Bridge - Unspecified
BRF-146-2(046)--38-79
LETTING DATE 10/17/2028

POWESHIEK COUNTY

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	**Title Sheets**
A.1	Title Sheet
A.2	Location Map Sheet
B Sheets	**Typical Cross Sections and Details**
B.1 - 4	Typical Cross Sections and Details
B.5 - 6	Existing Pavement Details
D Sheets	**Mainline Plan and Profile Sheets**
D.1	Plan & Profile Legend & Symbol Information Sheet
D.2 - 4	Iowa Highway 146
E Sheets	**Side Road Plan and Profile Sheets**
E.1	540th St.
G Sheets	**Survey Sheets**
G.1 - 3	Survey Information
G.4	Alignment Plan Views
G.5	Horizontal Control Tabulations
H Sheets	**Right-of-Way Sheets**
H.1	Iowa Highway 146
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control Plan
J.2	Coordinated Operations
J.3 - 4	Detour Route
J.5 - 6	Paddling Route Signage
V Sheets	**Bridge and Culvert Situation Plans**
V.1 - 3	Bridge and Culvert Situation Plan
W Sheets	**Mainline Cross Sections**
W.1 - 14	Mainline Cross Sections
X Sheets	**Side Road Cross Sections**
X.1 - 5	Side Road Cross Sections

IOWA DOT

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

POWESHIEK COUNTY

Bridge - Unspecified

IA 146 over North Skunk River
2.7 mi N of US 63

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

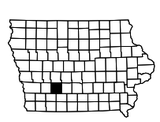
TOTAL
..
PROJECT IDENTIFICATION NUMBER
24-79-146-010
PROJECT NUMBER
BRF-146-2(046)--38-79
R.O.W. PROJECT NUMBER
STPN-146-2(047)--2J-79

MILEAGE SUMMARY — 105-1 — 09-27-94

Div.	Location	Lin. Ft.	Miles
1	IA 146 ML Sta. 2148+85.11 to 2162+59.99	1,374.88	0.260

DESIGN DATA RURAL

2023	AADT	1,310	V.P.D.
2049	AADT	1,700	V.P.D.
20 –	DHV	--	V.P.H.
TRUCKS		--	%
Total Design ESALs		--	



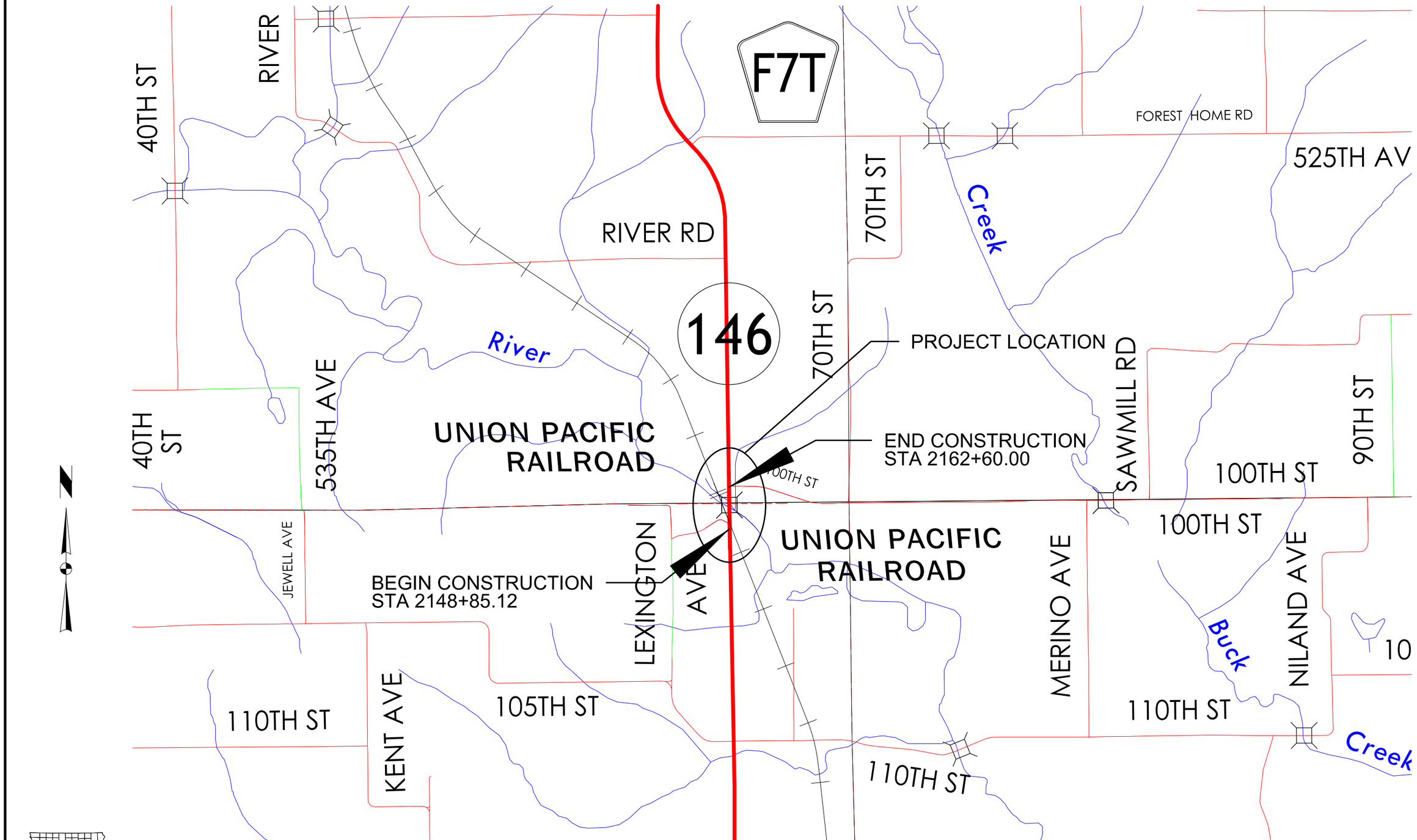
PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN - Date: 12/18/2025

FILE NO. --- | ENGLISH | DESIGN TEAM WHKS&CO. | POWESHIEK COUNTY | PROJECT NUMBER BRF-146-2(046)--38-79 | SHEET NUMBER A.1

10:49:45 AM 12/18/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Sheet_Files\SHT_79146046_A_D2.dgn



FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER A.2

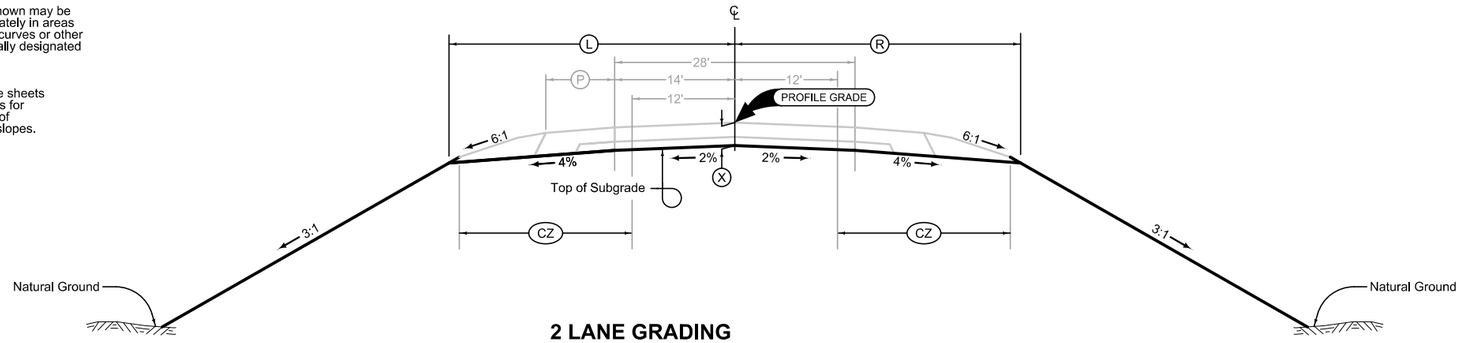
2:46:19 PM 12/4/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Sheet_Files\SHT_79146046_A_D2.dgn

