

DECATUR CO.

DITCH IMPROVEMENT
STPN-069-1(52)--2J-27

LETTING DATE
07-21-2020



Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

**PRIMARY ROAD SYSTEM
DECATUR COUNTY
DITCH IMPROVEMENT**

1.8 mi S of Co Rd J66

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



REVISIONS

TOTAL

19

PROJECT IDENTIFICATION NUMBER

18-27-069-020

PROJECT NUMBER

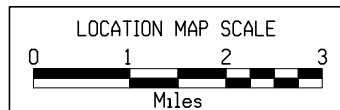
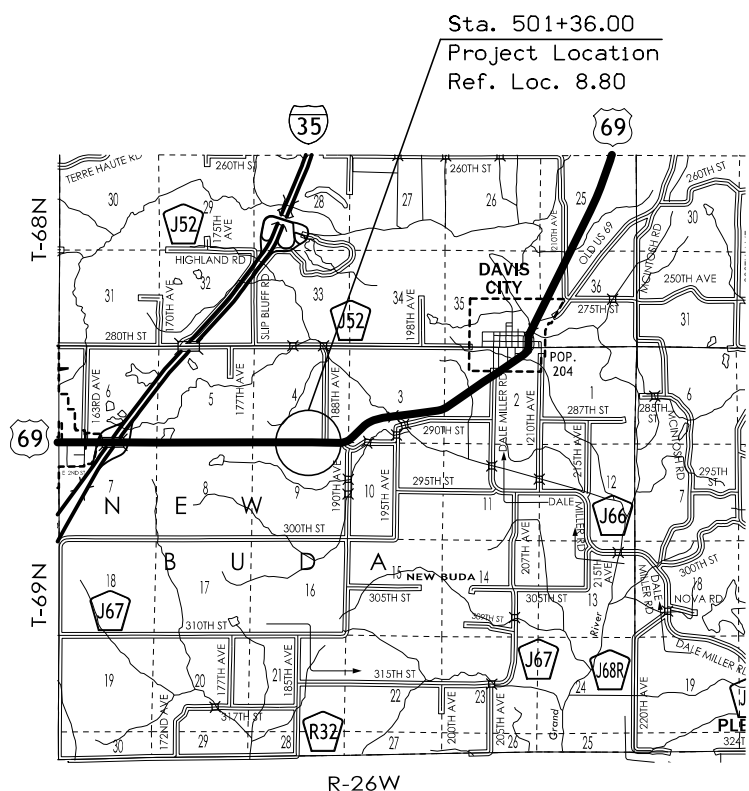
STPN-069-1(52)--2J-27

R.O.W. PROJECT NUMBER

STPN-069-1(53)--2J-27

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
A.1	Location Map Sheet
A.2 - 3	Concept
B Sheets	Typical Cross Sections and Details
B.1	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	U.S. 69
G Sheets	Survey Sheets
G.1	Reference Ties and Bench Marks
G.2	Control Point Vicinity Map
G.3	Horizontal Control Tab. & Super for all Alignments
J Sheets	Traffic Control and Staging Sheets
J.1	Traffic Control Plan
J.1	511 Travel Restrictons
J.1	Coordinate Operations
W Sheets	Mainline Cross Sections
W.1 - 9	Mainline Cross Sections
	* Color Plan Sheets



DESIGN DATA RURAL

2017 AADT	1140	V.P.D.
20-- AADT	--	V.P.D.
20-- DHV	--	V.P.H.
TRUCKS	8 %	
Total Design ESALs	--	

INDEX OF SEALS

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

PRELIMINARY PLANS

Subject to change by final design.

D2/D3 PLAN - Date: 6-5-19

IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE: District 5 DATE: May 7th, 2018
ATTENTION: James V. Armstrong PROJECT: Decatur County
FROM: Anthony J. Klein STPN-069-1(52)--2J-27
OFFICE: District 5 Design PIN: 18-27-069-020
SUBJECT: FY 2021 – Ditch Improvement Project Concept

Decatur County
STPN-069-1(52)--2J-27
PIN: 18-27-069-020
Page 2

PROJECT LOCATION MAP: Page 3 or Click Here

BACKGROUND: Decatur County, US 69, MM 8.8

A meandering drainage ditch runs along the south side of US 69 near the toe of slope generally within the station range of 502+00 to 504+00. Further east (up station), the drainage ditch meanders further south, away from US 69.

The right foreslope appears to have an irregular surface generally within station 502+00 to 507+00. These irregularities are likely associated with areas of previous, less recent slope instability. The DOT Maintenance has, in years past, placed clay fill within slide areas that occur along the foreslope with the intention to increase roadside safety. The foreslope in this area generally has an estimated height of about 15 to 20 feet and a 1.5:1 to 2:1 slope. Several culverts are located within or immediately beyond the limits of foreslope irregularity. A 5' x 4' RCB culvert is located at Station 501+72.8. This culvert and a CMP culvert have outlets near each other (at approximate station 502+00) and drain directly into this drainage ditch. A second RCB culvert is located at station 505+95. This 2' x 2' culvert outlets to the south of US 69 but not directly into the ditch. Relatively recent foreslope instability was also observed above the culvert located at Station 505+95. It is possible that deterioration of this culvert has caused the instability of the slope at this location. However, the condition of this culvert is unknown at this time. Due to the proximity of the drainage ditch to the toe of slope at some locations, it is likely that toe loss has resulted in the previous slope instability. Concrete debris was present near the outlet of the 5' x 4' RCB culvert.

The actual ROW limits along the south side (right) of US 69 were not apparent. However, from as-built plans the limits are approximately 80 feet on the south side (right) of roadway centerline. With this assumed ROW offset, the drainage ditch partially falls within and beyond the ROW limits.

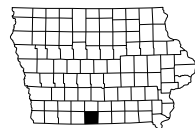
Link to pictures: DSCN1029.JPG

Links to relevant as-built road plan sheets: US 69, Decatur Co., 1928 as-built road plans, MP 8.8.pdf, US 69, Decatur Co., 1927 as-built road plans, MP 8.8.pdf

Link to relevant as-built culvert plan sheets: US 69, Decatur Co., as-built culvert plans, MP 8.8.pdf

RECOMMENDATIONS:

Relocate a portion of the drainage ditch further south away from the roadway so that the entire foreslope within the station range 502+00 to 508+00 can be rebuilt using suitable embankment material to a 2.5:1 or flatter slope.



The relocated drainage ditch will be present at the toe of the new rebuilt foreslope and armored with Class E Revetment underlain with Engineering Fabric. It is estimated that the relocated ditch will have a depth of 5 feet, a bottom width of 10 feet and 2:1 side slopes. It is anticipated that the ditch will need to be relocated approximately within the station range 502+00 to 504+35.

Additional permanent ROW will be required to complete this type of repair.

It is recommended to investigate the 2' x 2' RCB culvert located at 505+95. Depending on its condition, this culvert will either need to be extended to match the new foreslope or removed and replaced.

The two (2) culverts located near Station 502+00 will also need to be extended for proper drainage.

Some amount of Clearing and Grubbing will be necessary.

The existing overhead utility poles within the limits of the proposed foreslope repair will likely need to be relocated.

Field survey will be needed to accurately determine new ROW limits and for culvert design.

The following quantities and associated costs are estimated for the rebuilding of the foreslope and relocating a portion of the drainage ditch.

