



Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
GREENE COUNTY
RCB CULVERT REPLACEMENT-TWIN BOX

Over Devils Fork 1.3 Miles N. of Dana

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.15 of the Specifications.

NO MILEAGE SUMMARY



REVISIONS

TOTAL

14

PROJECT IDENTIFICATION NUMBER

12-37-144-010

PROJECT NUMBER

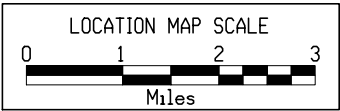
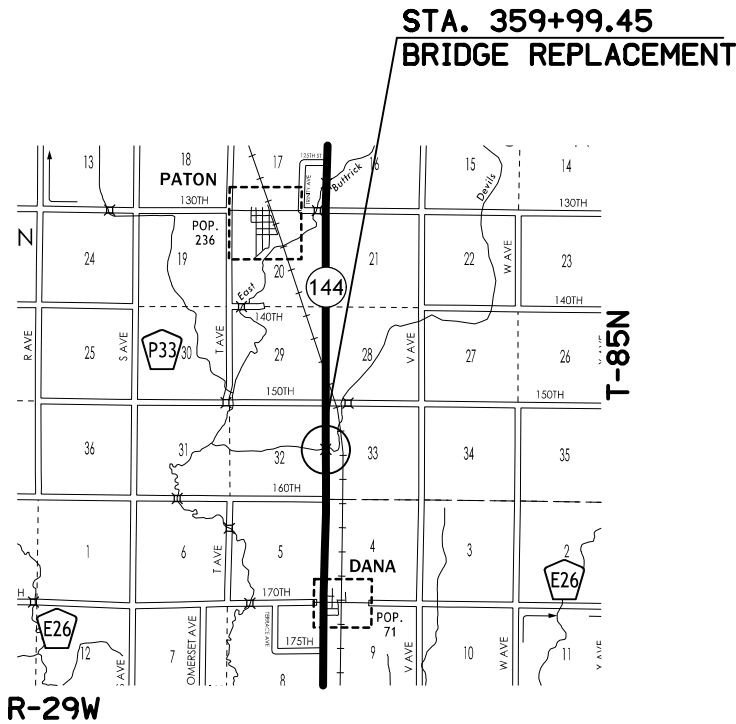
BRFN-144-3(16)--39-37

R.O.W. PROJECT NUMBER

STPN-144-3(17)--2J-37

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
B Sheets	Typical Cross Sections and Details
B.1 - 3	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
D.1	Legend
D.2	Plan & Profile Sheet
G Sheets	Survey Sheets
G.1	Reference Ties and Bench Marks
G.2	Horizontal Control Tab. & Super for all Alignments
V Sheets	Bridge and Culvert Situation Plans
V.1	Bridge and Culvert Situation Plans
W Sheets	Shoulder Widening Cross Sections
W.1 - 5	Ia 144 Cross Sections



DESIGN DATA RURAL

2017	AADT	700	V.P.D.
2037	AADT	800	V.P.D.
20--	DHV	--	V.P.H.
	TRUCKS	33/34	%
	Total		
	Design ESALs	--	

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Tony J. Gustafson	Primary Signature Block
X	X	X

D0	- Concept	6/10/13	Completed
D2	- Field Exam	8/26/14	Completed
D3	- Bridge Submittal	9/15/14	Completed
B1	- Bridge Layout	12/15/14	Completed
D5	- ROW Submittal	2/16/15	Due
R1	- ROW Layout	5/15/15	Scheduled
P9	- Public Info Meeting	7/28/15	Scheduled
D4	- Plans to Bridge	8/23/16	Scheduled
B3	- Contracts Submittal	10/4/16	Scheduled
L5	- Letting	12/20/16	Scheduled

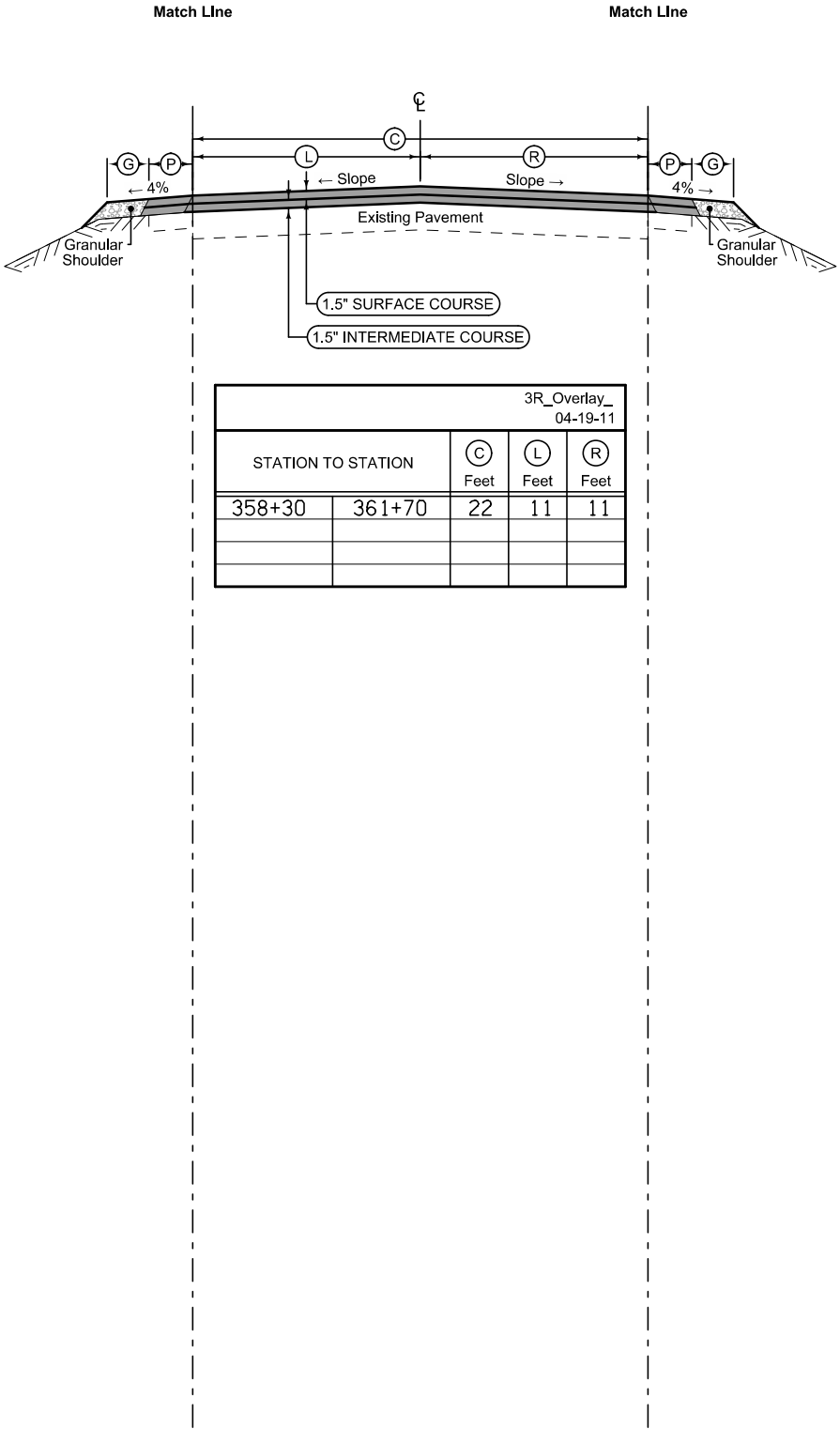
PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN - Date: 2/16/2015

