

MARSHALL CO. PCC PAVEMENT - GRADE AND NEW STPN-146-4(8)--2C-64

LETTING DATE
Oct. 17, 2017

MILEAGE SUMMARY			
			105-1
			09-27-94
Div.	Location	Lin. Ft.	Miles
	Rural - Marshall County Sta. 444+50 to Sta. 548+65 Omit Bridge at Sta. 536+14	10,415 -279	
Length of Project		10,136	1.920



Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
MARSHALL COUNTY
PCC PAVEMENT - GRADE AND NEW

From Co. Rd. E-49 North to US 30

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

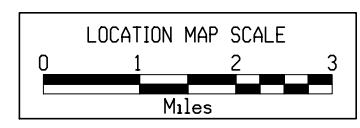
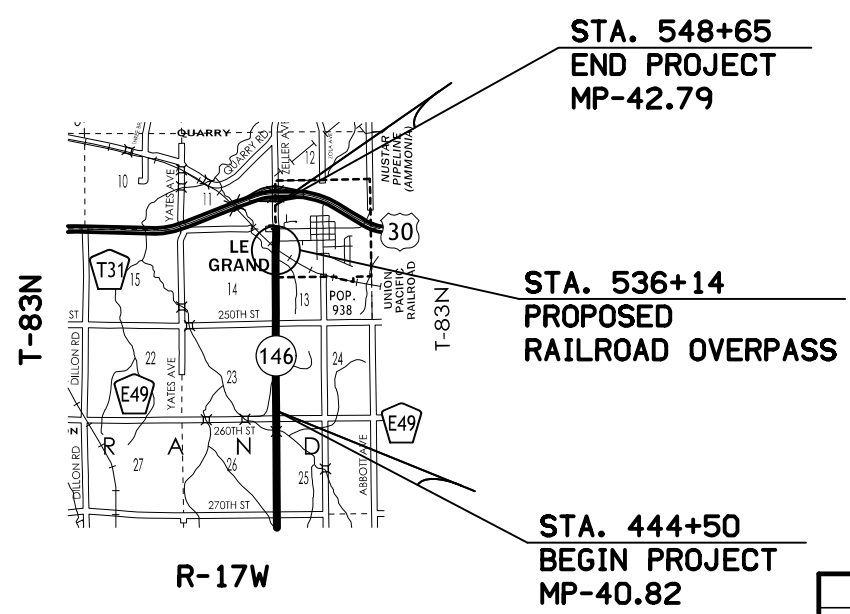
Value Engineering Saves. Refer to Article 1105.15 of the Specifications.



REVISIONS

TOTAL
??
PROJECT IDENTIFICATION NUMBER
8264146050
PROJECT NUMBER
STPN-146-4(8)--2C-64
R.O.W. PROJECT NUMBER
FN-146-4(11)--21-64

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.1 - 3	Title Sheet
B Sheets	Typical Cross Sections and Details
B.1 - 4	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
D.1	Legend
D.2 - 5	Plan & Profile Sheet
G Sheets	Survey Sheets
G.1 - 5	Reference Ties and Bench Marks
G.6 - 7	Horizontal Control Tab. & Super for all Alignments
U Sheets	500 Series, Mod.Stds. and Detail Sheets
U.1 - 10	500 Series, Modified Standards and Detail Sheets
V Sheets	Bridge and Culvert Situation Plans
V.1	Bridge and Culvert Situation Plans
W Sheets	Shoulder Widening Cross Sections
W.1 - 62	Ia 146 Cross Sections



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

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Tony J. Gustafson	Primary Signature Block
X	X	X

PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN - Date: 11/17/2014

FIELD EXAM NOTES

FIELD EXAM NOTES

CLEAR ZONE DISTANCES

(in feet from edge of traveled way)

Design Speed (mph)	Design ADT	Fill Slopes (fs)			Cut Slopes (cs)		
		fs ≥ 6:1	4:1 ≤ fs < 6:1	fs < 4:1	cs < 4:1	4:1 ≤ cs < 6:1	cs ≥ 6:1
40mph or less	ADT < 750	7-10	7-10	---**	7-10	7-10	7-10
	750 ≤ ADT < 1500	10-12	12-14	---**	10-12	10-12	10-12
	1500 ≤ ADT < 6000	12-14	14-16	---**	12-14	12-14	12-14
	ADT ≥ 6000	14-16	16-18	---**	14-16	14-16	14-16
45-50 mph	ADT < 750	10-12	12-14	---**	8-10	8-10	10-12
	750 ≤ ADT < 1500	14-16	16-20	---**	10-12	12-14	14-16
	1500 ≤ ADT < 6000	16-18	20-26	---**	12-14	14-16	16-18
	ADT ≥ 6000	20-22	24-28	---**	14-16	18-20	20-22
55 mph	ADT < 750	12-14	14-18	---**	8-10	10-12	10-12
	750 ≤ ADT < 1500	16-18	20-24	---**	10-12	14-16	16-18
	1500 ≤ ADT < 6000	20-22	24-30	---**	14-16	16-18	20-22
	ADT ≥ 6000	22-24	26-32 *	---**	16-18	20-22	22-24
60 mph	ADT < 750	16-18	20-24	---**	10-12	12-14	14-16
	750 ≤ ADT < 1500	20-24	26-32 *	---**	12-14	16-18	20-22
	1500 ≤ ADT < 6000	26-30	32-40 *	---**	14-18	18-22	24-26
	ADT ≥ 6000	30-32 *	36-44 *	---**	20-22	24-26	26-28
65-70 mph	ADT < 750	18-20	20-26	---**	10-12	14-16	14-16
	750 ≤ ADT < 1500	24-26	28-36 *	---**	12-16	18-20	20-22
	1500 ≤ ADT < 6000	28-32 *	34-42 *	---**	16-20	22-24	26-28
	ADT ≥ 6000	30-34 *	38-46 *	---**	22-24	26-30	28-30

*Where a site specific investigation indicates a high probability of continuing accidents, or such occurrences are indicated by accident history, the designer may provide clear zone distances greater than 30 feet as indicated. Clear zones may be limited to 30 feet for practicality and to provide a consistent roadway template if previous experience with similar projects or designs indicates satisfactory performance.

**Since recovery is less likely on the unshielded, traversable 3:1 slopes, fixed objects should not be present in the vicinity of the toe of these slopes. Recovery of high-speed vehicles that encroach beyond the edge of the shoulder may be expected to occur beyond the toe of slope. Determination of the width of the recovery area at the toe of slope should take into consideration right-of-way availability, environmental concerns, economic factors, safety needs, and accident histories. Also, the distance between the edge of the travel lane and the beginning of the 3:1 slope should influence the recovery area provided at the toe of slope.

OTHER ITEMS

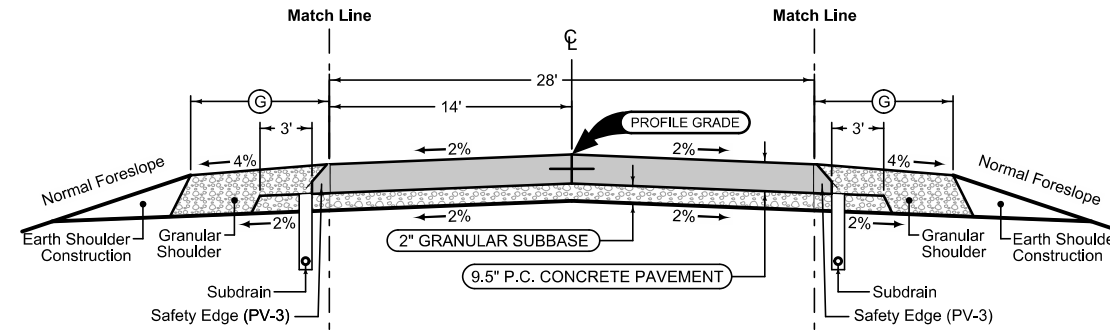
1. Contractor to obtain borrow materials (Y) (N)
2. FDP to be PCC (Y) (N)
3. Patching to be doweled (Y) (N)
4. District to determine subdrain locations (Y) (N)
5. Pollution Prevention Plan needed (Y) (N)
6. Field Offices (Y) (N)
7. Construction Survey (see #27 adjacent) (Y) (N)
8. Survey by Design Office (Y) (N)
9. Any special construction times required (night time?) (Y) (N)
10. Any RWIS or Auto. Traffic Recorder sites within the project limits? (Y) (N)

FIELD EXAM CHECKLIST + NEEDED INFORMATION

1. Duration of Project?
2. Posted Speed Limit(s) and if different during construction.
3. Any sight distance a problems?
4. Patching quantities, who provides, any need to extend project limits (Full / Partial Depth, Surf. electronically tabulated).
5. Strengthening and leveling areas (Sta-Sta).
6. Survey of culvert extensions (for RCB extensions 100' each side of RCB and 100' Lt. and Rt. of centerline at 25' intervals and provide 20-scale drawing).
7. Survey of safety dikes (100' each side of proposed dike and to 100' from centerline of roadway).
8. Survey and 20-scale of proposed right-turn lanes (from centerline of sideroad back 400' and to 75' from centerline of roadway. Cross section every 50').
9. Survey of horizontal curves (at least three locations within full super. Edges and centerline).
10. Embankment and pipe quantities for sideslopes (National Highway System (NHS) routes only). Items to be tabbed by location.
11. Any known utilities potentially needing relocated (Temp. or Permanently)?
12. Names and addresses of affected utility companies.
13. Locations of entrances to be reshaped.
14. Any existing drainage issues?
15. Any suspected wetland or environmental impacts?
16. Condition of existing culverts needed, obtained by whom?
17. Any existing subdrain locations?
18. Names of affected special events.
19. Locations of mailboxes to be relocated to a minimum of 8' from pavement edge.
20. Survey trees within the roadside recovery area (trees within ___ ft from edge of roadway are to be removed. Those outside ___ ft will be reviewed from survey data).
21. Number and location of EF joints.
22. Disposition of bridge handrail and guardrail and posts.
23. Inventory of Existing Guardrail.
24. Longitudinal joint repair locations.
25. Listing of adjustment of fixtures.
26. Clearing and Grubbing quantities - by unit or area?
27. If this is a resurf. proj., is Dist. Survey able to preserve Section Corners & points (if no then add these items under Construction Survey).

Granular Shoulder with Safety Edge

2_G_		Ⓞ
10-21-14		
STATION TO STATION		Feet
444+50	548+65	6



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

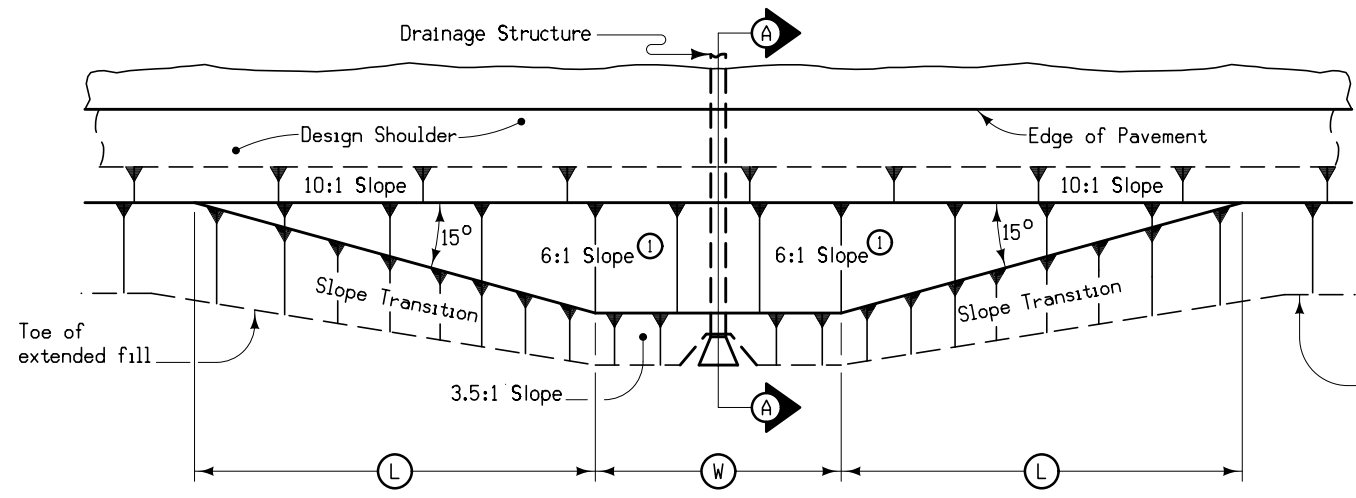
2P_	
10-19-10	
STATION TO STATION	
444+50	548+65

Granular Shoulder with Safety Edge

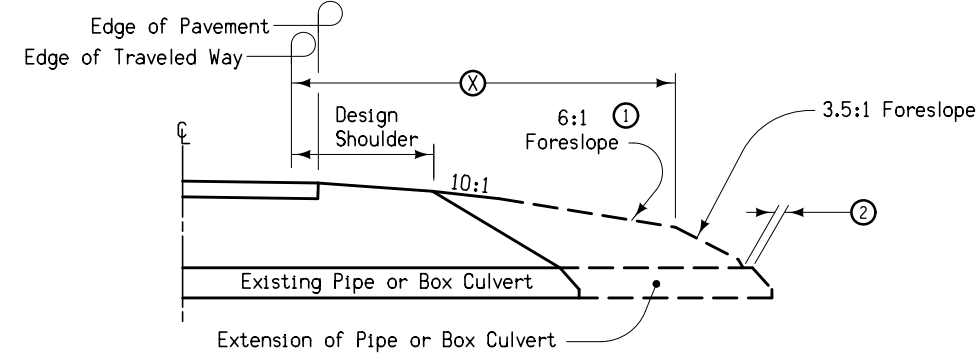
2_G_		Ⓞ
10-21-14		
STATION TO STATION		Feet
444+50	548+65	6

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

IA 146



PLAN VIEW

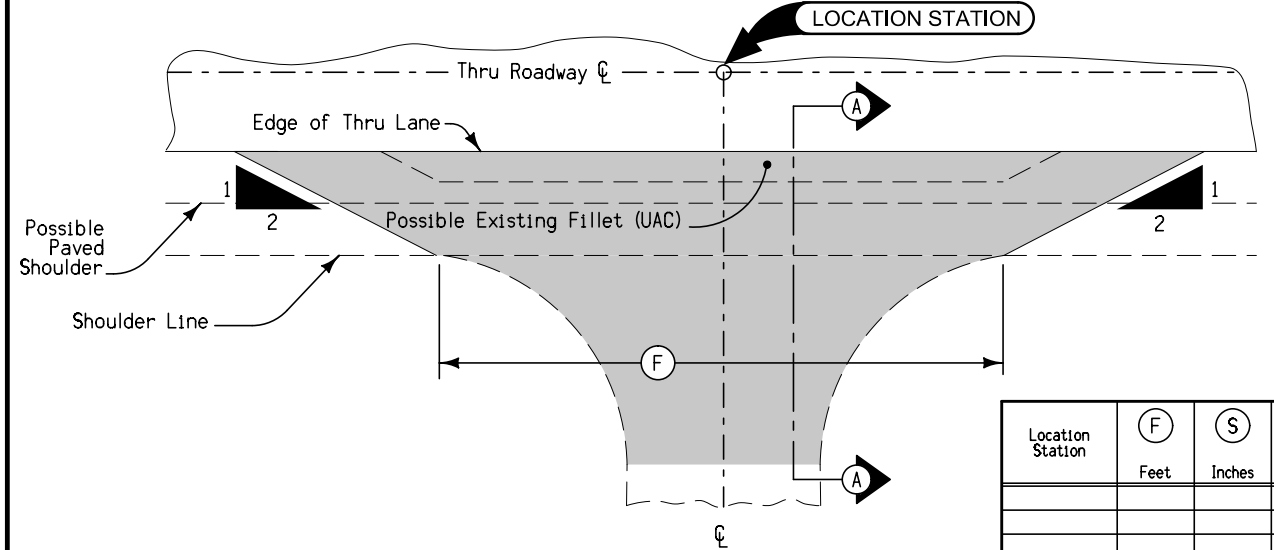


SECTION A-A

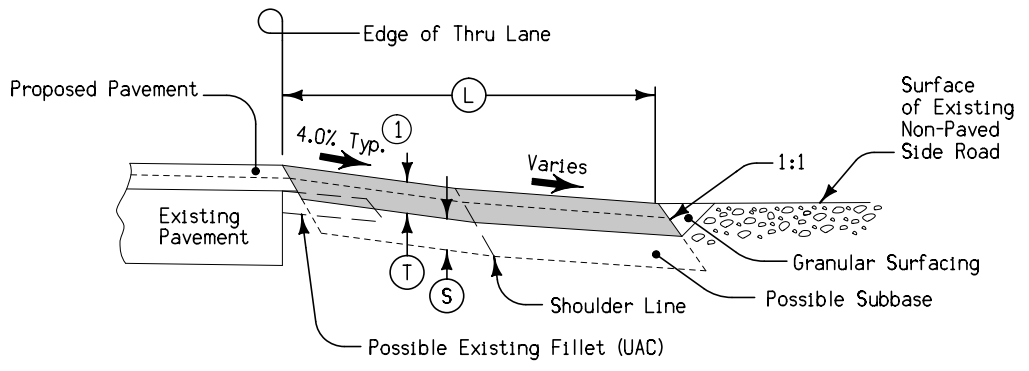
STRUCTURE LOCATION		(W)	(L)	(X)
STATION	SIDE	Feet	Feet	Feet

- 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.
 - (W) = Pipe or R.C.B. width plus 20 feet each side.

DETAILS OF
BARNROOF FORESLOPE
AT DRAINAGE STRUCTURE



PLAN



SECTION A-A

- Special shaping of existing surface prior to placement of fillet or fillet extension may be required by the Engineer and is incidental to other work on the project.
- Pavement quantities included with mainline quantities.
- ① Match existing slope.

Location Station	(F) Feet	(S) Inches	(T) Inches	(L) (50' min.) Feet	Remarks

FILLET EXTENSION FOR NON-PAVED SIDE ROADS

SURVEY SYMBOLS

- BLD Building or Foundation
- BNK Stream Bank
- CON Concrete or A/C Slab
- CU Back of Curb
- CUL Culvert
- D Centerline Draw or Stream (Down)
- DU Centerline Draw or Stream (Up)
- EG Edge of Gravel Road
- E1 - ELA Underground Electric Line Co. 1
- ENP Edge Paved Entrance & Park Lot
- ENT Centerline BL of Entrance
- ENU Edge Unpaved Entrance & Parking
- EP Edge of Paved Roads (ML or SR)
- F0 - FOA Underground Fiber Optic Co. 1
- F02 - FOB Underground Fiber Optic Co. 2
- FW Wire Fence
- G - GLA Underground Gas Line Co. 1
- GU Gutter In Front of Curb
- LIN Miscellaneous Line
- PIP Pipe Culvert
- RET Retaining Walls
- RIP Rip-Rap
- RR Centerline of Railroad Tracks
- SH Paved Shoulder
- SWK Sidewalk
- TER Terrace
- Tile - TIL Tile Line
- T1 - TLA Underground Telephone Line Co. 1
- W - WLA Underground Water Line Co. 1
- EB Electrical Box
- E2 - ELB Underground Electric Line Co. 2
- EW Edge of Water
- IN Storm Sewer Intake
- INB Storm Sewer Beehive Intake
- LC Lot Corner
- MH Utility Access (Manhole)
- MIS Miscellaneous
- MM Mile Marker Post
- OUT Tile Outlet
- PLG Location of General Photo
- PPA Power Pole Co. 1
- PR Electric Riser Pole
- PRO Profile Shot
- RRB Railroad Signal Box
- RRS Railroad Signal
- SHR Shrub
- SI Sign
- SOP Size of Pipe or Culvert
- TDC Tree Deciduous
- TEV Evergreen Tree
- TFR Tree Fruit
- TPD Telephone Pedestal
- TSG Traffic Signal
- TV - TVA Underground TV Cable Co. 1
- UB Utility Box
- UE Utility Elevation
- WV Water Valve
- F03 - FOC Underground Fiber Optic Co. 3
- # STP Stump
- # FCL Chain Link and Security Fence
- # SF Silt Fence (Wetlands)
- SL Speed Limit Sign
- SNP Unpaved Shoulder

UTILITY LEGEND

- F0 - Sprint (QLD)
- F02 - Windstream (QLD)
- F03 - ICN (QLD)
- E1 - Alliant (QLD)
- E2 - Iowa Dept. of Transportation (QLD)
- G - Alliant (QLD)
- T1 - Windstream (QLD)
- W - Poweshiek Rural Water (QLD)
- TV - Mediacom (QLD)

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
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

CONVENTIONAL SIGNS

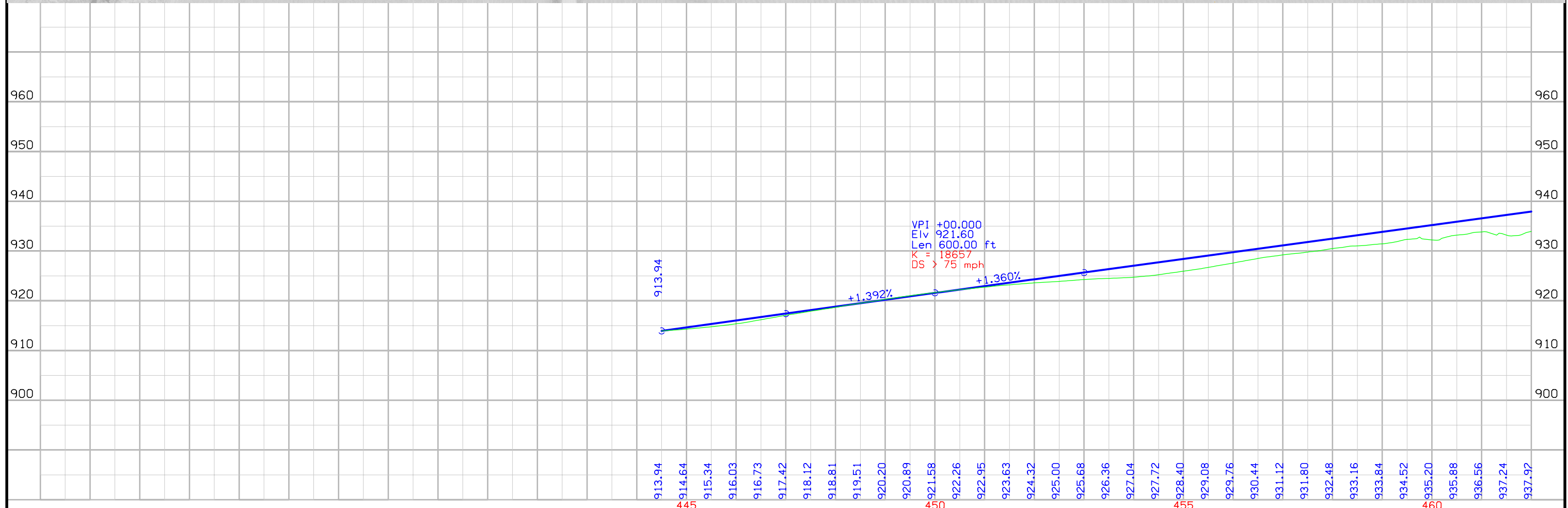
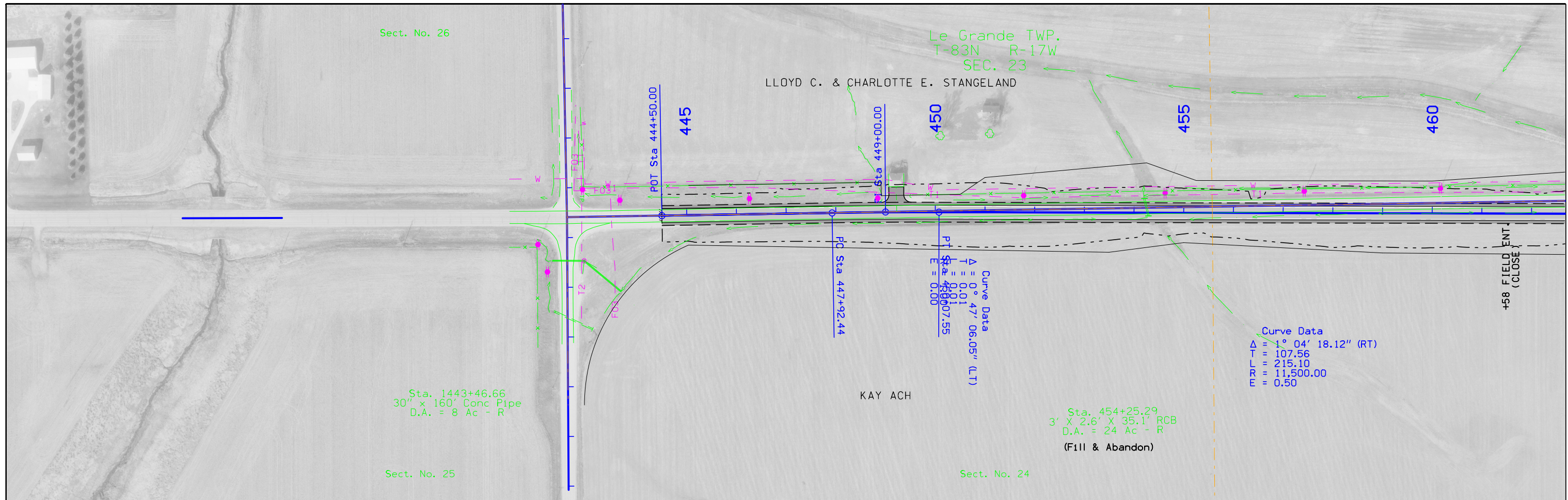
- Reference Point
- Survey Line
- Station
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Clearing & Grubbing Area
- Pavement Removal

RIGHT-OF-WAY LEGEND

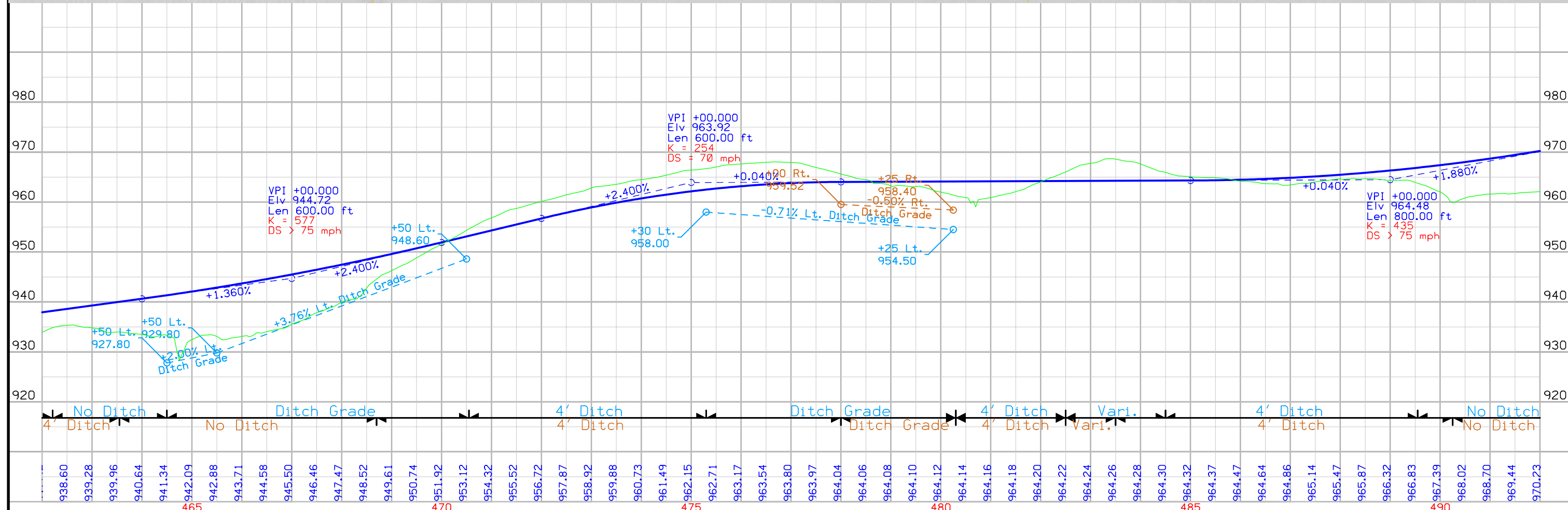
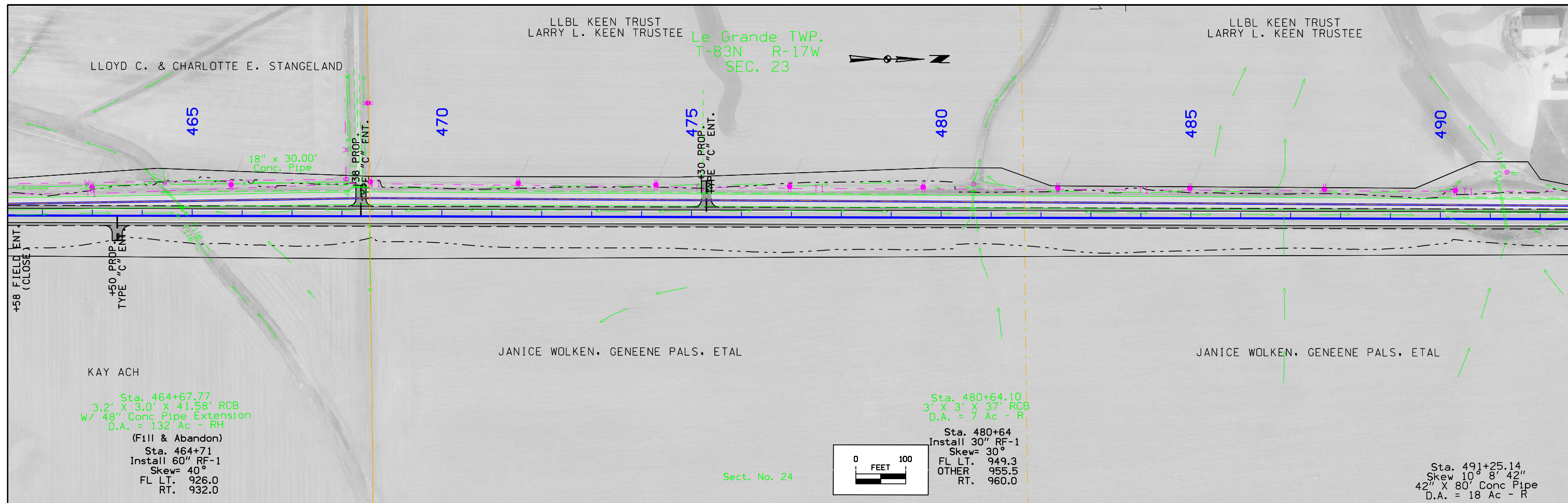
- Proposed Right-of-Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Borrow
- Easement (Temporary)
- Easement
- Excess
- Access Control

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

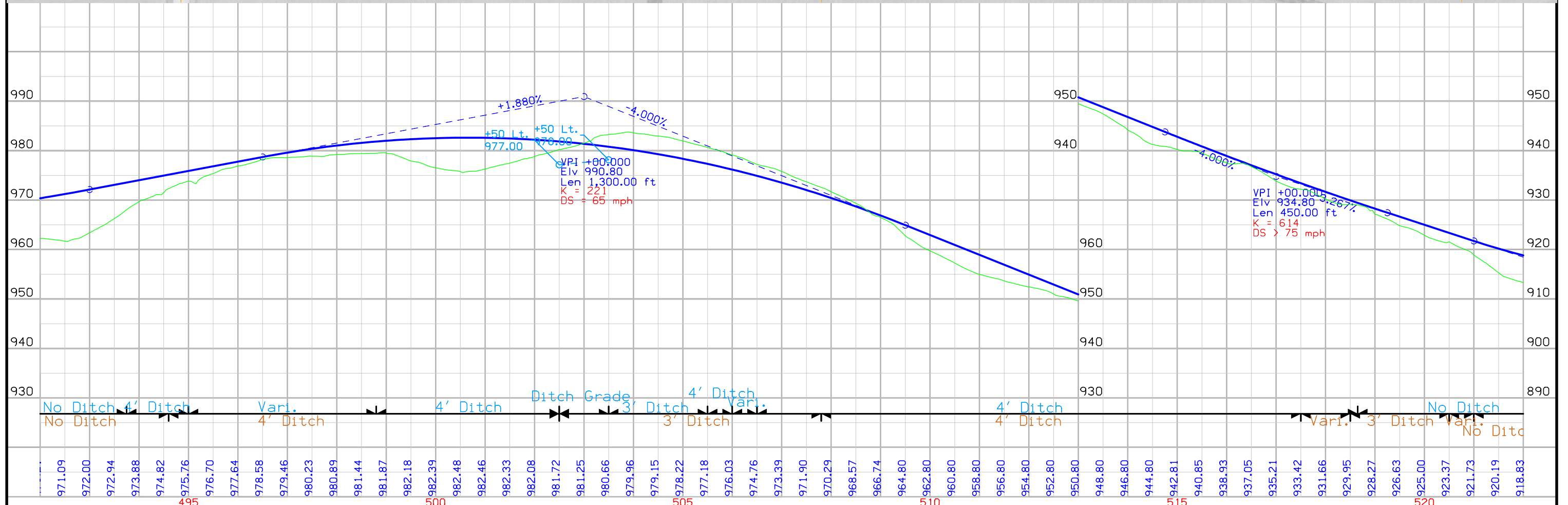
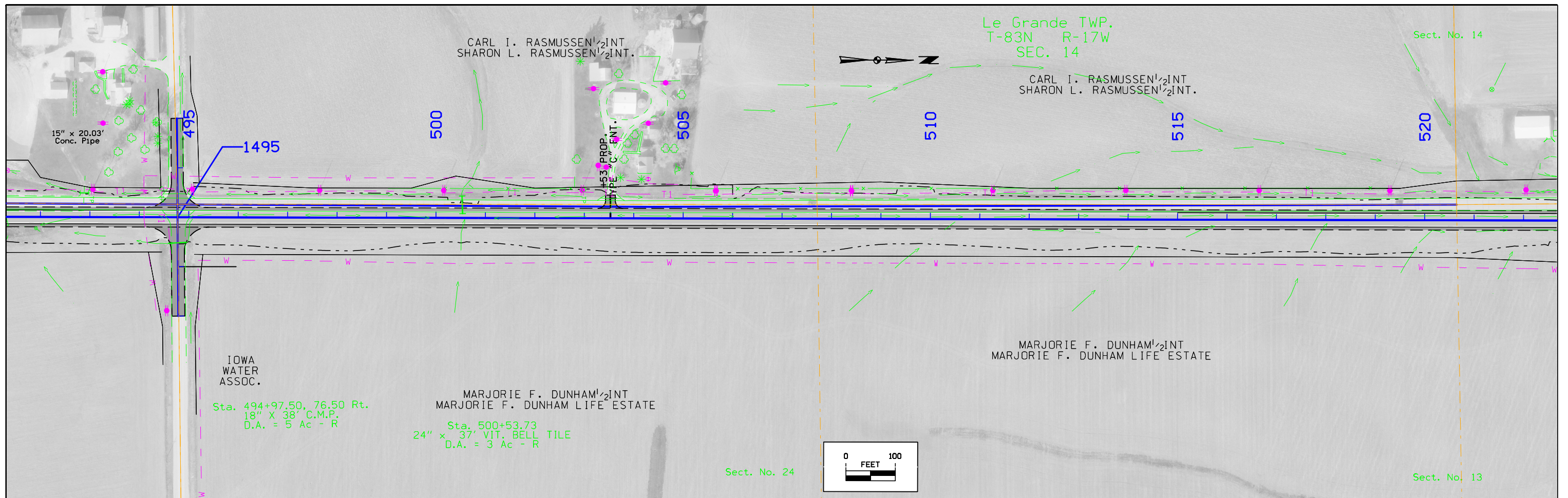
(COVERS SHEET SERIES D, E, F, & K)



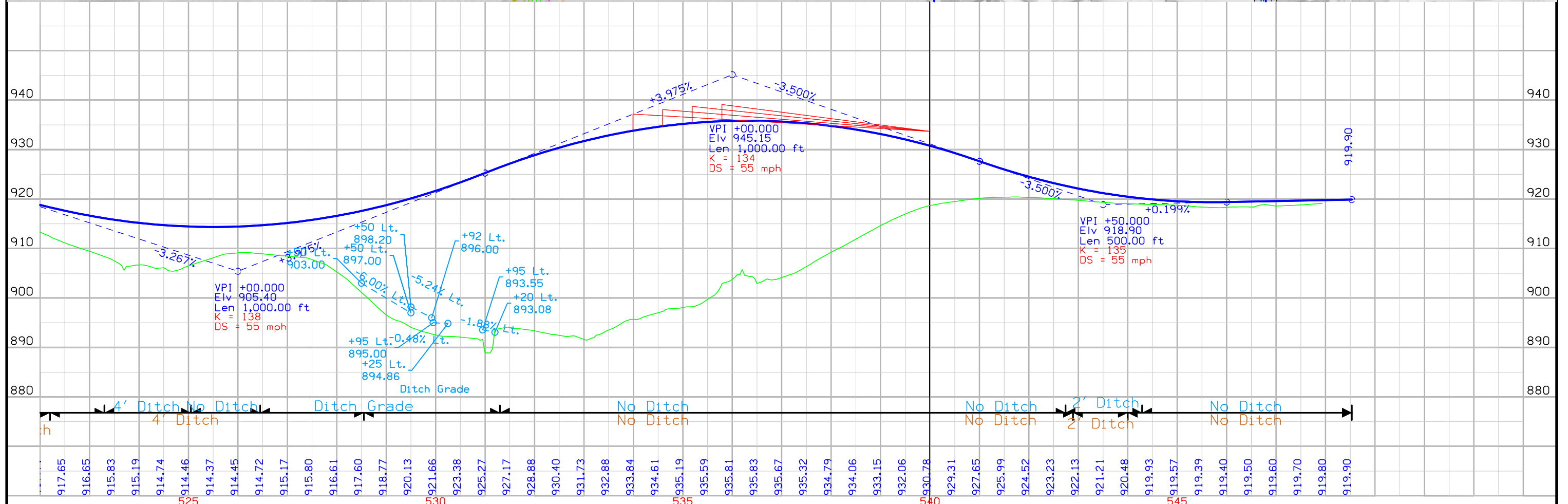
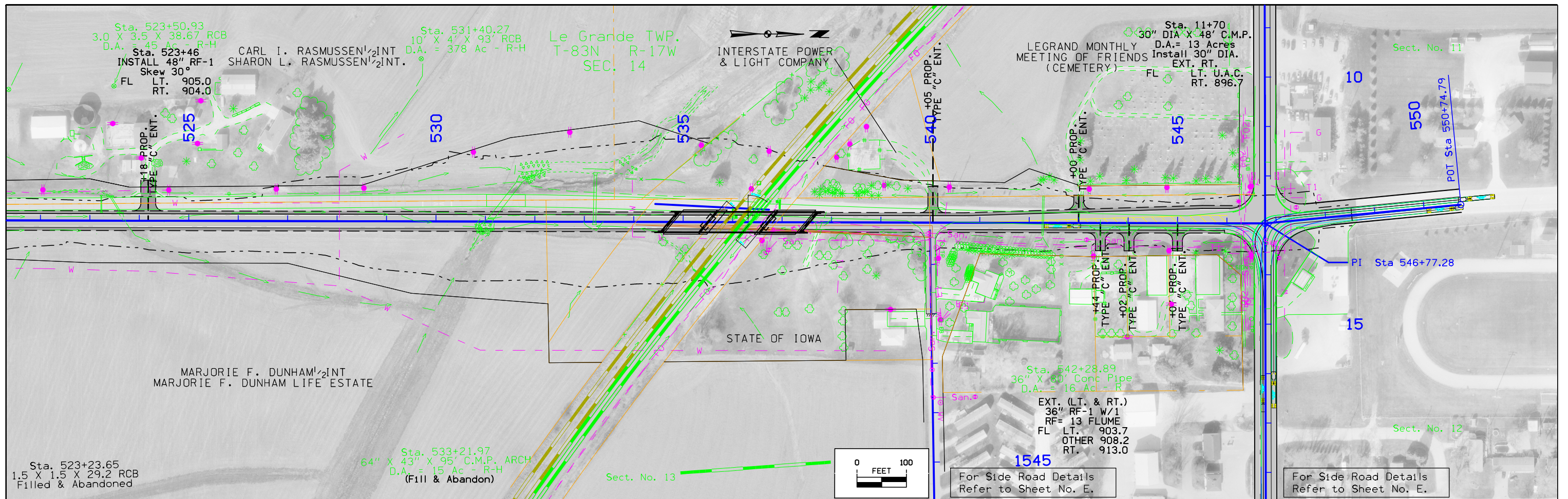
FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Vortherms \ Bowen	MARSHALL COUNTY	PROJECT NUMBER	STPN-146-4(8)--2C-64	SHEET NUMBER	D.2
----------	---------	---	-----------------	----------------	----------------------	--------------	-----



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Vortherms \ Bowen	MARSHALL COUNTY	PROJECT NUMBER	STPN-146-4(8)--2C-64	SHEET NUMBER	D.3
----------	---------	---	-----------------	----------------	----------------------	--------------	-----



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Vortherms \ Bowen	MARSHALL COUNTY	PROJECT NUMBER	STPN-146-4(8)--2C-64	SHEET NUMBER	D.4
----------	---------	---	-----------------	----------------	----------------------	--------------	-----



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Vortherms \ Bowen	MARSHALL COUNTY	PROJECT NUMBER	STPN-146-4(8)--2C-64	SHEET NUMBER	D.5
----------	---------	---	-----------------	----------------	----------------------	--------------	-----

Survey Information

All measurements for this survey are in English Units. The mainline alignment for this survey is a retrace of Marshall Co. Proj No. F-146-(8)-20-64 Preliminary Plans. The coordinates used on this project are relative to NAD83. Coordinates used on this project were acquired in a Static GPS Network. They are unique to this project and are approximate State Plane Coordinates. Coordinates were held on GPS 12. Equations for State Plane Coordinates are provided in the file, GPSPoints.doc. For equations to common points in adjoining GPS Networks, contact Iowa DOT, Office of Design.

This survey is a compilation of 3 different surveys; FR-146-4(8)-2G-64, 1987, Carlson 2000, and current survey (2003-2004). Coordinates from the previous surveys were converted to current Project Coordinates and the relationships are shown in file, Coordinates.xls.

This survey was collected by an IDOT Preliminary Survey Crew. This survey was a Photo DTM Survey, the mainline alignment, Bench levels, and references.

VERTICAL DATUM

The Vertical Datum for this survey is relative to NGVD29 vertical datum. Benches were set at the beginning of this project and run North along IA# 146 to US# 30 then Northwest along railroad tracks to USC&GS BM# E-83 1934
EL= 872.872. (from Marshall Co. FR-146-4(8)-2G-64, 1987)
Additional benches were set in 2004.

HORIZONTAL DATUM

Stationing was established at PI Sta. 442+59.10. Stationing was then produced back and ahead to the end of this survey.