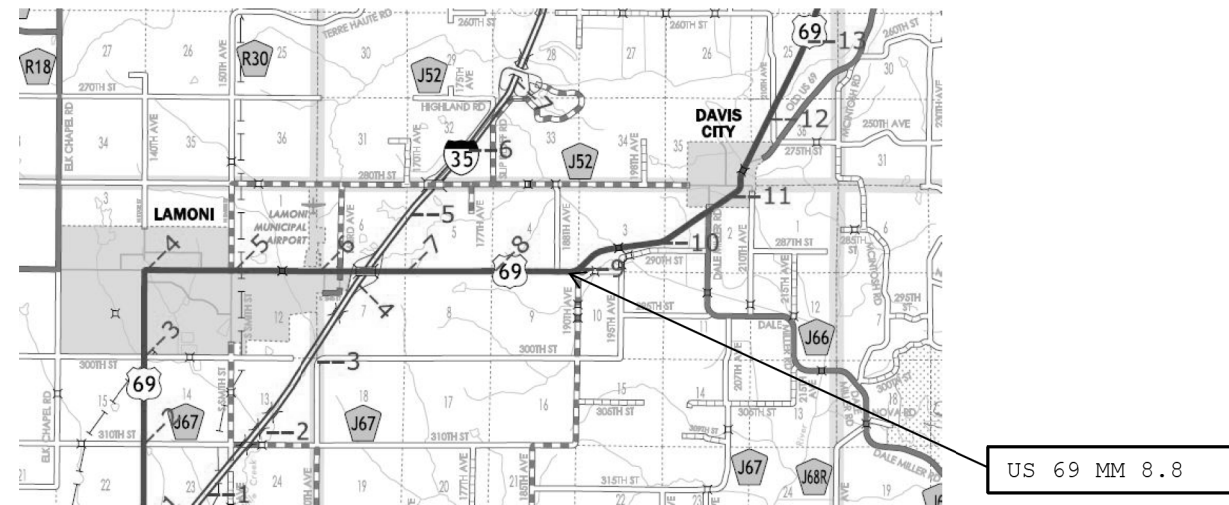
ESTIMATED COST:

Table with 2 columns: Description and Cost. Items include Excavation, CL 13, Waste (\$ 1,000.00), Excavation, CL 10, Roadway and Borrow (\$ 5,000.00), Embankment-In-Place, Contractor Furnished (\$ 21,000.00), Pipe Culvert Repairs (\$ 16,000.00), Clearing and Grubbing (\$ 2,500.00), Topsoil, Furnish and Spread (\$ 13,000.00), Engineering Fabric (\$ 3,100.00), Revetment, Class E (\$ 19,000.00), ROW (\$ 20,000.00), Contingencies, Mobilization & TC (35%) (\$ 50,400.00), and Total Cost (\$ 150,000.00).

FUNDS PROGRAMMED:

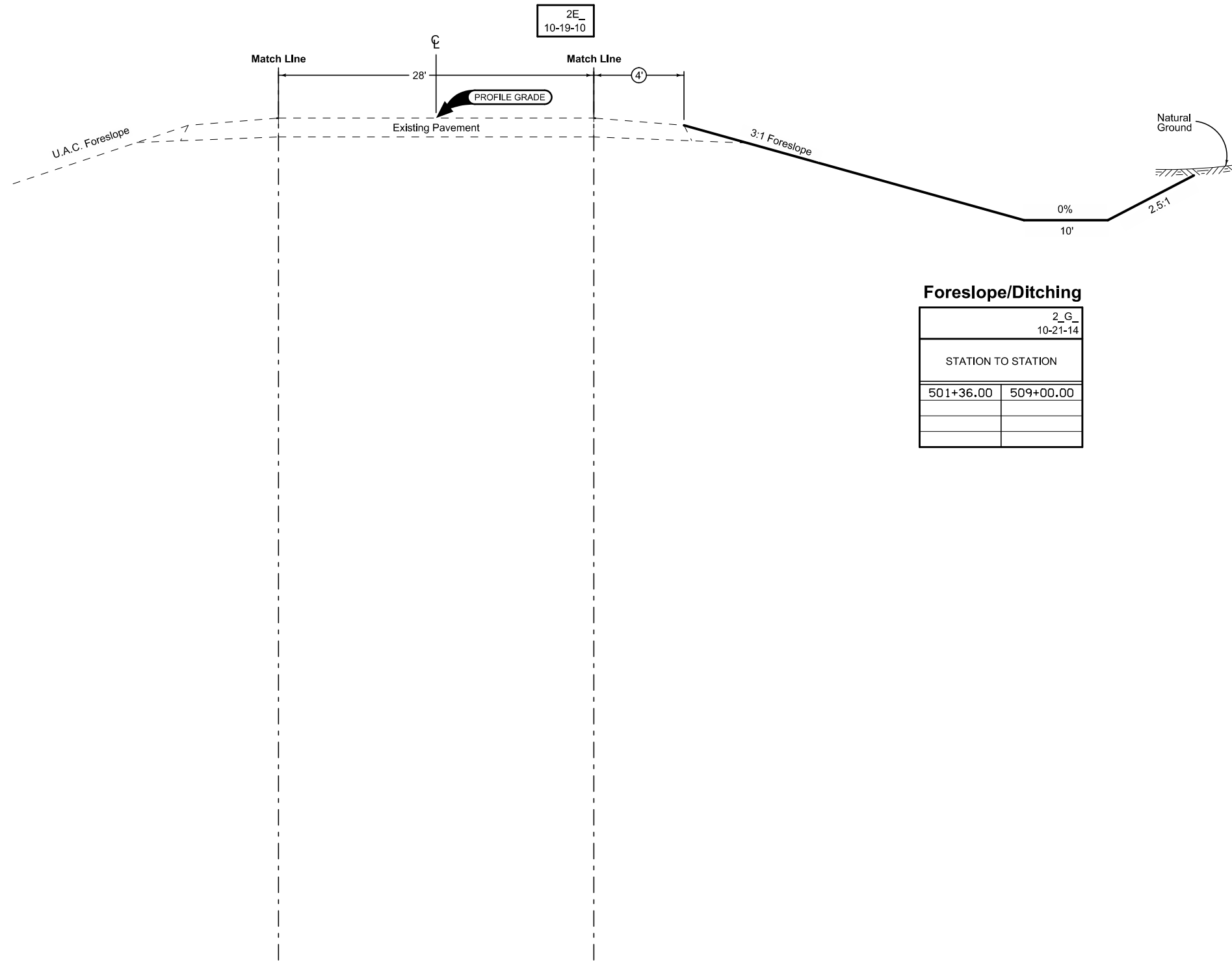
It has been identified by the District 5 office for construction in FY 2021. A schedule of events for plan development will be determined following approval of the Project Concept.

