

BRIDGE REPLACEMENT - OTHER
BRF-069-5(120)--38-85

LETTING DATE
12-19-2023

STORY CO.



PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
STORY COUNTY
BRIDGE REPLACEMENT - OTHER

Walnut Creek 0.2 mi N of Co Rd E57

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

PROJECT IDENTIFICATION NUMBER

19-85-069-010

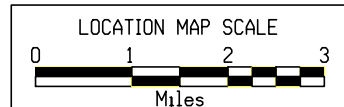
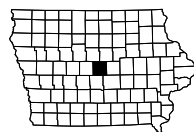
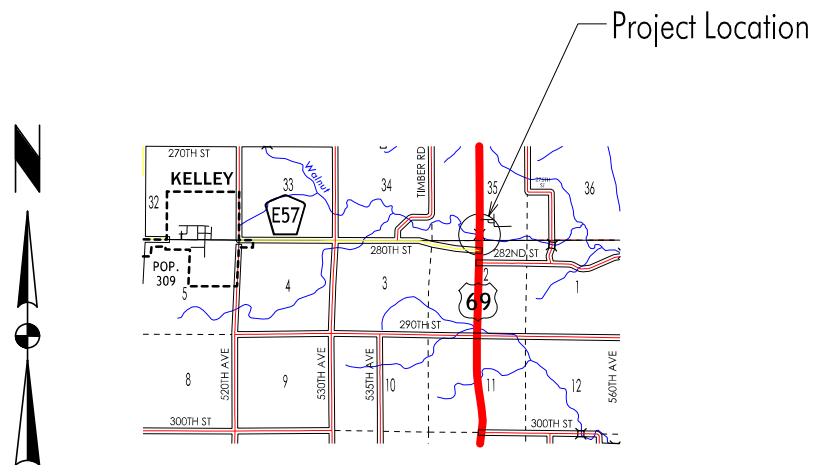
PROJECT NUMBER

BRF-069-5(120)--38-85

R.O.W. PROJECT NUMBER

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	Title Sheets
* A.1	Title Sheet
* A.1	Location Map Sheet
B Sheets	Typical Cross Sections and Details
B.1	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	US 69
J Sheets	Traffic Control and Staging Sheets
J.1	Traffic Control Plan
V Sheets	Bridge and Culvert Situation Plans
* V.1	Bridge and Culvert Situation Plans
W Sheets	Mainline Cross Sections
W.1 - 5	Mainline Cross Sections
	* Color Plan Sheets



DESIGN DATA RURAL			
2019	AADT	7,100	V.P.D.
20--	AADT	--	V.P.D.
20--	DHV	--	V.P.H.
	TRUCKS	5	%
	Total		
	Design	ESALs	--

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

D5 PLAN - Date: 1-14-2022
D4 PLAN - Date: 8-22-2023

PRELIMINARY PLANS

Subject to change by final design.

D3 PLAN - Date: 11-4-2021

FIELD EXAM CHECKLIST + NEEDED INFORMATION

FIELD EXAM NOTES

- 1. Duration of Project? *3 weeks*
- 2. Posted Speed Limit(s) and if different during construction. *55*
- 3. Any sight distance a problems? *No*
- Any overtopping problems within the project limits? *No*
- 5. Strengthening and leveling areas (Sta-Sta). *None*
- 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). *Yes*
- 7. Survey of safety dikes (100' each side of proposed dike and to 100' from centerline of roadway). *No*
- 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'). *N/A*
- 9. Survey of horizontal curves (at least three locations within full super. Edges and centerline). *N/A*
- 10. Embankment and pipe quantities for sideslopes (National Highway System (NHS) routes only). Items to be tabbed by location. *Yes*
- 11. Any known utilities potentially needing relocated (Temp. or Permanently)? *Yes, FO on West side, utility pole + pedestal on East*
- 12. Names and addresses of affected utility companies.
- 13. Locations of entrances to be reshaped. *N/A*
- 14. Any existing drainage issues? *No*
- 15. Any suspected wetland or environmental impacts? *Yes*
- 16. Condition of existing culverts needed, obtained by whom? *N/A*
- 17. Any existing subdrain locations? *N/A*
- 18. Names of affected special events. *None*
- 19. Locations of mailboxes to be relocated to a minimum of 8' from pavement edge. *N/A*
- 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). *N/A*
- 21. Disposition of Exist. Bridge Approaches (UAC or Resurface them). *N/A*
- 22. Number and location of EF joints. *N/A*
- 23. Disposition of bridge handrail and guardrail and posts.
- 24. Inventory of Existing Guardrail. *Existing Cable Guard Rail to be removed w/ project*
- 25. Longitudinal joint repair locations. *No*
- 26. Listing of adjustment of fixtures. *No*
- 27. Clearing and Grubbing quantities - by unit or area? *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). *No*

FINAL PROJECT CONCEPT STATEMENT
 US 69—Bridge over Walnut Creek, 0.2 Miles North of County Road E57

Story County
 BRFN-069-5(120)—39-85
 PIN: 19-85-069-010
 Maintenance No.: 8510.5S069
 FHWA No.: 48950

Allison Smyth, PE
 District 1 Office
 January 19, 2021

I. STUDY AREA

A. Project Description

This project involves the replacement of the US 69 concrete arch (Maint. No. 8510.5S069) over Walnut Creek, 0.2 miles north of county road E 57.

Three alternatives were considered:

1. Replace existing bridge with twin 12' x 12' x 149 RCB
2. Replace existing bridge with 32' x 11' ConSpan Bridge Arch (Flowable Mortar)
3. Replace existing bridge with 22'-6 x 15'-8 Elliptical steel arch liner (Flowable Mortar)

Alternative 3 is the preferred alternative, as it is the most economical and easiest to build alternative. Traffic can be maintained with only short-term lane closures.

B. Need for Project

The existing structure is a 45' x 9' x 80' R.C. Arch Bridge (3-sided Culvert) built in 1913, with 1 foot of fill over it. There are large spalls, hollows, and efflorescence around the construction joints of the arch. Some of the spalls have exposed rebar. Due to the age and condition of the culvert, a replacement is recommended.