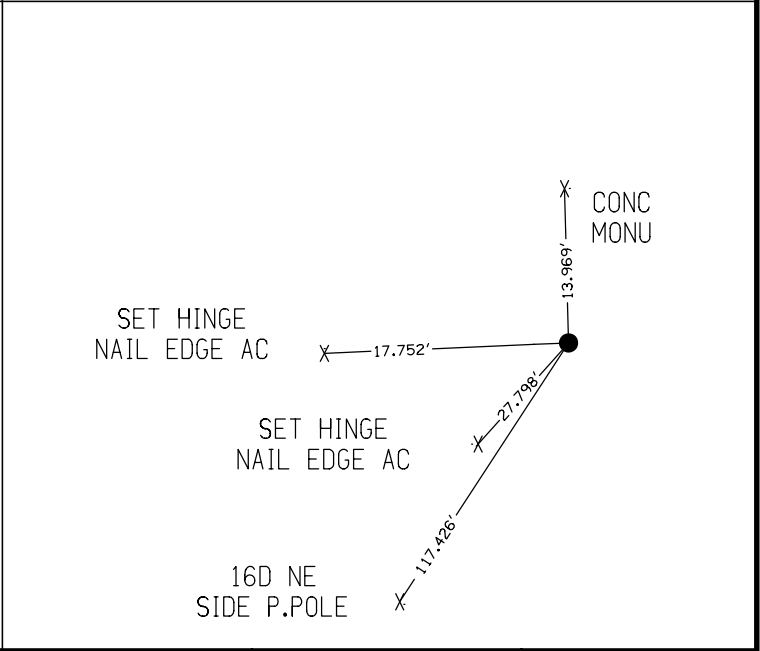
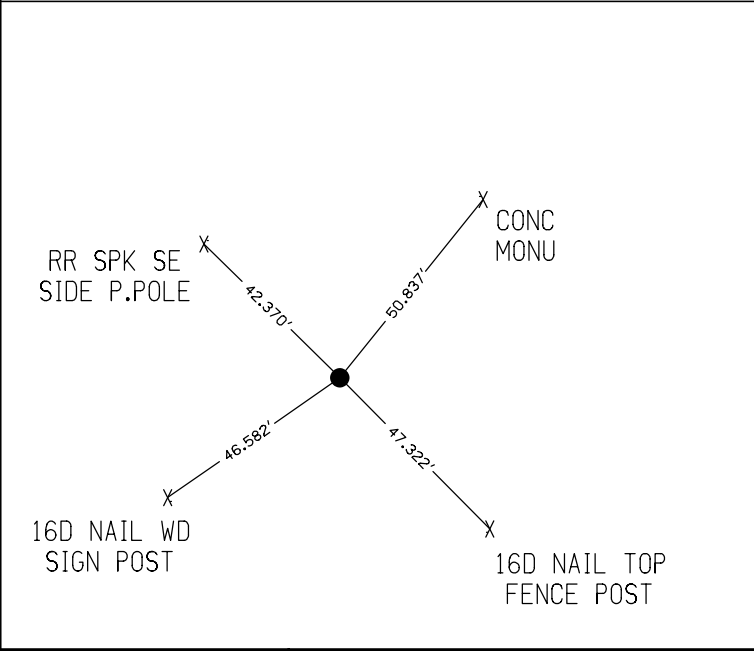
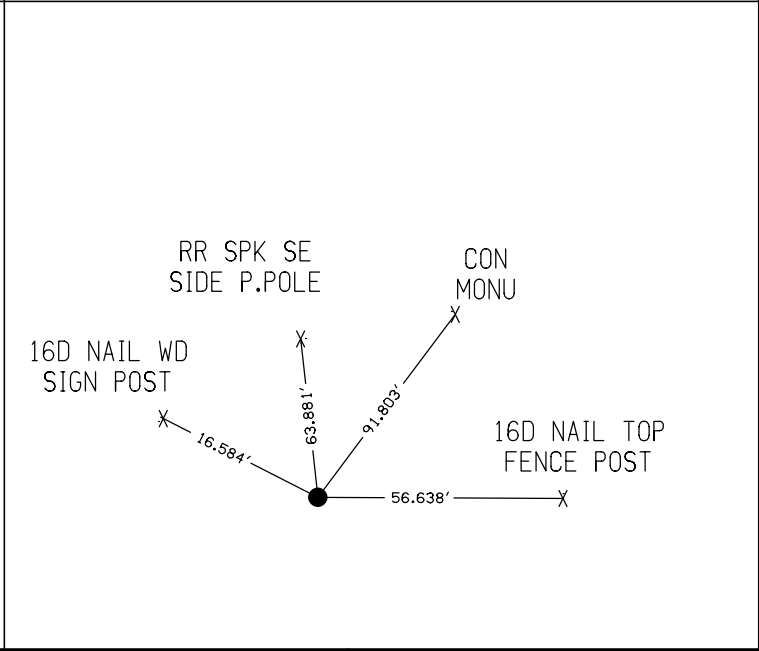
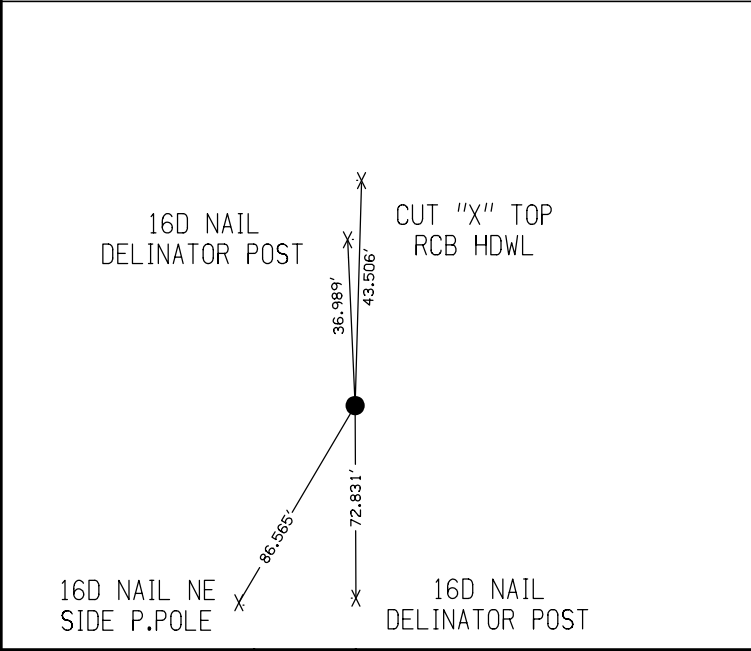
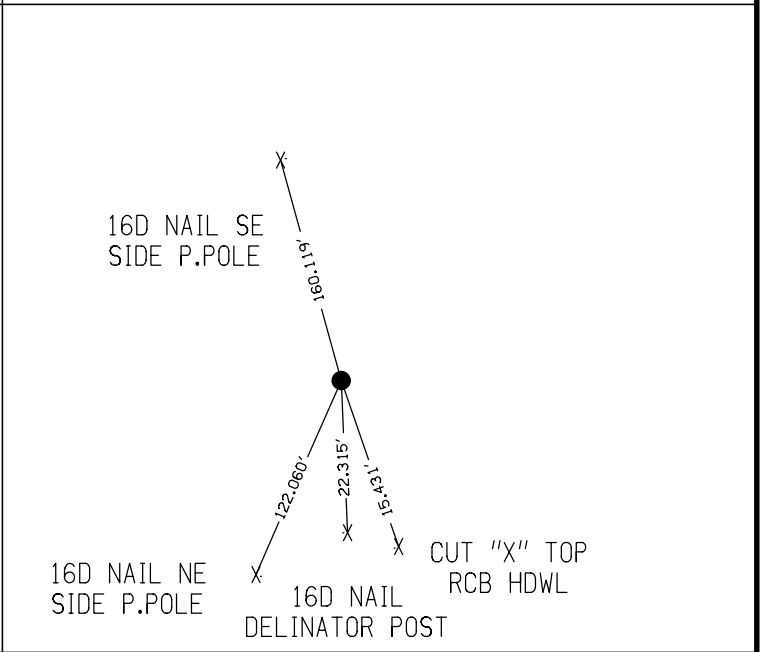
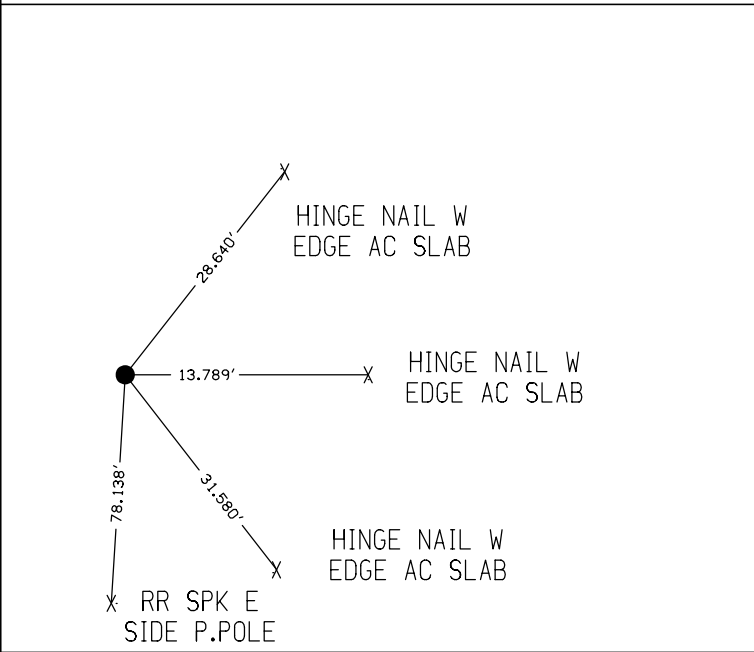
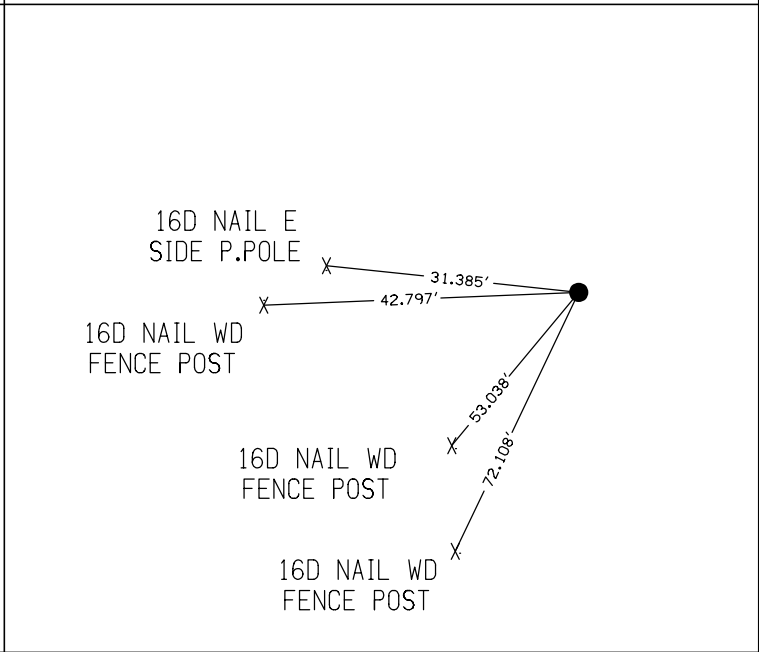
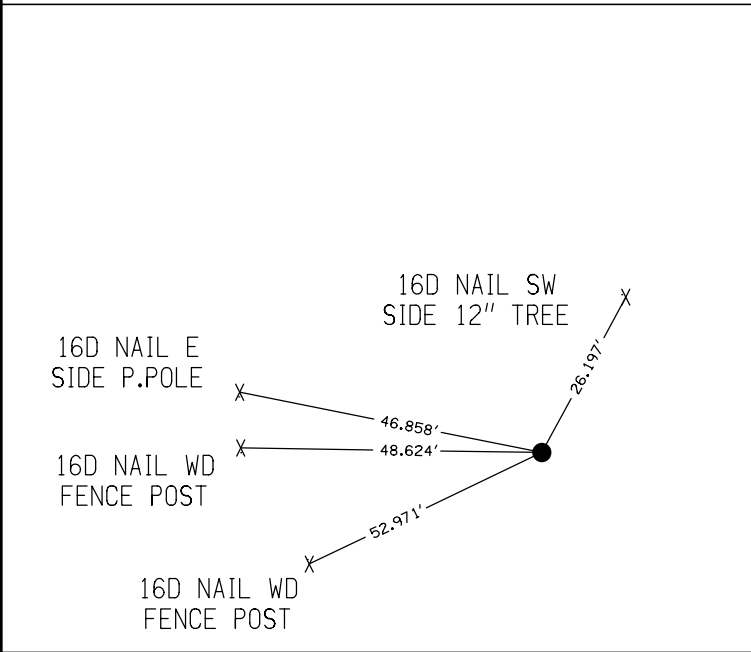
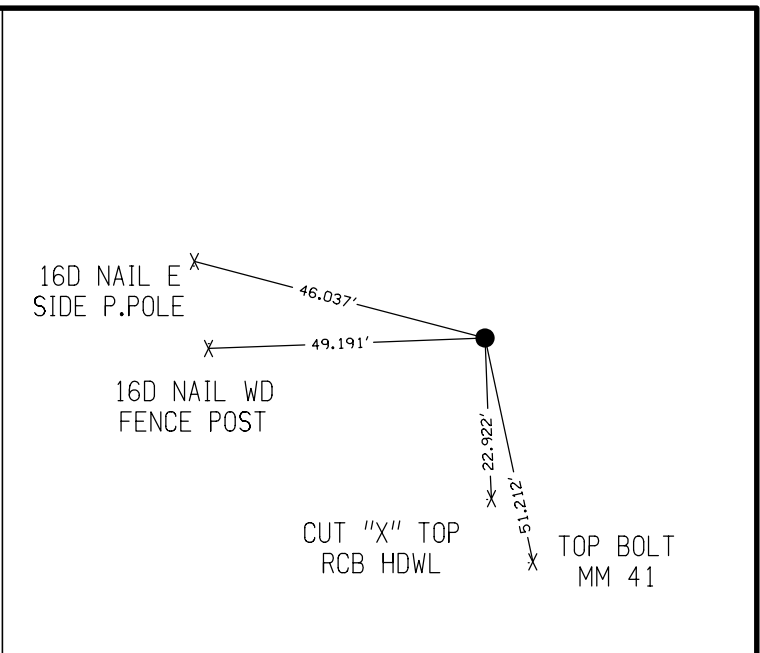
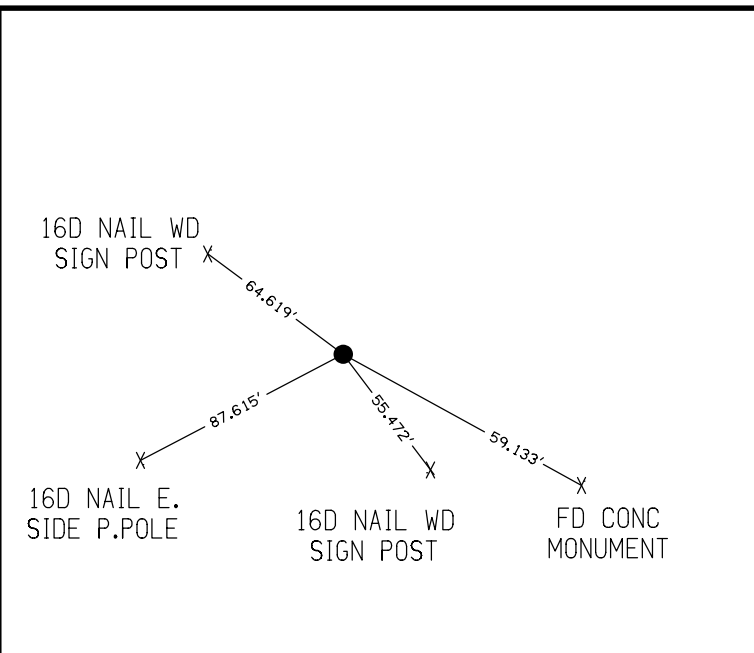
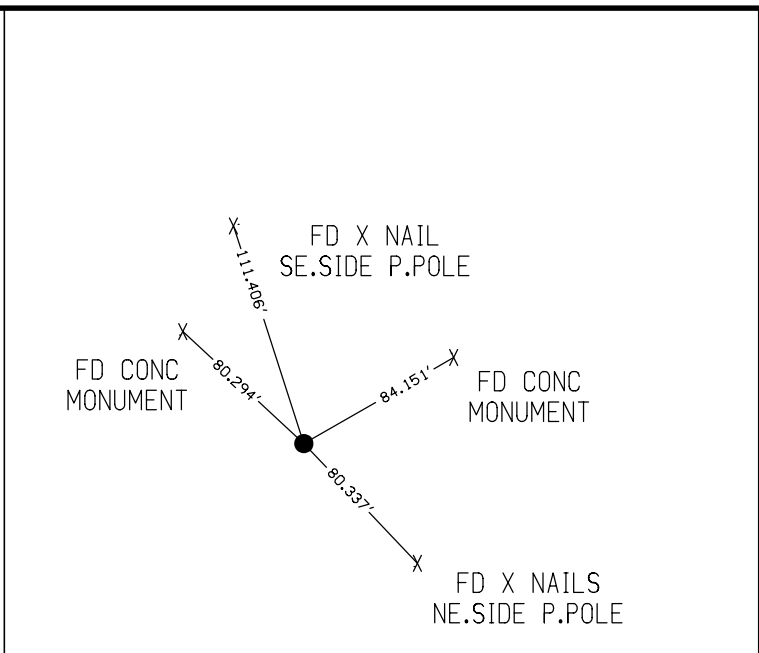
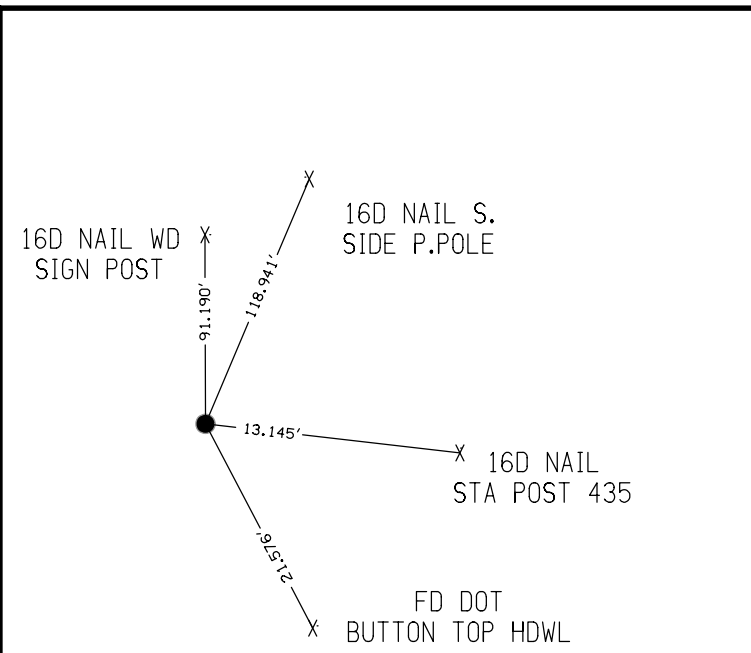
Equations are as follows:

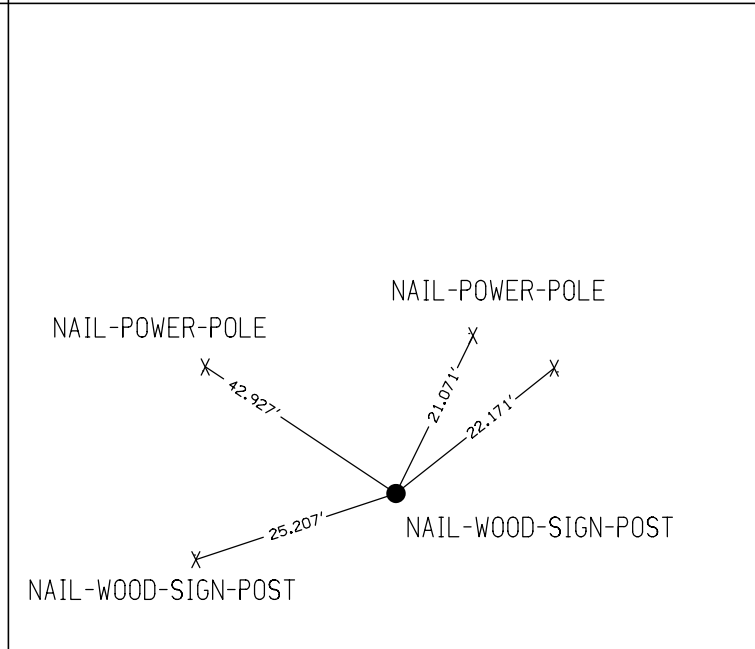
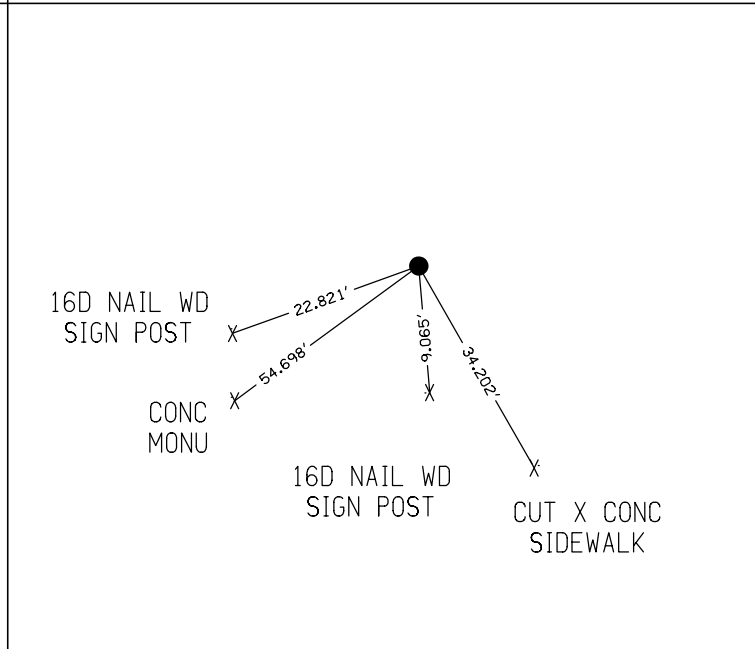
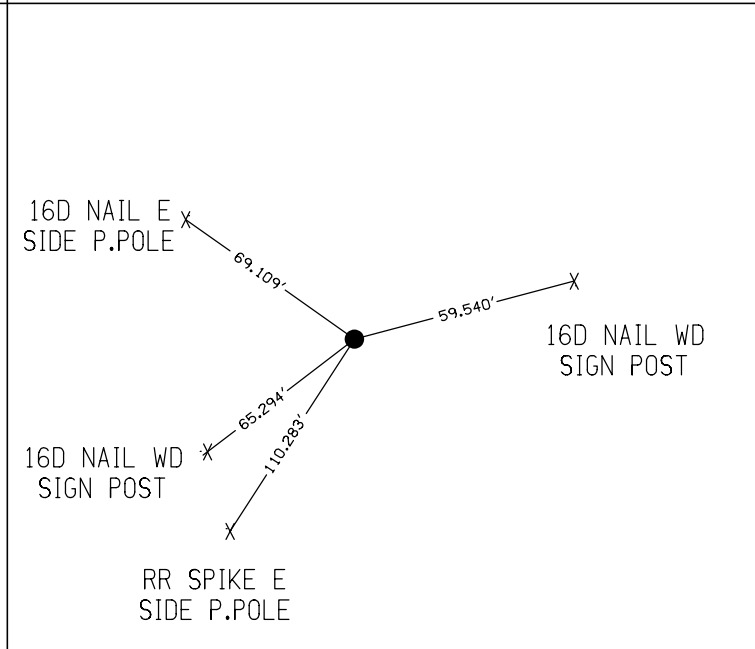
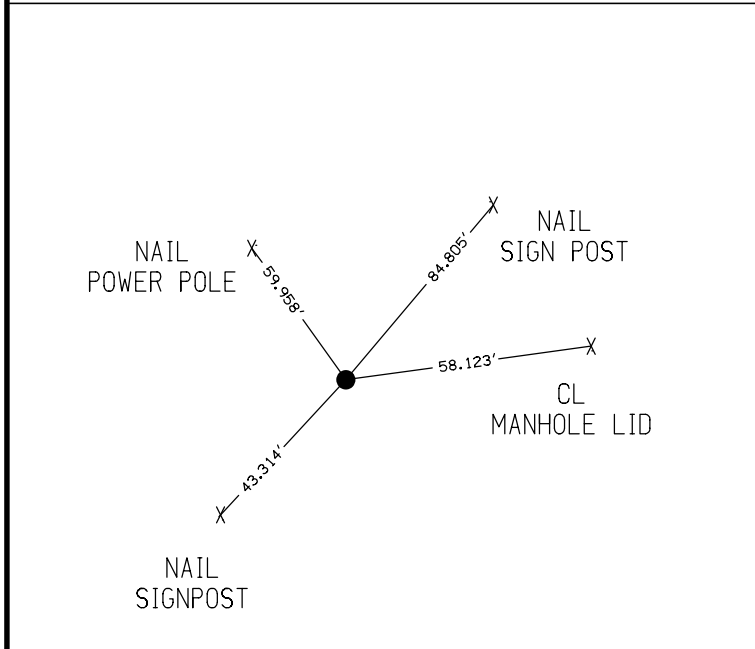
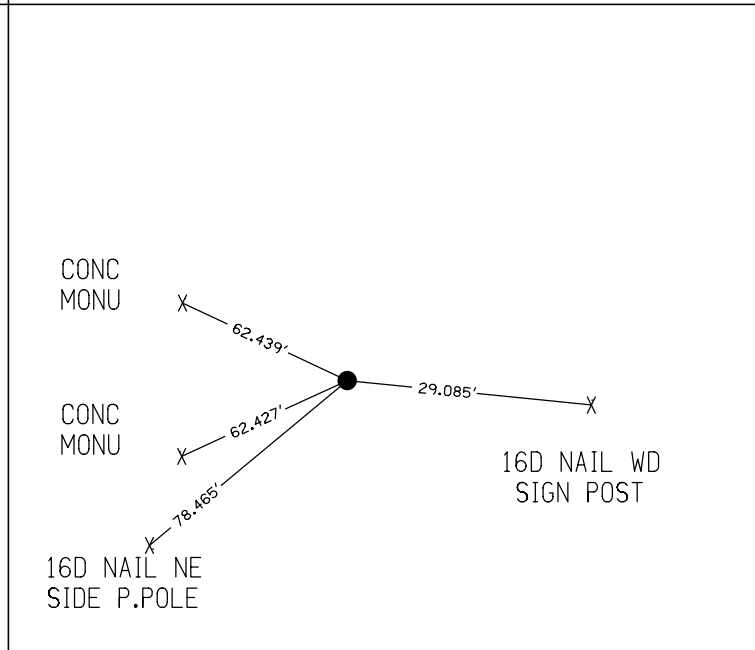
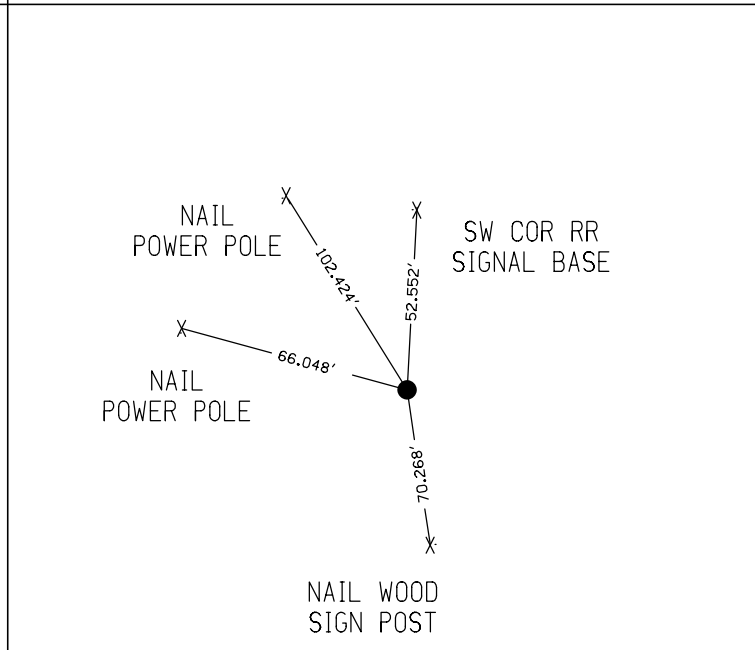
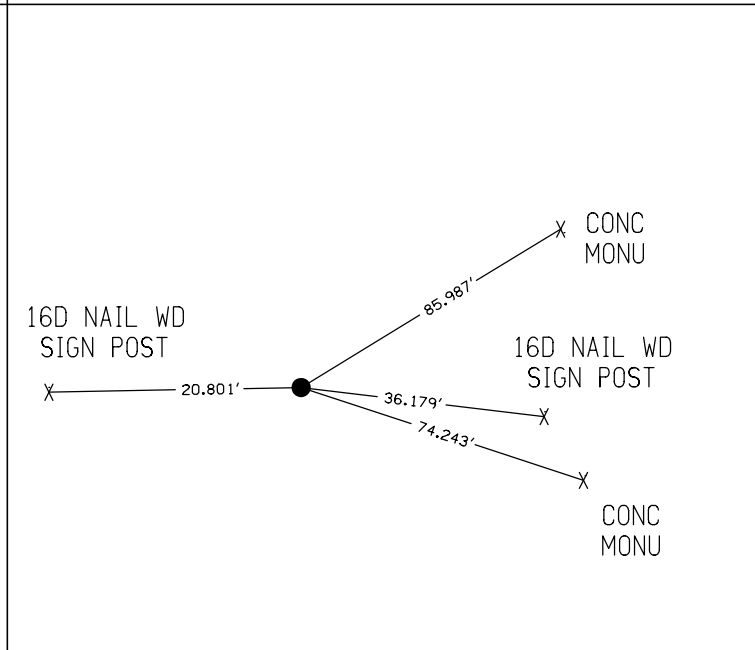
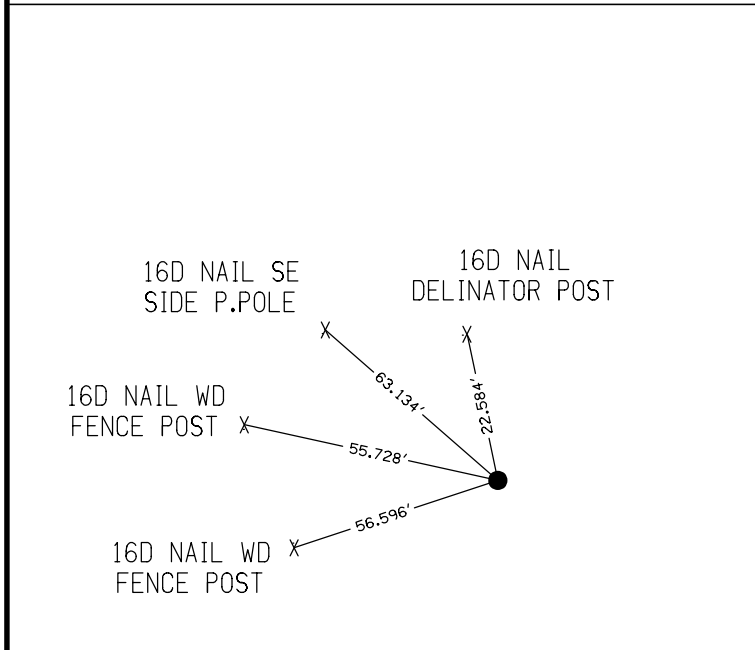
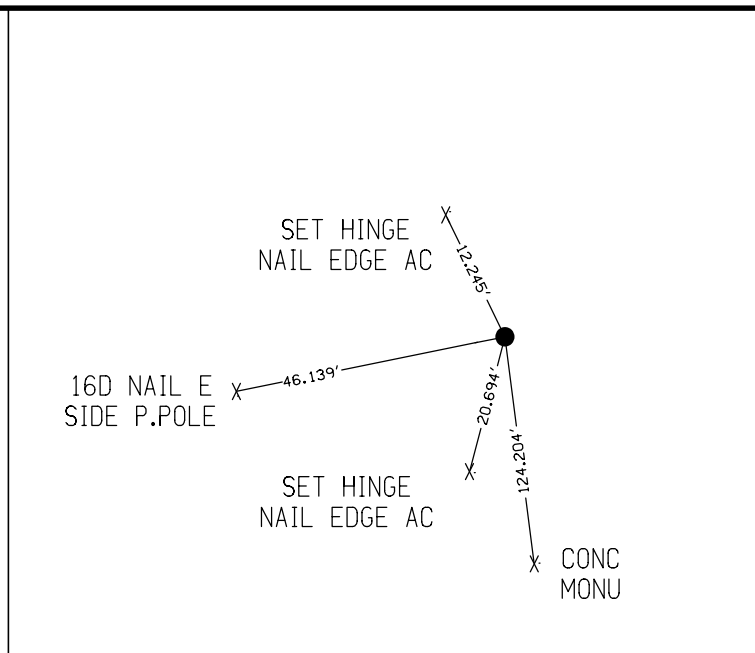
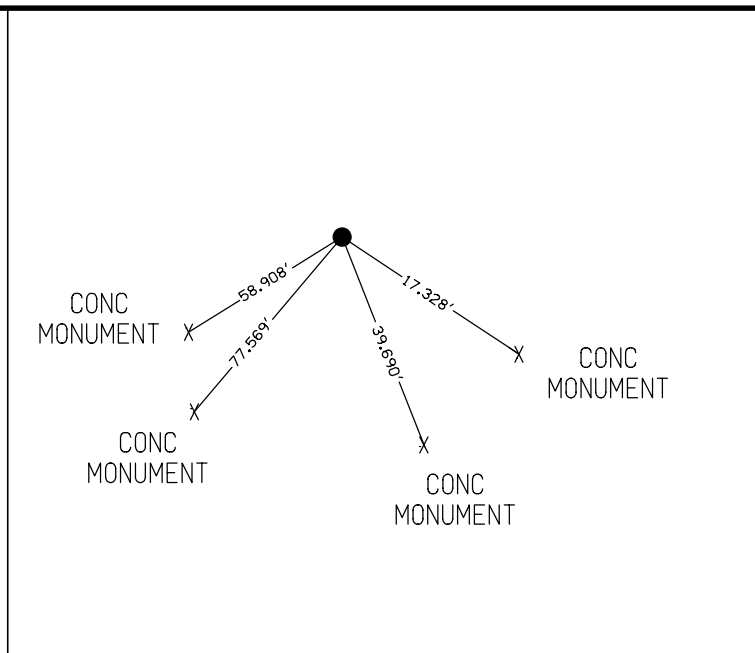
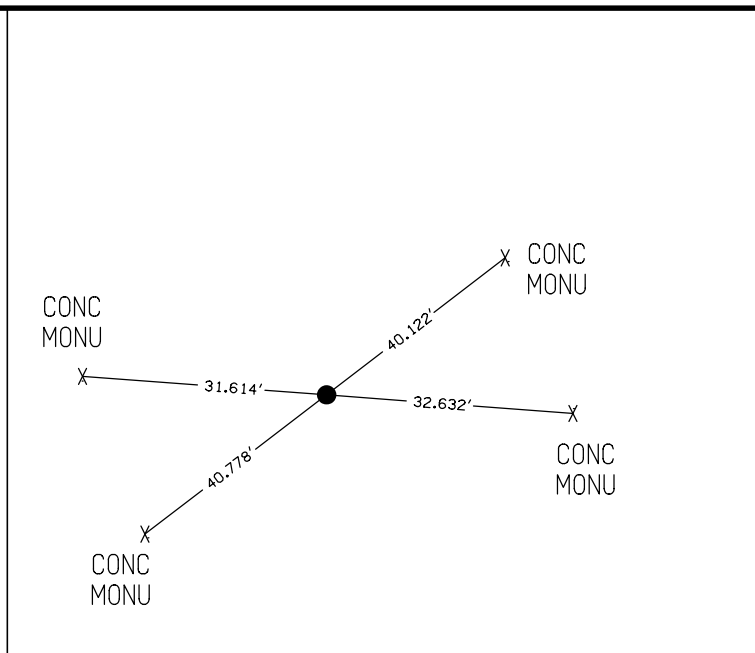
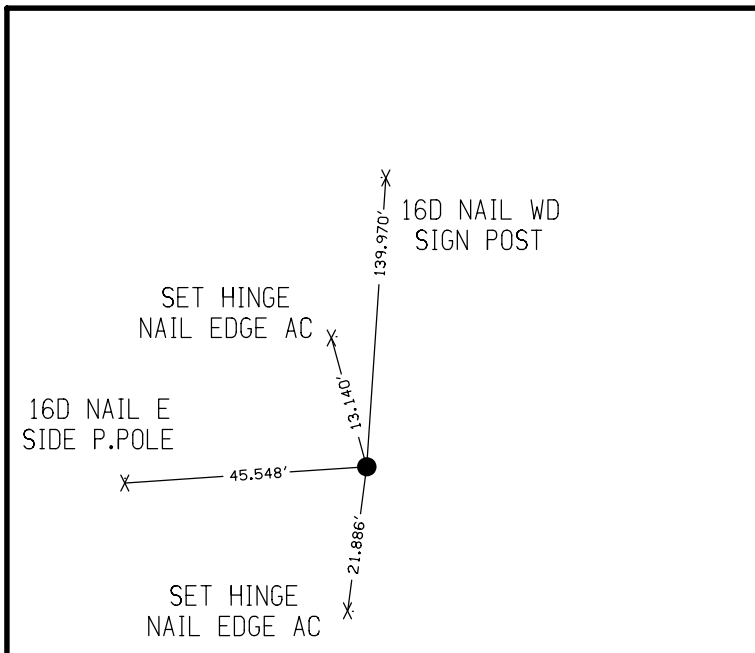
PI Sta. 442+59.10 This Survey
PI Sta. 442+59.10 Marshall Co. Proj No. F-146-(8)-20-64 Preliminary Plans.

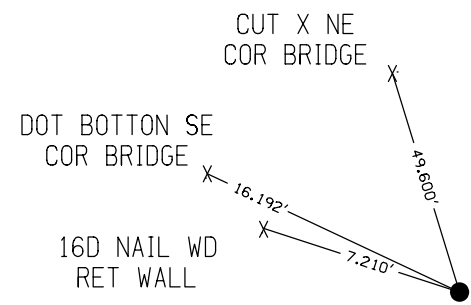
VERTICAL CONTROL

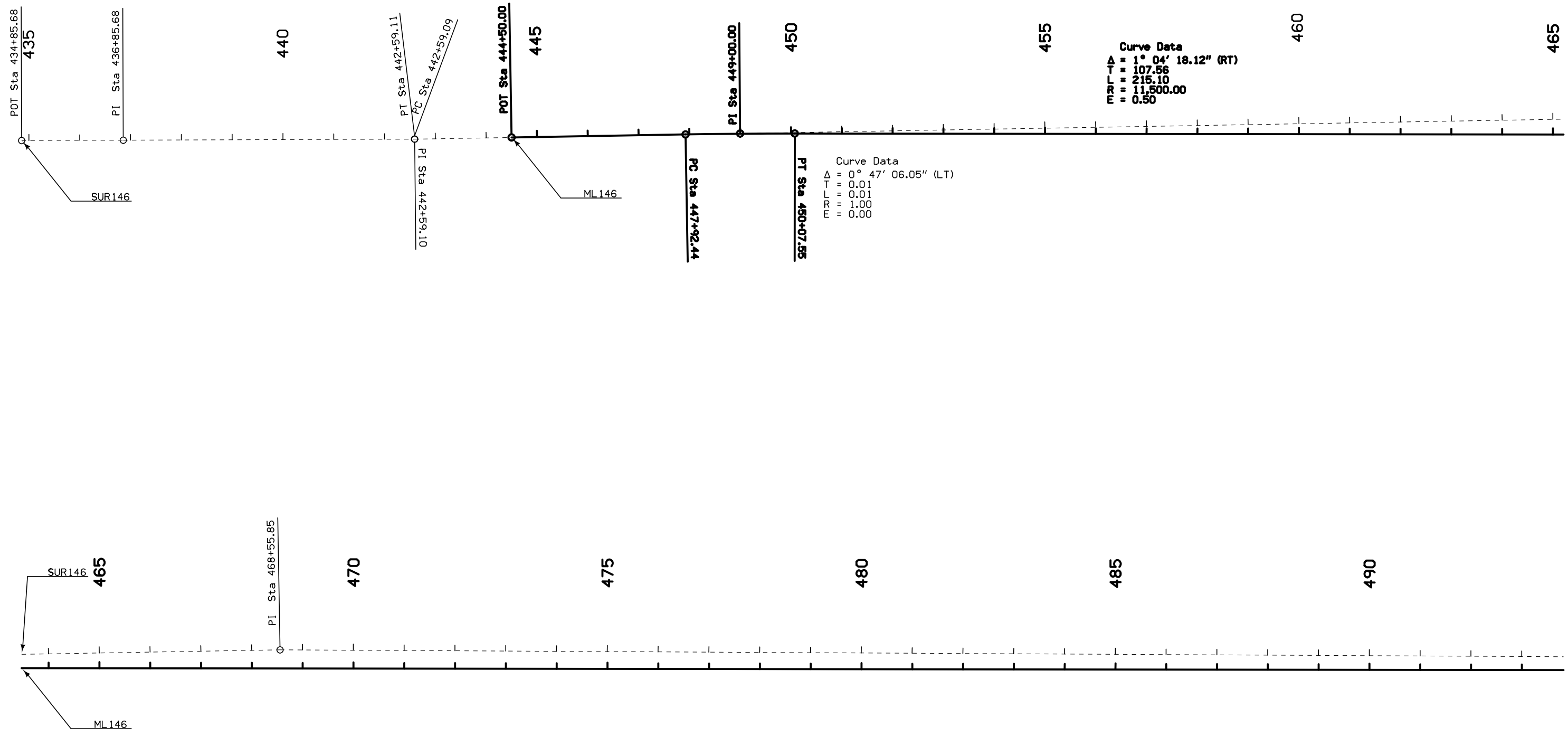
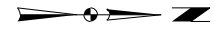
BENCHMARKS				ELEVATION
-----				-----
No. 524	Sta. 435+50.00	43.00 Rt.	BM 200 FOUND I.H.C. B.M. HDWL. T-----	909.250
No. 500	Sta. 435+50.01	42.70 Rt.	FOUND I.H.C. B.M. HDWL. T BM 200 BM#500 THIS SURVEY=BM500 WAYNE CARLSON SURVEY = BM#200 FR-146-4(8)--2G-64 MAY-JUNE 1987-----	909.250
No. 501	Sta. 442+00.69	54.23 Rt.	SET R.R. SPIKE IN W. SIDE BM 201 BM#501 THIS SURVEY=BM501 WAYNE CARLSON SURVEY = BM#201 FR-146-4(8)--2G-64 MAY-JUNE 1987-----	908.170
No. 502	Sta. 454+28.64	16.40 Rt.	CUT X RT. HDWL 3'X2.6' R. BM 202 BM#502 THIS SURVEY=BM502 WAYNE CARLSON SURVEY = BM#202 FR-146-4(8)--2G-64 MAY-JUNE 1987-----	923.170
No. 503	Sta. 464+50.22	18.49 Lt.	CUT X CT. HDWL 3'X3' R.C. BM 203 BM#503 THIS SURVEY=BM503 WAYNE CARLSON SURVEY = BM#203 FR-146-4(8)--2G-64 MAY-JUNE 1987-----	930.580
No. 519	Sta. 474+28.91	29.26 Lt.	SET RR SPK E. SIDE P.POLE-----	964.880
No. 504	Sta. 480+63.63	16.93 Rt.	FD X RT.HDWL 3'X2'X6' RCB BM#504 THIS SURVEY=BM504 WAYNE CARLSON SURVEY = BM#204 FR-146-4(8)--2G-64 MAY-JUNE 1987-----	962.190
No. 521	Sta. 491+48.92	15.59 Rt.	CUT X TOP HDWL 42" VCP-----	962.315
No. 505	Sta. 495+07.34	30.28 Lt.	SET RR SPK E. SIDE P.POLE BM#505 THIS SURVEY=BM505 WAYNE CARLSON SURVEY = BM#205 FR-146-4(8)--2G-64 MAY-JUNE 1987-----	976.510

BENCHMARKS				ELEVATION
-----				-----
No. 506	Sta. 503+95.83	30.03 Rt.	USGS STAN. CONC MON. #1 BM#506 THIS SURVEY=BM506 WAYNE CARLSON SURVEY = BM#206 FR-146-4(8)--2G-64 MAY-JUNE 1987-----	986.960
No. 523	Sta. 505+67.27	31.56 Lt.	SET RR SPK E. SIDE P.POLE-----	982.862
No. 507	Sta. 511+26.84	30.74 Lt.	SET RR SPK E. SIDE P.POLE BM#507 THIS SURVEY=BM507 WAYNE CARLSON SURVEY = BM#207 FR-146-4(8)--2G-64 MAY-JUNE 1987-----	955.560
No. 525	Sta. 523+42.00	15.00 Lt.	BM 208 CUT X LT. HDWL 3'X3.5' R.-----	910.650
No. 320	Sta. 523+42.00	15.00 Lt.	BM 208 CUT X LT. HDWL 3'X3.5' R.-----	910.650
No. 508	Sta. 523+42.30	15.13 Lt.	CUT X LT. HDWL 3'X3.5' R. BM 208 EL=910.65 =BM # 208 PLANS-----	910.650
No. 321	Sta. 533+21.48	19.69 Rt.	BM 209 FOUND X RT. HDWL 6'X4' R.-----	895.330
No. 509	Sta. 533+22.32	20.41 Rt.	FOUND X RT. HDWL 6'X4' R. BM 209 BM#509 THIS SURVEY=BM509 WAYNE CARLSON SURVEY = BM#209 FR-146-4(8)--2G-64 MAY-JUNE 1987-----	895.330
No. 510	Sta. 539+05.47	57.63 Lt.	SET RR SRK. IN E. SIDE P. BM 210 EL=913.02 =BM # 210 PLANS-----	913.020
No. 322	Sta. 539+06.59	57.85 Lt.	BM 210 SET RR SRK. IN E. SIDE P.-----	913.020
No. 323	Sta. 546+51.89	67.00 Rt.	BM 211 FOUND RR SPK. IN S. SIDE-----	920.050



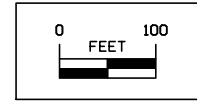


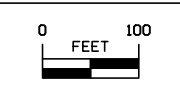
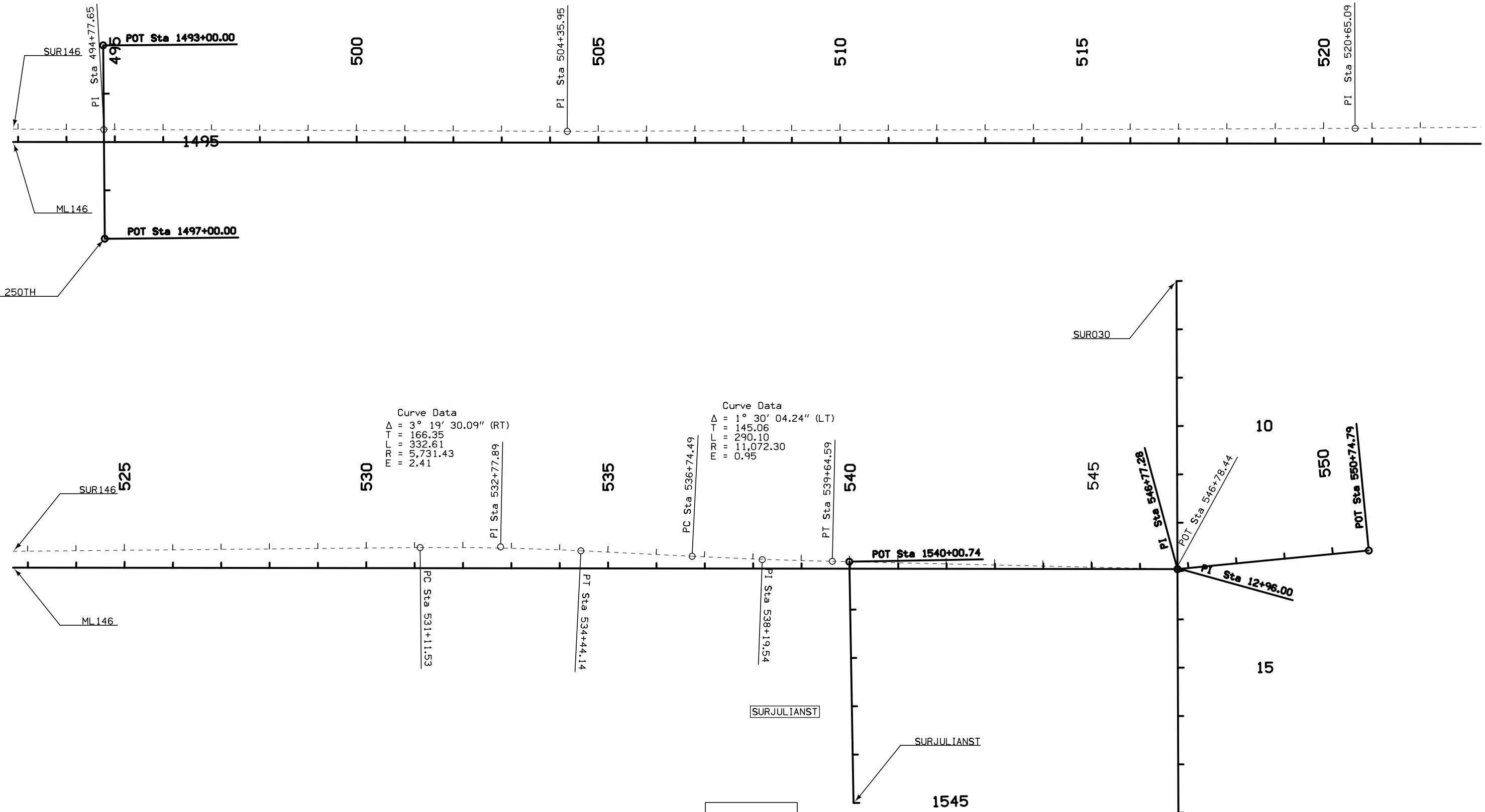


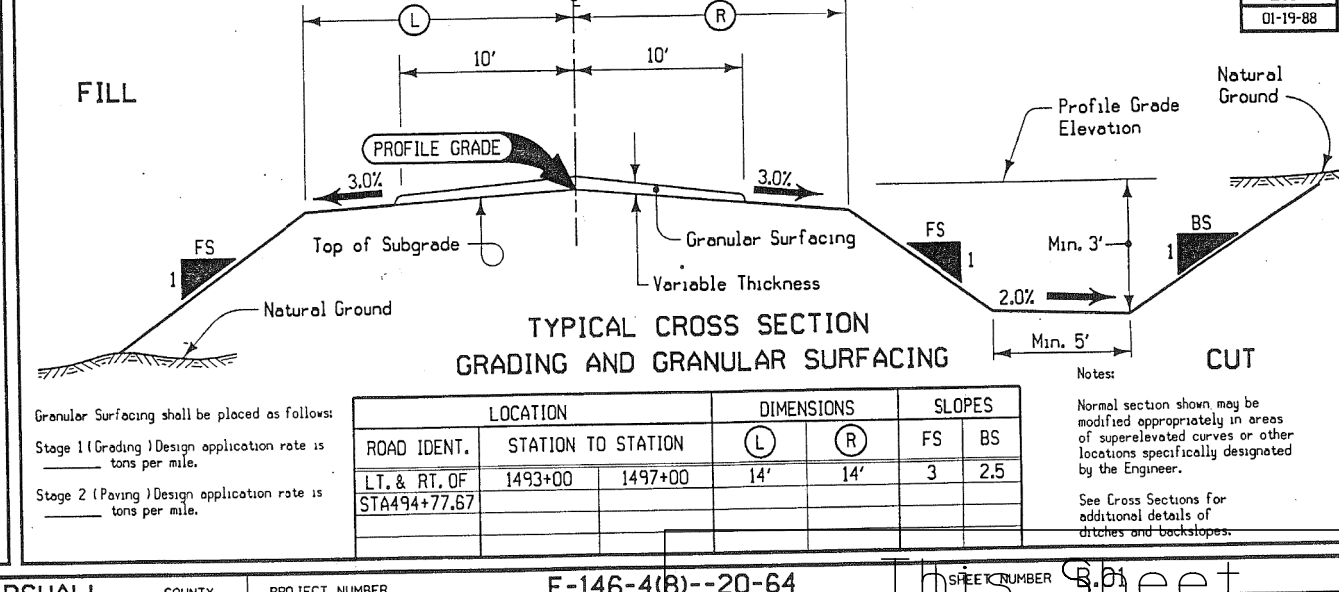
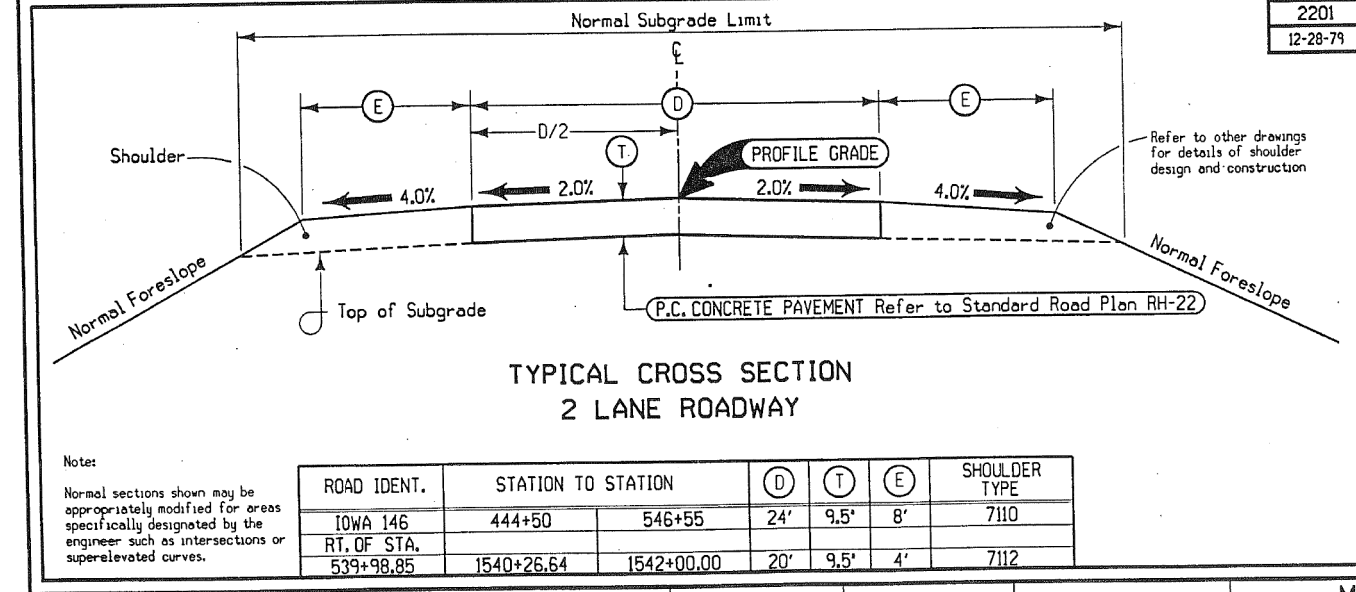
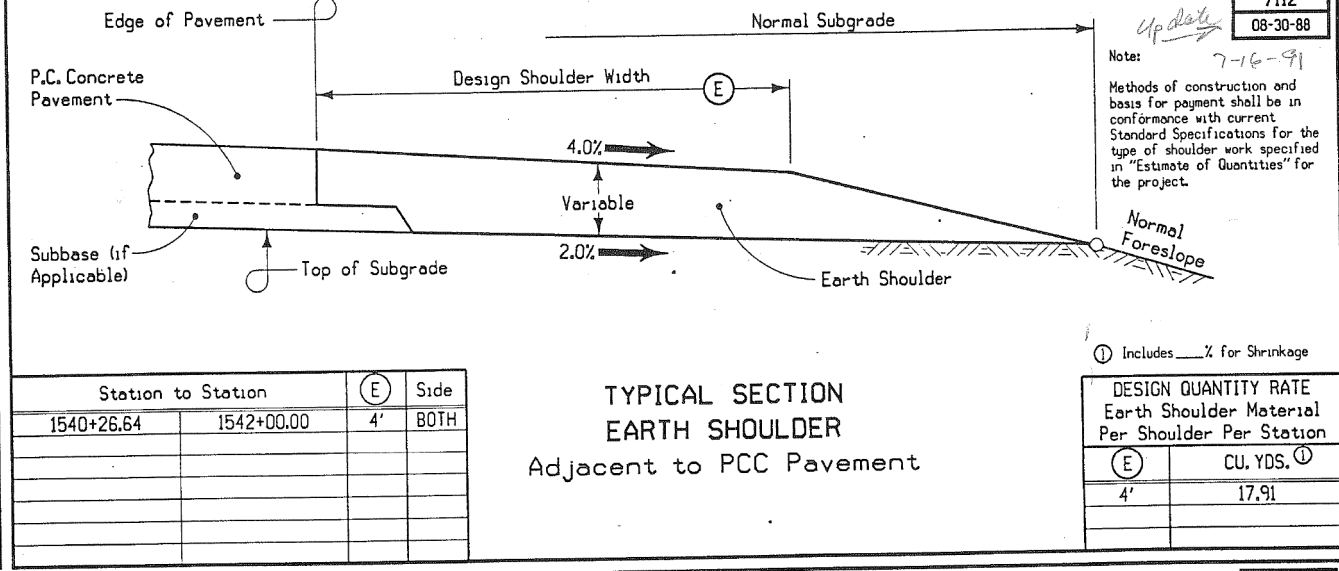
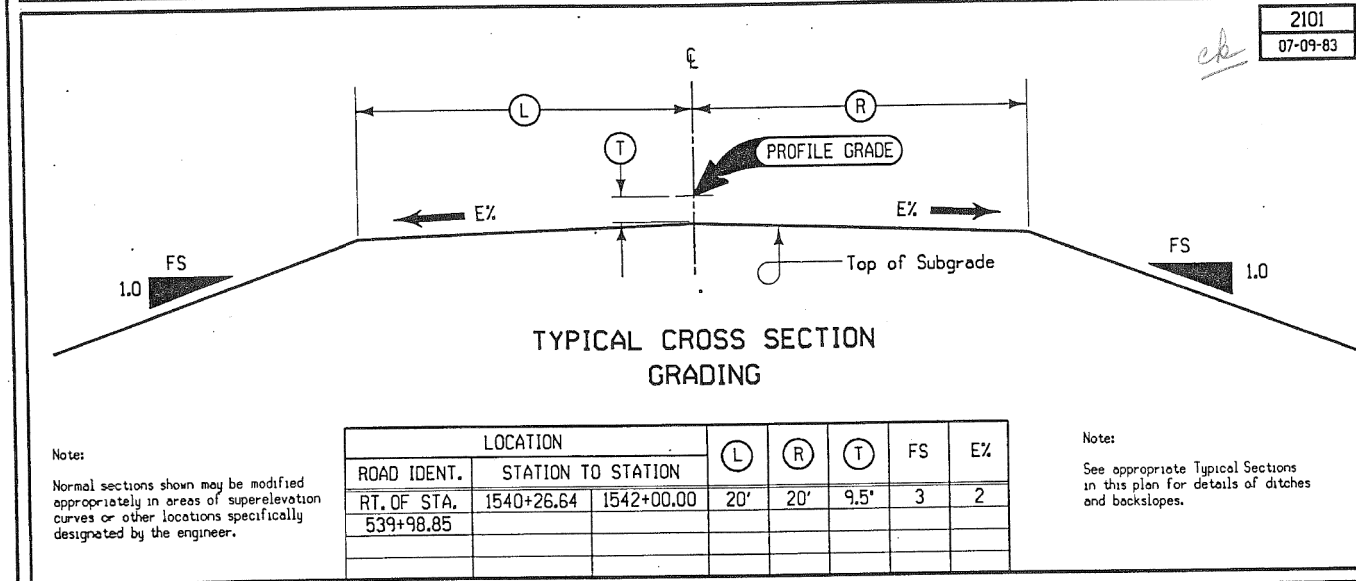
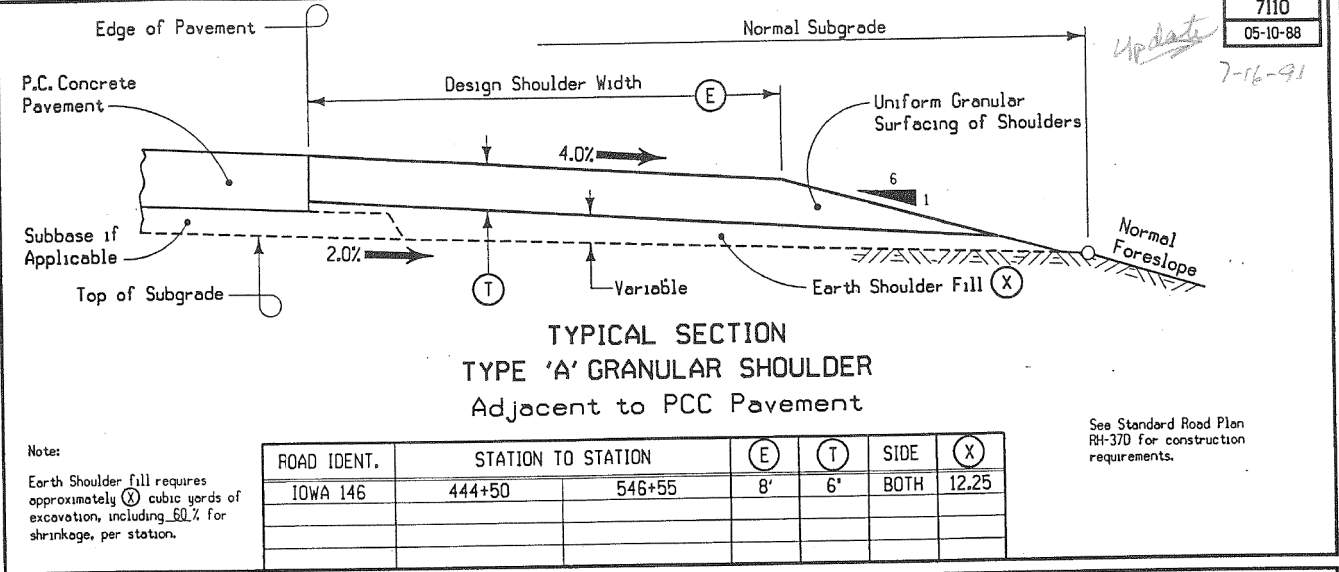
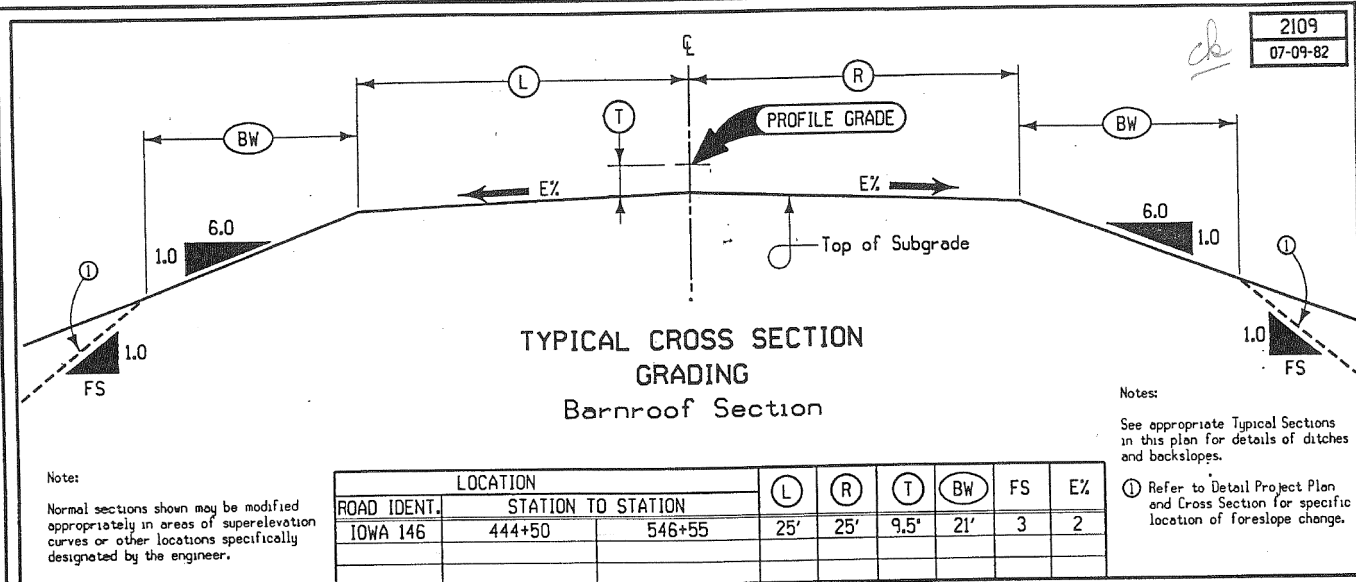


Curve Data
 $\Delta = 1^\circ 04' 18.12''$ (RT)
 T = 107.56
 L = 215.10
 R = 11,500.00
 E = 0.50

Curve Data
 $\Delta = 0^\circ 47' 06.05''$ (LT)
 T = 0.01
 L = 0.01
 R = 1.00
 E = 0.00







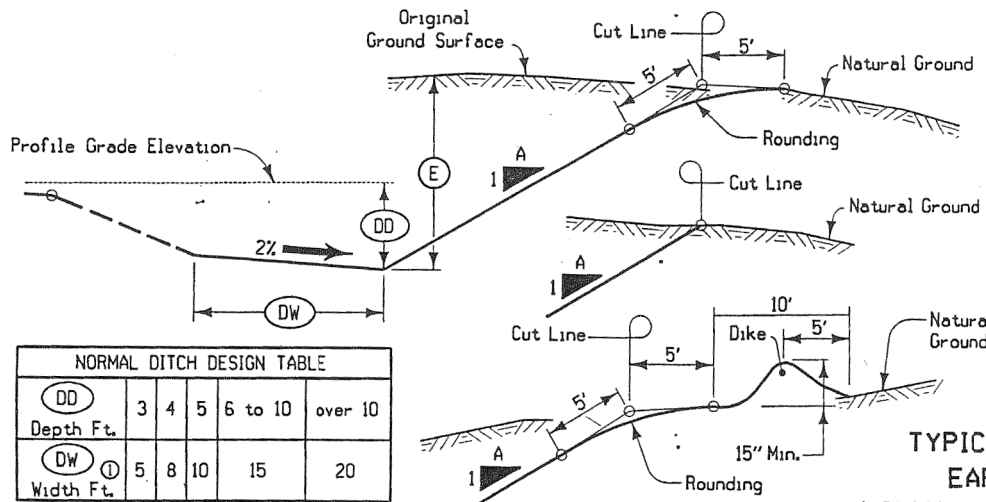
ROAD DESIGN • CADD • PRODUCED

STATE OF IOWA FHWA REGION 7 FISCAL YEAR

MARSHALL COUNTY PROJECT NUMBER F-146-4(8)--20-64

SHEET NUMBER 8 of 11

For Information Only.



