

BRIDGE REPLACEMENT
BRFN-376-1(16)--39-97

WOODBURY COUNTY

LETTING DATE
Jan 21, 2026

MILEAGE SUMMARY			105-1 09-27-94
Div.	Location	Lin. Ft.	Miles
1	Sta. 222+22.48 to Sta. 228+35.60 Deduct Bridge at Sta. 224+96.40 Total New Bridge at Sta. 224+96.25	613.12 24.00 20.75	0.116 0.004 0.004
Total Length of Roadway in Project:		613.12	0.116
Total Length of Bridge in Project:		22.25	0.004
Total Net Length of Project:		613.12	0.116



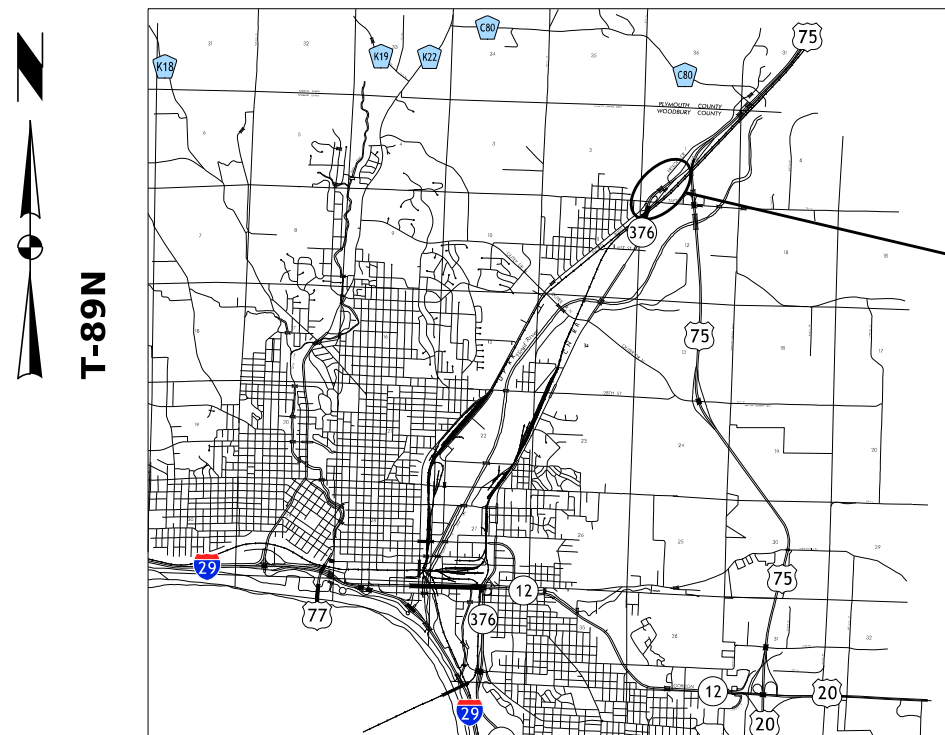
PLANS OF PROPOSED IMPROVEMENT ON THE
**PRIMARY ROAD SYSTEM
WOODBURY COUNTY
BRIDGE REPLACEMENT**

Tributary to Floyd River 0.1 mi N
of Co Rd D12 in Sioux City (SB)

SCALES: As Noted

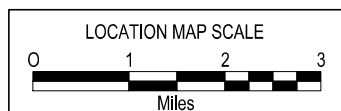
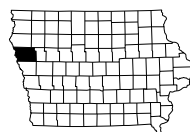
Refer to the Proposal Form for list of applicable specifications.

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



PROJECT LOCATION
(REFER TO A.2 FOR DETAIL)

R-47W



DESIGN DATA RURAL			
2026	AADT	4300	V.P.D.
2046	AADT	5200	V.P.D.
2046	DHV	540	V.P.H.
	TRUCKS	6	%
	Total Design ESALs	--	

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Brian T. Higginbotham	Primary Signature Block
V.1	Jonathan E. Peterson	Hydraulic Design

REVISIONS

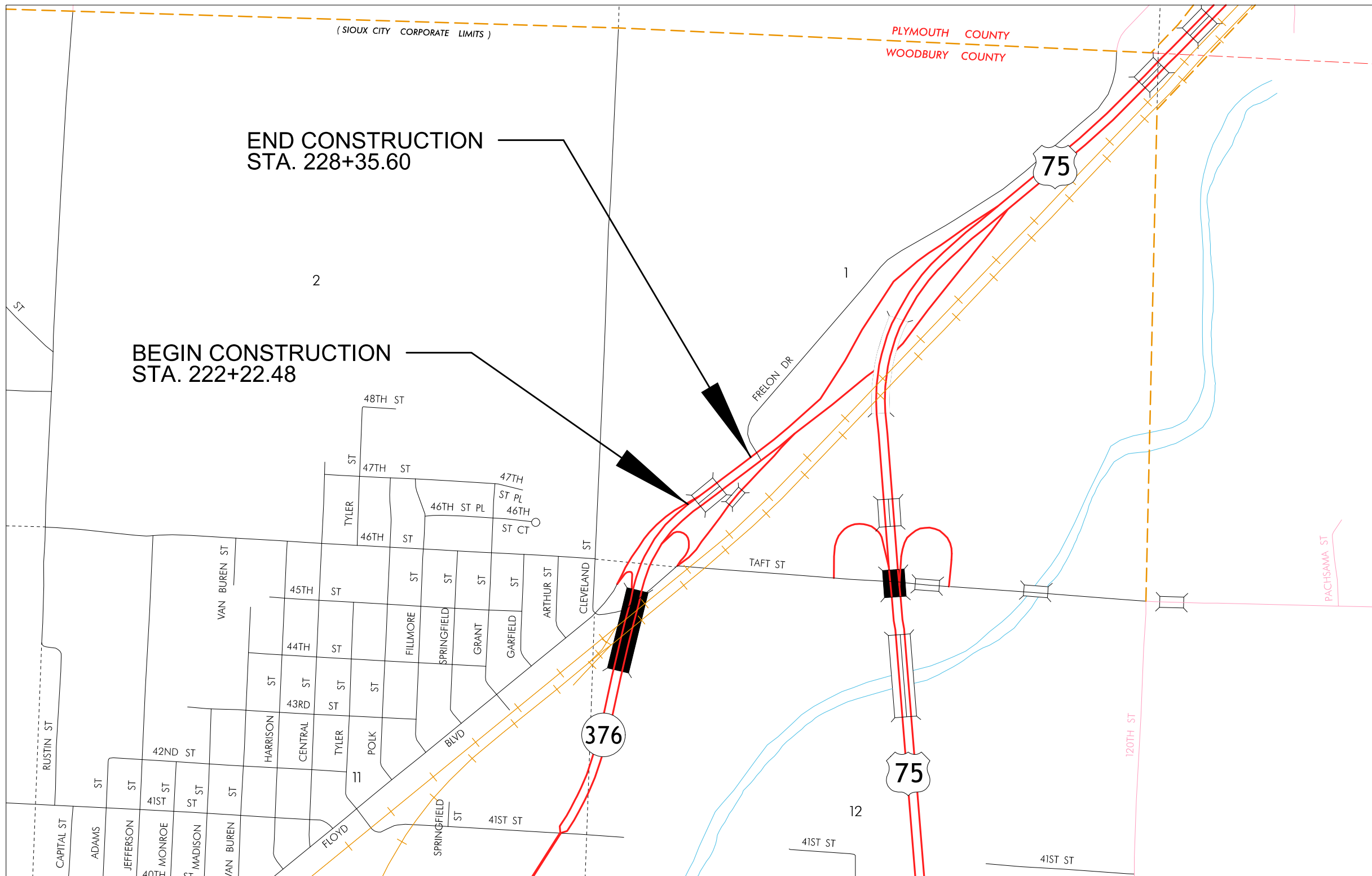
TOTAL
60
PROJECT IDENTIFICATION NUMBER
21-97-376-030
PROJECT NUMBER
BRFN-376-1(16)--39-97
R.O.W. PROJECT NUMBER
NHSN-376-1(17)--2R-97

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 - 4	Typical Cross Sections and Details
C Sheets	Quantities and General Information
C.1 - 3	Project Description
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	IA 376
G Sheets	Survey Sheets
* G.1 - 3	Reference Ties and Bench Marks
G.4	Horiz. Control Tab. & Super Elev. for all Alignments
J Sheets	Traffic Control and Staging Sheets
J.1 - 2	Traffic Control Plan and Staging Notes
* J.3	Traffic Control & Staging Legend & Symbol Info. Sheet
* J.4 - 5	Staging Typical
* J.6	Detour Plans
* J.7 - 16	Staging and Traffic Control Sheets
U Sheets	500 Series, Mod.Stds. and Detail Sheets
U.1	Geotextile Retainment for Staged Culverts
V Sheets	Bridge and Culvert Situation Plans
* V.1	Bridge and Culvert Situation Plans
W Sheets	Mainline Cross Sections
* W.1	Cross Sections Legend & Symbol Information Sheet
* W.2 - 9	IA 376 Cross Sections
* W.10 - 20	Detour Paving Cross Sections
X Sheets	Side Road Cross Sections
* X.1 - 7	RCB Excavation Cross Sections
	* Color Plan Sheets

PRELIMINARY PLANS

Subject to change by final design.

D3 PLAN-Date: 03/01/24

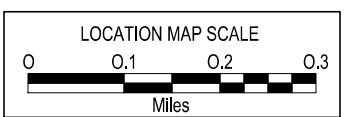
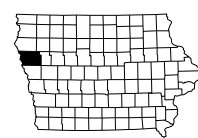


END CONSTRUCTION
STA. 228+35.60

BEGIN CONSTRUCTION
STA. 222+22.48

T-89N

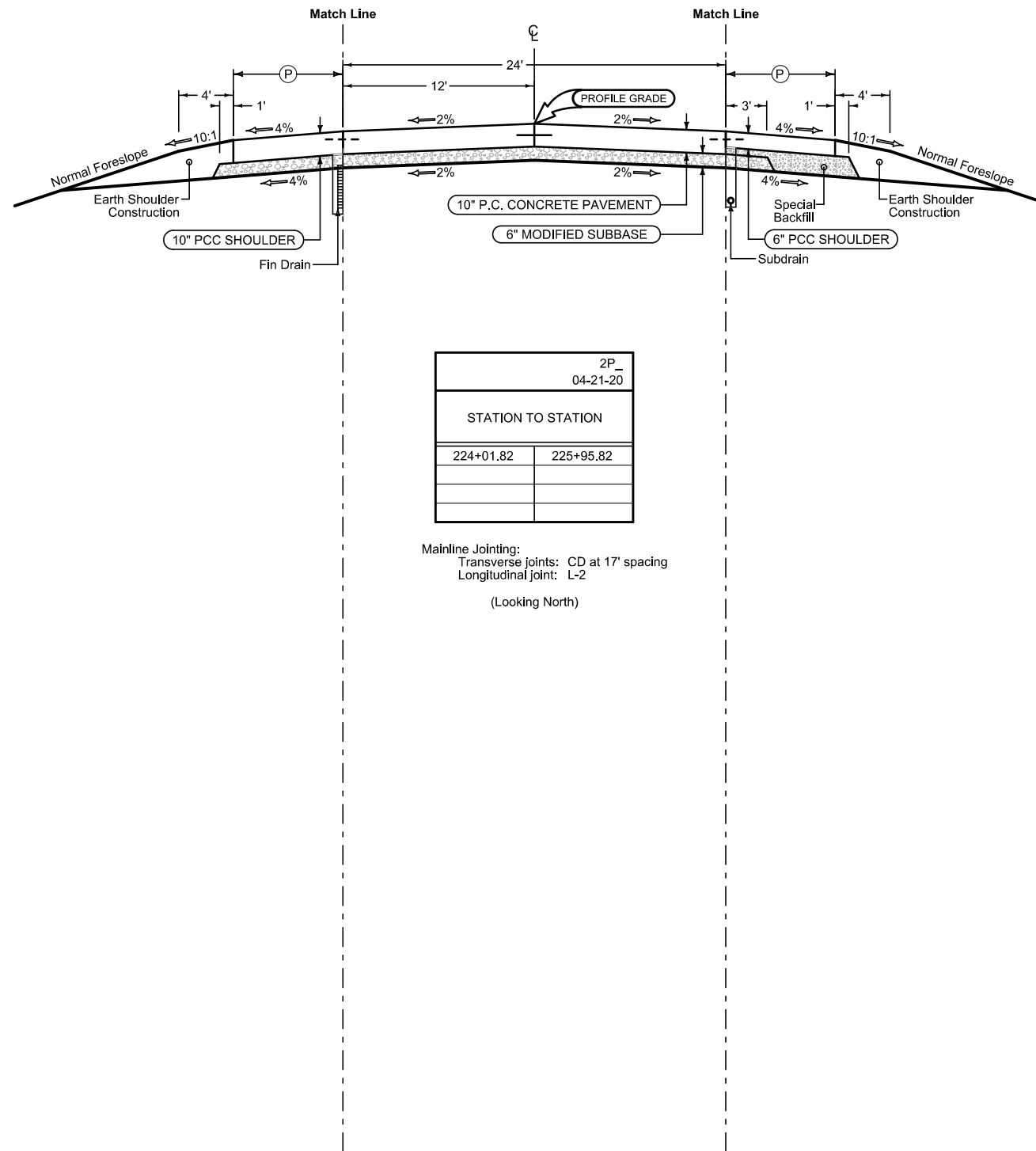
R-47W



Paved Shoulder Alternates

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

2_P_FULLPCC_04-21-20		
STATION TO STATION		(P) Feet
222+89.80	226+60.00	10



Paved Shoulder Alternates

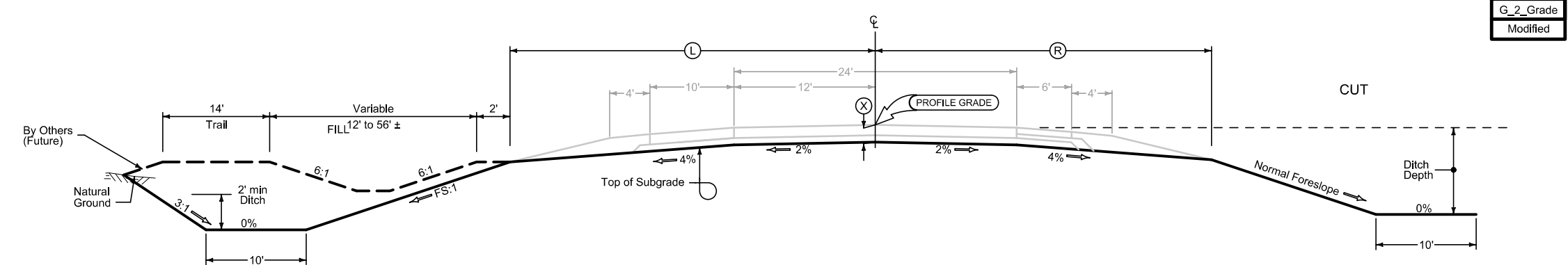
PCC Shoulder Jointing:
 Longitudinal joint: BT-1 or BT-5
 Transverse joints: C at 17' spacing
 HMA Shoulder Jointing:
 Longitudinal joint: B

2_P_ALT_04-21-20		
STATION TO STATION		(P) Feet
224+01.82	225+95.82	6

2P_04-21-20	
STATION TO STATION	
224+01.82	225+95.82

Mainline Jointing:
 Transverse joints: CD at 17' spacing
 Longitudinal joint: L-2
 (Looking North)

LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	FS
IA 376	224+01.82	225+95.82	34.6	30.6	18	6

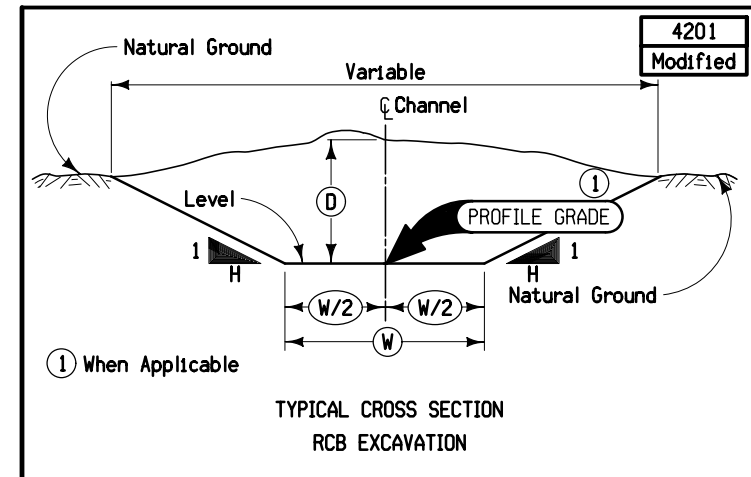


Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.

See plan & profile sheets and cross sections for additional details of ditches and backslopes.

2 LANE GRADING (FINAL)

G_2_Grade
Modified



Location		WIDTH (W)	DEPTH (Average) (D)	(H)
Station	Station			
1224+11.25	1224+36.25	8'-17.375'	7'	1
1224+36.25	1224+45.25	17.375'-20.75'	7'	1-2

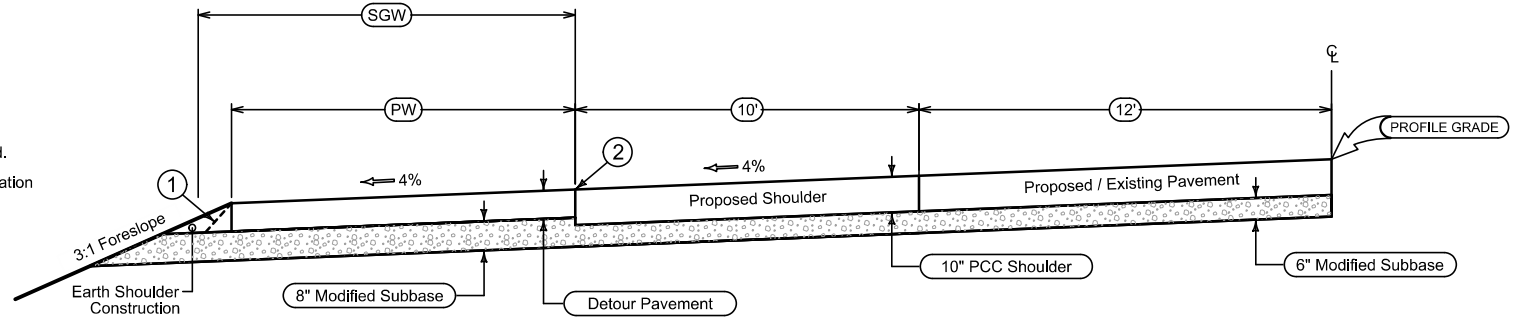
4201
Modified

LOCATION			DIMENSIONS						6" Special Backfill	Earth Shoulder Construction
ROAD IDENTIFICATION	STATION TO STATION		HMA			PCC				
			PW Feet	T Inches	SGW Feet	PW Feet	T Inches	SGW Feet	Tons/Station	Station
IA 376	222+22.48	222+34.78	2	9	5.3	2	8	3.9		0.12
IA 376	222+34.78	222+90.00	2-8.42	9	5.3-13.8	2-8.42	8	3.9-13.0		0.55
IA 376	222+90.00	225+92.52	8.42	9	13.8	8.42	8	13.0		3.03
IA 376	225+92.52	228+04.82	8.42-2	9	13.8-5.3	8.42-2	8	13.0-3.9		2.12
IA 376	228+04.82	228+35.60	2	9	5.3	2	8	3.9		0.31

Quantity calculations based on vertical pavement edges.

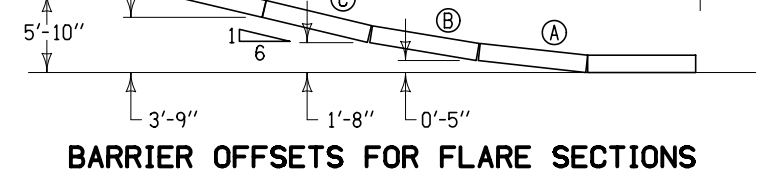
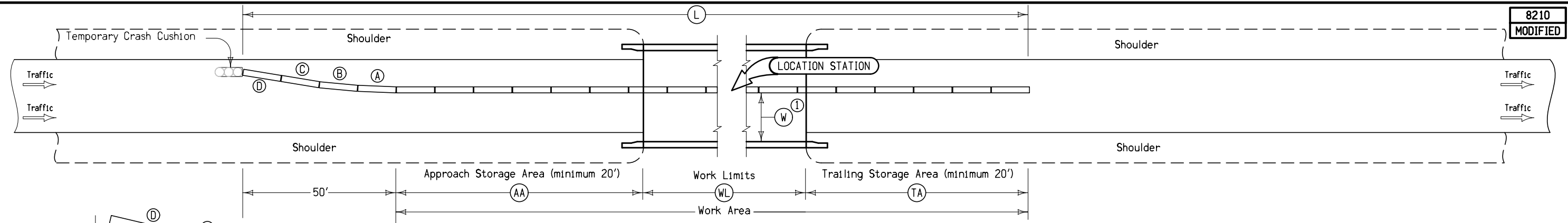
Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.

- ① Possible HMA 1:1 slope
- ② During Stage 3 construction the Detour Pavement will be removed. Refer to Typical G-2 Grade and Cross-sections for grading information



DETOUR PAVING

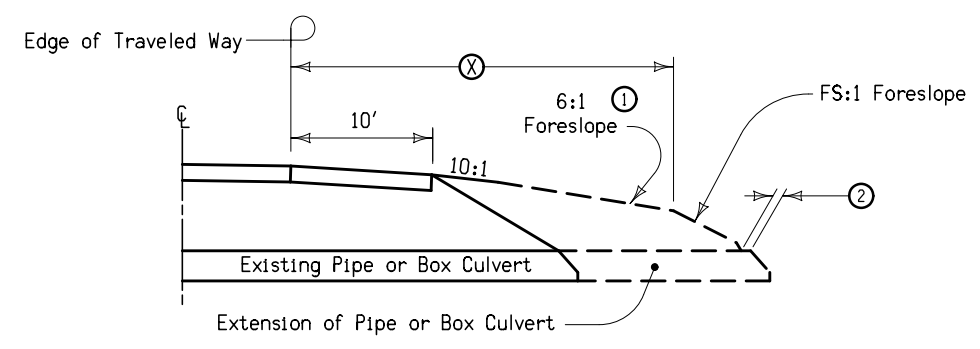
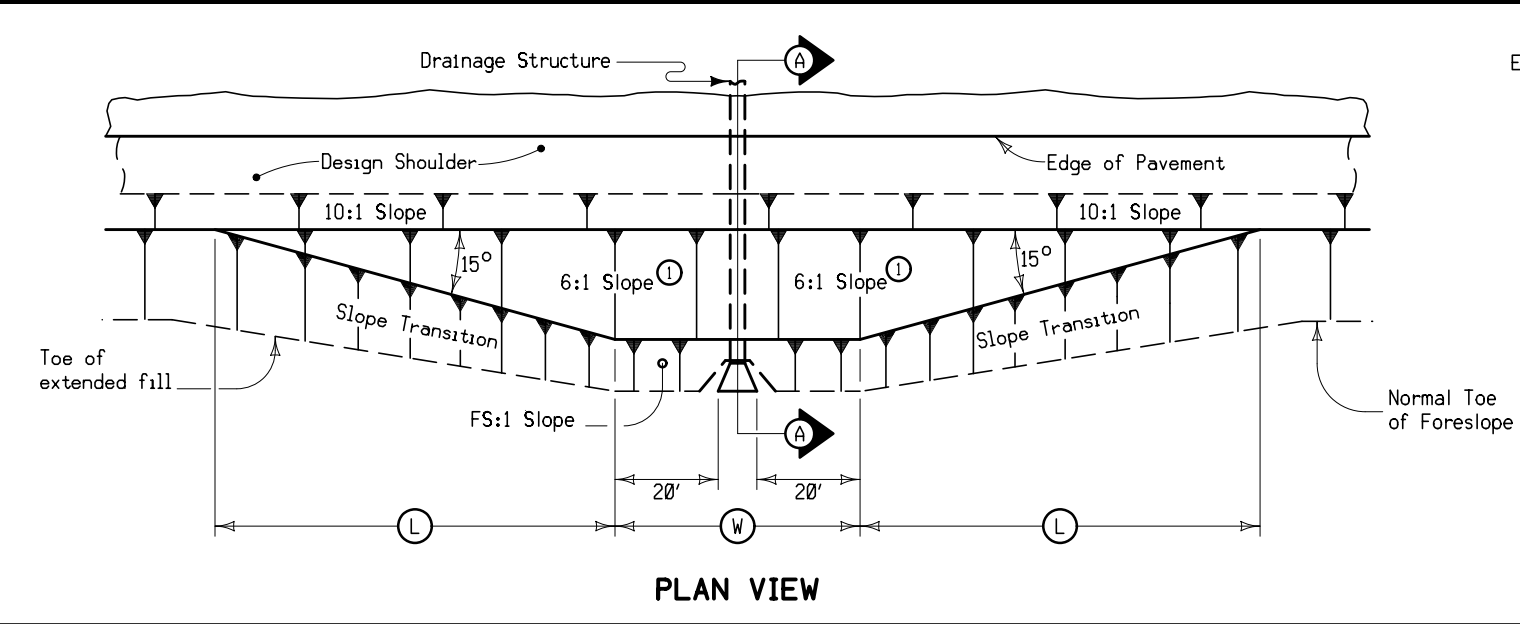
D_Detour
MODIFIED



Station	Side	AA	WL	TA	L	Anchored	W	Remarks
		Feet	Feet	Feet	Feet	X	Ft-Inches	
225+00.00	LT	52	158	140	350	X	15-0	Stage 1
225+00.00	RT	20	193	21	284		14-6	Stage 2

① Where W is less than 15'-6", install restricted width signing as per Standard Road Plan TC-81.

