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C.1	Estimated Project Quantities
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Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM HENRY COUNTY BRIDGE REPLACEMENT - PPCB

U.S. 34 Bridge over the Skunk River,
3.8 miles east of County Road W40 (EB)

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
27
PROJECT IDENTIFICATION NUMBER
16-44-034-010
PROJECT NUMBER
BRF-034-9(224)--38-44
R.O.W. PROJECT NUMBER
NHSN-034-9(225)--2R-44

DESIGN ACTIVITIES

	DUE DATE	EVENT
D2	05/25/18	Office Review
D2	05/31/18	Field Exam
D2	06/08/18	Plans for Review (PSS Date)
D3	07/06/18	Preliminary Plans to Bridge Office (PSS Date)
D5	11/09/18	Plans to ROW (PSS Date)
D4	03/24/20	Final Roadway Plans (PSS Date)
L5	07/21/20	Letting Date

For Project Location Map
Refer to Sheet A.2

DESIGN DATA RURAL

2021 AADT	7,900	V.P.D.
2041 AADT	11,800	V.P.D.
20-- DHV	--	V.P.H.
TRUCKS	17	%
Total Design ESALs	6,500,000	

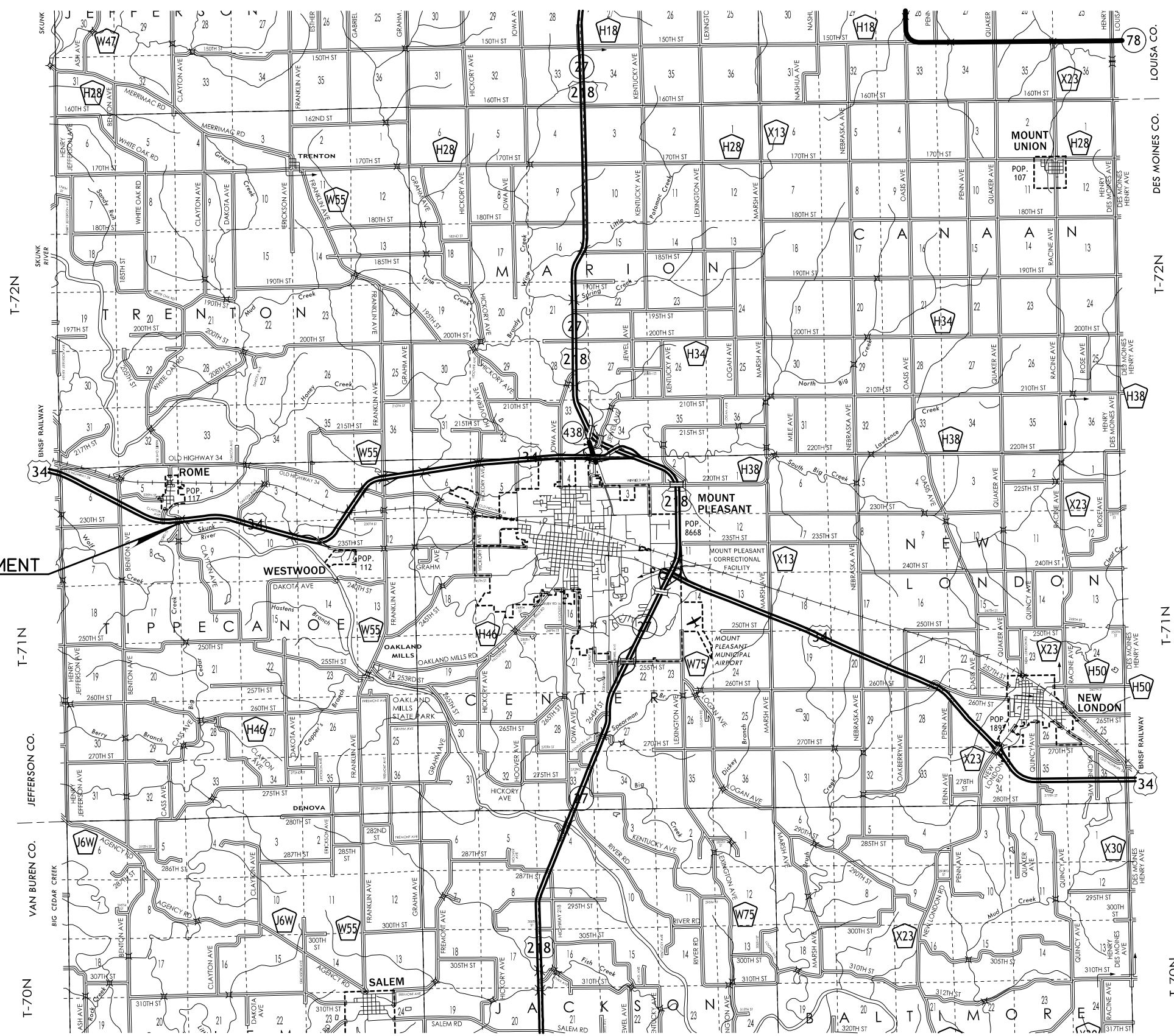
INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1		Primary Signature Block
V.1	Mark D. Werner	Hydraulic Design

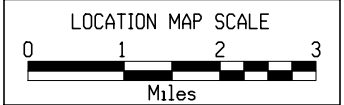
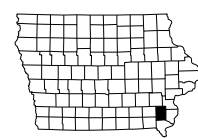
PRELIMINARY PLANS

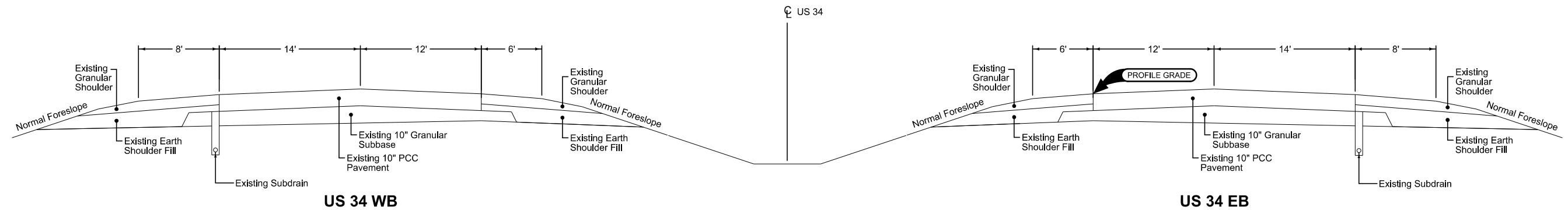
Subject to change by final design.

D5 PLAN - Date: Nov 9, 2018



U.S. 34 EB BRIDGE REPLACEMENT
 FHWA No. 28430 (EXISTING)
 FHWA No. 28431 (NEW)



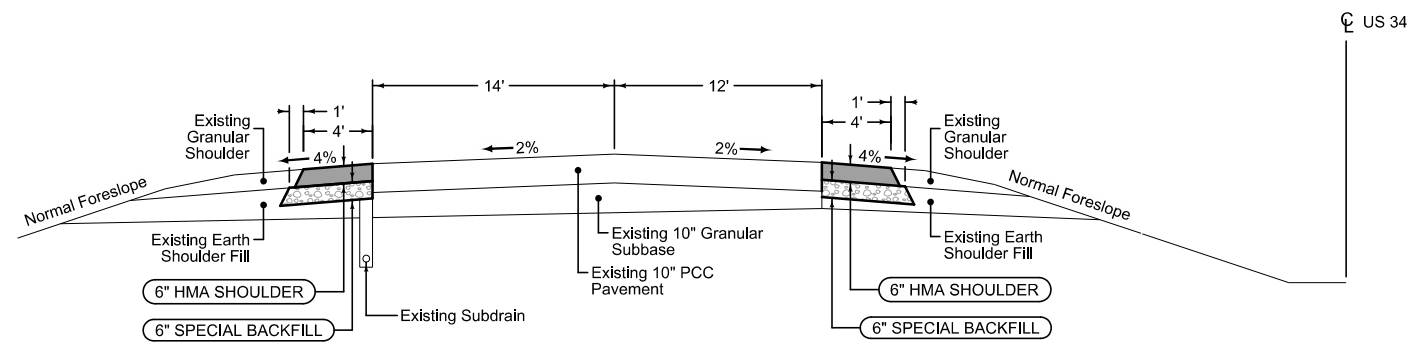


EXISTING US 34

HMA Shoulder

Shoulder Jointing:
Longitudinal joint: B

4_P_HMA_MODIFIED		
Direction of Travel	BEGIN STATION	END STATION
WB	936+24.50	939+92.50
WB	942+38.75	955+88.25
WB	963+24.00	969+23.50



HMA Shoulder

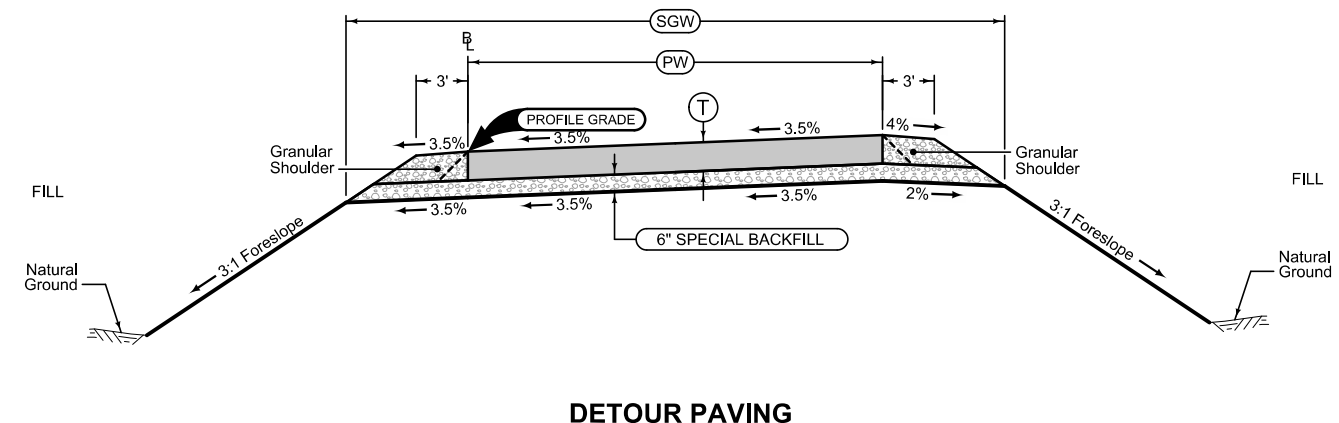
Shoulder Jointing:
Longitudinal joint: B

4_P_HMA_MODIFIED		
Direction of Travel	BEGIN STATION	END STATION
EB	920+54.00	922+30.00
WB	940+48.50	940+85.25
WB	941+76.00	954+29.00
WB	956+31.00	956+57.25
WB	963+40.00	965+68.00

US 34

ROAD IDENTIFICATION	LOCATION	STATION TO STATION	DIMENSIONS					
			HMA			PCC		
			PW Feet	T Inches	SGW Feet	PW Feet	T Inches	SGW Feet
Detour Connection 1A	Refer to Sheet F.2 for location and details							
Detour Pavement 1	5922+30.00	5940+47.81	16	12	31.7	16	9	30
Detour Connection 1B	Refer to Sheet F.3 for location and details							

Quantity calculations based on vertical pavement edges.
Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.



DETOUR PAVING

D_Detour
Modified

SURVEY SYMBOLS

- WC Wild Card (Misc. Field Shot)
- CP Control Point
- GHP - GH1D High Pres Gas Co 1 - Quality D
- TP TPD Telephone Pedestal
- T1 - TL1D Telephone Line Co. 1 - Quality D
- T2 - TL2D Telephone Line Co. 2 - Quality D
- PPA Power Pole Co. 1
- EP Edge of Paved Roads (ML or SR)
- GU Gutter In Front of Curb
- CU Back of Curb
- - - - BL Topo Breakline
- - - - C Centerline BL of Road (ML or SR)
- DU Centerline Draw or Stream (Up)
- - - - SNP Unpaved Shoulder
- - - - ENU Edge Unpaved Entrance & Parking
- - - - ENT Centerline BL of Entrance
- ***** RIP Rip-Rap
- x- FW Wire Fence
- OUT Tile Outlet
- TILE TIL Tile Line
- ENP Edge Paved Entrance & Park Lot
- D Centerline Draw or Stream (Down)
- ▲ BM Bench Mark
- POT Tangent Point
- TS Spiral Point
- SC Spiral Point
- CS Curve Point
- ST Spiral Point
- REF Reference Tie Point
- BBB Bottom of Bridge Beam
- BRG Bridge
- PRO Profile Shot
- TOP Top of Bridge Pier
- SP Stream Profile
- EG Edge of Gravel Road
- PIP Pipe Culvert
- SOP Size of Pipe or Culvert
- BCL Bridge Centerline
- BD Bridge Deck
- SBR Size of Bridge
- GR Ground Shot
- CON Concrete or A/C Slab
- FENO FENO Monument

UTILITY LEGEND

Sub-Surface Utility Mapping Quality Level is in accordance with CI/ASCE 38-02 Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data.