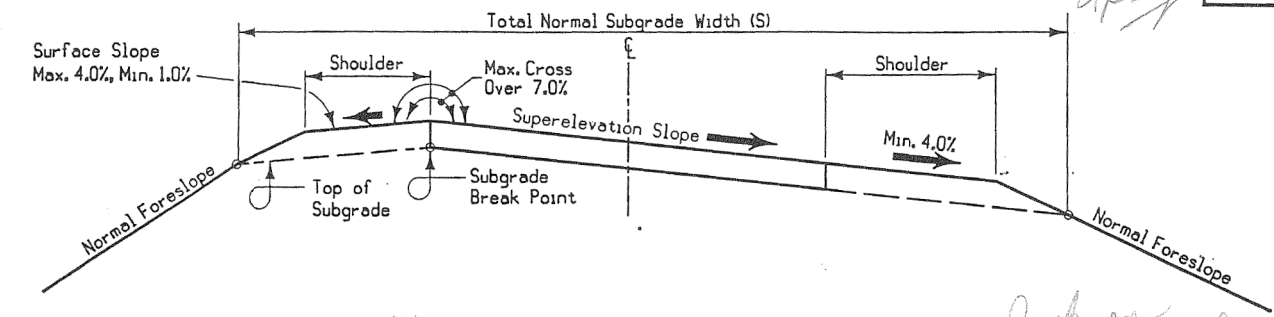
NORMAL DITCH DESIGN TABLE					
DD	3	4	5	6 to 10	over 10
Depth Ft.					
DW	5	8	10	15	20
Width Ft.					

① A 100' transition should be used between width changes.

Notes:
 For normal conditions, backslopes (A) shall be 2.5 on 1.0 for E depths less than 25', unless specified otherwise. Refer to detail project plans and cross sections for Ditch Depth or for Special Ditches.
 Refer to project plans for locations of areas where rounding of the back slope is not required.
 Refer to plans for locations of intercepting ditches. Dike for intercepting ditch shall be made by taking earth from roadway side. Do not excavate back of dike.

TYPICAL CROSS SECTION
 EARTH EXCAVATION
 NORMAL DITCH AND BACKSLOPE

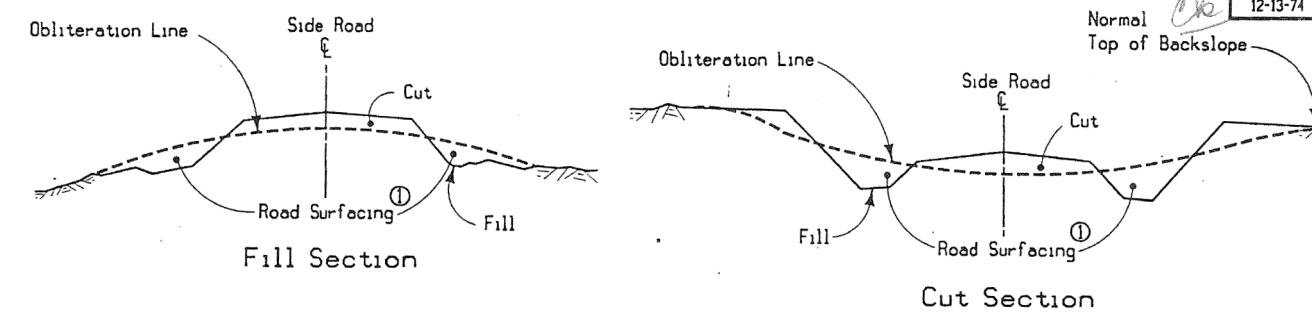
4101
 09-23-86



Notes:
 High Side: The shoulder slope shall be maintained at the normal rate of 4.0% unless this slope produces a grade break with adjacent pavement of more than 7.0%. The shoulder slope shall then be determined by a 7.0% break with adjacent pavement. If superelevation slope exceeds 6.0%, use Typical 2014 for high side shoulder.
 Low Side: The shoulder slope shall be maintained at normal rate of 4.0% unless the adjacent pavement slope is steeper, in which case the shoulder will slope at the same slope as adjacent pavement.

SUPERELEVATION (UP TO 6.0%)
 TYPICAL CROSS SECTION
 ALL PAVED A.C. CONC. or P.C. CONC. SHOULDERS

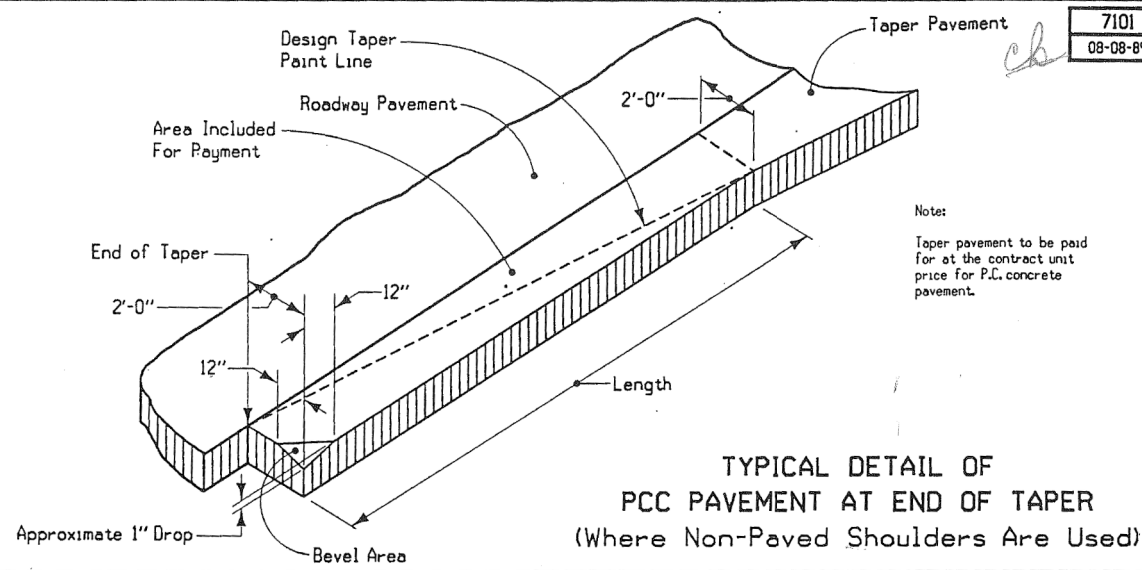
2012
 07-21-87



Notes:
 Existing road surfacing (granular material) shall be placed as shown unless otherwise directed by the engineer or provided for in the detail project plans.
 The work of obliterating or reshaping old roadbeds shall be done at the direction of the engineer. Any such work necessary shall not be paid for directly, but shall be considered incidental to other work on the project.

TYPICAL DETAILS FOR OBLITERATION EXISTING ROADBED

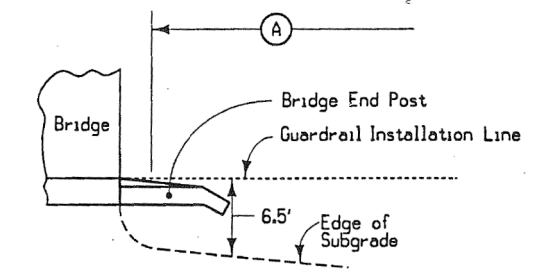
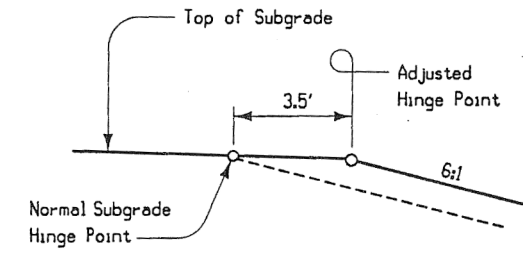
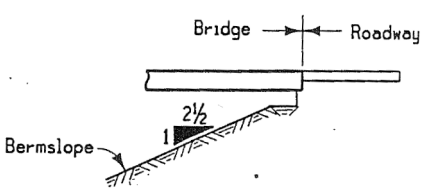
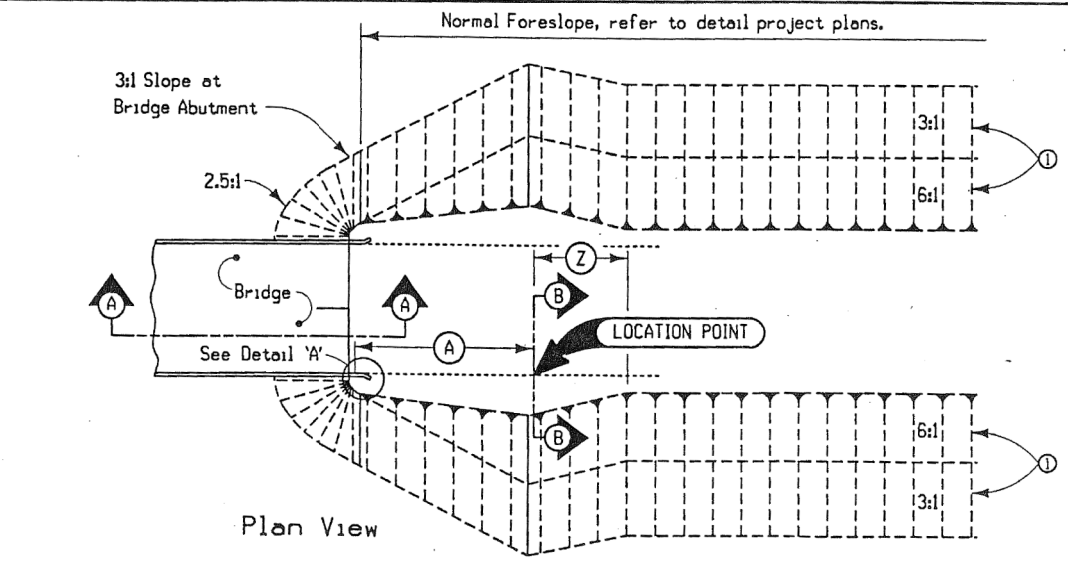
4302
 12-13-74



Notes:
 Taper pavement to be paid for at the contract unit price for P.C. concrete pavement.

TYPICAL DETAIL OF
 PCC PAVEMENT AT END OF TAPER
 (Where Non-Paved Shoulders Are Used)

7101
 08-08-89



Notes:
 Refer to tabulation 107-23 for listings of Location Points and Dimensions A and Z.
 ① Barnroof section refer to other Typical Drawings.

FORESLOPE TRANSITION AT BRIDGE
 FROM BARNROOF SECTION

4306
 07-21-87

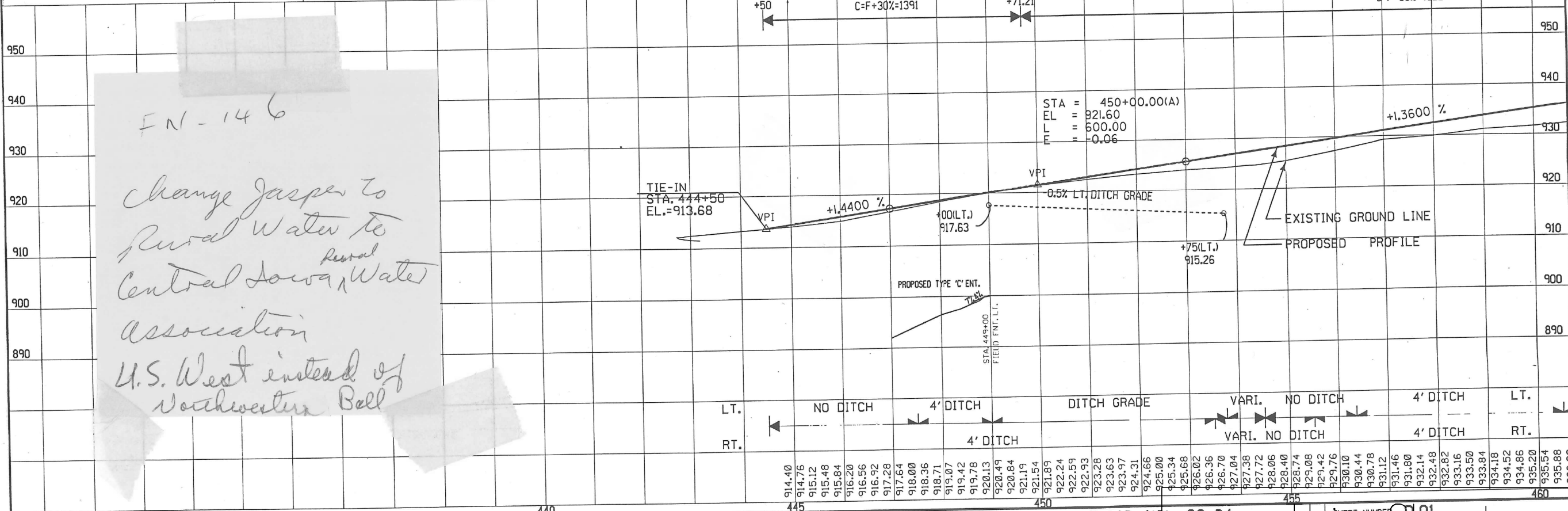
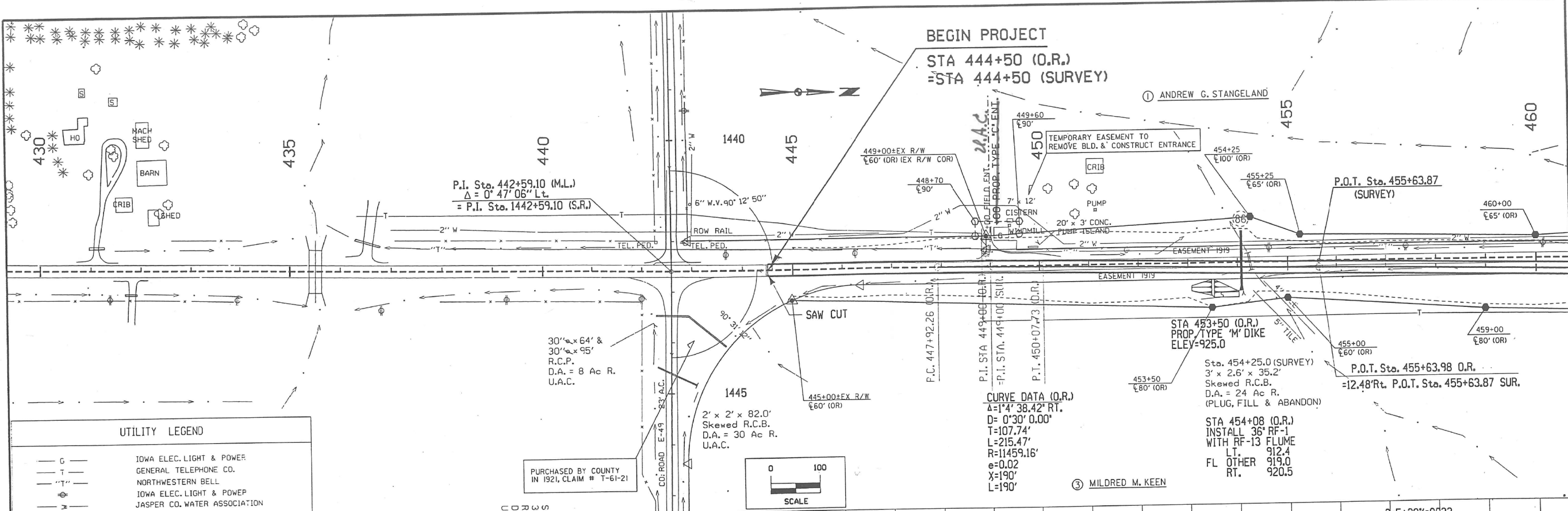
ROAD DESIGN • CAD • PRODUCED

STATE OF IOWA FHWA REGION 7 FISCAL YEAR

MARSHALL COUNTY PROJECT NUMBER F-146-4(8)--20-64

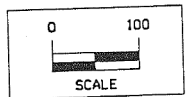
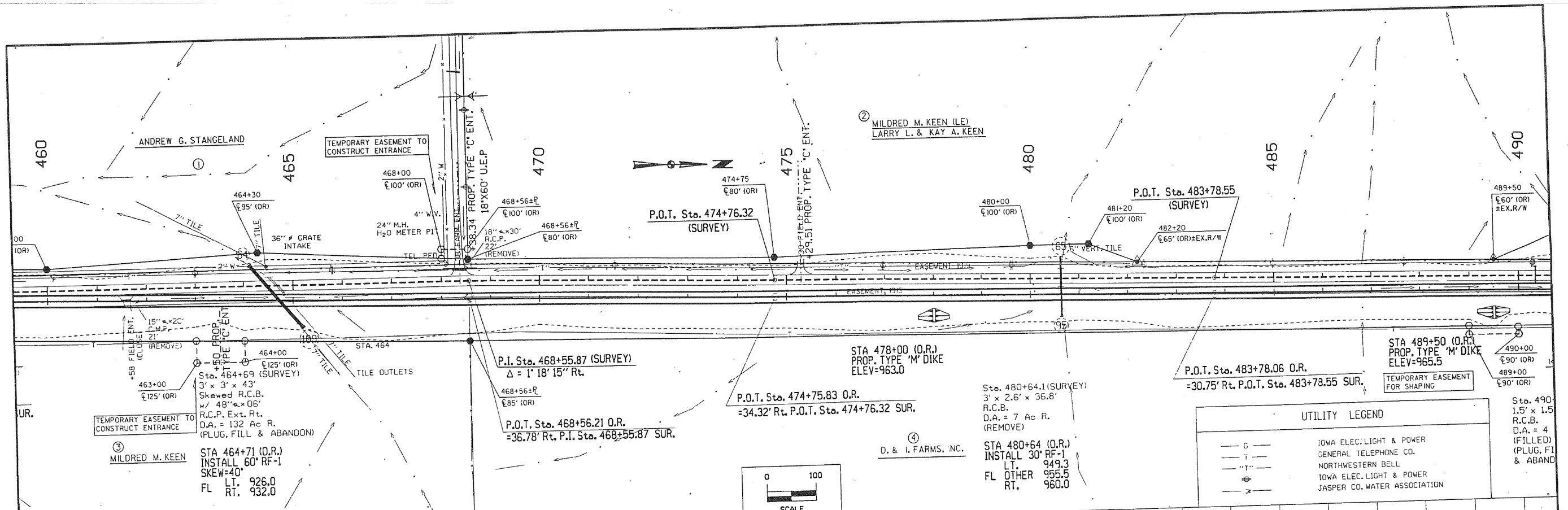
SHEET NUMBER B.02

This Sheet
 For Information Only

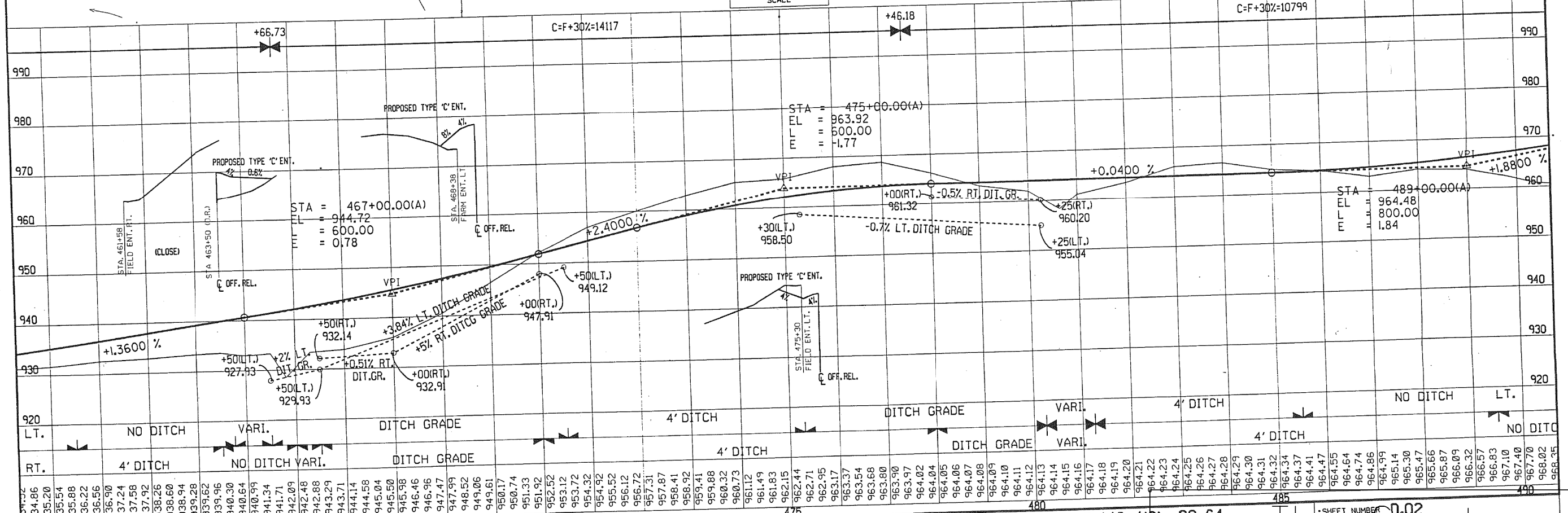


FN-146
 Change Jasper to Rural Water to Central Iowa Rural Water Association
 U.S. West instead of Northwestern Bell

This Sheet For Information Only.



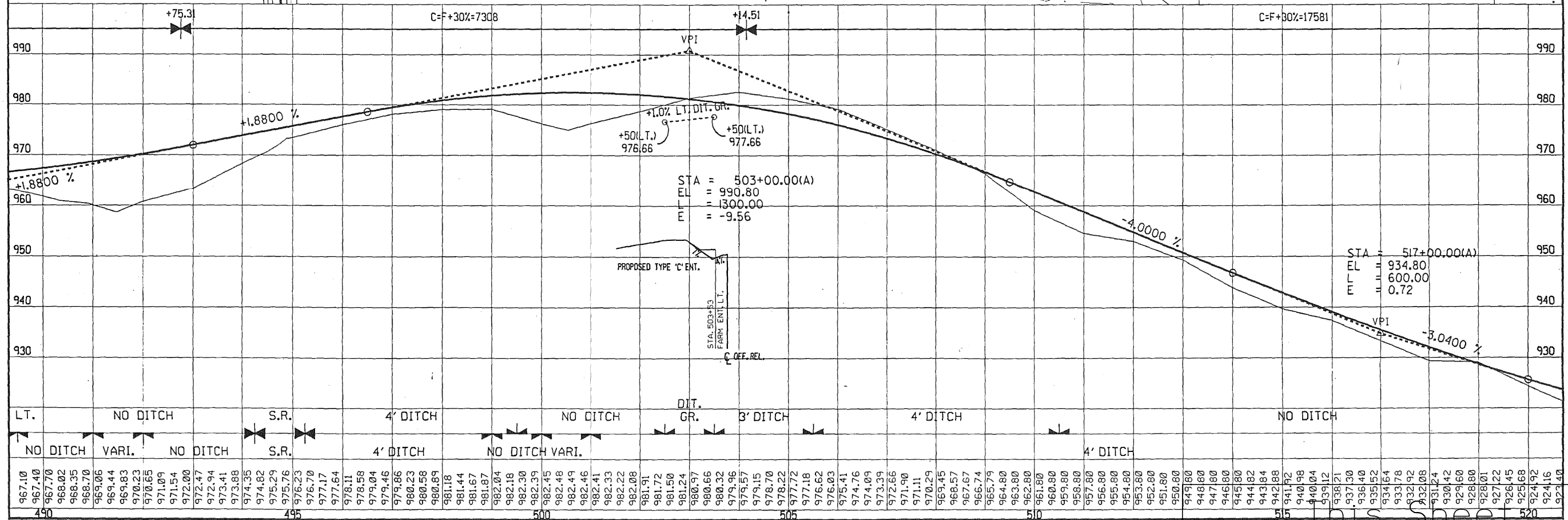
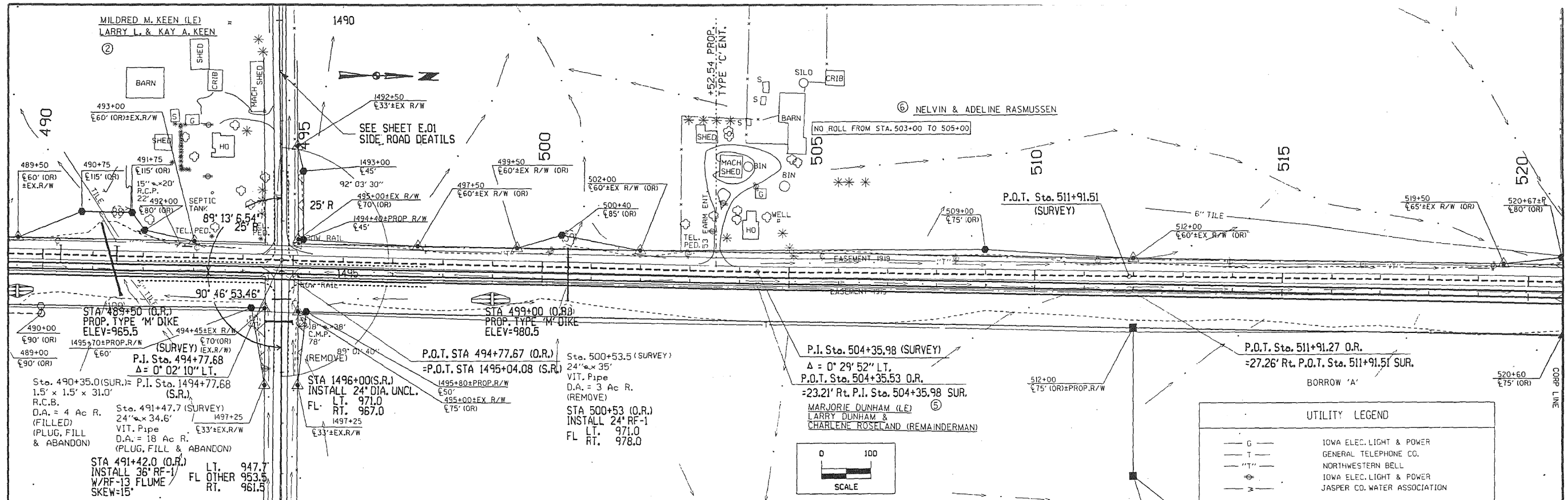
UTILITY LEGEND	
— G —	IOWA ELEC. LIGHT & POWER
— T —	GENERAL TELEPHONE CO.
— "T" —	NORTHWESTERN BELL
— P —	IOWA ELEC. LIGHT & POWER
— X —	JASPER CO. WATER ASSOCIATION



934.86	935.20	935.54	935.88	936.22	936.56	936.90	937.24	937.58	937.92	938.26	938.60	938.94	939.28	939.62	939.96	940.30	940.64	940.98	941.32	941.66	942.00	942.34	942.68	943.02	943.36	943.70	944.04	944.38	944.72	945.06	945.40	945.74	946.08	946.42	946.76	947.10	947.44	947.78	948.12	948.46	948.80	949.14	949.48	949.82	950.16	950.50	950.84	951.18	951.52	951.86	952.20	952.54	952.88	953.22	953.56	953.90	954.24	954.58	954.92	955.26	955.60	955.94	956.28	956.62	956.96	957.30	957.64	957.98	958.32	958.66	959.00	959.34	959.68	960.02	960.36	960.70	961.04	961.38	961.72	962.06	962.40	962.74	963.08	963.42	963.76	964.10	964.44	964.78	965.12	965.46	965.80	966.14	966.48	966.82	967.16	967.50	967.84	968.18	968.52
--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------

ROAD DESIGN • CADD • PRODUCED STATE OF IOWA FHWA REGION 7 FISCAL YEAR MARSHALL COUNTY PROJECT NUMBER F-146-4(8)--20-64 SHEET NUMBER 0.02

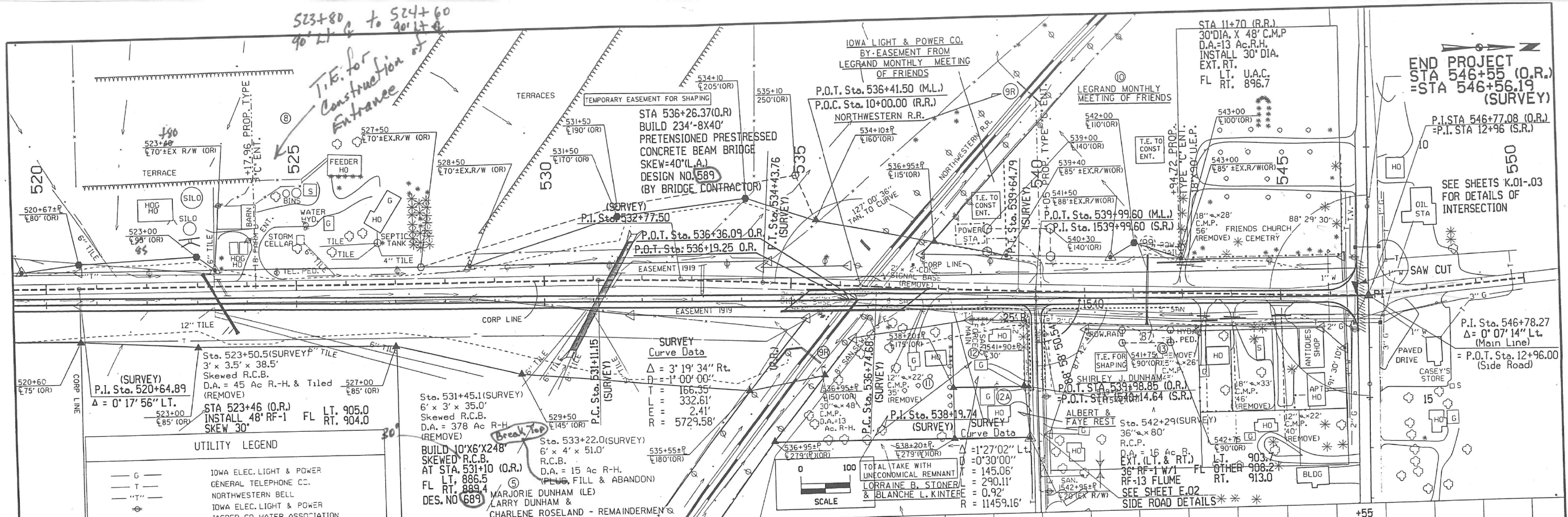
This Sheet For Information Only.



967.10	967.40	967.70	968.02	968.35	968.70	969.06	969.44	969.83	970.23	970.65	971.09	971.54	972.00	972.47	972.94	973.41	973.88	974.35	974.82	975.29	975.76	976.23	976.70	977.17	977.64	978.11	978.58	979.04	979.46	979.86	980.23	980.58	980.89	981.18	981.44	981.67	981.87	982.04	982.18	982.30	982.39	982.45	982.48	982.49	982.46	982.41	982.33	982.22	982.08	981.91	981.72	981.50	981.24	980.97	980.66	980.32	979.96	979.57	979.15	978.70	978.22	977.72	977.18	976.62	976.03	975.41	974.76	974.09	973.39	972.66	971.90	971.11	970.29	969.45	968.57	967.67	966.74	965.79	964.80	963.80	962.80	961.80	960.80	959.80	958.80	957.80	956.80	955.80	954.80	953.80	952.80	951.80	950.80	949.80	948.80	947.80	946.80	945.80	944.82	943.84	942.88	941.92	940.98	940.04	939.12	938.21	937.30	936.40	935.52	934.64	933.78	932.92	932.08	931.24	930.42	929.60	928.80	928.01	927.22	926.45	925.68	924.92	924.16	923.40
--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------

ROAD DESIGN • CADD • PRODUCED STATE OF IOWA FHWA REGION 7 FISCAL YEAR MARSHALL COUNTY PROJECT NUMBER F-146-4(8)--20-64 SHEET NUMBER D.03

For Information Only



UTILITY LEGEND

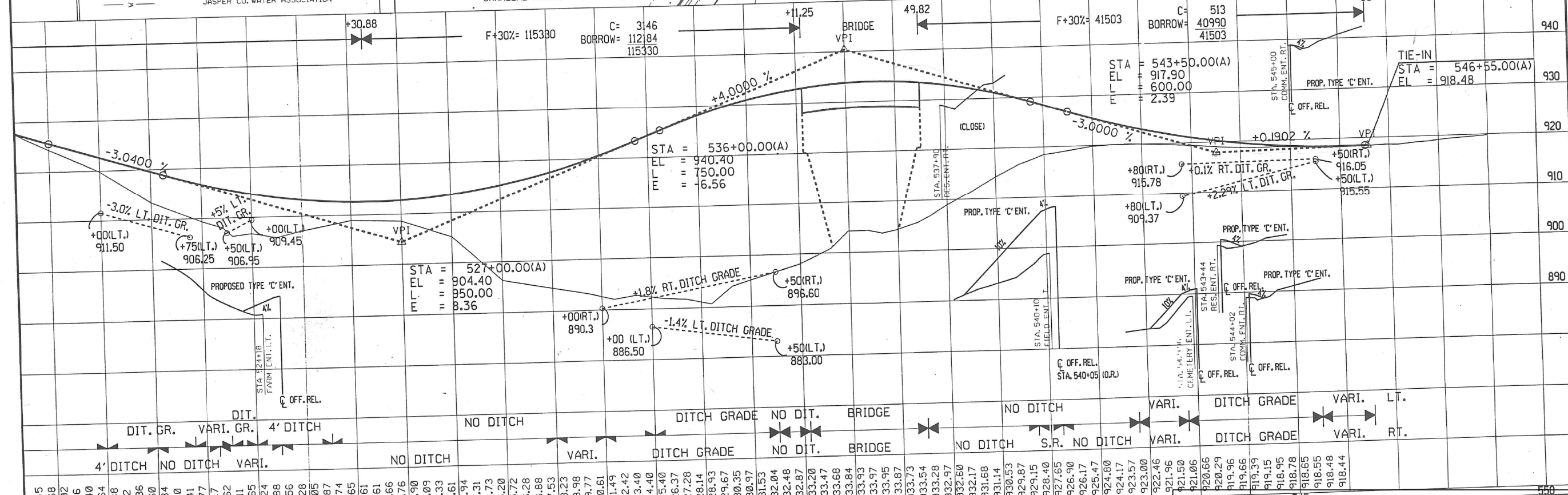
- G — IOWA ELEC. LIGHT & POWER
- T — GENERAL TELEPHONE CO.
- NORTHWESTERN BELL
- IOWA ELEC. LIGHT & POWER
- x — JASPER CO. WATER ASSOCIATION

SURVEY Curve Data

$\Delta = 3^\circ 19' 34''$ Rt.
 $D = -1^\circ 00' 00''$
 $L = 166.35'$
 $T = 332.61'$
 $E = 2.41'$
 $R = 5729.58'$

SURVEY Curve Data

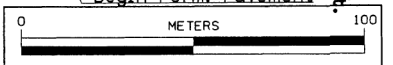
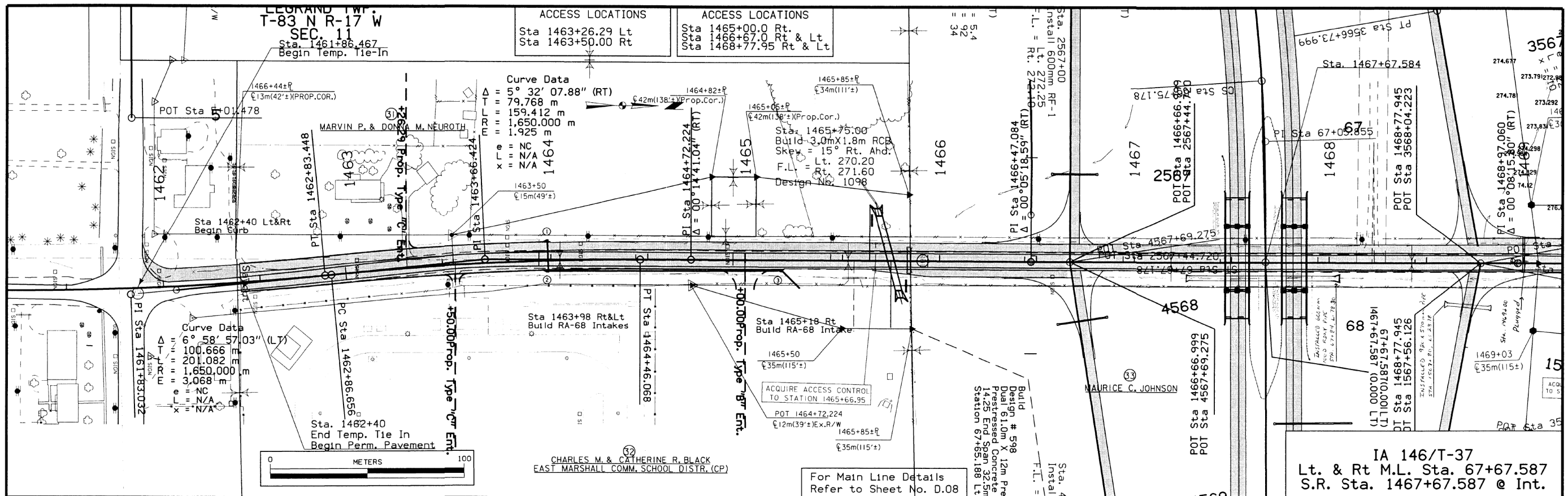
$\Delta = 1^\circ 27' 02''$ Lt.
 $D = 0^\circ 30' 00''$
 $L = 145.06'$
 $T = 290.11'$
 $E = 0.92'$
 $R = 11459.16'$



926.45	925.68	924.92	924.16	923.40	922.64	921.88	921.12	919.60	918.84	918.10	917.41	916.77	915.62	915.11	914.65	914.24	913.88	913.56	913.28	913.05	912.74	912.65	912.61	912.61	912.66	912.76	913.00	913.09	913.33	913.61	913.94	914.31	914.73	915.20	915.72	916.28	916.88	917.53	918.23	918.98	919.77	920.61	921.49	922.42	923.40	924.40	925.40	926.37	927.28	928.14	928.93	929.67	930.35	930.97	931.53	932.04	932.48	932.87	933.20	933.47	933.68	933.84	933.93	933.97	933.95	933.87	933.73	933.54	933.28	932.97	932.60	932.17	931.68	931.14	930.53	929.87	929.15	928.40	927.65	926.90	926.17	925.47	924.80	924.17	923.57	923.00	922.46	921.96	921.50	921.06	920.66	920.29	919.96	919.66	919.39	919.15	918.95	918.78	918.65	918.55	918.48	918.44	550
--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	-----

ROAD DESIGN • CADD • PRODUCED STATE OF IOWA FHWA REGION 7 FISCAL YEAR MARSHALL COUNTY PROJECT NUMBER F-146-4(8)--20-64 SHEET NUMBER 0104

This Sheet For Information Only.



For Detour Pavement Refer to Sheet No. F.07

For Storm Sewer Profiles Refer to Sheet No. M.05

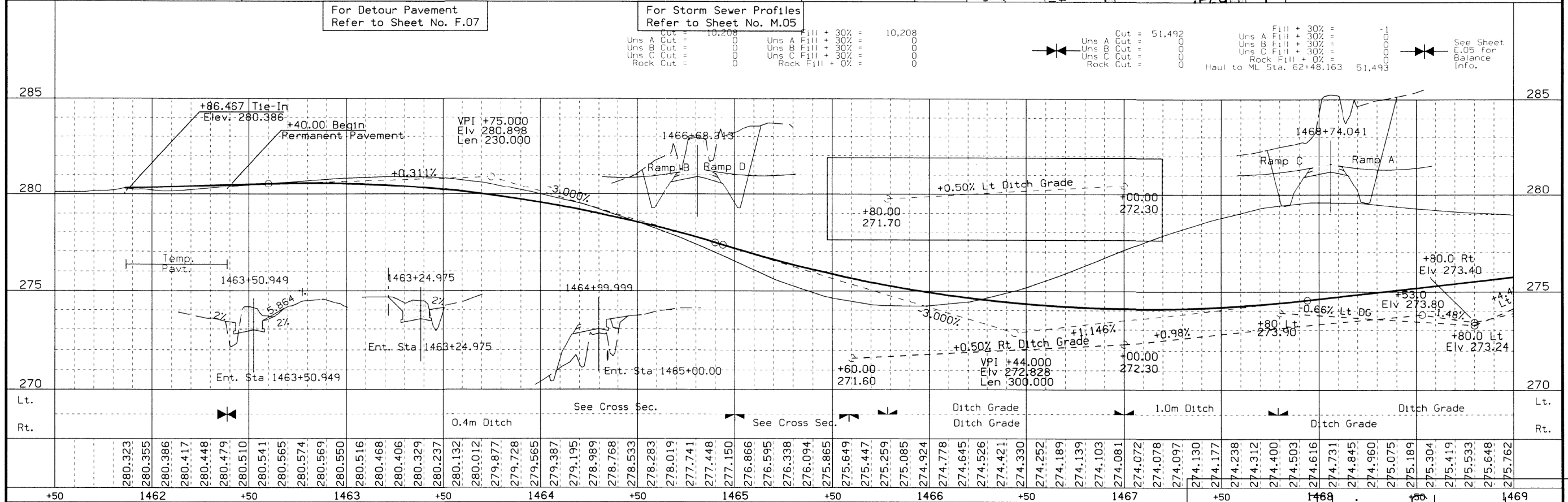
For Main Line Details Refer to Sheet No. D.08

IA 146/T-37
Lt. & Rt M.L. Sta. 67+67.587
S.R. Sta. 1467+67.587 @ Int.

Cut	10,208	Fill + 30%	10,208
Uns A Cut	0	Uns A Fill + 30%	0
Uns B Cut	0	Uns B Fill + 30%	0
Uns C Cut	0	Uns C Fill + 30%	0
Rock Cut	0	Rock Fill + 0%	0

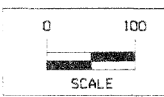
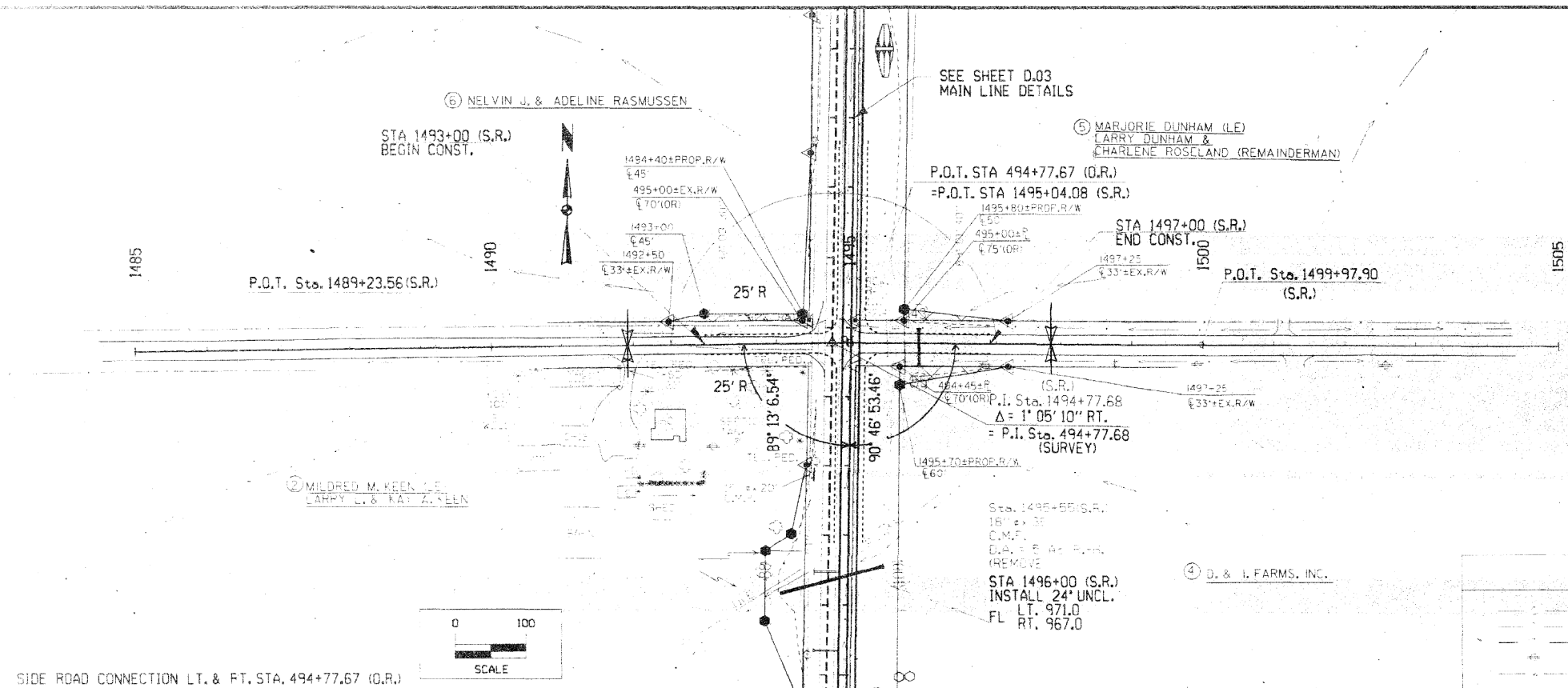
Uns A Cut	51,492	Fill + 30%	-1
Uns B Cut	0	Uns A Fill + 30%	0
Uns C Cut	0	Uns B Fill + 30%	0
Rock Cut	0	Uns C Fill + 30%	0
		Rock Fill + 0%	0
		Haul to ML Sta. 62+48.163	51,493

See Sheet E.05 for Balance Info.