LOCATION MAP:



cc:

- | | | |
|------------------|------------------|-----------------|
| C. Purcell | M. J. Kennerly | K. D. Nicholson |
| D. L. Maifield | C. B. Brakke | S. J. Megivern |
| F. W. Todey | A. A. Welch | N. M. Miller |
| C. C. Poole | S. Anderson | G. A. Novey |
| M. A. Swenson | M. J. Sankey | R. A. Younie |
| D. R. Tebben | B. D. Hofer | K. Brink |
| D. L. Newell | B. E. Azeltine | D.R. Claman |
| T. D. Hanson | S. J. Gent | W.A. Sorenson |
| T. D. Crouch | J.W. Laaser-Webb | M. Van Dyke |
| D. E. Sprengeler | E. C. Wright | H. Torres-Cacho |
| J. R. Webb | A.J. Klein | J. R. Phillips |
| B. M. Clancy | T. Quam | FHWA |
| M. E. Ross | J. Selmer | P.C. Keen |
| J. Garton | J. Woodcock | B. Walls |



Foreslope/Ditching

2_G_	
10-21-14	
STATION TO STATION	
501+36.00	509+00.00

U.S. 69

SURVEY SYMBOLS

- BNK Stream Bank
- D Centerline Draw or Stream (Down)
- BL Topo Breakline
- EW Edge of Water
- DU Centerline Draw or Stream (Up)
- CON Concrete or A/C Slab
- CP Control Point
- PRO Profile Shot
- PIP Pipe Culvert
- PLG Location of General Photo
- SOP Size of Pipe or Culvert
- ENU Edge Unpaved Entrance & Parking
- ENT Centerline BL of Entrance
- UE Utility Elevation
- SIGN SI Sign
- TA Tower Anchor
- OUT Tile Outlet
- TILE TIL Tile Line
- FW Wire Fence
- MIS Miscellaneous
- PPA Power Pole Co. 1
- GU Gutter In Front of Curb
- CU Back of Curb
- TLNL Tree Line Left
- WL1D Water Line Co. 1 - Quality D
- FENO FENO Monument
- BM Bench Mark
- TLNR Tree Line Right

UTILITY LEGEND

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK		Design Color No.	
Green	(2)		Existing Topographic Features and Labels
Blue	(1)		Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)		Existing Utilities
SHADING		Design Color No.	
Yellow	(4)		Highlight for Critical Notes or Features
Red	(3)		Delineates Restricted Areas
Lavender	(9)		Temporary Pavement Shading
Gray, Light	(48)		Proposed Pavement Shading
Gray, Med	(80)		Proposed Granular Shading
Gray, Dark	(112)		Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)		Grading Shading
Tan	(8)		Proposed Sidewalk Shading
Blue, Light	(230)		Proposed Sidewalk Landing Shading
Pink	(11)		Proposed Sidewalk Ramp Shading

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

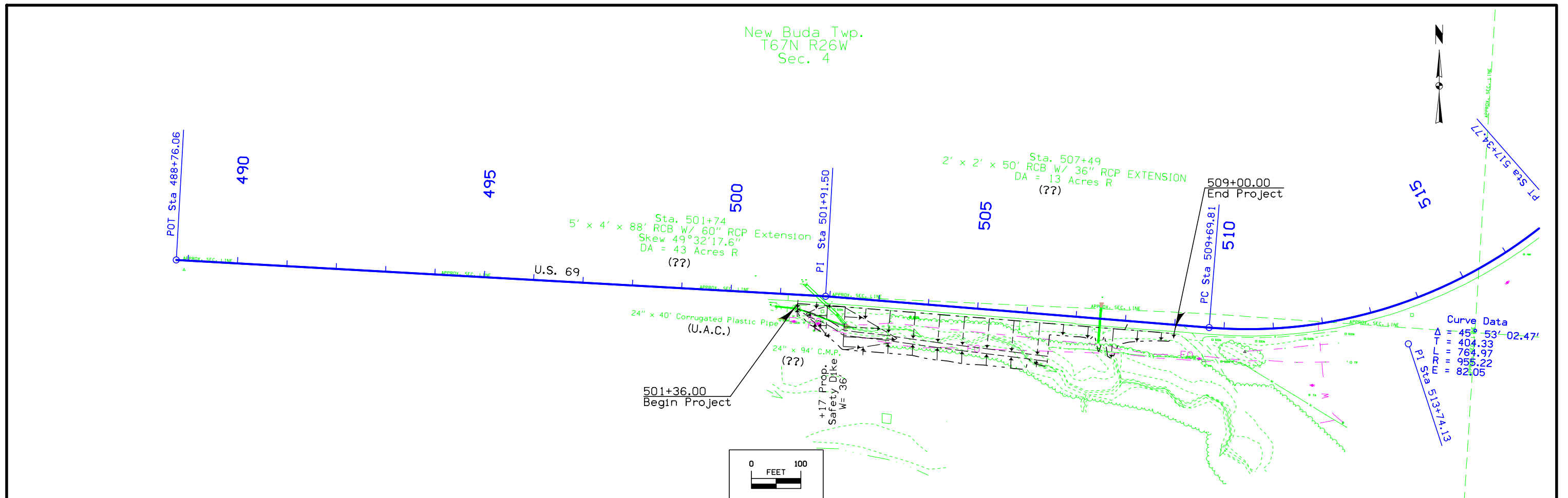
LINEWORK		Design Color No.	
Green	(2)		Existing Ground Line Profile
Blue	(1)		Proposed Profile and Annotation
Magenta	(5)		Existing Utilities
Blue, Light	(230)		Proposed Ditch Grades, Left
Black	(0)		Proposed Ditch Grades, Median
Rust	(14)		Proposed Ditch Grades, Right

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

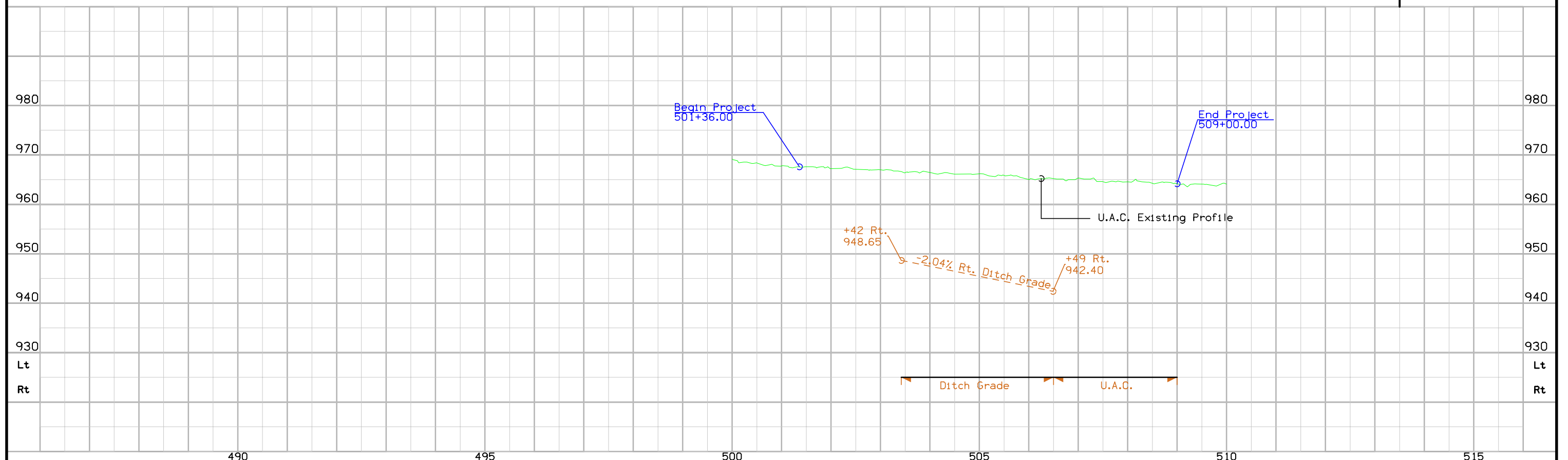
- RIGHT-OF-WAY LEGEND**
- Proposed Right-of-Way
 - Existing Right of Way
 - Existing and Proposed Right-of-Way
 - Easement and Existing Right-of-Way
 - Easement (Temporary)
 - Easement
 - Access Control
 - Property Line

**PLAN AND PROFILE
LEGEND AND SYMBOL
INFORMATION SHEET**

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



U.S. 69



Survey Information

Decatur County
STPN-069-1(52)--2J-27
1.8 mi S of Co Rd J66
Ditch Improvement
PIN 18-27-069-020
Sap-0816

General Information

Measurement units for this survey are US survey feet. This survey is for ditch improvement, 1.8 mi S of Co Rd J66 on US Hwy. 69 in Decatur County. Project datum and control information is provided by Design Survey Office. This project is a full field survey.