TEMPORARY CONCRETE BARRIER LAYOUT for One-Way Traffic



STRUCTURE LOCATION		W	L	X	FS
STATION	SIDE	Feet	Feet	Feet	
224+96.25	LT	62.25	89.6	38	3

Notes:

At locations where an extended or newly constructed drainage structure extends beyond the normal foreslope cover, flatten the foreslope as indicated so as to cover the structure. Minimum earth cover is 6".

① Slope may be flatter than 6:1.

② 6" Minimum for pipe installations or to top of headwall on R.C.B.

W = Pipe or R.C.B. opening width plus 20 feet each side.

BARNROOF FORESLOPE AT DRAINAGE STRUCTURE

100_01D
8/15/22

PROJECT DESCRIPTION

This project involves the replacement of the IA 376 bridge (Maint. No. 9799.2L376) over Tributary to Floyd River, 0.1 mile north of County Road D12 in Sioux City (SB) with a new twin 10' x 8' x 99.0' RCB.

EXISTING PAVEMENT

Line No.	County	Route	Direction of Travel	Begin Ref. Location Sign	End Ref. Location Sign	Year	Type	Project Number	Surface Type	Surface Depth (IN)	Base Type	Base Depth (IN)	Subbase Type	Subbase Depth (IN)	Removal Type	Removal Depth (IN)	Coarse Aggregate Source	Coarse Aggregate Type	Course Aggregate Durability Class	Reinforcement Type	Remarks
1.0	Woodbury	IA 376	SB		99.28	1956		US 273(21)	PCC	9.0											
2.0	Woodbury	IA 376	SB	99.23	99.28	1989		EACF-75-1(36)--2K-97	AAC	4.0											
3.0	Woodbury	IA 376	SB	99.29		1998		NHS-75-1(88)--19-97	PCC	10.0			Granular	10.0							6" Subgrade Treatment

262_05
2022-09-28

UTILITIES (POINT 25 PROJECT)

This is a POINT 25 project and is subject to the provisions of IAC 761-115.25.

SURVEY SYMBOLS

<p>AST, Above Ground Storage Tank BB, Billboard BBB, Bottom of Bridge Beam BCL, Bridge Centerline BD, Bridge Deck BIN, Grain Bin BL, Topo Breakline BLD, Building or Foundation BLS, Bridge Low Steel BM, Bench Mark BNK, Stream Bank BRG, Bridge C, Centerline BL of Road -ML or SR CAV, Cave CEL, Cell Phone Tower CIS, Cistern CON, Concrete or A/C Slab CP, Control Point CRP, Corporation Line CS, Curve Point CU, Back of Curb CUL, Culvert D, Centerline Draw or Stream -Down DAB, Drainage Area Boundary DIK, Centerline of Dike or Dam DTM, Photogrammetry Elv Control Check DU, Centerline Draw or Stream -Up EB, Electrical Box EG, Edge of Gravel Road ENP, Edge Paved Entrance and Park Lot ENT, Centerline BL of Entrance ENU, Edge Unpaved Entrance and Parking EP, Edge of Paved Roads -ML or SR EW, Edge of Water FCL, Chain Link and Security Fence FENO, FENO Monument FHD, Fire Hydrants FLG, Flag Poles FP, Filler Pipe FW, Wire Fence FWD, Wood Fence GDC, Guard Rail Cable GDL, Guard Rail Steel GP, Guard Post -Less Than 4 Posts GPR, Guard Post -4 or More Posts GR, Ground Shot GRV, Grave GU, Gutter In Front of Curb GV, Gas Valve HDG, Hedge Row HS, Hydric Soil -Wetlands HT, Electrical Highline Tower IN, Storm Sewer Intake INB, Storm Sewer Beehive Intake LC, Lot Corner LIN, Miscellaneous Line LP, L.P. Tank LUM, Luminaire MH, Utility Access -Manhole MIS, Miscellaneous MM, Mile Marker Post OUT, Tile Outlet PC, Curve Point PCP, Photo Control Point PCT, Photo Control Target PI, Tangent Point PIP, Pipe Culvert PL, Location of Photo -Wetlands PLG, Location of General Photo POC, Curve Point POST, Spiral Point</p>	<p>PR, Electric Riser Pole PRO, Profile Shot PT, Curve Point REF, Reference Tie Point RET, Retaining Walls RIP, Rip-Rap ROC, Rock Outcropping ROW, Right of Way Mark RR, Centerline of Railroad Tracks RRB, Railroad Signal Box RRF, Railroad Frog RRR, Railroad Rail RRS, Railroad Signal RRW, Railroad Switch RT, Radio Tower S, Soil Sampling Site -Wetlands SBR, Size of Bridge SC, Spiral Point SCR, Section Corner SEP, Septic Tank SF, Silt Fence -Wetlands SG, Staff Gauge -Wetlands SH, Paved Shoulder SHR, Shrub SI, Sign SL, Speed Limit Sign SLN, Section Line SLO, Silo SNK, Sink Hole SNP, Unpaved Shoulder SP, Stream Profile STP, Stump SWK, Sidewalk SWP, Swamp or Marsh TA, Tower Anchor TBO, Telephone Booth TCB, Traffic Signal Box TDC, Tree Deciduous TDL, Traffic Detection Loop TER, Terrace TEV, Evergreen Tree TFR, Tree Fruit TGP, Telegraph Pole TIL, Tile Line TLNL, Tree Line Left TLNR, Tree Line Right TOP, Top of Bridge Pier TPA, Telephone Pole Co. 1 TPB, Telephone Pole Co. 2 TPC, Telephone Pole Co. 3 TR, Telephone Riser Pole TRL, Trail TS, Spiral Point TSB, Telephone Switch Box TSG, Traffic Signal TSL, Traffic Signal and Luminare TV, Satellite TV Dish TVP, TV Pedestal TW, Top of Water UB, Utility Box UE, Utility Elevation UPH, Utility Pot Hole - Quality A UST, Underground Tank UV, Underground Utility Vault VS, Channel Cross Section WC, Wild Card -Misc. Field Shot WEL, Well WHD, Water Hydrant WHU, RV Water Hook Up WM, Wind Mill WND, Wind Turbine WV, Water Valve</p>
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SURVEYED UTILITY OWNER SYMBOLS

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

— F0	FO1D, FiberComm, L.C. - Quality D
— F02	FO2D, FiberComm, L.C. - Quality D
— SAN.	SA1D, City of Sioux City- Quality D
— T1	TL1D, CenturyLink - Quality D
— T2	TL2D, LongLines Broadband - Quality D
— W	WL1D, City of Sioux City- Quality D
⚡	Iowa Department of Transportation
⚡	PPA, MidAmerican-Elec

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK		Design Color No.	
Green	(2)		Existing Topographic Features and Labels
Blue	(1)		Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)		Existing Utilities
SHADING		Design Color No.	
Lavender	(9)		Temporary Pavement Shading
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
Gray, Dark	(112)		Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)		Grading Shading
Orange, Light	(134)		Proposed Granular Entrance Shading
Yellow	(220)		Proposed Paved Entrance Shading
Tan	(8)		Proposed Sidewalk Shading
Blue, Light	(230)		Proposed Sidewalk Landing Shading
Pink	(11)		Proposed Sidewalk Ramp Shading
Green, Light	(225)		Existing Pavement Shading
Red	(3)		Proposed Structure Shading
Red	(3)		Delineates Restricted Areas

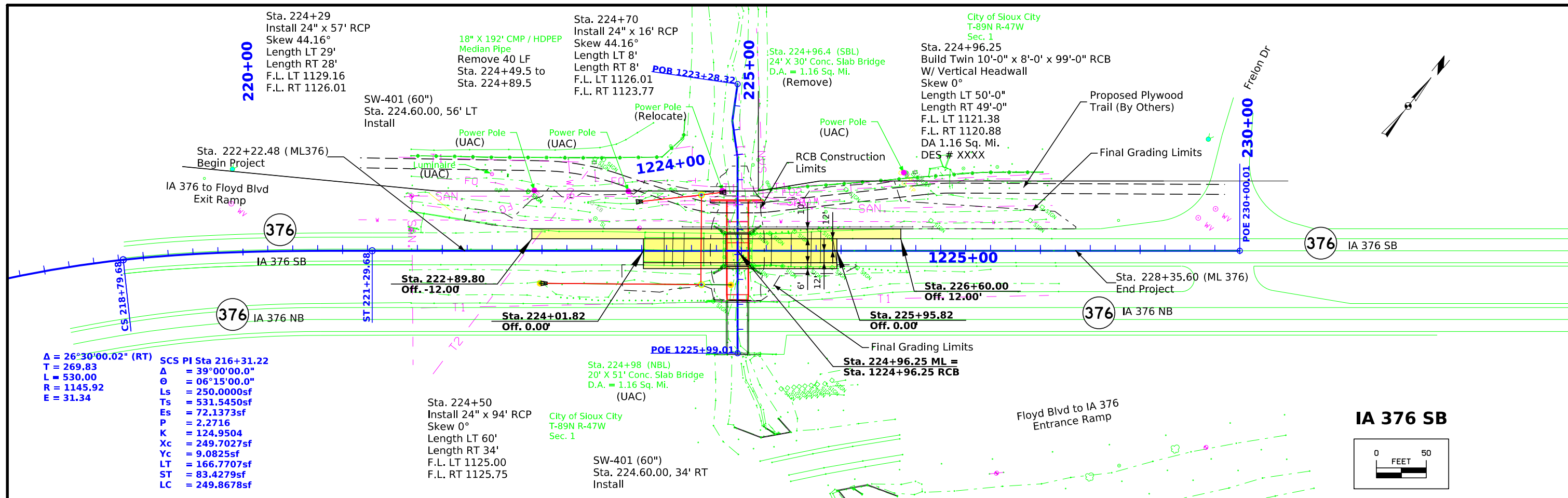
PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

<p>Reference Point</p> <p>Station</p> <p>Section Corner</p> <p>Ground Line Intercept</p> <p>Saw Cut</p> <p>Guardrail</p> <p>Trench Drain</p> <p>High Tension Cable Guardrail</p> <p>Sheet Pile</p> <p>Pavement Removal</p> <p>Clearing & Grubbing Area</p>	<p>Survey Line</p> <p>Section Corner</p> <p>Ground Line Intercept</p> <p>Saw Cut</p> <p>Guardrail</p> <p>Trench Drain</p> <p>High Tension Cable Guardrail</p> <p>Sheet Pile</p> <p>Pavement Removal</p> <p>Clearing & Grubbing Area</p>	<h3>RIGHT-OF-WAY LEGEND</h3> <p>▲ Proposed Right-of-Way</p> <p>△ Existing Right of Way</p> <p>▲△ Existing and Proposed Right-of-Way</p> <p>▲△ Easement and Existing Right-of-Way</p> <p>○ Easement (Temporary)</p> <p>● Easement</p> <p>C/A Access Control</p> <p>↔ Property Line</p>
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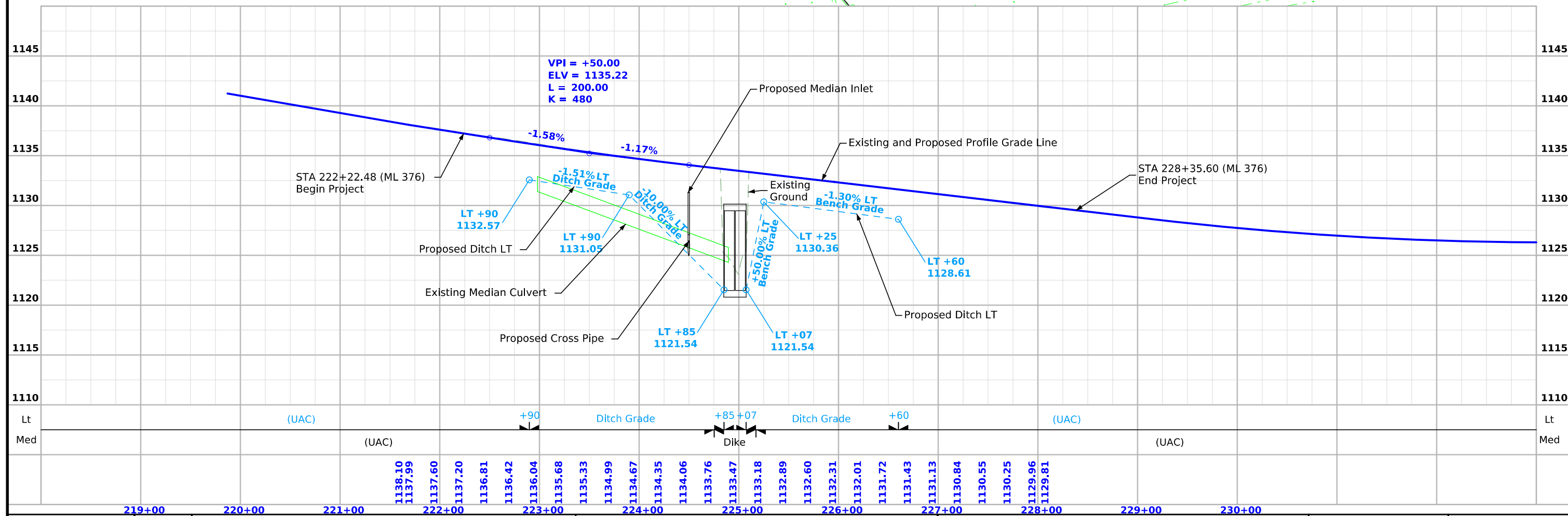
PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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



$\Delta = 26^\circ 30' 00.02''$ (RT)
 $T = 269.83$
 $L = 530.00$
 $R = 1145.92$
 $E = 31.34$

SCS PI Sta 216+31.22
 $\Delta = 39^\circ 00' 00.0''$
 $\Theta = 06^\circ 15' 00.0''$
 $L_s = 250.0000sf$
 $T_s = 531.5450sf$
 $E_s = 72.1373sf$
 $P = 2.2716$
 $K = 124.9504$
 $X_c = 249.7027sf$
 $Y_c = 9.0825sf$
 $LT = 166.7707sf$
 $ST = 83.4279sf$
 $LC = 249.8678sf$



Survey Information

SURVEY INDEX

County: Woodbury
PIN: 21-97-376-030
Project Number: BRFN-376-1(16)--39-97
Location: Tributary to Floyd River 0.1 mi N of
Co Rd D12 in Sioux City (SB)
Type of Work: 2001 – Bridge-Unspecified
Project Directory: 9737603021

Survey Personnel

Cory Welsh – Survey Party Chief
Nate Myers – Assistant Survey Party Chief

Date(s) of Survey

Begin Date 09/19/2022
End Date 09/21/2022

General Information

Project datum and control information is provided by the HGM Associates Inc..
Measurement units for this survey are US survey feet. This survey is for IA Highway 376
Bridge Replacement over a Tributary to Floyd River 0.1 mi N of Co Rd D12 in Sioux City
(SB). This survey request was for the southbound bridge replacement only.

Project Control

Nearby HPRTK Network (includes Iowa Real Time Network stations) reference stations
were utilized to obtain horizontal control on primary project control points. 60 epochs
were observed on each control point. NGS benchmark designation A 181
(PID=NM1918) was used for vertical control. This benchmark is located on the east side
of the Floyd River, south side of Dale Street and west of Expo Center Drive.

PROJECT DATUM: NAD83(2011) EPOCH 2010.00
VERTICAL DATUM: NAVD88
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 4
GEOID MODEL: G12AUS

Alignment Information

The horizontal alignment for IA 376 this survey is a retrace of As-built Plans No. 273
(21) Paving Plans (1956). Survey stationing was equated to the plan Bridge Sta.
224+96.4 and run back and ahead without equation throughout the survey. No control
was located from previous projects. Alignment bearing at the bridge is based on
centerline joints.

Survey stationing relates to as built plan stationing as follows:

POB Sta. 209+00 Assumed

SCS PI Sta. 216+31.22 As-built Plans Project No. 273 (21)

POT Sta. 224+96.4 As-built Plans Project No. 273 (21)
Bridge Location Station

POE Sta. 230+00 End Alignment

Utility Information

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

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 4 (U.S. Survey Foot)

VERT. DATUM: NAVD88 - Geoid Model: G12AUS

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 XX (U.S. Survey Foot)
 VERT. DATUM: NAVD88
 Geoid Model: 2018u3 or 2018u2

POINT NAME	NORTHING	EASTING	ELEVATION	FEATURE DEFINITION - DESCRIPTION
1	8609442.079	14091564.74	1142.96	CP 5/8 INCH REBAR SET
2	8609656.371	14092005.35	1131.29	CP
3	8609985.291	14092304.72	1127.78	CP
4000	8608971.743	14090858.15	1154.752	SCR - DRILLED HOLE IN MH RING
4002	8608811.711	14093524.51	1112.493	SCR - SURVEY MARKER BUTTON IN PCC
4230	8609717.328	14092047.58	1134.054	BM - FOUND I.H.C. BUTTON
4383	8609654.164	14092108.3	1132.3	BM - FOUND I.H.C. BUTTON
10478	8609609.237	14092265.58	1127.129	BM BUTTON IN HEADWALL FL=1127.129
500	8587571.845	14079851.7	1102.03	BM - NM 1918 E SIDE FLOYD R. SO. S-SIDE DACE ST. W-SIDE EXPO CENTER DRIVE
502	8609757.829	14091977.45	1132.302	BM - S- BASE BOLT LP SE OF DOT BLDG & NW OF EXIT RAMP
501	8609625.362	14091786.37	1138.421	BM - RR- SPIKE SW SIDE DRY CREEK. NW OF BR. NW HWY 376 SB

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)
20000	ML376	209+00.00	8608442.45	14091174.51															
20001	ML376	210+99.67	8608637.70	14091216.32															
20003	ML376				210+99.68	8608637.70	14091216.33												
20005	ML376							213+49.68	8608879.96	14091277.50									
20007	ML376				218+79.68	8609327.42	14091552.66												
20009	ML376	221+29.68	8609491.33	14091741.26															
20010	ML376	224+96.41	8609721.68	14092026.62															
20011	ML376	230+00.01	8610037.99	14092418.48															
30000	CH224	1223+28.32	8609851.65	14091921.50															
30001	CH224	1223+65.45	8609819.72	14091940.44															
30002	CH224	1224+02.72	8609794.35	14091967.75															
30003	CH224	1225+99.01	8609641.62	14092091.04															

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	
20005	ML376	39.000°	6.250°	250.00	531.55	72.14	249.70	9.08	166.77	83.43	26.500°	269.827	530.000	1146	31.339	

108_23A
8/15/22

TRAFFIC CONTROL PLAN

Traffic on IA 376 SB will remain open at all times.

There will be no off-site detour for IA 376 SB, a detour will be established by the contractor to access Frelon Dr. from IA 376.

One lane of traffic will be maintained utilizing lane and shoulder closures, and temporary pavement.

STAGING NOTES

The bridge will be constructed in three stages, maintaining at least one lane of southbound traffic. Access to the southbound Floyd Boulevard exit will be maintained through all phases of construction.

Place Road Closed signs on Southbound Frelon Drive at the F STREET intersection prior to closure following Standard Road Plan TC-252.

Stage 1 - Construction of Outside 42'-0" of RCB

Stage 2 - Construction of Inside 57'-0" of RCB

Stage 3 - Construction of Outside Foreslope and High Tension Cable Guardrail

Stage 1 (Close Outside Lane)

- Close the outside lane of IA 376 for 14.1' of Bridge removal and construction of RCB. Lane closure utilizing Standard Road Plan TC-421.
- Removal of a portion of the southbound outside lane and shoulder, a total of 13'-7 1/2" of the existing bridge. (a sawcut 2'-4" west of the centerline is required.
- A 15'-0" traffic lane will be utilized on the remainder of the existing bridge.
- Temporary barrier rail (TBR) will be placed 6" from the sawcut. This will require anchoring into the existing bridge deck and pavement.
- 42'-0" of the west end of the RCB, cross-pipe 24" RCB w/Temp Plug at the east end of the first stage, proposed southbound full-depth paved shoulder and subdrain and 8'-5" of the temporary pavement will be constructed along with the wingwalls.
- Temporary sheet pile and shoring will be placed at the RCB staging joint to support the proposed fill and pavement.

Stage 2 (Close Inside Lane)

- Close the inside lane of IA 376 for the bridge removal and construction of the RCB. Lane closure utilizes Standard Road Plan TC-421.
- Traffic will be shifted to the full-depth shoulder and temporary pavement while the remainder of the existing bridge is removed.
- A 14'-6" traffic lane will be utilized.
- TBR will be placed 2' from the median edge of the pavement and 6" from the outside edge of pavement.
- The remainder of the RCB, the median shoulder, cross-pipe and manhole w/ area intake and the proposed lanes will be constructed.

Stage 3 (Close Outside Shoulder)

- Close outside shoulder for construction of outside foreslope and guardrail. Shoulder closure utilizes Standard Road Plan TC-402.
- Removal of the Detour pavement and grading of the foreslopes, per detail 4311.
- High Tension Cable Guardrail will be placed 2' off the edge of the shoulder on the outside foreslope.

**CROSS SECTION VIEW COLOR LEGEND
OF TRAFFIC CONTROL AND STAGING SHEETS**

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Med	(237)	Future Proposed Pavement Shading

**CROSS SECTION VIEW PATTERN AND SYMBOL LEGEND
OF TRAFFIC CONTROL AND STAGING SHEETS**

	Pavement Removal		Proposed Granular Shoulder
	Proposed Granular Subbase		Temporary Shoulder
	Proposed Special Backfill		Existing Shoulder Strengthening
	Temporary Barrier Rail		Permanent Barrier Rail
			Channelizing Device

PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Magenta	(5)	Pavement Marking Call Outs
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Yellow	(4)	Pavement Markings, Yellow
Off White	(254)	Pavement Markings, White
Violet	(15)	Temporary barrier rail, Unpinned
Flush Orange	(228)	Temporary barrier rail, Pinned

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Proposed Granular Surface Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Light	(236)	Proposed Grading Limits Shading
Pink, Dark	(13)	Proposed MSE or CIP Wall Shading
Red	(3)	Proposed Bridge Shading and Sign Trusses
Black w/Gray, Light Fill	(0,48)	Previously Constructed Structure

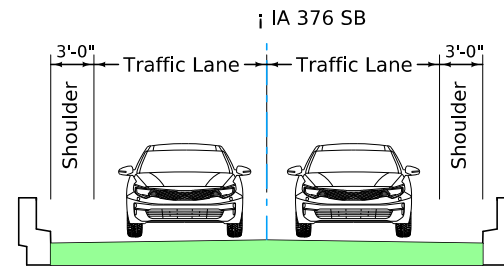
**PLAN VIEW PATTERN AND SYMBOL LEGEND
OF TRAFFIC CONTROL AND STAGING SHEETS**

	Channelizing Device		Crash Cushion (Temp or Perm)
	Drum		Traffic Signal
	Temporary Lane Separator		Flagger
	Tubular Marker		Temporary Floodlighting
	Channelizer Marker		Traffic Sign
	Concrete Barrier Marker		Type III Barricade
	Delineator		Type A Warning Light
	Temporary Barrier Rail		Direction of Traffic
	Pavement Removal		Safety Closure
	Sand Barrel Layout		Lane Identification

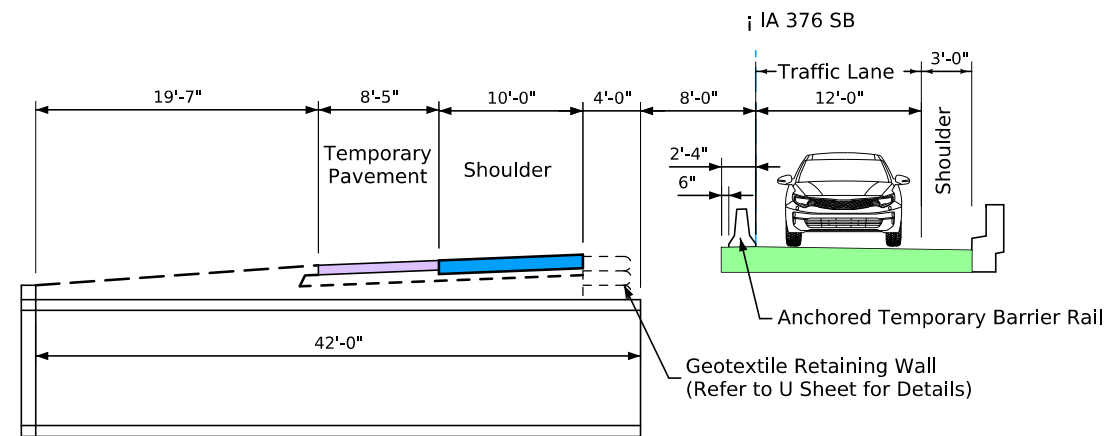
NOTE: Device spacing according to Standard Road Plans unless specifically dimensioned.