Combination Shoulder

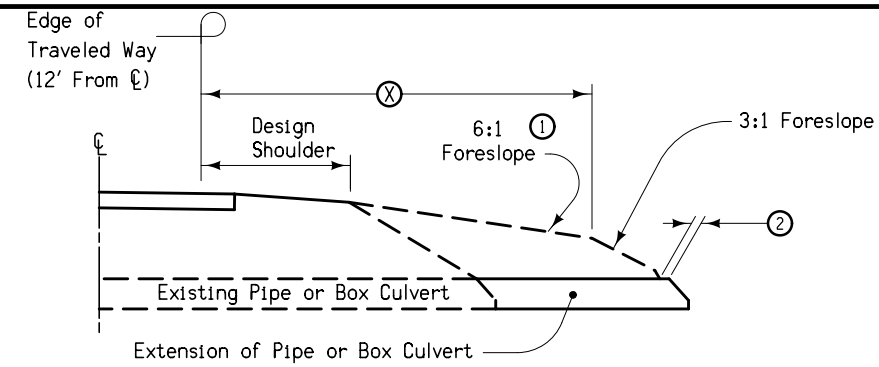
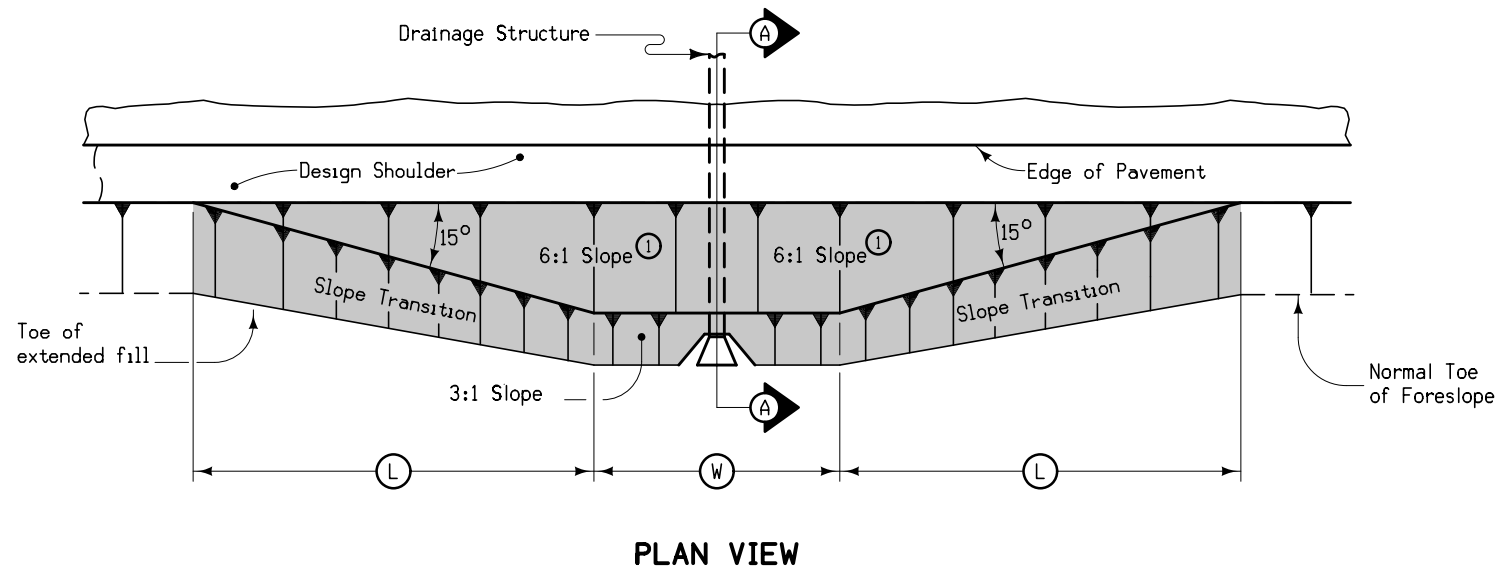
3R_Shldr_C_Overlay_ 04-19-11			
STATION TO STATION		(P) Feet	(G) Feet
358+30	361+70	4	5



Combination Shoulder

3R_Shldr_C_Overlay_ 04-19-11			
STATION TO STATION		(P) Feet	(G) Feet
358+30	361+70	4	5

See Tab 100-24 or 100-25 for pavement quantities.
See Tab 112-9 for shoulder quantities.



- Notes:
- At locations where an extended or newly constructed drainage structure extends beyond the normal foreslope cover, the foreslope shall be flattened as indicated so as to cover the structure. Minimum earth cover is 6".
- ① 6:1 Maximum - Slope may be flatter.
- ② 6" Minimum for pipe installations or to top of headwall on R.C.B.
- Ⓦ = Pipe or R.C.B. width plus 20 feet each side.

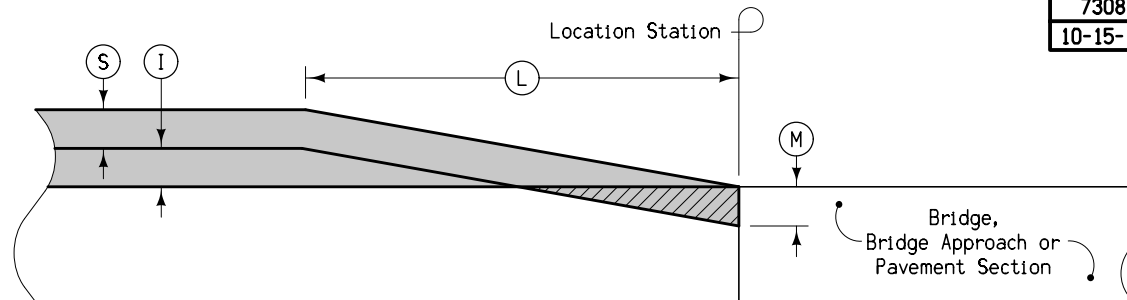
STRUCTURE LOCATION		Ⓦ	Ⓛ	ⓧ
STATION	SIDE	Feet	Feet	Feet
360+00	Lt.	80	63.5	26
360+00	Rt.	80	63.5	26

* Maintain the 6:1/3:1 at 26' barnroof section until the slopes blend into the existing entrance.

DETAILS OF BARNROOF FORESLOPE AT DRAINAGE STRUCTURE

Posted Speed Limit (mph)	Runout Ratio (ft per inch)
45 or More	50
20 to 45	25
Under 20	10 *

* Based on turning maneuvers at side roads and intersections.

