Roadway Realignment and Bridge Replacements
BRF-030-9(189)--38-23
CLINTON COUNTY

LETTING DATE 10/15/2024

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	**Title Sheets**
A.1	Title Sheet
A.2	Location Map Sheet
A.3 - 4	Design Criteria (Temp Sheets)
B Sheets	**Typical Cross Sections and Details**
B.1 - 2	Typical Cross Sections and Details
C Sheets	**Quantities and General Information**
C.1	Project Description
C.1	Estimated Project Quantities
C.1	Estimate Reference Information
C.1	Standard Road Plans
D Sheets	**Mainline Plan and Profile Sheets**
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2 - 6	US 30
G Sheets	**Survey Sheets**
G.1 - 4	Reference Ties and Bench Marks
G.5	Horizontal Control Tab. & Super for all Alignments
G.6 - 7	Superelevation Evaluation (Temp Sheets)
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control Plan
J.1	Staging Notes Stage
* J.2	Traffic Control & Staging Legend & Symbol Info. Sheet
* J.3 - 5	Staging and Traffic Control Sheets
U Sheets	**500 Series, Mod.Stds. and Detail Sheets**
U.1	500 Series, Modified Standards and Detail Sheets
V Sheets	**Bridge and Culvert Situation Plans**
* V.1 - 5	Bridge and Culvert Situation Plans
* V.6 - 7	Plat Plans
W Sheets	**Mainline Cross Sections**
* W.1	Cross Sections Legend & Symbol Information Sheet
* W.2 - 49	Mainline Cross Sections
	* Color Plan Sheets

IOWA DOT

REVISIONS

TOTAL 81
PROJECT IDENTIFICATION NUMBER
19-23-030-020
PROJECT NUMBER
BRF-030-9(189)--38-23
R.O.W. PROJECT NUMBER
NHSN-030-9(190)--2R-23

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
CLINTON COUNTY
Roadway Realignment and Bridge Replacements
UP RR 0.6 mi E of Co Rd Y4E

SCALES: As Noted

Refer to the Proposal Form for list of

Value Engineering Saves. Refer to Article

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.

Discussed the 2D hydraulic model. A draft report is available for review. Stanley Consultants will send link to prelim bridge.

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) - 06/18/2024
L05 (Letting) - 10/15/2024

44

DESIGN DATA RURAL			
2020	AADT	3,100	V.P.D.
20 --	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(189)--38-23	SHEET NUMBER A.1

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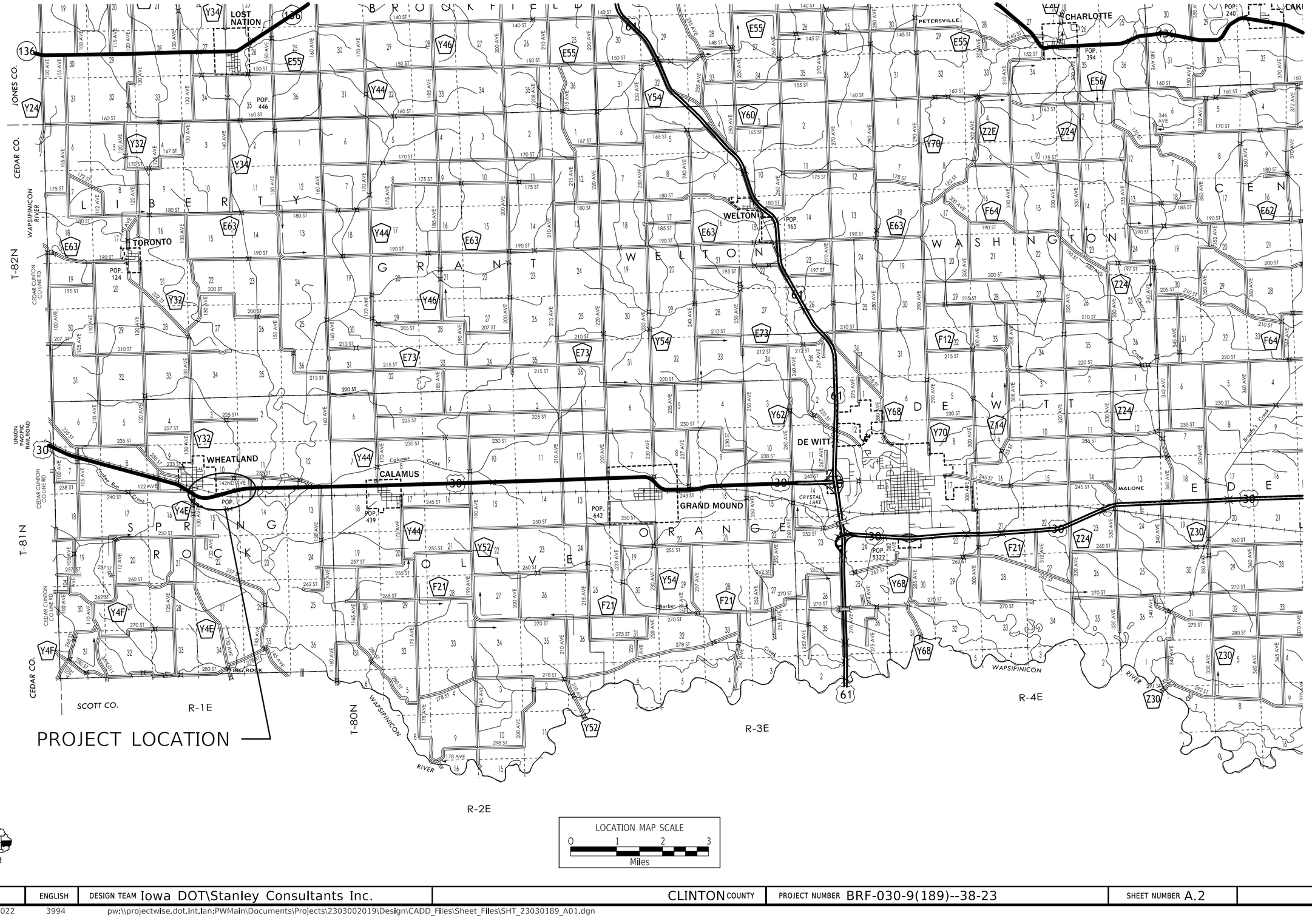

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER A.2

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Roadway	US 30				
PIN Number	19-23-030-020 / 21-23-030-030		**Submittal Date**	07/15/22	
Project Number	BRF-030-9(189)--38-23 / BRF-030-9(196)--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 Union Pacific Railroad and Wapsipinicon River Overflow				
Work Type	Roadway Realignment and Bridge Replacements				
Segment Manager					
Designer	Stanley Consultants Inc.				

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

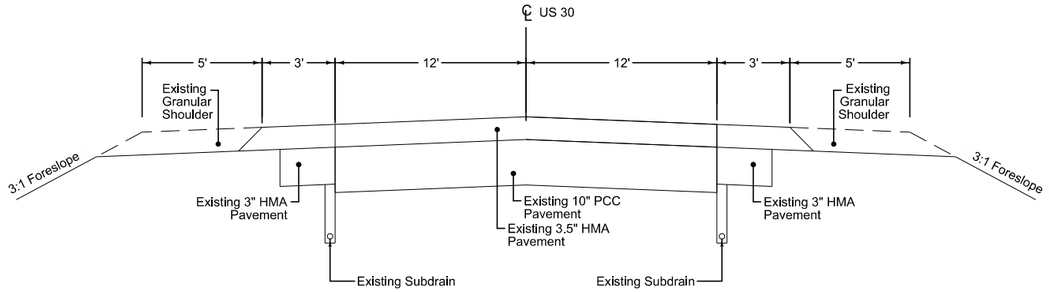
Rural Two-Lane Highways (Rural Arterials)

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	23.3	--
	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)

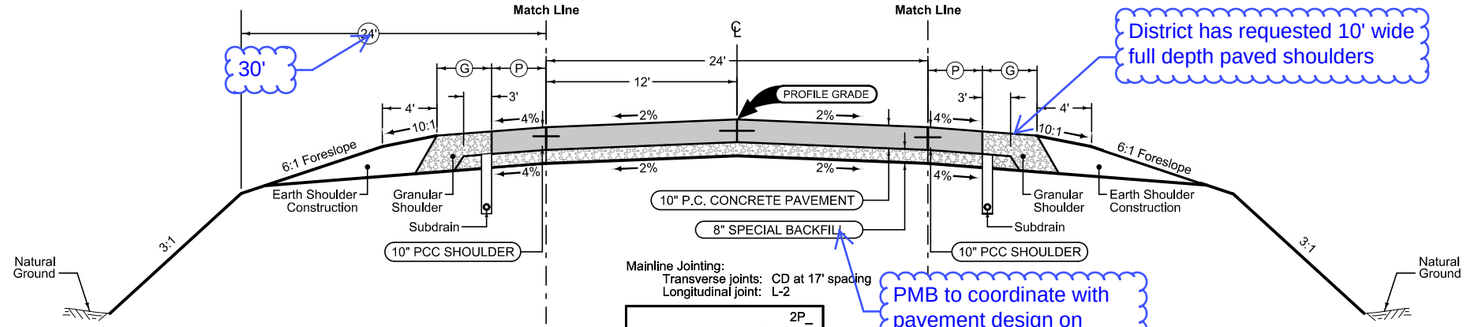
Design year ADT =	3800												
Design Manual Section 1C-1 Last Updated: 04-29-19	**Effective Shoulder Width and Type for Two-Lane Highways**												
Preferred (values shown in feet)				Acceptable (values shown in feet)				Project Values					
	Rural Roadways	Urban Roadways			Rural Roadways	Urban 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											
On roadways approaching urban areas (due to increased bike traffic)	10	10		Design year ADT > 2000 vpd	8	0*		10	GB table 7-3				
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						Acceptable Criteria						Project Values	
			Design Speed, mph						Design Speed, mph							
			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)	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
(Refer to Section 2B-1)		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						30	



US 30

EXISTING US 30



Mainline Jointing:
Transverse joints: CD at 17' spacing
Longitudinal joint: L-2

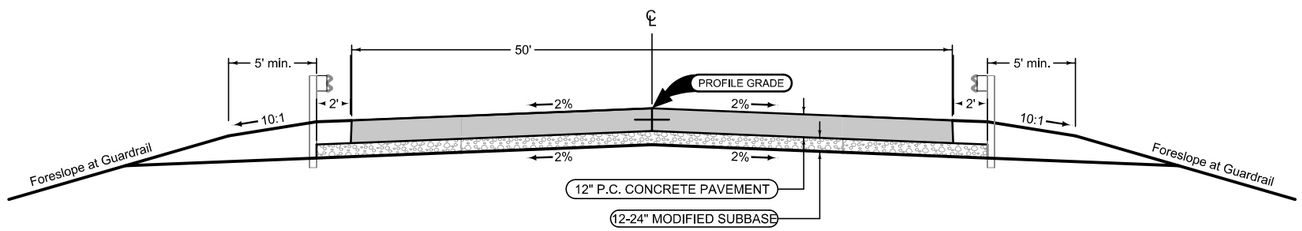
2P_ 04-21-20	
STATION TO STATION	
222+26.04	238+63.05
243+40.07	269+09.02
272+48.02	287+50.00

Full Depth PCC Combination Shoulder

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

2_C_FullPCC_ 04-20-21			
STATION TO STATION		(P) Feet	(G) Feet
222+26.04	238+63.05	6	4
243+40.07	269+09.02	6	4
272+48.02	287+50.00	6	4

PROPOSED US 30



STATION TO STATION	
238+63.05	239+42.79
242+60.37	243+40.07
269+09.02	269+79.02
271+78.02	272+48.02

BRIDGE APPROACH US 30

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER B.1	

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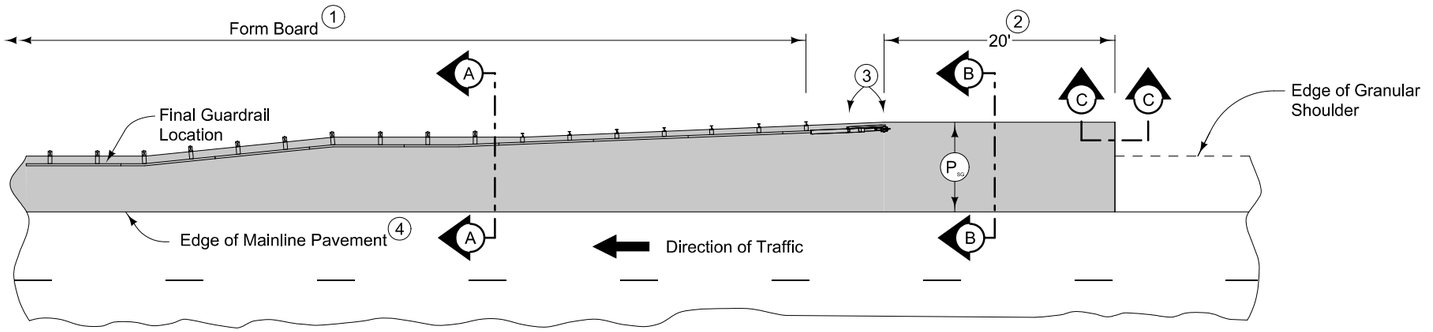
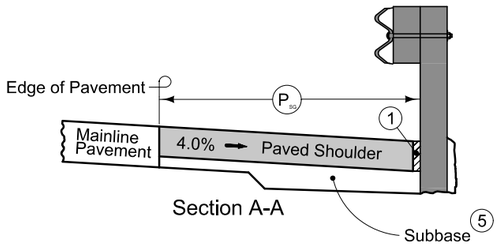
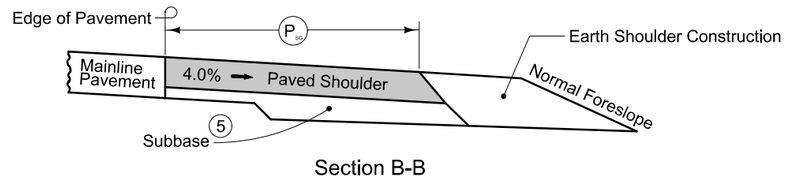


PLAN VIEW

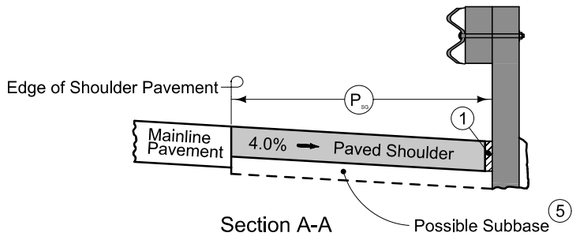


Section A-A

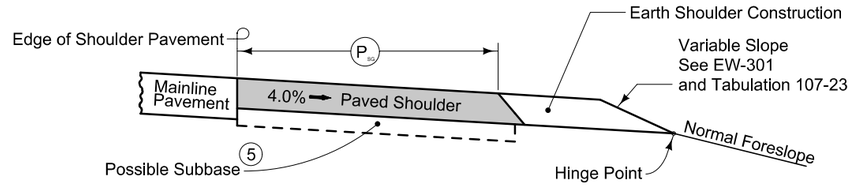


Section B-B

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.

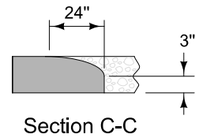
(1) PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.

(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)

100-1D
10-18-05

PROJECT DESCRIPTION

This project involves the realignment of US 30 and replacement of the bridges on US 30 over Union Pacific Railroad (Maint. No.2397.6S030) and Wapsipinicon River Overflow (Maint. No. 2397.9S030).

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)
BR-203	10-19-21	Double Reinforced 12" Approach
DR-201	04-21-20	Concrete Aprons
DR-306	10-16-18	Precast Concrete Headwall for Subdrain Outlets
DR-601	04-18-17	Reinforced Concrete Pipe Culvert
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)

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

E1, EL1D, Eastern Iowa Light & Power
FO, FO1D, F&B Communications
FO2, FO2D, Sprint
G, GL1D, Alliant Energy
SAN, SA1D, City of Wheatland
W, WL1D, City of Wheatland

UTILITY LEGEND

Add utility contact info when available

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(189)--38-23	SHEET NUMBER D.1

1:05:07 PM 7/8/2022 3994 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2303002019\Design\CADD_Files\Sheet_Files\SHT_23030189_D01.dgn

SPRING ROCK TYP.
T-81N R-1E
SEC. 15

POB 216+05.00

PC 218+13.95

Δ = 10°15'55.84" (LT)
T = 206.59
L = 412.08
R = 2300.00
E = 9.26

220+00

PI 220+20.55

Sta. 222+26.04
Begin Construction

SCS 222+26.04

SCS 223+86.04

225+00

District has requested 10'
full depth paved shoulders

Δ = 59°56'03.31" (LT)
T = 766.86
L = 1391.25
R = 1330.00
E = 205.24
e = 6.0%
L = 160.00
x = 53.00

230+00

Obliterate Existing Roadbed

US 30

SCS PI Sta 231+18.99
Δ = 77.092°
Θ = 3.446°
Ls = 160.00sf
Ts = 1304.9309sf
Es = 344.3987sf
Xc = 159.942
Yc = 3.207
LT = 106.687
ST = 53.352

PI 231+52.90

Sta. 220+68.36
Skew 30° RT AH
12'x8'x77' RCB
D.A.=531 A-R

0 50
FEET

720
710
700
690
680
670
660
650
640

677.93 677.98 678.03 678.08 678.13 678.18 678.23 678.28 678.33 678.38 678.43 678.48 678.53 678.58 678.63 678.68 678.73 678.78 678.83 678.88 678.93 678.98 679.03 679.13 679.27 679.45 679.68 679.95 680.26 680.62 681.02 681.46 681.95 682.49 683.06 683.68 684.35 685.05

+0.20% +3.00%
VPI = +61.62
ELV = 679.40
L = 400.00
K = 143
D.S. = 60mph

217+00 218+00 219+00 220+00 221+00 222+00 223+00 224+00 225+00 226+00 227+00 228+00 229+00 230+00 231+00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER D.2

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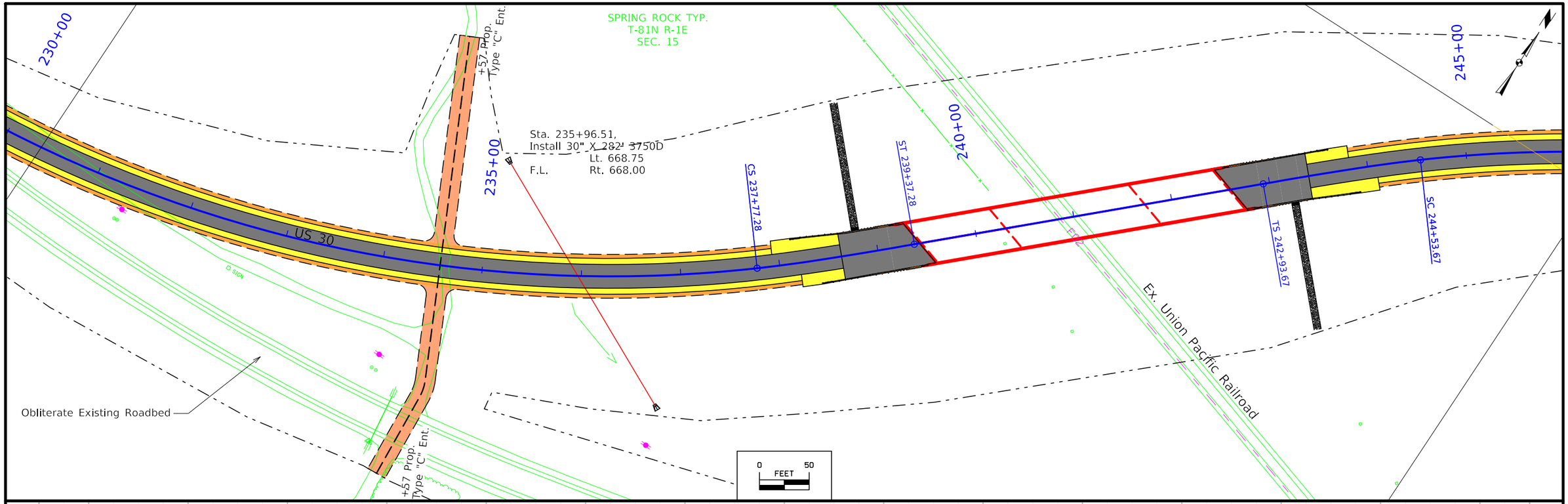

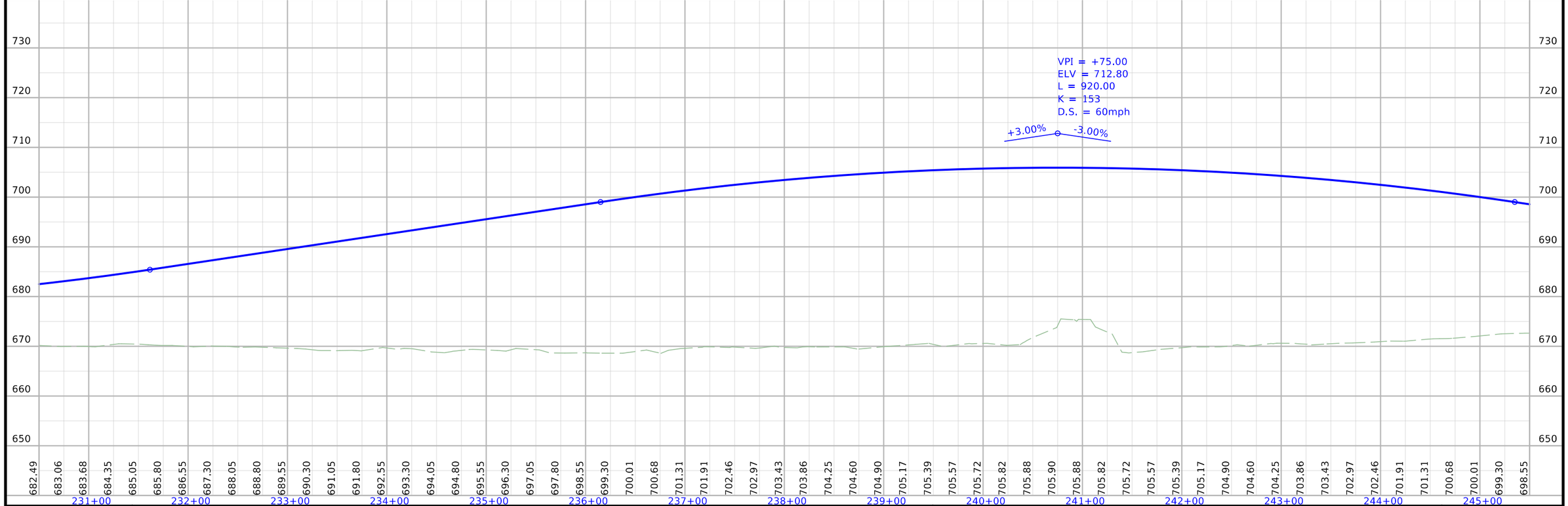

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER D.3

9:53:20 PM 7/24/2022 8725 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2303002019\Design\CADD_Files\Sheet_Files\SHT_23030189_D02.dgn

SPRING ROCK TYP.
T-81N R-1E
SEC. 10

SCS PI Sta 249+64.75
Δ = 47°53'52.6"
Θ = 03°26'46.9"
Ls = 160.00sf
Ts = 671.0819sf
Es = 126.1672sf
Xc = 159.942
Yc = 3.207
LT = 106.687
ST = 53.352

PI 249+51.00

250+00

SPRING ROCK TYP.
T-81N R-1E
SEC. 10

Sta. 253+64.82,
Install 30" X 106' 2000D
Lt. 670.10
F.L. Rt. 668.25

255+00

260+00

US 30

CS 254+95.51

ST 255+65.51

Δ = 41°00'18.79" (RT)
T = 497.34
L = 951.85
R = 1330.00
E = 89.94
e = 6.00%
L = 160.00
x = 53.00

SPRING ROCK TYP.
T-81N R-1E
SEC. 15

0 50
FEET

725
715
705
695
685
675
665
655
645

VPI = +96.81
ELV = 675.55
L = 550.00
K = 137
D.S. = 60mph

-3.00%
+1.00%
-2.18% LT Ditch Grade
+1.11% LT Ditch Grade
-0.34% RT Ditch Grade

RT +00
669.50

LT +85
674.00

LT +68
670.00

RT +67
668.25

LT +10
676.00

698.05 697.30 696.55 695.80 695.05 694.30 693.55 692.80 692.05 691.30 690.55 689.80 689.05 688.30 687.55 686.80 686.05 685.30 684.55 683.80 683.07 682.39 681.75 681.16 680.62 680.12 679.66 679.25 678.89 678.57 678.30 678.07 677.89 677.75 677.66 677.62 677.62 677.66 677.75 677.89 678.07 678.30 678.55 678.80 679.05 679.30 679.55 679.80 680.05 680.30 680.55 680.80 681.05 681.30 681.55 681.80 682.05 682.30 682.55 682.80 683.05

246+00 247+00 248+00 249+00 250+00 251+00 252+00 253+00 254+00 255+00 256+00 257+00 258+00 259+00 260+00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER D.4

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SPRING ROCK TYP.
T-81N R-1E
SEC. 10

SPRING ROCK TYP.
T-81N R-1E
SEC. 11

265+00

270+00

275+00

Δ = 04°19'37.39" (LT)
T = 344.92
L = 689.51
R = 9130.00
E = 6.51

PC 271+91.41

PI 275+36.33

US 30

Obliterate Existing Roadbed

SPRING ROCK TYP.
T-81N R-1E
SEC. 15

0 FEET 50

VPI = +48.16
ELV = 684.66
L = 250.00
K = 167
D.S. = 60mph

+1.00%

-0.50%

-2.77% LT Ditch Grade

-0.27% RT Ditch Grade

-0.24% LT Ditch Grade

LT +86
665.57

RT +19
664,03

RT +14
661.49

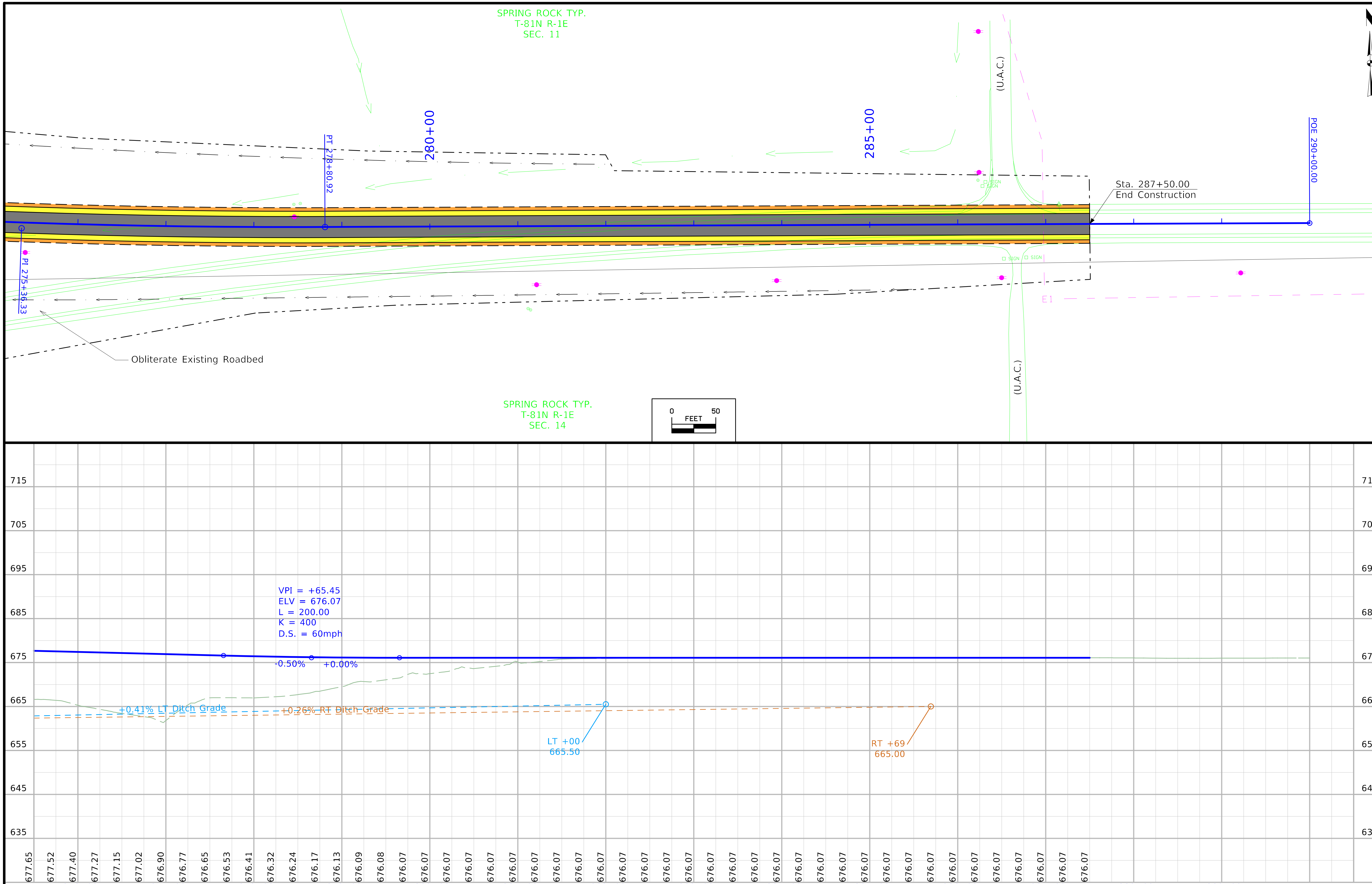
720 710 700 690 680 670 660 650 640

683.66 683.85 684.00 684.12 684.20 684.24 684.24 684.21 684.13 684.03 683.90 683.78 683.65 683.53 683.40 683.28 683.15 683.03 682.90 682.78 682.65 682.53 682.40 682.28 682.15 682.03 681.90 681.78 681.65 681.53 681.40 681.28 681.15 681.03 680.90 680.78 680.65 680.53 680.40 680.28 680.15 680.03 679.90 679.78 679.65 679.52 679.40 679.27 679.15 679.02 678.90 678.77 678.65 678.52 678.40 678.27 678.15 678.02 677.90 677.77 677.65

261+00 262+00 263+00 264+00 265+00 266+00 267+00 268+00 269+00 270+00 271+00 272+00 273+00 274+00 275+00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER D.5

9:53:25 PM 7/24/2022 8725 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2303002019\Design\CADD_Files\Sheet_Files\SHT_23030189_D02.dgn



FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER D.6

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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

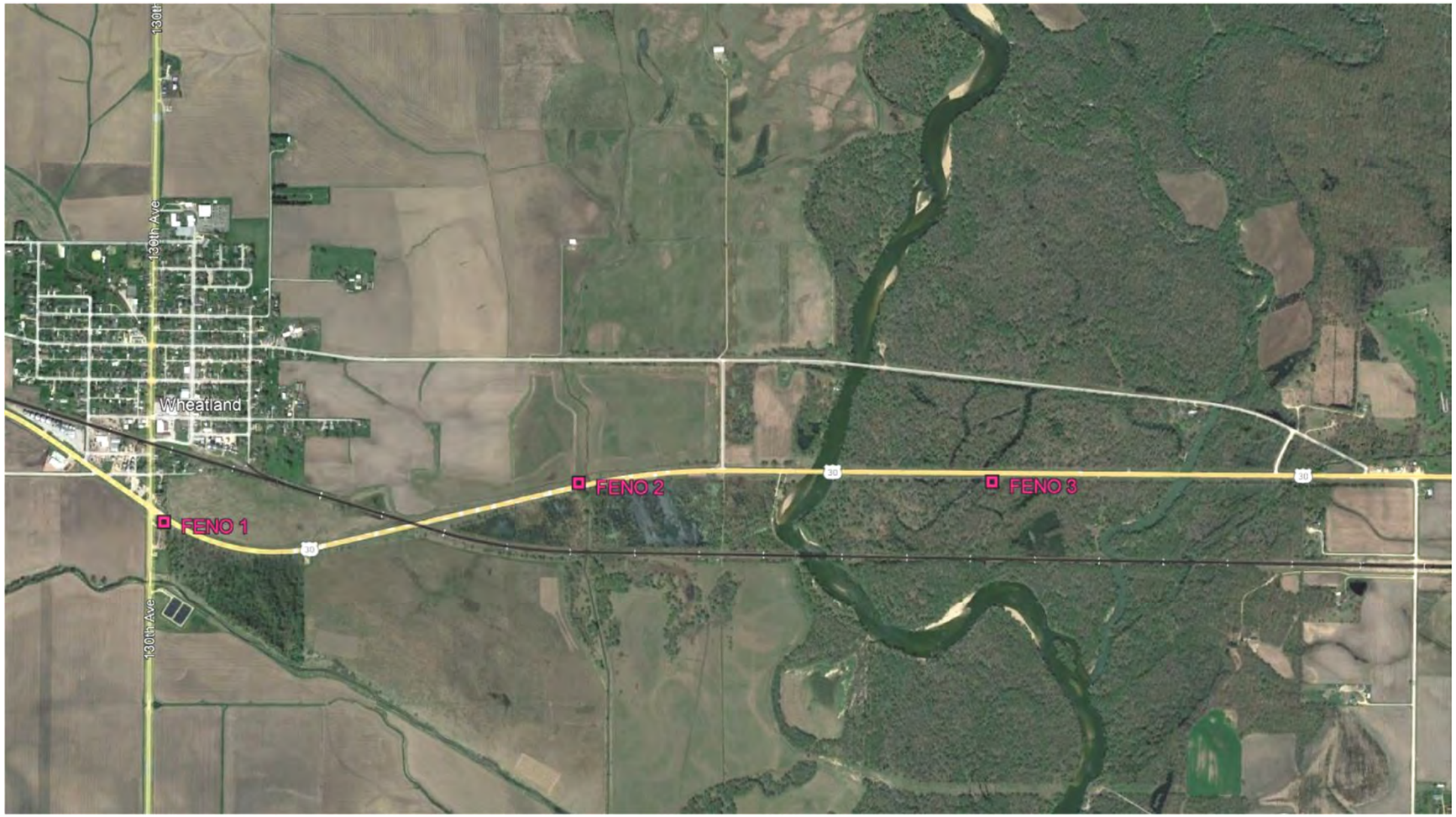
PT Sta. 287+08.6 As-built Plans Project No. F-Proj No. 147 (9)
Survey PT Sta. 287+08.1