WHKS-1

LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	(CZ) Feet
IA 146	2148+85.35	2150+72.00	32.5	32.5	21	20
IA 146	Bridge and Bridge Approach Pavement					
IA 146	2158+05.00	2162+60.00	32.5	32.5	21	20

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

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



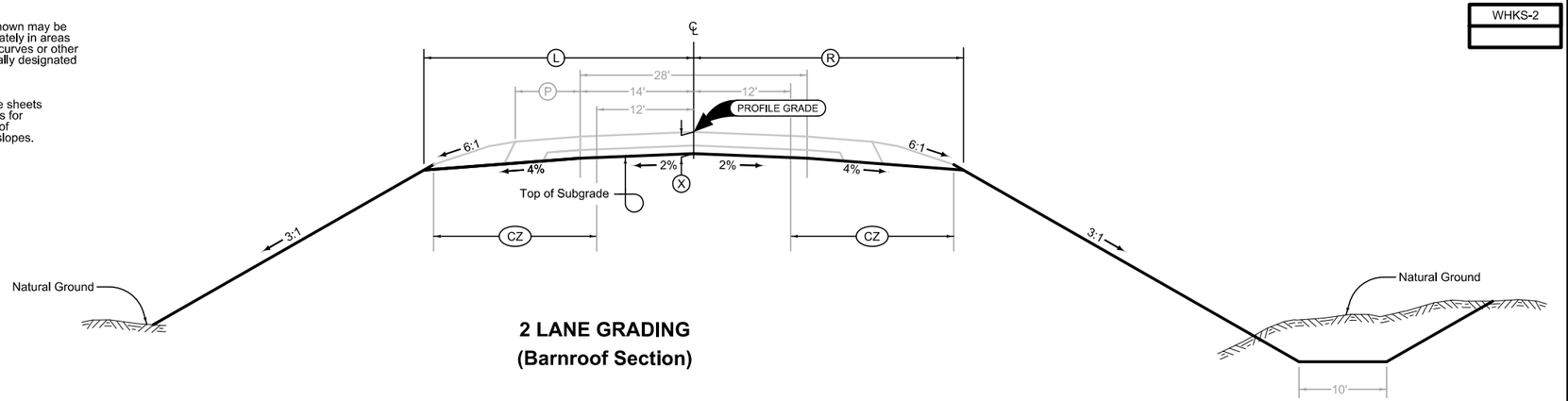
2 LANE GRADING
(Barnroof Section)

WHKS-2

LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	(CZ) Feet
IA 146	Bridge and Bridge Approach Pavement					
IA 146	2154+04.92	2155+33.38	32.5	32.5	21	20
IA 146	540th Street Return					
IA 146	2156+99.44	2158+05.00	32.5	32.5	21	20

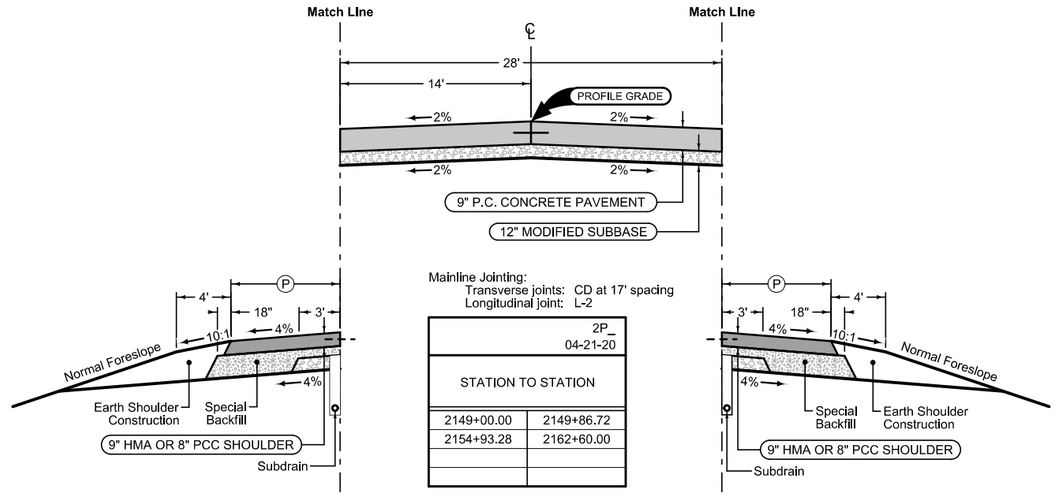
Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.

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



2 LANE GRADING
(Barnroof Section)

IA 146 Mainline



2P_ 04-21-20	
STATION TO STATION	
2149+00.00	2149+86.72
2154+93.28	2162+60.00

Paved Shoulder at Guardrail

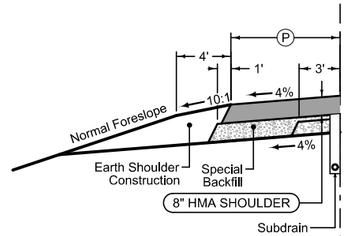
PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at mainline spacing
HMA Shoulder Jointing:
Longitudinal joint: B

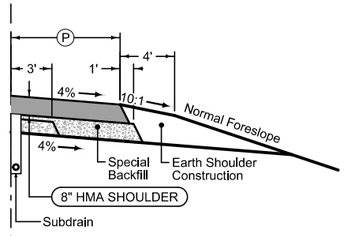
2_P_Guard_ L 04-21-20		
STATION TO STATION		(P) Feet
2149+46.62	2149+86.72	Var.
2154+93.28	2155+94.88	Var.

Paved Shoulder at Guardrail

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

2_P_Guard_ R 04-21-20		
STATION TO STATION		(P) Feet
2148+85.12	2149+86.72	Var.
2154+93.28	2155+33.38	Var.