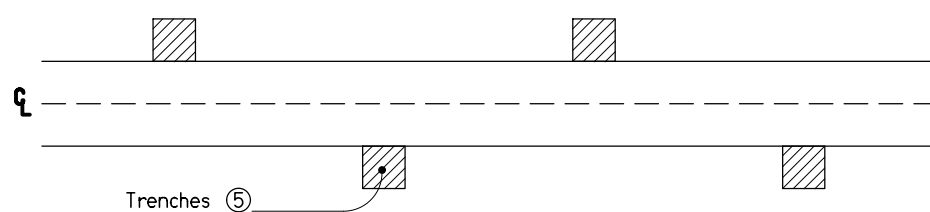
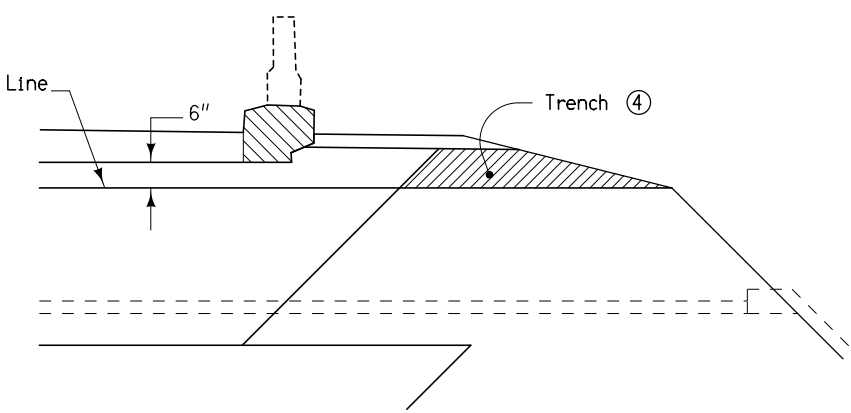
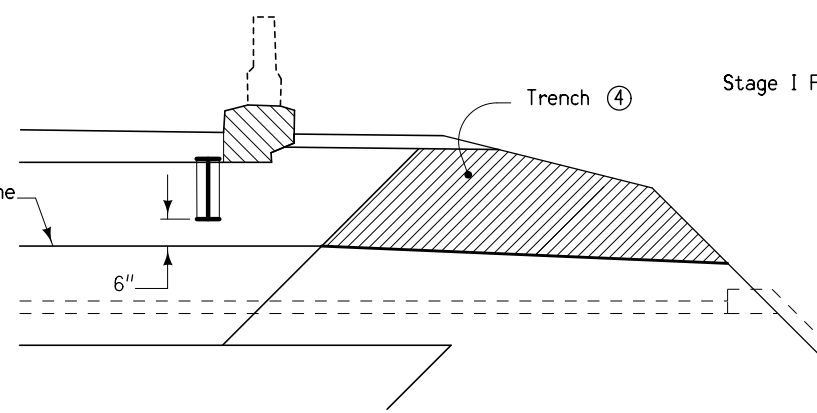
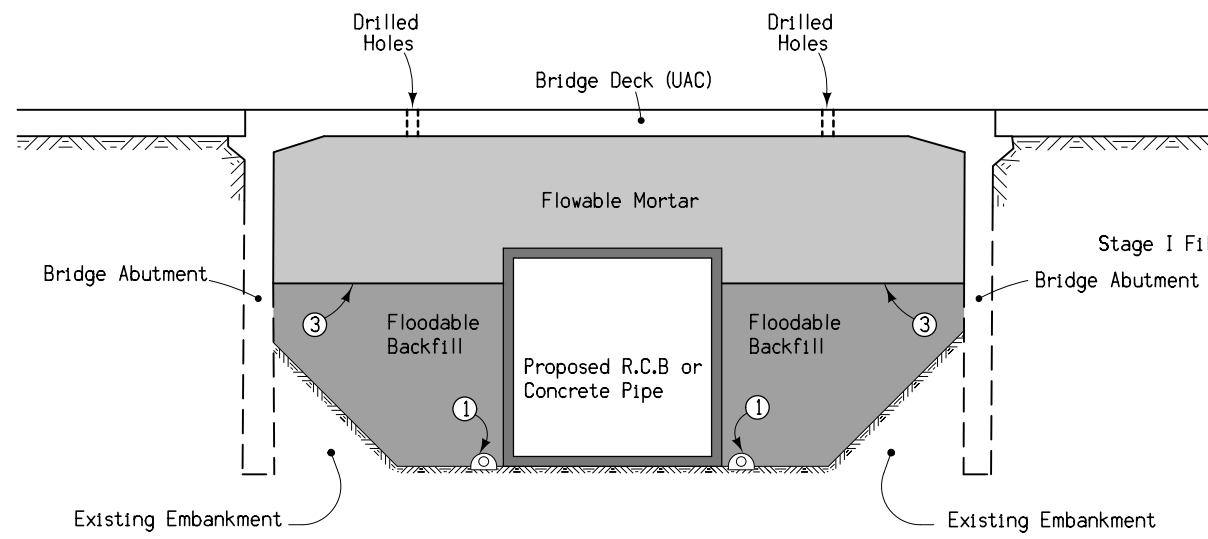
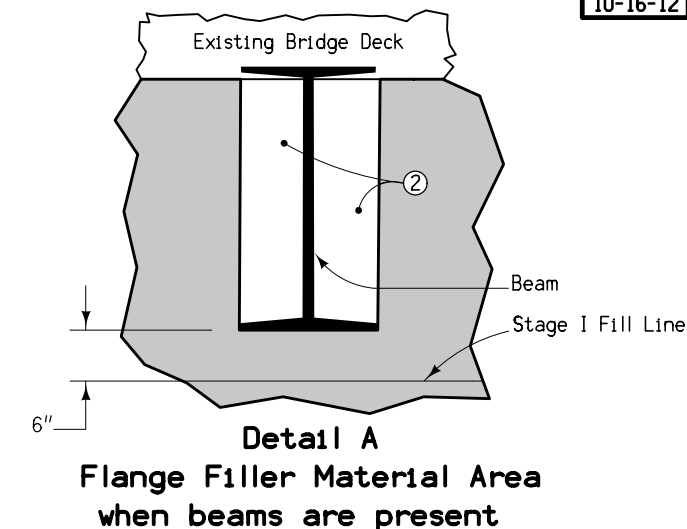
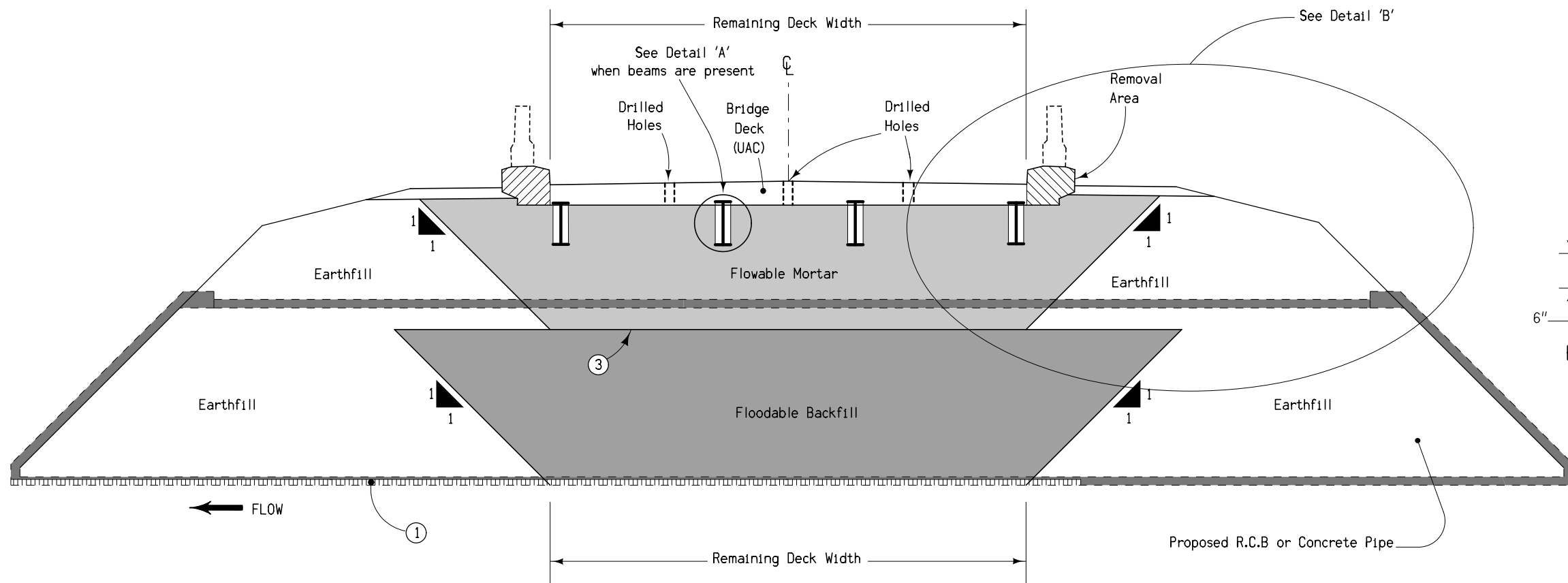


7308
10-15-13

- Ⓢ Surface Course
Ⓜ Intermediate Course
Ⓜ Milling

Location Station	Ⓛ Feet	Ⓢ Inches	Ⓜ Inches	Ⓜ Inches	Remarks
359+80	150	1.5	1.5	1.5	
360+20	150	1.5	1.5	1.5	

SURFACE NOTCH - INTERMEDIATE RUNOUT FOR DOUBLE COURSE RESURFACING



Denotes pay limits for flowable mortar
Denotes pay limits for flooded backfill

- ① 4" Subdrain at flowline elevation of culvert with 4" cover of porous backfill.
- ② Place Flange Filler Material to fill pocket area between flanges to prevent flowable mortar from building up. Flange Filler Material is incidental to flowable mortar.
- ③ Fill void with the maximum amount of Floodable Backfill possible. Distance from Floodable Backfill to bridge beams (when present) or bridge deck shall not exceed 5'.
- ④ Cut trenches in the soil plug to provide drainage for the flowable mortar. Backfill the trenches with open graded crushed stone, gravel, or recycled PCC to allow water to drain. Backfill material is incidental to flowable mortar.
- ⑤ Place trenches at 20' spacing with a minimum of two trenches on each side of the roadway.

