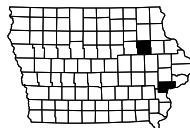


BUCHANAN COUNTY

PIPE CULVERTS

LETTING DATE
Dec 21 2027

STPN-187-1(036)--2J-10



INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
A.2	Location Map Sheet
B Sheets	Typical Cross Sections and Details
B.1	Typical Cross Sections and Details
D Sheets	Mainline Plan Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2 - 15	ML 187 Buchanan County Plan Sheets
* D.16 - 18	ML 187 Fayette County Plan Sheets
G Sheets	Survey Sheets
G.1 - 2	Reference Ties and Bench Marks
G.3	Horizontal Control Tab.
J Sheets	Traffic Control and Staging Sheets
* J.1	Potential Detour Layout
V Sheets	Culvert Situation Plans
V.1 - 6	Culvert Situation Plans
VW Sheets	Mainline Pipe Cross Sections
VW.1 - 9	Mainline Pipe Cross Sections
	* Color Plan Sheets

<-- H Sheets



PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
BUCHANAN COUNTY
PIPE CULVERTS
220th St to IA 3

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



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

PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN - Date: 4-17-2026

REVISIONS

TOTAL
40

PROJECT IDENTIFICATION NUMBER

24-10-187-010

PROJECT NUMBER

STPN-187-1(036)--2J-10

R.O.W. PROJECT NUMBER

FILE NO. -

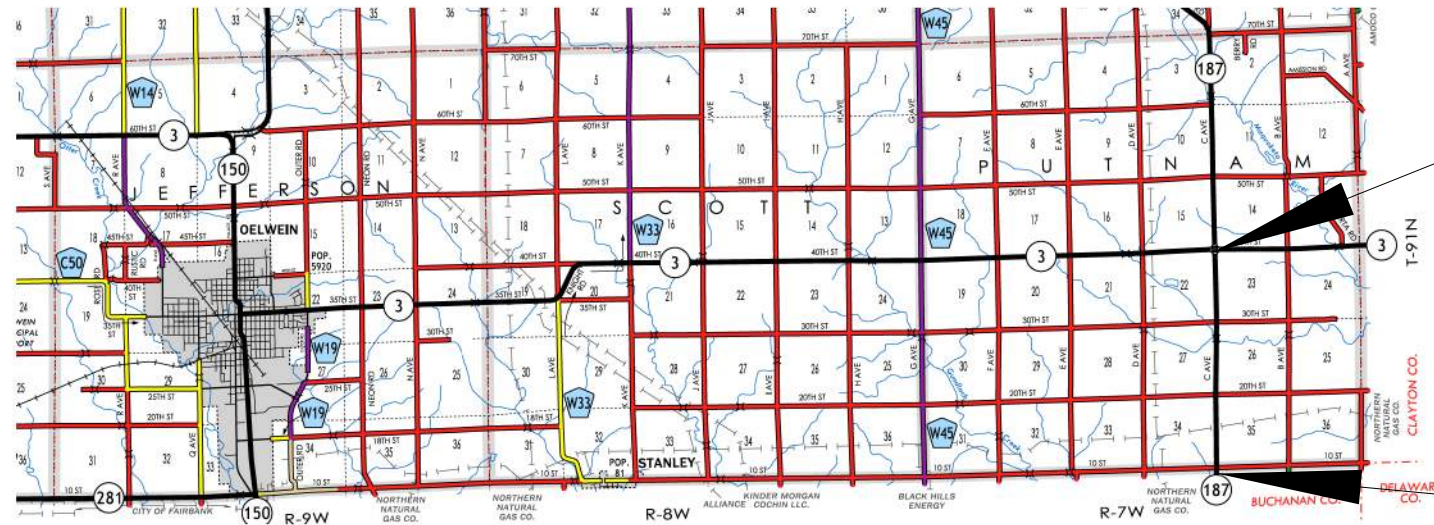
ENGLISH

DESIGN TEAM AECOM

BUCHANAN COUNTY

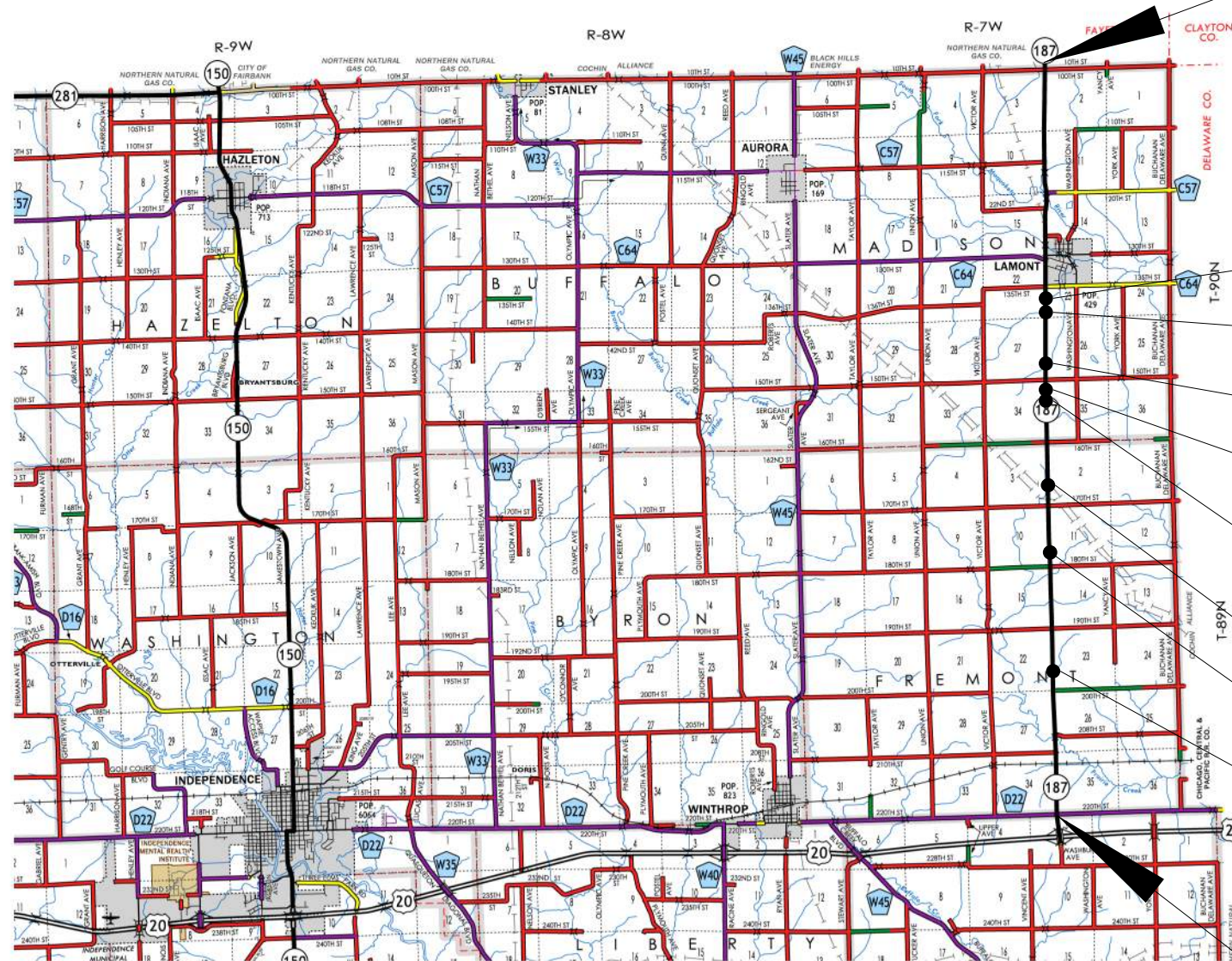
PROJECT NUMBER STPN-187-1(036)--2J-10

SHEET NUMBER A.1



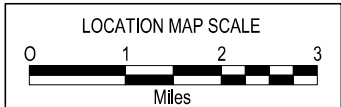
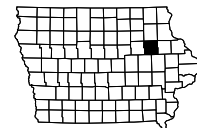
END CONSTRUCTION
MP 15.07

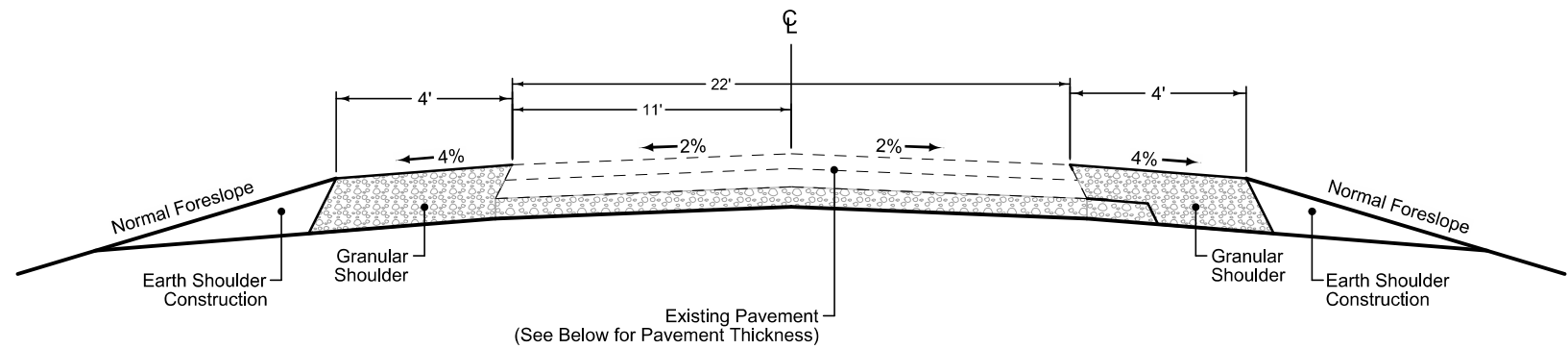
MP 12.05



- STA 444+84.00
12' x 6' RCB REPLACEMENT
- STA 431+16.79
66" RCB REPLACEMENT
- STA 389+96.01
102" x 62" RCP REPLACEMENT
- STA 369+55.00
6' x 3' RCB REPLACEMENT
- STA 348+85.03
24" RCP REPLACEMENT
- STA 280+06.59
60" RCP REPLACEMENT
- STA 230+58.28
24" RCP REPLACEMENT
- STA 127+72.00
14' x 4' RCB REPLACEMENT

BEGIN CONSTRUCTION
MP 0.47





Existing Pavement Section

For Reference Only

EXISTING PAVEMENT																						102-5 04-18-17
No.	Location					Year	Type	Project Number	Surface		Base		Subbase		Removal		Coarse Aggregate			Reinforcement	Remarks	
	County	Route	Dir. of Travel	Begin Ref. Loc. Sign	End Ref. Loc. Sign				Type	Depth	Type	Depth	Type	Depth	Type	Depth	Source	Type	Durability Class	Type		
																						IN
1	Buchanan	IA 187	Both	0.00	9.63	2018 1995 1988 1978 1956		STPN-187-1(30)--2J-10 STPN-187-1(18)--2J-10 MP-187-6(1)0--76-10 FN-187-1(6)--21-10 P-744	BSC HMA BSC HMA HMA	2.0	HMA	2.5					Weston-Lamo	C. Lst.			1.5" SCR @ bridge approaches, culverts Cold-In-Place Recycling	
2	Buchanan	IA 187	Both	9.63	10.26	1990			PCC	9.0												
3	Buchanan	IA 187	Both	10.26	12.05	2018 1995 1988 1962		STPN-187-1(30)--2J-10 STPN-187-1(18)--2J-10 MP-187-6(1)0--76-10 S-874(3)	BSC HMA BSC BTB	2.0	HMA	2.5					Weston-Lamo	C. Lst.			1.5" SCR @ bridge approaches, culverts Cold-In-Place Recycling	
4	Fayette	IA 187	Both	12.05	15.09	2018 1995 1988 1973 1961		STPN-187-1(30)--2J-10 STPN-187-1(18)--2J-10 MP-187-6(1)0--76-10 SN-874(4)--51-53 S-874(2)	BSC HMA BSC HMA HMA	2.0	HMA	2.5					Weston-Lamo	C. Lst.			1.5" SCR @ Bridge approaches, only Cold-In-Place Recycling	

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

	E1	EL1D, Electric Line East-Central Iowa REC - Quality D
	F0	F01D, Fiber Optic East Buchanan Telephone COOP - Quality D
	F02	F02D, Fiber Optic Iowa Communications Network - Quality D
	F03	F03D, Fiber Optic Windstream - Quality D
	G	GL1D, Gas Line Pembina Cochin LLC - Quality D
	G2	GL2D, Gas Line Alliance Pipeline - Quality D
	PPA	PPA, Power Pole Co. 1
	W	WL1D, Water Line Iowa REgional Utility Association - Quality D

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.	Transparency
Pink, Dark	(13)		Temporary Pavement Shading
Yellow	(4)		Proposed Pavement Shading
Orange	(6)		Proposed Granular Shading
Orange	(70)		Proposed Shoulder Granular Shading
Yellow	(68)		Proposed Shoulder Paved Full Depth Shading
Yellow	(132)		Proposed Shoulder Paved Partial Depth Shading
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
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

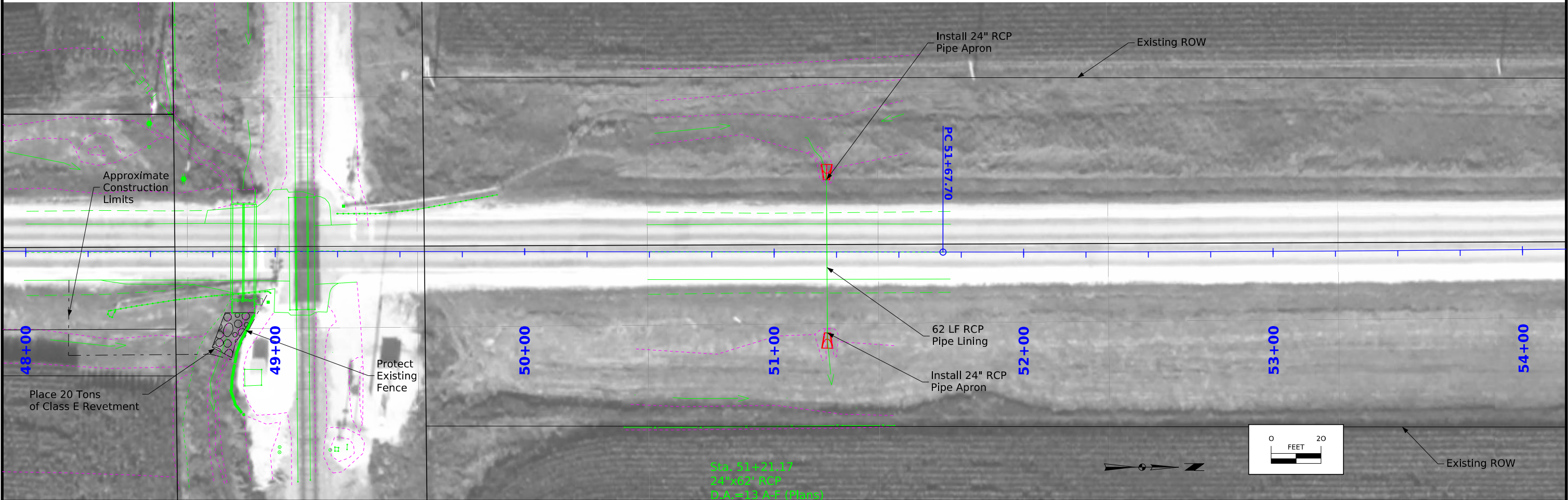
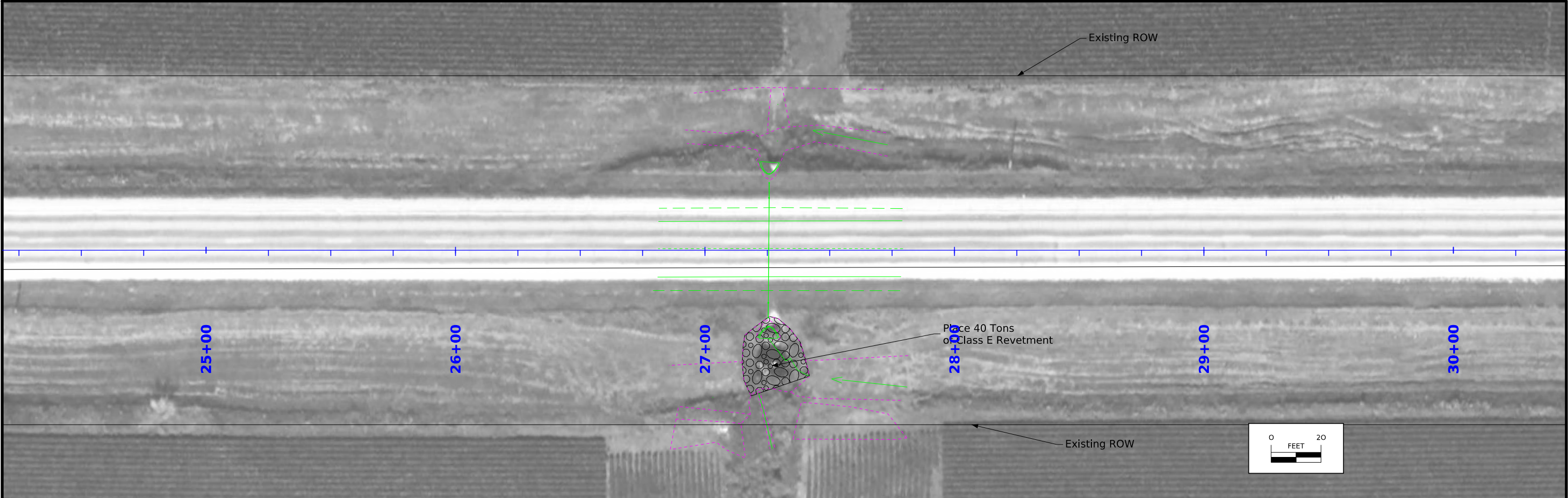
	Reference Point	
	Station	Survey Line
	Section Corner	
	Ground Line Intercept	
	Saw Cut	
	Guardrail	
	Trench Drain	
	HighTension Cable Guardrail	
	Sheet Pile	
	Pavement Removal	

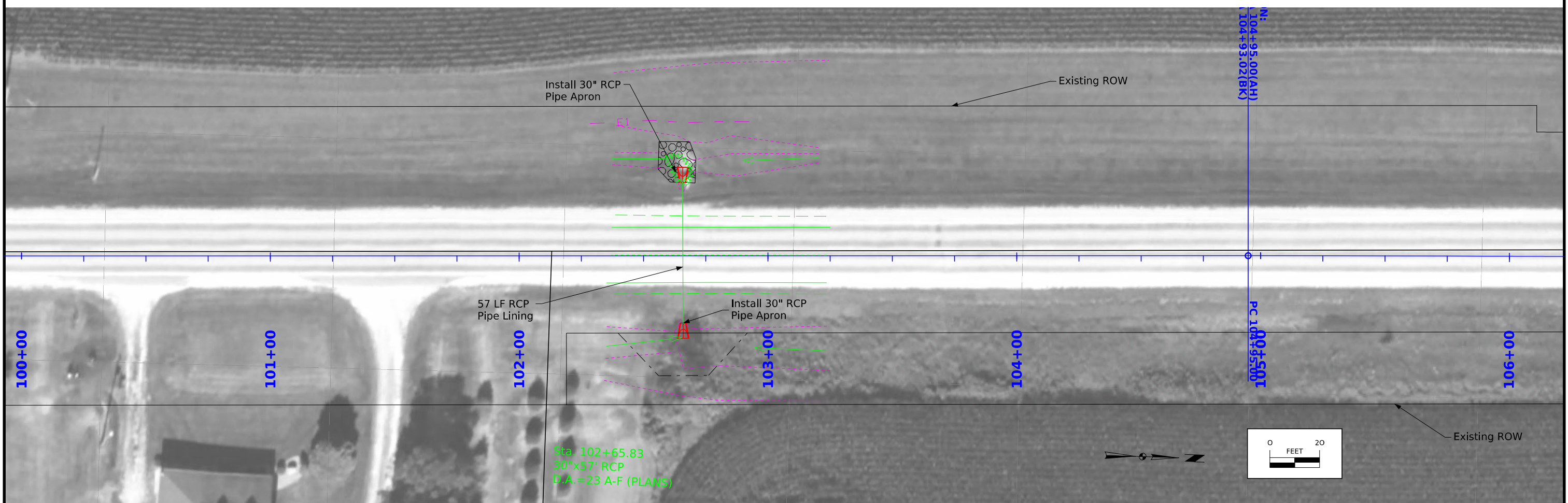
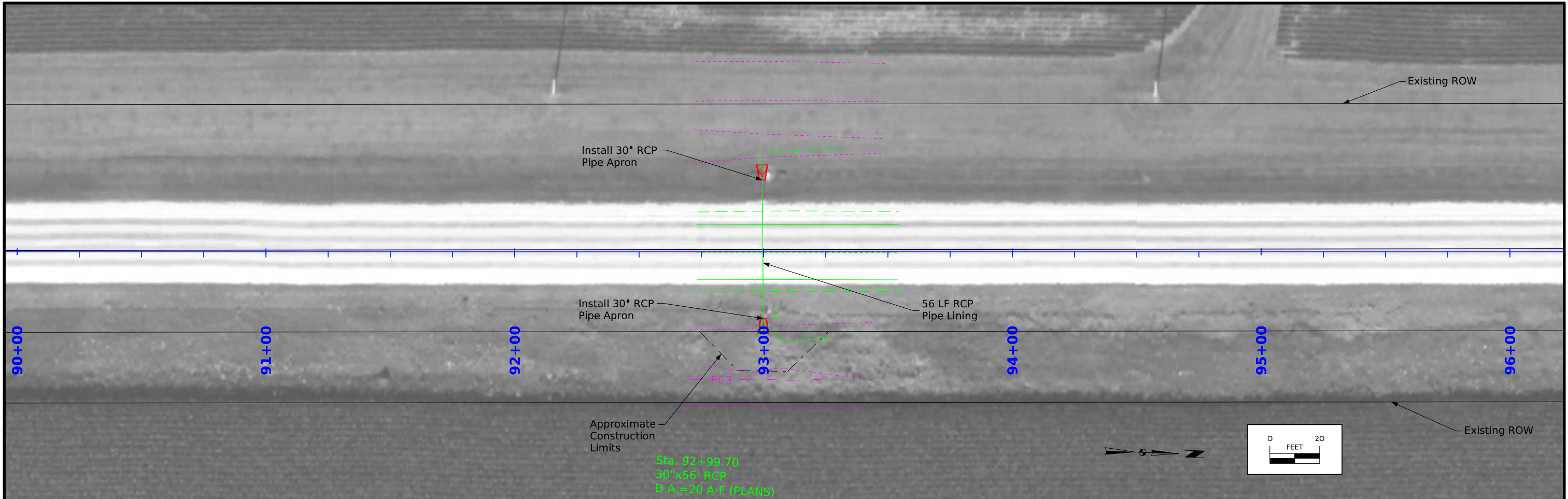
RIGHT-OF-WAY LEGEND

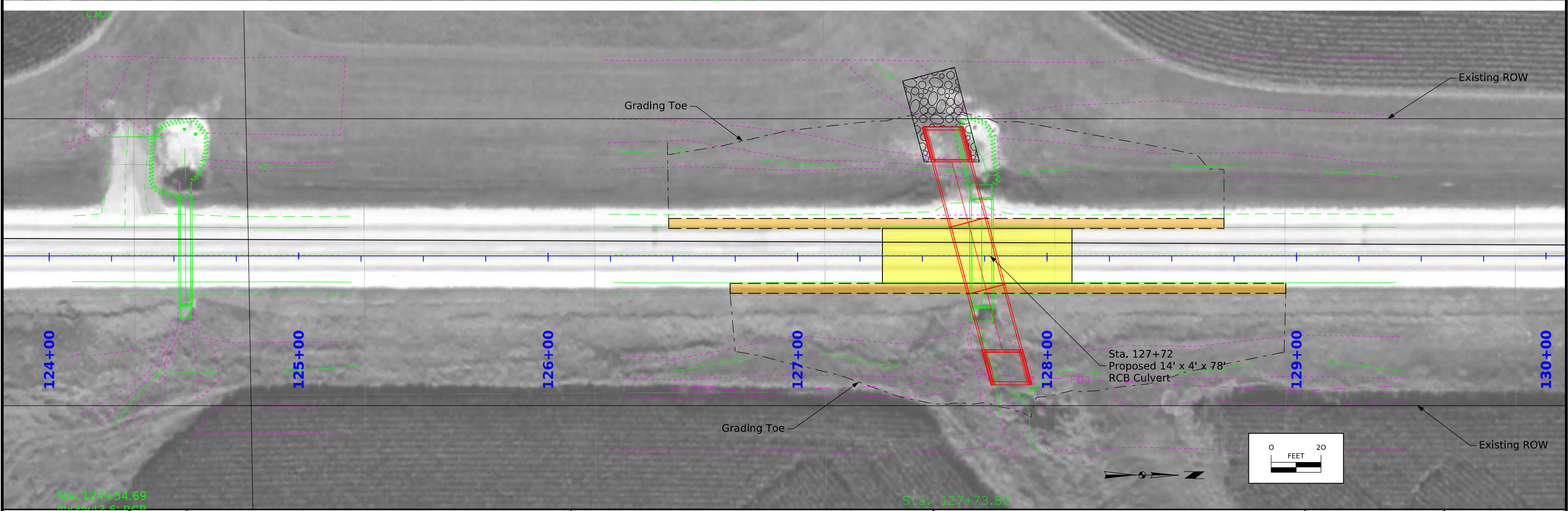
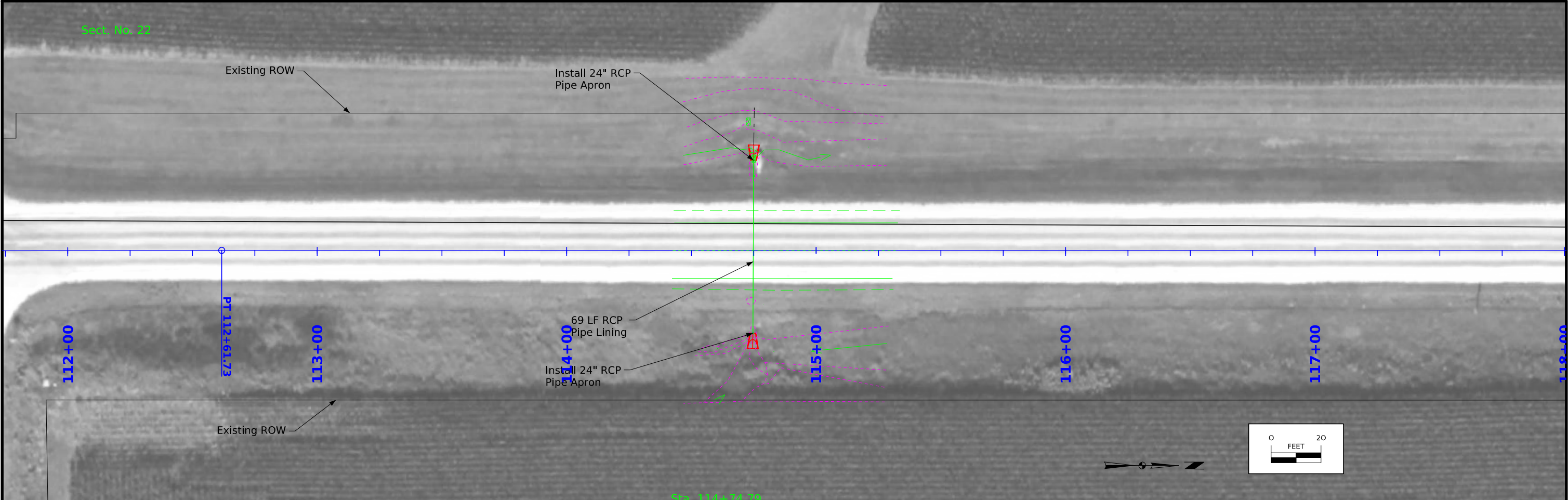
	Proposed Right-of-Way Symbol
	Proposed Right-of-Way Line
	Existing Right of Way
	Existing and Proposed Right-of-Way
	Easement and Existing Right-of-Way
	Easement (Temporary) Symbol
	Easement (Temporary) Line
	Easement
	Access Control
	Property Line Symbol
	Property Line