C. Present Facility

The existing structure is a 45' x 9' x 80' R.C. Arch Bridge (3-sided Culvert) built in 1913, with 1 foot of fill over it. The bridge was widened in 1922 and again in 1948, and the fill height was raised to 8 feet.



Looking at left side—inlet (2020).

D. Traffic Estimates

2017 ADT was 7,100 vpd with 3% trucks.

E. Sufficiency Ratings

US 69 is classified as an access route and is a maintenance service level "B" road. The federal bridge sufficiency rating is 84.9.

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from January 1, 2015 through December 31, 2019, there were a total of four crashes: three property damage only and one possible/unknown injury. An animal was listed as the major cause for one crash, driver distraction for two of the crashes, and the last was caused by driving too fast for the conditions.

II. PROJECT CONCEPT

A. Feasible Alternatives

1. Replace existing bridge with twin 12' x 12' x 149 RCB with a 30° skew (left ahead), traffic maintained via off-site detour (7 miles out of distance)

This alternative is not being carried forward for the following reasons

- The twin RCB will not fit under the arch structure, so flowable mortar is not an option
- Since some roadway reconstruction would be required during culvert construction and arch bridge removal, the roadway vertical curve would need to be brought up to minimum standards. This would result in a roadway profile grade raise in the sag of 5' to meet a 35-mph design speed. The estimated cost to accomplish roadway construction of the profile grade raise is 1 million dollars.
- The road would need to be closed for approximately 5 months, which should be avoided if possible.

2. Replace existing bridge with 32' x 11' ConSpan Bridge Arch (Flowable Mortar). Traffic would be maintained via occasional lane closures.

a. This option with full bottom slab was considered but is not being carried forward for the following reasons:

- Based on coordination with a supplier (Contech) and their preliminary analysis, the ConSpan arch would require a thick bottom (2-3')
- The weight of the ConSpan precast elements with such a thick bottom slab would be problematic from a lifting standpoint.
- This option appears not to be feasible at this site.

b. This option with a bottomless ConSpan arch on micropile foundations with full revetment of the stream bottom was considered. This option is not carried forward due to cost, constructability, and potential scour issues.

3. Replace existing bridge with 22'-6 x 15'-8 Elliptical steel arch liner (Flowable Mortar), 0° skew. Traffic would be maintained via occasional lane closures.

Bridge Items:

Steel Ellipse – 118 lf @ \$1,906.78/lf	\$ 225,000
Headwalls	\$ 200,000
Revetment	\$ 65,000
Mobilization	\$ 49,000
<u>Contingency and Misc. (20%)</u>	<u>\$ 108,000</u>
Bridge Costs	\$ 647,000

Roadway Items:

Embankment In Place (3,500 cu. yd. @ \$17/cu. yd.)	\$ 60,000
Flowable Mortar (210 cu. yd. @ \$190/cu. yd.)	\$ 40,000
Flooded Backfill (680 cu. yd. @ \$50/cu. yd.)	\$ 34,000
Remove Cable Guardrail (1,200 lf @ \$8/lf)	\$ 10,000
Traffic Control	\$ 25,000
Mobilization	\$ 50,000
<u>Contingency (20%)</u>	<u>\$ 44,000</u>
Roadway Costs	\$ 263,000

Total Project Costs \$ 910,000

B. Detour Analysis

1. For Alternative 1, US 69 traffic would be maintained via an offsite detour utilizing US 30, I-35, and IA 210. US 69 would be detoured for up to five months during construction.
2. For Alternative 2, traffic on US 69 would remain open, with occasional lane closures.
3. For Alternative 3, traffic on US 69 would remain open, with occasional lane closures.

C. Recommendations

It is recommended that the present structure be replaced with a 22'-6 x 15'-8 elliptical steel arch liner with flowable mortar, as shown in Alternative 3. The existing cable guardrail will be removed and the foreslopes will be flattened to a 6:1 slope out to the 32-foot clear zone, then a 3.5:1 slope to existing ground. No roadway or shoulder will be replaced with this option.

D. Construction Sequence

It is anticipated that all work on this project will be awarded to one prime contractor. The Bridges and Structures Bureau will contract the design out to a consultant, and the District 1 Office will design the roadway items.

E. ADA Accommodations

There are no ADA facilities within the limits of this projects, and no new facilities will be added with this project.

F. Special Considerations

Intersection improvements at E57, project number STPN-069-5(125)—2J-85/HSIPX-069-5(126)—3L-85 and immediately south of this project, are scheduled to be constructed in 2022. The project includes the addition of left turn lanes and a southbound offset right turn lane.

This will not be a traffic critical project.

The ABC Rating Score of 15 is less than the first stage filter threshold of 50, therefore this bridge will not undergo further ABC evaluation.

No railroads exist within the limits of this project.

Right of Way may be required for this project. This is in addition to the intersection improvement project just south of this project.

G. Program Status

This project is listed in the 2021-2025 Iowa Transportation Improvement Program, with \$1,000,000 programmed for bridge replacement in FY 2024.

H. Project Schedule:

D00 – Pre-Design Concept	1-19-2021
D02 – Design Field Exam	6-18-2021
D03 – Plans for Preliminary Bridge	7-16-2021
B01 – Bridges and Structures Layout	10-15-2021
D05 – Plans to Right of Way	11-19-2021
D04 – Design Plans for Bridge	8-22-2023
B03 – Final Bridge Plans	10-03-2023
L05 – Letting – Bridge and Culverts	12-19-2023

Cc:

C. Purcell
 S. J. Megivern
 M. A. Swenson
 S. Majors
 B. Bradley
 E. C. Wright
 N. M. Miller
 B. E. Azeltine
 S. Anderson
 K. K. Patel
 D. R. Claman
 M. E. Khoda
 D. Mulholland
 V. Brewer
 J. Garton
 A. Loonan
 M. Solberg

M. J. Kennerly
 J. S. Nelson
 R. A. Younie
 K. Brink
 J. W. Laaser-Webb
 M. E. Ross
 C. C. Poole
 T. D. Crouch
 D. Stokes
 S. Godbold
 J. Hauber
 K. Olson
 P. Schwarz
 A. Loonan
 A. Smyth
 B. Ellis