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)
1	ML030_West	216+05.00	8175277.54	21416331.87															
2	ML030_West							218+13.954	8175160.11	21416504.70	220+20.549	8175044.00	21416675.59	222+26.038	8174960.20	21416864.42			
3	ML030_West				222+26.038	8174960.20	21416864.42				223+32.725	8174916.93	21416961.94				223+86.038	8174898.26	21417011.92
4	ML030_West							223+86.038	8174898.26	21417011.92	231+52.897	8174629.92	21417730.30	237+77.285	8175117.20	21418322.43			
5	ML030_West				237+77.285	8175117.20	21418322.43				238+30.637	8175151.10	21418363.63				239+37.285	8175223.72	21418441.79
7	ML030_West				242+93.665	8175466.31	21418702.86				244+00.352	8175538.93	21418781.01				244+53.665	8175572.83	21418822.21
8	ML030_West							244+53.665	8175572.83	21418822.21	249+51.001	8175888.85	21419206.23	254+05.514	8175875.37	21419703.39			
9	ML030_West				254+05.514	8175875.37	21419703.39				254+58.866	8175873.92	21419756.72				255+65.514	8175864.62	21419863.00
11	ML030_West							271+91.408	8175722.92	21421482.71	275+36.327	8175692.85	21421826.31	278+80.917	8175688.80	21422171.21			
12	ML030_West	290+00.00	8175675.66	21423290.21															

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	
C1	ML030_West										10.266°	206.595	412.084	2300	9.260	
C2	ML030_West	77.092°	3.446°	160	1304.93	344.399	159.942	3.207	106.687	53.352	59.934°	766.859	1391.247	1330	205.243	
C3	ML030_West	47.898°	3.446°	160.000	671.082	126.167	159.942	3.207	106.687	53.352	41.005°	497.336	951.849	1330	89.945	
C4	ML030_West										4.327°	344.919	689.510	9130	6.513	

SUPERELEVATION DATA

See PV-300 Series

Road Identification	Circular Curve or Spiral Curve Name	Radius	Superelevation Data			Standard Road Plan	Section A-A	Section B-B	Section C-C	Section D-D	Section E-E	Section F-F	Case A	Case B	Case C	Case S	Case T	Case U	Remarks
			e	L	x														
		FT	%	FT	FT														
US 30	C2	1330	6.0	160	53	PV-301	221+73.04	222+26.04	222+79.04	223+86.04			223+86.04			223+32.71	223+32.71		
							239+90.28	239+37.28	238+84.28	237+77.28			237+77.28			238+30.61	238+30.61		
	C3	1330	6.0	160	53	PV-301	242+40.67	242+93.67	243+46.67	244+53.67			244+53.67			244+00.34	244+00.34		
							256+18.51	255+65.51	255+12.51	254+05.51			254+05.51			254+58.84	254+58.84		

Horizontal Information

Roadway Type	Two-Lane
Design Speed	60
Begin/End of Circular Curve	
Zero Slope Station	239+37.28
TS/ST/PC/PT	ST
Direction of Curve	
Left/Right	Left
Radius/Ft.	1330
L	160
x	53

Profile Information

Nearest V.P.I. Station	240+85.00
V.P.I. Elevation	712
Back Grade	3.0%
Forward Grade	-3.0%
Curve Length	925

BCVSta	236+22.50
EVCSta	245+47.50

Project Information

Project Number	BRF-030-9(189)--38-23
User ID	88+77.00
Date	6/22/2022

	239+17.28	239+19.28	239+21.28	239+23.28	239+25.28	239+27.28	239+29.28	239+31.28	239+33.28	239+35.28	239+37.28	239+39.28	239+41.28	239+43.28	239+45.28	239+47.28	239+49.28	239+51.28	239+53.28	239+55.28
-12	0.0227	0.0227	0.0226	0.0226	0.0225	0.0224	0.0224	0.0223	0.0223	0.0222	0.0221	0.0221	0.0220	0.0220	0.0219	0.0219	0.0218	0.0218	0.0217	0.0217
-10	0.0227	0.0227	0.0226	0.0226	0.0225	0.0224	0.0224	0.0223	0.0223	0.0222	0.0221	0.0221	0.0220	0.0220	0.0219	0.0219	0.0218	0.0218	0.0217	0.0217
-8	0.0227	0.0227	0.0226	0.0226	0.0225	0.0224	0.0224	0.0223	0.0223	0.0222	0.0221	0.0221	0.0220	0.0220	0.0219	0.0219	0.0218	0.0218	0.0217	0.0217
-6	0.0227	0.0227	0.0226	0.0226	0.0225	0.0224	0.0224	0.0223	0.0223	0.0222	0.0221	0.0221	0.0220	0.0220	0.0219	0.0219	0.0218	0.0218	0.0217	0.0217
-4	0.0227	0.0227	0.0226	0.0226	0.0225	0.0224	0.0224	0.0223	0.0223	0.0222	0.0221	0.0221	0.0220	0.0220	0.0219	0.0219	0.0218	0.0218	0.0217	0.0217
-2	0.0227	0.0227	0.0226	0.0226	0.0225	0.0224	0.0224	0.0223	0.0223	0.0222	0.0221	0.0221	0.0220	0.0220	0.0219	0.0219	0.0218	0.0218	0.0217	0.0217
0	0.0227	0.0227	0.0226	0.0226	0.0225	0.0224	0.0224	0.0223	0.0223	0.0222	0.0221	0.0221	0.0220	0.0220	0.0219	0.0219	0.0218	0.0218	0.0217	0.0217
2	0.0127	0.0121	0.0116	0.0112	0.0108	0.0104	0.0100	0.0097	0.0095	0.0093	0.0091	0.0091	0.0091	0.0091	0.0093	0.0095	0.0097	0.0100	0.0103	0.0107
4	0.0120	0.0115	0.0110	0.0105	0.0101	0.0097	0.0093	0.0090	0.0087	0.0085	0.0084	0.0083	0.0083	0.0084	0.0086	0.0088	0.0091	0.0094	0.0098	0.0102
6	0.0115	0.0109	0.0104	0.0098	0.0094	0.0089	0.0086	0.0082	0.0080	0.0078	0.0076	0.0076	0.0076	0.0077	0.0079	0.0081	0.0084	0.0088	0.0092	0.0097
8	0.0109	0.0103	0.0097	0.0092	0.0087	0.0083	0.0079	0.0075	0.0072	0.0070	0.0069	0.0068	0.0069	0.0070	0.0072	0.0075	0.0078	0.0082	0.0087	0.0092
10	0.0103	0.0097	0.0091	0.0086	0.0081	0.0076	0.0071	0.0068	0.0065	0.0063	0.0061	0.0061	0.0062	0.0063	0.0066	0.0069	0.0073	0.0077	0.0082	0.0087
	0.0098	0.0092	0.0085	0.0080	0.0074	0.0069	0.0065	0.0061	0.0057	0.0055	0.0054	0.0054	0.0054	0.0056	0.0059	0.0063	0.0067	0.0072	0.0077	0.0083

Horizontal Information

Roadway Type	Two-Lane
Design Speed	60
Begin/End of Circular Curve	
Zero Slope Station	242+93.67
TS/ST/PC/PT	TS
Direction of Curve	
Left/Right	Right
Radius/Ft.	1330
L	160
x	53

Profile Information

Nearest V.P.I. Station	240+85.00
V.P.I. Elevation	712
Back Grade	3.0%
Forward Grade	-3.0%
Curve Length	925

BCVSta	236+22.50
EVCSta	245+47.50

Project Information

Project Number	BRF-030-9(189)--38-23
User ID	88+77.00
Date	6/22/2022

	242+73.67	242+75.67	242+77.67	242+79.67	242+81.67	242+83.67	242+85.67	242+87.67	242+89.67	242+91.67	242+93.67	242+95.67	242+97.67	242+99.67	243+01.67	243+03.67	243+05.67	243+07.67	243+09.67	243+11.67
-12	0.0109	0.0105	0.0101	0.0098	0.0096	0.0094	0.0093	0.0093	0.0093	0.0093	0.0095	0.0096	0.0099	0.0102	0.0105	0.0109	0.0113	0.0118	0.0123	0.0128
-10	0.0114	0.0111	0.0108	0.0105	0.0103	0.0101	0.0100	0.0100	0.0100	0.0101	0.0102	0.0104	0.0106	0.0109	0.0112	0.0116	0.0120	0.0125	0.0129	0.0134
-8	0.0120	0.0117	0.0114	0.0112	0.0110	0.0109	0.0108	0.0107	0.0108	0.0108	0.0110	0.0111	0.0114	0.0117	0.0120	0.0123	0.0127	0.0131	0.0136	0.0141
-6	0.0126	0.0123	0.0121	0.0119	0.0117	0.0116	0.0115	0.0115	0.0115	0.0116	0.0117	0.0119	0.0121	0.0124	0.0127	0.0130	0.0134	0.0138	0.0143	0.0147
-4	0.0133	0.0130	0.0128	0.0126	0.0124	0.0123	0.0122	0.0122	0.0123	0.0123	0.0125	0.0126	0.0129	0.0131	0.0134	0.0138	0.0141	0.0145	0.0150	0.0154
-2	0.0139	0.0137	0.0134	0.0133	0.0131	0.0130	0.0130	0.0130	0.0130	0.0131	0.0132	0.0134	0.0136	0.0139	0.0142	0.0145	0.0148	0.0152	0.0156	0.0161
0	0.0235	0.0235	0.0236	0.0237	0.0238	0.0238	0.0239	0.0240	0.0240	0.0241	0.0242	0.0243	0.0243	0.0244	0.0245	0.0246	0.0246	0.0247	0.0248	0.0249
2	0.0235	0.0235	0.0236	0.0237	0.0238	0.0238	0.0239	0.0240	0.0240	0.0241	0.0242	0.0243	0.0243	0.0244	0.0245	0.0246	0.0246	0.0247	0.0248	0.0249
4	0.0235	0.0235	0.0236	0.0237	0.0238	0.0238	0.0239	0.0240	0.0240	0.0241	0.0242	0.0243	0.0243	0.0244	0.0245	0.0246	0.0246	0.0247	0.0248	0.0249
6	0.0235	0.0235	0.0236	0.0237	0.0238	0.0238	0.0239	0.0240	0.0240	0.0241	0.0242	0.0243	0.0243	0.0244	0.0245	0.0246	0.0246	0.0247	0.0248	0.0249
8	0.0235	0.0235	0.0236	0.0237	0.0238	0.0238	0.0239	0.0240	0.0240	0.0241	0.0242	0.0243	0.0243	0.0244	0.0245	0.0246	0.0246	0.0247	0.0248	0.0249
10	0.0235	0.0235	0.0236	0.0237	0.0238	0.0238	0.0239	0.0240	0.0240	0.0241	0.0242	0.0243	0.0243	0.0244	0.0245	0.0246	0.0246	0.0247	0.0248	0.0249
	0.0235	0.0235	0.0236	0.0237	0.0238	0.0238	0.0239	0.0240	0.0240	0.0241	0.0242	0.0243	0.0243	0.0244	0.0245	0.0246	0.0246	0.0247	0.0248	0.0249

Horizontal Information

Roadway Type	Two-Lane
Design Speed	60
Begin/End of Circular Curve	
Zero Slope Station	255+65.51
TS/ST/PC/PT	ST
Direction of Curve	
Left/Right	Right
Radius/Ft.	1330
L	160
x	53

Profile Information

Nearest V.P.I. Station	253+00.00
V.P.I. Elevation	675.55
Back Grade	-3.0%
Forward Grade	1.0%
Curve Length	550

BCVSta	250+25.00
EVCSta	255+75.00

Project Information

Project Number	BRF-030-9(189)--38-23
User ID	88+77.00
Date	6/22/2022

-12	255+45.51	255+47.51	255+49.51	255+51.51	255+53.51	255+55.51	255+57.51	255+59.51	255+61.51	255+63.51	255+65.51	255+67.51	255+69.51	255+71.51	255+73.51	255+75.51	255+77.51	255+79.51	255+81.51	255+83.51
-10	0.0081	0.0075	0.0070	0.0065	0.0060	0.0056	0.0053	0.0052	0.0051	0.0051	0.0052	0.0055	0.0058	0.0063	0.0067	0.0072	0.0076	0.0081	0.0087	0.0093
-8	0.0085	0.0079	0.0074	0.0070	0.0066	0.0063	0.0060	0.0059	0.0058	0.0059	0.0060	0.0062	0.0066	0.0069	0.0074	0.0078	0.0082	0.0087	0.0092	0.0097
-6	0.0089	0.0084	0.0079	0.0075	0.0072	0.0069	0.0067	0.0066	0.0065	0.0066	0.0068	0.0070	0.0073	0.0076	0.0081	0.0084	0.0088	0.0093	0.0098	0.0103
-4	0.0094	0.0089	0.0085	0.0081	0.0078	0.0076	0.0074	0.0073	0.0073	0.0074	0.0075	0.0077	0.0080	0.0084	0.0088	0.0091	0.0095	0.0099	0.0103	0.0108
-2	0.0099	0.0095	0.0091	0.0087	0.0085	0.0083	0.0081	0.0080	0.0080	0.0081	0.0083	0.0085	0.0087	0.0091	0.0095	0.0098	0.0101	0.0105	0.0109	0.0114
0	0.0104	0.0100	0.0097	0.0094	0.0091	0.0089	0.0088	0.0088	0.0088	0.0089	0.0090	0.0092	0.0095	0.0098	0.0102	0.0105	0.0108	0.0112	0.0116	0.0120
2	0.0215	0.0216	0.0216	0.0217	0.0217	0.0218	0.0219	0.0219	0.0220	0.0220	0.0221	0.0222	0.0222	0.0223	0.0223	0.0224	0.0224	0.0224	0.0224	0.0224
4	0.0215	0.0216	0.0216	0.0217	0.0217	0.0218	0.0219	0.0219	0.0220	0.0220	0.0221	0.0222	0.0222	0.0223	0.0223	0.0224	0.0224	0.0224	0.0224	0.0224
6	0.0215	0.0216	0.0216	0.0217	0.0217	0.0218	0.0219	0.0219	0.0220	0.0220	0.0221	0.0222	0.0222	0.0223	0.0223	0.0224	0.0224	0.0224	0.0224	0.0224
8	0.0215	0.0216	0.0216	0.0217	0.0217	0.0218	0.0219	0.0219	0.0220	0.0220	0.0221	0.0222	0.0222	0.0223	0.0223	0.0224	0.0224	0.0224	0.0224	0.0224
10	0.0215	0.0216	0.0216	0.0217	0.0217	0.0218	0.0219	0.0219	0.0220	0.0220	0.0221	0.0222	0.0222	0.0223	0.0223	0.0224	0.0224	0.0224	0.0224	0.0224
	0.0215	0.0216	0.0216	0.0217	0.0217	0.0218	0.0219	0.0219	0.0220	0.0220	0.0221	0.0222	0.0222	0.0223	0.0223	0.0224	0.0224	0.0224	0.0224	0.0224

108-25
10-21-14

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

108-23A
08-01-08

TRAFFIC CONTROL PLAN

US 30
- Maintain US 30 two-lane, two-way traffic during Stage 1 at all times utilizing Standard Road Plans as noted in the Staging Plan.
- Close US 30 and utilize detour route during Stage 2.

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

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

111-01
04-17-12

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(186)--38-23	Bridge Replacement

108-26A
08-01-08

STAGING NOTES

US 30

Stage 1 Traffic:
- Maintain 2-way traffic on existing US 30 at all times.

Stage 1 Construction:
- Grade and pave US 30 from Sta. 232+00 to Sta. 278+00.

Stage 2 Traffic:
- Detour Traffic north on 130th Ave to northwest on 202nd St to north on Mill St to east to 180th St to east on 190th St south on 170th St
  Refer to sheet detour sheet J.3 to details.

Stage 2 Construction:
- Grade and Pave US 30 from Sta. 222+26.04 to 232+00.00
- Grade and Pave US 30 from Sta. 278+00.00 to 287+50.00
- Obliterate existing US 30

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.

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 Subbase
- Proposed Special Backfill
- Temporary Barrier Rail
- Proposed Granular Shoulder
- Temporary Shoulder
- Existing Shoulder Strengthening
- 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
- Drum
- Temporary Lane Separator
- Tubular Marker
- Channelizer Marker
- Concrete Barrier Marker
- Delineator
- Temporary Barrier Rail
- Pavement Removal
- Sand Barrel Layout
- Crash Cushion (Temp or Perm)
- Traffic Signal
- Flagger
- Temporary Floodlighting
- Traffic Sign
- Type III Barricade
- Type A Warning Light
- Direction of Traffic
- Safety Closure
- Lane Identification (1)

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

TRAFFIC CONTROL AND STAGING LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES J)

US 30 Detour

T-82N

LIBERTY GRANT SPRING

TORONTO
POP. 124
WHEATLAND
POP. 764
CALAMUS
POP. 439

WAPSIPINICON RIVER
CEDAR CLINTON CO LINE RD
UNION PACIFIC RAILROAD
Yankee Run Creek
Calamus Creek

E63 Y32 Y44 E63 Y46 E73 Y4E

180 ST 190 ST 195 ST 200 ST 205 ST 207 ST 210 ST 215 ST 220 ST 225 ST 227 ST 230 ST 233 ST 235 ST 238 ST 240 ST 245 ST 250 ST

112 AVE 118 AVE 120 AVE 130 AVE 150 AVE 160 AVE 170 AVE 175 AVE 185 AVE 190 AVE 200 AVE 100 AVE 105 AVE 110 AVE 120 AVE 130 AVE 150 AVE 160 AVE 170 AVE 190 AVE

202 ST 142ND AVE 122 AVE

30

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER J.3

12:23:32 PM 7/15/2022 9474 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2303002019\Design\CADD_Files\Sheet_Files\SHT_23030189_J03.dgn

A discussion was had regarding snow drifting and whether a living snow fence could be warranted along the two horizontal curves. Maintenance mentioned this area usually isn't a concern for drifting and there should be ample storage. PMB to follow up with ROW prior to D05 in case additional ROW be needed.

PMB to coordinate with Maria Hobbs on RR

End Stage 1
Grade and Pave
Sta 278+00.00

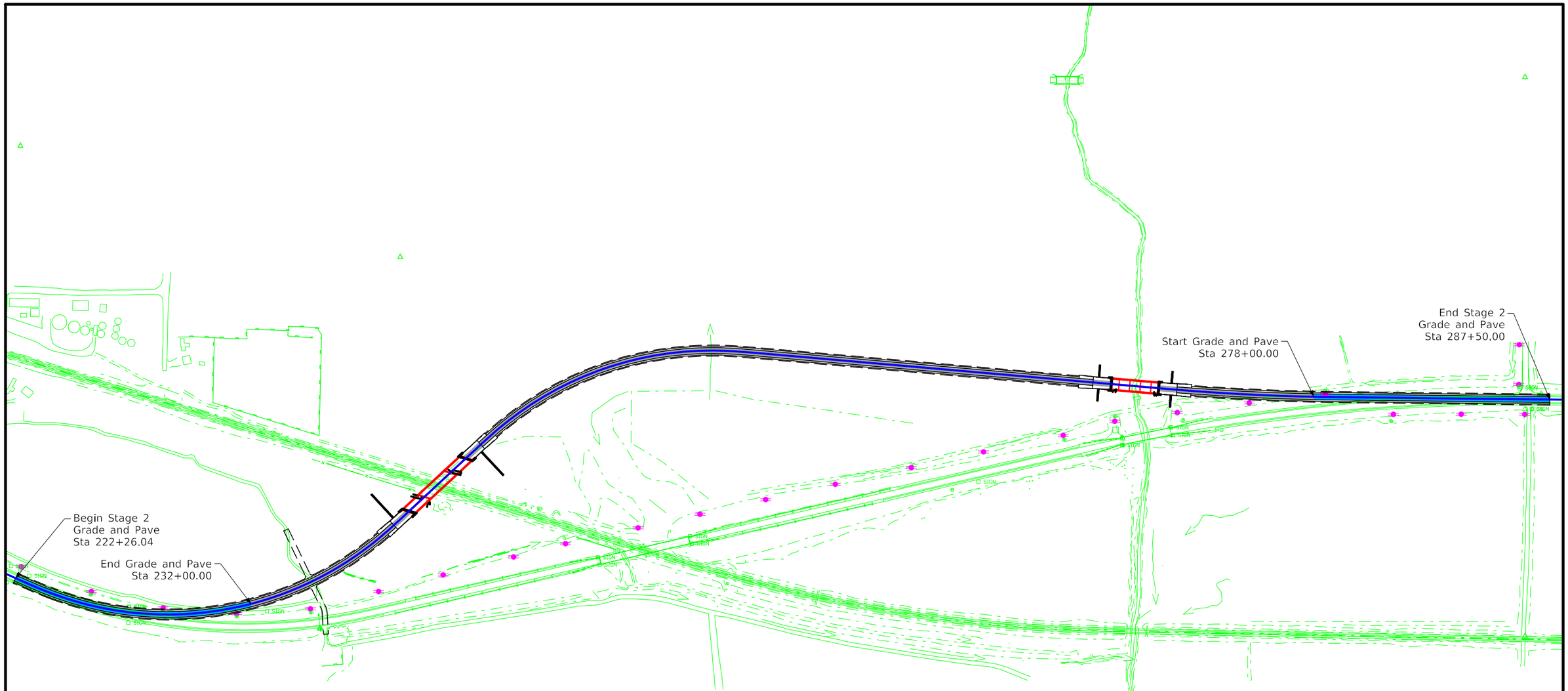
Begin Stage 1
Grade and Pave
Sta 232+00.00

District to coordinate with Steven Flockhart on utlities

Stage 1

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER J.4	

3:42:11 PM 7/15/2022 8725 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2303002019\Design\CADD_Files\Sheet_Files\SHT_23030189_J04.dgn



Stage 2

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER J.5

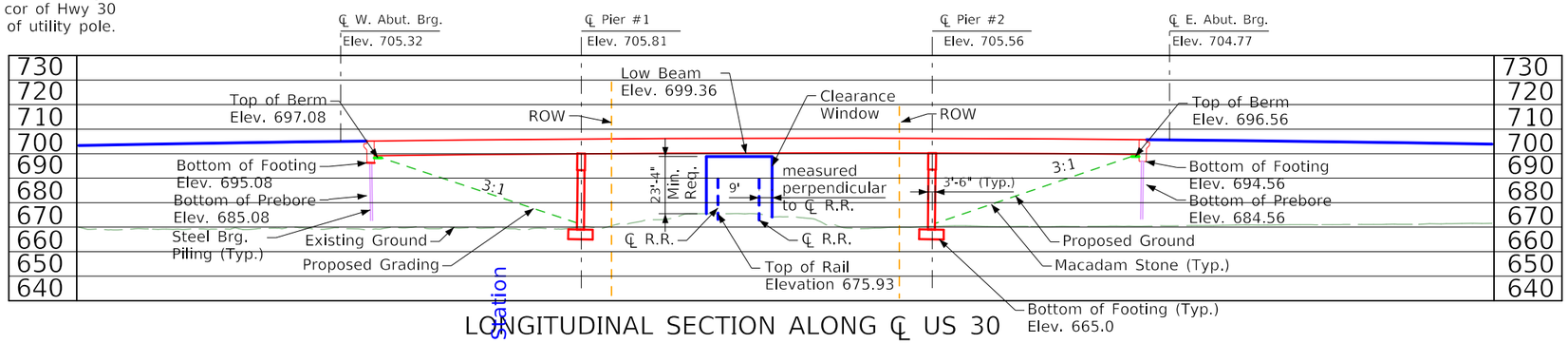
1:12:06 PM 7/15/2022 9474 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2303002019\Design\CADD_Files\Sheet_Files\SHT_23030189_J05.dgn

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.

+3.00% -3.00%

VPT STA. = 240+75.00
VPT ELEV. = 712.80
L = 920'

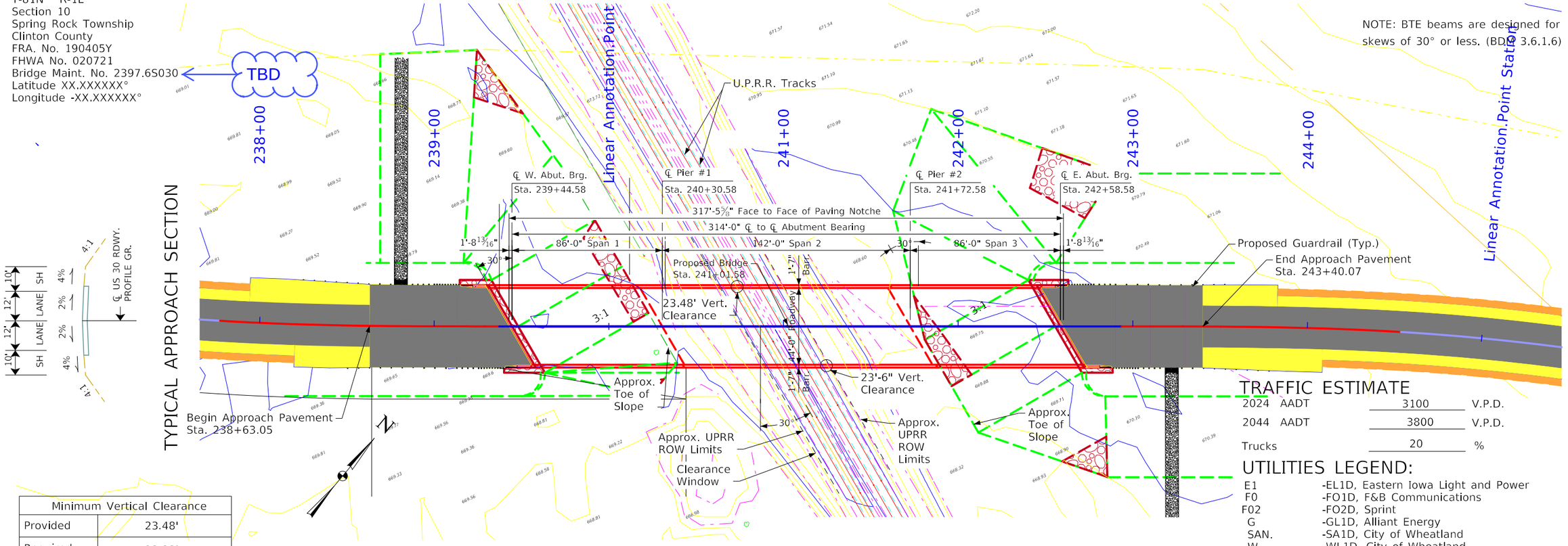
PROPOSED PROFILE GRADE US 30



LONGITUDINAL SECTION ALONG ℄ US 30

LOCATION

US 30 Over UPRR
T-81N R-1E
Section 10
Spring Rock Township
Clinton County
FRA. No. 190405Y
FHWA No. 020721
Bridge Maint. No. 2397.6S030
Latitude XX.XXXXXX°
Longitude -XX.XXXXXX°

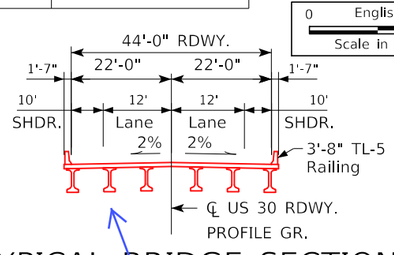


SITUATION PLAN

NOTE: BTE beams are designed for skews of 30° or less. (BDM 3.6.1.6)

TYPICAL APPROACH SECTION

Minimum Vertical Clearance	
Provided	23.48'
Required	23.33'



TYPICAL BRIDGE SECTION

add superelevation table, slope varies

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

PLAN NOTES:

1. Top of bridge deck at centerline US 30 is 0.03' below the profile grade to account for parabolic crown.

GENERAL NOTES:

1. This design is for the replacement of the existing 368'-0 x 28'-0 continuous I-beam bridge, Clinton County Design No. 1354, FHWA No. 020720, Maint. 2397.6S030.

Design For 30° Skew (R.A.)

314' X 44' Pretensioned Prestressed Concrete Beam Bridge

86' End Spans (BTE Beam Type) 142' Interior Span

Situation Plan

STA. 241+01.58 July 2022

Clinton County

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY ADMINISTRATION

Design No. 125 Design Sheet No. 1 of 3 FHWA No. 020721

FILE NO. TBD	ENGLISH	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER V.1

1:06:13 PM 7/22/2022 9127 d1625593\ORD_23030189_STANLEY_STRUCTURES_Z11.dgn

DESIGN NOTES:

All units are in feet unless noted otherwise

3'-8" tall TL-5 bridge railing proposed

Pier type - tee piers

Beam type - BTE beams - provide vent holes in all beams

Foundation type to be confirmed during final design

Berm slopes to be confirmed during final design

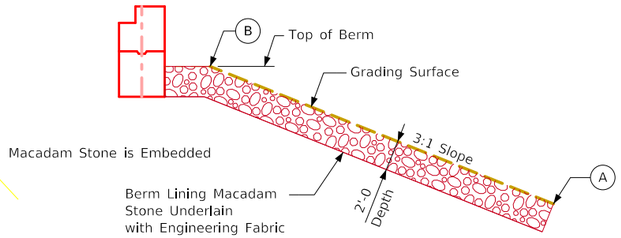
Potential for ABC to be investigated as design progresses

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.

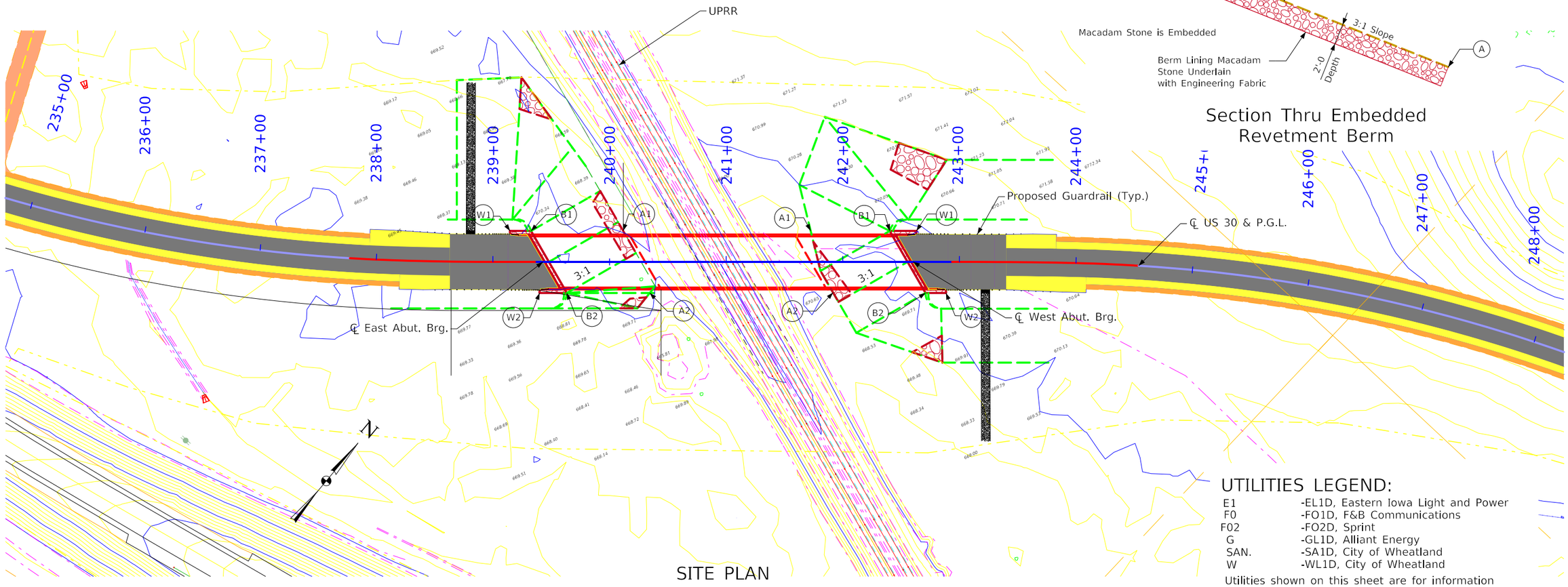
Berm Slope Location Table

Points	West Abutment			East Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	240+11.70	26.58' LT	671.00	241+71.85	26.58' LT	671.00
A2	240+34.51	26.58' RT	671.00	241+91.74	26.58' RT	671.00
B1	239+33.47	26.58' LT	697.08	242+40.23	26.58' LT	696.56
B2	239+63.39	26.58' RT	697.08	242+70.15	26.58' RT	696.56
W1	239+14.62	26.58' LT	704.56	242+63.13	26.58' LT	704.01
W2	239+40.09	26.58' RT	704.56	242+88.41	26.58' RT	704.01

Berm slope elevations reflect the grading surface.



Section Thru Embedded Revetment Berm



SITE PLAN

0 English 80
Scale in Feet

Estimated Berm Armoring Quantities

Location	Macadam Stone (Ton)	Erosion Stone (Ton)	Engineering Fabric (SY)	Excavation (CY)
Berm Lining - West	1250.7		1455.8	1323.4
Berm Lining - East	1708.9		1989.2	1808.3
Totals	2959.5		3445.0	3131.8

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 30° Skew (R.A.)