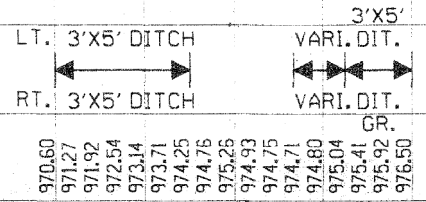
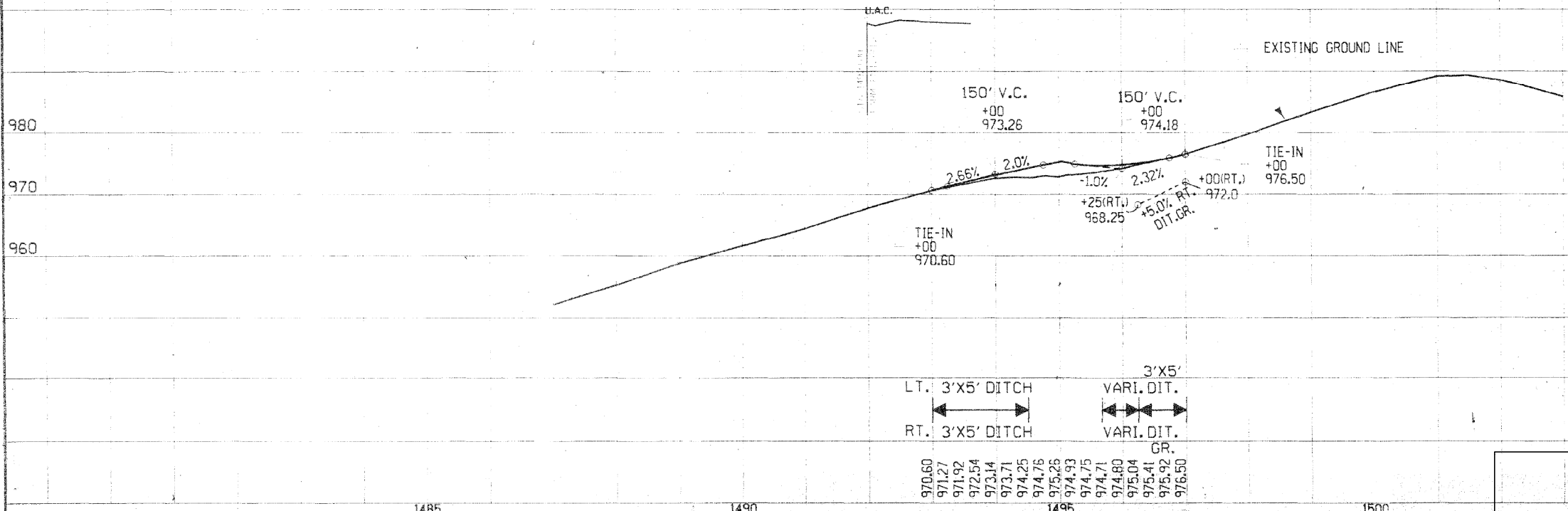
DESIGN TEAM	ABRAMS/SMITH	METRIC	IOWA DOT * OFFICE OF DESIGN	COUNTY	MARSHALL	PROJECT NUMBER	NHSX-30-5(166)--3H-64	SHEET NUMBER	E.04
-------------	--------------	--------	-----------------------------	--------	----------	----------------	-----------------------	--------------	------

For Information Only



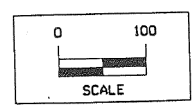
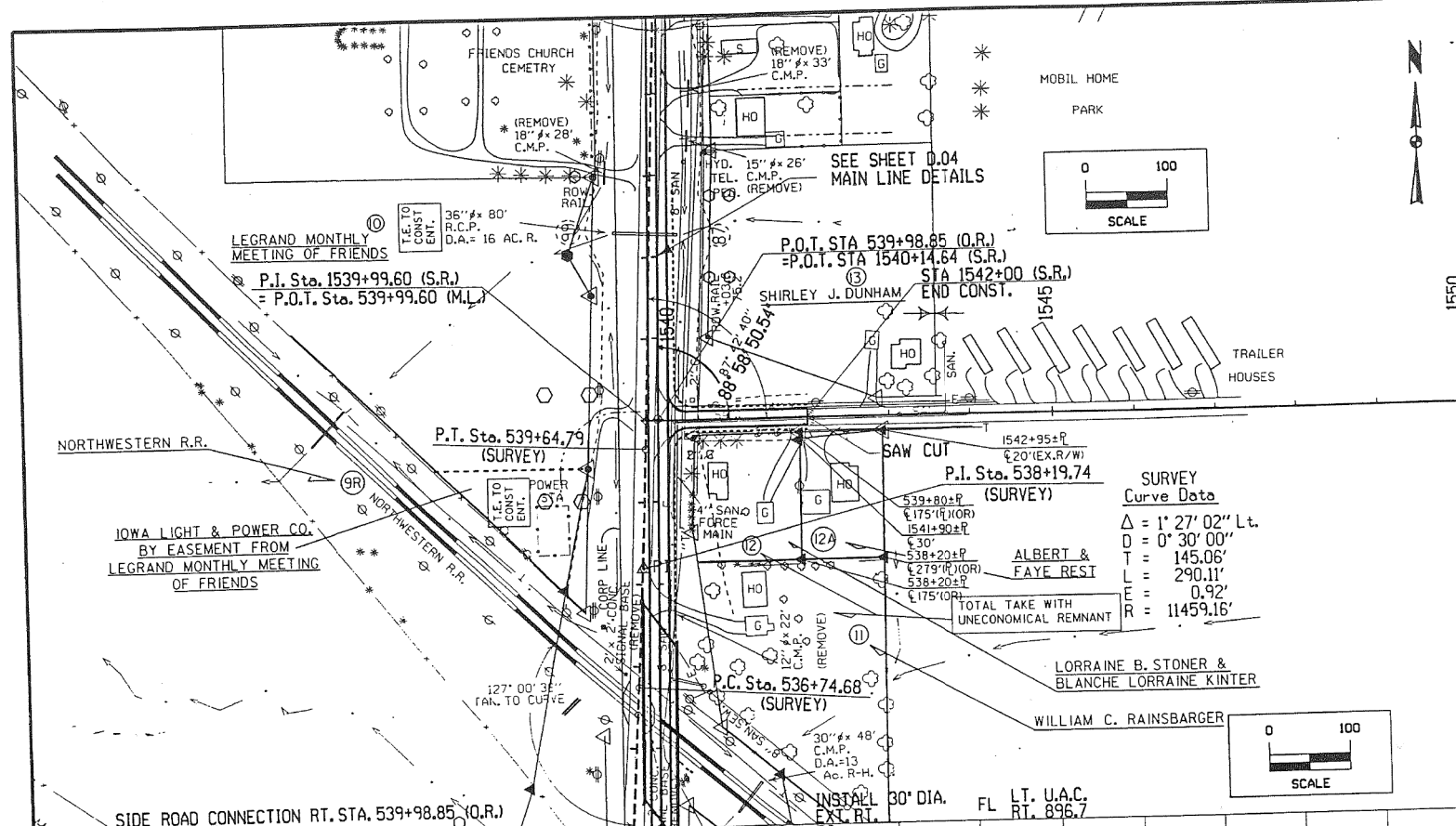
UTILITY LEGEND	
	TOWN ELECTRIC & POWER
	GENERAL TELEPHONE CO.
	NORTHWESTERN BELL
	IOWA ELECTRIC & POWER
	HARBOR HILL WATER ASSOCIATION

+50	+44	+64	+50
C=701	F+30%=150	F+30%=130	C=106
	WASTE=551		BORROW=24
	701		130



This Sheet
For Information Only

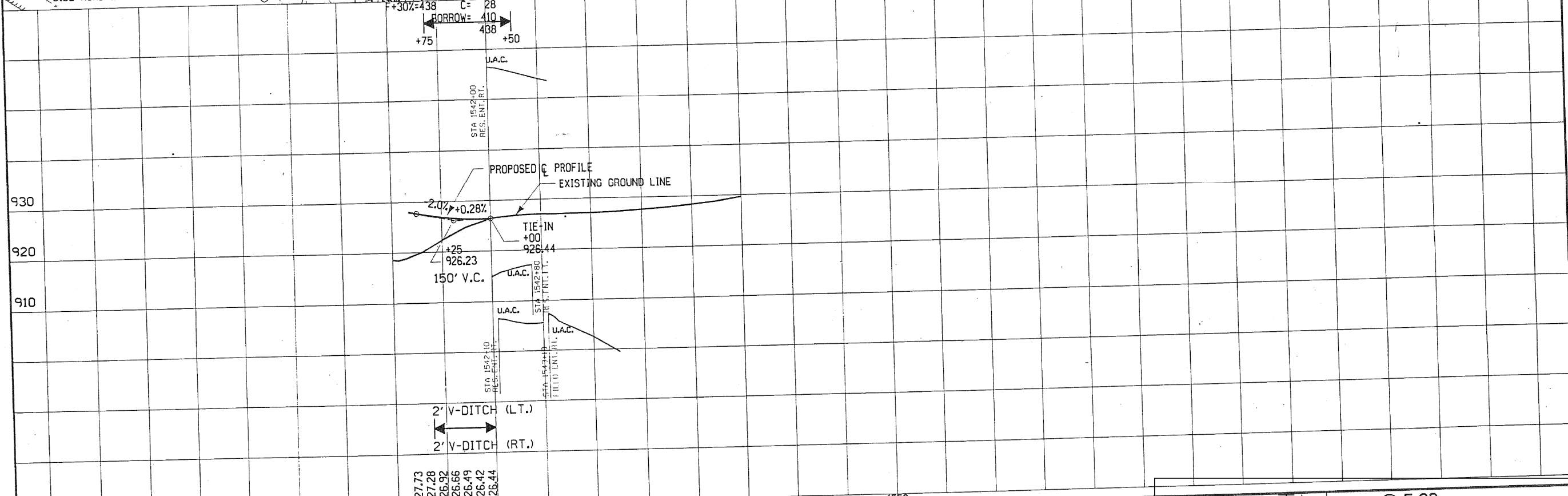
ROAD DESIGN • CADD • PRODUCED STATE OF IOWA FHWA REGION 7 FISCAL YEAR MARSHALL COUNTY PROJECT NUMBER F-146-4(8)--20-64



SURVEY
Curve Data

$\Delta = 1' 27' 02''$ Lt.
 $D = 0' 30' 00''$
 $T = 145.06'$
 $L = 290.11'$
 $E = 0.92'$
 $R = 11459.16'$

UTILITY LEGEND	
— G —	IOWA ELEC. LIGHT & POWER
— T —	GENERAL TELEPHONE CO.
— "T" —	NORTHWESTERN BELL
— W —	IOWA ELEC. LIGHT & POWER
— W —	JASPER CO. WATER ASSOCIATION



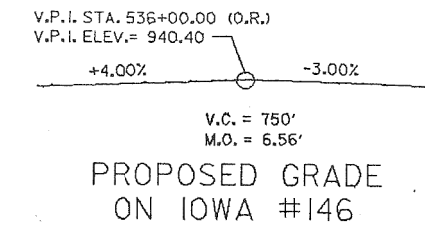
ROAD DESIGN • CADD • PRODUCED STATE OF IOWA FHWA REGION 7 FISCAL YEAR MARSHALL COUNTY PROJECT NUMBER F-146-4(8)--20-64 SHEET NUMBER E.02

This Sheet
For Information Only.

BENCH MARK NO. 209, STA. 533+22 (SURVEY), 21' RT., FOUND "X" ON RT. HDWL. OF 6'x4' R.C.B., ELEV. 895.33.

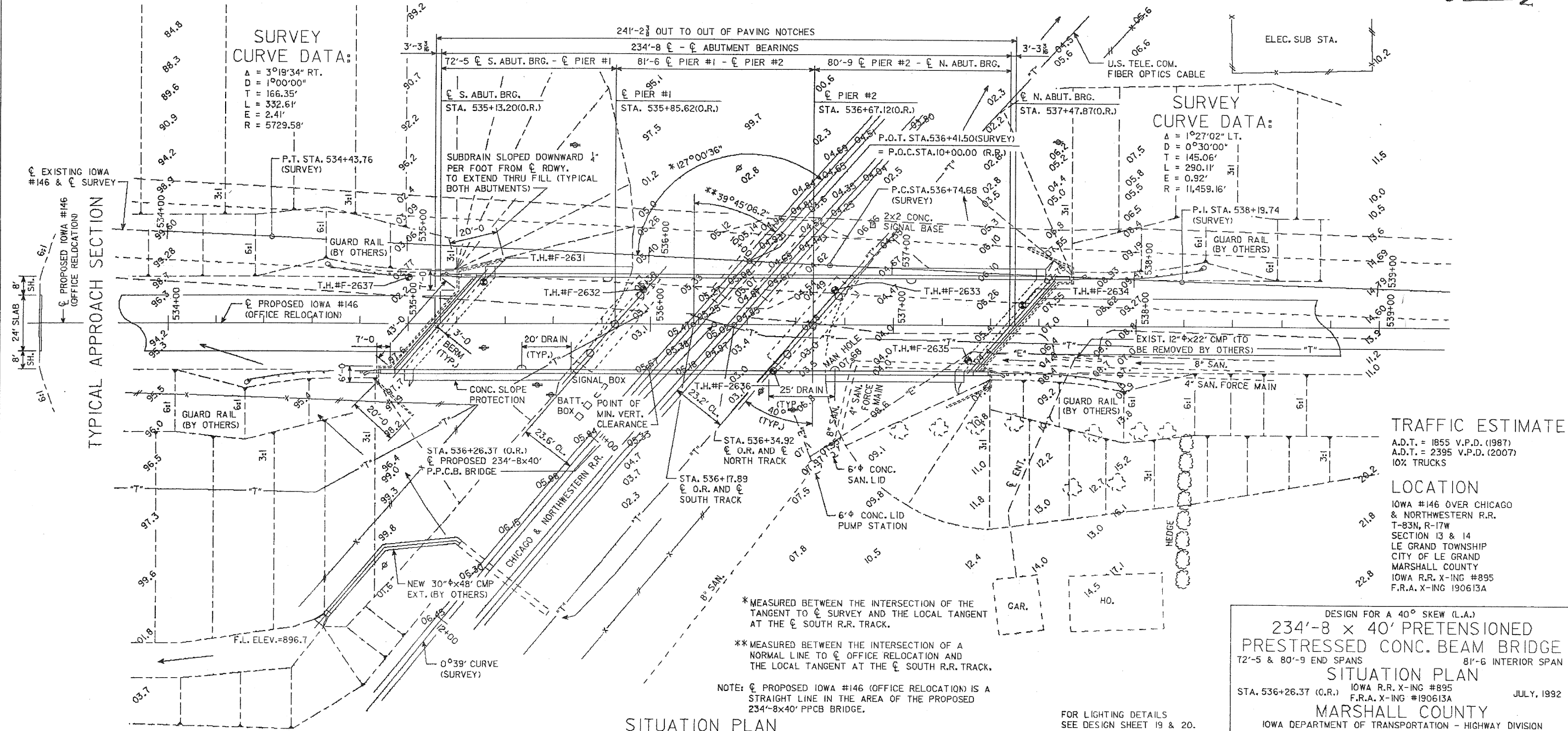
940	BERM EL. 925.6	GR. ELEV. = 933.05	PIER TOP ELEV. 929.18	GR. ELEV. = 933.76	PIER TOP ELEV. 929.37	GR. ELEV. = 933.96	BERM EL. 926.2	GR. ELEV. = 933.56	PROPOSED GRADE LINE	940
930	ABUT. TOP ELEV. 928.25		CRASHWALL ELEV. 911.75		CRASHWALL ELEV. 912.04		ABUT. TOP ELEV. 928.77			930
920	BOTT. FTG. ELEV. 923.62		CONC. SLOPE PROTECTION 2 1/2:1 (NORMAL)		CONC. SLOPE PROTECTION 2 1/2:1 (NORMAL)		BOTT. FTG. ELEV. 924.22			920
910			23.0' MIN. VERT. CL.							910
900			48' - HP10x42 STEEL BEARING PILING		21' - HP10x42 STEEL BEARING PILING		15' - HP10x42 STEEL BEARING PILING		EXISTING GROUND LINE	900
890			BOTT. FTG. ELEV. = 897.75				BOTT. FTG. ELEV. = 898.04			890
880										880

LONGITUDINAL SECTION ALONG C PROPOSED ROADWAY



SURVEY CURVE DATA:
 $\Delta = 3^{\circ}19'34''$ RT.
 $D = 1^{\circ}00'00''$
 $T = 166.35'$
 $L = 332.61'$
 $E = 2.41'$
 $R = 5729.58'$

SURVEY CURVE DATA:
 $\Delta = 1^{\circ}27'02''$ LT.
 $D = 0^{\circ}30'00''$
 $T = 145.06'$
 $L = 290.11'$
 $E = 0.92'$
 $R = 11,459.16'$



TRAFFIC ESTIMATE
 A.D.T. = 1855 V.P.D. (1987)
 A.D.T. = 2395 V.P.D. (2007)
 10% TRUCKS

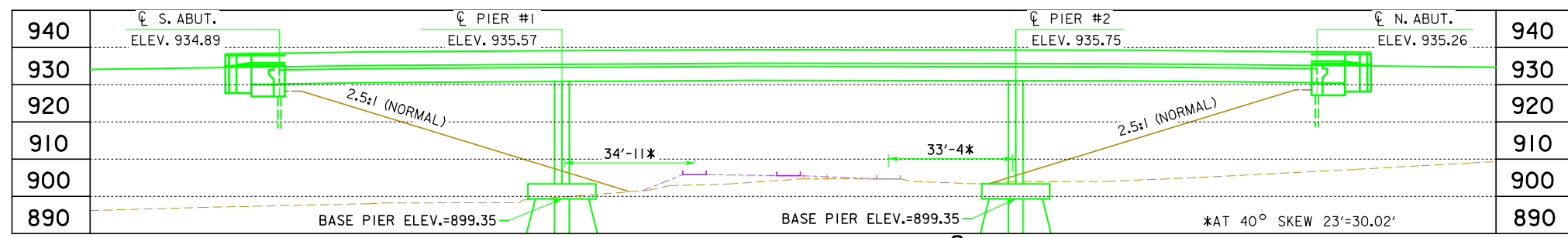
LOCATION
 IOWA #146 OVER CHICAGO & NORTHWESTERN R.R.
 T-83N, R-17W
 SECTION 13 & 14
 LE GRAND TOWNSHIP
 CITY OF LE GRAND
 MARSHALL COUNTY
 IOWA R.R. X-ING #895
 F.R.A. X-ING 190613A

DESIGN FOR A 40° SKEW (L.A.)
**234'-8' x 40' PRETENSIONED
 PRESTRESSED CONC. BEAM BRIDGE**
 72'-5' & 80'-9' END SPANS 81'-6' INTERIOR SPAN
SITUATION PLAN
 STA. 536+26.37 (O.R.) IOWA R.R. X-ING #895
 F.R.A. X-ING #190613A JULY, 1992
MARSHALL COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGNED BY THAYNE SORENSON TRACED BY _____
 CHECKED BY _____
 H64059200.SD2 DEVICE : ZHA0:(200,004) ARCH. TAPE NO. _____ DATE _____

MARSHALL COUNTY PROJECT NUMBER _____
 DESIGN SHEET NO. 2 OF 23 FILE NO. 27772 DESIGN NO. 592

This Sheet
 For Information Only.



3.975% -3.500%

PI STA 536+00.00 VC = 1000'

PI ELEV 945.15

PROPOSED PROFILE GRADE ON IA 146

PROFILE GRADE LINE (PGL) IS AT ϕ OF LANES.
TOP OF BRIDGE DECK AT ϕ ROADWAY IS 0.03' BELOW THE PROFILE GRADE TO ACCOUNT FOR PARABOLIC CROWN.

TRAFFIC ESTIMATE

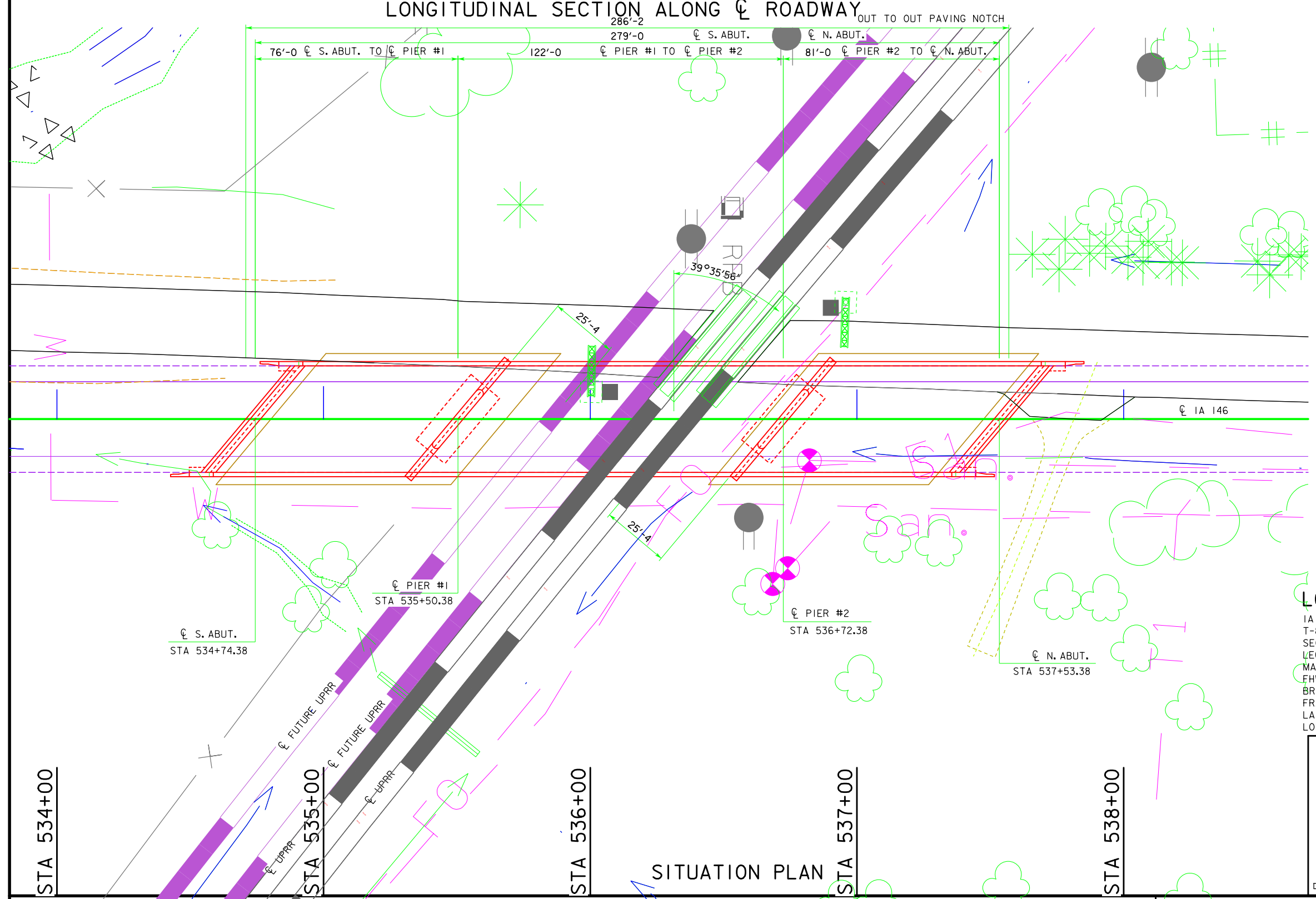
20?? AADT ? V.P.D.

20?? AADT ? V.P.D.

20?? DHV - V.P.H

TRUCKS ? %

TOTAL DESIGN ESAL's -

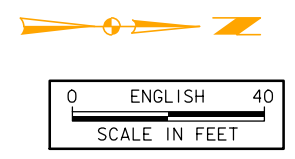


MINIMUM VERTICAL CLEARANCE

OVERHEAD STATION=535+36.96, 20' RT.
CALCULATED OVERHEAD PGL ELEVATION=935.51
DEPTH OF SUPERSTRUCTURE=4.99
UNDERPASS STATION=535+36.96, 20' RT.
UNDERPASS ELEVATION=906.58
MINIMUM VERTICAL CLEARANCE=23.94

LOCATION

IA 146 OVER UPRR
T-83N R-17W
SECTION 13/14
LEGRAND TOWNSHIP
MARSHALL COUNTY
FHWA NO.
BRIDGE MAINT. NO. ?
FRA NO. 190613A, IA RR NO. 895
LATITUDE ?° N
LONGITUDE ?° W



DESIGN FOR 40° SKEW LA

279'-0 X 40' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

76'-0 & 81'-0 END SPANS 122'-0 CENTER SPAN

SITUATION PLAN

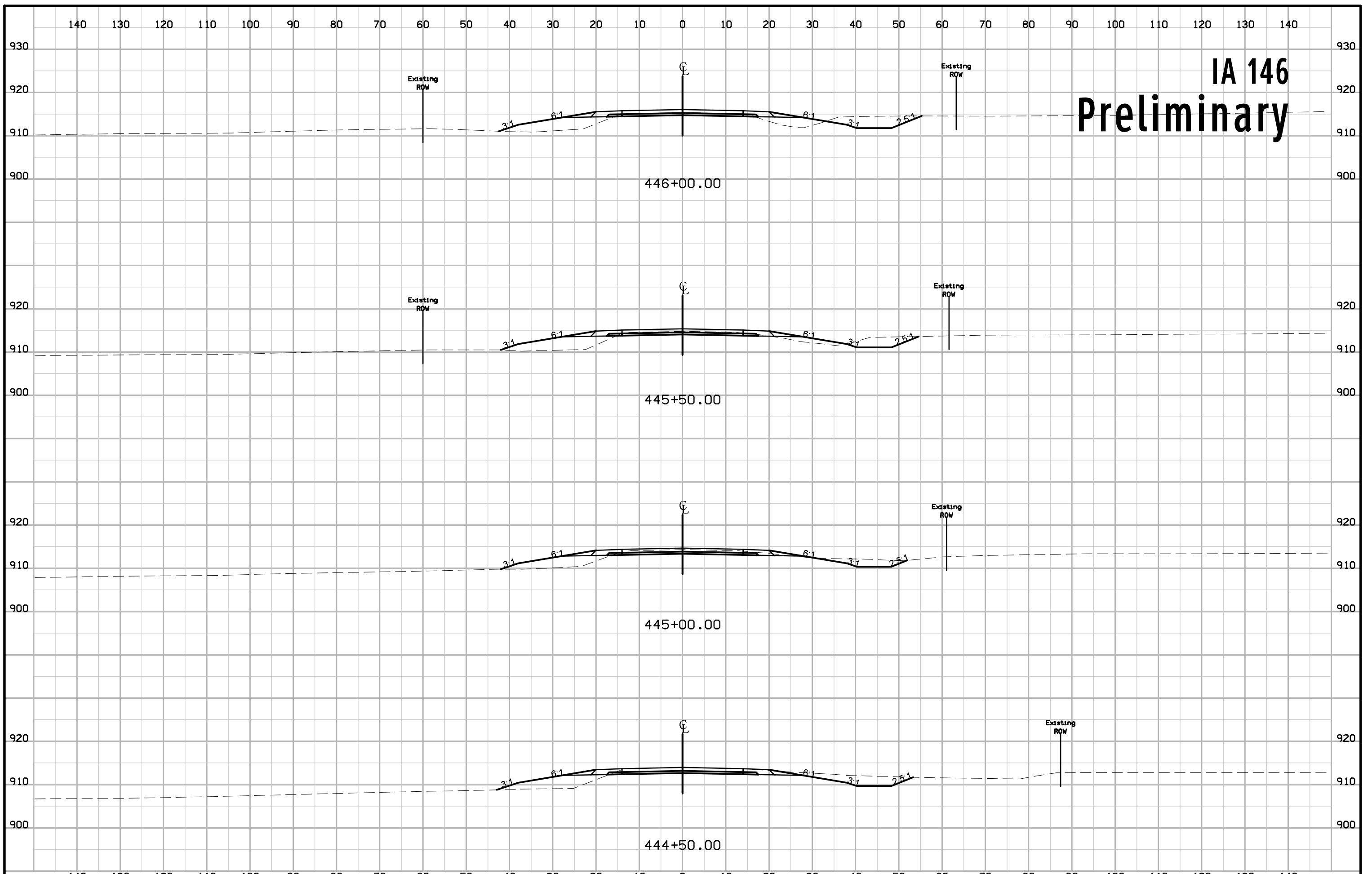
STATION: 536+13.88 BTC BM

MARSHALL COUNTY

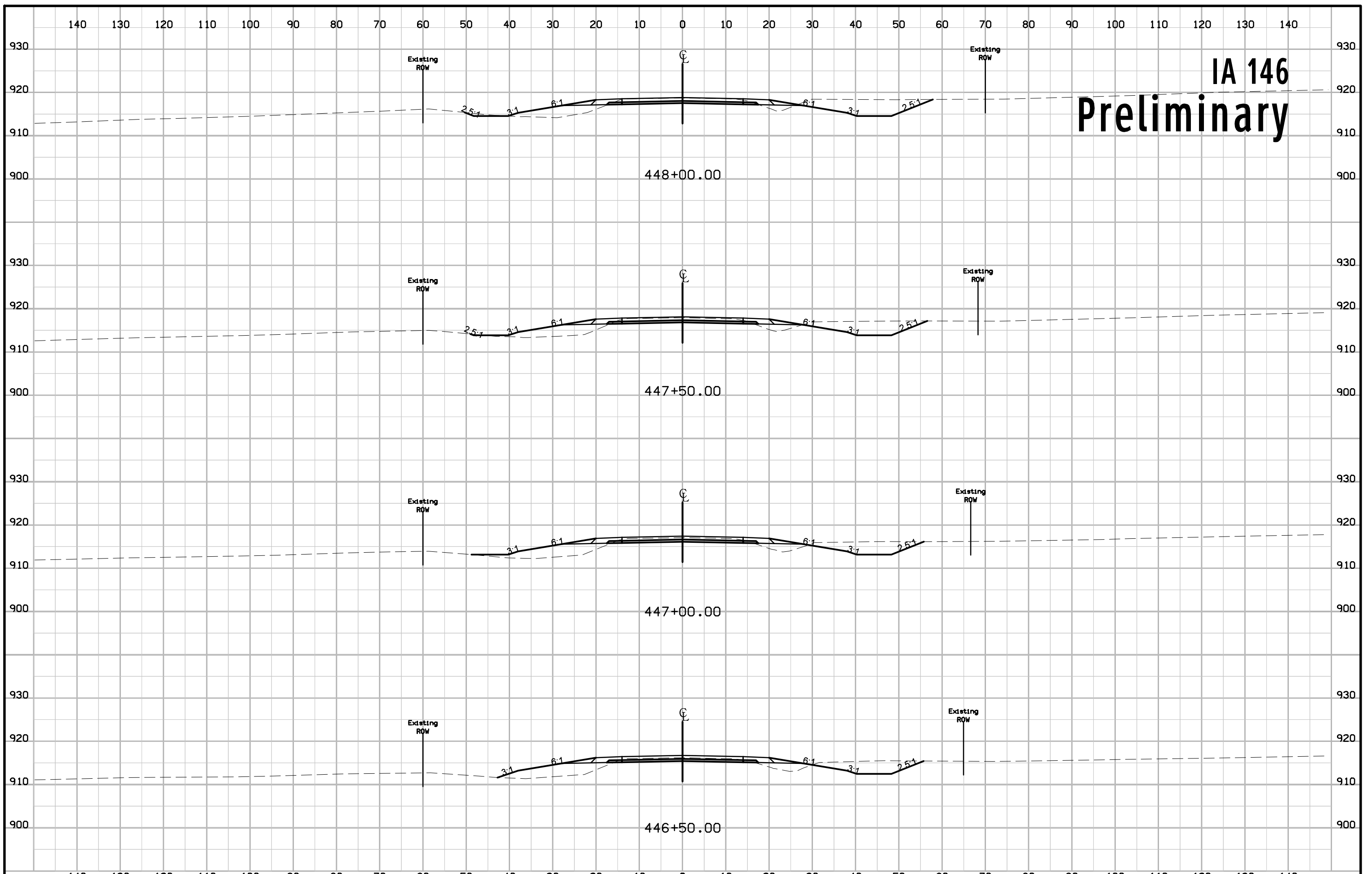
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. ____ DESIGN NO. ____