**TRAFFIC CONTROL
AND
STAGING
LEGEND AND SYMBOL
INFORMATION SHEET**

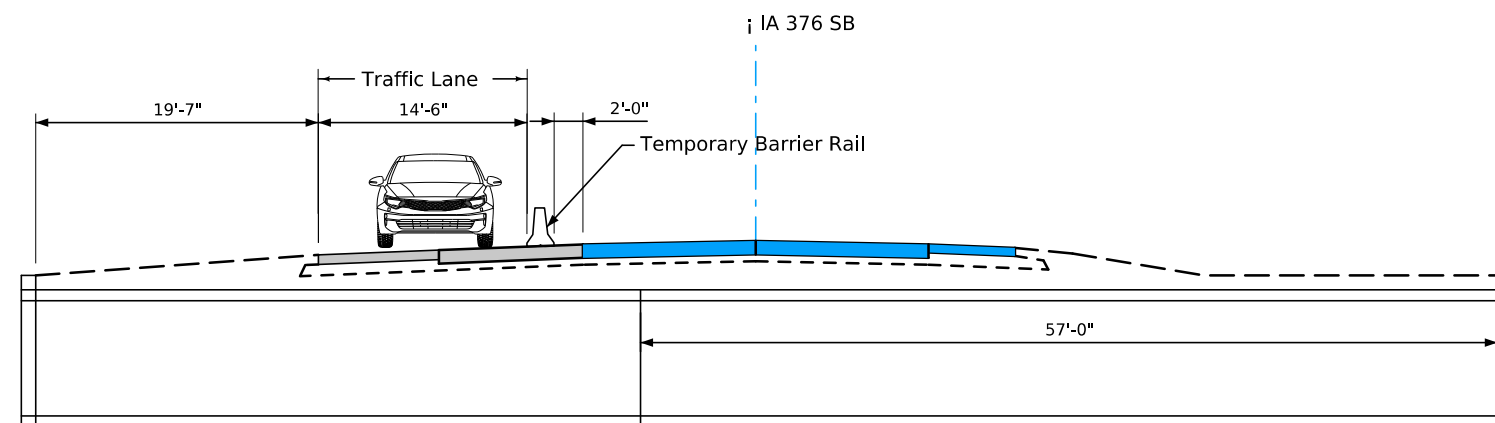
(COVERS SHEET SERIES J)



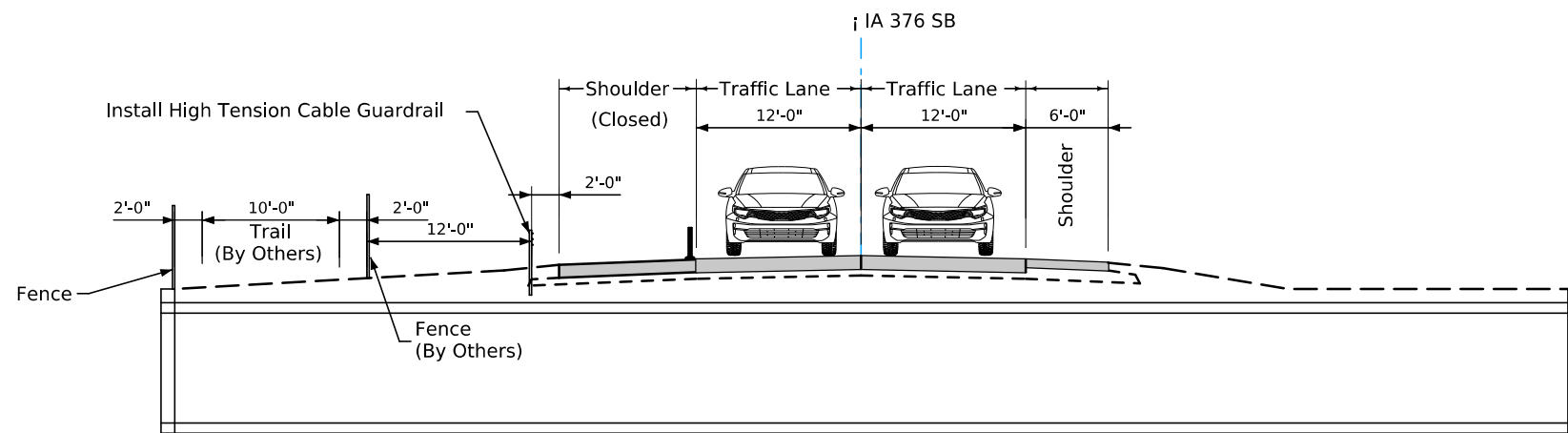
**IA 376
Existing Condition**



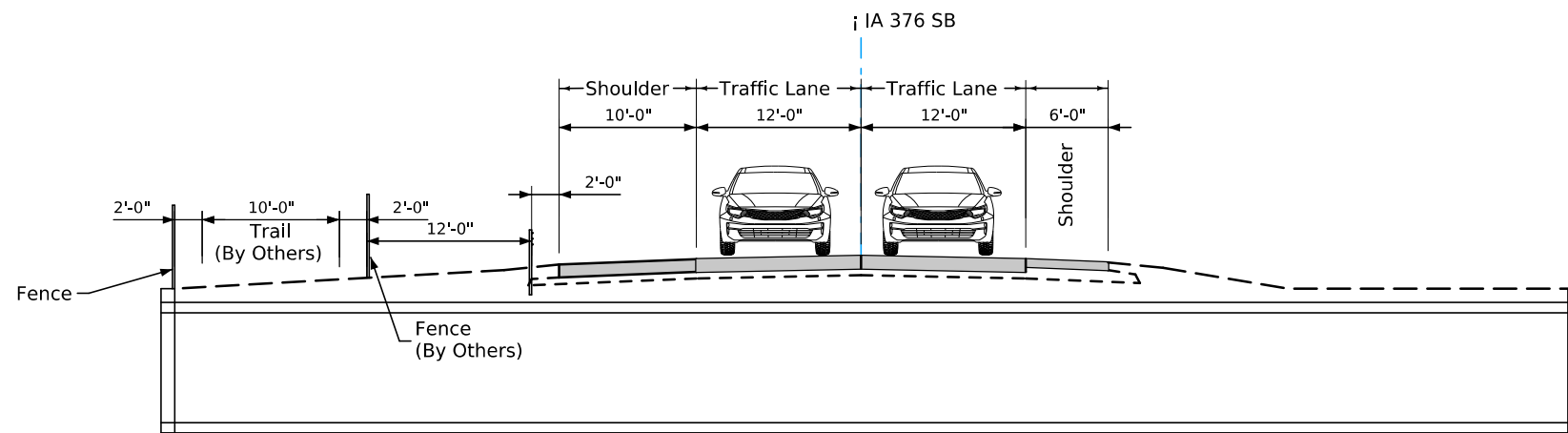
**IA 376
STAGE 1
Outside Lane Closure
Construct 42'-0" of RCB and End Section**



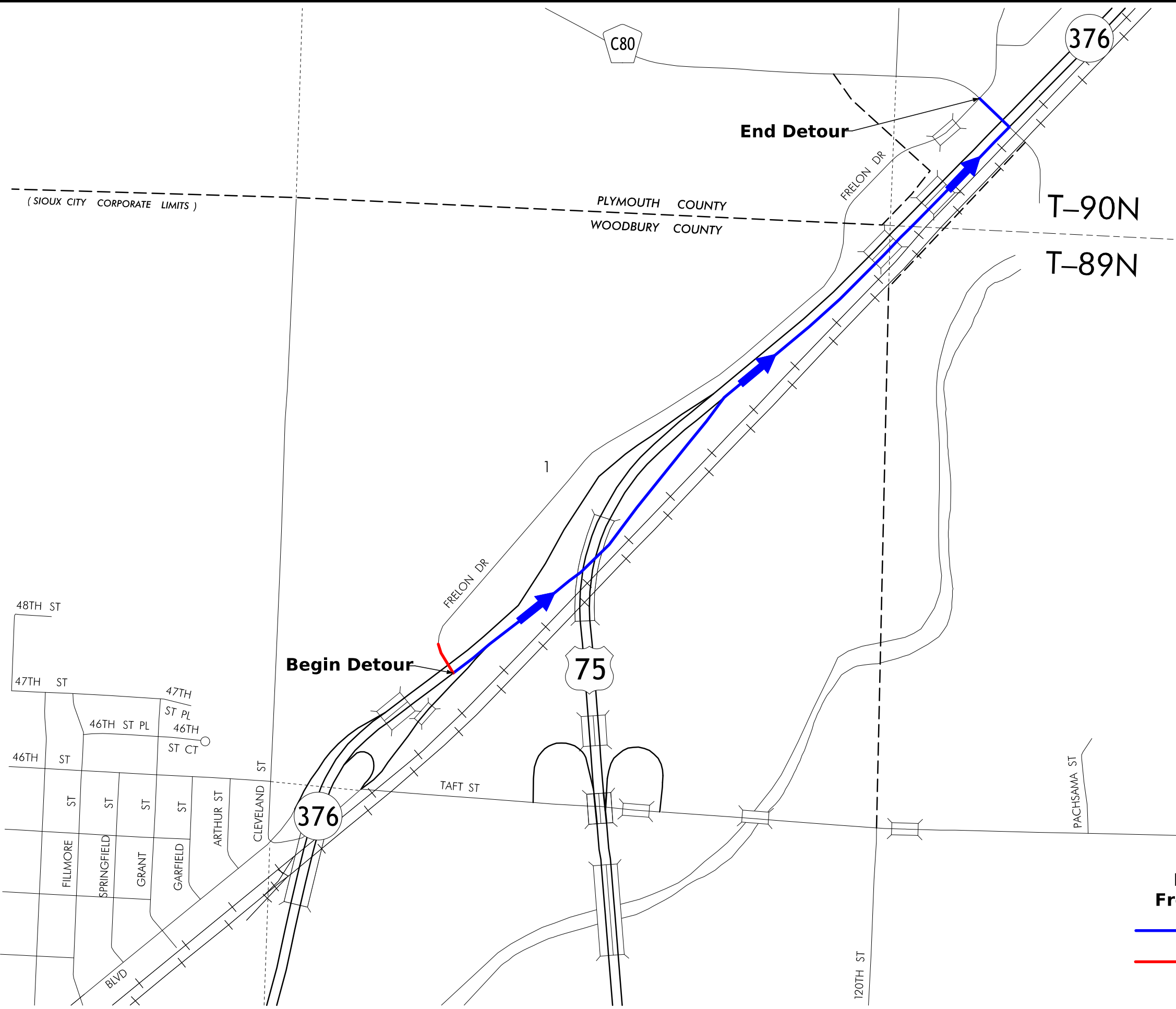
**IA 376
STAGE 2
Traffic on Shoulder and Temporary Pavement
Construct 57'-0" of RCB and Connection to NB Structure**



**IA 376
STAGE 3
Traffic on Inside Lane
Remove Temporary Pavement and Construct Outside Foreslope and Guardrail**

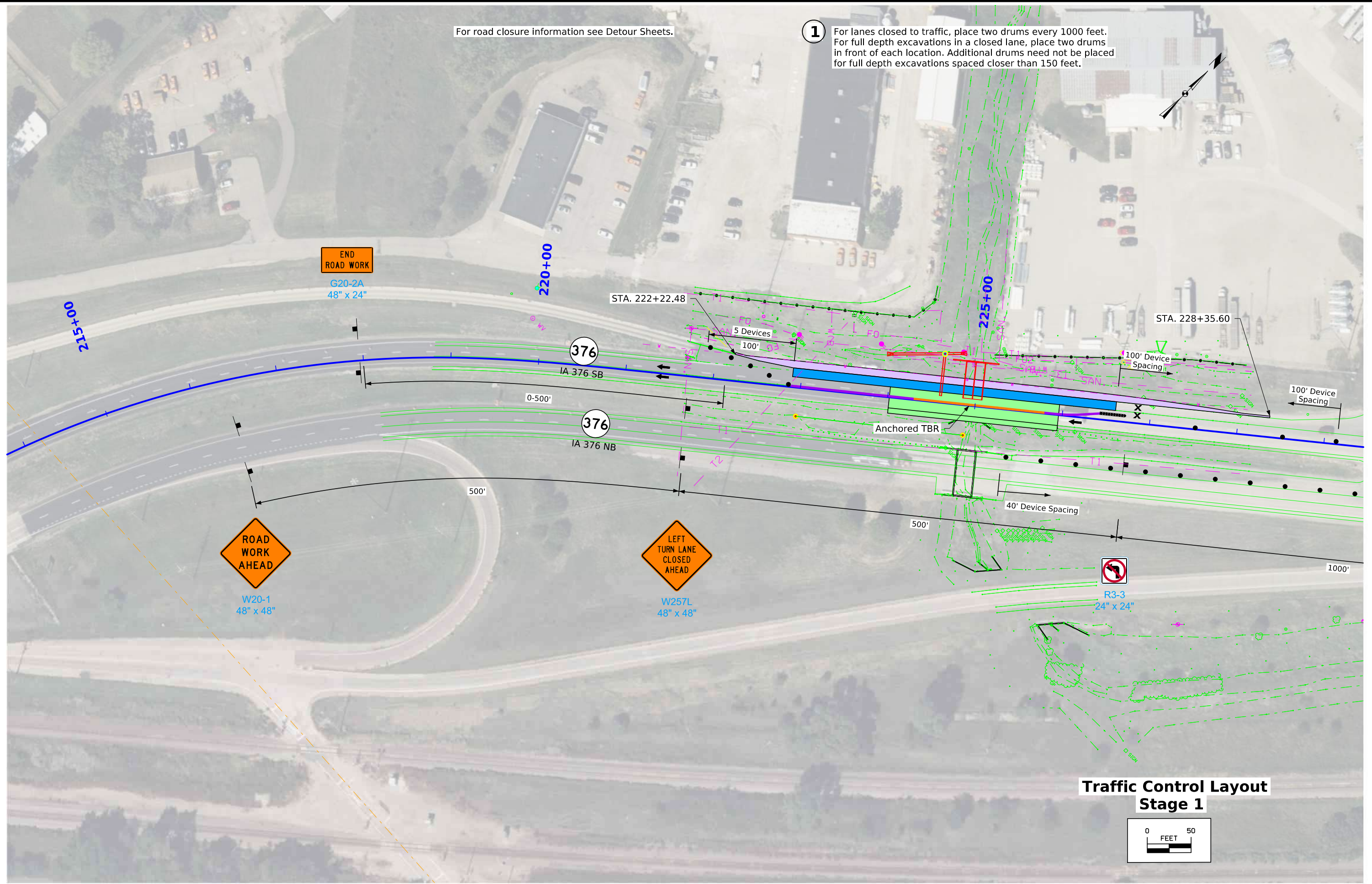


**IA 376
Final**

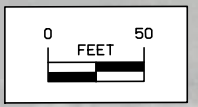


For road closure information see Detour Sheets.

1 For lanes closed to traffic, place two drums every 1000 feet. For full depth excavations in a closed lane, place two drums in front of each location. Additional drums need not be placed for full depth excavations spaced closer than 150 feet.



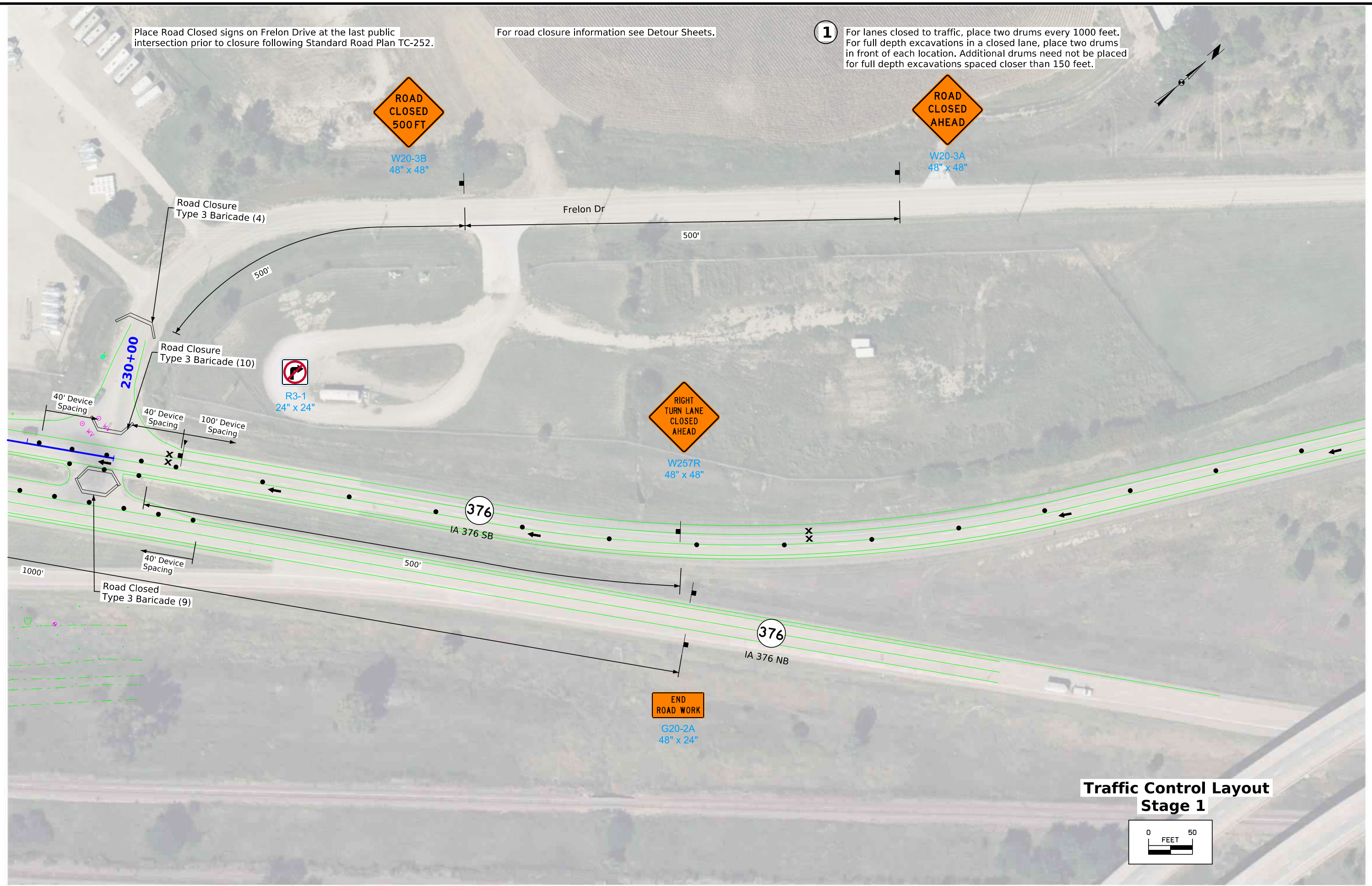
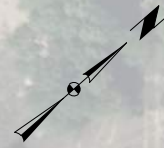
Traffic Control Layout Stage 1



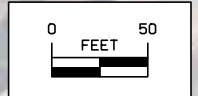
Place Road Closed signs on Frelon Drive at the last public intersection prior to closure following Standard Road Plan TC-252.

For road closure information see Detour Sheets.

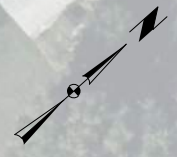
1 For lanes closed to traffic, place two drums every 1000 feet. For full depth excavations in a closed lane, place two drums in front of each location. Additional drums need not be placed for full depth excavations spaced closer than 150 feet.



Traffic Control Layout Stage 1



1 For lanes closed to traffic, place two drums every 1000 feet. For full depth excavations in a closed lane, place two drums in front of each location. Additional drums need not be placed for full depth excavations spaced closer than 150 feet.



Frelon Dr

376

IA 376 SB

100' Device Spacing

75

US 75 SB

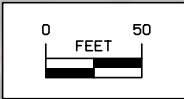
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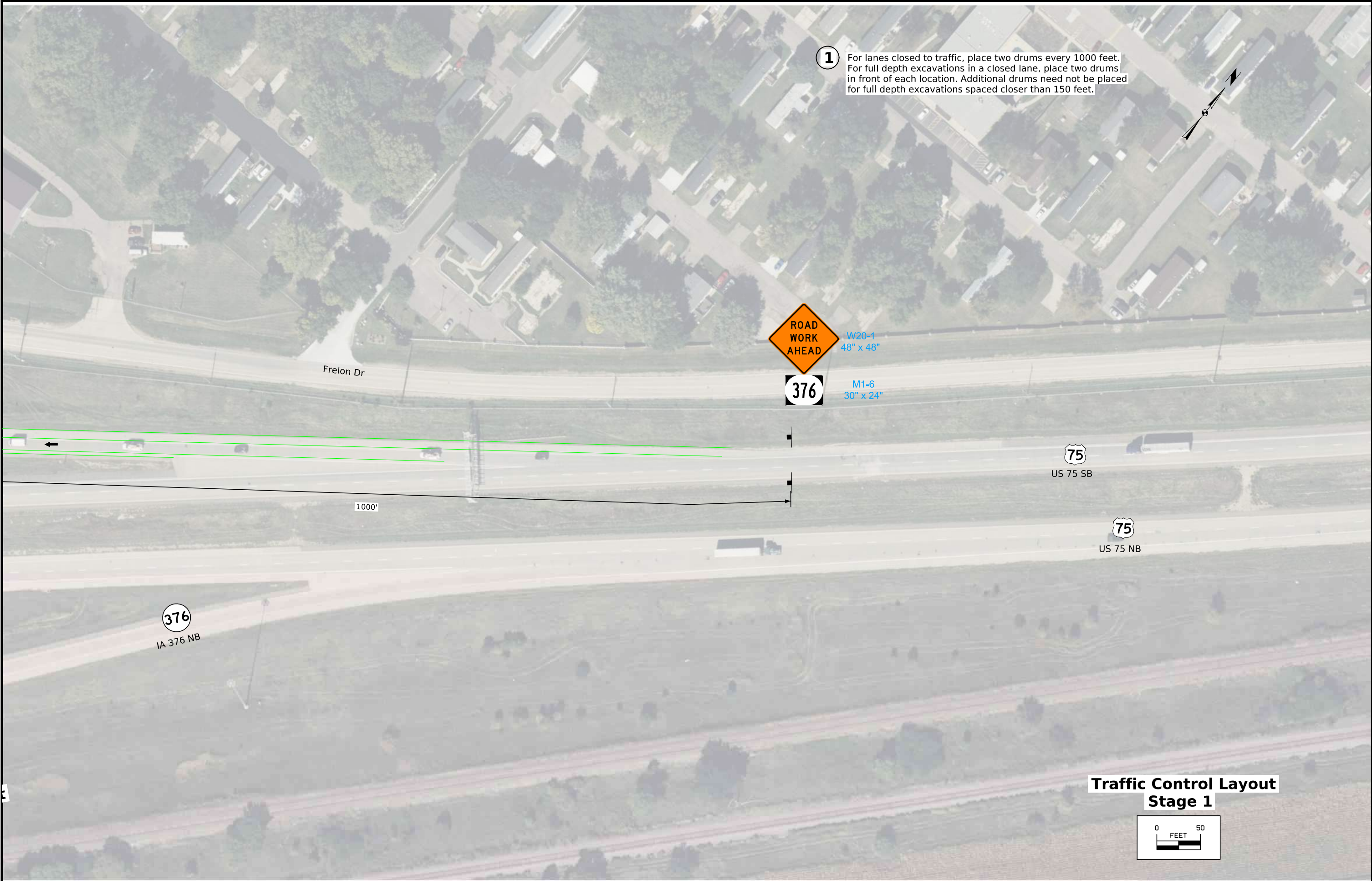
US 75 NB

376

IA 376 NB

**Traffic Control Layout
Stage 1**





1 For lanes closed to traffic, place two drums every 1000 feet. For full depth excavations in a closed lane, place two drums in front of each location. Additional drums need not be placed for full depth excavations spaced closer than 150 feet.



