

CEDAR COUNTY

HMA Pavement Widening  
NHSX-030-8(53)--3H-16

LETTING DATE  
11-18-2025



PLANS OF PROPOSED IMPROVEMENT ON THE  
PRIMARY ROAD SYSTEM  
**CEDAR COUNTY**  
HMA Pavement Widening  
W of Charles Ave E of Lisbon to WCL Stanwood

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



For Project Location Map  
Refer to Sheet No. A.2

REVISIONS

TOTAL

PROJECT IDENTIFICATION NUMBER

21-16-030-020

PROJECT NUMBER

NHSX-030-8(53)--3H-16

R.O.W. PROJECT NUMBER

NHSN-030-8(55)--2R-16

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DESIGN DATA RURAL			
2024	AADT	5,432	V.P.D.
2044	AADT	6,659	V.P.D.
2044	DHV	690	V.P.H.
	TRUCKS	15	%
	Total Design ESALs	2.86	Million

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

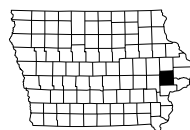
PROJECT EVENT DATES

D3	-	11-17-2023
D5	-	03-01-2024
DM5	-	07-29-2025
D7	-	09-02-2025

PRELIMINARY PLANS

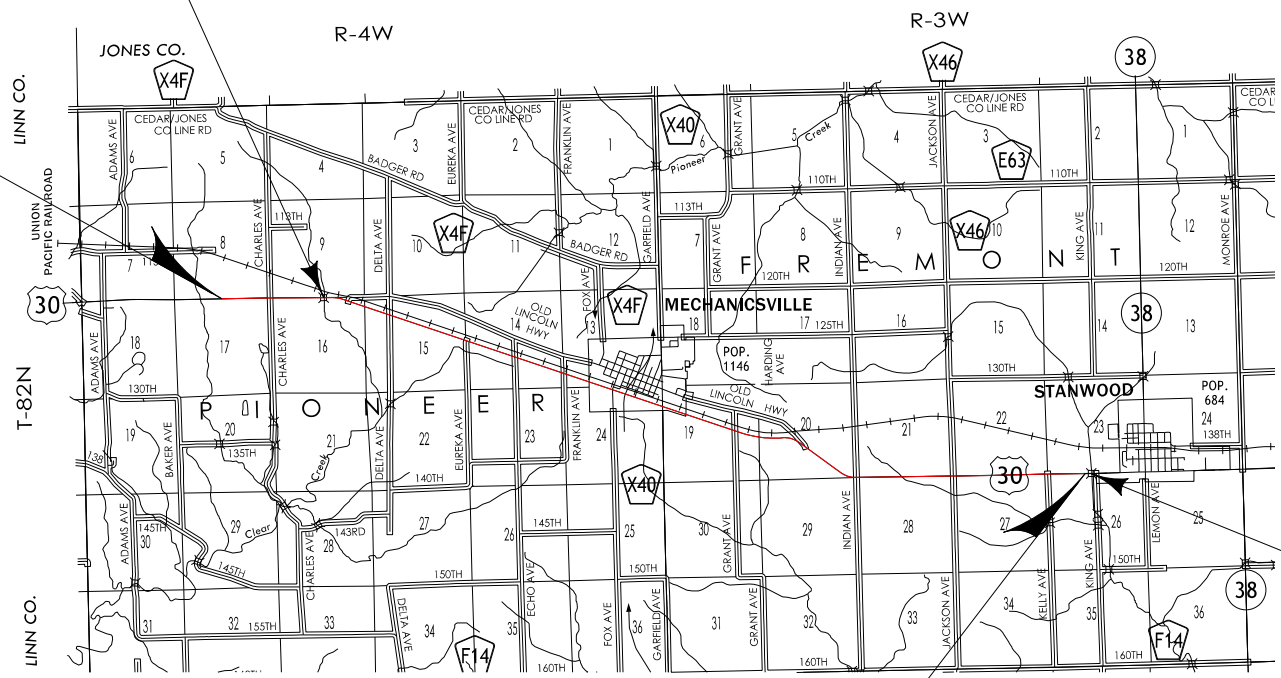
Subject to change by final design.

D2 PLAN - Date: 10-24-2023



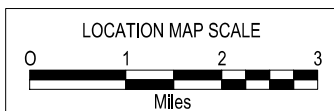
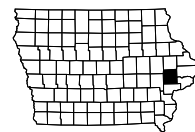
FHWA 18251  
 MAINT 1671.15030  
 TWIN 10' X 8' X 84' RCB CULVERT

BEGIN PROJECT  
 STA. XX+XX  
 REF. LOC. 270+16



FHWA 18261  
 MAINT 1679.55030  
 44' X 100' CONT. CONCRETE SLAB BRIDGE

END PROJECT  
 STA. XX+XX  
 REF. LOC. 279.40



Refer to D Sheets for  
 Railroad Crossing Information

**TO OFFICE:** District 6  
**ATTENTION:** Jim Schnoebelen, District Engineer  
**FROM:** Mark Harle  
**OFFICE:** District 6  
**SUBJECT:** FY 2026 Super-2 Concept Statement – REVISED D00

**DATE:** January 27, 2023  
**COUNTY:** Cedar  
**PIN:** 21-16-030-020  
**PROJECT:** NHSX-030-8(53)--3H-16

**FOLDER:** [1603002021](#)

**PROJECT DATA:**

ROUTE: US 30  
 LENGTH: 9.4 miles  
 PLANNING CLASSIFICATION: 2  
 MAINTENANCE SERVICE LEVEL: B  
 NHS ROUTE: Yes  
 TRAFFIC: Program Year (2024): 5900 ADT with 13% Trucks  
 Design Year (2044): 7200 ADT with 15% Trucks

**PURPOSE AND NEED:**

The purpose of this project is to improve safety and operations by making Super-2 improvements.

A Planning and Environmental Linkages (PEL) study was completed in June 2020 which looked at environmental, community, and economic goals for the corridor from Lisbon to DeWitt. The PEL recommended pursuing a Super-2 concept, which was approved for this corridor.

**PROJECT LOCATION:**

US 30 in Cedar County from west of Charles Ave east of Lisbon to the WCL of Stanwood (MP 270.0 to MP 279.4)

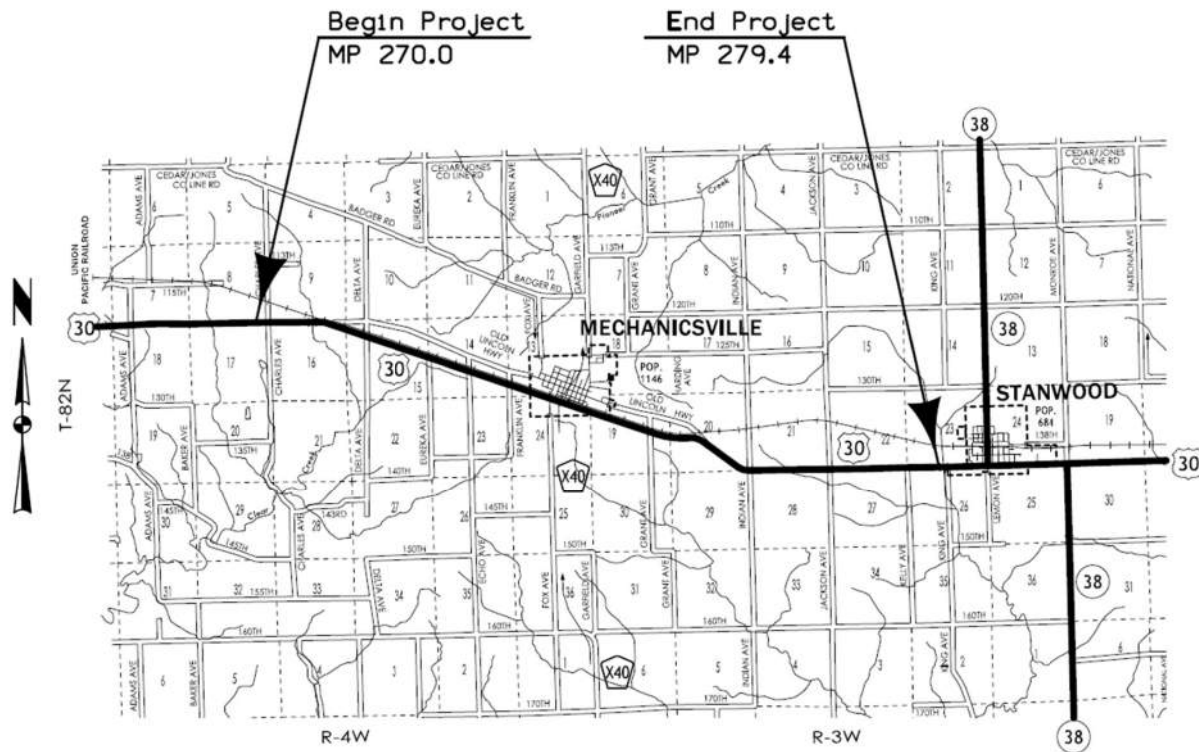


Figure 1: Existing granular shoulders eastbound lane

**FEASIBLE ALTERNATIVES:****Project Number: NHSX-030-8(53)--3H-16**

Type of Work: HMA Pavement Widening and HMA Paved Shoulders - New

Alt.	Mechanicsville Alignment	Total Cost
1	Existing Alignment – No New Turn Lanes	\$10,368,000
2	12 ft. Shift South – Left Turn Lanes at Madison and Cherry St.	\$10,769,000
3	32 ft. Shift South – Left Turn Lanes + Additional Storage between RR tracks	\$11,270,000

For the widening project encompassing the Super-2 improvements, three alignments through Mechanicsville were analyzed. Alternative 1 does not include any new turn lanes in Mechanicsville. Both alternatives 2 and 3 include both eastbound and westbound left turn lanes at Madison St. and at Cherry St. Alternative 2 shifts the alignment to the south 12 ft. to accommodate the additional lane width. Alignment 3 includes a larger shift to the south to allow additional vehicles storage between US 30 and the railroad tracks.

All alternatives include a new westbound four-lane to two-lane transition at the west end of the project and three passing lanes: a westbound passing lane west of Mechanicsville, an eastbound passing lane east of Mechanicsville, and a second westbound passing lane west of Stanwood.

Additionally, all alternatives include resurfacing cost of full width paved shoulders. HMA quantities for 10 ft. paved shoulders were included.

**RECOMMENDATIONS:**

The recommended alternative is Alternative #2 for. Alternative 2 includes left-turn lanes at Madison St. and Cherry St., with a slight shift of the alignment in Mechanicsville to accommodate the additional lane. Three passing lanes will be built (WB MP 273.0 – MP 274.0, EB MP 274.6 to MP 275.6, and WB MP 278.4 to MP 279.4). Other improvements included a new two-four lane transition and full-width paved shoulders.

A 1.5" HMA surface lift will be added to through lanes in the areas where pavement is being widened to provide a uniform pavement surface. This final surface lift is being deferred from the resurfacing project to the widening project to allow it to be placed continuous with the new turn-lanes.

The total cost of all improvements is estimated as \$10,769,000. This includes the cost for paved shoulders, a new westbound four-lane to two-lane transition, three passing lanes, and two left-turn lanes in Mechanicsville, as well as incidental widening work (subdrain, guardrail, culvert extensions).

**FUNDS PROGRAMMED:**

The widening project is currently programmed in FY 2026.

NHSX-030-8(53)--3H-16 HMA Pavement Widening is currently programmed for \$8,362,000.

**PROJECT IMPACTS:**

Designed by: District/Design/Consultant

Design Impact	Assistance Requested (Y/N)	Remarks
ADA:	N	
Agreements/Notification Letters:	Y	Agreements with Mechanicsville, Stanwood, Clarence, Cedar County
Bridges and Structures:	Y	
Consultant:	N	Design and Bridge should verify
Contracts:	N	
Design/Methods:	Y	Review of Passing Lane Locations
Location and Environment:	Y	
Maintenance: Tipton	N	
Project Management:	N	
Railroad:	Y	Eight side-road crossings meeting "Near" criteria
RCE: Davenport	N	
Right of Way:	Y	Acquisition of permanent right of way
Soils:	N	
Survey/Photogrammetry:	Y	Survey by Design
Systems Planning:	N	
Traffic and Safety:	Y	Review of passing lane locations
Utilities:	Y	Relocation of utilities in passing lane footprint
Other:		

CC:

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D. L. Maifield	C. B. Brakke	S. S. Nielsen
A. A. Welch	C. C. Poole	J. S. Nelson
M. Nop	M. A. Swenson	R. A. Younie
S. P. Anderson	B. D. Hofer	K. Brink
D. L. Newell	B. E. Azeltine	W. W. Musgrove
S. J. Gent	J. W. Laaser-Webb	W. A. Sorenson
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F. Thiede	S. R. Martin	W. Kreinbring
B. Weimar		

**CONCEPT ANALYSIS & SUPPORTING DATA:**

Necessary supporting data may be linked in the analysis to ProjectWise.

**Date of Field Review:**

11/18/2020 (virtual)

**Participants:**

J. Tibodeau, T. Storey, J. Tjaden, W. Kreinbring, T. Sorgenfrey, B. Bradley, G. Harris, E. Gansen

**PLANNING AND ENVIRONMENTAL LINKAGES (PEL):**

Prior to concept development, a Planning and Environmental Linkages (PEL) study was completed in June 2020 which looked at environmental, community, and economic goals for the corridor from Lisbon to DeWitt. The PEL recommended pursuing a Super-2 concept with recommendations for further study including:

- Engineering and environmental studies, as well as stakeholder engagement to determine the range of improvements for each cross-section.
- Configurations of various alternatives including on-alignment and bypass improvements
- Determining the pavement prioritization of the segments of US 30.

Possible locations for passing and turn-lanes were studied as a follow up to the PEL.

The PEL is available at the following link: [PEL Vision Document](#)

The most recent passing lane information is at the following: [Passing Lane Tech Memo, Design Criteria](#)

Two different passing lane configuration alternatives were developed: [Alternative I](#), [Alternative II](#)

**PAVEMENT:****Existing Conditions:**

US 30 is a two-lane rural highway on the NHS with at-grade intersections. The speed limit is 55 mph for the rural sections and drops to 45 mph through Mechanicsville.

The existing cross section primarily consists of two 12 ft. lanes with 10 ft. granular shoulders and 3:1 maximum foreslopes. Foreslopes on the outside of three horizontal curves appear to be steeper than 3:1, probably due to past wedging for superelevation. A design exception may need to be pursued as part of design to accommodate the steeper ditches based on limited ROW next to the Union Pacific Railroad. Entrance side slopes are 6:1 or flatter.

The shoulders in Mechanicsville have existing surfacing but will need to be replaced to provide adequate pavement structure.

There are utility poles and light poles within the clear zone in Mechanicsville.

There are right turn lanes at County Road X40/Madison Ave. in Mechanicsville, Cherry St. in Mechanicsville, neither of which has existing shoulder.

The existing HMA pavement will be resurfaced with a project the prior year (2025). The proposed treatment is 4.5" of HMA over Cold in Place Recycling.

**Pavement History:**

Segment A: Milepost 268.59 to Milepost 279.9

1994	ACC Overlay - 24 ft wide x 5" thick	NHS-30-7(89)--19-57
1984	ACC Overlay - 24 ft wide x 2" thick	FR-30-8(12)--2G-16
1960	Widening 18 - 24 ft with 24 ft. x 3" ACC Resurfacing	FN-57
1952	ACC Overlay - 18 ft wide x 3" thick	P-1018
1927	PCC Original Construction - 18 ft wide x 7" thick	FA-57

**PMIS Data:**

Segment	Milepost to Milepost	Dir.	Type	Avg.	80%	PCI	IRI	K Value
				Str. No.	Str. No.			
A	268.59 to 279.50	1	COM	5.47	3.57	47	150	155

**Pavement Design & dTIMS Recommendation:**

Pavement Design Recommendation (Lisbon to Clarence):

MP	MP	DIR	TESTED	80% SR	AVG K (psi/in)	Interpolated Res. Mod. (psi)	20 Year Overlay		40 Year Reconstruct	PAVEMENT
							Over exsit. Pav't (in)	After 3" CIR (in)	HMA over 12" Modified Subbase (in)	
270.39	279.90	B	05/23/2018	3.57	155	3684	4.2	3.7	12.5	1927 PC7 7.0, 1952 BAC 1.5 TBB 1.5, 1960 AAC 3.0, 1984 AAC 1.0 RAC 1.0, 1994 AAC 2.0 AAC 3.0
279.90	280.52	B	05/23/2018	3.79	150	3609	3.7	3.4	12.5	1927 PC7 7.0, 1952 BAC 1.5 TBB 1.5, 1960 AAC 3.0, 1984 AAC 1.0 RAC 1.0, 1994 AAC 2.0 AAC 3.0
280.52	284.08	B	05/22/2017	3.40	95	2945	5.6	5.1	12.5	1927 PC7 7.0, 1952 BAC 1.5 TBB 1.5, 1960 AAC 3.0, 1984 AAC 1.0 RAC 1.0, 1994 AAC 2.0 AAC 3.0
284.08	284.70	B	05/22/2017	3.84	123	3278	4.0	3.7	12.5	1928 PC7 7.0, 1952 BAC 1.5 TBB 1.5, 1954 PCC, 1960 AAC 1.5 AAC 1.5, 1984 AAC 1.0 RAC 1.0, 1994 AAC 2.0 AAC 3.0
284.70	285.34	B	09/09/2014	4.21	148	3585	2.8	Min. 3.0" cover over CIR	12.5	1928 PC7 7.0, 1967 AAC 1.5 AAC 3.0, 1994 AAC 2.0 AAC 3.0

dTIMS recommendation: 2020 PRI\_MIN\_REHAB\_FUNC

**Subdrains:**

Subdrain is currently installed on one side of the existing pavement. Recommendation is to add full subdrain coverage with the resurfacing project. This concept will estimate a small quantity for subdrain adjacent to the widened lanes.

**Patching/Curb Repairs:**

None

**ADA/Sidewalk/Trails:**

There are no pedestrian facilities in the project limits.

**Complete Streets:**

The minimum functional width for a paved shoulder used by bicyclists is 4 feet (Bicyclist Operating Space, AASHTO Bike Guide 2012), outside the rumble strips.

This project has been scoped with acceptable accommodations per the Complete Streets Policy with the recommendation of 8-foot HMA paved shoulders.

**SAFETY:**

**Design Criteria for High Speed Rural Two-Lane:**

Design Element		Preferred	Acceptable	Project Values
Design speed (mph)		60	50	55
Maximum superelevation rate (Refer to Section 2A-2)		6%	8%	8%
Design lane width (ft)		12	12	12
Full depth paved width (ft)		12	12	12
Right turn lane (ft)		12	10	12
Climbing Lane (ft)		12	12	12
Left turn lane (ft)		12	10	12
Pavement cross-slope (on tangent sections)	Through lanes	2%	1.5% minimum, 2% maximum	2
	Auxiliary and turn lanes	3%	3% maximum	3
	Crown break at centerline	4%	4% maximum	4
Shoulder cross-slope (on tangent sections)		4%	Shoulder cross-slope cannot be less than the adjacent lane, 6% max for paved or granular shoulders, 8% max for earth shoulders	4% Paved w/ 6% granular
Curb type (Refer to Section 3C-2)	Design speed = 50 or 55 mph	6-inch sloped	6-inch standard	6-inch standard
	Design speed ≥ 60 mph	4-inch sloped	6-inch sloped	NA
Foreslope (For fill areas greater than 40 ft, contact the Soils Design Section for assistance)	Adjacent to shoulder	10:1 for 4' then 6:1	3:1	3:1
	Beyond standard ditch depth and design clear zone	3.5:1	3:1	3:1
	Curbed roadways	2%	not steeper than 3:1	3:1
Backslope (For cut areas greater than 25 feet, contact the Soils Design Section for assistance with backslope benches.)		3:1	2.5:1	2.5:1
Transverse Slopes	w/ drainage structures	8:1	6:1	6:1
	w/o drainage structures	10:1	6:1	6:1
Ditches (Refer to Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	--	5 x 10
Bridge width—new*	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths	design lane widths + effective shoulder widths	NA

	Bridge length > 200 ft	design lane widths + effective shoulder widths	design lane width + 4' right and left of the design lane widths	NA
Bridge width—existing*		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft. offset left and right	44 ft.
Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)	Over primary	16.5	16	NA
	Over non-primary	16.5 at interchange locations, 15 at all other locations	14	NA
	Over railroad	23.3	23.3	NA
	Sign trusses and pedestrian bridges	17.5	17	NA
Structural Capacity		Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	
Level of Service		B	B	
*FHWA notification via email is required if acceptable criteria is not met on the NHS system (No formal design exception is required)				

**Crash Analysis:**

The ICAT quick report with 5-year crash history summary is available as an appendix to this document.

**Corridor Crash History:**

There were 39 total number of crashes in the five-year-plus study period including 1 suspected serious injury crash and 13 either minor or suspected/unknown injury crashes. There were no fatal crashes during the study period. The total crashes included 10 animal related crashes and 3 ran-off the road crashes.

**Intersection Crash History:**

Crash tables showing severity and manner of crash collision are shown below for each intersection in the project limits. There were 26 total crashes at intersections during the study period.

Location	Intersection Crash Severity					
	Fatal (K)	Suspected Serious Injury (A)	Suspected Minor Injury (B)	Possible/Unknown Injury (C)	Property Damage Only (O)	All Crashes
Charles Ave.	0	1	0	1	1	3
Old Lincoln Hwy.	0	0	0	0	0	0
Delta Ave.	0	0	0	1	2	3
Eureka Ave.	0	0	0	1	0	1
Echo Ave.	0	0	0	0	1	1
Franklin Ave.	0	0	0	0	1	1
Madison / X40	0	0	1	0	7	8
Cherry St.	0	0	2	1	3	6
Grant St.	0	0	0	1	0	1
Old Lincoln Hwy.	0	0	0	0	1	1
Indian Ave.	0	0	0	0	0	0
Jackson Ave	0	0	0	0	0	0
Kelly Ave	0	0	1	0	0	1
Total	0	1	4	5	16	26

Source: ICAT, 2017-2021 - 250 ft. Radius at each intersection

Location	Intersection Manner of Crash Collision								
	Single Vehicle	Head-on	Rear-end	Angle	Broadsid e	Sideswip e (Same Side)	Sideswip e (Opp. Side)	Other / Not Reported	All Crashes
Charles Ave.	1	1	1	0	0	0	0	0	3
Old Lincoln Hwy.	0	0	0	0	0	0	0	0	0
Delta Ave.	2	0	1	0	0	0	0	0	3
Eureka Ave.	0	1	0	0	0	0	0	0	1
Echo Ave.	0	0	0	0	1	0	0	0	1
Franklin Ave.	0	1	0	0	0	0	0	0	1
Madison / X40	0	0	2	1	2	1	0	2	8
Cherry St.	0	0	4	1	0	1	0	0	6
Grant St.	0	0	0	0	0	0	1	0	1
Old Lincoln Hwy.	1	0	0	0	0	0	0	0	1
Indian Ave.	0	0	0	0	0	0	0	0	0
Jackson Ave	0	0	0	0	0	0	0	0	0
Kelly Ave	1	0	0	0	0	0	0	0	1
Total	5	3	8	2	3	2	1	2	26

Source: ICAT, 2017-2021 - 250 ft. Radius at each intersection

**Potential for Crash Reduction (PCR) Analysis:**

PCR values are below for each of the intersections within the project limits and the three PCR segments that the data is broken into. None of the values below indicate a significant potential (All priority 3 or lower) to reduce crashes within the corridor. The highest value is at Madison/X-40 in Mechanicsville, which has a value of 0.10 for all crashes. For reference, the Priority 2 category has a lower-bound value of 0.2.

Location	Intersection Potential for Crash Reduction (PCR)	
	Severe (KAB)	All Crashes
<b>Intersection</b>		
Charles Ave.	0.02	0.02
Old Lincoln Hwy.	0.00	-0.02
Delta Ave.	0.02	0.07
Eureka Ave.	0.00	0.00
Echo Ave.	0.00	0.02
Franklin Ave.	0.00	-0.01
Madison / X40	0.10	-0.11
Cherry St.	Unavailable	Unavailable
Grant St.	0.00	-0.01
Old Lincoln Hwy.	0.00	-0.01
Indian Ave.	0.01	0.02
Jackson Ave	0.00	-0.01
Kelly Ave	0.00	0.00
<b>Segment</b>		
Begin four-lane to Mechanicsville	-0.03	-0.47
In Mechanicsville	-0.04	-1.33
Mechanicsville to Stanwood	-0.02	-0.86

Source: Iowa DOT Potential for Crash Reduction Map (2016-2020 Data)

**Intersection / Turn-Lane Analysis:**

As a follow up to the PEL study, a [document with a list of feasible alternatives](#) for each of the local communities was developed. Each of these was recommended for further environmental and engineering study. The first two alternatives for Mechanicsville were developed into an alternative for this concept. The bypass alternative was not studied further at the completion of the PEL since the study results favored a Super-2 that did not include bypassing local communities. The City of Mechanicsville and Cedar County both would support an alternative that realigns US 30 significantly to the south to eliminate highway traffic through town.

Further discussions with the City of Mechanicsville indicated an observed problem with left turning vehicles being forced to queue in either the right turn-lane at Madison or the parking-lot at Cherry to wait for trains to clear the tracks.

**Railroads:**

The Union Pacific Railway does not cross US 30, but it parallels the highway less than 100' from the pavement between mileposts 271 and 277. There are eight railroad crossings within approximately 100 ft of project limits.



MP	Cross Street	City	FRA	Railroad
271.3	Old Lincoln Hwy	NA	190458X	UP
271.8	Delta Ave	NA	190457R	UP
273.2	Echo Ave.	NA	190455C	UP
273.2	Echo Ave.	NA	190455C	UP
273.7	Franklin Ave	Mechanicsville	190454V	UP
274.2	S. Madison St.	Mechanicsville	190453N	UP
274.5	S. Cherry St.	Mechanicsville	190452G	UP
275.6	Grant Ave	Mechanicsville	190451A	UP

Figure 2: List of Railroads Near Project

Railroad diagnostic review will be required for each of the above crossing locations

The PEL study has documented some RR items for consideration:

**Railroad Opportunities and Coordination.** Today, an average of 60 trains per day pass through the Study corridor with the potential of future growth. Because of the number of at-grade crossings closely spaced to existing US 30, the UP Railroad should remain a key stakeholder when considering US 30 improvements during future study. Future study should examine the following: (1) future rail demand; (2) any railroad expansion or other improvement plans; (3) closely spaced at-grade crossing improvements that may be required as part of any US 30 highway improvement; and (4) improvements that could provide mutual benefit, particularly at heavily traveled at-grade railroad crossings (like those at Mechanicsville), which could result in additional cost-sharing opportunities and funding sources (Federal Railroad Administration, FHWA, various safety funds and programs, grants, etc.).

**Additional Safety & Operation Considerations:**

The corridor meets more than 50% of the risk factors for HSIP paved shoulder eligibility. The existing granular shoulder is 10 feet wide. Six-foot paved shoulders are required for routes on the NHS and full width paved shoulders are recommended for Super-2 projects. This project will include full width paved shoulders.

In addition, a permanent two-to-four lane transition will be constructed with this project. The existing transition between the two and four-lane sections at the beginning of the project is a standard PV-505 temporary construction crossover. The two-lane alignment shifts with two horizontal curves with normal roadway crown just to the east of the crossover. There were some initial issues with westbound vehicles missing the crossover and knocking the barricade over, and although issues have become less frequent, there have been recurring issues at the existing crossover. Inclusion of a new permanent transition is recommended to be included with this project. A separate [memorandum](#) documents the details and estimated costs for the proposed transition.

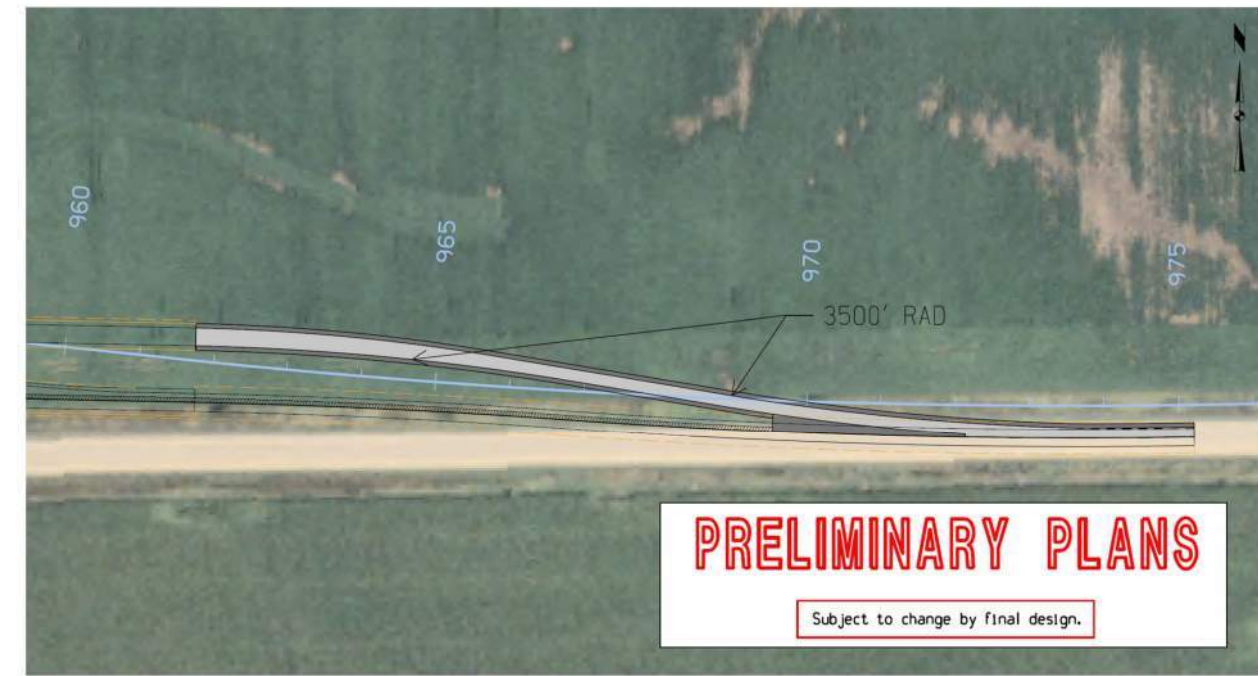


Figure 3: Permanent WB 2-4 lane transition

**STRUCTURES and DRAINAGE:****Bridges:**

FHWA No.	Maint. No.	Size/Type	Year Built	BDO/Rehab Year	Bridge Rail Height	End Post Type	Vertical Clearance	Future Projects
18251	1671.1S030	Twin 10'x8'x 84' RCB Culvert	1987	NA	NA		NA	None
18261	1679.5S030	44' x 100' Cont. Concrete Slab	1973	1995		Tapered	NA	None

**Culverts/Pipes:**

The following minor culvert work was documented in 2016. Estimated cost of repairs is \$100,000. Recommendation is to include this work in the future widening project.

Location (Station)	Mile	Size	Type	Work
145+30.80	271.3	30"	RCP	Line culvert and replace both ends with aprons
177+03.60	271.9	42"	RCP	Left: Replace end pipe with apron Right: Replace end pipe with apron and tie one joint
202+25.10	272.4	42"	RCP	Left: Tie one joint
315+43.00	274.5	18"	RCP	Far: Tie two joints
379+25.80	275.8	54"	RCP	Left: Tie two joints, Right: Replace Apron
418+85.30	276.5	30"	RCP	Left: Replace end pipe with apron Right: Replace end pipe with apron
429+11.40	276.7	30"	RCP	Left: Replace end pipe with apron Right: Replace end pipe with apron
445+72.60	277.0	36"	RCP	Culvert: Bore new pipe
476+24.00	277.6	48"	RCP	Left: Tie two pipes, Right: Replace end pipe with apron
488+78.00	277.8	4' x 5'	RCB	Repair 3 joints
530+84.00	278.6	54"	RCP	Left: Tie two
557+29.60	279.1	30"	RCP	Left: Replace end pipe with apron, Right: Tie two joints

**Guardrail:**

Guardrail at bridge 18261 does not meet current standards will be replaced with the prior resurfacing project.

**Drainage District:**

The Cedar County Assessor has a map on file of the Stanwood Drainage District. The map is available as an appendix to this concept.

**PROJECT IMPACTS:****Impacts Map:**

Refer to separate environmental impacts map. The project corridor contains a few minor wetlands adjacent to the project, as well as multiple environmental hotspots (MP 271.1, MP 271.3, MP 276). These should be investigated further following completion of the concept.

**Environmental:**

Minimal clearing and grubbing needs will be a part of the projects in this corridor. The impacts map shows some minor wetlands, and parks in the project vicinity. A review of historic/cultural resources will be required.

**TSMO/Traffic Control:**

It is anticipated that most of the work could be completed under traffic without any special work hour restrictions. The proximity of adequate detour routes makes closing the road to traffic an unattractive option but may need to be investigated further if closures are required.

**ROW:**

Right of way impacts are anticipated on the order of 15-20 parcels for passing lane construction with minor amounts of right of way (<0.5 Acres) needed for each parcel. Estimated right of way costs for the project is \$500,000. Adding widening and turn lanes to the project in Mechanicsville would increase the number of parcels impacted and would likely increase the ROW costs by a factor of 2. Mechanicsville has overhead power lines and fire hydrants on the south side of US 30 that will need to be relocated.

**Agreements/Notification Letters:**

Cedar County will be contacted to confirm that they want to add paved fillets to any county side roads that intersect with US 30 in the passing lane areas. They have expressed interest in extending the paved fillet to the HMA surface at each railroad crossing to avoid having a short section of granular surface.

Detour agreements will be needed for open-cut pipe replacements or other required closures.

**Project Coordination:**

STP-038-2(50)--2C-16 SCL to NCL in Tipton PCC Pavement - Grade and Replace 2023-2024

**Previous Projects List:**

NHSX-030-8(51)--3H-16 – 2025 – HMA Resurfacing with Cold in Place Recycling  
Refer to pavement history for complete list of projects

**Future Projects List:**

The US 30 Super-2 corridor extends past Clarence, to just west of DeWitt, where the four-lane section begins. The remainder of the corridor will be completed with subsequent projects. Passing lane locations were studied at the conclusion of the PEL and were considered during the development of this concept to aid with meeting spacing requirements.

Bridge Replacements are being scheduled for structures between Wheatland and Calamus for FY 2026.

**FEASIBLE ALTERNATIVES & RECOMMENDATION:**

**Feasible Alternatives:**

All alternatives include an eastbound passing lane east of Mechanicsville, a westbound passing lane west of Mechanicsville, and an eastbound passing lane east of Stanwood.

Evaluated alternatives included

Alt.	Mechanicsville Alignment	Total Cost
1	Existing Alignment – No New Turn Lanes	\$10,368,000
2	12 ft. Shift South – Left Turn Lanes at Madison and Cherry St.	\$10,769,000
3	32 ft. Shift South – Left Turn Lanes + Additional Storage between RR tracks	\$11,270,000

**Alternative A:**

This alternative does not include any new turn lanes in Mechanicsville. Existing right-turn lanes at Madison St. and Cherry St. could be extended to provide additional storage. The cost of Alternative A is estimated at \$10,368,000.

**Alternative B:**

Adding left turn lanes at Madison St. and Cherry St. by shifting the alignment to the south to accommodate the additional lane. The cost of Alternative B is estimated at \$10,769,000.

**Alternative C:**

In addition to shifting the alignment to the south to add left turn lanes at Madison St. and Cherry St., the alignment is further shifted south to provide additional vehicle storage. The cost of Alternative B is estimated at \$11,270,000.

All alternatives include a new two-lane to four-lane transition, three new passing lanes, a single-lift of resurfacing within passing lane limits, longitudinal subdrain, 10 ft. wide paved shoulders, culvert work, and guardrail.

**Cost Comparison:**

Refer to Detailed Cost Estimates in Appendix A.

**Recommendation:**

Alternative 2 is the preferred alternative for the Super-2 widening project. The total estimated cost of work included in this concept is \$10,769,000.

**Alternatives not Studied:**

An alternative was originally discussed that would build left-turn lanes at Madison St. but not at Cherry St. Traffic was counted and analyzed at both locations ([Traffic Memo](#)) and based on the turn volumes, proceeding without a turn-lane at Cherry St. was not recommended.

A major realignment of US 30 to the south of Mechanicsville (bypass) was not studied for this concept because of the broader goal of the Super-2 to provide ways of maximizing the effectiveness of the two-lane corridor, with minimal right-of-way. In recent discussions with the City of Mechanicsville, the city favors this alternative, under the assumption that four-lane improvements west of Cedar Rapids will cause a significant increase in traffic through town. DOT communication has consistently emphasized that a Super-2 does not preclude a future four-lane, so this option may be used in the future if needed.

**Funds Programmed:**

The widening project is currently programmed in FY 2026. NHSX-030-8(53)--3H-16 HMA Pavement Widening is programmed for \$8,362,000.

**Development Schedule:**

A list of all event dates is shown below.

A pdf Gantt chart of the preliminary schedule is available here: [Preliminary Schedule](#).

The current schedule is available to view in Masterworks: [MW Schedule](#)

Task	Dur.	Start	End
<b>NHSX-030-8(54)--3H-16</b>			
A01 - Approval of DOT Commission - Inclusion in 5-Year Program	0	6/8/2021	6/8/2021
D00 - Pre-Design Concept	135	1/26/2022	6/10/2022
D01 - Survey Plan and Photogrammetry (DTM)	9	6/21/2022	6/30/2022
TE0 - Desktop Review	94	4/12/2022	7/15/2022
W00 - Preliminary Wetland Review	94	4/12/2022	7/15/2022
U00 - Preliminary Utility Review	29	6/16/2022	7/15/2022
T01 - Existing ROW, Property and Sections Lines in CADD	337	9/30/2021	9/2/2022
D02 - Design Field Exam	29	9/15/2022	10/14/2022
W01 - Wetland Design Review	245	4/1/2022	12/2/2022
H00 - Cultural Resources Assessment	94	8/30/2022	12/2/2022
D03 - Plans for Preliminary Bridge	59	10/4/2022	12/2/2022
H06 - SHPO-State Historic Preservation Officer	0	12/2/2022	12/2/2022
NE10 - Signed PCE	39	11/21/2022	12/30/2022
U02 - Project Notification to Utilities	91	11/18/2022	2/17/2023
B02 - Drainage Design and Misc. Layout to Office of Design	29	2/2/2023	3/3/2023
S02 - Identification of Soils Related ROW Issues	154	11/25/2022	4/28/2023
D05 - Plans to Right Of Way	119	2/3/2023	6/2/2023
F03 - Final Regulated Materials Review	207	12/12/2022	7/7/2023
R01 - Right Of Way Layout	73	7/18/2023	9/29/2023
R00 - Plot Plans and Summary Sheets to District	0	12/6/2023	12/6/2023
P09 - Public Information Meeting (PIM)	0	12/6/2023	12/6/2023
U03 - 1st Plan Submittal to Utilities	91	10/27/2023	1/26/2024
T02 - Acquisition Plats and Legal Descriptions	275	5/31/2023	3/1/2024
R02 - Right Of Way Appraisal	182	1/1/2024	7/1/2024
W02 - Wetland Field Work	249	2/19/2024	10/25/2024
R03 - Right Of Way Negotiation	3089	5/18/2016	11/1/2024
S03 - Soils Design Complete	44	1/15/2025	2/28/2025
W03 - 404 Permit Submittal	0	2/28/2025	2/28/2025
U04 - 2nd Plan Submittal to Utilities	59	1/6/2025	3/6/2025
R04 - Right Of Way Acquisition	213	10/1/2024	5/2/2025
R10 - ROW Clearance	0	5/2/2025	5/2/2025
W04 - 404 Permit Clearance	0	5/2/2025	5/2/2025
U06 - Notice to Proceed to Utilities	61	4/4/2025	6/4/2025
P08 - Pre-Construction Agreement	0	8/15/2025	8/15/2025
D07 - Final Pave Plans	105	5/20/2025	9/2/2025
U07 - Utility Bid Attachment	29	8/4/2025	9/2/2025
U10 - Utility clearance	0	9/2/2025	9/2/2025
L02 - Letting-Paving and Incidentals	0	11/18/2025	11/18/2025
C02 - Construction Period (Field Work)	366	11/19/2025	11/20/2026

Figure 4: Project Schedule Event Dates

**Concept Appendices:**

[Appendix A: Cross Sections](#)

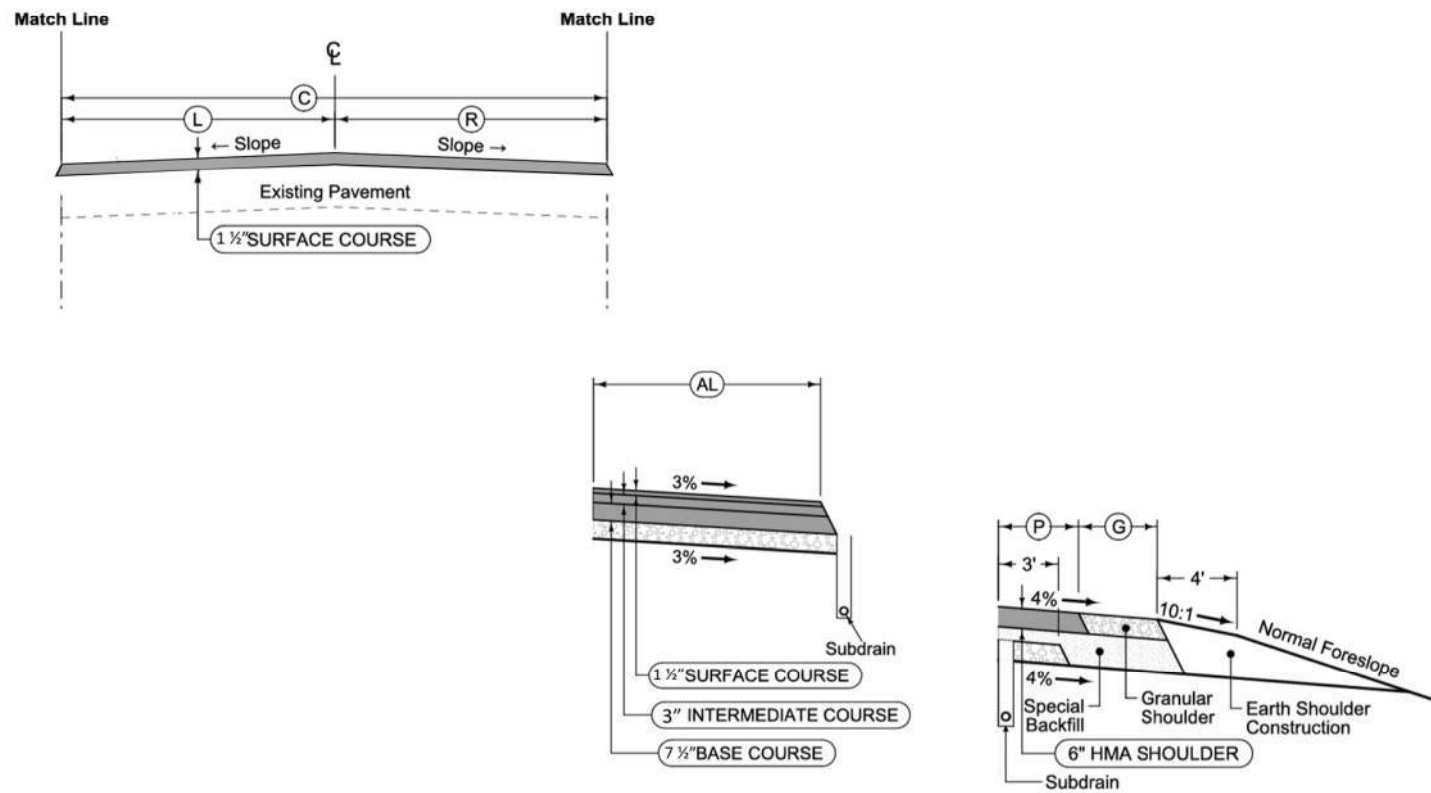
[Appendix B: Detailed Cost Estimates](#)

[Appendix C: Crash Analysis](#)

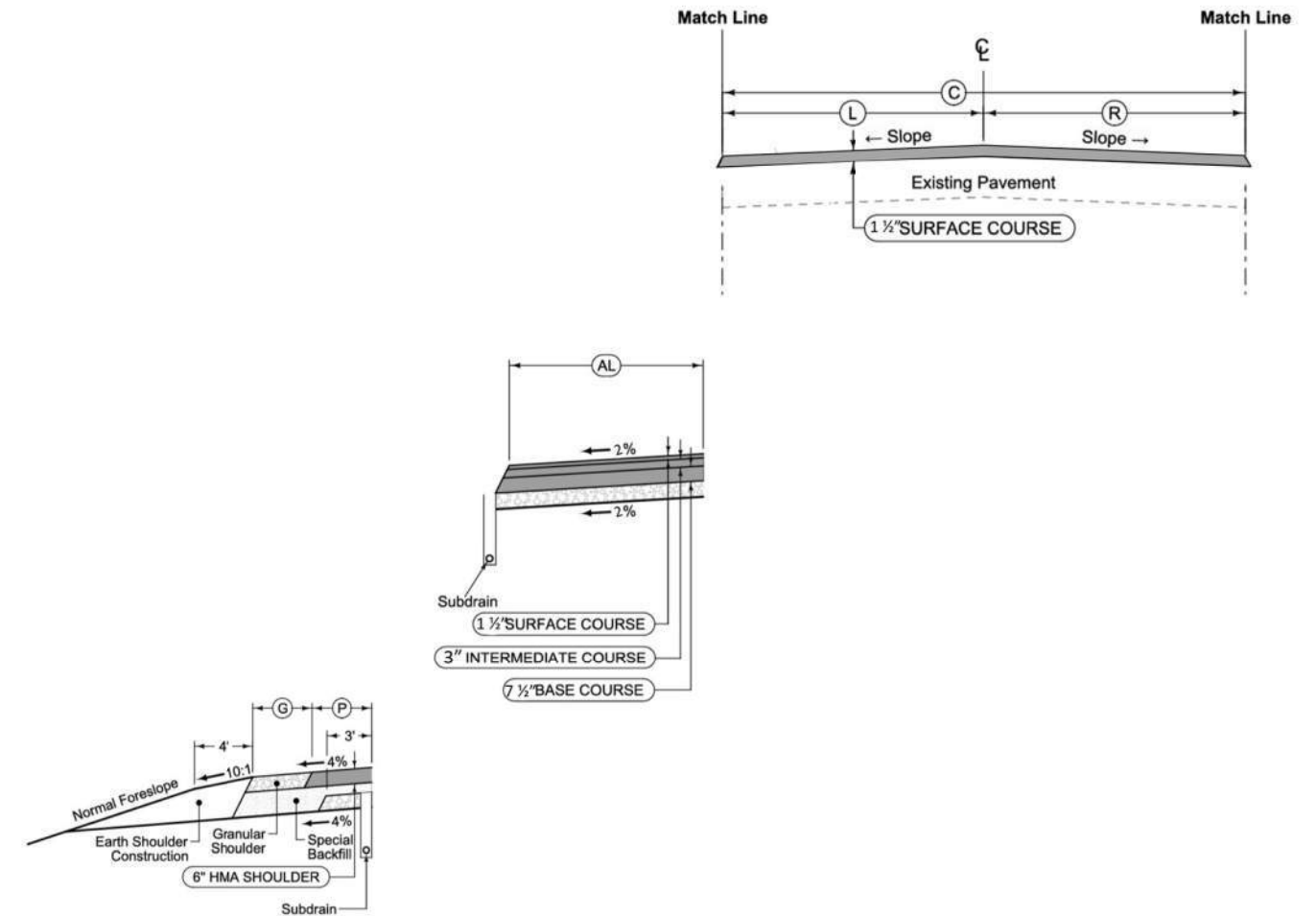
[Appendix D: Environmental Impacts Map](#)

[Appendix E: Stanwood Drainage District](#)

Cross section showing passing lane added to the right



Cross section showing passing lane added to the left



21-16-030-020  
 NHSX-030-8(53)--3H-16

Appendix B – Detailed Cost Estimates

HMA WIDEN AND RESURFACE and HMA Paved Shoulders NEW NHSN-030-8(53)--2R-16 - Alternative A No LTL in Mechanicsville					
Item Number	Item Description	Unit	Quantity	Cost	Line Total
<b>Roadway Items for Widening and Resurfacing Super-2 Improvement Areas</b>					
2102-0425071	SPECIAL BACKFILL	CY	295.68	97.08	\$28,704.61
2102-2625000	EMBANKMENT IN PLACE	CY	24845.52	11.55	\$286,965.76
2115-0100000	MODIFIED SUBBASE	CY	8279.04	50.02	\$414,117.58
2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	2944.21	\$27.98	\$82,379.00
2213-2713300	EXCAVATION, CL 13, WIDEN	CY	11466.84	\$14.16	\$162,370.45
2213-8200000	BASE WIDENING, HMA	TON	28752.57	\$35.88	\$1,031,642.21
2303-1042500	HMA HT INTERMEDIATE, 1/2"	TON	14725.56	\$38.87	\$572,382.52
2303-1043503	HMA HT SURF, 1/2", FRIC L-3	TON	15938.24	\$42.20	\$672,593.73
2303-1258284	ASPH BINDER, PG 58-28H	TON	3564.98	\$685.79	\$2,444,827.63
2502-8212034	SUBDRAIN, LONGITUDINAL, (SHLD) 4"	LF	15000.00	\$6.34	\$95,100.00
2548-0000100	MILLED SHOULDER RUMBLE STRIPS	STA	1004.57	\$17.29	\$17,369.02
2548-0000310	MILLED CENTERLINE RUMBLE STRIPS	STA	502.29	\$17.12	\$8,599.20
	TWO TO FOUR LANE TRANSITION	LS	1.00		\$542,000.00
2533-4980005	MOBILIZATION	%	0.05		\$454,217.98
2528-8445110	TRAFFIC CONTROL	%	0.05		\$454,217.98
	MISC. + CONTINGENCY	%	0.20		\$1,816,871.92
Sub-total for Roadway Items					\$9,084,359.59
	Inflation (4.5% from Date)		7/1/2022		\$1,283,654.09
<b>Total Bid Letting Cost Estimate</b>					<b>\$10,368,013.68</b>

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 NHSX-030-8(53)--3H-16

Appendix B – Detailed Cost Estimates

HMA WIDEN AND RESURFACE and HMA Paved Shoulders NEW NHSN-030-8(53)--2R-16 - Alternative 2 - LTL at Madison and Cherry					
Item Number	Item Description	Unit	Quantity	Cost	Line Total
<b>Roadway Items for Widening and Resurfacing Super-2 Improvement Areas</b>					
2102-0425071	SPECIAL BACKFILL	CY	320.320	95.04	\$30,443.21
2102-2625000	EMBANKMENT IN PLACE	CY	27290.480	11.28	\$307,836.61
2115-0100000	MODIFIED SUBBASE	CY	9092.160	50.03	\$454,880.76
2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	3034.650	\$27.88	\$84,606.04
2213-2713300	EXCAVATION, CL 13, WIDEN	CY	11466.840	\$14.16	\$162,370.45
2213-8200000	BASE WIDENING, HMA	TON	29918.890	\$35.73	\$1,069,001.94
2303-1042500	HMA HT INTERMEDIATE, 1/2"	TON	15274.420	\$38.69	\$590,967.31
2303-1043503	HMA HT SURF, 1/2", FRIC L-3	TON	16647.180	\$41.80	\$695,852.12
2303-1258284	ASPH BINDER, PG 58-28H	TON	3710.430	\$686.24	\$2,546,245.48
2502-8212034	SUBDRAIN, LONGITUDINAL, (SHLD) 4"	LF	15000.000	\$6.34	\$95,100.00
2548-0000100	MILLED SHOULDER RUMBLE STRIPS	STA	1004.570	\$17.29	\$17,369.02
2548-0000310	MILLED CENTERLINE RUMBLE STRIPS	STA	502.290	\$17.12	\$8,599.20
	TWO TO FOUR LANE TRANSITION	LS	1.00		\$542,000.00
2533-4980005	MOBILIZATION	%	0.05		\$471,805.15
2528-8445110	TRAFFIC CONTROL	%	0.05		\$471,805.15
	MISC. + CONTINGENCY	%	0.20		\$1,887,220.62
Sub-total for Roadway Items					\$9,436,103.09
	Inflation (4.5% from Date)		7/1/2022		\$1,333,356.76
<b>Total Bid Letting Cost Estimate</b>					<b>\$10,769,459.86</b>

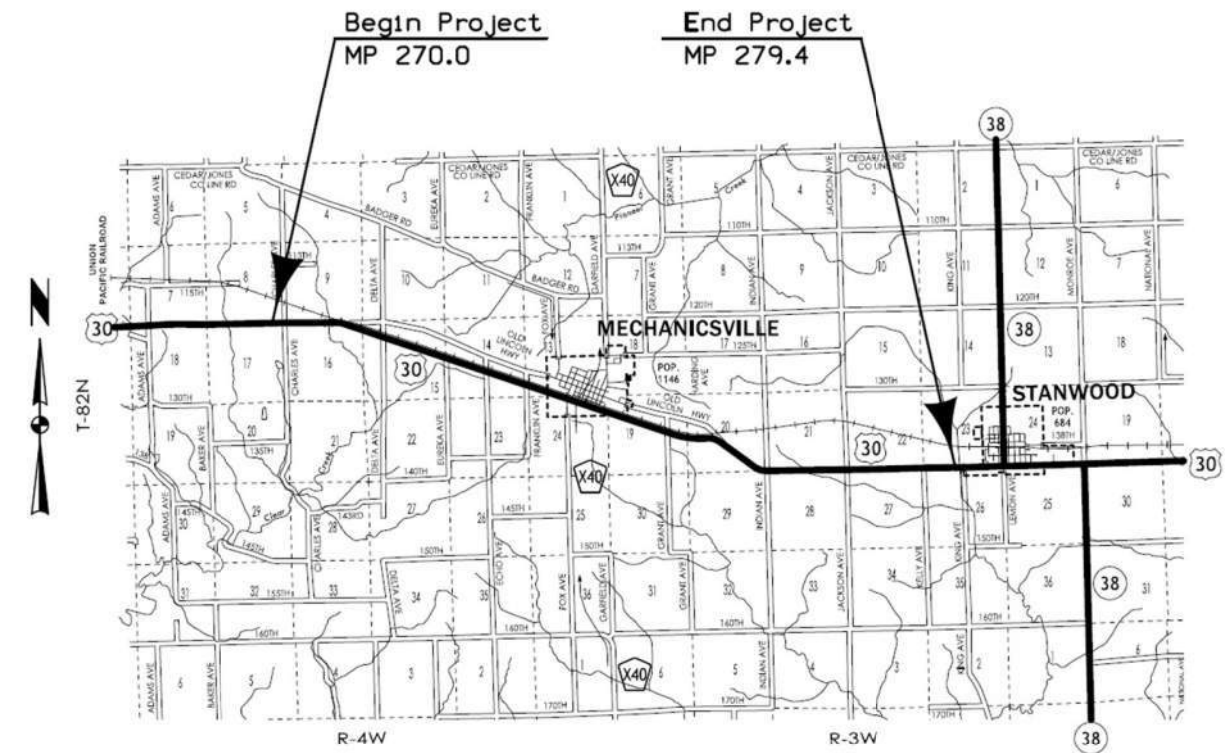
21-16-030-020  
 NHSX-030-8(53)--3H-16

Appendix B – Detailed Cost Estimates

Item Number	Item Description	Unit	Quantity	Cost	Line Total
<b>HMA WIDEN AND RESURFACE and HMA Paved Shoulders NEW NHSN-030-8(53)--2R-16 - Alternative 3 LTL and Alignment Shift in Mechanic</b>					
<b>Roadway Items for Widening and Resurfacing Super-2 Improvement Areas</b>					
2102-0425071	SPECIAL BACKFILL	CY	320.32	95.04	\$30,443.21
2102-2625000	EMBANKMENT IN PLACE	CY	31365.41	10.9	\$341,882.97
2115-0100000	MODIFIED SUBBASE	CY	10447.36	50.03	\$522,681.42
2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	3034.65	\$27.88	\$84,606.04
2213-2713300	EXCAVATION, CL 13, WIDEN	CY	11466.84	\$14.16	\$162,370.45
2213-8200000	BASE WIDENING, HMA	TON	31634.06	\$35.53	\$1,123,958.15
2214-5145160	PAV'T, SCARIFICATION	TON	0.00	\$0.00	\$0.00
2303-1042500	HMA HT INTERMEDIATE, 1/2"	TON	15960.49	\$38.48	\$614,159.66
2303-1043503	HMA HT SURF, 1/2", FRIC L-3	TON	17001.65	\$41.60	\$707,268.64
2303-1258284	ASPH BINDER, PG 58-28H	TON	3875.77	\$686.73	\$2,661,607.53
2502-8212034	SUBDRAIN, LONGITUDINAL, (SHLD) 4"	LF	15000.00	\$6.34	\$95,100.00
2548-0000100	MILLED SHOULDER RUMBLE STRIPS	STA	1004.57	\$17.29	\$17,369.02
2548-0000310	MILLED CENTERLINE RUMBLE STRIPS	STA	502.29	\$17.12	\$8,599.20
	TWO TO FOUR LANE TRANSITION	LS	1.00		\$542,000.00
2533-4980005	MOBILIZATION	%	0.05		\$493,717.59
2528-8445110	TRAFFIC CONTROL	%	0.05		\$493,717.59
	MISC. + CONTINGENCY	%	0.20		\$1,974,870.37
<b>Sub-total for Roadway Items</b>					<b>\$9,874,351.85</b>
	Inflation (4.5% from Date)		7/1/2022		\$1,395,282.96
<b>Total Bid Letting Cost Estimate</b>					<b>\$11,269,634.81</b>

21-16-030-020  
 NHSX-030-8(53)--3H-16

Appendix C – Crash Analysis





Iowa Crash Analysis Tool  
Quick Report  
2017-2021

Crash Severity	39	Injury Status Summary	21
Fatal Crash	0	Fatalities	0
Suspected Serious Injury Crash	1	Suspected serious/incapacitating	1
Suspected Minor Injury Crash	7	Suspected minor/non-incapacitating	8
Possible/Unknown Injury Crash	6	Possible (complaint of pain/injury)	12
Property Damage Only	25	Unknown	0

Property/Vehicles/Occupants		Average Severity	
Property Damage Total (dollars):	296,800.00	Fatalities/Fatal Crash:	0.00
Average (per crash dollars):	7,610.26	Fatalities/Crash:	0.00
Total Vehicles:	63.00	Injuries/Crash:	0.54
Average (per crash):	1.62	Major Injuries/Crash:	0.03
Total Occupants:	79.00	Minor Injuries/Crash:	0.21
Average (per crash):	2.03	Possible/Unknown Injuries/Crash:	0.31



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Iowa Crash Analysis Tool  
Quick Report  
2017-2021

Major Cause	39
Animal	10
Ran stop sign	0
FTYROW: At uncontrolled intersection	0
FTYROW: From stop sign	1
FTYROW: Making left turn	2
FTYROW: From parked position	0
FTYROW: Other	0
Disregarded RR Signal	0
Crossed median (divided)	0
Aggressive driving/road rage	0
Exceeded authorized speed	1
Operating vehicle in an reckless, erratic, ca...	0
Passing: On wrong side	0
Passing: With insufficient distance/inadequa...	0
Passing: Other passing	0
Driver Distraction: Manual operation of an e...	0
Driver Distraction: Talking on a hands free ...	0
Driver Distraction: Other electronic device ...	0
Driver Distraction: Unrestrained animal	0
Driver Distraction: Inattentive/lost in thou...	1
Driver Distraction: Exterior distraction	1
Ran off road - straight	0
Lost control	2
Over correcting/over steering	0
Failure to signal intentions	0
Vehicle stopped on railroad tracks	0
Other: Improper operation	0
Other: Disregarded signs/road markings	0
Downhill runaway	0
Towing improperly	0
Equipment failure	0
Other: Getting off/out of vehicle	0
Improper backing	0
Illegally parked/unattended	0
Operator inexperience	0
Unknown	0
Other: No improper action	0
Ran traffic signal	0
Failed to yield to emergency vehicle	1
FTYROW: Making right turn on red signal	0
FTYROW: From yield sign	0
FTYROW: From driveway	0
FTYROW: To pedestrian	0
Drove around RR grade crossing gates	0
Crossed centerline (undivided)	0
Traveling wrong way or on wrong side of road	0
Driving too fast for conditions	6
Improper or erratic lane changing	0
Followed too close	3
Passing: Where prohibited by signs/markings	0
Passing: Through/around barrier	0
Made improper turn	1
Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Passenger	0
Driver Distraction: Reaching for object(s)/f...	1
Driver Distraction: Other interior distracti...	3
Ran off road - right	2
Ran off road - left	1
Swerving/Evasive Action	0
Failed to keep in proper lane	0
Traveling on prohibited traffic way	0
Other: Vision obstructed	0
Other: Disregarded warning sign	0
Other: Illegal off-road driving	0
Separation of units	0
Cargo/equipment loss or shift	1
Oversized load/vehicle	0
Failure to dim lights/have lights on	0
Improper starting	0
Driving less than the posted speed limit	0
Other	2
Not reported	0

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Iowa Crash Analysis Tool  
Quick Report  
2017-2021

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Monday	1	0	1	1	1	0	3	0	1	0	1	1	0	10
Tuesday	0	1	2	0	0	0	0	1	4	0	1	0	0	9
Wednesday	0	0	0	0	0	1	0	3	1	3	0	0	0	8
Thursday	0	0	0	0	1	0	0	2	0	2	0	1	0	6
Friday	0	0	0	1	0	0	0	2	0	0	0	0	0	3
Saturday	0	0	0	0	1	0	0	0	0	0	1	0	0	2
<b>Total</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>8</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>39</b>

Manner of Crash Collision	39	Surface Conditions	39
Non-collision (single vehicle)	13	Dry	24
Head-on (front to front)	3	Wet	1
Rear-end (front to rear)	9	Ice/frost	3
Angle, oncoming left turn	2	Snow	1
Broadside (front to side)	1	Slush	1
Sideswipe, same direction	1	Mud, dirt	0
Sideswipe, opposite direction	4	Water (standing or moving)	0
Rear to rear	0	Sand	0
Rear to side	0	Oil	0
Not reported	5	Gravel	0
Other	1	Not reported	9
Unknown	0	Other	0
		Unknown	0

Fixed Object Struck	63
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	8
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0

08/10/2022

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Iowa Crash Analysis Tool  
Quick Report  
2017-2021

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	1	0	0	1
= 15	1	0	0	0	1
= 16	1	0	0	0	1
= 17	0	2	0	0	2
= 18	1	2	0	0	3
= 19	1	0	0	0	1
= 20	1	3	0	0	4
>= 21 and <= 24	1	2	0	0	3
>= 25 and <= 29	0	4	0	0	4
>= 30 and <= 34	3	1	0	0	4
>= 35 and <= 39	0	2	0	0	2
>= 40 and <= 44	2	5	0	0	7
>= 45 and <= 49	1	5	0	0	6
>= 50 and <= 54	2	4	0	0	6
>= 55 and <= 59	2	4	0	0	6
>= 60 and <= 64	1	3	0	0	4
>= 65 and <= 69	1	3	0	0	4
>= 70 and <= 74	2	0	0	0	2
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	2	0	0	0	2
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	<b>22</b>	<b>41</b>	<b>0</b>	<b>0</b>	<b>63</b>

Drug/Alcohol Related	39
Drug	1
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	38

Alcohol Test Given	63
None	61
Blood	0
Urine	2
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	63
None	61
Blood	1
Urine	1
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Result	0
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	0
Other	0

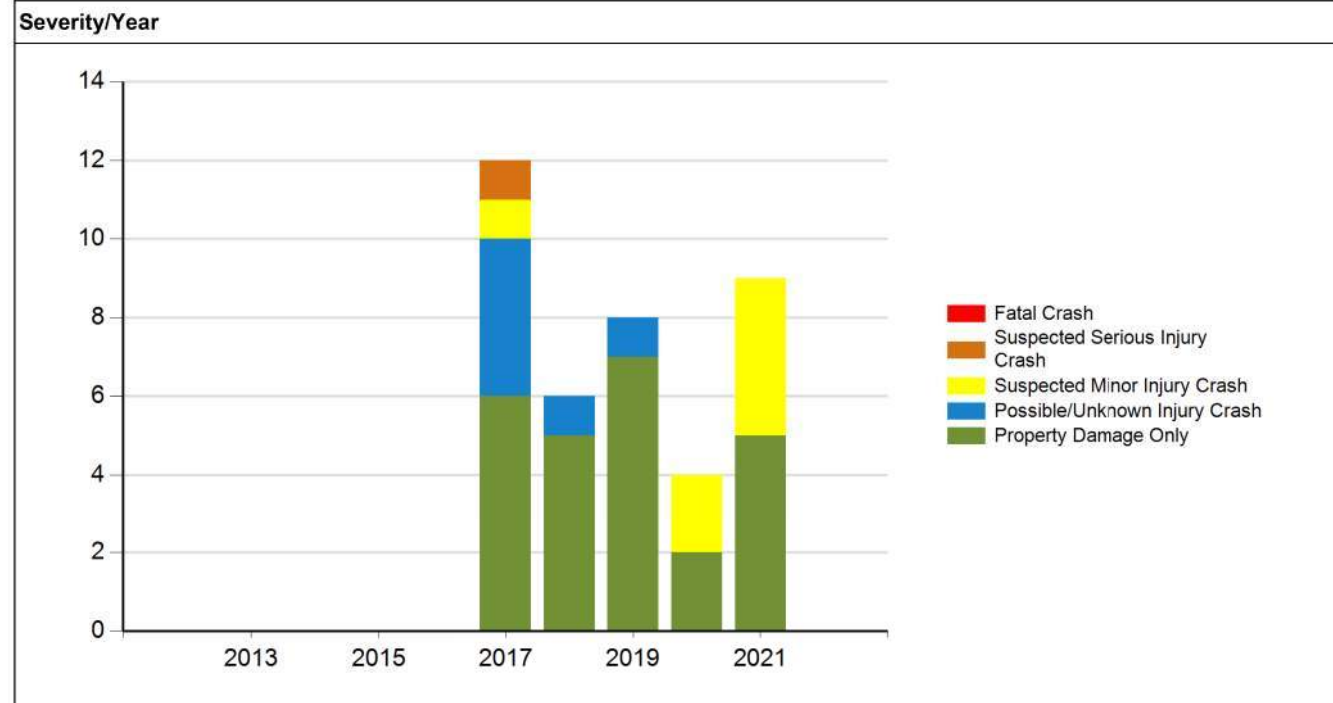
08/10/2022

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Iowa Crash Analysis Tool  
Quick Report  
2017-2021

Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2012	0	0	0	0	0	0
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	1	1	4	6	12
2018	0	0	0	1	5	6
2019	0	0	0	1	7	8
2020	0	0	2	0	2	4
2021	0	0	4	0	5	9
2022	0	0	0	0	0	0
<b>Total</b>	0	1	7	6	25	39



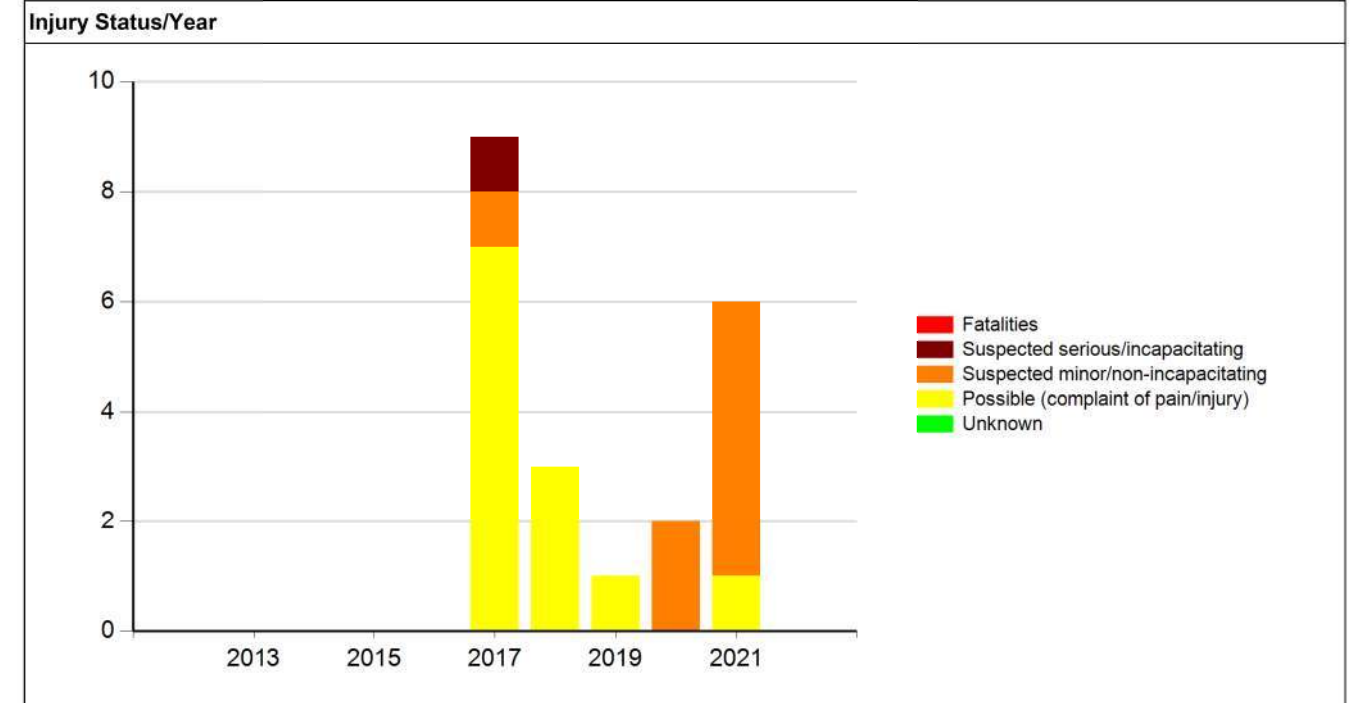
08/10/2022

5 of 7



Iowa Crash Analysis Tool  
Quick Report  
2017-2021

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2012	0	0	0	0	0	0
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	1	1	7	0	9
2018	0	0	0	3	0	3
2019	0	0	0	1	0	1
2020	0	0	2	0	0	2
2021	0	0	5	1	0	6
2022	0	0	0	0	0	0
<b>Total</b>	0	1	8	12	0	21



08/10/2022

6 of 7



Meeting the following criteria

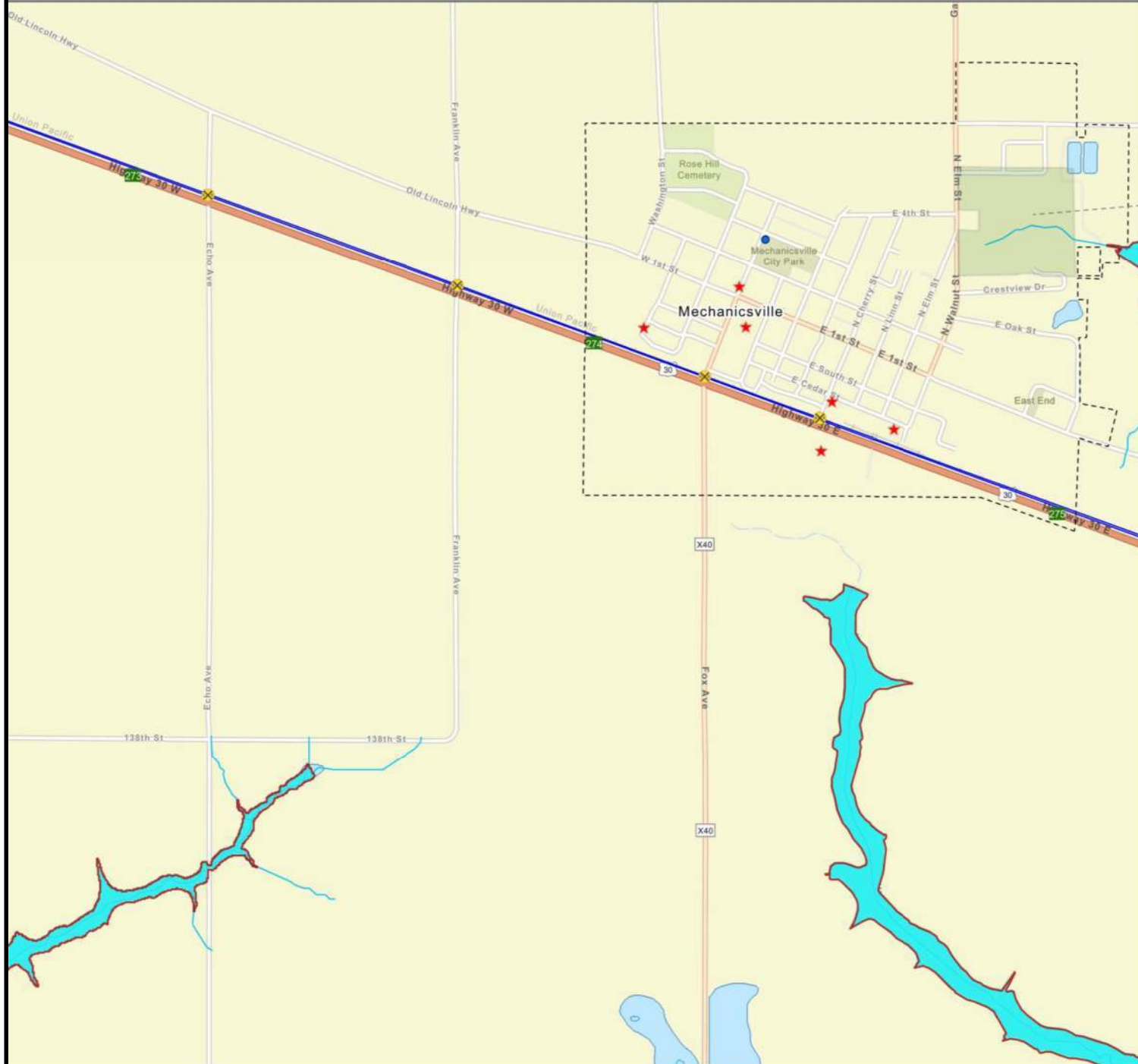
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Year: 2017, 2018, 2019, 2020, 2021  
Map Selection: Yes  
Filter: None