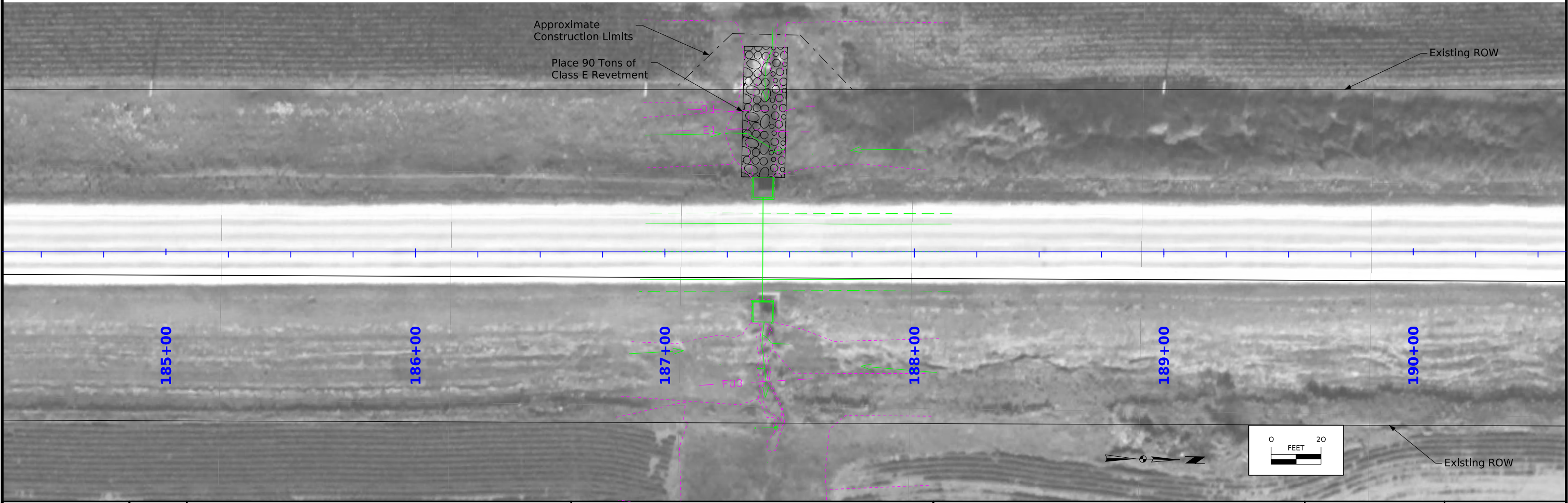
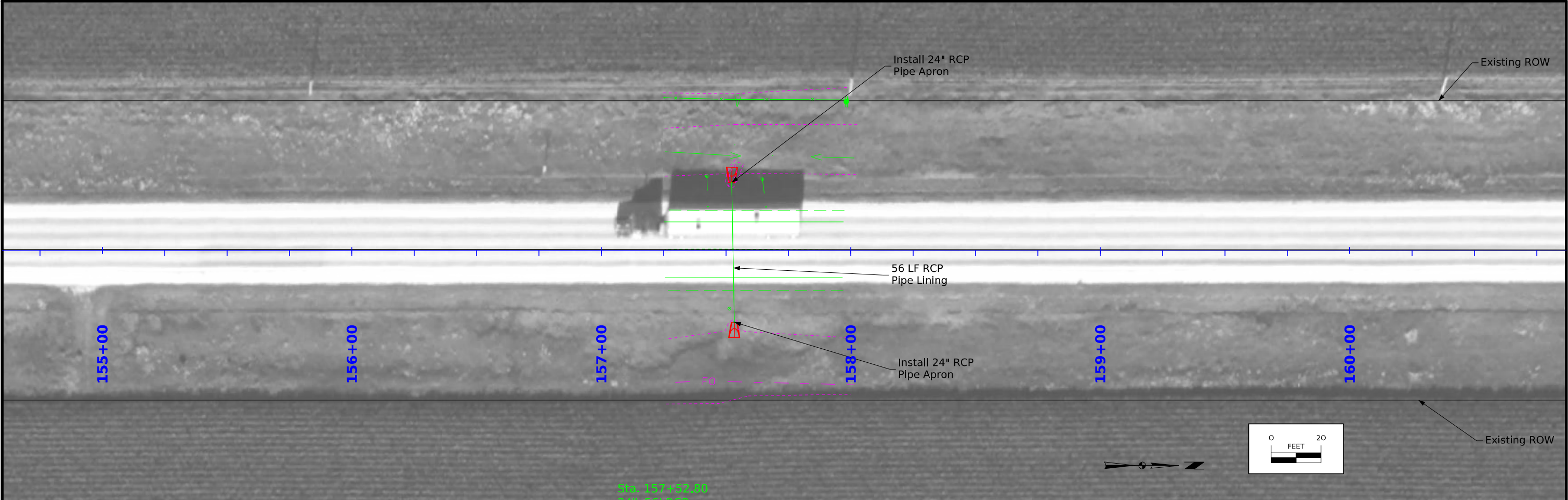
PLAN AND PROFILE
LEGEND AND SYMBOL
INFORMATION SHEET

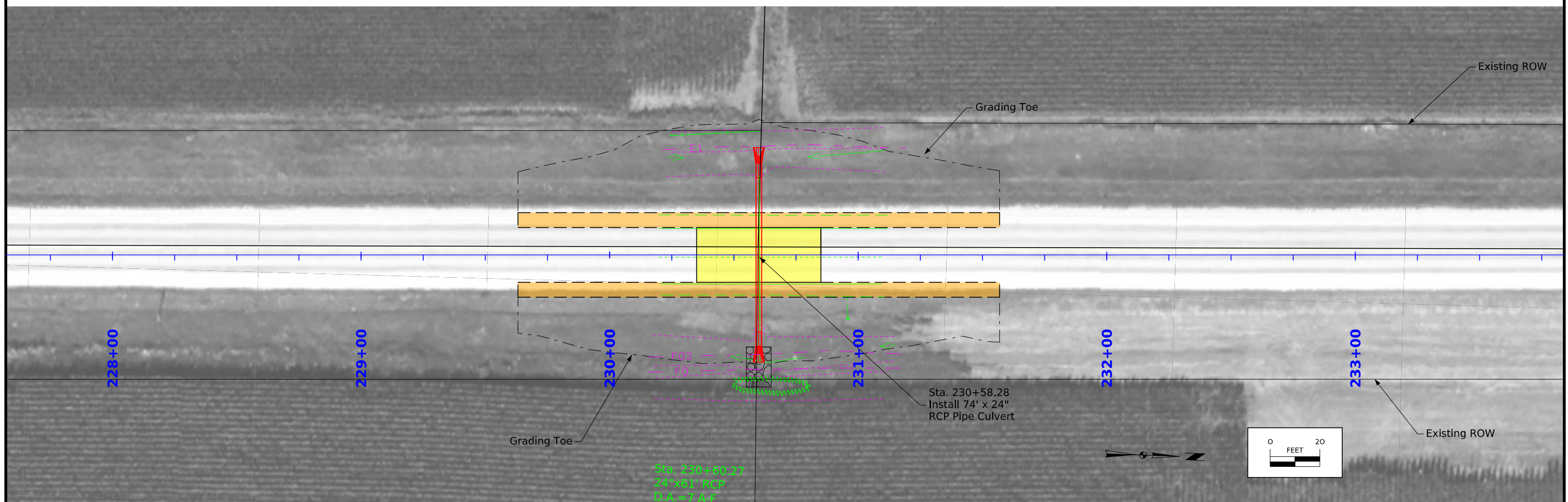
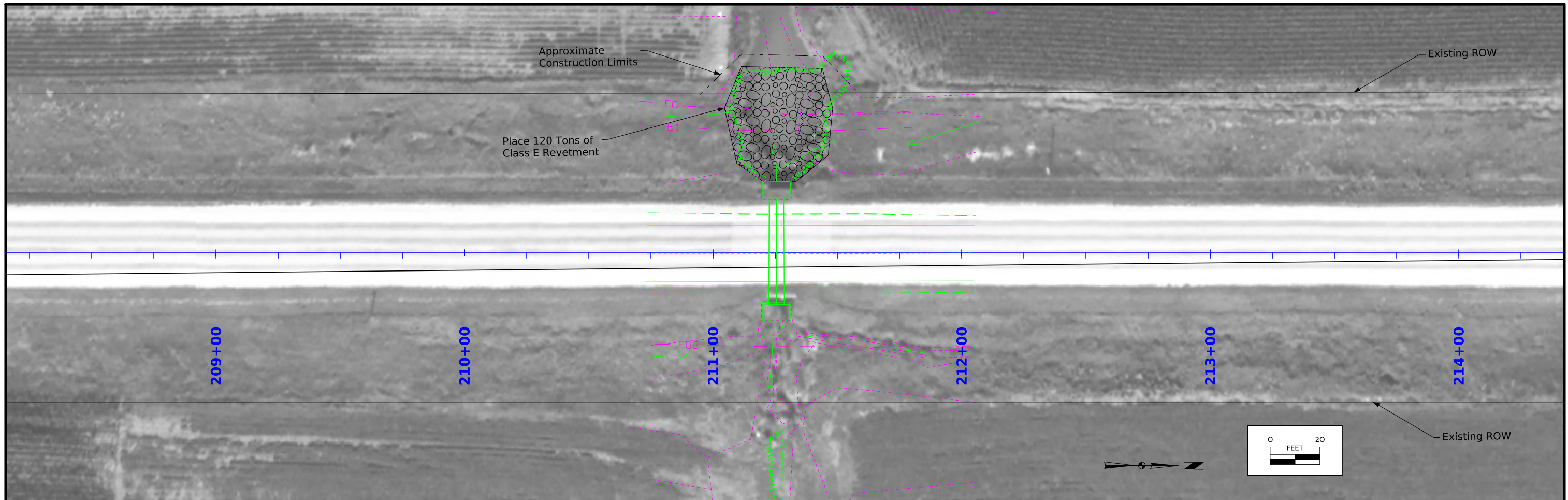
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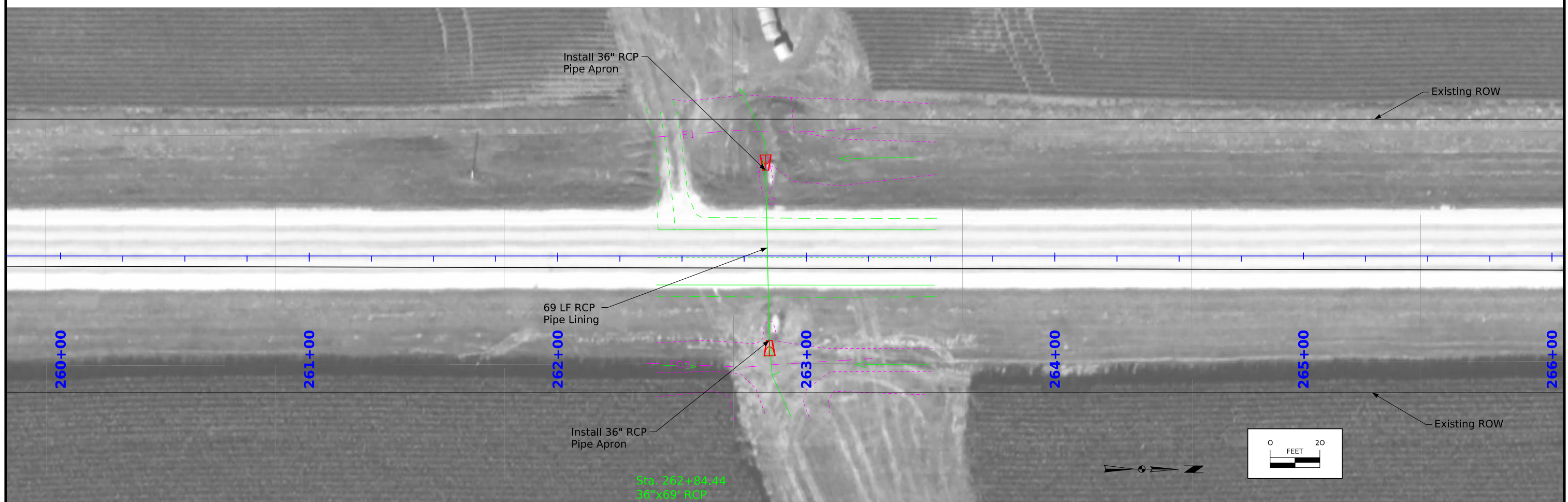
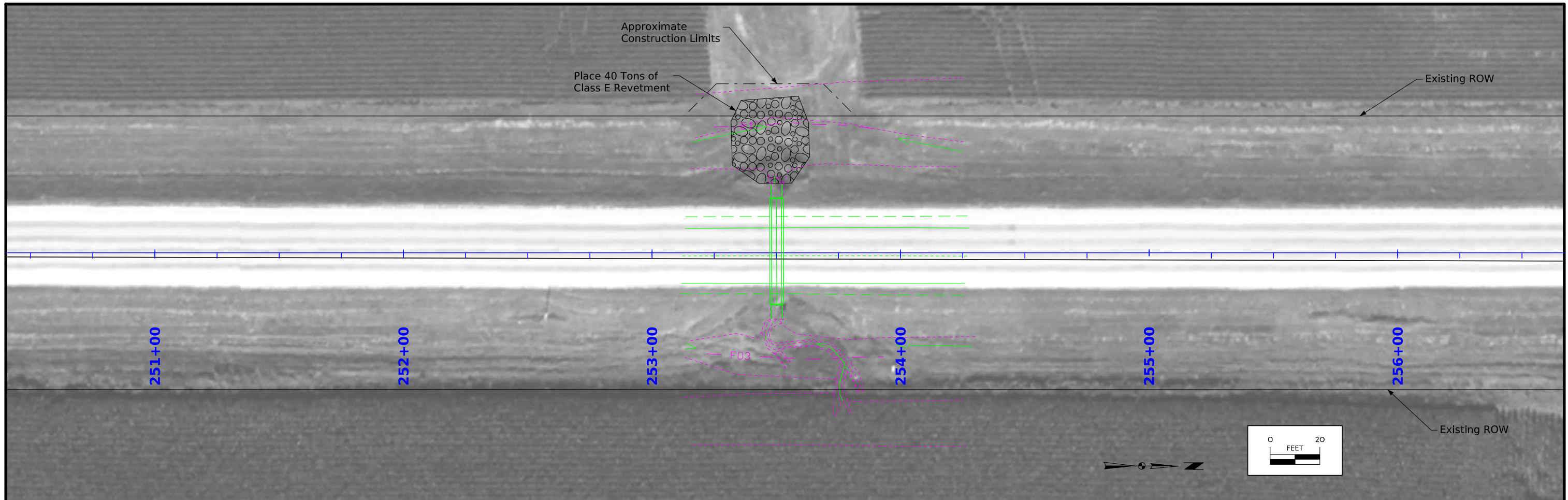


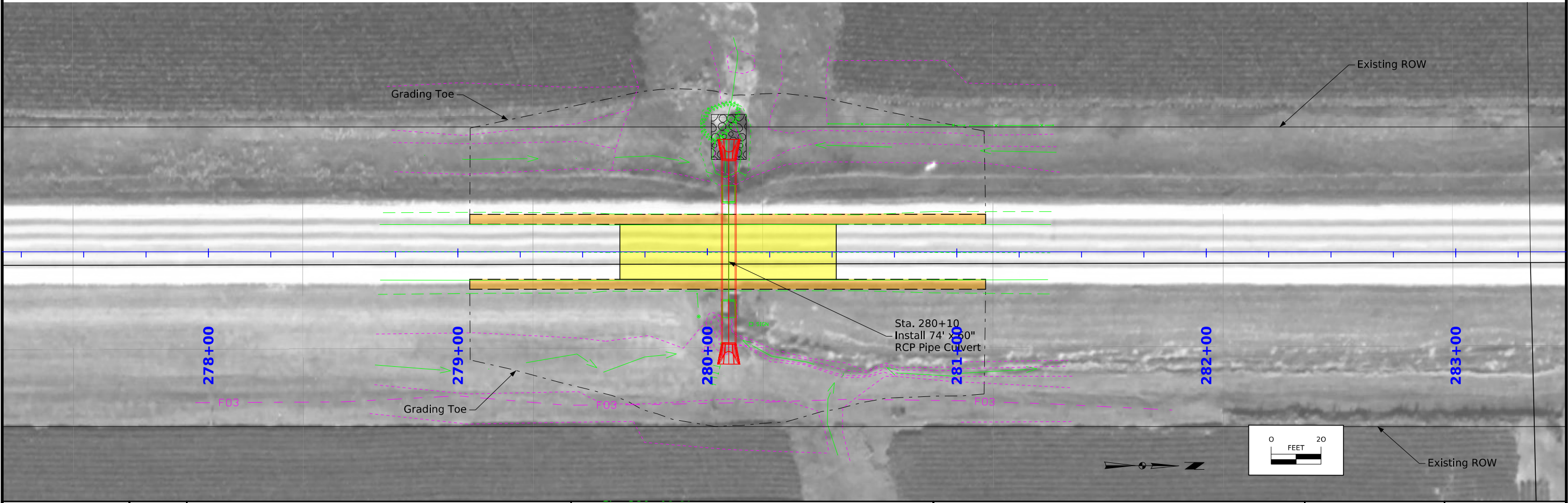
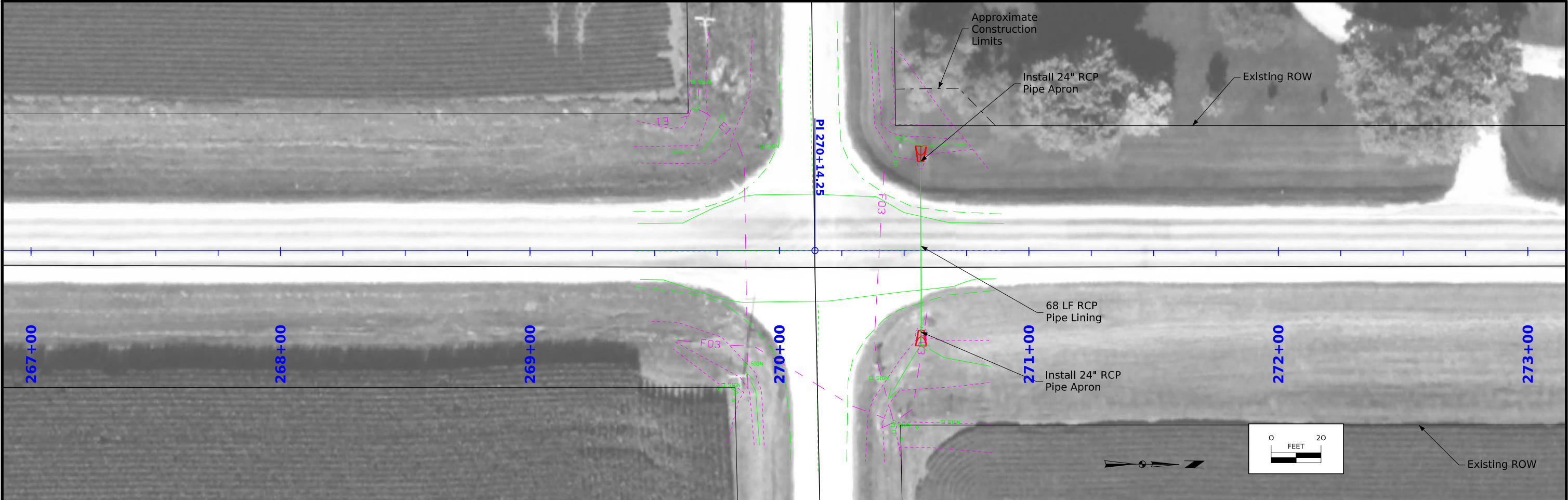


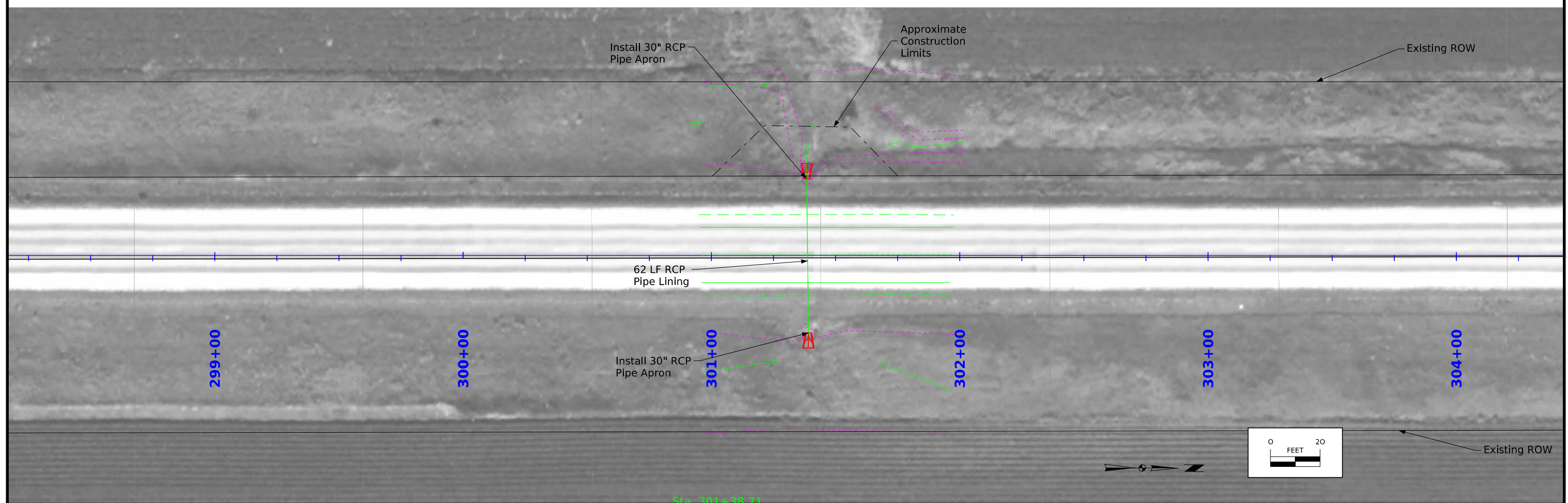
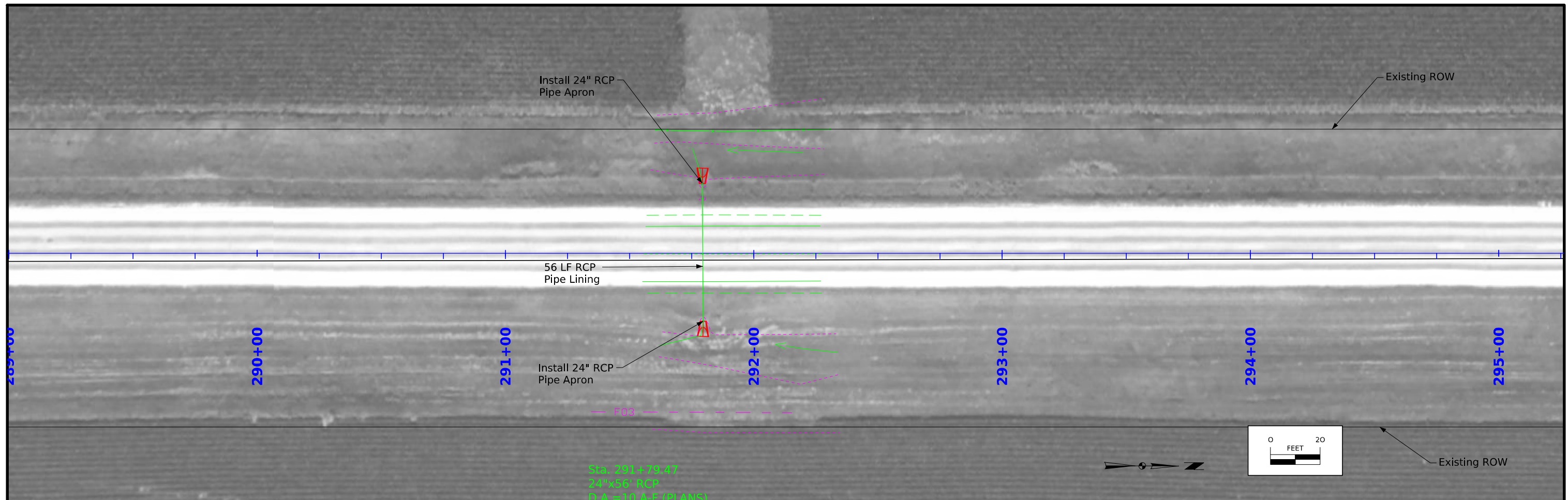


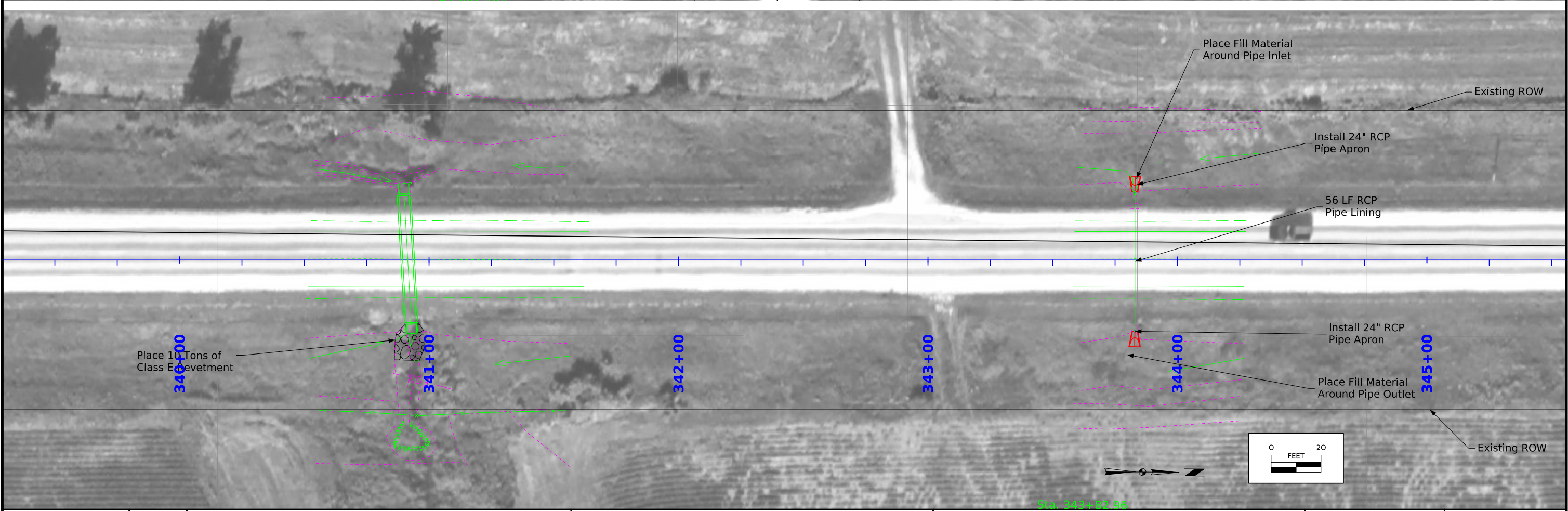
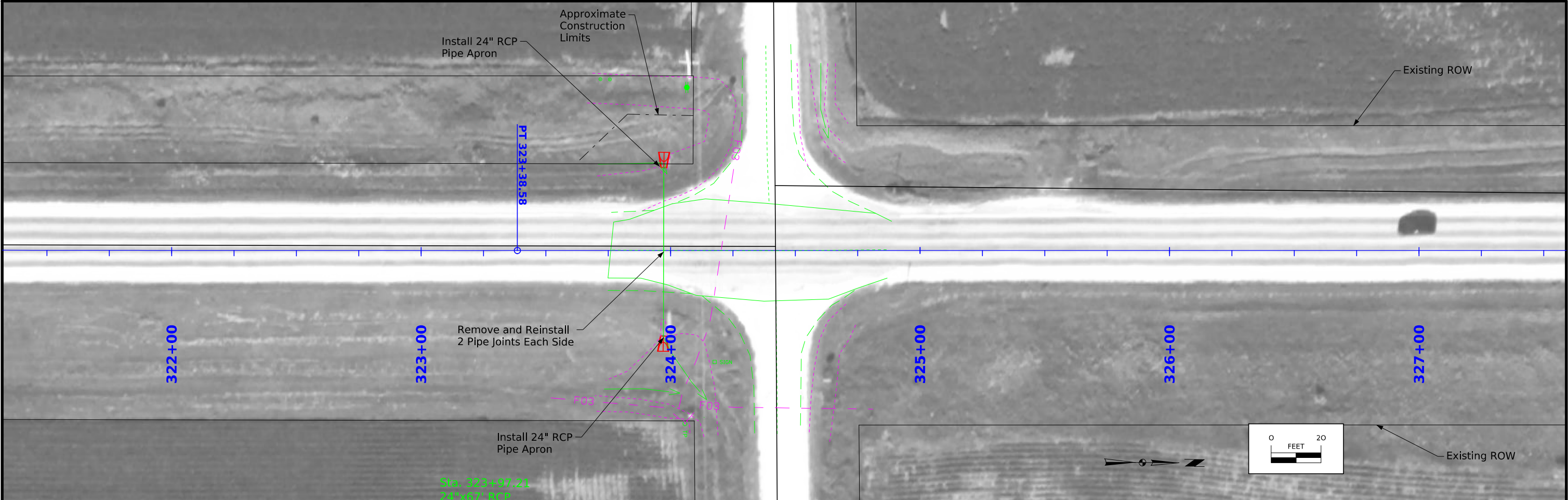


