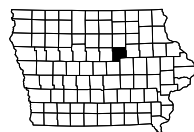


**PIPE CULVERTS**  
**STPN-175-9(23)--2J-38**

LETTING DATE  
**10-20-2020**

**GRUNDY CO.**



**Highway Division**

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM  
**GRUNDY COUNTY**  
 PIPE CULVERTS

E of Co Rd T53 (4 Locations)

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



REVISIONS

TOTAL

16

PROJECT IDENTIFICATION NUMBER

19-38-175-020

PROJECT NUMBER

STPN-175-9(23)--2J-38

R.O.W. PROJECT NUMBER

STPN-175-9(24)--2J-38

**INDEX OF SHEETS**

No.	DESCRIPTION
<b>A Sheets</b>	<b>Title Sheets</b>
A.1	Title Sheet
A.2	Location & Detour Map Sheet
<b>D Sheets</b>	<b>Mainline Plan and Profile Sheets</b>
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2 - 4	IA 175
<b>G Sheets</b>	<b>Survey Sheets</b>
G.1 - 3	Reference Ties and Bench Marks
G.4	Horizontal Control Tab. & Super for all Alignments
<b>J Sheets</b>	<b>Traffic Control and Staging Sheets</b>
J.1	Traffic Control Plan
<b>V Sheets</b>	<b>Culvert Situation Plans</b>
V.1 - 2	Culvert Situation Plans
<b>W Sheets</b>	<b>Mainline Cross Sections</b>
W.1	Cross Sections Legend & Symbol Information Sheet
W.1	Mainline Cross Sections
<b>X Sheets</b>	<b>Side Road Cross Sections</b>
X.1 - 2	Side Road Cross Sections
	* Color Plan Sheets

D9 PLAN - Date: 8-4-2020

Letting - Date: 10-20-2020

**DESIGN DATA RURAL**

2016	AADT	1690	V.P.D.
20--	AADT	--	V.P.D.
20--	DHV	--	V.P.H.
	TRUCKS	17	%
	Total Design ESALs	--	

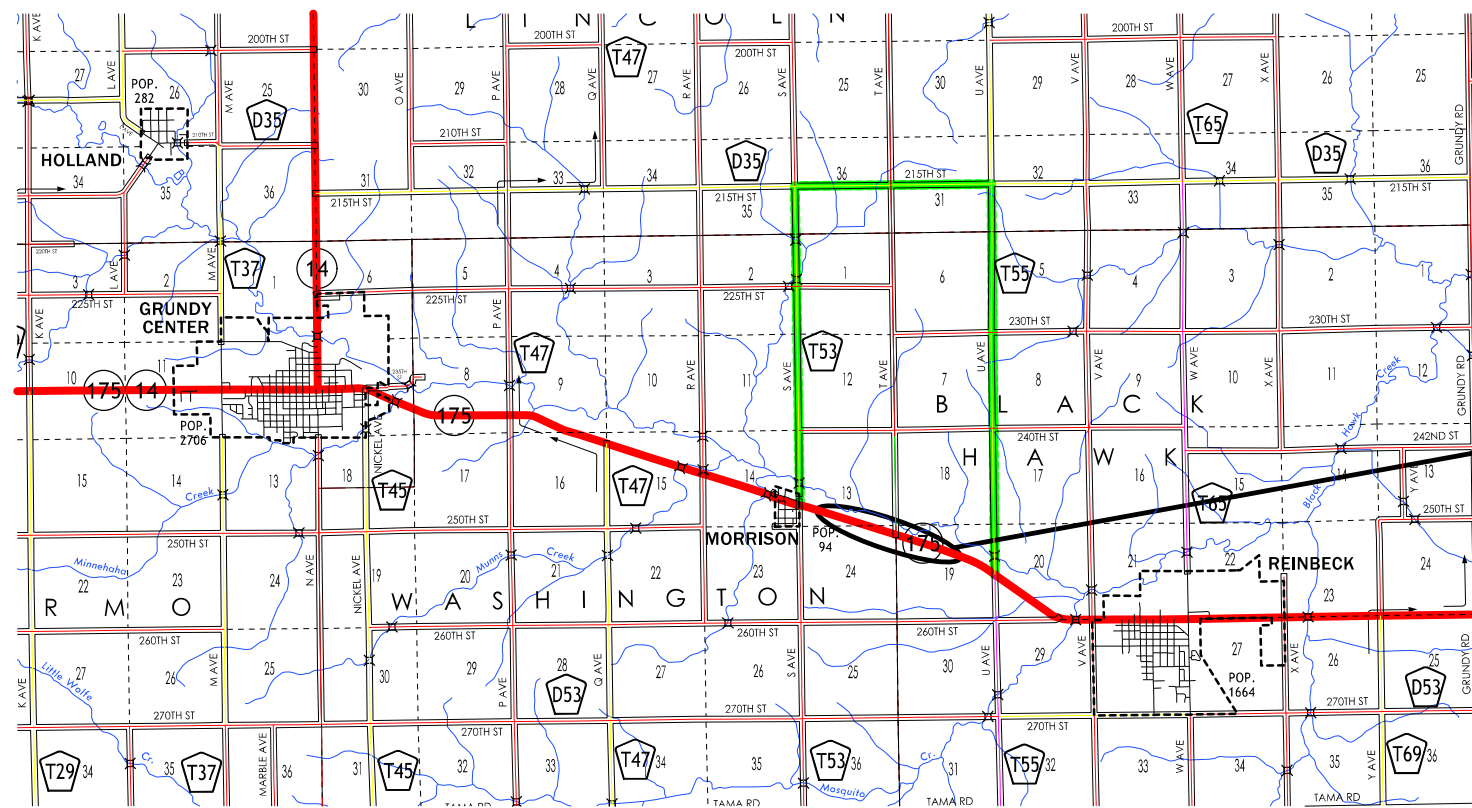
**INDEX OF SEALS**

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

**PRELIMINARY PLANS**

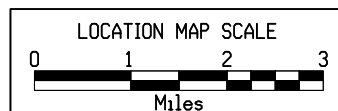
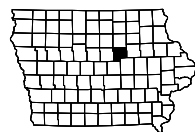
Subject to change by final design.

D5 PLAN - Date: 7-29-2019



Project Location  
Reference Locations:  
209.59, 209.67, 210.48, 210.58

— Detour Route



### SURVEY SYMBOLS

- CP Control Point
- ▲ SCR Section Corner
- SNP Unpaved Shoulder
- ENU Edge Unpaved Entrance & Parking
- EP Edge of Paved Roads (ML or SR)
- C Centerline BL of Road (ML or SR)
- BL Topo Breakline
- PIP Pipe Culvert
- PRO Profile Shot
- SIGN
- D Centerline Draw or Stream (Down)
- GR Ground Shot
- PPA Power Pole Co. 1
- DU Centerline Draw or Stream (Up)
- TILE TIL Tile Line
- FO FO1D Fiber Optic Co. 1 - Quality D
- TDC Tree Deciduous
- INB Storm Sewer Beehive Intake
- HDG Hedge Row
- F02 FO2D Fiber Optic Co. 2 - Quality D
- T1 TL1D Telephone Line Co. 1 - Quality D
- W WL1D Water Line Co. 1 - Quality D
- ENP Edge Paved Entrance & Park Lot
- TRL Trail
- \*\*\*\*\* RIP Rip-Rap
- SOP Size of Pipe or Culvert
- REF Reference Tie Point