**FILL FOR CULVERT USED
IN BRIDGE REPLACEMENTS**

SURVEY SYMBOLS

	MIS Miscellaneous
	GDL Guard Rail Steel
	MM Mile Marker Post
	PPA Power Pole Co. 1
	OUT Tile Outlet
	TIL Tile Line
	TPD Telephone Pedestal
	FWD Wood Fence
	PIP Pipe Culvert
	FW Wire Fence
	COR Round Bridge Pier Column
	BRG Bridge
	PLG Location of General Photo
	SNP Unpaved Shoulder
	ENU Edge Unpaved Entrance & Parking
	ENT Centerline BL of Entrance
	DU Centerline Draw or Stream (Up)
	D Centerline Draw or Stream (Down)
	CON Concrete or A/C Slab
	RIP Rip-Rap
	BNK Stream Bank
	EP Edge of Paved Roads (ML or SR)
	SH Paved Shoulder
	SOP Size of Pipe or Culvert
	PRO Profile Shot
	BCL Bridge Centerline
	BD Bridge Deck
	BLS Bridge Low Steel
	SBR Size of Bridge

UTILITY LEGEND

— T 1	- Webster Calhoun Coop Telephone (QLD)
— W	- Xenia Rural Water District (QLD)
—	Alliant

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
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

CONVENTIONAL SIGNS	
	Reference Point
	Station
	Section Corner
	Ground Line Intercept
	Saw Cut
	Guardrail
	Clearing & Grubbing Area
	Pavement Removal

RIGHT-OF-WAY LEGEND	
	Proposed Right-of-Way
	Existing and Proposed Right-of-Way
	Easement and Existing Right-of-Way
	Borrow
	Easement (Temporary)
	Easement
	Excess
	Access Control

PLAN AND PROFILE

LEGEND AND SYMBOL

INFORMATION SHEET

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

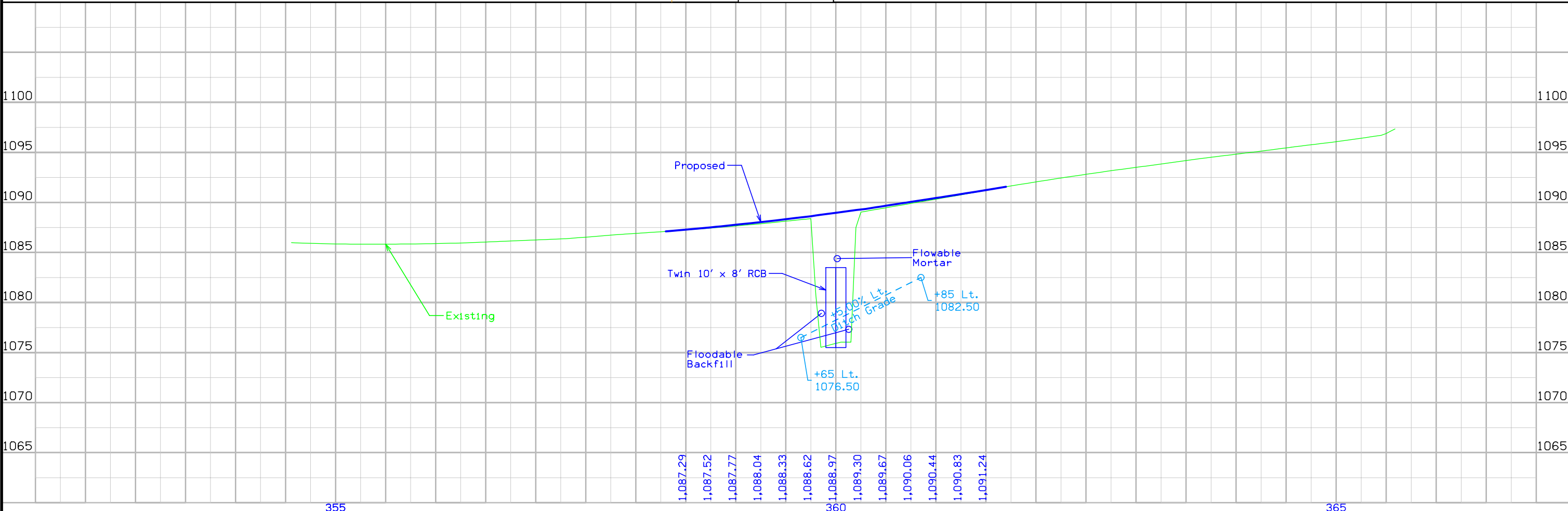
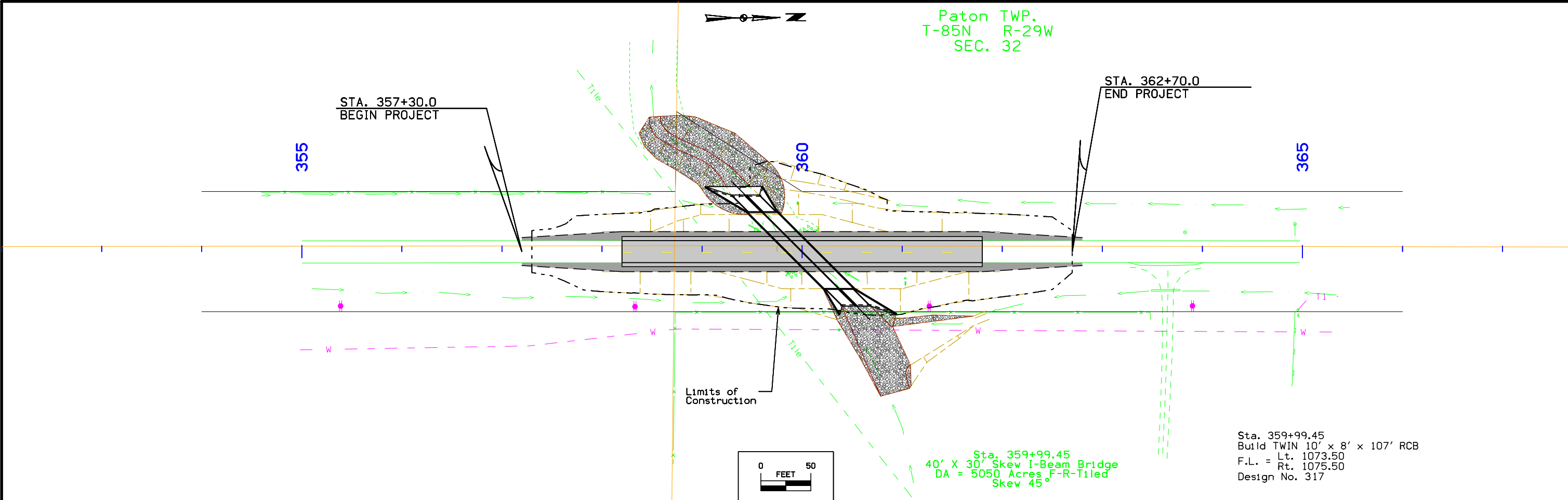
CONVENTIONAL SIGNS

	Reference Point	
		Survey Line
	— — — — —	Section Corner
	- - - - -	Ground Line Intercept
	//////	Saw Cut
		Guardrail
	Clearing & Grubbing Area	
	Pavement Removal	

RIGHT-OF-WAY LEGEND

	Proposed Right-of-Way
	Existing and Proposed Right-of-Way
	Easement and Existing Right-of-Way
	Borrow
	Easement (Temporary)
	Easement
	Excess
A/C	Access Control

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



Survey Information

General Information

Measurement units for this survey are US survey feet. This survey is in 1.3 miles north of Dana on IA 144 @ bridge overE. Devils Fork Creek. The entire digital terrain model and topography in the corridor will be completed by supplemental aerial photography

Vertical Control

Project ellipsoidal height was established at Pt. 1 by averaging a minimum of two IA RTN RTK observations with 4 hour or greater time span between each observation. NAVD88 height was computed at Pt. 1 using Geoid 12A. The relative network error of height observations was less than 0.03 ft. at 95% confidence level. Additional benchmarks were placed throughout the project using a GNSS Base-Rover setup at Pt. 1. A minimum of three observations were collected with 1 hour or greater time span between each observation. The local error of these observations relative to Pt. 1 was less than 0.04 ft. at 95% confidence level.