Analyst Information



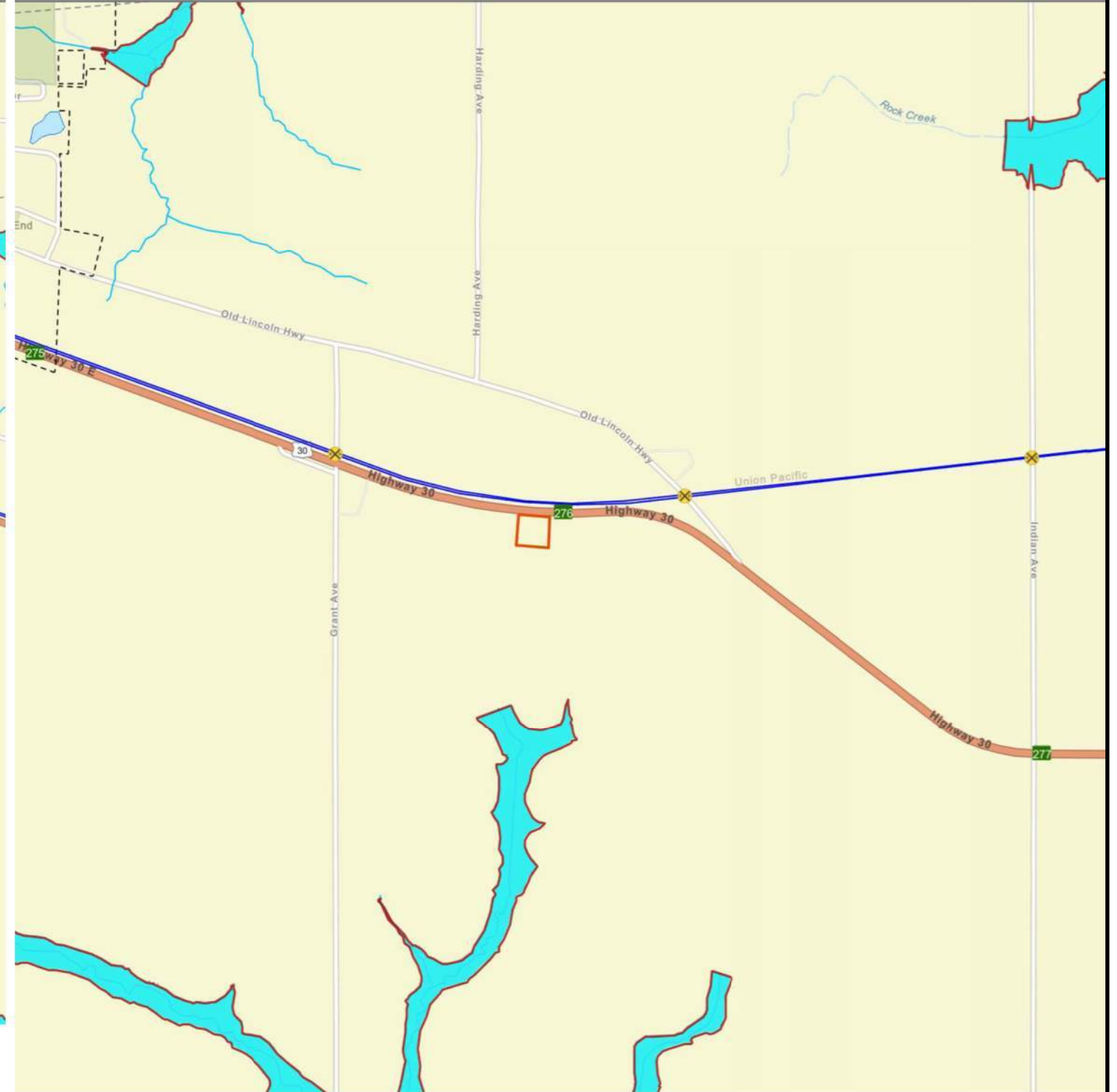
21-16-030-020  
NHSX-030-8(54)--3H-16

Appendix D – Impacts Map

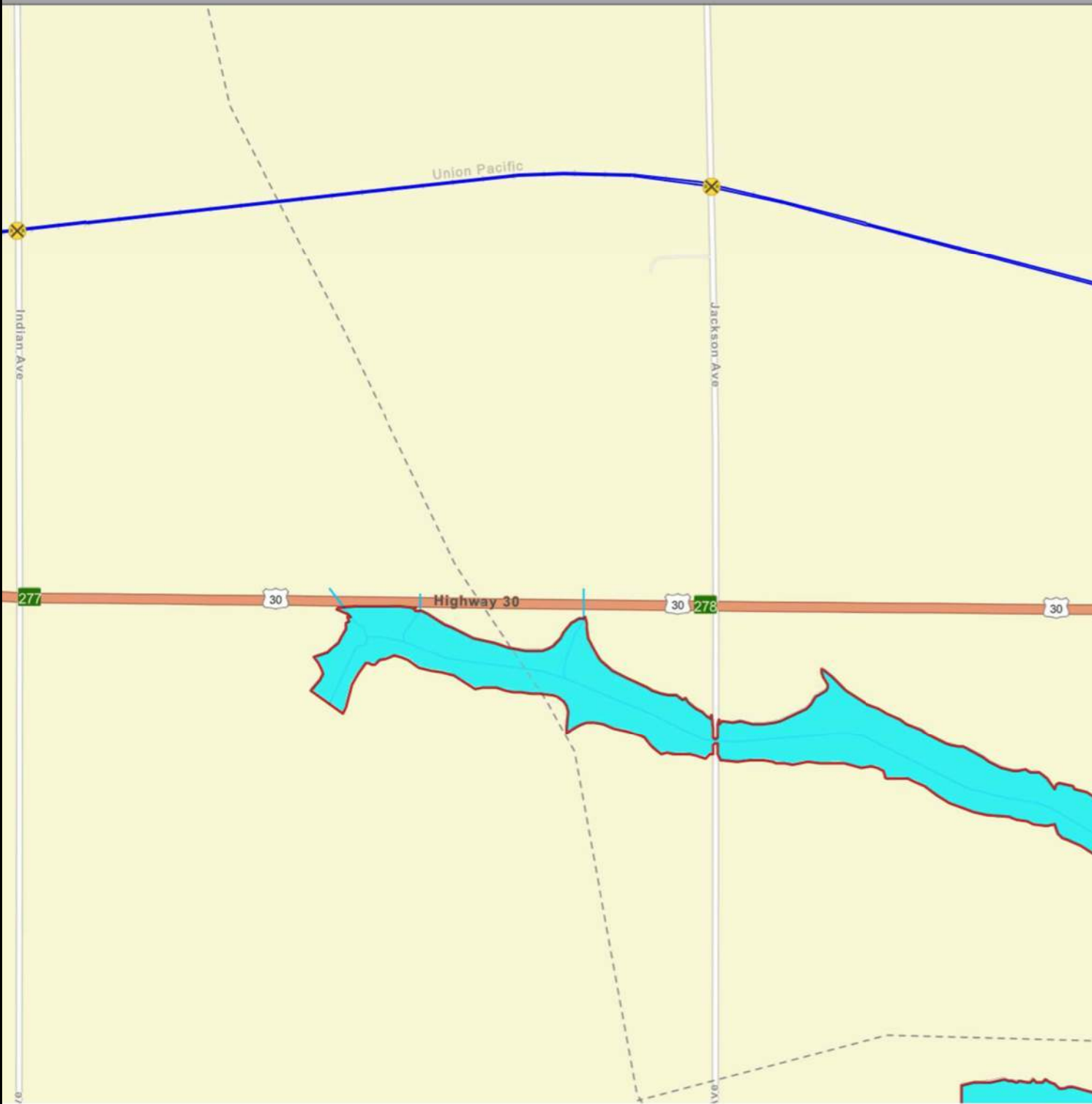


21-16-030-020  
NHSX-030-8(54)--3H-16

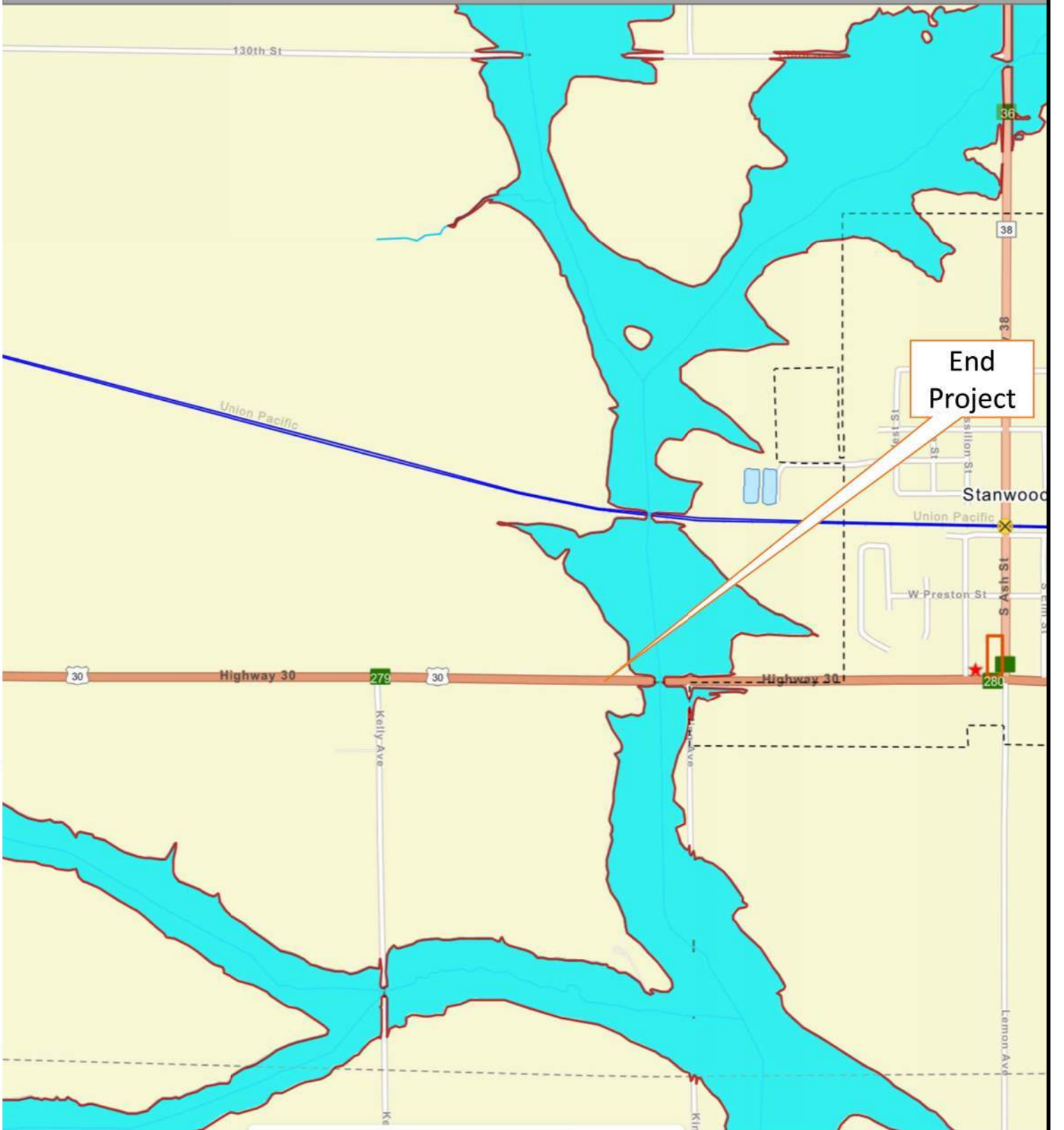
Appendix D – Impacts Map



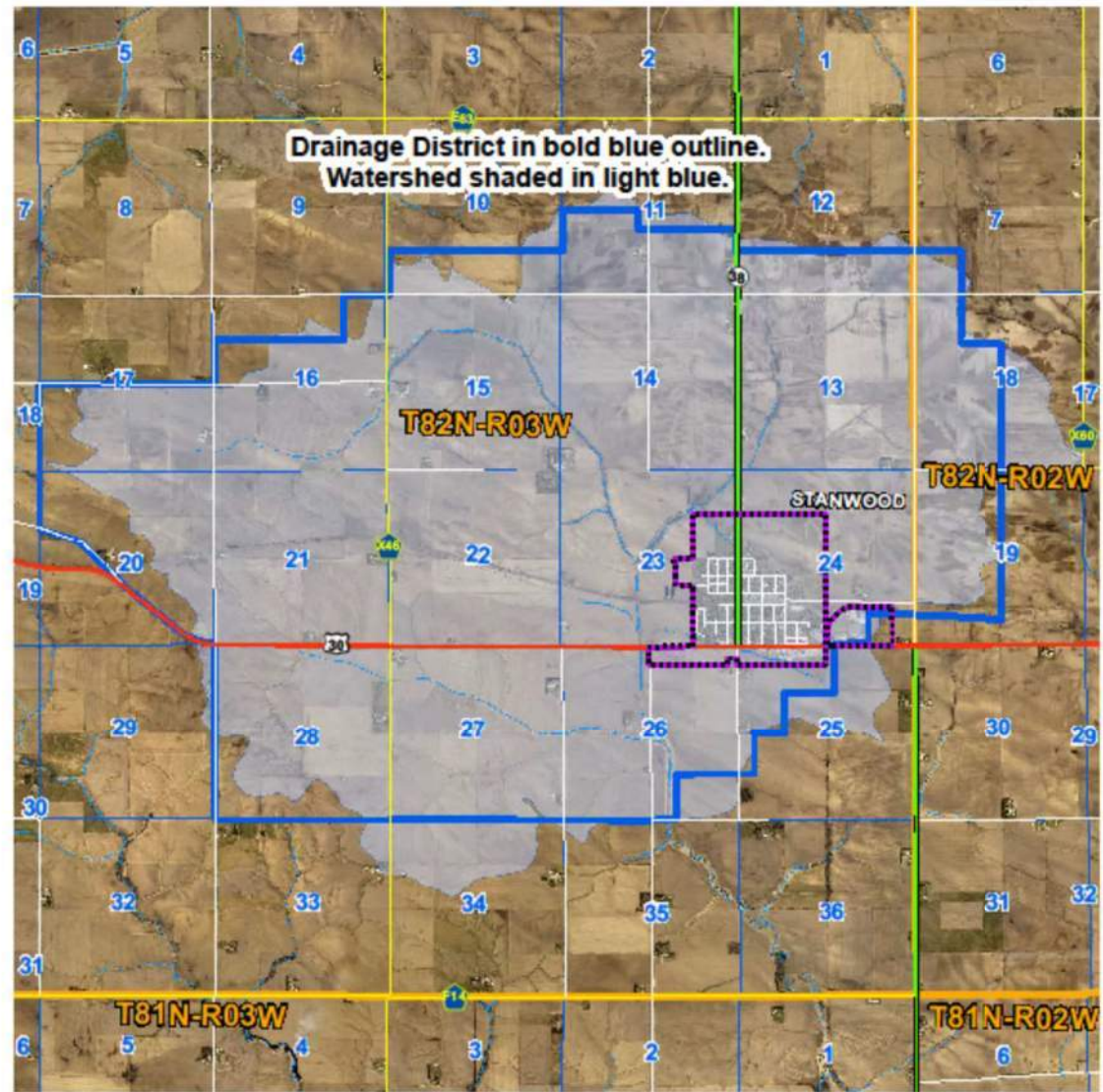
Appendix D – Impacts Map



Appendix D – Impacts Map



### Stanwood Drainage District



0 0.25 0.5 1 1.5 2 Miles

Page: 13



<b>Roadway</b>	US 30		
<b>PIN Number</b>	21-16-030-020	<b>Submittal Date</b>	12/14/23
<b>Project Number</b>	NHSX-030-8(53)--3H-16		<b>Approval Date</b>
<b>District</b>	District 6	<b>Assistant District Engineer</b>	Jesse Tibodeau
<b>County</b>	CEDAR	or	
<b>Route</b>	US 30	<b>Office Director</b>	
<b>Location</b>	W of Charles Ave E of Lisbon to WCL Stanwood		
<b>Work Type</b>	Super Two (Passing Lanes) and HMA Shoulder Construction		
<b>Segment Manager</b>	Jason Holst		
<b>Designer</b>	Jonathan Bahr		

[Design Manual Section 1C-1](#)  
[Last Updated: 04-29-19](#)

### Rural Two-Lane Highways (Rural Arterials)

Design Element	Preferred	Acceptable	Project Values
Design speed (mph)	60	50	55
Maximum superelevation rate (Refer to Section <a href="#">2A-2</a> )	6%	8%	8
Design lane width (ft)	12	12	12
Full depth paved width (ft)	12	12	12
Right turn lane (ft)	12	10	12
Passing Lane (ft)	12	12	12
Left turn lane (ft)	12	10	12' Reg. & 14' TWLTL
Pavement cross-slope (on tangent sections)	Through lanes	1.5% minimum, 2% maximum	2
	Auxiliary and turn lanes	3% maximum	3
	Crown break at centerline	4% maximum	4
Shoulder cross-slope (on tangent sections)	4%	Shoulder cross-slope cannot be less than the adjacent lane, 6% max for paved or granular shoulders, 8% max for earth shoulders	4%
Curb type (Refer to Section <a href="#">3C-2</a> )	Design speed = 50 or 55 mph	6-inch sloped	4-in slope (45mph)
	Design speed ≥ 60 mph	4-inch sloped	N/A
Foreslope (For fill areas greater than 40 ft, contact the Soils Design Section for assistance)	Adjacent to shoulder	10:1 for 4' then 6:1	4:1
	Beyond standard ditch depth and design clear zone	3.5:1	3:1
	Curbed roadways	2%	4:1
Backslope (For cut areas greater than 25 feet, contact the Soils Design Section for assistance with backslope benches.)	3:1	2.5:1	3:1
Transverse Slopes	w/ drainage structures	8:1	6:1
	w/o drainage structures	10:1	6:1
Ditches (Refer to Section <a href="#">3G-1</a> )	Outside ditch (depth x width) (ft)	5 x 10	5 x 10
Bridge width—new*	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths	N/A
	Bridge length > 200 ft	design lane widths + effective shoulder widths	design lane width + 4' right and left of the design lane widths
Bridge width—existing*		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft. offset left and right
Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)	Over primary	16.5	16
	Over non-primary	16.5 at interchange locations, 15 at all other locations	14
	Over railroad	23.3	23.3
	Sign trusses and pedestrian bridges	17.5	17
Structural Capacity	Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	N/A
Level of Service	B	B	B

\*FHWA notification via email is required if acceptable criteria is not met on the NHS system (No formal design exception is required)

**Design year ADT = 7,200 (YEAR 2044)**

[Design Manual Section 1C-1](#)  
[Last Updated: 04-29-19](#)

**Effective Shoulder Width and Type for Two-Lane Highways**

	Preferred (values shown in feet)			Acceptable (values shown in feet)		Project Values
	Rural Roadways	Urban Roadways		Rural Roadways	Urban Roadways	
Turn lanes with shoulders	6	6	Turn lanes with shoulders	6	0	2' & 6' (note 1)
Turn lanes with curbs	6	See Section <a href="#">3C-2</a>	Turn lanes with curbs	6	0	N/A
	Effective Shoulder Width	Paved Width		Effective Shoulder Width	Paved Width	
Passing Lanes	6	4	Passing Lanes	4	0	8' paved
Two-Lane Highways	Effective Shoulder Width	Paved Width	Two-Lane Highways	Effective Shoulder Width	Paved Width	
Routes where bicycles are to be accommodated	10	10	Design year ADT > 2000 vpd	8	0*	8' paved
On roadways approaching urban areas (due to increased bike traffic)	10	10				
On all curves with a superelevation rate of 7.0% or greater	10	10				
On roadways with design year ADT > 5000	10	6	Design year ADT between 400 - 2000 vpd	6	0*	
On all other NHS	10	6				
On non-NHS routes with design year ADT > 3000	10	6	Design year ADT < 400 vpd	4	0*	
On non-NHS routes with design year ADT < 3000	8	0*				

\*Requires safety edge-Refer to Section [3C-6](#)

Curbs should be located beyond the outer edge of the effective shoulder width in rural areas

Refer to Section [3C-2](#) for curb offsets in urban areas

Notes:

Note 1: Parallel Right Turn Lanes will have 2' wide granular shoulders (approved by Methods). Offset Right Turn Lanes will have 6' wide granular shoulders.




<b>Roadway</b>	US 30		
<b>PIN Number</b>	21-16-030-020	<b>Submittal Date</b>	
<b>Project Number</b>	NHSX-030-8(53)--3H-16	<b>Approval Date</b>	
<b>District</b>	District 6	<b>Assistant District Engineer</b>	Jesse Tibodeau
<b>County</b>	CEDAR	<b>or</b>	
<b>Route</b>	US 30	<b>Office Director</b>	
<b>Location</b>	W of Charles Ave E of Lisbon to WCL Stanwood		
<b>Work Type</b>	Super Two (Passing Lanes) and HMA Shoulder Construction		
<b>Segment Manager</b>	Jason Holst		
<b>Designer</b>	Jonathan Bahr		
<a href="#">Design Manual Section 6C-2</a> <a href="#">Section 6C-2 Last Updated 7/27/2021</a>			
<b>Super Two - Passing Lanes (Rural)</b>			
<b>Design Element</b>	<b>Preferred</b>	<b>Acceptable</b>	<b>Notes</b>
Passing Lane Spacing (miles)	4 to 5	4 to 5 +/- 0.5 per location specific constraints	Westbound Passing Lanes (west of Mechanicsville and west of Stanwood) are separated by 4.29 miles. Eastbound Passing Lane is east of Mechanicsville.
Taper Rates	Lane Add	15:1	15:1
	Lane Drop (Refer to Design Manual Section 6C-1)	60:1 (60 mph design speed)	50:1 (50 mph design speed)
Design lane width (ft)	12	11	12'
Shoulder Width (ft) (paved or combination paved/granular)	6	4	8' paved
Passing Lane Length (Miles)	AADT / VPD		ADT > 5000
	1000 / 100	0.50	WB Passing Lane West of Mechanicsville 1.24 miles (MP 272.81 to 274.05).
	2000 / 200	0.50-0.60	EB Passing Lane East of Mechanicsville 0.87 miles (MP 274.73 to 275.60)***.
	3000 / 300	0.60-0.80	WB Passing Lane West of Stanwood 1.00 miles (MP 278.34 to 279.34).
	4000 / 400	0.80-1.50	***Constraints (Mechanicsville to the west and Superelevated Curves to the east) limit the length of the EB Passing Lane. Reviewed with Methods.***
5000 / 500 or greater	1.00-1.75		
Passing Lane Configuration (Refer to Design Manual Section 6C-2 Figure 1)	B or C	A, D, E, F, G, or H	B
Passing Lane Locations	Locations will avoid the following when possible: - areas of reduced speed adjacent to local communities - areas with six or more accesses per mile - bridges & large drainage structures - paved local side roads - horizontal curves with posted advisory speeds - horizontal/vertical curves with limited sight distance - known environmentally sensitive areas - within one mile of interchange ramps		Passing lane locations were reviewed with respect to the special areas listed.
*FHWA notification via email is required if acceptable criteria is not met on the NHS system (No formal design exception is required)			

**Kickoff Questions for District 6:**

Date 2/27/2023

Times: 9:00 am to 11:00 am

Location: Microsoft Teams

**Attendees:**

Jonathan Bahr (Ames Road Design)  
Kari Jackson (Ames Road Design)  
Jason Holst (Ames Road Design)  
Hunter Finch (Ames Road Design)  
Jesse Tibodeau (District 6, Assistant District Engineer)  
Mark Harle (District 6, Staff Engineer)

**D2 Meeting:**

Date 10/24/2023

Times: 2:00pm to 4:45pm

Location: Microsoft Teams

**Attendees:**

Jonathan Bahr (Ames Road Design)  
Kari Jackson (Ames Road Design)  
Jason Holst (Ames Road Design)  
Hunter Finch (Ames Road Design)  
Jesse Tibodeau (District 6, Assistant District Engineer)  
Mark Harle (District 6, Staff Engineer)  
Alexander Stanley (District 6, Engineering Technician)  
Steven Flockhart (District 6, Engineering Technician)  
David Coon (District 6, Public Service Manager)  
Robert Cornelis (Bridges Preliminary Design)  
Jimmy Ellis (Bridges Preliminary Design)  
Tom Lovan (Bridges Preliminary Design)  
Sarah Cook (Right-of-Way, Utilities)  
Nicole Cuva (Right-of-Way, Design)  
Tami Quam (Railroad Bureau)  
Mark Sloppy (Location and Environment Bureau)  
Danny Zeimen (Construction and Materials Bureau, Pavement Design)  
William Kreinbring (Highway Maintenance Supervisor, Tipton Garage)

**1. PROJECT LIMITS**

- a. Beginning of Project is at MP 270.16 (the east limits of the 4-Lane Divided Highway completion point). Please verify.
  - i. 2023-02-27 Kickoff Meeting: Beginning of Project location has been verified: MP 270.16 (the east limits of the 4-Lane Divided Highway completion point). Also, the demolition of the existing 4-Lane to 2-Lane transition and construction of new 4-Lane to 2-Lane transition further to the east was confirmed.
  - ii. 2023-11-08 Field Meeting Notes: The team decided that there should be some pavement removal at the existing WB stub so that the project wouldn't start at with 2 existing 6' +/- long panels. The team measured that a sawcut will be done 21.5 feet east of the east edge of the existing paved shoulder.
    - 1. 2023-12-01 Road Design Note: The Beginning of Project at the existing WB Stub has been revised in Connect and now starts at 961+66.5.
  - iii. 2023-11-08 Field Meeting Notes: The team decided that there should be granular shoulder placed along both sides of the existing pavement west of the WB Stub (961+66.5) at the beginning of the project (currently it is just grass outside of the pavement). Adding pavement markings to the existing pavement west of the WB Stub at the beginning of the project are also needed.
  - iv. 2023-12-13 Road Design Note: The beginning of the (51) resurfacing project shall be east of the east limits of the new four-lane to two-lane transition being built as part of NHSX-030-8(53)--3H-16 (STA 2976+63.47 = 98+44.66, MP 270.44) because of design constraints between the (51) and (53) projects and because of the complexities involved with the development of the profile of the new four-lane to two-lane transition. During project (53) a Mill and Fill operation (zero roadway profile elevation adjustment) will need to be done between the beginning of the existing asphalt pavement (STA 89+85, MP 270.28) and the beginning of project (51) because the roadway width between MP 270.28 and 270.41 consists of a continuously tapering section of relatively new full-depth PCC adjacent to existing asphalt pavement (the relatively new full-depth PCC will not be resurfaced). Runouts and Notches associated with (51) and (53) will be considered and coordinated as the design progresses.
- b. End of Project: Options
  - i. MP 279.40 (the west limits of the existing 200' long x 3' Wide 'Shoulder Strengthening' installed for Bridge FHWA 18261 (1679.5S030, MP 279.45).
  - ii. MP 279.50 (PI of US 30/King Avenue; the west Corporate Limits of the City of Stanwood).
  - iii. 2023-02-27 Kickoff Meeting: The intent for the End of Project is MP 279.40, STA 572+18 (the west limits of the existing 200' long x 3' Wide 'Shoulder Strengthening' installed for Bridge FHWA 18261 (1679.5S030, MP 279.45). Road Design will need to coordinate the (53) project with the (51) project. Mark Harle (District 6) said he was currently scheduled to be doing the design for (51), but the District's design work wouldn't start until 2024, so coordination could be tricky. Mark Harle, Jesse Thibodeau, Jason Holst, and Jonathan Bahr agreed that the Ames Road Design Team will design both the (51) and (53) projects to improve the coordination.

## 2. PAVEMENT DESIGN

- a. The 'Project Data' Section on Page 3 of the Project Concept suggests that the Design Year is 2054. Please confirm that the Design Life for the Pavement is 30 years (2024 Program Year to 2054 Design Year). Design Life of Pavement is typically 20 years.
  - i. 2023-02-27 Kickoff Meeting: Mark Harle confirmed that 2044 should be the Design Year (2054 was a typo). 20 Year Design Life should be used. Mark Harle has revised the Project Concept accordingly.
- b. The 'RECOMMENDATIONS' Section on Page 3 of the Project Concept includes the following text: "A 1.5" HMA surface lift will be added to through lanes in the areas where pavement is being widened to provide a uniform pavement surface. This final surface lift is being deferred from the resurfacing project to the widening project to allow it to be placed continuous with the new turn-lanes." The 'Resurfacing Project' (NHSX-030-8(51)--3H-16 – 2025 – HMA Resurfacing with Cold in Place Recycling, ProjectWise: 1603001021) is mentioned on Pages 8 and 17 of this Project Concept. (51) consists of 4.5" HMA Resurfacing (2 x 1.5" Intermediate + 1.5" Surface) over 4" Cold in Place Recycling. From the 'RECOMMENDATIONS' paragraph transcribed above, the Typical on Pages 22 and 23, and the Cost Estimate on Page 24 of this Project Concept it seems that the intent is for (53) to include the cost of the 1.5" Surface Course over the through lanes, auxiliary lanes (passing and turn lanes), and paved shoulders only when the auxiliary lanes are being added. This would mean that the (51) project would NOT include the cost of 1.5" Surface Course over the through lanes adjacent to where (53) proposes auxiliary lanes. Please confirm that this was the intent.
  - i. 2023-02-27 Kickoff Meeting: Road Design Team correctly interpreted the staging intent of HMA Surface Course placement between (51) and (53).
- c. According to the Traffic Forecast 3525a.xlsx file's PD tab) the Project Data section at the top of Page 2 of the Project Concept should be as follows, please confirm:
  - i. Program Year should be 2024 with 5,432 ADT and 14% Trucks
  - ii. Design Year should be 2044 with 6,659 ADT and 15% Trucks
  - iii. 2023-02-28 Kickoff Meeting Follow-Up: Mark Harle response: "I kept the traffic numbers the same. Those are the volumes for the first four segments. When we requested the traffic projections, we envisioned a project from W of Charles Ave to the ECL of Clarence. Since we ended up breaking this into smaller projects, I calculated the weighted AADT (sum of AADT x segment length/total length) for just the segment in this PIN. For the program year this ends up as 5881.06 and design year 7206.27. I rounded those numbers for use in the concept."
- d. Road Design will be working with Danny Zeimen in Materials to determine the appropriate Pavement Specifications.
- e. 2023-10-24 D2 Field Exam Meeting: D2 Team discussed the (51) and (53) Typical Sections with Pavement Design (Danny Zeimen). Discussed the Pros and Cons of the Cold-In-Place Recycling Option and the Rubblization Option. A Cost Comparison between the two Options will be issued by Road Design after the meeting. The Team discussed constructability alternatives for the Rubblization option, but will discuss particulars during separate conversations. Danny Zeimen mentioned that DCP Testing would be needed in order to decide if Rubblization was an option. Danny did not think that the DCP cores have been taken yet.
  - i. Pros of CIR
    1. More cost effective than Rubblization.
    2. No detour.

3. Raising roadway 4.5" actually helps at the railroad crossings within Mechanicsville, which currently have noticeable slopes.
- ii. Cons of CIR
  1. Roadway is in very poor shape and CIR no longer appears to be a sufficient repair. In fact the Stanwood to Clarence segment currently being concepted is investigating between Rubblization and Reconstruction. FYI, Lisbon to Clarence was originally 'Concepted' in 2019 as an ordinary 3R Resurfacing Project, but it was delayed until now because of the Super Two study.
  2. The pavement section raises the roadway profile 4.5" which impacts need lines and ROW.
- iii. Pros of Rubblization
  1. More effective repair of US 30.
- iv. Cons of Rubblization
  1. Extra Cost
  2. Constructability / PCC Profiles (Chris Brakke sounded concerned that the 3' x 10" PCC Outside Widening Units would break up effectively)
  3. Detour (no room for detour pavement, so we have to use gravel roads as detour).
  4. Time
- f. 2023-10-31 Road Design Note: A Cost Comparison between the CIR Option (combining NHSX-030-8(51)--3H-16 and NHSX-030-8(53)--3H-16) and the Rubblization Option for US 30 Super-2 from Lisbon to Stanwood was generated by Road Design and issued to District 6. District 6 opted to keep the CIR Option for (51/53) as Concepted.
  - i. CIR Option (NHSX-030-8(51)--3H-16 / NHSX-030-8(53)--3H-16)
    1. NHSX-030-8(51)--3H-16 = \$7,242,593.04
    2. NHSX-030-8(53)--3H-16 = \$8,453,299.39
    3. (51) + (53) = \$15,695,892.43
  - ii. Rubblization Option
    1. \$20,054,725.59
  - iii. Difference in cost = \$4,358,833.16

## 3. PASSING LANES

- a. Page 3 of the 9/20/2022 Project Concept indicates three passing lanes will be built in the following locations: (EB MP 273.0 – MP 274.0, WB MP 274.6 to MP 275.6, and EB MP 278.4 to MP 279.4). The Passing Lane Tech Memo linked on Page 7 of the 9/20/2022 Concept gives slightly different MPs and a different direction for the first passing lane (WB 273.2-274.1), shows EB passing lane from 274.6-275.6, and shows a WB passing lane from 278.4 to MP 279.4. Please confirm locations of the Passing Lanes and the locations of widening construction (ie. the widening construction can be done on the opposite side of the road from where the eventual passing lane occurs, for an example see the Preliminary Passing Lane Configurations of Alternative 1 in the Passing Lane Tech Memo).
  - i. 2023-02-27 Kickoff Meeting: Project Concept has been fixed (See PROJECT CONCEPT Section) and revised to 1/27/2023. Mark Harle instructed Road Design to go with the directions AND the Mileposts provided in the Technical Memo (specifically for the Passing Lane west of Mechanicsville. FYI, the east end of the

Passing Lane west of Mechanicsville may need to be coordinated with the EB Left Turn Lane being constructed for Eastbound Access to Madison Street in Mechanicsville (see TURN LANE CONSIDERATIONS Section).

- ii. 2023-03-31 Road Design Team Meeting: Reviewed the Location of the Tapers at the Beginning and End of each Passing Lane. See the respective Section for each individual passing lane for more information.
- b. Do the Milepost Limits include the Tapers for the Passing Lanes or do they just include the full width of the Passing Lanes? FYI, MP 279.40 coincides with what appears to be 3' Paved Shoulders installed as 200' long 'Shoulder Strengthening' for Bridge FHWA 18261 (Maint 1679.5S030) at MP 279.45. The Passing Lane Tech Memo linked on Page 6 of the Concept appears to include the tapers within the MP ranges (as shown in the Alternative 1 Preliminary Plans found within the Memo).
  - i. 2023-02-27 Kickoff Meeting: The Milepost Limits include the Taper per the HR Green Technical Memo.
  - ii. 2023-03-31 Road Design Team Meeting: According to the Design Manual Section for Super Two's the tapers of Passing Lanes do NOT count towards the Passing Lane Length. The locations of the tapers for each of the three passing lanes were reviewed and are discussed above.
- c. Should the Tapers for the Passing Lanes consist of 60:1 TAPERS as recommended in the HR Green Technical Memorandum instead of REVERSE CURVES specified in the Design Manual (Section 6C-1, Adding, Dropping, or Redirecting Through Lanes)?
  - i. 2023-02-27 Kickoff Meeting: The Kickoff Team determined that the 60:1 TAPERS would be utilized per the HR Green Recommendation because of the space available. FYI, Tapers at the beginning of a Passing Lane don't need to be as long as tapers at the End of the Passing Lane (beginning and end are with respect to the respective direction of traffic) because the merge distance at the End of the Passing Lane needs to be more generous.
  - ii. 2023-03-31 Road Design Team Meeting: According Jason Holst it's easier to construct straight line tapers on existing pavement rather than curves. However, Jason said that we should reconsider using curves rather than straight line tapers because of deflection requirements. A 60:1 Straight Line Taper is a 0d57'11" deflection. According to the Maximum Deflection Angle without a Curve Section of Design Manual Section 2A-1 (Horizontal Alignments): Alignments for two-lane roadways and expressways can be designed without a horizontal curve, if the deflection angle is small. As a guide, a deflection angle of about 1.5 degrees will not likely affect aesthetics.

4. WB PASSING LANE IN THE VICINITY OF MP 272.81 TO 274.05 (WEST OF MECHANICSVILLE):

- a. 2023-10-10 Microsoft Teams call between Road Design and Methods regarding Super-2 Passing Lane Lengths and Turning Lanes (Road Design: Jonathan Bahr, Kari Jackson, Hunter Finch) and Methods. Methods: Daniel Harness). Topic; the passing lane is currently less than 1 mile long (0.75 miles):
  - i. Daniel Harness would rather have passing lanes be shorter than 1 mile (even 0.75 miles) than have them go through an intersection with a shadowing problem. "An extra quarter mile isn't worth the safety problems introduced by having the passing lane go through the Echo Avenue intersection and introducing a shadowing problem." Daniel agrees with Jason Holst in that the shadowing problem is still a concern even if Echo Avenue was 'well within' the 12' portion of the passing lane.
  - ii. Daniel Harness mentioned that as long as there is less than 5 or 6 miles between passing lanes in a specific direction, then there shouldn't be an issue with having those consecutive direction-specific passing lanes being less than a mile in length each. FYI, the distance between the east end of the WB passing lane west of Mechanicsville and the beginning of the WB passing lane west of Stanwood is approximately 4.4 miles. (Later in the discussion it was agreed that the WB passing lane just west of Stanwood could be extended to 1 mile, which reduces the separation between the two WB passing lanes to 4.10 miles [MP 274.10 to MP 278.20].)
- b. 2023-10-24 D2 Field Exam Meeting: The Design of the WB Passing Lane west of Mechanicsville is currently 0.60 miles long (it begins east of Echo Avenue; the length of the 12' passing lane was reduced from 0.75 miles to 0.60 miles because the east end of the Passing Lane shifted west). District 6 asked why the west end of the Passing Lane could not extend west of Echo Avenue in order to extend the length of the Passing Lane. Jonathan Bahr outlined Daniel Harness's (Methods) 10/10/2023 reasons outlined above (prevention of shadowing traffic, proximity to other WB passing lane, preference to avoid placing passing lanes through sideroads). The District accepted the reasoning for the 0.75 mile passing lane east of Echo Avenue (FYI, the passing length was mistakenly identified as 0.75 miles and not the reduced 0.60 miles during the meeting).
- c. 2023-11-01 Microsoft Team Meeting between Road Design (Jonathan Bahr) and Methods (Daniel Harness):
  - i. Jonathan Bahr and Daniel Harness discussed the West End of the Passing Lane west of Mechanicsville. Jonathan Bahr pointed out that the length of the 12' passing lane was reduced from 0.75 miles to 0.60 miles because the east end of the Passing Lane shifted west.
  - ii. Jonathan Bahr did some calculations and determined that a car traveling 55 mph (Car B) would need 1,775 feet (0.34 miles) to get even with slower car traveling 50 mph (Car A) if Car B was 2 seconds behind Car A. If Car B needed to get 50 feet ahead of Car A to complete the pass, then you would need an additional 550 ft (total 0.44 miles). If Car B needed to get 2 seconds ahead of Car A to complete the pass, then you would basically need to double the catch-up distance, totaling 0.68 miles.
  - iii. Jonathan Bahr and Daniel Harness agreed that the intent for a Passing Lane is to allow for a pod of cars to pass a slow moving vehicle and that 0.60 miles of 12'

wide passing lane was probably too short for a Passing Lane (even for just one car to pass another), especially on a high-profile corridor like this project.

- iv. Given the information above Daniel Harness was okay with moving the west end of the Passing Lane west of Echo Avenue (close to Eureka Avenue), with the 60:1 taper toe at STA 218+00 (MP 272.67) and the 12' Passing Lane at STA 252+20 (MP 272.81). This change lengthens the 12' WB Passing Lane to more than a mile in total (1.14 miles from MP 272.81 to MP 273.95). Furthermore, Daniel mentioned that while avoiding passing lanes going through side roads was preferred, this project already had passing lanes going through sideroads, so it didn't seem that big of an issue to have this passing lane pass through Echo Avenue. He also mentioned that even though some vehicle shadowing may now occur at Echo Avenue, the safety and effectiveness of a 0.60 mile Passing Lane was more of a problem than the possible vehicle shadowing issue, plus moving the taper closer to Eureka mitigates the shadowing issue at Echo Ave.

- 1. 2023-12-18 Traffic and Safety Meeting Notes: Microsoft Teams Meeting between Road Design (Jonathan Bahr and Jason Holst) and Traffic and Safety (Greg Karssen and Willy Sorenson). Willy Sorenson suggested that vehicle 'shadowing' should only be considered a problem specifically related to mainline turnlanes. If the shadowing effect had to be considered everywhere (such as tapers for passing lanes) then this would lead to overdesign and limit design flexibility.

- d. 2023-10-20 Road Design Note: Jonathan Bahr discussed the east end of the passing lane with Jason Holst and decided that the add taper should be the standard 15:1 rather than 60:1. This moved the add taper to span from 291+30 (MP 274.05) to 293+10 (MP 274.10). The passing lane length is now 1.24 miles long (MP 272.81 to MP 274.05).

5. EB PASSING LANE IN THE VICINITY OF MP 274.73 TO 275.60 (EAST OF MECHANICSVILLE):

- a. 2023-10-10 Microsoft Teams call between Road Design and Methods regarding Super-2 Passing Lane Lengths and Turning Lanes (Road Design: Jonathan Bahr, Kari Jackson, Hunter Finch) and Methods. Methods: Daniel Harness). Topic; the passing lane is currently less than 1 mile long (0.78 miles):
  - i. Daniel Harness agrees about not being able to extend the EB passing lane between Mechanicsville and Grant Avenue. Grant Avenue, the industrial entrance, and the reverse curves of US 30 east of the industrial area are not conducive to the placement of a passing lane within their limits. The Result is a 0.78 mile Passing Lane (not including tapers) between 319+85 (274.60) and 361+80 (MP 275.37)
  - ii. Daniel Harness would rather have passing lanes be shorter than 1 mile (even 0.75 miles) than have them go through an intersection with a shadowing problem. "An extra quarter mile isn't worth the safety problems introduced by having the passing lane go through the Echo Avenue intersection and introducing a shadowing problem." Daniel agrees with Jason Holst in that the shadowing problem is still a concern even if Echo Avenue was 'well within' the 12' portion of the passing lane. (Shadowing at Grant Avenue wasn't specifically discussed).
    - 1. 2023-12-18 Traffic and Safety Meeting Notes: Microsoft Teams Meeting between Road Design (Jonathan Bahr and Jason Holst) and Traffic and

Safety (Greg Karssen and Willy Sorenson). Willy Sorenson suggested that vehicle 'shadowing' should only be considered a problem specifically related to mainline turnlanes. If the shadowing effect had to be considered everywhere (such as tapers for passing lanes) then this would lead to overdesign and limit design flexibility.

- iii. Daniel Harness mentioned that as long as there is less than 5 or 6 miles between passing lanes in a specific direction, then there shouldn't be an issue with having those consecutive direction-specific passing lanes being less than a mile in length each. FYI, there is expected to be another EB passing lane on the east side of Stanwood that is expected to be built in a subsequent project.

- b. 2023-10-20 Road Design Note: The west end of the westbound passing lane east of Mechanicsville had to shift a little further east because of turning lane configurations at Cherry Street. This change pushed the beginning of the 12' Passing Lane to Station 320+75 (MP 274.62), the Toe of the 45:1 Taper is at 315+35 (MP 274.10). This change reduced the 12' WB Passing Lane Length to 0.75 miles (MP 274.62 to MP 275.37).
- c. 2023-10-24 D2 Field Exam Meeting: District 6 was okay with the 12' WB Passing Lane Length of 0.75 miles (MP 274.62 to MP 275.37) due to the constraints introduced by Grant Avenue, the Industrial Entrance, and the reverse curves to the east of the east end of the Passing Lane.
- d. 2023-11-30 Road Design Note: Discussed the design of the west end of the passing lane with Jason Holst. Jason agreed that a 15:1 add taper should be used to maximize the passing lane distance. The west taper was moved and now runs from 317+35 (MP 274.55) to 319+15 (MP 274.58) because of linework changes in Mechanicsville (adding a 14' Two-Way-Left-Turn-Lane. This means the WB Passing Lane Length is now 0.79 miles long (MP 274.58 to MP 275.37).
- e. 2023-12-01 Road Design Note: Jonathan Bahr discussed the design of the west end of the passing lane with Jason Holst again. We decided that the business entrance at 320+00 (Golden Harvest, seed distributor which probably sees a fair amount of traffic) needed a WB Left Turn Lane for access, therefore the 15:1 add taper at the west end of the passing lane had to shift to 325+05 (MP 274.69) to 326+85 (MP 274.73). We also decided that the east end of the passing lane should now pass through Grant Avenue and stop just east of Grant Avenue, which puts the industrial entrance at 375+00 right in the middle of the 60:1 drop taper which now spans from 373+00 (MP 275.60) to 380+20 (MP 275.74). The benefits to this new configuration at the east end of the passing lane is that it gives EB vehicles an effective right turn lane on southbound Grant Avenue and an effective EB right turn lane into the industrial entrance at 375+00. The benefit of having the industrial entrance within the drop taper of the passing lane is that WB vehicles turning left into the industrial entrance don't have to pass two lanes of traffic. It's worth noting that the PC of the 5730' Radius curve east of Grant Avenue is at 375+31.4 (within the passing lane drop taper) and it appears (via observed conditions from the 7/19/2023 site visit) that the curve is superelevated (approximately 3% per superelevation tables in Section 2A-3 of the Design Manual) even though the 1929 and 1953 Record Drawings do not indicate the superelevation design. Also, there is also a decent sized culvert at 379+25 (a 4' span x 6' rise Concrete Box Culvert (cattle pass) that was installed in 1929 and was extended south with a 54" Concrete Pipe in 1953). The passing lane east of Mechanicsville is now 0.87 miles long (MP 274.73 to MP 275.60). Jonathan Bahr and Jason Holst discussed these conditions and determined that the superelevation and cattle pass do not change the decision.

- i. 2023-12-18 Traffic and Safety Meeting Notes: Microsoft Teams Meeting between Road Design (Jonathan Bahr and Jason Holst) and Traffic and Safety (Greg Karssen and Willy Sorenson). The attendees agreed that the passing lane from Mechanicsville to Grant Avenue should stay as it is currently designed (extending through Grant and terminating east of Grant, 0.87 miles from MP 274.73 to MP 275.60). The passing lane would be too short if it stopped west of Grant (0.64 miles from MP 274.73 to MP 275.37).

6. WB PASSING LANE IN THE VICINITY OF MP 278.34 (516+20) TO 279.34 (569+20), W STANWOOD

a. 2023-03-31 Road Design Team Meeting:

- i. West Side: Decided to place the Westbound Passing Lane Taper between STA 518+00 (MP 278.00) and 525+20 (278.51) (60:1 Drop Taper). The taper starts just east of a field entrance. Vehicle shadowing is not an issue here because vehicles are tapering out/away from the entrance and not towards it. There is a 5'x5'x26.2' Concrete Box Culvert at STA 506+41.4 (MP 278.15) that we probably want to avoid impacting if we are able to move the taper west of the field entrance (shadowing is not an issue for vehicles queued at Jackson Avenue for the same reason mentioned regarding the field entrance). If the taper is moved between STA 507+44 (102.6' east of the Concrete Box Culvert) and 514+64, it would result in a Passing Lane Length of 1.03 miles.
- ii. East Side: Decided to place the Westbound Passing Lane Taper between STA 569+20 (MP 279.34) and 571+00 (279.38) (15:1 Add Taper). This moves the taper outside of the entrance at 572+00 and allows for a 'normal section of roadway between 561+00 to the End of Project at 572+18.
- iii. Summary: The Result is a 0.83 mile Passing Lane (not including tapers) between 525+20 (278.51) and 569+20 (MP 279.34). The recommended Passing Lane length for a roadway traffic volume greater than 5,000 is 1.00 to 1.75 miles (According to the Iowa DOT Design Manual). We may need a Design Exception for this Passing Lane Length. We will need to discuss the situation with Methods (Daniel Harness) once the Super Two Design Manual has been revised (the Section is currently under review for revisions by Methods and this situation was mentioned by the Road Design Team, see e-mails between Jason Holst and Daniel Harness on 4/3/2023).

b. 2023-10-10 Microsoft Teams call between Road Design and Methods regarding Super-2 Passing Lane Lengths and Turning Lanes (Road Design: Jonathan Bahr, Kari Jackson, Hunter Finch) and Methods. Methods: Daniel Harness):

- i. Regarding placing the toe of the taper close to the 5'x5'x26.2' Concrete Box Culvert at STA 506+41.4 (MP 278.15): Daniel Harness thinks vehicles exiting the taper could be jockeying for position with vehicles in the WB thru-lane and could get bumped onto the WB foreslope. Daniel wants to make sure there is plenty of space between the box culvert and the toe of the taper for a vehicle to stop. Daniel suggested that 200' should be enough separation. Jonathan Bahr decided that putting the toe at 509+00 (a little more than 250' away from the culvert) should allow for plenty of space for deceleration. This puts the full 12' passing lane length to 5,300' (STA 516+20 [MP 278.34] to STA 569+20 [MP 279.34]), a little more than 1 mile. Daniel Harness is not concerned about the passing lane going through the farm entrance at STA ~517+50, especially since it appears as though the farm entrance is very lightly used.

7. TURN LANE CONSIDERATIONS

- a. 2023-01-24 Road Design Note: This corridor of US 30 is a NHS Route and therefore additional considerations are typically given regarding Turning Lanes. The Preliminary Design of this project (outlined in the Project Concept and Planning documents linked within the Project Concept, see Page 6 and Page 12 of the Project Concept for the Planning links) recommended adding eastbound Left Turn Lanes to the north legs of the Madison Street and Cherry Street intersections in Mechanicsville. Road Design shall design these two eastbound left turn lanes. FYI, the Planning Documents include Conceptual designs of the eastbound left turn lanes.

- i. 2023-02-27 Kickoff Meeting: Road Design will look at the design since it looks like the TWLTL will need some more consideration. Elijah Gansen had an issue with it, but Jason Holst is OK with a TWLTL, especially because the TWLTL gives more queue length to vehicles waiting to take turns into Mechanicsville. FYI, There is potential for the Passing Lane west of Mechanicsville to end at the taper for the eastbound Left Turn Lane for Madison Street (see Page 70 of the Technical Memo developed by HR Green). The same goes for the west end of the Passing Lane east of Mechanicsville being coordinated with the eastbound Left Turn Lane being constructed for Eastbound Access to Cherry Street in Mechanicsville Street (see Page 71 of the Technical Memo developed by HR Green).

- ii. 2023-11-30 Road Design Note: A 14' TWLTL between Madison Street and Cherry Street was considered by Road Design (Jonathan Bahr and Jason Holst) as well as Traffic and Safety (Chris Poole) and added to the design. The TWLTL provides access to businesses on the south side of US 30 and provides for more left turn queuing at Cherry Street for when a train is passing through Mechanicsville. The quarter mile minimum length requirement for TWLTL's is satisfied. The two foot shift of the EB Edge of Pavement shift to the south will occur over 200' long tapers (1' over 100'). The western two foot shift will occur at least 500' west of the beginning of the taper for the EB US 30 Offset Right Turn Lane to Fox Avenue and the eastern two foot shift will occur east of the left turn lane being developed for the business entrance at 320+00 (Golden Harvest, seed distributor) and west of the taper for the EB Passing Lane.

- b. 2023-02-06 Road Design Note: According to the Potential for Crash Reduction (PCR website); all the intersections within this Project Limits have a PCR Rating of 'Negligible'.

- c. Are there any other intersections that the District has been requested to look at?
  - i. 2023-02-27 Kickoff Meeting: None of the other intersections warrant additional turn lane considerations.

- d. 2023-08-30 Road Design Note: See FOX AVENUE EB OFFSET RIGHT TURN LANE Section, CHERRY STREET WB PARALLEL RIGHT TURN LANE Section, and other possible individual Sections (MADISON AVENUE WB PARALLEL RIGHT TURN LANE, MADISON AVENUE EB LEFT TURN LANE, and CHERRY STREET EB PARALLEL LEFT TURN LANE) for more specific design information related to each specific turn lane.

- e. 2023-10-09 Road Design Note: Ask Methods Daniel Harness about whether additional Right Turn Lanes (and Left Turn Lanes) needed to be added throughout the corridor per Section 6C-2 (Super-2 Highways) of the Design Manual. Specifically, in the 'Right Turn Lanes' Section: "Right turn lanes should be placed at all paved intersections and should be considered at unpaved intersections. Offset right turn lanes are preferred." (Left Turn

guidance is defined by warrants). Would these additional Right Turn Lanes and Left Turn Lanes be needed at locations where Passing Lanes are actively located or throughout the entire project 'Super-2' corridor.

- i. 2023-10-10 Road Design Note: Jonathan Bahr spoke with Daniel Harness (Methods) regarding whether additional Right Turn Lanes (and Left Turn Lanes) needed to be added throughout the corridor per Section 6C-2 (Super-2 Highways) of the Design Manual:
  1. The 'Right Turn Lanes' subsection of Design Manual Section 6C-2 (Super-2 Highways) applies for the entire Super-2 corridor in general, not just for sideroads directly impacted by the addition of a passing lane. Right Turn Lanes should be installed at all paved sideroads, with offset Right Turn Lanes being preferred.
  2. Daniel does not consider paved fillets (like what are at the Railroad Crossings and Grant Avenue) to be considered 'paved sideroads'. They should be considered fillets for non-paved sideroads and as such, right lanes are not required at non-paved sideroads, but right turn lanes should still be considered at non-paved sideroads (offset right turn lane preferred, parallel right turn lane is acceptable).
    - a. The considerations for right turn lanes at non-paved sideroads include: future development down the non-paved sideroads, will the non-paved sideroad be paved in the near future, traffic volumes down the non-paved sideroads, and queuing issues at the sideroads that have railroad crossings. Daniel was particularly worried about vehicles stopping on the highway waiting for a train to go by.
      - i. Jonathan Bahr suggested the Road Design Team would ask the District about future development plans and queuing histories around the railroad tracks (ie. are cars or trucks stopping on US 30 waiting for the trains to go by, how many cars or trucks are waiting at a time, do the cars or trucks use the shoulder while they wait, do the cars or trucks wait inside the return?
        1. 2023-10-24 D2 Field Exam Meeting: The situations mentioned above were discussed during the 10/24/2023 D2 Field Exam Meeting; the District (and Railroad Bureau) wants WB parallel right turn lanes and WB acceleration lanes for sideroads that have Railroad Crossings (except for Lincoln Highway sideroad at MP 271.33 which has Railroad Crossing FRA 190458X, the sideroad will be permanently closed prior to construction), the District wants a EB parallel right turn lane for Charles Avenue, the District does not want right turn lanes for any of the other sideroads because traffic counts are very low and development is not expected. Left Turn Lanes do not need to be added at sideroads outside of Mechanicsville

because sideroads have less than the 5 vehicles/hour of turn lane volume needed to trigger the installation of left turn lanes per Section 6C-2 [Super-2 Highways] of the Design Manual and the Iowa DOT Traffic Counts GIS Map. Ie. Charles Avenue had the highest traffic count, 80 vehicles per day (both directions), which equates to only 3.3 vehicles per hour, so we can expect much less than 5 vehicles per hour taking a left turn from WB US 30 to SB Charles Avenue or taking a left turn from EB US 30 to NB Charles Avenue.

- ii. The Road Design Team decided to draw in a Westbound Right Turn Lane at Delta Avenue and will model it for the D2 meeting to demonstrate to the District what the impacts would be at similar locations in the project corridor. The Road Design Team decided that a 465' deceleration length would be necessary for a 55 MPH Design Speed and an estimated 40' control radius (following Table 2 of Section 6A-1).
3. Daniel mentioned that the Methods group talked about granular shoulders adjacent to turning lanes on Highways and said that the following change is coming and can be included on the US 30 Super-2 plans: Granular Shoulders adjacent to Turning Lanes on Highways only need to be 2' wide and do not need a safety edge (applies to offset right turn lanes and parallel right turn lanes). Typically a safety edge is needed when a granular shoulder is less than 4' wide (according to Section 3C-6 of the Design Manual). Reducing the required width of granular shoulder from 6' to 2' will reduce the grading impacts in the ditch on the WB side of Mechanicsville. FYI, the Ditch in Mechanicsville is extremely shallow (See the 'DRAINAGE IN MECHANICSVILLE' Section of these Notes for more information).
  - a. 2023-11-02 Road Design Note: Jonathan Bahr followed-up with Daniel Harness (over Microsoft Teams Chat) about shoulders adjacent to turning lanes for additional clarity: "You mentioned that the Methods group talked about granular shoulders adjacent to turning lanes on Highways and said that the following change is coming and can be included on the US 30 Super-2 plans: Granular Shoulders adjacent to Turning Lanes on Highways only need to be 2' wide and do not need a safety edge. I just wanted to make sure that the change applied to offset right turns as well as parallel right turn lanes. Can you please confirm?"

Also, would you say that the granular shoulder width adjacent to turning lanes on Highways should still be 6' wide if there is available space? or is it just going to be an across-the-board change to 2'?" Daniel Harness responded: "Two foot granular

shoulders is only allowed for parallel right turn lanes. We should try for as much as we can get.”

- f. 2023-10-24 D2 Field Exam Meeting: The D2 Team discussed placing WB US 30 right turn lanes at Railroad Crossings. Jonathan Bahr outlined his earlier conversations with Daniel Harness (Methods) about the need for WB US 30 Right Turn Lanes at the gravel sideroads that have Railroad Crossings. The District and Railroad Bureau (Tami Quam) confirmed that the sideroads with Railroad Crossings should receive parallel right turn lanes for the purposes of allowing vehicles to queue in the right turn bays while a train is crossing the sideroad. Railroad Bureau requested that US 30 WB Acceleration Lanes be placed west of the sideroads with Railroad Crossings to allow large trucks making a SB to WB Right Turn from the Sideroad to accelerate and merge onto WB US 30 safer. Road Design agreed to provide turning movement diagrams to assist with Railroad Bureaus diagnostics of the intersections to show that the DOT’s improvements are not creating an unsafe situation at the railroad crossings (federally funded project need diagnostics). Tami Quam indicated that the Railroad Crossings (including lights and gates) may need to be adjusted/widened to allow for the WB-67 Semi-Truck Turning Movements, which could add significant time to the schedule. Tami also relayed that current situations at railroad crossings are not ideal (vehicles are queuing in lanes and shoulders while waiting for the trains to pass the crossings) and railroad crossing that did have Right Turn Lanes (ie. in Mechanicsville) probably are not up to current standards, hence the need for new turning movement modeling. The Team agreed that it is not likely that a scenario would result where the proposed WB US 30 right turn lanes at the Railroad Crossing would be eliminated from the scope because of the potential impacts to the railroad crossings (ie. right turn lanes will have to be installed, right turn from WB thru-lanes is not going to be permitted on this project). Preliminary modeling indicates that these WB Right Turn Lanes and WB Acceleration Lanes should not impact the ditch or Railroad Right-of-Way. There was discussion that a EB US 30 left turn lane would be needed at the intersection of US 30/Old Lincoln Highway (MP 271.33) for frequent truck traffic utilizing to get to a Quarry, however, this EB US 30 left turn lane would not be viable due to the superelevated curve just west of the intersection. Furthermore, it was discussed that the US 30/Old Lincoln Highway intersection MAY be closed permanently in the near future (Tami Quam mentioned Washington County has expressed interest to permanently close the intersection, but a final decision has not yet been made. Jesse Tibodeau said the District would follow-up with the County about the intersection).
  - i. 2023-11-13 Road Design Note: According to the AASHTO Greenbook Table 10-4 in Section 10.9.6 (Ramps), the minimum acceleration length should be 960' assuming a stop condition and 'Design Speed' of 55 mph (1,200' for Design Speed of 60 MPH). There are some circumstances in the Design Manual and Greenbook where Design Speed equals the Posted Speed (ie. see 'Right Turn Lane Design' subsection of Section 6C-5 (Four-Lane Expressway Turn Lanes of the Design Manual and Section 2.3.6.3 of the Greenbook [the Greenbook hardly distinguishes between the two])). The posted speed on US 30 is 55 mph. Road Design suggests using a 1,100' acceleration to split the difference between the 55MPH/60 MPH requirement and use a 60:1 drop taper. FYI, the Auxiliary Lane Section of the Greenbook (9.7) references the use of Section 10.9.6.
  - ii. 2023-11-28 Road Design Note: Jason Holst recommended using a 900' acceleration lane for the WB US 30 Acceleration Lane for a vehicle making a Right Turn on WB US 30 from SB Madison Street. This corresponds with a 15

MPH Start and a 55 MPH Design Speed per the AASHTO Greenbook. Jason thinks we should put in full 12 wide pavement between Madison Street and Cherry Street (with 2' wide granular shoulder) and include pavement striping for a WB right turn lane for Madison Street and a short acceleration lane for a vehicle making a Right Turn on WB US 30 from SB Cherry Street. The vehicles making the Right Turn on WB US 30 from SB Cherry Street can continue WB and use the WB right turn lane for Madison Street and the WB US 30 Acceleration Lane for Madison Street as an acceleration lane if needed. Westbound US 30 Acceleration Lanes were NOT included for the rural/gravel sideroads outside of Mechanicsville. We did not think the traffic volume justified the acceleration lanes at the rural/gravel sideroads. Also, when we ran models with acceleration lanes for the rural sideroads we found that the sideroad aprons were substantially larger than what is needed for a SB WB-67 turning right into the WB US 30 Thru Lane.

- g. 2023-10-24 D2 Field Exam Meeting: Jonathan Bahr outlined his earlier conversations with Daniel Harness (Methods) about the need for a EB US 30 Offset Right Turn Lane at Charles Avenue. The District prefers the use of a parallel right turn lane at Charles Avenue, Road Design will discuss more with Daniel Harness (see CHARLES AVENUE – US 30 EB RIGHT TURN LANE Section for more detailed information).
- h. 2023-10-24 D2 Field Exam Meeting: Steve Flockhart indicated that the intersection at Madison is more car centric and the intersection at Cherry Street is more agricultural/semi traffic going to and from US 30. Tami Quam thinks Madison Street is the more dangerous of the two intersections.

#### 8. CHARLES AVENUE – US 30 EB RIGHT TURN LANE

- a. 2023-10-10 Road Design Note: Jonathan Bahr spoke with Daniel Harness (Methods) regarding adding an EB offset Right Turn Lane at Charles Avenue. According to Daniel Harness the 'Right Turn Lanes' subsection of Design Manual Section 6C-2 (Super-2 Highways) applies for the entire Super-2 corridor in general, not just for sideroads directly impacted by the addition of a passing lane. Right Turn Lanes should be installed at all paved sideroads, with offset Right Turn Lanes being preferred. Therefore, an EB offset Right Turn Lane should be added at Charles Avenue (if we can fit one in there) because Daniel considers it a paved sideroad.
- b. 2023-10-11 Road Design Note: Jonathan Bahr spoke with Jason Holst regarding adding an EB offset Right Turn Lane at Charles Avenue. According to the Design Manual Section for Super-2 Highways and per 10/10/2023 conversation between Jonathan Bahr and Daniel Harness (see 10/10/2023 Road Design Note above) it appears as though the south paved leg of the intersection of Charles Avenue and US 30 requires an EB offset Right Turn Lane. Jason Holst regarding Charles Avenue; go ahead with adding an EB offset Right Turn Lane at Charles Avenue, it's just safer. We looked at Traffic Counts and found 80 vehicles per day on Charles Avenue per Iowa DOT GIS (dated 2022) and 120 vehicles per day on Old Lincoln Highway. With that limited Traffic Information we assumed the traffic count to be 200, therefore according to Figure 1 on Section 6A-1 of the Design Manual it seems to justify the placement of a major right turn lane (EB US 30 offset Right Turn Lane at Charles Avenue). Jason was not concerned with the impact to the E-W drainage culvert that is under the south leg of the intersection (a bend and extension can be easily added).



- c. 2023-10-17 Road Design Note: Design Criteria for the EB US 30 offset Right Turn Lane at Charles Avenue:
- i. Posted Speed of the EB Offset Right Turn Lane is 55 MPH.
  - ii. Should the Design Speed be 55 MPH (Posted Speed) or 60 MPH (Posted Speed + 5 MPH)? This impacts the Length of the Offset Right Turn Lane. Section 6C-5 (Four-Lane Expressway Turn Lanes) of the Design Manual suggests in Figure 2 of the 'Offset Right Turn Lane' subsection that the Posted Mainline Speed is used to calculate the Length of the 12' wide portion of the Offset Right Turn Lane, which is dependent on Intersection Sight Distances. Therefore, the Design Speed for Offset Right Turn Lanes on Super Two Roadways is the same as the Posted Speed, in this case it is 55 MPH.
  - iii. Should the Design Speed equal the Posted Speed for Horizontal Sight Distance Triangle Calculations? We should assume that the Design Speed for Horizontal Sight Distance Triangle Calculations equals the Posted Speed (55 MPH) as mentioned in the section above that references Figure 2 of Section 6C-5.
  - iv. Should the taper of the Offset Right Turn Lane be 15:1 or 30:1? Section 6C-5 (Four-Lane Expressway Turn Lanes) of the Design Manual shows in Figure 2 of the 'Offset Right Turn Lane' subsection that the taper for Offset Right Turn Lanes on Super Two Roadways should be 30:1. The subsection 'Right Turn Lane Design' of Section 6C-5 that mentions 15:1 tapers are only for Parallel Right Turn Lanes.
  - v. How long does the Offset Right Turn Lane need to be? Section 6C-5 (Four-Lane Expressway Turn Lanes) of the Design Manual suggests in the 'Offset Right Turn Lane' subsection that the Offset Right Turn Lanes on Super Two Roadways should be long enough to get the entire offset Right Turn Lane out of the Horizontal Sight Triangle of vehicles queued to take a turn onto the mainline from a sideroad. To build the Horizontal Intersection Sight Distance we need to refer to section 6D-1 (Sight Distance) of the Design Manual (information related to intersection sight distance) and subsection 'Intersection Sight Distance/Horizontal Intersection Sight Distance' and Equation 6D-1\_4 where L (as shown on Figure 2, Illustration showing components for departure sight distance) =  $1.47 (V \text{ major}) (\text{time gap standard} + \text{adjusted})$ ,  $L = 1.47 * 55 \text{ MPH} * (11.5s \text{ for combination truck taking left turn} + 0.0s \text{ for adjustments}) = 889.35$  feet (FYI, the grade at this location is 1%, which is less than 3% that would trigger an adjustment factor, so a time gap adjustment for grade is not needed. Also, there is no need for an extra crossing lane adjustment at this location). FYI, if the Design Speed was 60 MPH, then L would equal 970.2 feet. After building the intersection sight triangle clear area the length of the Offset Right Turn Lane needs to be moved so that the Offset Right Turn Lane does not encroach within the intersection sight triangle. The Road Design Team suspects that Sight Distance is more important for these offset right turn lanes because it is assumed that there is a high speed and high volume along the Super Two Roadway and the vehicles waiting at the sideroads need maximum opportunity to make their turning movements.
  - vi. How do we determine what the intersection return should look like? According to Section 6A-2 (Intersection Design Vehicle) Vehicle Turning Movements for a WB-67 Truck with a minimum Turning Radius of 41' should be run with AutoTurn. According to Figure 11 (Intersection layout for skewed intersections)

of Section 6A-1 (Horizontal Intersection Design) the turning radius for a WB-67 Truck should be 100' (the use of the 100' radius was approved by Senior Technician Agata Janus). Road Design opted to use a turning radius of 100'. A 3 foot buffer of the turning path should be applied regardless and the proposed edge of return should stay outside of the 3 foot buffer. It is suggested that a two or three point compound curve be used to generate the curve of the intersection curve (a three point compound curve will be more difficult to design and stake, but it will result in less ROW and material).

- d. 2023-10-23 Road Design Note: The Road Design Team reviewed the configuration of the EB US 30 Offset Right Turn Lane for Charles Avenue (with 25.5' channelizing offset at Charles Avenue, measured from EB Edge of Thru Traffic) and found a few areas of concern:
- i. The taper for the EB US 30 Offset Right Turn Lane started on the outside of the second (heading EB) of a pair of reverse curves due to the Horizontal Intersection Site Distance Triangles that were developed. The reverse curves were not supposed to be superelevated per the 2018 NHSX-030-7(192)--3H-57 Record Drawings and the survey confirmed that the existing WB lanes were not superelevated (the EB lanes were not surveyed), HOWEVER, conditions in the field differ from what was provided in the 2018 NHSX-030-7(192)--3H-57 Record Drawings and the survey did not provide sufficient information for the EB lanes; between MP 270.28 and MP 270.41 the US 30 roadway consists of a continuously tapered section of new PCC pavement adjacent to existing composite pavement left over from the old configuration of US 30. The existing crown of the existing composite pavement was left in place, which means the new outer US 30 EB lanes associated with (53) are effectively superelevated 2% because the crown does NOT follow the Centerline of the current configuration.
  - ii. The channelizing for the EB US 30 Offset Right Turn Lane could add some complexity for NB Charles Avenue to WB US 30 vehicles which already need to consider navigating the WB 2 Lane to 4 Lane transition. On the other hand, the channelizing is intended to mitigate the confusion.
  - iii. Impacts to ditches, the E-W culvert beneath the south leg of Charles Avenue, overhead power lines, and a potential impact to a gas (G-2) line.
  - iv. Charles Avenue may actually be considered a non-paved sideroad. Only 350' of Charles Avenue (measured south of the EB US 30 Edge of Traffic) was paved as part of the NHSX-030-7(192)--3H-57 US 30 4-Lane Project. Therefore an offset Right Turn Lane at this location is probably overkill, especially if drivers already have access to Old Lincoln Highway via the exit ramps at the US 30/Lisbon Avenue Interchange (2.13 miles west of the intersection of US 30 and Charles Avenue) and if we focused on the ADT of Charles Avenue only being 80 vehicles per day (total of both directions) on Charles Avenue per Iowa DOT GIS (dated 2022).
- e. 2023-10-24 D2 Field Exam Meeting: District 6 Response: Road Design outlined Methods 10/10/2023 reasoning for the WB US 30 Offset Right Turn Lane to Charles Avenue and also outlined the 10/23/2023 Road Design concerns. District 6 determined that they do not want the EB US 30 Offset Right Turn Lane at Charles Avenue. There is too much complexity in the vicinity (4 Lane to 2 Lane transition and superelevated reverse curves) to add an EB US 30 Offset Right Turn Lane for a road with such low traffic and for a road that could be considered a non-paved side road. The D2 Meeting Team also discussed

the potential impacts to a 'relatively shallow' 'Magellan' G-2 Gas Utility line that passes N-S under US 30 at STA 110+30, MP 270.47 (it would be best to avoid impacting the Gas Line). The District added that the Gas line would not be impacted by fill activities (previous projects where fill was placed of gas lines were not an issue). The District was OK with installing a EB US 30 Parallel Right Turn Lane at Charles Avenue instead of the EB Offset Right Turn Lane. District 6 Maintenance mentioned they use Charles Avenue as a turn-around point for their eastbound snow-plows, so they welcomed an EB US 30 Parallel Right Turn Lane at Charles Avenue. The Road Design Team should investigate whether the full-depth pavement and modified subbase for the Right Turn Lane as well as realignment of the ditch would create a cut situation deep enough to impact the G-2 Gas Utility Line. Potholes of the gas line may be required.

- f. 2023-11-02 Road Design Note: Jonathan Bahr spoke with Daniel Harness (Methods) regarding the decisions made by District 6 during the 10/24/2023 D2 Field Exam Meeting. Jonathan Bahr outlined the items discussed during 10/24/2023 D2 Field Exam Meeting and mentioned that the District was OK with installing a EB US 30 Parallel Right Turn Lane at Charles Avenue instead of the EB Offset Right Turn Lane. Daniel said that even though Charles Avenue was a non-paved sideroad he'd still like Road Design to investigate keeping the EB Offset Right Turn Lane at Charles Avenue since Offset Right Turn Lanes are still the preferred right turn lane option for non-paved sideroads (when space is available) and since the segment for Charles Avenue that US 30 is connected to is technically paved. Daniel suggested using a 'smaller' EB US 30 Offset Right Turn lane at Charles Avenue. Road Design should check to see if the taper can get out of the transition curve if a channelizing offset of 15' at Charles Avenue is used. FYI, the channelizing offset at Charles Avenue is currently 25.5' (measured from EB Edge of Thru Traffic due to Horizontal Intersection Sight-Distance Triangles). If Road Design can't get the EB US 30 Offset Right Turn Lane's taper out of the reverse curve with a 15' channelizing offset at Charles Avenue, then Daniel Harness is okay with the installation of a EB US 30 PARALLEL Right Turn Lane.
- g. 2023-11-28 Road Design Note: Jonathan Bahr developed linework for an EB US 30 Offset Right Turn Lane with a 15' channelizing offset at Charles Avenue per Daniel Harness's 11/2/2023 recommendation and developed linework for a EB US 30 Parallel Right turn Lane at Charles Avenue. Here are the findings:
  - i. EB US 30 Offset Right Turn Lane at Charles Avenue Iteration 1: The first iteration of the 15' channelizing offset EB US 30 Offset Right Turn Lane linework utilized a constant 30:1 taper from the Charles Avenue intersection. A constant 30:1 taper is the preferred taper for an Offset Right Turn Lane on 4 Lane Expressway (which Super-Two's effectively are) per Section 6C-5 of the Design Manual. The outside edge of the 12' wide pavement never intersected with the edge of thru traffic because of the transition curve. This is a fatal flaw, meaning this iteration cannot be used.
  - ii. EB US 30 Offset Right Turn Lane at Charles Avenue Iteration 2: The second iteration of the 15' channelizing offset EB US 30 Offset Right Turn Lane linework utilized a 37:1 taper from the Charles Avenue intersection until the inner lane line of the EB US 30 Offset Right Turn intersected with the outer edge line of the EB US 30 thru lane, then a 15:1 'add' taper was used to reduce the EB US 30 Offset Right Turn Lane from 12' to 0' wide (direction with respect to moving west, away from Charles Avenue). The 37:1 Taper Rate was utilized to provide a 446' Deceleration Lane Length (445' is the required Deceleration Lane Length

for 55 MPH Design Speed and an Exit Curve Radius of 80' per Table 2 in Section 6A-1 of the Design Manual). The 15:1 'add' taper can be used when design constraints are introduced (the WB IA 92/T17 Offset Right Turn in Marion County NHSX-092-6(40)--3H-63 had a 15:1 'add' taper because of ROW and Budget Constraints. The WB Offset Right Turn Lane at IA 163/Business Hwy 163 in Marion County HSIPX-163-3(060)--3L-63 had a 15:1 'add' taper because the offset Right Turn Lane was on a curve and a 30:1 'add' taper would have added significant cost that seemed unjustified, plus there were ROW constraints as well) and also, according to Figure 6 in Section 6A-1 (Horizontal Intersection Design) of the Design Manual, there is such a thing as a 'Taper type right-turn... for major right-turn lanes' that use a constant 15:1 taper throughout. Furthermore, Section 6C-1 (Adding, Dropping, or Redirecting through Lanes) of the Design Manual suggests using 15:1 'add' tapers "when additional lanes are developed, such as for passing lanes, climbing lanes, additional lanes at intersections, or in other circumstances, they should be developed with a 15:1 taper ratio". The termination point of the 15:1 'add taper' was found to be 150' within the transition curve. Jonathan Bahr discussed this iteration with Jason Holst and William McNamara in Road Design (William worked on the IA 92 Marion County NHSX-092-6(40)--3H-63 Project). Jason Holst determined that given the fact that this iteration has a sharper 'add' taper (15:1) than the preferred 'add' taper of offset right turn lanes (30:1) that still falls within the transition curve AND the reduced 15' channelizing offset at Charles Avenue, then we would not be getting the ideal benefits of an Offset Right Turn Lane at Charles Avenue.

- iii. EB US 30 Parallel Right Turn Lane at Charles Avenue: Jason Holst suggested moving forward with an EB US 30 Parallel Right Turn Lane at Charles Avenue even if the 15:1 'add' taper for the EB US 30 Parallel Right Turn Lane falls within the transition curve. He added that the EB US 30 Parallel Right Turn Lane seems further justified because he believes the 2022 IDOT GIS Traffic Counts for the Sideroad and Frontage Road do not justify the offset right turn, there is a gas line which risks being impacted with the more pavement we introduce (the offset right turn lane's edge of 6' wide granular shoulder is 10.5' further south than the parallel right turn lane's edge of 2' wide granular shoulder, measured at the gas line). Jason suggested the vehicle return at Charles Avenue should be a three-point curve that follows the standard 75' radius for a WB-67 turning movement per Figure 10 in Section 6A-1 (Horizontal Intersection Design) of the Design Manual. The Deceleration Lane Length (L) portion of the EB US 30 Right Turn Lane will be determined from Table 2 of Section 6A-1 (Horizontal Intersection Design) of the Design Manual once the three-point curve is developed (the radius of the exit control helps determine the Deceleration Lane Length [L]). For the EB US 30 Parallel Right Turn Lane, we found that a Deceleration Lane Length of 445' was required for 55 MPH Design Speed and an Exit Curve Radius of 80', a deceleration lane length of 450' was provided. The 'add' taper of the EB US 30 Parallel Right Turn Lane was 15:1 and terminated 150' within the transition curve (effectively in the exact same location as iteration 2 of the EB US 30 Offset Right Turn Lane).

9. FOX AVENUE – US 30 EB OFFSET RIGHT TURN LANE

- a. 2023-07-19 Road Design Note: District 6 (Mark Harle) mentioned during the 7/19/2023 'Stanwood to Clarence' D0 Kickoff Meeting that an EB offset Right Turn Lane at Fox Avenue would be considered moving forward.
- b. 2023-08-16 Road Design Note: District 6 (Mark Harle) sent an e-mail saying "I know we have an eastbound right turn lane at Fox/X40. Is that one going to be an offset right turn lane?" According to Section 6C-2 (Super-2 Highways) of the Design Manual (see Subsection Turning Lanes / Right Turn Lanes on Page 5 of 6C-2) "Right turn lanes should be placed at all paved intersections and should be considered at unpaved intersections. Offset right turn lanes are preferred. Section 6C-5 (Four-Lane Expressway Turn Lanes) provides guidance for offset right turn lanes. If a 20 foot offset is not possible due to ROW constraints, the maximum amount of offset should be provided given sight distance and available ROW. Refer to Section 6D-1 (Sight Distance) for information related to intersection sight distance." It is a debatable whether offset right turn lanes within Corporate Limits need to be considered for Offset Right Turn lanes due to Property constraints, but EB Fox Avenue does not seem to have those constraints and is on the outside edge of Mechanicsville. Therefore a EB offset Right Turn Lane at Fox Avenue will be designed by Road Design.
- c. 2023-08-29 Road Design Note: Two members of Road Design (Jonathan Bahr and Jason Strum) discussed Design Criteria for the EB Offset Right Turn Lane at Fox Avenue, there appears to be conflicting information in the Design Manual that we need to consider in order to develop and justify the design. Here is the resulting Design Criteria that was discussed:
  - i. Should the Posted Speed be 55 MPH or 45 MPH? The Posted Speed of US 30 is 55 MPH outside of the Mechanicsville Corporate Limits. The Posted Speed for Mechanicsville is 45 MPH. The 45 MPH sign is at STA 293+75, which is 680' west of the PI of Fox Avenue (STA 300+55). The taper for the EB offset Right Turn Lane is expected to start west of the 45 MPH Speed Sign for Mechanicsville (STA 293+75), therefore we are assuming that the Posted Speed of the EB Offset Right Turn Lane is 55 MPH.
  - ii. Should the Design Speed be 55 MPH (Posted Speed) or 60 MPH (Posted Speed + 5 MPH)? This impacts the Length of the Offset Right Turn Lane. Section 6C-5 (Four-Lane Expressway Turn Lanes) of the Design Manual suggests in Figure 2 of the 'Offset Right Turn Lane' subsection that the Posted Mainline Speed is used to calculate the Length of the 12' wide portion of the Offset Right Turn Lane, which is dependent on Intersection Sight Distances. Therefore, the Design Speed for Offset Right Turn Lanes on Super Two Roadways is the same as the Posted Speed, in this case it is 55 MPH.
  - iii. Should the Design Speed equal the Posted Speed for Horizontal Sight Distance Triangle Calculations? We should assume that the Design Speed for Horizontal Sight Distance Triangle Calculations equals the Posted Speed (55 MPH) as mentioned in the section above that references Figure 2 of Section 6C-5.
  - iv. Should the taper of the Offset Right Turn Lane be 15:1 or 30:1? Section 6C-5 (Four-Lane Expressway Turn Lanes) of the Design Manual shows in Figure 2 of the 'Offset Right Turn Lane' subsection that the taper for Offset Right Turn Lanes on Super Two Roadways should be 30:1. The subsection 'Right Turn Lane Design' of Section 6C-5 mentions 15:1 tapers are only for Parallel Right Turn Lanes.

- v. How long does the Offset Right Turn Lane need to be? Section 6C-5 (Four-Lane Expressway Turn Lanes) of the Design Manual suggests in the 'Offset Right Turn Lane' subsection that the Offset Right Turn Lanes on Super Two Roadways should be long enough to get the entire offset Right Turn Lane out of the Horizontal Sight Triangle of vehicles queued to take a turn onto the mainline from a sideroad. To build the Horizontal Intersection Sight Distance we need to refer to section 6D-1 (Sight Distance) of the Design Manual (information related to intersection sight distance) and subsection 'Intersection Sight Distance/Horizontal Intersection Sight Distance' and Equation 6D-1\_4 where  $L$  (as shown on Figure 2, Illustration showing components for departure sight distance) =  $1.47 (V \text{ major}) (\text{time gap standard} + \text{adjusted})$ ,  $L = 1.47 * 55 \text{ MPH} * (11.5s \text{ for combination truck taking left turn} + 0.7s \text{ for an additional } 12' \text{ lane for a truck to cross}) = 986.37 \text{ feet}$  (FYI, the grade at this location is 0%, which is less than 3%, so an time gap adjustment for grade is not needed). FYI, if the Design Speed was 60 MPH, then  $L$  would equal 1076.04 feet. After building the intersection sight triangle clear area the length of the Offset Right Turn Lane needs to be moved so that the Offset Right Turn Lane does not encroach within the intersection sight triangle. The Road Design Team suspects that Sight Distance is more important for these offset right turn lanes because it is assumed that there is a high speed and high volume along the Super Two Roadway and the vehicles waiting at the sideroads need maximum opportunity to make their turning movements. This need for extra sight distance is compounded at Fox Avenue since the vehicles turning from NB Fox Avenue onto WB US 30 will also need to pass a EB Left Turn Lane. FYI, 425' is the required Deceleration Lane Length for 55 MPH Design Speed and an Exit Curve Radius of 120' per Table 2 in Section 6A-1 of the Design Manual, 665' is provided.
- vi. How do we determine what the intersection return should look like? According to Section 6A-2 (Intersection Design Vehicle) Vehicle Turning Movements for a WB-67 Truck with a minimum Turning Radius of 41' should be run with AutoTurn. According to Figure 11 (Intersection layout for skewed intersections) of Section 6A-1 (Horizontal Intersection Design) the turning radius for a WB-67 Truck should be 100' (the use of the 100' radius was approved by Senior Technician Agata Janus). Road Design opted to use a turning radius of 100'. A 3 foot buffer of the turning path should be applied regardless and the proposed edge of return should stay outside of the 3 foot buffer. It is suggested that a two or three point compound curve be used to generate the curve of the intersection curve (a three point compound curve will be more difficult to design and stake, but it will result in less ROW and material).
- d. 2023-10-24 D2 Field Exam Meeting: Road Design outlined the current design of the EB US 30 Offset Right Turn Lane to Fox Avenue. There were no exceptions taken among the attendees.

10. FOX AVENUE – FOX AVENUE NORTHBOUND RIGHT TURN LANE

- a. 2023-09-01 Road Design Note: During the 7/19/2023 Kickoff Meeting for the Super-2 US 30 segment from Stanwood to Clarence the team stopped to look at the turning movement of a WB-67 truck heading Northbound on Fox Avenue to take a Right onto EB US 30. The Truck off-tracked onto the gravel at the SEC of the intersection and used every inch of the gravel shoulder to complete its turning movement. There were ruts in the gravel shoulder that indicated that such a turning movement had to be done often. Jason Holst agreed that this project (53) should include construction of a new three point curve return to solve the off-tracking issue for turning movements of a WB-67 heading Northbound on Fox Avenue to take a Right onto EB US 30.
- b. 2023-10-17 Road Design Note: A new Fox Avenue Northbound Right Turn area was created using a WB-67 with a 75' Turning Radius per Figure 11 (Intersection layout for skewed intersections) of Section 6A-1 (Horizontal Intersection Design).

11. FOX AVENUE – US 30 WESTBOUND LEFT TURN LANE

- a. 2023-09-05 Road Design Note: According to Subsection "Turning Lanes\Left Turn Lanes" of Section 6C-2 (Super-2 Highways) a WB left turn lane from US 30 to SB Fox Avenue is warranted at this intersection. The Design Criteria for a Super-2 Left Turn Lane can be found in Section 6C-5 (Four-Lane Expressway Turn Lanes). Turning volume determines left turn storage lane length can be found in Figure 2 in Section 6A-1 (Horizontal Intersection Design: Rural Two Lane) of the Design Manual). Warrants need to be checked to determine whether additional length and a shallow 15:1 taper are needed for deceleration purposes. Furthermore, the Design Manual states that traffic volumes for the Design of Turning Lanes should be based of the current traffic data, NOT projected traffic. The 2018 Turning Movement Volume [https://www.iowadot.gov/maps/msp/traffic/turning\\_movements/2018/16414689099.pdf](https://www.iowadot.gov/maps/msp/traffic/turning_movements/2018/16414689099.pdf) for the 'East Leg Left Turn Movement' was 152 Vehicles per Day, with a peak of 18 vehicles during the 16:00-17:00 hour. The 2018 Turning Movement document shows US 30 through traffic west of Fox Avenue as 6,170 VPD and 5,047 VPD (both direction) east of Fox Avenue. For comparison, the 2022 Iowa DOT GIS) traffic volumes for US 30 through Mechanicsville are 5,500 VPD west of Fox Avenue (both directions) and 4,410 VPD East of Fox Avenue (both directions).
  - i. Storage Length: According to Figure 2 in Section 6A-1 (Horizontal Intersection Design: Rural Two Lane) of the Design Manual the Storage Length should be 150'.
  - ii. Deceleration Length: This US 30 WB Left Turn Lane to SB Fox Avenue does NOT warrant additional length for a deceleration lane. According to the subsection 'Left Turn Lanes/Left Turn Deceleration Lane Warrants' of Section 6C-5 (Four-Lane Expressway Turn Lanes) 'A left turn deceleration lane may be warranted if left turning traffic flow rate is greater than 30 vehicles per hour measured over a minimum of 15 minutes and either: (a) approach volume is greater than 400 vehicles per hour, or (b) approach truck traffic volume is greater than 40 vehicles per hour.' The 18 vehicles for the 16:00-17:00 as found on the 2018 Traffic Movement Chart linked above is well below the required left turning traffic flow rate requirement of 30 vehicles per hour. Also, according to the same section "the Intersection location may warrant a left turn deceleration

lane even if turning and approach volumes do not...". None of the intersection location warrants were met. This US 30 WB LTL onto SB Fox Avenue would NOT be considered a main entrance into Mechanicsville since Mechanicsville is on the NORTH side of US 30.

- iii. Taper Ratio: The Taper Ratio will be designed as 15:1 even though only 10:1 is per the Storage Length Requirements. The fact that a Deceleration Length is not needed means that technically a 15:1 ratio is not needed, however, the Design feels that a shallower taper is justified for this location because of the Super-2 designation and the relatively high posted speed through Mechanicsville (45 MPH).
- b. 2023-11-30 Road Design Note: A 14' TWLTL between Madison Street and Cherry Street was considered by Road Design (Jonathan Bahr and Jason Holst) as well as Traffic and Safety (Chris Poole) and added to the design. This TWLTL also serves US 30 WB traffic taking a left turn onto SB Fox Avenue.