Vertical Control

Vertical Control was established on 2 feno monuments on this project by six hour static sessions. Vertical datum for this survey is NAVD88 (Computed using Geoid12b). GRS80 Ellipsoidal Height was computed at project Pts. Feno 5 & Feno 6. Vertical control was verified with Pt. # Feno 3 from Project No. IMX-035-1(158)6- -02-27. Vertical control was checked with IARTN checks.

This survey observed 1 As-Built plan bench marks to compare to local ground control:

BM 42 Project P 588 Elev. 1017.30
Survey Elev. = 1019.89

Horizontal Control

The project coordinate system for this survey is Iowa RCS Zone 12 (U.S. Survey Feet). This survey control is relative to IARTN reference stations. IARTN Reference Station coordinates are relative to the National Reference Station network datum: NAD83 (2011). Coordinates were determined by conducting a six hour static observations. Horizontal control was verified with Pt. # Feno 3 from Project No. IMX-035-1(158)6- -02-27. Horizontal control was checked with IARTN checks.

Point Name	Northing	Easting	Elevation	Description
Feno 3	6104352.63	22470865.35	970.50	FENO
Feno 5	6093271.30	22472642.87	964.92	FENO
Feno 6	6093328.87	22473834.01	962.23	FENO

Alignment Information

The horizontal alignment for this survey is a retrace of As-built Plans No. P 588. Survey stationing was equated to the plan PI at Sta. 53+73.8 and run back and ahead with an equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PI Sta. 488+77.5 As-built Plans Project No. P 588 =
Survey PI Sta. 488+76.06

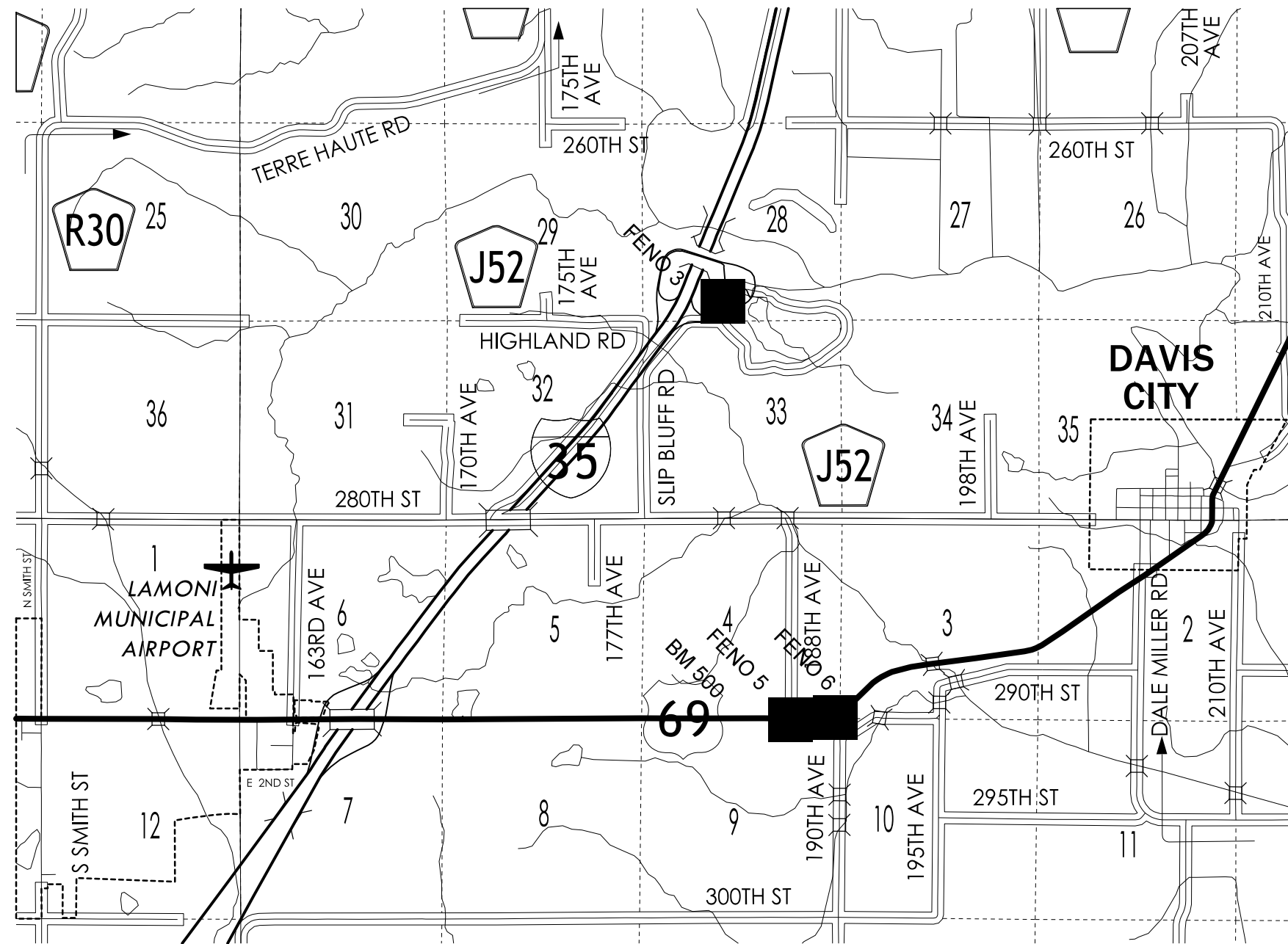
PI Sta. 501+90.5 Project No. P 588 =
Survey PI Sta. 501+91.50

PI Sta. 513+73.8 Project No. P 588 =
Survey PI Sta. 513+73.8

PT Sta. 517+034.11 Back =
Sta. 515+66.70 Ahead

CONTROL POINT VICINITY MAP

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



HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

1a. Regional Coordinate System Zone 12

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

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 12

Point Name	Y	X	Z	Feature Definition-Description
FENO 3	6104352.627	22470865.35	970.5	FENO SET FENO MONU_AT REST AREA_85.5' WEST INLET APRON_123' SOUTHWEST TOP OUTLET PIPE_89' SOUTHEAST I-BEAM SIGN POST_69' SOUTH OF CENTER RAMP C
FENO 5	6093271.299	22472642.87	964.924	FENO SET FENO MONUMENT_2.18 MILES E OF INTERS. NB I-35 & US HWY 69_71? ENTRANCE COUNTY ACCESS TO HUNTING_67' SE OF CENTER FACE HDWL 5' X 4' RCB_29' S OF US HWY 69
FENO 6	6093328.869	22473834.01	962.226	FENO SET FENO MONUMENT_2.41 MILES E OF INTERS. NB I-35 & US HWY 69_95' E OF INTERS. US HWY 69 & 190TH AVE_57' NW OF POWER POLE_29' S OF US HWY 69
500	6093284.886	22471348.94	1019.89	BM FD X HDWL 18" CAST IRON PIPE_BM 42 AB PLANS PROJECT # P 588