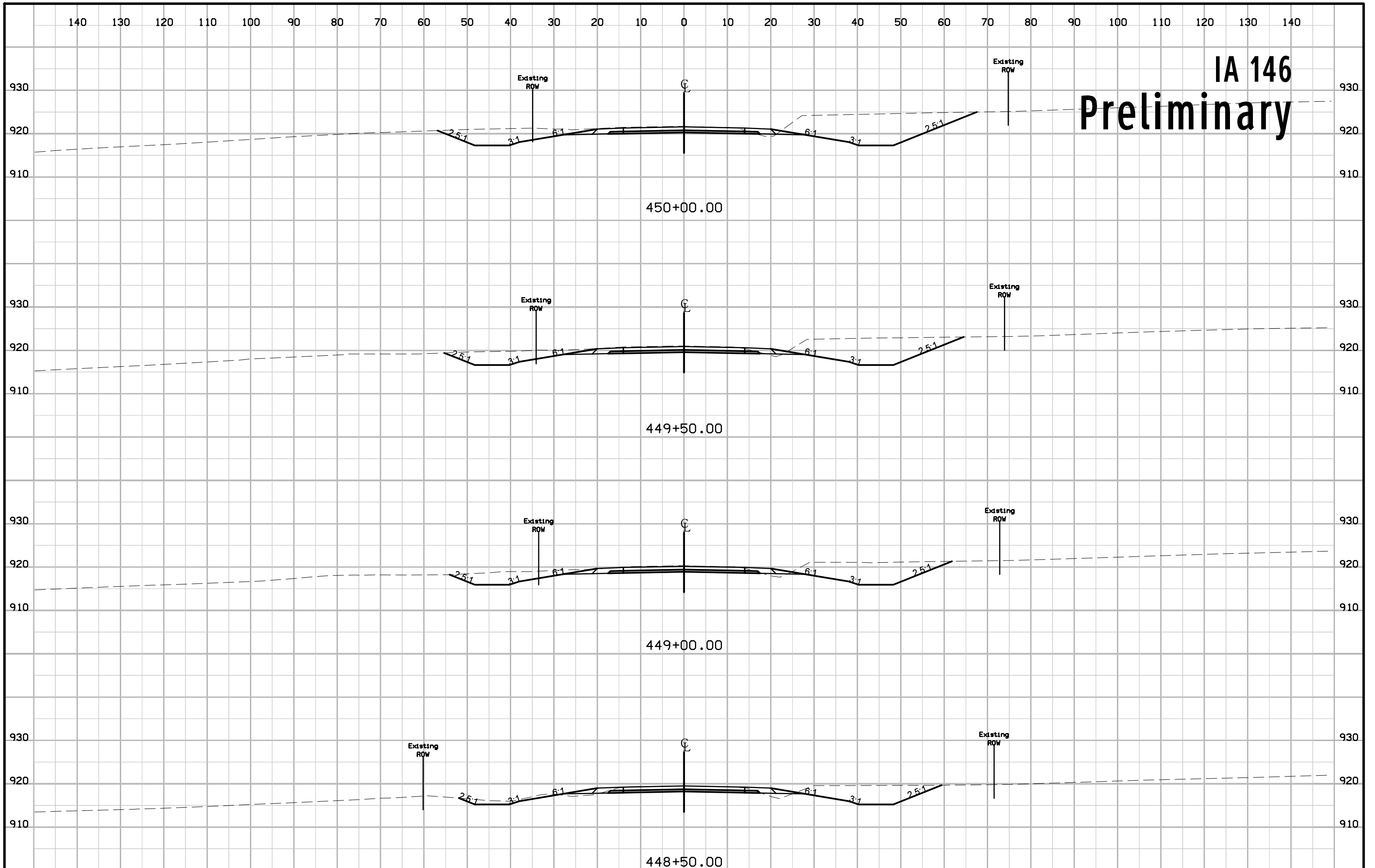
IA 146 Preliminary

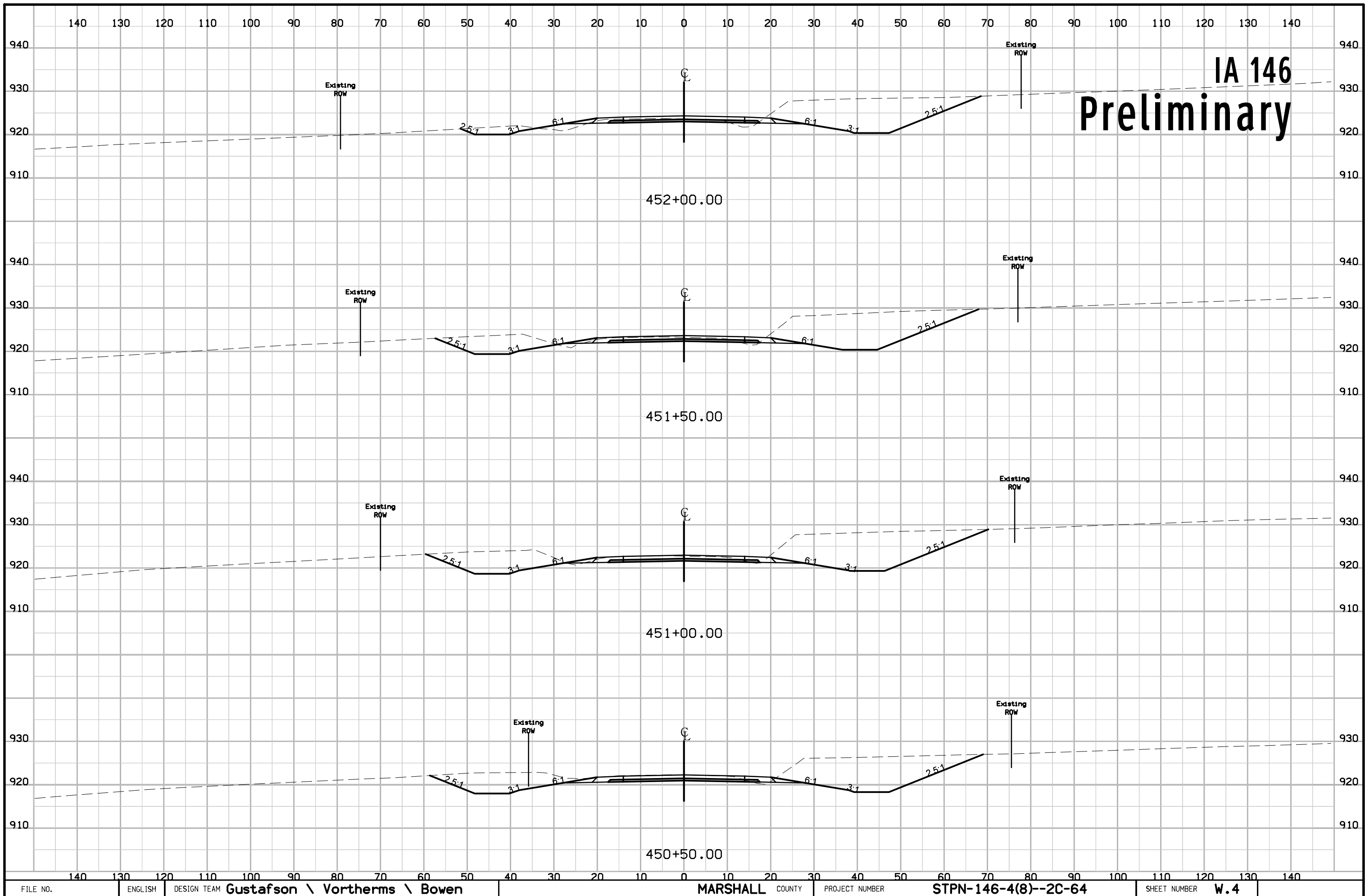


IA 146 Preliminary



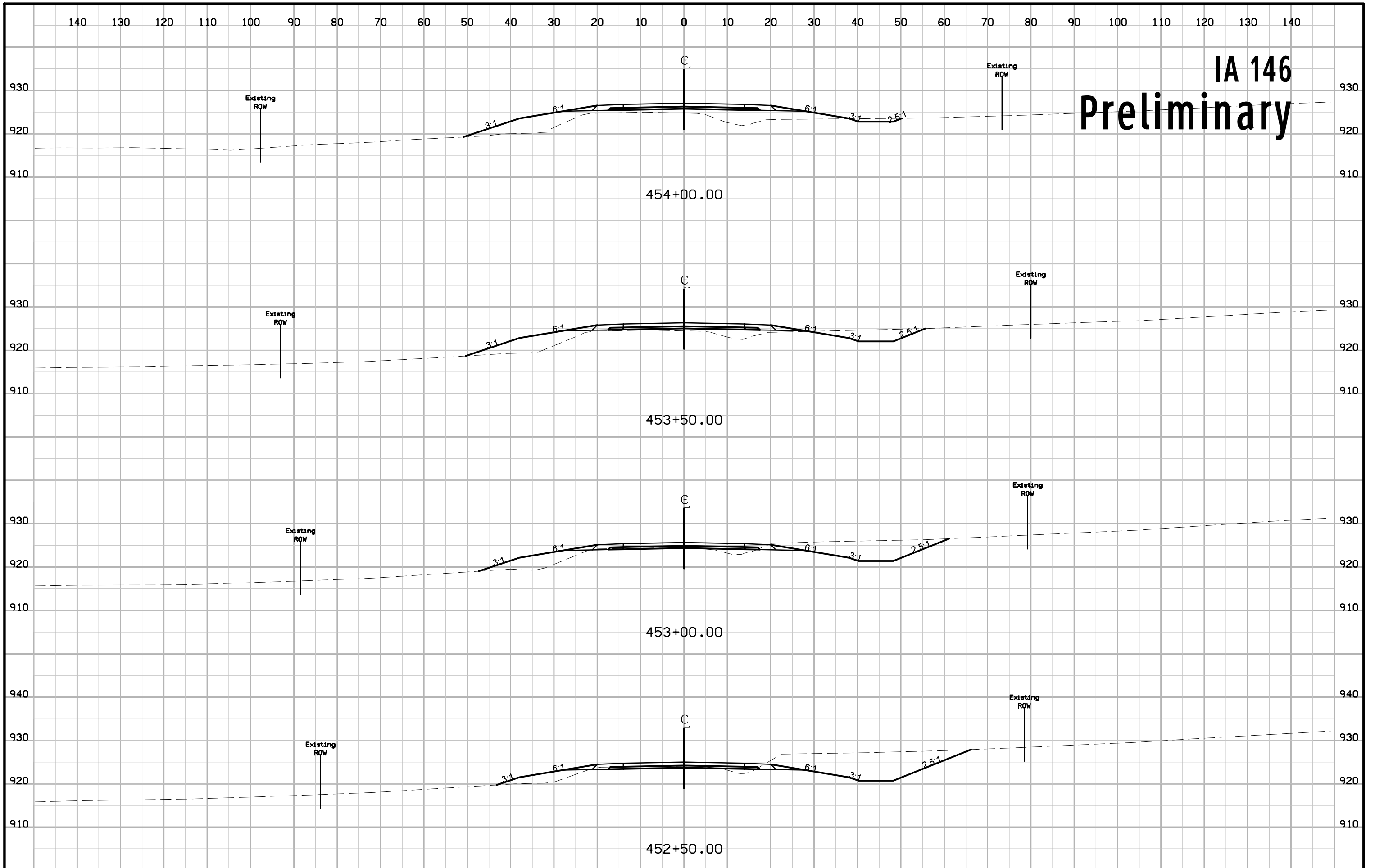
IA 146 Preliminary



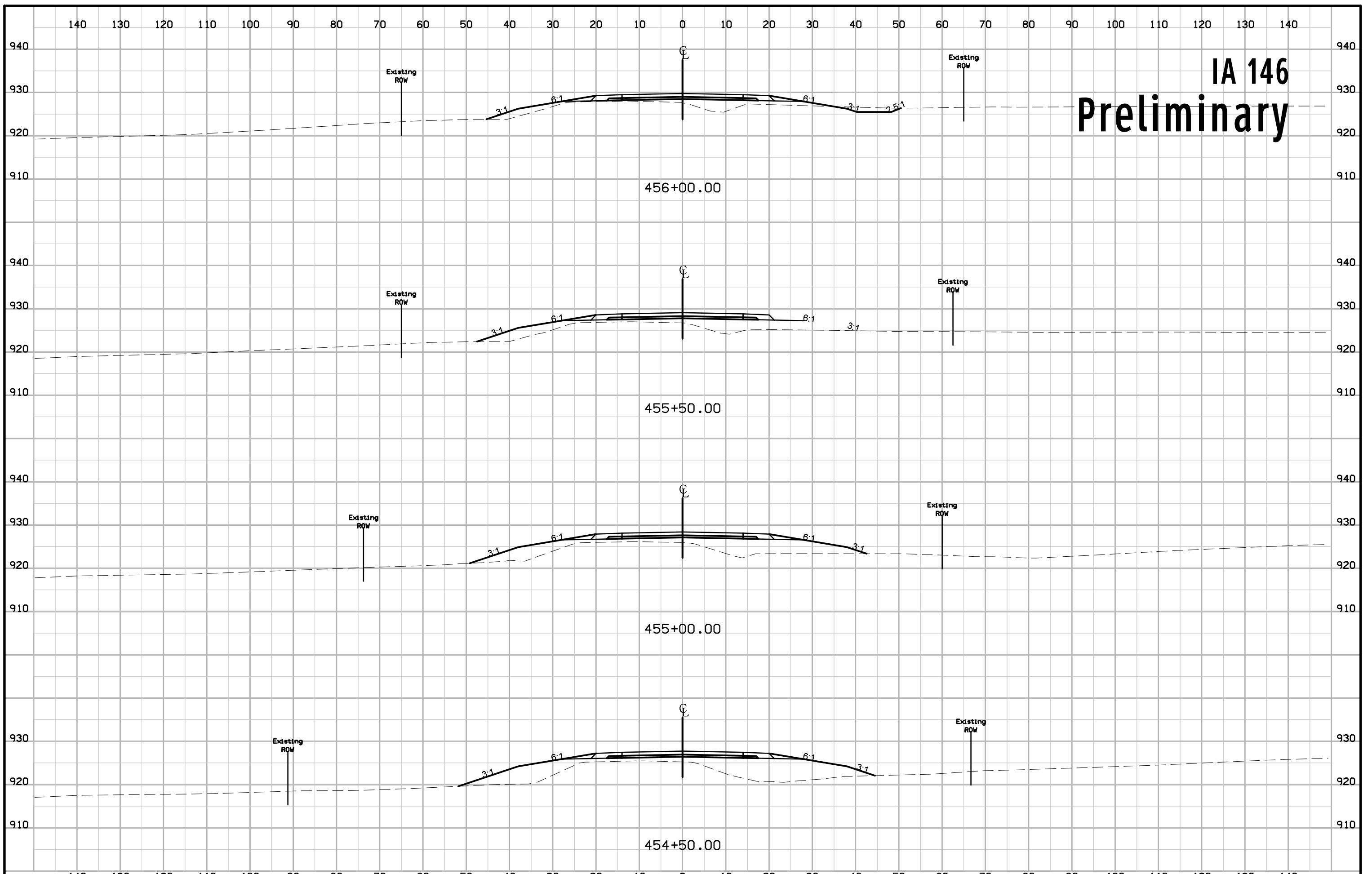


IA 146 Preliminary

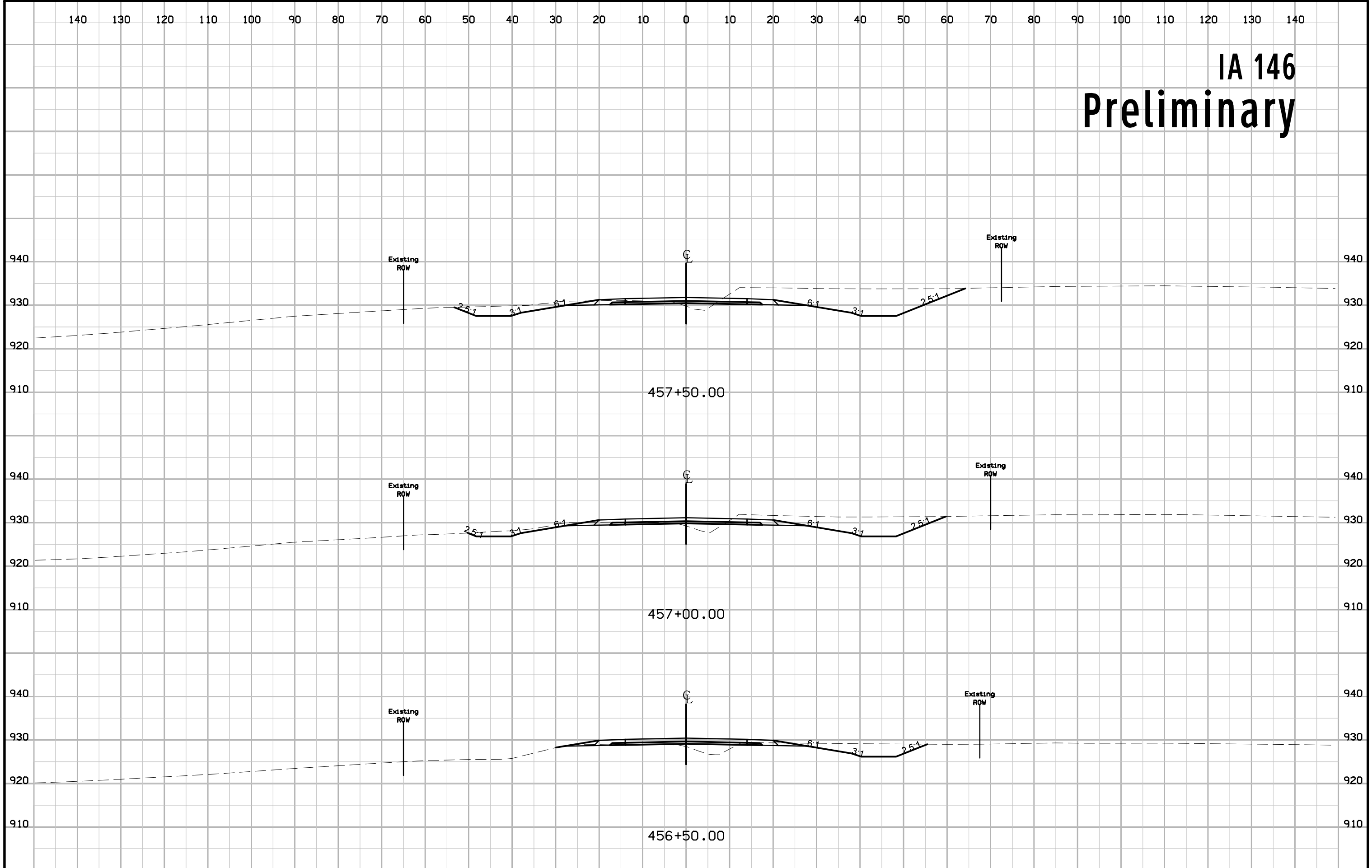
IA 146 Preliminary



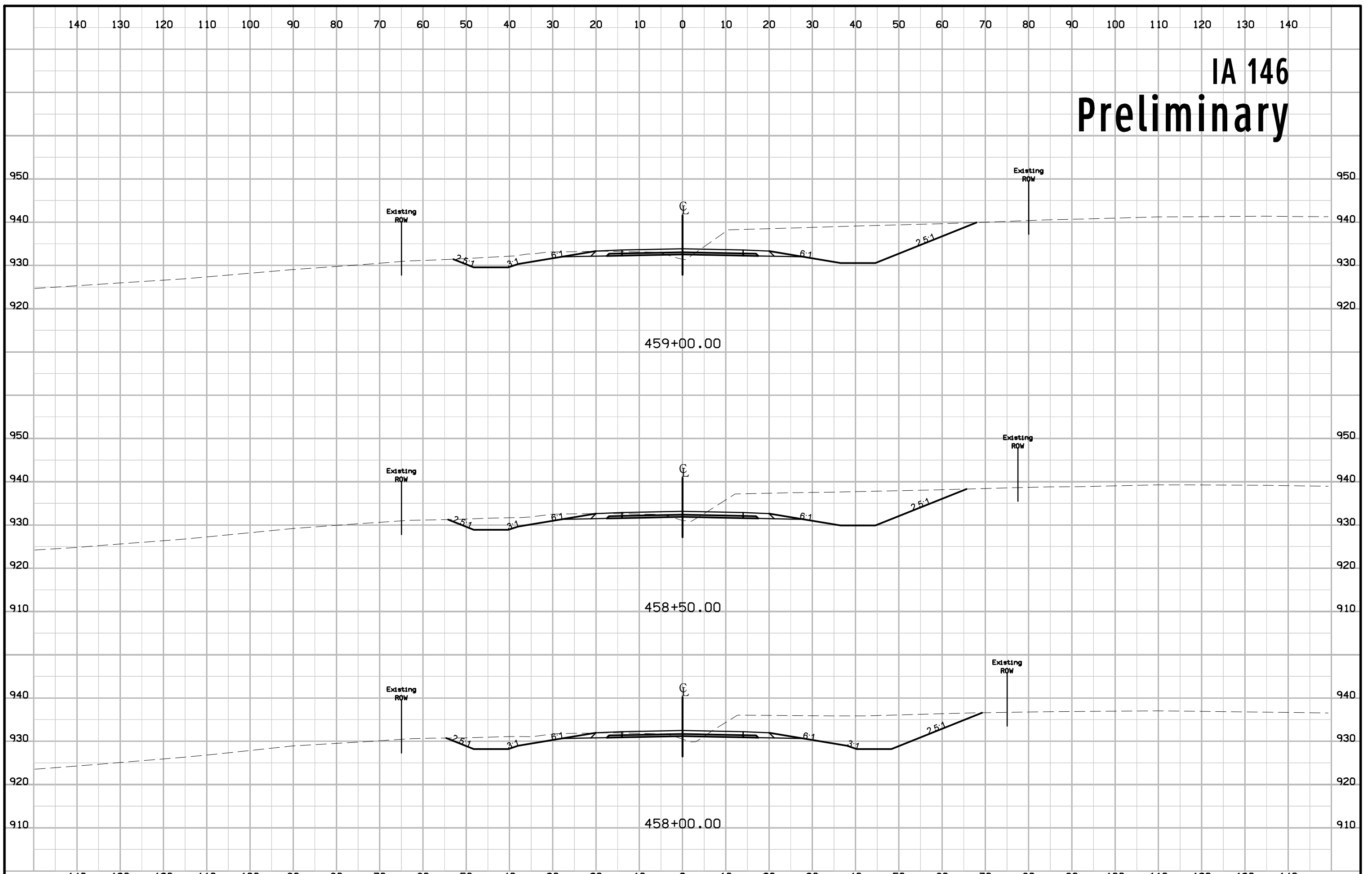
IA 146 Preliminary



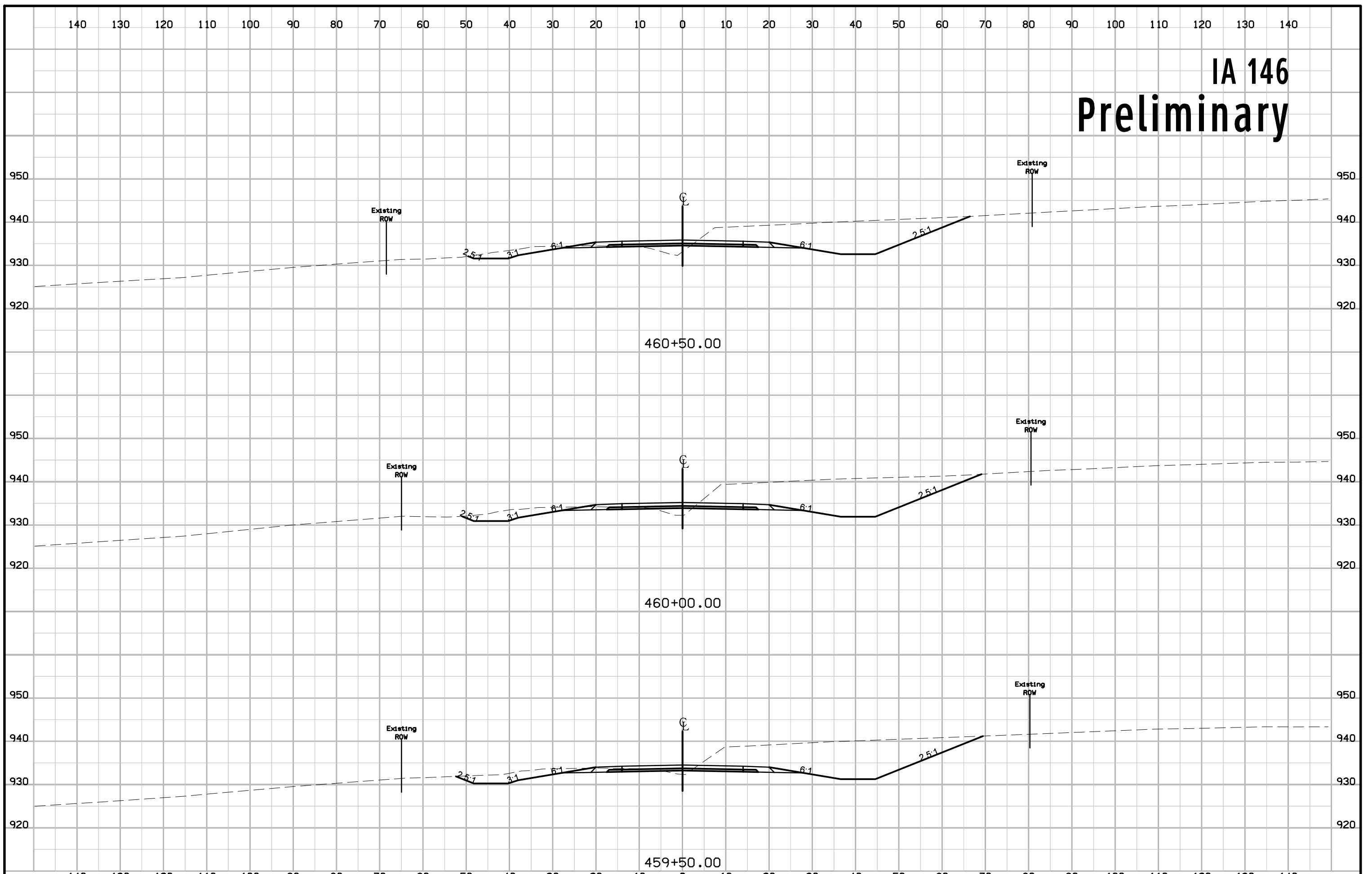
IA 146 Preliminary



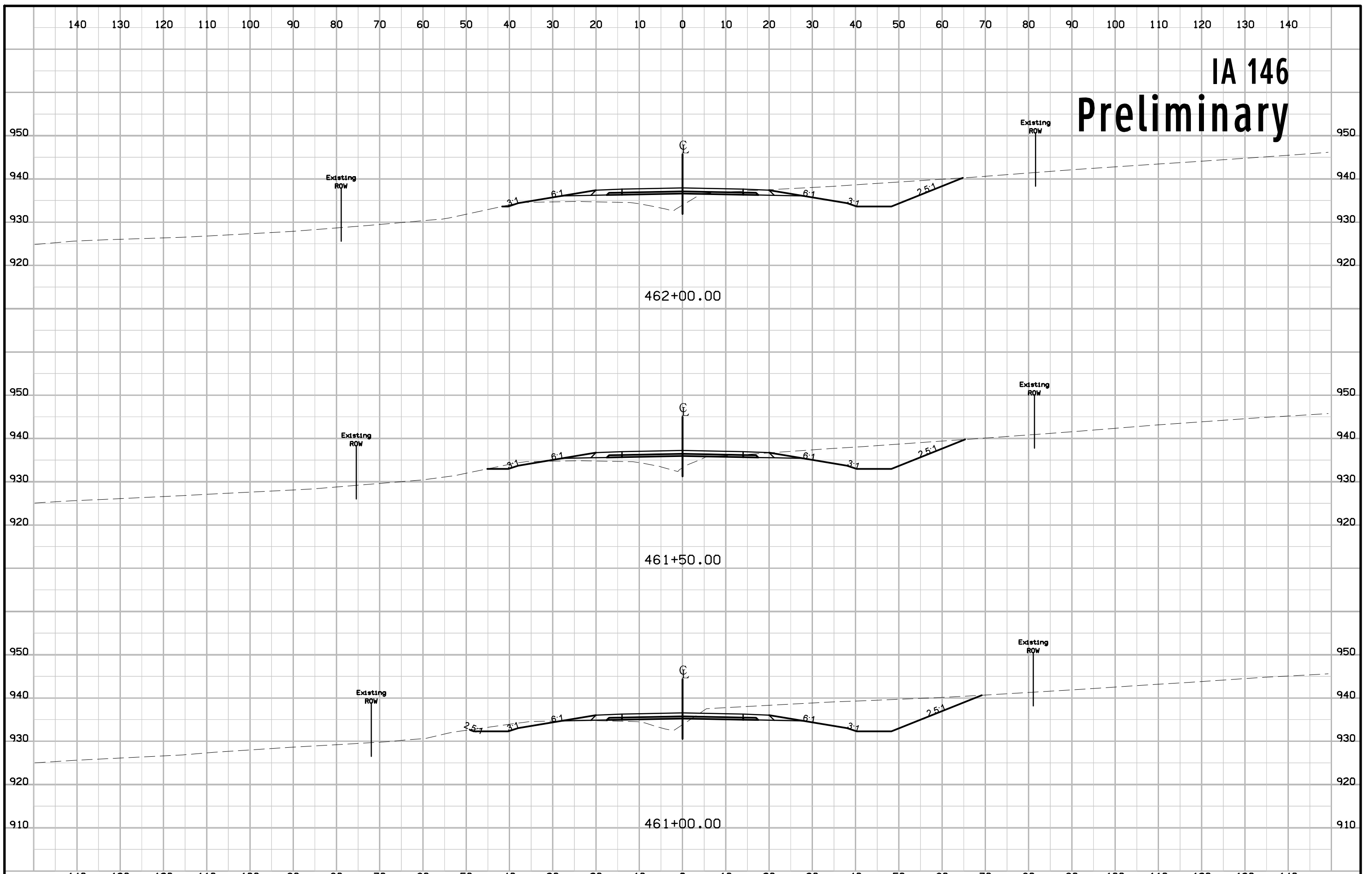
IA 146 Preliminary



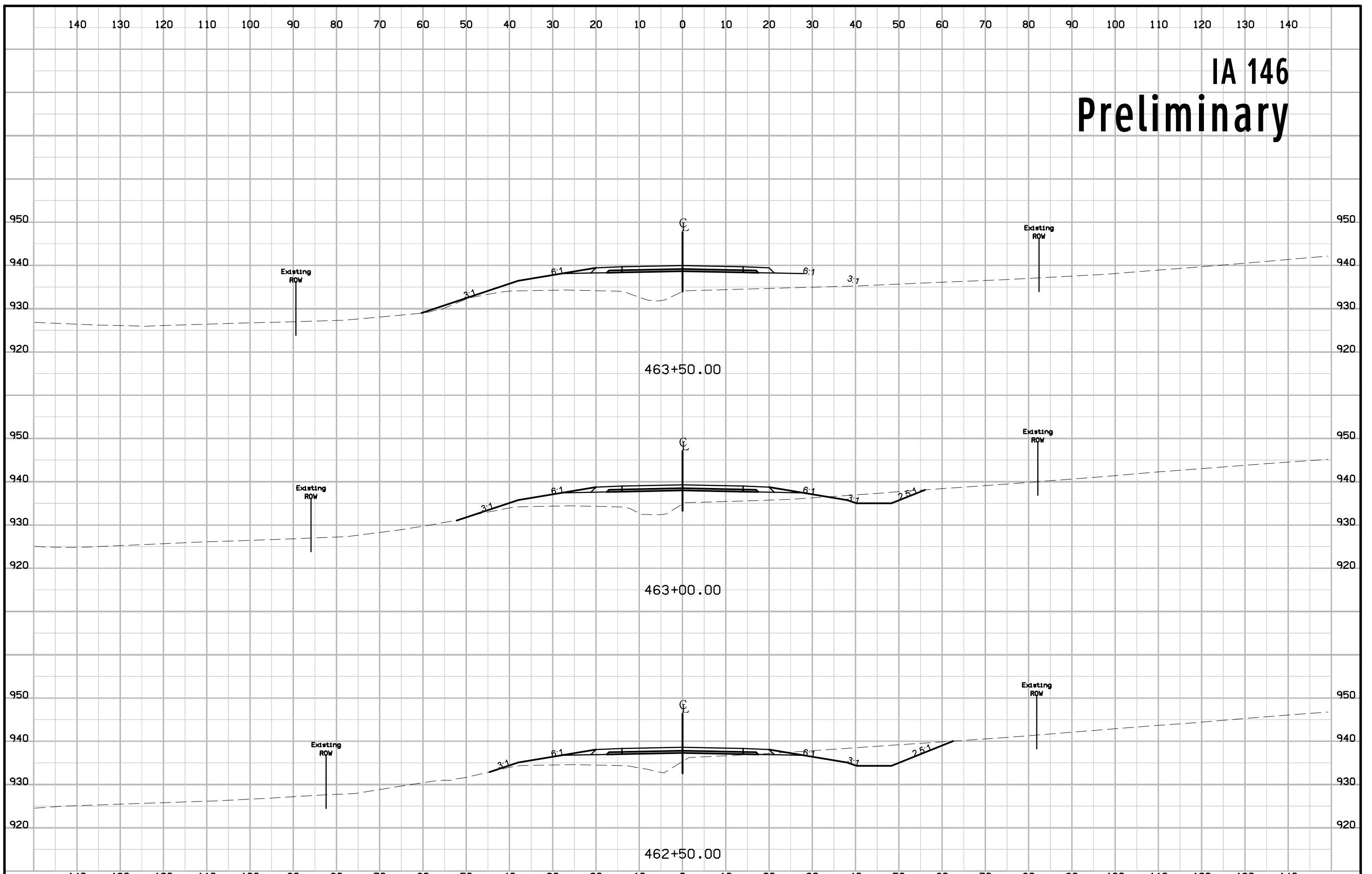
IA 146 Preliminary



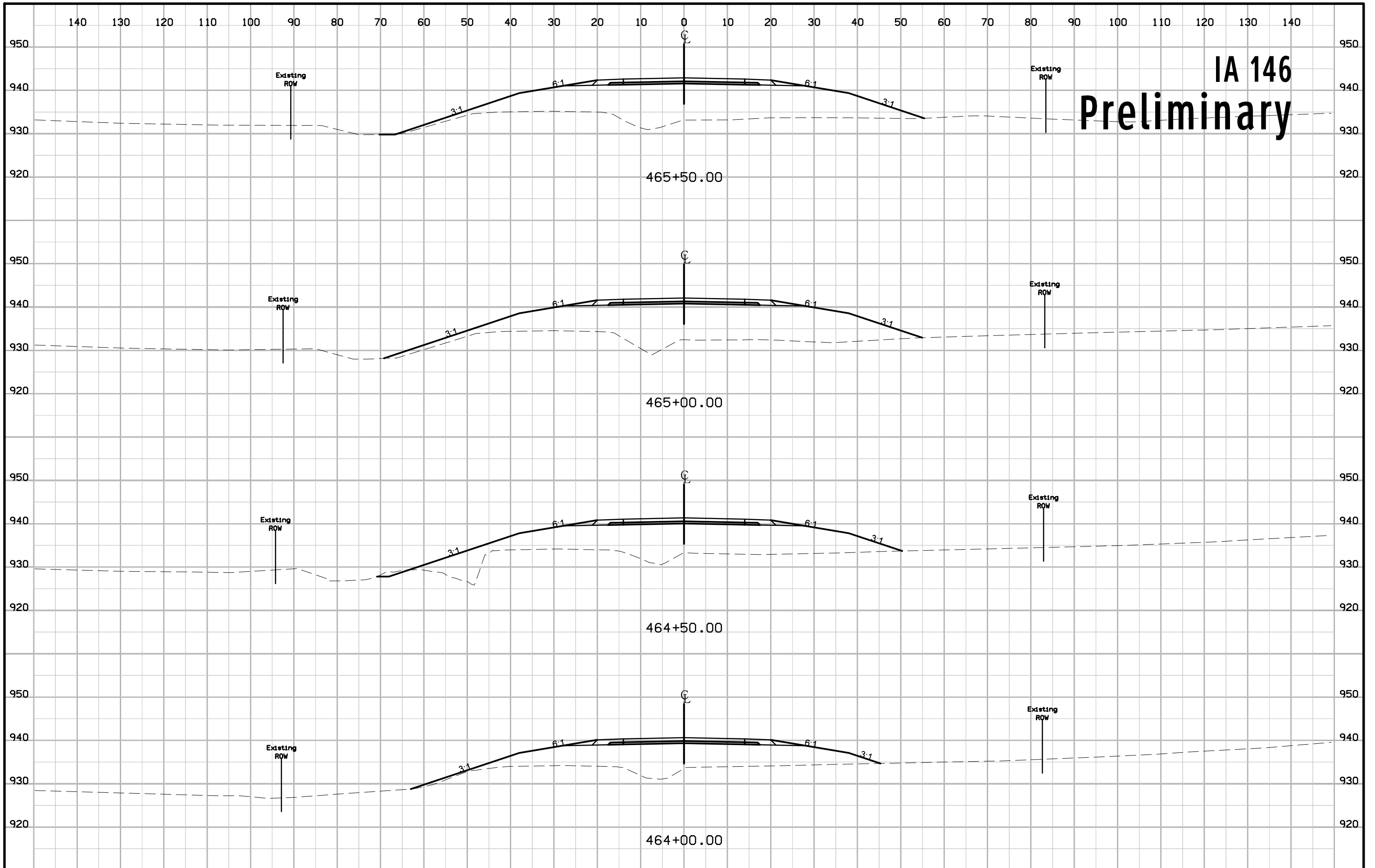
IA 146 Preliminary

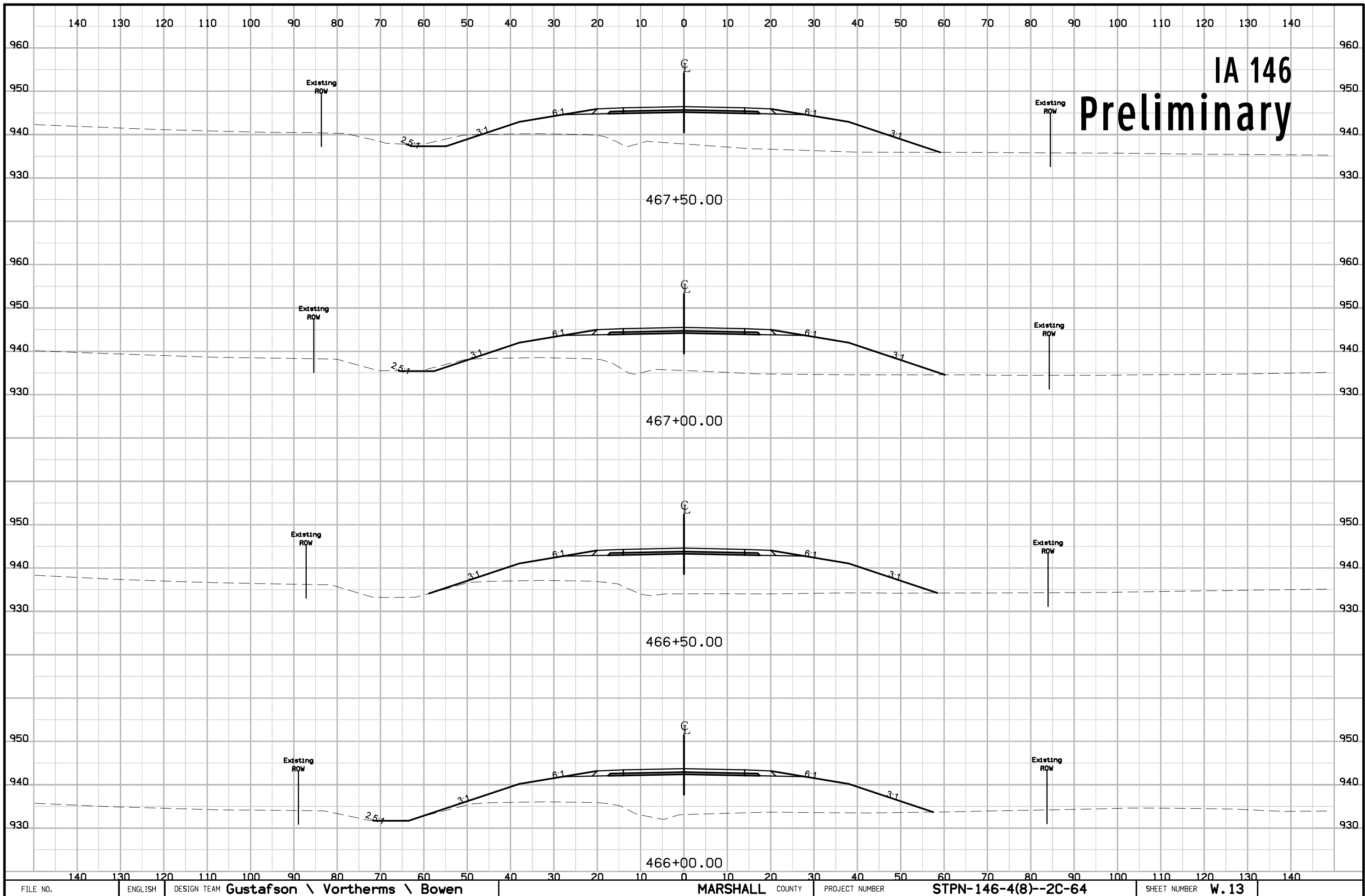


IA 146 Preliminary



IA 146 Preliminary





IA 146 Preliminary

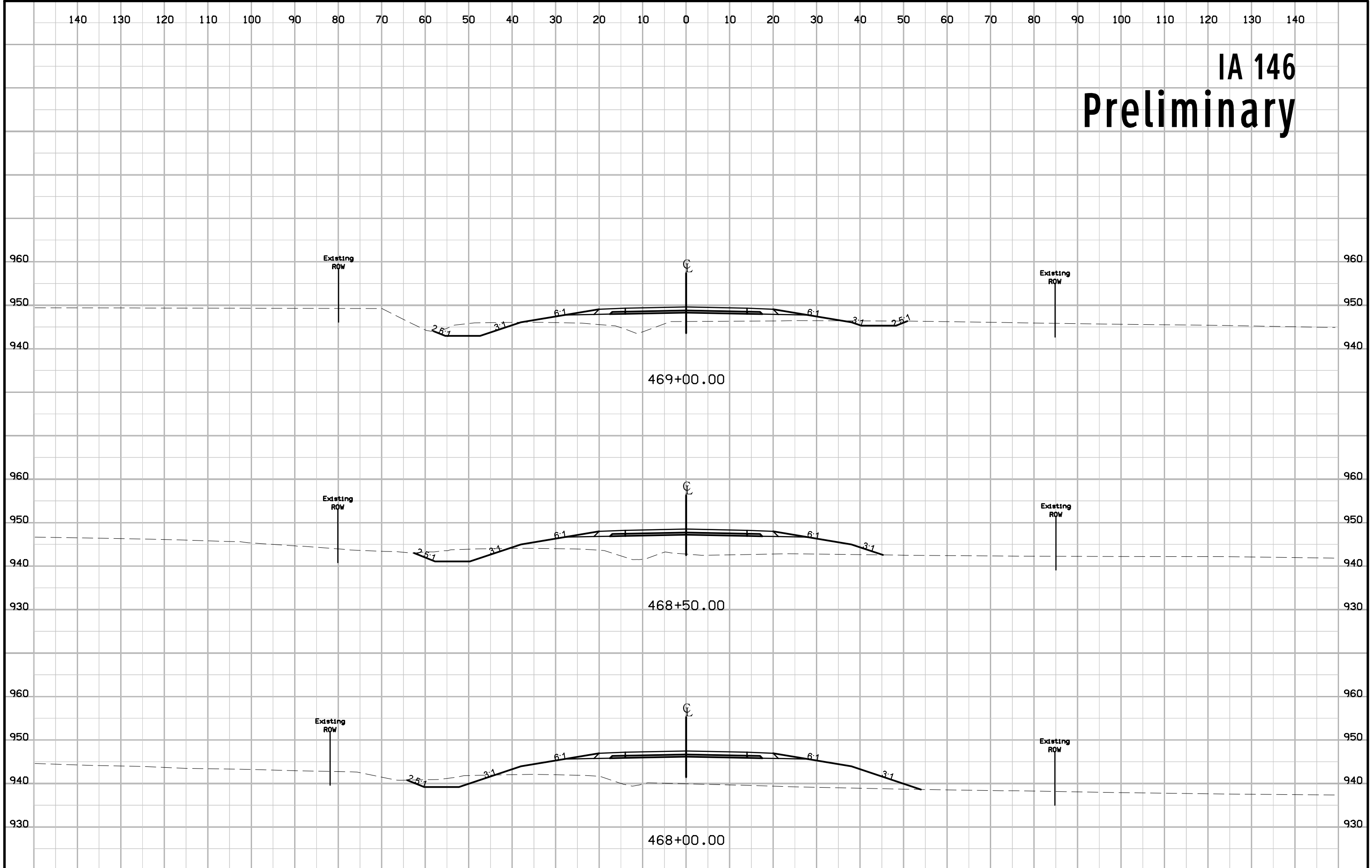
467+50.00

467+00.00

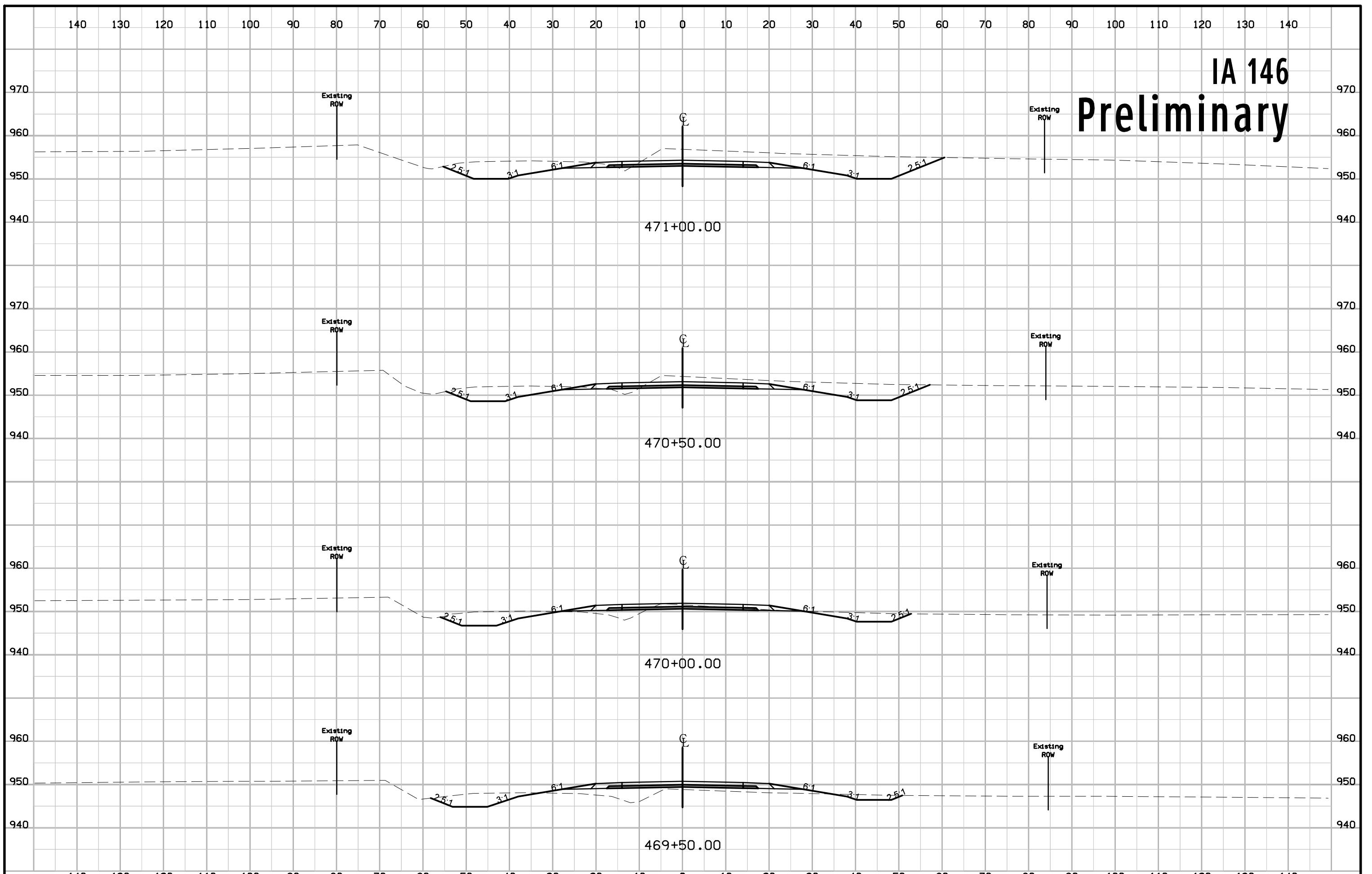
466+50.00

466+00.00

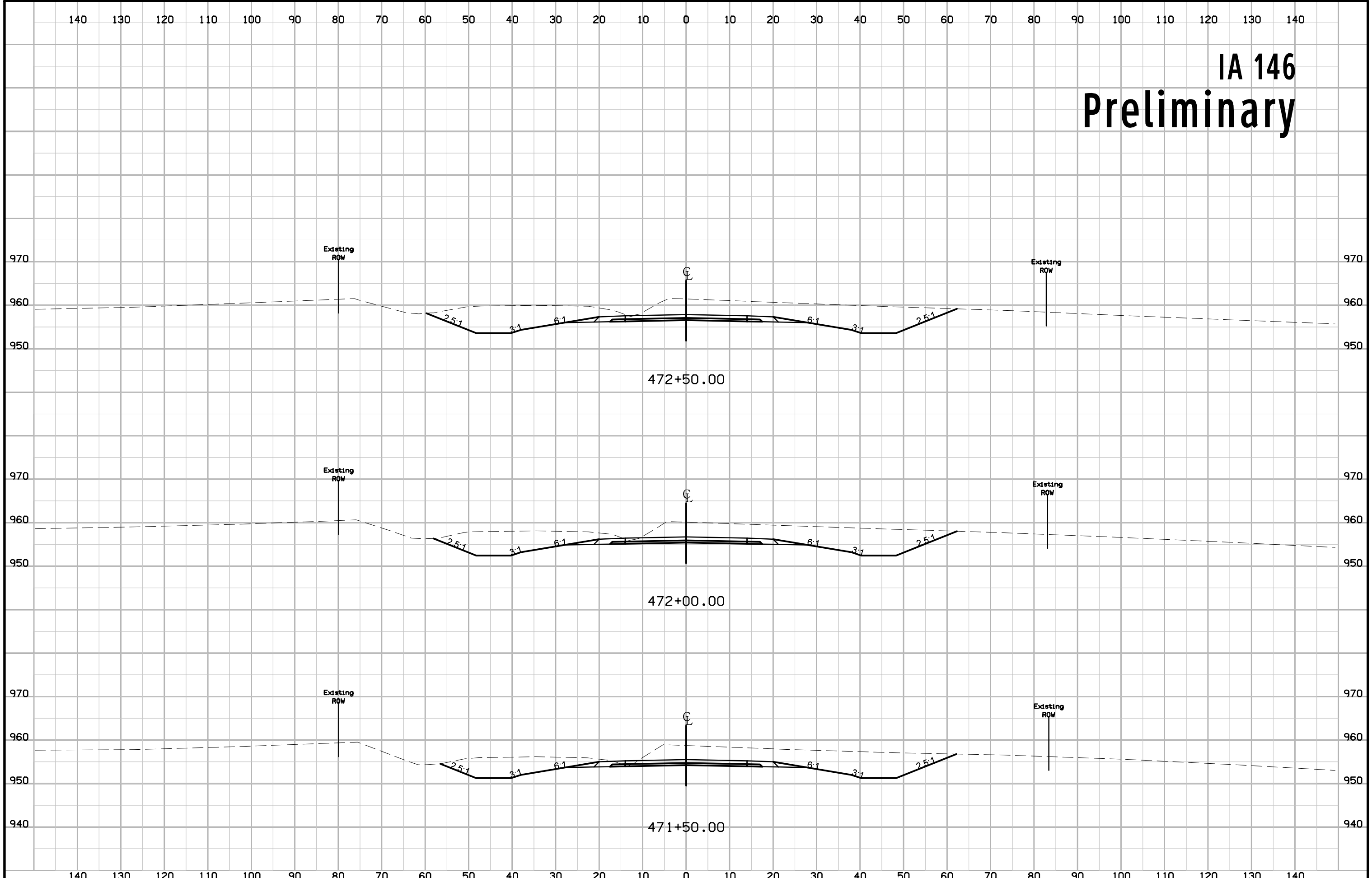
IA 146 Preliminary



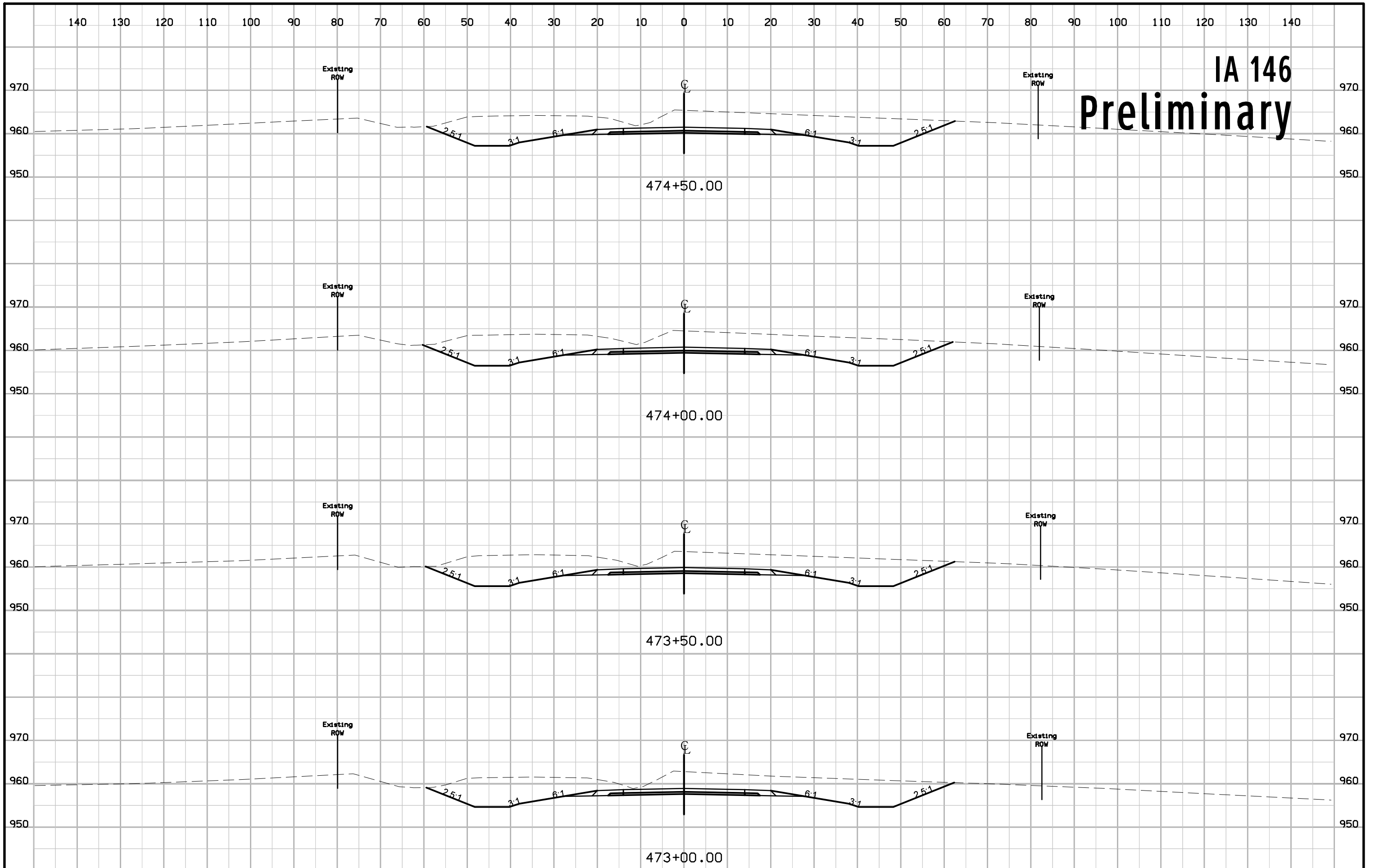
IA 146 Preliminary



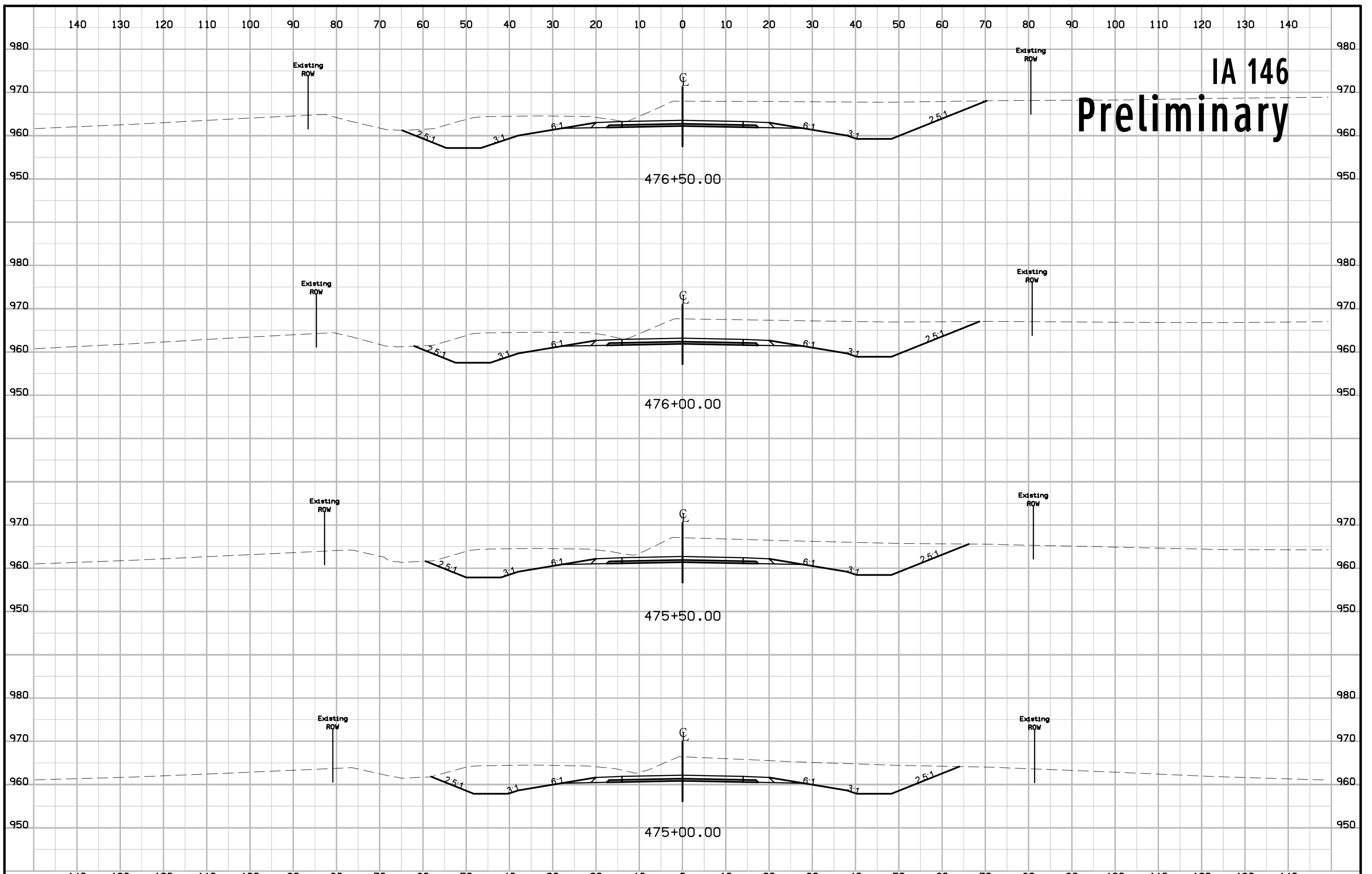
