BRIDGE REPLACEMENT - PPCB
BRF-030-9(186)--38-23

LETTING DATE 10/20/2026

CLINTON COUNTY

INDEX OF SHEETS

IOWA DOT

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
CLINTON COUNTY
BRIDGE REPLACEMENT - PPCB

Wapsipinicon River 1.5 mi E of Co Rd Y4E and
E Channel Wapsipinicon River 2.3 mi E of Co Rd Y4E and
Calamus Drainage Ditch 1.5 mi W of Co Rd Y44

SCALES: As Noted

Refer to the Proposal Form for list of

Value Engineering Saves. Refer to Article 1

REVISIONS

TOTAL 48

PROJECT IDENTIFICATION NUMBER
18-23-030-030
PROJECT NUMBER
BRF-030-9(186)--38-23
R.O.W. PROJECT NUMBER
NHSN-030-9(187)--2R-23

Field Exam review held virtually on 08/02/2022.

Attendees:
Jeremey Vortherms, Iowa DOT
Steven Schroder, Iowa DOT
Jim Ellis, Iowa DOT
Kevin Patel, Iowa DOT
David Coon, Iowa DOT
Brent Roling, Iowa DOT
Brock Struecker, Iowa DOT
Madeline Schmitt, Iowa DOT
Danielle Alvarez, Iowa DOT
Mark Harle, Iowa DOT
Jesse Tibodeau, Iowa DOT
Taylor Theulen, Stanley Consultants
Tony Bower, Stanley Consultants
Kelsey Bergman, Stanley Consultants
Mark Werner, Stanley Consultants

Reviewed overall scope and project schedule with attendees.

Reviewed plan sheets. Questions, comments and other notes from the meeting have been added to the appropriate sheets.

Schedule:

D02 (Field Exam) - 07/15/2022
B01 (BSB Layout) - 08/19/2022
D05 (Plans to ROW) - 09/16/2022
D04 (Final) - 06/23/2026
L05 (Letting) - 10/20/2026

DESIGN DATA RURAL

2024	AADT	3,100	V.P.D.
2044	AADT	3,800	V.P.D.
20 --	DHV	--	V.P.H.
TRUCKS		20	%
Total Design ESALs		3,200,000	

INDEX OF SEALS

SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS
A.1	X	Primary Signature Block	X
X	X	X	X

PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN – Date: 07/15/22

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(186)--38-23	SHEET NUMBER A.1

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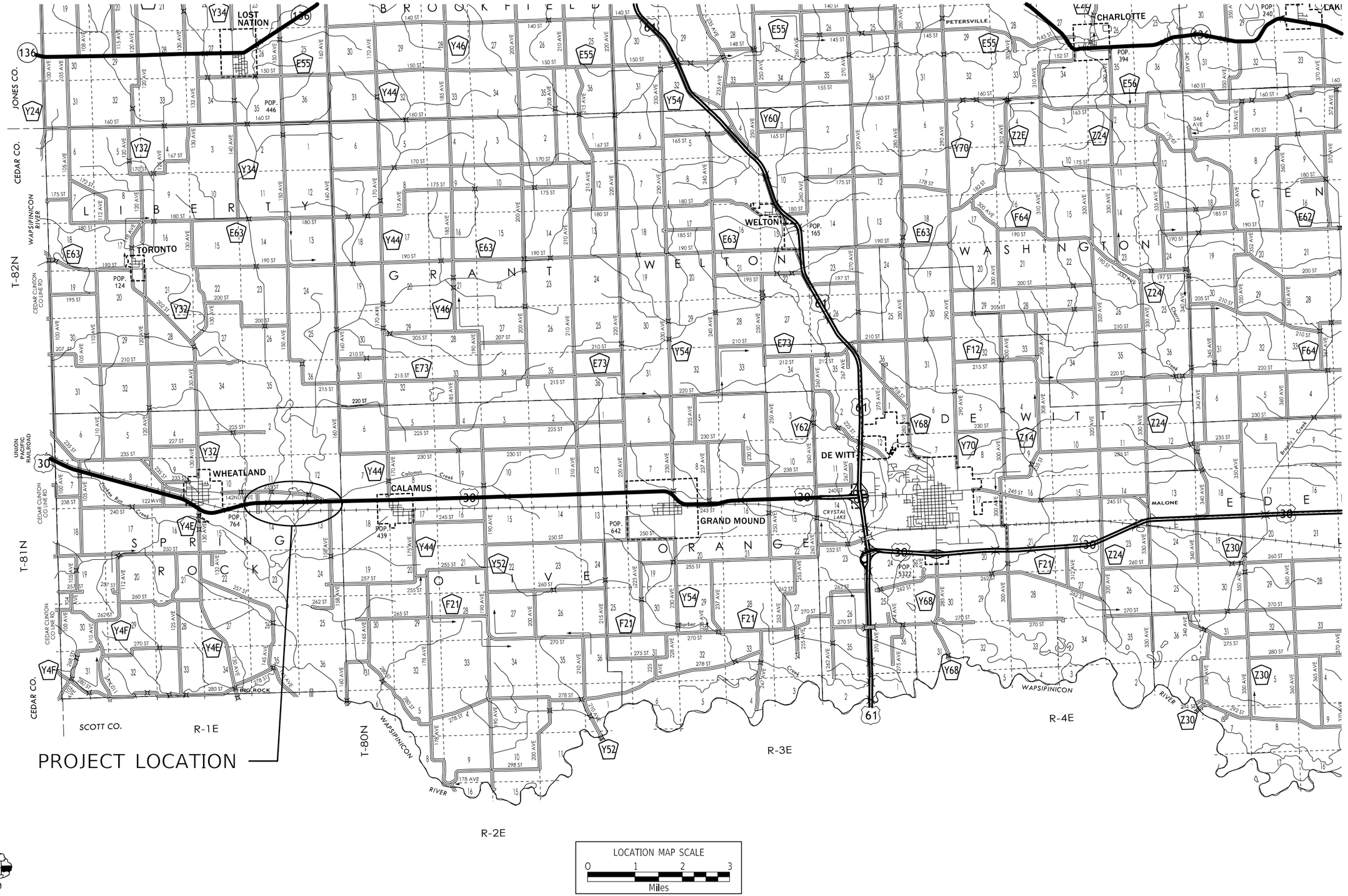

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(186)--38-23	SHEET NUMBER A.2

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Roadway	US 30				
PIN Number	18-23-030-030 / 21-23-030-040		**Submittal Date**	07/15/22	
Project Number	BRF-030-9(186)--38-23 / BRF-030-9(198)--38-23 / BRF-030-9(205)--38-23			**Approval Date**	
District	District 6	**Assistant District Engineer**	Jesse Tibodeau		
County	CLINTON		**or**		
Route	US 30	**Office Director**			
Location	Near Wheatland, on US 30 over Wapsipinicon River, East Channel Wapsipinicon River and Calamus Drainage Ditch				
Work Type	Bridge Replacements				
Segment Manager					
Designer	Stanley Consultants Inc.				

Design Manual Section 1C-1
Last Updated: 04-29-19

Rural Two-Lane Highways (Rural Arterials)

Design Element		Preferred	Acceptable	Project Values	
Design speed (mph)		60	50	60	GB Section 7.2.2
Maximum superelevation rate (Refer to Section 2A-2)		6%	8%	6%	GB page 7-6
Design lane width (ft)		12	12	12	GB table 7-3
Full depth paved width (ft)		12	12	12	--
Right turn lane (ft)		12	10	12	GB section 9.7.1
Climbing Lane (ft)		12	12	12	GB page 3-141
Left turn lane (ft)		12	10	12	GB section 9.7.1
Pavement cross-slope (on tangent sections)	Through lanes	2%	1.5% minimum, 2% maximum	2%	GB page 7-6
	Auxiliary and turn lanes	3%	3% maximum	3%	GB page 7-15
	Crown break at centerline	4%	4% maximum	4%	GB page 4-6
Shoulder cross-slope (on tangent sections)		4%	Shoulder cross-slope cannot be less than the adjacent lane, 6% max for paved or granular shoulders, 8% max for earth shoulders	4%	GB Section 4.4.3
Curb type (Refer to Section 3C-2)	Design speed = 50 or 55 mph	6-inch sloped	6-inch standard	6-inch sloped	
	Design speed ≥ 60 mph	4-inch sloped	6-inch sloped	4-inch sloped	
Foreslope (For fill areas greater than 40 ft, contact the Soils Design Section for assistance)	Adjacent to shoulder	10:1 for 4' then 6:1	3:1	10:1 for 4' then 6:1	RDG section 3.3.2
	Beyond standard ditch depth and design clear zone	3.5:1	3:1	3.5:1	
	Curbed roadways	2%	not steeper than 3:1	2%	
Backslope (For cut areas greater than 25 feet, contact the Soils Design Section for assistance with backslope benches.)		3:1	2.5:1	3:1	GB Section 4.8.4
Transverse Slopes	w/ drainage structures	8:1	6:1	8:1	RDG Section 3.2.3
	w/o drainage structures	10:1	6:1	10:1	
Ditches (Refer to Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	--	5 x 10	--
Bridge width—new*	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths	design lane widths + effective shoulder widths	44'	GB Section 7.2.5
	Bridge length > 200 ft	design lane widths + effective shoulder widths	design lane width + 4' right and left of the design lane widths	44'	
Bridge width—existing*		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft. offset left and right	28'	
Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)	Over primary	16.5	16	N/A	GB Section 7.2.5
	Over non-primary	16.5 at interchange locations, 15 at all other locations	14	N/A	GB pages 5-9 and 6-8
	Over railroad	23.3	23.3	N/A	--
	Sign trusses and pedestrian bridges	17.5	17	N/A	GB section 7.2.5
Structural Capacity		Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	--	--
Level of Service		B	B	B	GB section 7.2.2

*FHWA notification via email is required if acceptable critera is not met on the NHS system (No formal design exeption is required)

Design year ADT =	3800	

Design Manual Section 1C-1
Last Updated: 04-29-19

Effective Shoulder Width and Type for Two-Lane Highways

Preferred (values shown in feet)			Acceptable (values shown in feet)			Project Values	
	Rural Roadways	Urban Roadways		Rural Roadways	Urban Roadways		
Turn lanes with shoulders	6	6	Turn lanes with shoulders	6	0	6	GB section 9.7.1
Turn lanes with curbs	6	See Section 3C-2	Turn lanes with curbs	6	0	6	GB section 9.7.1 and 4.7.3
	Effective Shoulder Width	Paved Width		Effective Shoulder Width	Paved Width		
Climbing Lanes	6	4	Climbing Lanes	4	0	6	GB page 3-141
Two-Lane Highways	Effective Shoulder Width	Paved Width	Two-Lane Highways	Effective Shoulder Width	Paved Width		
Routes where bicycles are to be accommodated	10	10	Design year ADT > 2000 vpd	8	0*	10	GB table 7-3
On roadways approaching urban areas (due to increased bike traffic)	10	10					
On all curves with a superelevation rate of 7.0% or greater	10	10					
On roadways with design year ADT > 5000	10	6	Design year ADT between 400 - 2000 vpd	6	0*		
On all other NHS	10	6					
On non-NHS routes with design year ADT > 3000	10	6	Design year ADT < 400 vpd	4	0*		
On non-NHS routes with design year ADT < 3000	8	0*					
*Requires safety edge-Refer to Section 3C-6							
Curbs should be located beyond the outer edge of the effective shoulder width in rural areas							
Refer to Section 3C-2 for curb offsets in urban areas							

Notes:

Roadway Design Speed (mph) =	60

Design Manual Section 1C-1
Last Updated: 04-29-19

Design Criteria for High Speed Roadways

Design Element			Preferred Criteria, Design Speed, mph						Acceptable Criteria, Design Speed, mph						Project Values	
			50	55	60	65	70	75	50	55	60	65	70	75		
Stopping sight distance (ft) (Refer to Section 6D-1)			425	495	570	645	730	820	425	495	570	645	730	820	570	GB Table 3-1
Minimum horizontal curve radius (ft) (Refer to Sections 2A-2 and 2A-3)	Method 5 superelevation and side friction distribution	e_{max} = 6%	833	1060	1330	1660	2040	2500	833	1060	1330	1660	2040	2500	1330	GB Table 3-7
		e_{max} = 8%	--	--	--	--	--	--	758	960	1200	1480	1810	2210	--	GB Table 3-7
Minimum vertical curve length (ft) (Refer to Section 2B-1)			150	165	180	195	210	225	150	165	180	195	210	225	180	GB page 3-167
Minimum rate of vertical curvature (K) (Refer to Section 2B-1)	crest vertical curves		84	114	151	193	247	312	84	114	151	193	247	312	151	GB Table 3-35
	sag vertical curves	roadways without fixed-source lighting	96	115	136	157	181	206	96	115	136	157	181	206	136	GB Table 3-37
		roadways with fixed-source lighting	96	115	136	157	181	206	54	66	78	91	106	121	136	GB page 3-176
Minimum gradient (%)	(Refer to Section 2B-1)		0.5						0.3% with a curb, 0.0% without a curb						0.5%	GB page 3-130
Maximum gradient (%)	(Refer to Section 2B-1)	Urban roadways	4		3				7	6	6	–	–	–	4%	GB Table 7-4a
		Rural roadways							5	5	4	4	4	4	4%	GB Table 7-2
		Interstates							5	5	4	4	4	4	4%	IDG page 3
Clear zone			See "Preferred Clear Zone" table in Section 8A-2						See "Acceptable Clear Zone" table in Section 8A-2						40	

290+00
295+00
300+00
305+00
310+00
315+00
320+00
325+00
330+00
335+00
340+00
345+00
350+00
355+00
360+00
365+00

F02

0 250
FEET

FILE NO.	ENGLISH	DESIGN TEAM		COUNTY	PROJECT NUMBER	SHEET NUMBER	

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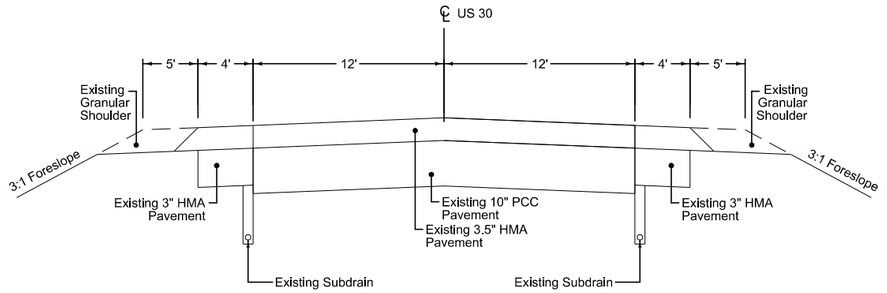
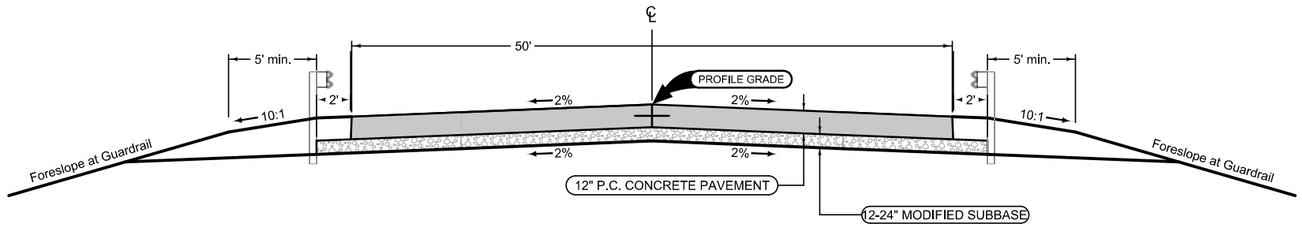


US 30 - EXISTING



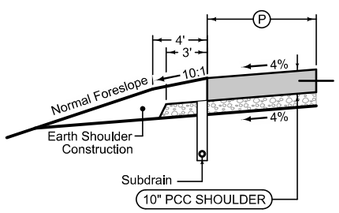
STATION TO STATION	
295+02.00	295+72.00
300+58.00	301+28.00
337+79.00	338+49.00
341+21.00	341+91.00
352+45.19	353+15.19
355+69.33	356+39.33

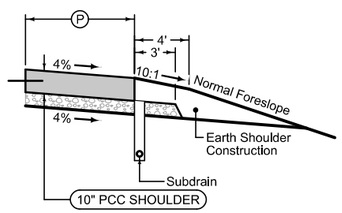
US 30 - BRIDGE APPROACHES

Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: BT-2, L-2 or KT-2
Transverse joints: C at 17' spacing

2_P_FullPCC_ 04-20-21		
STATION TO STATION		Ⓟ Feet
294+53.10	295+02.00	13.5-11.5
301+28.00	302+47.39	11.5-13.5
337+09.60	337+79.00	13.5-11.5
341+91.00	343+10.39	11.5-13.5
351+91.37	352+45.19	13.5-11.5
356+39.33	357+62.19	11.5-13.5





Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: BT-2, L-2 or KT-2
Transverse joints: C at 17' spacing

2_P_FullPCC_ 04-20-21		
STATION TO STATION		Ⓟ Feet
293+82.60	295+02.00	13.5-11.5
301+28.00	301+97.39	11.5-13.5
336+59.60	337+79.00	13.5-11.5
341+91.00	342+60.39	11.5-13.5
351+22.39	352+45.19	13.5-11.5
356+39.33	356+93.21	11.5-13.5

US 30 - SHOULDERS

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(186)--38-23	SHEET NUMBER B.1

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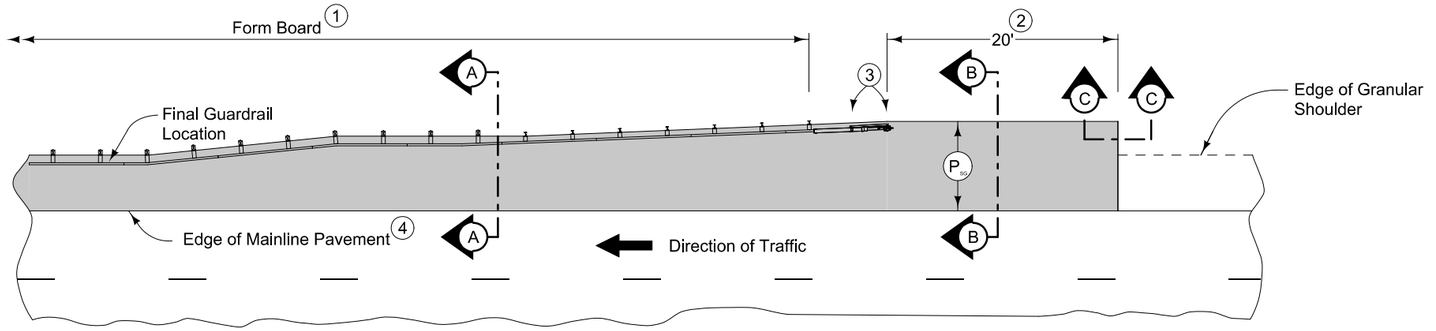
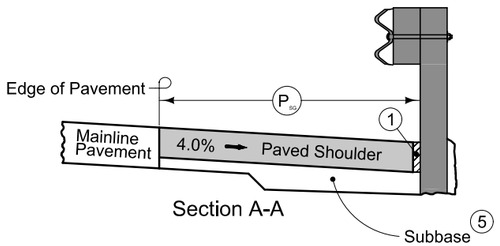
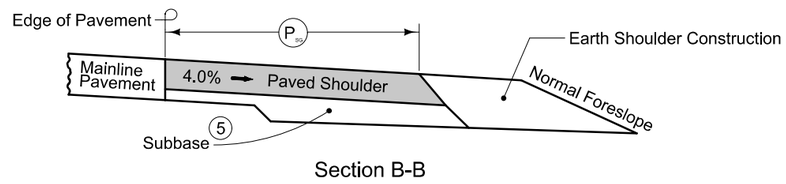


PLAN VIEW

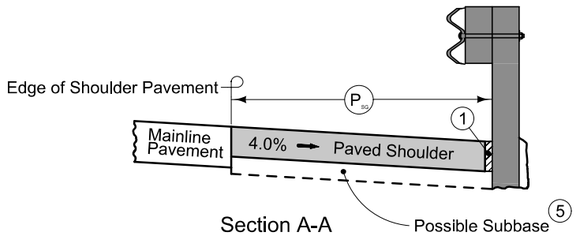


Section A-A

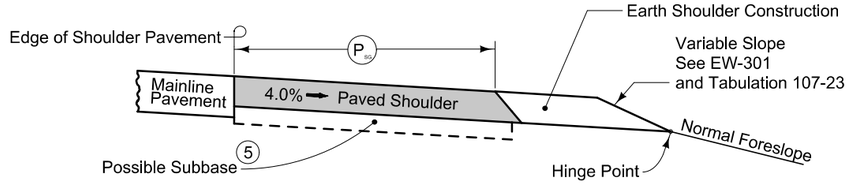


Section B-B

NEW CONSTRUCTION



Section A-A



Section B-B

EXISTING SHOULDER

9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

Match mainline pavement joint spacing. When mainline pavement is 8" or greater in thickness, place additional transverse 'C' joints in shoulder at mid-panel of the mainline pavement. Place longitudinal 'C' joint at P/2 from edge of mainline pavement when P is greater than 10' wide. Terminate longitudinal joint at transverse joint less than 10' in length.

Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

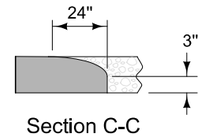
(1) PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.

(2) Continue paved shoulder 20 feet beyond the center of the first post.

(3) Shoulder may be notched for first 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.

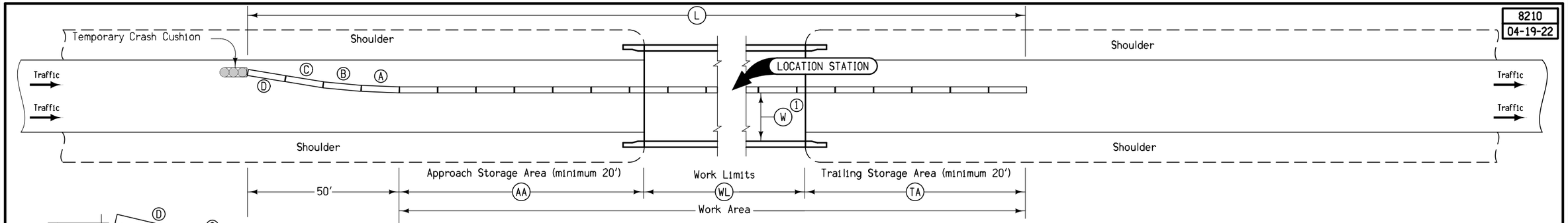
(4) 'KT' joint (per PV-101) for PCC shoulder.
'B' joint (per PV-101) for HMA shoulder.

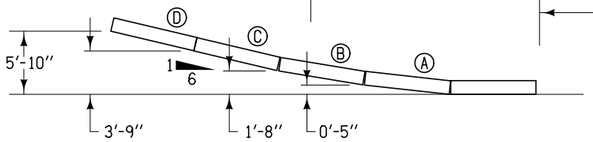
(5) Refer to other details in the plan.



Section C-C
Roll down at granular shoulder or earth.