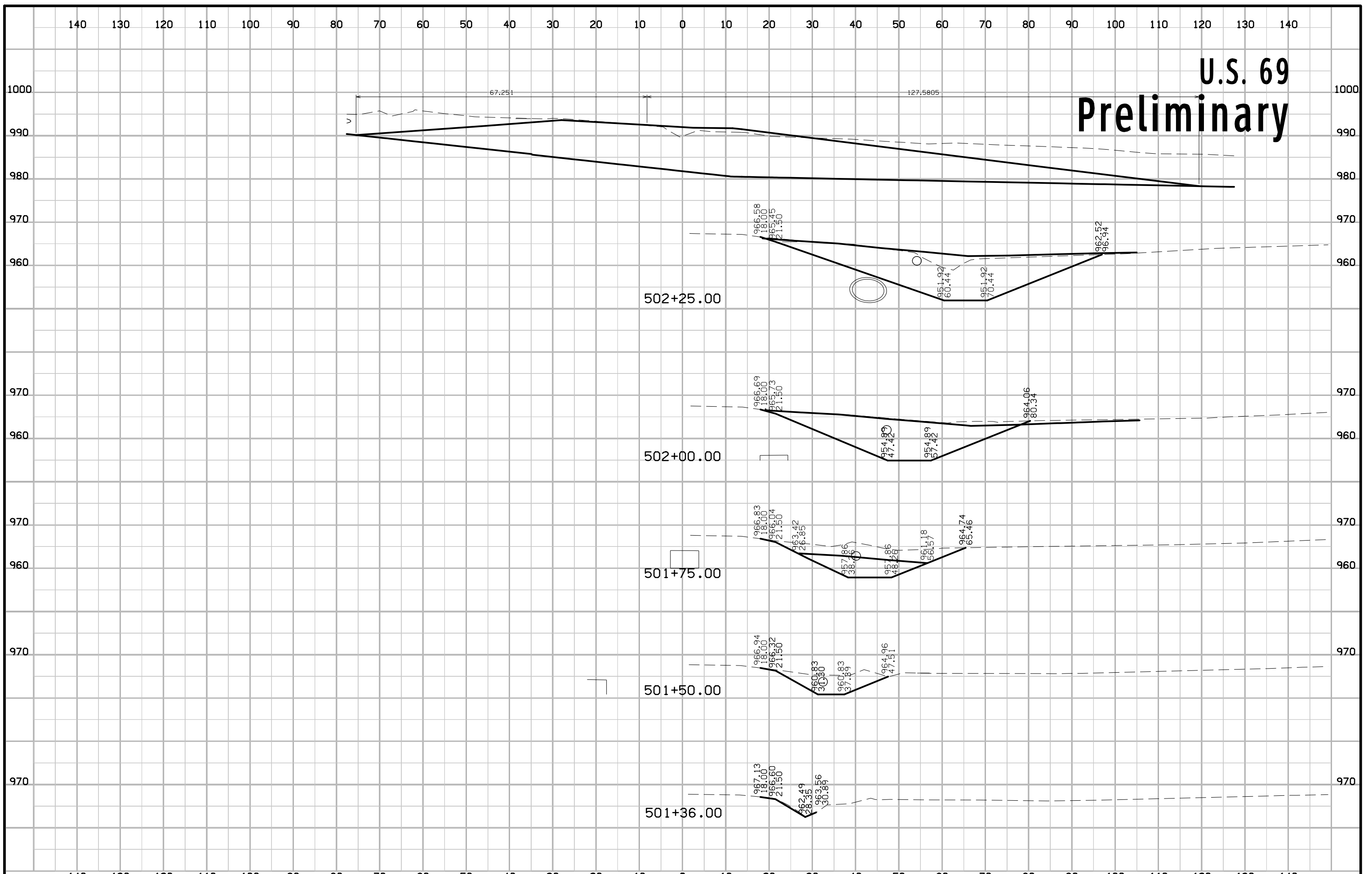
108-23A 08-01-08
TRAFFIC CONTROL PLAN
U.S. 69 traffic shall be maintained at all times.

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
STPN-069-1(50)--2J-27	Revetment
STPN-069-1(54)--2J-27	Pipe Culverts