Horizontal Control

The project coordinate system is Modified Iowa State Plane North Zone (U.S. Survey Feet) scaled around Pt. 1 at 3508692.359 N, 4719895.92 E, 1091.905 (H)eight. IaRTN datum is adjusted to NAD83(2011) (Epoch 2010.00). Project coordinates were established at Pt. 1 by averaging two Iowa RTN RTK observations with 4 hours or greater time span between each observation. The relative network error of observations was less than 0.03 ft. at 95% confidence level. Additional control points were placed throughout the project using by averaging a minimum of two Iowa RTN RTK observations with 4 hours or greater time span between each observation. The local error of these observations was less than 0.04 ft. at 95% confidence level.

1/Combined Scale Factor of project (State plane grid modified to ground)= 1.000057725922

The 1/Combined Scale Factor scaled at Pt. 1 will be used for GPS/GNSS stakeout and location survey in the Project Coordinate system. A scale factor of 1 will be used for total station stakeout and location survey in the Project Coordinate system.

Alignment Information

The horizontal alignment for this survey is a retrace of As-built Plans # F Project # 785 (2). Survey stationing was equated to the plan at E ¼ Sec.32-85-29 Sta. 358+72.3, and run ahead without equation throughout the survey.

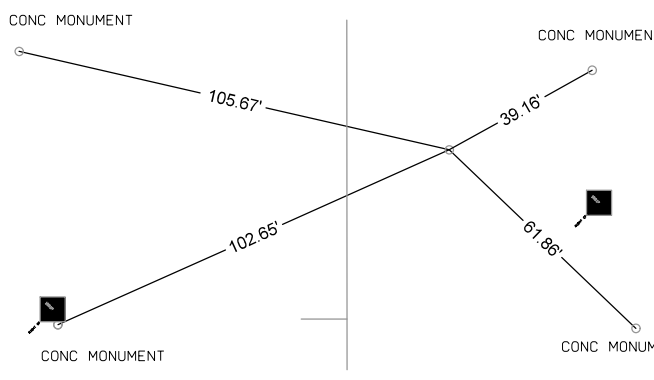
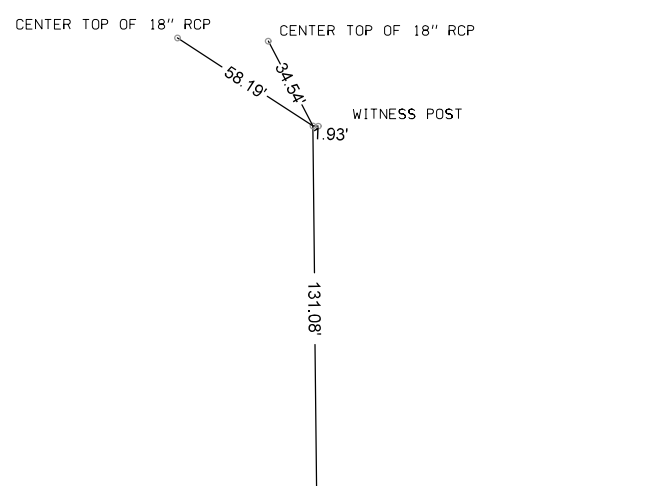
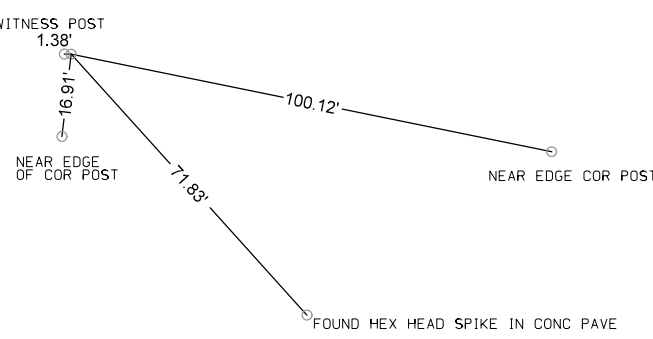
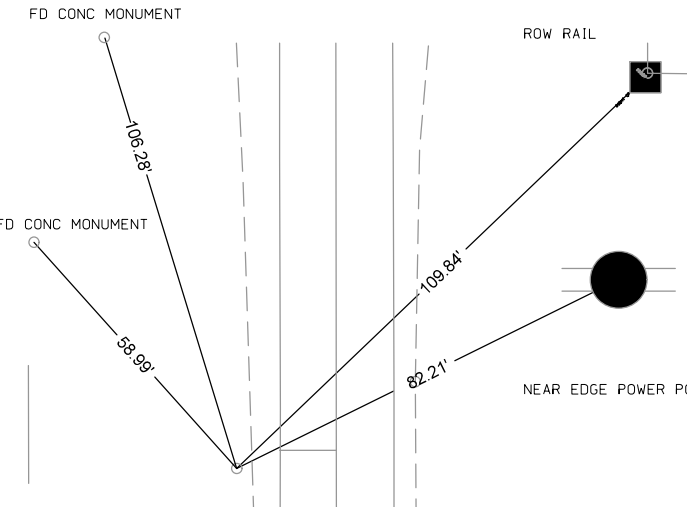
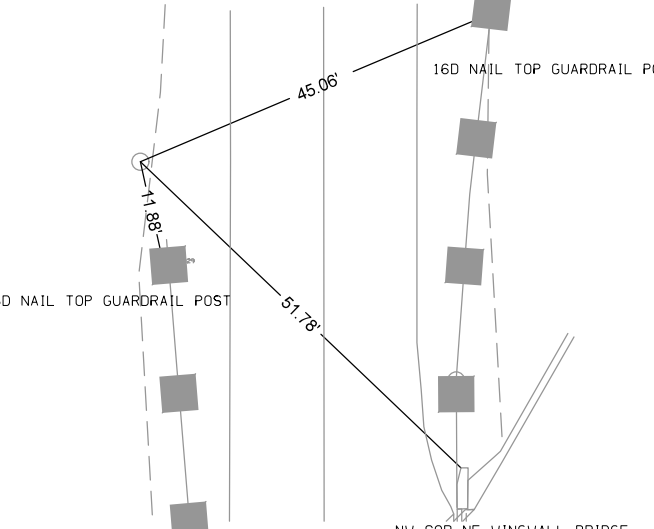
Equations are as follows:

CP Sta. 327+85.03 This Survey
= PI Sta. 327+85.8 As-built Plans # F Project # 785 (2)