12. MADISON STREET – US 30 WB PARALLEL RIGHT TURN LANE

- a. 2023-08-31 Road Design Notes: We are using Design Manual Sections 6C-2 (Super-2 Highways), 6C-5 (Four-Lane Expressway Turn-Lanes), and 6A-1 (Horizontal Intersection Design: Rural Two-Lane) to develop the Design Criteria for the Madison Street WB Parallel Right Turn Lane. There is an existing WB Parallel Right Turn Lane at Madison Street, so we will be checking to see if we need to make it longer. An Offset Right Turn Lane can not be added at this location because of Railroad constraints.
  - i. Taper Rate is 15:1 according to Section 6C-5 subsection "Right Turn Lane Design".
  - ii. Length of the parallel portion should be 360' (350'+10'). Length of the parallel portion depends on the posted mainline speed (45 MPH) and the return radius as a 'control radius' (40' according to 1953 FN-57 Record Drawing) according to Section 6C-5 subsection "Right Turn Lane Design." Section 6C-5 subsection "Right Turn Lane Design" also mentions that the designer should use Table 2 of Section 6A-1 to determine the length of the parallel portion. According to Table 2 of Section 6A-1 it seems as though the minimum control radius for a major parallel right turn lane should be 50. Unfortunately, due to the constraints of the intersection (proximity to railroad and ditch, specifically), it does not look like the radius can be reconstructed to be greater than the existing 40', Jason Holst agreed. Jason Holst suggested that by looking at Table 2 of 6A-1 we could interpolate what the deceleration lane length should be for a 40' control radius; it seems as though for every 20' increment of control radius an opposite increment of 5' to 10' of deceleration lane length is added or subtracted, with the amount of deceleration lane length being decreased as the control radius increases, therefore, Jason thought it was appropriate to only add 10' onto the 350' deceleration lane length that was designated for a 50' control radius with a design speed of 45 MPH. FYI, the WB Parallel Right Turn Lane was constructed in 1994 according to Record Drawing 1994 NHS-30-7(89)--19-57 and the parallel length is currently 185' (STA 300+92 to STA 302+77).

13. MADISON STREET – US 30 EASTBOUND LEFT TURN LANE

- a. 2023-09-05 Road Design Note: According to Subsection "Turning Lanes\Left Turn Lanes" of Section 6C-2 (Super-2 Highways) a EB left turn lane from US 30 to NB Madison Street is warranted at this intersection. The Design Criteria for a Super-2 Left Turn Lane can be found in Section 6C-5 (Four-Lane Expressway Turn Lanes). Turning volume determines left turn storage lane length can be found in Figure 2 in Section 6A-1 (Horizontal Intersection Design: Rural Two Lane) of the Design Manual). Warrants need to be checked to determine whether additional length and a shallow 15:1 taper are needed for deceleration purposes. Furthermore, the Design Manual states that traffic volumes for the Design of Turning Lanes should be based of the current traffic data, NOT projected traffic. The 2018 Turning Movement Volume [https://www.iowadot.gov/maps/msp/traffic/turning\\_movements/2018/16414689099.pdf](https://www.iowadot.gov/maps/msp/traffic/turning_movements/2018/16414689099.pdf) for the 'West Leg Left Turn Movement' was 531 Vehicles per Day, with a peak of 55 vehicles during the 16:00-17:00 hour. The 2018 Turning Movement document shows US 30 through traffic west of Fox Avenue as 6,170 VPD and 5,047 VPD (both direction) east of Fox Avenue. For comparison, the 2022 Iowa DOT GIS) traffic volumes for US 30 through Mechanicsville are 5,500 VPD west of Fox Avenue (both directions) and 4,410 VPD East of Fox Avenue (both directions).
- i. Storage Length: According to Figure 2 in Section 6A-1 (Horizontal Intersection Design: Rural Two Lane) of the Design Manual the Storage Length should be 150'.
  - ii. Deceleration Length: Deceleration Length should be 505' (180' of 15:1 Taper + 325' of 12' Full-Lane Deceleration). This US 30 EB Left Turn Lane to NB Madison Street DOES warrant additional length for a deceleration lane. According to the subsection 'Left Turn Lanes/Left Turn Deceleration Lane Warrants' of Section 6C-5 (Four-Lane Expressway Turn Lanes) 'A left turn deceleration lane may be warranted if left turning traffic flow rate is greater than 30 vehicles per hour measured over a minimum of 15 minutes and either: (a) approach volume is greater than 400 vehicles per hour, or (b) approach truck traffic volume is greater than 40 vehicles per hour.' The 55 vehicles for the 16:00-17:00 as found on the 2018 Traffic Movement Chart linked above is well above the required left turning traffic flow rate requirement of 30 vehicles per hour AND the approach truck traffic volume of 38 (9+29) was determined to be close enough to the 40 trucks per hour threshold. Also, according to the same section "the intersection location may warrant a left turn deceleration lane even if turning and approach volumes do not...". Road Design believes the intersection location warrant is met at this location because the US 30 EB LTL onto NB Madison Street WOULD be considered a main entrance into Mechanicsville since Mechanicsville is on the NORTH side of US 30. The deceleration lane length was determined per Table 9-20 (Desirable Lane Change and Deceleration Distances) in Section 9.7.2 (Deceleration Lanes) of the 2012 AASHTO Manual 'A Policy on Geometric Design of Highways and Streets' using a posted speed of 55 MPH (the EB speed limit changes from 55 MPH to 45 MPH at STA 294+00, which Road Design believes is close enough to the US 30/Madison Street intersection to justify the use of the 55 MPH posted speed, plus the designation of the route as a Super-2 may suggest that vehicles would be more likely to enter town at a higher rate of speed than what is posted. FYI, the 2001 version of the AASHTO Manual was

referenced for use in subsection 'Left Turn Lane Design/Left Turn Deceleration Lanes' in Section 6C-5 (Four-Lane Expressway Turn Lanes) of the Iowa DOT Manual, the 2012 AASHTO Manual was used instead.

- iii. Taper Ratio: The Taper Ratio will be designed as 15:1 per requirements for Left Turn Lanes that have Deceleration Length.

14. CHERRY STREET – US 30 WB PARALLEL RIGHT TURN LANE

- a. 2023-08-31 Road Design Notes: We are using Design Manual Sections 6C-2 (Super-2 Highways), 6C-5 (Four-Lane Expressway Turn-Lanes), and 6A-1 (Horizontal Intersection Design: Rural Two-Lane) to develop the Design Criteria for the Cherry Street WB Parallel Right Turn Lane. There is an existing WB Parallel Right Turn Lane at Cherry Street, so we will be checking to see if we need to make it longer. An Offset Right Turn Lane can not be added at this location because of Railroad constraints.
- i. Taper Rate is 15:1 according to Section 6C-5 subsection "Right Turn Lane Design".
  - ii. Length of the parallel 'deceleration' portion should probably be 480' (455'+25', see below). Length of the parallel portion depends on the posted mainline speed (55 MPH is being used because of the close proximity of the speed limit change sign from WB 55 MPH to WB 45 MPH at STA 316+75, even though Cherry Street is within a 45 MPH zone at STA 313+40) and the return radius as a 'control radius' (25' according to Survey provided for this project, FYI, no Record Drawings for the Cherry Street intersection were found, it was built between 1953 and 1994) according to Section 6C-5 subsection "Right Turn Lane Design." Section 6C-5 subsection "Right Turn Lane Design" also mentions that the designer should use Table 2 of Section 6A-1 to determine the length of the parallel portion. According to Table 2 of Section 6A-1 it seems as though the minimum control radius for a major parallel right turn lane should be 50. Unfortunately, due to the constraints of the intersection (proximity to railroad and ditch, specifically), it does not look like the radius can be reconstructed to be greater than the existing 25', Jason Holst agreed. Jason Holst suggested that by looking at Table 2 of 6A-1 we could interpolate what the deceleration lane length should be for a 25' control radius; it seems as though for every 20' increment of control radius an opposite increment of 5' to 10' of deceleration lane length is added or subtracted, with the amount of deceleration lane length being decreased as the control radius increases, therefore, Jason thought it was appropriate to only add 25' onto the 455' deceleration lane length that was designated for a 50' control radius with a design speed of 55 MPH. FYI, the WB Parallel Right Turn Lane was constructed when the Cherry Street intersection was constructed and the parallel length is currently 65' (STA 313+85 to STA 314+50) according to the Survey provided for this project. We could not find Turning Movement Counts for the Cherry Street intersection, however, the 2014 ADT on Cherry street is 2,010 vehicles (both directions, so it's not clear how many are accessing Cherry Street via WB US 30) and similar to Madison Street, so, if the WB Turning Movement Counts at Cherry Street are similar to the WB Right Turn Lane at Madison Street [https://www.iowadot.gov/maps/msp/traffic/turning\\_movements/2018/16414689099.pdf](https://www.iowadot.gov/maps/msp/traffic/turning_movements/2018/16414689099.pdf), then it looks like the deceleration length (L) of the WB Right Turn

Lane at Cherry Street will need to be lengthened (it's only 65'-80' [depending on how it's measured] right now). Jason Holst said he thought the WB Right Turn Lane at Cherry Street qualifies as a Major Right Turn Lane per Figure 1 on Section 6A-1 (Horizontal Intersection Design: Rural Two-Lane Section) his review. The Right Turn Lane Warrants in Section 6C-5 (Four-Lane Expressway Turn Lanes) weren't able to be verified with the information we had. Regardless, Section 6C-2 (Super-2 Highways) says that "Right turn lanes should be placed at all paved intersections and should be considered at unpaved intersections." Jason Holst said he would like Road Design to talk with Traffic and Safety (we can start with Greg Aarssen) to discuss the large amount of vehicle shadowing that this 480' WB parallel Right Turn Lane at Cherry Street would produce.

truck traffic volume of 38 (9+29) was determined to be close enough to the 40 trucks per hour threshold. Also, according to the same section "the Intersection location may warrant a left turn deceleration lane even if turning and approach volumes do not...". Road Design believes the intersection location warrant is met at this location because the US 30 EB LTL onto NB Cherry Street COULD be considered a main entrance into Mechanicsville since Mechanicsville is on the NORTH side of US 30. The deceleration lane length was determined per Table 9-20 (Desirable Lane Change and Deceleration Distances) in Section 9.7.2 (Deceleration Lanes) of the 2012 AASHTO Manual 'A Policy on Geometric Design of Highways and Streets' using a posted speed of 45 MPH (the EB speed limit changes from 55 MPH to 45 MPH at STA 294+00, which Road Design believes is far enough away from the US 30/Cherry Street intersection to justify the use of the 45 MPH in-town posted speed. FYI, the 2001 version of the AASHTO Manual was referenced for use in subsection 'Left Turn Lane Design/Left Turn Deceleration Lanes' in Section 6C-5 (Four-Lane Expressway Turn Lanes) of the Iowa DOT Manual, the 2012 AASHTO Manual was used instead.

iii. Taper Ratio: The Taper Ratio will be designed as 15:1 per requirements for Left Turn Lanes that have Deceleration Length.

**15. CHERRY STREET – US 30 EASTBOUND LEFT TURN LANE**

- a. 2023-09-05 Road Design Note: According to Subsection "Turning Lanes\Left Turn Lanes" of Section 6C-2 (Super-2 Highways) a EB left turn lane from US 30 to NB Cherry Street is warranted at this intersection. The Design Criteria for a Super-2 Left Turn Lane can be found in Section 6C-5 (Four-Lane Expressway Turn Lanes). Turning volume determines left turn storage lane length can be found in Figure 2 in Section 6A-1 (Horizontal Intersection Design: Rural Two Lane) of the Design Manual). Warrants need to be checked to determine whether additional length and a shallow 15:1 taper are needed for deceleration purposes. Furthermore, the Design Manual states that traffic volumes for the Design of Turning Lanes should be based of the current traffic data, NOT projected traffic. We could not find Turning Movement Counts for the Cherry Street intersection, however, the 2014 Iowa DOT GIS ADT on Cherry Street is 2,010 vehicles (both directions, so it's not clear how many are accessing Cherry Street via WB US 30) and similar to Madison Street, so, if the WB Turning Movement Counts at Cherry Street are similar to the 2018 WB Right Turn Lane at Madison Street [https://www.iowadot.gov/maps/msp/traffic/turning\\_movements/2018/16414689099.pdf](https://www.iowadot.gov/maps/msp/traffic/turning_movements/2018/16414689099.pdf) then for the 'West Leg Left Turn Movement' was 531 Vehicles per Day, with a peak of 55 vehicles during the 16:00-17:00 hour. The 2018 Turning Movement document shows US 30 through traffic west of Fox Avenue as 6,170 VPD and 5,047 VPD (both direction) east of Fox Avenue. For comparison, the 2022 Iowa DOT GIS traffic volumes for US 30 through Mechanicsville is 4,410 VPD on each side of Cherry Street (both directions).
  - i. Storage Length: According to Figure 2 in Section 6A-1 (Horizontal Intersection Design: Rural Two Lane) of the Design Manual the Storage Length should be 150'.
  - ii. Deceleration Length: Deceleration Length should be 340' (180' of 15:1 Taper + 160' of 12' Full-Lane Deceleration). This US 30 EB Left Turn Lane to NB Cherry Street DOES warrant additional length for a deceleration lane. According to the subsection 'Left Turn Lanes/Left Turn Deceleration Lane Warrants' of Section 6C-5 (Four-Lane Expressway Turn Lanes) 'A left turn deceleration lane may be warranted if left turning traffic flow rate is greater than 30 vehicles per hour measured over a minimum of 15 minutes and either: (a) approach volume is greater than 400 vehicles per hour, or (b) approach truck traffic volume is greater than 40 vehicles per hour.' The 55 vehicles for the 16:00-17:00 as found on the 2018 Traffic Movement Chart linked above is well above the required left turning traffic flow rate requirement of 30 vehicles per hour AND the approach

**16. CHERRY STREET – US 30 WESTBOUND ACCELERATION LANE (WEST OF CHERRY STREET)**

- a. 2023-10-24 D2 Field Exam Meeting: The team discussed the need of at US Westbound acceleration lane west o Cherry Street and its potential impacts to the US 30 Westbound Right Turn Lane into Madison Street (it seems the acceleration lane would overlap US 30 Westbound Right Turn Lane into Madison Street). The Road Design Team will look at the interaction between the acceleration lane and the US 30 Westbound Right Turn Lane into Madison Street.
- b. 2023-10-24 Road Design Note: The Road Design Team discussed the interaction between the acceleration lane and the US 30 Westbound Right Turn Lane into Madison Street. The Road Design Team agreed that it would not be likely that there would be someone entering the WB US 30 Right Turn Lane for Madison Street (or queued up because of a train at the Madison Street railroad crossing) and someone using the acceleration lane from Cherry Street at the same time, therefore it should not be an issue if a semi-truck exiting Cherry Street to WB US 30 used part or all of the US 30 Westbound Right Turn Lane into Madison Street Madison RTL as an acceleration lane if they needed to. They could even use the acceleration lane of being installed west of Madison for SB Madison Right Turn movements onto WB US 30. The pavement marking striping would show a relatively short acceleration lane and the normal length of right turn lane for Madison Street.

17. BUSINESS ENTRANCE (SOUTH LEG OF CHERRY STREET) – US 30 WESTBOUND LEFT TURN LANE

- a. 2023-10-10 Road Design Note: According to Subsection “Turning Lanes\Left Turn Lanes” of Section 6C-2 (Super-2 Highways) a WB left turn lane from US 30 to the business entrance south of Cherry Street is not necessarily warranted for the entrance. However, the alternative would be to have the designed turning lane area striped with channelizing median paint because of the EB Left Turn Lane for Cherry Street. It generally seems appropriate that a EB Left Turn Lane is warranted at this location rather than a channelized median. FYI, the WB Left Turn Lane for the business entrance south of Cherry Street was shown in the ‘Mechanicsville Recommended Alternative’ exhibit generated by Consultant HDR.
  - i. Storage Length: According to Figure 2 in Section 6A-1 (Horizontal Intersection Design: Rural Two Lane) of the Design Manual the Storage Length should be 150’.
  - ii. Deceleration Length: This US 30 WB Left Turn Lane to the business entrance south of Cherry Street does NOT warrant additional length for a deceleration lane. According to the subsection ‘Left Turn Lanes/Left Turn Deceleration Lane Warrants’ of Section 6C-5 (Four-Lane Expressway Turn Lanes) ‘A left turn deceleration lane may be warranted if left turning traffic flow rate is greater than 30 vehicles per hour measured over a minimum of 15 minutes and either: (a) approach volume is greater than 400 vehicles per hour, or (b) approach truck traffic volume is greater than 40 vehicles per hour.’ No counts are available for this business, but it would stand to reason that the counts are less than the WB Left Turn Lane at Fox Avenue. Also, according to the same section “the Intersection location may warrant a left turn deceleration lane even if turning and approach volumes do not...”. None of the intersection location warrants were met. This US 30 WB LTL into the business entrance south of Cherry Street would NOT be considered a main entrance into Mechanicsville since Mechanicsville is on the NORTH side of US 30.
  - iii. Taper Ratio: The Taper Ratio will be designed as 15:1 even though only 10:1 is per the Storage Length Requirements. The fact that a Deceleration Length is not needed means that technically a 15:1 ratio is not needed, however, the Design feels that a shallower taper is justified for this location because of the Super-2 designation and the relatively high posted speed through Mechanicsville (45 MPH) and the close proximity to the 55 MPH posted US 30 out of Mechanicsville.

18. PROPOSED PAVED SHOULDER AND GRANULAR SHOULDERS

- a. According to Page 3 of the 9/20/2022 Project Concept; NHSX-030-8(53)--3H-16 pays for the 'inner' 4' of the proposed 8' paved shoulders. HSIPX-030-8(054)--3L-16 will pay for the outer 4' of the proposed 8' paved shoulders. According to Page 14 of the 9/20/2022 Project Concept; “the Existing Granular Shoulders are 10 feet wide, but two feet are a granular fillet that was added with the previous resurfacing project.” Please confirm what should be constructed outside of the proposed 8' paved shoulders (Earth Shoulder Construction or Granular Fillet)?
  - i. 2023-02-27 Kickoff Meeting: The District confirmed that HSIPX funding is being removed from the scope of the project and that the entire 8' paved shoulder will be funded by (53). See Revised Project Concept dated 1/27/2023.
  - ii. 2023-02-27 Kickoff Meeting: The District confirmed Granular Fillet (specifically “Granular Shoulder Construction”) should be utilized outside of the 8' paved shoulders. See below for more information regarding “Granular Shoulder Construction”.
  - iii. 2023-07-19 Field Visit: Road Design did some measurements in the field of the existing gravel shoulder. There were three measurements from the existing edge of pavement. What we would consider ‘proper’ gravel shoulder went to 8’, there was some vegetation overgrowth that went to 9’, and then when we pulled the vegetation back it appeared the fines (clay, no gravel) went to 10’. We believe the 10’ measurement was the end of the rolldown/wedge. Furthermore, we discussed the existing granular shoulder with Bill (District 6 Maintenance) and he said that when Maintenance orders gravel to retop the existing gravel shoulders they order enough for 8’.
    - 1. 2023-07-19 Field Visit: During the 7/19/2023 Kickoff Meeting for the Super-2 US 30 segment from Stanwood to Clarence Mark Harle (District 5) said the existing shoulder is either 10’ wide or 8’ wide + 2’ wedge. He was thinking about pricing the paved shoulder from Stanwood to Clarence as 10’ wide paved shoulders for the project, but decided to price out 8’ wide paved shoulders for the Stanwood to Clarence Project Concept. Road Design will still need to see whether we need to do foreslope and ditch reshaping to install 8’ wide paved shoulders, therefore Mark was going to look into getting survey of the existing foreslopes to confirm what size of shoulders can be installed.
    - 2. 2023-08-04 Road Design Note: Jonathan Bahr noticed that there was a difference in shoulder information provided in the 9/20/2022 Project Concept when compared to the 1/27/2023 Project Concept. The 9/20/2022 Project Concept specified 8’ Paved Shoulders and the 1/27/2023 Project Concept specified 10’ Paved Shoulders. During the 2/27/2023 Kick-off Meeting the Road Design Team and District Team were reviewing the Project with respect to the 9/20/2022 Project Concept and agreed that the width of the Paved Shoulders should be 8’, particularly because of the potential impact to foreslopes along US 30 (the existing gravel shoulder drivable ‘shelf’ appeared to be only 8’ wide and the roadway profile elevation is already being raised 4.5”) and the potential impacts to Right-of-Way in Mechanicsville. During a separate conversation on 8/4/2023 between Jonathan Bahr and Jason Holst it was agreed that the Paved Shoulders should be specified as 8’ wide for

- the reasons previously outlined (foreslope and ROW) and that the topic did not need to be reconsidered.
3. 2023-10-24 D2 Field Exam Meeting: Jonathan Bahr re-summarized the reasons above about why the paved shoulders were designed as 8'. The District did not have any exceptions. The District said the intent was not to have to do any fill or grading on the foreslopes to install the paved shoulders, so 8' wide shoulders were OK. The District mentioned that the real driver of the decision was the limited space on the WB side of US 30 against the railroad tracks.
  4. 2023-11-08 Field Meeting Notes: Jonathan Bahr spoke with Mark Harle (District 5) about the 8' paved shoulders. Mark Harle indicated that Jesse Tibodeau spoke with Charlie Purcell after the 10/24/2023 D2 Field Exam Meeting and they agreed that the paved shoulders should be 8' wide instead of 10' wide. The District does not want 'sliver fill' adjacent to the new paved shoulders. FYI, shoulder measurements were taken on video at and around MP 277.40 (between Indian Avenue and Jackson Avenue); the 11/08/2023 measurements appeared to show a 10' granular shoulder (measured from the Edge of Pavement to the outer fringe of the gravel shoulder). The foreslope appears to drop at 11'.
- iv. Can excavated material be specified for the construction of this area? "Granular Shoulder Construction" can make use of the Class 13 Excavation Material from the adjacent paved shoulder construction area. FYI, this operation was previously confirmed for use on District 5 projects US 65 Wayne (NHSX-065-1(36)--3H-93), US 69 Decatur (STP-069-1(56)--2C-27), and IA 149 Wapello (STP-149-1(90)--2C-90 / HSIPX-149-1(91)--3L-90).
1. 2023-02-27 Kickoff Meeting: District 6 is okay with Road Design specifying Class 13 Excavated Material as 'Granular Shoulder Construction' for the construction of the (53) Granular Fillet. The District recommended that the notes in the Estimate Reference Information specify it as being clean material.
  2. 2023-02-27 Kickoff Meeting: District 6 mentioned that the intent for the 3R Resurfacing Project (51) was for there to be a Temporary Granular Fillet placed adjacent to the traveled way paved edge line (outside of Town) to make up for the temporary 3" rise in roadway profile elevation (after the second 1.5" HMA intermediate course is placed) rather than installing 3" thick x 8' wide gravel material which would be excavated and replaced with a paved shoulder when the (53) project started a year later.
    - a. 2023-12-13 Road Design Note: Road Design Team discussed Temporary Granular Fillet. The Temporary Granular Fillet placed adjacent to the traveled way paved edge line (outside of Town) to make up for the temporary 3" rise in roadway profile elevation (after the second 1.5" HMA intermediate course is placed) will be 4" at the edge of pavement (to account for 1" of washout) and will be 0" thick at a distance measured 8' from the edge of pavement. A steeper/shorter Temporary Granular Fillet was considered, but Road Design felt the traffic volume along US 30 justified a flatter Temporary Granular Fillet.

3. 2023-10-25 District 6 Comment: Jesse Tibodeau provided an e-mail indicating all shoulder rock should be placed in year 1 (51), after the mainline resurfacing. He also indicated that all shoulder paving would be done in year 2 (53 project) and indicated that the rock placed during (51) can be reclaimed for a rock fillet outside of the paved shoulders (Class 13 Material excavated for the paved shoulders will be reused as 'Granular Shoulder Construction' for the construction of the (53) Granular Fillet. (There was some initial thought that there could be a cost savings on granular material if paved shoulder not adjacent to passing lanes was installed done during (51) rather than (53).)
- b. Please confirm the composition (width and material thicknesses) of the paved shoulders within areas that have proposed auxiliary lanes (passing and turn lanes) and areas that do NOT have proposed auxiliary lanes. It seems as though the 8' Paved Shoulders outside of the areas proposed to have auxiliary lanes will be constructed following Resurfacing Project (51) and therefore be bid as 6" HMA Paved Shoulder and not 4.5" Base Widening + 1.5" Surface Course.
- i. 2023-02-27 Kickoff Meeting: District 6 prefers that the Typical Section for the 8' wide Paved Shoulders in areas not adjacent to the proposed Auxiliary Lanes be revised to 4.5" HMA Base Widening + 1.5" Surface Course. The difference between 'Class 13 Excavation, Waste' and 'Class 13 Excavation for Widening' was discussed and the District maintained their decision to utilize 4.5" HMA Base Widening + 1.5" Surface Course.
  - ii. 2023-09-20 Road Design Note: Jason Holst suggests changing the composition of the shoulders adjacent to the proposed passing lanes from a 'simple' continuation of the passing lane pavement composition to the 'standard' 6" thick paved shoulder as shown in the Project Concept and DOT Shoulder Typical Components (ie 6" HMA Shoulder with Special Backfill and Modified Subbase like component 2\_P\_HMA). Jason said that the 'simple' continuation is okay to use where we are changing climbing lanes into passing lanes, but when we are building long passing lanes outright then it is more cost-effective to just to the 'standard' 6" thick paved shoulders. Also, he said that the construction operation would probably have the contractor building all of the passing lane (including the surface course) and then coming back later to place the 6" HMA Paved Shoulder because the 6" Paved Shoulder is cheaper material than what would otherwise be done to construct a 6" Paved Shoulder (4.5" Base Course then + 1.5" Surface Course over the roadway, passing lane, and shoulder). We should probably ask the question again during the D2 Meeting. FYI, Jonathan Bahr asked a question regarding Paved Shoulder Subbase and Subdrains to Soils (Mark Dell), Pavement Design (Danny Zeimen and Chris Brakke), and Methods (Daniel Harness) in e-mails to the group back on May 3, 2023 and June 15, 2023, and just to Daniel Harness on September 11, 2023.
  - iii. 2023-10-24 D2 Field Exam Meeting: Road Design summarized the current composition of the 6" Paved Shoulders and possible alternatives. A final design can be determined as the project progresses.
- c. There are right turn lanes at County Road X40/Madison Ave. in Mechanicsville, Cherry St. in Mechanicsville, neither of which has existing shoulder. Shall this project include the installation of Paved Shoulder at these Right Turn Lanes? If so, how wide should they be?



- i. 2023-02-27 Kickoff Meeting: District 6 is okay with the paved shoulders being reduced in width to 4' (or 6' because it is NHS) adjacent to Turning Lanes. Jason Holst is generally okay with the Paved Shoulders being reduced adjacent to Turning Lanes. Paved Shoulder width reduction at Turning Lanes is an Iowa DOT Design Standard. However, we will need to check about whether there is space to install 6' paved shoulders adjacent to the WB Right Turn Lanes accessing Madison Street and Cherry Street in Mechanicsville. There is not much of a shelf between the existing WB turn lane edge of pavement and the foreslope to the E-W ditches on the north side of US 30. We can check to see if such space is available when the survey is completed, but it is possible that we may need a Design Exception if we find that we cannot place a paved shoulder adjacent to the Turn Lanes.
- ii. 2023-04-05 Road Design Note: The interaction between the paved sideroads and proposed paved shoulders was reviewed by the Road Design Team. It was determined that the paved shoulders should simply terminate at the intersection point with the curve return of the sideroad and should NOT follow the curve return. There is limited space between the paved sideroad returns, utilities, and ditches that it does not appear as though we could have the paved shoulder follow the curve return even if we wanted it to. FYI, it does not appear as though there has been a problem with vehicle turnoff-tracking onto the gravel shoulder. However, it would be good to generate an AutoTurn Exhibit demonstrating that vehicle off-tracking is not an issue.
- d. 2023-10-24 D2 Field Exam Meeting: The District will consider adding the paved shoulders to (51) instead of the 4.5" of Granular Shoulder. This would reduce the cost of Class 13 Excavation of new Granular Shoulder that would need to be removed during (53). District will discuss with Road Design next week.
  - i. 2023-11-25 Road Design Note: District 5 (Jesse Tibodeau) determined that the gravel shoulder should be installed with (51) after mainline resurfacing and that all shoulder paving would be done in (53). "The rock can be reclaimed for a rock fillet outside of the paved shoulders." Jesse also said to show all surface course work in the (53) project. Moving all surface course to the (53) project would eliminate runouts and add clarity to the scope of work between (51) and (53). They also did not like how they would have to do surface course testing for parts of the projects and not others (it would just get confusing).
- e. Shall we assume Granular Shoulder is 1" below existing edge of pavement due to washout?
  - i. 2023-10-24 D2 Field Exam Meeting: District 6 Response: Yes, assume the existing granular shoulder is 1" below the existing edge of pavement due to washout. Also, include 20% of contingency granular material in addition to the 1" of extra thickness. The District has had issues with plans underestimating the amount of granular shoulder material needed to top-off the existing granular shoulders.
- f. 2023-12-18 Traffic and Safety Meeting Notes: Microsoft Teams Meeting between Road Design (Jonathan Bahr and Jason Holst) and Traffic and Safety (Greg Karssen and Willy Sorenson). The attendees agreed to widen the paved shoulder on the EB side of US 30 at the rural Railroad Crossing intersections to 10' wide over a length of 150' to allow EB vehicles taking a left turn onto the NB leg of the sideroad a place to wait while trains are passing through the sideroad. Jonathan Bahr and Jason Holst discussed the

configuration and determined the following: at T intersections (like Old Lincoln Highway) the 10'x150' EB shoulder should 'end' even with a projected edge of the sideroad's NB edge of pavement, at four-way intersections (like Echo Avenue) the 10'x150' EB shoulder should 'end' where the west edge of the apron of the south leg of the intersection tapers down to 2' wide (this means that EB vehicles waiting to take a left turn would not need to block the south leg of the intersection while they wait to take a left turn). The 150' matches the minimum required amount of storage space required for left turn storage bays.

#### 19. 4 LANE TO 2 LANE TRANSITION

##### a. Superelevation

- i. 2023-03-22 Road Design Team Meeting: The Road Design Team needs to look at the Horizontal Geometry of the 4 Lane to 2 Lane Transition (see 'Horizontal Geometry' subsection below) to make sure that the superelevation of the two reverse curves can work with respect to Design Standards (ie. are the tangent sections long enough to support the superelevation transitions?). Jason Holst mentioned that it is possible that we may need to remove a few hundred feet of the existing westbound stubbed PCC pavement at the beginning of the project in order to complete the superelevation transition and remarked that this option is viable, but undesirable, and later remarked that we should really try to avoid removing any of the existing westbound stubbed PCC pavement and move the termination point of the transition as close to Charles Avenue as needed within reason (500' was an initial minimum distance between the transition termination point and the Charles Avenue Curve Return).
  - 1. 2023-11-08 Field Meeting Notes: Jason Holst suggested the possibility of moving the transition termination point closer to Charles Avenue than the 500' previously discussed. See "Sight Distances" and "Horizontal Geometry" Sections below.
- ii. 2023-03-22 Road Design Team Meeting: The Road Design Team needs to make sure we avoid trapping water in the tangent sections of the superelevated reverse curves. See Section 2A-4 of the Design Manual for an explanation and a link to a tool that helps resolve the situation.

##### b. Sight Distances

- i. 2023-03-22 Road Design Team Meeting: The Road Design Team needs to review how the 4 Lane to 2 Lane Transition works with the US 30 intersection with Charles Avenue.
- ii. 2023-03-22 Road Design Team Meeting: The Vertical Curve and Sight Distances need to be considered when the Design Team reviews the Superelevation Transition.
- iii. 2023-11-08 Field Meeting Notes: Jason Holst suggested the possibility of moving the transition termination point closer to Charles Avenue than the 500' currently discussed.
  - 1. 2023-11-27 Road Design Note: Jason Holst and Jonathan Bahr discussed moving the transition termination point closer to Charles Avenue and decided to leave it where it was (The reverse curves end at 98+44.66, which is approximately 480' from the existing beginning of the SWC curve intersection return of the Charles Avenue intersection). We

looked at the vertical geometry of the existing roads (heading westbound from Charles Avenue there is a 1.039% slope going up [per page 72, E.20 of the 2018 Record Drawings. 1929 Record Drawings show 1.00% going up on sheet 11], then a vertical crest curve [high point around 966+50/87+50/1896+50], then a 1.492% slope going down [per page 52, D.17 of the 2018 Record Drawings]. We determined that a vehicle heading westbound on US 30 will be able to see the beginning (east end) of the transition from east of Charles Avenue. The middle of the west reverse curve of the transition will be at the crest of the vertical curve, which means an eastbound vehicle will be preparing to exit the superelevated section of the horizontal curve at the crest of the vertical curve, which seemed viable (there is no guidance on how to handle superelevated sections on gradients, sags, and crests, regardless the slopes are relatively shallow). These conditions support the placement of the transition where it currently is. Pushing the transition further east would have marginal effects and would begin to encroach on Charles Avenue.

c. Horizontal Geometry

- i. 2023-03-22 Road Design Team Meeting: Keep in mind that it appears as though the east end of the 4 Lane to 2 Lane Transition will occur on a horizontal curve, so we may need to develop a spiral curve off that horizontal curve. It could be that it winds up that the median width is the only part that needs to spiral.
- ii. 2023-08-29 Road Design Notes: The Survey for the existing 4 Lane to 2 Lane was provided and the Alignment for US 30 was finalized. Unfortunately Survey did not provide linework south of the EB Centerline and also did not provide an alignment for the EB Transition Roadway. The only Alignments provided were along the Median Centerline of the 4 Lane Section of US 30 and the OLD Centerline of the 2 Lane Section of US 40 (prior to construction of the 4 Lane Section). The linework for the EB Transition Roadway was drawn in per the 2018 Record Drawings with two 9500' radius reverse curves with no tangent in between them. The linework for the new WB Transition roadway was drawn in with two 3500' radius reverse curves (superelevated at 4%) with a 150' radius between them. The 3500' radii with 4% superelevation was initially selected as part of the Technical Memo [220321 West TransitionRoadway TechMemo v1.pdf](#) dated 3/29/2022 and produced by Consultant HR Green. Road Design cross-checked HR Green's recommendation and found that according to Table 2 (High Speed, Two-Lane Undivided Roadways [w=12 feet],  $e_{max} = 6\%$ ,  $NC = 2\%$ ) of Section 2A-3 (Superelevation Tables) of the Design Manual; for a Design Speed of 60 MPH (Posted Speed = 55 MPH) and a 3500' radius, the minimum full superelevation is 4%, the Superelevation Runoff Length (aka Tangent Runoff Length)  $L = 107$ , and the Tangent Runout Length  $x = 53'$  (these values are less for a Design Speed of 55 MPH (also posted speed), but the values for 60 MPH satisfy both 55 MPH and 60 MPH conditions). Table 2 (specifically related to the Table being designated for use on Undivided Highways with  $w = 12'$ , where  $w$  is the distance from the axis of rotation to the outside edge of the traveled way) is OK to use per the language in the 'Divided Roadways/Depressed Medians' Subsection of Section 2A-2 (Superelevation) of the Design Manual "Facilities that have wide medians

with independent profile grades and/or construction centerlines may be treated as two-lane (undivided) highways, if the resulting median cross section is acceptable." The axis of rotation will be at the center of the 24' wide WB Transition Roadway. The 150' tangent Section between the reverse curves is the minimum amount of length allowed between these reverse curves according to Section 2D-1 (Reverse Curve Design) of the Design Manual ("The minimum tangent length between the curves is equal to the sum of 70% of the tangent runoff length (L) for each curve."). The Design Team decided that it would be preferable NOT to have to remove any of the existing WB stub except for some deleterious/cracked and uneven concrete at the very end of the stub (a sawcut at 961+70 would probably be needed to even off the PCC Stub), therefore the western 3,500' curve and superelevation transition would need to terminate at the existing PCC stub; therefore the PC of the west 3,500 would need to be a distance  $x + 0.7L$  ( $53' + 0.7*107 = 127.9$ ) away from the PCC stub; the Design Team would place the PC of the west curve at STA 963+00, which is 130 feet away from the PCC stub at 961+70 (after sawcut). The resulting westbound divergence point from the two-lane highway section would have improved line of sight and greater decision sight distance for an approaching driver compared to the current cross-over location. The reverse curves end at 98+44.66, which is approximately 480' from the existing beginning of the SWC curve intersection return of the Charles Avenue intersection. Moving the WB transition roadway closer to Charles Avenue should not be a problem since the new transition is with respect to changing the alignment of WB traffic only, which does NOT impact any Horizontal Sight Triangles for vehicles waiting at SB Charles or NB Charles.

- iii. 2023-11-08 Field Meeting Notes: Jason Holst suggested the possibility of moving the transition termination point closer to Charles Avenue than the 500' currently discussed.
  1. 2023-11-27 Road Design Note: Jason Holst and Jonathan Bahr discussed moving the transition termination point closer to Charles Avenue and decided to leave it where it was (The reverse curves end at 98+44.66, which is approximately 480' from the existing beginning of the SWC curve intersection return of the Charles Avenue intersection). We looked to see if there was any guidance regarding Horizontal Geometry and separation from transitions and sideroads and could not find any guidance. We determined that a vehicle heading westbound on US 30 will be able to see the beginning (east end) of the transition from east of Charles Avenue. The middle of the west reverse curve of the transition will be at the crest of the vertical curve, which means an eastbound vehicle will be preparing to exit the superelevated section of the horizontal curve at the crest of the vertical curve, which seemed viable (there is no guidance on how to handle superelevated sections on gradients, sags, and crests, regardless the slopes are relatively shallow). These conditions support the placement of the transition where it currently is. Pushing the transition further east would have marginal effects and would begin to encroach on Charles Avenue.

20. EXISTING PAVED SHOULDER

- a. There are existing Paved Shoulders within Mechanicsville within the limits of the proposed eastbound Left Turn Lanes at Madison Street and Cherry Street. Discuss the Treatment of these existing Paved Shoulders within the construction of the Left Turn Lane. FYI, Page 6 of the Project Concept indicates 'The shoulders in Mechanicsville have existing surfacing but will need to be replaced to provide adequate pavement structure.'
  - i. 2023-02-27 Kickoff Meeting: Existing Paved Shoulders will need to be removed. New full-depth Pavement and Paved Shoulders will need to be installed to accommodate the improvements.
- b. There is existing Paved Shoulders north of the area where an old truck weigh station was (the weigh station was at the SW corner of US 30 and Grant Avenue). The Stationing of the existing Paved shoulder is: 363+90 (MP 275.43) to 367+00 (MP 273.49) on the Westbound Side of US 30. What should the treatment of the existing Paved Shoulder be?
  - i. 2023-10-24 D2 Field Exam Meeting: District 6 Response: Remove the existing paved shoulder when encountered. New full-depth shoulder pavement should be installed in its place.
- c. 2023-11-08 District 6 Comment: The District is currently installing "partial-depth 3' wide HMA paved shoulders" at the temporary 4-lane to 2-lane transition/cross-over to temporarily address pavement edge drop-off. The approximate stationing and footage for the marked areas on hwy 30 for the HMA shoulders to be placed are,  
EB 961+71 – 967+99, (628')  
WB 975+09 – 961+68 (1341')



- i. 2023-11-17 Road Design Note: The Road Design Team will need to figure out how to address the "partial-depth 3' wide HMA paved shoulders" being installed. Will they be left in place?

21. SHOULDER RUMBLES

- a. Please confirm the use of Shoulder Rumble Strips as opposed to Shoulder Rumble STRIPES (rumble stripes are placed under the traffic edge line and increase the functional width of the shoulder). Road Design suggests that the use of standard Shoulder Rumble Strips is appropriate for this project since the minimum functional width for a paved shoulder used by bicyclists is 4 feet (Bicyclist Operating Space, AASHTO Bike Guide 2012), outside the rumble strips should be achieved with the construction of the 8' paved shoulders.
  - i. 2023-02-27 Kickoff Meeting: Use of Shoulder Rumble Strips is confirmed. However, placement of Rumble Strips (Centerline and Shoulder) needs to be coordinated with Project (51). If Rumble Strips (Centerline and Shoulder) can wait until construction of (53), then a Design Exception for (51) may need to be provided.
  - ii. 2023-10-25 District 6 Comment: Jesse Tibodeau provided an e-mail indicating all the surface course would be done in (53). A Design Exception for excluding the shoulder rumbles on (51) will need to be provided.

22. CENTERLINE RUMBLES

- a. Centerline Rumbles shall be installed within Rural areas per Design Manual Section 3C-5 (Centerline rumble strips must be placed on all new or existing two lane Primary rural roads with at least 11 foot lane widths).
  - i. 2023-02-27 Kickoff Meeting: Use of Centerline Rumble Strips is confirmed. However placement of Rumble Strips (Centerline and Shoulder) needs to be coordinated with (51). If Rumble Strips (Centerline and Shoulder) can wait until construction of (53), then a Design Exception for (51) may need to be provided.
  - ii. 2023-10-25 District 6 Comment: Jesse Tibodeau provided an e-mail indicating all the surface course would be done in (53). A Design Exception for excluding the centerline rumbles on (51) will need to be provided.
- b. Rumbles shall be excluded from Incorporated and Unincorporated Towns.

23. RUMBLE PANELS

- a. 2023-01-24 Road Design Note: There aren't any existing Rumble Panels in this corridor and we will not be adding any. Tab 112-7 is unnecessary and doesn't need to be included in these plans.
  - i. 2023-02-27 Kickoff Meeting: District 6 confirmed Rumble Panels are not needed within this Project corridor.

24. PATCHING

- a. Please confirm that Patching will NOT be implemented with this project (53), but that it will be included with Resurfacing Project (51).
  - i. 2023-02-27 Kickoff Meeting: District 6 confirmed that District 6 would be providing Field tabulations and Patches likely would be installed as part of (51). The implementation between (51) and (53) will be reviewed further by the Design Team upon receipt of the Field Tabulations.
  - ii. 2023-10-24 D2 Field Exam Meeting: Road Design reiterated the need for Field Tabulations.

25. SIDEROAD AND ENTRANCE TREATMENT

- a. Discuss Treatment of Existing Sideroads and Entrances throughout the Project Limits.
  - i. Existing Gravel Sideroads without Existing Paved Fillet
    - 1. 2023-02-27 Kickoff Meeting: District 6 verified the installation of the 10' paved fillets at existing Gravel Sideroads. The District added that Cedar County may want 50' Paved Fillet Extensions at each of the sideroads as a part of the (51) project (50' beyond the 10' paved fillet). Mark Harle will contact the Cedar County engineer. District 6 mentioned they have a Detail that they have been using for the 50' Paved Fillet Extensions that they can provide to Road Design if needed.
  - ii. Existing Gravel Sideroads with Existing Paved Fillet
    - 1. 2023-02-27 Kickoff Meeting: Road Design shall create a Detail as needed.
  - iii. Existing Paved Sideroads and Existing Paved Entrances
    - 1. 2023-02-27 Kickoff Meeting: Road Design shall create a Detail as needed for Runouts at existing Paved Sideroads and existing Paved Entrances (Class 13 excavation will skip the paved sideroads and paved entrances).
  - iv. Existing Gravel Entrances without Existing Paved Fillets
    - 1. 2023-02-27 Kickoff Meeting: Road Design shall not give existing gravel entrances special considerations regarding paved fillets. The standard shoulder shall pass through existing gravel entrances that do not have existing paved fillets.
  - v. Existing Gravel Entrances with Existing Paved Fillets
    - 1. 2023-02-27 Kickoff Meeting: Road Design shall not give existing gravel entrances special considerations regarding paved fillets. The standard shoulder shall pass through existing gravel entrances that have existing paved fillets (the existing paved fillet shall be obliterated by the class 13 excavation operation).

26. TREATMENT OF EXISTING PCC CURB

- a. There is Curb and Gutter on the eastbound side of US 30 within Mechanicsville that may be affected by the project. These locations are pinned in the Project's Google Earth KMZ file. Discuss the Treatment of this curb under the consideration of the proposed construction of eastbound Left Turn Lanes at Madison Street and Cherry Street within Mechanicsville.
  - i. 2023-02-27 Kickoff Meeting: Road Design Team shall specify the removal of the existing Curb and Gutter and replace it with the Paved Shoulder for (53). New PCC Curb may need to be constructed (see PROPOSED CURB IN MECHANICSVILLE Section). Utilities will need to be removed and relocated. Road Design Team will need to figure out what to do with how these locations impact the scope of the (51) project. The District previously reviewed the possibility that the (51) project would skip Mechanicsville, but rejected the option (the (51) project will NOT skip Mechanicsville). The District said it could be ok just going over the gutter pan with HMA during (51) since it would effectively be a temporary condition (the existing Curb and Gutter will be removed for the (53) project). The District was ok with placing as little as 1.5" of HMA over the existing gutter pan (the maximum amount of HMA over the gutter pan was not discussed during the meeting).
  - ii. 2023-10-24 D2 Field Exam Meeting: Road Design summarized the treatment of the existing curb and gutter during the (51) project and removal during the (53) project.

27. PROPOSED CURB IN MECHANICSVILLE:

- a. 2023-02-27 Discussion with Jason Holst: Jason is considering putting new curb and gutter (urban section) along the paved shoulders in Mechanicsville. Road Design Team shall review the situation as the design progresses.
- b. 2023-12-13 Road Design Note: The existing curb appears to be a 4" sloped curb with a 2' wide gutter pan and a 1' wide x 4" high sloped curb. A similar new curb will be installed. Depending on how the modeling winds up we may move the gutter lip so that it is 6' from the EB Edge of Traffic instead of 8'. That would mean that the 2' gutter pan would be considered part of the shoulder.

28. RAISED TRAFFIC ISLANDS

- a. 2023-01-24 Road Design Note: No Raised Traffic Islands were observed.

29. UTILITY STRUCTURES NEEDING ADJUSTMENT

- a. There are some Open Throat Intakes and Utility Manholes within Mechanicsville that may be effected by the project. These locations are pinned in the Project's Google Earth KMZ file. Discuss the Treatment of these Structures under the consideration of the proposed construction of eastbound Left Turn Lanes at Madison Street and Cherry Street within Mechanicsville.
  - i. 2023-02-27 Kickoff Meeting: Project (51) should overlay the gutter pan (see TREATMENT OF EXISTING PCC CURB Section). Project (53) will remove the curb and gutter and the intakes. Project (53) will relocate the intakes and may install new curb and gutter (see PROPOSED CURB IN MECHANICSVILLE Section).
  - ii. 2023-10-24 D2 Field Exam Meeting: Road Design summarized the utility structures needed adjustment.
- b. There are overhead utilities within passing locations that may need relocation. Road Design shall coordinate with Utility Coordination Bureau. Page 6 of the Project Concept indicates 'There are utility poles and light poles within the clear zone in Mechanicsville.'
  - i. 2023-02-27 Kickoff Meeting: District 6 said Steve Flockhart is aware of the project, but Mark Harle will contact him regarding private utilities that will need relocation, especially Alliant Energy Power Poles.
  - ii. 2023-10-24 D2 Field Exam Meeting: Road Design summarized the private utilities needing adjustment. Steve Flockhart indicated that he is pretty sure that there is E-W fiber on the south side of US 30 that may need to be adjusted as well.
- c. 2023-02-27 Kickoff Meeting: Image includes manhole, post, fire hydrant, and power pole within Mechanicsville.



30. ROADWAY SIGNAGE NEEDING ADJUSTMENT

- a. There is roadside signage within passing locations that may need relocation. Road Design shall coordinate with Roadside Safety and Traffic Control. Private Signage is generally handled by the Right of Way Bureau.

31. FORESLOPE FLATTENING

- a. This corridor of US 30 is a NHS Route and therefore Foreslope Flattening at sideroads and entrances is required. This foreslope flattening will require the culvert extensions at those respective sideroads and entrances. District 5 Staff usually provides field tabulations for inclusion in the Road Design C Sheets. Will District 6 will provide this information to Road Design?
  - i. 2023-02-27 Kickoff Meeting: District 6 will provide tabs for foreslope flattening and culvert extensions. Road Design will check to see where the tabs fit in better; (51) or (53).
  - ii. 2023-10-24 D2 Field Exam Meeting: Road Design reiterated the needs for field tabulations.

32. RAILROAD PERMITTING

- a. 2023-01-24 Road Design Note: There are several (8) at-grade UP (Union Pacific) Railroad Crossings at sideroad locations within Mechanicsville and just outside of Mechanicsville, near the vicinity of the proposed improvements (the crossings meet the 'Near' criteria: within 100 feet). Road Design shall discuss coordination of the Crossings with the Railroad Bureau (Tami Quam, Travis Tinken, and Ed Engle).
- b. 2023-10-24 D2 Field Exam Meeting: Road Design will develop Turning Lane Movement Exhibits at Sideroad Intersections with Railroad Crossings to Tami Quam (Railroad Bureau) as soon as possible so Railroad Bureau can develop Diagnostic Analysis (federally funded project need diagnostics). See other sections (ie. TURN LANE CONSIDERATIONS) for specific information regarding the turn lanes.
- c. 2023-12-5 Road Design Note: Turning Movement Exhibits at sideroads with Railroad Crossings were issued by Road Design to the Railroad Bureau (Tami Quam).
- d. 2023-12-12 Road Design Note: Tami Quam will set up a meeting to discuss the Turning Movement Exhibits at sideroads with Railroad Crossings.
- e. 2023-12-14 Road Design Note: Tami Quam has set up a meeting to discuss the Turning Movement Exhibits at sideroads with Railroad Crossings for Tuesday 12/19/2023 at 3pm.

### 33. LONGITUDINAL SUBDRAINS

- a. Subdrain is required adjacent to auxiliary lanes (passing and turning lanes) per RECOMMENDATION section on Page 3 and the Concept Estimates of this (53) Project Concept. The SUBDRAIN section on Page 8 of this Concept indicates the *Resurfacing Project (51)* will include subdrain along the rest of the US 30 corridor to make subdrain fully covered (*the Concept Estimate for (51) shows the same thing and includes the language "Subdrain is currently installed on one side of the existing pavement. Recommendation is to add new subdrain to with the project to get full coverage on both sides. Estimated quantity of new subdrain is 35,000 LF."*). Road Design shall coordinate design of subdrain adjacent to auxiliary lanes with the Soils Bureau.
- b. 2023-04-07 Road Design Note: Discussion of placement location of longitudinal subdrain between Jonathan Bahr, Kari Jackson, and Jason Holst. Decided that longitudinal subdrain should be shown at the inner edge of the shoulder pavement rather than the outside edge to follow the placement scheme shown on Typical Components for Shoulders in the Road Design Detail Library as well as the placement scheme shown on Standard Road Plan DR-303 (Longitudinal Subdrains), Type 8A Installation.
  - i. 2023-04-08 Road Design Note: The Typical Sections were updated to reflect the 4/7/2023 Discussion between Jonathan Bahr, Kari Jackson, and Jason Holst.
  - ii. 2023-04-18 Road Design Note: Discussion of placement location of longitudinal subdrain between Jonathan Bahr, William McNamara, and Jason Holst. Jason said that we should contact Mark Dell (Soils Bureau) and cc: Daniel Harness, Chris Brakke, and Danny Zeimen regarding the Modified Subbase and Longitudinal Subdrain. He also said that we should point out the asymmetrical subgrade in the 4 Lane to Two Lane Transition area during the coordination discussion with the Soils Bureau so they put the longitudinal subdrain on the correct side of the road (only need subdrain on one side of the road). Jason also recommended that we ask the Soils Bureau whether we should install a polymer grid beneath the Subbase (for an example see 'Modified Subbase and Subdrain' cross-section on Standard Road Plan PR-101 "Full Depth Patch with 'EF' Joint in PCC"). If Yes, then we should stop the grid 6" shy of the subdrain so that the subdrain can drain the subbase.
  - iii. 2023-05-03 Road Design Note: Sent an e-mail out to Mark Dell (Soils Bureau) and cc: Daniel Harness, Chris Brakke, and Danny Zeimen asking about Modified Subbase and Longitudinal Subdrain.
- c. 2023-10-24 D2 Field Exam Meeting: Road Design shall coordinate design of subdrain adjacent to auxiliary lanes with the Soils Bureau. Jason Holst mentioned that the longitudinal subdrain outlets installed during (51) could impact Railroad ROW. Tami Quam mentioned that an access agreement could be generated to allow for contractors to step into ROW to do work within DOT Right-of-Way. Other than the longitudinal subdrain outlets Road Design mentioned above that the work associated with (51) would not have Union Pacific Railroad Right-of-Way impacts.

### 34. SLIDE REPAIR

- a. 2023-01-24 Road Design Note: Foreslope Slide Repair is currently not scoped for this project.

### 35. STRUCTURES

- a. 2023-01-24 Road Design Note: Neither of the FHWA locations in the vicinity of the project (FHWA 18251 and 18261) have aspects that will be impacted by this project (53) or need design with this project. See Page 15 of the Project Concept.
- b. 2023-07-19 Road Design Note: The guardrail at FHWA 18261 will be updated to current standards as a part of project (51).
  - i. 2023-10-24 D2 Field Exam Meeting: District 6 Response: The guardrail repairs at FHWA 18261 should be moved to the 'Stanwood to Clarence' Super-2 project that is still being Concepted. The end of the (51) and (53) projects should be at STA 572+18 (the west end of the existing Shoulder Strengthening). The existing roadway surface east of STA 572+18 (including the approach panels, which currently have a HMA Surface) within the to-be-updated guardrail shoulder station range will be milled and filled (zero net profile elevation rise) under the Stanwood to Clarence Project (the PCC deck appears to be in good shape and will be scheduled to be UAC'd until further notice).

### 36. GUARDRAIL

- a. 2023-01-24 Road Design Note: Road Design shall investigate the need for Steel Beam and Cable Guardrail and side road obstacles and check for critical slopes/drop-offs.
- b. 2023-07-19 Road Design Note: The guardrail at FHWA 18261 will be updated to current standards as a part of project (51).
  - i. 2023-10-24 D2 Field Exam Meeting: District 6 Response: The guardrail repairs at FHWA 18261 should be moved to the 'Stanwood to Clarence' Super-2 project that is still being Concepted. The end of the (51) and (53) projects should be at STA 572+18 (the west end of the existing Shoulder Strengthening). The existing roadway surface east of STA 572+18 (including the approach panels, which currently have a HMA Surface) within the to-be-updated guardrail shoulder station range will be milled and filled (zero net profile elevation rise) under the Stanwood to Clarence Project (the PCC deck appears to be in good shape and will be scheduled to be UAC'd until further notice).

### 37. STOCK PASS

- a. 2023-01-24 Road Design Note: There aren't any Stock Passes within the Project Limits.

### 38. ADA SIDEWALK AND RAMPS

- a. 2023-01-24 Road Design Note: There aren't any ADA sidewalks or ramps within the scope of this Project.

39. SPECIAL FEATURES

- a. Are there any special features not shown on the plans (Schools or businesses with particular entrance needs, mailboxes, signage, structures, traffic signal detector loops at signalized intersections) that need to be taken into consideration, either design or Traffic Control-wise?
  - i. 2023-02-27 Kickoff Meeting: See GARAGE WITHIN MECHANICSVILLE (MP 34.37, EB) Section and BRIDGE COMMUNITY BANK SIGN IN MECHANICSVILLE (MP 234.43, EB) Section.

40. GARAGE WITHIN MECHANICSVILLE (MP 234.37, EB)

- a. 2023-02-27 Kickoff Meeting: There is a detached garage on the eastbound side of US 30 within Mechanicsville that may need to be relocated. Road Design shall keep this garage in mind when developing the need lines for the project. Discuss the garage during the D2 meeting.
- b. 2023-10-24 D2 Field Exam Meeting: Road Design outlined the project's possible impacts to the garage. While the garage is far enough from the roadway and is outside of the grading intercept, the driveway to the garage will be steepened. Jason Holst mentioned that Road Design will work with the ROW Bureau to determine if there are building offset/setback requirements from edge of traffic (the garage may be too close to the proposed edge of traffic).
- c. 2023-11-08 Field Meeting Notes: Measurements of the building corners and the PCC pad to the north of the garage were taken on video.

41. PAVED DRIVEWAY REMNANTS WITHIN MECHANICSVILLE (MP 234.45, EB)

- a. 2023-11-08 Field Meeting Notes: The paved driveway remnants at MP 234.45 (EB side of US 30) will need to be removed and bid as 'Removal of Pavement' instead of Class 13 removal for the installation of the additional lanes.
- b. 2023-11-08 Field Meeting Notes: Since there is a separate property at 234.45 (confirmed on Cedar County Assessor GIS Map), then Road Design will need to provide a curb drop for a future entrance. FYI, there is an existing curb drop for the entrance (the curb drop was measured to be approximately 45' long, with its east end over with a power pole and its west end stopping at a joint just west of the Community Bank Sign (video was taken). If the area was actually part of the adjacent car wash property then the drop curb wouldn't be needed.

42. BRIDGE COMMUNITY BANK SIGN IN MECHANICSVILLE (MP 234.43, EB)

- a. 2023-02-27 Discussion with Jason Holst: ROW Bureau will take care of the relocation of the sign.
- b. 2023-11-08 Field Meeting Notes: Measurements of the Bridge Community Bank were taken on video.
- c. 2023-11-08 Field Meeting Notes: Team discussed the following: If the proposed grading terminates at the existing PCC foundation, then the Bridge Community Bank Sign could stay. The proposed ROW would be at the grading slope intersect. The District (Mark Harle) said that the District would discuss allowing an easement for the top of the sign to overhang the proposed ROW. HOWEVER, the sign would need to be outside of the Clear Zone (measured from edge of through traffic to the foundation) to be allowed to stay, which it probably doesn't. Road Design will work with the ROW Bureau to determine if there are offset/setback requirements from edge of traffic (the bank sign may be too close to the proposed edge of traffic).

43. SURVEY

- a. Has survey been requested for areas within the vicinity of proposed auxiliary lanes and proposed Left Turn Lanes?
  - i. 2023-02-27 Kickoff Meeting: Jesse Tibodeau mentioned that he hoped a Level D Survey was performed so that a SUE is performed and gets detailed information on utilities in Mechanicsville.
  - ii. 2023-02-27 Kickoff Meeting: Jason Holst has sent out e-mails for survey and will continue to send e-mails.
  - iii. 2023-03-22 Road Design Team Meeting: Jason Holst indicated that Survey Bureau indicated that the completion of the alignment and hard shots at the Beginning of Project (4 Lane to 2 Lane Transition) are about 2 weeks from completion. This will certainly delay the D2 date. Jason Holst will send out e-mails regarding the schedule. Jason suggested that we could sketch in the existing conditions (or bring in the linework from the 2018 US 30 Project NHSX-030-7(192)--3H-57 before we get the survey so that we can start looking at the geometry of the 4 Lane to 2 Lane Transition as early as possible.
- b. Have soil borings or pavement cores been taken on this project?
  - i. 2023-02-27 Discussion with Jason Holst: Asked Jason whether he knew if soil borings will be needed to analyze constructability of the passing lanes?
    - 1. 2023-02-28 Response from Jason Holst: I'll defer to Soils Design for the need of soils borings, but this is my list of items to consider:
      - a. It appears like we won't have any high foreslopes or backslopes, so soil stability analysis in that respect probably won't be needed.
      - b. I assume it's doubtful that we would run into unsuitable soils for the west lane shift and the passing lanes, but I'd defer to Soils design for that
      - c. Do we have RCB extensions needed (if so, how big of a RCB)?
      - d. Do we have jacked pipes (I'm guessing not, but it's a little early to know yet).

c. Survey Alignment

- i. 2023-03-22 Road Design Team Meeting: There is concern that the completed survey alignment will vary slightly from the Preliminary alignment that the Road Design Team is using to draw in conceptual Edge of Pavement and Edge of Shoulder. If the completed survey alignment is different than the Preliminary alignment then we will be obligated to redraw our linework (all of it or part of it). There is no point in modeling US 30 until we get Survey.
- ii. 2023-09-14 9:30am Road Design (Jonathan Bahr and Jason Holst) Microsoft Teams conversation with Survey Bureau (Jeremy Harris, Brad Burger, and Danny Fines):

1. Jonathan Bahr outlined the situation: We reviewed the Survey Alignment ([SURMLA030.xml](#)) Mechanicsville and found that there is approximately 2' +/- of offset from the Surveyed Centerline (crown apex) and the Survey Alignment; Survey Alignment was south of the Surveyed Centerline. Outside of Mechanicsville it seemed as though that offset remained consistent.

We reviewed the Alignment from District 6 ([HIGHWAY 30 CEDAR COUNTY.XML](#)) around Mechanicsville and found that there is approximately 9" +/- of offset from the Surveyed Centerline (crown apex) and the District 6 Alignment; District 6 Alignment was south of the Surveyed Centerline. Outside of Mechanicsville it seemed as though that offset varied.

From reviewing the G Sheets it is apparent that the Survey Alignment [SURMLA030.xml](#) was created per the FN-57 Record Drawings, which featured an Office Relocation Alignment that was offset approximately 3' from the original 1929 FA-57 Alignment.

We are planning on creating a Design Alignment using an offset of your Survey Alignment [SURMLA030.xml](#) to best fit the Surveyed Centerline (crown apex).

We believe we have everything we need to move forward, but would like your feedback on this particular item: Was there anything District 6 saw when they created their alignment [HIGHWAY 30 CEDAR COUNTY.XML](#) that would suggest that we should base our Design Alignment off of [HIGHWAY 30 CEDAR COUNTY.XML](#) instead of [SURMLA030.xml](#)? FYI, if we went with [HIGHWAY 30 CEDAR COUNTY.XML](#) as the base alignment then I presume we would need new G Sheets.

2. Jeremy Harris said the District 5 [HIGHWAY 30 CEDAR COUNTY.XML](#) has its own issues and that the WHKS Survey Alignment [SURMLA030.xml](#) should be used as the baseline of any adjusted survey. This was reiterating a 9/12/2024 e-mail that Jeremy sent to Road Design.
3. Brad Burger said the District found Monument ties in the pc/pt's, but there is a long stretch between the curves (and consequently through

Mechanicsville) that didn't have centerline pins, which contributed to the offset.

4. Brad Burger said the PIs were added to check the rails with the centerline of the asphalt.
  5. Danny Fine said the centerline Pins are probably a mess because of sloppy construction survey, especially during installation of culverts.
  6. Jeremy Harris, Brad Burger, and Danny Fine: Survey Bureau recommends using the alignment created by WHKS as a baseline for our Office Relocation alignment, which is based of retracing of the Record Drawings. Brad Burger added that a constant offset would be easier for ROW to be measured off of, but Brad understands that the offset would likely vary anyway.
- iii. 2023-10-25 Road Design (Jason Holst) conversation with Survey (Jeremy Harris): Jason Holst is worried that it wasn't just the survey alignment that was messed up. Jason is concerned that the location of the surveyed shots could be messed up as well. Jeremy agreed that Survey could send someone out to make sure the shots (and adjusted alignment) all lined up and that there is nothing wrong with the placement of the survey shots or the adjusted alignment. Survey should have this information by mid-next week, weather permitting. Road Design should send the new alignment XML and also tell Jeremy where the ideal locations for the survey check should be. Jason recommended that we should suggest that one of the survey check shots should be on the crown and edge of pavement in a location between the topographed areas. Jason also mentioned that we definitely want the Edge of Pavement with Mechanicsville confirmed. He also suggested that we get a survey check shot in a topographed location that had the furthest offset between the crown apex and the survey alignment. Again, Jason said they wherever a survey check shot is taken we should also ask for the Edge of Pavement to be surveyed for checking. Jason mentioned that the best path forward in September was to assume that the surveyed shots and linework were in the correct location and that it was the survey alignment that just needed alignment, but that we definitely double check the surveyed shots are where they should be.
    1. 2023-10-26 Road Design Note: Jason Holst (Road Design) sent Jeremy Harris an e-mail outlining the check shots that needed to be taken.
    2. 2023-11-02 Road Design Note: Jeremy Harris responded to the group with Survey Bureau's Check Shots. The Survey Bureau's US 30 check shots (CL and Edgelines) look like they fall pretty closely to WHKS's.

44. RIGHT OF WAY

- a. 2023-01-24 Road Design Note: Road Design shall develop Auxiliary Lane (passing and turn lane) Need Lines for the consideration of Land Acquisition.



#### 45. DRAINAGE IN MECHANICSVILLE

- a. 2023-03-30 Road Design Note: Road Design Team (Jonathan Bahr and Kari Jackson) reviewed ERMS and Road Analyzer to find the Record Drawings within Mechanicsville that showed the construction of the US 30/Cherry Street intersection and Open-Throat Intakes along the south curb line near the intersection. The Road Design Team found that the Open-Throat Intakes, paved shoulders, and Turn-Lanes (at Cherry and Madison) were installed with 1994 project NHS-30-7(89)--19-57, but the Record Drawings for the US 30/Cherry Street intersection were not found, therefore, it appears as though all of the drainage from the W-E ditch along the north side of US 30 that was heading to a 2'x2' Concrete Box Culvert at 313+74.5 (intake was located just east of Cherry Street but has been removed, it collected runoff and projected it south of US 30) now goes to a 4'x3' Concrete Box Culvert at 345+62.7. Such a diversion of runoff would have required a large amount of ditch regrading along the north side US 30 and the elimination of a ditch high point at Station 320+00. The 2022 survey appears to verify this theory: the elevations shot at the Ditch Centerline at 314+50 was 891.51, 319+00 was 891.35, 320+00 = 890.93, 321+00 = 890.87, thus showing that 320+00 is no longer a high point. The ditch centerline elevations between Cherry Street and STA 321+00 are extremely flat (and sometimes undulating), barely pitching to the east. The Record Drawings and Google Earth suggest that this ditch did not actually change the Tributary Area to the culvert at 345+62.7 because the culvert at 345+62.7 collects runoff from south of US 30 (that was previously ejected from the culvert at 313+74.5 and projects the runoff north of US 30. The 1953 FN-59 Record Drawings show the drainage pattern of the culverts. Perhaps the area between 313+74.5 and 345+63 now needs to be considered a wetland? Road Design believes that all the available Record Drawings within the Project Limits have been compiled (including Bridge and Culverts).
  - i. 2023-10-24 D2 Field Exam Meeting: Road Design reiterated that the ditch situation from 313+74.5 to 345+63 would not be improved with this project. Design is attempting to create a model that does not impact the ditch.

#### 46. EXISTING DRAINAGE PROBLEMS

- a. Are there any existing drainage problems within towns or in rural areas that may need to be mitigated (shoulder washout, standing water, etc.)?
  - i. 2023-02-27 Kickoff Meeting: District 6 did not recall any issues.

#### 47. EXISTING EROSION PROBLEMS

- a. Are there any existing erosion problems within towns or in rural areas that may need to be mitigated (ie. slides, ditch reshaping, curb overtaken with grass/debris, etc.)?
  - i. 2023-02-27 Kickoff Meeting: District 6 did not recall any issues.

#### 48. SAFETY CONSIDERATIONS

- a. Are there any additional safety considerations that aren't already outlined on Page 12 through 14 of the Project Concept?
  - i. 2023-02-27 Kickoff Meeting: There was superelevation correction at the curve near the beginning of the project at MP 271.20 (west of Railroad Crossing 190458X) that was done recently. The foreslopes at that curve may be steep and may require a Design Exception. The situation is outlined in the Project Concept and in the DESIGN EXCEPTIONS Section.
    1. 2023-10-24 D2 Field Exam Meeting: Road Design will model the superelevated curve around MP 271.20 to make sure that the Railroad Right-of-Way is not impacted.
    2. 2023-11-08 Field Meeting Notes: During the site walkthrough Jonathan Bahr measured the foreslope at MP 271.19 (with iPhone level) and found the foreslope at the superelevated curve was 33 degrees.

#### 49. FIELD MAINTENANCE TABS

- a. Please confirm that the FIELD Tabs (Tree Clearing, patching, curb repairs, culvert repairs and extension, foreslope flattening, rock erosion, etc.) are pending collection, review, and distribution to Road Design.
  - i. 2023-02-27 Kickoff Meeting: District Tabs will be provided.
  - ii. 2023-10-24 D2 Field Exam Meeting: Road Design reiterated the needs for field tabulations.
- b. There is a Culvert/Pipe Table on Page 16 of the Project Concept; will District Staff be transcribing the information found in this table into a tabulation or will Road Design be responsible for transcribing the information?
  - i. 2023-02-27 Kickoff Meeting: District Tabs will be provided.
  - ii. 2023-10-24 D2 Field Exam Meeting: Road Design reiterated the needs for field tabulations. Mark Harle said the District will provide culvert repairs as soon as possible in an effort to accelerate the D5 (Bridge Bureau design of culvert adjustments).
  - iii. 2023-10-24 District 6 Correspondence: Mark Harle provided a list of culvert repairs in an effort to accelerate the D5 (Bridge Bureau design of culvert adjustments). Jonathan Bahr in Road Design forwarded the list to Bridge Bureau (Mark Sloppy and Rob Cornelis) on 10/25/2023.
  - iv. 2023-10-24 D2 Field Exam Meeting: Mark Harle mentioned there is a culvert around Station 145+00 that is scheduled to be relined, but it might be within Railroad Right-of-Way, so they may need to reconsider what work is done at that location.

50. STOCKPILED MATERIALS (TAB 110-13 DELIVERY AND STOCKPILING):

- a. Confirm that Maintenance would like the following Stockpiled Materials:
  - i. HMA Millings (if found to be applicable)
  - ii. Class 13 Excavation
  - iii. 2023-02-27 Kickoff Meeting: District to send an e-mail to maintenance regarding stockpiling.
  - iv. 2023-10-24 D2 Field Exam Meeting: District 6 will follow-up with maintenance regarding stockpiling once staging is figured out.
- b. Verify the location of Stockpiled Materials (Primary Location? Secondary location? Is there a preferred distribution of materials across the sites?)
- c. Maintenance Contact Person and Phone Number:

51. CONTINGENCY PERCENTAGES

- a. HMA Pavement Contingency for Irregularities: 5.0% is Typical. Please confirm.
  - i. 2023-02-27 Kickoff Meeting: 5% is OK.
  - ii. 2023-10-24 D2 Field Exam Meeting: 5% is OK.
- b. Granular Shoulder (if found to be applicable): 20% has been used on recent projects. Please confirm.
  - i. 2023-02-27 Kickoff Meeting: 20% is OK.
  - ii. 2023-10-24 D2 Field Exam Meeting: 20% is OK. Also, add 1 additional inch to the granular shoulder thickness on (51) to account for washout.
- c. Patches Contingency (if found to be applicable): 15% is Typical. Please confirm.
  - i. 2023-02-27 Kickoff Meeting: 15% is OK.
  - ii. 2023-10-24 D2 Field Exam Meeting: 15% is OK.

52. RCE BID ITEMS

- a. Construction Survey? 2023-02-27 Kickoff Meeting: YES.
  - i. 2023-10-24 D2 Field Exam Meeting: District 6 Response: YES, still.
- b. Field Lab? 2023-02-27 Kickoff Meeting: NO, but the District will confirm.
  - i. 2023-10-24 D2 Field Exam Meeting: District 6 Response: NO, still.
- c. Field Office? 2023-02-27 Kickoff Meeting: YES, but the District will confirm.
  - i. 2023-10-24 D2 Field Exam Meeting: District 6 Response: YES, still.
- d. Traffic Control/Work Hour Restrictions? 2023-02-27 Kickoff Meeting: See TRAFFIC CONTROL PLANS Section, and perhaps Staging Notes should be added, but otherwise No Traffic Control Restrictions are needed at this time. Mark Harle will confirm Work Hour Restrictions with Newman Abuissa.
  - i. 2023-10-24 D2 Field Exam Meeting: District 6 Response: YES, Mark Harle will confirm Work Hour Restrictions with Newman Abuissa later, depending on which of the pavement design options are selected. Newman will be included in formal submittal e-mail list.
- e. Project Requiring Contractor Coordination (COORDINATED OPERATIONS TAB 111-01 on on J Sheets)? (FYI, STP-038-2(50)--2C-16 SCL to NCL in Tipton PCC Pavement - Grade and Replace 2023-2024 is currently listed on Page 17 of the Project Concept. Should the 'Resurfacing Project' (NHSX-030-8(51)--3H-16 – 2025 – HMA Resurfacing with Cold in Place Recycling Resurfacing Project, Letting 10/15/2024) be included?)
  - i. 2023-02-27 Kickoff Meeting: Road Design shall include Project (51) as a Coordinated Project for Project (53). (50) does not need to coordinate with (51) or (53).
    - 1. 2023-10-24 D2 Field Exam Meeting: District 6 Response: District 6 will follow-up and a list of field tabulations will be provided to Road Design.
- f. Site Times Needed? 2023-02-27 Kickoff Meeting: Road Design shall get into the Details as Design Progresses, but the cross-over transition tie-in at the beginning of the Project may need to be one lane for a short period and may need to be called out as only being closed to one lane for a certain amount of time (hence, needing 'Site Times').
  - i. 2023-10-24 D2 Field Exam Meeting: Site Times will be discussed later.
- g. Project Management? 2023-02-27 Kickoff Meeting: NO, the District does NOT want the Project Management Specification.
  - i. 2023-10-24 D2 Field Exam Meeting: District 6 Response: NO, still.

53. HMA PAVEMENT SAMPLES

- a. Confirm whether HMA Pavement Samples Bid Item needs to be included on this Project.
  - i. 2023-02-27 Kickoff Meeting: YES, HMA Samples for (51) and (53).
  - ii. 2023-10-24 D2 Field Exam Meeting: District 6 Response: YES, HMA Samples for (51) and (53).

54. TIED PROJECTS

- a. Are there any Projects Expected to be Tied to this Project during the 11/18/2025 Letting.
  - i. 2023-02-27 Kickoff Meeting: Road Design shall ask the District as Design Progresses. The District mentioned that they want to try to avoid Tying any projects to (53).

55. LETTING DATE

- a. Letting Date is currently scheduled for 11/18/2025. Road Design Team does not have any exceptions this date at this time.
  - i. 2023-02-27 Kickoff Meeting: Road Design will review Letting Date as the Design progresses.
  - ii. 2023-10-24 D2 Field Exam Meeting: The D2 Meeting Attendees discussed coordination between Bureaus. There are no current plans to adjust the Letting Date.

56. P9 EVENT

- a. Will the P9 Event require a Public Meeting?
  - i. 2023-02-27 Kickoff Meeting: The District confirmed that YES, a Public Meeting should be scheduled.
    - 1. 2023-10-24 D2 Field Exam Meeting: P09 (Public Meeting) event date is currently 8/7/2024.

57. FUNDING DIVISIONS

- a. Does District 6 require the setup of URBAN and RURAL Funding Divisions for areas within and outside of Corporate City Limits, respectively?
  - i. 2023-02-27 Kickoff Meeting: District 6 said that Road Design should NOT break out URBAN and RURAL funding for this project at this time. However, District 6 said they may want to do an informal breakout of the quantities 'later'. Road Design will revisit Funding Divisions with the District as the Design Progresses.
    - 1. 2023-10-24 D2 Field Exam Meeting: District 6 Response: District 6 reconfirmed that there is no need to create separate funding divisions for URBAN and RURAL Funding. The only reason for additional funding divisions on these projects would be for Agreements (see AGGREEMENTS Section of these Project Notes).

58. SPECIAL EVENTS

- a. Are there any Special Events that need to be identified? If so, what are their schedules?
  - i. 2023-02-27 Kickoff Meeting: Mark Harle (District 6) will investigate Special Events and provide Special Events and their Dates under a separate e-mail.
  - ii. 2023-10-24 D2 Field Exam Meeting: Mark Harle (District 6) will investigate Special Events and provide Special Events and their Dates under a separate e-mail.

59. TRAFFIC CONTROL PLAN (TAB 108-23A on J SHEETS)

- a. Are there any special Traffic Control Notes that District would like to include on the Traffic Control Plan Tabulation?
  - i. 2023-02-27 Kickoff Meeting: Road Design should add the following notes to the Traffic Control Plan: (1) Keep one of the sideroad locations within Mechanicsville open at all times. (2) Contractor shall maintain access for property owners at all times.
  - ii. 2023-02-27 Kickoff Meeting: Mark Harle will work with Cedar County for shutting down Fox Avenue (X40) in Mechanicsville. The County will need to come up with a Detour for Fox Avenue (X40). The Detour may be part of the Agreement and would not need to be included in the (53) plans, but that's not a final decision yet.
  - iii. Mark Harle (District 6) will investigate Traffic Control and will cover as the design progresses.

60. AGREEMENTS

- a. Please confirm the Agreements associated with this Project.
  - i. 2023-02-27 Kickoff Meeting: Mark Harle (District 6) will talk with Cedar County and the City of Mechanicsville (because of temporary closures of sideroads) and determine what Agreements are necessary. Road Design shall implement those Agreements into the plans.
  - ii. 2023-10-24 D2 Field Exam Meeting: District 6 Response: District 6 confirmed that Cedar County will want 50' fillet extensions at non-paved sideroads. District 6 will work with Cedar County to generate the Agreements and forward them on to Road Design upon completion.

61. DESIGN EXCEPTIONS

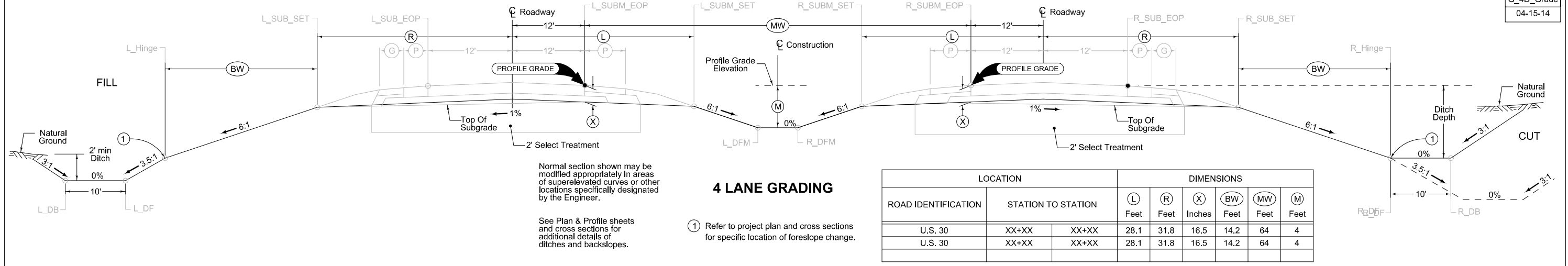
- a. Page 6 of the Project Concept states the following: "The existing cross section primarily consists of two 12 ft. lanes with 10 ft. granular shoulders and 3:1 maximum foreslopes. Foreslopes on the outside of three horizontal curves appear to be steeper than 3:1, probably due to past wedging for superelevation. A design exception may need to be pursued as part of design to accommodate the steeper ditches based on limited ROW next to the Union Pacific Railroad. Entrance side slopes are 6:1 or flatter." Road Design shall investigate the need for a Design Exception at these locations.
  - i. 2023-10-24 D2 Field Exam Meeting: Road Design will model the outside (WB) of the curve at 140+00 to ensure that the ROW along the superelevated section is not impacted.
- b. Are there any other portions of this Project that may need require Design Exceptions?
  - i. 2023-02-27 Kickoff Meeting: No other Design Exceptions were recalled at the Kickoff meeting. Mark Harle mentioned that he was not sure if there were any vertical curves that weren't quite adequate, but he thought they were OK off-hand.

62. PROJECT CONCEPT

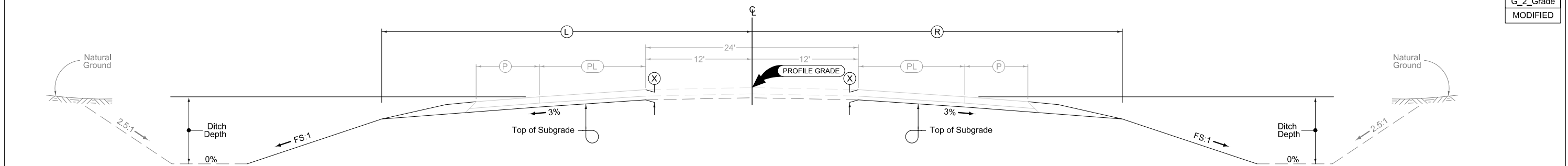
- a. 2023-02-27 Kickoff Meeting: An old copy of the Project Concept was dated September 20, 2022. The September 20, 2022 copy is the Concept that the Kickoff Meeting questions were originally based off of (the questions and responses in this Word Document have been updated to reflect the 1/27/2023 revision unless a reference to the 9/20/2022 is made). Mark Harle mentioned that the September 20, 2022 Project Concept had been updated in late January 2023, but not placed in project works. Mark then posted the January 27, 2023 Project Concept to Project Wise.

63. SCHEDULE

- a. Can the Bridge Bureau complete the B2 event early (Drainage Design and Miscellaneous Layout to Office of Design)? The current B2 event is 2/16/2024. Does the Bridge Bureau see anything that could impact ROW? Road Design would like to get an early D5 ROW submittal out to help keep the project moving forward (D5 Date is currently 3/1/2024). Letting for the project is 11/18/2025.
  - i. 2023-10-24 D2 Field Exam Meeting: Road Design will try to get the D2 event closed and the subsequent D3 set out as soon as possible so that Bridge Bureau can begin their culvert design and identify any ROW impacts as soon as possible. The D2 set will include the set as discussed during the 10/24/2023 Field Exam Meeting. The D3 set will include changes that were discussed during the D2 Field Exam Meeting and subsequent discussions regarding Railroad Crossings and Pavement Design. The D2 Event is currently set for 11/17/2023. Road Design will work with Bridge Bureau (Steven Flockhart, Jim Ellis, and Rob Cornelis) to complete the design. Most of the utility impacts that Bridge Bureau will be involved with are extensions of existing drainage structures. Bridge Bureau was wondering about the condition of the existing culverts since they were originally constructed in 1927 and had extensions done in 1953 when US 30 was widened. Road Design and Bridge Bureau acknowledged that the misalignment of surveyed crown ground shots and the survey alignment could make the work tricky. (UPDATE: 10/26/2023: Road Design (Jonathan Bahr and Jason Holst) is working with Survey Bureau (Jeremy Harris) to make sure the survey ground shots were processed in the correct locations. See SURVEY Section of these Project Notes for more information.)

