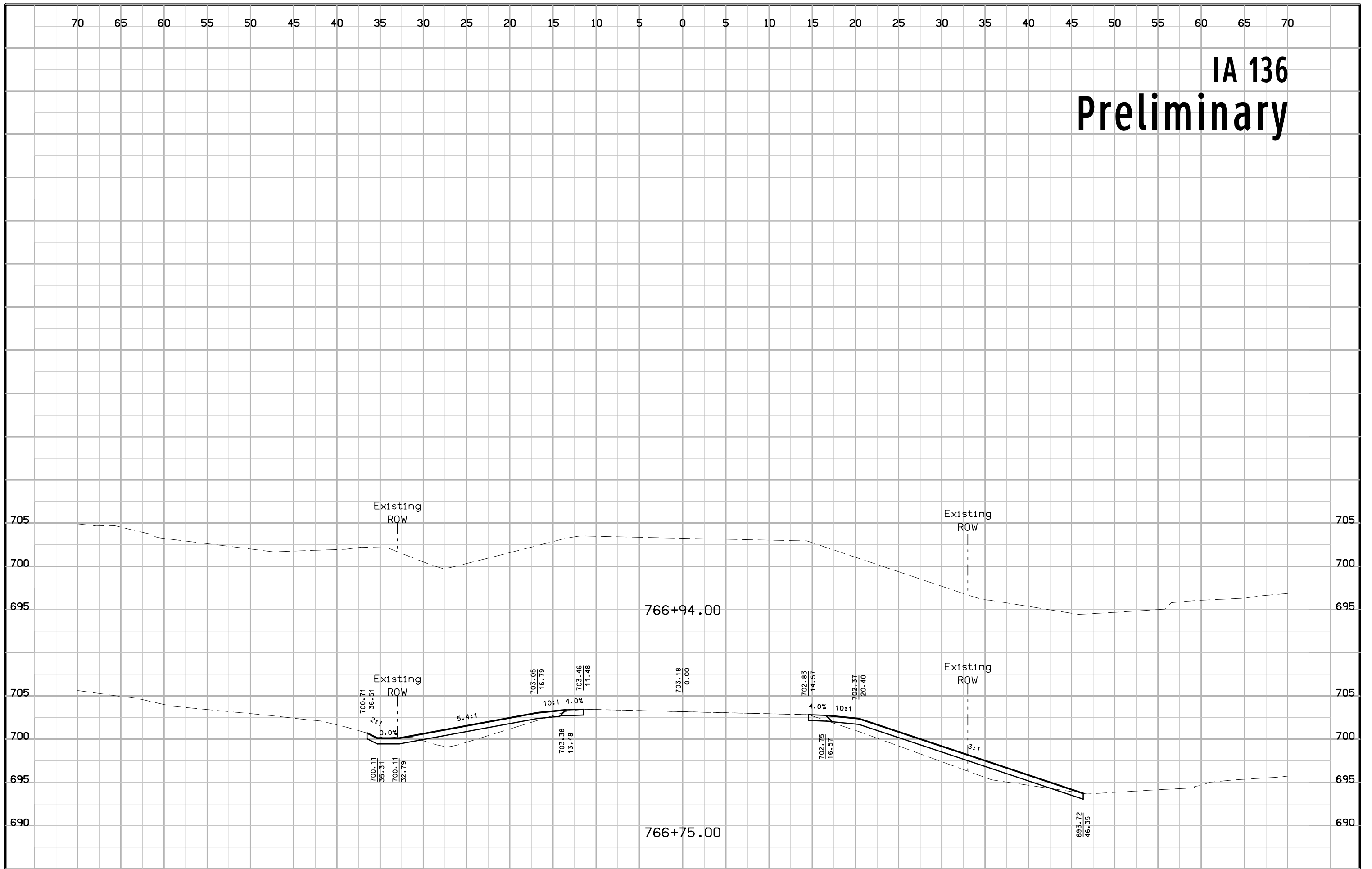




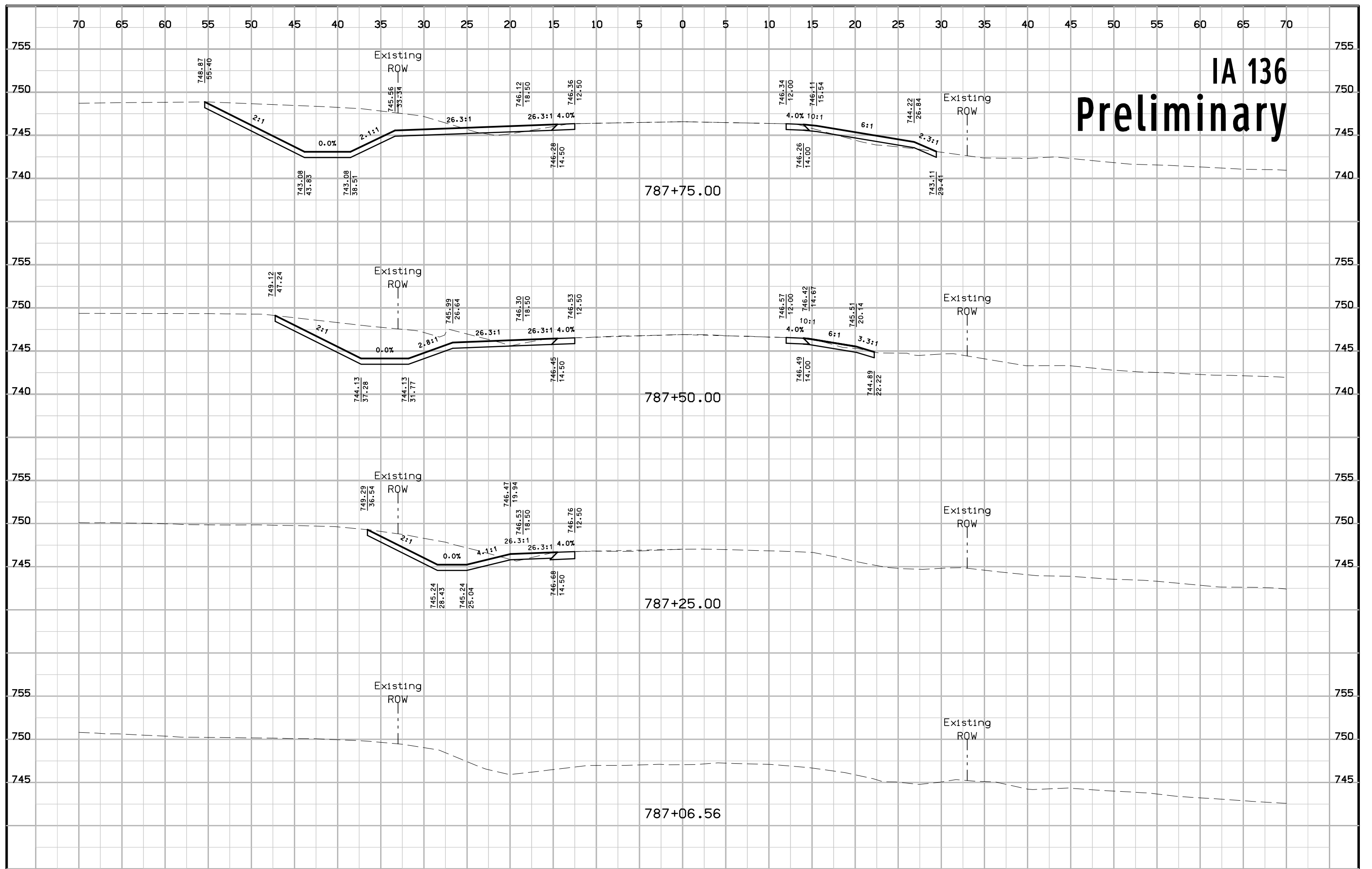
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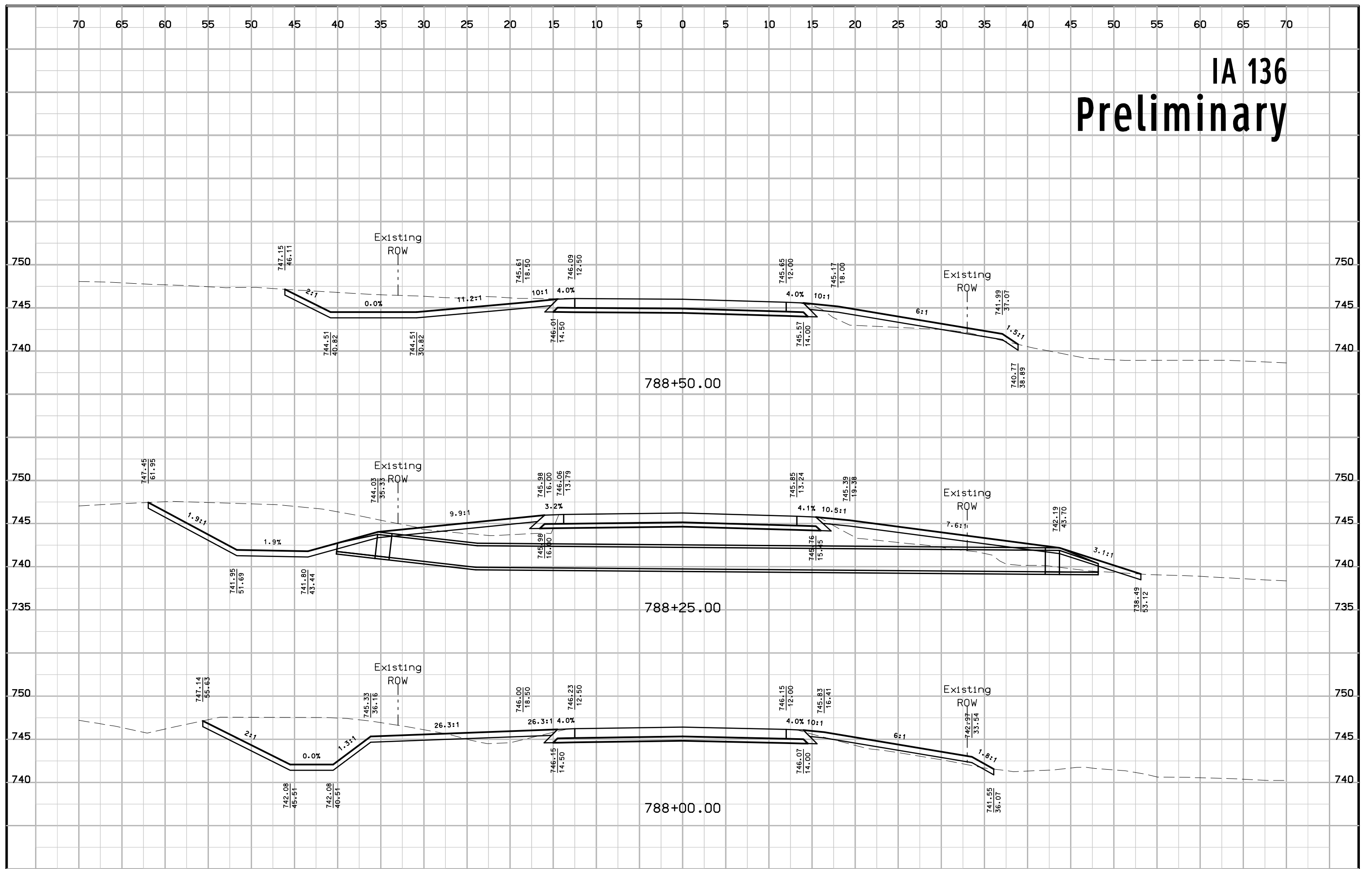
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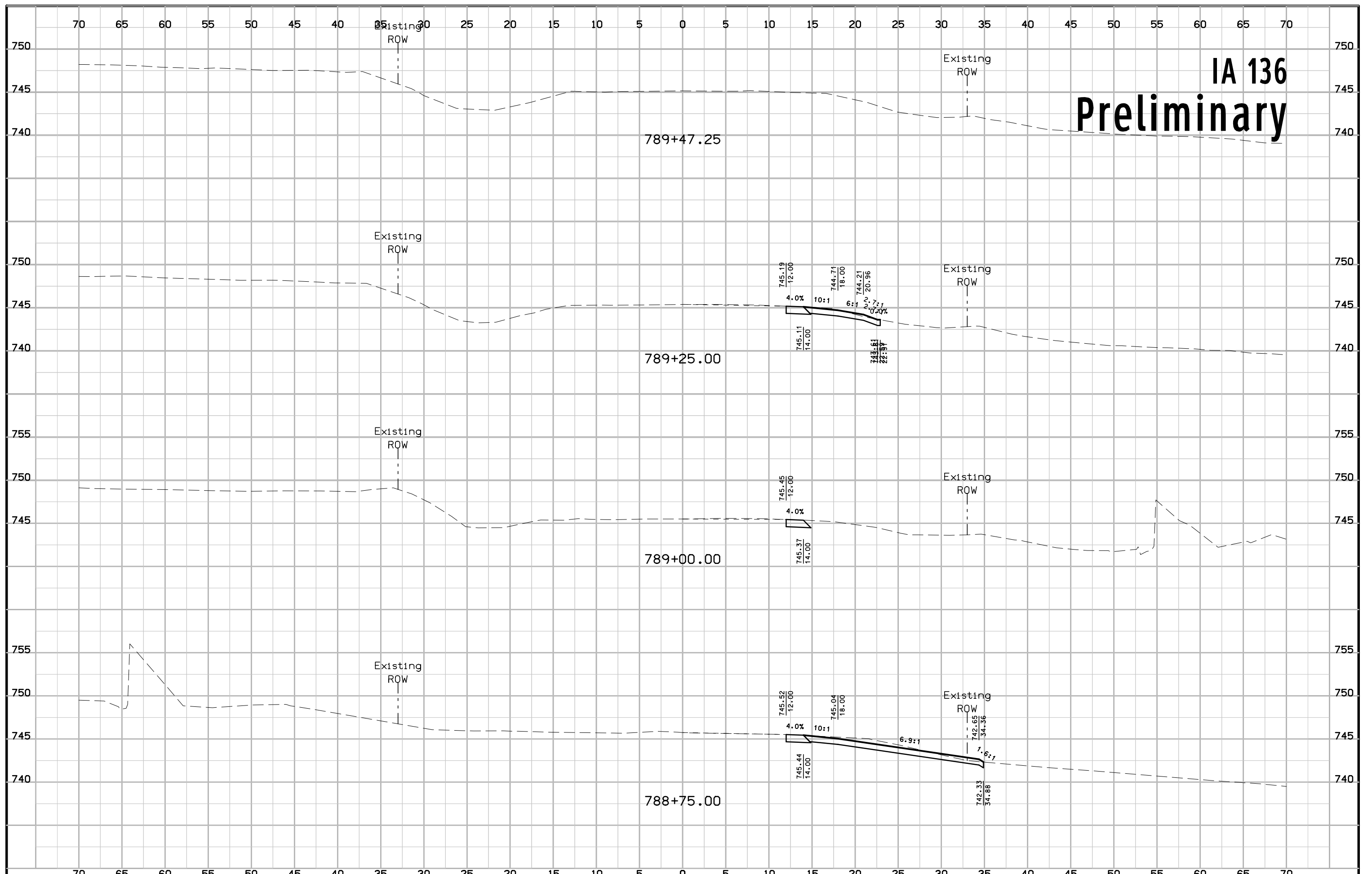
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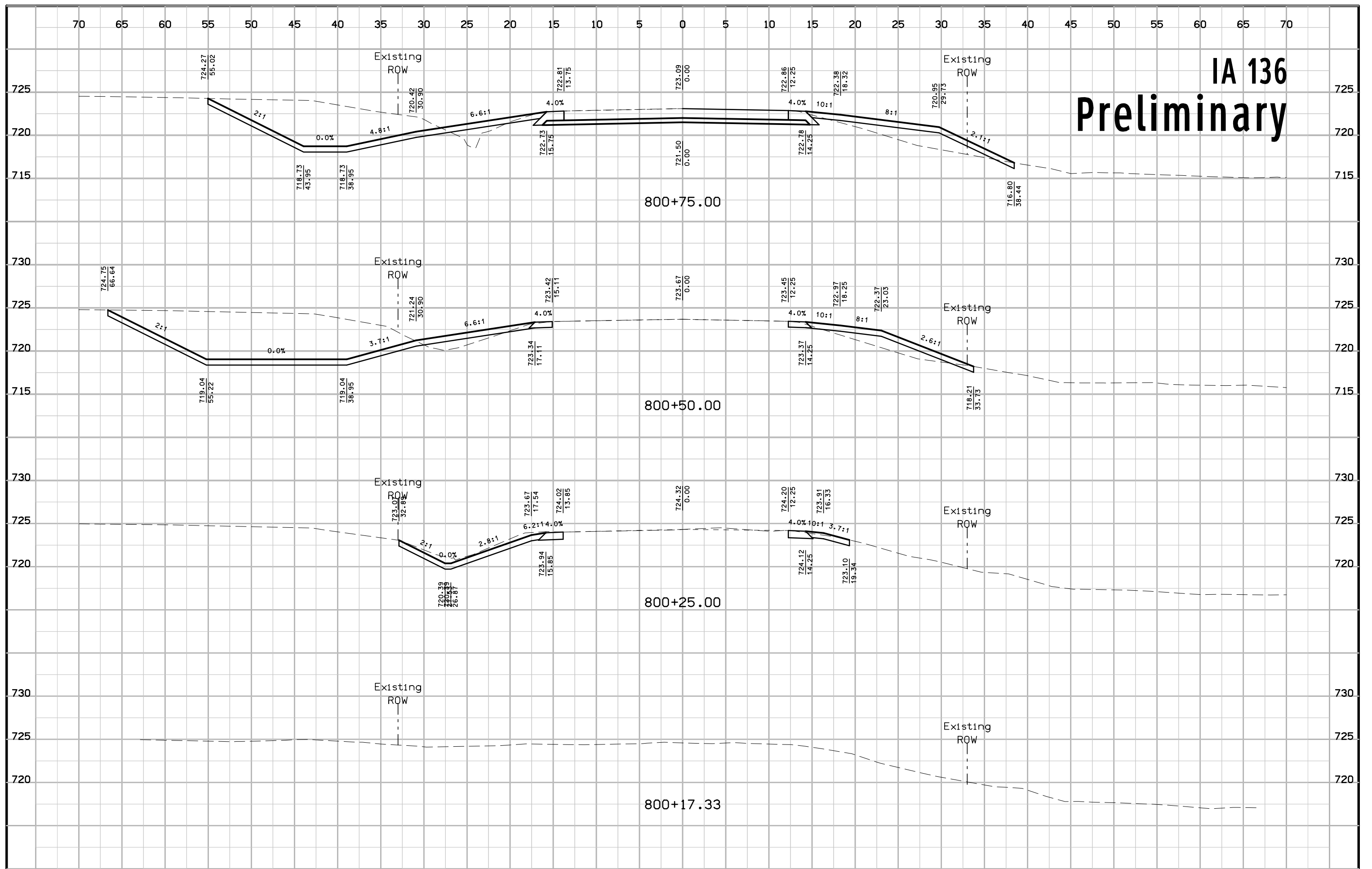