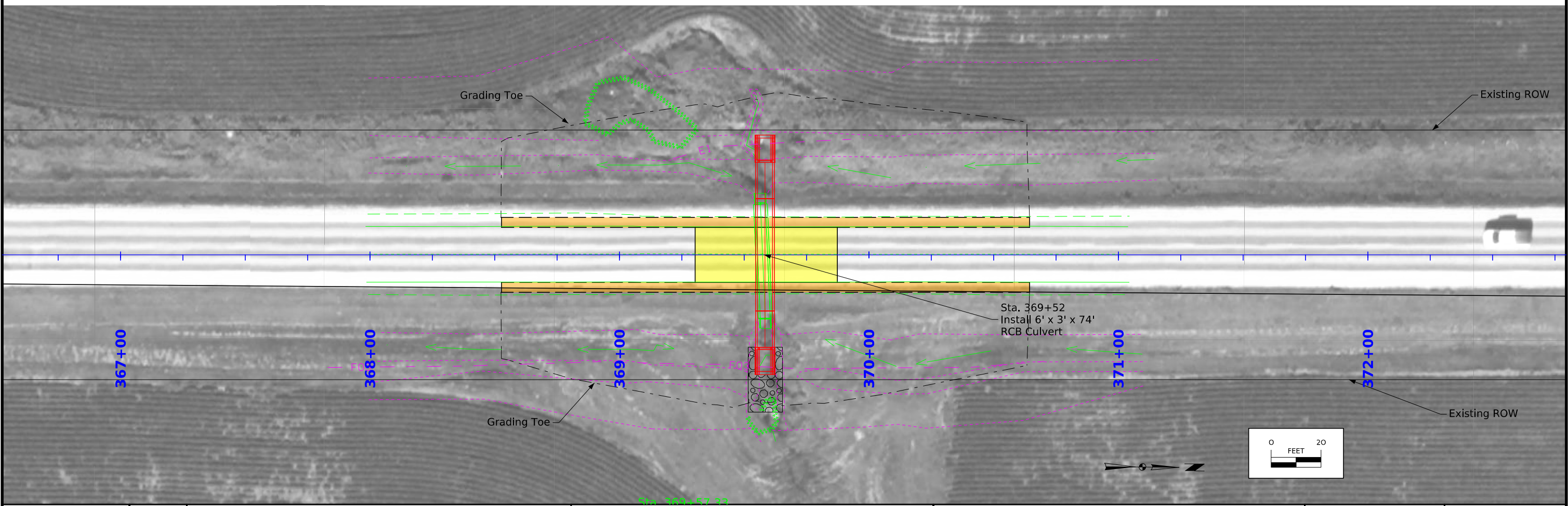
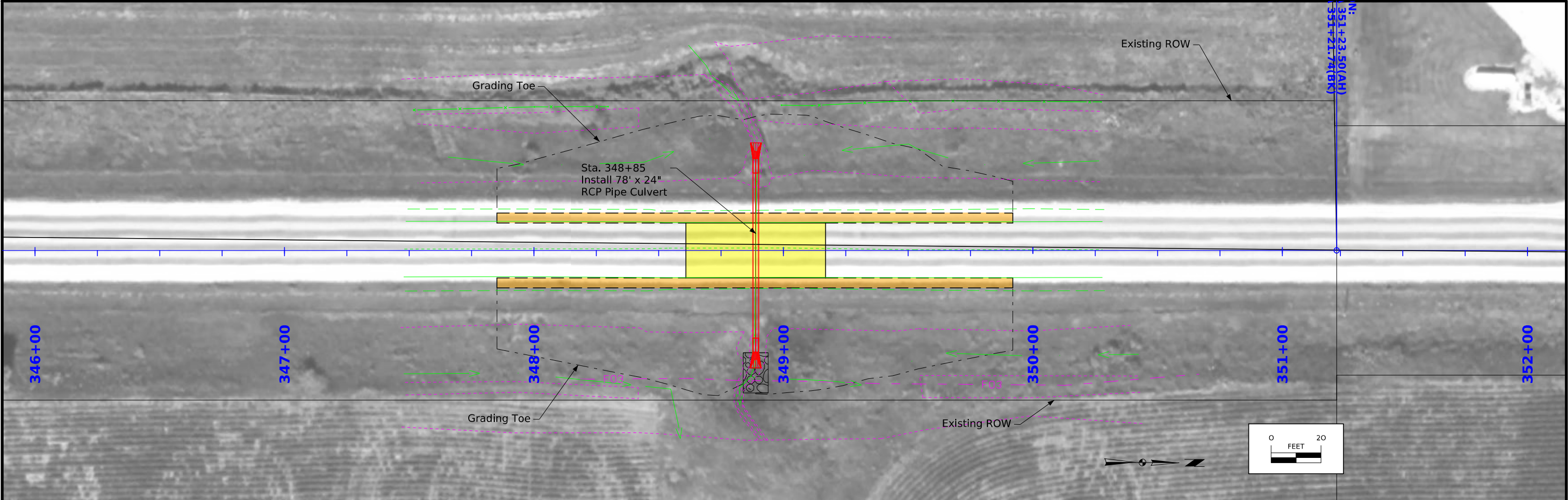


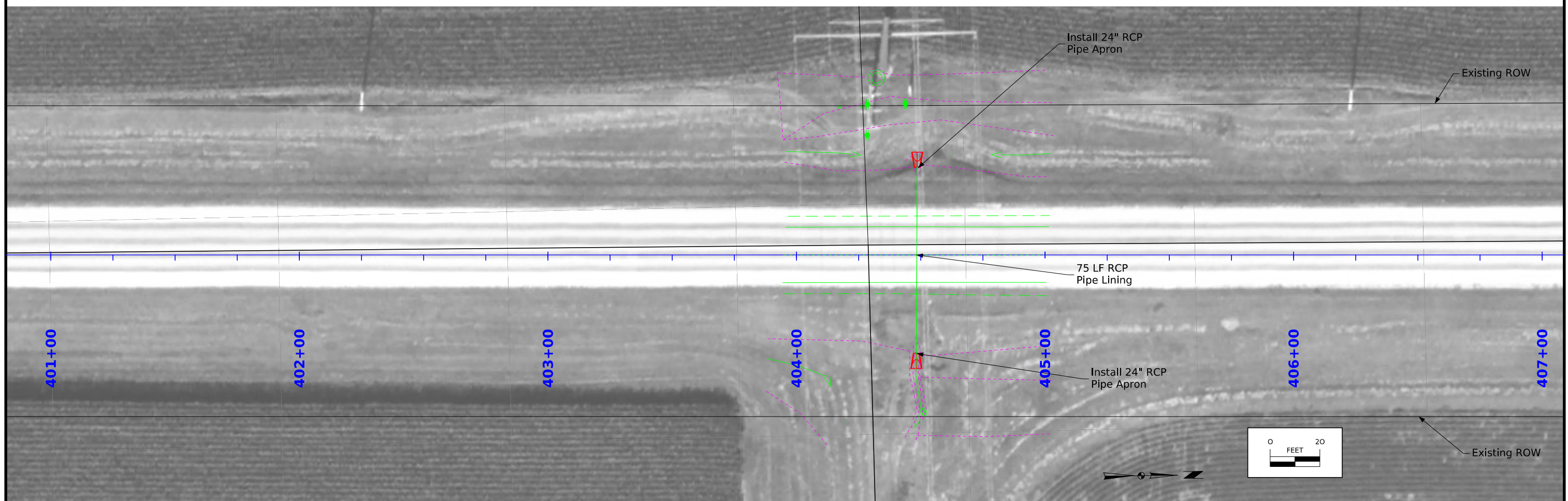
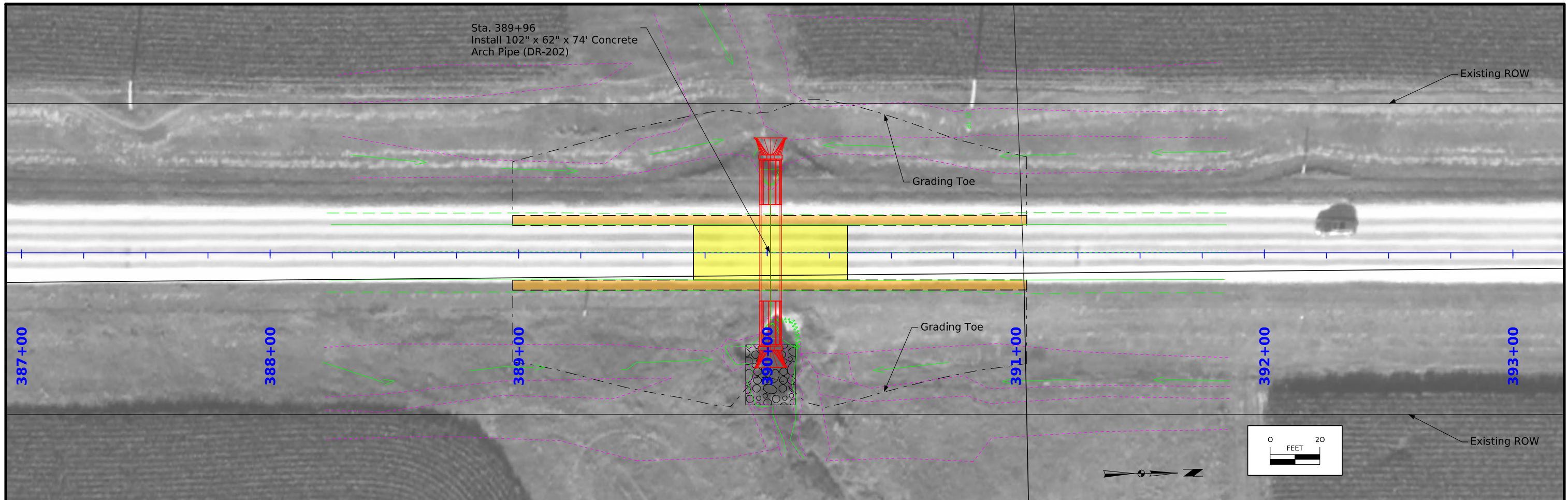


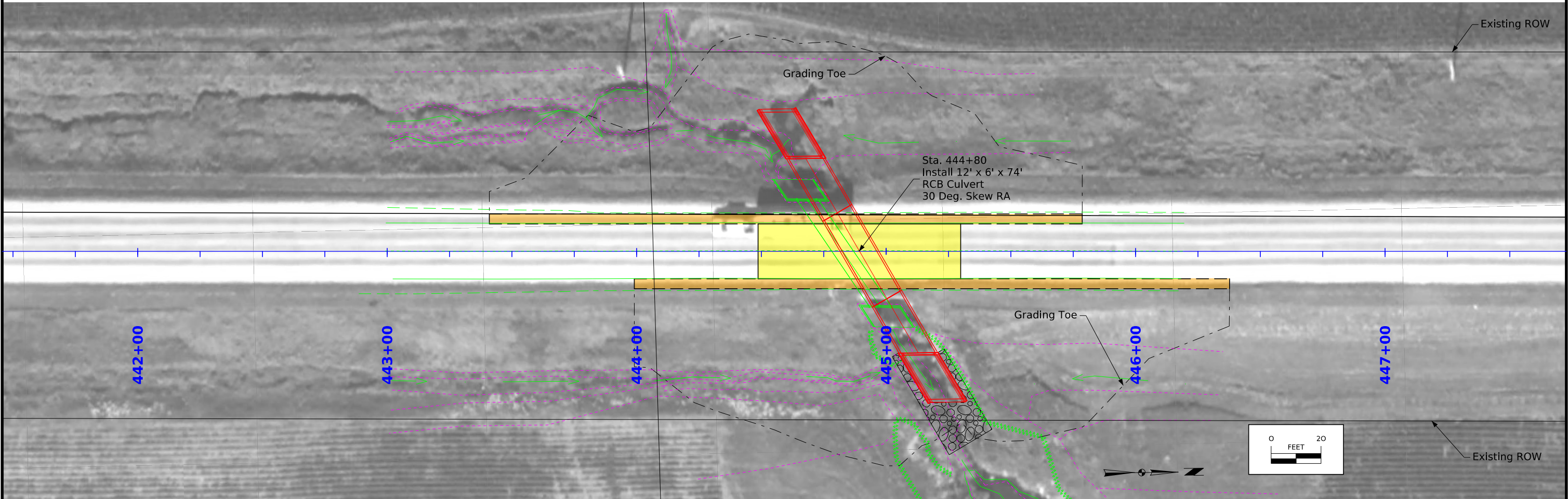
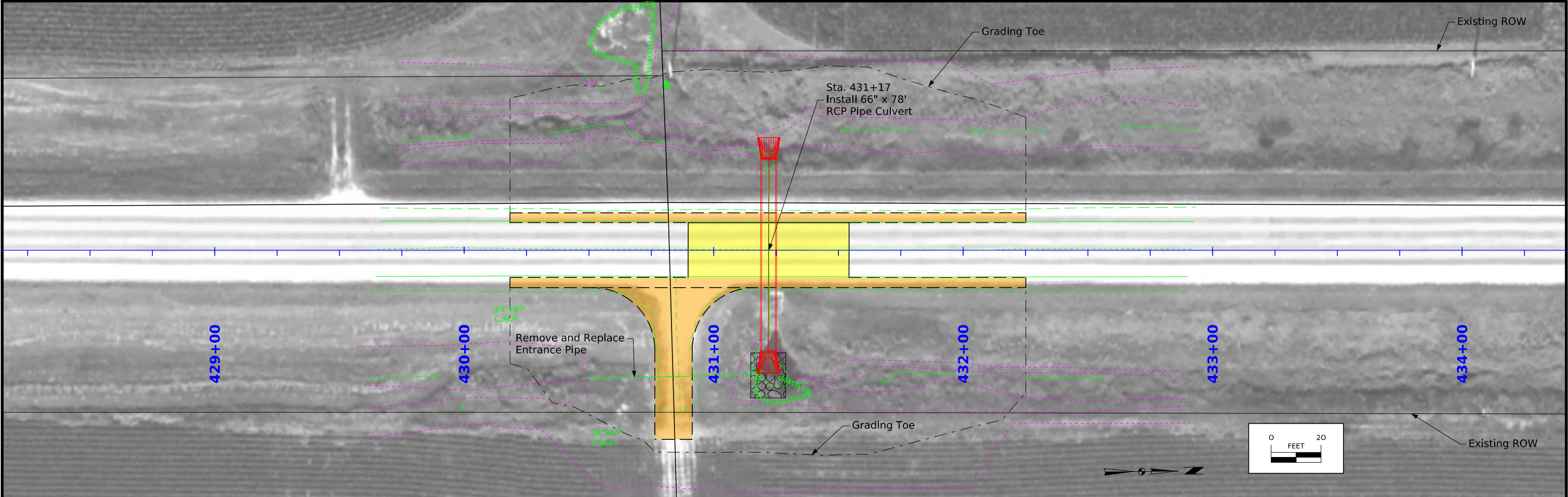


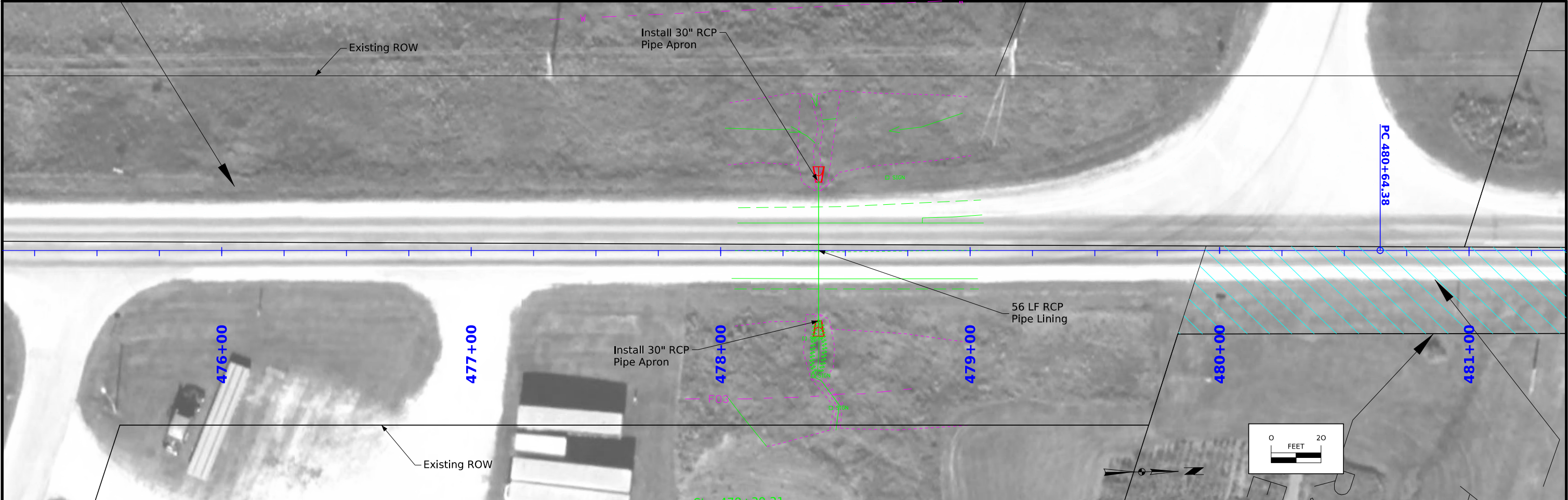


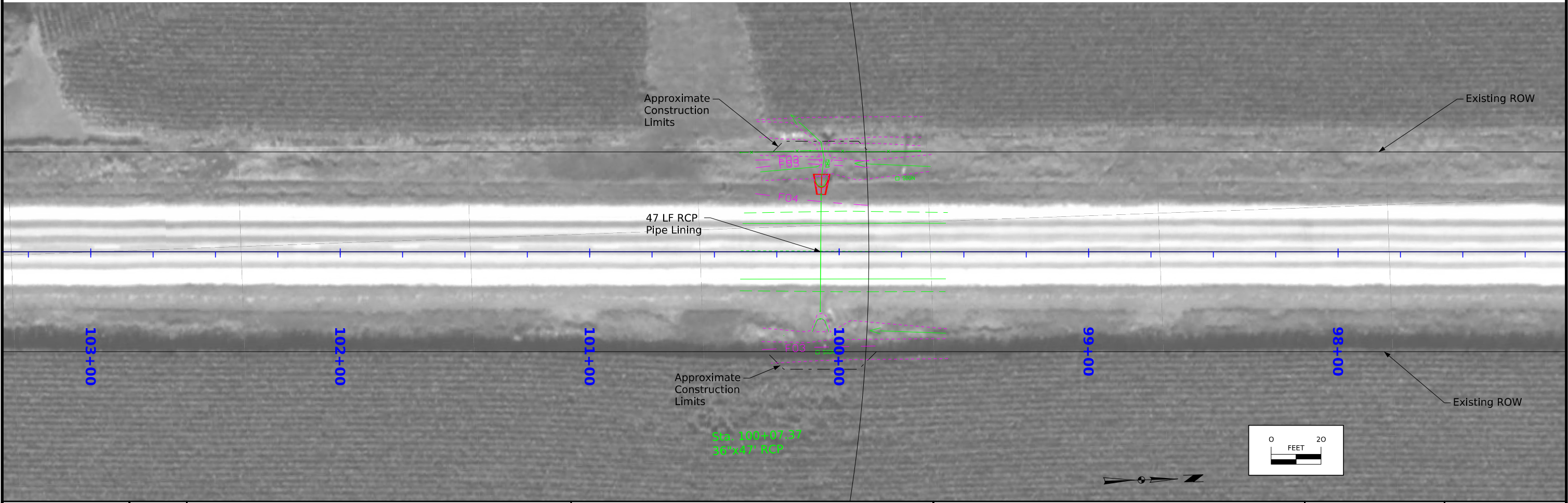
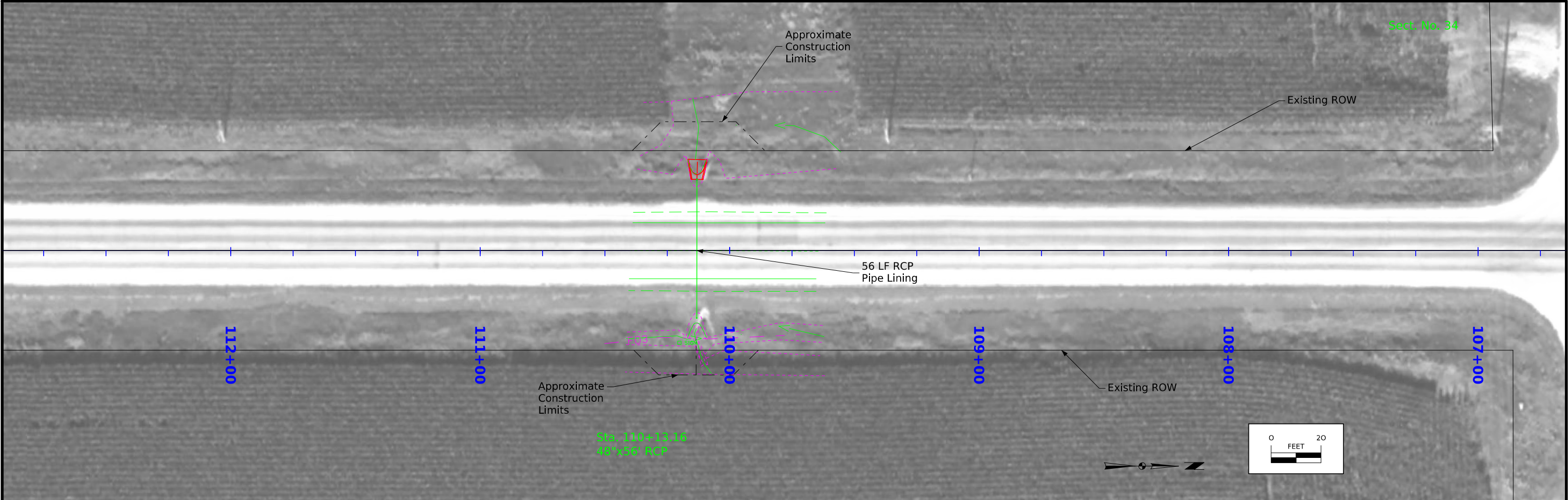


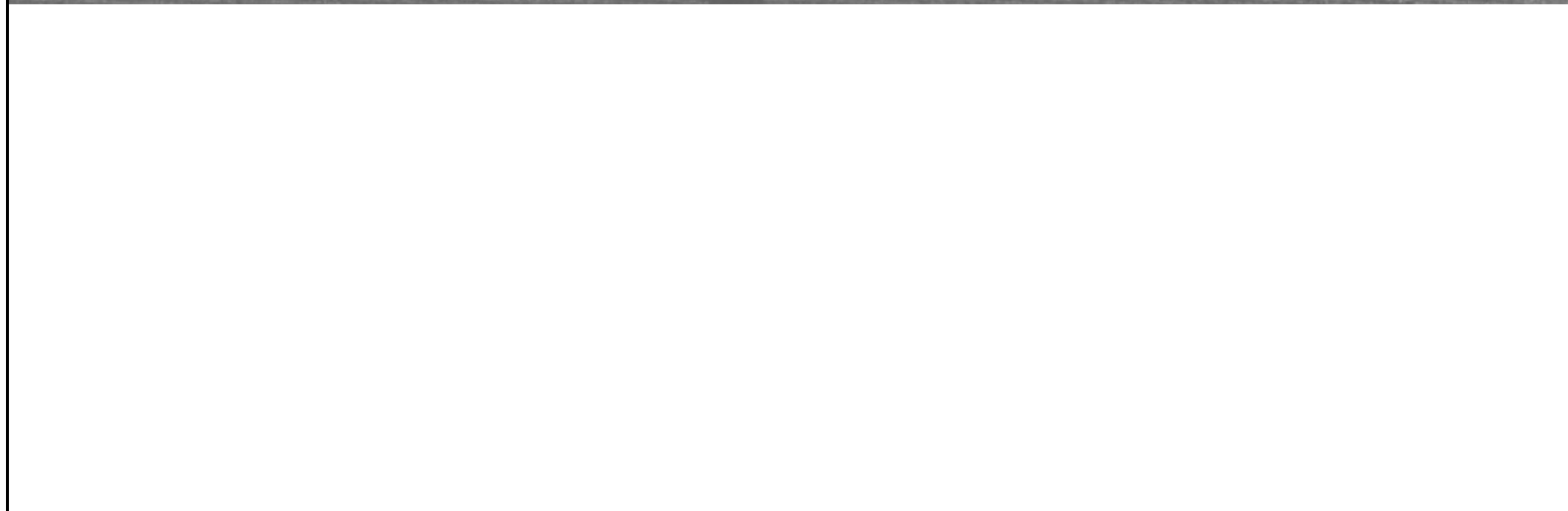












Survey Information

SURVEY INDEX

County: Buchanan
PIN: 24-10-187-010
Project Number: STPN-187-1(036)--2J-10
Location: 220th St to IA 3
Type of Work: Pipe/Culvert Repair
Project Directory: 1018701024

Survey Personnel

John Hahn– Survey Party Chief

Date(s) of Survey

Begin Date 09/23/2025
End Date 10/29/2025

General Information

This survey is for IA Hwy 187 pipe and culvert repair at various locations from 220th Street to IA Hwy 3. This survey request was for the IA Hwy 187 corridor only. This project is a Full Field DTM survey.

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 six-hour static observations. Post processing is constrained to nearby Iowa Real Time Network reference stations. For additional details of the control survey, contact the Preliminary Survey department.

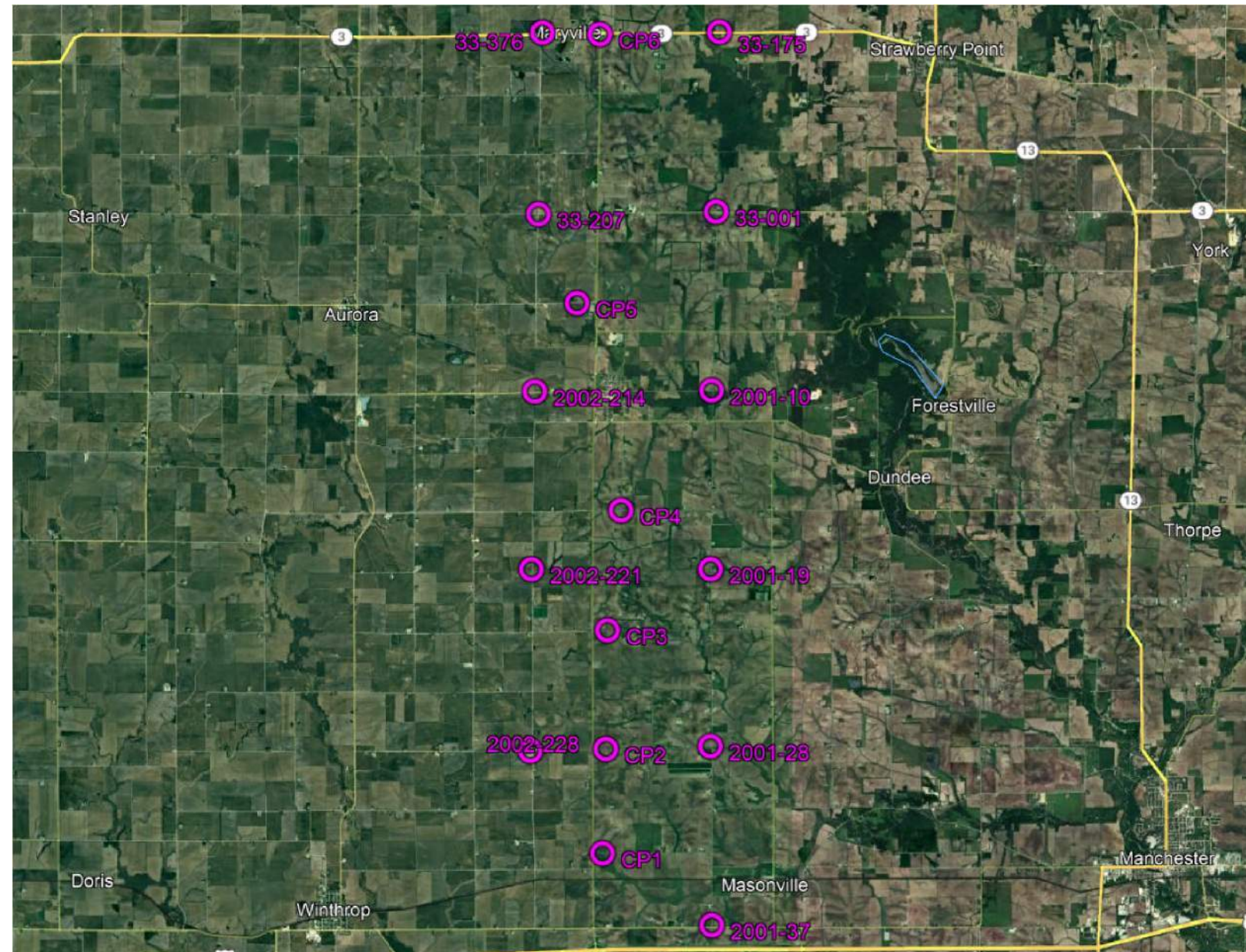
PROJECT DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 ADJUSTMENT)
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 5
(U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u3

Alignment Information

The alignment for this project was provided by District 6 ROW Survey.