W20-1
48" x 48"



M1-6
30" x 24"

Frelon Dr

1000'



US 75 SB

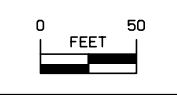


US 75 NB



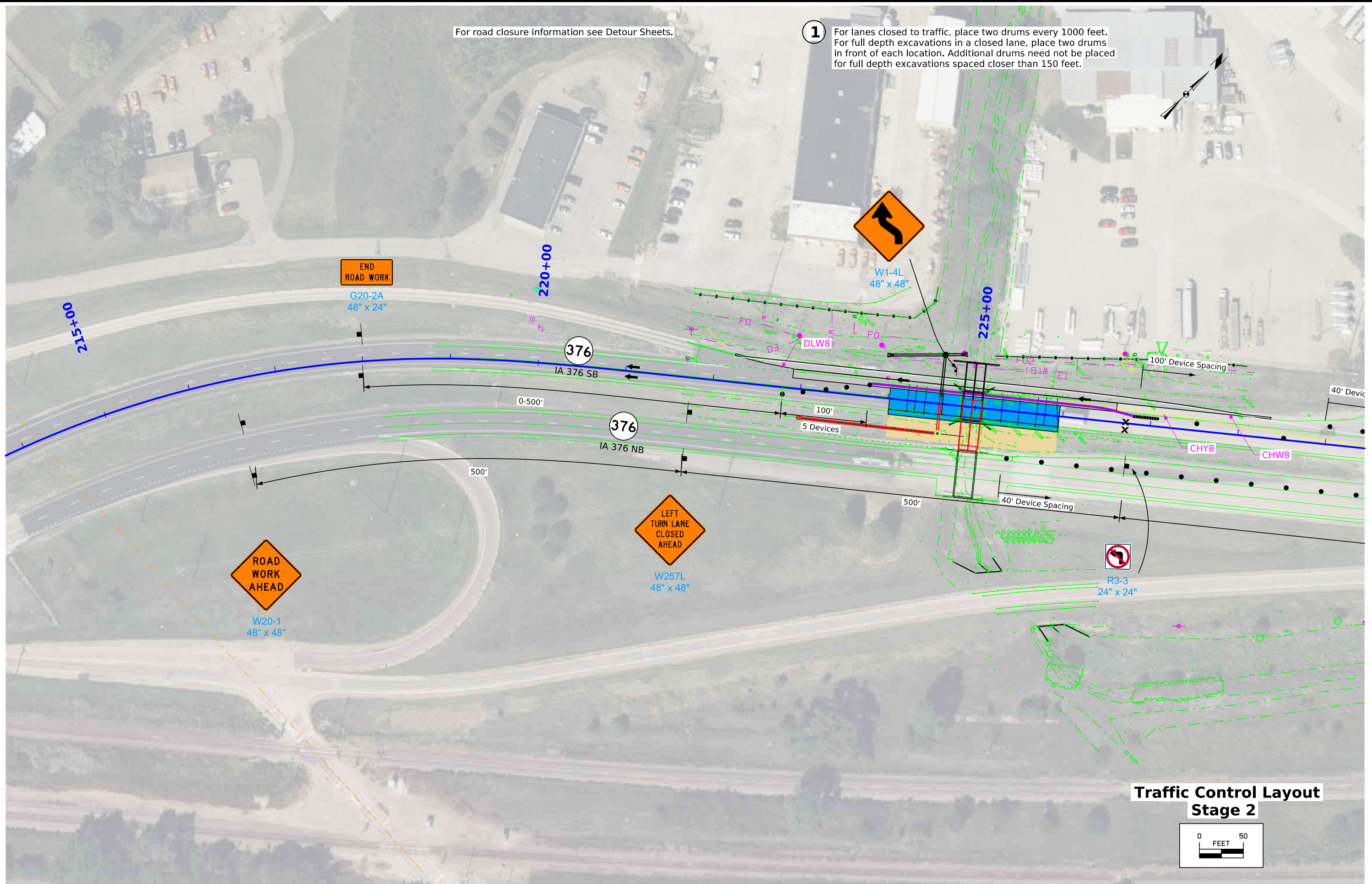
IA 376 NB

**Traffic Control Layout
Stage 1**

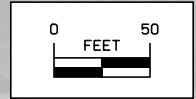


For road closure information see Detour Sheets.

1 For lanes closed to traffic, place two drums every 1000 feet. For full depth excavations in a closed lane, place two drums in front of each location. Additional drums need not be placed for full depth excavations spaced closer than 150 feet.



**Traffic Control Layout
Stage 2**



Place Road Closed signs on Frelon Drive at the last public intersection prior to closure following Standard Road Plan TC-252.

For road closure information see Detour Sheets.

1 For lanes closed to traffic, place two drums every 1000 feet. For full depth excavations in a closed lane, place two drums in front of each location. Additional drums need not be placed for full depth excavations spaced closer than 150 feet.



W20-3B
48" x 48"



W20-3A
48" x 48"

Frelon Dr

500'

500'
Road Closed
Type 3 Barcade (4)

Road Closed
Type 3 Barcade (10)

40' Device Spacing

40' Device Spacing

100' Device Spacing

40' Device Spacing
Road Closed
Type 3 Barcade (9)

1000'

376

1000'

376

IA 376 NB

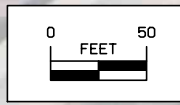


G20-2A
48" x 24"

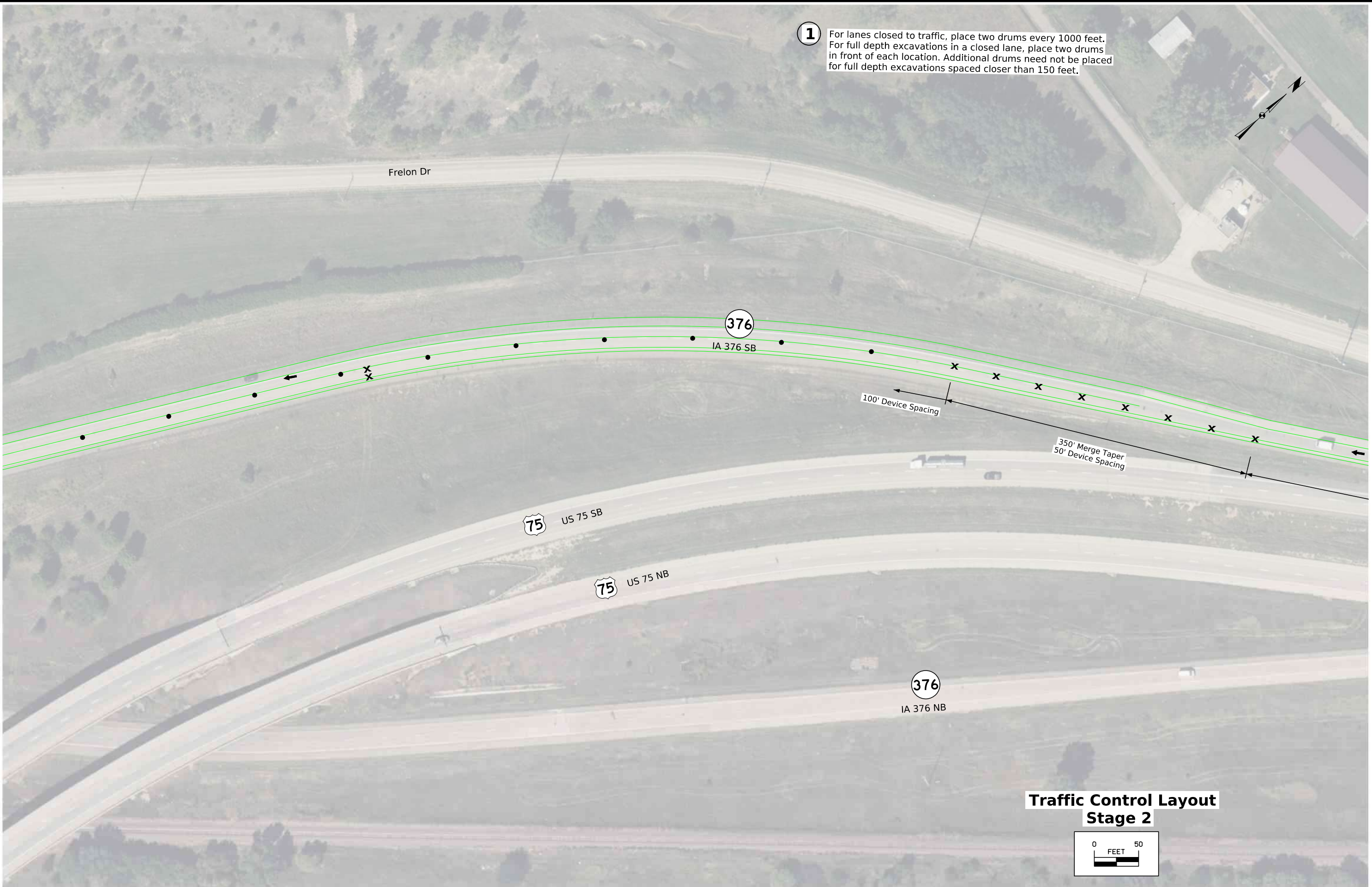


W1-4R
48" x 48"

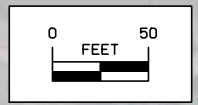
Traffic Control Layout Stage 2



1 For lanes closed to traffic, place two drums every 1000 feet. For full depth excavations in a closed lane, place two drums in front of each location. Additional drums need not be placed for full depth excavations spaced closer than 150 feet.



**Traffic Control Layout
Stage 2**



1 For lanes closed to traffic, place two drums every 1000 feet. For full depth excavations in a closed lane, place two drums in front of each location. Additional drums need not be placed for full depth excavations spaced closer than 150 feet.



Frelon Dr



W1-4R
48" x 48"



W20-1
48" x 48"



M1-6
30" x 24"

500'

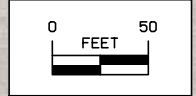
1000'

75 US 75 NB

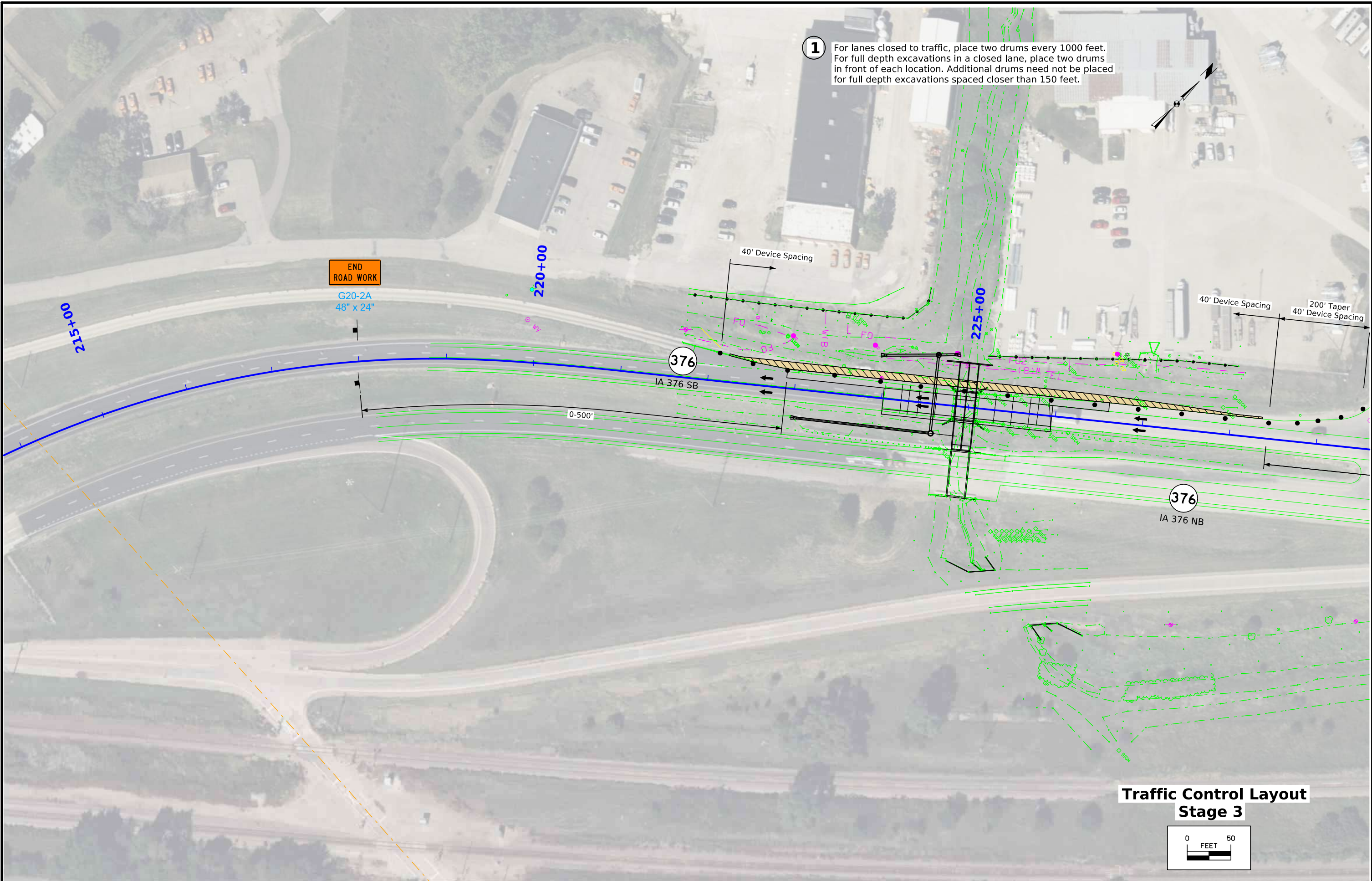
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IA 376 NB

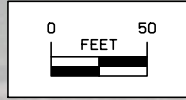
Traffic Control Layout Stage 2



1 For lanes closed to traffic, place two drums every 1000 feet. For full depth excavations in a closed lane, place two drums in front of each location. Additional drums need not be placed for full depth excavations spaced closer than 150 feet.



**Traffic Control Layout
Stage 3**



1 For lanes closed to traffic, place two drums every 1000 feet. For full depth excavations in a closed lane, place two drums in front of each location. Additional drums need not be placed for full depth excavations spaced closer than 150 feet.



W20-1
48" x 48"

Frelon Dr

500'

200' Taper
40' Device Spacing

230+00



W8-9A
48" x 48"



W20-1
48" x 48"

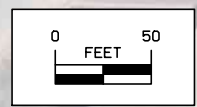
500'

376
IA 376 SB

1000'

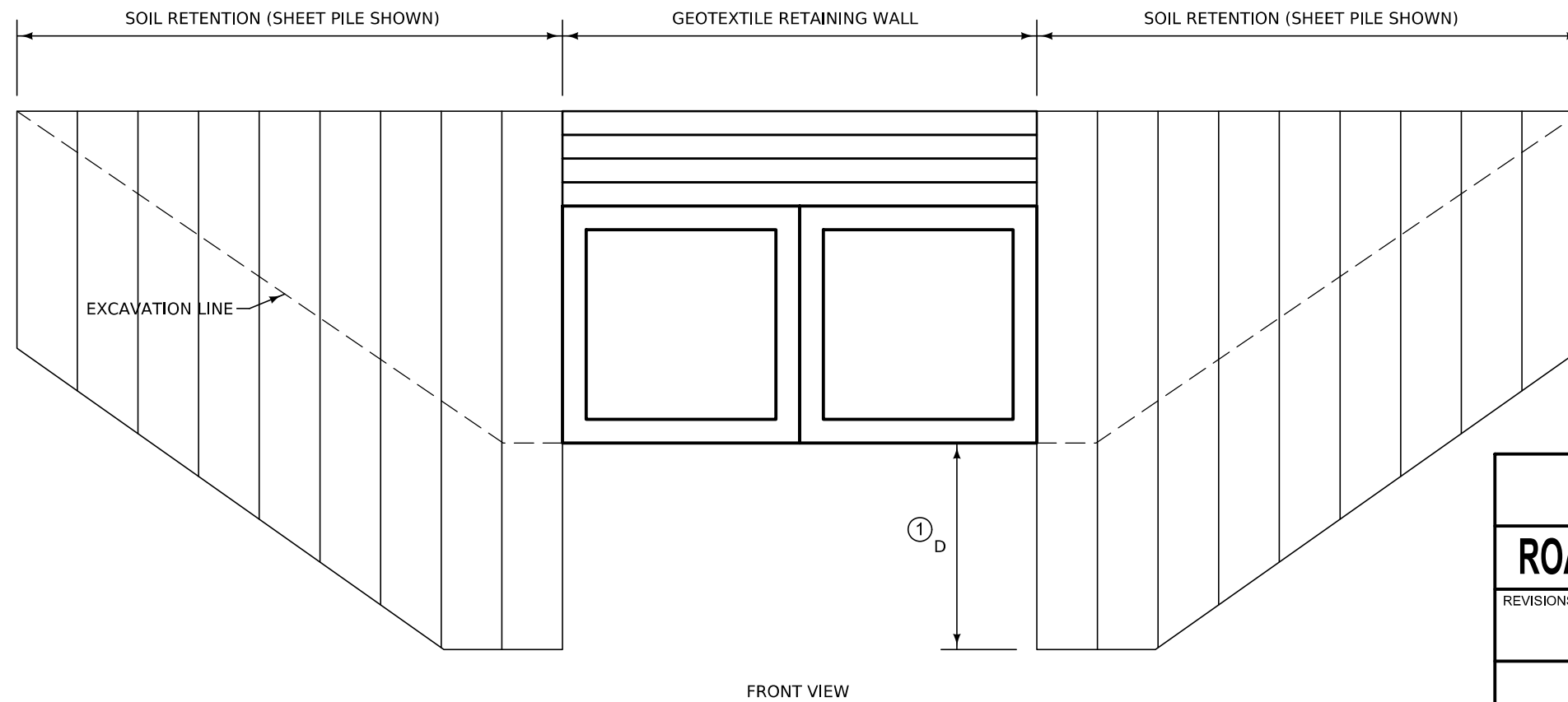
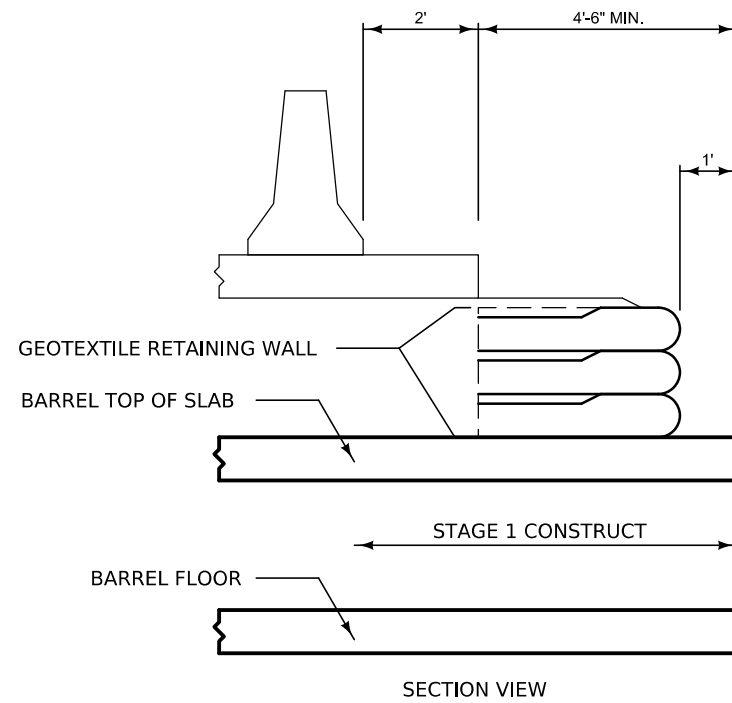
376
IA 376 NB

**Traffic Control Layout
Stage 3**



GEOTEXTILE RETAINMENT FOR STAGED CULVERTS

① D to be determined by contractor.

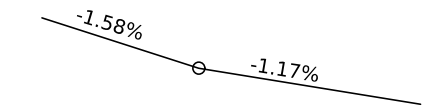


HGM	NEW	5-23-23
	HGM-1	
ROAD DESIGN DETAIL		
SHEET 1 of 1		
REVISIONS: New.		
GEOTEXTILE RETAINMENT FOR STAGED CULVERTS		

1160			1160
1150			1150
1140			1140
1130			1130
1120			1120
1110			1110
1100			1100
1190			1190

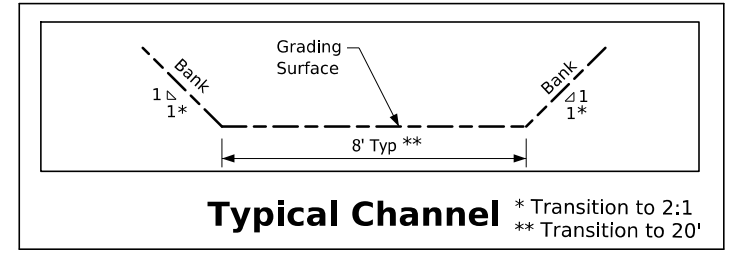
Benchmark No. 4383
 Northing: 8609654.164
 Easting: 14092108.3
 Elev. 1132.3

Benchmark No. 10478
 Northing: 8609609.237
 Easting: 14092265.58
 Elev. 1127.129



VPI Sta. = 223+50
 VPI Elev. = 1135.22
 VC = 200

**Proposed Profile
 Grade IA 376**



Location

IA 376 over Tributary to Floyd River
 0.1 mi N of Co Rd D12 in Sioux City (SB)
 T-88N R-47W
 Section 1
 City of Sioux City
 Woodbury County
 FHWA No. 53100
 Bridge Maint. No. 9799.2L376
 Asset ID No. 53100
 FRA No. N/A
 Latitude 42.55001792°
 Longitude -96.34733894°

Hydraulic Data

RIDB: Not Applicable
 Drainage Area = 1.16 Sq. Mi.
 Q₅₀ = 799 cfs
 HW Elev. = 1127.33
 Exit Velocity = 12.6 fps
 Stream Slope = 89.8 Ft./Mi.