K. D. Nicholson
 M. Nop
 D. E. Sprengeler
 D. L. Newell
 W. A. Sorenson
 A. A. Welch
 B. Hofer
 S. J. Gent
 J. Selmer
 J. Vortherms
 A. Abu-Hawash
 S. Neubauer

 M. Donovan
 J. Lavine
 S. Nixon

Bridge Bureau Attachment for Concept Statement

Date: December 16, 2020
By: Patricia G. Schwarz
Location: U.S. 69 over Walnut Creek

County: Story
Project No.: BRFN-069-5(120)- -39-85
Pin No.: 19-85-069-010

1. Regulatory/Coordination

- Iowa DNR Flood Plain permit = No. The D.A. for bridge replacement is less than the 100 sq. mi. threshold for rural areas. To avoid need for permit due to channel change, the length of existing channel being altered should be less than 500' and the length of existing channel being altered should be reduced by less than 25%.
- Protected Stream = No
- Meandered Stream = No
- Iowa DNR Sovereign Lands permit = No
- Local Record of Coordination = Yes
- Flood Insurance Study = Yes. Zone AE with regulatory floodway. Pending Panel 19169C0278F, January 15, 2021.
- The need for a CLOMR/LOMR is likely.
- Drainage District = No (Ref. State of Iowa wide GIS Shape file)
- Corps of Engineers Section 408 = No
- Environmental = It is preferred to bury the culvert flowline at least 1' below design streambed. The concept culvert is buried 2.4', which is governed by the culvert maximum top elevation to provide sufficient clearance to the existing arch low concrete.

2. Hydrologic/Hydraulic Analysis/RIDB Dataset

- Design Qs determined = Yes (USGS 13-5086 Reg.1 & FIS Base Flood)
- Hydraulic analysis done = No. The FIS model may need to be used.
- Riverine Infrastructure Database (RIDB) = Yes. RIDB Site ID WalnutC_Story_5.4.

3. Structure/Roadway Layout Considerations

- The roadway will be used as constructed.
- Flattened foreslopes will be constructed and the existing cable rail will be removed.
- The headwall type and skew shall be evaluated during preliminary design.
- Effects of short-term and long-term settlement shall be considered.

4. Special survey = Survey is complete.

5. Aesthetic enhancements = No.

6. Other

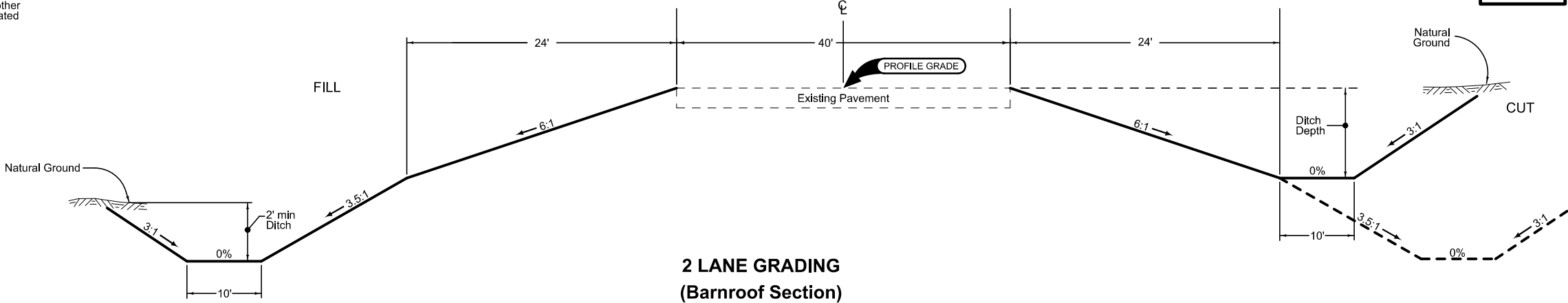
- Due to the likely need for a (CLOMR/LOMR), it is proposed that the Preliminary Design and final hydraulics be done by consultant.

~ 1 ~

LOCATION		
ROAD IDENTIFICATION	STATION TO STATION	
US 69	329+89.00	333+56.00

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

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



G_2_Grade_BR
MODIFIED

SURVEY SYMBOLS

- △ PI Tangent Point
- CP Control Point
- ▲ PCP Photo Control Point
- WC Wild Card (Misc. Field Shot)
- + REF Reference Tie Point
- EP Edge of Paved Roads (ML or SR)
- - - C Centerline BL of Road (ML or SR)
- FW Wire Fence
- D Centerline Draw or Stream (Down)
- PPA Power Pole Co. 1
- CON Concrete or A/C Slab
- OUT Tile Outlet
- - - TIL Tile Line
- - - FO2D Fiber Optic Co. 2 - Quality D
- SBR Size of Bridge
- DTM Photogrammetry Elv Control Check
- DU Centerline Draw or Stream (Up)
- - - BNK Stream Bank
- - - BL Topo Breakline
- TW Top of Water
- - - EW Edge of Water
- BLS Bridge Low Steel
- - - FO1D Fiber Optic Co. 1 - Quality D
- PLG Location of General Photo
- GDC Guard Rail Cable
- - - ENT Centerline BL of Entrance
- GR Ground Shot
- LUM Luminaire
- TLNR Tree Line Right
- MH Utility Access (Manhole)
- PIP Pipe Culvert
- RIP Rip-Rap
- △ ROW Right of Way Mark
- SH Paved Shoulder
- SNP Unpaved Shoulder
- SOP Size of Pipe or Culvert
- TDC Tree Deciduous
- TLNL Tree Line Left
- TPD Telephone Pedestal
- - - WL1D Water Line Co. 1 - Quality D
- - - FO3D Fiber Optic Co. 3 - Quality D
- PRO Profile Shot
- TEV Evergreen Tree
- MM Mile Marker Post
- - - GL1D Gas Line Co. 1 - Quality D
- ENP Edge Paved Entrance & Park Lot
- STP Stump