Remark Abbreviations
 QLA Quality Level A Highest guideline quality level
 QLD Quality Level D Lowest guideline quality level

- Access Energy Cooperative
Mark Fulton
907 E. Washington Street
Mt Pleasant, IA 52641
319-385-1577
- GHP - ANR Pipeline Company - Quality D
David Huebner
P.O. Box 9
2795 Locust Avenue
Birmingham, IA 52535
319-498-4200 ext 2252
- T1 - Iowa Communications Network - Quality D
Mike Broderick
400 E 14th Street
Grimes State Office Bldg
Des Moines, IA 50139
- T2 - Windstream Communications (Iowa Telecom) - Quality D
Kelly Eggers
101 West Madison Street
Mt. Pleasant, IA 52641
(319) 385-5004

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

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

RIGHT-OF-WAY LEGEND

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

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES D & F)

SCS PI Sta 936+61.24
 $\Delta = 33^\circ 19' 22.78''$ (LT)
 Theta = $1^\circ 45' 24.96''$
 Ls = 301.84
 Ts = 1,624.10
 Es = 216.49
 P = 0.77
 K = 150.91
 Xc = 301.81
 Yc = 3.08
 LT = 201.23
 ST = 100.62
 LC = 301.82

Tippecanoe TWP.
 T-71N R-7W
 SEC. 5

Curve Data
 $\Delta = 29^\circ 48' 32.85''$ (LT)
 T = 1,309.96
 L = 2,560.56
 R = 4,921.62
 E = 171.35



Clayton Avenue

SIGN

Construction Limits (Typ)

Install 6" HMA Shoulders, 4' Wide (Typ)

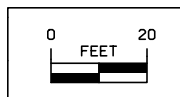
935 936 937 938 939 940 941

US 34

TILE

Sta. 936+52.52 RT 70'(SUR)
 24"X90' RCP
 D.A.=Median

PI Sta 936+48.9

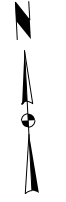


For Crossover Details Refer to Sheet No. F.1

US 34

Clayton Avenue

Tippecanoe TWP.
T-71N R-7W
SEC. 5



SIGN
SIGN
SIGN

Construction Limits (Typ)

Install 6" HMA Shoulders, 4' Wide (Typ)

941

942

943

944

945

946

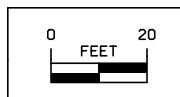
947

US 34

TILE

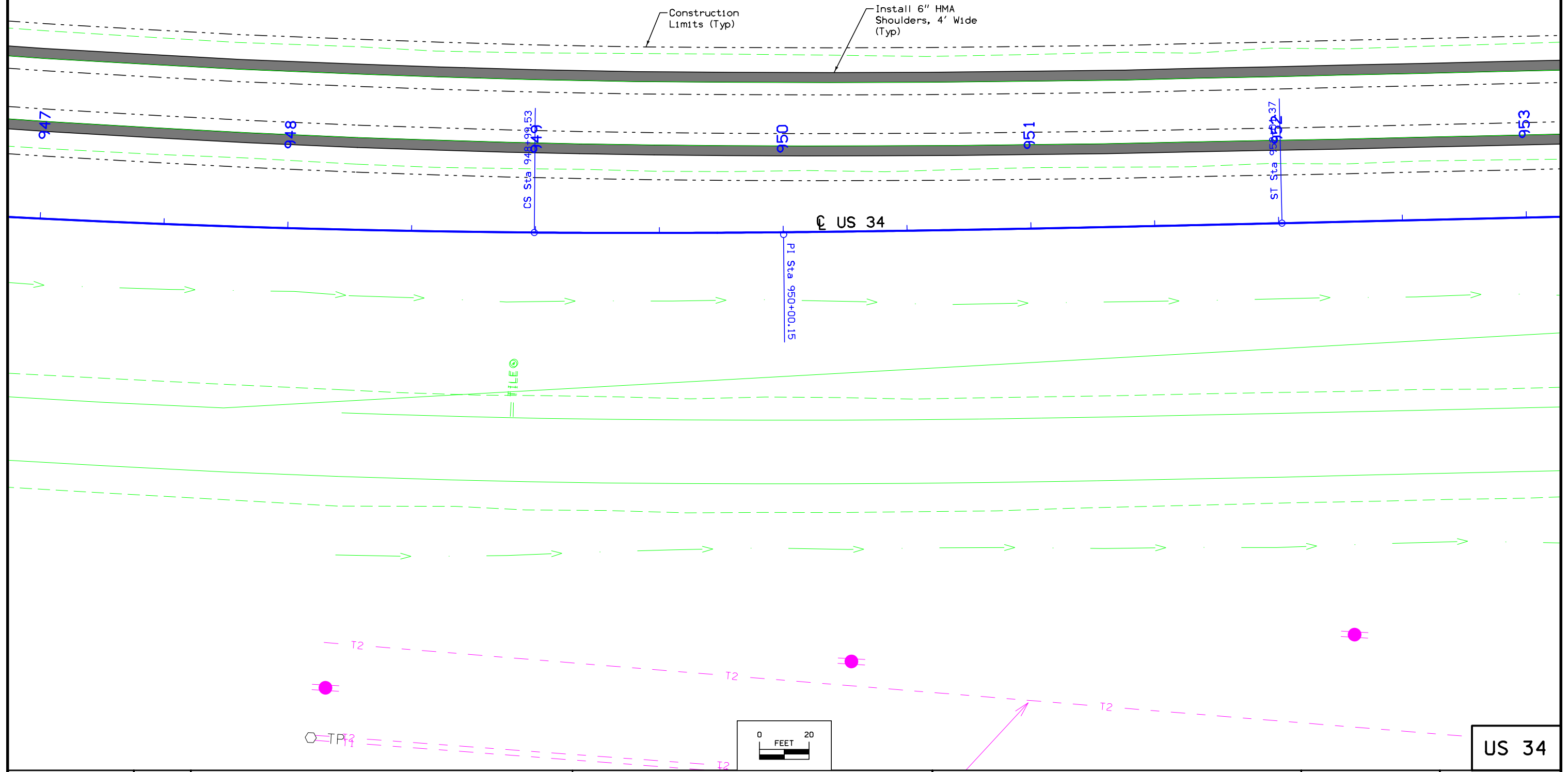
TILE

TILE



US 34

Tippecanoe TWP.
T-71N R-7W
SEC. 5



Tippecanoe TWP.
T-71N R-7W
SEC. 5

Tippecanoe TWP.
T-71N R-7W
SEC. 4

Skunk River



Sta. 954+06.06 LT 45'(SUR)
24"x72' RCP W/ 66' CMP EXT.
D.A.=Median

Install 6" HMA
Shoulders, 4' Wide
(Typ)

Install Temporary Guardrail.
At the End of the Project,
Remove and Deliver to Mt.
Pleasant Maintenance Shop.

953

954

955

956

957

958

959

US 34

Sta. 956+47.29
Begin Bridge Approach

Bridge Approach
(BR-203)

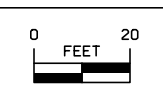
US 34 EB PGL

Clayton Avenue

Construction
Limits (Typ)

Install New Guardrail and
Paved Shoulders (Typ)

Sta. 955+20.46 RT 169'(SUR)
24"x66' RCP W/ 33' CMP EXT.
D.A.=1.38 Ha-R (From Plans)



For Profile Details
Refer to Sheet No. D.6

US 34

For Plan Details
Refer to Sheet No. D.5



Tippecanoe TWP.
T-71N R-7W
SEC. 4



Sta. 959+42 LT 46.17' (SUR)
BRG 2 524'X39' Prestressed Concrete Beam Bridge
Design No. 1100

Sta. 962+92.19 LT 46'(SUR)
24"X117" RCP
D.A.=Median

Install New Guardrail and
Paved Shoulders (Typ)

Install 6" HMA
Shoulders, 4' Wide
(Typ)

959

960

961

962

963

964

965

US 34

Skunk River

Install Rock Flume (Typ)

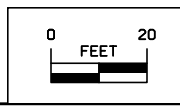
Bridge Approach
(BR-203)

US 34 EB PGL

Sta. 963+54.29
End Bridge Approach

Construction
Limits (Typ)

Sta. 959+97 RT 88.36' (SUR)
BRG 1 520'X28' Continuous I Beam Bridge
Design No. 1397



For Profile Details
Refer to Sheet No. D.8

US 34

FILE NO. 31646

ENGLISH

DESIGN TEAM Stanley Consultants Inc.

HENRY COUNTY

PROJECT NUMBER

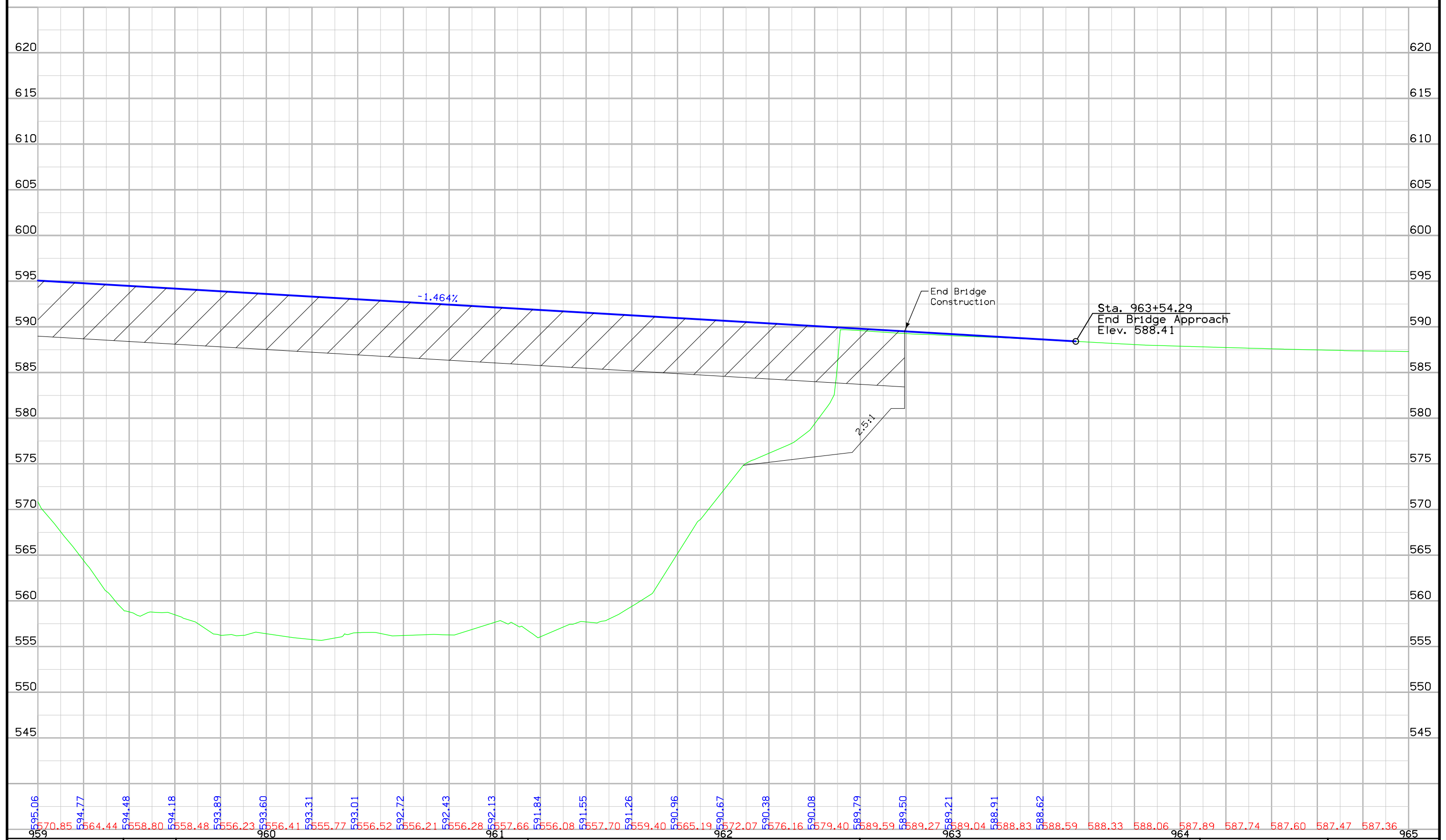
BRF-034-9(224)--38-44

SHEET NUMBER D.7

12:48:54 PM 10/29/2018 8725

pw:\projectwise.dot.int.lan:PWMain\Documents\Projects\4403401016\Design\CADD_Files\Sheet_Files\SHT_44034224_D01.dgn