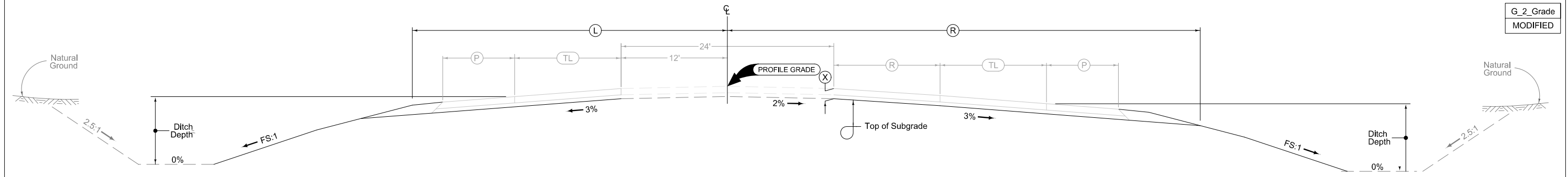


LOCATION		DIMENSIONS					
ROAD IDENTIFICATION	STATION TO STATION	L Feet	R Feet	X Inches	BW Feet	MW Feet	M Feet
U.S. 30	XX+XX XX+XX	28.1	31.8	16.5	14.2	64	4
U.S. 30	XX+XX XX+XX	28.1	31.8	16.5	14.2	64	4



LOCATION		DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION	L Feet	PL Feet	X Inches	FS
U.S. 30	519+27 526+47	31.65-43.65	0-12	10.5	4
U.S. 30	526+47 569+20	43.65	12	10.5	4
U.S. 30	569+20 571+00	43.65-31.65	12-0	10.5	4

LOCATION		DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION	L Feet	PL Feet	X Inches	FS
U.S. 30	246+00 253+20	31.65-43.65	0-12	10.5	4
U.S. 30	253+20 293+10	43.65	12	10.5	4
U.S. 30	320+75 361+80	43.65	12	10.5	4
U.S. 30	361+80 369+00	43.65-31.65	12-0	10.5	4



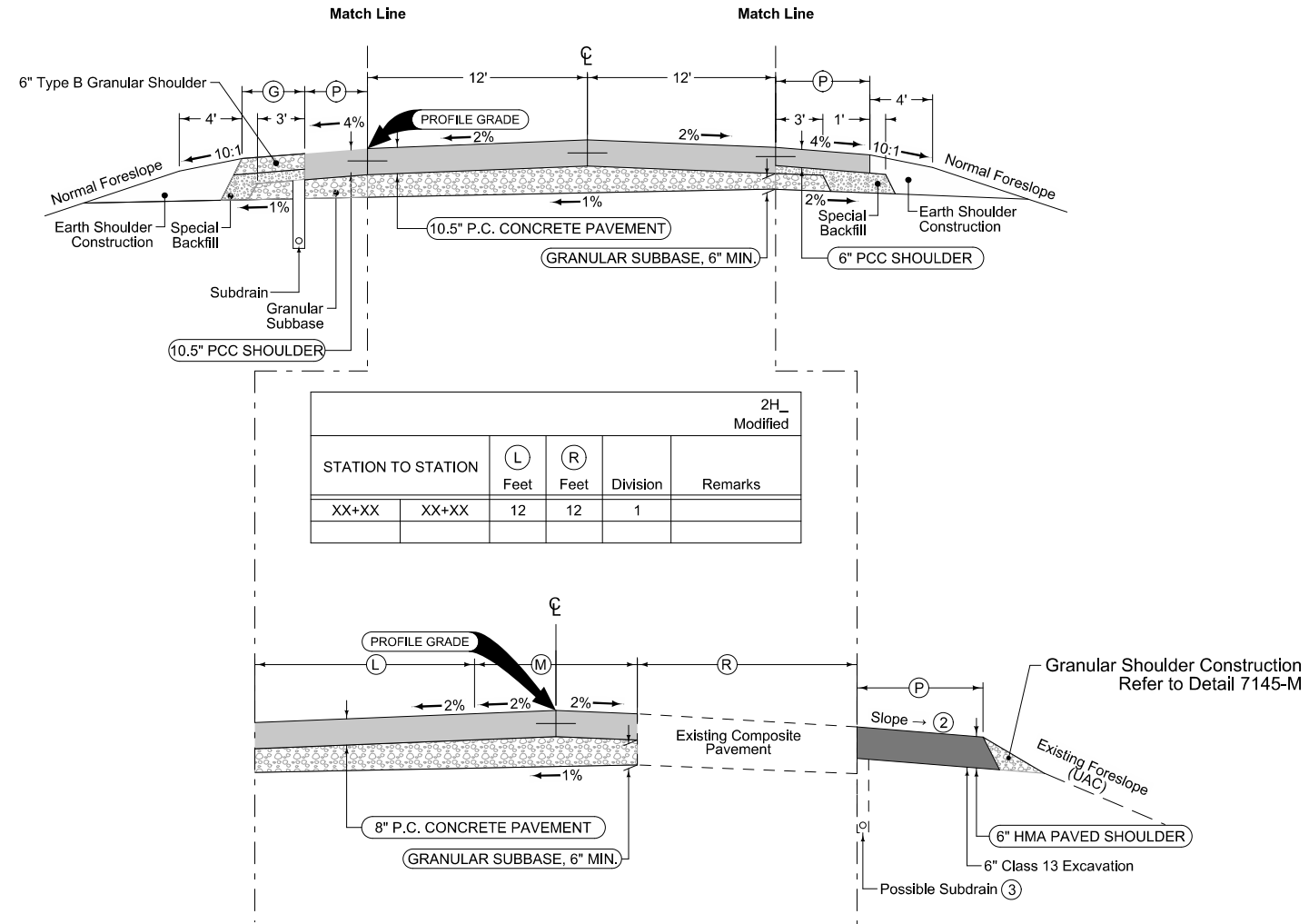
LOCATION		DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION	L Feet	TL Feet	X Inches	FS
U.S. 30	314+65 315+35	31.65	12	10.5	4
U.S. 30	315+35 317+15	31.65-19.65	12-0	10.5	4

LOCATION		DIMENSIONS				REMARKS
ROAD IDENTIFICATION	STATION TO STATION	R Feet	TL Feet	X Inches	FS	
U.S. 30	293+10 298+35	43.65	0	10.5	4	
U.S. 30	298+35 298+15	43.65-55.65	0-12	10.5	4	
U.S. 30	298+15 300+35	55.65	12	10.5	4	
U.S. 30	300+35 308+91	43.65	0	10.5	4	
U.S. 30	308+91 315+73	48.4	0	10.5	4	Proposed curb not shown on typical
U.S. 30	315+73 320+75	43.65	0	10.5	4	

**Proposed Combination Shoulder**

Shoulder Jointing:  
 Longitudinal joints: L-2 or KT-2  
 Transverse joints: CD at 17' spacing

		4_C Modified		
STATION TO STATION		(P) Feet	(G) Feet	Division
XX+XX	98+45	6	4	1



2H_ Modified				
STATION TO STATION	(L) Feet	(R) Feet	Division	Remarks
XX+XX	XX+XX	12	12	1

2H_ Modified				
STATION TO STATION	(L) Feet	(R) Feet	Division	Remarks
XX+XX	98+45	12	12	1

**Paved Shoulder Alternates**

PCC Shoulder Jointing:  
 Longitudinal joint: BT-1 or BT-5  
 Transverse joints: C at 17' spacing

		4_P_ALT_ Modified	
STATION TO STATION		(P) Feet	Division
XX+XX	XX+XX	6	1

**Paved Shoulder and Granular Fillet**

3R_Shldr_C_Overlay_ Modified			
STATION TO STATION		(P) Feet	Division
XX+XX	98+45	8	1

General Notes:

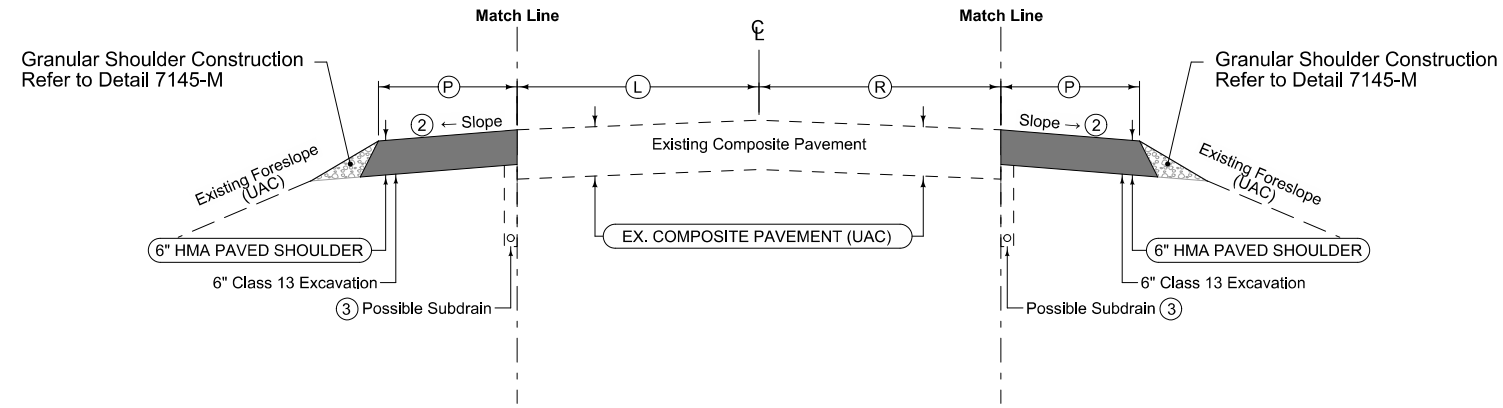
- Finished slope shall match existing pavement except the minimum allowable slope is 2.0% and the maximum allowable slope is 3.0%. Section may be modified as directed by the Engineer through areas of special shaping.
- Finished slope of Shoulder shall have a minimum allowable slope of 4% and a maximum allowable slope of 6%. Section may be modified as directed by the Engineer through areas of special shaping.
- UAC existing subdrain. All existing subdrain shall remain functional at all times (do not plug or crush). New subdrain shall be in contact with the granular material below the existing mainline pavement (see Tab 104-9 on CS sheets for proposed locations).
- The surface of the existing granular shoulder is estimated to be 1.0" below the surface of the edge of the existing pavement.

- Stationing on typical sections does not include gapping for bridges, sideroads, or entrances. Refer to tabulations and details for precise stationing and quantities.
- See Tab 100-25 for Pavement quantities.
- See Tab 112-9 for Granular Shoulder quantities.

**US 30 New 4-Lane to 2-Lane Transition  
(Beginning of Project)**

**Paved Shoulder and Granular Fillet**

3R_Shldr_C_Overlay_ Modified			
STATION TO STATION	(P) Feet	Division	
98+45	246+00	8	1
369+00	509+00	8	1
571+00	572+18	8	1



3R_MillingOverlay_ Modified				
STATION TO STATION	(L) Feet	(R) Feet	Division	Remarks
98+45	246+00	12	12	1
369+00	509+00	12	12	1
571+00	572+18	12	12	1

**Paved Shoulder and Granular Fillet**

3R_Shldr_C_Overlay_ Modified			
STATION TO STATION	(P) Feet	Division	
98+45	246+00	8	1
369+00	509+00	8	1
571+00	572+18	8	1

- ① Finished slope shall match existing pavement except the minimum allowable slope is 2.0% and the maximum allowable slope is 3.0%. Section may be modified as directed by the Engineer through areas of special shaping.
- ② Finished slope of Shoulder shall have a minimum allowable slope of 4% and a maximum allowable slope of 6%. Section may be modified as directed by the Engineer through areas of special shaping.
- ③ UAC existing subdrain. All existing subdrain shall remain functional at all times (do not plug or crush). New subdrain shall be in contact with the granular material below the existing mainline pavement (see Tab 104-9 on CS sheets for proposed locations).
- ④ The surface of the existing granular shoulder is estimated to be 1.0" below the surface of the edge of the existing pavement.

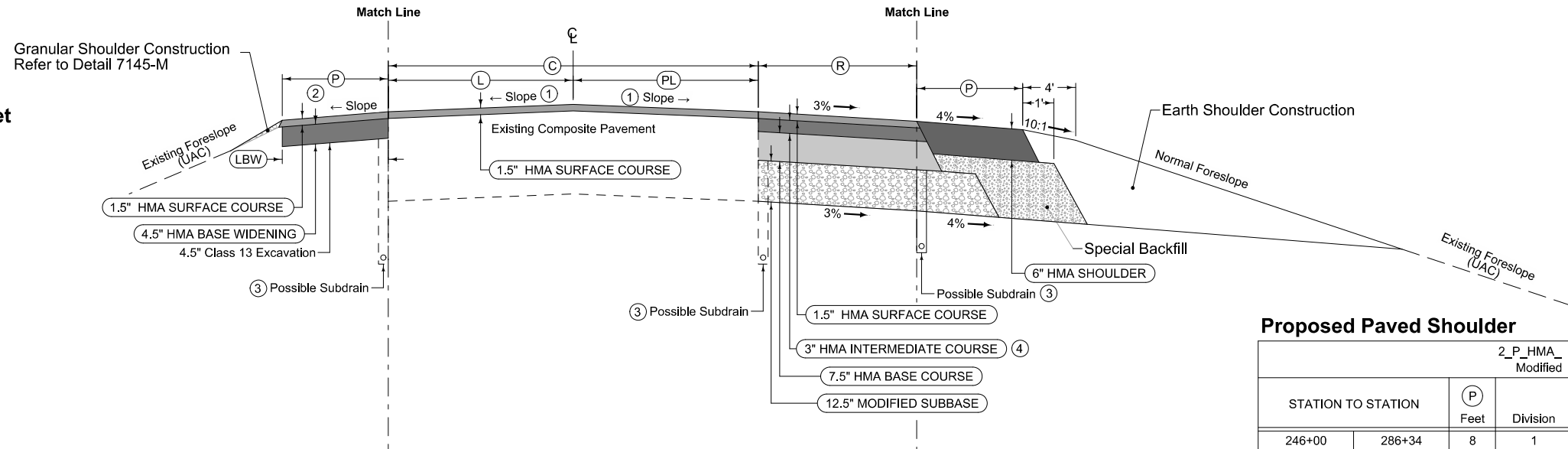
General Notes:

- 1. Stationing on typical sections does not include gapping for bridges, sideroads, or entrances. Refer to tabulations and details for precise stationing and quantities.
- 2. See Tab 100-25 for Pavement quantities.
- 3. See Tab 112-9 for Granular Shoulder quantities.

**US 30 New Shoulder  
(Four-Lane to Two-Lane Transition to Proposed Passing Lanes)  
(Proposed Passing Lanes to End of Project)**

**Paved Shoulder (with 8' Widening) and Granular Fillet**

3R_Shldr_P_Overlay_ Modified				
STATION TO STATION	(P) Feet	(LBW) Feet	Division	
246+00	286+34	8	8	1
286+34	293+10	8	8	2
320+75	334+69	8	8	2
334+69	369+00	8	8	1



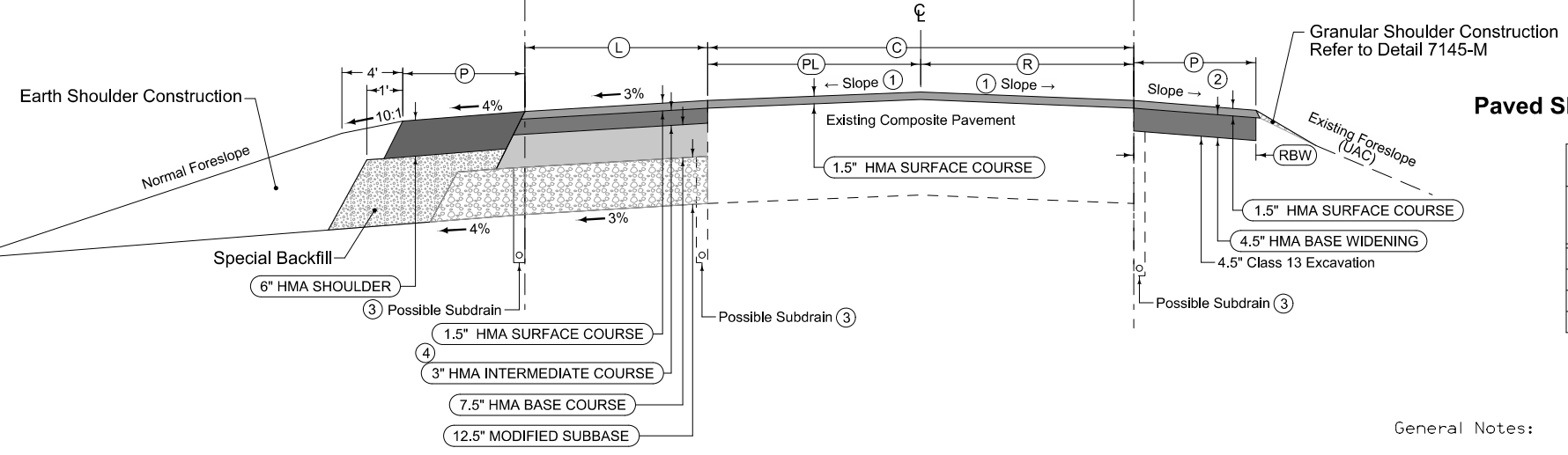
**Proposed Paved Shoulder**

2_P_HMA_ Modified			
STATION TO STATION	(P) Feet	Division	
246+00	286+34	8	1
286+34	293+10	8	2
320+75	334+69	8	2
334+69	369+00	8	1

3R_MillingOverlay_ Modified						
STATION TO STATION	(C) Feet	(L) Feet	(PL) Feet	(R) Feet	Division	Remarks
246+00	253+20	24	12	12	0-12	1
253+20	286+34	24	12	12	12	1
286+34	293+10	24	12	12	12	2
320+75	334+69	24	12	12	12	2
334+69	361+80	24	12	12	12	1
361+80	369+00	24	12	12	12-0	1

**Proposed Paved Shoulder**

2_P_HMA_ Modified			
STATION TO STATION	(P) Feet	Division	
509+00	571+00	8	1



**Paved Shoulder (with 8' Widening) and Granular Fillet**

3R_Shldr_P_Overlay_ Modified				
STATION TO STATION	(P) Feet	(RBW) Feet	Division	
509+00	571+00	8	8	1

- ① Finished slope shall match existing pavement except the minimum allowable slope is 2.0% and the maximum allowable slope is 3.0%. Section may be modified as directed by the Engineer through areas of special shaping.
- ② Finished slope of Shoulder shall have a minimum allowable slope of 4% and a maximum allowable slope of 6%. Section may be modified as directed by the Engineer through areas of special shaping.
- ③ UAC existing subdrain. All existing subdrain shall remain functional at all times (do not plug or crush). New subdrain shall be located at the outside edge of the paved shoulder and shall be in contact with the granular subbase. See Tab 104-9 and Detail RLS-3 on CS sheets for proposed locations.
- ④ 3" HMA Intermediate Course shall be placed in two 1.5" lifts.

3R_MillingOverlay_ Modified						
STATION TO STATION	(L) Feet	(C) Feet	(PL) Feet	(R) Feet	Division	Remarks
509+00	516+20	0-12	24	12	12	1
516+20	569+20	12	24	12	12	1
569+20	571+00	12-0	24	12	12	1

- General Notes:
- 1. Stationing on typical sections does not include gapping for bridges, sideroads, or entrances. Refer to tabulations and details for precise stationing and quantities.
  - 2. See Tab 100-25 for Pavement quantities.
  - 3. See Tab 112-9 for Granular Shoulder quantities.

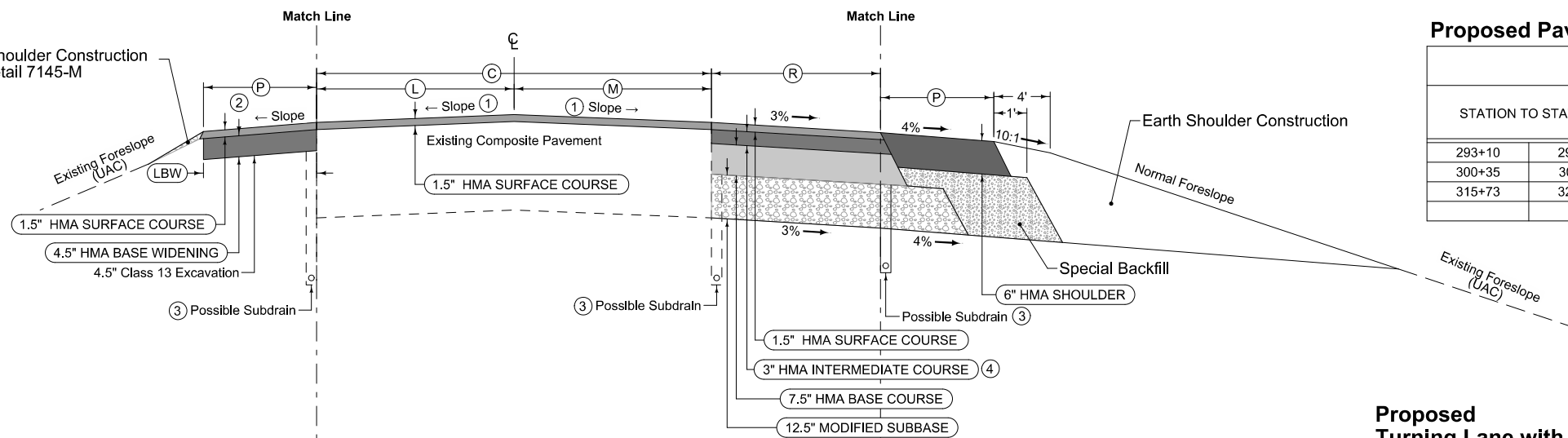
**IA 23 Mainline HMA Resurfacing  
New Paved Shoulders  
(Proposed Passing Lanes)**



**Paved Shoulder (with 8' Widening) and Granular Fillet**

3R_Shldr_P_Overlay_ Modified				
STATION TO STATION	(P) Feet	(LBW) Feet	Division	
293+10	298+30	8	8	2
304+05	313+20	8	8	2
317+15	320+75	8	8	2

Granular Shoulder Construction Refer to Detail 7145-M



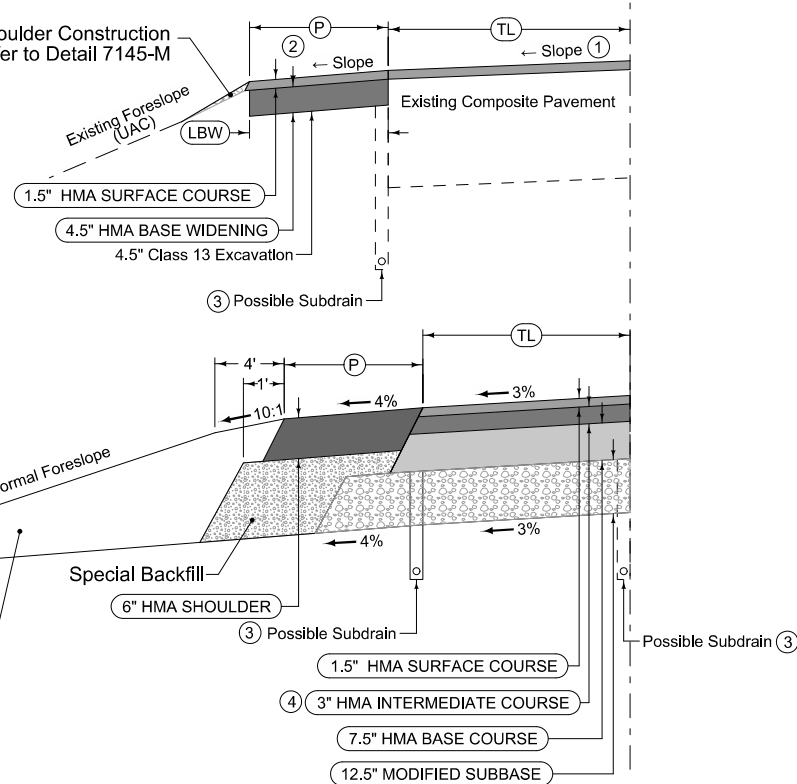
**Proposed Paved Shoulder**

2_P_HMA_ Modified			
STATION TO STATION	(P) Feet	Division	
293+10	296+35	8	2
300+35	308+91	8	2
315+73	320+75	8	2

**Turning Lane with Paved Shoulder (with 8' Widening) and Granular Fillet**

3R_Shldr_P_Overlay_ Modified					
STATION TO STATION	(TL) Feet	(P) Feet	(LBW) Feet	Division	
298+30	300+00	0-12	8-6	8-6	2
300+00	302+85	12	6	6	2
302+85	304+05	12-0	6-8	6-8	2
313+20	314+65	12	6	6	2

Granular Shoulder Construction Refer to Detail 7145-M



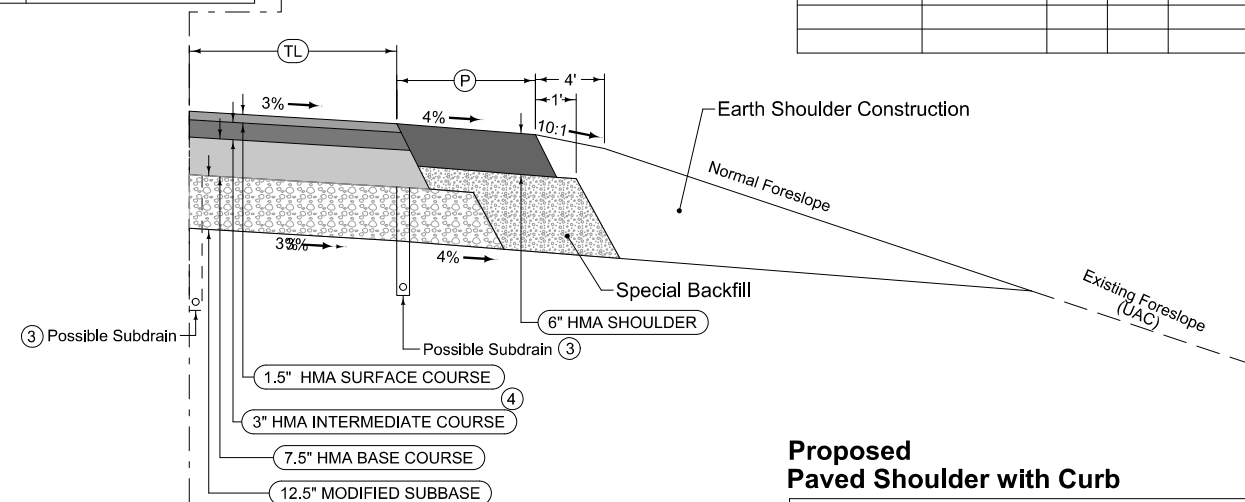
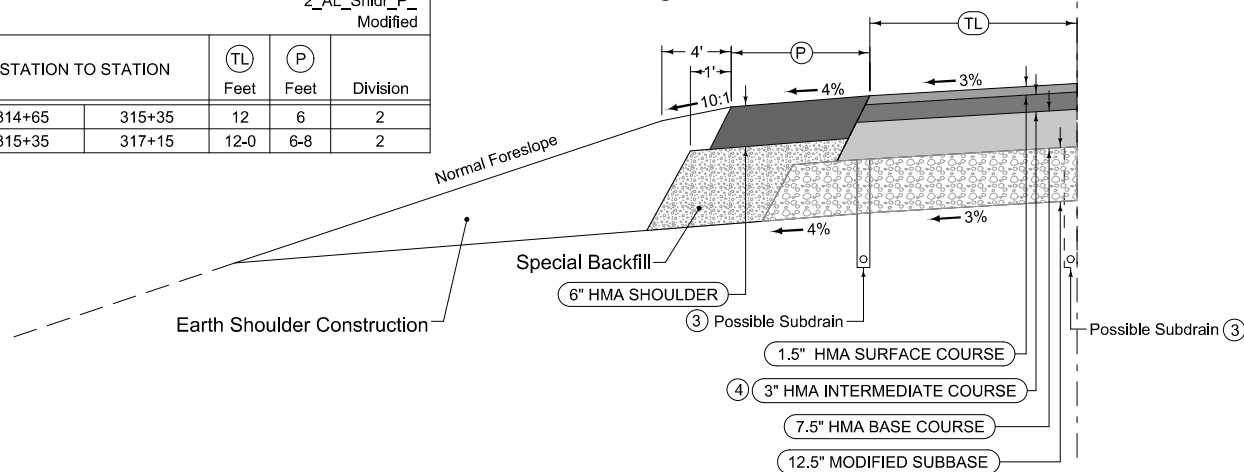
3R_MillingOverlay_ Modified						
STATION TO STATION	(C) Feet	(L) Feet	(M) Feet	(R) Feet	Division	Remarks
293+10	320+75	24	12	12	2	

**Proposed Turning Lane with Paved Shoulder**

2_AL_Shldr_P_ Modified				
STATION TO STATION	(TL) Feet	(P) Feet	Division	
296+35	298+15	0-12	8-6	2
298+15	300+35	12	6	2

**Proposed Turning Lane with Paved Shoulder**

2_AL_Shldr_P_ Modified			
STATION TO STATION	(TL) Feet	(P) Feet	Division
314+65	315+35	12	6
315+35	317+15	12-0	6-8



**Proposed Paved Shoulder with Curb**

2_Curb_ Modified			
STATION TO STATION	(P) Feet	Curb Type See PV-102	Division
308+91	315+73	6" Standard Curb	2

- ① Finished slope shall match existing pavement except the minimum allowable slope is 2.0% and the maximum allowable slope is 3.0%. Section may be modified as directed by the Engineer through areas of special shapig.
- ② Finished slope of Shoulder shall have a minimum allowable slope of 4% and a maximum allowable slope of 6%. Section may be modified as directed by the Engineer through areas of special shapig.
- ③ UAC existing subdrain. All existing subdrain shall remain functional at all times (do not plug or crush). New subdrain shall be located at the outside edge of the paved shoulder and shall be in contact with the granular subbase. See Tab 104-9 and Detail RLS-3 on CS sheets for proposed locations.
- ④ 3" HMA Intermediate Course shall be placed in two 1.5" lifts.

General Notes:

- 1. Stationing on typical sections does not include gapping for bridges, sideroads, or entrances. Refer to tabulations and details for precise stationing and quantities.
- 2. See Tab 100-25 for Pavement quantities.
- 3. See Tab 112-9 for Granular Shoulder quantities.

**IA 23 Mainline HMA Resurfacing  
New Paved Shoulders**

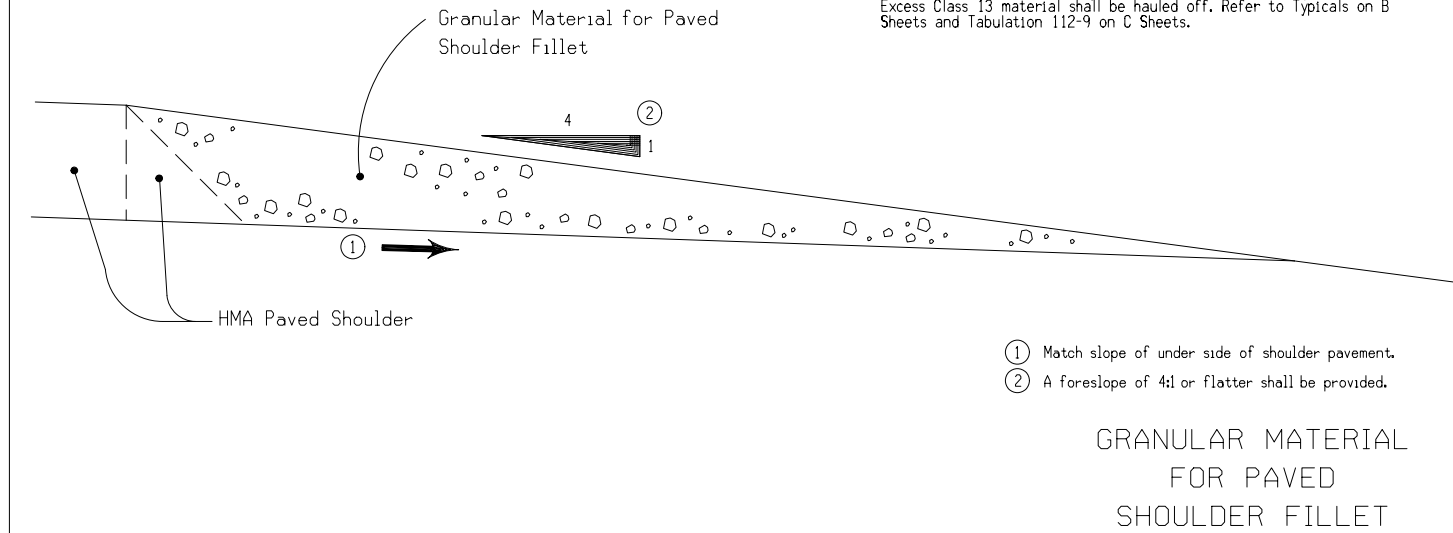
**(Proposed Turning Lanes in Mechanicsville)**

7145-M  
Modified

Notes:

This typical illustrates the construction requirements for a Granular Material fillet at the edge of a paved shoulder.

"Granular Shoulder Construction" shall consist of Class 13 Excavation material from adjacent Class 13 Excavation operation. Excess Class 13 material shall be hauled off. Refer to Typical on B Sheets and Tabulation 112-9 on C Sheets.



- ① Match slope of under side of shoulder pavement.
- ② A foreslope of 4:1 or flatter shall be provided.

**Existing Gravel Shoulder**

2_P_HMA_Modified			
STATION TO STATION	(G)	Feet	Division
XXX+XX	XXX+XX	8	1

2_P_HMA_Modified			
STATION TO STATION	(P)	Feet	Division
XXX+XX	XXX+XX	8	1

**Proposed Paved Shoulder**

2_P_HMA_Modified			
STATION TO STATION	(P)	Feet	Division
XXX+XX	XXX+XX	8	1

**Existing Gravel Shoulder**

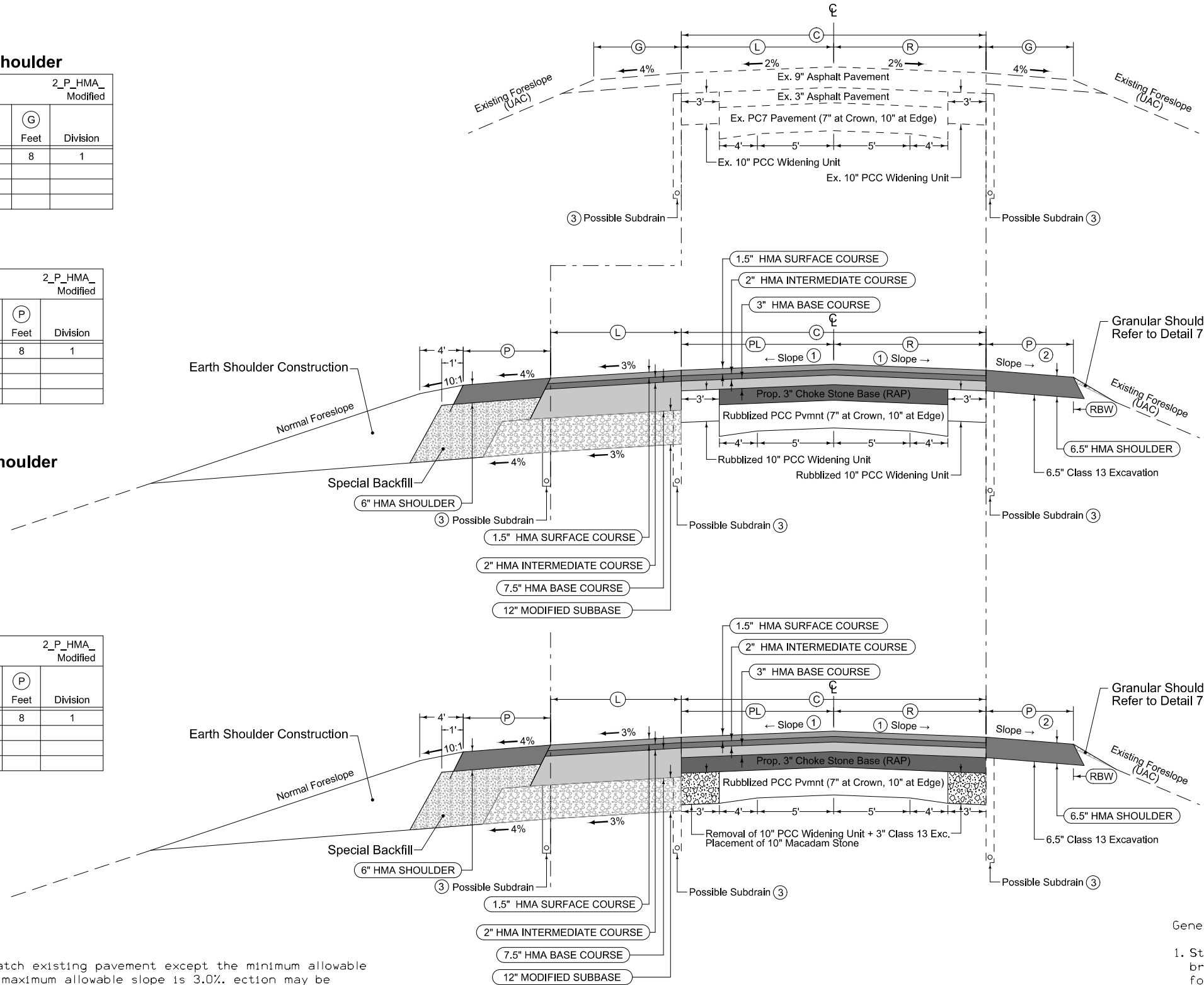
2_P_HMA_Modified			
STATION TO STATION	(G)	Feet	Division
XXX+XX	XXX+XX	8	1

**Paved Shoulder and Granular Fillet**

3R_Shldr_P_Overlay_Modified				
STATION TO STATION	(P)	(RBW)	Feet	Division
XXX+XX	XXX+XX	8	8	1

**Paved Shoulder and Granular Fillet**

3R_Shldr_P_Overlay_Modified				
STATION TO STATION	(P)	(RBW)	Feet	Division
XXX+XX	XXX+XX	8	8	1



- ① Finished slope shall match existing pavement except the minimum allowable slope is 2.0% and the maximum allowable slope is 3.0%. Section may be modified as directed by the Engineer through areas of special shaping.
- ② Finished slope of Shoulder shall have a minimum allowable slope of 4% and a maximum allowable slope of 6%. Section may be modified as directed by the Engineer through areas of special shaping.
- ③ UAC existing subdrain. All existing subdrain shall remain functional at all times (do not plug or crush). New subdrain shall be located at the outside edge of the paved shoulder and shall be in contact with the granular subbase. See Tab 104-9 and Detail RLS-3 on CS sheets for proposed locations.

- General Notes:
- 1. Stationing on typical sections does not include gapping for bridges, sideroads, or entrances. Refer to tabulations and details for precise stationing and quantities.
  - 2. See Tab 100-25 for Pavement quantities.
  - 3. See Tab 112-9 for Granular Shoulder quantities.

3R_MillingOverlay_Modified						
STATION TO STATION	(C)	(L)	(PL)	(R)	Division	Remarks
XXX+XX	XXX+XX	24	12	12	1	

**IA 23 Mainline**  
**(Existing Conditions and Proposed Rubblization and Passing Lanes)**

### SURVEY SYMBOLS

- |  |                                   |  |                              |
|--|-----------------------------------|--|------------------------------|
|  | Interstate Highway Symbol         |  | Septic Tank                  |
|  | U.S. Highway Symbol               |  | Cistern                      |
|  | Iowa Highway Symbol               |  | L.P. Gas Tank (No Footing)   |
|  | County Road Highway Symbol        |  | Underground Storage Tank     |
|  | Evergreen Tree                    |  | Latrine                      |
|  | Deciduous Tree                    |  | Satellite TV Dish            |
|  | Fruit Tree                        |  | Water Hook Up                |
|  | Shrub (Bushes)                    |  | Radio Tower                  |
|  | Timber                            |  | Tower Anchor                 |
|  | Hedge                             |  | Guardrail (Beam or Cable)    |
|  | Stump                             |  | Guard Post (one or two)      |
|  | Swamp                             |  | Guard Post (over two)        |
|  | Rock Outcrop                      |  | Filler Pipe                  |
|  | Broken Concrete                   |  | Gas Valve                    |
|  | Revetment (Rip Rap)               |  | Water Valve                  |
|  | Cemetery                          |  | Speed Limit Sign             |
|  | Grave                             |  | Mile Marker Post             |
|  | Cave                              |  | Sign                         |
|  | Sink Hole                         |  | Traffic Signal Control Box   |
|  | Board Fence                       |  | Rail Road Signal Control Box |
|  | Chain Link or Security Fence      |  | Telephone Switch Box         |
|  | Wire Fence                        |  | Electric Box                 |
|  | Terrace                           |  |                              |
|  | Earth Dam or Dike (Existing)      |  |                              |
|  | Tile Outlet                       |  |                              |
|  | Edge of Water                     |  |                              |
|  | Existing Drainage                 |  |                              |
|  | Right of Way Rail or Lot Corner   |  |                              |
|  | Concrete Monument                 |  |                              |
|  | Well                              |  |                              |
|  | Windmill                          |  |                              |
|  | Beehive Intake                    |  |                              |
|  | Existing Intake                   |  |                              |
|  | Existing Utility Access (Manhole) |  |                              |
|  | Fire Hydrant                      |  |                              |
|  | Water Hydrant (Rural)             |  |                              |

### 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.	
Lavender	(9)		Temporary Pavement Shading
Gray, Light	(48)		Proposed Resurfacing Shading
Orange	(6)		Proposed Granular Shading
Orange	(70)		Proposed Shoulder Granular Shading
Gray, Med	(80)		Proposed Shoulder Paved Full Depth Shading
Yellow	(132)		Proposed Shoulder Paved Partial Depth Shading
Gray, Dark	(112)		Proposed Widening Area Shading "In conjunction with a paving project"
Brown, Light	(236)		Grading Shading
Orange, Light	(134)		Proposed Granular Entrance Shading
Yellow	(220)		Proposed Paved Entrance Shading
Tan	(8)		Proposed Sidewalk Shading
Blue, Light	(230)		Proposed Sidewalk Landing Shading
Pink	(11)		Proposed Sidewalk Ramp Shading
Green, Light	(225)		Existing Pavement Shading
Red	(3)		Proposed Structure Shading
Red	(3)		Delineates Restricted Areas

### PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

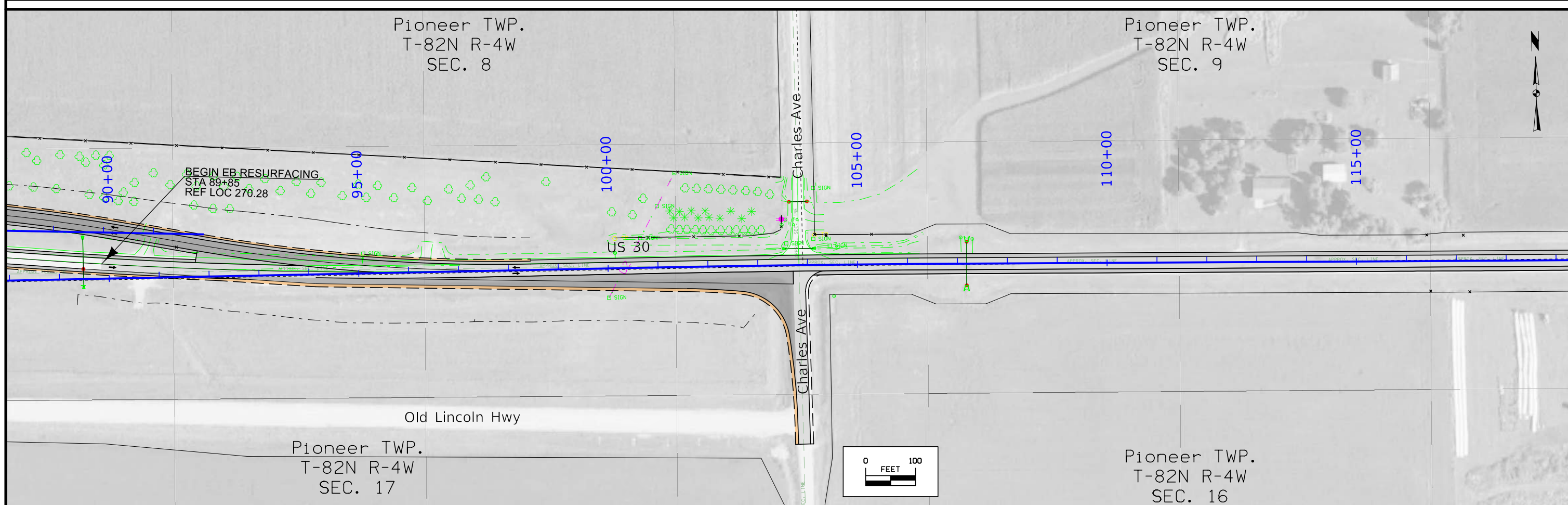
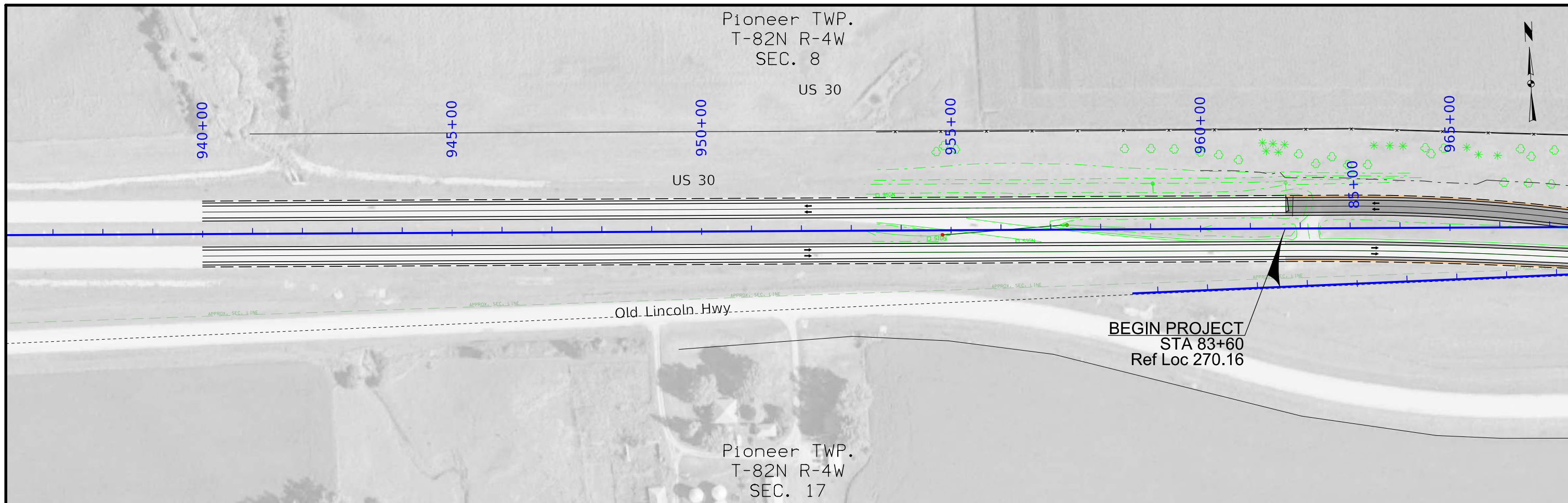
LINEWORK		Design Color No.	
Green	(10)		Existing Ground Line Profile
Blue	(1)		Proposed Profile and Annotation
Magenta	(5)		Existing Utilities
Blue, Light	(230)		Proposed Ditch Grades, Left
Black	(0)		Proposed Ditch Grades, Median
Rust	(14)		Proposed Ditch Grades, Right

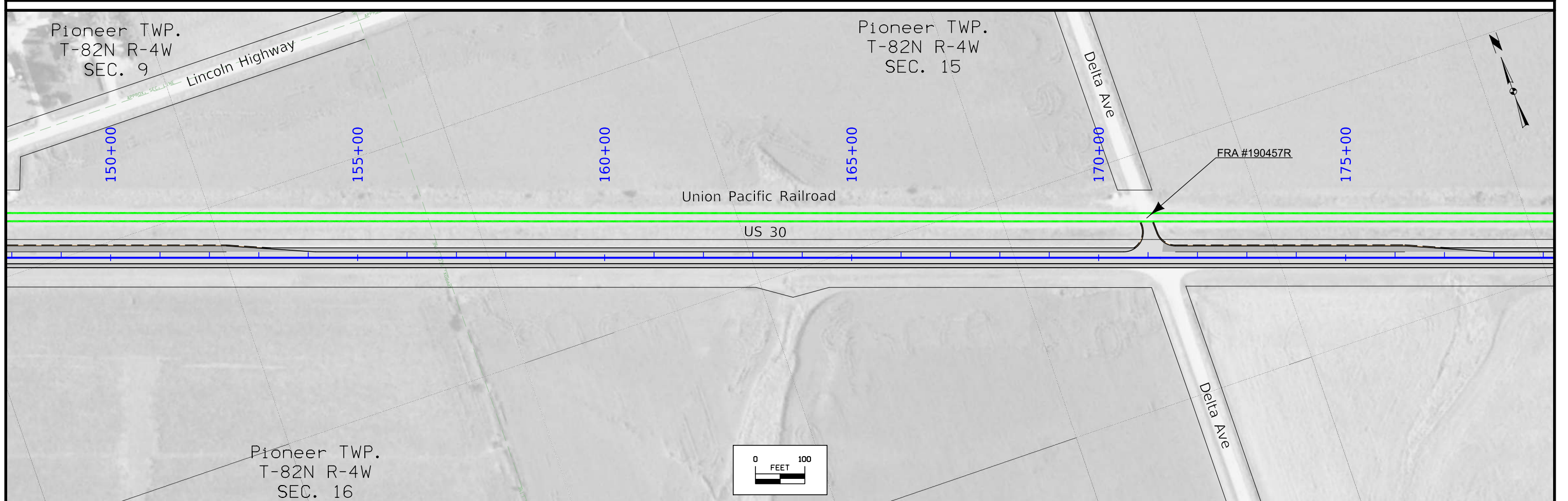
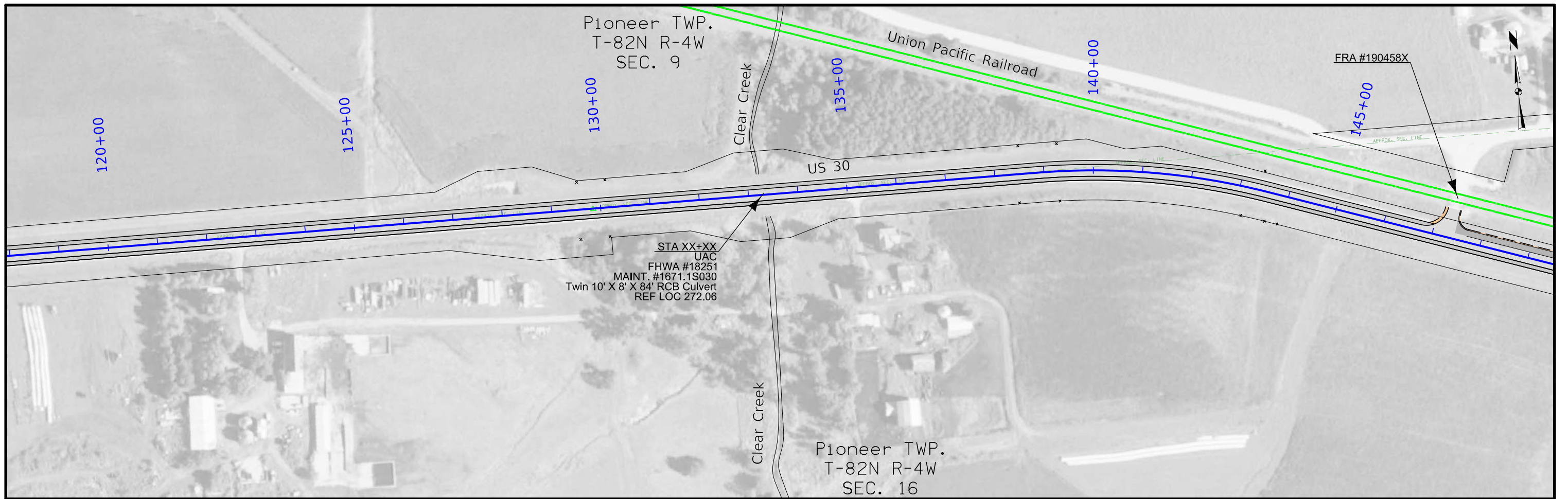
- |  |                             |  |                          |
|--|-----------------------------|--|--------------------------|
|  | Reference Point             |  | Survey Line              |
|  | Station                     |  | Section Corner           |
|  | Ground Line Intercept       |  | Saw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

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

## PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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





Pioneer TWP.  
T-82N R-4W  
SEC. 15



180+00

185+00

190+00

195+00

200+00

205+00

Union Pacific Railroad

US 30

Pioneer TWP.  
T-82N R-4W  
SEC. 15

Pioneer TWP.  
T-82N R-4W  
SEC. 14



210+00

215+00

220+00

225+00

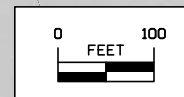
230+00

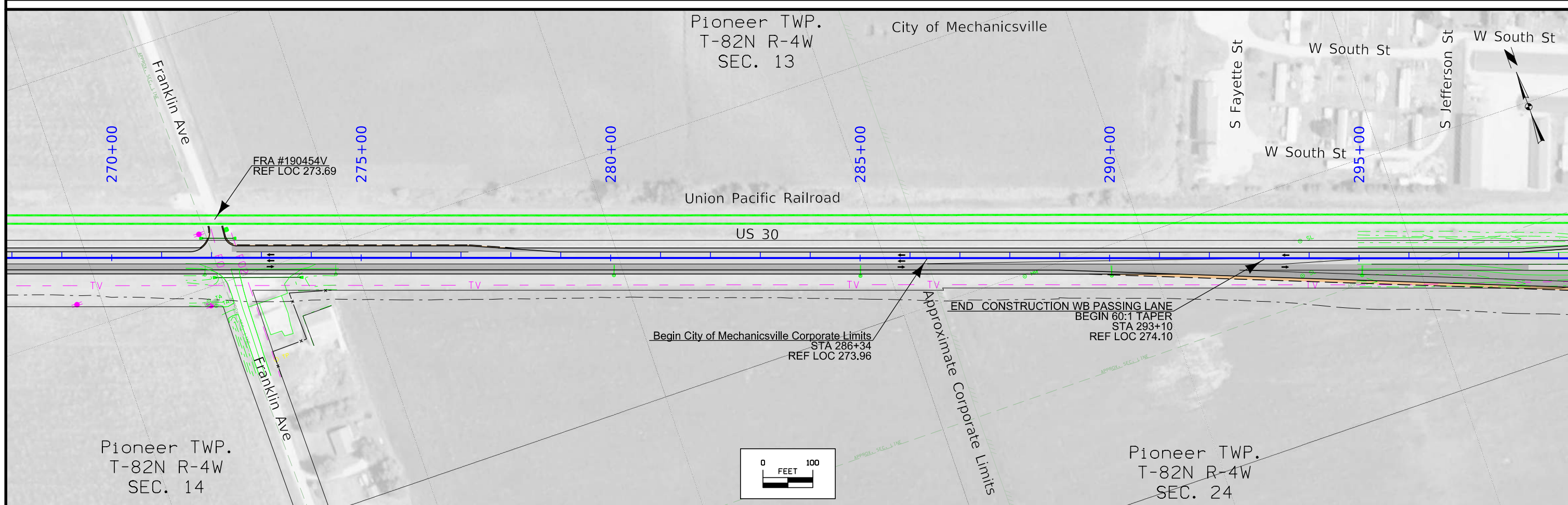
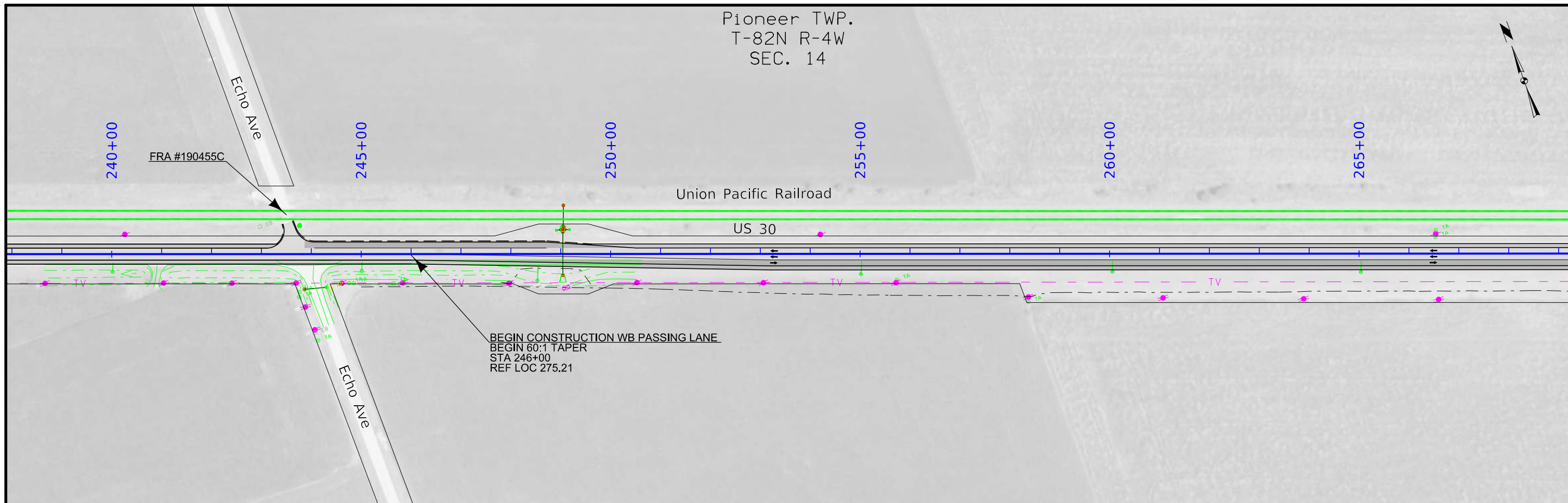
235+00

Union Pacific Railroad

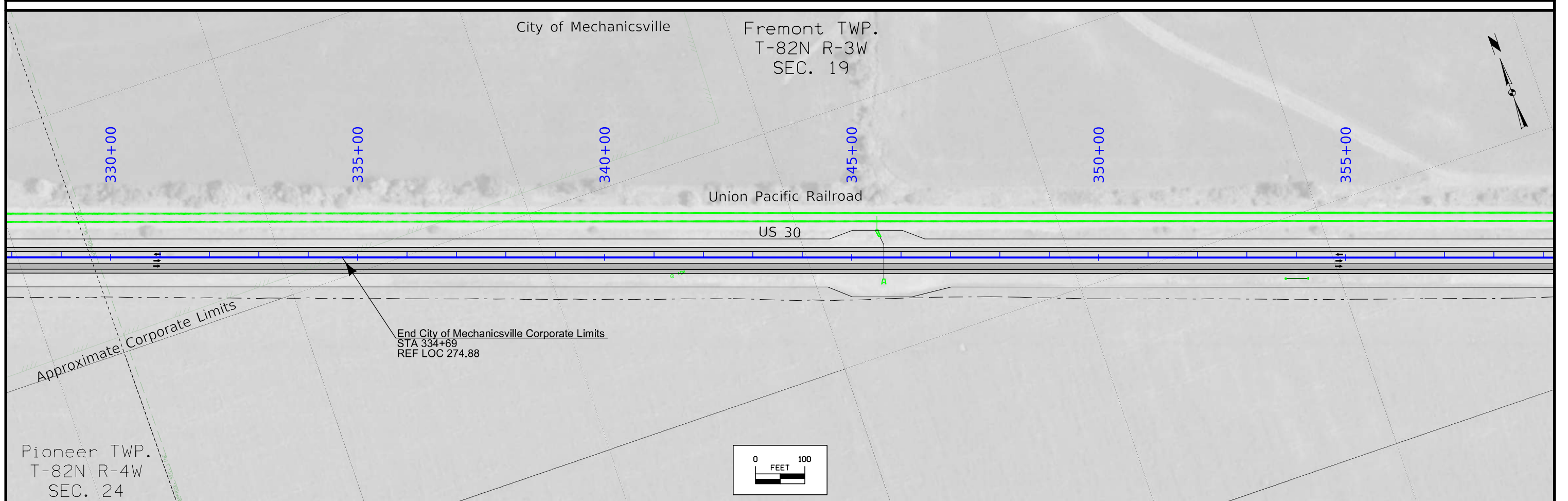
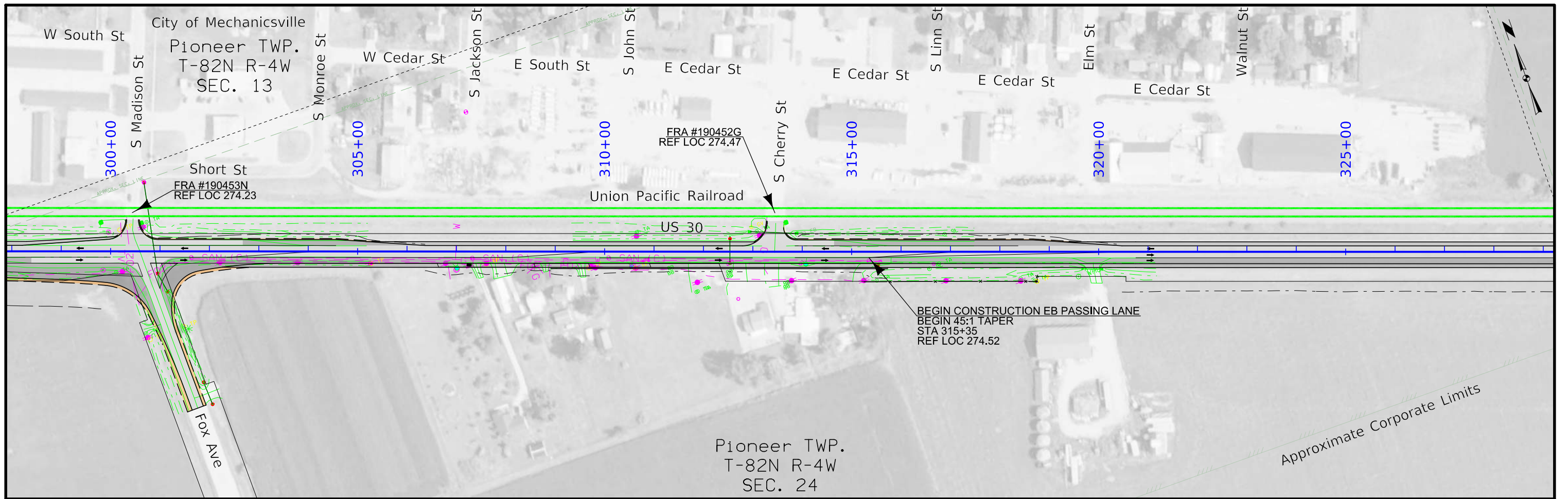
US 30

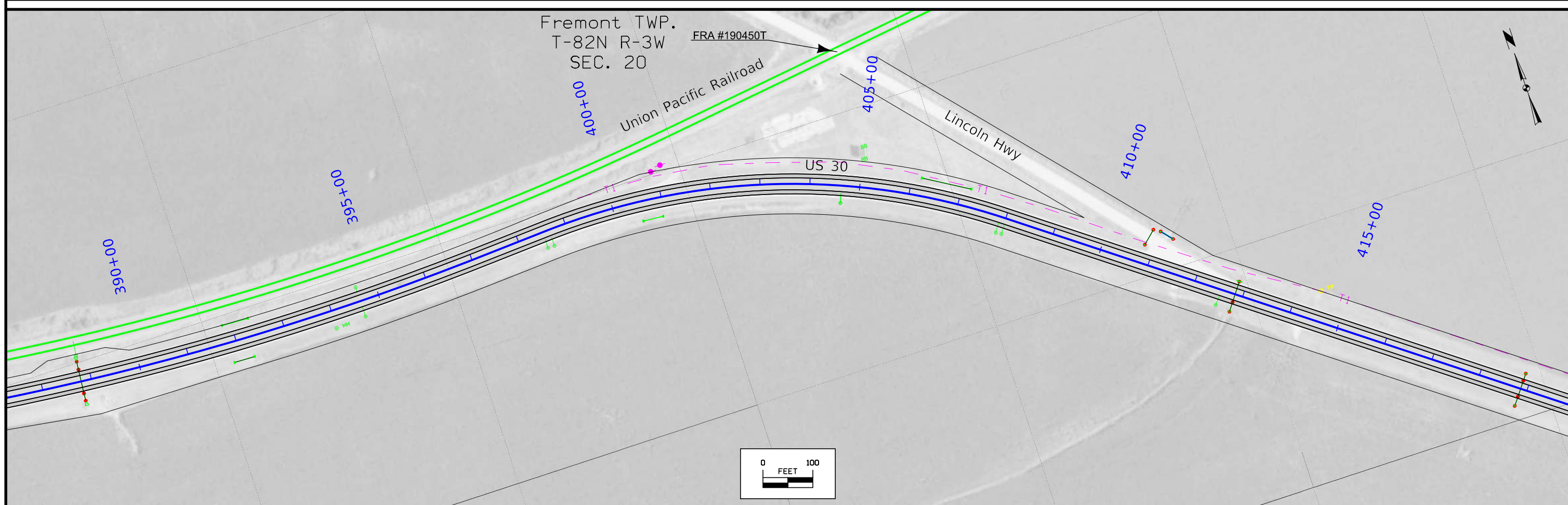
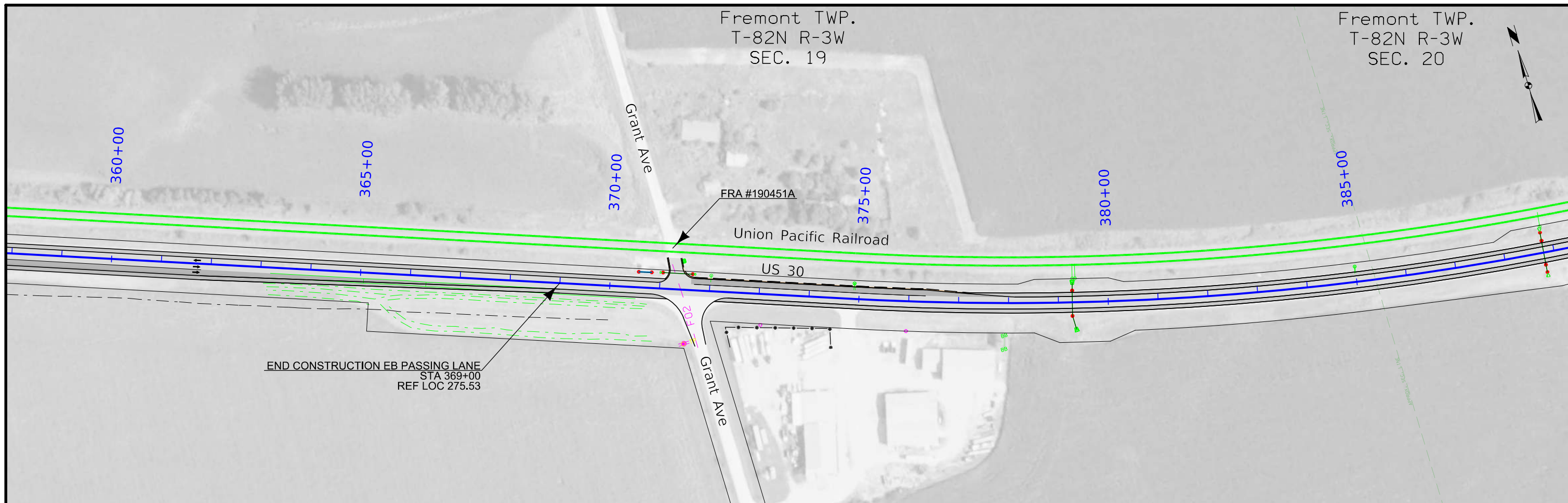
Eureka Ave

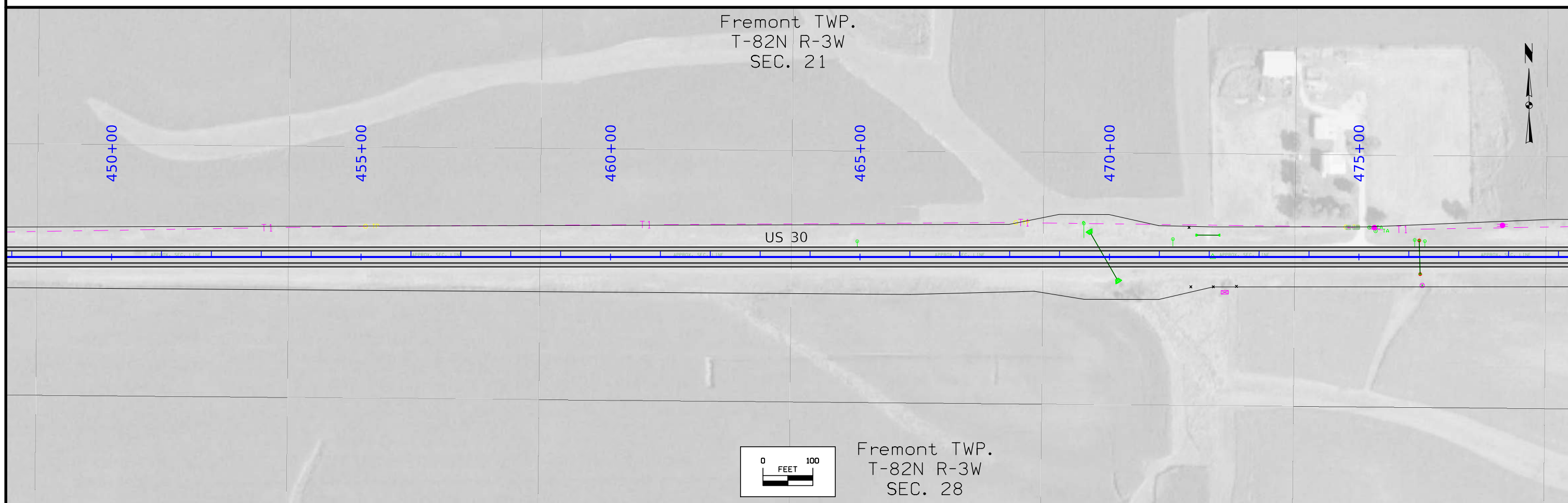
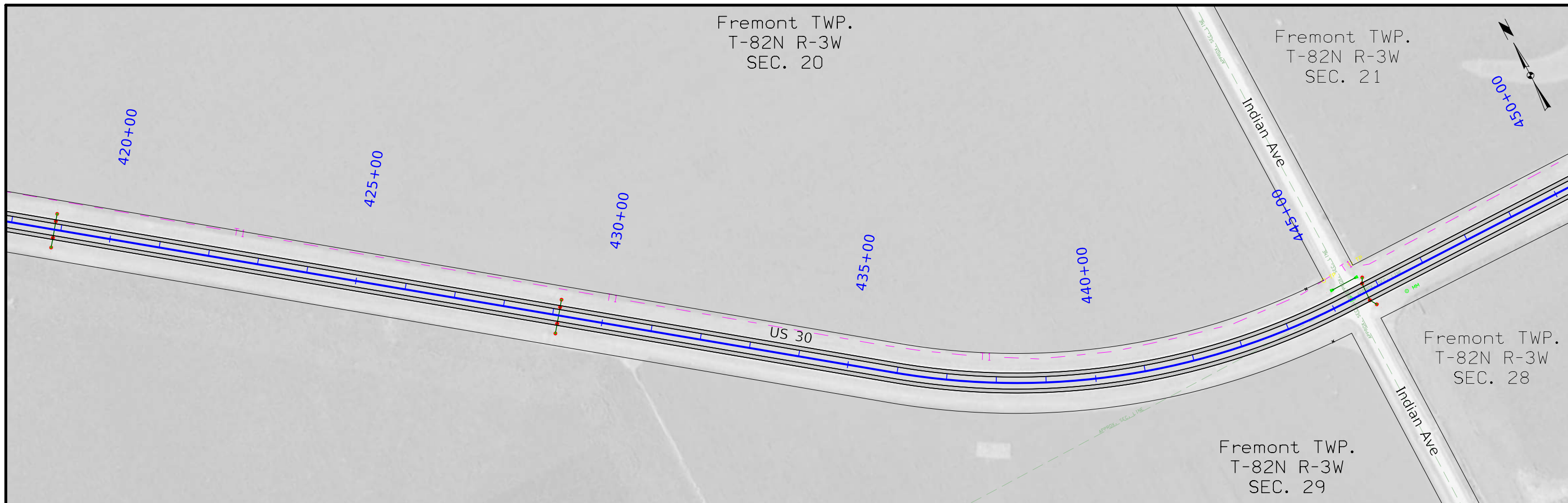












Fremont TWP.  
T-82N R-3W  
SEC. 21

Fremont TWP.  
T-82N R-3W  
SEC. 22

480+00

485+00

490+00

495+00

500+00

505+00

US 30

Co Rd X46 / Jackson Ave

Co Rd X46 / Jackson Ave

Fremont TWP.  
T-82N R-3W  
SEC. 28

Fremont TWP.  
T-82N R-3W  
SEC. 27

BEGIN CONSTRUCTION WB PASSING LANE  
BEGIN 60:1 TAPER  
STA 509+00  
REF LOC 278.20

Fremont TWP.  
T-82N R-3W  
SEC. 22

510+00

515+00

520+00

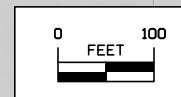
525+00

530+00

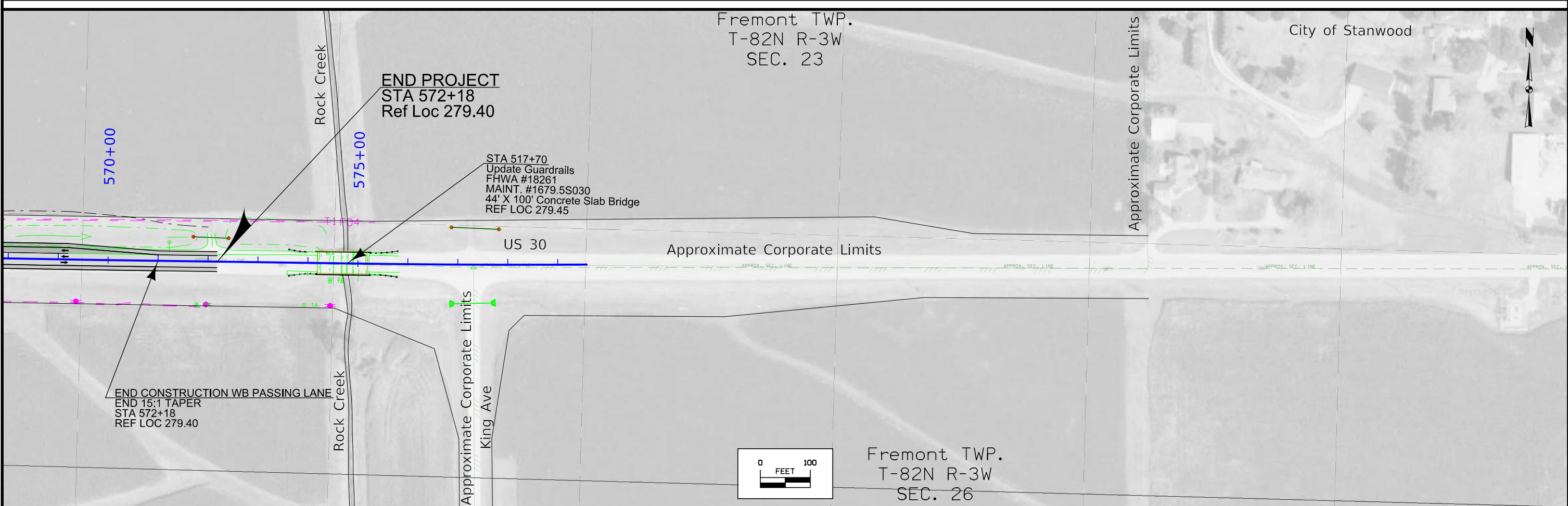
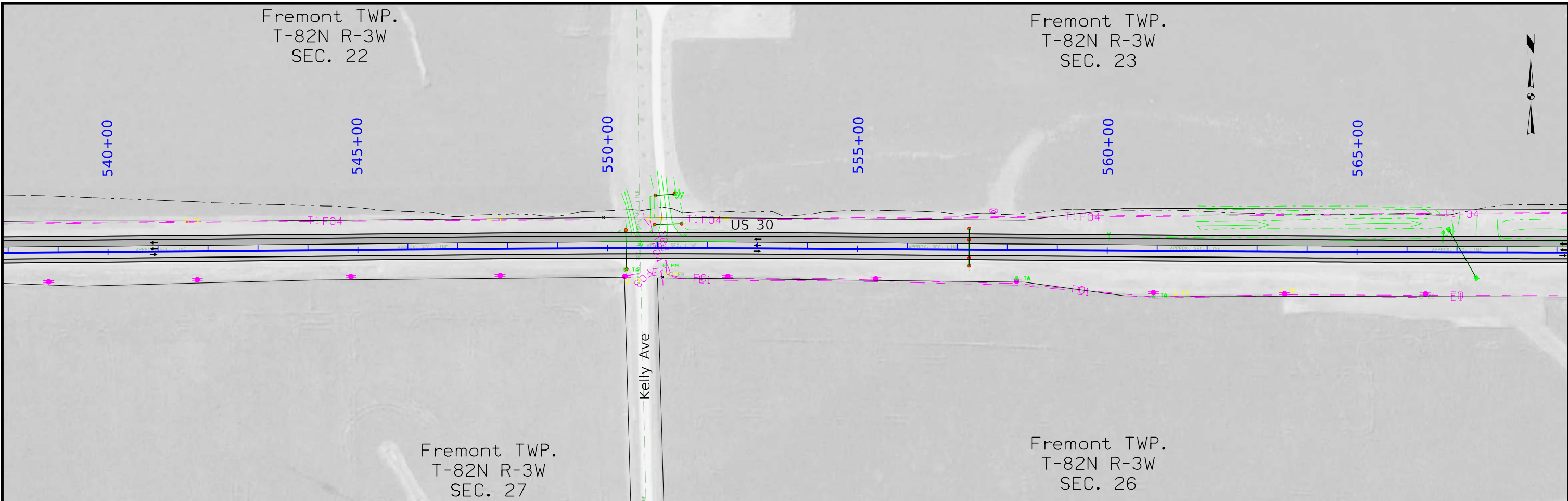
535+00

US 30

BEGIN CONSTRUCTION WB PASSING LANE  
BEGIN 60:1 TAPER  
STA 509+00  
REF LOC 278.20



Fremont TWP.  
T-82N R-3W  
SEC. 27



PIONEER TWP.  
T-82N R-4W  
SEC. 8



Sta. 942+54.95  
Install Twin 10' X 10' RCB Extension  
Skew = 31° Rt. Ahd.  
30' Headwall  
F.L. = Lt. 844.50  
Other 839.61  
Rt. 838.43  
(By Others)

Sta. 944+33.00 WBL  
Install 24" X 76' 2000D RCP  
F.L. = Lt. 850.66  
Rt. 854.61  
(By Others)

Sta. 952+00.00 WBL  
Install 24" X 70' 2000D RCP  
F.L. = Lt. 862.37  
Rt. 864.03  
(By Others)

Sta. 951+80.00 Med.  
Install Type "M" Dike  
Elev. = 965.53  
(By Others)

940

945

950



EXISTING U.S. 30

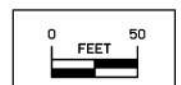
KIRKWOOD 4

SW-513  
942+75.00  
131.0' Rt.  
F.G. = 850.90  
B.W. = 843.90  
(By Others)

SW-513  
943+60.00  
127.0' Rt.  
F.G. = 850.80  
B.W. = 843.80  
(By Others)

Remove Headwall  
(By Others)