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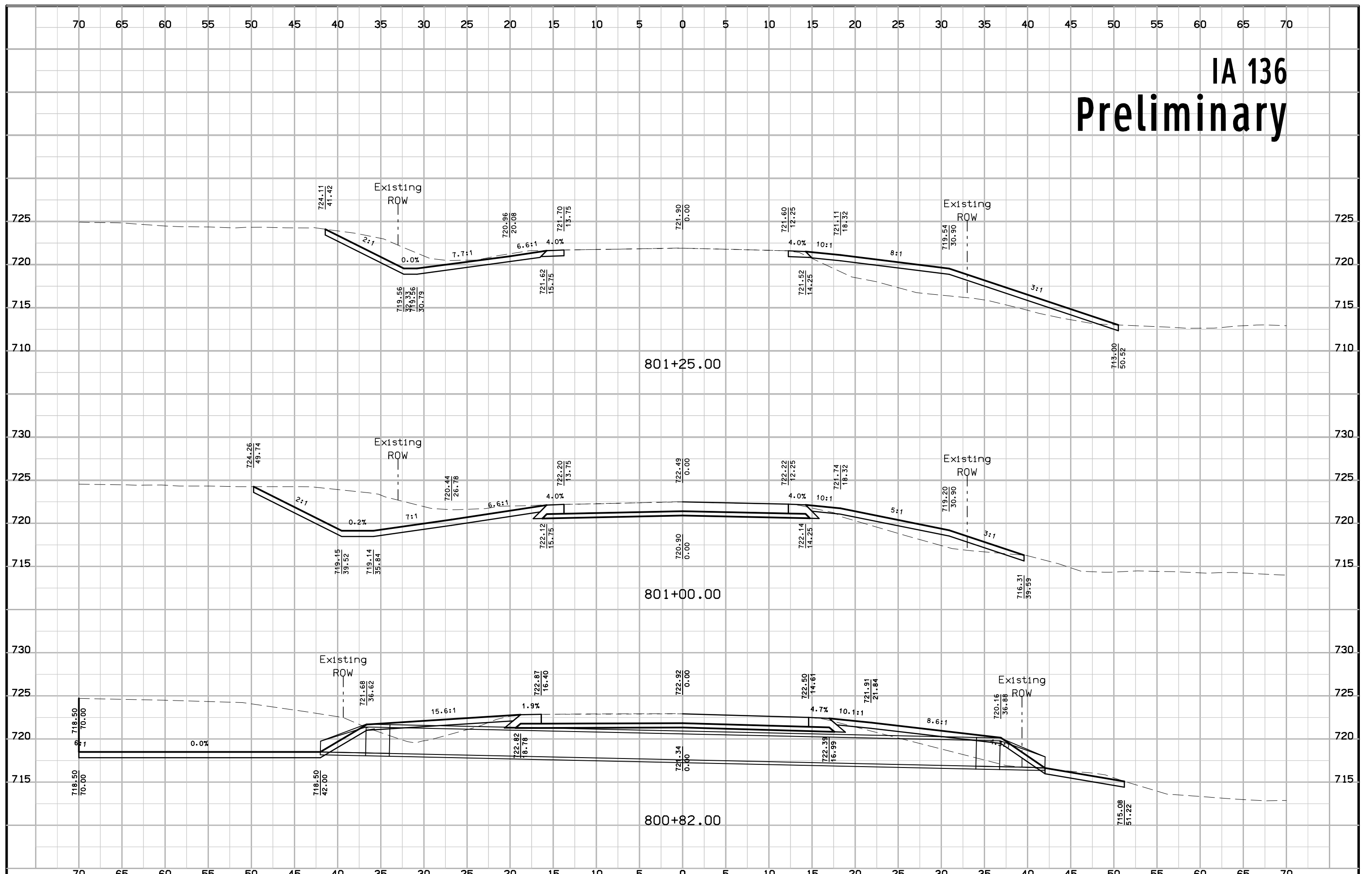
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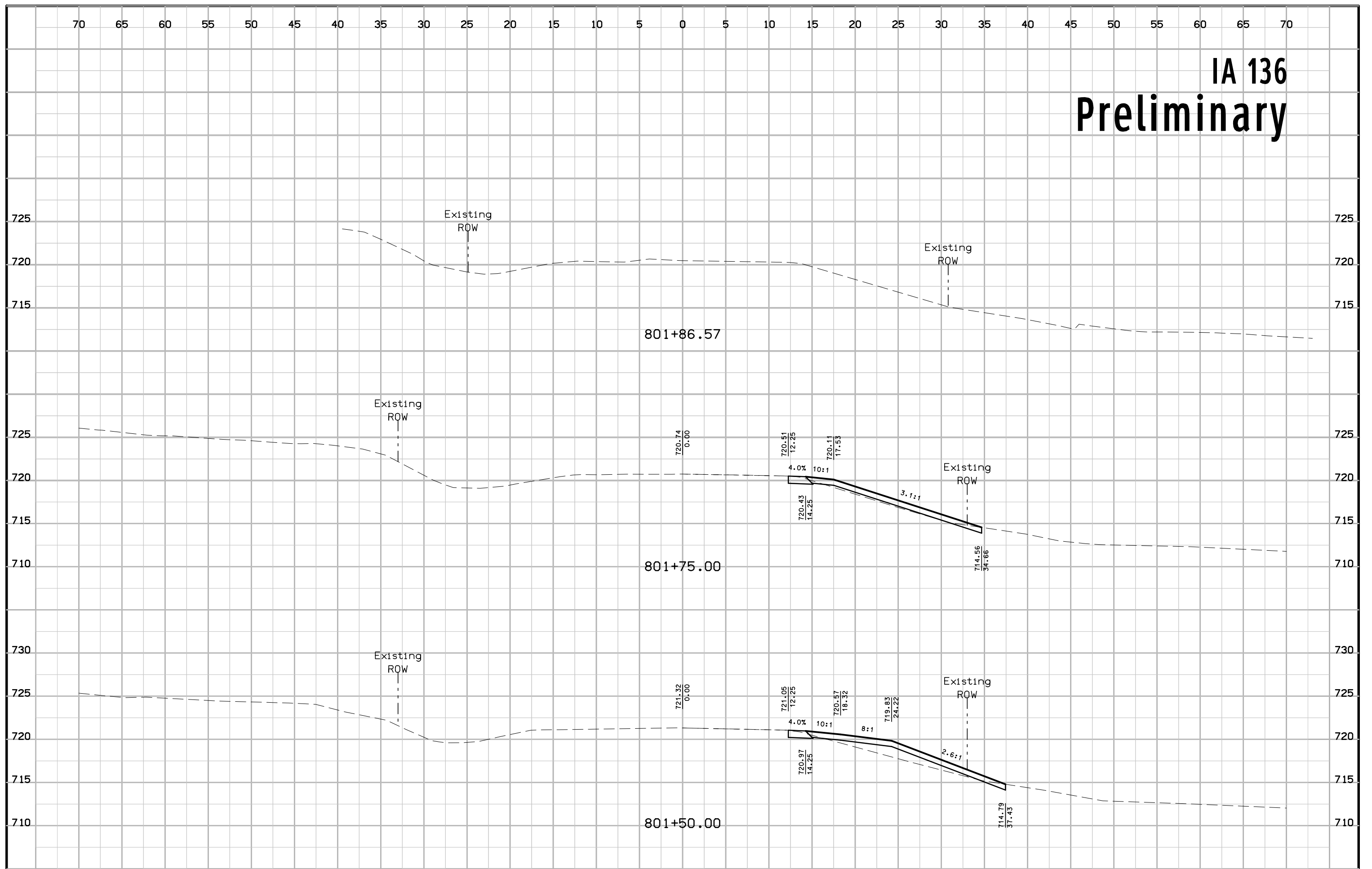
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# IA 136 Preliminary

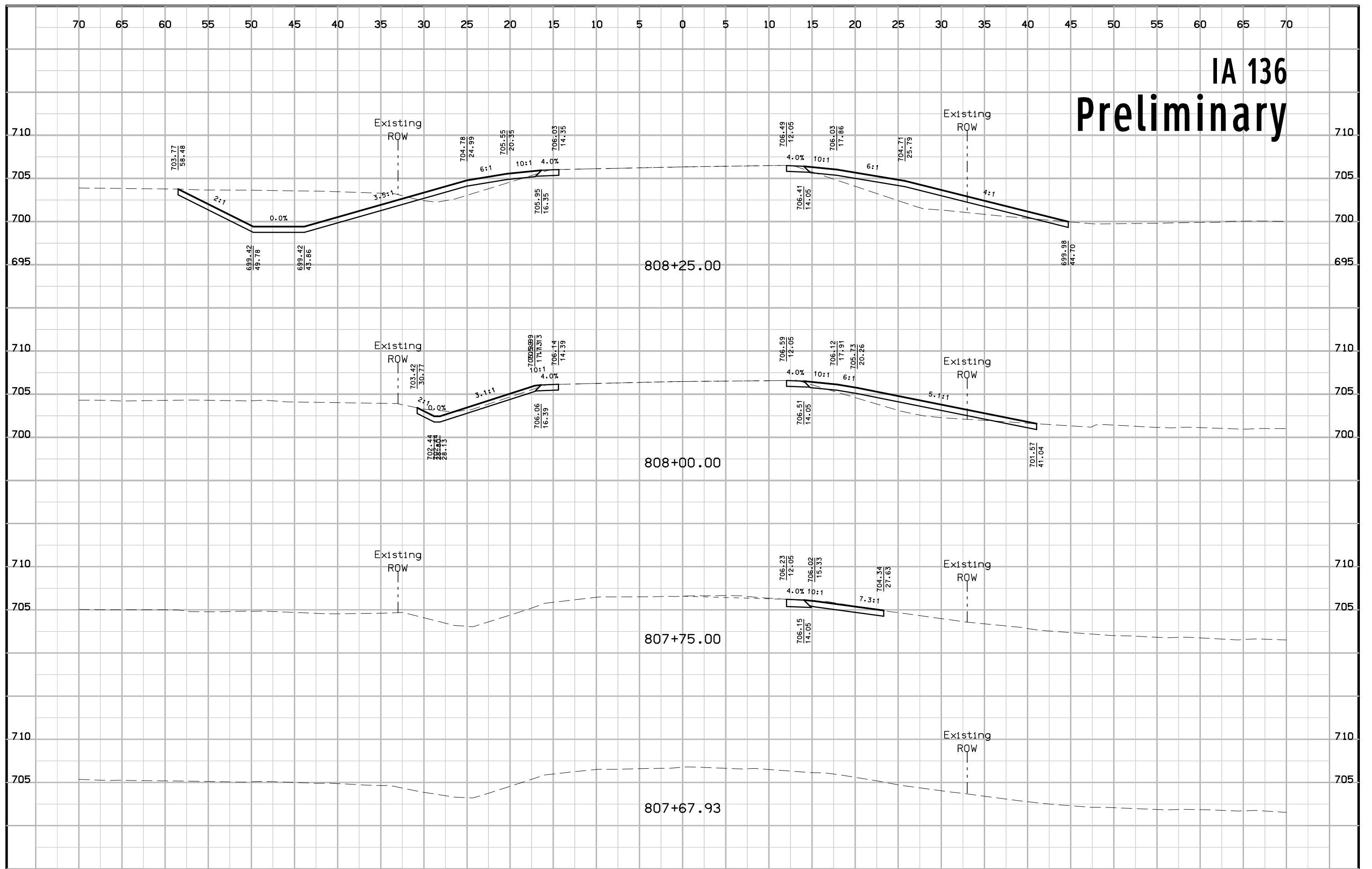