For Plan Details
Refer to Sheet No. D.7



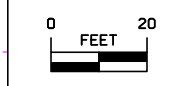
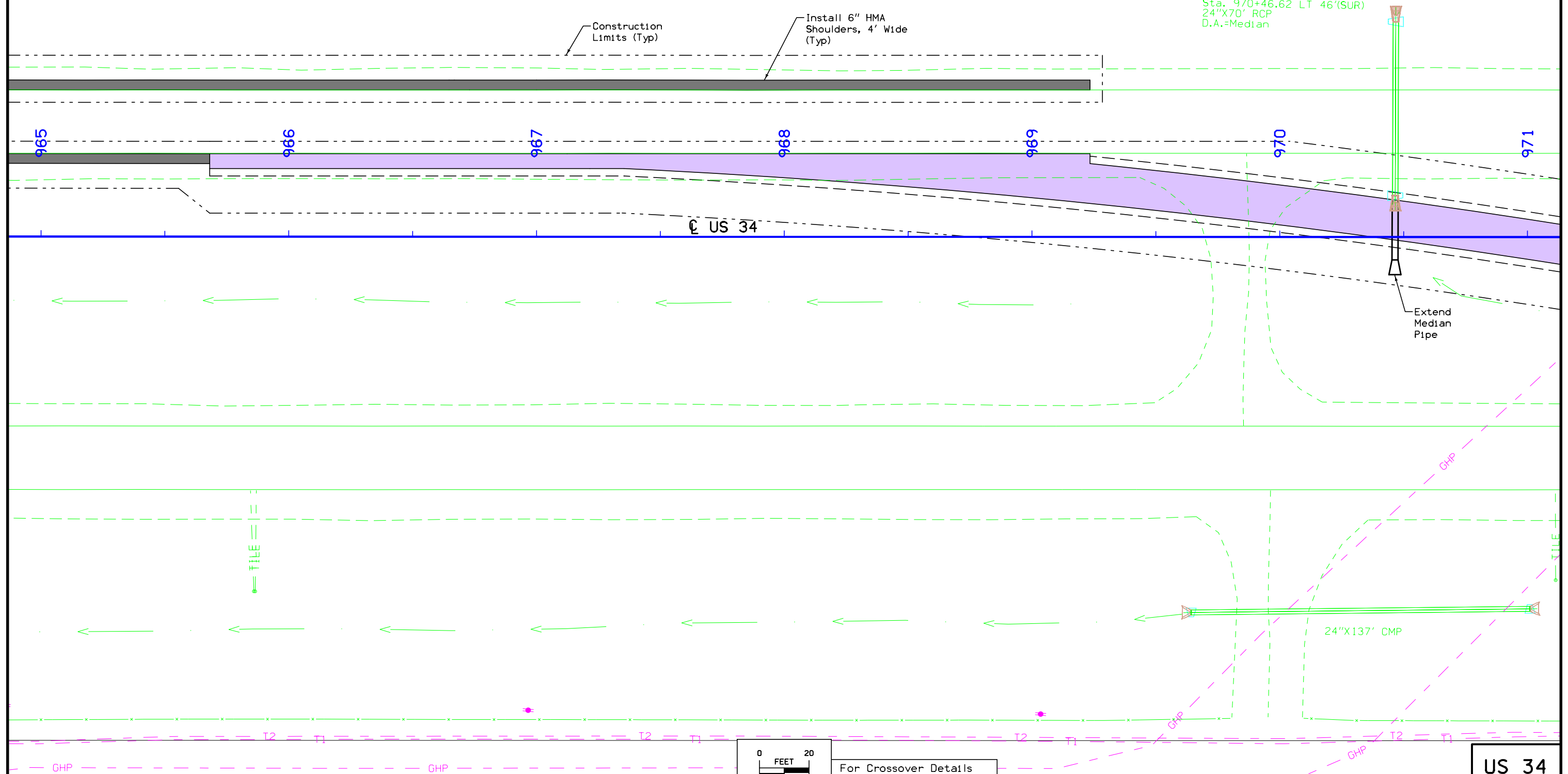
FILE NO.	31646	ENGLISH	DESIGN TEAM	Stanley Consultants Inc.	HENRY COUNTY	PROJECT NUMBER	BRF-034-9(224)--38-44	SHEET NUMBER	D.8
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Tippecanoe TWP.
T-71N R-7W
SEC. 4



Construction Limits (Typ)
Install 6" HMA
Shoulders, 4' Wide
(Typ)

Sta. 970+46.62 LT 46'(SUR)
24"X70" RCP
D.A.=Median



For Crossover Details
Refer to Sheet No. F.4

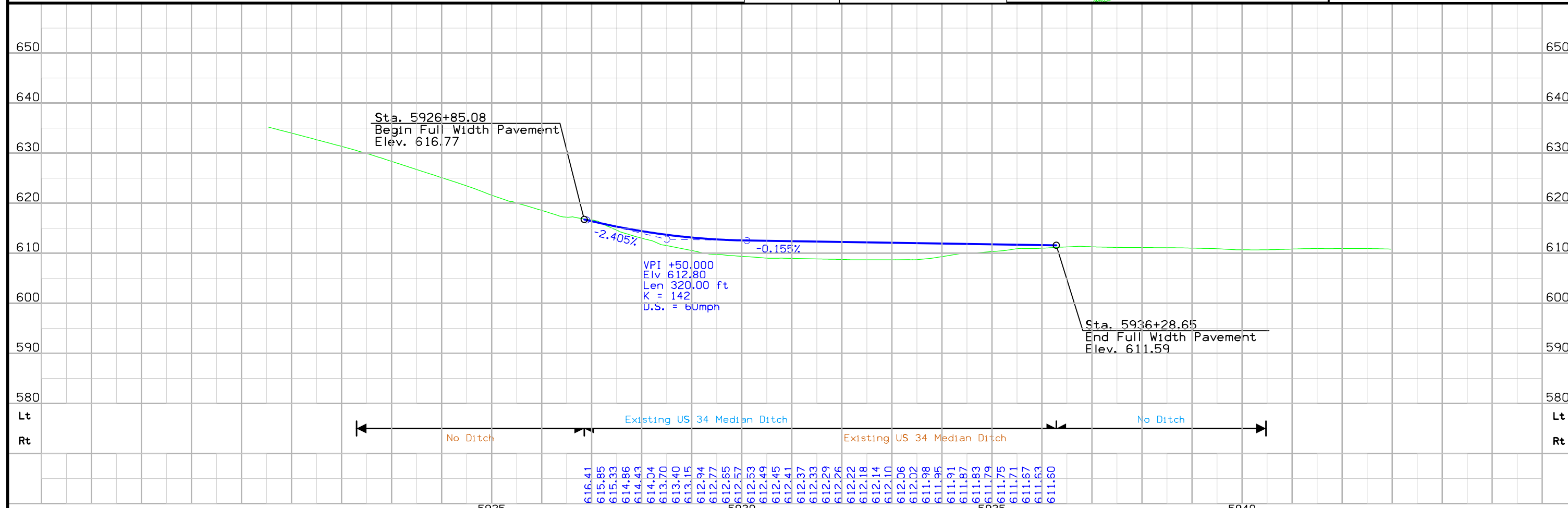
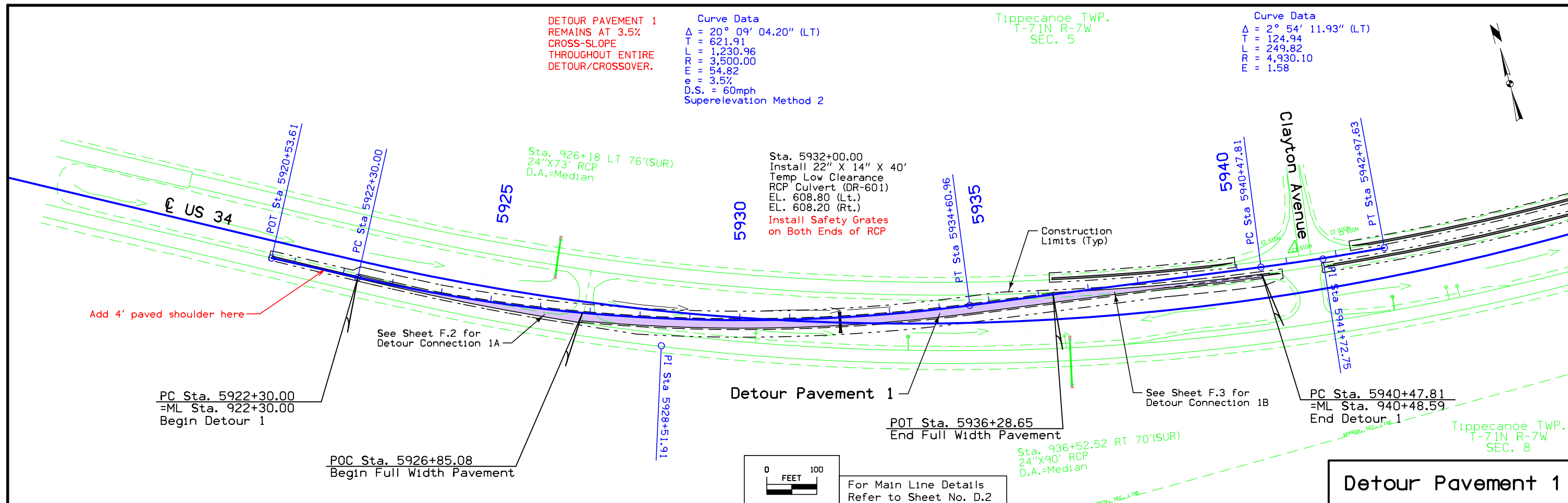
US 34

DETOUR PAVEMENT 1
REMAINS AT 3.5%
CROSS-SLOPE
THROUGHOUT ENTIRE
DETOUR/CROSSOVER.

Curve Data
Δ = 20° 09' 04.20" (LT)
T = 621.91
L = 1,230.96
RR = 3,500.00
E = 54.82
e = 3.5%
D.S. = 60mph
Superelevation Method 2

Tippecanoe TWP.
T-71N R-7W
SEC. 5

Curve Data
Δ = 2° 54' 11.93" (LT)
T = 124.94
L = 249.82
RR = 4,930.10
E = 1.58

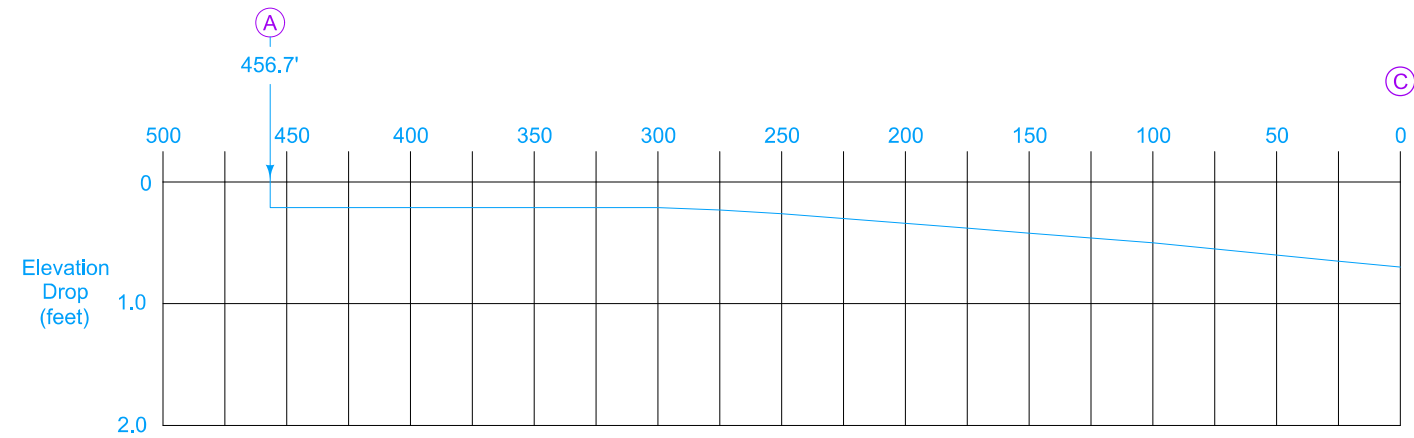
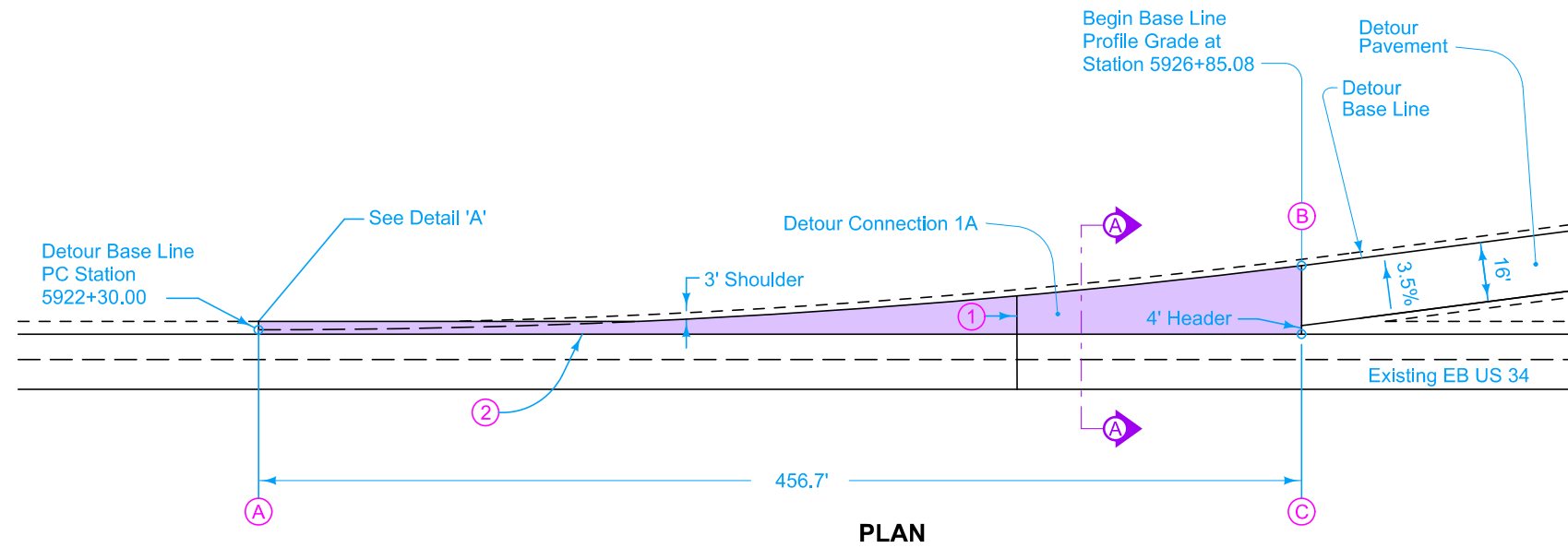


Construct detour connection pavement and subbase the same thickness as detour pavement and subbase.