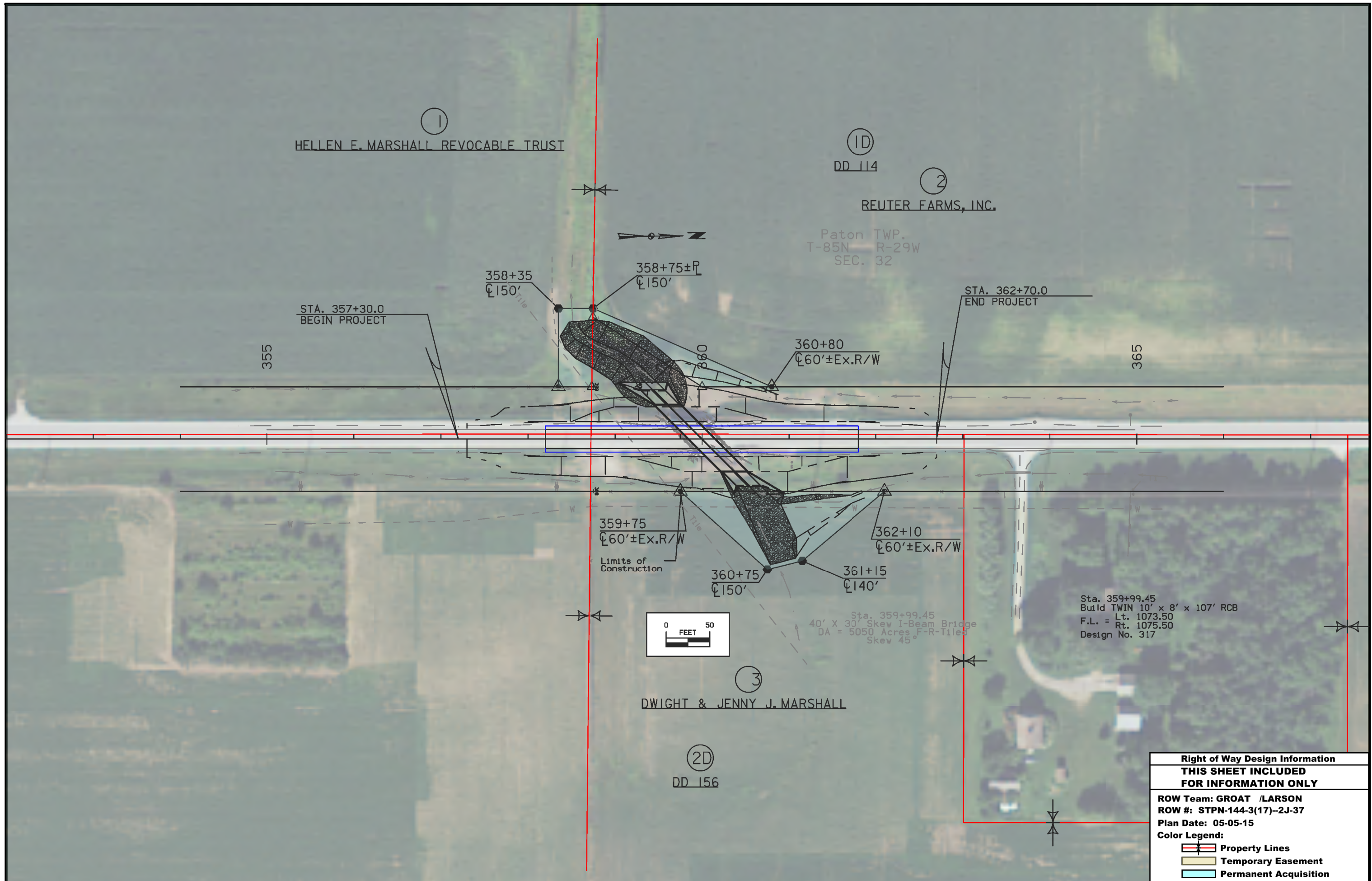
CP Sta. 464+25.4 This Survey
= PI Sta. 464+27.65 As-built Plans # F Project # 785 (2)

VERTICAL CONTROL

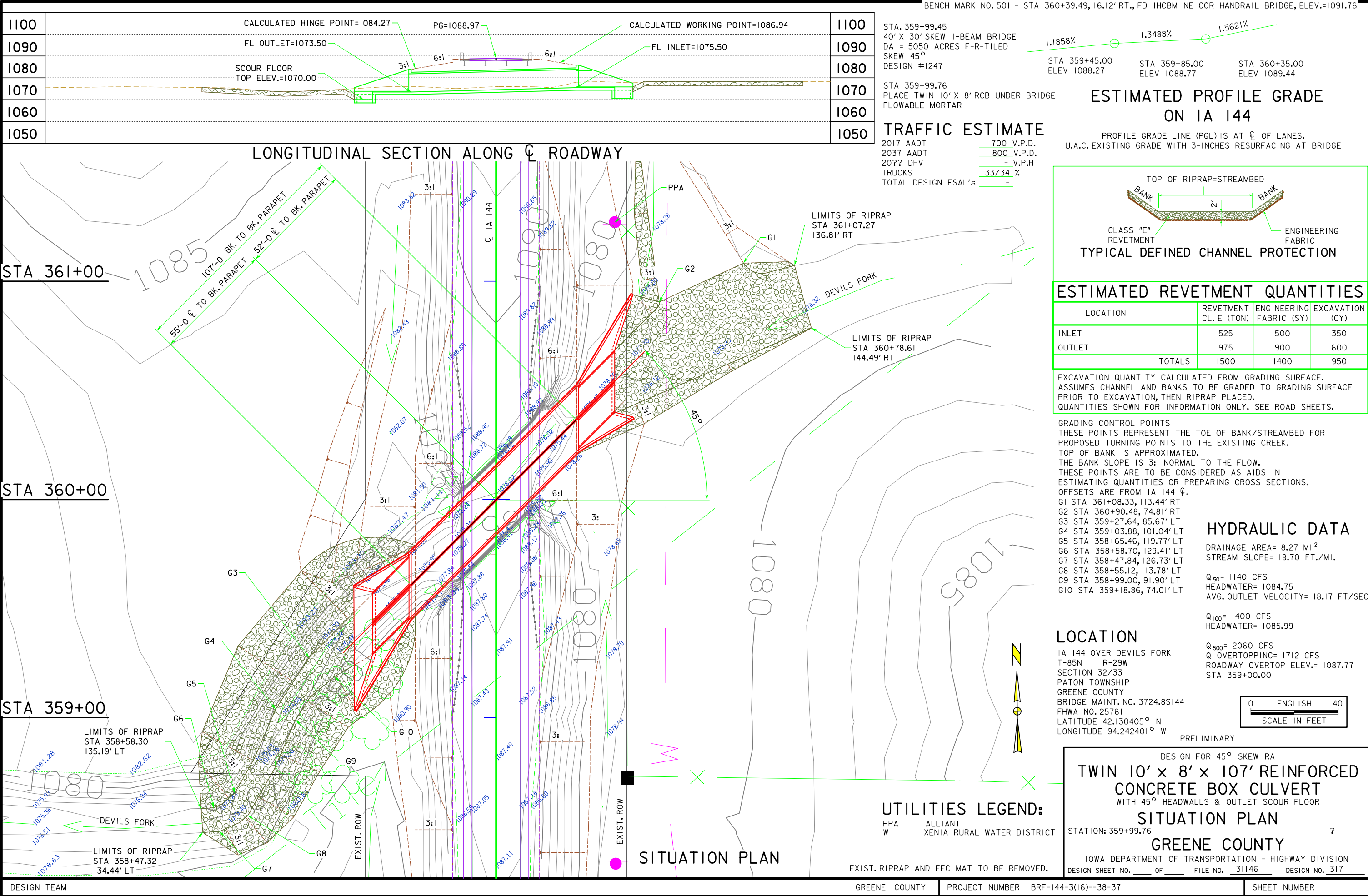
Point	North	East	Elevation	Station	Offset	Feature	Description
500	3508425.829	4719847.584	1090.505	329+74.00	-24.102	BM	FD X HDWL 3' X 2' RCB > BM # 7 GREENE COUNTY S.P.W. - FA PROJ. # 785 (2)
501	3511491.362	4719884.387	1091.756	360+39.49	16.121	BM	FD IHC BM NE COR HANDRAIL BRIDGE

CP STA. 332+40.47, 24.53 RT. CP No. 1,Set Feno Monument N=3508692.359, E=4719895.920 	CP STA. 333+15.45, 5281.704 RT. CP No. 2,Fd Aluminum Disk N=3508773.198, E=4725153.005  FD NAIL SIDE OF COR POST TAGGED /WYELLOW SURVEY MARKER	CP STA. 333+57.23, 10590.569 Lt. CP No. 3,Fd Aluminum Disk N=3508797.277, E=4709280.696 	CP STA. 357+96.48, 19.34 Lt. CP No. 4,Set 1/2" Iron Pin N=3511248.313, E=4719849.201 
CP STA. 360+77.25, 21.43 Lt. CP No. 5,Set 1/2" Iron Pin N=3511529.077, E=4719846.798  NW COR NE WINGWALL BRIDGE			