HMA Shoulder

Shoulder Jointing:
Longitudinal joint: B

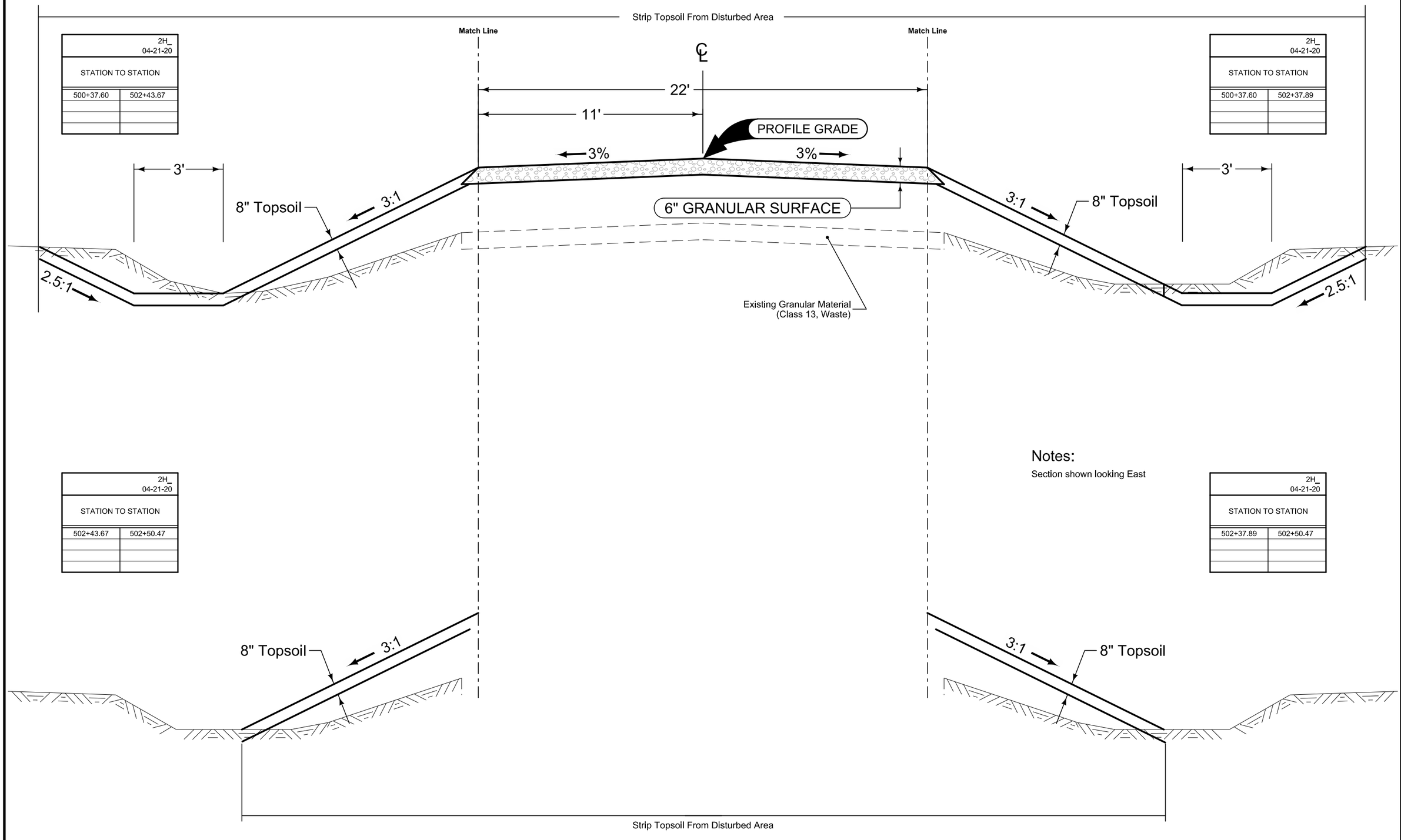
2_P_HMA_ L 04-21-20		
STATION TO STATION		(P) Feet
2149+00.00	2149+46.62	4
2155+94.87	2162+60.00	7.5

HMA Shoulder

Shoulder Jointing:
Longitudinal joint: B

2_P_HMA_ R 04-21-20		
STATION TO STATION		(P) Feet
2156+99.46	2162+60.00	7.5

540th St.



2H_ 04-21-20	
STATION TO STATION	
500+37.60	502+43.67

2H_ 04-21-20	
STATION TO STATION	
500+37.60	502+37.89

2H_ 04-21-20	
STATION TO STATION	
502+43.67	502+50.47

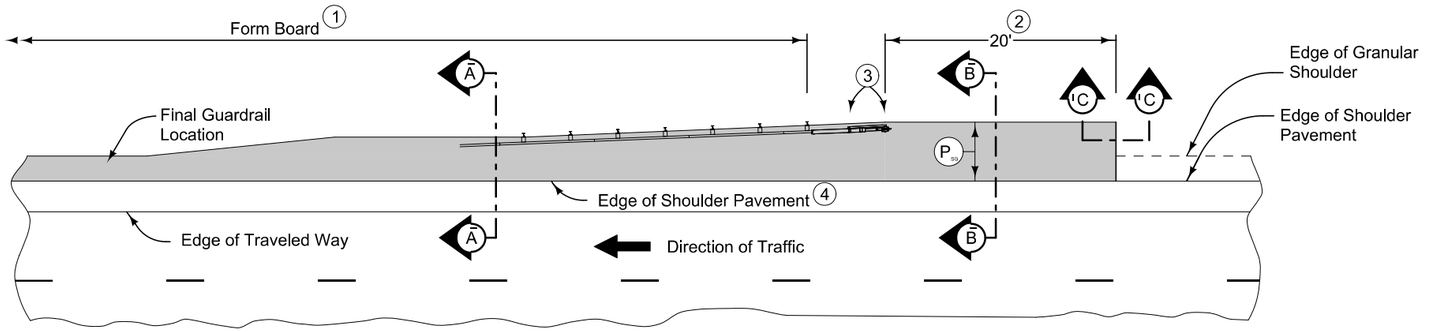
2H_ 04-21-20	
STATION TO STATION	
502+37.89	502+50.47

Notes:

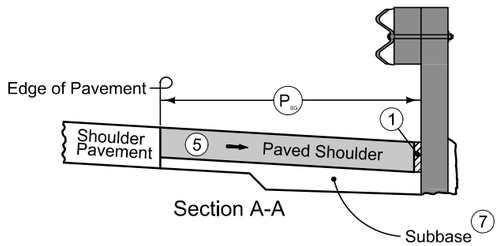
Section shown looking East

FILE NO. ---	ENGLISH	DESIGN TEAM **WHKS & CO.**	**POWESHIEK** COUNTY	PROJECT NUMBER **BRF-146-2(046)--38-79**	SHEET NUMBER **B.3**	

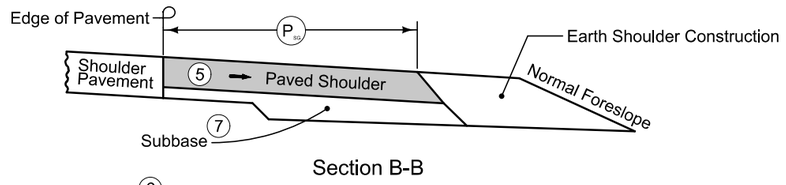
12:34:54 PM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Sheet_Files\SHT_79146046_B_D2.dgn



PLAN VIEW

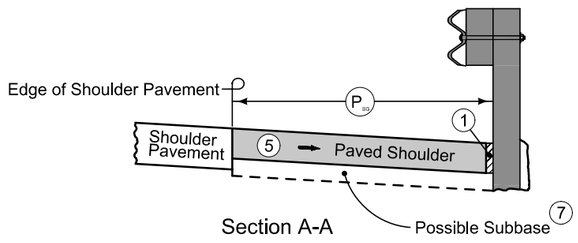


Section A-A

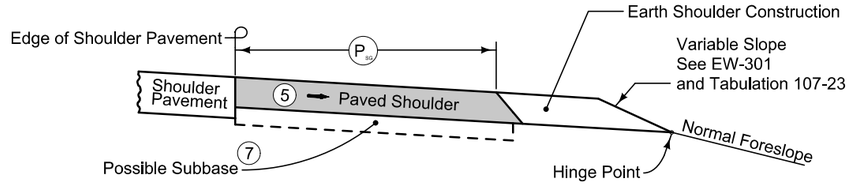


Section B-B

NEW CONSTRUCTION 6



Section A-A



Section B-B

EXISTING SHOULDER

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

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

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

Refer to Tabulation 112-9 for shoulder quantities.

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

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

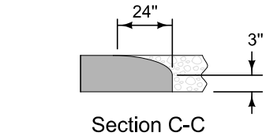
(3) Shoulder may be notched for first 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.

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

(5) Match shoulder slope.

(6) The Contractor has the option to pave the paved shoulder at guardrail and the partial width paved shoulder as one operation.

(7) Refer to other details in the plan.



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

PAVED SHOULDER AT GUARDRAIL
(ADJACENT TO PARTIAL WIDTH PAVED SHOULDER)

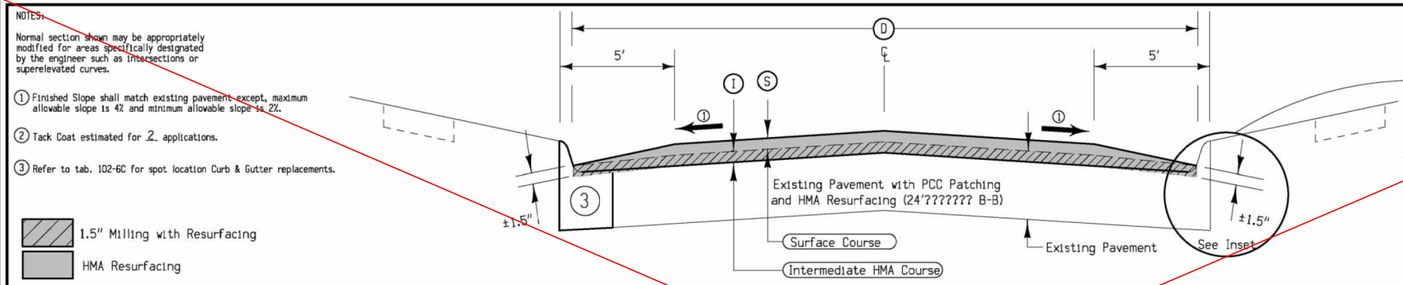
NOTES:

Normal section shown may be appropriately modified for areas specifically designated by the engineer such as intersections or superelevated curves.