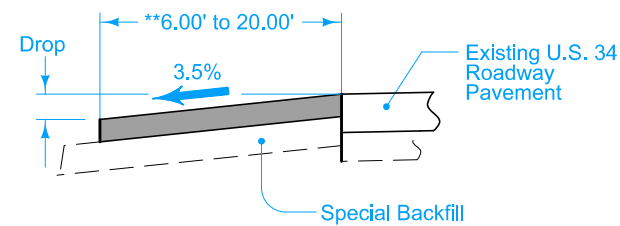
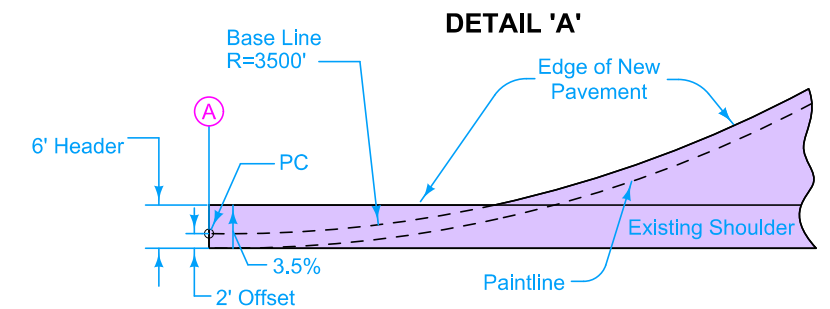
Detour connection pavement shown by shaded area is 510 square yards, which includes the 6' Header.

For joint details, see [PV-101](#)

- ① For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
- ② 'KT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out. 'BT-3' joint if mainline pavement is existing. 'B' joint if Detour Pavement is HMA.



NOTE: The algebraic difference between profile grade for Detour Base Line at (B) and relative profile grade of Existing U.S. 34 at (C) is 0.20%.

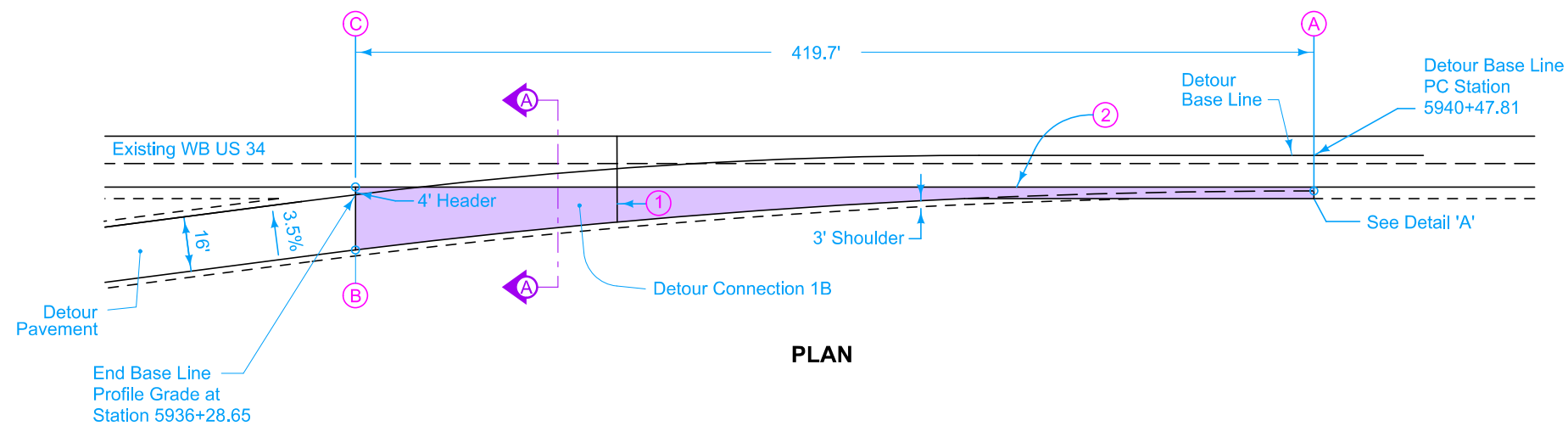


** Width includes Header.

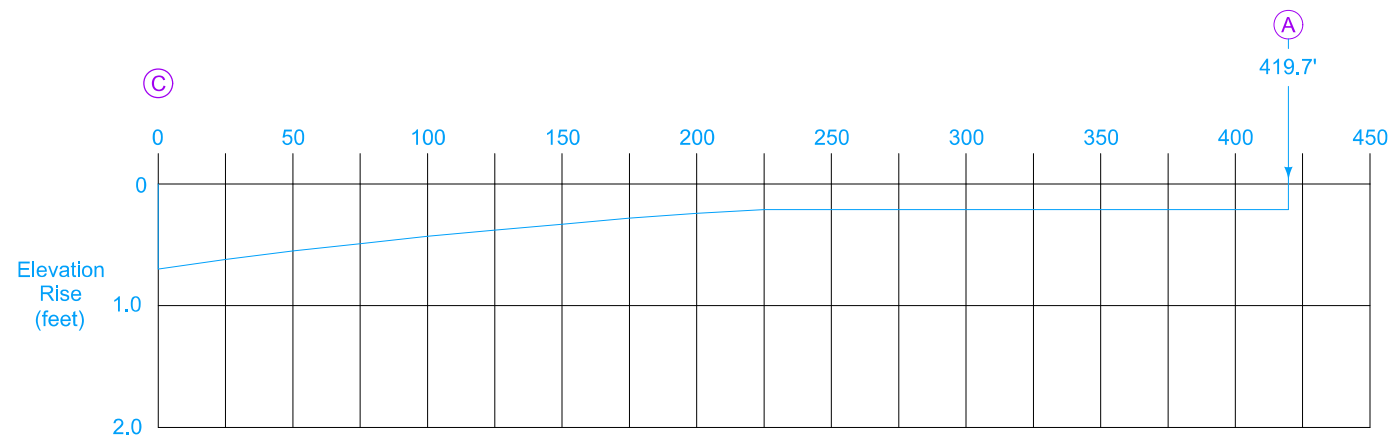
TABLE OF OFFSETS AND DROPS FOR DETOUR PAVEMENT																				
DISTANCE (Ft.)	456.7	450	425	400	375	350	325	300	275	250	225	200	175	150	125	100	75	50	25	0
OFFSET (Ft.)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.64	7.54	8.56	9.66	10.74	11.91	13.09	14.41	15.69	17.02	18.44	20.00
DROP (Ft.)	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.23	0.26	0.30	0.34	0.38	0.42	0.46	0.50	0.55	0.60	0.65	0.70

NOTE: The elevations are established by a constant 3.5% slope across the appropriate detour widths based on a radius of 3,500.00'. Drop = (0.035) x (Offset).

MODIFIED STANDARD ROAD PLAN	REVISION	
	1	10-21-14
PV-418		SHEET 1 of 1
MODIFICATIONS: Changed radius to 3,500 ft for increased design speed.		
ONE-LANE DETOUR CONNECTION 1A		

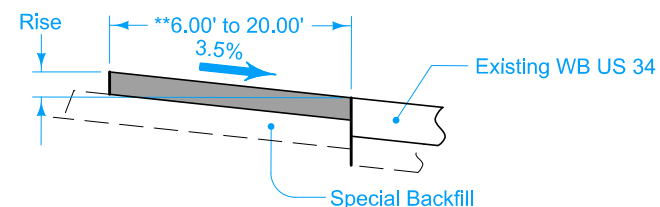


PLAN



NOTE: The algebraic difference between profile grade for Detour Base Line at (B) and relative profile grade of Existing U.S. 34 at (C) is 0.32%.

PROFILE



SECTION A-A

** Width includes Header.

TABLE OF OFFSETS AND RISE FOR DETOUR PAVEMENT																		
DISTANCE (Ft.)	0	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	419.7
OFFSET (Ft.)	20.00	17.84	15.81	13.93	12.40	10.88	9.43	8.11	6.88	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
RISE (Ft.)	0.70	0.62	0.55	0.49	0.43	0.38	0.33	0.28	0.24	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21

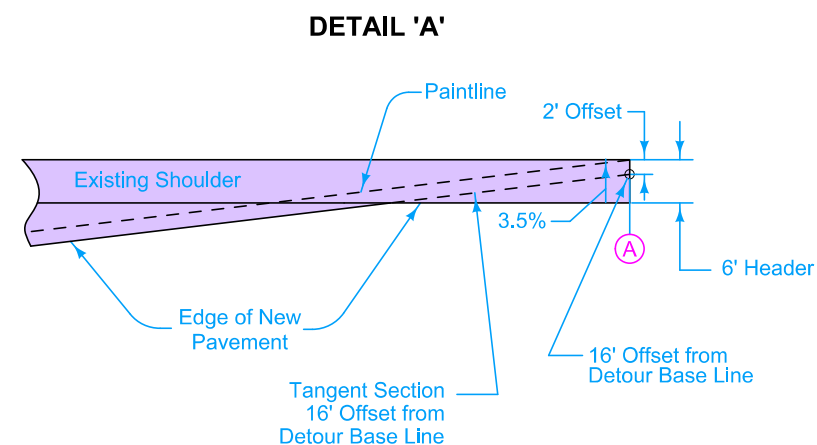
NOTE: The elevations are established by a constant 3.5% slope across the appropriate detour widths based on a tangent section. Rise = (0.035) x (Offset).

Construct detour connection pavement and subbase the same thickness as detour pavement and subbase.

Detour connection pavement shown by shaded area is 430 square yards, which includes the 6' Header.

For joint details, see PV-101

- ① For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
- ② 'KT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out. 'BT-3' joint if mainline pavement is existing. 'B' joint if Detour Pavement is HMA.



<h1>MODIFIED STANDARD ROAD PLAN</h1>	REVISION	
	1	10-21-14
	PV-418	
SHEET 1 of 1		
MODIFICATIONS: Changed detour alignment for increased design speed and to match existing mainline superelevated curves.		
ONE-LANE DETOUR CONNECTION 1B		