UTILITY LEGEND

- F0 - Huxley Communications Cooperative
Brant Strumpfer
102 N Main Ave
Huxley, IA 50010
(515) 597-2281
brant@huxleycommunications.net
- F02 - Aureon Network Services
Jeff Klocko
7760 Office Plaza Drive South
West Des Moines, IA 50266
(515) 830-0445
jeff.klocko@aureon.com
- F03 - Unite Private Networks
Clark Lundy
2320 Wakonda View Dr.
Des Moines, IA 50321
(515) 321-3336
clark.lundy@upnfiber.com
- G - Energy Transfer (Dakota Pipeline)
Jason Gould
30256 570th Ave
Cambridge, IA 50046
(713) 375-1673 Cell: (618) 508-1163
Jason.Gould@energytransfer.com
- Consumers Energy
Kevin Peterson
2075 Marshalltown Blvd
Marshalltown, IA 50158-1058
(641) 752-1593
kpeterson@consumersenergy.coop
- W - Xenia Rural Water District
LeRoy Wagner
23998 - 141st Street
Bouton, IA 50039
(515) 676-2117
lwagner@xeniawater.org

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

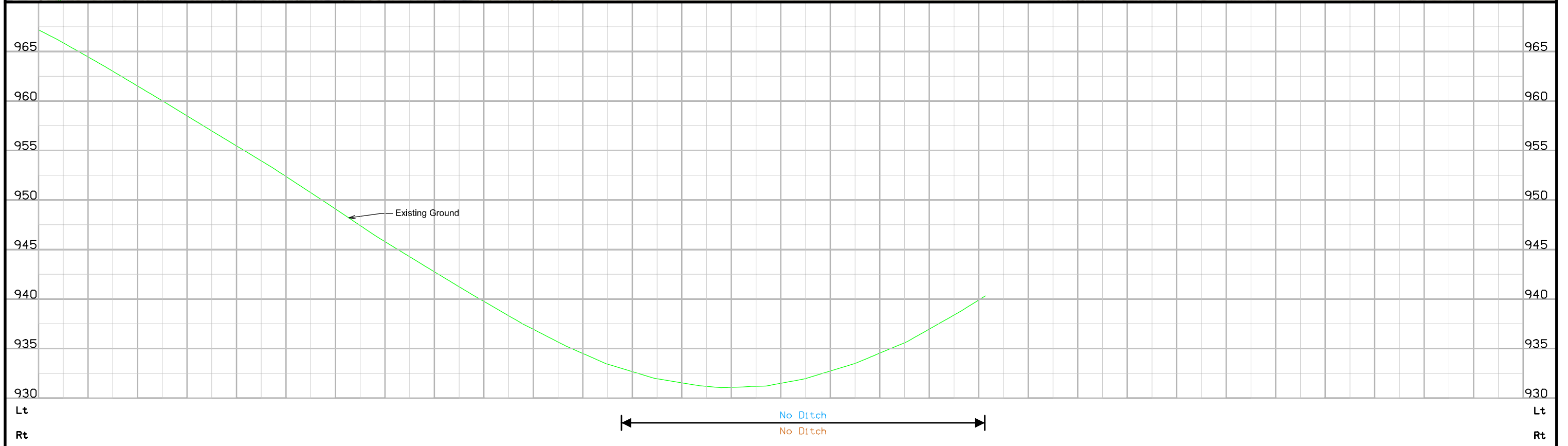
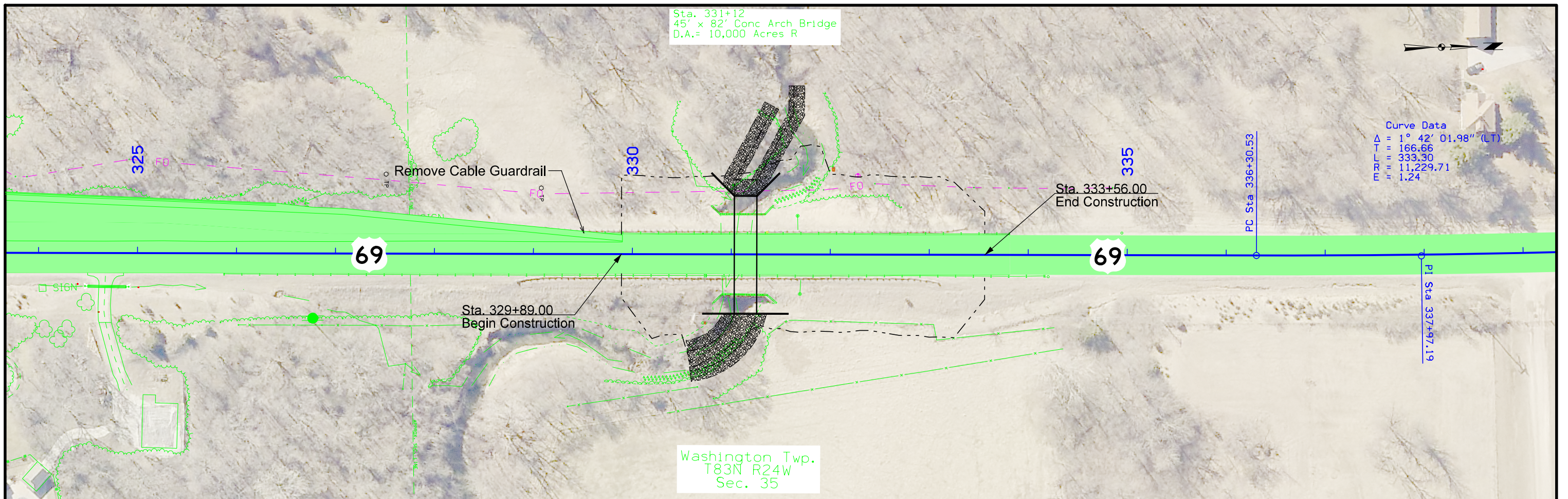
- Reference Point
- Station
- Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

RIGHT-OF-WAY LEGEND

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

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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



967.19	965.88	964.45	963.01	961.52	960.03	958.51	956.98	955.47	953.96	952.38	950.75	949.10	947.42	945.80	944.27	942.75	941.24	939.77	938.32	936.94	935.66	934.50	933.43	932.67	931.96	931.54	931.18	931.08	931.19	931.50	931.97	932.73	933.50	934.54	935.59	936.97	938.38	939.91
324	+50	325	+50	326	+50	327	+50	328	+50	329	+50	330	+50	331	+50	332	+50	333	+50	334	+50	335	+50	336	+50	337	+50	338	+50	339								
FILE NO.	ENGLISH	DESIGN TEAM	Smyth \ Adey															COUNTY	PROJECT NUMBER	BRF-069-5(120)--38-85					SHEET NUMBER	D.2												

108-23A
08-01-08

TRAFFIC CONTROL PLAN

US 69 traffic shall be maintained at all times. Refer to staging notes for additional information.