### UTILITY LEGEND

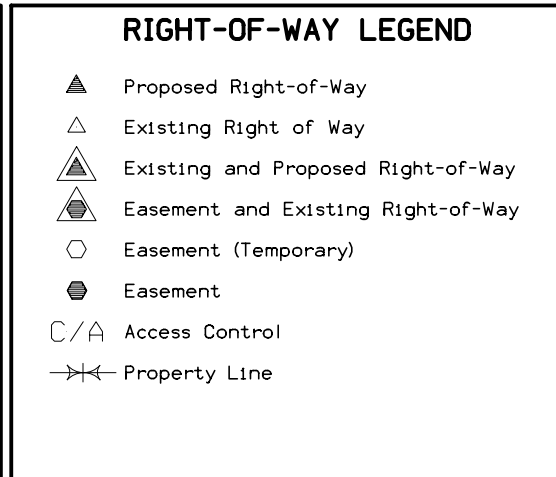
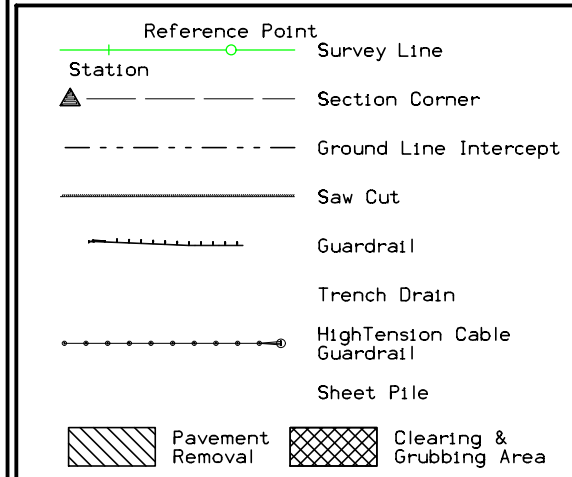
- F02- Windstream Communications  
Chris Cook  
236 W Maple  
Centerville, IA 52544  
(641) 437-4826  
christopher.l.cook@windstream.com
- Alliant Energy  
Gordon Sellers  
1284 XE Place  
Ames, IA 50014  
(515) 268-3436  
gordonsellers@alliantenergy.com
- T1- Windstream Communications  
Chris Cook  
236 W Maple  
Centerville, IA 52544  
(641) 437-4826  
christopher.l.cook@windstream.com
- TV- Grundy Center Municipal Utilities  
Jeff Carson  
706 6th St.  
Grundy Center, IA 50638-1536  
(319) 825-5207  
gcmuni@gcmuni.net
- W- Iowa Regional Utilities Association  
Micheal Madren  
3801 Iowa Speedway Drive  
Newton, IA 50208  
(641) 792-7011  
mmadren@irua.net

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

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

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

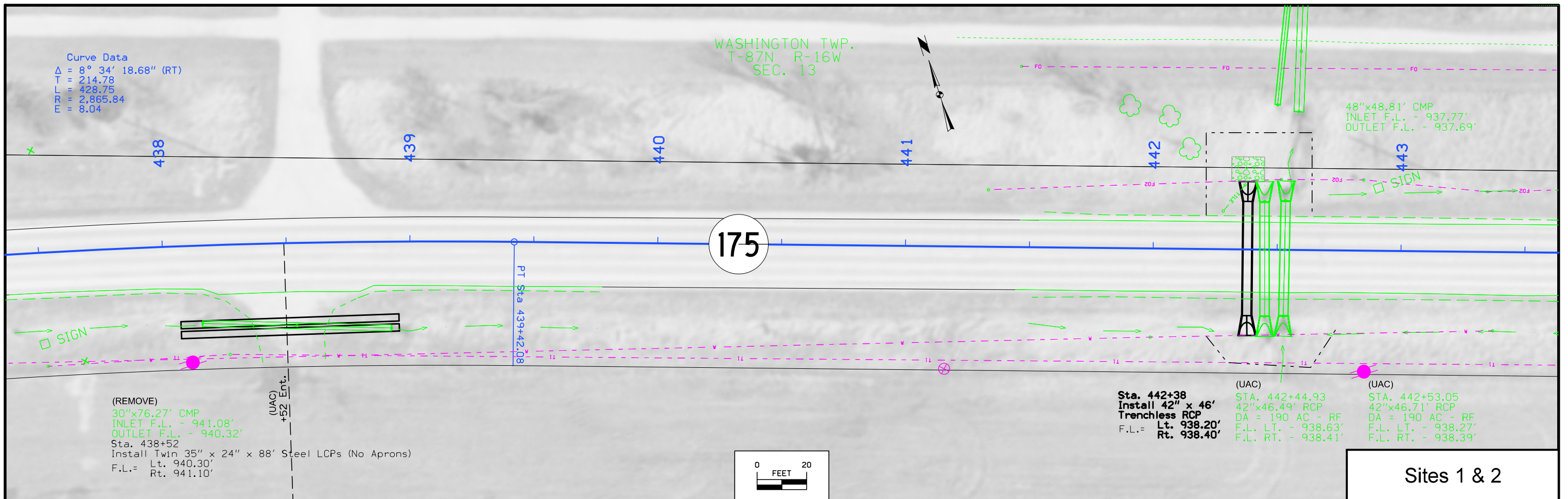
LINEWORK	Design Color No.	
Green	(2)	Existing Ground Line Profile
Blue	(1)	Proposed Profile and Annotation
Magenta	(5)	Existing Utilities
Blue, Light	(230)	Proposed Ditch Grades, Left
Black	(0)	Proposed Ditch Grades, Median
Rust	(14)	Proposed Ditch Grades, Right



PLAN AND PROFILE  
LEGEND AND SYMBOL  
INFORMATION SHEET  
(COVERS SHEET SERIES D, E, F, & K)

Curve Data  
 $\Delta = 8^\circ 34' 18.68''$  (RT)  
 $T = 214.78$   
 $LC = 428.75$   
 $ER = 2,865.84$   
 $E = 8.04$

WASHINGTON TWP.  
 T-87N R-16W  
 SEC. 13



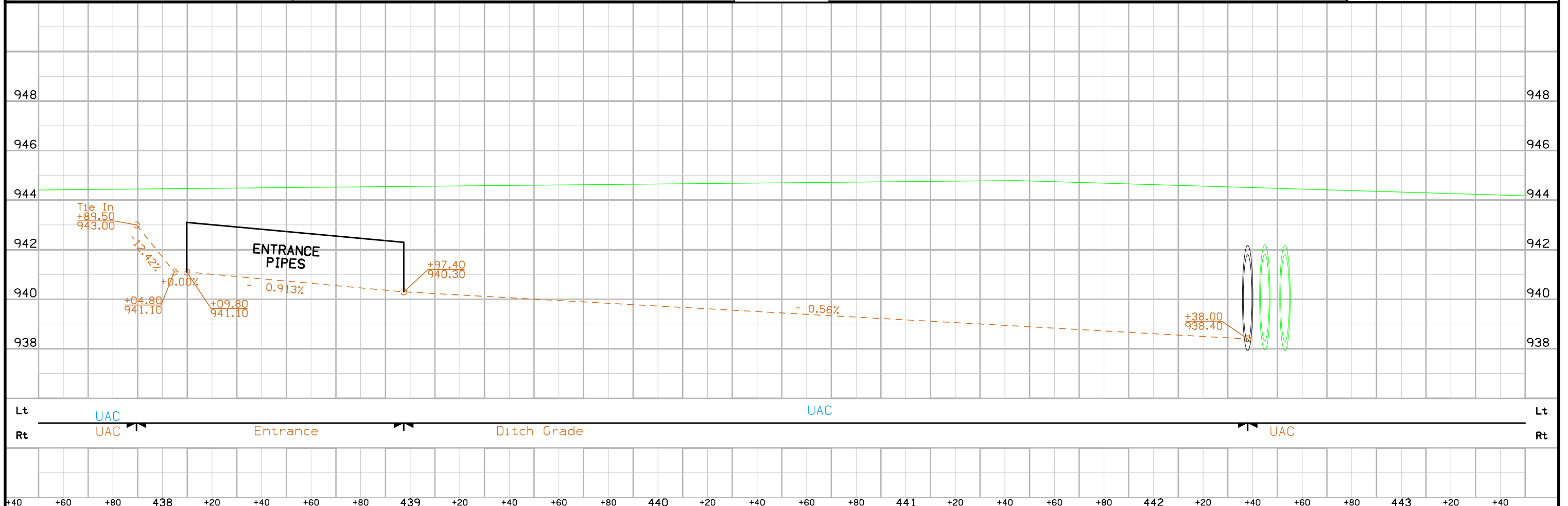
(REMOVE)  
 30"x76.27' CMP  
 INLET F.L. - 941.08'  
 OUTLET F.L. - 940.32'  
 Sta. 438+52  
 Install Twin 35" x 24" x 88' Steel LCPs (No Aprons)  
 F.L. = Lt. 940.30'  
 Rt. 941.10'