Traffic Estimate

2026 AADT	4300 V.P.D.
2046 AADT	5200 V.P.D.
2046 DHV	540 V.P.H.
TRUCKS	6 %
Total	—
Design ESALS	—

Q₁₀₀ = 959 cfs
 HW Elev. = 1128.11
 Exit Velocity = 13.3 fps

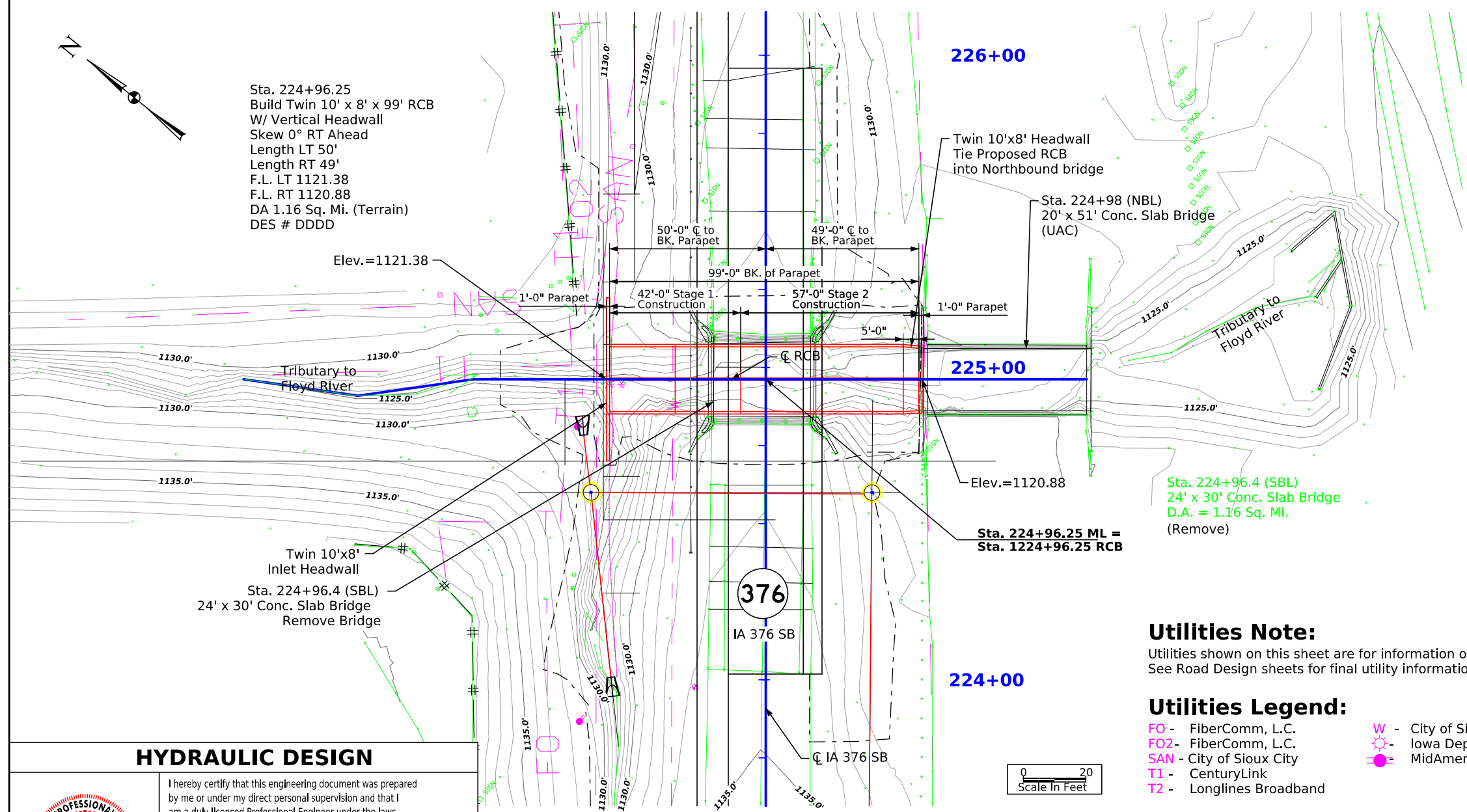
This design is for the replacement of the existing 24' x 30' Conc. Slab Bridge
 Design No. XXX
 FHWA No. 53100
 Maint No. 9799.2L376

Utilities Note:

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

Utilities Legend:

- FO - FiberComm, L.C.
- FO2 - FiberComm, L.C.
- SAN - City of Sioux City
- T1 - CenturyLink
- T2 - Longlines Broadband
- W - City of Sioux City
- Iowa Department of Transportation
- MidAmerican - Elec

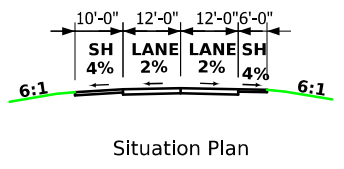


Sta. 224+96.25
 Build Twin 10' x 8' x 99' RCB
 W/ Vertical Headwall
 Skew 0° RT Ahead
 Length LT 50'
 Length RT 49'
 F.L. LT 1121.38
 F.L. RT 1120.88
 DA 1.16 Sq. Mi. (Terrain)
 DES # DDDD

Twin 10'x8'
 Inlet Headwall
 Sta. 224+96.4 (SBL)
 24' x 30' Conc. Slab Bridge
 Remove Bridge

Sta. 224+96.4 (SBL)
 24' x 30' Conc. Slab Bridge
 D.A. = 1.16 Sq. Mi.
 (Remove)

Removals shall be in accordance with Section 2401, of the Standard Specifications.



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: *Jonathan E. Peterson* Date: 03-01-2024
 Printed or Typed Name: Jonathan E. Peterson
 My license renewal date is December 31, 2024

Pages or sheets covered by this seal: V.1

Design For 0° SKEW
Twin 10'-0" x 8'-0" x 99'-0"
Reinforced Concrete Box Culvert
Preliminary Situation Plan
 STA. 224+96.25 (IA 376) Turn-in Date:
Woodbury County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. Design Sheet No. 1 of 1 FHWA/Asset 53100

CROSS SECTION VIEW COLOR LEGEND

Design Color No.	Feature	Design Color No.	Feature
Aggregate			
(64)	Choke Stone	(112)	Noise Wall
(42)	Engineering Fabric	(112)	Noise Wall Footing
(8)	Flooded Backfill	(112)	Retaining Wall Back
(92)	Macadam Stone	(112)	Retaining Wall Back Excavate
(20)	Modified	(112)	Retaining Wall Face
(12)	Plowing Shaping	(112)	Retaining Wall Front Excavate
(14)	Porous Backfill	(112)	Retaining Wall Front Footing
(8)	Revetment Class A	(112)	Retaining Wall MSE Gutter
(6)	Revetment Class B	(112)	Retaining Wall Reinforced Earth
(62)	Revetment Class C		
(188)	Revetment Class D	Grading	
(28)	Revetment Class E	(8)	Behind Curb Cut
(12)	Shoulder Special Backfill	(6)	Granular
(12)	Special Backfill	(13)	Granular Back Fill
(20)	Subbase	(48)	Rock Undercut
(20)	Subbase Lower	(8)	Shoulder Earth Fill
(20)	Subbase Upper	(2)	Side Slopes
(118)	Subgrade Treatment	(226)	Side Slopes Dressing
Asphalt			
(207)	HMA Base Course	Substrata	
(207)	HMA Interim Course	(128)	Boulder Substrata
(207)	HMA Surface Course	(48)	Broken Weathered Substrata
Concrete			
(0)	Barrier Concrete	(3)	Core Out Substrata
(0)	Barrier Concrete Footing	(203)	Existing Pavement Substrata
(0)	Curb Gutter	(6)	Loam Substrata
(48)	Flowable Mortar	(80)	Rock Substrata
(0)	Median Concrete	(4)	Select Sand Substrata
(0)	PCC Pavement	(3)	Shale Substrata
(0)	Sidewalk	(10)	Topsoil Substrata
Shoulder			
(209)	Shoulder HMA	Unsuitable / Waste	
(0)	Shoulder PCC	(3)	Unsuitable Type A
(6)	Shoulder Granular	(13)	Unsuitable Type B
Existing			
(0)	Existing Pavement	(11)	Unsuitable Type C
		(3)	Waste

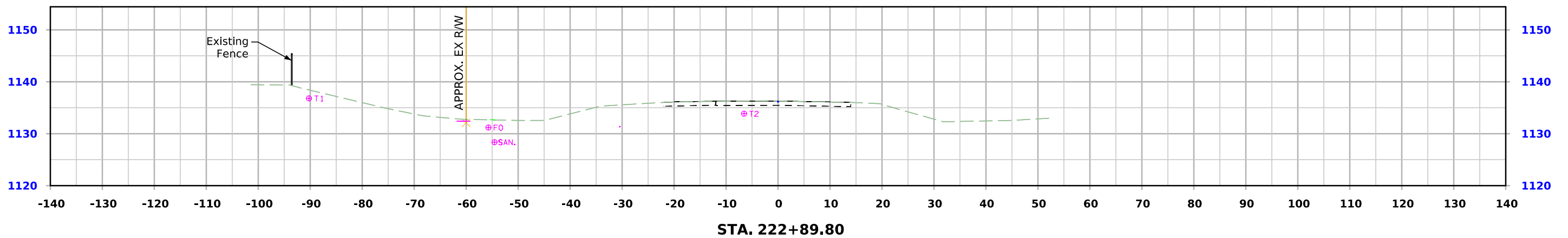
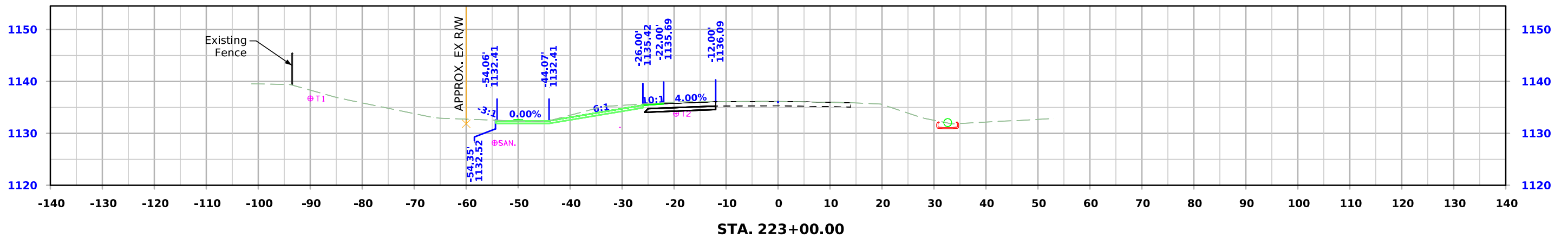
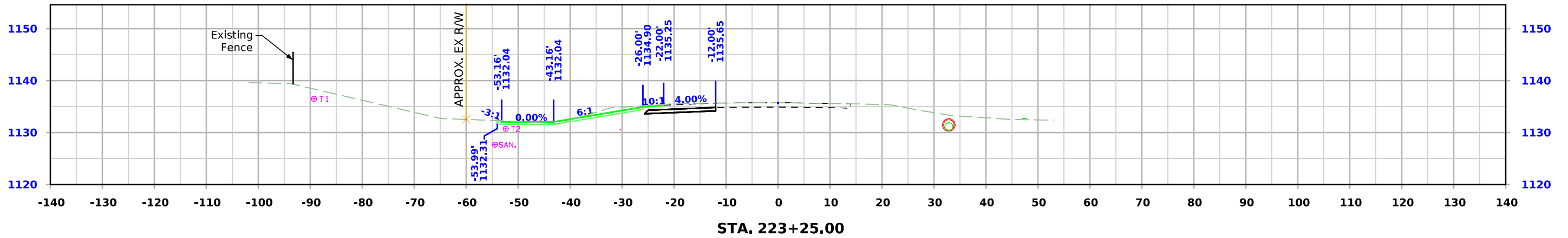
NOTES:

NOTES:

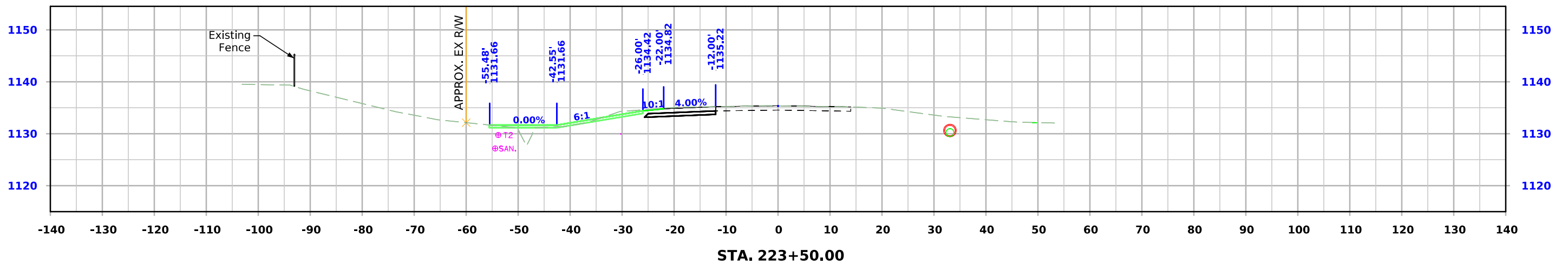
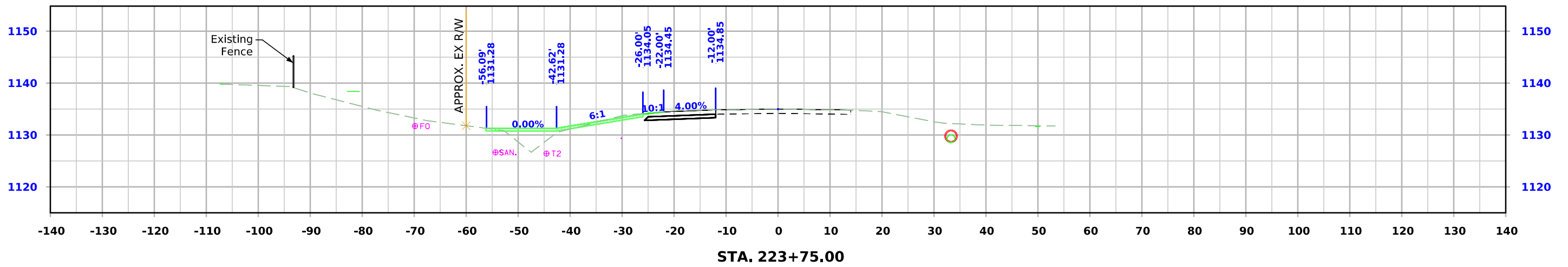
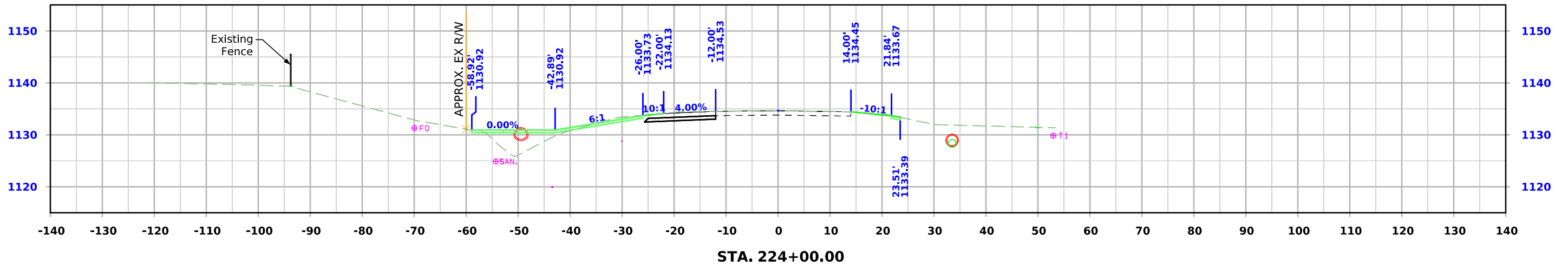
**CROSS SECTIONS
LEGEND AND INFORMATION SHEET**

(COVERS SHEET SERIES W, X, Y, & Z)

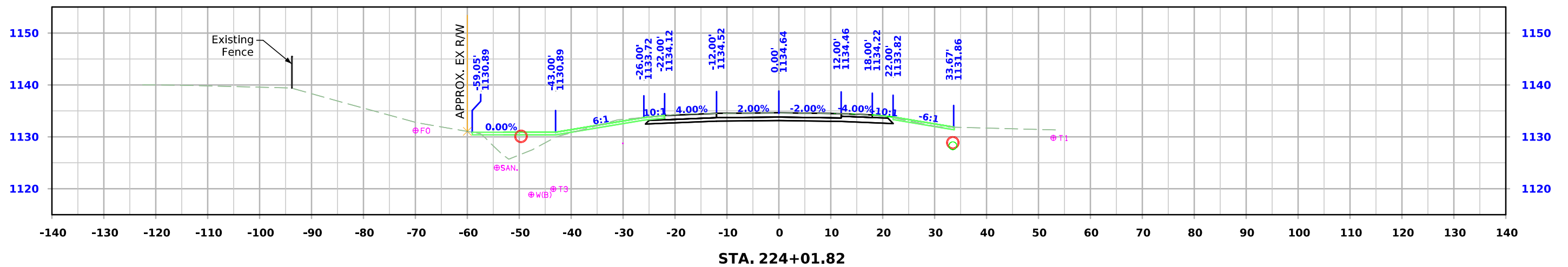
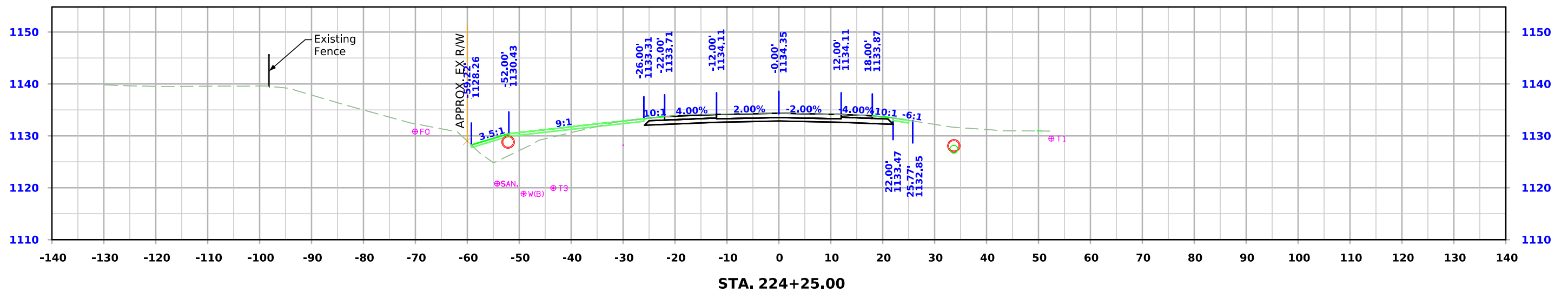
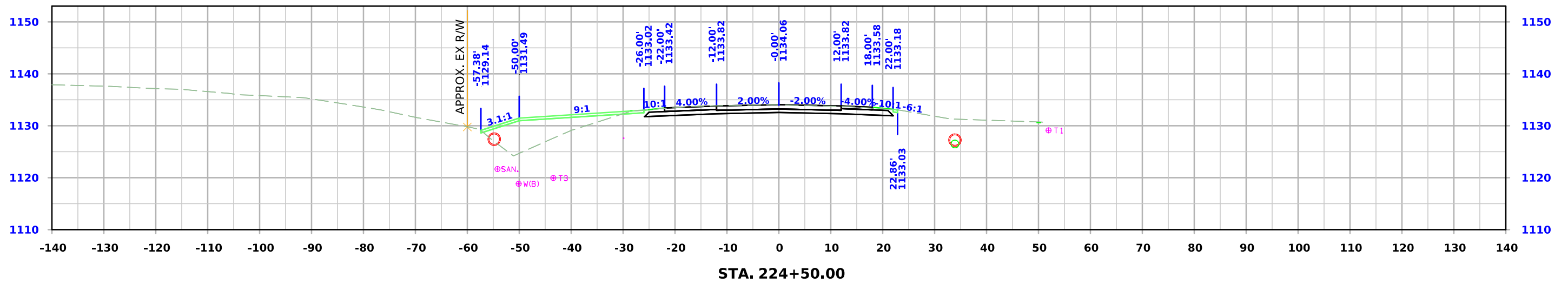
IA 376 Preliminary



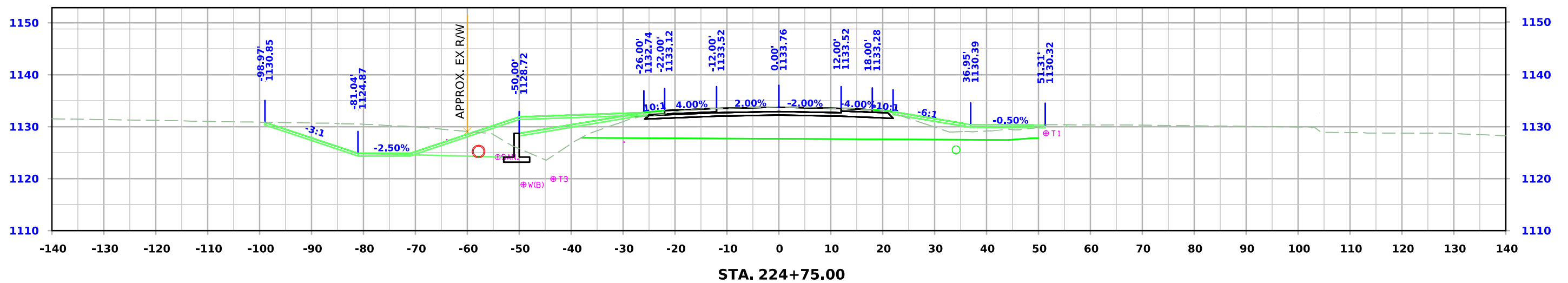
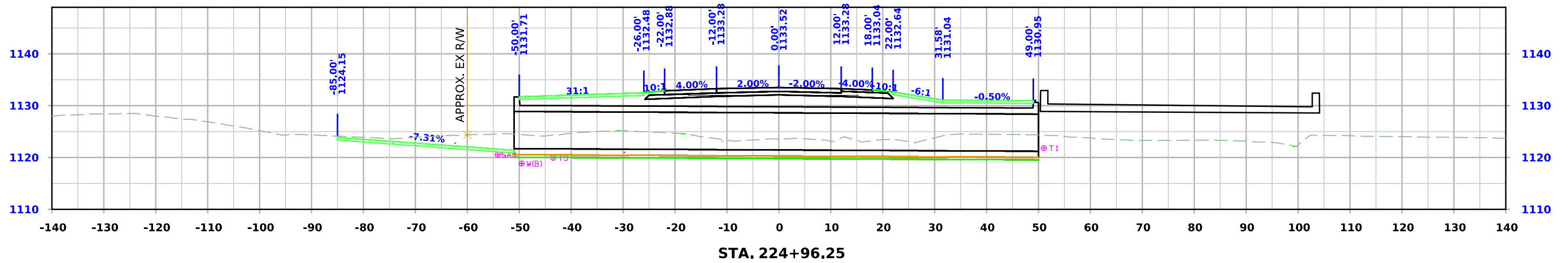
IA 376 Preliminary



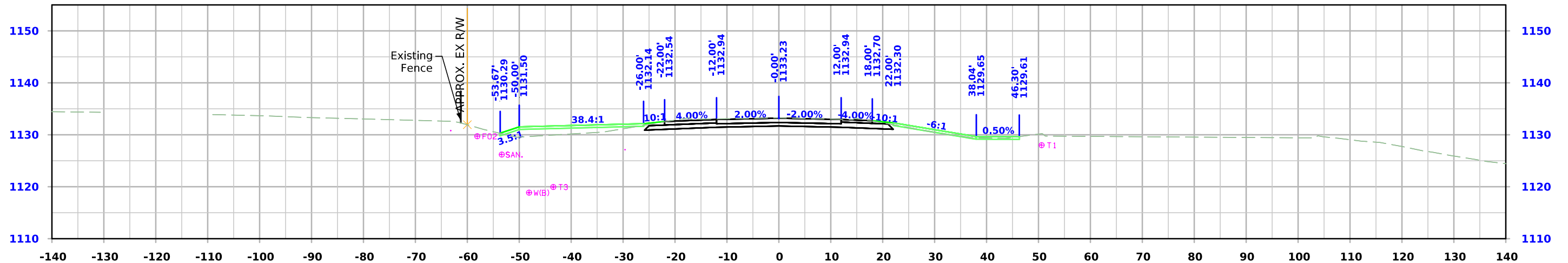
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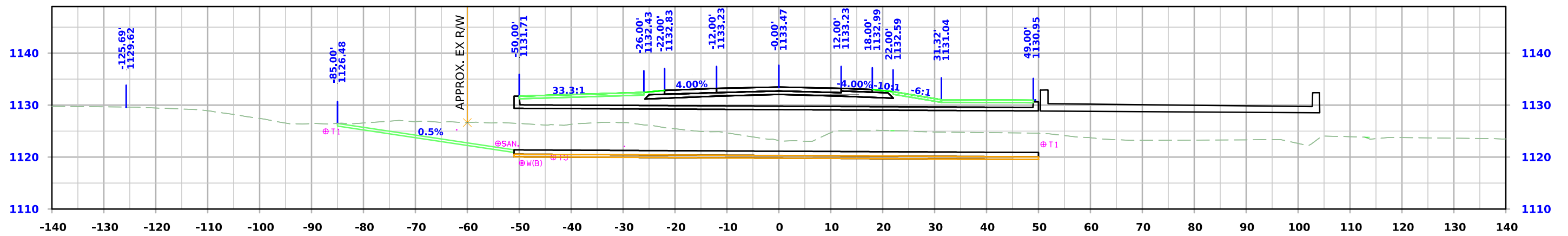
IA 376 Preliminary



