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PLANS OF PROPOSED IMPROVEMENT ON THE
**PRIMARY ROAD SYSTEM
 WOODBURY COUNTY**
 PCC Pavement-Grade and Replace
 US 75/IA 12 Interchange in Sioux City
 to Little Whiskey Creek (EB/WB)
 Location
 SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.
 Value Engineering Saves. Refer to Article 1105.14 of the Specifications.



REVISIONS

TOTAL	
PROJECT IDENTIFICATION NUMBER	17-97-020-010
PROJECT NUMBER	NHSX-020-1(179)--3H-97
R.O.W. PROJECT NUMBER	NHSN-020-1(180)--2R-97
	56478
	98765

D5 Submitted 2022-06-09

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Kelly C.Bell	Primary Signature Block

PRELIMINARY PLANS

Subject to change by final design.

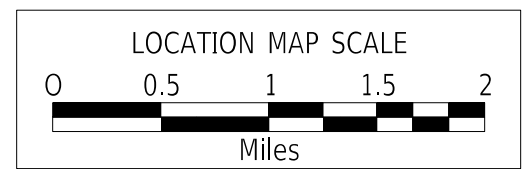
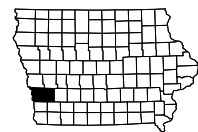
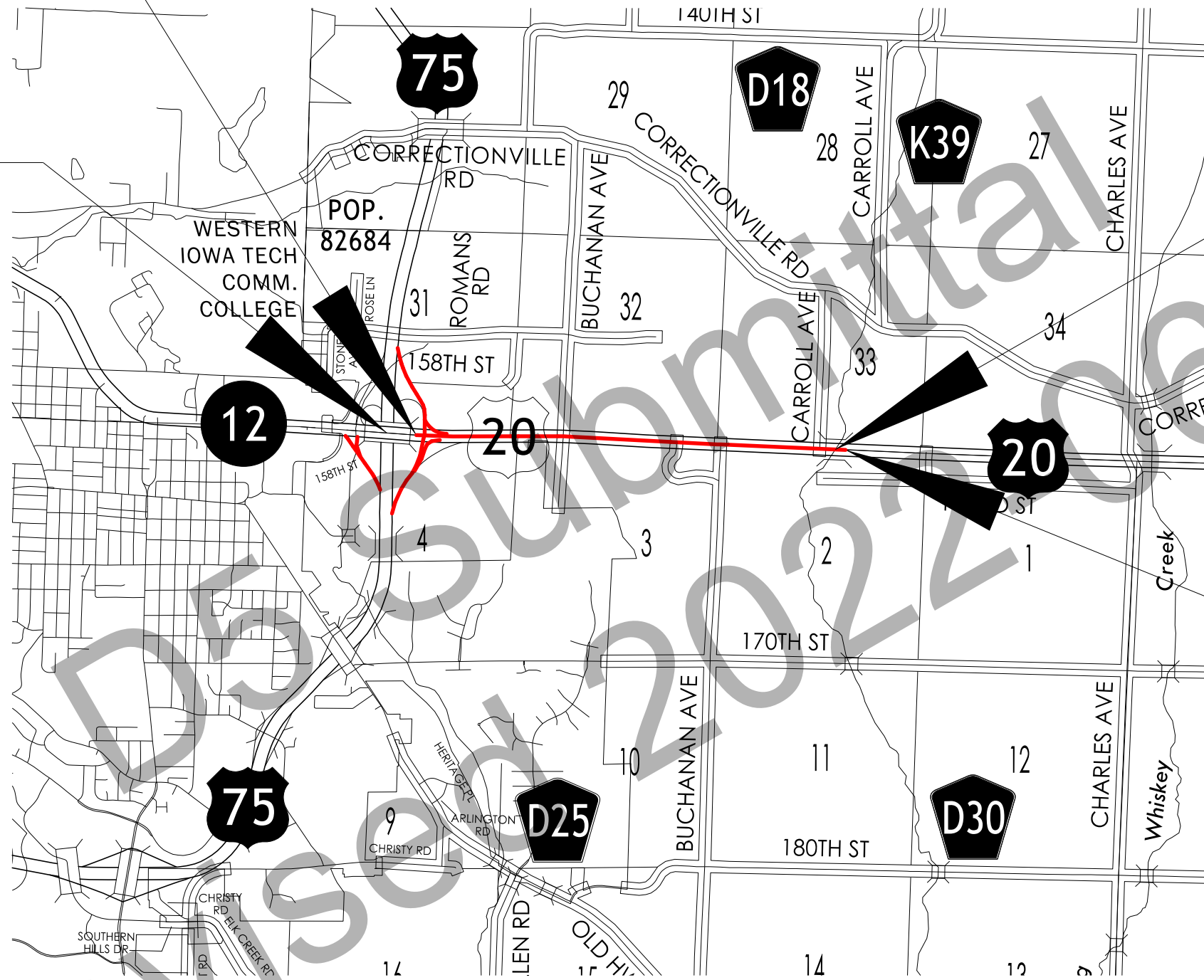
D5 REVISION
Date: June 9, 2022

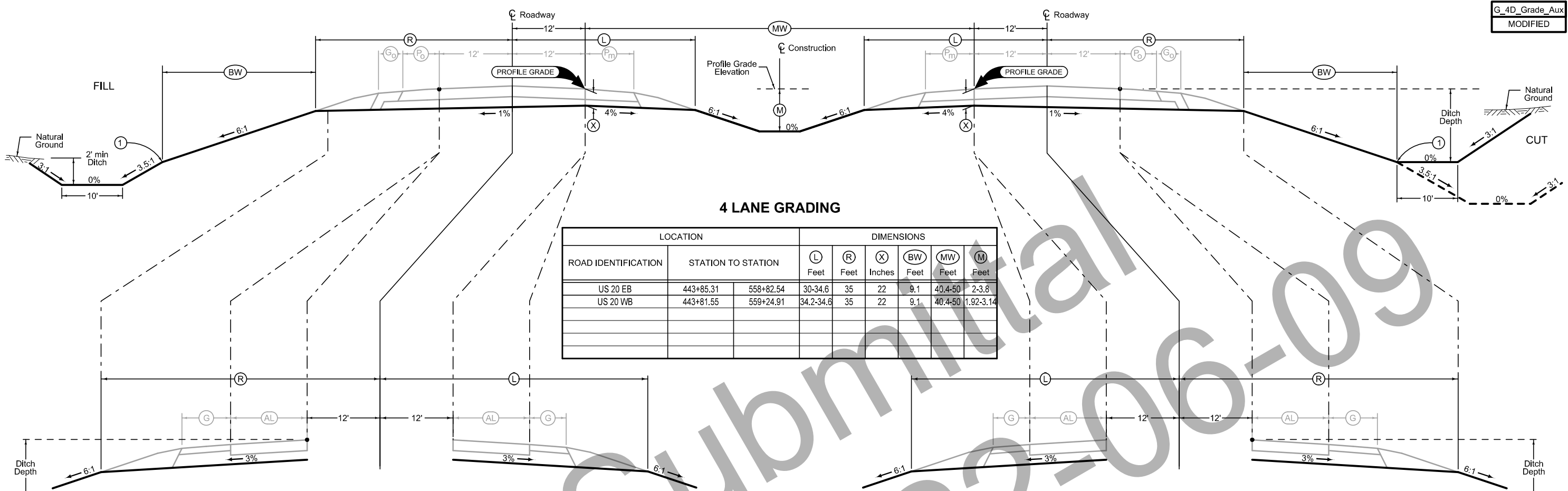
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MP 4.37
BEGIN CONSTRUCTION

FHWA IA 12/US 20
#603830 WB
#603820 EB

ML 020
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MP 7.44
END CONSTRUCTION

FHWA US 20
#52860 WB
#52850 EB





4 LANE GRADING

LOCATION		DIMENSIONS						
ROAD IDENTIFICATION	STATION TO STATION	(L) Feet	(R) Feet	(X) Inches	(BW) Feet	(MW) Feet	(M) Feet	
US 20 EB	443+85.31 - 558+82.54	30-34.6	35	22	9.1	40.4-50	2-3.8	
US 20 WB	443+81.55 - 559+24.91	34.2-34.6	35	22	9.1	40.4-50	1.92-3.14	

Auxiliary Lane Grading

LOCATION			(R) Feet
ROAD IDENTIFICATION	STATION TO STATION		
US 20 WB (Ramp A)	452+41.82	457+23.80	42.25-35.4
US 20 WB (Ramp A)	457+23.80	457+83.62	35.4
US 20 WB (DOT Site)	467+70.38	469+20.38	42.6
US 20 WB (DOT Site)	469+20.38	470+40.58	42.6-35.7
US 20 WB (DOT Site)	470+40.58	471+00.38	35.7
US 20 WB (Buchanan N)	488+95.00	490+44.70	42.6
US 20 WB (Buchanan N)	490+44.70	491+64.55	42.6-35.5
US 20 WB (Buchanan N)	491+64.55	492+24.35	35.5

Auxiliary Lane Grading

LOCATION			(L) Feet
ROAD IDENTIFICATION	STATION TO STATION		
US 20 WB (Glen Ellen)	488+05.10	489+12.68	Var.
US 20 WB (Glen Ellen)	489+12.68	490+62.36	34.6
US 20 WB (Glen Ellen)	490+62.36	492+42.22	Var.
US 20 WB (Buchanan S)	528+57.73	529+15.00	Var.
US 20 WB (Buchanan S)	529+15.00	530+65.20	34.6
US 20 WB (Buchanan S)	530+65.20	532+45.00	Var.
US 20 WB	554+13.11	554+70.59	Var.
US 20 WB	554+70.59	556+20.89	34.6
US 20 WB	556+20.89	557+41.19	Var.

Auxiliary Lane Grading

LOCATION			(L) Feet
ROAD IDENTIFICATION	STATION TO STATION		
US 20 EB (Ramp A)	445+57.42	447+37.29	Var.
US 20 EB (Ramp A)	447+37.29	448+87.40	34.6
US 20 EB (Ramp A)	448+87.40	449+29.76	Var.
US 20 EB (DOT Site)	454+80.01	456+63.42	Var.
US 20 EB (DOT Site)	456+63.42	466+12.94	34.6
US 20 EB (DOT Site)	466+12.94	466+50.24	Var.
US 20 EB (Buchanan N)	483+32.93	485+13.16	Var.
US 20 EB (Buchanan N)	485+13.16	486+63.49	34.6
US 20 EB (Buchanan N)	486+63.49	487+20.90	Var.
US 20 EB (Grandy)	512+50.15	514+29.82	Var.
US 20 EB (Grandy)	514+29.82	515+80.00	34.6
US 20 EB (Grandy)	515+80.00	516+37.27	Var.
US 20 EB (Buchanan S)	523+85.00	525+64.80	Var.
US 20 EB (Buchanan S)	525+64.80	527+15.00	34.6
US 20 EB (Buchanan S)	527+15.00	527+72.27	Var.
US 20 EB (Carroll)	549+35.00	551+14.80	Var.
US 20 EB (Carroll)	551+14.80	552+65.00	34.6
US 20 EB (Carroll)	552+65.00	553+24.06	Var.

Auxiliary Lane Grading

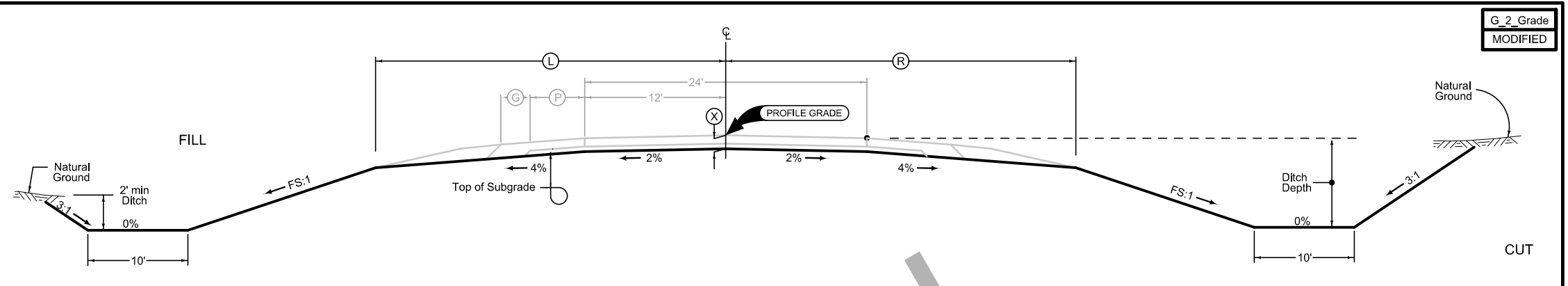
LOCATION			(R) Feet
ROAD IDENTIFICATION	STATION TO STATION		
US 20 EB (Ramp D2)	451+50.94	452+61.84	38.6-31.8
US 20 EB (Ramp D2)	452+61.84	462+10.31	31.8
US 20 EB (Ramp D2)	462+10.31	463+30.31	31.8-38.6
US 20 EB (Ramp D2)	463+30.31	463+90.31	38.6
US 20 EB (Glen Ellen)	482+96.58	483+56.38	36.52
US 20 EB (Glen Ellen)	483+56.38	484+76.47	36.52-44.38
US 20 EB (Glen Ellen)	484+76.47	486+27.51	44.38-46.57

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

See Plan & Profile sheets and cross sections for additional details of ditches and backslopes.

① Refer to project plan and cross sections for specific location of foreslope change.

LOCATION		DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION	Ⓐ Feet	Ⓑ Feet	Ⓒ Inches	FS
Buchanan Ave. N	4488+11.16 4489+19.56	Var.	Var.	22	6
Buchanan Ave. N	4489+19.56 4490+16.64	28.7	Var.	22	6
Buchanan Ave. N	4490+16.64 4490+90.00	28.7	28.7	22	6
Glen Ellen	3484+23.27 3485+42.93	27.5	32.5	22	Var.
Glen Ellen	3485+42.93 3486+43.13	Var.	28.7	22	Var.
Glen Ellen	3486+43.13 3487+14.04	Var.	Var.	22	6
Grandy	5515+14.61 5515+69.90	21	21	22	6
Grandy	5514+90.50 5516+34.29	Var.	Var.	22	Var.
Buchanan Ave. S	6518+50.00 6527+61.31	Var.	Var.	22	Var.



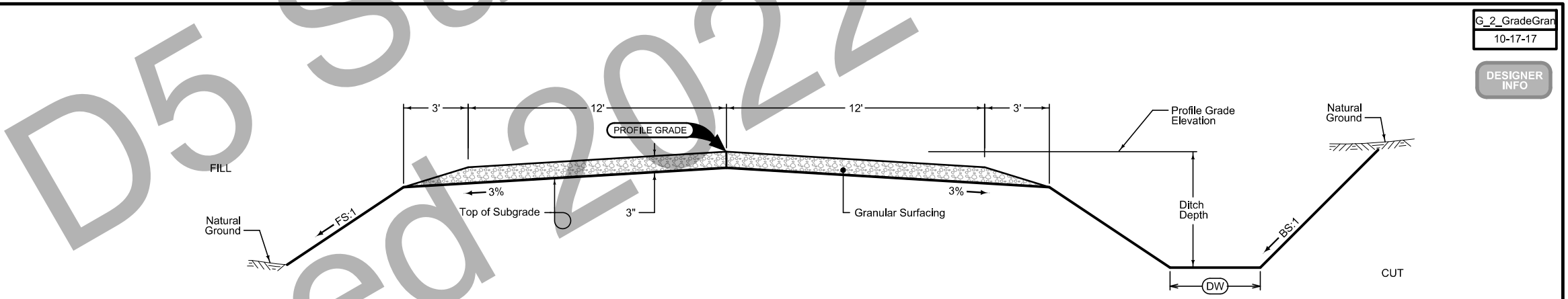
Normal section shown may be modified appropriately in areas of super-elevated curves or other locations specifically designated by the Engineer.

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

2 LANE GRADING

G_2_Grade
MODIFIED

LOCATION		DIMENSIONS		
ROAD IDENTIFICATION	STATION TO STATION	FS	BS	Ⓓ Feet
Carroll Ave.	7554+17.04 7556+00.00	3	3	5



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

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

GRADING AND GRANULAR SURFACING

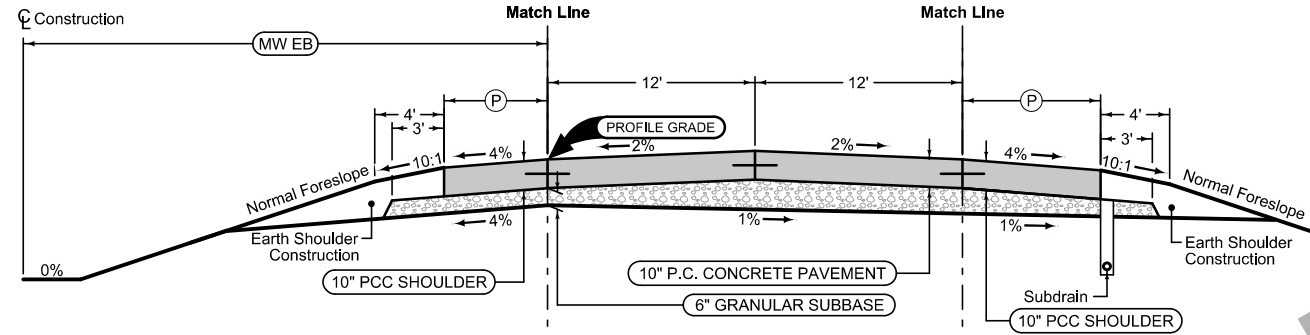
G_2_GradeGran
10-17-17

DESIGNER
INFO

Full Depth PCC Shoulder

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

4_P_FullPCC_04-20-21			
Direction of Travel	BEGIN STATION	END STATION	(P) Feet
EB	443+85.43	445+57.42	6
EB	449+89.25	454+84.01	6
EB	468+37.94	483+32.93	6
EB	489+37.65	512+50.15	6
EB	518+65.00	523+85.00	6
EB	529+95.00	549+35.00	6
EB	555+50.00	558+82.54	6



Section shown in the direction of traffic.
 Mainline Jointing:
 Transverse joints: CD at 17' spacing
 Longitudinal joint: L-2

4DP_04-21-20			
Direction of Travel	BEGIN STATION	END STATION	(MW EB) Feet
EB	443+85.31	459+76.16	20.6-25.0
EB	459+76.16	558+82.54	28.0

Full Depth PCC Shoulder

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

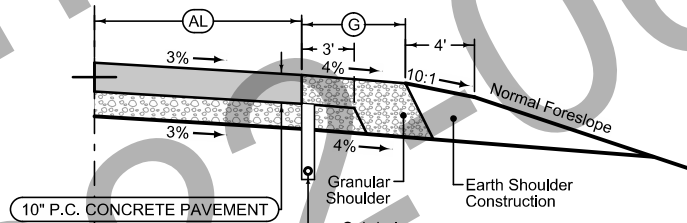
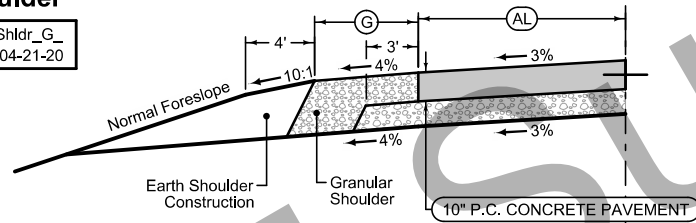
4_P_FullPCC_04-20-21			
Direction of Travel	BEGIN STATION	END STATION	(P) Feet
EB	450+15.57	482+96.58	10
EB	489+58.42	511+00.00	10
EB	517+46.78	527+49.01	10
EB	528+72.98	558+82.54	10

Auxiliary Lane

Longitudinal joint: L or KT
 Transverse joint: Match Mainline

4_AuxLane_PCC_10-18-16					2_AL_Shldr_G_04-21-20	
Direction of Travel	BEGIN STATION	END STATION	(AL) Feet	(G) Feet		
EB	445+57.42	446+47.41	6	0-6		
EB	446+47.41	447+37.45	6-12	6		
EB	447+37.45	448+87.45	12	6		
EB	454+84.01	455+73.81	6	0-6		
EB	455+73.81	456+63.62	6-12	6		
EB	456+63.62	466+12.94	12	6		
EB	483+32.93	484+09.45	6	0-6		
EB	484+09.45	485+13.16	6-12	6		
EB	485+13.16	486+63.49	12	6		
EB	512+50.15	513+40.08	6	0-6		
EB	513+40.08	514+30.02	6-12	6		
EB	514+30.02	515+80.00	12	6		
EB	523+85.00	524+75.01	6	0-6		
EB	524+75.01	525+65.00	6-12	6		
EB	525+65.00	527+15.00	12	6		
EB	549+35.00	550+25.00	6	0-6		
EB	550+25.00	551+15.00	6-12	6		
EB	551+15.00	552+65.00	12	6		

Auxiliary Lane Granular Shoulder



Auxiliary Lane

Longitudinal joint: L or KT
 Transverse joint: Match Mainline

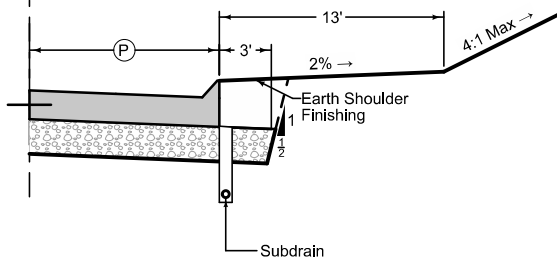
4_AuxLane_PCC_10-18-16					2_AL_Shldr_G_04-21-20	
Direction of Travel	BEGIN STATION	END STATION	(AL) Feet	(G) Feet		
EB	483+56.38	484+46.74	10	0-6		
EB	484+46.74	484+76.87	10-12	6		
EB	484+76.87	486+27.51	12	6		

Auxiliary Lane Granular Shoulder

Curbed Shoulder

Shoulder Jointing:
 Longitudinal joint not required when distance from back of curb to nearest joint is less than 15':

Single pour: L-2
 Staged: KT-2
 Transverse: C at 17' spacing



2_Curb_04-21-20			
STATION TO STATION	(P) Feet	Curb Type	See PV-102
443+99.14	447+99.26	28.2-10.0	
447+99.26	449+13.83	10.0	

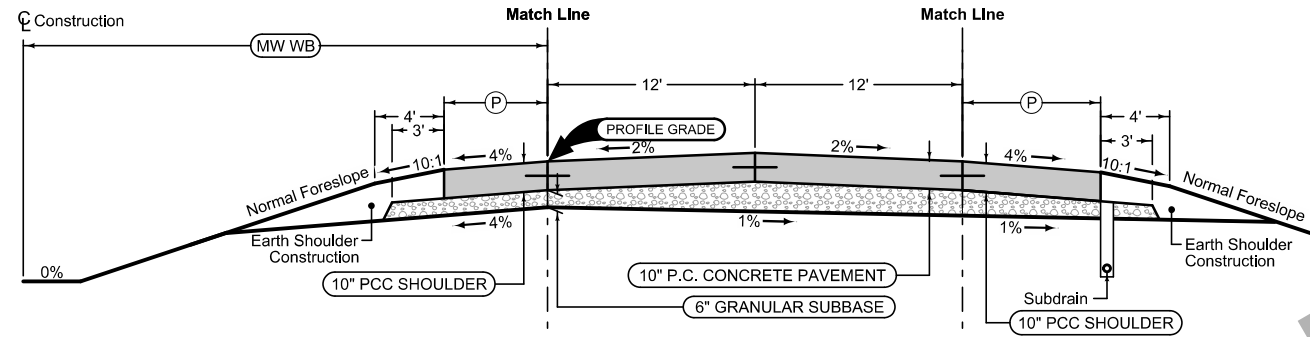
See Tab 100-24 or 100-25 for pavement quantities.
 See Tab 112-9 for shoulder quantities.

US Highway 20 EB

Full Depth PCC Shoulder

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

4_P_FullPCC_04-20-21			
Direction of Travel	BEGIN STATION	END STATION	(P) Feet
WB	443+81.55	447+98.92	6
WB	449+89.25	466+21.77	6
WB	467+56.77	485+81.69	6
WB	492+42.22	515+00.00	6
WB	521+10.00	526+35.00	6
WB	532+45.00	551+90.59	6
WB	557+41.19	559+24.91	6



Section shown in the direction of traffic.

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

4DP_04-21-20			
Direction of Travel	BEGIN STATION	END STATION	(MW WB) Feet
WB	443+81.55	459+76.16	20.5-25.0
WB	459+76.16	559+24.91	25.0

Full Depth PCC Shoulder

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

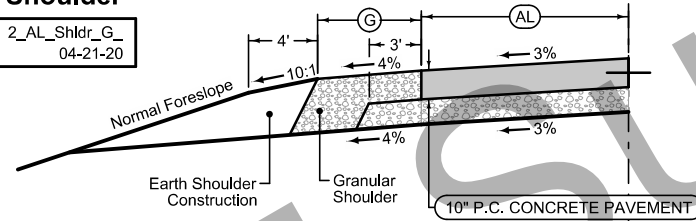
4_P_FullPCC_04-20-21			
Direction of Travel	BEGIN STATION	END STATION	(P) Feet
WB	446+00.20	446+79.79	14-10
WB	446+79.79	449+18.88	10
WB	450+34.85	452+41.82	10
WB	457+83.62	465+60.92	10
WB	471+00.38	486+33.61	10
WB	492+24.35	553+04.31	10
WB	554+28.33	559+24.91	10

Auxiliary Lane

Longitudinal joint: L or KT
 Transverse joint: Match Mainline

4_AuxLane_PCC_10-18-16				2_AL_Shldr_G_04-21-20	
Direction of Travel	BEGIN STATION	END STATION	(AL) Feet	(G) Feet	
WB	488+04.48	490+62.36	12	6	
WB	490+62.36	491+52.22	12-6	6	
WB	491+52.22	492+42.22	6	0-6	
WB	517+24.60	517+80.00	25-12	6	
WB	517+80.00	519+30.00	12	6	
WB	519+30.00	520+20.00	12-6	6	
WB	520+20.00	521+10.00	6	0-6	
WB	528+57.73	529+15.00	25-12	6	
WB	529+15.00	530+65.20	12	6	
WB	530+65.20	531+55.00	12-6	6	
WB	531+55.00	532+45.00	6	6-0	
WB	554+13.11	554+70.59	25-12	6	
WB	554+70.59	556+20.89	12	6	
WB	556+20.89	554+41.19	12-0	6	

Auxiliary Lane Granular Shoulder

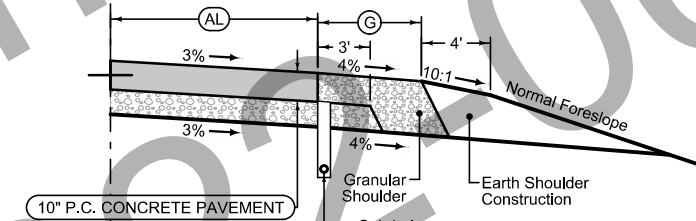


Auxiliary Lane

Longitudinal joint: L or KT
 Transverse joint: Match Mainline

4_AuxLane_PCC_10-18-16				2_AL_Shldr_G_04-21-20	
Direction of Travel	BEGIN STATION	END STATION	(AL) Feet	(G) Feet	
WB	467+70.16	469+20.38	12	6	
WB	469+20.38	469+50.38	12-10	6	
WB	469+50.38	470+40.58	10	6-0	
WB	488+95.34	490+44.70	12	6	
WB	490+44.70	490+74.57	12-10	6	
WB	490+74.57	491+64.55	10	6-0	

Auxiliary Lane Granular Shoulder



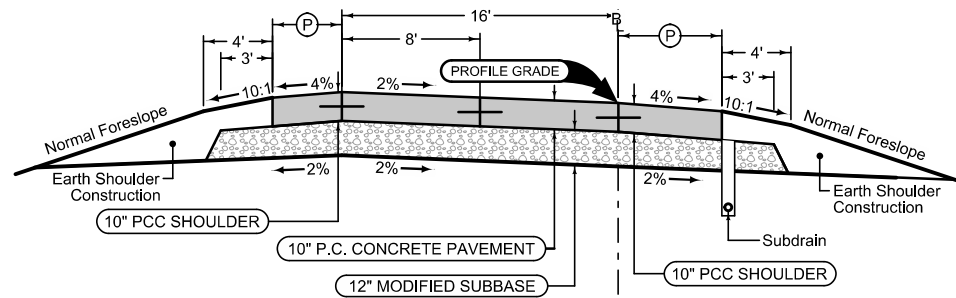
See Tab 100-24 or 100-25 for pavement quantities.
 See Tab 112-9 for shoulder quantities.

US Highway 20 WB

Full Depth PCC Shoulder

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

2_P_FullPCC_04-20-21			
RAMP	STATION TO STATION		(P) Feet
A	3656+27.86	3660+00.00	4
A2	5552+41.63	5555+26.33	4
B	6533+96.23	6541+55.38	4
D	4542+50.00	4553+26.65	4
D2	8551+12.75	8553+57.89	4



Section shown in the direction of traffic.

Ramp Jointing:
 Transverse joints: CD at 15' spacing.
 Longitudinal joints: L-2

1RP_Modified		
RAMP	BEGIN STATION	END STATION
A	3656+27.86	3658+25.00
A2	5552+41.63	5555+26.33
B2	6533+96.23	6541+55.38
D	4542+50.00	4553+26.65
D2	8551+12.75	8553+57.89

Full Depth PCC Shoulder

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

2_P_FullPCC_04-20-21			
RAMP	STATION TO STATION		(P) Feet
A	3656+27.86	3658+11.76	6
B	6533+96.23	6541+55.38	6
D	4542+50.00	4545+12.24	6
D	4551+12.75	4553+26.65	6
D2	8551+12.75	8553+57.89	6

Auxiliary Lane Full Depth PCC Shoulder

Shoulder Jointing:
 Longitudinal joint: L or KT
 Transverse joint: Match Mainline

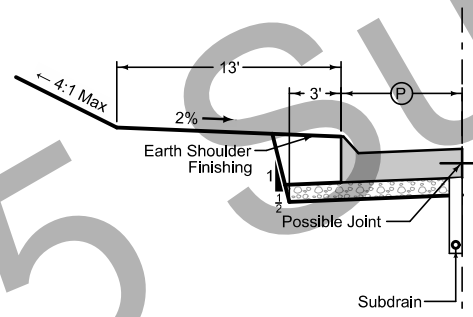
2_AuxLane_PCC_10-18-16				2_AL_Shldr_ALT_04-21-20	
RAMP	STATION TO STATION		(AL) Feet	(P) Feet	
A	3658+11.76	3664+24.54	12	7	
A	3664+24.54	3667+84.75	12-0	7	
B	6529+10.93	6533+96.23	0-16	6	
D	4545+12.24	4547+52.79	0-16	6	
D	4547+52.79	4551+12.75	16	6	

Curbed Shoulder

Shoulder jointing:
 Longitudinal joint not required when distance from back of curb to nearest joint is less than 16'

Transverse: C at 17' spacing
 Single pour: L-2
 Staged: KT-2

1R_Curb_04-21-20				
RAMP	BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
B2	6540+94.48	6541+45.48	7	
D	4552+63.46	4553+16.65	7	



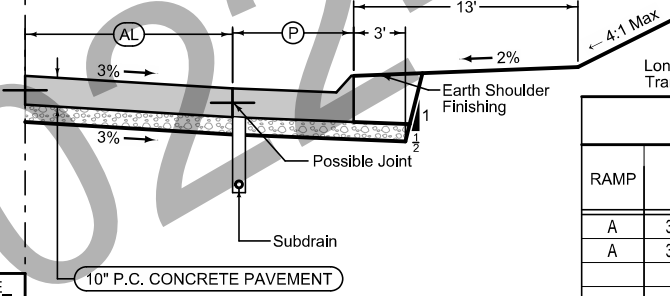
Section shown in the direction of traffic.

1RP_Modified		
RAMP	BEGIN STATION	END STATION
A	3656+27.86	3667+85.00
B	6529+10.93	6537+82.29

Auxiliary Lane Curbed Shoulder

Longitudinal joint: L or KT
 Transverse joint: Match Mainline

2_AuxLane_PCC_10-18-16				1R_Curb_04-21-20	
RAMP	STATION TO STATION		(AL) Feet	(P) Feet	Curb Type See PV-102
A	3658+11.76	3664+24.54	12	7	
A	3664+24.54	3667+85.00	12-0	7	



Curbed Shoulder

Shoulder jointing:
 Longitudinal joint not required when distance from back of curb to nearest joint is less than 16'

Transverse: C at 17' spacing
 Single pour: L-2
 Staged: KT-2

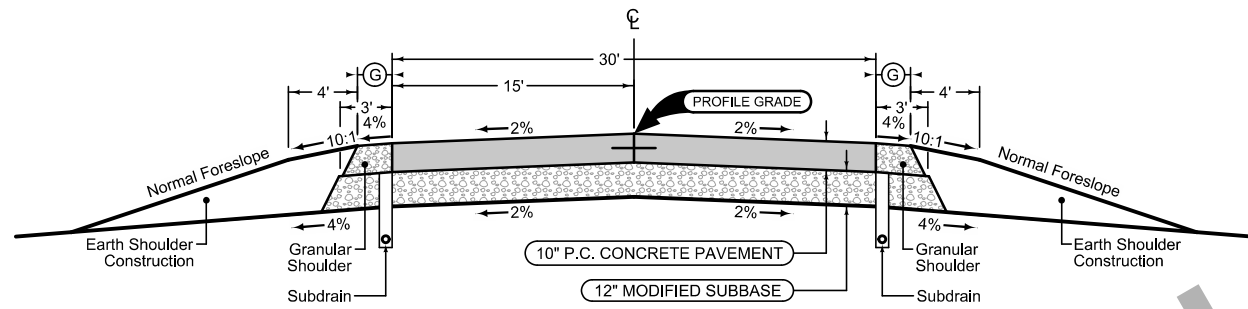
1R_Curb_04-21-20				
RAMP	BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
A2	5552+41.63	5555+26.33	7	
B2	6540+94.48	6541+45.48	7	

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

US 20/US 75 Interchange Ramps

Granular Shoulder

STATION TO STATION		Ⓞ
		Feet
3484+25.00	3484+88.50	2
3485+82.50	3486+96.50	2-6



Granular Shoulder

STATION TO STATION		Ⓞ
		Feet
3484+25.00	3487+08.35	2

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

STATION TO STATION	
3484+25.00	3487+14.66

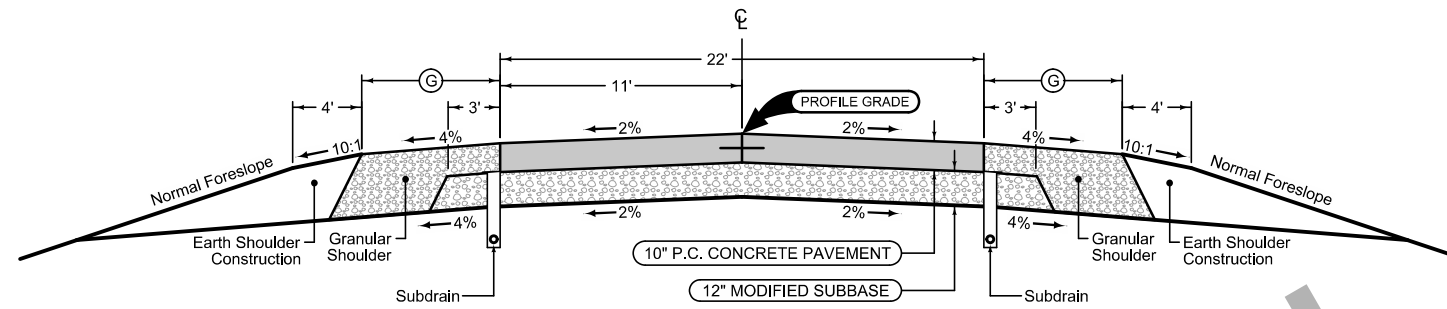
Revised D5 Submittal 2022-06-09

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

Glen Ellen Rd.

Granular Shoulder

2_G_SR_04-21-20		Ⓞ Feet
STATION TO STATION		
4488+11.15	4490+90.00	6



Granular Shoulder

2_G_SR_04-21-20		Ⓞ Feet
STATION TO STATION		
4488+11.15	4490+90.00	6

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

2P_04-21-20	
STATION TO STATION	
4488+11.15	4490+90.00

Revised D5 Submittal 2022-06-09

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

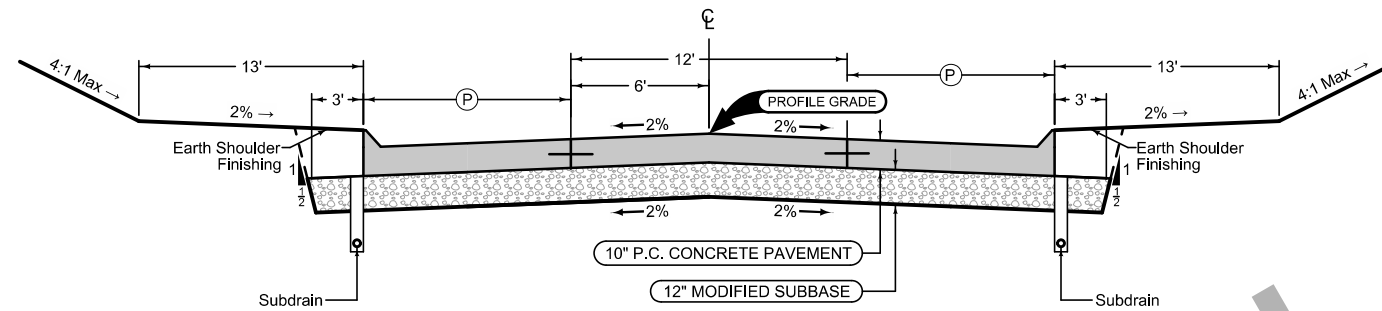
Buchanan Ave. N

Curbed Shoulder

Shoulder Jointing:
Longitudinal joint not required when distance from back of curb to nearest joint is less than 15':

Single pour: L-2
Staged : KT-2
Transverse: C at 17' spacing

STATION TO STATION		(P) Feet	Curb Type See PV-102
5515+15.00	5515+71.61	9	
5515+71.61	5516+22.63	9-54.28	



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

STATION TO STATION	
5515+15.00	5516+34.29

Curbed Shoulder

Shoulder Jointing:
Longitudinal joint not required when distance from back of curb to nearest joint is less than 15':

Single pour: L-2
Staged : KT-2
Transverse: C at 17' spacing

STATION TO STATION		(P) Feet	Curb Type See PV-102
5515+15.00	5515+74.90	9	
5515+74.90	5516+25.89	9-51.72	

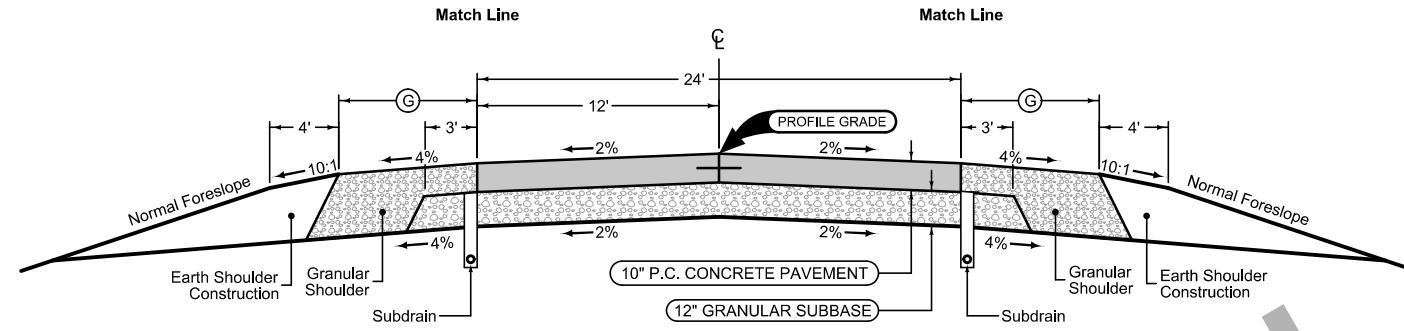
Revised D5 Submittal 2022-06-09

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

Grandy Drive

Granular Shoulder

2_G_SR_04-21-20		
STATION TO STATION		Ⓞ Feet
6519+41.03	6527+01.70	5
6527+01.70	6527+51.70	5-61.68



Granular Shoulder

2_G_SR_04-21-20		
STATION TO STATION		Ⓞ Feet
6518+50.00	6527+00.91	5
6527+00.91	6527+50.91	5-62.32

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

2P_04-21-20		
STATION TO STATION		
6518+50.00	6527+61.31	

Revised D5 Submittal 2022-06-09

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

Buchanan Ave. S

SURVEY SYMBOLS

- Interstate Highway Symbol
- U.S. Highway Symbol
- Iowa Highway Symbol
- County Road Highway Symbol
- Evergreen Tree
- Deciduous Tree
- Fruit Tree
- Shrub (Bushes)
- Timber
- Hedge
- Stump
- Swamp
- Rock Outcrop
- Broken Concrete
- Revetment (Rip Rap)
- Cemetery
- Grave
- Cave
- Sink Hole
- Board Fence
- Chain Link or Security Fence
- Wire Fence
- Terrace
- Earth Dam or Dike (Existing)
- Tile Outlet
- Edge of Water
- Existing Drainage
- Right of Way Rail or Lot Corner
- Concrete Monument
- Well
- Windmill
- Beehive Intake
- Existing Intake
- Existing Utility Access (Manhole)
- Fire Hydrant
- Water Hydrant (Rural)
- Septic Tank
- Cistern
- L.P. Gas Tank (No Footing)
- Underground Storage Tank
- Latrine
- Satellite TV Dish
- Water Hook Up
- Radio Tower
- Tower Anchor
- Guardrail (Beam or Cable)
- Guard Post (one or two)
- Guard Post (over two)
- Filler Pipe
- Gas Valve
- Water Valve
- Speed Limit Sign
- Mile Marker Post
- Sign
- Traffic Signal Control Box
- Rail Road Signal Control Box
- Telephone Switch Box
- Electric Box

UTILITY LEGEND

Revised 2022 Submit 2022

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
- Access Control
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

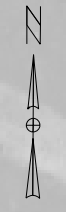
(COVERS SHEET SERIES D, E, F, & K)



Revised D5 Submittal 2022-06-09

Station	US 20 Westbound	US 20 Eastbound
420+00	1286.09	1285.52
421+00	1286.56	1285.86
422+00	1287.24	1286.49
423+00	1287.91	1287.09
424+00	1288.58	1287.69
425+00	1289.25	1288.29
426+00	1289.92	1288.89
427+00	1290.57	1289.50
428+00	1291.21	1290.10
429+00	1291.84	1290.71
430+00	1292.45	1291.33
431+00	1293.05	1291.95
432+00	1293.63	1292.57
433+00	1294.20	1293.19
434+00	1294.77	1293.81
435+00	1295.33	1294.44
436+00	1295.90	1295.06
437+00	1296.46	1295.69
438+00	1297.03	1296.31
439+00	1297.59	1296.94
440+00	1298.13	1297.54
441+00	1298.64	1298.10
442+00	1299.12	1298.63
443+00	1299.56	1299.12
444+00	1299.96	1299.57

Concord TWP.
T-89N R-46W
SEC. 31



NEW DISTRICT OFFICE SITE

Curve Data
Δ = 4° 23' 37.83" (LT)
TT = 441.17
L = 881.90
R = 11,500.00
E = 8.46

US 20 WBL Sta. 1459+47.89
24" x 262 RCP
D.A. = 1 AC R

US 20 WBL Sta. 468+97.03
4 x 4 x 247.0 RCB
D.A. = 35 Ac-H Skew = 30

US 20 WBL Sta. 475+75.48
5 x 5 x 175.0 RCB
D.A. = 38 Ac-H

20

US 20 EBL Sta. 468+04.68
24" x 57.0 RCP W/ CMP Ext.
D.A. = Median Only

US 20 EBL Sta. 475+06.00
24" x 51.5 RCP W/ CMP Ext.
D.A. = Median Only

US 20 EBL Sta. 473+00.96
24" x 83.7 RCP
D.A. = Median Only

Ramp A2

Ramp D2

Ramp D

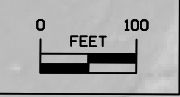
Obliterate

Obliterate

Close

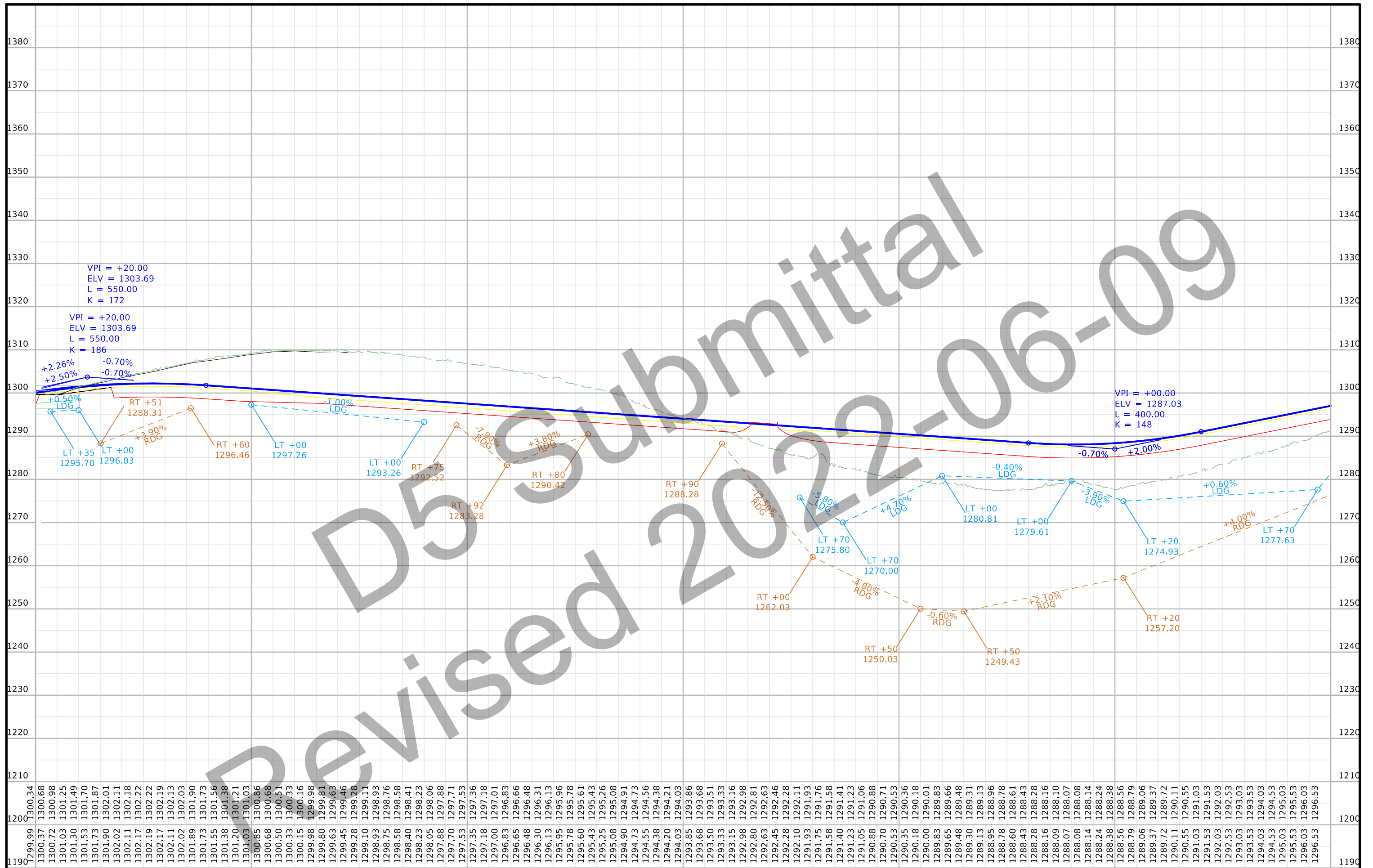
EQUATION:
Sta 2459+96.19 BK = POT1 Sta 459+96.75 460
Sta 459+96.75 AH

Revised 2022

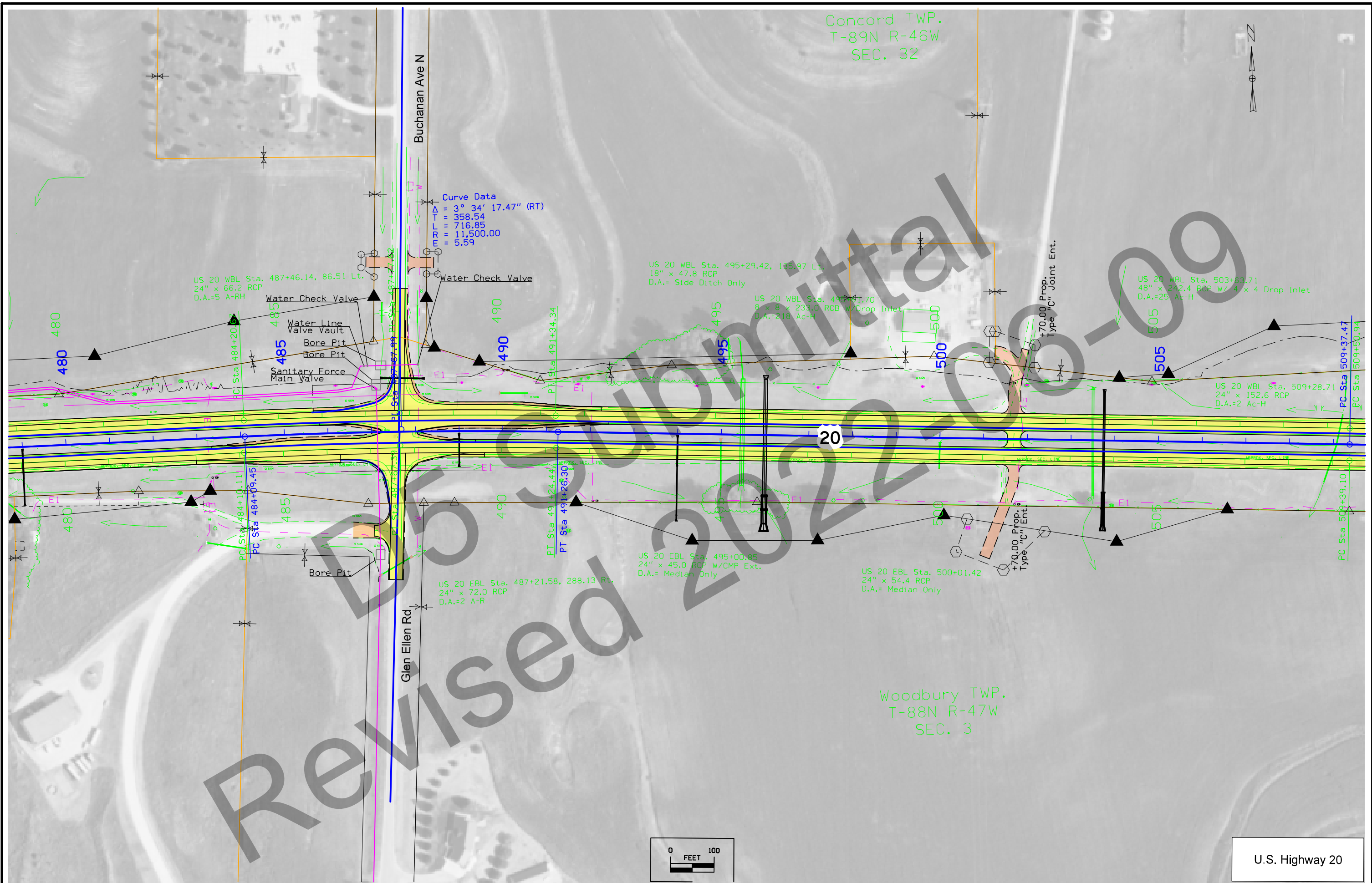


Woodbury TWP.
T-88N R-47W
SEC. 4

U.S. Highway 20



450+00	455+00	460+00	465+00	470+00	475+00
FILE NO. 32165	ENGLISH	DESIGN TEAM FlatteryBell\Hain	WOODBURY COUNTY	PROJECT NUMBER NHSX-020-1(179)--3H-97	SHEET NUMBER D.5



Concord TWP.
T-89N R-46W
SEC. 32

Woodbury TWP.
T-88N R-47W
SEC. 3

Buchanan Ave N

Glen Ellen Rd

20

Curve Data
 $\Delta = 3^\circ 34' 17.47''$ (RT)
 $L = 358.54$
 $R = 716.85$
 $PRR = 11,500.00$
 $E = 5.59$

US 20 WBL Sta. 495+29.42, 135.97 Lt.
 18" x 47.8 RCP
 D.A.= Side Ditch Only

US 20 WBL Sta. 493+61.70
 8' x 8' x 233.0 RCB W/Drop Inlet
 D.A.=218 Ac-H

US 20 WBL Sta. 503+63.71
 48" x 242.4 RCP W/ 4' x 4' Drop Inlet
 D.A.=25 Ac-H

US 20 WBL Sta. 509+28.71
 24" x 152.6 RCP
 D.A.=2 Ac-H

US 20 WBL Sta. 487+46.14, 86.51 Lt.
 24" x 66.2 RCP
 D.A.=5 A-RH

US 20 EBL Sta. 487+21.58, 288.13 Rt.
 24" x 72.0 RCP
 D.A.=2 A-R

US 20 EBL Sta. 495+00.85
 24" x 45.0 RCP W/CMP Ext.
 D.A.= Median Only

US 20 EBL Sta. 500+01.42
 24" x 54.4 RCP
 D.A.= Median Only



U.S. Highway 20

Concord TWP.
T-89N R-46W
SEC. 32

Concord TWP.
T-89N R-46W
SEC. 33



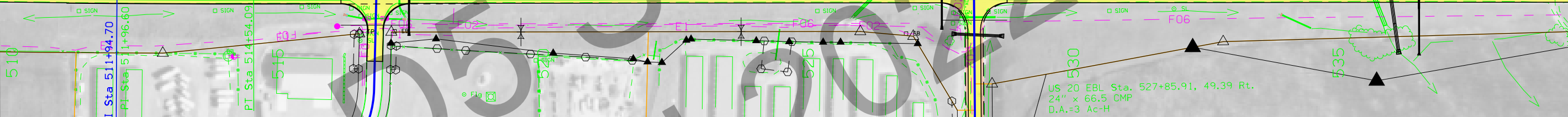
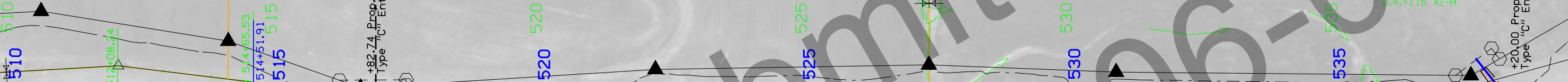
Curve Data
Δ = 0° 52' 00.31" (LT)
T = 257.22
R = 514.43
E = 34,005.92
C = 0.97

US 20 WBL Sta. 509+42.23, 118.09 Lt.
15" x 57.0 CMP
D.A.=Part of 2 Ac-H

US 20 WBL Sta. 517+37.82
24" x 151.55 RCP
W/ 18" x 94.0 CMP Median Drain
D.A.=3 Ac-H

US 20 WBL Sta. 527+18.18
4 x 4 x 244 RCB
Skew= 45 D.A.=37 Ac-H

US 20 WBL Sta. 535+77.53
6 x 6 x 196.0 RCB
D.A.=115 Ac-H



PI Sta 511+94.70
PI Sta 511+96.60
PI Sta 514+54.09
PI Sta 514+65.53
PI Sta 514+51.91

US 20 EBL Sta. 522+08.45, 127.88 Rt.
12" x 134.3 Iron Pipe
D.A.=1 Ac-R

US 20 EBL Sta. 524+38.67, 128.68 Rt.
15" x 57.1 Plastic Pipe
D.A.=2 Ac-F

US 20 EBL Sta. 527+85.91, 49.39 Rt.
24" x 66.5 CMP
D.A.=3 Ac-H

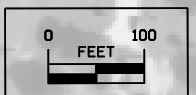
Grandy Dr

Buchanan Ave S

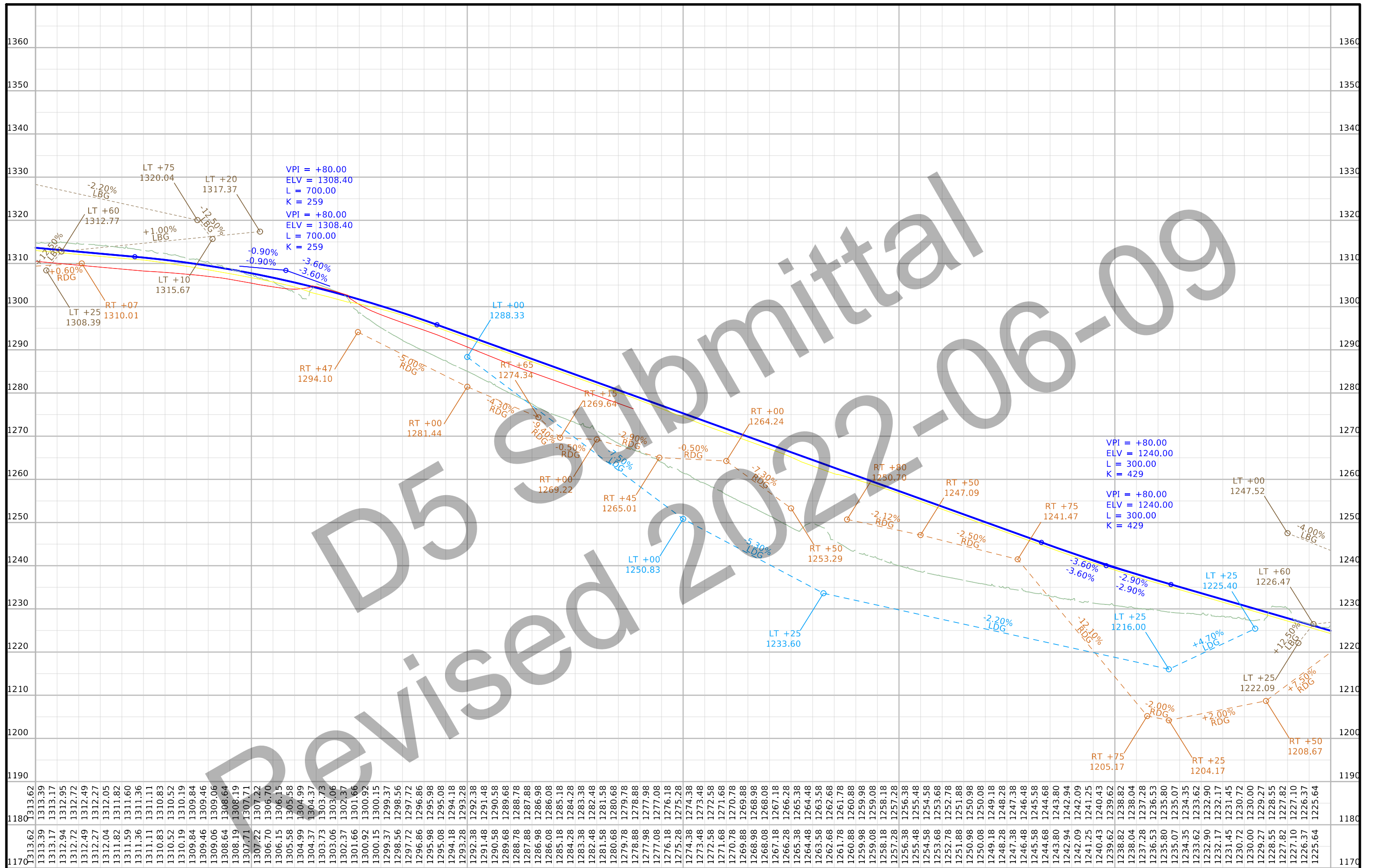
Revised

Woodbury TWP.
T-88N R-47W
SEC. 3

Woodbury TWP.
T-88N R-47W
SEC. 2



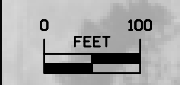
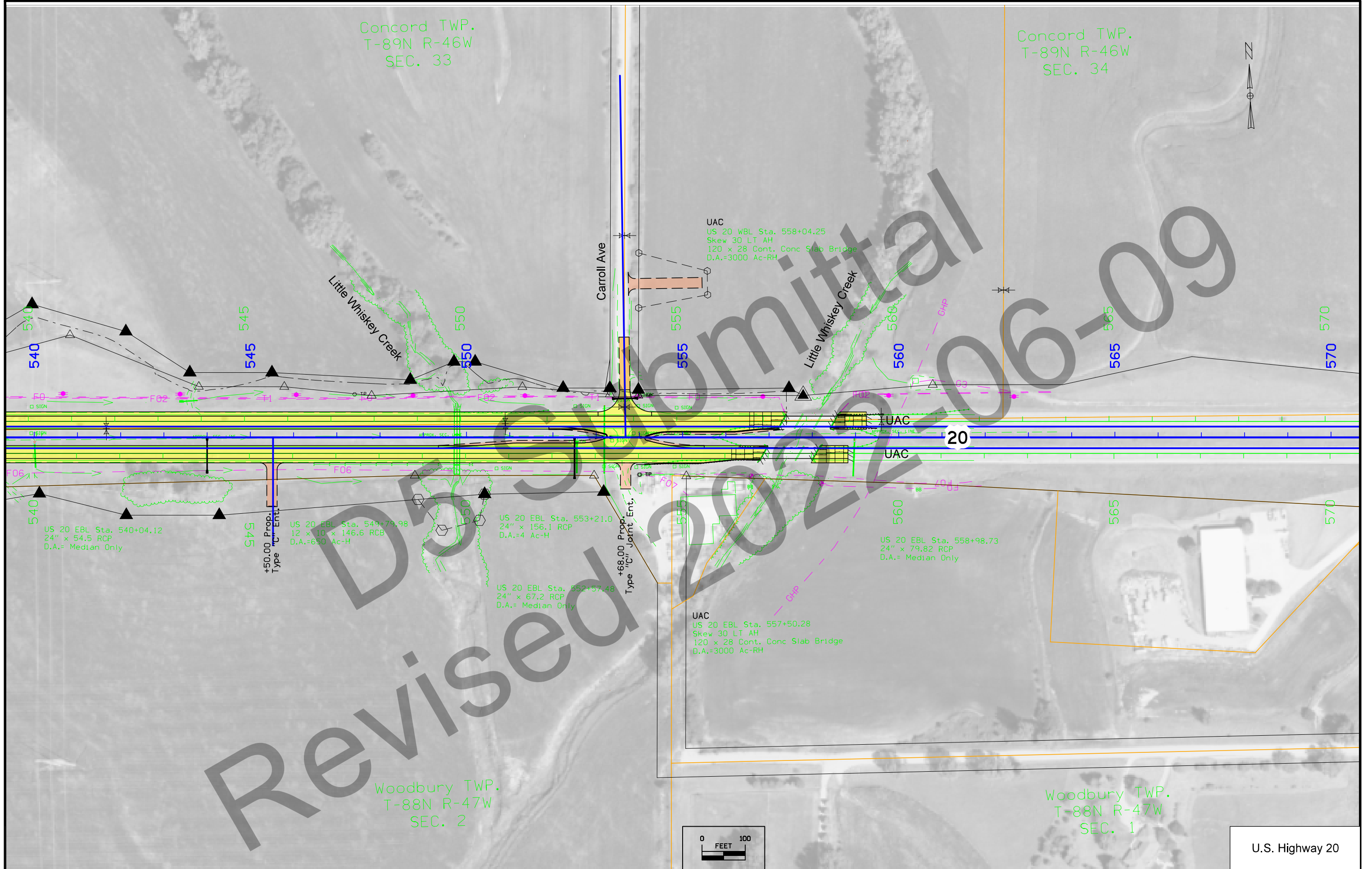
U.S. Highway 20



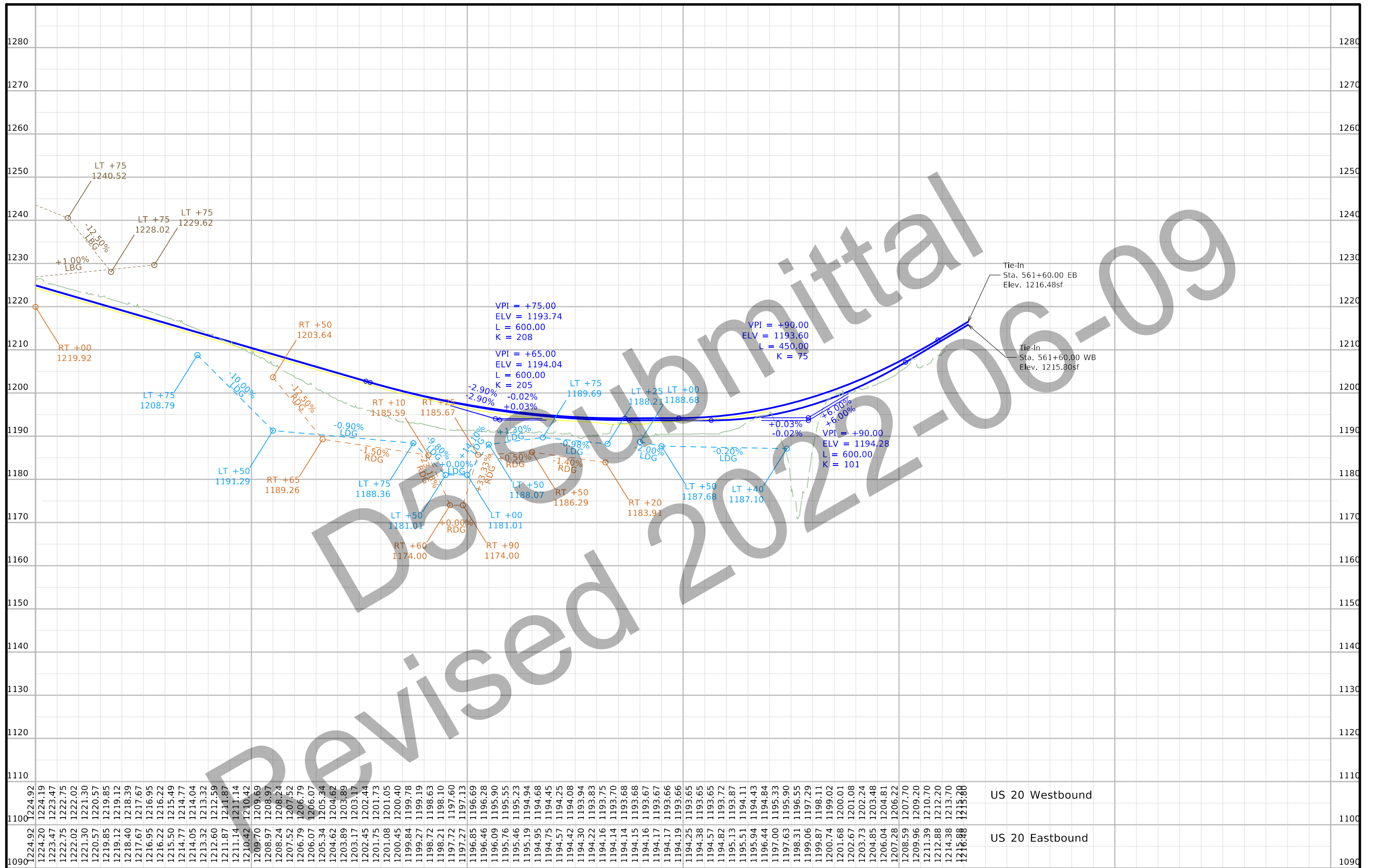
510+00	515+00	520+00	525+00	530+00	535+00
FILE NO. 32165	ENGLISH	DESIGN TEAM FlatteryBell\Hain	WOODBURY COUNTY	PROJECT NUMBER NHSX-020-1(179)--3H-97	SHEET NUMBER D.9

Concord TWP.
T-89N R-46W
SEC. 33

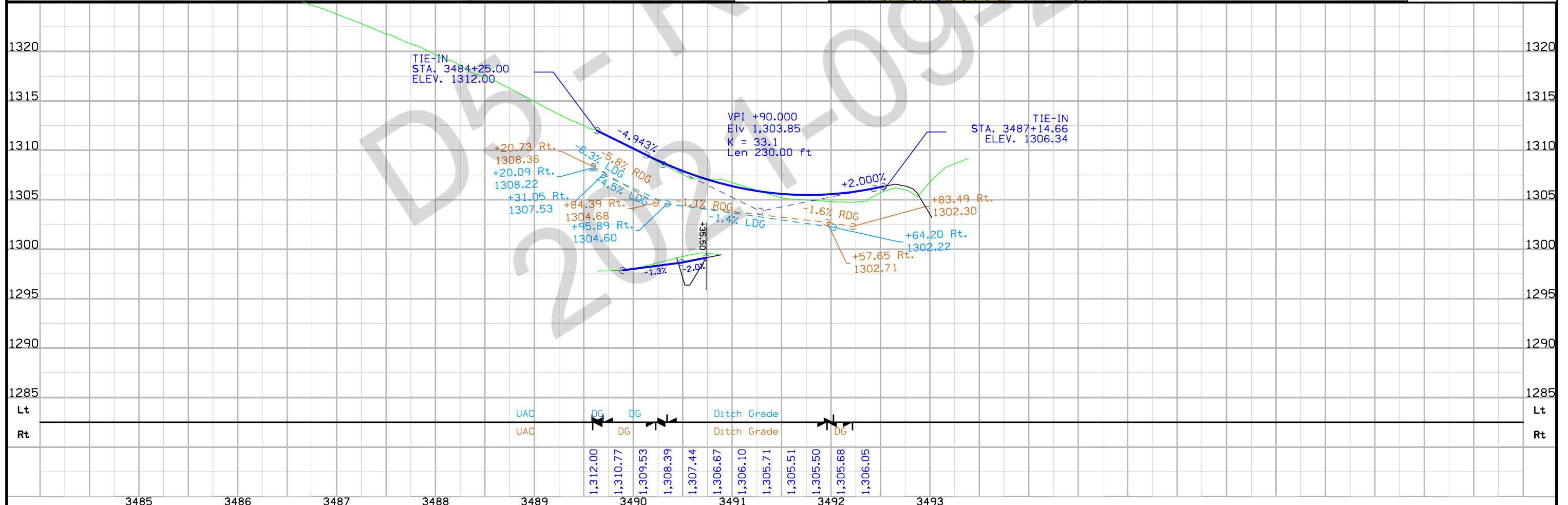
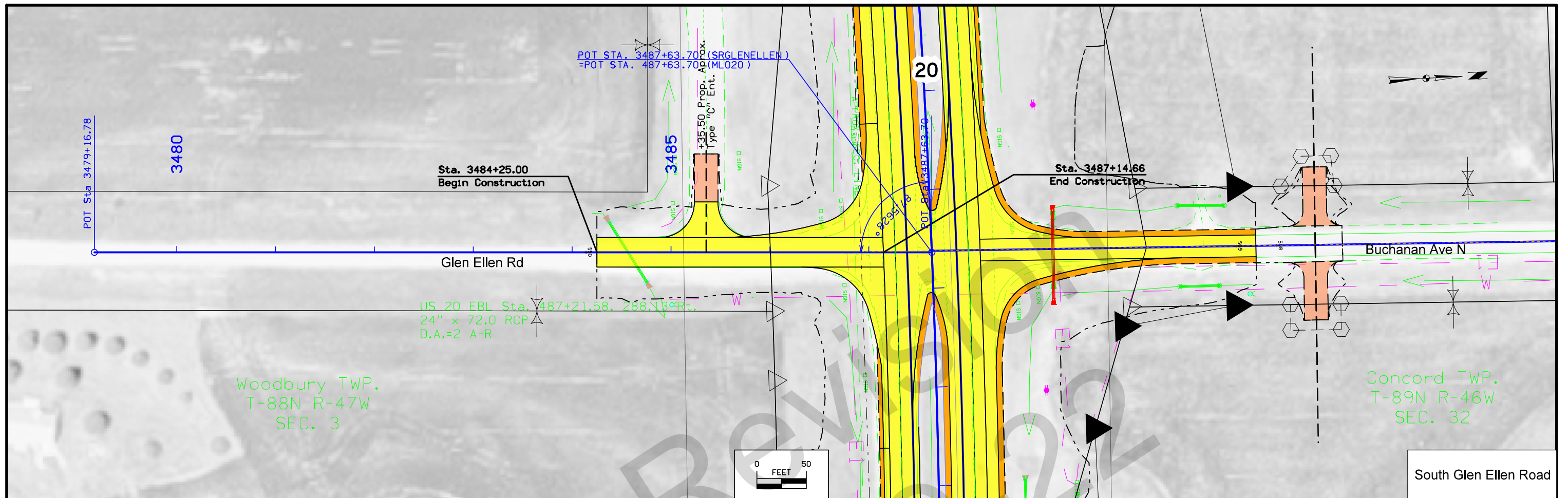
Concord TWP.
T-89N R-46W
SEC. 34



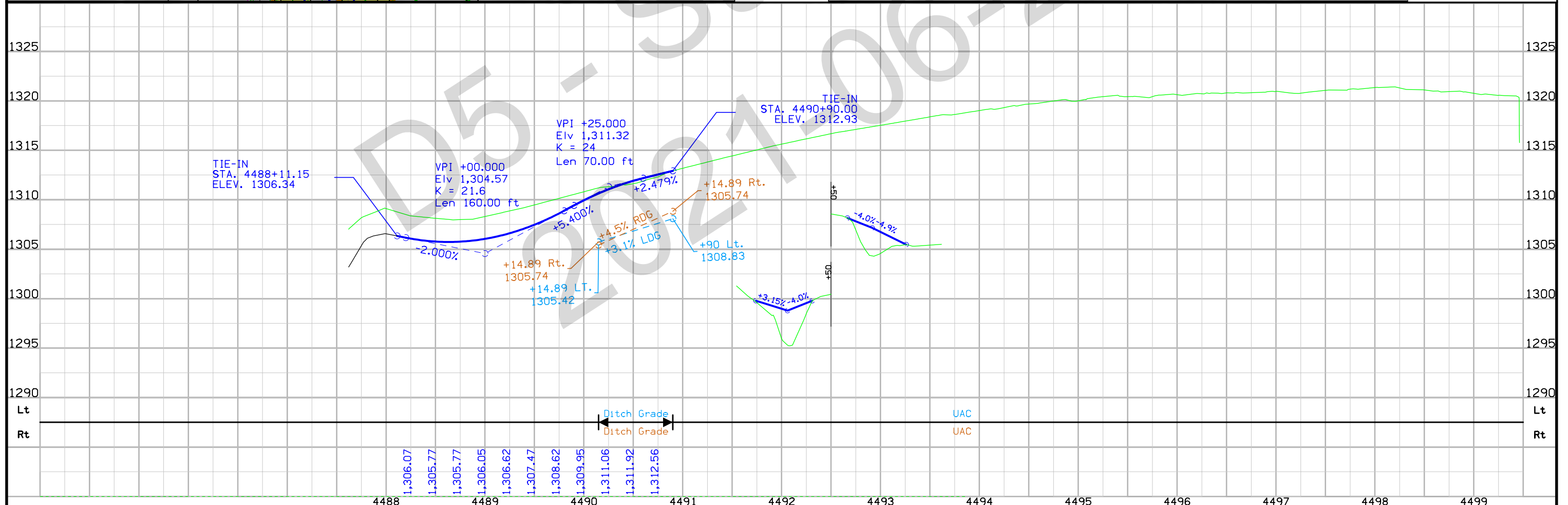
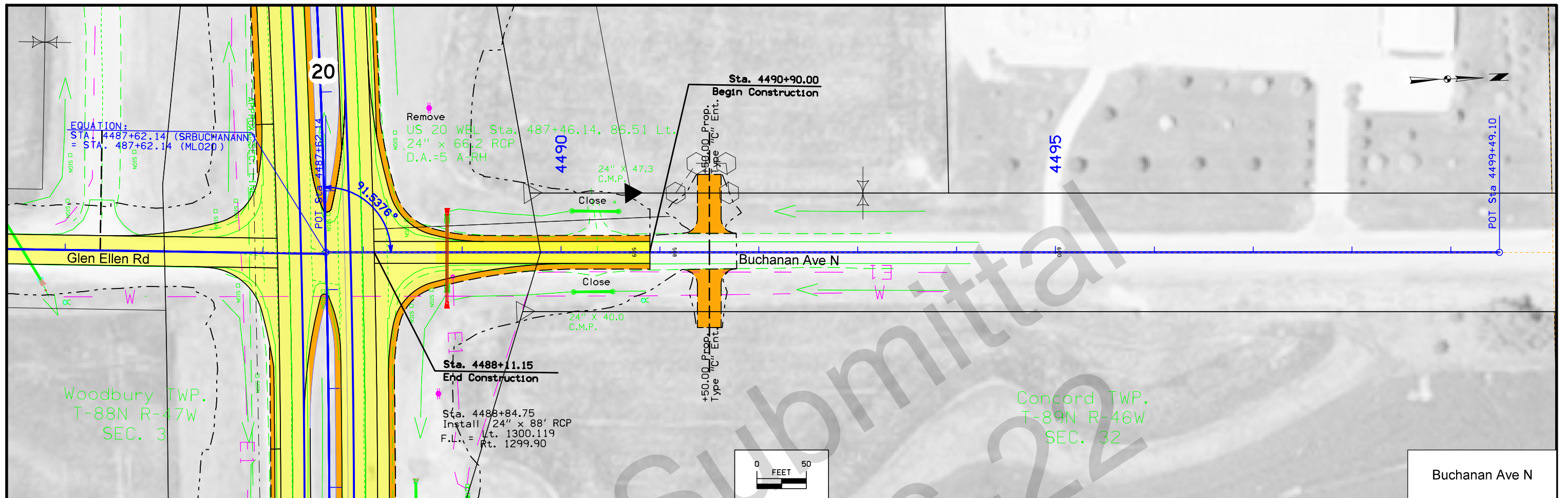
U.S. Highway 20



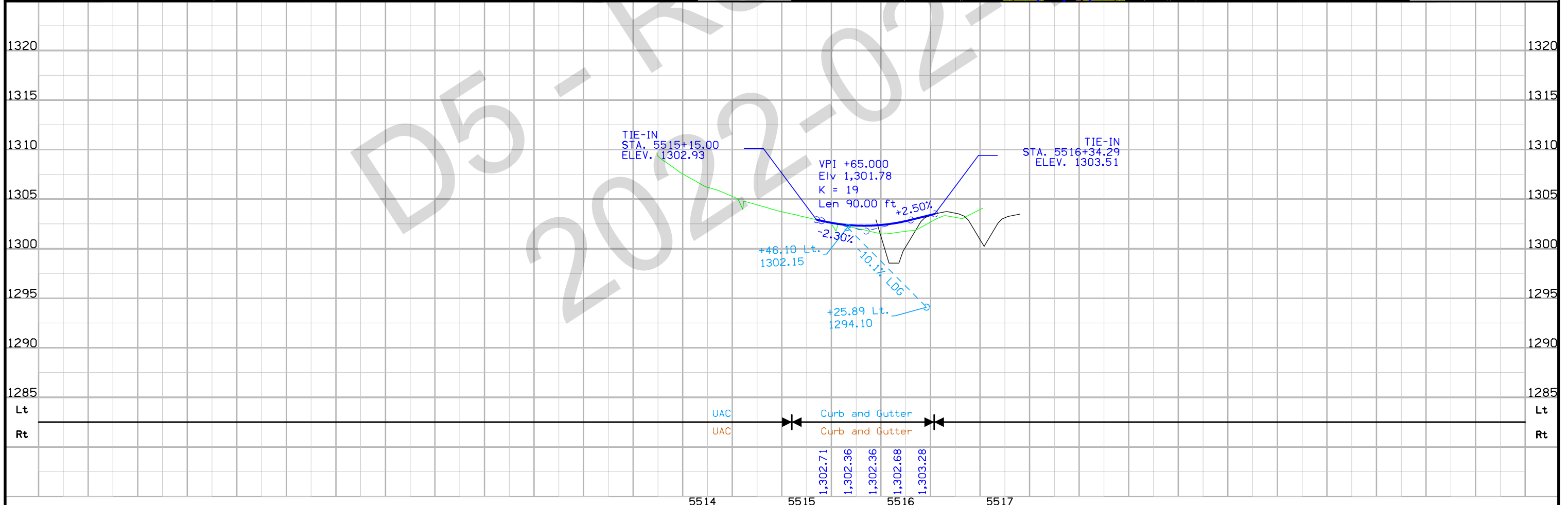
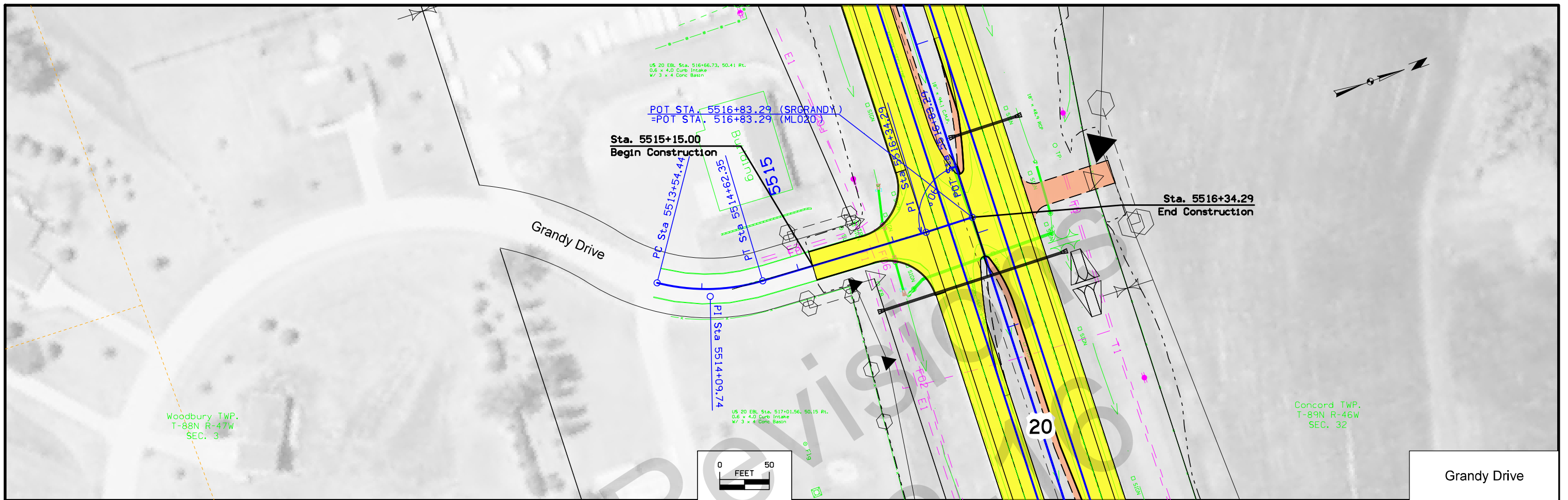
540+00	545+00	550+00	555+00	560+00	565+00	US 20 Westbound
1224.92	1224.19	1223.47	1222.75	1222.02	1221.30	1220.57
1219.85	1219.12	1218.40	1217.67	1216.95	1216.22	1215.49
1214.77	1214.04	1213.32	1212.59	1211.87	1211.14	1210.42
1209.70	1209.69	1208.97	1208.24	1207.52	1206.79	1206.07
1205.34	1204.62	1203.89	1203.17	1202.45	1201.73	1201.05
1200.45	1199.84	1199.27	1198.72	1198.21	1197.72	1197.13
1196.85	1196.69	1196.46	1196.28	1196.09	1195.90	1195.76
1195.55	1195.23	1194.94	1194.68	1194.45	1194.25	1194.08
1194.30	1193.94	1194.22	1193.83	1194.16	1193.75	1194.14
1194.14	1193.68	1194.15	1193.68	1194.16	1193.67	1194.17
1194.17	1193.66	1194.19	1193.66	1194.25	1193.65	1194.38
1194.57	1193.65	1194.82	1193.72	1195.13	1193.87	1195.51
1195.94	1194.43	1196.44	1194.84	1197.00	1195.33	1198.31
1199.06	1197.29	1199.87	1198.11	1200.74	1199.02	1201.68
1202.67	1201.08	1204.85	1203.48	1206.04	1204.81	1207.28
1208.59	1207.70	1209.96	1209.20	1211.39	1210.70	1212.88
1214.38	1213.70	1215.88	1215.28			
1090	1100	1110	1120	1130	1140	1150
1160	1170	1180	1190	1200	1210	1220
1230	1240	1250	1260	1270	1280	

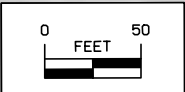


FILE NO.	ENGLISH	DESIGN TEAM	Flattery \ Bell \ Hain	WOODBURY COUNTY	PROJECT NUMBER	NHSX-020-1(179)--3H-97	SHEET NUMBER	E.1
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FILE NO.	ENGLISH	DESIGN TEAM	WOODBURY COUNTY	PROJECT NUMBER	SHEET NUMBER
		Flattery \ Bell \ Hain		NHSX-020-1(179)--3H-97	E.2





Woodbury TWP.
T-88N R-47W
SEC. 2

Concord TWP.
T-89N R-46W
SEC. 33

POT STA. 7553+68.03 (SRCARROLL)
=POT STA. 553+68.03 (ML020)

Sta. 7554+17.04
End Construction

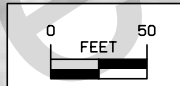
Sta. 7556+00.00
Begin Construction

POT Sta 7562+04.91

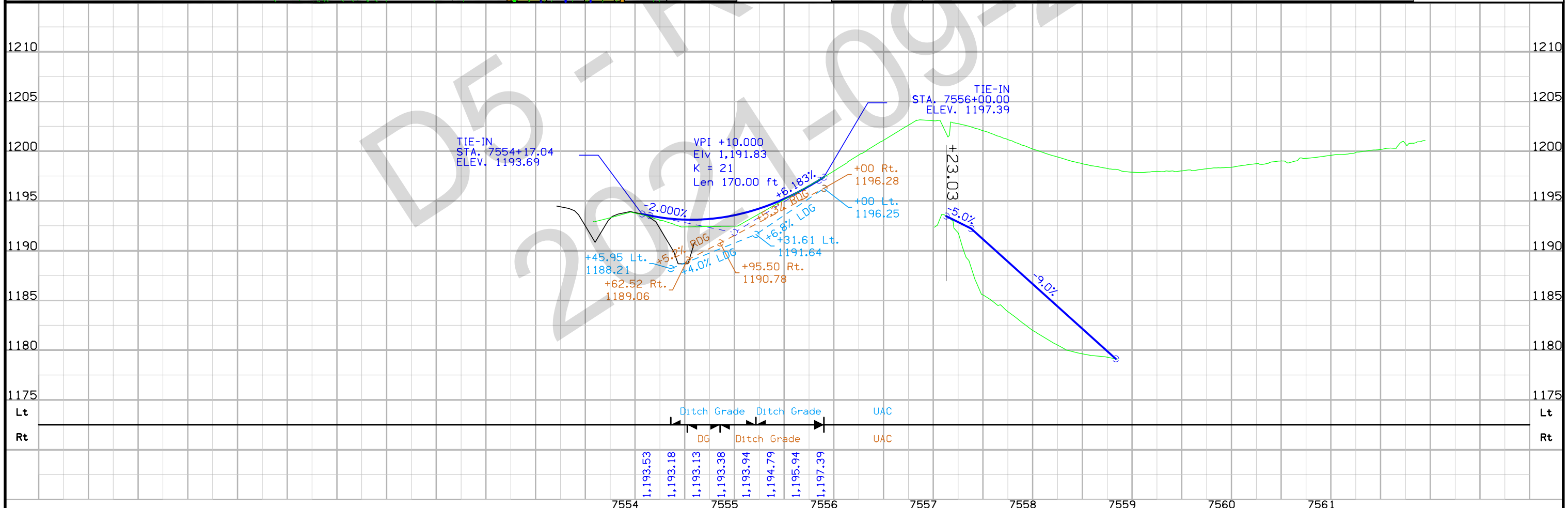
7555

7560

Building



Carroll Ave





To: Nikki Cuva/Jeff Larson
Office of Right of Way Design

Final Draft: August 31st, 2021

District 3: Tony Lazarowicz
Shane Tymkowicz

Project Details:
PIN: 17-97-020-010
Project #: NHSX-020-1(179)—3H-97
ROW #: NHSN-020-1(180)—2R-97

TAS: Jan Laaser-Webb
Traffic & Safety Bureau

From: Leilah Armstrong
Traffic & Safety Bureau

WOODBURY COUNTY
US 20 from US 75 / IA 12 Interchange in Sioux City to Little Whiskey Creek (EB/WB)

SUBJECT: Access Review

PROJECT LOCATION AND DESCRIPTION:

This project includes the proposed re-alignment of NB US 20/US 75 to EB US 20 ramp, and the reconstruction of US 20 from US 75 / IA 12 Interchange in Sioux City to Little Whiskey Creek.

ACCESS PRIORITY CLASSIFICATION:

Access locations are based off Priority 3 with a minimum spacing requirement of 1,000 feet along US 20.

ACCESS CONTROL LIMITS:

US 20

Access rights were previously acquired from approximately Sta. 448+10 to Sta. 847+91 with pre-determined accesses within the project limits at the following locations: Buchanan Avenue North, Glen Ellen Road, Grandy Drive, Buchanan Avenue South, and Carroll Road.

Buchanan Ave N

If not already previously acquired access rights are to be acquired 300 feet away from the edge of traveled way in accordance with 112.11(3).

Glen Ellen Rd

If not already previously acquired access rights are to be acquired 300 feet away from the edge of traveled way in accordance with 112.11(3).

Carroll Ave

If not already previously acquired access rights are to be acquired 285 feet away from the edge of traveled way in accordance with 112.11(3).

Buchanan Ave S

If not already previously acquired access rights are to be acquired 300 feet away from the edge of traveled way in accordance with 112.11(3).

Grandy Dr

If not already previously acquired access rights are to be acquired 300 feet away from the edge of traveled way in accordance with 112.11(3), with the exception of the entrance at approximately Sta. 5513+85 on the east side of the road.

ACCESS LOCATION DETAILS:

Location	Access	Comments
443+81	ML020	Begin Project
458+67 LT	Type C Entrance	Closed
466+88 LT	Type B Entrance	SAC - Proposed
466+90	Median Crossing	Proposed - Paved
487+68 LT	Buchanan Ave N	Existing
487+68 RT	Glen Ellen Rd	Existing
501+47 RT	Type C Entrance	Closed
501+62 LT	Type C Entrance	Closed
501+70 LT	Type C Entrance	Proposed – Reserved?
501+70	Median Crossing	Proposed - Granular
501+70 RT	Type C Entrance	Proposed – Reserved?
516+75 RT	Grandy Dr	Existing
528+20 RT	Buchanan Ave S	Existing
538+20 LT	Type C Entrance	Proposed – Reserved?
538+30 LT	Type C Entrance	Closed
538+84	Median Crossing	Closed
539+06 RT	Type C Entrance	Closed
543+65 LT	Type C Entrance	Closed
545+50 RT	Type C Entrance	SAC – Proposed?
553+68 LT	Carroll Ave	Existing
553+68 RT	Type C Entrance	Proposed
559+19	ML020	End Project
-	-	-
4488+11	SR Buchanan N	Begin Construction
4490+35 RT	Type C Entrance	Closed
4490+35 LT	Type C Entrance	Closed
4491+50 LT	Type C Entrance	Proposed
4491+50 RT	Type C Entrance	Proposed
4490+90	SR Buchanan N	End Construction
-	-	-
3484+25	SR Glen Ellen	Begin Construction
3485+35 LT	Type C Entrance	Proposed
3487+15	SR Glen Ellen	End Construction
-	-	-

7554+17	SR Carroll	Begin Construction
7555+13 RT	Type C Entrance	Closed
7557+20 RT	Type C Entrance	Proposed
7556+00	SR Carroll	End Construction



Concord TWP.
T-89N R-46W
SEC. 31



SW1/4 SE1/4

SE1/4 SE1/4

FUTURE R/W LINE

FUTURE R/W LINE

FUTURE R/W LINE

474+17±R
C200'

20

20

Obliterate

466+88
C167'±EX. R/W

471+85
C242'

475+97±R
C190'

TOTAL ACQUISITION

3

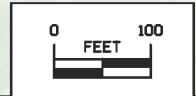
DAVID A. & SUS
DZIURAWIEC

Obliterate

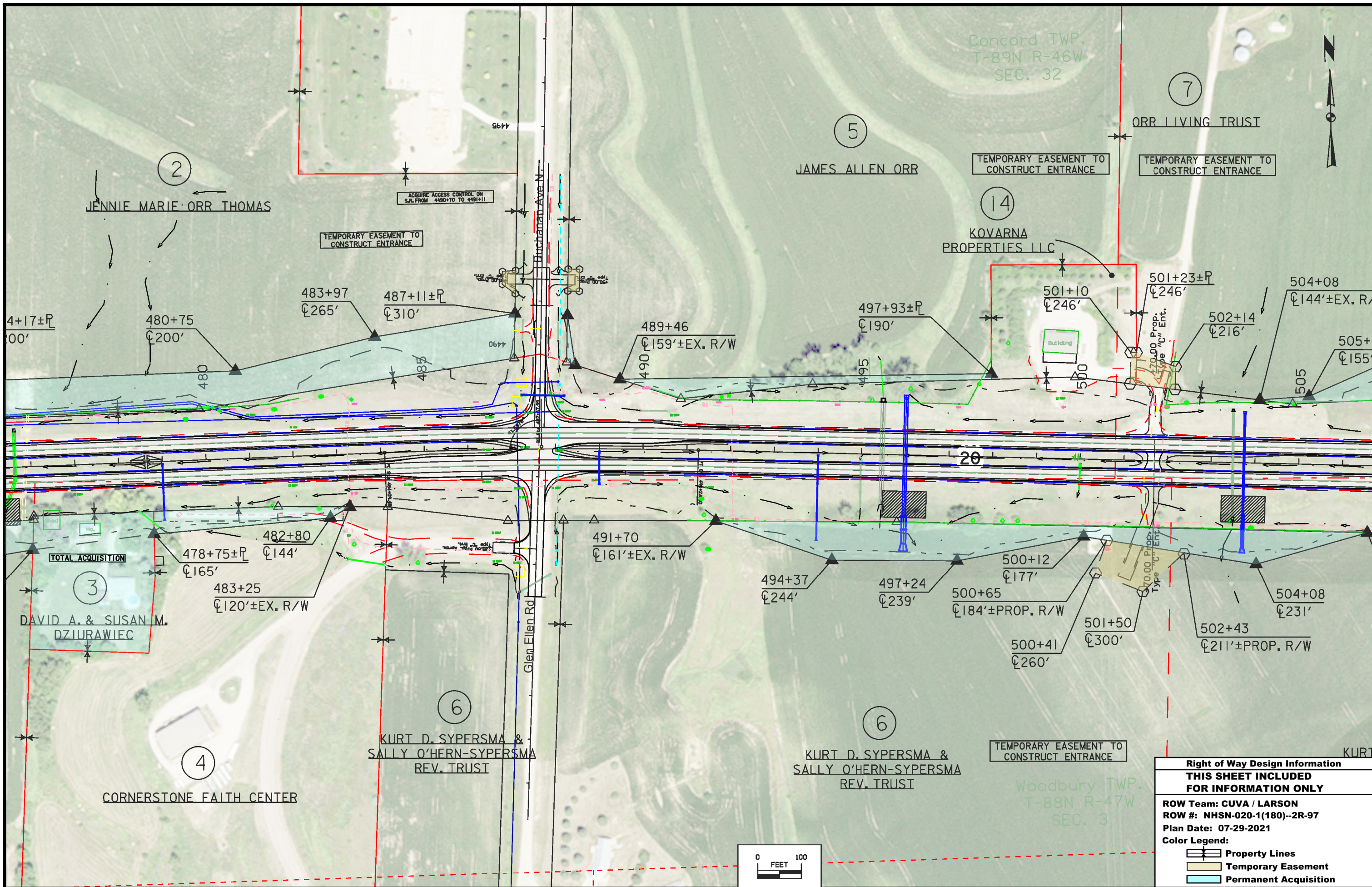
GOVT LOT 1

LONG LINES LTD

Woodbury TWP.
T-88N R-47W
SEC. 4



Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: CUVA / LARSON	
ROW #: NHSN-020-1(180)--2R-97	
Plan Date: 07-29-2021	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition

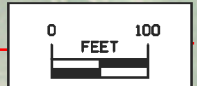


Concord TWP.
T-89N R-46W
SEC. 32

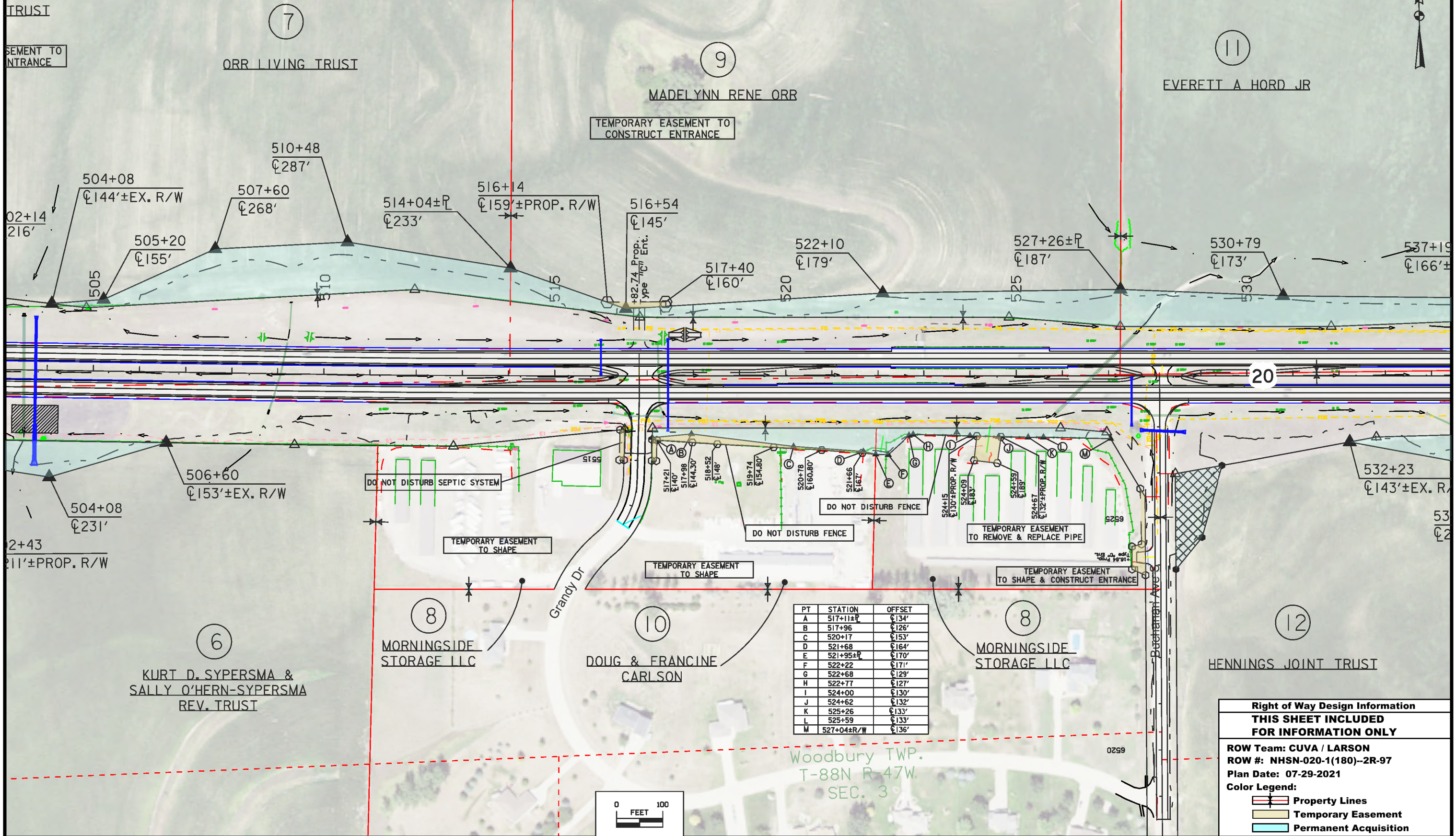
14
KOVARNA
PROPERTIES LLC

Woodbury TWP.
T-88N R-47W
SEC. 3

Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: CUVA / LARSON	
ROW #: NHSN-020-1(180)--2R-97	
Plan Date: 07-29-2021	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition



Concord TWP.
T-89N R-46W
SEC. 32



PT	STATION	OFFSET
A	517+11±P	±134'
B	517+96	±126'
C	520+17	±153'
D	521+68	±164'
E	521+95±P	±170'
F	522+22	±171'
G	522+68	±129'
H	522+77	±127'
I	524+00	±130'
J	524+62	±132'
K	525+26	±133'
L	525+59	±133'
M	527+04±R/W	±136'

Right of Way Design Information
THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: CUVA / LARSON
 ROW #: NHSN-020-1(180)--2R-97
 Plan Date: 07-29-2021

Color Legend:

- Property Lines
- Temporary Easement
- Permanent Acquisition

Concord TWP.
T-89N R-46W
SEC. 33

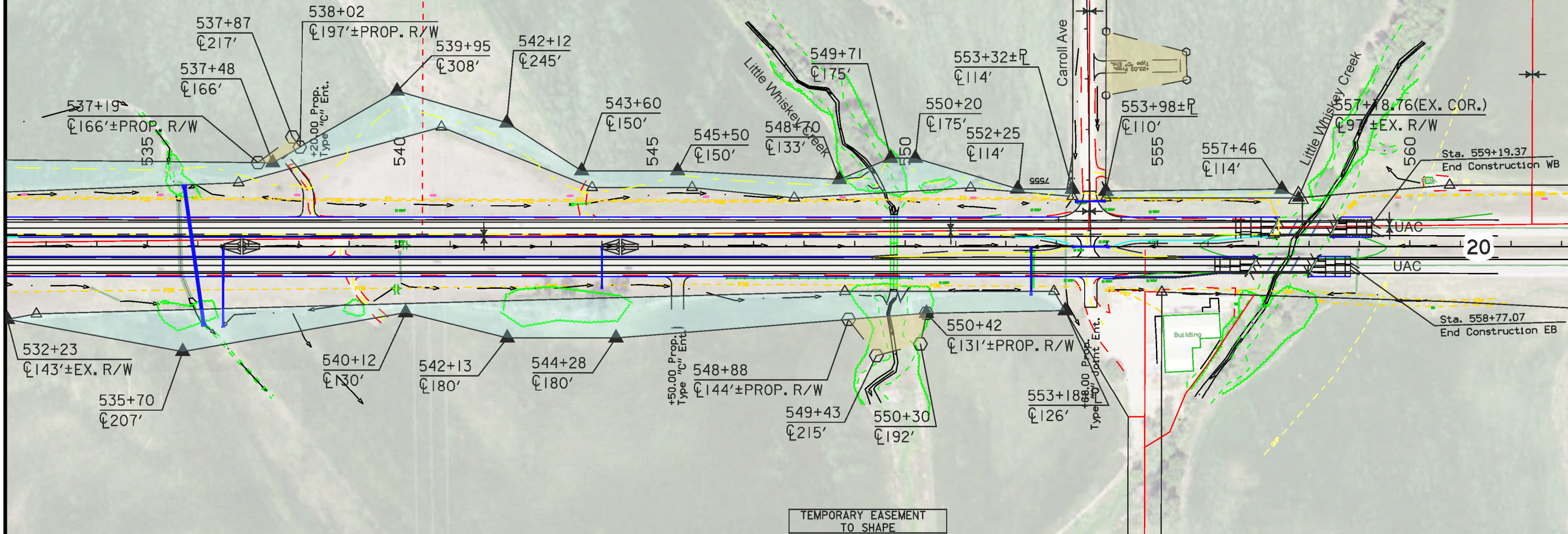
Concord TWP.
T-89N R-46W
SEC. 33

Concord TWP.
T-89N R-46W
SEC. 33

TEMPORARY EASEMENT TO
CONSTRUCT ENTRANCE

EVERETT A HORD JR

ELEWELLING
FARMS, L.C.



20

Sta. 559+19.37
End Construction WB

Sta. 558+77.07
End Construction EB

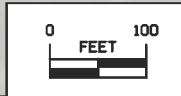
TEMPORARY EASEMENT
TO SHAPE

HENNINGS JOINT TRUST

Woodbury TWP.
T-88N R-47W
SEC. 2

Woodbury TWP.
T-88N R-47W
SEC. 2

Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: CUVA / LARSON	
ROW #: NHSN-020-1(180)--2R-97	
Plan Date: 07-29-2021	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition





6

KURT D. SYPERSMA &
SALLY O'HERN-SYPERMA
REV. TRUST

3480

3485

+35.50 Prop. Approx.
Type "C" Ent.

Glen Ellen Rd

PT Sta 487+67.99

Woodbury TWP.
T-88N R-47W
SEC. 3

6

KURT D. SYPERSMA &
SALLY O'HERN-SYPERMA
REV. TRUST

ACQUIRE ACCESS CONTROL ON
S.R. FROM 3484+14 TO 3486+00

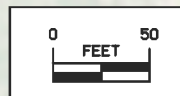
Right of Way Design Information

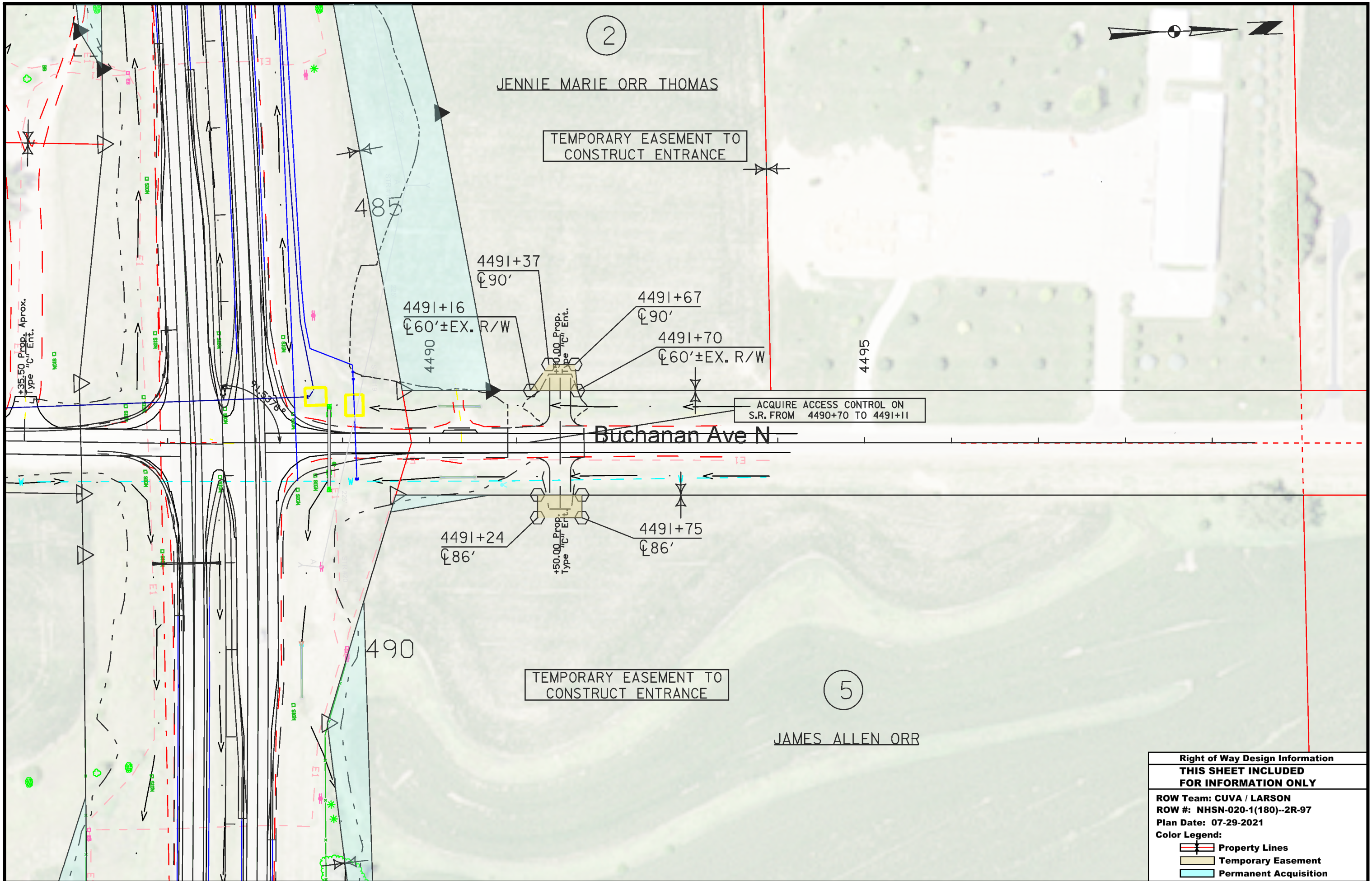
**THIS SHEET INCLUDED
FOR INFORMATION ONLY**

ROW Team: CUVA / LARSON
ROW #: NHSN-020-1(180)--2R-97
Plan Date: 07-29-2021

Color Legend:

-  Property Lines
-  Temporary Easement
-  Permanent Acquisition





2

JENNIE MARIE ORR THOMAS

TEMPORARY EASEMENT TO CONSTRUCT ENTRANCE

485

4491+37
±90'

4491+16
±60'±EX. R/W

4491+67
±90'

4491+70
±60'±EX. R/W

4495

ACQUIRE ACCESS CONTROL ON S.R. FROM 4490+70 TO 4491+11

Buchanan Ave N

4491+24
±86'

4491+75
±86'

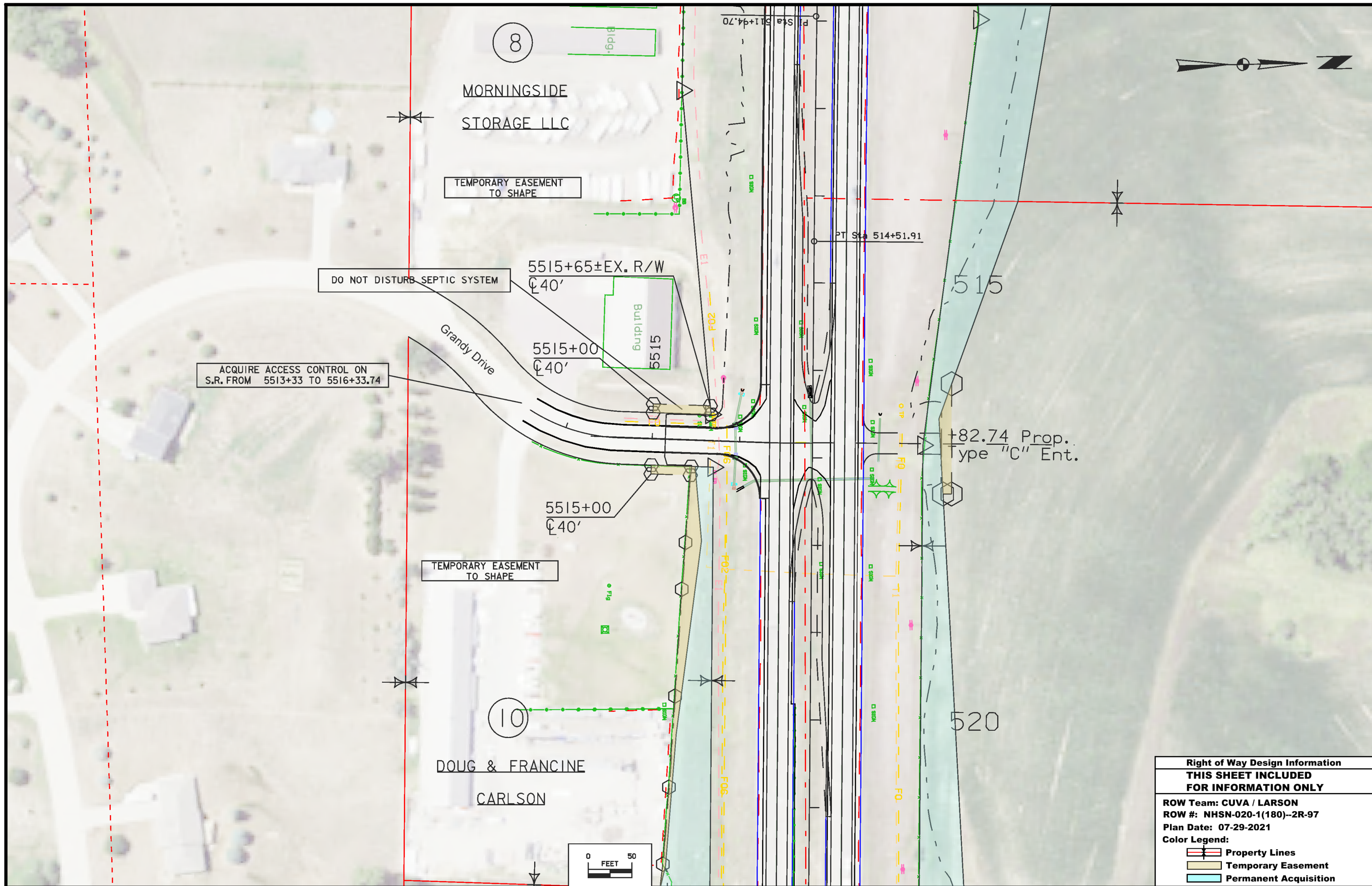
490

TEMPORARY EASEMENT TO CONSTRUCT ENTRANCE

5

JAMES ALLEN ORR

Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: CUVA / LARSON	
ROW #: NHSN-020-1(180)--2R-97	
Plan Date: 07-29-2021	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition



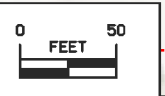
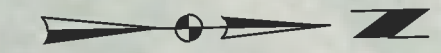
ACQUIRE ACCESS CONTROL ON S.R. FROM 5513+33 TO 5516+33.74



DO NOT DISTURB SEPTIC SYSTEM

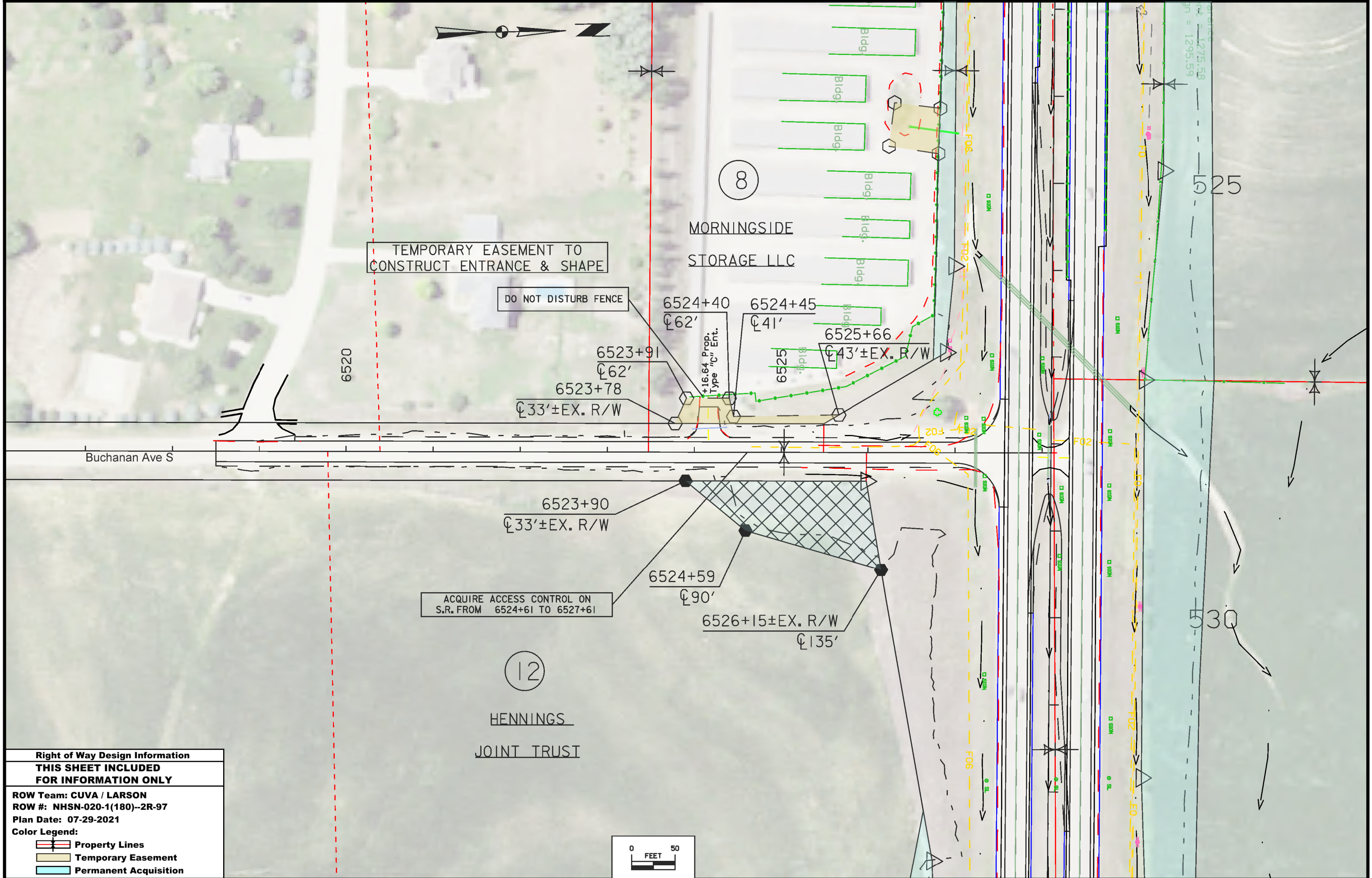
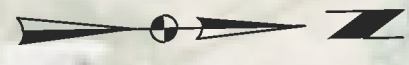
TEMPORARY EASEMENT TO SHAPE

TEMPORARY EASEMENT TO SHAPE

+82.74 Prop. type "C" Ent.



Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: CUVA / LARSON	
ROW #: NHSN-020-1(180)--2R-97	
Plan Date: 07-29-2021	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition



TEMPORARY EASEMENT TO CONSTRUCT ENTRANCE & SHAPE

DO NOT DISTURB FENCE

ACQUIRE ACCESS CONTROL ON S.R. FROM 6524+61 TO 6527+61

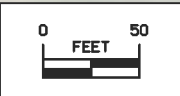
MORNINGSIDE STORAGE LLC

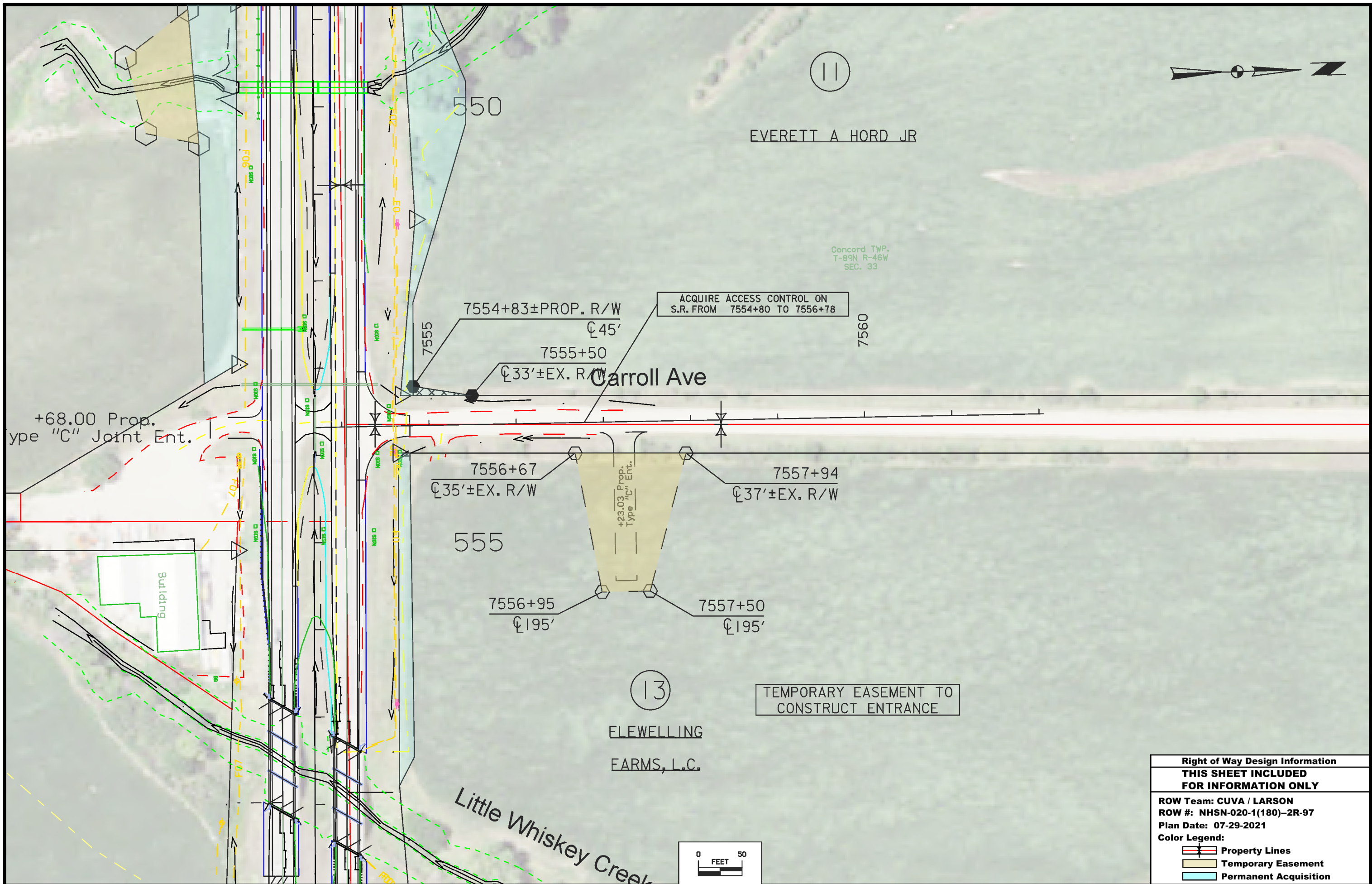
HENNINGS JOINT TRUST




Right of Way Design Information
THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: CUVA / LARSON
ROW #: NHSN-020-1(180)--2R-97
Plan Date: 07-29-2021

Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition





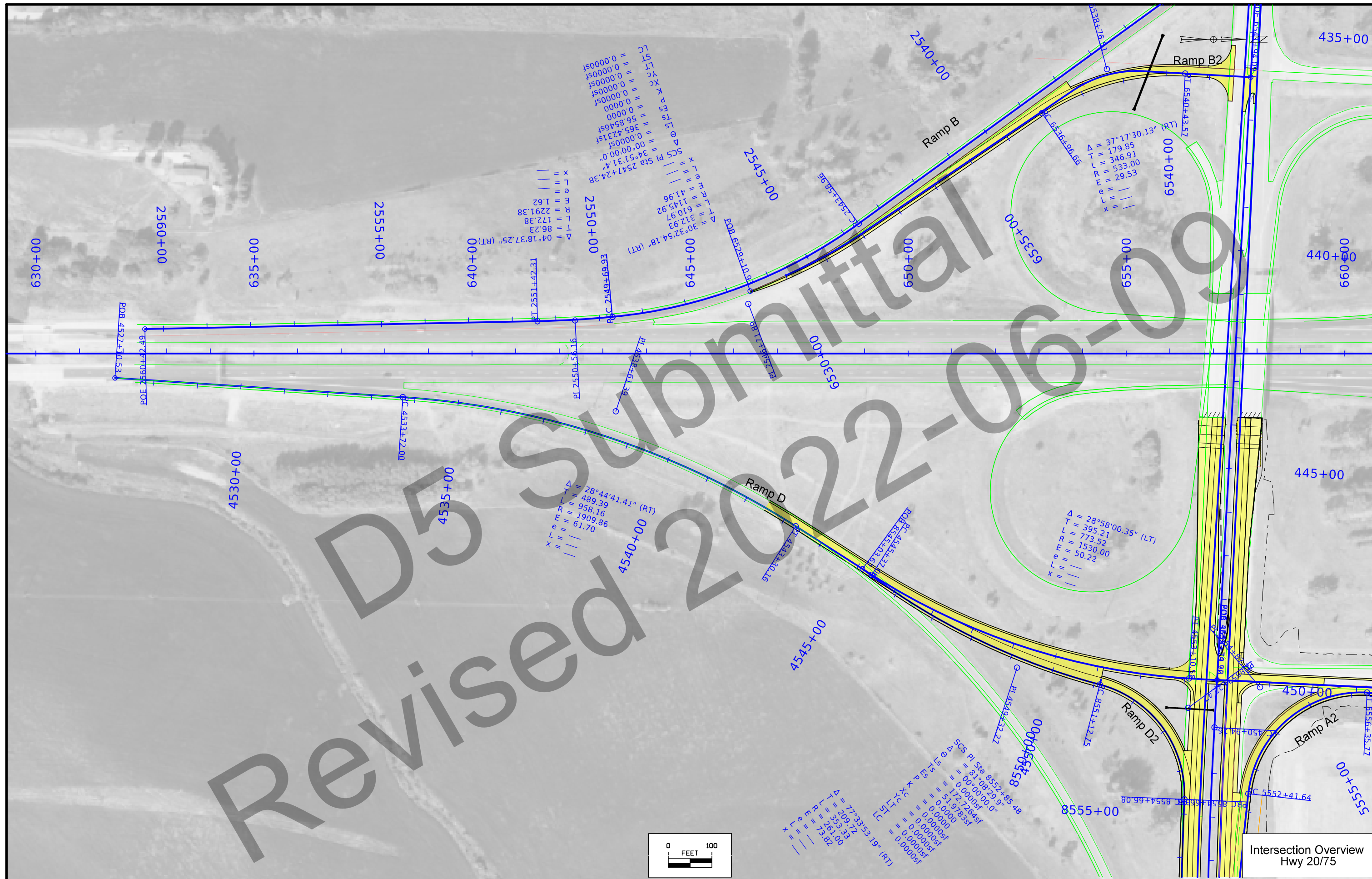
Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: CUVA / LARSON	
ROW #: NHSN-020-1(180)--2R-97	
Plan Date: 07-29-2021	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition

108-23A 08-01-08
TRAFFIC CONTROL PLAN
Traffic on US 20 shall be maintained at all times.

108-26A 08-01-08
STAGING NOTES
<p>Stage 1: <i>Traffic:</i> US 20 on existing WB lanes</p> <p><i>Construction:</i> Grade and pave new US 20 EB lanes Grade and pave US 20/US 75 Ramp B and Ramp D</p> <p>Stage 2: <i>Traffic:</i> US 20 on new EB lanes</p> <p><i>Construction:</i> Grade and pave new US 20 WB lanes Grade and pave US 20/US 75 Ramp A</p> <p><i>Removal:</i> Remove Loop E and Loop G</p> <p>Stage 3: <i>Traffic:</i> Open traffic on US 20 to final traffic patterns</p> <p><i>Construction:</i> Construction Complete</p>

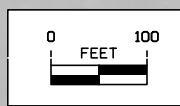
111-01 04-17-12												
COORDINATED OPERATIONS												
Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.												
<table border="1"> <thead> <tr> <th>Project</th> <th>Type of Work</th> </tr> </thead> <tbody> <tr> <td>None provided.</td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>	Project	Type of Work	None provided.									
Project	Type of Work											
None provided.												

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
			None Provided.									

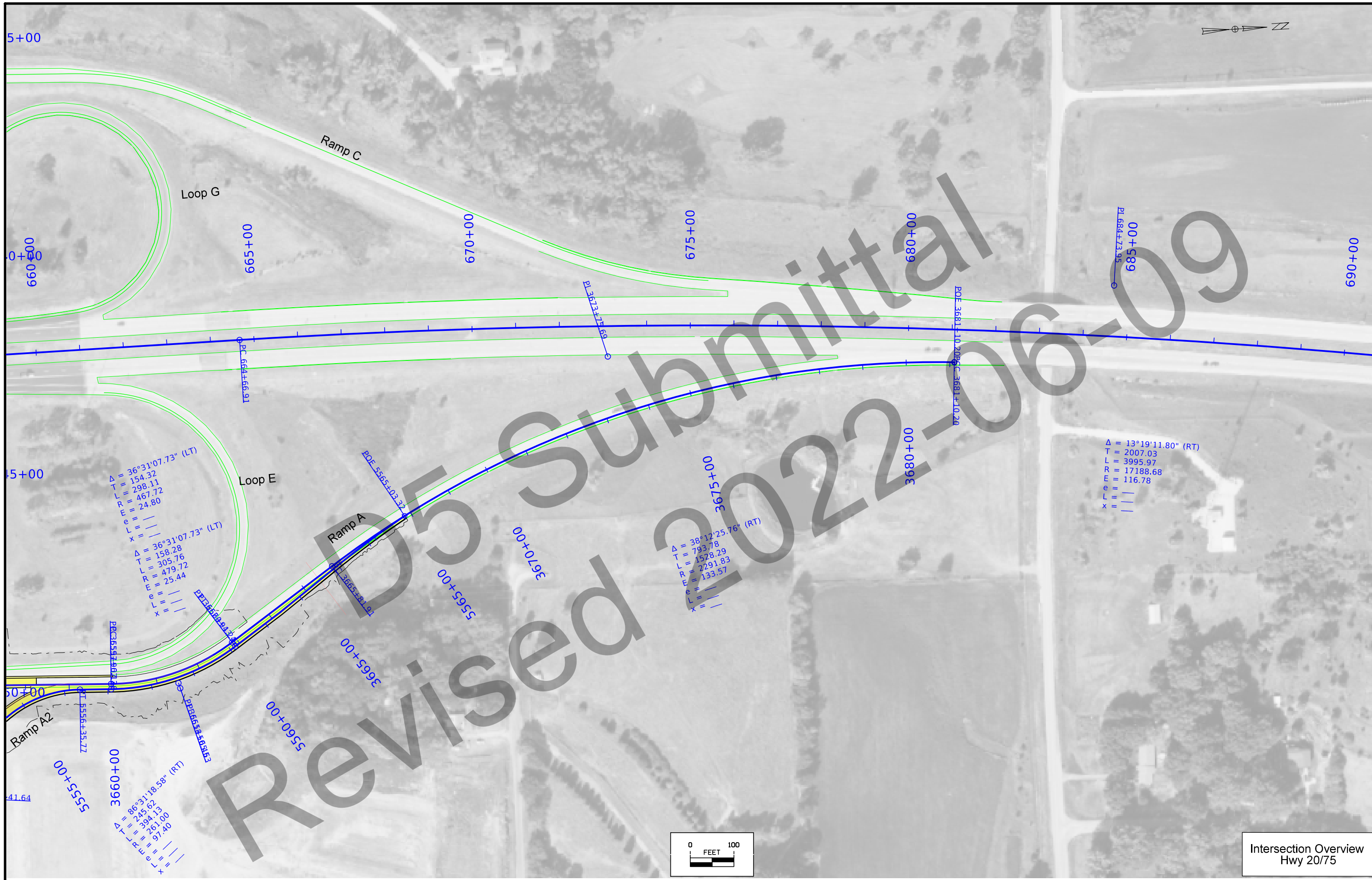


Revised 2022-06-09

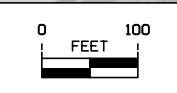
Submitted



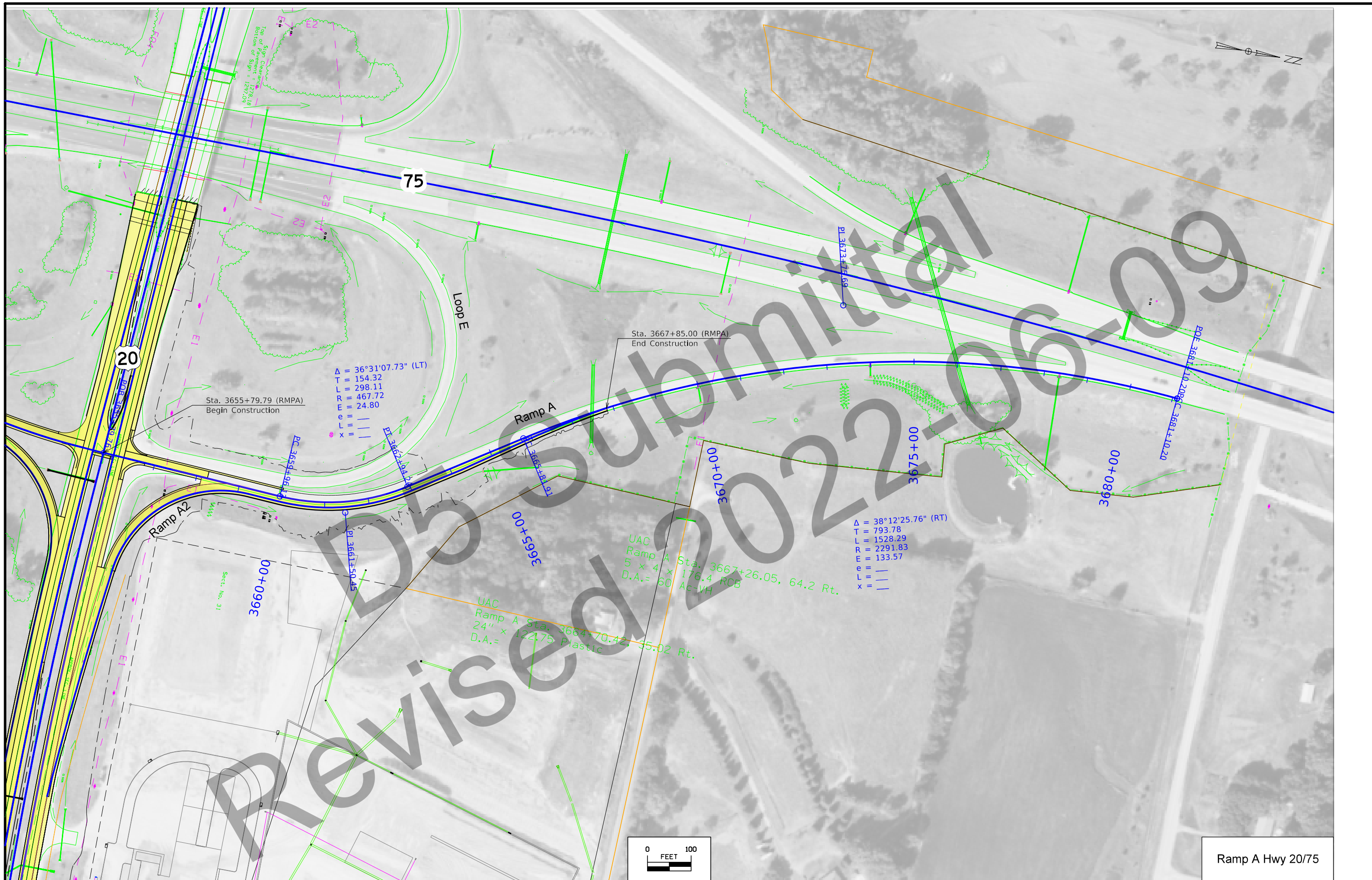
Intersection Overview
Hwy 20/75

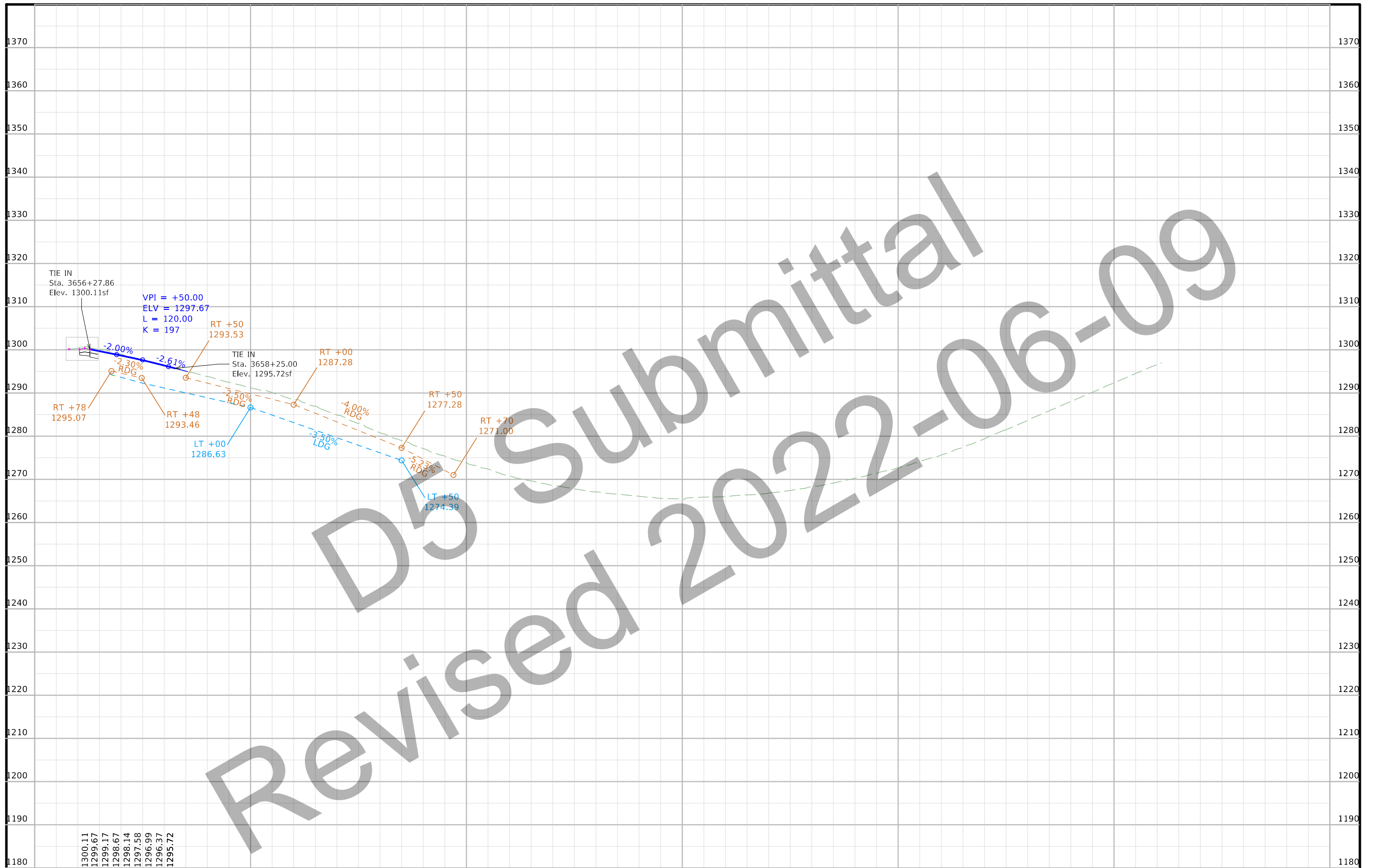


Revised 2022-06-09

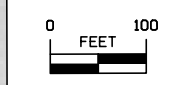
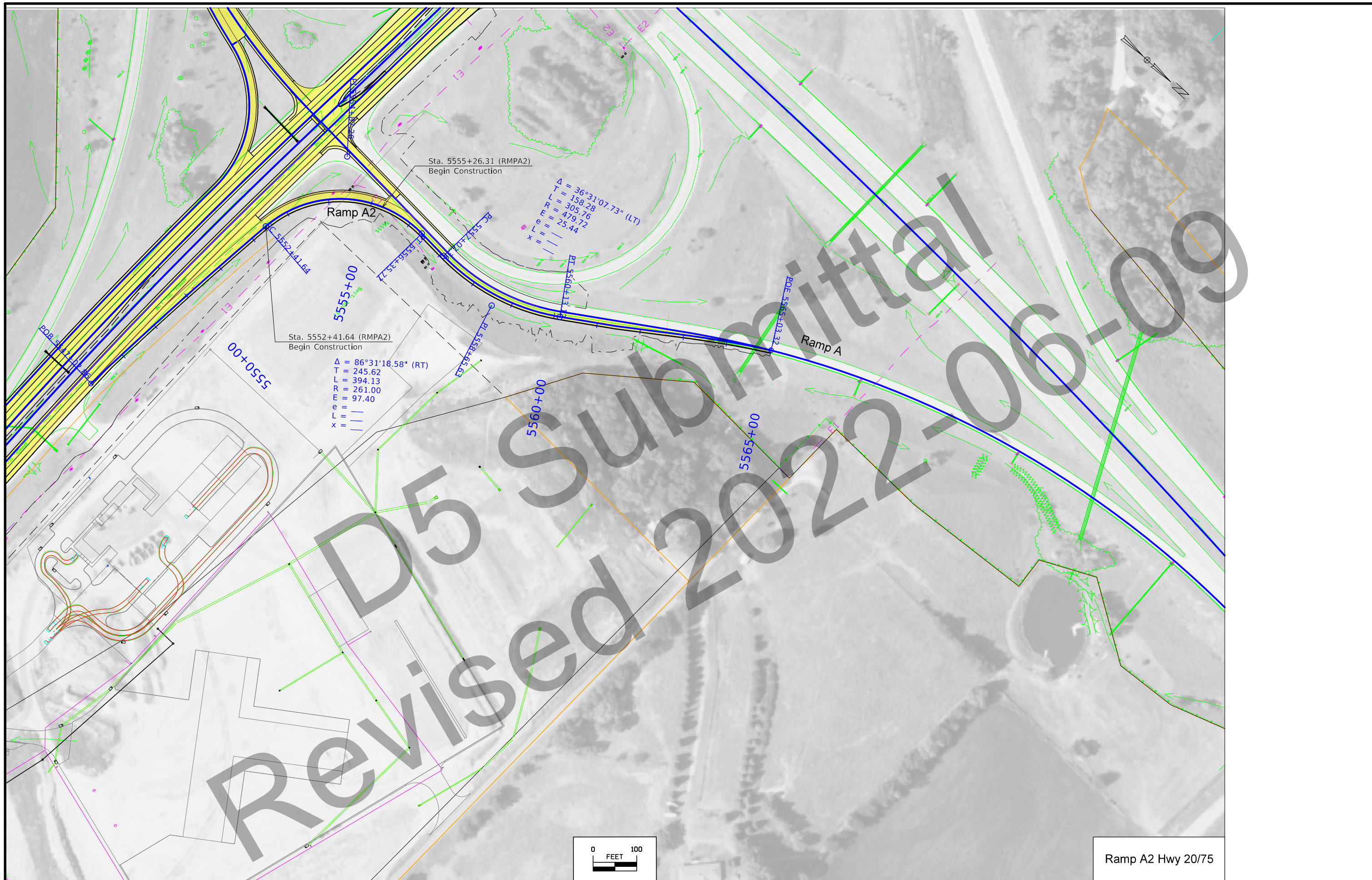


Intersection Overview
Hwy 20/75

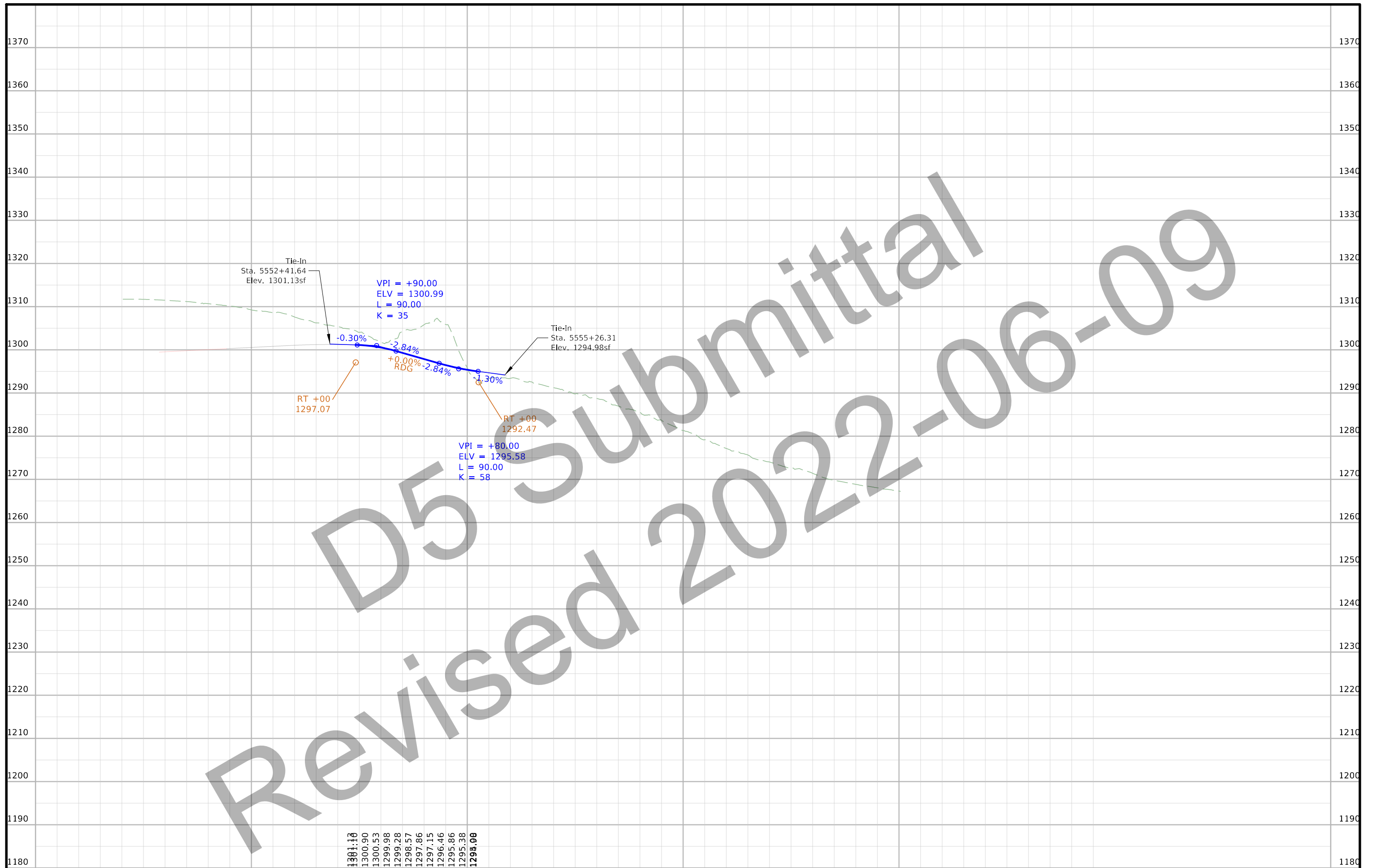




FILE NO. 32165	ENGLISH	DESIGN TEAM Flattery\Bell\Hain	WOODBURY COUNTY	PROJECT NUMBER NHSX-020-1(179)--3H-97	SHEET NUMBER K.4
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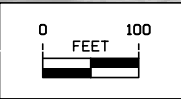


Ramp A2 Hwy 20/75



Revised D5 Submittal 2022-06-09

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 1300.53
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 1299.28
 1298.57
 1297.86
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 1296.46
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 1295.38
 1294.98

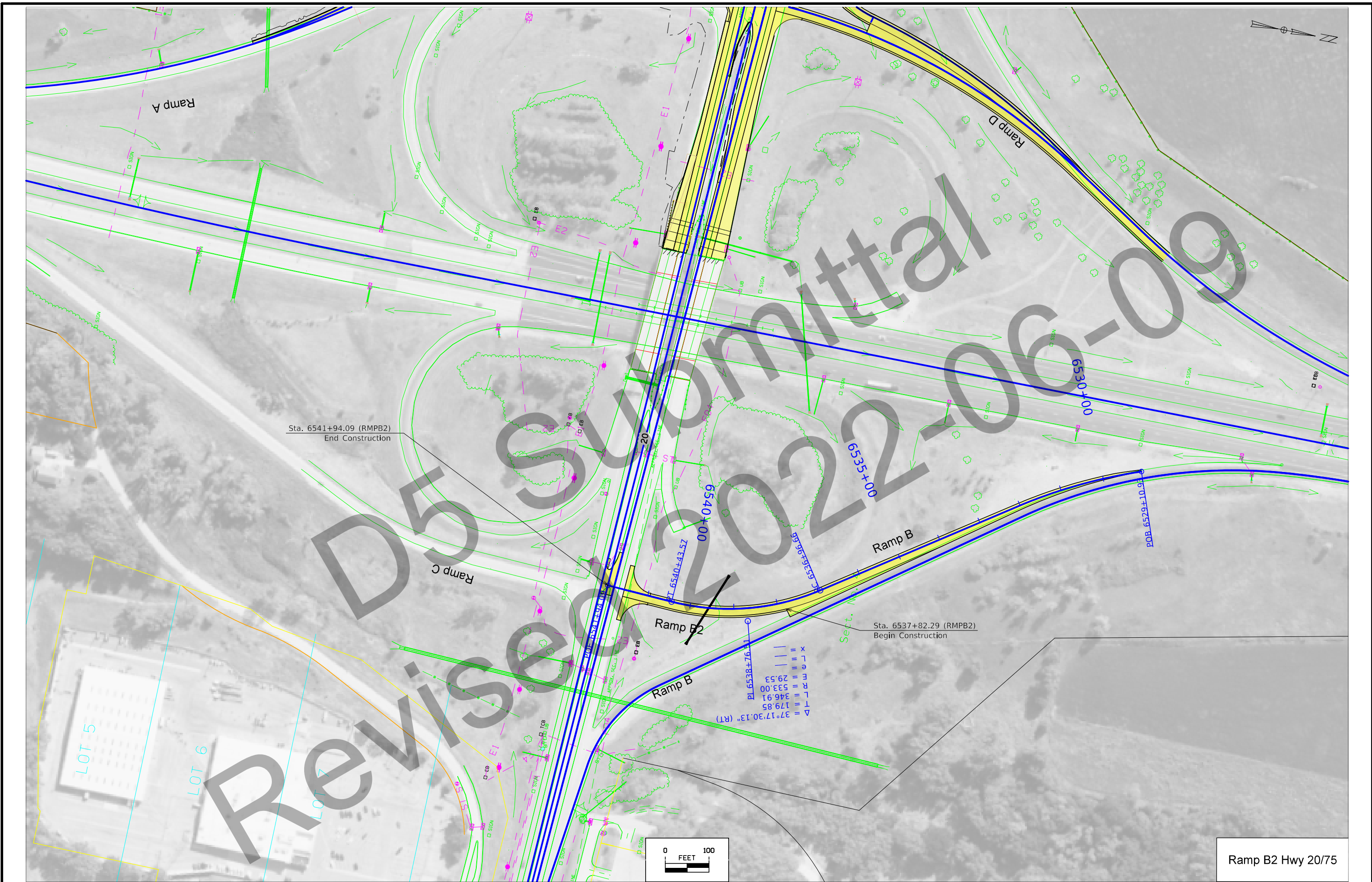


Ramp B Hwy 20/75



Revised D5 Submittal 2022-06-09

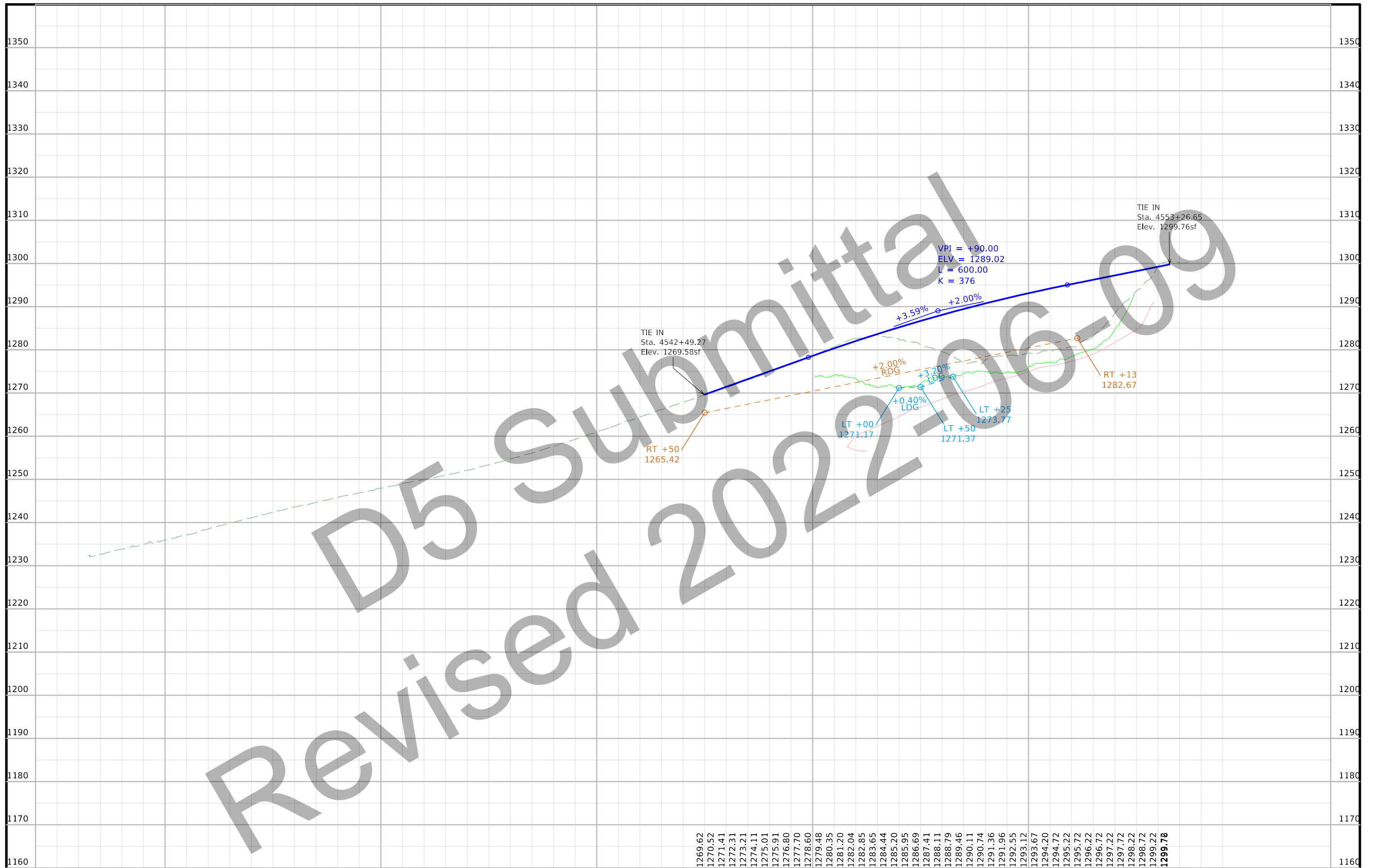
FILE NO. 32165	ENGLISH	DESIGN TEAM Flattery\Bell\Hain	WOODBURY COUNTY	PROJECT NUMBER NHSX-020-1(179)--3H-97	SHEET NUMBER K.8
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Ramp B2 Hwy 20/75



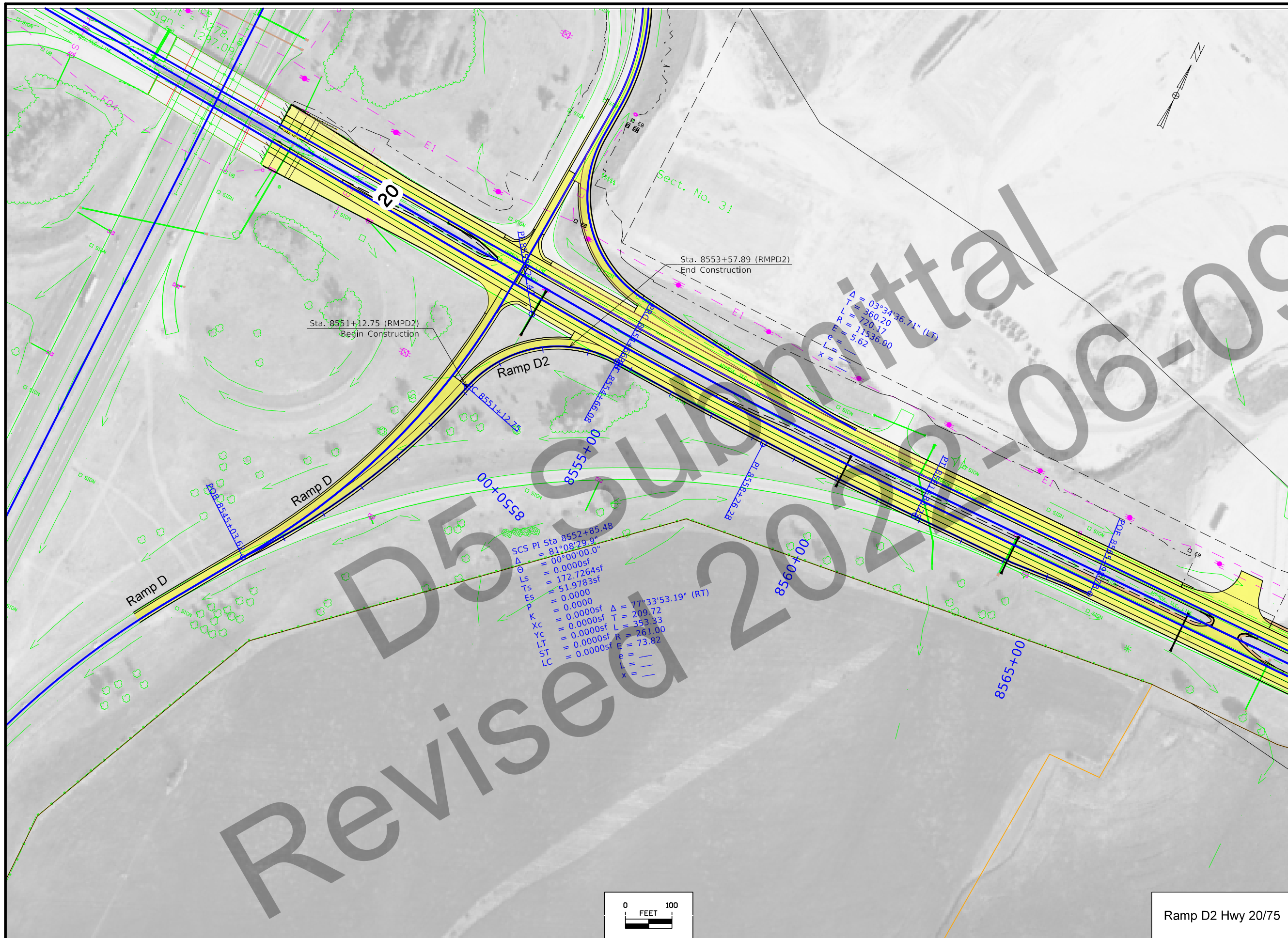
Revised 2022-06-09
D5 Submission



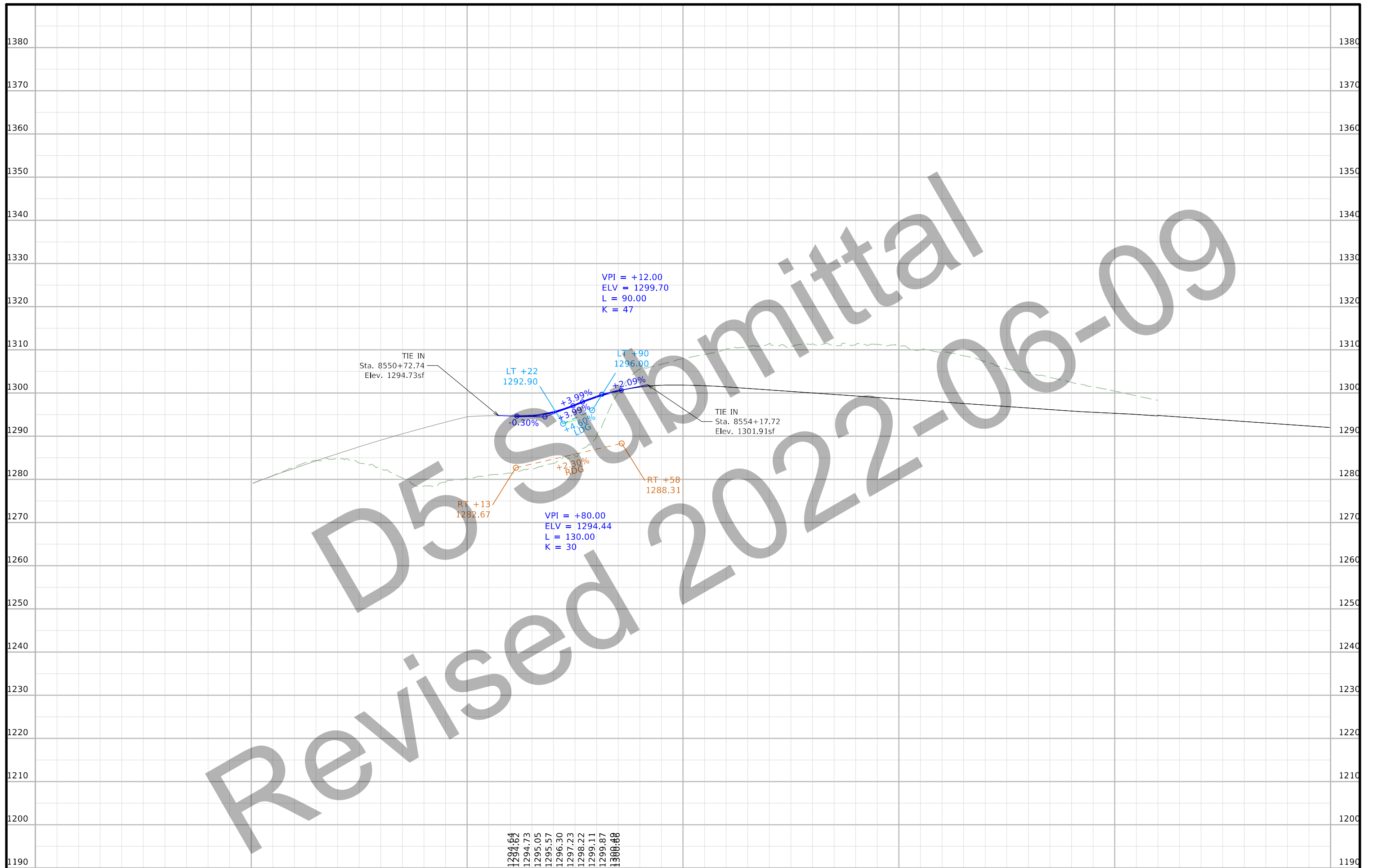
Revised D5 Submittal 2022-06-09

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 1271.41
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 1275.91
 1276.80
 1277.70
 1278.60
 1279.48
 1280.35
 1281.20
 1282.04
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1299.78

FILE NO. 32165	ENGLISH	DESIGN TEAM Flattery\Bell\Hain	WOODBURY COUNTY	PROJECT NUMBER NHSX-020-1(179)--3H-97	SHEET NUMBER K.12
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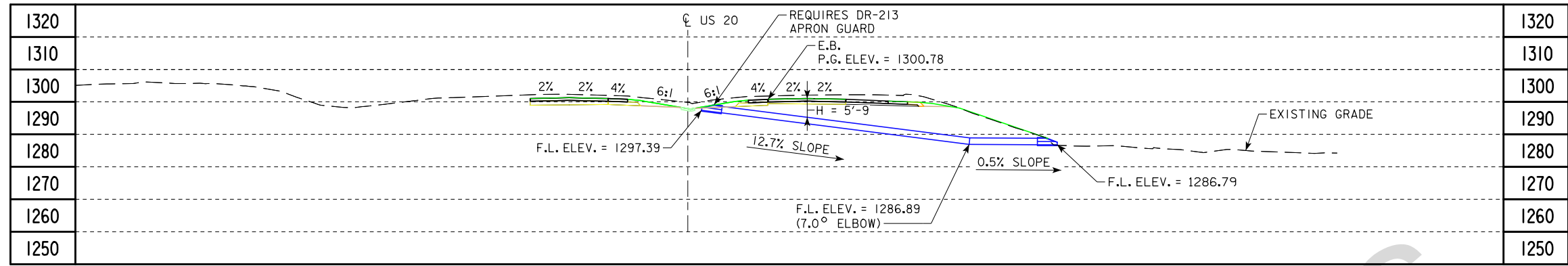


Ramp D2 Hwy 20/75



Revised 2022-06-09

D5 Submittal



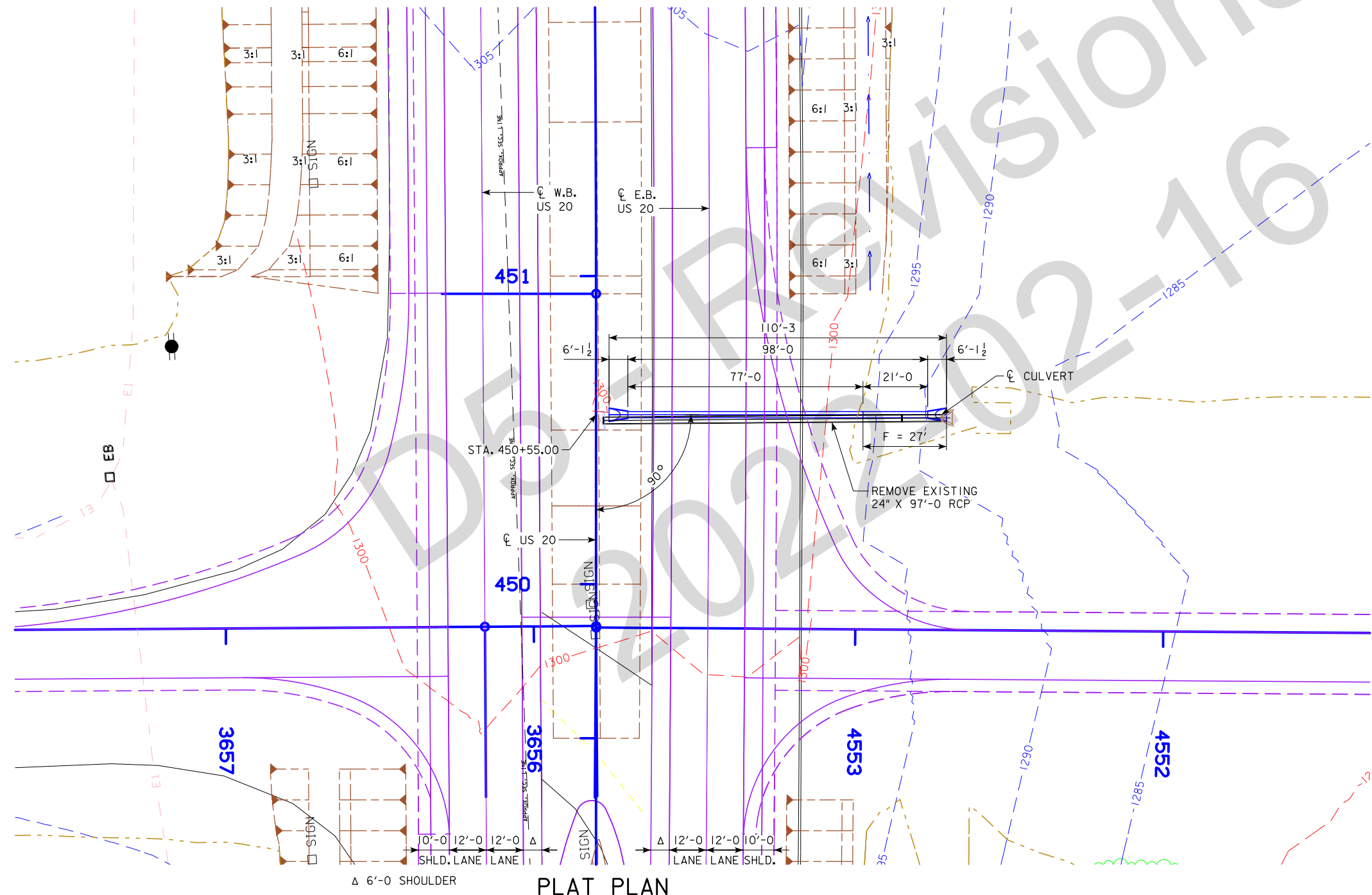
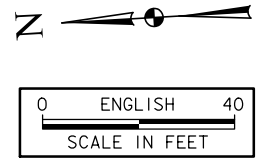
LONGITUDINAL SECTION ALONG ϕ CULVERT

BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT. ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

NOTES:
 PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.

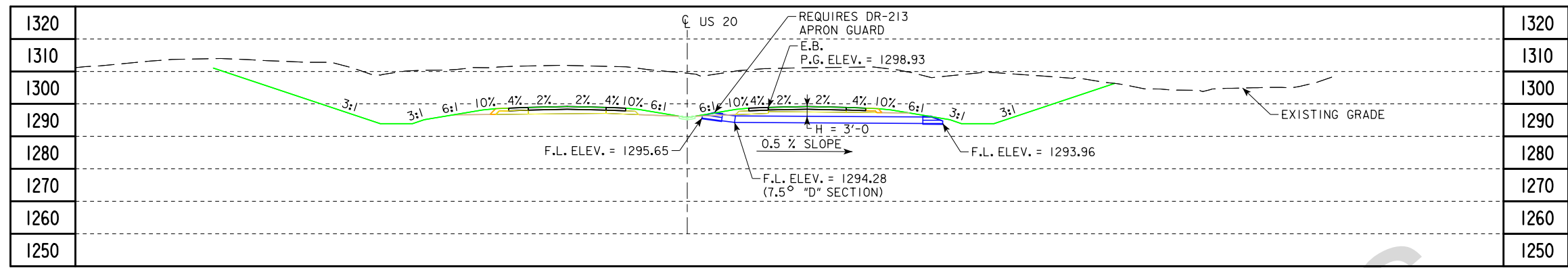
HYDRAULIC DATA
 MEDIAN DRAINAGE

LOCATION
 US 20
 T-88N R-47W, T-88N R-46W
 SECTION 4, 31
 CONCORD TWP.
 WOODBURY TWP.
 WOODBURY COUNTY



PLAT PLAN

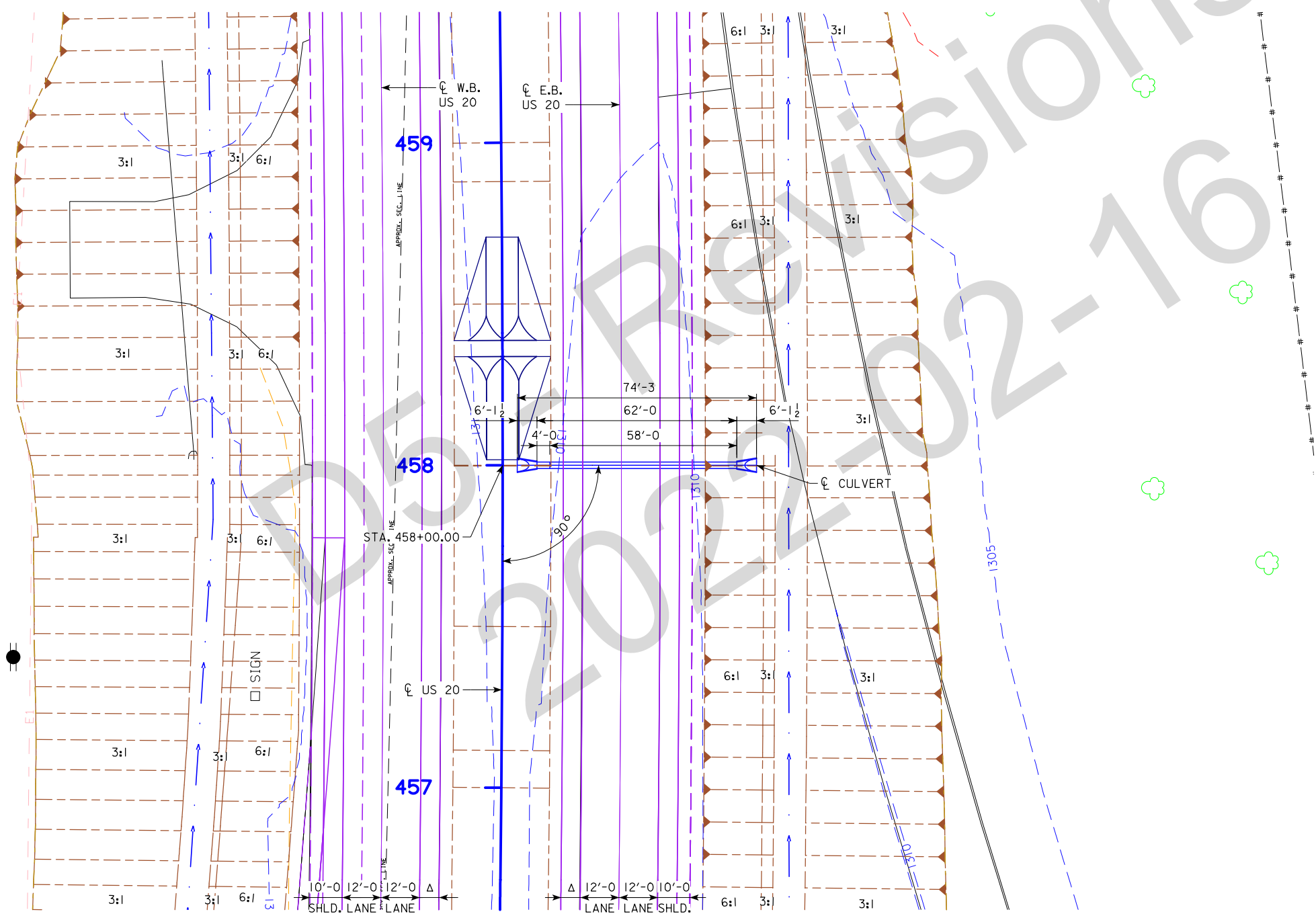
PRELIMINARY
 DESIGN FOR 0° SKEW
24" X 98'
REINFORCED CONCRETE PIPE
 PLAT PLAN
 STA. 450+55.00 (ϕ US 20) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 1 FILE NO. DESIGN NO.



BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT. ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

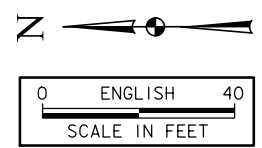
LONGITUDINAL SECTION ALONG ϕ CULVERT

NOTES:
 PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.



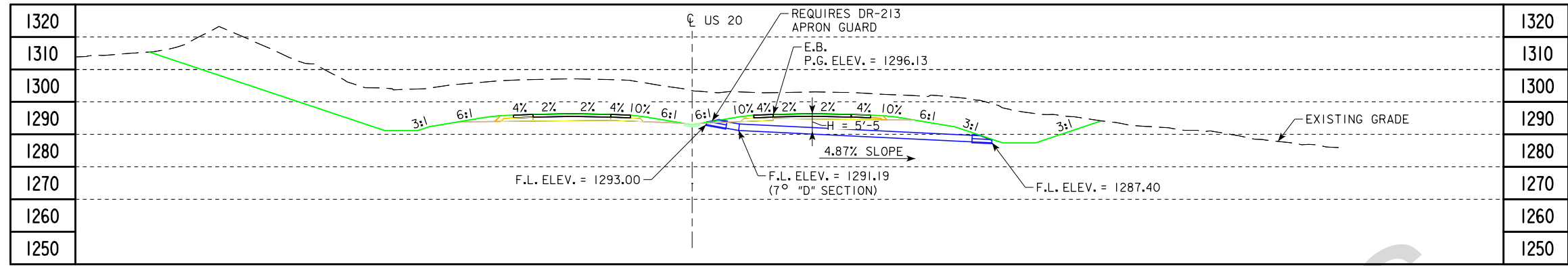
HYDRAULIC DATA
 MEDIAN DRAINAGE

LOCATION
 US 20
 T-88N R-47W
 SECTION 4
 WOODBURY TWP.
 WOODBURY COUNTY



PRELIMINARY
 DESIGN FOR 0° SKEW
24" X 62'
REINFORCED CONCRETE PIPE
 PLAT PLAN
 STA. 458+00.00 (ϕ US 20) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 1 FILE NO. _____ DESIGN NO. _____

PLAT PLAN

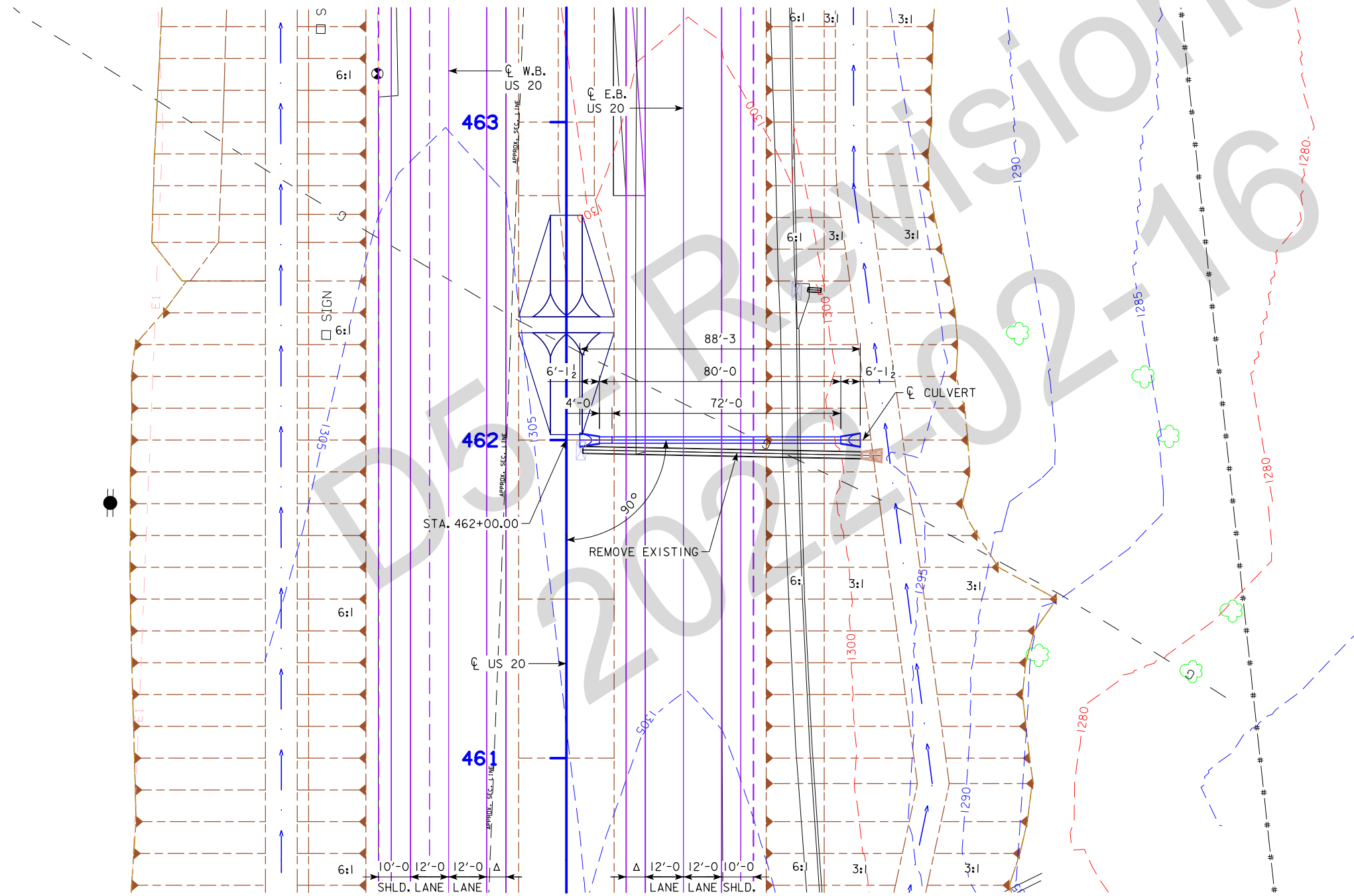


LONGITUDINAL SECTION ALONG \bar{C} CULVERT

BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT. ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

NOTES:

PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.



PLAT PLAN

HYDRAULIC DATA

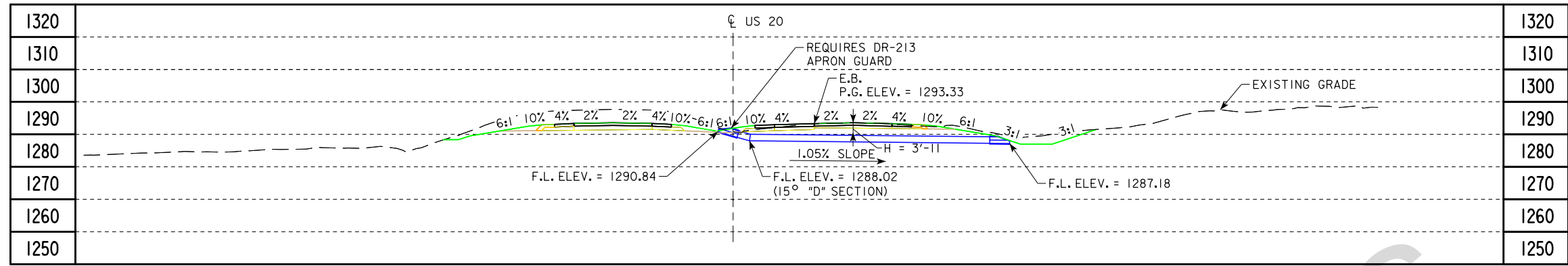
MEDIAN DRAINAGE

LOCATION

US 20
 T-88N R-47W
 SECTION 4
 WOODBURY TWP.
 WOODBURY COUNTY



PRELIMINARY
 DESIGN FOR 0° SKEW
24" X 76'
REINFORCED CONCRETE PIPE
 PLAT PLAN
 STA. 462+00.00 (\bar{C} US 20) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 1 FILE NO. DESIGN NO.



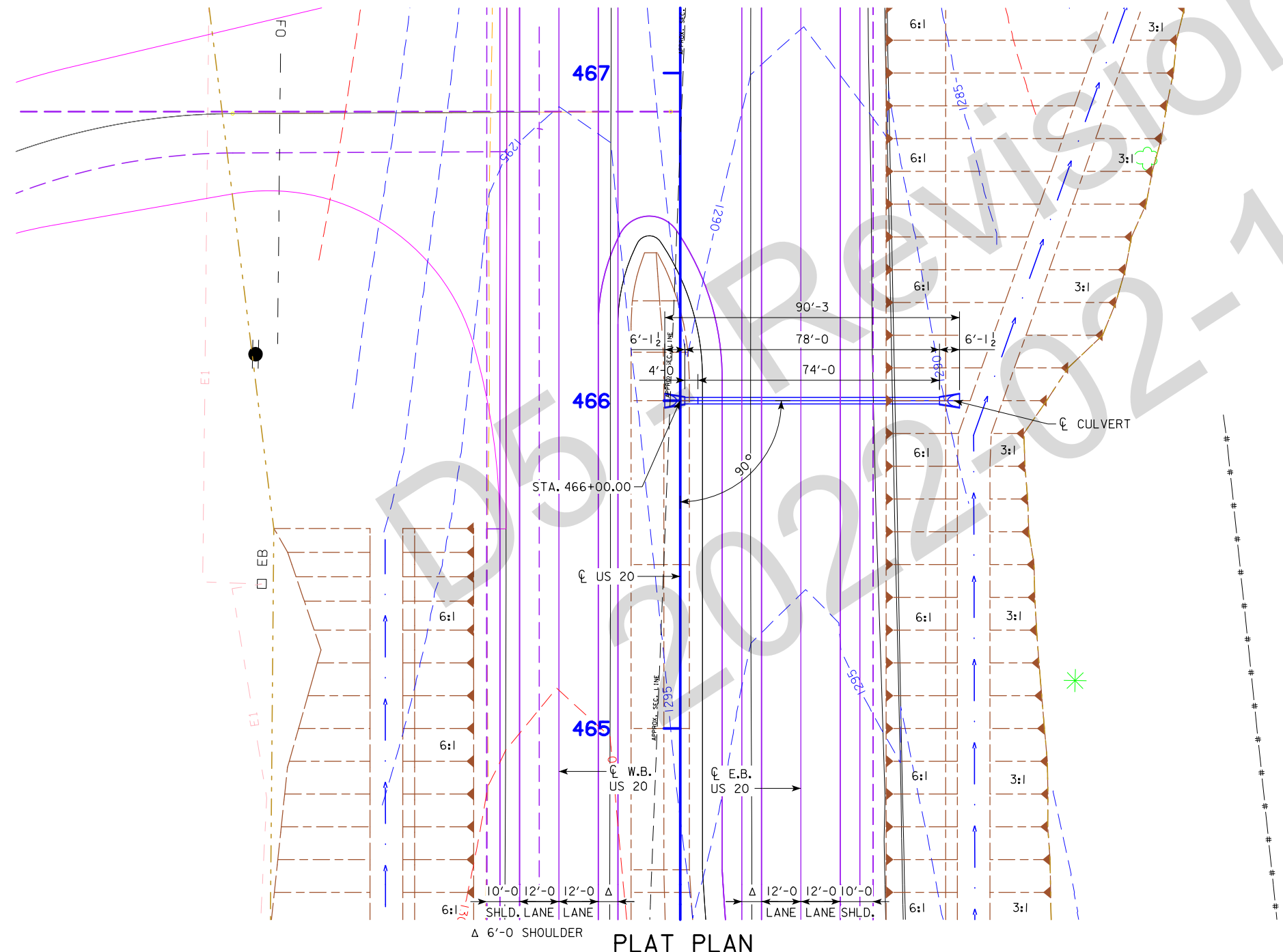
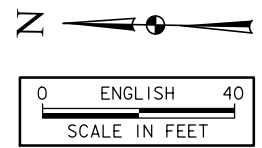
LONGITUDINAL SECTION ALONG ϕ CULVERT

BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT. ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

NOTES:
 PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.

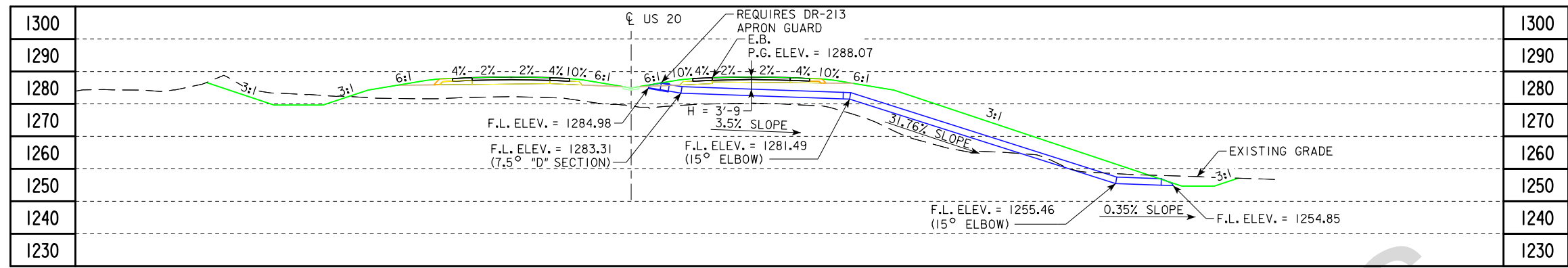
HYDRAULIC DATA
 MEDIAN DRAINAGE

LOCATION
 US 20
 T-88N R-47W
 SECTION 4
 WOODBURY TWP.
 WOODBURY COUNTY



PLAT PLAN

PRELIMINARY
 DESIGN FOR 0° SKEW
24" X 78'
REINFORCED CONCRETE PIPE
 PLAT PLAN
 STA. 466+00.00 (ϕ US 20) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 1 FILE NO. DESIGN NO.



LONGITUDINAL SECTION ALONG CL CULVERT

NOTES:

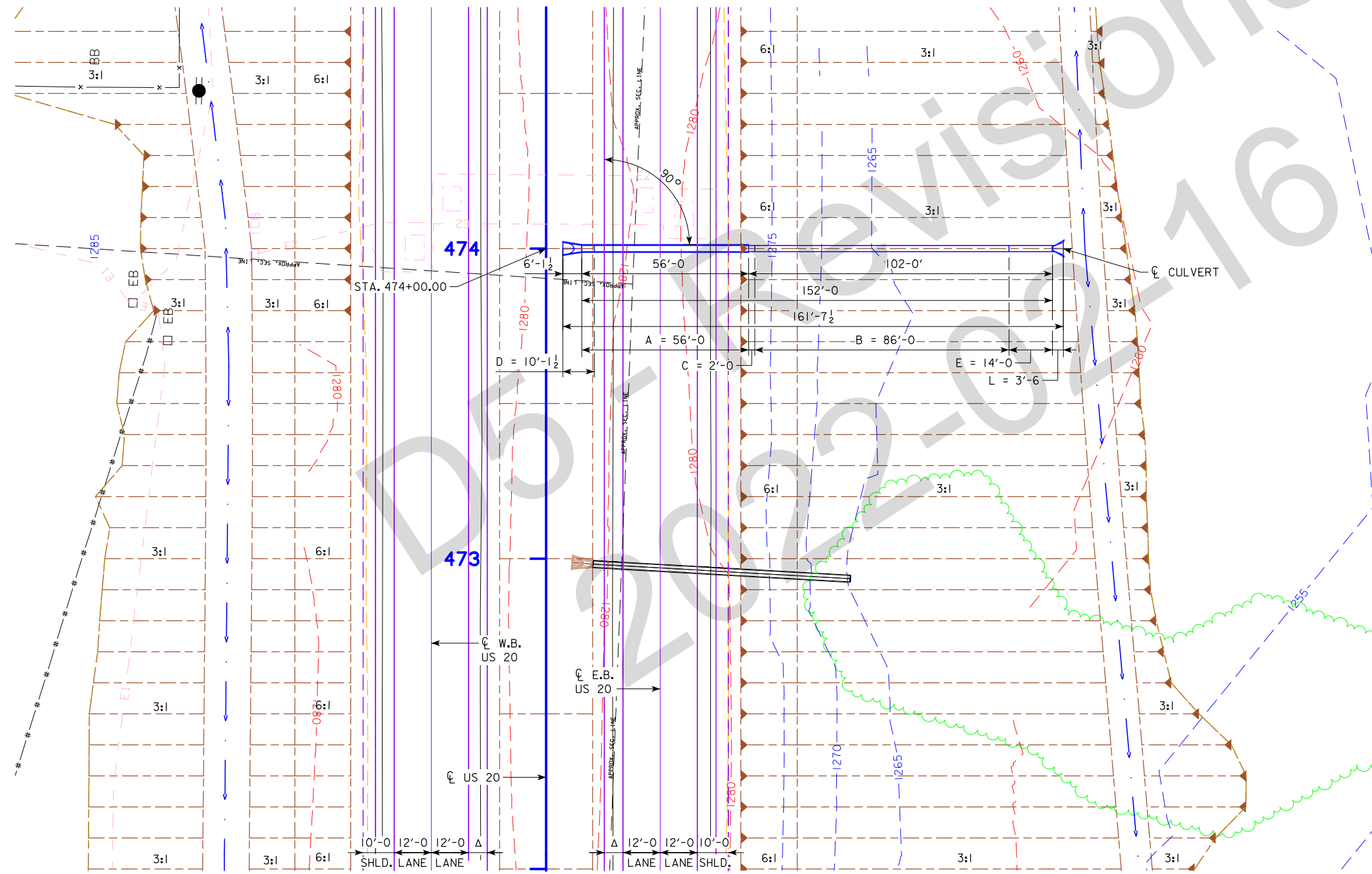
PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.

HYDRAULIC DATA

MEDIAN DRAINAGE

LOCATION

US 20
T-88N R-47W, T-88N R-46W
SECTION 4, 31
WOODBURY TWP.
WOODBURY COUNTY



PLAT PLAN

PRELIMINARY

DESIGN FOR 0° SKEW

24" X 158' REINFORCED CONC. & CORRUGATED METAL PIPE

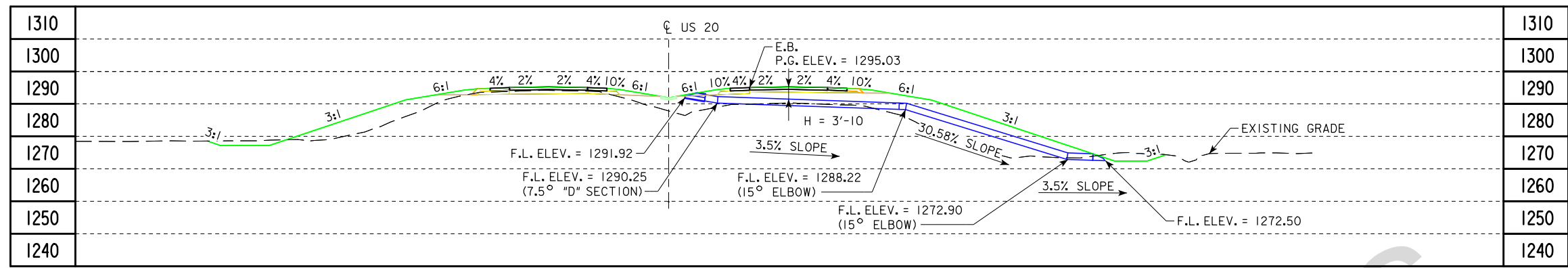
PLAT PLAN

STA. 474+00.00 (CL US 20) NOVEMBER, 2022

WOODBURY COUNTY

IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION

DESIGN SHEET NO. 1 OF 1 FILE NO. _____ DESIGN NO. _____

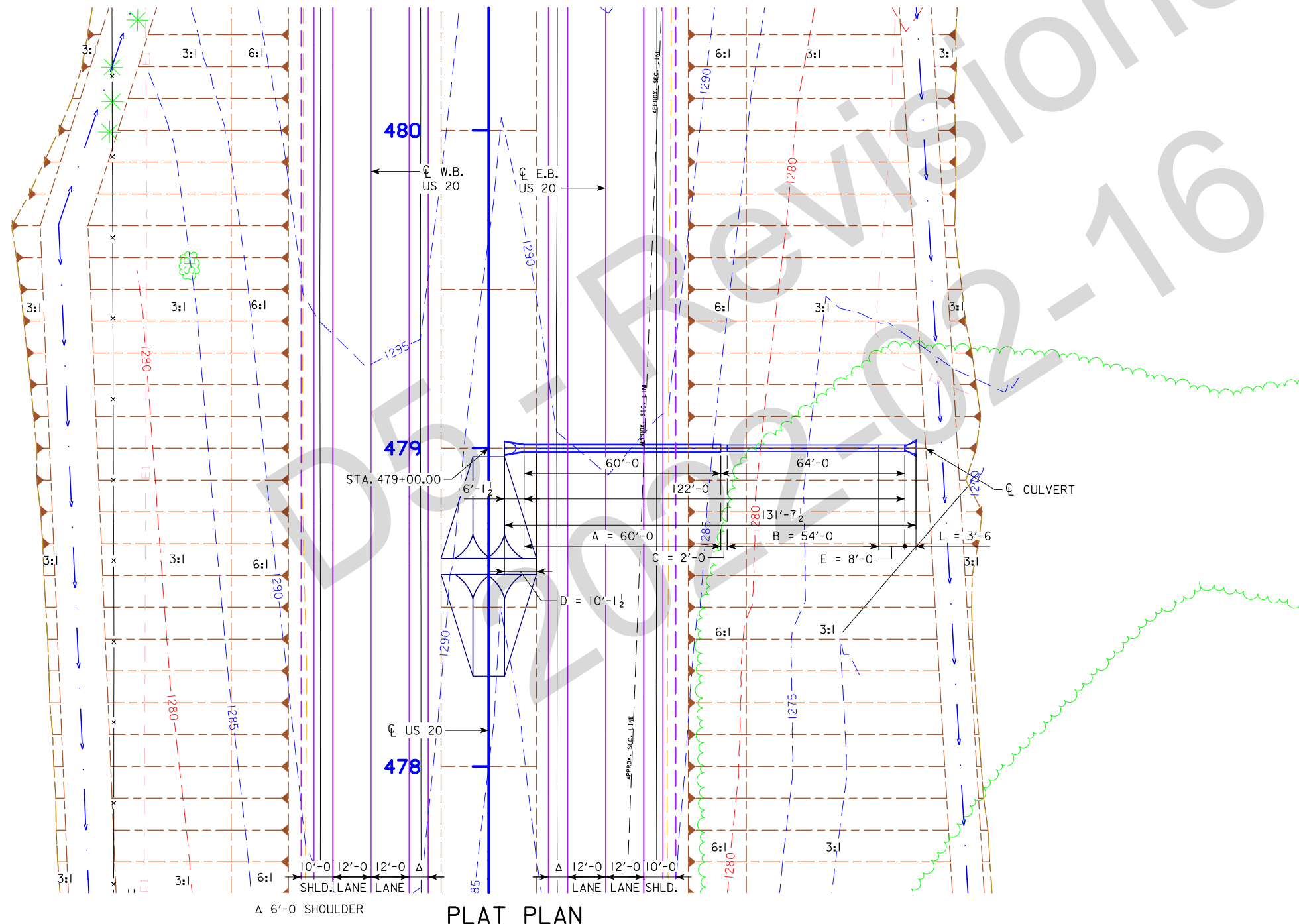


LONGITUDINAL SECTION ALONG ϕ CULVERT

BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT. ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

NOTES:

PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.

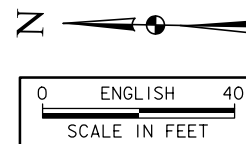


PLAT PLAN

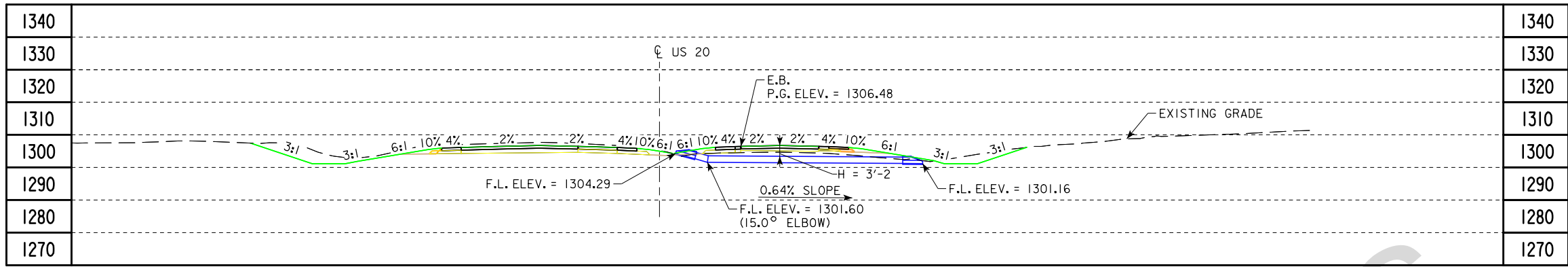
HYDRAULIC DATA
 MEDIAN DRAINAGE

LOCATION

US 20
 T-88N R-47W T-89N T-46W
 SECTION 4, 31
 WOODBURY TWP.
 WOODBURY COUNTY



PRELIMINARY
 DESIGN FOR 0° SKEW
24" X 124' REINFORCED CONC. & CORRUGATED METAL PIPE
 PLAT PLAN
 STA. 479+00.00 (ϕ US 20) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 1 FILE NO. DESIGN NO.



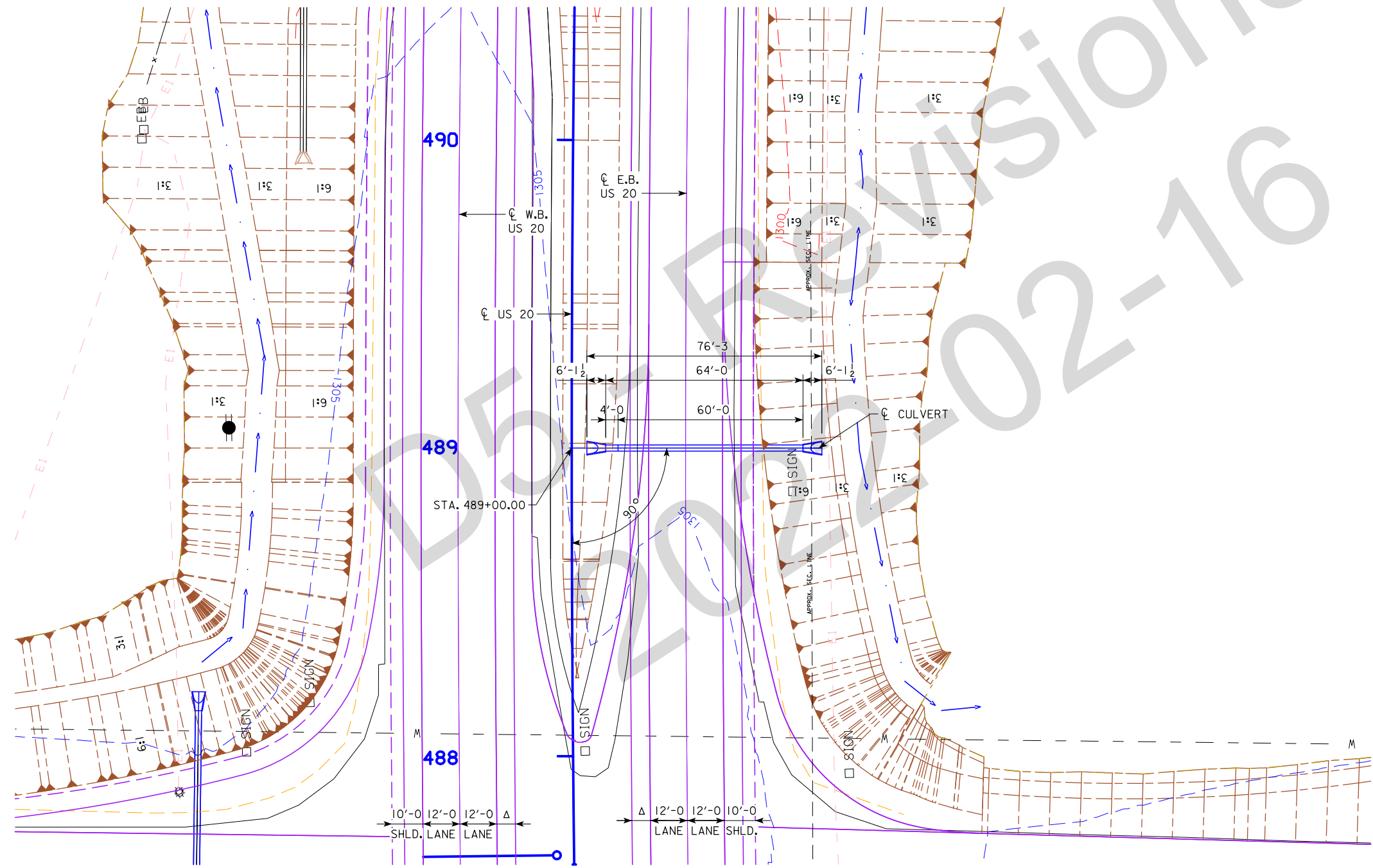
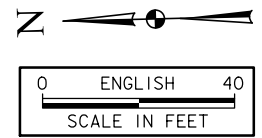
LONGITUDINAL SECTION ALONG ϕ CULVERT

BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT. ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

NOTES:
 PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.

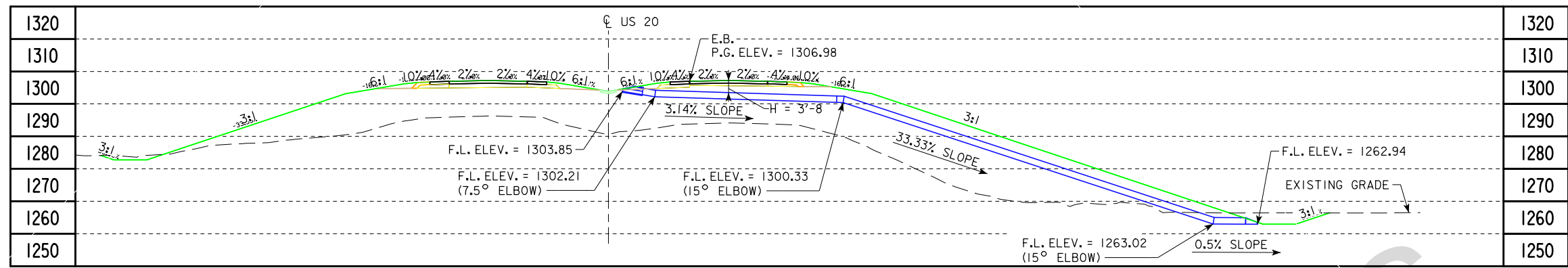
HYDRAULIC DATA
 MEDIAN DRAINAGE

LOCATION
 US 20
 T-88N R-47W, T-89N R46W
 SECTION 4, 31
 CONCORD TWP.
 WOODBURY TWP.
 WOODBURY COUNTY



PLAT PLAN

PRELIMINARY
 DESIGN FOR 0° SKEW
24" X 64'
REINFORCED CONCRETE PIPE
 PLAT PLAN
 STA. 489+00.00 (ϕ US 20) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 1 FILE NO. DESIGN NO.



LONGITUDINAL SECTION ALONG CULVERT

NOTES:

PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.

HYDRAULIC DATA

MEDIAN DRAINAGE

LOCATION

US 20
T-88N R-47W
SECTION 3, 32
CONCORD TWP.
WOODBURY TWP.
WOODBURY COUNTY



PRELIMINARY

DESIGN FOR 0° SKEW

24" X 192' REINFORCED CONC. & CORRUGATED METAL PIPE

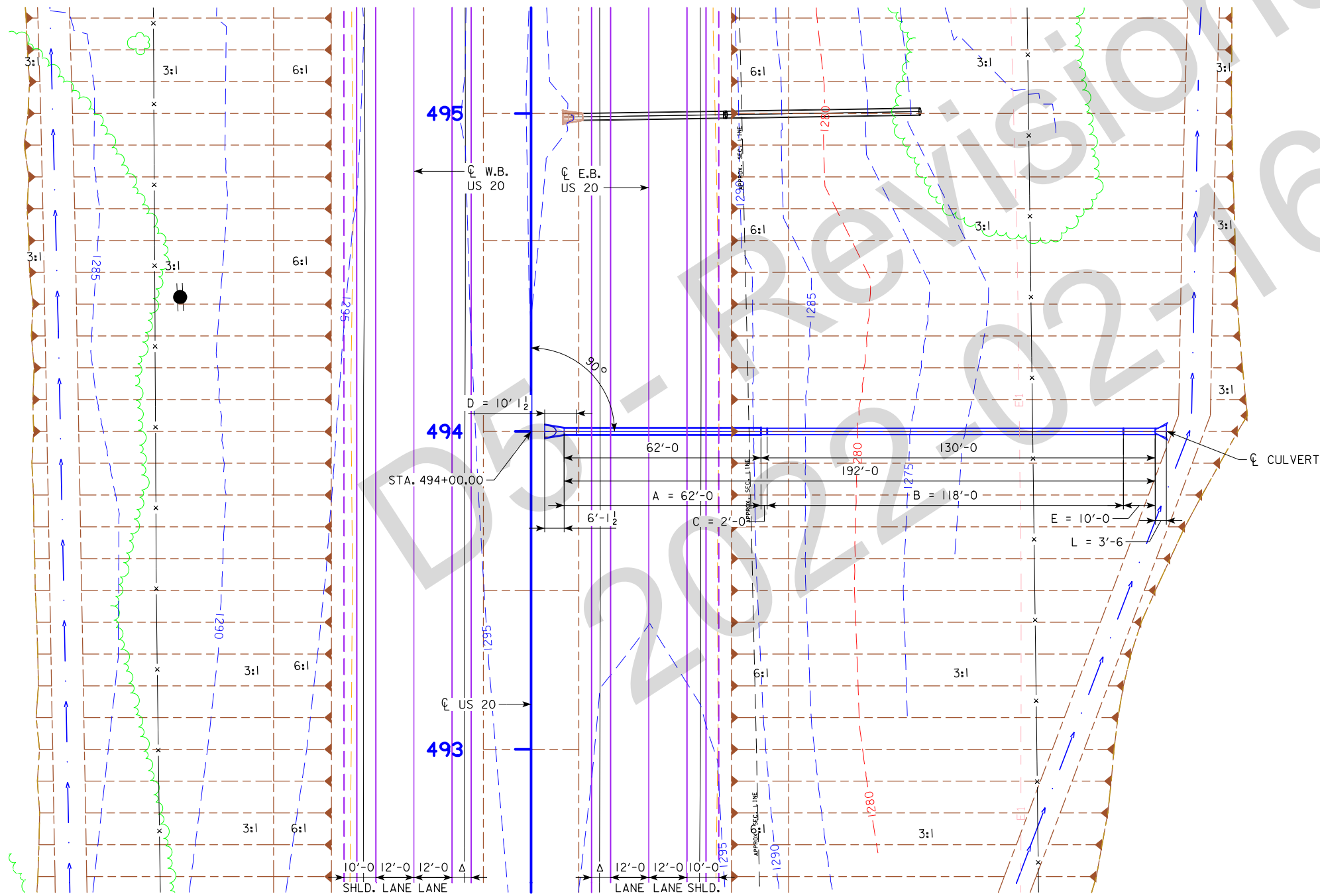
PLAT PLAN

STA. 494+00.00 (C US 20) NOVEMBER, 2022

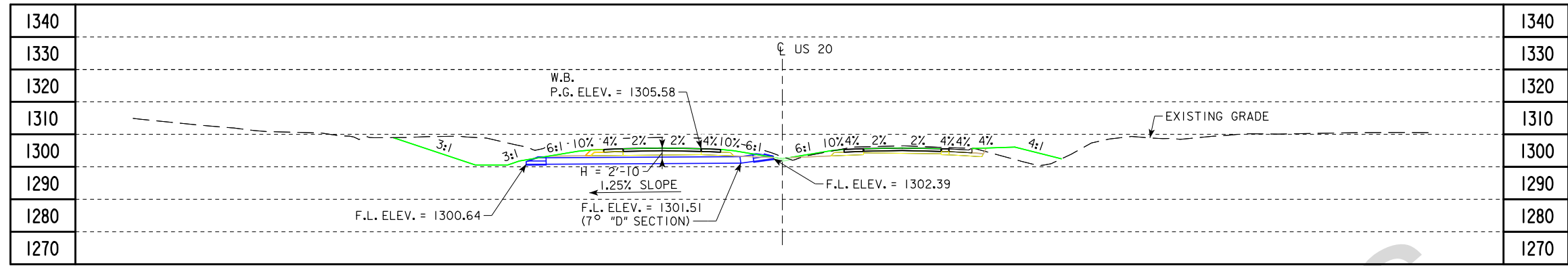
WOODBURY COUNTY

IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION

DESIGN SHEET NO. 1 OF 1 FILE NO. DESIGN NO.



PLAT PLAN

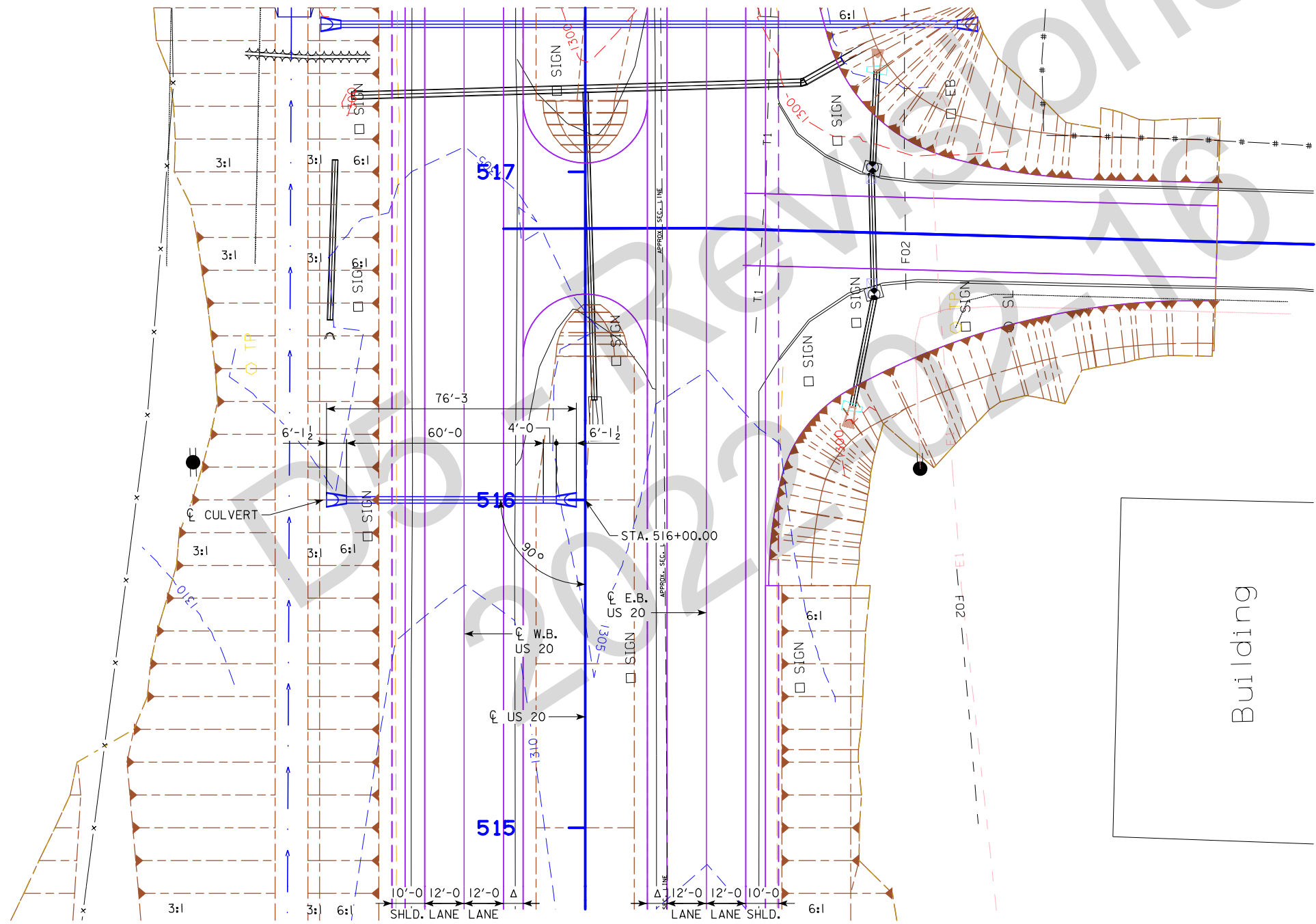


BENCH MARK CP8104 STA. 487+19.74, 3,329' RT. WOODBURY COUNTY GPS MONUMENT. ELEV. 1109.197

NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

LONGITUDINAL SECTION ALONG CULVERT

NOTES:
PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.

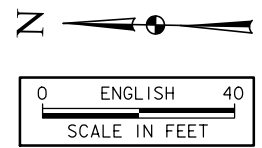


HYDRAULIC DATA

MEDIAN DRAINAGE

LOCATION

US 20
T-89N R-46W
SECTION 32
CONCORD TWP.
WOODBURY COUNTY



PRELIMINARY

DESIGN FOR 0° SKEW

24" X 64'

REINFORCED CONCRETE PIPE

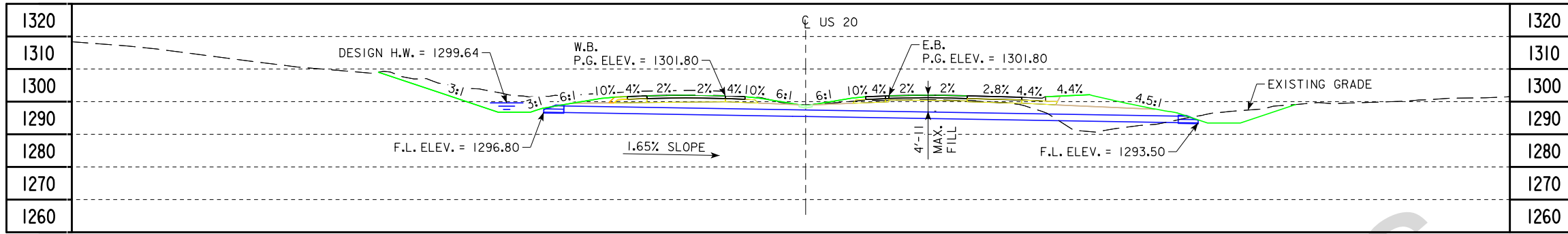
PLAT PLAN

STA. 516+00.00 (C US 20) NOVEMBER, 2022

WOODBURY COUNTY

IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION

DESIGN SHEET NO. 1 OF 1 FILE NO. DESIGN NO.

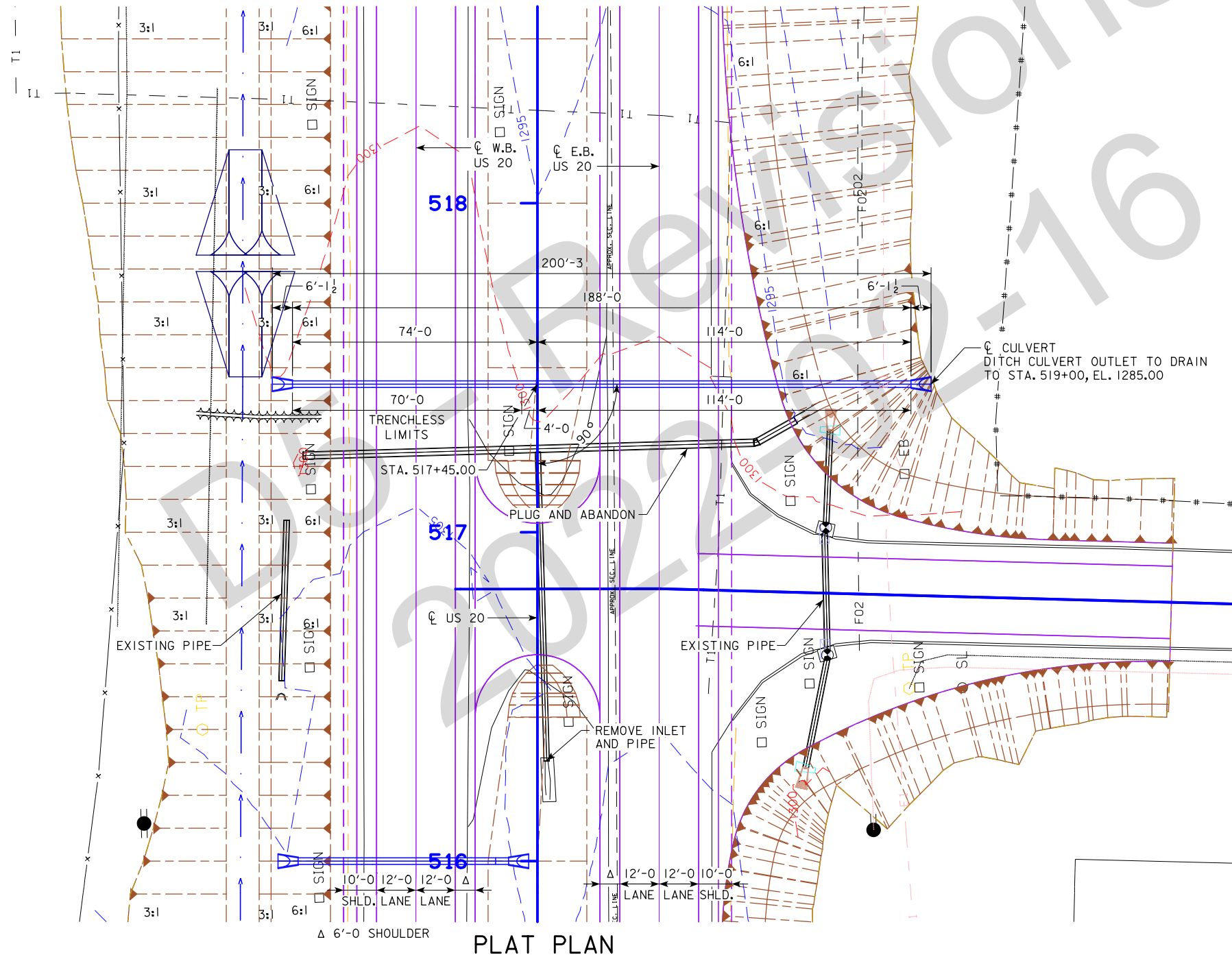


BENCH MARK CP8104 STA. 487+19.74, 3,329' RT. WOODBURY COUNTY GPS MONUMENT, ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

LONGITUDINAL SECTION ALONG CL CULVERT

NOTES:

PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.
 DURING INITIAL STAGE OF TRENCHLESS CONSTRUCTION, EXCAVATION FOR A RECEIVING PIT WILL BE REQUIRED AT UPSTREAM INLET.

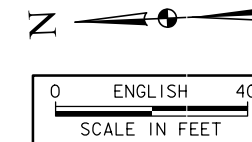


HYDRAULIC DATA

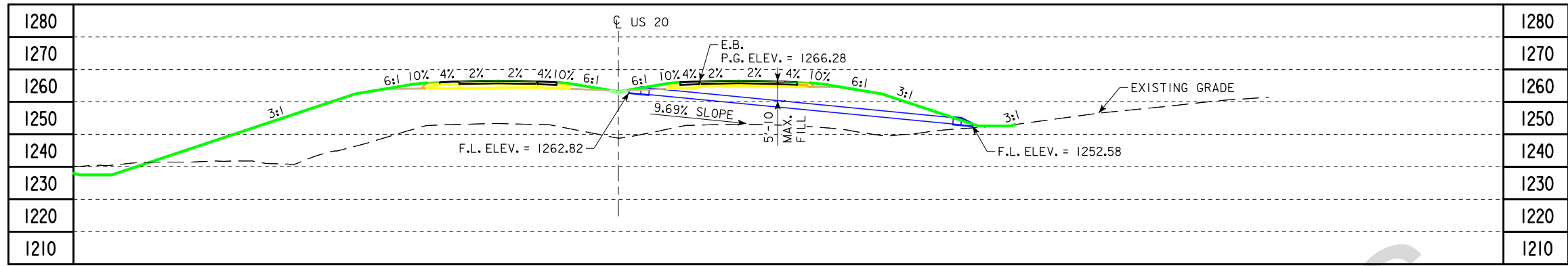
DRAINAGE AREA = 5.29 ACRES
 $Q_{50} = 20$ CFS
 HW ELEV. = 1299.64

LOCATION

US 20
 T-89N R-46W
 SECTION 32
 CONCORD TWP.
 T-88N R-47W
 SECTION 3
 WOODBURY TWP.
 WOODBURY COUNTY



PRELIMINARY
 DESIGN FOR 0° SKEW
24" X 188'
REINFORCED CONCRETE PIPE
(70' TRENCHLESS)
PLAT PLAN
 STA. 517+45.00 (CL US 20) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 1 FILE NO. DESIGN NO.



BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT. ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

LONGITUDINAL SECTION ALONG ϕ CULVERT

NOTES:

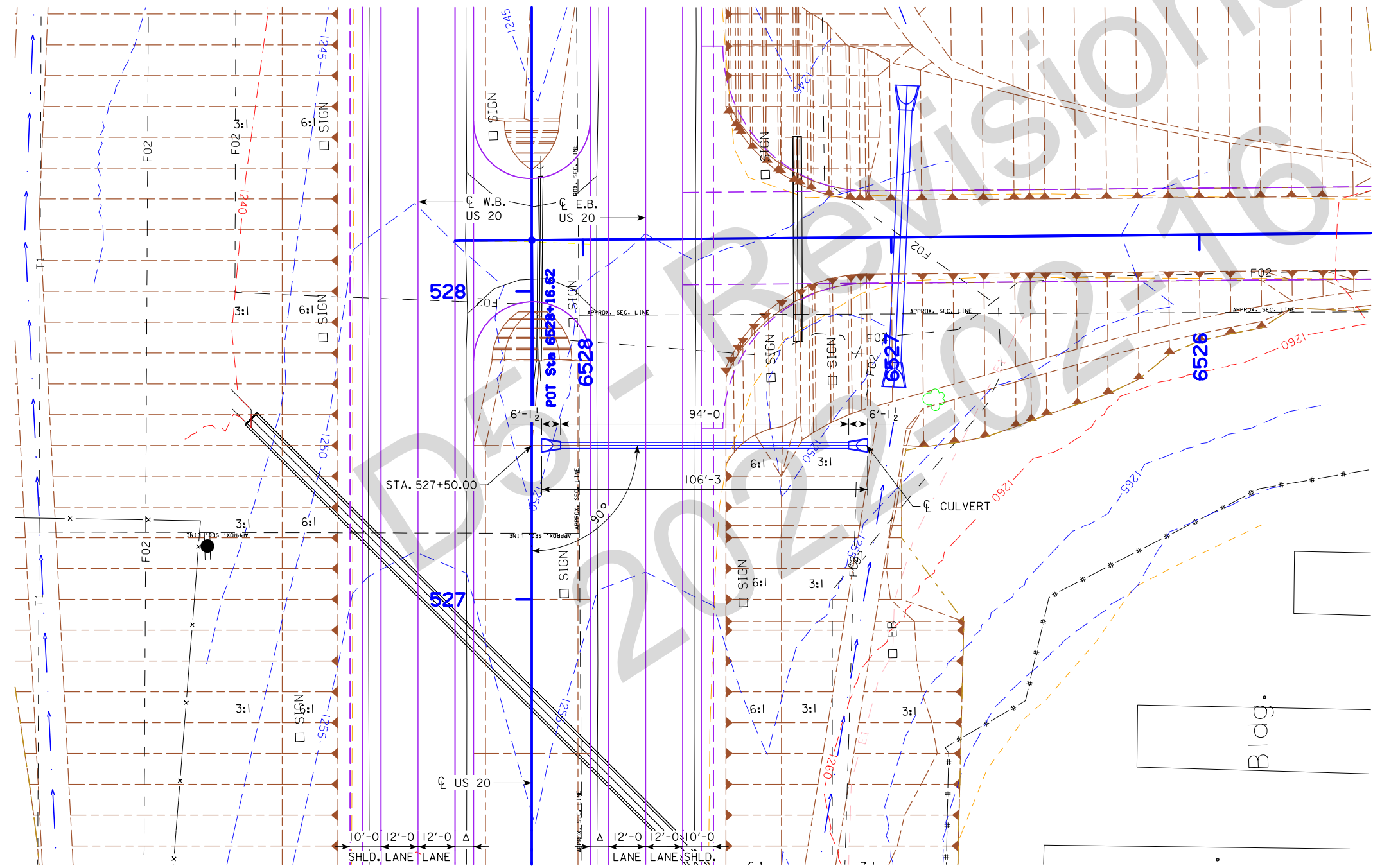
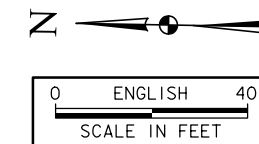
PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.

HYDRAULIC DATA

MEDIAN DRAINAGE

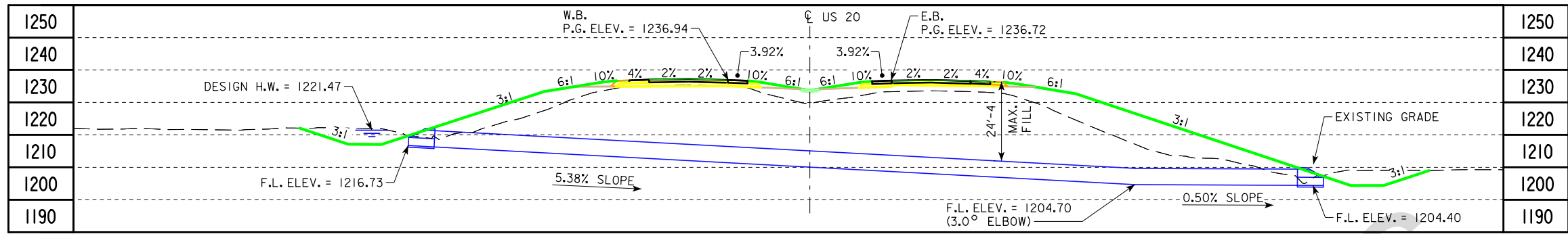
LOCATION

US 20
 T-88N R-47W
 SECTION 3
 WOODBURY TWP.
 WOODBURY COUNTY



PLAT PLAN

PRELIMINARY
 DESIGN FOR 0° SKEW
24" X 94'
REINFORCED CONCRETE PIPE
 PLAT PLAN
 STA. 527+50.00 (ϕ US 20) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 1 FILE NO. DESIGN NO.

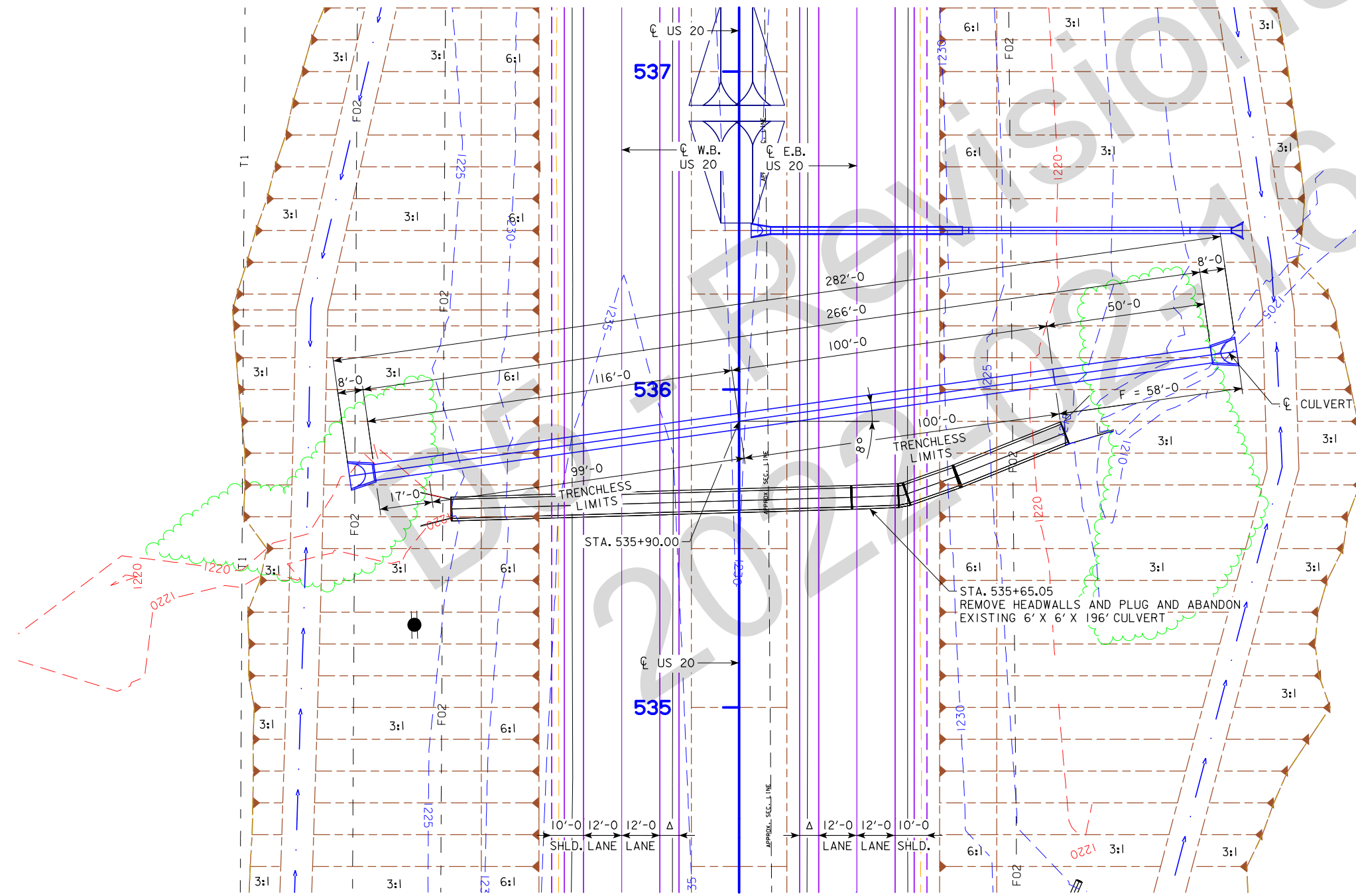


LONGITUDINAL SECTION ALONG C CULVERT

BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT, ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

NOTES:

PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.
 DURING INITIAL STAGE OF TRENCHLESS CONSTRUCTION, EXCAVATION FOR A RECEIVING PIT WILL BE REQUIRED AT UPSTREAM INLET.



PLAT PLAN

HYDRAULIC DATA

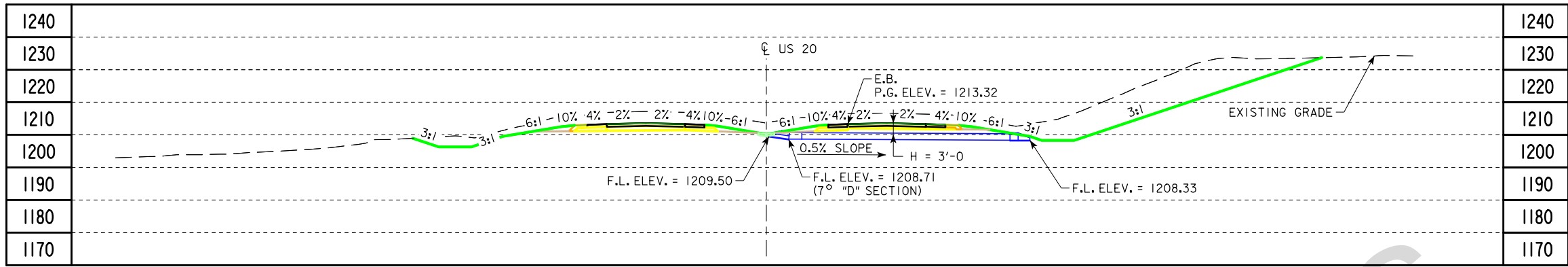
DRAINAGE AREA = 65.03 ACRES
 $Q_{50} = 108$ CFS
 HW ELEV. = 1221.47

LOCATION

US 20
 T-89N R-46W
 SECTION 33
 CONCORD TWP.
 T-88N R-47W
 SECTION 2
 WOODBURY TWP.
 WOODBURY COUNTY



PRELIMINARY
 DESIGN FOR 8° SKEW (R.A.)
60" X 266' (199' TRENCHLESS) REINFORCED CONCRETE PIPE
 PLAT PLAN
 STA. 535+90.00 (C US 20) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 1 FILE NO. DESIGN NO.



BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT. ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

LONGITUDINAL SECTION ALONG CL CULVERT

NOTES:

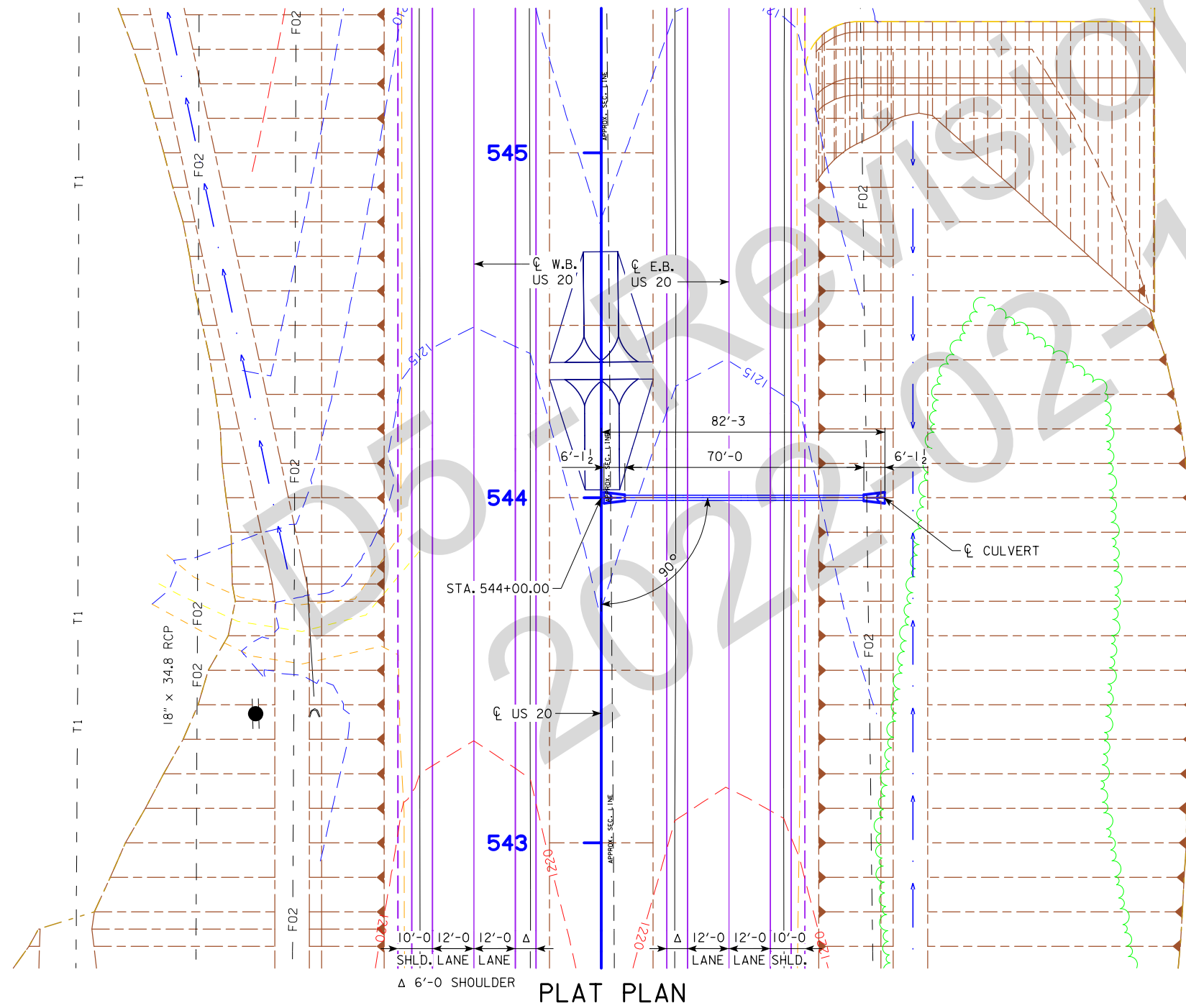
PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.

HYDRAULIC DATA

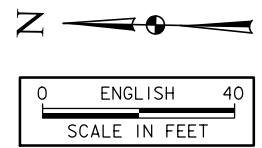
MEDIAN DRAINAGE

LOCATION

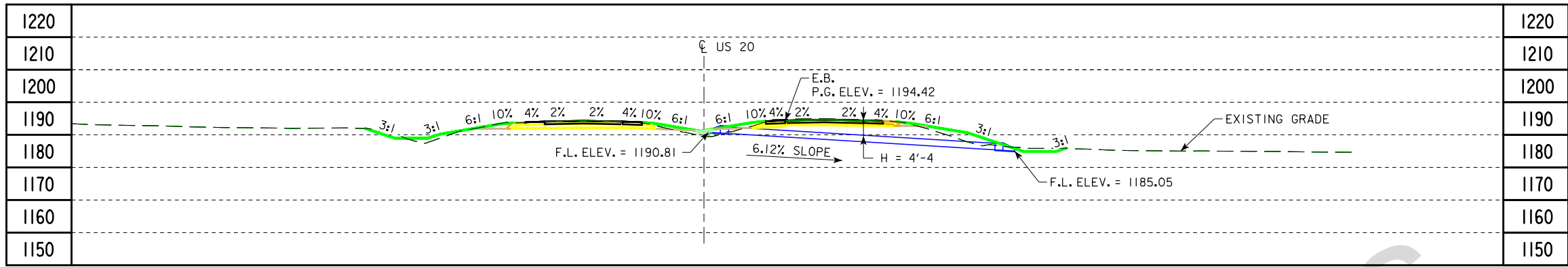
US 20
 T-88N R-47W
 SECTION 2
 WOODBURY TWP.
 WOODBURY COUNTY



PLAT PLAN



PRELIMINARY
 DESIGN FOR 0° SKEW
24" X 70'
REINFORCED CONCRETE PIPE
 PLAT PLAN
 STA. 544+00.00 (CL US 20) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 1 FILE NO. DESIGN NO.