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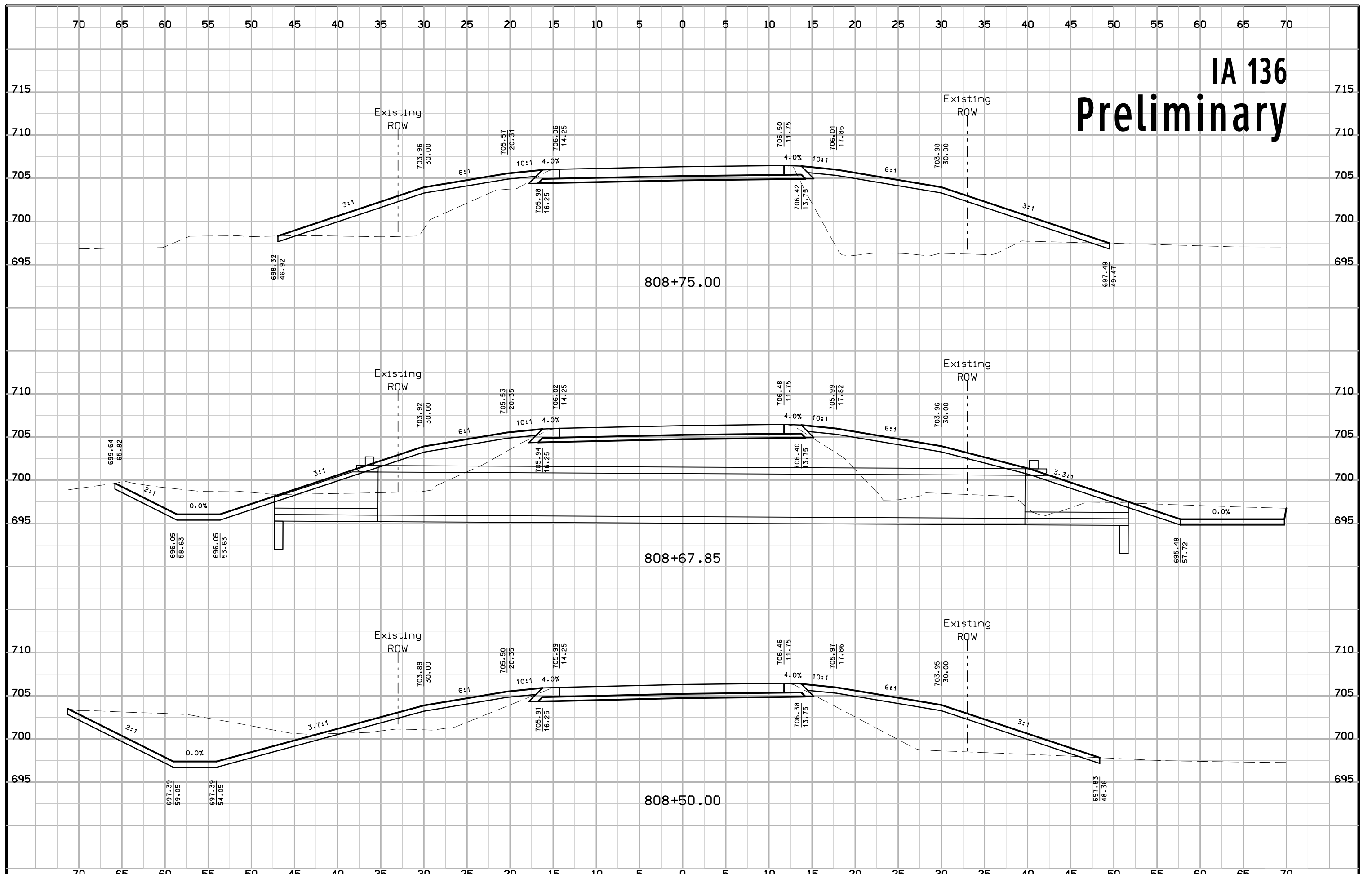




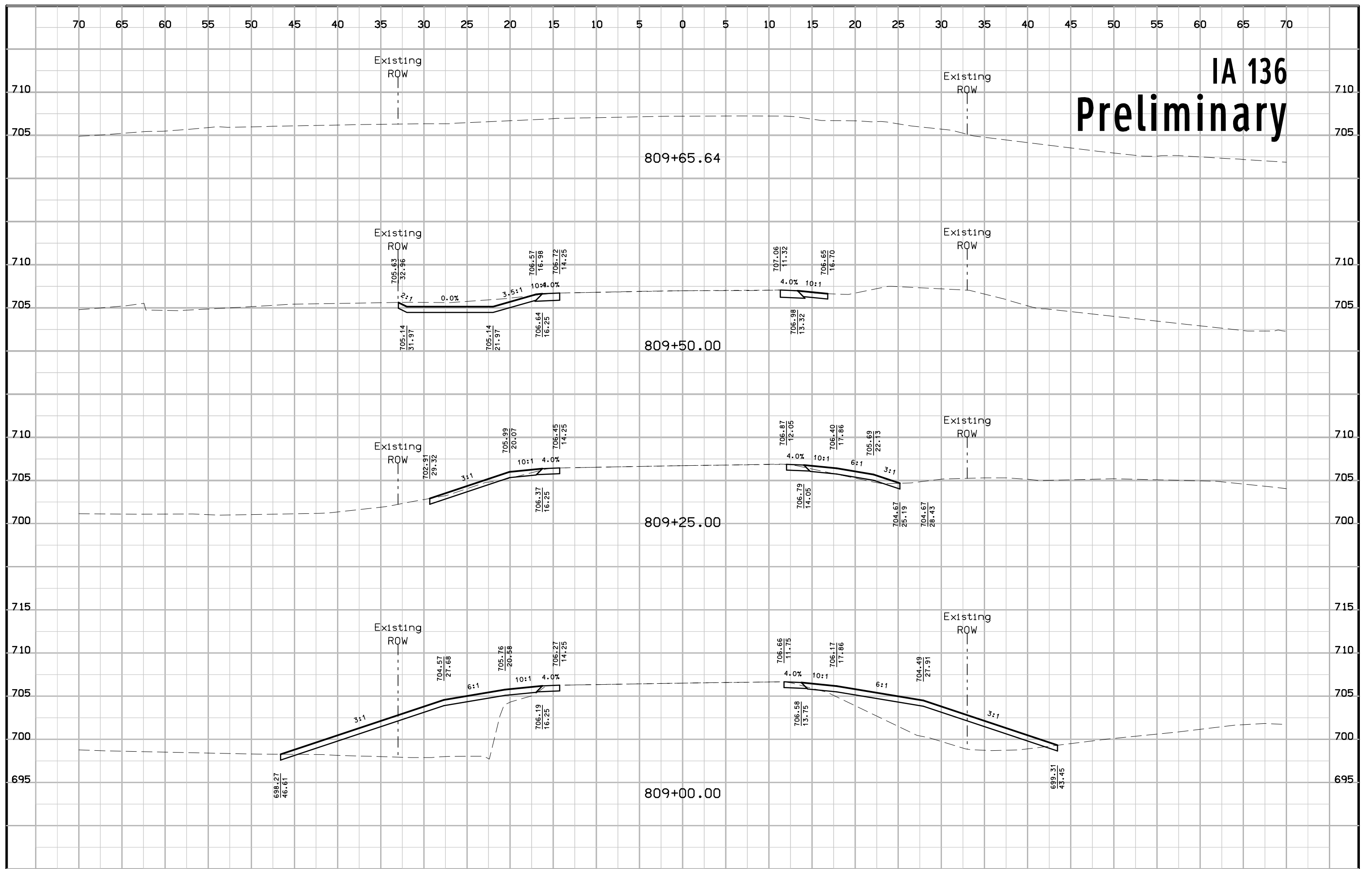
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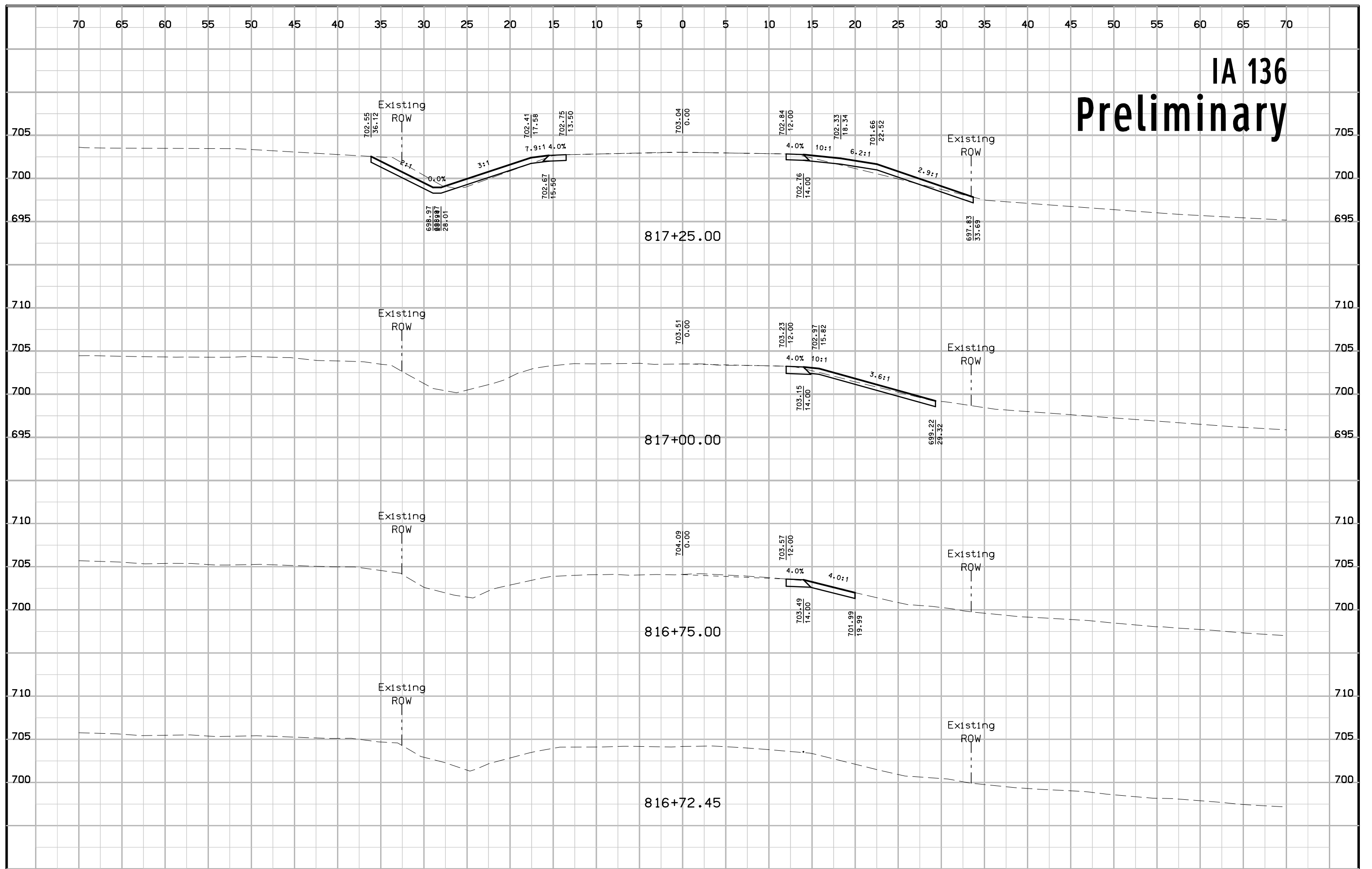
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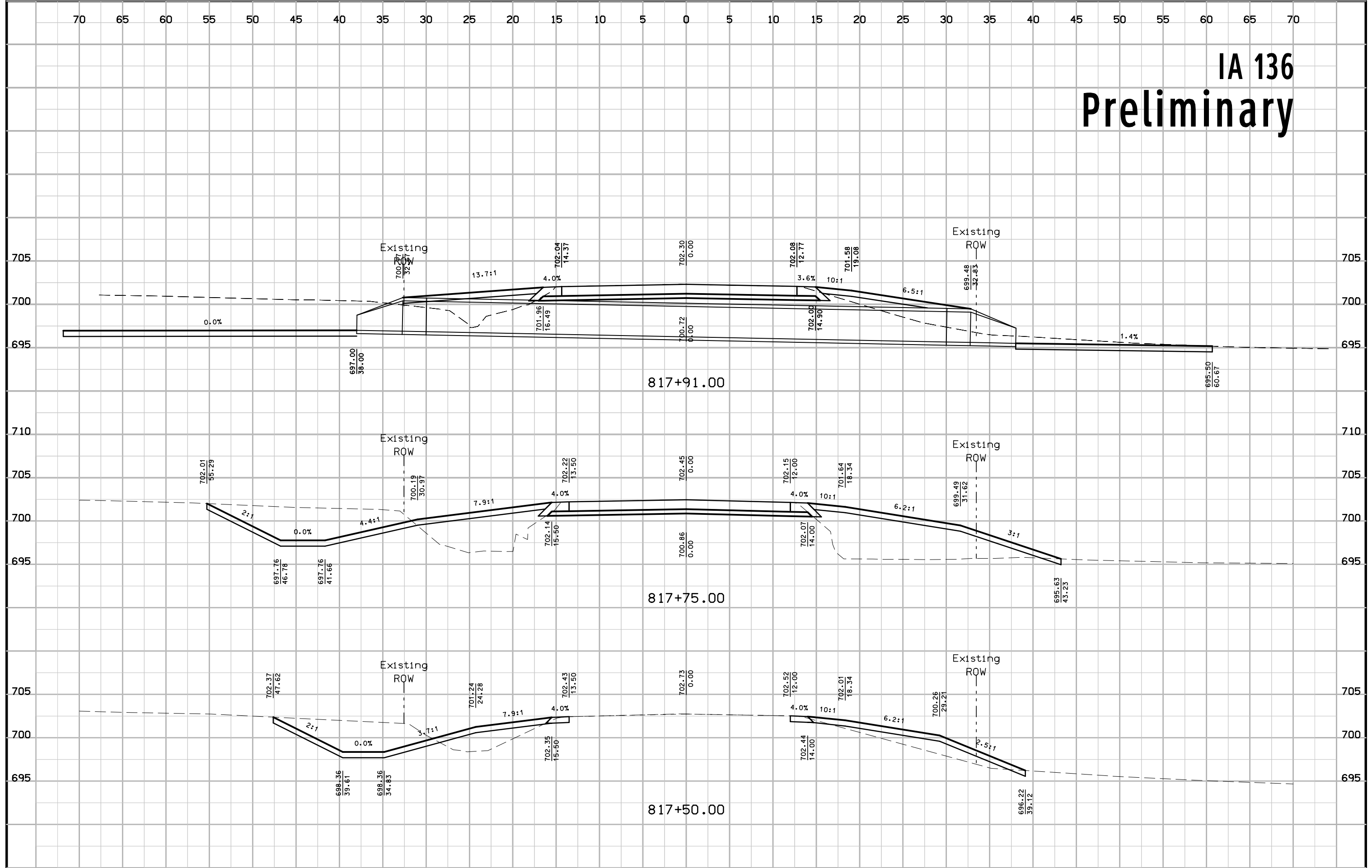