PAVED SHOULDER AT GUARDRAIL
(GRANULAR SHOULDER ADJACENT TO MAINLINE)





BARRIER OFFSETS FOR FLARE SECTIONS

Station	Side	AA	WL	TA	L	Anchored	W (1)	Remarks
		Feet	Feet	Feet	Feet	X	Ft-Inches	

(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

100-1D
10-18-05

PROJECT DESCRIPTION

This project involves the replacement of the bridges on US 30 over Wapsipinicon River (Maint. No. 2398.5S030), East Channel Wapsipinicon River (Maint. No. 2399.3S030), and Calamus Drainage Ditch (Maint. No. 2399.5S030).

100-1A
07-15-97

ESTIMATED PROJECT QUANTITIES
(1 DIVISION PROJECT)

Item No.	Item Code	Item	Unit	Total	As Built Qty.

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description

105-4
10-18-11

STANDARD ROAD PLANS

The following Standard Road Plans apply to construction work on this project.

Number	Date	Title
BA-200	04-20-21	Steel Beam Guardrail Components
BA-201	04-19-22	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)
BA-202	10-20-15	Steel Beam Guardrail Bolted End Anchor
BA-205	10-19-21	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-401	04-20-21	Temporary Barrier Rail (Precast Concrete)
BA-500	04-20-21	Temporary Crash Cushions Sand Barrel
BR-203	10-19-21	Double Reinforced 12" Approach
DR-306	10-16-18	Precast Concrete Headwall for Subdrain Outlets
EC-201	04-20-21	Silt Fence
EC-204	10-19-21	Perimeter, Slope and Ditch Check Sediment Control Devices
EW-202	04-19-16	Bridge Berm Grading without Recoverable Slope (Non-Barnroof Section)
EW-301	04-20-21	Guardrail Grading
PM-110	04-21-20	Line Types
PV-3	04-16-19	Safety Edge
PV-12	10-20-20	Milled Shoulder Rumble Strips
PV-13	10-17-17	Milled Centerline Rumble Strips
PV-101	04-19-22	Joints
PV-102	04-21-20	PCC Curb Details
SI-172	04-19-16	Delineators
SI-173	04-19-16	Object Markers
SI-211	10-18-16	Object Marker and Delineator Placement with Guardrail
TC-1	10-15-19	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-217	10-18-16	Lane Closure with Signals and TBR

SURVEY SYMBOLS

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

PR, Electic 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, Trafic Detection Loop
TER, Terrace
TEV, Evergeen 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, Satelite 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

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

EL1D, Eastern Iowa Light & Power
FO1D, F&B Communications
FO2D, Sprint
GL1D, Alliant Energy
SA1D, City of Wheatland
WL1D, City of Wheatland

UTILITY LEGEND

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

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
Survey Line
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, E, F, & K)

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(186)--38-23	SHEET NUMBER D.1

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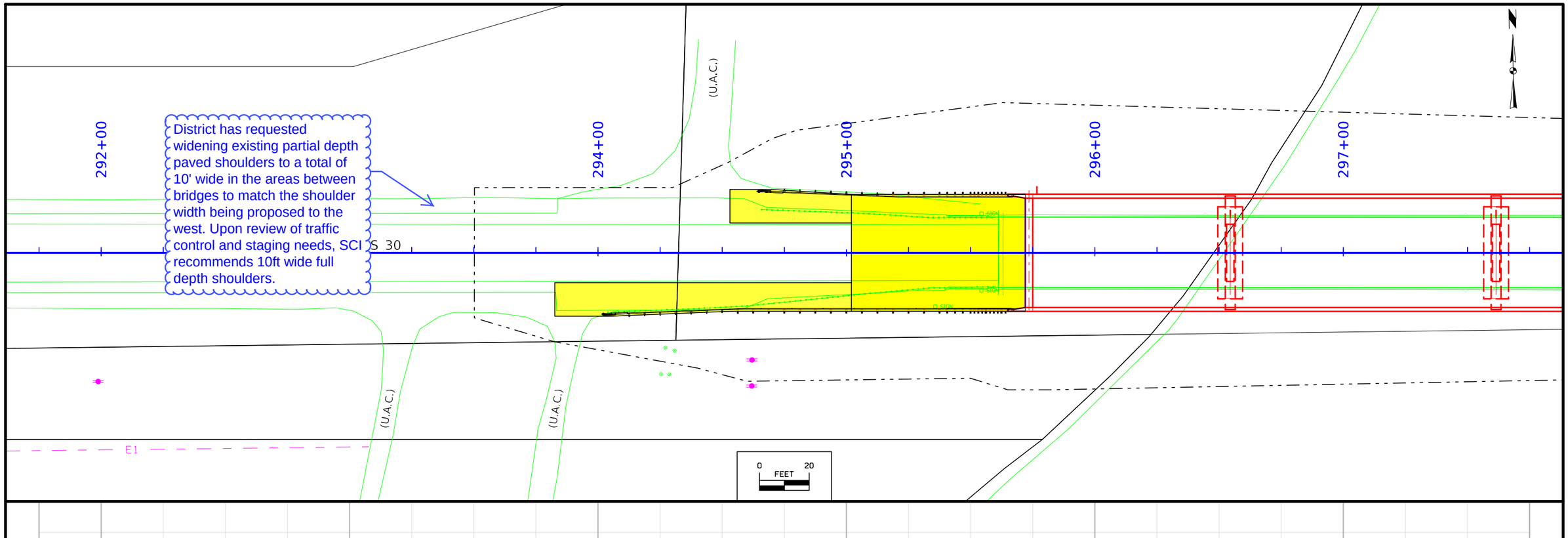

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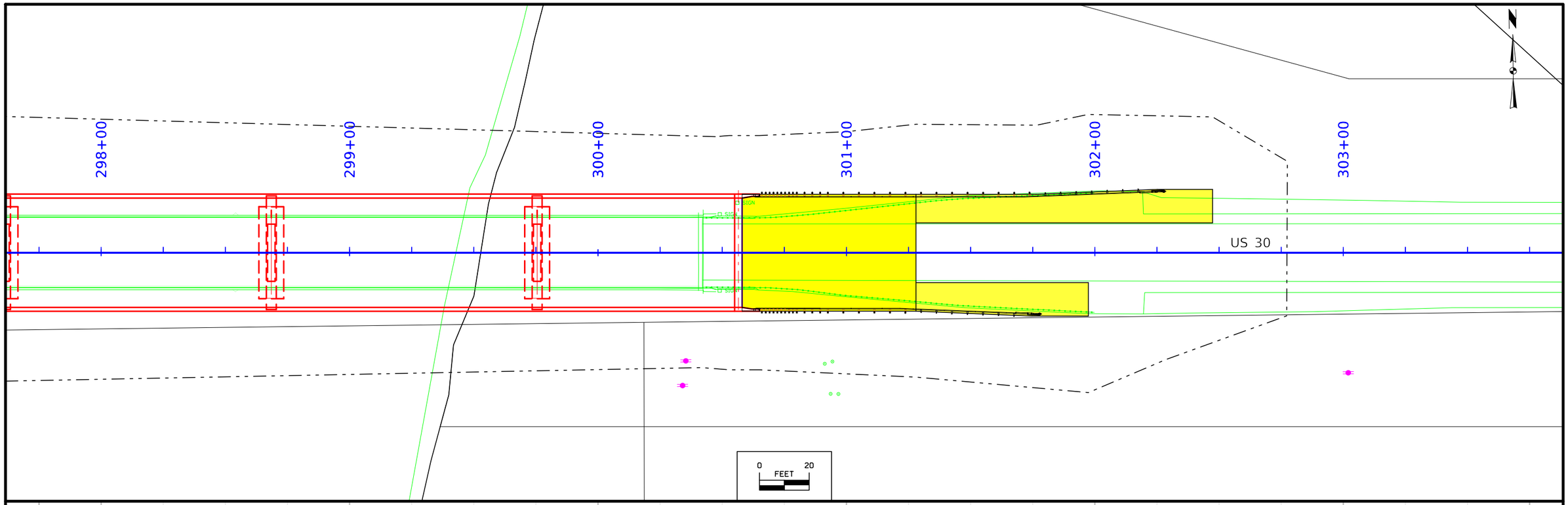

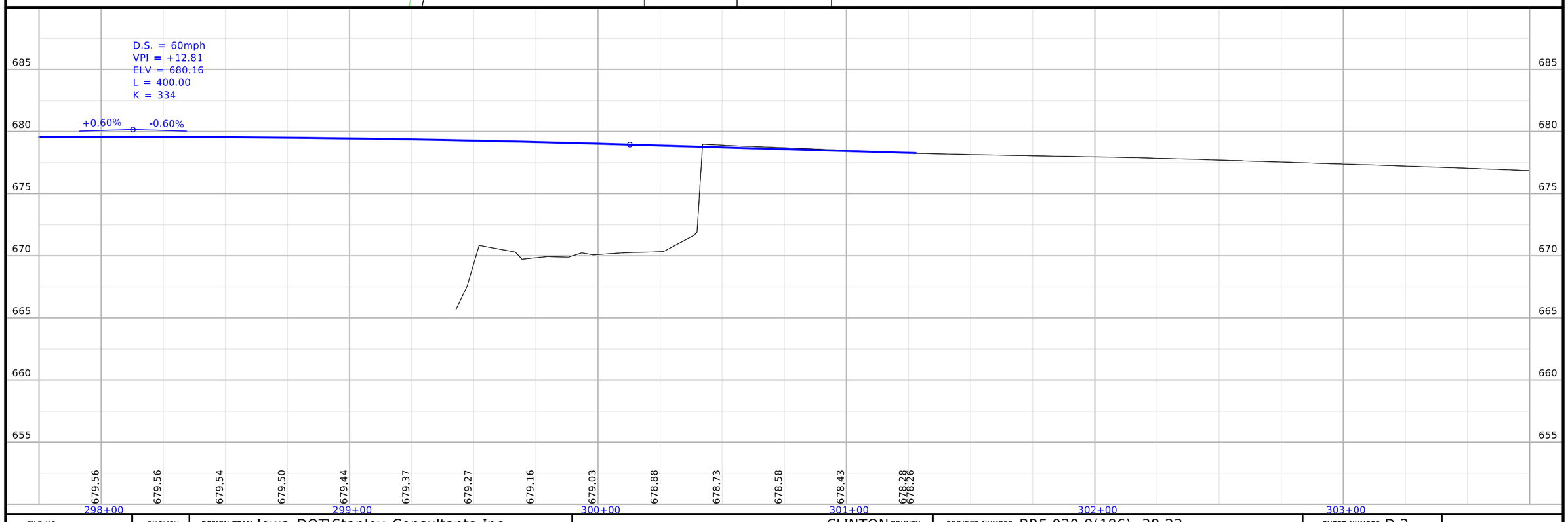

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334+00 335+00 336+00 337+00 338+00 339+00

US 30

0 20
FEET

685 680 675 670 665 660 655

678.44 678.59 678.76 678.94 679.11 679.29 679.46 679.60 679.72

334+00 335+00 336+00 337+00 338+00 339+00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(186)--38-23	SHEET NUMBER D.4

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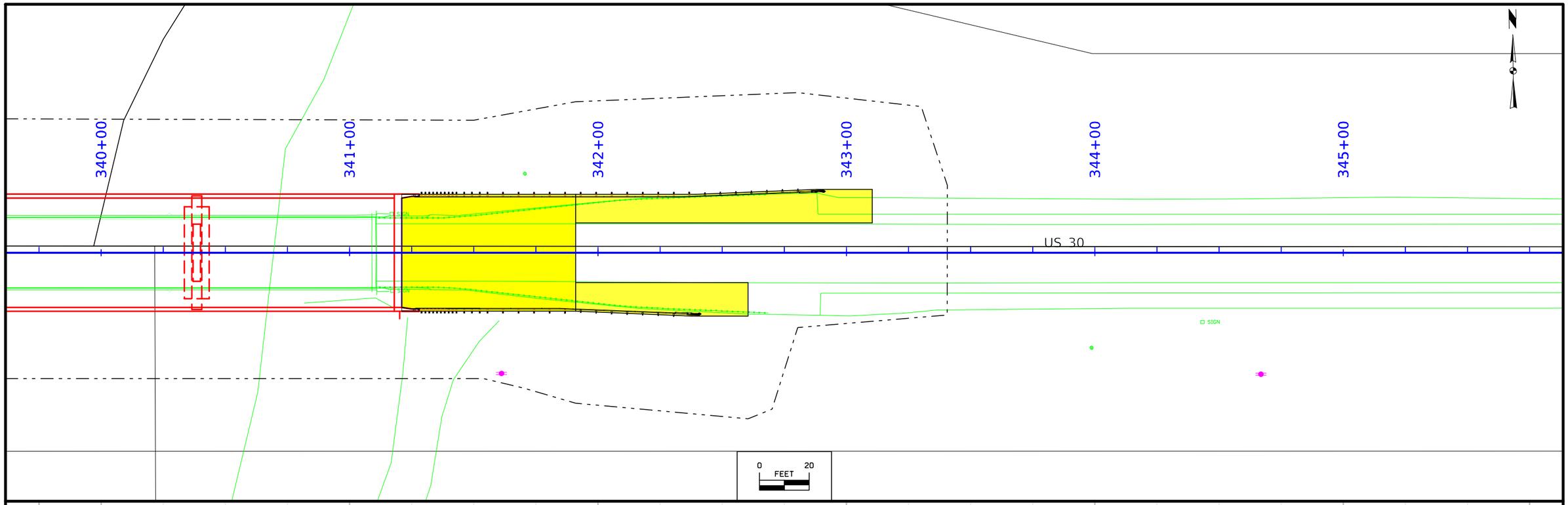

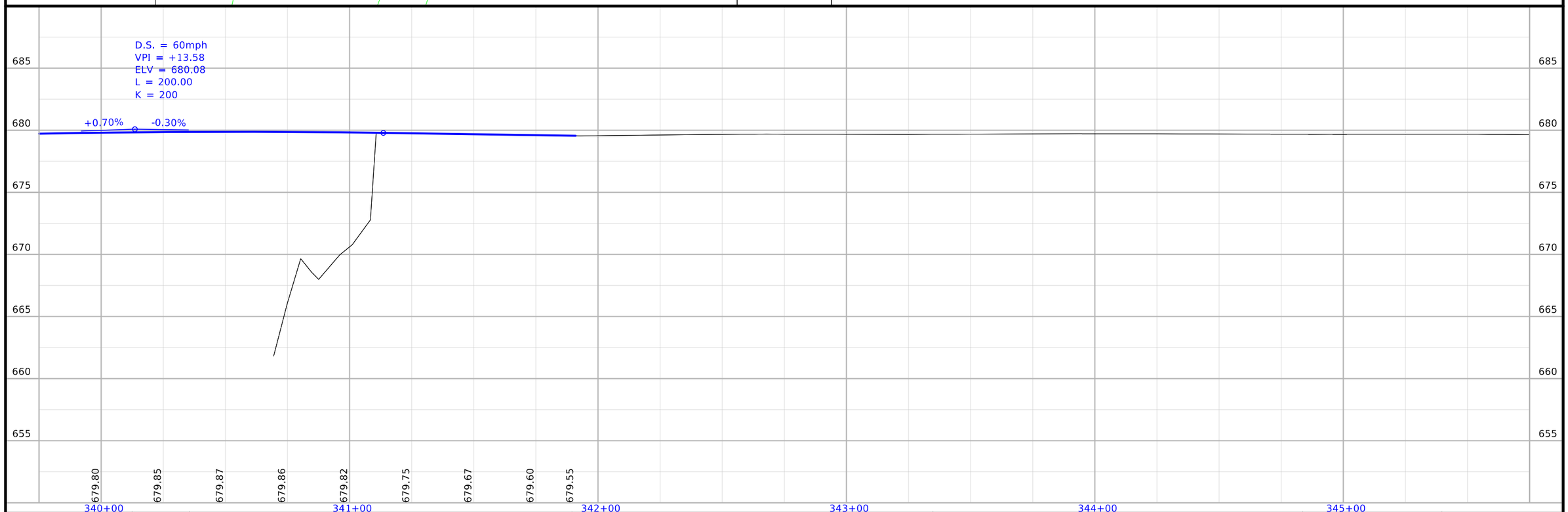

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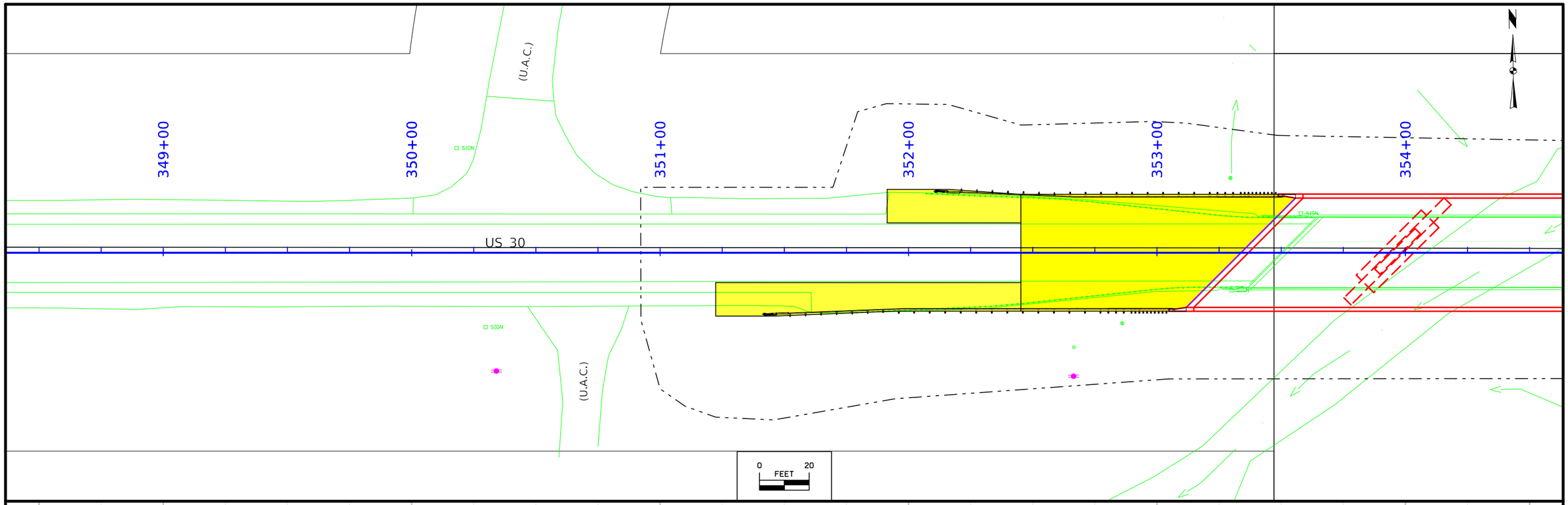

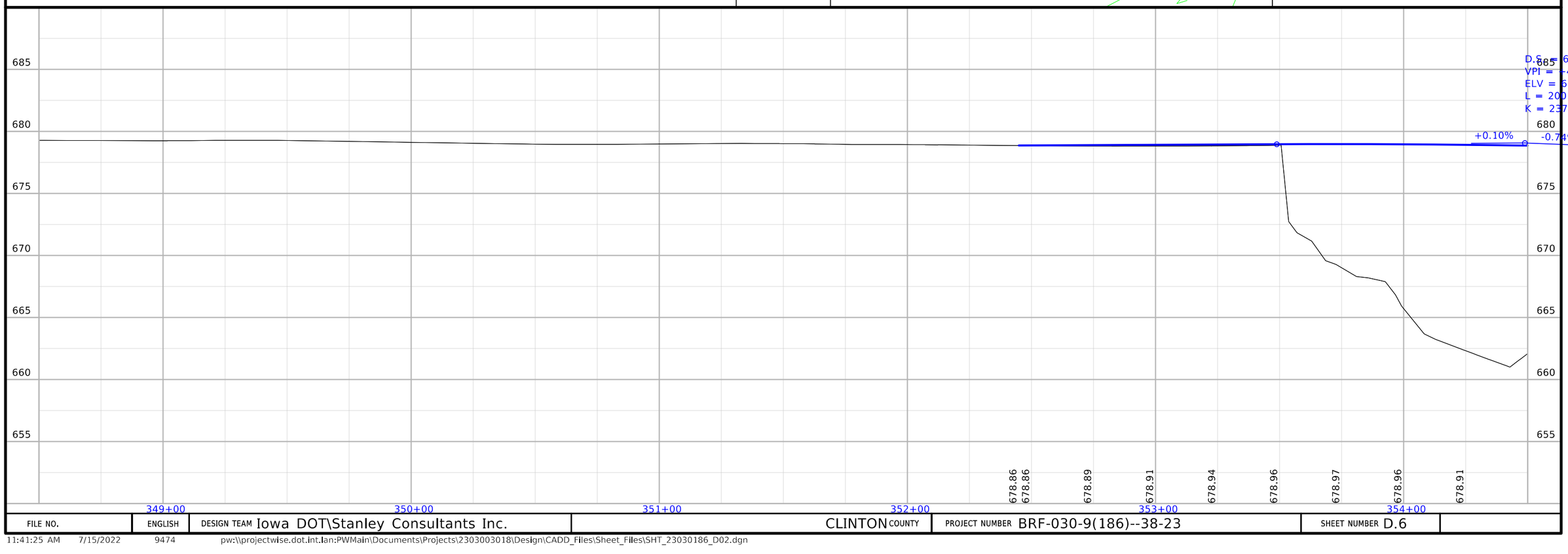

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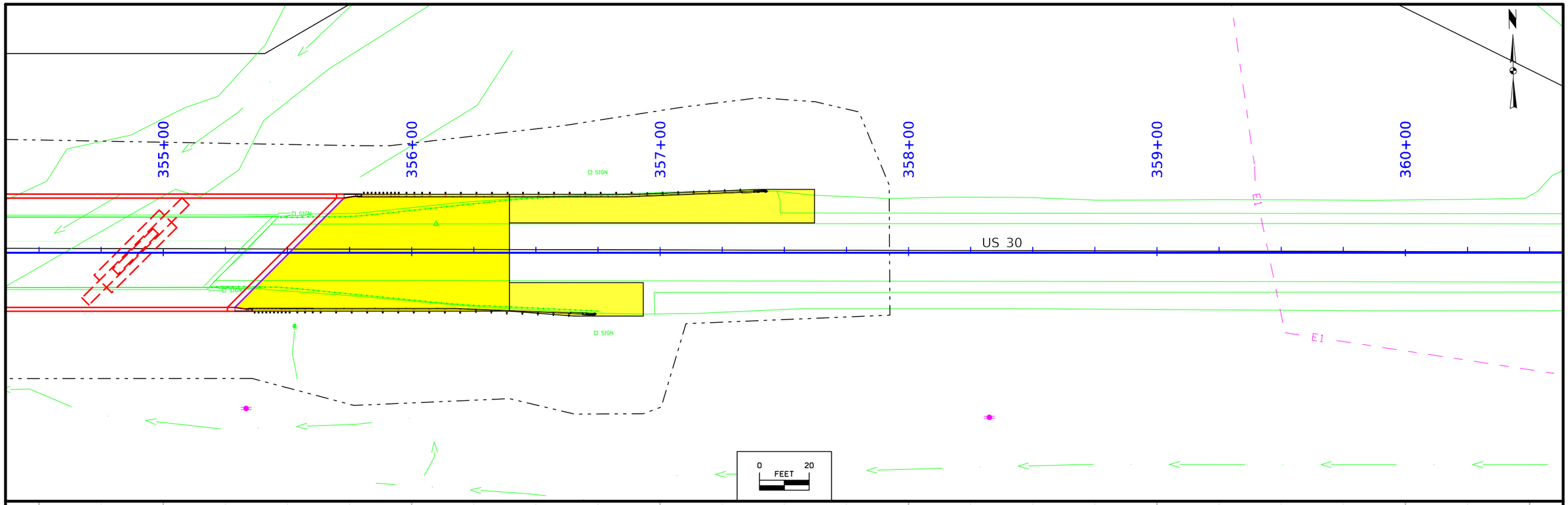