① Finished Slope shall match existing pavement except, maximum allowable slope is 4% and minimum allowable slope is 2%.

② Tack Coat estimated for 2 applications.

③ Refer to tab. 102-6C for spot location Curb & Gutter replacements.



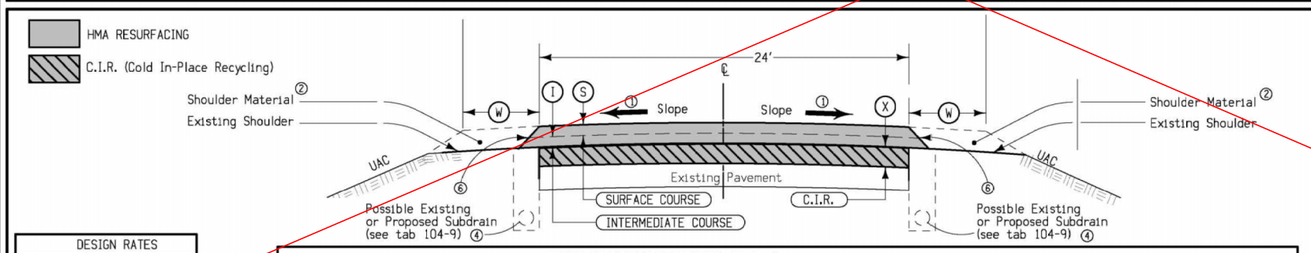
3222
Modified

TABLE OF DESIGN QUANTITIES **Per Location** * Not a Bid Item

LOCATION					S	I	D	TACK COAT *	ASPHALT BINDER	HOT MIX ASPHALT (tons)			PAVEMENT SCARIFICATION	
ROADWAY	STATION TO STATION		Net Length (Lin. Ft.)	Net Area (Sq. Ft.)	Inches	Inches	Feet	Gallons ②	Tons	SURFACE	INTERMEDIATE	BASE	Sq. Yds.	Tons
IA 146	2015+61 (E.Walnut St.)	±2025+75 (E. Water St.)	xxxx	xxxxx	1.5	1.5	23	259	22.6	155.4	211.4	---	2591	197

DESIGN RATES	
ITEM	RATE
Surface Course	145 lbs./cu. ft.
Intermediate Course	145 lbs./cu. ft.
Tack Coat	0.05 gal./sq. yd.
Pav't. Scarification	135 pounds/cu.ft.

TYPICAL CROSS SECTION 3" HMA RESURFACING ON CURBED ROADWAY (E. Walnut St. - near E. Water St.)



2602 A
Modified

Notes:

① Finished slope shall match existing pavement except that the maximum allowable slope is 3.0%, minimum allowable slope is 2.0%. Section may be Modified as directed by the engineer through areas of special shaping.

② Shoulder material as specified elsewhere in these plans; refer to modified typical 7151 A for "Retrofit Paved Shoulders".

③ Quantity estimated for 1 application for the intermediate course, and 1 application for the surface course.

④ All existing subdrains shall remain functional at all times; see tab. 104-9 for proposed. Additional longitudinal subdrains shall be placed prior to constructing HMA shoulders.

⑤ Estimated quantity excludes C.I.R.

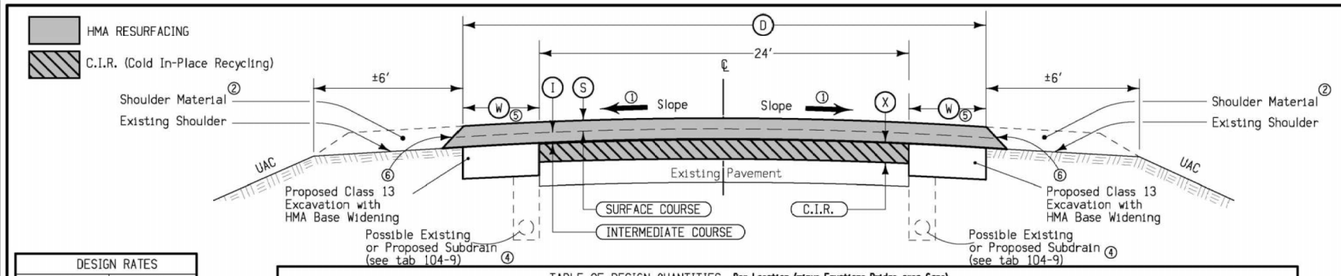
⑥ Required Safety Edge per Standard Road Plan PV-3

DESIGN RATES	
ITEM	RATE
Surface Course	145 lbs./cu. ft.
Intermediate Course	145 lbs./cu. ft.
Tack Coat	0.05 gal./sq. yd.

TABLE OF DESIGN QUANTITIES **Per Location**

LOCATION			S	I	D	X	W	C.I.R. AREA	STABILIZING AGENT	PRIME AND TACK COAT	ASPHALT BINDER	HOT MIX ASPHALT Tons	
ROAD IDENTIFICATION	STATION TO STATION		Inches	Inches	Feet	C.I.R. Inches	Feet	Sq. Yds.	Tons	Gallons ③	Tons ⑤	SURFACE	INTERMEDIATE
IA 146	±2025+75 (±MP 0.32) (E. Water St.)	2035+07 (±MP 0.49) (N. Sharon NCL)	1.5	1.5	24	4.0	±2.0	2485	10.9	264	25.8	211.2	219.6

TYPICAL CROSS SECTION COLD IN-PLACE RECYCLING WITH HOT MIX ASPHALT RESURFACING (Near E. Water St. to NCL New Sharon)



2602 B
Modified

Notes:

① Finished slope shall match existing pavement except that the maximum allowable slope is 3.0%, minimum allowable slope is 2.0%. Section may be Modified as directed by the engineer through areas of special shaping.

② Shoulder material as specified elsewhere in these plans; refer to modified typical 7151 B for "Retrofit Paved Shoulders".

③ Quantity estimated for 1 application for the intermediate course, and 1 application for the surface course.

④ All existing subdrains shall remain functional at all times; see tab. 104-9 for proposed. Additional longitudinal subdrains shall be placed prior to constructing HMA shoulders.

⑤ Construct Milled Rumble strips throughout 6° and 10° curves only (±MP 7.33 & 9.67) See Standard Road Plan PV-12 for Milled Shoulder Rumble Strip requirements.

⑥ Required Safety Edge per Standard Road Plan PV-3

⑦ Requires 286 tons each for Surface and Intermediate HMA at full width shoulders - see tab. 7151 B for locations (also see bid item reference notes).

DESIGN RATES	
ITEM	RATE
Surface Course	145 lbs./cu. ft.
Intermediate Course	145 lbs./cu. ft.
Tack Coat	0.05 gal./sq. yd.