Special events have been planned in the area around this project. Temporary lane closures shall not be allowed during any of the events listed below.

Event	Location	Dates
Iowa State Graduation	Iowa State University	May 2-4, 2024
Iowa State Football	Jack Trice Stadium	August 31, 2024
Iowa State Football	Jack Trice Stadium	September 7, 2024
Iowa State Football	Jack Trice Stadium	September 14, 2024
Iowa State Football	Jack Trice Stadium	To be announced

108-26A
08-01-08

STAGING NOTES

Traffic -- in existing lanes. Flaggers shall be used for any lane closures, which will be allowed 6pm Sunday to 5am Monday, 6pm Monday to 5am Tuesday, 6pm Tuesday to 5am Wednesday, and 6pm Wednesday to 5am Thursday.

Construction -- Build new culvert and grading.

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
To be determined	

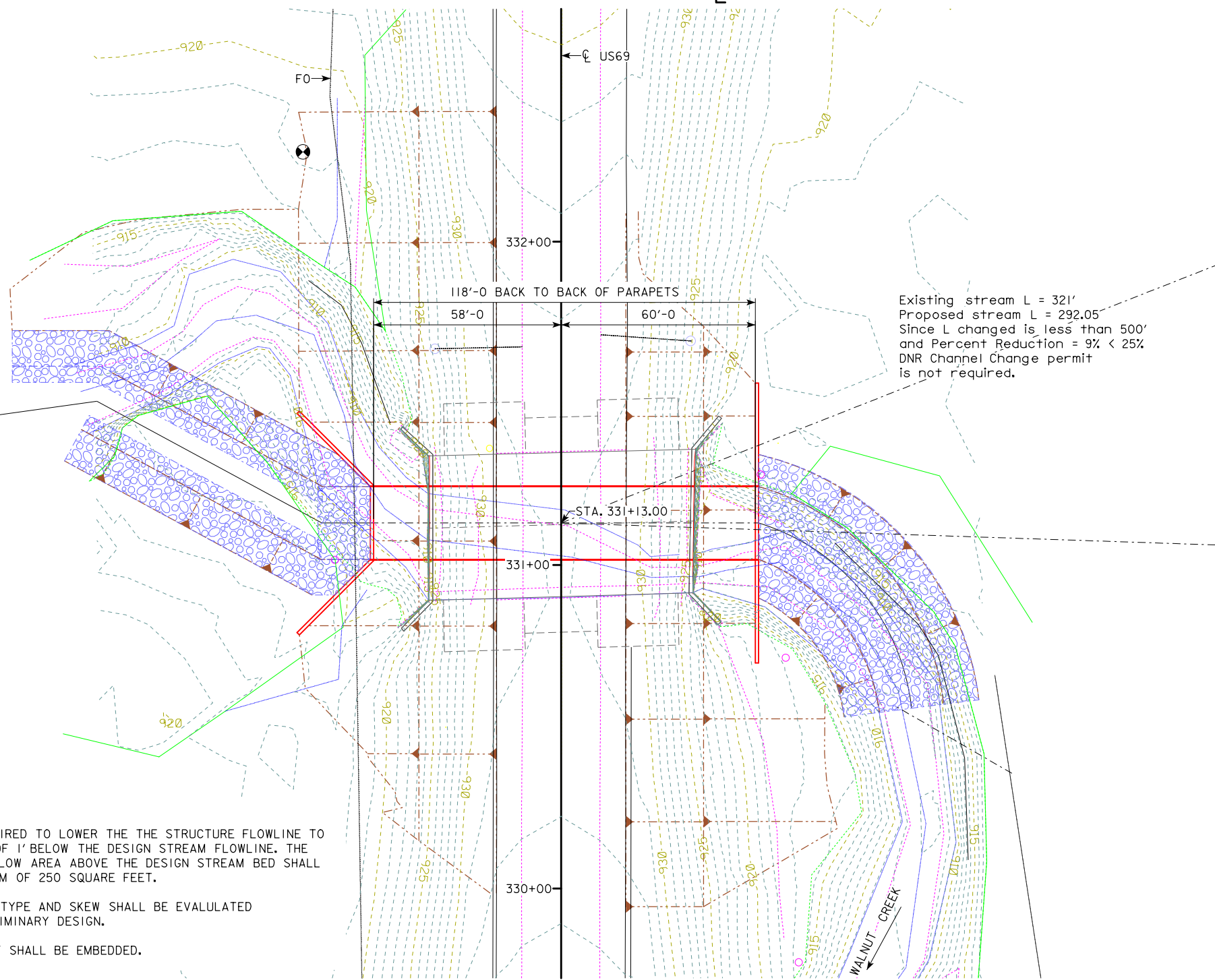
108-25
10-21-14

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
US 69	Both	Story	No Restrictions Anticipated									

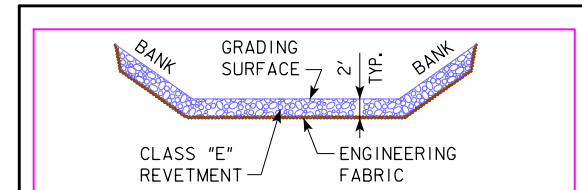
940				940
930	TOP OF PPT ELEV. 922.81		TOP OF PPT ELEV. 922.32	930
920				920
910	ELEV. 920.81		ELEV. 920.32	910
900	INLET F.L. ELEV. 905.14		INLET F.L. ELEV. 904.65	900
890		F.L. ELEV. 904.9		890

LONGITUDINAL SECTION ALONG CL CULVERT



BENCH MARK NO. CP2, NORTHING 7621787.92, EASTING 18529013.6, ELEVATION 968.27, SET FENO MONUMENT .114' N. OF INTAKE SIGN.48' W. OF STA. 350 SIGN.36' SE OF POWER POLE.29' W. OF CL US HWY 69.6" BELOW GROUND.