IA 376 Preliminary

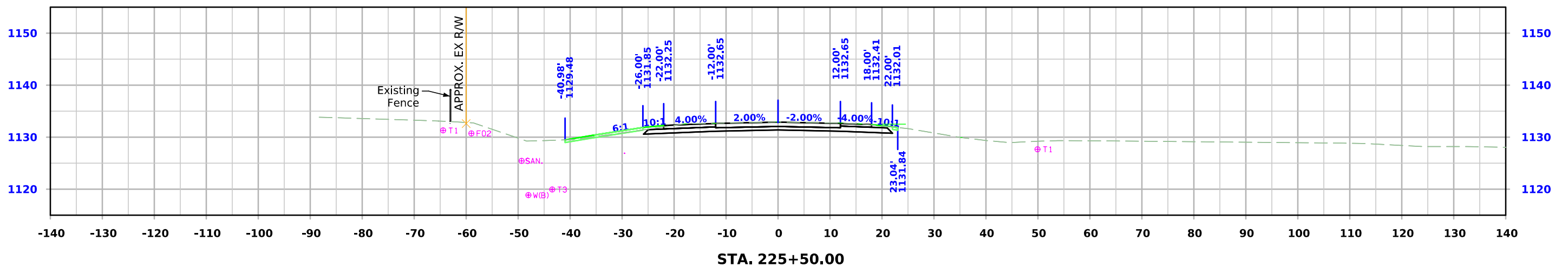
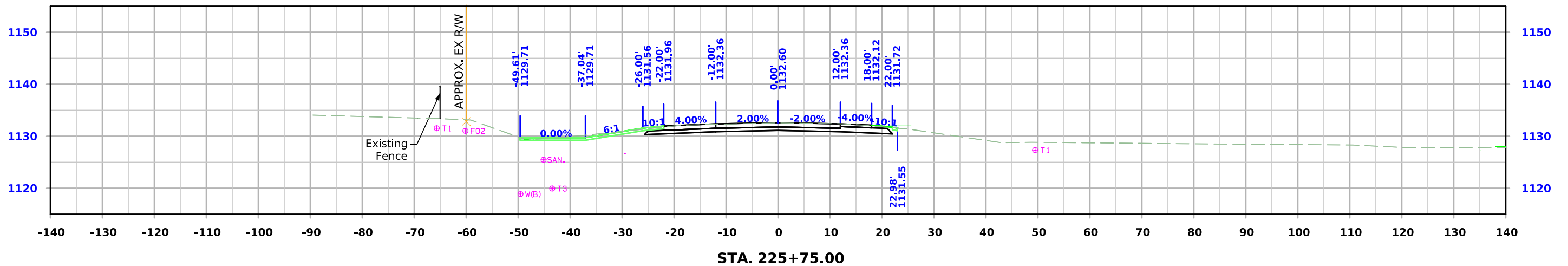
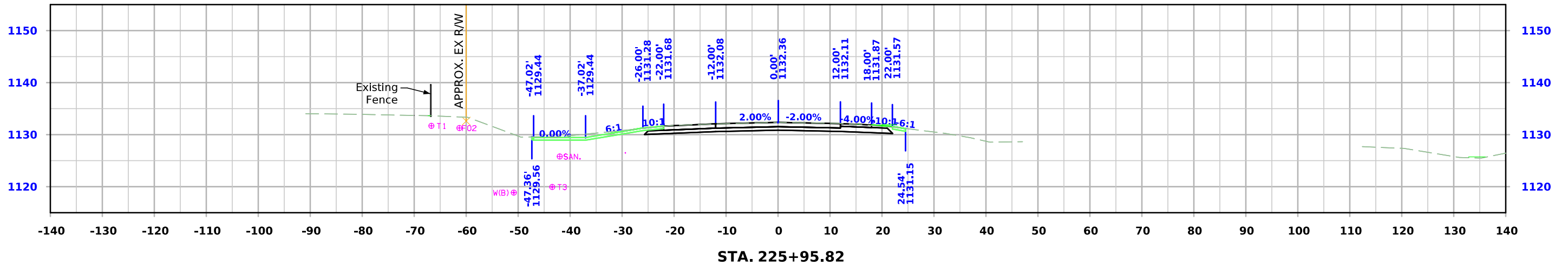


STA. 225+25.00

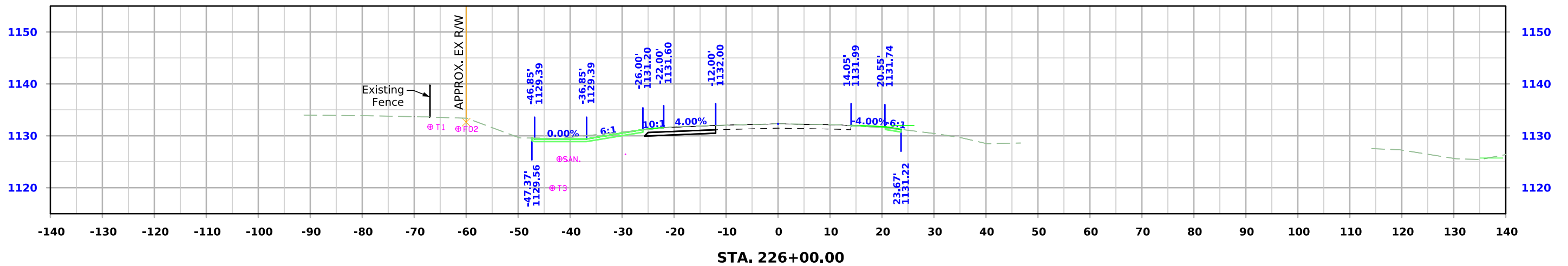
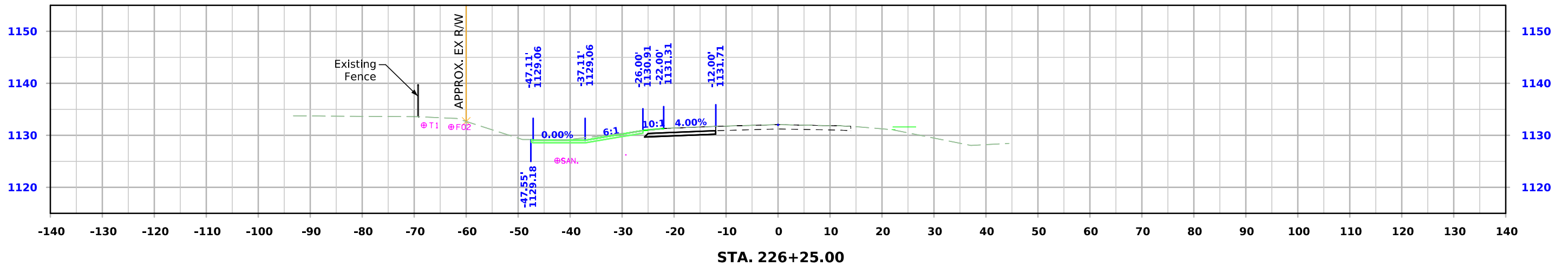
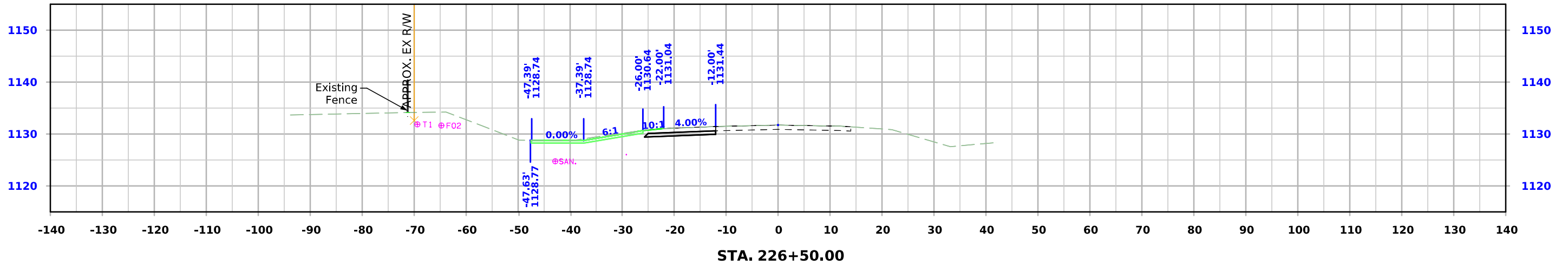


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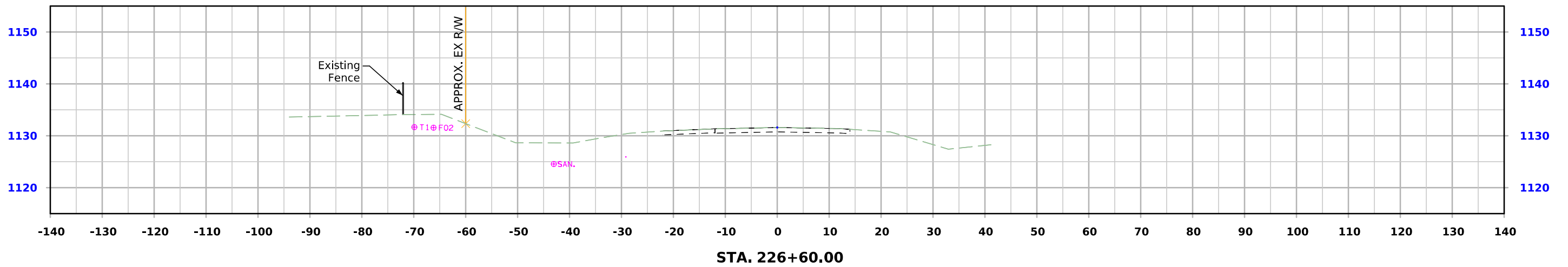
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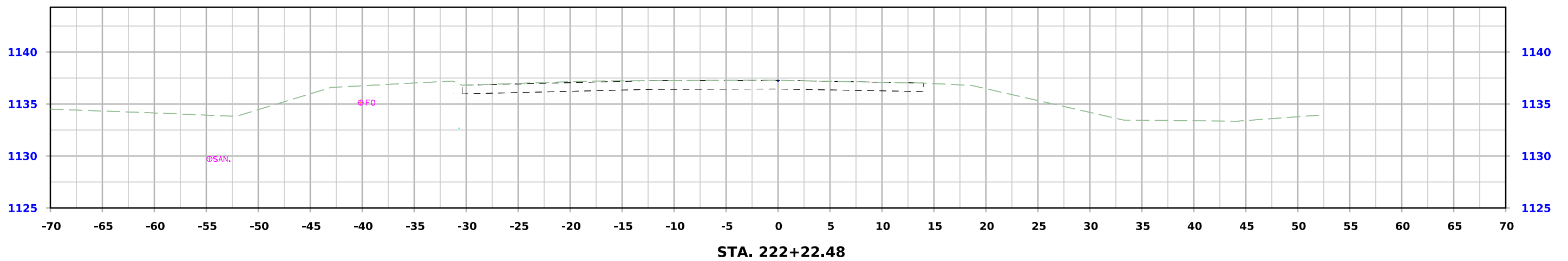
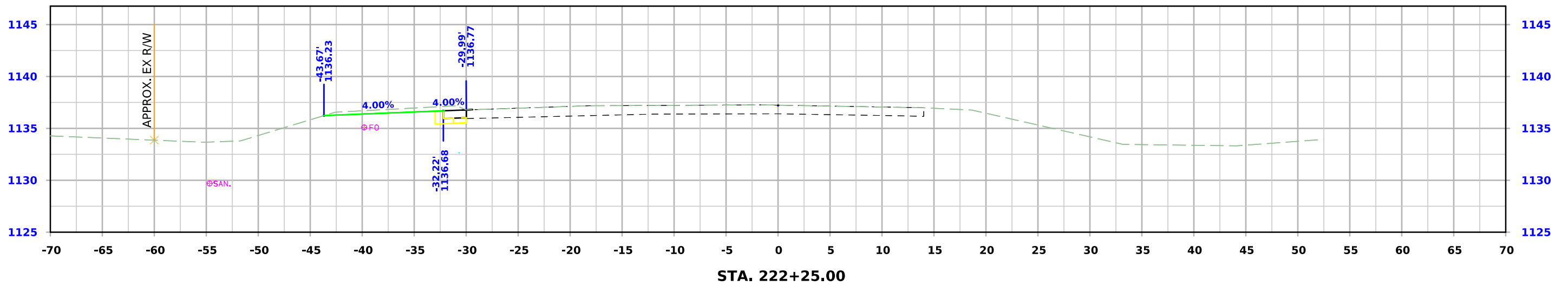
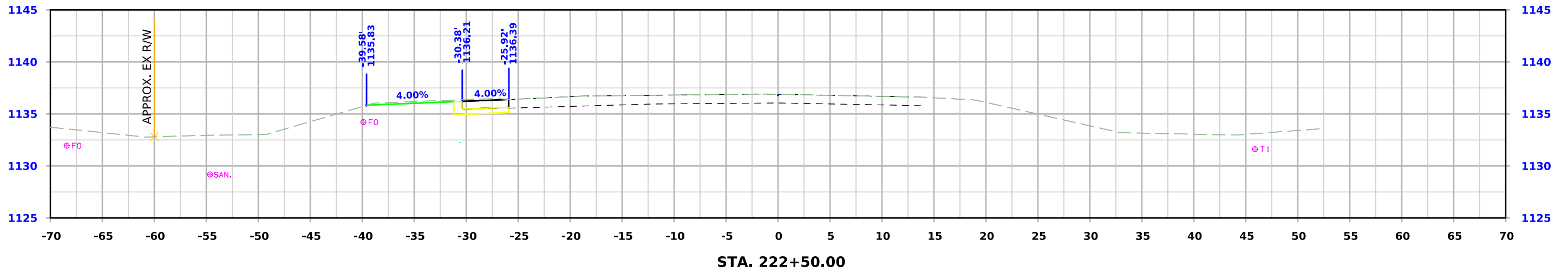
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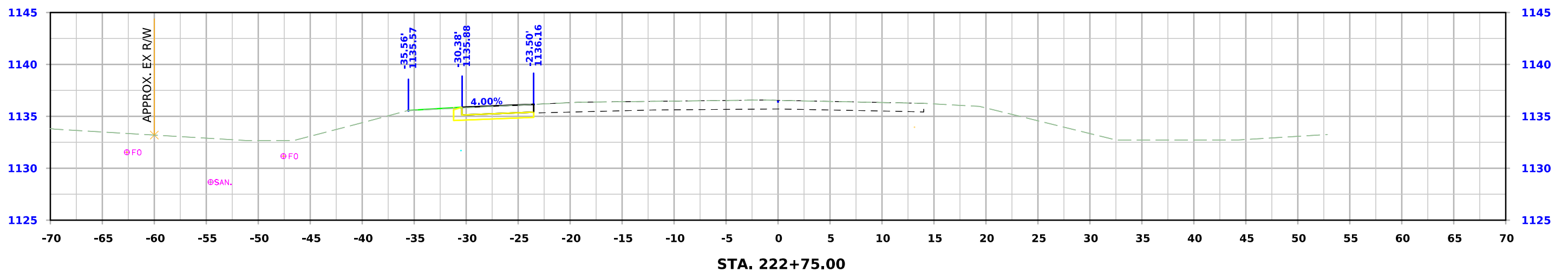
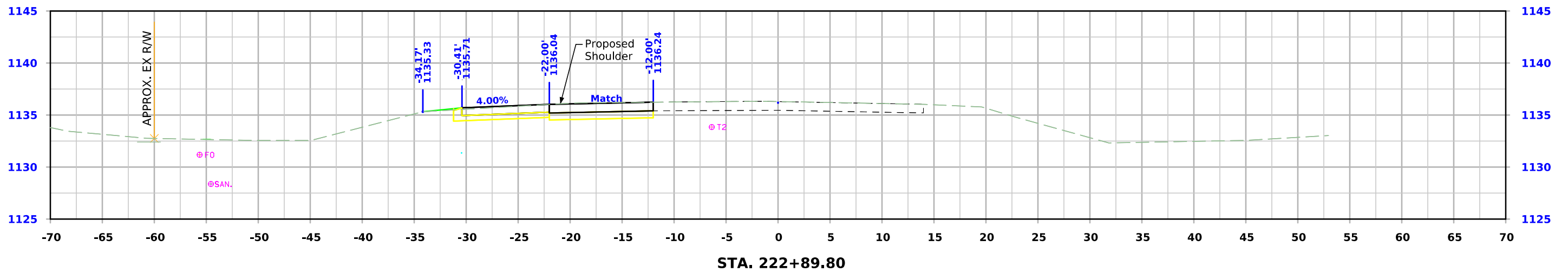
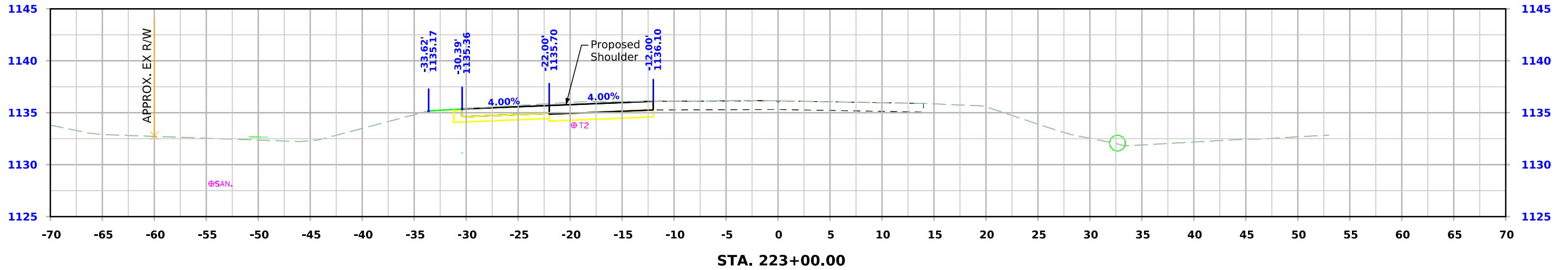
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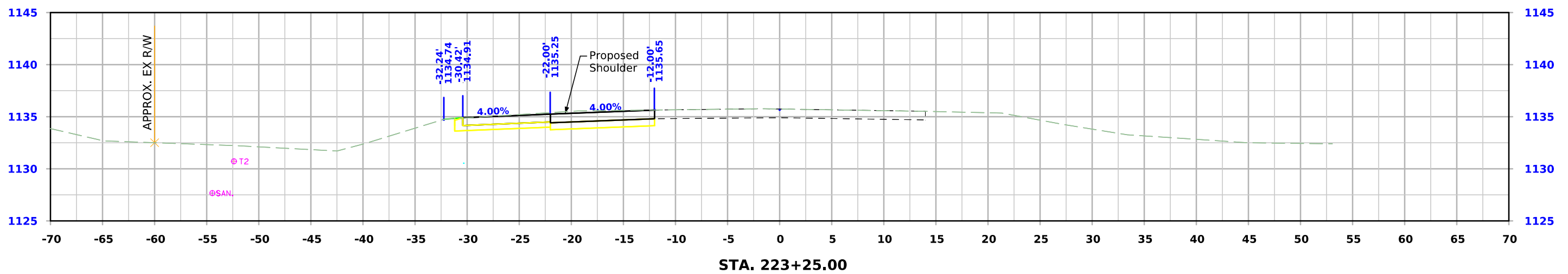
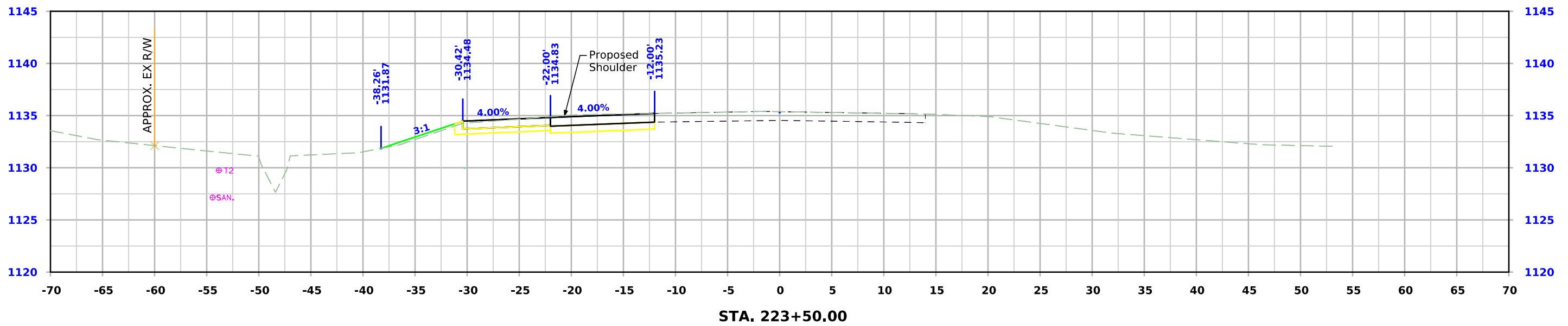
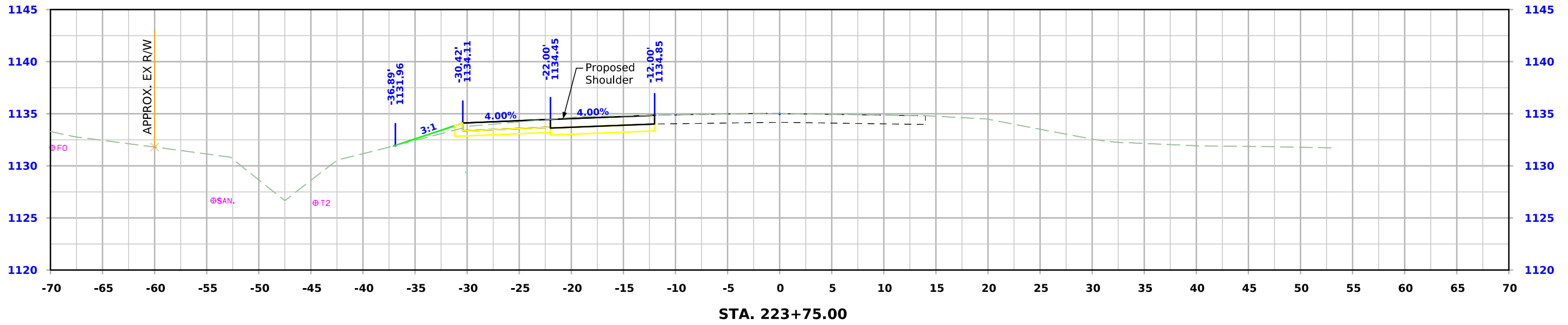
Preliminary Detour Pavement