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) for EPOCH 2010.00 (IaRTN 2019 Adjustment) - Iowa RCS Zone 5 (U.S. Survey Foot)

VERT. DATUM: NAVD88 - Geoid Model: 2018u3

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 5 (U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2018u3

Point Name	Northing	Easting	Elevation	Code/Description
2001-37	8834861.67	15673117.80	1019.62	CP FND BUCHANAN CO GPS MON IN GOOD COND
CP1	8841224.56	15663226.83	1019.31	CP SET FENO MON
CP3	8861106.90	15663514.65	1112.10	CP SET FENO MON
CP2	8850492.58	15663460.98	1080.18	CP SET FENO MON
2001-28	8850836.55	15672950.59	1024.80	CP FND BUCHANAN CO GPS MON IN GOOD COND
CP4	8871819.23	15664678.58	1096.06	CP SET FENO MON
2002-221	8866416.48	15656772.46	1100.23	CP FND BUCHANAN CO GPS MON IN GOOD COND
2001-19	8866642.97	15672722.70	1095.10	CP FND BUCHANAN CO GPS MON IN GOOD COND
CP5	8890315.45	15660538.11	1053.06	CP SET FENO MON
33-207	8898142.32	15657120.42	1099.05	CP FND FAYETTE CO GPS MON IN GOOD COND
2001-10	8882603.95	15672824.95	1021.86	CP FND BUCHANAN CO GPS MON IN GOOD COND
33-001	8898433.81	15673032.46	1116.18	CP FND FAYETTE CO GPS MON IN GOOD COND
2002-214	8882342.51	15656868.59	1061.03	CP FND BUCHANAN CO GPS MON IN GOOD COND
33-376	8914359.54	15657227.60	1116.26	CP FND FAYETTE CO GPS MON IN GOOD COND
CP6	8914205.23	15662734.71	1152.63	CP SET FENO MON
33-175	8914482.14	15673140.01	1086.05	CP FND FAYETTE CO GPS MON IN GOOD COND

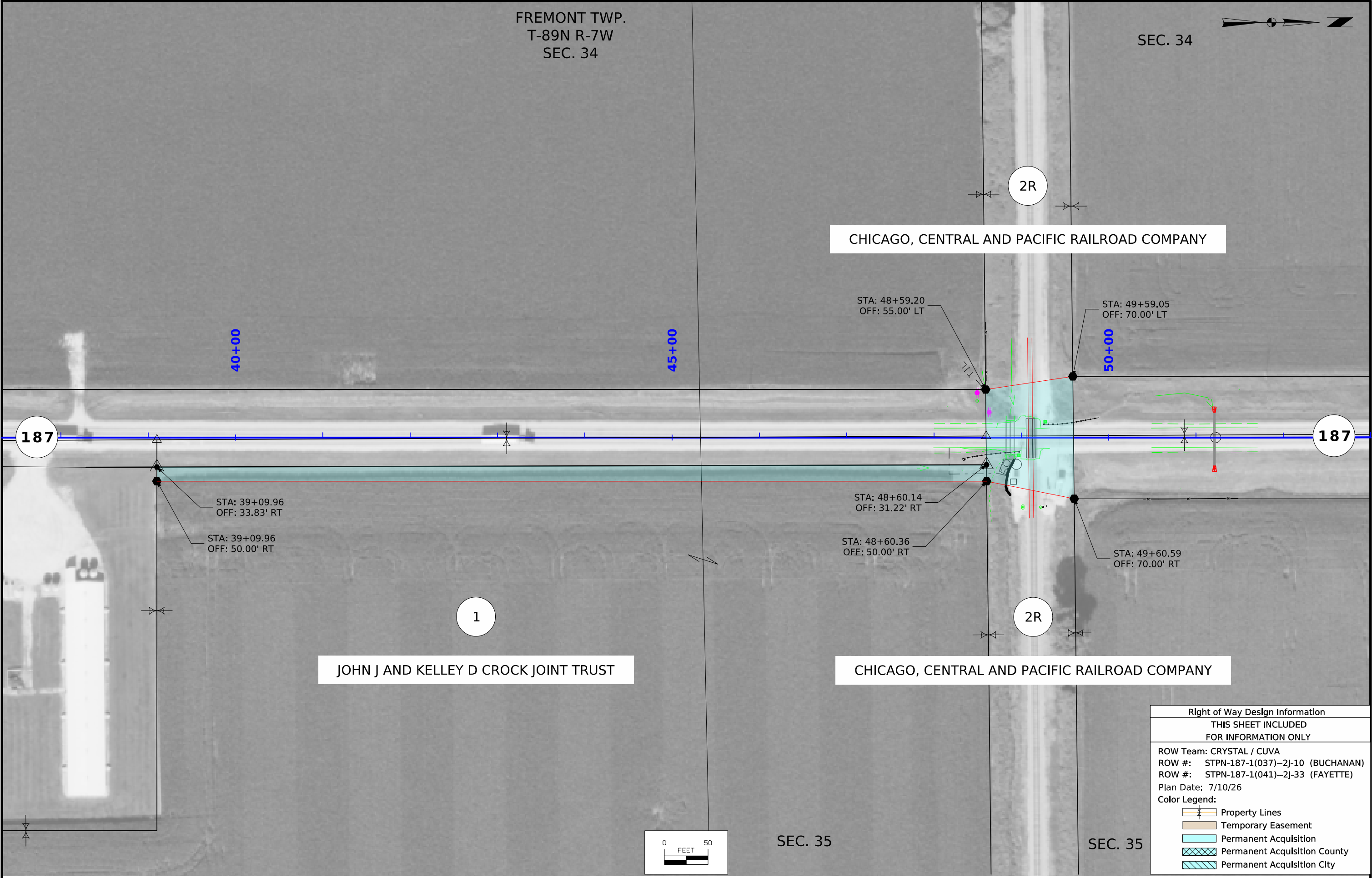
		State			County			City										
Parcel No	Owner Name	Fee	Hwy Ease	Other Ease	Fee	Hwy Ease	Other Ease	Fee	Hwy Ease	Other Ease	Excess	Temp Ease	Mitigation	Utility Ease	Relocation	TE Only	A/C Only	Total Acq
1	JOHN J AND KELLY D CROCK JOINT TRUST		0.38 AC															
2R	CHICAGO, CENTRAL AND PACIFIC RAILROAD COMPANY		0.28 AC															
3	MICHAEL E ANKROM		1.51 AC															
4	BOWDEN INVESTMENT COMPANY LP		0.02 AC															
5	RON HOEFER		0.06 AC															
6	MORINE FARMS INC		0.03 AC															
7	W A REED FARM LLC		0.03 AC															
8	BOWDEN INVESTMENT COMPANY LP		0.03 AC															
9	JAMES A WELTER REVOCABLE TRUST		0.01 AC															
10	ERIC H MANN TRUST		0.01 AC															
11	EDNA A BRUNKHORST LIVING TRUST		0.02 AC															
12	CHARLES GOEDKEN		0.10 AC															
13	PHILIP JUDE BRUNKHORST		0.01 AC															
14	LEON GOEDKEN		2.31 AC															
15	JAMES JEROME KOCH TRUST		0.02 AC															
16	MARK H ENGELBRECHT		0.06 AC															
17	ELLEN L HOWARD TRUST		0.08 AC															
18	HULLERMANN LEGACY FARMS LLC		0.01 AC															
19	DONALD COOK LTD		0.18 AC															
20	OAK HAVEN LLC		0.02 AC															
22	RANDALL L AND BARBARA R SWALES (LE)		0.03 AC															

21 Parcels

Parcel No	Owner Name	State			County			City			Excess	Temp Ease	Mitigation	Utility Ease	Relocation	TE Only	A/C Only	Total Acq
		Fee	Hwy Ease	Other Ease	Fee	Hwy Ease	Other Ease	Fee	Hwy Ease	Other Ease								
23	RONALD AND DEBRA E CARPENTER REVOCABLE TRUST											0.01 AC				Yes		
24	JAMES E OELRICH											0.02 AC				Yes		
25	GWEN K JONES											0.03 AC				Yes		
26	GWEN K JONES											0.01 AC				Yes		
27	DANIEL DELONG TESTAMENTARY TRUST											0.02 AC				Yes		
28	JOANN F DELONG 2005 REVOCABLE TRUST											0.02 AC				Yes		

6 Parcels

NO ACCESS RIGHTS ARE TO BE ACQUIRED ON THIS PROJECT.



FREMONT TWP.
T-89N R-7W
SEC. 27



85+00

90+00

95+00

187

187

STA: 85+30.21
OFF: 33.00' RT

STA: 85+30.03
OFF: 60.00' RT

3

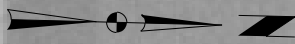
RODNEY L ANKROM
MICHAEL E ANKROM
MICHELLE A HARRIS

SEC. 26



Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: CRYSTAL / CUVA	
ROW #: STPN-187-1(037)--2J-10 (BUCHANAN)	
ROW #: STPN-187-1(041)--2J-33 (FAYETTE)	
Plan Date: 7/10/26	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition
	Permanent Acquisition County
	Permanent Acquisition City

FREMONT TWP.
T-89N R-7W
SEC. 27



100+00

105+00

110+00

187

187

STA: 99+06.17
OFF: 31.46' RT

STA: 99+05.16
OFF: 60.00' RT

STA: 102+20.44
OFF: 31.11' RT

STA: 102+20.44
OFF: 60.00' RT

STA: 108+78.37
OFF: 56.88' RT

STA: 111+29.24
OFF: 21.55' RT

STA: 111+29.51
OFF: 59.63' RT

3

RODNEY L ANKROM
MICHAEL E ANKROM
MICHELLE A HARRIS

200TH ST

SEC. 26



Right of Way Design Information

THIS SHEET INCLUDED
FOR INFORMATION ONLY

ROW Team: CRYSTAL / CUVA
ROW #: STPN-187-1(037)--2J-10 (BUCHANAN)
ROW #: STPN-187-1(041)--2J-33 (FAYETTE)
Plan Date: 7/10/26

Color Legend:

- Property Lines
- Temporary Easement
- Permanent Acquisition
- Permanent Acquisition County
- Permanent Acquisition City

FILE NO.

ENGLISH

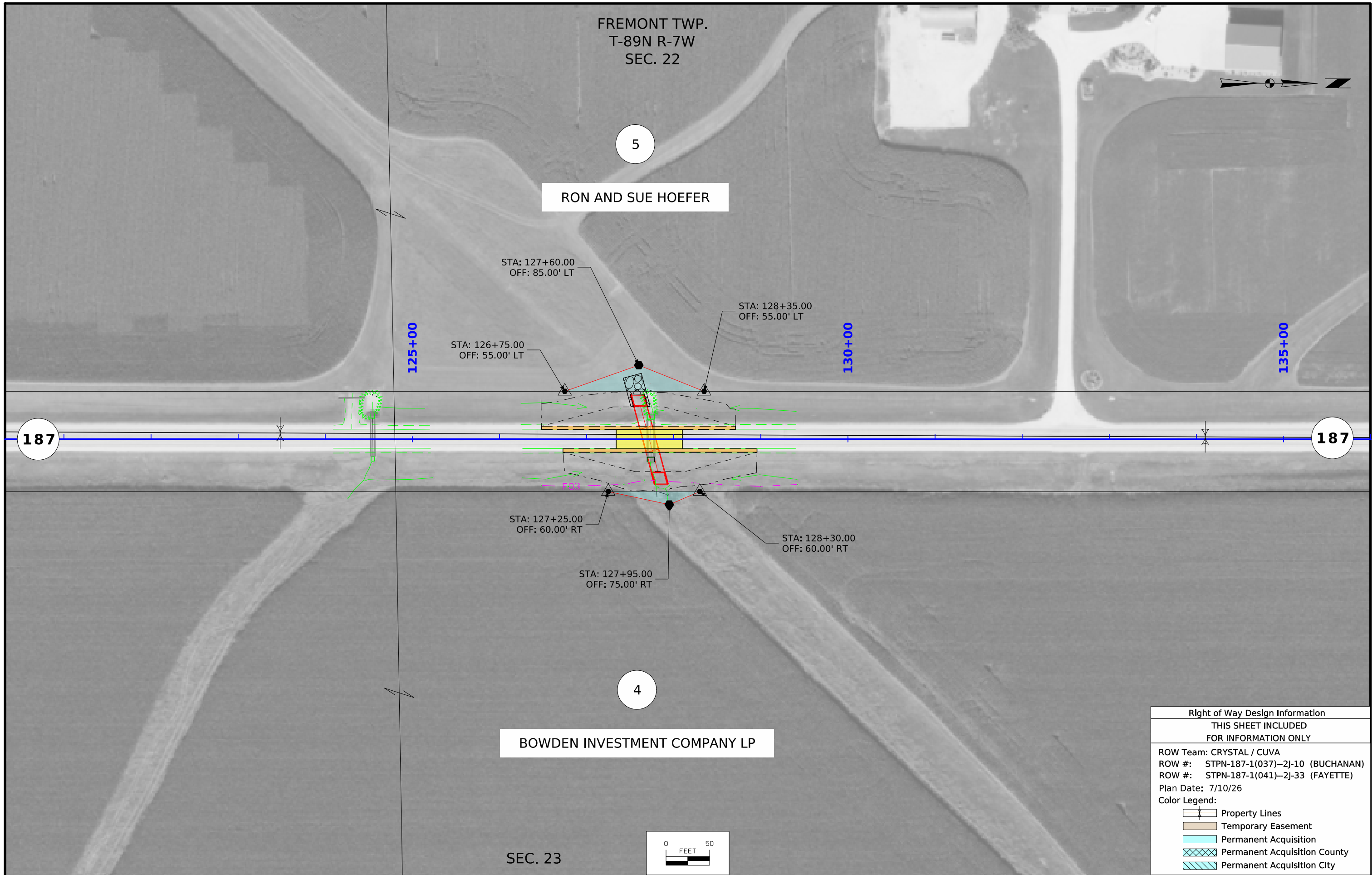
DESIGN TEAM **AECOM**

BUCHANAN COUNTY

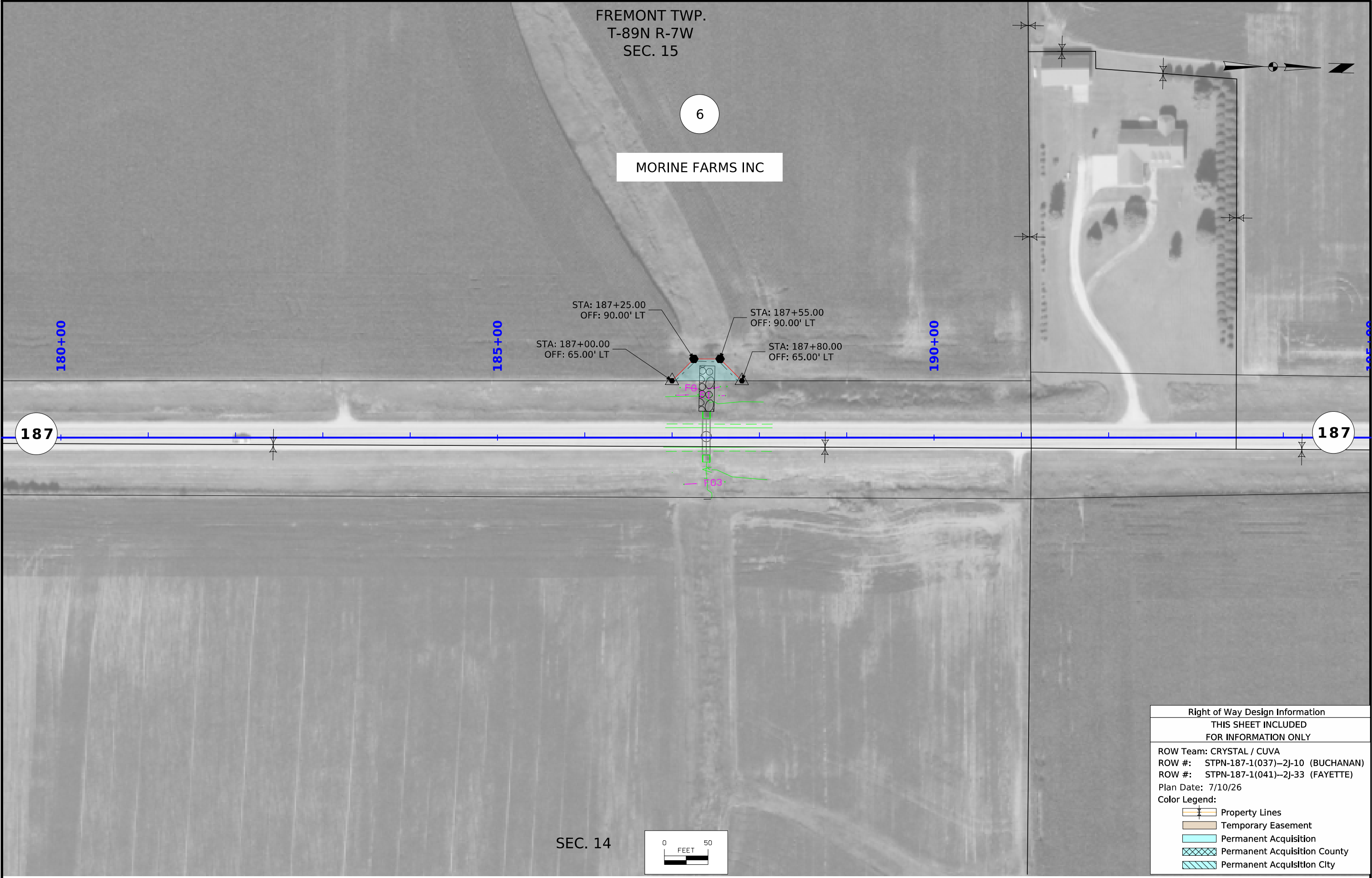
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SHEET NUMBER **H.3**

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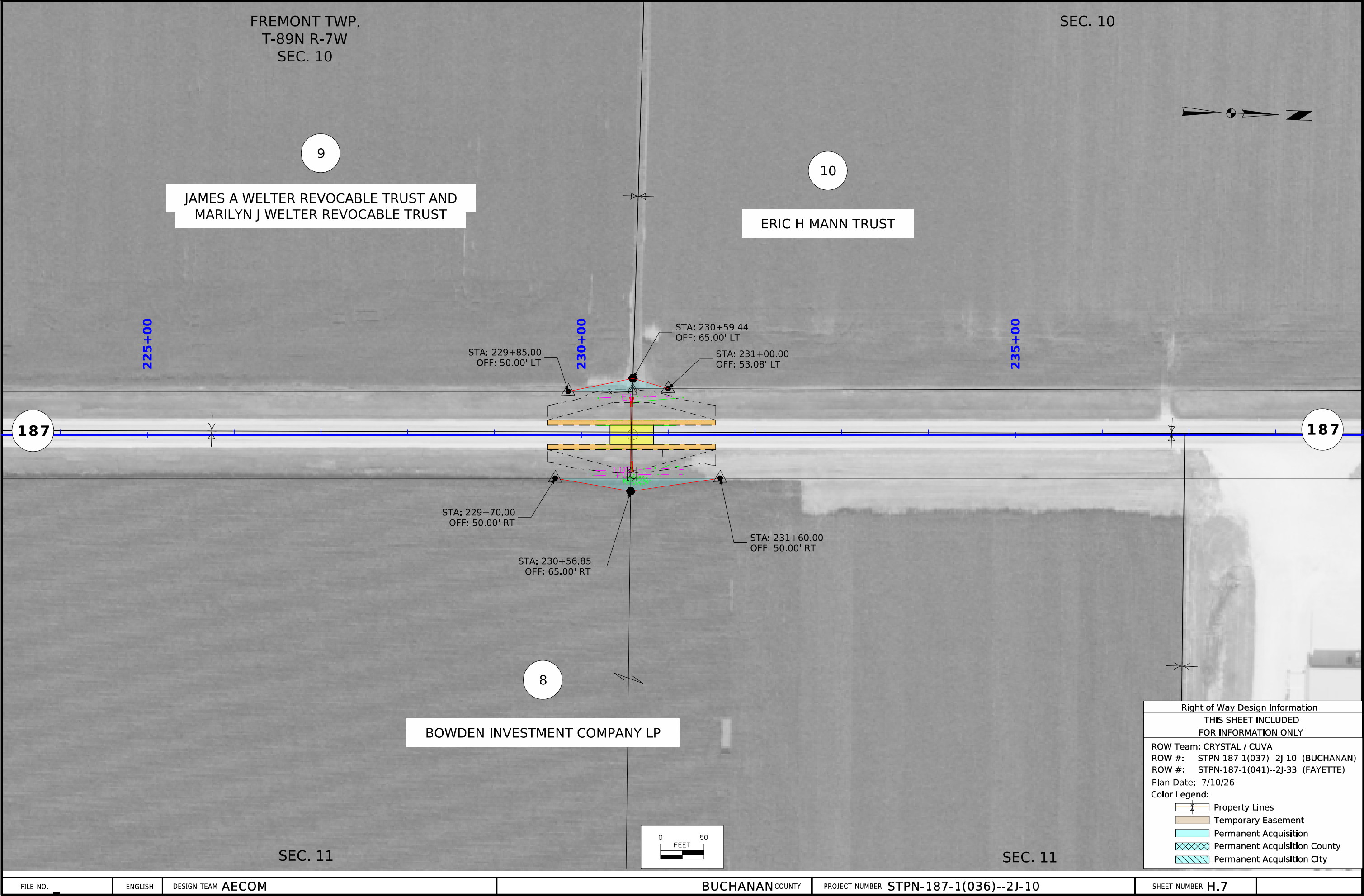


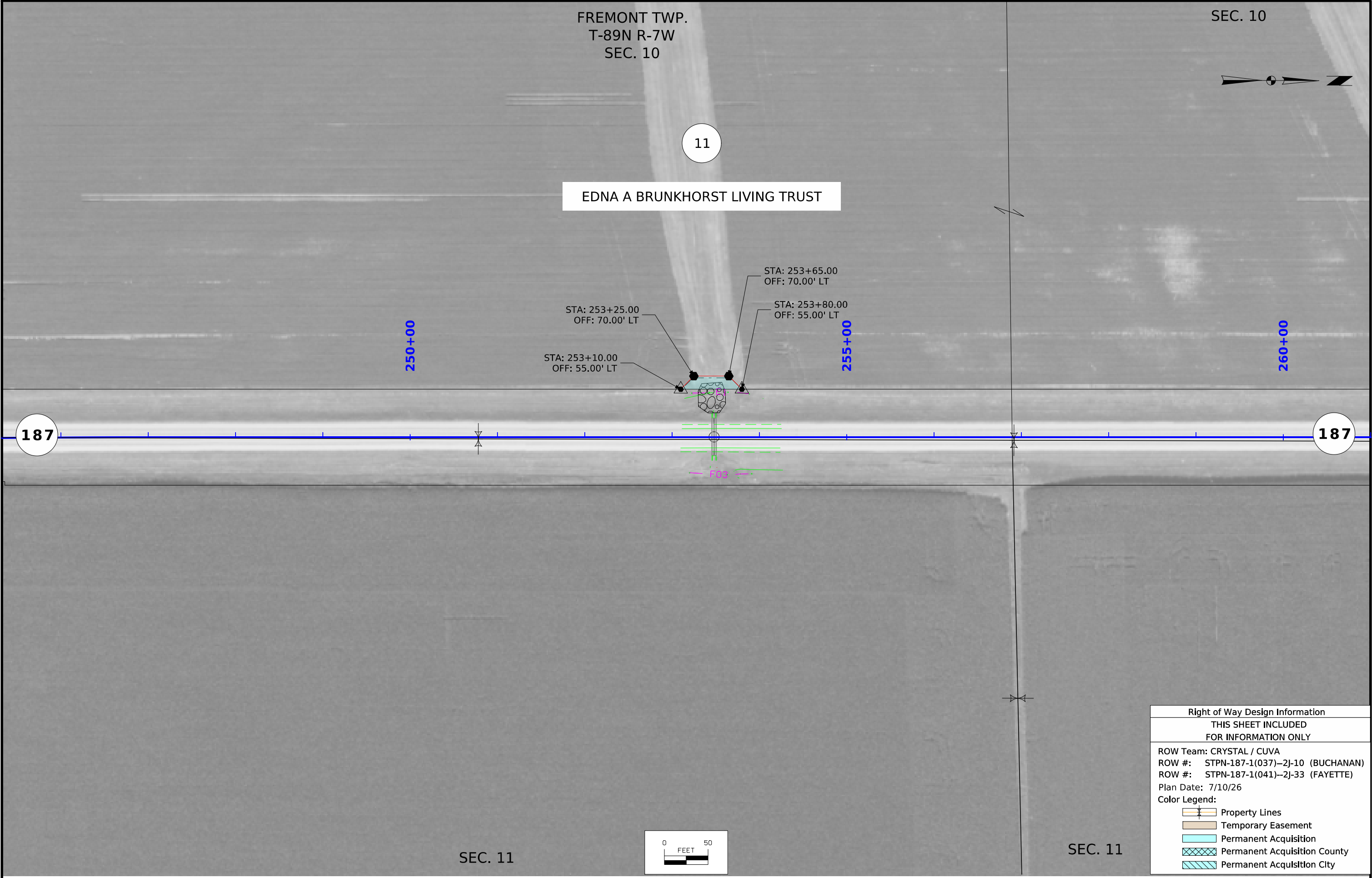
Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: CRYSTAL / CUVA	
ROW #: STPN-187-1(037)--2J-10 (BUCHANAN)	
ROW #: STPN-187-1(041)--2J-33 (FAYETTE)	
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Color Legend:	
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	Temporary Easement
	Permanent Acquisition
	Permanent Acquisition County
	Permanent Acquisition City



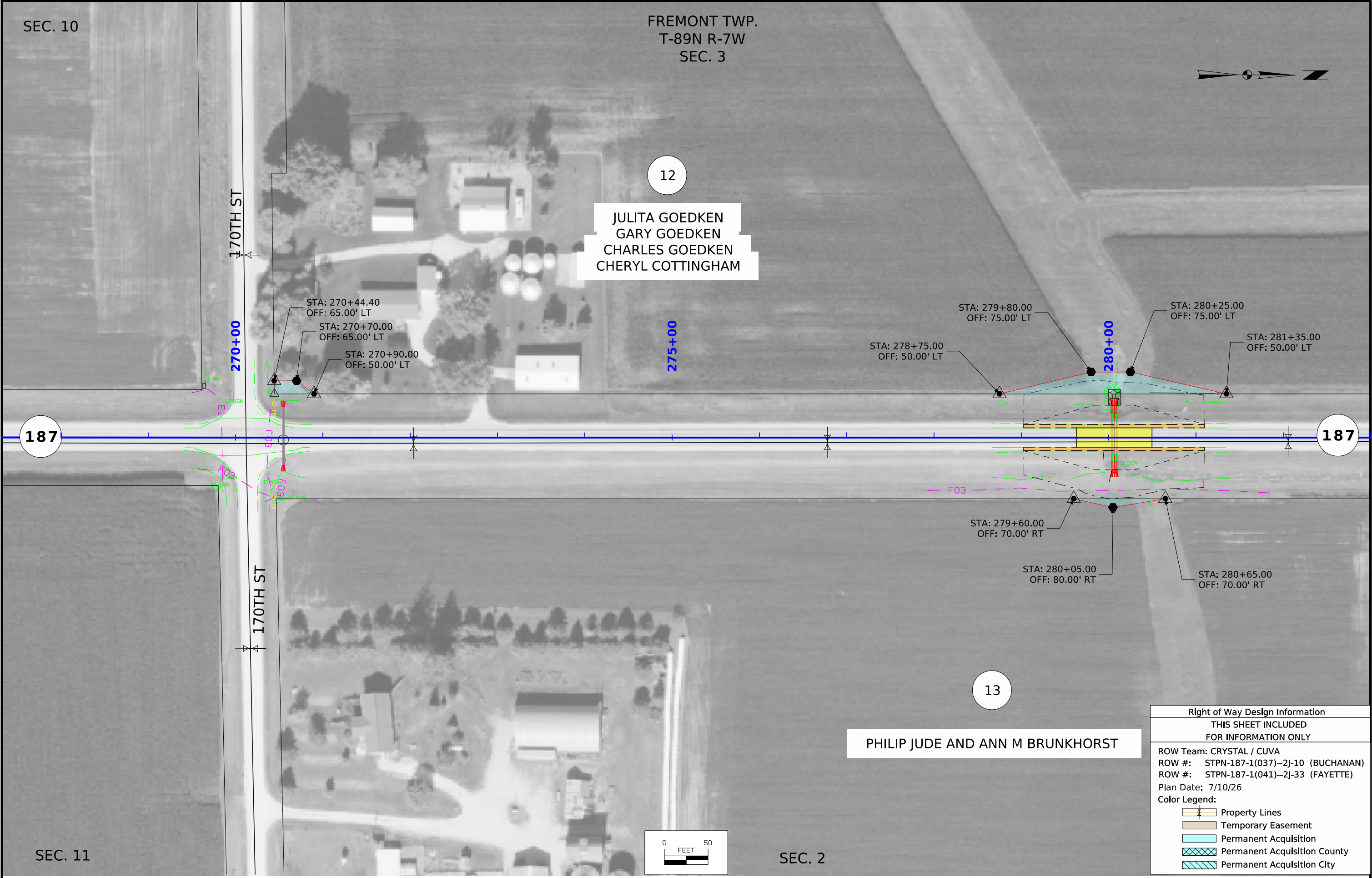


Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: CRYSTAL / CUVA	
ROW #: STPN-187-1(037)--2J-10 (BUCHANAN)	
ROW #: STPN-187-1(041)--2J-33 (FAYETTE)	
Plan Date: 7/10/26	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition
	Permanent Acquisition County
	Permanent Acquisition City