TABLE OF DESIGN QUANTITIES **Per Location (minus Equations Bridge area Gaps)**

LOCATION			S	I	D	X	W	C.I.R. AREA	STABILIZING AGENT	PRIME AND TACK COAT	ASPHALT BINDER	HOT MIX ASPHALT Tons	
ROAD IDENTIFICATION	STATION TO STATION		Inches	Inches	Feet	C.I.R. Inches	Feet	Sq. Yds.	Tons	Gallons ③	Tons	SURFACE	INTERMEDIATE
IA 146	2035+07 (±MP 0.46) (N. Sharon NCL)	2963+50 (±MP18.06) (EOP)	1.5	1.5	28	4.0	2.0	243,939	1073.3	29,984	2935	24,041 ⑦	24,870 ⑦

TYPICAL CROSS SECTION COLD IN-PLACE RECYCLING WITH HOT MIX ASPHALT RESURFACING (NCL New Sharon to EOP near I-80)

ENGLISH	IOWA DOT	DESIGN TEAM Gustafson\North	MAHASKA/POWESHIEK COUNTY	PROJECT NUMBER STP-146-1(6)--2C-62/MB-146-1(500)3--77-79 & STP-63-3(61)--2C-62	SHEET NUMBER B.1

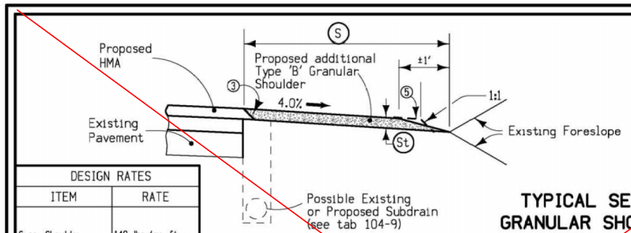
12:57:37 PM 7/29/2011 rlnorth W:\Projects\6214601003\DistrictDesign\62146006B01.sht

For Information Only

FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER B.5

11:28:50 AM 12/16/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Sheet_Files\SHT_79146046_B_D2.dgn

7151 A
Modified



TYPICAL SECTION GRANULAR SHOULDER

DESIGN RATES	
ITEM	RATE
Gran. Shoulder	140 lbs./cu. ft.

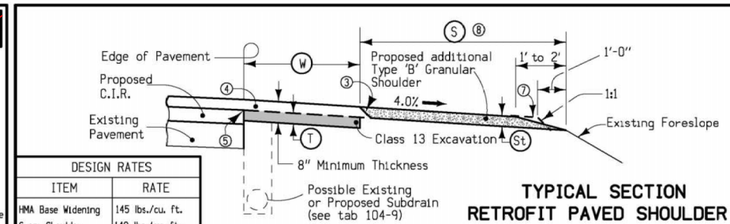
Location					S	St	Quantities ① ②	
Roadway	Station To Station		Net Length	Side	Feet	Inches	Rate Per Sta. Per Side ④ Tons	Granular Shoulder ④ Tons
IA 146	±2025+75	2035+07	932'	Rt	±2	3.0	5.11	47.6
IA 146	±2025+75	2035+07	932'	Lt	±2	3.0	5.11	47.6
								95.2

NOTE:
The contractor shall place the proposed ±2' granular shoulders thru all unpaved side road and entrance intersections. At paved intersection crossings, the proposed granular shoulder shall gap existing pavement at return radii.

Suitable Cl. 13 Excavation from this project may be used to supplement needed granular shoulder material.

① Per location.
② Bid Items.
③ Required Safety Edge per Standard Road Plan PV-3
④ Includes 20% additional for cross slope correction of shoulders.
⑤ Place and compact material to the dashed lines; then blade and shape to foreslope that portion above the solid line in the outer +/-1 ft. and roll with loaded truck tire.

7151 B
Modified



TYPICAL SECTION RETROFIT PAVED SHOULDER

DESIGN RATES	
ITEM	RATE
HMA Base Widening	145 lbs./cu. ft.
Gran. Shoulder	140 lbs./cu. ft.

Location					W	S	St	T	Quantities ① ②			
Roadway	Station To Station		Net Length	Side	Feet	Feet	Inches	Inches	Class 13 Excavation Cu. Yds.	HMA Base Widening Tons	Asphalt ⑤ Binder Tons	Granular ⑥ Shoulder Tons
IA 146	2035+07	2963+50	89,288'	Rt.	2	6	3.0	5.0	2754	5391	323	12,061
IA 146	2035+07	2963+50	88,978'	Lt.	2	6	3.0	5.0	2746	5376	323	12,027
FULL WIDTH HMA SHOULDERS AT CURVES												
IA 146	2384+06	2401+48	1285	Rt.	8	0	0	3.0	95	186	11	0
IA 146	2384+06	2401+48	1740	Lt.	8	0	0	3.0	129	252	15	0
IA 146/40th St	2507+60	2510+60	300	Rt.	10	0	0	3.0	28	54	3	0
IA 146	2516+62	2522+12	538	Rt.	8	0	0	3.0	40	78	5	0
									5792	11,388	680	24,089

NOTE:
The contractor shall place the proposed ±2' granular shoulders thru all unpaved side road and entrance intersections. At paved intersection crossings, the proposed granular shoulder shall gap existing pavement at return radii.

Suitable Cl. 13 Excavation from this project may be used to supplement needed granular shoulder material.

① Per location.
② Bid Items.
③ Required Safety Edge per Standard Road Plan PV-3
④ HMA and tack coat quantities above the HMA base are included with mainline quantities.
⑤ Provide a vertical edge. Incidental to Class 13 Excavation.
⑥ Includes 20% additional for cross slope correction of shoulders.
⑦ Place and compact material to the dashed lines; then blade and shape to foreslope that portion above the solid line in the outer 1 to 2 ft. and roll with loaded truck tire.
⑧ See typical RTL-1 for shoulder treatment at right turn lane locations.
⑨ For HMA base only.

ENGLISH	IOWA DOT	DESIGN TEAM Gustafson\North	MAHASKA/POWESHIEK COUNTY	PROJECT NUMBER STP-146-1(6)--2C-62/NB-146-1(500)3--77-79 & STP-63-3(91)--2C-62	SHEET NUMBER B.2

12:57:38 PM 7/29/2011 rlnorth W:\Projects\6214601003\DistrictDesign\62146006B01.sht

For Information Only

FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER B.6

11:28:57 AM 12/16/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Sheet_Files\SHT_79146046_B_D2.dgn

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
- WH Water Hydrant (Rural)
- ST Septic Tank
- C Cistern
- LP L.P. Gas Tank (No Footing)
- UST Underground Storage Tank
- Latrine
- Satellite TV Dish
- WHU Water Hook Up
- RT Radio Tower
- TA Tower Anchor
- Guardrail (Beam or Cable)
- GP Guard Post (one or two)
- Guard Post (over two)
- FP Filler Pipe
- GV Gas Valve
- WV Water Valve
- SL Speed Limit Sign
- MM Mile Marker Post
- SIGN Sign
- TCB Traffic Signal Control Box
- RRB Rail Road Signal Control Box
- TSB Telephone Switch Box
- EB Electric Box

UTILITY LEGEND

FO1D, Aureon - Quality D
FO2D, Lumen - Quality D
TL1D, Windstream - Quality D

Aureon
Contact: Jeff Klocko
Phone: (515)-830-0445
Email: jeff.klocko@aureon.com

Lumen
Contact: Sadie Hull
Phone: (918)-547-0147
Email: sadie.hull@lumen.com

Windstream
Contact: Locate Desk
Phone: (800)-289-1901
Email: locate.desk@windstream.com

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.**		**Transparency**
Pink, Dark	(13)	Temporary Pavement Shading	50%
Yellow	(4)	Proposed Pavement Shading	50%
Orange	(6)	Proposed Granular Shading	50%
Orange	(70)	Proposed Shoulder Granular Shading	50%
Yellow	(68)	Proposed Shoulder Paved Full Depth Shading	50%
Yellow	(132)	Proposed Shoulder Paved Partial Depth Shading	50%
Brown, Light	(236)	Grading Shading	50%
Orange, Light	(134)	Proposed Granular Entrance Shading	50%
Yellow	(220)	Proposed Paved Entrance Shading	50%
Tan	(8)	Proposed Sidewalk Shading	50%
Blue, Light	(230)	Proposed Sidewalk Landing Shading	50%
Pink	(11)	Proposed Sidewalk Ramp Shading	50%
Red	(3)	Proposed Structure Shading	50%
Red	(3)	Delineates Restricted Areas	0%

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

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

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER D.1

10:15:42 AM 12/4/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Sheet_Files\SHT_79146046_d01_D2.dgn

MAHASKA COUNTY

UNION PACIFIC RR

BONNIE L
DEJONG TRUST

2147+00 2148+00 2149+00 2150+00 2151+00 2152+00 2153+00

Construct paved shoulder
adajacent to steel beam guardrail.