IA 146 Preliminary



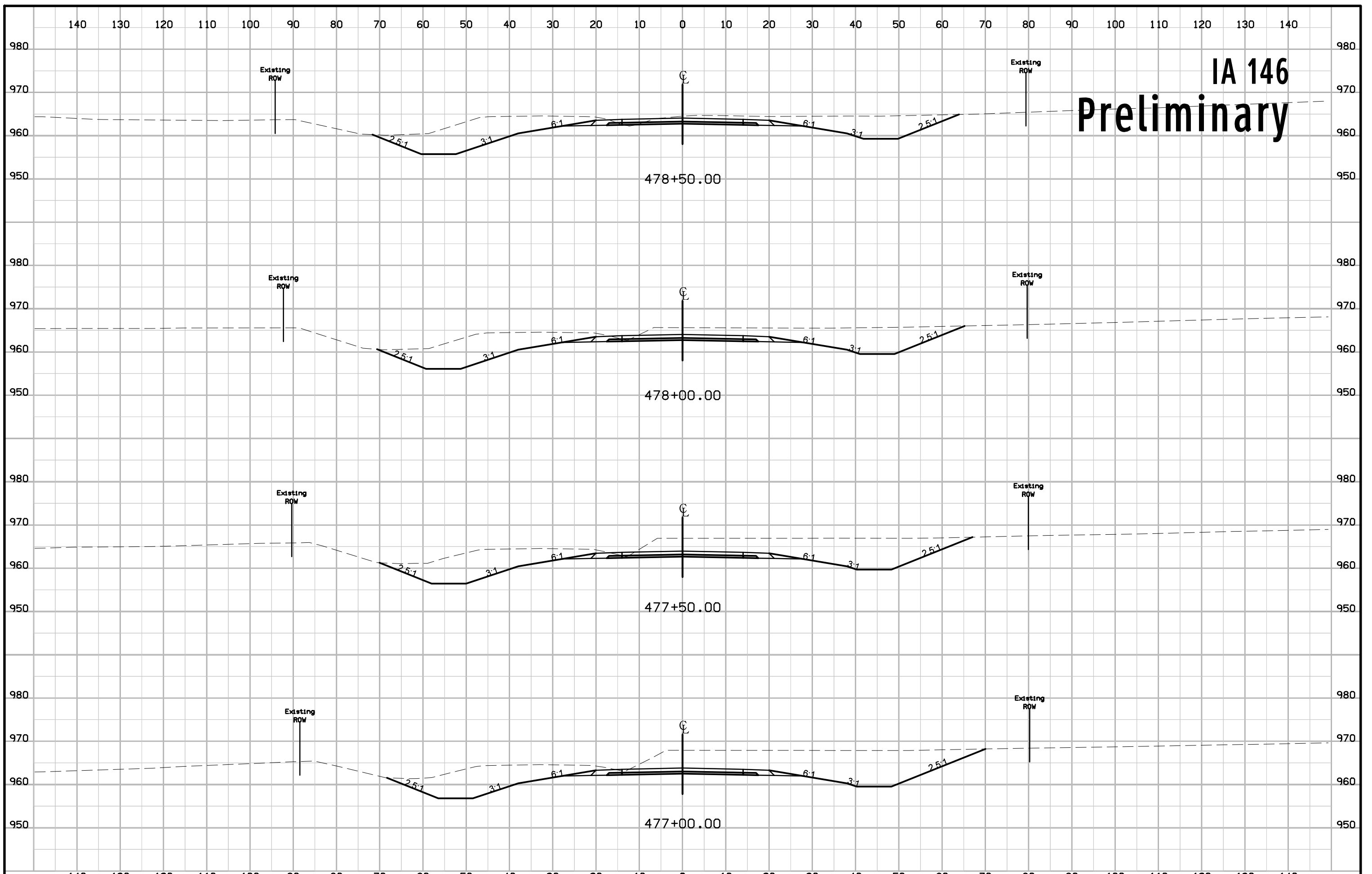
IA 146 Preliminary



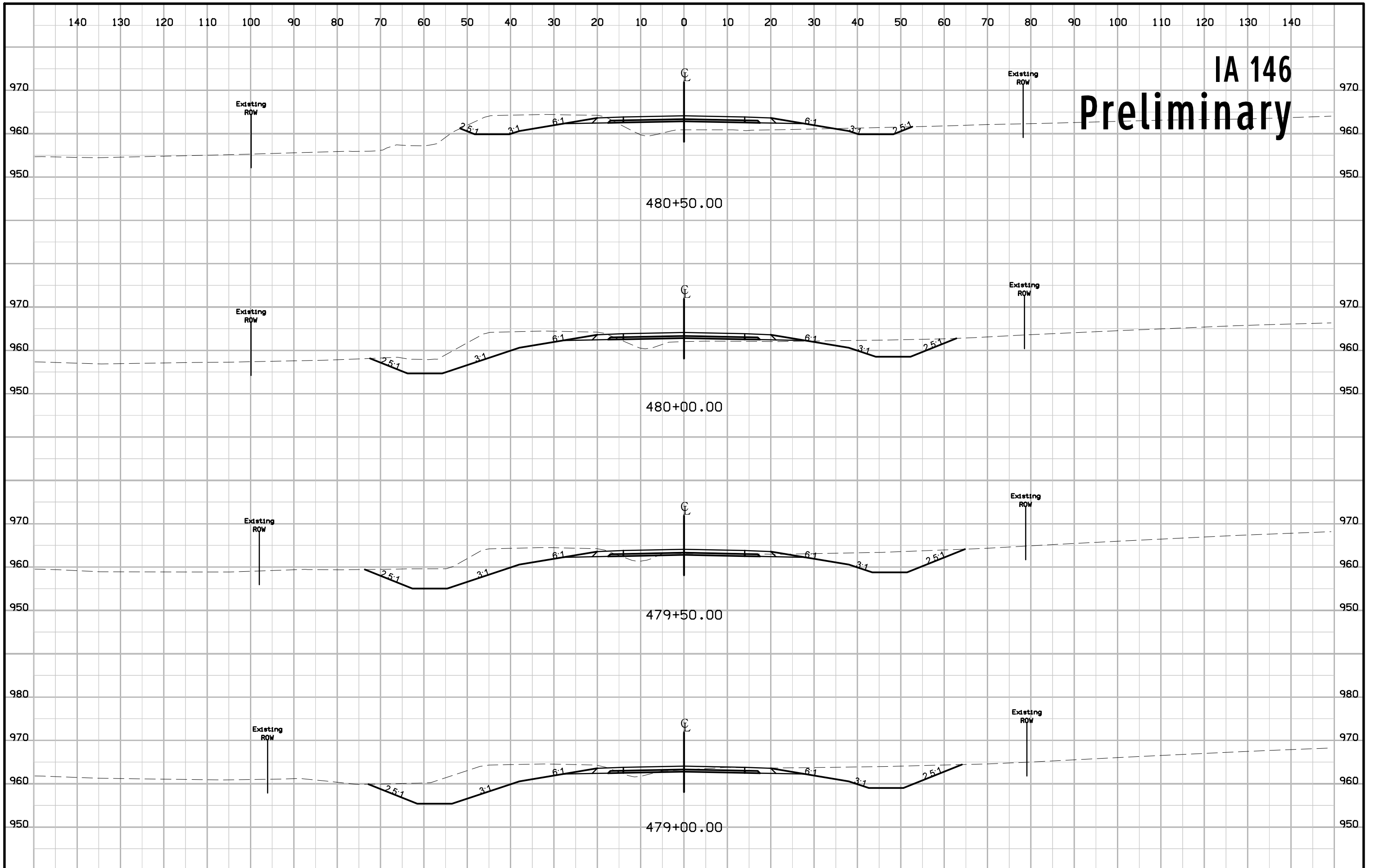
IA 146 Preliminary



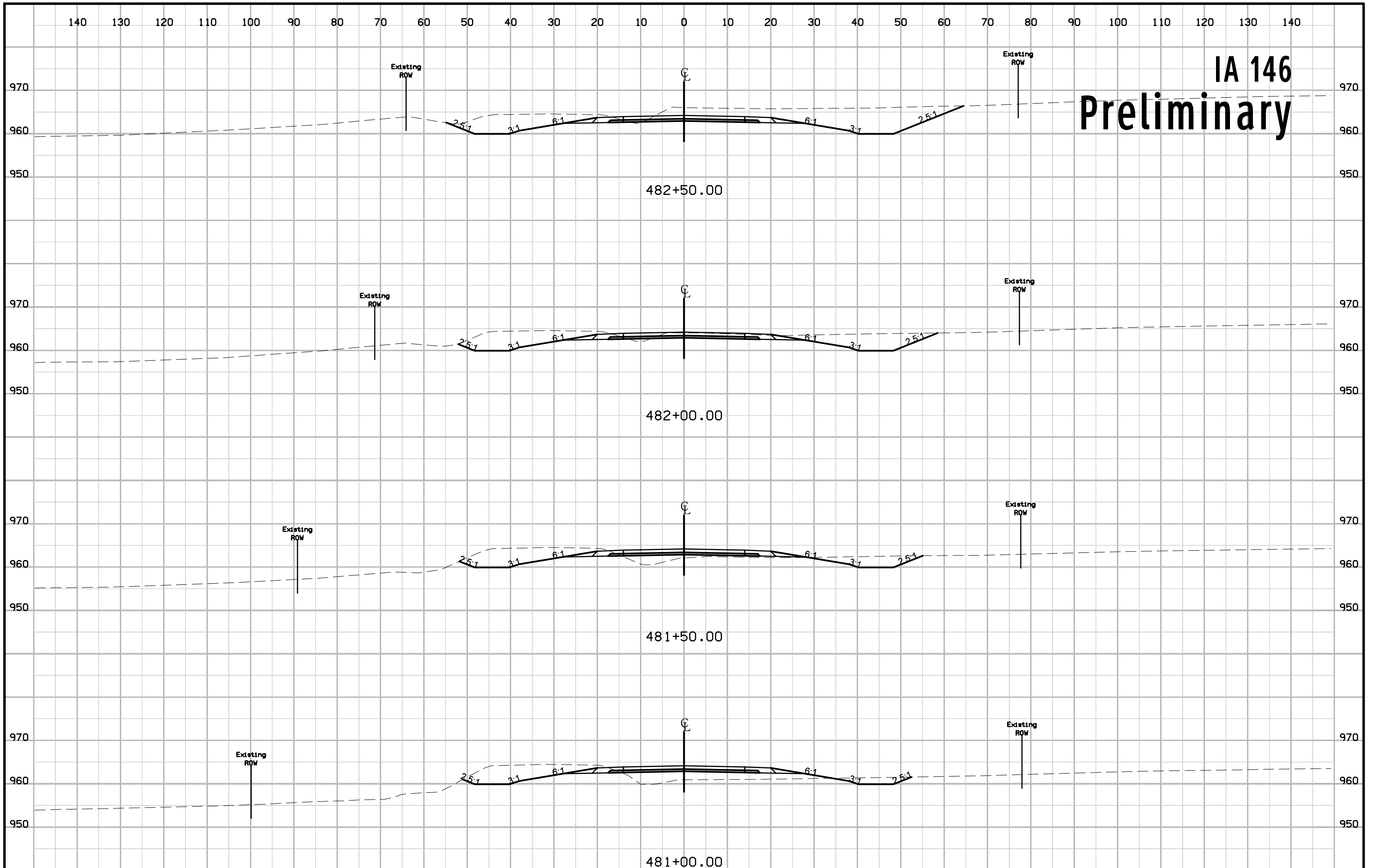
IA 146 Preliminary



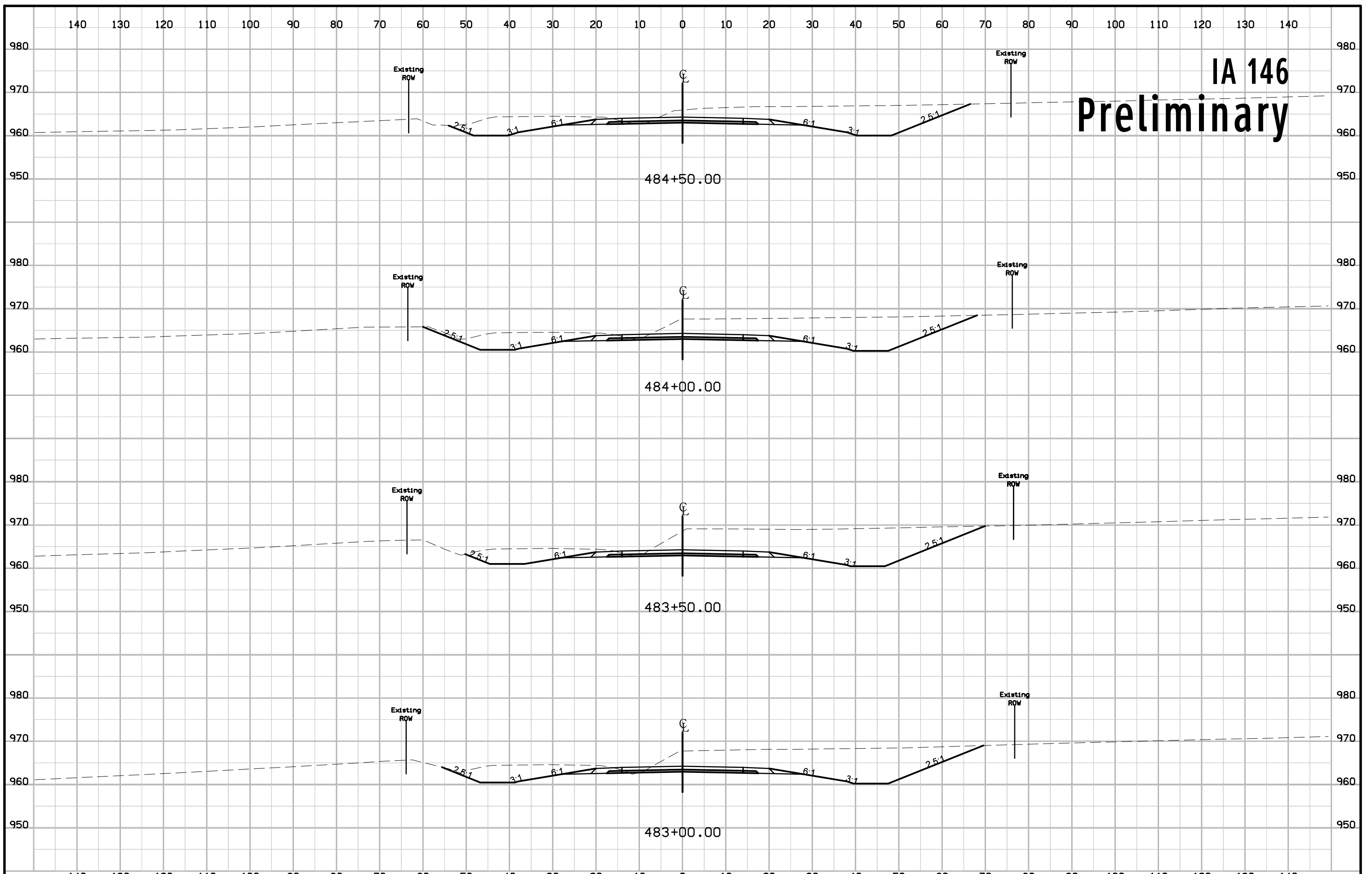
IA 146 Preliminary



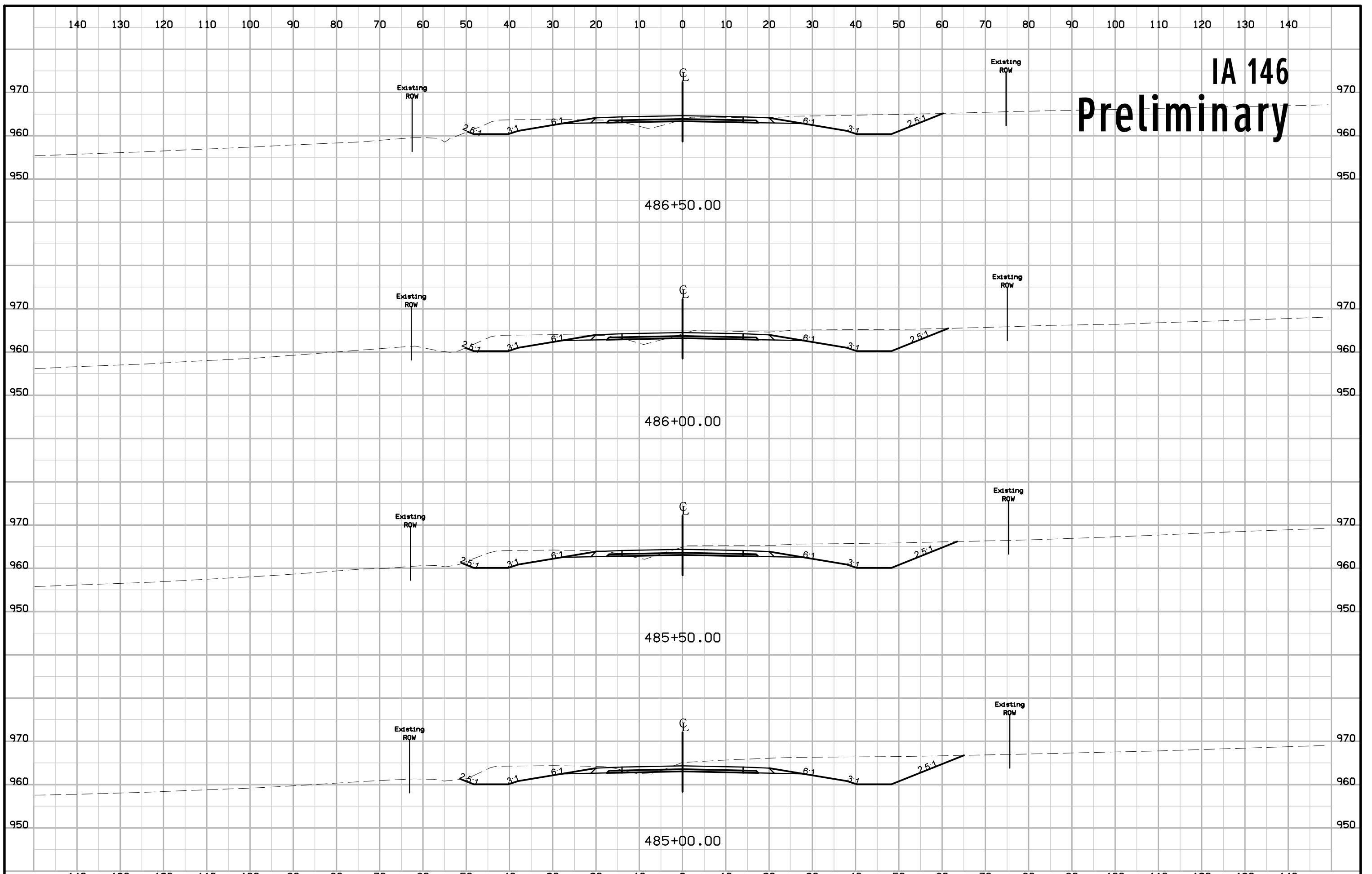
IA 146 Preliminary



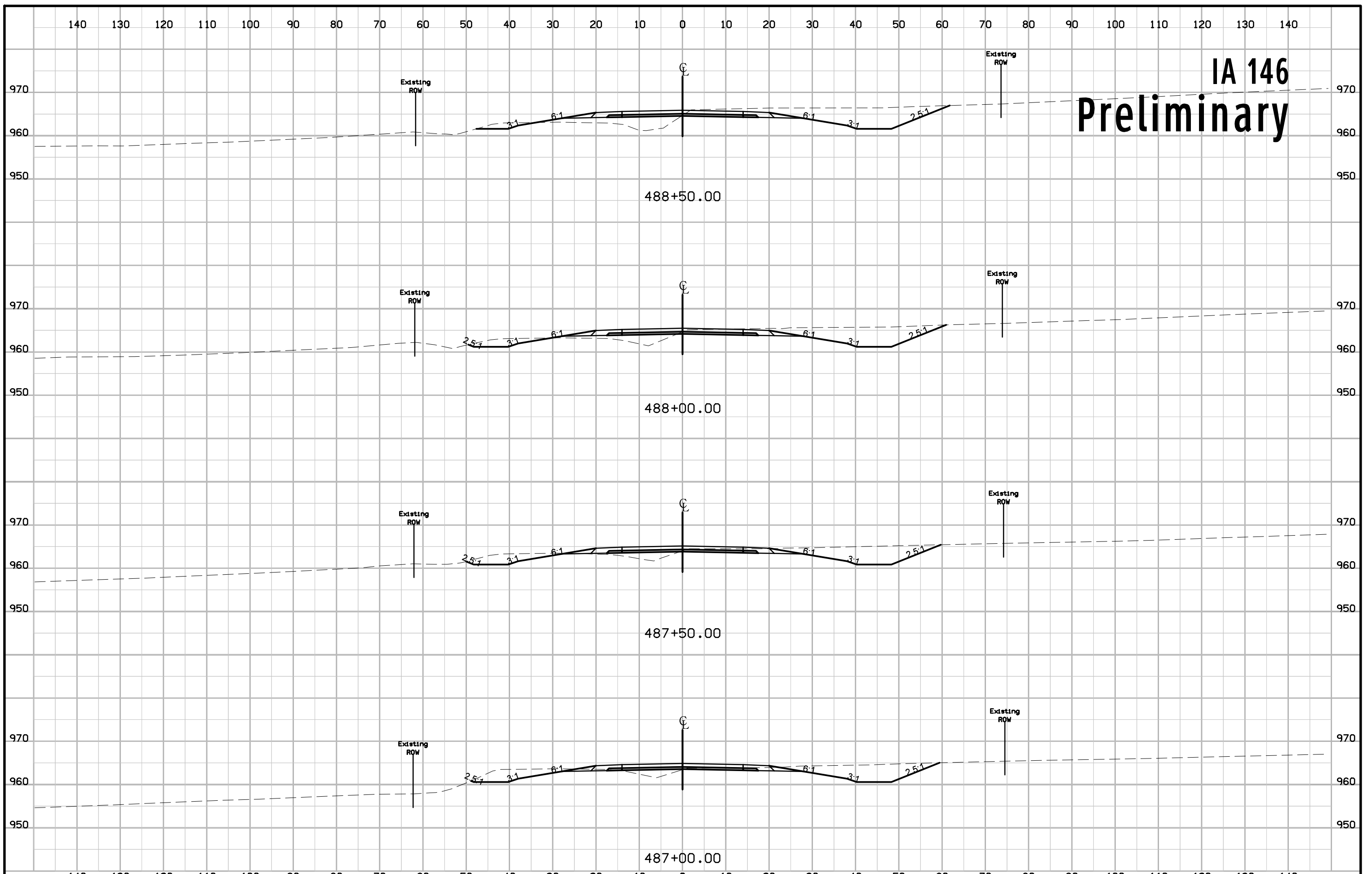
IA 146 Preliminary



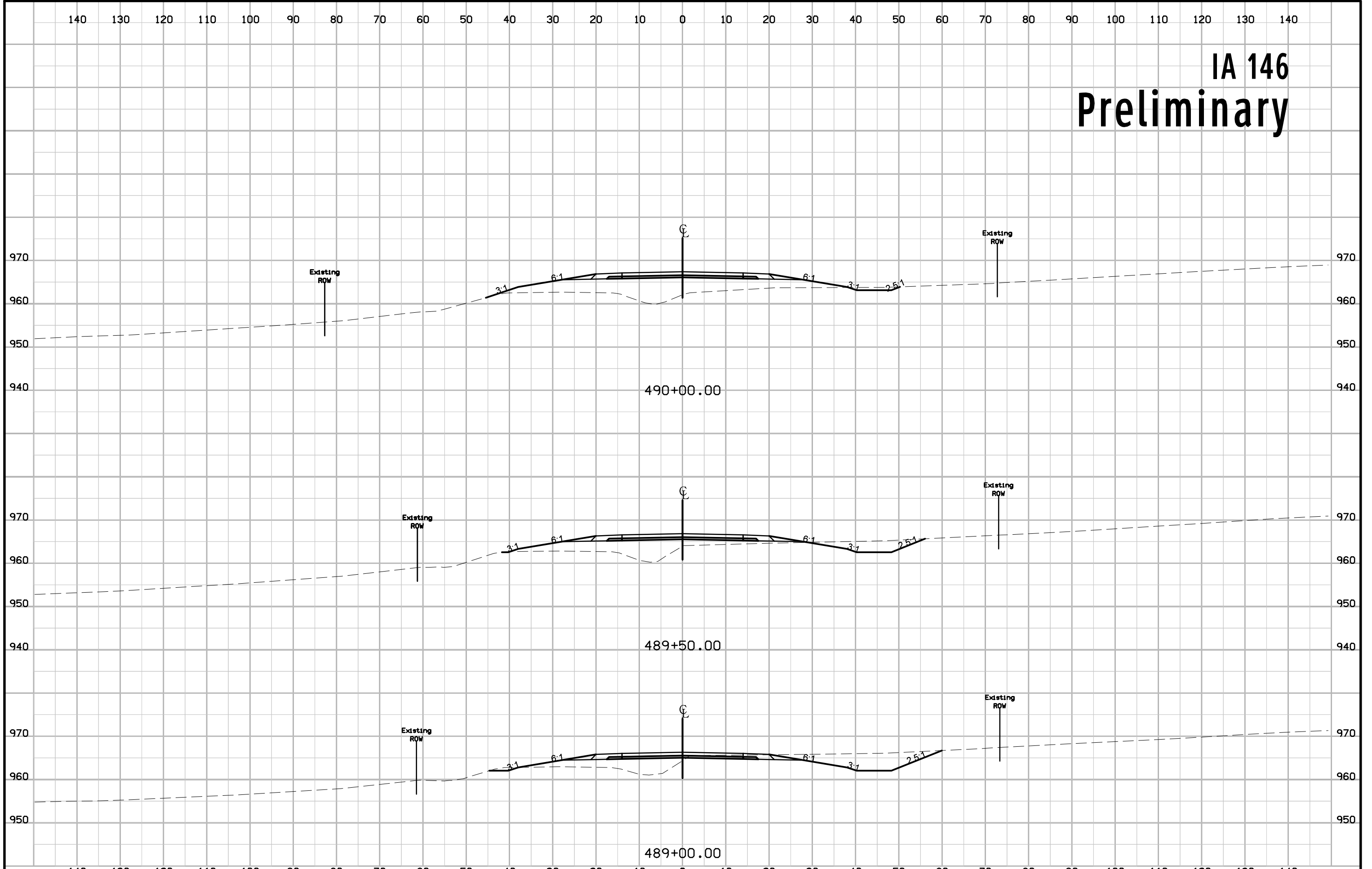
IA 146 Preliminary



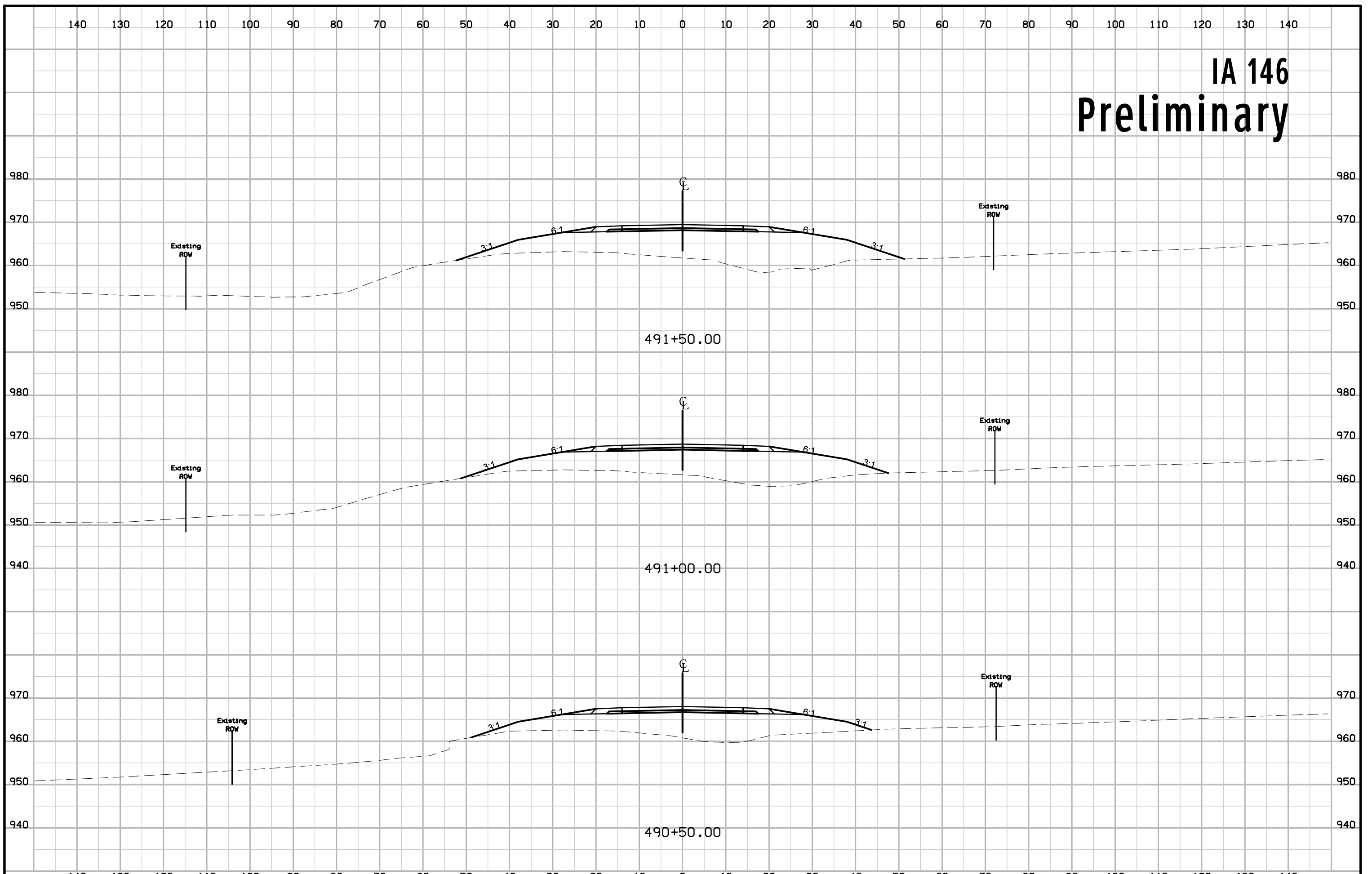
IA 146 Preliminary



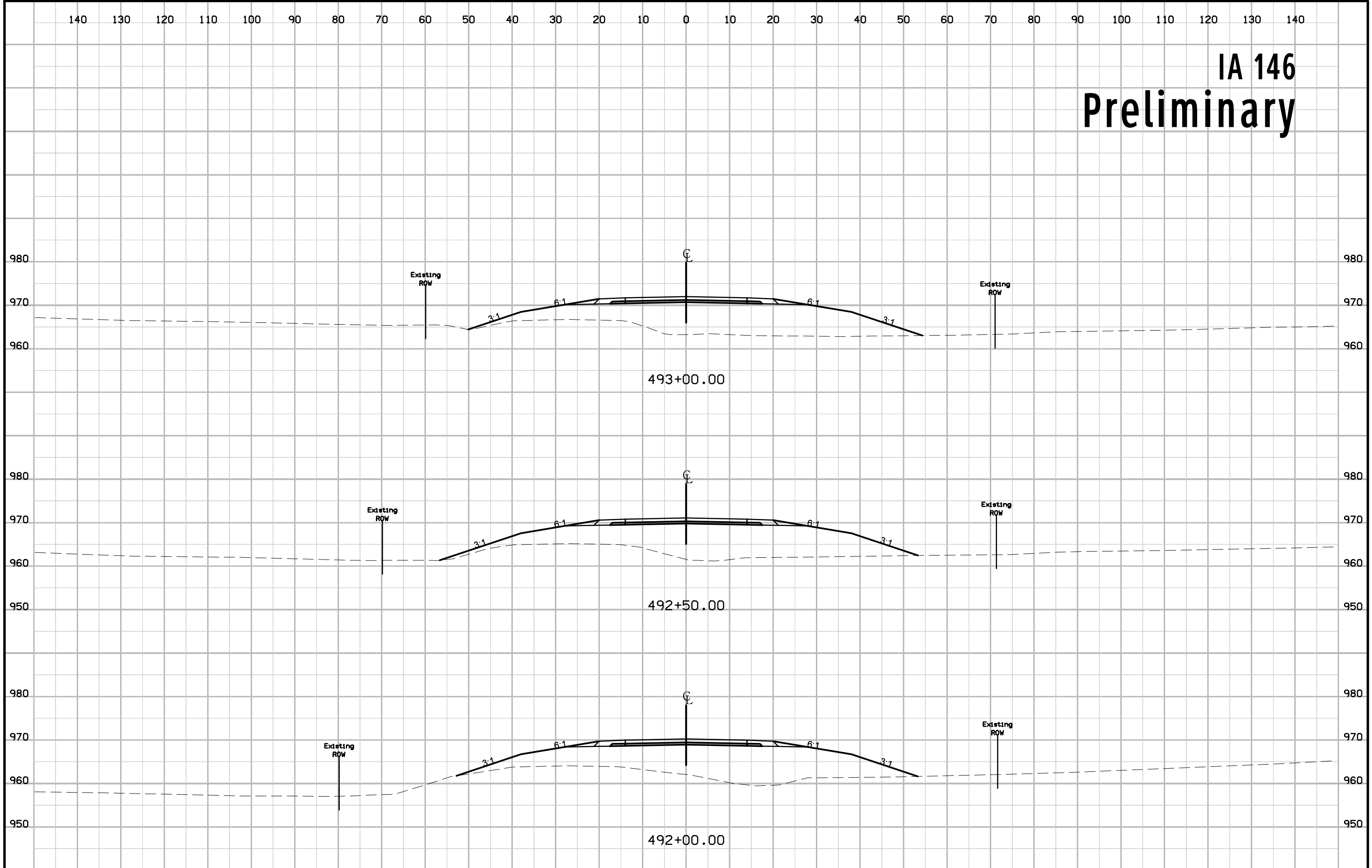
IA 146 Preliminary



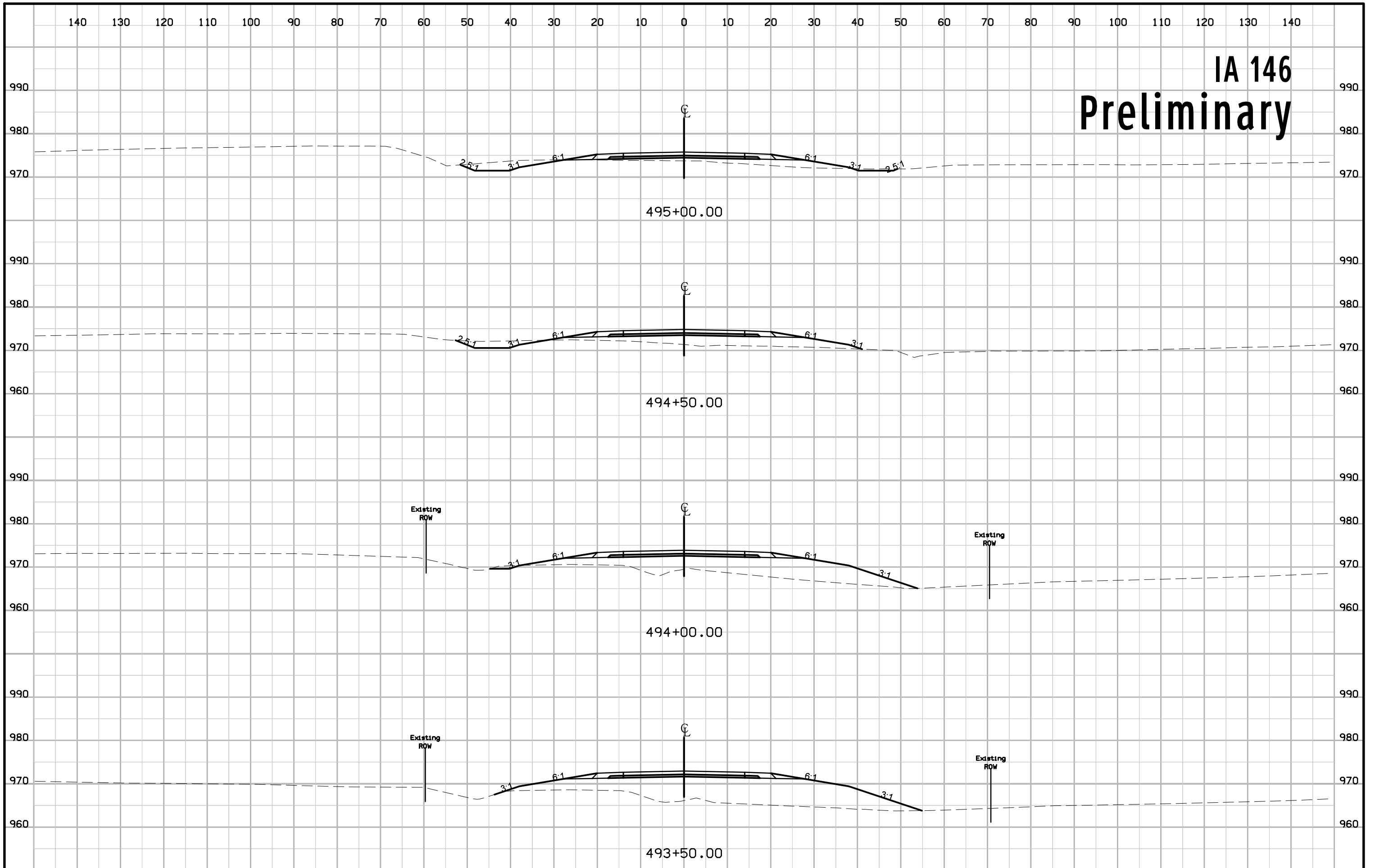
IA 146 Preliminary



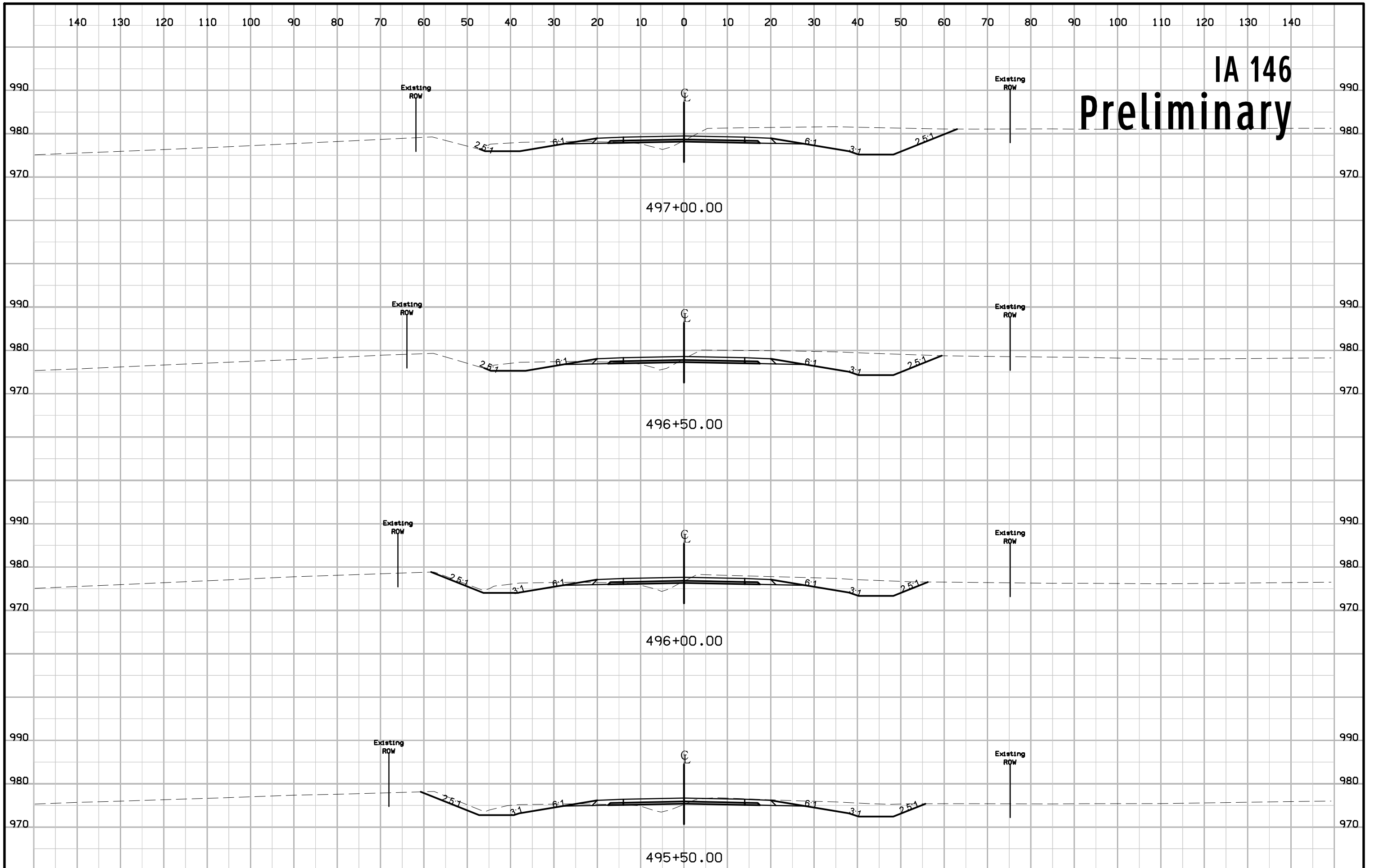
IA 146 Preliminary



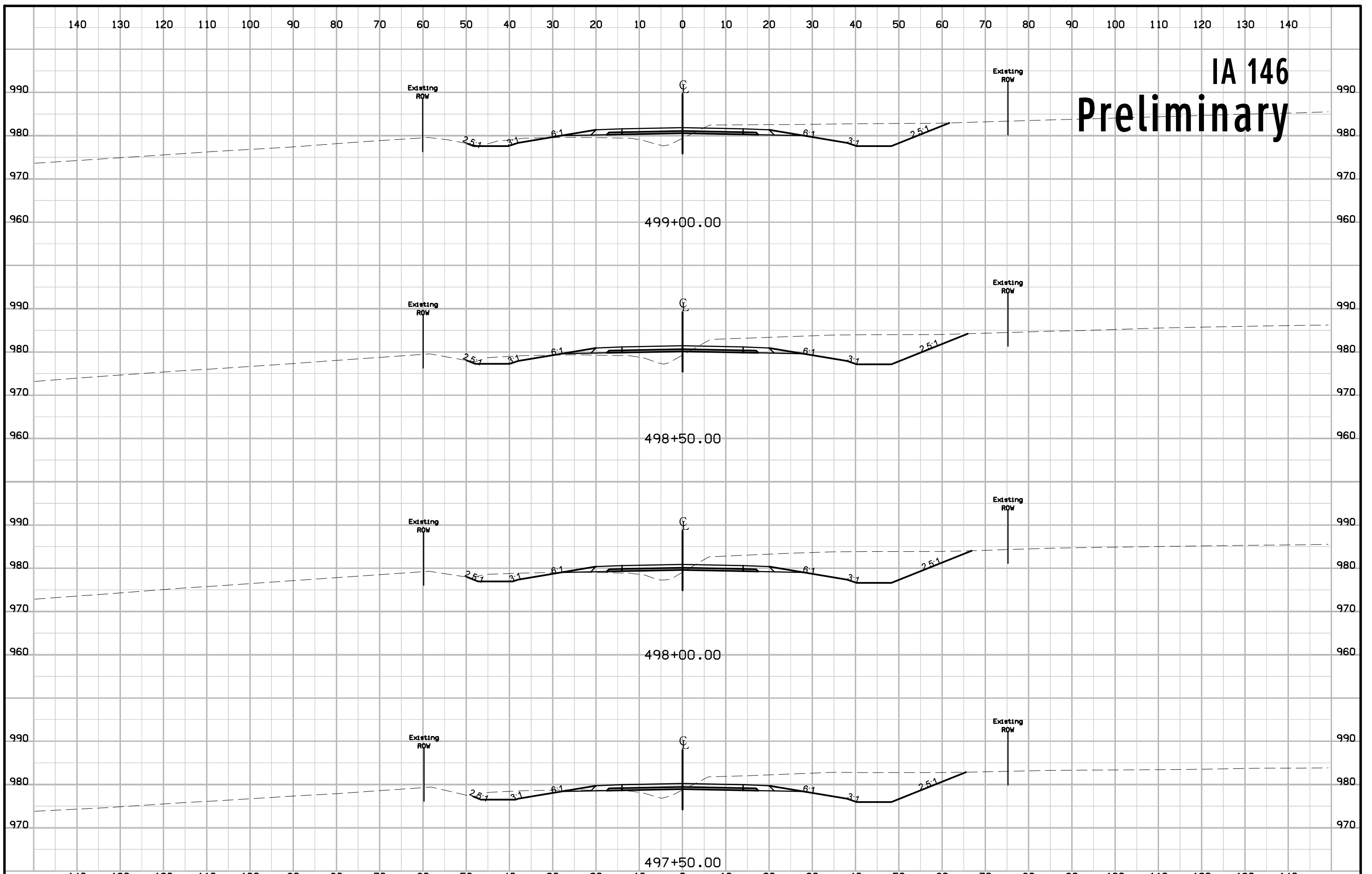
IA 146 Preliminary



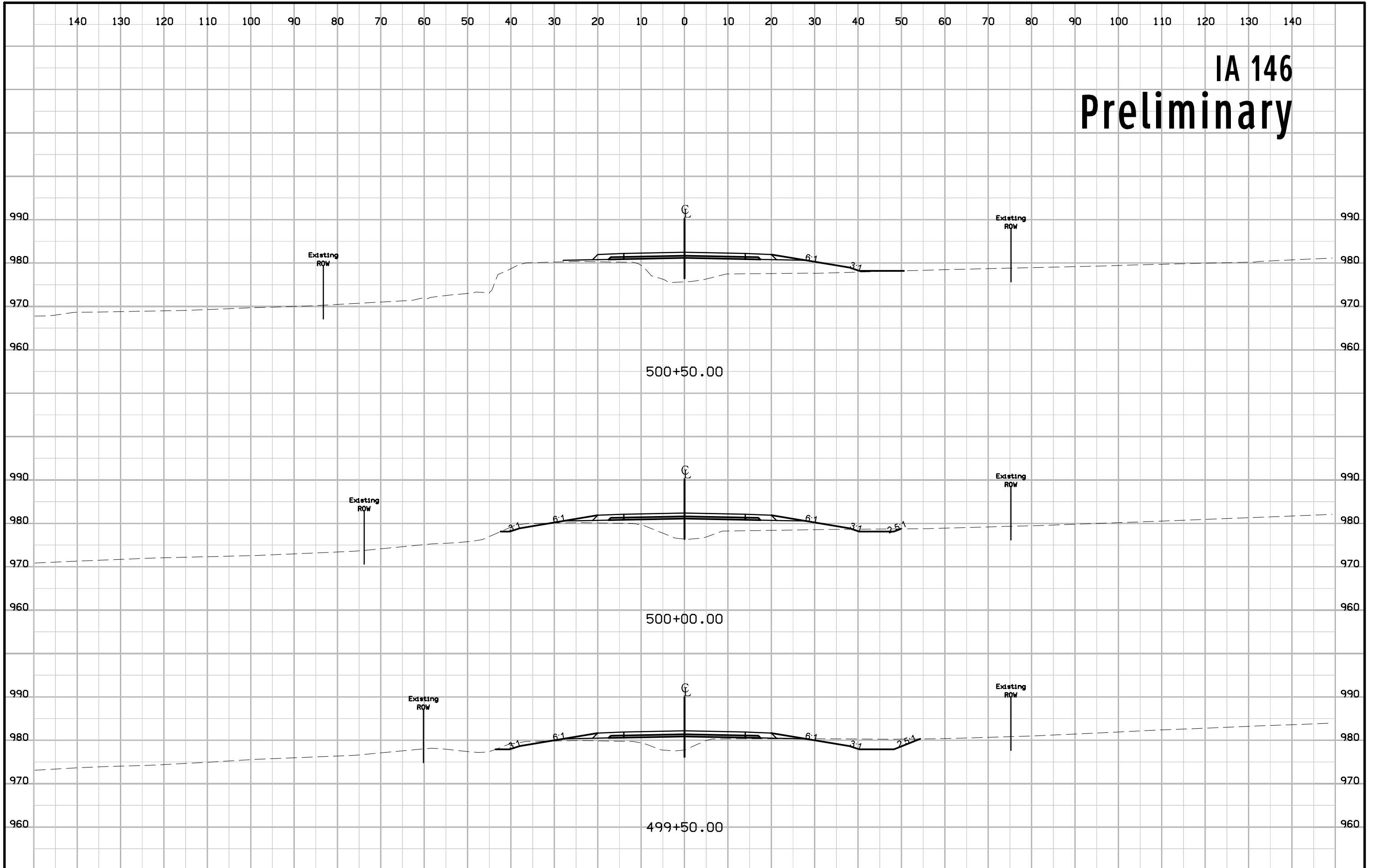
IA 146 Preliminary



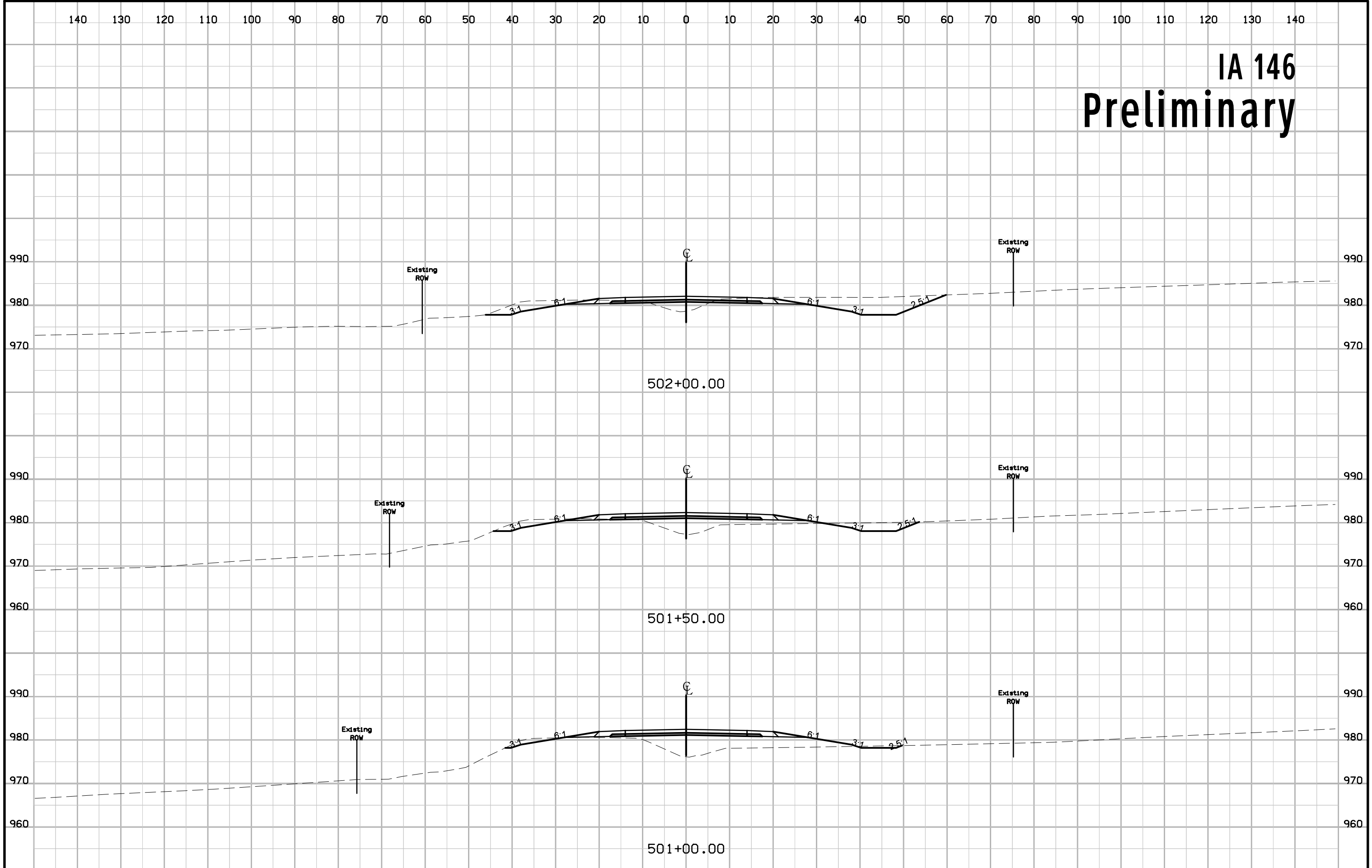
IA 146 Preliminary



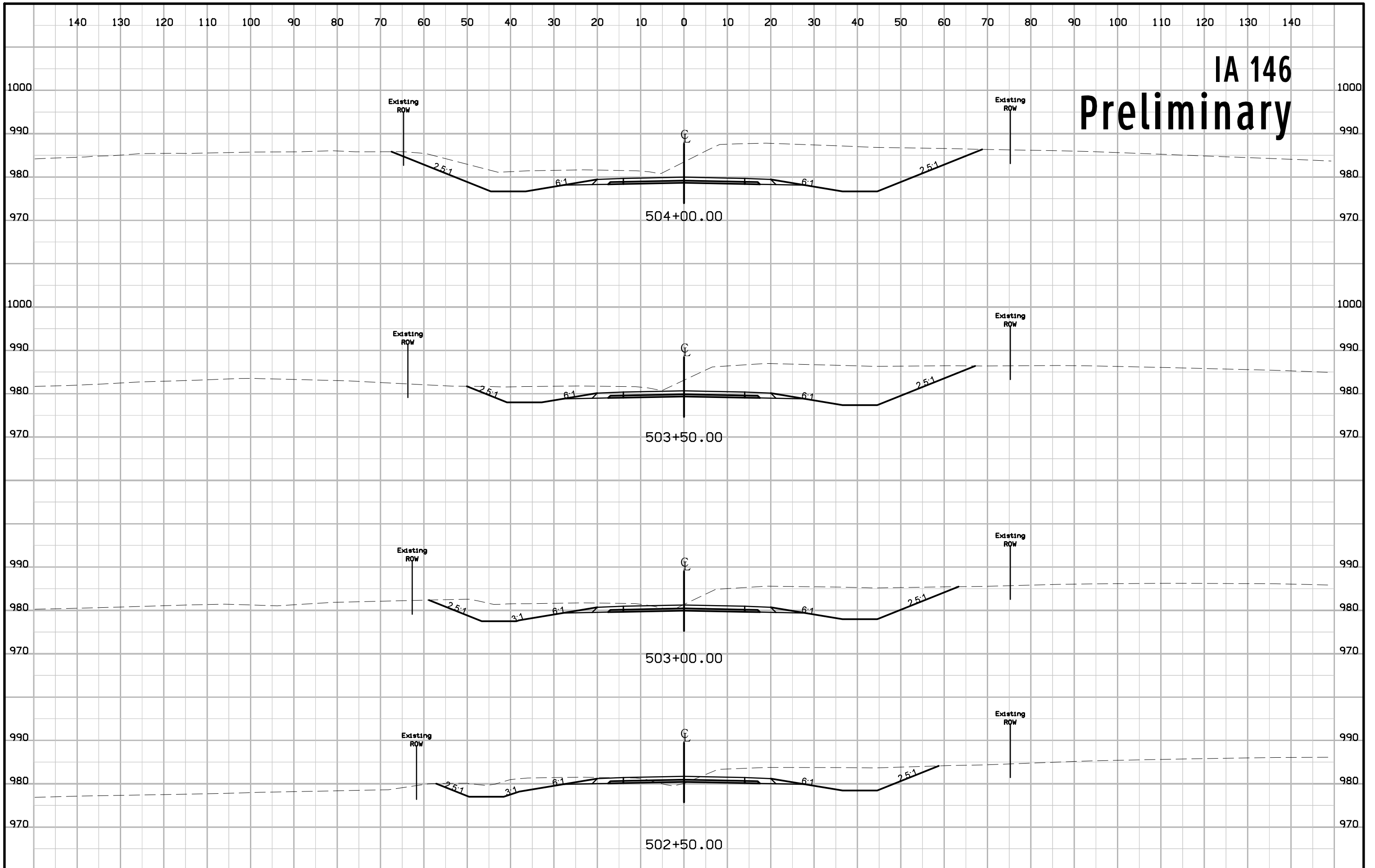
IA 146 Preliminary



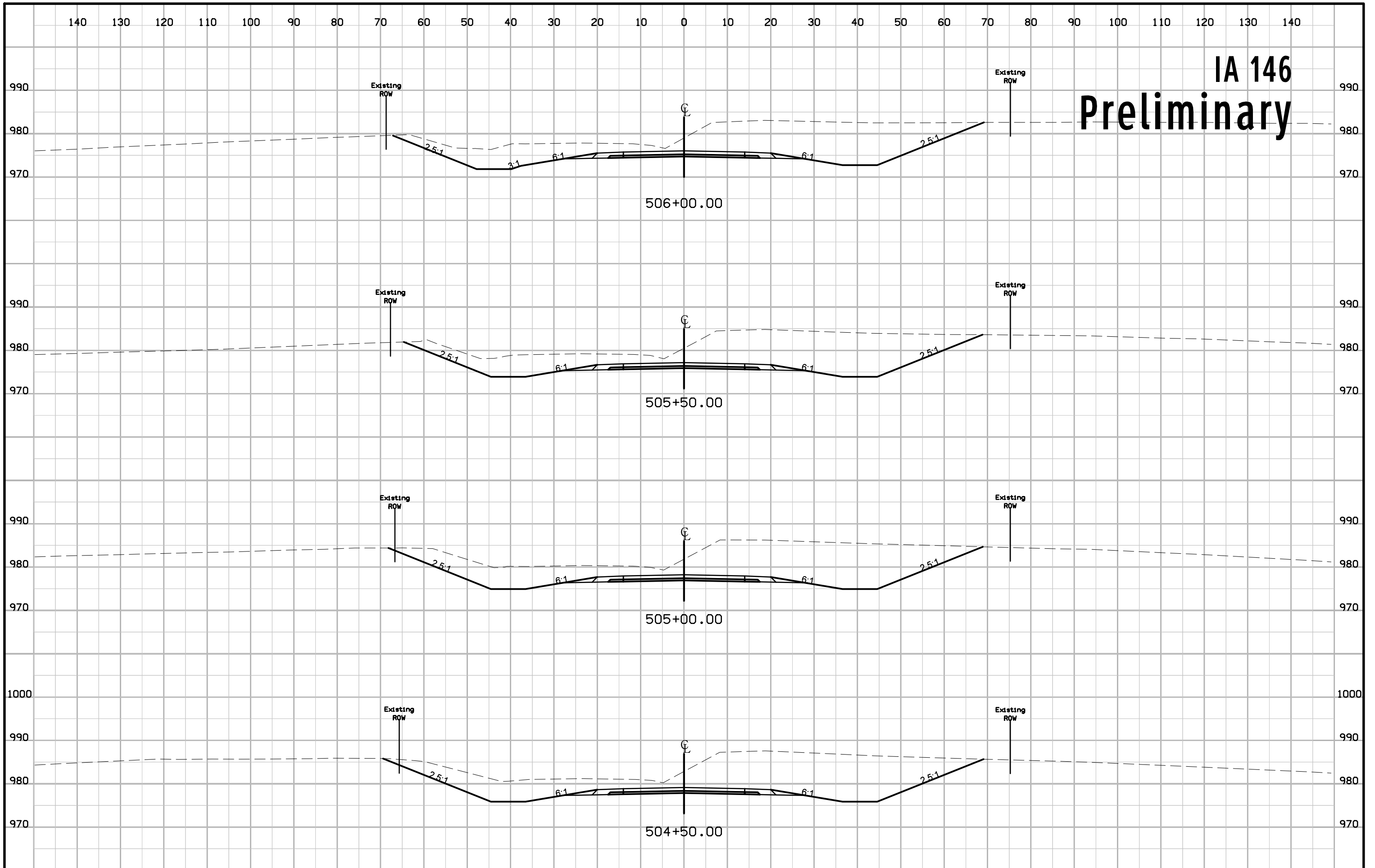