Tippecanoe TWP.
T-71N R-7W
SEC. 4

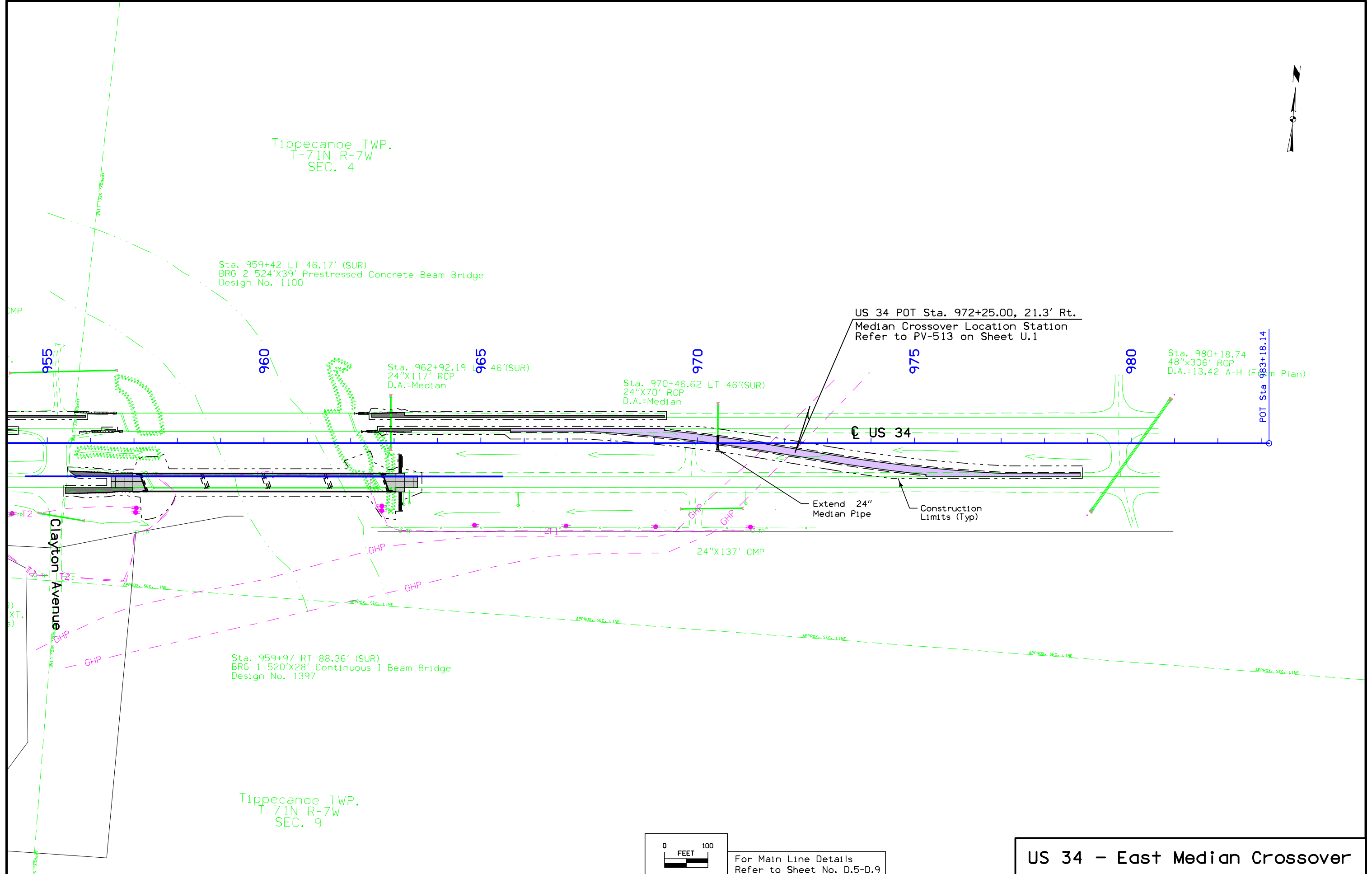
Sta. 959+42 LT 46.17' (SUR)
BRG 2 524'X39' Prestressed Concrete Beam Bridge
Design No. 1100

Sta. 962+92.19 LT 46'(SUR)
24"X117' RCP
D.A.=Median

Sta. 970+46.62 LT 46'(SUR)
24"X70' RCP
D.A.=Median

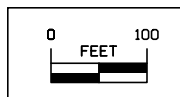
US 34 POT Sta. 972+25.00, 21.3' Rt.
Median Crossover Location Station
Refer to PV-513 on Sheet U.1

Sta. 980+18.74
48"X306' RCP
D.A.=13.42 A-H (From Plan)



Sta. 959+97 RT 88.36' (SUR)
BRG 1 520'X28' Continuous I Beam Bridge
Design No. 1397

Tippecanoe TWP.
T-71N R-7W
SEC. 9



For Main Line Details
Refer to Sheet No. D.5-D.9

US 34 - East Median Crossover

Survey Information

County: Henry
SAP 908.0
PIN: 16-44-034-010
Project Number: BRF-034-9(224)--38-44
Location: Skunk River 3.8 mi E of Co Rd W40 (EB)
Type of Work: Bridge-Unspecified
Project Directory: 4403401016
laRCS Zone 14

General Information

Measurement units for this survey are US survey feet. Project datum and control information is provided by Design Survey Office. This project is a Partial DTM with Photo control. This survey is for a bridge project over the Skunk River, 3.8 miles East of County Road W40 (EB).

Vertical Control

Vertical datum for this survey is NAVD88 (Computed using Geoid12A). Benchmarks were placed throughout the project using post processed static observations relative to laRTN Base Network. A minimum of 6hrs of data was simultaneously collected on each of these primary control points.

X 124 is a NGS vertical control monument. It was checked only for vertical tolerance. The difference of 0.13 ft. is within acceptable tolerance.

Z124 RESET is a NGS vertical control monument. It was checked only for vertical tolerance. The difference of 0.03 ft. is within acceptable tolerance.

Horizontal Control

The project coordinate system for this survey is laRCS Zone 14 (U.S. Survey Feet). This survey control is relative to laRTN reference stations. laRTN Reference Station coordinates are relative to the National Reference Station network datum: NAD83 (2011) for Epoch 2010.00.

Henry County Control Pt. 322 is checked for vertical and horizontal tolerance. The horizontal difference is about 0.2 ft. and the vertical difference is about 0.1 ft.

Henry County Control Pt. 323 is checked for vertical and horizontal tolerance. The horizontal difference is about 0.1 ft. and the vertical difference is about 0.1 ft.

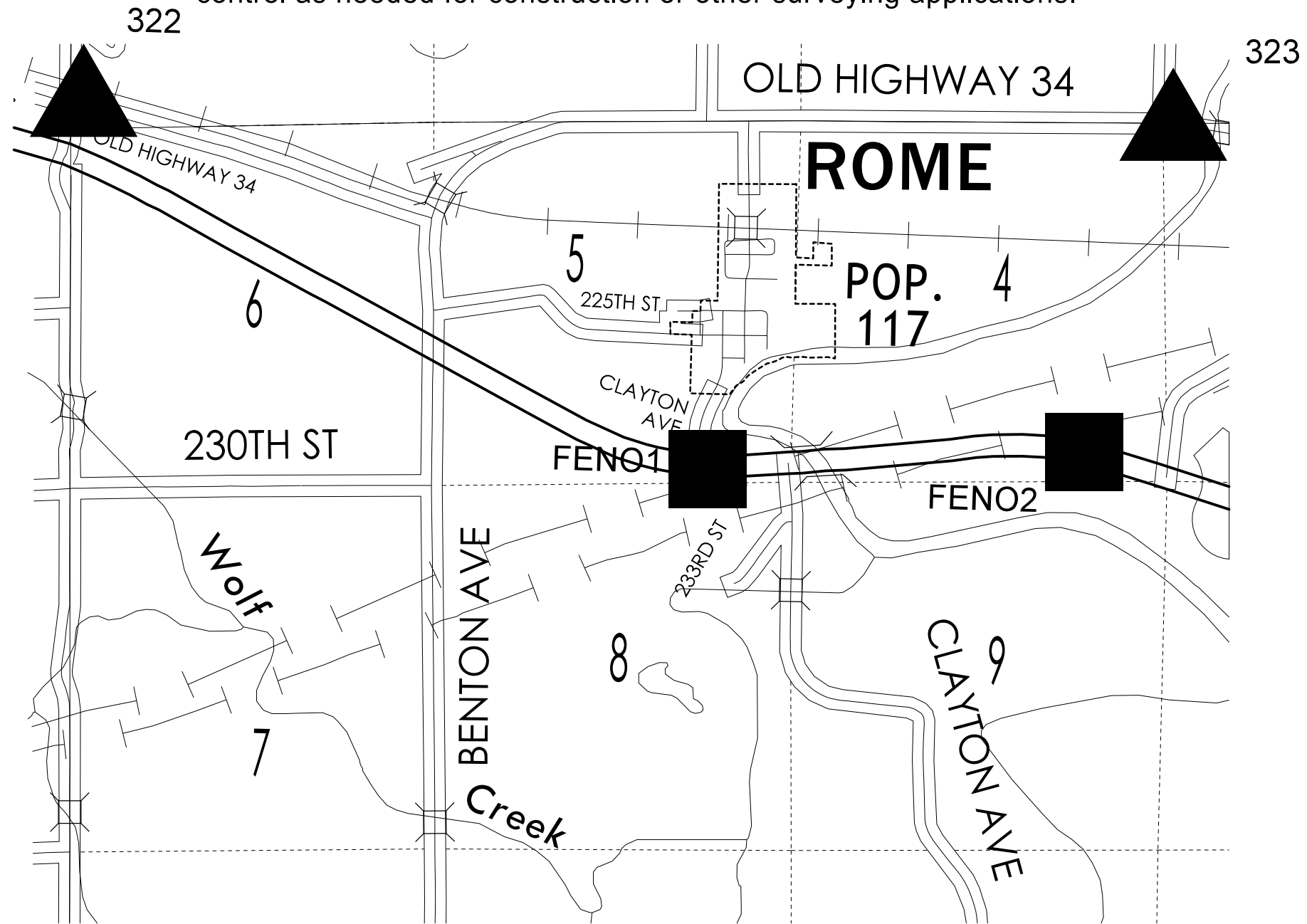
Note: The County mark system is using NAD83(96) datum so there is an expected difference in coordinates.

Alignment Information

The horizontal alignment for this survey is a retrace of As-built Plans No. NHSX-34-8(72)--3H-51 and best fit to existing monumentation. Survey stationing was equated to the plan POT at Sta 274+11.901 (metric), converted to Sta 899+34.06 (standard) and ran ahead without equation throughout the 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) EPOCH 2013.00

VERT. DATUM: NAVD88

1a. Regional Coordinate System Zone 14

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 2013.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 14

Point Name	Northing	Easting	Elevation	Feature Definition
FENO1	6464425.28	24379946.63	610.09	FENO MONUMENT STAMPED #1 53.5' EAST OF CENTERLINE MEDIAN CROSSOVER CLAYTON AVE 42' NORTH OF CENTERLINE HWY 34 EBL AND 94' SOUTH OF CENTERLINE HWY 34 WBL 4" BELOW THE SURFACE
FENO2	6464670.29	24385454.45	655.78	FENO MONUMENT STAMPED #2 26.5' WEST OF CENTERLINE MEDIAN CROSSOVER 42' NORTH OF CENTERLINE HWY 34 EBL AND 94' SOUTH OF CENTERLINE HWY 34 WBL 4' BELOW THE SURFACE
322	6469785.28	24370801.27	684.02	BM HENRY CO. MONUMENT 5/8" DIA DRIVEN ALUMINUM ROD WITH A 2-1/2" DIA ALUMINUM CAP AND PERMANENT MAGNET ENCASED IN A 5" DIA PVC PIPE WITH AN ALUMINUM ACCESS COVER
323	6469388.43	24386759.09	584.42	BM HENRY CO. MONUMENT 5/8" DIA DRIVEN ALUMINUM ROD WITH A 2-1/2" DIA ALUMINUM CAP AND PERMANENT MAGNET ENCASED IN A 5" DIA PVC PIPE WITH AN ALUMINUM ACCESS COVER

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)
POB	US 34	899+33.88	6466125.82	24376069.92															
TS	US 34				920+37.14	6465115.91	24377914.85												
SPI1	US 34									922+38.37	6465019.28	24378091.36							
SC	US 34														923+38.97	6464973.70	24378181.07		
PI	US 34									936+48.94	6464380.22	24379348.88							
CS	US 34				948+99.53	6464445.81	24380657.20												
SPI2	US 34									950+00.15	6464450.84	24380757.69							
ST	US 34														952+01.37	6464467.08	24380958.27		
POE	US 34	983+18.14	6464718.49	24384064.89															
POB	US 34 DET1	5920+53.61	6465077.76	24377913.23															
PC1	US 34 DET1							5922+30.00	6464995.01	24378069.00									
PI1	US 34 DET1									5928+51.91	6464703.24	24378618.22							
PT1	US 34 DET1												5934+60.96	6464618.54	24379234.33				
PC2	US 34 DET1							5940+47.81	6464538.61	24379815.71									
PI2	US 34 DET1									5941+72.75	6464521.60	24379939.48							
PT2	US 34 DET1												5942+97.63	6464510.87	24380063.96				

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	
SCS	US 34	33° 19' 22.78" (LT)	01° 45' 24.96"	301.84	1624.10	216.49	301.81	3.08	201.23	100.62	29° 48' 32.85" (LT)	1309.96	2560.56	4921.62	171.35	
CUR1	US 34 DET 1										20° 09' 04.20" (LT)	621.91	1230.96	3500	54.82	
CUR2	US 34 DET 1										2° 54' 11.93" (LT)	124.94	249.82	4930.1	1.58	