PROPOSED PROFILE GRADE US69 - U.A.C.

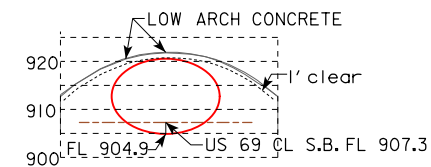


TYPICAL CHANNEL PROTECTION

ESTIMATED REVETMENT QUANTITIES INCLUDED WITH ROAD PLANS

LOCATION	REVETMENT CL. "E" (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	XX	XX	XX
OUTLET	XX	XX	XX
TOTALS	XX	XX	XX

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



COMBINED SECTION - LOOKING D.S.

HYDRAULIC DATA

DRAINAGE AREA = 13.3 SQ. MI.
 STREAM SLOPE = 21.6 FT./MI.
 AVG. LOW WATER STAGE = 909.6
 Q₁₀₀ = 1820 CFS
 HW = 920.56 (INLET CONTROL)
 H = -0.25'
 OUTLET VELOCITY = 9.3 FT/S.
 (HY-8 CONCEPT LEVEL ANALYSIS)

TRAFFIC ESTIMATE

2019 AADT 6700 V.P.D.
 2021 AADT - V.P.D.
 2021 DHV - V.P.H.
 TRUCKS 3 %
 TOTAL DESIGN ESALs -

UTILITIES LEGEND:

FOI - FIBER OPTIC

UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.

LOCATION

US 69 OVER WALNUT CREEK
 T-83N R-24W
 SECTION 35
 WASHINGTON TOWNSHIP
 STORY COUNTY
 FHWA NO. 48950
 BRIDGE MAINT. NO. 8510.55069
 LATITUDE 41.951294°
 LONGITUDE -93.609904°

NOTES:

- IT IS DESIRED TO LOWER THE THE STRUCTURE FLOWLINE TO A MINIMUM OF 1' BELOW THE DESIGN STREAM FLOWLINE. THE AVAILABLE FLOW AREA ABOVE THE DESIGN STREAM BED SHALL BE A MINIMUM OF 250 SQUARE FEET.
- HEADWALL TYPE AND SKEW SHALL BE EVALUATED DURING PRELIMINARY DESIGN.
- REVETMENT SHALL BE EMBEDDED.