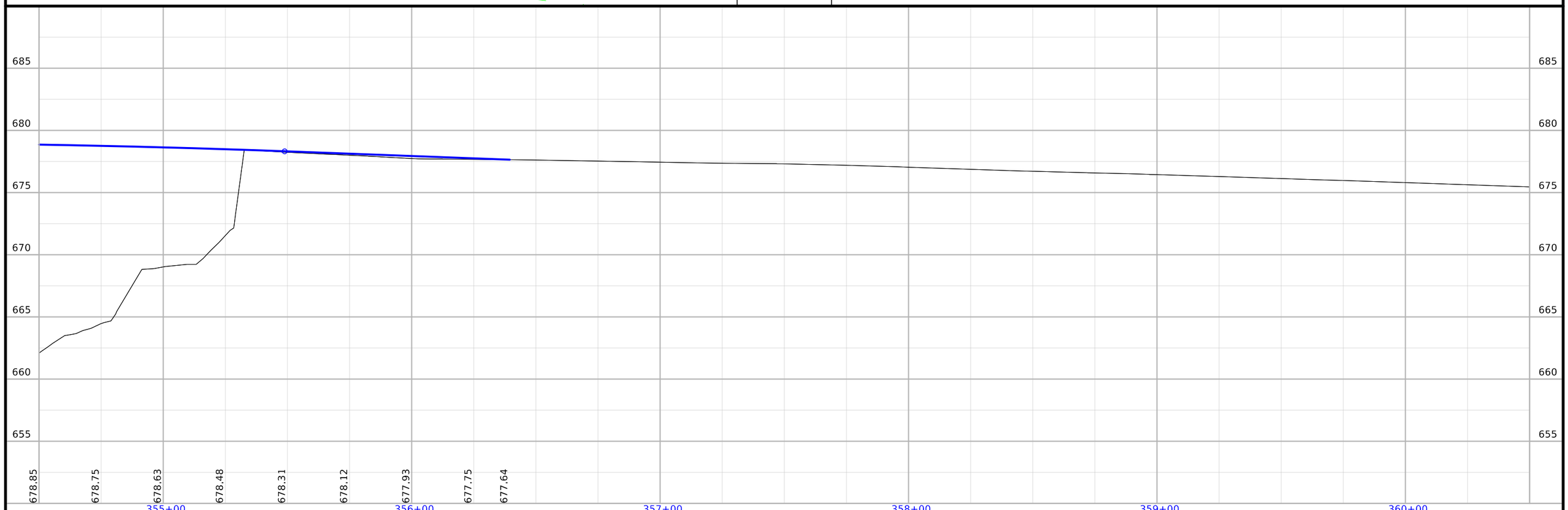

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Clinton County
BRF-030-9(186)—38-23
US30 Clinton County Survey
From 130th Ave to 158th Ave - Wheatland
PIN 18-23-030-030

Party Personnel

Jody Budde- PLS
Wes Shimp- PLS
Jon Miranda- Geospatial Lead Tech
Ben Sullivan- Geospatial Lead Tech
Matt Svec- Party Chief
Lee Budde- Party Chief
Aaron Paulsen- Party Chief
Katerina Wyatt- Assistant Survey Party Chief
Levi Suhr- Assistant Survey Party Chief
Jason Flaherty – Assistant Survey Party Chief
Scott Dillavou – Assistant Survey Party Chief

Date(s) of Survey

Begin Date	11/17/2021
End Date	02/28/2022

General Information

Measurement units for this survey are US survey feet. This survey is for the preliminary design for the section of approximately 3 miles of US Highway 30 beginning in Wheatland at 130th Ave east to 158th Ave. There were also a total of 15 bridge structures surveyed which included 5 bridges along the UPRR line south of Hwy 30, near Wheatland, IA.
Project datum and control information is provided by Design Survey Office. This project is a Full DTM survey. Project horizontal datum is NAD83 (2011) epoch 2010.00, Iowa RCS Zone 11 (Dubuque-Davenport). Foth established three new FENO monuments to supplement existing project control at a 1.0 mile distribution along the project corridor throughout the project lifecycle and for future corridor area work.

Vertical Control

Vertical datum for this survey is relative to NAVD88 (computed using Geoid18) for the new FENO marks: FENO 1, FENO 2 and FENO 3. This survey consisted of observing three new FENO 1-meter rod monuments and one existing USGS monument used by the Iowa DOT previously using minimum 2hr initial static observations along with data from four Iowa RTN CORS sites: Anamosa (IAAN), Maquoketa (IAMQ), Tipton (IATI) and Davenport (IADA).

The published Ellipsoidal heights for the four Iowa RTN stations were held for the vertical adjustment portion of this survey using as-published RTN positions by the Iowa DOT dated August 6, 2021.

Additionally, three nearby Scott County GPS monuments were recovered and observed with published NAVD88 elevations were observed and used that are located within the Hwy 30 project corridor region:

Scott County GPS 601 has a published Elv of: 757.56 usft (Geoid12A)
Adj Elv: 757.48

Scott County GPS 602 has a published Elv of: 706.44 usft (Geoid12A)
Adj Elv: 706.49

Scott County GPS 642 has a published Elv of: 640.80 usft (Geoid12A)
Adj Elv: 640.80

The final vertical adjustment results show standard deviations were less than 0.023 ft. at 95% confidence level (2 sigma) for the new FENO monuments.

Horizontal Control

The project coordinate system for this survey is NAD83 (2011) Iowa RCS Zone 11 (Dubuque-Davenport), US survey feet. This survey control is relative to IaRTN reference stations. IaRTN Reference Station coordinates are relative to the National Reference Station network datum: NAD83 (2011) for Epoch 2010.00. Coordinates were determined by observing each mark for 120 minutes minimum.

For the January 2022 control survey FOTH added FENO monuments FENO 1, FENO 2 and FENO 3 to supplement an existing DOT control monument recovered along the project corridor, Pt 706. Existing monuments Scott Co GPS 601, 602 and 642 were recovered and observed as part of this survey. The existing DOT concrete monument with brass cap (Pt 706) is on the east end of the project. The as listed adjusted coordinates in this report were the result of combined field observations and adjustment to the four Iowa RTN stations as listed herein.

Four Iowa RTN CORS stations: Anamosa, Maquoketa, Davenport and Tipton were utilized for the horizontal adjustment portion of this survey. The published horizontal geodetic positions for the four Iowa RTN stations were held for the horizontal

adjustment portion of this survey using as-published RTN positions by the Iowa DOT dated August 6, 2021.

The published horizontal positions of the existing three Scott County GPS Monuments 601, 602 and 642 were also confirmed and held fixed for the final horizontal constrained adjustment of the three new FENOs established by Foth.

The horizontal standard deviation of these adjusted observations was less than 0.015 ft. at 95% confidence level (2 sigma).

PROJECT CONTROL COORDINATE LISTING

Point ID	Northing	Easting	Elevation	Description
706	8175524.45	21430991.30	673.72	Existing Concrete Monument with brass disk set flush with the ground. 35.9 feet east of 158th Ave, 62.9 feet south of Hwy 30, 9.6 feet southeast of a utility pole.
FENO 1	8175123.51	21416496.20	676.87	New FENO style monument set flush with the ground. 33.5 feet southwest of centerline of Hwy 30, 147.5 feet east of center of 130th Ave.
FENO 2	8175556.21	21421292.80	674.35	New FENO style monument set flush with the ground. 28.15 feet NW of NW cor of wingwall of NW cor of Hwy 30 bridge over a creek. 37.3 feet south southeast of utility pole. 114.0
FENO 3	8175553.56	21426066.29	667.37	New FENO style monument set flush with the ground. 90.8 feet south of centerline of Hwy 30, 48.15 feet southwest of utility pole.
Scott Co GPS 601	8154639.01	21398578.53	757.48	Existing Berntsen driven rod monument with 2 1/2" aluminum cap with access cover.
Scott Co GPS 602	8154565.39	21415761.26	706.49	Existing Berntsen driven rod monument with 2 1/2" aluminum cap with access cover.
Scott Co GPS 642	8152509.73	21458526.18	640.80	Existing Berntsen driven rod monument with 2 1/2" aluminum cap with access cover.

Alignment Information

The horizontal alignment for this survey is a retrace of As-built Plans No. F-Proj No. 147 (9). Survey stationing was equated to the plan PT at STA 239+21.2 and run back and ahead throughout the survey.

Mainline (US30) Survey stationing relates to as built plan stationing as follows:

POB POT Sta. 211+54.50 As-built Plans Project No. F-Proj No. 147 (9)
Survey POT Sta. 211+54.30

PC Sta. 220+30.9 As-built Plans Project No. F-Proj No. 147 (9)
Survey PC Sta. 220+30.7

PT Sta. 239+21.2 As-built Plans Project No. F-Proj No. 147 (9)
Survey PT Sta. 239+21.2

PC Sta. 268+98.6 As-built Plans Project No. F-Proj No. 147 (9)
Survey PC Sta. 268+97.0

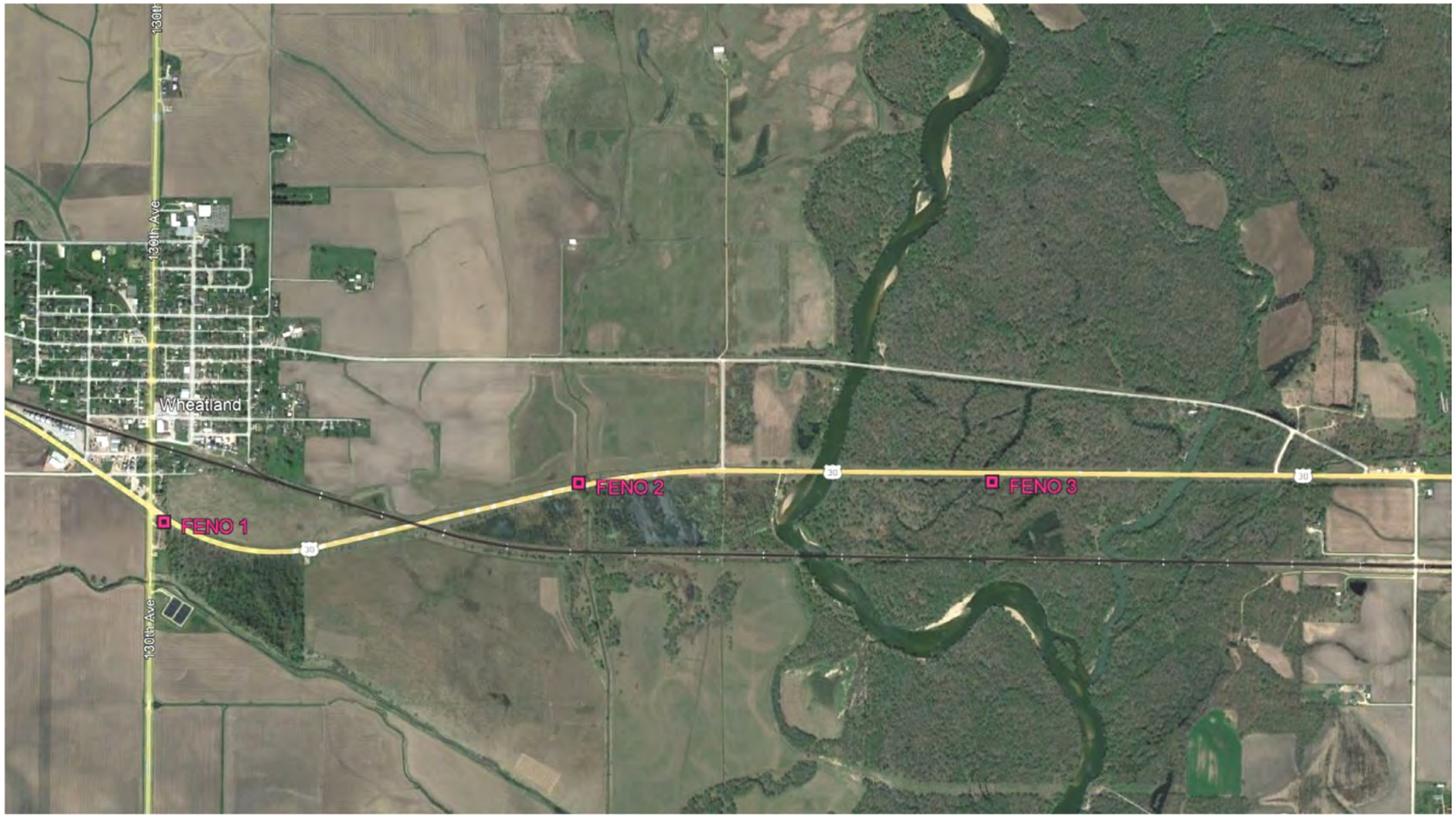
PT Sta. 287+08.6 As-built Plans Project No. F-Proj No. 147 (9)
Survey PT Sta. 287+08.1

Station Equation
As-built Plans POT Sta 366+23.9 (Back) = POT Sta 341+26.6(Ahead)
Survey POT Sta 366+23.9 (Back) = POT Sta 341+26.6(Ahead)

END POT Sta. 350+00.0 As-built Plans Project No. F-Proj No. 147 (9)
Survey POT Sta. 350+00.0

CONTROL POINT VICINITY MAP

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



HORIZ. DATUM: NAD83(2011) EPOCH 2010.00 - Ia. RCS Zone 11
VERT. DATUM: NAVD88 - Geoid Model G018

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) EPOCH 2010.00
Ia. Regional Coordinate System Zone 11

VERT. DATUM: NAVD88
Geoid Model G018
Project Control Marks are Bench Marks

Point ID	Northing	Easting	Elevation	Description
706	8175524.45	21430991.30	673.72	Existing Concrete Monument with brass disk set flush with the ground. 35.9 feet east of 158th Ave, 62.9 feet south of Hwy 30, 9.6 feet southeast of a utility pole.
FENO 1	8175123.51	21416496.20	676.87	New FENO style monument set flush with the ground. 33.5 feet southwest of centerline of Hwy 30, 147.5 feet east of center of 130th Ave.
FENO 2	8175556.21	21421292.80	674.35	New FENO style monument set flush with the ground. 28.15 feet NW of NW cor of wingwall of NW cor of Hwy 30 bridge over a creek. 37.3 feet south southeast of utility pole. 114.0 feet west of middle of small creek.
FENO 3	8175553.56	21426066.29	667.37	New FENO style monument set flush with the ground. 90.8 feet south of centerline of Hwy 30, 48.15 feet southwest of utility pole.
Scott Co GPS 601	8154639.01	21398578.53	757.48	Existing Berntsen driven rod monument with 2 1/2" aluminum cap with access cover.
Scott Co GPS 602	8154565.39	21415761.26	706.49	Existing Berntsen driven rod monument with 2 1/2" aluminum cap with access cover.
Scott Co GPS 642	8152509.73	21458526.18	640.80	Existing Berntsen driven rod monument with 2 1/2" aluminum cap with 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)
C1	US 30	290+00.00	8175675.66	21423290.21															
C2	US 30	369+00.00	8175582.88	21431189.67															

511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
US 30	BOTH	Clinton	0.2 mi. E of Jct. 142nd Ave	Wapsipinicon River	Barrier	Maint. 2398.5S030	Horizontal	N/A	16'-10"	N/A		Stg 1A
US 30	BOTH	Clinton	0.2 mi. E of Jct. 142nd Ave	Wapsipinicon River	Barrier	Maint. 2398.5S030	Horizontal	N/A	11'-1"	10'-1"		Stg 2A
US 30	BOTH	Clinton	0.6 mi. E of Jct. 142nd Ave	East Channel Wapsipinicon River	Barrier	Maint. 2399.3S030	Horizontal	N/A	16'-10"	N/A		Stg 1B
US 30	BOTH	Clinton	0.6 mi. E of Jct. 142nd Ave	East Channel Wapsipinicon River	Barrier	Maint. 2399.3S030	Horizontal	N/A	11'-1"	10'-1"		Stg 2B
US 30	BOTH	Clinton	1.0 mi. E of Jct. 142nd Ave	Calamus Drainage Ditch	Barrier	Maint. 2399.5S030	Horizontal	N/A	16'-10"	N/A		Stg 1C
US 30	BOTH	Clinton	1.0 mi. E of Jct. 142nd Ave	Calamus Drainage Ditch	Barrier	Maint. 2399.5S030	Horizontal	N/A	11'-1"	10'-1"		Stg 2C

TRAFFIC CONTROL PLAN

US 30
- Maintain US 30 two-lane, two-way traffic at all times utilizing Standard Road Plans as noted in the Staging Plan.

142nd Avenue
- To remain open to traffic for the duration of the project.

154th Avenue
- Maintain traffic to US 30 with right-in, right-out access.

Private Entrances
- Maintain access to US 30 for the duration of the project.

COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
BRF-030-9(205)--38-23	Bridge Replacement
BRF-030-9(198)--38-23	Bridge Replacement

Add notes regarding paddling route. DNR to provide signage plans after after D05.

STAGING NOTES

US 30 over Wapsipinicon River

Stage 1A:
Construction:
- Construct shoulder strengthening on south side of US 30.

Traffic Control:
- Shift US 30 traffic south and close WB lane per Standard Road Plan TC-217.

Construction:
- Construct north half of US 30 bridge, bridge approaches, shoulders and guardrail.
- Construct shoulder strengthening on north side of US 30.

Stage 2A:
Traffic Control:
- Shift US 30 traffic north and close EB lane per Standard Road Plan TC-217.

Construction:
- Construct south half of US 30 bridge, bridge approaches, shoulders and guardrail.

Traffic Control:
- Remove traffic control and open all lanes of US 30 traffic.

US 30 over East Channel Wapsipinicon River

Stage 1B:
Construction:
- Construct shoulder strengthening on south side of US 30.

Traffic Control:
- Shift US 30 traffic south and close WB lane per Standard Road Plan TC-217.

Construction:
- Construct north half of US 30 bridge, bridge approaches, shoulders and guardrail.
- Construct shoulder strengthening on north side of US 30.

Stage 2B:
Traffic Control:
- Shift US 30 traffic north and close EB lane per Standard Road Plan TC-217.

Construction:
- Construct south half of US 30 bridge, bridge approaches, shoulders and guardrail.

Traffic Control:
- Remove traffic control and open all lanes of US 30 traffic.

US 30 over Calamus Drainage Ditch

Stage 1C:
Construction:
- Construct shoulder strengthening on south side of US 30.

Traffic Control:
- Shift US 30 traffic south and close WB lane per Standard Road Plan TC-217.

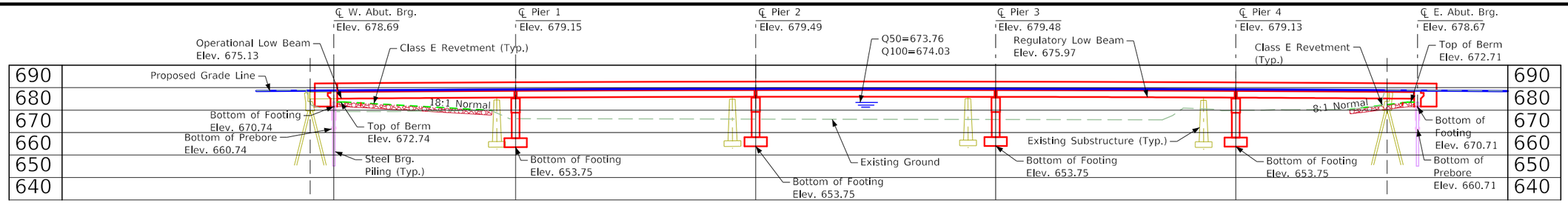
Construction:
- Construct north half of US 30 bridge, bridge approaches, shoulders and guardrail.
- Construct shoulder strengthening on north side of US 30.

Stage 2C:
Traffic Control:
- Shift US 30 traffic north and close EB lane per Standard Road Plan TC-217.

Construction:
- Construct south half of US 30 bridge, bridge approaches, shoulders and guardrail.

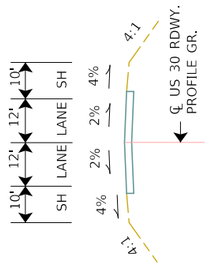
Traffic Control:
- Remove traffic control and open all lanes of US 30 traffic.

There was a general consensus that what is being proposed is acceptable. DOT has requested a separate meeting to bring in traffic and safety for their thoughts on traffic control, staging and detours.

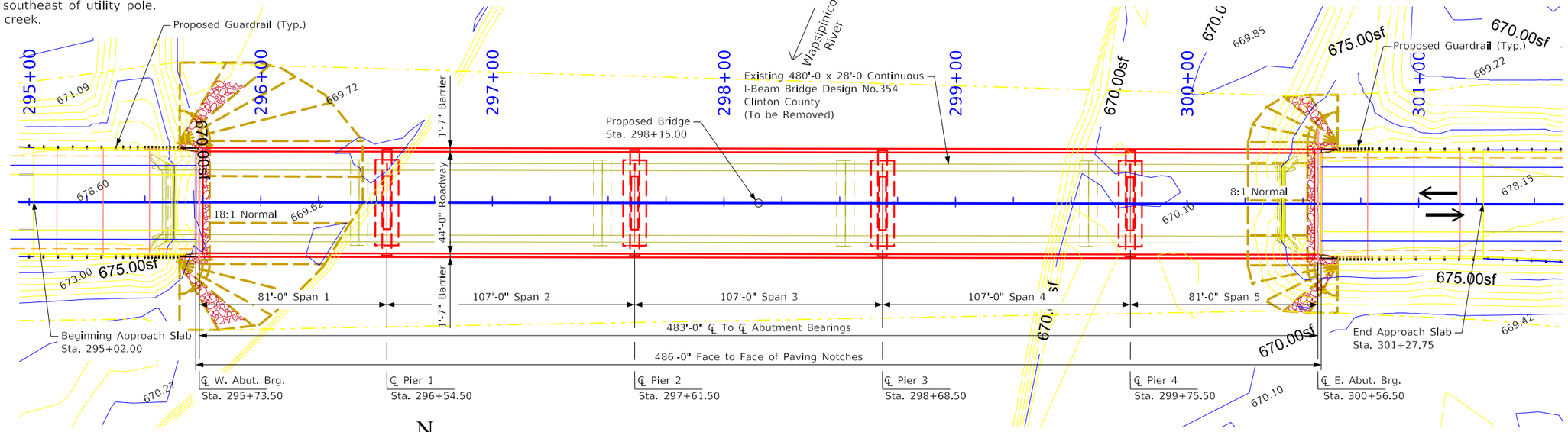


LONGITUDINAL SECTION ALONG ℄ US 30

BENCH MARK: New FENO Style monument set fluh with ground.
28.15 feet NW of NW cor of wingwall of NW cor of Hwy 30
Bridge over creek. 37.3 feet south southeast of utility pole.
114.0 feet west of middle of small creek.