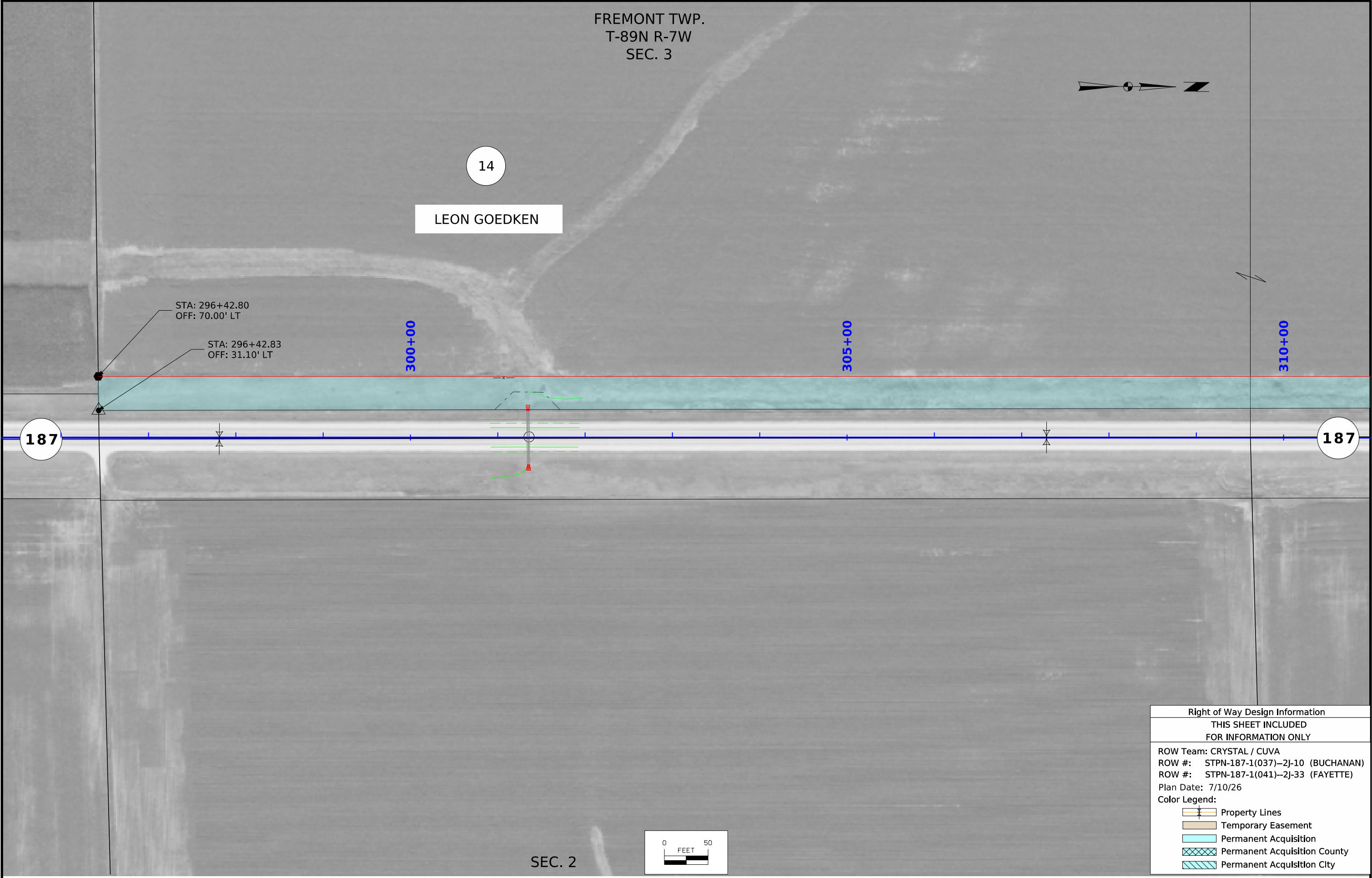
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FOR INFORMATION ONLY	
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ROW #: STPN-187-1(037)--2J-10 (BUCHANAN)	
ROW #: STPN-187-1(041)--2J-33 (FAYETTE)	
Plan Date: 7/10/26	
Color Legend:	
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	Permanent Acquisition
	Permanent Acquisition County
	Permanent Acquisition City

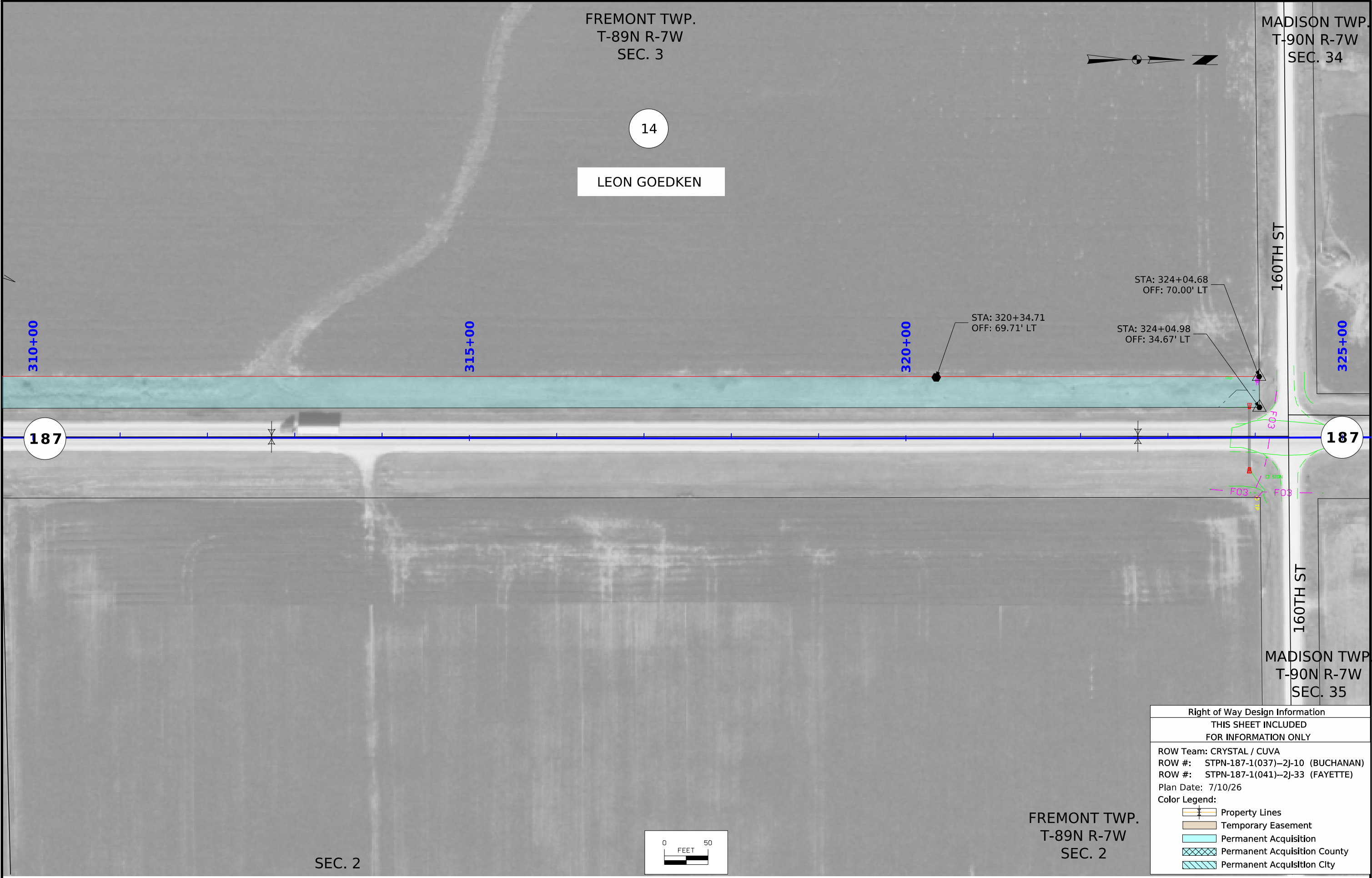


JULITA GOEDKEN
GARY GOEDKEN
CHARLES GOEDKEN
CHERYL COTTINGHAM

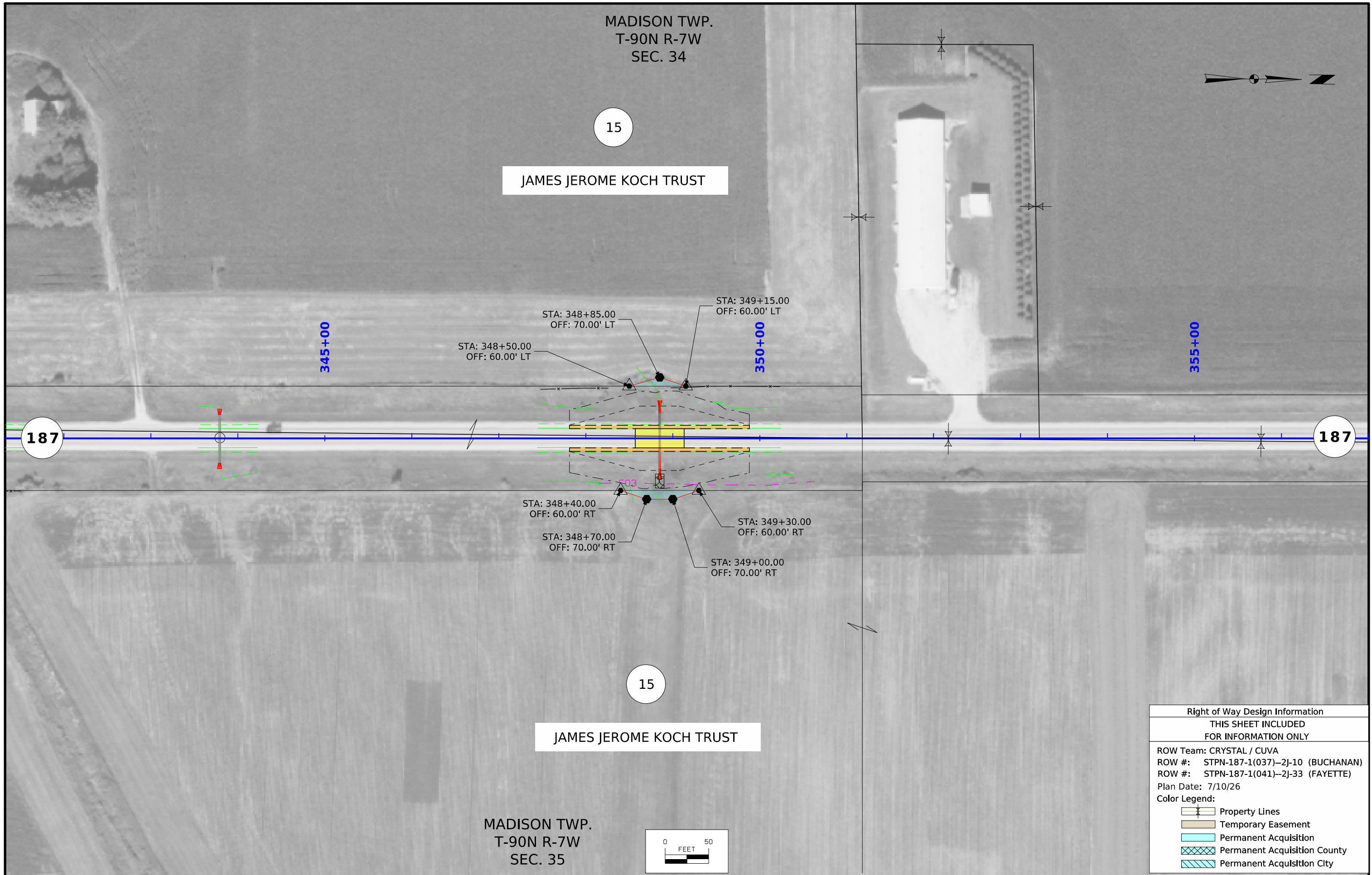
PHILIP JUDE AND ANN M BRUNKHORST

Right of Way Design Information	
THIS SHEET INCLUDED	
FOR INFORMATION ONLY	
ROW Team: CRYSTAL / CUVA	
ROW #: STPN-187-1(037)--2J-10 (BUCHANAN)	
ROW #: STPN-187-1(041)--2J-33 (FAYETTE)	
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Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition
	Permanent Acquisition County
	Permanent Acquisition City

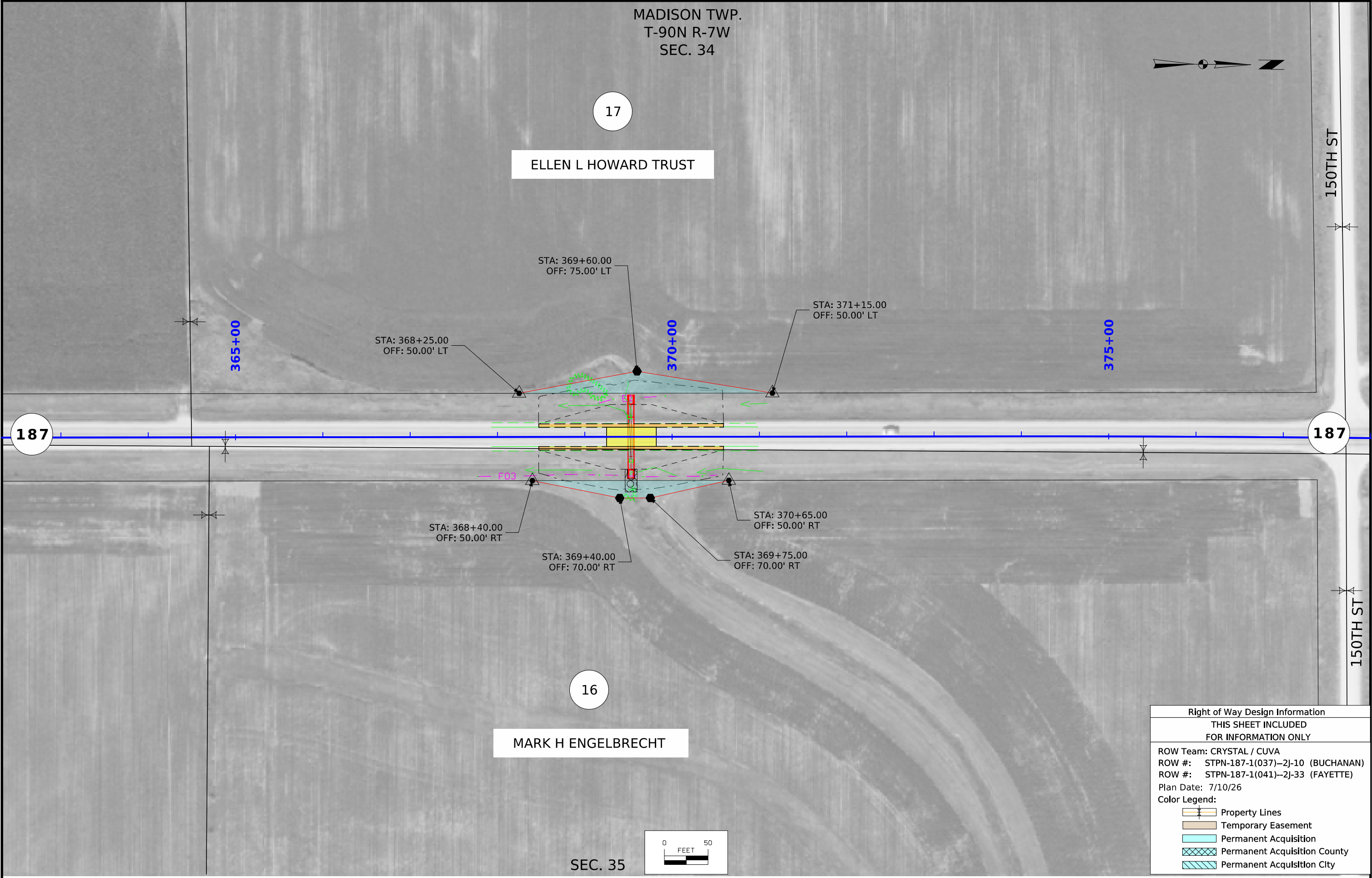




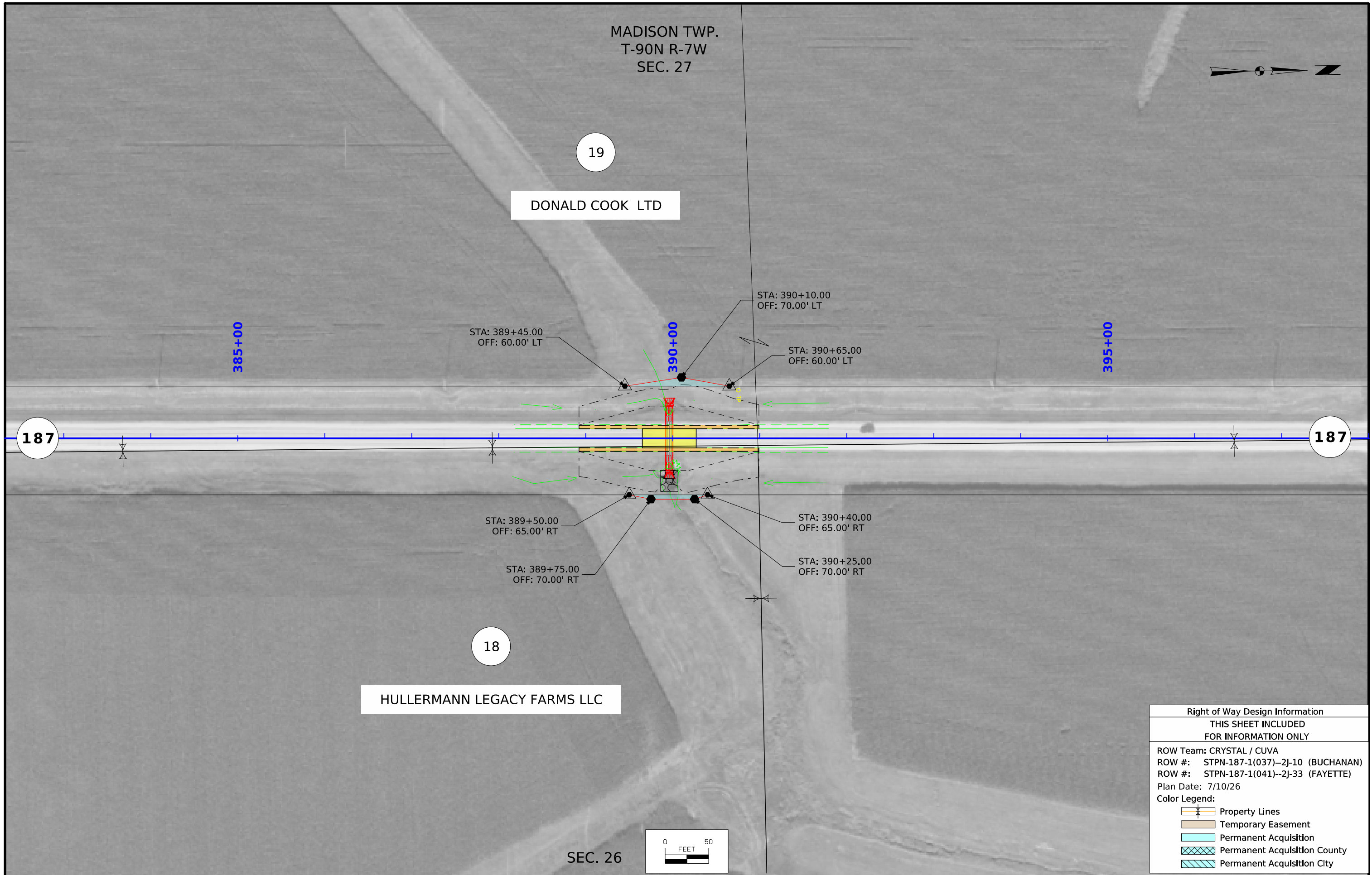
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ROW #: STPN-187-1(037)--2J-10 (BUCHANAN)	
ROW #: STPN-187-1(041)--2J-33 (FAYETTE)	
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ROW #: STPN-187-1(041)--2J-33 (FAYETTE)	
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ROW #: STPN-187-1(041)--2J-33 (FAYETTE)
Plan Date: 7/10/26
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Permanent Acquisition
Permanent Acquisition County
Permanent Acquisition City



RANDALL L AND BARBARA R SWALES (LE), ETAL

MADISON TWP.
T-90N R-7W
SEC. 22
(BUCHANAN)

22

19

DONALD COOK LTD

MADISON TWP.
T-90N R-7W
SEC. 23
(BUCHANAN)

187

187

STA: 443+97.73
OFF: 95.00' LT

STA: 444+60.00
OFF: 95.00' LT

STA: 445+20.00
OFF: 80.00' LT

STA: 444+03.36
OFF: 67.50' RT

STA: 445+00.00
OFF: 100.00' RT

STA: 446+10.00
OFF: 67.89' RT

FILE NO.

ENGLISH

DESIGN TEAM **AECOM**

BUCHANAN COUNTY

PROJECT NUMBER **STPN-187-1(036)--2J-10**

SHEET NUMBER **H.16**

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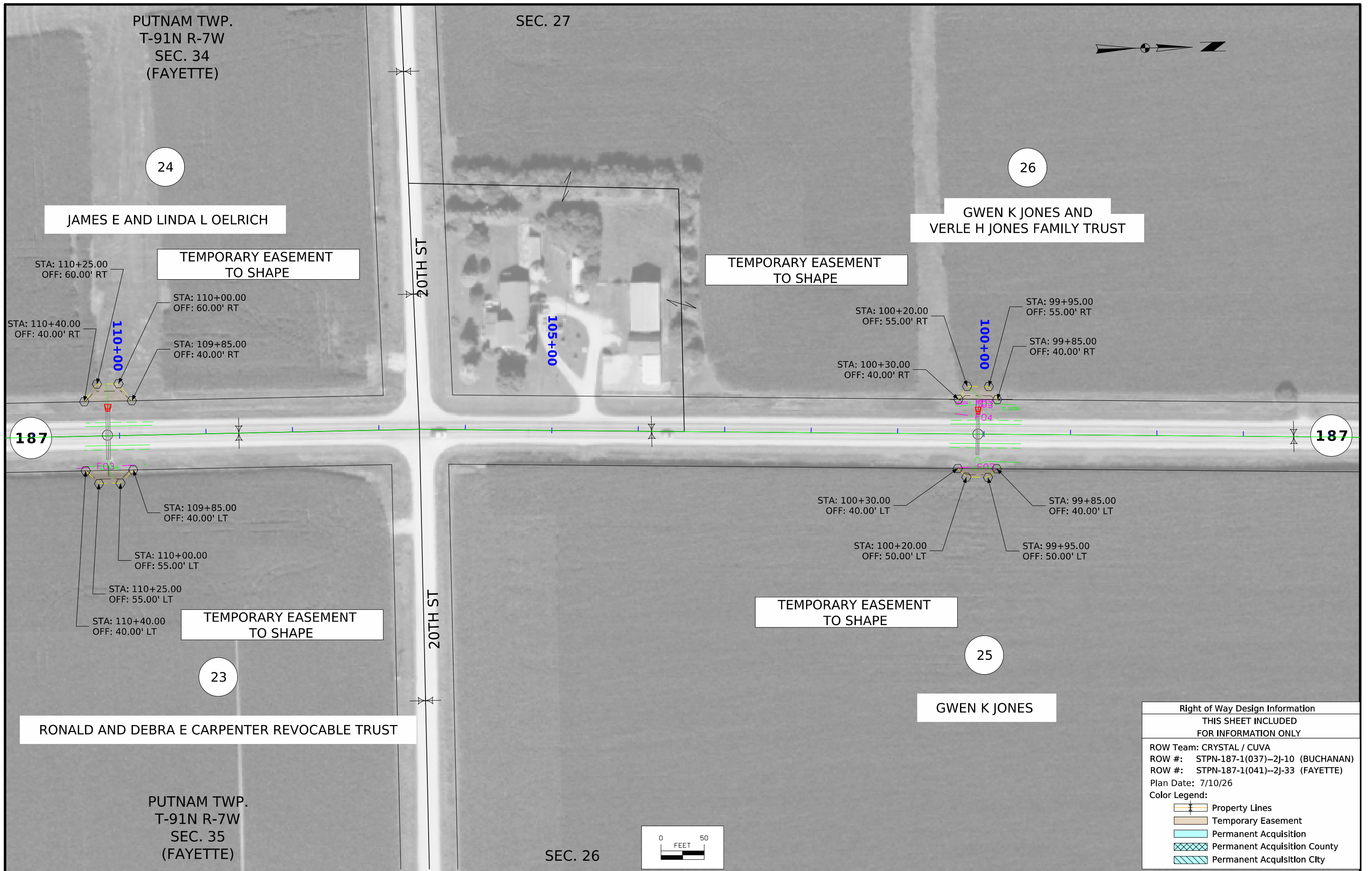
Right of Way Design Information

THIS SHEET INCLUDED
FOR INFORMATION ONLY

ROW Team: CRYSTAL / CUVA
ROW #: STPN-187-1(037)--2J-10 (BUCHANAN)
ROW #: STPN-187-1(041)--2J-33 (FAYETTE)
Plan Date: 7/10/26

Color Legend:

- Property Lines
- Temporary Easement
- Permanent Acquisition
- Permanent Acquisition County
- Permanent Acquisition City



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ROW Team: CRYSTAL / CUVA	
ROW #: STPN-187-1(037)--2J-10 (BUCHANAN)	
ROW #: STPN-187-1(041)--2J-33 (FAYETTE)	
Plan Date: 7/10/26	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition
	Permanent Acquisition County
	Permanent Acquisition City

GWEN K JONES

95+00

00+00

85+00

STA: 83+05.00
OFF: 39.99' RT

187

187

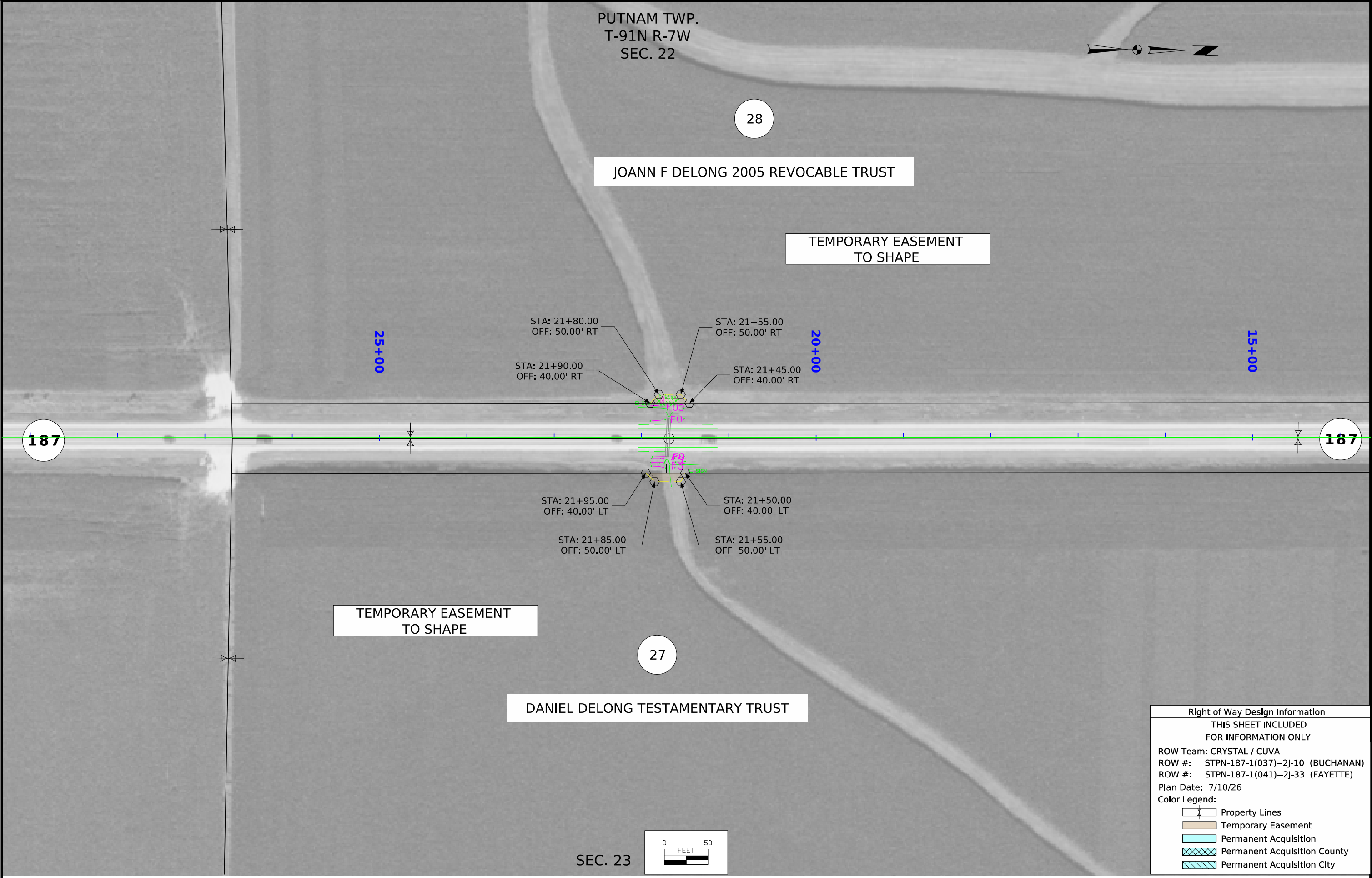
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OFF: 55.00' LT