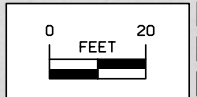
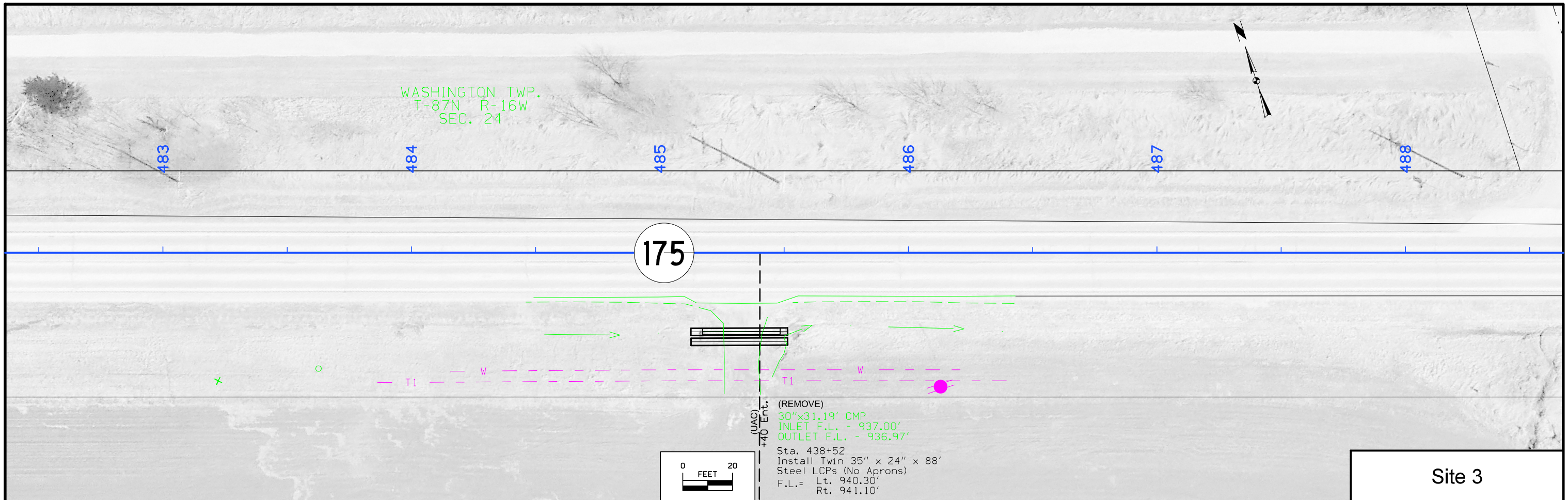
Sta. 442+38  
 Install 42" x 46'  
 Trenchless RCP  
 F.L. = Lt. 938.20'  
 Rt. 938.40'

(UAC)  
 STA. 442+44.93  
 42"x46.49' RCP  
 DA = 190 AC - RF  
 F.L. LT. - 938.63'  
 F.L. RT. - 938.41'

(UAC)  
 STA. 442+53.05  
 42"x46.71' RCP  
 DA = 190 AC - RF  
 F.L. LT. - 938.27'  
 F.L. RT. - 938.39'