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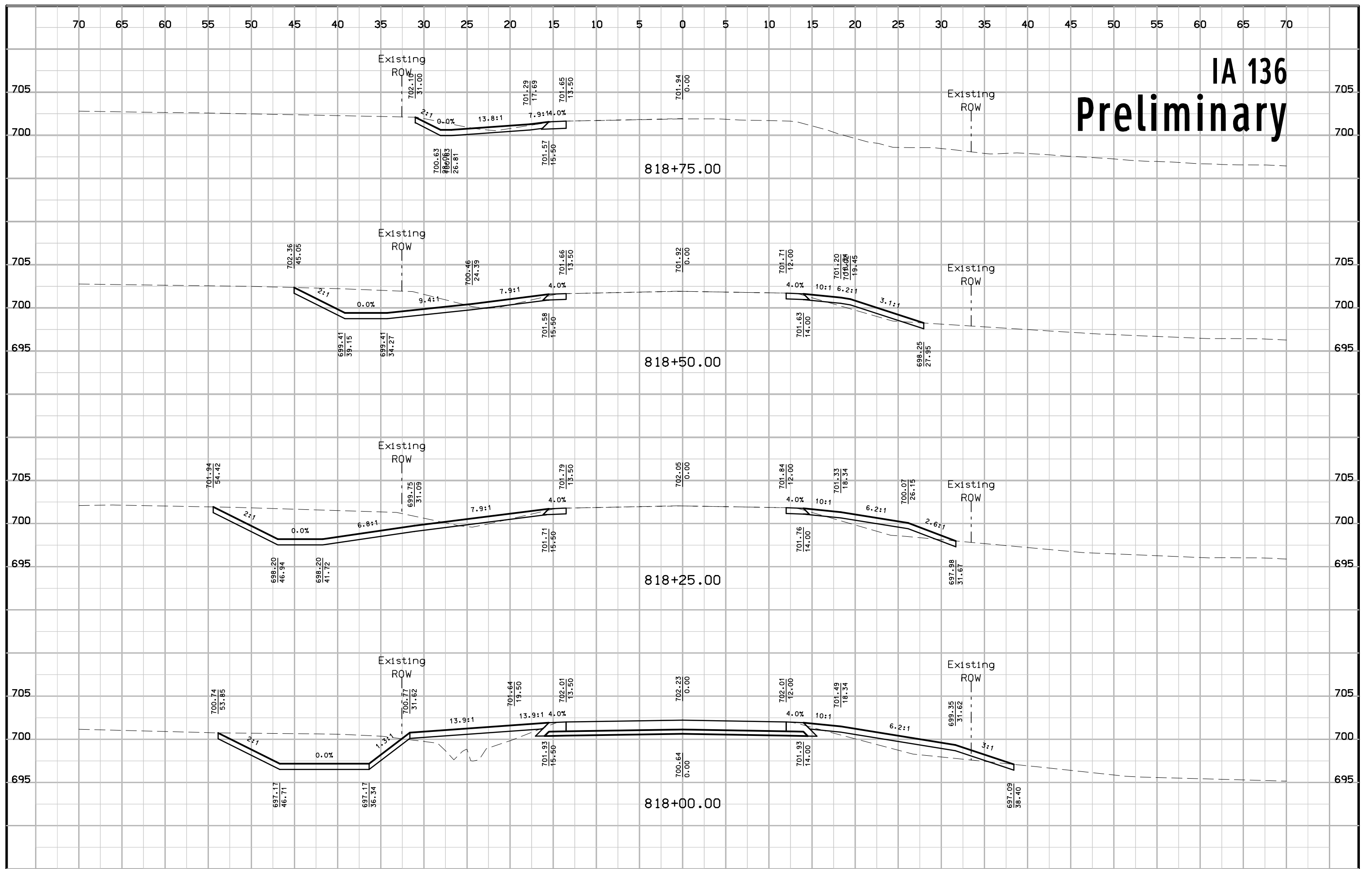
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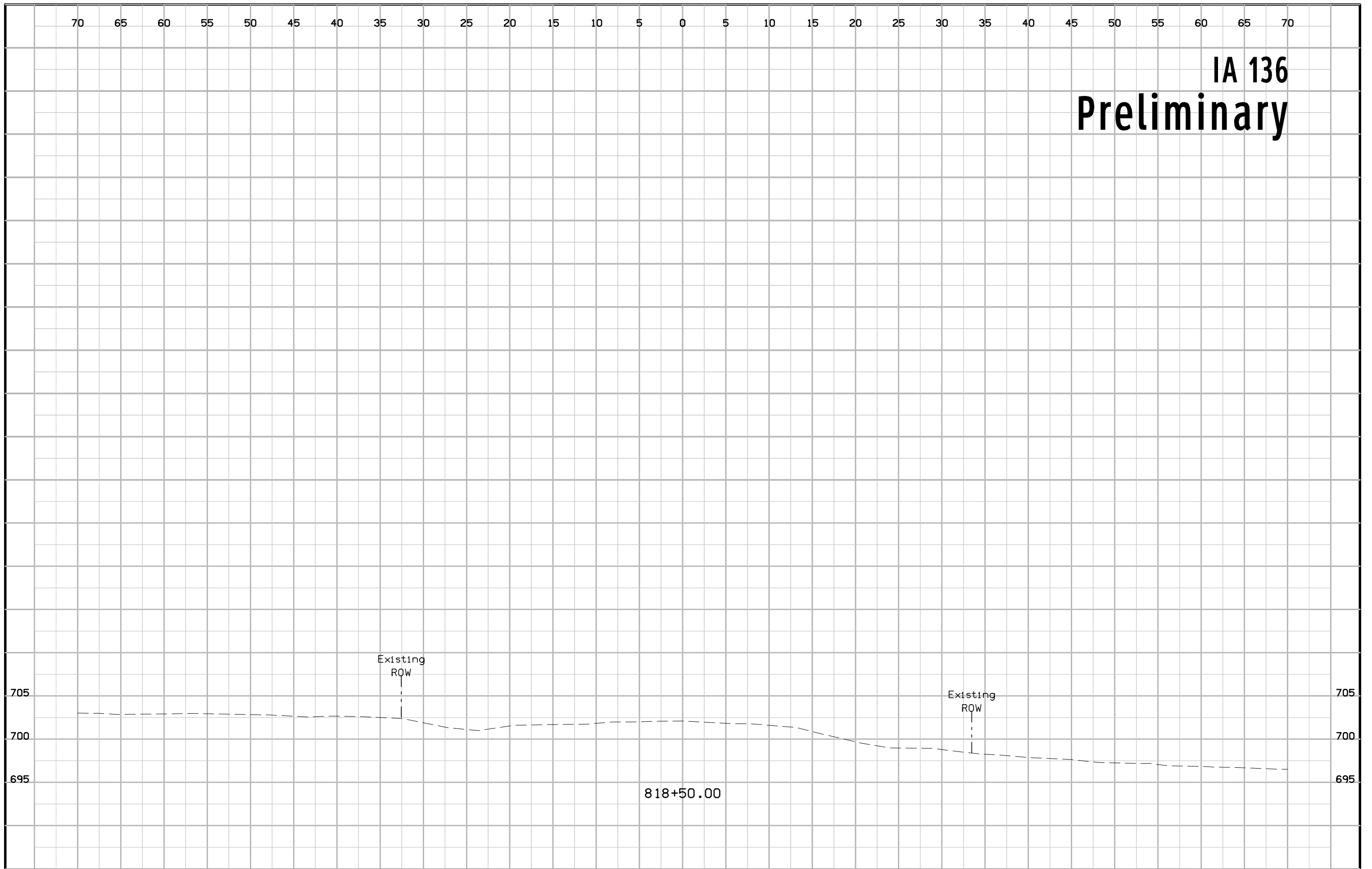
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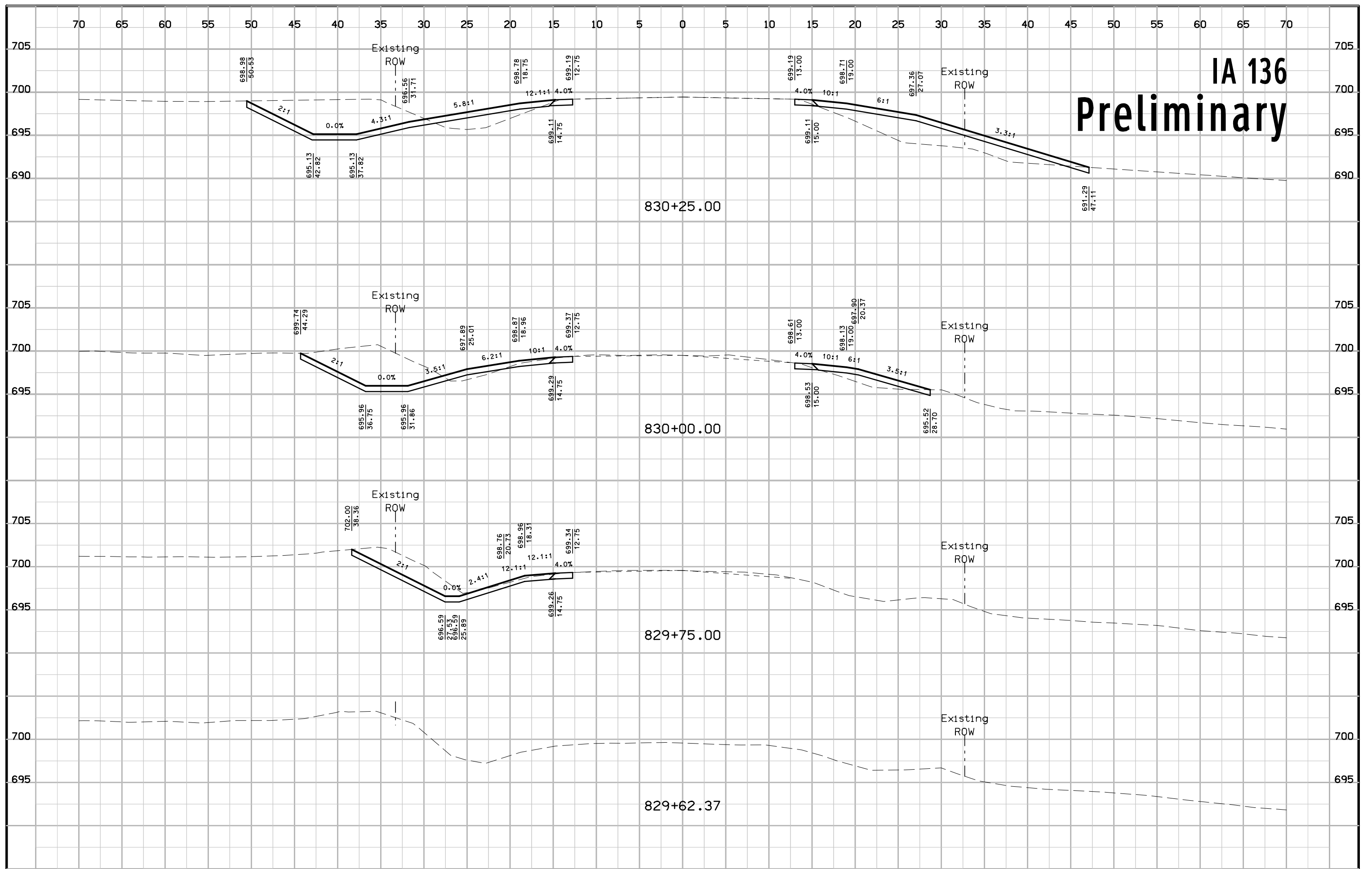
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# IA 136 Preliminary