25

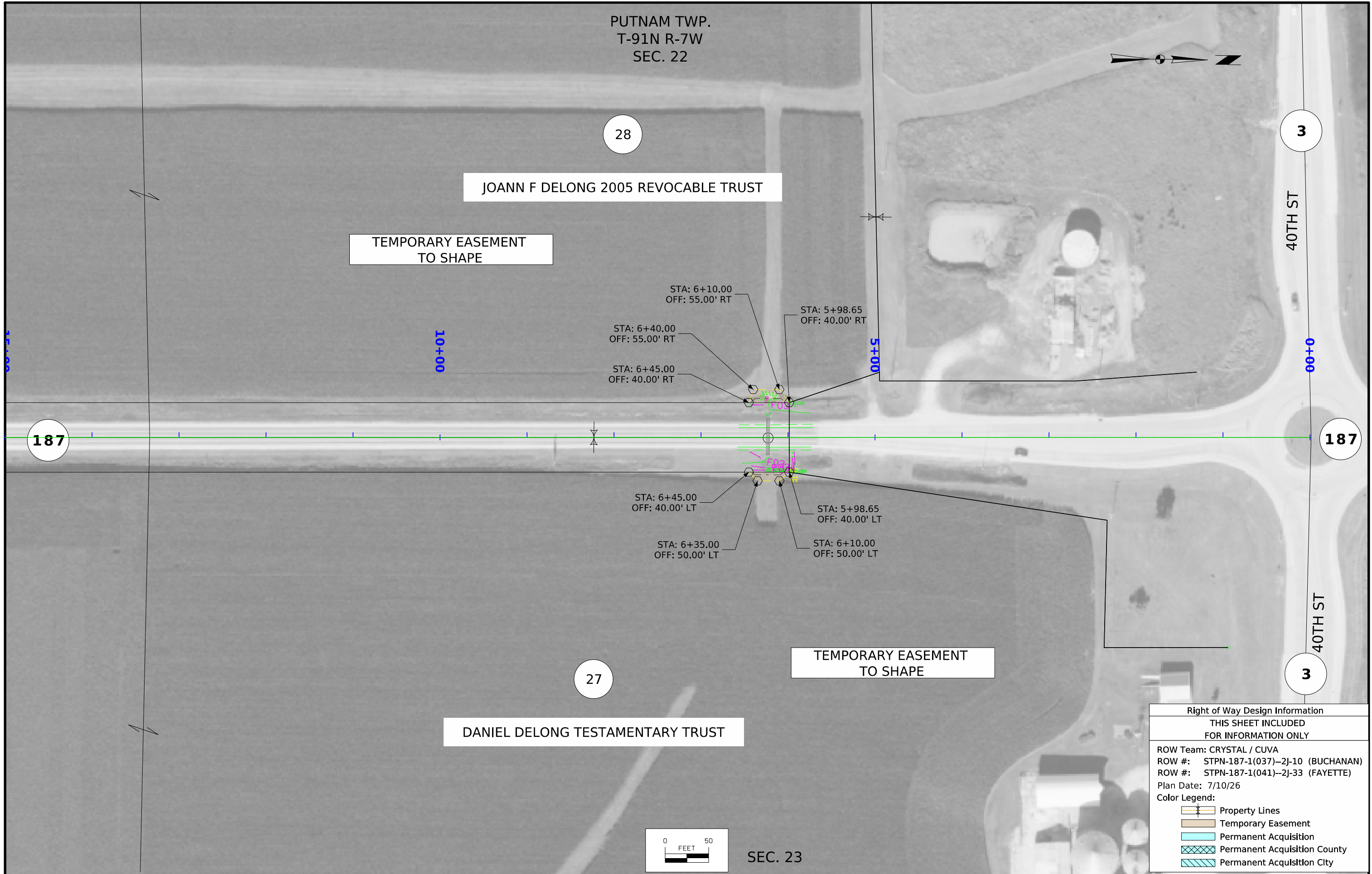
GWEN K JONES

A graphic scale bar with a horizontal line. Above the left end is the number '0' and above the right end is the number '50'. The word 'FEET' is centered above the line. The line is divided into two equal segments by a vertical tick mark in the middle. The left segment is white, and the right segment is black.

Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: CRYSTAL / CUVA	
ROW #: STPN-187-1(037)--2J-10 (BUCHANAN)	
ROW #: STPN-187-1(041)--2J-33 (FAYETTE)	
Plan Date: 7/10/26	
Color Legend:	
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	Temporary Easement
	Permanent Acquisition
	Permanent Acquisition County
	Permanent Acquisition City



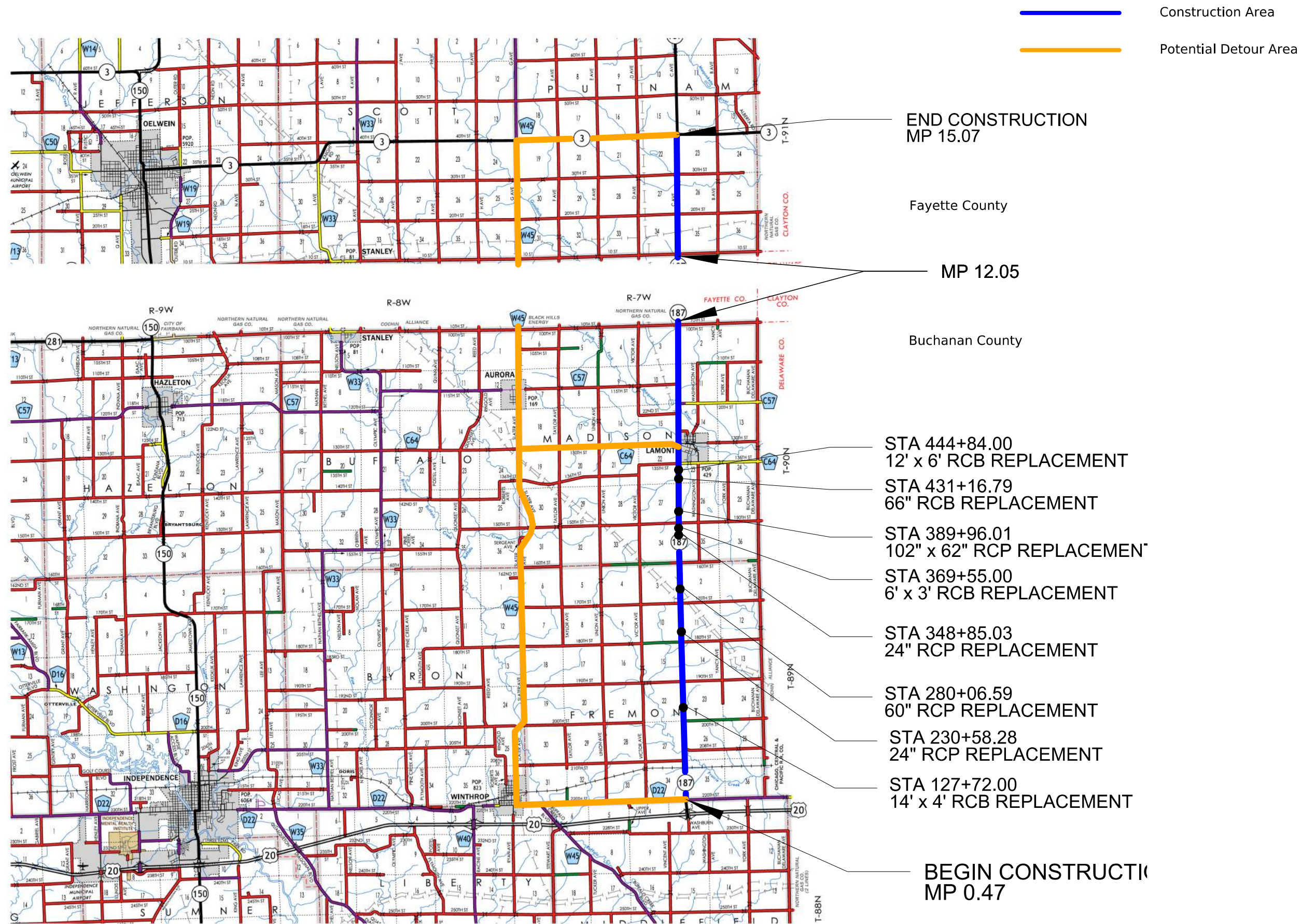
Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: CRYSTAL / CUVA	
ROW #: STPN-187-1(037)--2J-10 (BUCHANAN)	
ROW #: STPN-187-1(041)--2J-33 (FAYETTE)	
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	Permanent Acquisition City



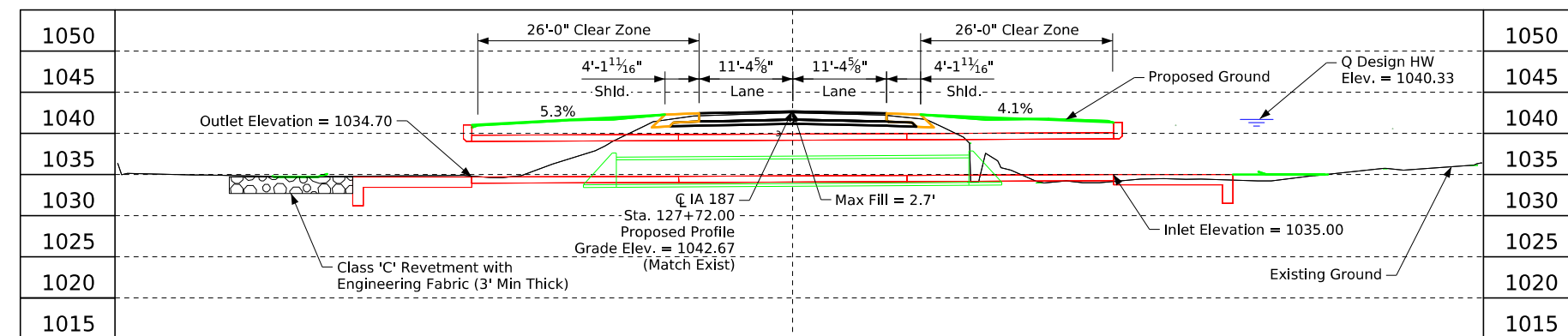
FILE NO.	ENGLISH	DESIGN TEAM AECOM	BUCHANAN COUNTY	PROJECT NUMBER STPN-187-1(036)--2J-10	SHEET NUMBER H.20
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Right of Way Design Information	
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ROW Team: CRYSTAL / CUVA	
ROW #: STPN-187-1(037)--2J-10 (BUCHANAN)	
ROW #: STPN-187-1(041)--2J-33 (FAYETTE)	
Plan Date: 7/10/26	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition
	Permanent Acquisition County
	Permanent Acquisition City



Control Point: CP SET FENO MON
Pnt. No.: CP2 N: 8850492.582 E: 15663460.981 Elev: 1080.179



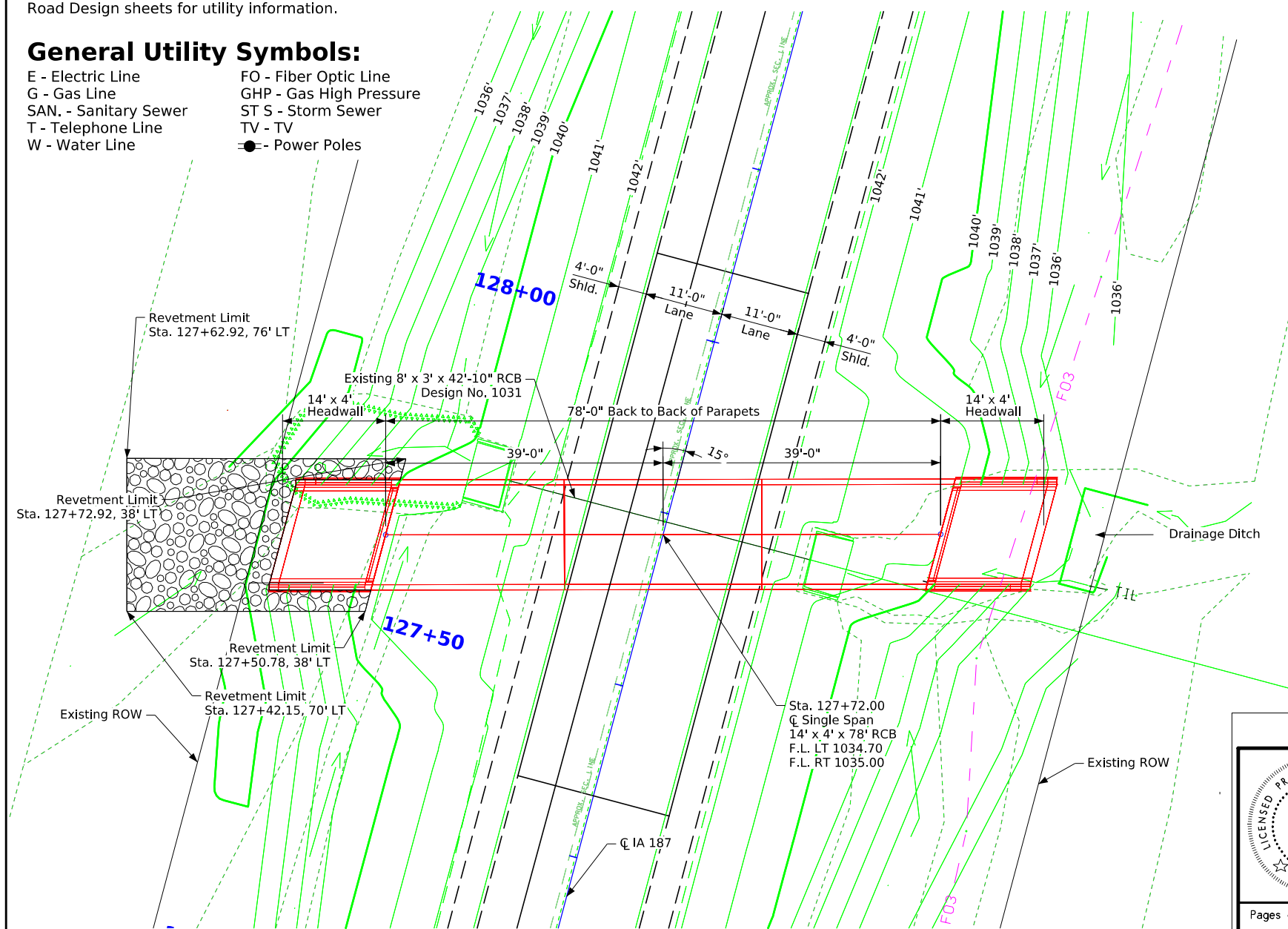
Utilities Note:

Utilities shown on this sheet are for information only. See Road Design sheets for utility information.

General Utility Symbols:

E - Electric Line
G - Gas Line
SAN. - Sanitary Sewer
T - Telephone Line
W - Water Line

FO - Fiber Optic Line
GHP - Gas High Pressure
ST S - Storm Sewer
TV - TV
●- Power Poles



Situation Plan



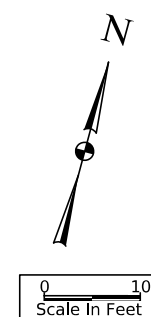
**Proposed Profile
Grade IA 187
(U.A.C.)**

Traffic Estimate

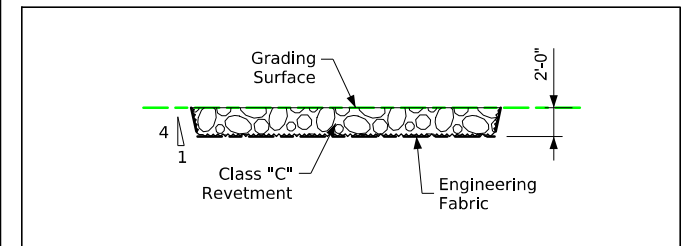
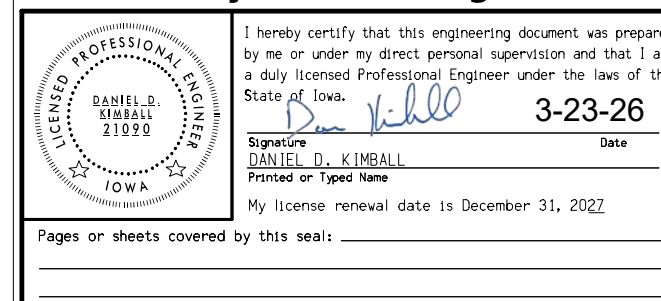
2024 AADT	2010 V.P.D.
TRUCKS	15.6 %

Location

IA 187 Over Drainage Ditch
T-89N R-7W
Section 22 & 23
Fremont Township
Buchanan County
Latitude 42.502514°
Longitude -91.648154°



Hydraulic Design



Typical Channel Protection

Estimated Revetment Quantities Included With Road Plans

Location	Revetment Class "C" (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Outlet	98.8	114.3	61.8
Totals	98.8	114.3	61.8

Excavation quantity calculated from grading surface. Excavation quantity is for embedded revetment core out only, and does not include excavation to the grading surface. Excavation quantity to the grading surface is determined by Road Design and included in the Road Plans. Quantities shown for information only. See Road Sheets.

Hydraulic Data

RIDB: Not Applicable
Drainage Area = 471.10 Acres
Stream Slope = 67.4 Ft./Mi.
 $Q_{50} = 432.50$ cfs
HW Elev. = 1040.33
Exit Velocity = 10.92 fps

Q₁₀₀ = 555.35 cfs
HW Elev. = 1041.84
Exit Velocity = 9.92 fps

General Notes:

This design is for the replacement of the existing 8' x 3' x 42'-10" Reinforced Concrete Box Culvert, Design No. 1031.

Design Notes:

IA 187 will be closed to traffic during construction and an off-site detour will be utilized.

Revetment is proposed at the culvert outlet due to the outlet velocity exceeding policy limits.

Density used for Class C Revetment quantity calculations is 1.6 T/cy

Plan Notes:

Drainage through existing culvert must be maintained throughout construction.

Design For 15 Degree
14'-0" x 4'-0" x 78'-0"
Cast-In-Place RCB Culvert

Situation Plan - CIP

STA. 127+72.00 (IA 187) Turn-in Date: Oct. 2027

Buchanan County

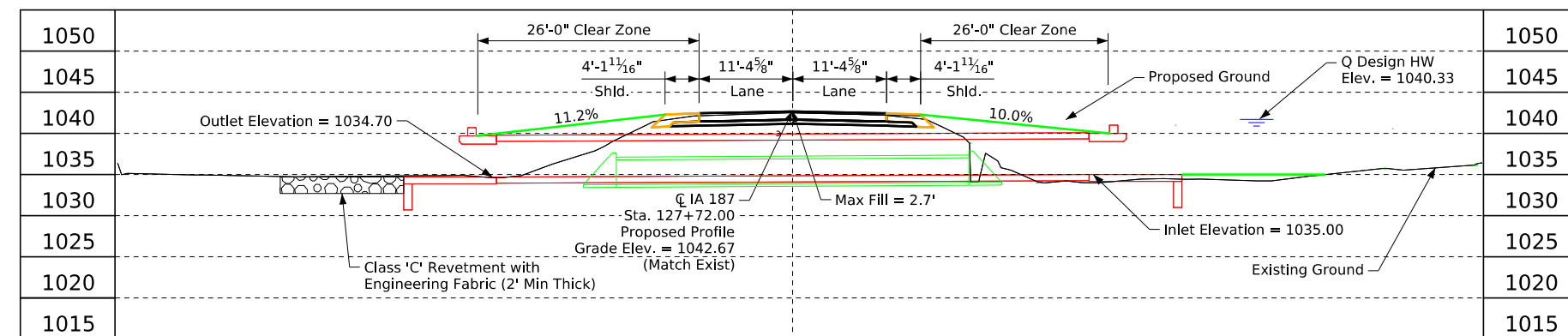
IOWA DEPARTMENT OF TRANSPORTATION

Design No.	Design Sheet No. 1 of 2	FHWA/Asset
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Design Sheet No. 1 of 2

FHWA/Asset

Control Point: CP SET FENO MON
Pnt. No.: CP2 N: 8850492.582 E: 15663460.981 Elev: 1080.179



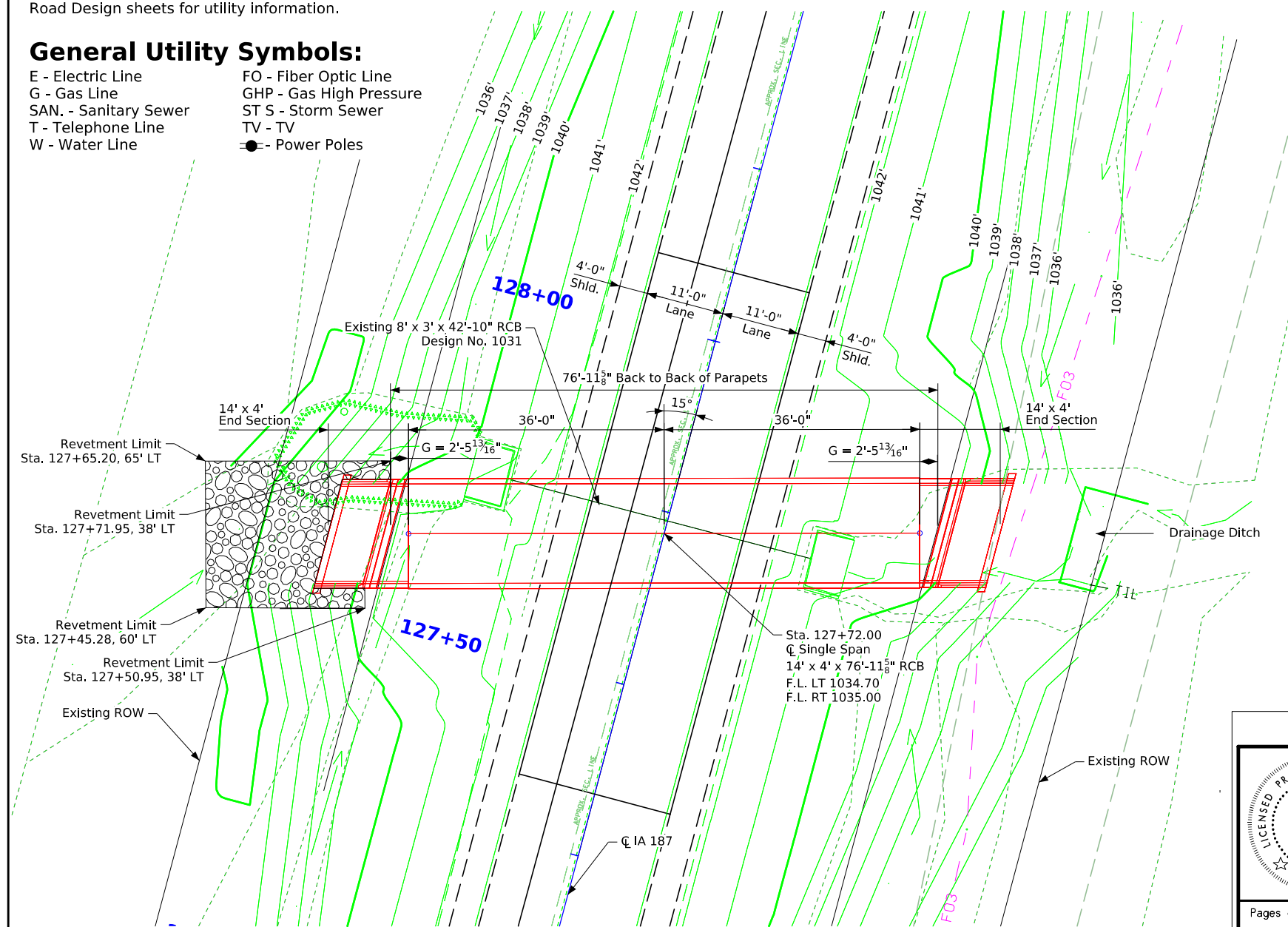
Utilities Note:

Utilities shown on this sheet are for information only. See Road Design sheets for utility information.

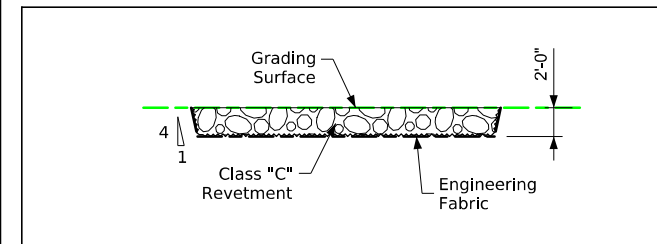
General Utility Symbols:

E - Electric Line
G - Gas Line
SAN. - Sanitary Sewer
T - Telephone Line
W - Water Line

FO - Fiber Optic Line
GHP - Gas High Pressure
ST S - Storm Sewer
TV - TV
●- Power Poles



Situation Plan



Typical Channel Protection

Estimated Revetment Quantities Included With Road Plans

Location	Revetment Class "C" (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Outlet	69.9	83.8	43.7
Totals	69.9	83.8	43.7

Excavation quantity calculated from grading surface. Excavation quantity is for embedded revetment core out only, and does not include excavation to the grading surface. Excavation quantity to the grading surface is determined by Road Design and included in the Road Plans. Quantities shown for information only. See Road Sheets.

Hydraulic Data

RIDB: Not Applicable
Drainage Area = 471.10 Acres
Stream Slope = 67.4 Ft./Mi.
Q₅₀ = 432.50 cfs
HW Elev. = 1040.33
Exit Velocity = 10.92 fps

Q₁₀₀ = 555.35 cfs
HW Elev. = 1041.84
Exit Velocity = 9.92 fps

General Notes:

This design is for the replacement of the existing 8' x 3' x 42'-10" Reinforced Concrete Box Culvert, Design No. 1031.

Design Notes:

IA 187 will be closed to traffic during construction and an off-site detour will be utilized.

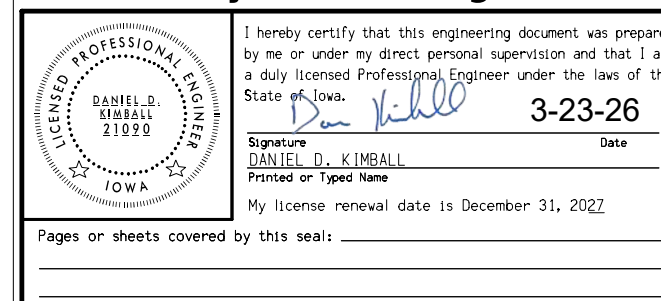
Revetment is proposed at the culvert outlet due to the outlet velocity exceeding policy limits.

Density used for Class C Revetment quantity calculations is 1.6 T/cy

Plan Notes:

Drainage through existing culvert must be maintained throughout construction.