PIONEER TWP.  
T-82N R-4W  
SEC. 17



Refer to Sheets E.9 - E.10  
For Kirkwood 4 Information

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER AND ASSOCIATES, INC.	LINN/CEDAR COUNTY	PROJECT NUMBER	NHSX-030-7(192)--3H-57	SHEET NUMBER	D.14
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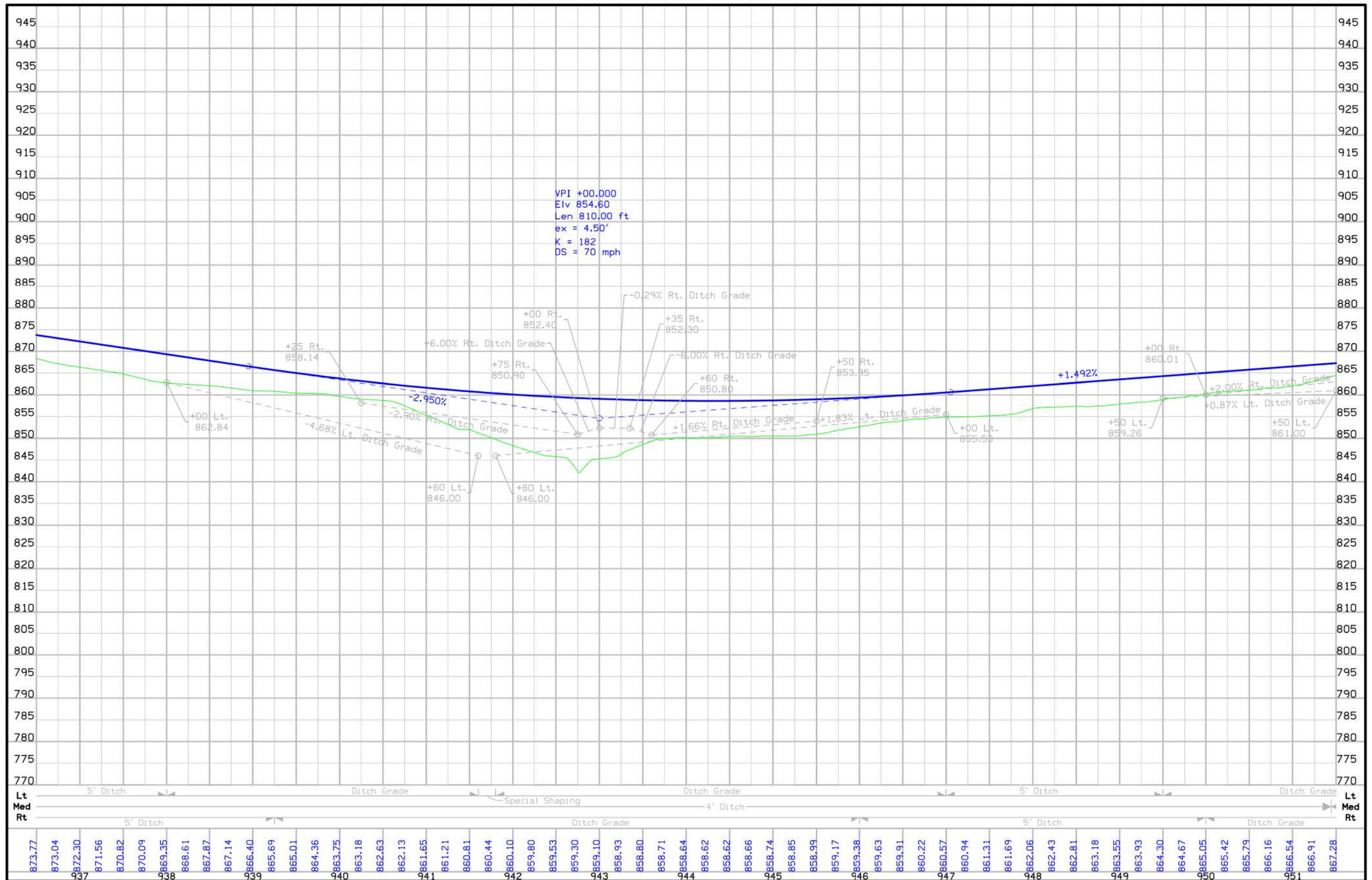
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Lisbon Bypass Plans  
1 of 8

FILE NO.	ENGLISH	DESIGN TEAM	HOLST / BAHR / JACKSON	CEDAR COUNTY	PROJECT NUMBER	NHSX-030-8(53)--3H-16	SHEET NUMBER	D11
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FILE NO.	ENGLISH	DESIGN TEAM	<b>SNYDER AND ASSOCIATES, INC.</b>	LINN/CEDAR COUNTY	PROJECT NUMBER	<b>NHSX-030-7(192)--3H-57</b>	SHEET NUMBER	<b>D.15</b>
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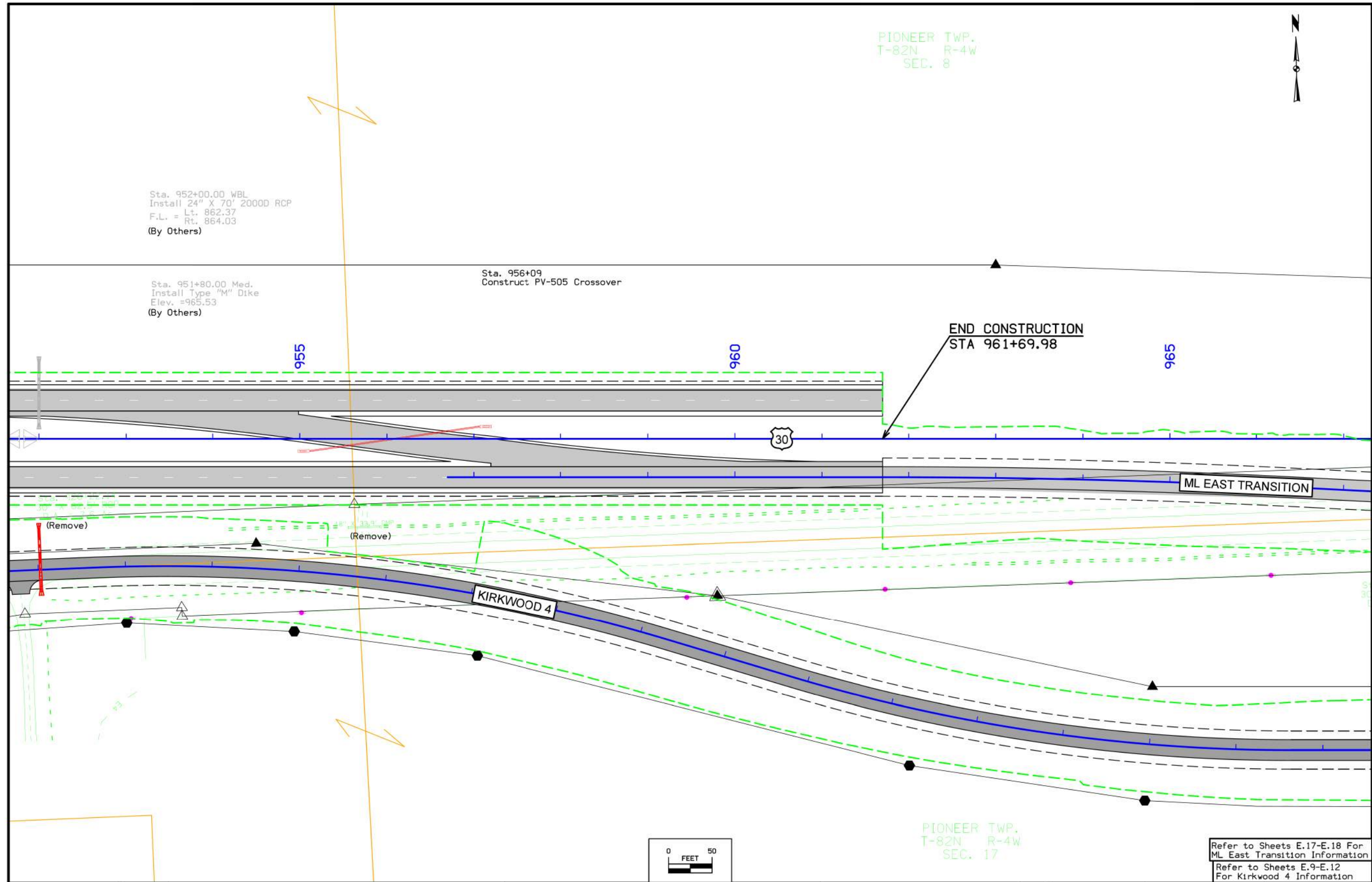
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Lisbon Bypass Plans  
2 of 8

FILE NO.	ENGLISH	DESIGN TEAM	<b>HOLST / BAHR / JACKSON</b>	CEDAR COUNTY	PROJECT NUMBER	<b>NHSX-030-8(53)--3H-16</b>	SHEET NUMBER	<b>D12</b>
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PIONEER TWP.  
T-82N R-4W  
SEC. 8



Sta. 952+00.00 WBL  
Install 24" X 70' 20000 RCP  
F.L. = Lt. 862.37  
Rt. 864.03  
(By Others)

Sta. 951+80.00 Med.  
Install Type "M" Dike  
Elev. = 965.53  
(By Others)

Sta. 956+09  
Construct PV-505 Crossover

END CONSTRUCTION  
STA 961+69.98

955

960

965

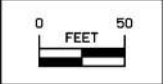


ML EAST TRANSITION

KIRKWOOD 4

(Remove)

(Remove)



PIONEER TWP.  
T-82N R-4W  
SEC. 17

Refer to Sheets E.17-E.18 For  
ML East Transition Information  
Refer to Sheets E.9-E.12  
For Kirkwood 4 Information

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER AND ASSOCIATES, INC.	LINN/CEDAR COUNTY	PROJECT NUMBER	NHSX-030-7(192)--3H-57	SHEET NUMBER	D.16
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Lisbon Bypass Plans  
3 of 8

FILE NO.	ENGLISH	DESIGN TEAM	HOLST / BAHR / JACKSON	CEDAR COUNTY	PROJECT NUMBER	NHSX-030-8(53)--3H-16	SHEET NUMBER	D13
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VPI +00.000  
 Elev 888.92  
 Len 980.00 ft  
 ex = -2.99'  
 K = 401  
 DS = 70 mph

END CONSTRUCTION  
 Sta 961+69.98, Elev = 882.46

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER AND ASSOCIATES, INC.	LINN/CEDAR COUNTY	PROJECT NUMBER	NHSX-030-7(192)--3H-57	SHEET NUMBER	D.17
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Lisbon Bypass Plans  
 4 of 8

FILE NO.	ENGLISH	DESIGN TEAM	HOLST / BAHR / JACKSON	CEDAR COUNTY	PROJECT NUMBER	NHSX-030-8(53)--3H-16	SHEET NUMBER	D14
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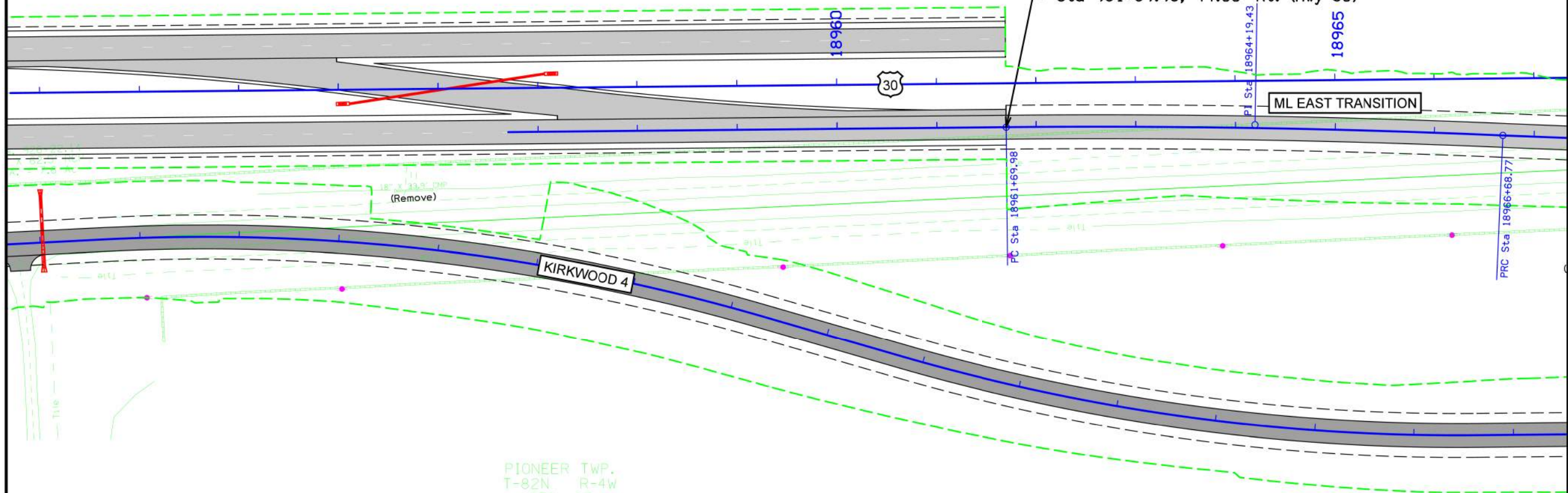
PIONEER TWP.  
T-82N R-4W  
SEC. 8

Curve Data  
 $\Delta = 3^\circ 00' 29.75''$  (RT)  
 $PT = 249.45$   
 $PL = 498.79$   
 $PC = 9,500.00$   
 $e = 3.27$   
 $e = NC$



BEGIN CONSTRUCTION

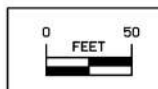
Sta 18961+69.98 (ML Trans. E)  
 = Sta 961+69.98, 44.00' Rt. (Hwy 30)



PIONEER TWP.  
T-82N R-4W  
SEC. 17

Refer to Sheet D.16 - D.17  
For Mainline Information  
Refer to Sheets E.9 - E.12  
For Kirkwood 4 Information

ML EAST TRANSITION



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER AND ASSOCIATES, INC.	LINN/CEDAR COUNTY	PROJECT NUMBER	NHSX-030-7(192)--3H-57	SHEET NUMBER	E.17
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Lisbon Bypass Plans  
5 of 8

FILE NO.	ENGLISH	DESIGN TEAM	HOLST / BAHR / JACKSON	CEDAR COUNTY	PROJECT NUMBER	NHSX-030-8(53)--3H-16	SHEET NUMBER	D15
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FILE NO.	ENGLISH	DESIGN TEAM	SNYDER AND ASSOCIATES, INC.	18957	18958	18959	18960	18961	18962	18963	18964	18965	18966	18967
				LINN/CEDAR COUNTY				PROJECT NUMBER	NHSX-030-7(192)--3H-57				SHEET NUMBER	E.18

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Lisbon Bypass Plans  
6 of 8

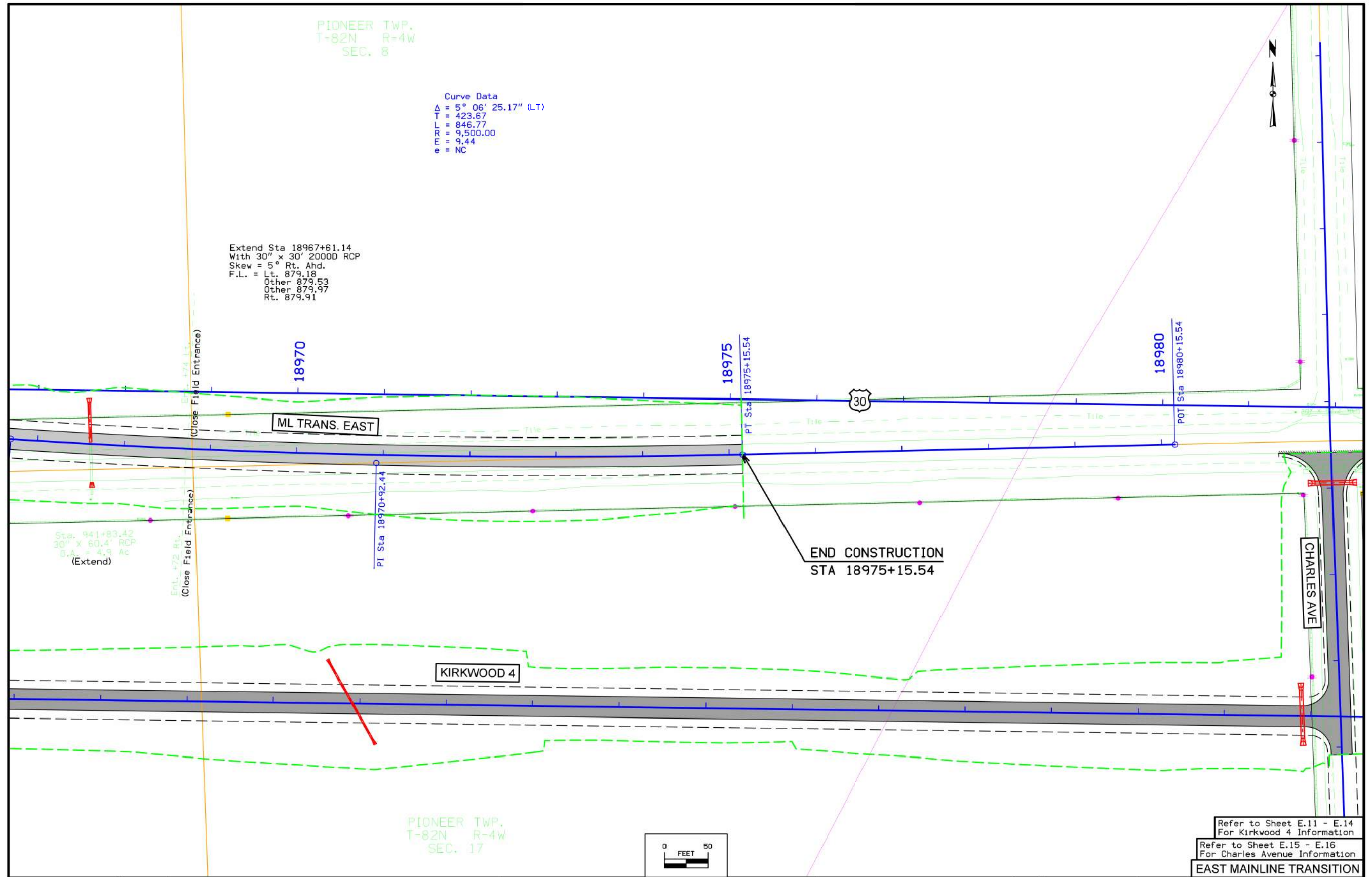
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PIONEER TWP.  
T-82N R-4W  
SEC. 8

Curve Data  
 $\Delta = 5^\circ 06' 25.17''$  (LT)  
 T = 423.67  
 L = 846.77  
 R = 9,500.00  
 E = 9.44  
 e = NC

Extend Sta 18967+61.14  
 With 30" x 30' 20000 RCP  
 Skew = 5° Rt. Ahd.  
 F.L. = Lt. 879.18  
       Other 879.53  
       Other 879.97  
       Rt. 879.91



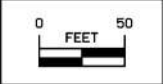
Sta. 9+1+83.42  
 30" x 60.4' RCP  
 D.A. = 4.9 Ac  
 (Extend)

PI Sta 18970+92.44

PT Sta 18975+15.54

POT Sta 18980+15.54

PIONEER TWP.  
T-82N R-4W  
SEC. 17



Refer to Sheet E.11 - E.14  
 For Kirkwood 4 Information  
 Refer to Sheet E.15 - E.16  
 For Charles Avenue Information

EAST MAINLINE TRANSITION

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER AND ASSOCIATES, INC.	LINN/CEDAR COUNTY	PROJECT NUMBER	NHSX-030-7(192)--3H-57	SHEET NUMBER	E.19
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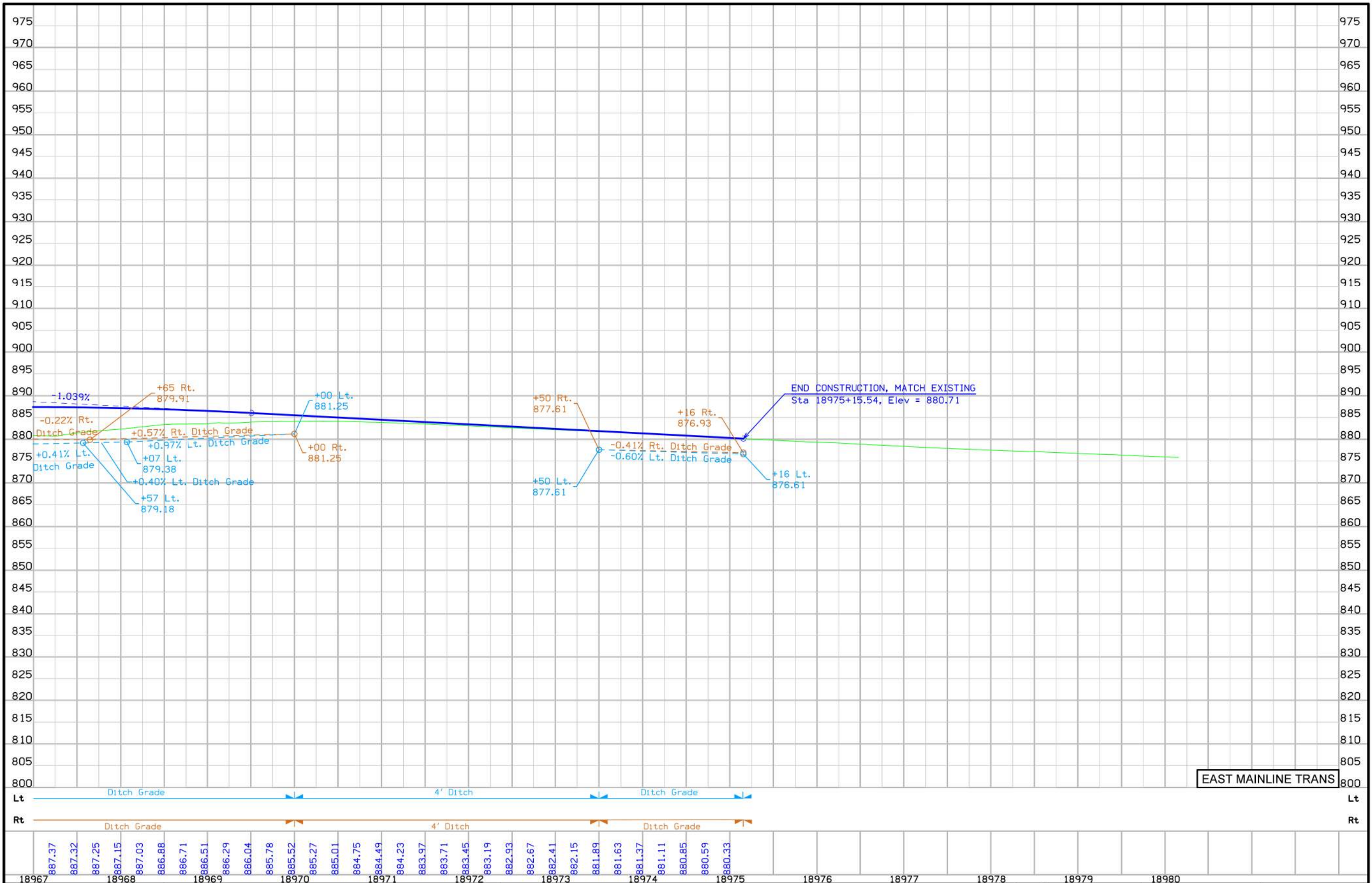
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Lisbon Bypass Plans  
 7 of 8

FILE NO.	ENGLISH	DESIGN TEAM	HOLST / BAHR / JACKSON	CEDAR COUNTY	PROJECT NUMBER	NHSX-030-8(53)--3H-16	SHEET NUMBER	D17
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EAST MAINLINE TRANS

18967	887.37	18968	887.32	887.25	887.15	887.03	886.88	886.71	886.51	886.29	886.04	885.78	885.52	885.27	885.01	884.75	884.49	884.23	883.97	883.71	883.45	883.19	882.93	882.67	882.41	882.15	881.89	881.63	881.37	881.11	880.85	880.59	880.33	18975	18976	18977	18978	18979	18980
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FILE NO.	ENGLISH	DESIGN TEAM	SNYDER AND ASSOCIATES, INC.	LINN/CEDAR COUNTY	PROJECT NUMBER	NHSX-030-7(192)--3H-57	SHEET NUMBER	E.20
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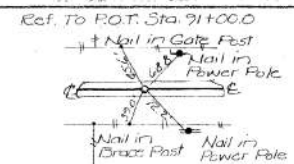
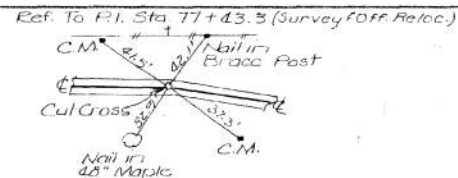
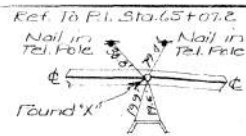
This Sheet  
For Information Only

Lisbon Bypass Plans  
8 of 8

FILE NO.	ENGLISH	DESIGN TEAM	HOLST / BAHR / JACKSON	CEDAR COUNTY	PROJECT NUMBER	NHSX-030-8(53)--3H-16	SHEET NUMBER	D18
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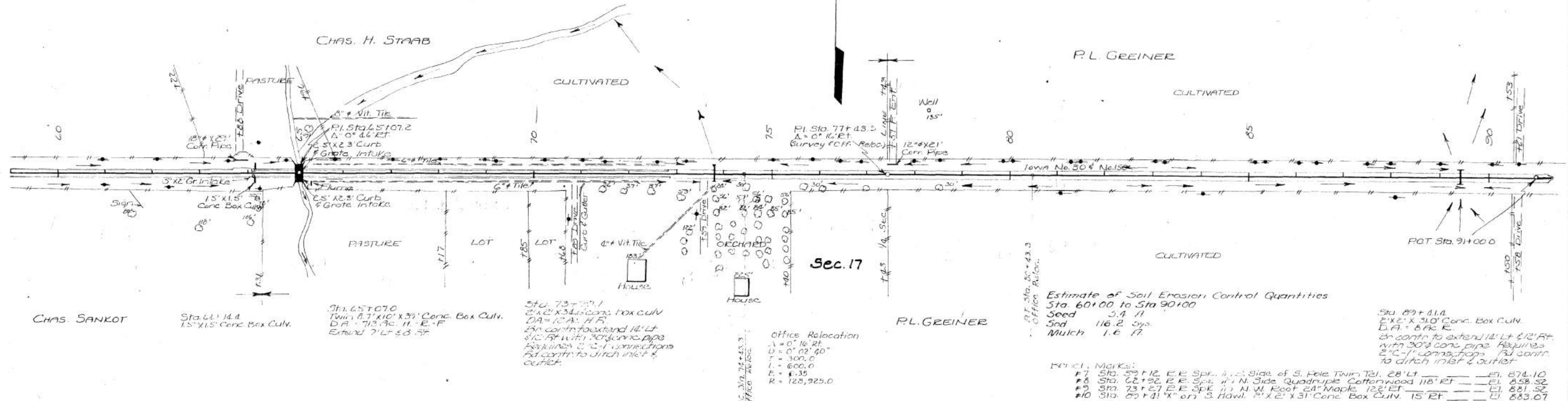
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ESTABLISHED WIDTH OF RIGHT OF WAY FT.



FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	57(5)	1952	9	36

PIONEER TWP.  
T82N - R4W  
Sec. 8

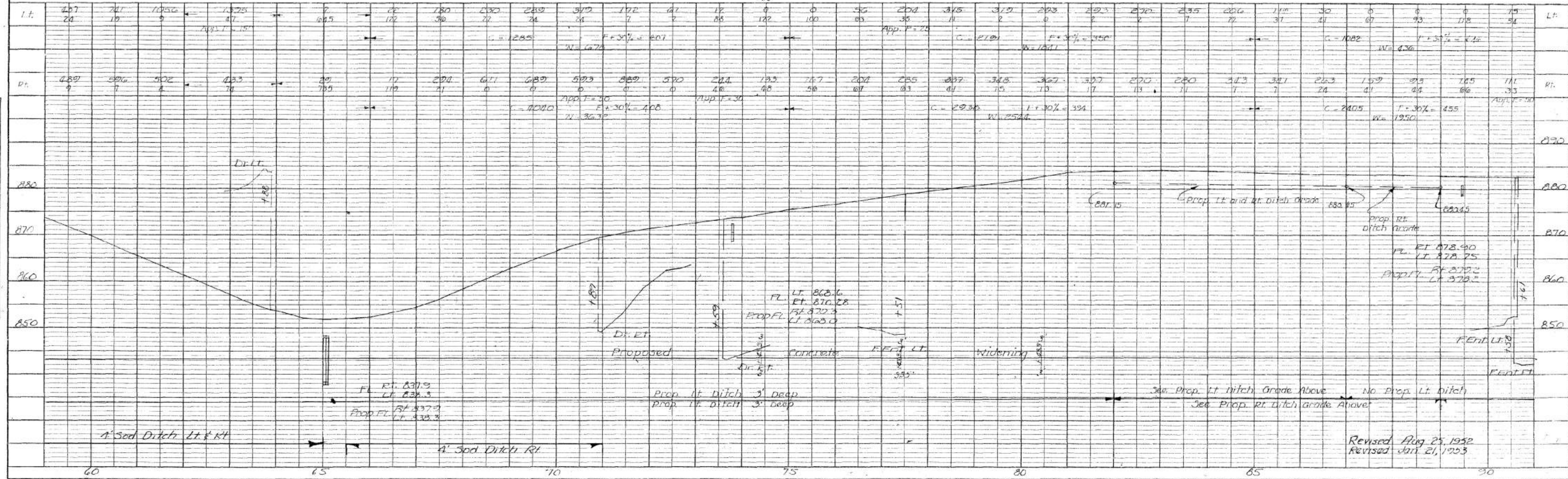


Estimate of Soil Erosion Control Quantities  
Sta. 60+00 to Sta. 90+00  
Seed 3.4 ft.  
Sod 116.2 Sps.  
Mulch 1.6 ft.

- Point Marks:
- #7 Sta. 59+12 E.E. Spr. 1/2 Side of S. Pole Twin Tel. 28' Lt. — El. 874.10
  - #8 Sta. 62+52 E.E. Spr. 1/2 N. Side Quadruple Cottonwood 118' Rt. — El. 858.52
  - #9 Sta. 73+27 E.E. Spr. 1/2 N.W. Eoot 24' Maple 122' Lt. — El. 881.52
  - #10 Sta. 89+41 X on S. Haul. 1/2 X 2' X 31' Conc. Box Culv. 15' Rt. — El. 883.07

PLAN  
SURVEYED  
NOTED  
CHECKED  
BY

PROFILES  
GRADES CHECKED  
BY  
STRUCTURE NOTING CHECKED  
BY



This Sheet For Information Only

US 30 As-Builts 1953  
1 of 23

ESTABLISHED WIDTH OF RIGHT OF WAY FT.

Ref To POT Sta 91+00.0

Ref To P.I. Sta 103+75.5 (Survey Off Reloc)

PIONEER TWP. T82N - R4W

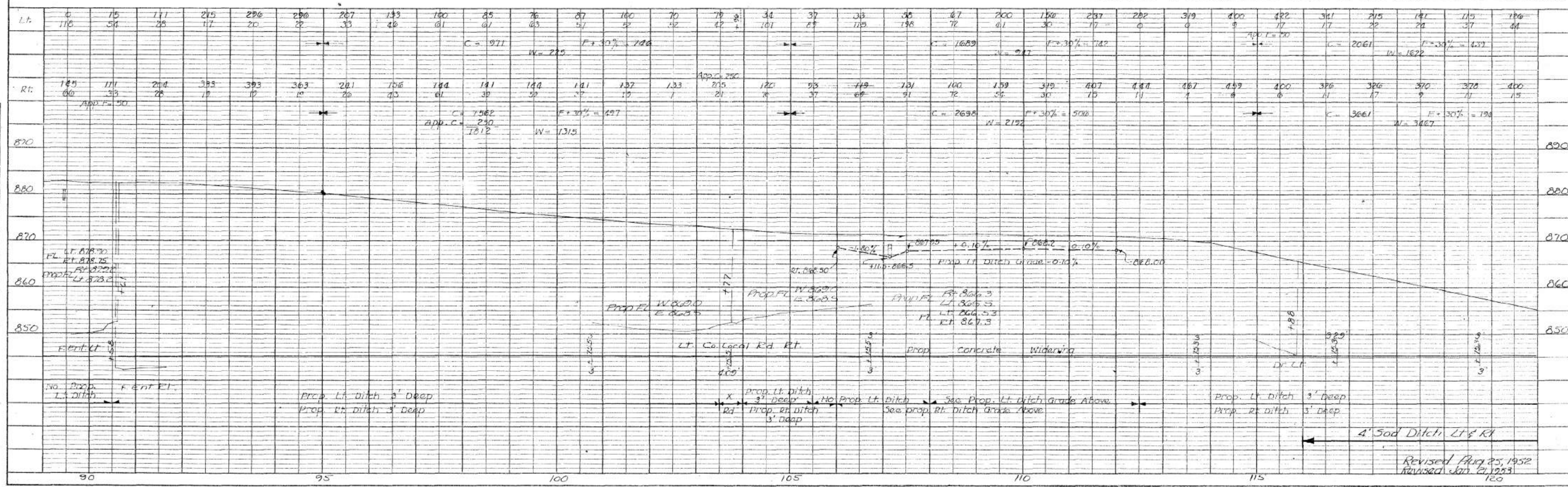
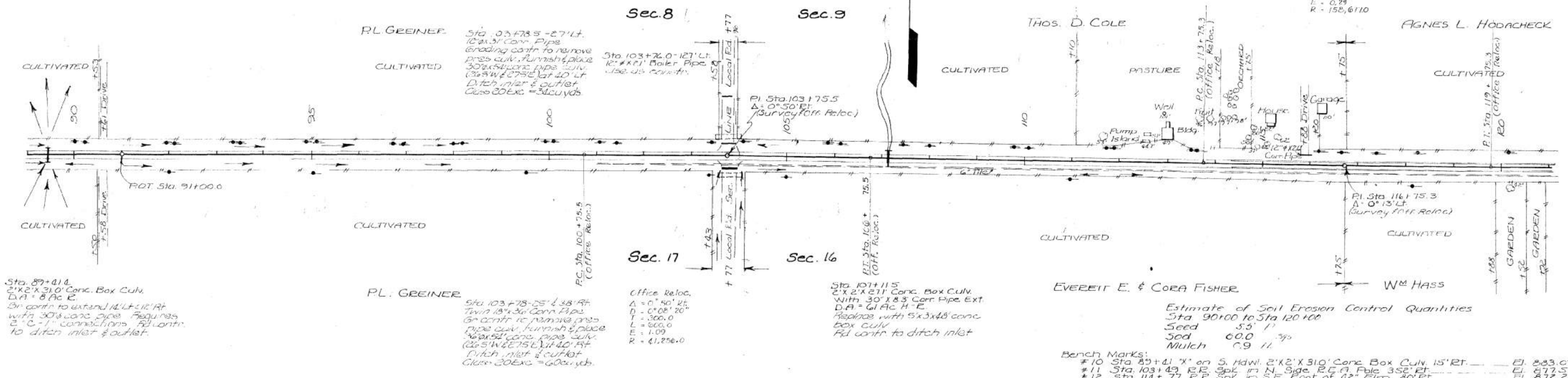
Ref To P.I. Sta 116+75.3 (Survey Off Reloc)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	5709	Having	10	36

Office Reloc.  
 A = 0° 13' Lt  
 D = 0° 02' 10"  
 L = 300.0  
 E = 600.0  
 R = 150.6110

PLAN	DATE
FORWARDED	
NOTED	
BY	

PROFILE	DATE
FORWARDED	
NOTED	
BY	



Estimate of Soil Erosion Control Quantities  
 Sta 90+00 to Sta 120+00  
 Seed 5.5 11  
 Sod 60.0 395  
 Mulch 0.9 11

Bench Marks:  
 #10 Sta 89+41.4 on S. Hdwl. 2'x2'x310' Conc. Box Culv. 15' RT. --- El. 833.07  
 #11 Sta 103+49 R.E. Spk. in N. Side R.E. Pole 352' RT. --- El. 877.57  
 #12 Sta 114+77 R.E. Spk. in S.E. Root of 42' Elm 80' RT. --- El. 872.24

PLATE 1 - PLAN-PROFILE OF R.R. & E. STANDARD  
 KELLOGG & ESEY CO. NEW YORK

Cedar Co. FN Proj. No. 57 Sheet No. 14

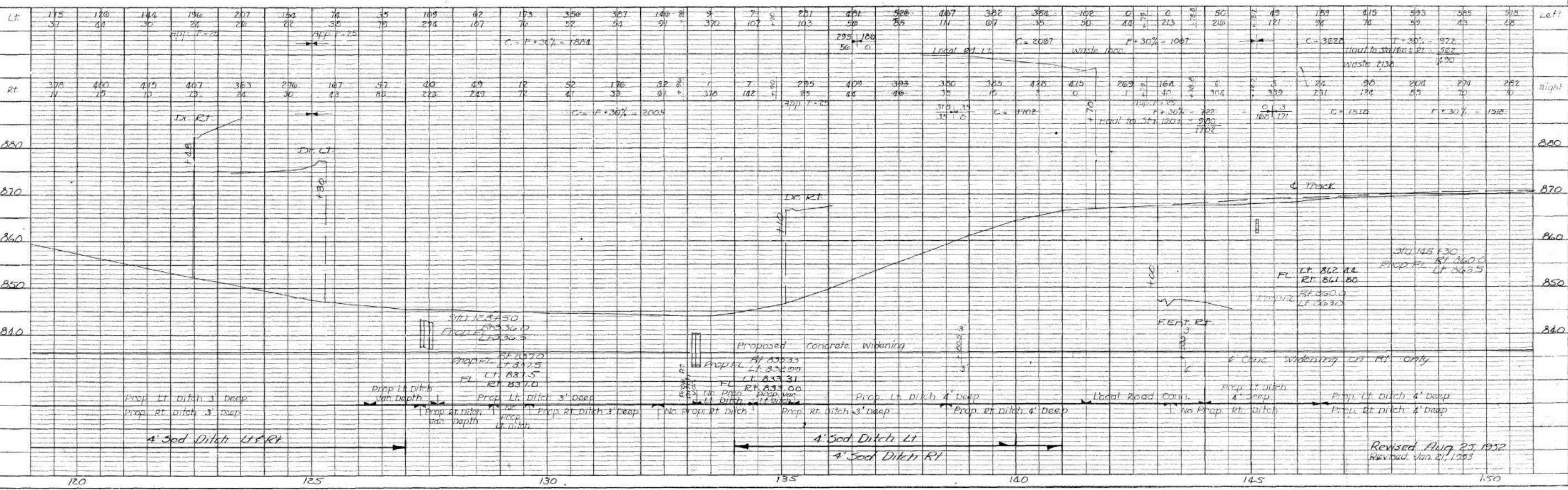
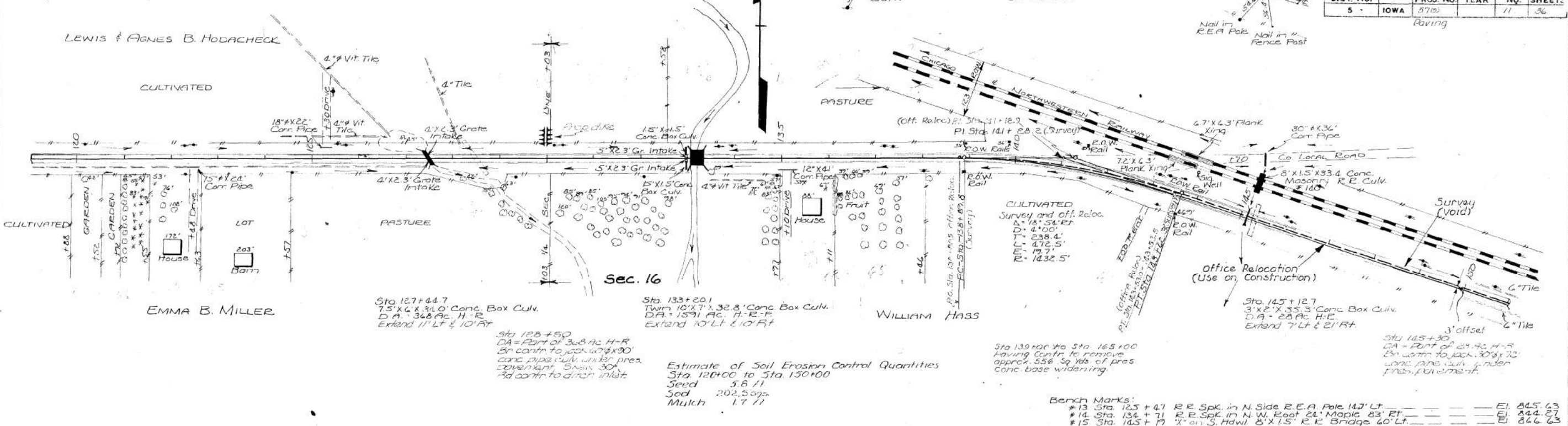
This Sheet For Information Only

US 30 As-Builts 1953  
 2 of 23

ESTABLISHED WIDTH OF RIGHT OF WAY FT.

PIONEER TWP. T82N-R4W Sec. 9

FED. ROAD DIST. NO.	STATE	F. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	5710		11	36



PLAN	DATE
REVISIONS	BY
1. CHECKED	
2. PLOTTED	
3. ALIGNED	
4. CHECKED	
5. PRINTED	

STRUCTURE	DATE
1. FOUNDATION	
2. WALLS	
3. ROOF	
4. INTERIORS	
5. EXTERIORS	

PLATE 1 - PLAN-PROFILE O. P. A. & C. STANDARD  
 CEDAR CO. F.N. Proj. No 57 Sheet No. 11

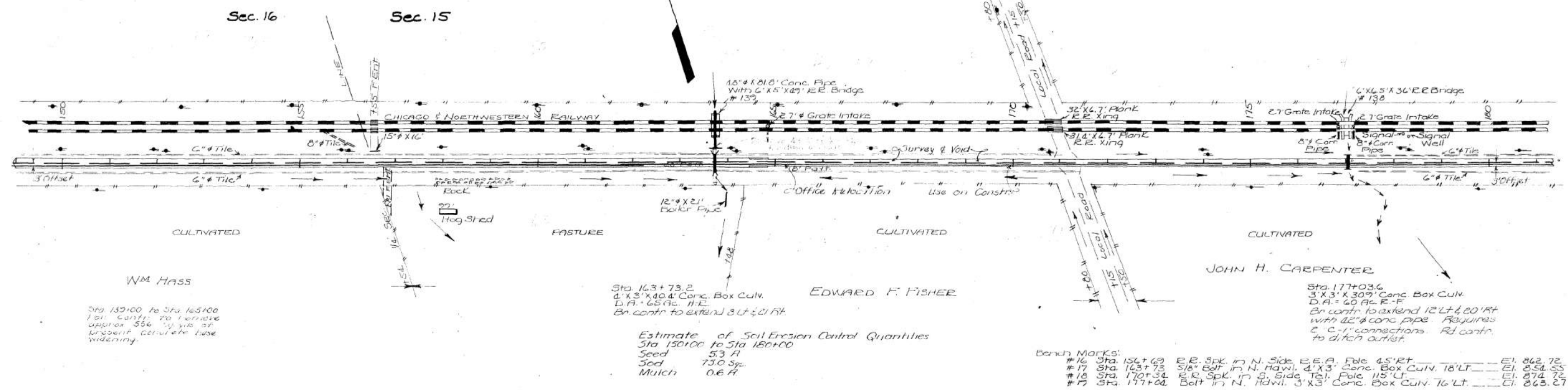


ESTABLISHED WIDTH OF RIGHT OF WAY FT.

PIONEER TWP.  
T82N-R1W

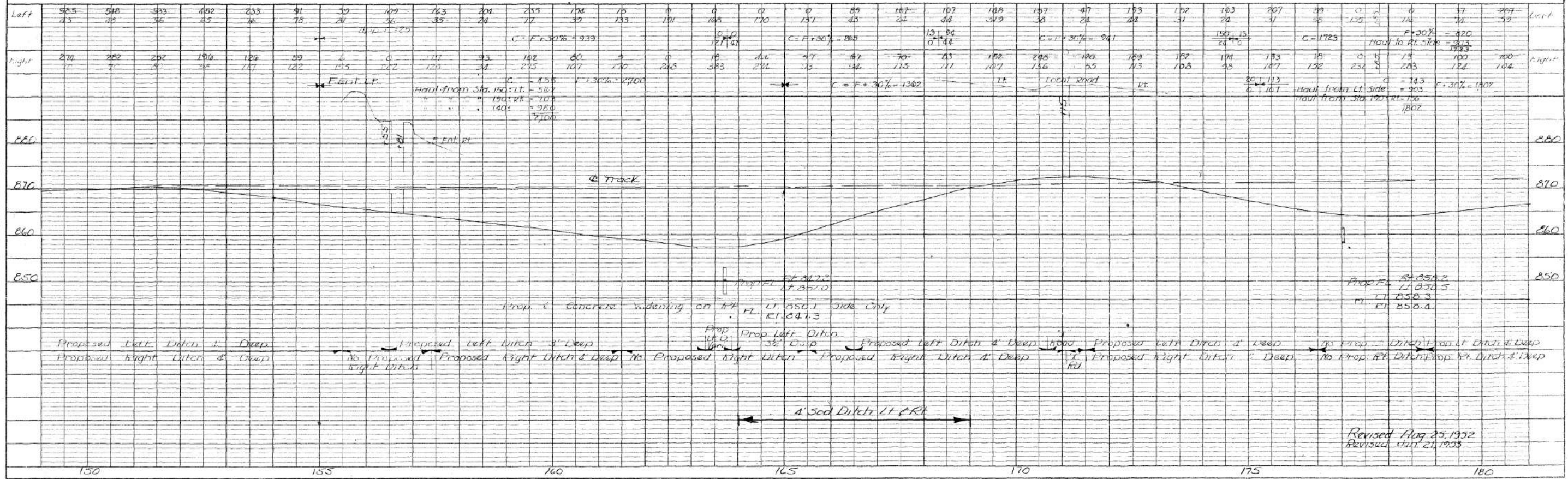
FED. ROAD DIST. NO.	STATE	FISCAL YEAR	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	57	57(5)	57	12	36

Paving



Estimate of Soil Erosion Control Quantities  
Sta 150+00 to Sta 180+00  
Seed 53 A  
Sod 73.0 Sp.  
Mulch 0.6 A

Bench Marks:  
#16 Sta. 156+69 E.R. Spk. in N. Side E.E.A. Pole 45' RT. — El. 862.72  
#17 Sta. 163+73 5/8" Bolt in N. Avail. 4' X 3' Conc. Box CULV. 18' LT. — El. 854.55  
#18 Sta. 170+34 E.R. Spk. in S. Side Tel. Pole 115' LT. — El. 874.72  
#19 Sta. 177+04 Bolt in N. Avail. 3' X 3' Conc. Box CULV. 16' LT. — El. 863.27



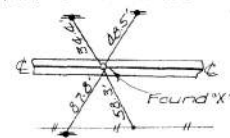
This Sheet For Information Only

US 30 As-Builts 1953  
4 of 23

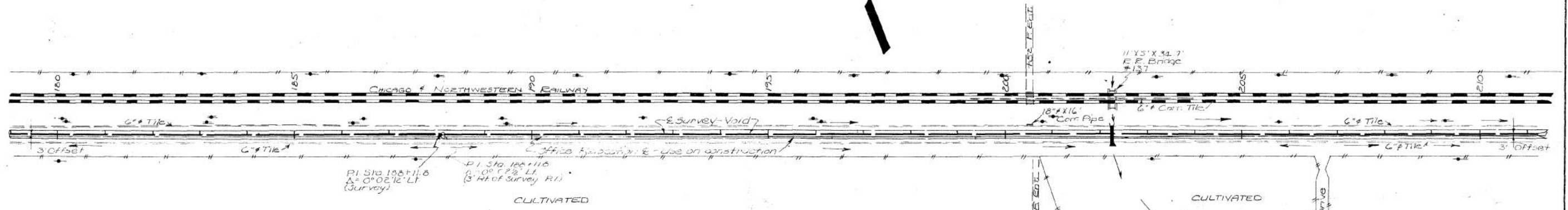
ESTABLISHED WIDTH OF RIGHT OF WAY FT.

Ref. To P.I. Sta. 188+11.8 (Survey)

PIONEER TWP.  
T82N-R4W  
Sec. 15



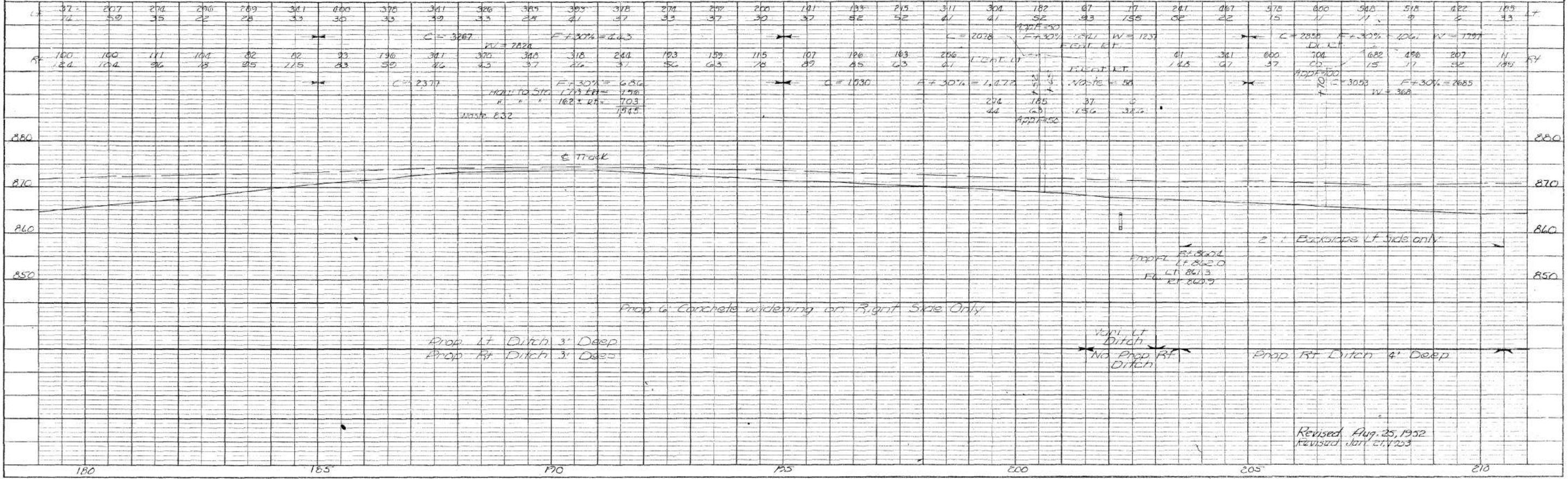
FED. ROAD DIST. NO.	STATE	F. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	5765	Daving	13	36



JOHN H. CARPENTER  
Estimate of Soil Erosion Control Quantities  
Sta. 180+00 to Sta. 210+00  
Seed 5.9 H  
Sod 0.0 Sp  
Mulch 0.6 H

HOWARD SECOR  
Sta. 202+25.1  
3' x 3' x 3/4\"/>

Boundary Marks:  
#20 Sta. 188+06 E.E. Spk. in Tel. Pole 122' LT. El. 878.81  
#21 Sta. 203+27 E.E. Spk. in S. Side Tel. Pole 120' LT. El. 870.59



NOTE BOOK: REVISIONS  
NOTE BOOK: ALIGNMENT CHECKED  
NOTE BOOK: STRUCTURE NOTATIONS CHECKED

NOTE BOOK: REVISIONS  
NOTE BOOK: ALIGNMENT CHECKED  
NOTE BOOK: STRUCTURE NOTATIONS CHECKED

PLATE 1 - PLAN-PROFILE O. P. K. & R. E. STANSHO  
KEUFFEL & ESSER CO., NEW YORK.

This Sheet For Information Only

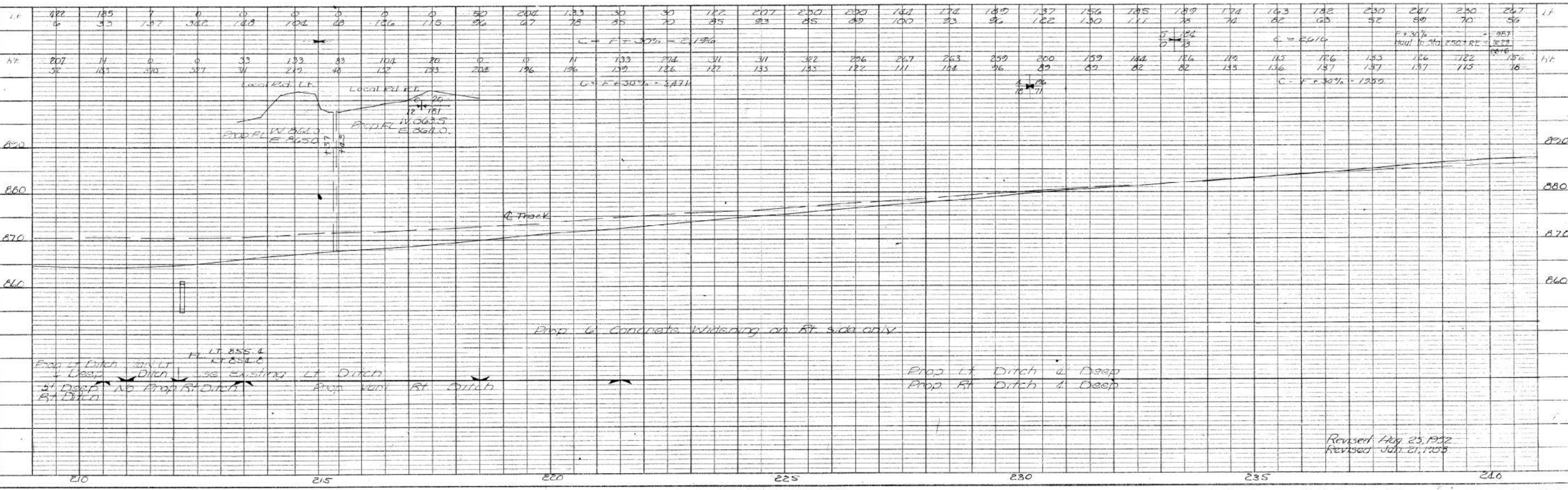
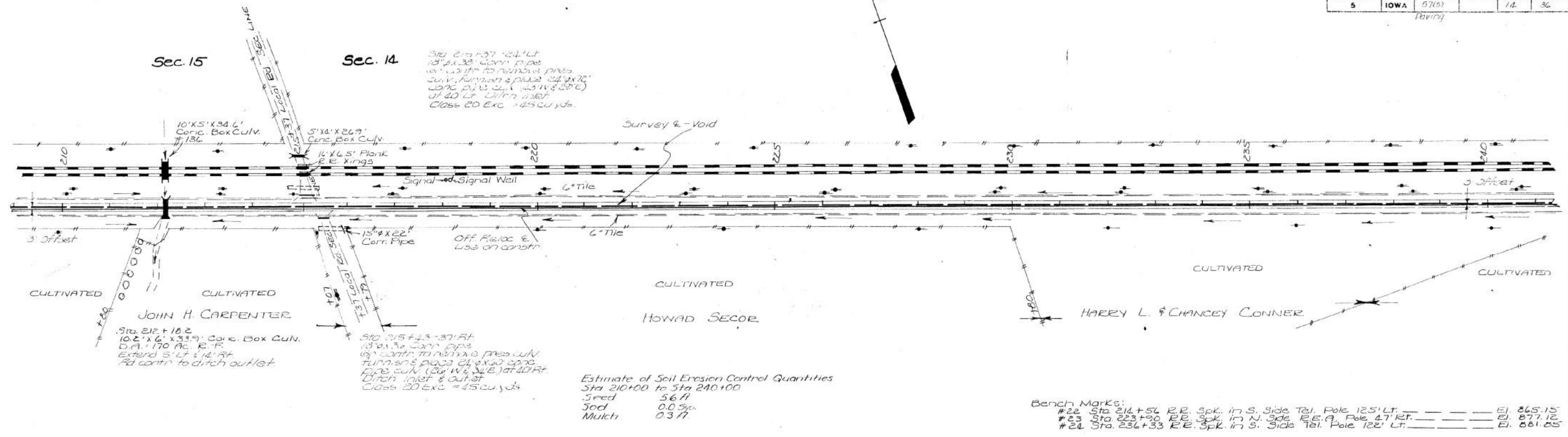
US 30 As-Builts 1953  
5 of 23

PIONEER TWP.  
T82N - R4W

FED. ROAD DIST. NO.	STATE	F. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	57(5)		14	36

FED. ROAD DIST. NO.	STATE	F. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	57(5)		14	36

ESTABLISHED WIDTH OF RIGHT OF WAY \_\_\_\_\_ FT.



DATE \_\_\_\_\_  
BY \_\_\_\_\_  
SURVEYED \_\_\_\_\_  
NOTE BOOK ALIGNMENT CHECKED \_\_\_\_\_  
PT. OF WAY CHECKED \_\_\_\_\_  
NO. \_\_\_\_\_

DATE \_\_\_\_\_  
BY \_\_\_\_\_  
PROFILE DRAWING PLOTTED \_\_\_\_\_  
NOTE BOOK GRADES CHECKED \_\_\_\_\_  
STRUCTURE NOTES FILED NO. \_\_\_\_\_

PLATE 1 - PLAN - PROFILE G.R.A.S.E. STANDARD  
KUSPEL & EAGER CO., NEW YORK

Cedar Co. F.N. Proj. No. 57  
Sheet No. 14 of 18

Revised Aug 25, 1952  
Revised Jan 21, 1953

This Sheet For Information Only

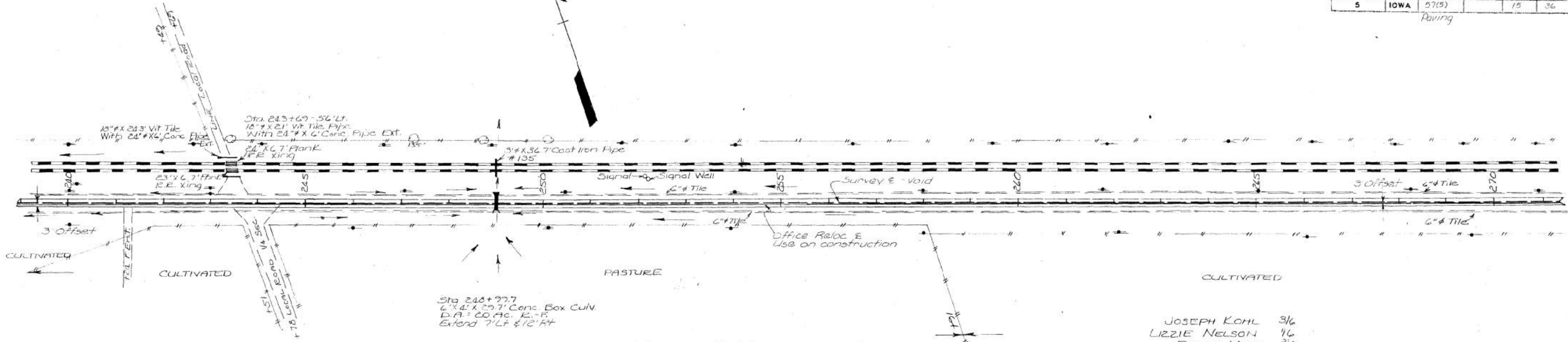
US 30 As-Builts 1953  
6 of 23

ESTABLISHED WIDTH OF RIGHT OF WAY FT.

PIONEER TWP.  
T82N - R4W  
Sec. 14

FED. ROAD DIST. NO.	STATE	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	57(5)	15	36

Paving



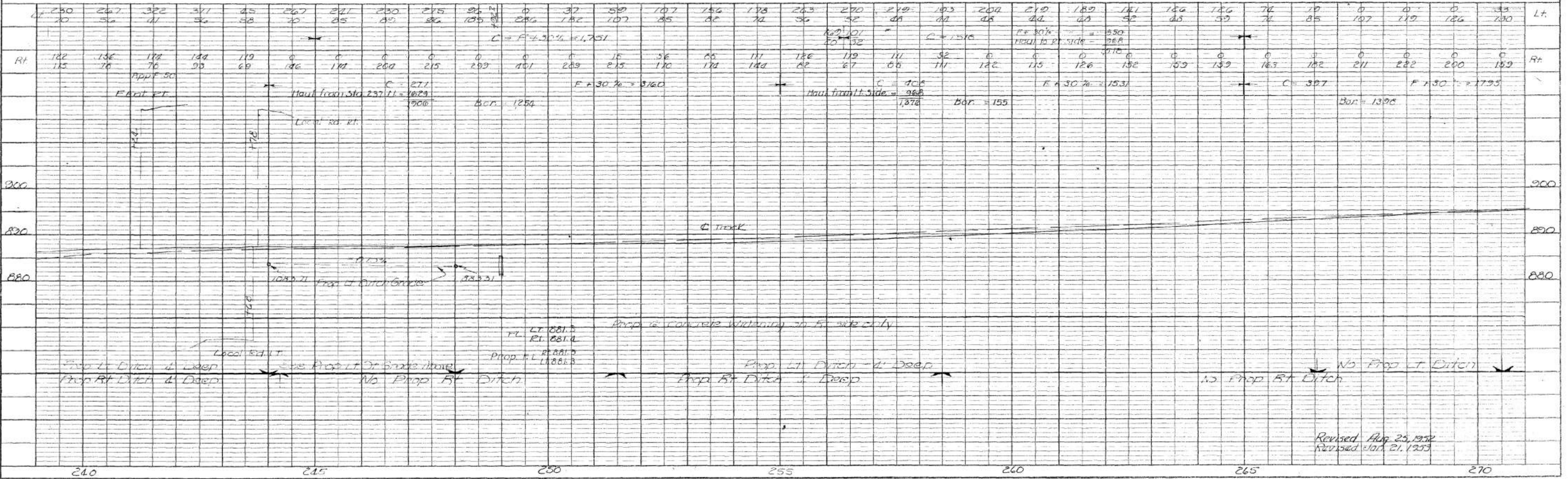
Sta 248+77.7  
6" x 4" x 20' Conc. Box Culv.  
D.A. = CO. Ac. K.-F.  
Extend 7' LT & 12' RT

MAURICE B. MOFFITT

Estimate of Soil Erosion Control Quantities  
Sta 240+00 to Sta 270+00  
Seed 4.8 A.  
Sod 0.0 3/4  
Mulch 0.0 ft.

JOSEPH KOHL 3/6  
LIZZIE NELSON 1/6  
POILES MOON 9/6

Bench Marks:  
#25 Sta. 247+24 E.E. Spk. in S. Side 3/4" Cottonwood 13.5' LT -- E.I. 887.29  
#26 Sta. 262+08 E.E. Spk. in N. Side E.E.A. Pole 6.5' RT -- E.I. 890.32



PLAN

DATE	
BY	
CHECKED	
NO. OF SHEETS	

PROFILE

DATE	
BY	
CHECKED	
NO. OF SHEETS	

PLATE 1 - PLAN-PROFILE O. P. & R. C. STANDARD

Revised Aug 25, 1952  
Revised Oct 21, 1953

Cedar Co. F.N. Proj. No. 57 Sheet No. 15 of 19

This Sheet For Information Only

US 30 As-Builts 1953  
7 of 23

ESTABLISHED WIDTH OF RIGHT OF WAY . . . FT.

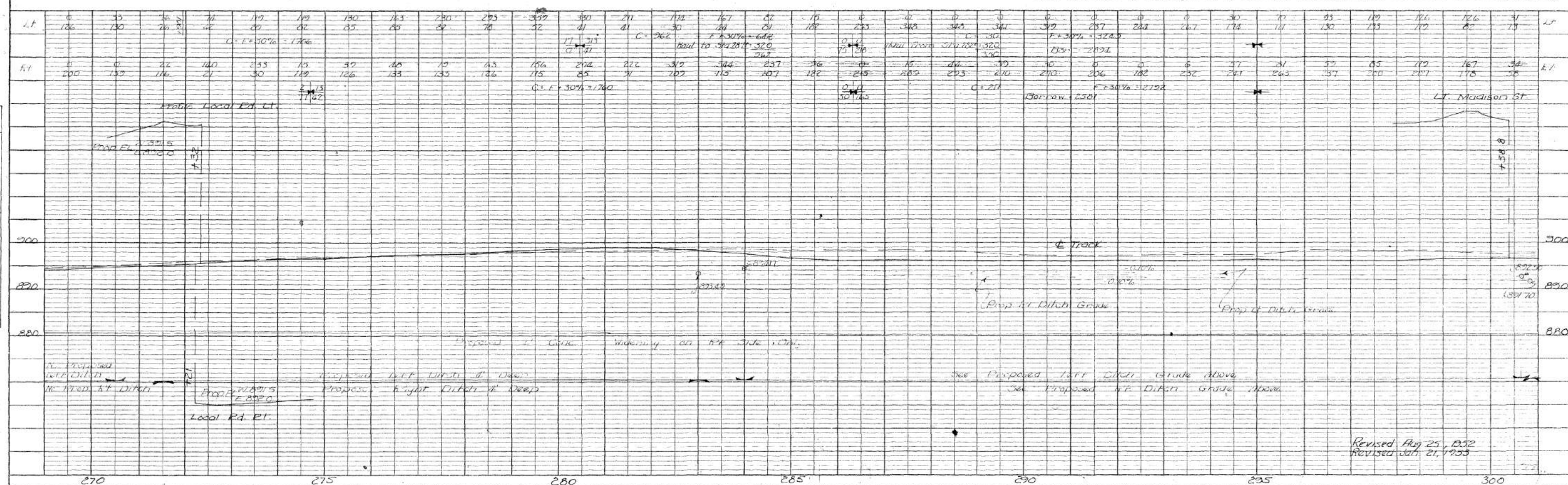
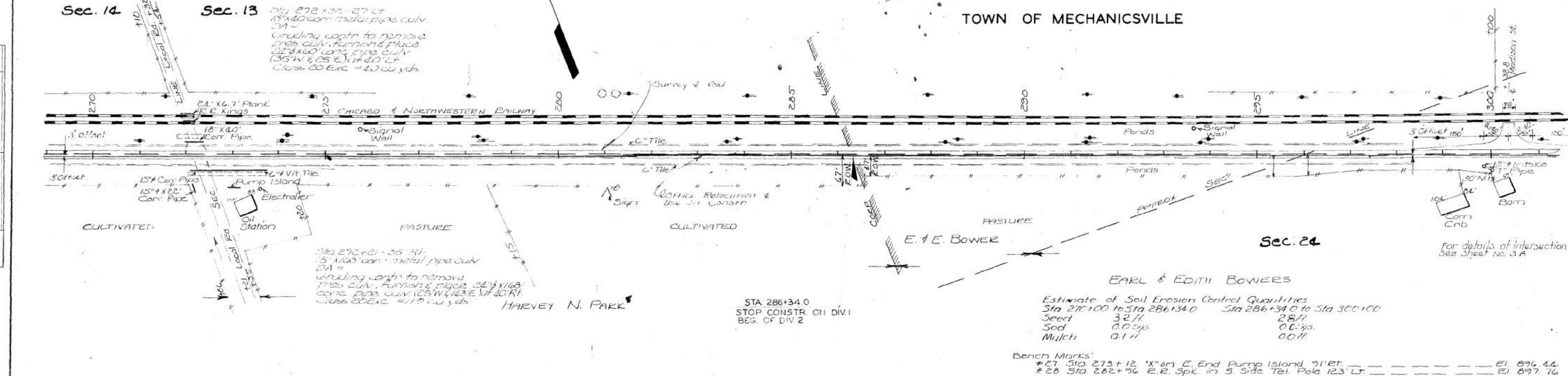
PIONEER TWP  
T82N-R1W

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	5700	16	16	135

FED. ROAD DIST. NO.	STATE	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	16	16	36

1. MAIN PLANTING PLANTING ALIGNMENT CHECKED  
 2. NOTE BOOK NO. OF WAY CHECKED  
 3. NO.

4. PROFILE GRADE NOTED  
 5. STRUCTURE NOTATION CHECKED  
 6. NO.



**Estimate of Soil Erosion Control Quantities**  
 Sta 270+00 to Sta 286+34.0      Sta 286+34.0 to Sta 300+00  
 Seed                    3.2 ft                    2.8 ft  
 Sod                    0.0 yds                    0.0 yds  
 Mulch                    0.1 ft                    0.0 ft

Bench Marks:  
 #27 Sta 273+12 "X" on E. End Pump Island 21' Et.      El. 896.44  
 #28 Sta 282+96 R.R. Spk. in S. Side Tel. Pole 123' Lt.      El. 897.16

PLATE 1 - PLAN - PROFILE O. P. E. N. E. STANDARD  
 KEUFFEL & ESSER CO. NEW YORK

Revised Aug 25, 1952  
 Revised Jan 21, 1953

This Sheet  
 For Information Only

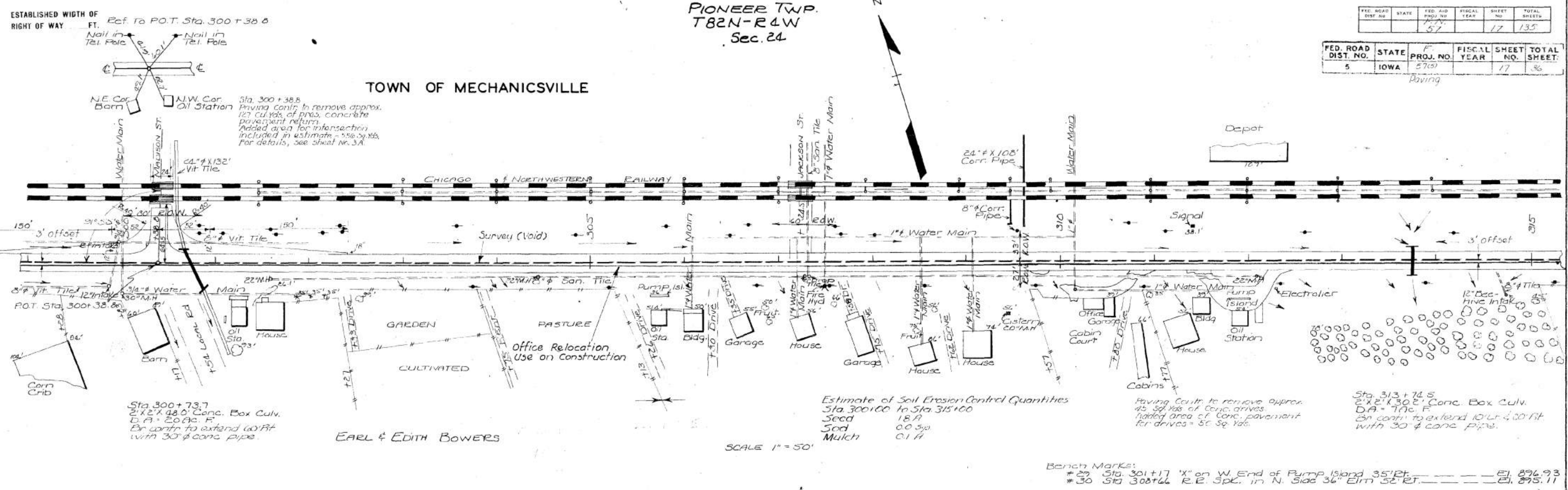
US 30 As-Builts 1953  
 8 of 23

PIONEER TWP.  
T82N-R4W  
Sec. 24

FED. ROAD DIST. NO.	STATE	F. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	5700		17	135

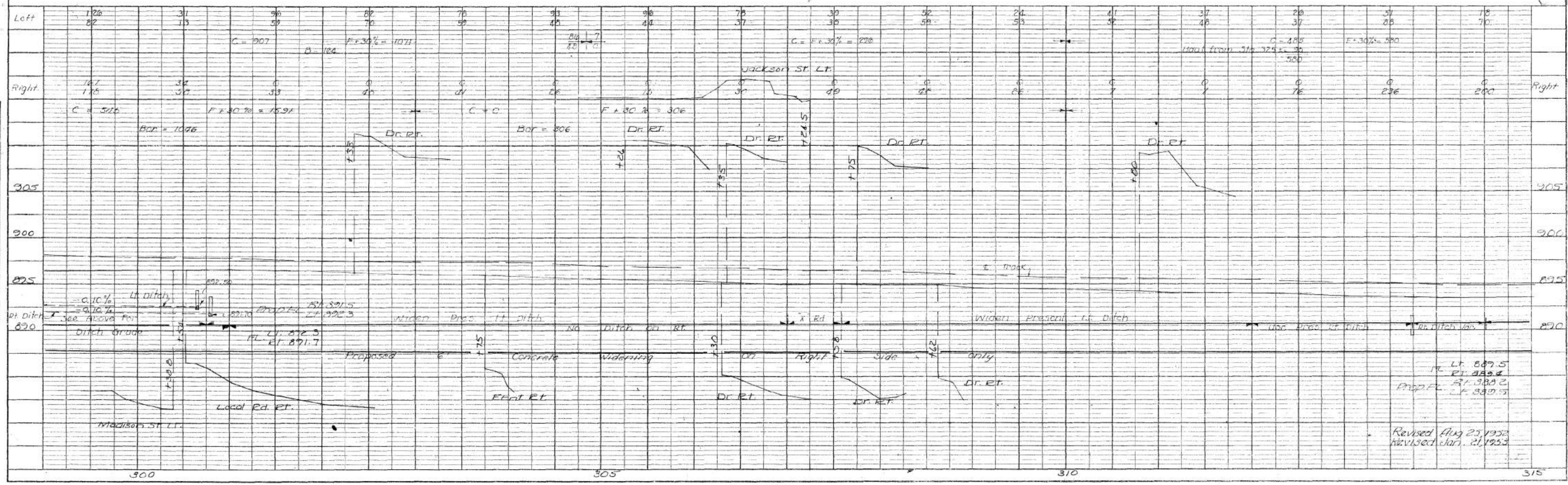
TOWN OF MECHANICSVILLE

PLAN  
SURVEYED  
NOTED  
CHECKED  
NO. OF WAY CHECKED



SCALE 1" = 50'

Bench Marks:  
#29 Sta. 301+17 'X' on W. End of Pump Island 35' RT. E.I. 896.93  
#30 Sta. 302+66 R.R. Spk. in N. Side 36" Elm 52' RT. E.I. 895.11



This Sheet  
For Information Only

US 30 As-Builts 1953  
9 of 23

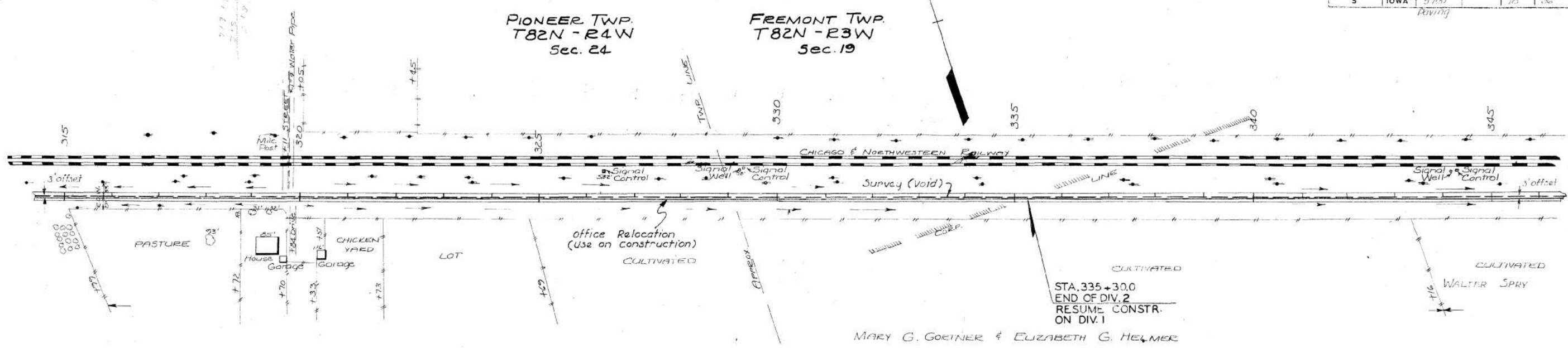
ESTABLISHED WIDTH OF RIGHT OF WAY \_\_\_\_\_ FT.

TOWN OF MECHANICSVILLE

PIONEER TWP.  
T82N-R4W  
Sec. 24

FREMONT TWP.  
T82N-R3W  
Sec. 19

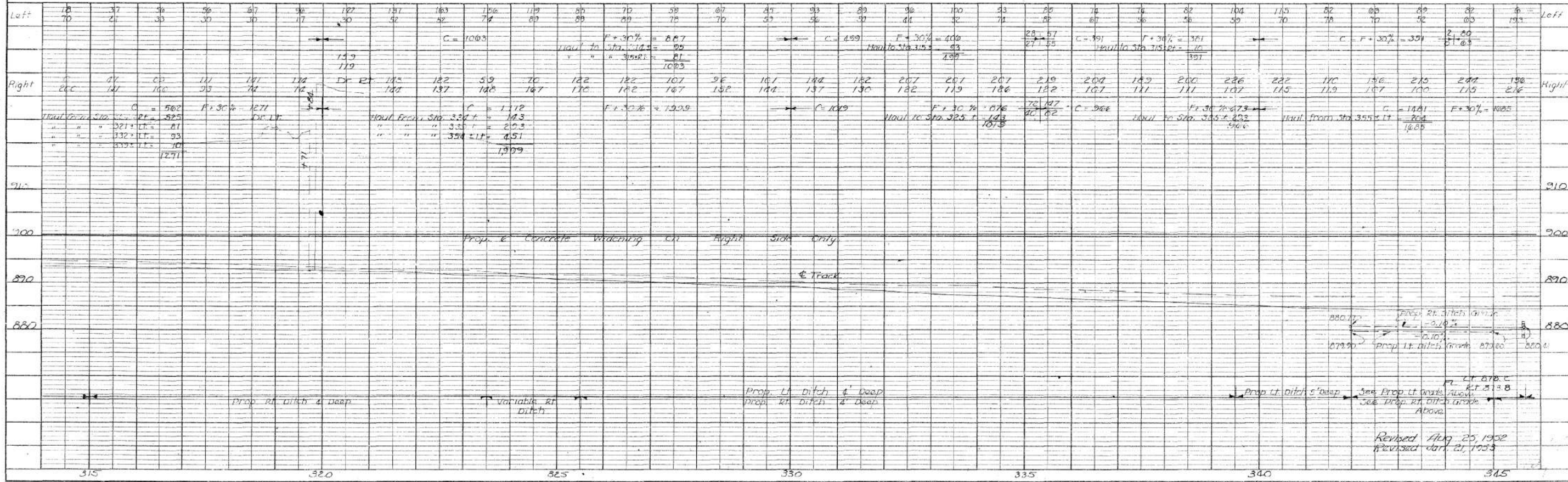
FED. ROAD DIST. NO.	STATE	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	1952	16	135



Estimate of Soil Erosion Control Quantities  
Sta 315+00 to Sta 335+30.0    Sta 335+30.0 to Sta 345+00

Seed	1.9 A	3.9 A
Soil	0.05%	0.05%
Mulch	0.0 H	0.0 H

Bench Marks:  
#31 Sta. 318+10 R.R. Spk. in N.E. Root 48' Elm 93' Rt. El. 872.87  
#32 Sta. 330+00 R.R. Spk. in S. Side Tel. Pole 122' Rt. El. 887.93  
#33 Sta. 345+47 'X' in S. Hdw. C. X.C. S. R.R. Bridge 61' Lt. El. 885.13



PLAN SURVEILLED BY DATE  
NOTE BOOK ALIGNED CHECKED NO.  
RT. OF WAY CHECKED NO.

PROFILE PLOTTED BY DATE  
NOTE BOOK CORRECTED NO.  
STRUCTURE NOTATIONS CHKD. NO.

PLATE 1 - PLAN - PROFILE C. P. R. & E. STANDARD  
KEUFFEL & ESSER CO., NEW YORK

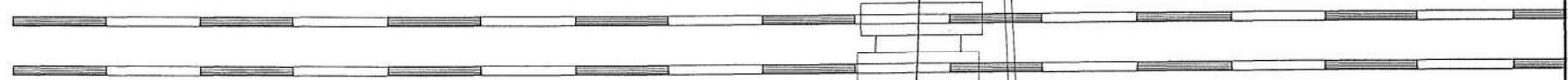
Cedar Co. I-N Proj. No. 57 Sheet No. 16

This Sheet For Information Only

US 30 As-Builts 1953 10 of 23

PIONEER TWP.  
T-82N R-4W  
SEC. 24

TOWN OF MECHANICSVILLE



Sta. 300+92

Proposed Right Turn Lane

4' granular shoulder

300

Q TP

MADISON ST.

91° 54' 59"

Sta. 297+07  
Location Point

10:1 Taper

Sta. 298+27

4' granular shoulder

Proposed Right Turn Lane

Sta. 300+12

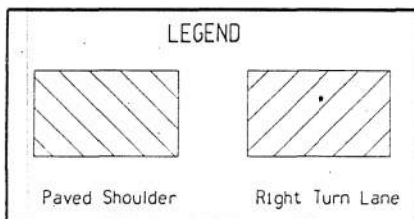
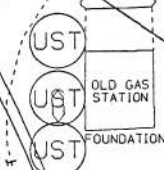
POT 300+38.80

POT 300+55.84

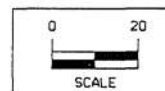
Proposed Paved Shoulder

Sta. 301+00

Begin Paved Shoulder



Sta 300+76.3  
2' x 2' x 43.1'  
SKEWED RCB  
DA = 20 Ac F.



ROAD DESIGN • CADD • PRODUCED

STATE OF IOWA

FHWA REGION 7

FISCAL YEAR

LINN/CEDAR

COUNTY

PROJECT NUMBER

NHS-30-7(89)--19-57

SHEET NUMBER

D.01

This Sheet  
For Information Only

US 30 As-Builts 1953  
11 of 23

FILE NO.