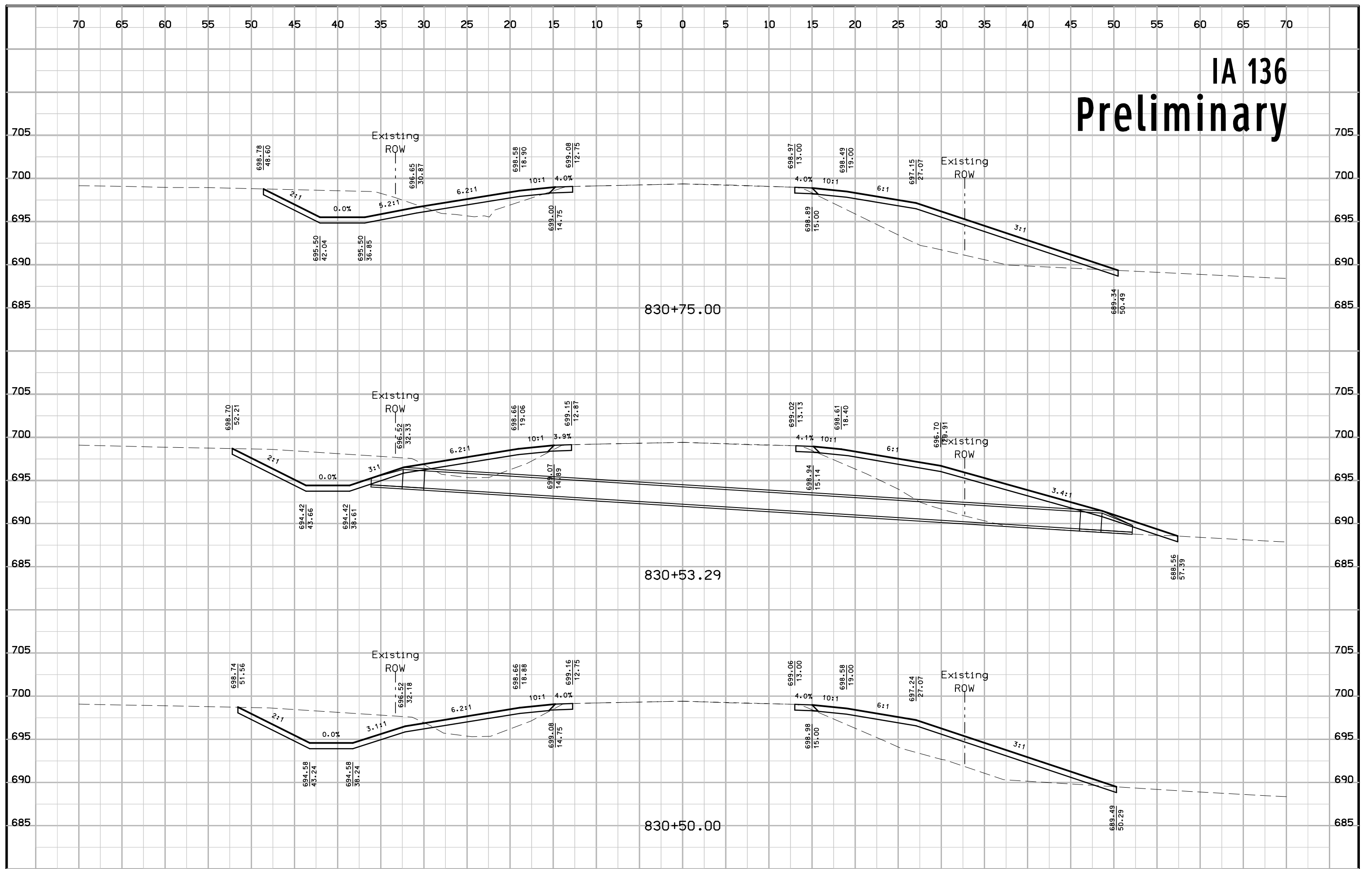


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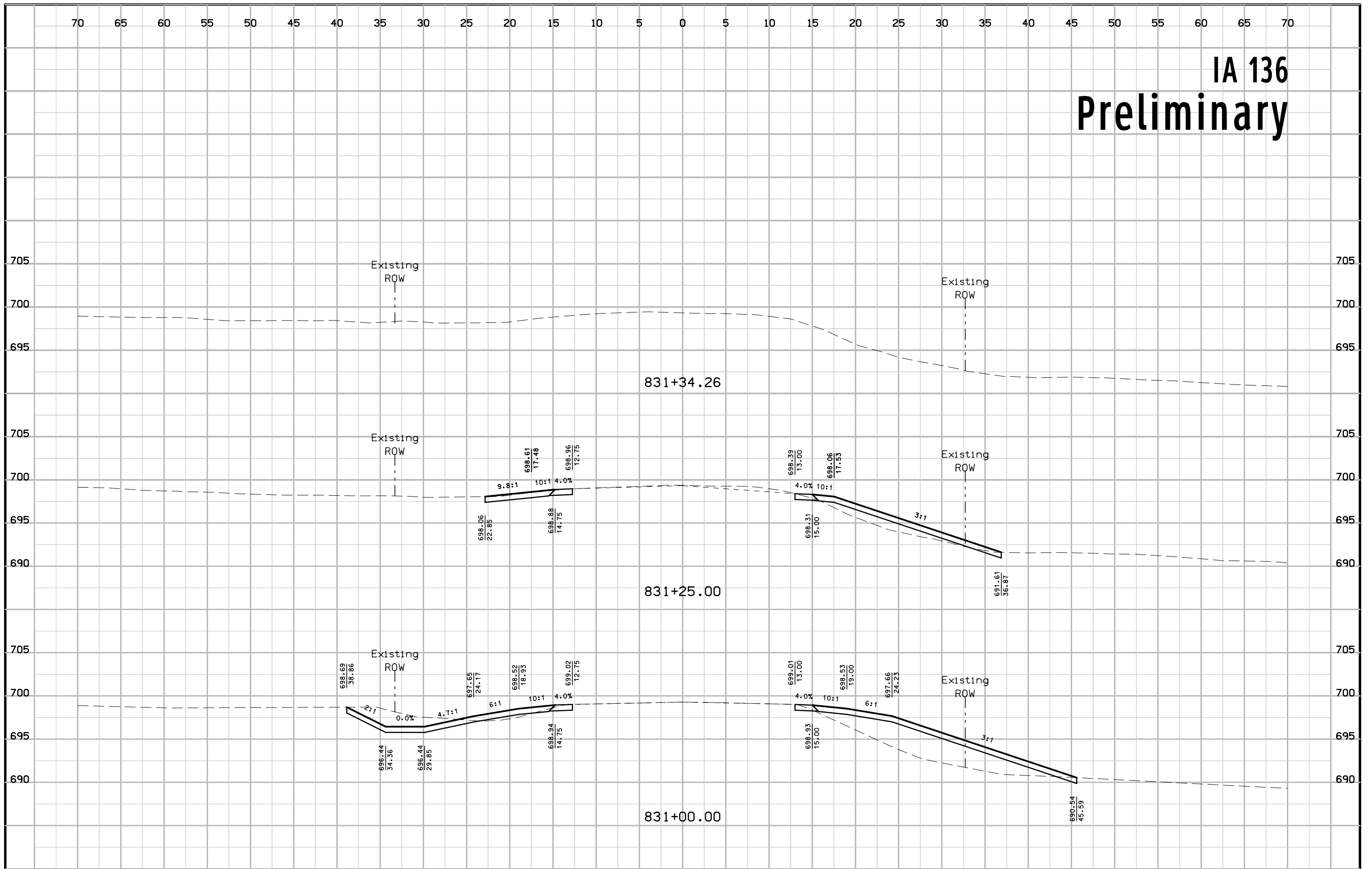




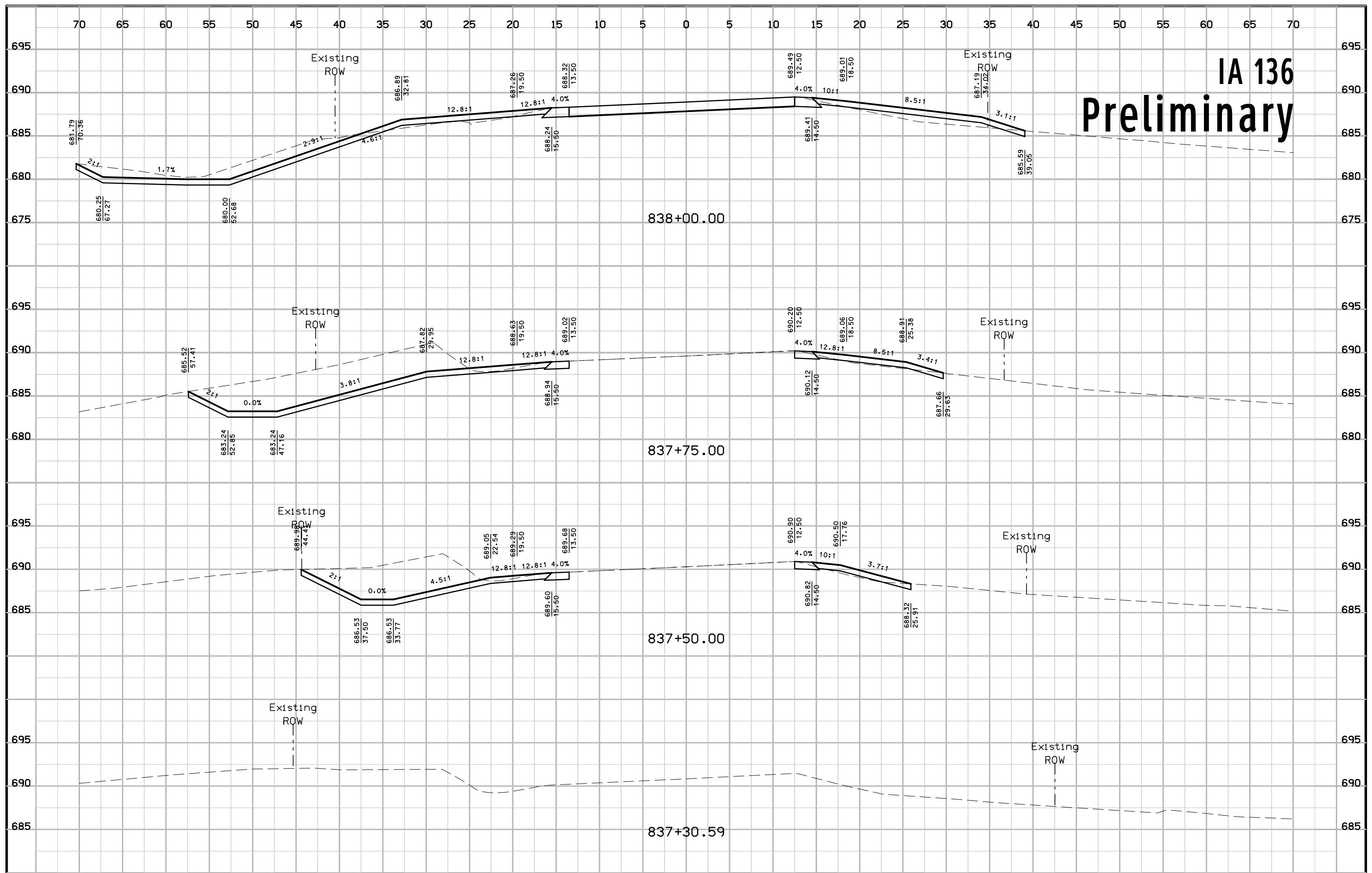
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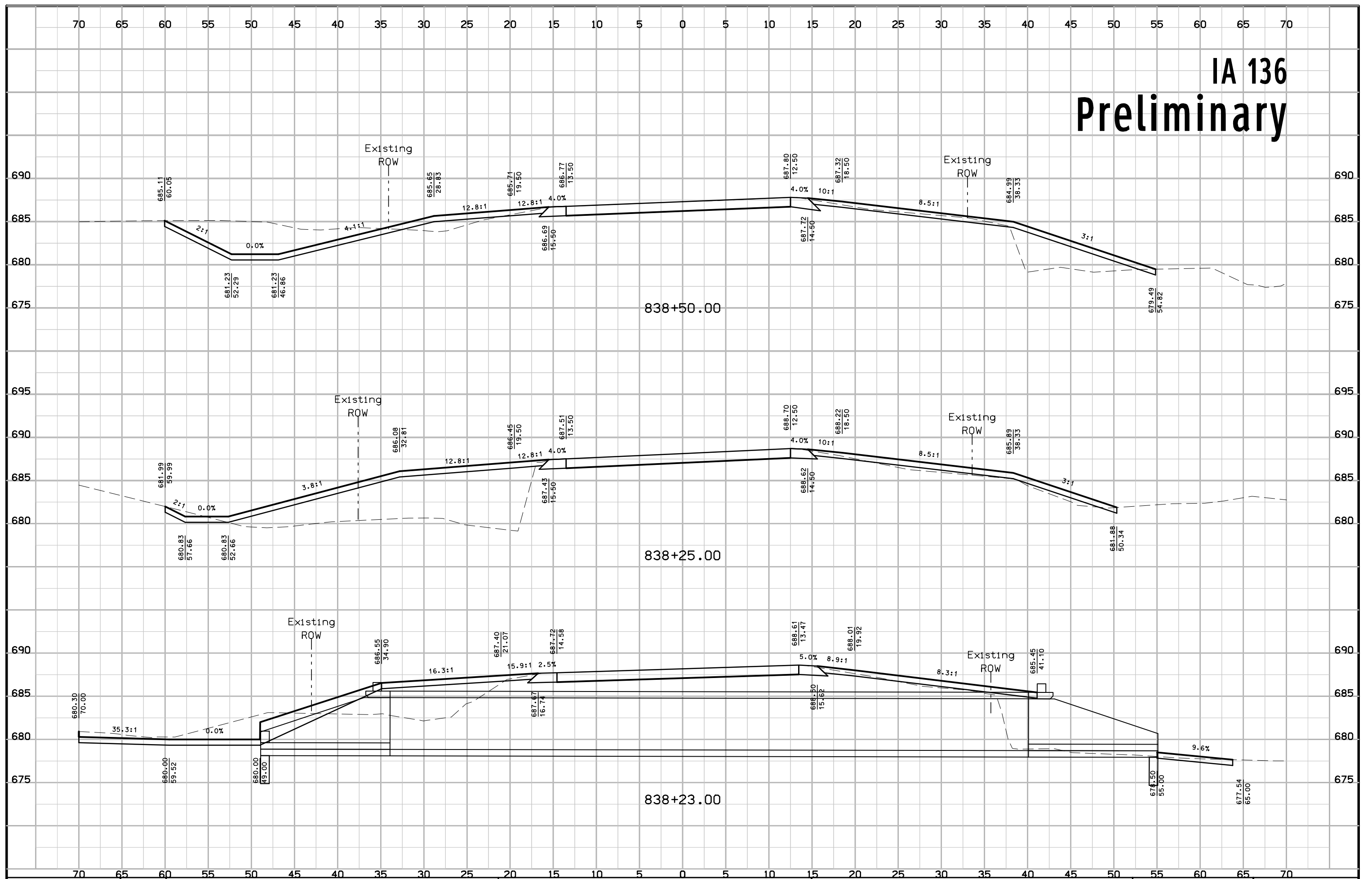