314' X 44' Pretensioned Prestressed Concrete Beam Bridge

86' End Spans (BTE Beam Type) 142' Interior Span

Site Plan

STA. 241+01.58 Letting Date: July 2022

Clinton County

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY ADMINISTRATION

Design No. 125 Design Sheet No. 2 of 3 FHWA No. 020721

FILE NO. TBD	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER V.2

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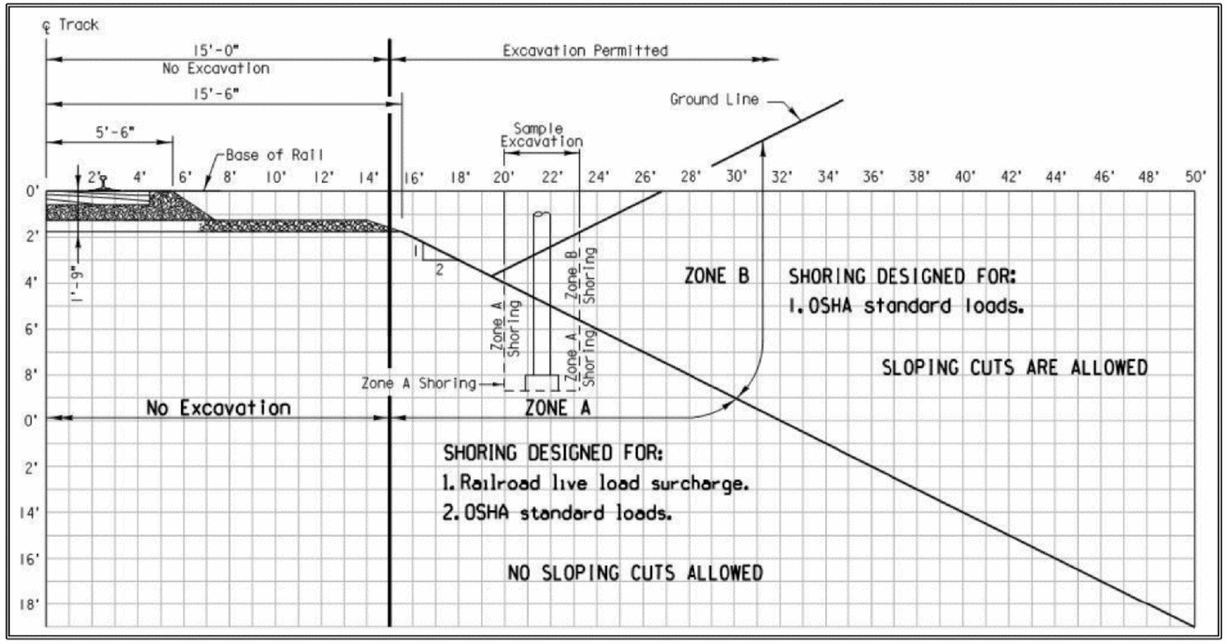


GENERAL EXCAVATION ZONES

Source: UPRR & BNSF Guidelines For Temporary Shoring, 2021

RAILROAD GENERAL NOTES:

1. Railroad review and approval of shoring, erection, demolition, and falsework is required. allow a minimum of four weeks for the review and approval of each submittal.
2. The proposed grade separation project shall not increase the quantity and/or characteristics of the flow in the railroad's ditches and/or drainage structures.
3. The elevation of the existing top-of-rail profile shall be verified before beginning construction. All discrepancies shall be brought to the attention of the railroad prior to construction.
4. The contractor must submit a proposed method of erosion and sediment control and have the method approved by the railroad.
5. All shoring systems that impact the railroad's operations and/or supports the railroad's embankment shall be designed and constructed per current railroad guidelines for temporary shoring.
6. All demolitions within the railroad's right-of-way and/or demolition that may impact the railroad's tracks or operations shall be in compliance with the railroad's demolition guidelines.
7. Erection over the railroad's right-of-way shall be designed to cause no interruption to the railroad's operation, enabling the track(s) to remain open to traffic per the railroad's requirements.
8. All construction phasing that may impact the railroad operations shall be designed to cause no interruption to the railroad's operation, enabling the track(s) to remain open to traffic per the railroad's requirements.
9. False-work clearances shall comply with minimum construction clearances.
10. All permanent clearances shall be verified before project closing.
11. For railroad coordination please refer to the railroad coordination requirements as part of special provisions.

GENERAL SHORING NOTES:

1. All dimensions are measured perpendicular to track.
2. Prior to commencing any work, the contractor shall submit for approval by the railroad detailed plans indicating the nature and extent of the track protection shoring proposed. The contractor shall install the temporary shoring system per the approved plans. Design of the temporary shoring system to comply with UPRR guidelines for temporary shoring, 2021.
3. For excavations within zone A, shoring plans shall be accompanied by design calculations. All shoring within the limits of zone a must be placed prior to the start of excavation. Plans and calculations must be signed and stamped by a professional engineer registered in the state of iowa.

TOP OF RAIL ELEVATIONS

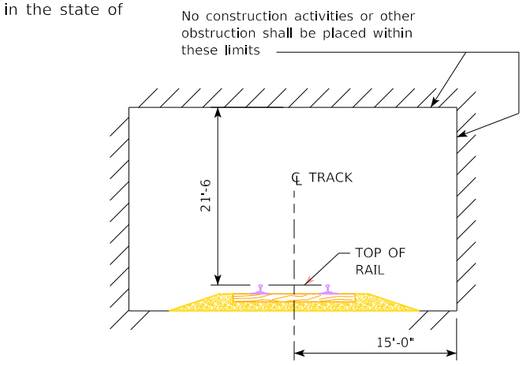
(Stations increase with milepost increase)

North Main Line			
Alignment: North Rail		Alignment: South Rail	
Station	Elevation	Station	Elevation
12+96.14	678.88	12+96.04	678.83
13+96.14	678.68	13+96.14	678.68
14+96.14	678.34	14+96.14	678.29
15+96.14	678.02	15+96.14	678.06
16+96.14	677.67	16+96.13	677.72
17+96.14	677.30	17+96.14	677.38
18+96.13	676.80	18+96.14	676.80
19+96.14	676.63	19+96.14	676.63
20+96.13	676.31	20+96.14	676.33
21+96.13	676.12	21+96.14	676.10
(1) 22+94.02	675.89	(1) 22+91.18	675.87
23+96.13	675.78	23+96.14	675.76
24+96.14	675.58	24+96.13	675.58
25+96.13	675.24	25+96.13	675.35
26+96.13	675.04	26+96.13	675.11
27+96.09	674.89	27+96.12	674.97
28+96.10	674.93	28+96.11	675.01
29+96.09	674.65	29+96.12	674.65
30+96.14	674.51	30+96.14	674.50
31+96.14	674.58	31+96.14	674.50
32+96.14	674.52	32+96.14	674.49

(1) Existing Track Sta. 22+94.02 North Rail
Sta. 22+91.18 South Rail

South Main Line			
Alignment: North Rail		Alignment: South Rail	
Station	Elevation	Station	Elevation
12+96.14	678.21	12+96.15	678.21
13+96.14	677.80	13+96.15	677.82
14+96.14	677.21	14+96.14	677.21
15+96.14	677.01	15+96.14	676.96
16+96.14	676.74	16+96.14	676.66
17+96.14	676.28	17+96.14	676.30
18+96.13	676.30	18+96.14	676.33
19+96.14	676.30	19+96.14	676.30
20+96.14	676.22	20+96.14	676.13
21+96.14	676.08	21+96.13	676.03
(2) 22+96.13	675.90	(2) 22+96.14	675.86
23+96.13	675.68	23+96.13	675.68
24+96.13	675.38	24+96.13	675.36
25+96.13	675.04	25+96.14	675.04
26+96.13	674.77	26+96.14	674.71
27+96.15	674.52	27+96.17	674.44
28+96.14	674.59	28+96.17	674.56
29+96.14	674.37	29+96.17	674.35
30+96.14	674.26	30+96.14	674.28
31+96.14	674.31	31+96.14	674.33
32+96.14	674.32	32+96.14	674.38

(2) Existing Track Sta. 22+96.13 North Rail
Sta. 22+96.14 South Rail



MIN. CONSTRUCTION CLEARANCE ENVELOPE

(NORMAL TO RAILROAD)

PRELIMINARY

Design For 30° Skew (R.A.)

314' X 44' Pretensioned Prestressed Concrete Beam Bridge

86' End Spans (BTE Beam Type) 142' Interior Span

UPRR General Notes

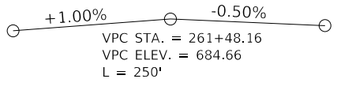
STA. 241+01.58 Letting Date: July 2022

Clinton County

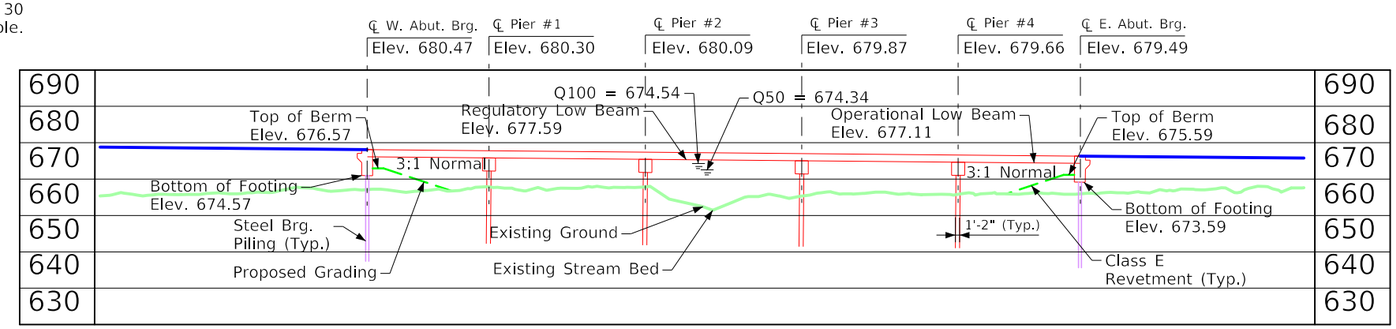
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY ADMINISTRATION

Design No. 125 Design Sheet No. 3 of 3 FHWA No. 020721

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.



PROPOSED PROFILE
GRADE US 30



HYDRAULIC DATA

Drainage Area = 6.7 Sq. Mi.
Stream Slope = 14.3 Ft./mi.

Q50= 2,970 Cfs (AEPD) 9,195 CFS (2D Model)
Stage = 674.34
Regulatory Low Beam = 677.59
Avg. Bridge Velocity = 6.0 FPS

Q100= 3,520 CFS (AEDP) 9,716 CFS (2D Model)
Stage = 674.54
Operational Low Beam =677.11
Backwater = 0.51 Ft.
Avg. Bridge Velocity = 6.1 FPS

Q200 = 4,580 CFS (AEPD) 12,209 (2D Model)
Design Scour = 641.9

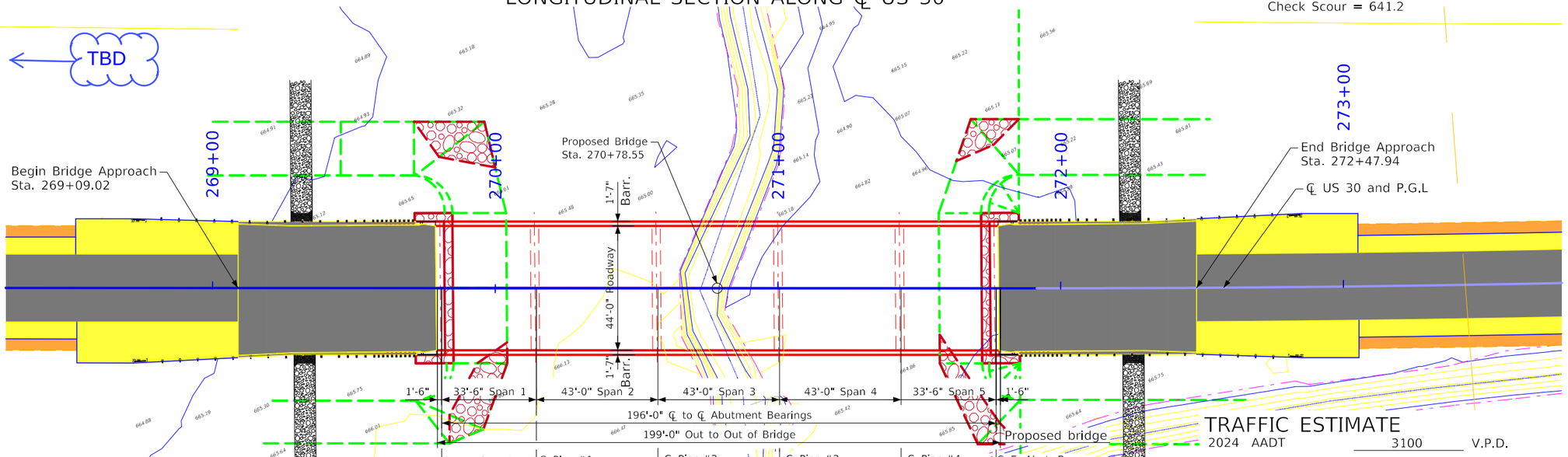
Q500 = 5,030 CFS (AEPD) 12,918 CFS (2D Model)
Check Scour = 641.2

LOCATION

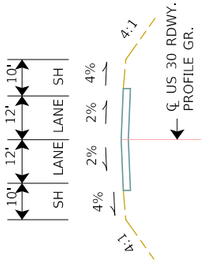
US 30 Over Overflow Ditch
T-81N R-1E
Section 10
Spring Rock Township
Clinton County
FHWA No. 020731
Bridge Maint. No. 2397.9S030
Latitude XX.XXXXXX°
Longitude -XX.XXXXXX°

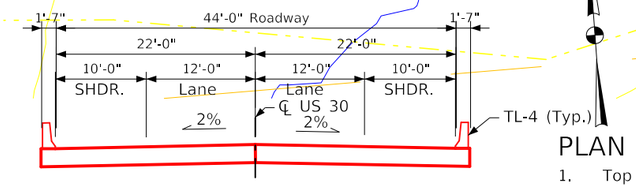
TBD

LONGITUDINAL SECTION ALONG ℄ US 30



TYPICAL APPROACH SECTION





TYPICAL BRIDGE SECTION

0 English 40
Scale in Feet

SITUATION PLAN

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 194'-0 x 28'-0 continuous concrete slab bridge, Clinton County Design No. 254, FHWA No. 020730, Maint. 2397.9S030.

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

Designer Note:

Pier type and foundation type to be confirmed as design progresses.

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

Design For 0° Skew
196' X 44' Continuous Concrete Slab Bridge
33'-6" End Spans 43'-0" Interior Span
Situation Plan
STA. 270+78.55 Letting Date: July 2022
Clinton County
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY ADMINISTRATION
Design No. Design Sheet No. 1 of 2 FHWA No. 020731

FILE NO. TBD	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER V.4

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DESIGN NOTES:

All units are in feet unless noted otherwise

TL-4 bridge railing proposed

Pier type - fully encased pile bent piers

Foundation type to be confirmed during final design

Berm slopes to be confirmed during final design

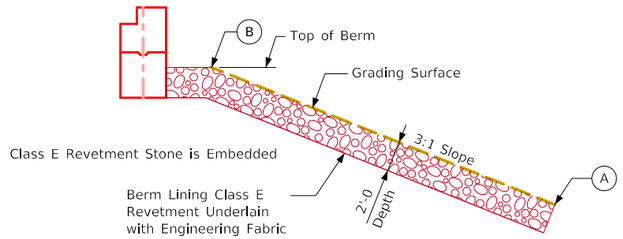
Potential for ABC to be investigated as design progresses

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.

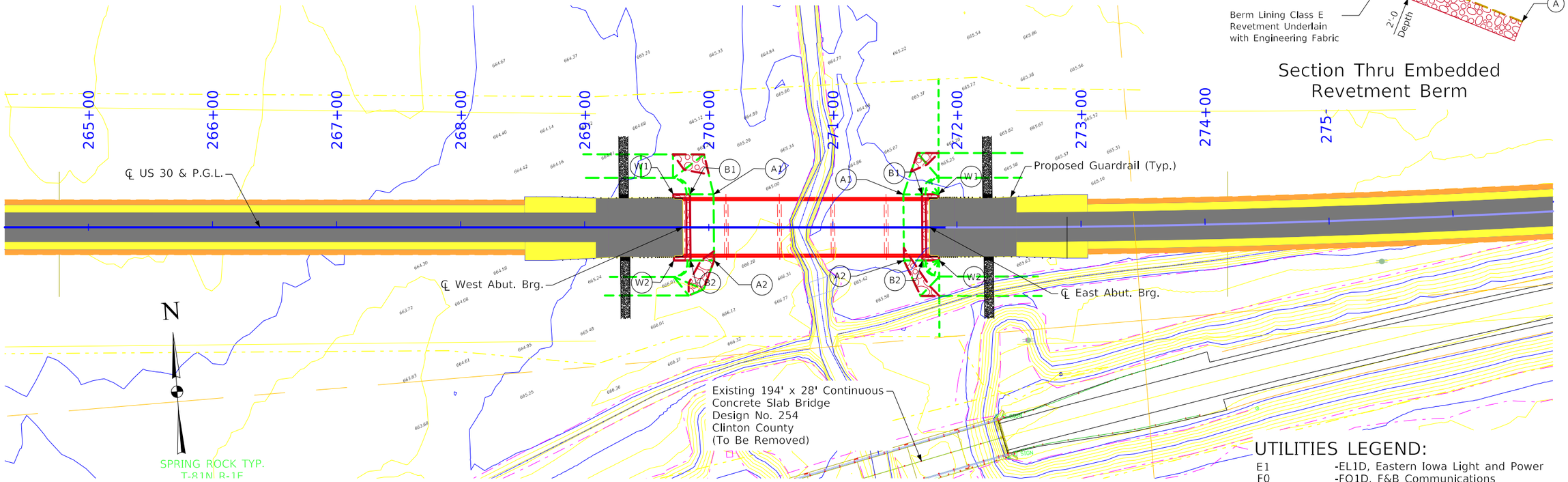
Berm Slope Location Table

Points	West Abutment			East Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	270+03.80	26.58' LT	669.82	271+56.80	26.58' LT	670.00
A2	270+03.80	26.58' RT	669.82	271+56.80	26.58' RT	670.00
B1	269+85.06	26.58' LT	676.57	271+72.05	26.58' LT	672.59
B2	269+85.06	26.58' RT	676.57	271+72.05	26.58' RT	672.59
W1	269+65.06	26.58' LT	679.71	271+92.05	26.58' LT	678.73
W2	269+65.06	26.58' RT	679.71	271+92.05	26.58' RT	678.73

Berm slope elevations reflect the grading surface.



Section Thru Embedded Revetment Berm



SITE PLAN

Estimated Berm Armoring Quantities

Location	Revetment CL. E (Ton)	Erosion Stone (Ton)	Engineering Fabric (SY)	Excavation (CY)
Berm Lining - West	272.2		316.8	288.0
Berm Lining - East	239.6		278.9	253.6
Totals	511.8		595.7	541.6

Excavation quantity calculated from grading surface.

0 English 75
Scale in Feet

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

196' X 44' Continuous Concrete Slab Bridge

33'-6" End Spans 43'-0" Interior Span

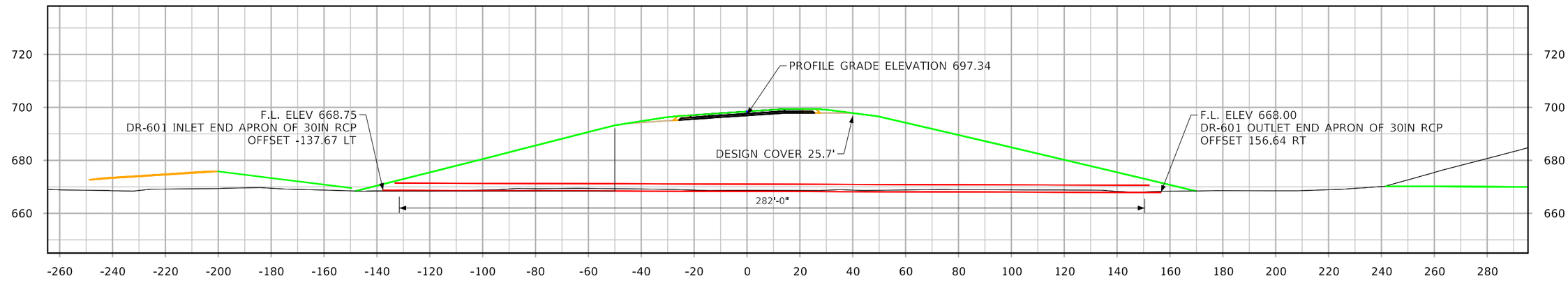
Site Plan

STA. 270+78.55 Letting Date: July 2022

Clinton County

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY ADMINISTRATION

Design No. Design Sheet No. 2 of 2 FHWA No. 020731

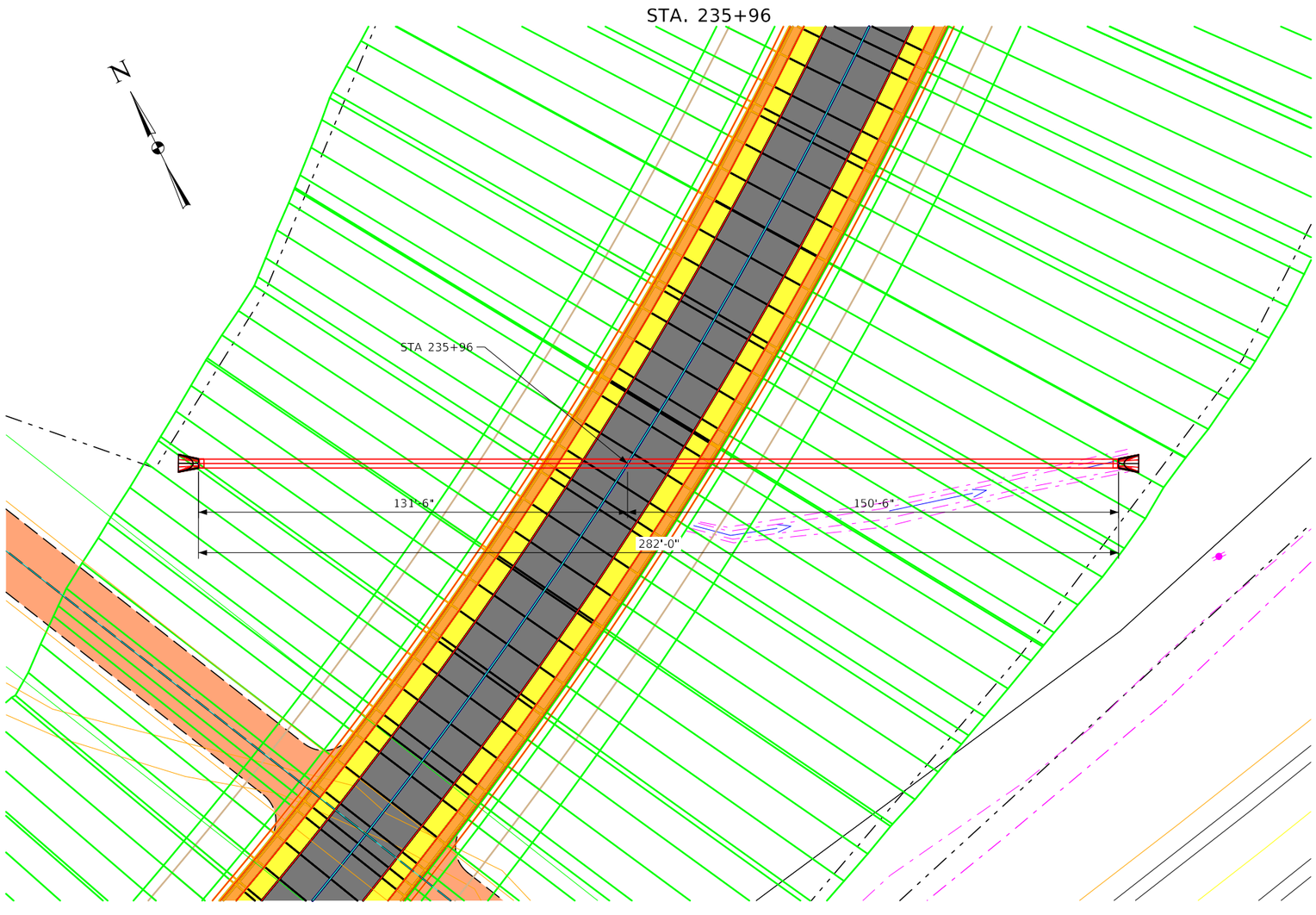


Hydraulic Data

Drainage Area = 29.2 Acres
Q_{50} = 19.65 CFS
HW Elev. = 671.23

Location

US 30
T-81N R-1E
Section 15
Clinton County



Incorporate information into cross sections and remove this sheet

Design For 32° Rt Skew
30" X 282'
REINFORCED CONCRETE PIPE

PLAT PLAN

STA. 235+96 (US 30)
Turn-in Date: XXX

Clinton County
IOWA DEPARTMENT OF TRANSPORTATION

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

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER V.6	

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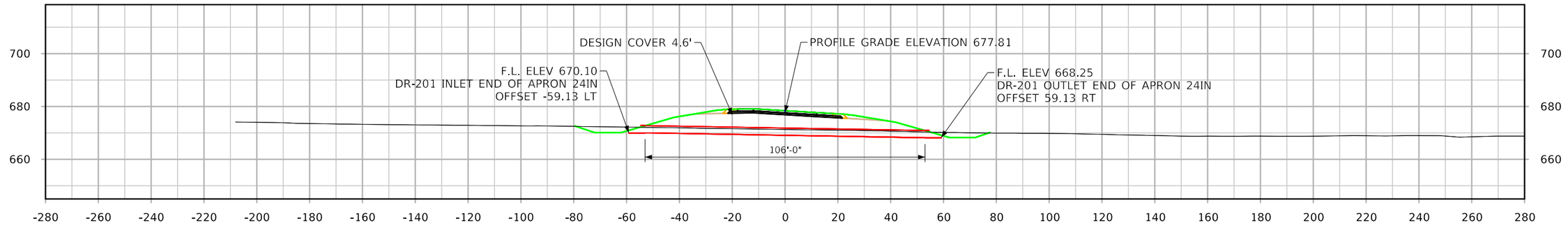


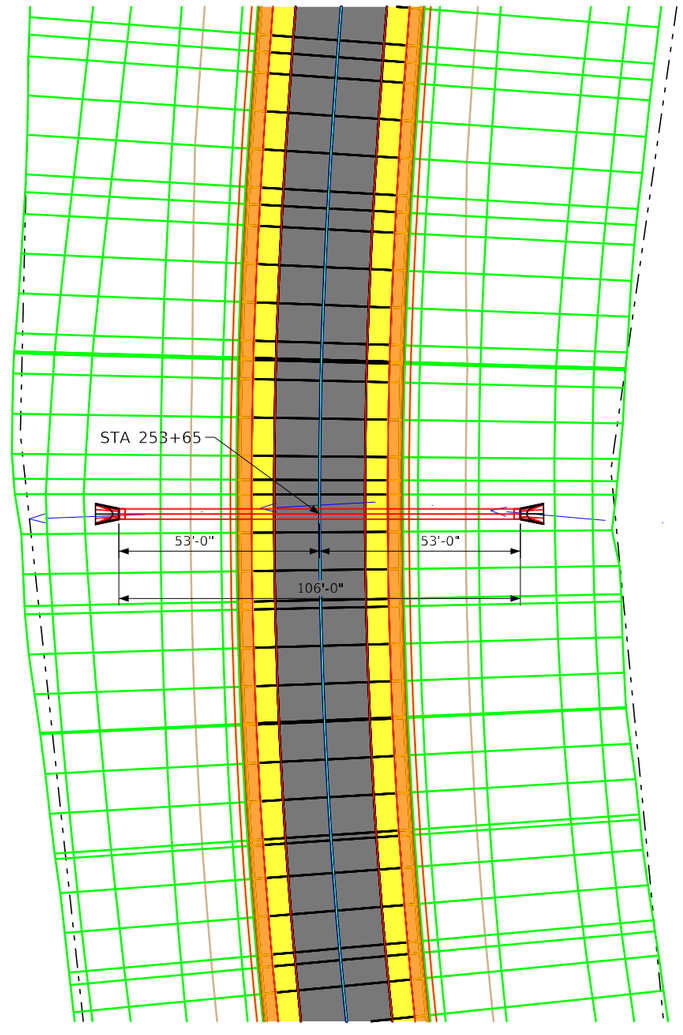
STA. 253+65

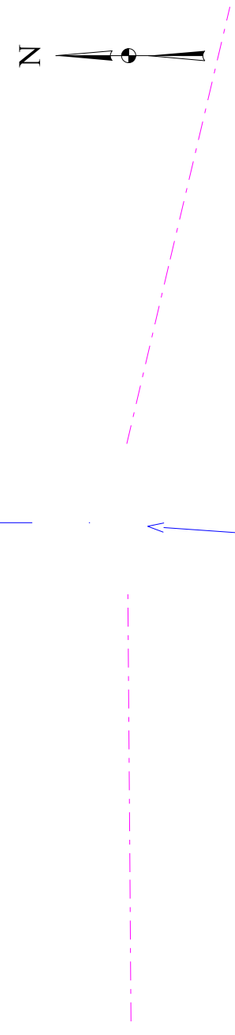
Hydraulic Data

Drainage Area = 54.1 Acres
Q_{50} = 31.0 CFS
HW Elev. = 672.56

Location

US 30
T-81N R-1E
Section 10
Clinton County





Incorporate information into cross sections and remove this sheet

Design For 0° Skew
30" X 106'
REININFORCED CONCRETE PIPE

PLAT PLAN

STA. 253+65 (US 30)
Turn-in Date: XXX

Clinton County
IOWA DEPARTMENT OF TRANSPORTATION

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

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER V.7	

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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

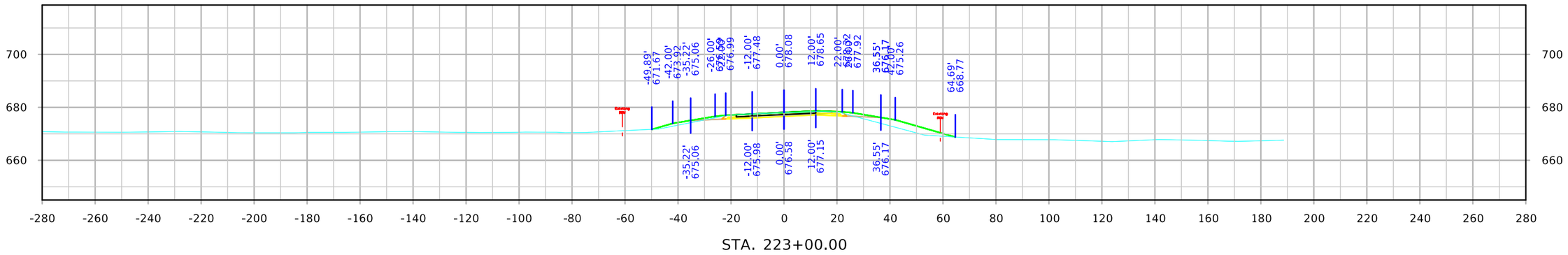
NOTES:

NOTES:

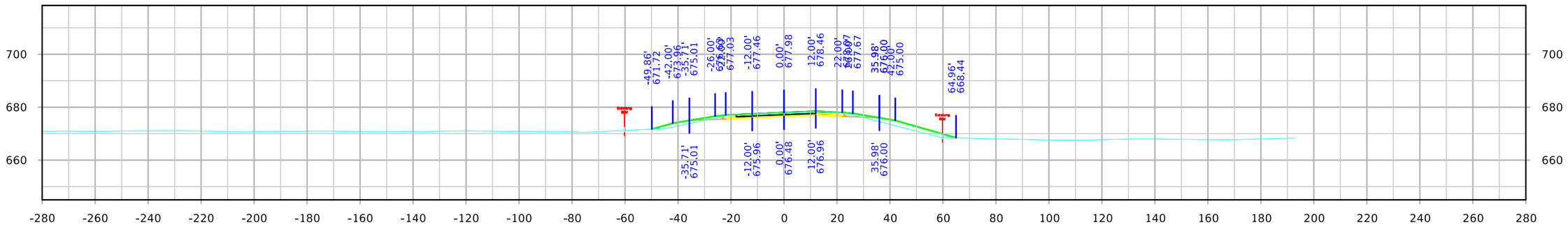
CROSS SECTIONS
LEGEND AND INFORMATION SHEET