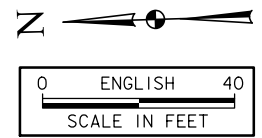
LONGITUDINAL SECTION ALONG ϕ CULVERT

BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT. ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

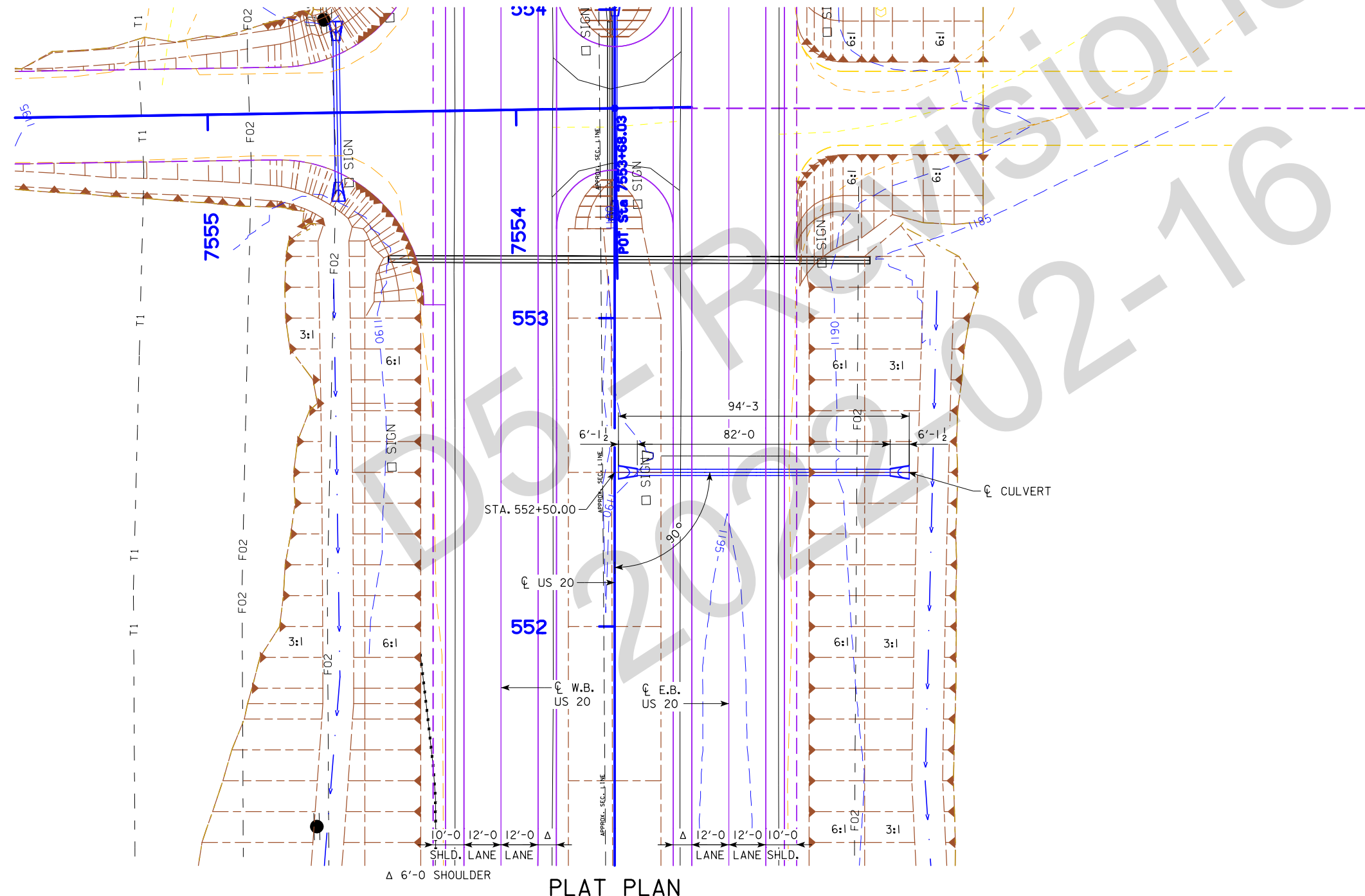
NOTES:
 PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.

HYDRAULIC DATA
 MEDIAN DRAINAGE

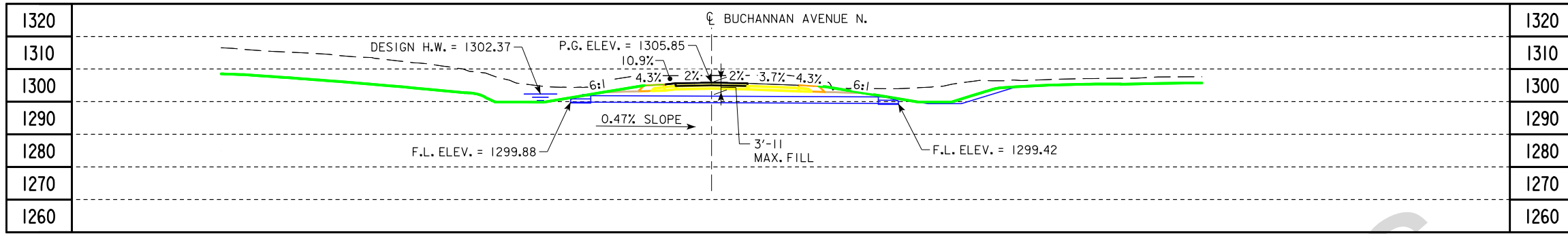
LOCATION
 US 20
 T-88N R-47W
 SECTION 2
 WOODBURY TWP.
 WOODBURY COUNTY



PRELIMINARY
 DESIGN FOR 0° SKEW
24" X 82'
REINFORCED CONCRETE PIPE
 PLAT PLAN
 STA. 552+50.00 (ϕ US 20) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 1 FILE NO. DESIGN NO.



PLAT PLAN



BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT. ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

LONGITUDINAL SECTION ALONG ϕ CULVERT

NOTES:

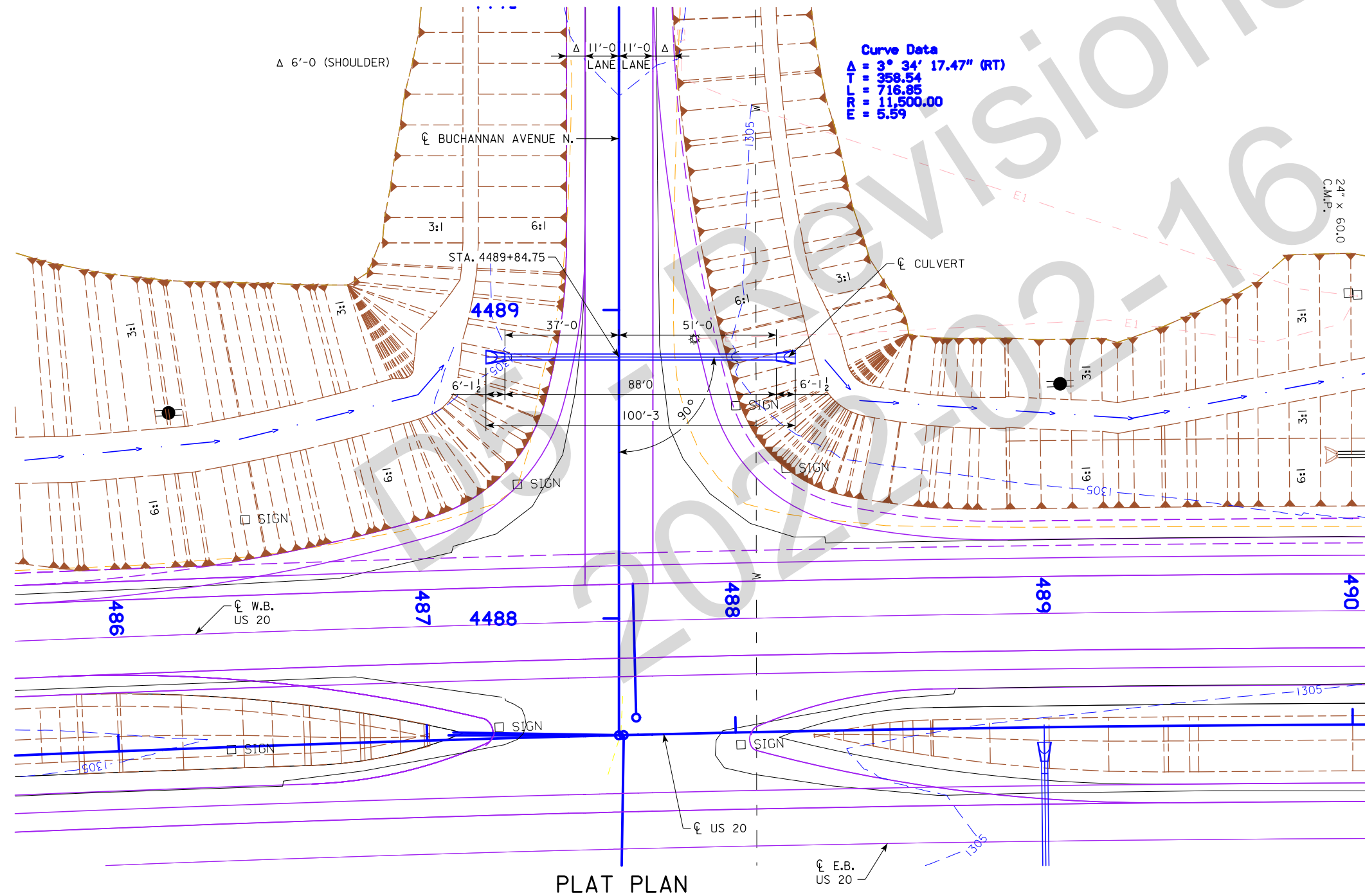
PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.

HYDRAULIC DATA

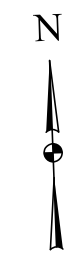
DRAINAGE AREA = 4.69 ACRES
 $Q_{50} = 14$ CFS
 HW ELEV. = 1302.37

LOCATION

BUCHANNAN AVENUE N.
 T-89N R-46W
 SECTION 31, 32
 CONCORD TWP.
 WOODBURY COUNTY

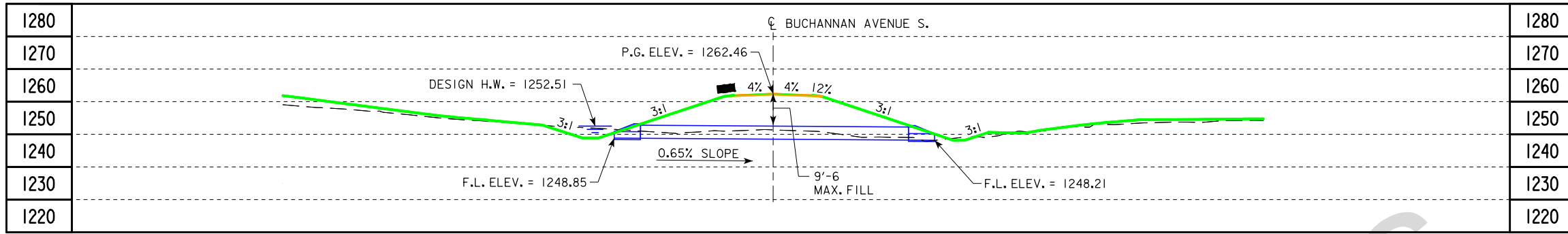


Curve Data
 $\Delta = 3^\circ 34' 17.47''$ (RT)
 $T = 358.54$
 $L = 716.85$
 $PR = 11,500.00$
 $E = 5.59$



PRELIMINARY
 DESIGN FOR 0° SKEW
24" X 88'
REINFORCED CONCRETE PIPE
 PLAT PLAN
 STA. 4488+84.75 (ϕ BUCHANNAN AVENUE N.) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 1 FILE NO. DESIGN NO.

PLAT PLAN



BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT, ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

LONGITUDINAL SECTION ALONG ϕ CULVERT

NOTES:

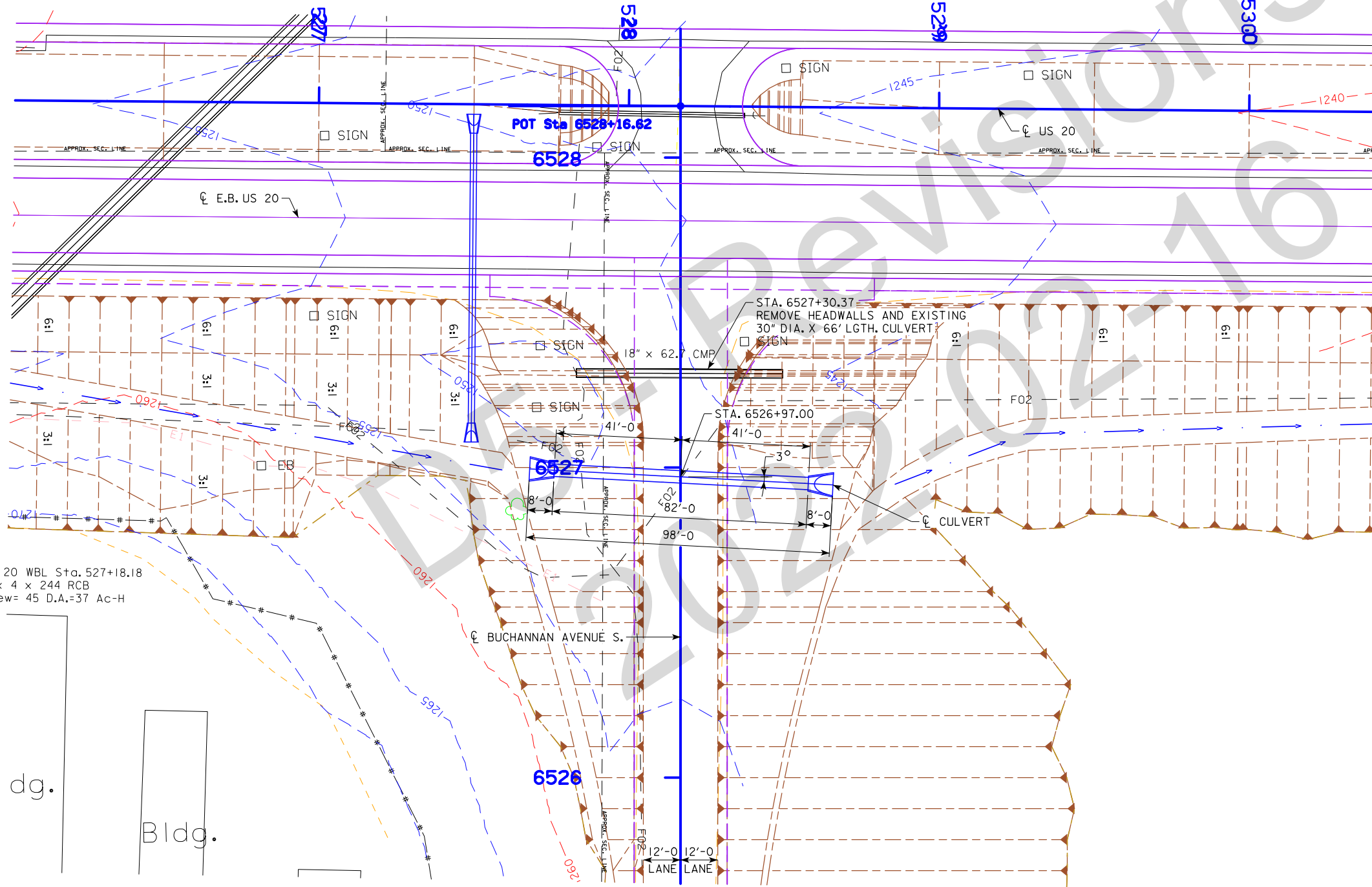
PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.

HYDRAULIC DATA

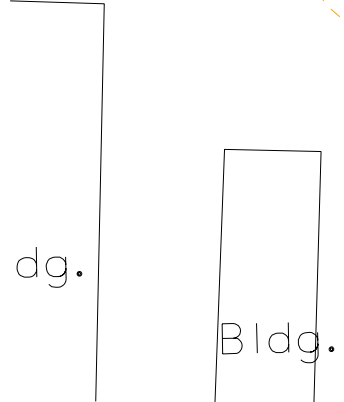
DRAINAGE AREA = 33.88 ACRES
 Q_{50} = 65 CFS
 HW ELEV. = 1252.51

LOCATION

BUCHANNAN AVENUE S.
 T-88N R-47W
 SECTION 2, 3
 WOODBURY TWP.
 WOODBURY COUNTY

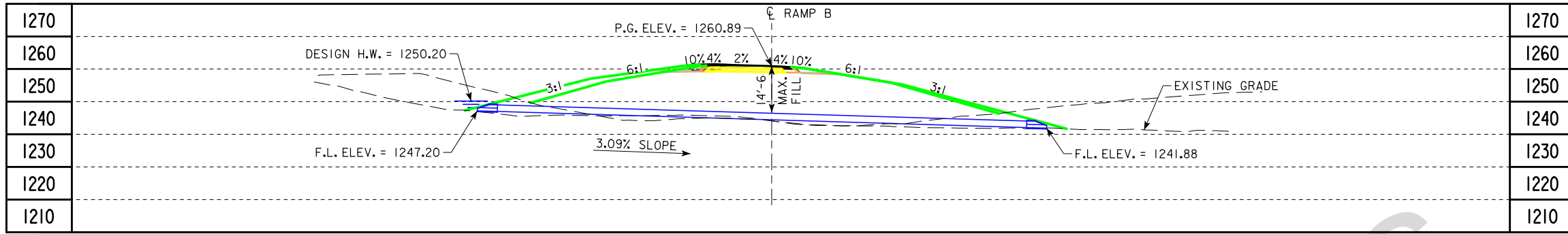


US 20 WBL Sta. 527+18.18
 4 x 4 x 244 RCB
 Skew= 45 D.A.=37 Ac-H



PLAT PLAN

PRELIMINARY
 DESIGN FOR 3° SKEW (L.A.)
48" X 82'
REINFORCED CONCRETE PIPE
 PLAT PLAN
 STA. 6526+97.00 (ϕ BUCHANNAN AVENUE S.) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 1 FILE NO. DESIGN NO.



LONGITUDINAL SECTION ALONG ϕ CULVERT

BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT. ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

NOTES:

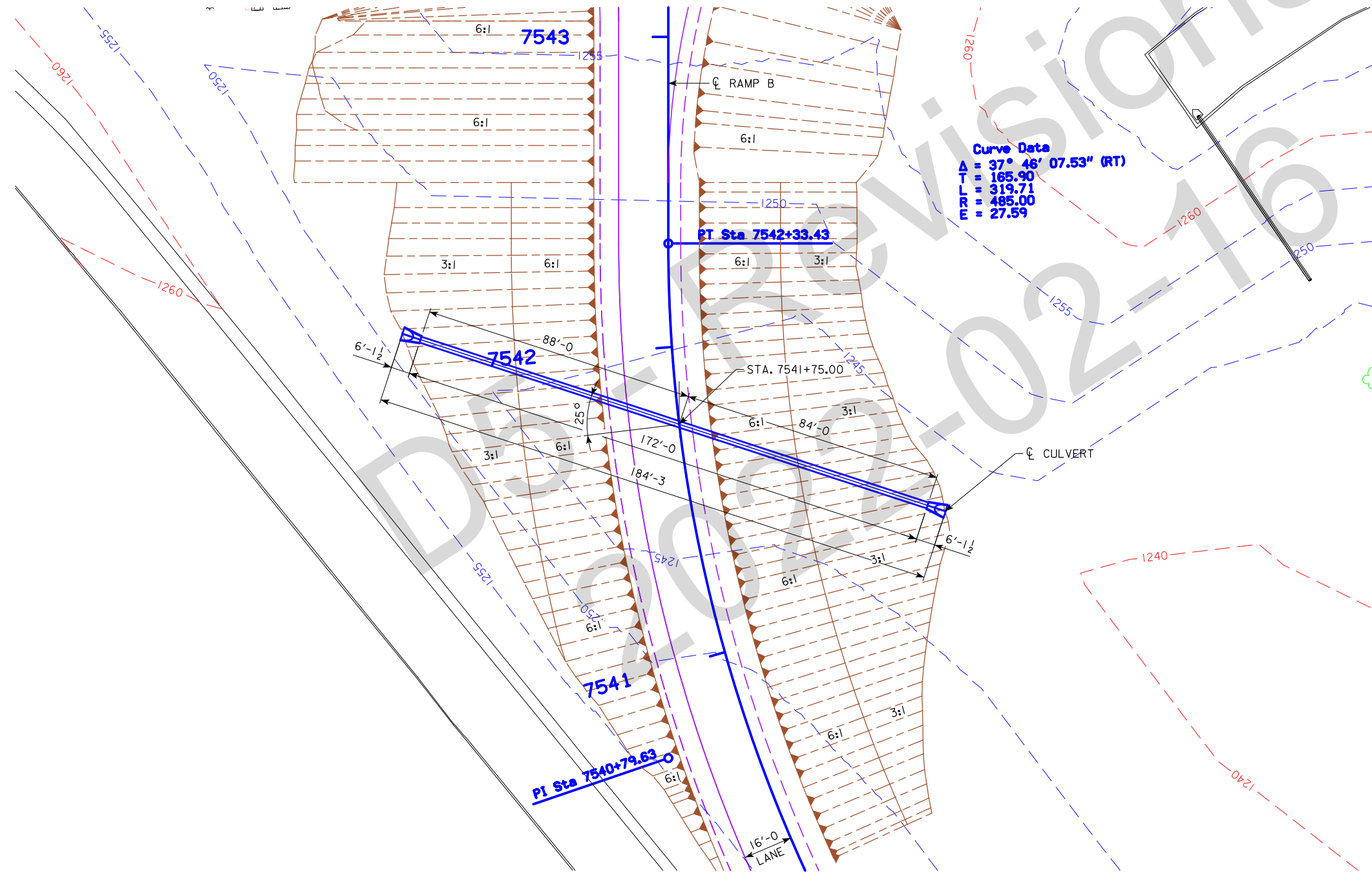
PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.

HYDRAULIC DATA

DRAINAGE AREA = 2 AC.
 Q_{50} = 13 CFS
 HW ELEV. = 1250.20

LOCATION

RAMP B
 T-88N R-47W
 SECTION 4
 WOODBURY TWP.
 WOODBURY COUNTY



Curve Data
 Δ = 37° 46' 07.53" (RT)
 T = 165.90
 L = 319.71
 PC = 485.00
 E = 27.59



PRELIMINARY
 DESIGN FOR 25° SKEW
24" X 172'
REINFORCED CONCRETE PIPE
 PLAT PLAN
 STA. 7541+75.00 (ϕ RAMP B) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 1 FILE NO. DESIGN NO.

SITUATION PLAN

1210		1210
1200		1200
1190		1190
1180		1180
1170		1170
1160		1160
1150		1150

BENCH MARK CP8104 STA. 487+19.74, 3,329' RT. WOODBURY COUNTY GPS MONUMENT, ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

LONGITUDINAL SECTION ALONG ϕ CULVERT

NOTES:

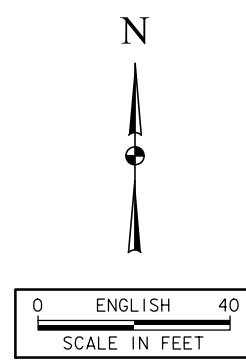
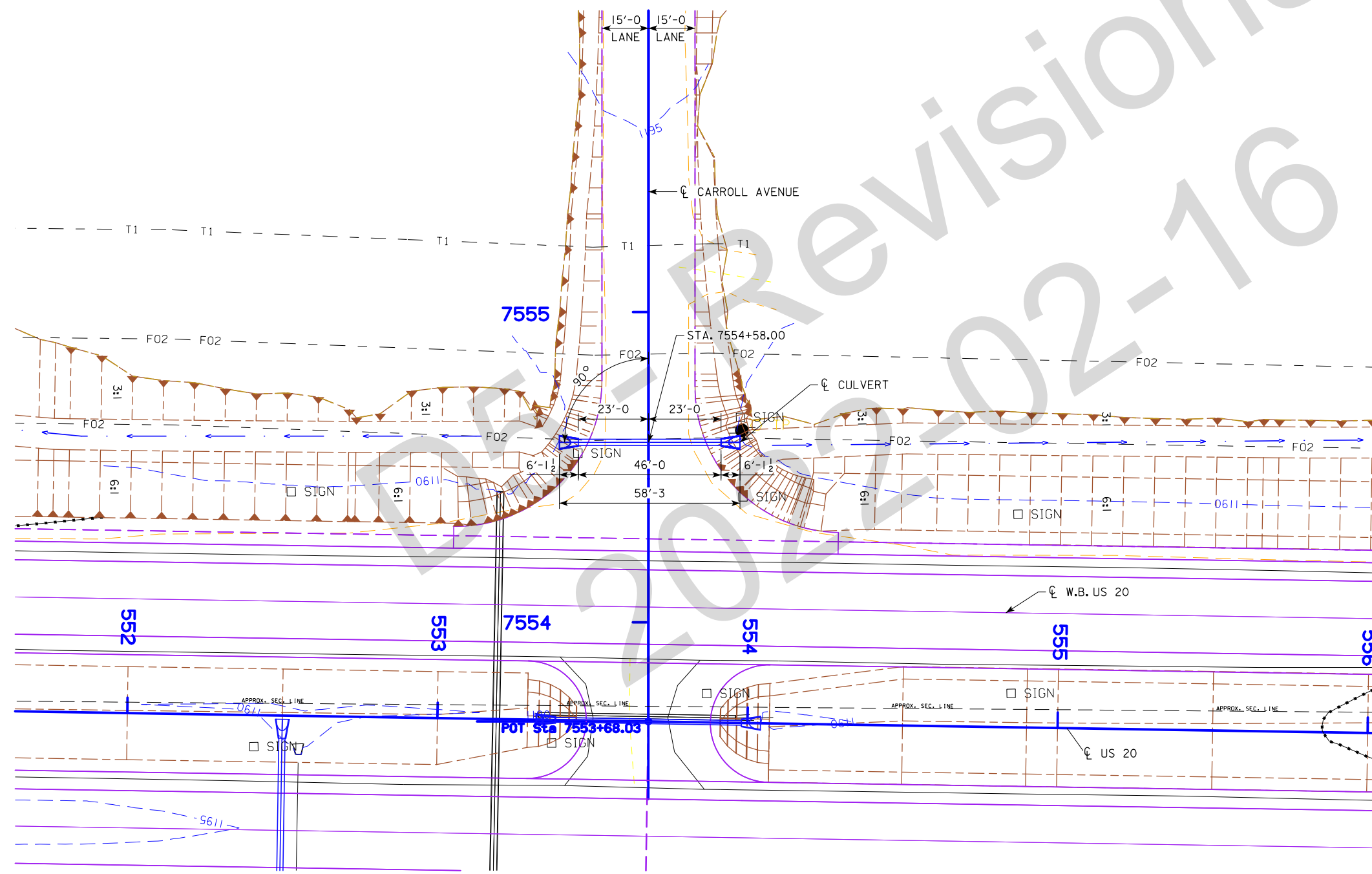
PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.

HYDRAULIC DATA

DRAINAGE AREA = 1.07 ACRES
 $Q_{50} = 4$ CFS
 HW ELEV. = 1189.19

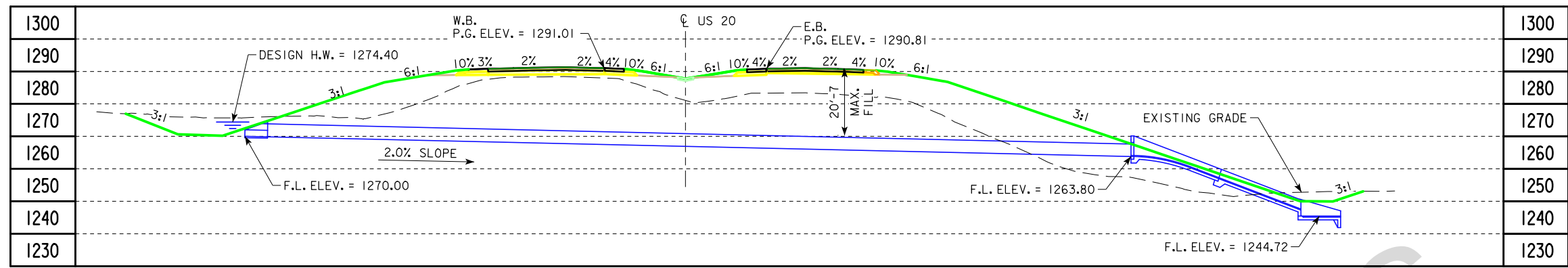
LOCATION

CARROLL AVENUE
 T-89N R-46W
 SECTION 33, 34
 CONCORD TWP.
 WOODBURY COUNTY



PRELIMINARY
 DESIGN FOR 0° SKEW
24" X 46'
REINFORCED CONCRETE PIPE
 PLAT PLAN
 STA. 7554+58.00 (ϕ CARROL AVENUE) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 1 FILE NO. DESIGN NO.

PLAT PLAN



LONGITUDINAL SECTION ALONG ϕ CULVERT

BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT. ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

NOTES:

PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.

DURING INITIAL STAGE OF TRENCHLESS CONSTRUCTION, EXCAVATION FOR A RECEIVING PIT WILL BE REQUIRED AT UPSTREAM INLET.

HYDRAULIC DATA

DRAINAGE AREA = 31.77 ACRES
 $Q_{50} = 83$ CFS
 HW ELEV. = 1274.40

LOCATION

US 20
 T-89N R-46W
 SECTION 31
 CONCORD TWP.
 T-88N R-47W
 SECTION 4
 WOODBURY TWP.
 WOODBURY COUNTY



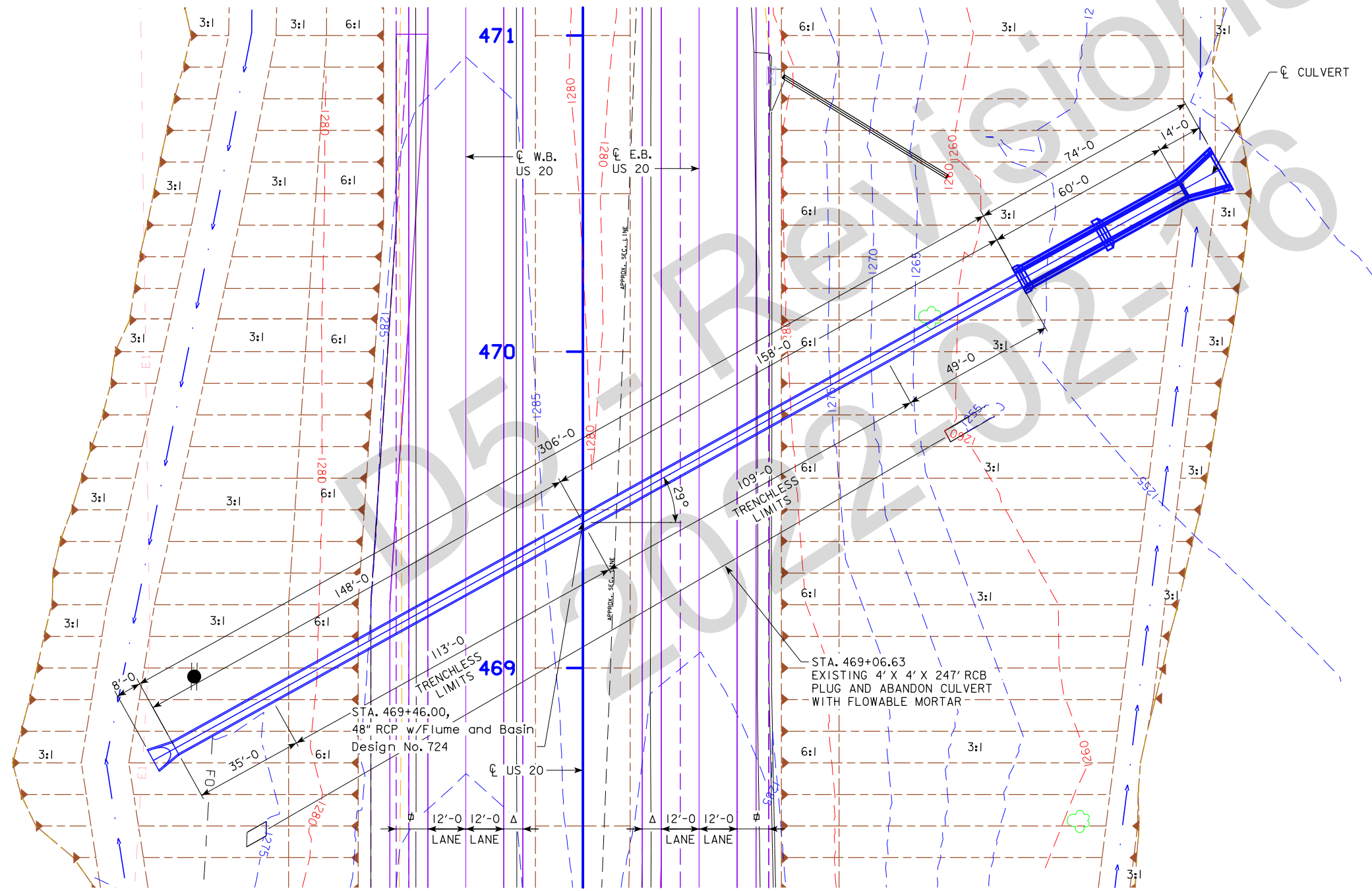
PRELIMINARY

DESIGN FOR 29° SKEW (R.A.)
48" X 306' (222' TRENCHLESS) REINFORCED CONCRETE PIPE w/FLUME L3 6' X 4'
SITUATION PLAN

STA. 469+46.00 (ϕ US 20) NOVEMBER, 2022

WOODBURY COUNTY

IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 2 FILE NO. 32165 DESIGN NO. 724



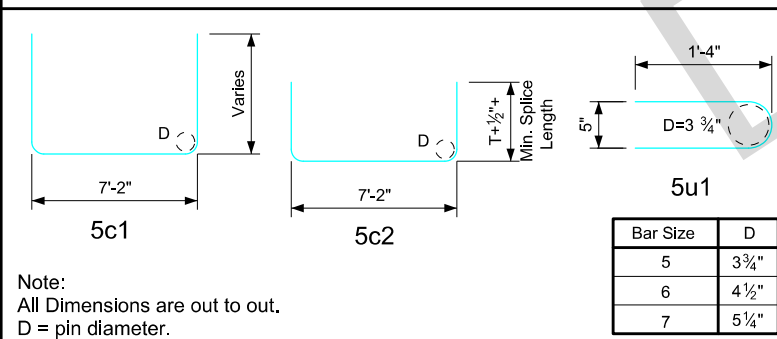
Δ 6'-0" SHOULDER
 $\#$ 10'-0" SHOULDER
SITUATION PLAN

Reinforcing Bar List - Flume

Bar	Location	Shape	No.	Length	Weight
4a1	Walls FFV		118	Listed	351
5b1	Walls FFH - Section 1		4	31'-3"	130
4b2	Walls BFH - Section 1		4	31'-3"	84
5b3	Walls FFH - Section 2		4	31'-3"	130
4b4	Walls BFH - Section 2		4	31'-3"	84
5b5	Walls FFH - Section 1		4	Listed	68
4b6	Walls BFH - Section 1		4	Listed	43
5c1	Bott. Floor & Walls BFV		117	Listed	1333
5c2	Bott. Floor & Walls BFV - Spliced		117	13'-1"	1597
5c3	Walls BFV		117	Listed	653
6f1	Floor Longit. Top - Section 1		7	30'-3"	318
5f2	Floor Longit. Bott. - Section 1		7	30'-3"	221
6f3	Floor Longit. Top - Section 2		13	31'-3"	610
5f4	Floor Longit. Bott. - Section 2		3	31'-3"	424
6m1	Floor Transv. Top		62	7'-8"	714
6s1	Walls Both F Along Slope - Section 1		4	31'-4"	131
6s2	Walls Both F Along Slope - Section 2		4	31'-4"	131
5u1	Fence Anchors (Galvanized)		2	2'-10"	6
Total (LBS.)					7027

Weight of bars over 40'-0" long include an allowance for a 2'-0" lap but lengths shown for bars over 40'-0" long do not include the lap.

Bent Bar Details



Concrete Placement Quantities

Location	Footing	Walls	Total
Flume - Section 1	5.9	9.6	15.5
Flume - Section 2	9.8	4.7	14.5
Junction Bell	1.3	0.8	2.1
Chute Bell	1.3	0.5	1.8
Basin	8.1	2.6	10.7
Basin Curtain	0.3	---	0.3
Total (CY)	26.7	18.2	44.9

Listed Bars

Bar 4a1
59 Bars
58 Spaces @ 1'-0"
Length Var. - 2 Ea. Lgth.
6'-9" MAX, 3'-7" MIN - L3 LENGTH (20 BARS TOTAL)
3'-7" - L2 LENGTH (39 BARS TOTAL)

Bar 5b5 AND 4b6
4 Bars - 2 Ea. Lgth.
21'-6" MAX, 11'-0" MIN

Bar 5c1
117 Bars
116 Spaces @ 0'-6"
Length Var. - 2 Ea. Lgth.
20'-8" MAX, 9'-2" MIN - L3 LENGTH (40 BARS TOTAL)
9'-2" - L2 LENGTH (77 BARS TOTAL)

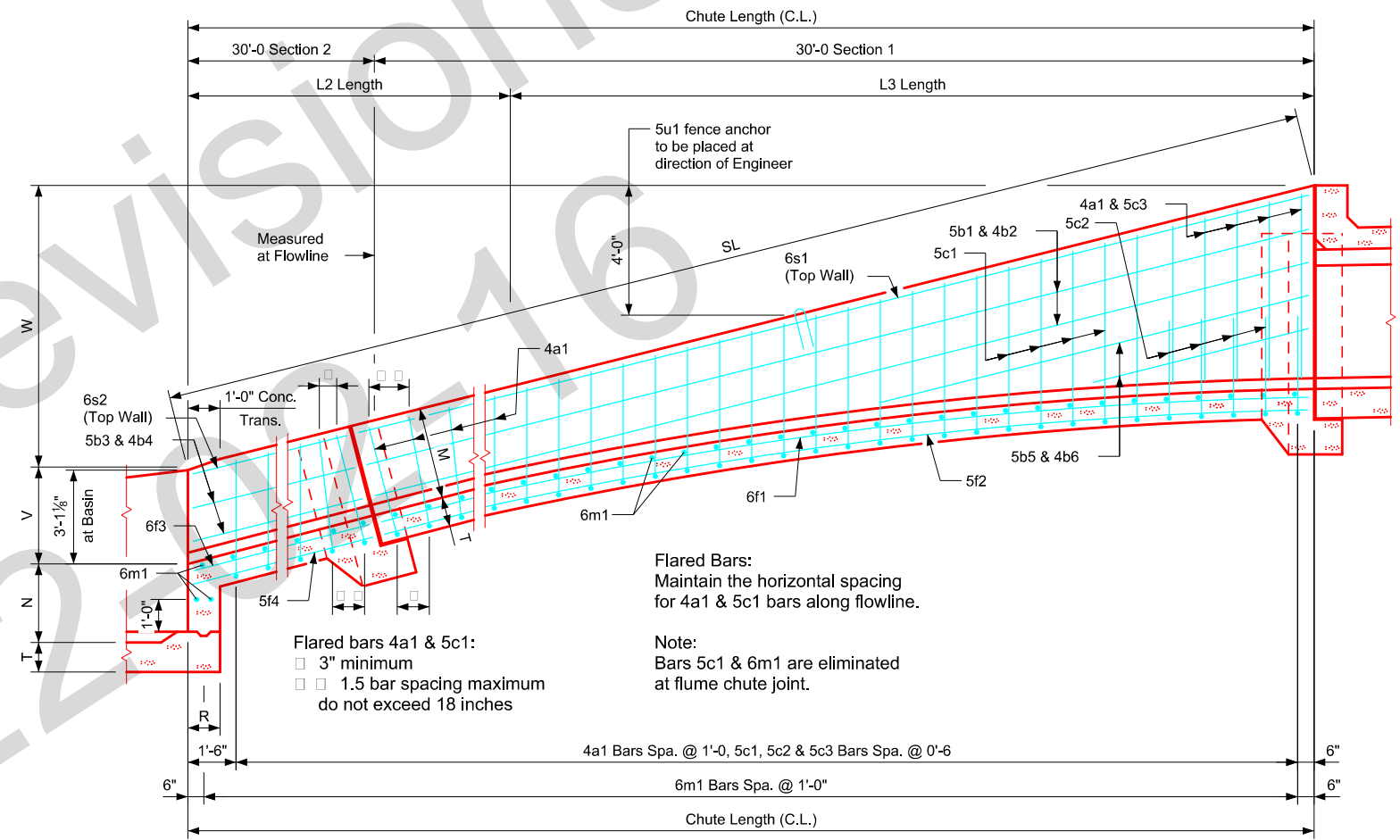
Bar 5c3
117 BARS
116 SPACES @ 0'-6"
LENGTH VAR. - 2 EA. LENGTH

Flume Data

A = 18°26'
C = 1°00'
B = 10'-6 5/16"
SL = 63'-2 15/16"
V = 3'-2"
W = 20'-0"
M = 3'-0"
T = 0'-11"
H = 4'-0"

Curve Data

C.L. = 60'-0"
L2 = 39'-11 3/4"
L3 = 20'-0 1/4"
D = 10'-0 7/16"
E = 9'-11 13/16"
P.C. Elev. = 1263.80
P.I. Elev. = 1263.63
P.P. Elev. = 1263.45
P.T. Elev. = 1260.30
X1 = 3'-1 7/8"
X2 = 1'-9 1/4"
X3 = 0'-9 7/16"
X4 = 0'-2 3/8"
L3/4 = 5'-0 1/16"



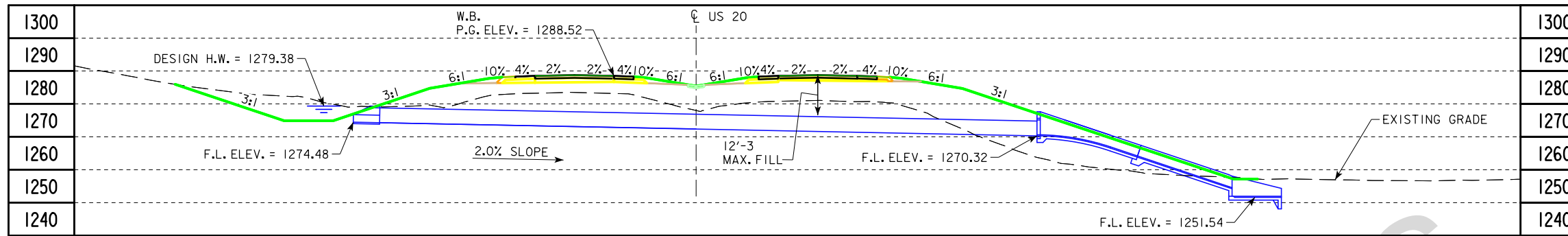
6'x4' Flume Chute - Longitudinal Section

Notes:

- See Sheets RCF 1-20 & RCF 2-20 for flume information and details not shown.
- See Sheet FBJ 02-20 for bell joint information and details not shown.
- See Sheet RCFB 02-20 for flume basin information and details not shown.

PRELIMINARY

DESIGN FOR 29° SKEW (R.A.)
**48" X 306' (222' TRENCHLESS)
REINFORCED CONCRETE PIPE
w/FLUME L3 6' X 4'
FLUME DETAILS**
STA. 469+46.00 (C US 20) NOVEMBER, 2022
WOODBURY COUNTY
IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
DESIGN SHEET NO. 2 OF 2 FILE NO. 32165 DESIGN NO. 724



BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT. ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

LONGITUDINAL SECTION ALONG CULVERT

NOTES:

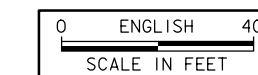
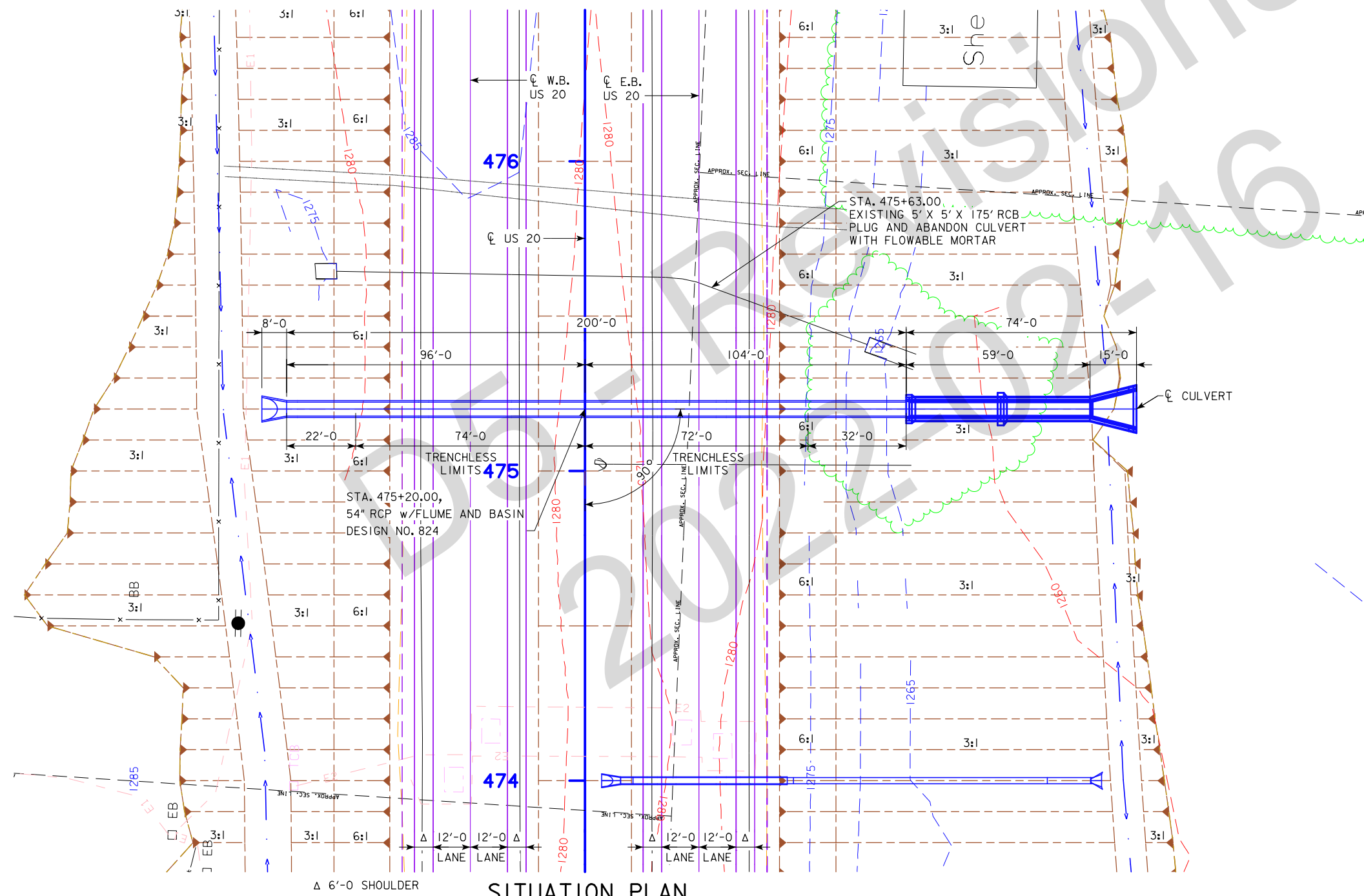
PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.
 DURING INITIAL STAGE OF TRENCHLESS CONSTRUCTION, EXCAVATION FOR A RECEIVING PIT WILL BE REQUIRED AT UPSTREAM INLET.

HYDRAULIC DATA

DRAINAGE AREA = 66.29 ACRES
 $Q_{50} = 110$ CFS
 HW ELEV. = 1279.38

LOCATION

US 20
 T-89N R-46W
 SECTION 31
 CONCORD TWP.
 T-88N R-47W
 SECTION 4
 WOODBURY TWP.
 WOODBURY COUNTY



PRELIMINARY
 DESIGN FOR 0° SKEW
54" X 200' (146' TRENCHLESS) REINFORCED CONCRETE PIPE w/FLUME L3 6' X 5'
SITUATION PLAN
 STA. 475+20.00 (C US 20) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 2 FILE NO. 32165 DESIGN NO. 824

Reinforcing Bar List - Flume					
Bar	Location	Shape	No.	Length	Weight
4a1	Walls FFV	—	116	Listed	428
5b1	Walls FFH - Section 1	—	6	30'-8"	192
4b2	Walls BFH - Section 1	—	6	30'-8"	123
5b3	Walls FFH - Section 2	—	6	30'-8"	192
4b4	Walls BFH - Section 2	—	6	30'-8"	123
5b5	Walls FFH - Section 1	—	4	Listed	68
4b6	Walls BFH - Section 1	—	4	Listed	43
5c1	Bott. Floor & Walls BFV	—	115	Listed	1482
5c2	Bott. Floor & Walls BFV - Spliced	—	115	13'-1"	1569
5c3	Walls BFV	—	115	Listed	796
6f1	Floor Longit. Top - Section 1	—	7	29'-8"	312
5f2	Floor Longit. Bott. - Section 1	—	7	29'-8"	217
6f3	Floor Longit. Top - Section 2	—	13	31'-3"	610
5f4	Floor Longit. Bott. - Section 2	—	13	31'-3"	424
6m1	Floor Transv. Top	—	61	7'-8"	702
6s1	Walls Both F Along Slope - Section 1	—	4	30'-9"	128
6s2	Walls Both F Along Slope - Section 2	—	4	30'-9"	128
5u1	Fence Anchors (Galvanized)	U	2	2'-10"	6
Total (LBS.)					7543

Weight of bars over 40'-0" long include an allowance for a 2'-0" lap but lengths shown for bars over 40'-0" long do not include the lap.

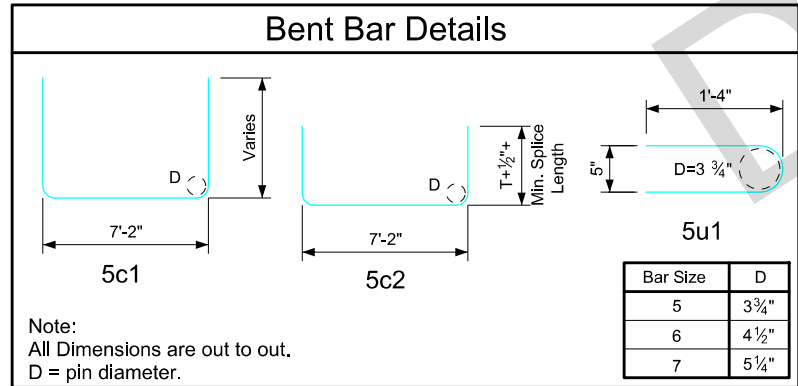
Listed Bars

Bar 4a1
58 BARS
57 SPACES @ 1'-0"
LENGTH VARIES
7'-9" MAX, 4'-7" MIN - L3 LENGTH (21 BARS TOTAL)
4'-7" - L2 LENGTH (37 BARS TOTAL)

Bar 5b5 AND 4b6
4 BARS - 2 EA. LENGTH
21'-6" MAX, 11'-0" MIN

Bar 5c1
115 BARS
114 SPACES @ 0'-6"
LENGTH VARIES
20'-8" MAX, 10'-6" MIN - L3 LENGTH (42 BARS TOTAL)
10'-6" - L2 LENGTH (73 BARS TOTAL)

Bar 5c3
115 BARS
114 SPACES @ 0'-6"
LENGTH VARIES
7'-9" MAX, 4'-7" MIN - L3 LENGTH (42 BARS TOTAL)
4'-7" - L2 LENGTH (73 BARS TOTAL)



Concrete Placement Quantities

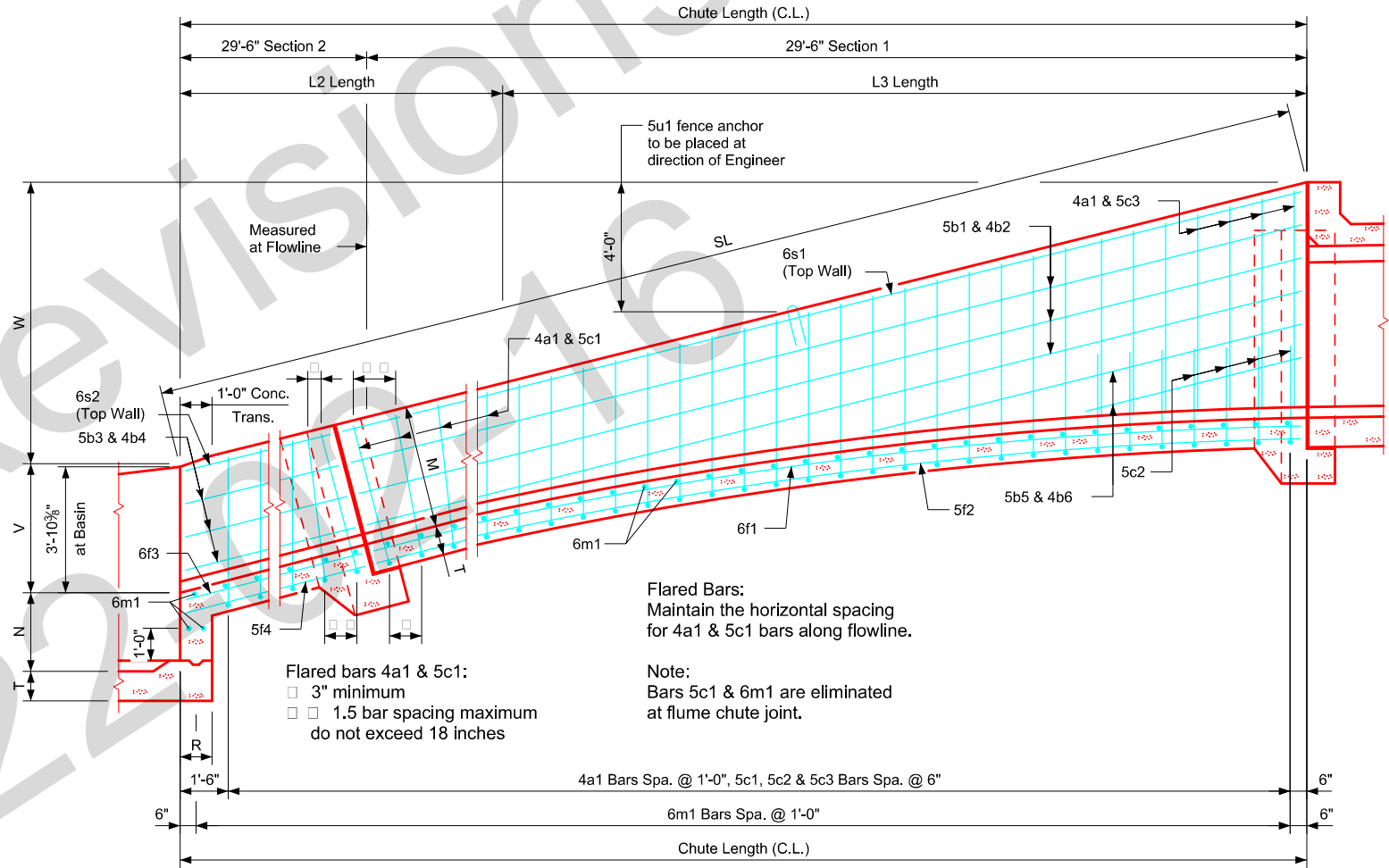
Location	Footing	Walls	Total
Flume - Section 1	9.5	7.2	16.7
Flume - Section 2	9.7	5.9	15.6
Junction Bell	1.3	1.0	2.3
Chute Bell	1.3	0.6	1.9
Basin	8.7	3.6	12.3
Basin Curtain	0.4	---	0.4
Total (CY)	30.9	18.3	49.2

Flume Data

A = 18'-26"
C = 1'-00"
B = 11'-2 5/8"
SL = 62'-2 3/16"
V = 3'-11 3/8"
W = 19'-8"
M = 3'-9"
T = 0'-11"
H = 5'-0"

Curve Data

C.L. = 59'-0"
L2 = 37'-7 7/8"
L3 = 21'-4 1/8"
D = 10'-8 7/16"
E = 10'-7 11/16"
P.C. Elev. = 1270.32
P.I. Elev. = 1270.13
P.P. Elev. = 1269.95
P.T. Elev. = 1266.59
X1 = 3'-4 5/16"
X2 = 1'-10 11/16"
X3 = 0'-10 1/16"
X4 = 0'-2 1/2"
L3/4 = 5'-4 1/16"(-)



6'x5' Flume Chute - Longitudinal Section

Notes:

- See Sheets RCF 1-20 & RCF 2-20 for flume information and details not shown.
- See Sheet FBJ 02-20 for bell joint information and details not shown.
- See Sheet RCFB 02-20 for flume basin information and details not shown.

PRELIMINARY

DESIGN FOR 0° SKEW

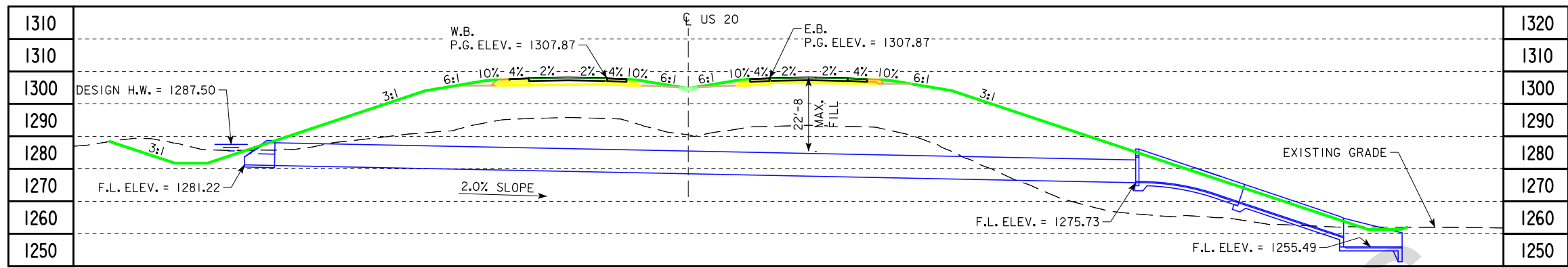
**54" X 200' (146' TRENCHLESS)
REINFORCED CONCRETE PIPE
w/FLUME L3 6' X 5'
FLUME DETAILS**

STA. 475+20.00 (± US 20) NOVEMBER, 2022

WOODBURY COUNTY

IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION

DESIGN SHEET NO. 2 OF 2 FILE NO. 32165 DESIGN NO. 824



BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT. ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

LONGITUDINAL SECTION ALONG CULVERT

NOTES:

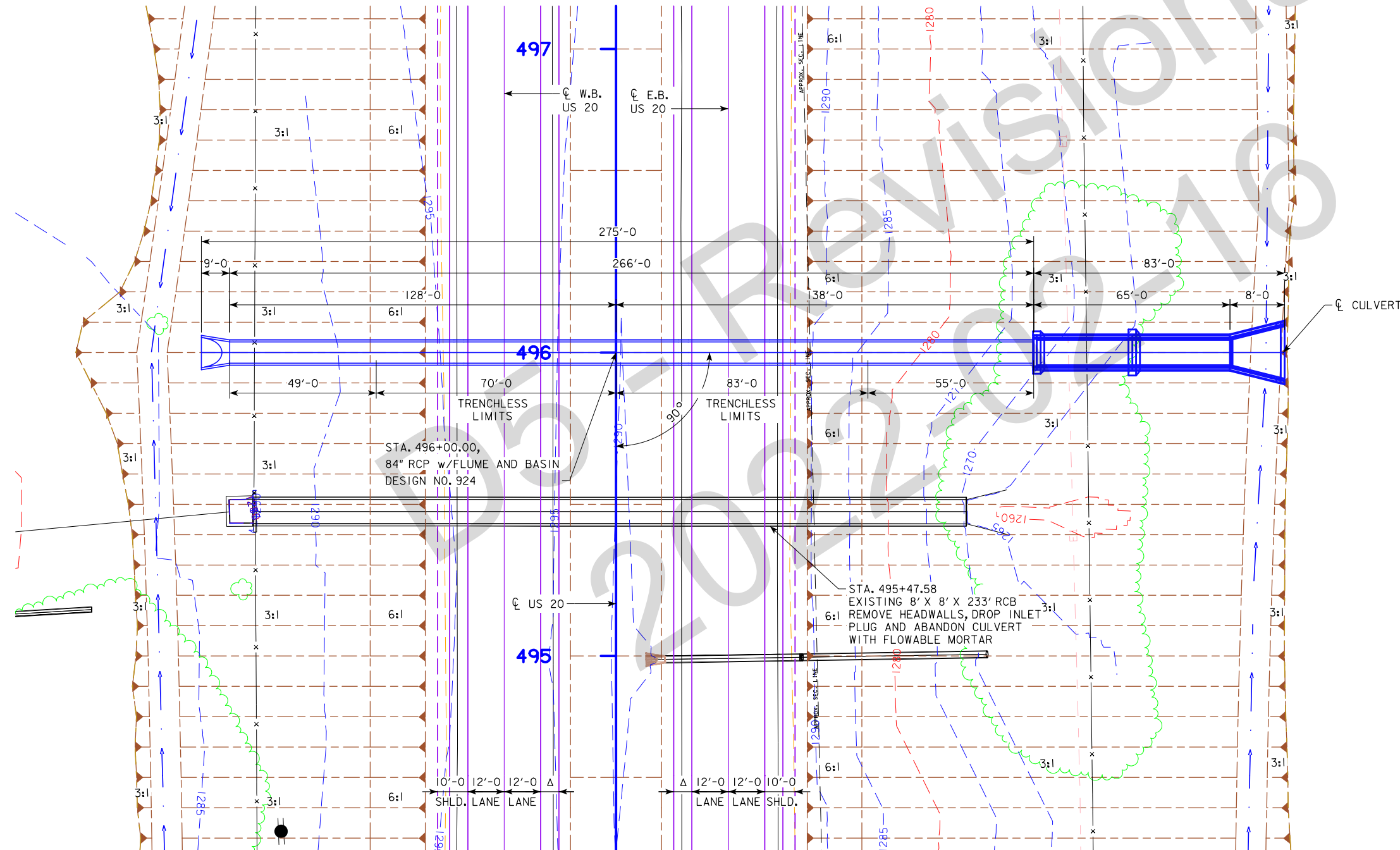
PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.
 DURING INITIAL STAGE OF TRENCHLESS CONSTRUCTION, EXCAVATION FOR A RECEIVING PIT WILL BE REQUIRED AT UPSTREAM INLET.

HYDRAULIC DATA

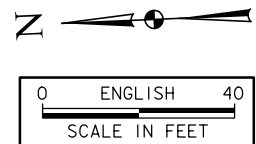
DRAINAGE AREA = 187.48 ACRES
 $Q_{50} = 231$ CFS
 HW ELEV. = 1287.50

LOCATION

US 20
 T-89N R-46W
 SECTION 32
 CONCORD TWP.
 T-88N R-47W
 SECTION 3
 WOODBURY TWP.
 WOODBURY COUNTY



SITUATION PLAN



PRELIMINARY
 DESIGN FOR 0° SKEW
84" X 266' (162' TRENCHLESS) REINFORCED CONCRETE PIPE w/FLUME L3 10' X 8' SITUATION PLAN
 STA. 496+00.00 (C US 20) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 2 FILE NO. 32165 DESIGN NO. 924

Reinforcing Bar List - Flume

Bar	Location	Shape	No.	Length	Weight
5a1	Walls FFV		124	Listed	1127
5b1	Walls FFH - Section 1		10	32'-10"	342
4b2	Walls BFH - Section 1		10	32'-10"	219
5b3	Walls FFH - Section 2		10	32'-10"	342
4b4	Walls BFH - Section 2		10	32'-10"	219
5b5	Walls FFH - Section 1		6	Listed	102
4b6	Walls BFH - Section 1		6	Listed	65
7c2	Bott. Floor & Walls BFV - Spliced		123	19'-1"	4798
5c3	Walls BFV		123	Listed	1352
6f1	Floor Longit. Top - Section 1		11	31'-7"	522
5f2	Floor Longit. Bott. - Section 1		11	31'-7"	362
6f3	Floor Longit. Top - Section 2		21	31'-3"	986
5f4	Floor Longit. Bott. - Section 2		21	31'-3"	684
6m1	Floor Transv. Top		65	11'-10"	1155
6s1	Walls Both F Along Slope - Section 1		4	32'-10"	198
6s2	Walls Both F Along Slope - Section 2		4	32'-10"	198
5u1	Fence Anchors (Galvanized)		2	2'-10"	6
Total (LBS.)					12,679

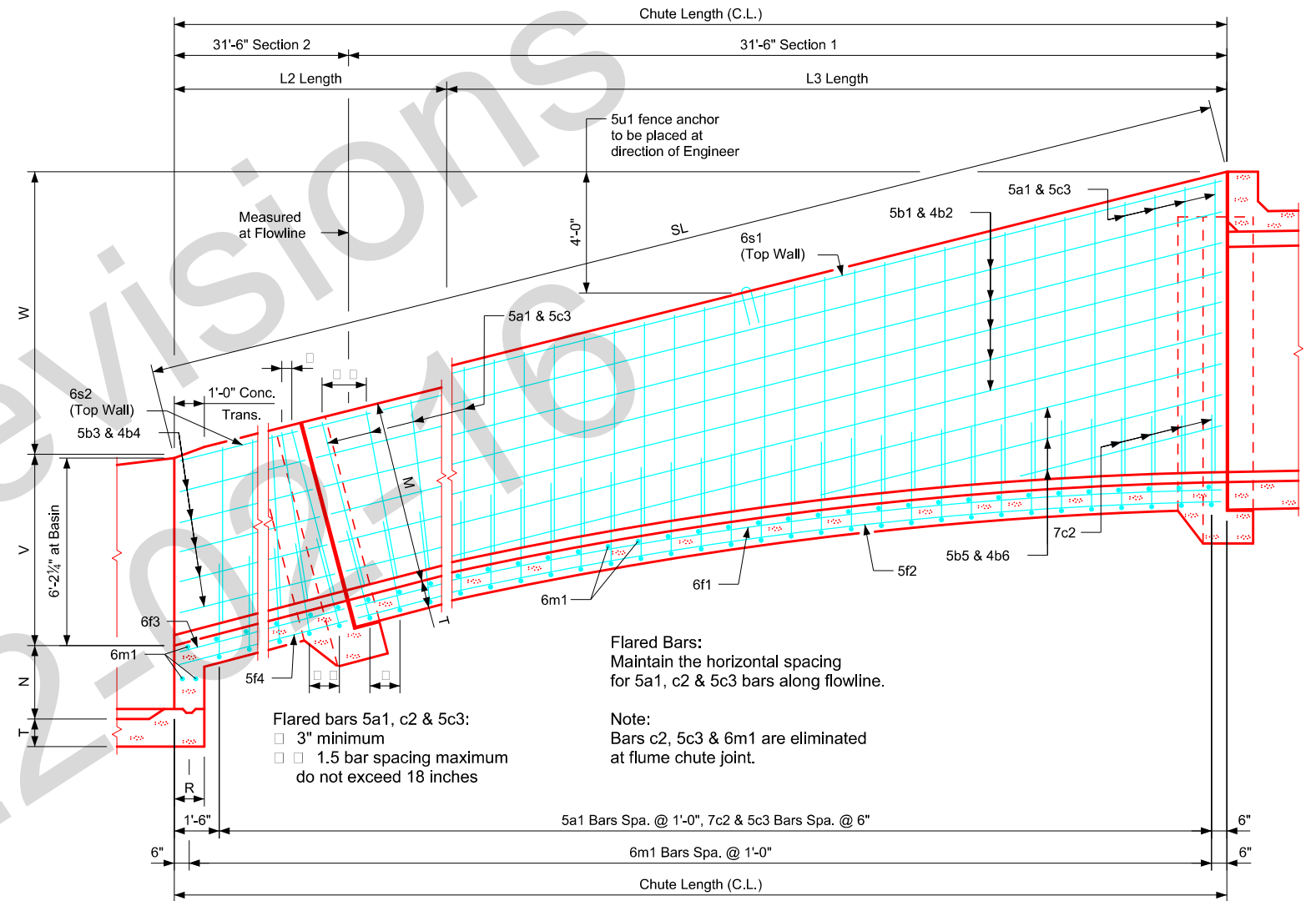
Weight of bars over 40'-0" long include an allowance for lap (2'-5" for 6s bars and 2'-0" for all other bars) but lengths shown for bars over 40'-0" long do not include laps.

Listed Bars

Bar 5a1
62 BARS
61 SPACES @ 1'-0"
LENGTH VARIES
10'-11" MAX, 6'-11" MIN - L3 LENGTH (25 BARS TOTAL)
6'-11" - L2 LENGTH (37 BARS TOTAL)

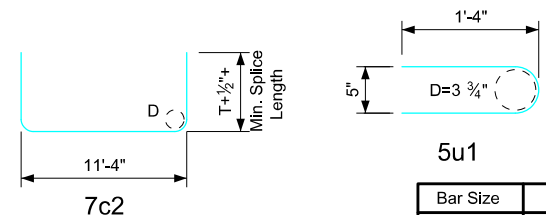
Bar 5c3
123 BARS
122 SPACES @ 0'-6"
LENGTH VARIES
10'-11" MAX, 6'-11" MIN - L3 LENGTH (50 BARS TOTAL)
6'-11" - L2 LENGTH (73 BARS TOTAL)

Bar 5b5 AND 4b6
4 BARS - 2 EA. LENGTH
21'-6" MAX, 11'-0" MIN



10'x8' Flume Chute - Longitudinal Section

Bent Bar Details



Flume Data

A = 18°26'
C = 1°00"
B = 13'-3 5/8"
SL = 66'-4 7/8"
V = 6'-3 7/8"
W = 21'-0"
M = 6'-0"
T = 1'-1"
H = 8'-0"

Curve Data

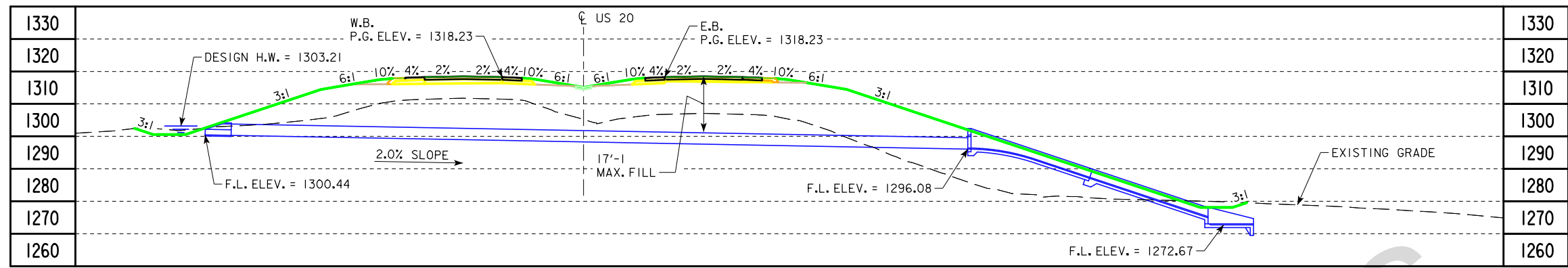
C.L. = 63'-0"
L2 = 37'-8 1/4"
L3 = 25'-3 3/4"
D = 12'-8 5/16"
E = 12'-7 7/16"
P.C. Elev. = 1275.73
P.I. Elev. = 1275.51
P.P. Elev. = 1275.29
P.T. Elev. = 1271.31
X1 = 3'-11 13/16"
X2 = 2'-2 7/8"
X3 = 0'-11 15/16"
X4 = 0'-3"
L3/4 = 6'-3 15/16"

Notes:

- See Sheets RCF 1-20 & RCF 2-20 for flume information and details not shown.
- See Sheet FBJ 04-20 for bell joint information and details not shown.
- See Sheet RCFB 04-20 for flume basin information and details not shown.

PRELIMINARY

DESIGN FOR 0° SKEW
**84" X 266' (162' TRENCHLESS)
REINFORCED CONCRETE PIPE
w/FLUME L3 10' X 8'
FLUME DETAILS**
STA. 496+00.00 (€ US 20) NOVEMBER, 2022
WOODBURY COUNTY
IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
DESIGN SHEET NO. 2 OF 2 FILE NO. 32165 DESIGN NO. 924



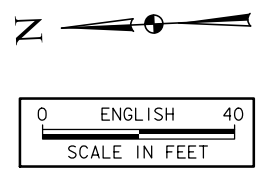
LONGITUDINAL SECTION ALONG ϕ CULVERT

BENCH MARK CP8104 STA. 487+19.74, 3.329' RT. WOODBURY COUNTY GPS MONUMENT. ELEV. 1109.197
 NOTE: STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

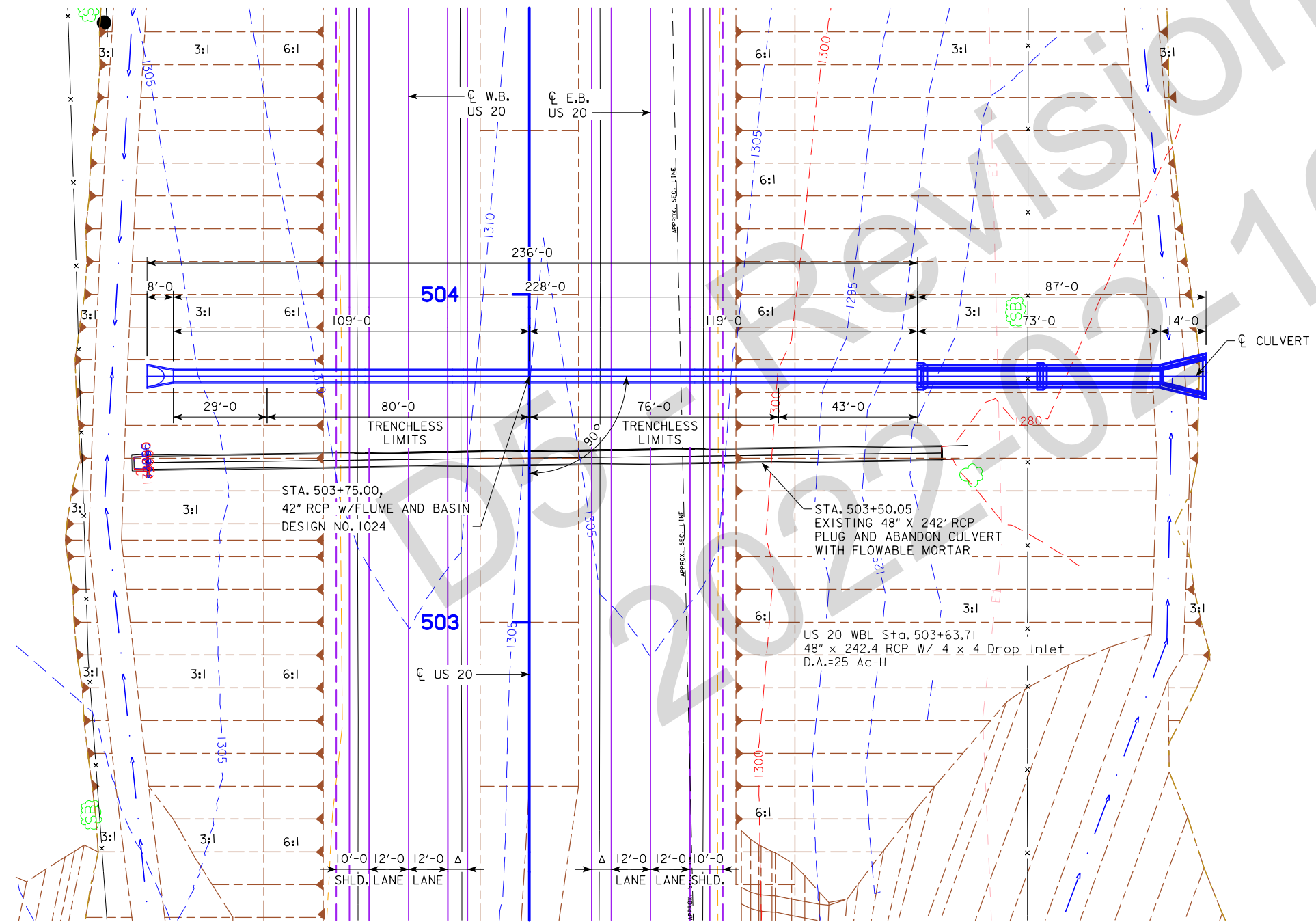
NOTES:
 PIPE DIMENSIONS SHOWN IN PLAN VIEW ARE BASED ON LAYING LENGTH.
 DURING INITIAL STAGE OF TRENCHLESS CONSTRUCTION, EXCAVATION FOR A RECEIVING PIT WILL BE REQUIRED AT UPSTREAM INLET.

HYDRAULIC DATA
 DRAINAGE AREA = 17.96 ACRES
 $Q_{50} = 40$ CFS
 HW ELEV. = 1303.21

LOCATION
 US 20
 T-89N R-46W
 SECTION 32
 CONCORD TWP.
 T-88N R-47W
 SECTION 3
 WOODBURY TWP.
 WOODBURY COUNTY



PRELIMINARY
 DESIGN FOR 0° SKEW
42" X 228' (156' TRENCHLESS) REINFORCED CONCRETE PIPE w/FLUME L3 5' X 4'
SITUATION PLAN
 STA. 503+75.00 (ϕ US 20) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 1 OF 2 FILE NO. 32165 DESIGN NO. 1024



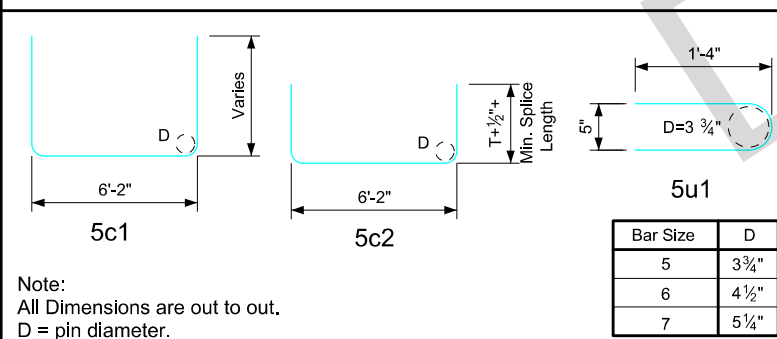
SITUATION PLAN

Reinforcing Bar List - Flume

Bar	Location	Shape	No.	Length	Weight
4a1	Walls FFV	—	144	Listed	414
5b1	Walls FFH - Section 1	—	4	38'-1"	159
4b2	Walls BFH - Section 1	—	4	38'-1"	102
5b3	Walls FFH - Section 2	—	4	38'-1"	159
4b4	Walls BFH - Section 2	—	4	38'-1"	102
5b5	Walls FFH - Section 1	—	4	Listed	68
4b6	Walls BFH - Section 1	—	4	Listed	43
5c1	Bott. Floor & Walls BFV	—	143	Listed	1543
5c2	Bott. Floor & Walls BFV - Spliced	—	143	12'-1"	1802
5c3	Walls BFV	—	143	Listed	750
6f1	Floor Longit. Top - Section 1	—	6	37'-1"	334
5f2	Floor Longit. Bott. - Section 1	—	6	37'-1"	232
6f3	Floor Longit. Top - Section 2	—	6	31'-3"	282
5f4	Floor Longit. Bott. - Section 2	—	6	31'-3"	196
6m1	Floor Transv. Top	—	75	6'-8"	751
5s1	Walls Both F Along Slope - Section 1	—	4	38'-2"	159
5s2	Walls Both F Along Slope - Section 2	—	4	38'-2"	159
5u1	Fence Anchors (Galvanized)	—	2	2'-10"	6
Total (LBS.)					7261

Weight of bars over 40'-0" long include an allowance for a 2'-0" lap but lengths shown for bars over 40'-0" long do not include the lap.

Bent Bar Details



Concrete Placement Quantities

Location	Footing	Walls	Total
Flume - Section 1	10.4	6.9	17.3
Flume - Section 2	10.7	5.7	16.4
Junction Bell	0.8	0.6	1.4
Chute Bell	0.8	0.3	1.1
Basin	7.4	2.6	10.0
Basin Curtain	0.3	---	0.3
Total (CY)			46.5

Listed Bars

Bar 4a1
72 BARS
71 SPACES @ 1'-0"
LENGTH VARIES
6'-9" MAX, 3'-7" MIN - L3 LENGTH (20 BARS TOTAL)
3'-7" - L2 LENGTH (52 BARS TOTAL)

Bar 5b5 AND 4b6
4 BARS - 2 EA. LENGTH
21'-6" MAX, 11'-0" MIN

Bar 5c1
143 BARS
143 SPACES @ 0'-6"
LENGTH VARIES
19'-8" MAX, 8'-10" MIN - L3 LENGTH (40 BARS TOTAL)
8'-10" - L2 LENGTH (103 BARS TOTAL)

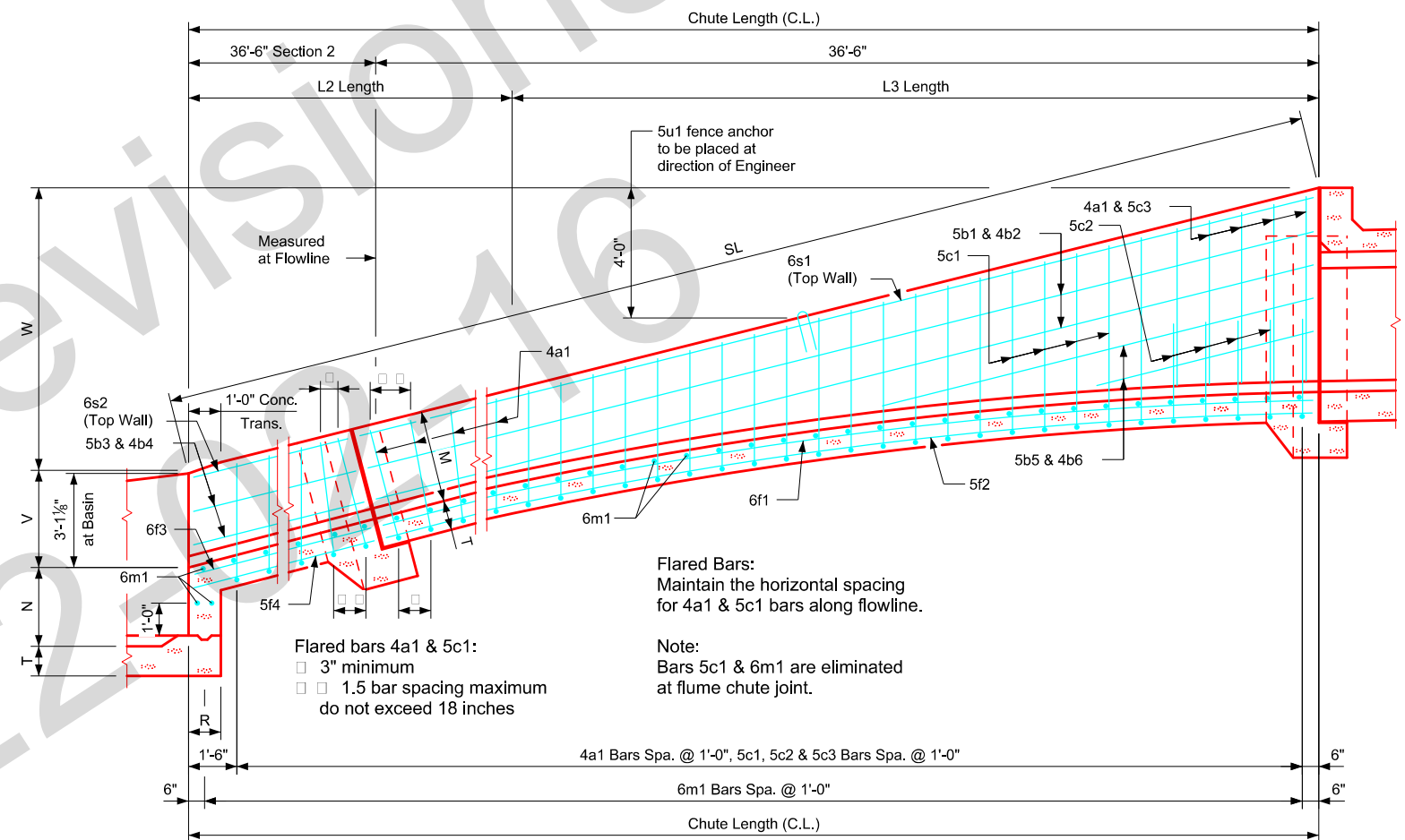
Bar 5c3
143 BARS
143 SPACES @ 0'-6"
LENGTH VARIES
6'-9" MAX, 3'-7" MIN - L3 LENGTH (40 BARS TOTAL)
3'-7" - L2 LENGTH (103 BARS TOTAL)

Flume Data

A = 18°26'
C = 1°00'
B = 10'-6 5/16"
SL = 76'-11 3/8"
V = 3'-2"
W = 24'-4"
M = 3'-0"
T = 0'-11"
H = 4'-0"

Curve Data

C.L. = 73'-0"
L2 = 52'-11 3/4"
L3 = 20'-0 1/4"
D = 10'-0 7/16"
E = 9'-11 13/16"
P.C. Elev. = 1296.10
P.I. Elev. = 1295.91
P.P. Elev. = 1295.73
P.T. Elev. = 1292.57
X1 = 3'-1 7/8"
X2 = 1'-9 1/4"
X3 = 0'-9 7/16"
X4 = 0'-2 3/8"
L3/4 = 5'-0 1/16"



5'x4' Flume Chute - Longitudinal Section

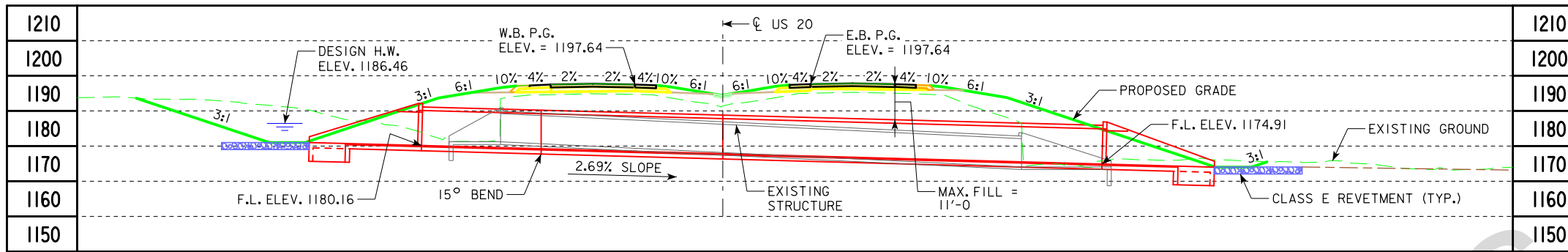
Notes:

- See Sheets RCF 1-20 & RCF 2-20 for flume information and details not shown.
- See Sheet FBJ 01-20 for bell joint information and details not shown.
- See Sheet RCFB 01-20 for flume basin information and details not shown.

PRELIMINARY

DESIGN FOR 0° SKEW
**42" X 228' (156' TRENCHLESS)
 REINFORCED CONCRETE PIPE
 w/FLUME L3 5' X 4'
 FLUME DETAILS**

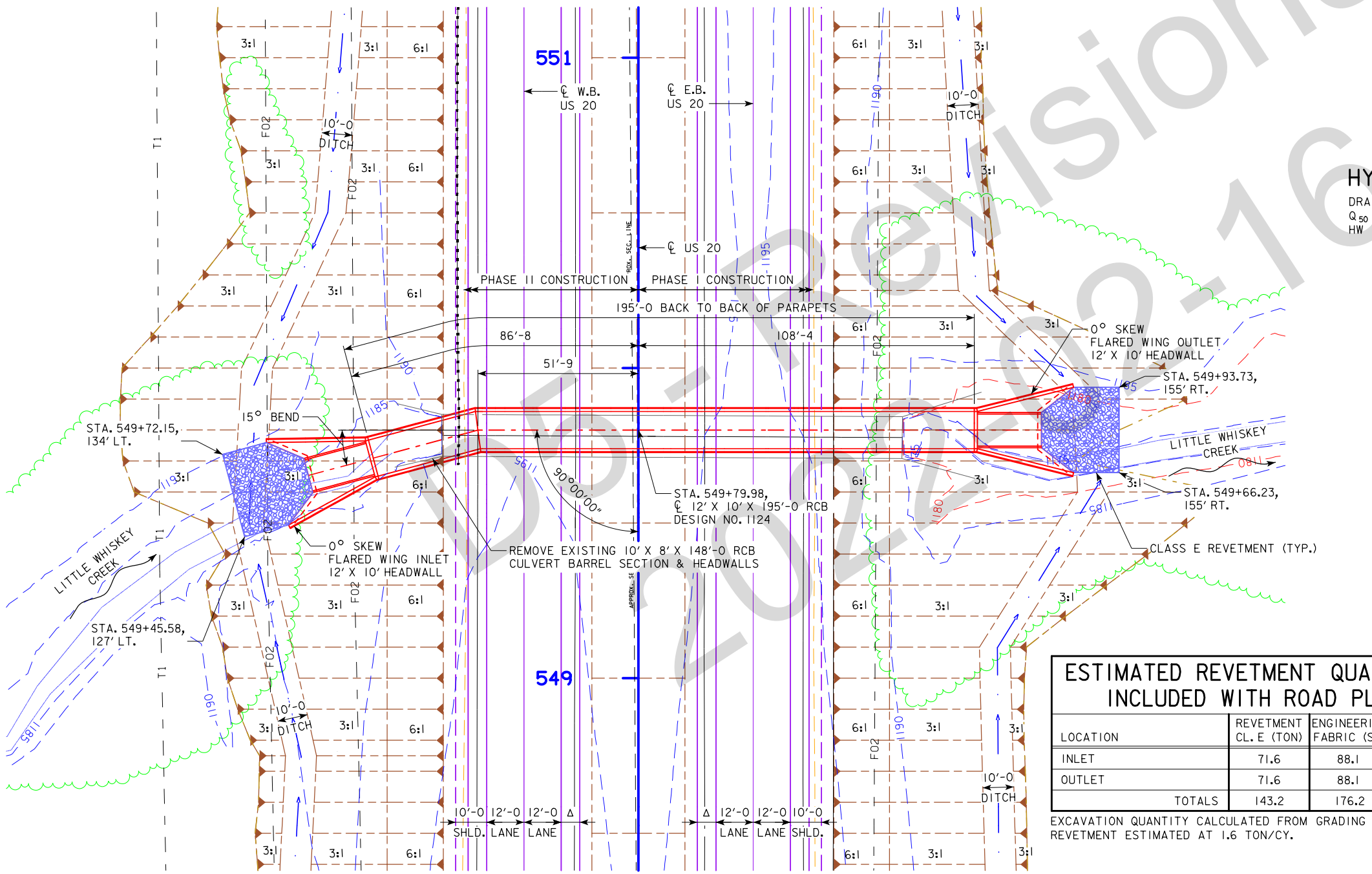
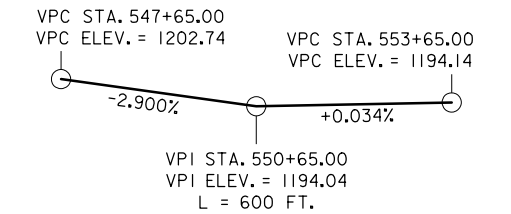
STA. 503+75.00 (± US 20) NOVEMBER, 2022
WOODBURY COUNTY
 IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
 DESIGN SHEET NO. 2 OF 2 FILE NO. 32165 DESIGN NO. 1024



LONGITUDINAL SECTION ALONG CL CULVERT

NOTES:
STATION AND OFFSET BASED ON US 20 CENTERLINE ALIGNMENT.

DESIGN NOTES:
TEMPORARY SHORING REQUIRED FOR BOTH CONSTRUCTION PHASES.
FLARED WINGS UTILIZED DUE TO STREAM ALIGNMENT WITH CULVERT.
A PRECAST OPTION WILL NOT BE PRESENTED DUE TO BEND IN CULVERT.
STAGE I AND STAGE II CONSTRUCTION LIMITS TO BE DETERMINED DURING FINAL DESIGN.



SITUATION PLAN

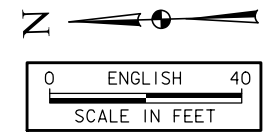
HYDRAULIC DATA

DRAINAGE AREA = 627.25 ACRES
Q₅₀ = 541 CFS
HW ELEV. = 1186.49

UTILITIES LEGEND:

REFER TO SHEET D.1

UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.



LOCATION

US 20 OVER LITTLE WHISKEY CREEK
T-88N R-47W SECTION 2
WOODBURY TOWNSHIP
T-89N R-46W SECTION 33
CONCORD TOWNSHIP
WOODBURY COUNTY
LATITUDE 42.475300°
LONGITUDE -96.284024°

TRAFFIC ESTIMATE

2020 AADT	11,886	V.P.D.
2040 AADT	16,195	V.P.D.
2040 DHV	1,673	V.P.H.
TRUCKS	13	%
TOTAL DESIGN ESALs	5,197,600	

ESTIMATED REVETMENT QUANTITIES INCLUDED WITH ROAD PLANS

LOCATION	REVETMENT CL. E (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	71.6	88.1	44.7
OUTLET	71.6	88.1	44.7
TOTALS	143.2	176.2	89.4

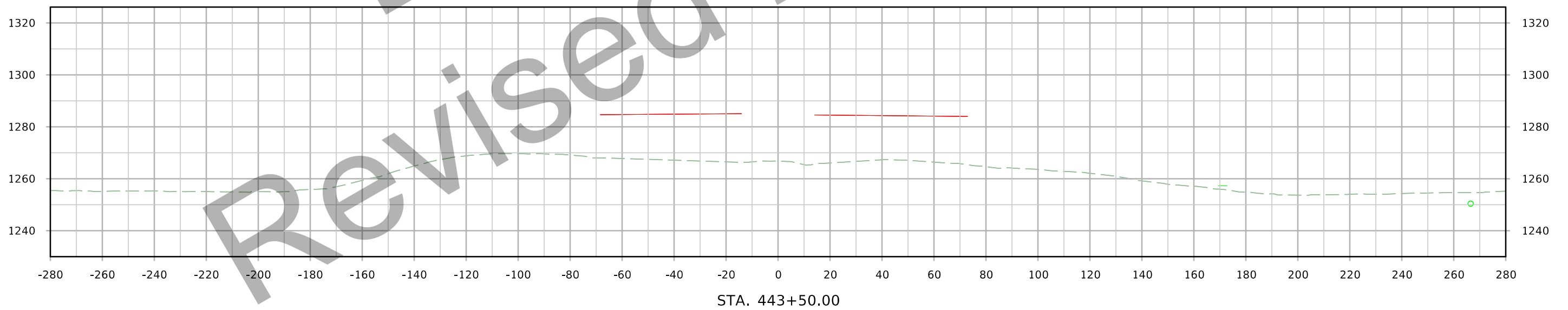
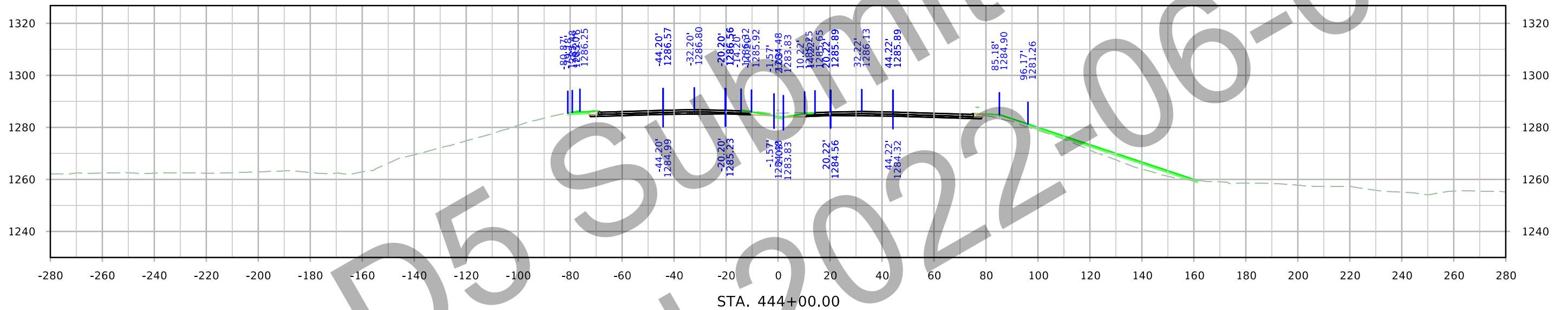
EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.
REVETMENT ESTIMATED AT 1.6 TON/CY.

PRELIMINARY

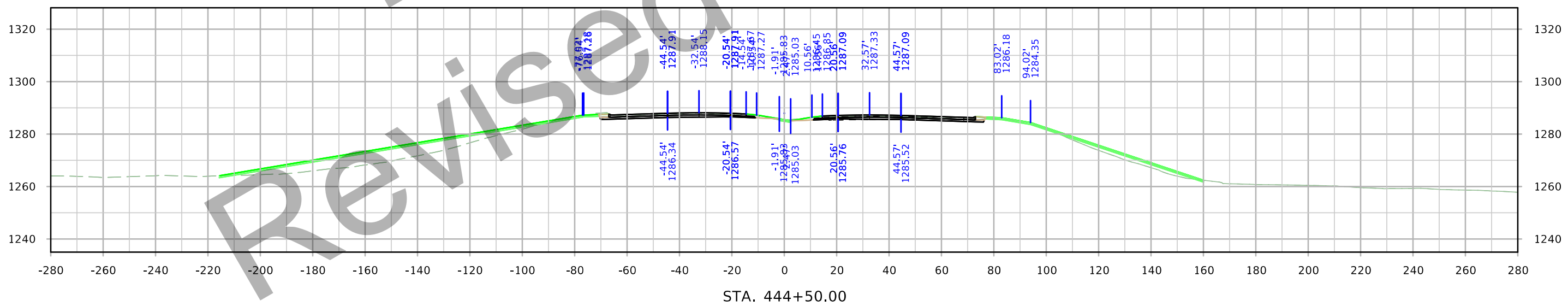
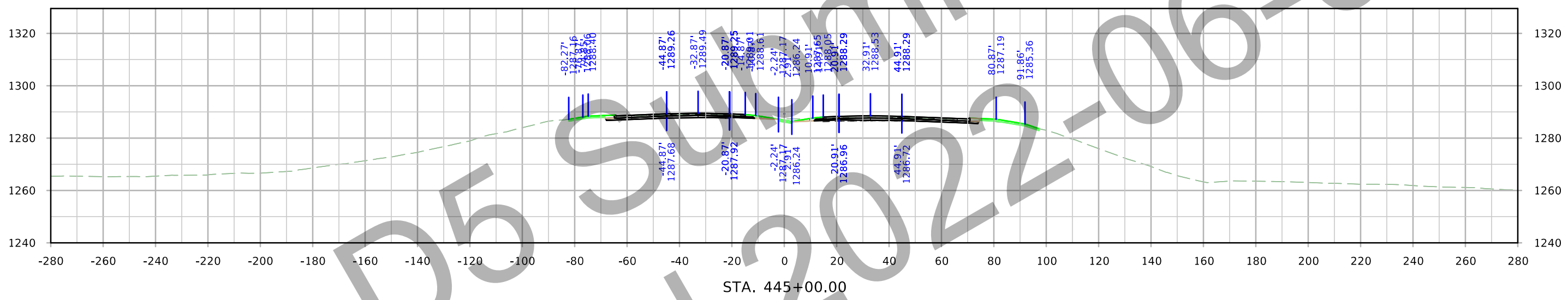
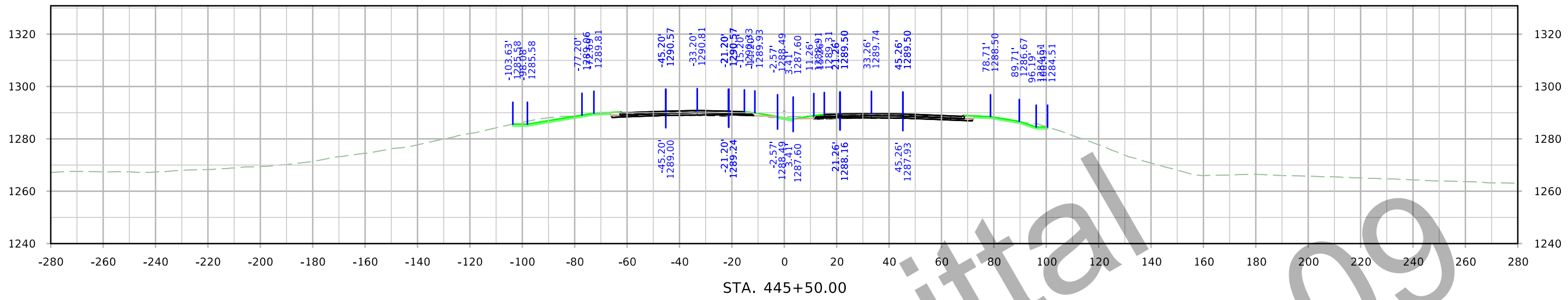
DESIGN FOR 0° SKEW
12' X 10' X 195'-0" REINFORCED CONCRETE BOX CULVERT
SITUATION PLAN

STA. 549+79.98 (CL US 20) NOVEMBER, 2022
WOODBURY COUNTY
IOWA DOT - TRANSPORTATION DEVELOPMENT DIVISION
DESIGN SHEET NO. 1 OF 1 FILE NO. 32165 DESIGN NO. 1124

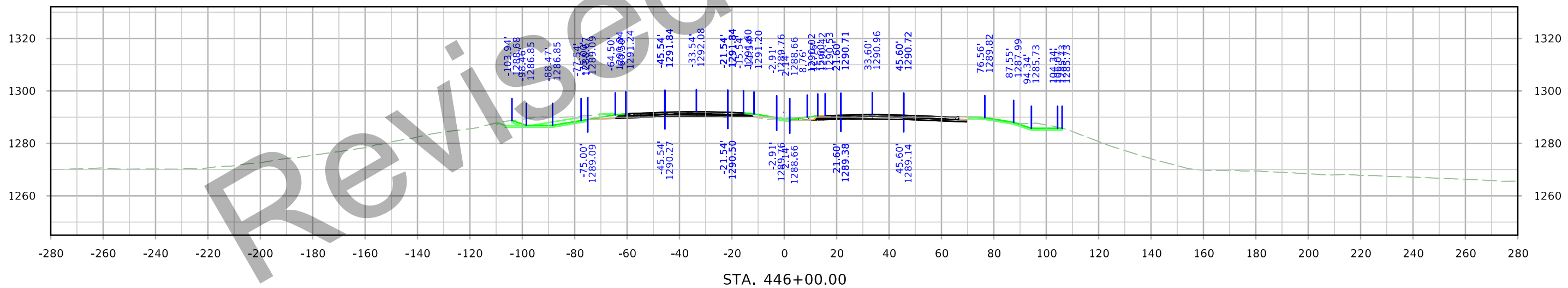
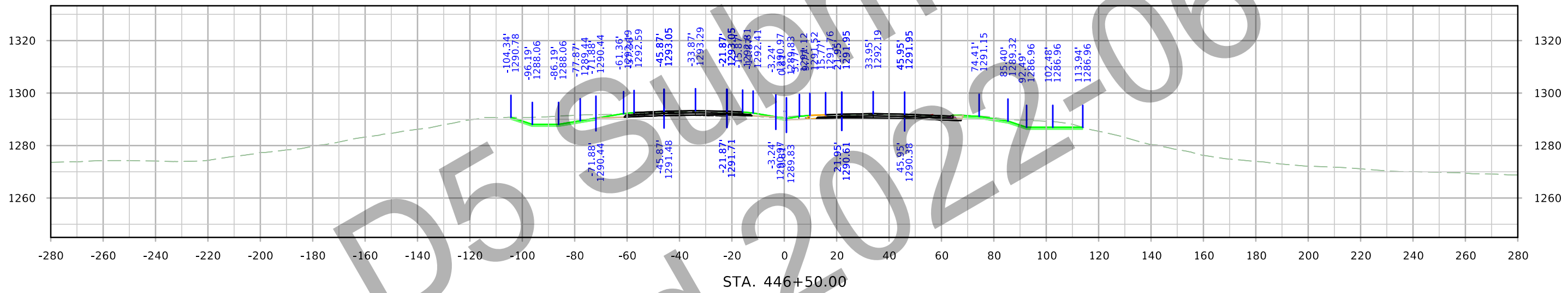
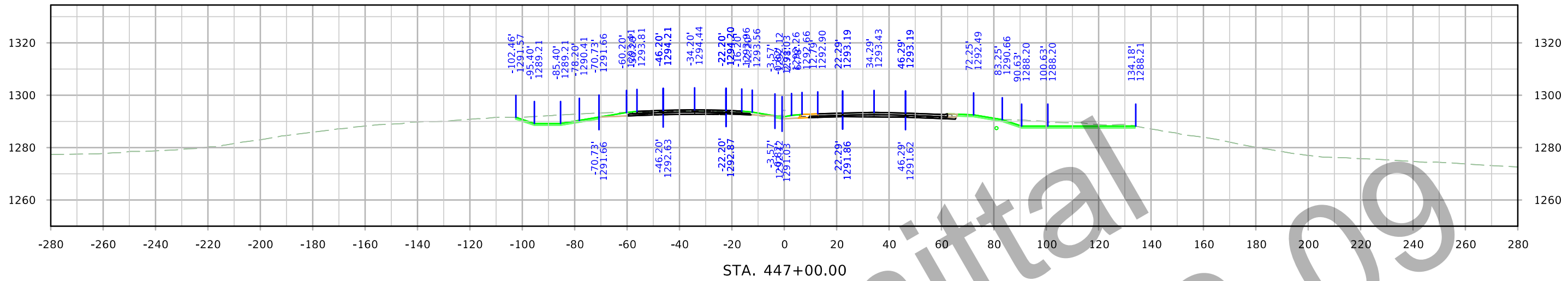
US 20 Stage 2
US 20 Stage 2

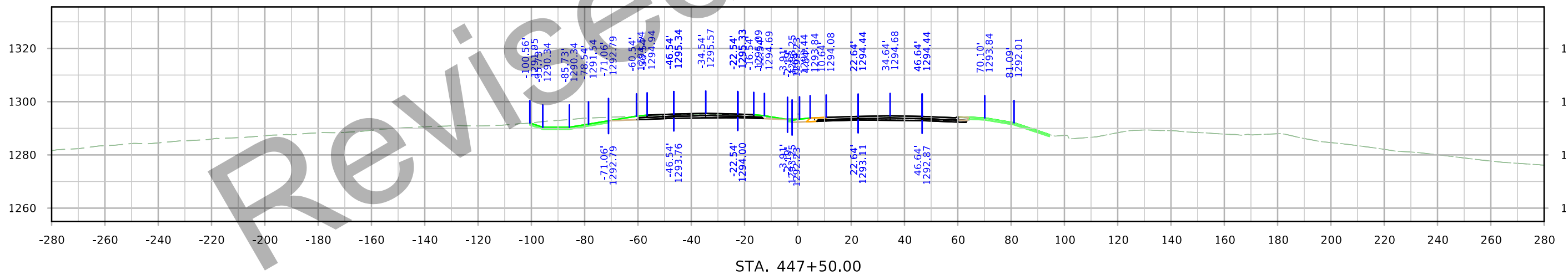
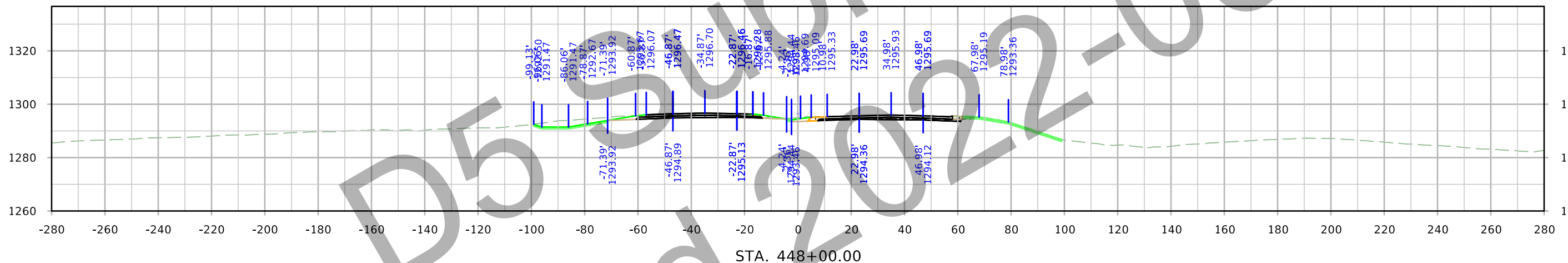
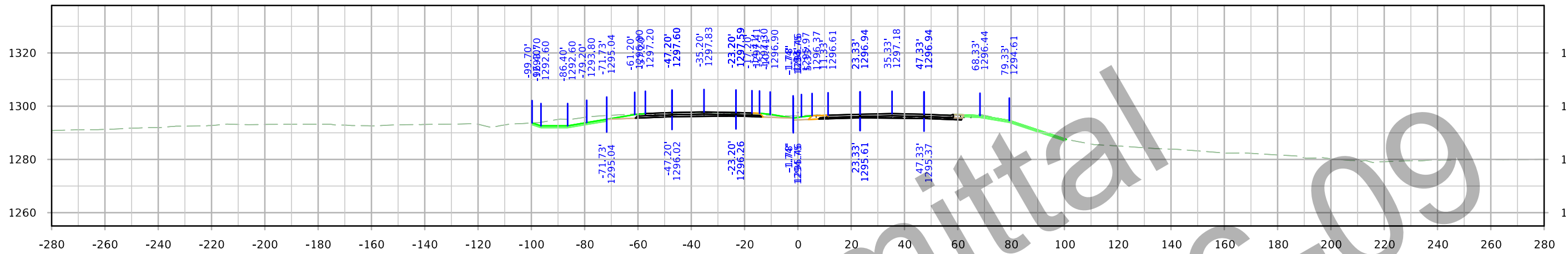


US 20 Stage 2

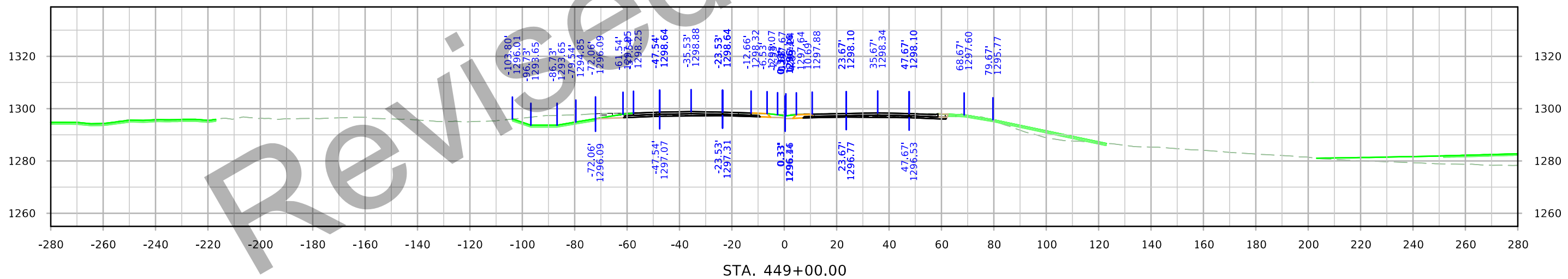
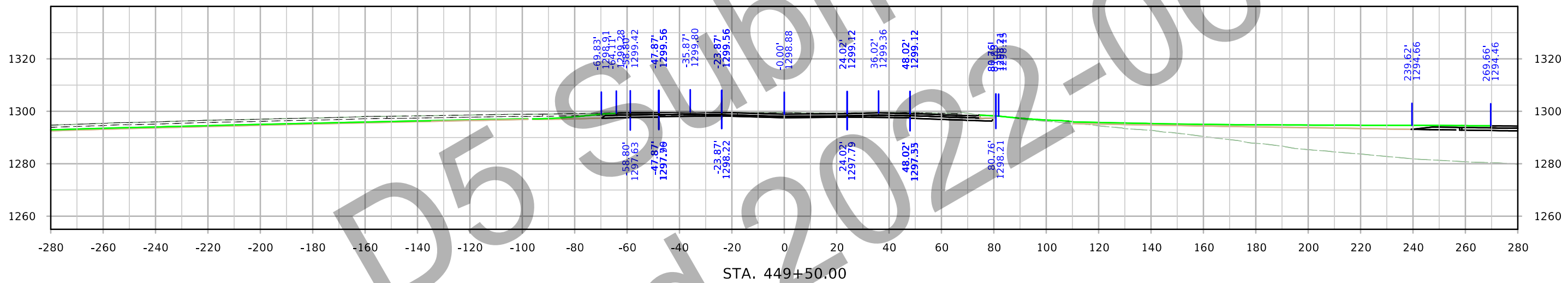
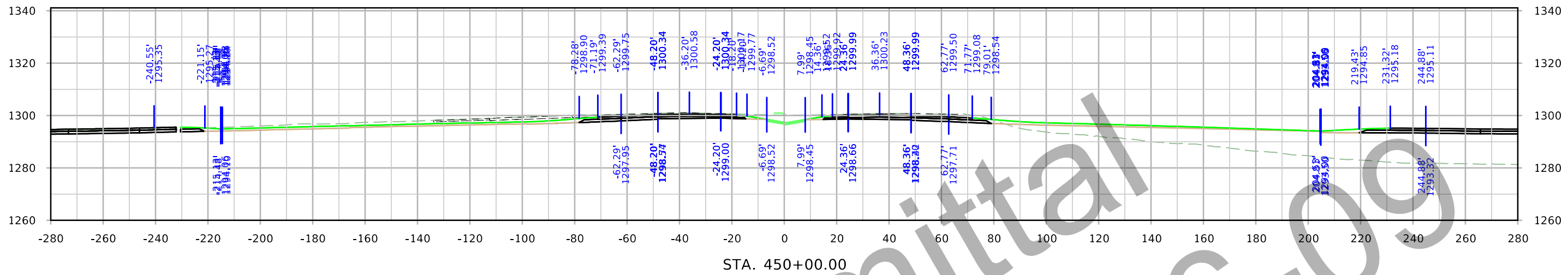


US 20 Stage 2

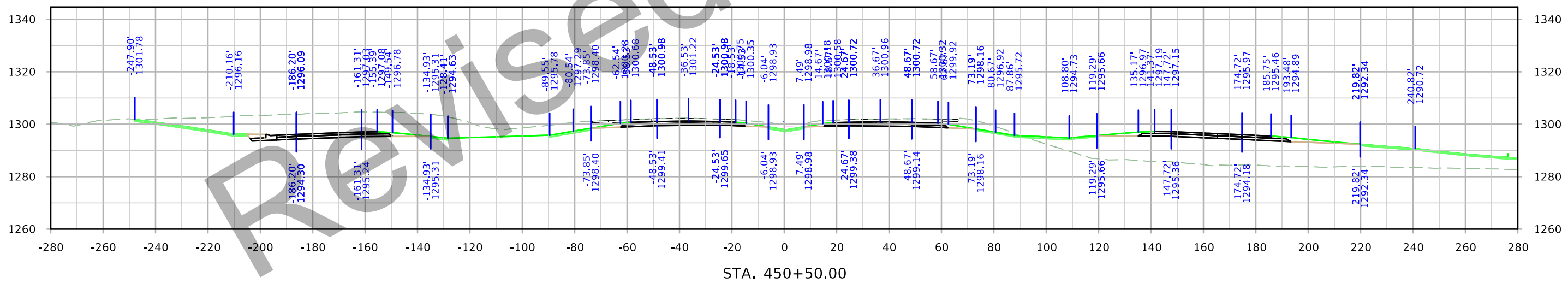
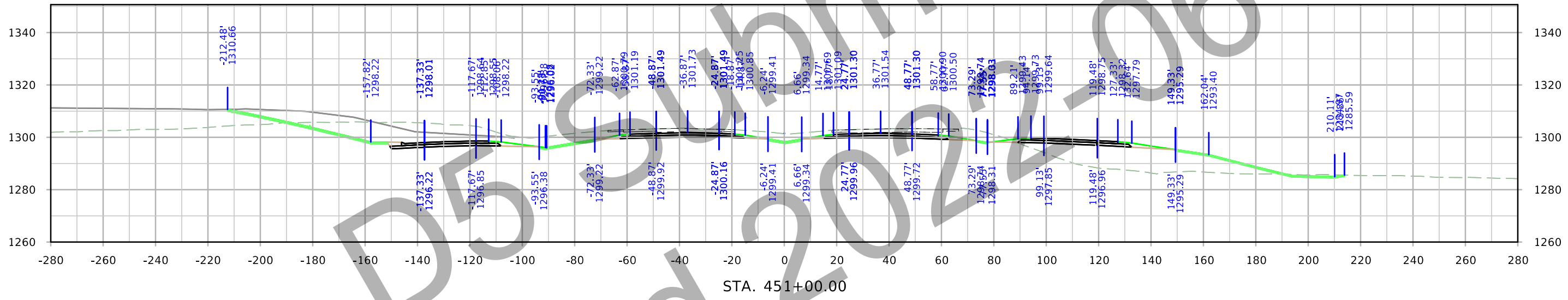
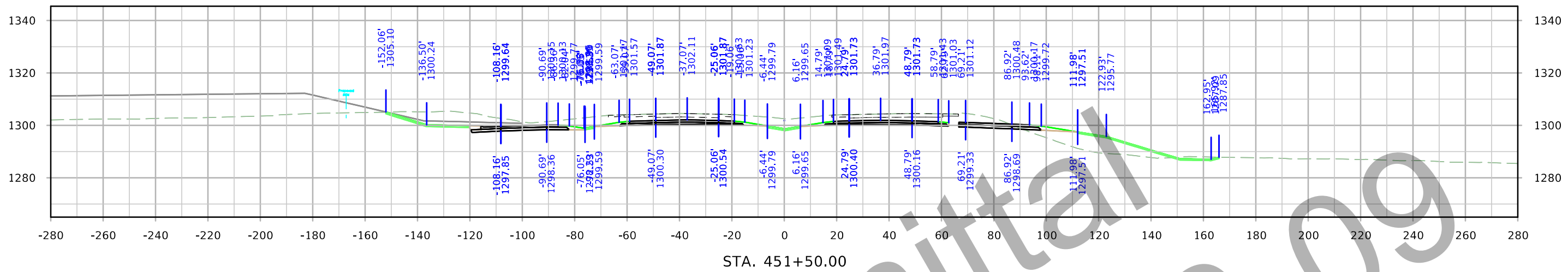