Limits of Construction

(UAC)
Sta. 2147+81
Skew 21° RT AH
24"X76' CMP

IA 146

STA 2148+85.12 (ML146)
BEGIN CONSTRUCTION

Install steel beam guardrail
per SRP BA-250.

Construct bridge approach
per SRP BR-203.

Sta. 2152+40.00
Skew 30° LT AH
324' X 23'
CONT. WELDED GIRDER BRIDGE
(REMOVE)

North Skunk River

Sta. 2148+39. 54" RT
24"x31' CMP
(UAC)

0 20
FEET

Limits of Construction

MAHASKA COUNTY
for Conservation
Board Purposes

Sta. 2152+40.00
Construct 350' X 40' Rolled Steel Beam Bridge
Skew 30° LT AH
See V Sheets

**IA 146 over
North Skunk River**

STA. 2149+00.00
ELEV. 778.56

Proposed Profile

Existing Profile

775 770 765 760 755 750 745 740

Lt

Rt

Refer to Cross Sections

Bridge

Refer to Cross Sections

Bridge

778.56 778.51 778.46 778.41 778.36 778.31 778.26 778.20 778.15 778.10 778.05 778.00 777.95 777.90 777.85 777.80 777.75

2148+00 2149+00 2150+00 2151+00 2152+00 2153+00

FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER D.2

11:23:35 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Sheet_Files\SHT_79146046_d02_D2.dgn

BONNIE L DEJONG TRUST

BONNIE L DEJONG TRUST

Limits of Construction

Construct bridge end drain per SRP DR-402.

Sta. 2156+19, 62' LT
DUAL 18"x88' CMP
(UAC)

Construct bridge approach per SRP BR-203.

Install steel beam guardrail per SRP BA-250.

2153+00 2154+00 2155+00 2156+00 2157+00 2158+00 2159+00

IA 146

540TH AVE.

Construct side road PCC return.

Sta. 2156+15, 73' RT
DUAL 60"X107" RCP
(REMOVE)

Relocate Power Pole

Construct paved shoulder adjacent to steel beam guardrail.

Limits of Construction

Relocate Power Pole

Limits of Construction

Sta. 2156+20, 91' RT
INSTALL DUAL 60"x122' RCP

BONNIE L DEJONG TRUST

0 20
FEET

IA 146 over North Skunk River

-0.20% -1.70%

Proposed Profile

VPI = +50.00
EL = 777.25
L = 240.00'
K = 160
Des. Speed = 60 MPH

Existing Profile

0.10%
754.90
755.00

756.50
0.30%
756.82

775 770 765 760 755 750 745 740

Lt Bridge Refer to Cross Sections

Rt Bridge Special Ditch Grade 540th Ave. Special Ditch Grade UAC Drainage Channel

777.70 777.65 777.60 777.55 777.50 777.44 777.33 777.19 777.01 776.80 776.54 776.24 775.91 775.53 775.12 774.70 774.27 773.85 773.46 773.11 772.81 772.55 772.32 772.14

2154+00 2155+00 2156+00 2157+00 2158+00 2159+00

FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER D.3

11:23:37 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Sheet_Files\SHT_79146046_d02_D2.dgn

BONNIE L DEJONG TRUST

FO

FO

T1

T1

2159+00

2160+00

2161+00

2162+00

2163+00

2164+00

2165+00

Limits of Construction

STA 2162+60.00 (ML146)
END CONSTRUCTION

IA 146

FO2

FO2

Power Pole
(UAC)

Power Pole
(UAC)