108-23A
08-01-08

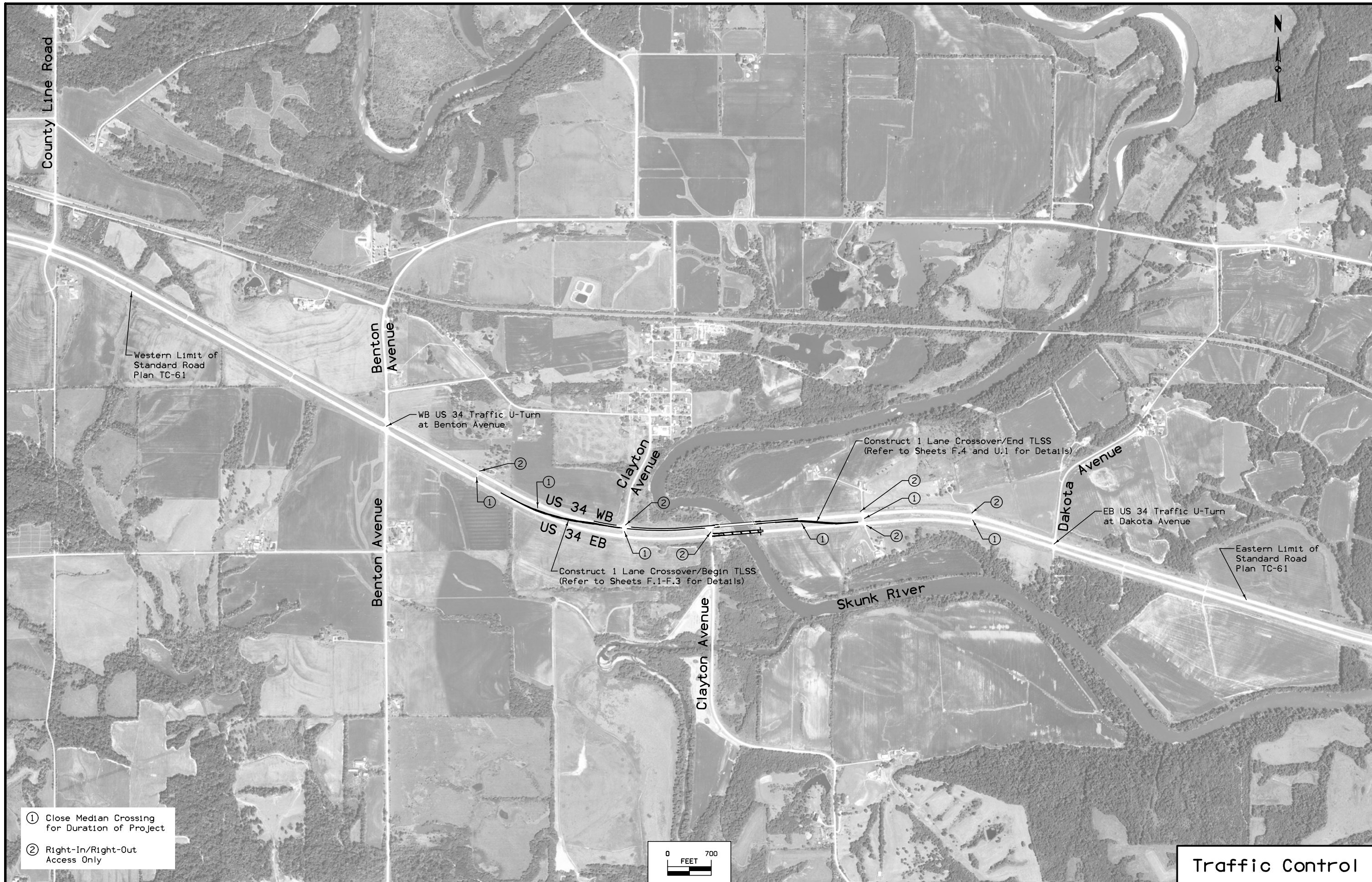
TRAFFIC CONTROL PLAN

- US 34
- Maintain US 34 2-lane, two-way traffic at all times utilizing median crossovers and Standard Road Plan TC-61.
- Clayton Avenue
- Maintain traffic using median crossing and temporary lane separator devices to access US 34.
- Median Crossings
- Close median crossings as shown on Sheet J.2 for duration of the project.
- Private Entrances
- Maintain access to US 34 for the duration of the project.

108-26A
08-01-08

STAGING NOTES

- Stage 1:
- Close median crossings as identified in the Traffic Control Plan.
- Shift traffic using Standard Road Plan TC-418 and construct both crossovers and HMA shoulders and install temporary guardrail on NW and SW corners of existing WB bridge.
- Install traffic control per Standard Road Plan TC-61.
- Install temporary lane separator devices in locations shown on Sheet J.2.
- Stage 2:
- Construct new EB bridge and roadway approaches.
- Stage 3:
- Remove Standard Road Plan TC-61 traffic control.
- Install traffic control per Standard Road Plan TC-418 to close inside WB lane from west median crossover to the east median crossover.
- Remove median crossovers and temporary guardrail.
- Install paved shoulders and guardrail on SE corner of existing WB bridge.
- Shift traffic to inside WB lane and install paved shoulders and guardrail on NE corner of existing WB bridge.
- Remove traffic control and open all lanes to traffic.



Western Limit of Standard Road Plan TC-61

Benton Avenue

WB US 34 Traffic U-Turn at Benton Avenue

US 34 WB
US 34 EB

Clayton Avenue

Construct 1 Lane Crossover/Begin TLSS (Refer to Sheets F.1-F.3 for Details)

Clayton Avenue

Construct 1 Lane Crossover/End TLSS (Refer to Sheets F.4 and U.1 for Details)

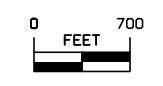
Skunk River

Dakota Avenue

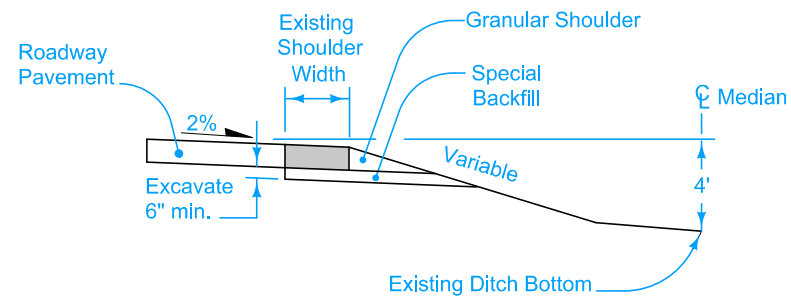
EB US 34 Traffic U-Turn at Dakota Avenue

Eastern Limit of Standard Road Plan TC-61

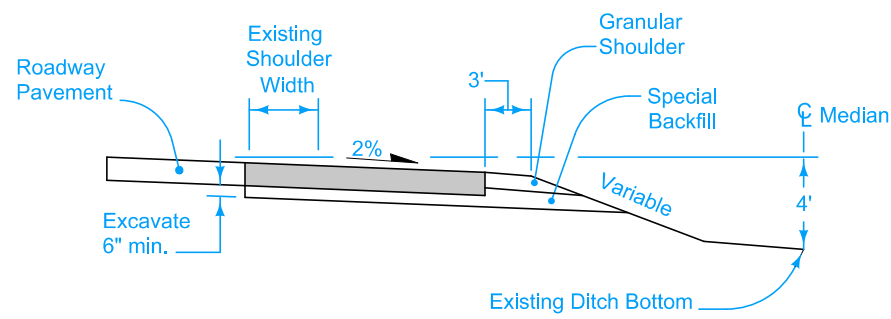
- ① Close Median Crossing for Duration of Project
- ② Right-In/Right-Out Access Only



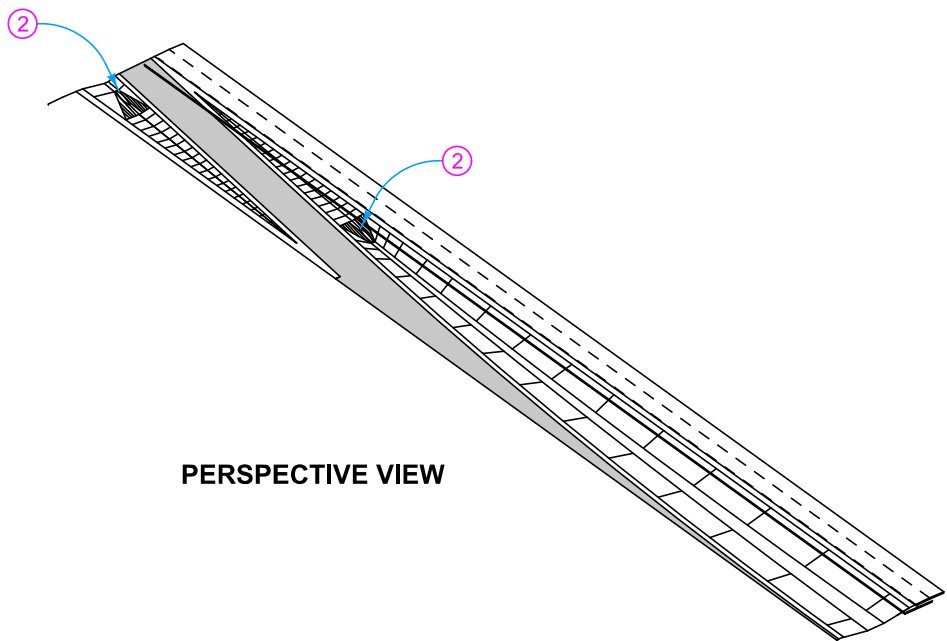
Traffic Control



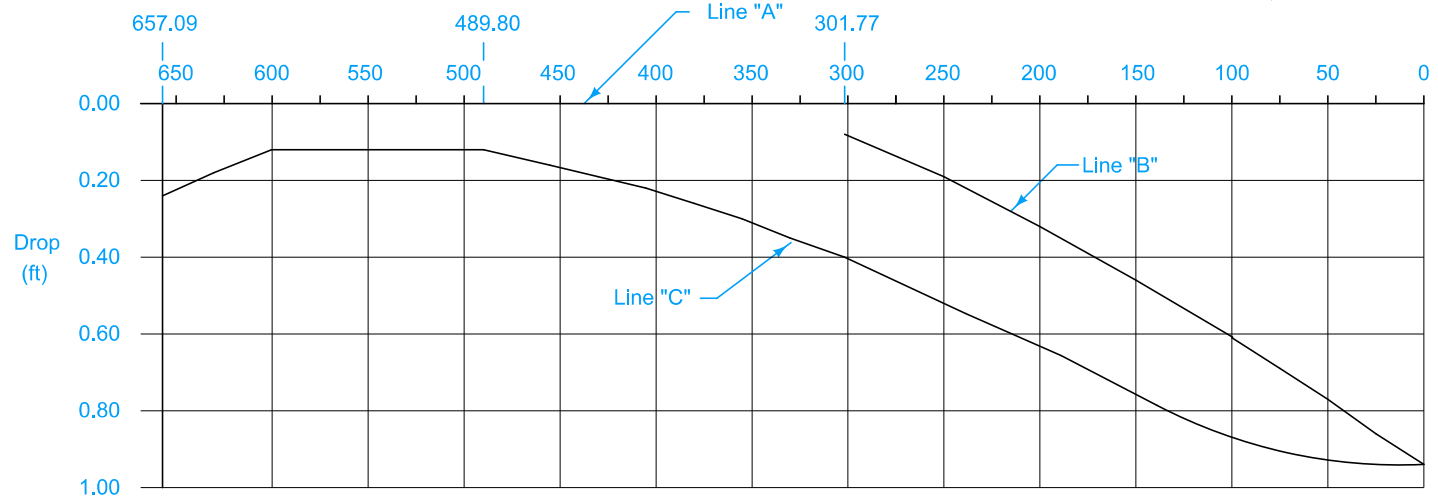
SECTION A-A



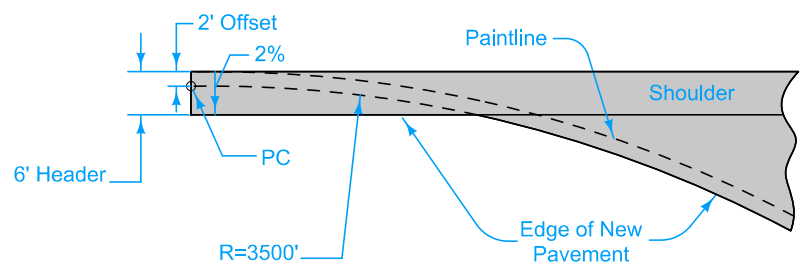
SECTION B-B



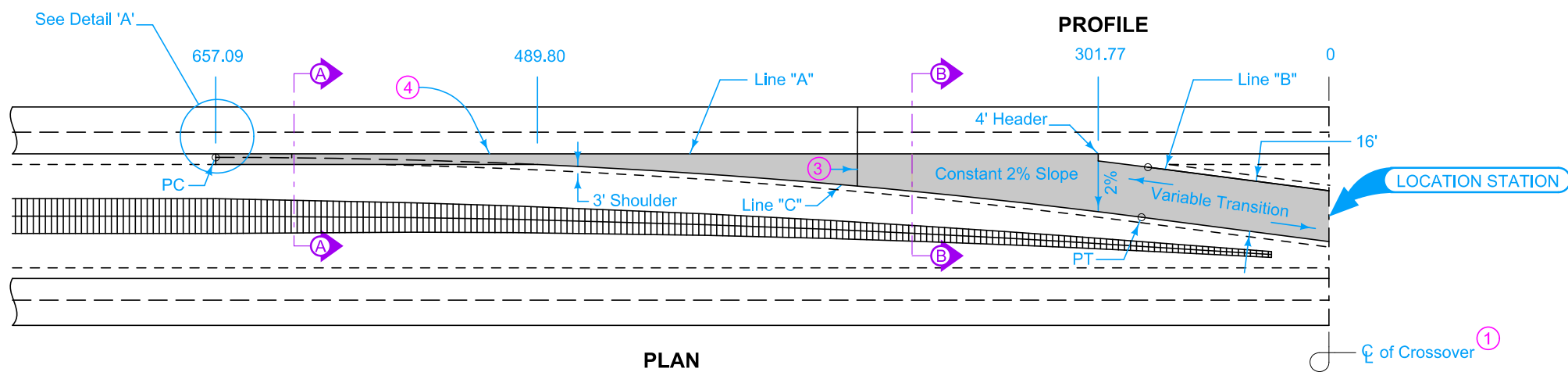
PERSPECTIVE VIEW



PROFILE



DETAIL 'A'



PLAN

Detour Pavement options: 9" PCC or 12" HMA

For joint details, see PV-101.