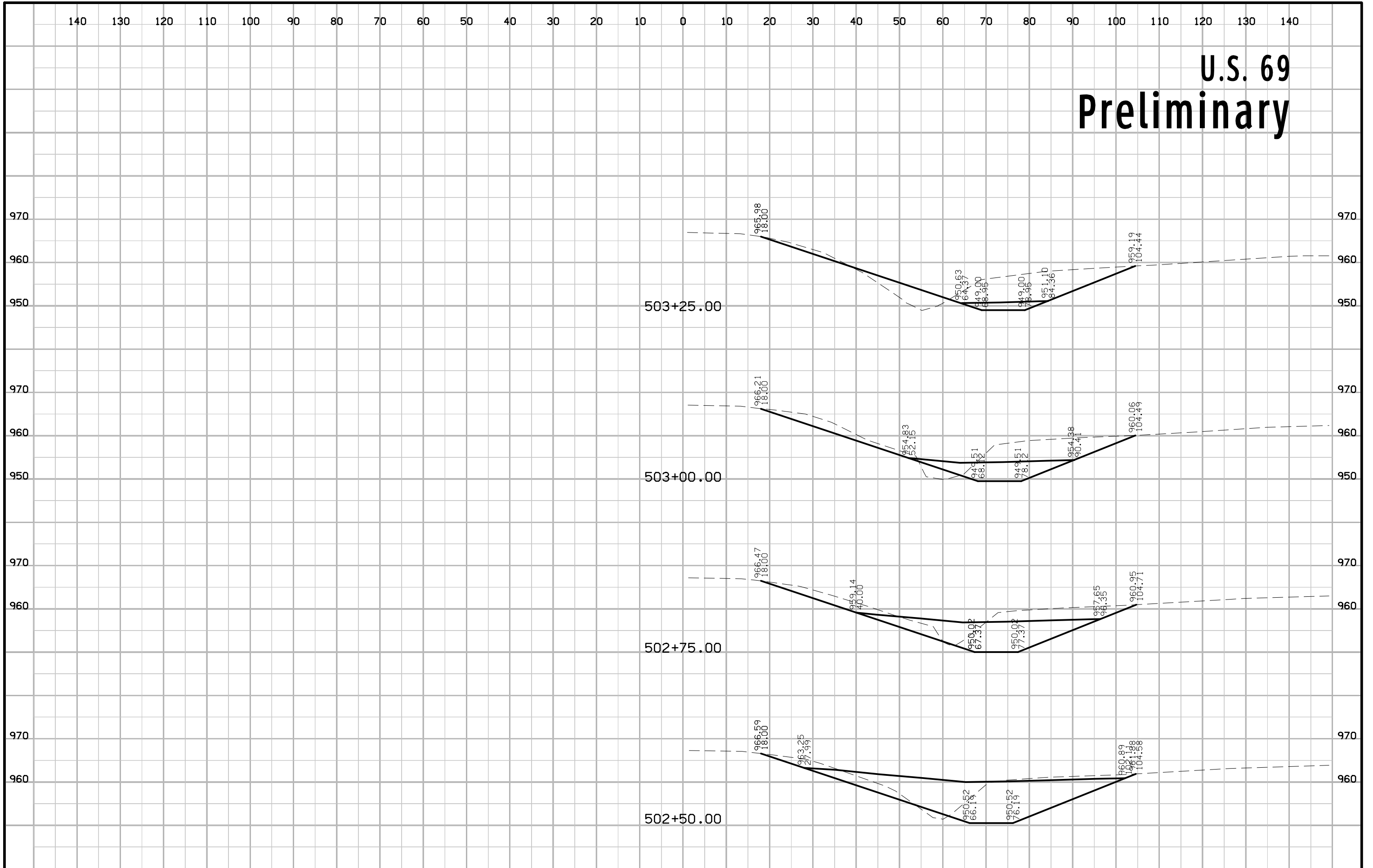
108-25 10-21-14
511 TRAVEL RESTRICTIONS

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

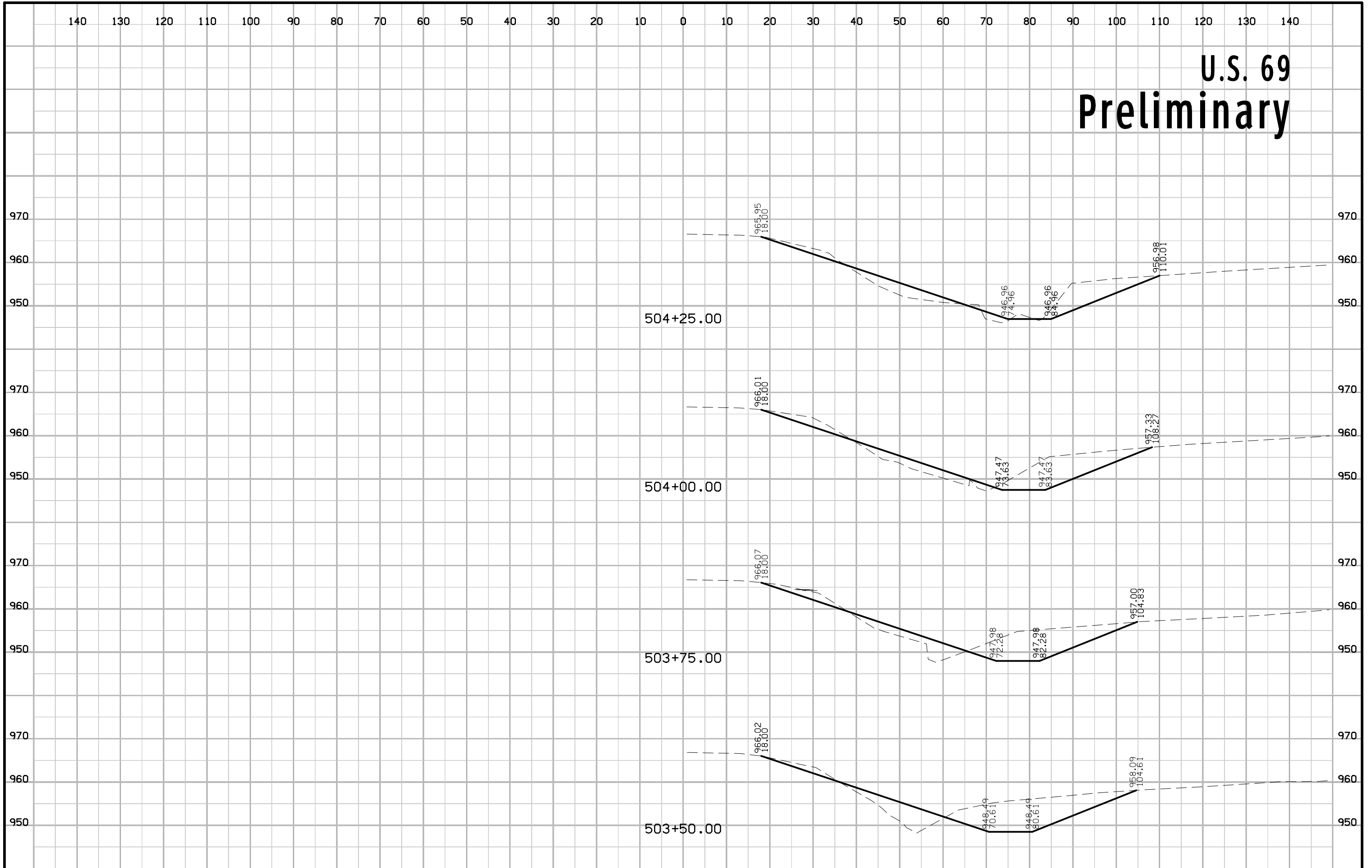
U.S. 69 Preliminary