Limits of Construction

BONNIE L DEJONG TRUST

0 20
FEET

**IA 146 over
North Skunk River**

Proposed Profile

Existing Profile

STA. 2162+60.00
ELEV. 774.09

-1.70%

+1.73%

**VPI = +00.00
EL = 769.60
L = 520.00'
K = 152
Des. Speed = 60 MPH**

775
770
765
760
755
750
745
740

Lt

Refer to Cross Sections

Rt

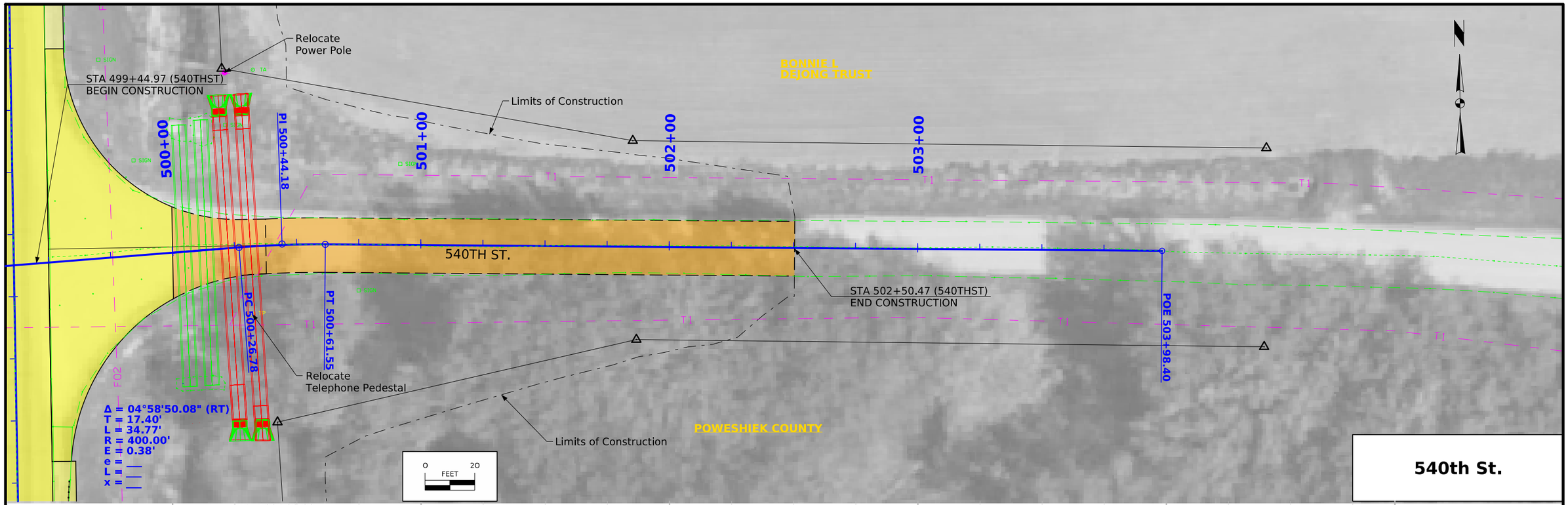
Refer to Cross Sections

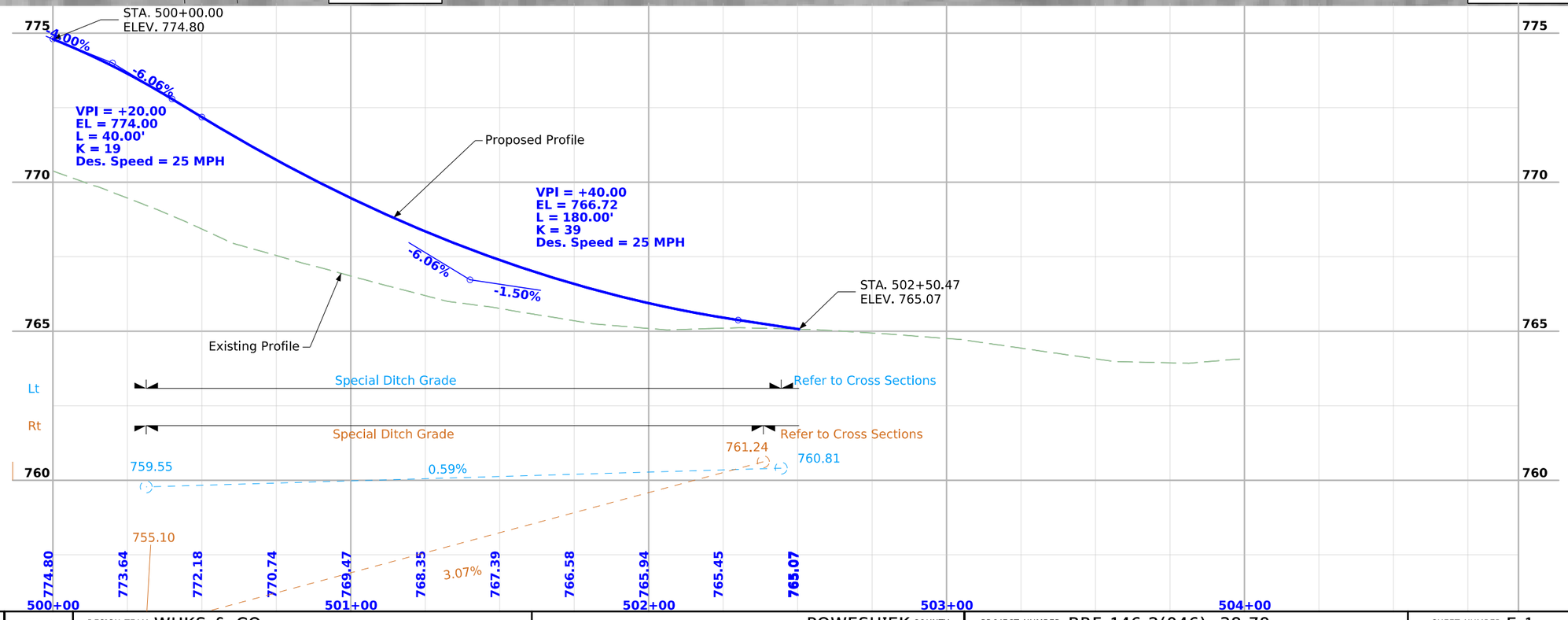
772.00 771.90 771.84 771.83 771.85 771.92 772.02 772.17 772.36 772.59 772.86 773.18 773.53 773.93 774.09

2160+00 2161+00 2162+00 2163+00 2164+00 2165+00

FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER D.4

11:23:40 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Sheet_Files\SHT_79146046_d02_D2.dgn





FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER E.1

12:25:50 PM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Sheet_Files\SHT_79146046_WHKS_Z09_e01.dgn

SURVEY INDEX

County: Poweshiek
PIN: 24-79-146-010
Project Number: BRF-146-2(046)--38-79
Location: North Skunk River 2.7 mi N of US 63
Type of Work: Bridge Unspecified
Project Directory: 7914601024

Survey Personnel

Jeremy Leemon – Survey Party Chief
Jacob Powers – Assistant Survey Party Chief
Matt Goedken – Assistant Surveyor

Date(s) of Survey

Begin Date	11/11/2024
End Date	11/13/2024

General Information

This survey is for a bridge replacement on IA 146 over North Skunk River. This project is a Limited Topography Survey.

Utility Information

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

Project Control

Nearby Iowa Real Time Network reference stations were utilized to obtain horizontal and vertical control on primary project control points. Three five-minute observations were taken and referenced against an NGS Monument. A Base-Rover setup was then established and calibrated to the RTN and NGS points. For additional details of the control survey, contact the Preliminary Survey department.

PROJECT DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 ADJUSTMENT)
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 9 (U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u3

Alignment Information

Survey alignment was not created for this project.

CONTROL POINT VICINITY MAP

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

HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment) - Iowa RCS Zone 9 (U.S. Survey Foot)

VERT. DATUM: NAVD88 - Geoid Model: 2018u3

Coordinate listing from next sheet will be used with IaRTN for monument recovery. No other reference ties are given.

Mahaska **STPN-146-1(007)--2J-62**
North Skunk River 2.7 mi N of US 63
7914601024

Project Code **24-79-146-010**

Route **IA 146**

		State		County		City			Temp Ease						
Parcel No	Owner Name	Fee	Ease	Fee	Ease	Fee	Ease	Excess			Mitigation	Other	Relocation Needed	A/C Only	Total Acq
1R	Union Pacific Railroad		0.85 AC												

1 Parcels

Poweshiek **STPN-146-2(047)--2J-79**
North Skunk River 2.7 mi N of US 63
7914601024

Project Code **24-79-146-010**

Route **IA 146**

		State			County			City				Temp Ease						
Parcel No	Owner Name	Fee	Ease		Fee	Ease		Fee	Ease		Excess			Mitigation	Other	Relocation Needed	A/C Only	Total Acq
2	Bonnie L Dejong Tr	0.27 AC																
3	Poweshiek County	0.21 AC																

2 Parcels

NO ACCESS RIGHTS ARE TO BE ACQUIRED ON THIS PROJECT.

FILE NO.	ENGLISH	DESIGN TEAM	IOWA DOT * OFFICE OF ROW	COUNTY	PROJECT NUMBER	SHEET NUMBER	

(MAHASKA CO)
PRAIRIE TWP.
T-77N R-16W
SEC. 1

(POWESHIEK CO)
SUGAR CREEK TWP.
T-78N R-16W
SEC. 36

1R

2

BONNIE L DEJONG TR

UNION PACIFIC RAILROAD

2145+00

2150+00

2155+00

100TH ST

146

146

STA: 2148+82.44
OFF: 70.00' LT

STA: 2151+65.41
OFF: 70.00' LT

STA: 2152+27.53
OFF: 68.52' LT

STA: 2154+00.00
OFF: 69.51' LT

STA: 2154+50.00
OFF: 90.00' LT

STA: 2155+24.82
OFF: 90.00' LT

STA: 2145+38.28
OFF: 60.02' RT

STA: 2148+19.66
OFF: 60.62' RT

STA: 2152+26.79
OFF: 120.00' RT

STA: 2155+30.00
OFF: 142.00' RT

STA: 2155+76.79
OFF: 305.00' RT

STA: 2157+00.00
OFF: 120.00' RT

STA: 2156+56.83
OFF: 305.00' RT

1R

UNION PACIFIC RAILROAD

2

BONNIE L DEJONG TR

3

POWESHIEK COUNTY

(MAHASKA CO)
PRAIRIE TWP.
T-77N R-16W
SEC. 1

(POWESHIEK CO)
SUGAR CREEK TWP.
T-78N R-16W
SEC. 36

0 50
FEET

Right of Way Design Information

THIS SHEET INCLUDED
FOR INFORMATION ONLY

ROW Team: CRYSTAL / CUVA
ROW #: STPN-146-2(047)--2J-79 (Powshiek)
ROW #: STPN-146-2(007)--2J-62 (Mahaska)
Plan Date: 3/13/2026
Color Legend:

- Property Lines
- Temporary Easement
- Permanent Acquisition
- Permanent Acquisition County
- Permanent Acquisition City

FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER H.1	

10:46:30 AM 3/16/2026 wcrysta pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7914601024\ROW\H_Sheet_79146047.dgn

SUGAR CREEK TWP.
T-78N R-16W
SEC. 36

2

BONNIE L DEJONG TR

2160+00

2165+00

2170+00

STA: 2165+56.25
OFF: 76.20' LT

146

146

FO

T1

FO2

STA: 2157+00.00
OFF: 120.00' RT

STA: 2161+15.00
OFF: 72.73' RT

STA: 2165+55.80
OFF: 60.00' RT

2

BONNIE L DEJONG TR

SUGAR CREEK TWP.
T-78N R-16W
SEC. 36

0 50
FEET

Right of Way Design Information
THIS SHEET INCLUDED
FOR INFORMATION ONLY

ROW Team: CRYSTAL / CUVA
ROW #: STPN-146-2(047)--2J-79 (Powshiek)
ROW #: STPN-146-2(007)--2J-62 (Mahaska)
Plan Date: 3/13/2026
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition
Permanent Acquisition County
Permanent Acquisition City