ENGLISH

DESIGN TEAM HOLST / BAHR / JACKSON

CEDAR COUNTY

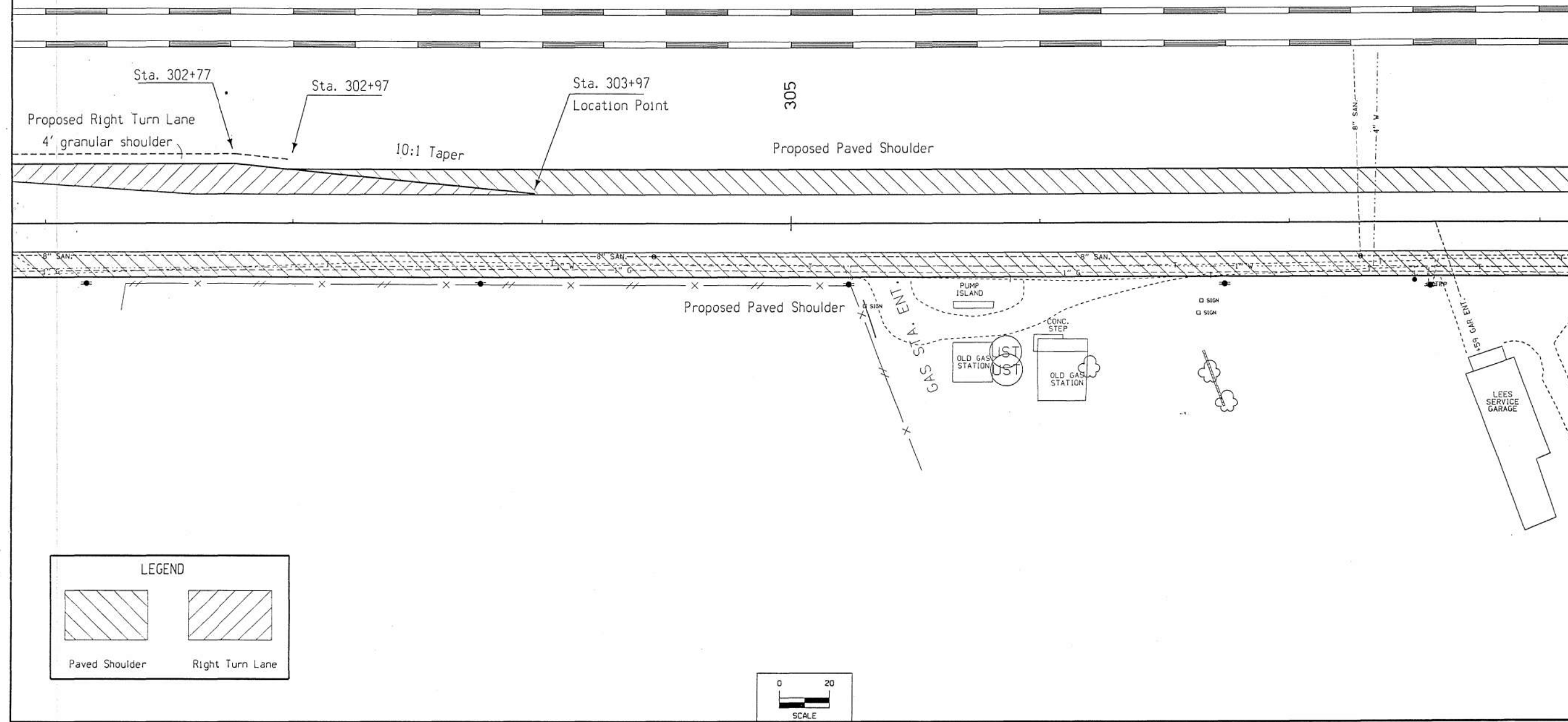
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SHEET NUMBER D29



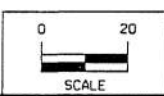
PIONEER TWP.  
T-82N R-4W  
SEC. 24

TOWN OF MECHANICSVILLE



**LEGEND**

Paved Shoulder	Right Turn Lane



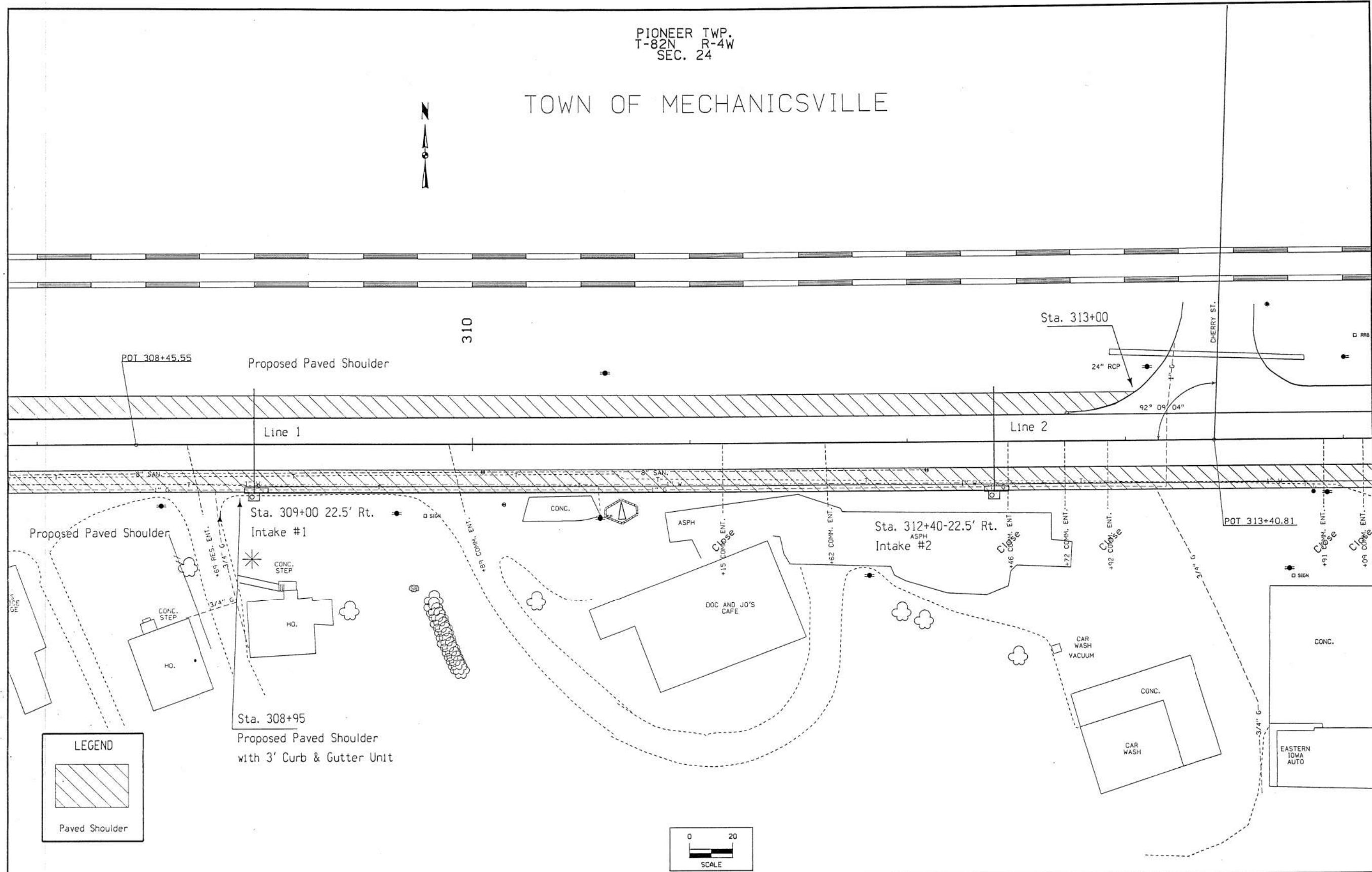
ROAD DESIGN • CADD • PRODUCED      STATE OF IOWA      FHWA REGION 7      FISCAL YEAR      LINN/CEDAR      COUNTY      PROJECT NUMBER      NHS-30-7(89)--19-57      SHEET NUMBER      D.02

This Sheet  
For Information Only

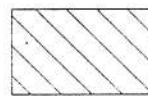
US 30 As-Builts 1953  
12 of 23

PIONEER TWP.  
T-82N R-4W  
SEC. 24

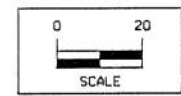
# TOWN OF MECHANICSVILLE



**LEGEND**



Paved Shoulder

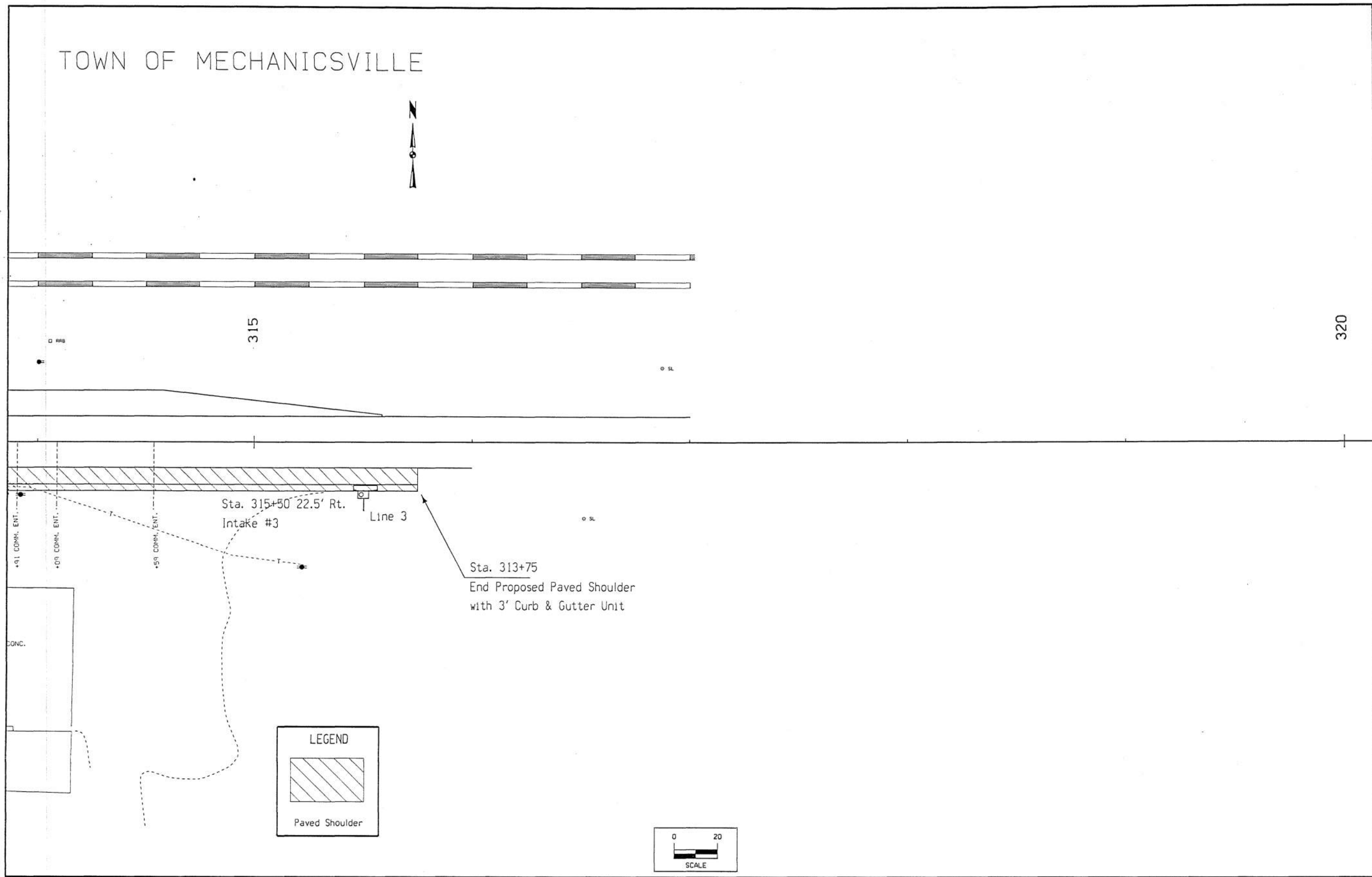


ROAD DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	LINN/CEDAR COUNTY	PROJECT NUMBER NHS-30-7(89)--19-57	SHEET NUMBER D.03
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For Information Only

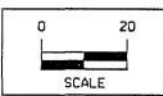
US 30 As-Builts 1953  
13 of 23

# TOWN OF MECHANICSVILLE



**LEGEND**

Paved Shoulder



ROAD DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	LINN/CEDAR	COUNTY	PROJECT NUMBER	NHS-30-7(89)--19-57	SHEET NUMBER	D.04
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For Information Only

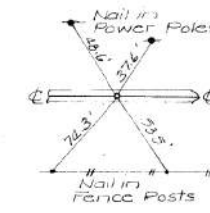
US 30 As-Builts 1953  
14 of 23

FILE NO.	ENGLISH	DESIGN TEAM HOLST / BAHR / JACKSON	CEDAR COUNTY	PROJECT NUMBER NHSX-030-8(53)--3H-16	SHEET NUMBER D32
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ESTABLISHED WIDTH OF RIGHT OF WAY FT.

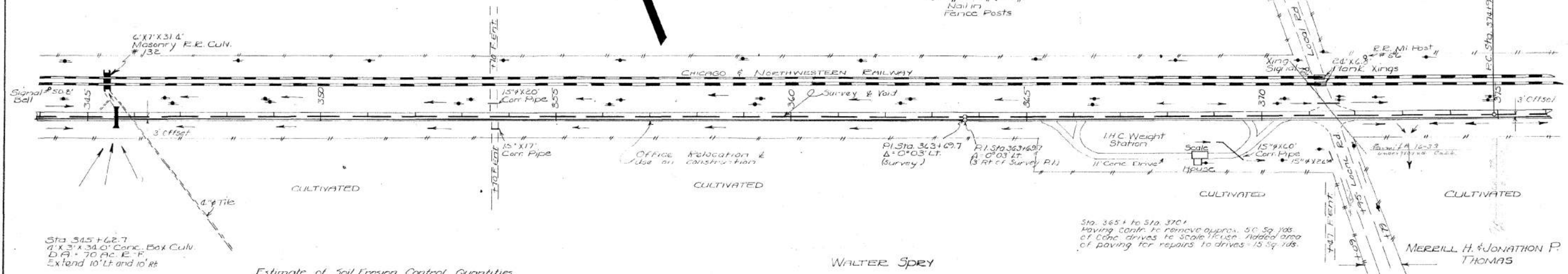
FREEMONT TWP  
T 82N - R 3W  
Sec. 19

Ref. To P.I. Sta. 363+69.7



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	57(5)	19	36	36

Sta. 371+45 - 27' LT.  
12" x 18" corr. pipe culv.  
Grading contn. to remove  
pre-culv. furnish and  
place 24" x 60" conc.  
pipe culv. (34' W- 26'E)  
at 80' Lt. ditch inlet  
and outlet.  
Class 20 Exc. - 61 Cu. Yds.



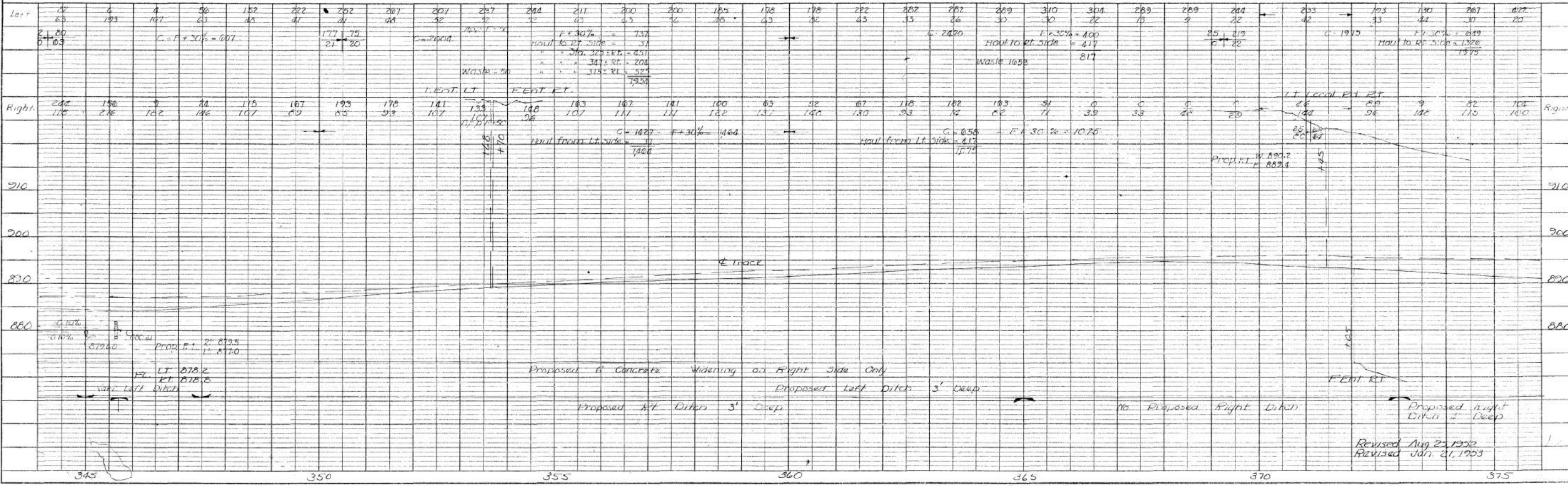
Sta 345+62.7  
1 x 3' x 38.0" Conc. Box Culv.  
D 19' x 70' AC. E-F  
Extend 10' Lt and 10' Rt

Estimate of Soil Erosion Control Quantities  
Sta 345+00 to Sta 375+00  
Seed 5.5 A  
Sod 0.0 Sp  
Mulch 0.0 A

WALTER SPRY

Sta. 365+ to Sta. 370+  
Having contn. to remove approx. 50 Sp. Yds.  
of Conc. drives to Scale House. Hauling area  
of paving for repairs to drives - 15.59 Yds.

Bench Marks:  
#33 Sta 345+47 X on S. Side of 6' x 6' R.R. Bridge 6' Lt.  
#34 Sta 358+32 E.R. Spk. in S. Side of T&N Hole 37' Lt.  
#35 Sta 371+50 X on E.R. Signal Base 36' Lt.  
E.I. 805.13  
E.I. 871.73  
E.I. 875.81



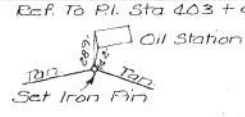
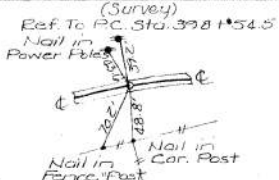
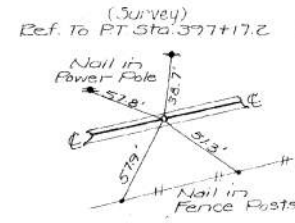
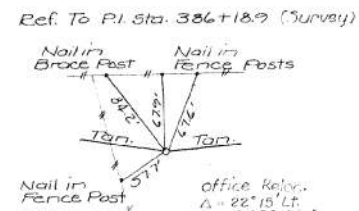
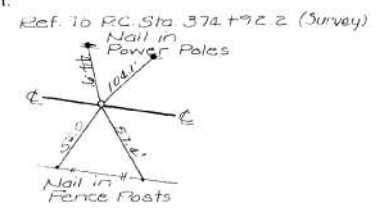
This Sheet For Information Only

US 30 As-Builts 1953 15 of 23

FREMONT TWP.  
T82 N-R3 W

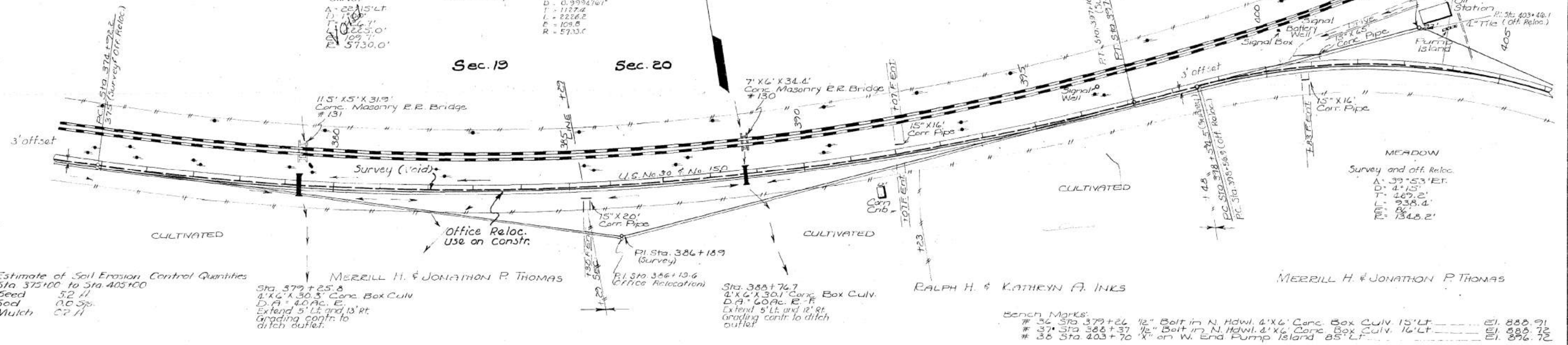
ESTABLISHED WIDTH OF  
RIGHT OF WAY \_\_\_\_\_ FT.

FED. ROAD DIST. NO.	STATE	F. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	570		20	36

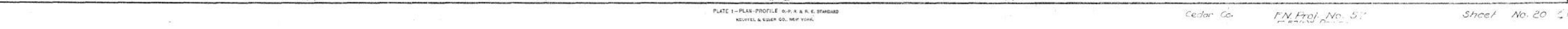


Survey  
A = 22°15' LT.  
D = 0.3994 mi  
T = 1023.0'  
D = 109.7'  
E = 5730.0'

Office Reloc.  
A = 22°15' LT.  
D = 0.3994 mi  
T = 1023.0'  
D = 109.7'  
E = 5730.0'



Left	267	472	337	211	141	17	82	124	93	46	107	200	291	287	128	150	231	194	185	98	90	115	113	130	107	270	293	213	170	187	136	Left
Right	82	104	83	37	7	0	0	0	16	70	152	182	189	303	57	233	59	0	50	242	205	132	105	222	232	190	198	235	209	385	Right	
Haul From	1730	1326	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	1730	



Revised Aug. 25, 1952  
Revised Jan. 21, 1953

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For Information Only

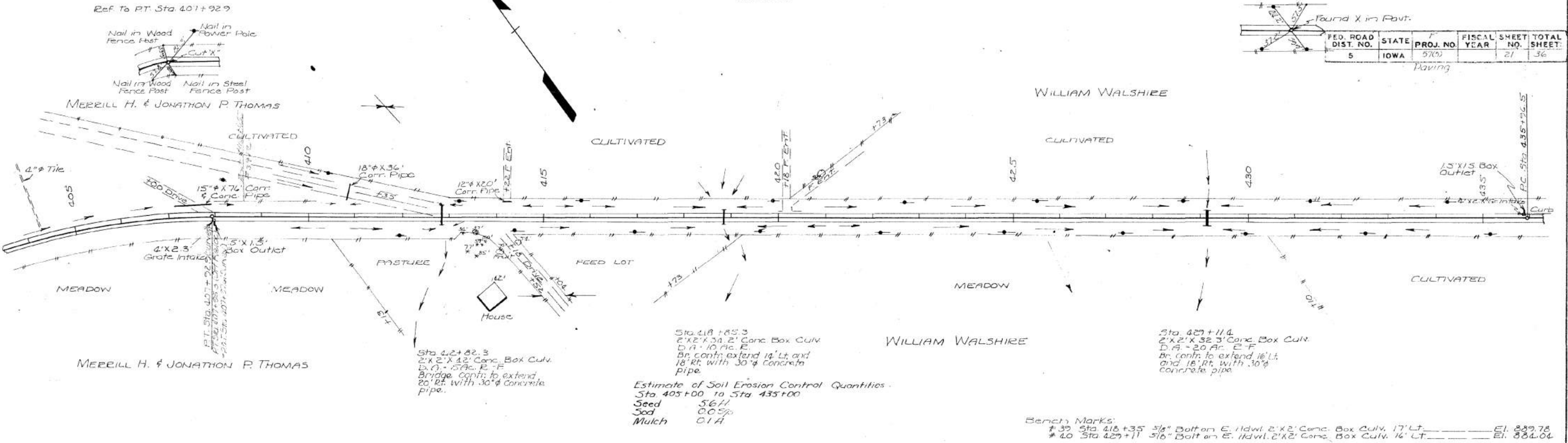
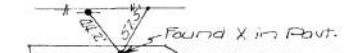
US 30 As-Builts 1953  
16 of 23

ESTABLISHED WIDTH OF RIGHT OF WAY \_\_\_\_\_ FT.

FREMONT TWP.  
T82N-R3W  
Sec. 20

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	570	57	21	36

Ref To PC Sta 435+26.5



Estimate of Soil Erosion Control Quantities:  
Sta 405+00 to Sta 435+00  
Seed 5611  
Sod 0.05 sp  
Mulch 0.1A

Bench Marks:  
#39 Sta 418+35 5/8" Bolt on E. Hdwl 2'x2' Conc. Box Culv. 17' LT. El. 889.78  
#40 Sta 429+11 5/8" Bolt on E. Hdwl 2'x2' Conc. Box Culv. 16' LT. El. 884.04

Station	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435
Left	167	150	127	102	70	202	15	35	128	130	57	35	23	82	200	121	157	172	165	127	218	253	130	29	141	263	315	285	283	167	
Right	289	309	305	160	44	35	205	18	20	131	143	69	56	32	20	131	165	141	28	109	96	152	105	37	0	82	178	222	211	167	
Elevation	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	1529	
Prop. E.L.																															

PLAN  
SURVEYED  
PLANNED  
NOTED  
RT. OF WAY CHECKED

1. PLAN  
2. GRADES  
3. GRADES CHECKED  
4. AS NOTED  
5. STRUCTURE NOT TO BE CONFD.

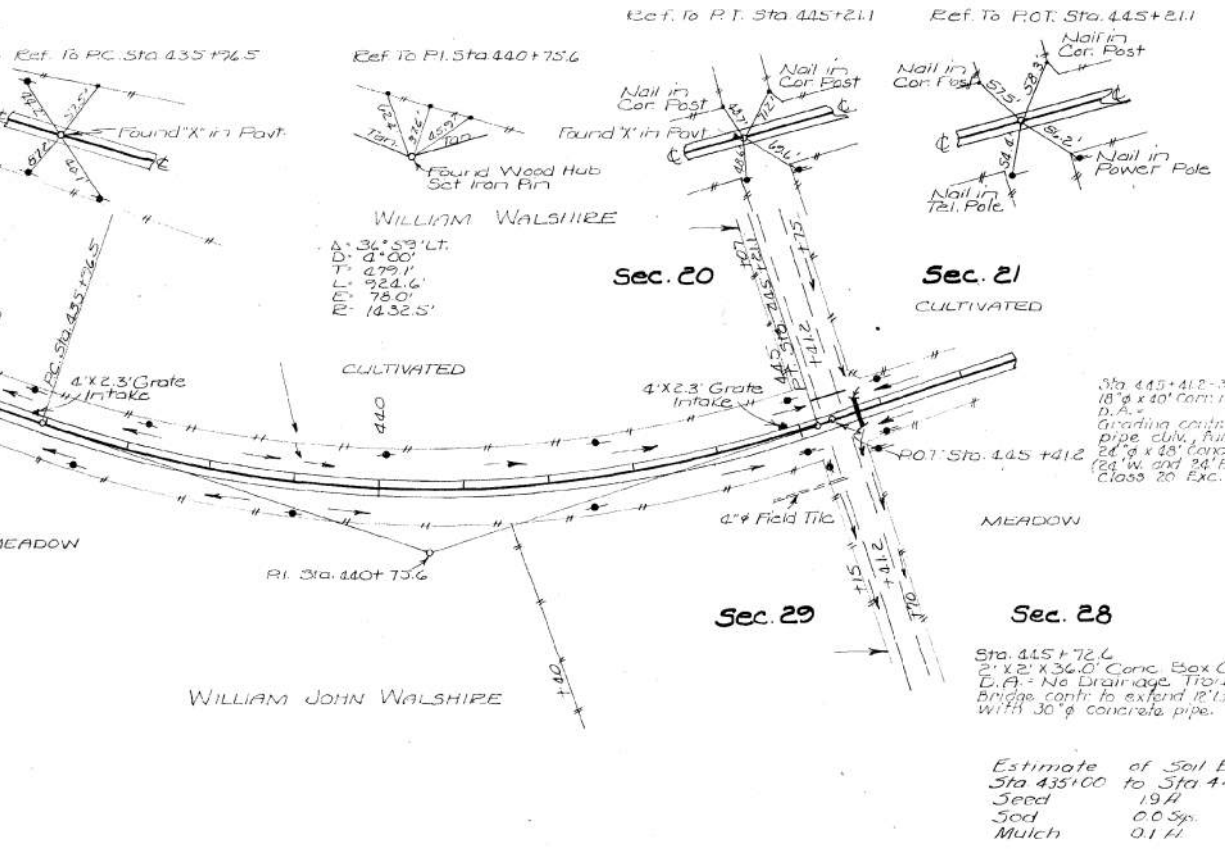
PLATE 1-PLAN-PROFILE D.P.R. & C. STANDARD

Cedar Co. I.N. Proj. No. 7 Sheet No. 21 35

This Sheet For Information Only

US 30 As-Builts 1953 17 of 23

ESTABLISHED WIDTH OF RIGHT OF WAY FT.



FREMONT TWP  
T82N-R3W

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	5782		22	36

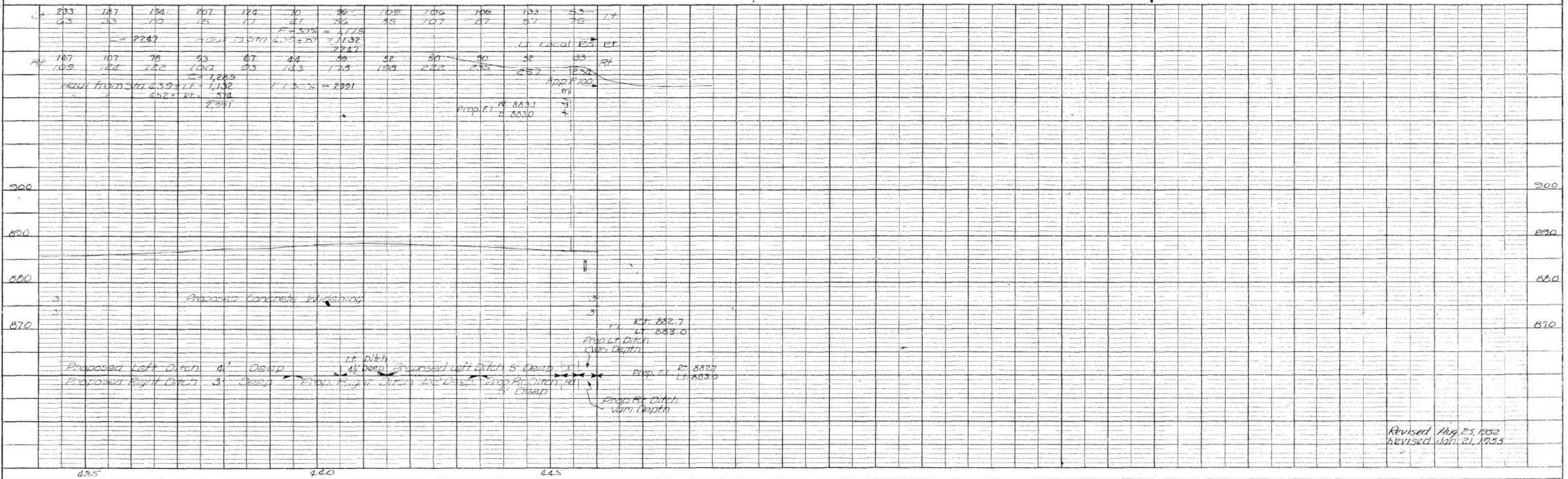
Paving

Sta. 445+412-20' Lt.  
18" x 40" Conc. metal pipe culv.  
D.A. =  
Grading contr. to remove pres. pipe culv. Furnish and place 24" x 48" conc. pipe culv. (24" W. and 24" E.) at 45' Lt. Class 20 Exc. = 32 Cu. Yds.

Sta. 445+72.6  
2' x 2' x 36.0' Conc. Box Culv.  
D.A. = No Drainage Trouble.  
Bridge contr. to extend 12' Lt. - 14' Rt. with 30" x 30" concrete pipe.

Estimate of Soil Erosion Control Quantities  
Sta 435+00 to Sta 445+00  
Seed 19 lb  
Sod 0.0 Sp.  
Mulch 0.1 lb

Bench Mark:  
#41 Sta. 445+75 R.R. Spk in S. Side R.E.A. Pole 153' Lt. El. 881.13



DRAWING NO. \_\_\_\_\_  
 PLOTTED \_\_\_\_\_  
 NOTE BOOK \_\_\_\_\_  
 ALIGNMENT CHECKED \_\_\_\_\_  
 BY \_\_\_\_\_  
 DATE \_\_\_\_\_  
 NO. \_\_\_\_\_

DRAWING NO. \_\_\_\_\_  
 PLOTTED \_\_\_\_\_  
 NOTE BOOK \_\_\_\_\_  
 STRUCTURE NOTATIONS OR NO. \_\_\_\_\_  
 NO. \_\_\_\_\_

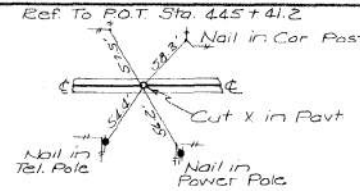
PLATE 1-PLAN-PROFILE D.P.R. & C.C. STANDARD  
KUEPPEL & ESSEX CO., NEW YORK

Revised Aug. 25, 1952  
Revised Jan. 21, 1953

This Sheet  
For Information Only

US 30 As-Builts 1953  
18 of 23

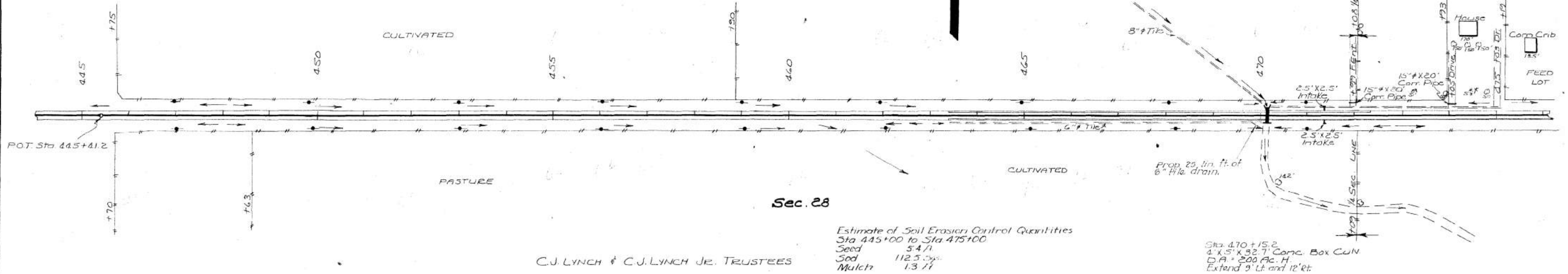
ESTABLISHED WIDTH OF RIGHT OF WAY \_\_\_\_\_ FT.



FREMONT TWP.  
T82N-R3W  
Sec. 21

FED. ROAD DIST. NO.	STATE	F. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	57(5)		23	135

HENRY VAN BEHEEN

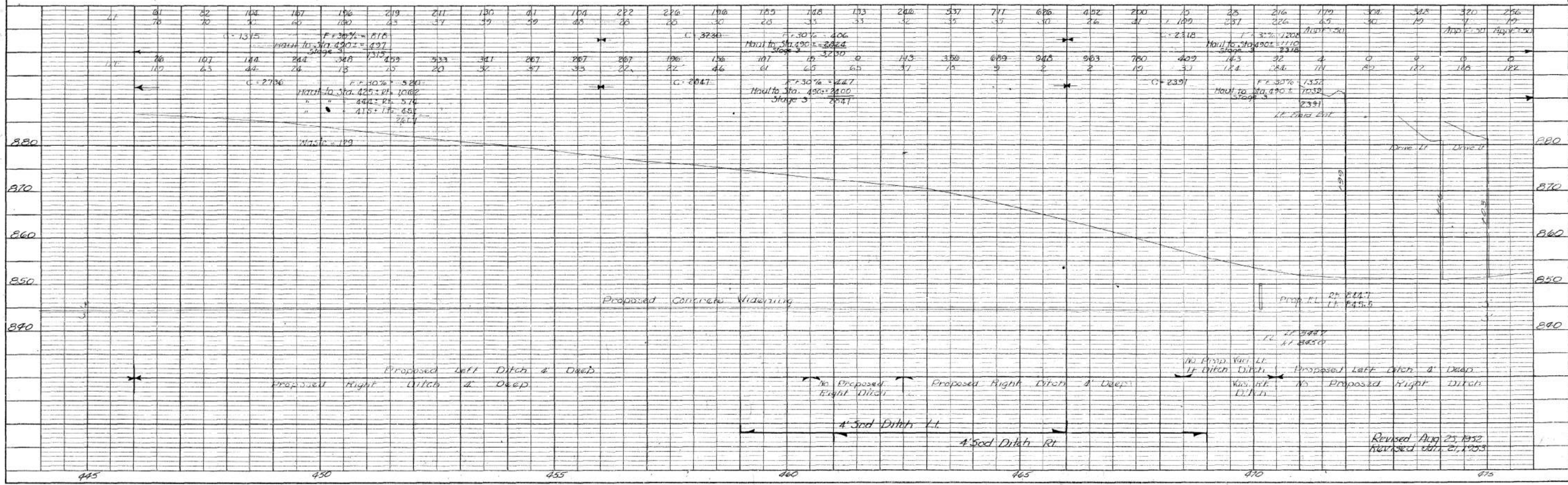


CJ LYNCH & CJ LYNCH JR. TRUSTEES

Estimate of Soil Erosion Control Quantities  
Sta 445+00 to Sta 475+00  
Seed 54.7  
Sod 112.5  
Mulch 13.77

Sta. 470+15.2  
4' x 5' x 32.7' Conc. Box Culv  
D.A. = 200 Ac. H.  
Extend 9' Lt and 12' Rt

Bench Marks:  
#41 Sta 445+75 R.R. Spk. in S. Side R.E.A. Pole 153' Lt. E1.847.13  
#42 Sta 457+31 R.R. Spk. in N. Side Brocc. Post 33' Rt. E1.875.05  
#43 Sta. 470+15 'L' on S. Hdrl. 4' x 5' Conc. Box Culv. 12' Rt. E1.853.93



SURVEYED  
NOTE BOOK  
ALIGNMENT CHECKED  
PT. OF WY CHECKED  
NO.

PLOTTED  
NOTE BOOK  
GRADE CHECKED  
STRUCTURE NOTATION CHECKED  
NO.

PLATE 1 - PLAN-PROFILE OF P.R. & C. STRIAD

Cedar Co. T.N. Proj. No. 57 S.H. Sheet No. 23 of 27

Revised Aug 23, 1952  
Revised Oct 21, 1953

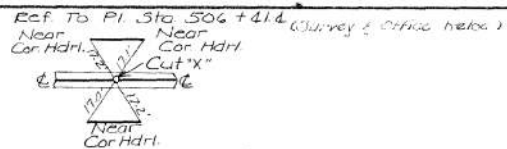
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For Information Only

US 30 As-Builts 1953  
19 of 23

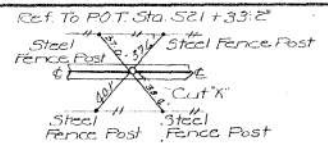




ESTABLISHED WIDTH OF RIGHT OF WAY          FT.



FREMONT TWP.  
T82N-R3W  
Sec. 22



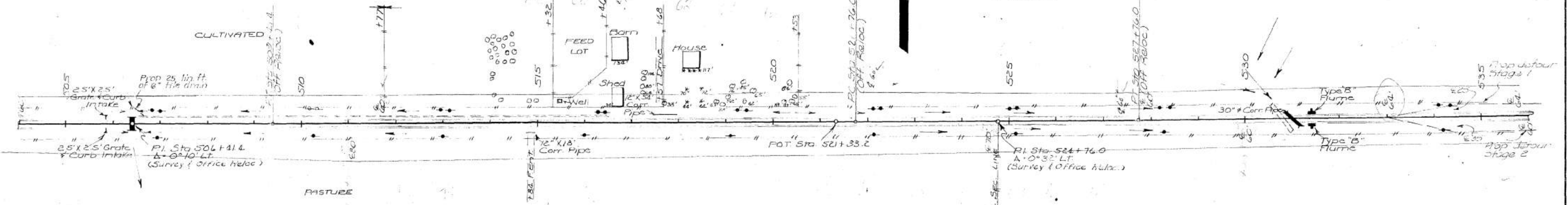
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	5700		25	36

Off Reloc Curve Data  
 $\Delta = 0^\circ 10' 40''$   
 $D = 0^\circ 1' 40''$   
 $L = 6000'$   
 $T = 3000'$   
 $E = 0^\circ 3' 30''$   
 $R = 206,304.0'$

JOHN TOEBER

EARL DOUGHERTY & GRACE McCLELLAN

Off Reloc Curve Data  
 $\Delta = 0^\circ 30' 20''$   
 $D = 0^\circ 5' 20''$   
 $L = 6000'$   
 $T = 3000'$   
 $E = 0^\circ 7' 0''$   
 $R = 66,462.0'$



Sta. 506+41.4  
 5'x5'x26.2' Conc. Box Culv.  
 D.A. = 112' Ac. H.  
 Ext. 10' Lt. and 19' Rt.  
 Rd. contn. to ditch inlet.

LLOYD J. CHESMORE

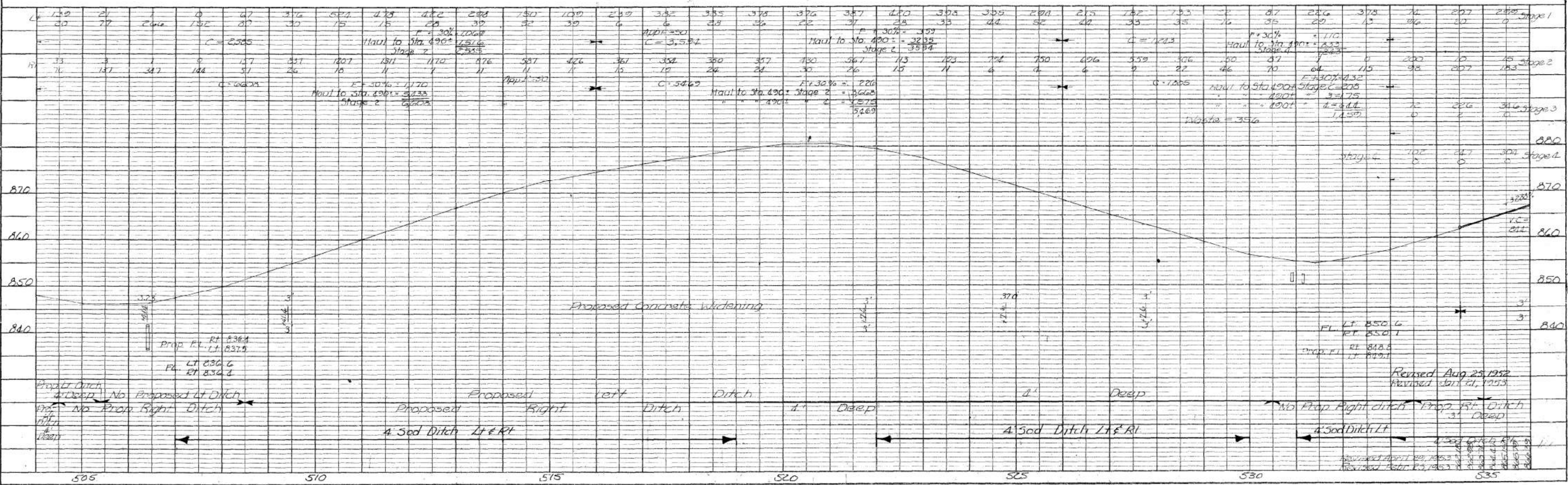
Sec. 27

CHRIS J. KROEMER

Sta. 531+01.9  
 2'x2'x36.7' Conc. Box Culv.  
 D.A. = 66' Ac. H.  
 Bridge contn. to jock 54"x78"  
 conc. pipe culv. under pres.  
 pavement. 3'x5'x30"  
 of Sta. 530+84.  
 Rd. contn. to ditch inlet and outlet.

Estimate of Soil Erosion Control Quantities  
 Sta. 505+00 to Sta. 535+00  
 Seed 6.2 A  
 Sod 360.0 Sys  
 Mulch 2.1 A

Bench Marks:  
 #17 Sta. 504+41 "A" on S. Hdrl. 5'x5' Conc. Box Culv. E1 844.80  
 #18 Sta. 517+21 "B" on S.P. in SE. Root 30" Maple E1 877.82  
 #19 Sta. 531+16 "A" on S. Hdrl. 2'x2' Conc. Box Culv. E1 854.14



NOTE: BOOK GRADES CHECKED. PLOTTED. ALIGNMENT CHECKED. PT. OF MAIN CENTER.

NOTE: BOOK GRADES CHECKED. NO. STRUCTURE NOTING CHECKED.

PLATE 1 - PLAN - PROFILE (O.P.E.A.R.E. STANDARD)

Cedar Co. P.M. Proj. No. 57 Sheet No. 25 of 36

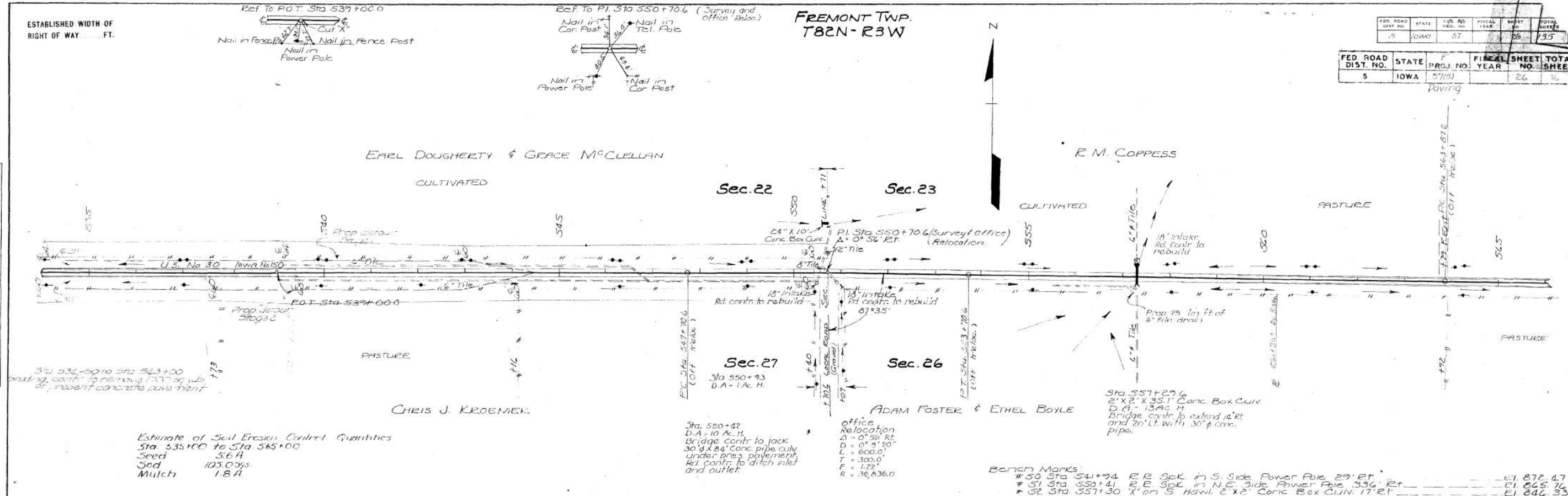
This Sheet For Information Only

US 30 As-Builts 1953 21 of 23

ESTABLISHED WIDTH OF RIGHT OF WAY 66 FT.

FREMONT TWP. T82N-R3W

FED. ROAD DIST. NO.	STATE	F. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	57(3)		26	46

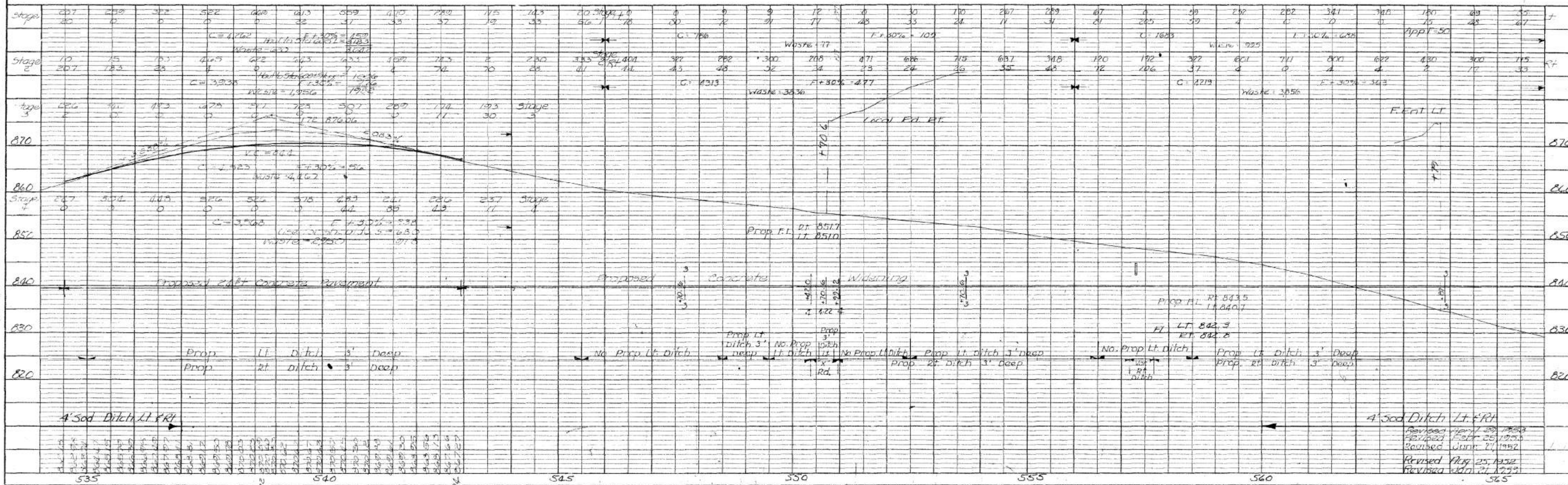


Estimate of Soil Erosion Control Quantities  
Sta. 535+00 to Sta. 565+00  
Seed 5.6A  
Sod 103.03 yds  
Mulch 1.8A

Sta. 550+42  
D.A. = 10 Ac. H.  
Bridge contr. to jack  
30" x 48" conc. pipe culv  
under pres. pavement.  
Rt. contr. to ditch inlet  
and outlet.

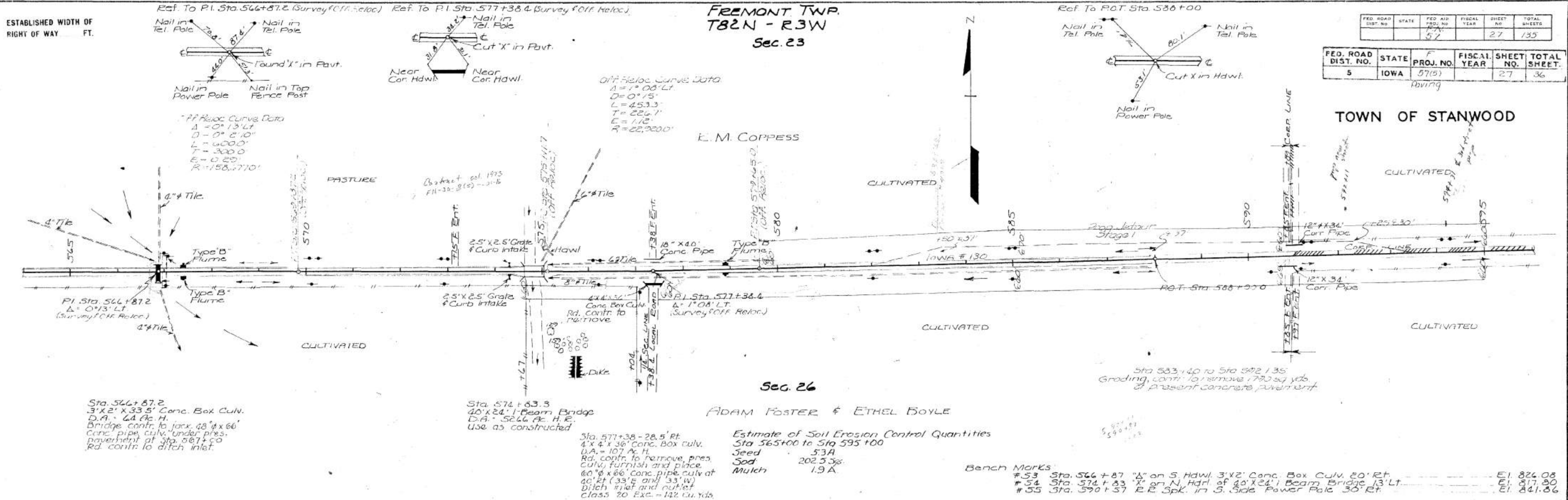
office  
Relocation  
Δ = 0° 59' 20"  
D = 0° 9' 20"  
L = 600.0'  
T = 300.0'  
F = 1.22'  
R = 36.836.0

Bench Marks:  
# 50 Sta. 541+94 R.R. Spk. in S. Side Power Pole 29' Pt. --- El. 872.47  
# 51 Sta. 550+41 R.R. Spk. in N.E. Side Power Pole 336' Rt. --- El. 865.76  
# 52 Sta. 557+30 'X' on S. Hand. 2' x 2' Conc. Box CULV. 17' Rt. --- El. 846.33



PLAN  
SURVEYED  
PLOTTED  
NOTE BOOK GRASS CHECKED  
NO. STRUCTURE NOTATIONS CHD.

PROFILE  
SURVEYED  
PLOTTED  
NOTE BOOK GRASS CHECKED  
NO. STRUCTURE NOTATIONS CHD.



Station	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595
Prop. Ft. E	808.1	808.0	807.9	807.8	807.7	807.6	807.5	807.4	807.3	807.2	807.1	807.0	806.9	806.8	806.7	806.6	806.5	806.4	806.3	806.2	806.1	806.0	805.9	805.8	805.7	805.6	805.5	805.4	805.3	805.2	
Local Rd. RT																															
Prop. Ft. E	808.1	808.0	807.9	807.8	807.7	807.6	807.5	807.4	807.3	807.2	807.1	807.0	806.9	806.8	806.7	806.6	806.5	806.4	806.3	806.2	806.1	806.0	805.9	805.8	805.7	805.6	805.5	805.4	805.3	805.2	
Stage 1																															
Stage 2																															
Stage 3																															
4' Sod Ditch Lt. RT																															
Prop. Rt. Ditch 3' Deep																															
Prop. Lt. Ditch 3' Deep																															
Prop. Rt. Ditch 3' Deep																															
Prop. Lt. Ditch 3' Deep																															
4' Sod Ditch Lt. RT																															

**PLAN**  
 SURVEY  
 FLUORIMETER CHECKED  
 NOTE LOOK AT RT. OF WAY CHECKED.  
 NO.

**PROFILE**  
 SURVEY  
 PHOTO  
 NOTE LOOK GRADES CHECKED  
 NO. STRUCTURE NOT AS SHOWN.

## Survey Information

### SURVEY INDEX

County: Cedar  
PIN: 21-16-030-020  
Project Number: NH SX-030-8(53)--3H-16  
Location: 13 Locations along US 30 starting 4.3 miles west of  
Mechanicsville to 0.5 miles west of Stanwood, Cedar County  
Type of Work: HMA Resurfacing  
Project Directory: 1603002021

### Survey Personnel

Jeremy Leemon     Survey Project Manager  
Chris Ries         Assistant Survey Project Manager  
CJ Beckman        Instrument  
Jacob Powers      Instrument

### Date(s) of Survey

Begin Date         10/11/2022  
End Date            5/31/2023

### General Information

Measurement units for this survey are US survey feet. This survey is a full field DTM survey of 13 locations along US 30 in Cedar County, starting 4.3 miles west of Mechanicsville to 0.5 miles west of Stanwood.

### Utility Information

For logging data and other utility details see Utility Survey and Ownership Report in the Utility folder of the PrelimSurvey project directory.

### Project Control

Coordinates were determined for primary project control points by conducting concurrent four-hour static observations. Post processing is constrained to nearby Iowa Real Time Network reference stations. A site calibration was then performed from the post processed control points. For additional details of the control survey, contact the Preliminary Survey department.

PROJECT DATUM: NA D83(2011) EPOCH 2010.00  
VERTICAL DATUM: NAVD88  
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 10  
GEOID MODEL: 18

### Alignment Information

The horizontal alignment for U.S. Hwy 30 (SURMLA030) this survey is a retrace of As-built Plans No. FN-57. Survey stationing was equated to the plan PT at Sta. 445+21.1 and run back and ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PT Sta. 80+43.3 As-built Plans Project No. FN-57  
Survey POT Sta. 80+50.31

PI Sta. 103+75.5 As-built Plans Project No. FN-57  
Survey PI Sta. 103+82.51

PI Sta. 116+75.3 As-built Plans Project No. FN-57  
Survey PI Sta. 116+83.53

PI Sta. 188+11.8 As-built Plans Project No. FN-57  
Survey PI Sta. 188+17.18

PT Sta. 397+18.4 As-built Plans Project No. FN-57  
Survey PT Sta. 397+20.05

PT Sta. 445+21.1 As-built Plans Project No. FN-57  
Survey PT Sta. 445+21.10

PI Sta. 488+77.9 As-built Plans Project No. FN-57  
Survey PI Sta. 488+76.06

PI Sta. 508+41.4 As-built Plans Project No. FN-57  
Survey PI Sta. 508+38.73

PI Sta. 524+76.0 As-built Plans Project No. FN-57  
Survey PI Sta. 524+70.99

PI Sta. 550+70.6 As-built Plans Project No. FN-57  
Survey PI Sta. 550+64.93

PT Sta. 579+65.0 As-built Plans Project No. FN-57  
Survey PT Sta. 579+58.24

The horizontal alignment for U.S. Hwy 30 (SURMLB030) this survey is a retrace of Grading Plans Project No. NHSX-030-7(189)—3H-57. Survey stationing was equated to the plan PC at Sta. 903+60.89 and run ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PC Sta. 903+60.89 As-built Plans Project No. NHSX-030-7(189)—3H-57  
Survey PC Sta. 903+60.89

PT Sta. 932+23.89 As-built Plans Project No. NHSX-030-7(189)—3H-57  
Survey PT Sta. 932+23.89

## 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 - 1a. RCS Zone 10

VERT. DATUM: NAVD88 - Geoid Model 18

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

## 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 - Ia. RCS Zone 10

VERT. DATUM: NAVD88 - Geoid Model 18

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



HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING  
 HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment)  
 Ia. Regional Coordinate System Zone 10 (U.S. Survey Foot)  
 VERT. DATUM: NAVD88  
 Geoid Model: 18

Point Name	Northing	Easting	Elevation	Feature Definition-Description
112	8031277.21	20589197.79	865.24	CP Set 5/8" x 48" Rebar W/ Cap 6" Deep
111	8031145.88	20592541.17	871.27	CP Set 5/8" x 48" Rebar W/ Cap 6" Deep
109	8028606.07	20602893.99	870.72	CP SET 1000MM FENO MON. W/ BRASS CAP
102	8021792.84	20602994.00	892.51	CP Set 5/8" x 48" Rebar W/ Cap 6" Deep
104	8028103.71	20610443.80	903.03	CP Set 5/8" x 48" Rebar W/ Cap 6" Deep
103	8022649.43	20610912.02	908.69	CP Set 5/8" x 48" Rebar W/ Cap 6" Deep
502	8022266.53	20621541.14	891.14	BM Fd IHC Rebar on NE InHdwl
106	8017739.58	20624228.61	885.31	CP Set 5/8" x 48" Rebar W/ Cap 6" Deep
105	8023493.94	20624238.74	896.32	CP Set 5/8" x 48" Rebar W/ Cap 6" Deep
107	8025800.58	20637394.24	827.61	CP Set 5/8" x 48" Rebar W/ Cap 6" Deep
110	8020372.73	20637509.34	816.68	CP SET 1000MM FENO MON. W/ BRASS CAP

**ALIGNMENT COORDINATES**

Name	Location	Point on Tangent			Begin Spiral			Begin Curve			Simple Curve PI or Master PI of SCS			End Curve			End Spiral		
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
1	MLA030	80+50.310	8031121.24	20589865.55															
2	MLA030						100+82.526	8031114.88	20591897.76	103+82.510	8031113.94	20592197.74	106+82.483	8031108.63	20592497.68				
4	MLA030						113+83.532	8031096.24	20593198.61	116+83.532	8031090.67	20593498.56	119+83.532	8031085.88	20593798.52				
6	MLA030						138+85.932	8031053.80	20595700.65	141+23.234	8031049.80	20595937.92	143+56.265	8030969.50	20596161.23				
8	MLA030	188+17.180	8029460.03	20600358.99															
9	MLA030	363+71.586	8023519.63	20616877.74															
10	MLA030						374+93.917	8023140.59	20617934.13	386+21.182	8022759.87	20618995.15	397+20.047	8022809.21	20620121.33				
12	MLA030						398+59.336	8022815.30	20620260.49	403+47.744	8022836.67	20620748.43	407+96.498	8022540.56	20621136.84				
14	MLA030						435+97.303	8020842.51	20623364.21	440+75.905	8020551.90	20623744.47	445+21.100	8020548.22	20624223.06				
16	MLA030						479+38.000	8020525.36	20627639.88	482+38.000	8020523.57	20627939.87	485+38.000	8020520.91	20628239.86				
18	MLA030						485+76.056	8020520.41	20628277.92	488+76.056	8020517.24	20628577.90	491+76.056	8020515.56	20628877.90				
20	MLA030	506+38.725	8020507.45	20630340.54															
21	MLA030						521+70.985	8020501.73	20631872.79	524+70.987	8020500.46	20632172.79	527+70.985	8020501.99	20632472.79				
23	MLA030						547+64.917	8020512.20	20634466.70	550+64.924	8020513.90	20634766.70	553+64.917	8020510.73	20635066.69				
25	MLA030						563+80.440	8020500.56	20636082.16	566+80.441	8020497.86	20636382.15	569+80.440	8020496.29	20636682.14				
27	MLA030						575+04.940	8020494.82	20637206.64	577+31.598	8020494.19	20637433.30	579+58.240	8020498.04	20637659.92				
1	MLB030						903+60.890	8030608.67	20584517.47	918+40.463	8031420.56	20585754.38	932+23.890	8031359.13	20587232.68				
2	MLB030	970+00.000	8031202.32	20591005.53															
1	ML030C						963+00.000 R1	8031275.35	20590307.96	965+70.301 R1	8031264.13	20590578.03	968+39.532 R1	8031211.57	20590843.17				
3	ML030C						969+89.532 R1	8031182.40	20590990.31	973+27.547 R1	8031116.68	20591321.87	976+63.472 R1	8031115.62	20591659.89				

**SPIRAL OR CIRCULAR CURVE DATA**

Name	Location	ΔSCS	Horizontal Alignment Data												Remarks		
			Spiral Data						Curve Data								
			θS	Ls	Ts	Es	Xc	Yc	L.T.	S.T.	ΔC	T	L	R		E	
C1	MLA030												00°50'00.001"	299.984	599.957	41250	1.091
C2	MLA030												00°08'51.153"	300.000	600.000	233000	0.193
C3	MLA030												18°48'42.971"	237.302	470.333	1433	19.522
C4	MLA030												22°14'52.852"	1127.265	2226.130	5733	109.775
C5	MLA030												39°49'38.984"	488.408	937.162	1348	85.740
C6	MLA030												36°56'56.940"	478.601	923.797	1433	77.836
C7	MLA030												00°09'59.953"	300.000	600.000	206281	0.218
C8	MLA030												00°16'59.918"	300.001	600.000	121342	0.371
C9	MLA030												00°31'59.873"	300.002	600.000	64462	0.698
C10	MLA030												00°55'59.726"	300.007	600.000	36836	1.222
C11	MLA030												00°12'59.942"	300.000	600.000	158677	0.284
C12	MLA030												01°07'59.400"	226.657	453.300	22920	1.121
C1	MLB030												35°39'37.421"	1479.573	2863.000	4600	232.094
C1	ML030C												08°49'56.118"	270.301	539.532	3500	10.422
C2	ML030C												11°01'57.215"	338.015	673.941	3500	16.284

**SUPERELEVATION DATA**

See PV-300 Series

Road Identification	Circular Curve or Spiral Curve Name	Radius FT	Superelevation Data			Standard Road Plan	Section A-A	Section B-B	Section C-C	Section D-D	Section E-E	Section F-F	Case A	Case B	Case C	Case S	Case T	Case U	Remarks
			e	L	x														
			%	FT	FT														

108-23A  
08-01-08

**TRAFFIC CONTROL PLAN**

1. Through traffic on US 30 shall be maintained at all times.
2. Access to all properties shall be maintained at all times.
3. The following Special Events are expected to take place in the vicinity of this project:
  - a. TBD

NOTE: The Contractor shall be responsible for contacting City officials prior to the events to confirm dates and plan not to work those dates. The Contractor shall allow normal traffic operations within the City during the duration of the Special Events.
4. The detail on J.2 is the Traffic Control Plan for Centerline Rumble Strip installation on HMA surfaces. Pavement markings shall be replaced within 48 hours of removal.
5. If necessary to complete sideroad pavement replacement; lane closures and street closures shall be in accordance with TC-213, TC-251, and TC-252. Safety Closures or Type III barricades placed to protect work area will not be counted or paid for separately.

111-01  
04-17-12

**COORDINATED OPERATIONS**

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

Project	Type of Work
None Anticipated	

108-25  
10-21-14

**511 TRAVEL RESTRICTIONS**

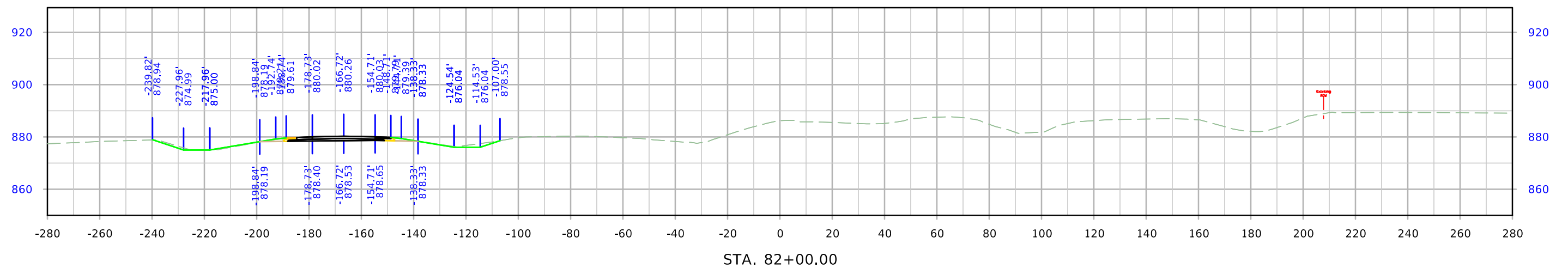
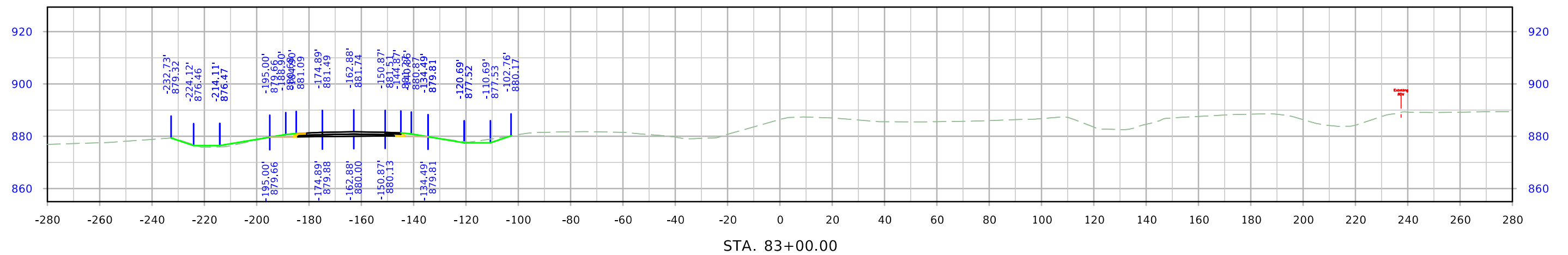
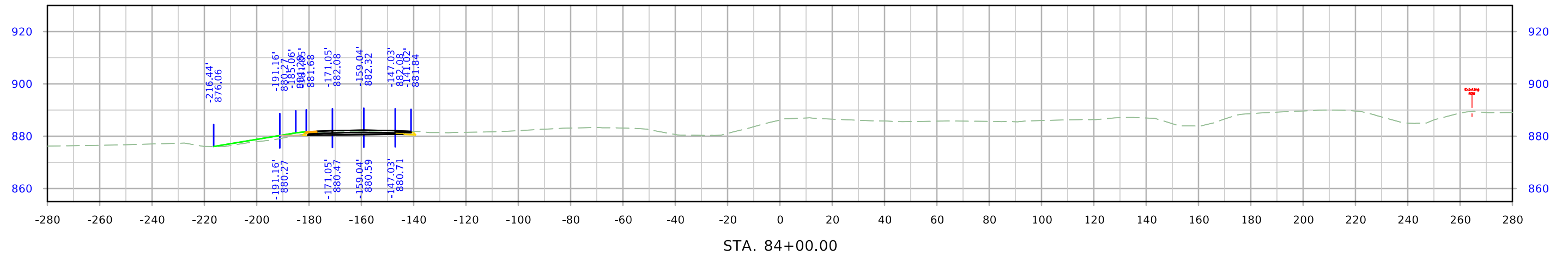
Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
US 30	BOTH	Cedar	W of Charles Ave E of Lisbon to WCL Stanwood		Traffic Control Device		Horizontal	N/A	12'	11'	N/A	(1)
(1) Restriction is during paving operations.												

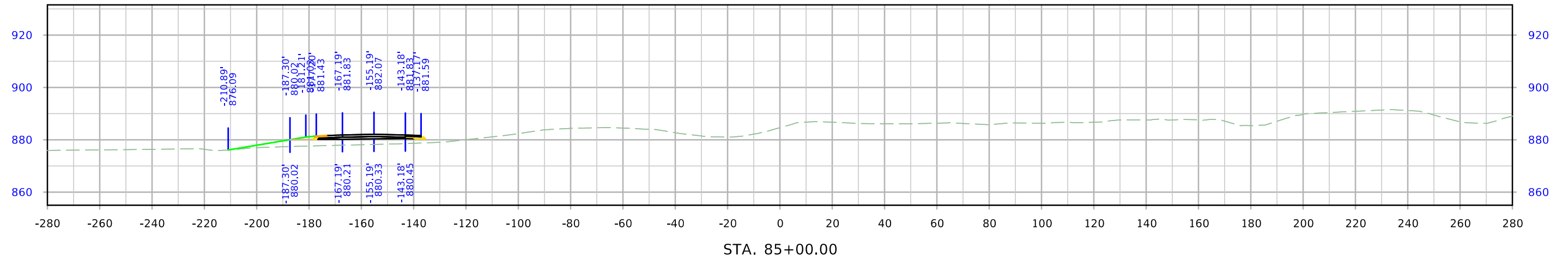
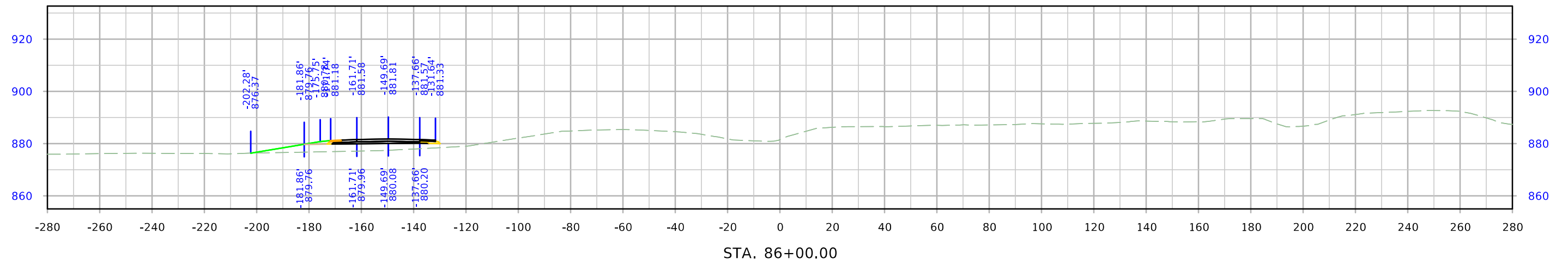
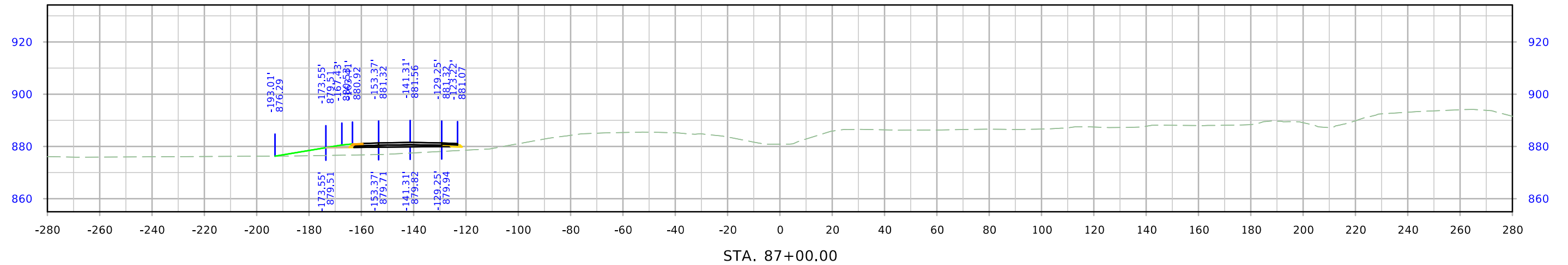
108-26A  
08-01-08

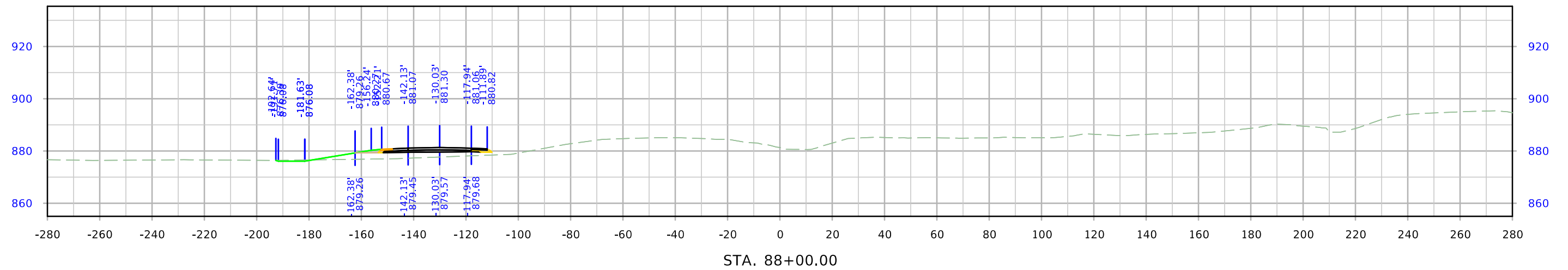
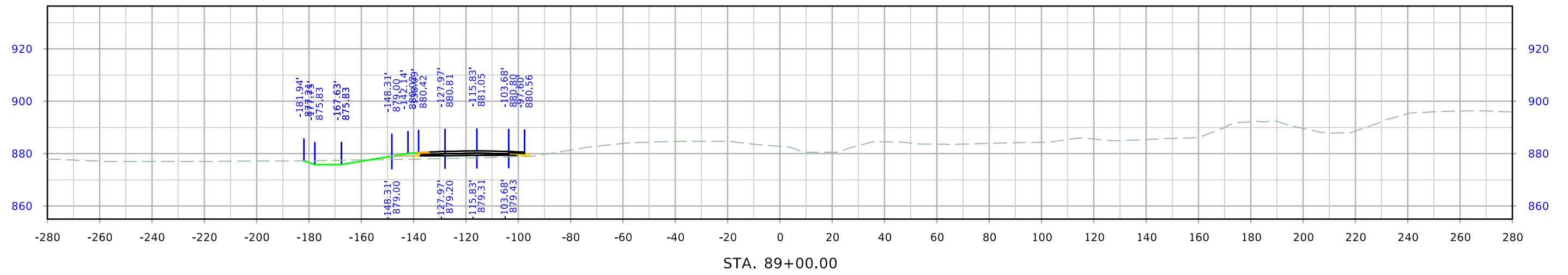
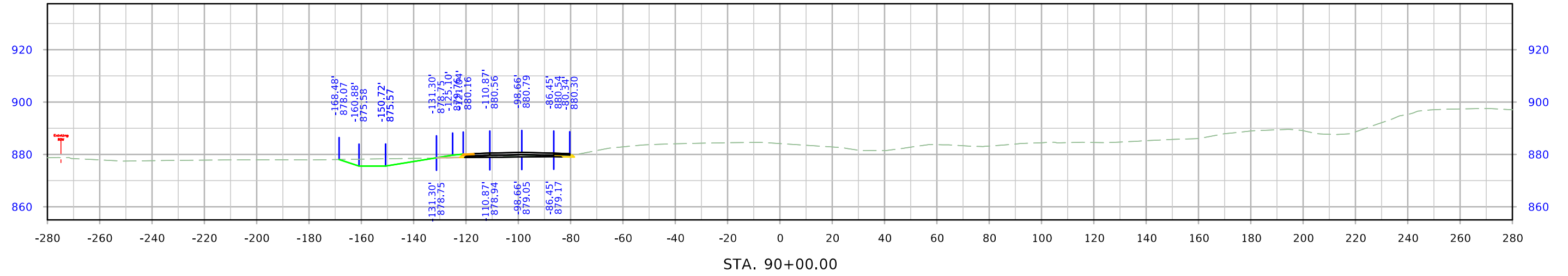
**STAGING NOTES**

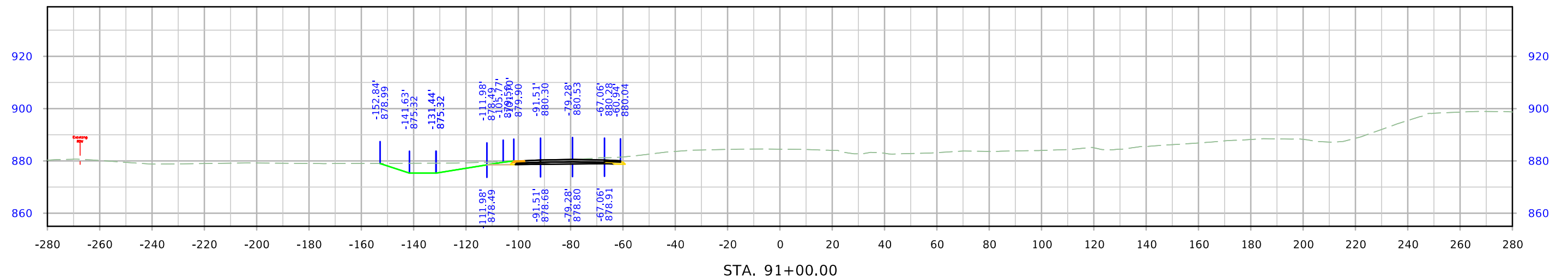
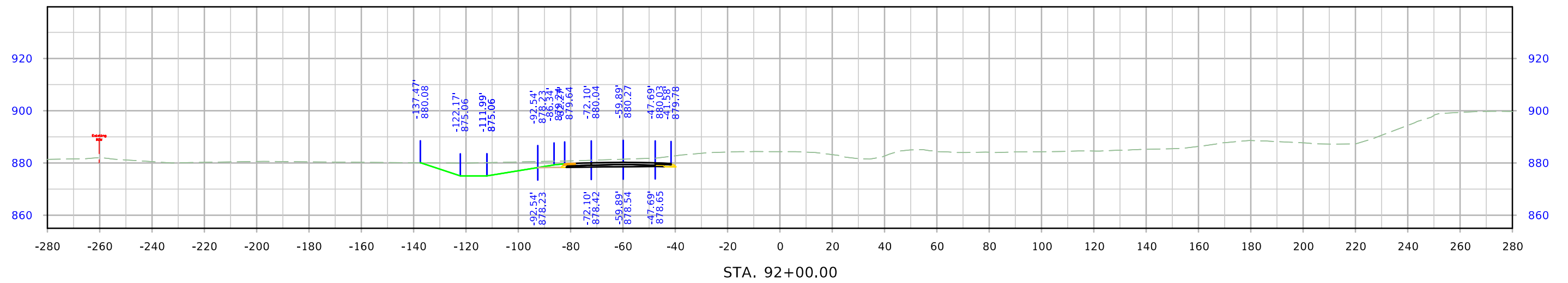
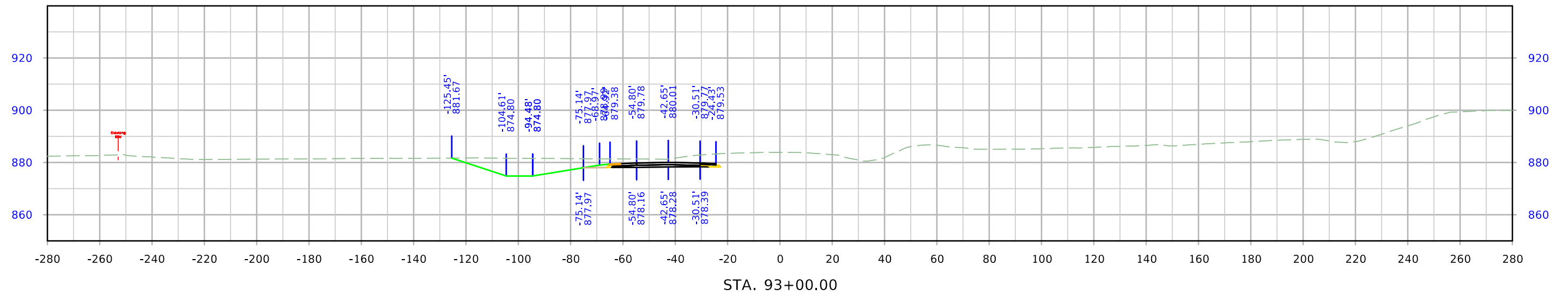
- General Notes:
1. Patching shall be performed prior to other work on this project.
  2. Pavement Markings shall be placed on each drivable surface as construction progresses.