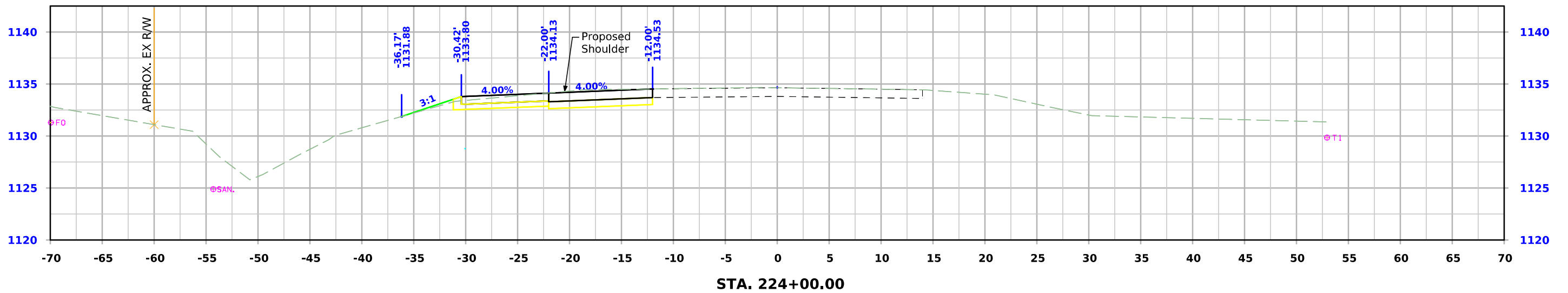
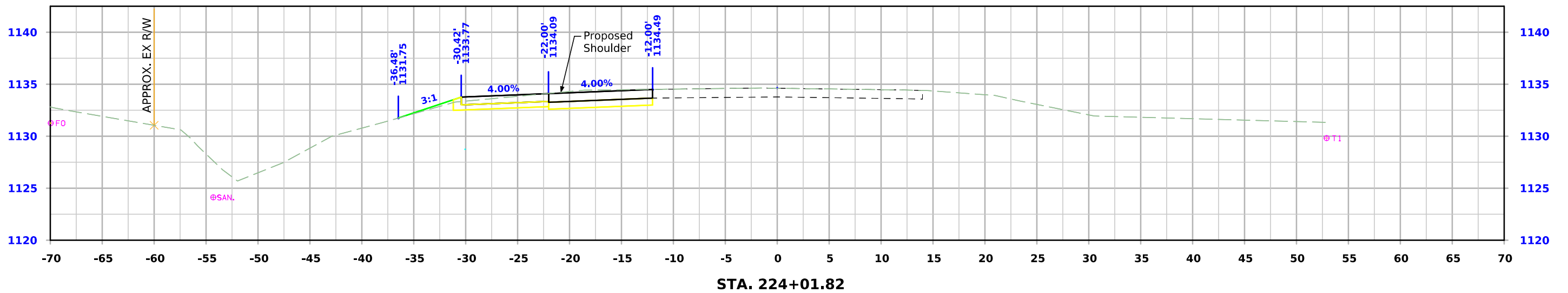
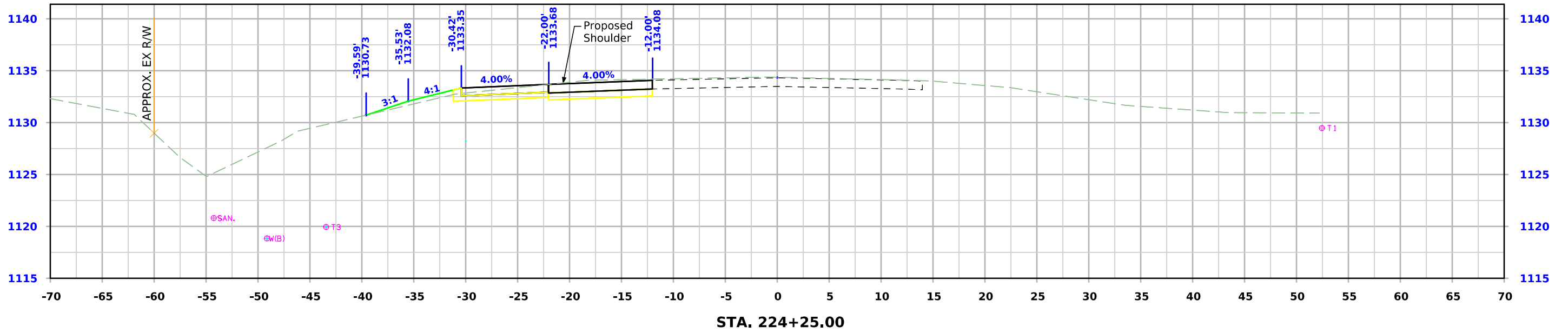
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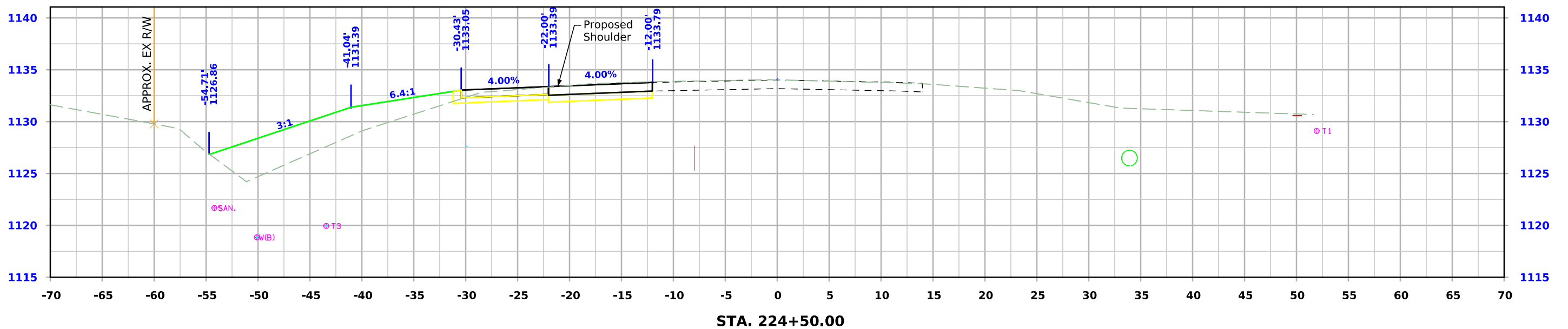
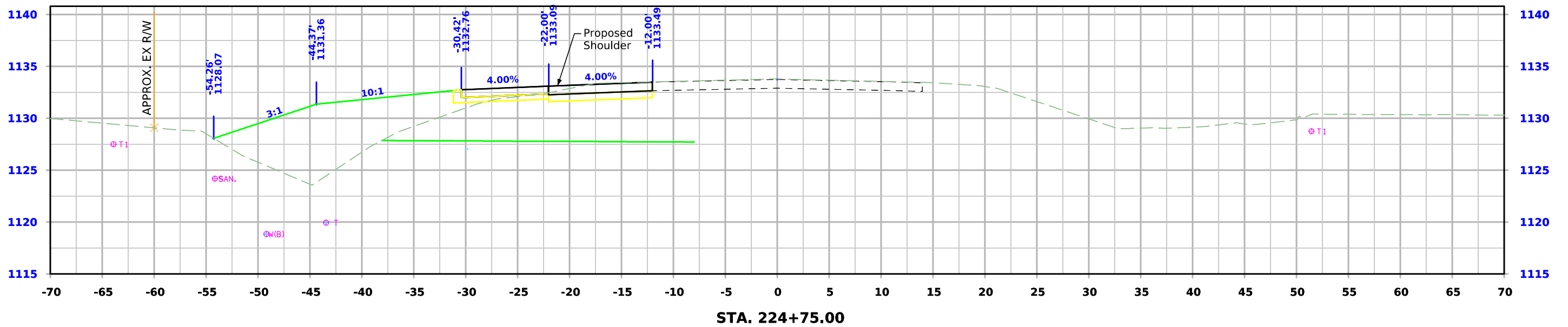
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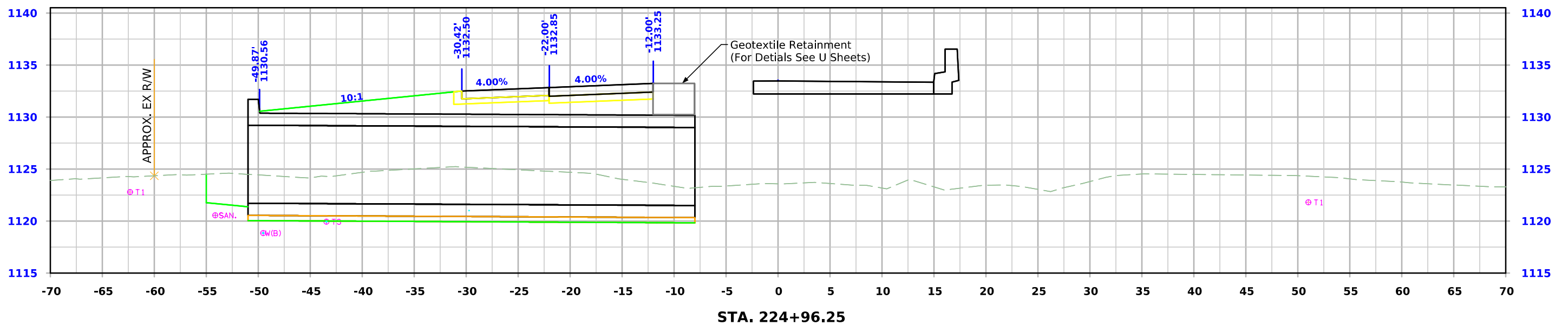
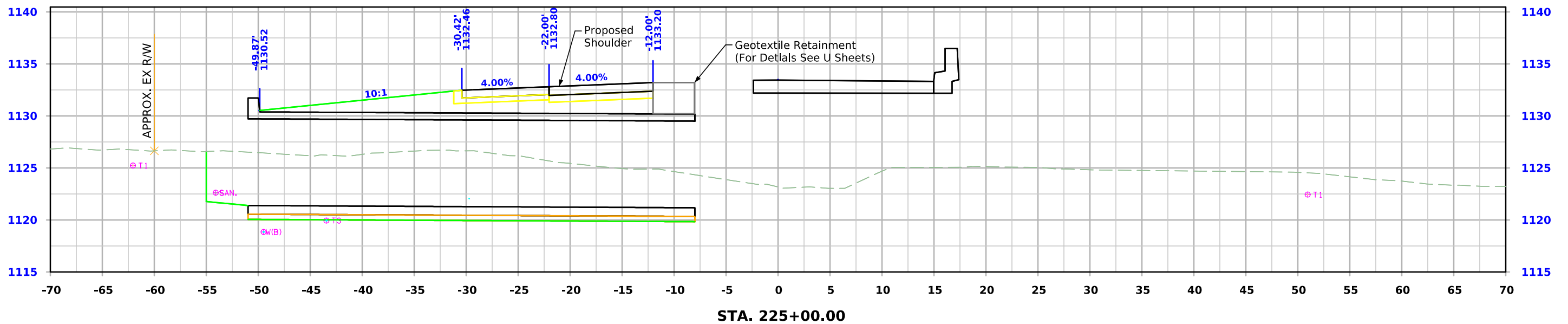
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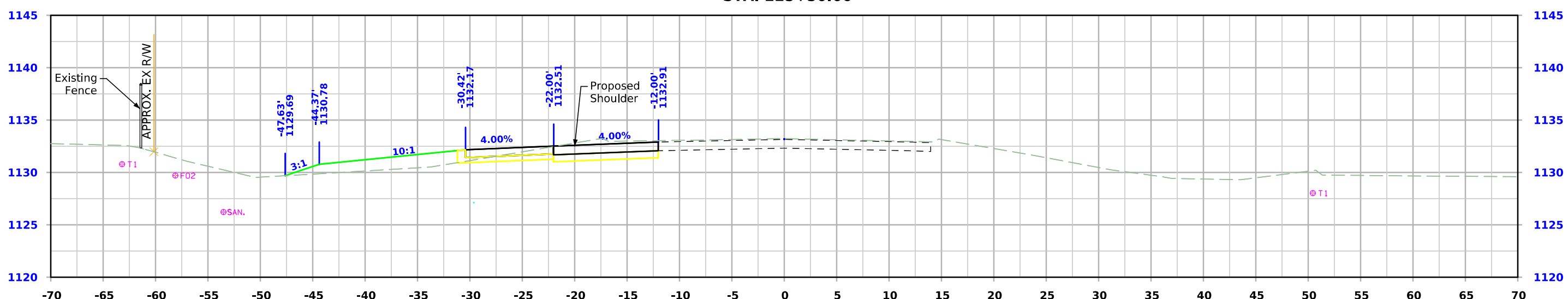
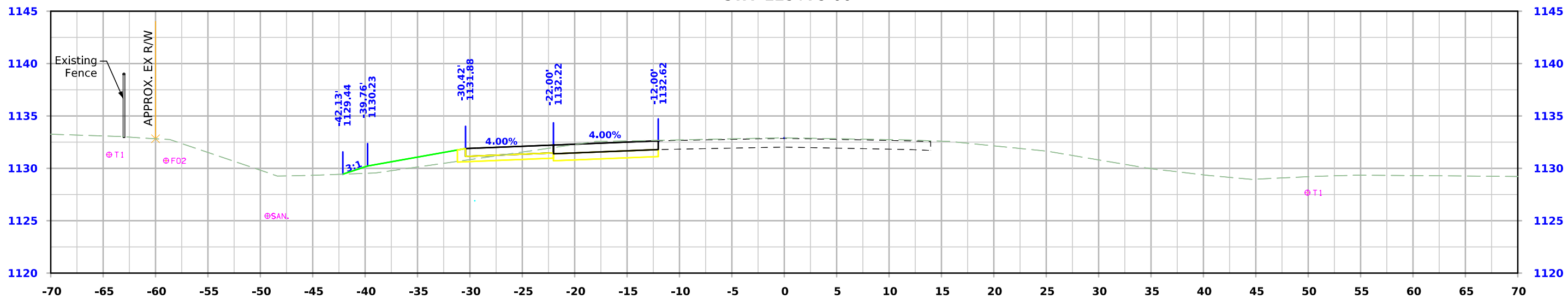
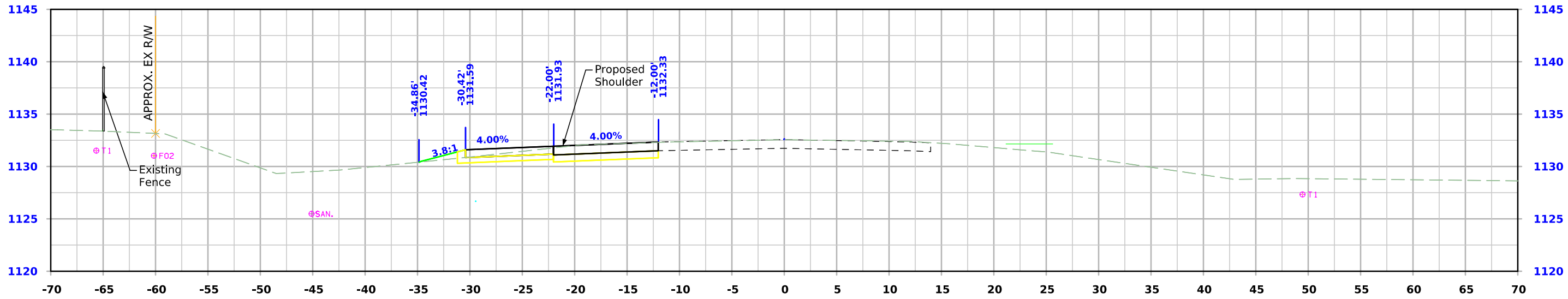
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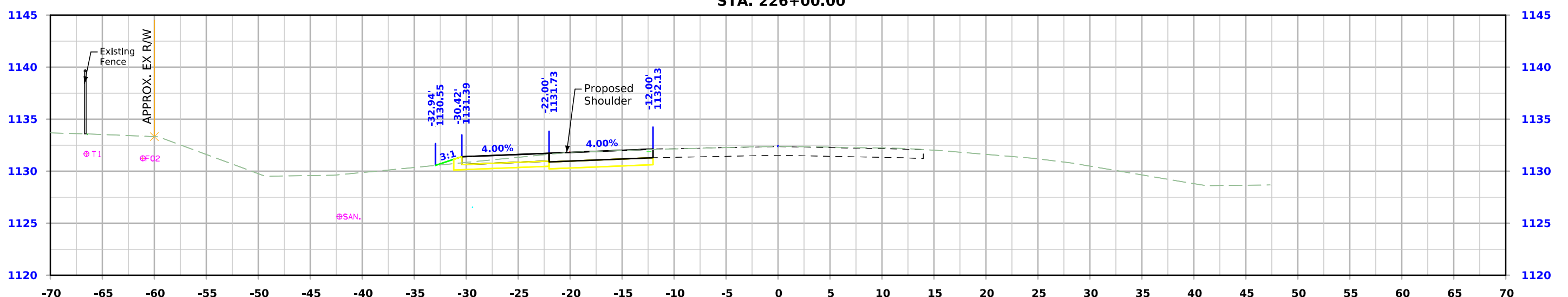
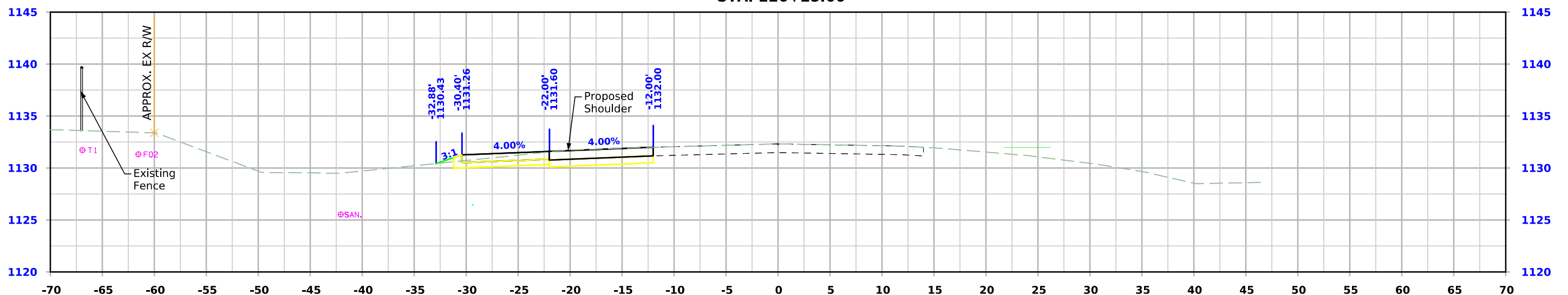
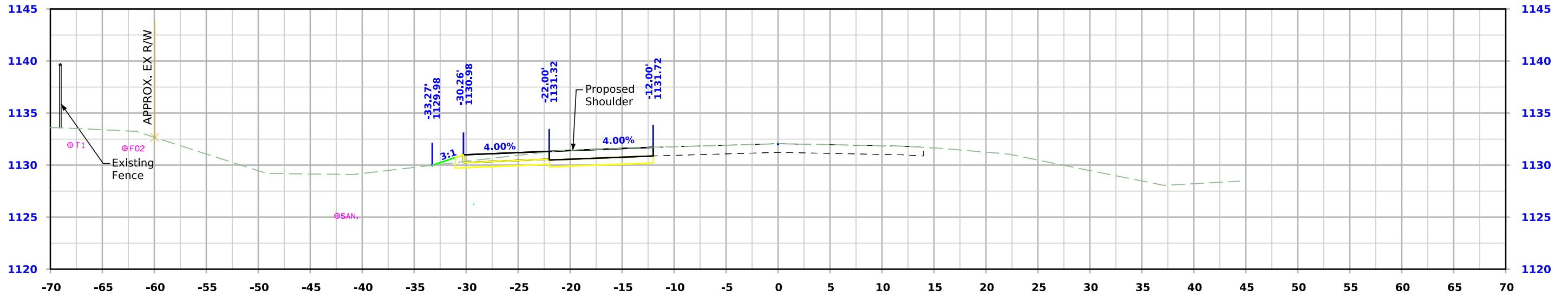
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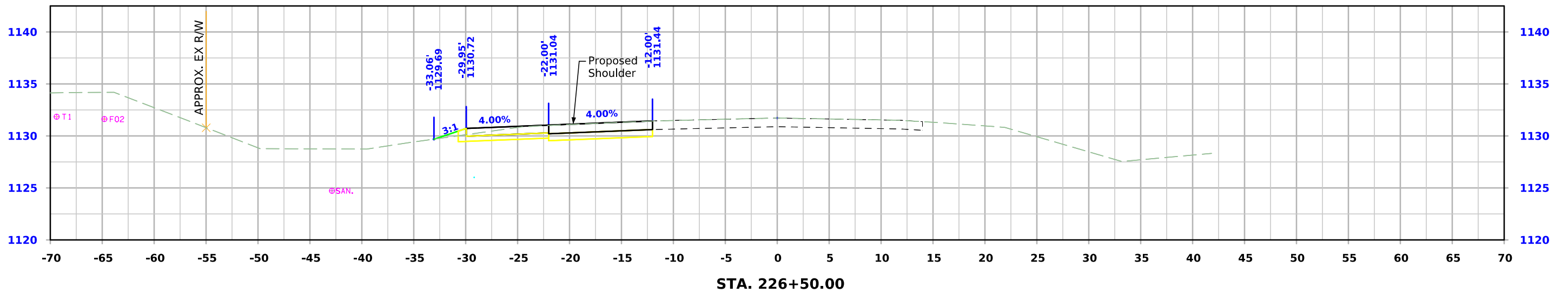
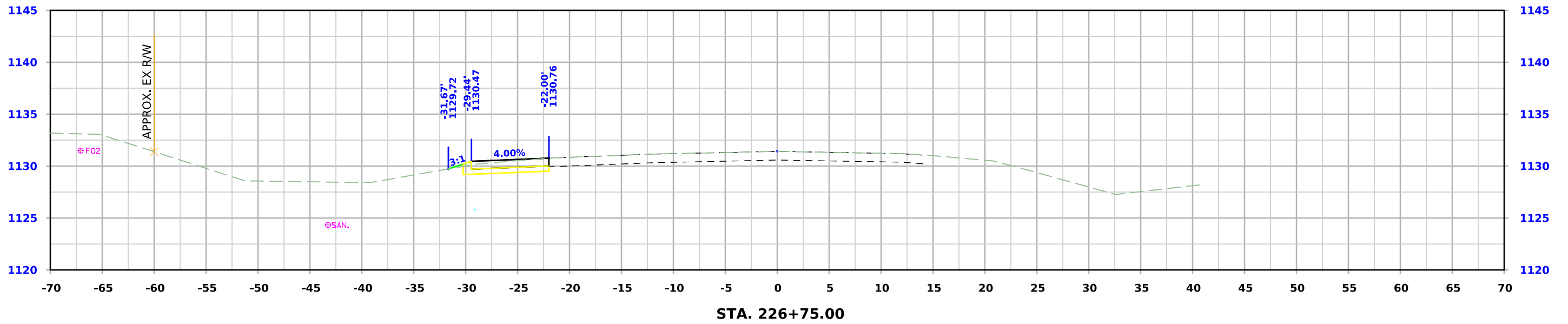
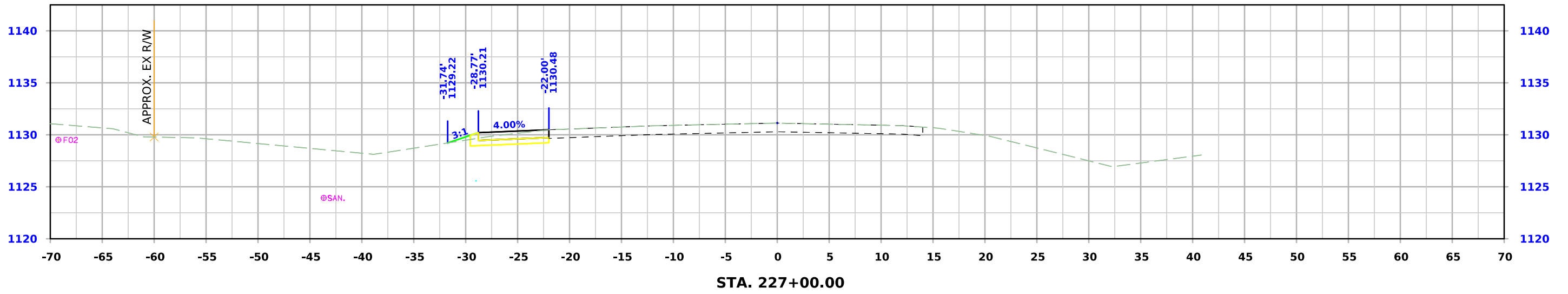
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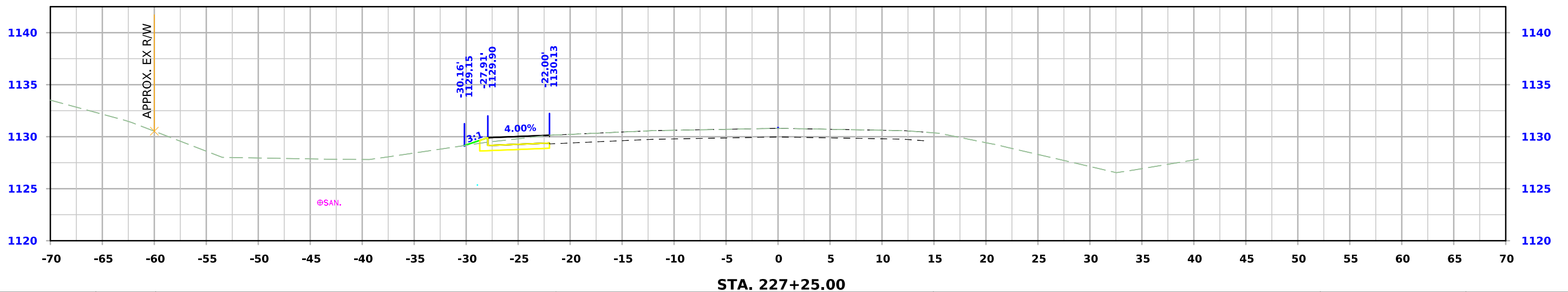
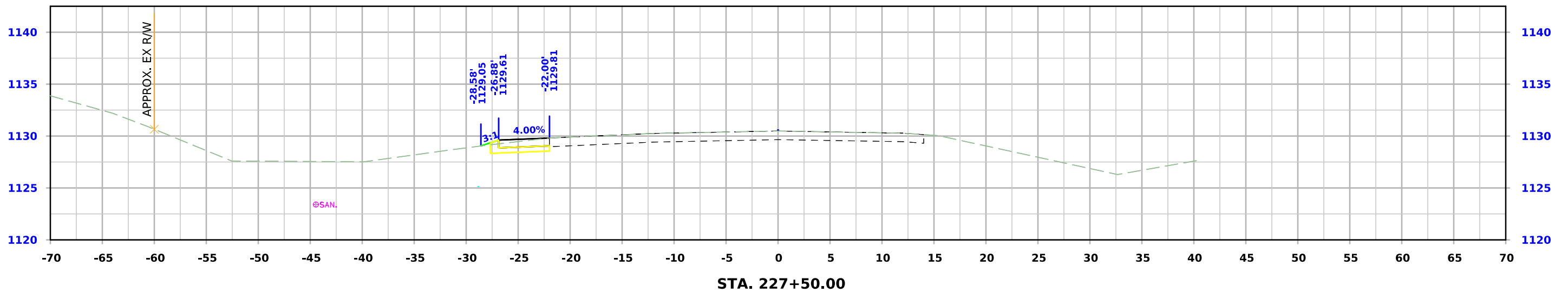
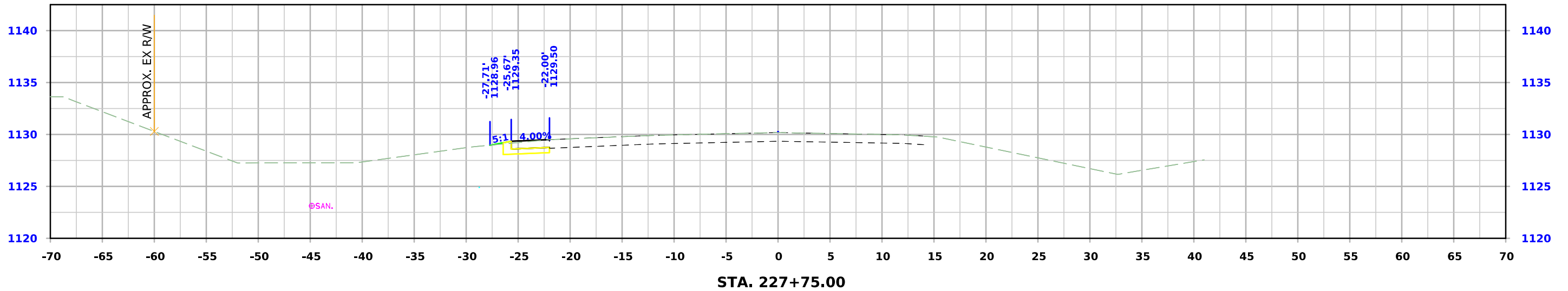
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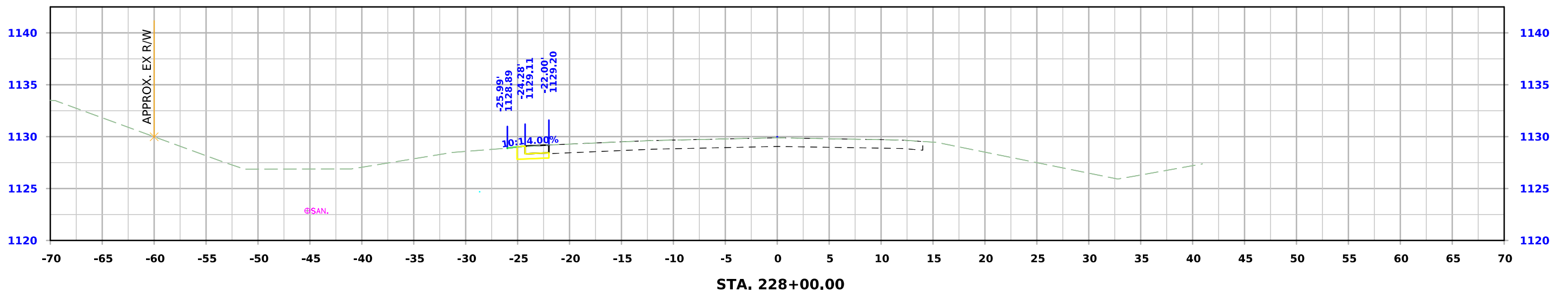
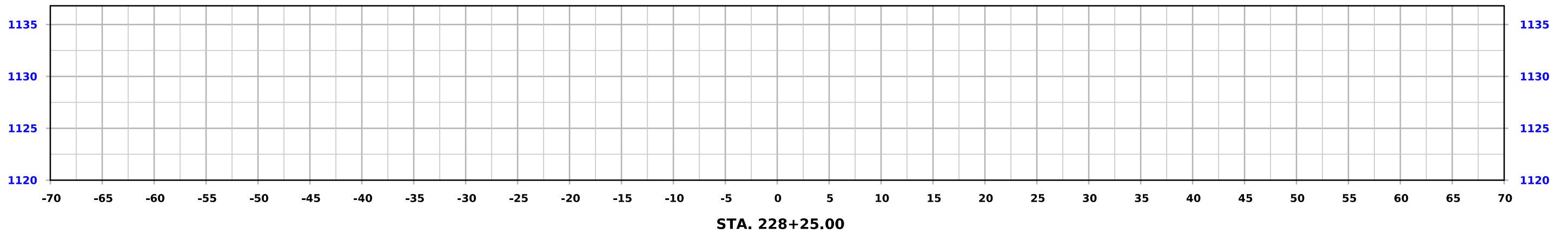
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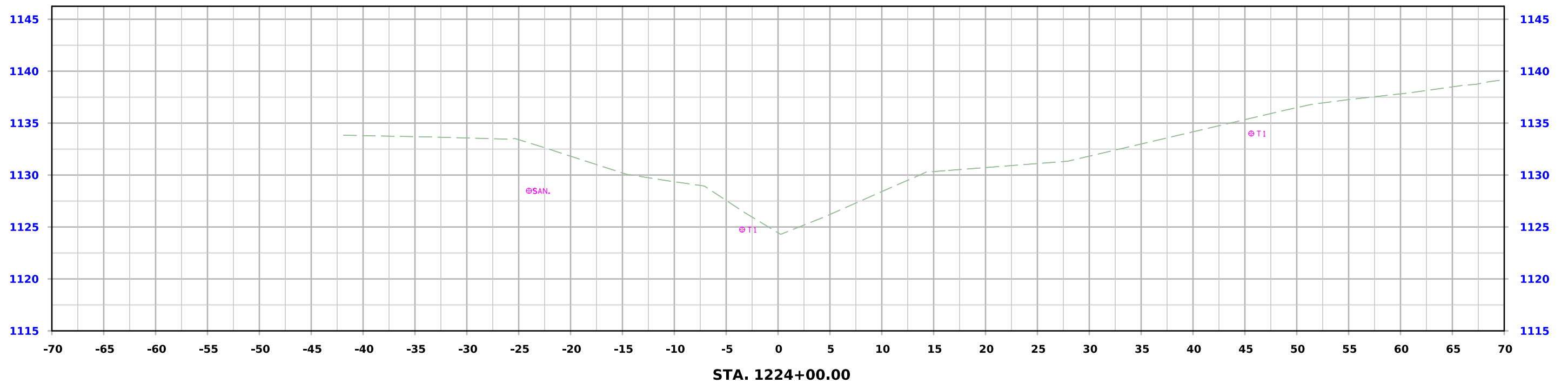
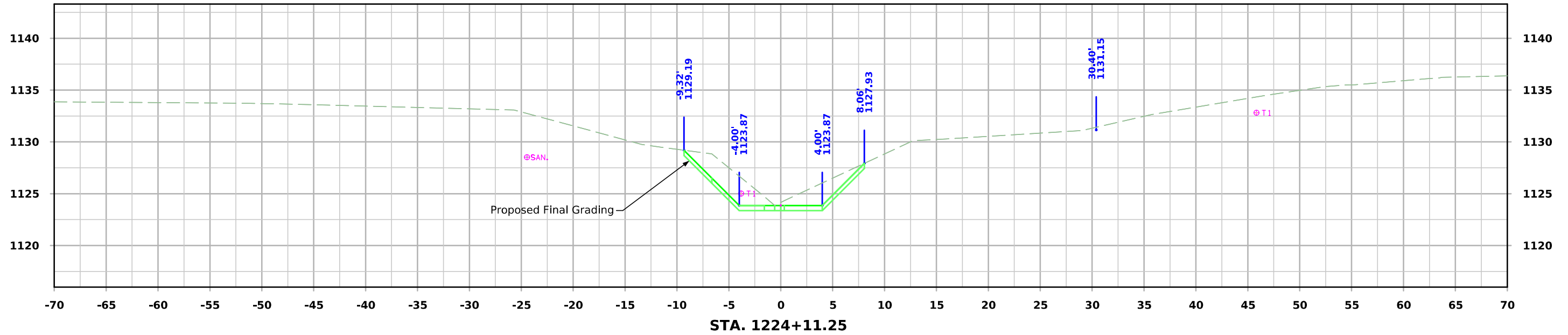
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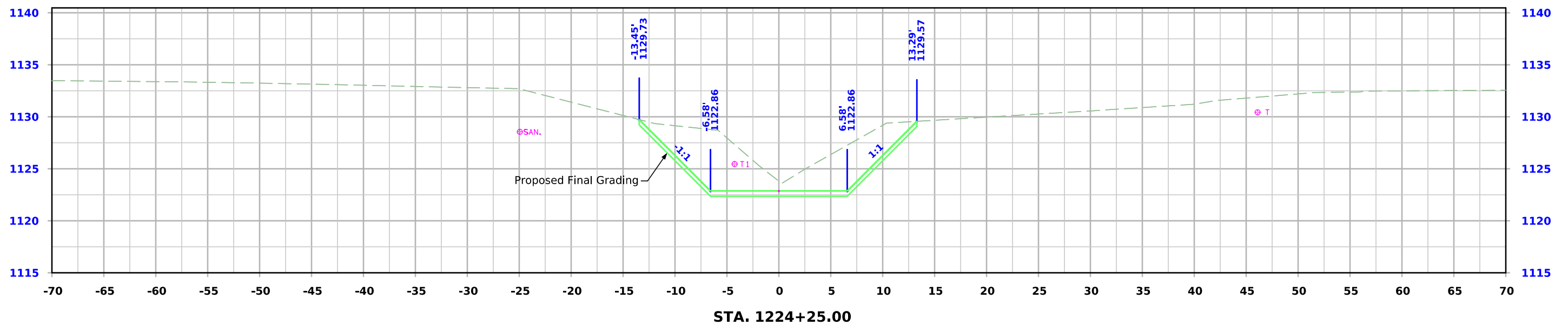
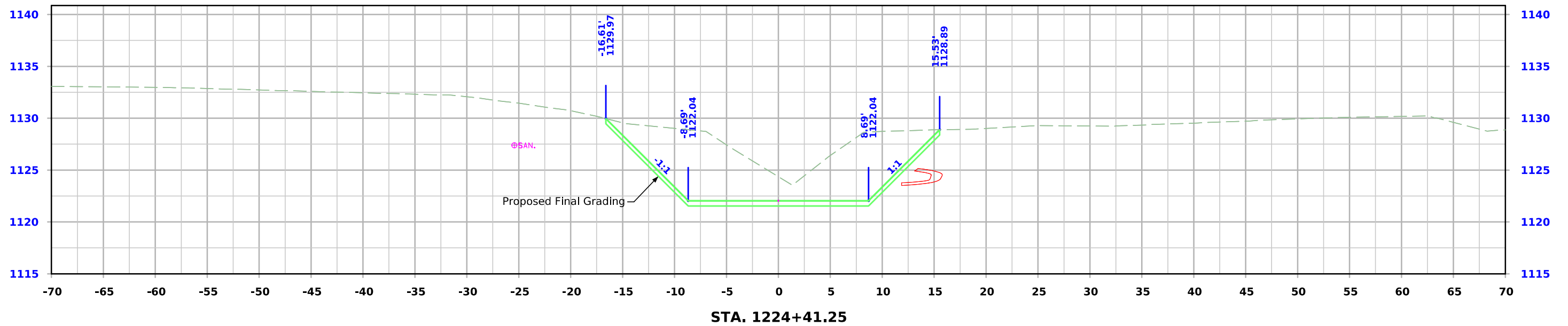
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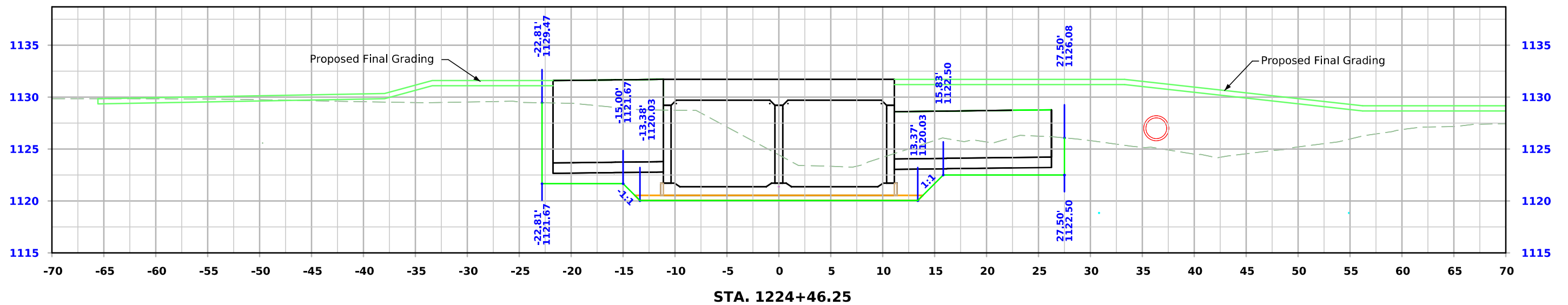
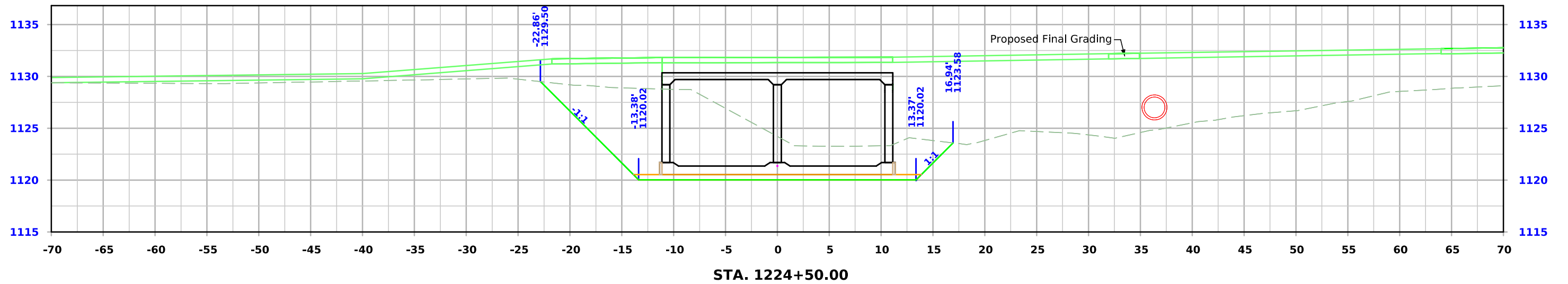
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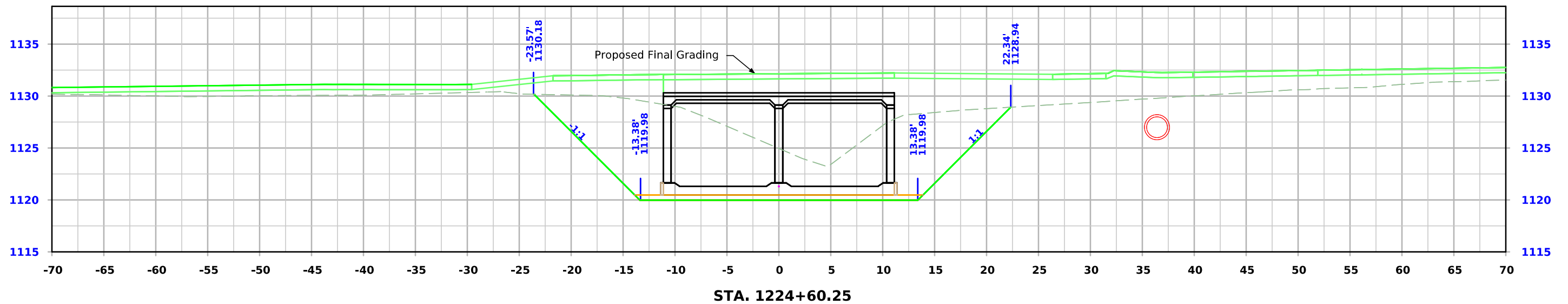
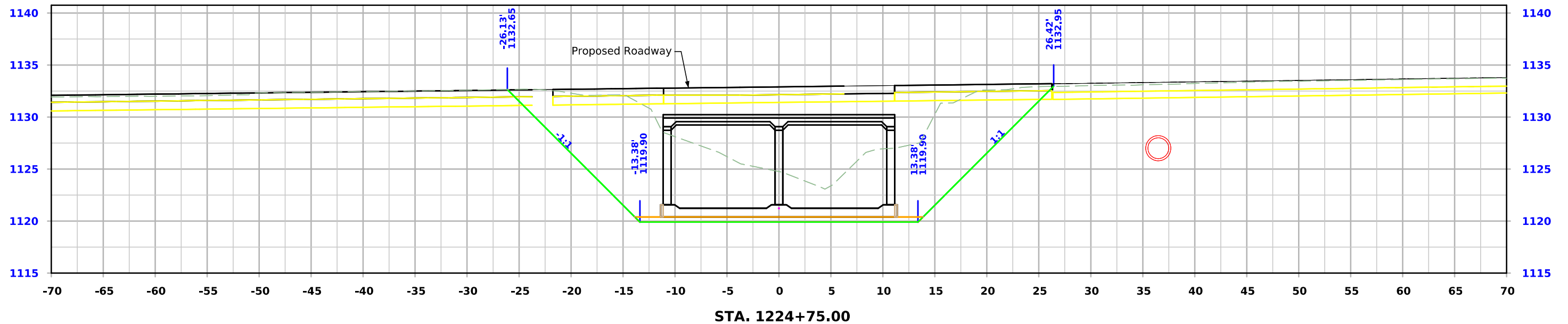
RCB Excavation Preliminary