IA 146 Preliminary



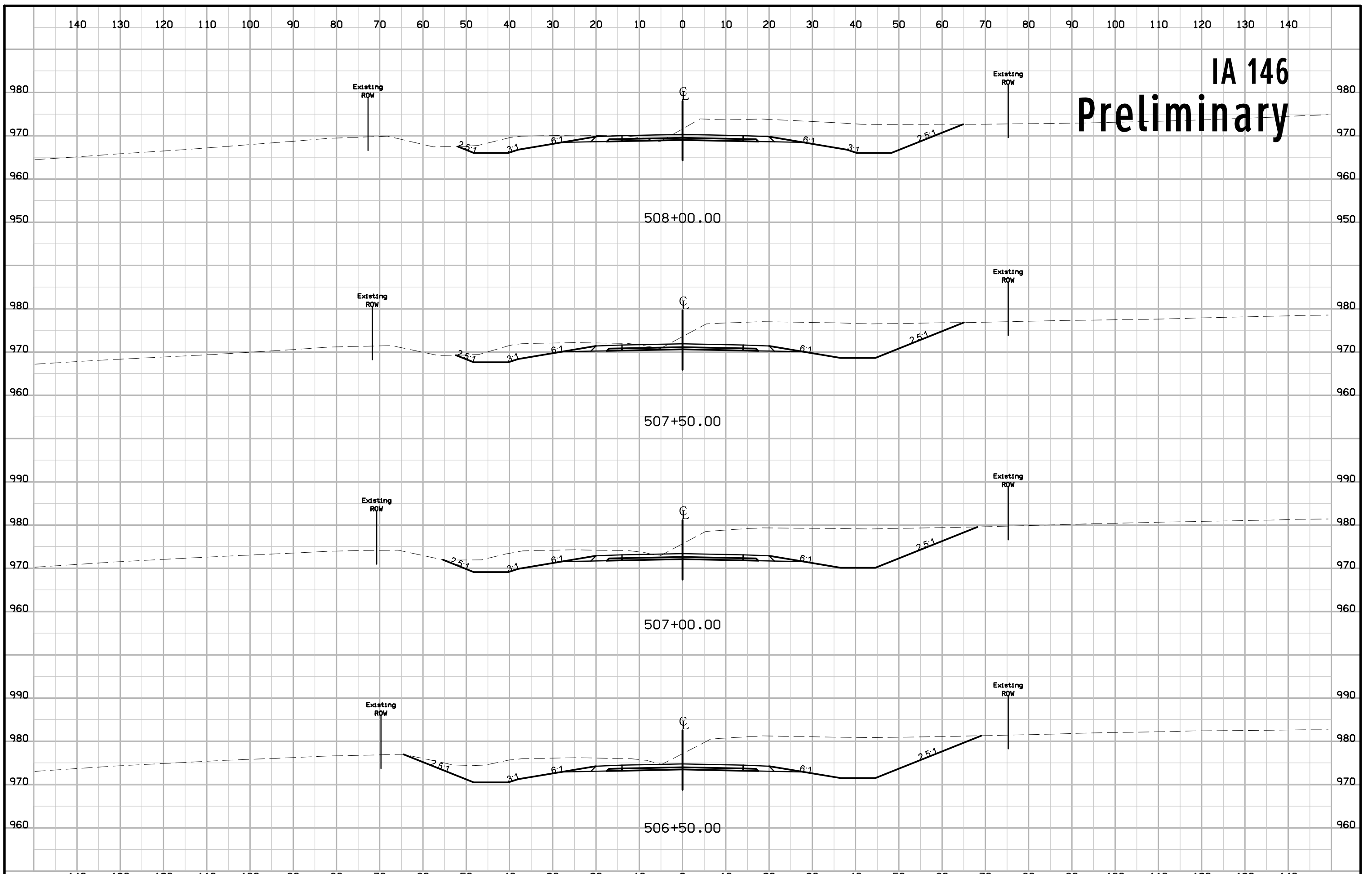
IA 146 Preliminary



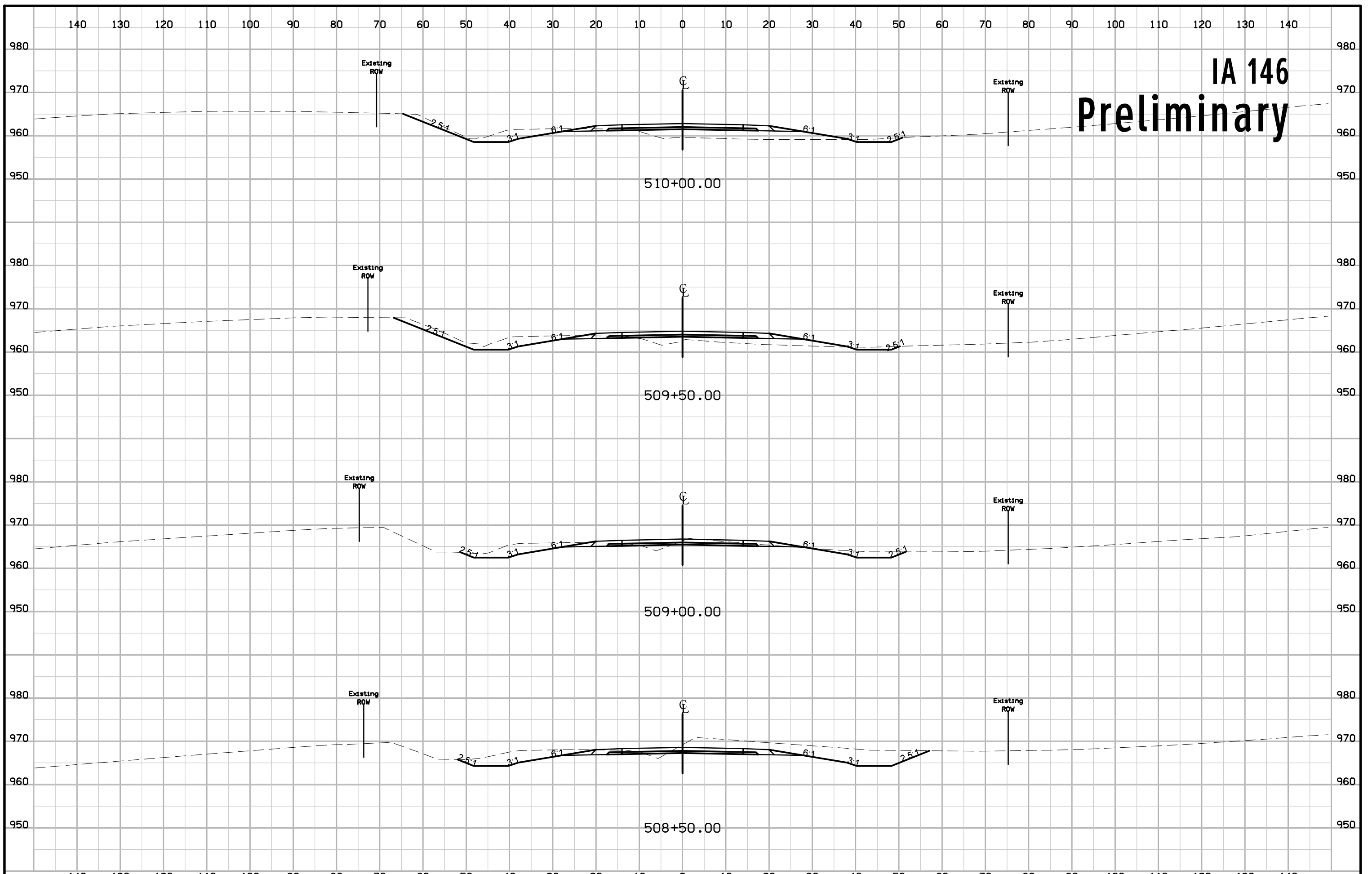
IA 146 Preliminary



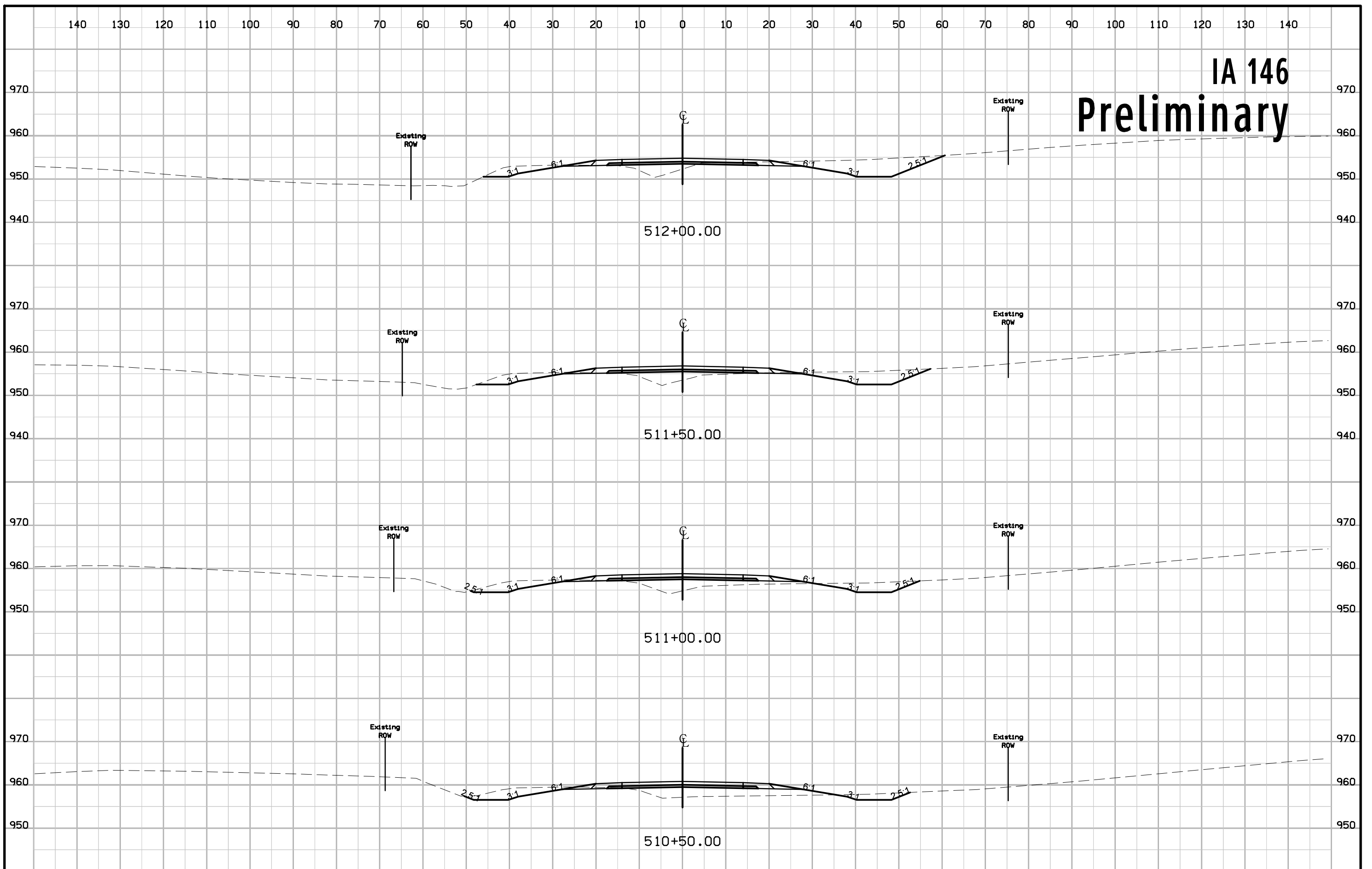
IA 146 Preliminary



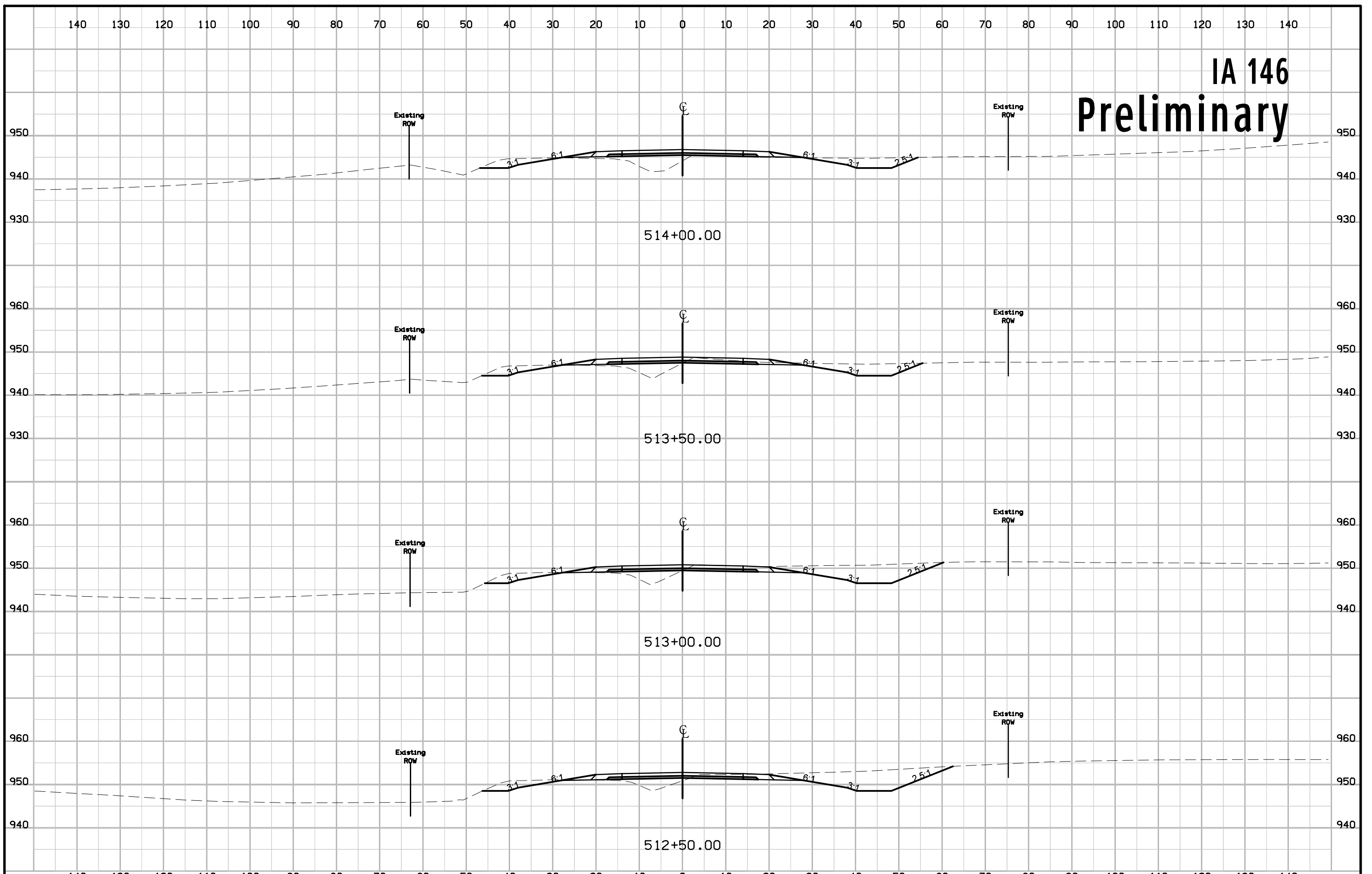
IA 146 Preliminary



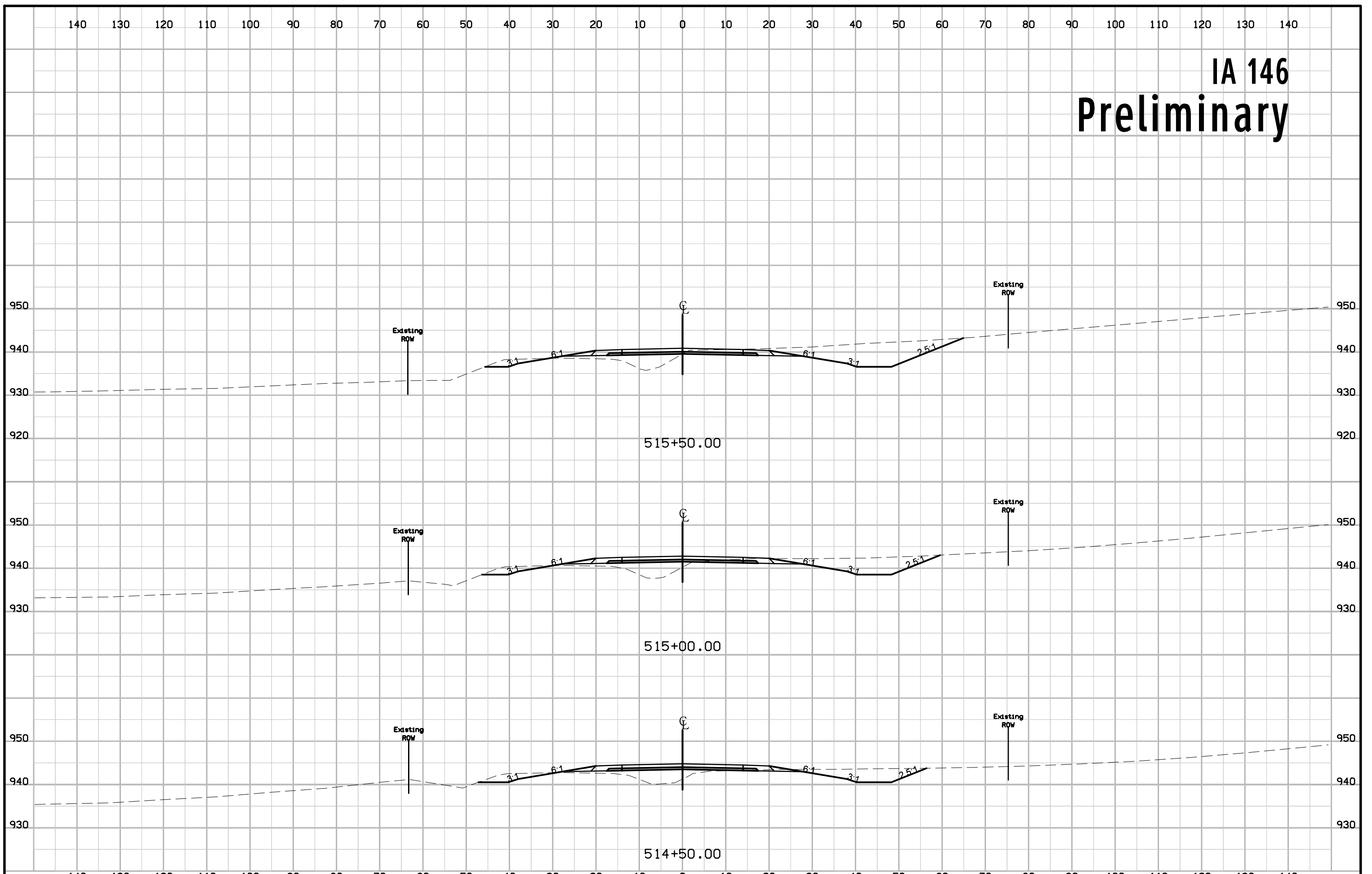
IA 146 Preliminary



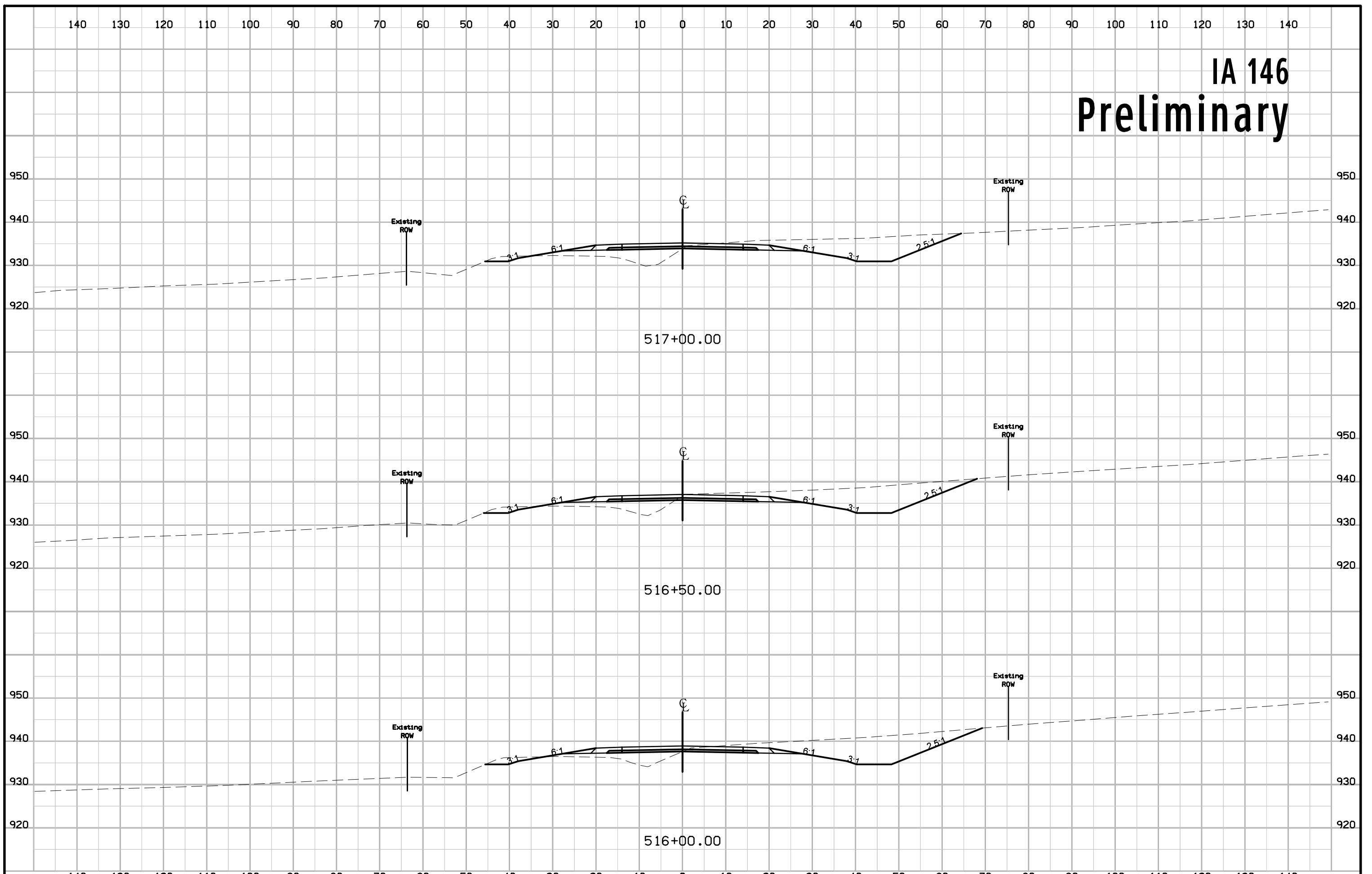
IA 146 Preliminary



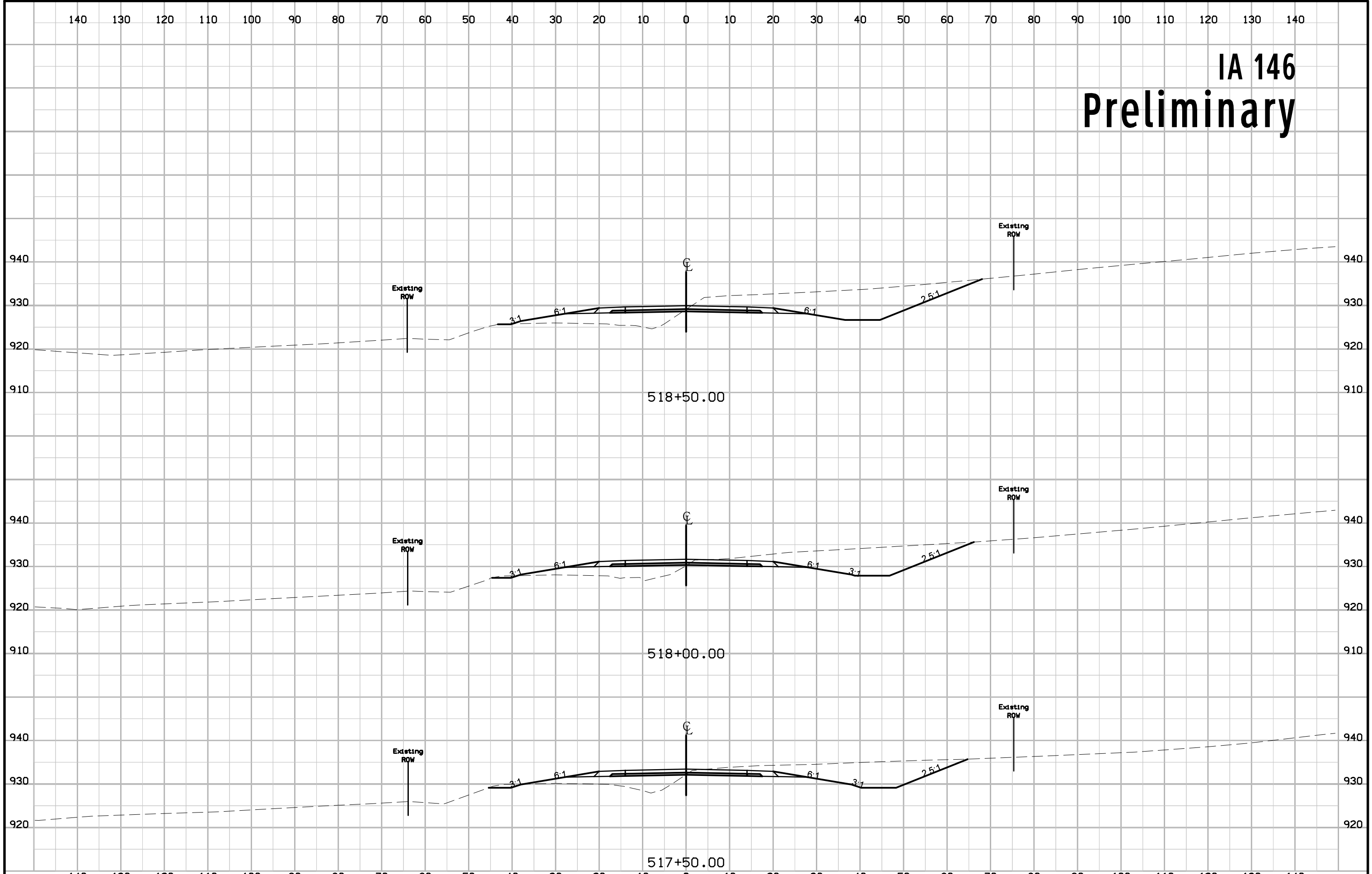
IA 146 Preliminary



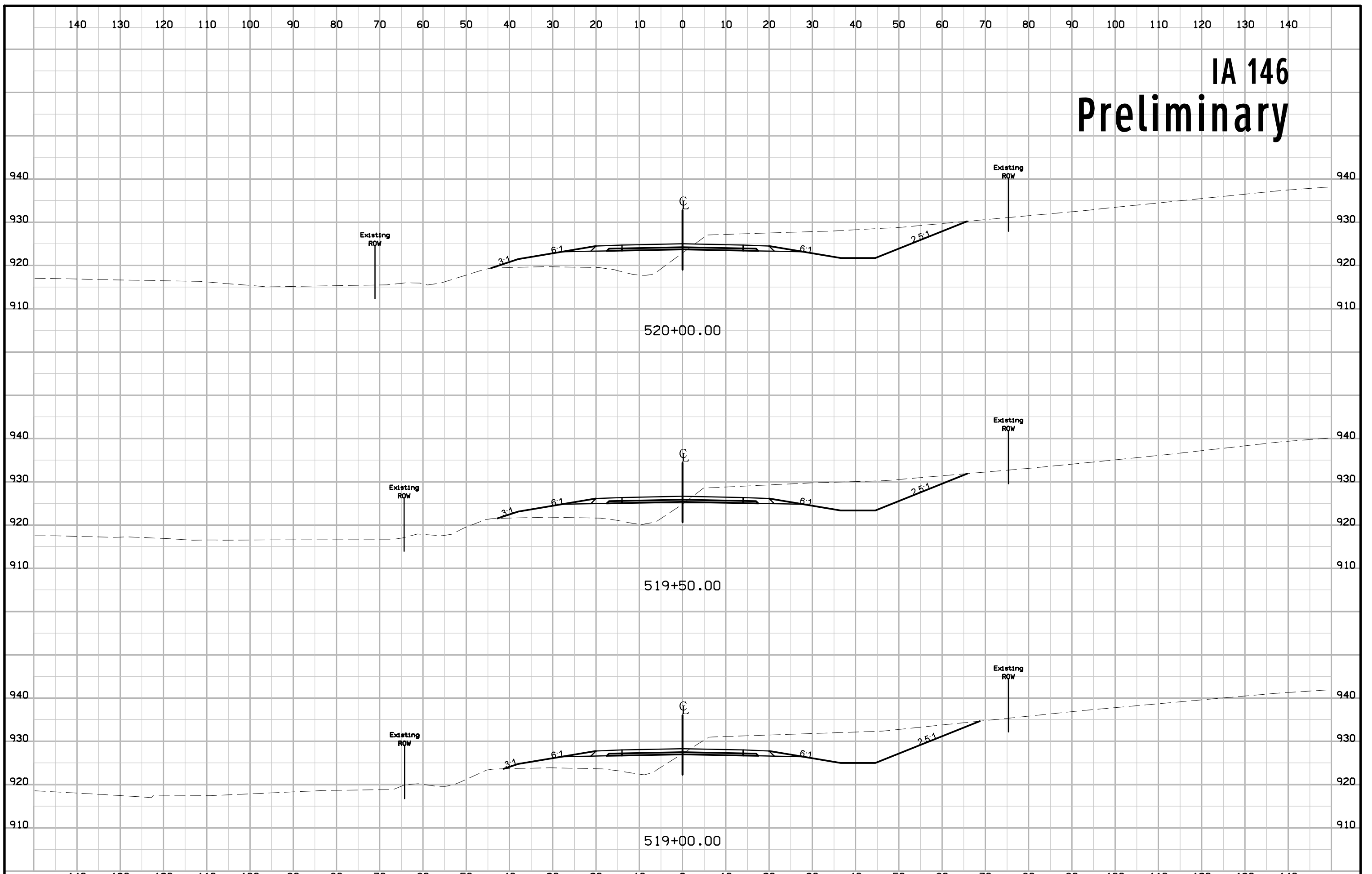
IA 146 Preliminary



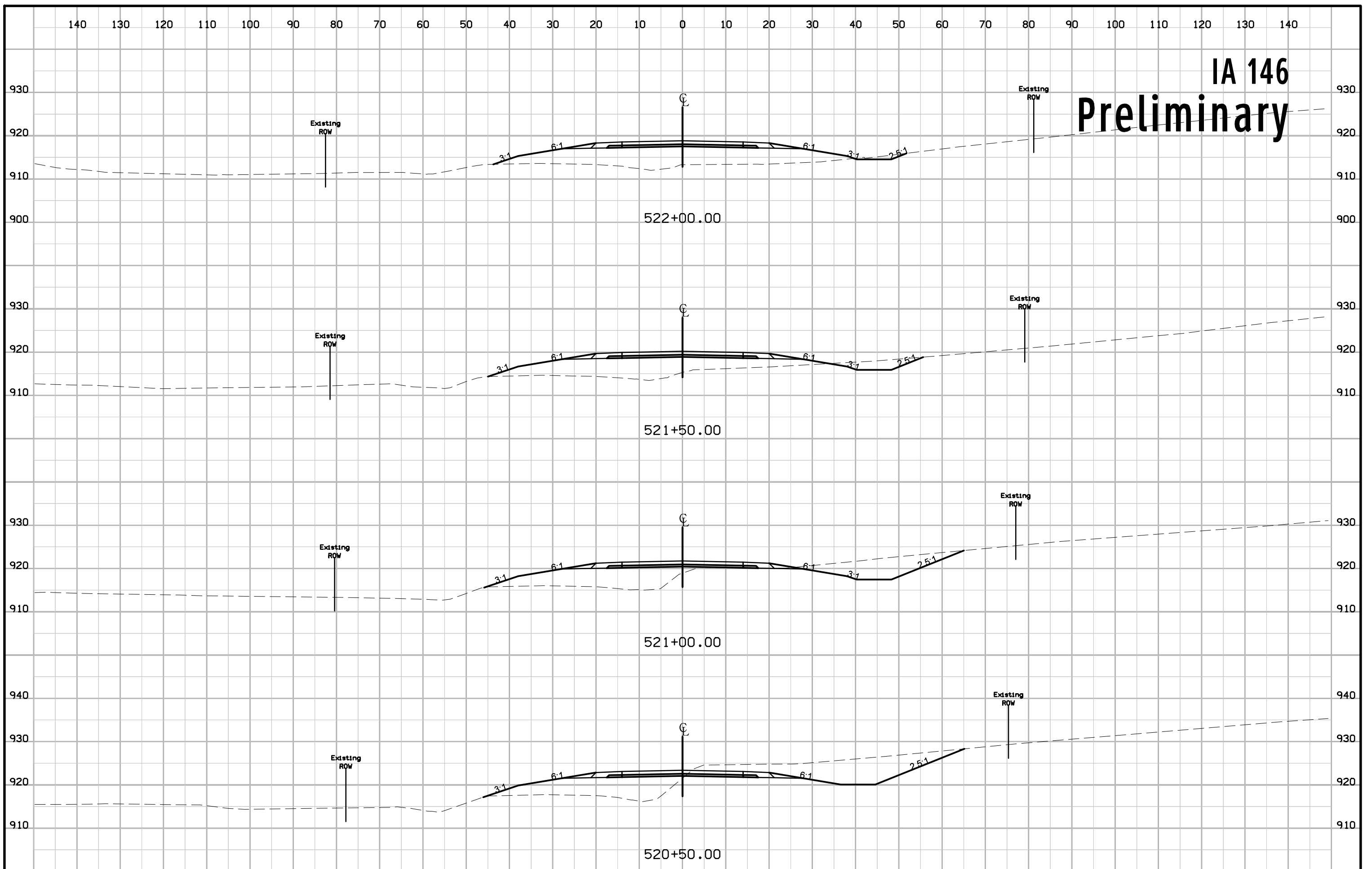
IA 146 Preliminary



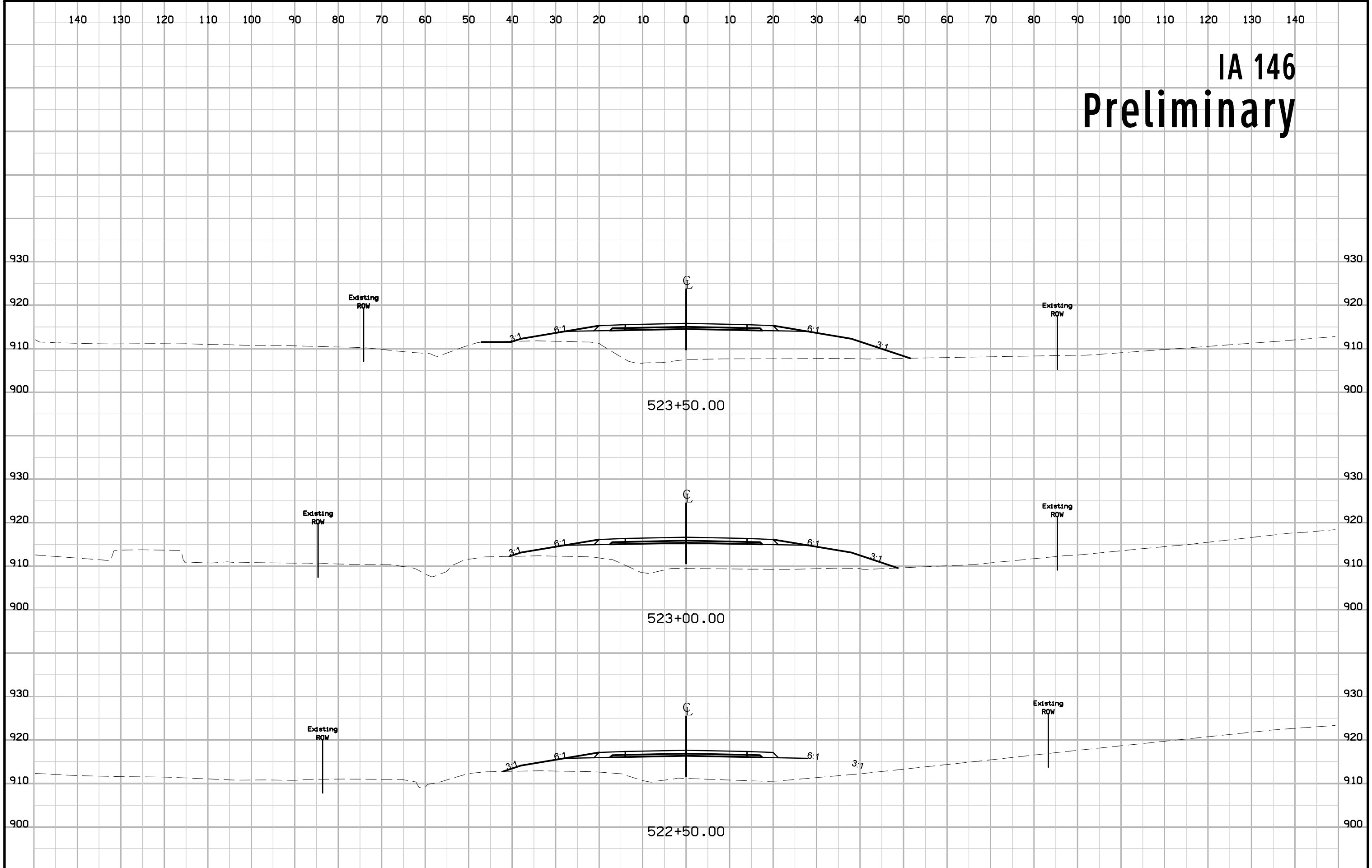
IA 146 Preliminary



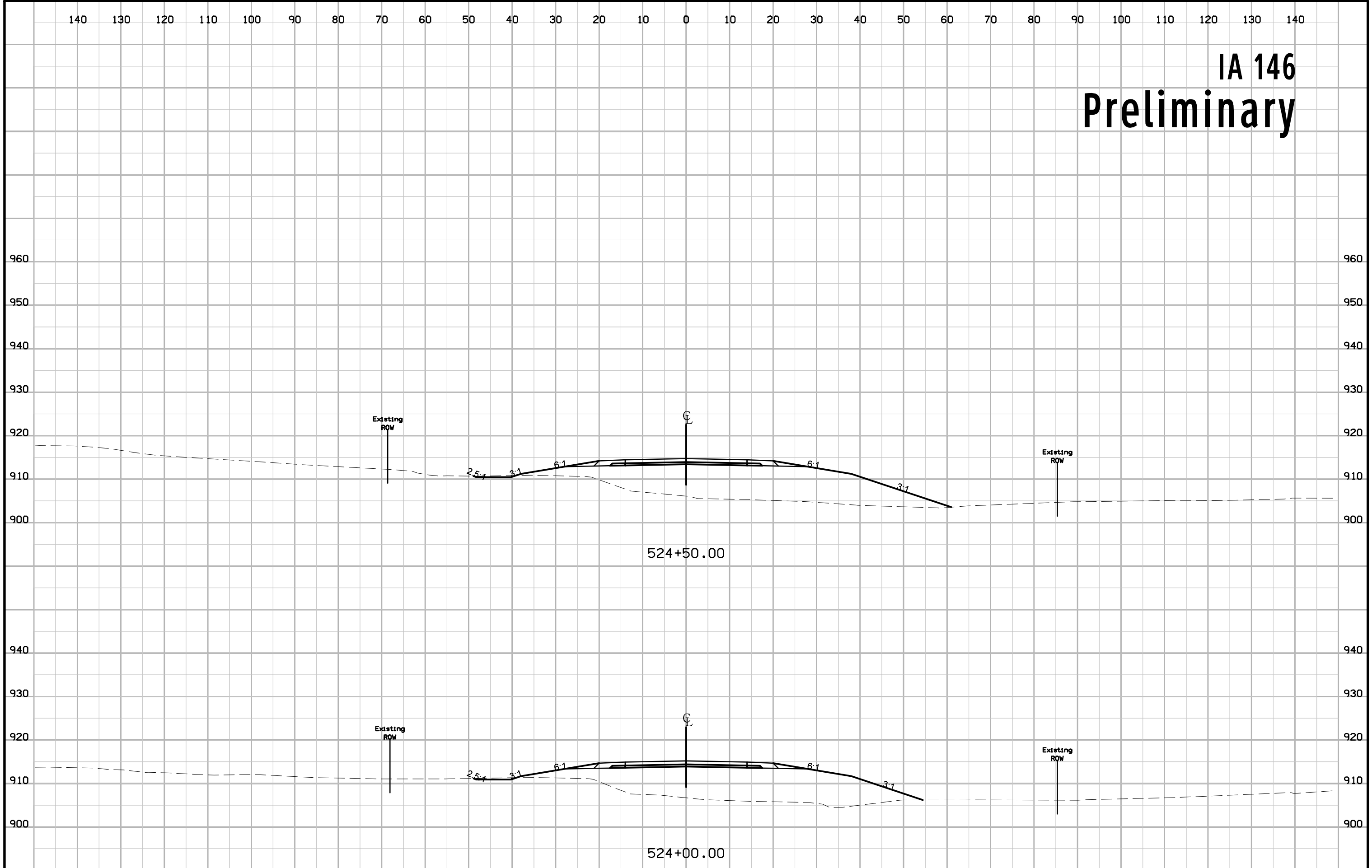
IA 146 Preliminary



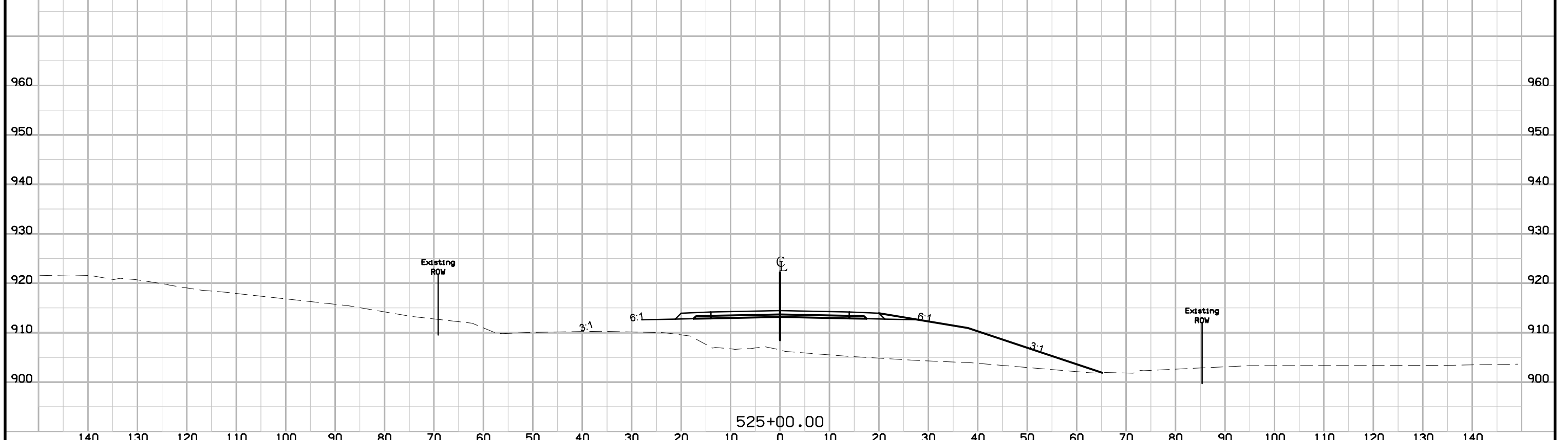
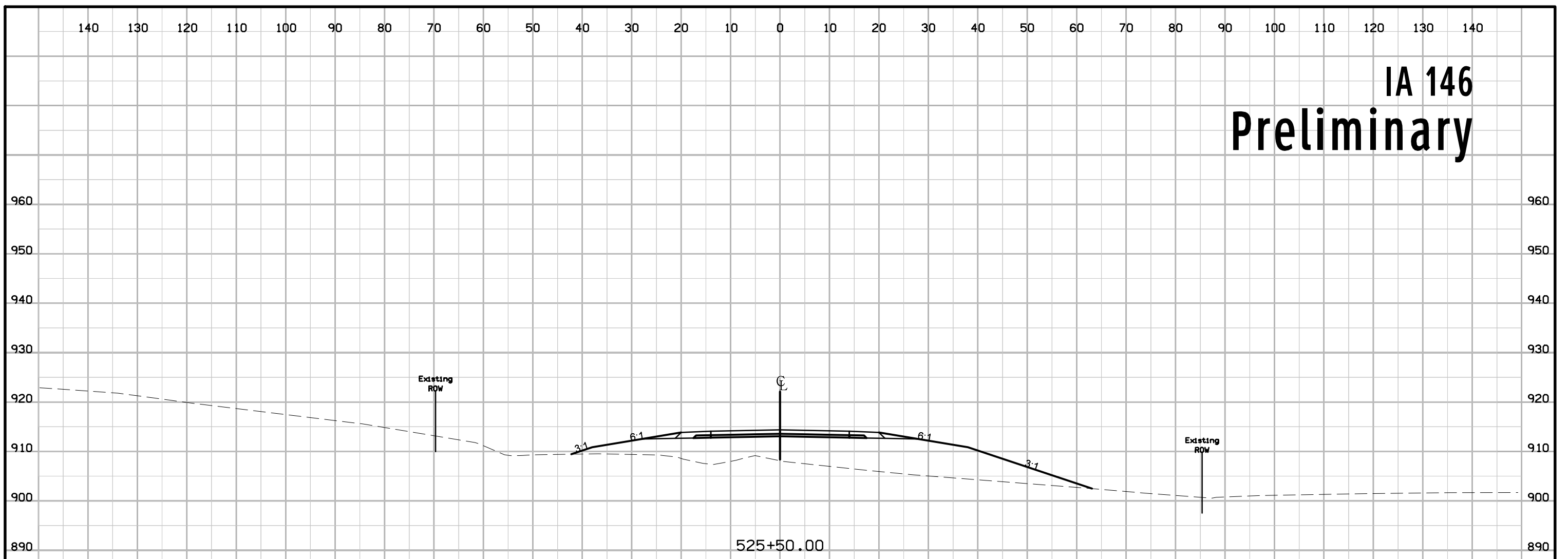
IA 146 Preliminary



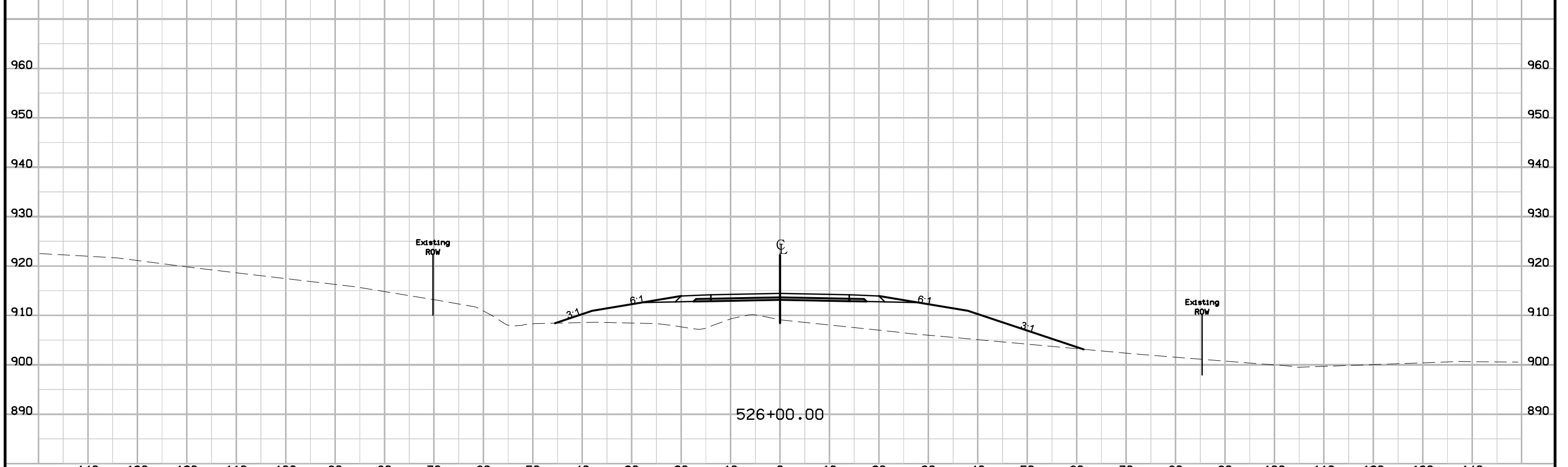
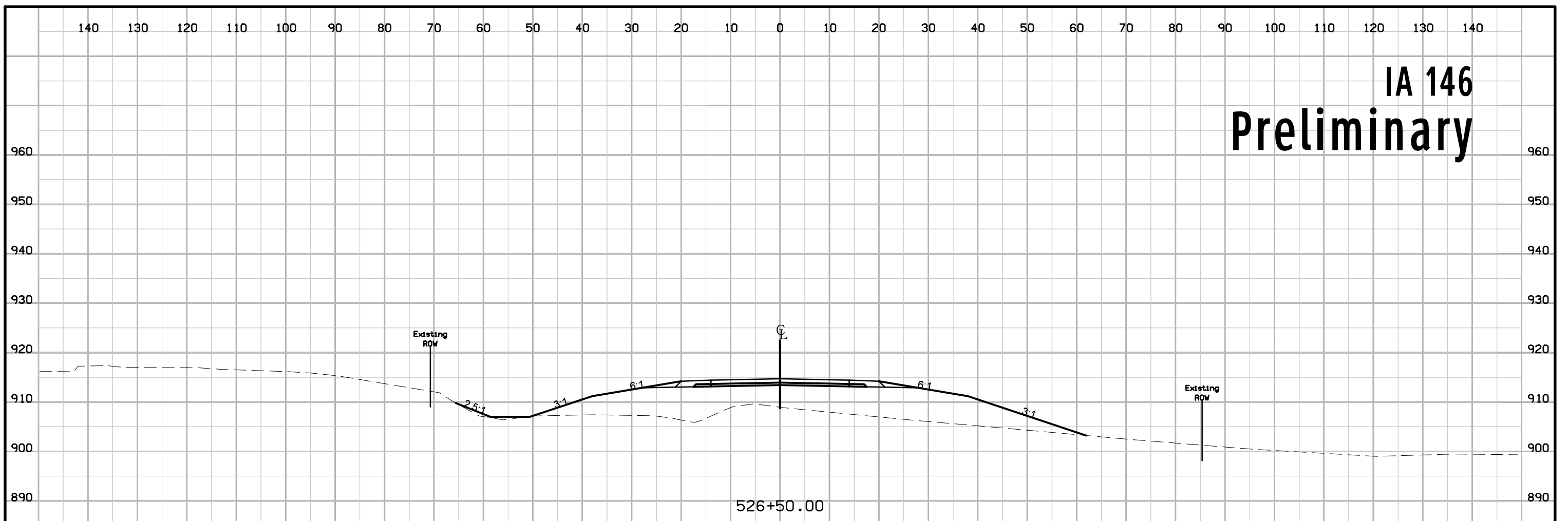
IA 146 Preliminary



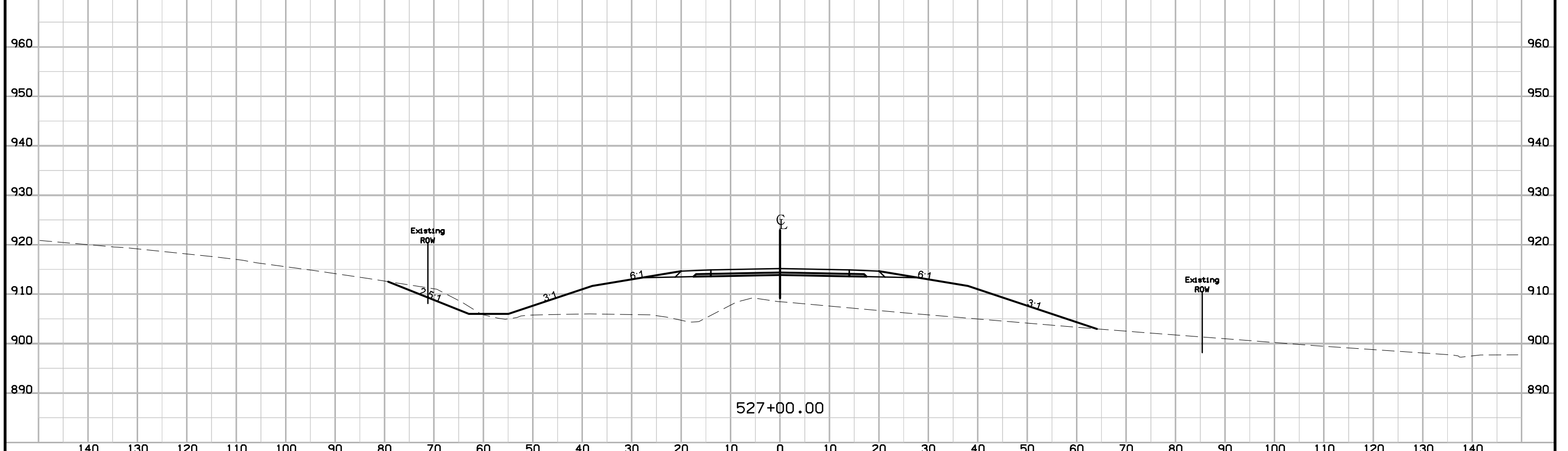
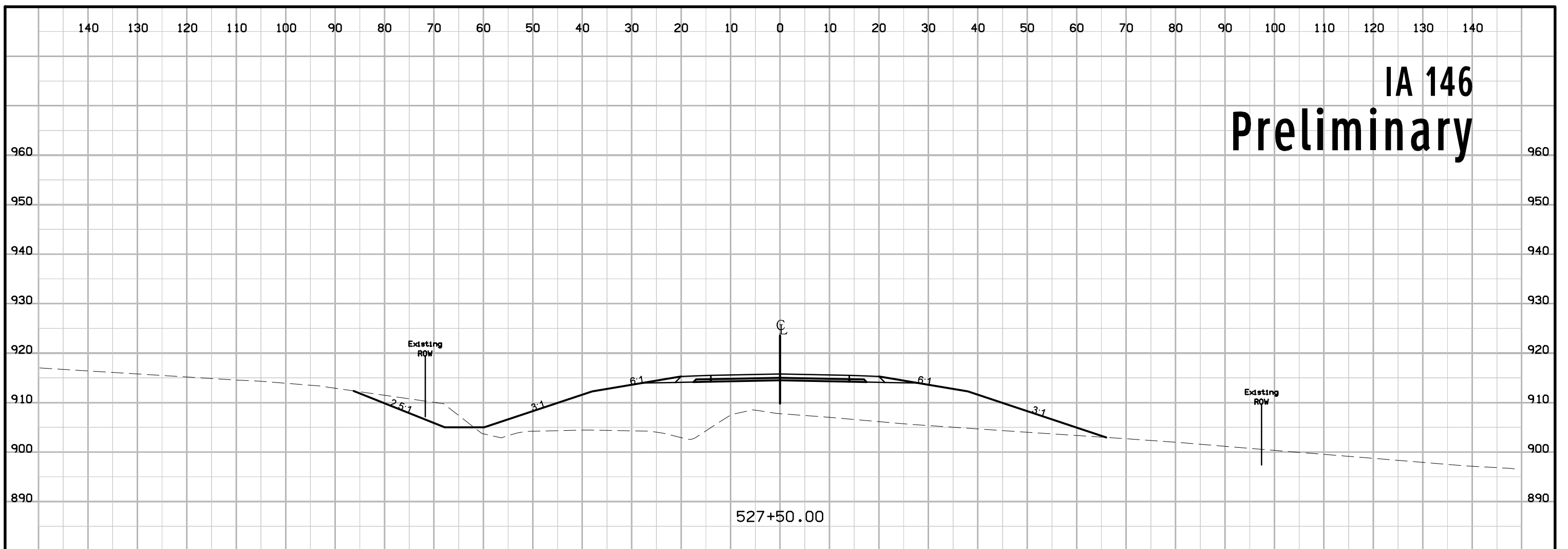
IA 146 Preliminary