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

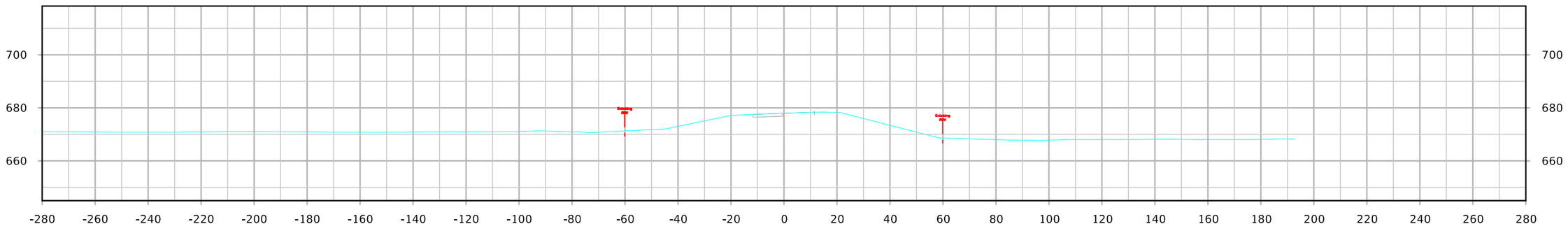
ML - US30



STA. 223+00.00



STA. 222+50.00



STA. 222+26.04

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.2

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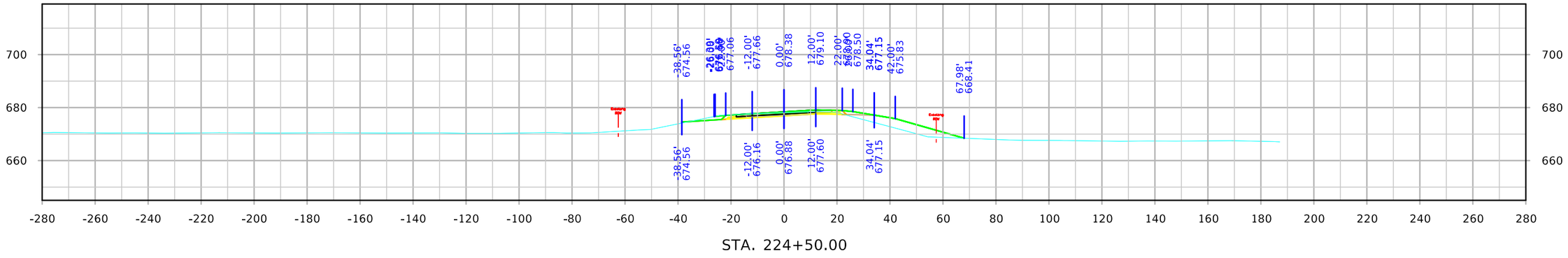
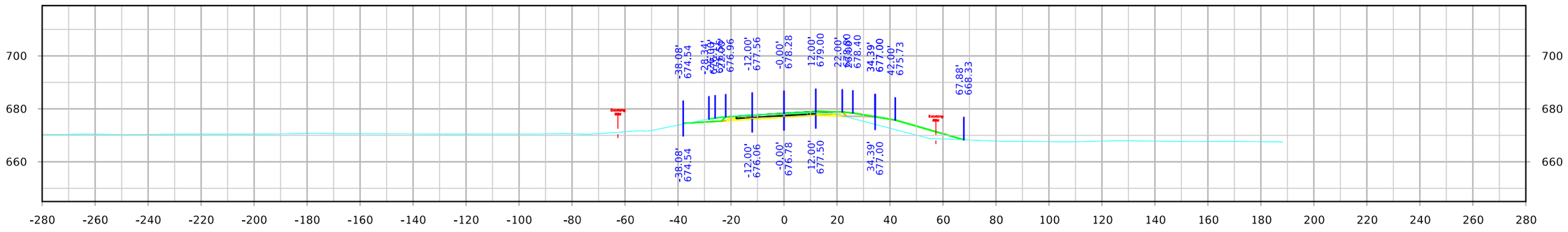
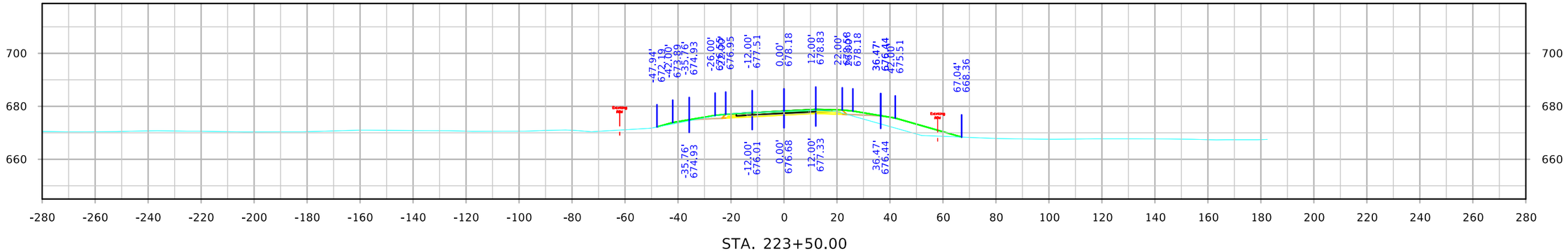
ML - US30



STA. 224+50.00



STA. 224+00.00

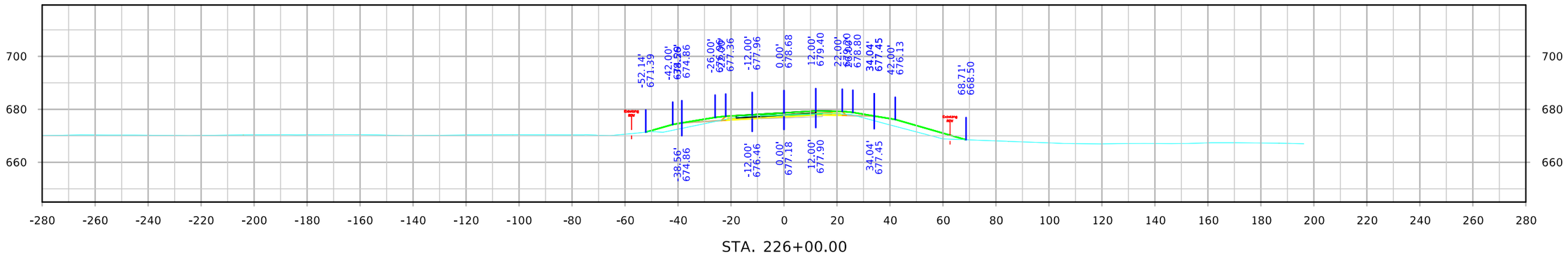


STA. 223+50.00

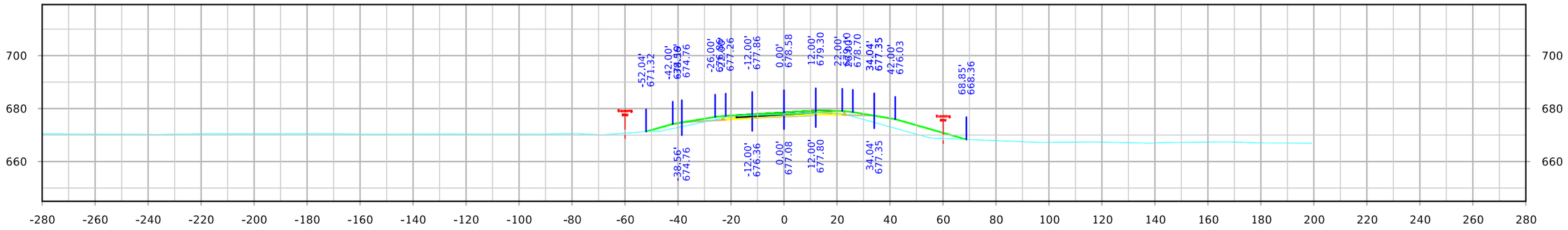
FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.3

10:11:09 PM 7/24/2022 8725 c:\pw_work\pwmain\taylor.theulen\d1625302\SHT_23030189_W02.dgn

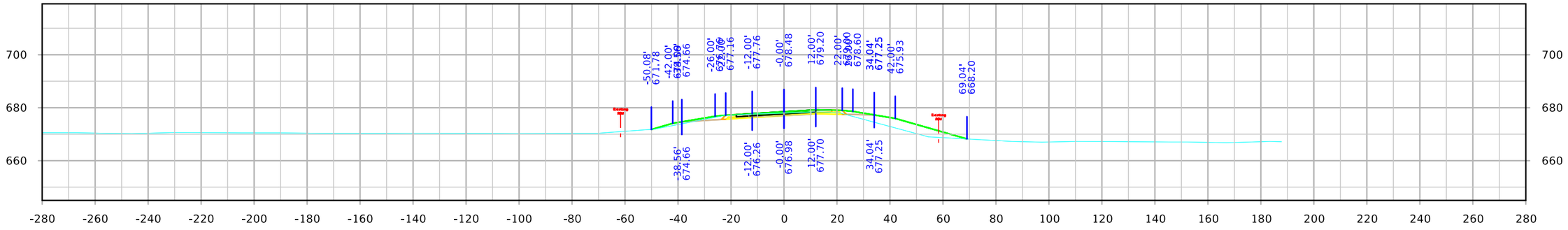
ML - US30



STA. 226+00.00



STA. 225+50.00

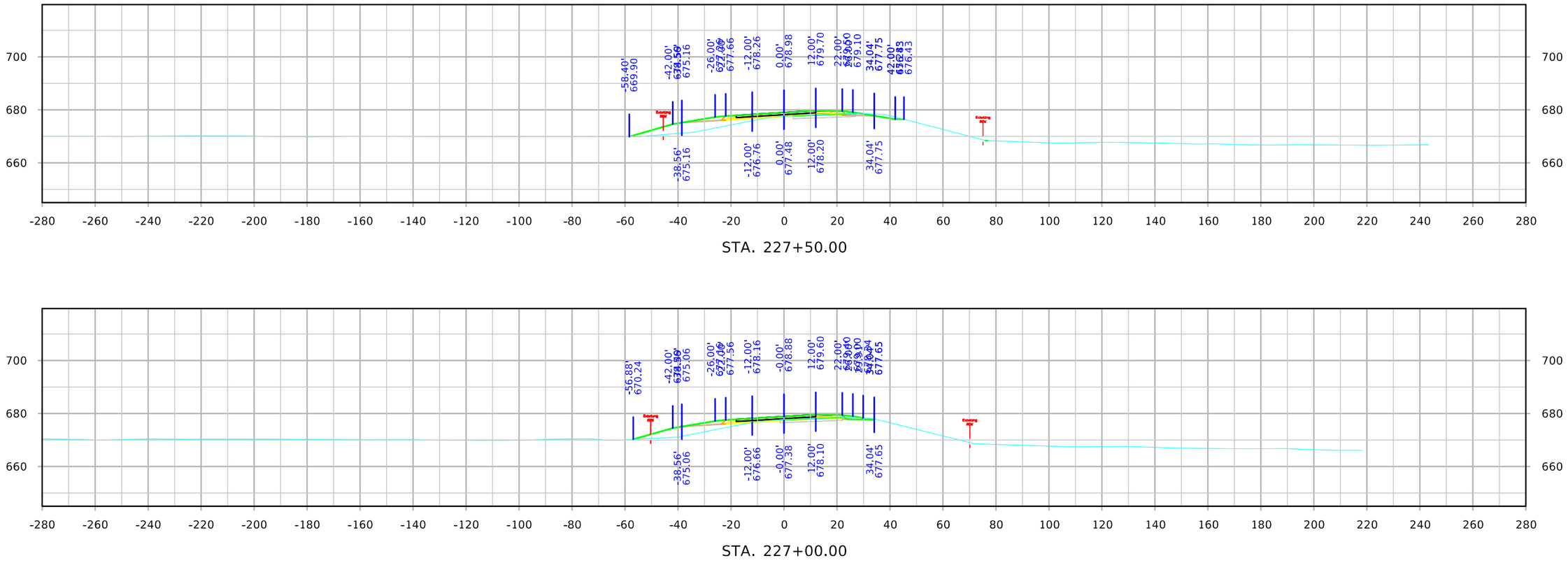


STA. 225+00.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.4

10:11:11 PM 7/24/2022 8725 c:\pw_work\pwmain\taylor.theulen\d1625302\SHT_23030189_W02.dgn

ML - US30



STA. 227+50.00

STA. 227+00.00

STA. 226+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.5

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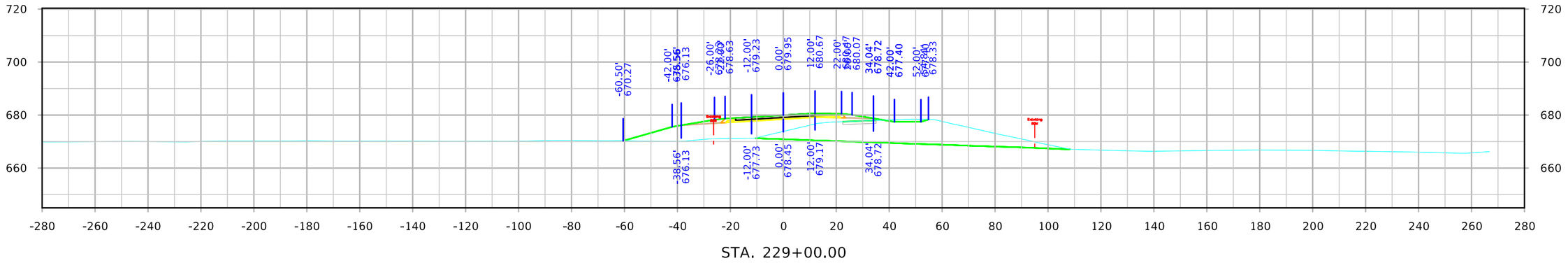
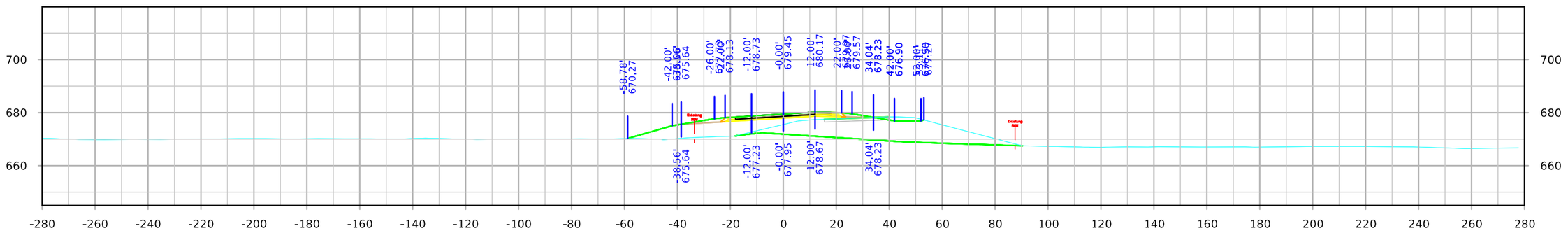
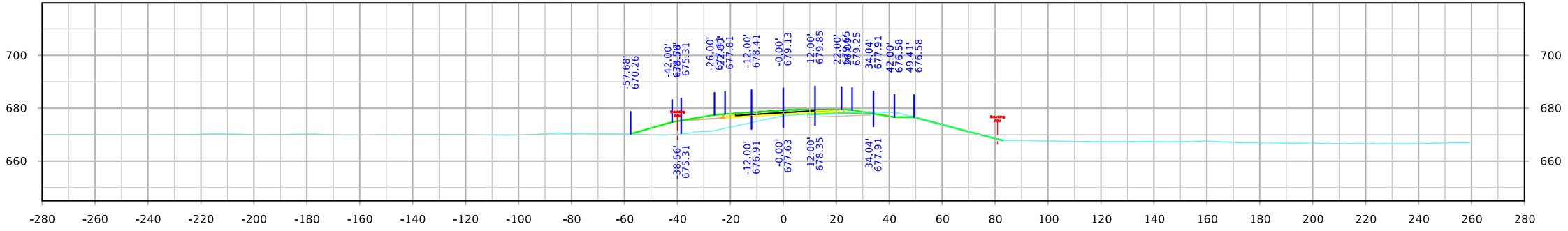
ML - US30



STA. 229+00.00



STA. 228+50.00

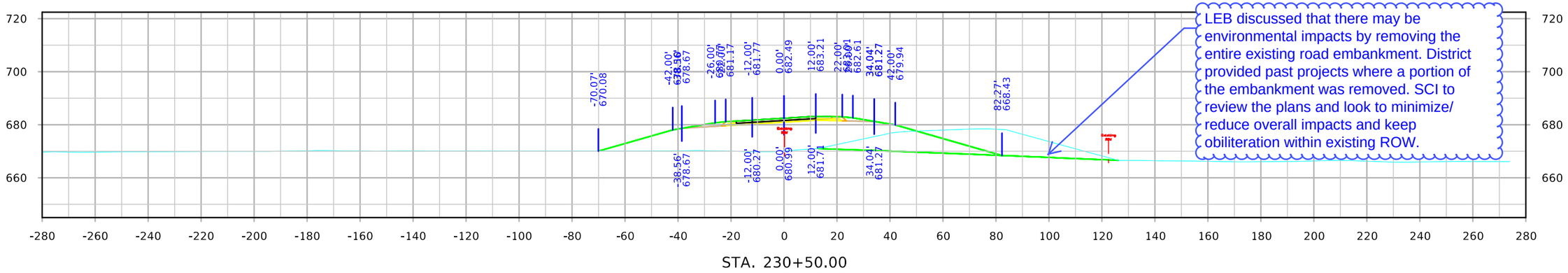


STA. 228+00.00

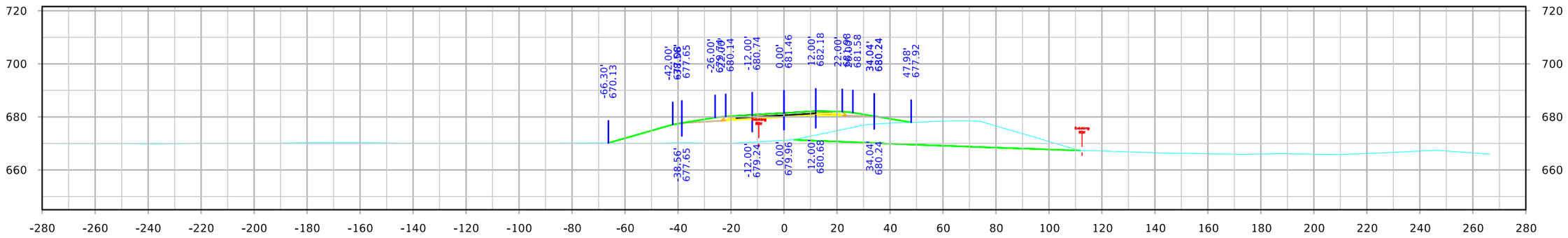
FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.6

10:11:14 PM 7/24/2022 8725 c:\pw_work\pwmain\taylor.theulen\d1625302\SHT_23030189_W02.dgn

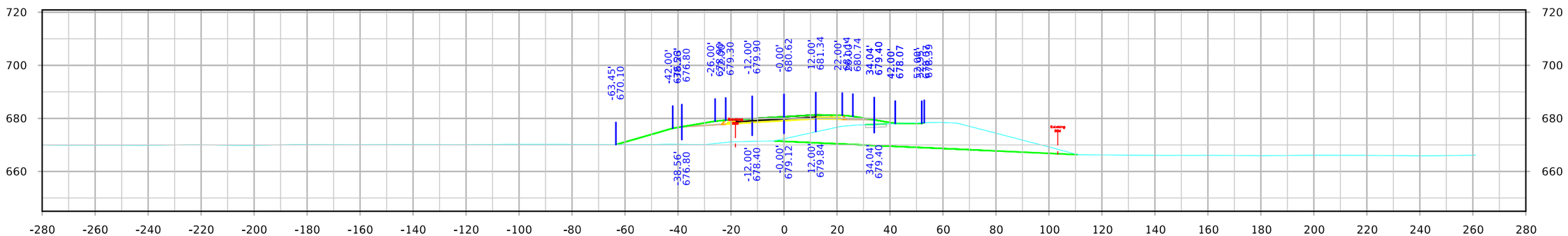
ML - US30



STA. 230+50.00



STA. 230+00.00

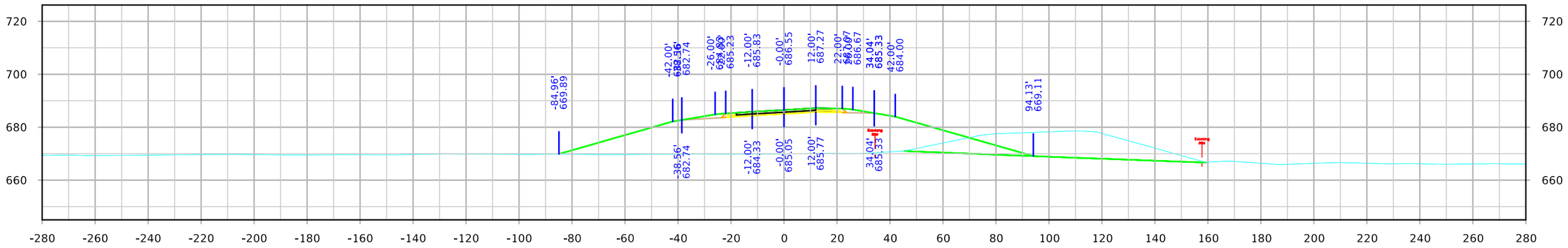


STA. 229+50.00

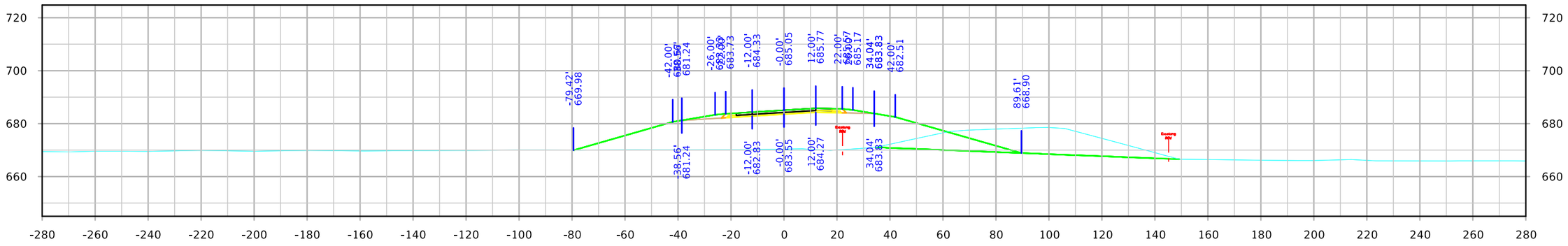
FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.7

10:11:16 PM 7/24/2022 8725 c:\pw_work\pwmain\taylor.theulen\d1625302\SHT_23030189_W02.dgn

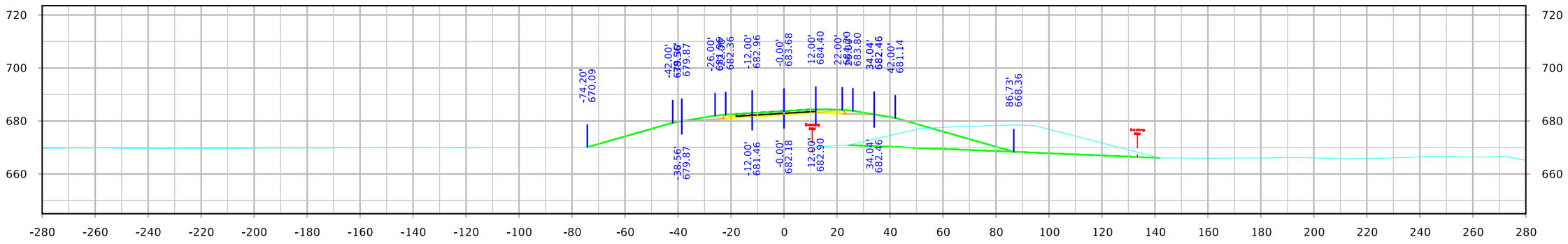
ML - US30



STA. 232+00.00



STA. 231+50.00



STA. 231+00.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.8

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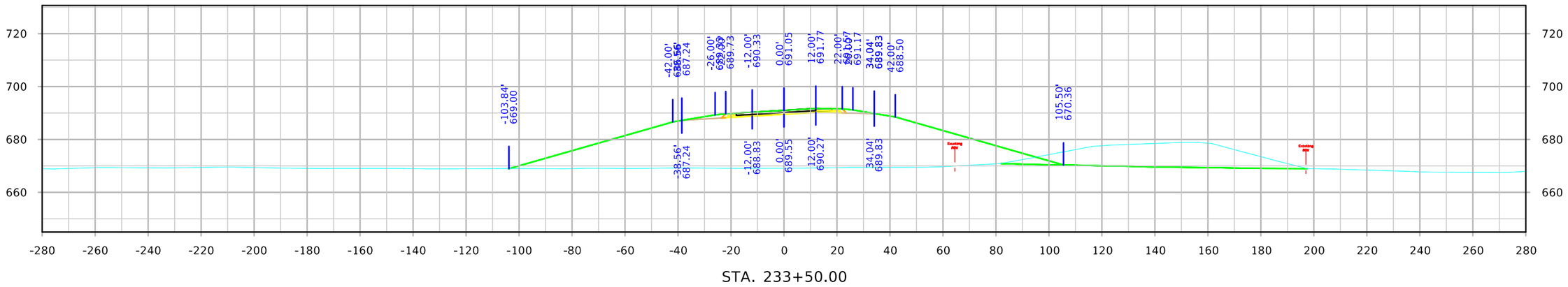
ML - US30



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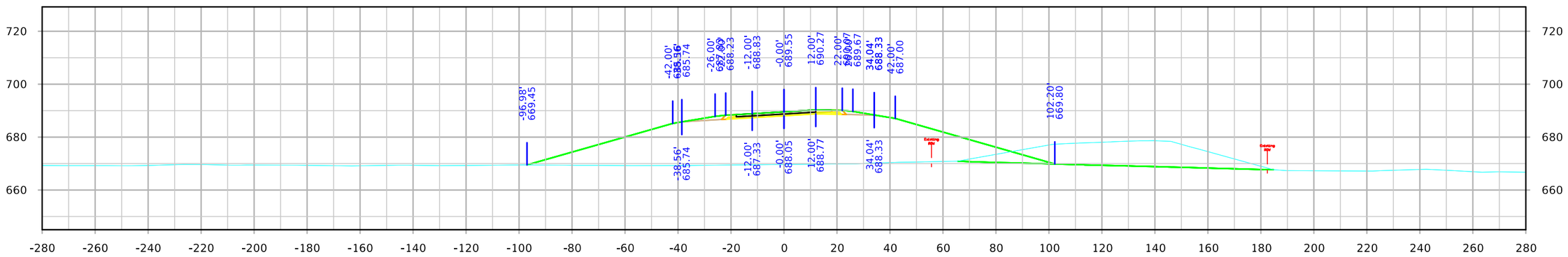

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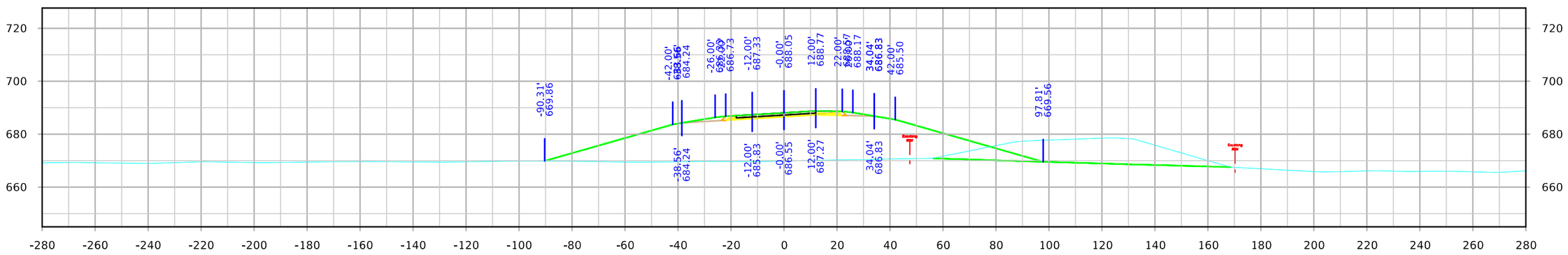

STA. 232+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.9

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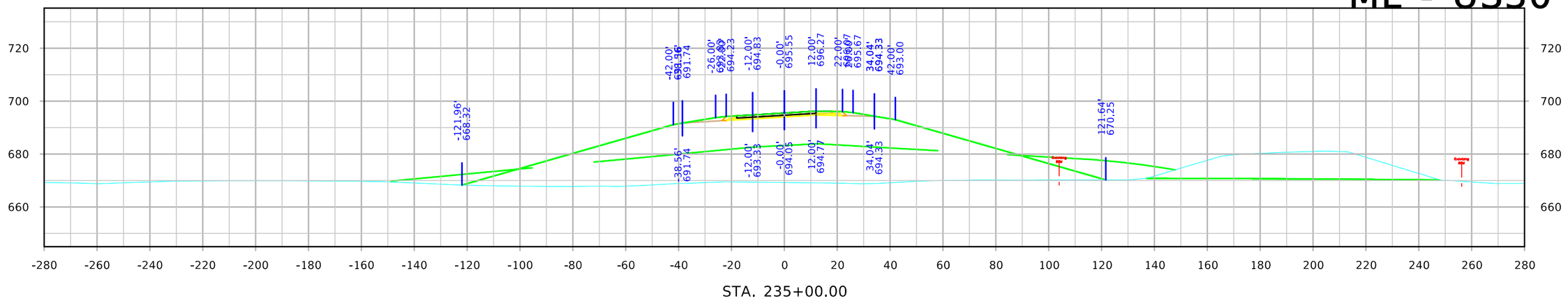
ML - US30



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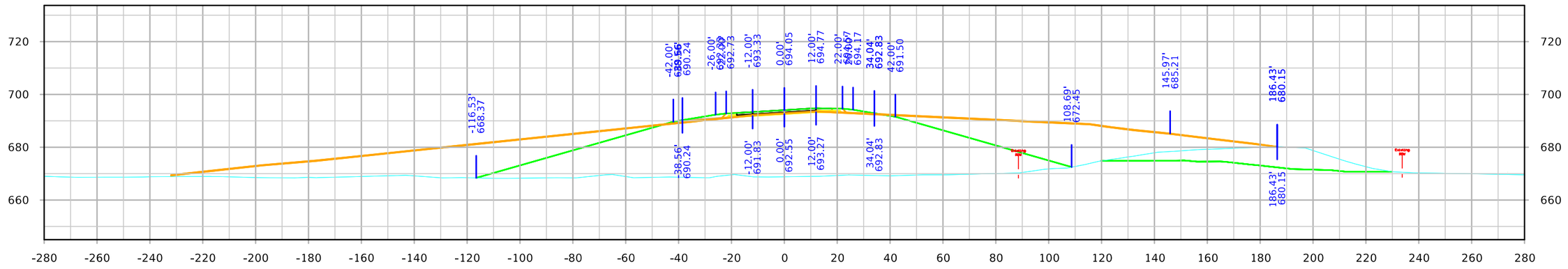

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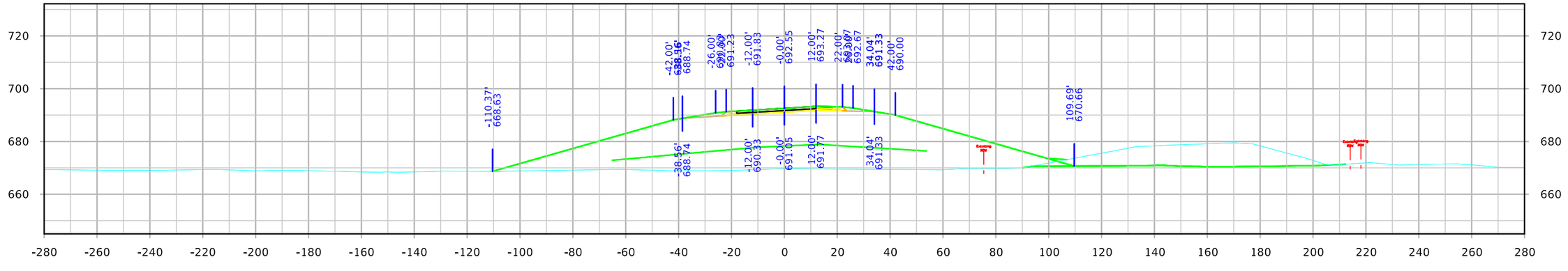

STA. 234+00.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.10

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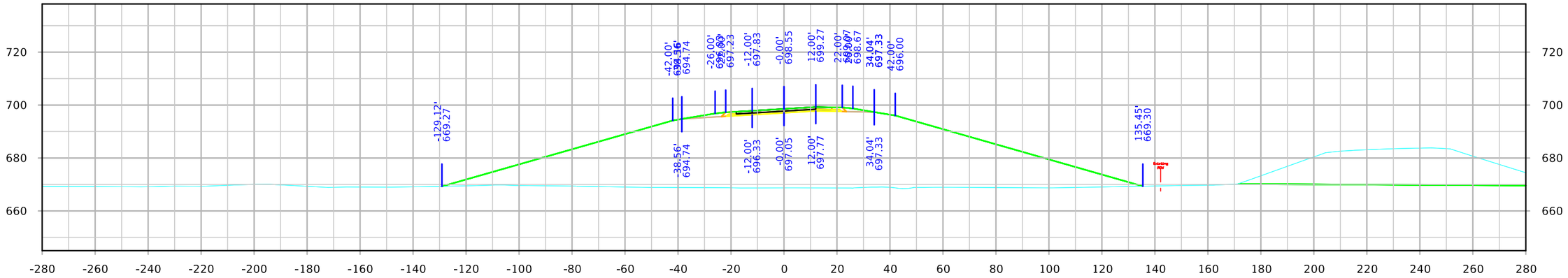
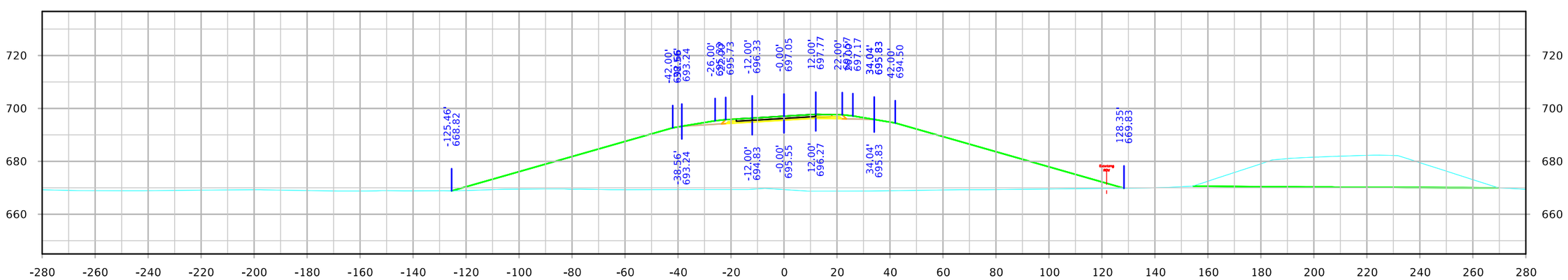
ML - US30