TYPICAL APPROACH SECTION

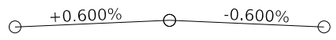


N

0 English 40
Scale in Feet

SITUATION PLAN

VPI STA. = 298+12.81
VPI ELEV. = 680.13
L = 400'



PROPOSED PROFILE GRADE US 30

Hydraulic Design

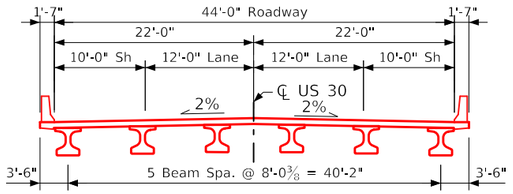
LICENSED PROFESSIONAL ENGINEER
Mark D. Werner
15418
IOWA

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.

XX-XX-XXXX
Signature Date
Mark D. Werner
Printed or Typed Name

My license renewal date is December 31, XXXX

Pages or sheets covered by this seal: XXXX



TYPICAL BRIDGE SECTION

PLAN NOTES:

1. Top of bridge deck at centerline US 30 is 0.03' below the profile grade to account for parabolic crown.
2. Class E Revetment stone is embedded.
3. The Bridge will be designed to withstand the applicable effects of ice and the horizontal stream loads and uplift forces associated with the Q100.

GENERAL NOTES:

1. This design is for the replacement of the existing 480'-0 X 28'-0 Continuous I-Beam Bridge, Clinton Design No. 354, FHWA No. 020740, Maint. 2398.5S030.

TRAFFIC ESTIMATE

2024 AADT	3100	V.P.D.
2044 AADT	3800	V.P.D.
Trucks	20	%

UTILITIES LEGEND:

E1	-EL1D, Eastern Iowa Light and Power
F0	-FO1D, F&B Communications
F02	-FO2D, Sprint
G	-GL1D, Alliant Energy
SAN.	-SA1D, City of Wheatland
W	-WL1D, City of Wheatland

Utilities shown on this sheet are for information only, see road design sheets for final utility information.

HYDRAULIC DATA

Drainage Area = 1890 SQ. MI.
Stream Slope = 2.1 FT./MI.

Q50= 27,300 CFS (AEPD), 18,321 CFS (2D Model)
Stage = 673.76
Regulatory Low Beam = 675.97
Avg. Bridge Velocity = 6.6 FPS

Q100= 30,300 CFS (AEPD), 19,282 CFS (2D Model)
Stage = 674.03
Operational Low Beam = 675.13
Backwater = 0.32 FT.
Avg. Bridge Velocity = 6.8 FPS

Q200 = 35,800 CFS (AEPD) 22,898 CFS (2D Model)
Design Scour = 649.80

Q500 = 37,300 CFS (AEPD) 23,765 CFS (2D Model)
Check Scour = 648.50

LOCATION

US 30 Over Wapsipinicon River
T-81N R-1E
Section 11
Spring Rock Township
Clinton County
FHWA No. 020740
Bridge Maint. No. 2398.5S030
Latitude 41.829597°
Longitude -90.812740°

PRELIMINARY

Design For 0° Skew

483'-0" x 44'-0" Pretensioned Prestressed Concrete Beam Bridge

81'-0" End Spans (BTB Beam Type) 107'-0" Interior Span

US 30 over Wapsipinicon River

STA. 298+15.00 July 2022

Clinton County

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY ADMINISTRATION

Design No. Design Sheet No. 1 of 2 FHWA No. 020740

FILE NO. TBD	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(186)--38-23	SHEET NUMBER V.1	

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DESIGN NOTES:

All units are in feet unless noted otherwise

TL-4 Bridge railing proposed

Pier Type - Tee Piers

Beam Type - BTB Beams - [illegible] beams

DOT prelim bridge prefers Tee Piers on all bridges if possible

Foundation type to be con[illegible]

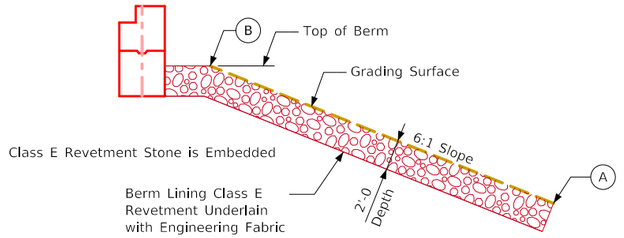
Berm slopes to be confirmed during final design

An Iowa DNR Sovereign Lands Permit is required. As this project requires a sovereign lands permit, bid item reference notes shall restrict broken concrete as a substitute for revetment.

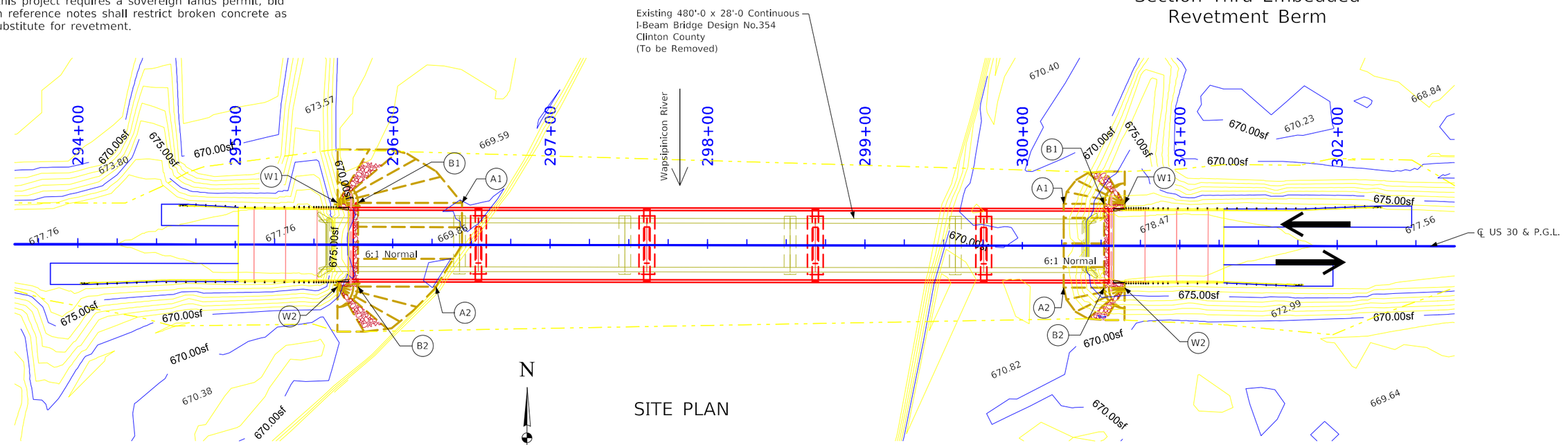
DESIGN NOTES:

An Iowa DNR Flood Plain Permit is required. Preliminary Design will submit the permit in the PW Regulatory_Permits subdirectory folder upon receipt.

Requirements for a state water trail or paddling route are applicable. Signage, plan notes, and bid items shall be addressed by the Design Bureau and included in the road plans.



Section Thru Embedded Revetment Berm



SITE PLAN

0 English 60
Scale in Feet

Estimated Berm Armoring Quantities

Location	Revetment CL. E (Ton)	Erosion Stone (Ton)	Engineering Fabric (SY)	Excavation (CY)
Berm Lining - West	732.0		852.0	774.6
Berm Lining - East	309.6		360.3	327.6
Totals	1041.5		1212.4	1102.1

Excavation quantity calculated from grading surface.

Berm Slope Location Table

Points	West Abutment			East Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	296+44.04	26.58' LT	669.80	300+26.29	26.58' LT	668.91
A2	296+27.63	26.58' RT	669.80	300+26.29	26.58' RT	668.91
B1	295+78.04	26.58' LT	672.74	300+52.04	26.58' LT	672.71
B2	295+77.96	26.58' RT	672.74	300+51.96	26.58' RT	672.71
W1	295+65.21	26.58' LT	677.93	300+65.04	26.58' LT	677.91
W2	295+64.96	26.58' RT	677.93	300+64.96	26.58' RT	677.91

Berm slope elevations reflect the grading surface.

UTILITIES LEGEND:

E1	-EL1D, Eastern Iowa Light and Power
F0	-FO1D, F&B Communications
F02	-FO2D, Sprint
G	-GL1D, Alliant Energy
SAN.	-SA1D, City of Wheatland
W	-WL1D, City of Wheatland

Utilities shown on this sheet are for information only, see road design sheets for final utility information.

Design For 0° Skew

483'-0" x 44'-0" Pretensioned Prestressed Concrete Beam Bridge

81'-0" End Spans (BTB Beam Type) 107'-0" Interior Span

Site Plan

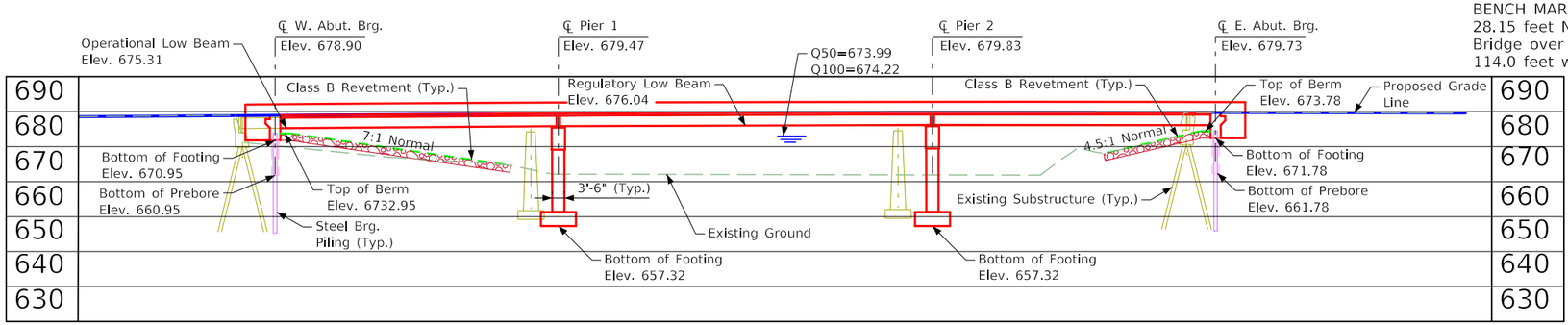
STA. 298+15.00 July 2022

Clinton County

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY ADMINISTRATION

Design No. Design Sheet No. 2 of 2 FHWA No. 020740

BENCH MARK: New FENO Style monument set fluh with ground.
28.15 feet NW of NW cor of wingwall of NW cor of Hwy 30
Bridge over creek. 37.3 feet south southeast of utility pole.
114.0 feet west of middle of small creek.

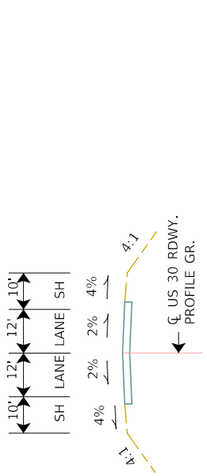


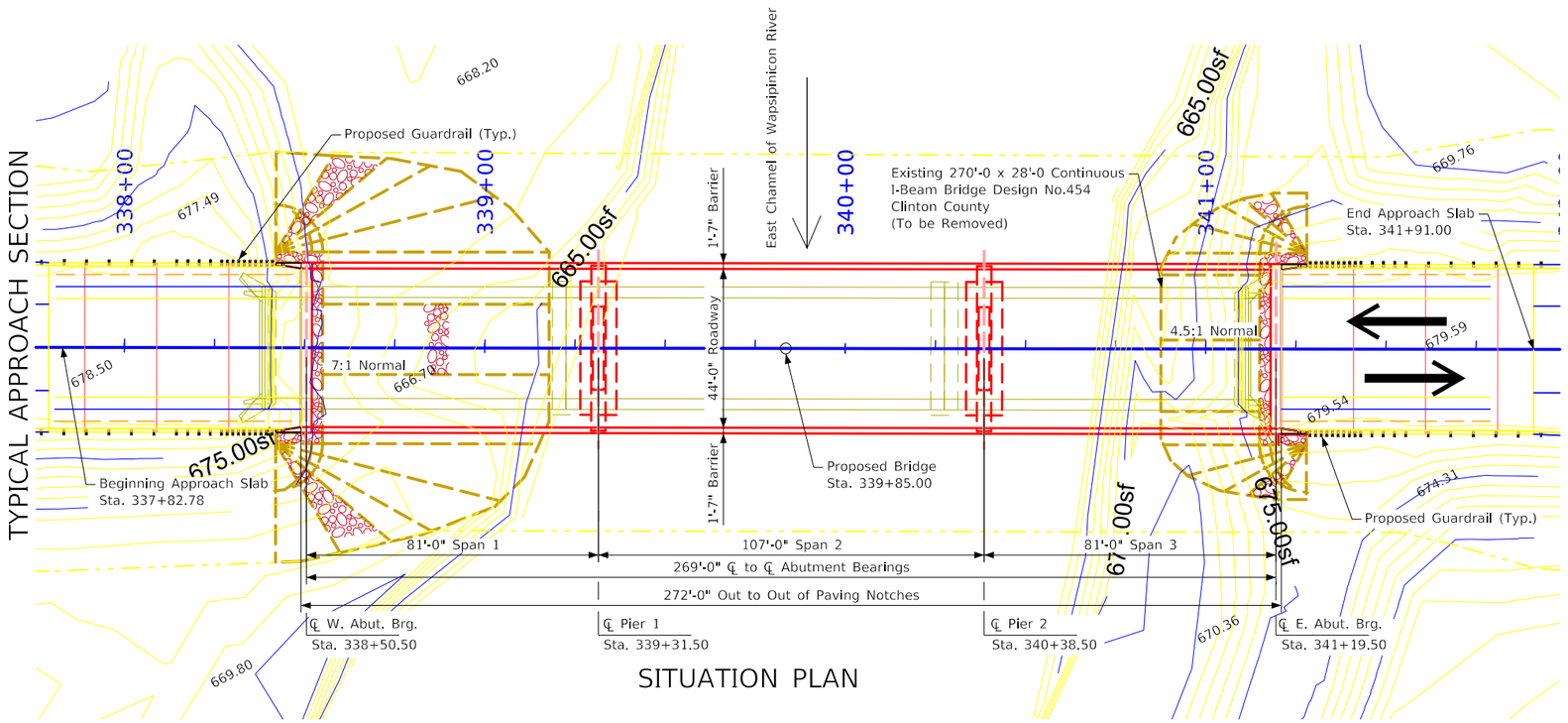
VPT STA. = 340+13.58
VPT ELEV. = 680.08
L = 200'

+0.700% -0.300%

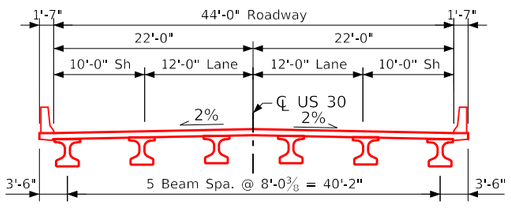
PROPOSED PROFILE
GRADE US 30

LONGITUDINAL SECTION ALONG ℄ US 30





SITUATION PLAN



TYPICAL BRIDGE SECTION

PLAN NOTES:

1. Top of bridge deck at centerline US 30 is 0.03' below the profile grade to account for parabolic crown.
2. Class B Revetment stone is embedded.
3. The Bridge will be designed to withstand the applicable effects of ice and the horizontal stream loads and uplift forces associated with the Q100.

GENERAL NOTES:

1. This design is for the replacement of the existing 270'-0 x 28'-0 continuous I-Beam Bridge, Clinton Design No. 454, FHWA NO. 020750, Maint. 2399.3S030.

HYDRAULIC DATA

Drainage Area = 39.9 SQ. MI.
Stream Slope = 7.1 FT./MI.

Q50= 7,920 CFS (AEPD), 13,050 CFS (2D Model)
Stage = 673.99
Regulatory Low Beam = 676.04
Avg. Bridge Velocity = 8.1 FPS

Q100= 9,310 CFS (AEPD), 13,659 CFS (2D Model)
Stage = 674.22
Operational Low Beam = 675.31
Backwater = 0.34 FT.
Avg. Bridge Velocity = 8.4 FPS

Q200 = 12,000 CFS (AEPD) 15,535 CFS (2D Model)
Design Scour = 645.30

Q500 = 13,100 CFS (AEPD) 15,535 CFS (2D Model)
Check Scour = 645.30

LOCATION

US 30 Over East Wapsipinicon
T-81N R-1E
Section 12 & 13
Spring Rock Township
Clinton County
FHWA No. 020750
Bridge Maint. No. 2399.3S030
Latitude 41.829498°
Longitude -90.797041°

TRAFFIC ESTIMATE

2024 AADT	3100	V.P.D.
2044 AADT	3800	V.P.D.
Trucks	20	%

UTILITIES LEGEND:

E1	-EL1D, Eastern Iowa Light and Power
F0	-FO1D, F&B Communications
F02	-FO2D, Sprint
G	-GL1D, Alliant Energy
SAN.	-SA1D, City of Wheatland
W	-WL1D, City of Wheatland

Utilities shown on this sheet are for information only, see road design sheets for final utility information.

PRELIMINARY

Hydraulic Design

LICENSED PROFESSIONAL ENGINEER
Mark D. Werner
15418
IOWA

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.

XX-XX-XXXX
Signature Date
Mark D. Werner
Printed or Typed Name
My license renewal date is December 31, XXXX
Pages or sheets covered by this seal: XXXX

Design For 0° Skew
269' X 44' Pretensioned
Prestressed Concrete Beam Bridge
81'-0" End Spans (BTB Beam Type) 107'-0" Interior Span
Situation Plan
STA. 339+85.00 July 2022
Clinton County
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY ADMINISTRATION
Design No. Design Sheet No. 1 of 2 FHWA No. 020750

FILE NO. TBD	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(186)--38-23	SHEET NUMBER V.3

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DESIGN NOTES:

All units are in feet unless noted otherwise

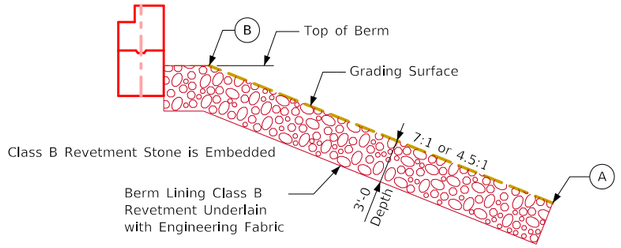
TL-4 Bridge railing proposed

Pier Type - Tee Piers

Beam Type - BTB Beams - Provide Vent Holes in all beams

Foundation type to be confirmed during final design

Berm slopes to be confirmed during final design

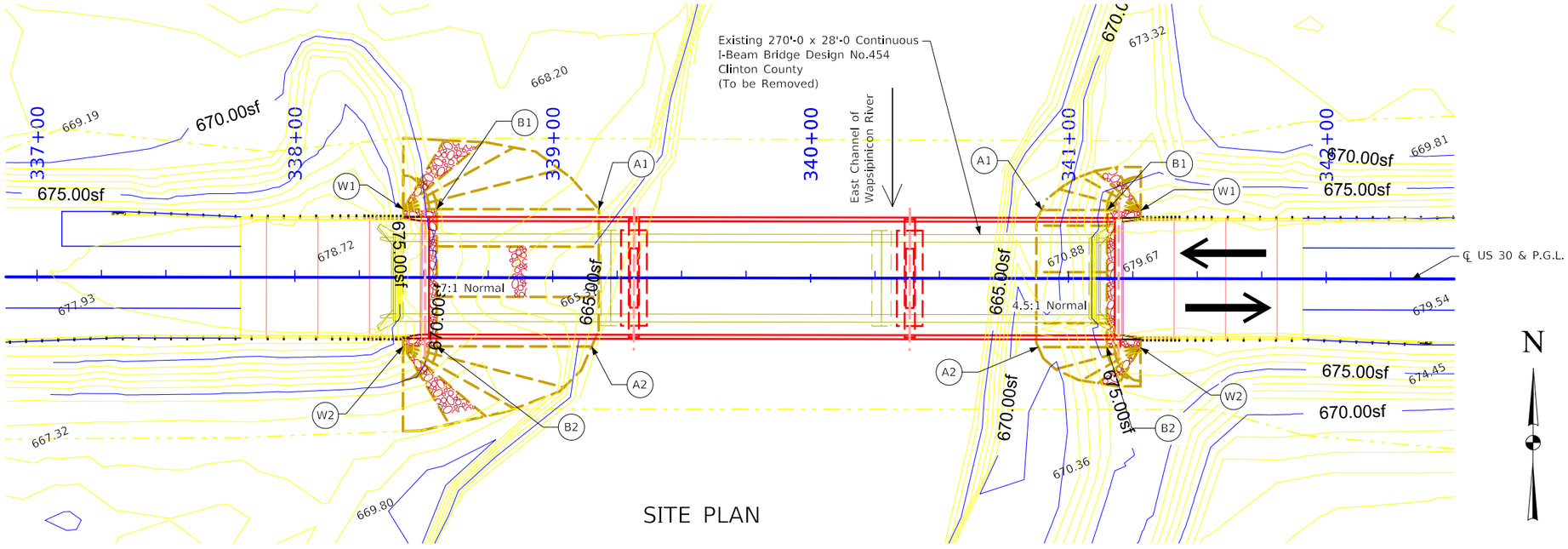


Section Thru Embedded
Revetment Berm

Berm Slope Location Table

Points	West Abutment			East Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	339+17.67	26.58' LT	667.20	340+89.56	26.58' LT	670.70
A2	339+15.13	26.58' RT	664.50	340+88.38	26.58' RT	670.70
B1	338+55.04	26.58' LT	672.95	341+15.04	26.58' LT	673.78
B2	338+54.96	26.58' RT	672.95	341+14.96	26.58' RT	673.78
W1	338+42.00	26.58' LT	678.15	341+28.04	26.58' LT	678.97
W2	338+41.96	26.58' RT	678.15	341+27.96	26.58' RT	678.97

Berm slope elevations reflect the grading surface.



SITE PLAN

0 English 40
Scale in Feet

Estimated Berm Armoring Quantities

Location	Revetment CL. B (Ton)	Erosion Stone (Ton)	Engineering Fabric (SY)	Excavation (CY)
Berm Lining - West	1092.1		847.5	770.5
Berm Lining - East	415.8		322.7	293.4
Totals	1508.0		1170.2	1063.8

Excavation quantity calculated from grading surface.

UTILITIES LEGEND:

E1	-EL1D, Eastern Iowa Light and Power
F0	-FO1D, F&B Communications
F02	-FO2D, Sprint
G	-GL1D, Alliant Energy
SAN.	-SA1D, City of Wheatland
W	-WL1D, City of Wheatland

Utilities shown on this sheet are for information only, see road design sheets for final utility information.