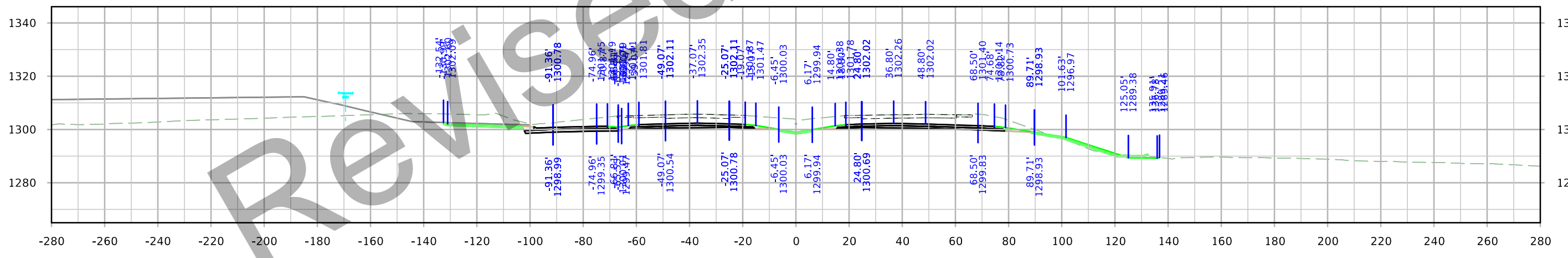
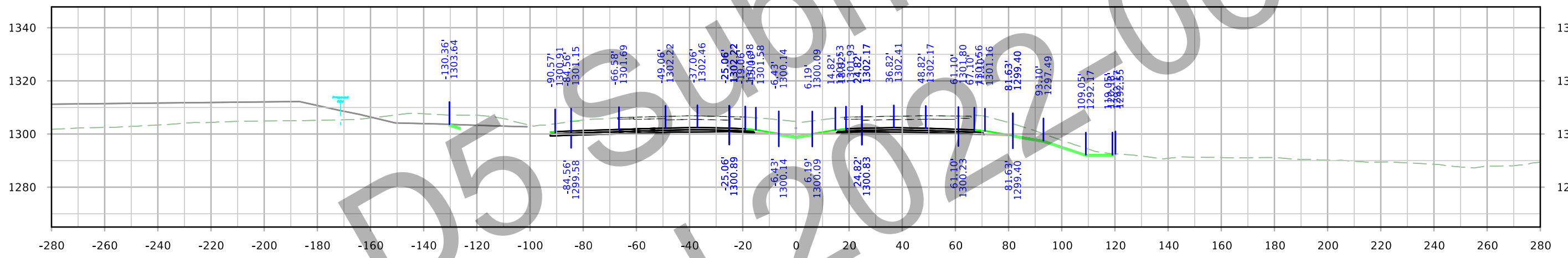
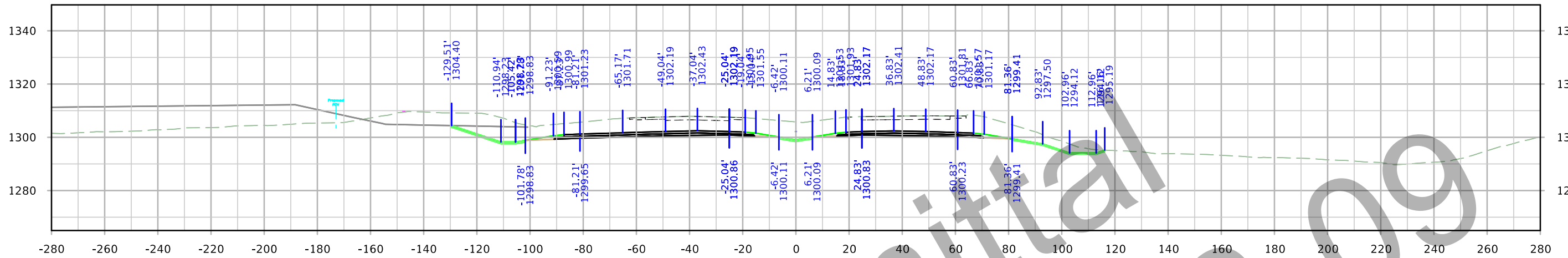
US 20 Stage 2



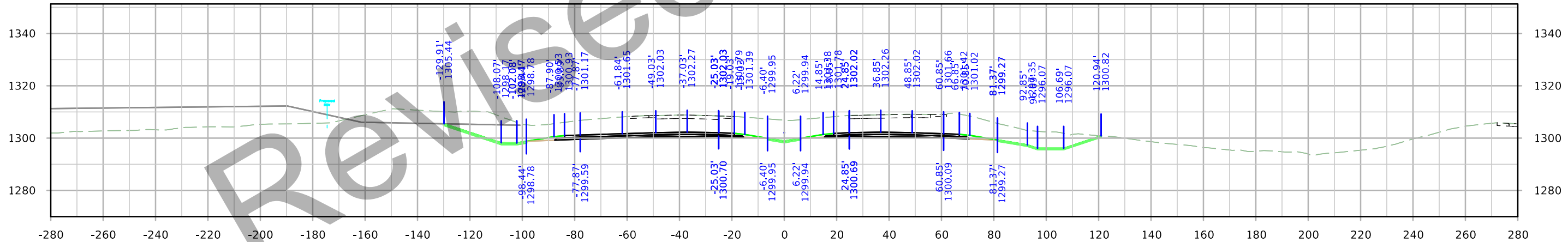
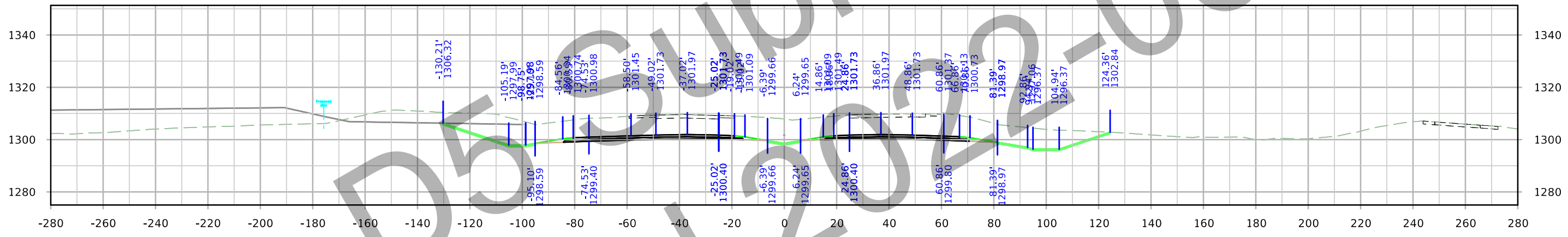
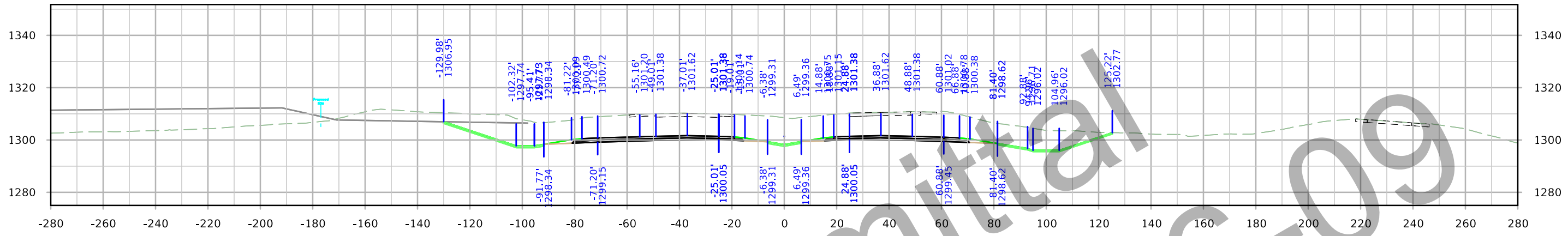
US 20 Stage 2

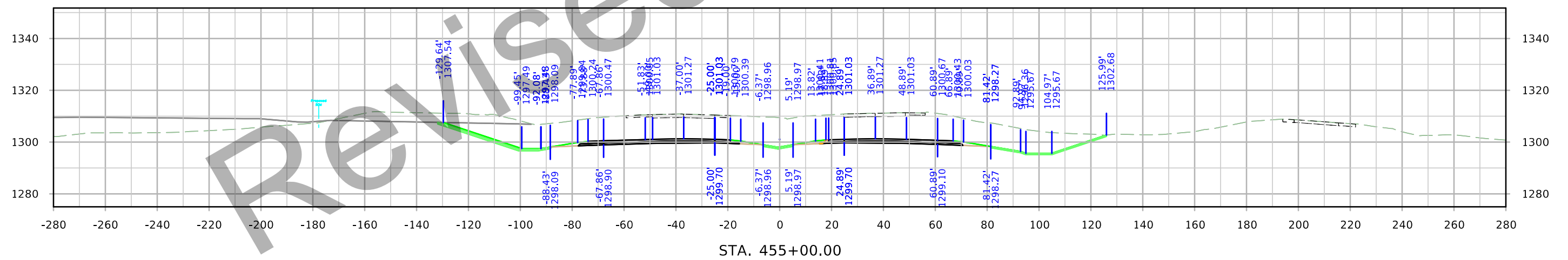
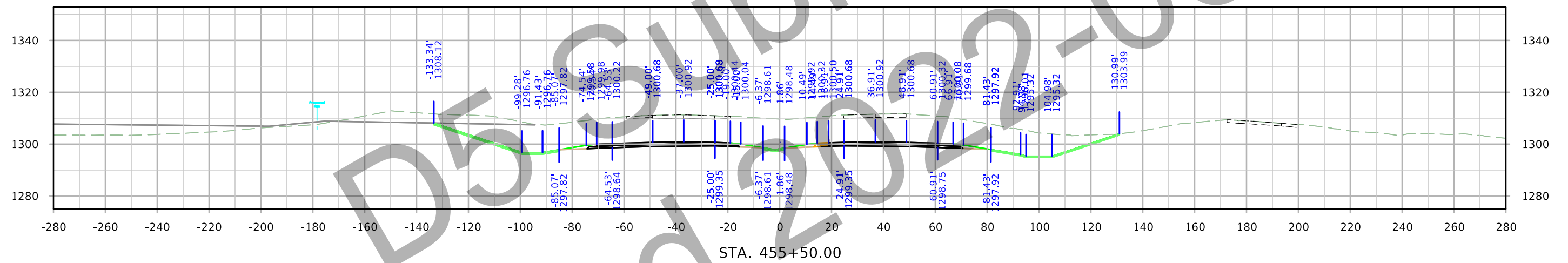
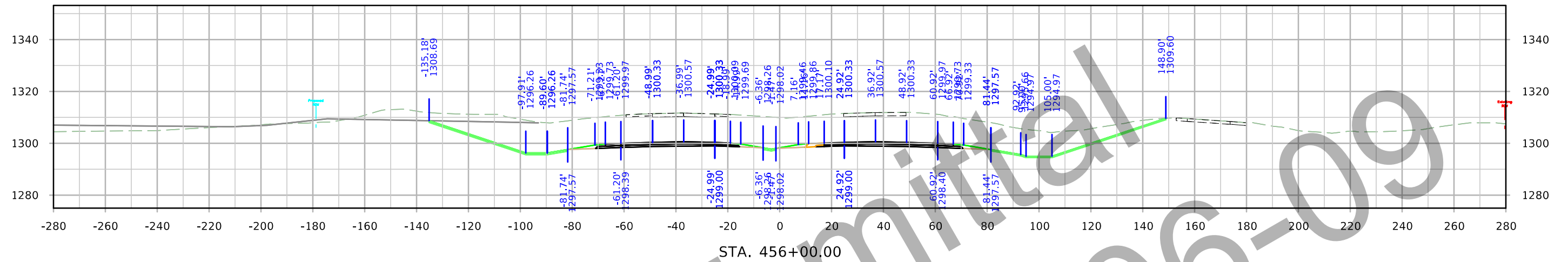


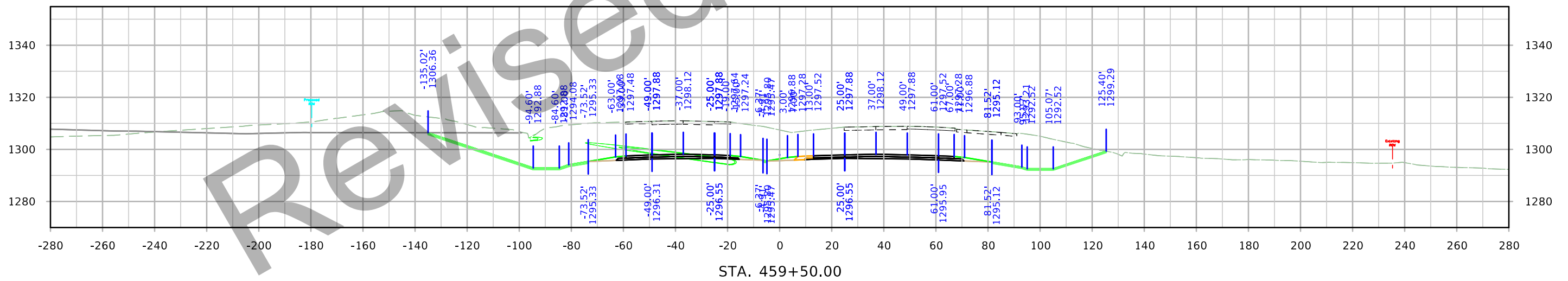
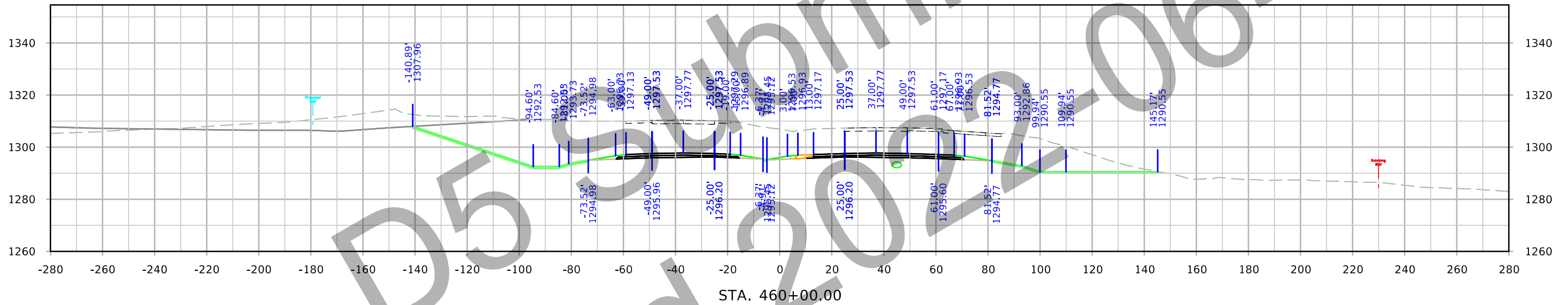
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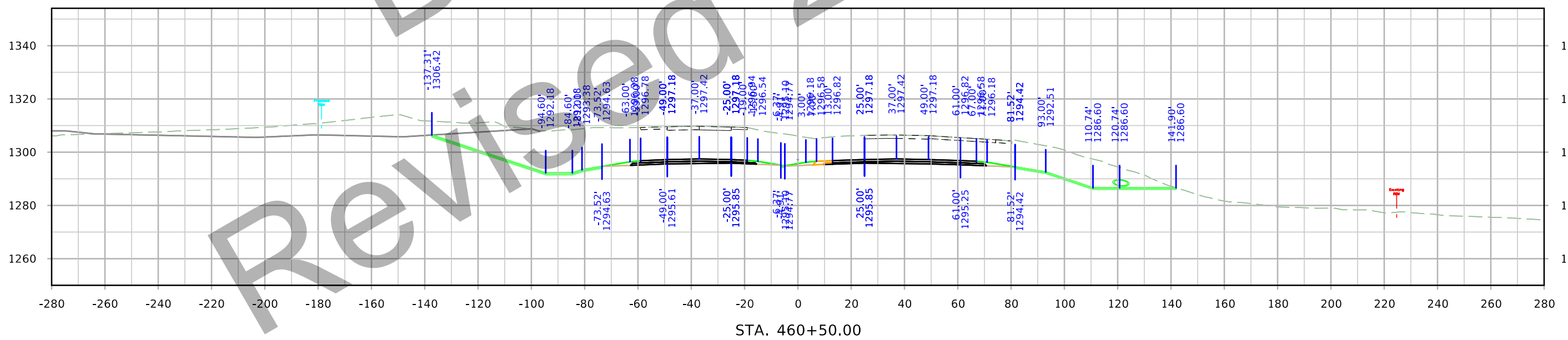
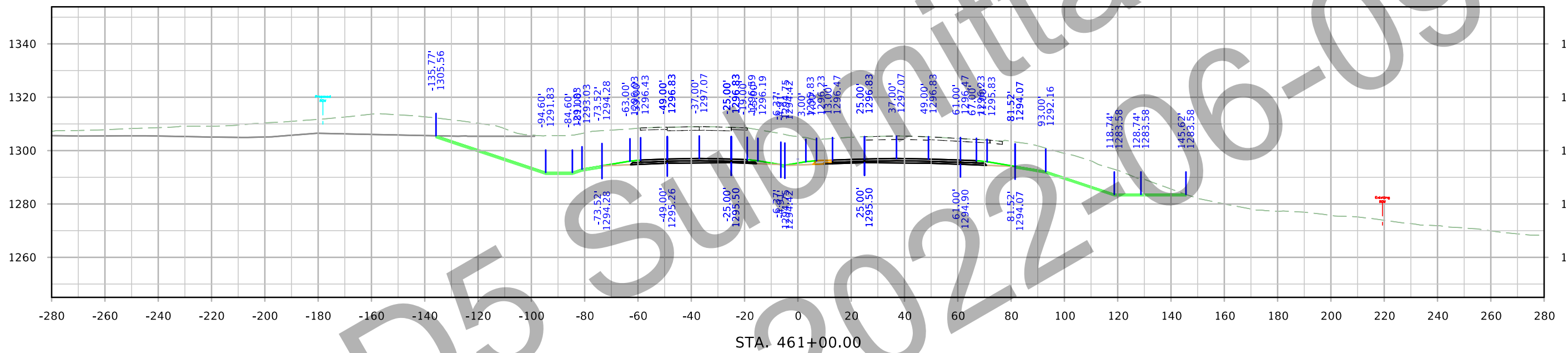


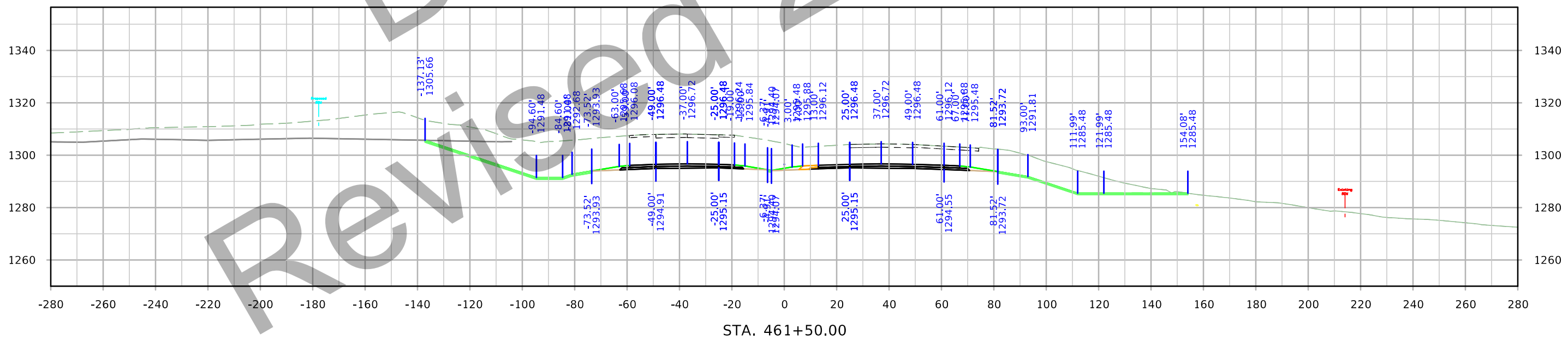
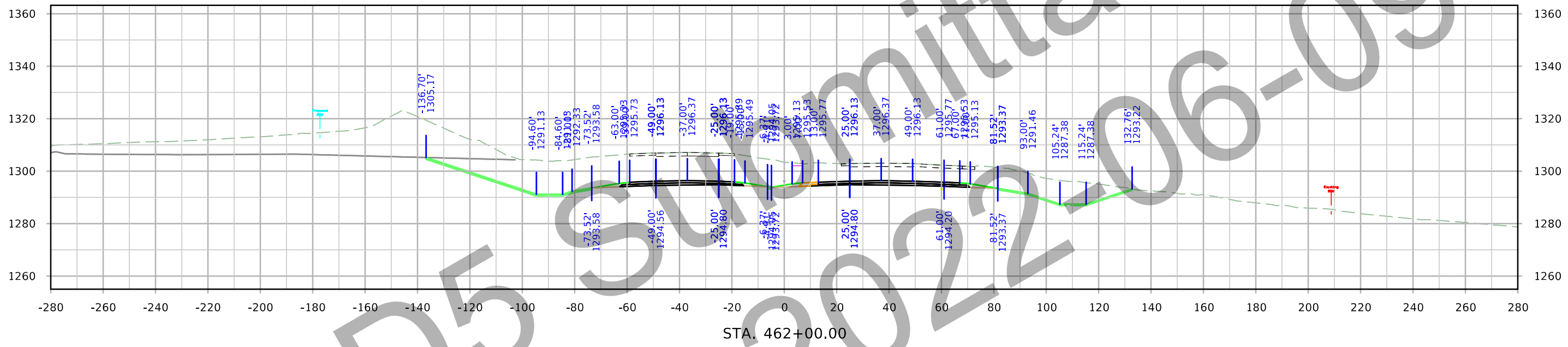
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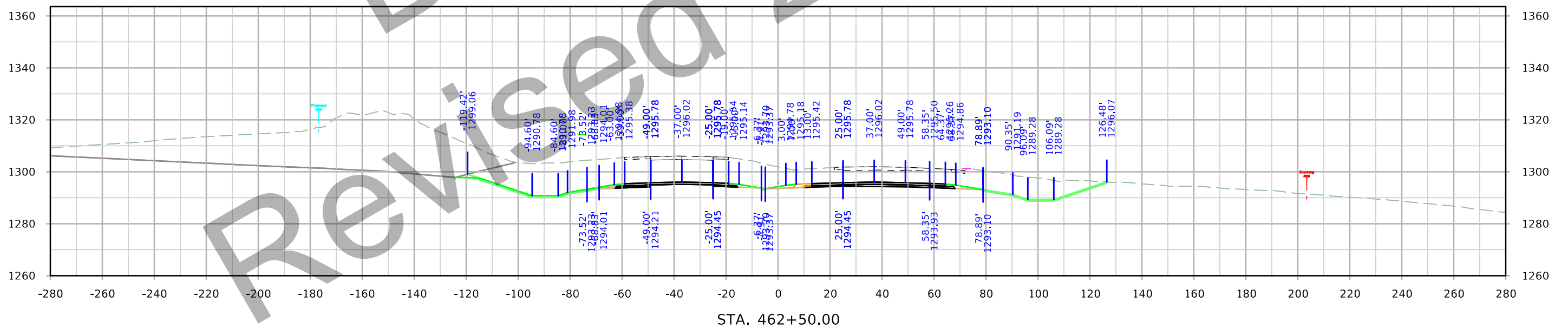
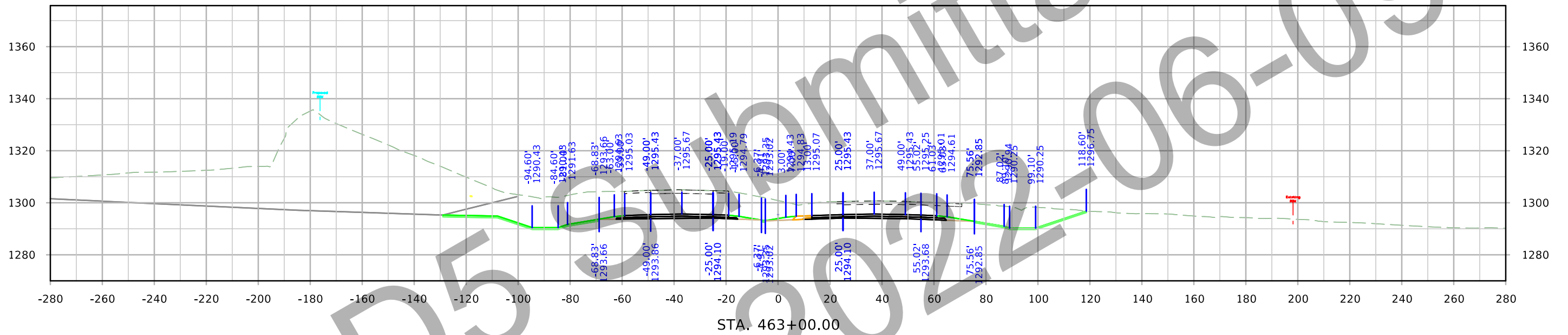


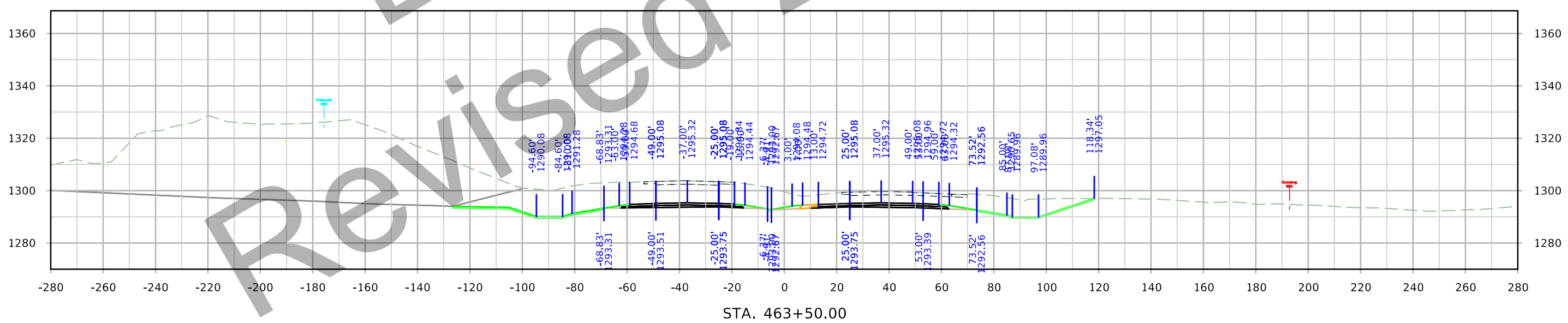
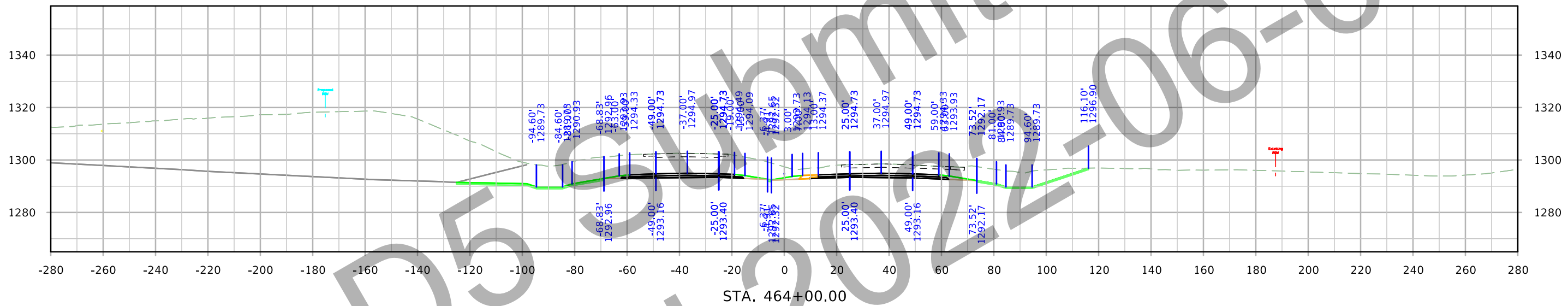


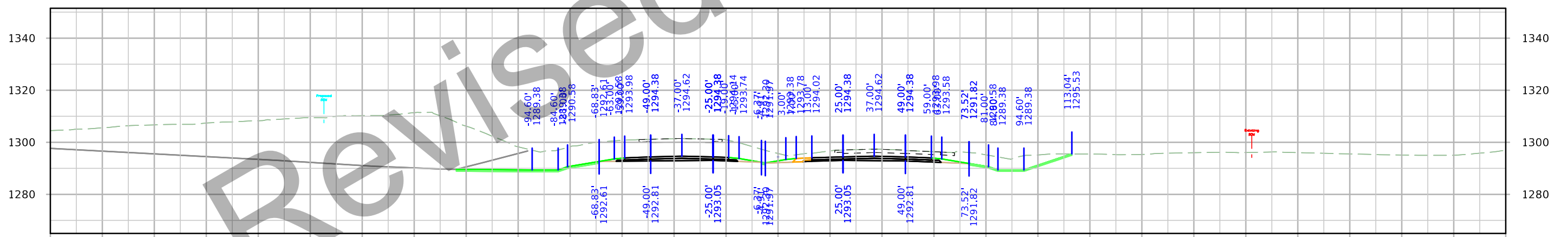
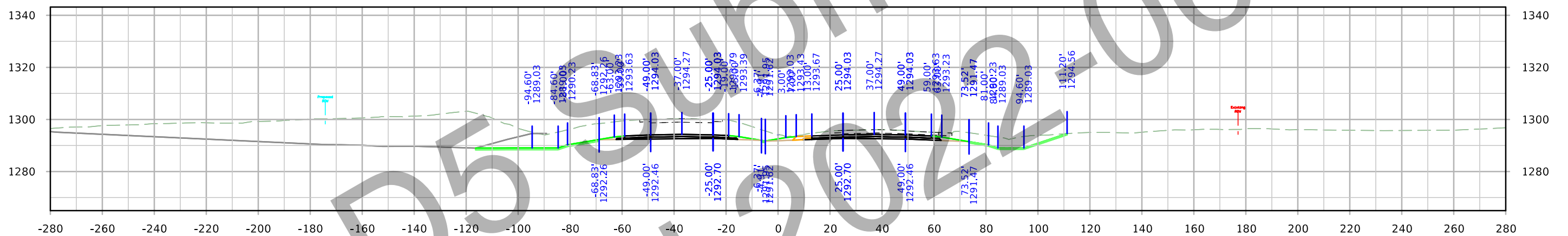
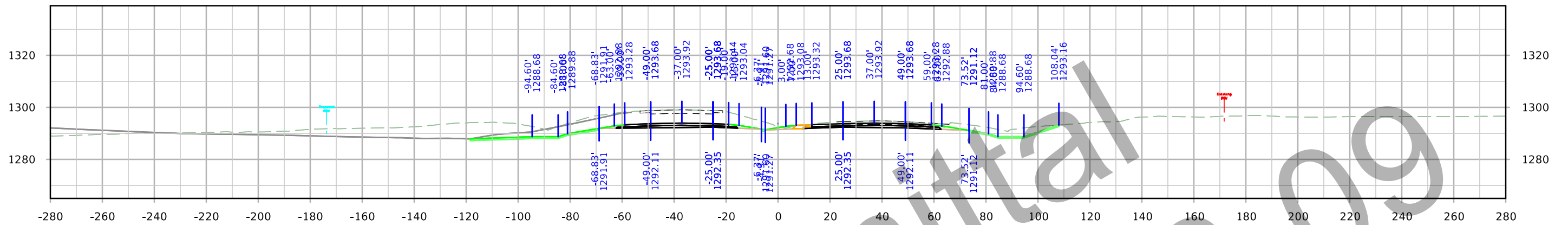


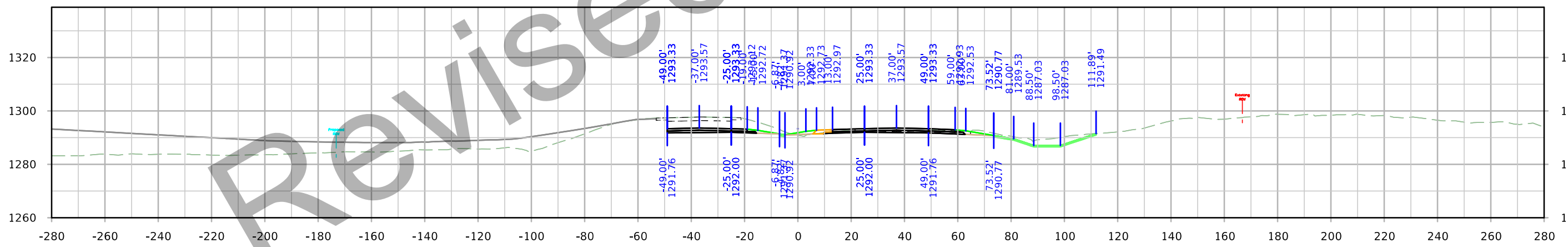
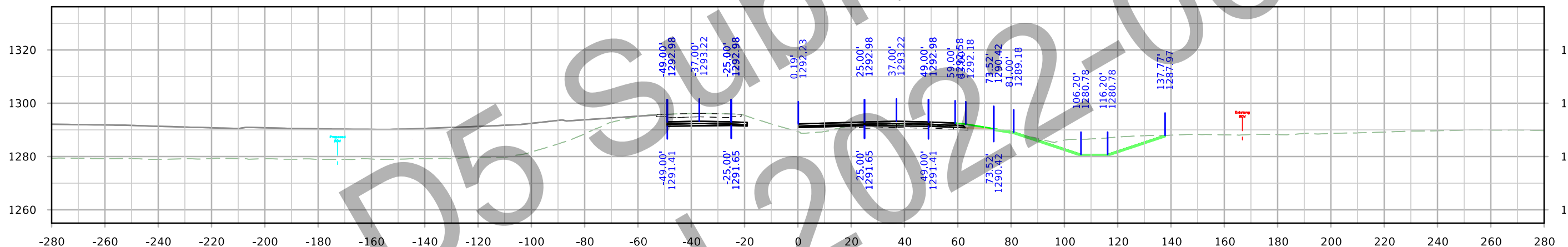
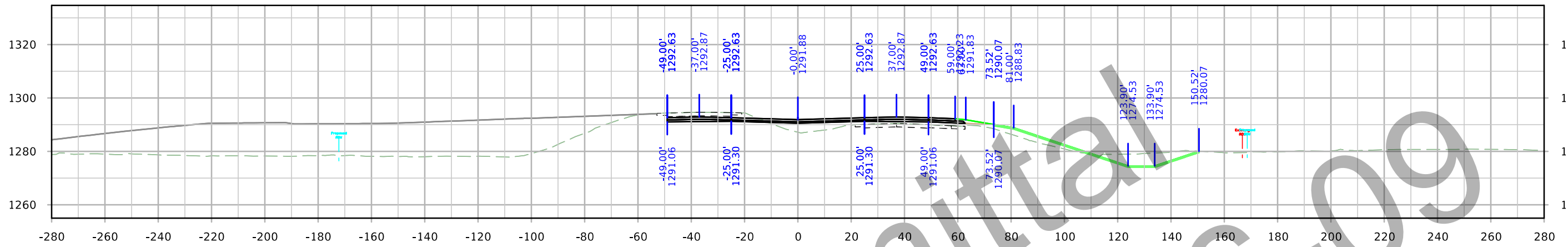




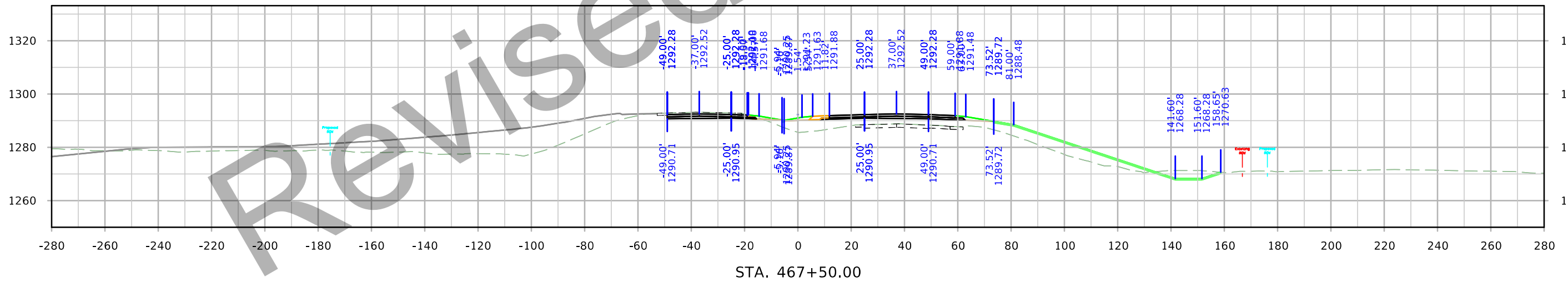
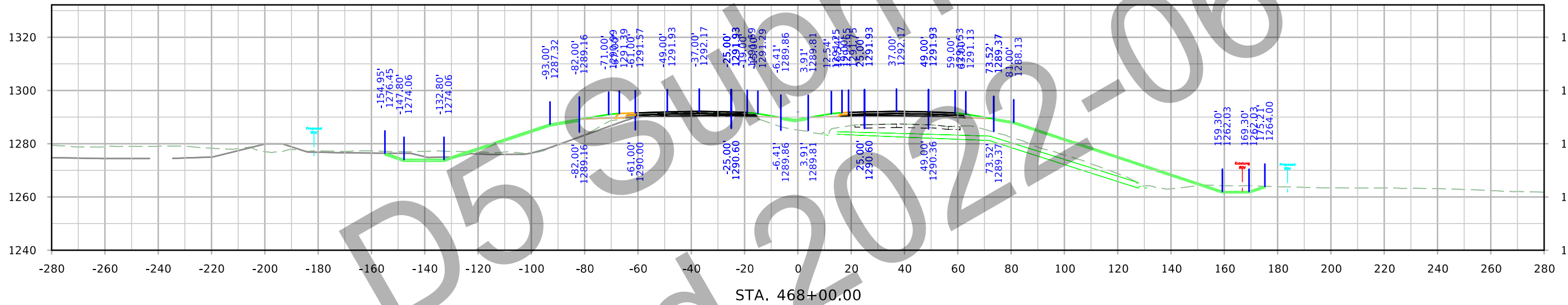
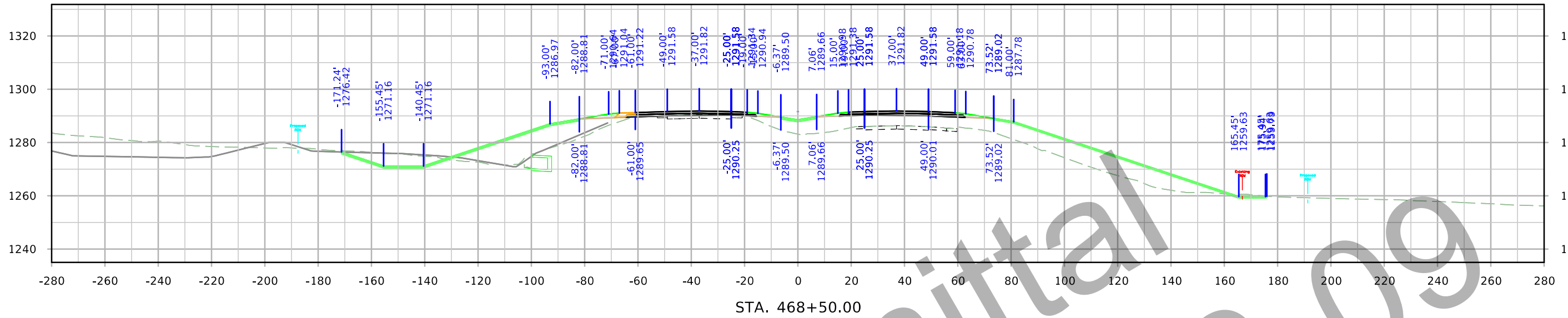


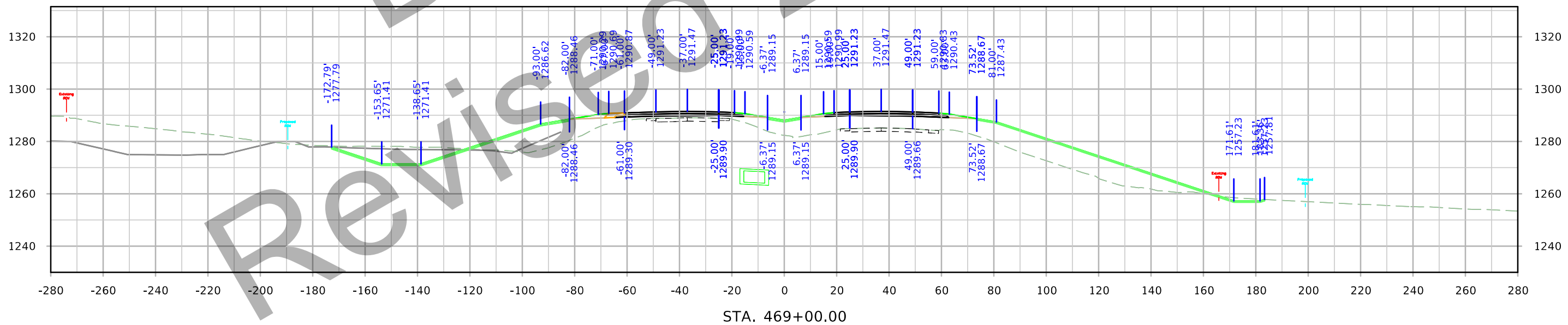
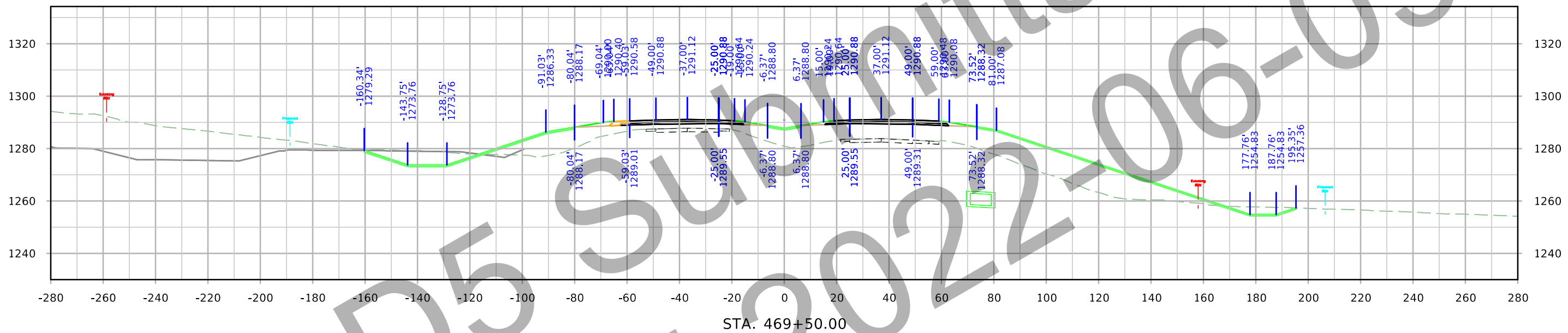


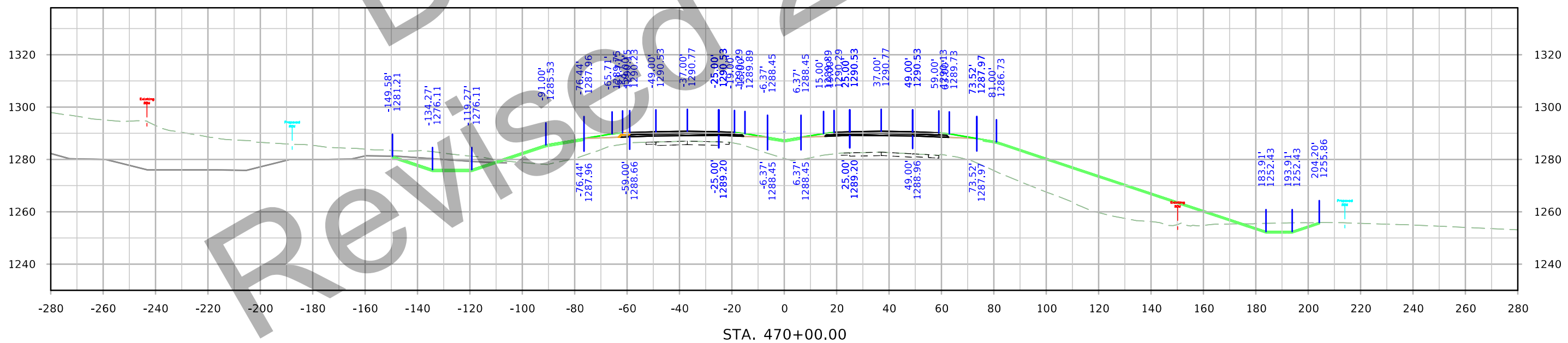
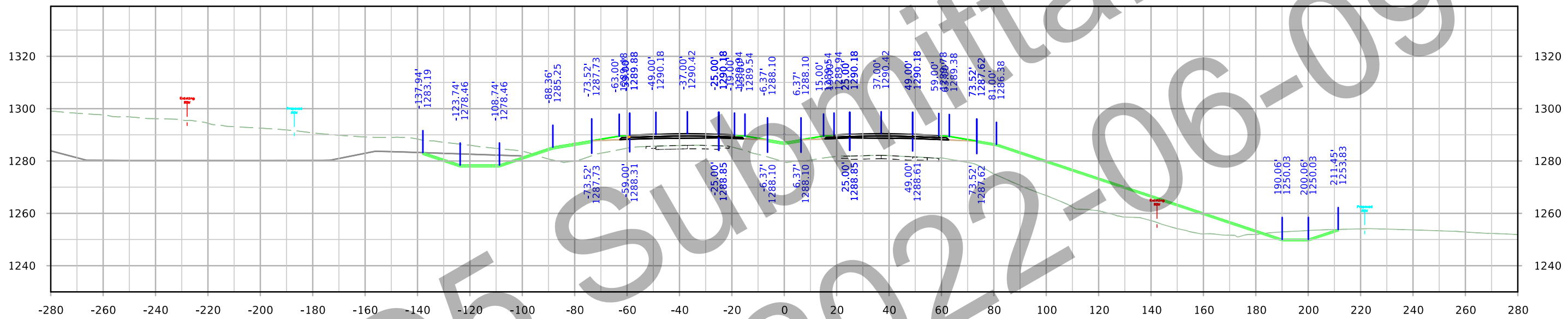


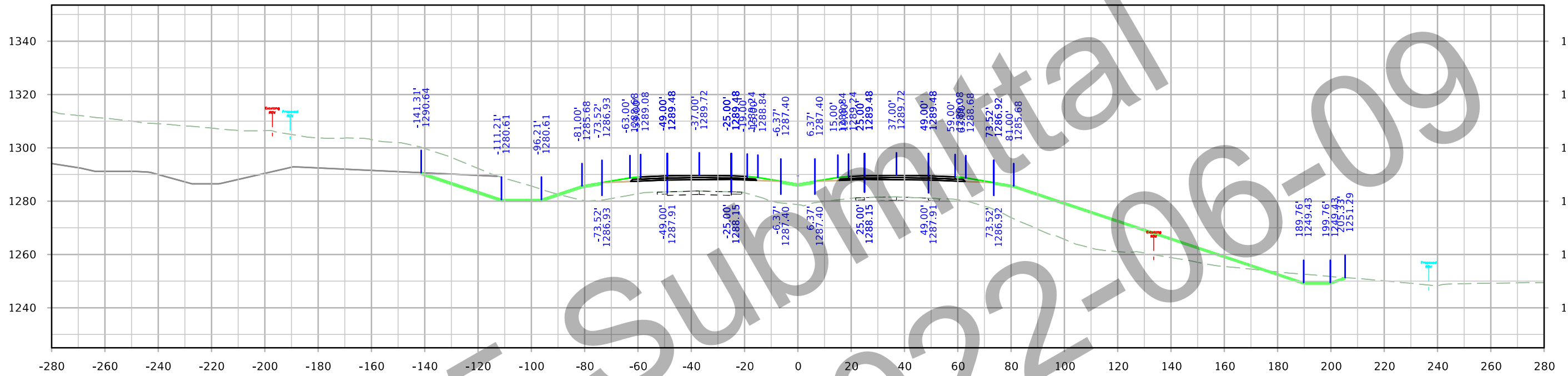


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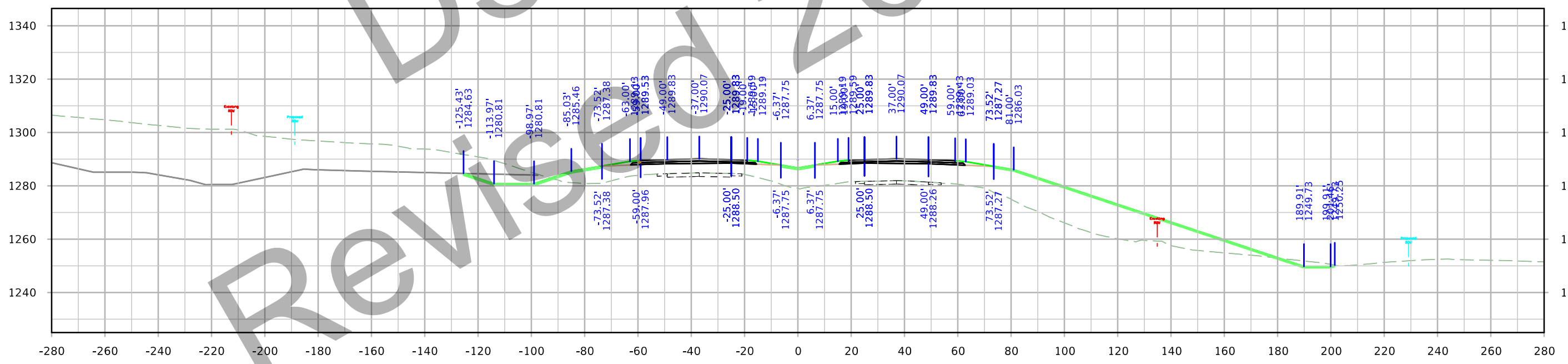




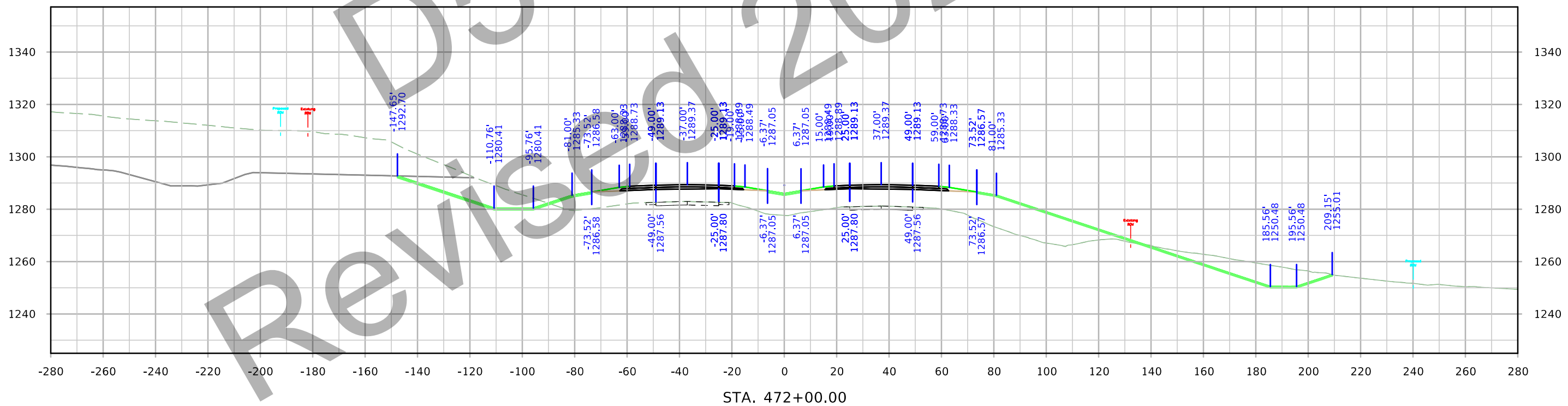
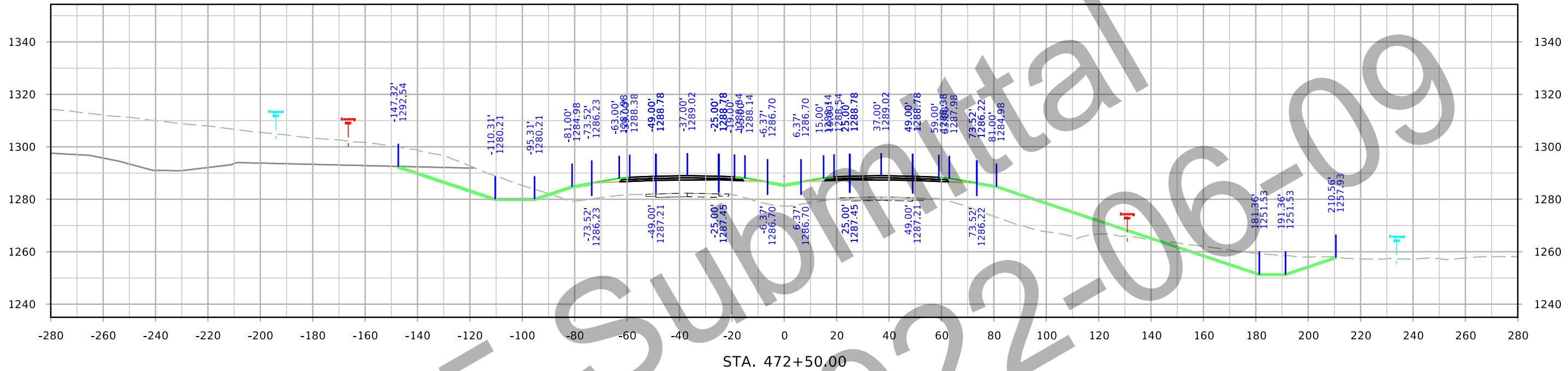


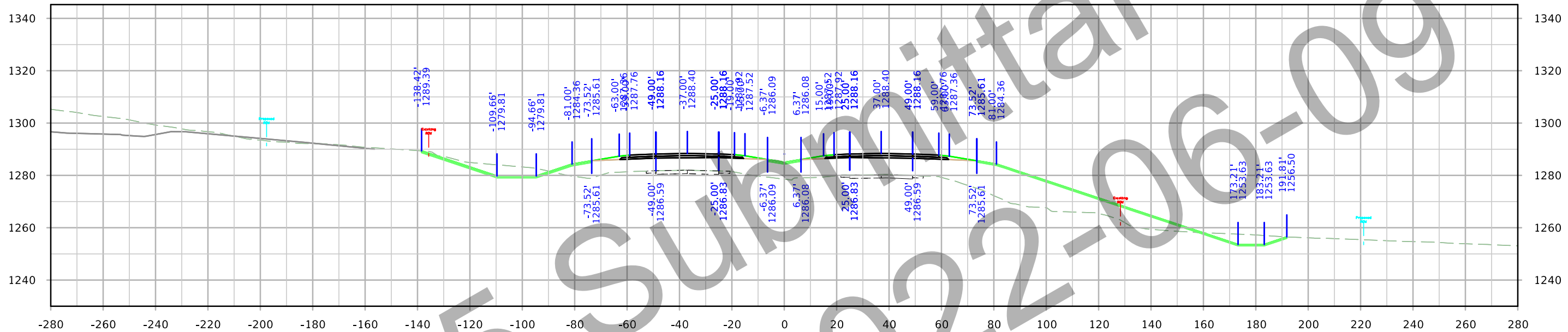


STA. 471+50.00

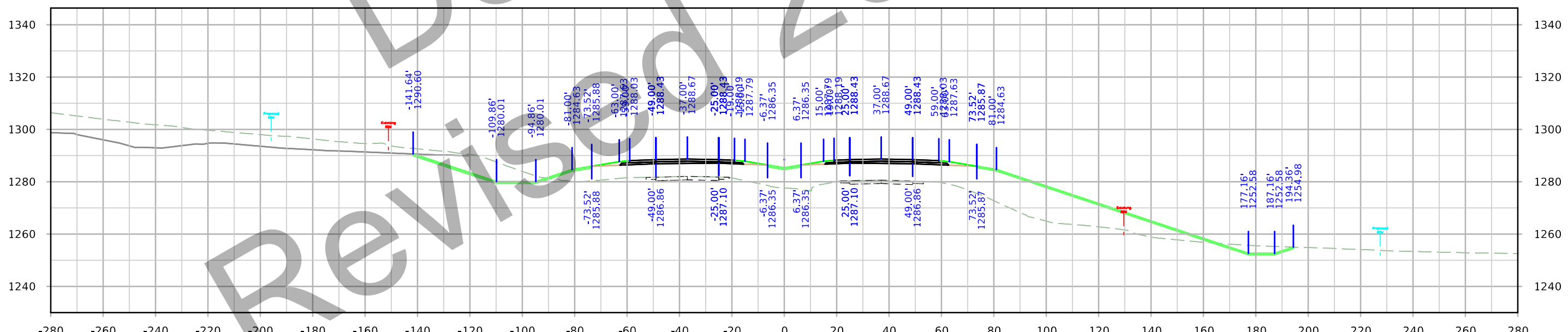


STA. 471+00.00

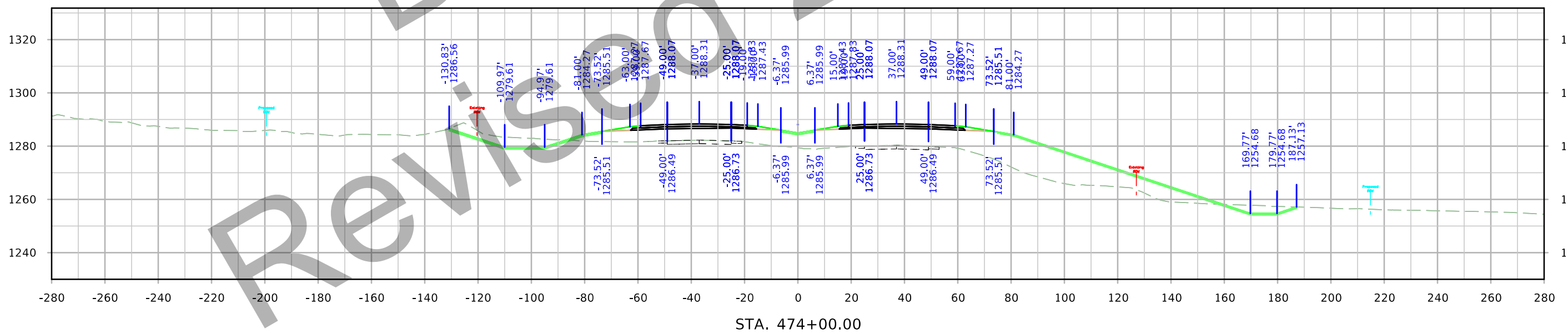
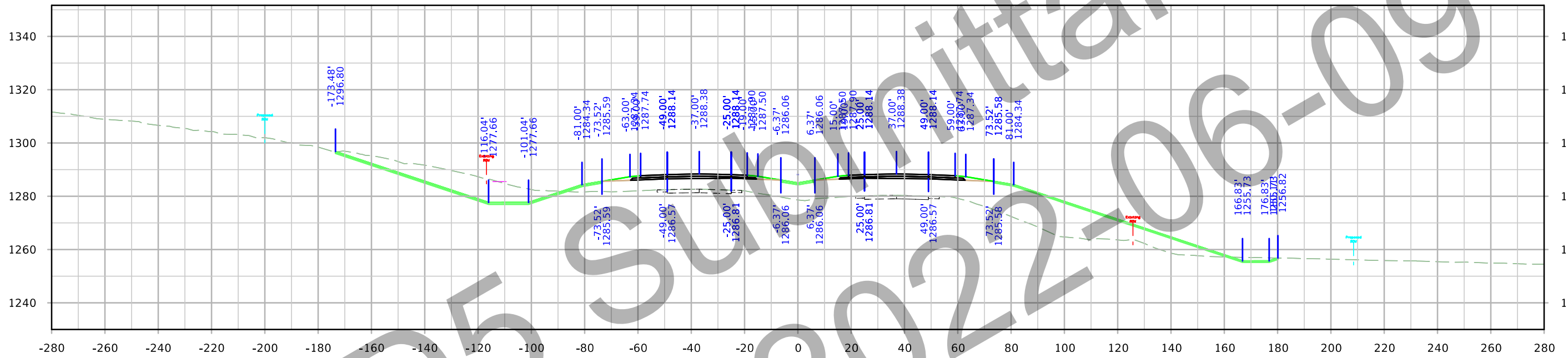


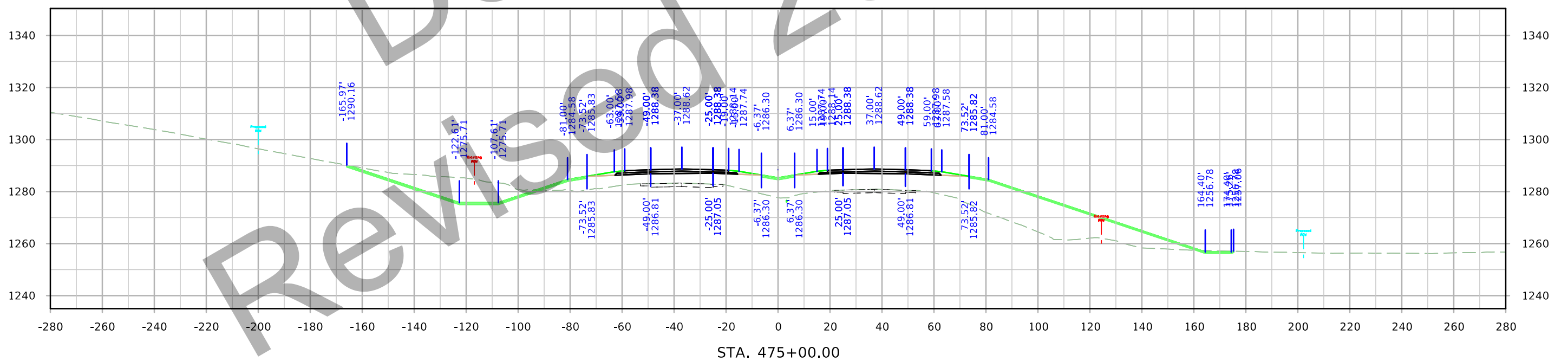
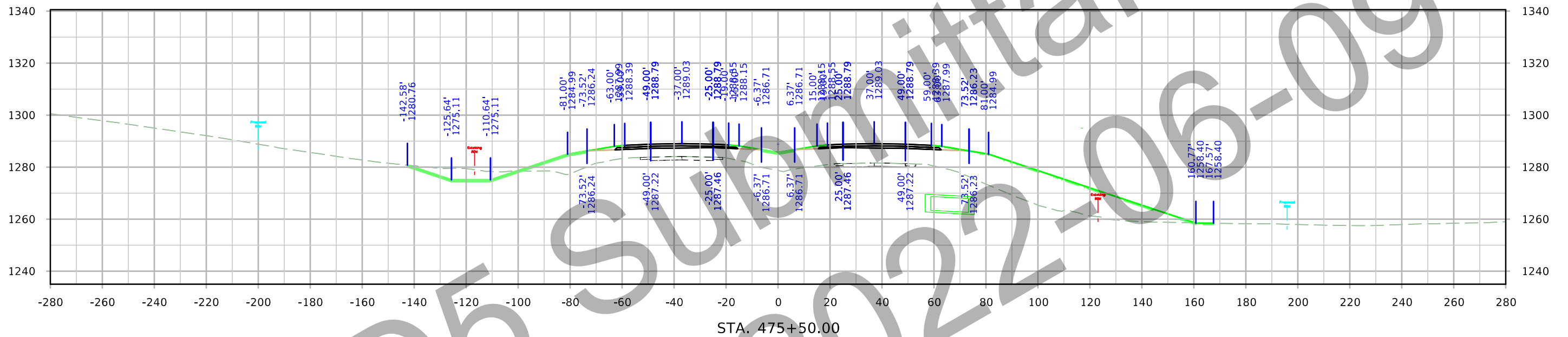


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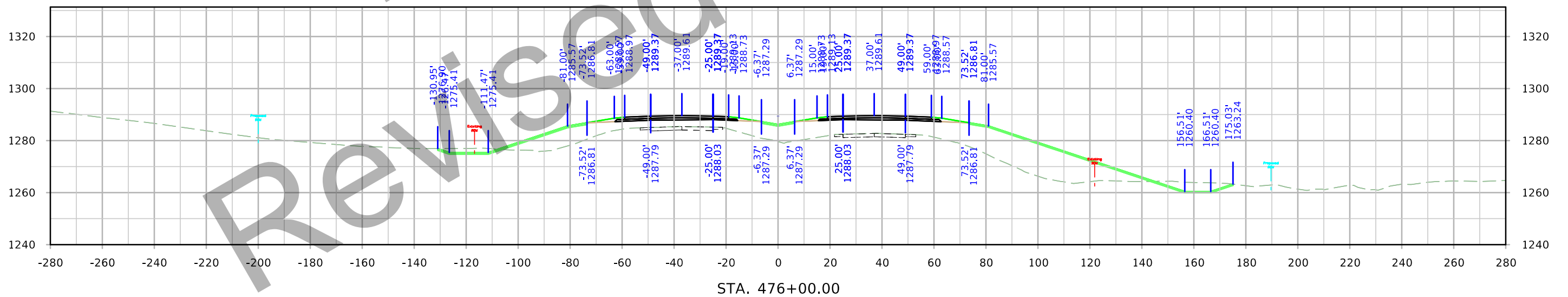
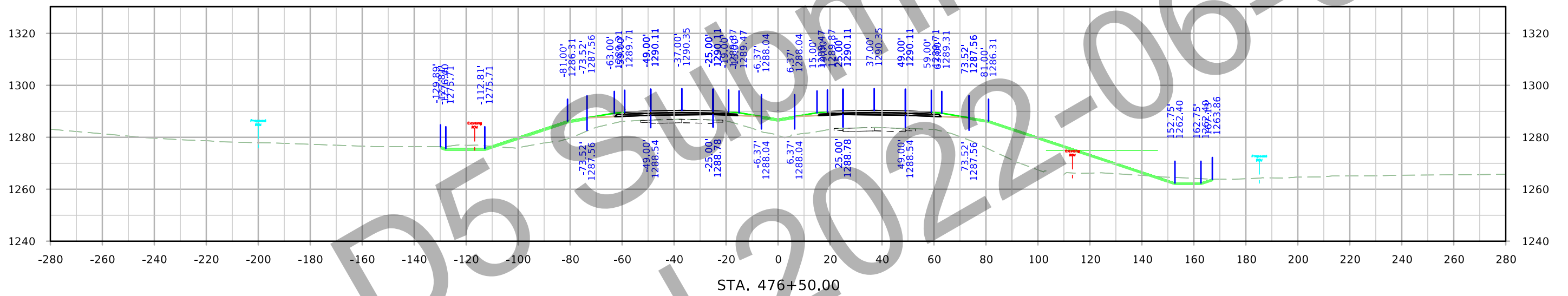
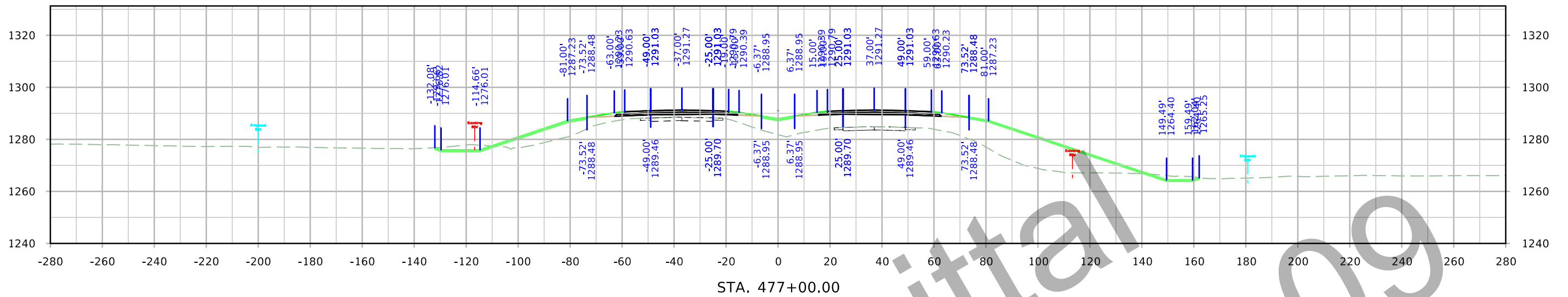


STA. 473+00.00

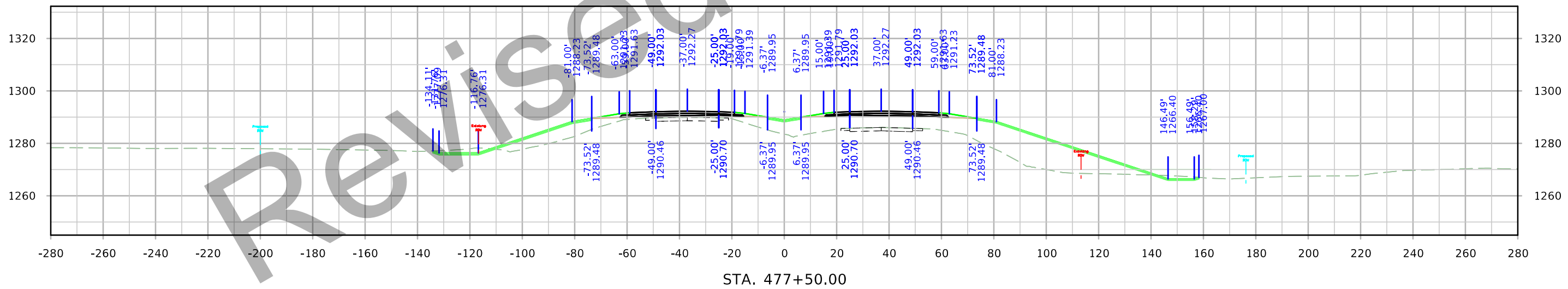
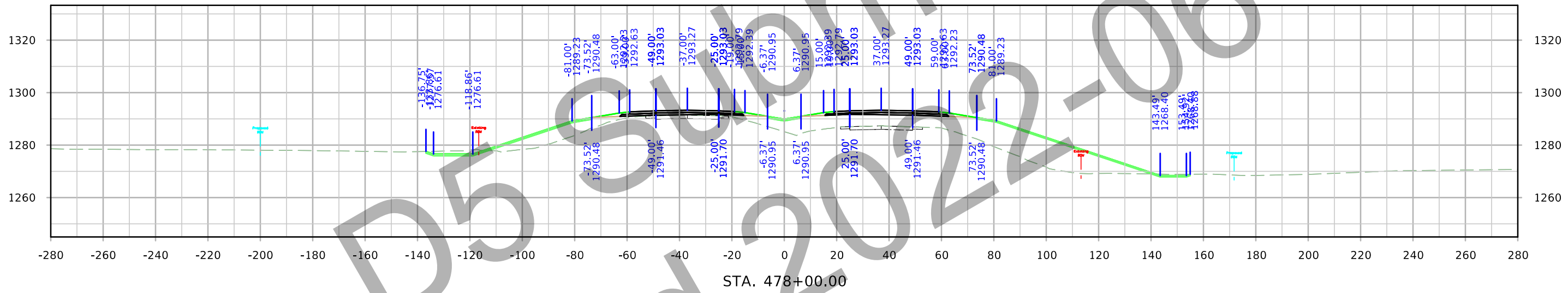
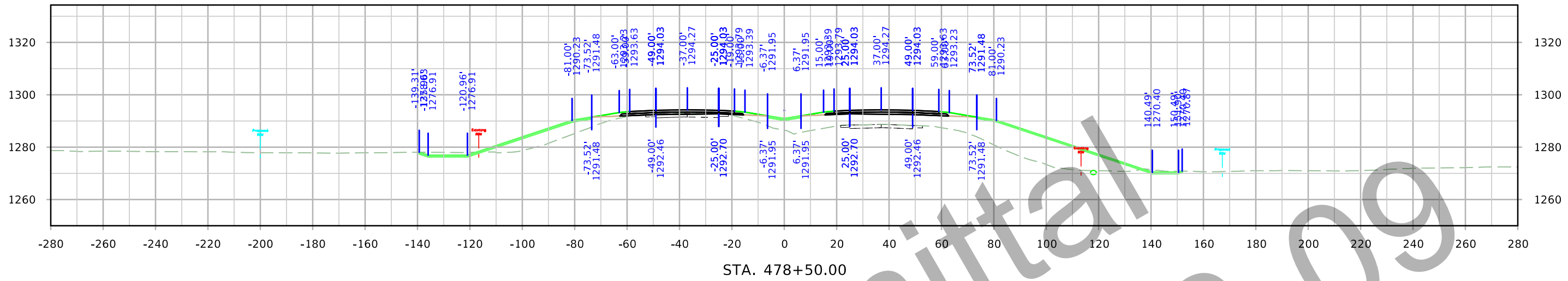


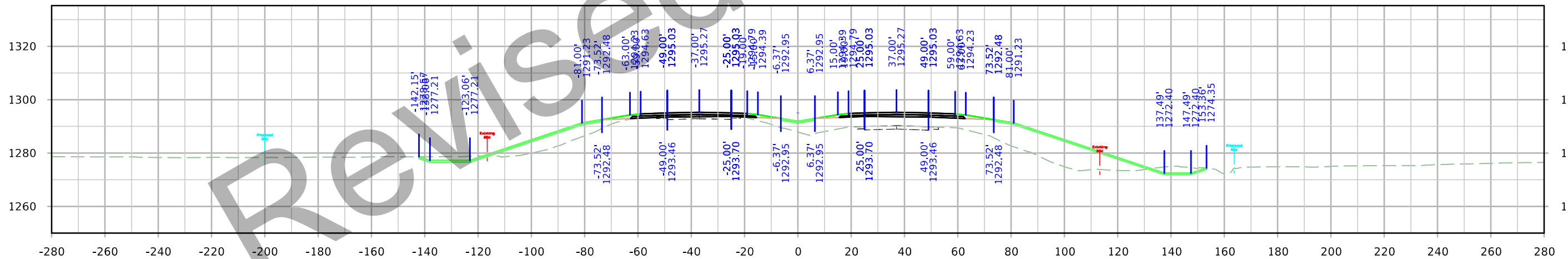
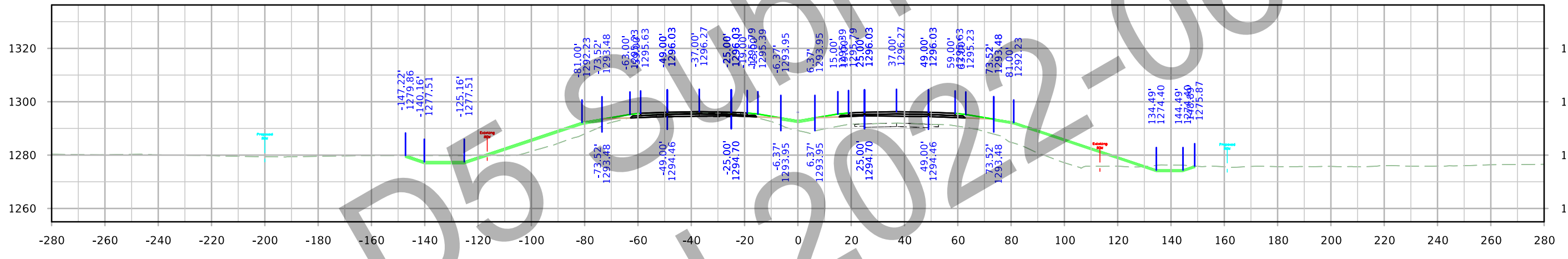
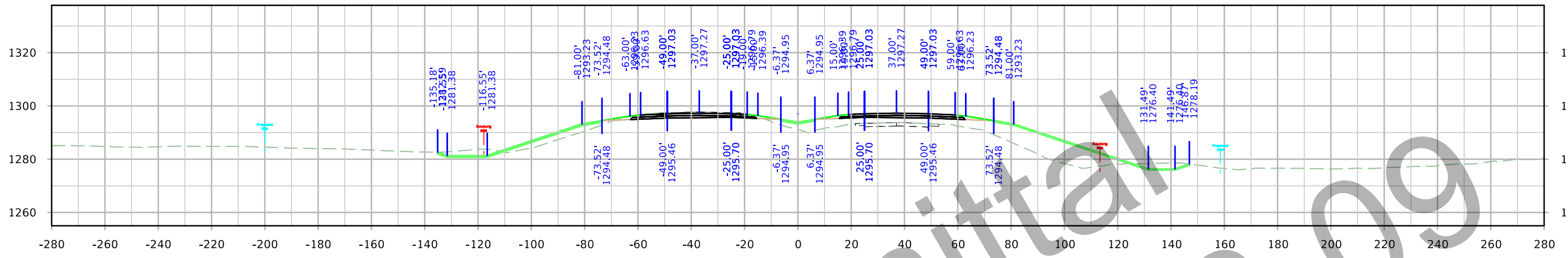


US 20 Stage 2

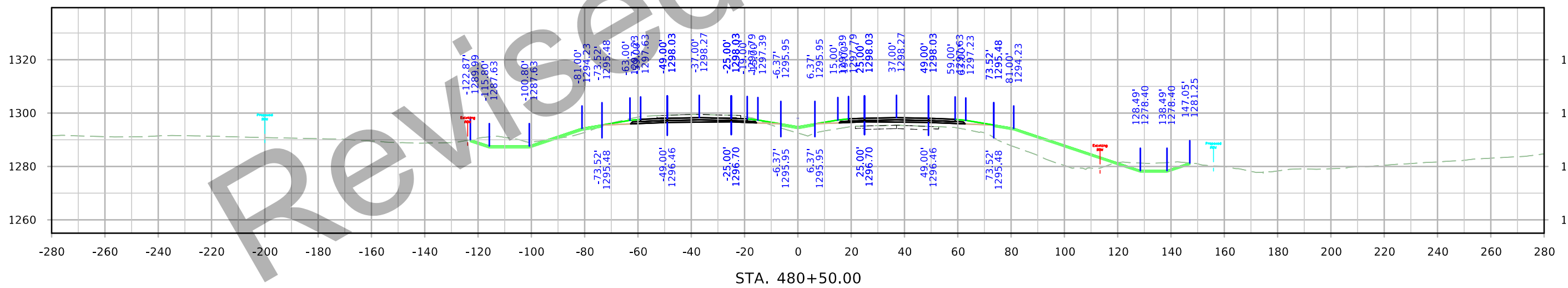
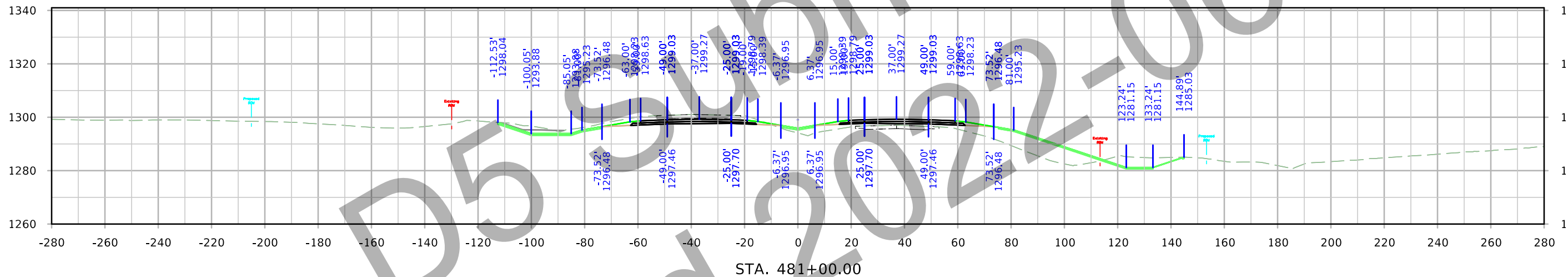
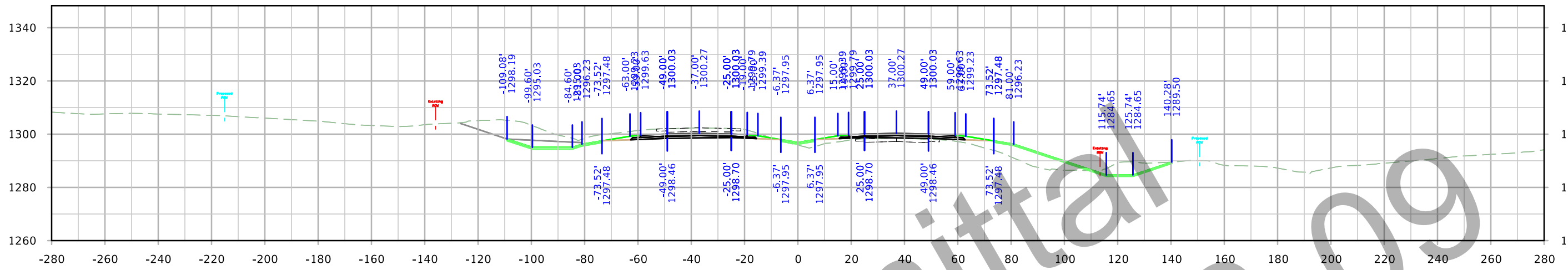


US 20 Stage 2

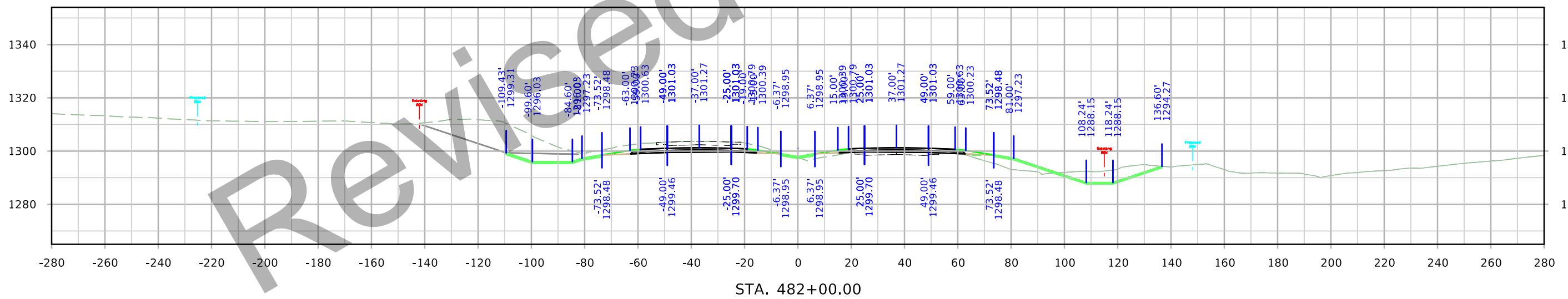
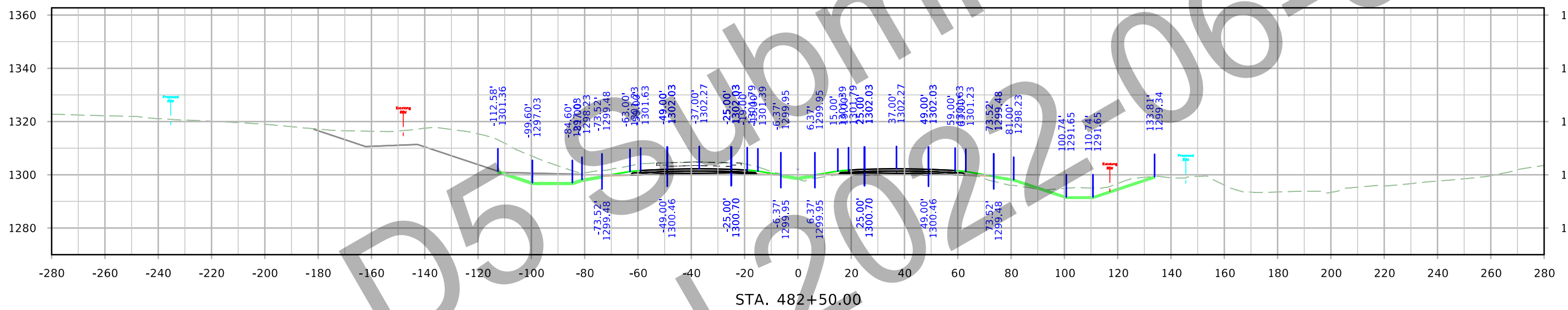
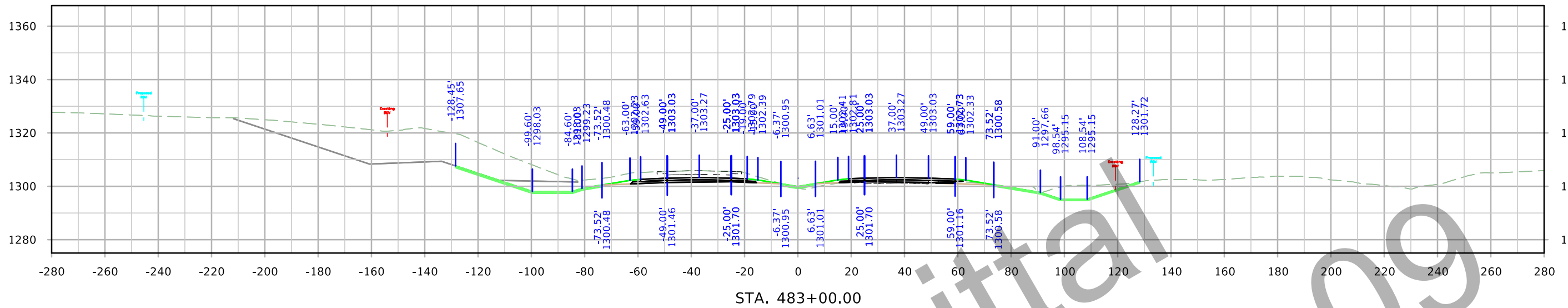


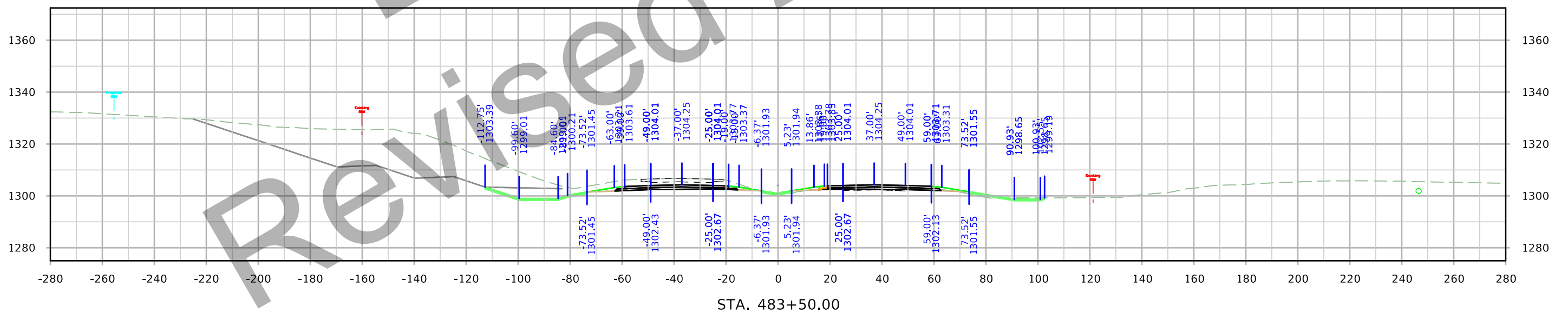
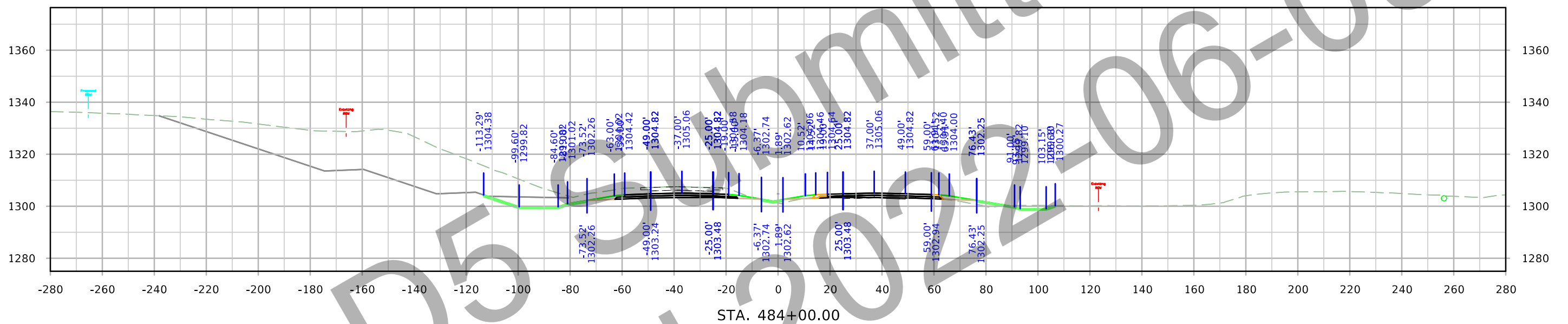


US 20 Stage 2

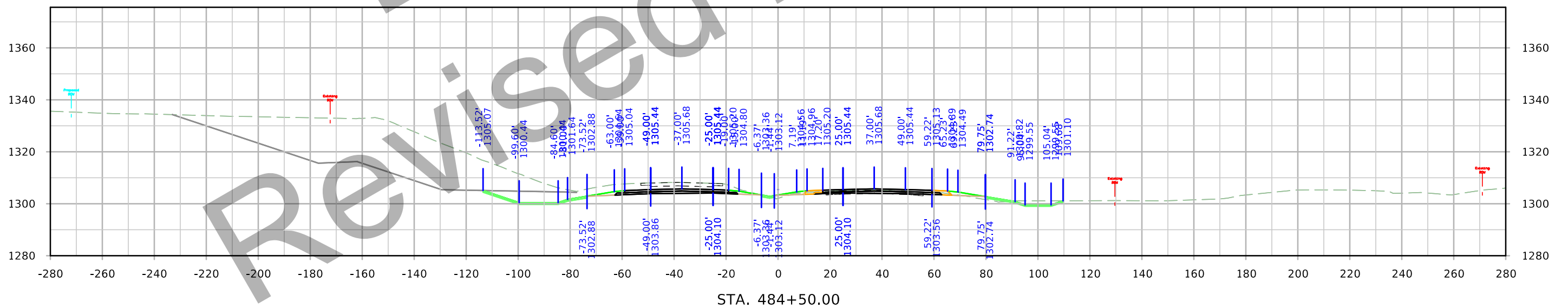
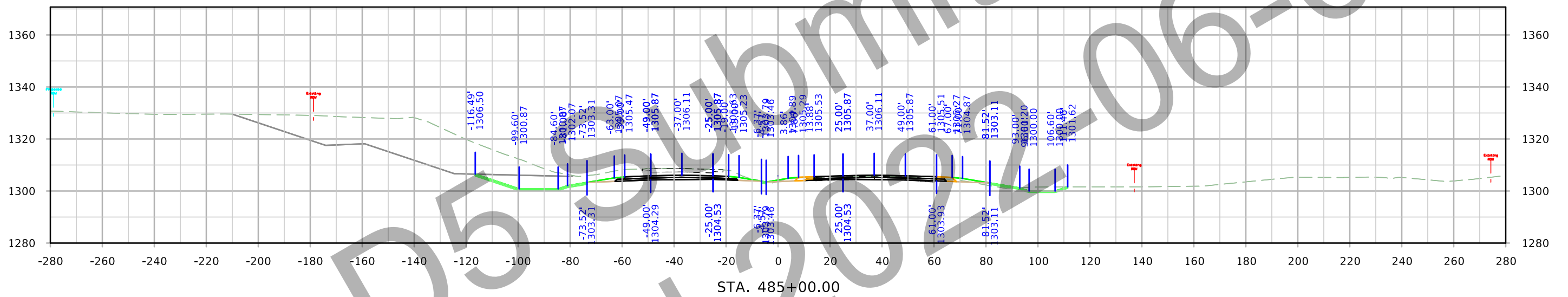
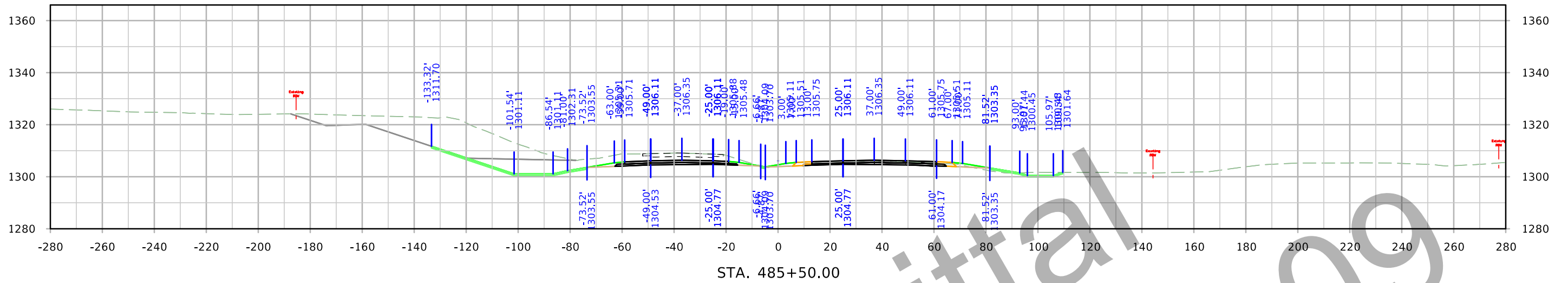


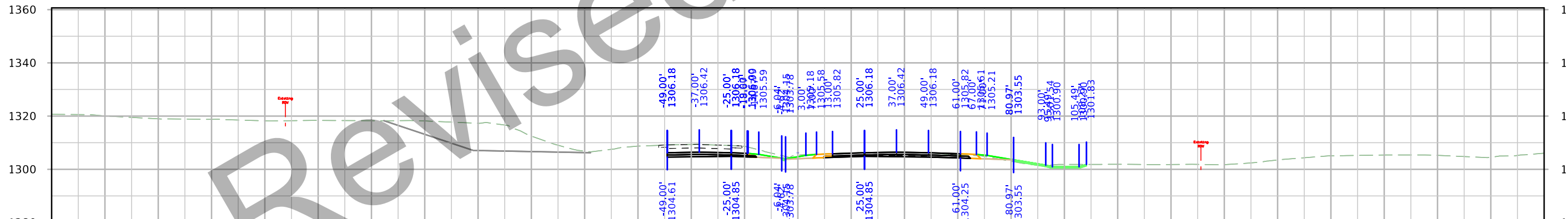
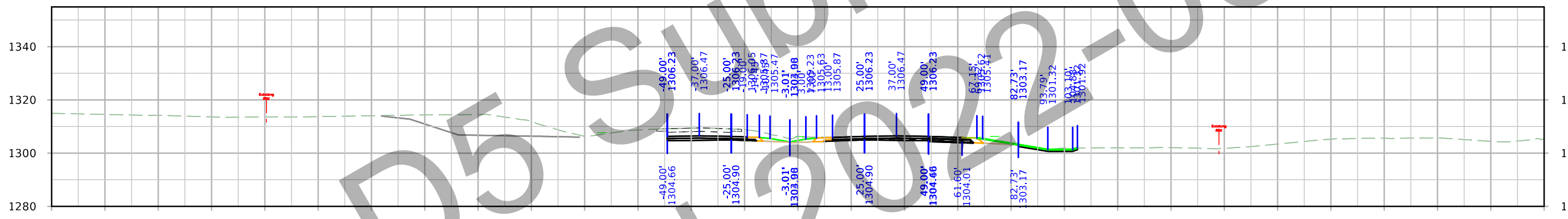
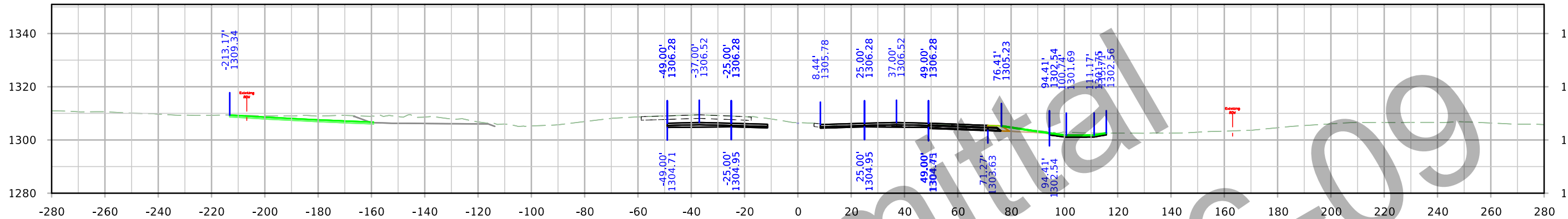
US 20 Stage 2

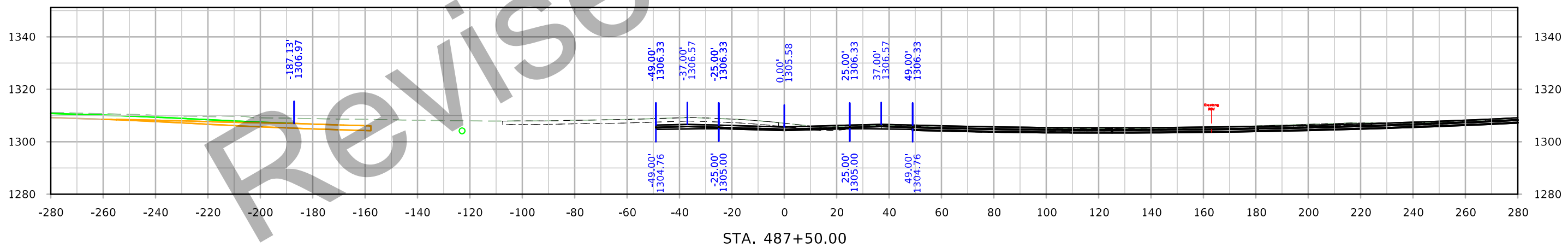
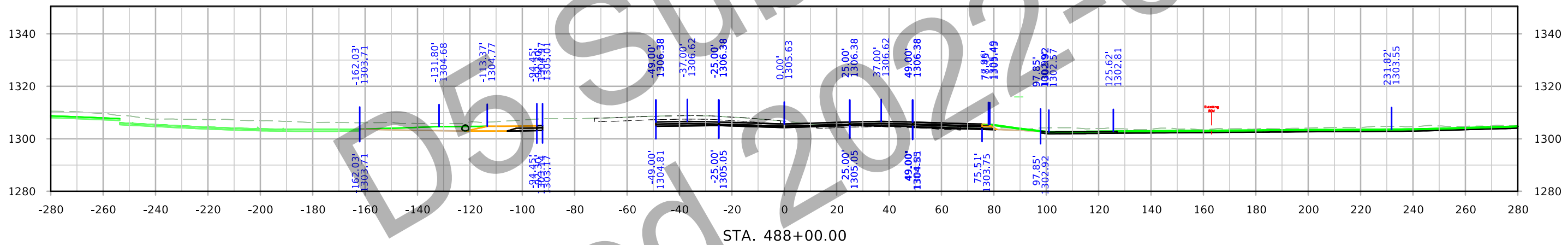
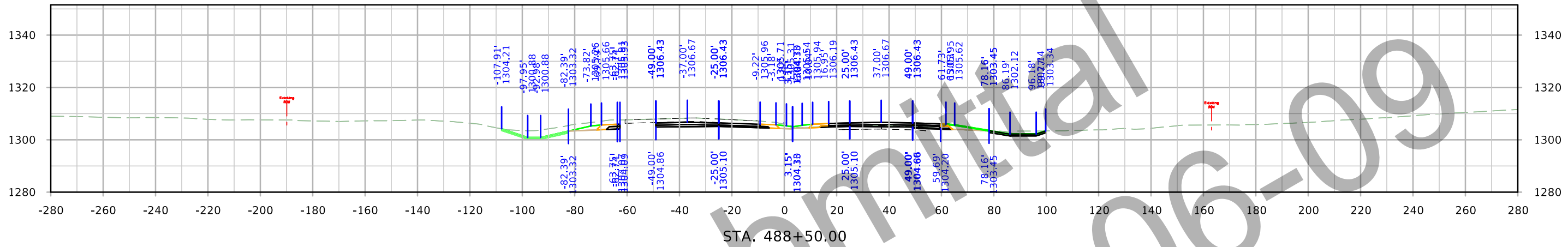




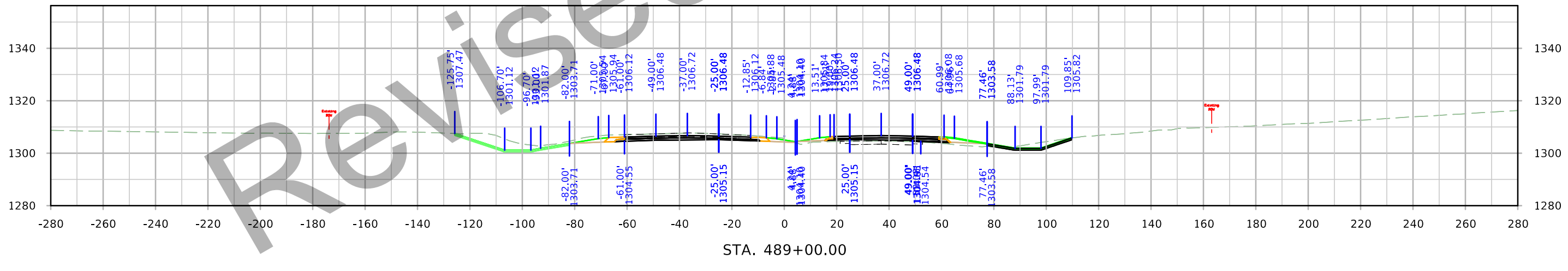
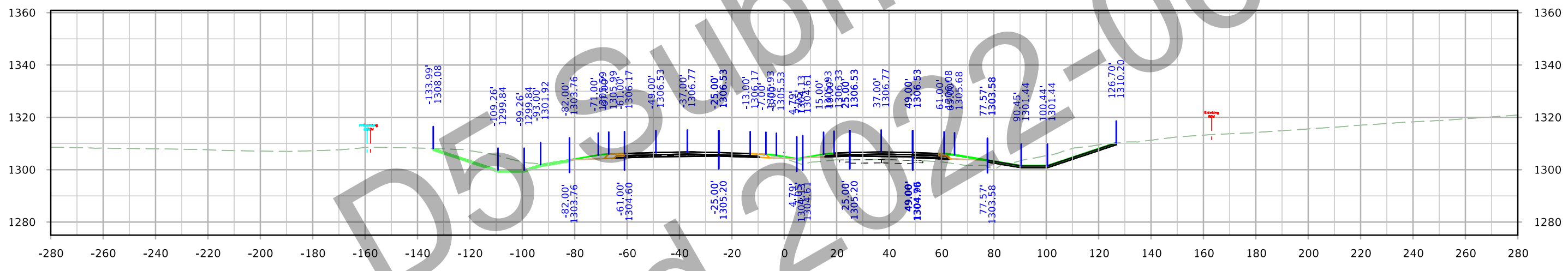
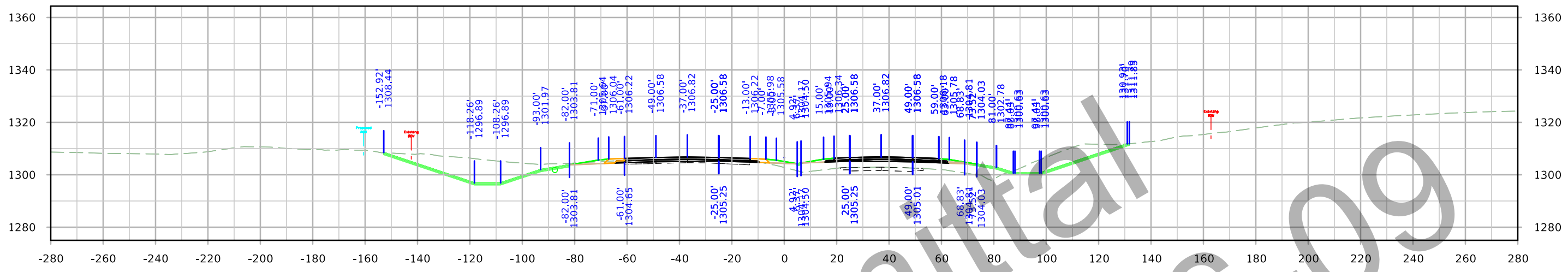
US 20 Stage 2



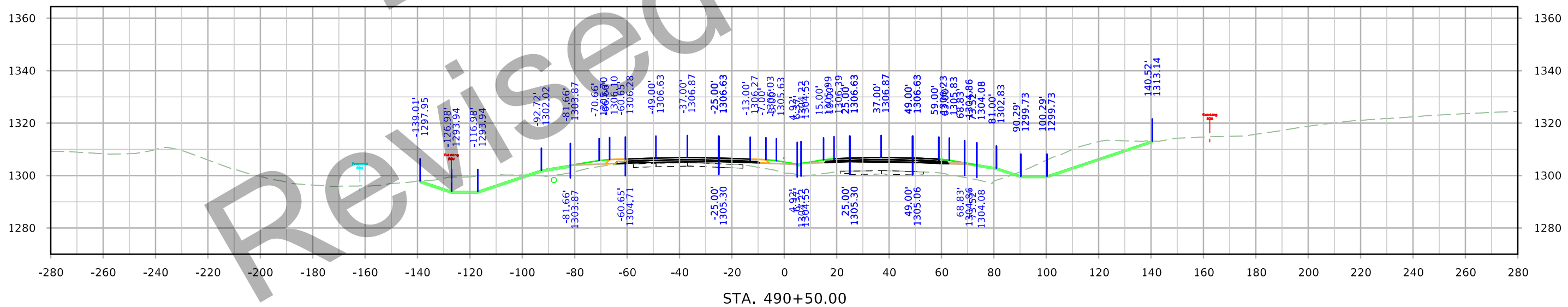
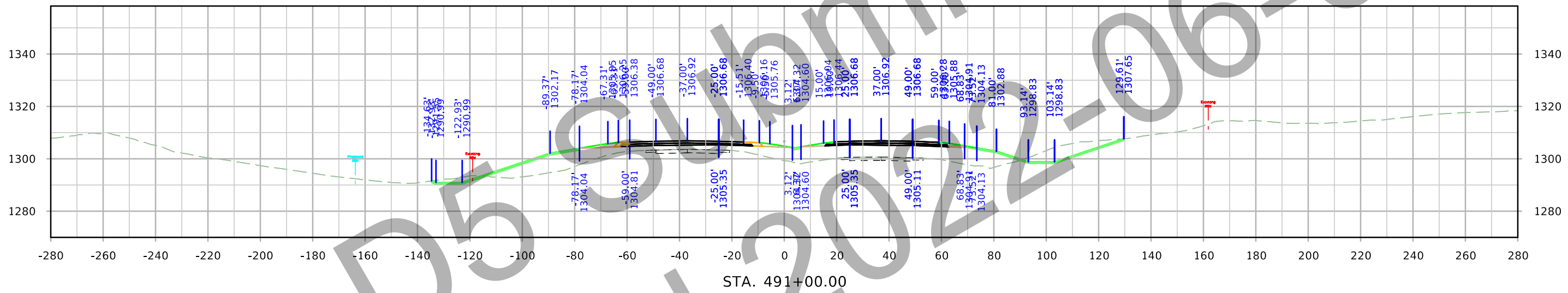
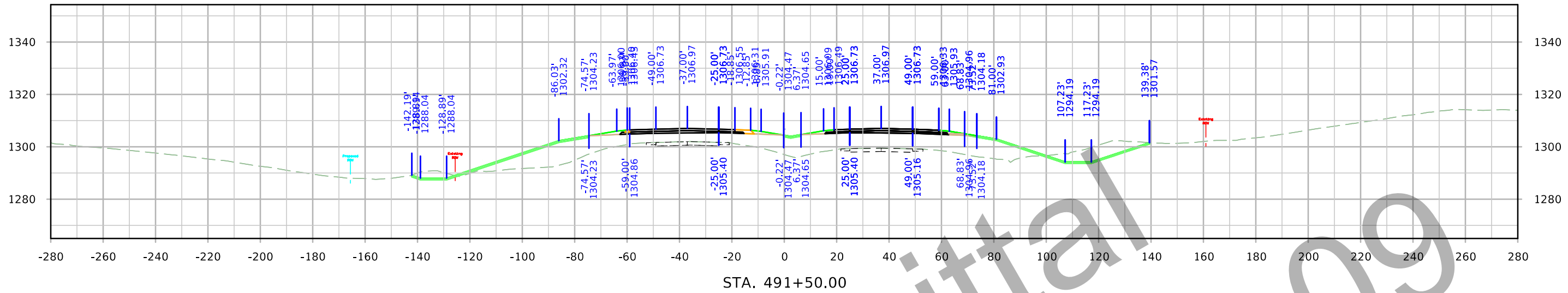




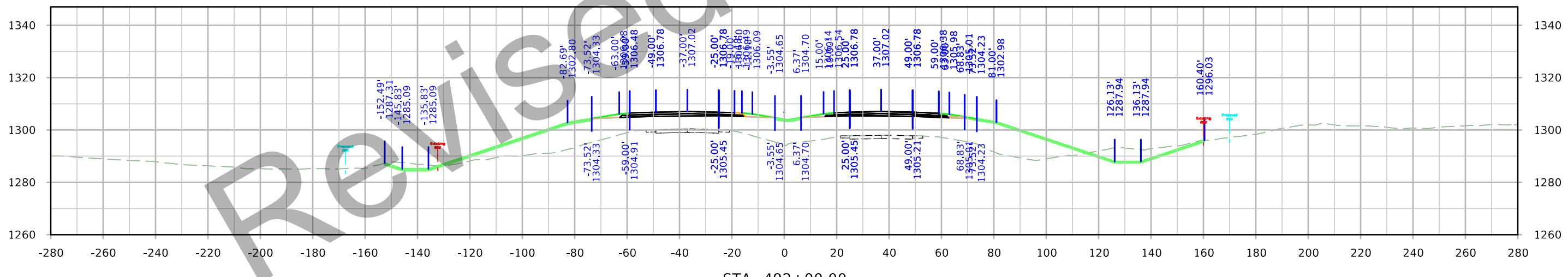
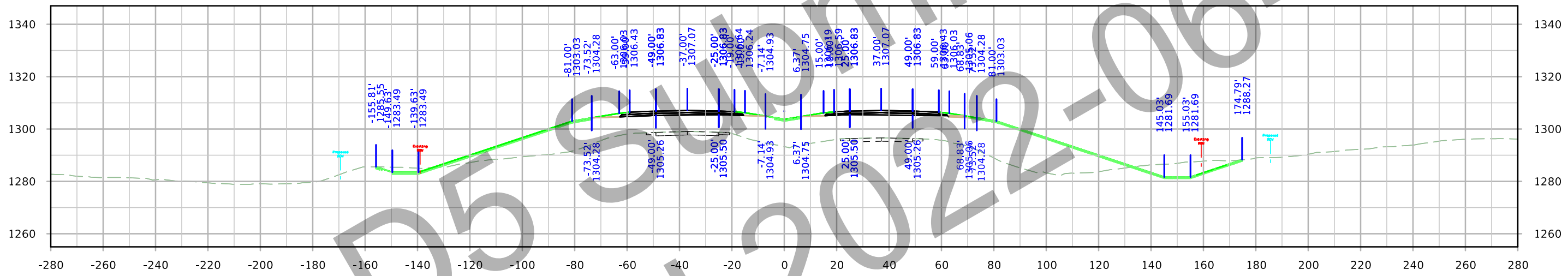
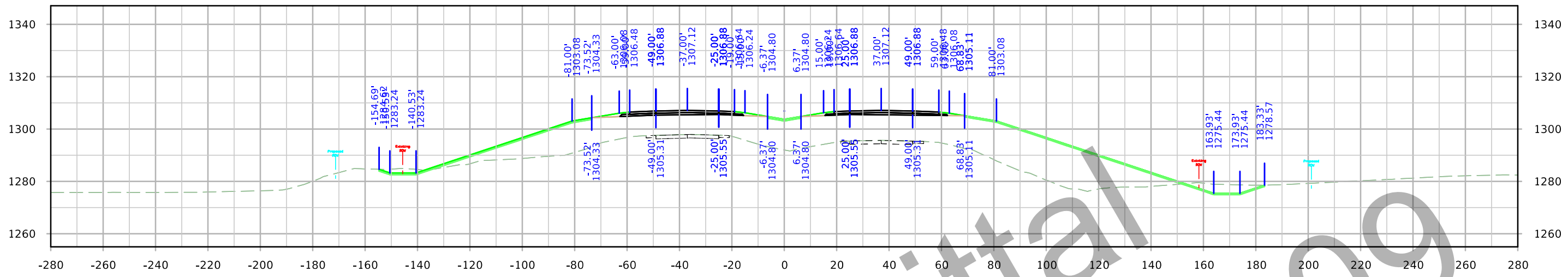
US 20 Stage 2

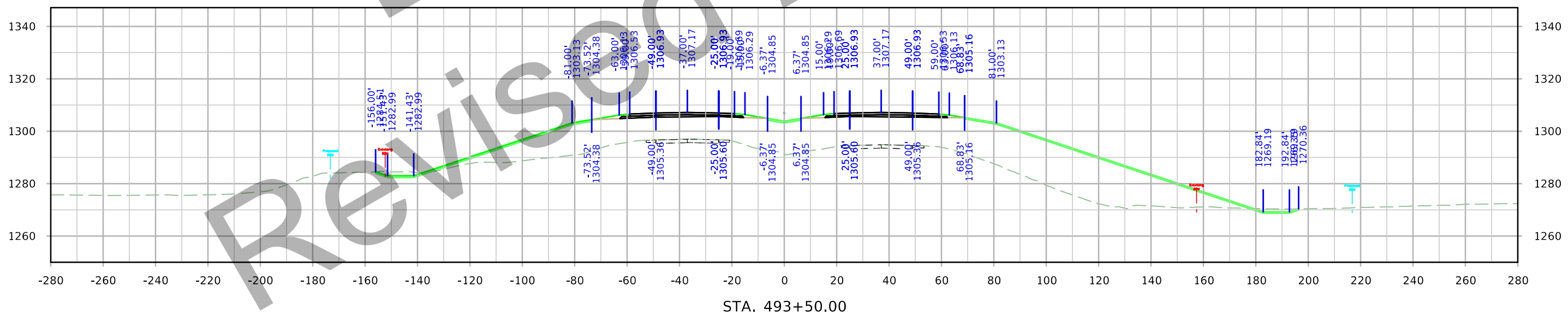
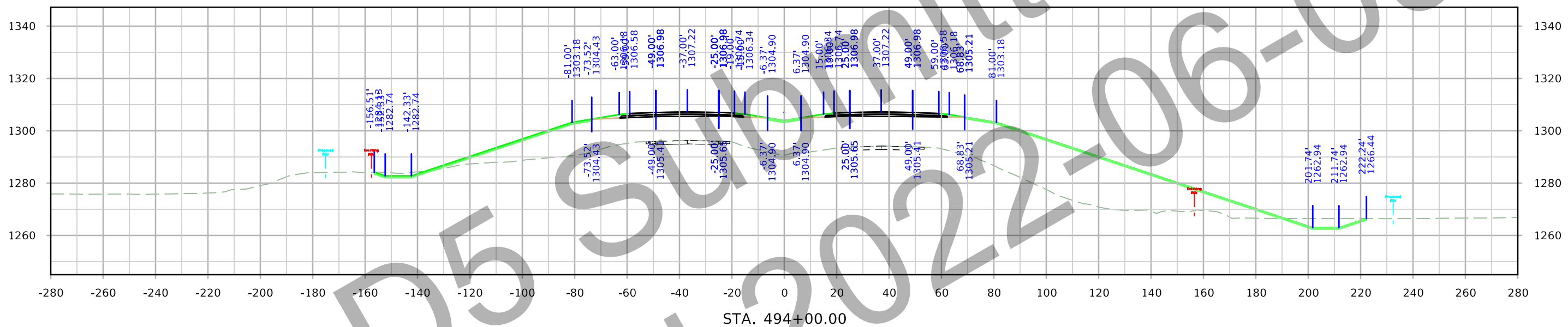


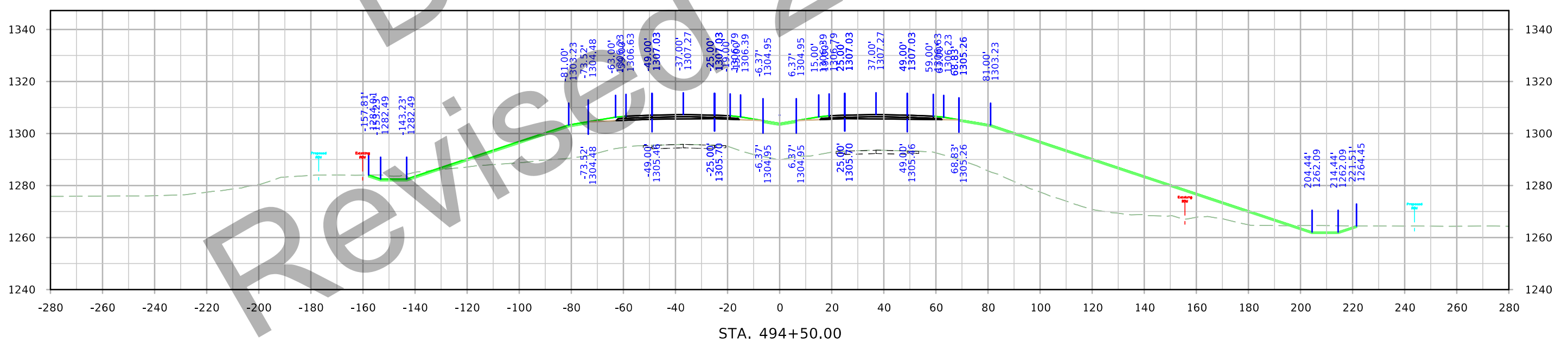
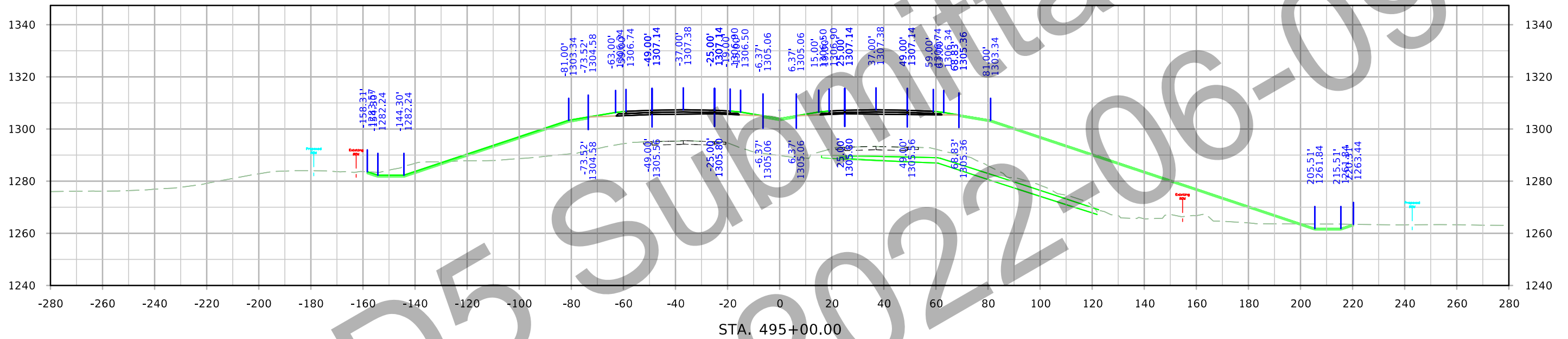
US 20 Stage 2

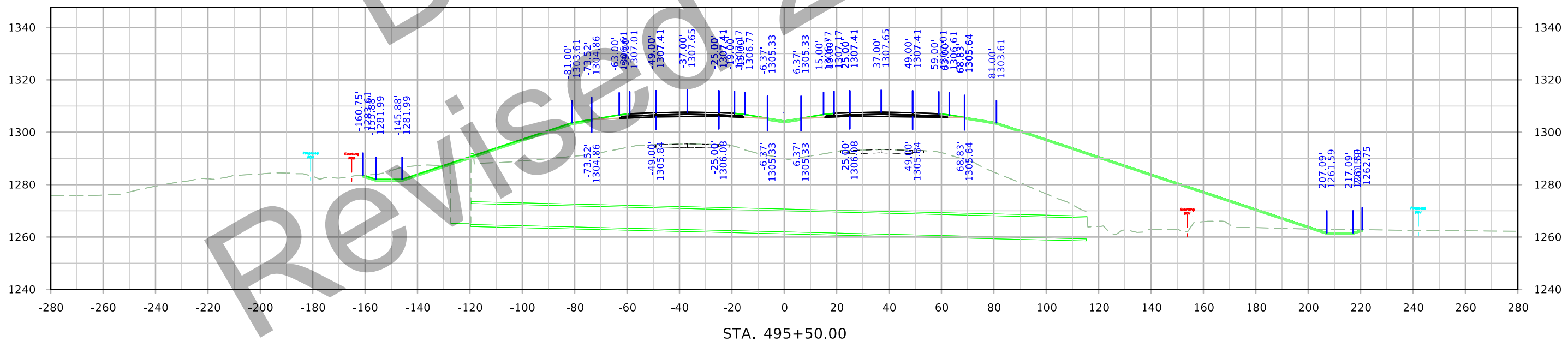
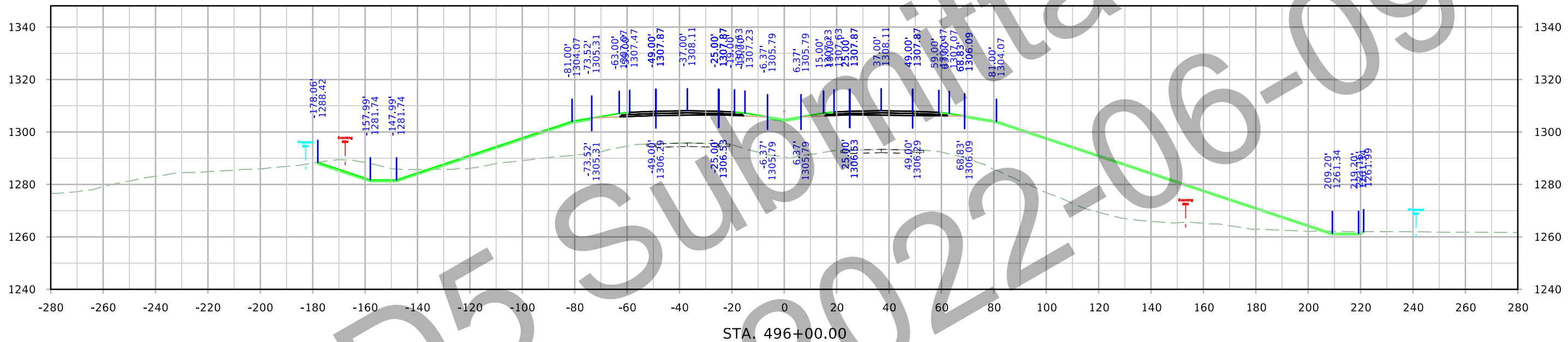