Hydraulic Design



Design For 15 Degree Skew RA
14'-0" x 4'-0" x 76'-11 5/8"
Precast RCB Culvert

Situation Plan - PC

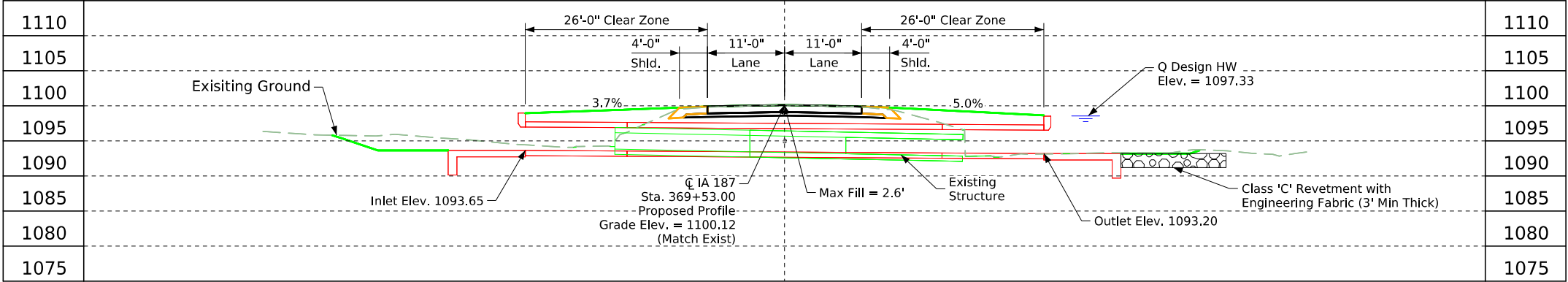
STA. 127+72.00 (IA 187) Turn-in Date: Oct. 2027

Buchanan County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. Design Sheet No. 2 of 2 FHWA/Asset

Control Point:
Pnt. No.: CP4 N: 15664678.582 E:8871819.227 Elev:1096.058, CP SET FENO MON



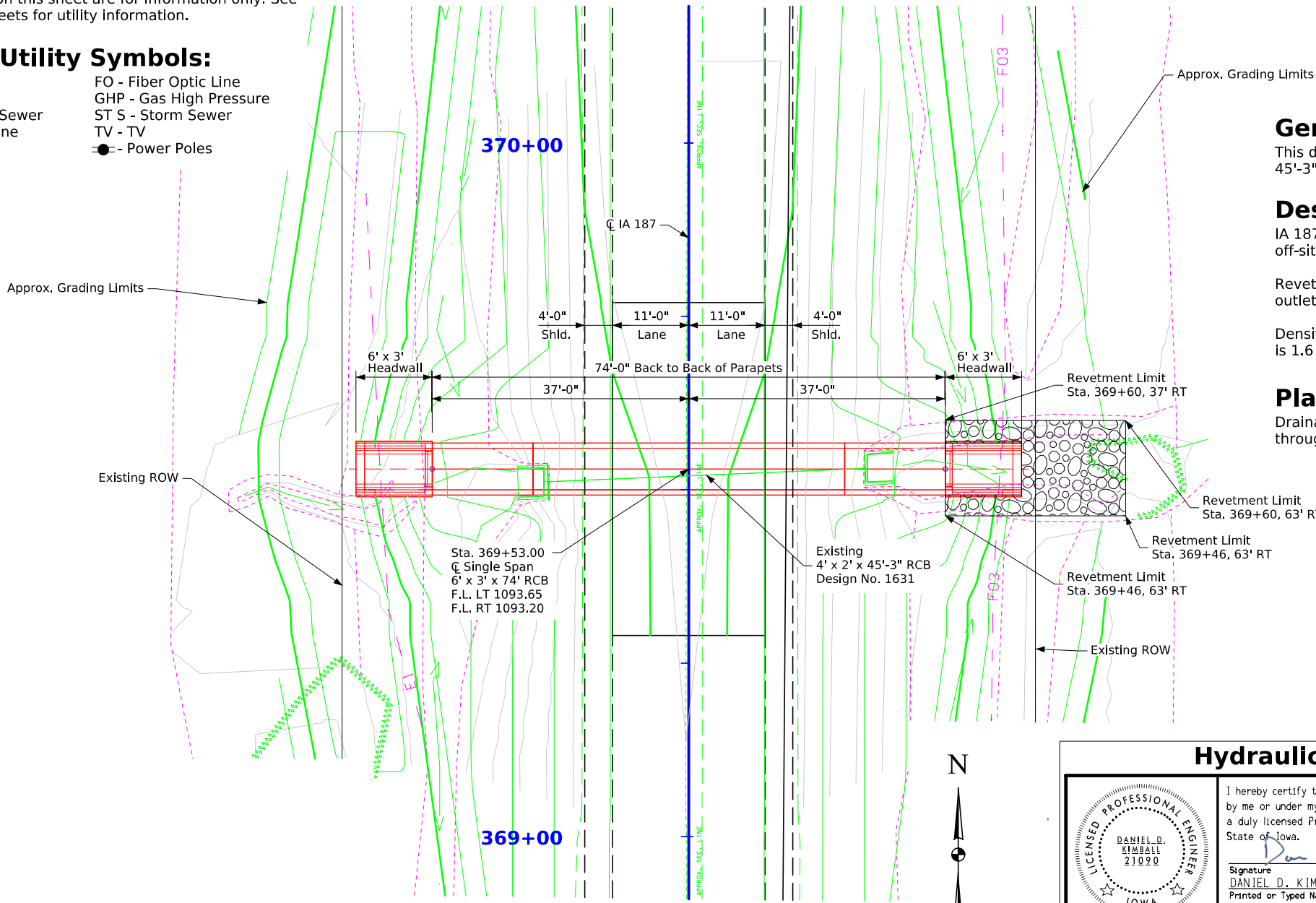
Longitudinal Section Along Centerline of Culvert

Utilities Note:

Utilities shown on this sheet are for information only. See Road Design sheets for utility information.

General Utility Symbols:

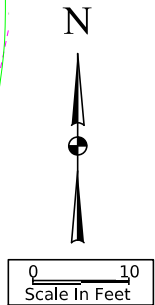
- E - Electric Line
- G - Gas Line
- SAN. - Sanitary Sewer
- T - Telephone Line
- W - Water Line
- FO - Fiber Optic Line
- GHP - Gas High Pressure
- ST S - Storm Sewer
- TV - TV
- Power Poles



Traffic Estimate

2024 AADT 2010 V.P.D.
TRUCKS 15.6 %

Situation Plan



General Notes:

This design is for the replacement of the existing 4' x 2' x 45'-3" Reinforced Concrete Box Culvert, Design No. 1631

Design Notes:

IA 187 will be closed to traffic during construction and an off-site detour will be utilized.

Revetment is proposed at the culvert outlet due to the outlet velocity exceeding policy limits.

Density used for Class C Revetment quantity calculations is 1.6 T/cy

Plan Notes:

Drainage through existing culvert must be maintained throughout construction.

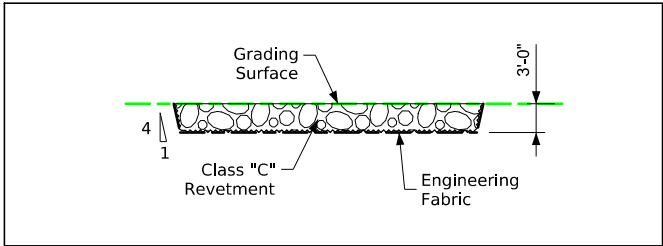
Location

IA 187 Over Drainage Ditch
T-90N R-7W
Section 34 & 35
Madison Township
Buchanan County
Latitude 42.568847°
Longitude -91.648417°

Hydraulic Data

RIDB: Not Applicable
Drainage Area = 78.28 Acres
Stream Slope = 86.62 Ft./Mi.
Q₅₀ = 108.47 cfs
HW Elev. = 1097.33
Exit Velocity = 9.55 fps

Q₁₀₀ = 138.20 cfs
HW Elev. = 1098.22
Exit Velocity = 10.23 fps



Typical Channel Protection

Estimated Revetment Quantities Included With Road Plans

Location	Revetment Class "C" (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Outlet	48.9	68.4	30.6
Totals	48.9	68.4	30.6

Excavation quantity calculated from grading surface. Excavation quantity is for embedded revetment core out only, and does not include excavation to the grading surface. Excavation quantity to the grading surface is determined by Road Design and included in the Road Plans. Quantities shown for information only. See Road Sheets.



Proposed Profile Grade IA 187 (U.A.C.)

Hydraulic Design

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature: *Daniel D. Kimball* Date: 3-23-26

Printed or Typed Name: DANIEL D. KIMBALL

My license renewal date is December 31, 2027

Pages or sheets covered by this seal: _____

Design For 0 Degree

6'-0" x 3'-0" x 74'-0"

Cast-In-Place RCB Culvert

Situation Plan - CIP

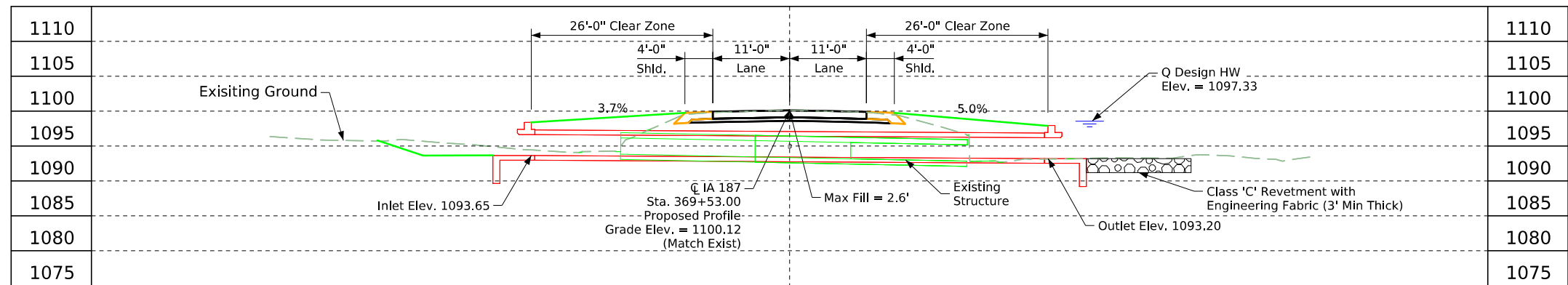
STA. 369+55 (IA 187) Turn-in Date: Oct. 2027

Buchanan County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. Design Sheet No. 1 of 2 FHWA/Asset

Control Point:
Pnt. No.: CP4 N: 15664678.582 E:8871819.227 Elev:1096.058, CP SET FENO MON



Longitudinal Section Along C Culvert

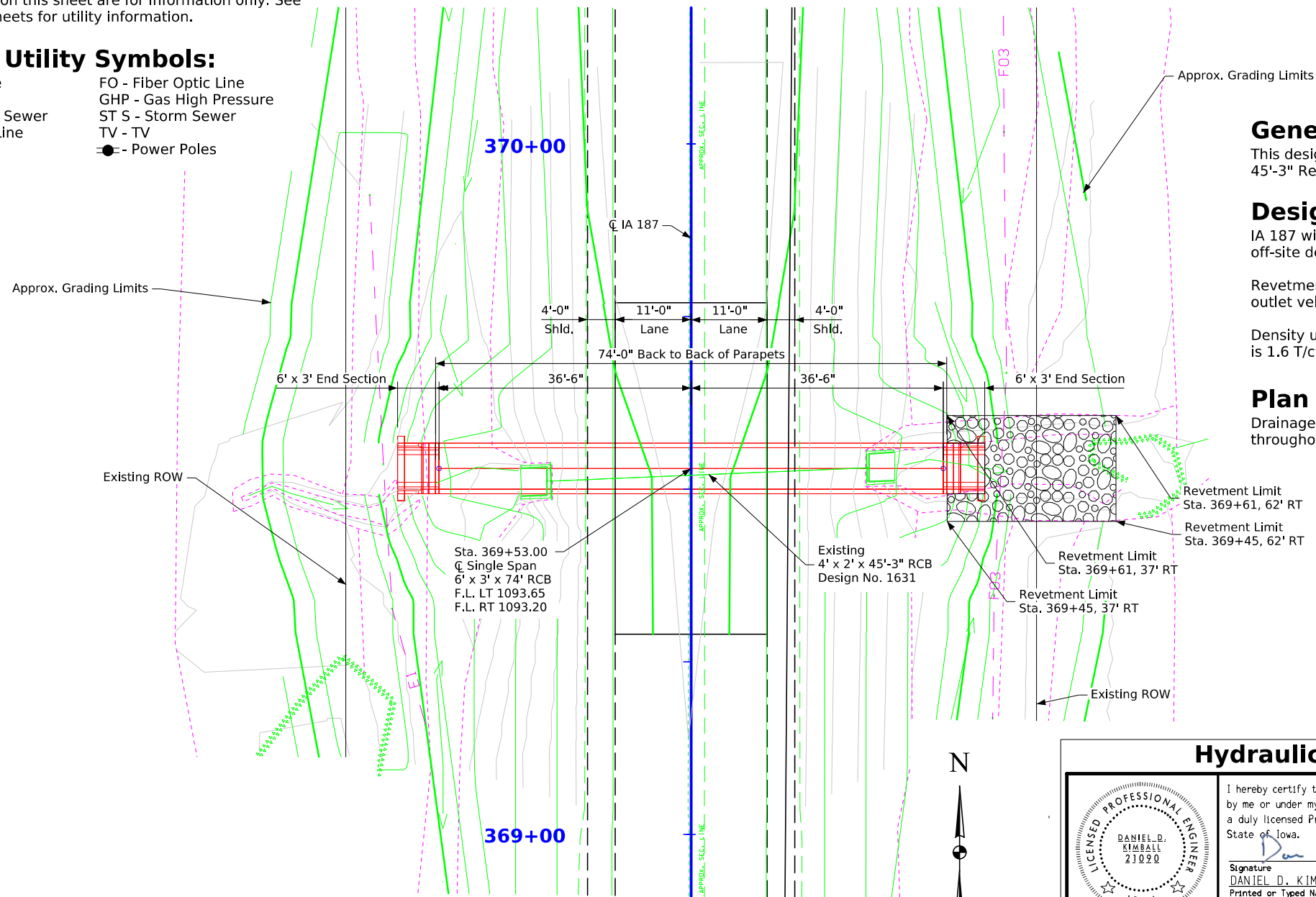
Utilities Note:

Utilities shown on this sheet are for information only. See Road Design sheets for utility information.

General Utility Symbols:

E - Electric Line
G - Gas Line
SAN. - Sanitary Sewer
T - Telephone Line
W - Water Line

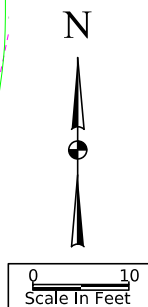
FO - Fiber Optic Line
GHP - Gas High Pressure
ST S - Storm Sewer
TV - TV
● - Power Poles



Traffic Estimate

2024 AADT	2010 V.P.D.
TRUCKS	15.6 %

Situation Plan



Hydraulic Design

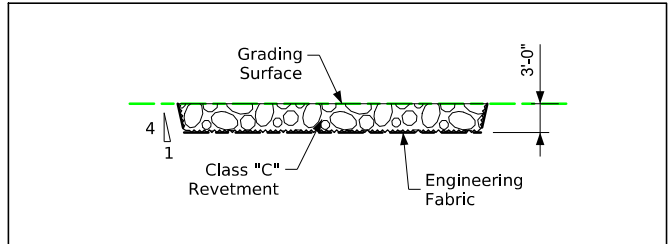
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Dan Kimball 3-23-26

Signature _____ Date _____
DANIEL D. KIMBALL
Printed or Typed Name _____

My license renewal date is December 31, 2027

Pages or sheets covered by this seal: _____



Typical Channel Protection

Estimated Revetment Quantities Included With Road Plans

Location	Revetment Class "C" (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Outlet	59.4	71.3	37.1
Totals	59.4	71.3	37.1

Excavation quantity calculated from grading surface. Excavation quantity is for embedded revetment core out only, and does not include excavation to the grading surface. Excavation quantity to the grading surface is determined by Road Design and included in the Road Plans. Quantities shown for information only. See Road Sheets.

General Notes:

This design is for the replacement of the existing 4' x 2' x 45'-3" Reinforced Concrete Box Culvert, Design No. 1631

Design Notes:

IA 187 will be closed to traffic during construction and an off-site detour will be utilized.

Revetment is proposed at the culvert outlet due to the outlet velocity exceeding policy limits.

Density used for Class C Revetment quantity calculations is 1.6 T/cy

Plan Notes:

Drainage through existing culvert must be maintained throughout construction.

Location

IA 187 Over Drainage Ditch
T-90N R-7W
Section 34 & 35
Madison Township
Buchanan County
Latitude 42.568847°
Longitude -91.648417°

Hydraulic Data

RIDB: Not Applicable
Drainage Area = 78.28 Acres
Stream Slope = 86.62 Ft./Mi.
 $Q_{50} = 108.47$ cfs
HW Elev. = 1097.33
Exit Velocity = 9.55 fps

$Q_{100} = 138.20 \text{ cfs}$
 HW Elev. = 1098.22
 Exit Velocity = 10.23 fps

Design For 0 Degree
6'-0" x 3'-0" x 74'-0"
Precast RCB Culvert

Situation Plan - PC

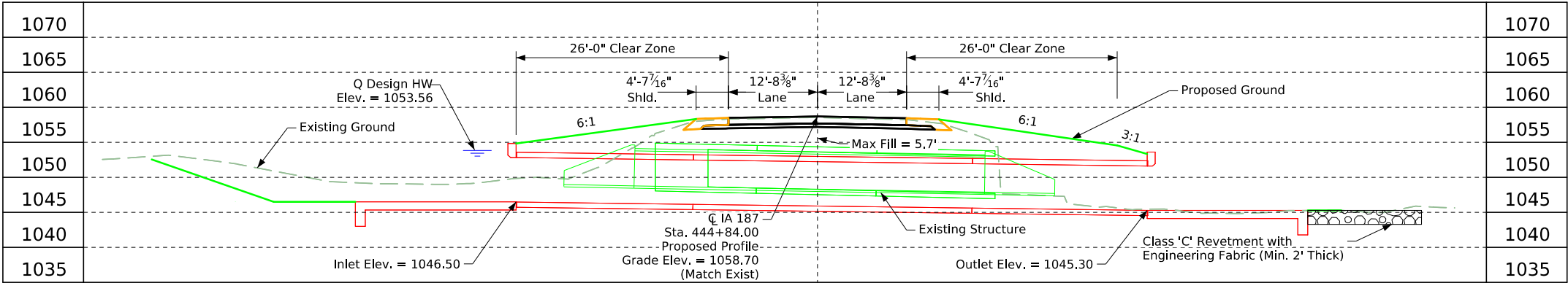
STA. 369+55 (IA 187) Turn-in Date: Oct. 2027

Buchanan County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. Design Sheet No. 2 of 2 FHWA/Asse

Control Point:
Pnt. No.: CP4 N: 15664678.582 E:8871819.227 Elev:1096.058, CP SET FENO MON



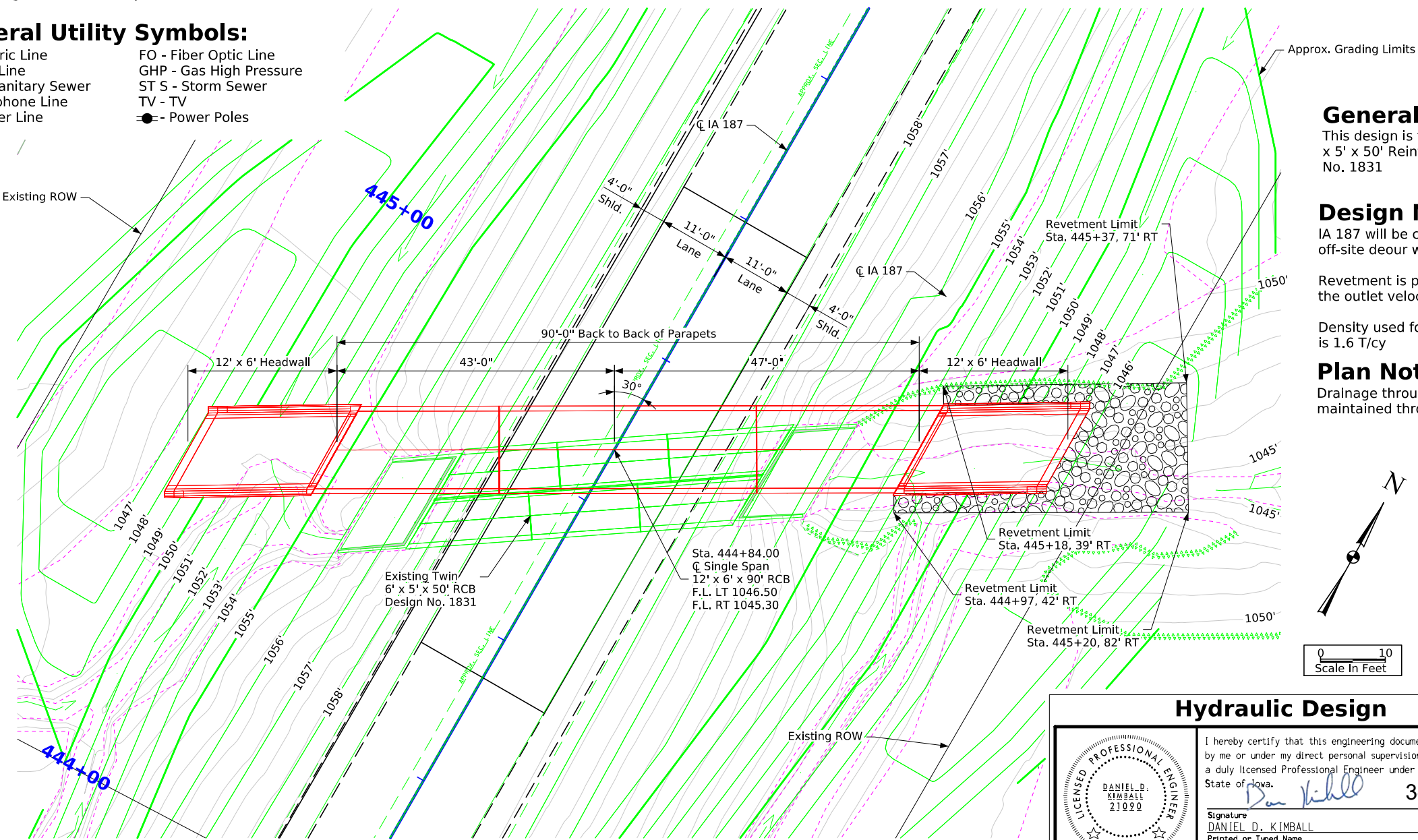
Utilities Note:

Utilities shown on this sheet are for information only. See Road Design sheets for utility information.

General Utility Symbols:

E - Electric Line
G - Gas Line
SAN. - Sanitary Sewer
T - Telephone Line
W - Water Line
FO - Fiber Optic Line
GHP - Gas High Pressure
ST S - Storm Sewer
TV - TV
● - Power Poles

Longitudinal Section Along Q Culvert



Traffic Estimate

2024 AADT
TRUCKS
2010 V.P.D.
15.6 %

Situation Plan

Approx. Grading Limits

General Notes:

This design is for the replacement of the existing 6' x 5' x 50' Reinforced Concrete Box Culvert, Design No. 1831

Design Notes:

IA 187 will be closed to traffic during construction and off-site detour will be utilized

Revetment is proposed at the culvert outlet due to the outlet velocity exceeding policy limits.

Density used for Class C Revetment quantity calculations is 1.6 T/cy

Plan Notes:

Drainage through existing culvert must be maintained throughout construction

Hydraulic Data

RIDB: Not Applicable
Drainage Area = 940.39 Acres
Stream Slope = 50.5 Ft./Mi.
 $Q_{50} = 576.09$ cfs
HW Elev. = 1053.56
Exit Velocity = 15.76 fps

$Q_{??} = 740.60$ cfs
HW Elev. = 1055.17
Exit Velocity = 16.78 fps

Location

IA 187 Over Drainage Ditch
T-90N R-7W
Section 22 & 23
Madison Township
Buchanan County
Latitude 42.589551°
Longitude -91.647902°

Proposed Profile Grade IA 187 (U.A.C.)

Hydraulic Design

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature: *Daniel D. Kimball* Date: 3-23-26

Printed or Typed Name: DANIEL D. KIMBALL

My license renewal date is December 31, 2027

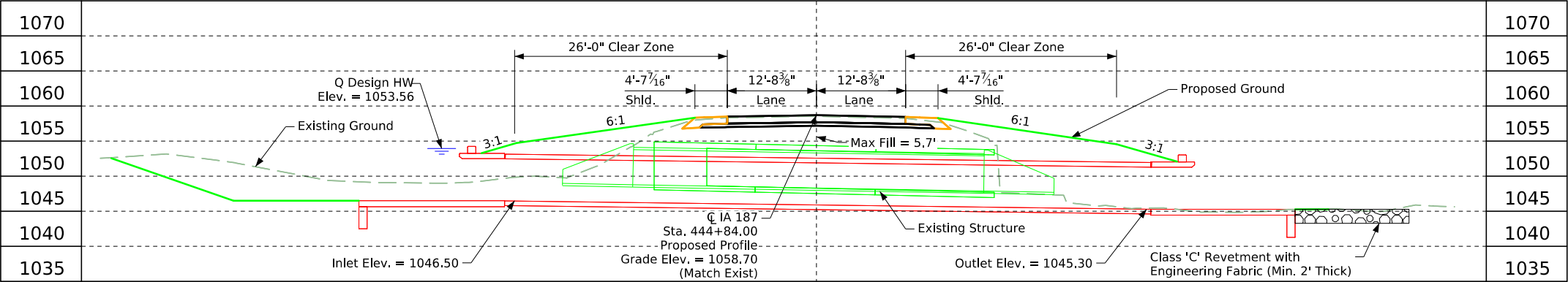
Pages or sheets covered by this seal: _____

Design For 30 Degree RA
12'-0" x 6'-0" x 90'-0"
Cast-In-Place RCB Culvert

Situation Plan - CIP

STA. 444+84.00 (IA 187) Turn-in Date: Oct. 2027
Buchanan County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. Design Sheet No. 1 of 2 FHWA/Asset

Control Point:
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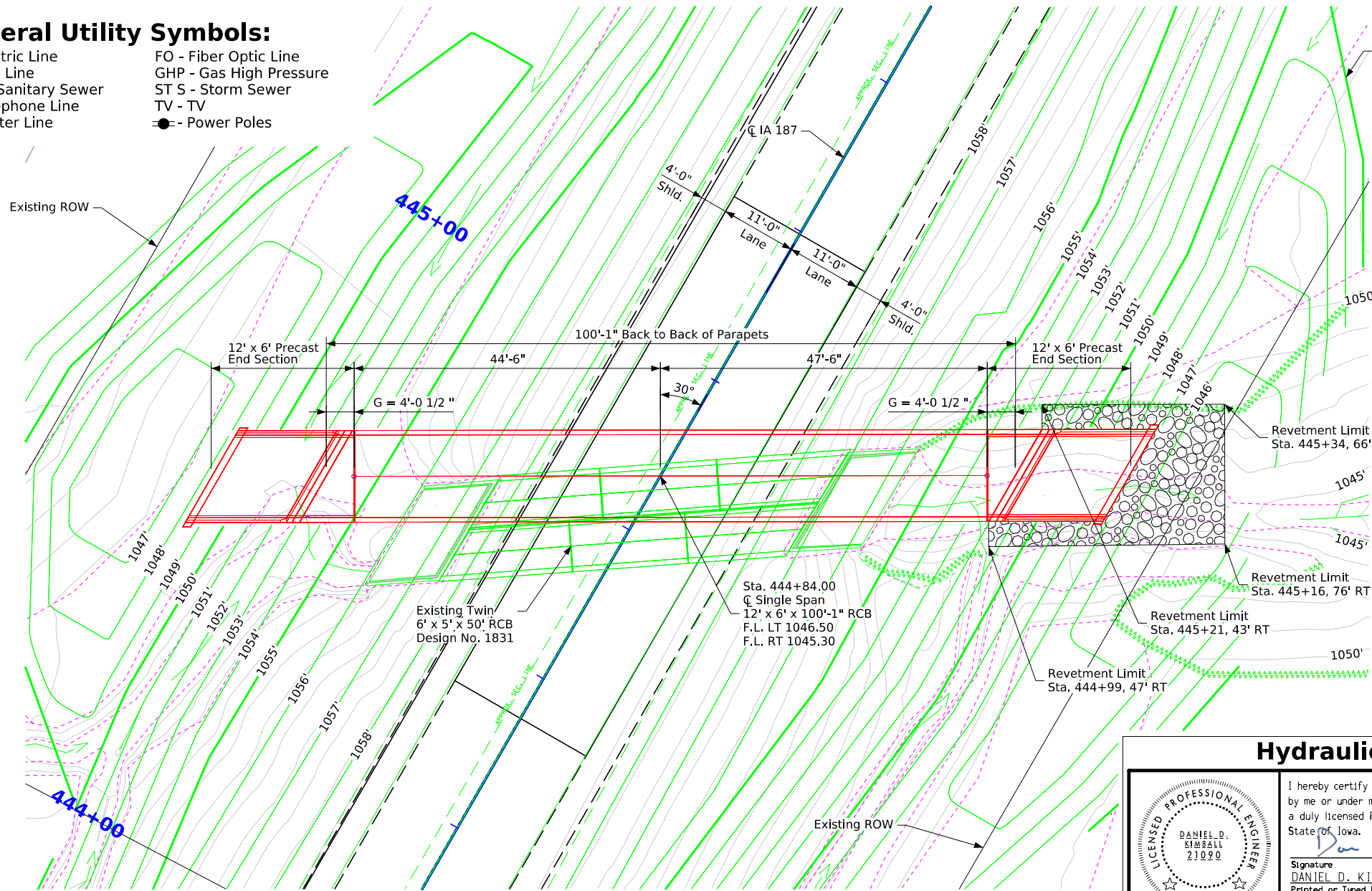


Utilities Note:

Utilities shown on this sheet are for information only. See Road Design sheets for utility information.