PRELIMINARY

Design For 0° Skew

269' X 44' Pretensioned Prestressed Concrete Beam Bridge

81'-0" End Spans (BTB Beam Type) 107'-0" Interior Span

Site Plan

STA. 339+85.00 July 2022

Clinton County

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY ADMINISTRATION

Design No. Design Sheet No. 2 of 2 FHWA No. 020750

FILE NO. TBD	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(186)--38-23	SHEET NUMBER V.4

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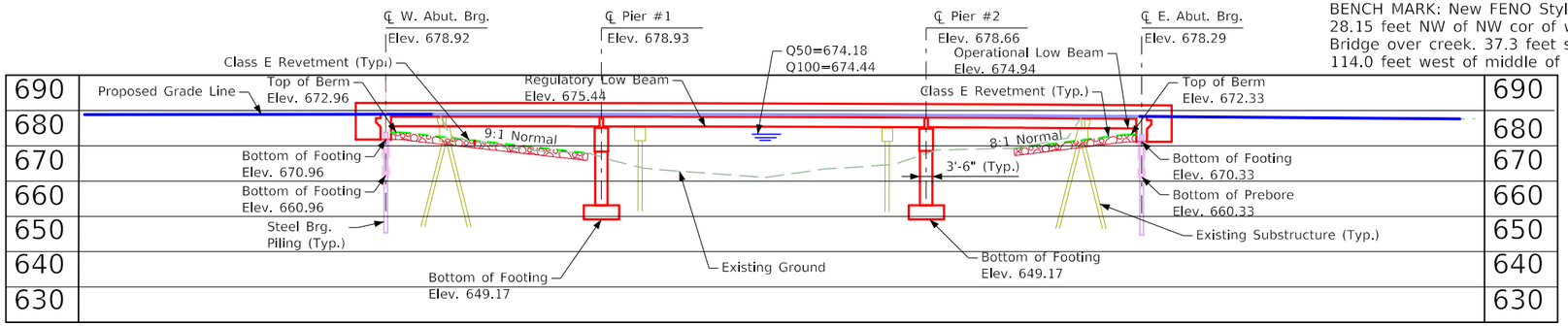
VPT STA. = 354+48.87
VPT ELEV. = 679.06
L = 200'

+0.100% -0.740%

PROPOSED PROFILE
GRADE US 30



LONGITUDINAL SECTION ALONG ℄ US 30

BENCH MARK: New FENO Style monument set fluh with ground. 28.15 feet NW of NW cor of wingwall of NW cor of Hwy 30 Bridge over creek. 37.3 feet south southeast of utility pole. 114.0 feet west of middle of small creek.

LOCATION

US 30 Over Calamus Ditch
T-81N R-1E
Section 12 & 13
Spring Rock Township
Clinton County
FHWA No. 020760
Bridge Maint. No. 2399.5S030
Latitude 41.829460°
Longitude -90.791465°

HYDRAULIC DATA

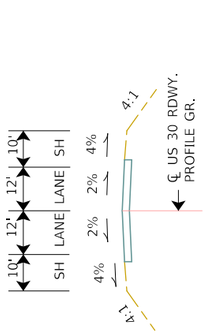
Drainage area = 17.0 SQ. MI.
Strem Slope = 9.5 FT./MI.

Q50= 4,880 CFS (AEPD), 2,843 CFS (2D Model)
Stage = 674.18
Regulatory Low Beam = 675.44
Avg. Bridge velocity = 4.5 FPS

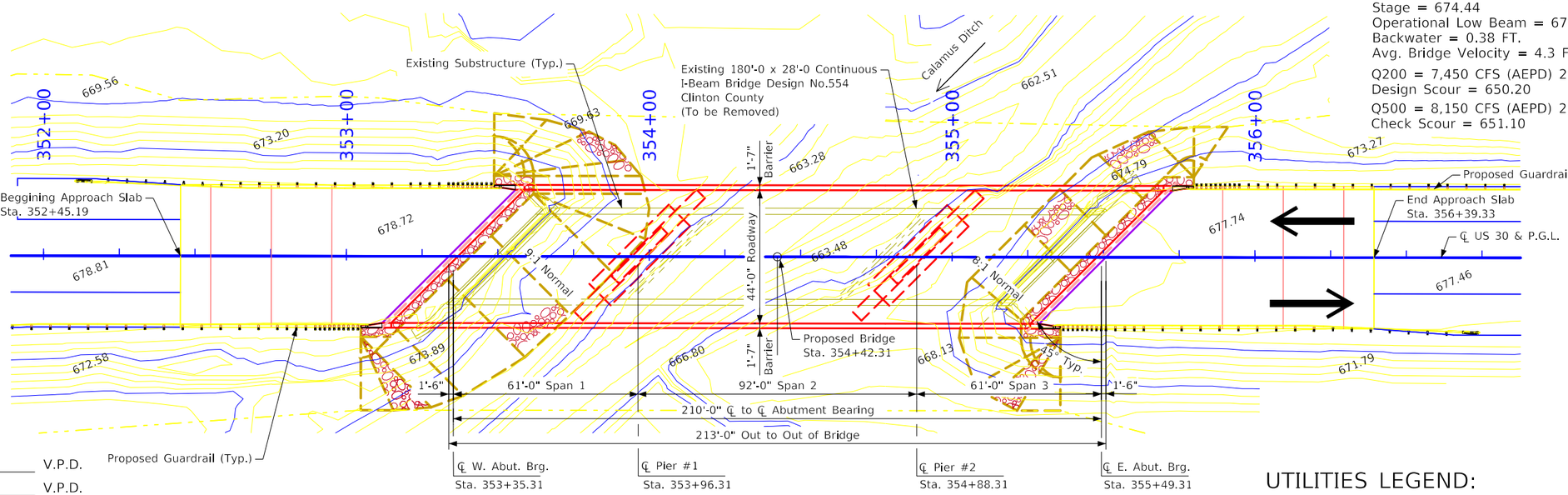
Q100= 5,760 CFS (AEPD), 2,832 CFS (2D Model)
Stage = 674.44
Operational Low Beam = 674.94
Backwater = 0.38 FT.
Avg. Bridge Velocity = 4.3 FPS

Q200 = 7,450 CFS (AEPD) 2,775 CFS (2D Model)
Design Scour = 650.20

Q500 = 8,150 CFS (AEPD) 2,662 CFS (2D Model)
Check Scour = 651.10



TYPICAL APPROACH SECTION

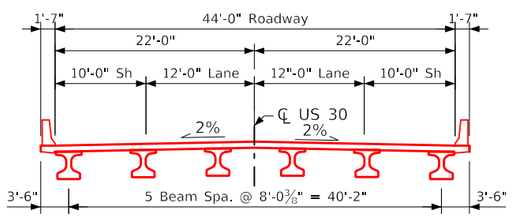


SITUATION PLAN

0 English 30
Scale in Feet

TRAFFIC ESTIMATE

2024 AADT	3100	V.P.D.
2044 AADT	3800	V.P.D.
Trucks	20	%



TYPICAL BRIDGE SECTION

PLAN NOTES:

1. Top of bridge deck at centerline US 30 is 0.03' below the profile grade to account for parabolic crown.
2. Class E Revetment stone is embedded.
3. The Bridge will be designed to withstand the applicable effects of ice and the horizontal stream loads and uplift forces associated with the Q100.

GENERAL NOTES:

1. This design is for the replacement of the existing 180'-0 x 28'-0 pretensioned prestressed concrete beam bridge, Clinton County Design No. 554, FHWA No. 020760, Maint. 2399.5S030.

Hydraulic Design

LICENSED PROFESSIONAL ENGINEER
Mark D. Werner
15418
IOWA

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 Mark D. Werner — Date XX-XX-XXXX

Printed or Typed Name

My license renewal date is December 31, XXXX

Pages or sheets covered by this seal: XXXX

UTILITIES LEGEND:

E1	-EL1D, Eastern Iowa Light and Power
F0	-FO1D, F&B Communications
F02	-FO2D, Sprint
G	-GL1D, Alliant Energy
SAN.	-SA1D, City of Wheatland
W	-WL1D, City of Wheatland

Utilities shown on this sheet are for information only, see road design sheets for final utility information.

PRELIMINARY

Design For 45° Skew (L.A.)

210' X 44' Pretensioned Prestressed Concrete Beam Bridge

61'-0" End Spans (BTB Beam Type) 92'-0" Interior Span

Situation Plan

STA. 354+42..31 July 2022

Clinton County

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY ADMINISTRATION

Design No. Design Sheet No. 1 of 2 FHWA No. 020760

FILE NO. TBD | ENGLISH | DESIGN TEAM Stanley Consultants Inc. | CLINTON COUNTY | PROJECT NUMBER BRF-030-9(186)--38-23 | SHEET NUMBER V.5

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DESIGN NOTES:

All units are in feet unless noted otherwise

TL-4 Bridge railing proposed

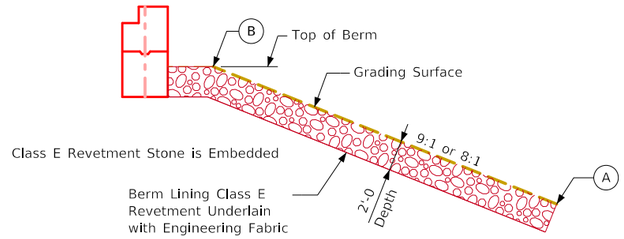
Pier Type - Tee Piers

Beam Type - BTB Beams - Provide Vent Holes in all beams

Foundation type to be confirmed during final design

Berm slopes to be confirmed during final design

BENCH MARK: New FENO Style monument set fluh with ground.
28.15 feet NW of NW cor of wingwall of NW cor of Hwy 30
Bridge over creek. 37.3 feet south southeast of utility pole.
114.0 feet west of middle of small creek.

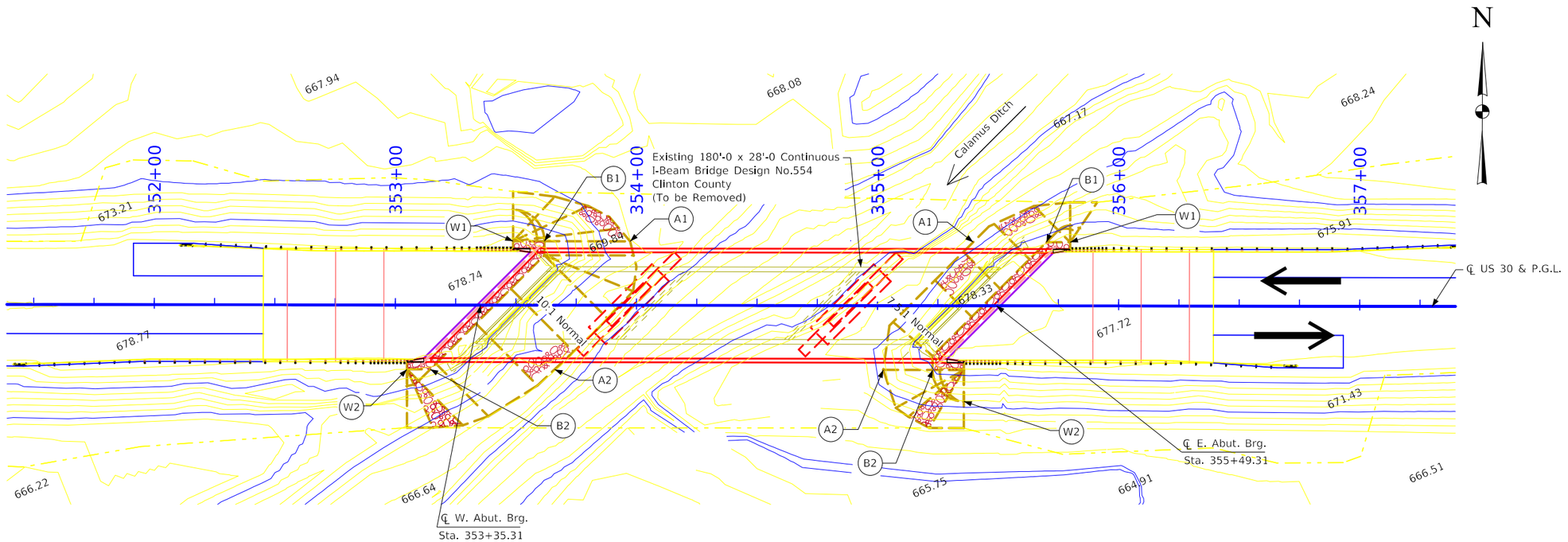


Section Thru Embedded
Revetment Berm

Berm Slope Location Table

Points	West Abutment			East Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	353+97.29	26.58' LT	670.37	355+39.63	26.58' LT	671.65
A2	353+66.06	26.58' RT	670.95	355+02.37	26.58' RT	670.41
B1	353+61.79	26.58' LT	672.96	355+70.25	26.58' LT	672.33
B2	353+14.42	26.58' RT	672.96	355+22.81	26.58' RT	672.33
W1	353+48.79	26.58' LT	678.16	355+79.83	26.58' LT	677.53
W2	353+04.75	26.58' RT	678.16	355+35.79	26.58' RT	677.53

Berm slope elevations reflect the grading surface.



SITE PLAN

0 English 45
Scale in Feet

Estimated Berm Armoring Quantities

Location	Revetment CL. E (Ton)	Engineering Fabric (SY)	Excavation (CY)
Berm Lining - West	486.1	565.8	514.4
Berm Lining - East	310.8	361.7	328.9
Totals	796.9	927.6	843.2

Excavation quantity calculated from grading surface.

UTILITIES LEGEND:

E1	-EL1D, Eastern Iowa Light and Power
F0	-FO1D, F&B Communications
F02	-FO2D, Sprint
G	-GL1D, Alliant Energy
SAN.	-SA1D, City of Wheatland
W	-WL1D, City of Wheatland

Utilities shown on this sheet are for information only, see road design sheets for final utility information.

PRELIMINARY

Design For 45° Skew (L.A.)

210' X 44' Pretensioned Prestressed Concrete Beam Bridge

61'-0" End Spans (BTB Beam Type) 92'-0" Interior Span

Site Plan

STA. 354+42.31 July 2022

Clinton County

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY ADMINISTRATION

Design No. Design Sheet No. 2 of 2 FHWA No. 020760

FILE NO. TBD	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(186)--38-23	SHEET NUMBER V.6

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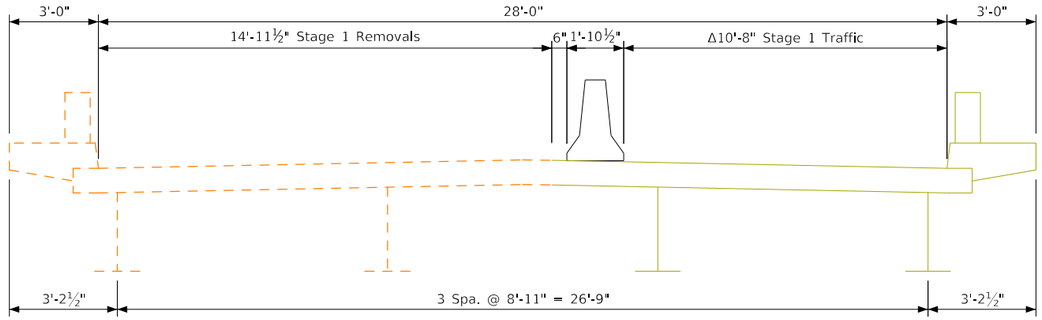
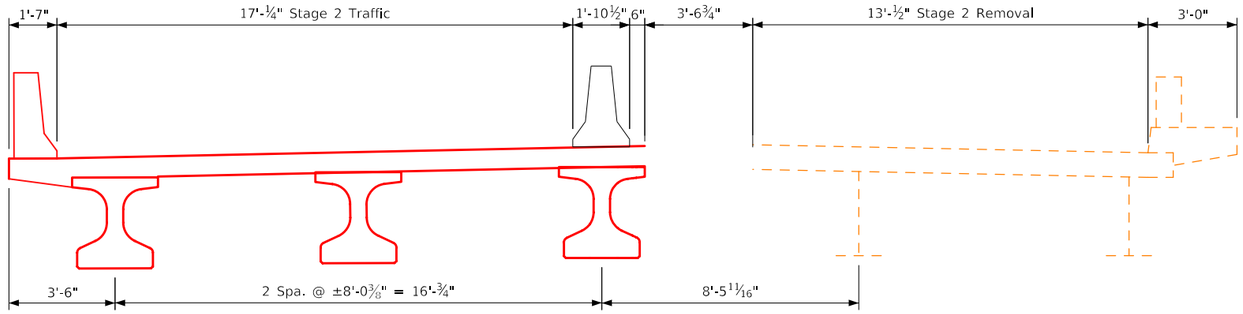
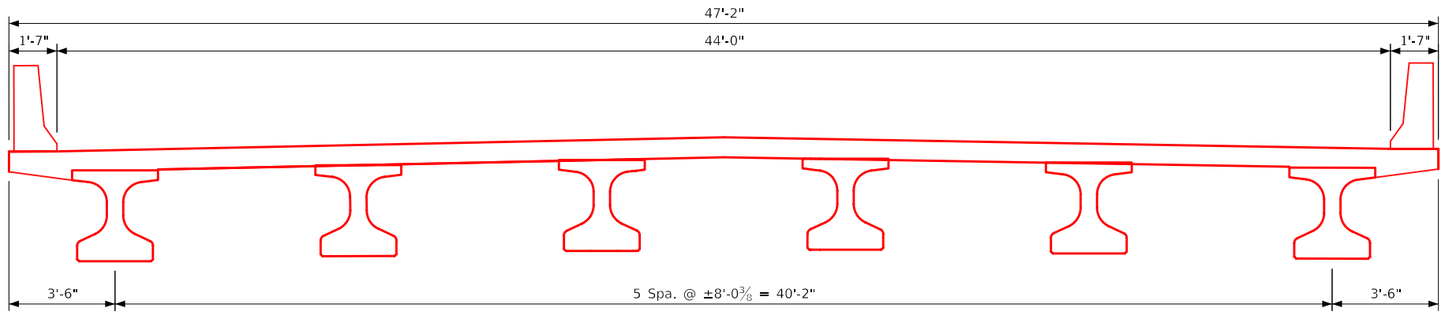


STAGE 1 CONSTRUCTION



STAGE 2 CONSTRUCTION



BRIDGE CROSS SECTION

Staging and horizontal clearance on the bridges to be discussed as part of the separate meeting with District, PMB, Traffic and Safety and Stanley Consultants

Δ Stage 1 traffic lane can be widened to approximately 11'-4" if steel TBR is used

Note:
Capacity of existing structure to be evaluated to ensure that it will carry legal loads.

Applies to Sheets V.1-V.6.

PRELIMINARY

Design For 0° Skew

Alternate 1

US 30 Staging Details

July 2022

Clinton County

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY ADMINISTRATION

Design No. Design Sheet No. 1 of 1

FILE NO. TBD	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	Clinton COUNTY	PROJECT NUMBER TBD	SHEET NUMBER V.7

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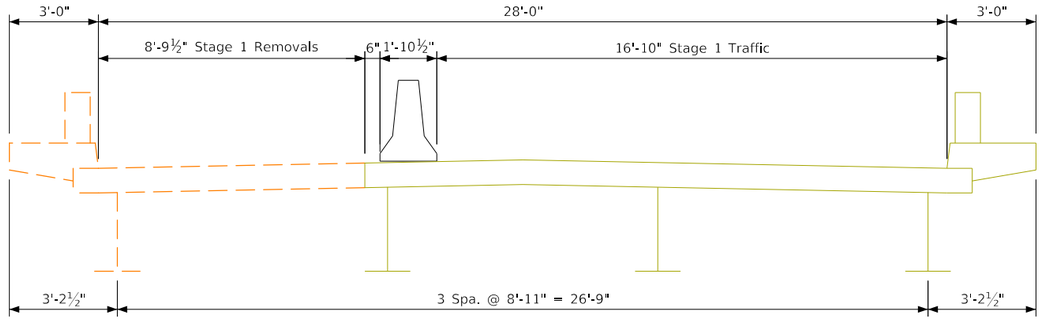
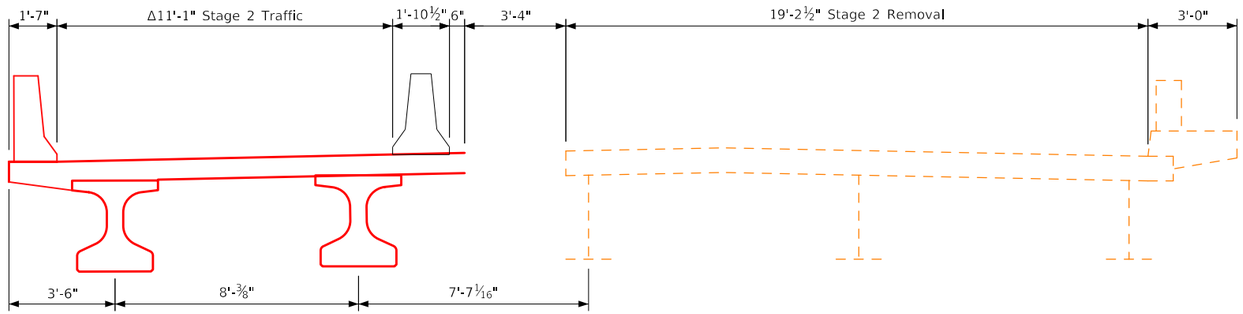
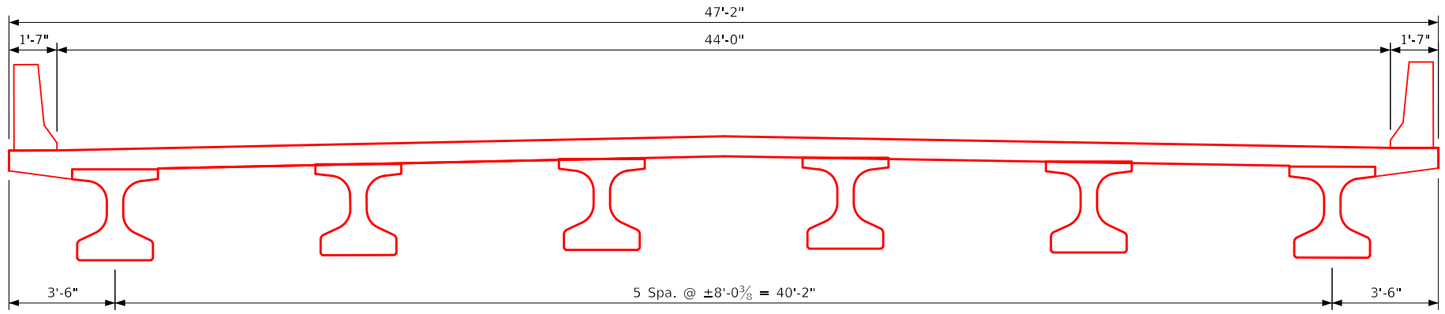


STAGE 1 CONSTRUCTION



STAGE 2 CONSTRUCTION



BRIDGE CROSS SECTION

Δ Stage 2 traffic lane can be widened to approximately 11'-9" if steel TBR is used

Note:
Capacity of existing structure to be evaluated to ensure that it will carry legal loads.

Applies to Sheets V.1-V.6.