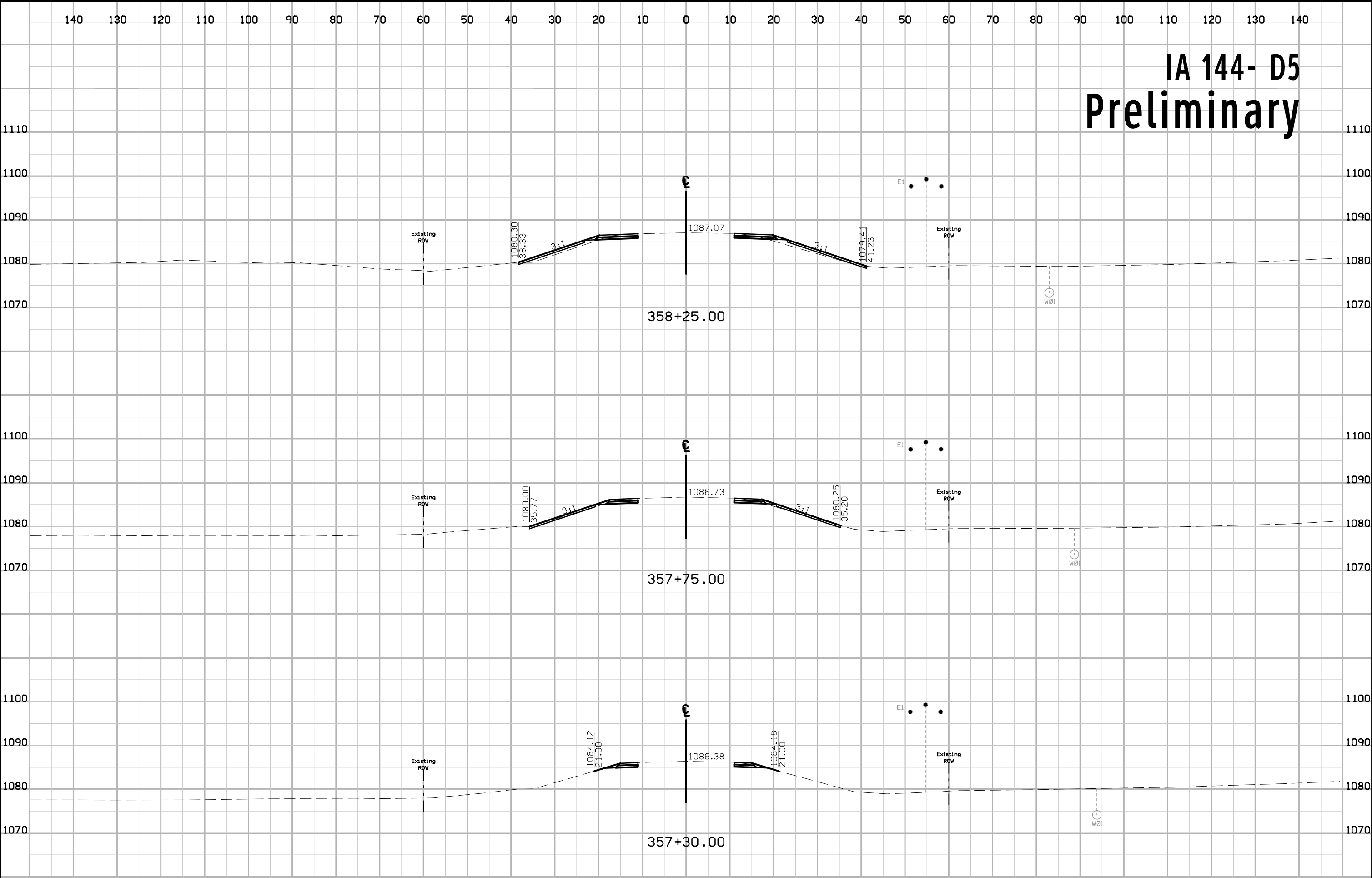
Greene	ROW: STPN-144-3(17)--2J-37				PIN	12-37-144-010													
	Devils Fork 1.3 miles N of Dana																		
		STATE			COUNTY			CITY			BORROW								
PARCEL NO	OWNER NAME	FEE	EASE		FEE	EASE		FEE	EASE		EXCESS	FEE	T.E.	MITIGATION	OTHER	HOUSE	BUILDING(S)	A/C ONLY	TOTAL ACQ.
1	Hellen E. Marshall Revocable Trust - Fee		0.08 AC																
2	Reuter Farms, Inc. - Fee		0.1 AC																
3	Dwight Marshall - Fee		0.27 AC																
3 Parcels	"TOTALS	0 AC	0.45 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	0 SF								



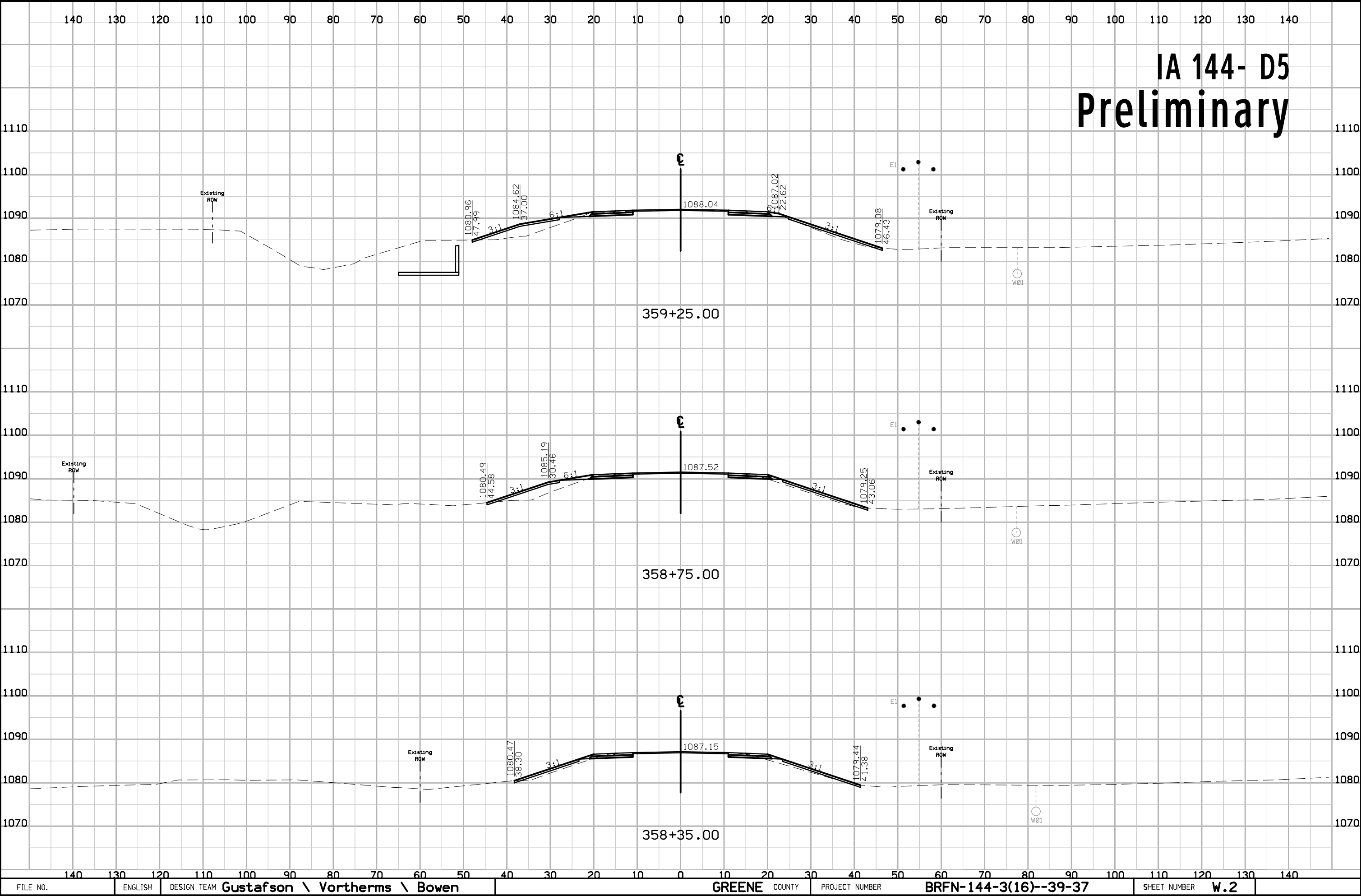
Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: GROAT /LARSON	
ROW #: STPN-144-3(17)--2J-37	
Plan Date: 05-05-15	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition