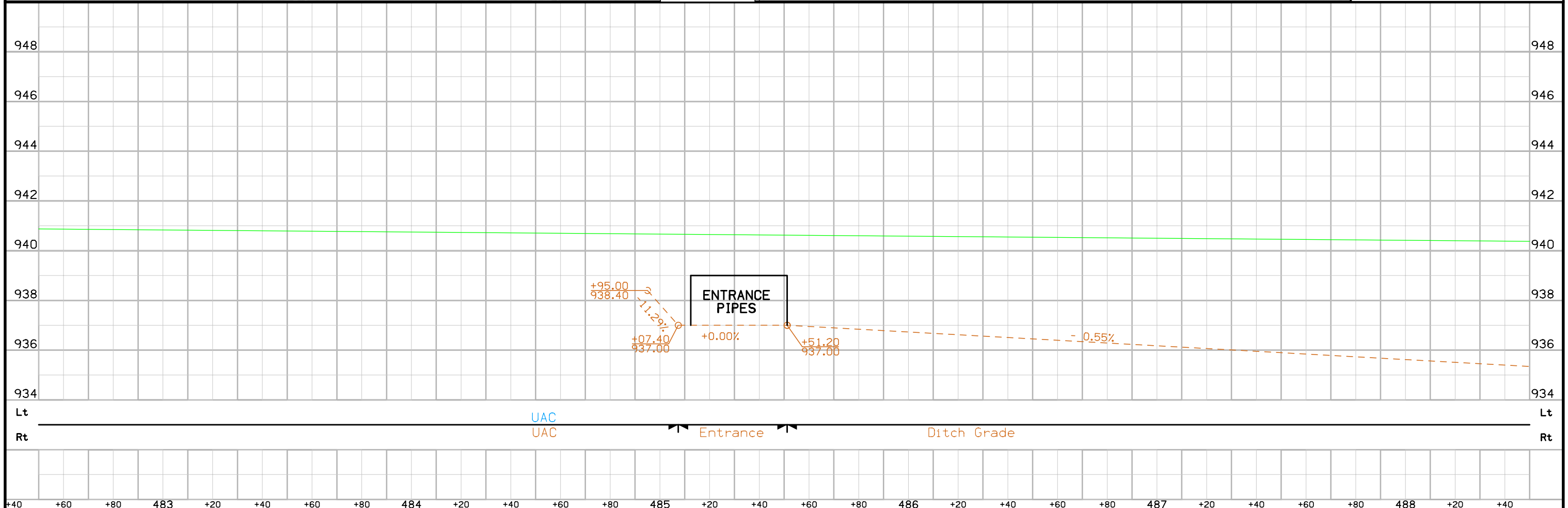
Sites 1 & 2



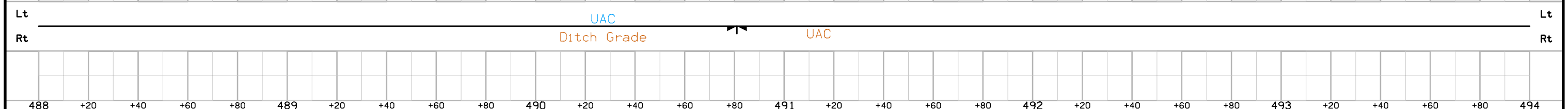
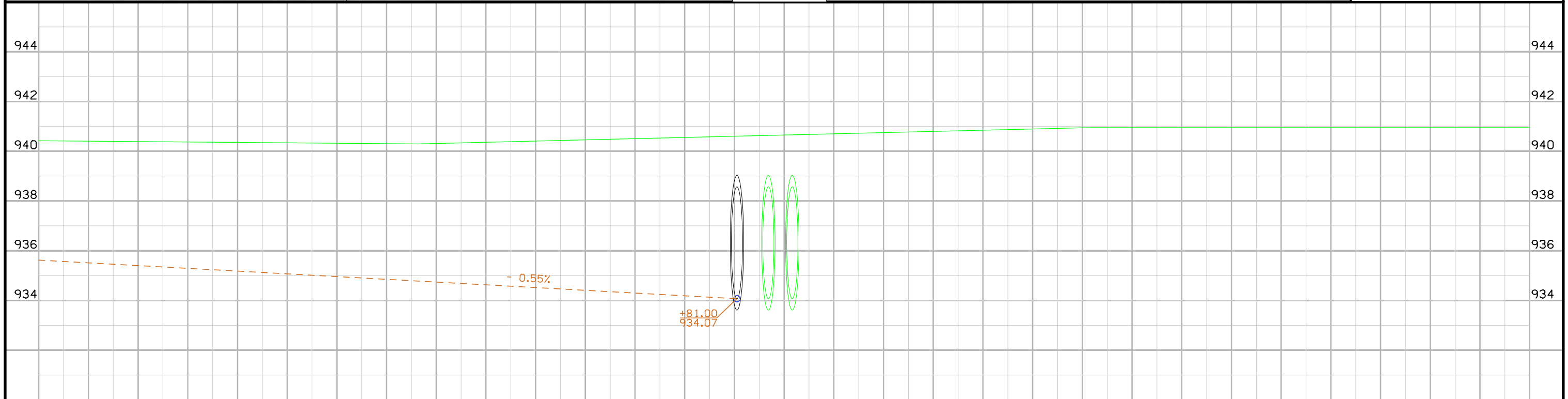
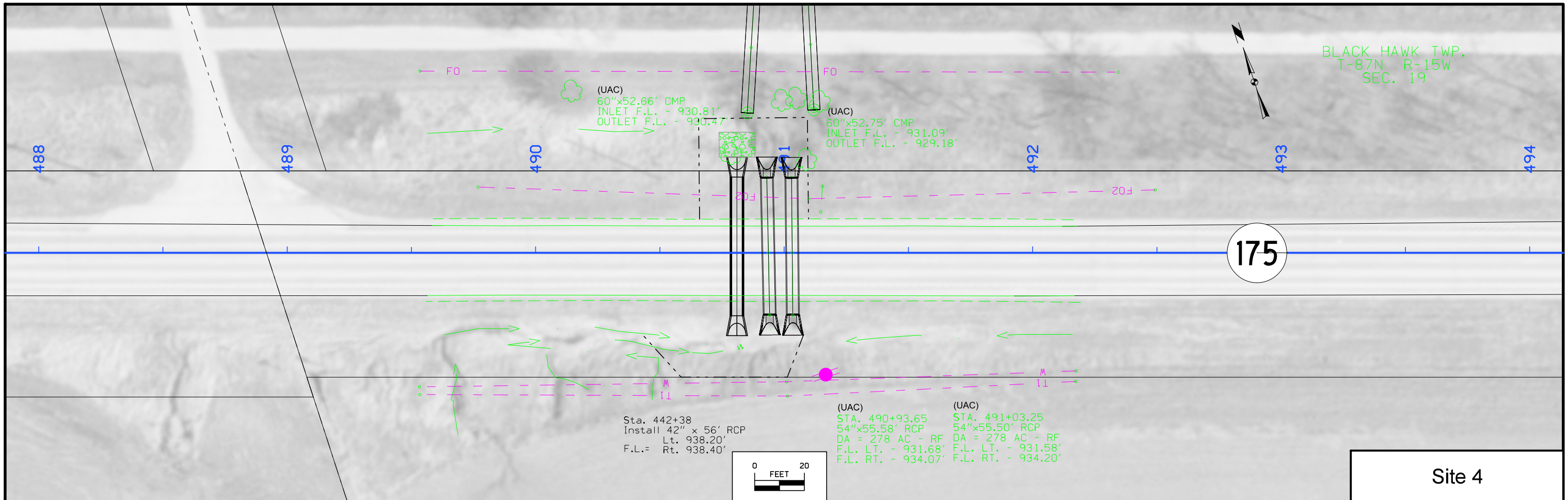


(REMOVE)  
 30"x31.19' CMP  
 INLET F.L. - 937.00'  
 OUTLET F.L. - 936.97'  
 Sta. 438+52  
 Install Twin 35" x 24" x 88'  
 Steel LCPs (No Aprons)  
 F.L.= Lt. 940.30'  
 Rt. 941.10'

Site 3



FILE NO. ENGLISH DESIGN TEAM **Gustafson \ Smyth** GRUNDY COUNTY PROJECT NUMBER **STPN-175-9(23)--2J-38** SHEET NUMBER **D.3**



County: Grundy  
PIN: 19-38-175-020  
Project Number: STPN-175-9(23)--2J-38  
Location: In Grundy Co., east of Morrison on Ia175. Four sites at Sta. 438+00+/-, 442+38+/-, 485+40+/-, & 490+81+/-.  
Type of Work: Ditch reshaping with drainage pipe updates at each site.  
Project Directory: 3817502019

#### General Information

Measurement units for this survey are U.S. survey feet. This survey was completed to assist in the design of reshaping ditches and updating failing drainage pipes at four sites (Sta. 438+00+/-, 442+38+/-, 485+40+/-, & 490+81+/-) on Ia175 in Grundy Co., just east of the town of Morrison.

#### Vertical Control

The vertical datum for this survey is NAVD88. The vertical control for this project is relative to said datum, computed using GEOID 12a, and is dependent on the Iowa Real-Time Network (IaRTN) reference stations. Control point elevations were established by 5 redundantly averaged RTK GPS shots utilizing the IaRTN.

#### Horizontal Control

The horizontal project coordinate system basis for this survey is from the Iowa Regional Coordinate System Zone 9 projection. The Geodetic Datum is NAD83 (2011) EPOCH 2010.0. Control Point horizontal coordinate positions were established by 5 redundantly averaged RTK GPS shots utilizing the Iowa Real-Time Network.

#### Alignment Information

The horizontal alignment for Ia175 is a retrace of as-built plan F-175-9(6)--20-38. Stationing was held at PI 437+28.11 and was ran back and ahead without equation.

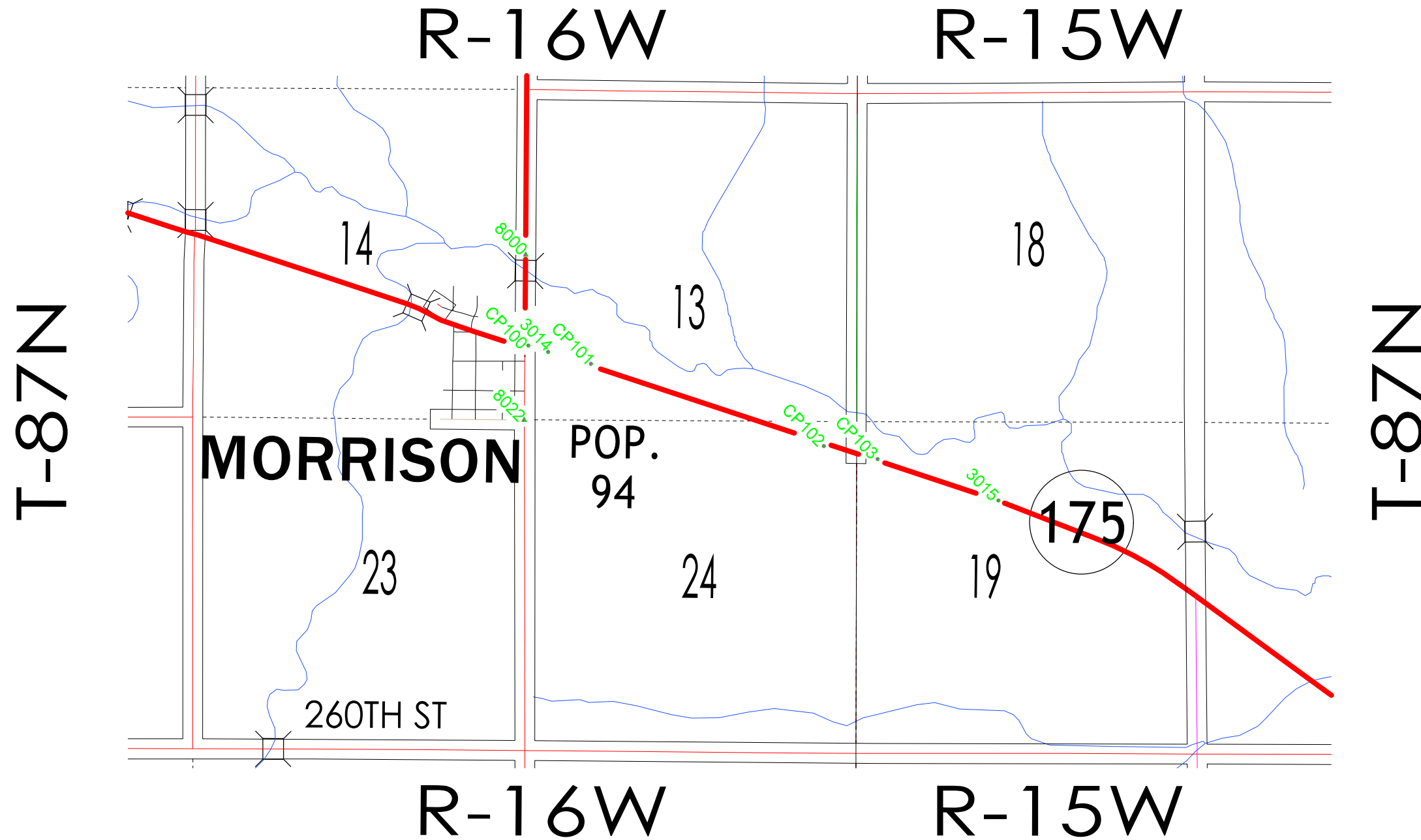
Survey stationing relates to as-built stationing as follows:

PI Sta. 437+28.11 (F-175-9(6)--20-38) = PI Sta. 437+28.11 (this survey)  
Found Hinge nail in A/C mat. surface.