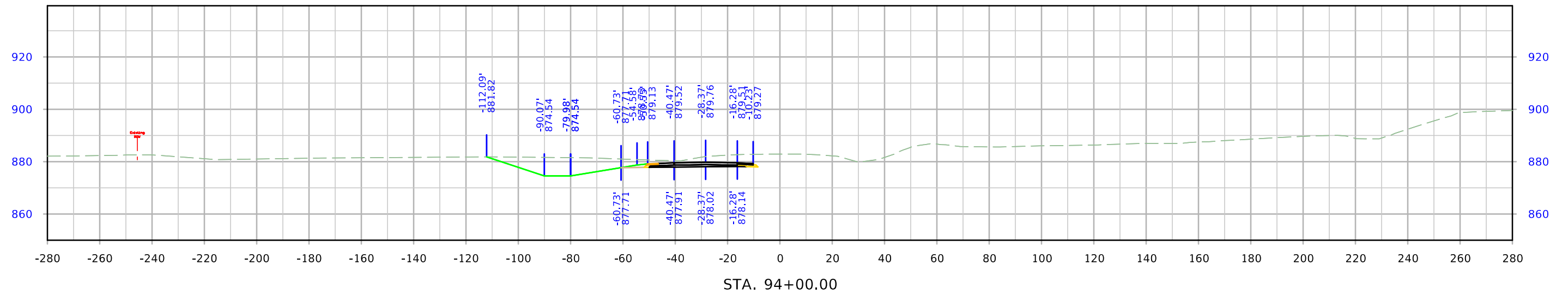
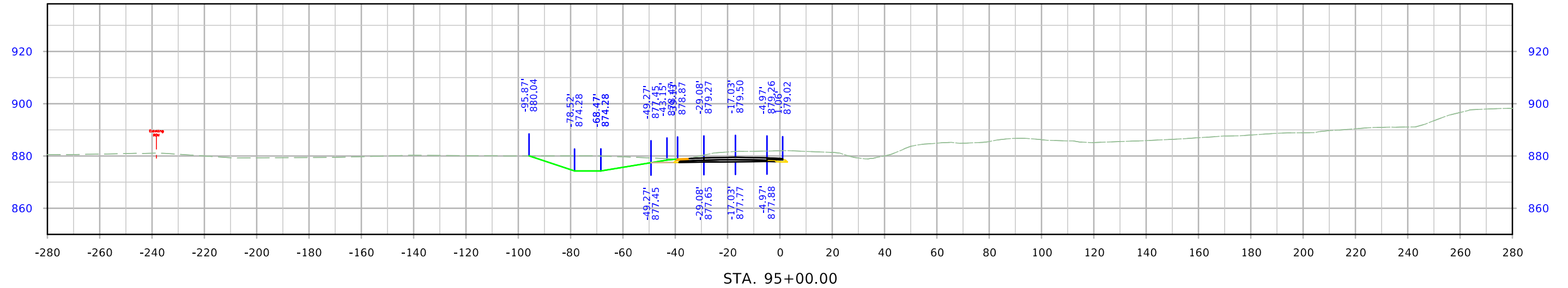
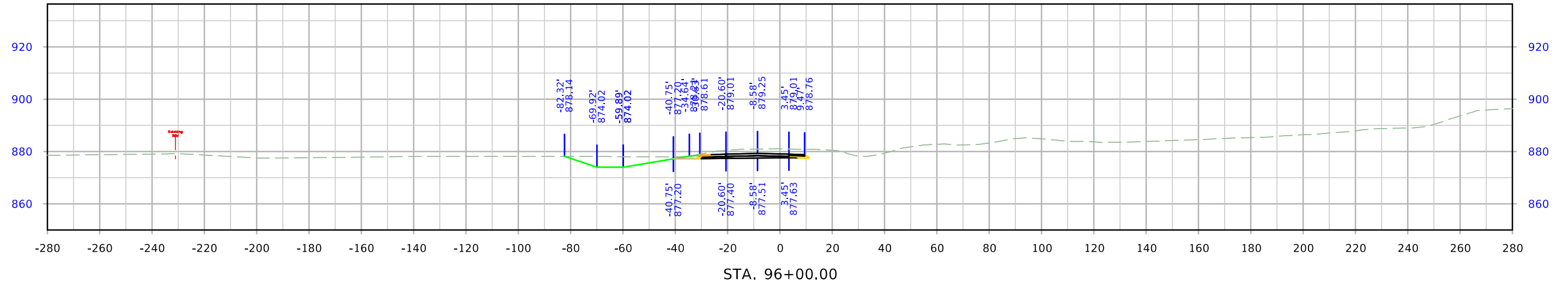
# US 30 4L-2L Trans.



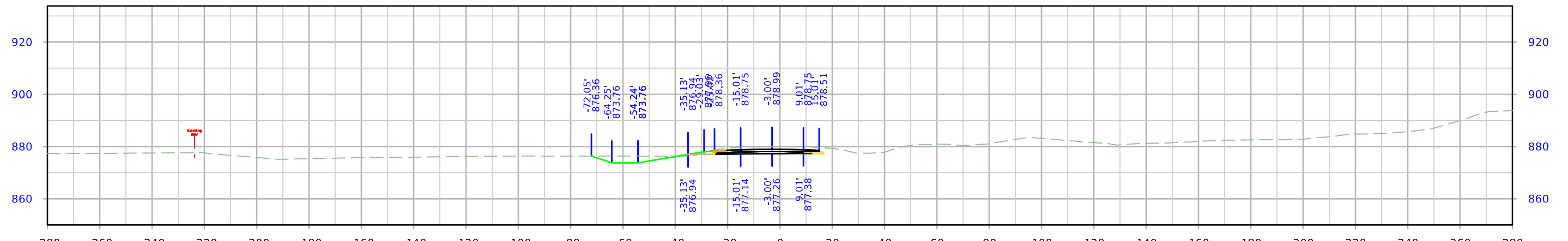
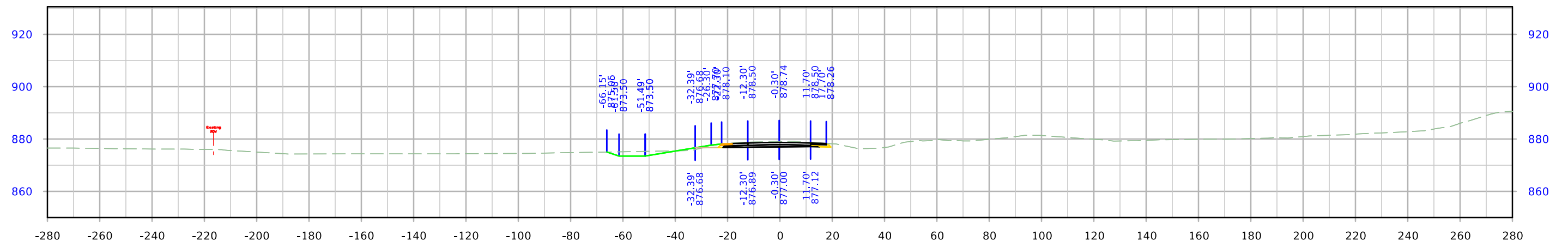
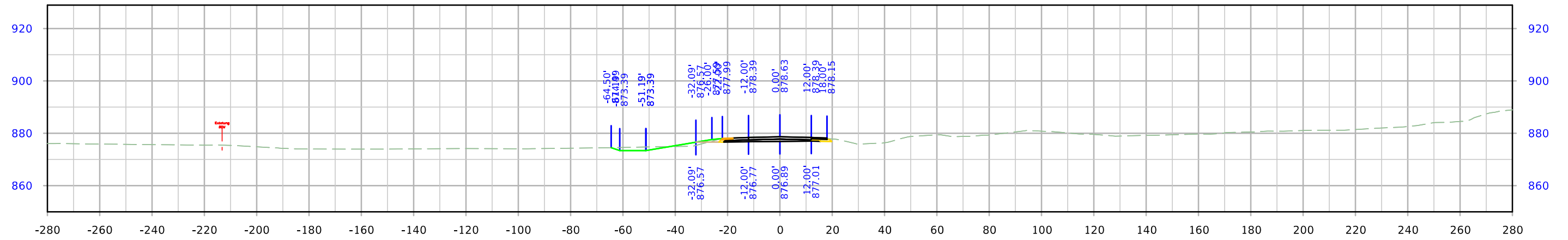




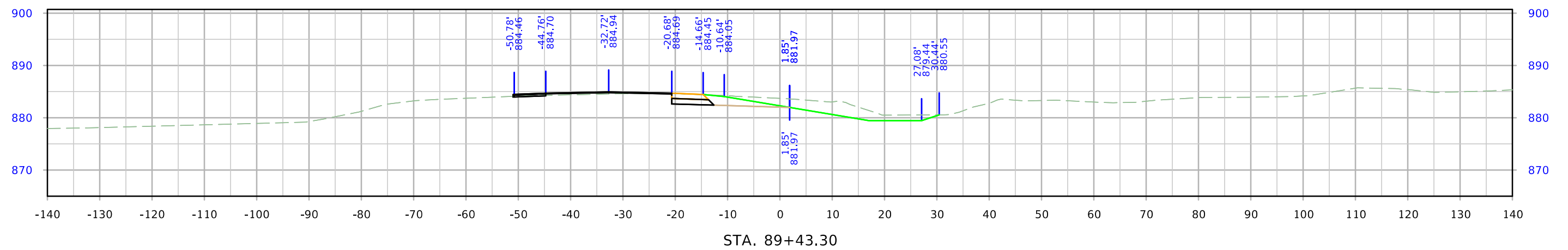
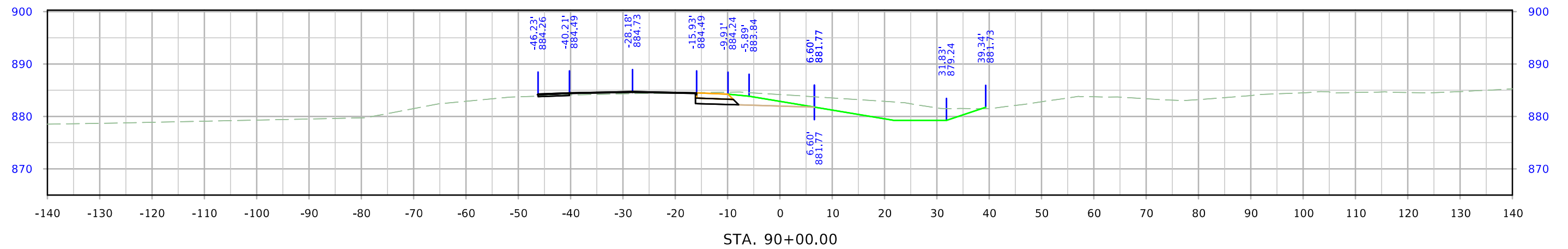
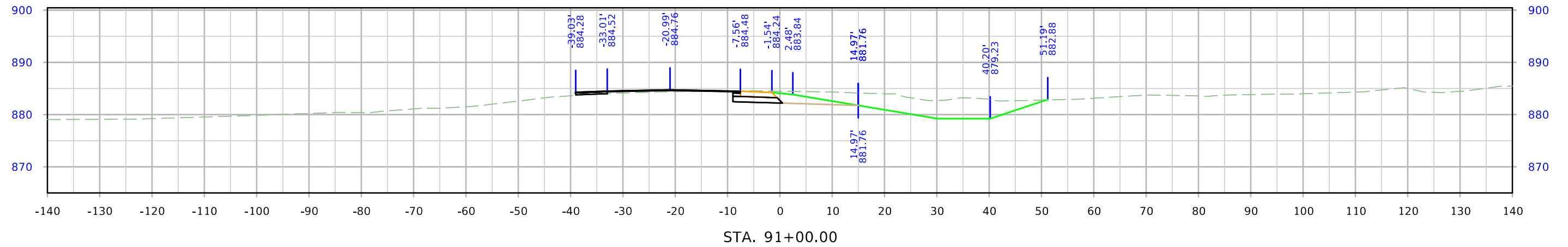


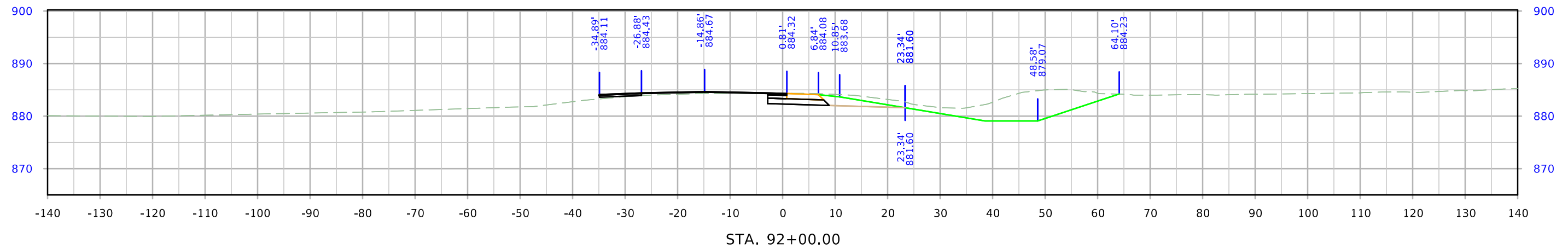
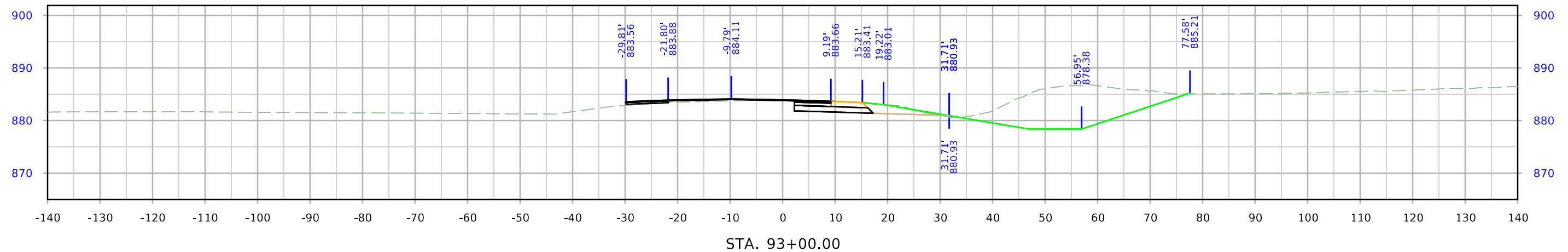
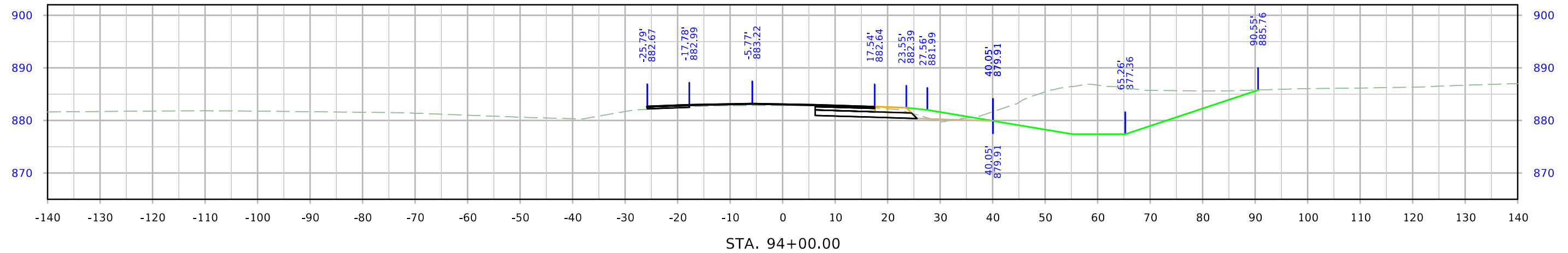


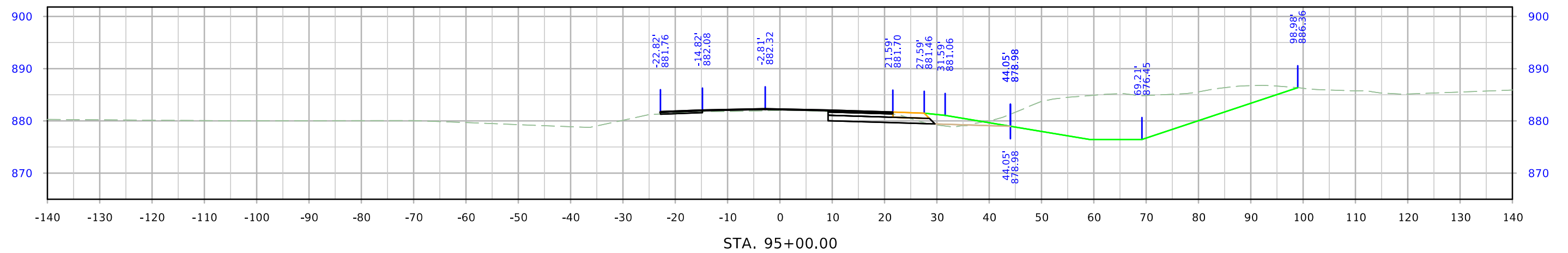
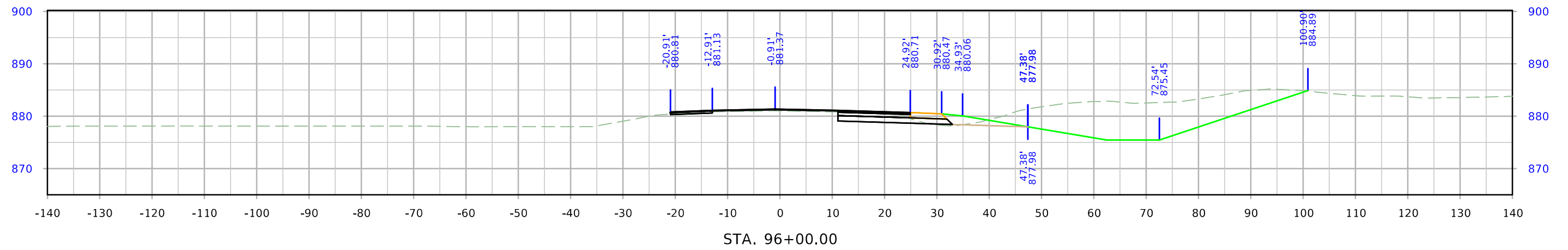
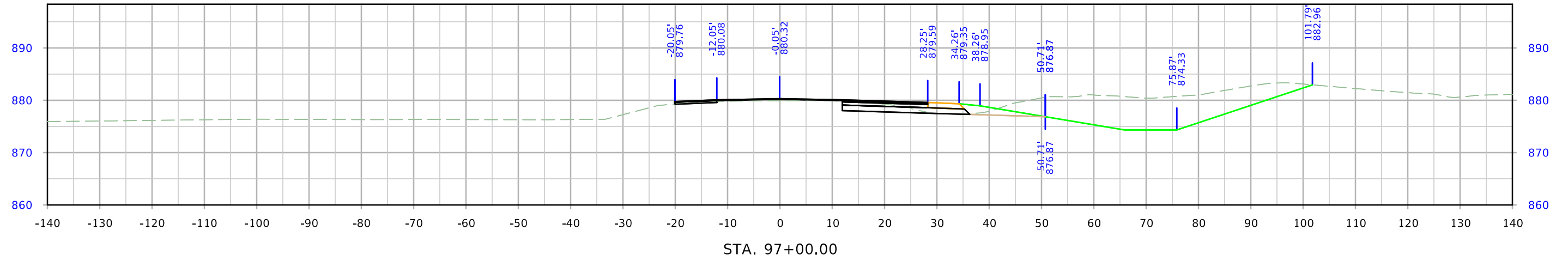


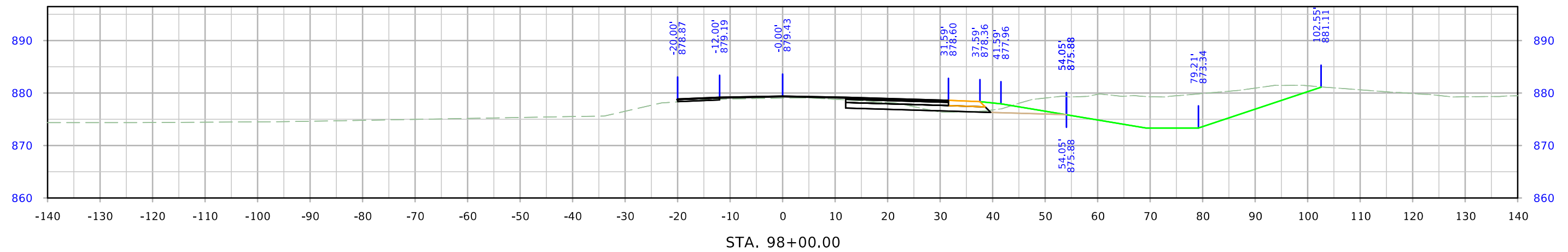
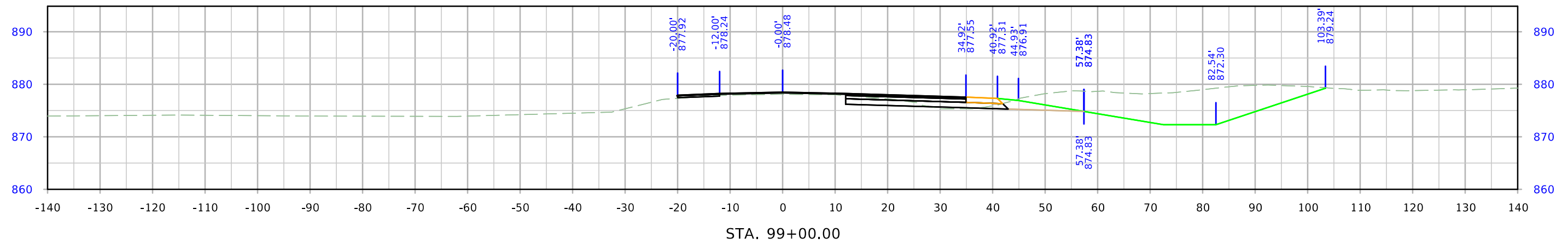
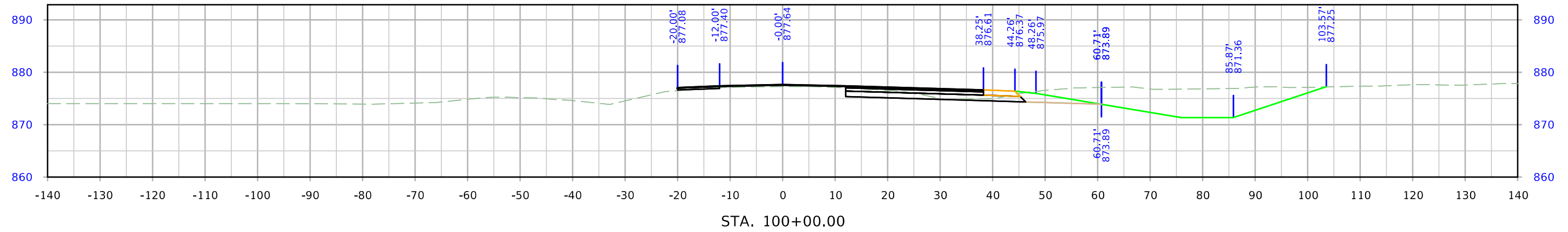


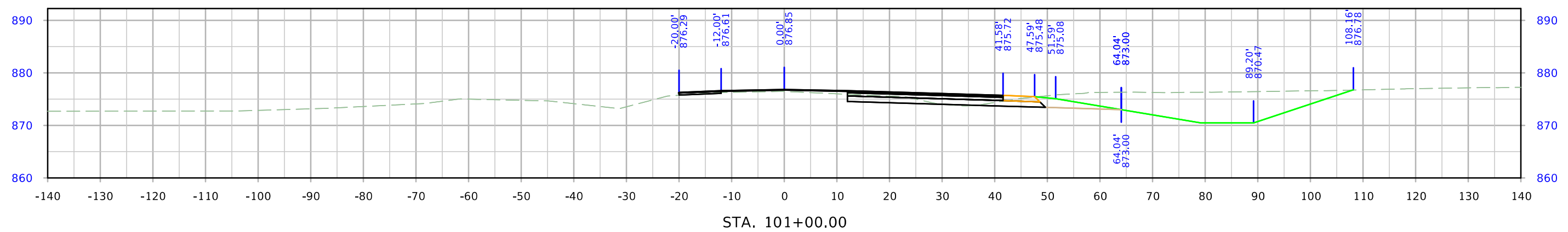
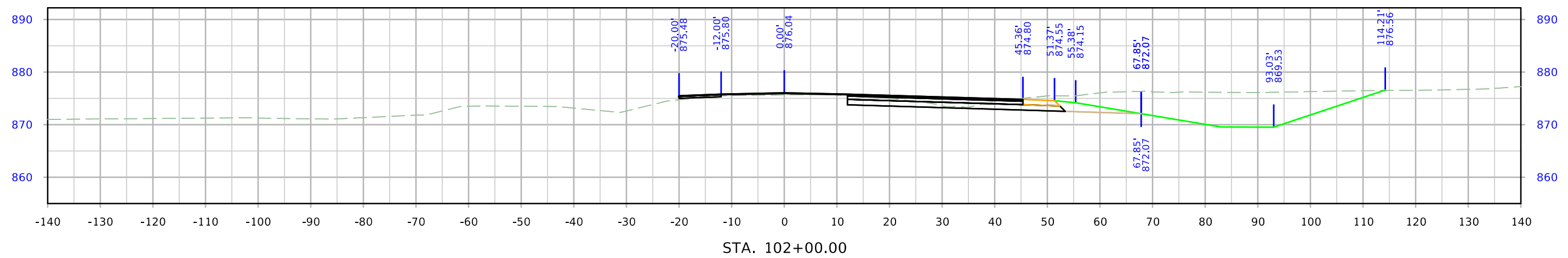
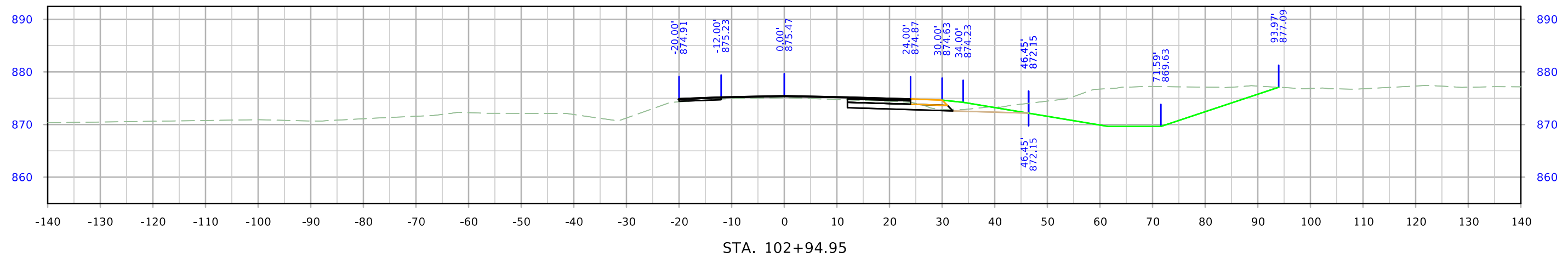
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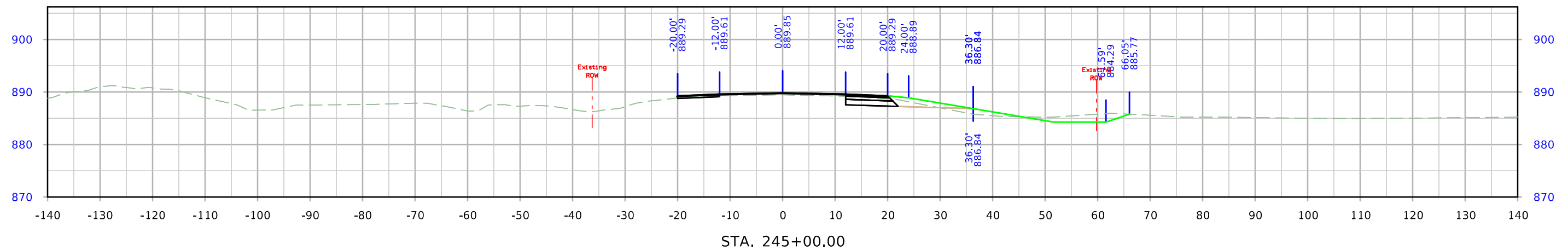
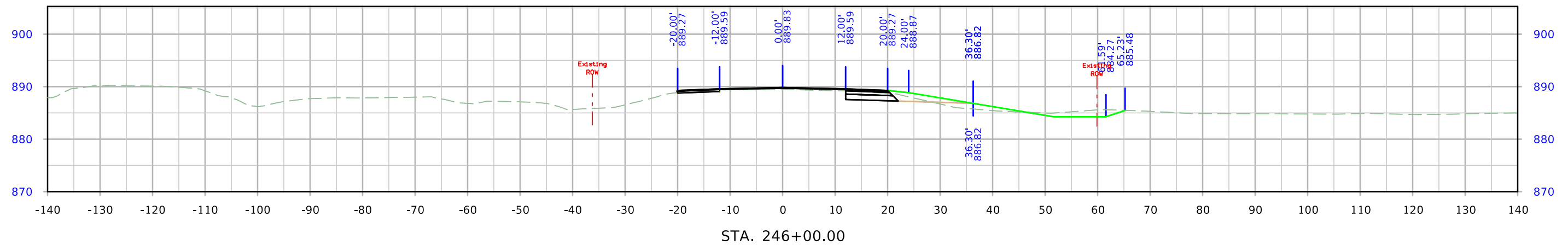
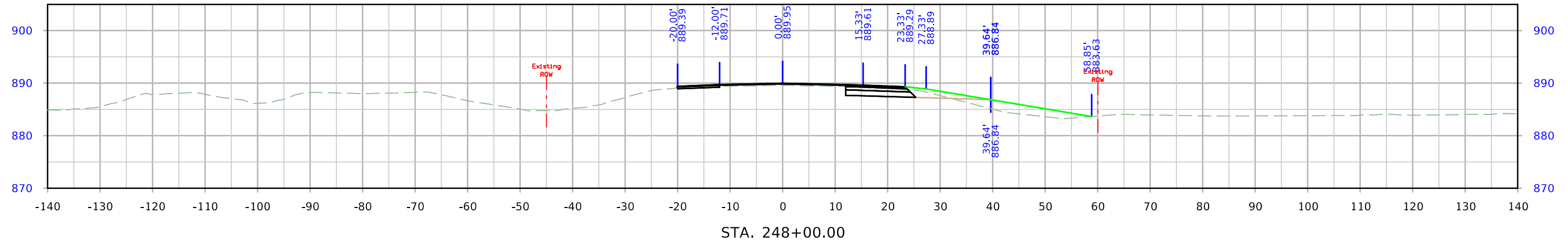


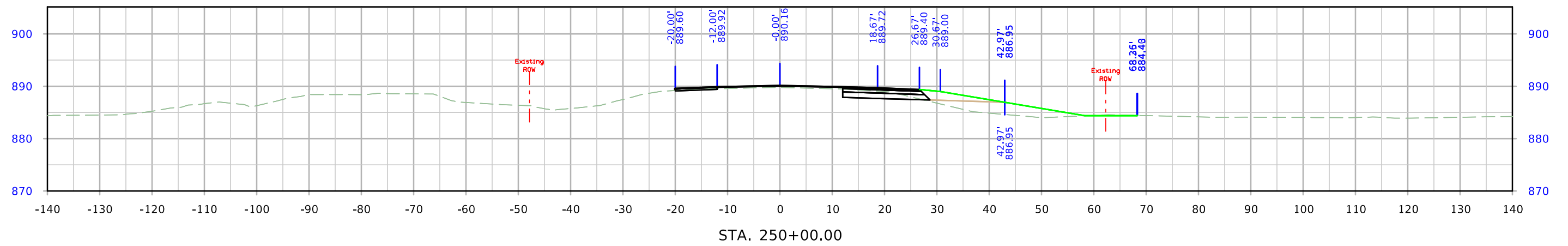
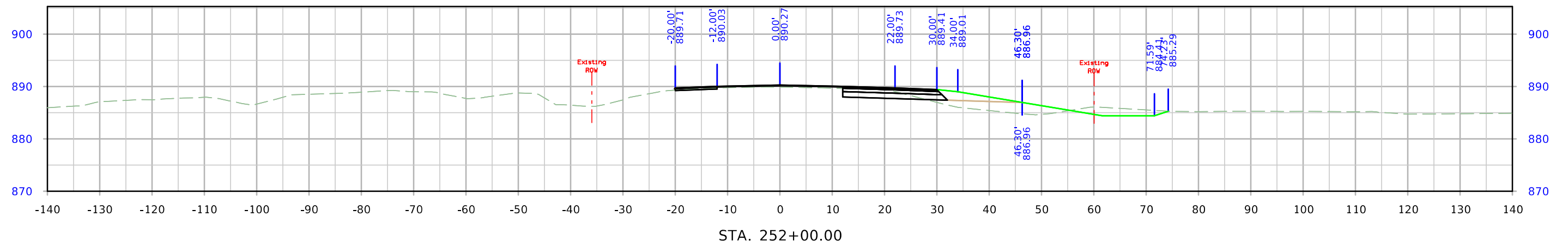
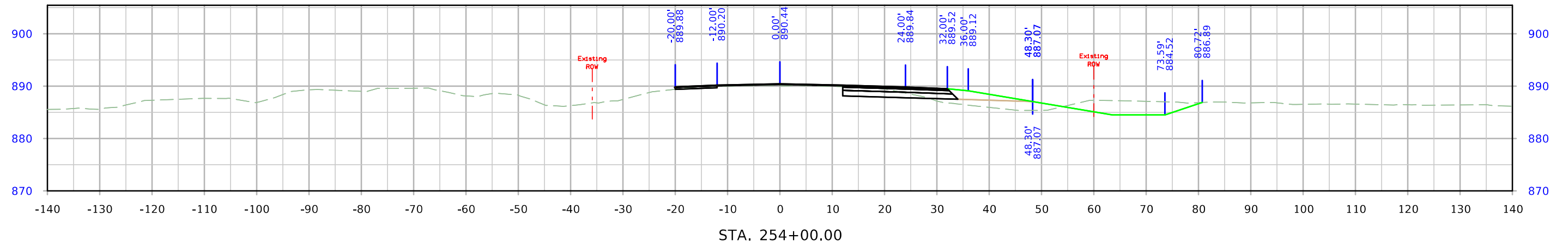




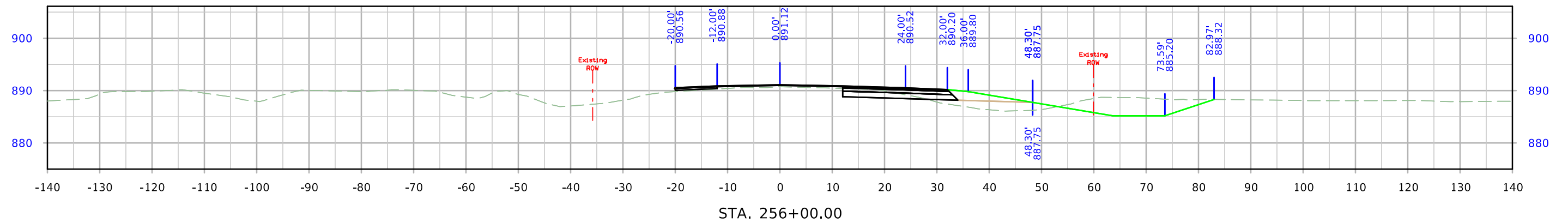
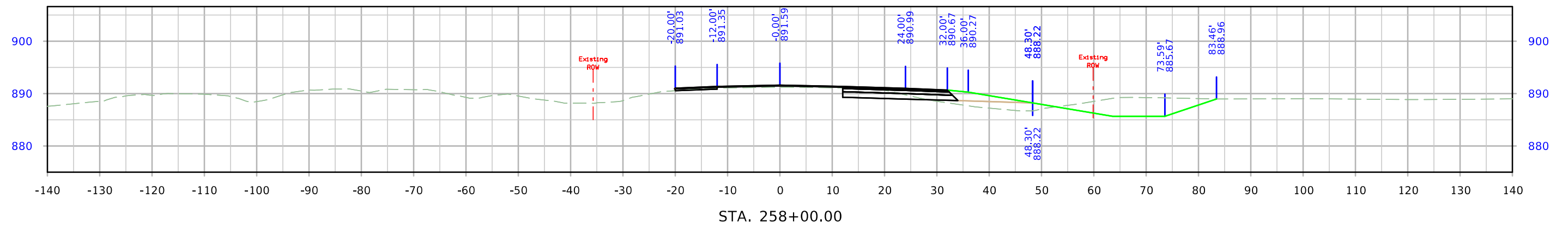
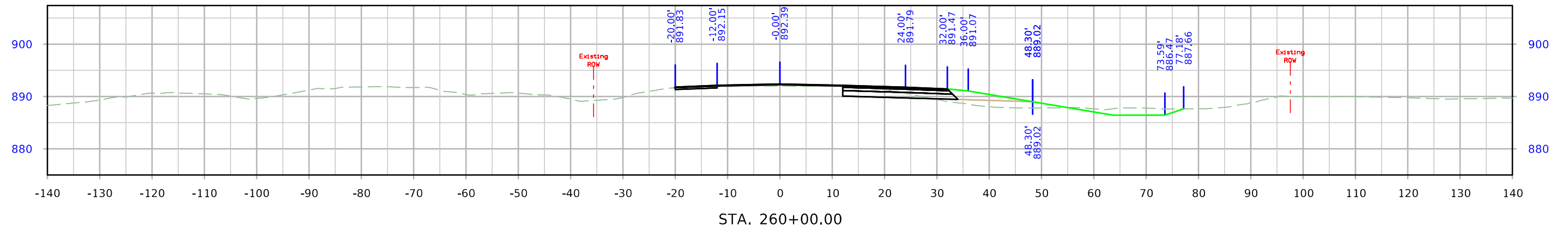


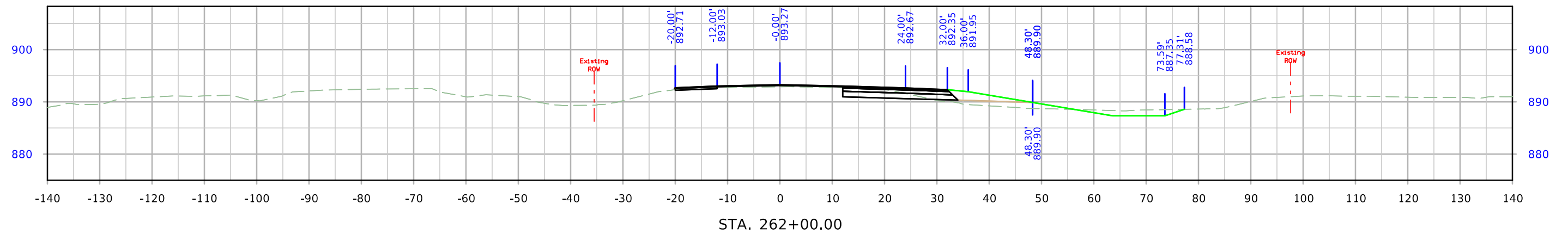
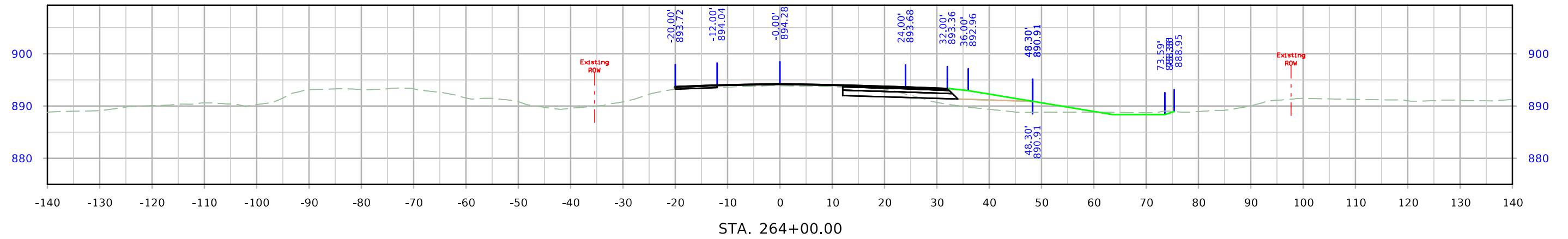
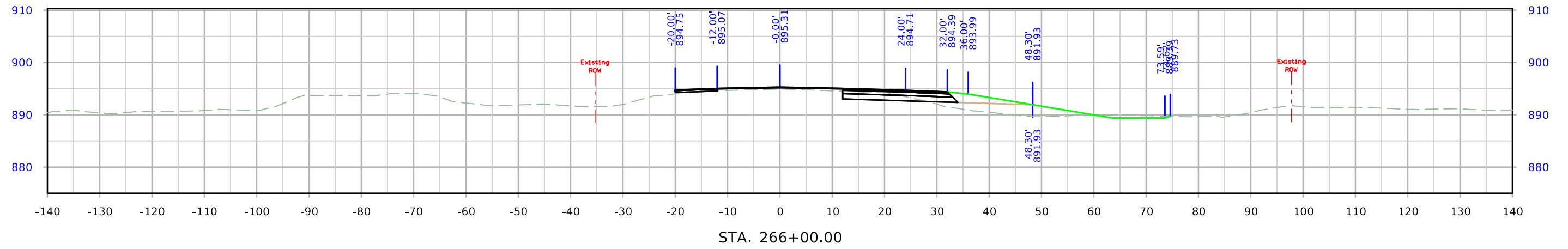
# US 30 WB Passing Lane West of Mechanicsville

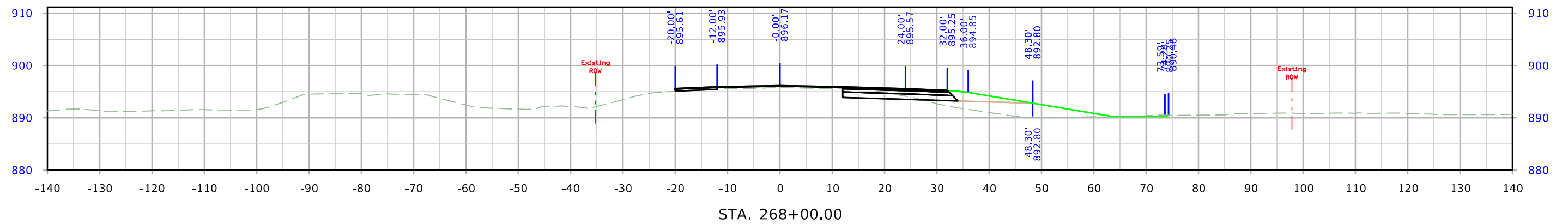
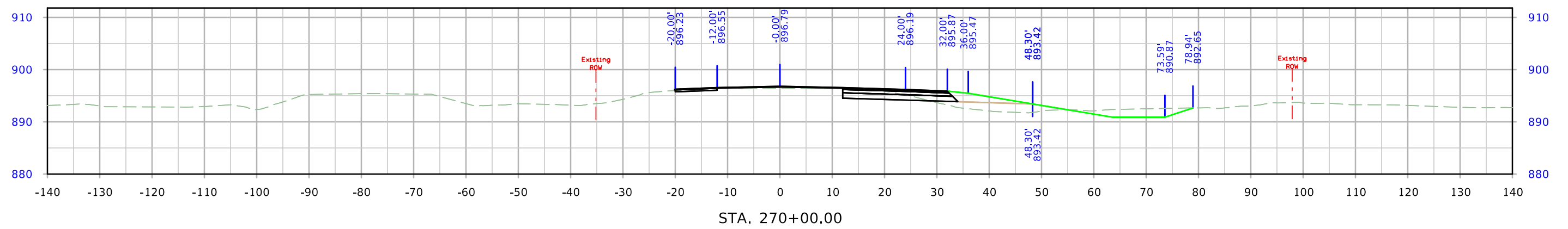
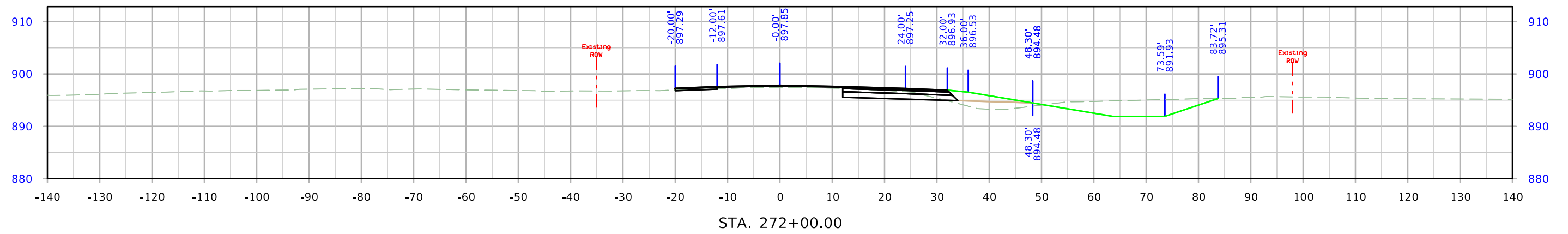


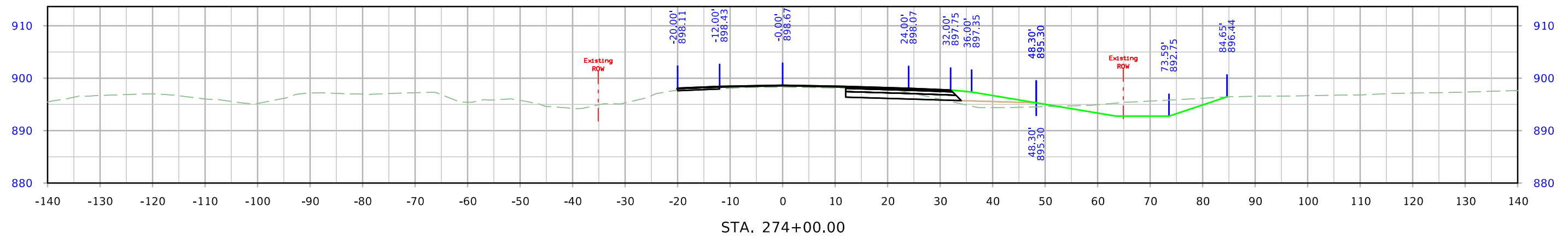
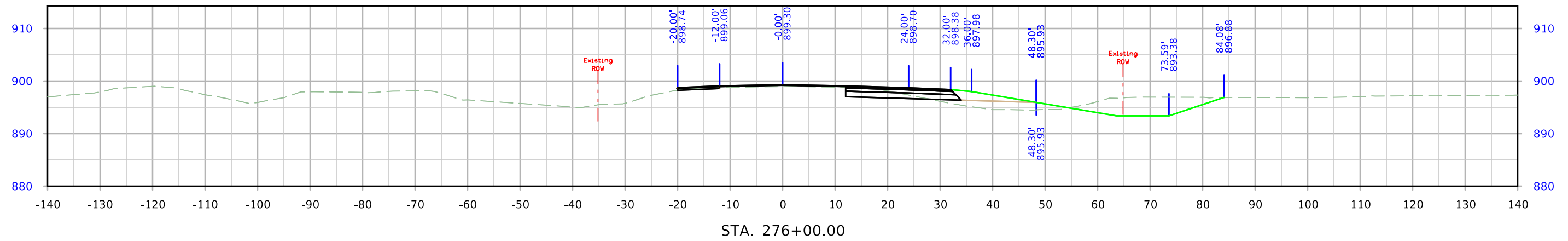
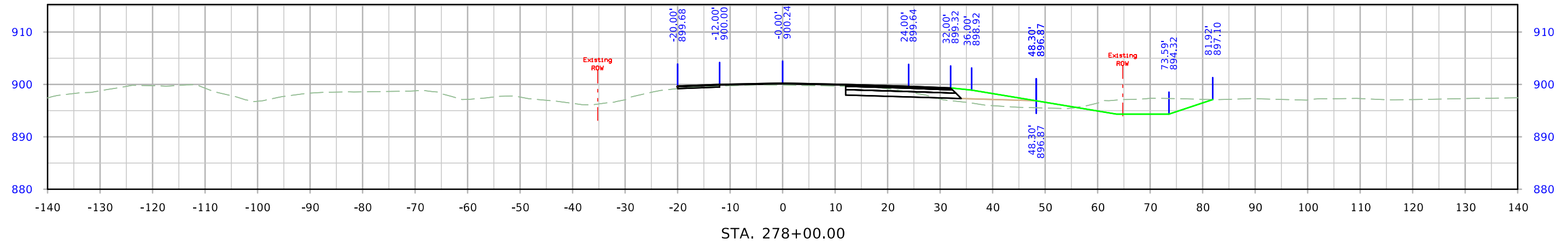


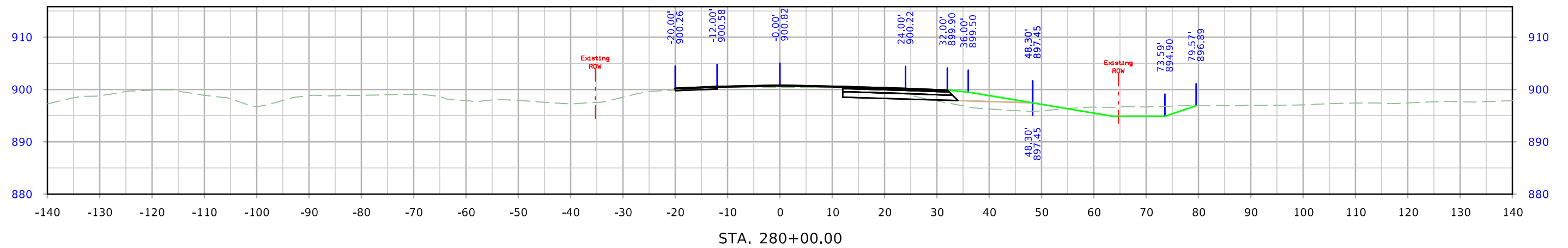
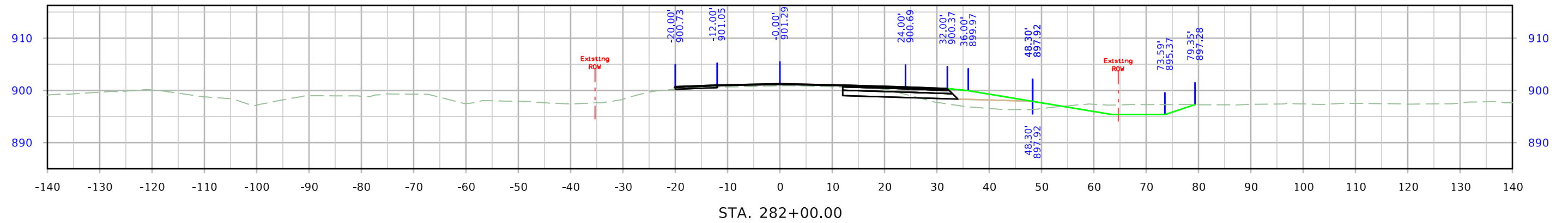
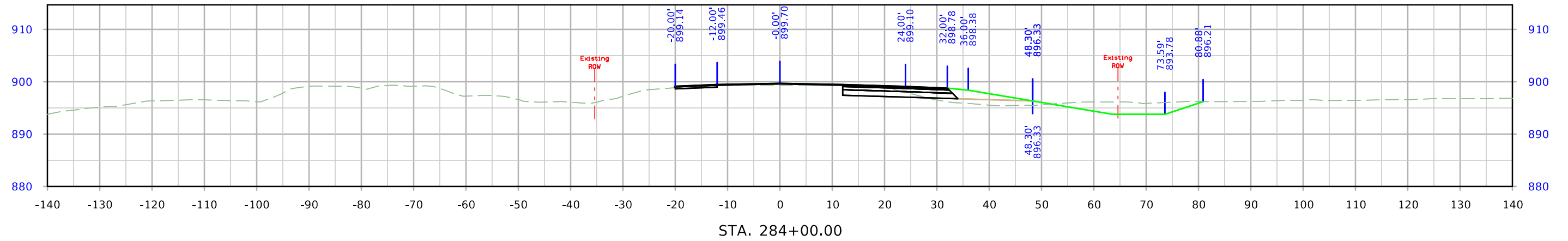


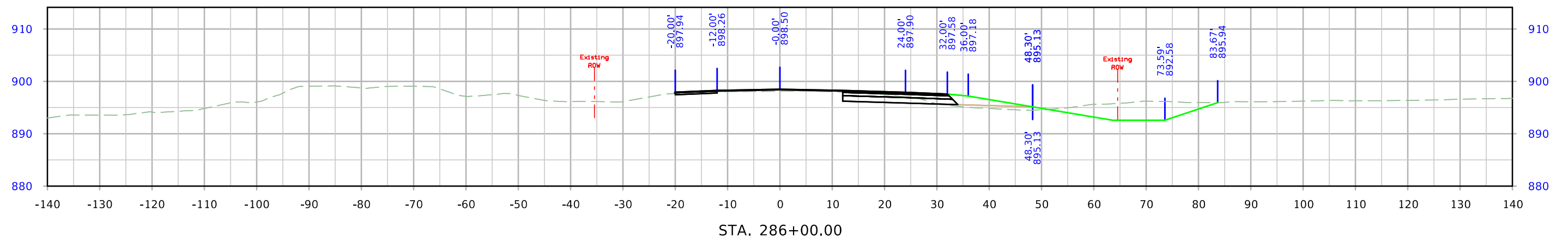
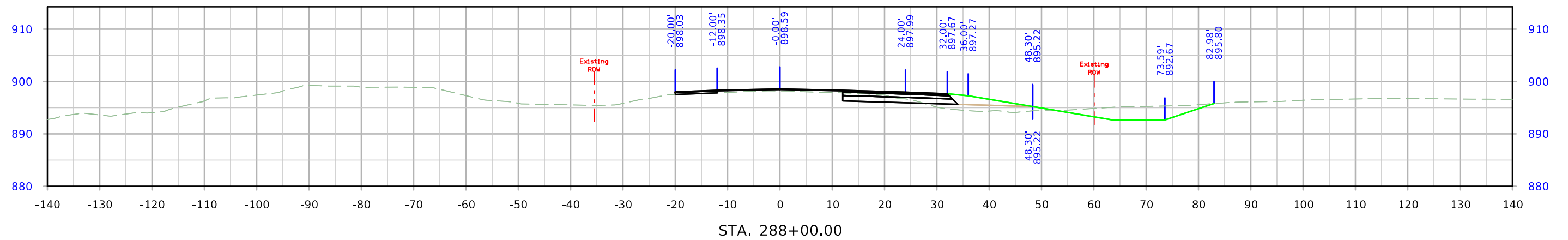
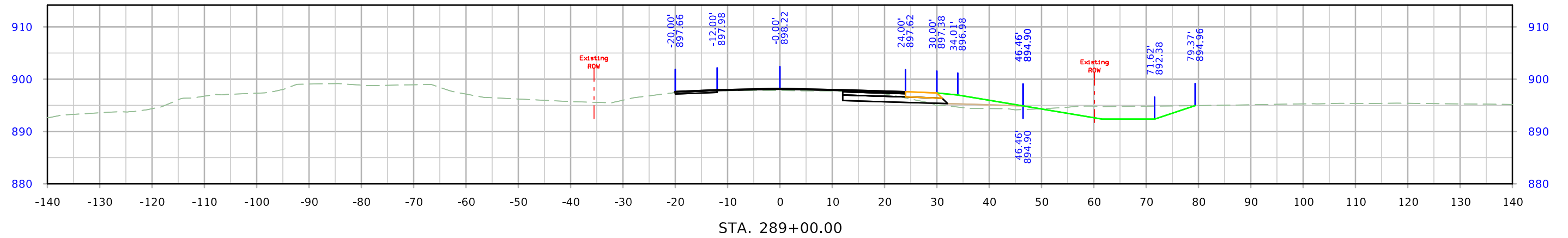




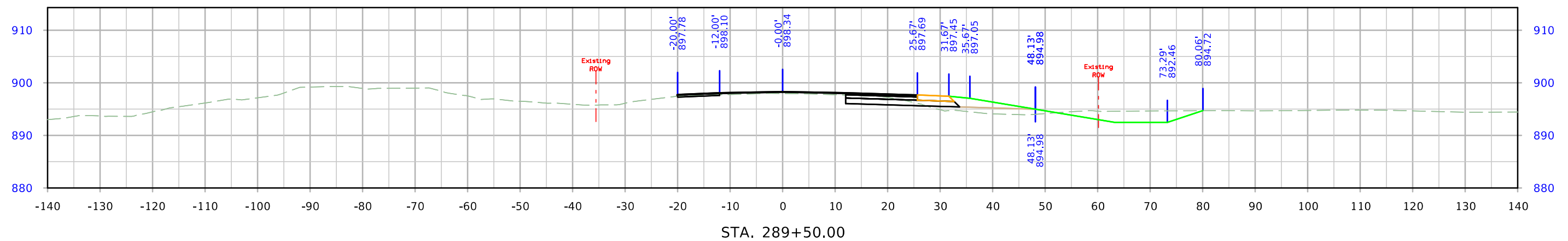
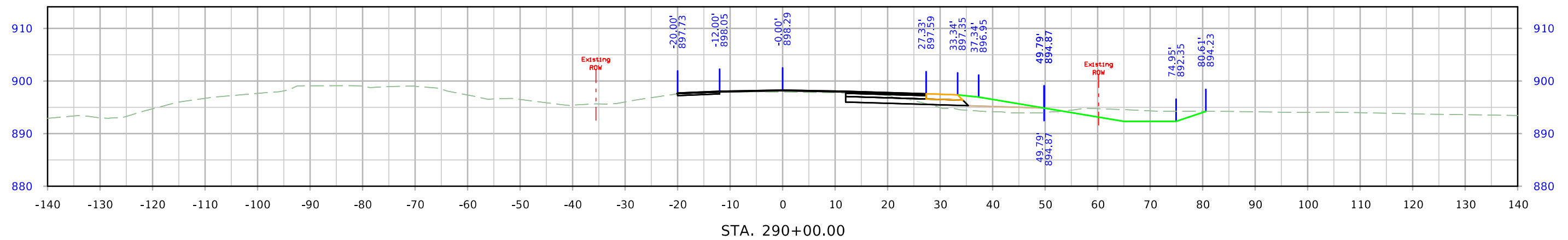
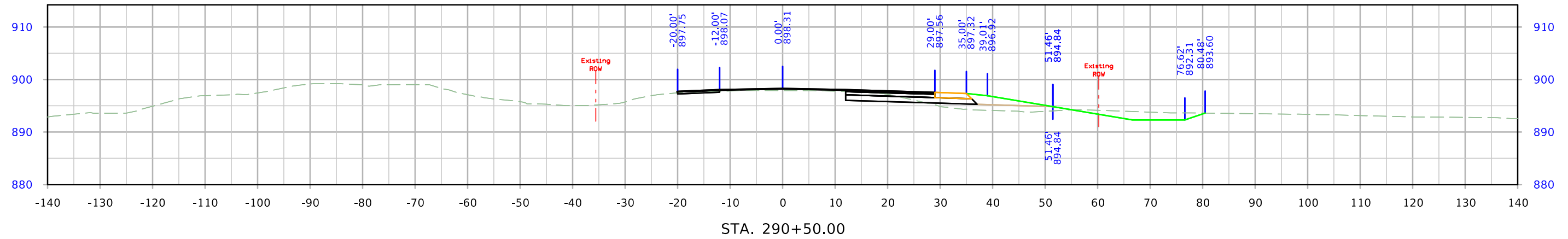


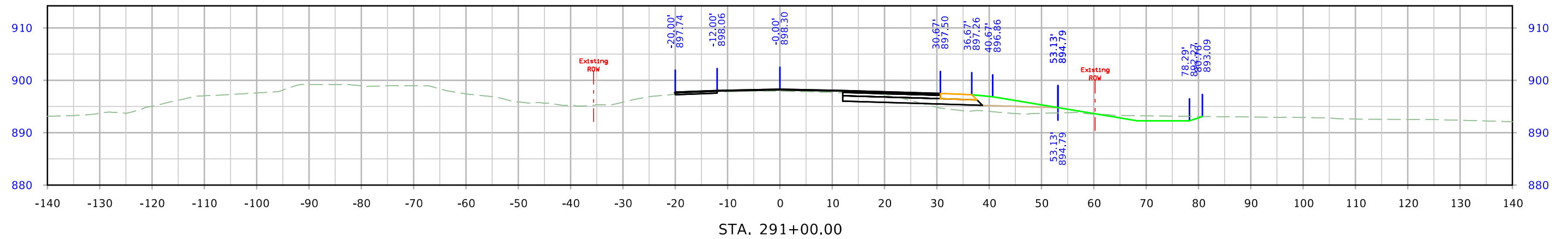
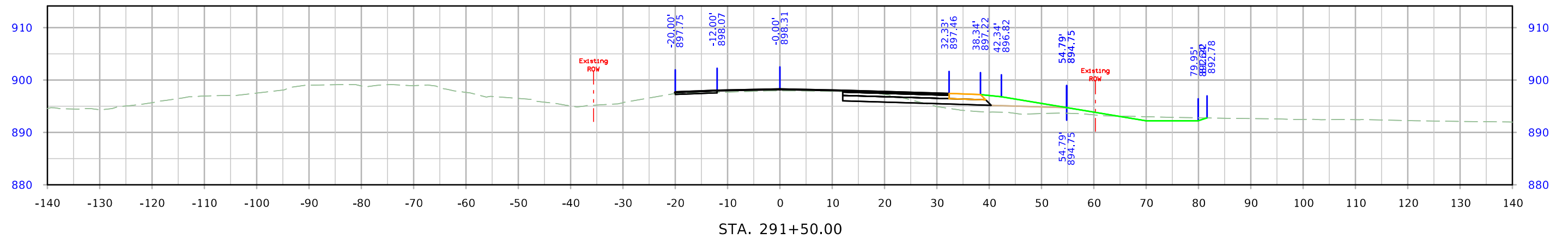
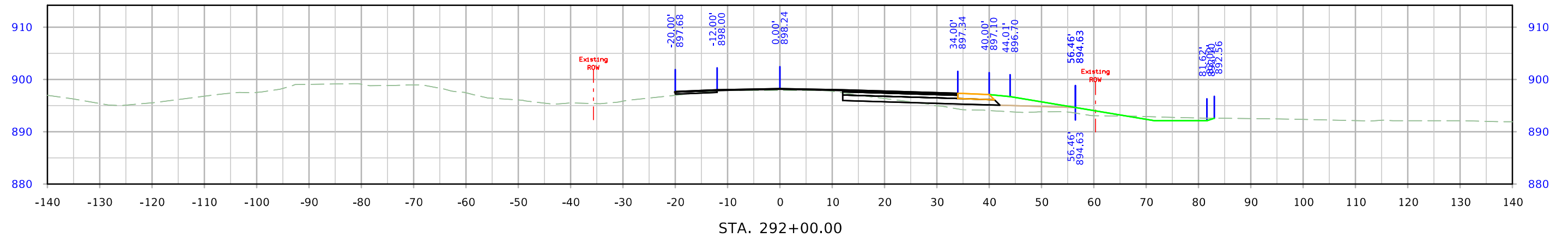




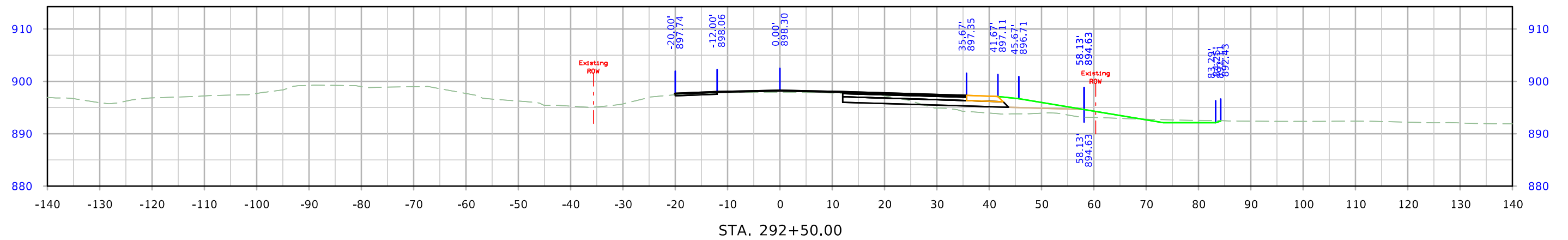
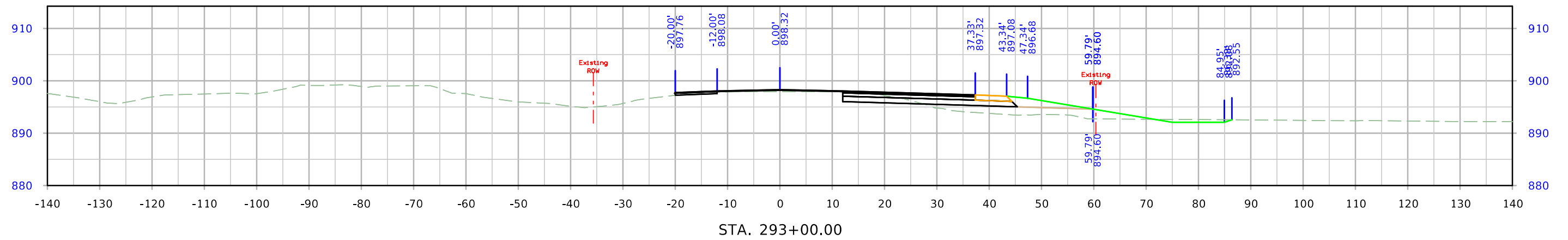
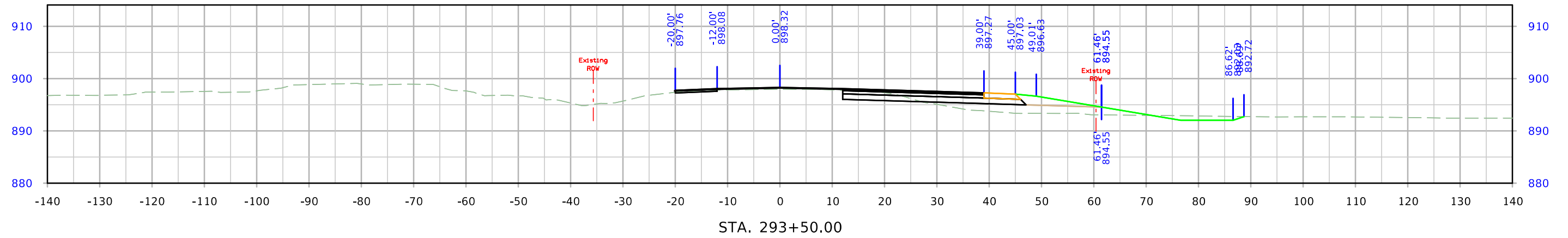


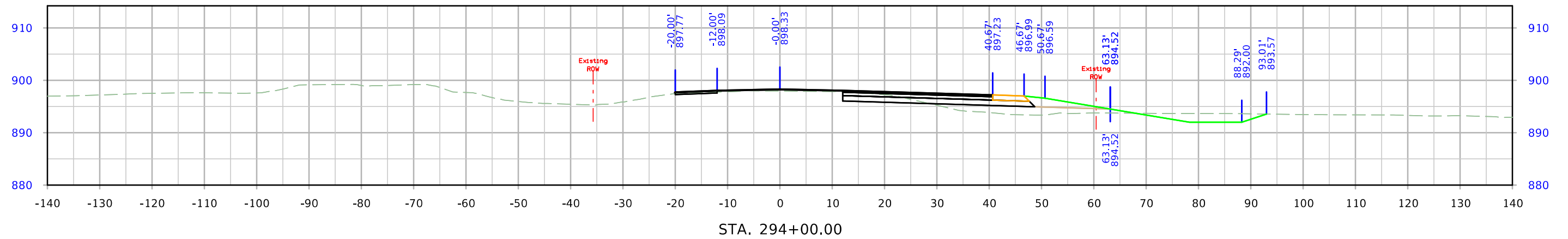
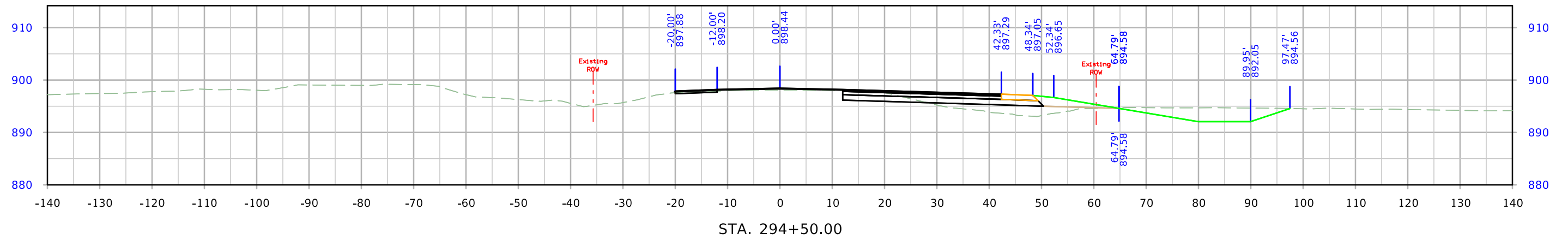
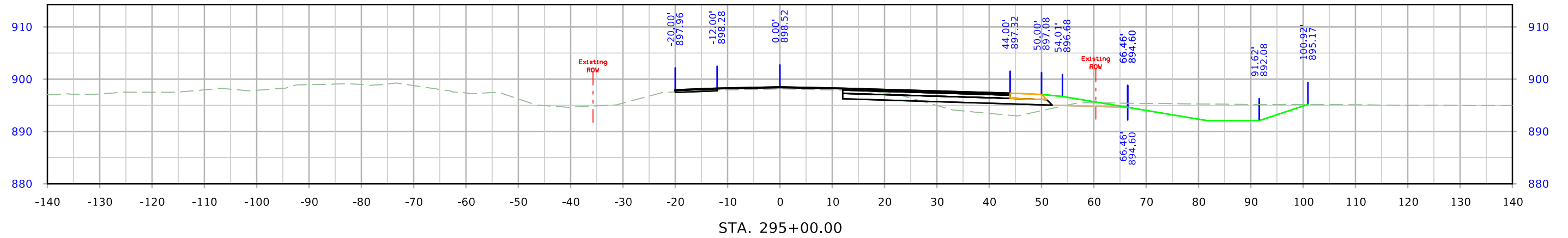
# US 30 RTLs through Mechanicsville

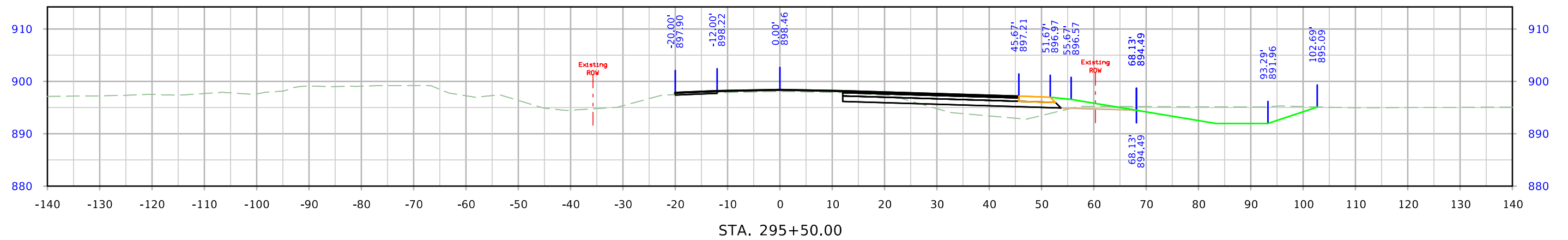
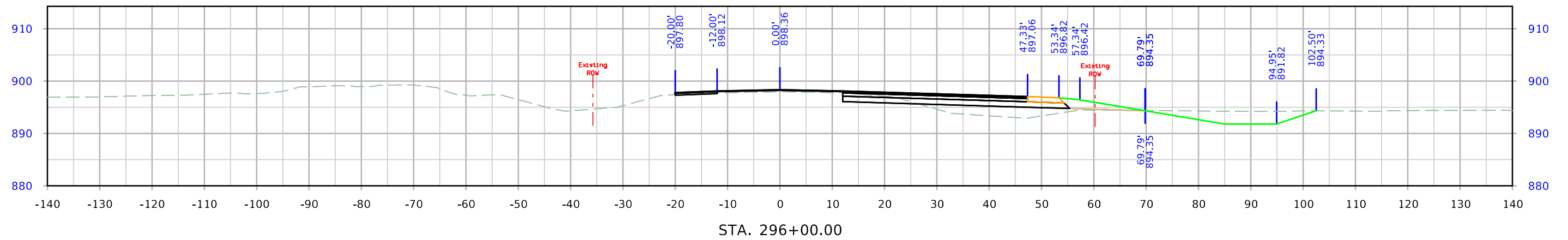
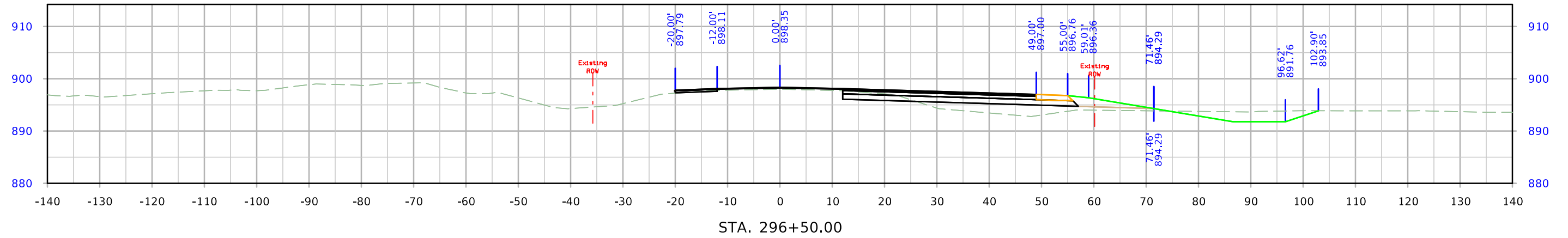


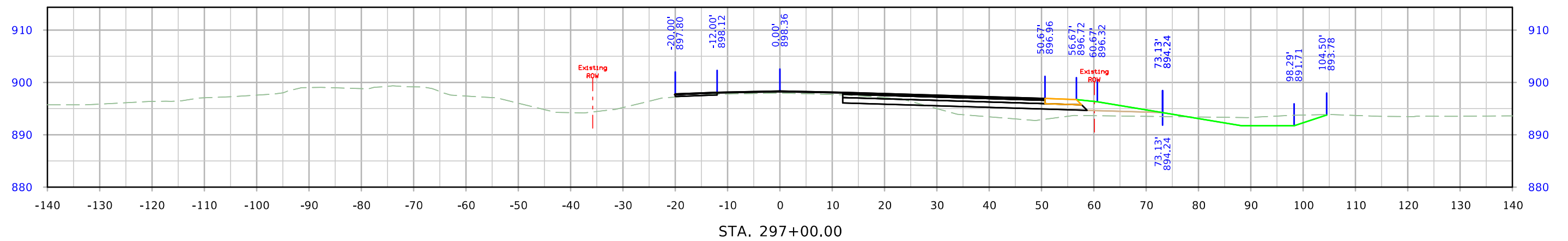
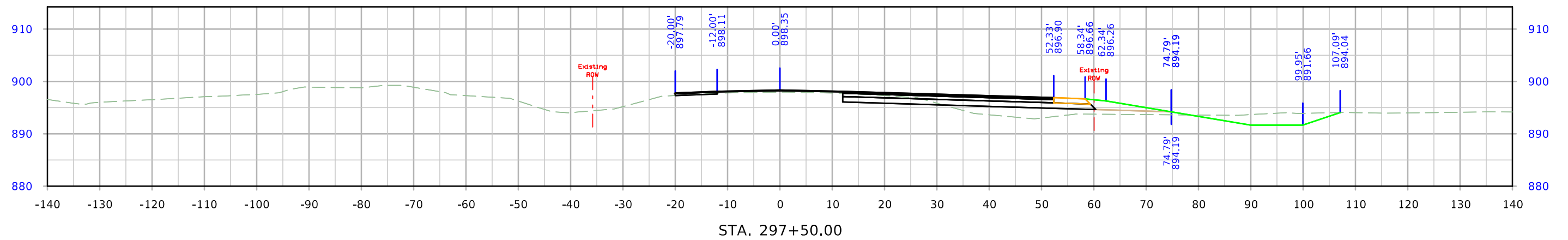
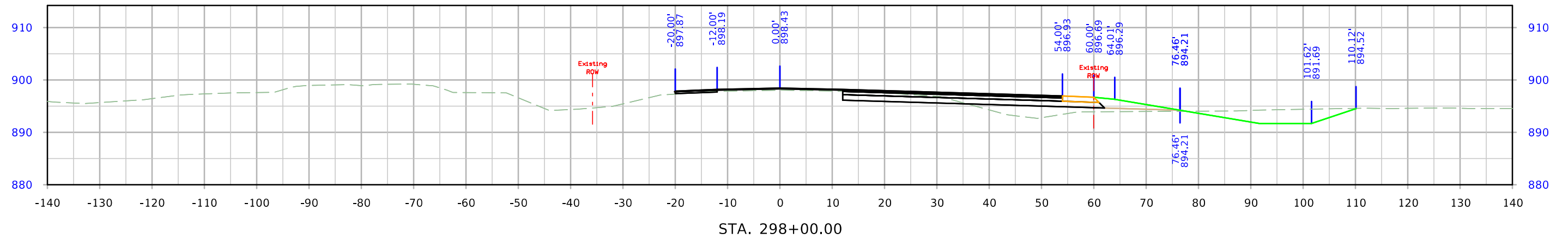


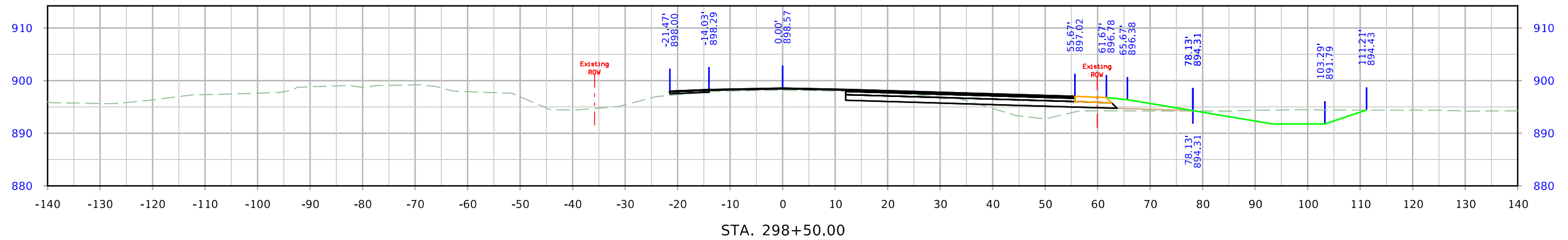
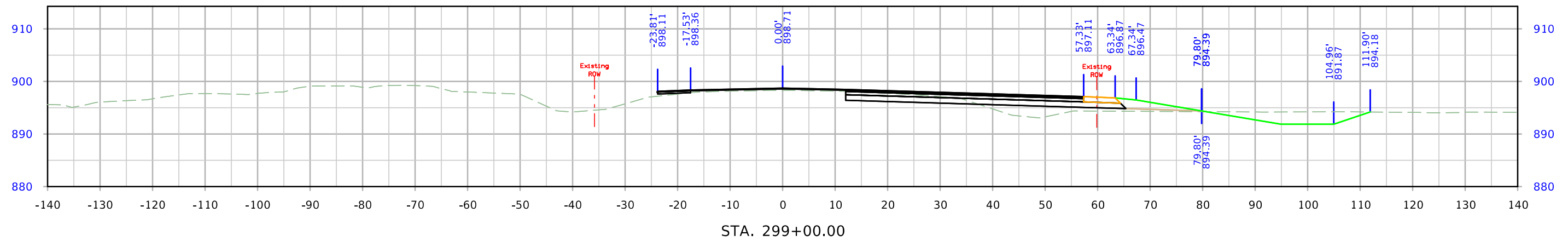
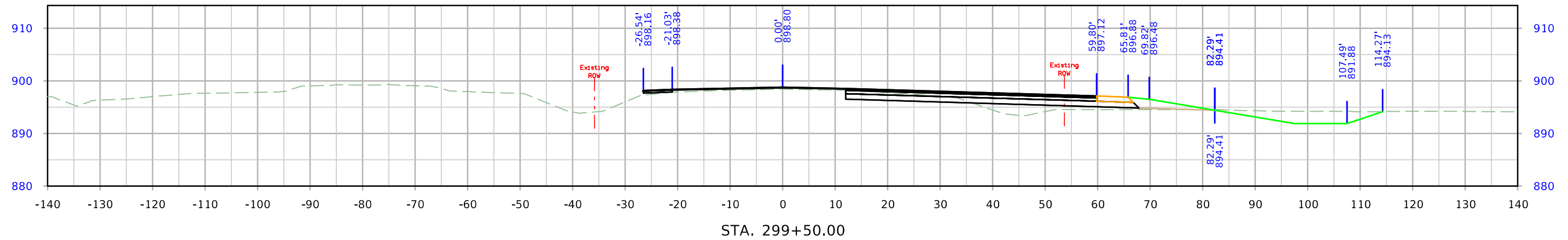