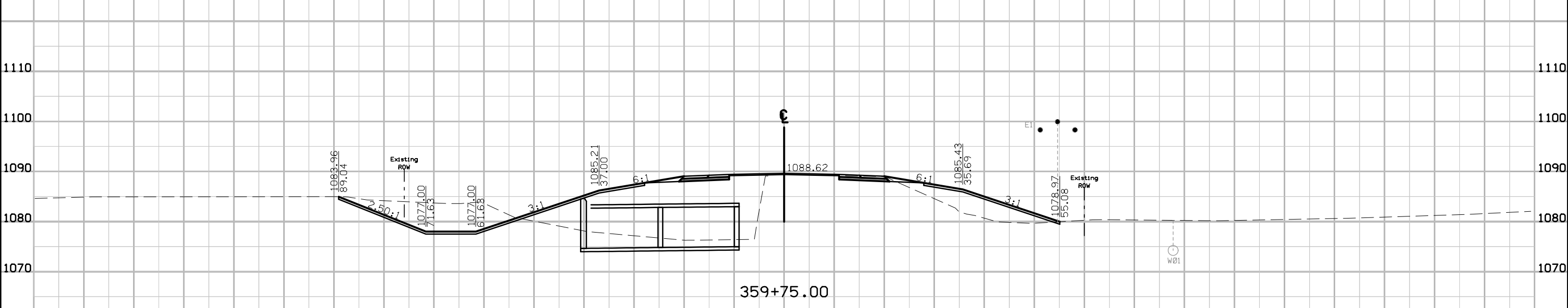
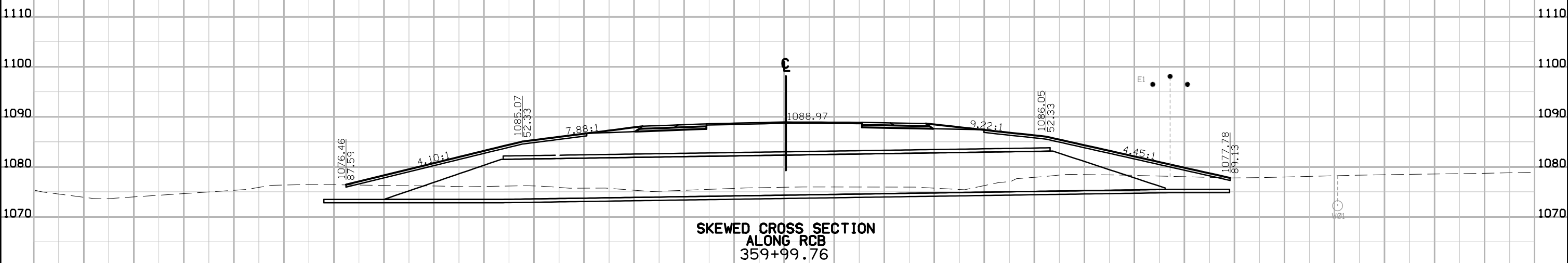
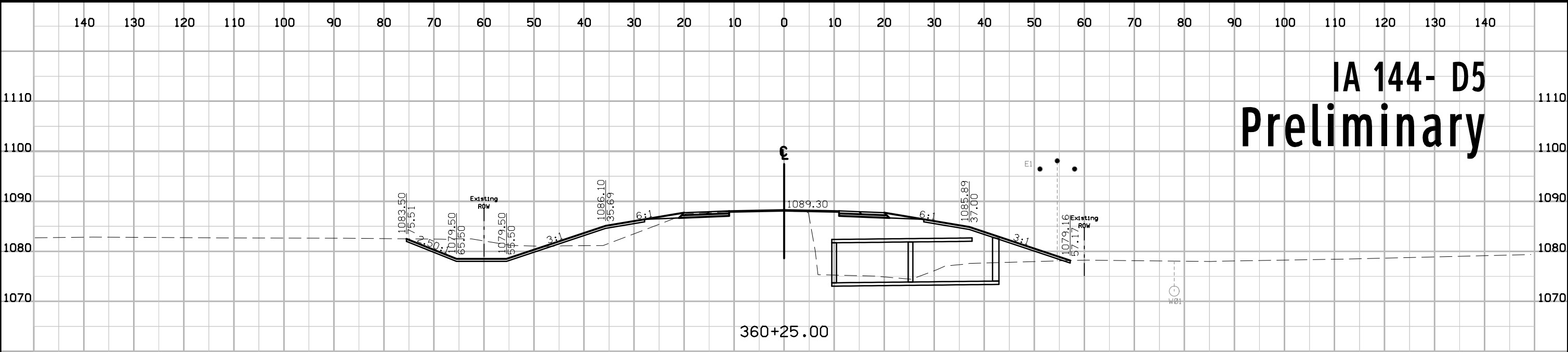
IA 144- D5
Preliminary



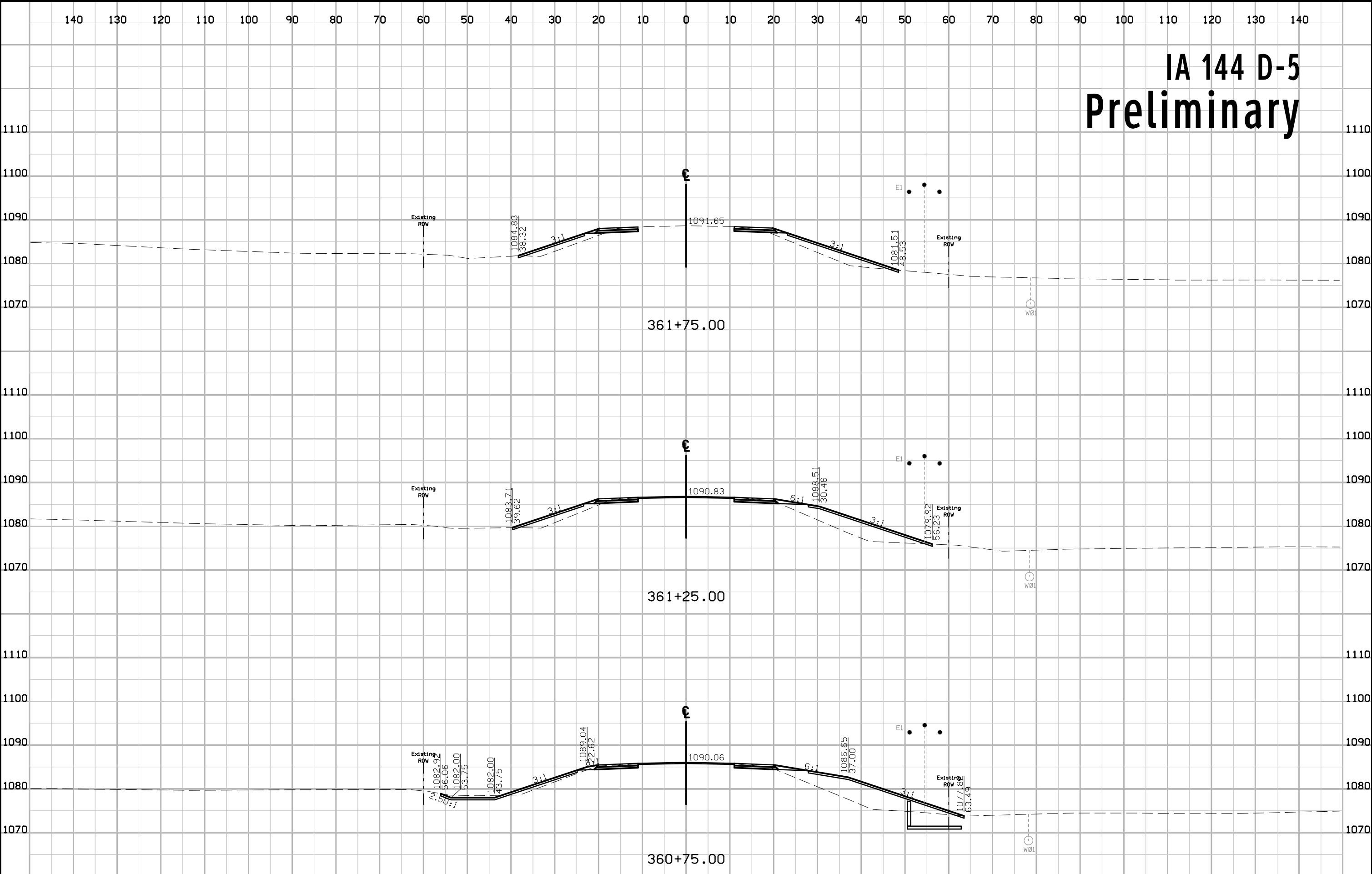
IA 144- D5
Preliminary



IA 144- D5
Preliminary



IA 144 D-5
Preliminary



IA 144- D5
Preliminary