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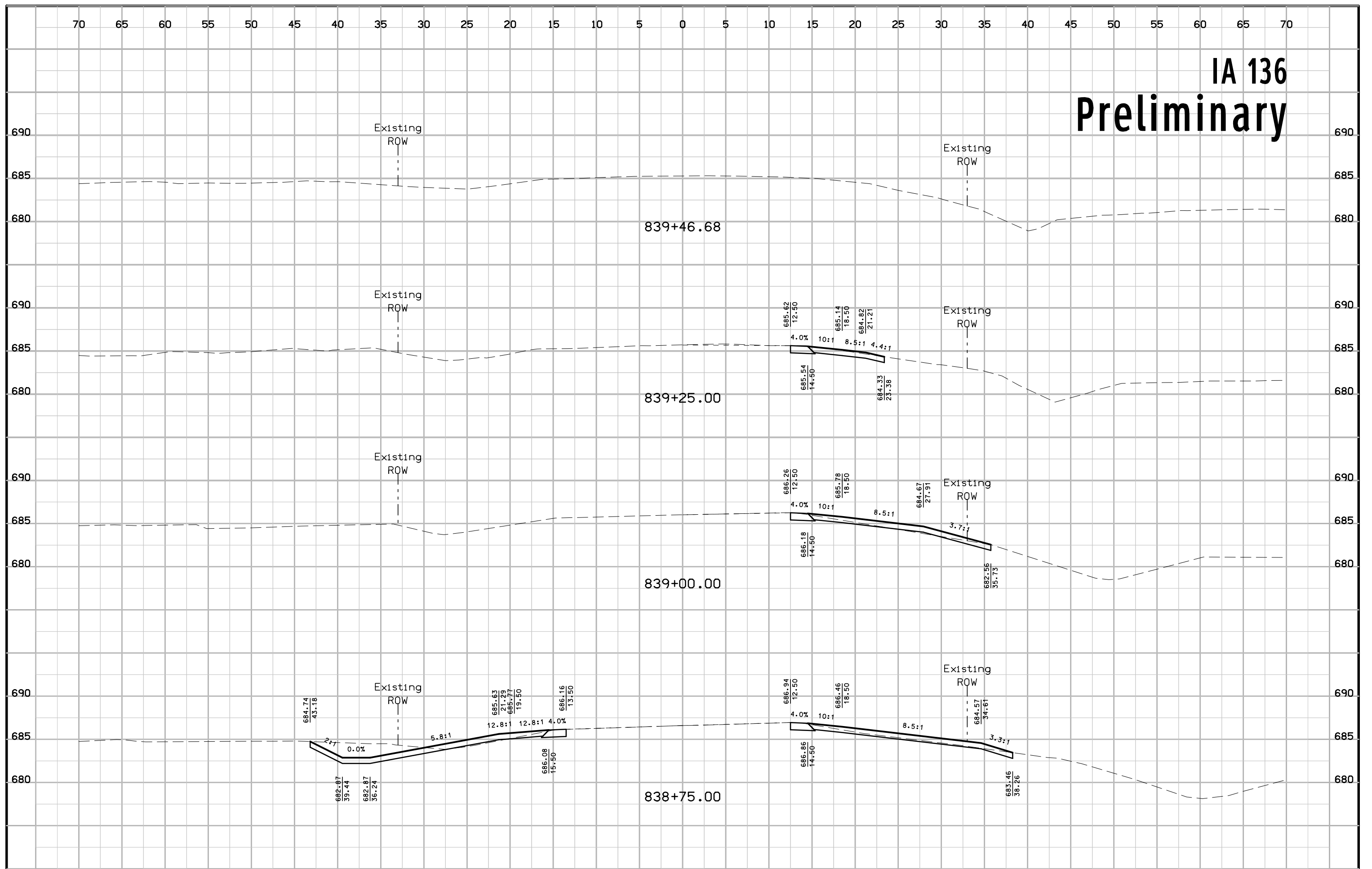
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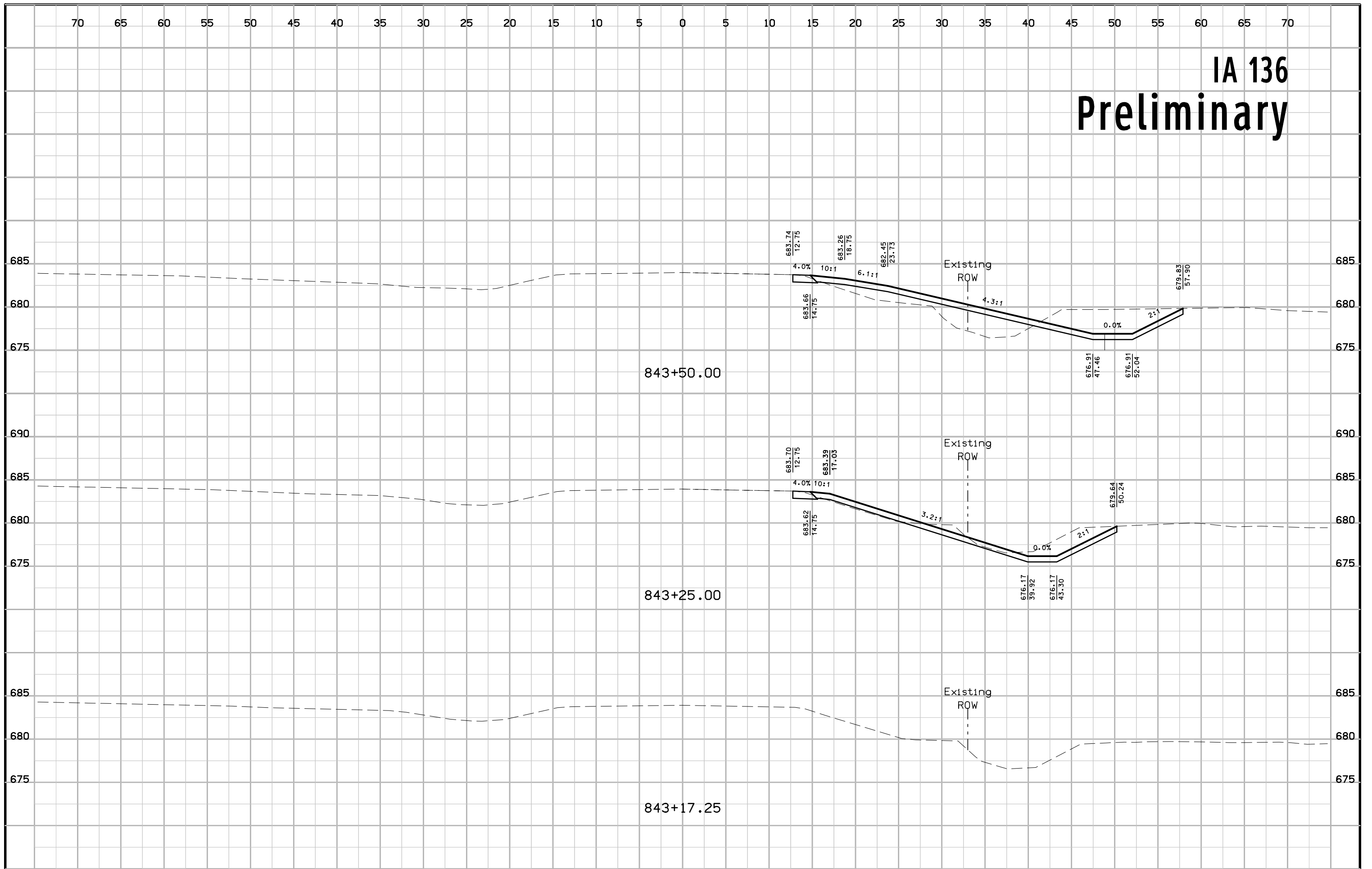
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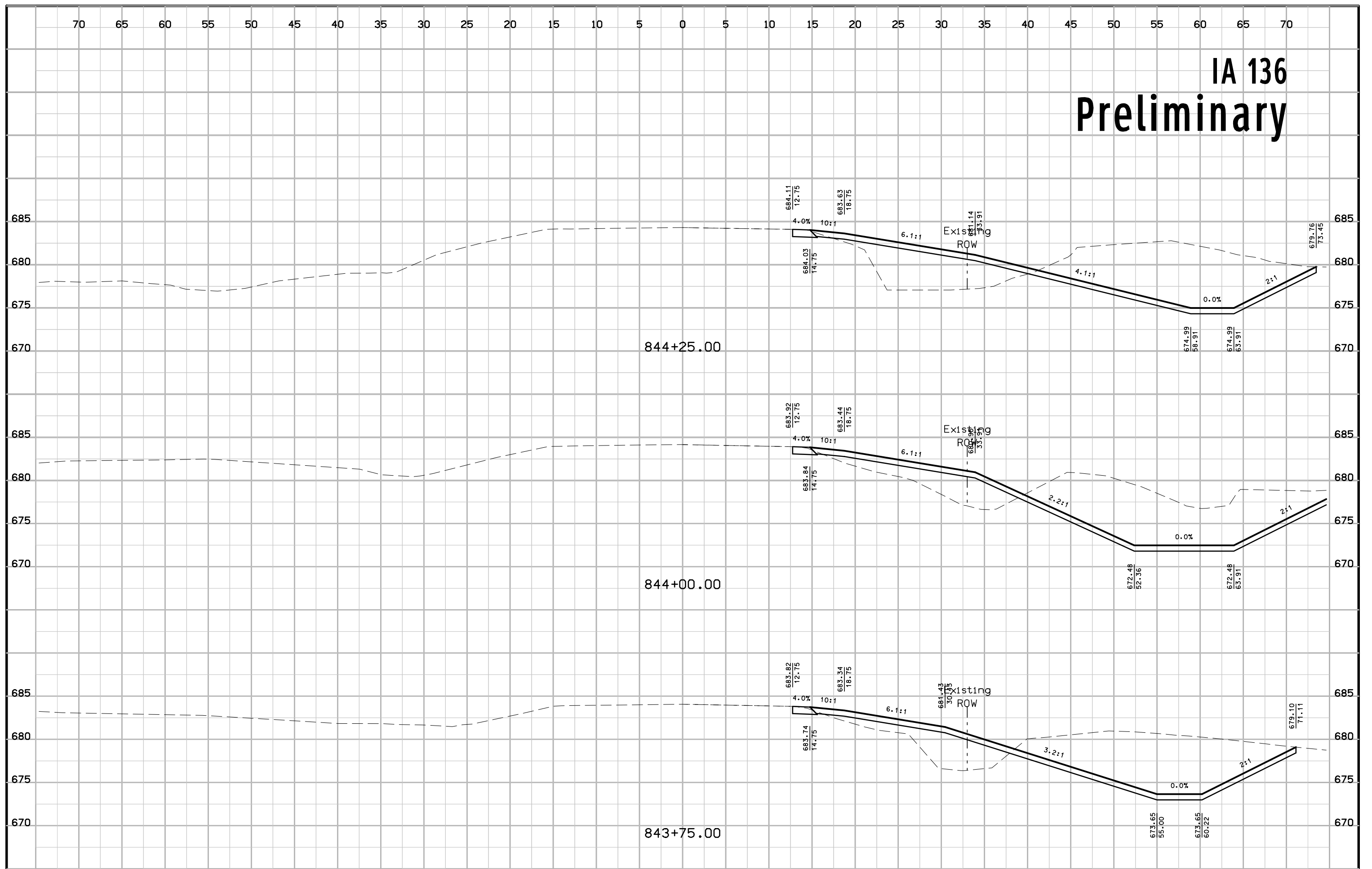
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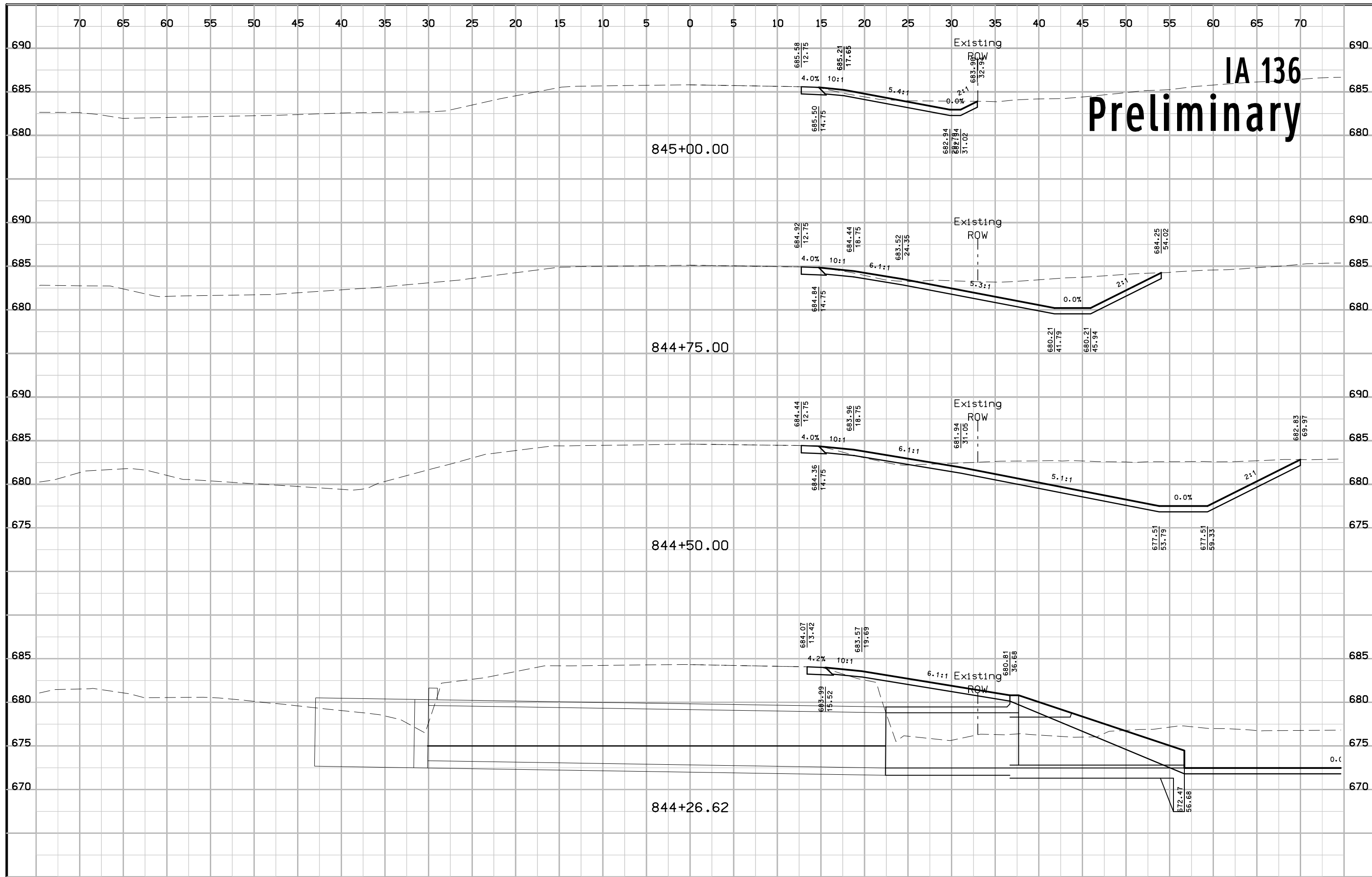