- ① Median crossover is symmetrical about centerline.
- ② Median pipe for crossover. See Detail 500-19.
- ③ For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
- ④ 'KT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out. 'BT-3' joint if mainline pavement is existing. 'B' joint if Detour Pavement is HMA.

DESIGN QUANTITY TABLE		
Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
1820	900	*340

*Quantity based on 8" shoulder depth.



- Possible Contract Items:
- Detour Pavement
 - Embankment In Place
 - Excavation, Class 10, Roadway and Borrow
 - Excavation, Class 13, Roadway and Borrow
 - Granular Shoulder, Type A
 - Removal of Pavement
 - Special Backfill

Possible Tabulation: 112-8

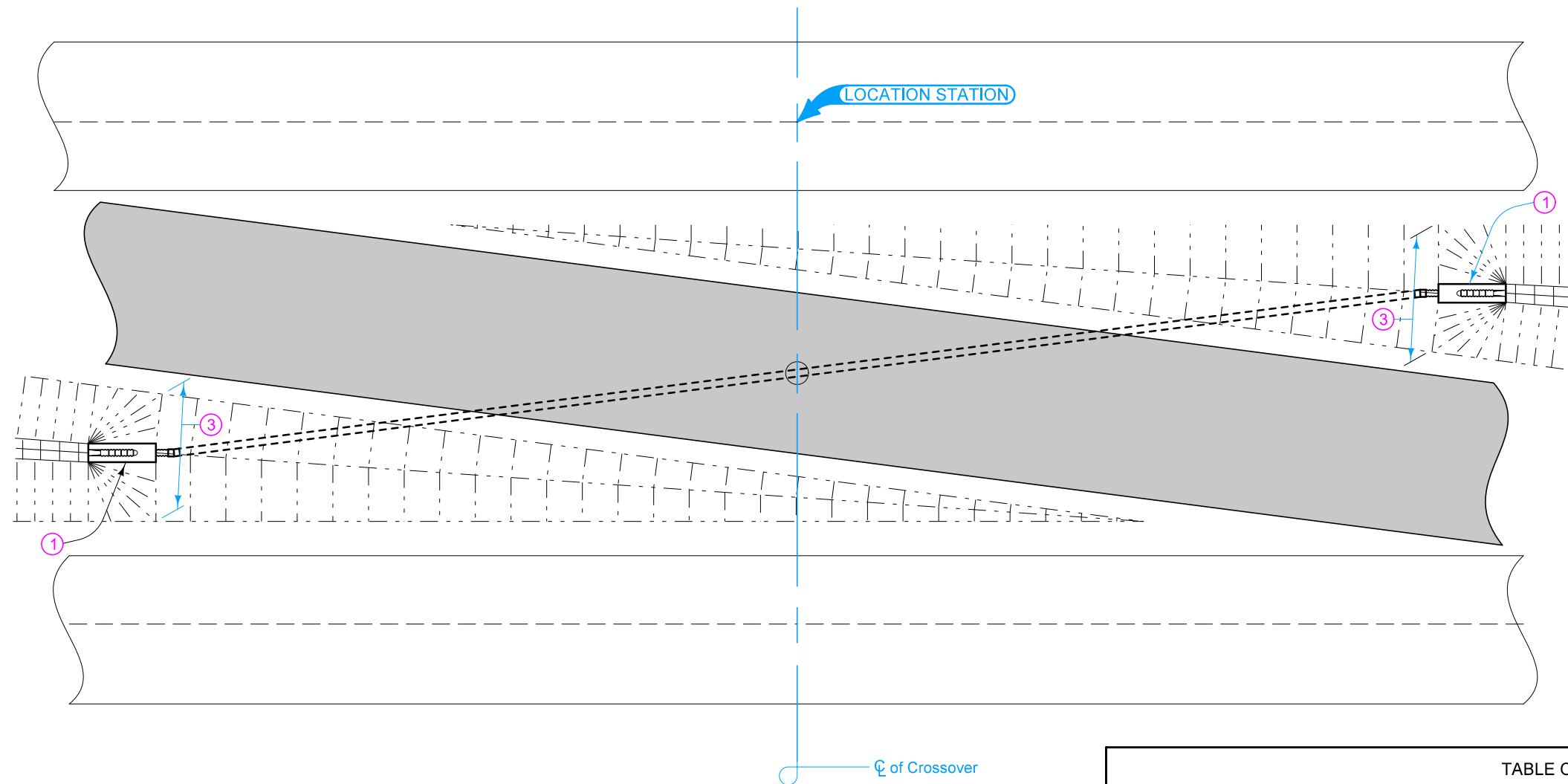
MODIFIED STANDARD ROAD PLAN	REVISION New 04-15-14
	PV-513
	SHEET 1 of 1

MODIFICATIONS: Lengthened the tangent section between centerline of crossover and the PT to accommodate a 110' median.

APPROVED BY DESIGN METHODS ENGINEER

**MEDIAN CROSSOVER
(110' MEDIAN)
16' WIDE 1 LANE**

TABLE OF OFFSETS AND DROPS																					
Distance (Feet)	626.81	600	575	550	500	489.80	450	425	400	375	350	325	301.77	250	200	150	100	75	50	25	0
Offset A to C (Feet)	6.00	6.00	6.00	6.00	6.00	6.00	8.13	9.70	11.46	13.39	15.50	17.79	20.08	25.76	31.98	38.93	46.62	50.72	54.85	59.98	63.11
Drop A to C (Feet)	0.24	0.18	0.13	0.12	0.12	0.12	0.16	0.19	0.23	0.27	0.31	0.36	0.40	0.52	0.63	0.76	0.87	0.90	0.93	0.94	0.94
Drop A to B (Feet)													0.08	0.19	0.32	0.46	0.61	0.69	0.77	0.86	0.94



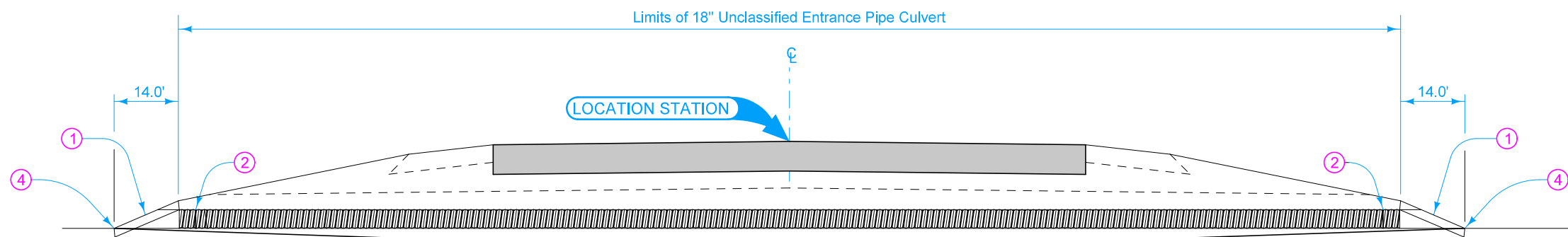
PLAN VIEW

- ① Beveled pipe and guard. See Standard Road Plan DR-212.
- ② Requires approximately 7 degree elbow.
- ③ Place the top edge of beveled pipe and guard at a point where the distance between the edges of the shoulders are approximately 22 feet apart.
- ④ Median ditch flow line.

TABLE OF QUANTITIES										
Standard Road Plan No.	PV-501	PV-502	PV-504	PV-505	PV-507	PV-508	PV-510	PV-511	PV-513	PV-514
Median Width	50.0'	50.0'	64.0'	64.0'	68.24'	68.24'	82.0'	82.0'	100.0'	100.0'
Crossover Pavement Width	16.0'	28.0'	16.0'	28.0'	16.0'	28.0'	16.0'	28.0'	16.0'	28.0'
Bid Item										
18" dia. Unclassified Entrance Pipe Culvert	250'	344'	112'	196'	82'	162'	56'	74'	148'	88'

Possible Contract Items:
 Beveled Pipe and Guard.
 Culvert, Unclassified Entrance Pipe, 18" Dia.
 Embankment-In-Place
 Excavation, Class 10, Roadway and Borrow
 Special Backfill

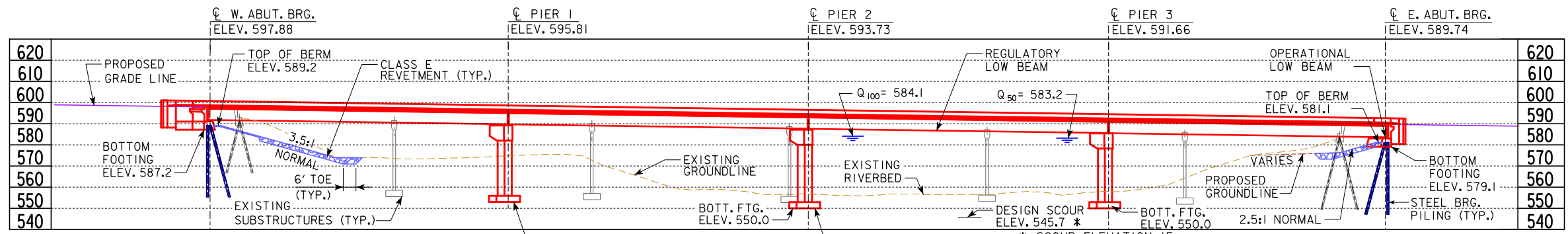
Possible Tabulation:
 112-8



LONGITUDINAL SECTION AT PIPE CENTERLINE

REVISION	
6	04-21-15
500-19	
SHEET 1 of 1	
REVISIONS: Changed reference from RF-27 to DR-212 in circle note 1.	

**DIAGONAL PLACED DRAIN FOR
 MEDIAN CROSSOVERS**



BENCH MARK NO. 322 - N:6469785.28 E:24370801.27 - BM 8" DIA. DRIVEN ALUMINUM ROD WITH 2.5" DIA. ALUMINUM CAP
 VPI STA. 956+47.29 VPI ELEV. 598.76
 VPI STA. 963+54.29 VPI ELEV. 588.41

PROPOSED PROFILE GRADE US 34

- NOTES:**
- ALL UNITS ARE IN FEET UNLESS NOTED OTHERWISE.
 - TL-4 BRIDGE RAILING PROPOSED.
 - TOP OF BRIDGE DECK AT \bar{C} E.B. US 34 IS 0.21' ABOVE THE PROFILE GRADE TO ACCOUNT FOR DECK CROSS SLOPE AND PARABOLIC CROWN.
 - PIER TYPE - TEE PIERS.
 - BEAM TYPE - BTE BEAMS.
 - FOUNDATION TYPE AND FOOTING ELEVATIONS TO BE CONFIRMED DURING FINAL DESIGN.
 - BRIDGE AESTHETICS TO BE INCORPORATED DURING FINAL DESIGN.
 - CLASS E REVETMENT STONE IS EMBEDDED.
 - AN IOWA DNR SOVEREIGN LANDS PERMIT IS REQUIRED.
 - AS THE PROJECT REQUIRES A SOVEREIGN LANDS PERMIT, BID ITEM REFERENCES NOTES SHALL RESTRICT BROKEN CONCRETE AS A SUBSTITUTE FOR REVETMENT.
 - AN IOWA DNR FLOOD PLAIN CONSTRUCTION PERMIT IS REQUIRED.

STRUCTURAL DESIGN

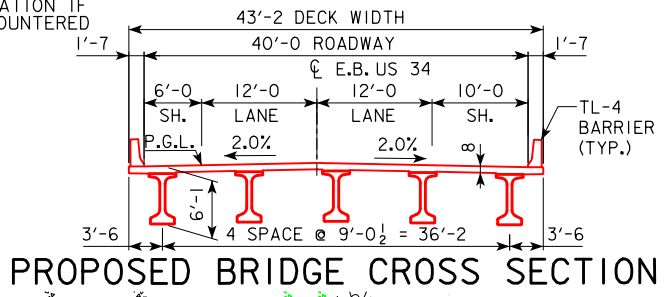
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Mark D. Werner 10/11/2018
 Signature Date
 Mark D. Werner
 Printed or Typed Name
 My license renewal date is December 31, 2019

Pages or sheets covered by this seal: V.1 & V.2

LONGITUDINAL SECTION ALONG \bar{C} E.B. US 34

(SEE SECTION THRU EMBEDDED REVETMENT BERM DETAILS ON SHEET V.2)



HYDRAULIC DATA

DRAINAGE AREA = 3430 SQ. MI.
 STREAM SLOPE = 1.056 FT./MI.
 AVG. LOW WATER STAGE = 576.6

Q_{25} = 39,100 CFS
 STAGE = 582.3

Q_{50} = 43,850 CFS
 STAGE = 583.2
 REGULATORY LOW BEAM = 586.5
 BACKWATER = 0.01 FT.