STA. 236+00.00



STA. 235+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.11

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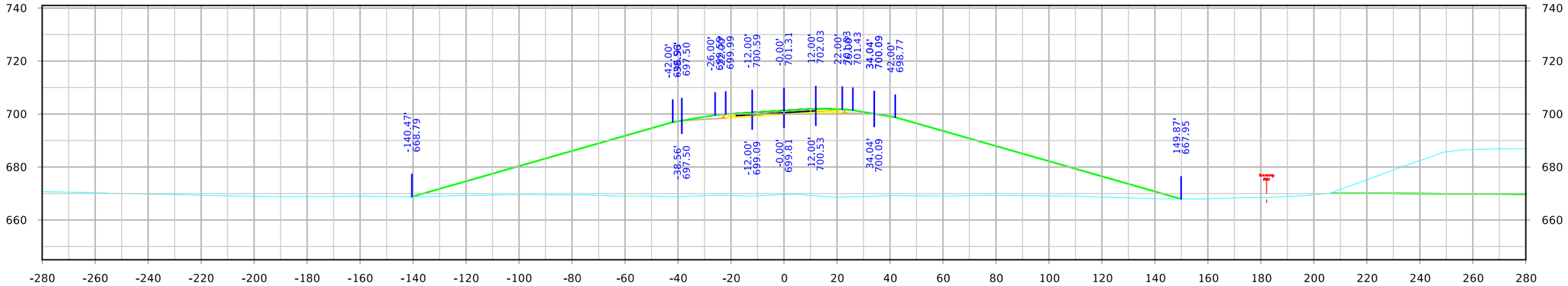
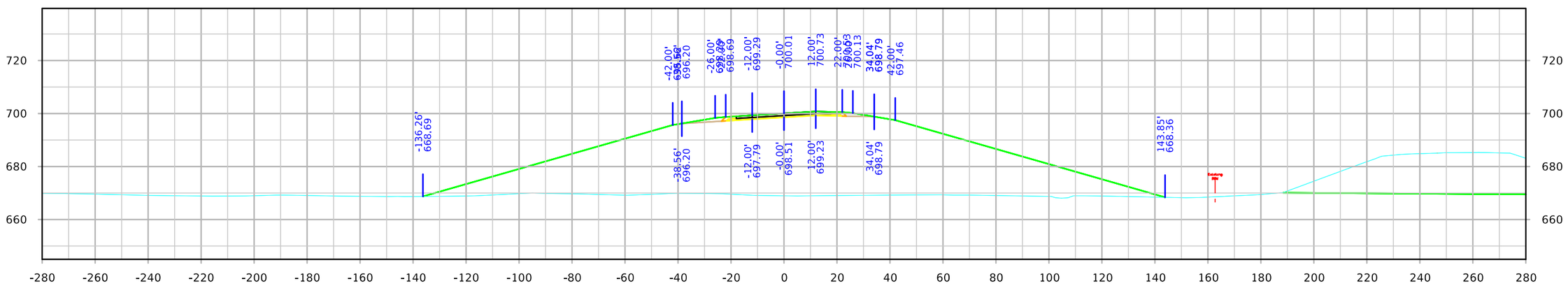
ML - US30



STA. 237+00.00



STA. 236+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.12

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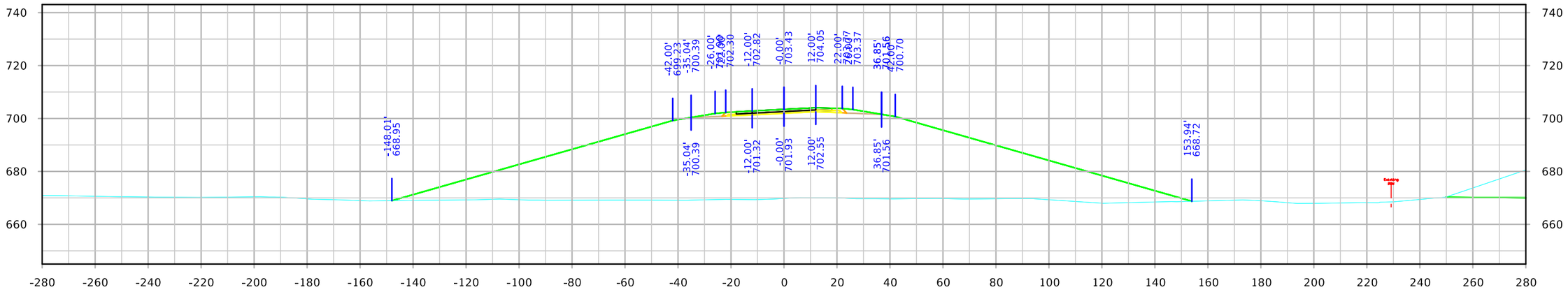
ML - US30



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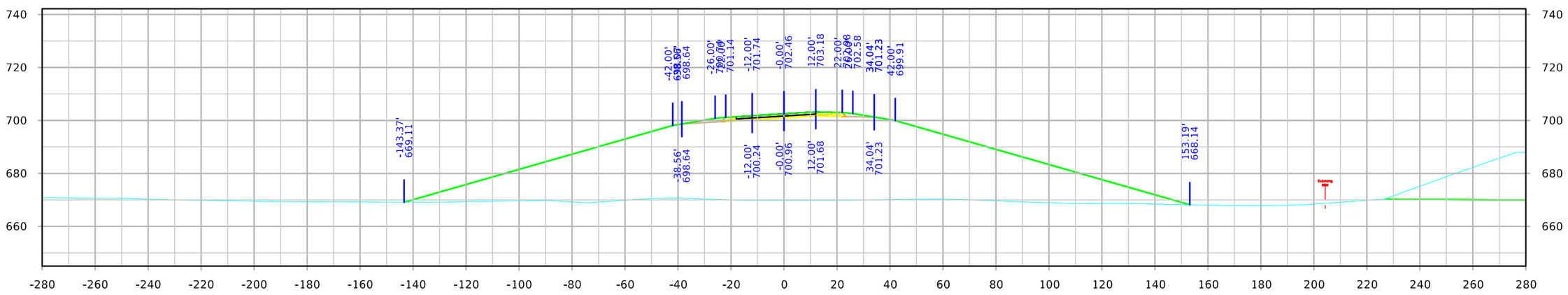

STA. 237+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.13

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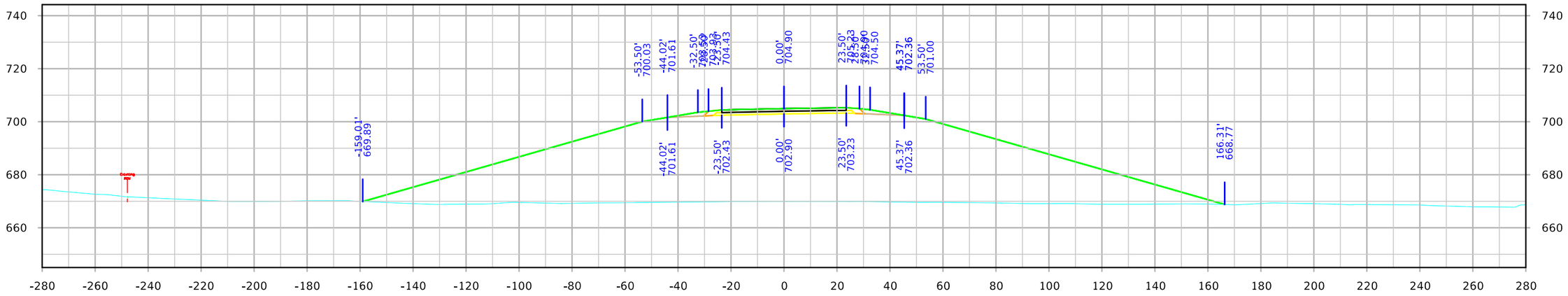
ML - US30



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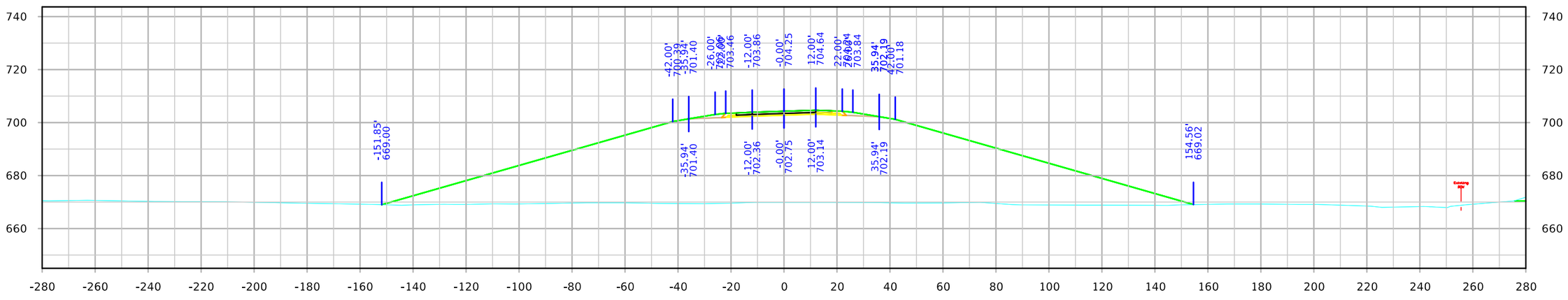

STA. 238+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.14

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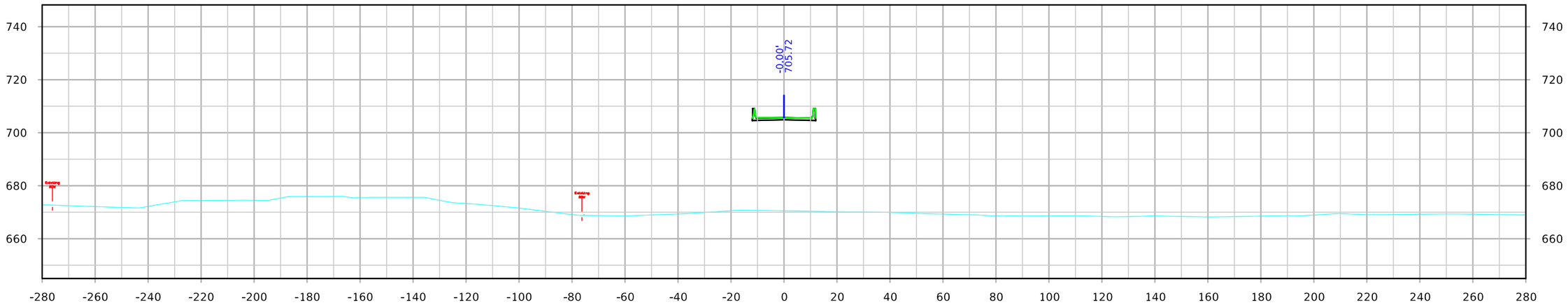
ML - US30



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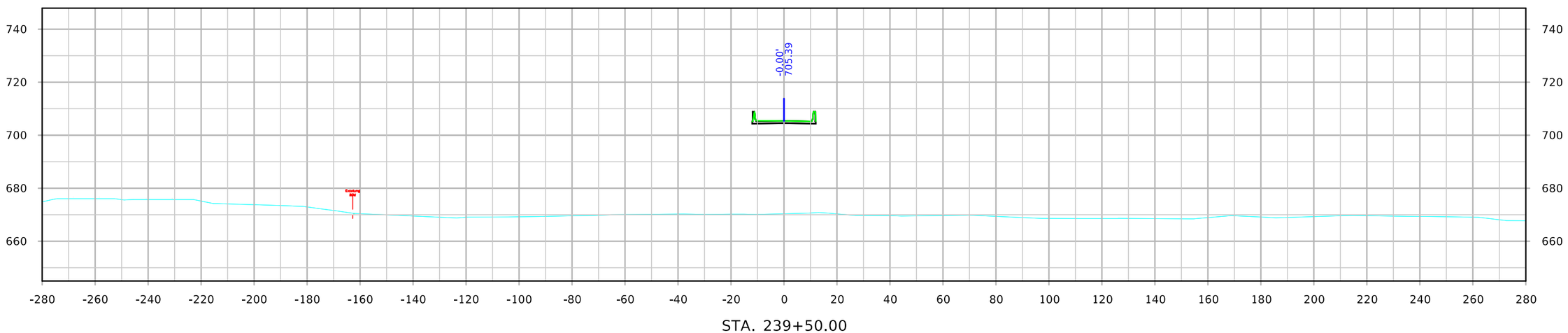

STA. 239+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.15

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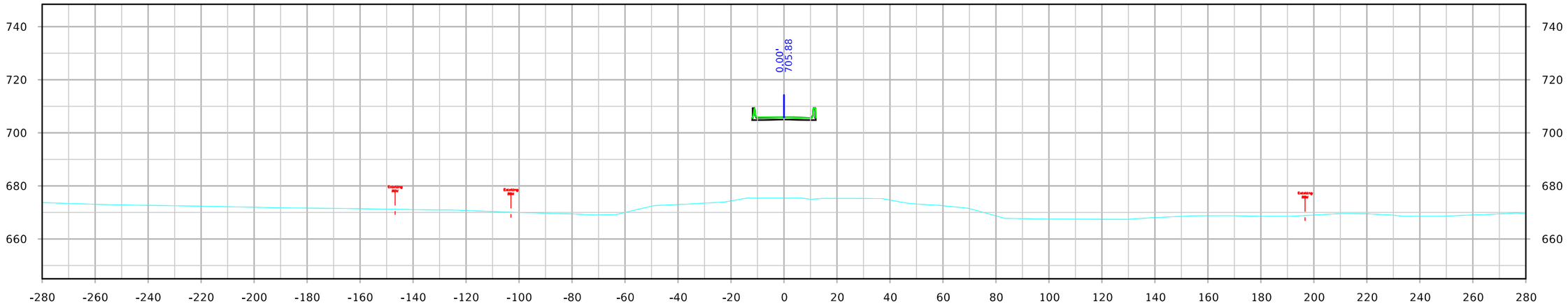
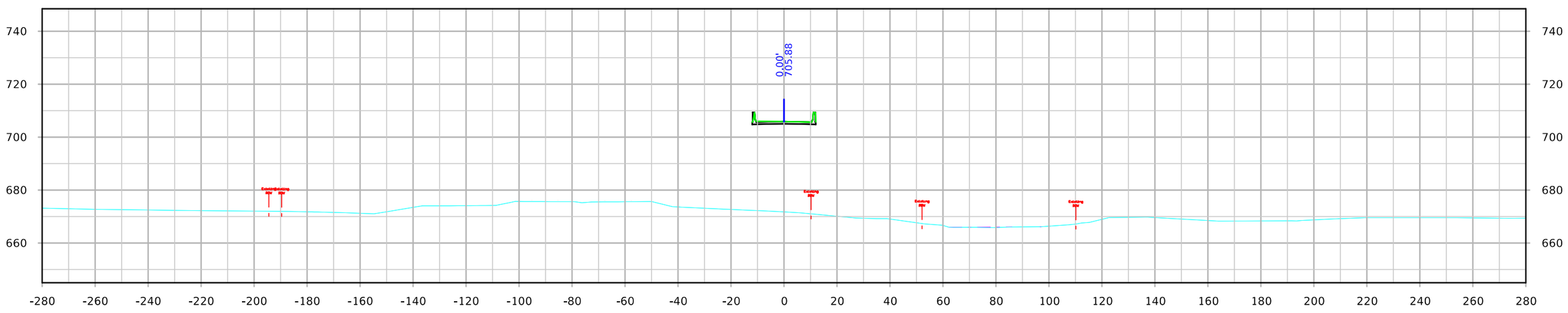
ML - US30



STA. 241+00.00



STA. 240+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.16

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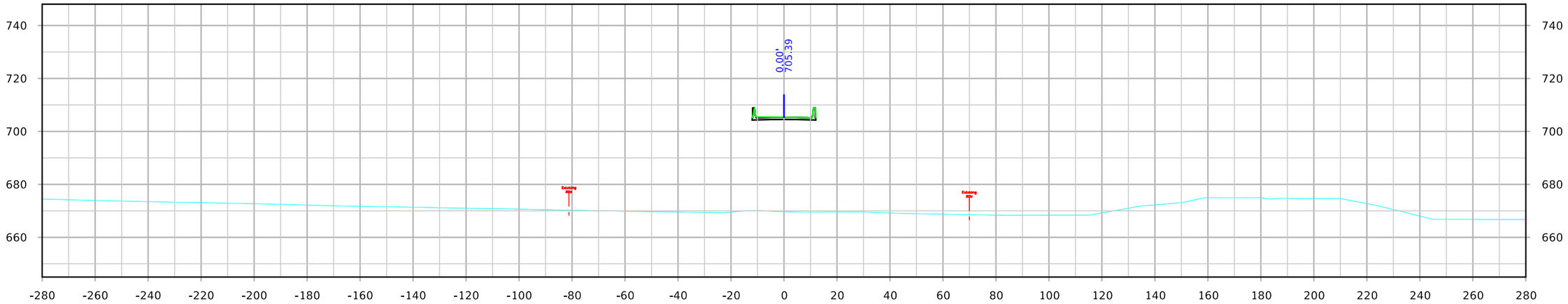
ML - US30



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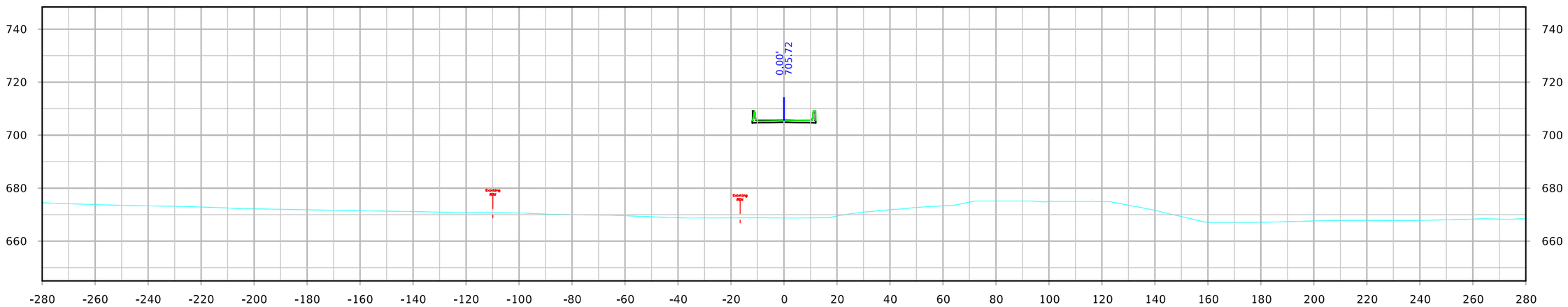

STA. 241+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.17

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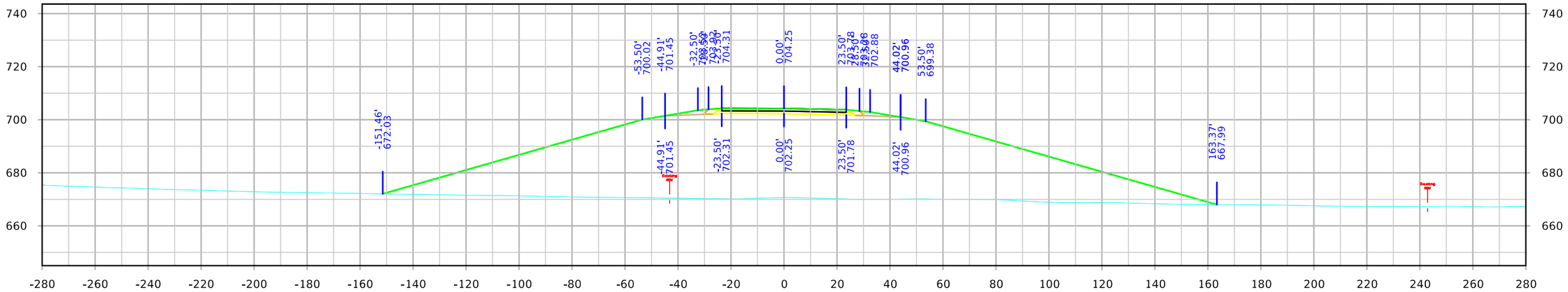
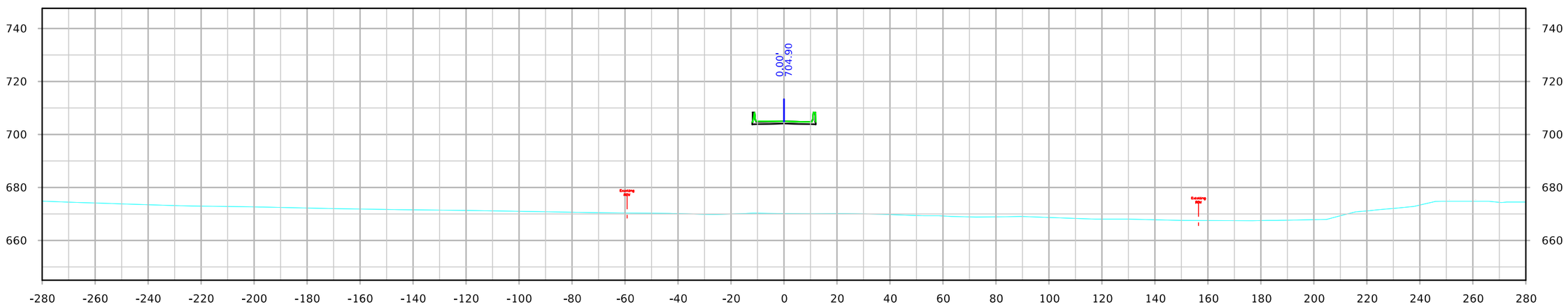
ML - US30



STA. 243+00.00



STA. 242+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.18

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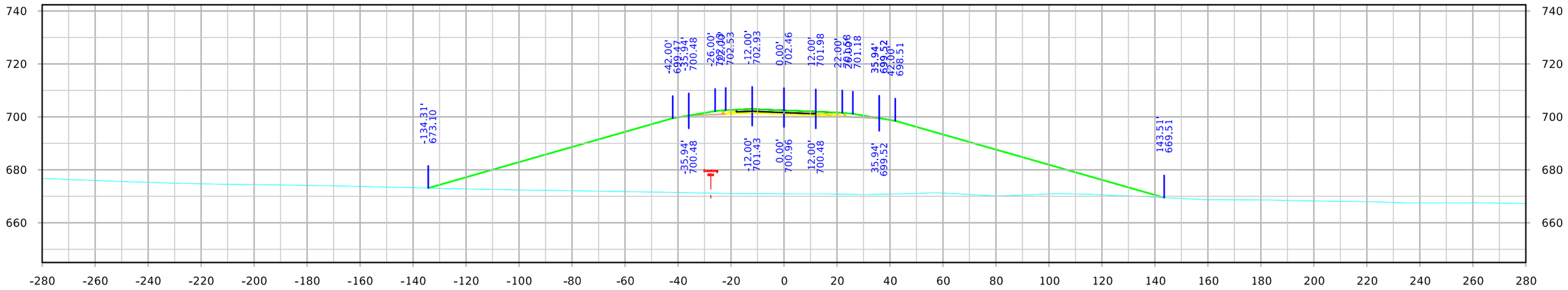
ML - US30



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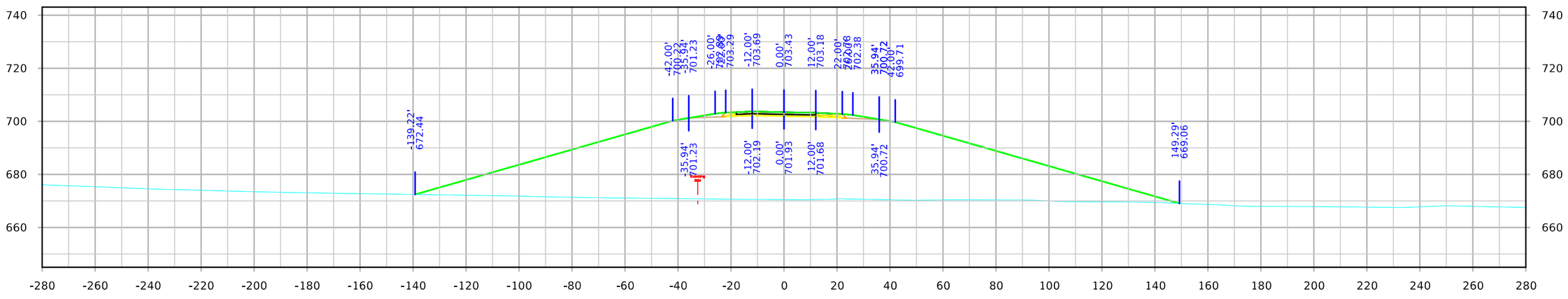

STA. 243+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.19	

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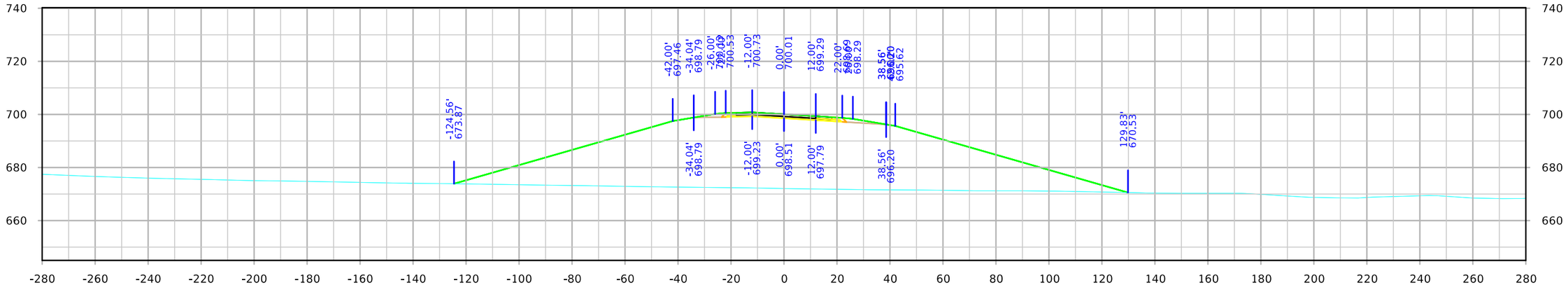
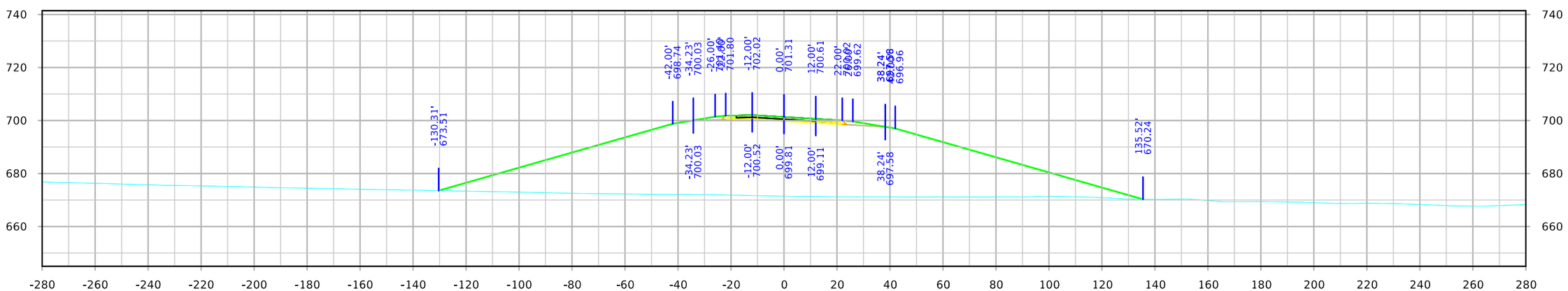
ML - US30



STA. 245+00.00



STA. 244+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.20

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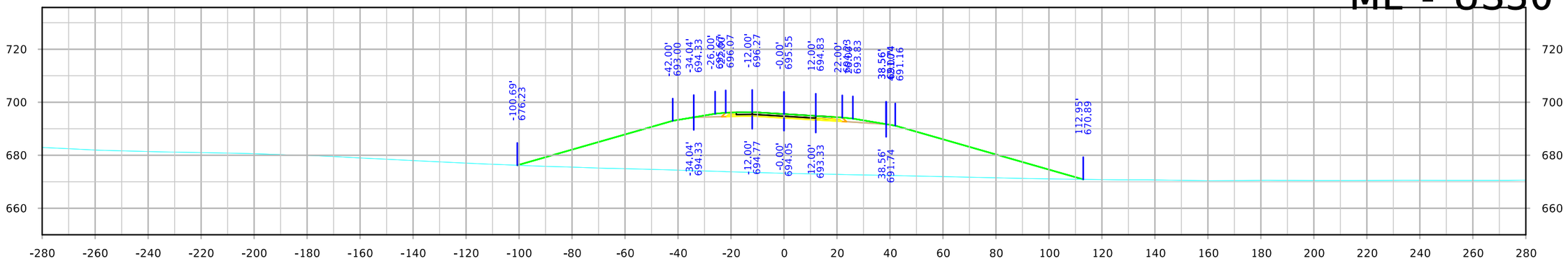
ML - US30



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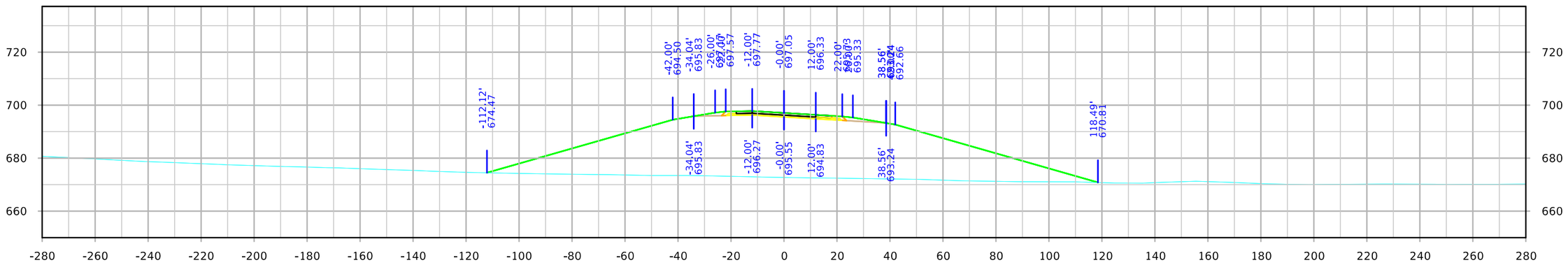

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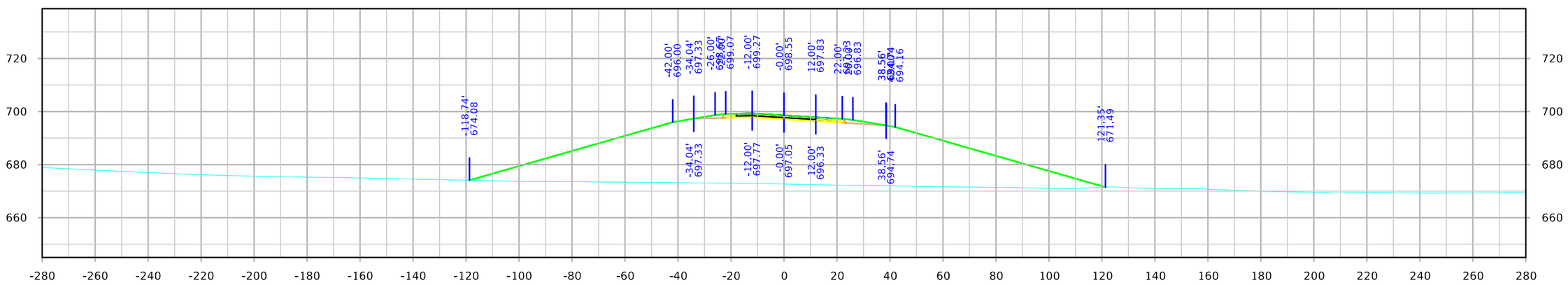

STA. 245+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.21

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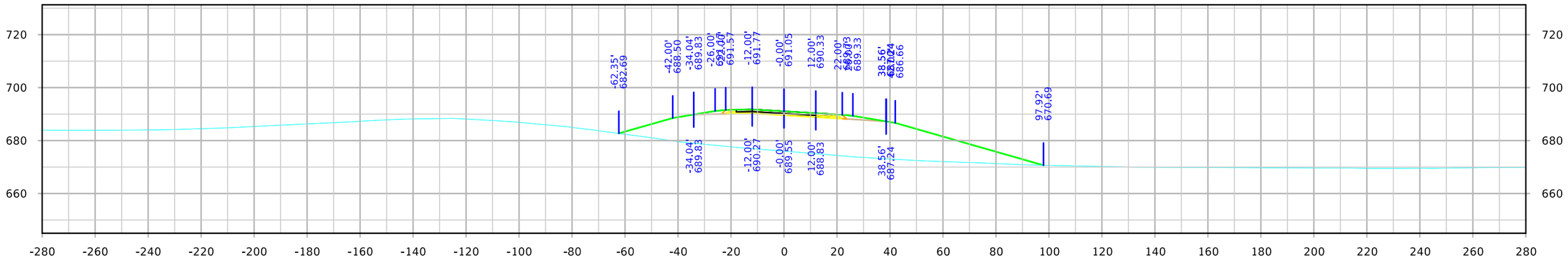
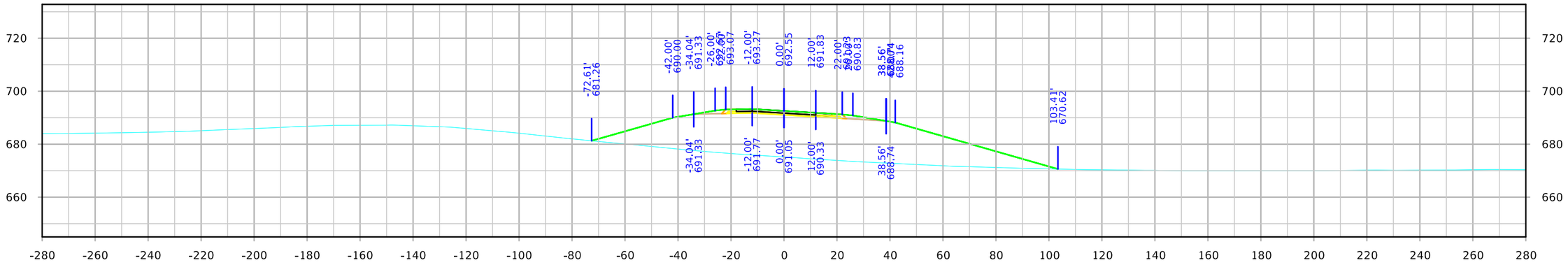
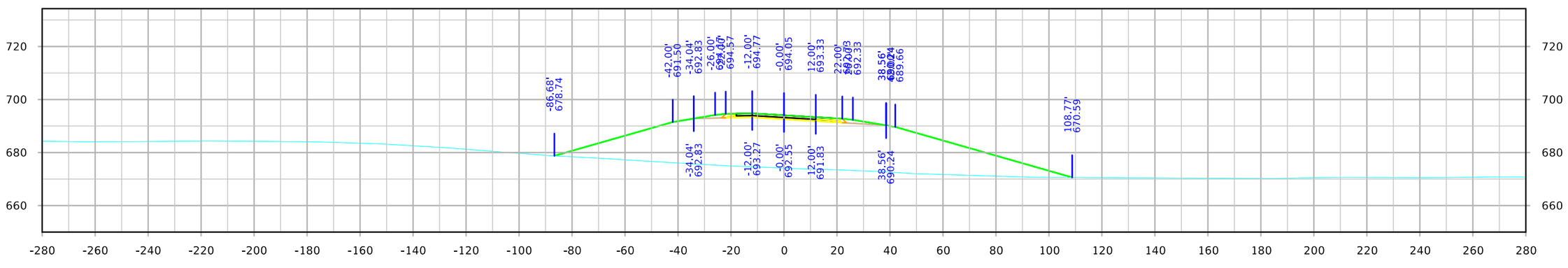
ML - US30