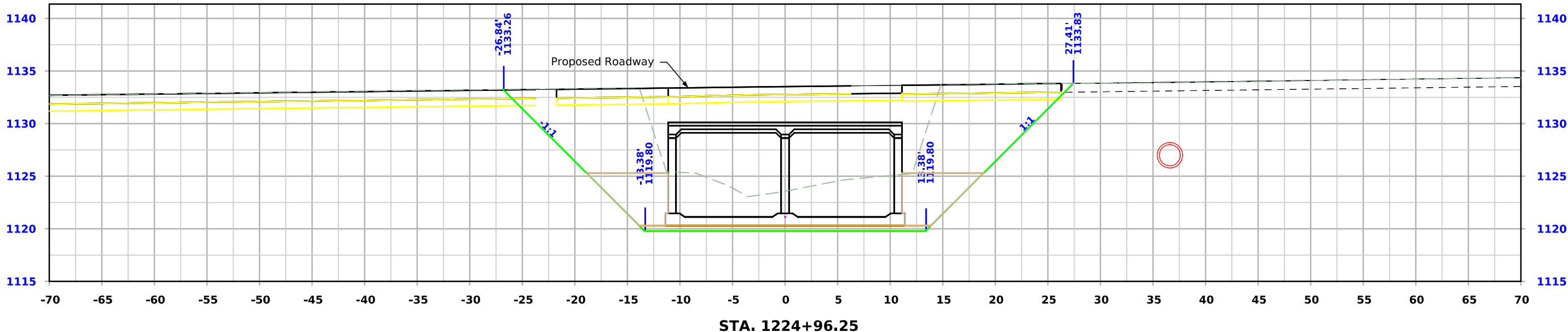
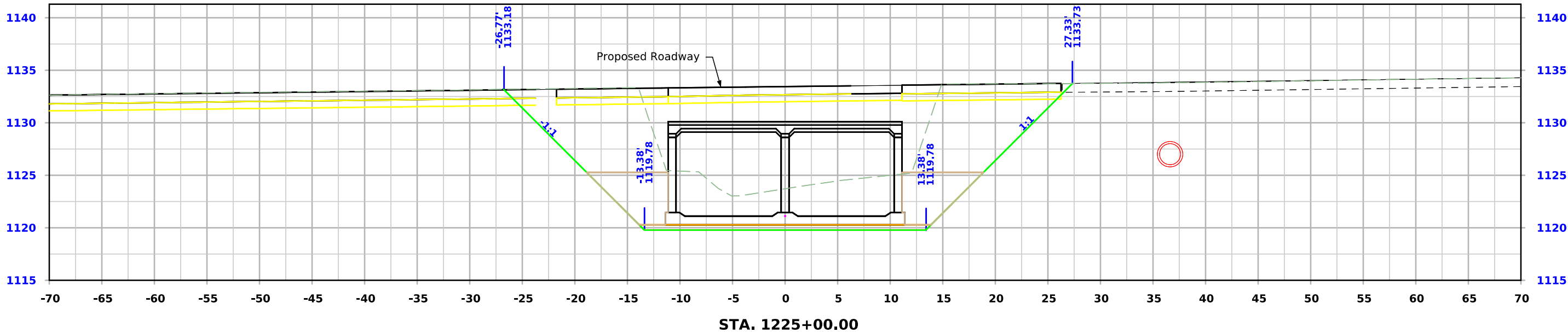
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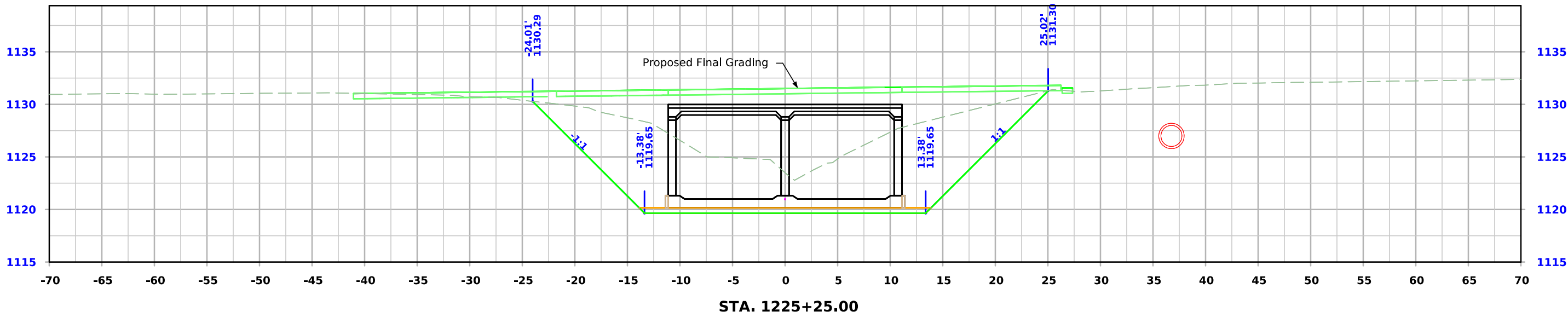
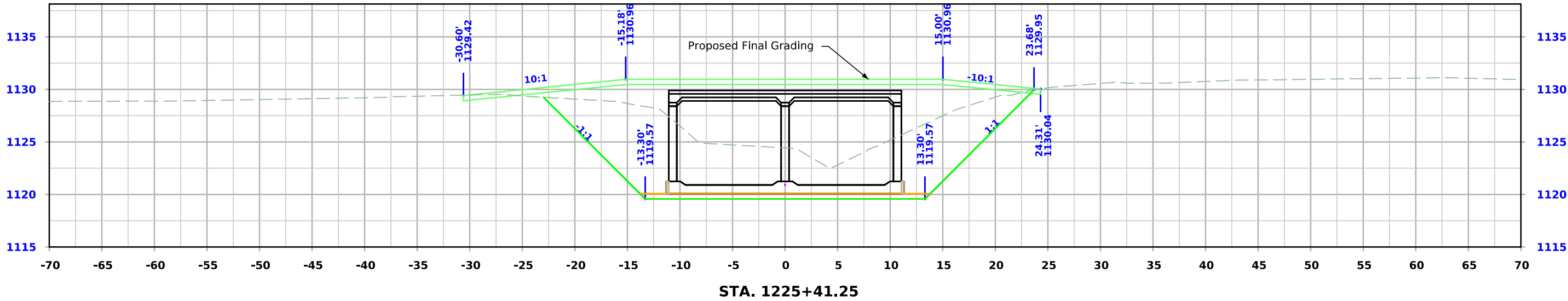
RCB Excavation Preliminary



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