PI Sta. 512+75.43 (F-175-9(6)--20-38) = PI Sta. 512+75.56 (this survey)  
Found hinge nail in A/C mat. surface.

**CONTROL POINT VICINITY MAP**

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



HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

1a. Regional Coordinate System Zone 5

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



# HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 5

Point Number	Northing	Easting	Elevation	Feature Code	Description
CP100	8788566.65	15386297.19	946.96	CP	SET 5/8" RE-ROD (FLUSH)
CP101	8788272.16	15387294.17	942.89	CP	SET 5/8" RE-ROD (FLUSH)
CP102	8786964.88	15391002.33	940.23	CP	SET 5/8" RE-ROD (FLUSH)
CP103	8786754.55	15391858.71	937.68	CP	SET 5/8" RE-ROD (FLUSH)
3014	8788463.23	15386615.61		CP	P.I. STA. 437+28.11 FOUND HINGE NAIL
3015	8786095.32	15393782.84		CP	P.I. STA. 512+75.43 FOUND HINGE NAIL
8000	8790011.12	15386256.73		SCR	W 1/4 13-87N-16W FOUND 3/8" RE-ROD (5" DEEP)
8022	8787377.93	15386232.68		SCR	SW COR. 13-87N-16W FOUND 1/2" RE-ROD (4" DEEP)

**ALIGNMENT COORDINATES**

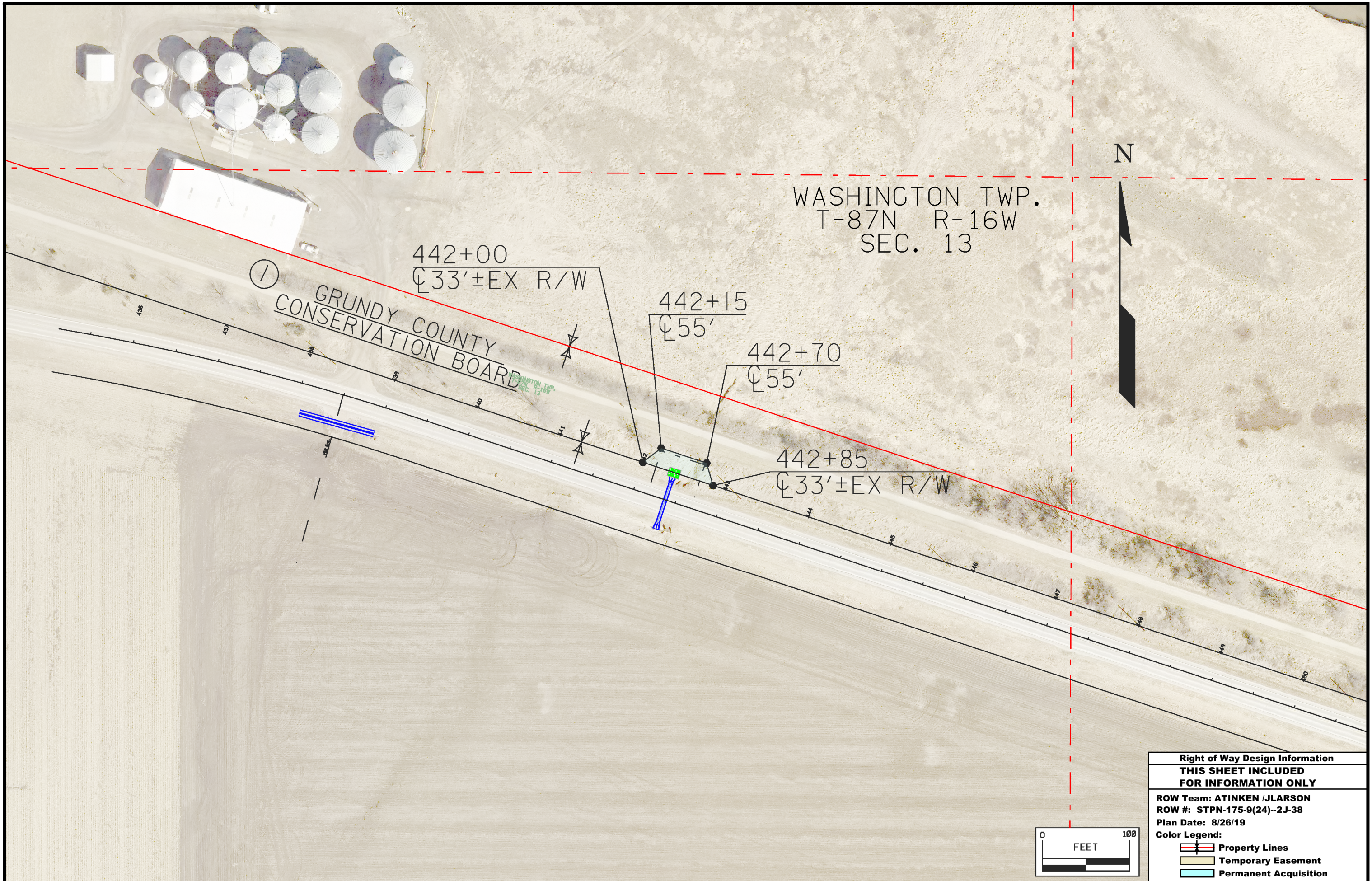
Name	Location	Point on Tangent		Begin Spiral		Begin Curve		Simple Curve PI or Master PI of SCS			End Curve		End Spiral			
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
ROWMLA175						435+13.33 R1	8788499.46	15386403.91	437+28.11 R1	8788463.23	15386615.61	439+42.08 R1	8788395.86	15386819.54		
ROWMLA175						511+24.36 R1	8786142.76	15393639.27	512+75.56 R1	8786095.32	15393782.84	514+26.69 R1	8786040.39	15393923.71		
Ent485		0+00.00 R1	8786953.40	15391185.61												
Ent485		1+00.00 R1	8786858.53	15391153.99												
Ent438		0+00.00 R1	8788423.60	15386730.76												
Ent438		2+00.02 R1	8788230.98	15386676.84												

**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	ROWMLA175												8°34'18.7"	214.776	428.750	2866	8.037
C2	ROWMLA175												3°01'19.4"	151.200	302.330	5732	1.994

NO ACCESS RIGHTS ARE TO BE ACQUIRED ON THIS PROJECT.