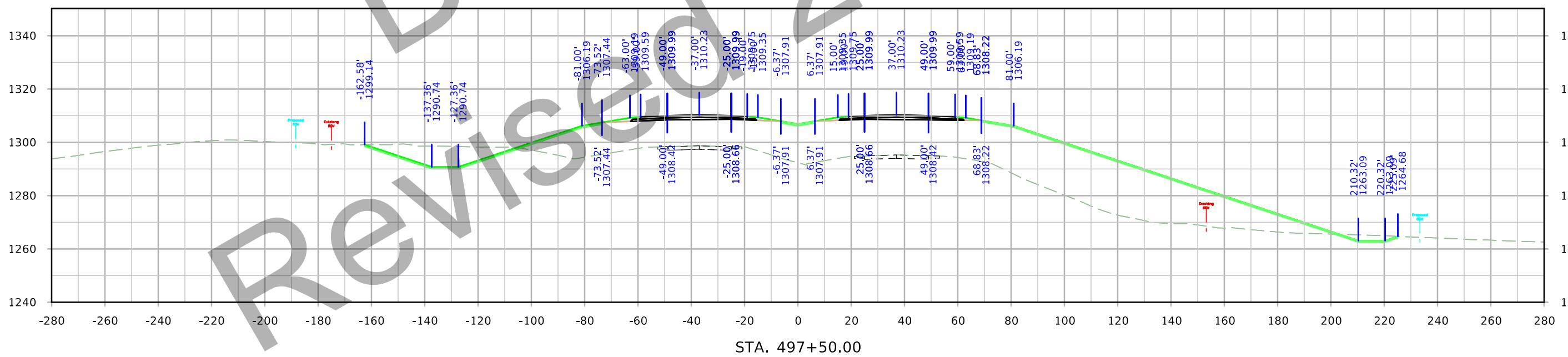
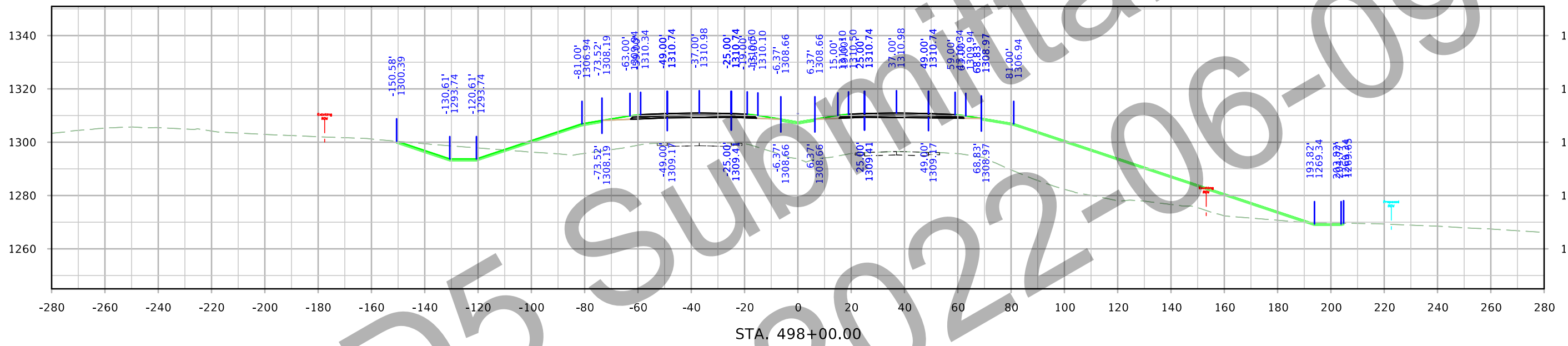
US 20 Stage 2

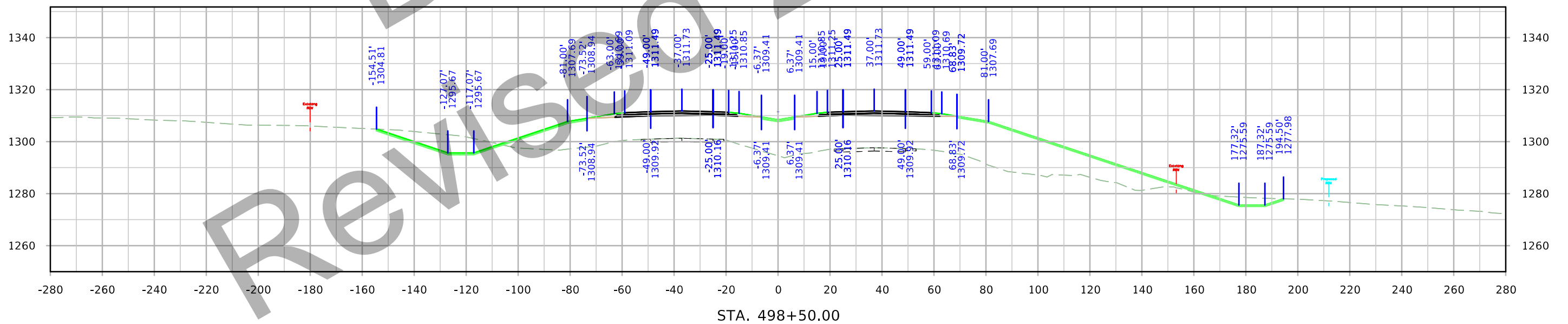
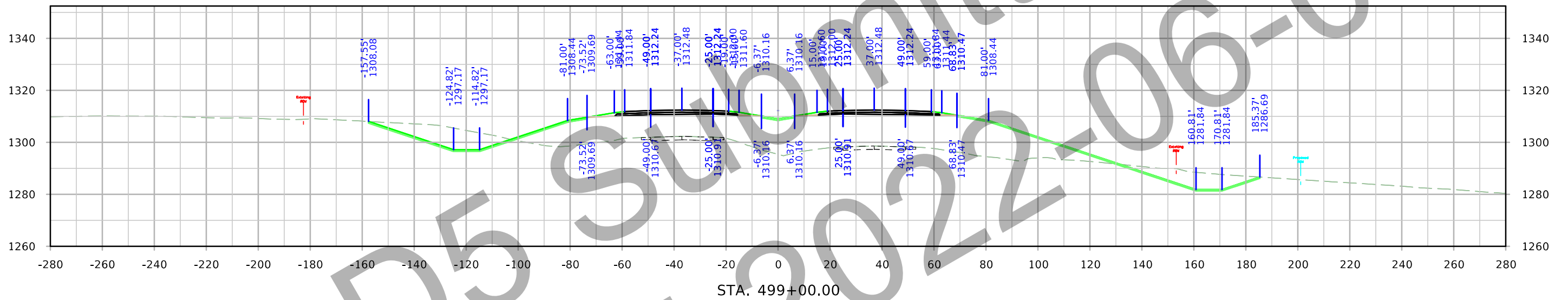




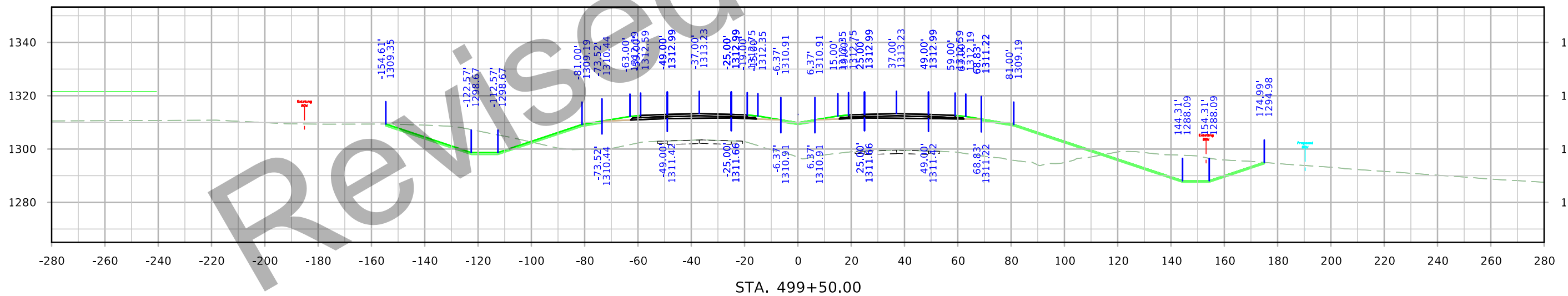
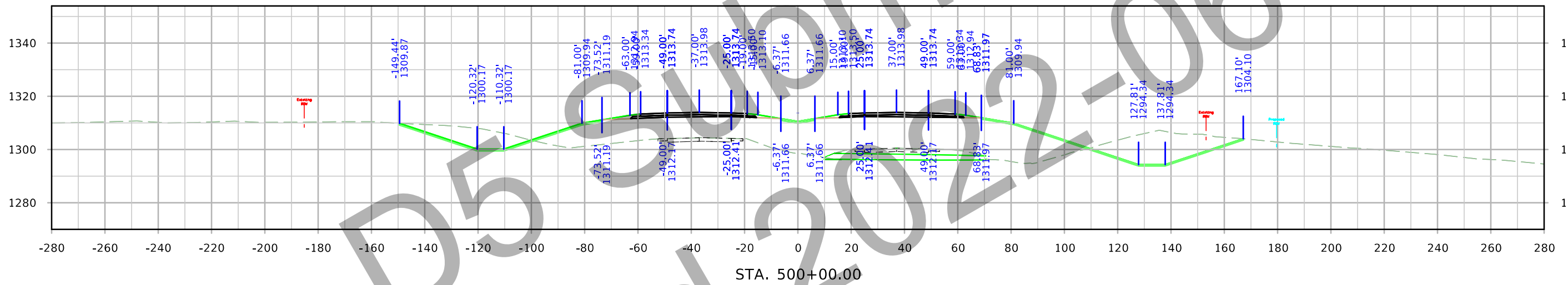
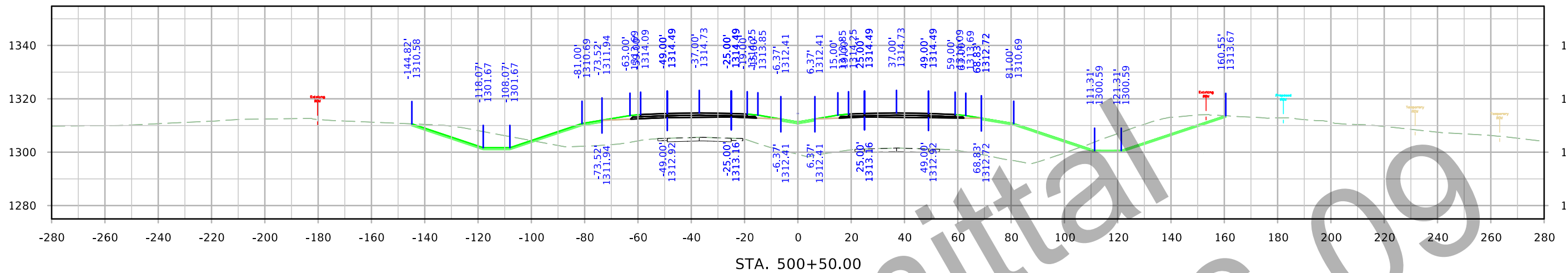




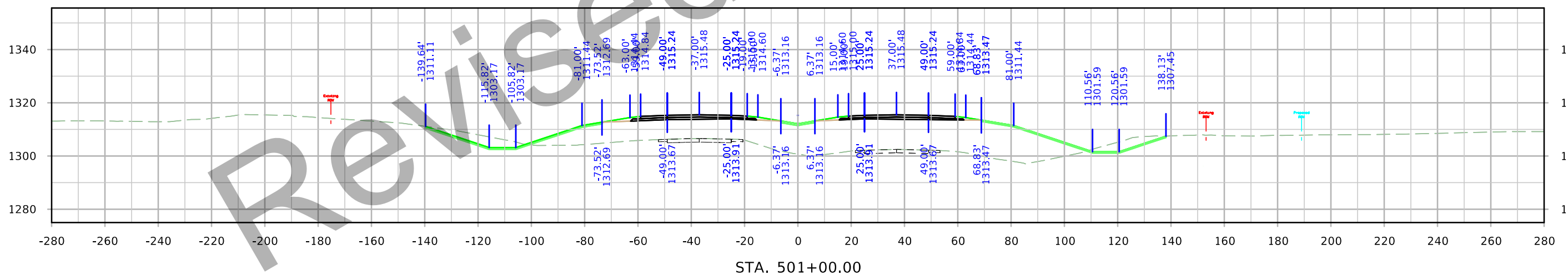
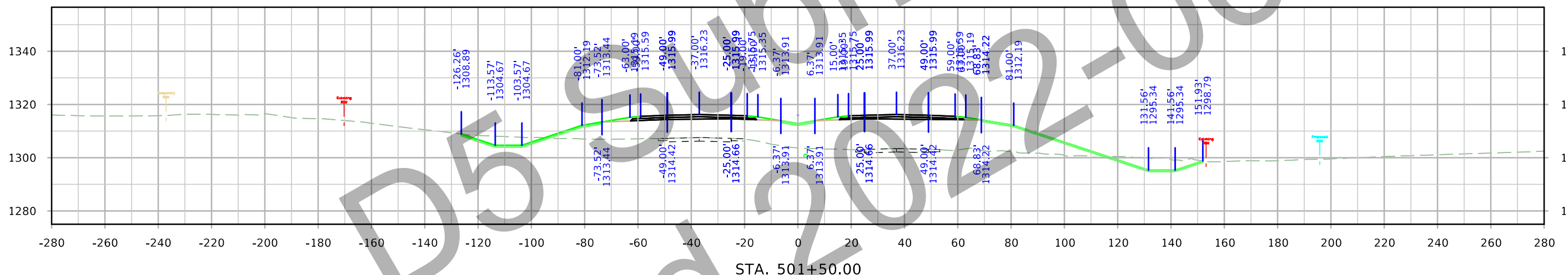
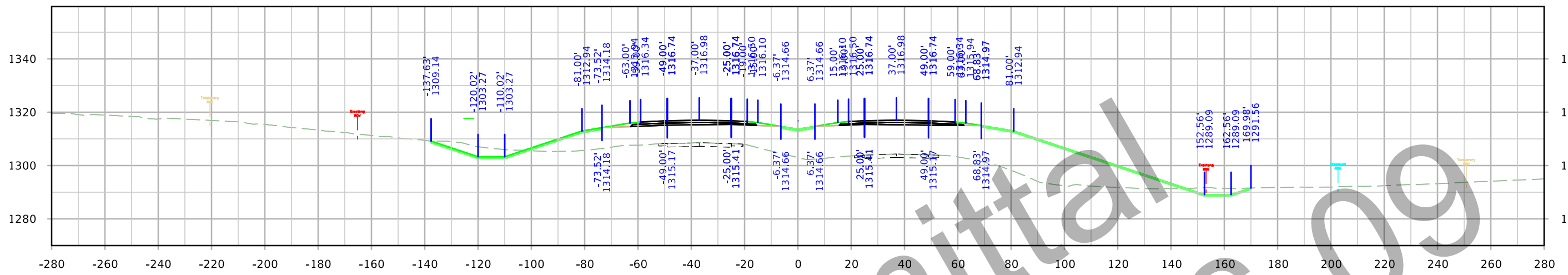


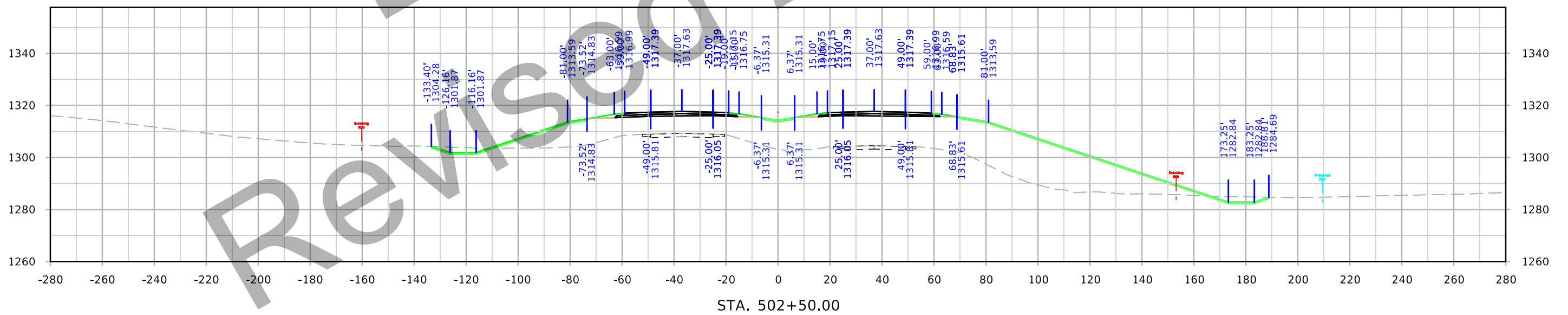
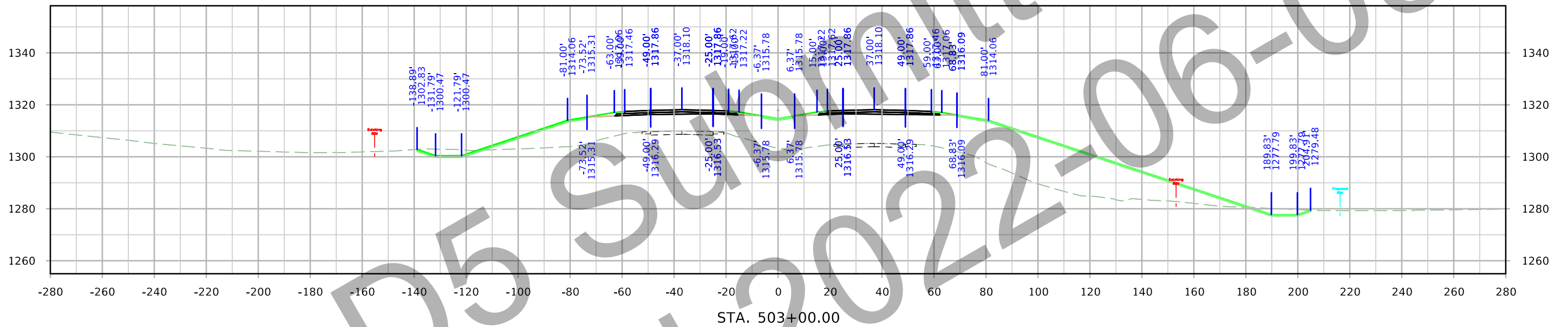


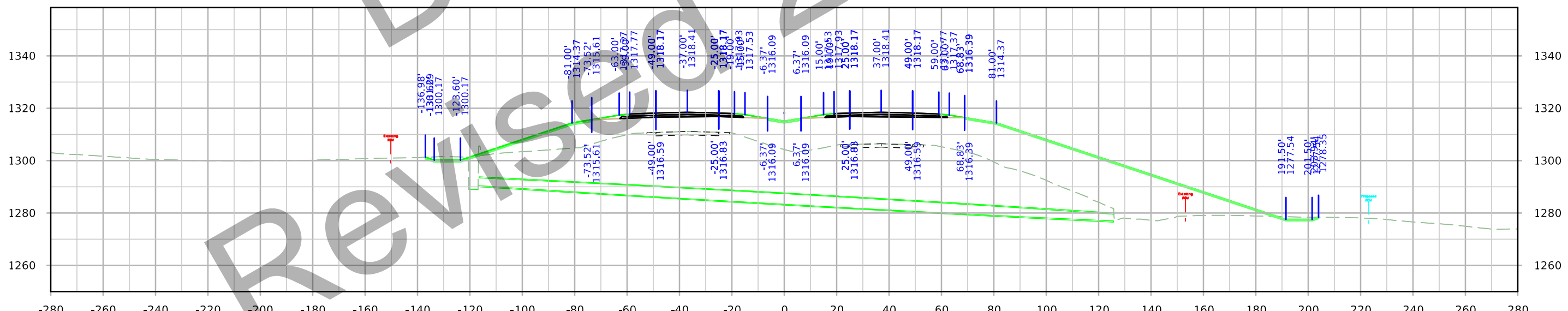
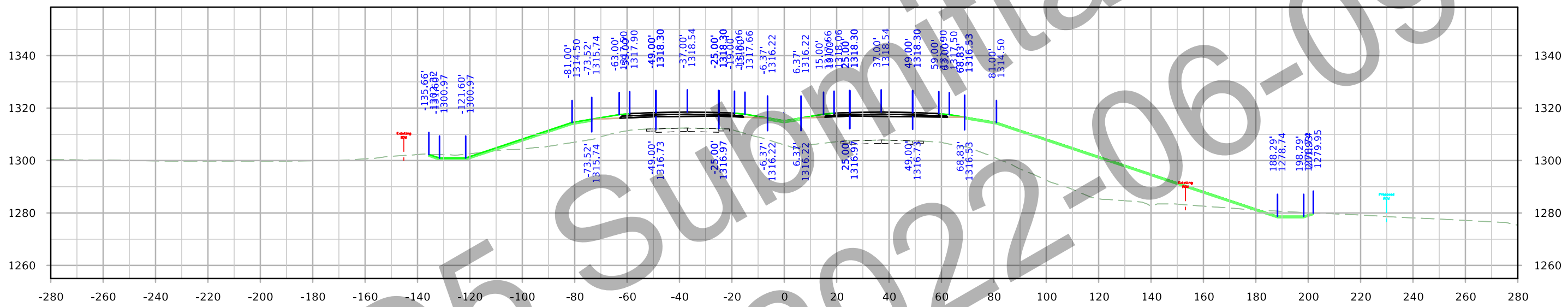
US 20 Stage 2

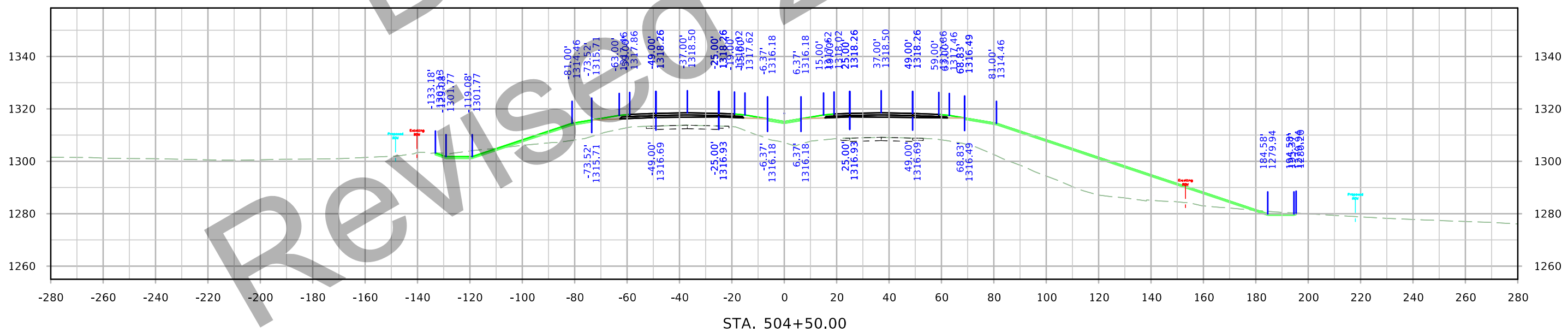
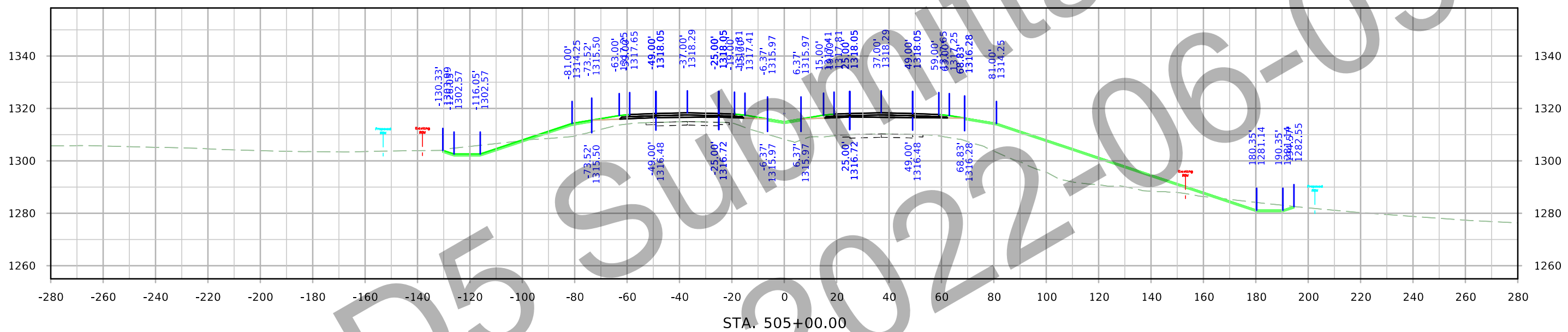


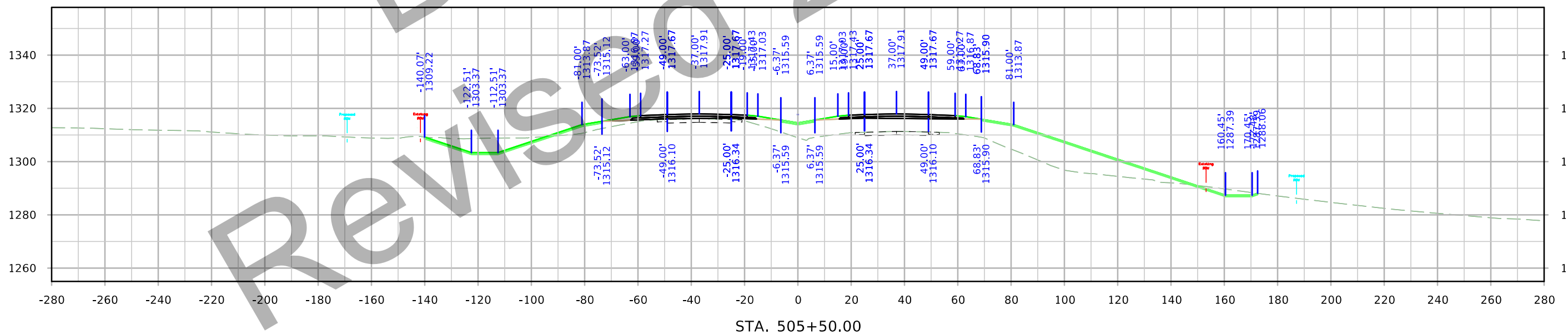
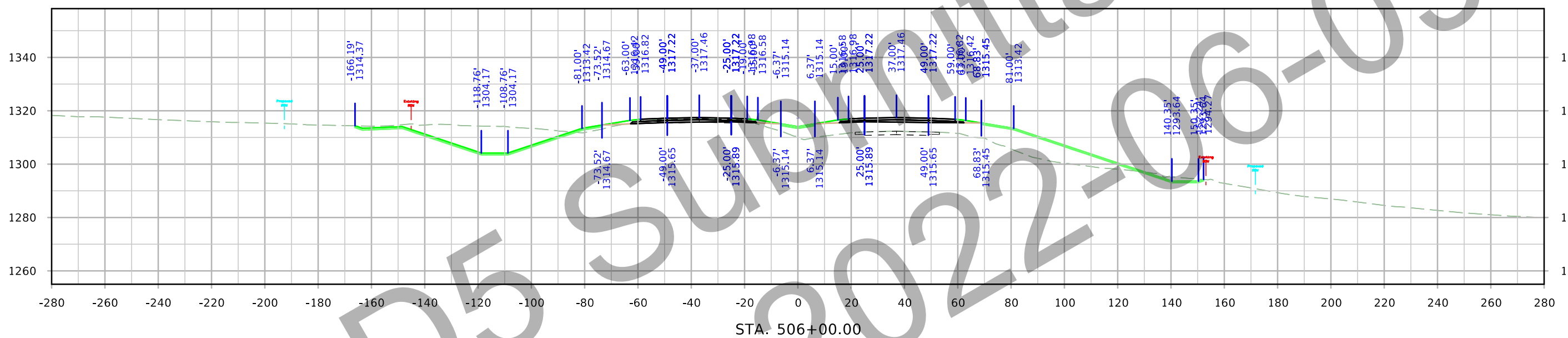
US 20 Stage 2

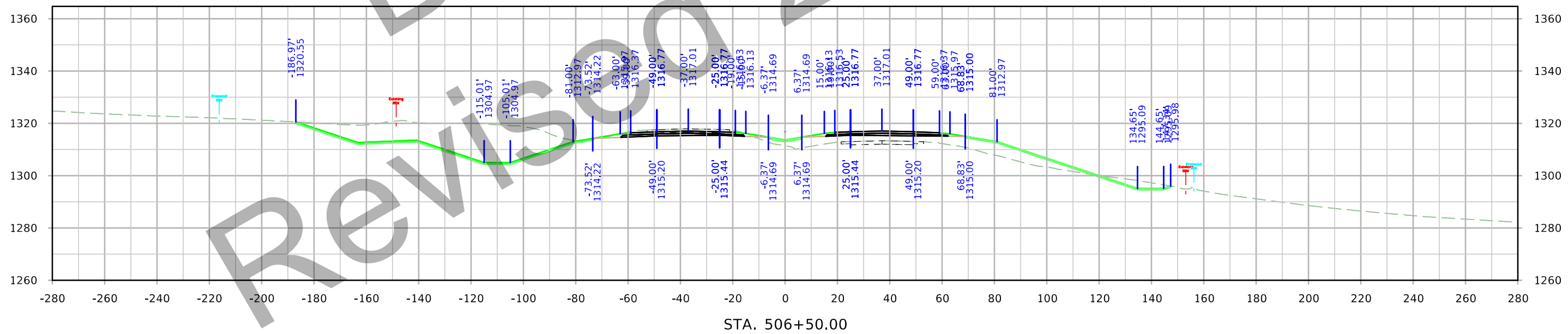
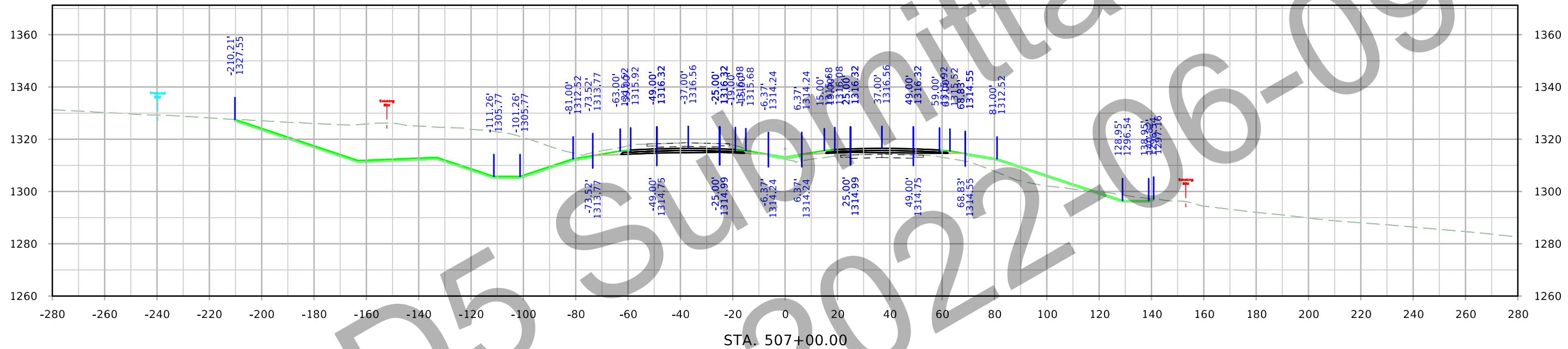


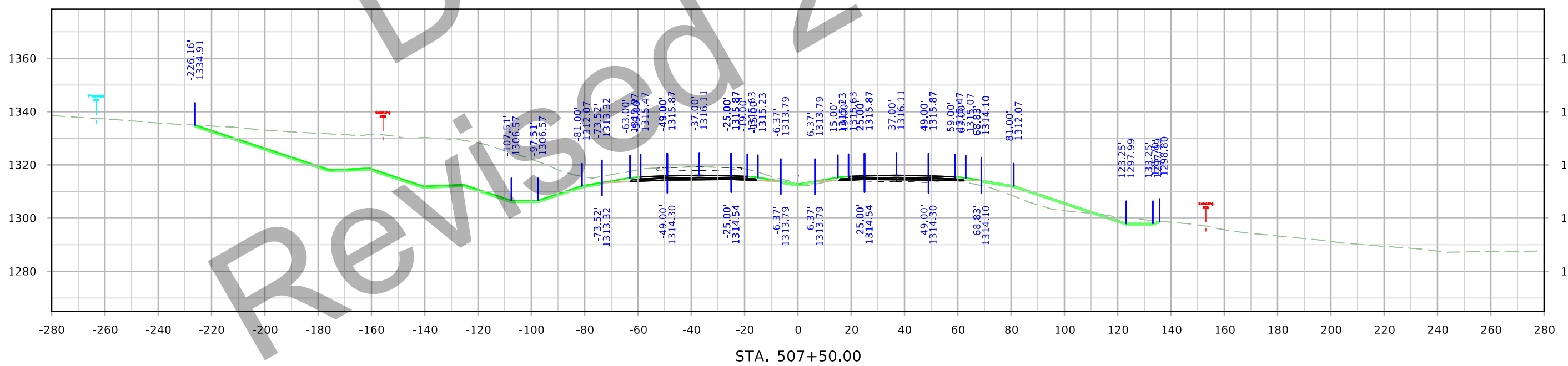
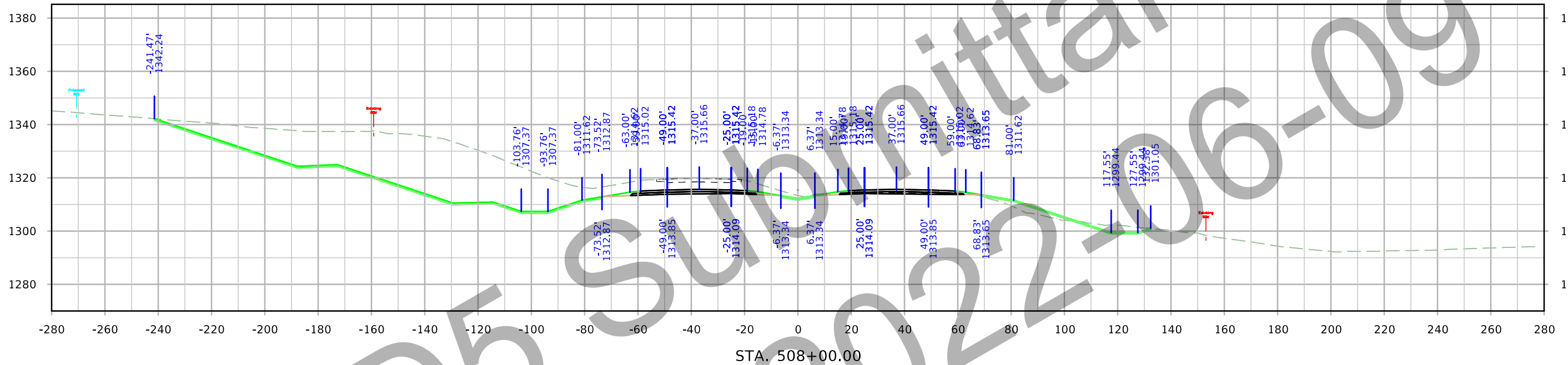


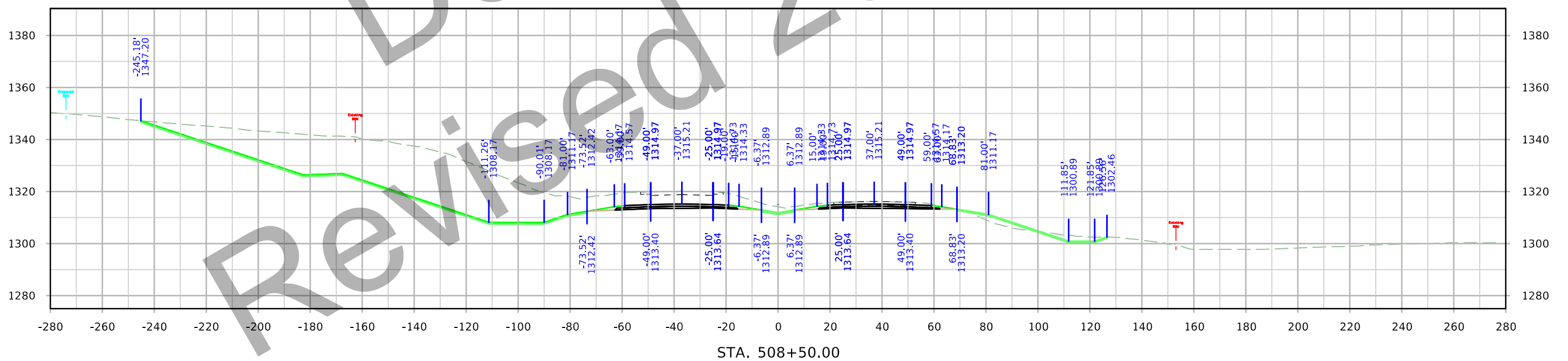
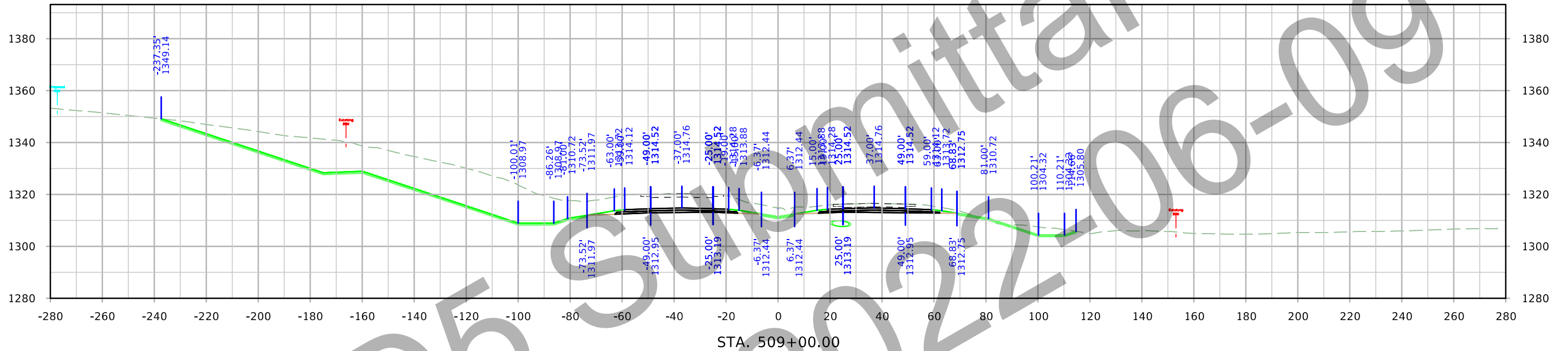


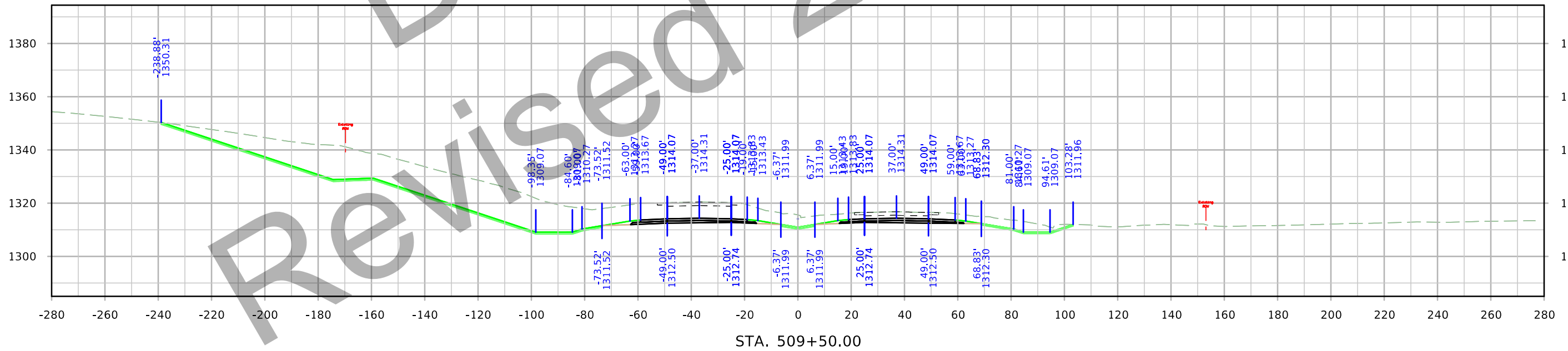
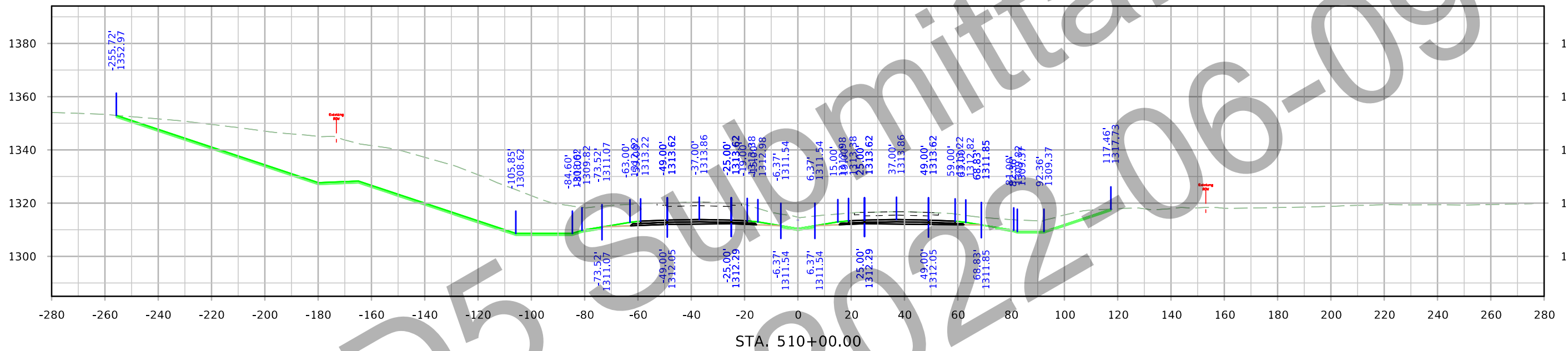


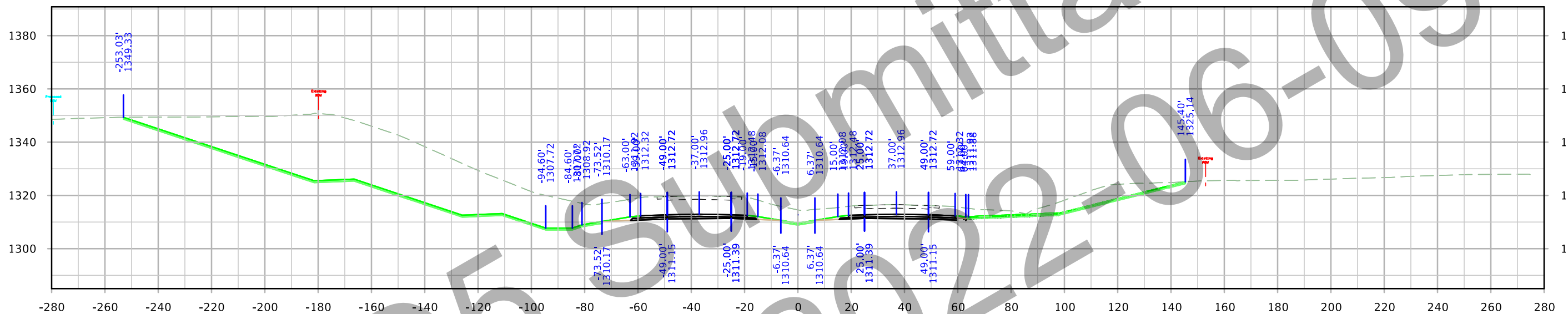




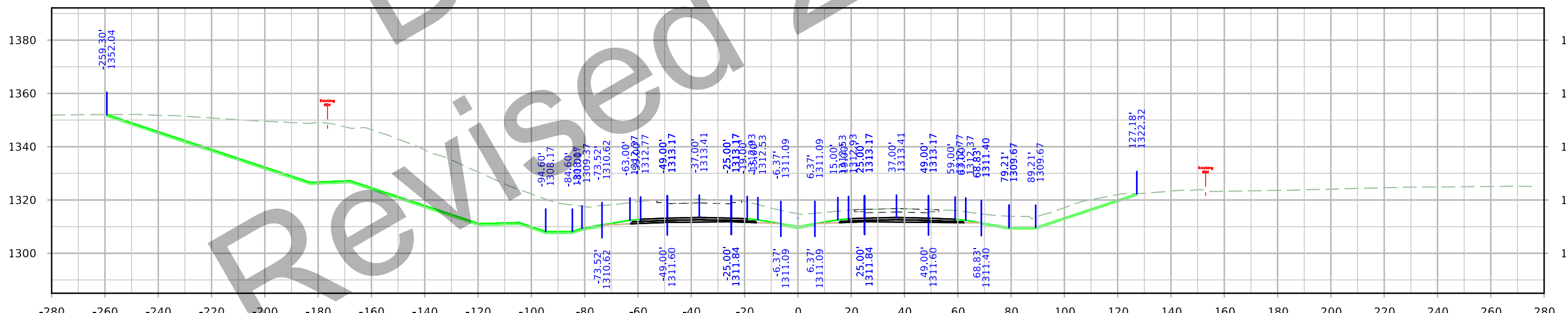




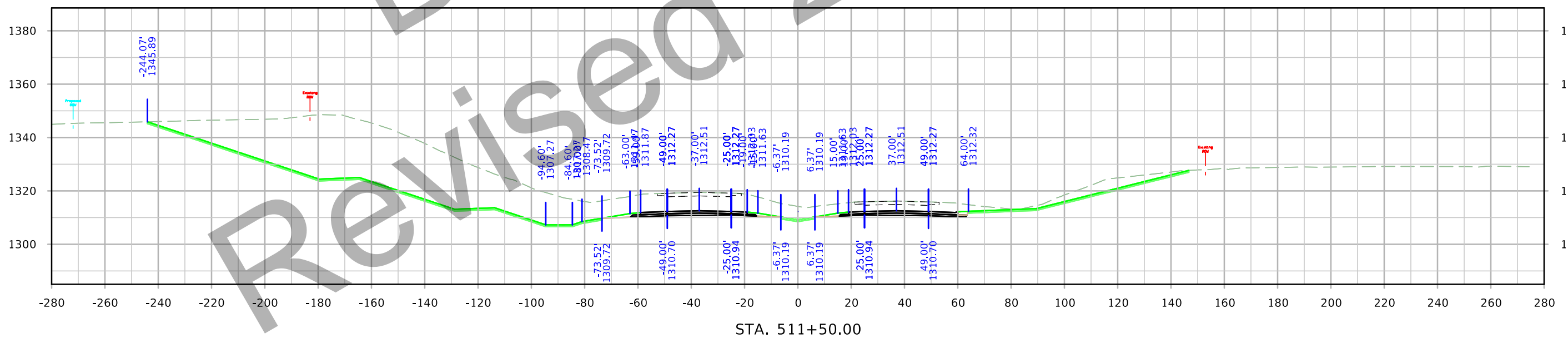
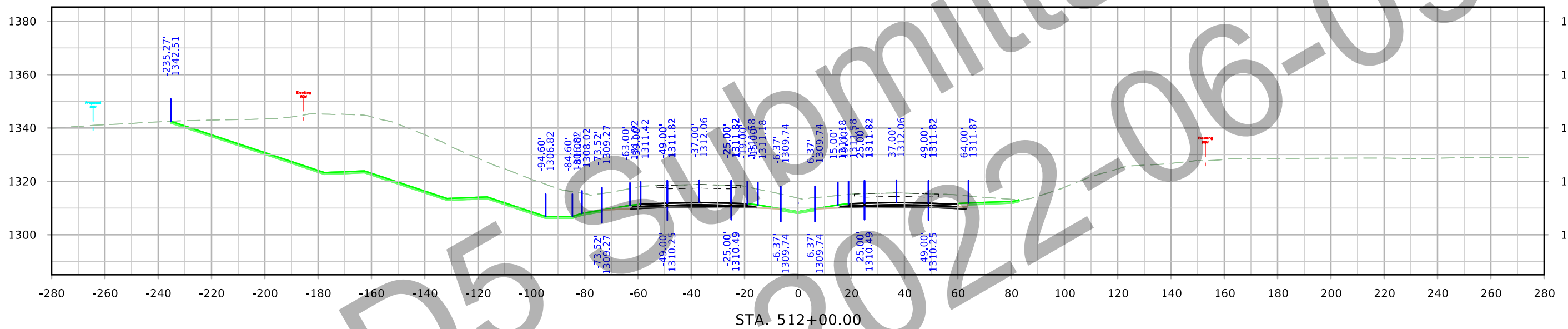


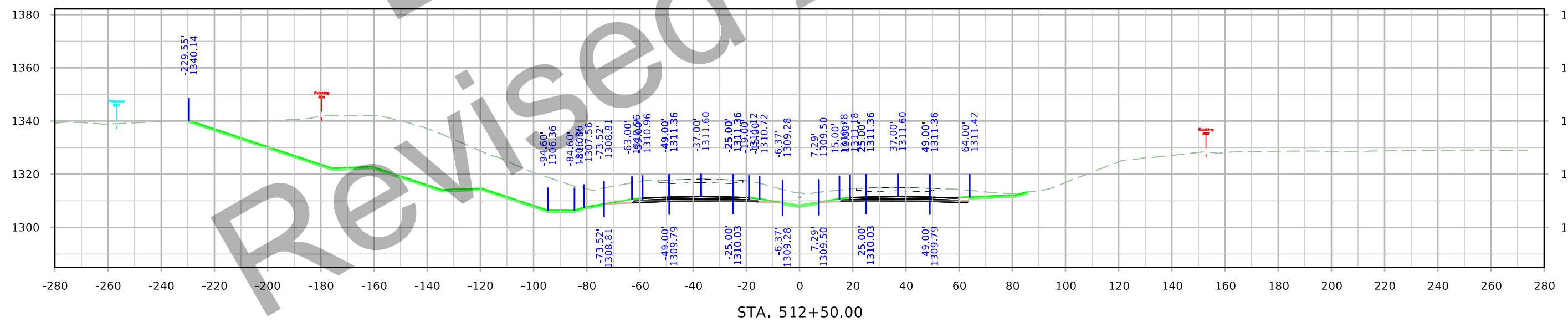
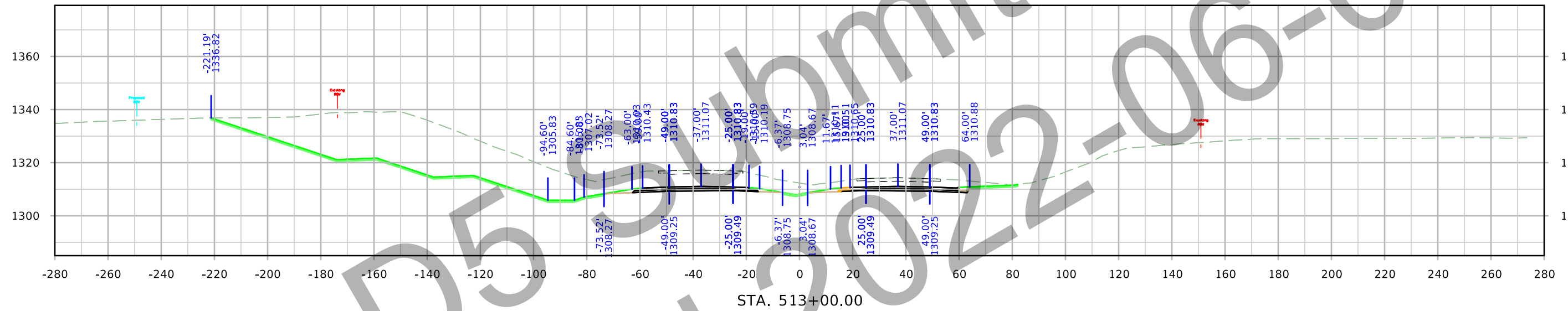


STA. 511+00.00

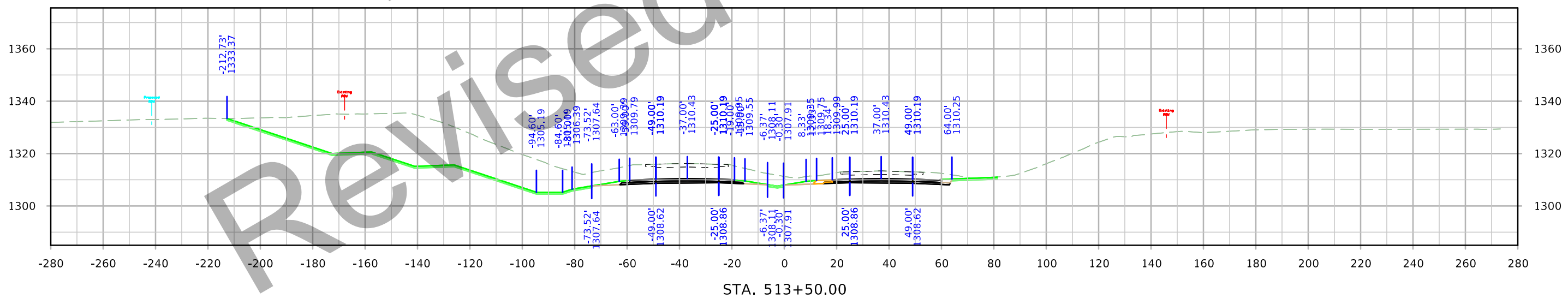
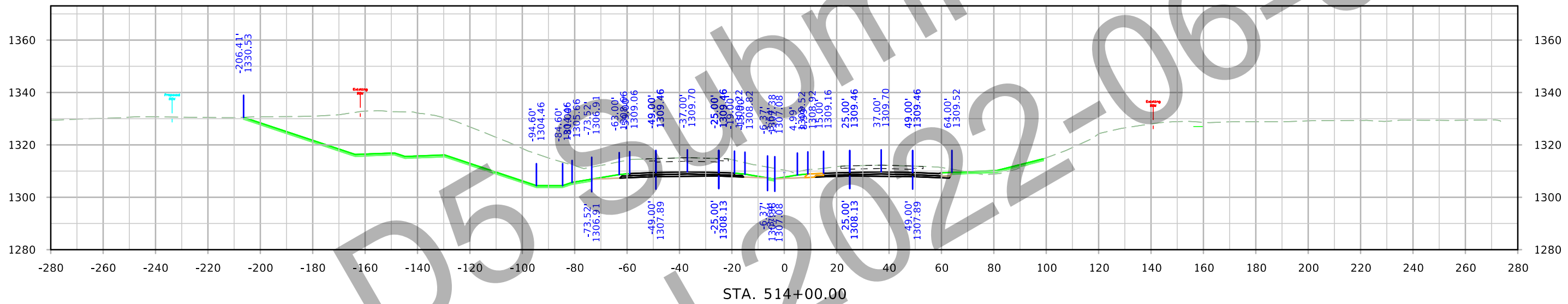
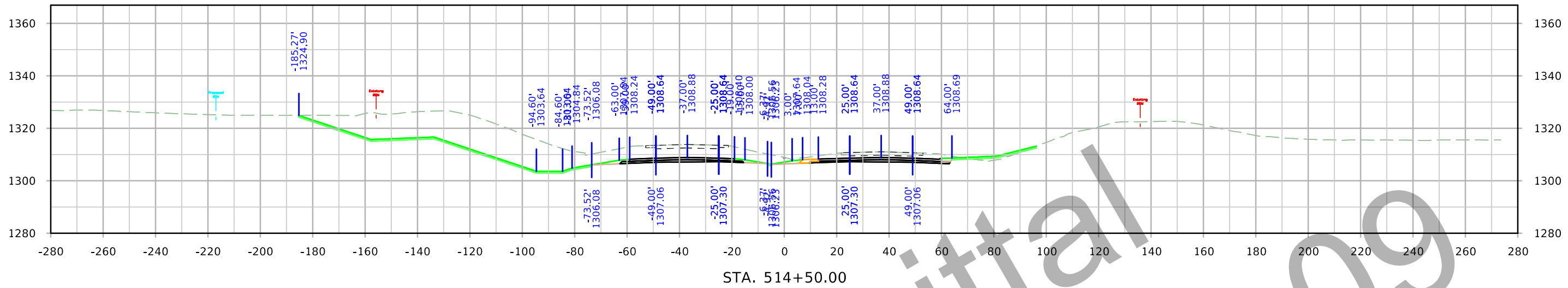


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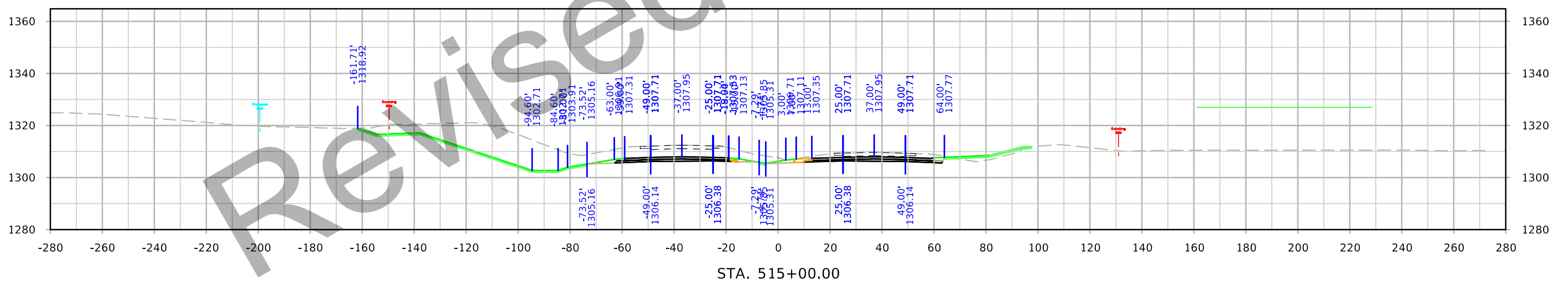
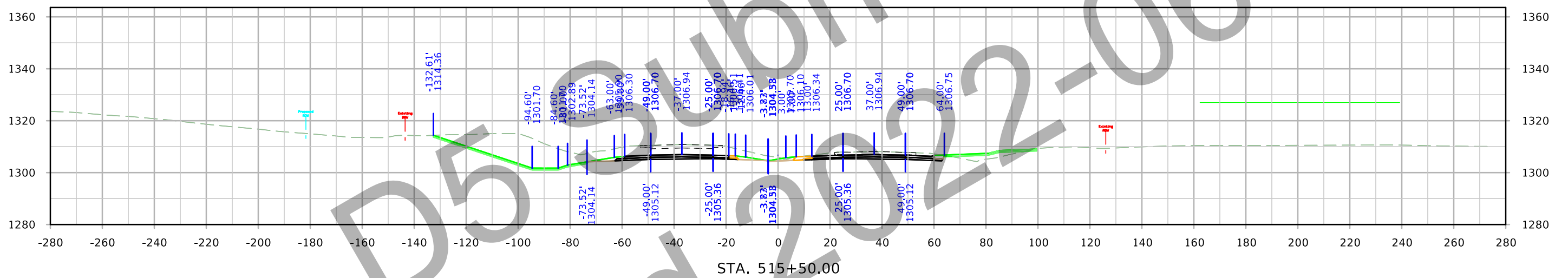
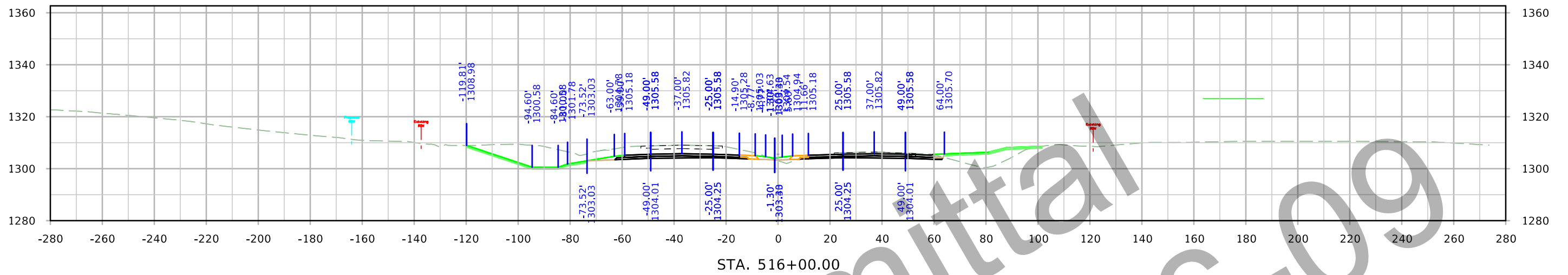




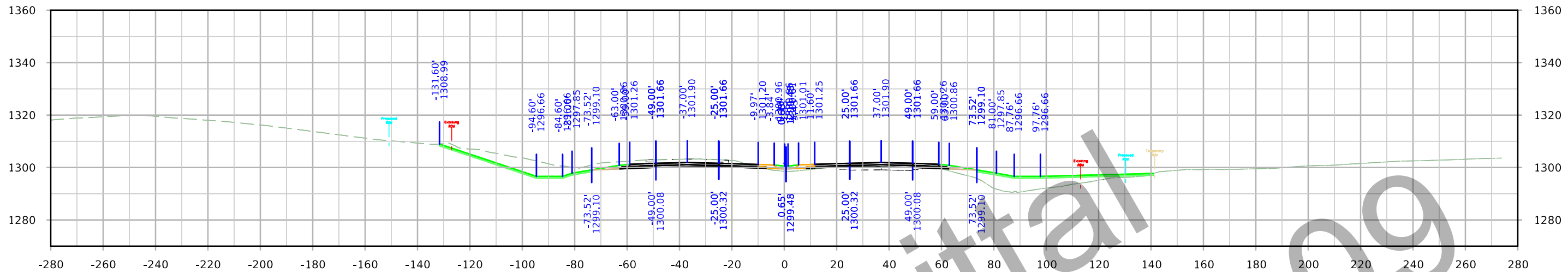
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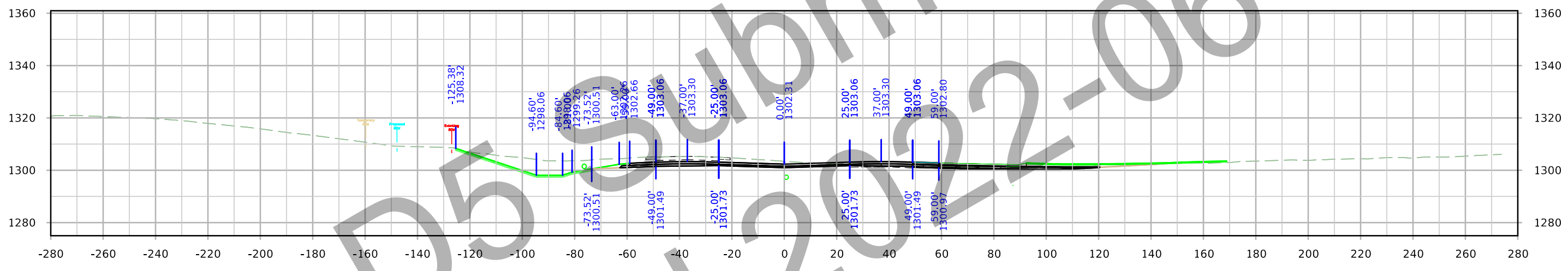
US 20 Stage 2



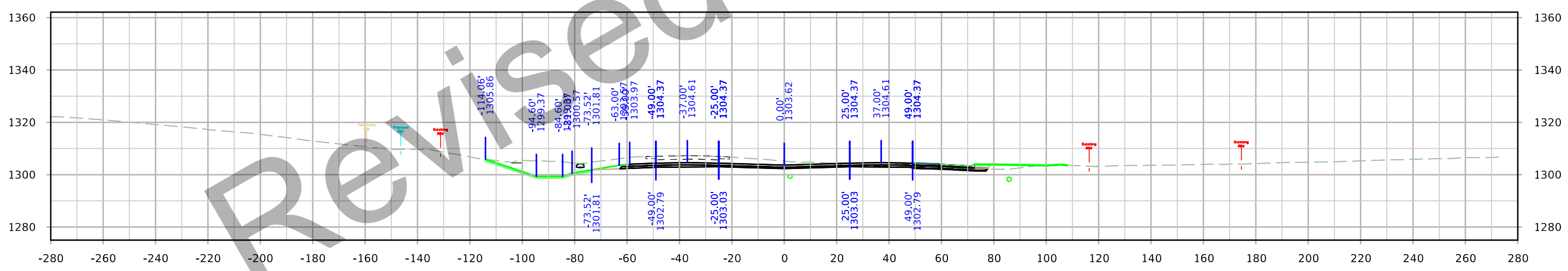
US 20 Stage 2



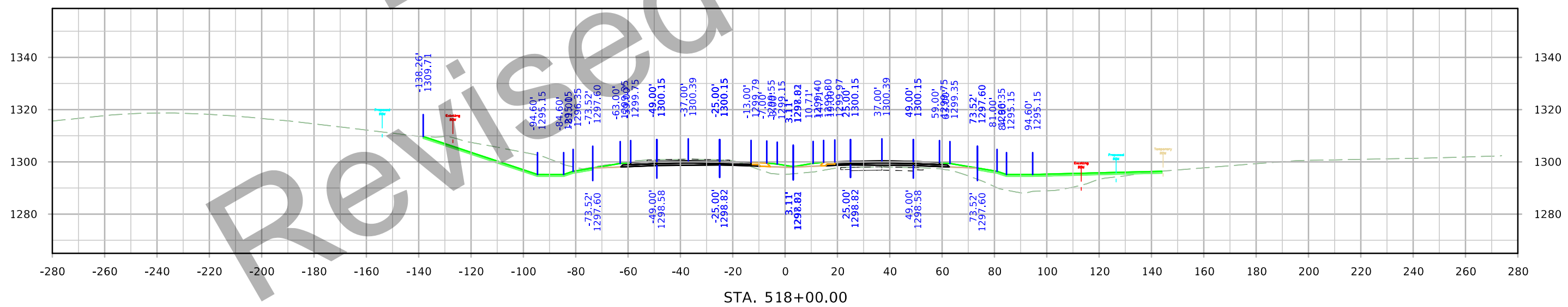
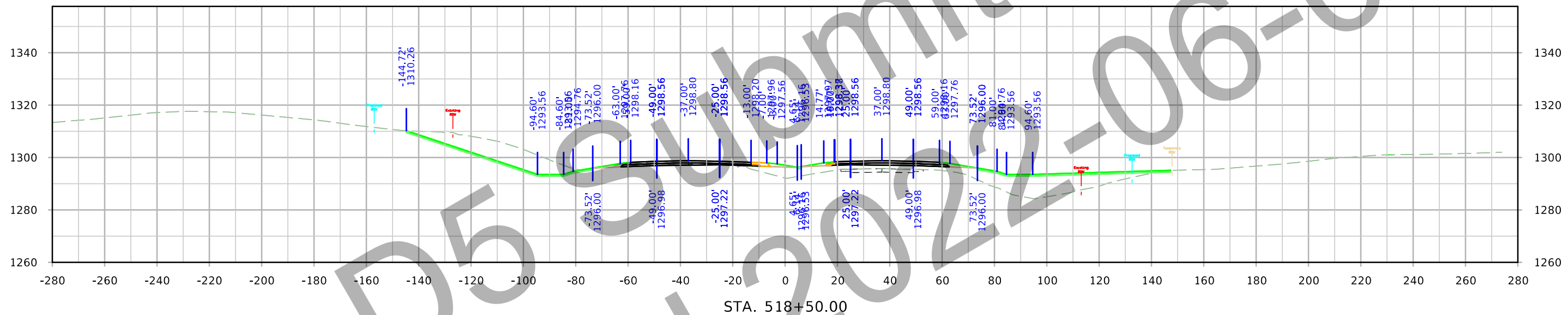
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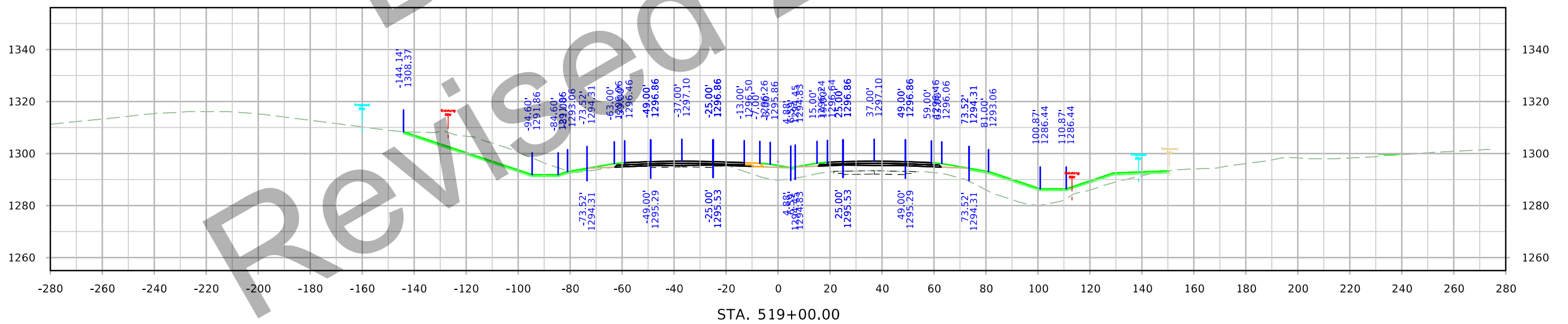
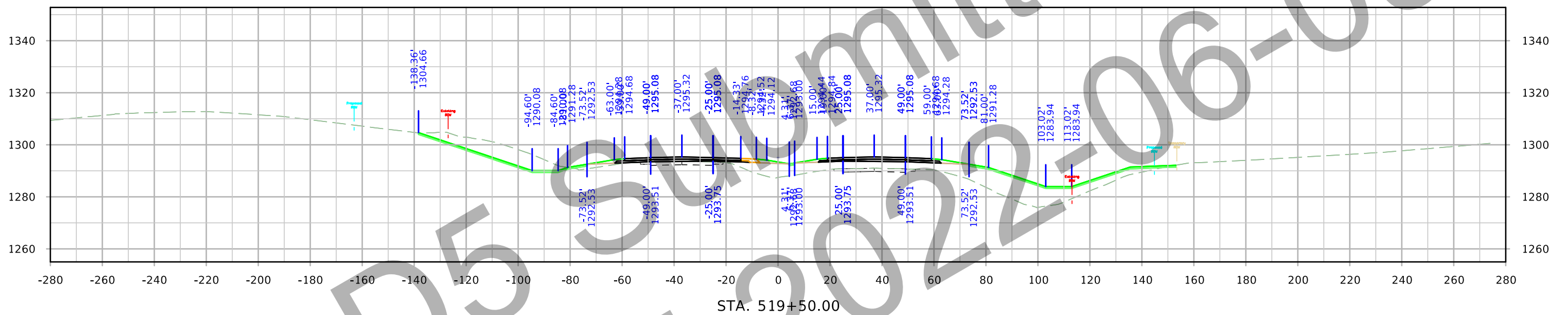


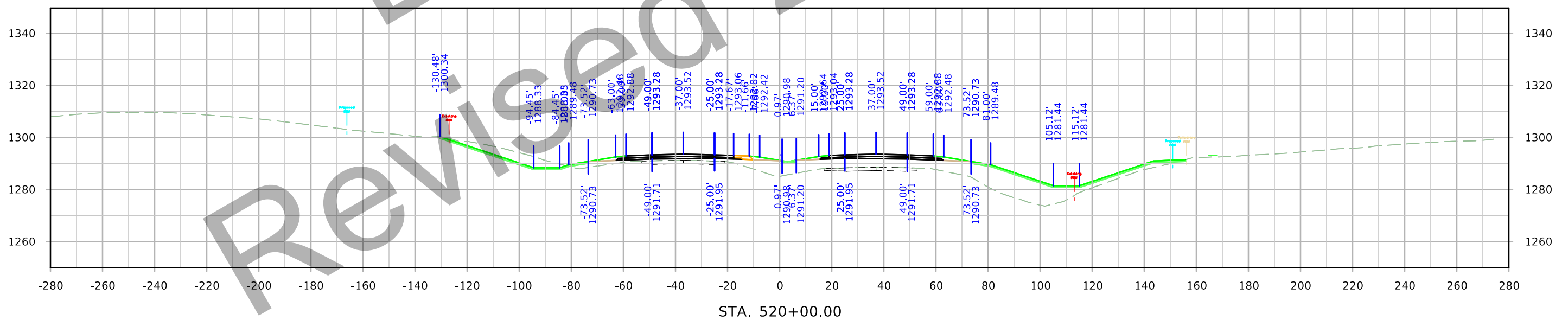
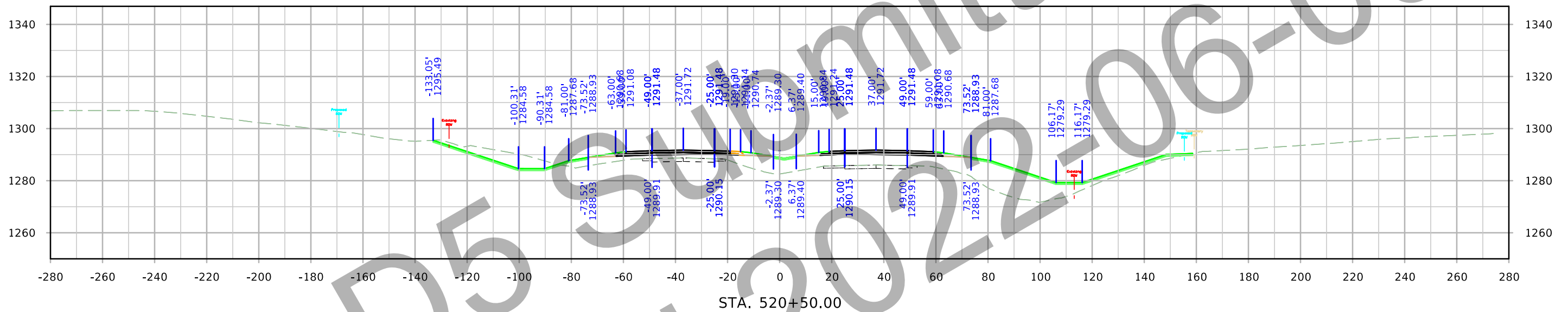
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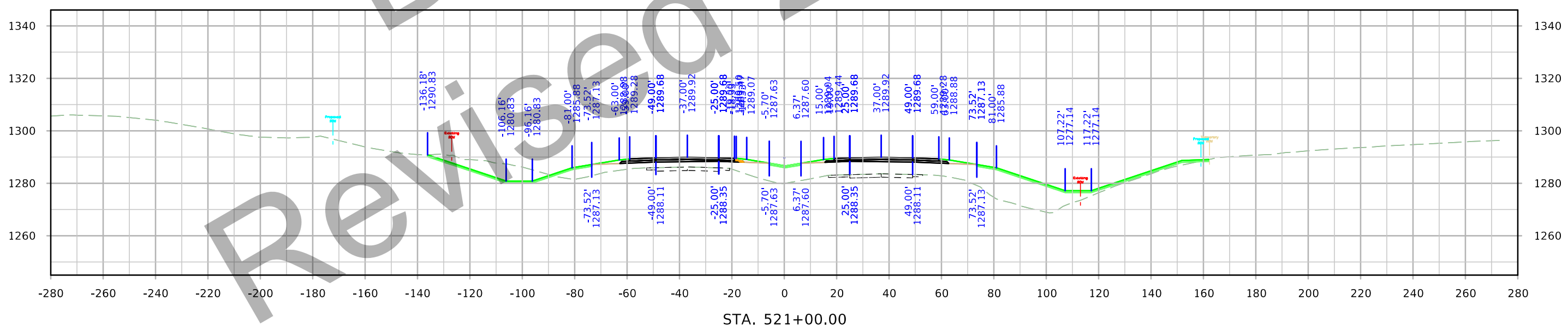
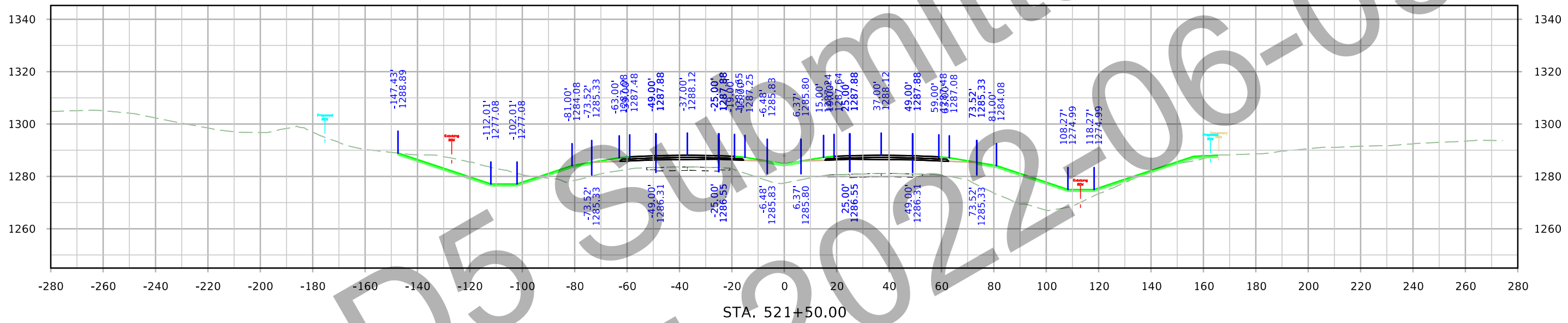


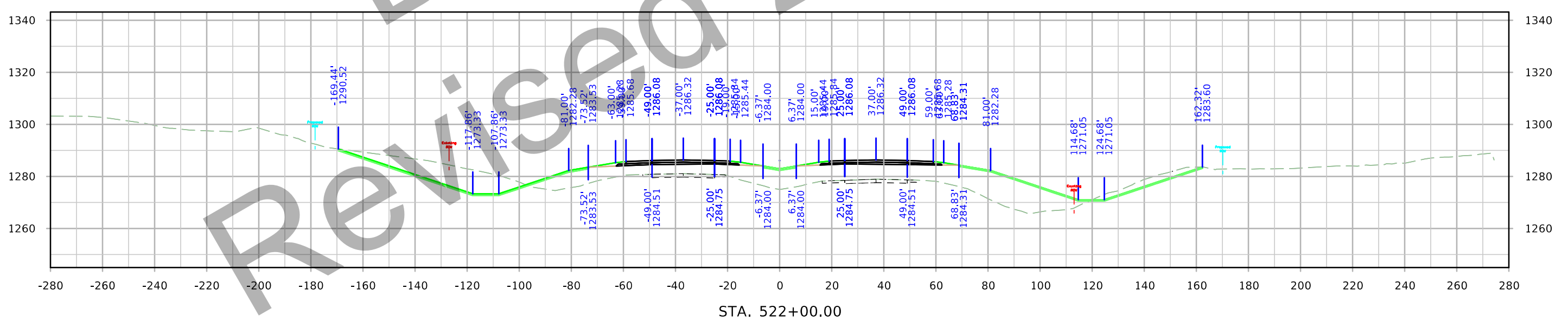
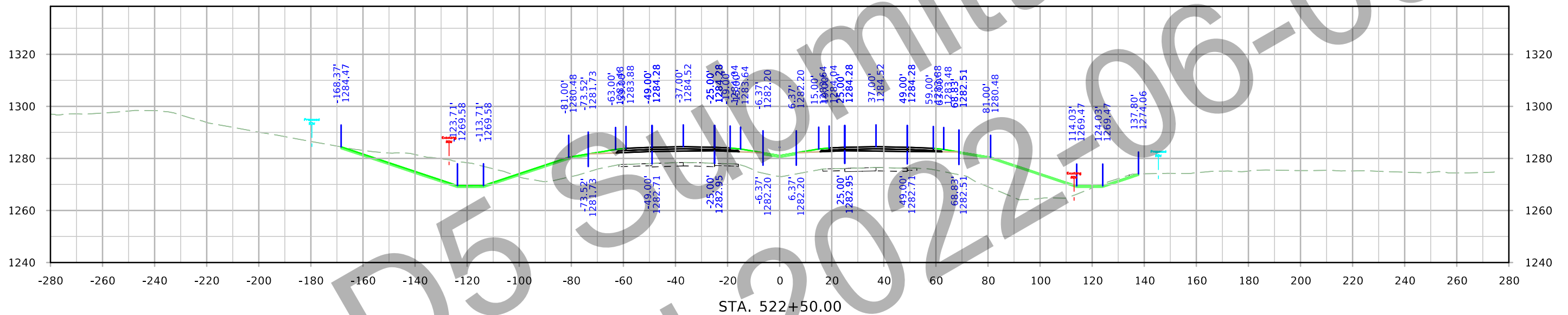
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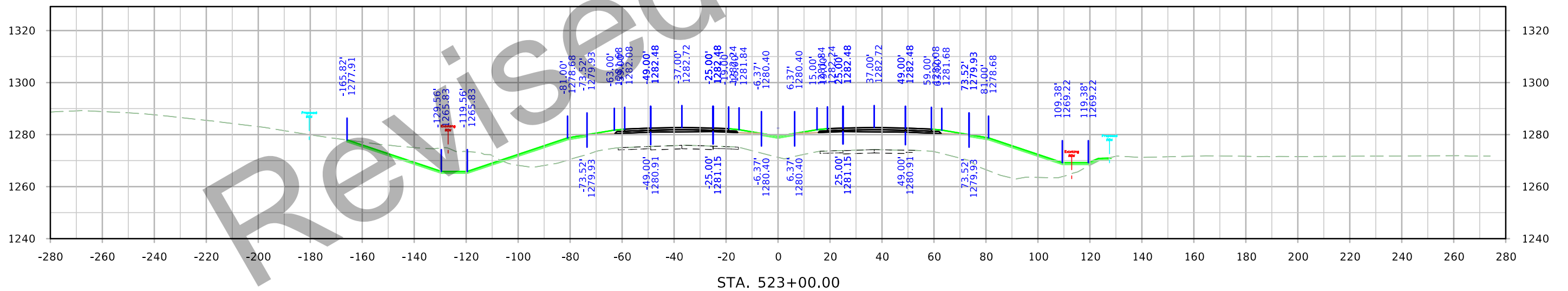
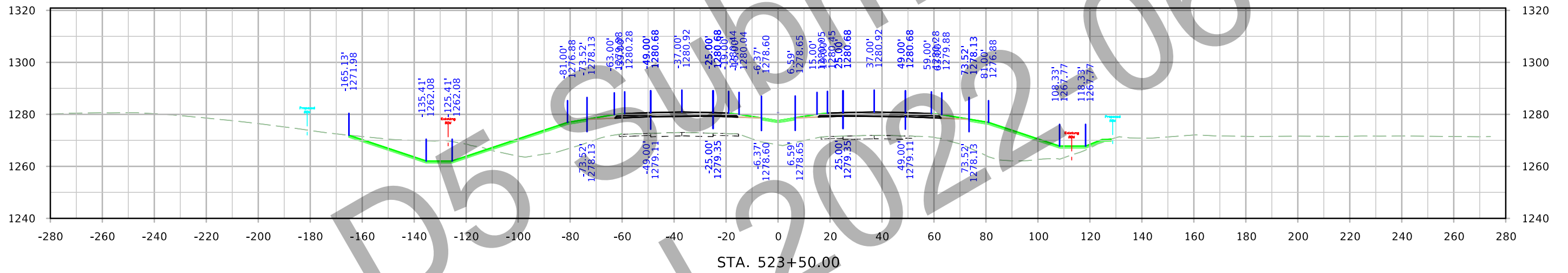
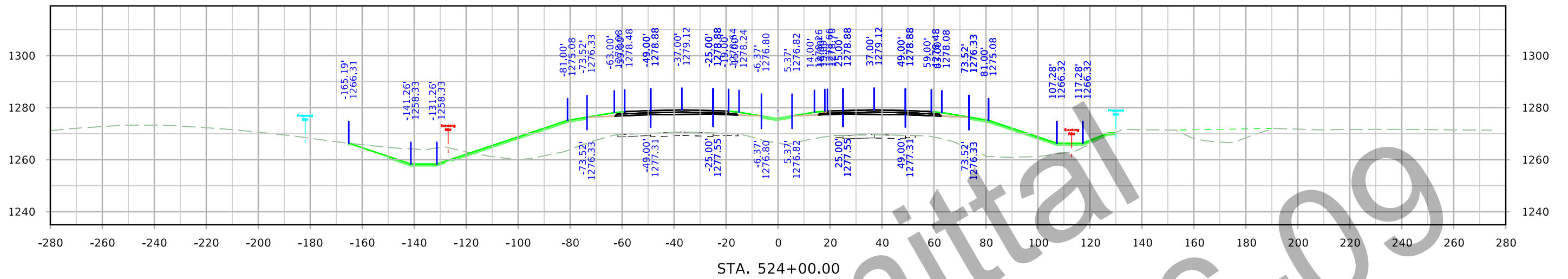




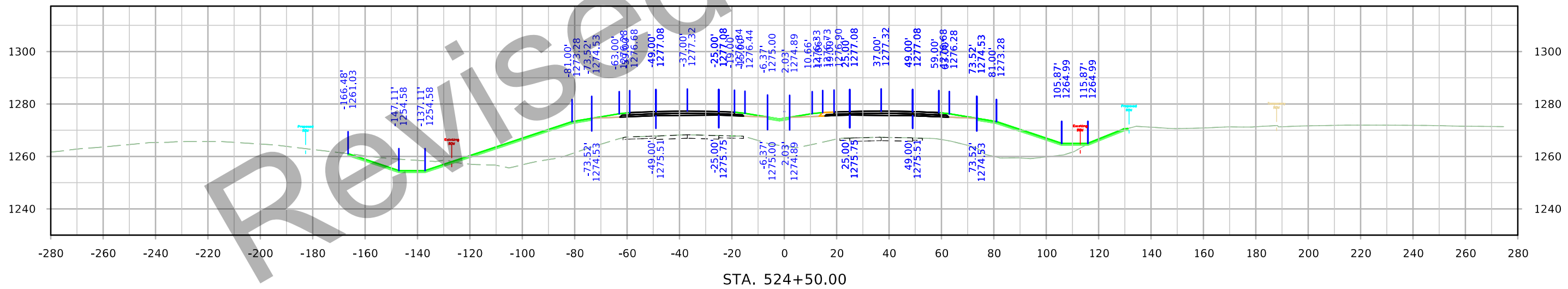
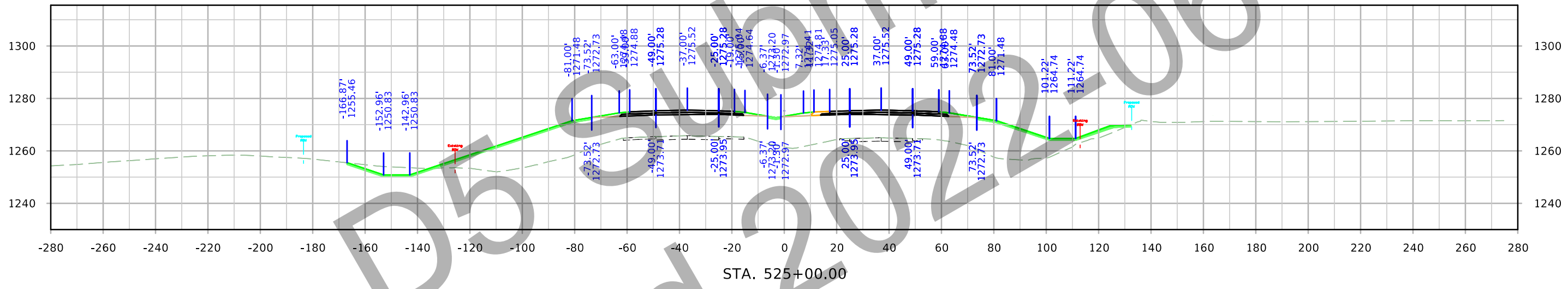
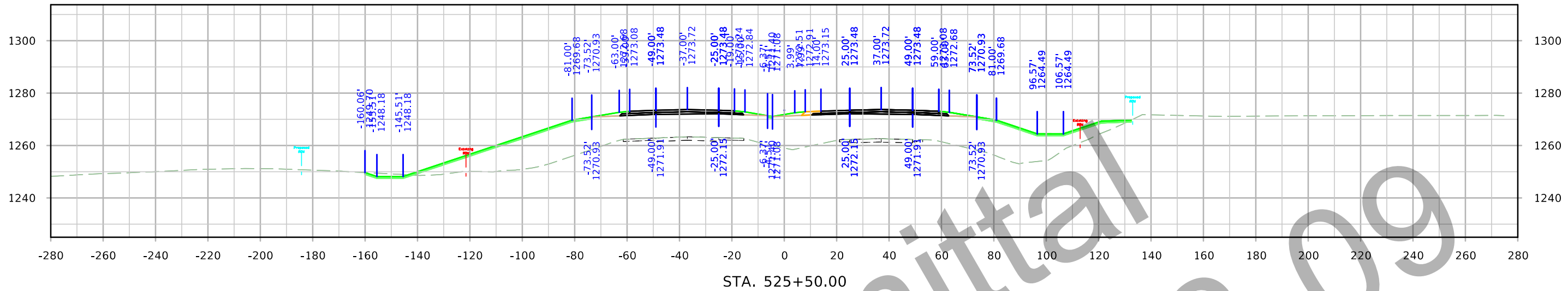




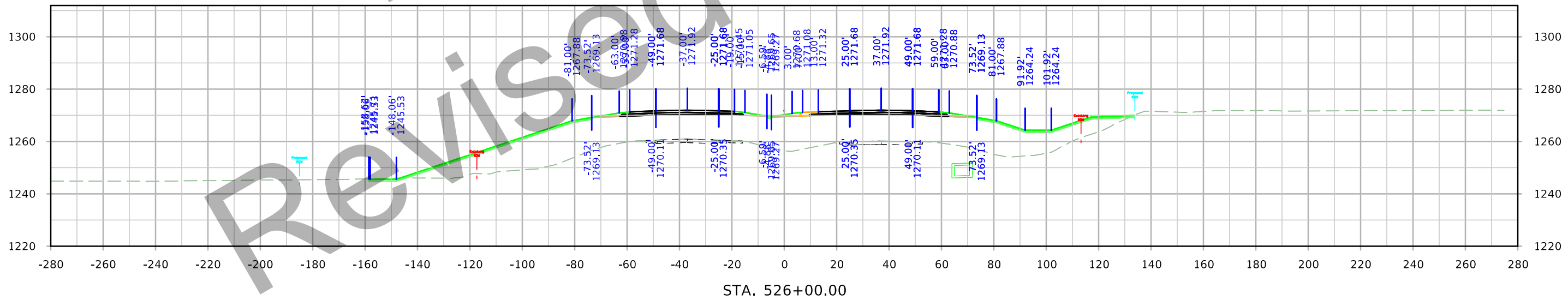
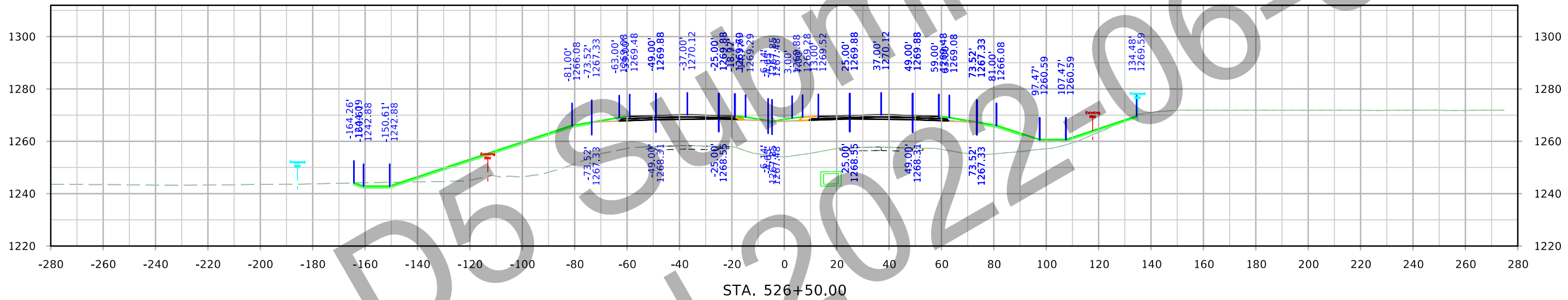
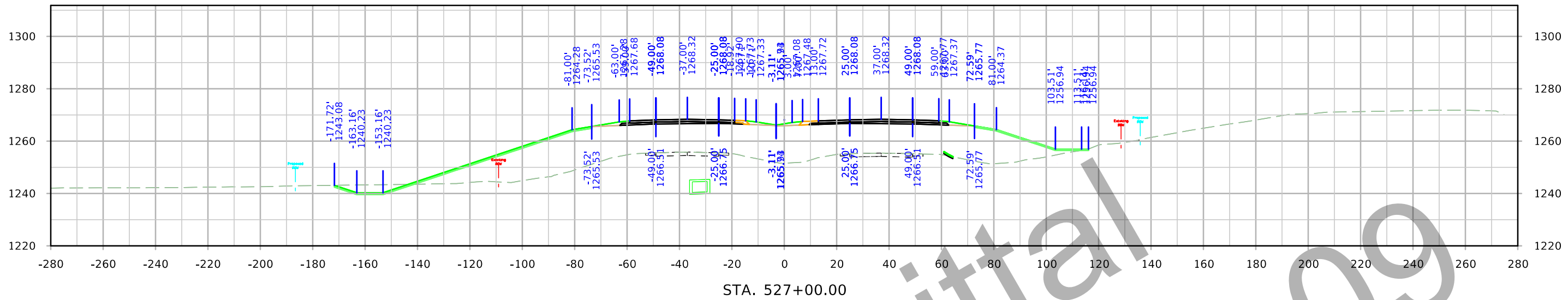
US 20 Stage 2

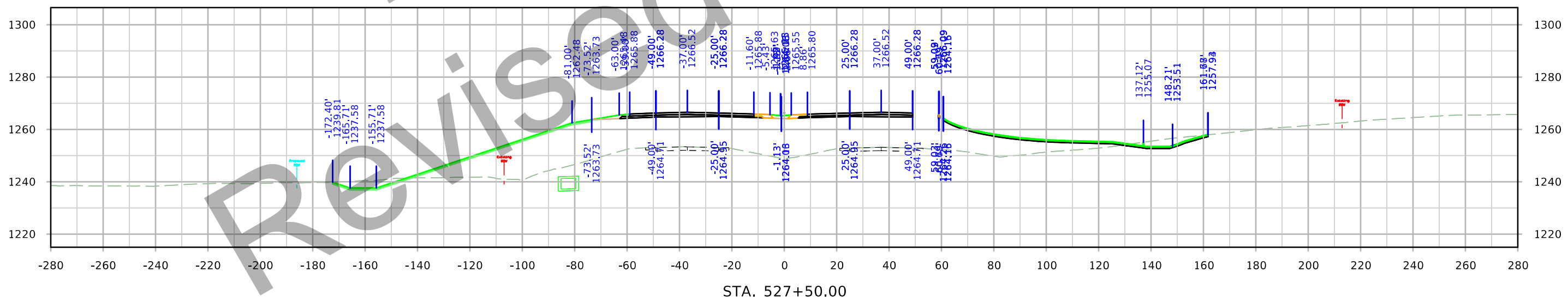
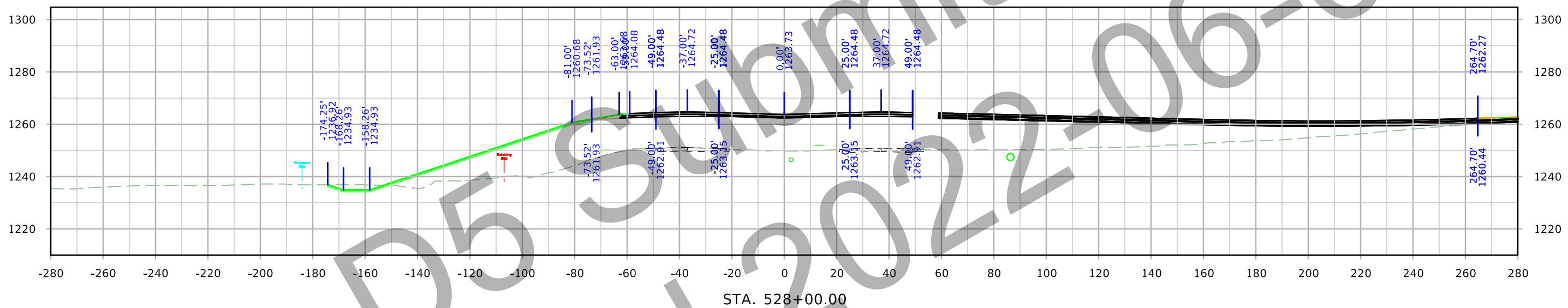


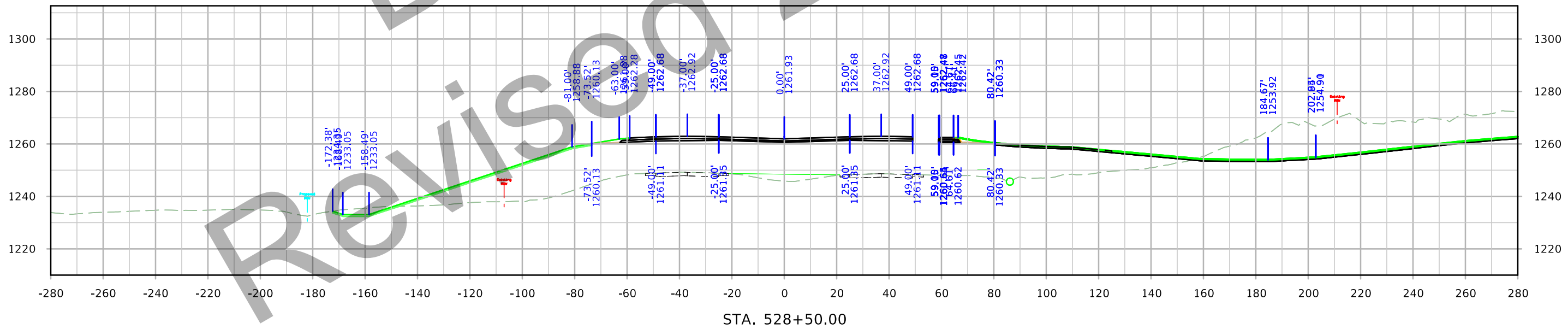
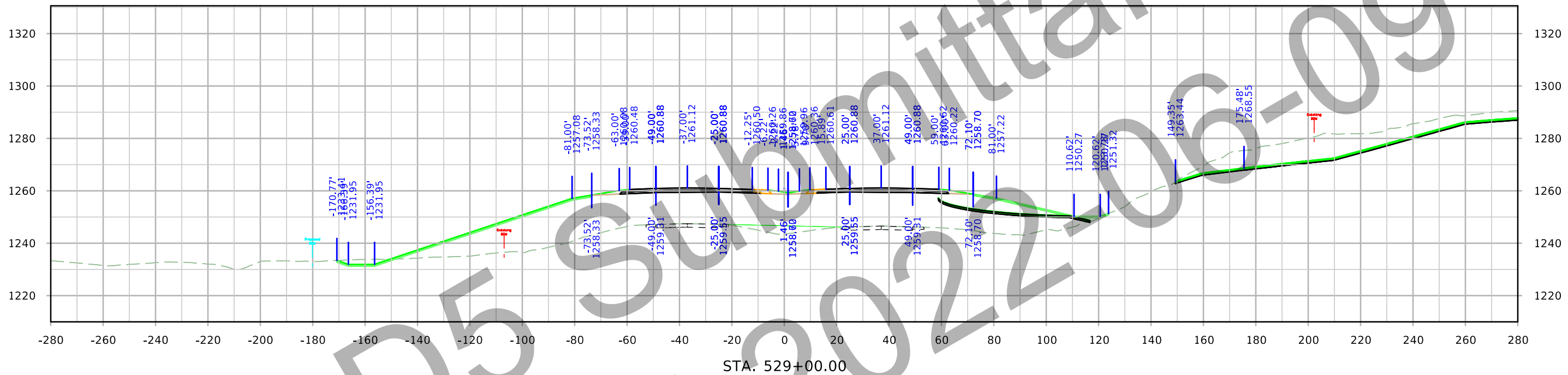
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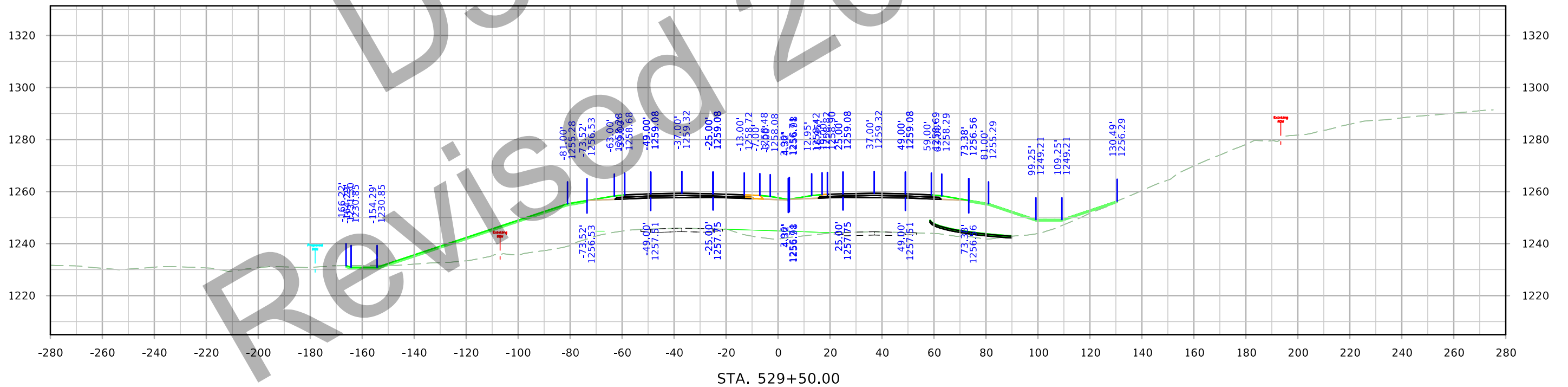
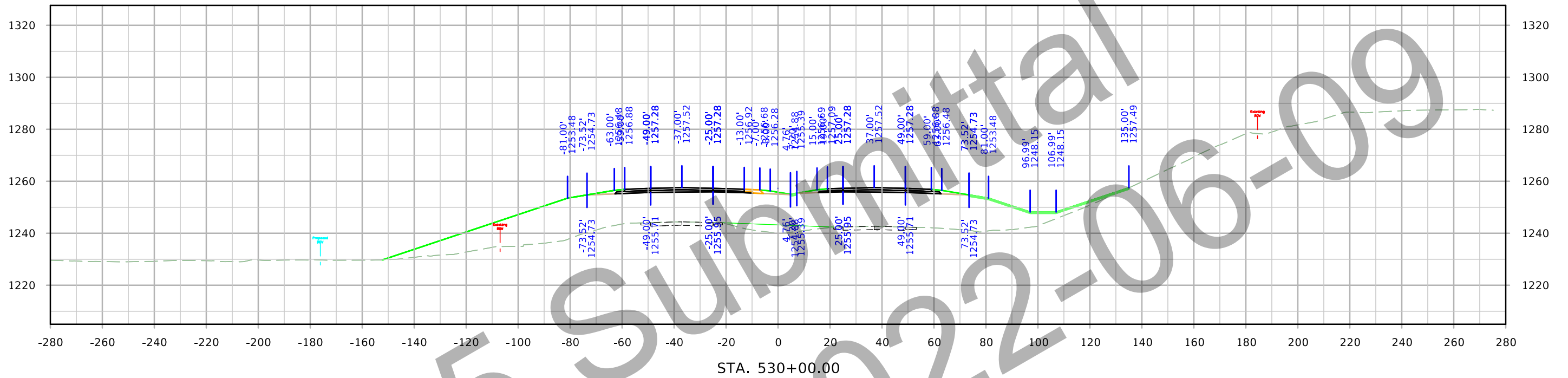


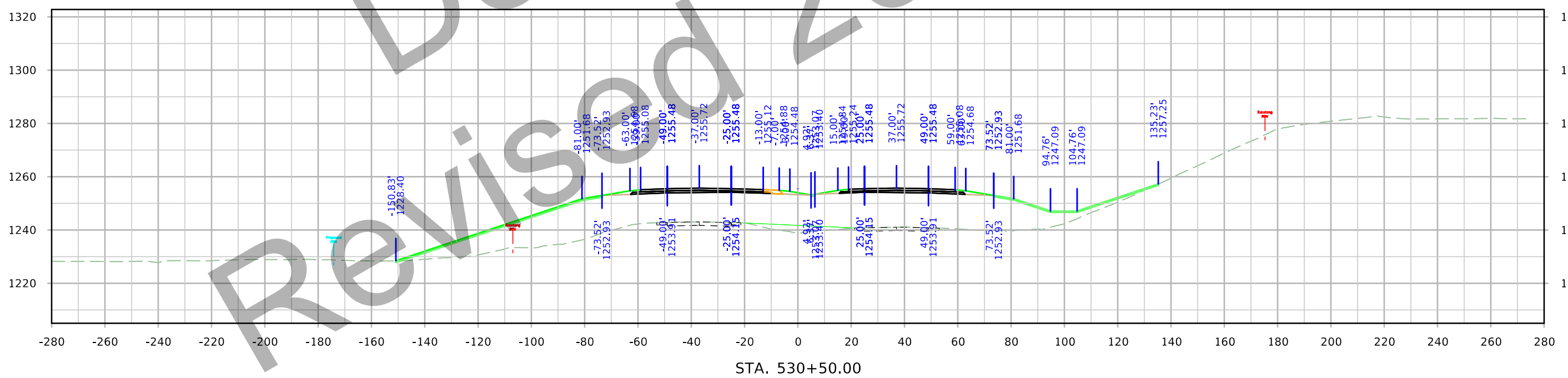
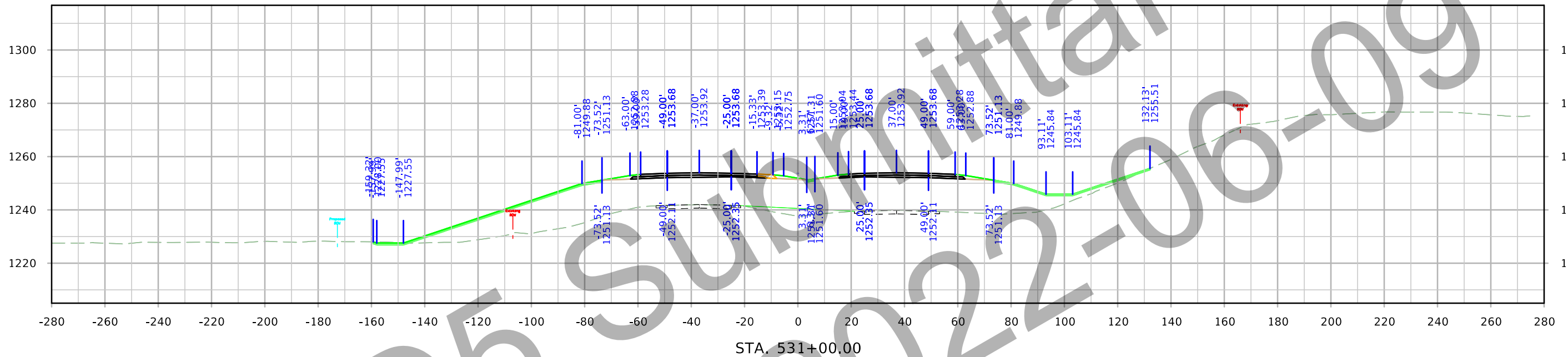
US 20 Stage 2

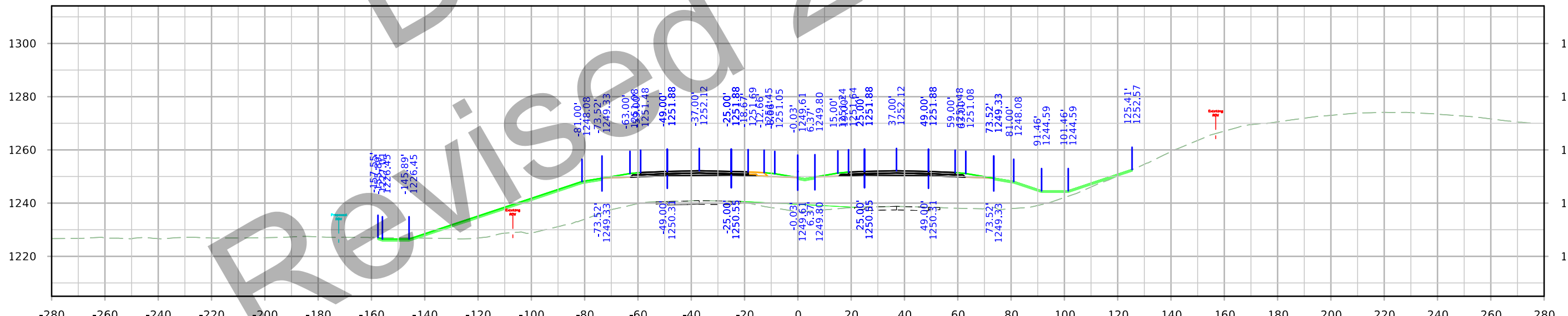
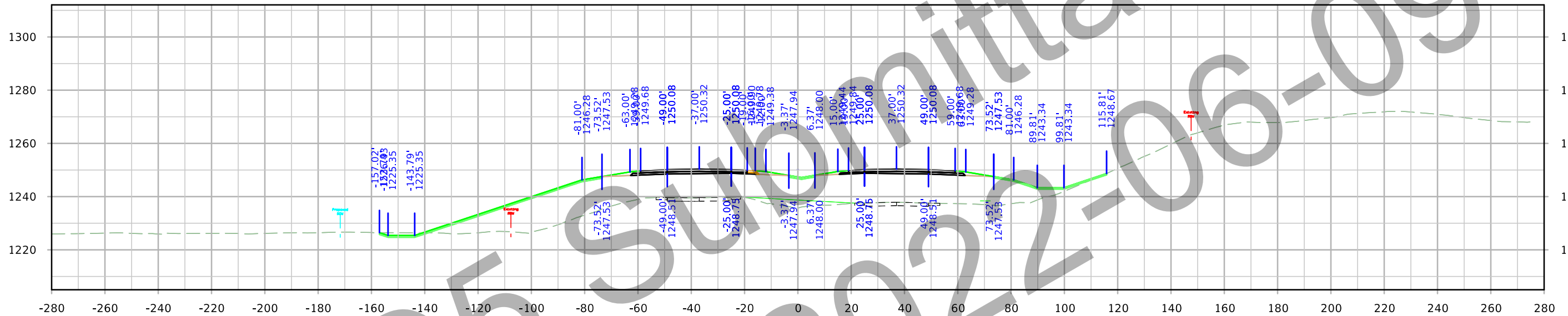


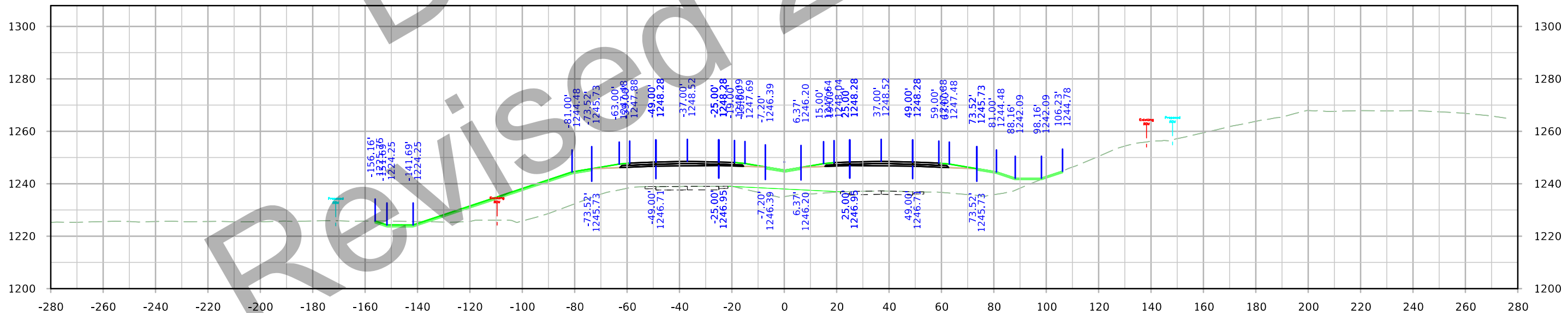
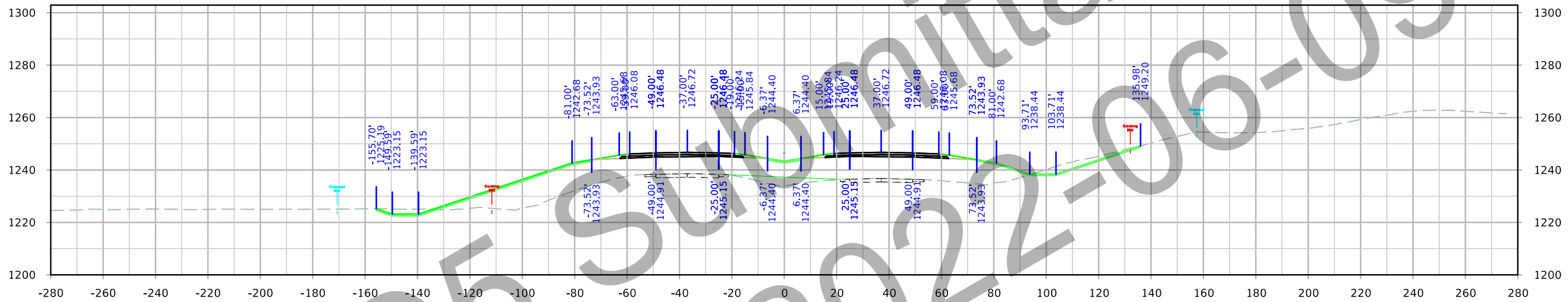




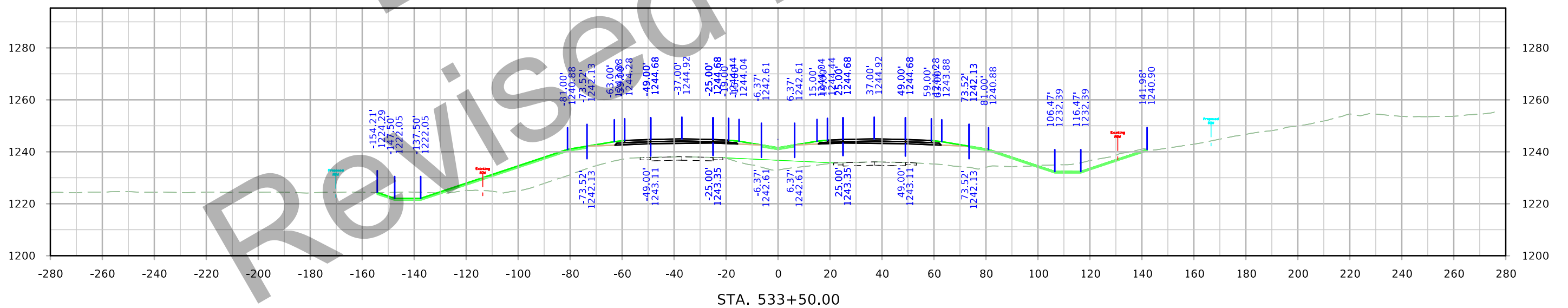
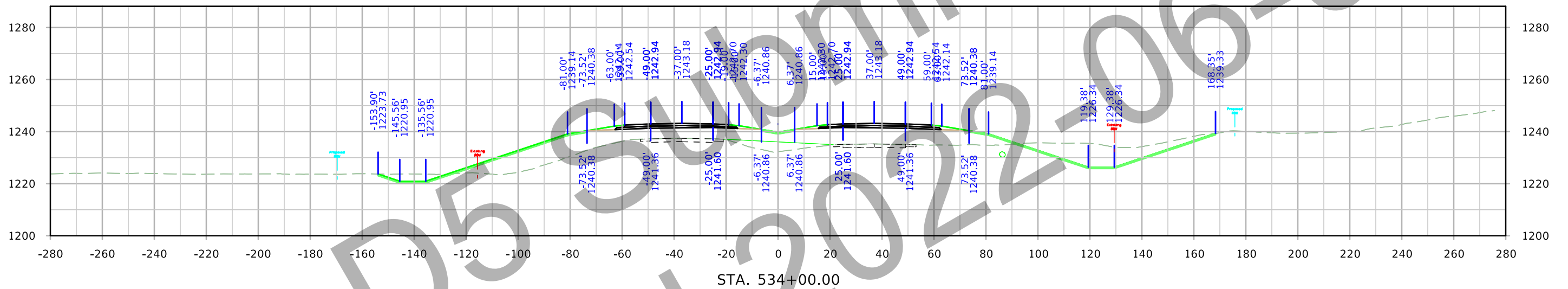
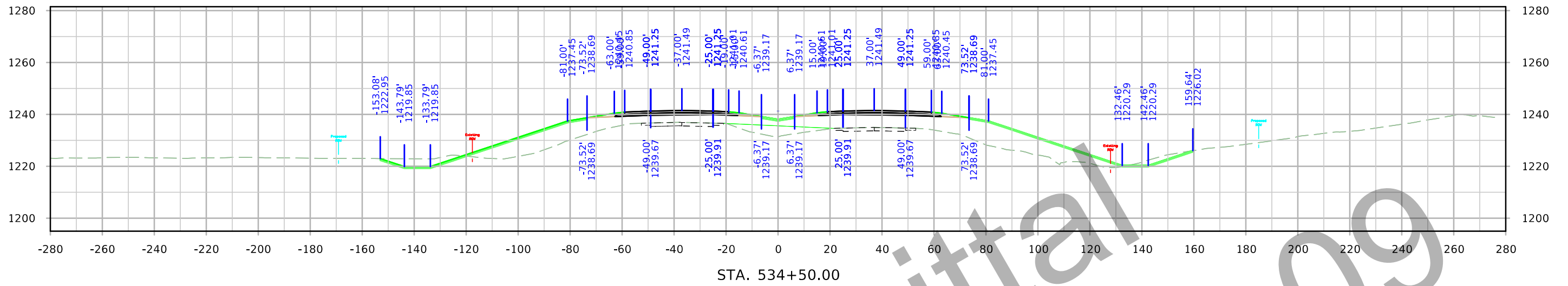