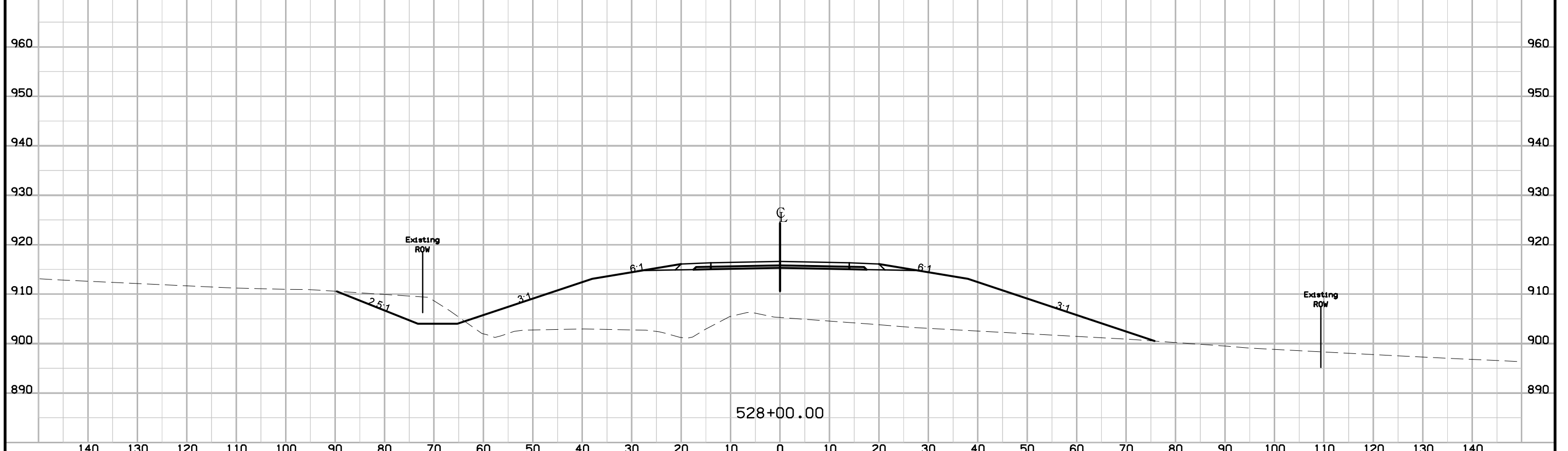
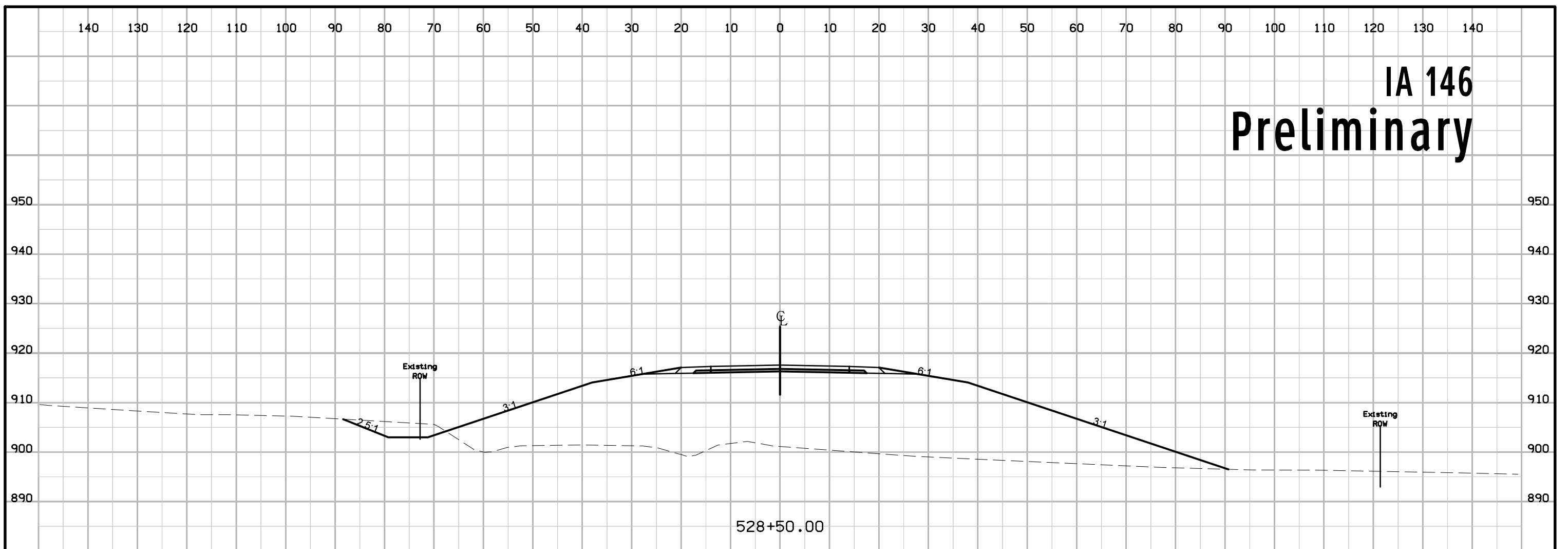
IA 146 Preliminary



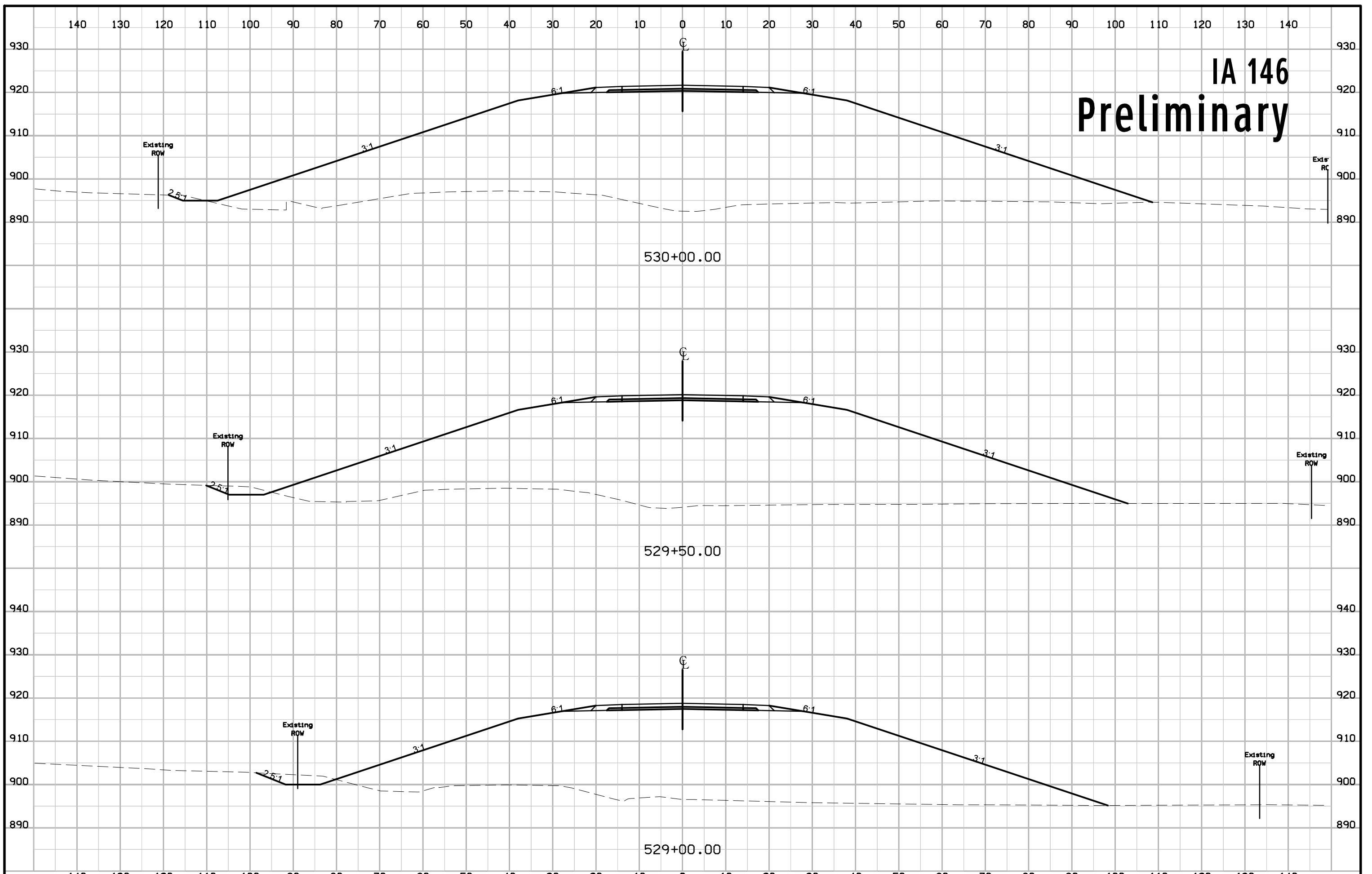
IA 146 Preliminary



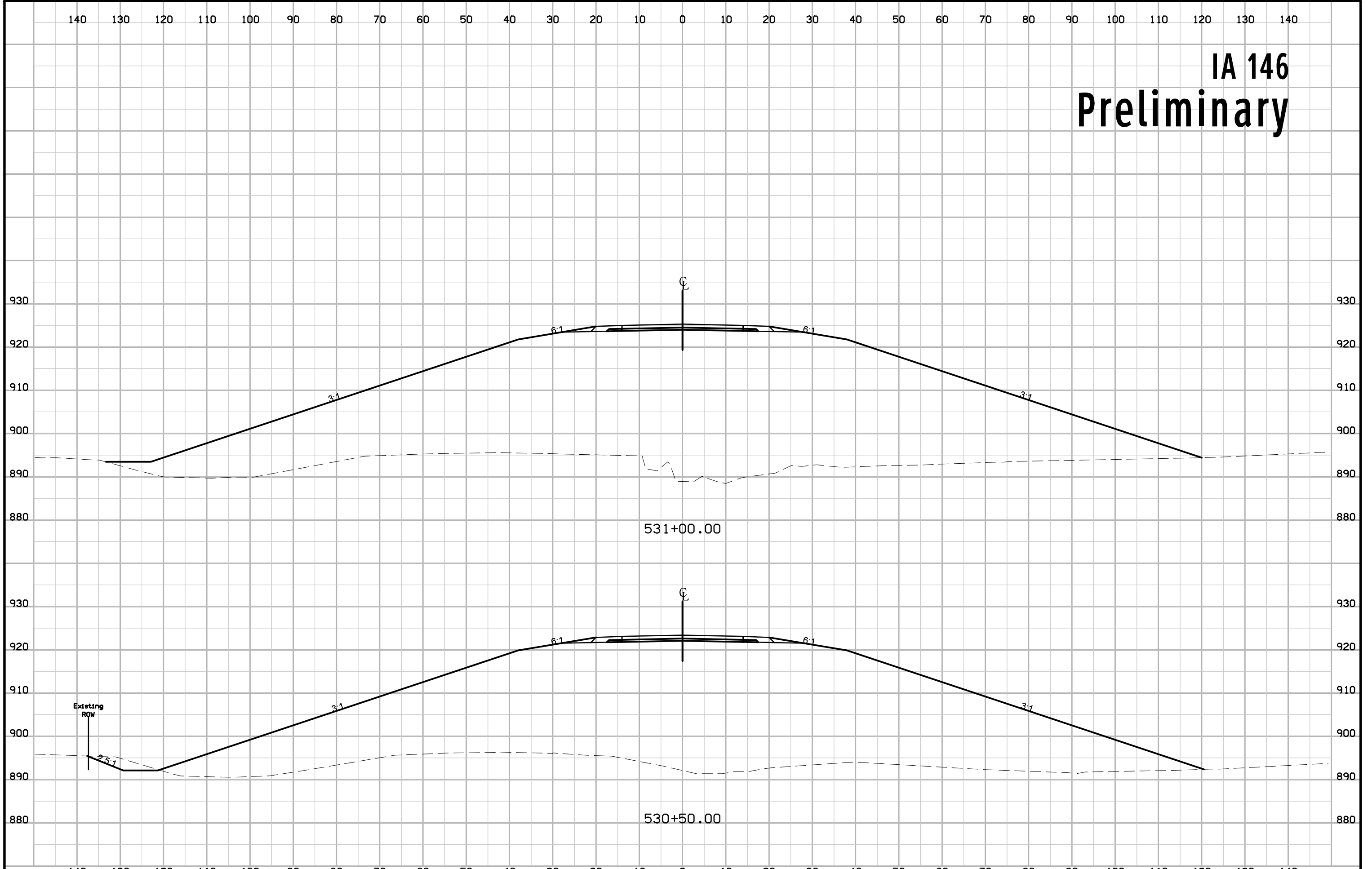
IA 146 Preliminary



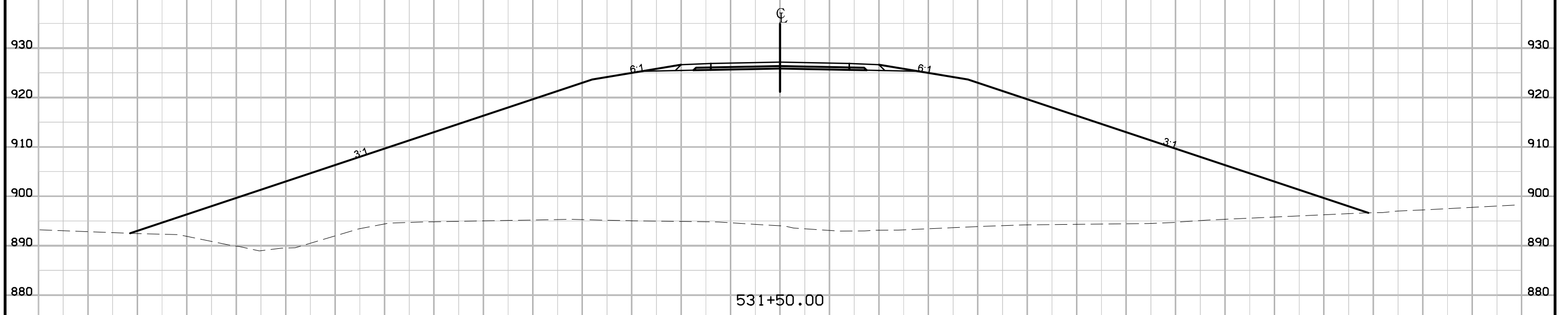
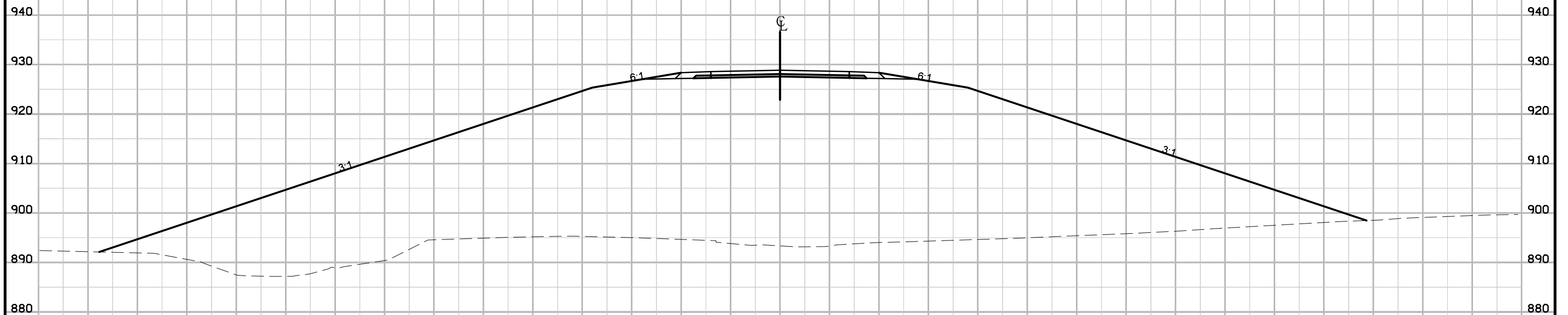
IA 146 Preliminary



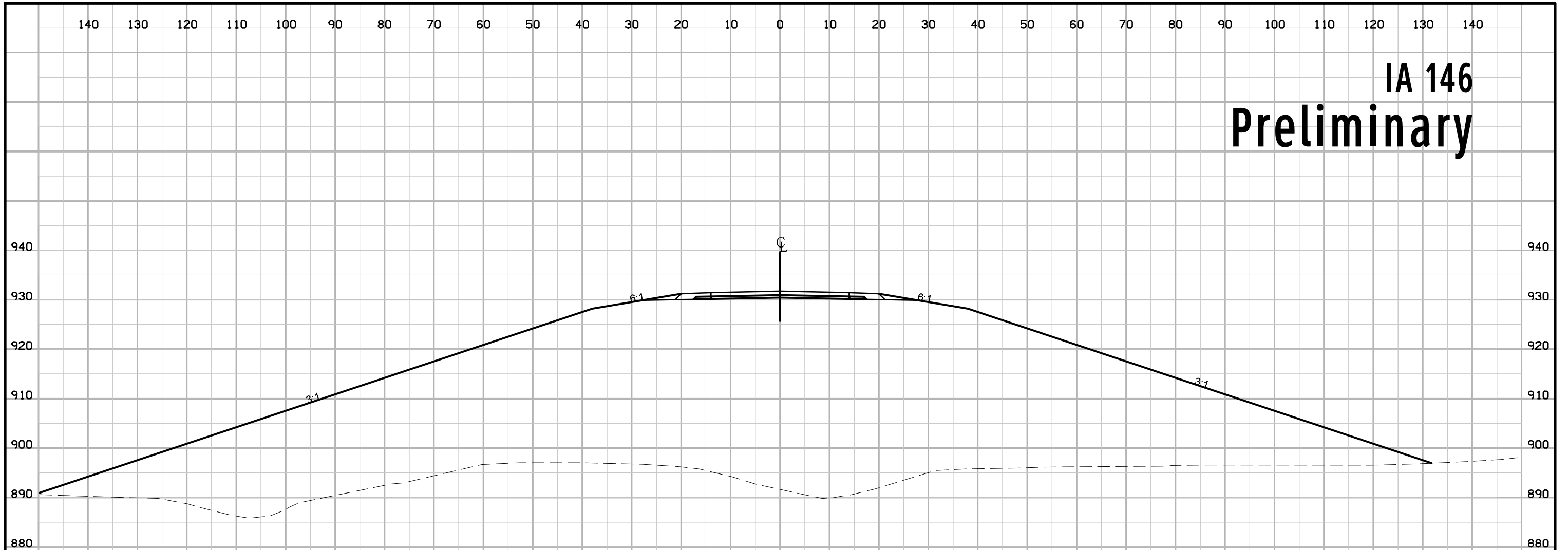
IA 146 Preliminary



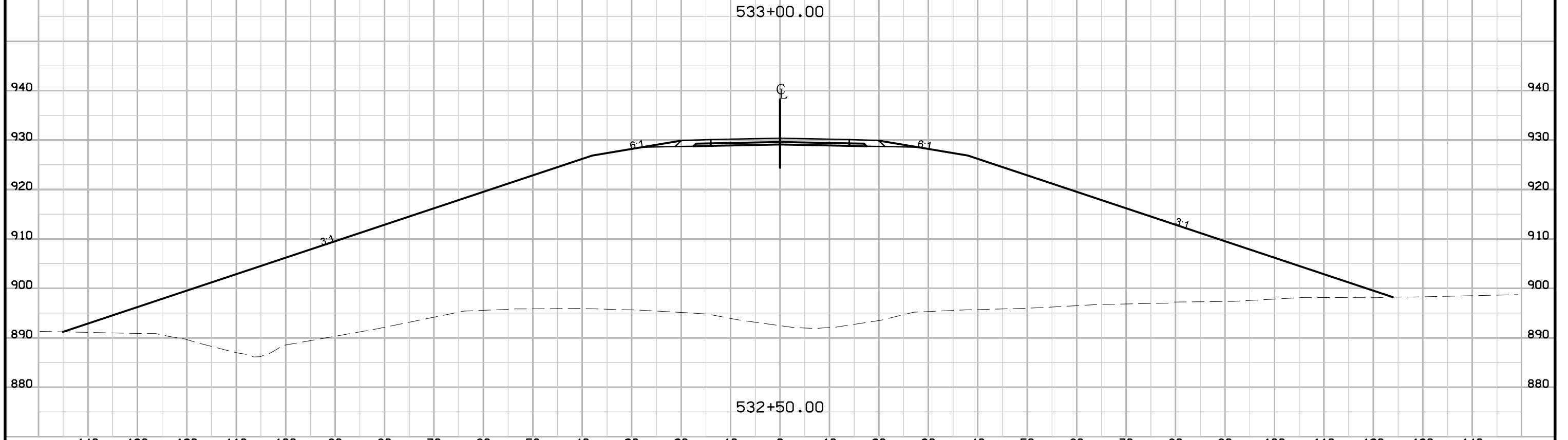
IA 146 Preliminary



IA 146 Preliminary

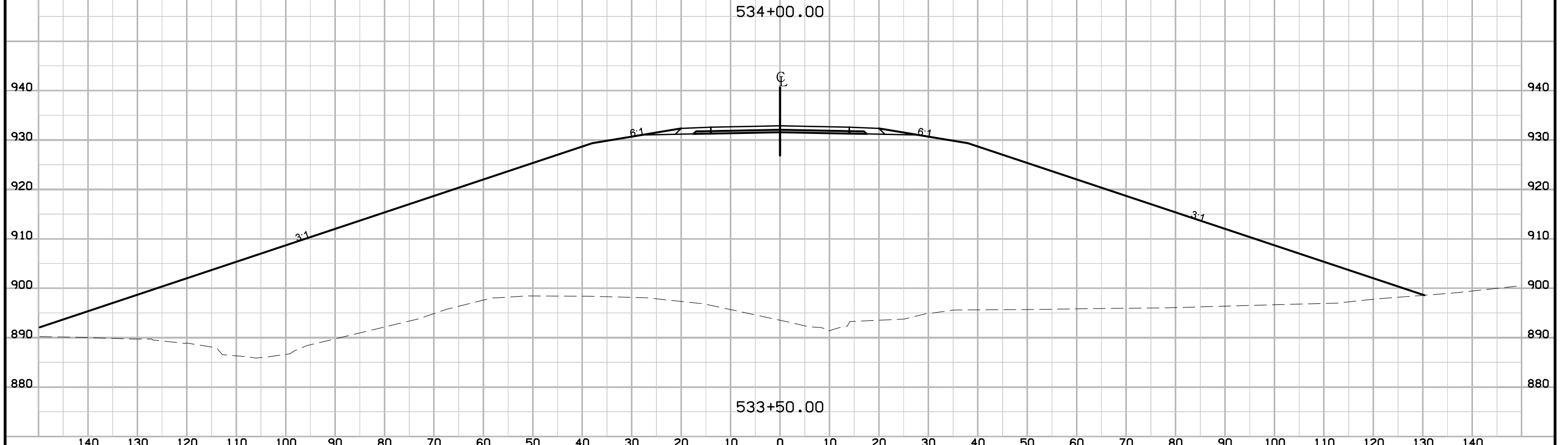
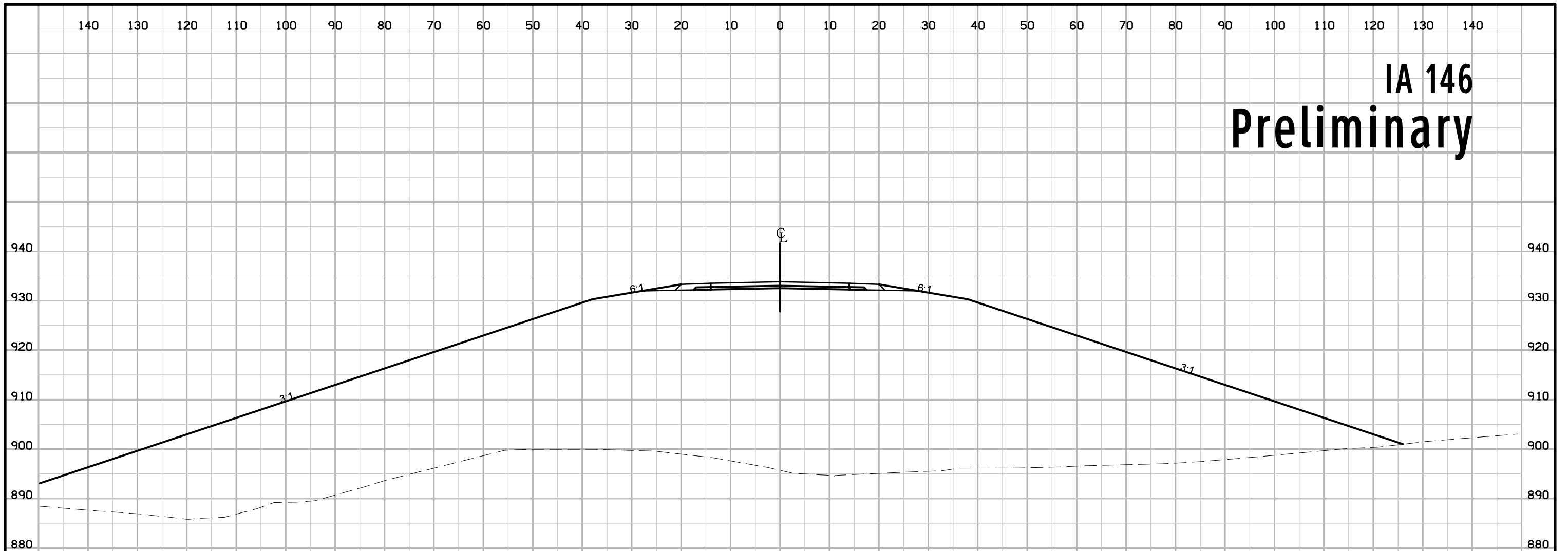


533+00.00

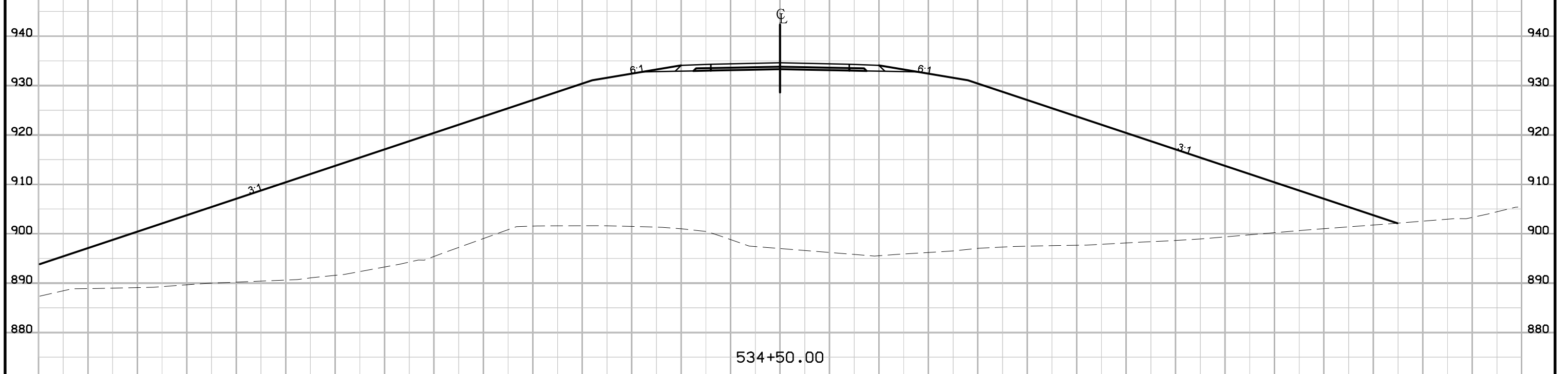
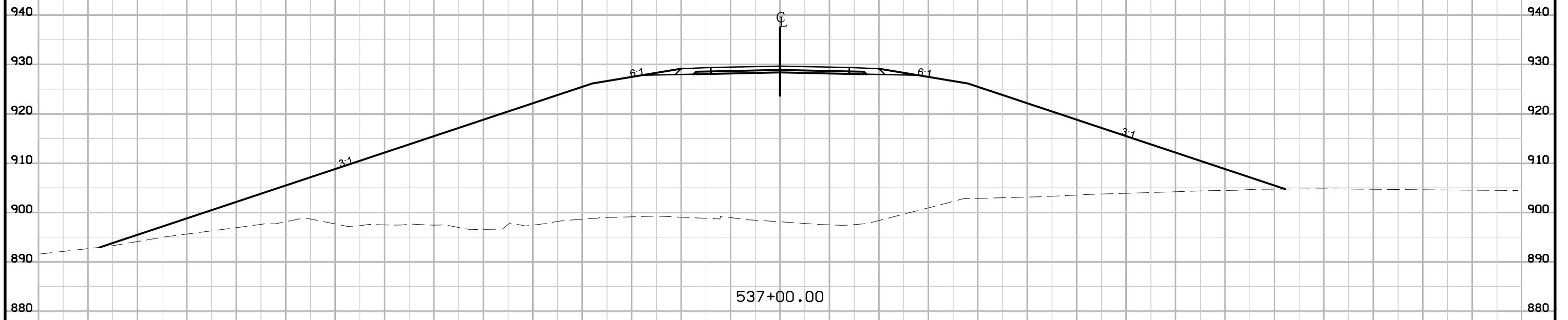


532+50.00

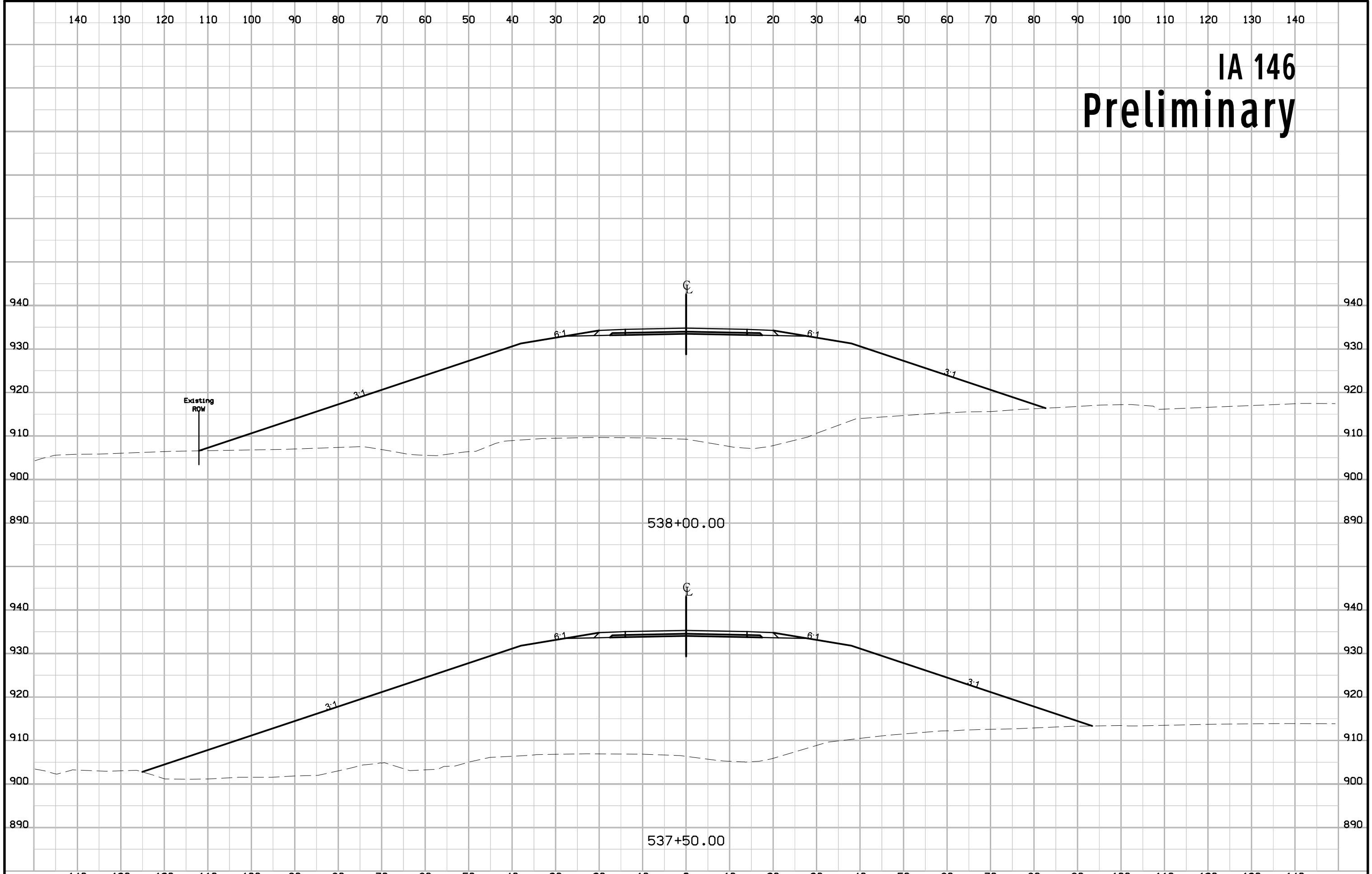
IA 146 Preliminary



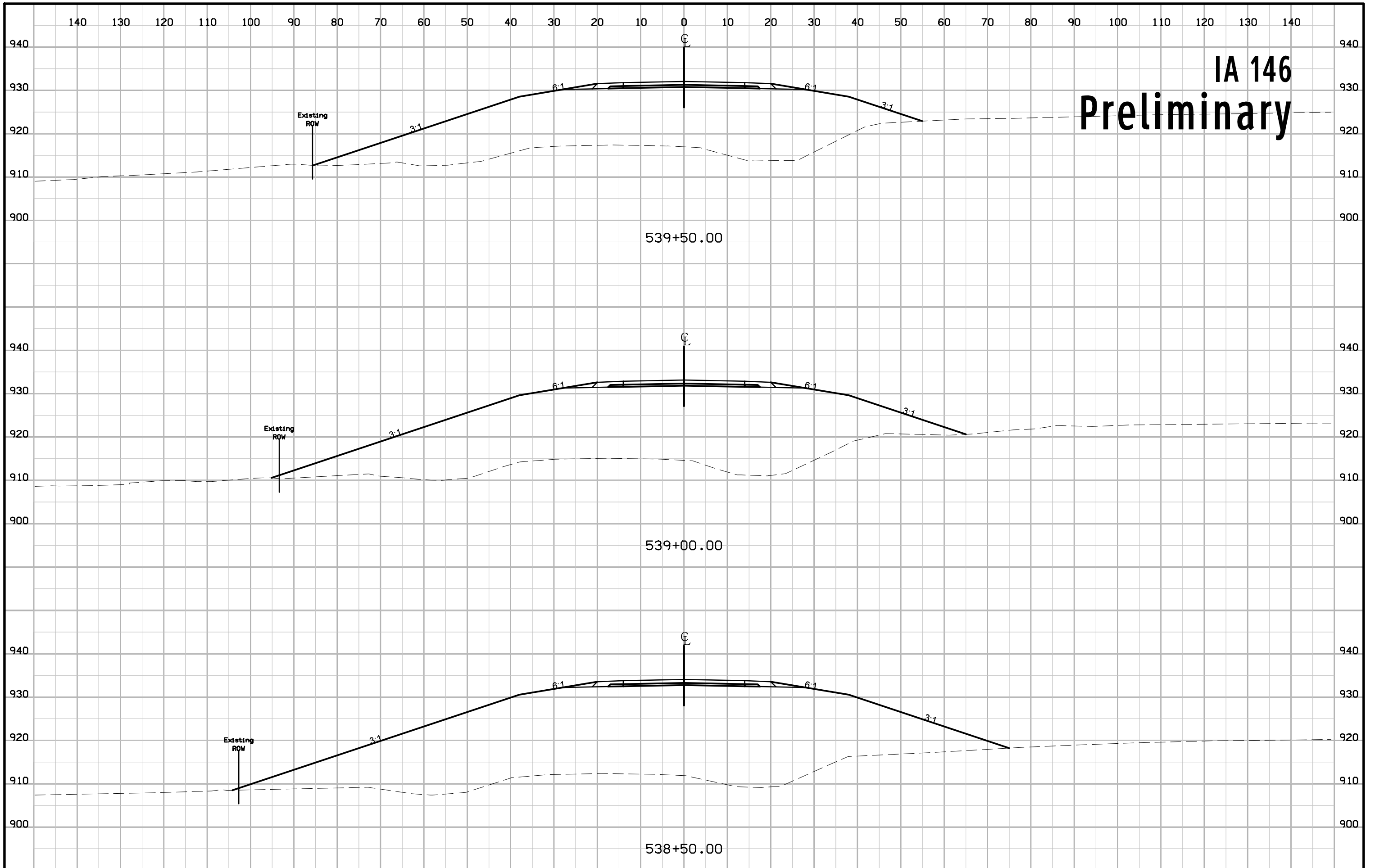
IA 146 Preliminary



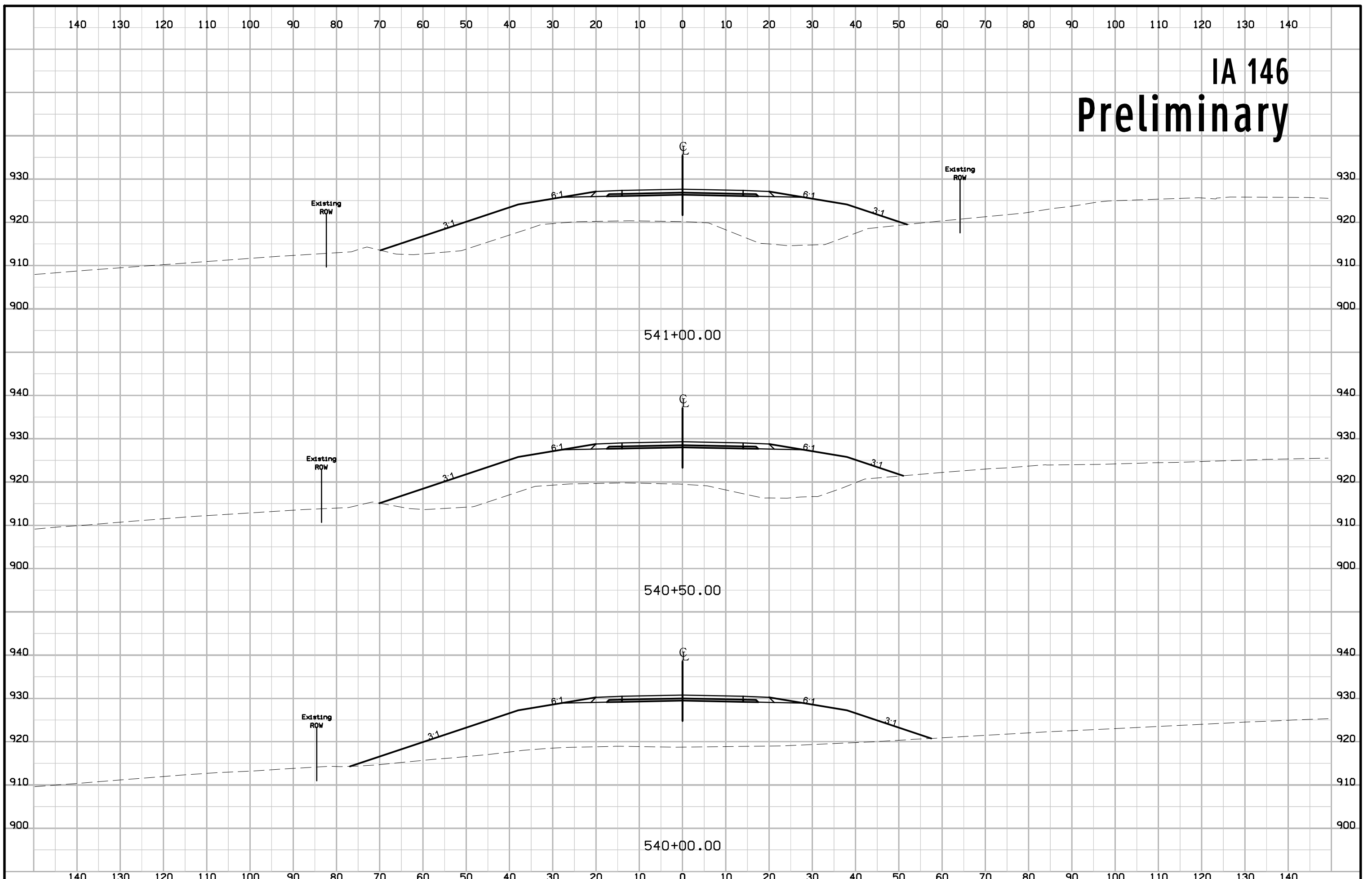
IA 146 Preliminary



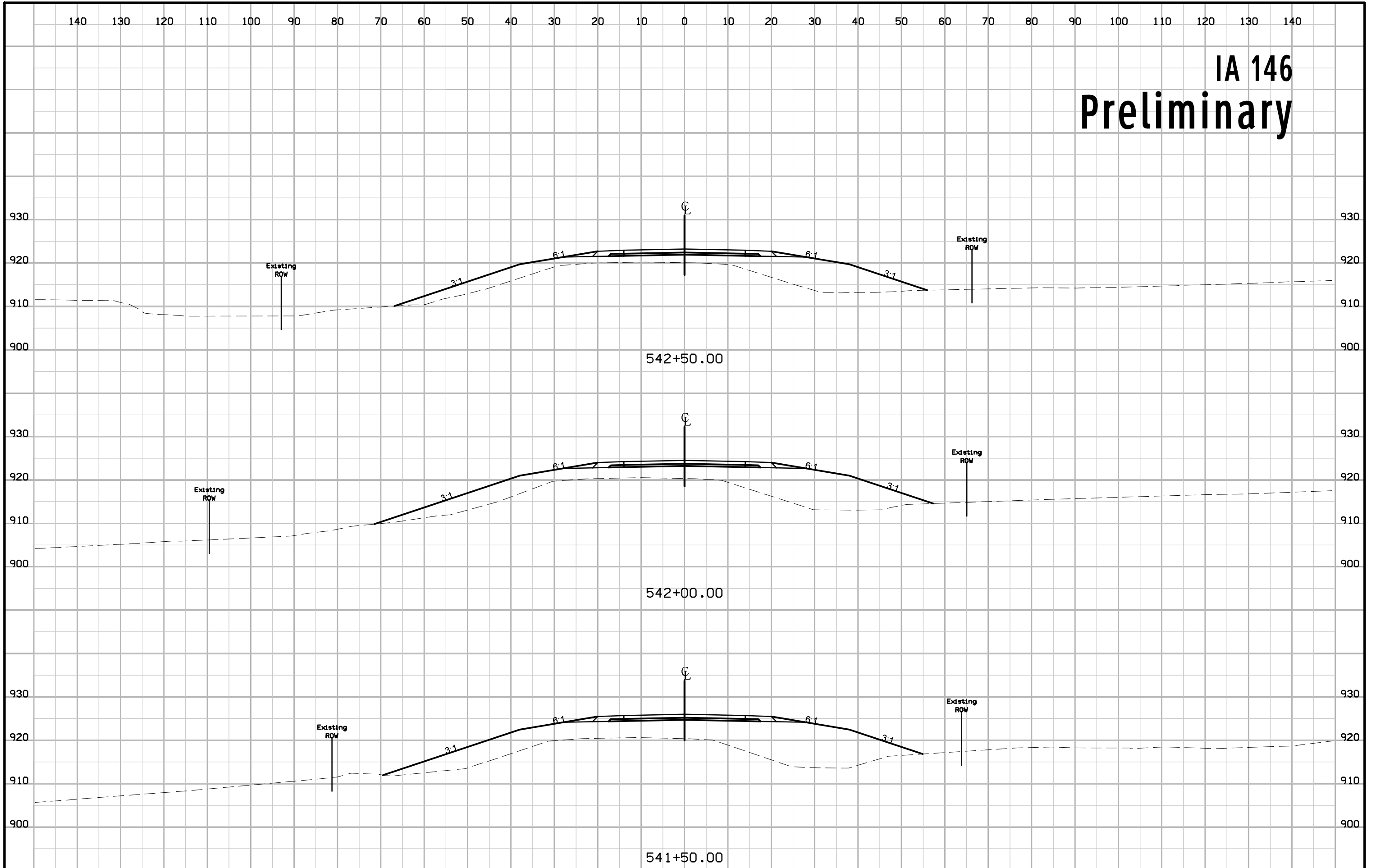
IA 146 Preliminary



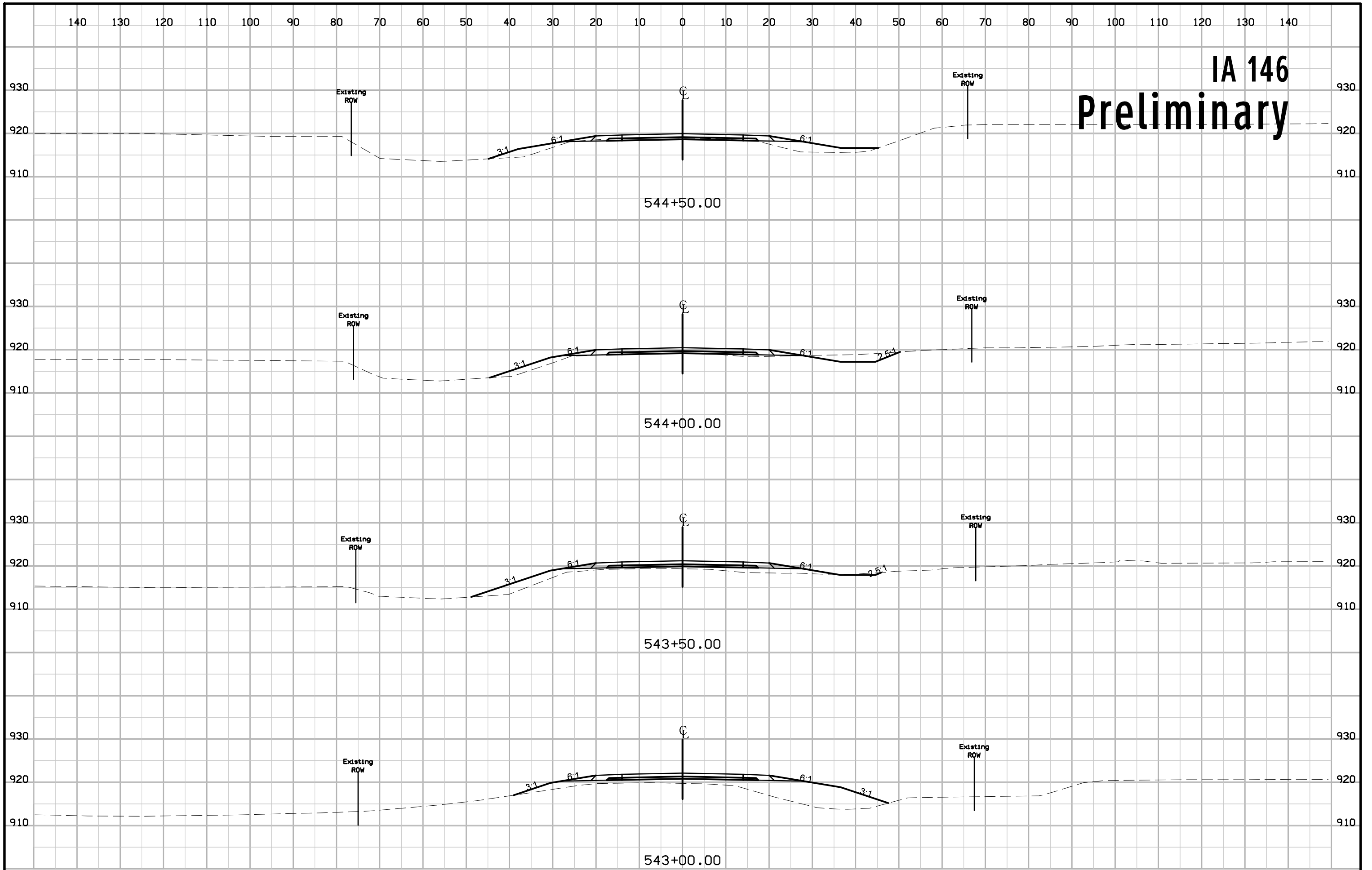
IA 146 Preliminary



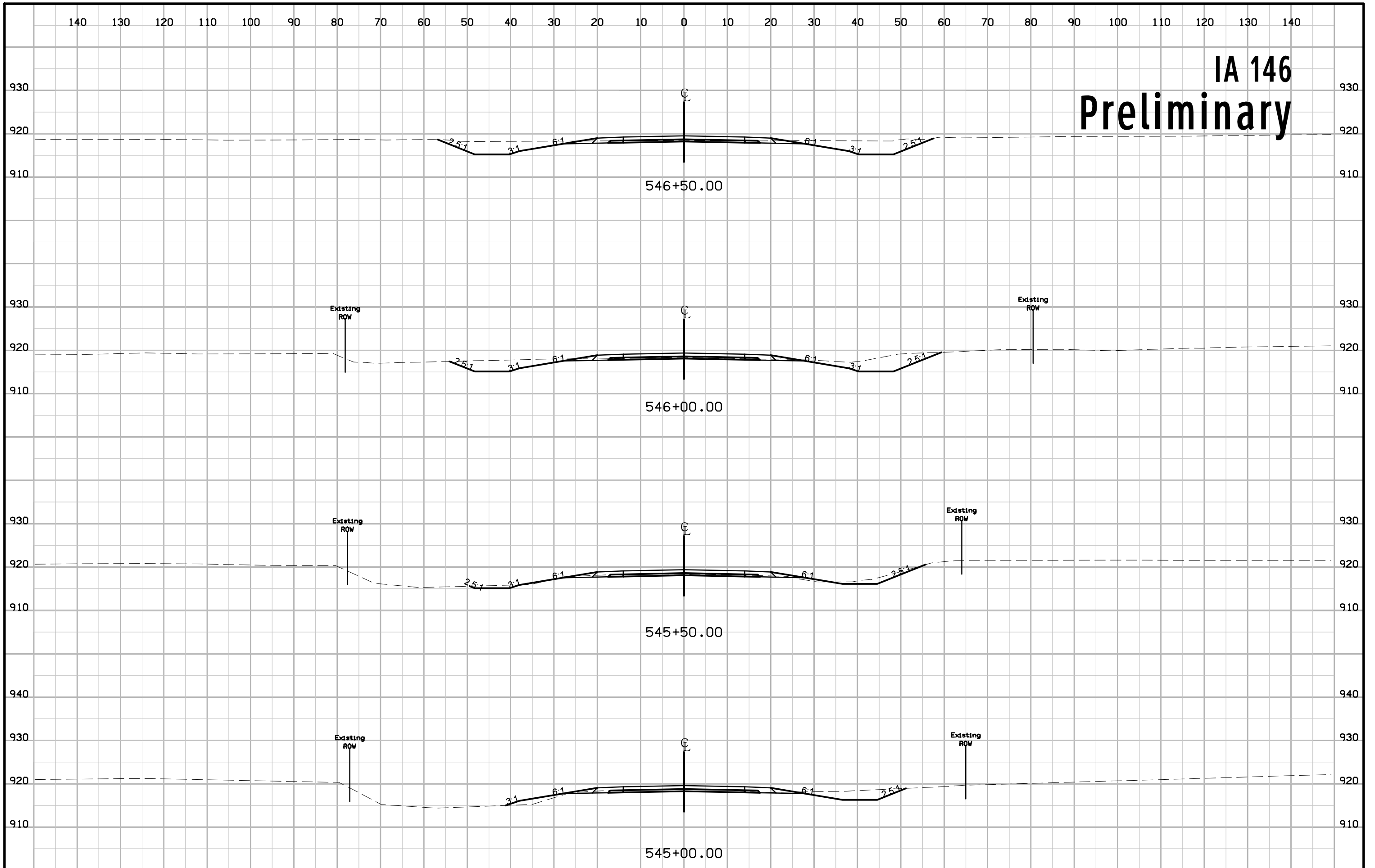
IA 146 Preliminary



IA 146 Preliminary



IA 146 Preliminary



IA 146 Preliminary