Currently the preferred option of the two options presented

PRELIMINARY

Alternate 2

US 30 Staging Details

July 2022

Clinton County

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY ADMINISTRATION

Design No. Design Sheet No. 1 of 1

FILE NO. TBD	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	Clinton COUNTY	PROJECT NUMBER TBD	SHEET NUMBER V.8

12:28:10 PM 7/22/2022 9127 c:\pw_work\pwmain\kelsey.berens\d1625443\ORD_23030186_STANLEY_STRUCTURES_Z11.dgn

CROSS SECTION VIEW COLOR LEGEND

Design Color No.	Feature
Aggregate	
(64)	Choke Stone
(42)	Engineering Fabric
(8)	Flooded Backfill
(92)	Macadam Stone
(20)	Modified
(12)	Plowing Shaping
(14)	Porous Backfill
(8)	Revetment Class A
(6)	Revetment Class B
(62)	Revetment Class C
(188)	Revetment Class D
(28)	Revetment Class E
(12)	Shoulder Special Backfill
(12)	Special Backfill
(20)	Subbase
(20)	Subbase Lower
(20)	Subbase Upper
(118)	Subgrade Treatment
Asphalt	
(207)	HMA Base Course
(207)	HMA Interim Course
(207)	HMA Surface Course
Concrete	
(0)	Barrier Concrete
(0)	Barrier Concrete Footing
(0)	Curb Gutter
(48)	Flowable Mortar
(0)	Median Concrete
(0)	PCC Pavement
(0)	Sidewalk
Shoulder	
(209)	Shoulder HMA
(0)	Shoulder PCC
(6)	Shoulder Granular
Existing	
(0)	Existing Pavement
Structural	
(0)	Bridge
(21)	Guardrail
(112)	Noise Wall
(112)	Noise Wall Footing
(112)	Retaining Wall Back
(112)	Retaining Wall Back Excavate
(112)	Retaining Wall Face
(112)	Retaining Wall Front Excavate
(112)	Retaining Wall Front Footing
(112)	Retaining Wall MSE Gutter
(112)	Retaining Wall Reinforced Earth
Grading	
(8)	Behind Curb Cut
(6)	Granular
(13)	Granular Back Fill
(48)	Rock Undercut
(8)	Shoulder Earth Fill
(2)	Side Slopes
(226)	Side Slopes Dressing
Substrata	
(128)	Boulder Substrata
(209)	Boulder Removed Substrata
(48)	Broken Weathered Substrata
(210)	Broken Weathered Removed Substrata
(3)	Core Out Substrata
(195)	Core Out Remove and Replace Substrata
(115)	Core Out Remove Only Substrata
(203)	Existing Pavement Substrata
(200)	Existing Pavement Remove and Replace Substrata
(184)	Existing Pavement Remove Only Substrata
(6)	Loam Substrata
(211)	Loam Removed Substrata
(80)	Rock Substrata
(212)	Rock Removed Substrata
(4)	Select Sand Substrata
(214)	Select Sand Removed Substrata
(3)	Shale Substrata
(215)	Shale Removed Substrata
(10)	Topsoil Substrata
(4)	Topsoil Remove and Replace Substrata
(2)	Topsoil Remove Only Substrata
Unsuitable / Waste	
(3)	Unsuitable Type A
(216)	Unsuitable Type A Removed
(13)	Unsuitable Type B
(217)	Unsuitable Type B Removed
(11)	Unsuitable Type C
(218)	Unsuitable Type C Removed
(3)	Waste
(219)	Waste Removed
Trigger Switches	
(27)	Do Not Construct

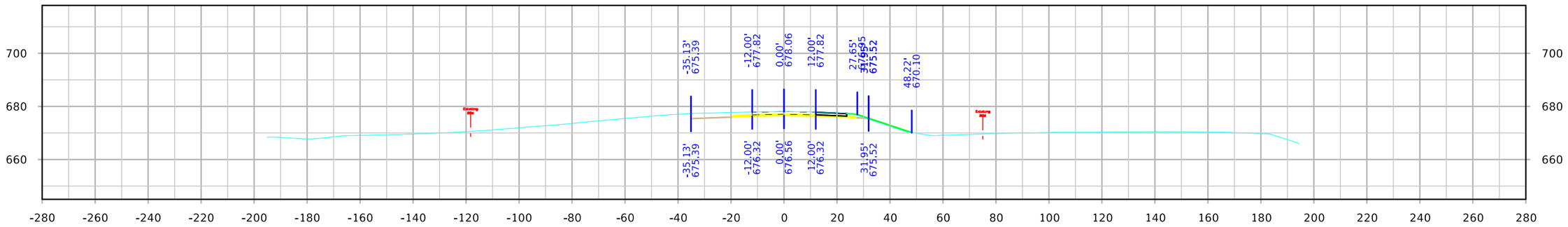
NOTES:

NOTES:

CROSS SECTIONS
LEGEND AND INFORMATION SHEET

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

ML - US30



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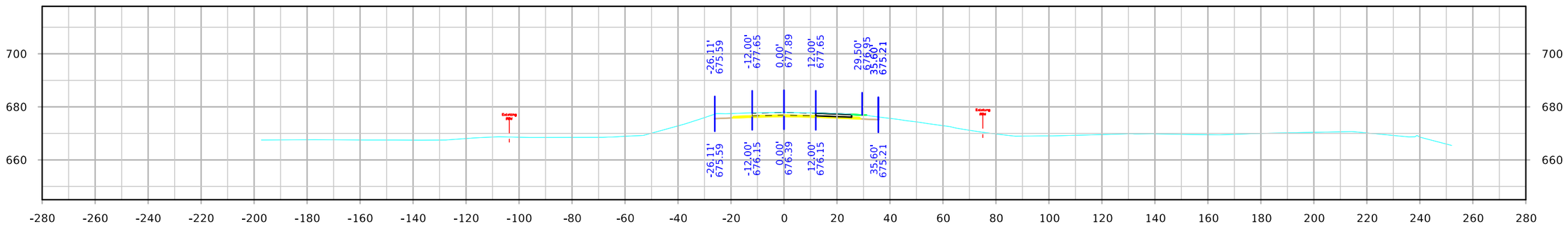

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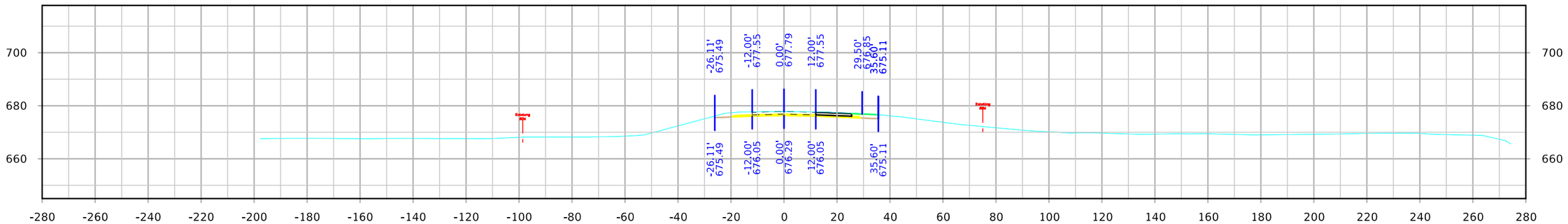

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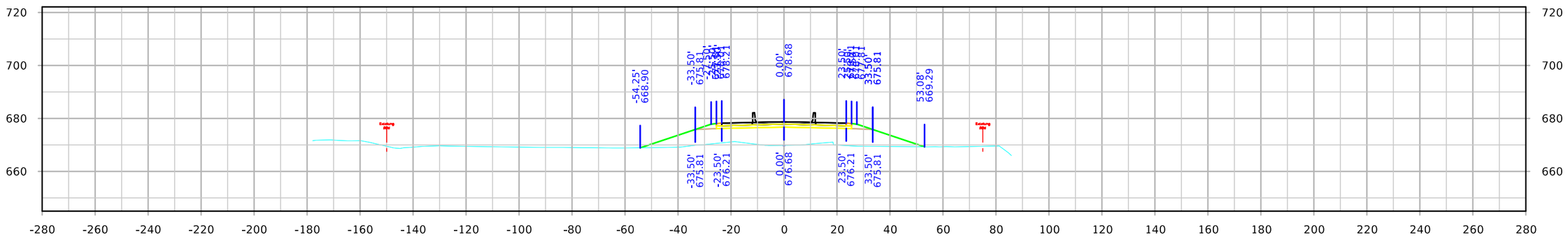

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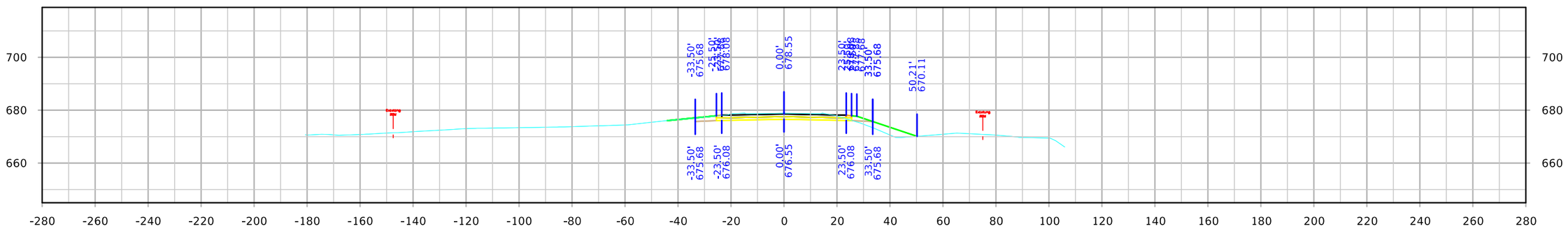

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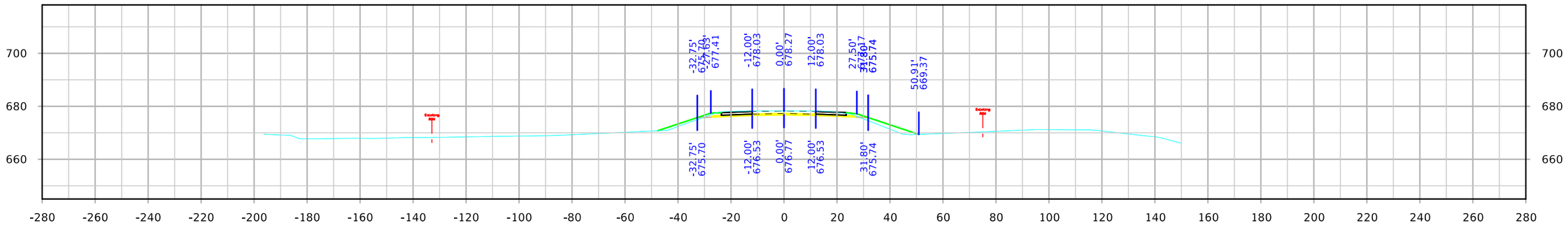

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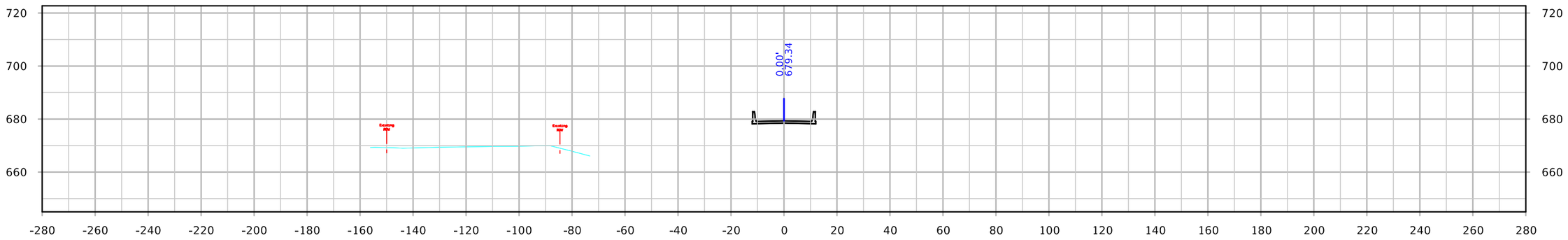

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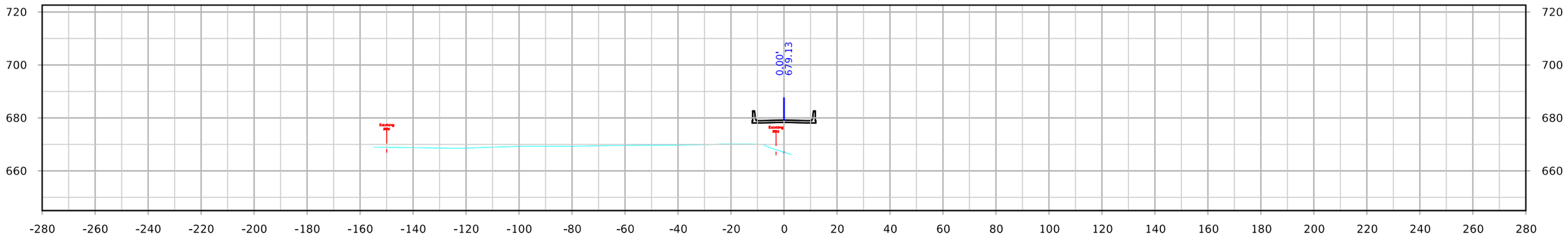

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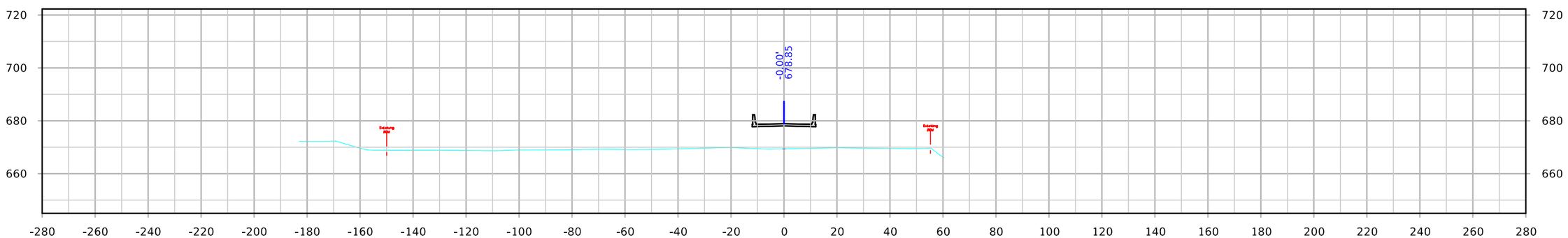

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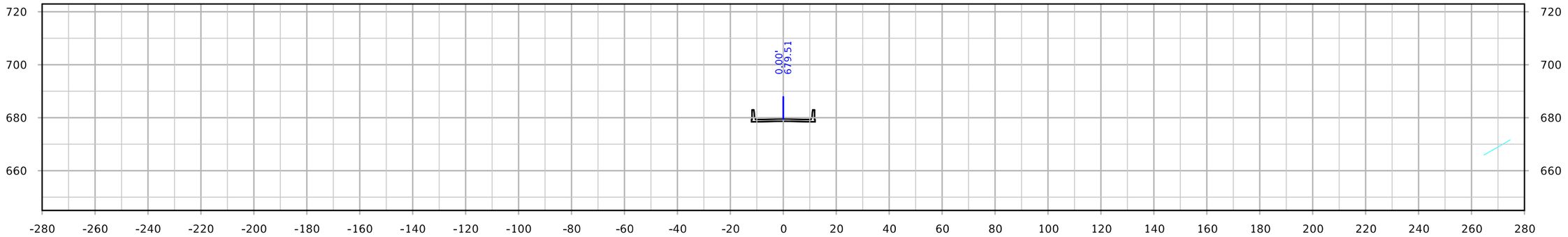

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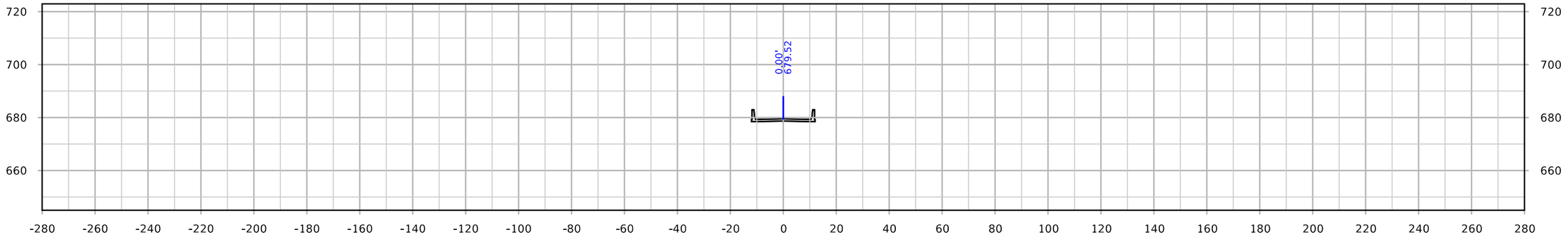

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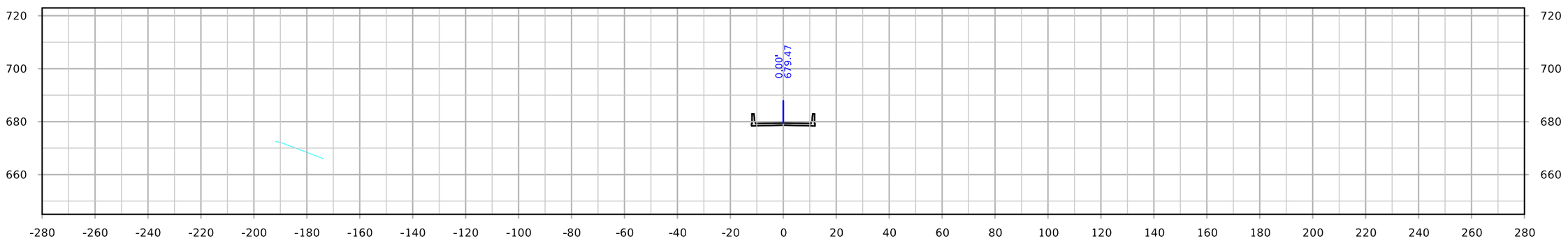

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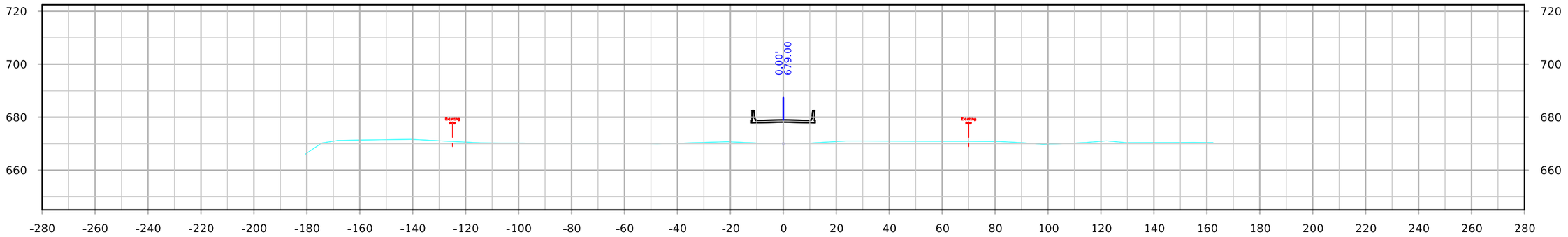

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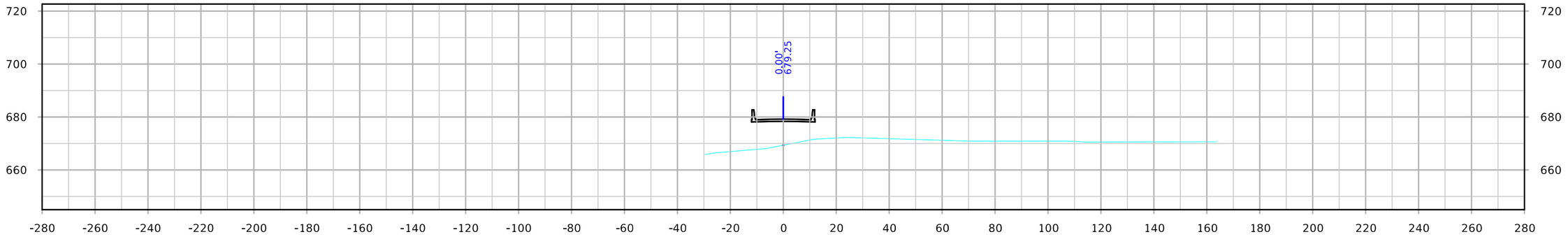

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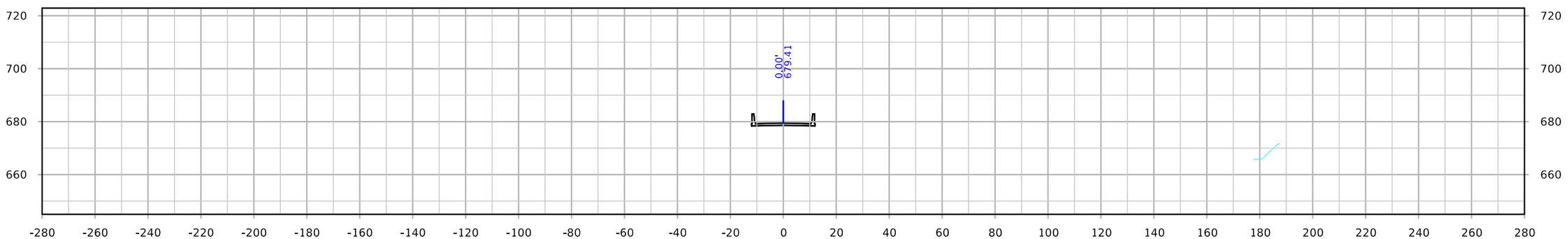

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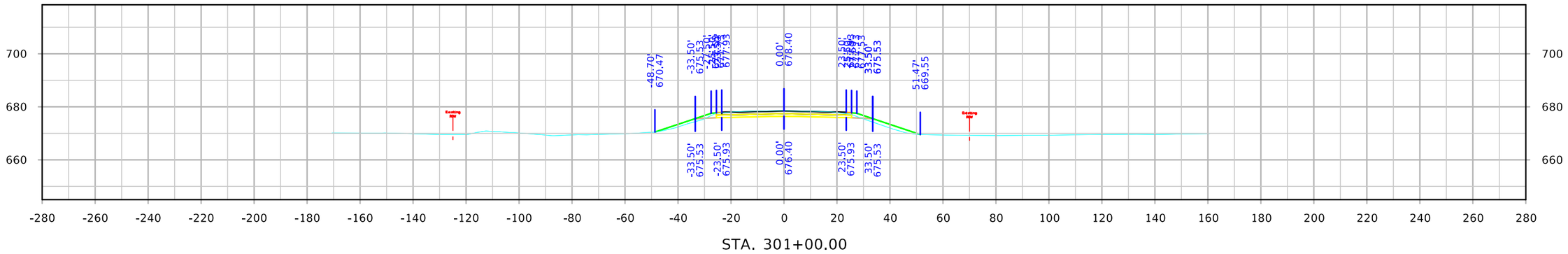

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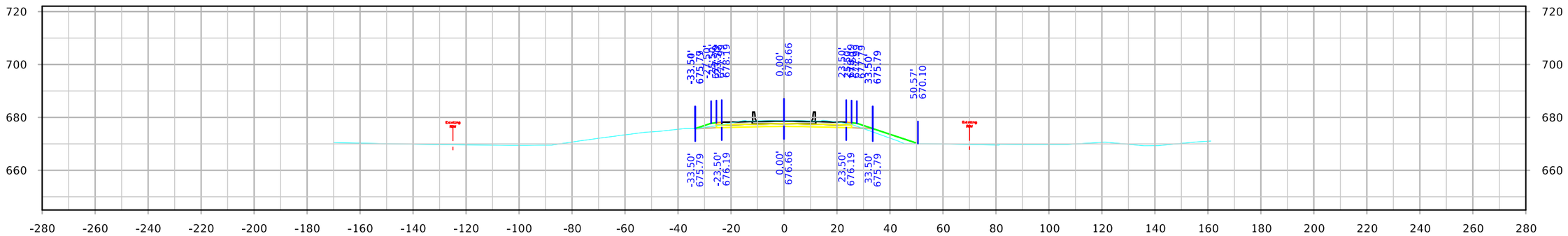