General Utility Symbols:

E - Electric Line
G - Gas Line
SAN. - Sanitary Sewer
T - Telephone Line
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● - Power Poles

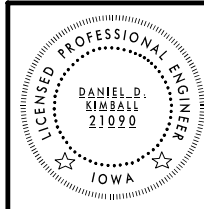


Traffic Estimate

2024 AADT TRUCKS
2010 V.P.D. 15.6 %

Situation Plan

Hydraulic Design



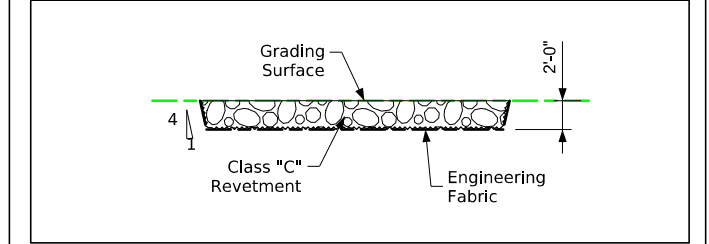
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Iowa.

Signature: *Dan Kimball* Date: 3-23-26

Printed or Typed Name: DANIEL D. KIMBALL

My license renewal date is December 31, 2027

Pages or sheets covered by this seal: _____



Typical Channel Protection

Estimated Revetment Quantities Included With Road Plans

Location	Revetment Class "C" (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Outlet	90.0	117.0	56.2
Totals	90.0	117.0	56.2

Excavation quantity calculated from grading surface. Excavation quantity is for embedded revetment core out only, and does not include excavation to the grading surface. Excavation quantity to the grading surface is determined by Road Design and included in the Road Plans. Quantities shown for information only. See Road Sheets.

General Notes:

This design is for the replacement of the existing 6' x 5' x 50' Reinforced Concrete Box Culvert, Design No. 1831

Design Notes:

IA 187 will be closed to traffic during construction and off-site detour will be utilized

Revetment is proposed at the culvert outlet due to the outlet velocity exceeding policy limits.

Density used for Class C Revetment quantity calculations is 1.6 T/cy

Plan Notes:

Drainage through existing culvert must be maintained throughout construction

Hydraulic Data

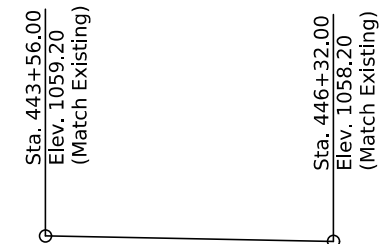
RIDB: Not Applicable
Drainage Area = 940.39 Acres
Stream Slope = 50.5 Ft./Mi.
Q₅₀ = 576.09 cfs
HW Elev. = 1053.56
Exit Velocity = 15.76 fps

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Location

IA 187 Over Drainage Ditch
T-90N R-7W
Section 22 & 23
Madison Township
Buchanan County
Latitude 42.589551°
Longitude -91.647902°

Proposed Profile Grade IA 187 (U.A.C.)



Design For 30 Degree RA
12'-0" x 6'-0" x 100'-1"
Precast RCB Culvert

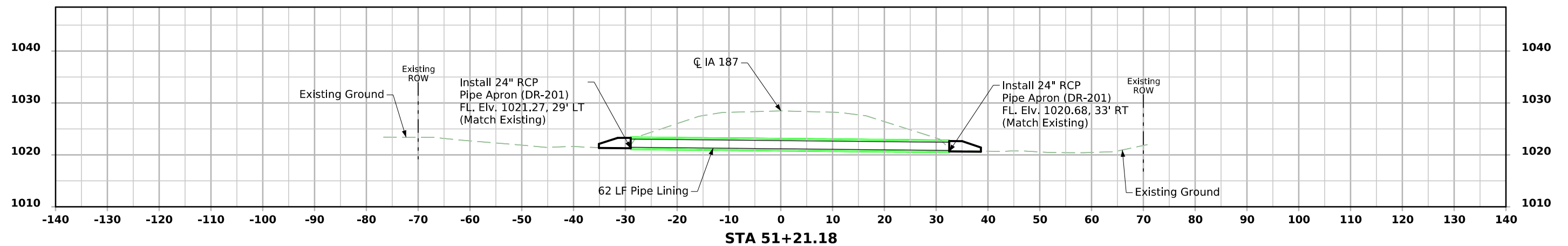
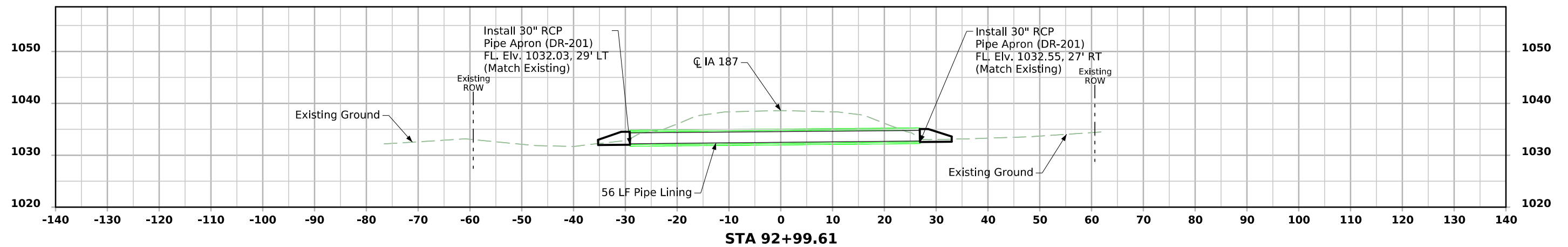
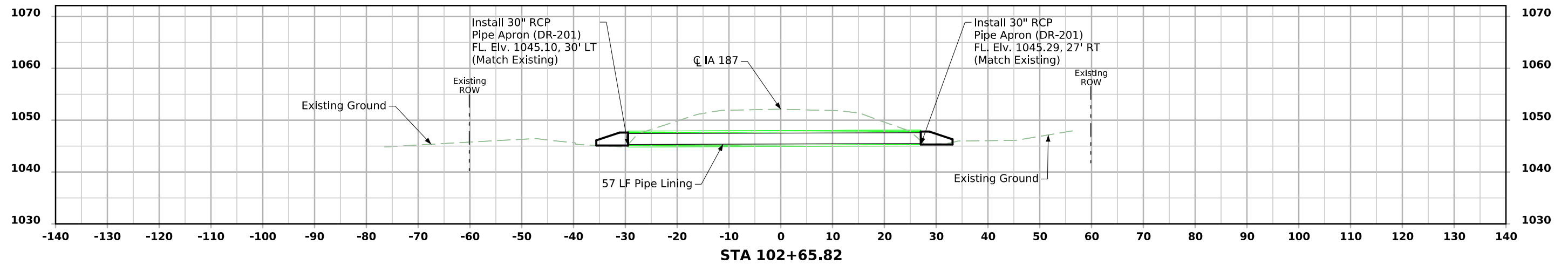
Situation Plan - PC

STA. 444+84 (IA 187) Turn-in Date: Oct. 2027

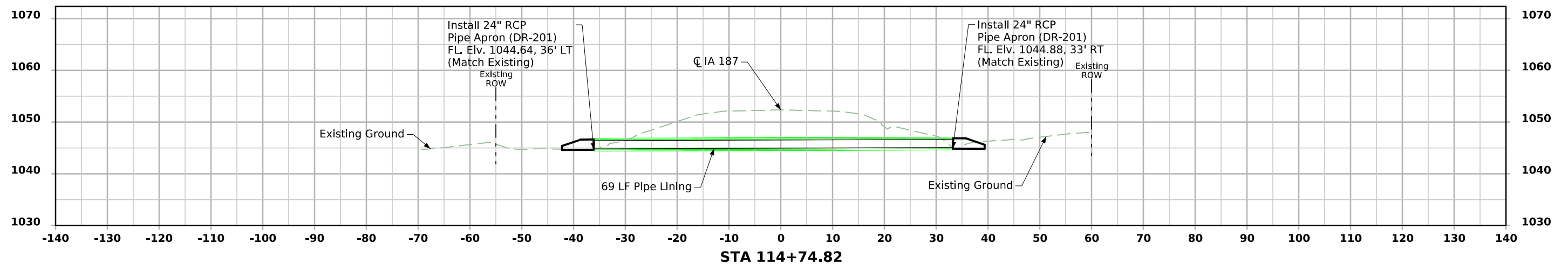
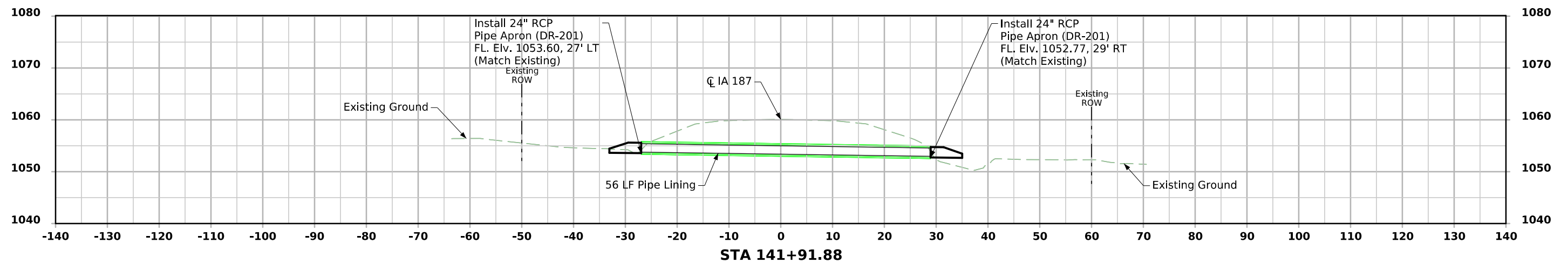
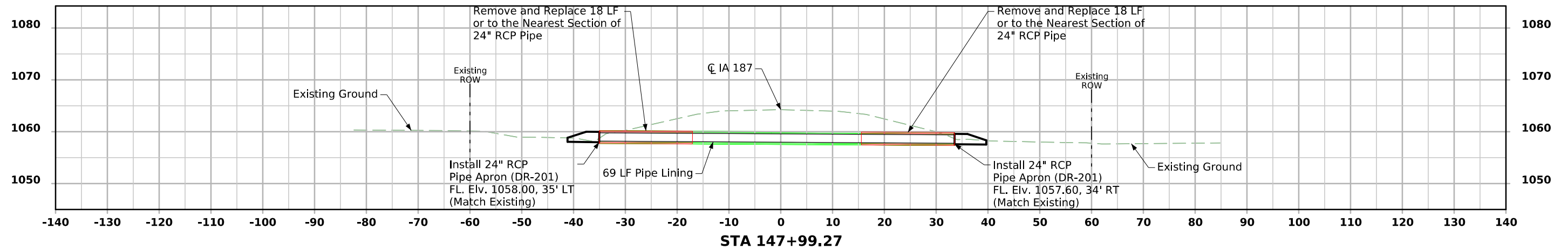
Buchanan County

IOWA DEPARTMENT OF TRANSPORTATION
Design No. Design Sheet No. 2 of 2 FHWA/Asset

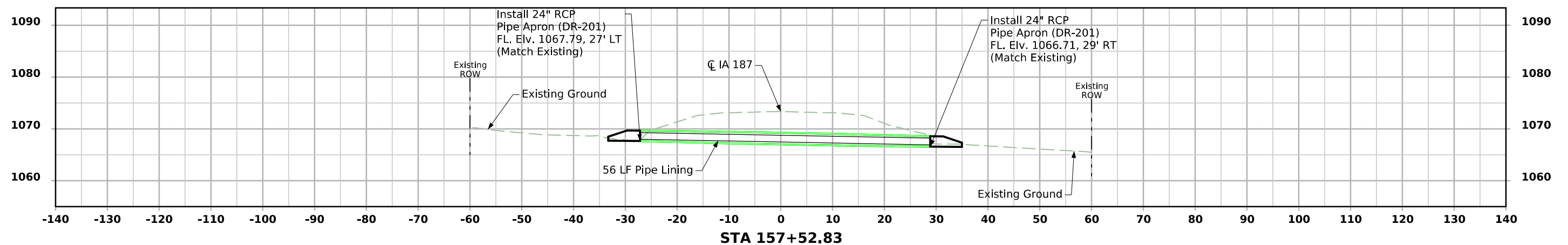
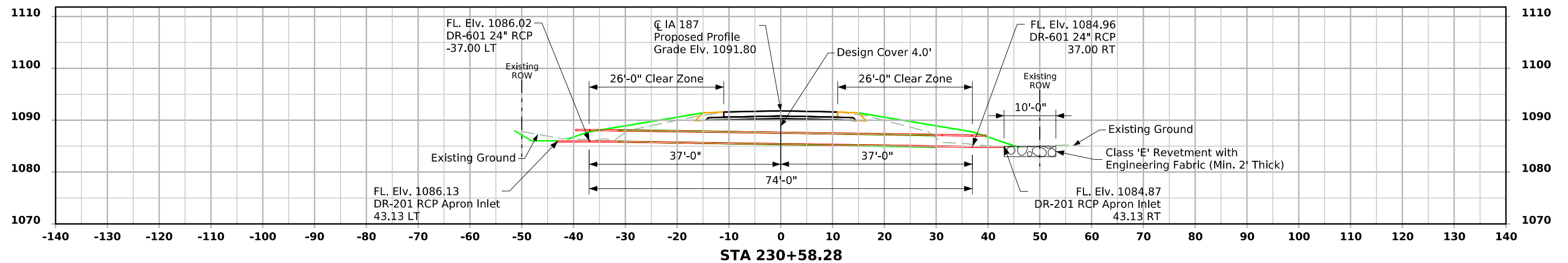
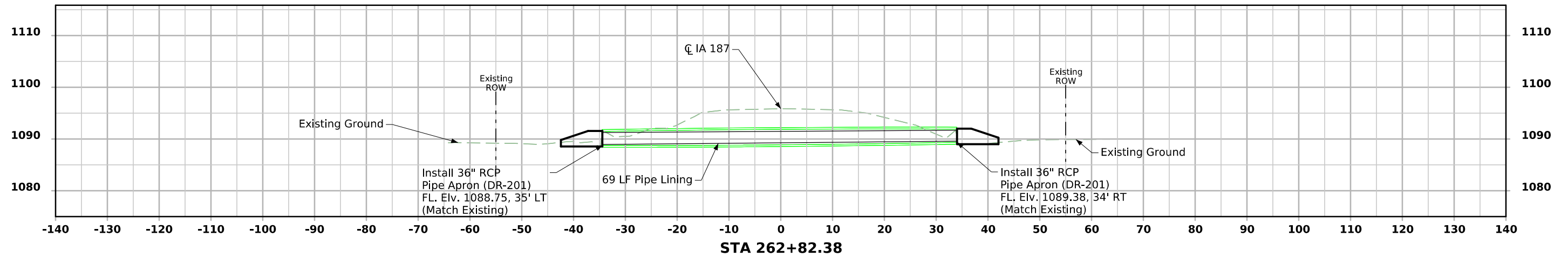
IA 187



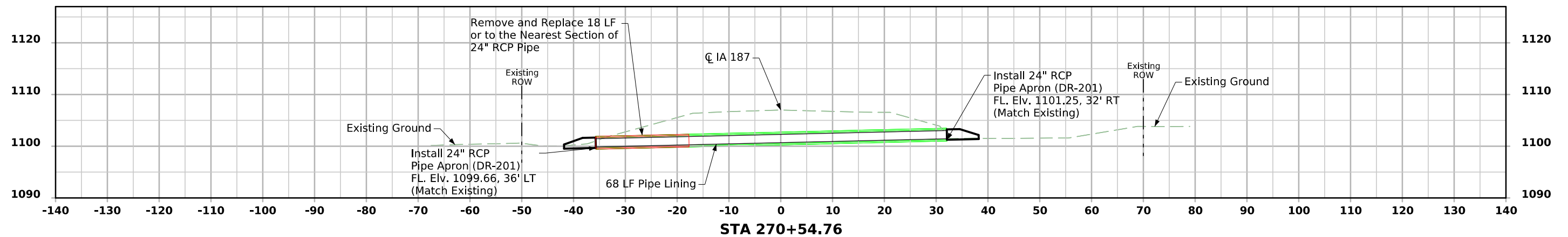
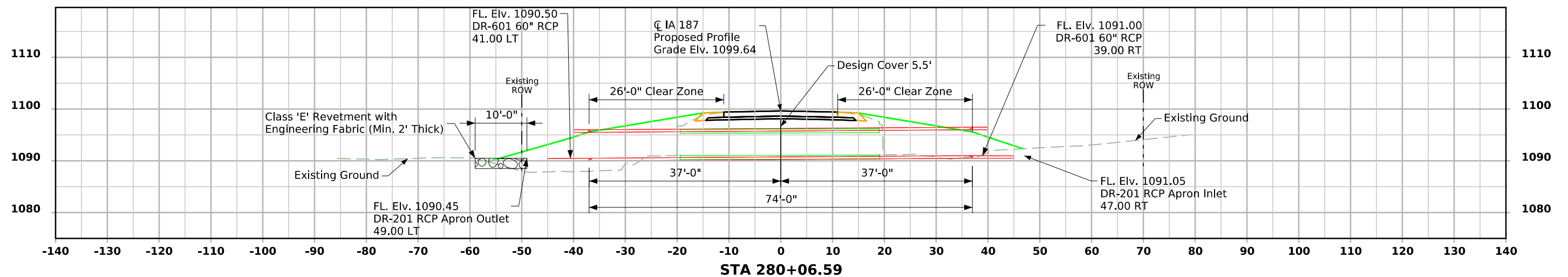
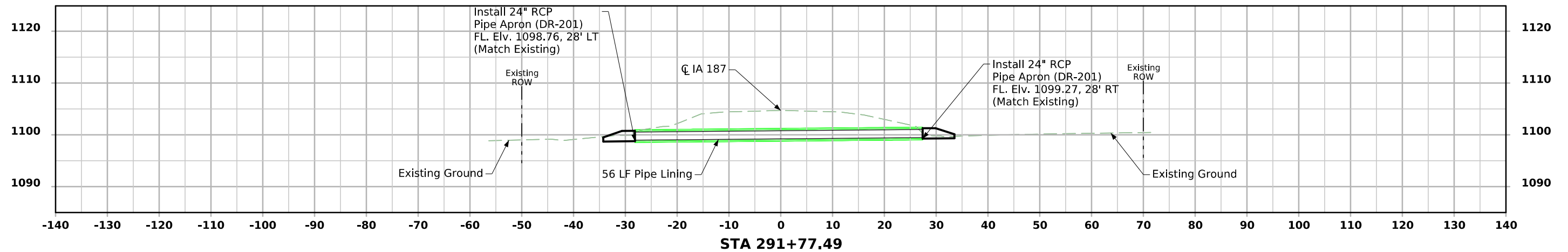
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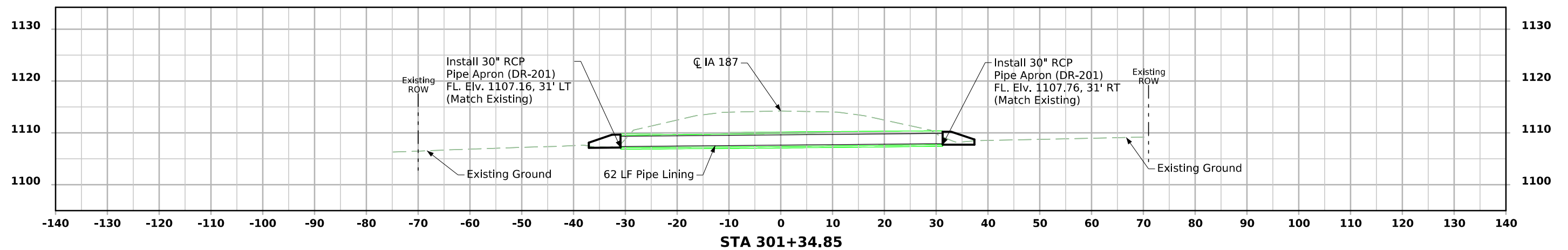
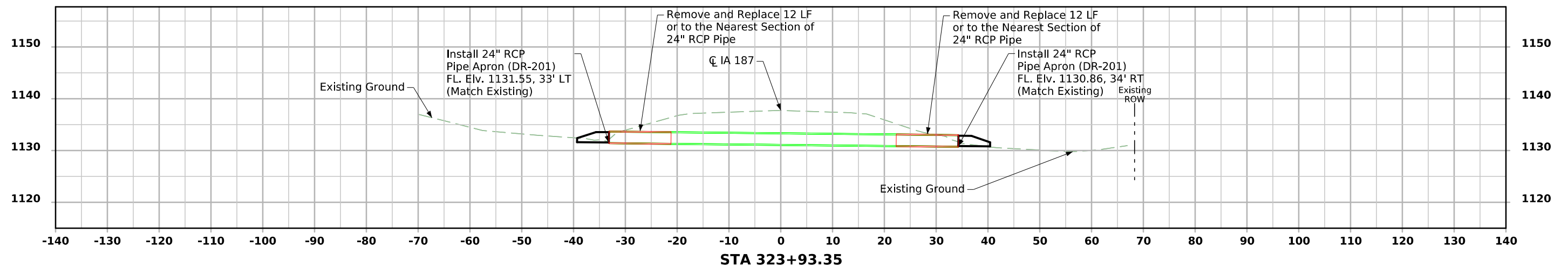
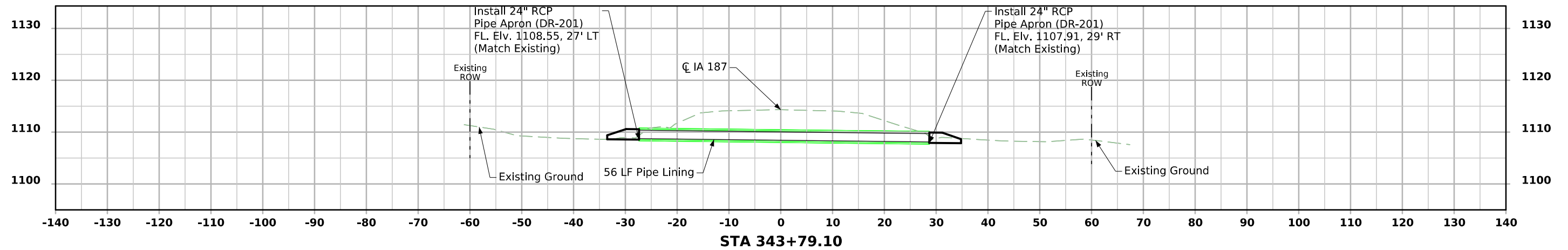
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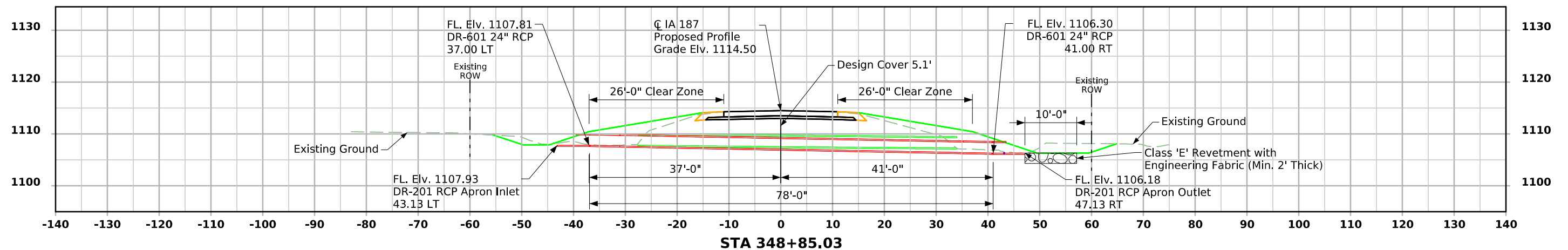
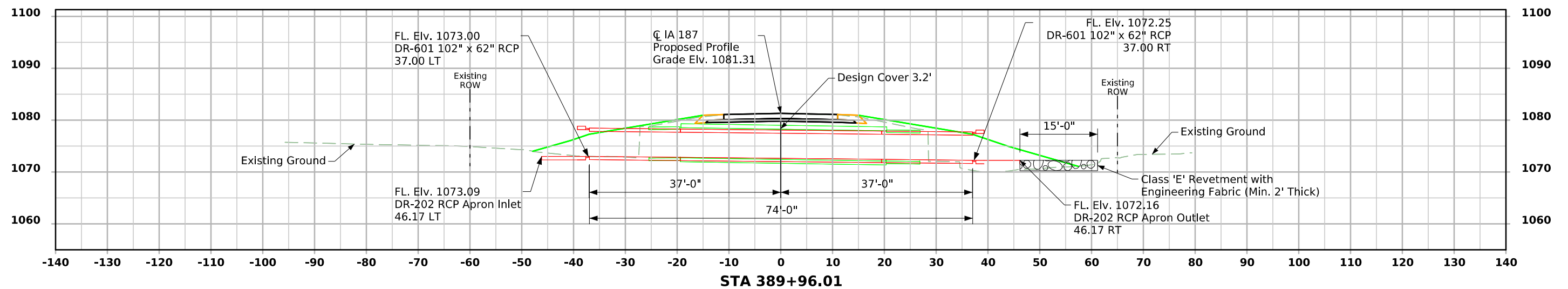
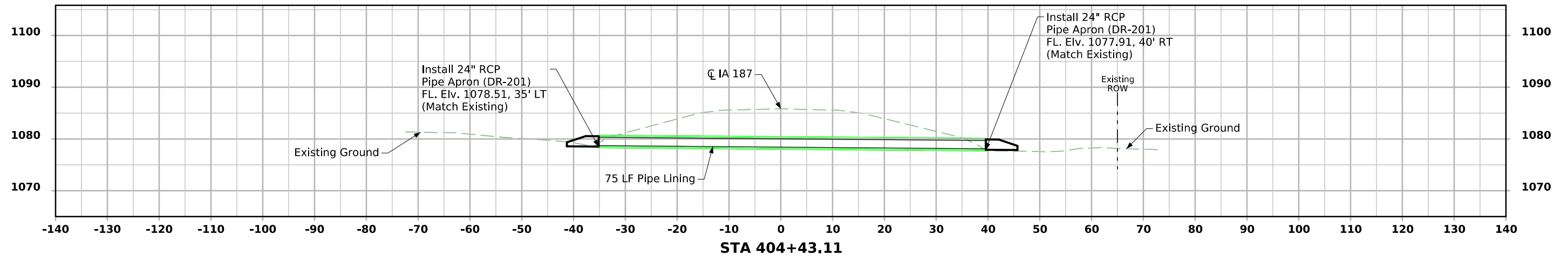
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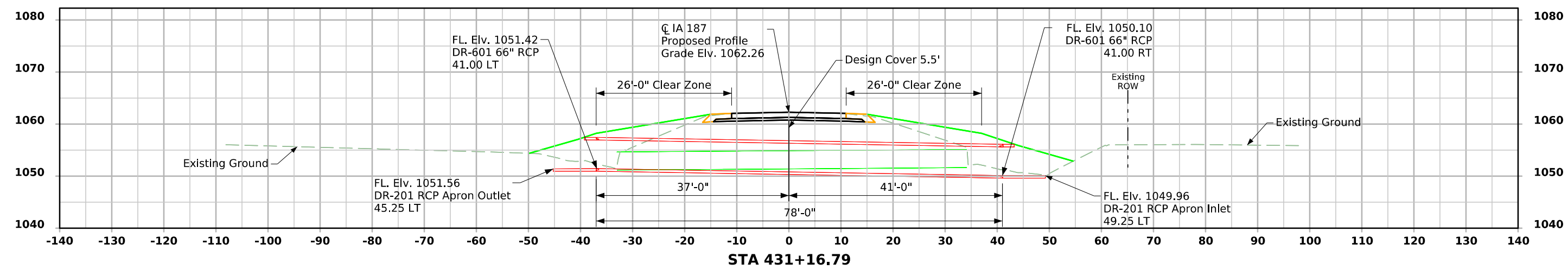
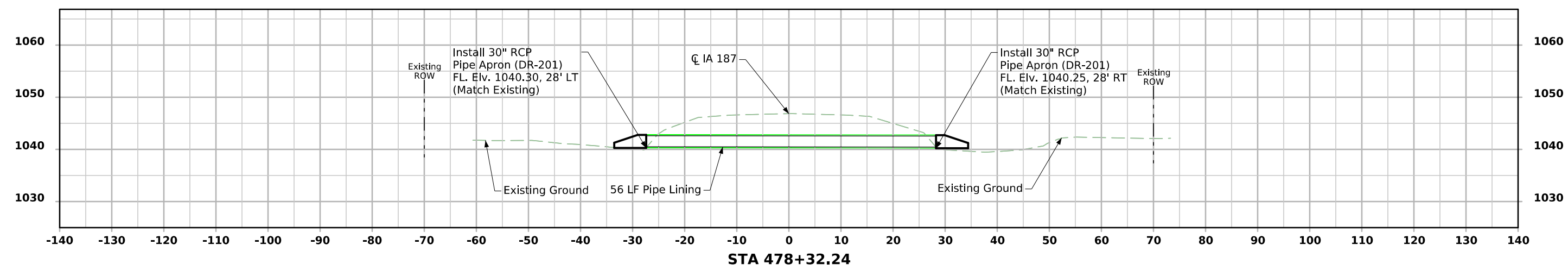


IA 187



IA 187





IA 187