STA. 248+00.00



STA. 247+50.00



STA. 247+00.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.22

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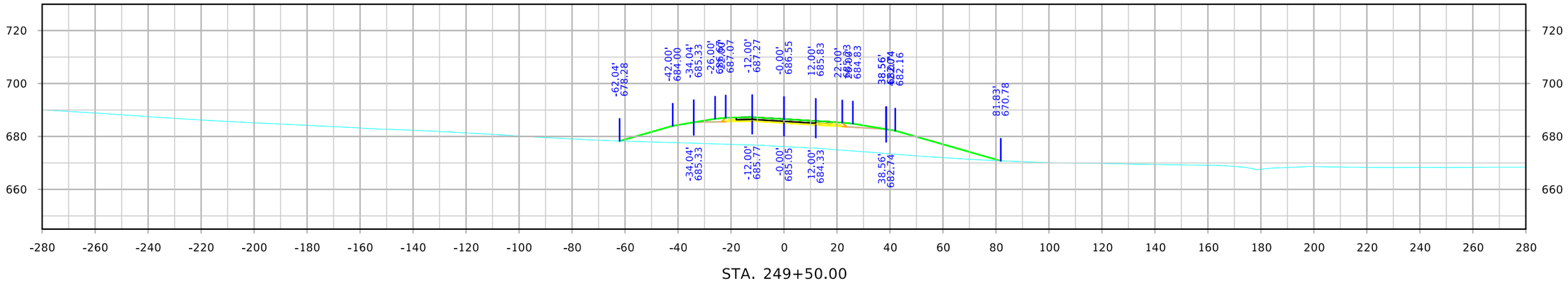
ML - US30



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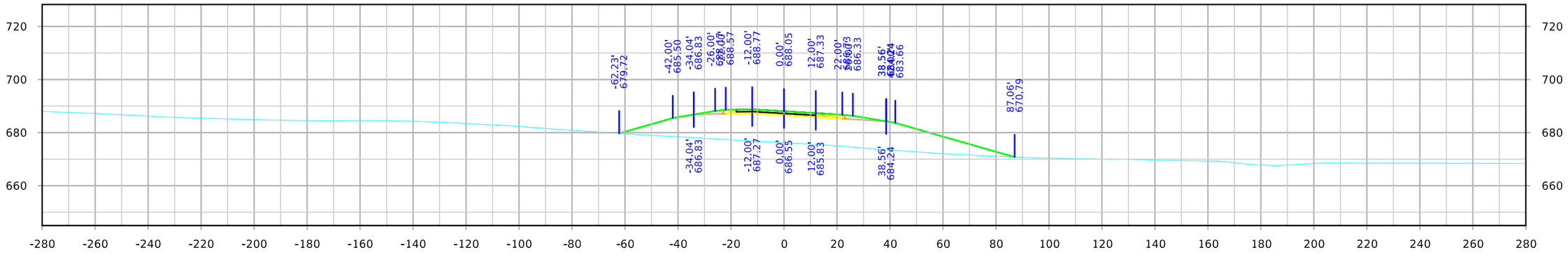

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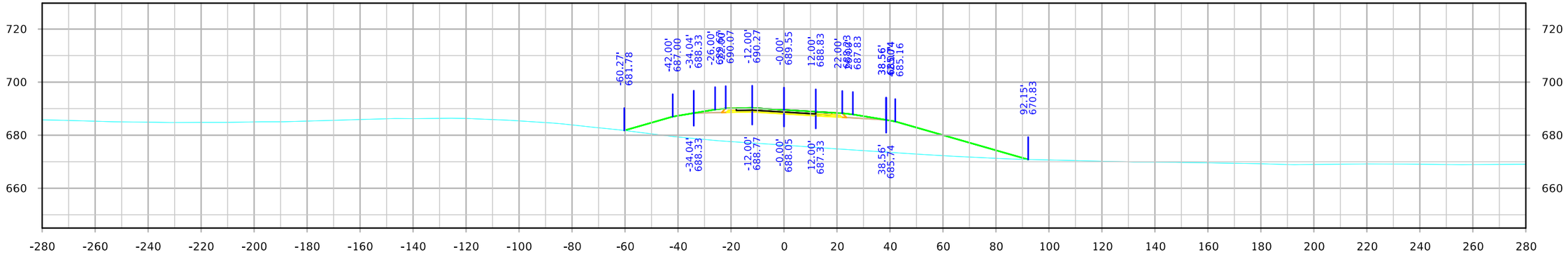

STA. 248+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.23

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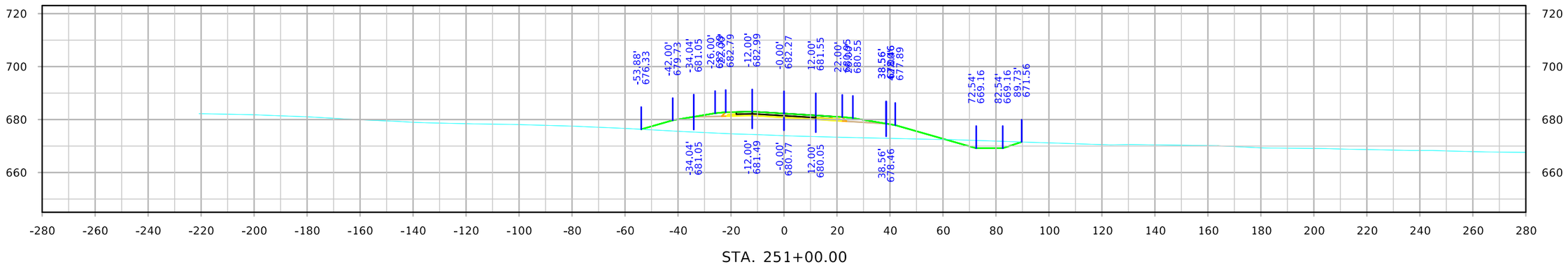
ML - US30



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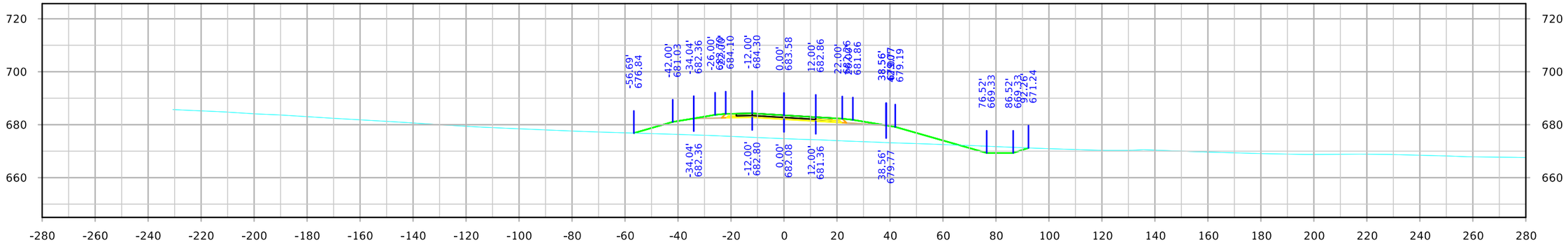
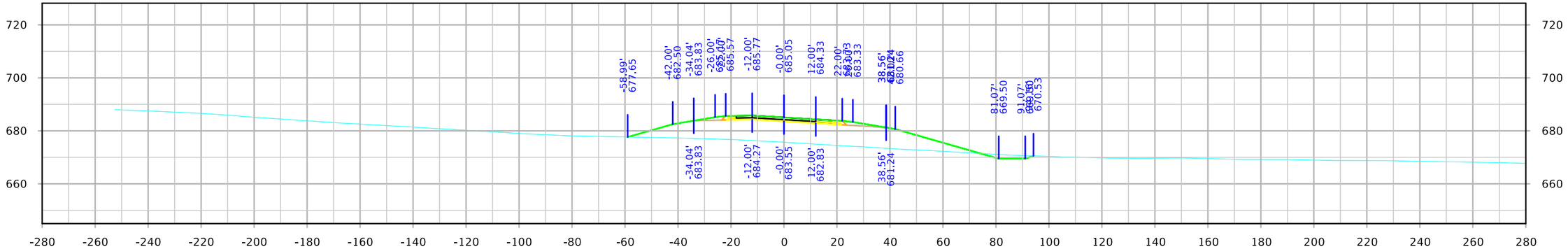


STA. 250+50.00



STA. 250+00.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.24

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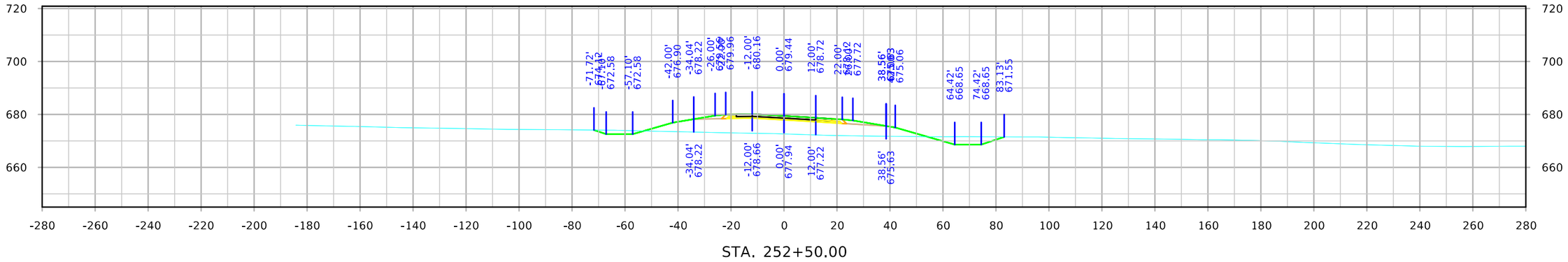
ML - US30



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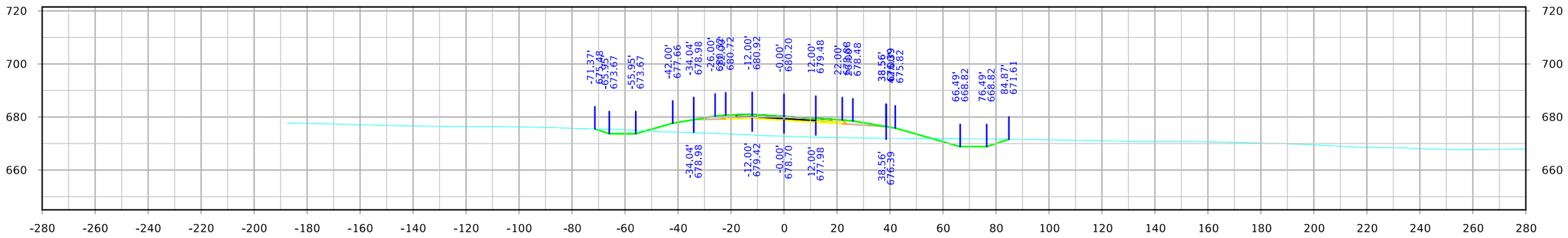

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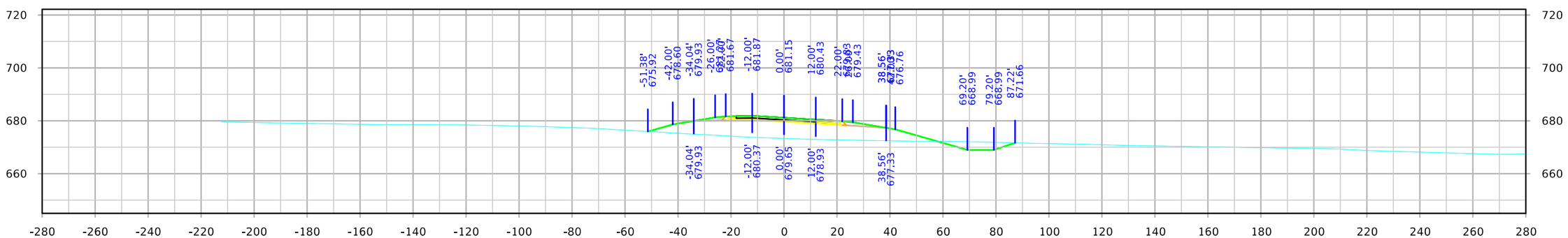

STA. 251+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.25

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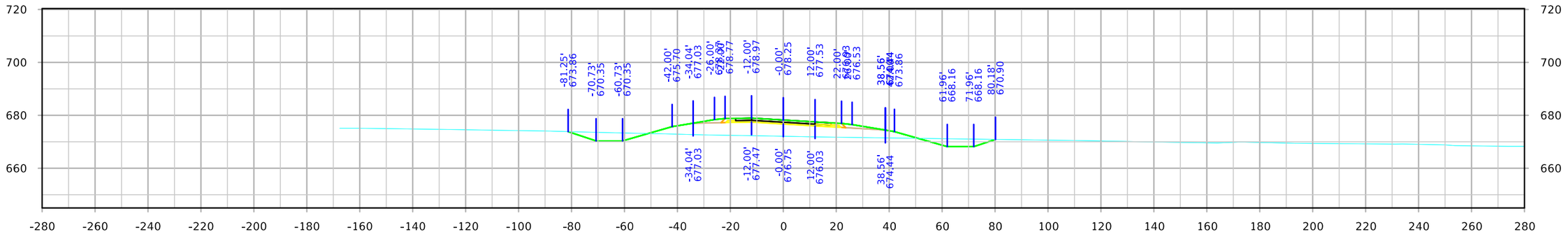
ML - US30



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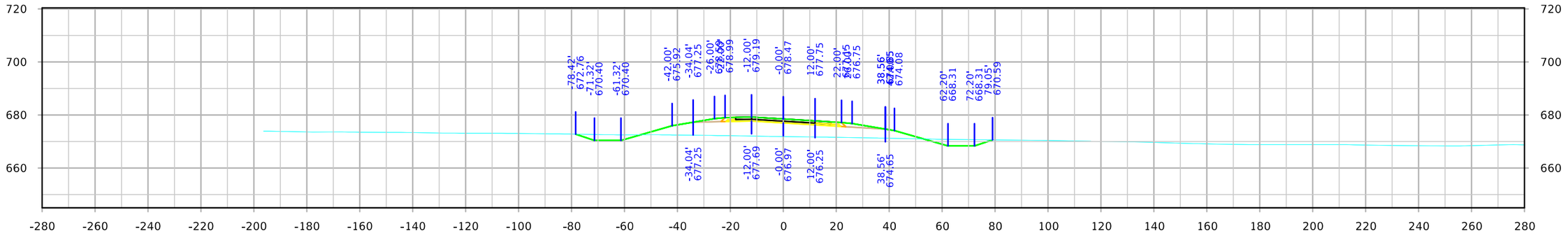

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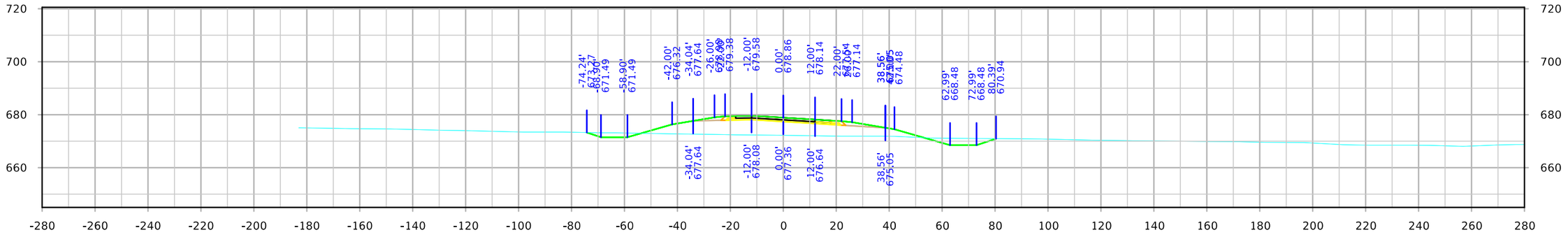

STA. 253+00.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.26

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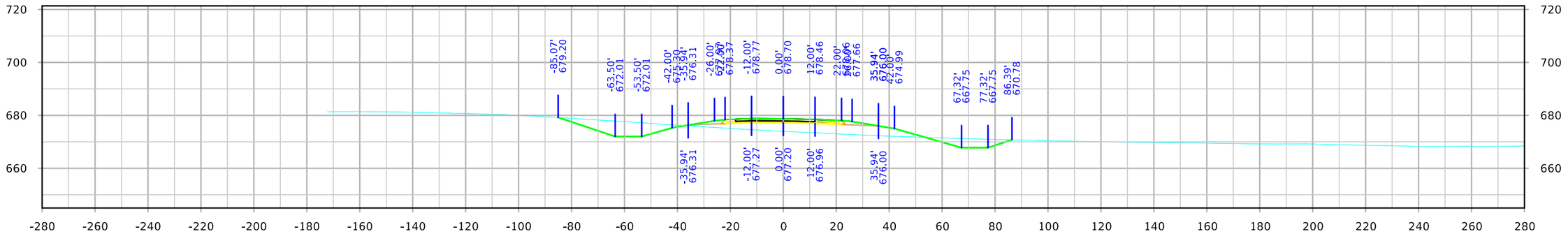
ML - US30



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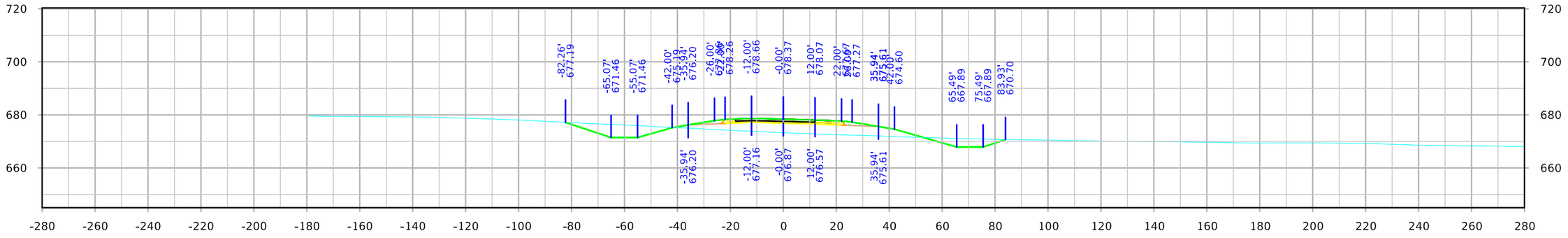

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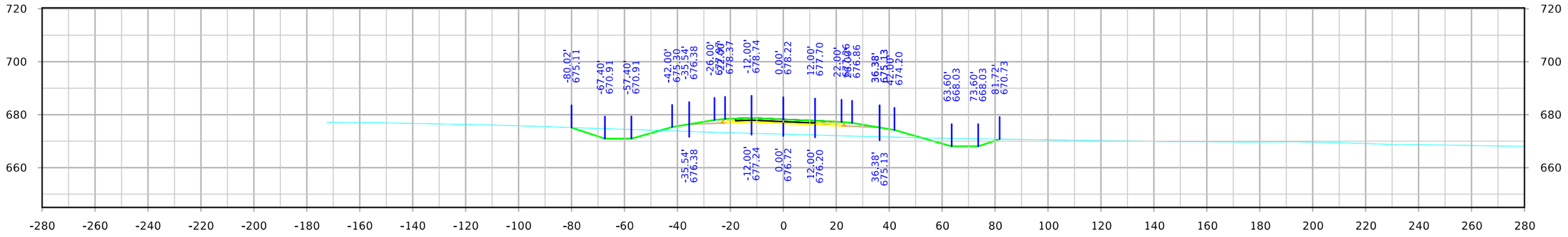

STA. 254+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.27

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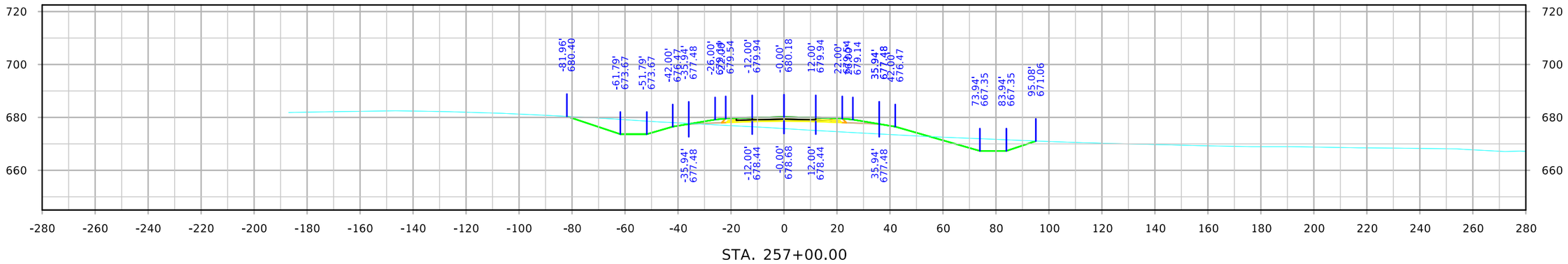
ML - US30



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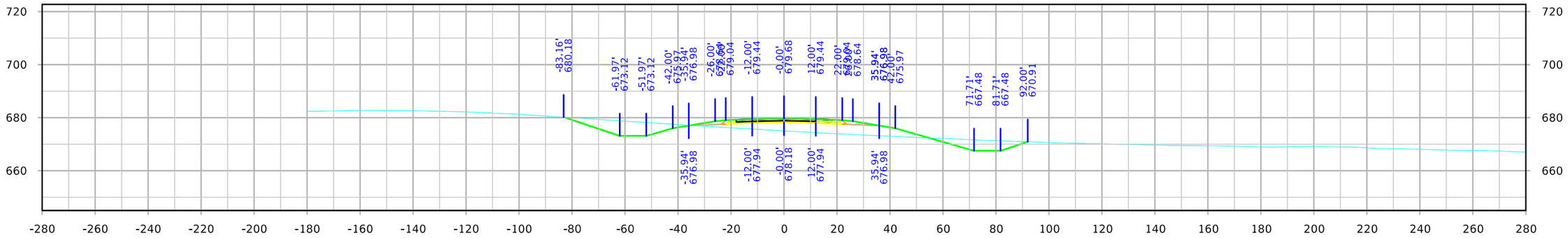

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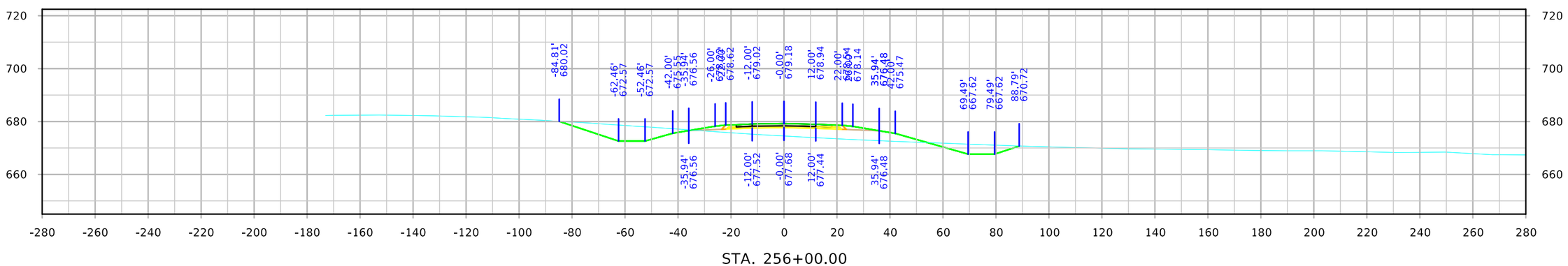

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FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.28

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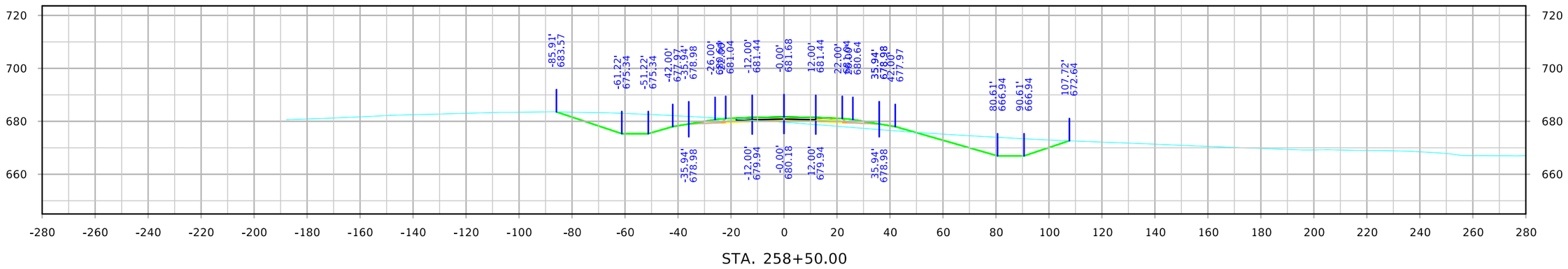
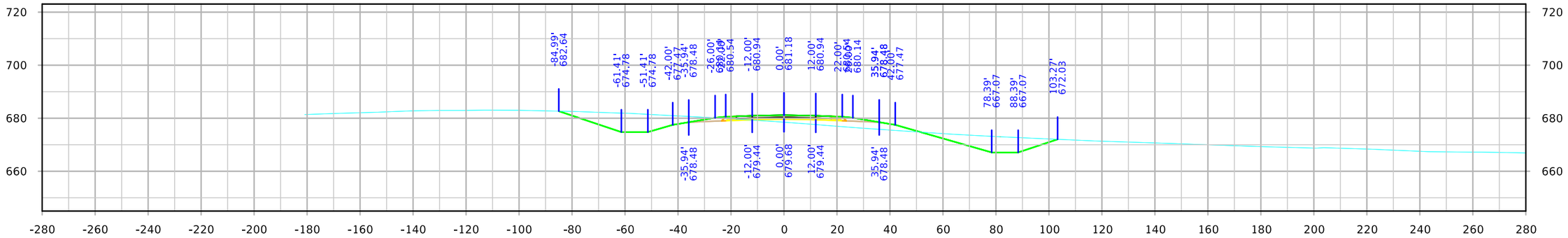
ML - US30



STA. 258+50.00



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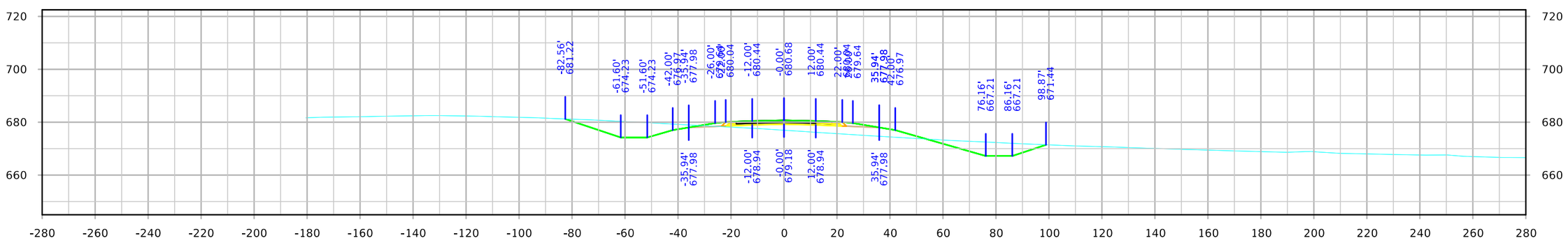

STA. 257+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.29

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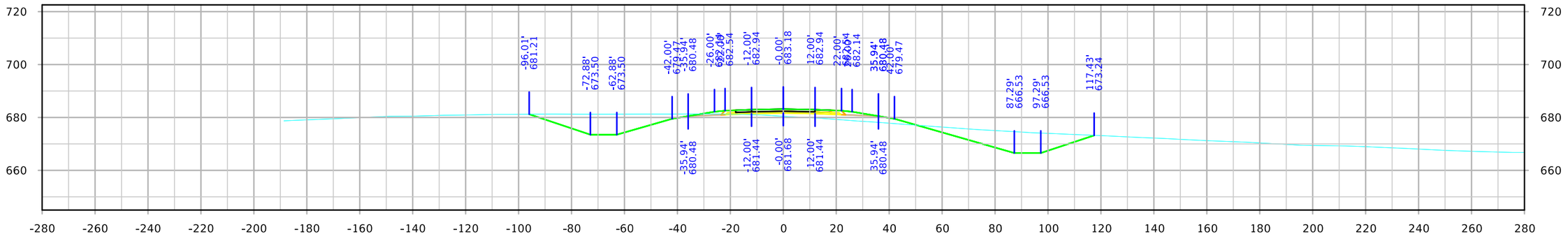
ML - US30



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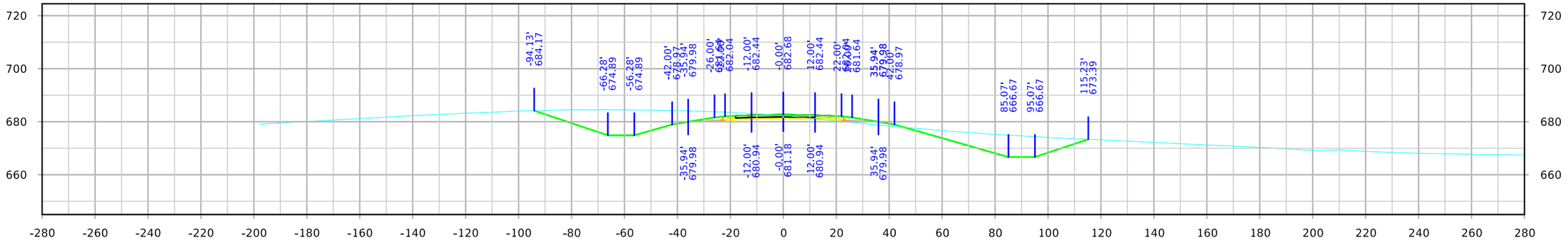

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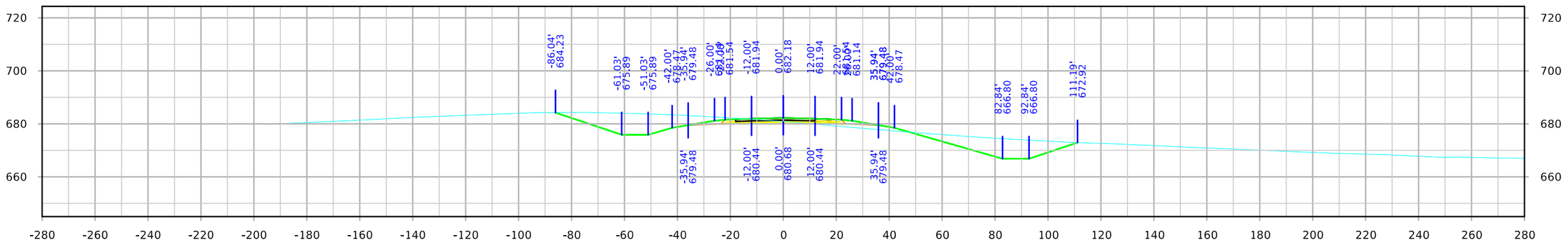

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FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.30

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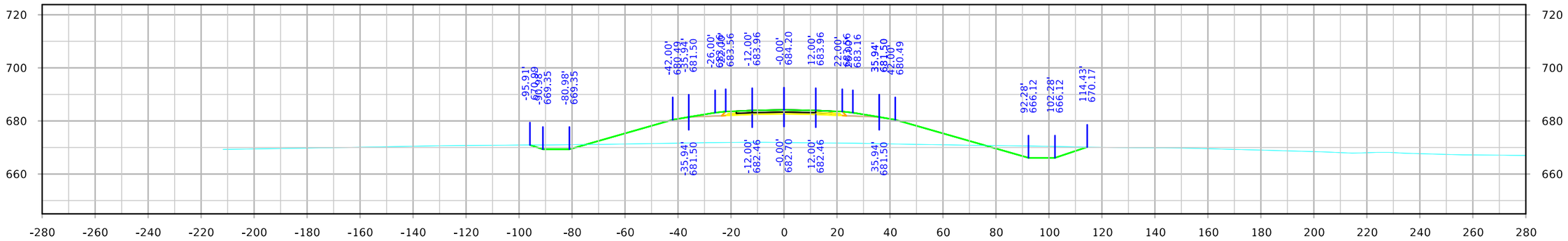
ML - US30



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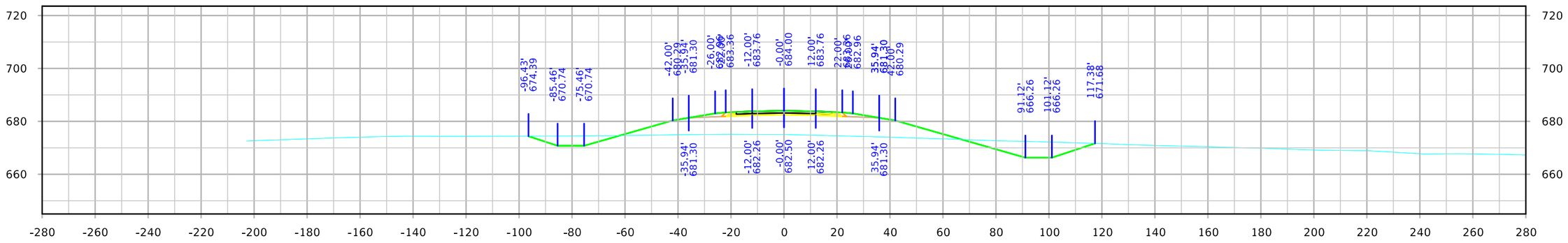