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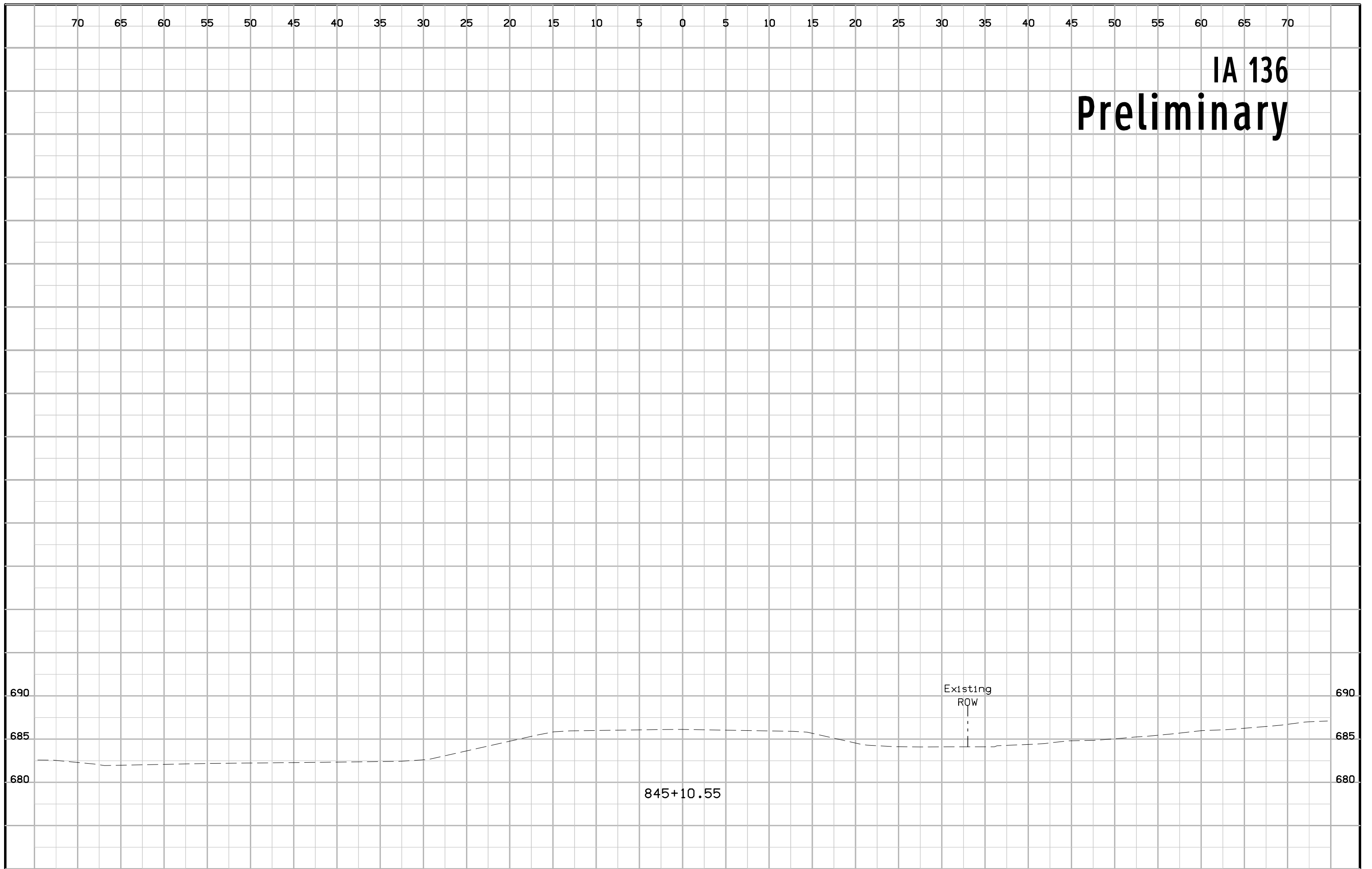
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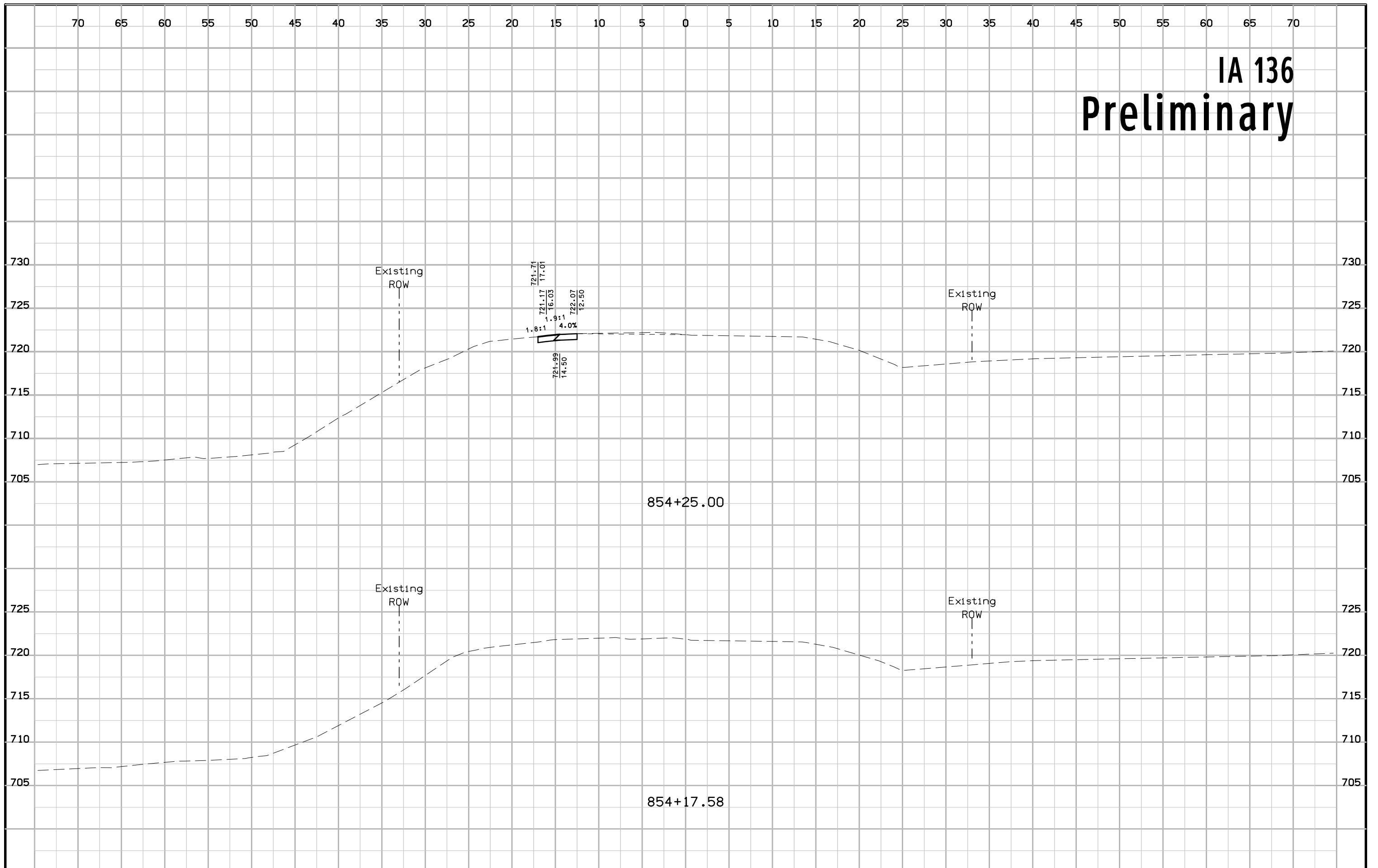
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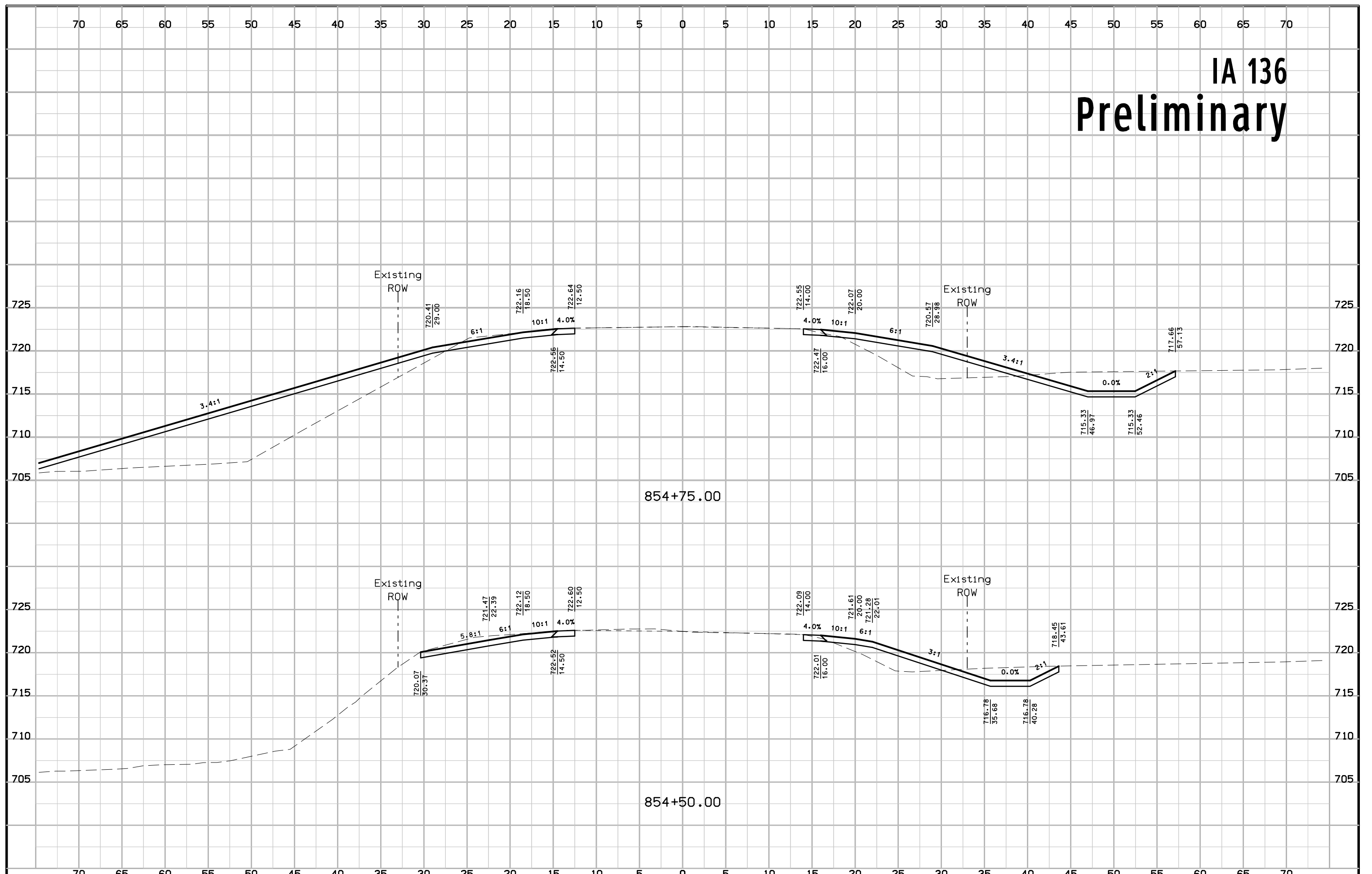
845+10.55

Existing  