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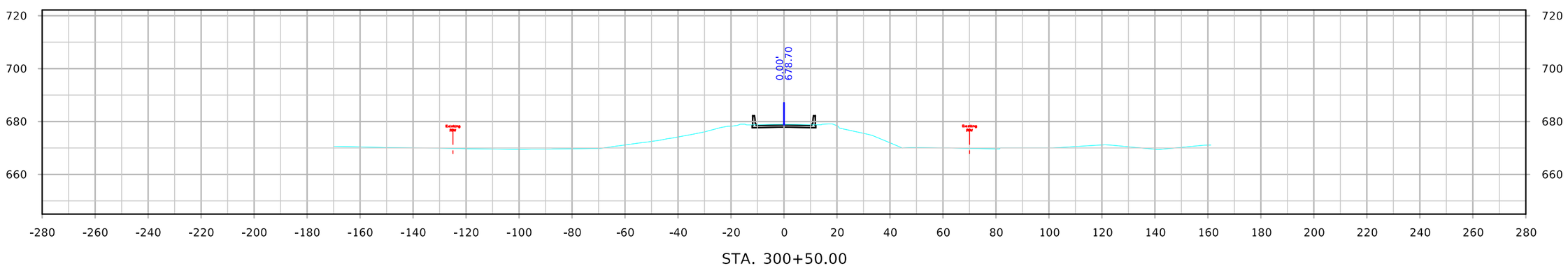

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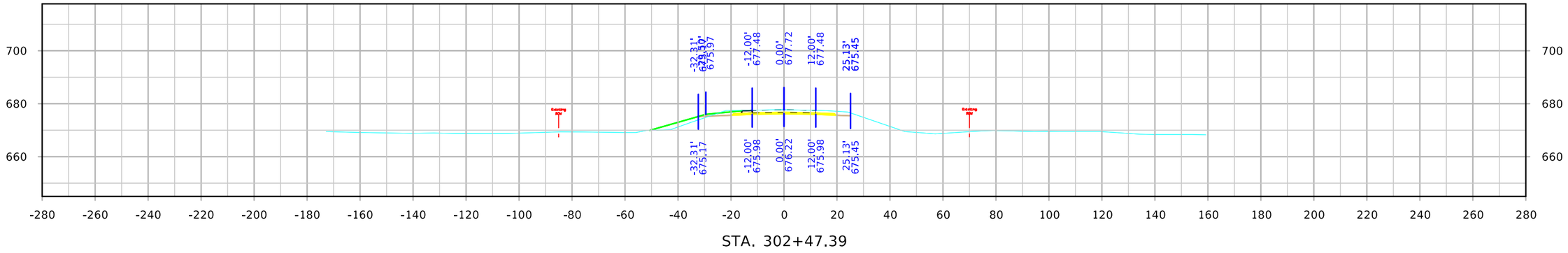

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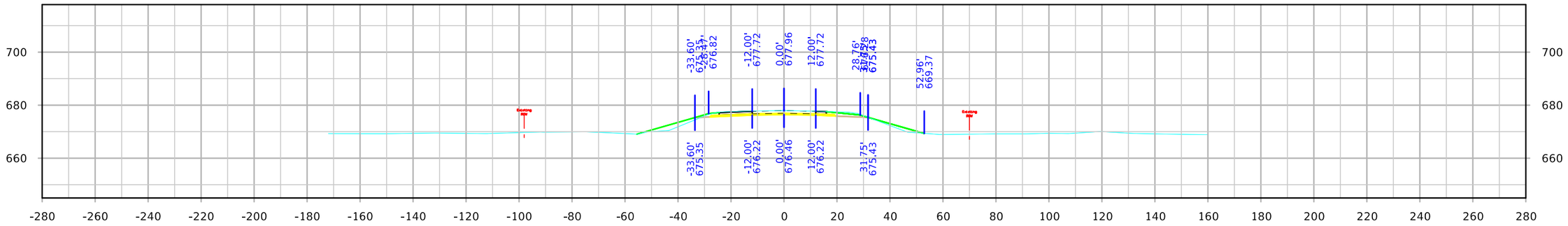

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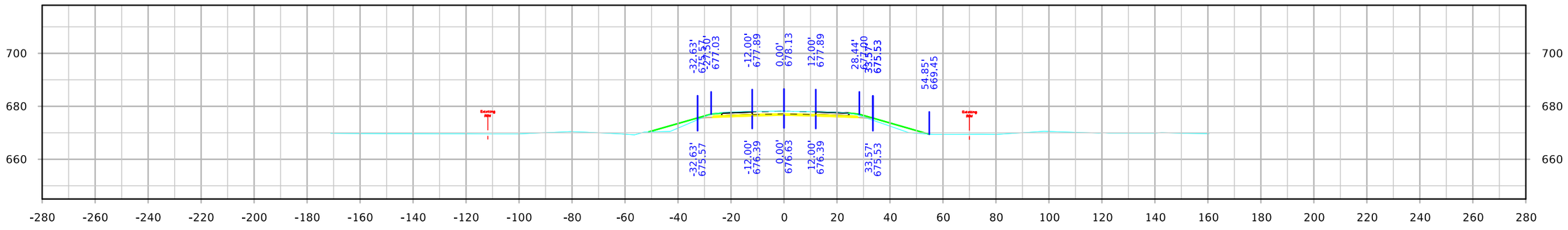

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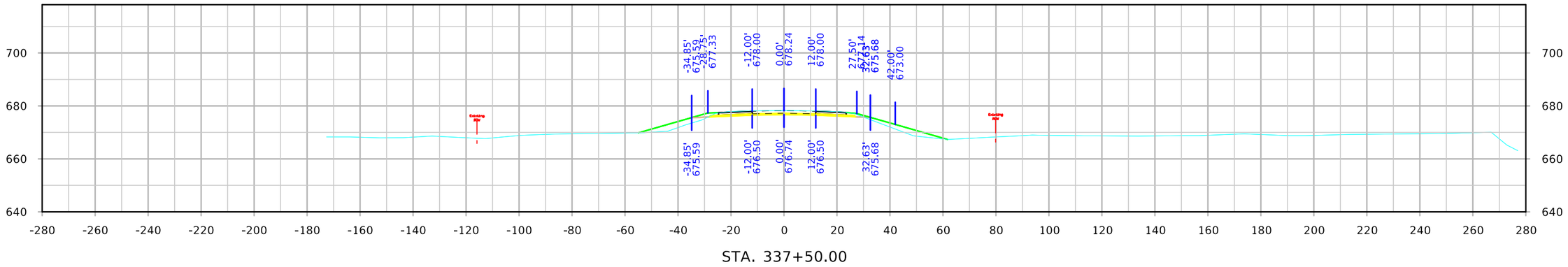

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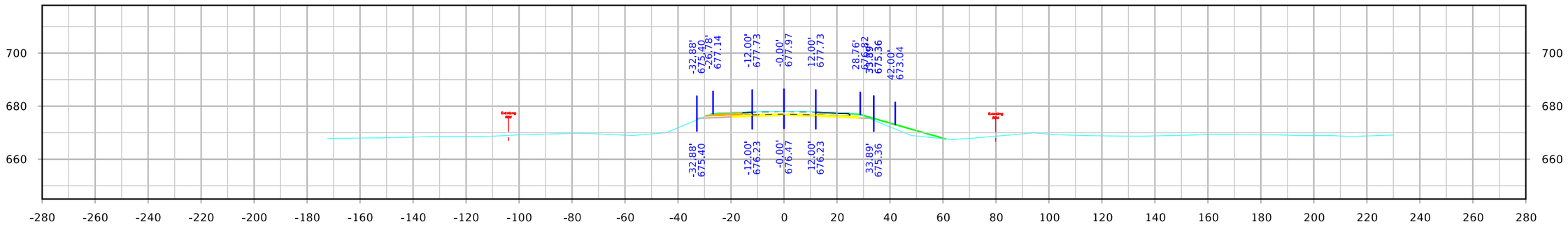

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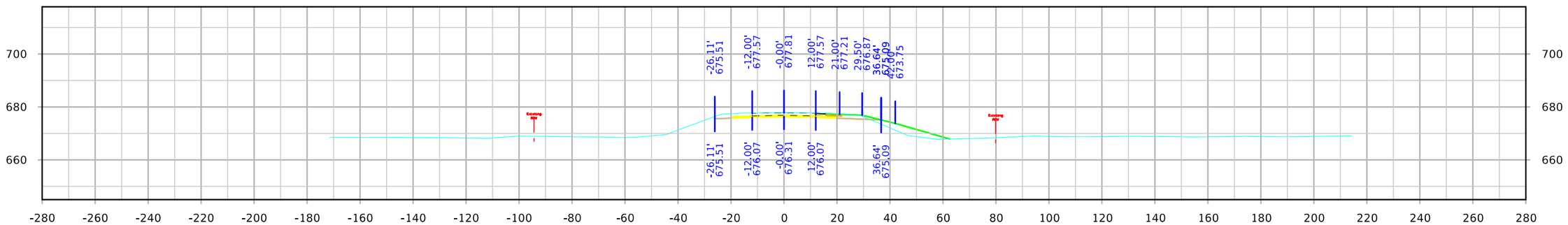

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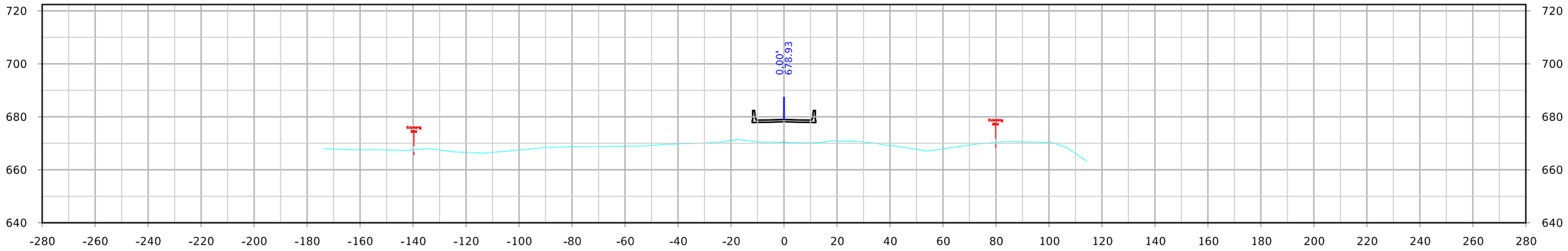

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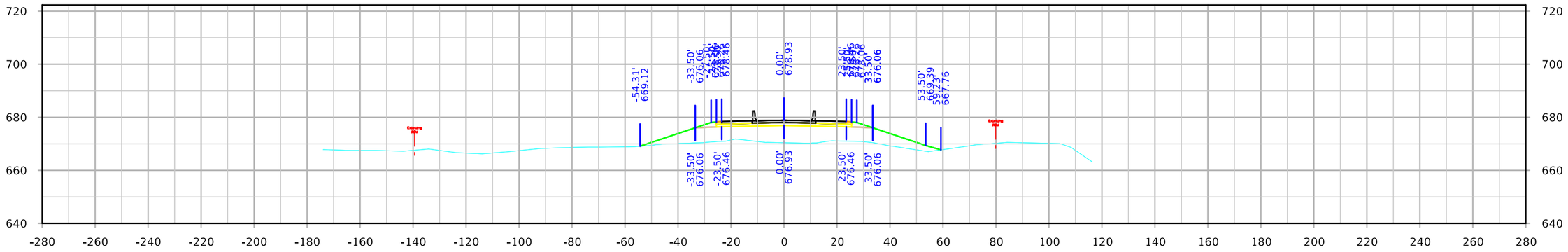

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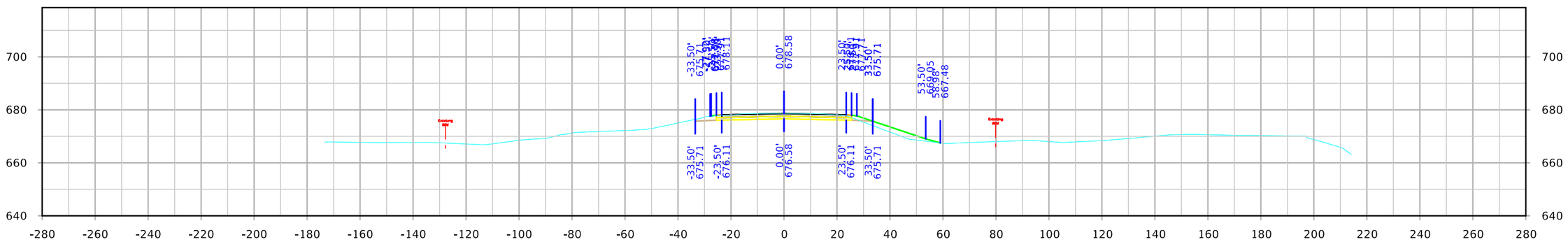

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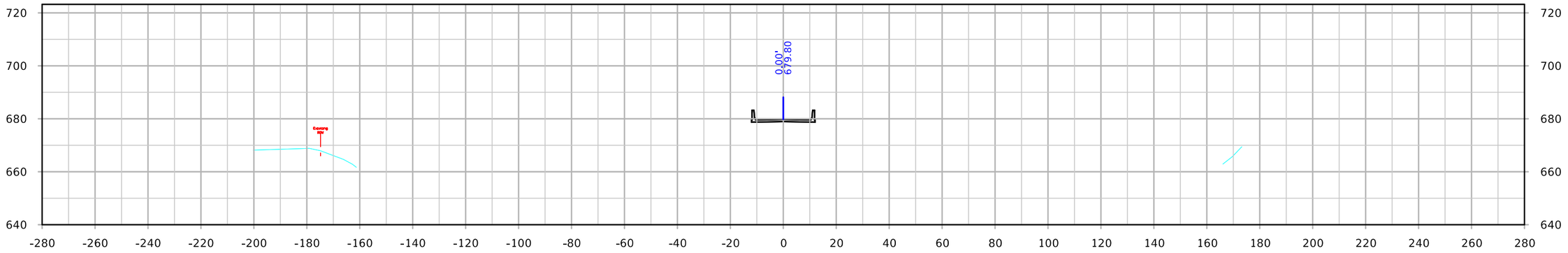

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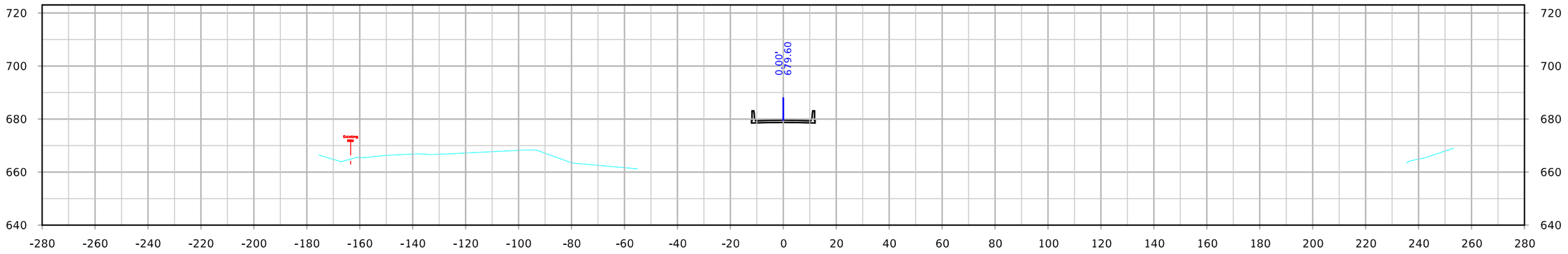

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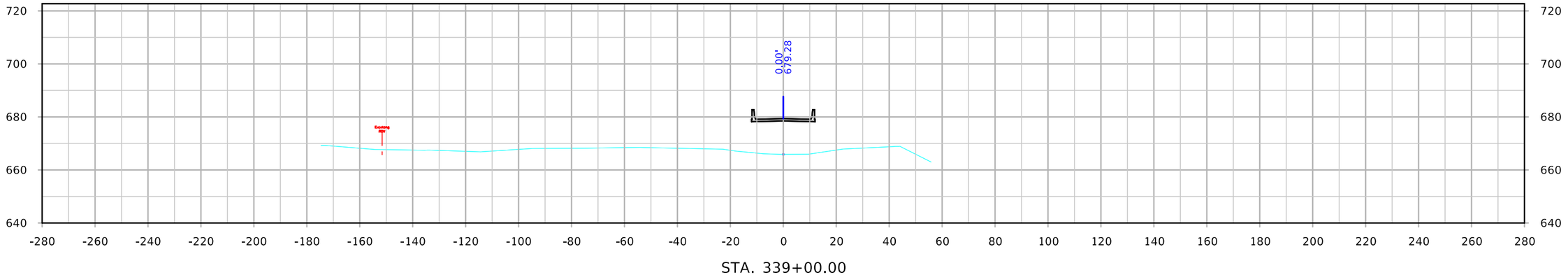

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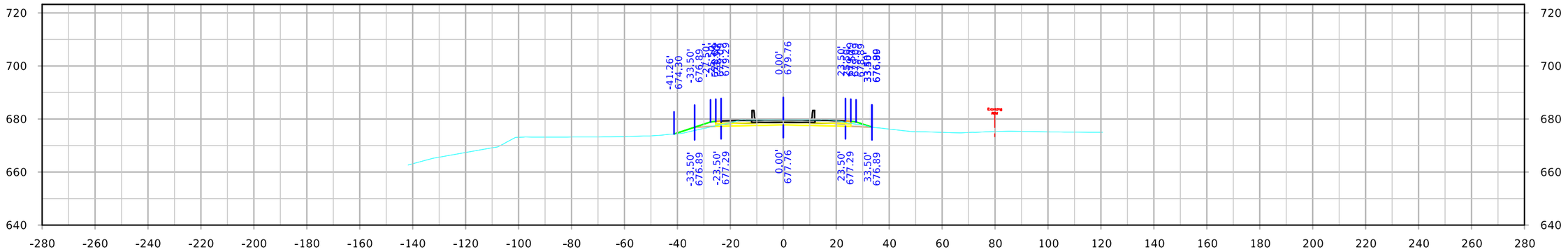

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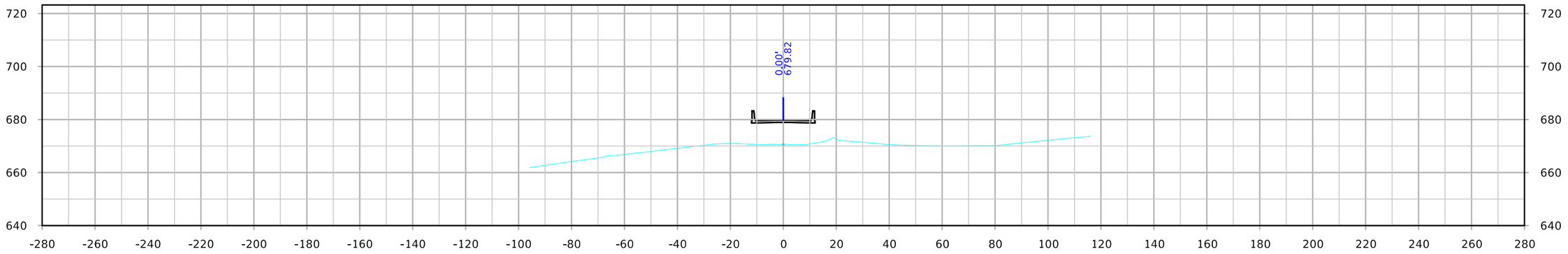

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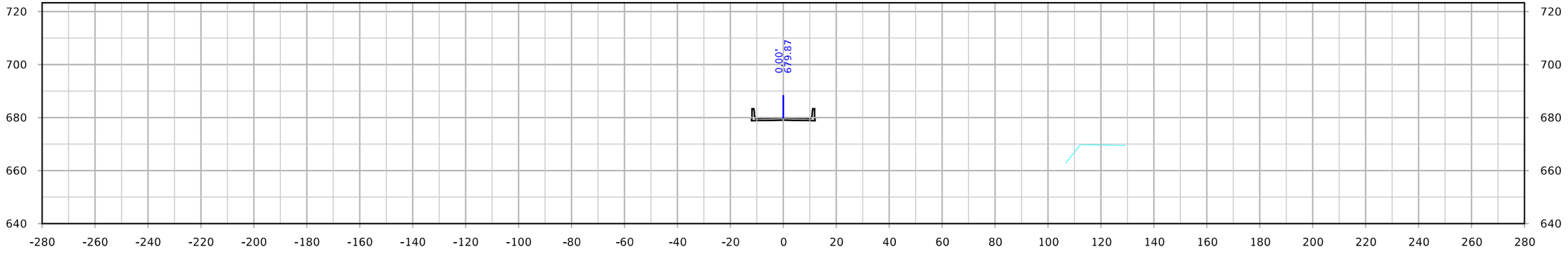

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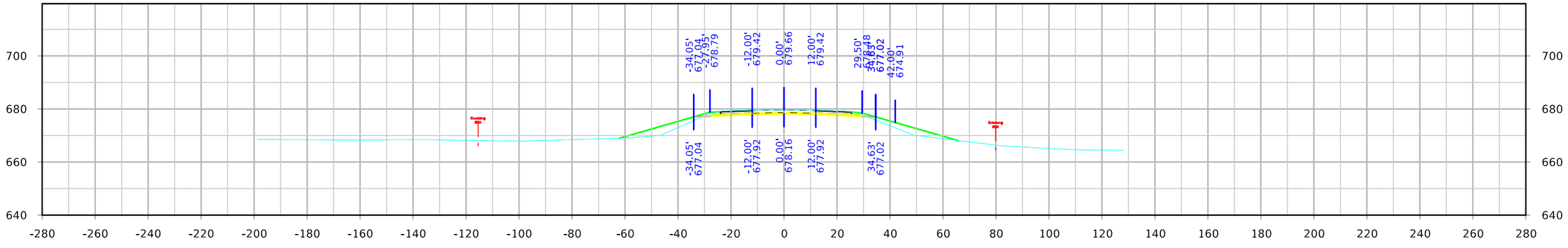

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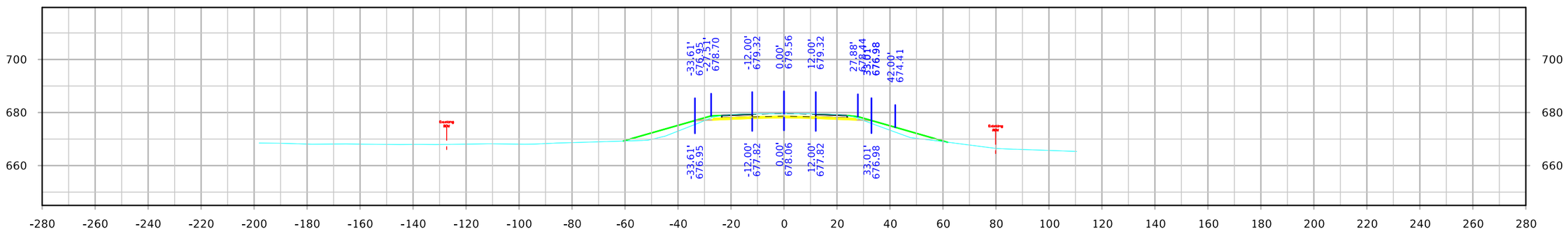