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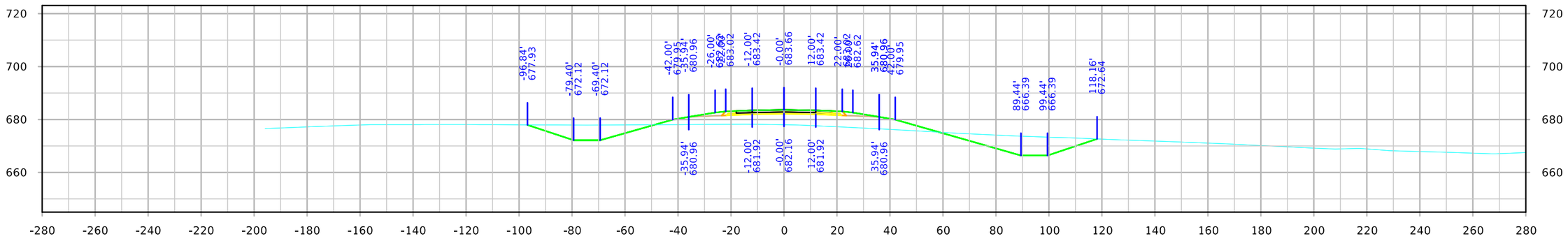

STA. 260+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.31	

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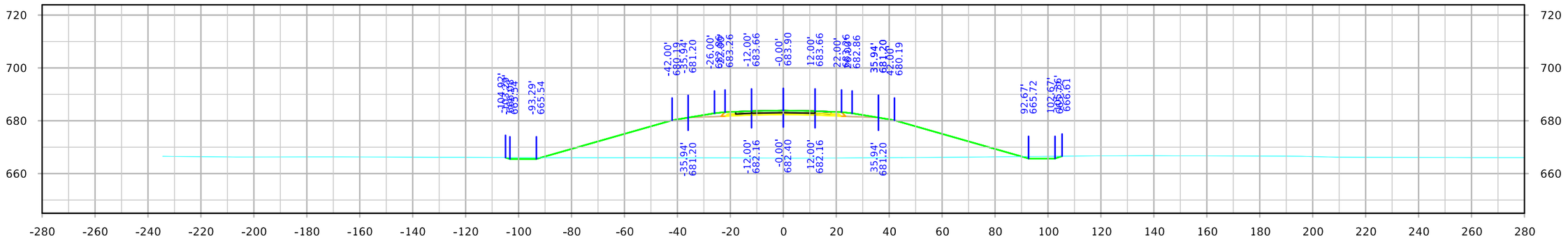
ML - US30



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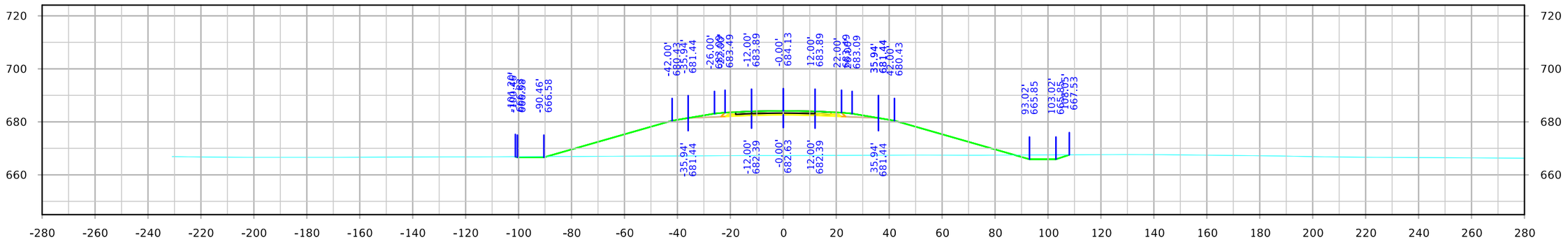

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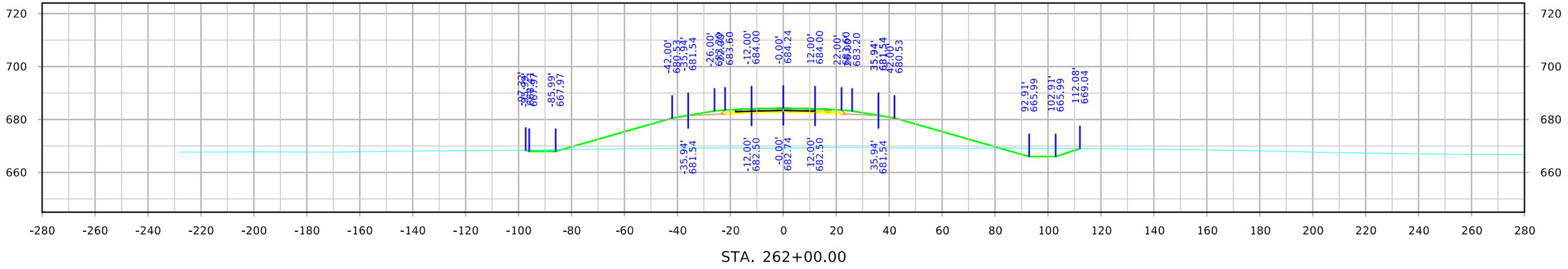

STA. 262+00.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.32

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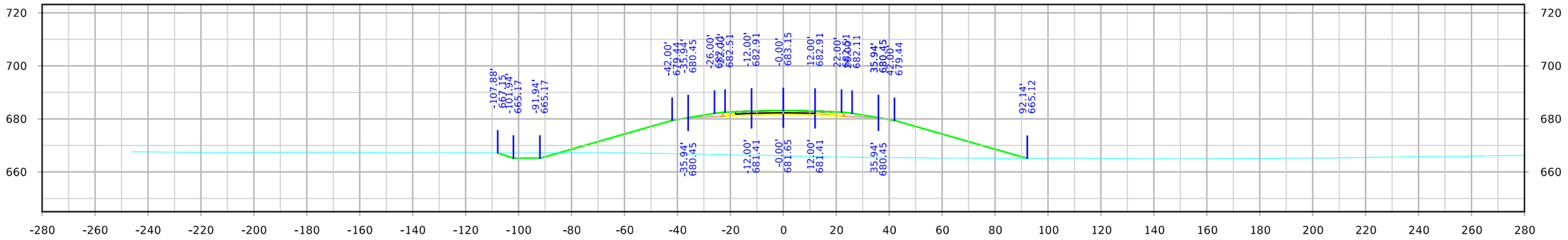
ML - US30



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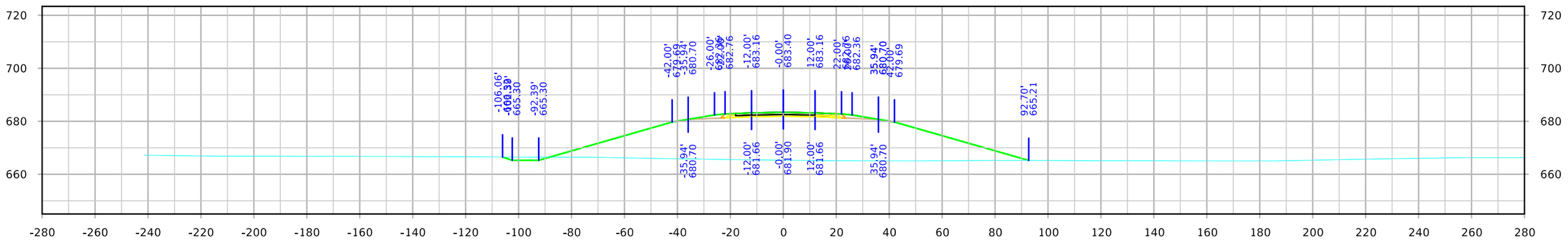

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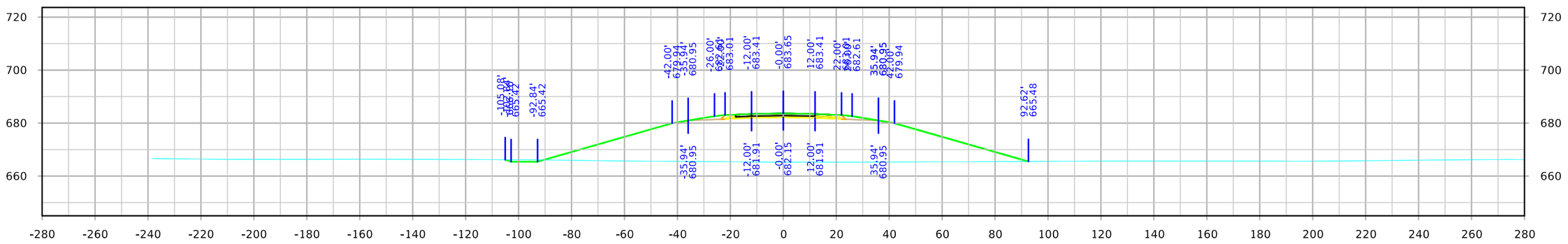

STA. 263+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.33

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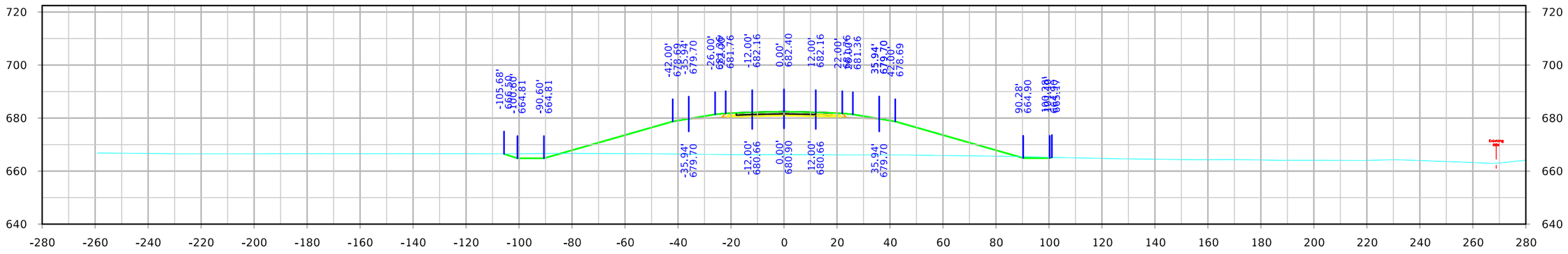
ML - US30



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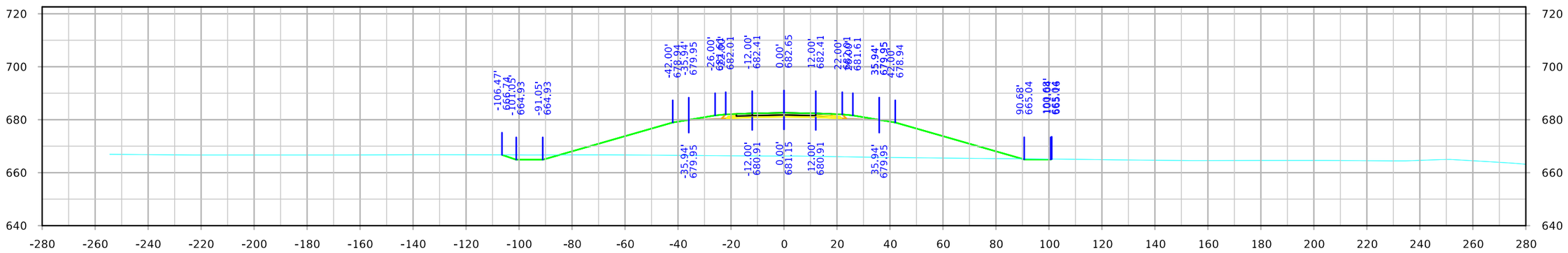

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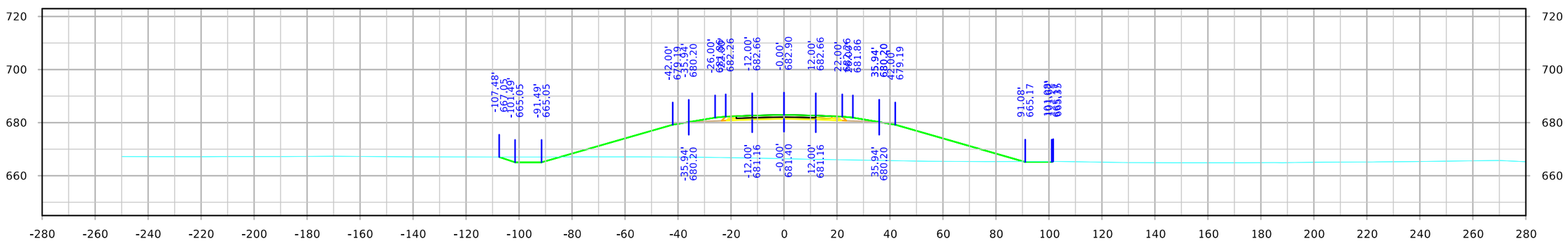

STA. 265+00.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.34

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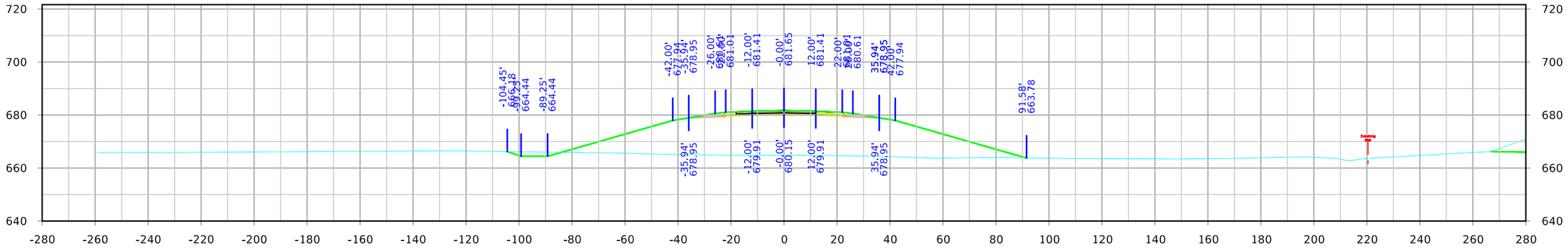
ML - US30



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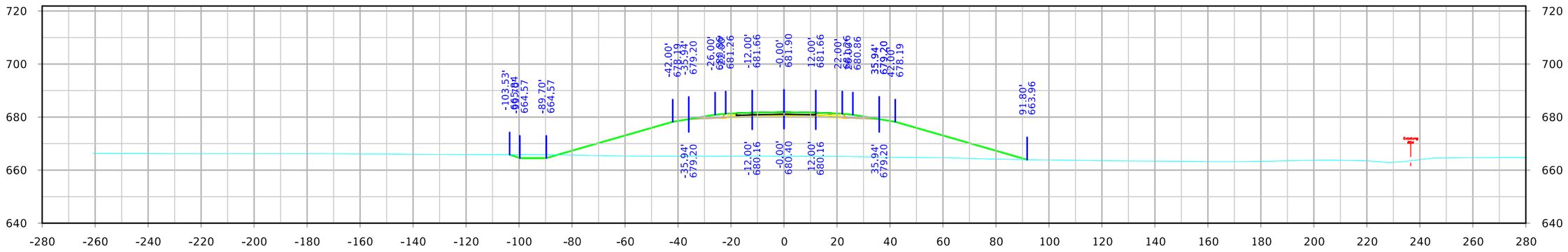
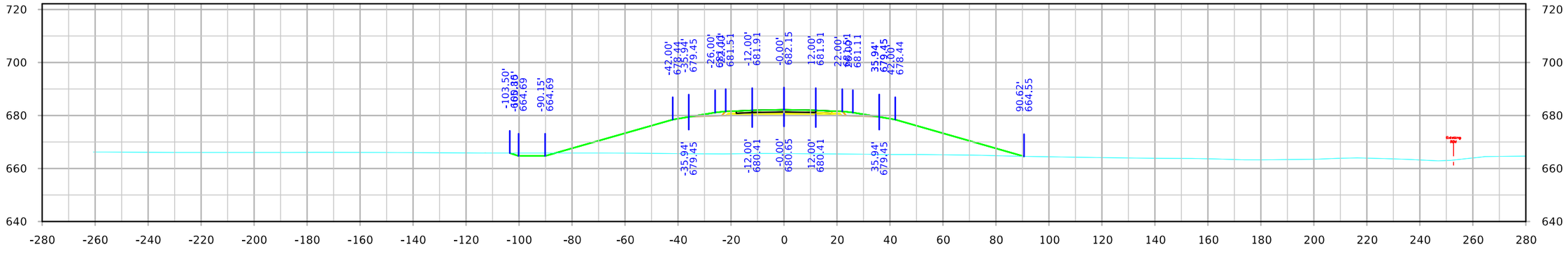


STA. 267+00.00



STA. 266+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.35

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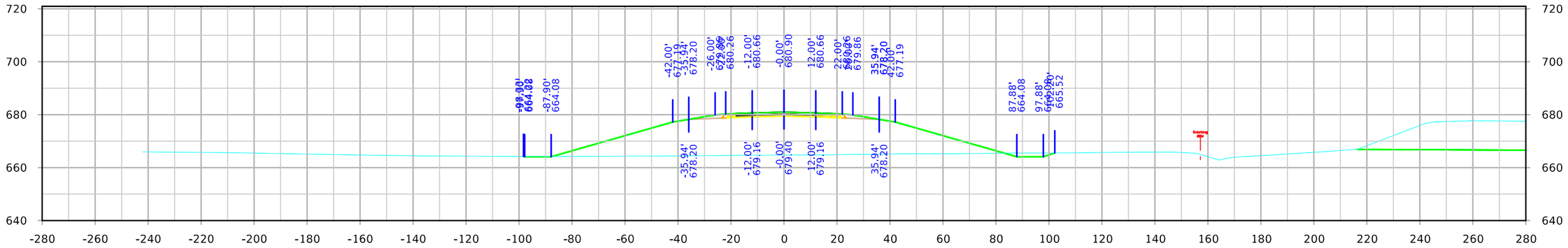
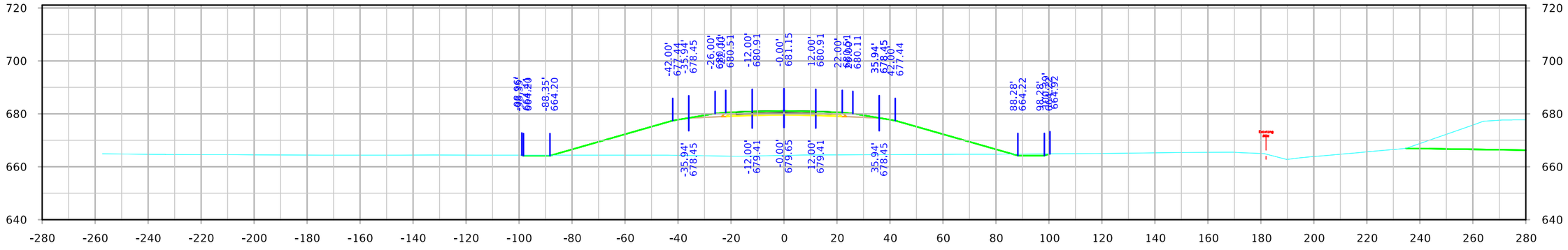
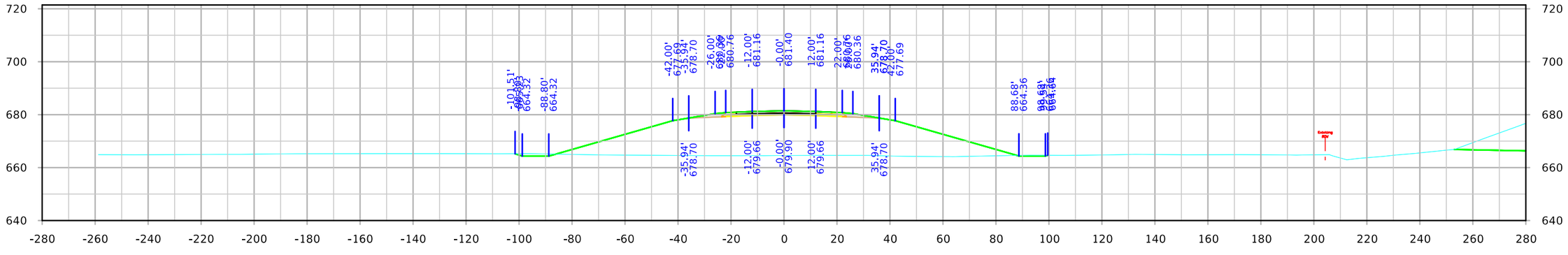
ML - US30



STA. 269+00.00



STA. 268+50.00



STA. 268+00.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.36

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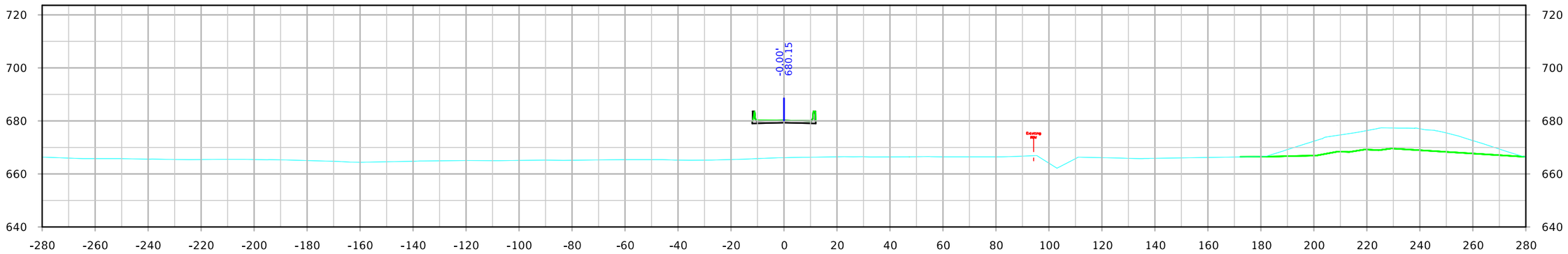
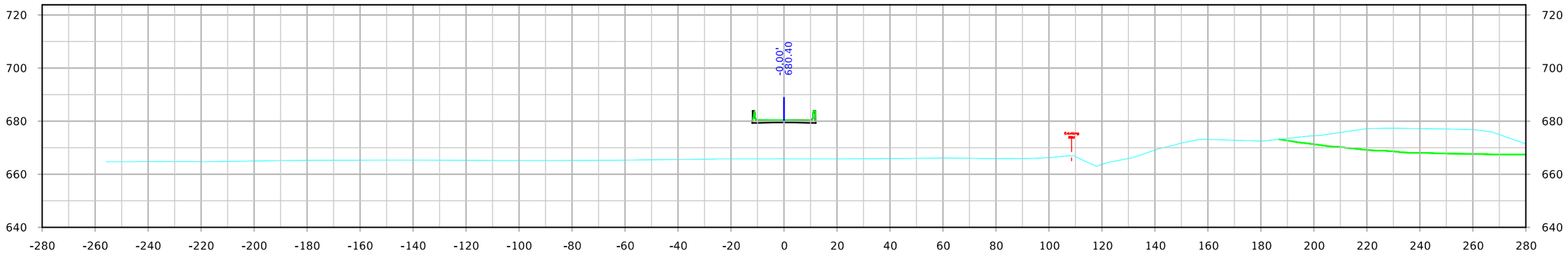
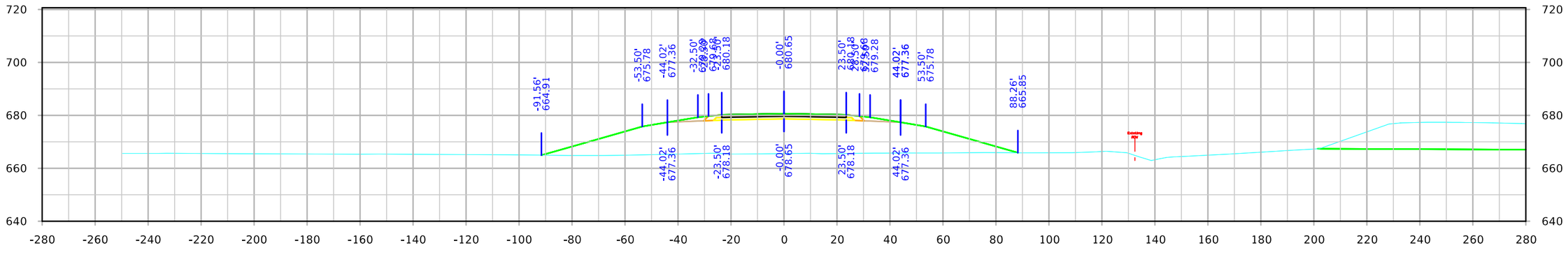
ML - US30



STA. 270+50.00



STA. 270+00.00



STA. 269+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.37	

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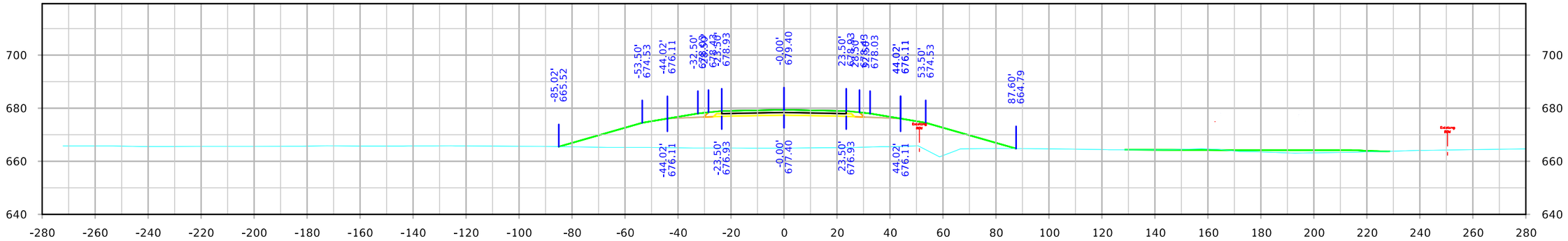
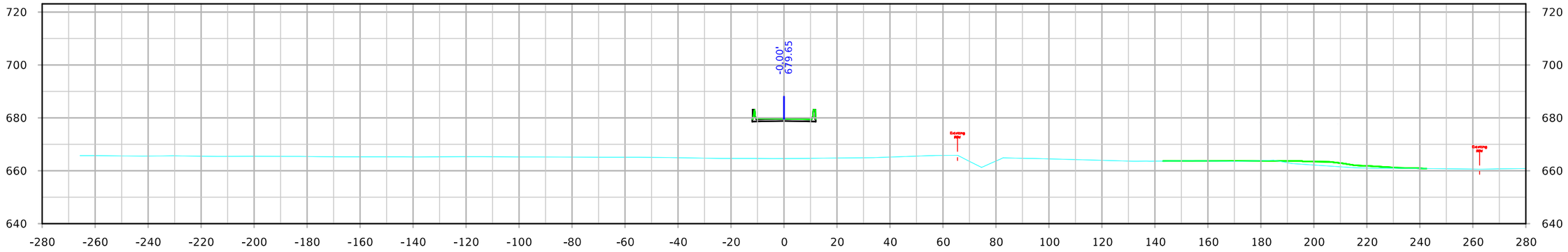
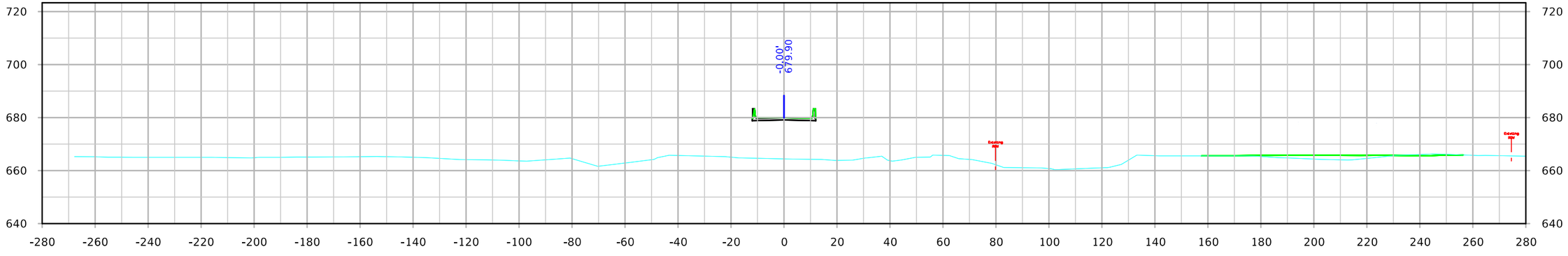
ML - US30



STA. 272+00.00



STA. 271+50.00



STA. 271+00.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.38

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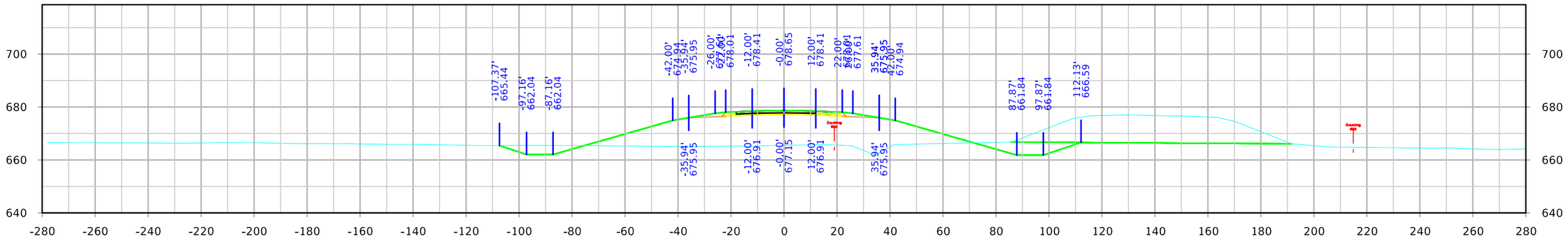
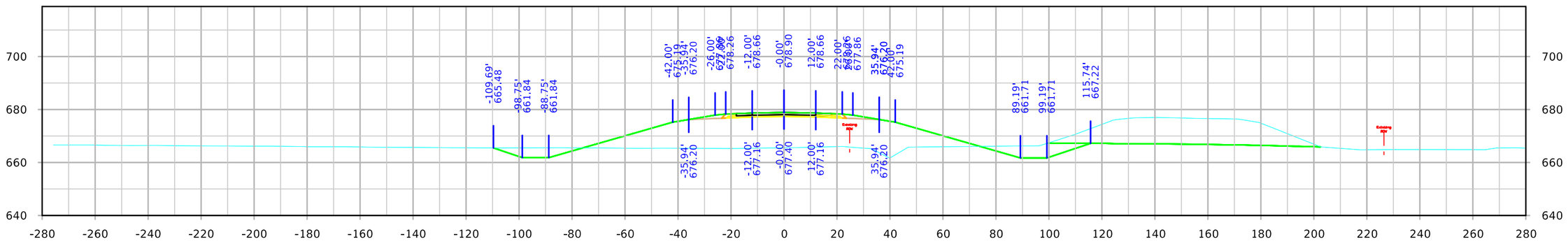
ML - US30



STA. 273+50.00



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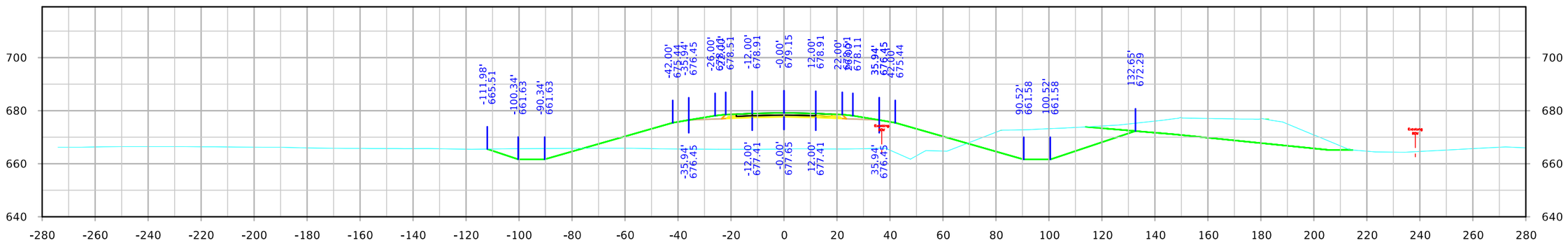

STA. 272+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.39

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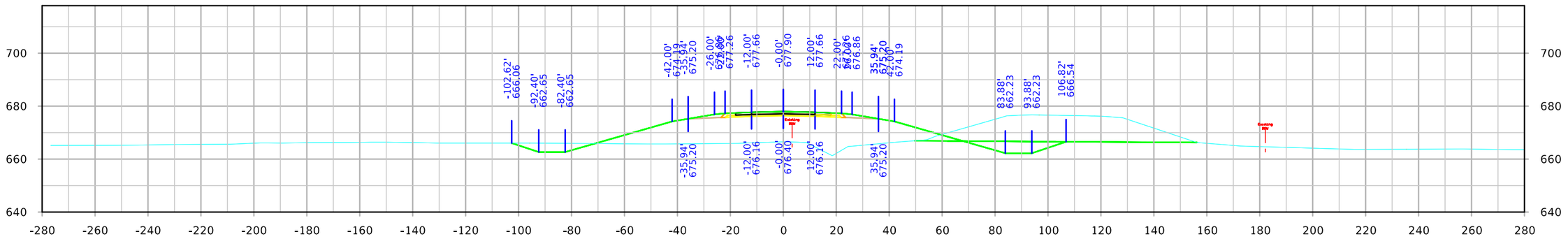
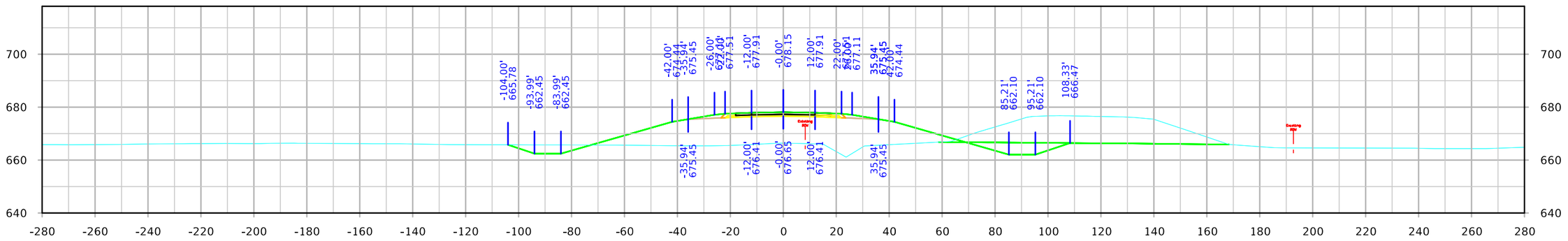
ML - US30