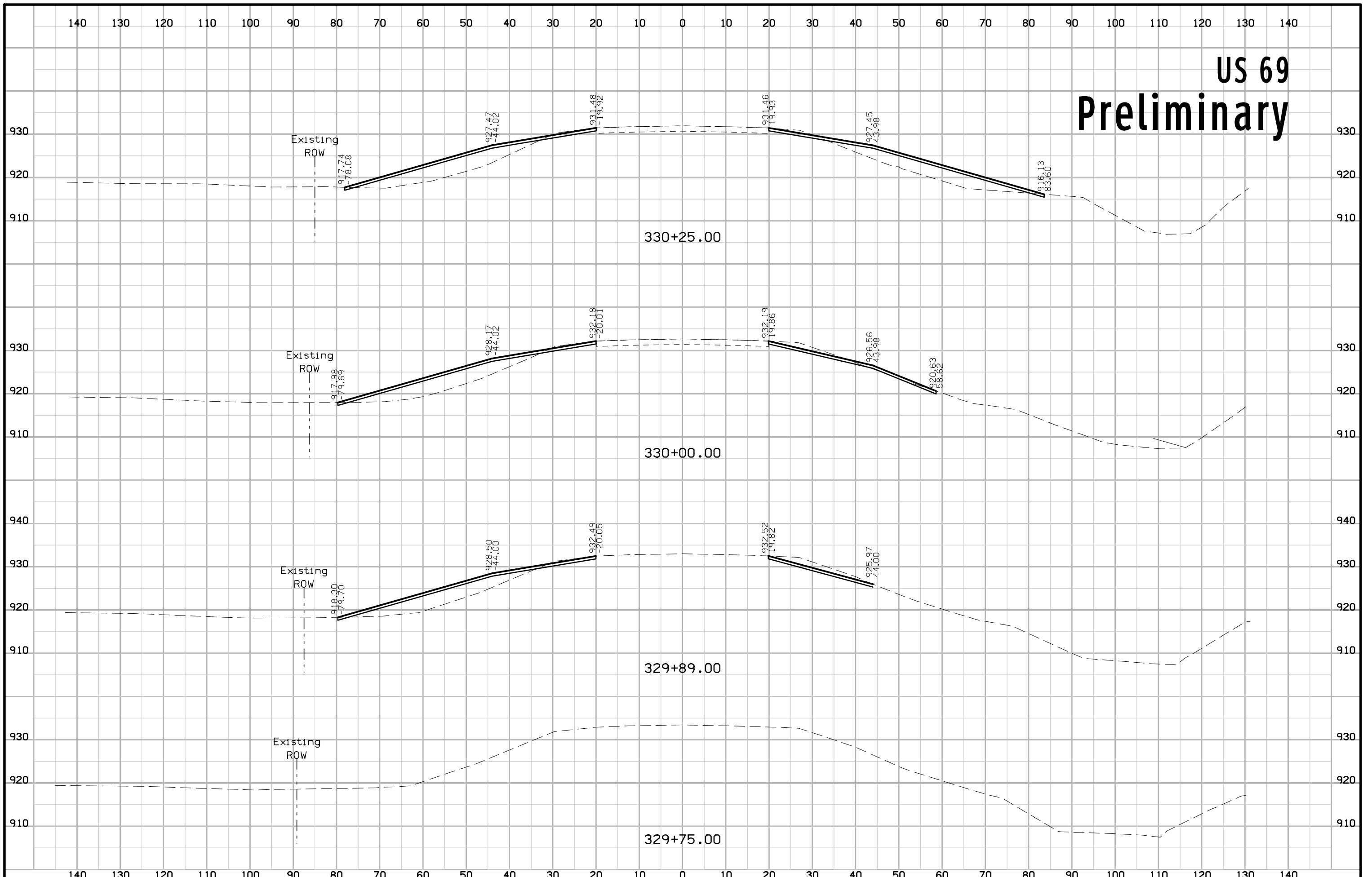
SITUATION PLAN



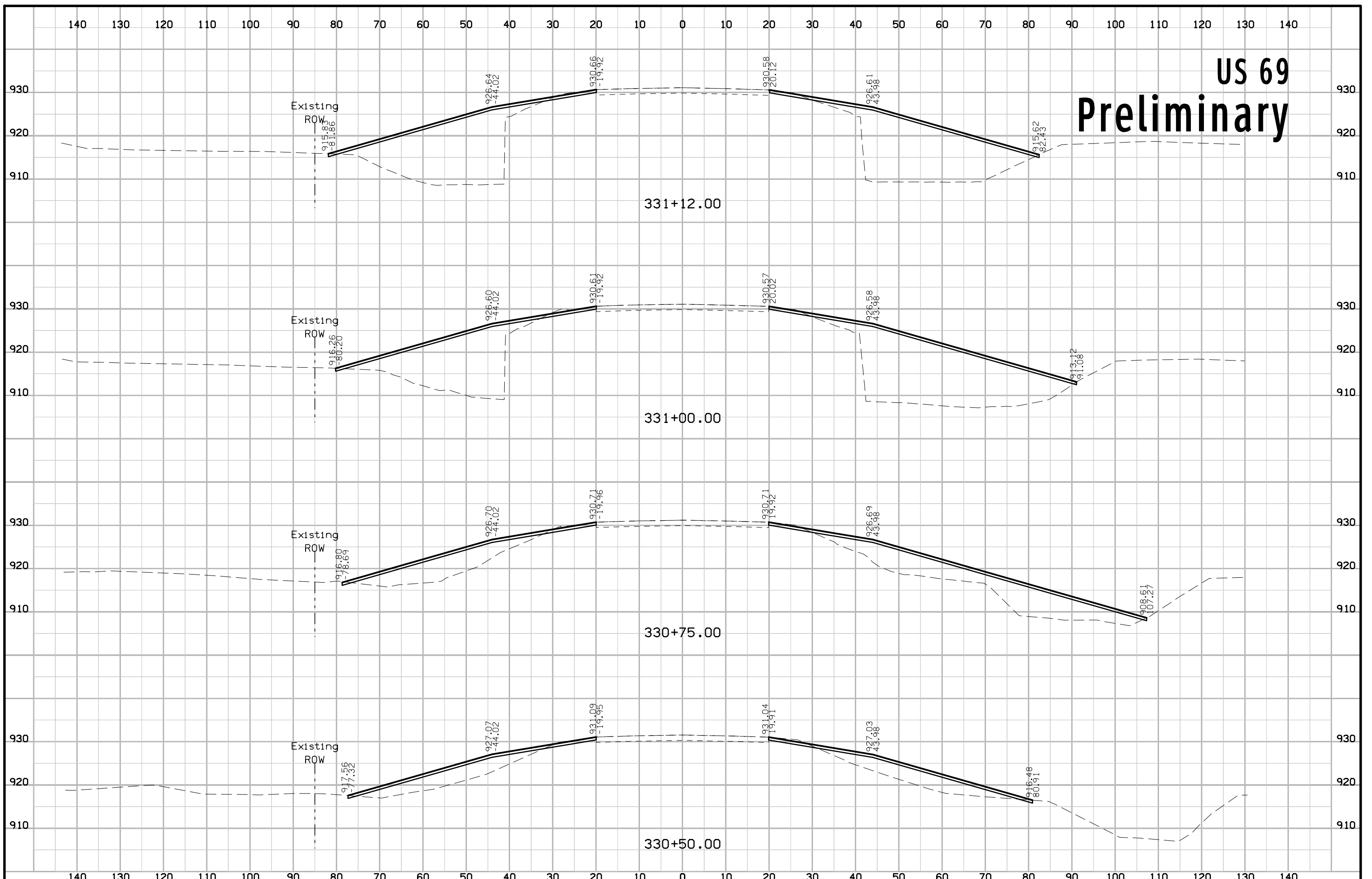
PRELIMINARY
 DESIGN FOR 0° SKEW
22'-6 x 15'-8 x 118'-0 CORRUGATED STEEL ELLIPSE CULVERT LINER

SITUATION PLAN
 STATION 331+13.00 (US 69) SEPTEMBER 2021
 STORY COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION
 DESIGN SHEET NO. ___ OF 1 FILE NO. ? DESIGN NO. ?