Grundy	ROW: STPN-175-9(24)--2J-38			PIN	19-38-175-020														
	E of Co Rd T53 (4 Locations)																		
		STATE			COUNTY			CITY			TEMP EASE		BORROW						
PARCEL NO	OWNER NAME	FEE	EASE	FEE	EASE	FEE	EASE	EXCESS			FEE	T.E.	MITIGATION	OTHER	HOUSE	BUILDING(S)	A/C ONLY	TOTAL ACQ.	
1	Grundy County Conserva		0.09 AC																
1 Parcel	"TOTALS	0 AC	0.09 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC					
		0 SF		0 SF		0 SF		0 SF		0 SF		0 SF							



WASHINGTON TWP.  
T-87N R-16W  
SEC. 13

①  
GRUNDY COUNTY  
CONSERVATION BOARD

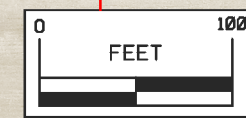
442+00  
±33'±EX R/W

442+15  
±55'

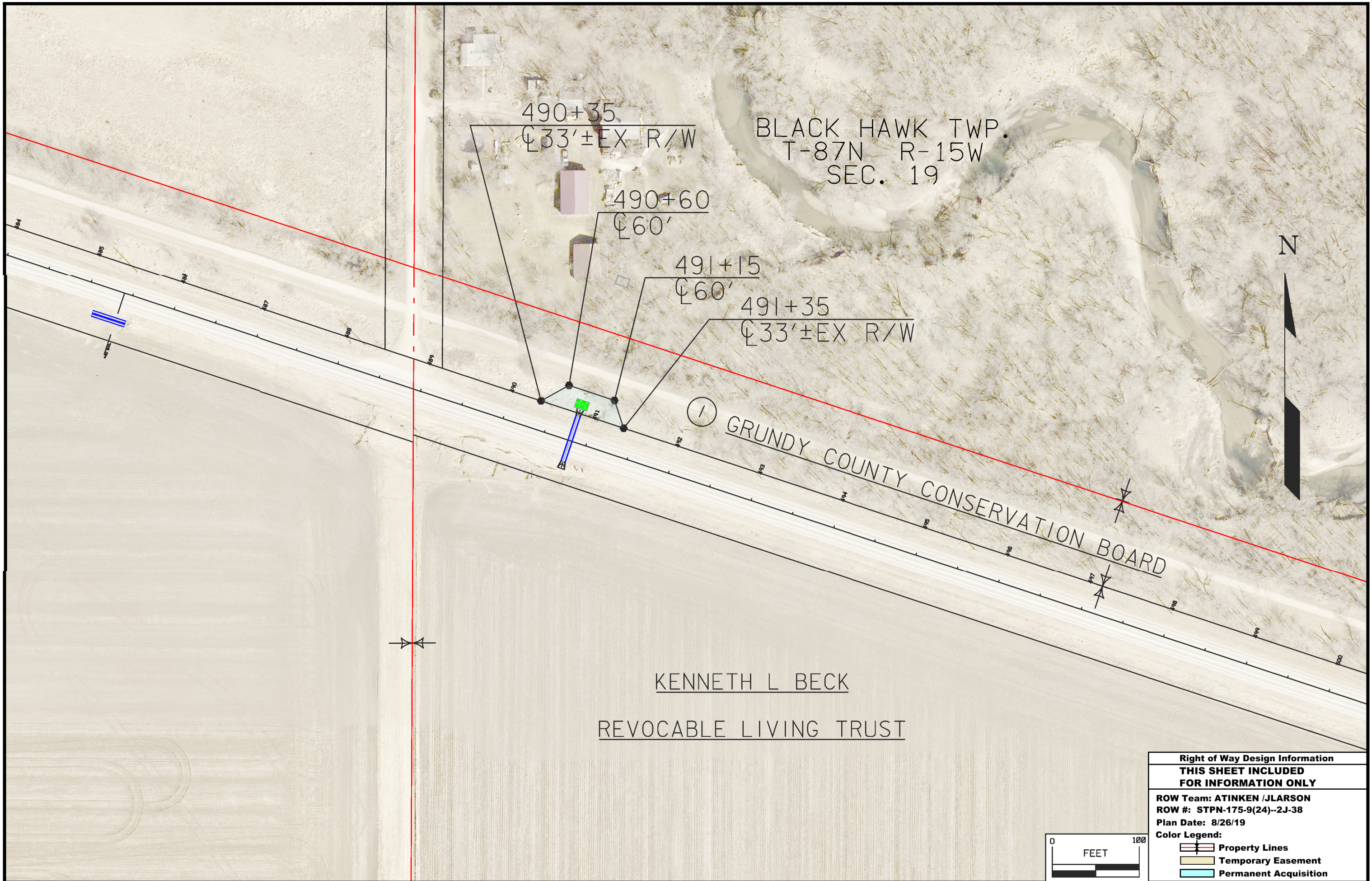
442+70  
±55'

442+85  
±33'±EX R/W

N



<b>Right of Way Design Information</b>	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: ATINKEN /JLARSON	
ROW #: STPN-175-9(24)--2J-38	
Plan Date: 8/26/19	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition



490+35  
 ±33'±EX R/W

BLACK HAWK TWP.  
 T-87N R-15W  
 SEC. 19

490+60  
 ±60'

491+15  
 ±60'

491+35  
 ±33'±EX R/W

GRUNDY COUNTY CONSERVATION BOARD

KENNETH L BECK  
 REVOCABLE LIVING TRUST

<b>Right of Way Design Information</b>	
<b>THIS SHEET INCLUDED FOR INFORMATION ONLY</b>	
ROW Team: ATINKEN /JLARSON	
ROW #: STPN-175-9(24)--2J-38	
Plan Date: 8/26/19	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition



**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
IA 175	Both	Grundy	East of Morrison	NA-- No Restrictions Expected								

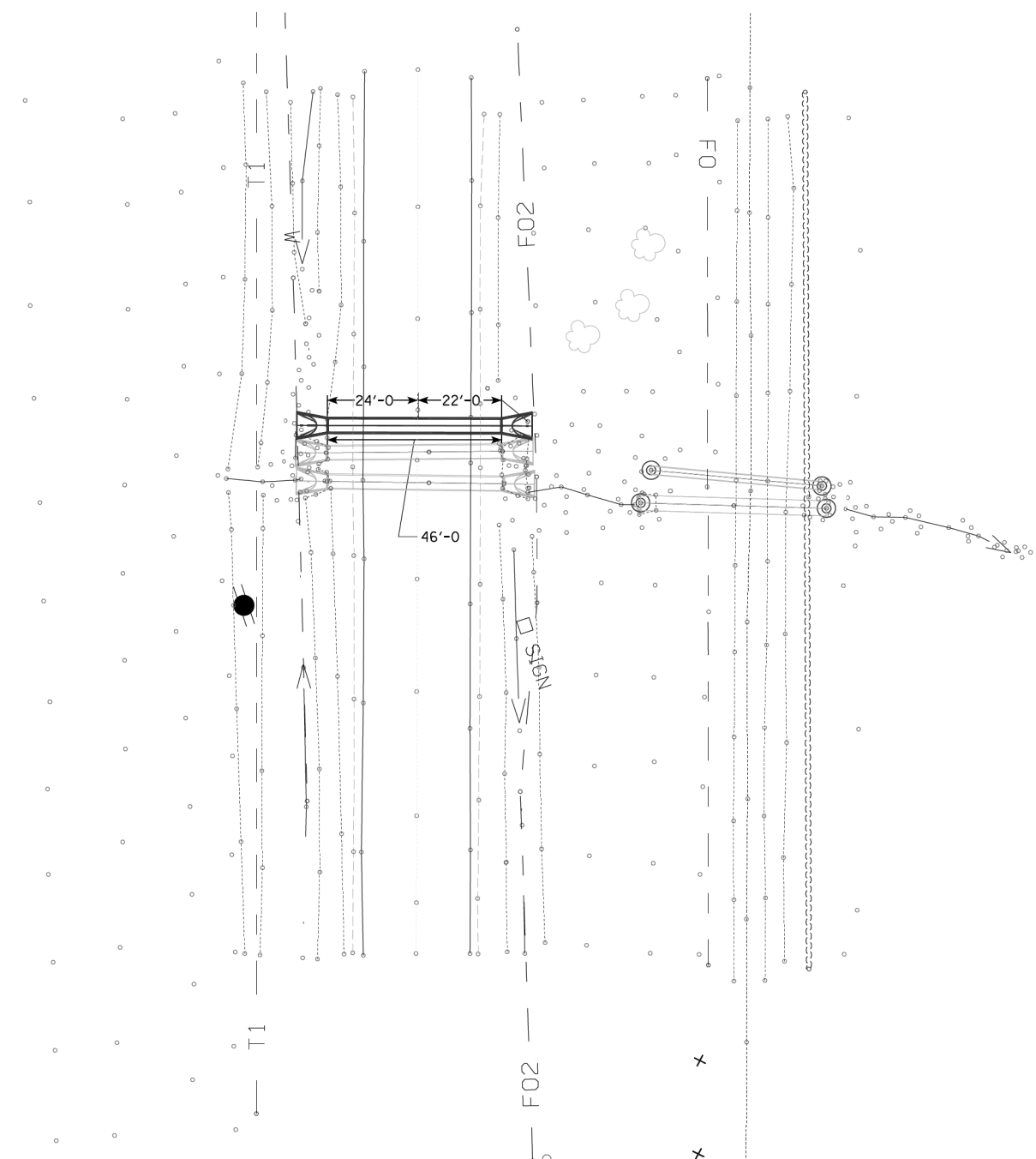
**TRAFFIC CONTROL PLAN**

Two Options for discussion at Field Exam:

1. Close Traffic and Detour IA 175 during construction.
2. Maintain traffic during construction via trenchless construction of the roadway culverts.