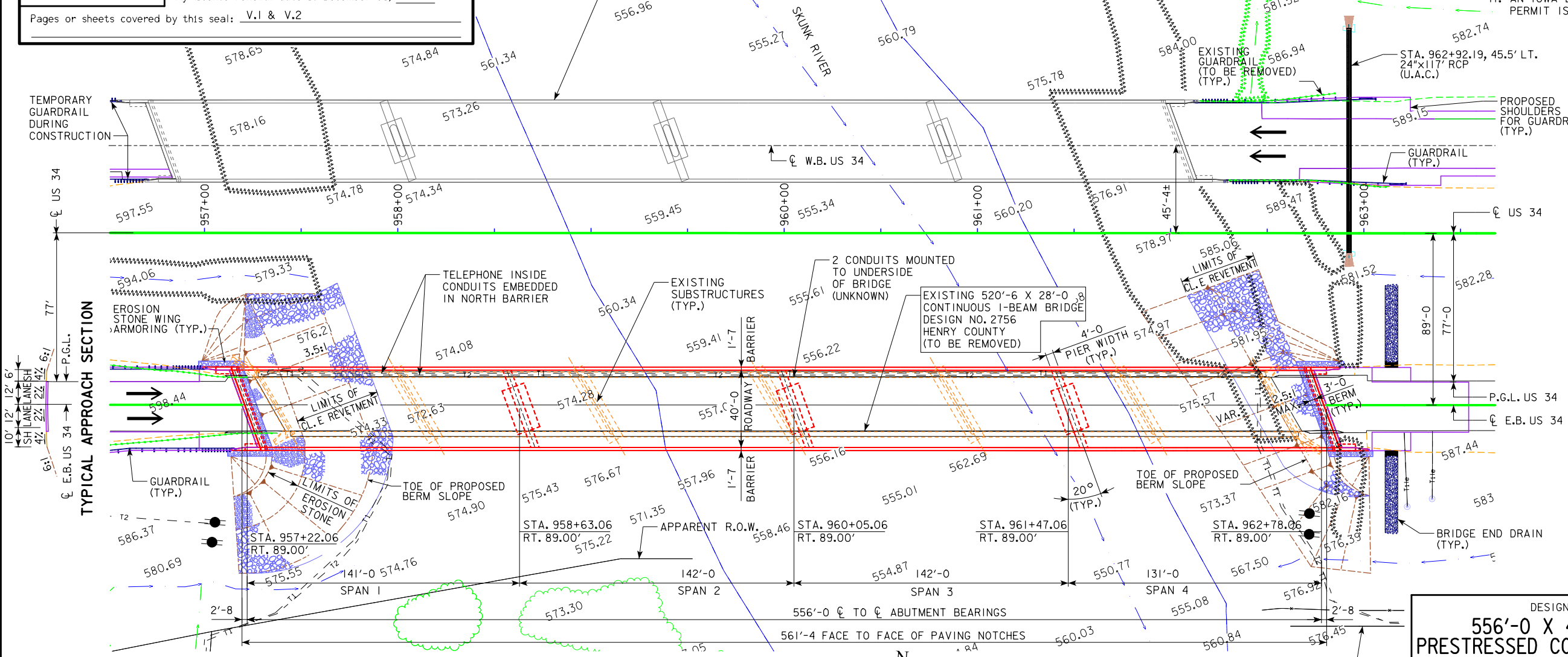
Q_{100} = 48,300 CFS
 STAGE = 584.1
 OPERATIONAL LOW BEAM = 583.4
 BACKWATER = 0.01 FT.
 AVG. BRIDGE VELOCITY = 5.8 FPS

Q_{200} = 55,500 CFS
 STAGE = 585.0
 CALCULATED DESIGN SCOUR = 545.7

Q_{500} = 58,850 CFS
 STAGE = 585.7
 AVG. BRIDGE VELOCITY = 6.5 FPS
 CALCULATED CHECK SCOUR = 545.7

ROADWAY OVERTOP ELEV. STA. 587.2
 STA. 965+78.90

EXTREME HW STAGE = APPROX. 586.8
 DATE = APRIL 1973



TRAFFIC ESTIMATE

2021 AADT	7900	V.P.D.
2041 AADT	11800	V.P.D.
TRUCKS	17 %	

SITUATION PLAN

- ### UTILITIES LEGEND:
- T1 TELEPHONE LINE - ICON
 - T2 TELEPHONE LINE - WINDSTREAM



DESIGN FOR 20° SKEW (R.A.)

556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE

141' & 131' END SPANS (BTE BEAM TYPE) 142' INTERIOR SPANS

SITUATION PLAN

STATION 960+00.06, RT. 89.00' OCTOBER 2018

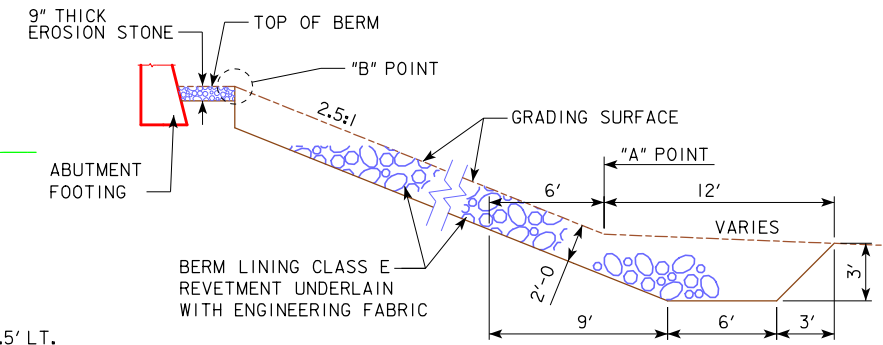
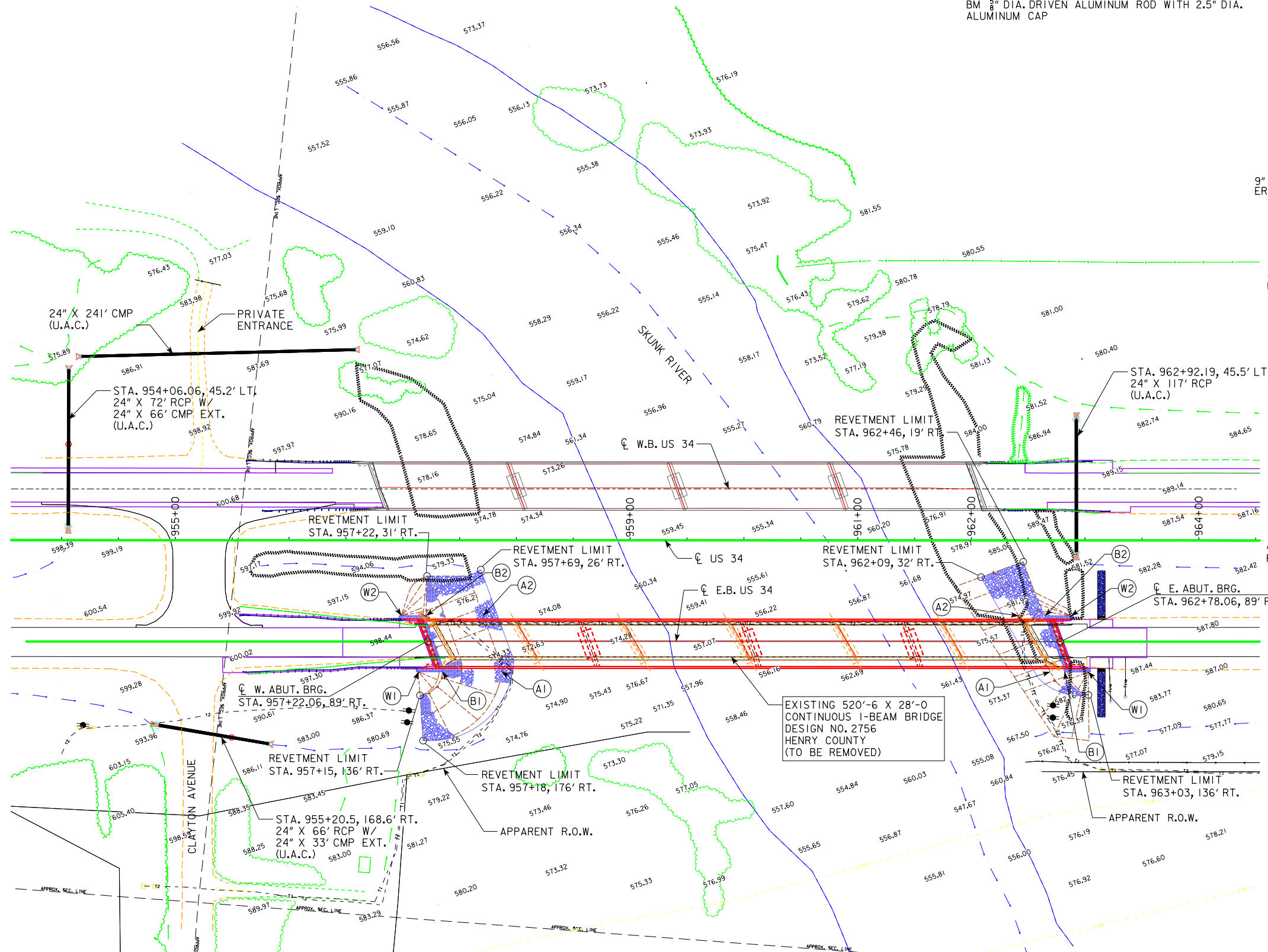
HENRY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 1 OF 2 FILE NO. 31646 DESIGN NO. 220

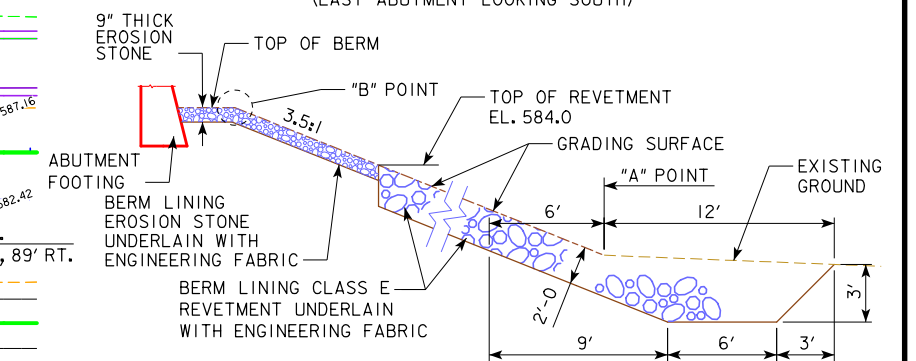
BENCH MARK NO. 322 - N:6469785.28 E:24370801.27 -
 BM 3/4" DIA. DRIVEN ALUMINUM ROD WITH 2.5" DIA.
 ALUMINUM CAP

POINTS	WEST ABUTMENT			EAST ABUTMENT		
	STATION	OFFSET	ELEV.	STATION	OFFSET	ELEV.
A1	957+86.9	115.58' RT.	575.0	962+69.4	115.58' RT.	575.0
A2	957+70.7	66.42' RT.	575.0	962+41.6	66.42' RT.	575.0
B1	957+35.0	115.58' RT.	589.2	962+82.0	115.58' RT.	581.1
B2	957+20.5	66.42' RT.	589.2	962+64.8	66.42' RT.	581.1
W1	957+14.0	115.58' RT.	597.5	963+02.7	115.58' RT.	588.9
W2	956+98.9	66.42' RT.	597.8	962+87.6	66.42' RT.	589.2

BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE



SECTION THRU EMBEDDED REVETMENT BERM (EAST ABUTMENT LOOKING SOUTH)



SECTION THRU EMBEDDED REVETMENT BERM (WEST ABUTMENT LOOKING NORTH)

UTILITIES LEGEND:

- T1 — TELEPHONE LINE - ICN
- T2 — TELEPHONE LINE - WINDSTREAM
- G-HP — GAS LINE - ANR PIPELINE CO.

PRELIMINARY

ESTIMATED BERM ARMORING QUANTITIES				
LOCATION	REVETMENT CL. E (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
BERM LINING - WEST ABUT.	710	100	1100	810
BERM LINING - EAST ABUT.	390	15	500	420
TOTALS	1100	115	1600	1230

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.

SITE PLAN



DESIGN FOR 20° SKEW (R.A.)
556'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM E.B. BRIDGE
 141' & 131' END SPANS (BTE BEAM TYPE) 142' INTERIOR SPANS
SITUATION PLAN - SITE
 STATION 960+00.06, RT. 89.00' OCTOBER 2018
HENRY COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 2 OF 2 FILE NO. 31646 DESIGN NO. 220