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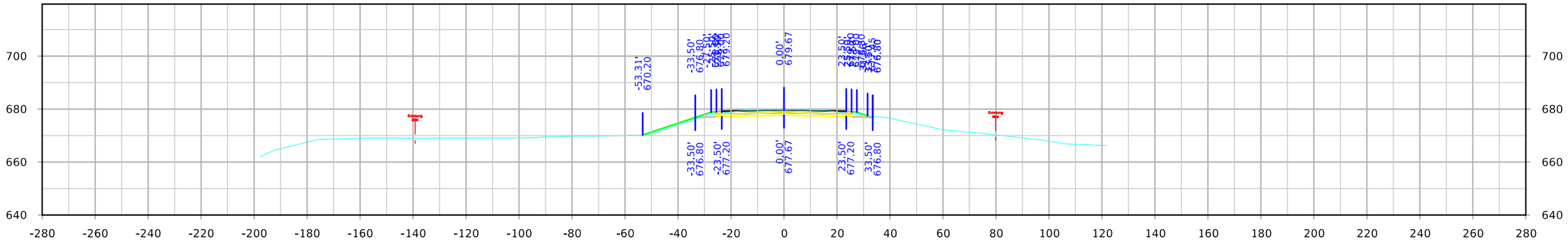

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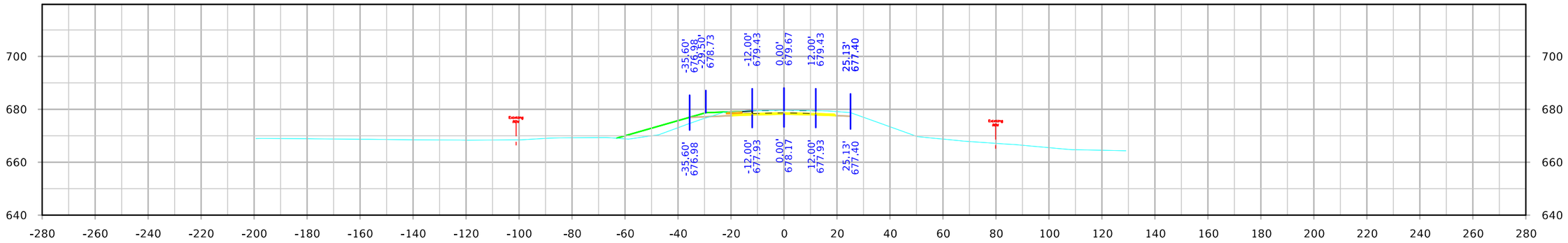

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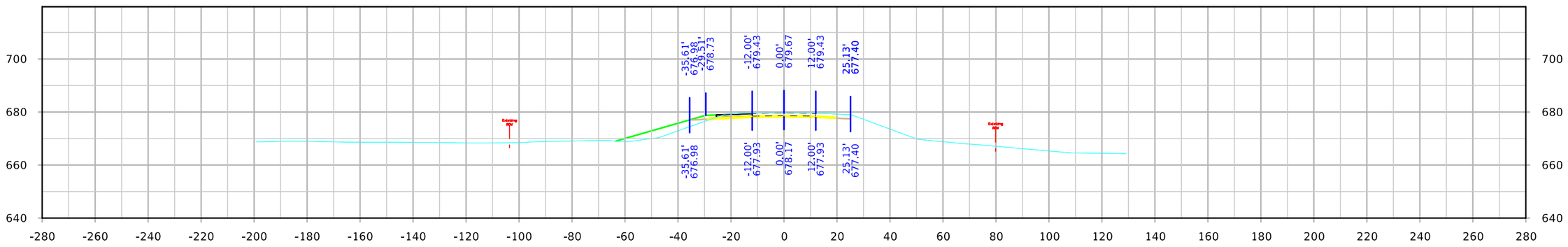

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FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(186)--38-23	SHEET NUMBER W.14

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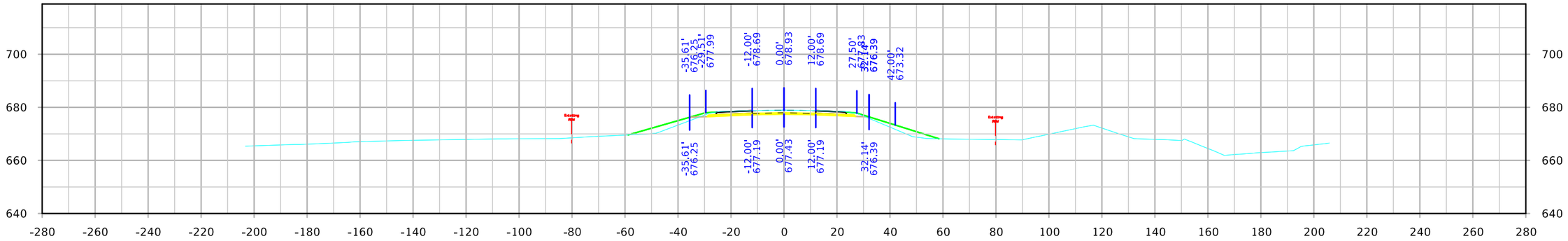
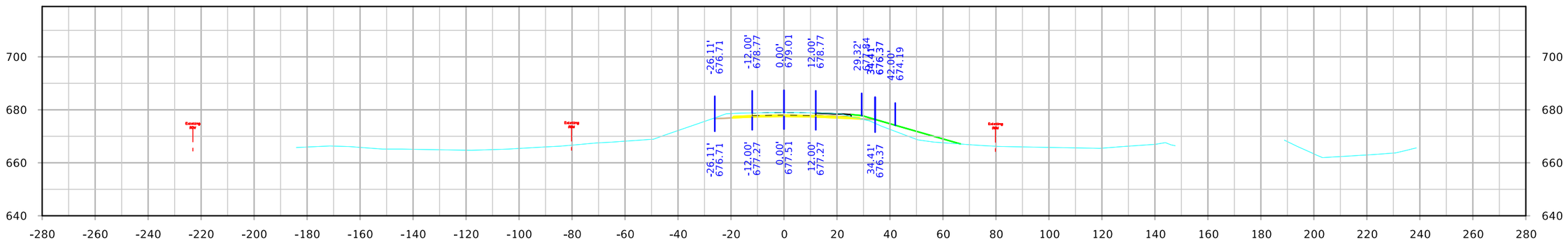
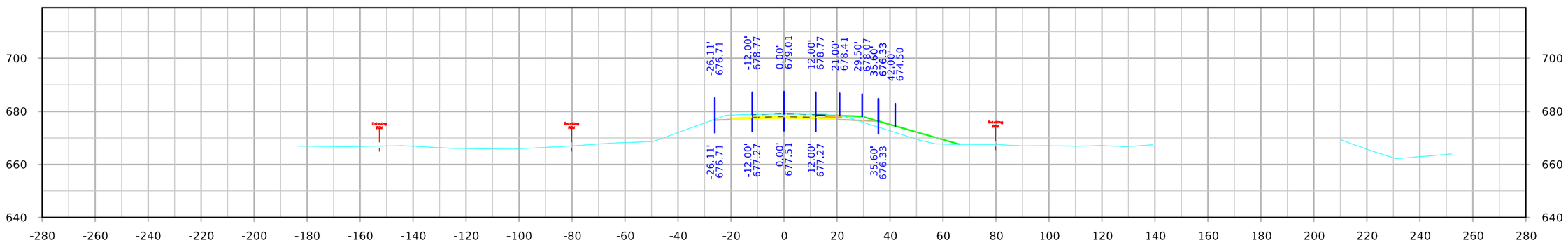


STA. 352+00.00



STA. 351+50.00



STA. 351+22.39

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(186)--38-23	SHEET NUMBER W.15

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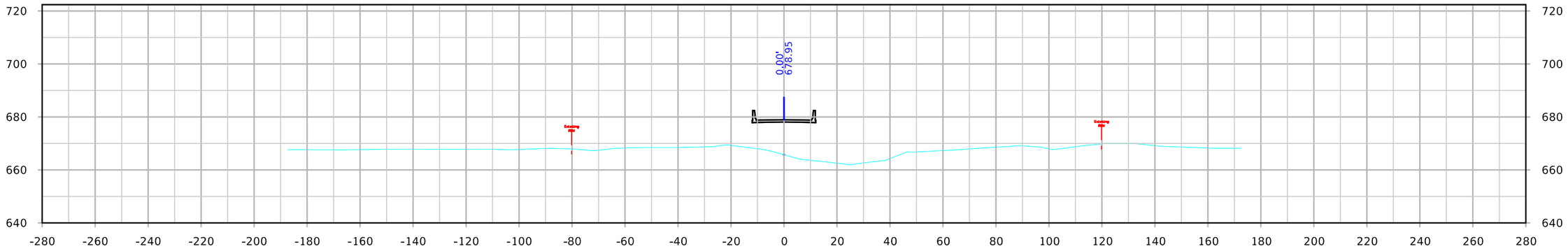
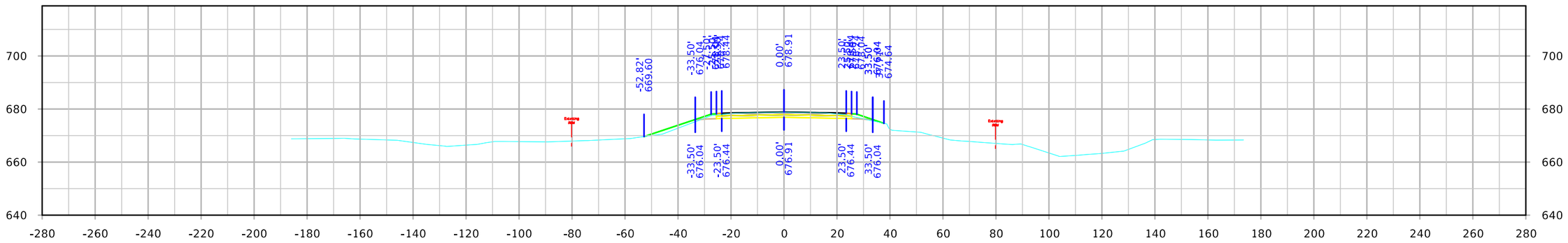
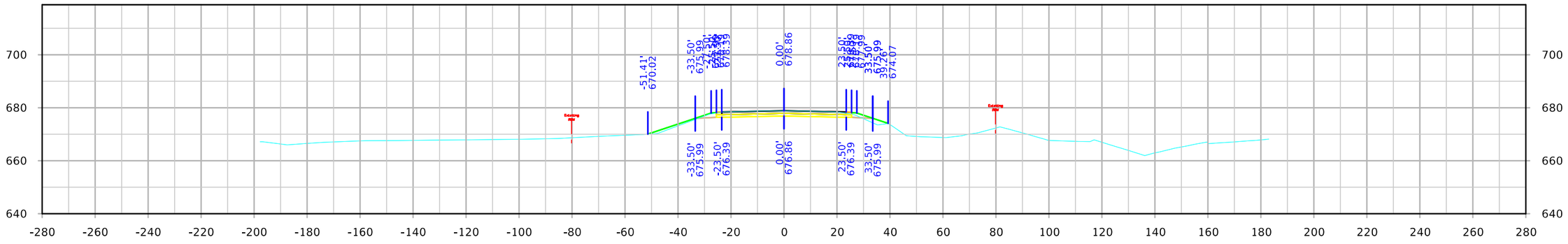
ML - US30



STA. 354+00.00



STA. 353+00.00



STA. 352+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(186)--38-23	SHEET NUMBER W.16	

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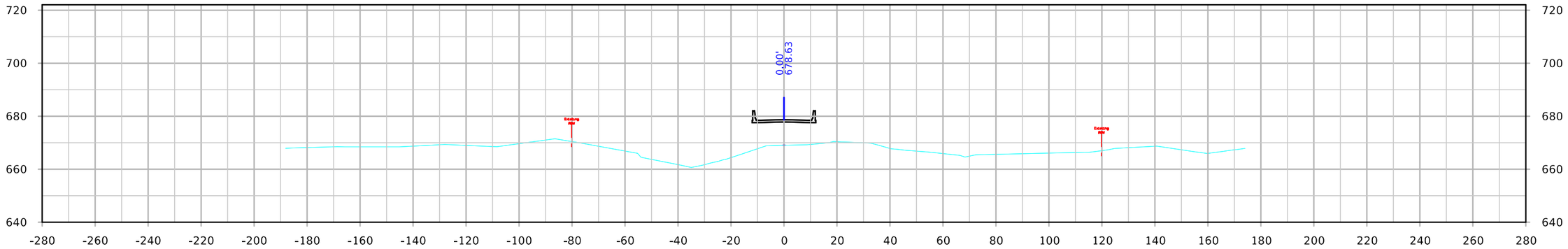
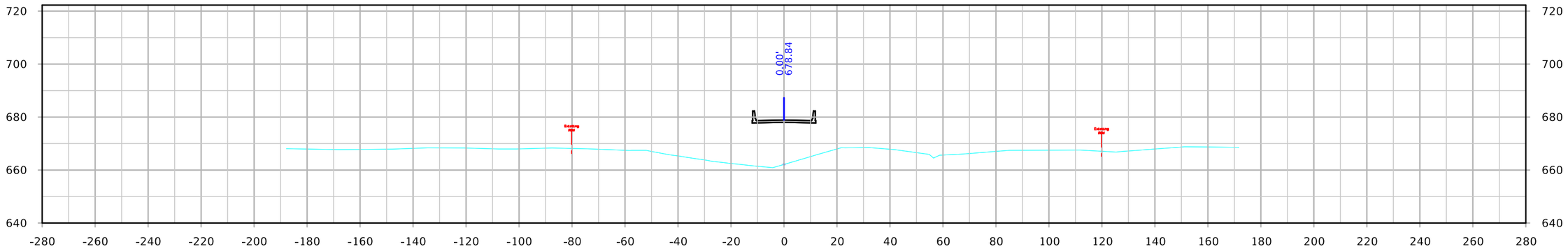
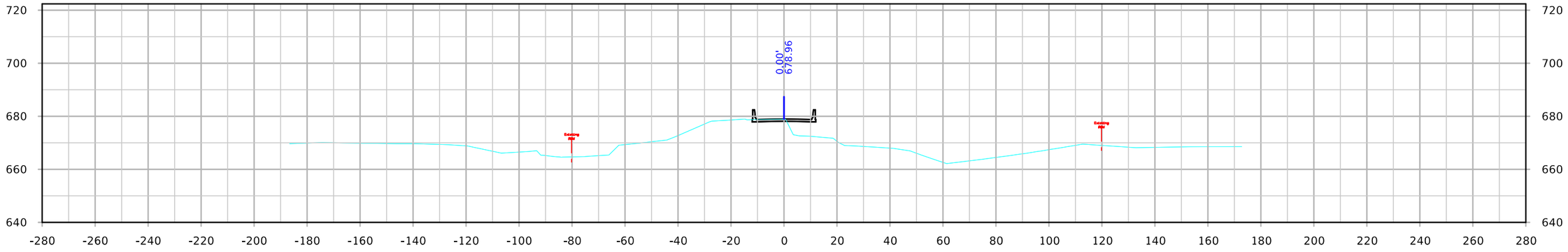
ML - US30



STA. 355+00.00



STA. 354+50.00



STA. 353+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(186)--38-23	SHEET NUMBER W.17

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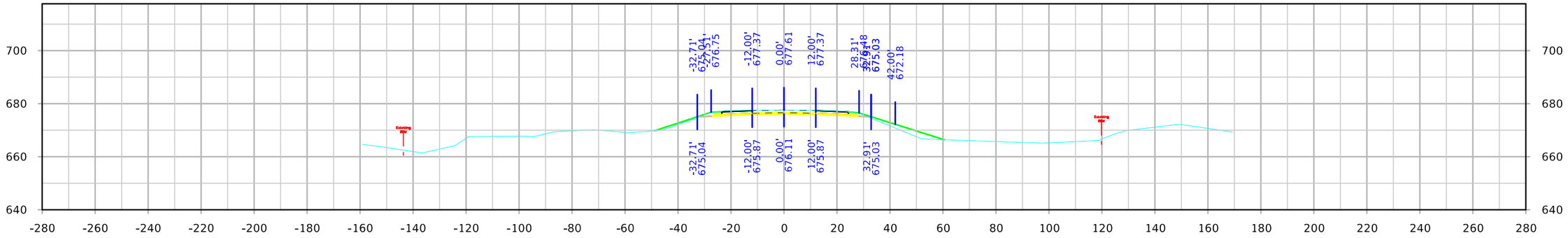
ML - US30



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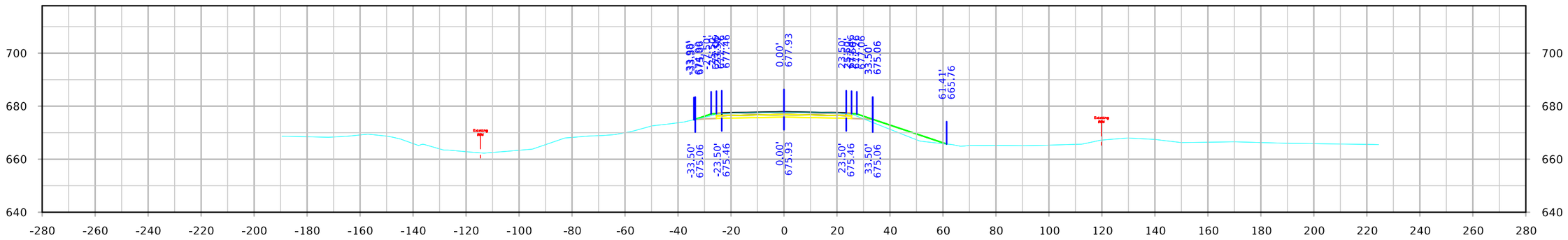
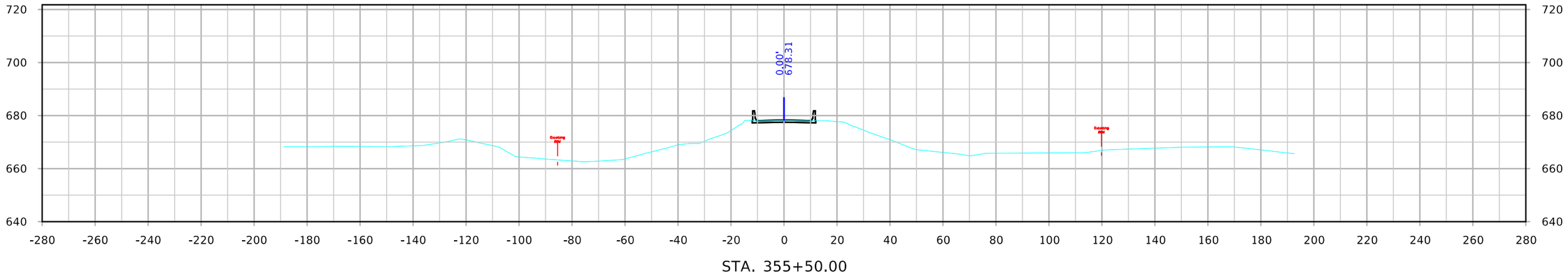


STA. 356+00.00



STA. 355+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(186)--38-23	SHEET NUMBER W.18

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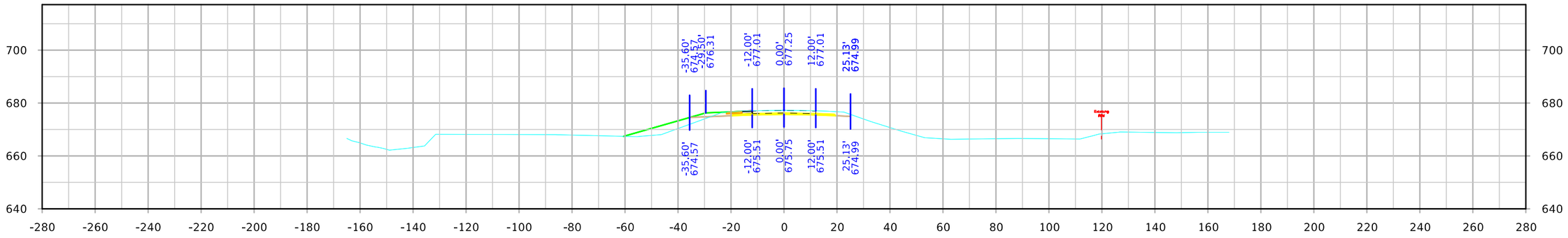
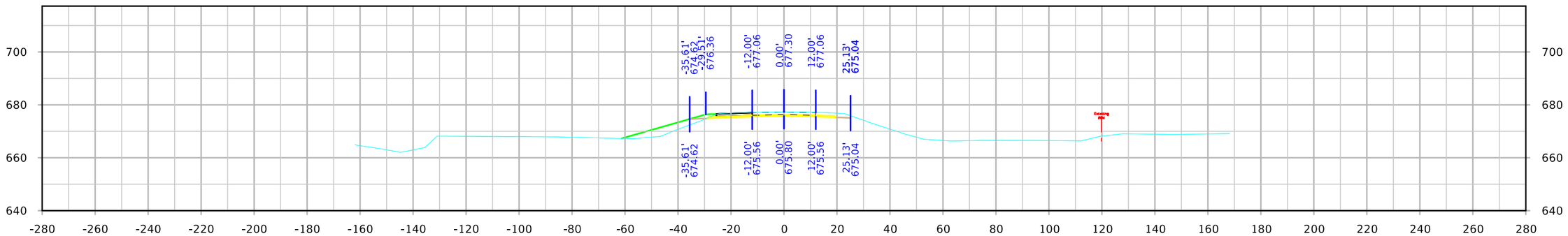
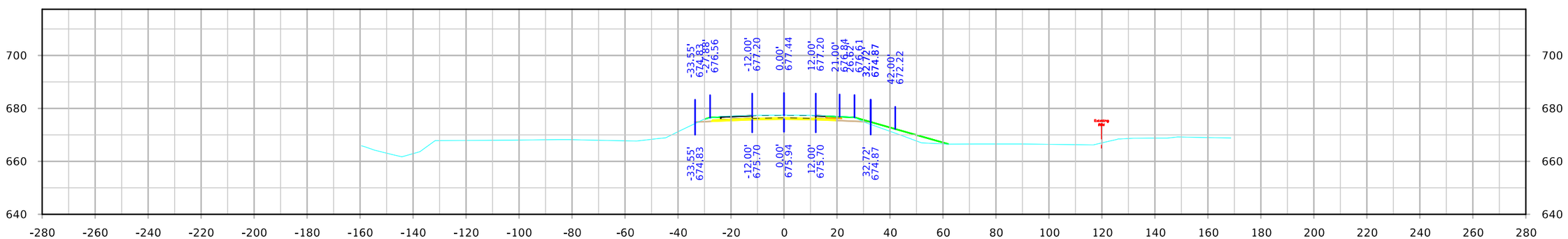
ML - US30



STA. 357+62.19



STA. 357+50.00



STA. 357+00.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(186)--38-23	SHEET NUMBER W.19

11:44:46 AM 7/15/2022 9474 c:\pw_work\pwmain\seth.morling\d1625189\SHT_23030186_W02.dgn