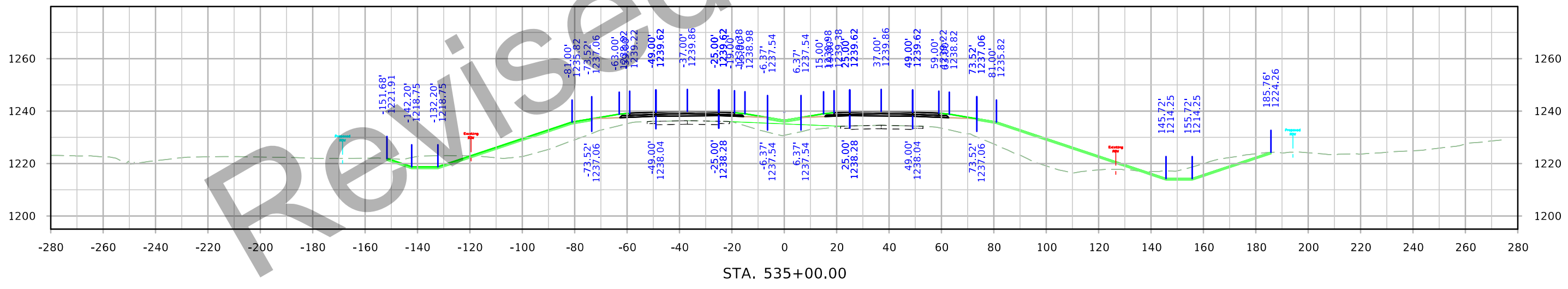
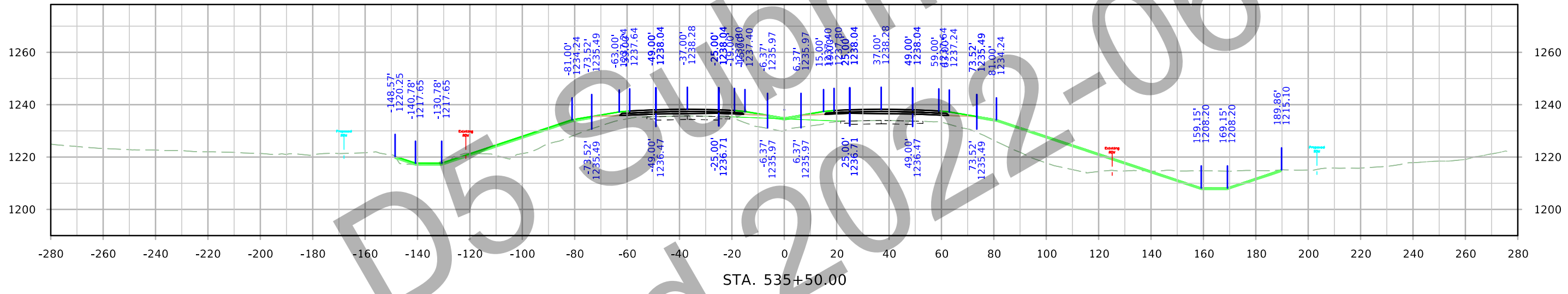
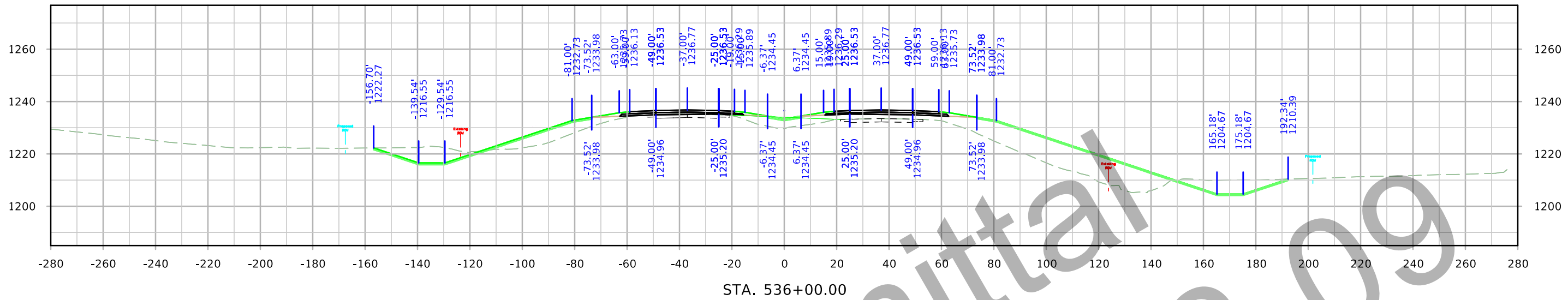


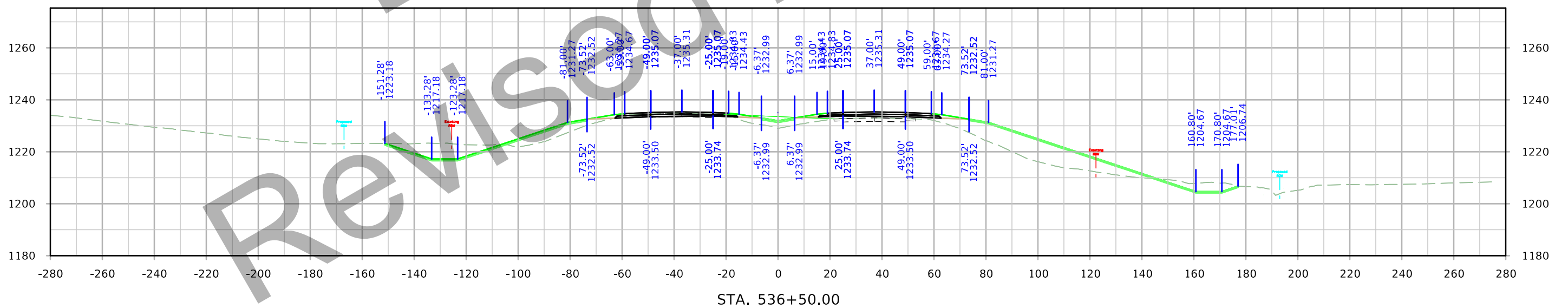
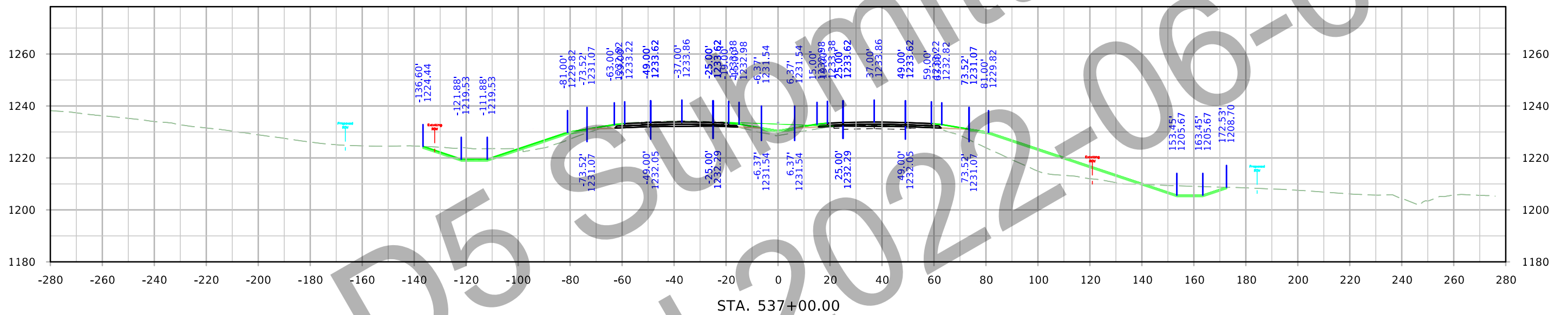


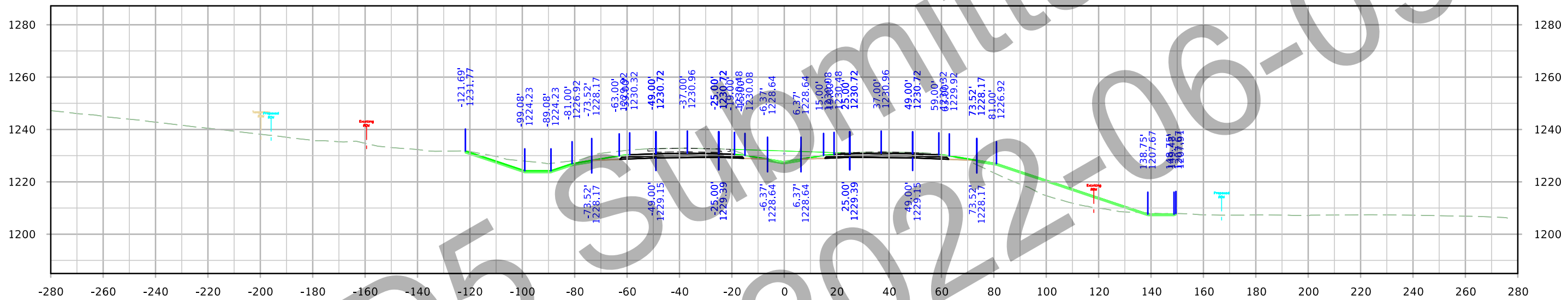
US 20 Stage 2



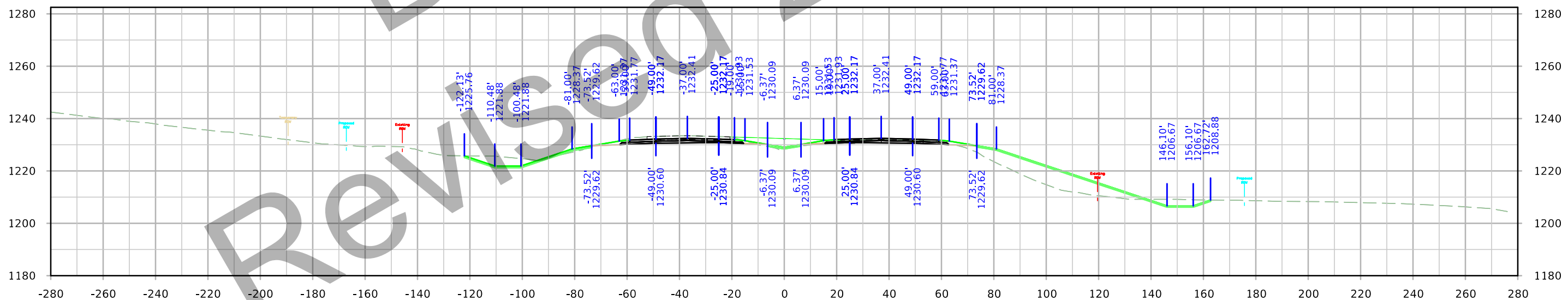
US 20 Stage 2



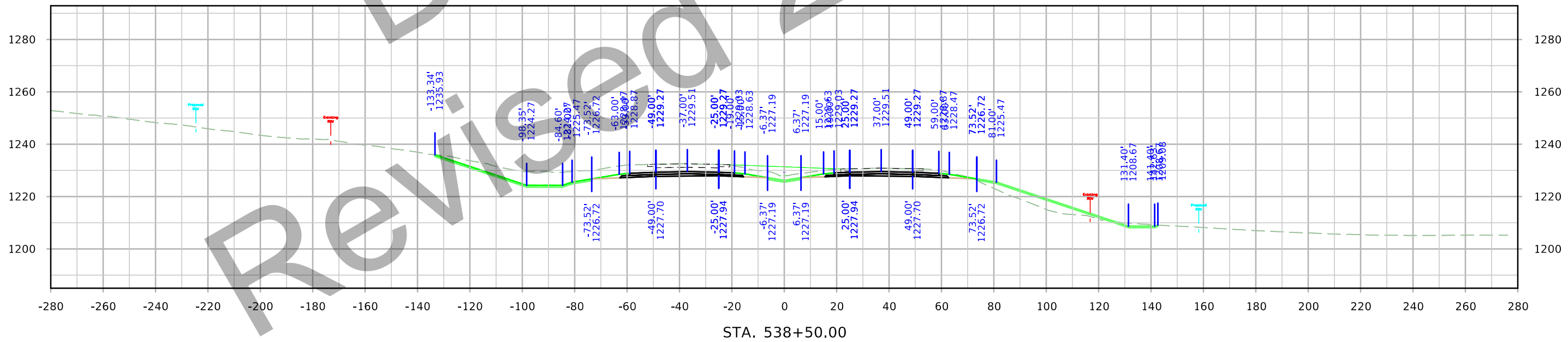
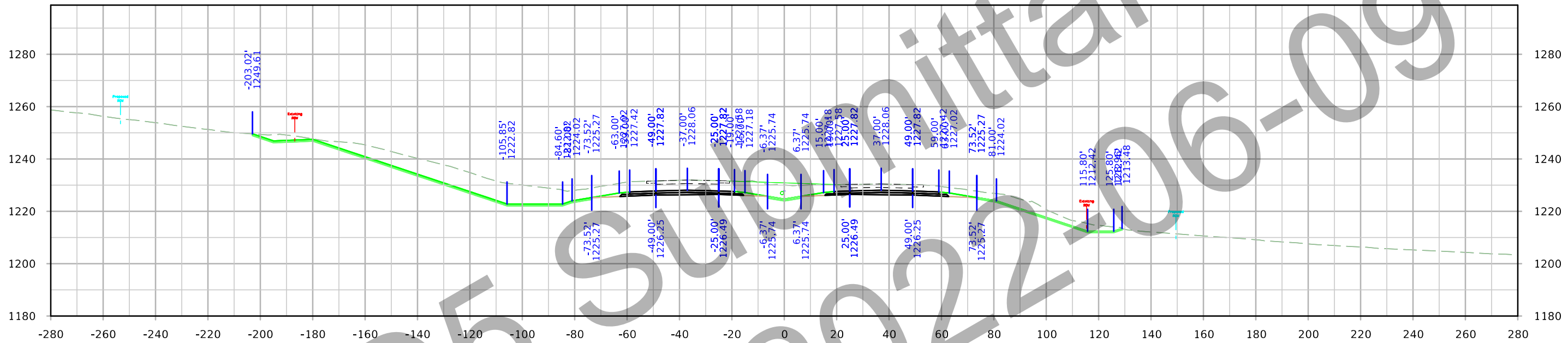


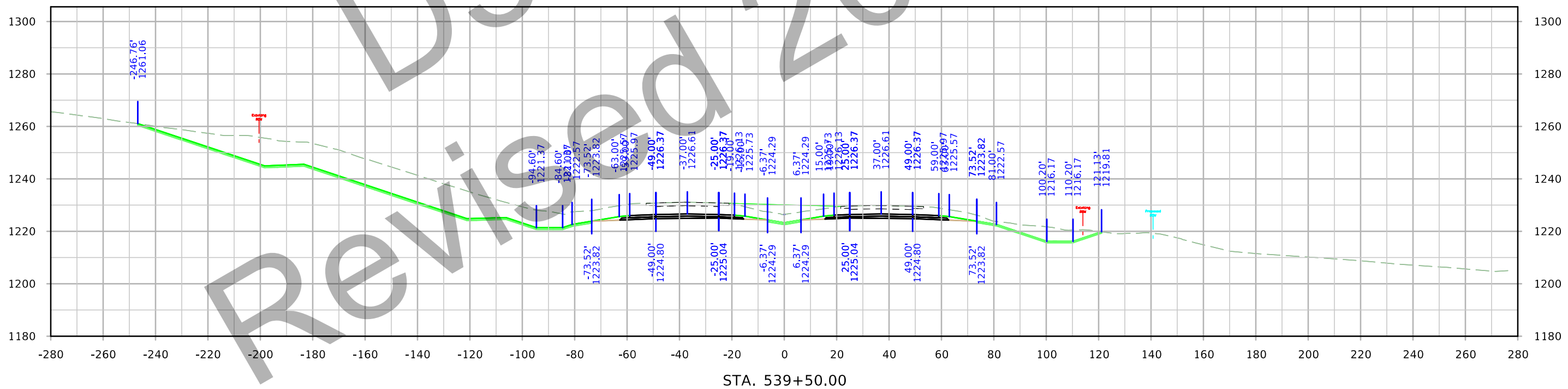
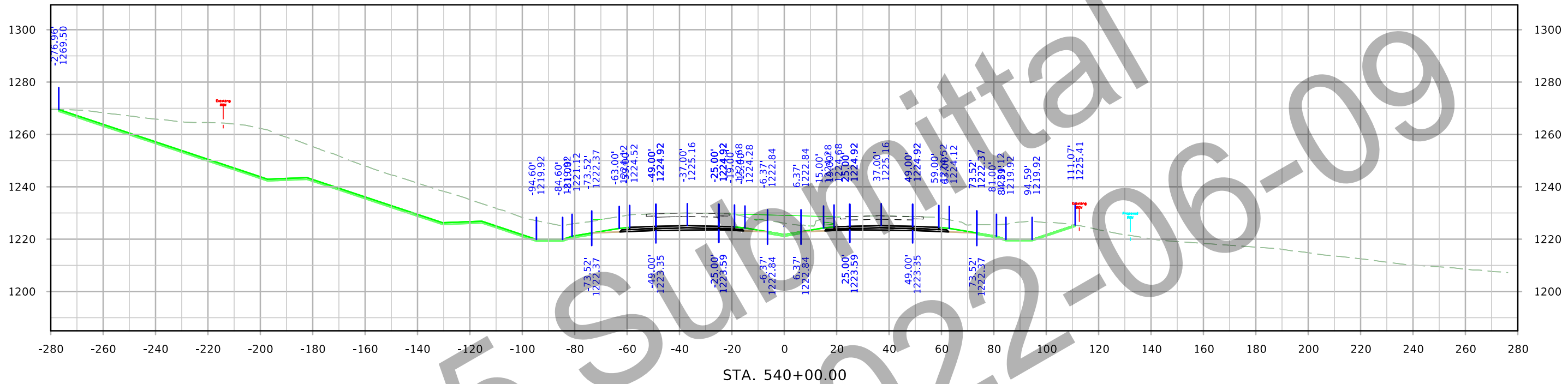


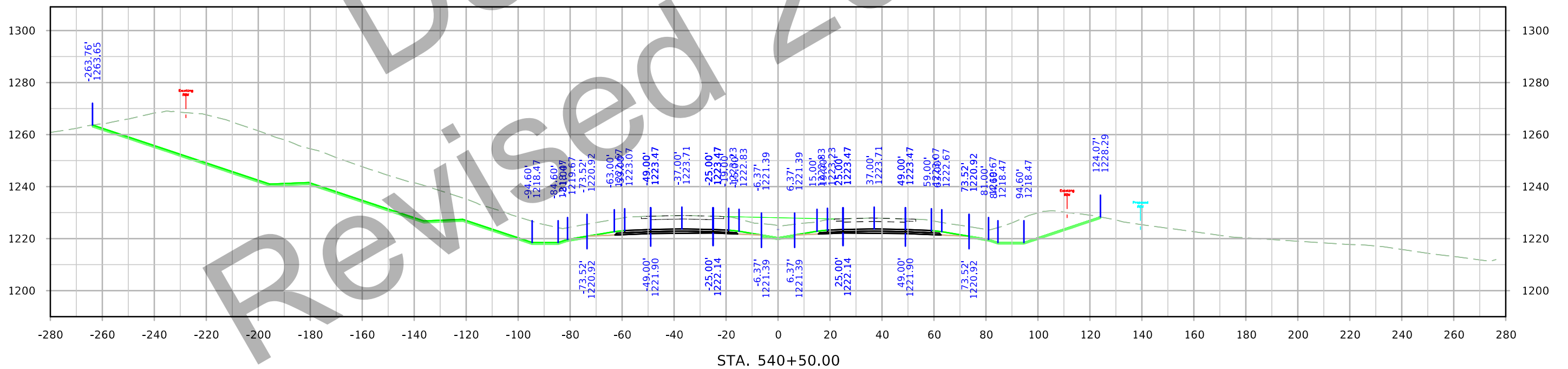
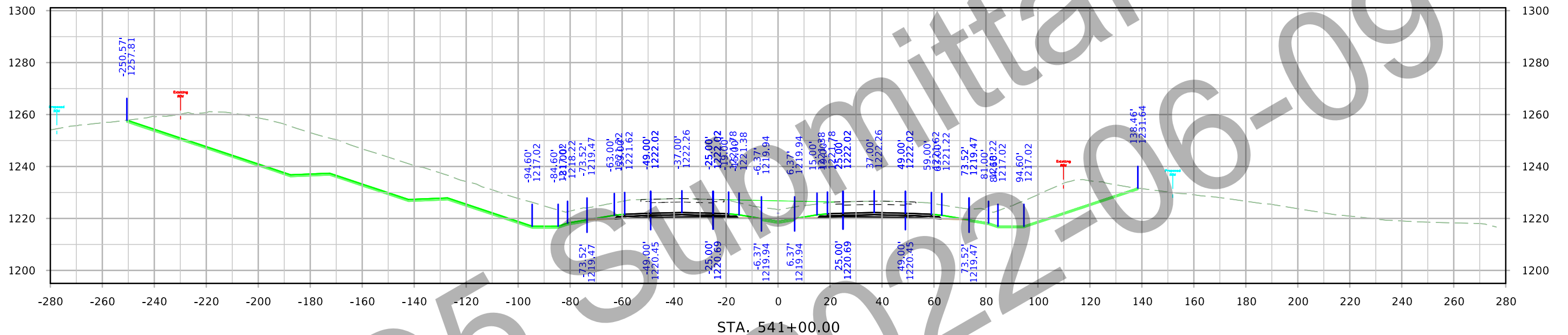
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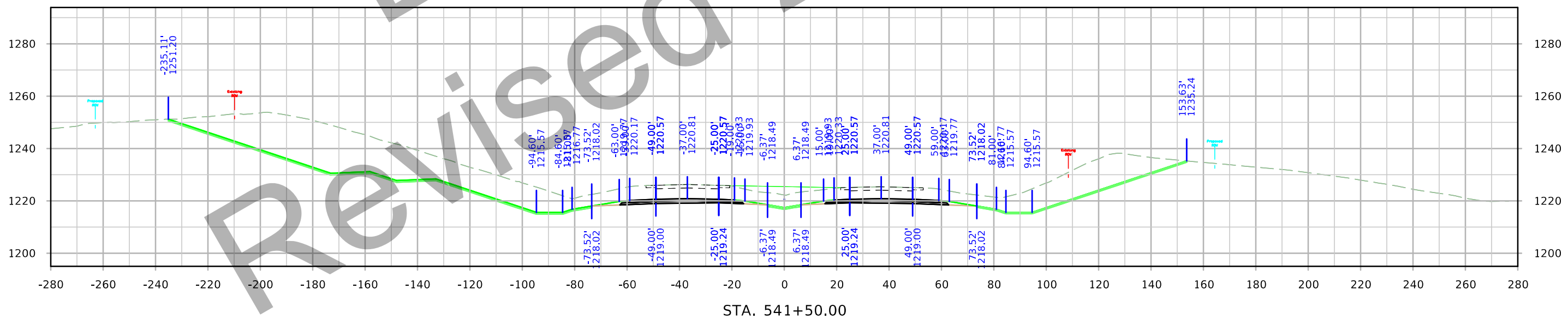
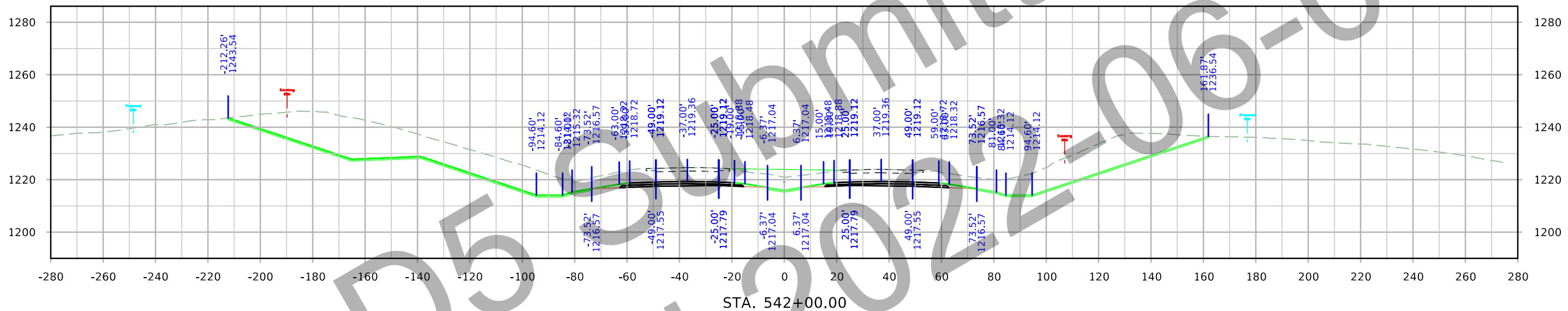


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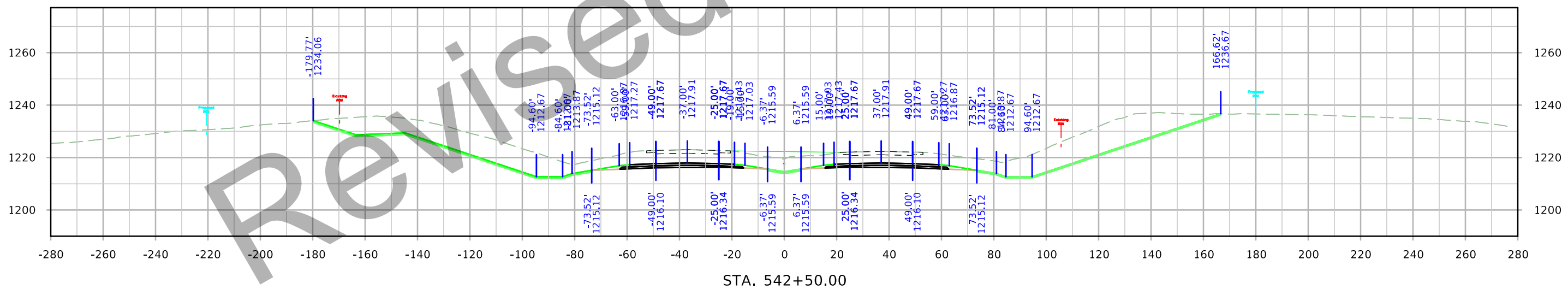
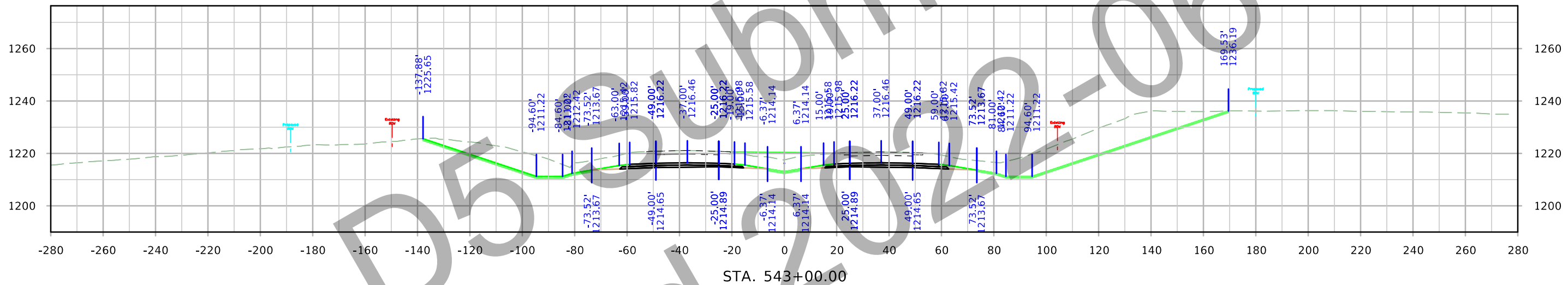
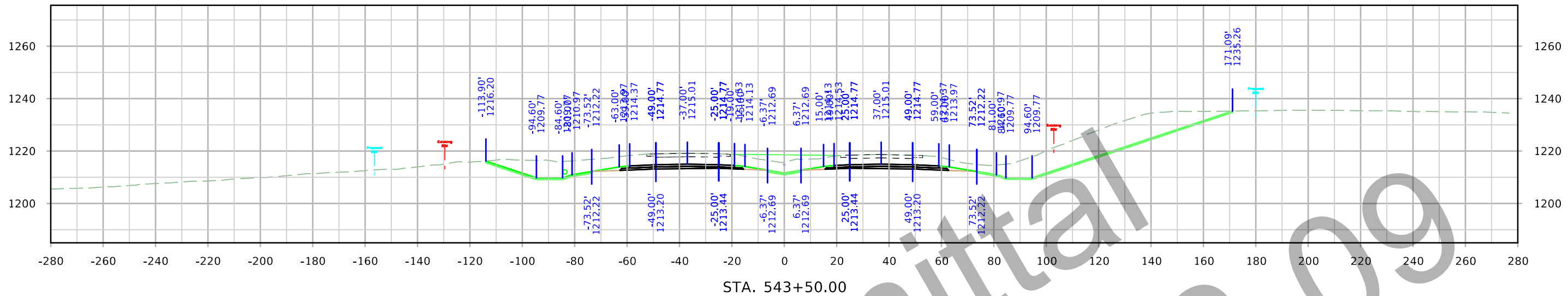


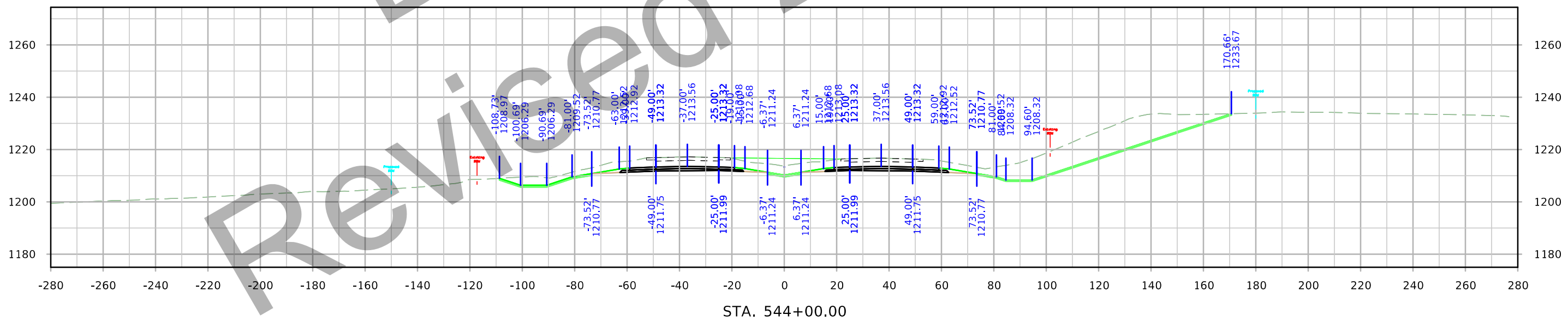
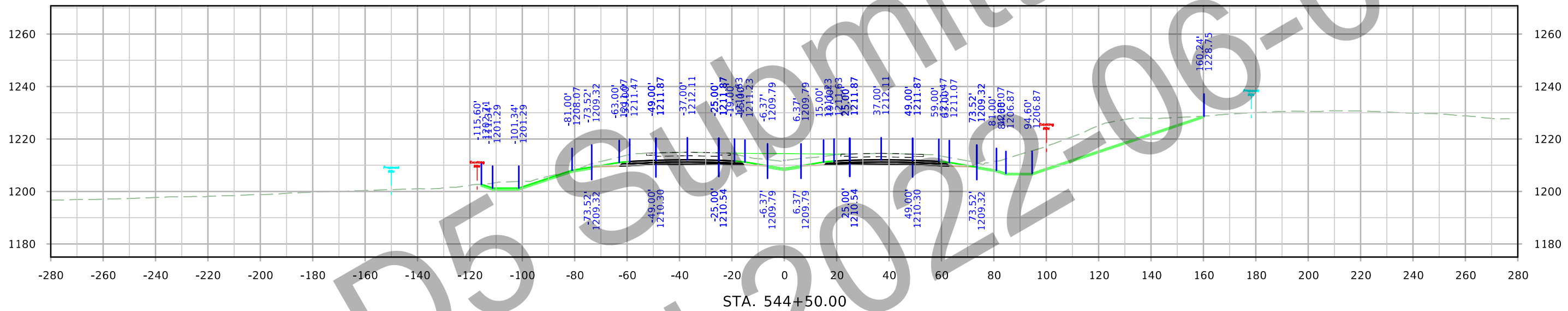




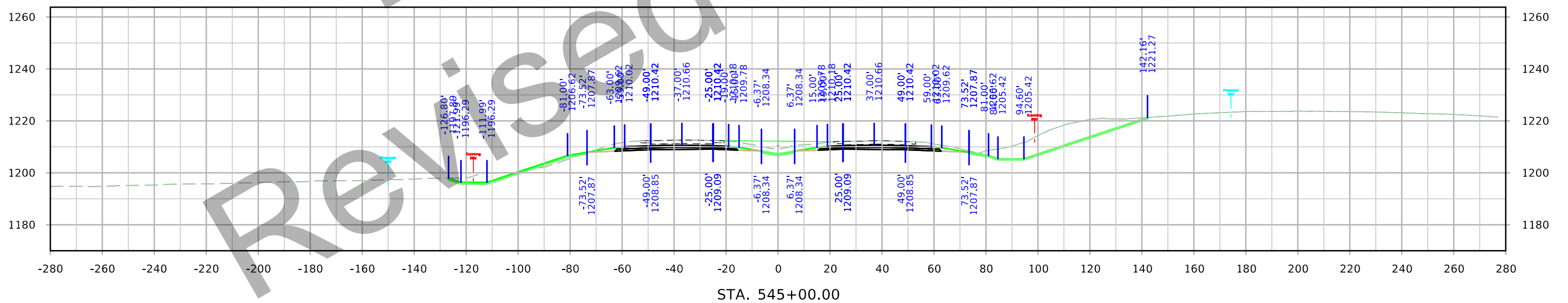
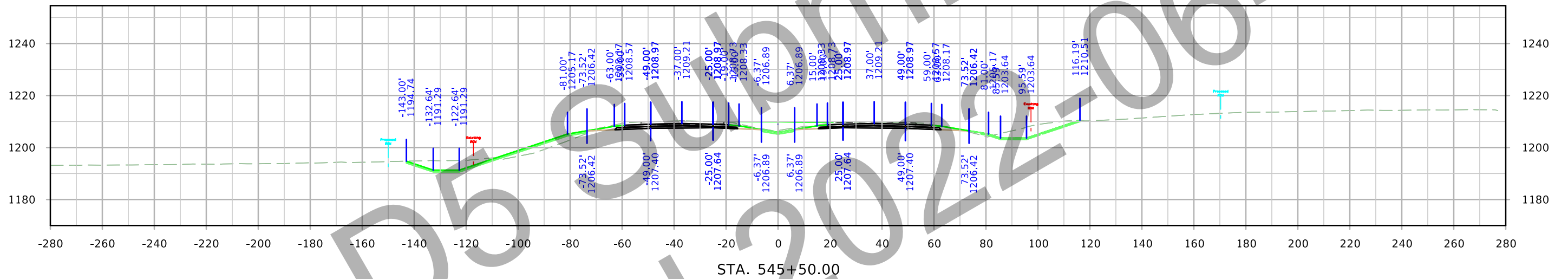
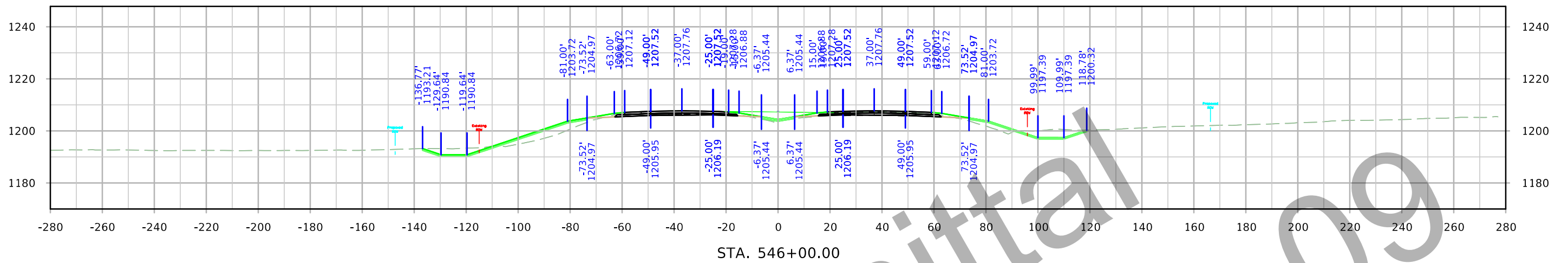


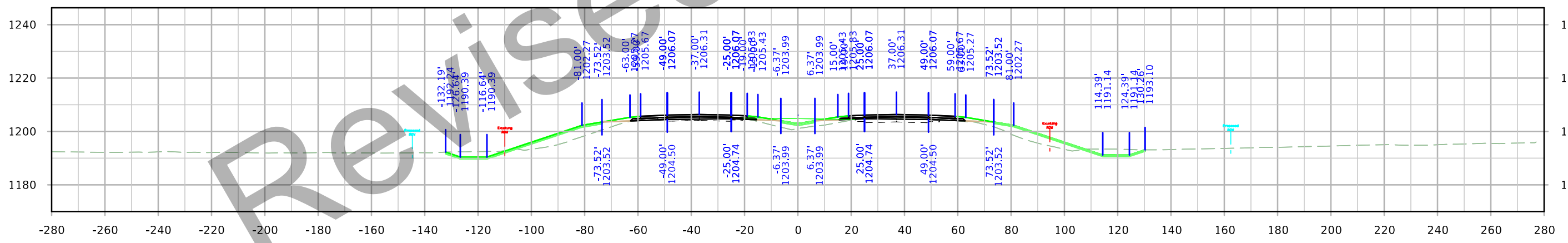
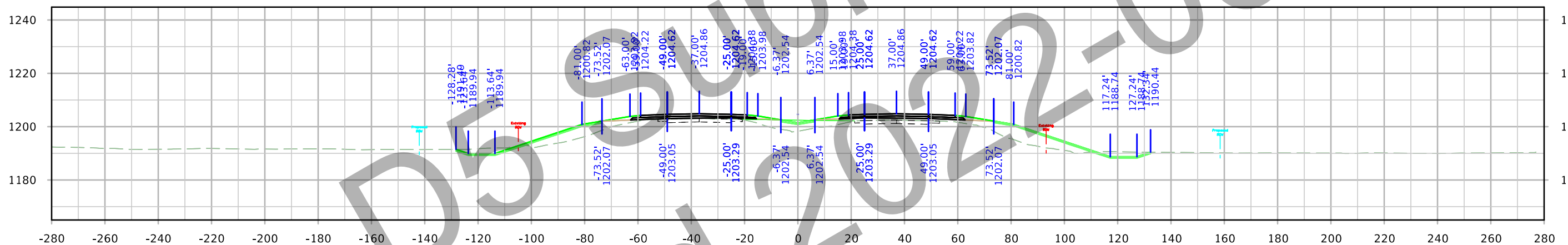
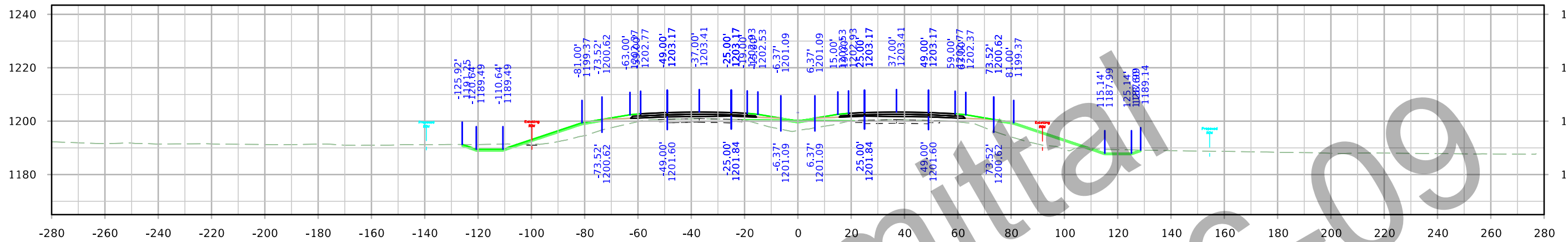
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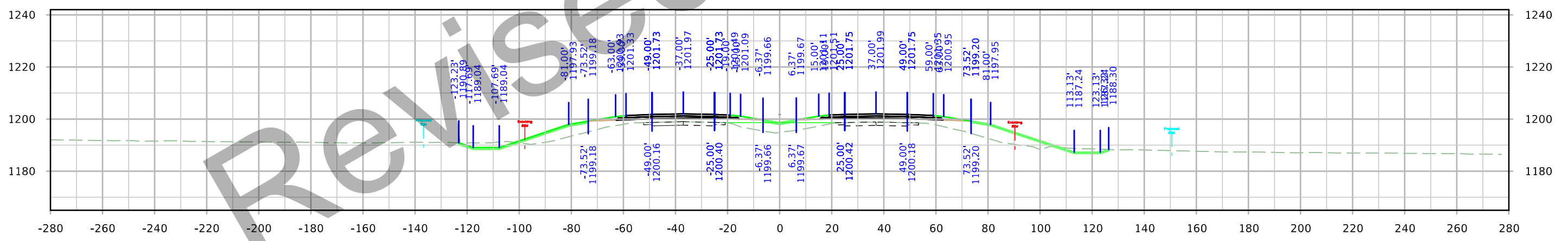
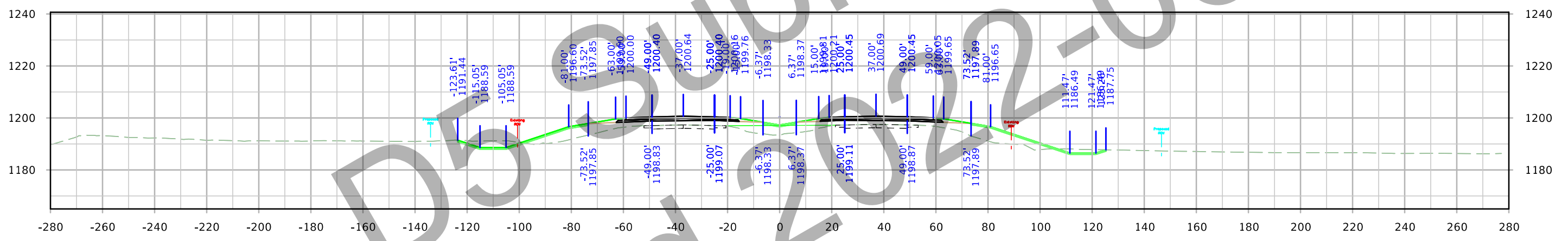
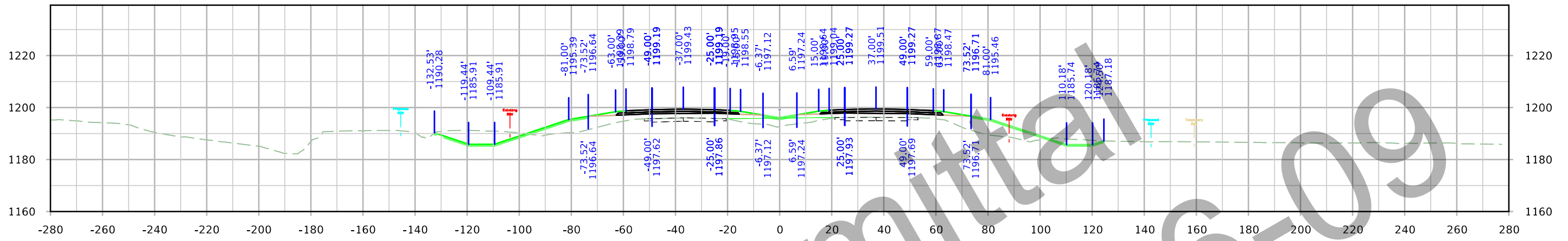




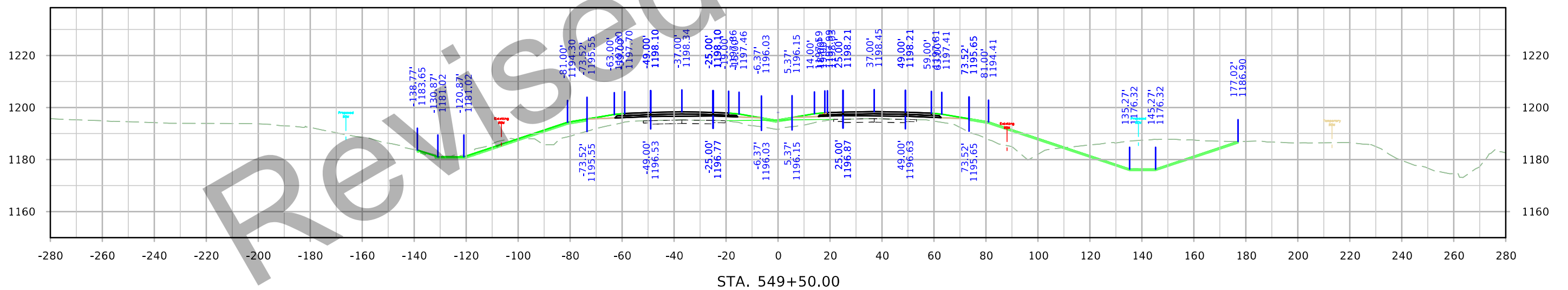
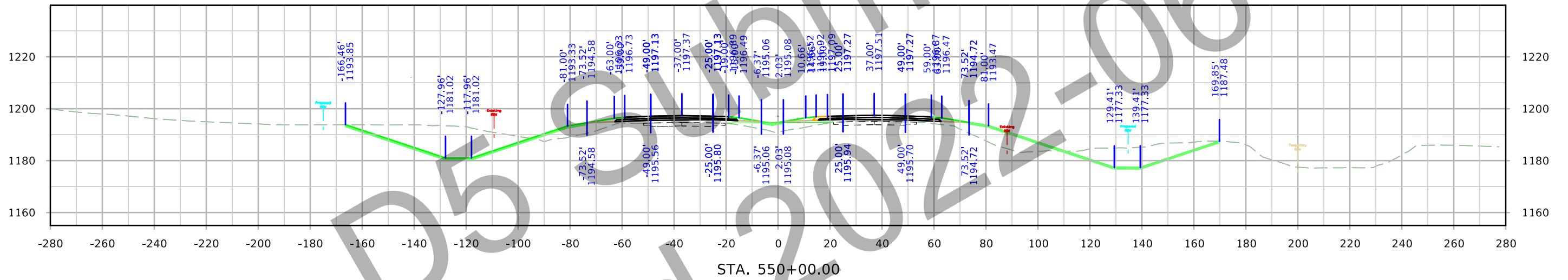
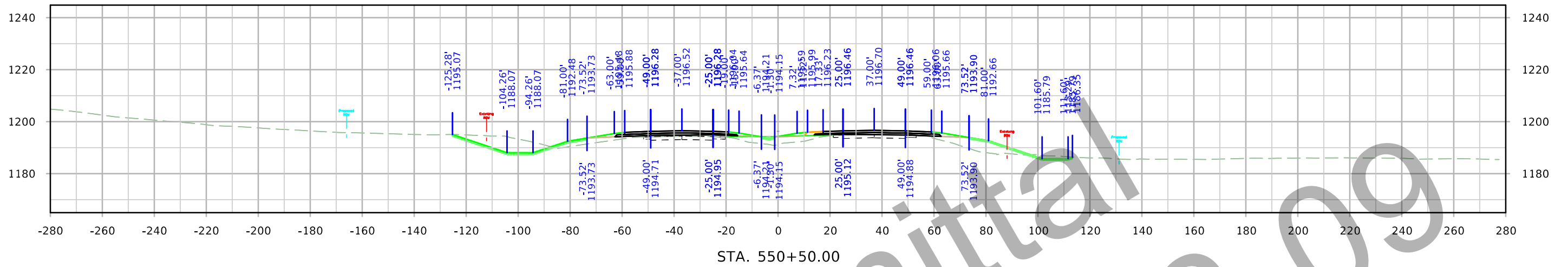
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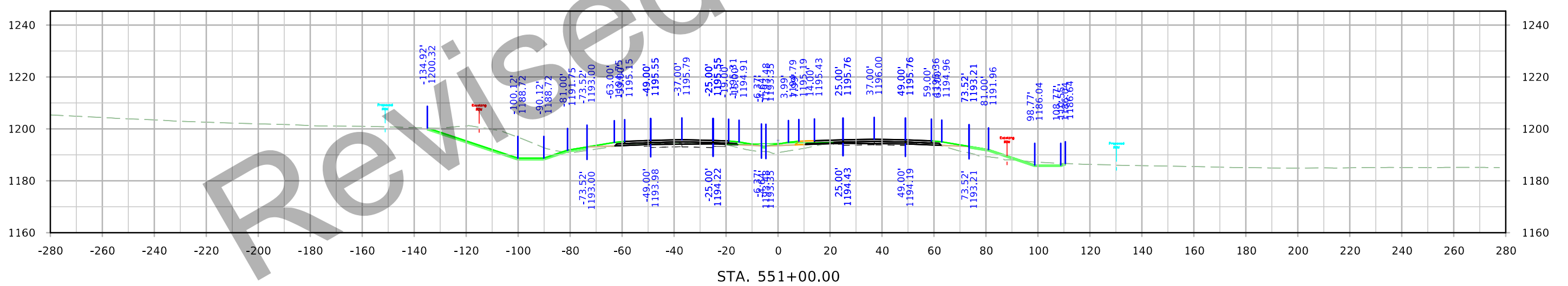
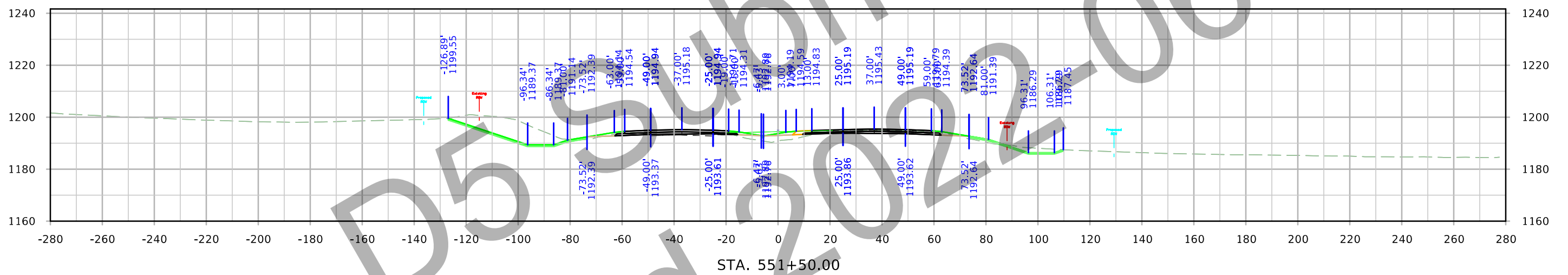
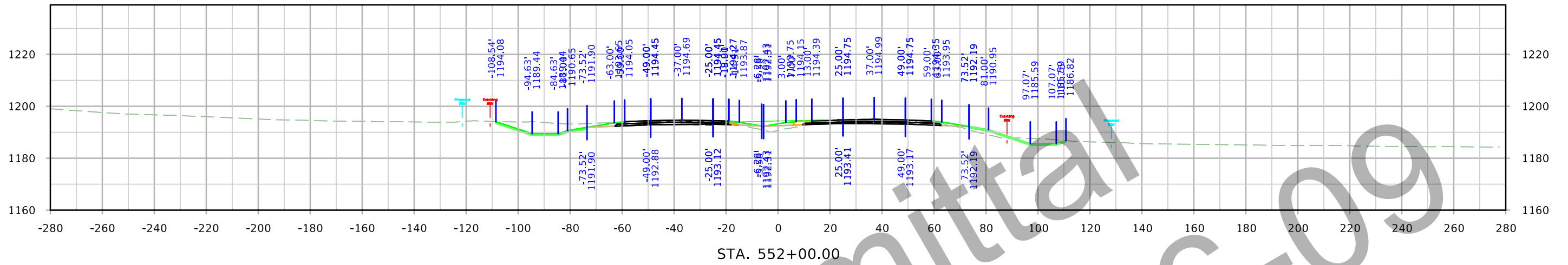




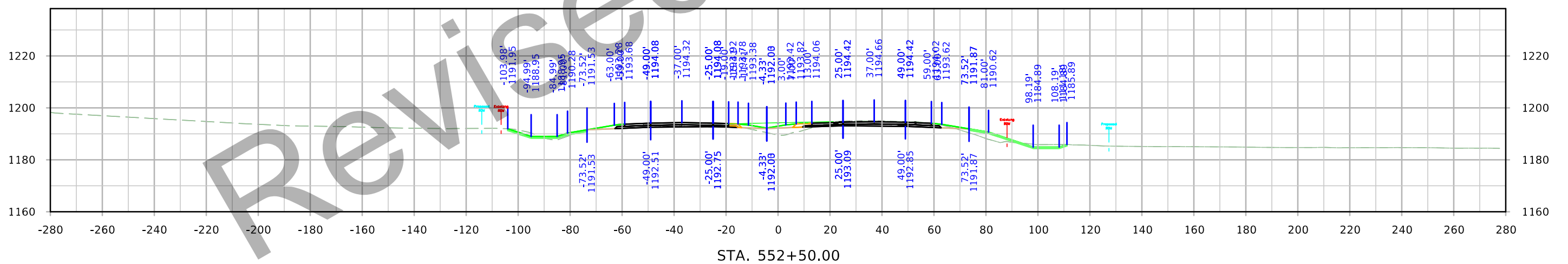
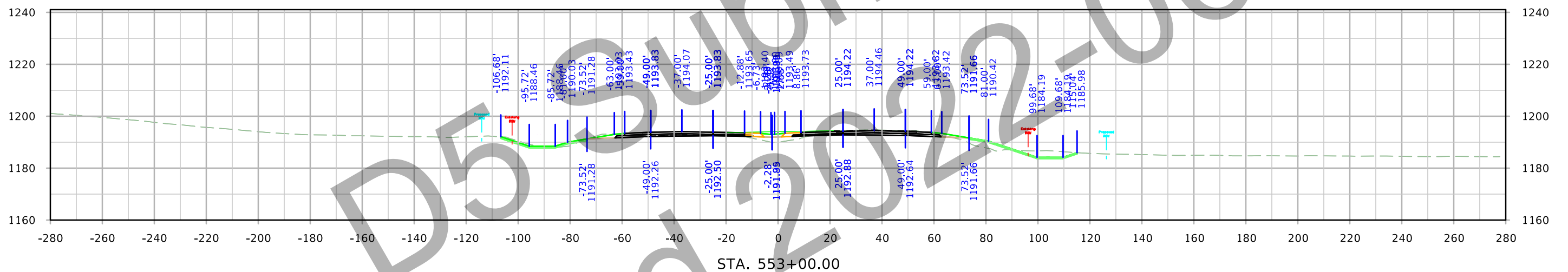
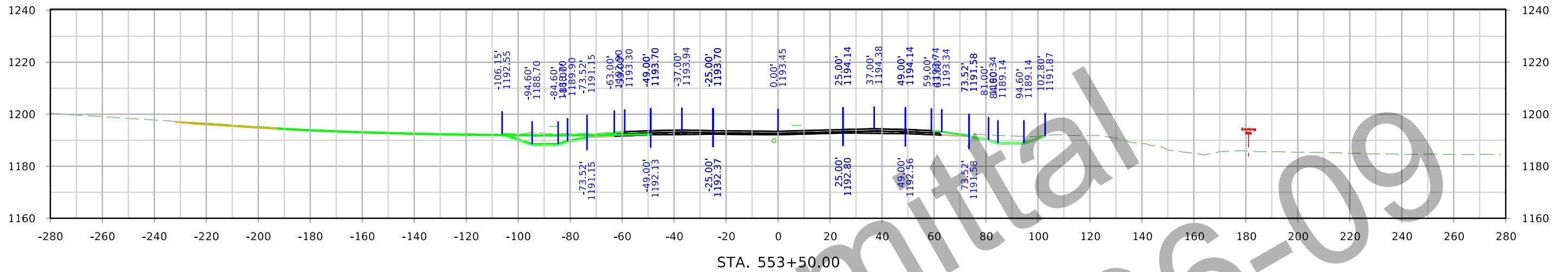
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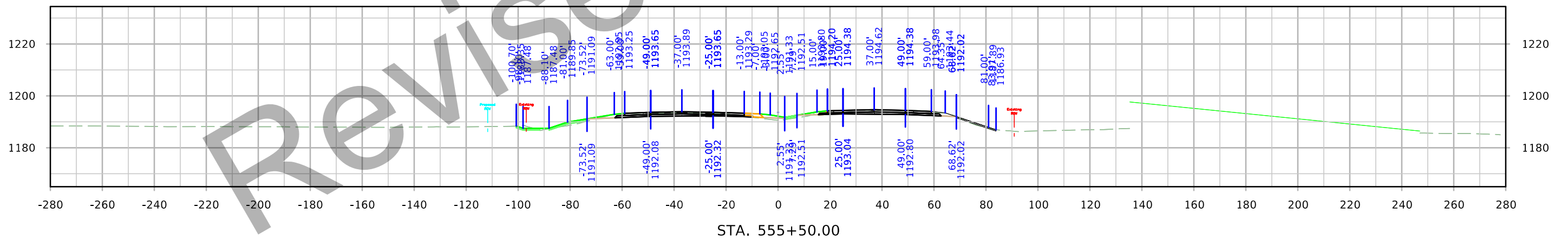
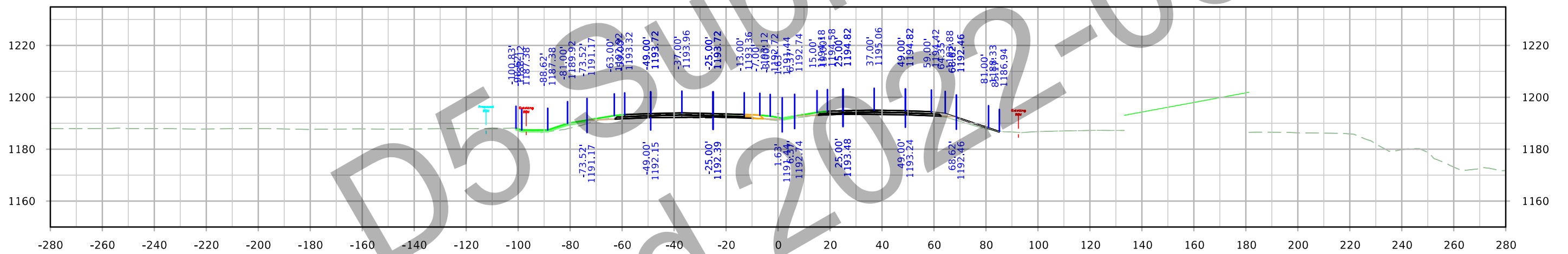
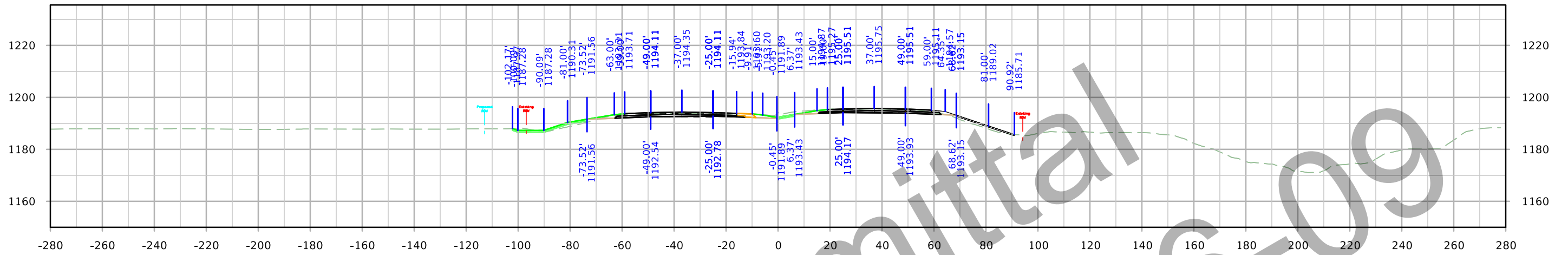
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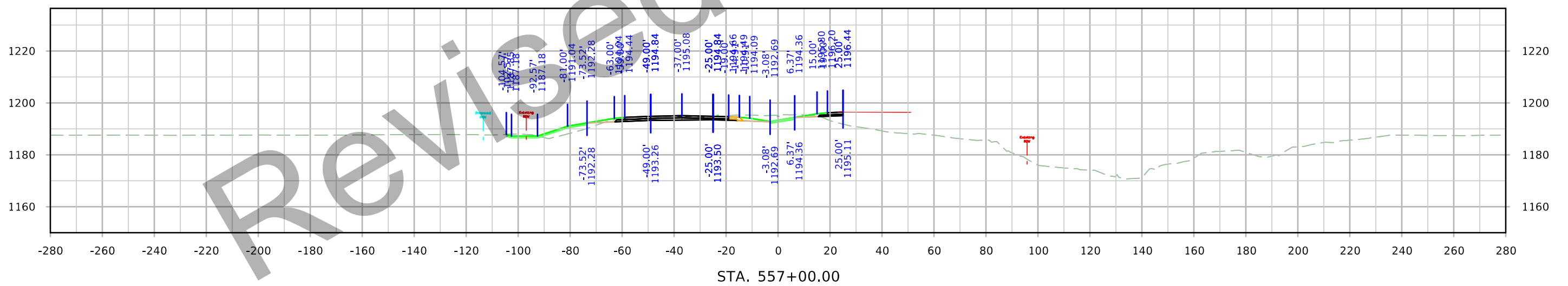
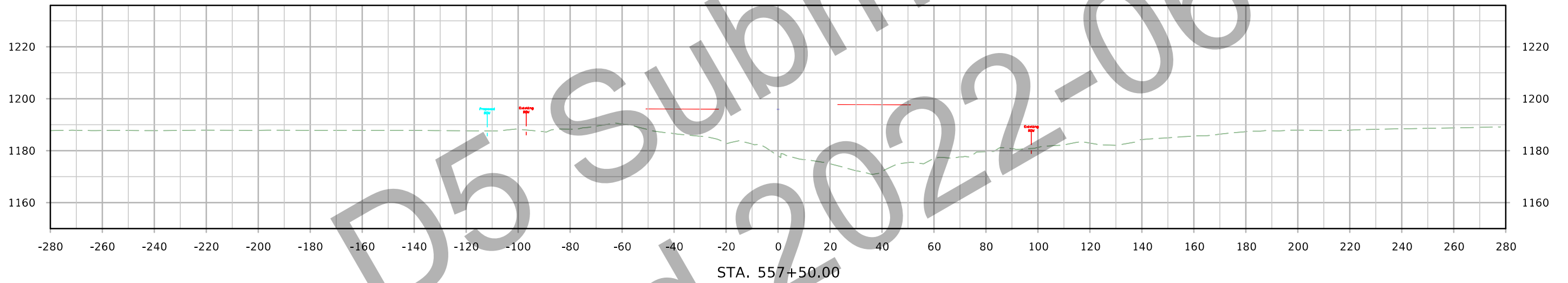


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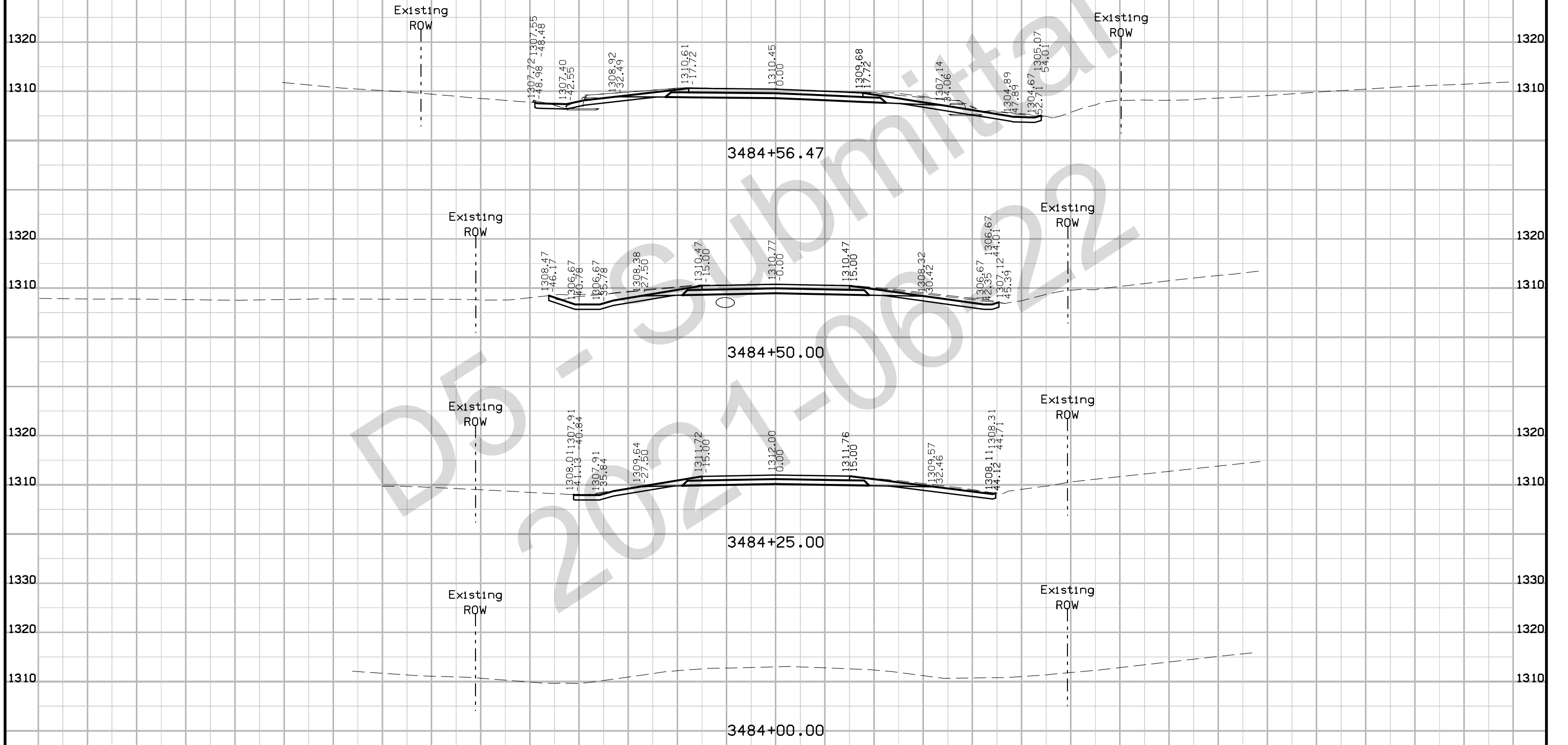


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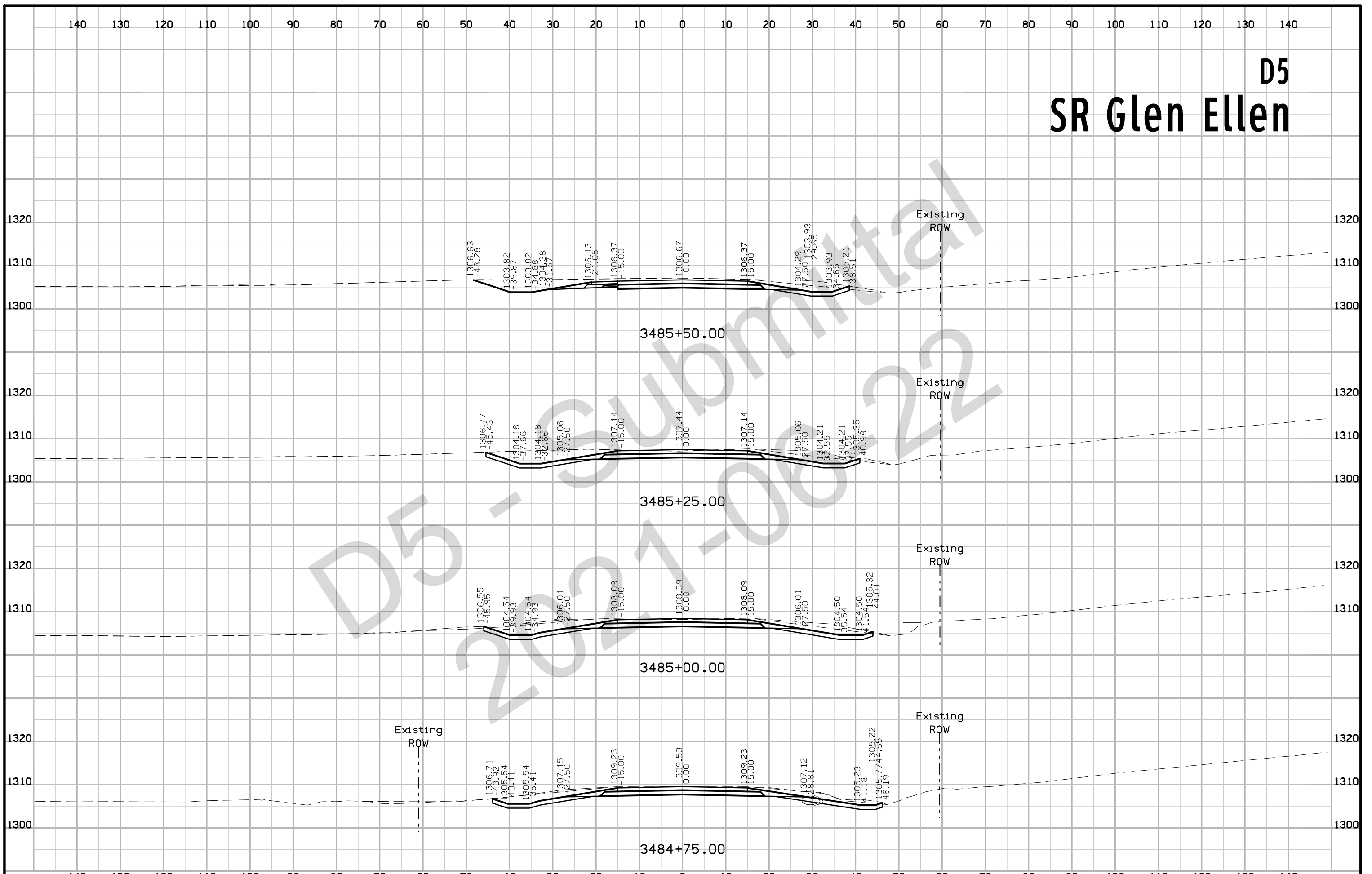




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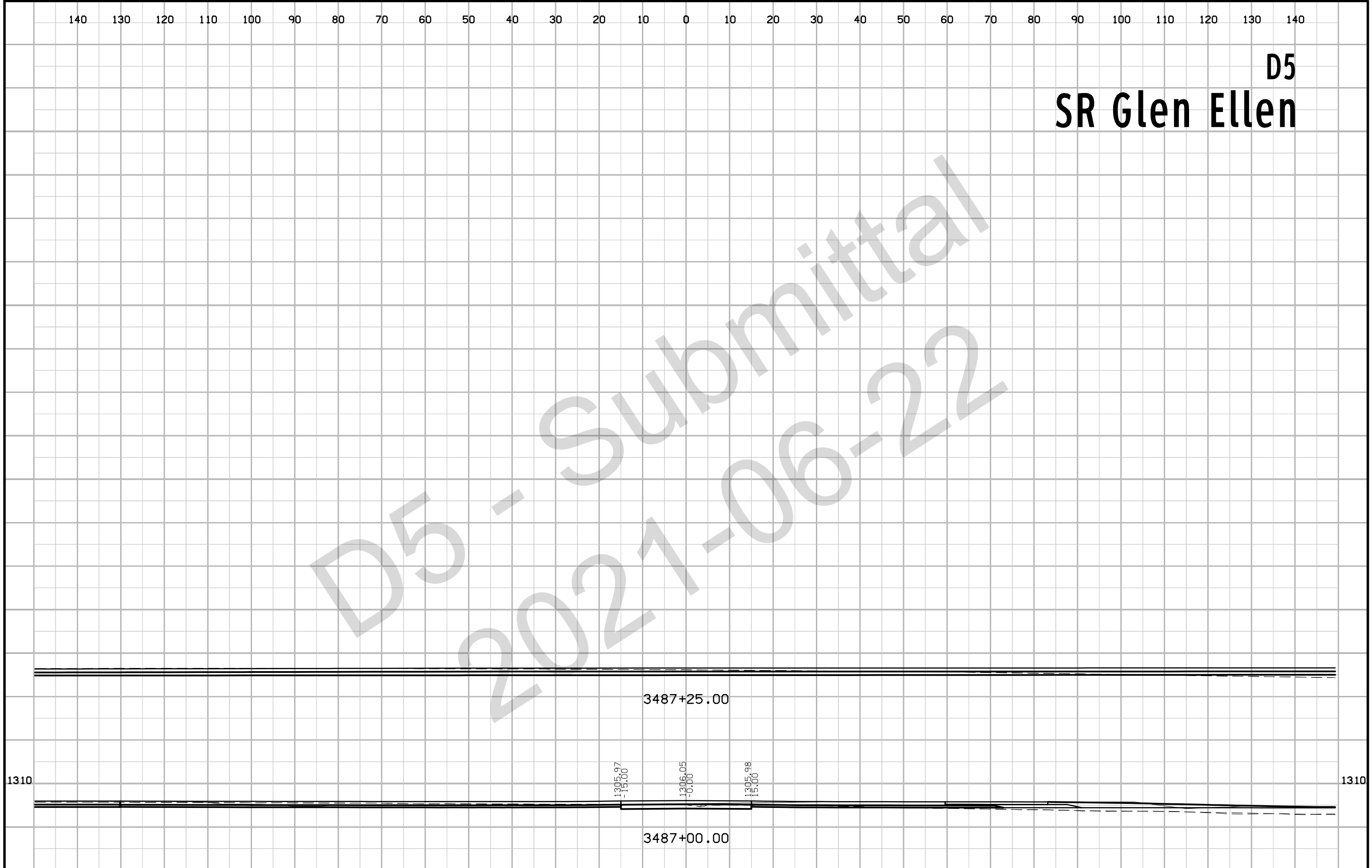


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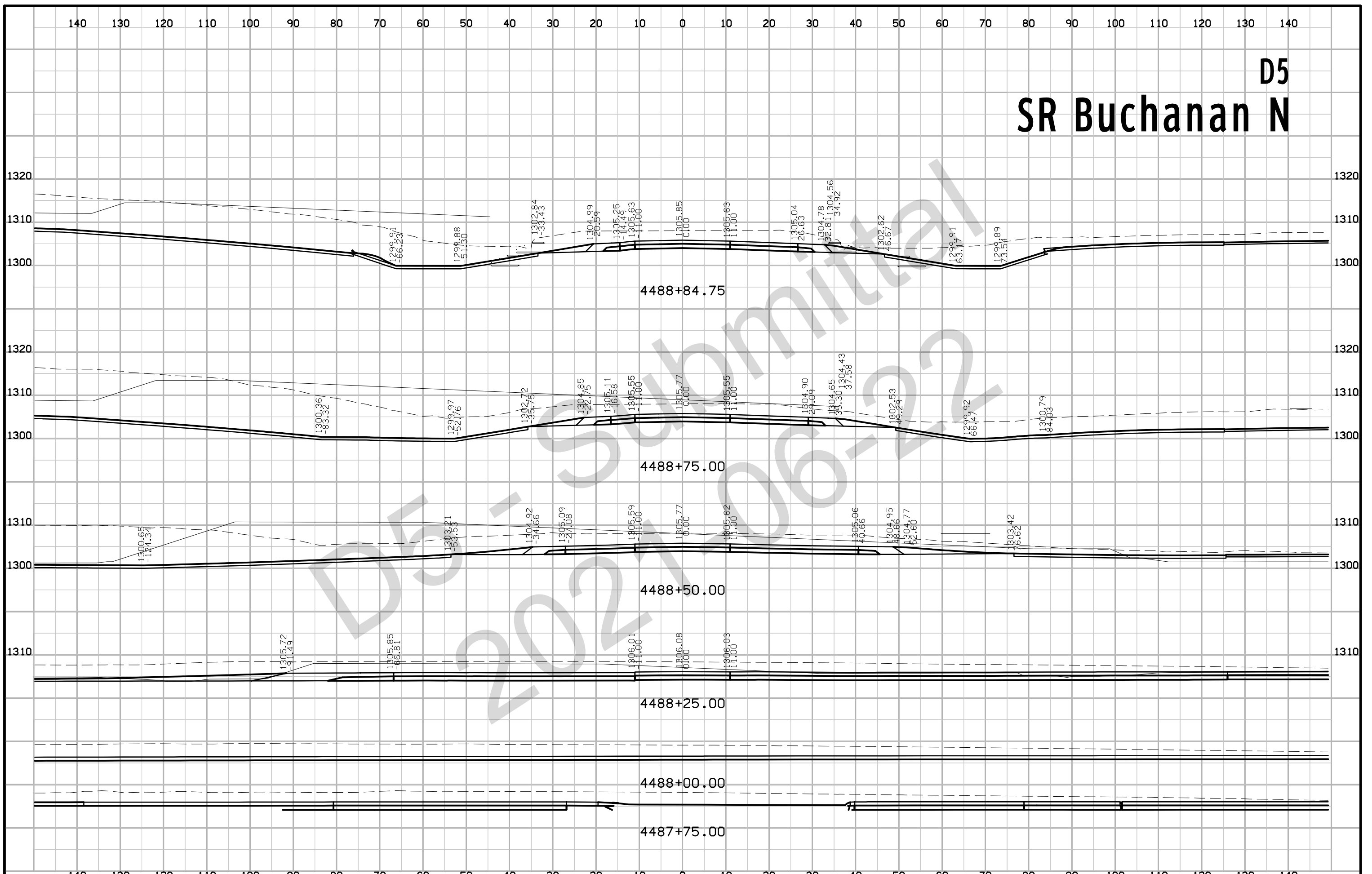
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D5 - Submittal
2021-06-22