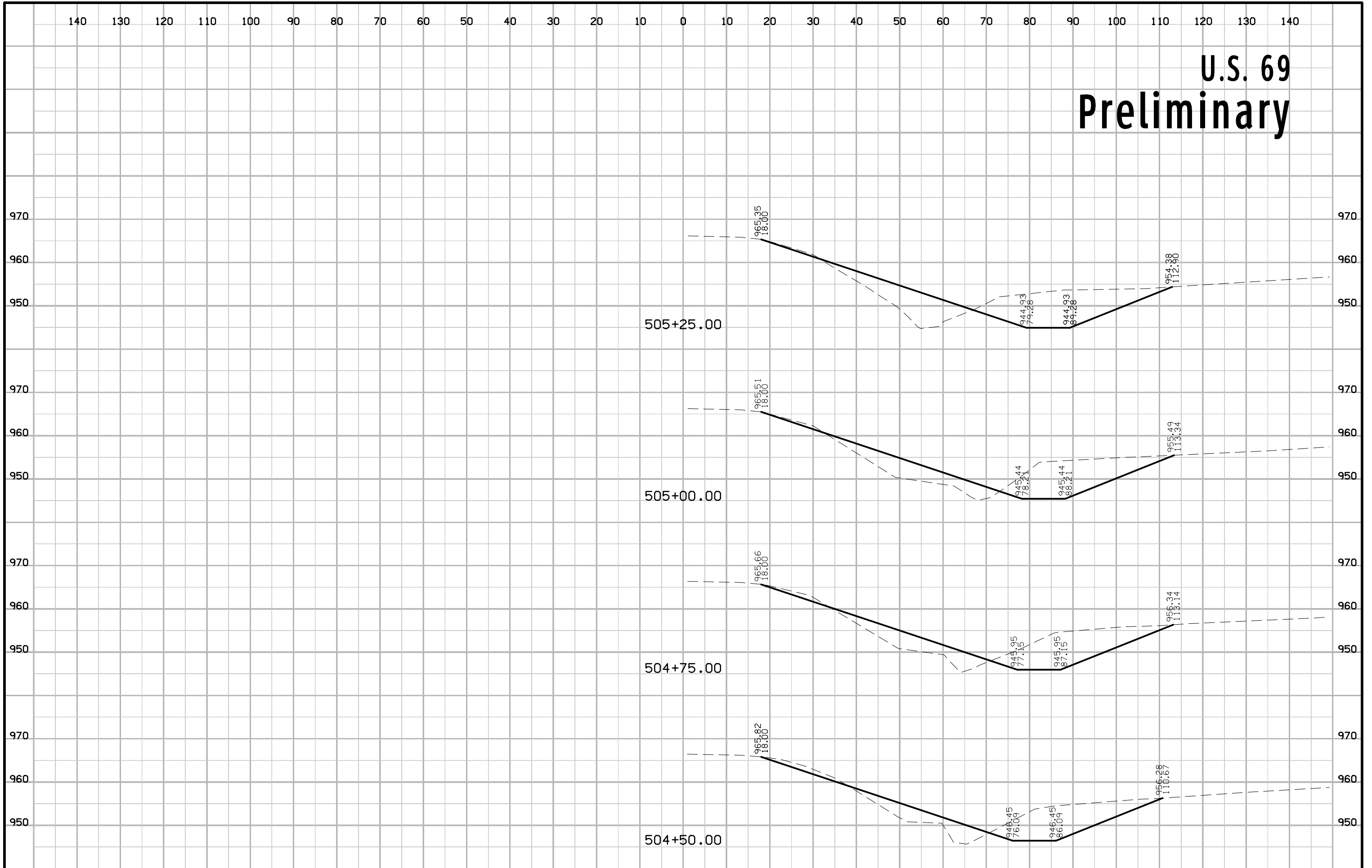
U.S. 69 Preliminary



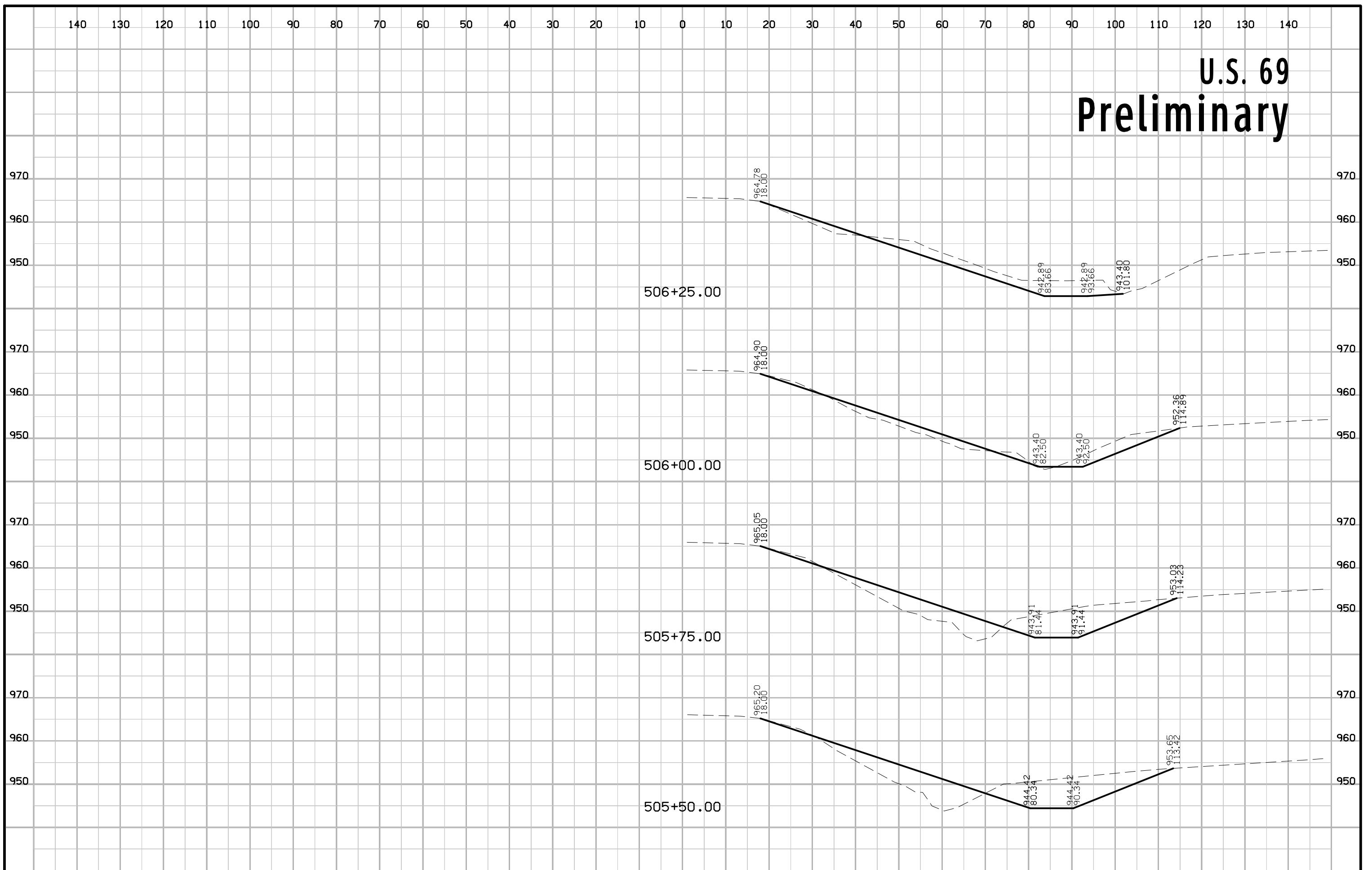
U.S. 69 Preliminary



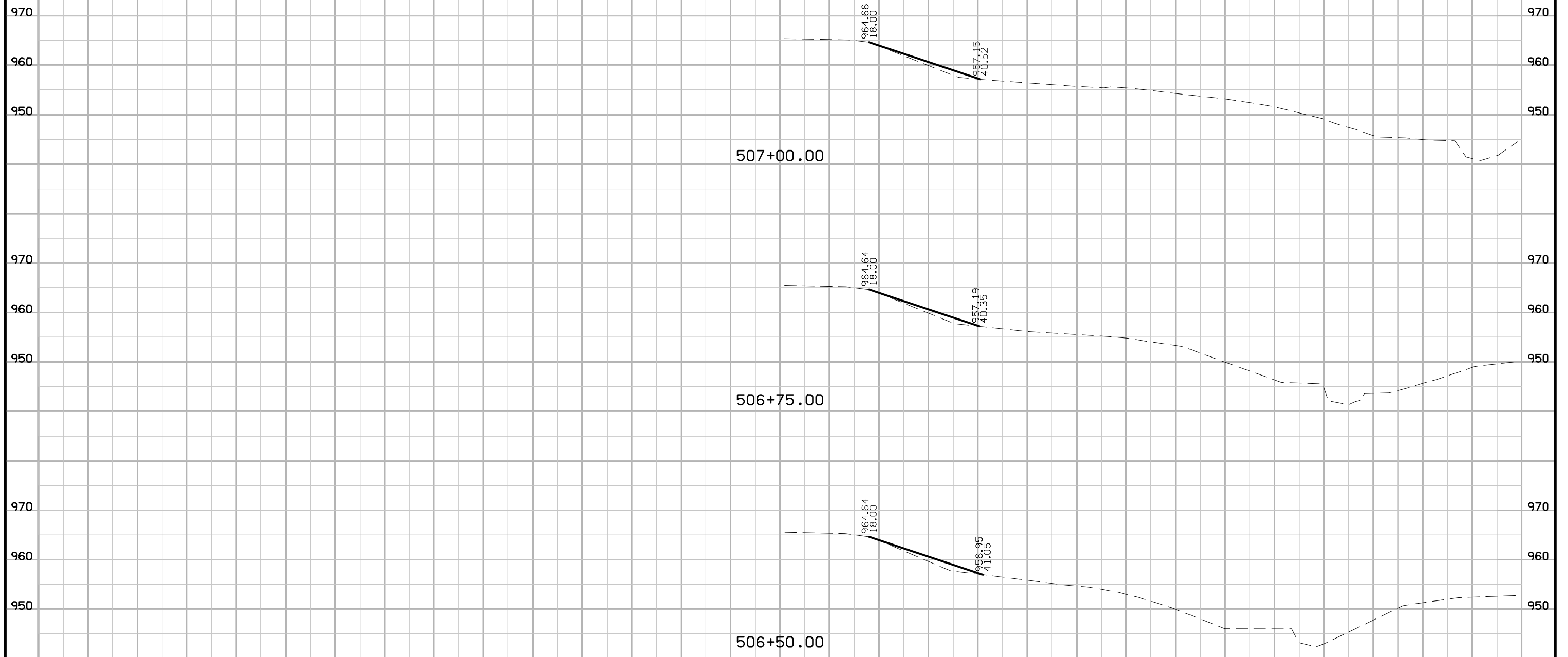
U.S. 69 Preliminary