960		960
950		950
940		940
930		930
920		920
910		910

LONGITUDINAL SECTION ALONG CULVERT



UTILITIES LEGEND:

- PPA Power Pole Co. 1
- F0 — FO1D Fiber Optic Co. 1 - Quality D
- F02 — FO2D Fiber Optic Co. 2 - Quality D
- T — TL1D Telephone Line Co. 1 - Quality D
- W — WL1D Water Line Co. 1 - Quality D

SITUATION PLAN

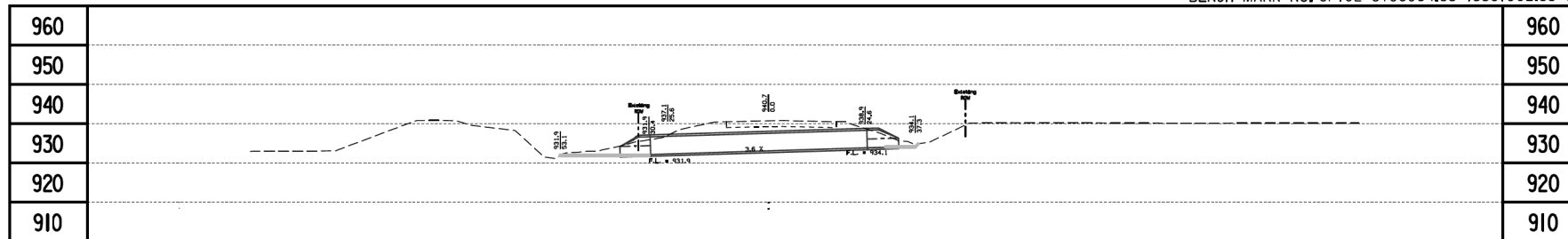
PRELIMINARY  
 DESIGN FOR 0° SKEW  
**42" REINFORCED  
 CONCRETE PIPE**  
 SITUATION PLAN  
 STATION 442+38.00  
**GRUNDY COUNTY**  
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
 DESIGN SHEET NO. \_\_\_ OF 1 FILE NO. 0 DESIGN NO. 0

DESIGN TEAM	GRUNDY COUNTY	PROJECT NUMBER STPN-175-9(23)--2J-38	SHEET NUMBER 01
-------------	---------------	--------------------------------------	-----------------

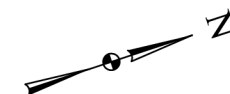
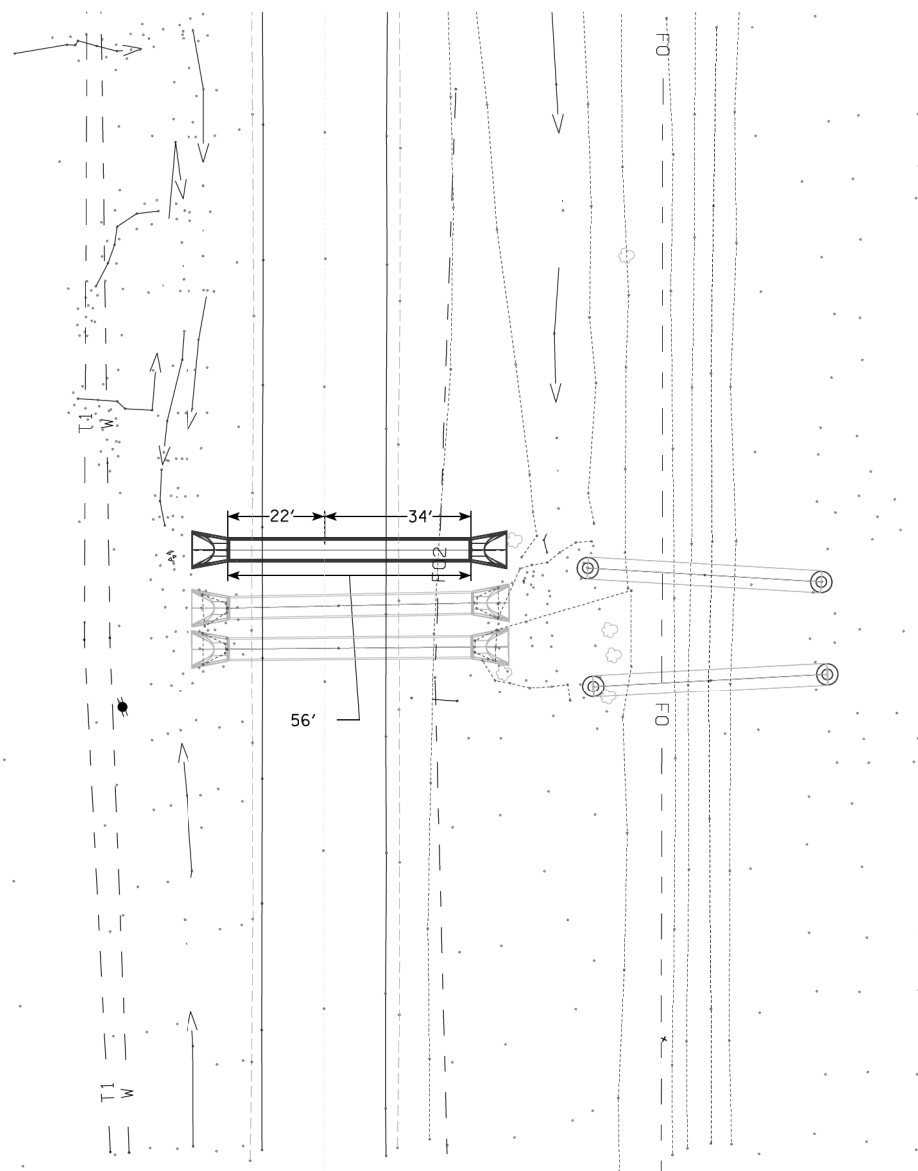
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BENCH MARK NO. CP102 8786964.88 15391002.33 940.23 CP SET 5/8" RE-ROD (FLUSH)



LONGITUDINAL SECTION ALONG CULVERT



UTILITIES LEGEND:

- PPA Power Pole Co. 1
- FO - FO1D Fiber Optic Co. 1 - Quality D
- FO2 - FO2D Fiber Optic Co. 2 - Quality D
- T - TL1D Telephone Line Co. 1 - Quality D
- W - WL1D Water Line Co. 1 - Quality D