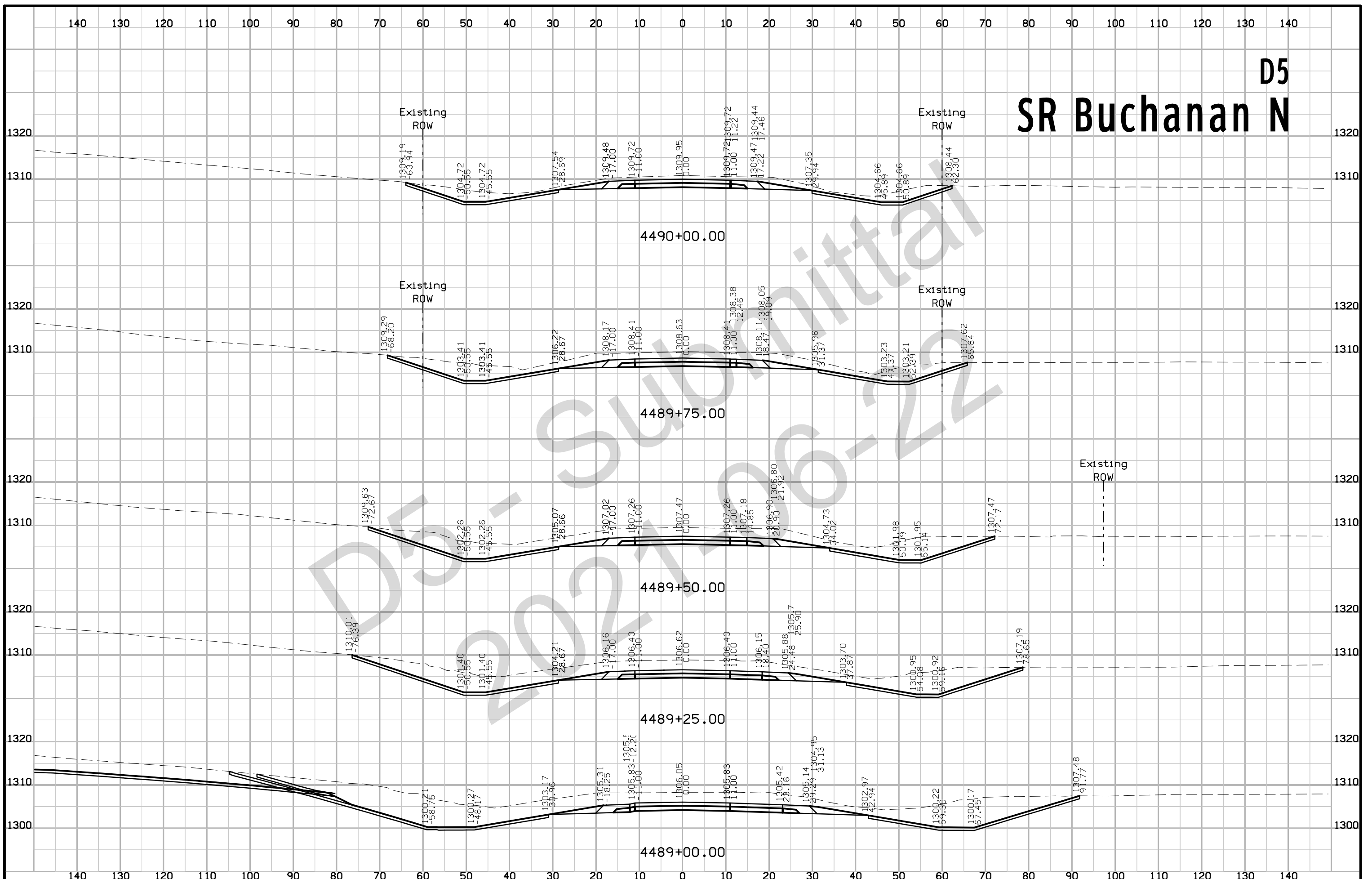


FILE NO.	ENGLISH	DESIGN TEAM	COUNTY	PROJECT NUMBER	SHEET NUMBER
					X.103

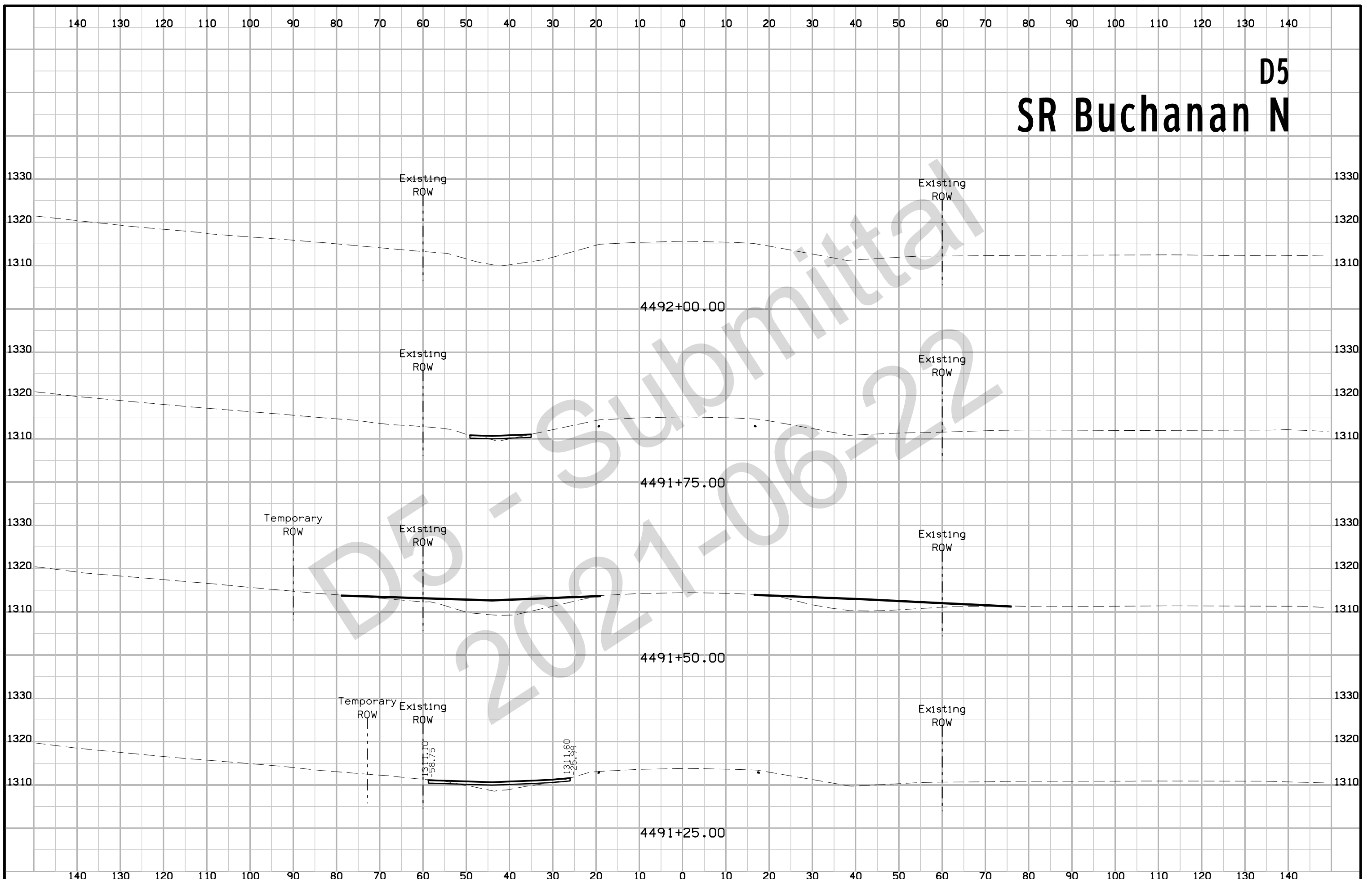
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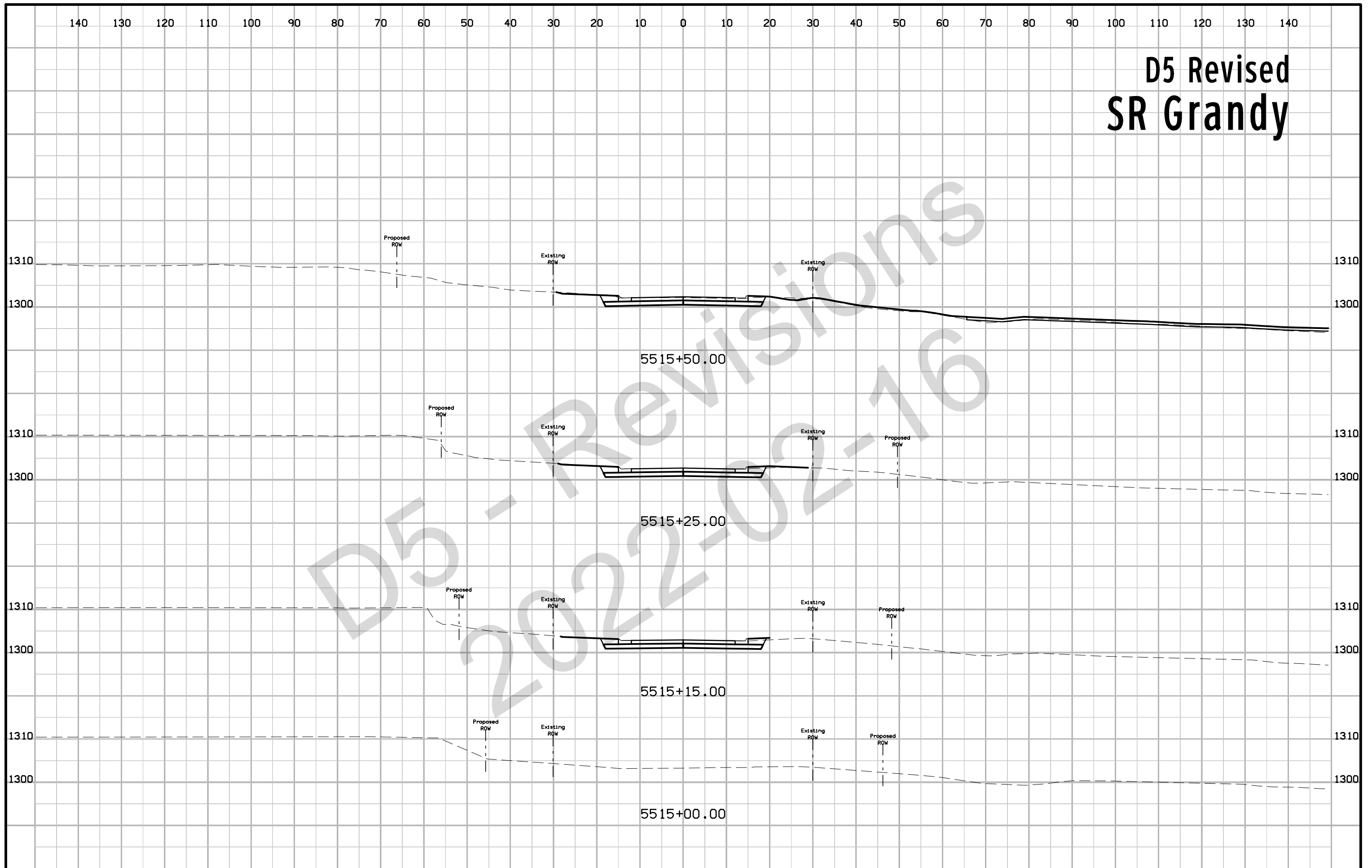
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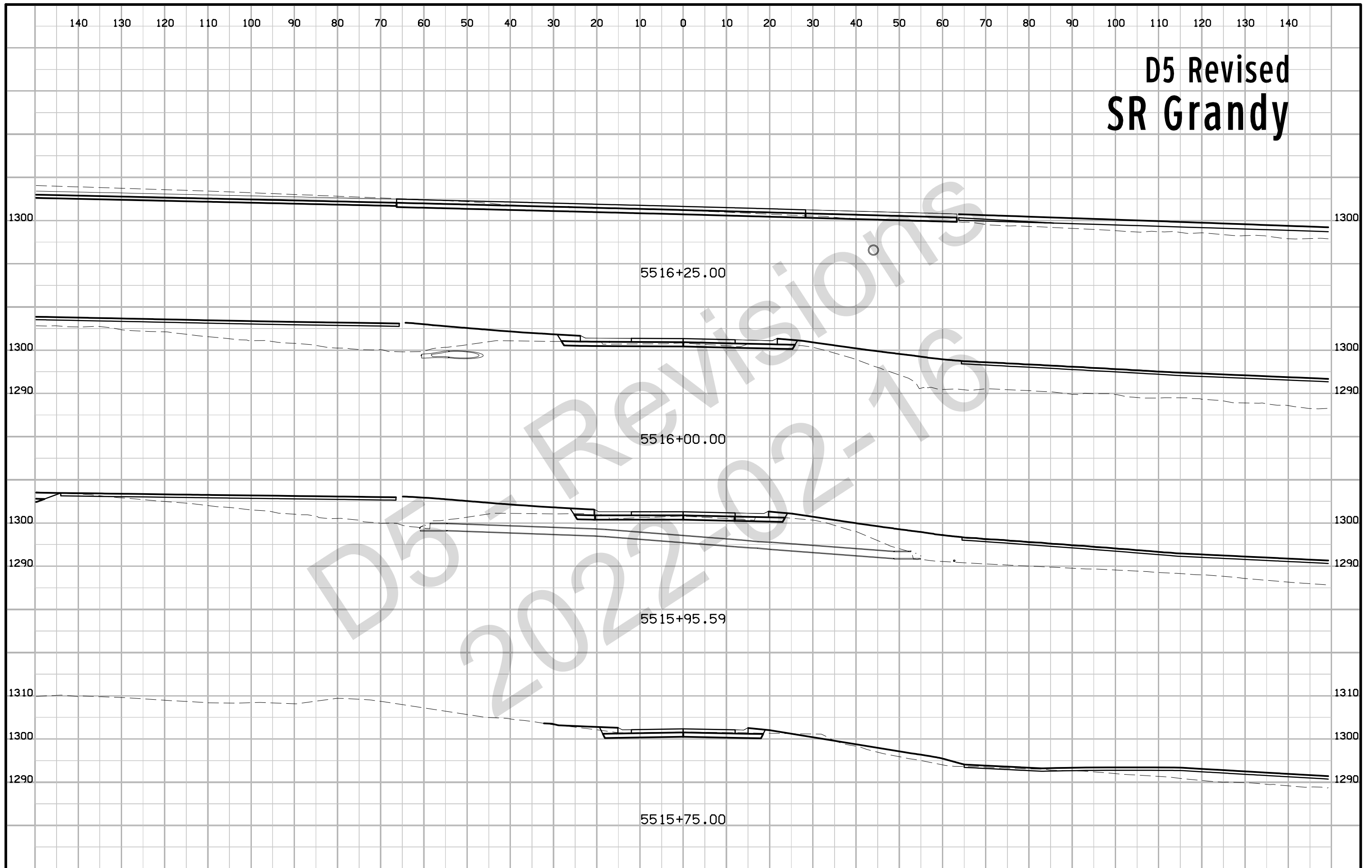
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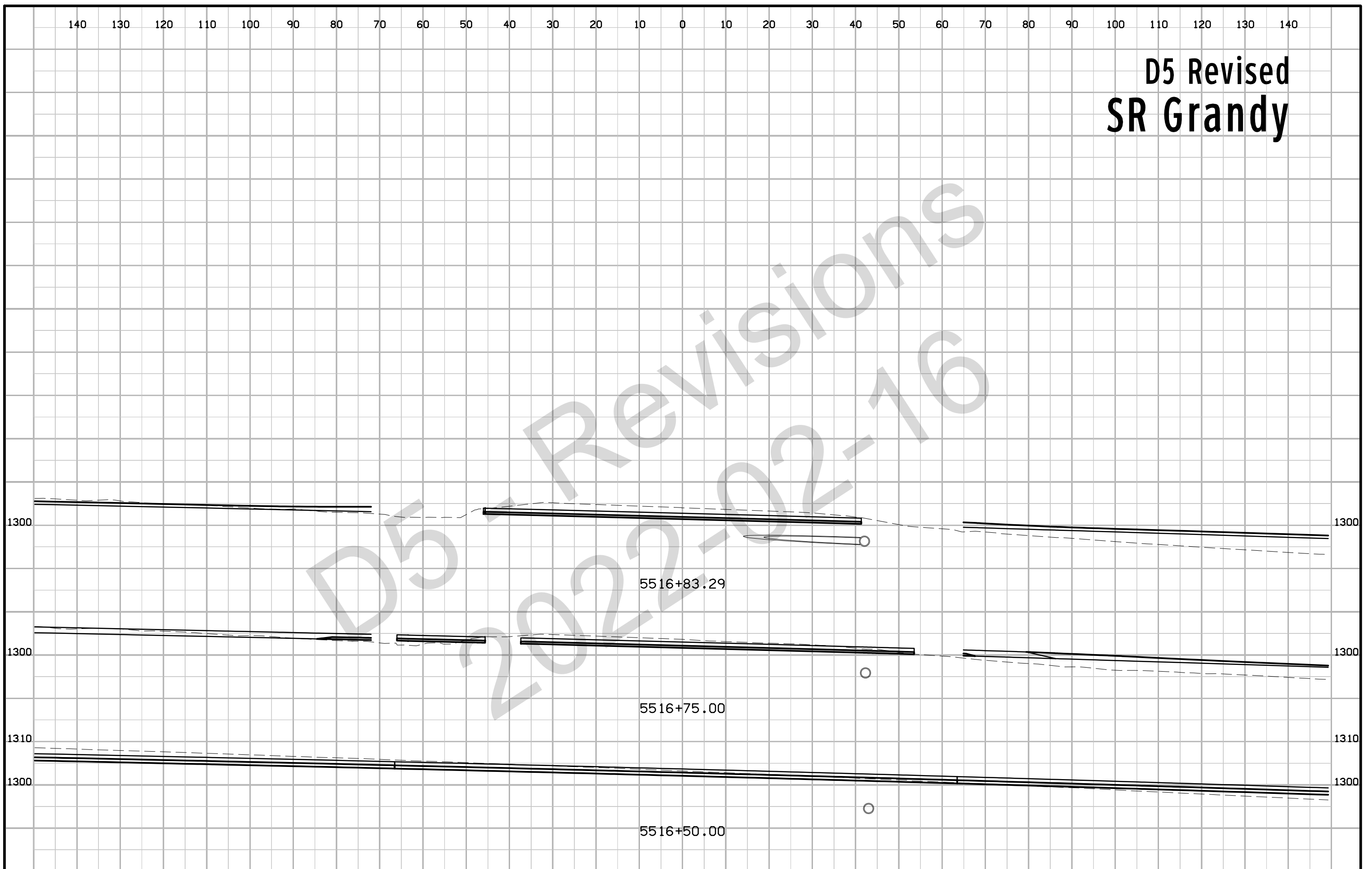
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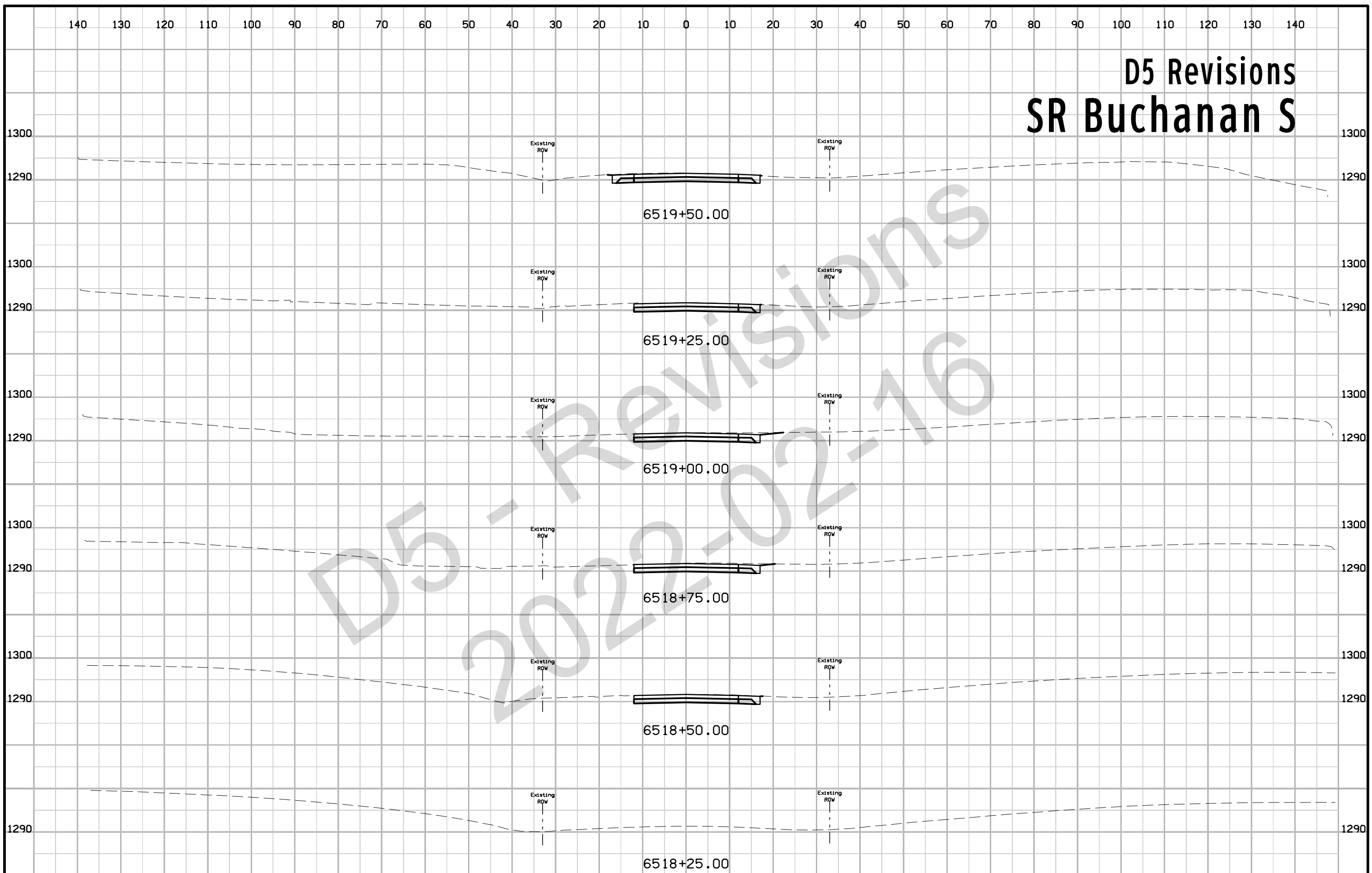
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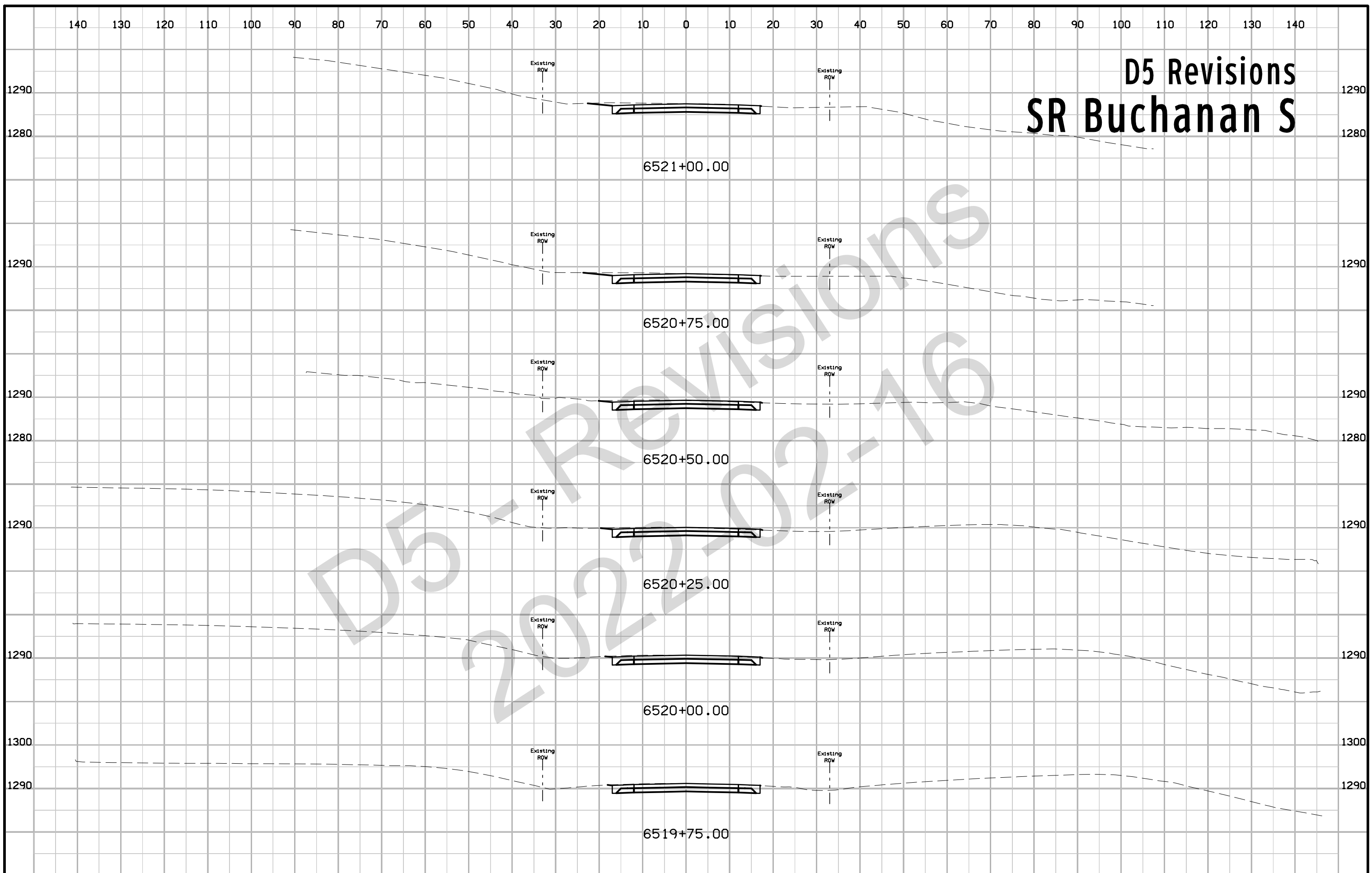
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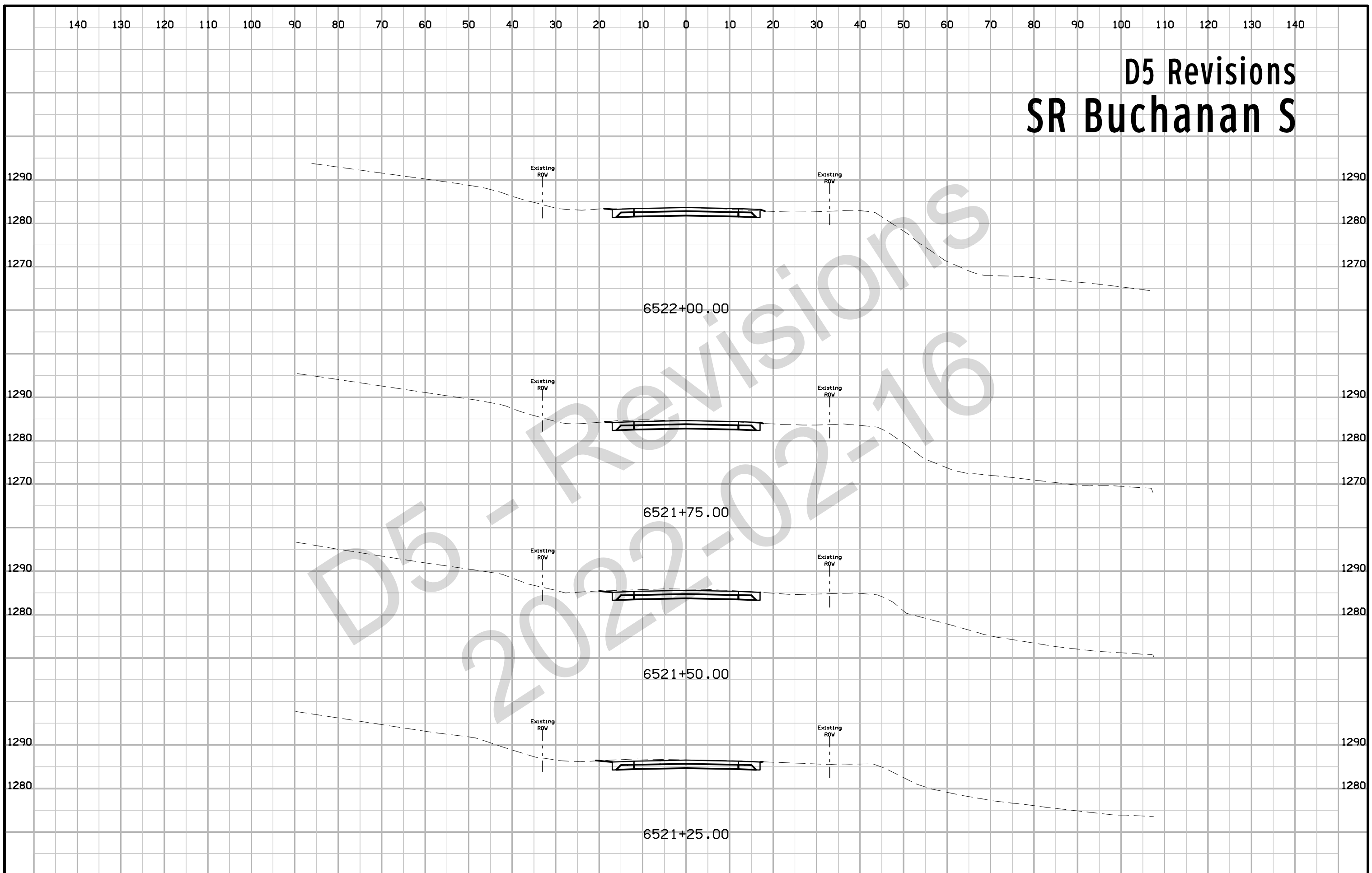
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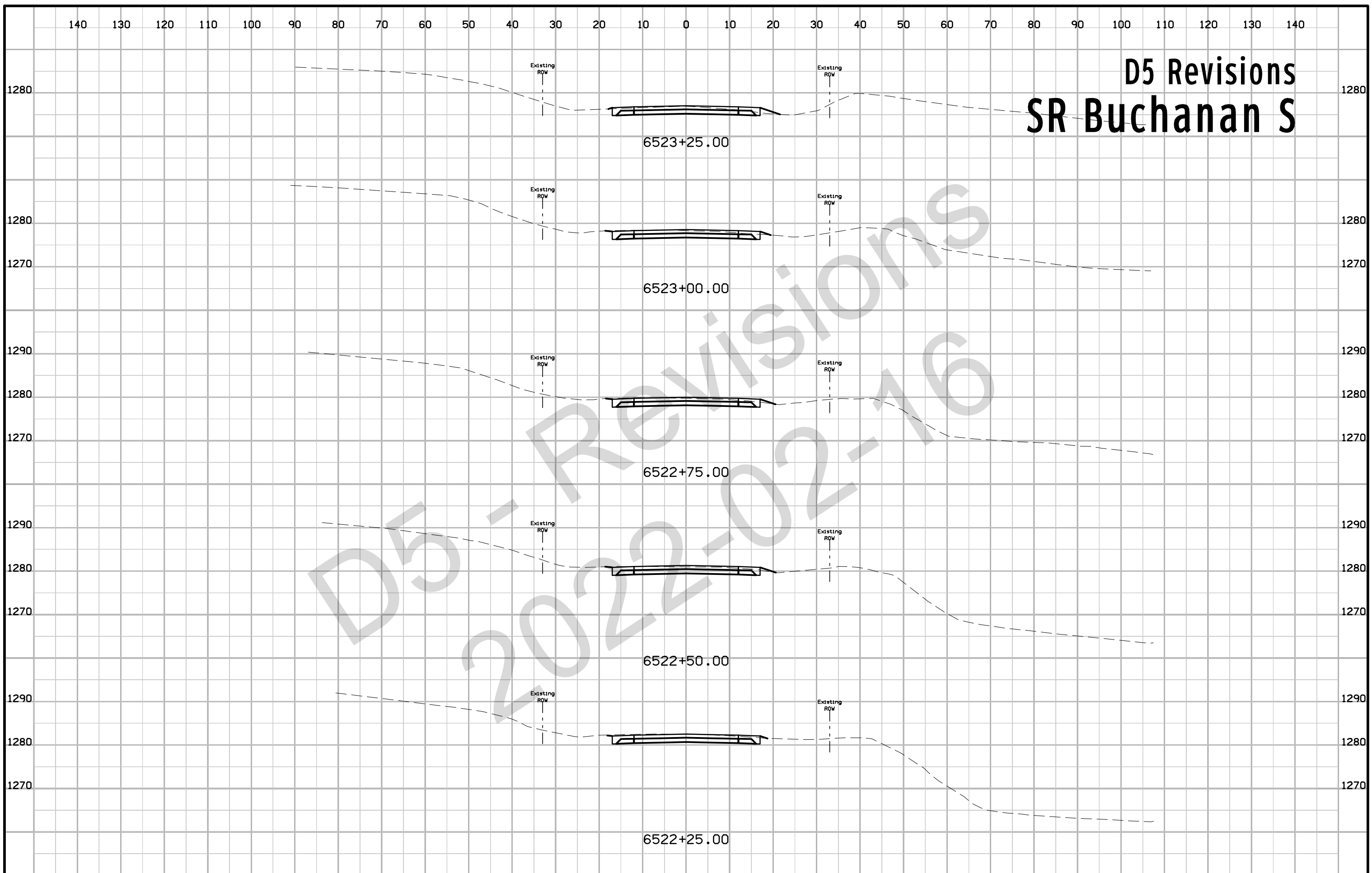
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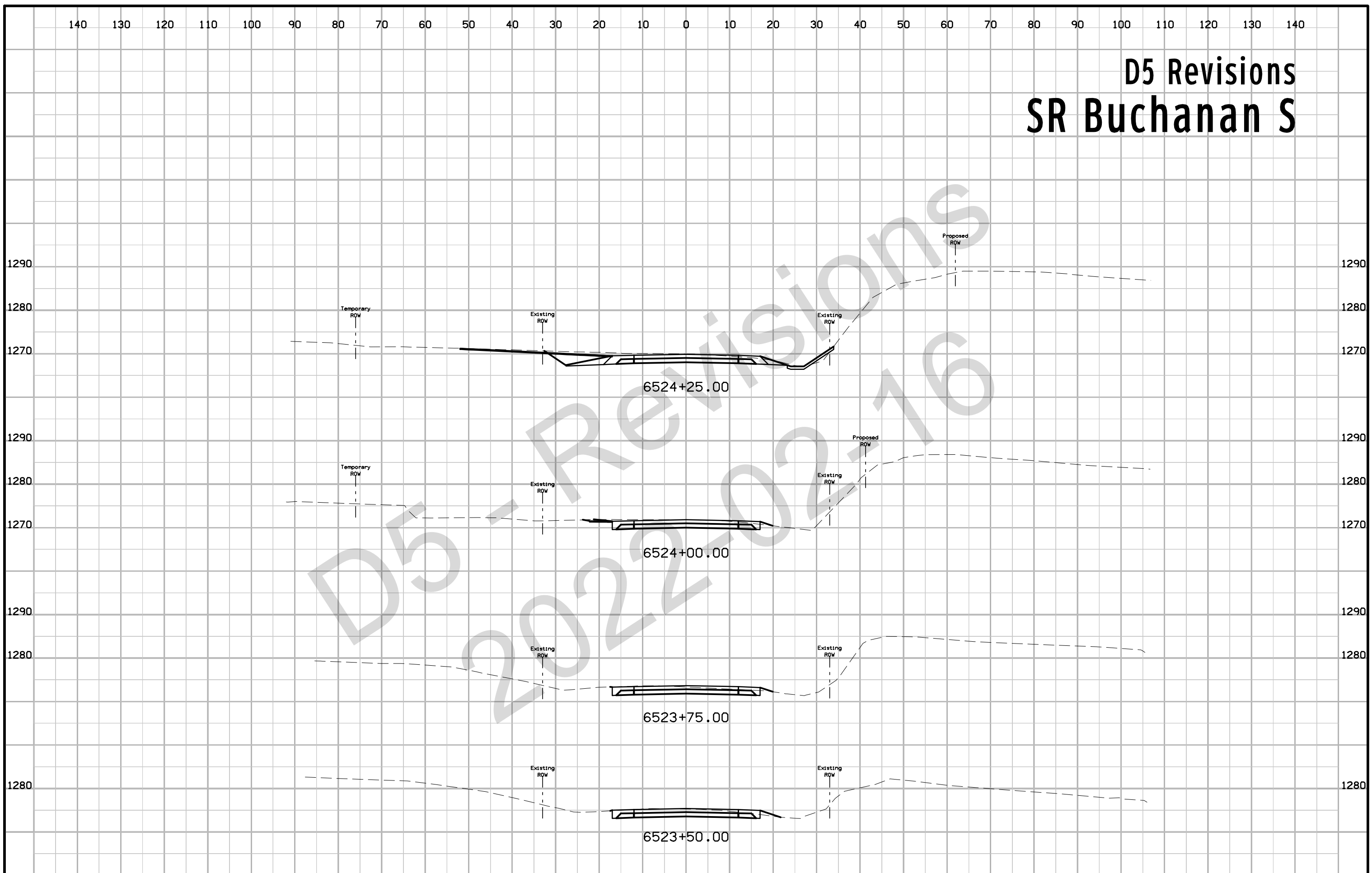
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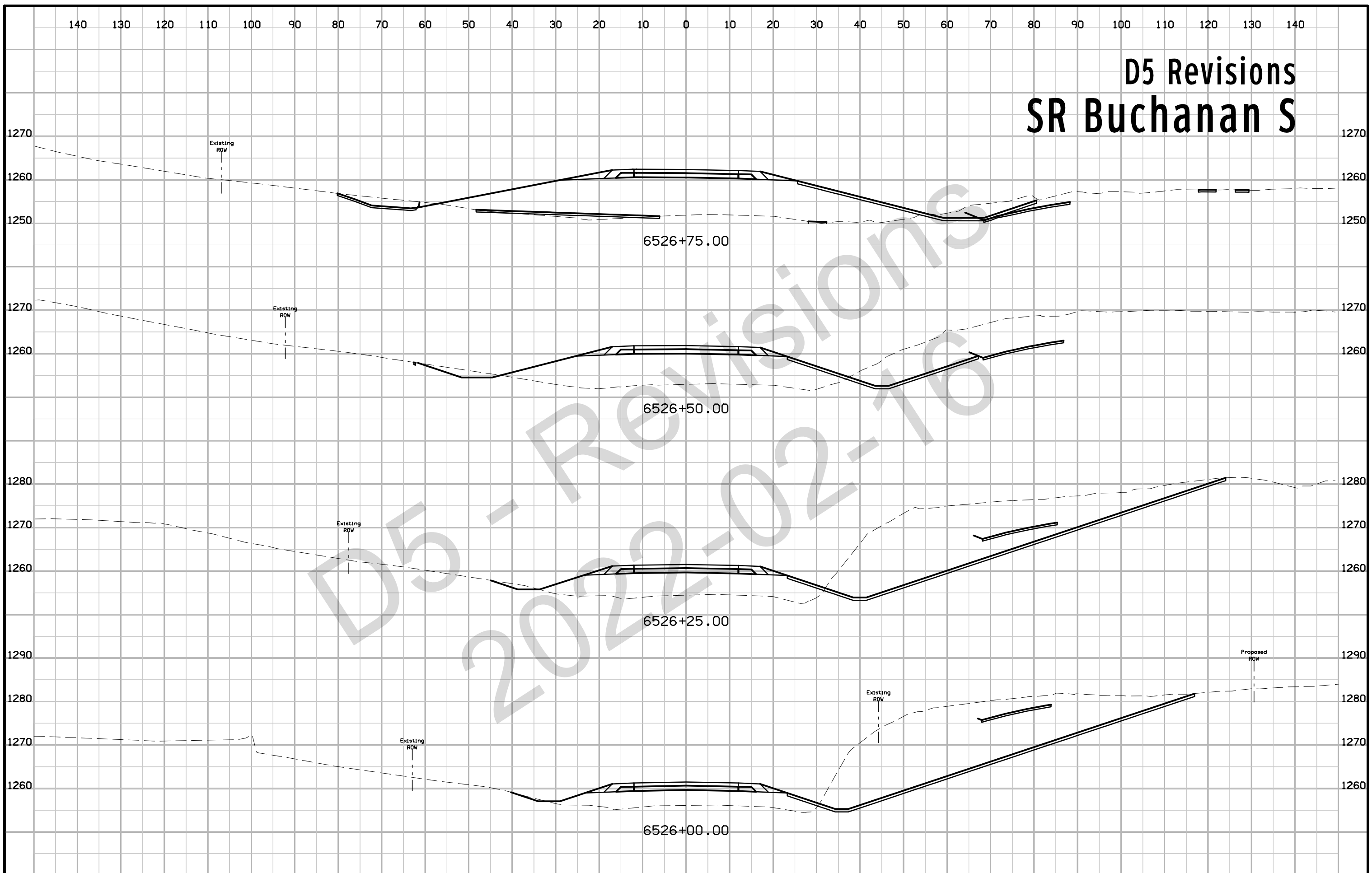
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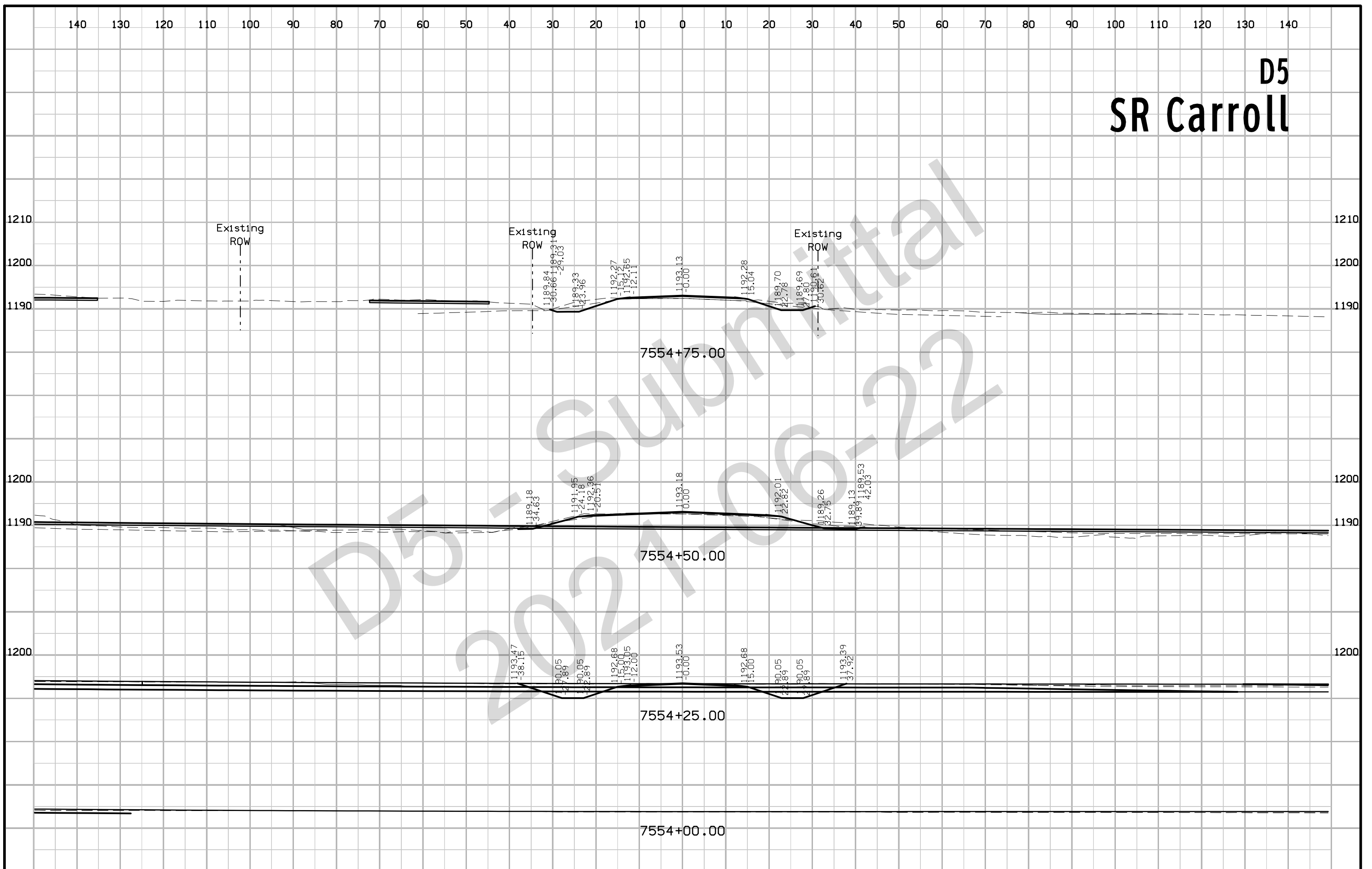
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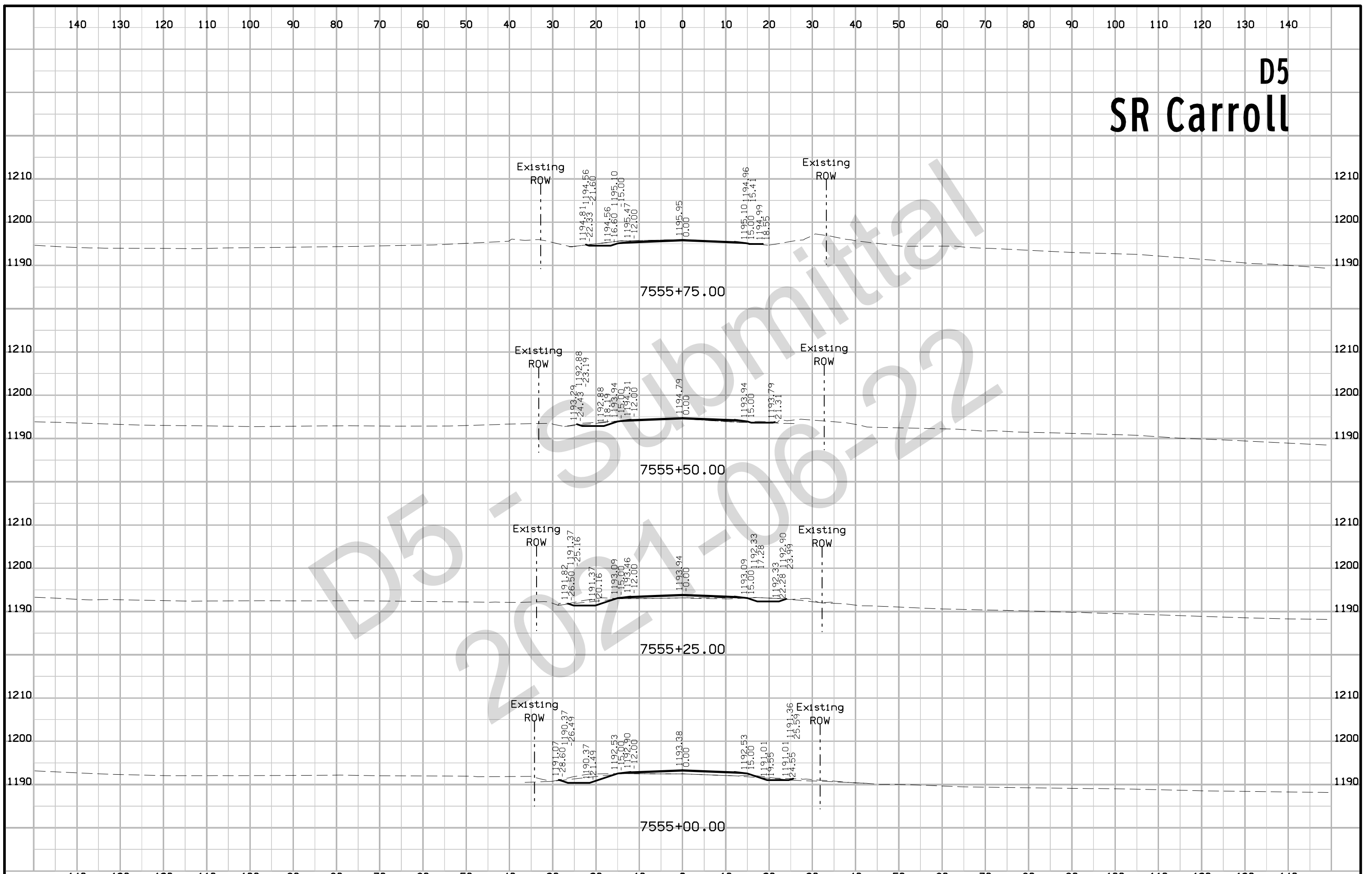
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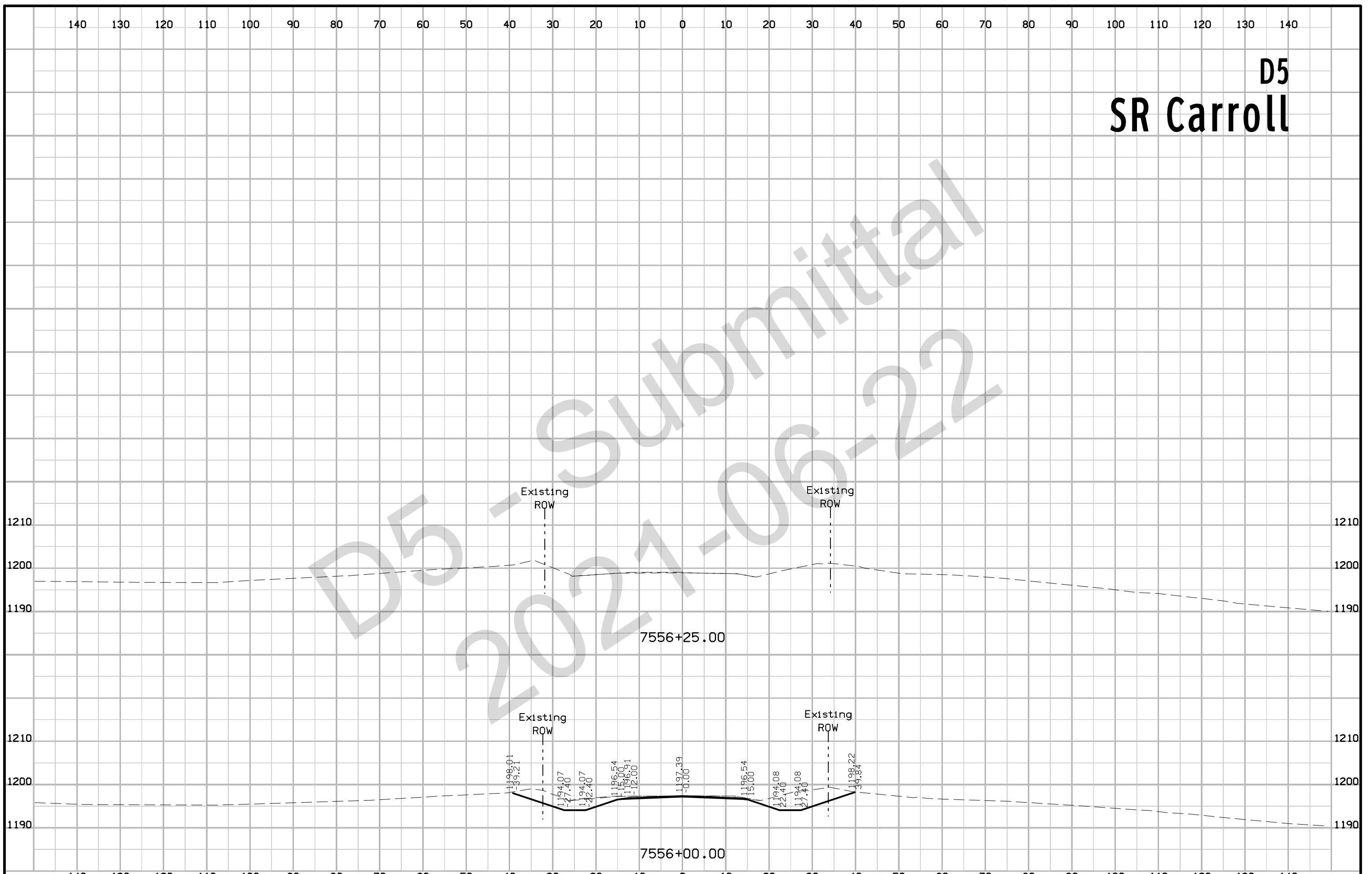
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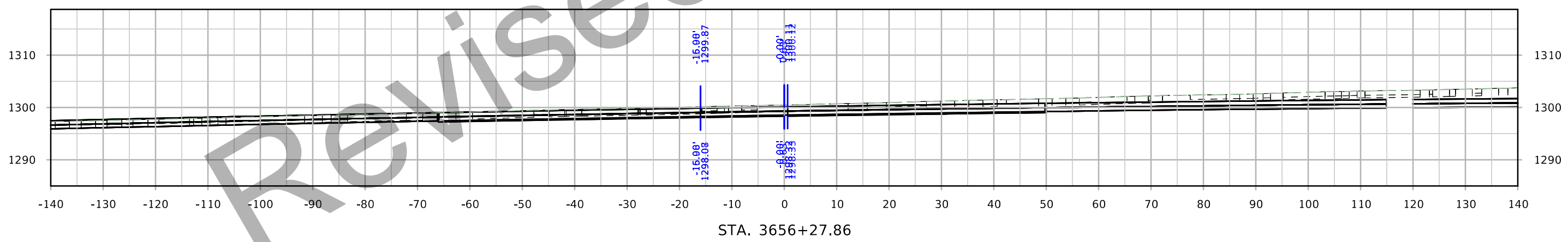
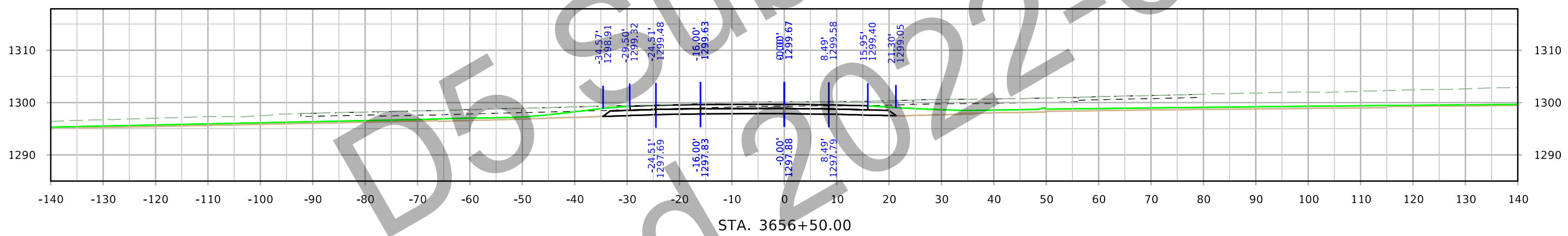
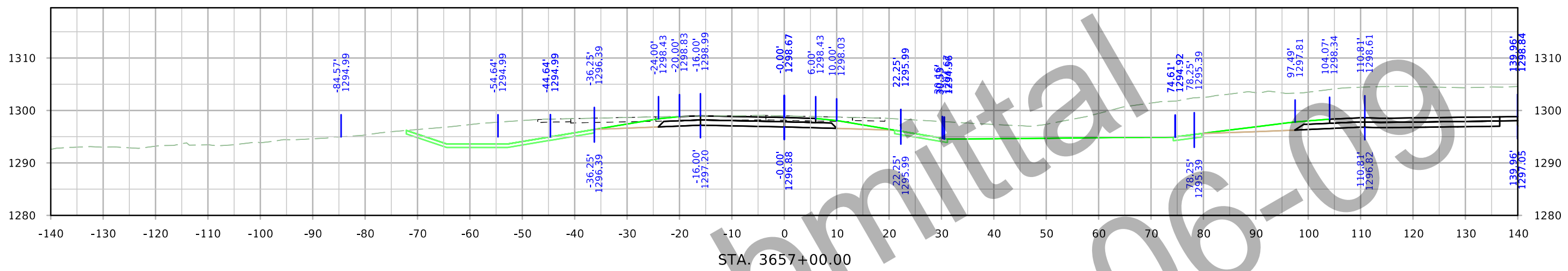
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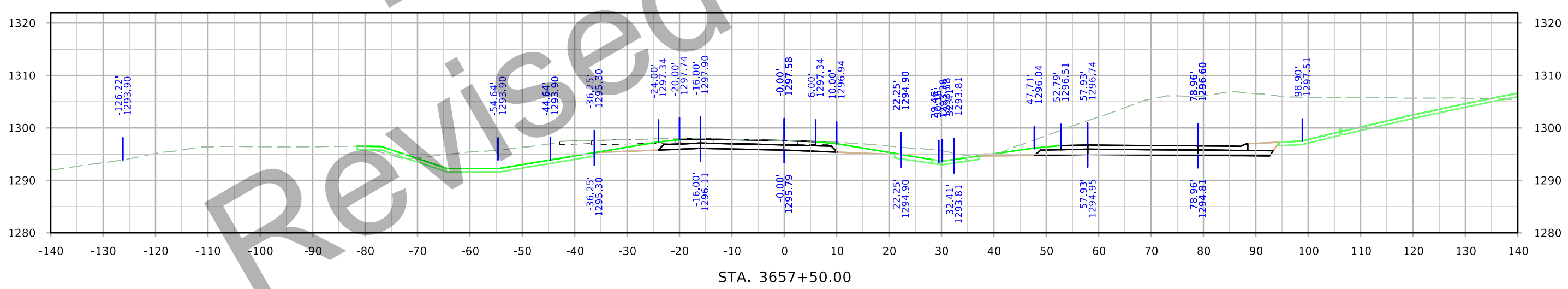
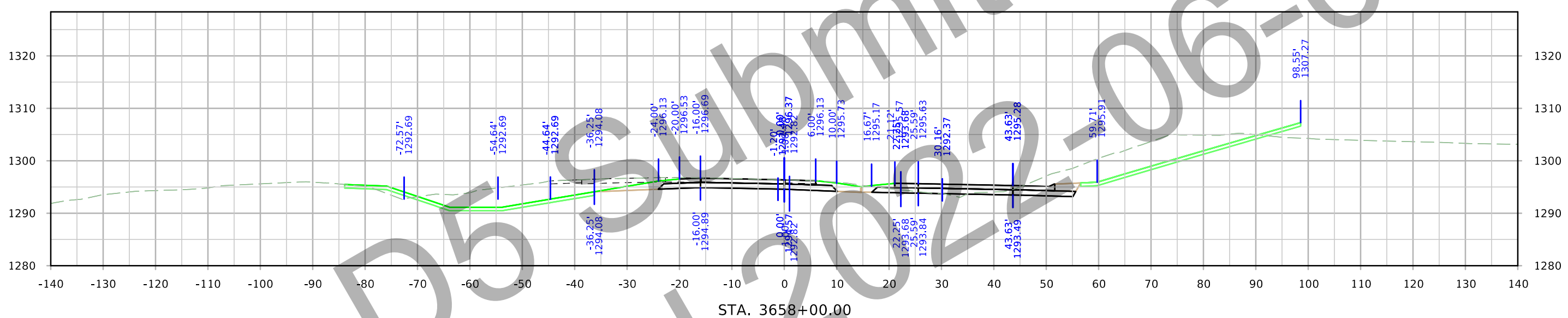
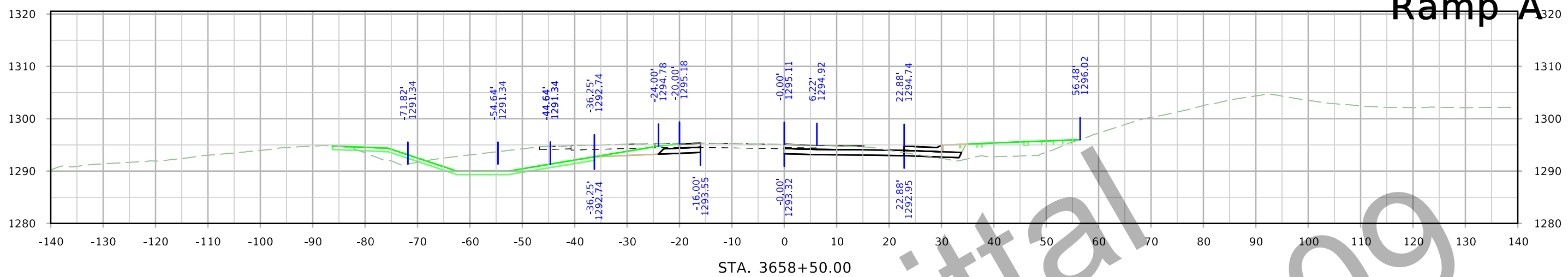
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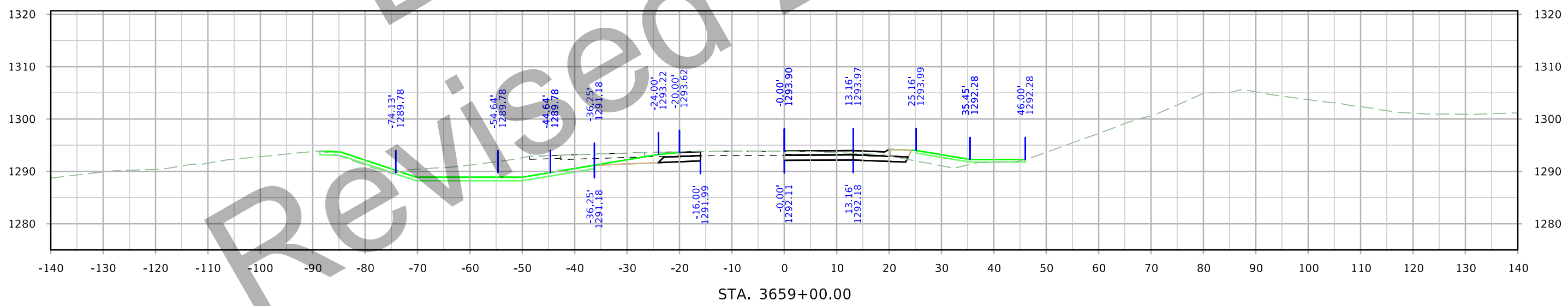
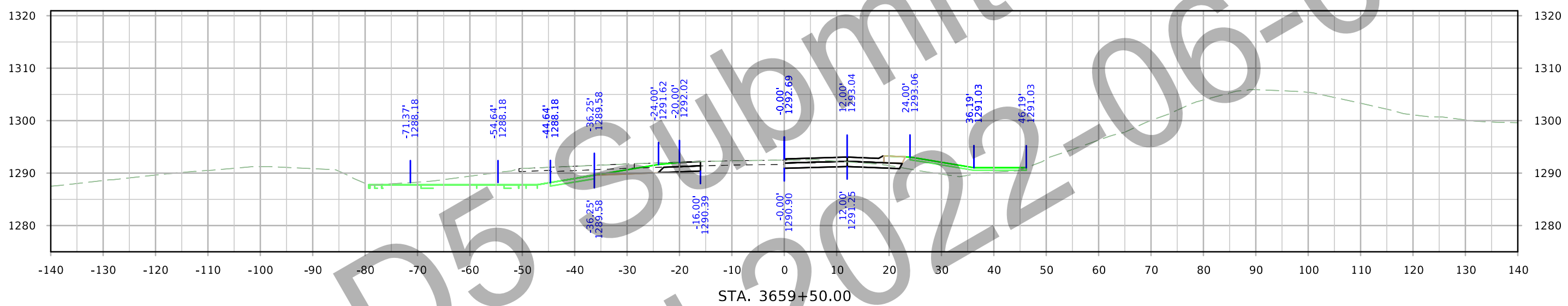
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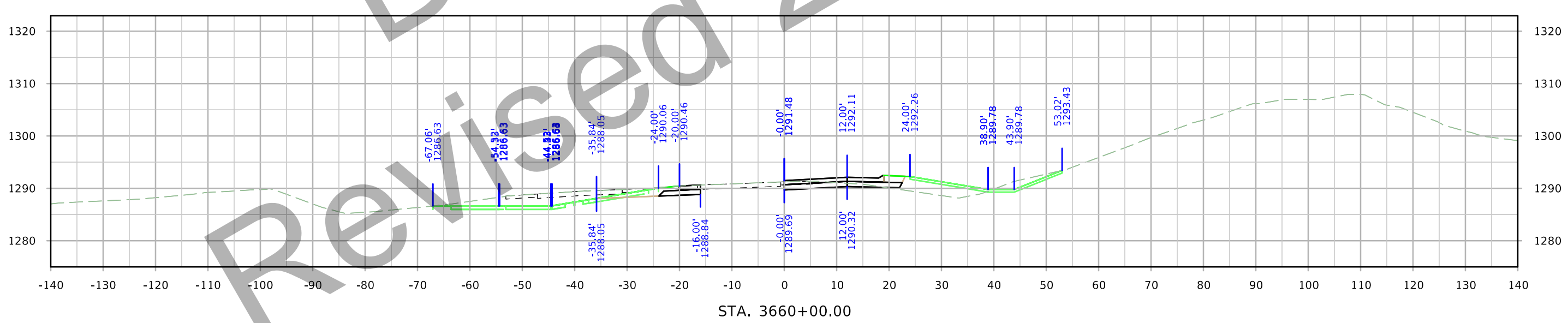
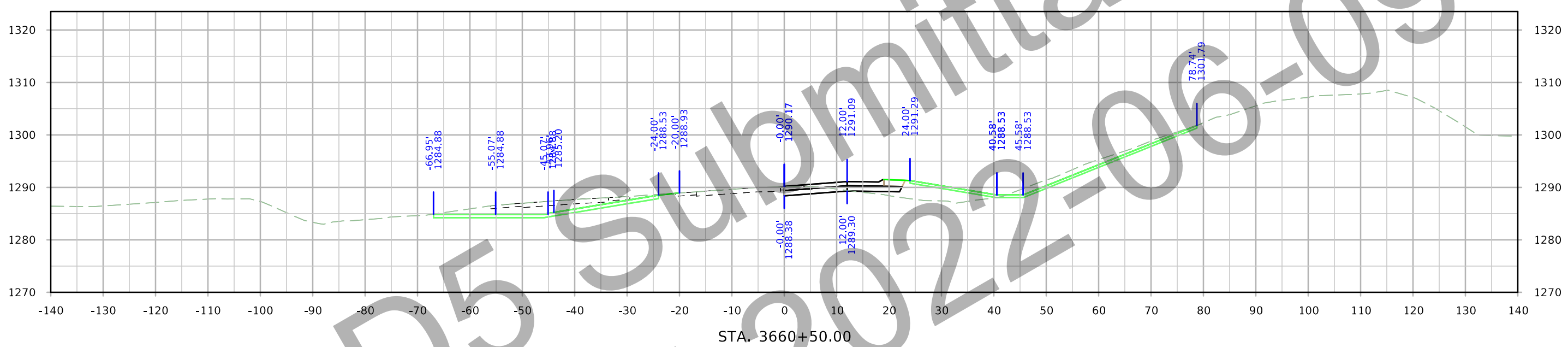
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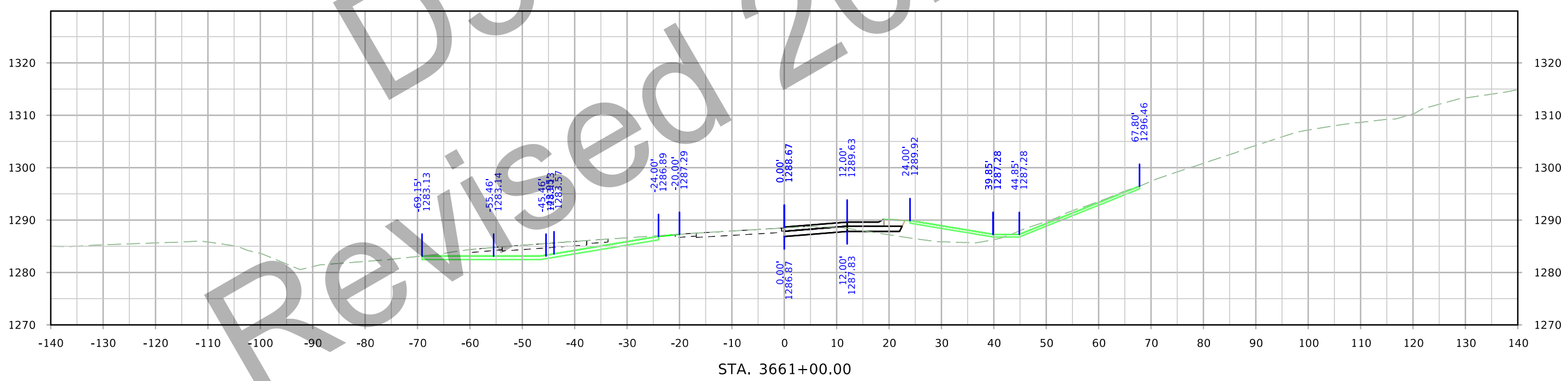
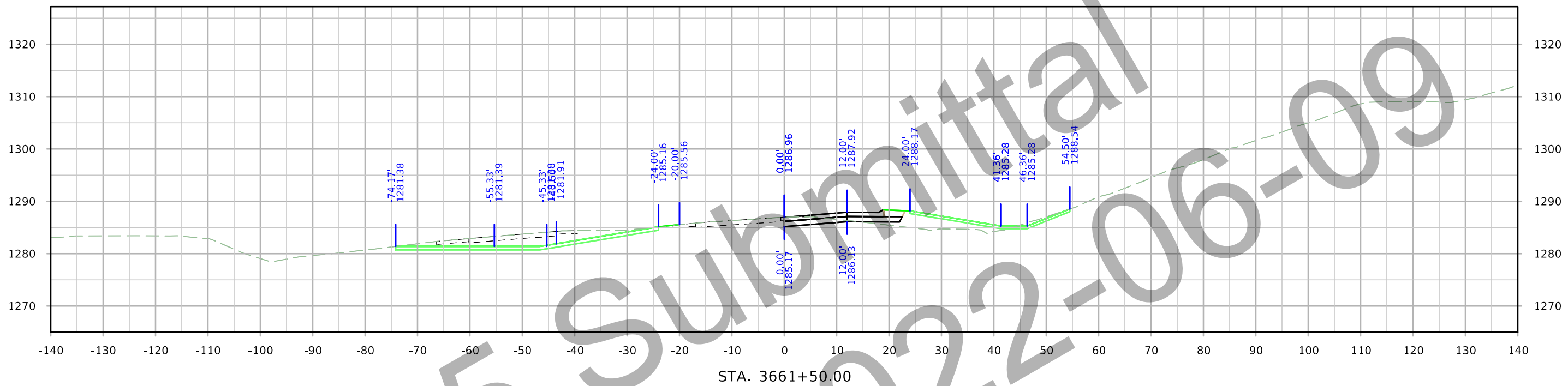
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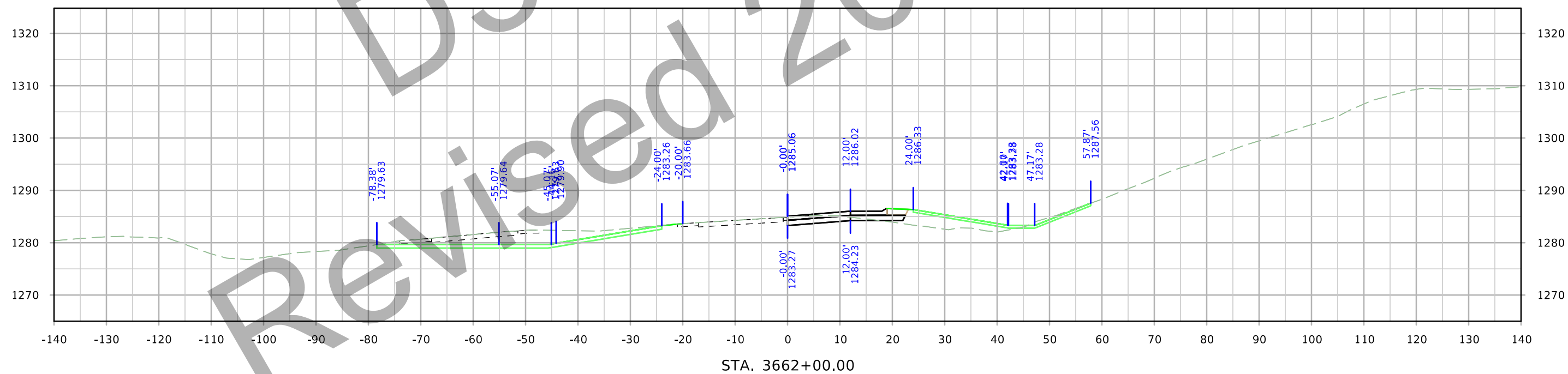
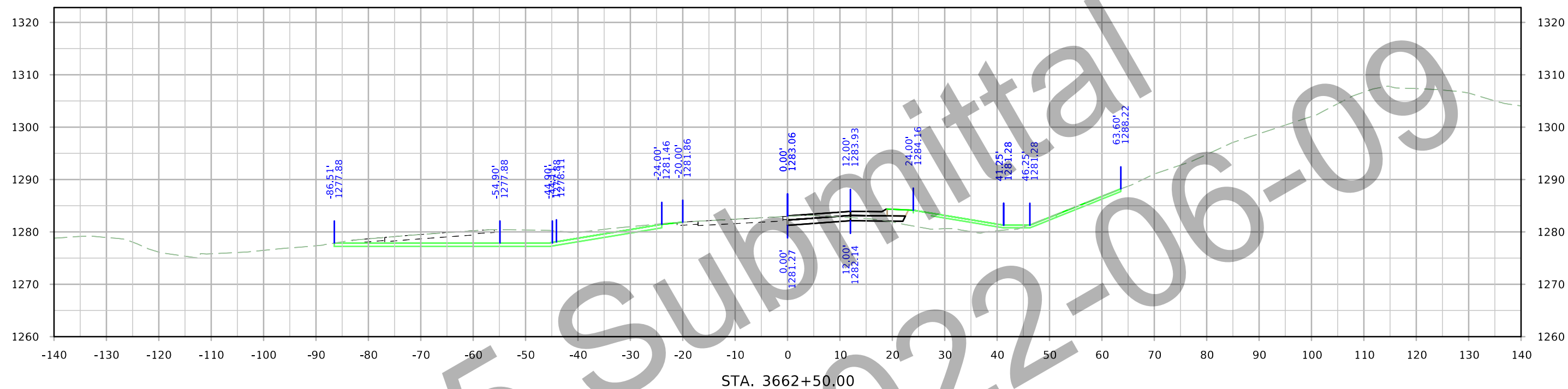
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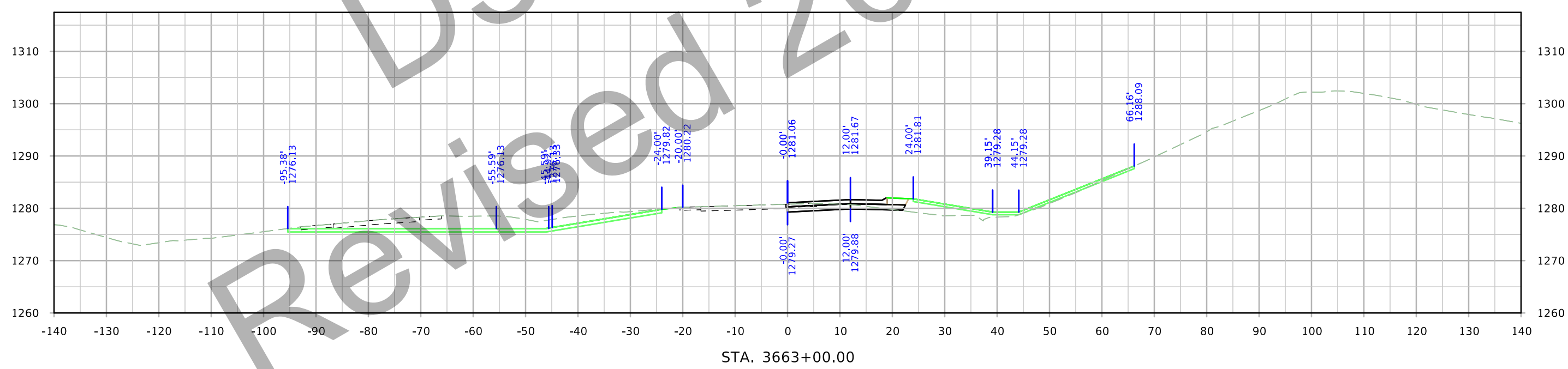
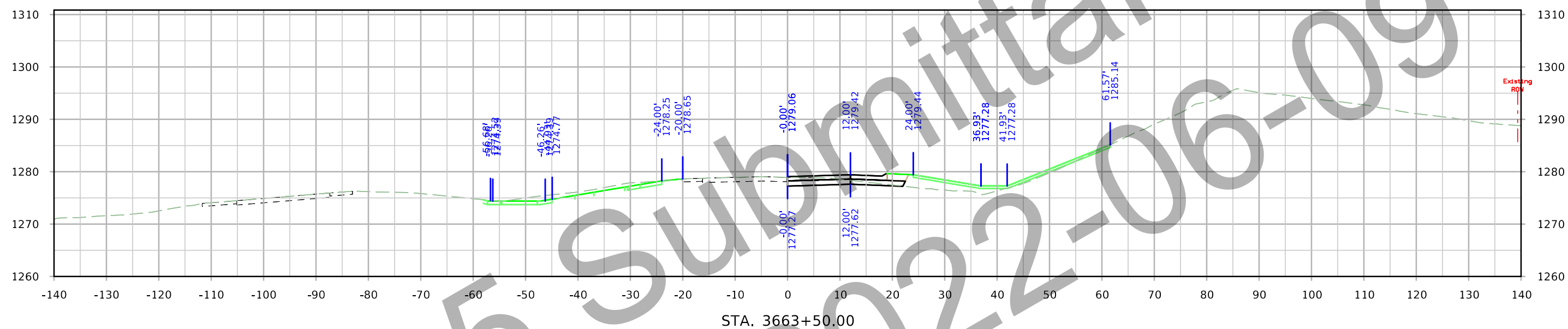
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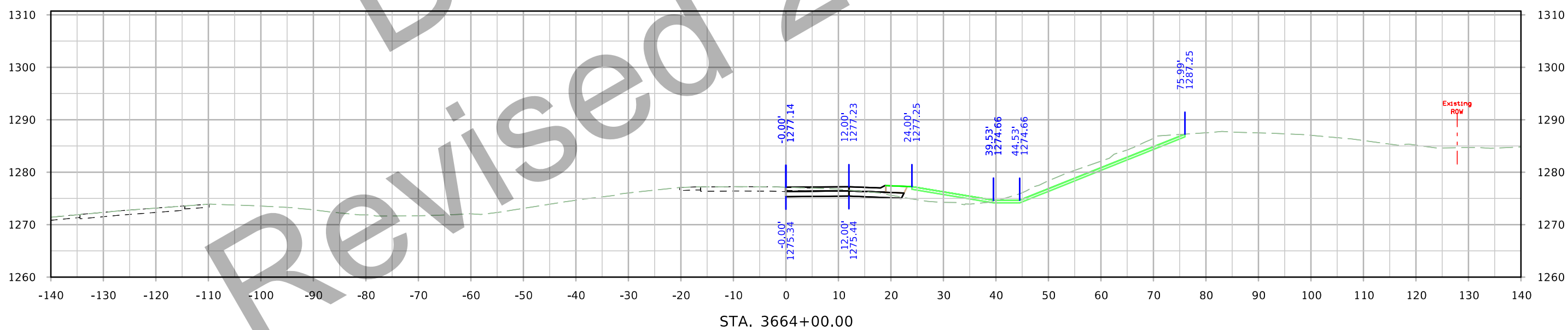
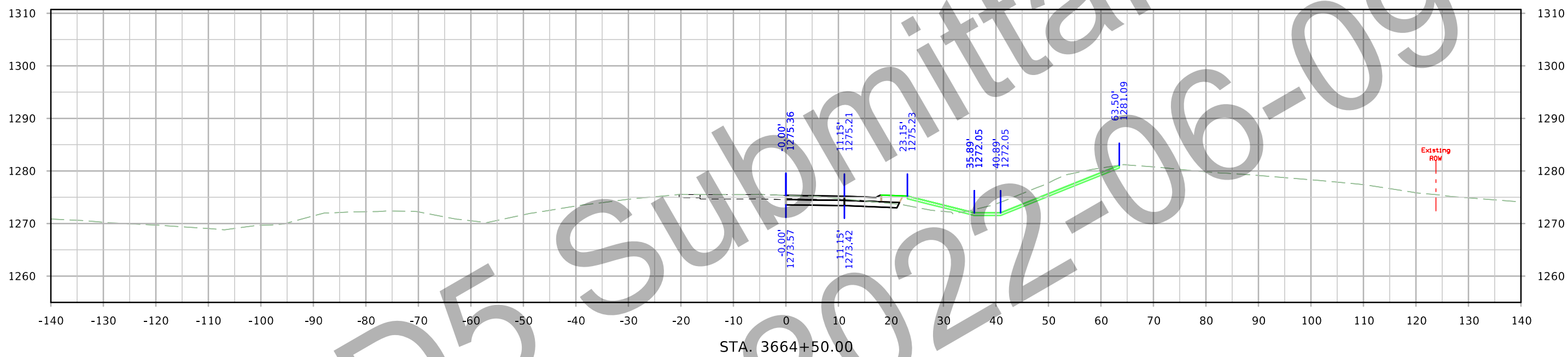
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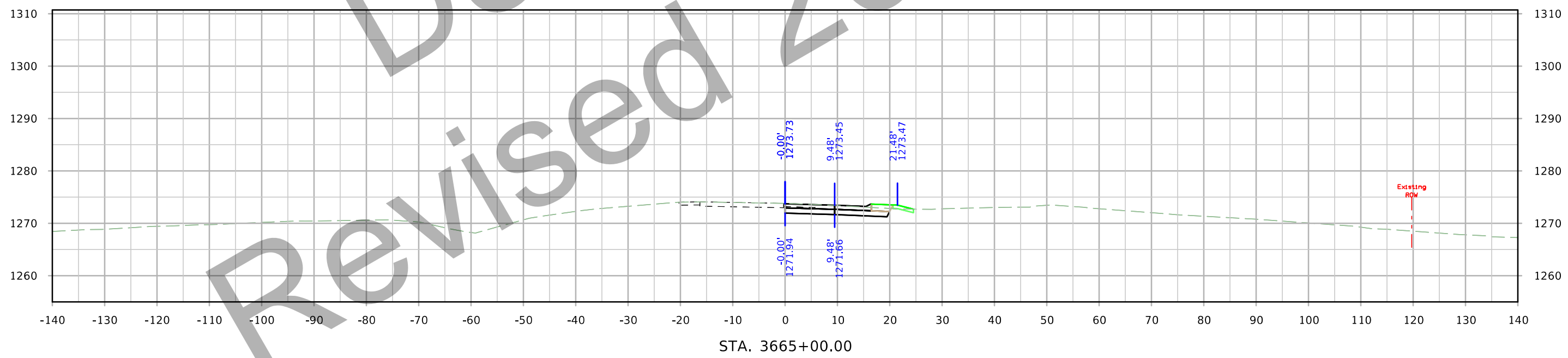
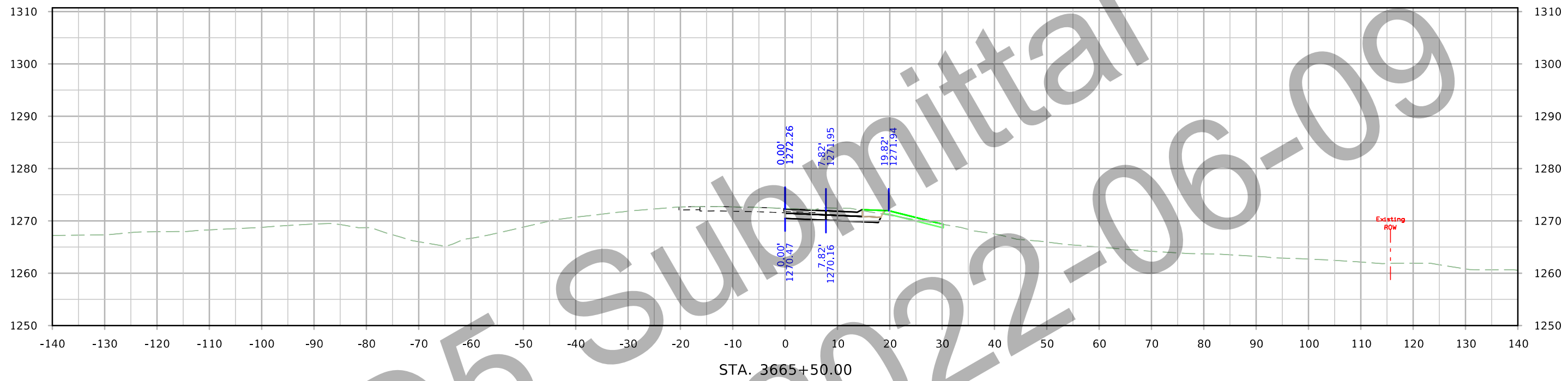
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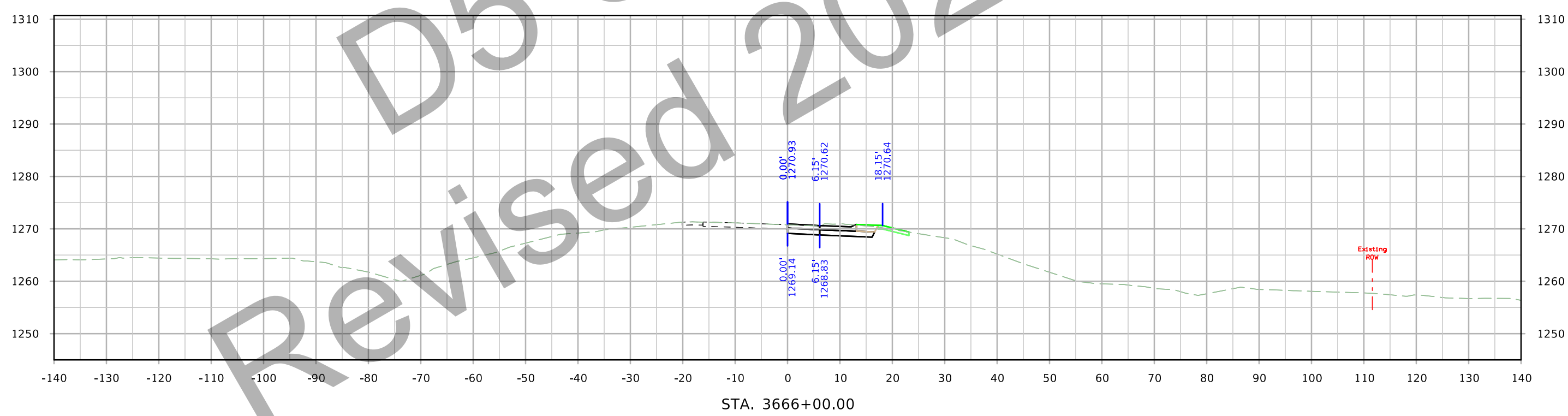
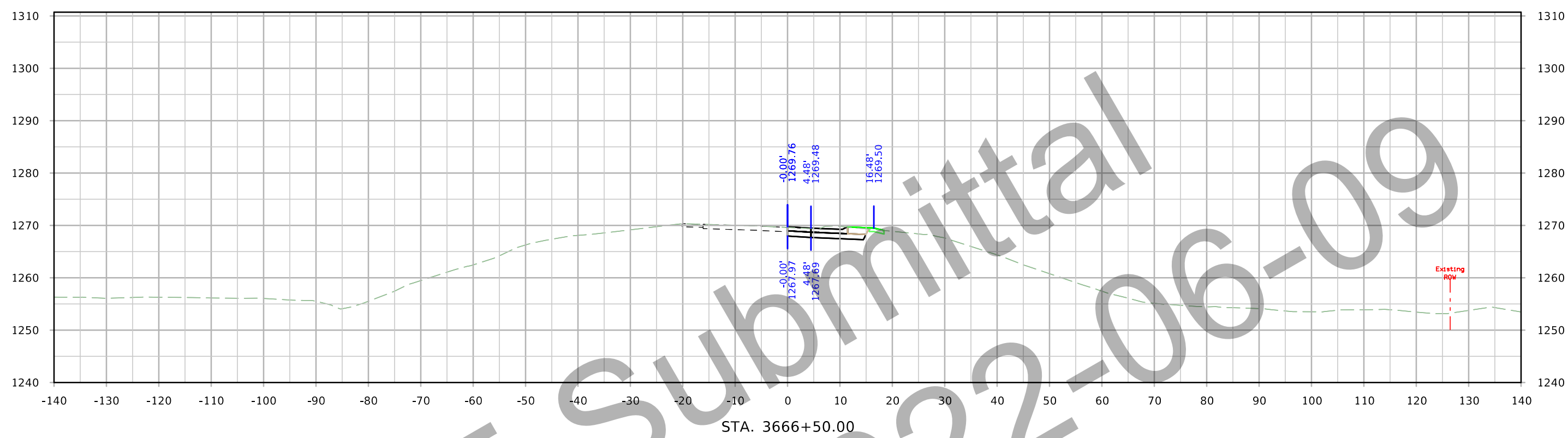
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Ramp A

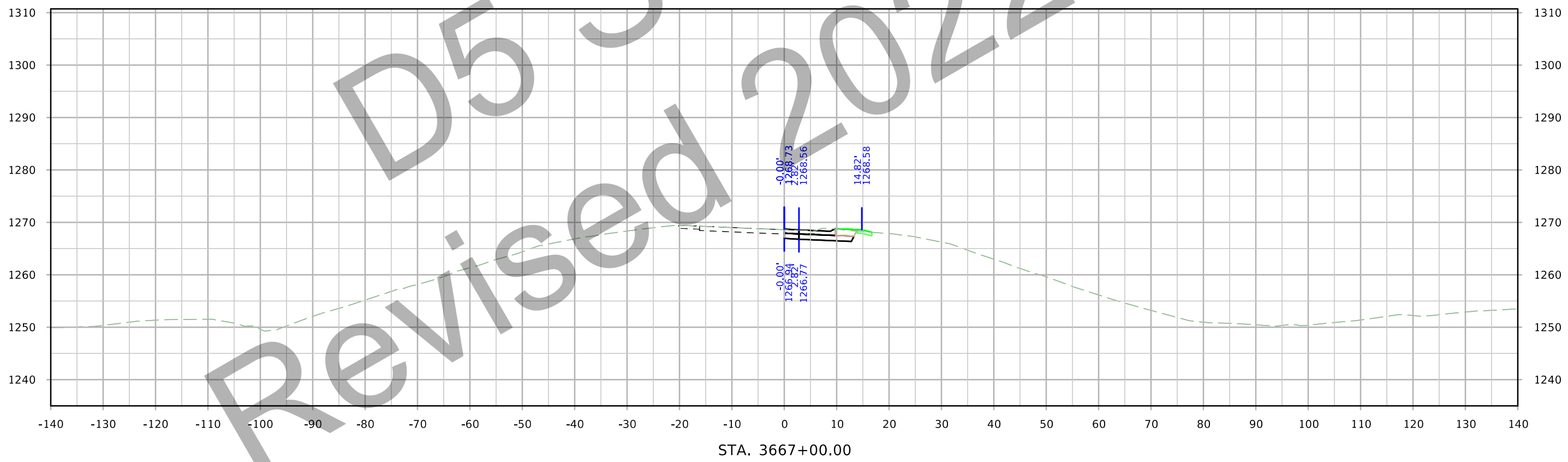


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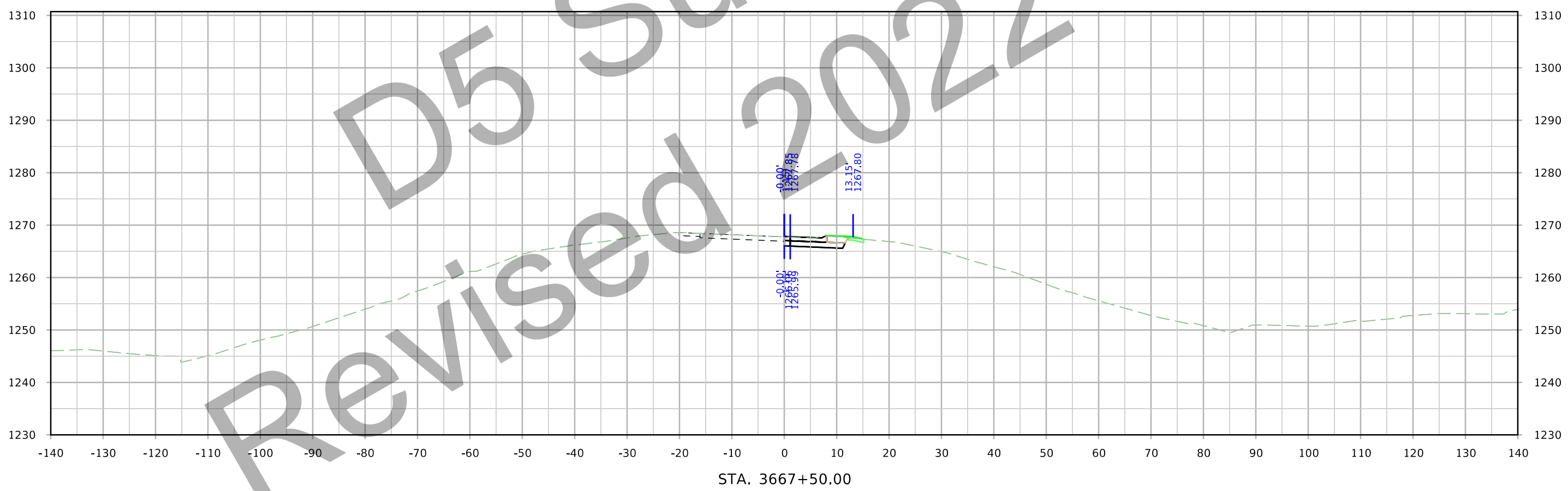
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Revised D5 Submittal 2022-06-09



Ramp A

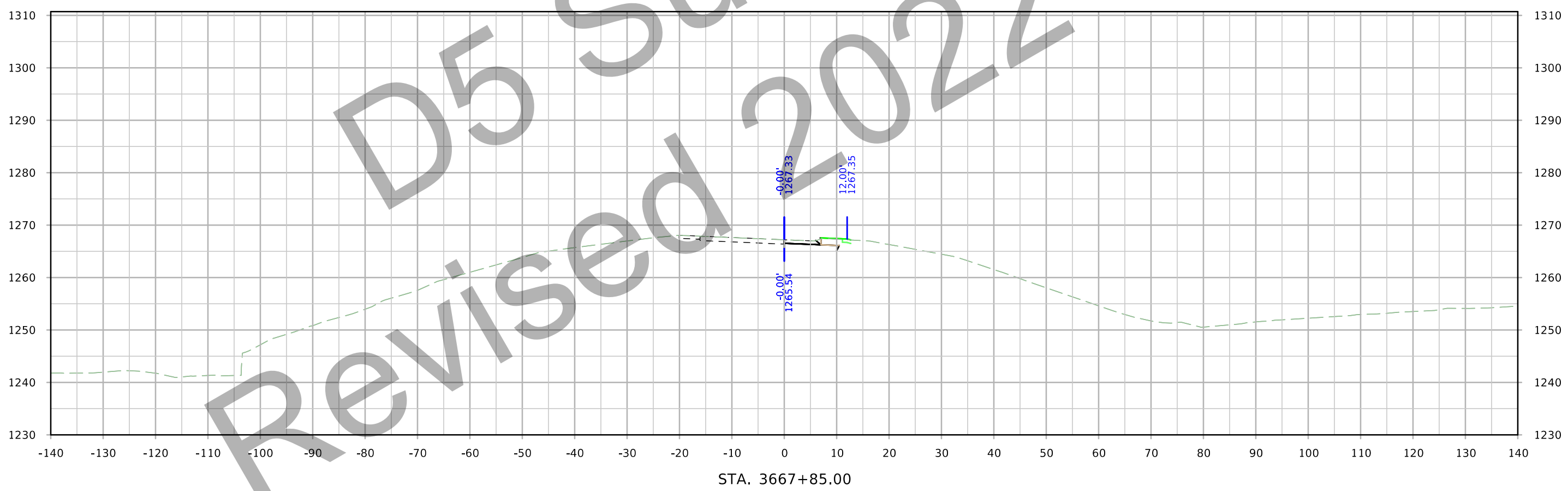
Revised D5 Submittal 2022-06-09



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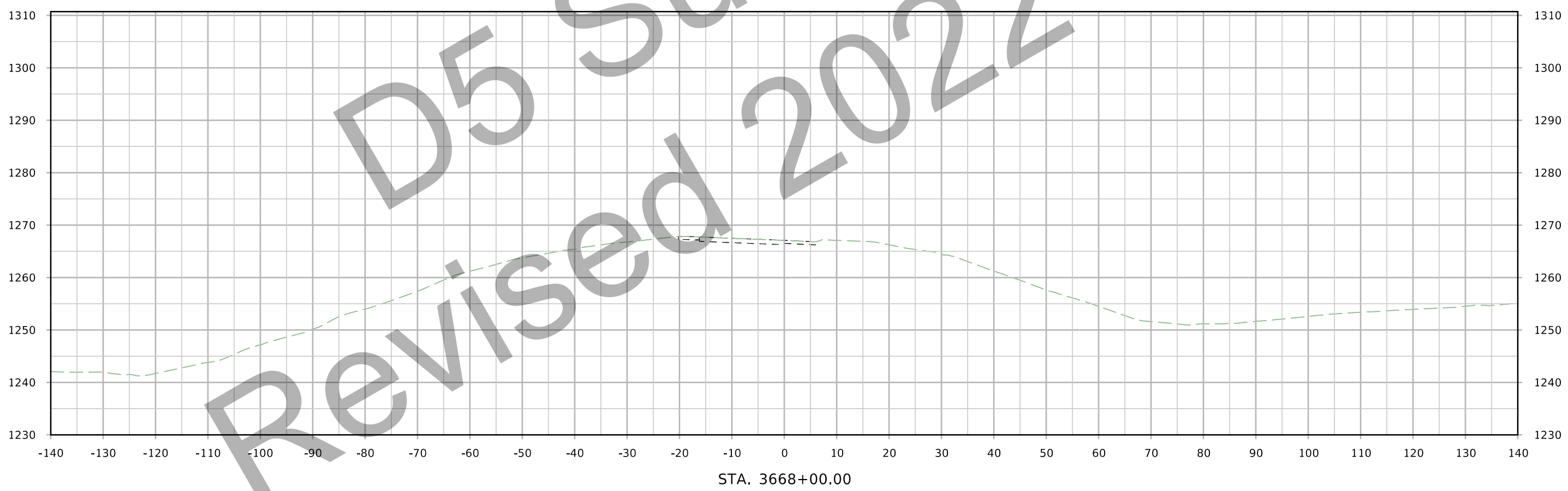
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Revised D5 Submittal 2022-06-09



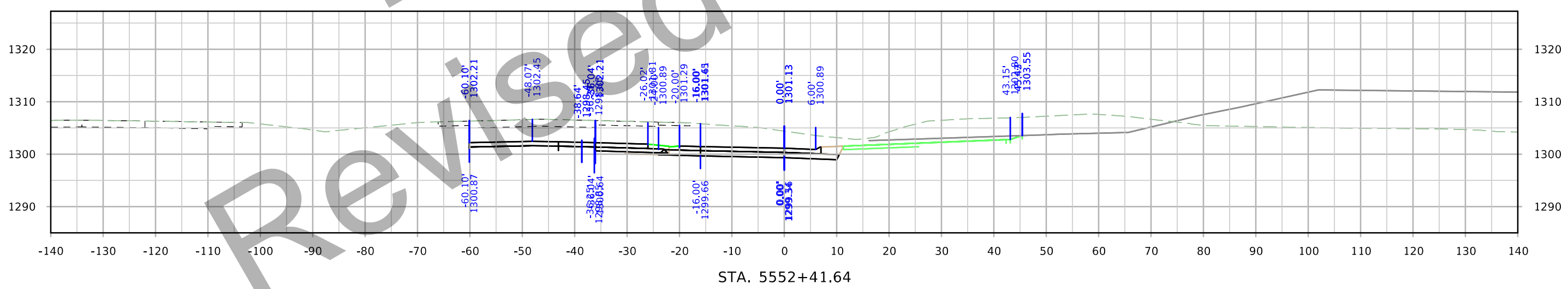
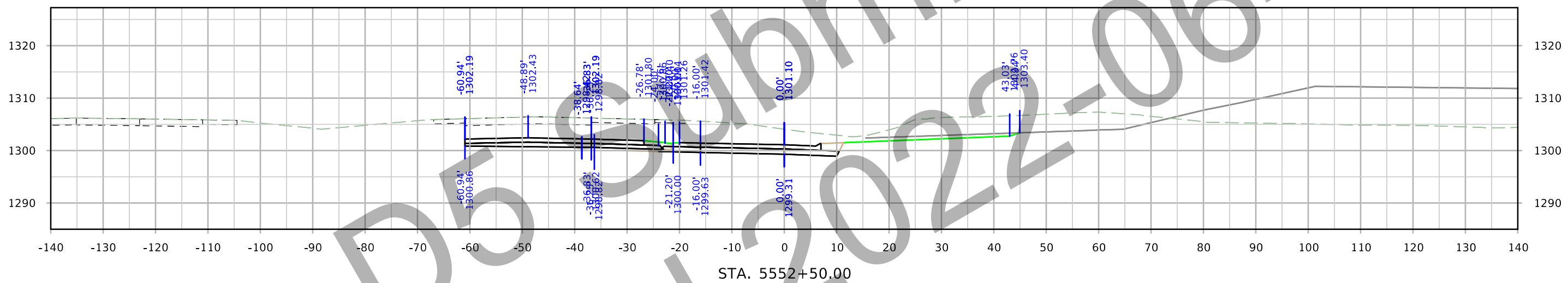
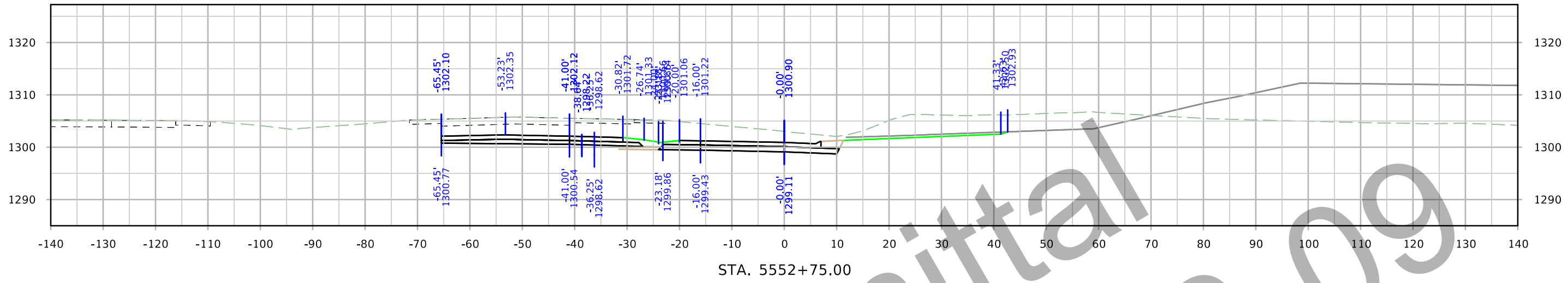
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D5 Submittal
Revised 2022-06-09

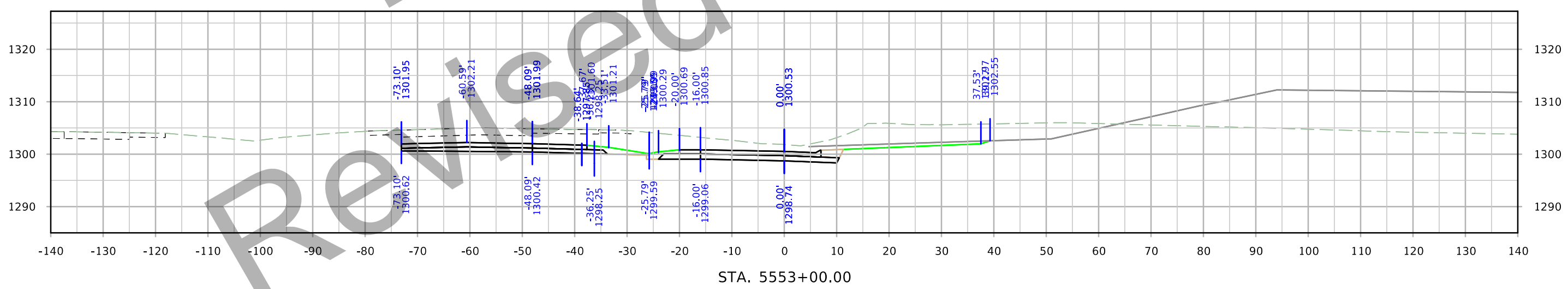
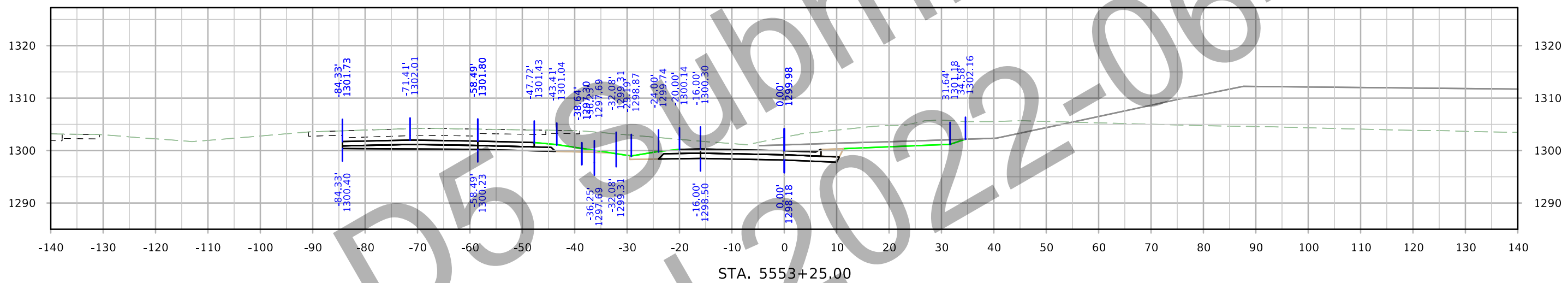
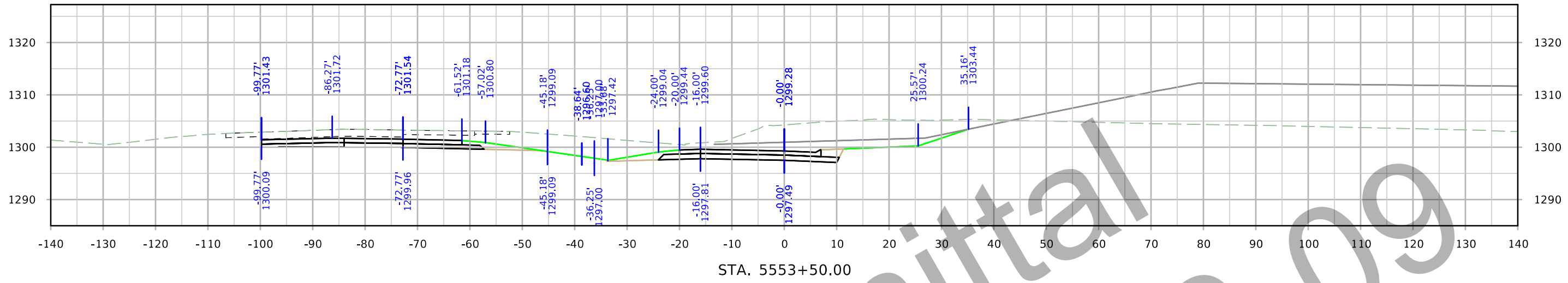


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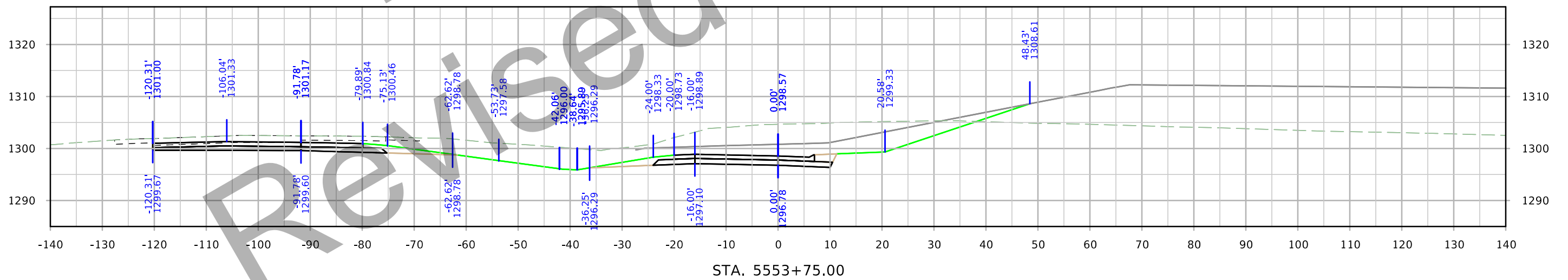
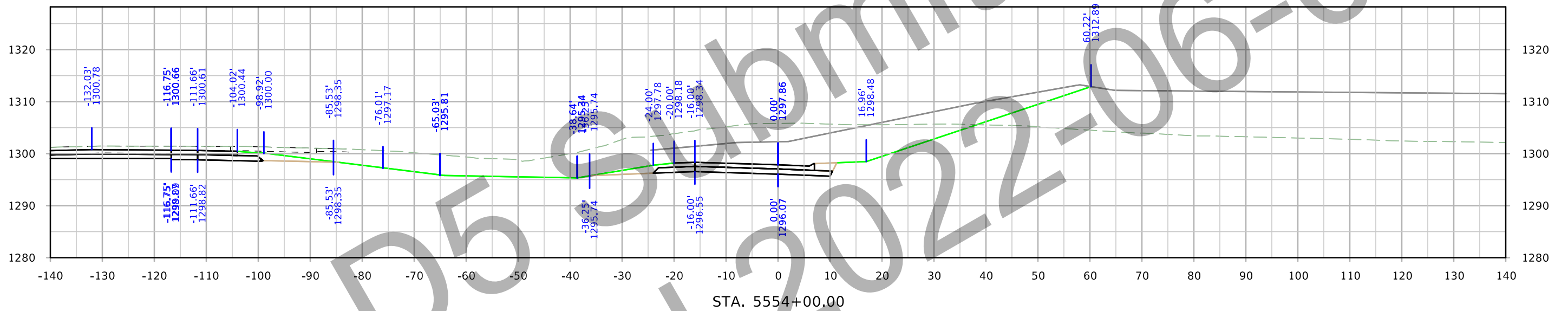
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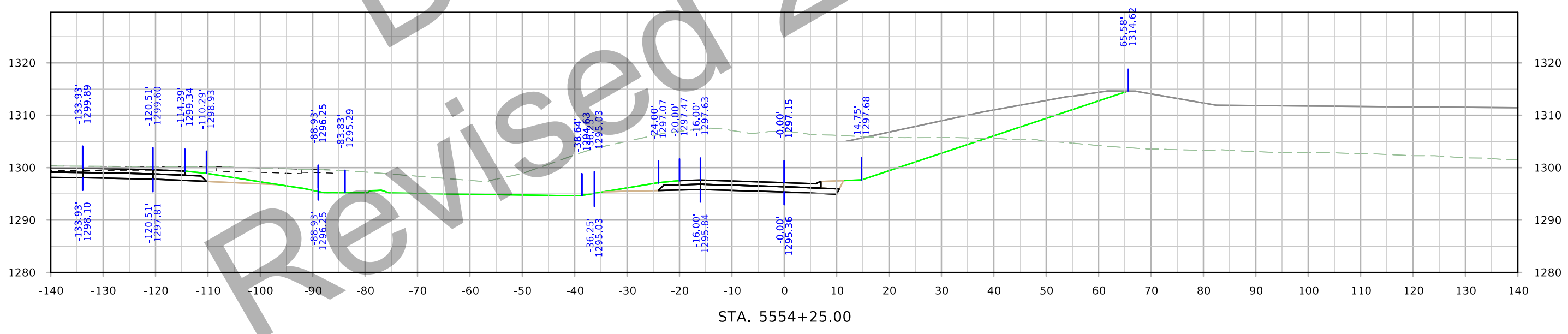
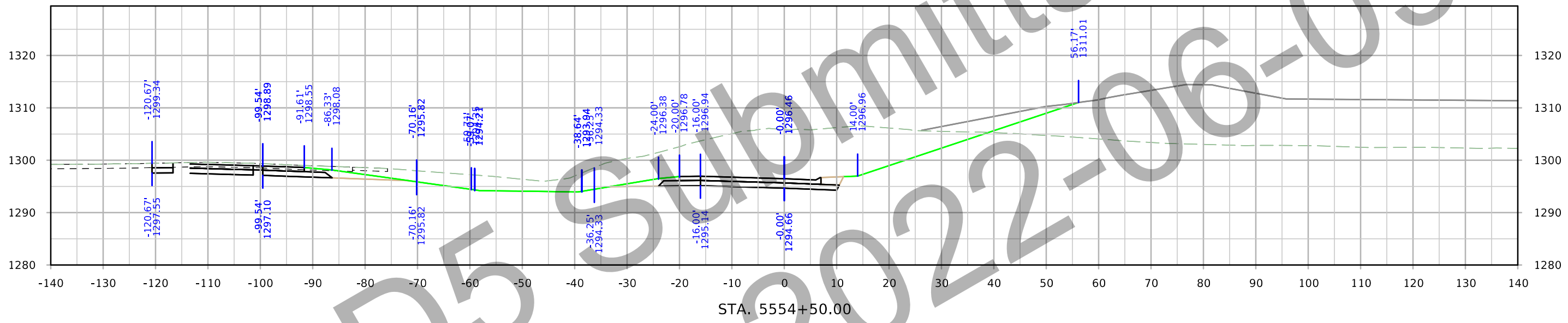
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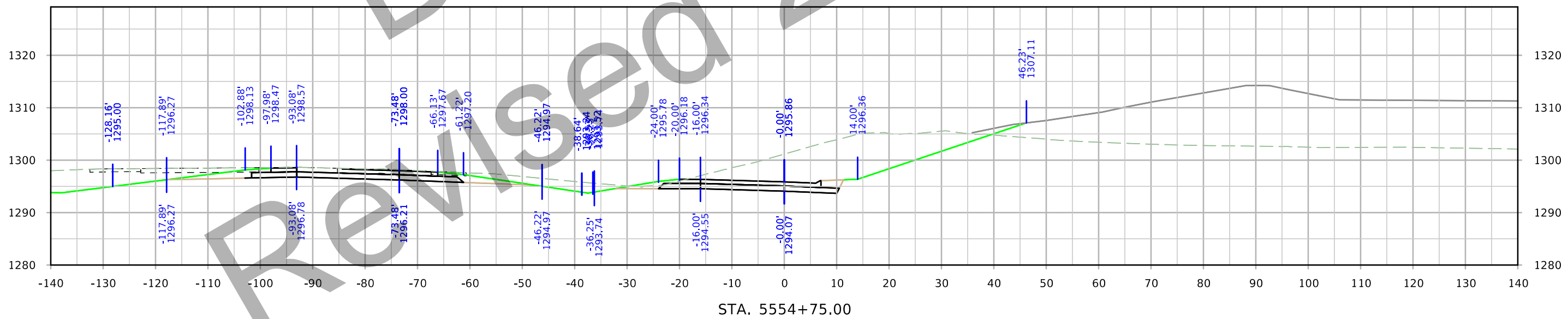
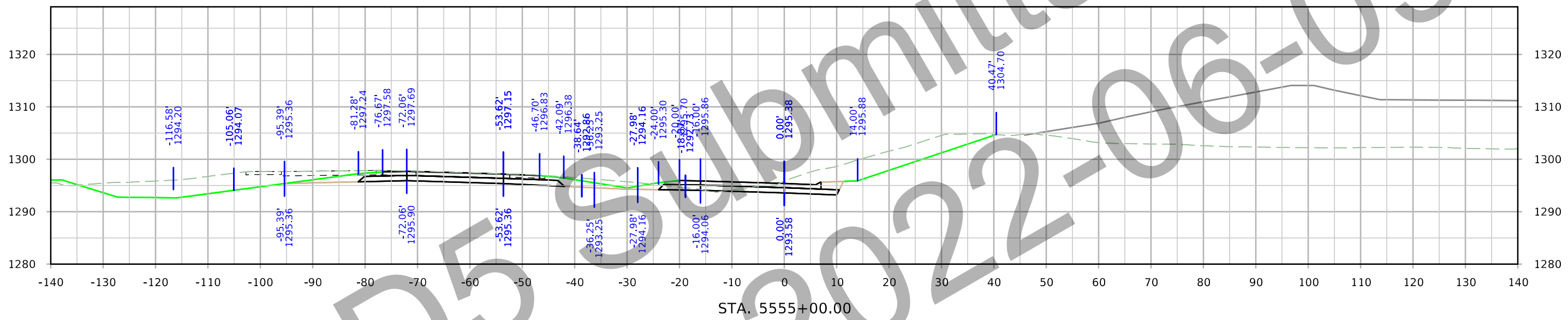
Ramp A2



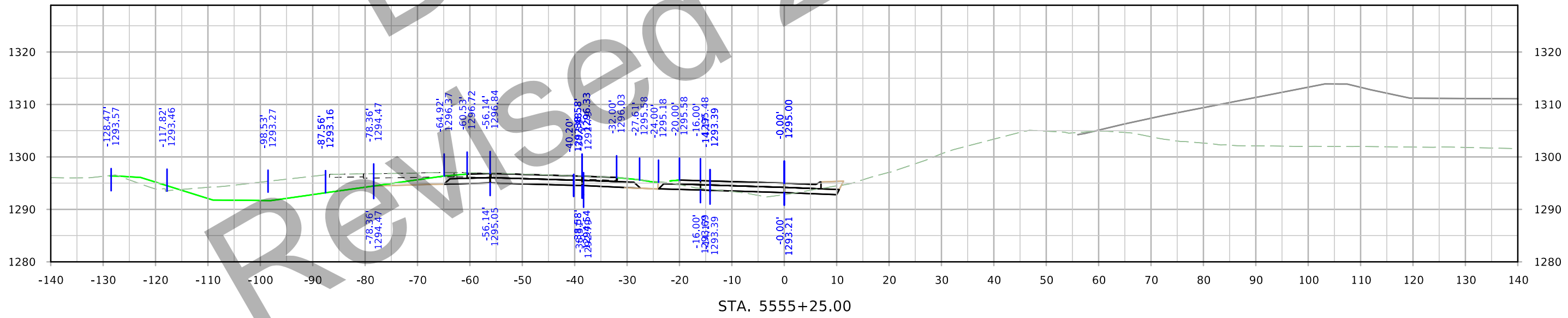
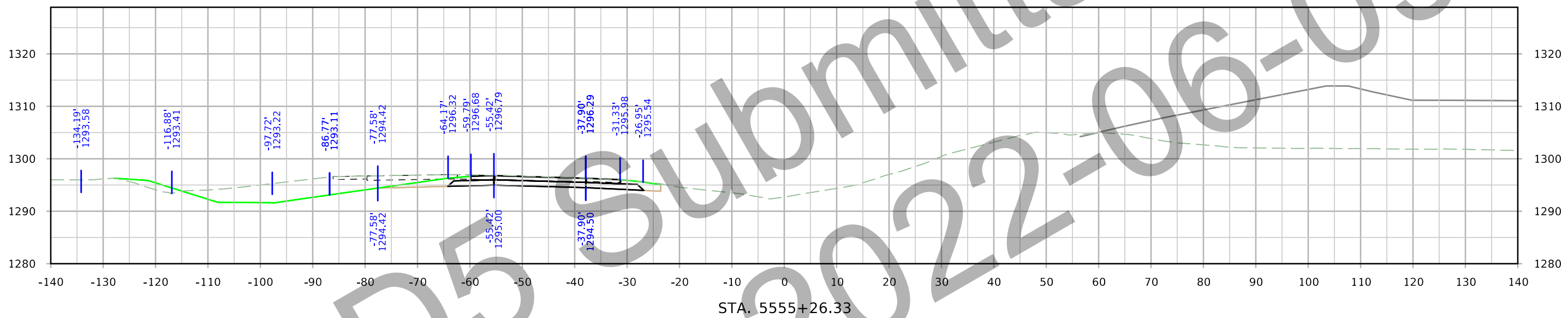
Ramp A2



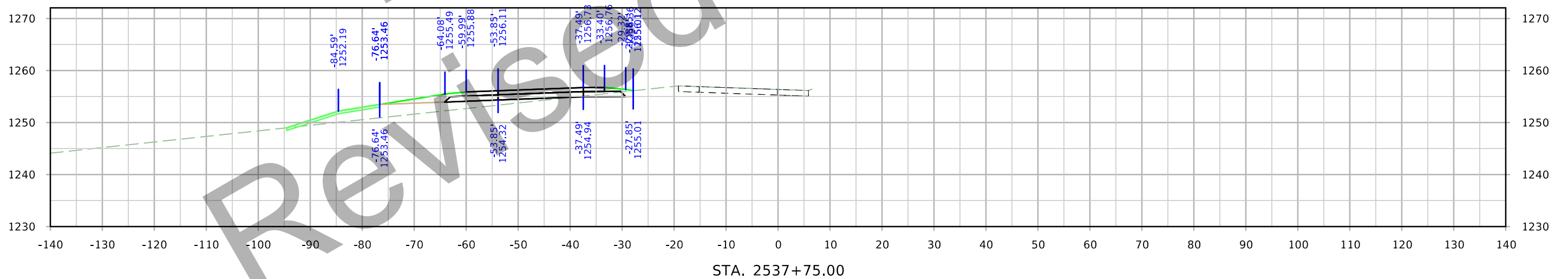
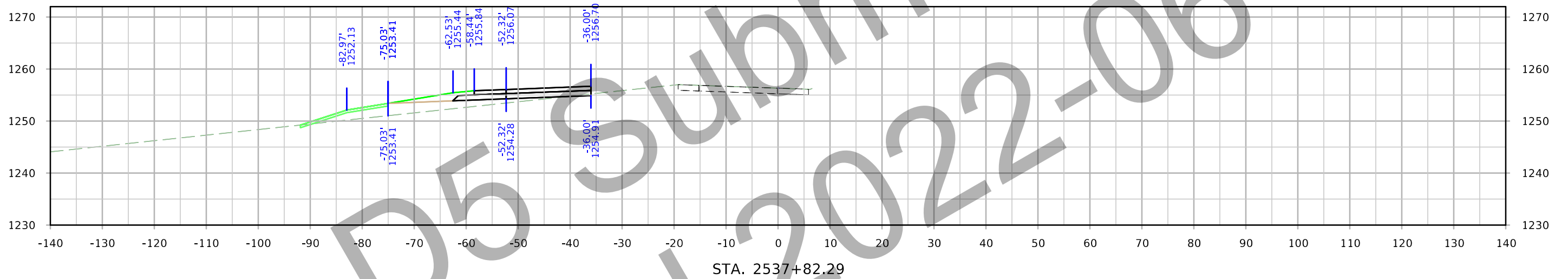
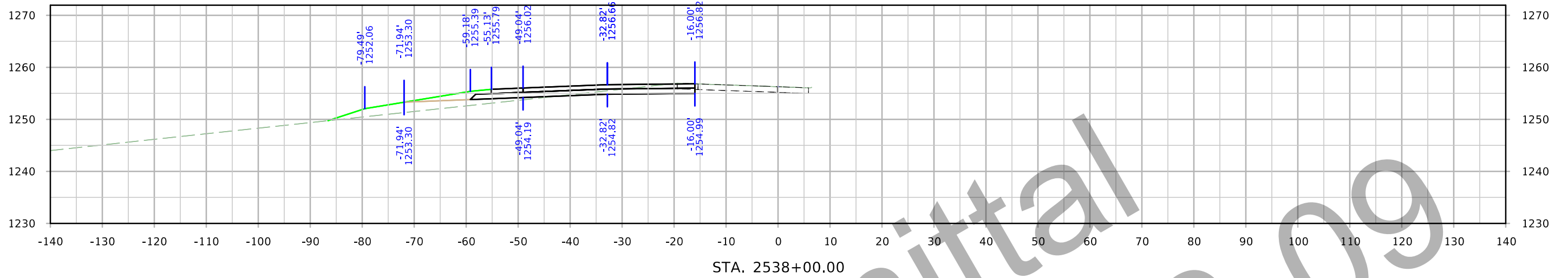
Ramp A2



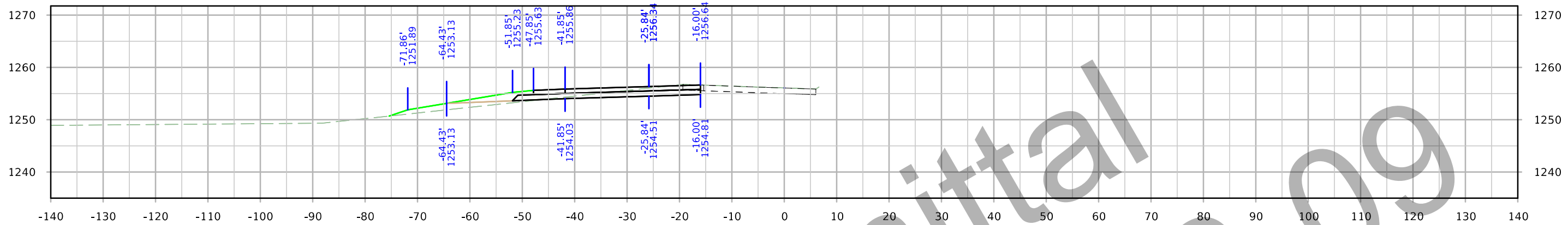
Ramp A2



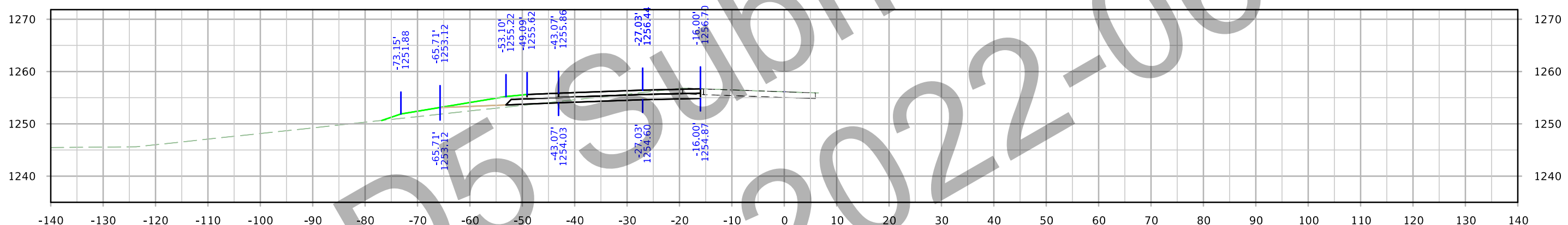
Ramp B



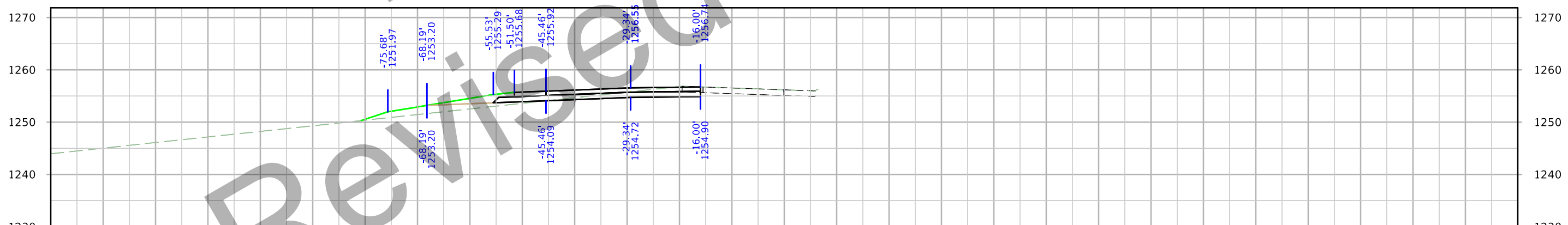
Ramp B



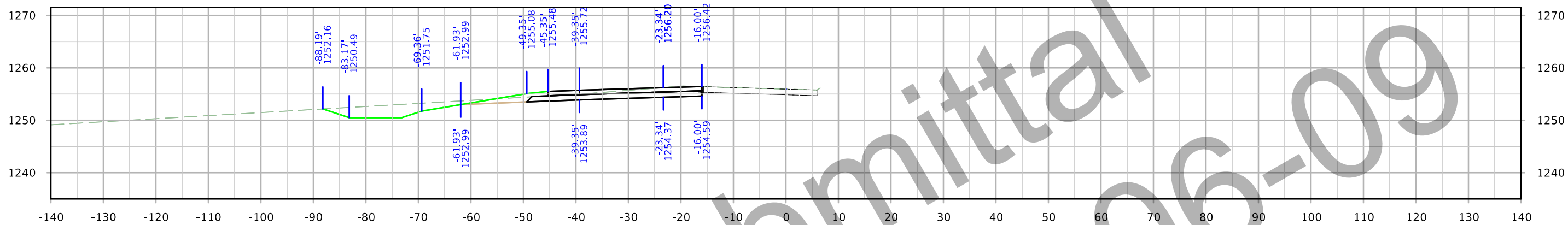
STA. 2538+75.00



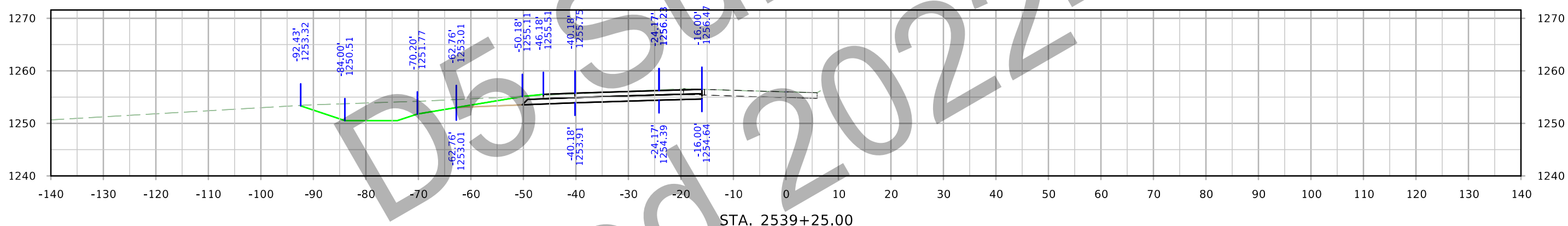
STA. 2538+50.00



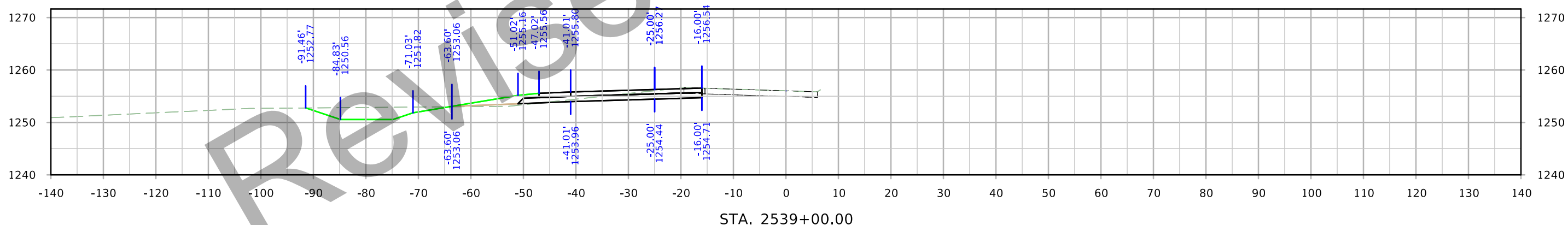
STA. 2538+25.00



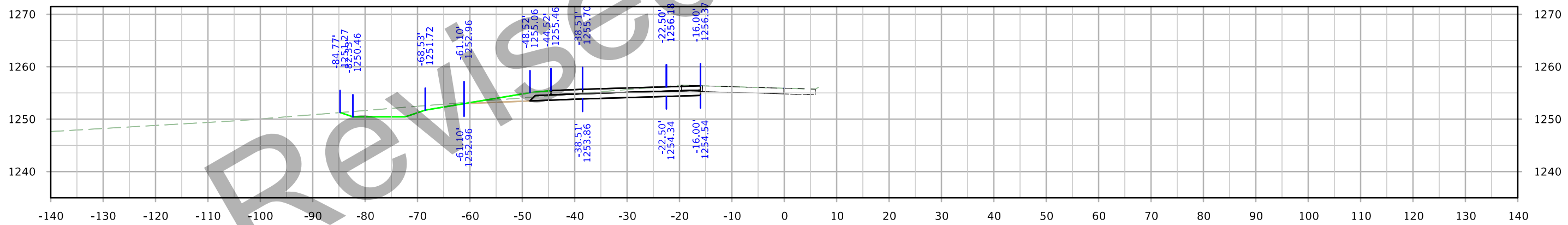
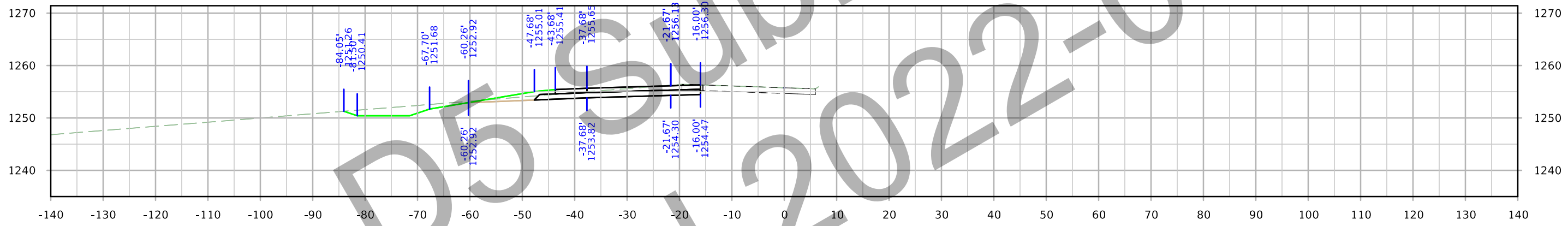
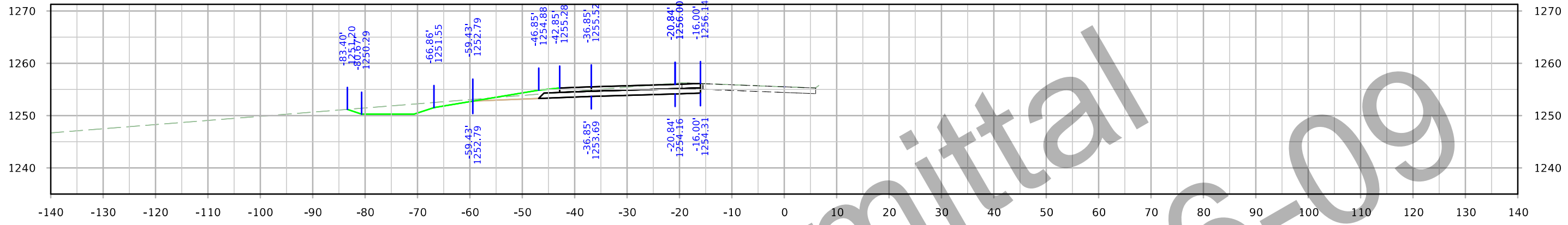
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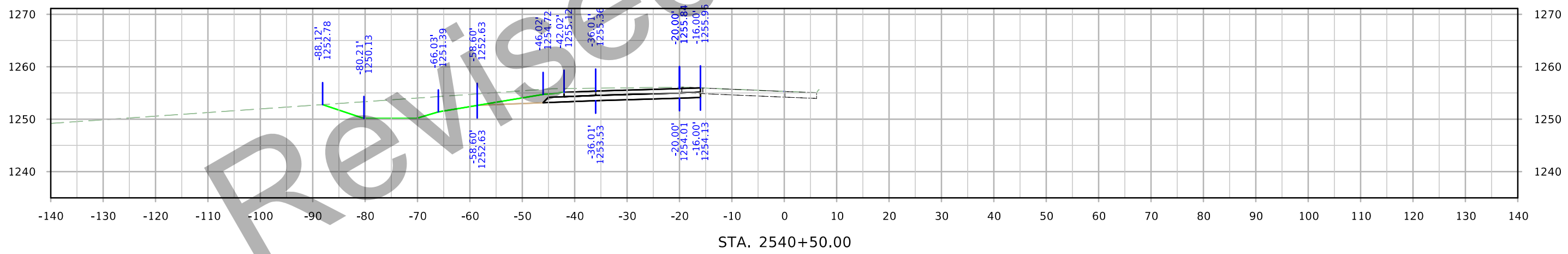
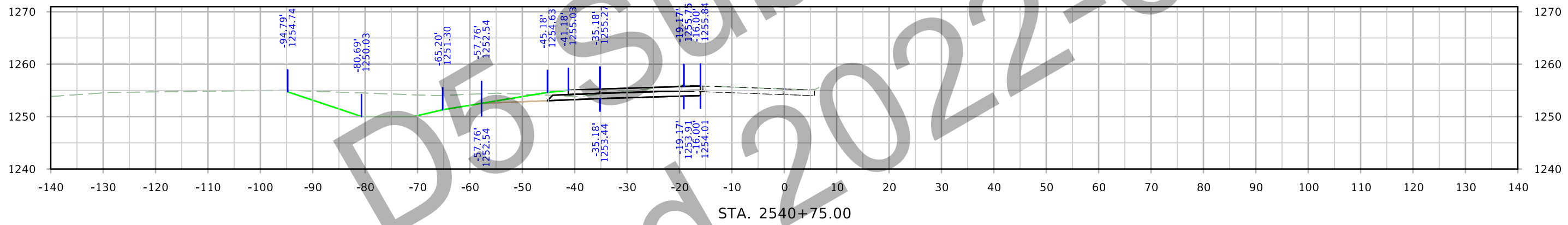
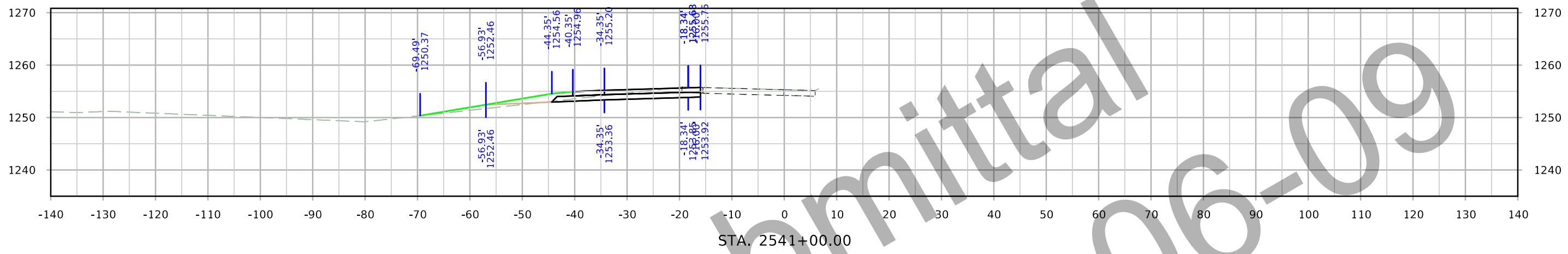


STA. 2539+25.00

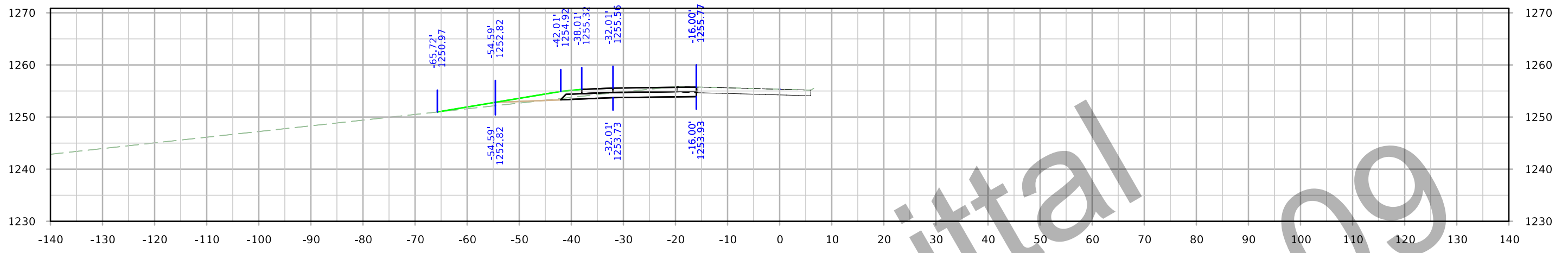


STA. 2539+00.00

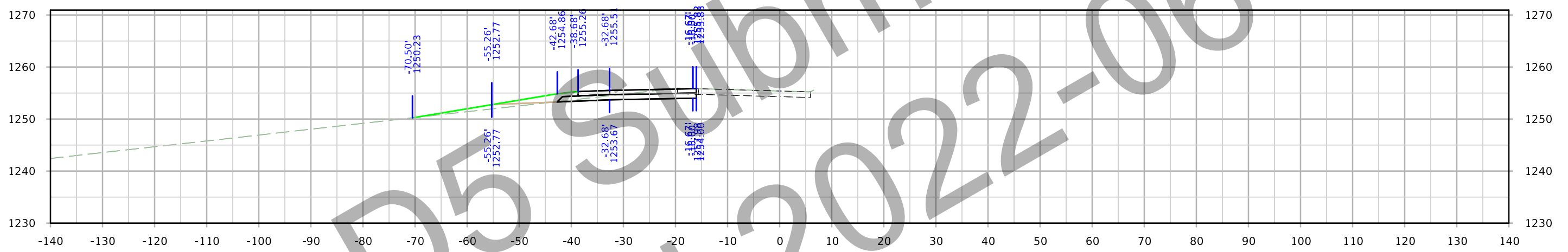




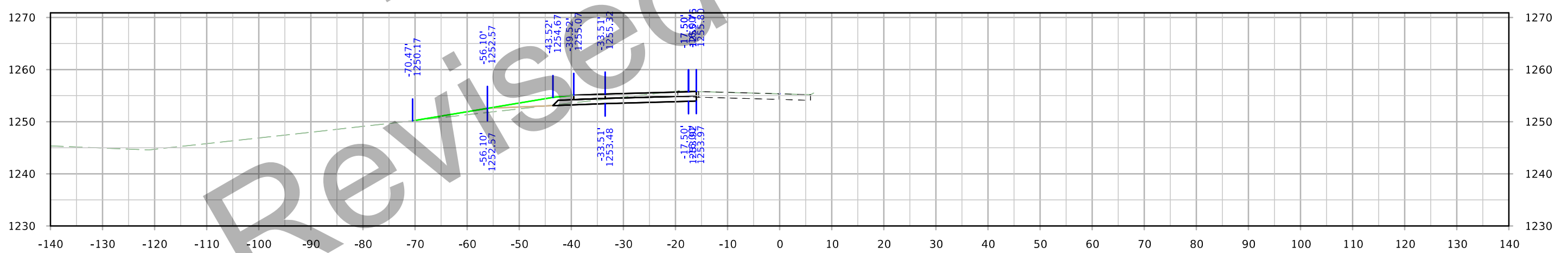
Ramp B



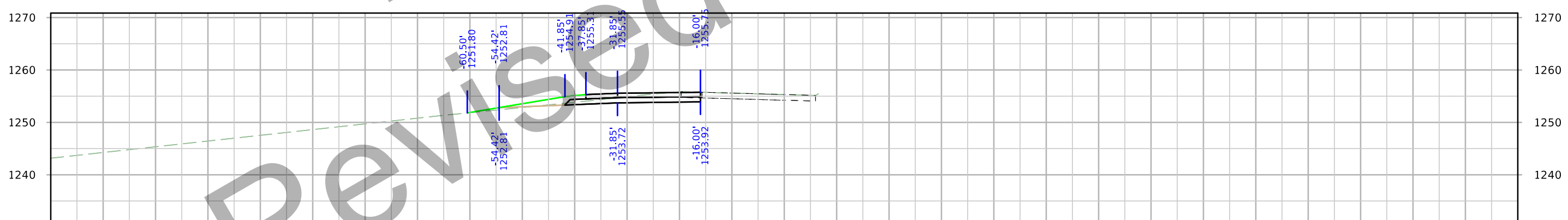
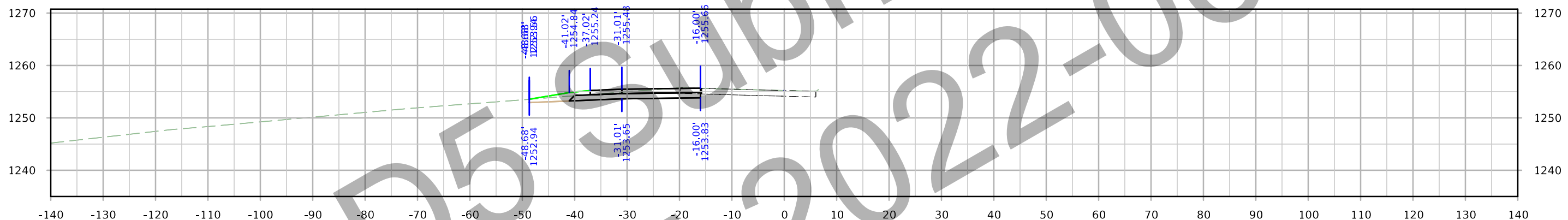
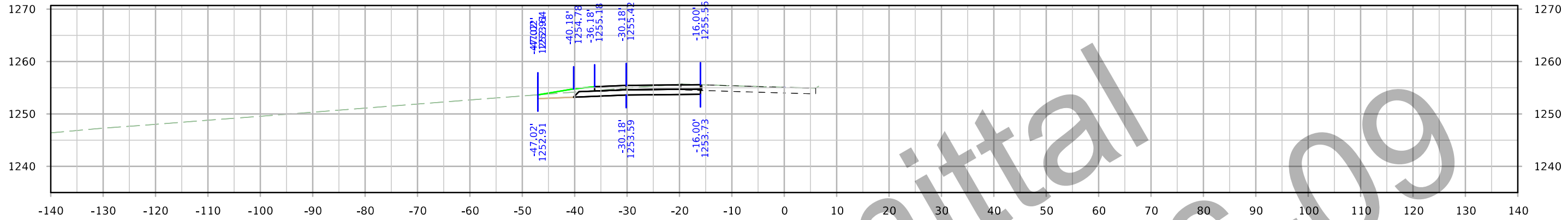
STA. 2541+70.09

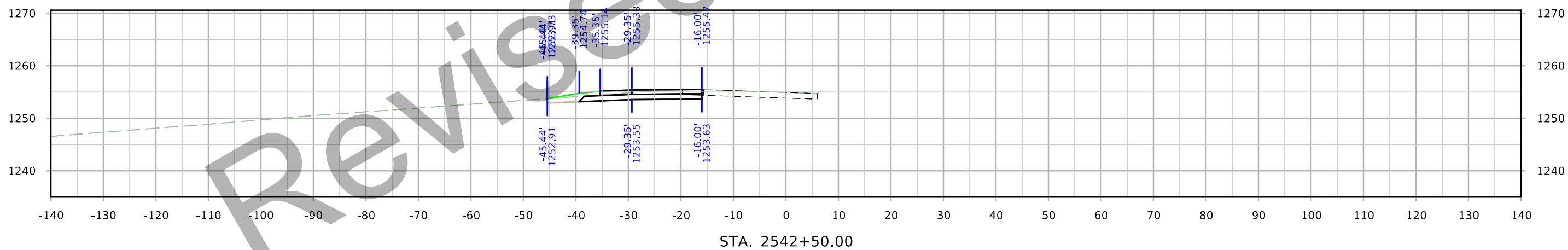
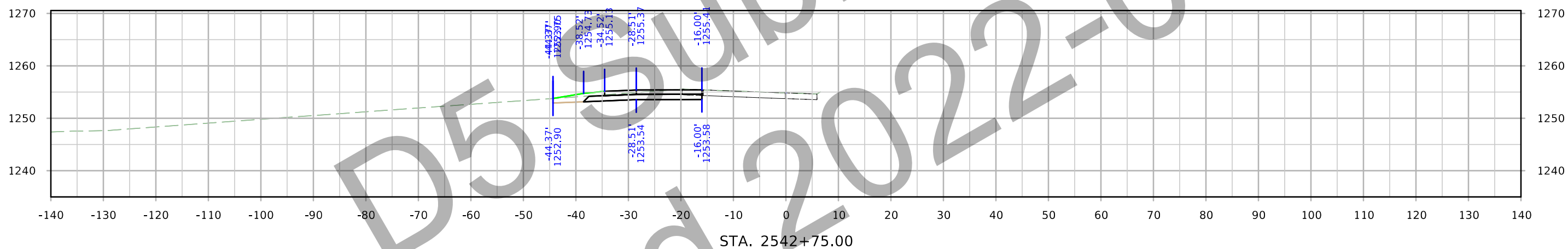
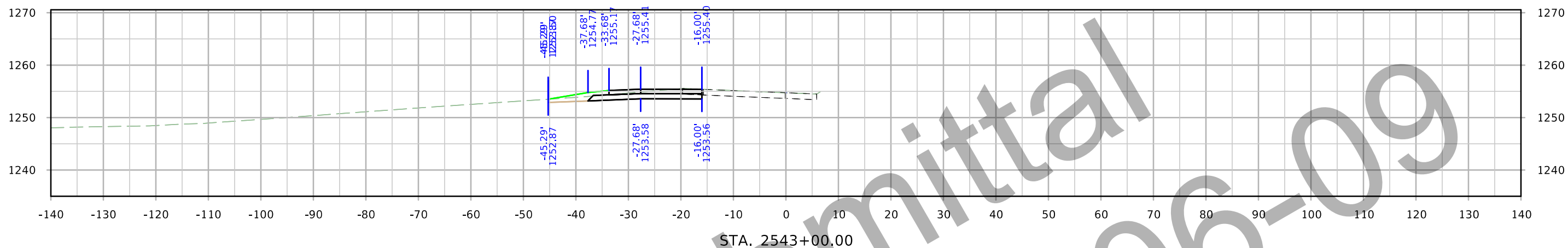


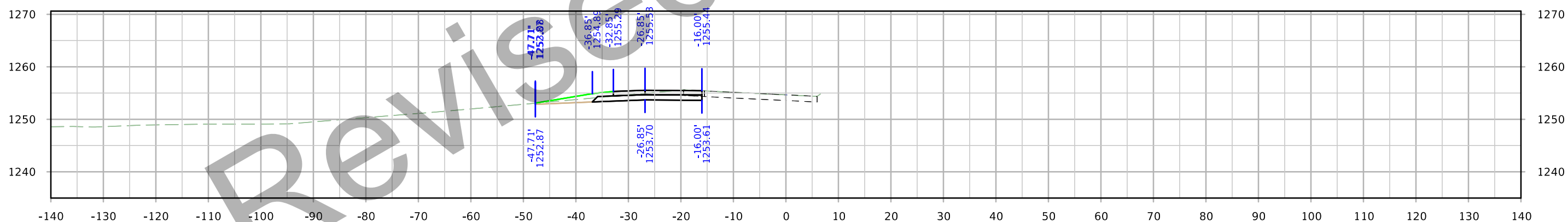
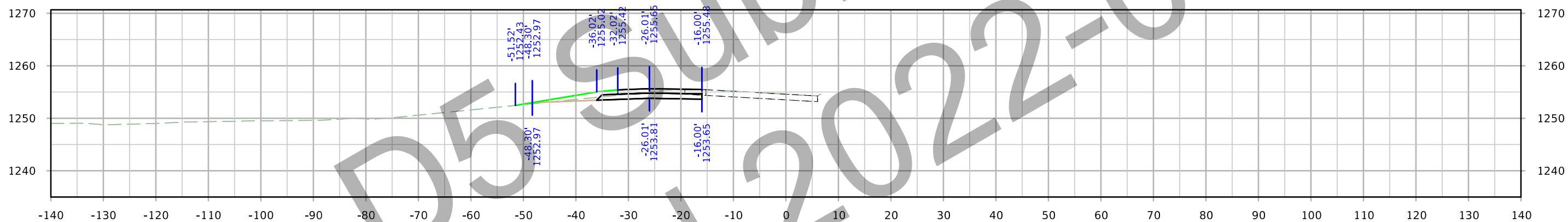
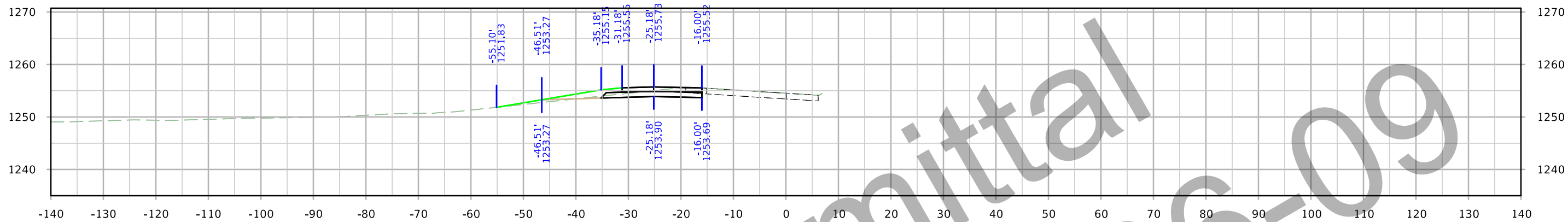
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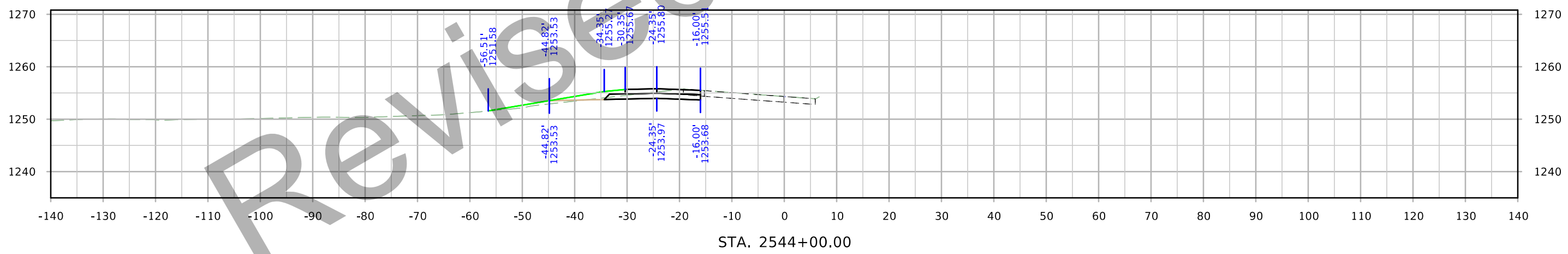
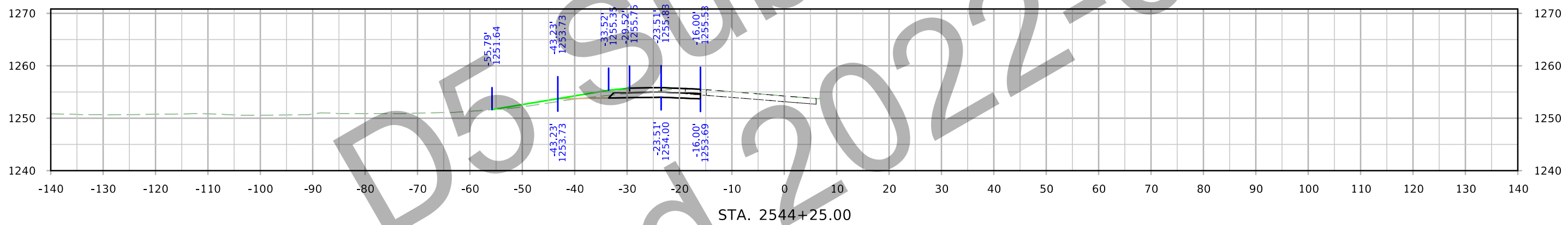
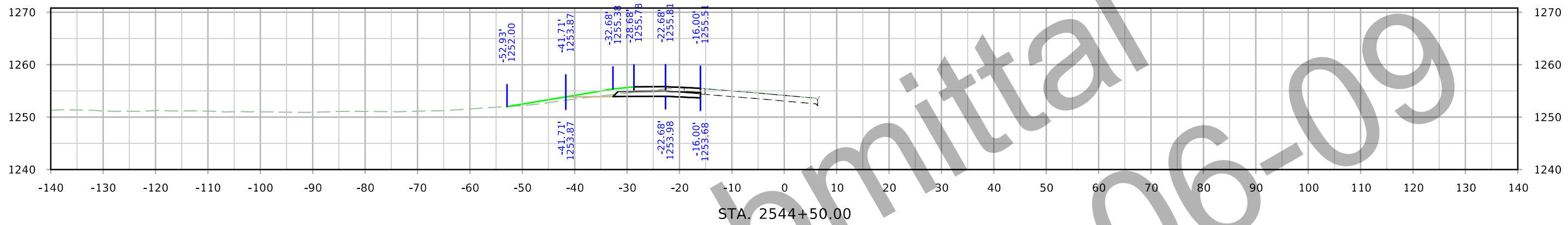


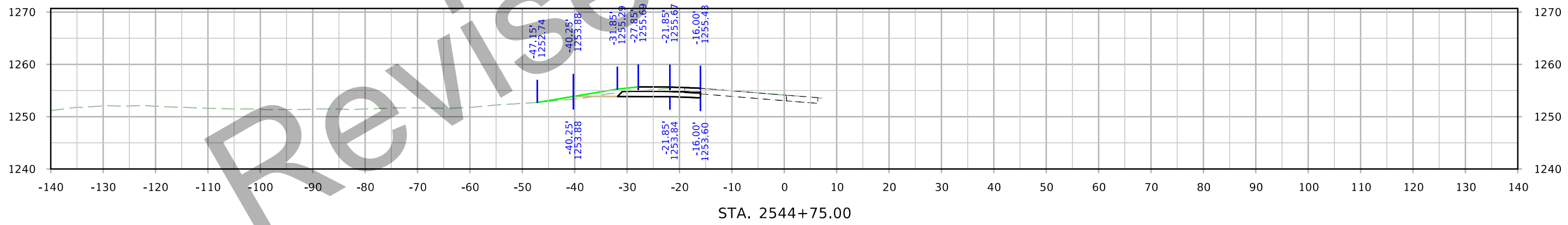
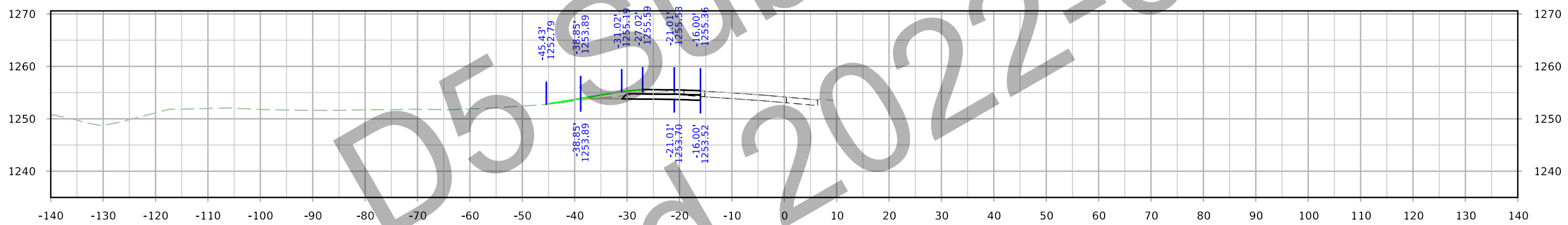
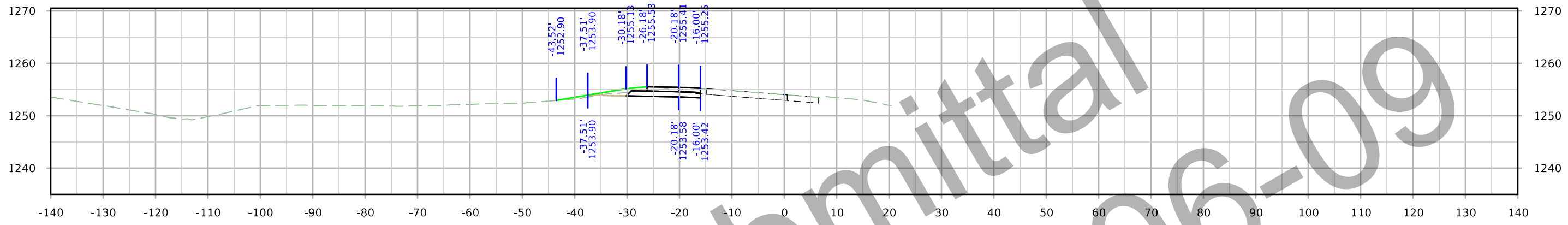
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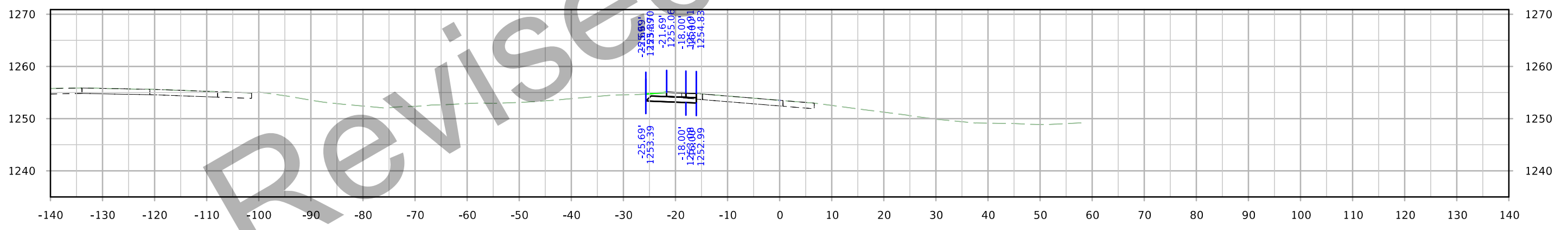
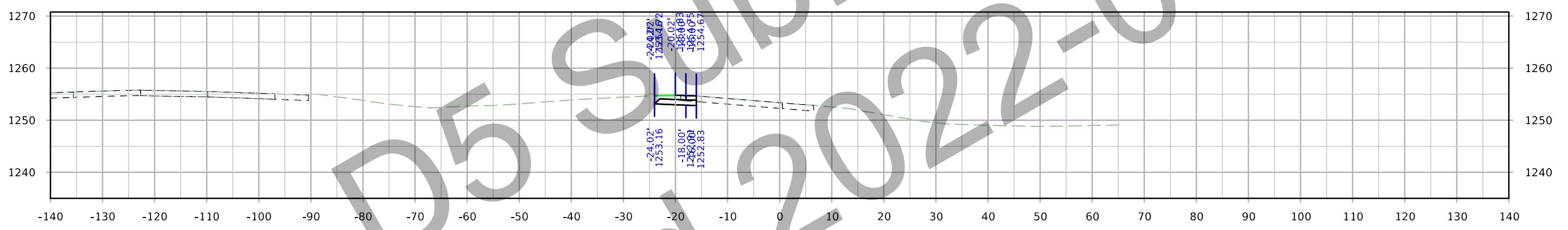
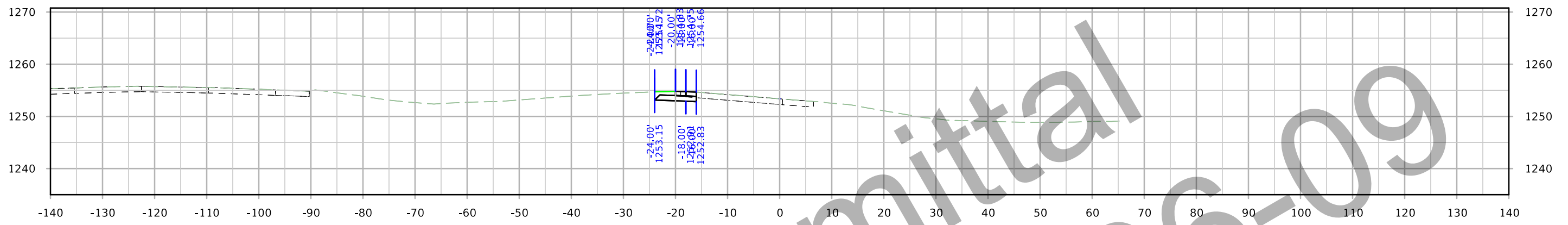