ROW

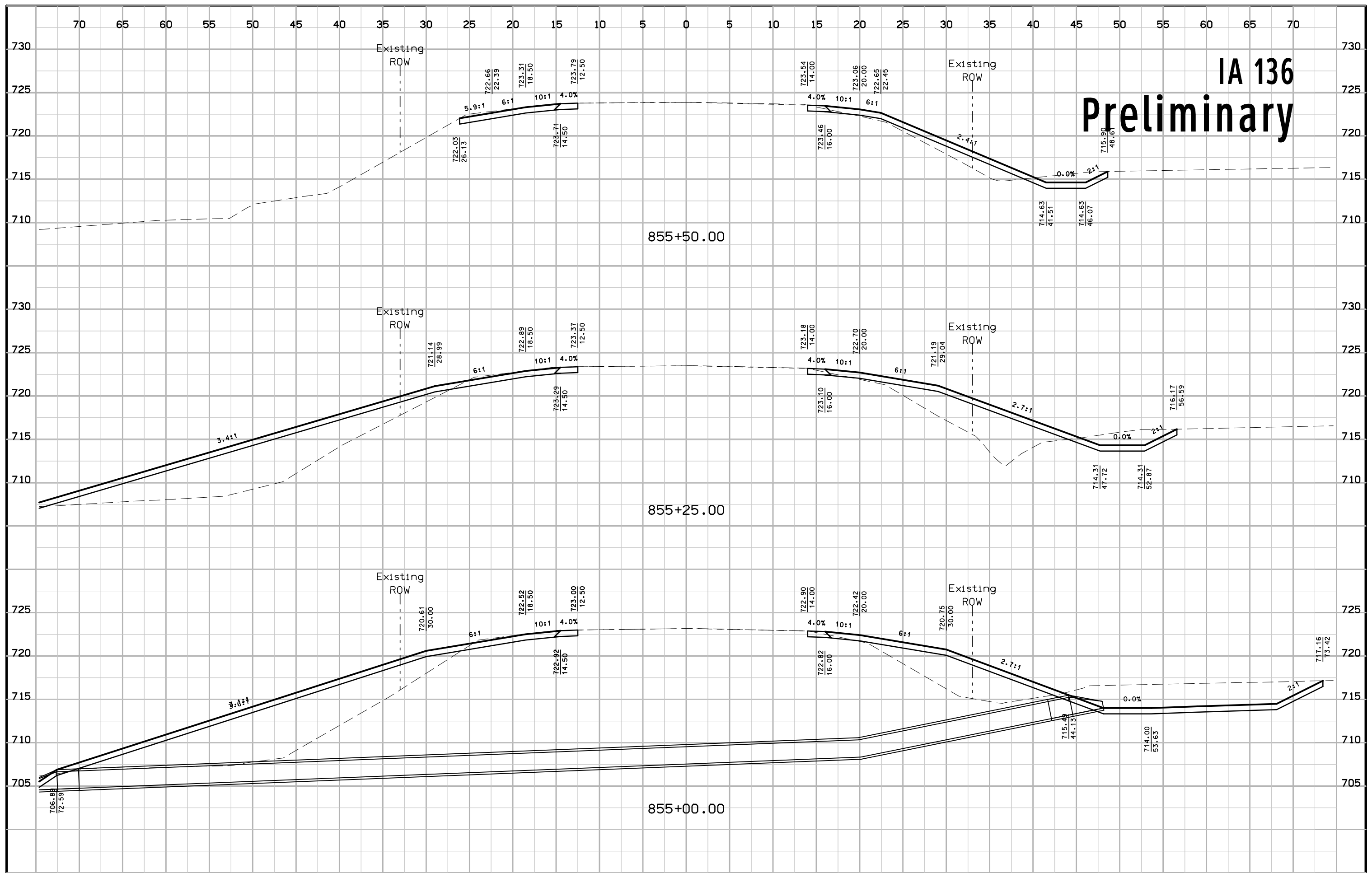
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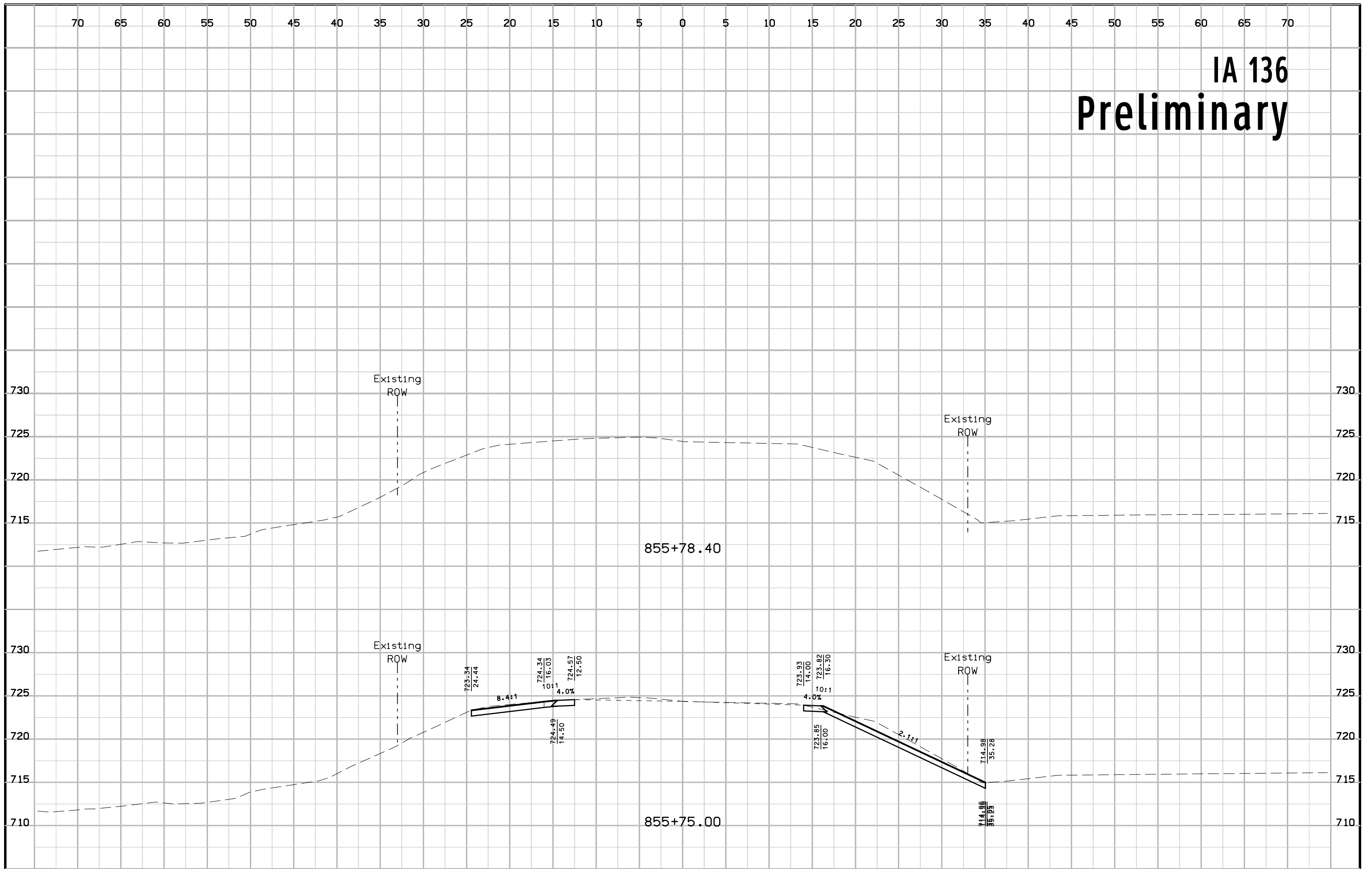
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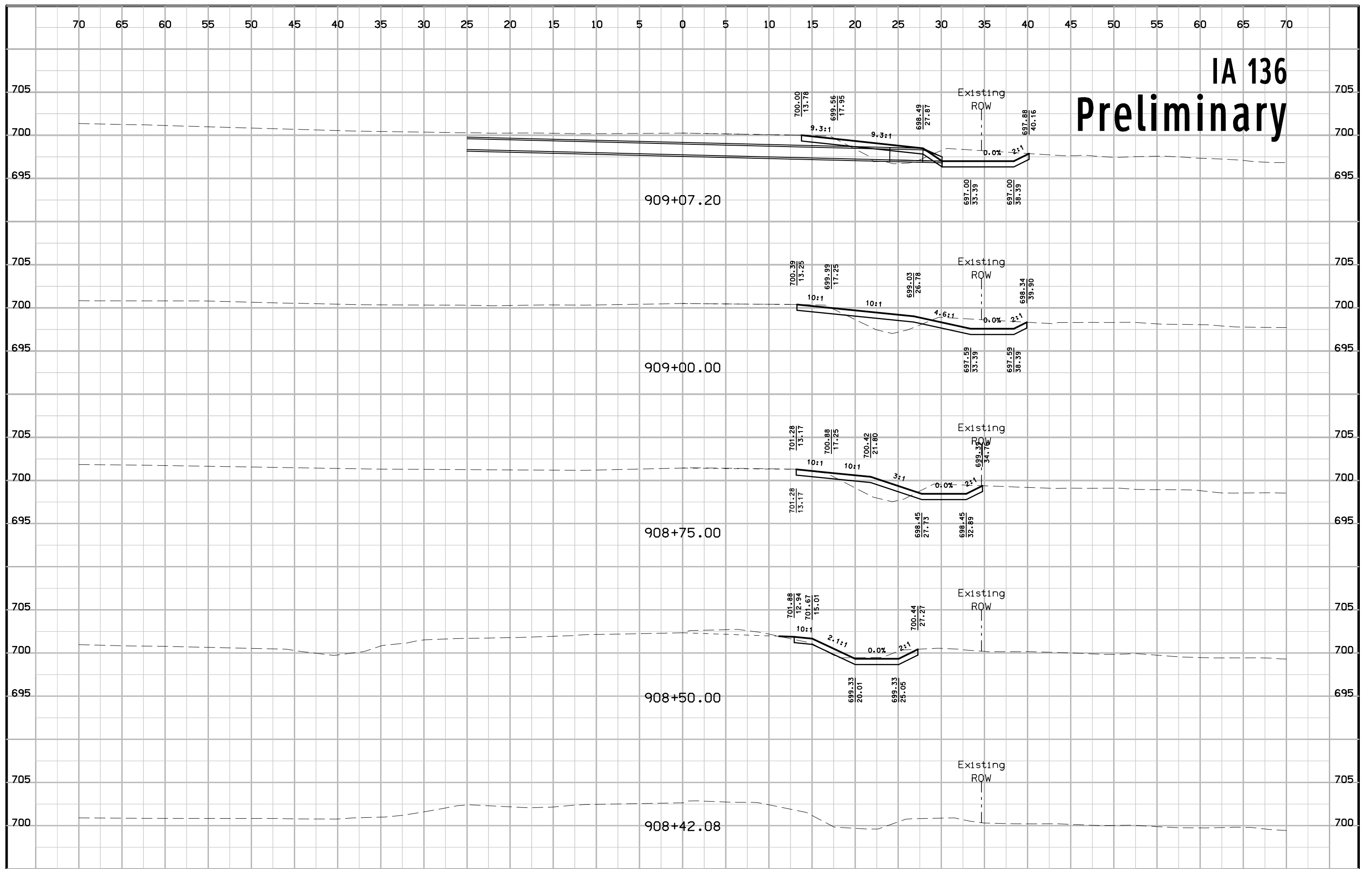
# IA 136 Preliminary



# IA 136 Preliminary



# IA 136 Preliminary



# IA 136 Preliminary