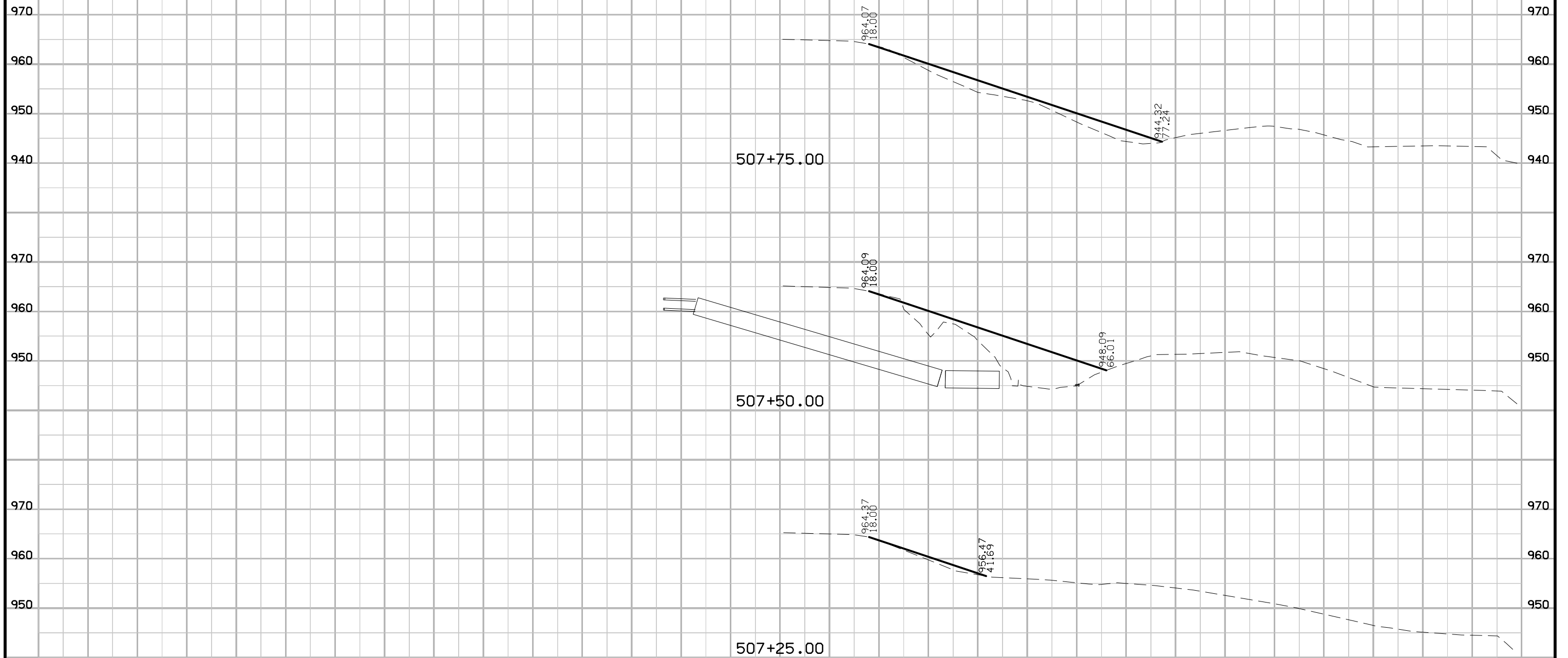
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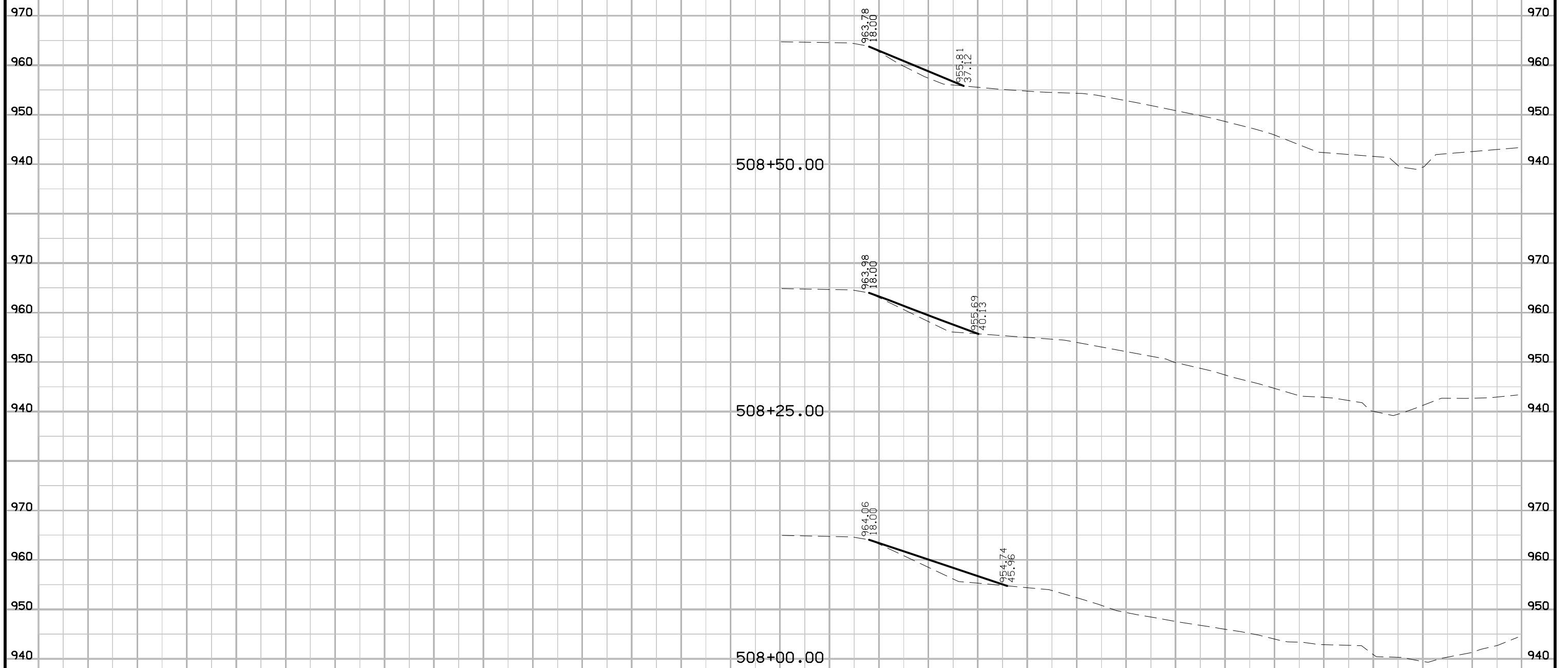
U.S. 69 Preliminary



U.S. 69 Preliminary



U.S. 69 Preliminary



U.S. 69 Preliminary