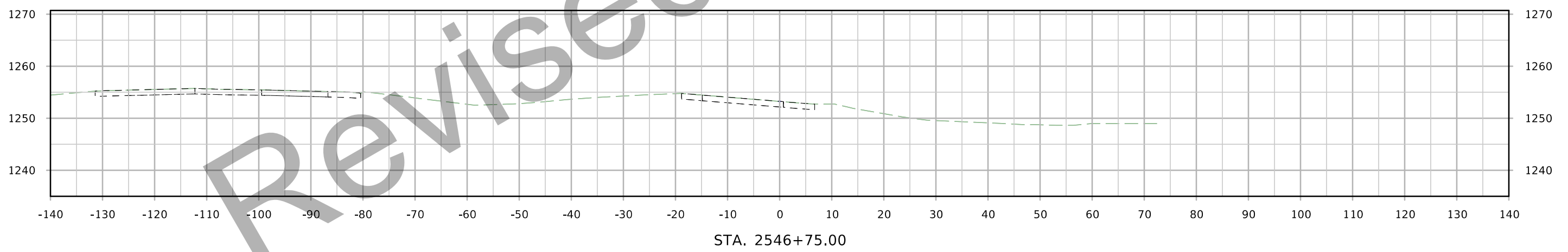




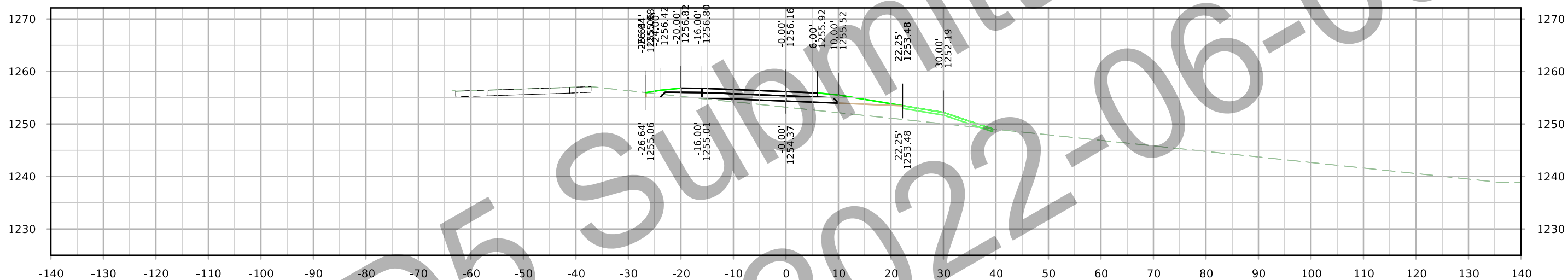




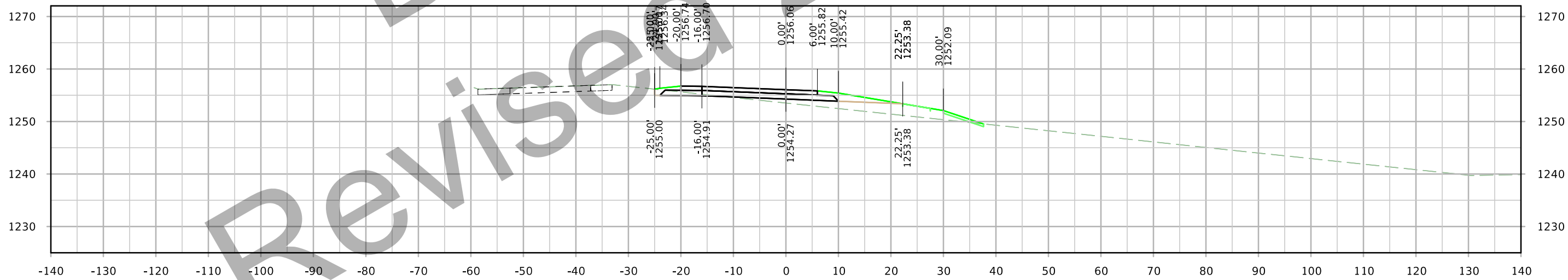
D5 Submittal
Revised 2022-06-09



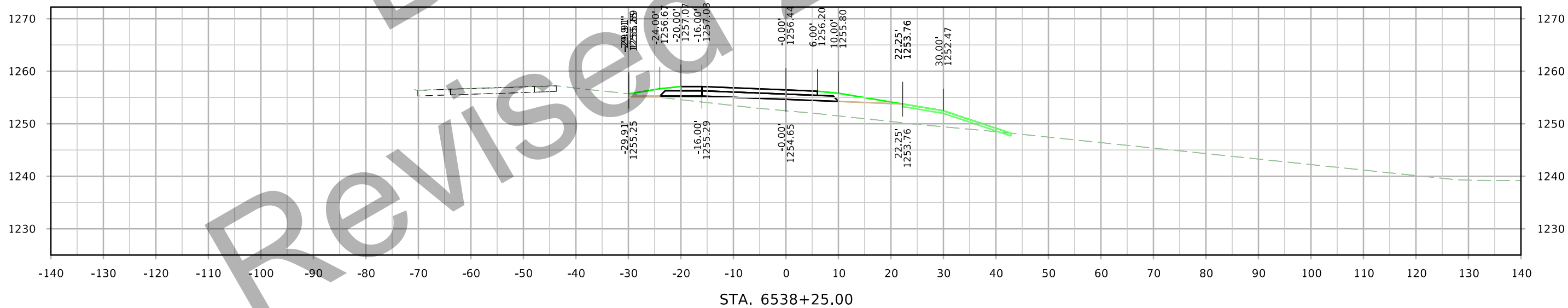
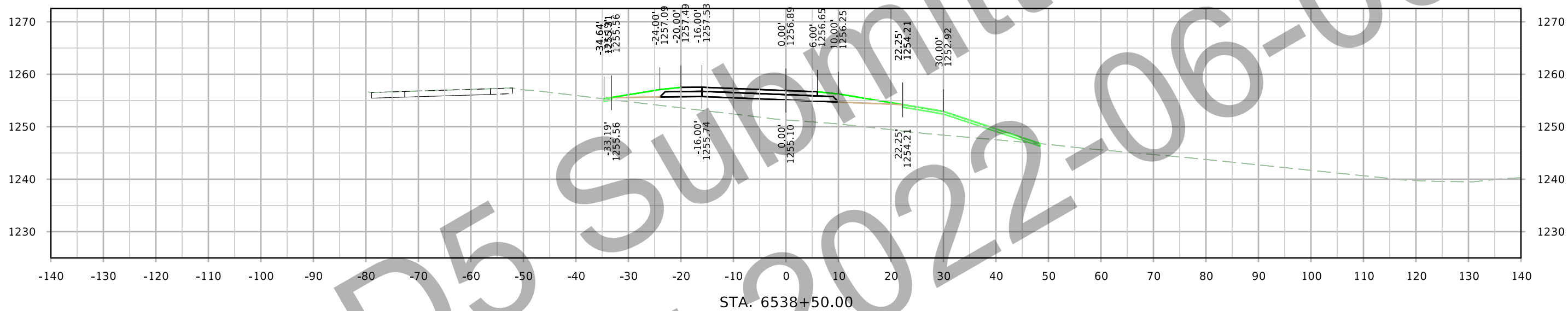
Ramp B2



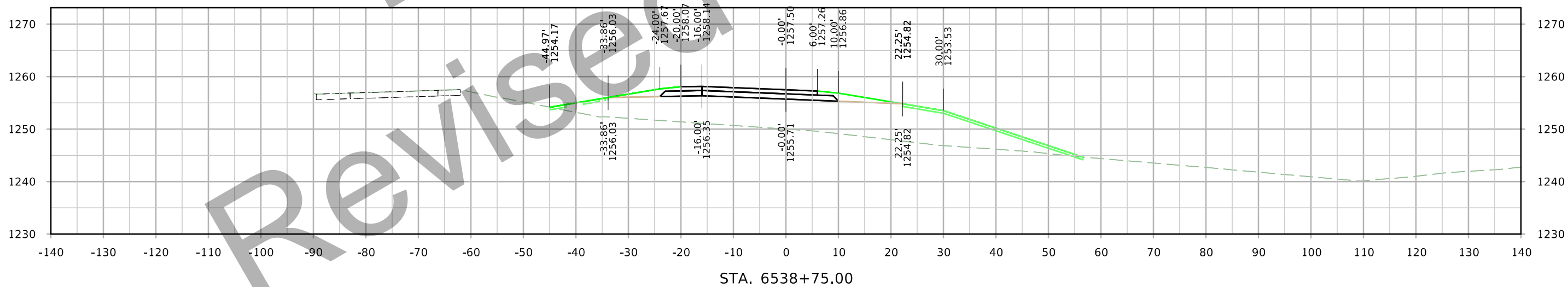
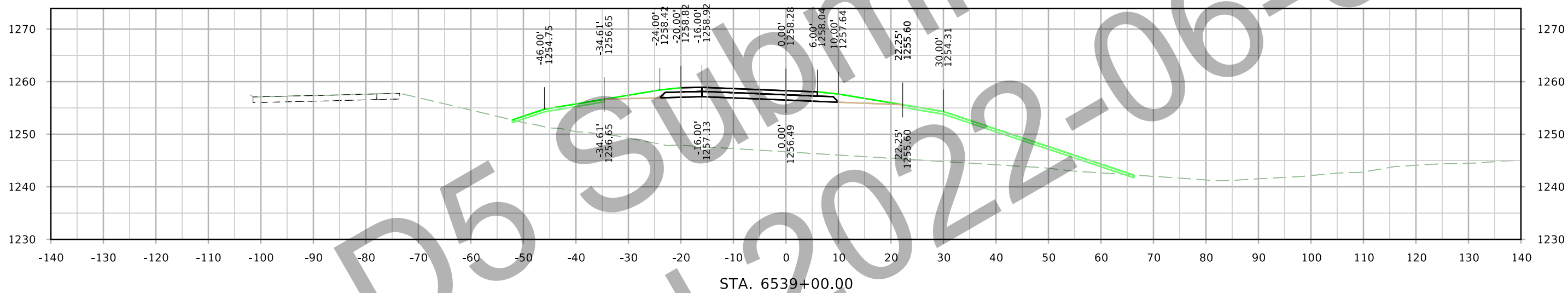
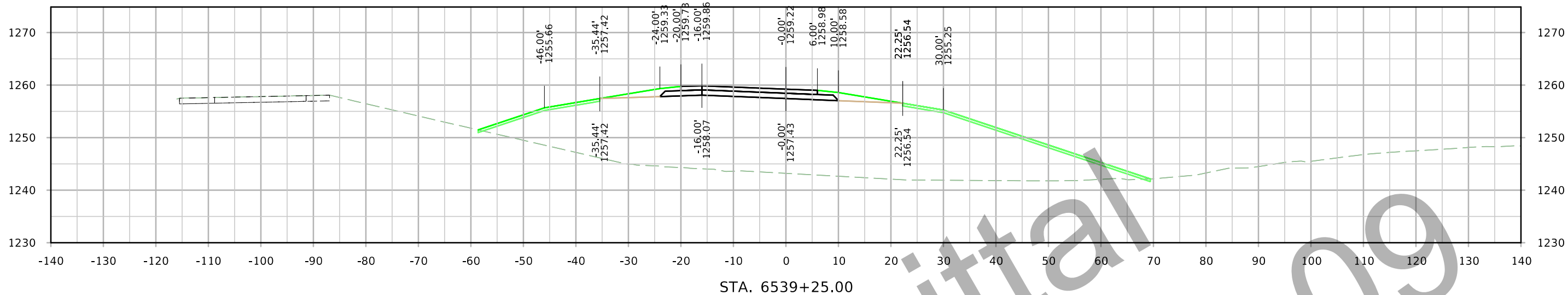
STA. 6538+00.00

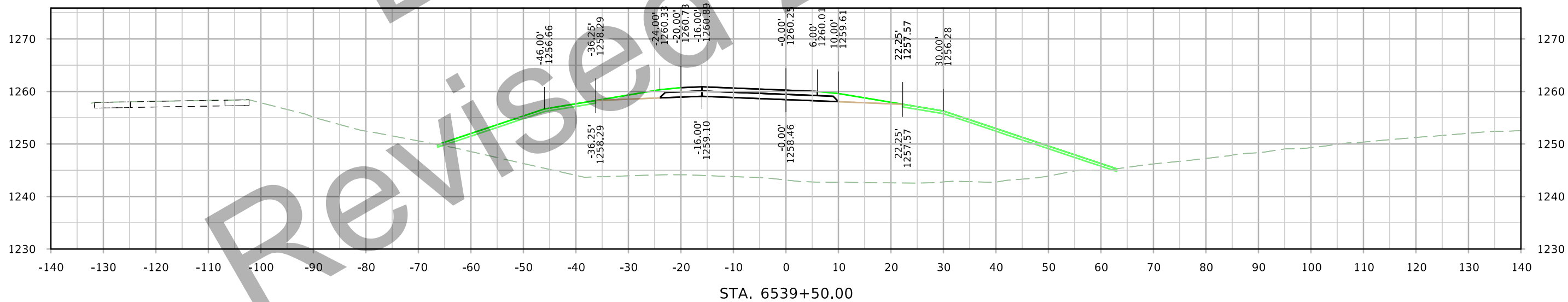
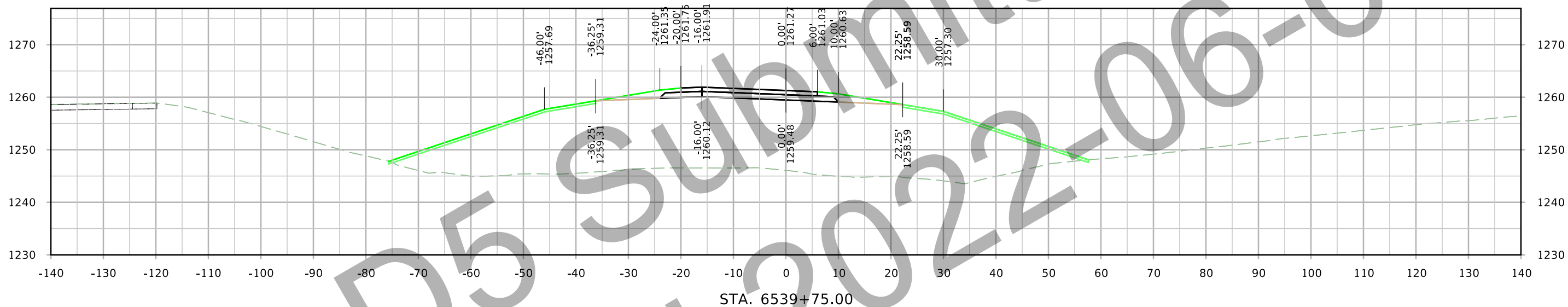


STA. 6537+82.29

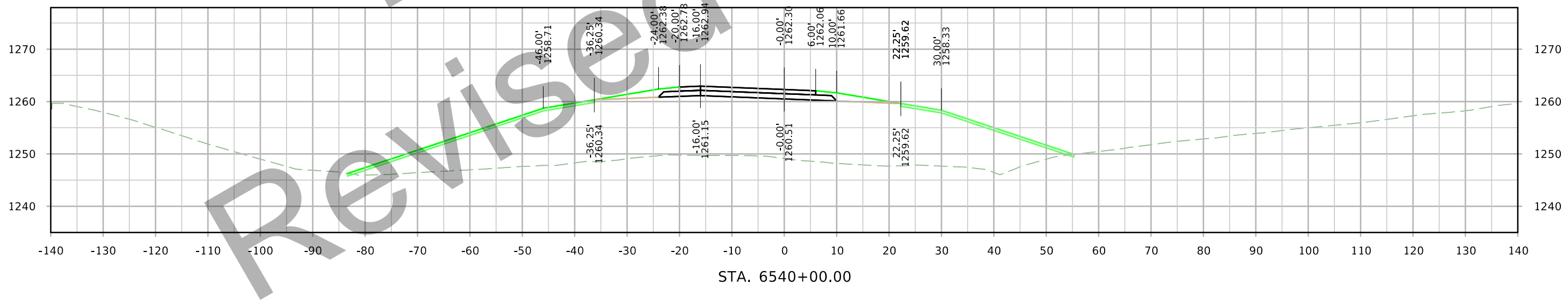
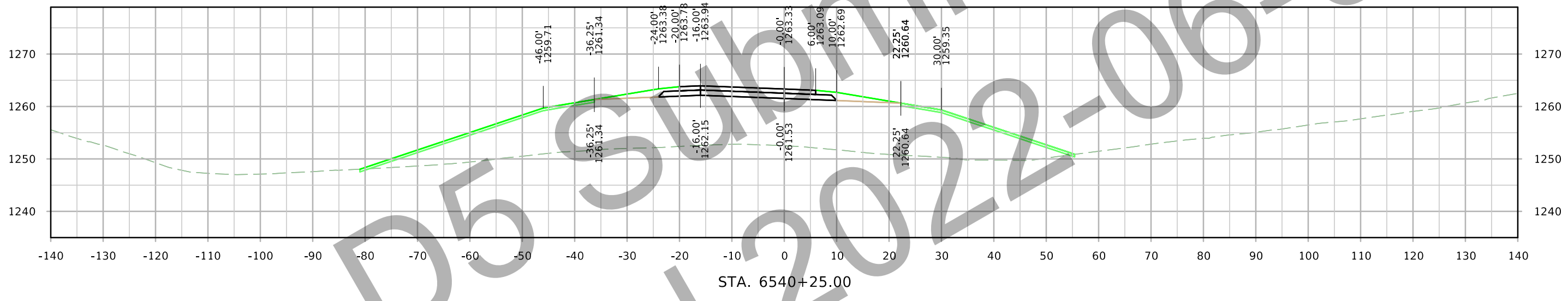
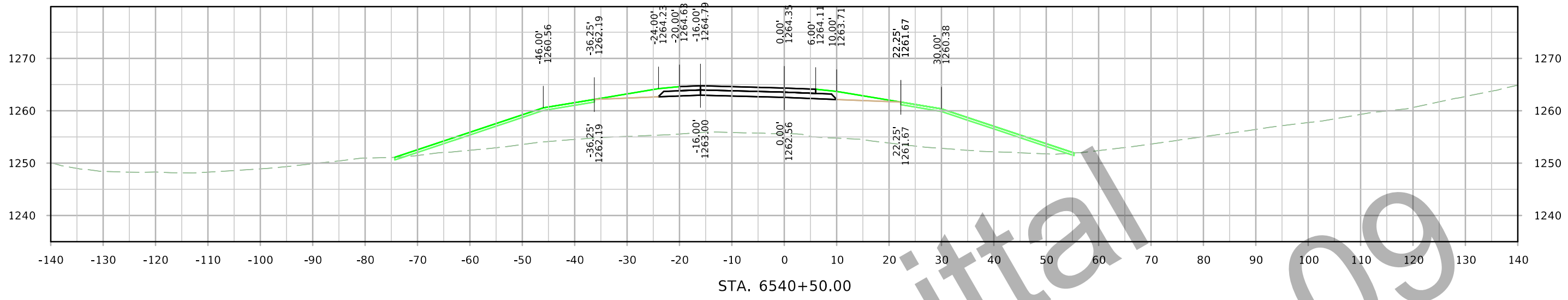


Ramp B2

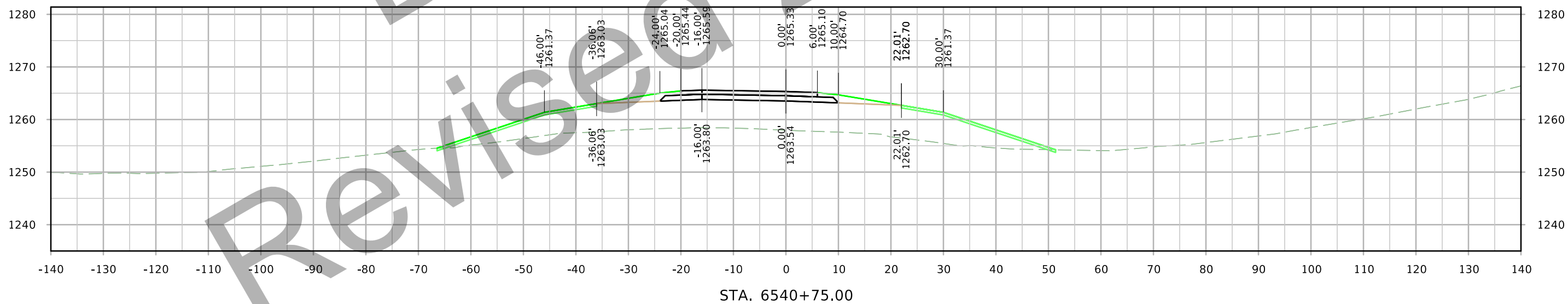
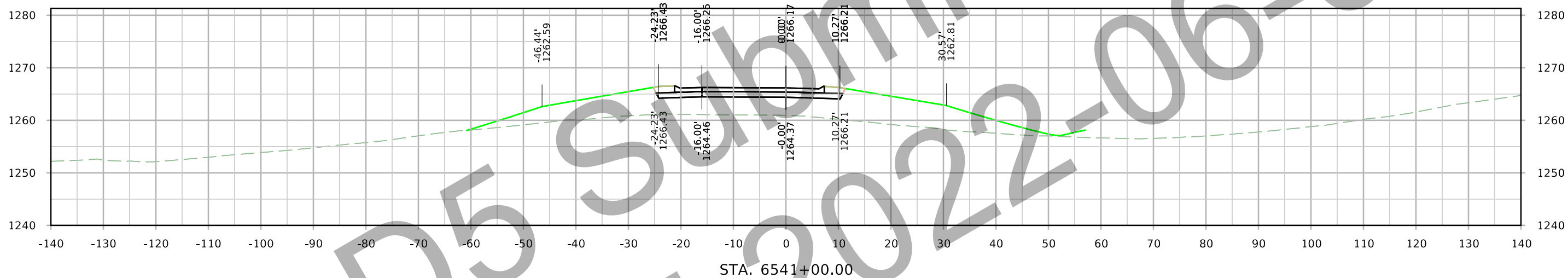
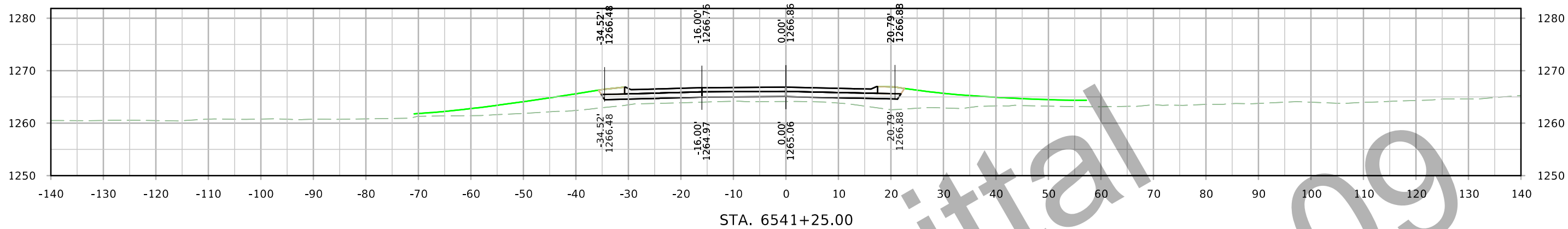




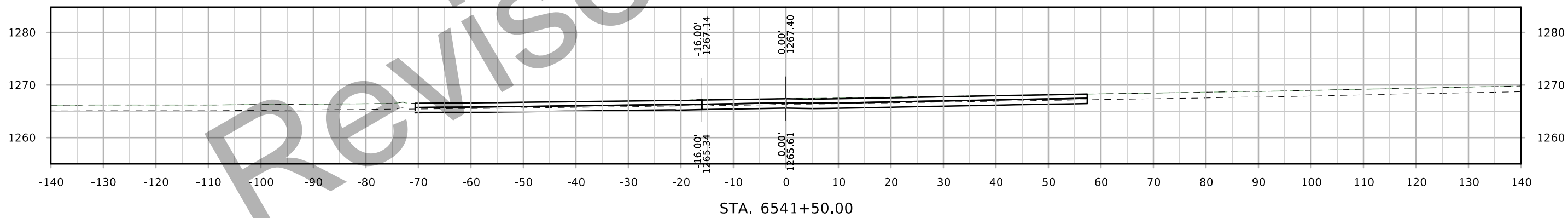
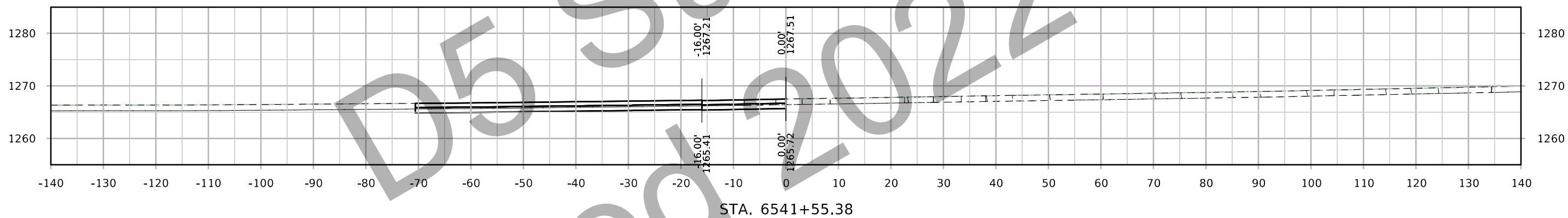
Ramp B2



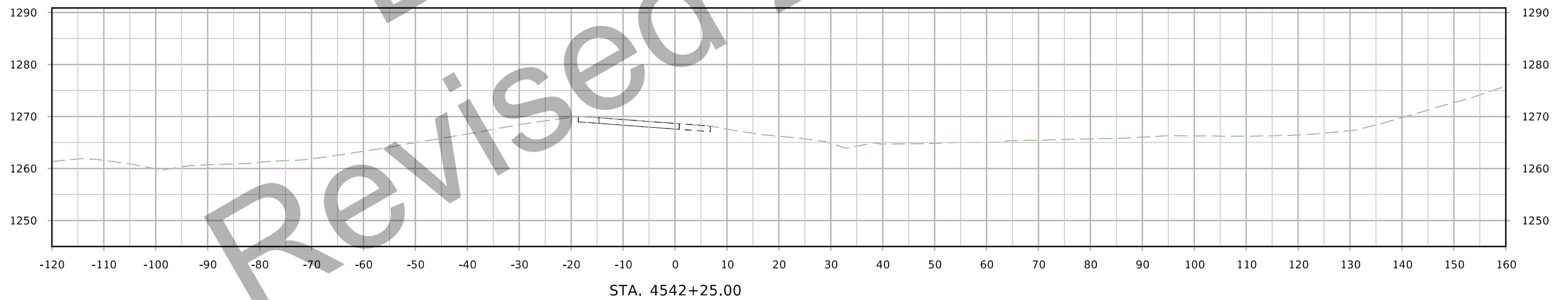
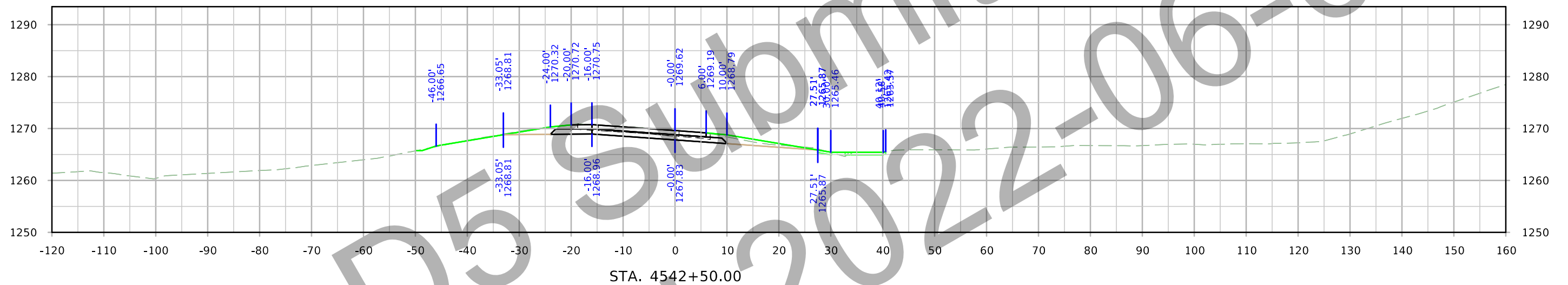
Ramp B2



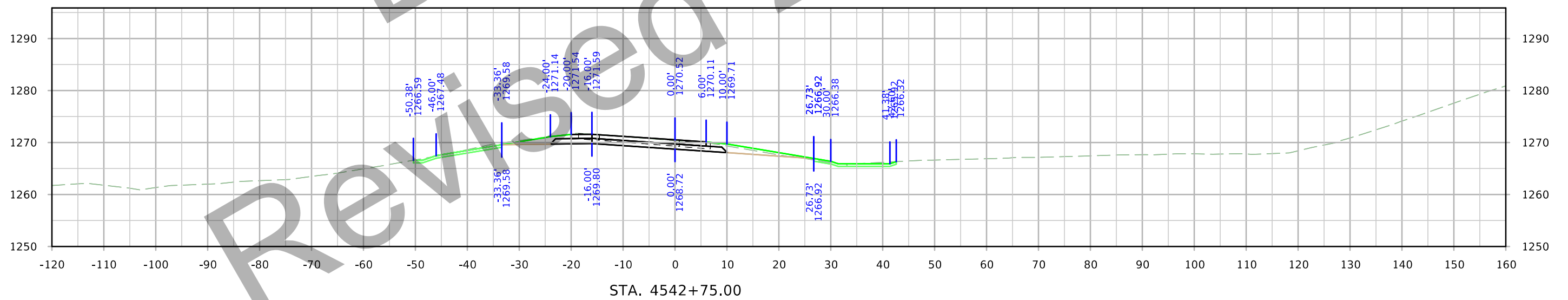
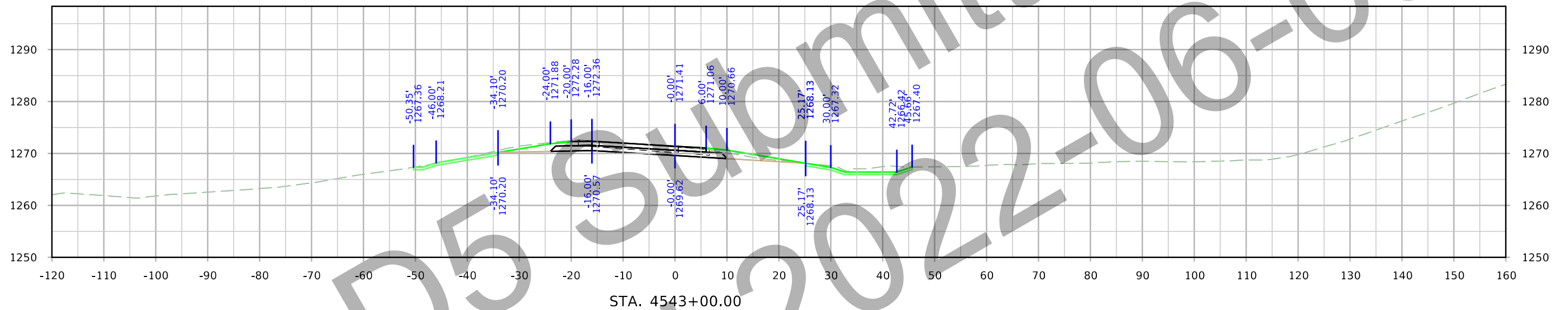
Revised 2022-06-09
D5 Submittal



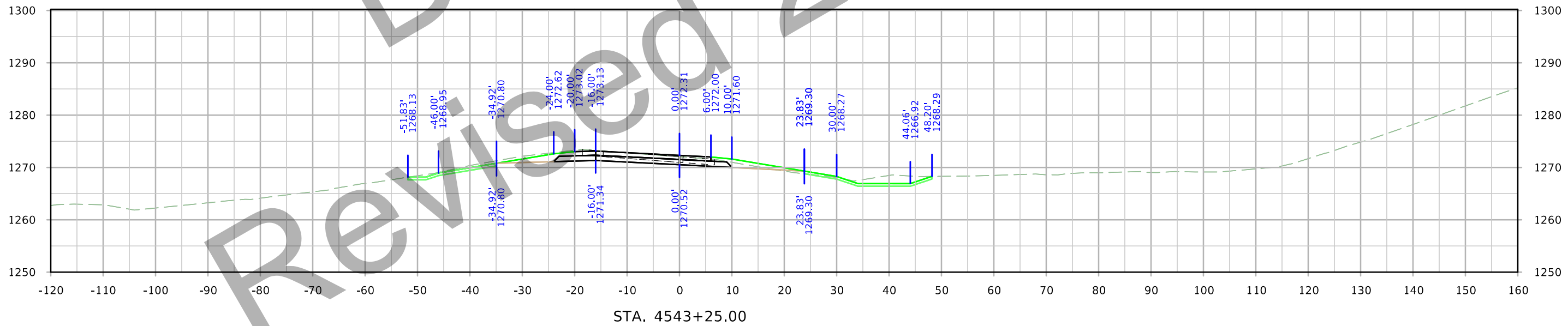
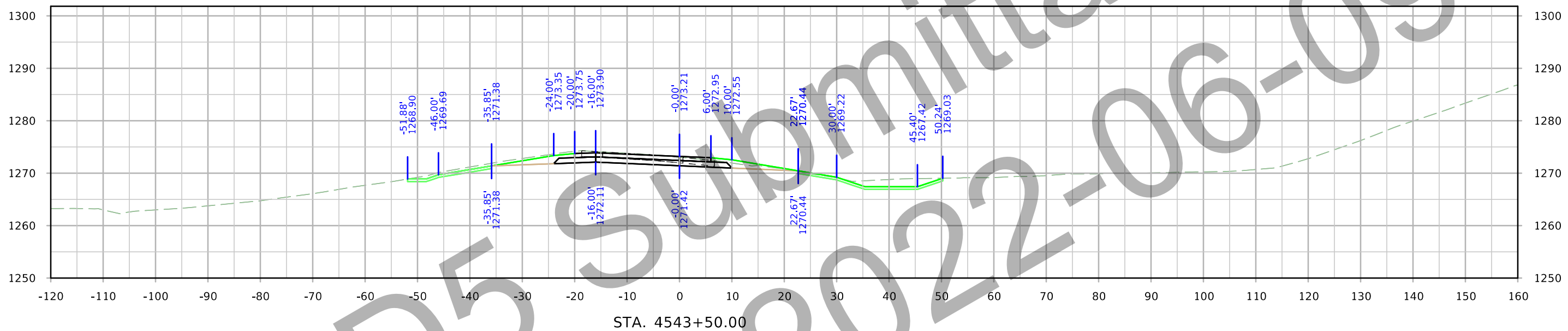
Ramp D



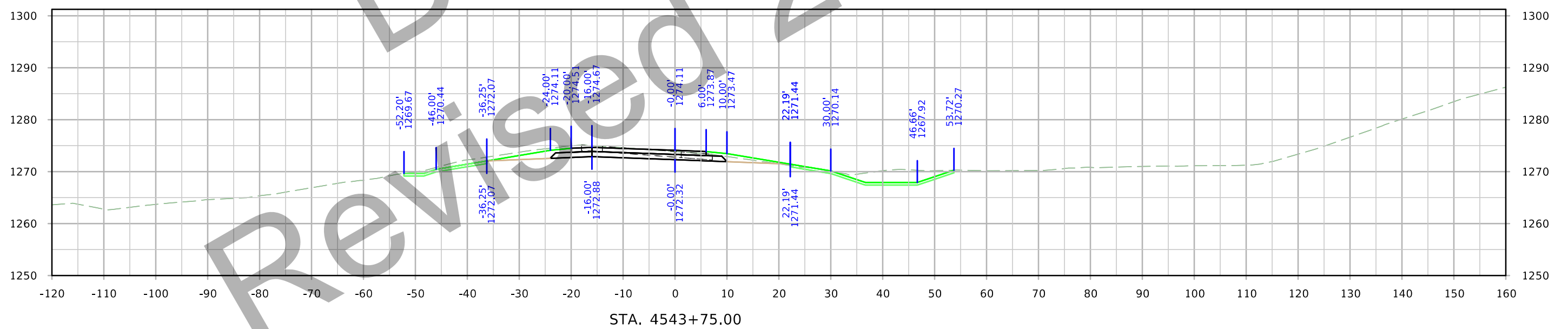
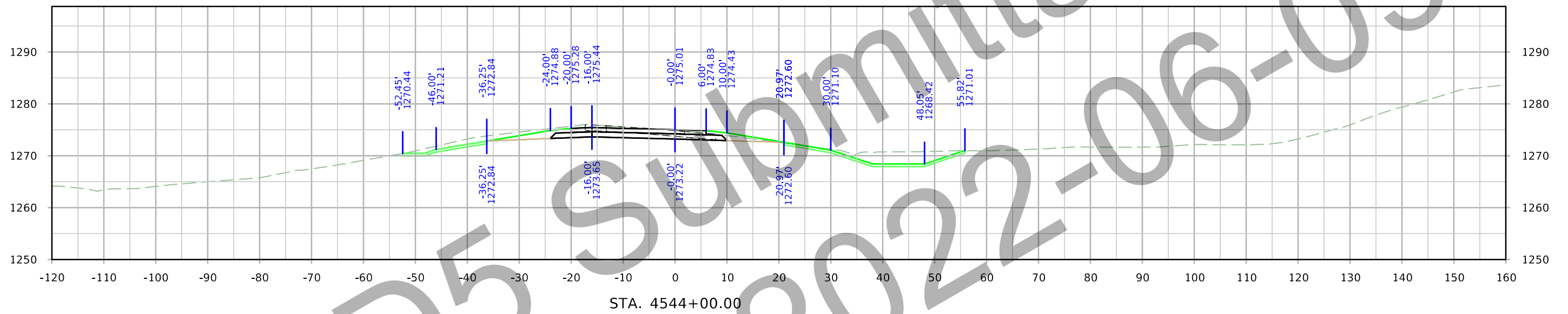
Ramp D



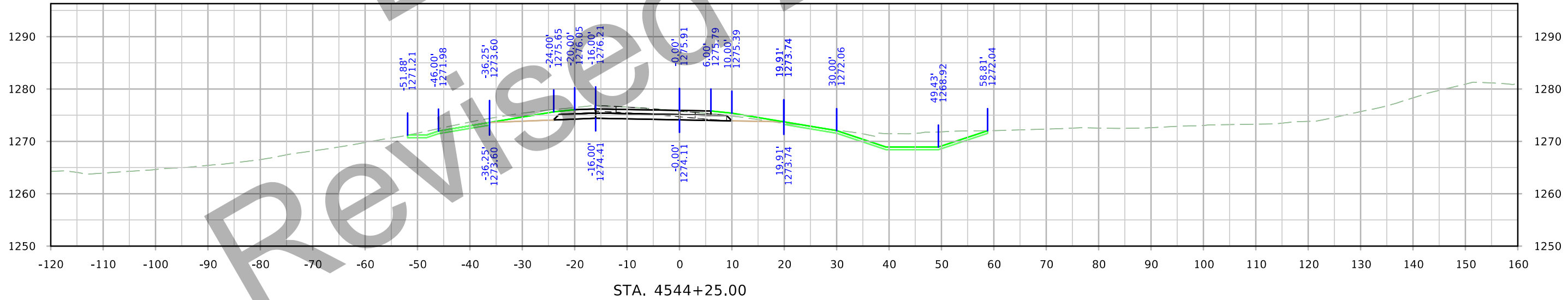
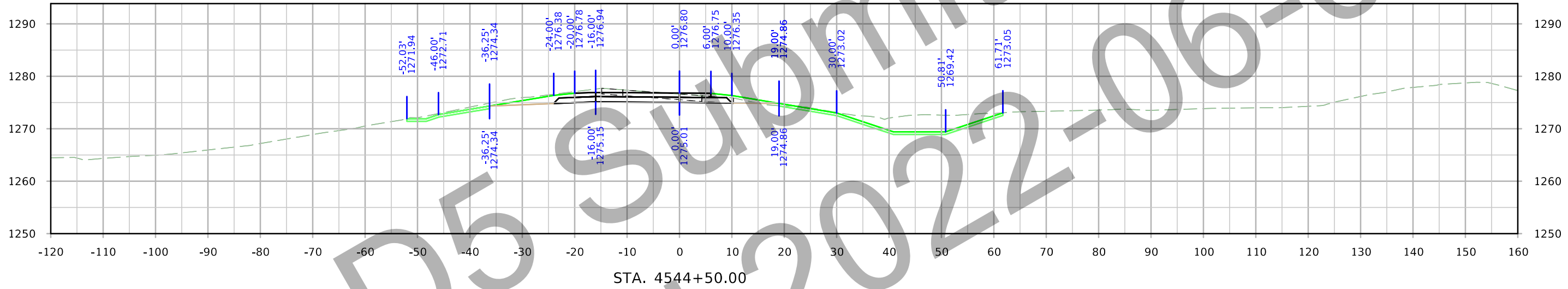
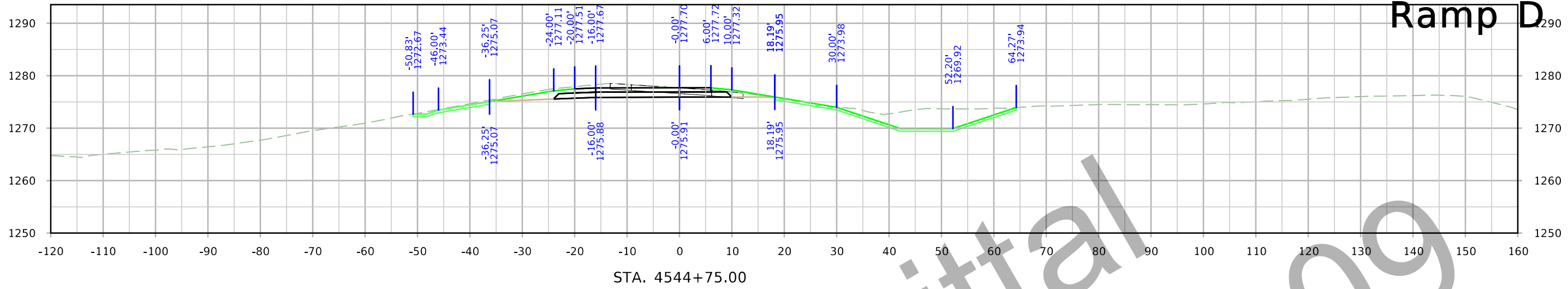
Ramp D



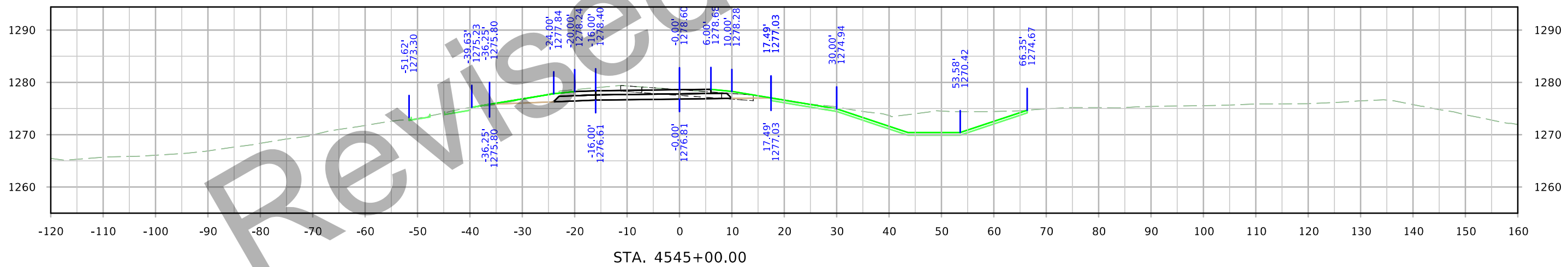
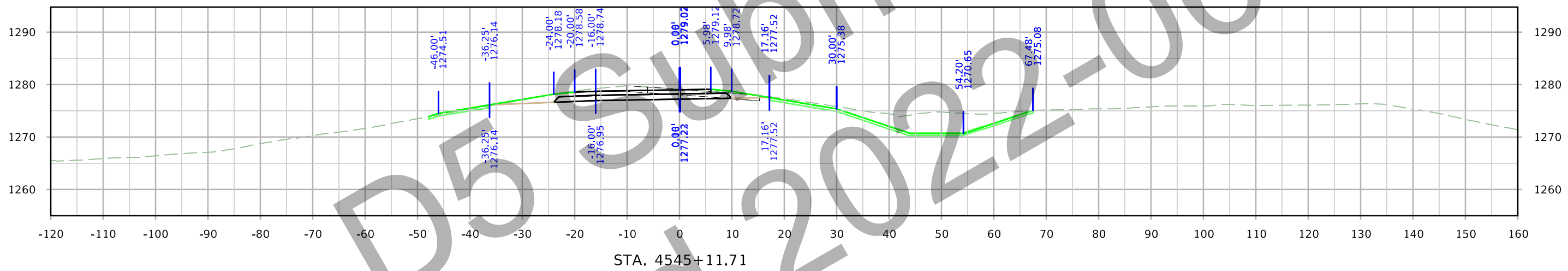
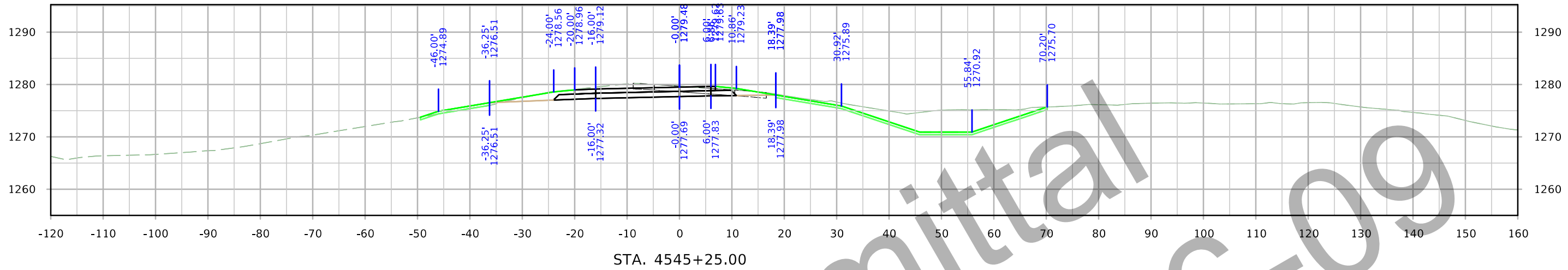
Ramp D



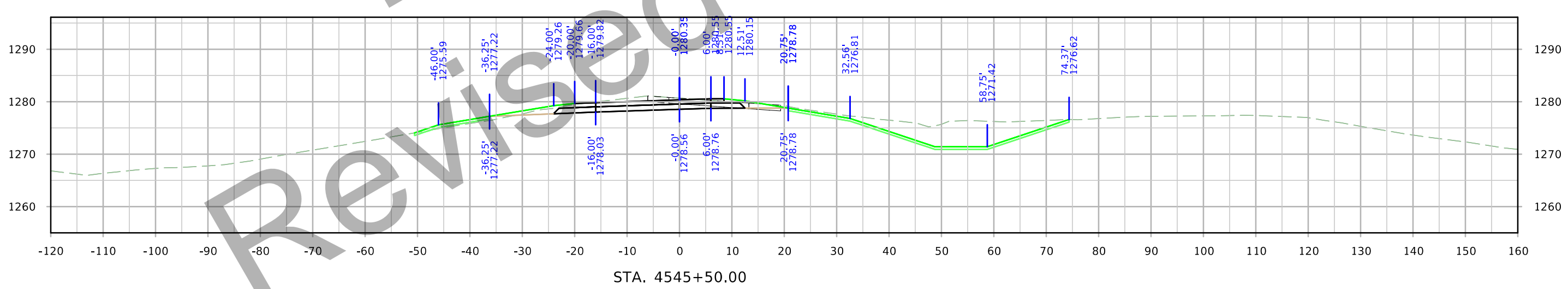
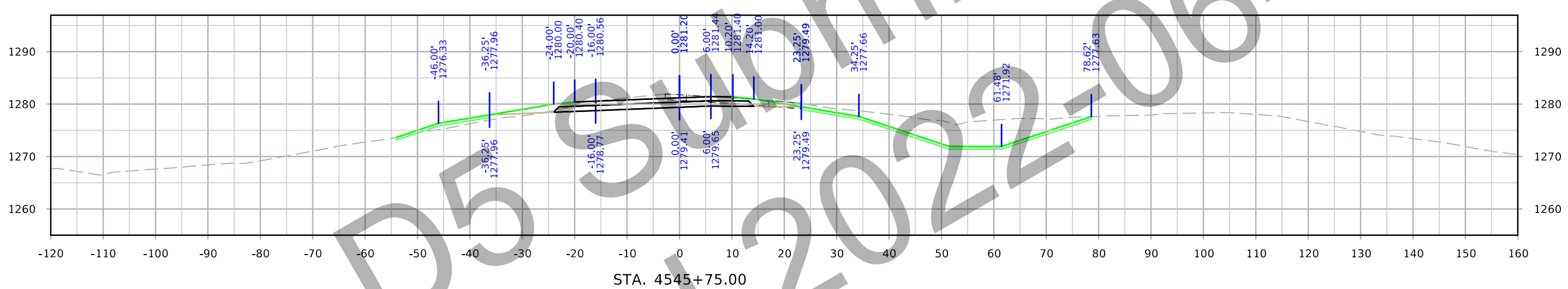
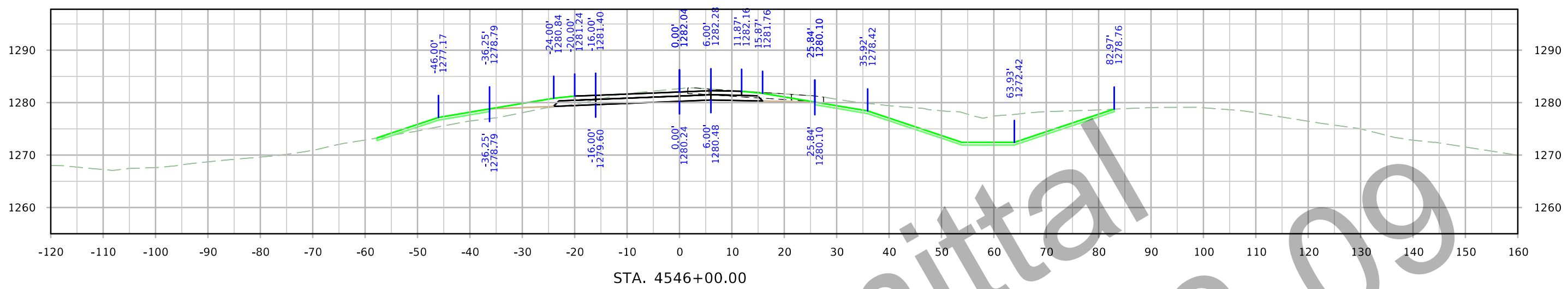
Ramp D

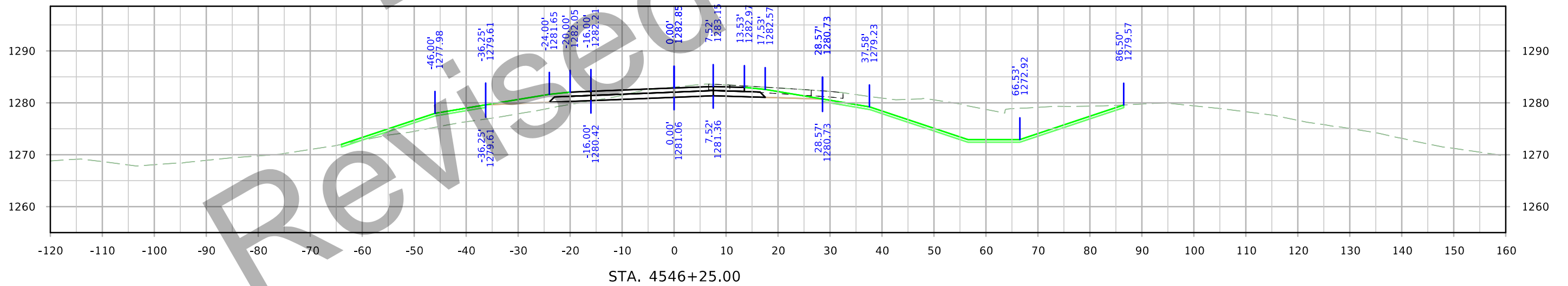
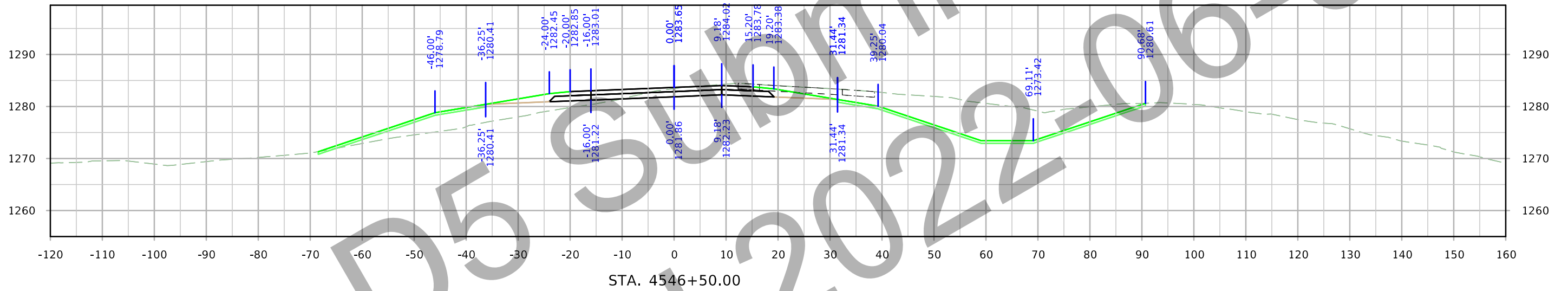
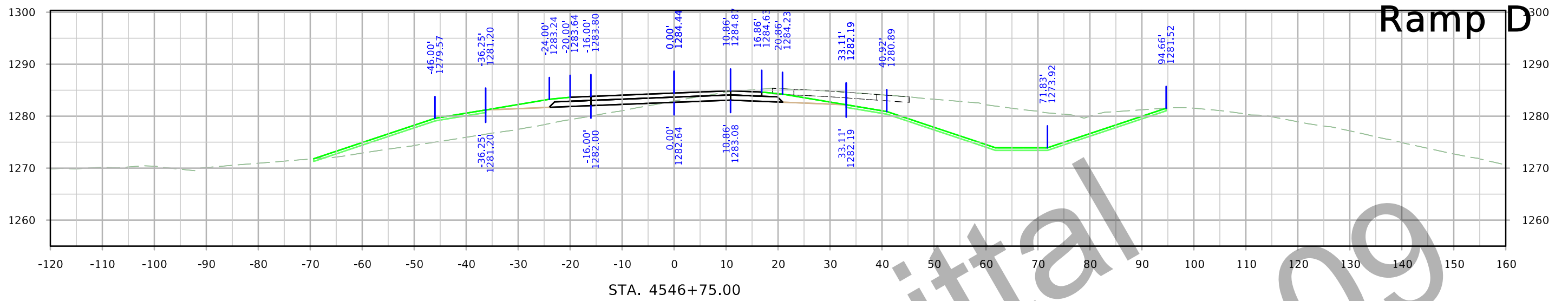


Ramp D

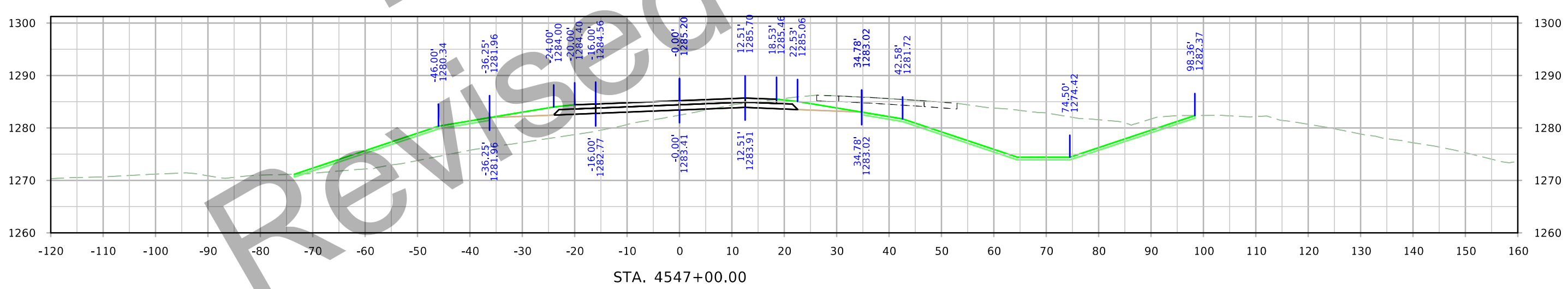
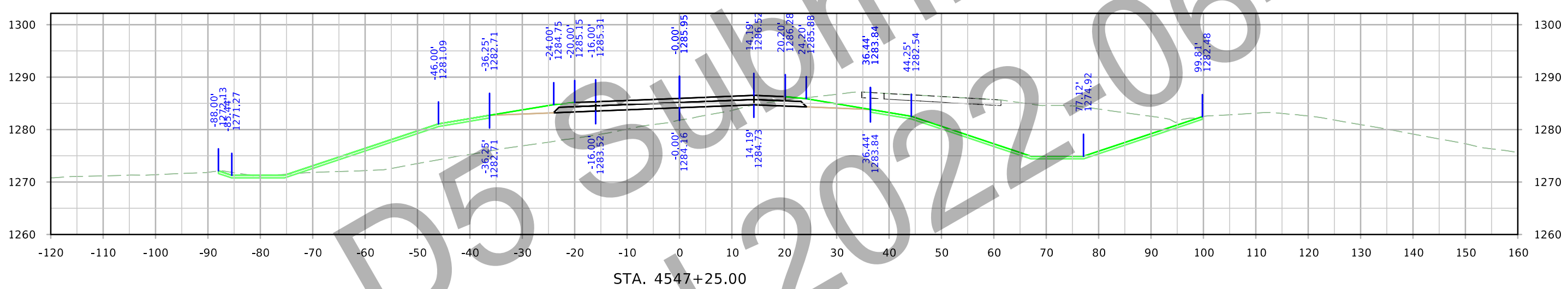
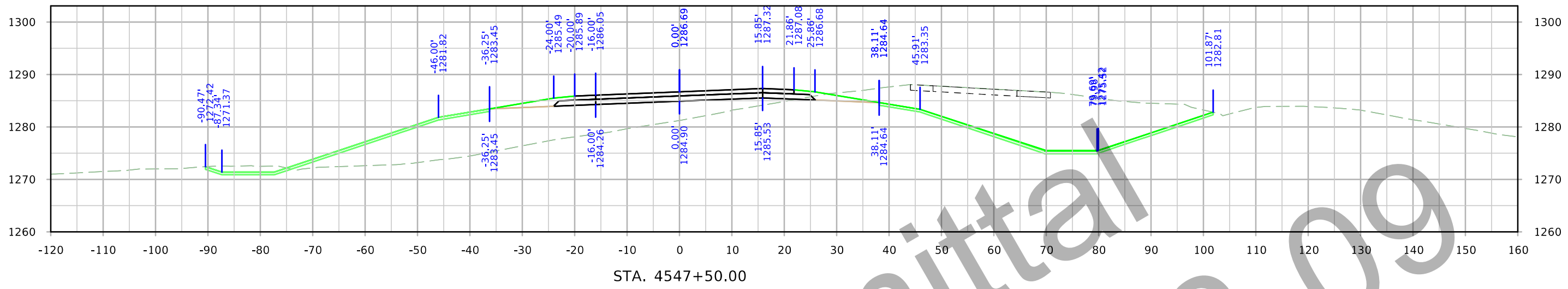


Ramp D

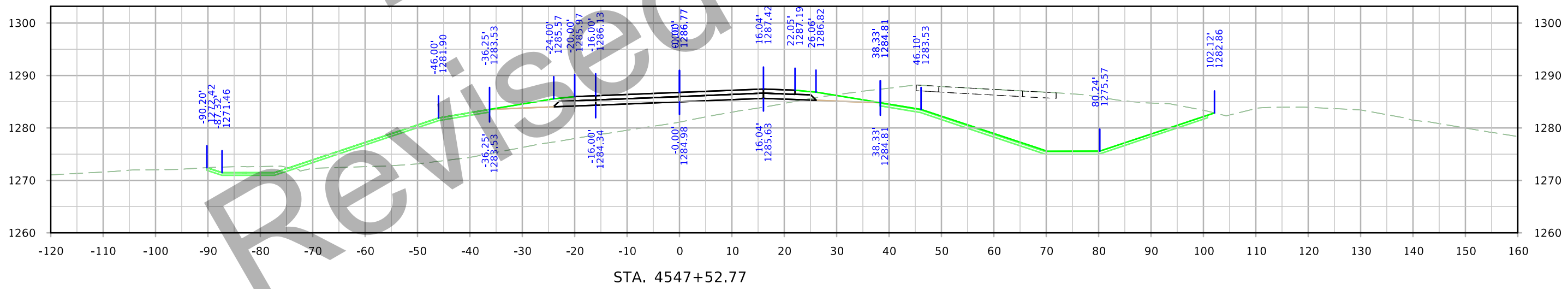
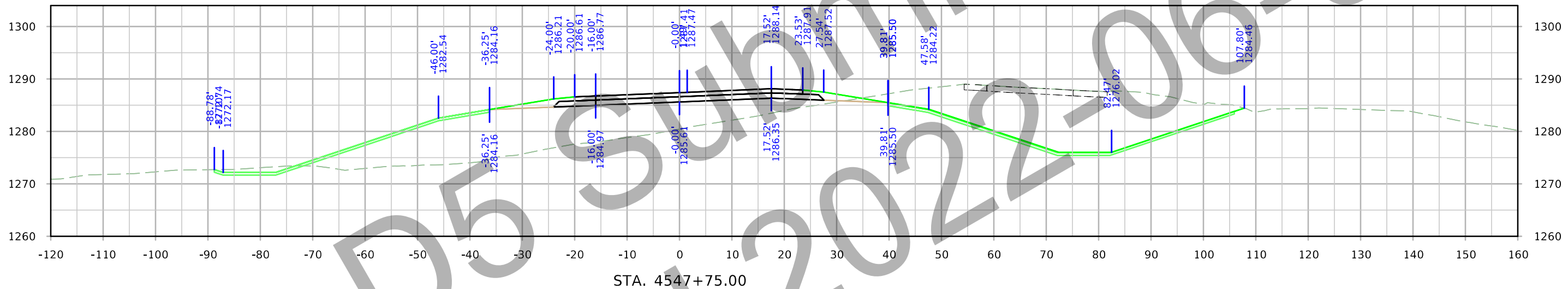
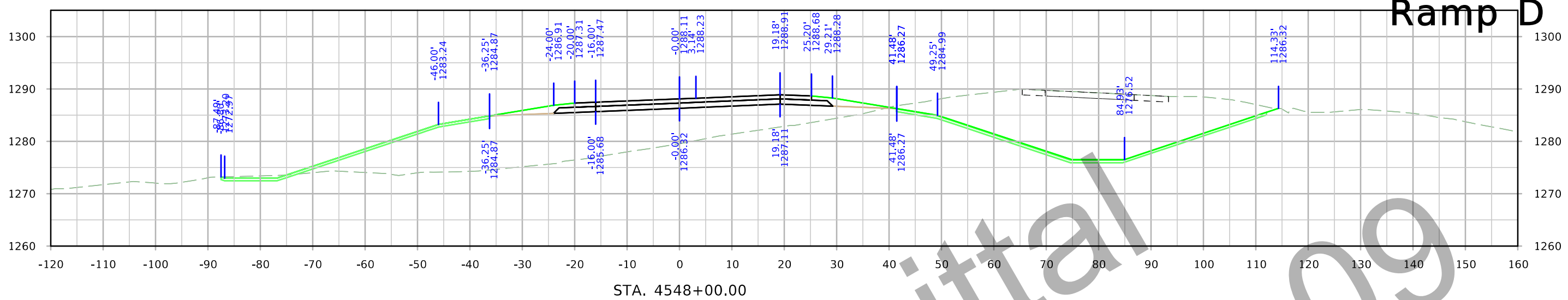




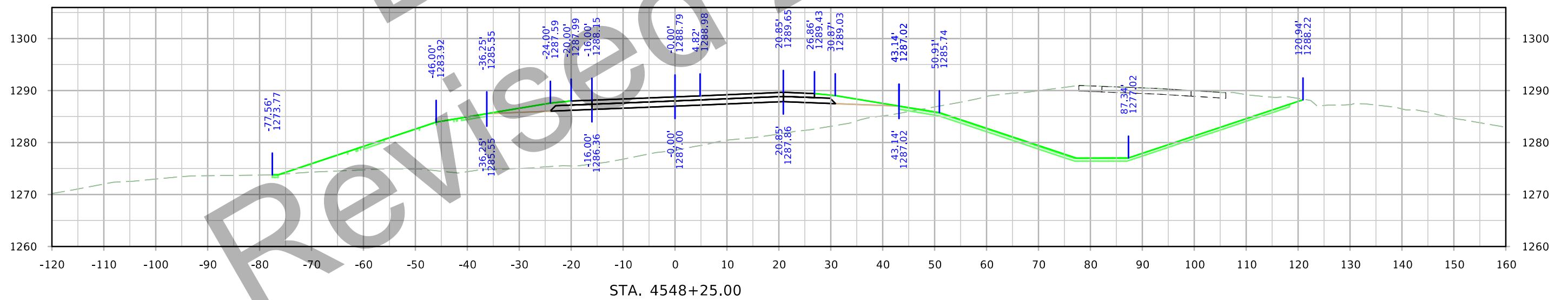
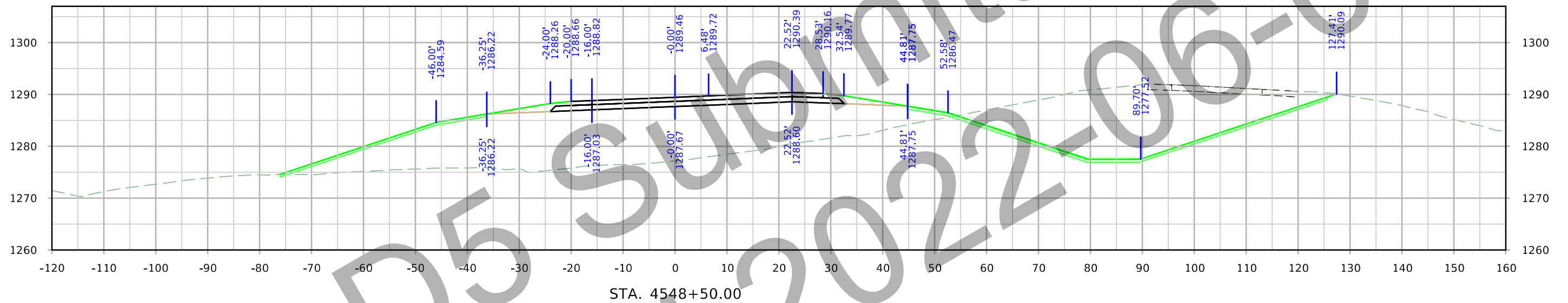
Ramp D



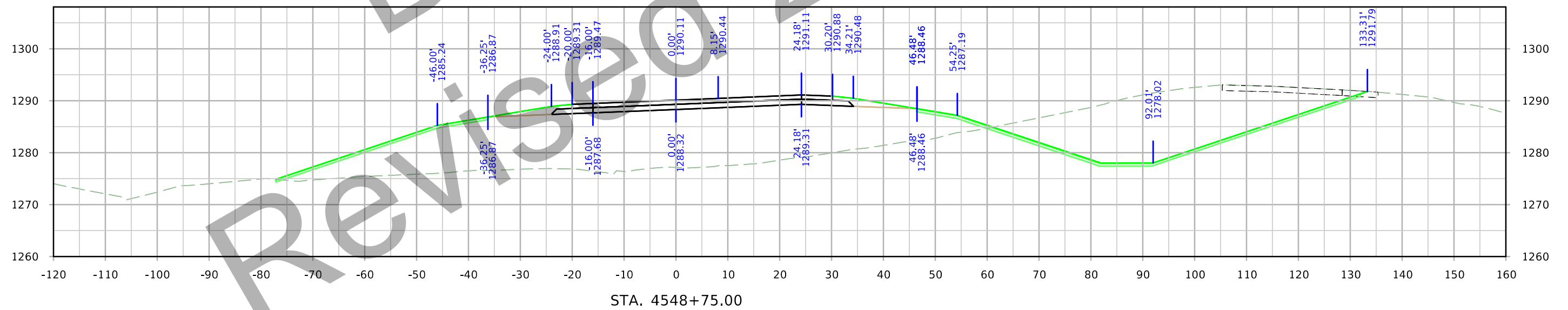
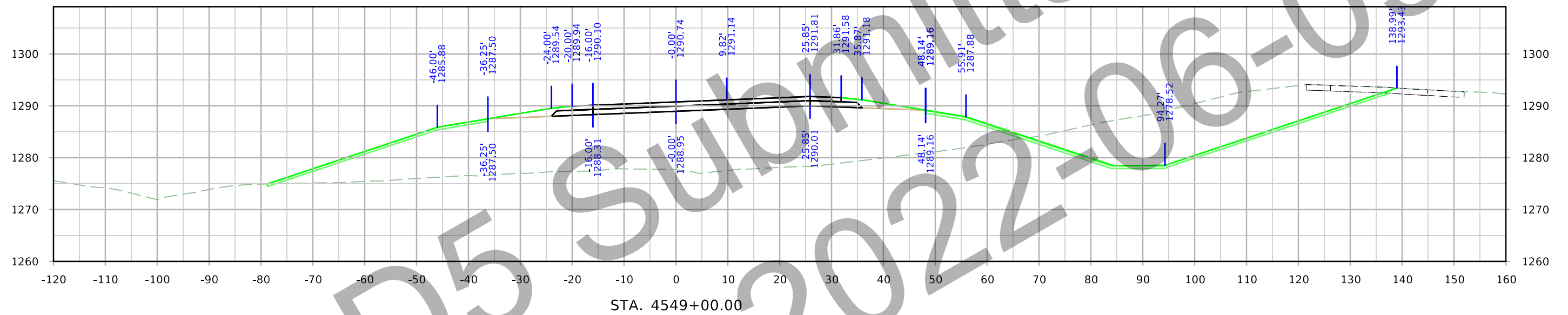
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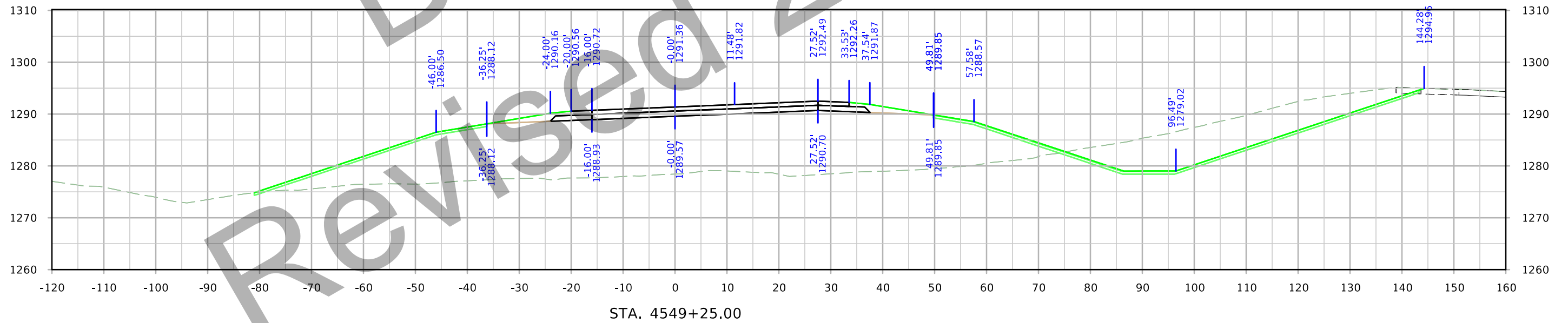
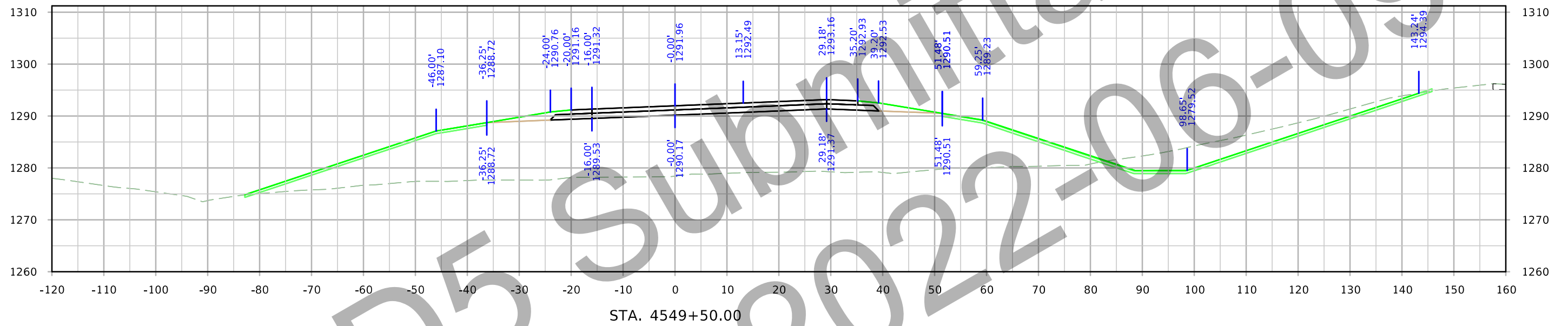
Ramp D



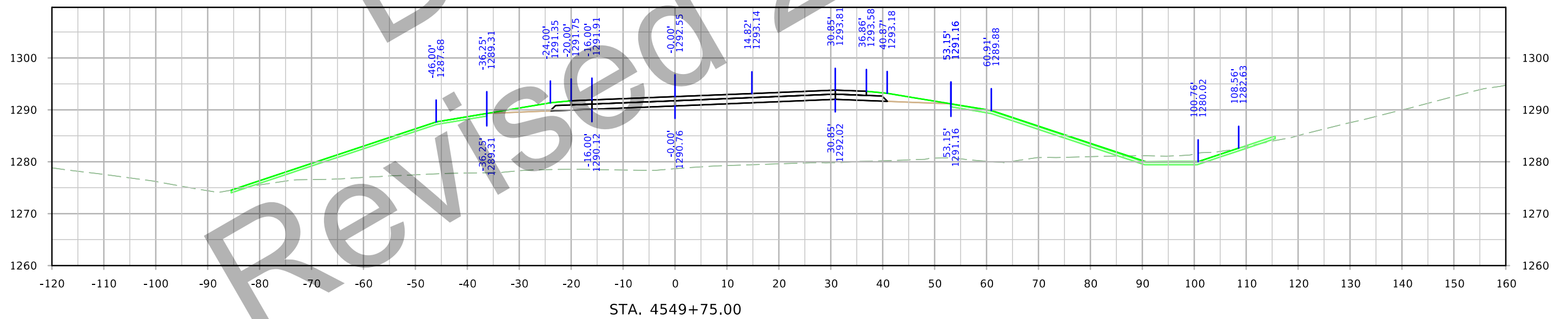
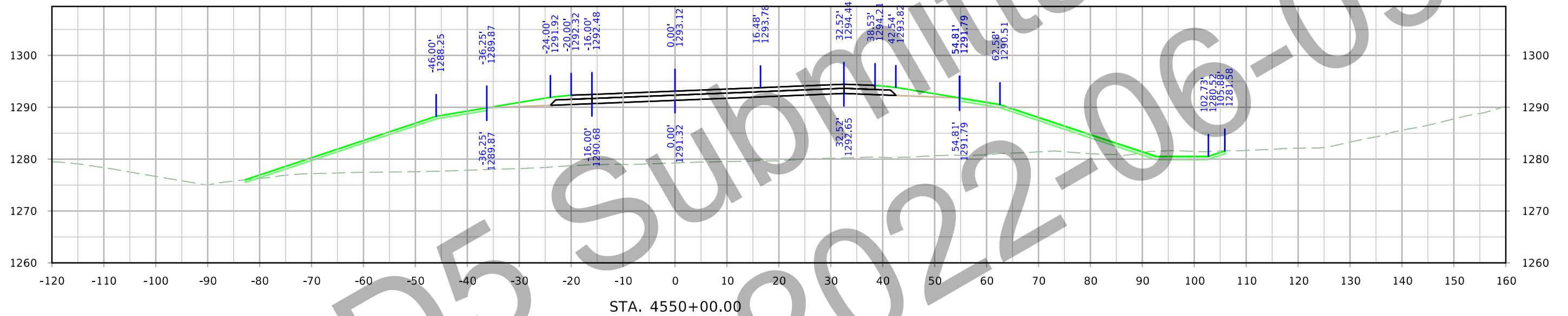
Ramp D



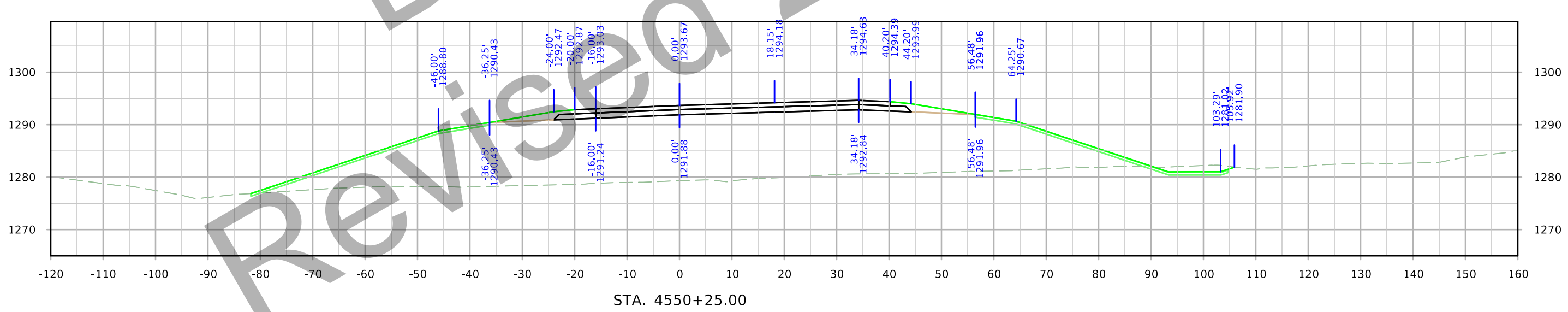
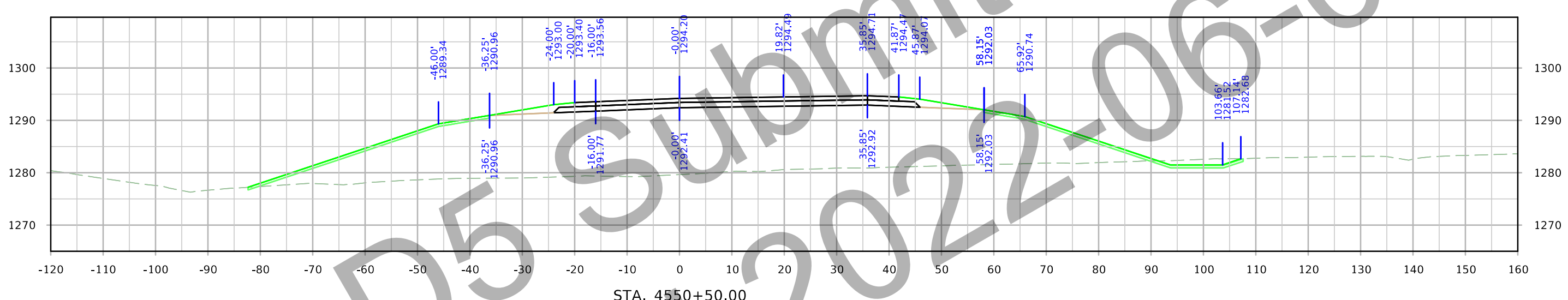
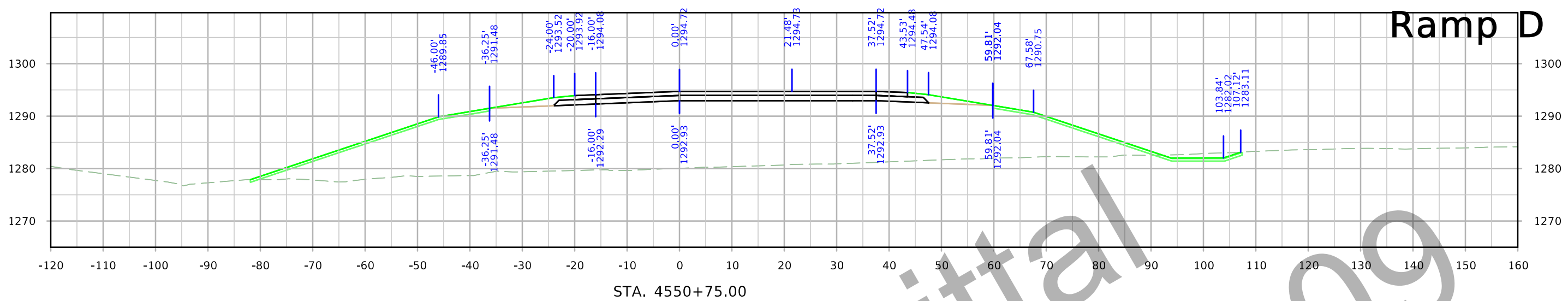
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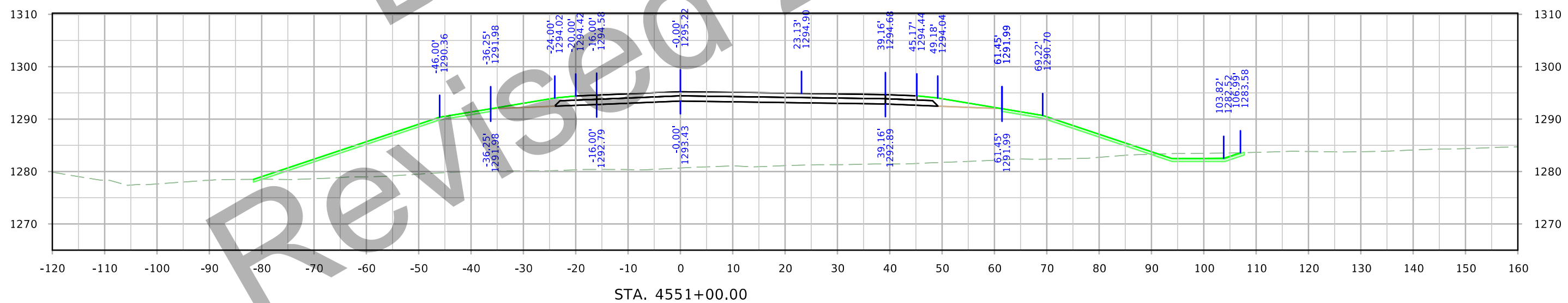
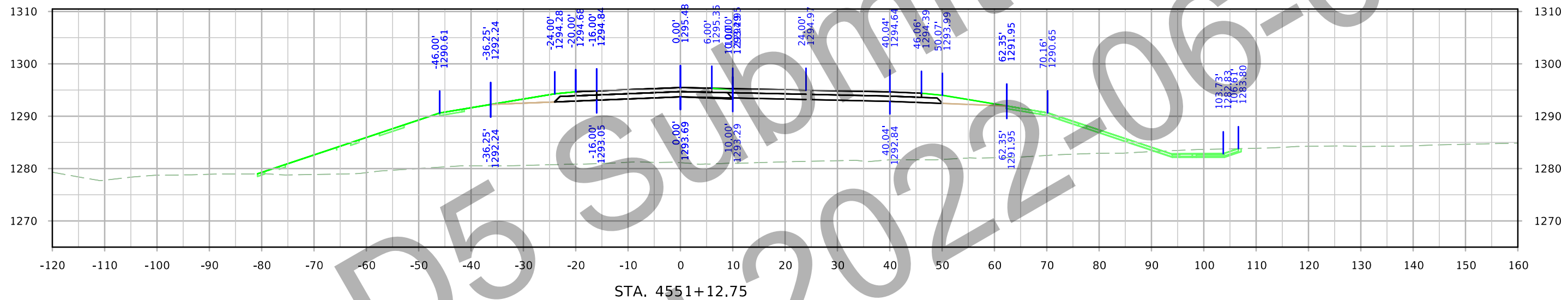
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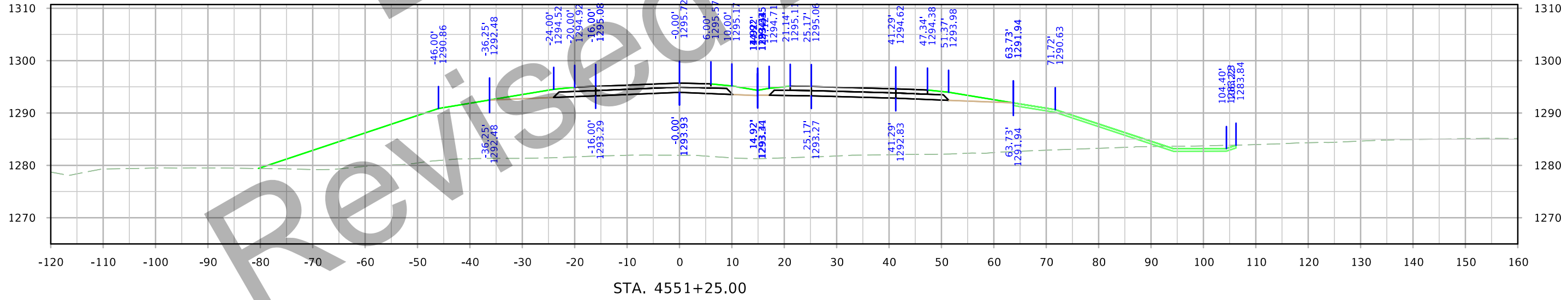
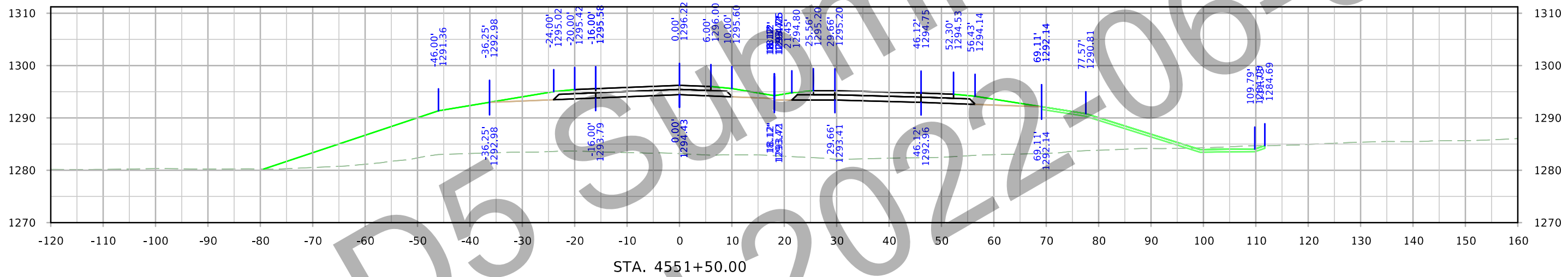
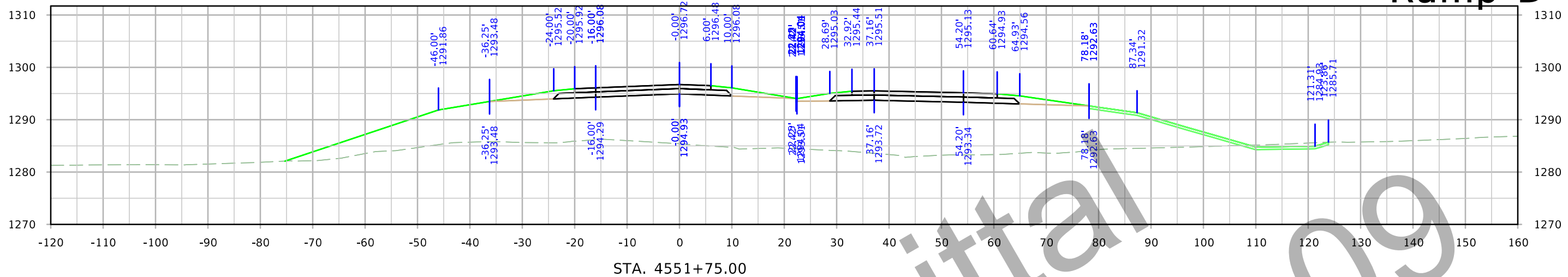
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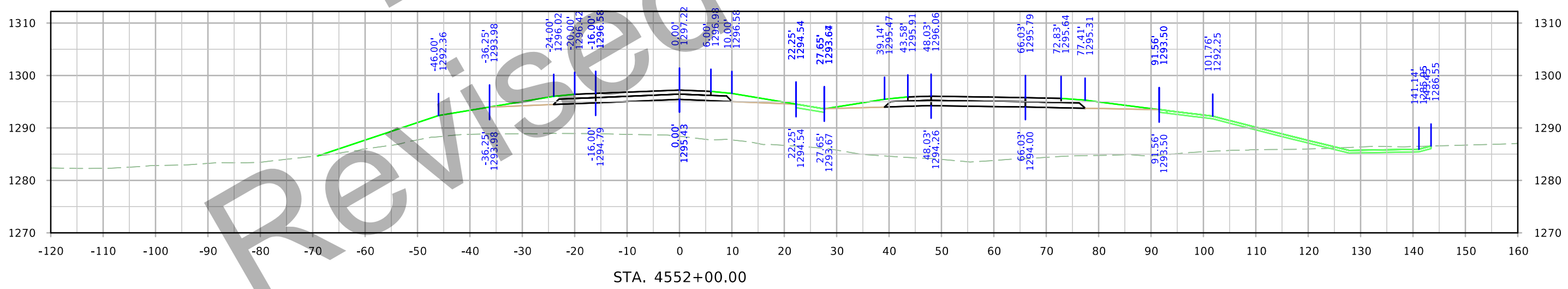
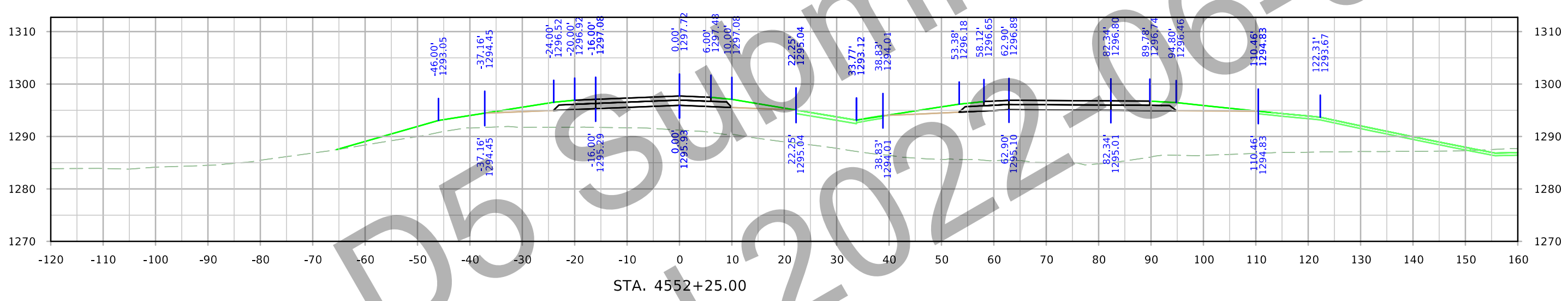
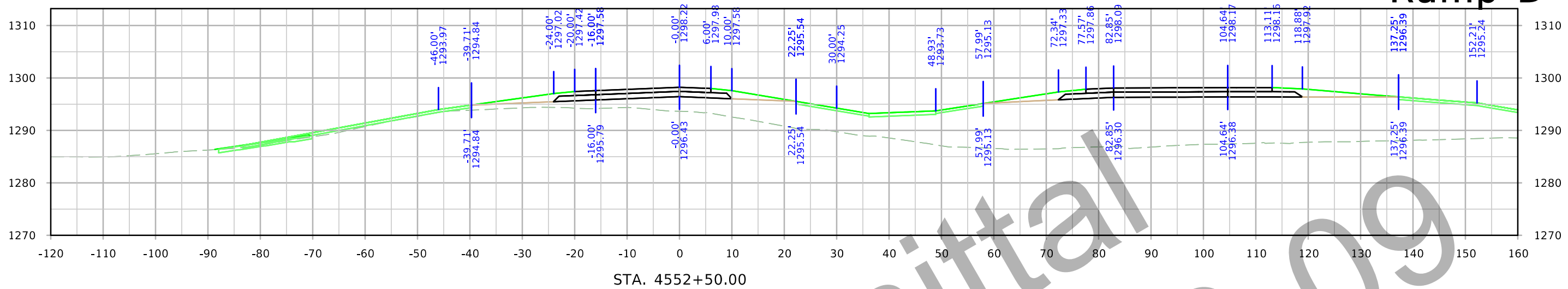
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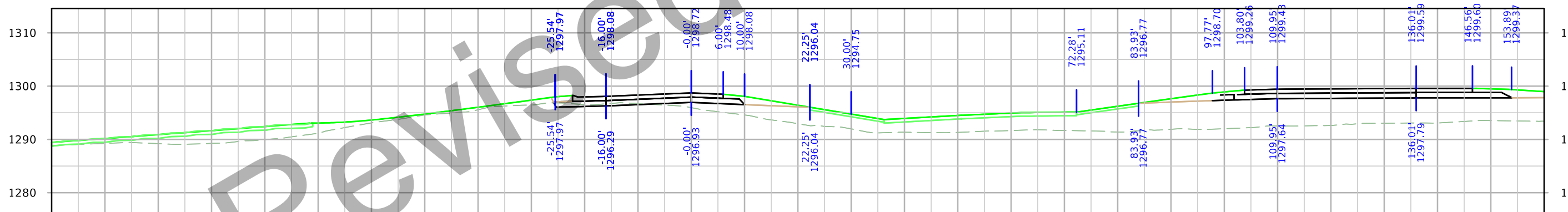
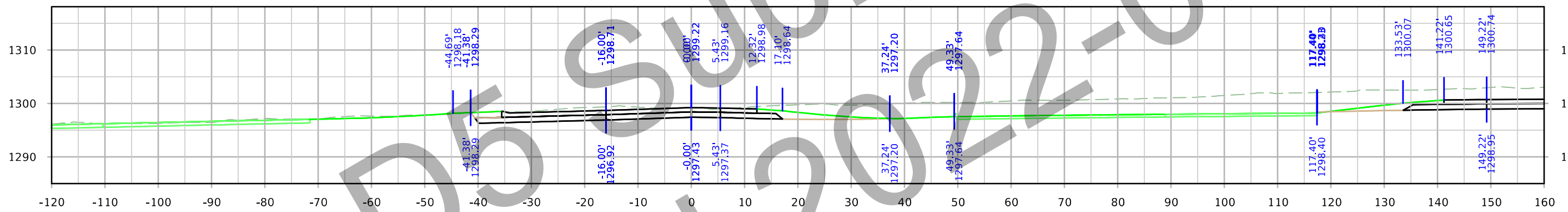
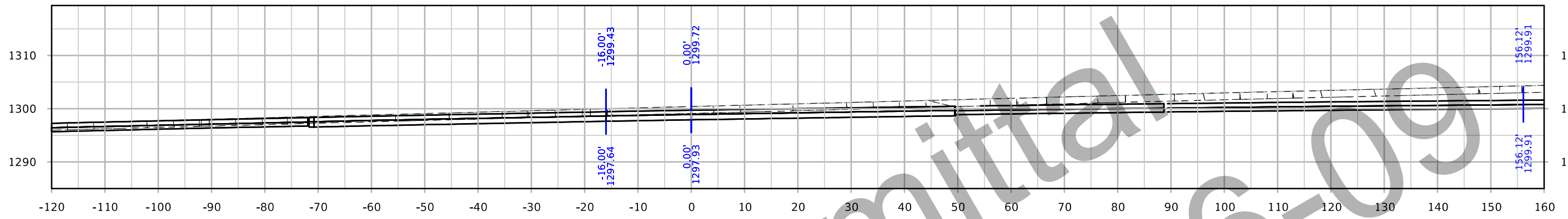
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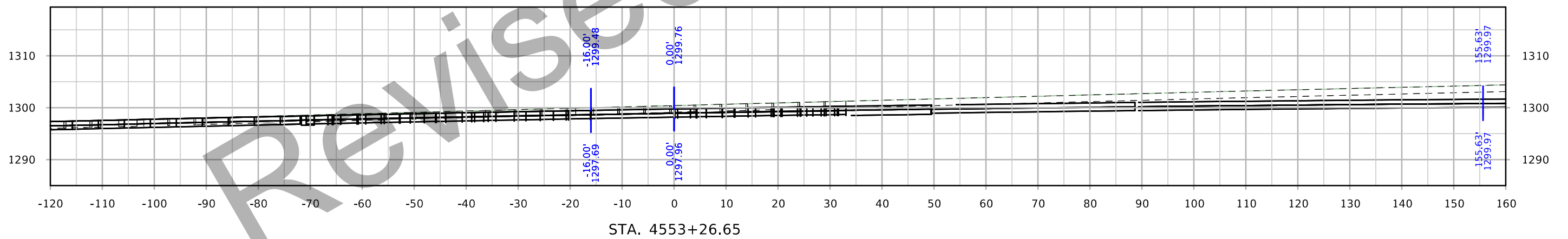


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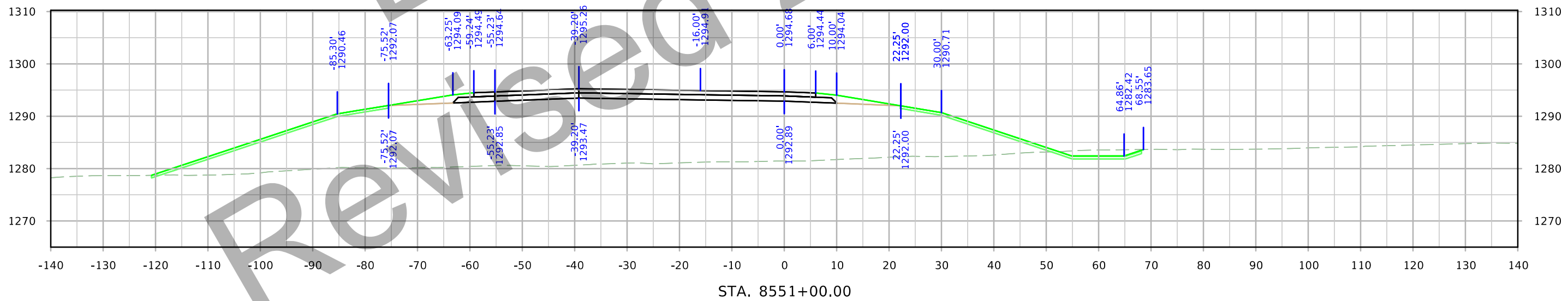
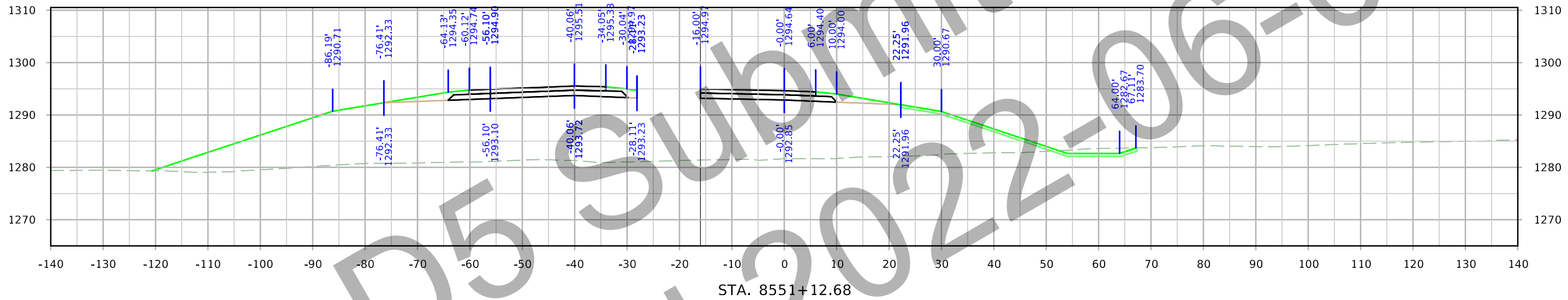


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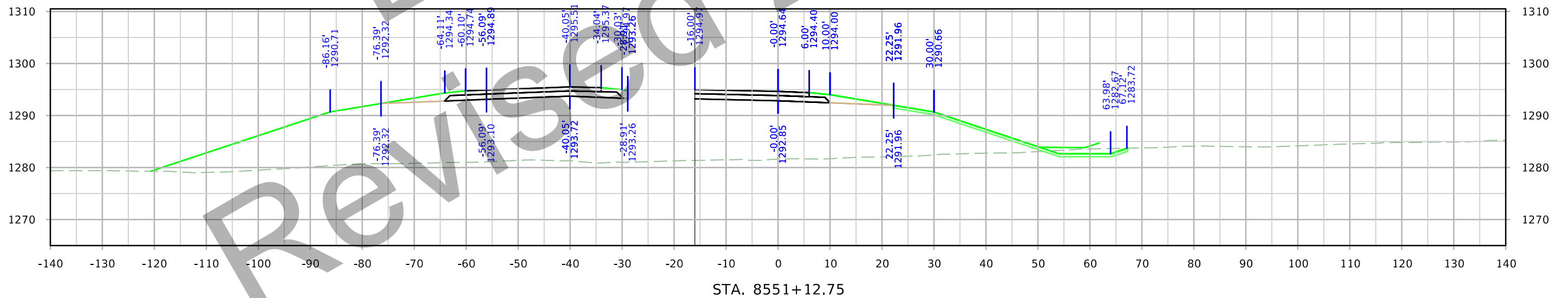
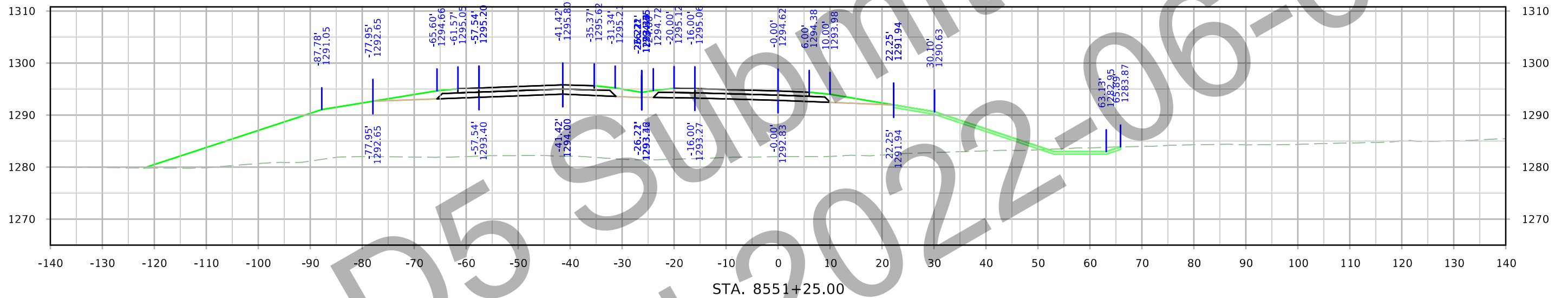
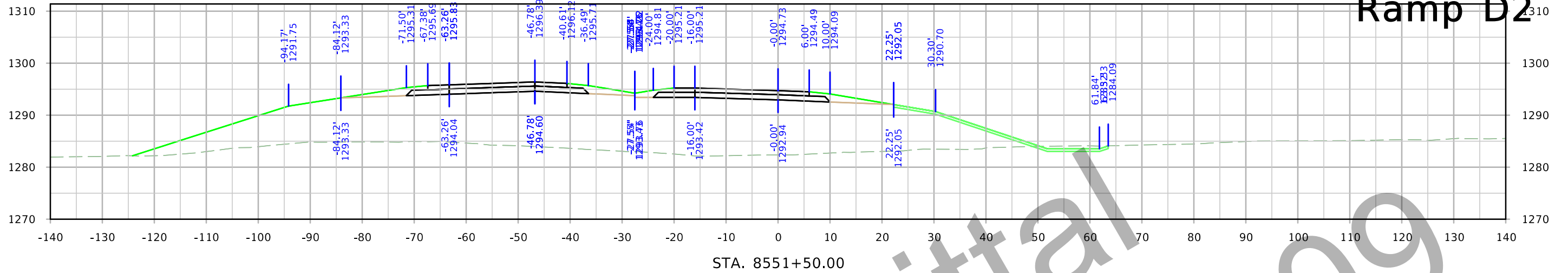
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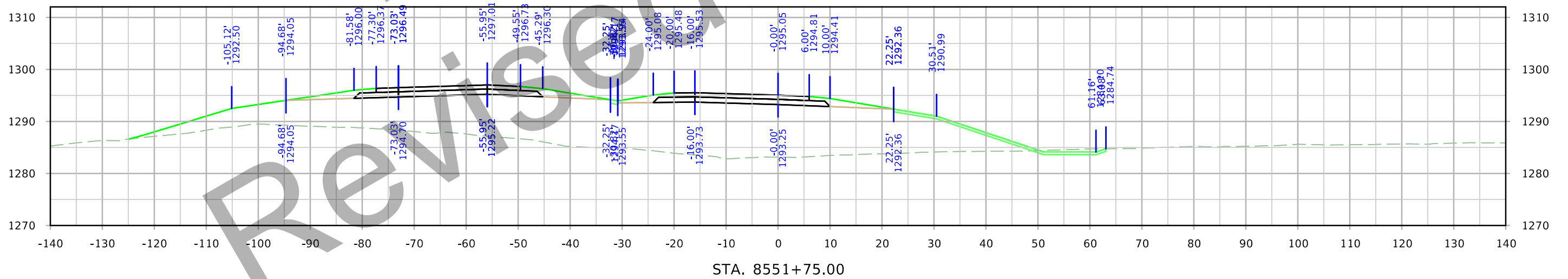
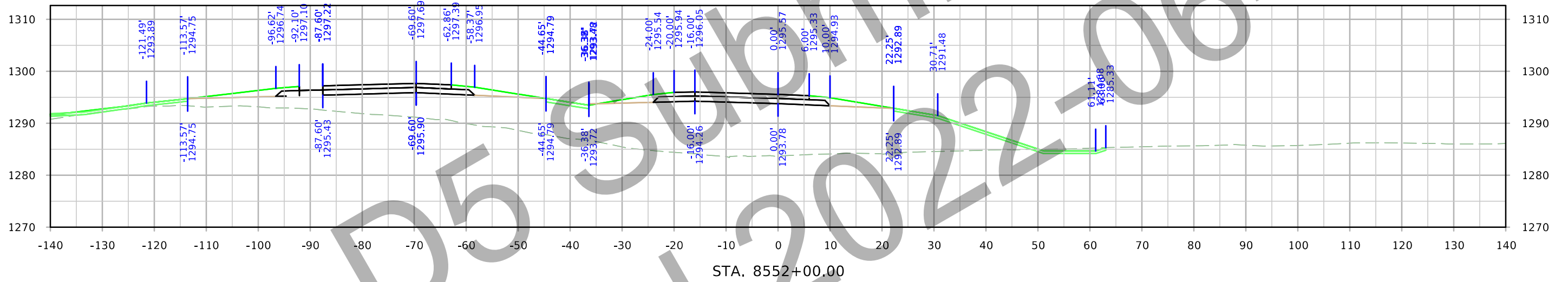
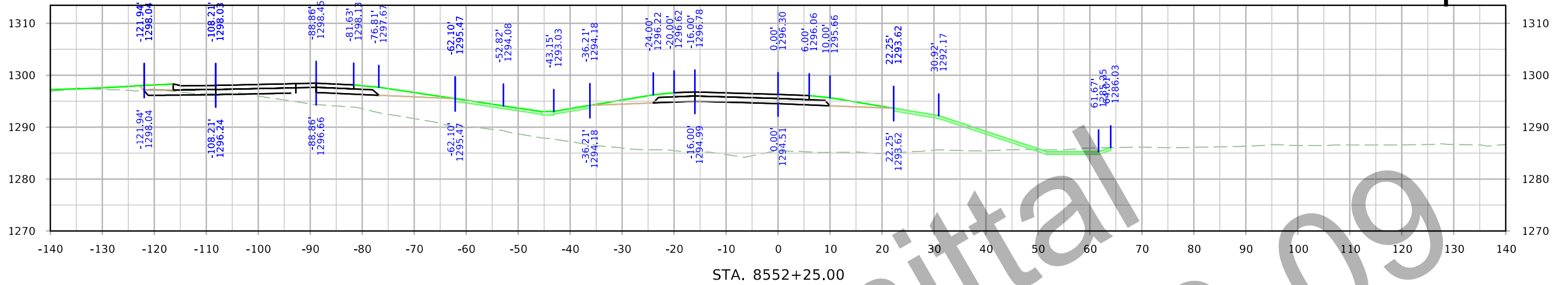
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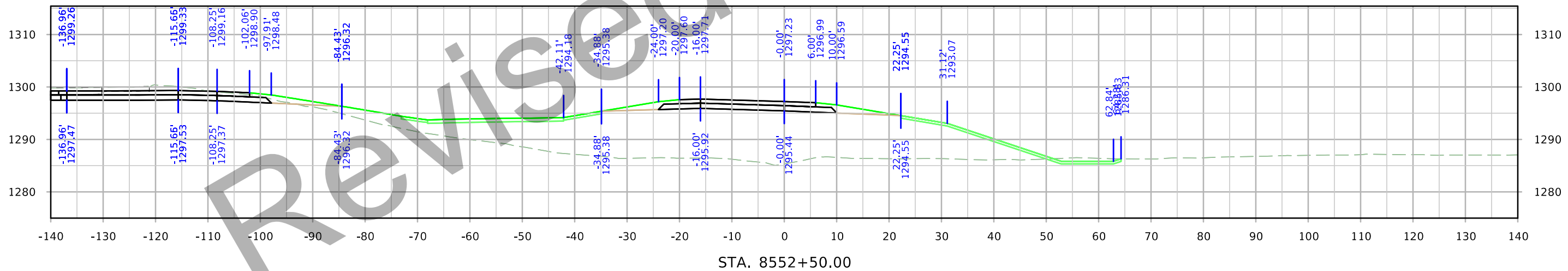
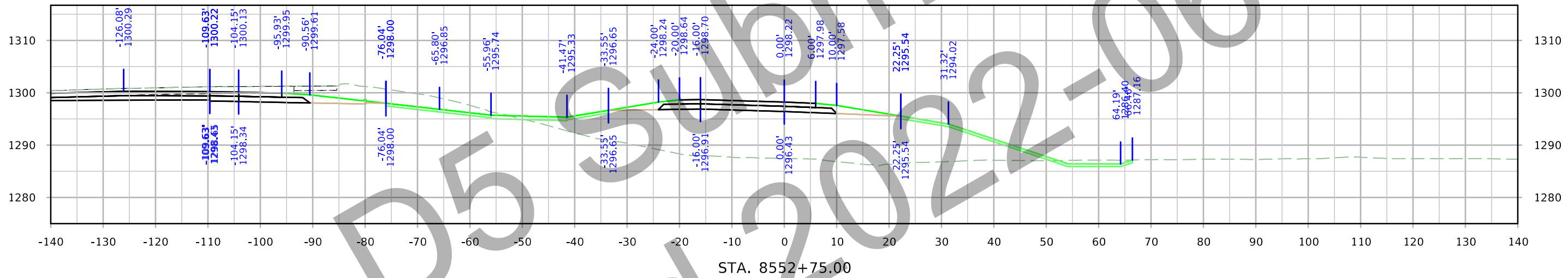
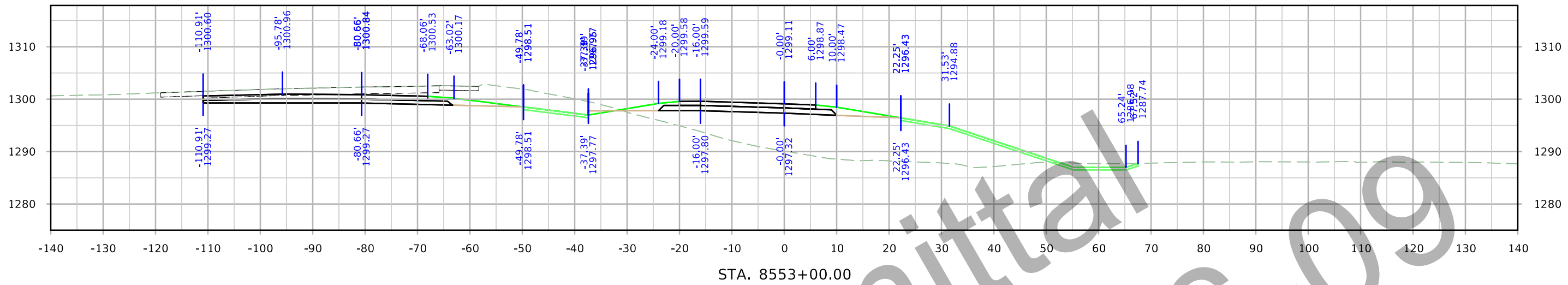
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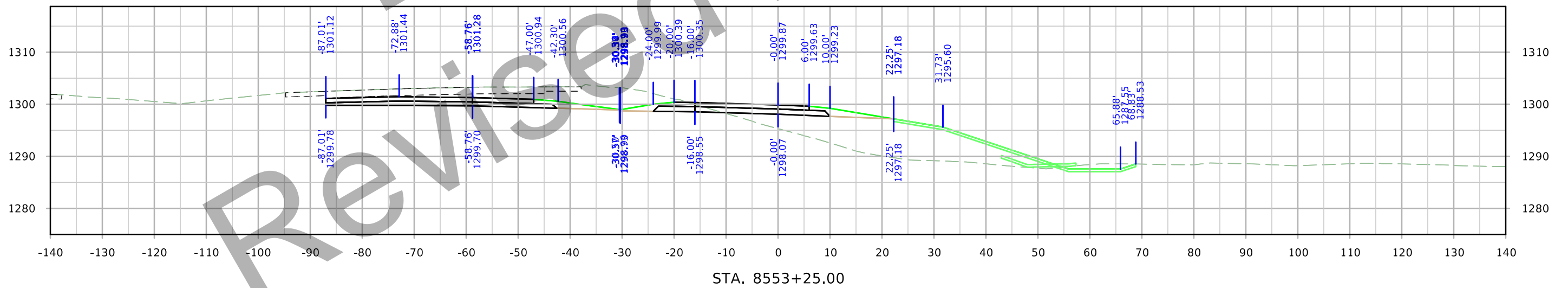
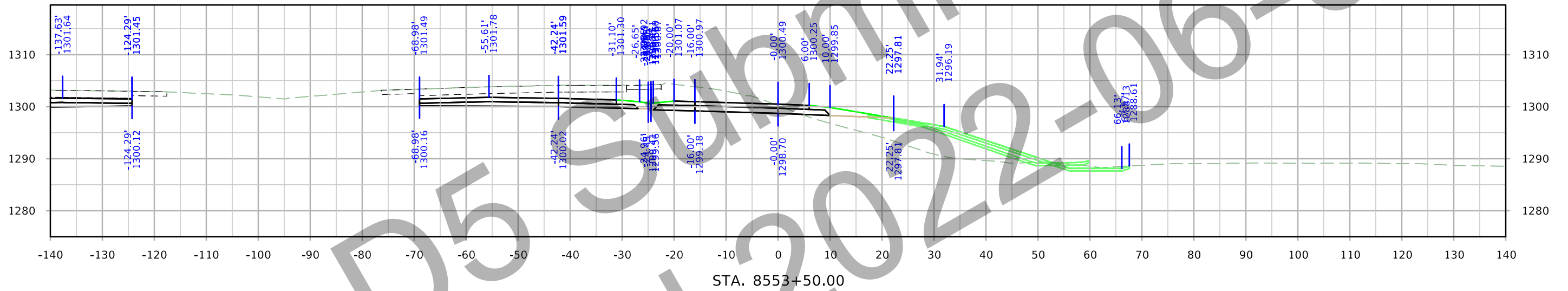
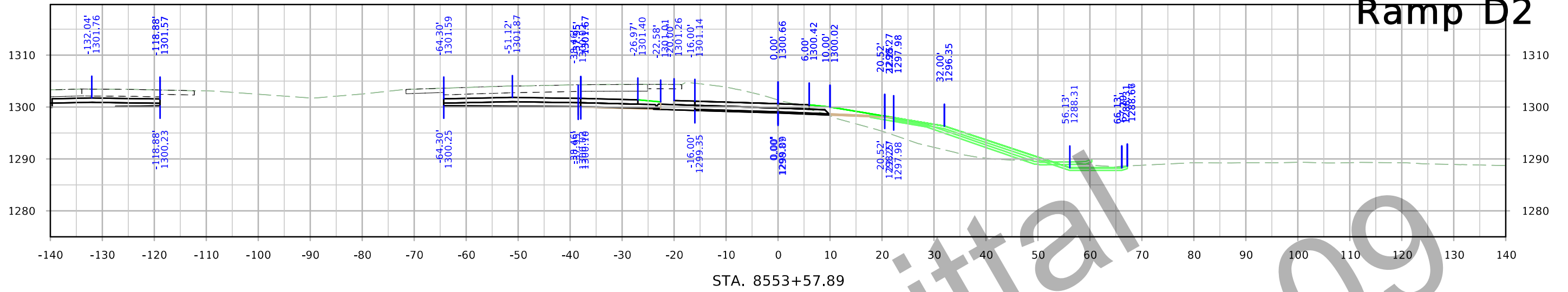
Ramp D2



Ramp D2



Ramp D2



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