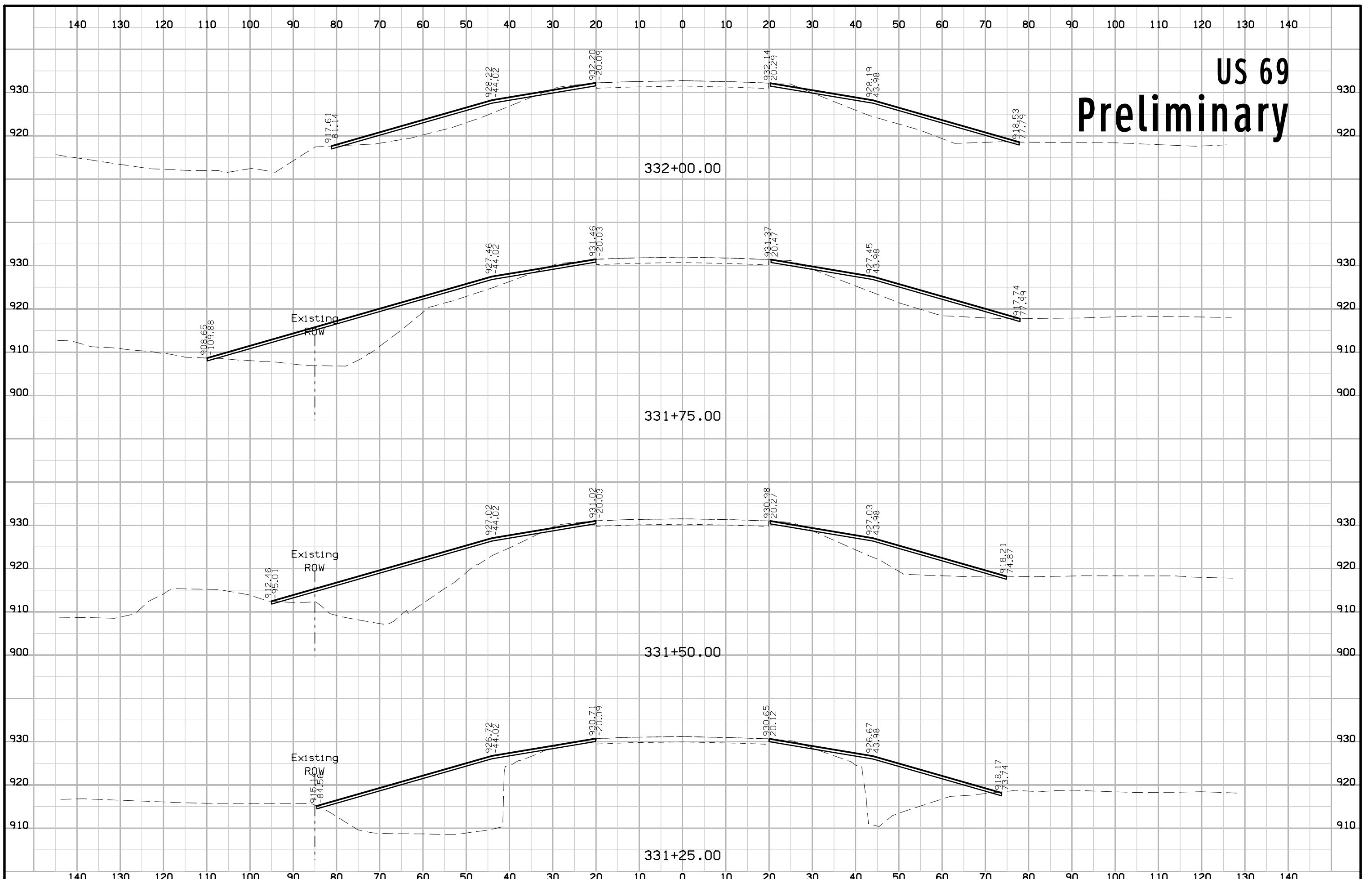
US 69 Preliminary



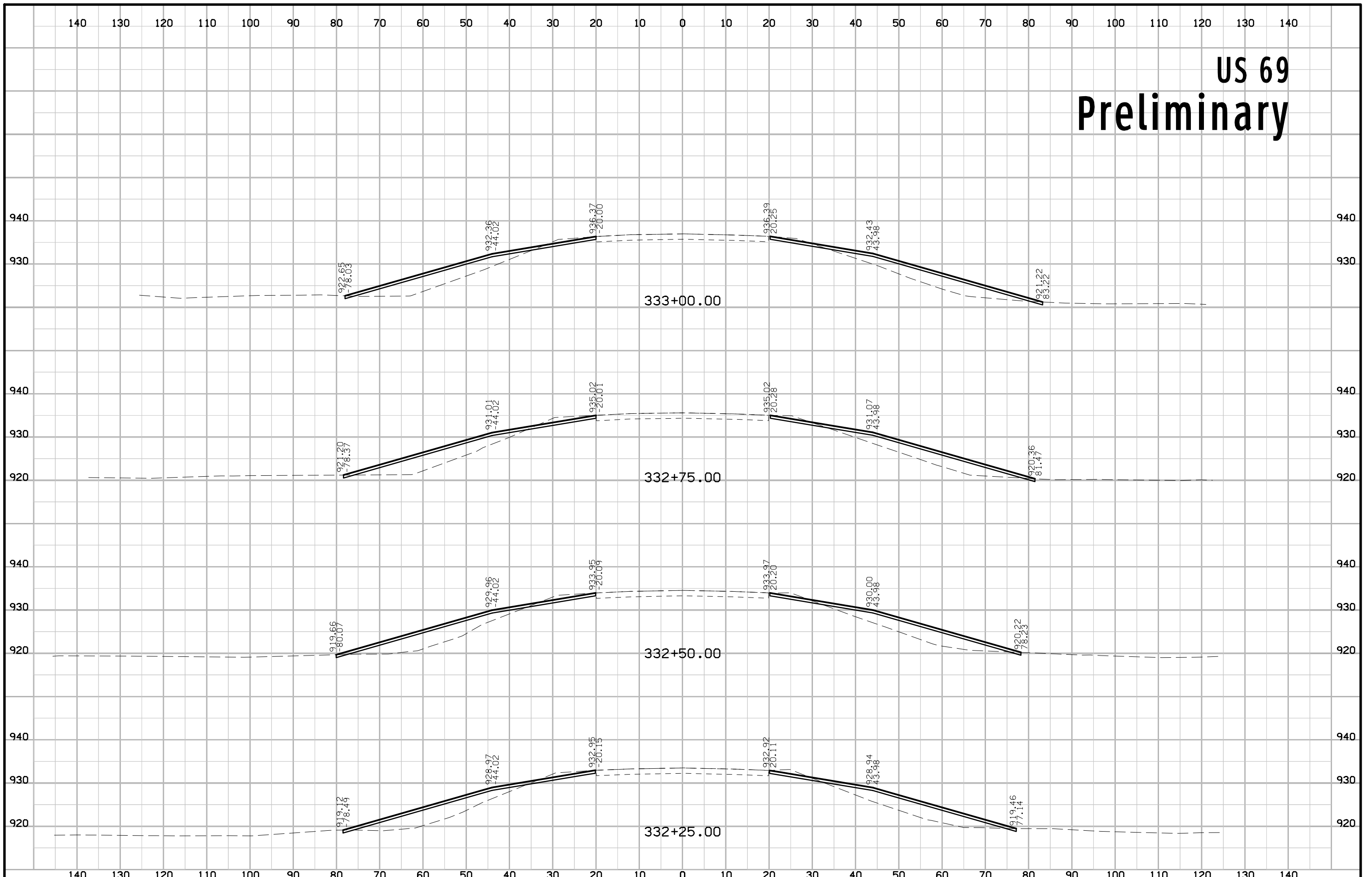
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