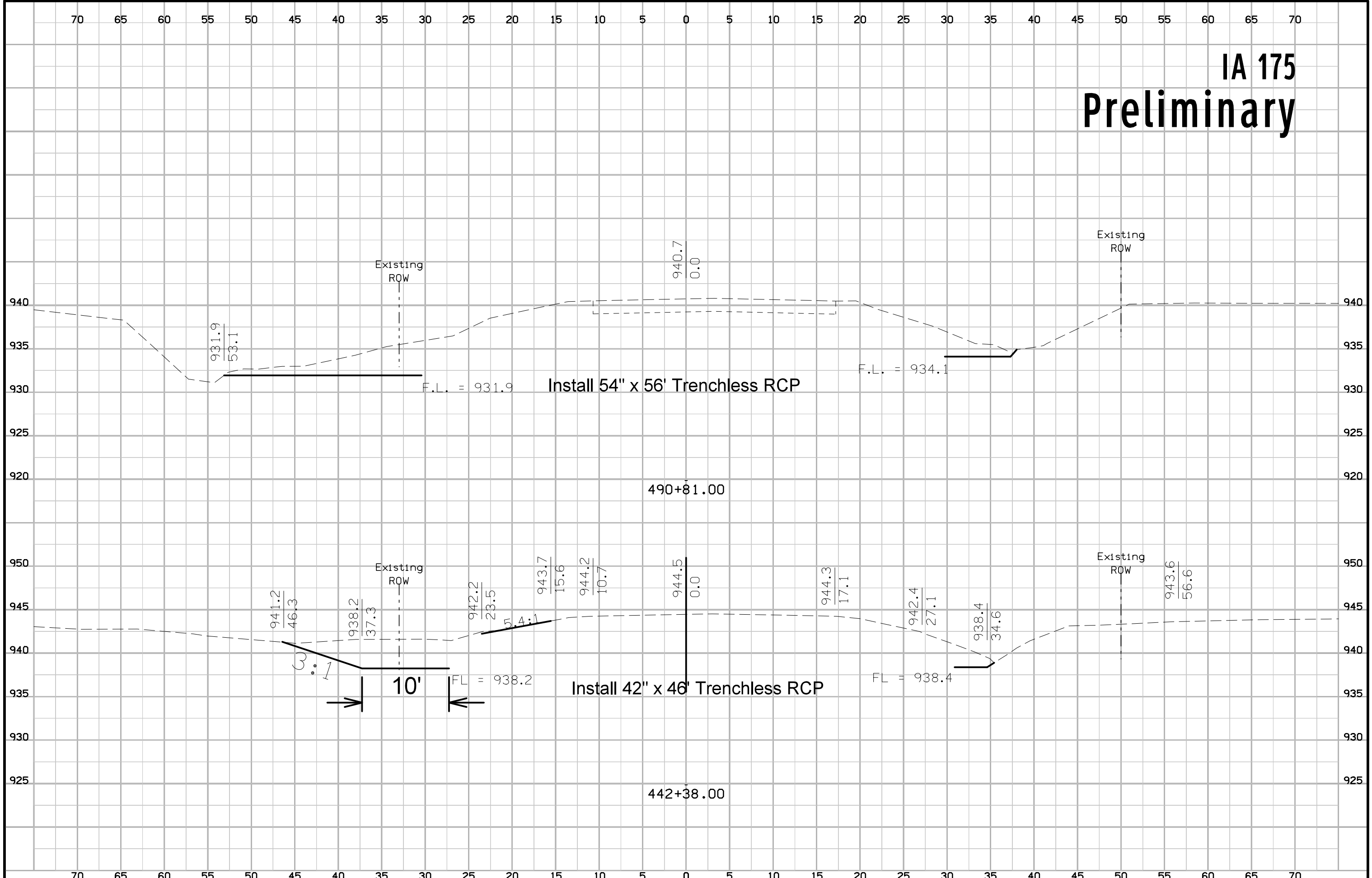
SITUATION PLAN

PRELIMINARY  
 DESIGN FOR 0° SKEW  
**54" REINFORCED  
 CONCRETE PIPE**  
 SITUATION PLAN  
 STATION 490+81.00  
**GRUNDY COUNTY**  
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
 DESIGN SHEET NO. \_\_\_ OF 1 FILE NO. 0 DESIGN NO. 0

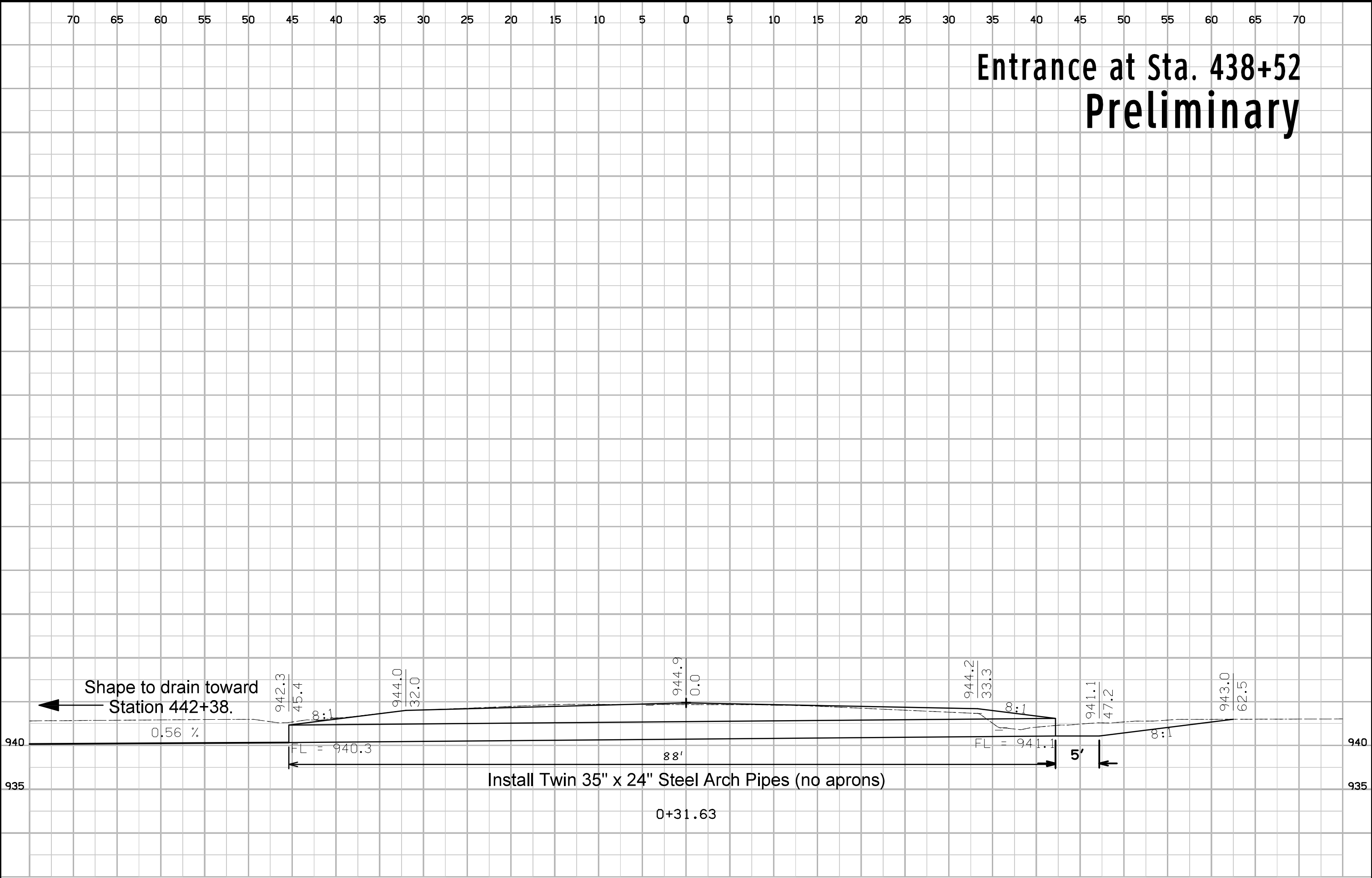
DESIGN TEAM	GRUNDY COUNTY	PROJECT NUMBER STPN-175-9(23)--2J-38	SHEET NUMBER 01
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# IA 175 Preliminary

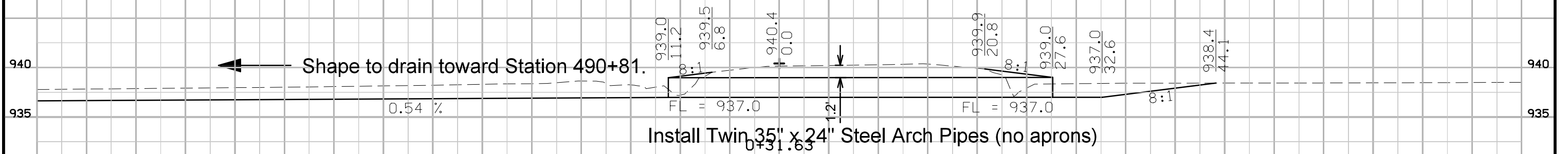


# Entrance at Sta. 438+52 Preliminary



70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70

# Entrance at Sta. 485+40 Preliminary



Install Twin 35" x 24" Steel Arch Pipes (no aprons)