STA. 275+00.00



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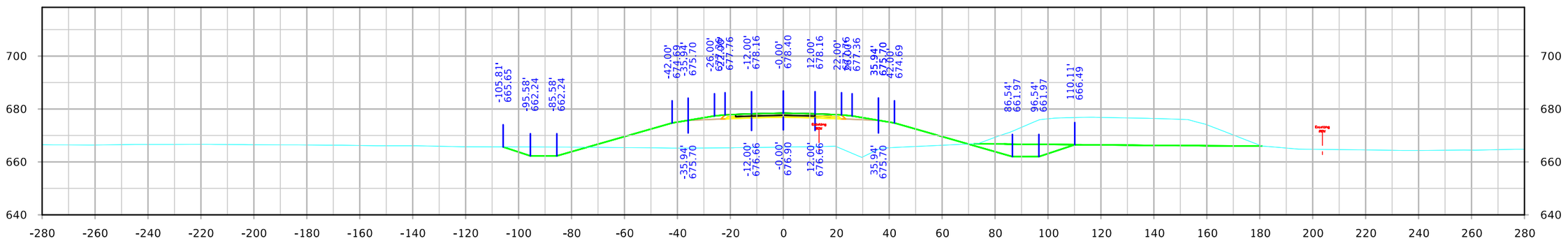

STA. 274+00.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.40	

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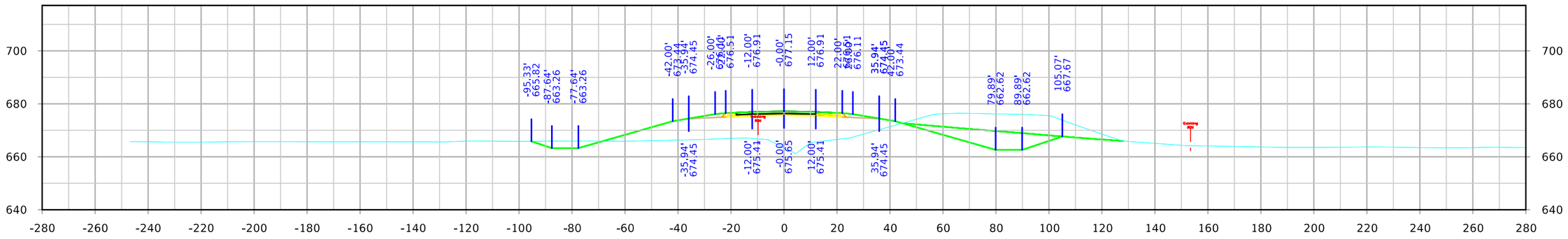
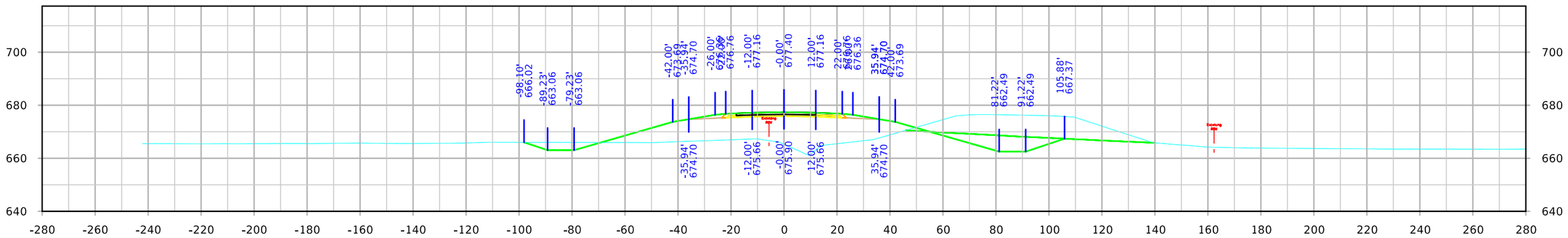
ML - US30



STA. 276+50.00



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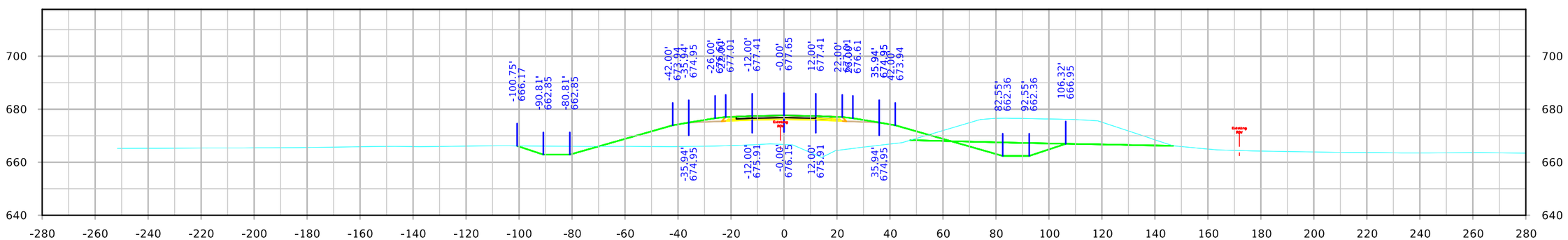

STA. 275+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.41

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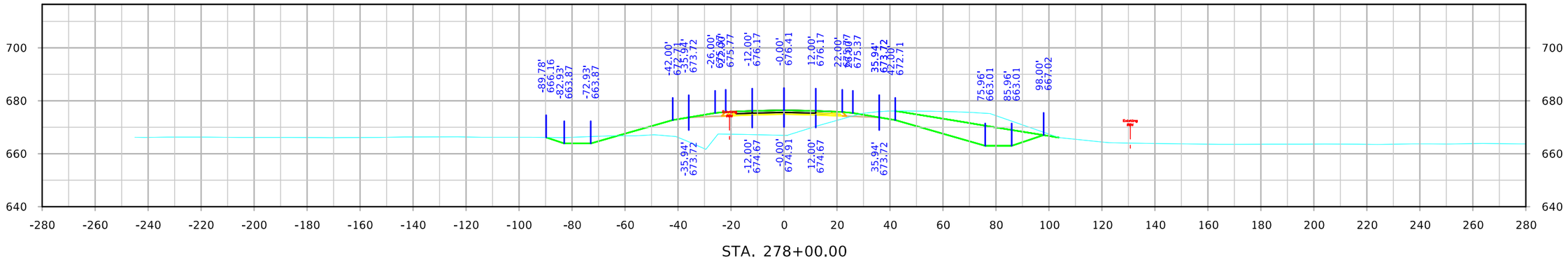
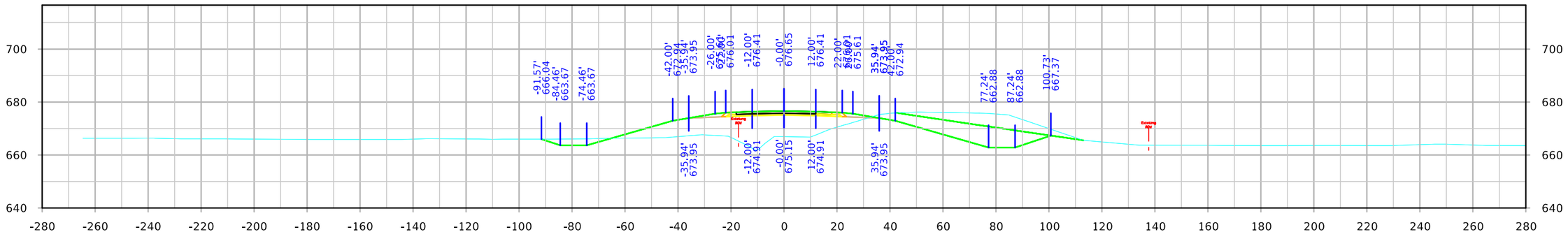
ML - US30



STA. 278+00.00



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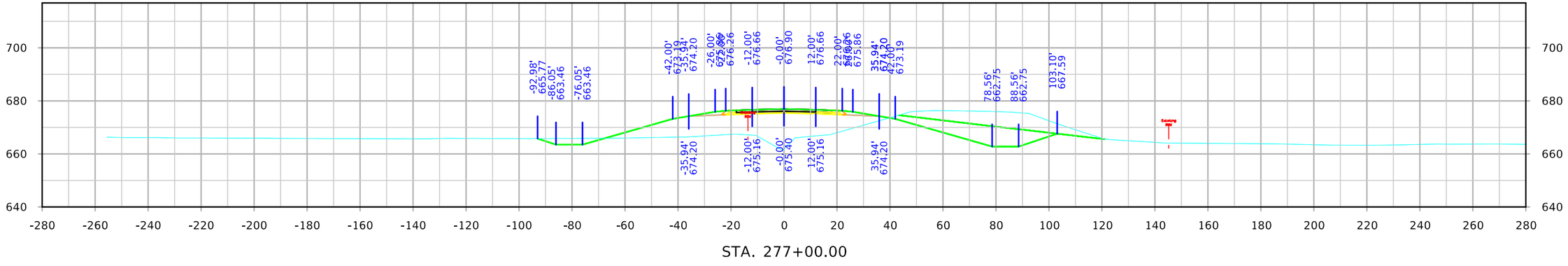

STA. 277+00.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.42

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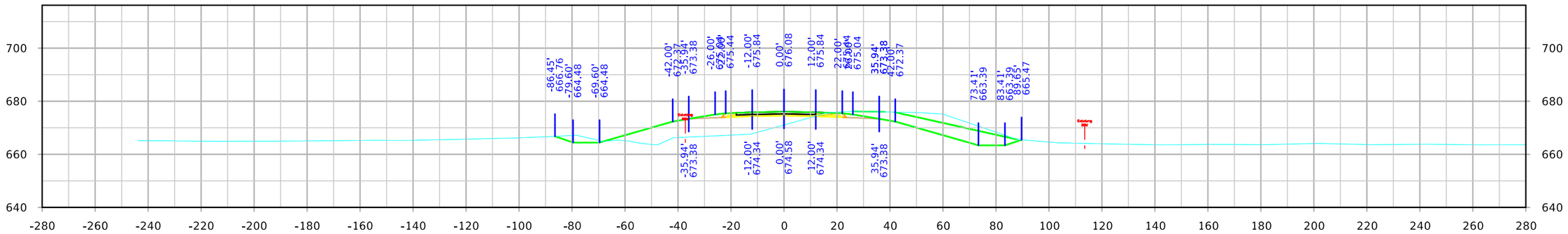
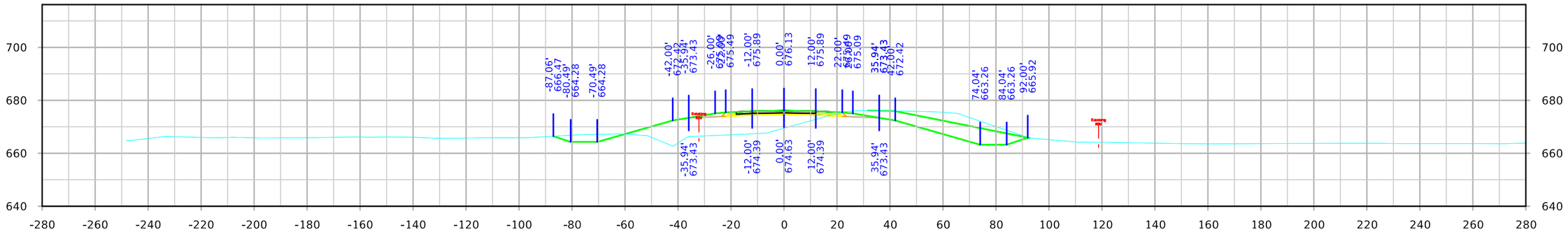
ML - US30



STA. 279+50.00



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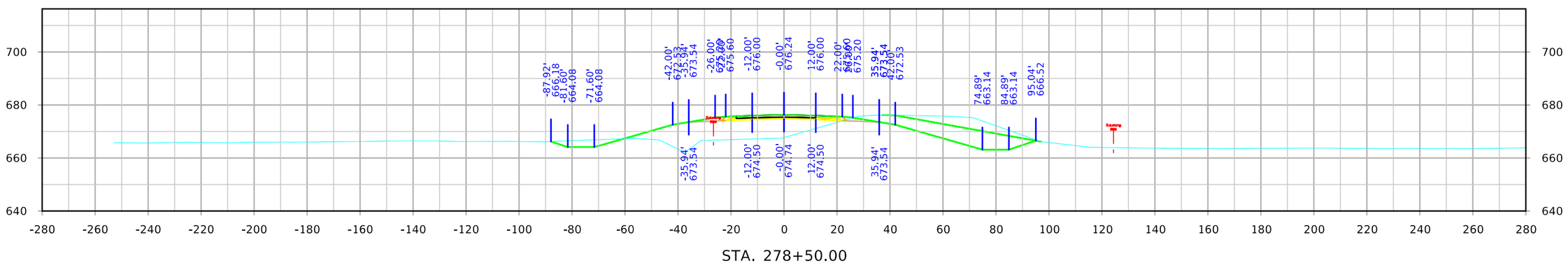

STA. 278+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.43

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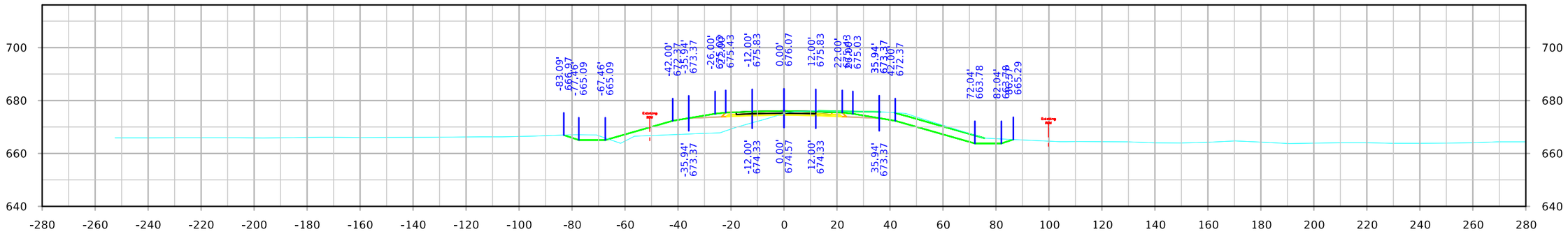
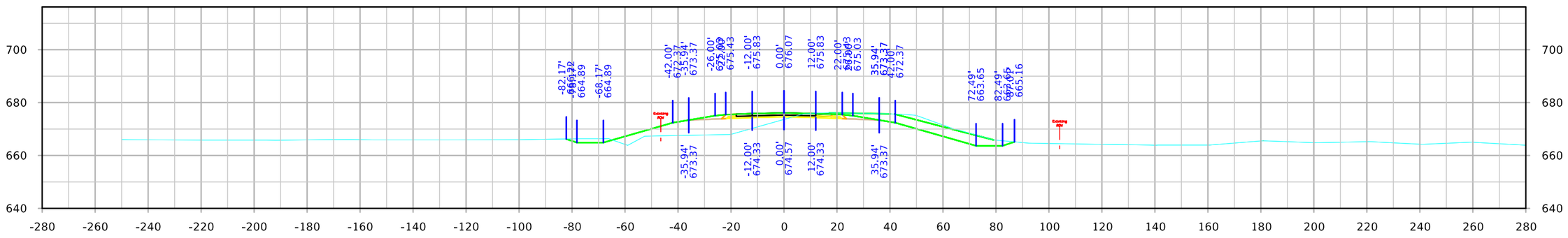
ML - US30



STA. 281+00.00



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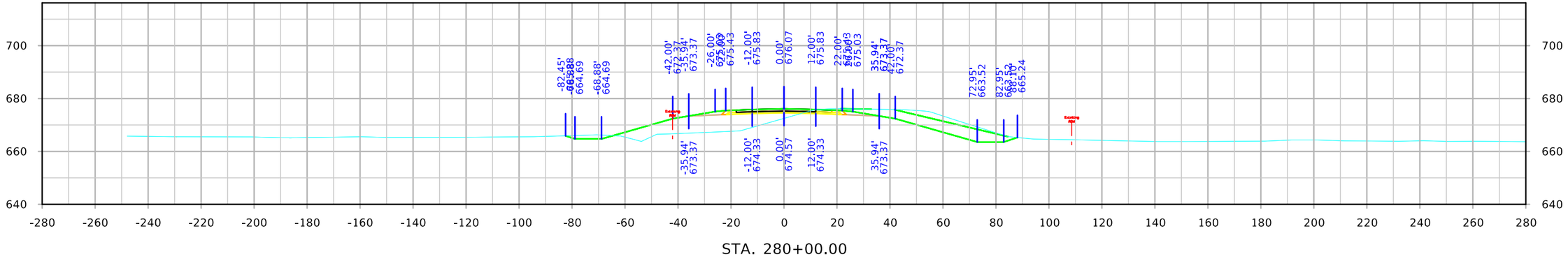

STA. 280+00.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.44

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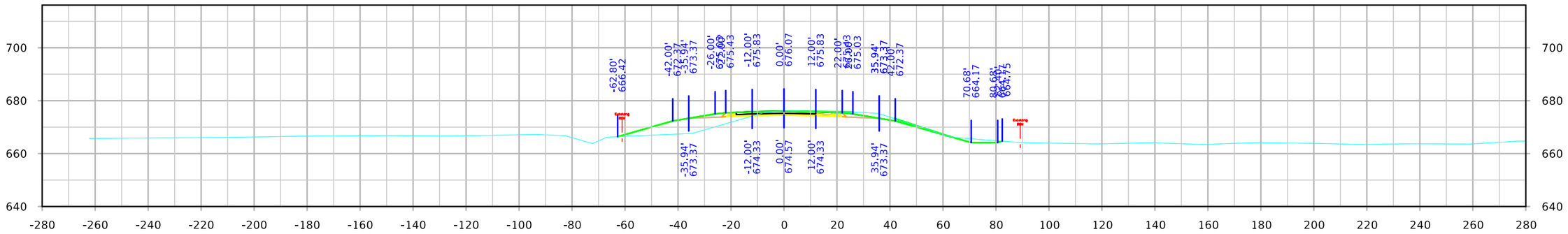
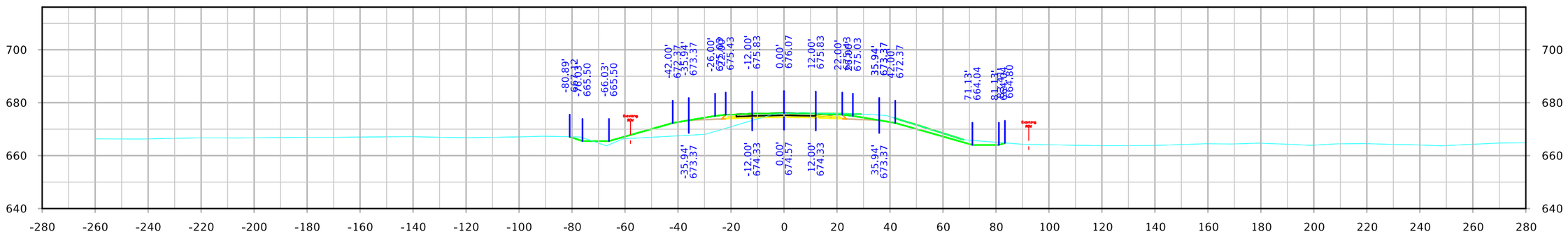
ML - US30



STA. 282+50.00



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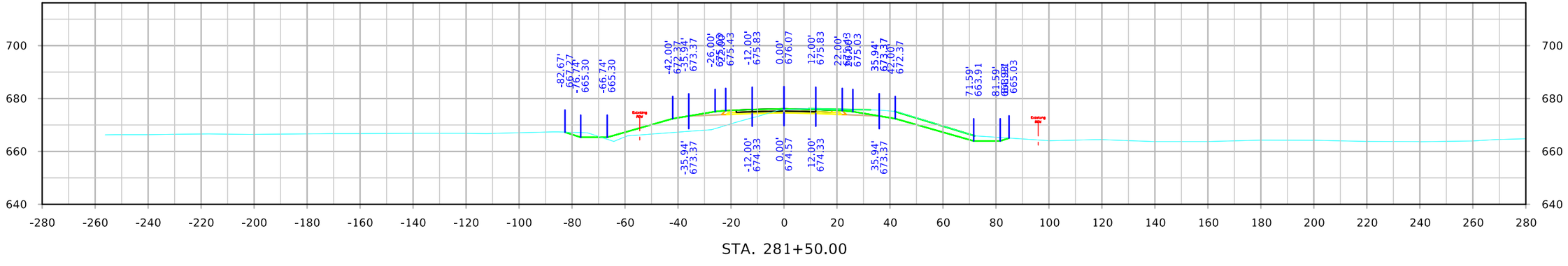

STA. 281+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.45

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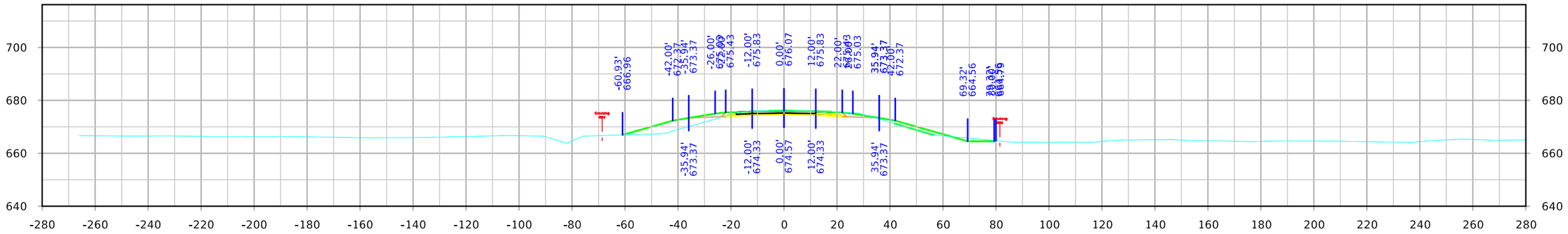
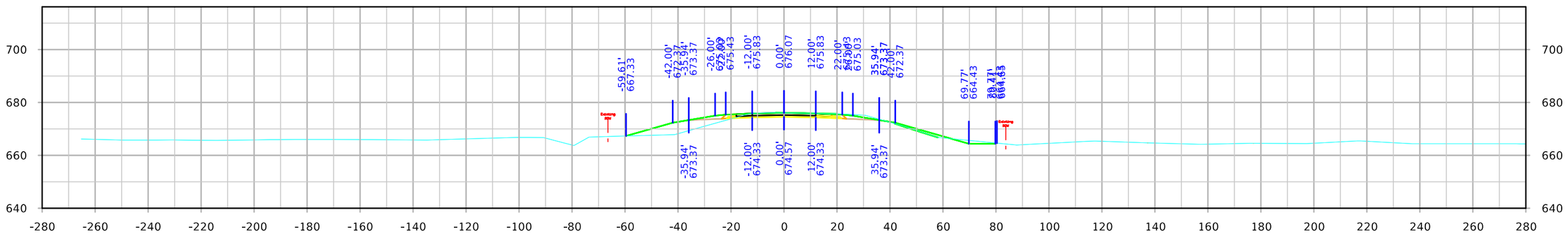
ML - US30



STA. 284+00.00



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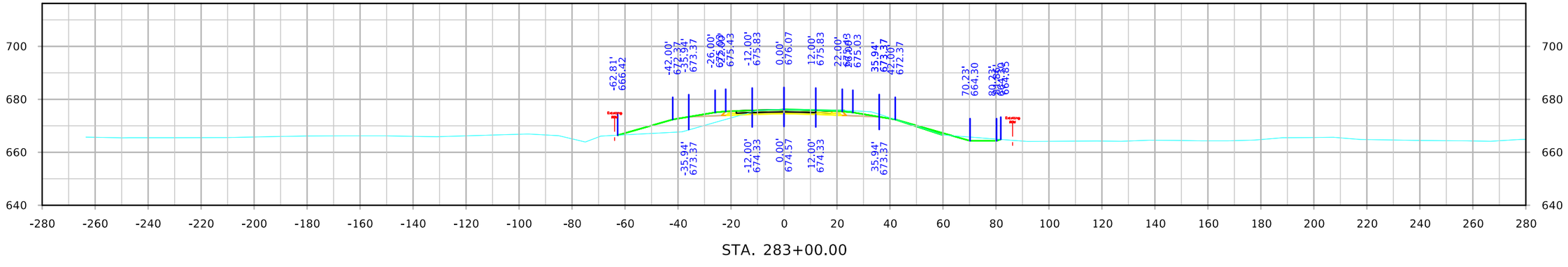

STA. 283+00.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.46

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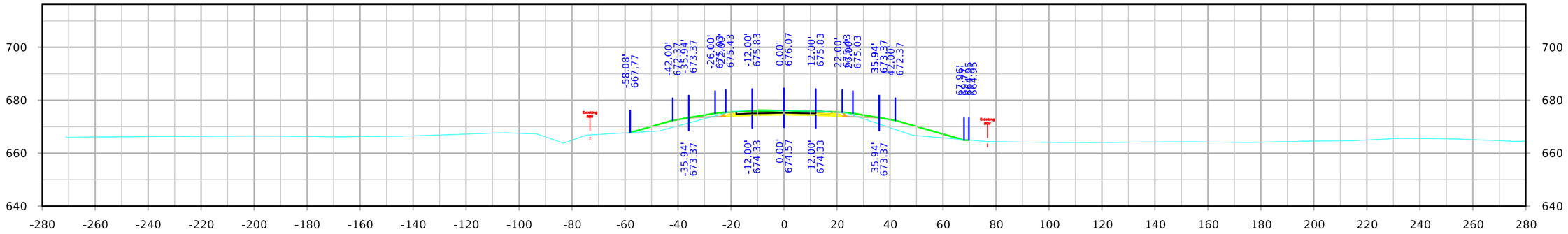
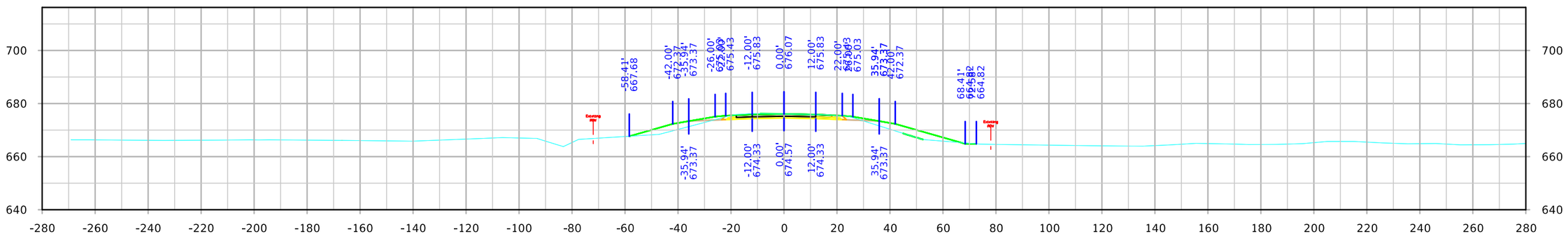
ML - US30



STA. 285+50.00



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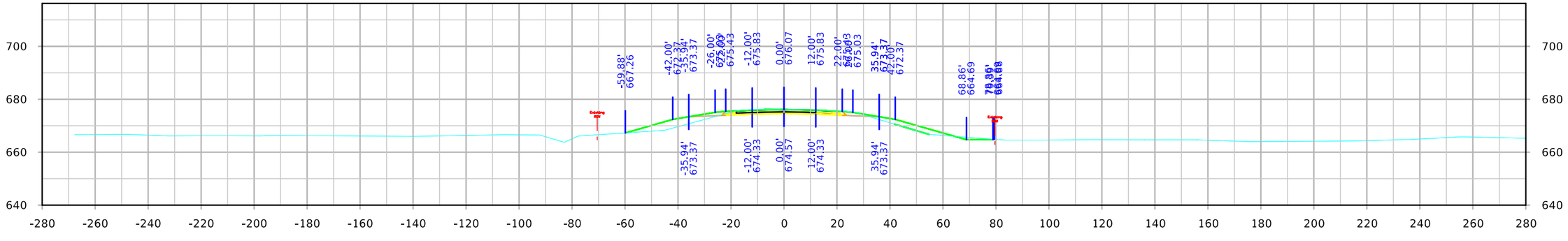

STA. 284+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.47

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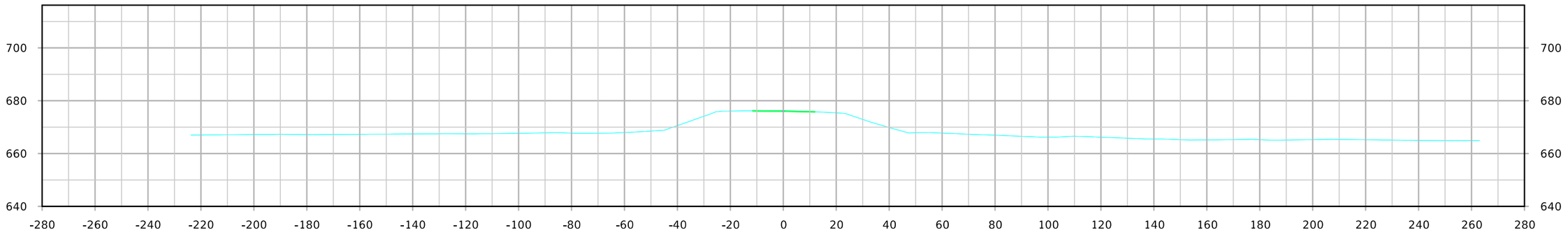
ML - US30



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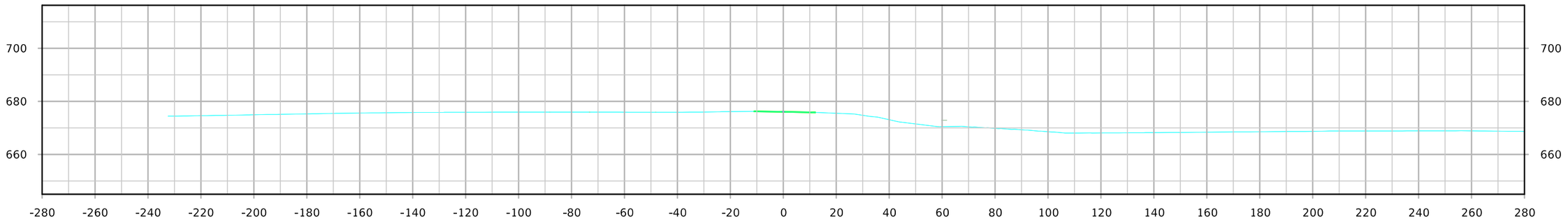

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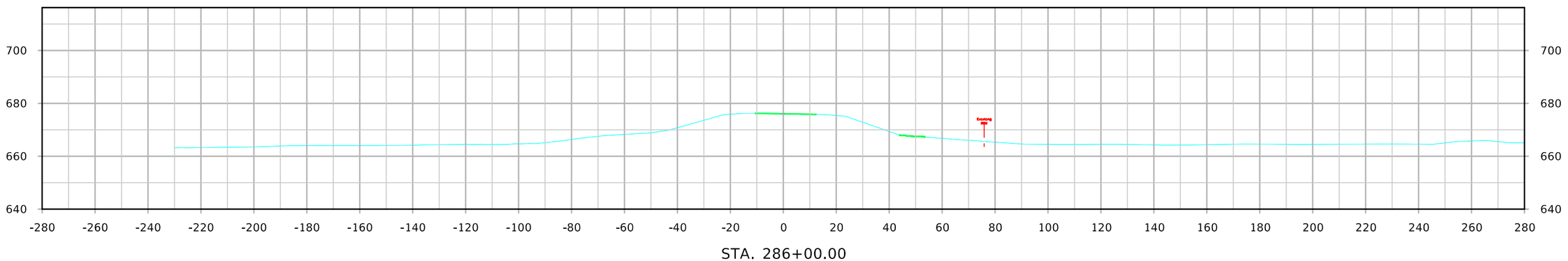

STA. 286+00.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.48

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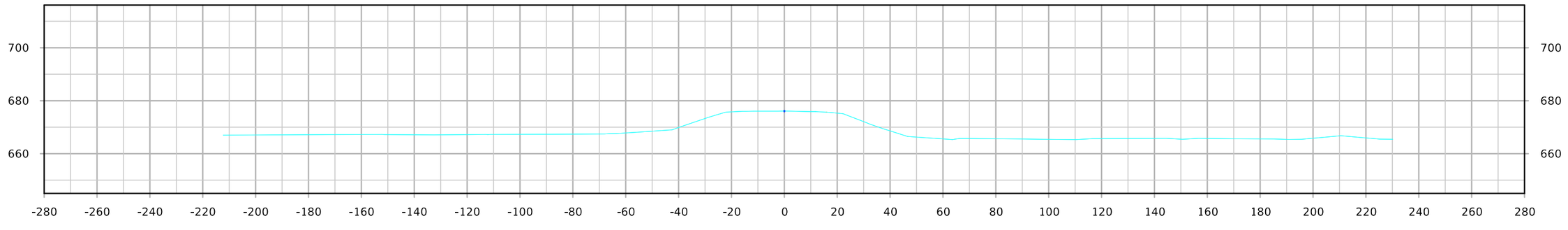
ML - US30



STA. 287+50.00

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT\Stanley Consultants Inc.	CLINTON COUNTY	PROJECT NUMBER BRF-030-9(189)--38-23	SHEET NUMBER W.49	

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