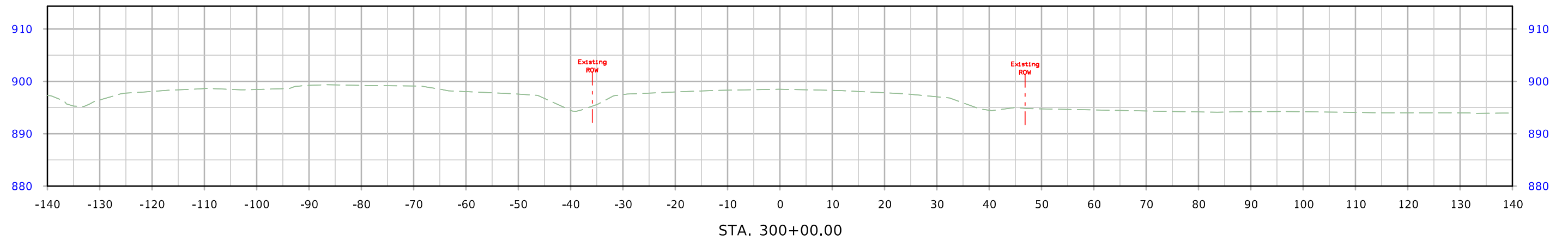
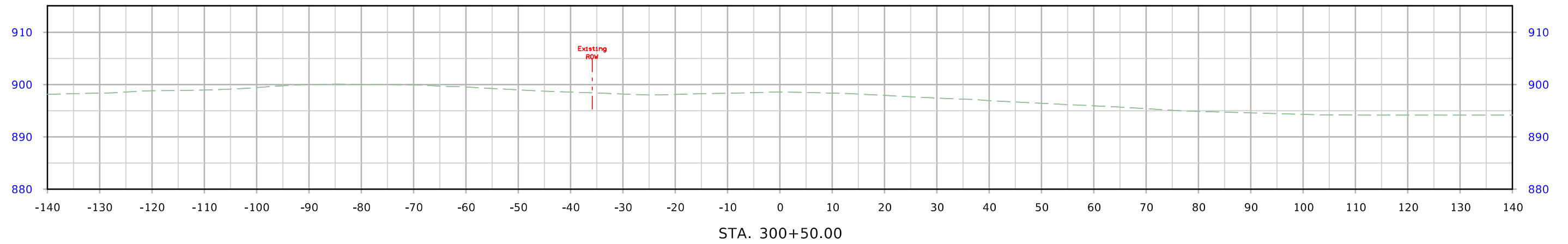
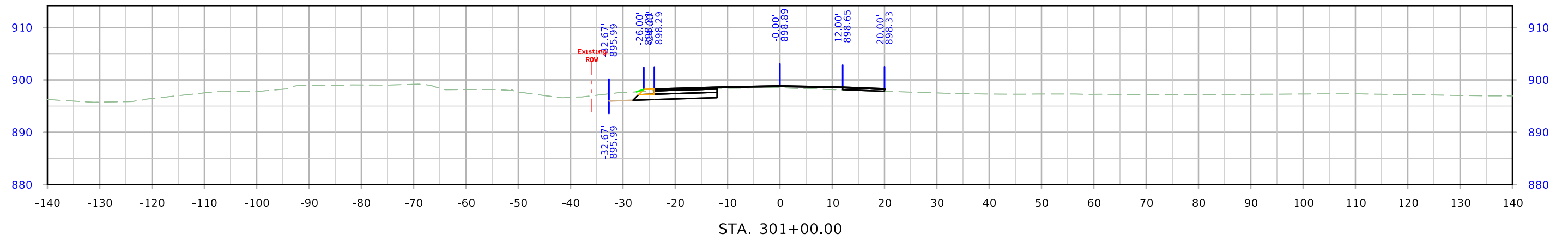


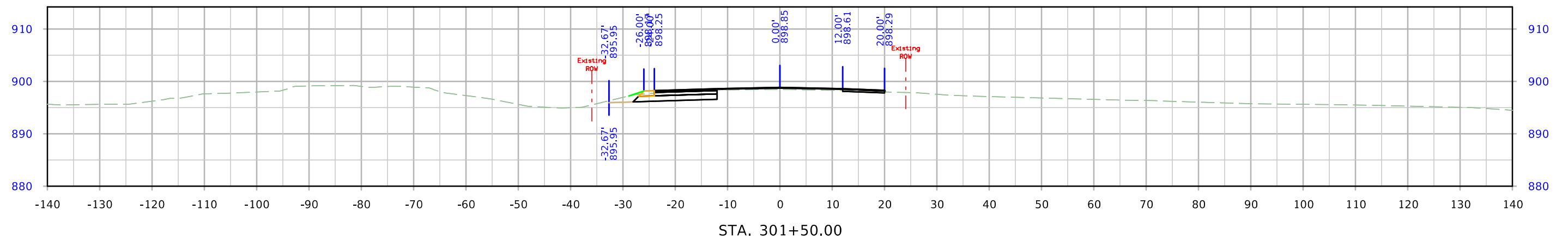
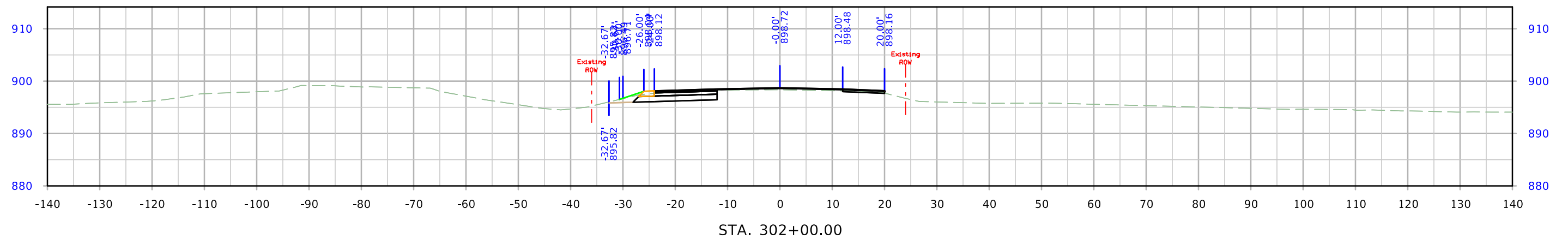
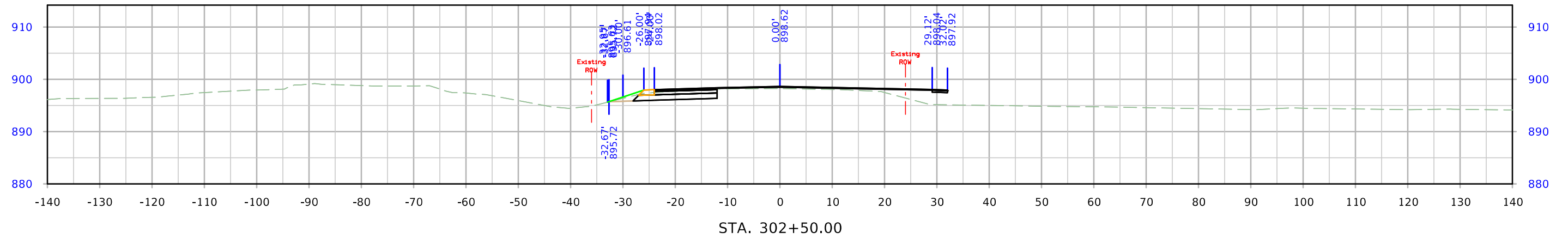


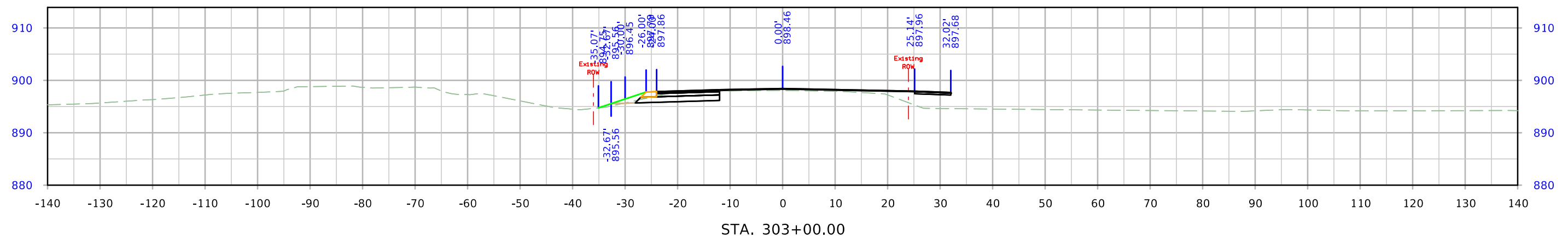
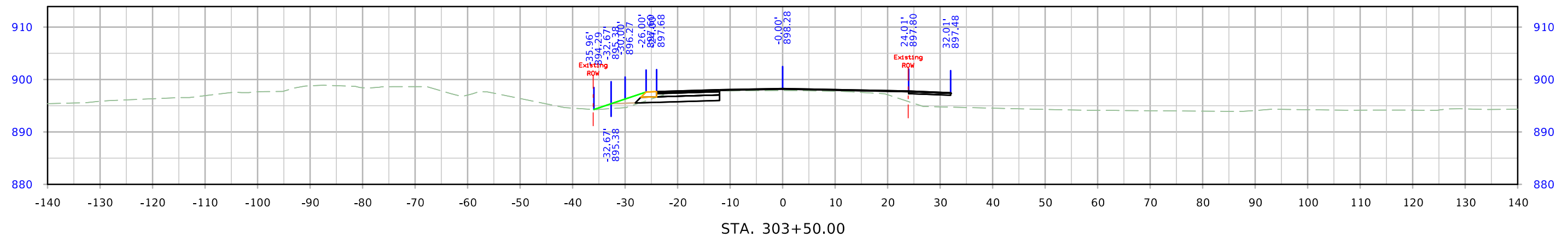
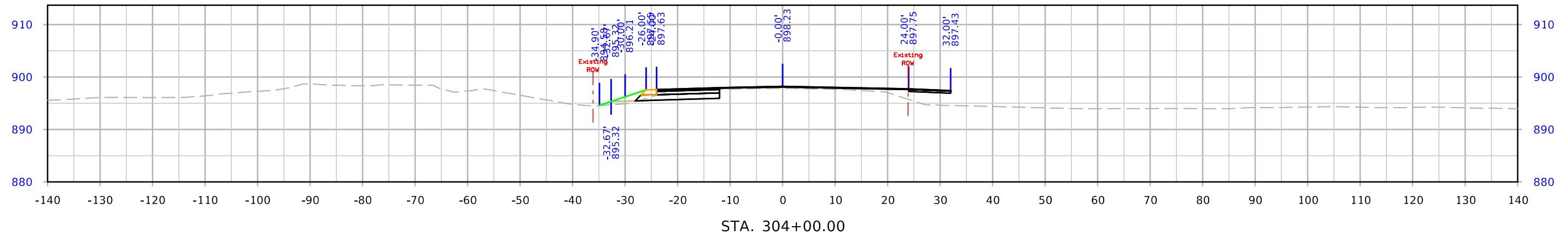




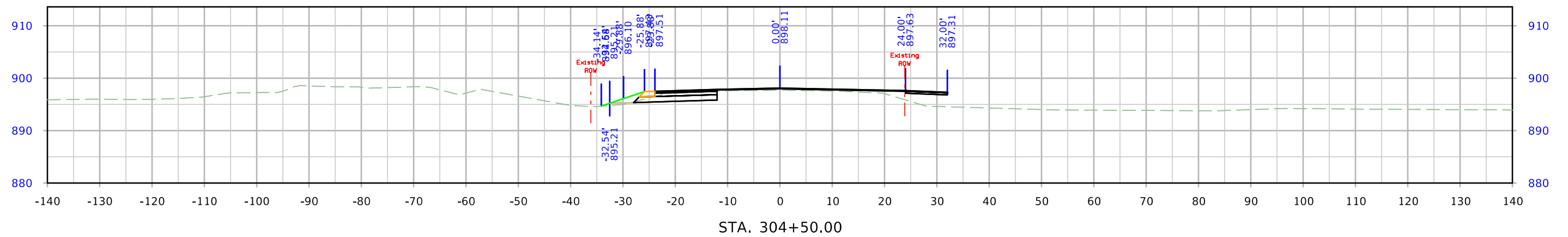
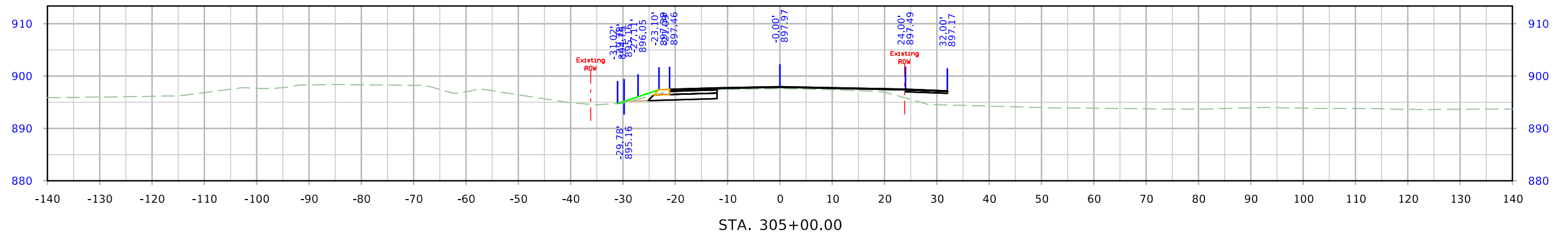
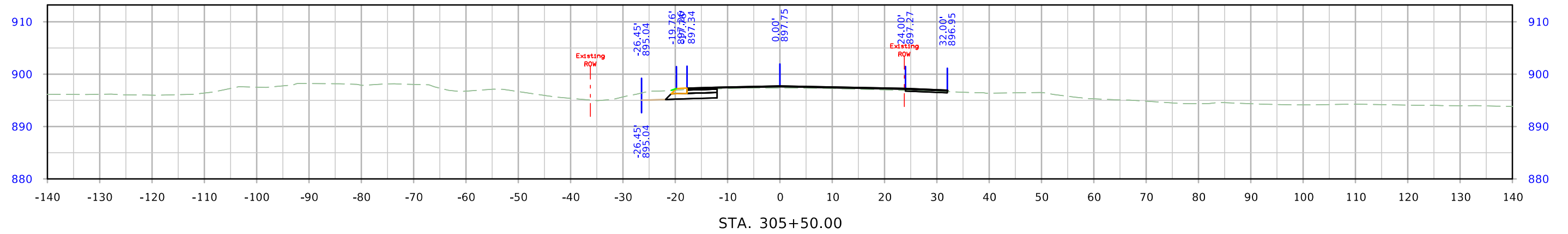


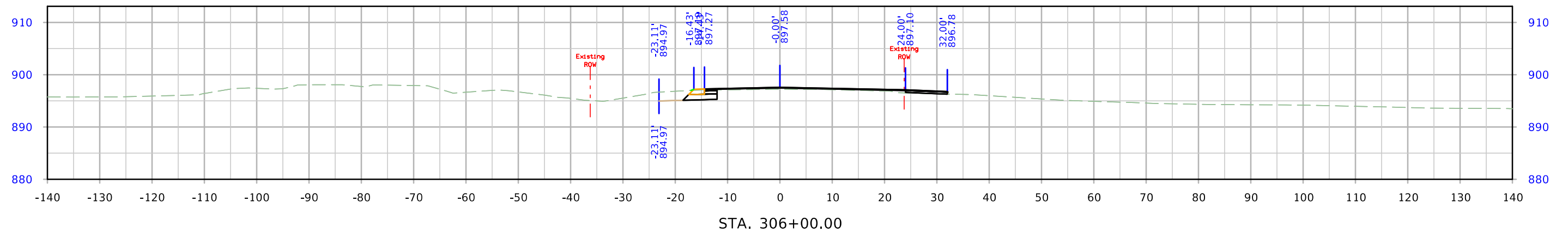
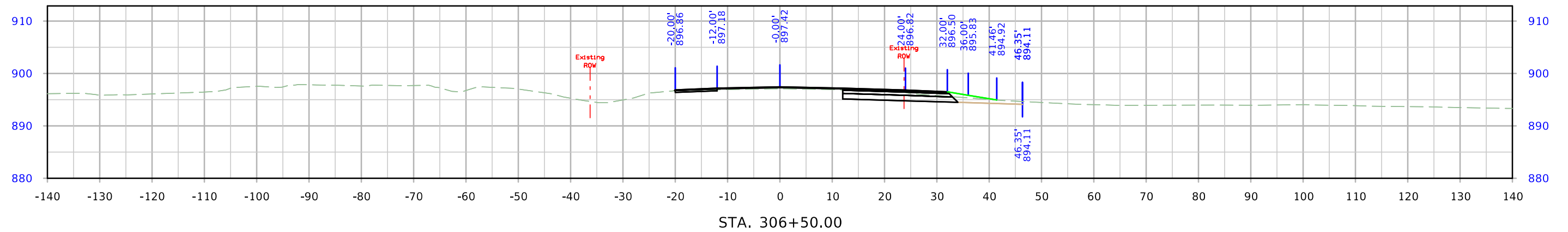
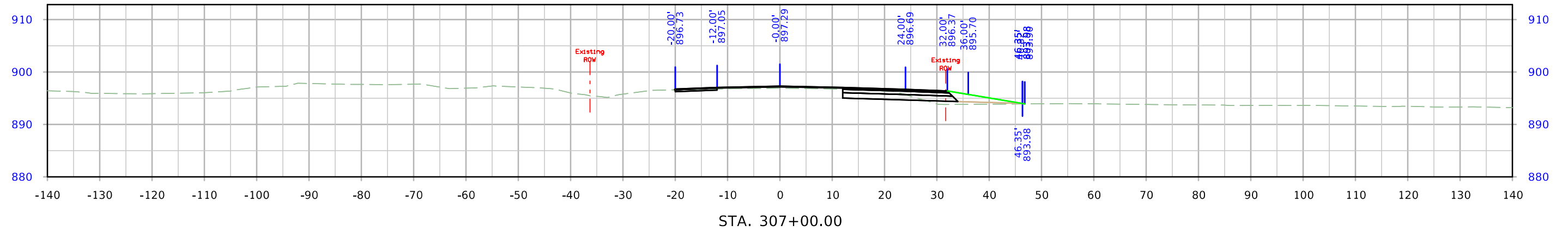


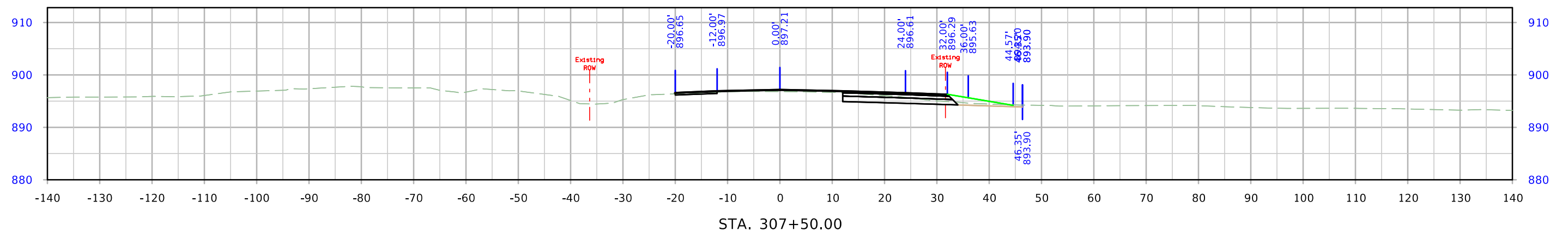
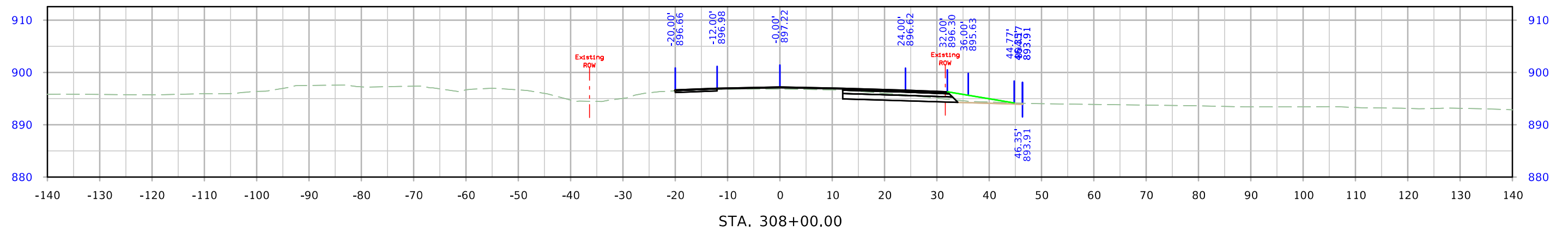
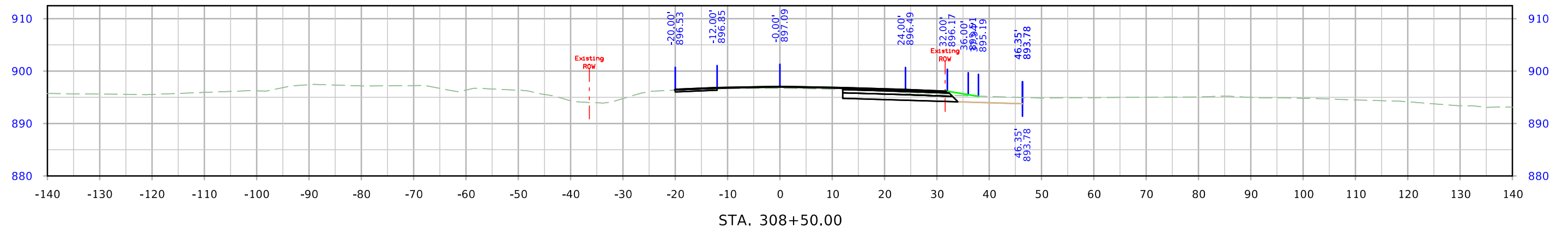


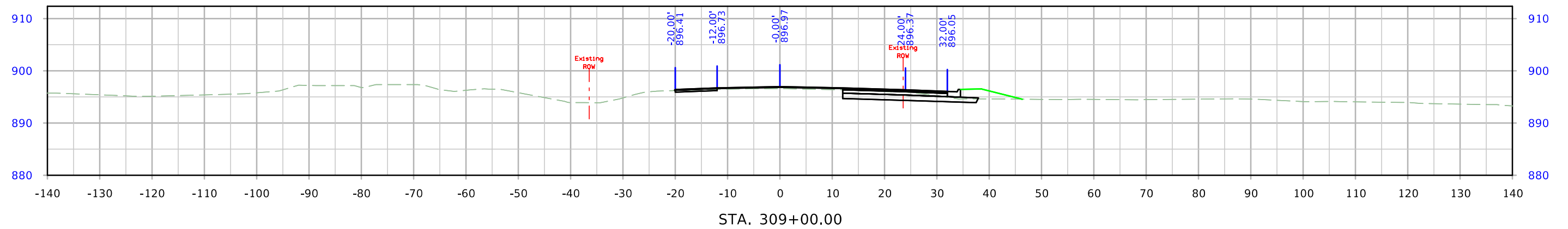
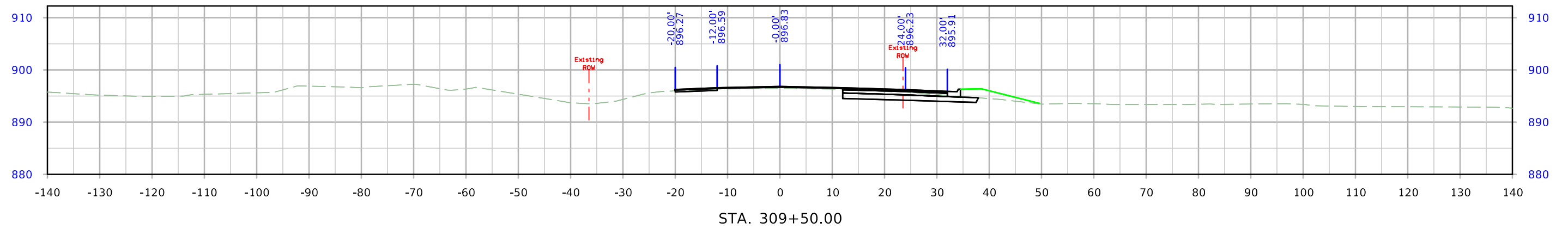
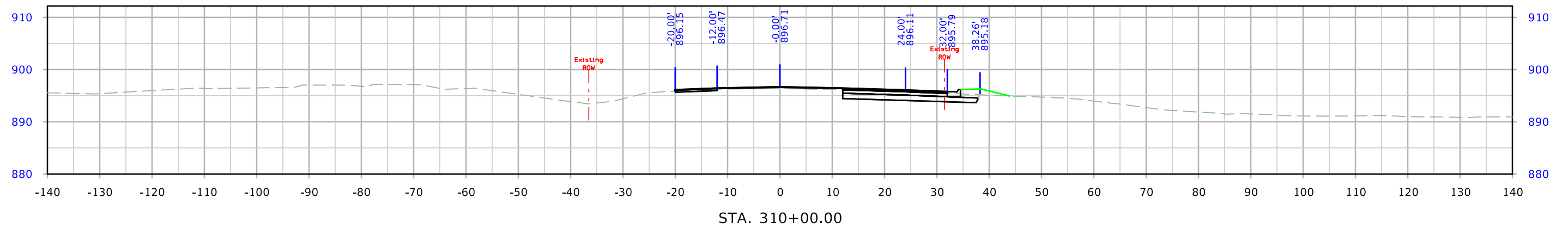


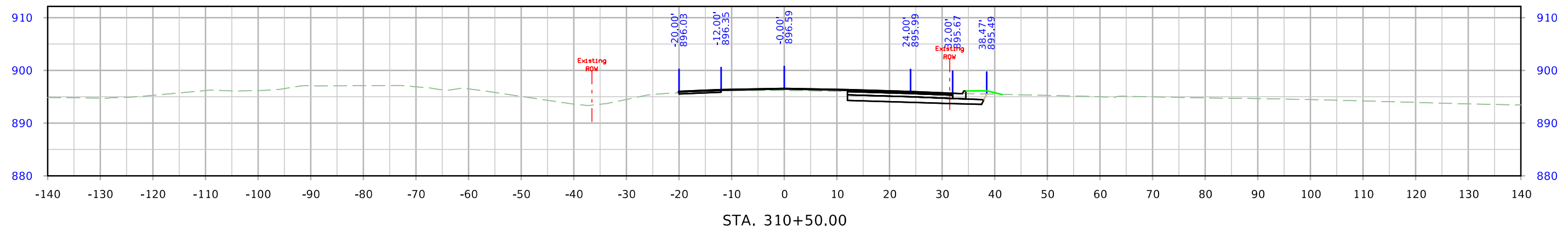
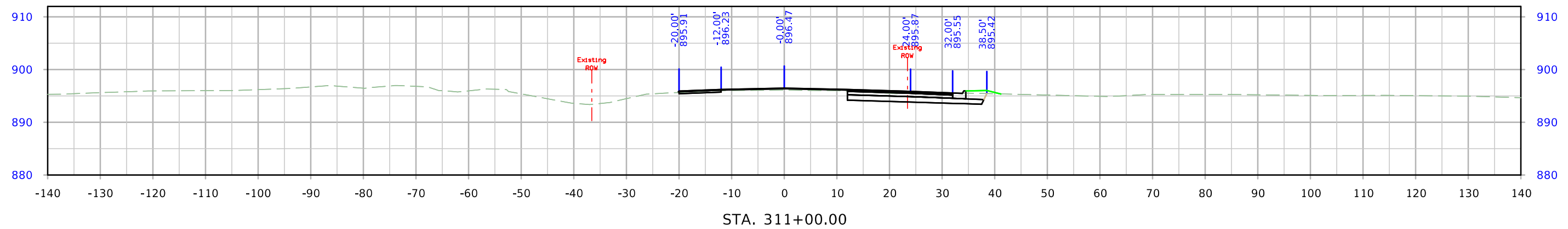
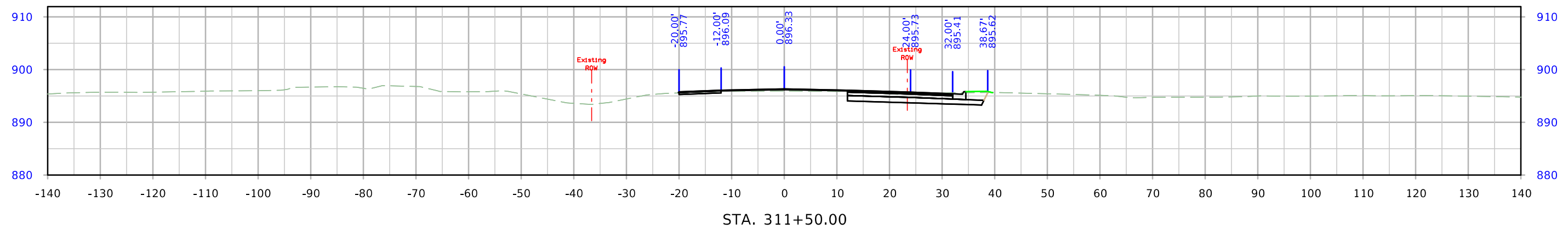


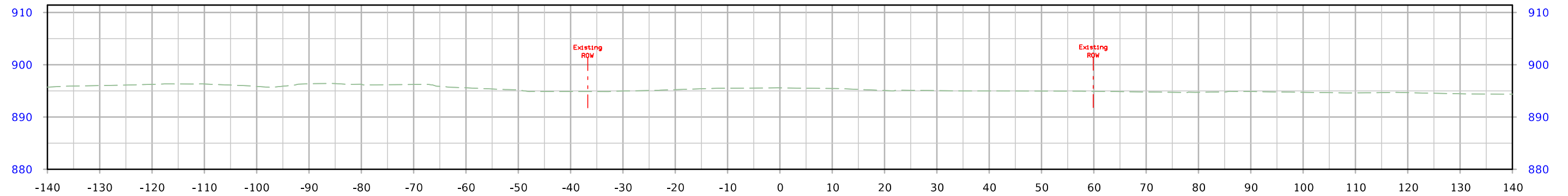




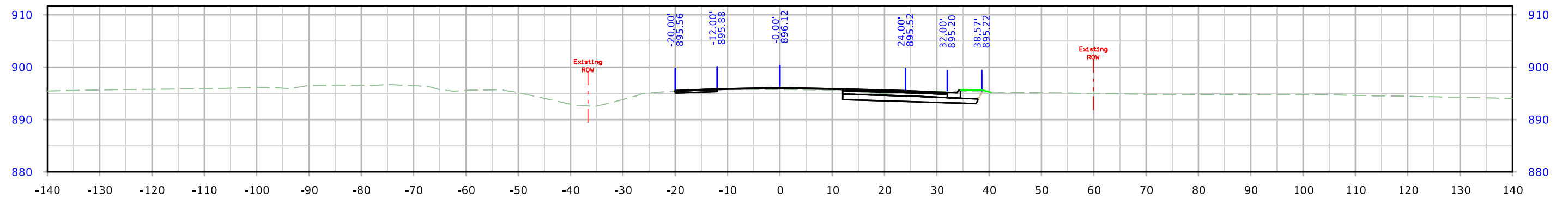




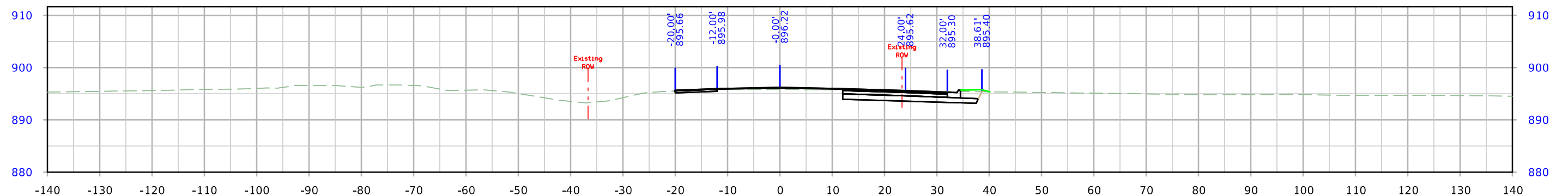




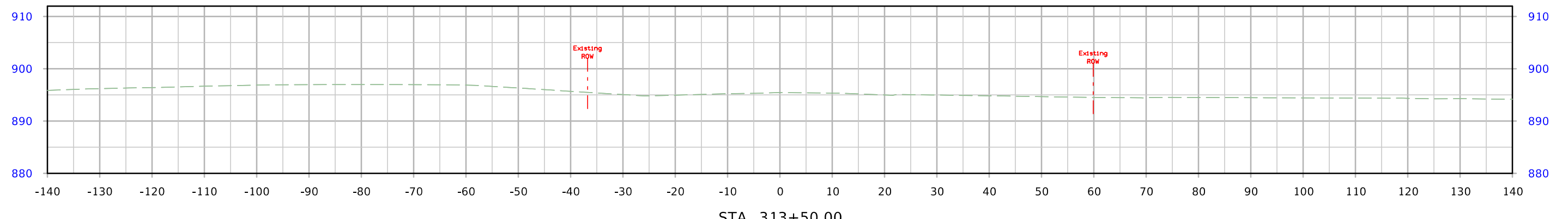
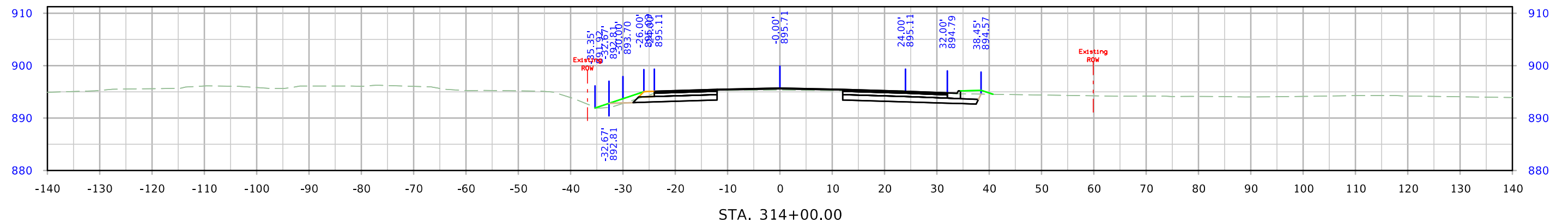
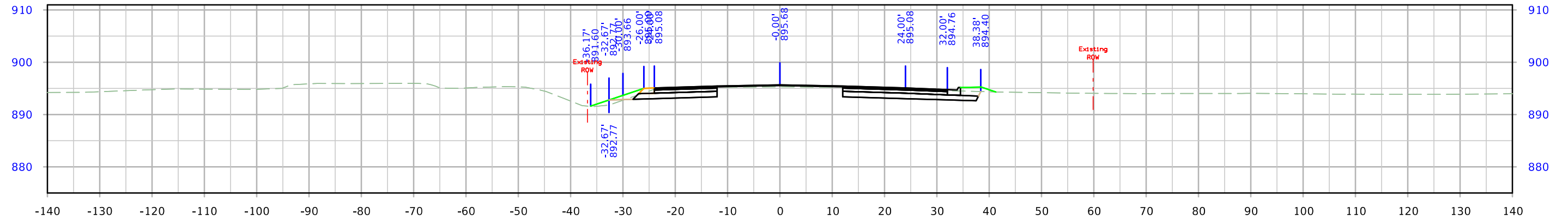
STA. 313+00.00

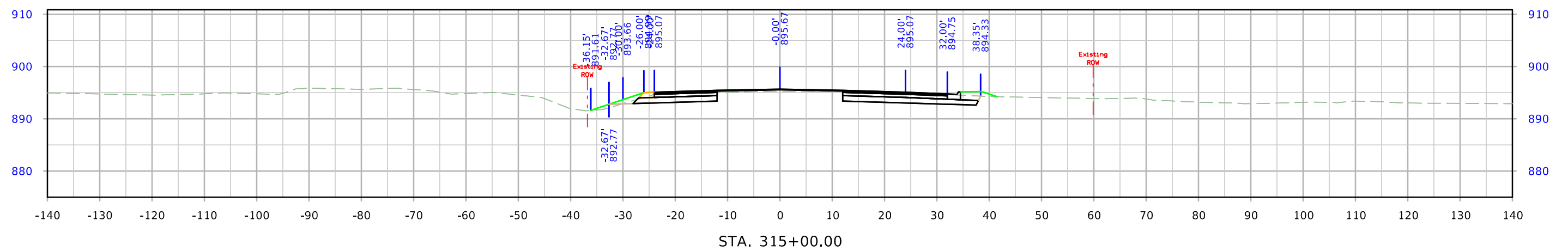
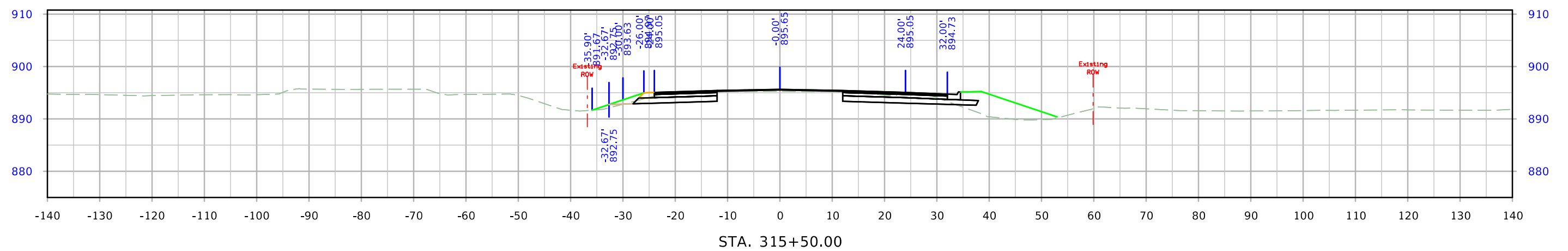
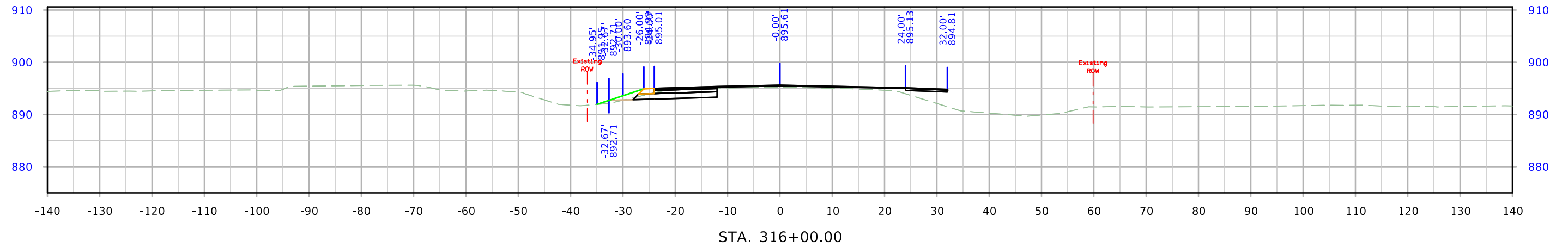


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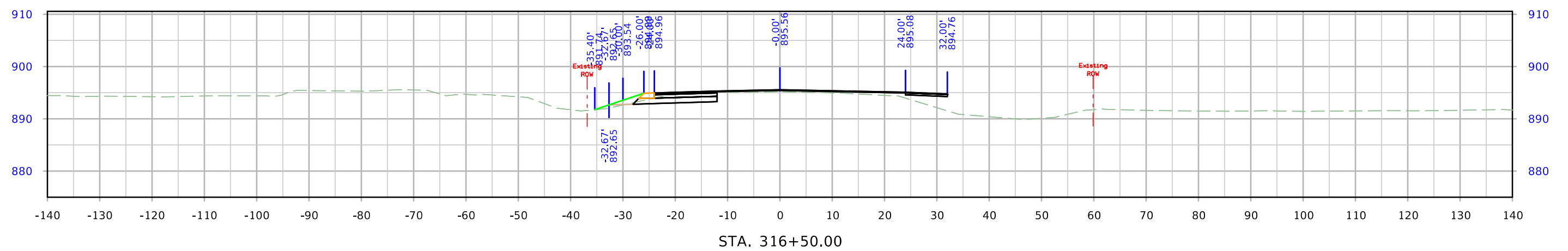
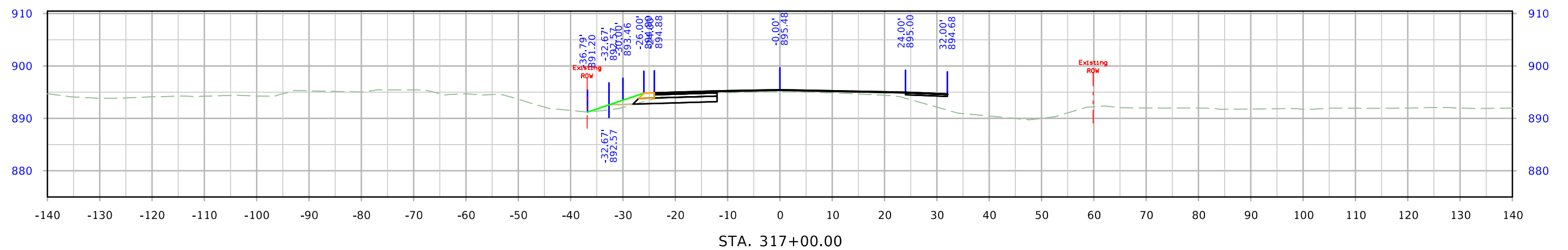
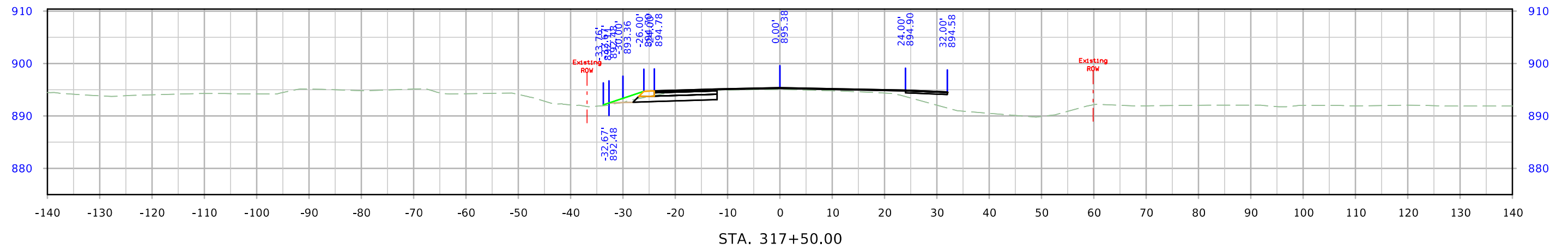


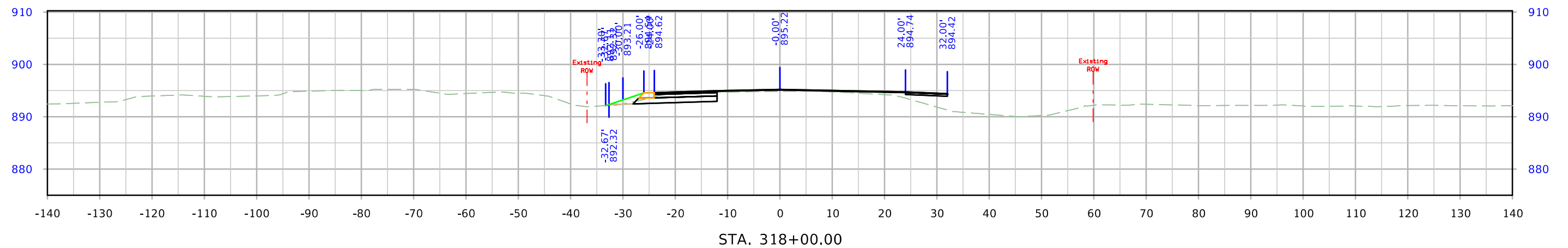
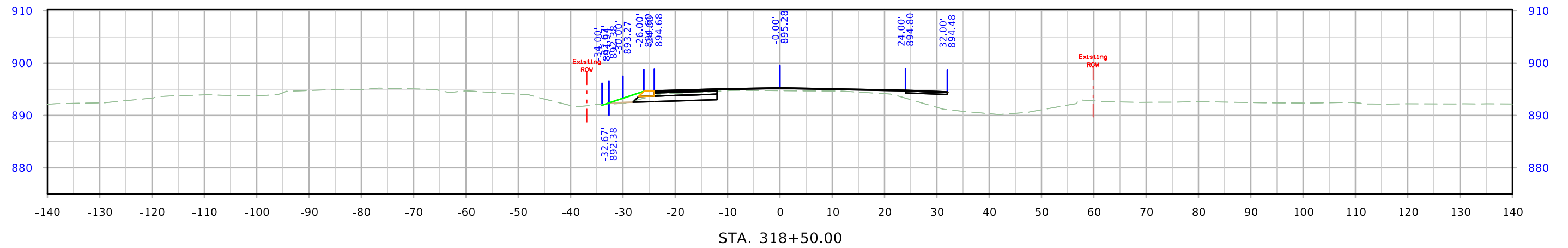
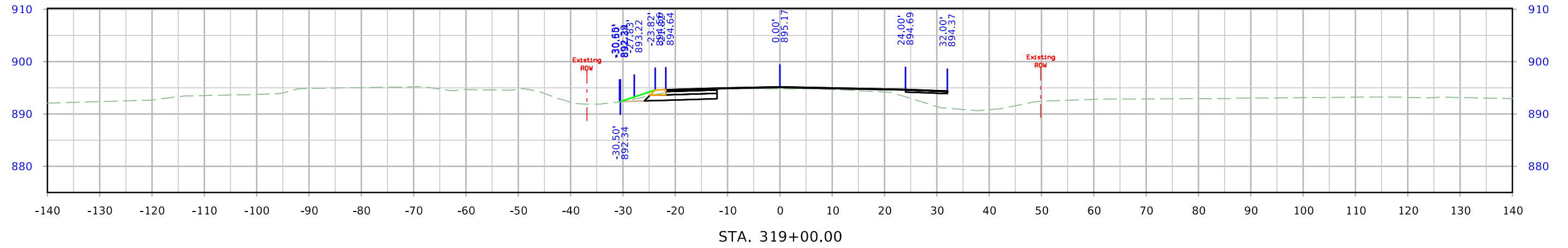
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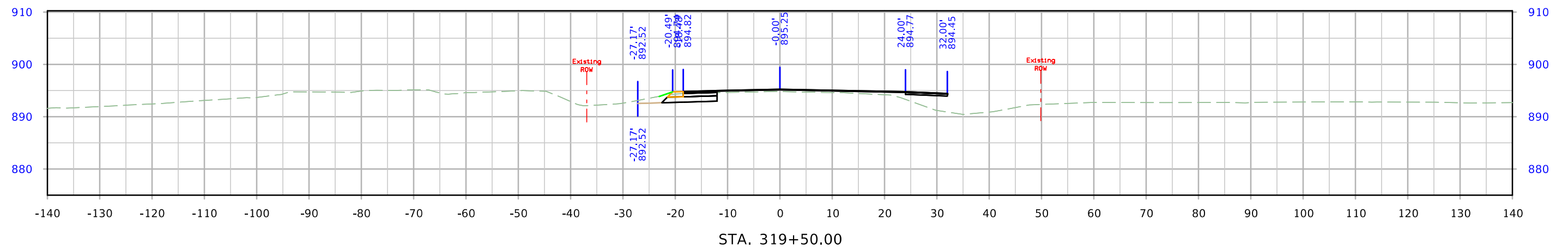
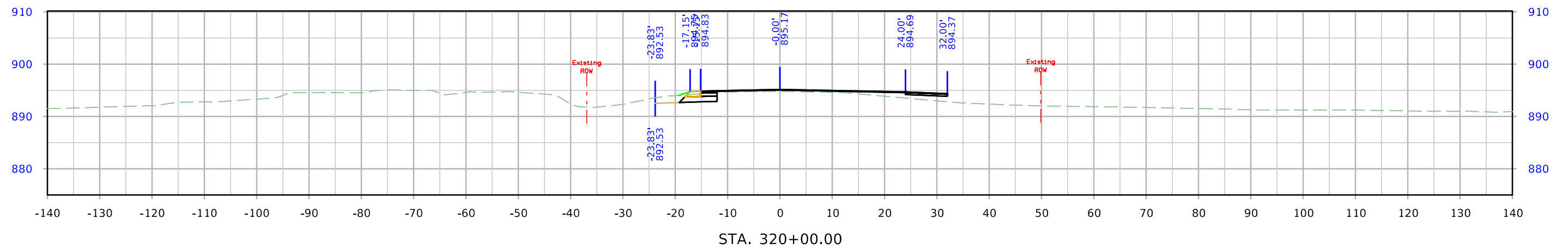
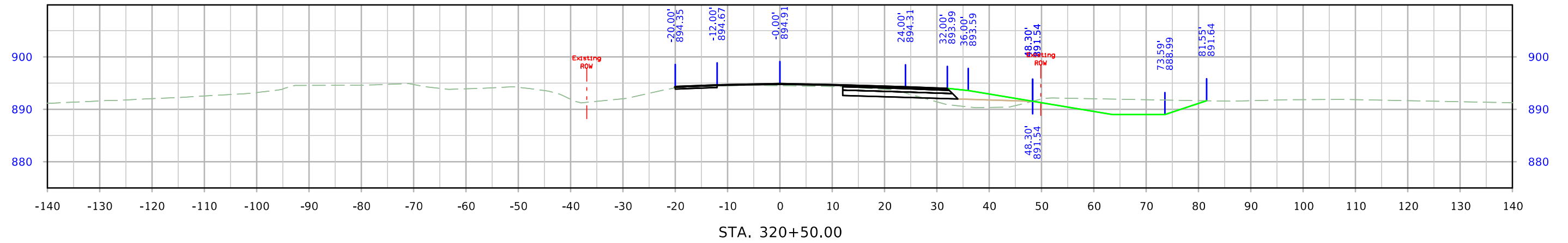


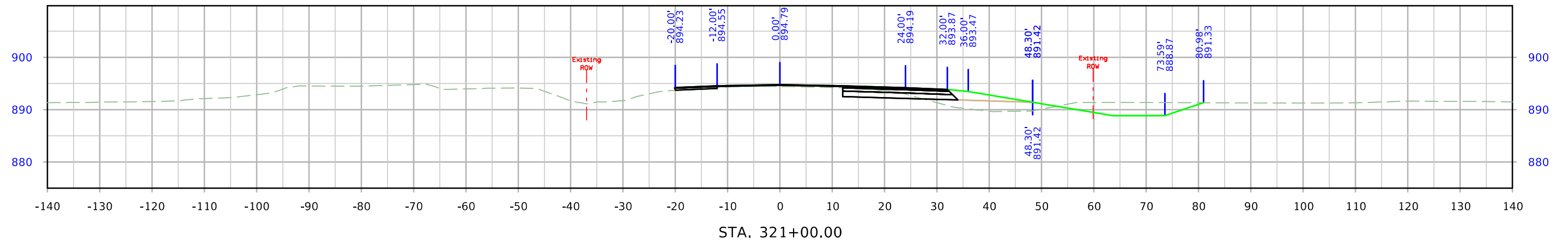




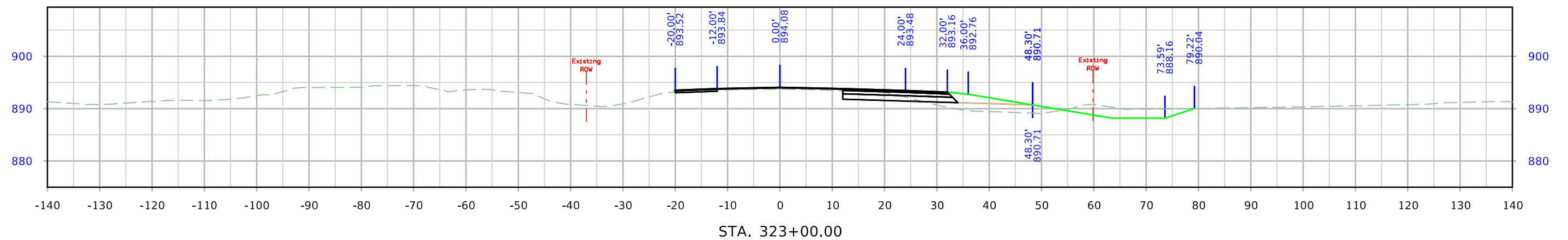
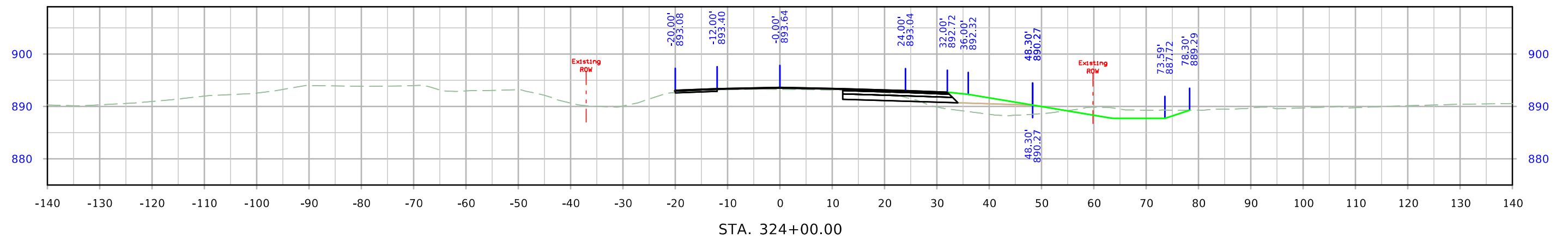
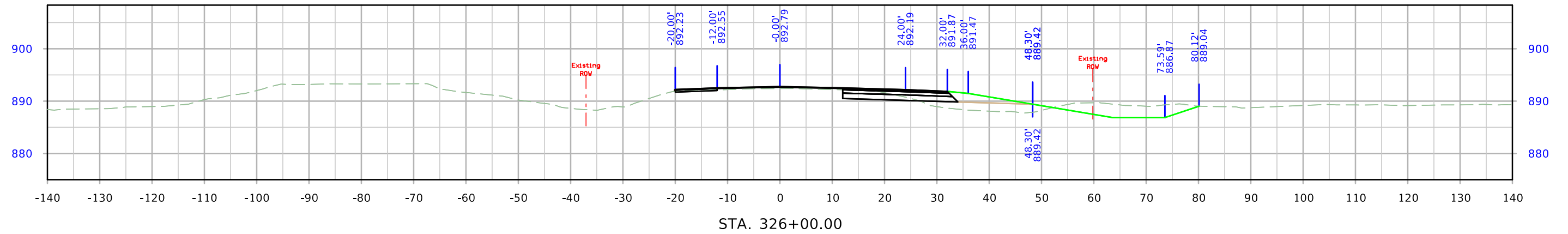


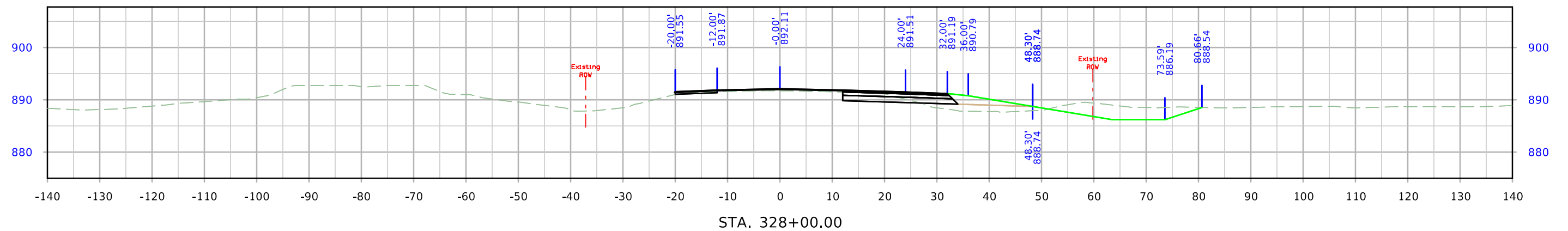
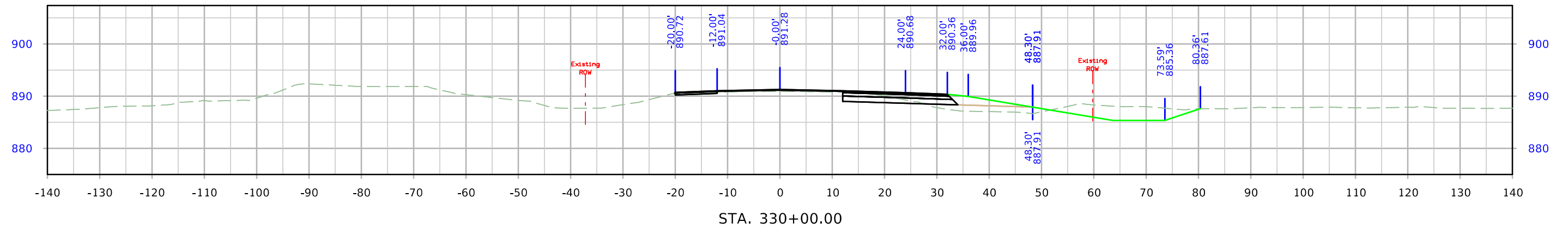
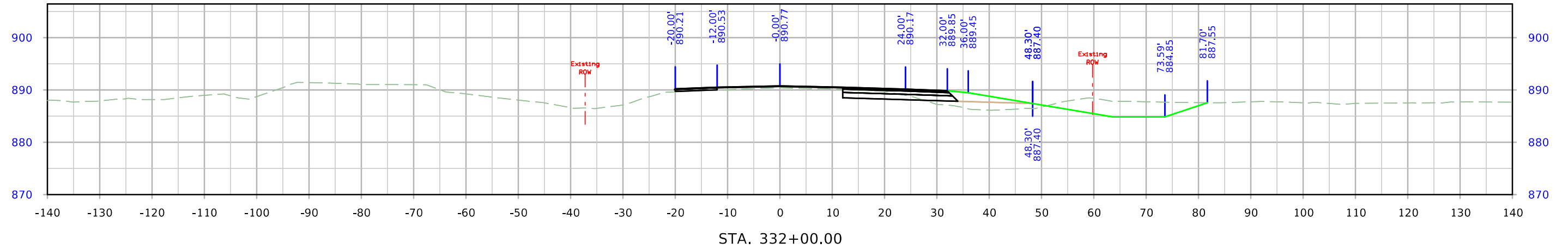


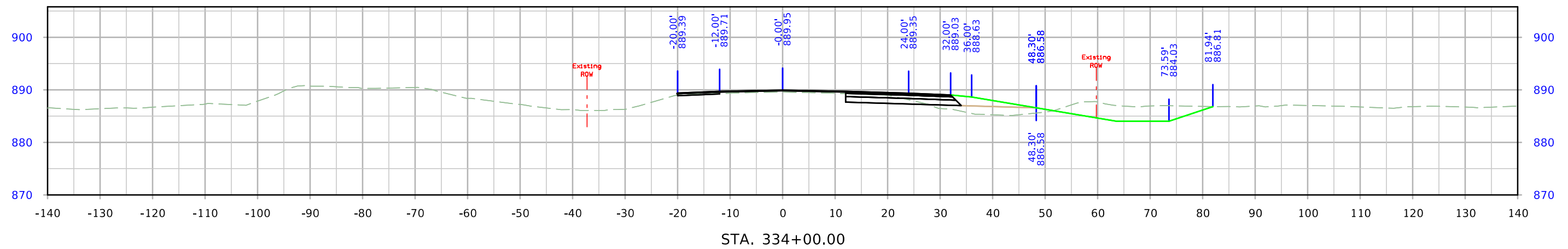
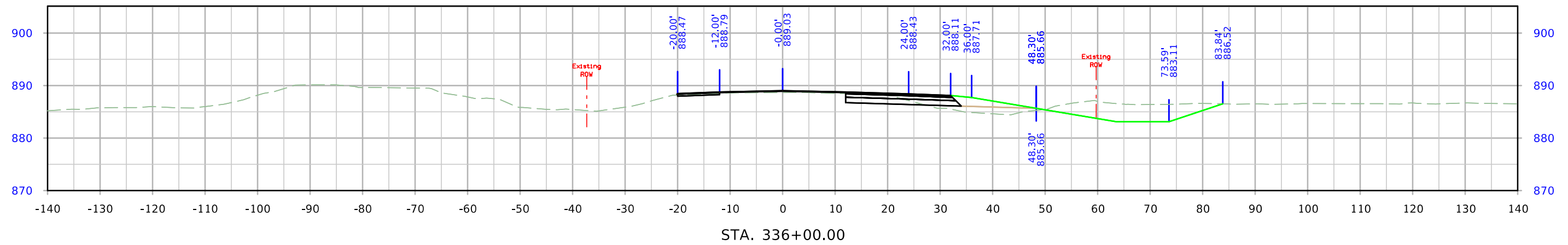
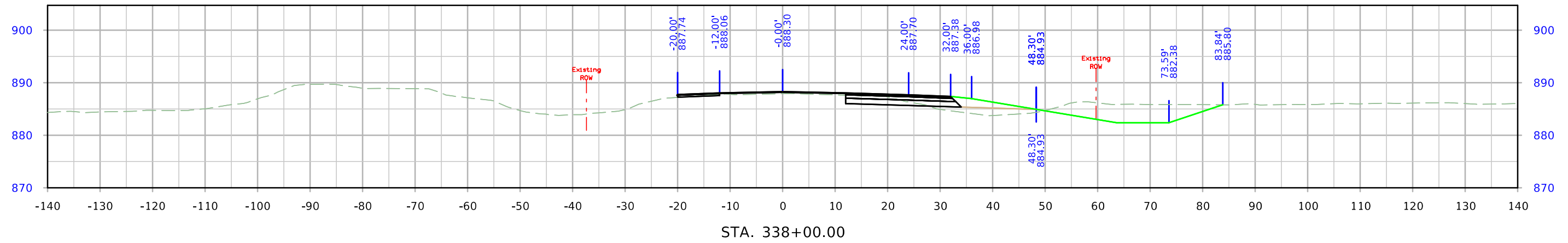


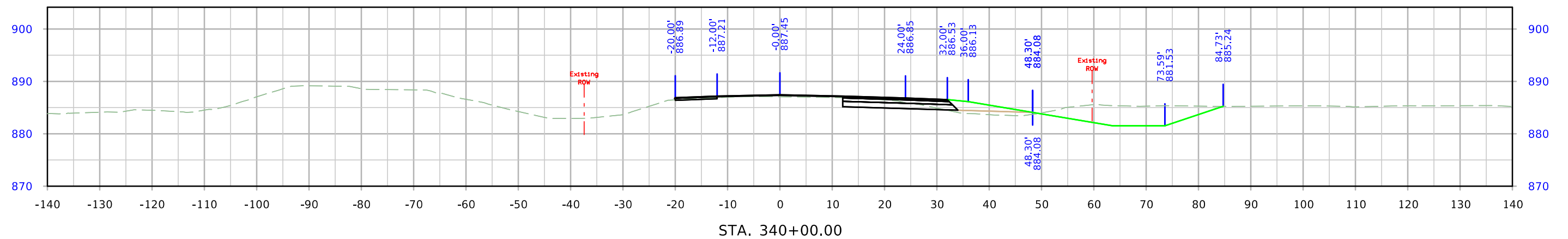
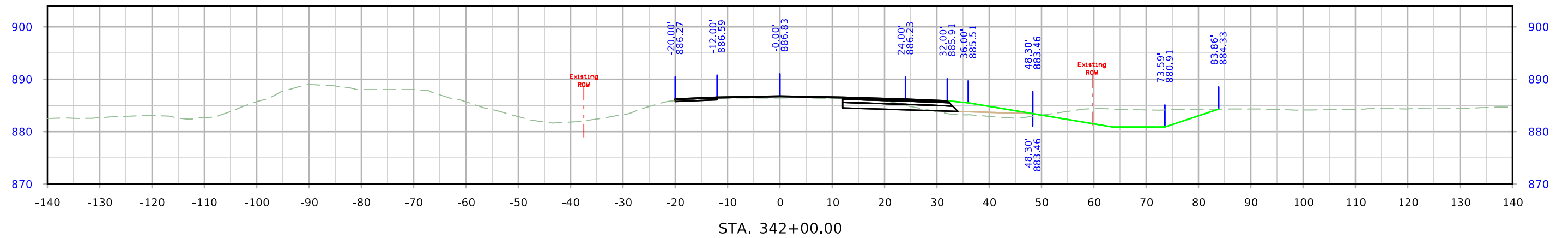
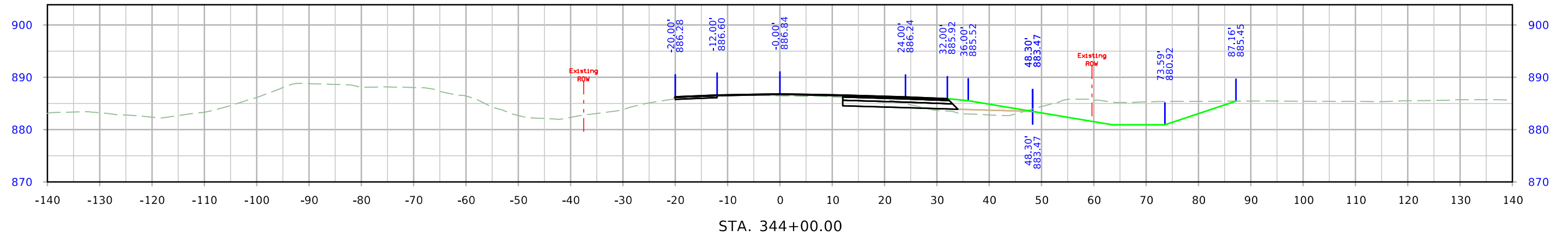


# US 30 EB Passing Lane East of Mechanicsville

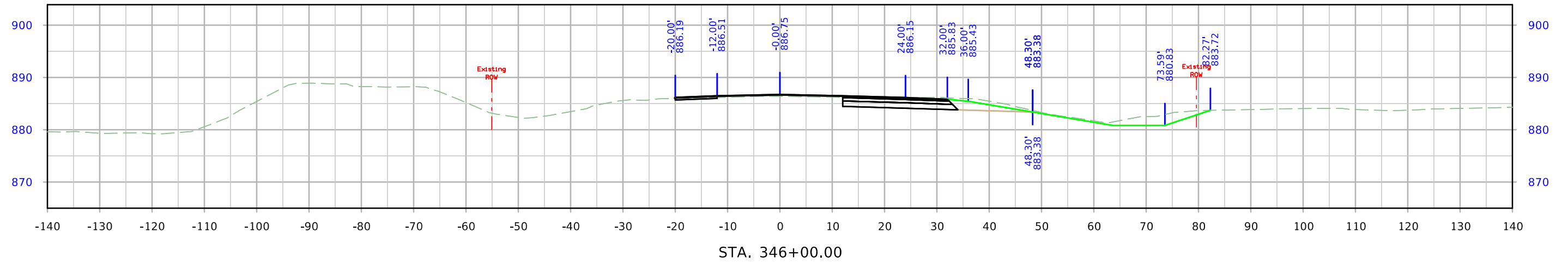
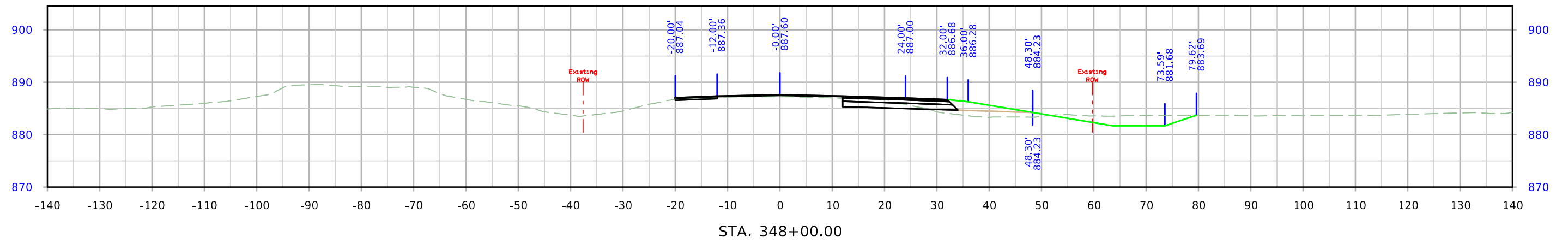
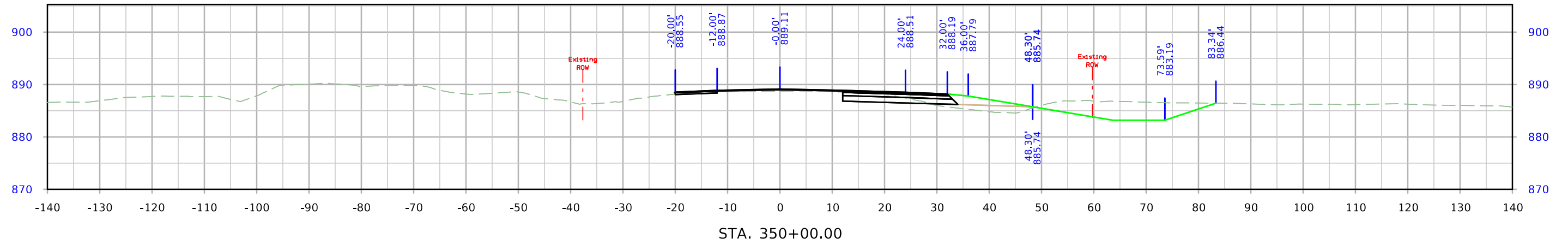


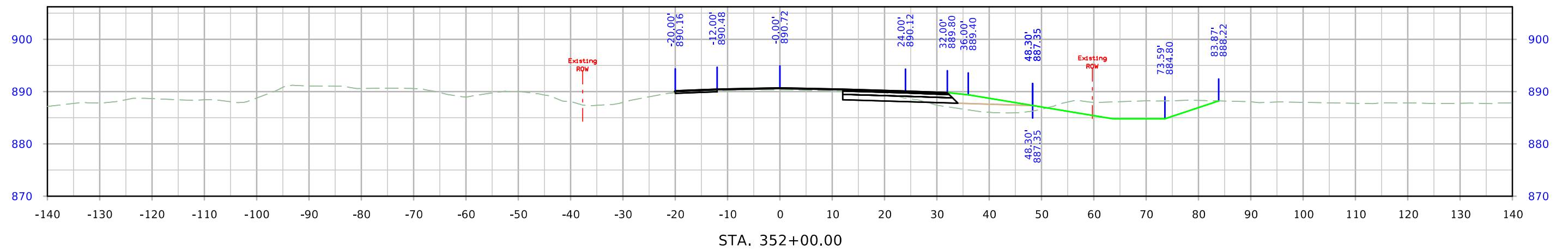
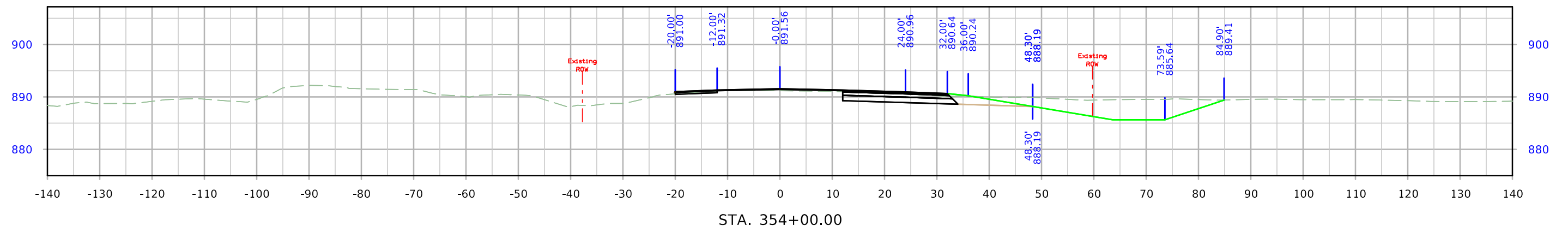
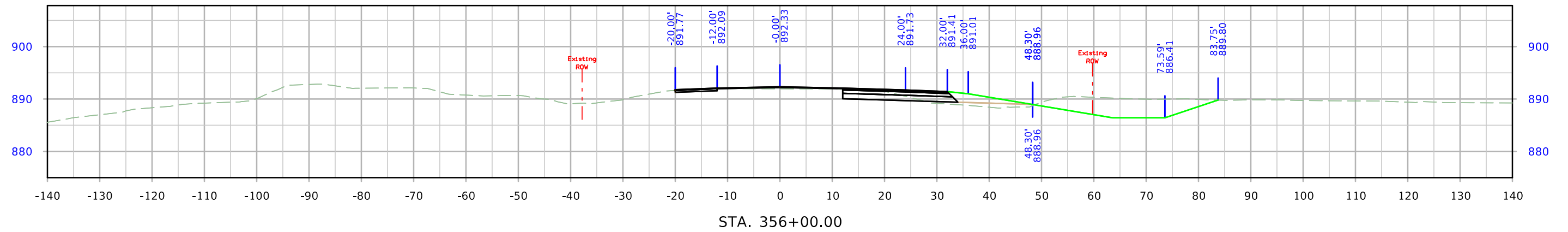


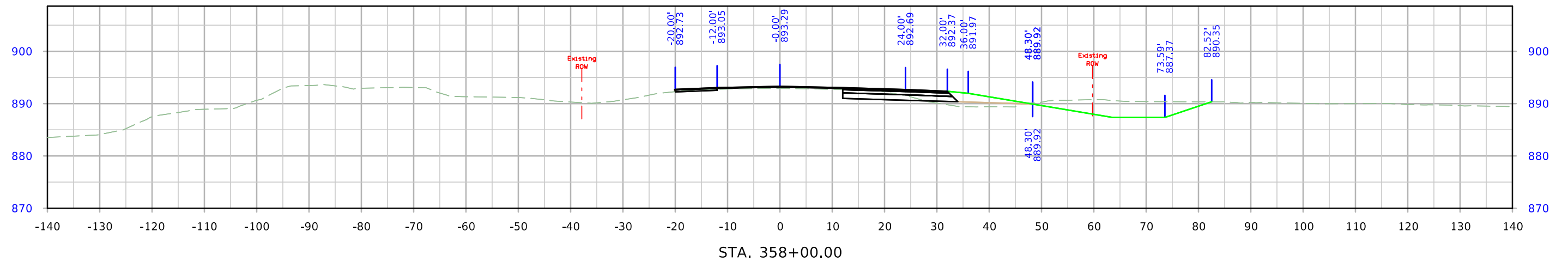
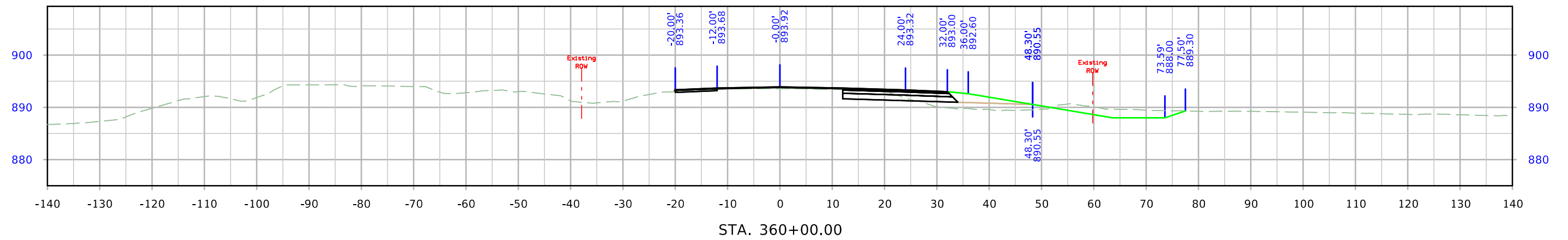
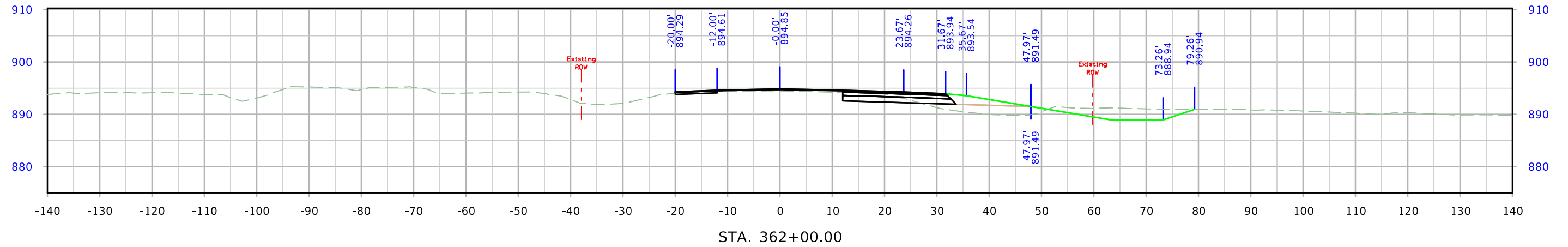


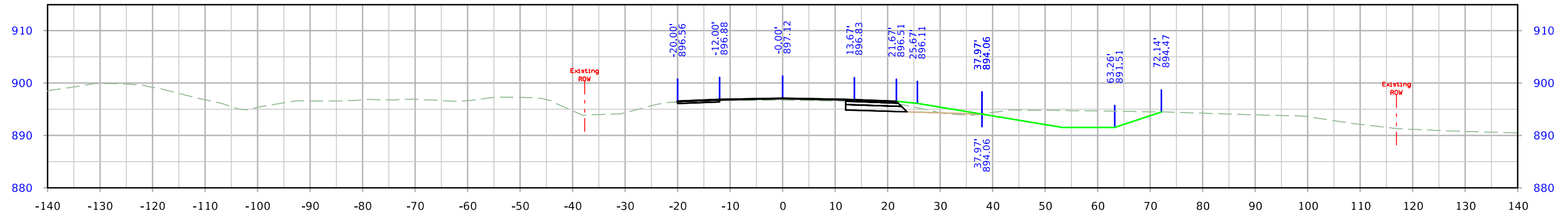




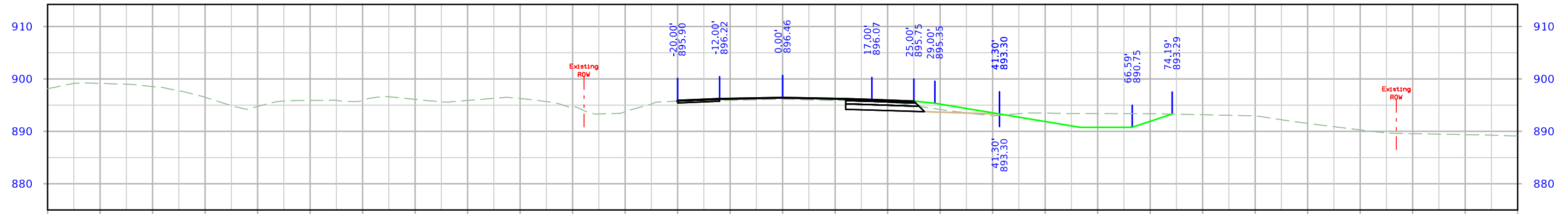




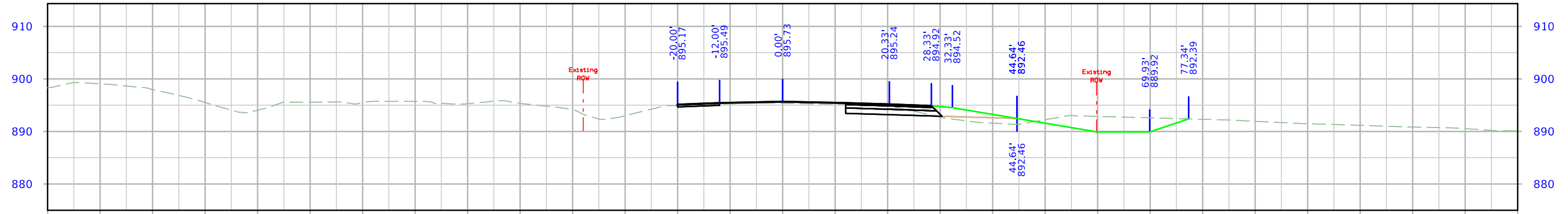




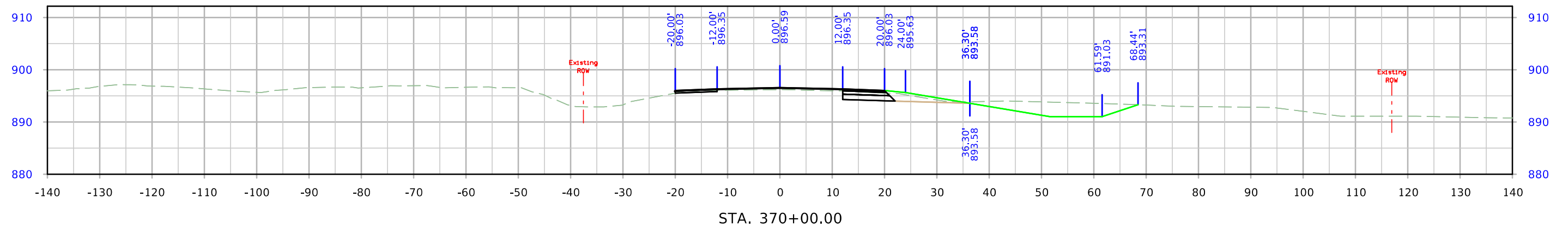
STA. 368+00.00



STA. 366+00.00



STA. 364+00.00



# US 30 WB Passing Lane