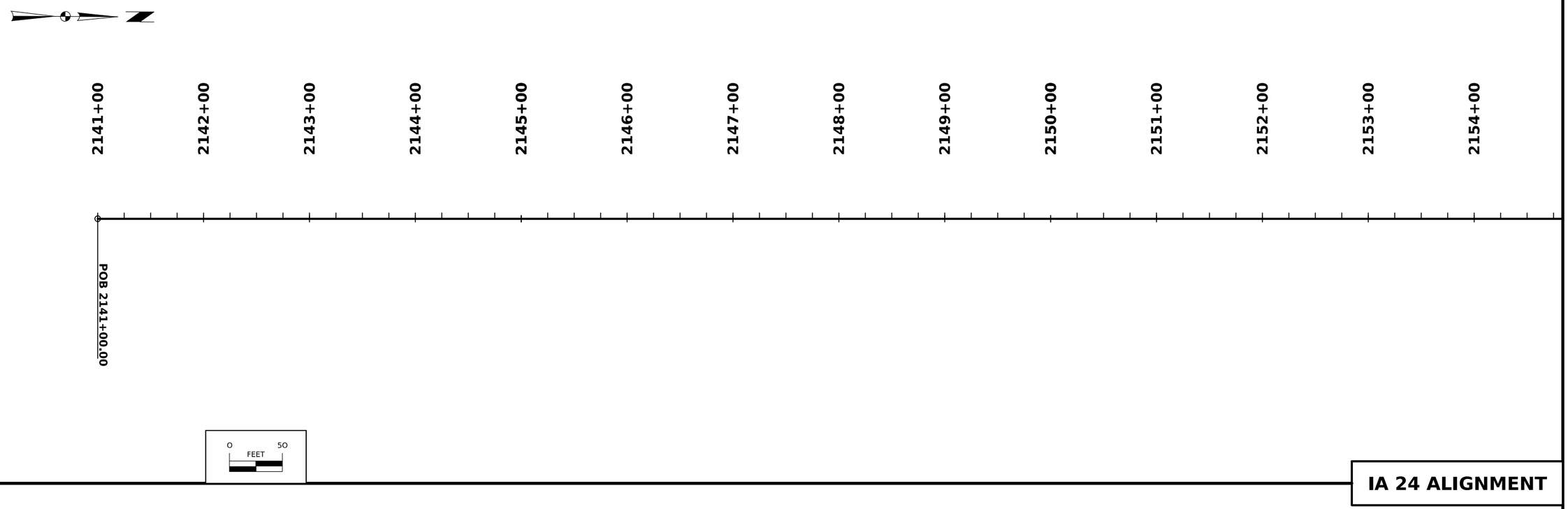
FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER H.2	

10:46:33 AM 3/16/2026 wcrysta pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7914601024\ROW\H_Sheet_79146047.dgn

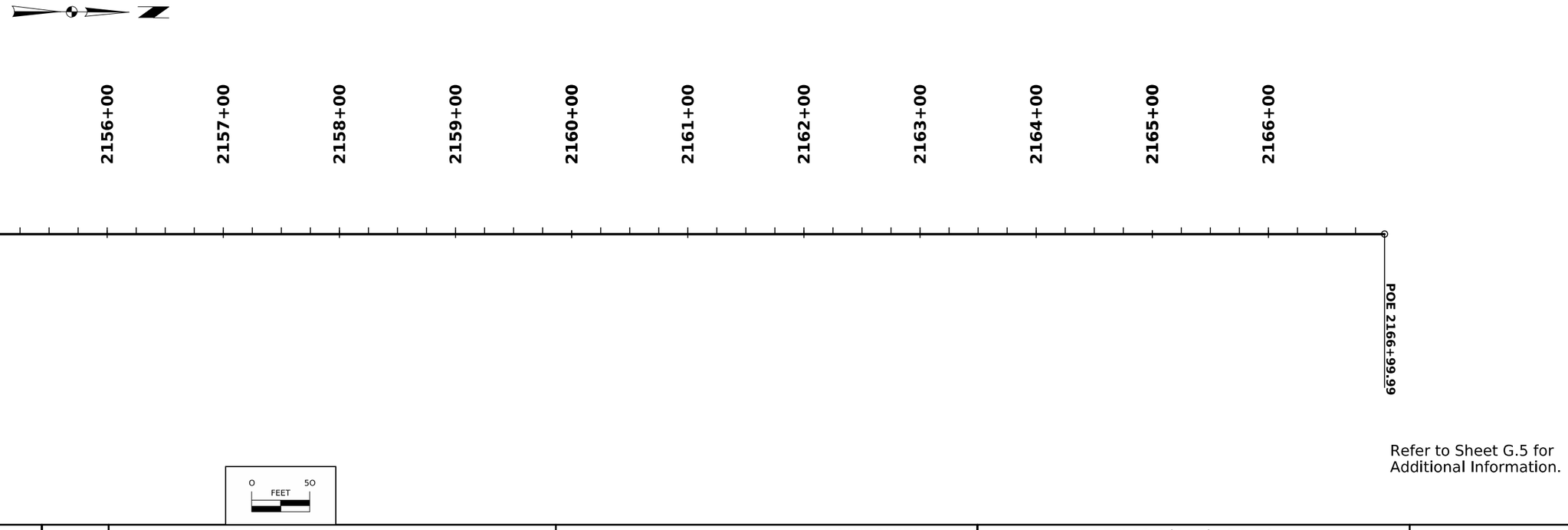
HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment)
Ia. Regional Coordinate System Zone 9 (U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2018u3

Point Name	Northing	Easting	Elevation	Code-Description
100	7660552.42	19545161.19	784.95	CP SET 5/8" X 4' REBAR W PINK CAP, 23' W OF IA 146 CL, N SIDE OF FIELD ENT
103	7654917.28	19543912.93	843.53	CP SET 5/8" X 4' REBAR W PINK CAP, 15' E OF FARM ENT CL, 1070 LEXINGTON AVE
N87	7658958.53	19545004.82	770.21	BM FOUND NGS MONUMENT NE RAILROAD BRIDGE ABUT
500	7658515.79	19545250.13	770.77	BM SET RR SPK W SIDE PP 50' E OF IA 146 CL



IA 24 ALIGNMENT



Refer to Sheet G.5 for Additional Information.

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER G.4	

2:31:05 PM 9/3/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Sheet_Files\SHT_g02_79146046_WHKS.dgn

ALIGNMENT COORDINATES

Line No.	Name	Location	Point on Tangent Station	Point on Tangent Y Northing	Point on Tangent X Easting	Begin Spiral Station	Begin Spiral Y Northing	Begin Spiral X Easting	Begin Curve Station	Begin Curve Y Northing	Begin Curve X Easting	Simple Curve PI or Master PI Station	Simple Curve PI or Master PI Y Northing	Simple Curve PI or Master PI X Easting	End Curve Station	End Curve Y Northing	End Curve X Easting	End Spiral Station	End Spiral Y Northing	End Spiral X Easting
1.0	ML146		2141+00.00	7657676.570	19545205.884															
2.0	ML146		2167+00.00	7660276.520	19545189.883															

108_23A
8/15/22

TRAFFIC CONTROL PLAN

The IA 146 bridge over the North Skunk River will be constructed under a full road closure with a detour. Traffic will be detoured to the East with the following route:

Northbound Traffic: Traffic will travel East on US 63 to Parkin Ave. for 4.0 miles. Then North on US 63 to County Highway F57 in Montezuma for 8.6 miles. Then West to IA 146 for 7.0 miles. Total Detour length is 19.6 miles.

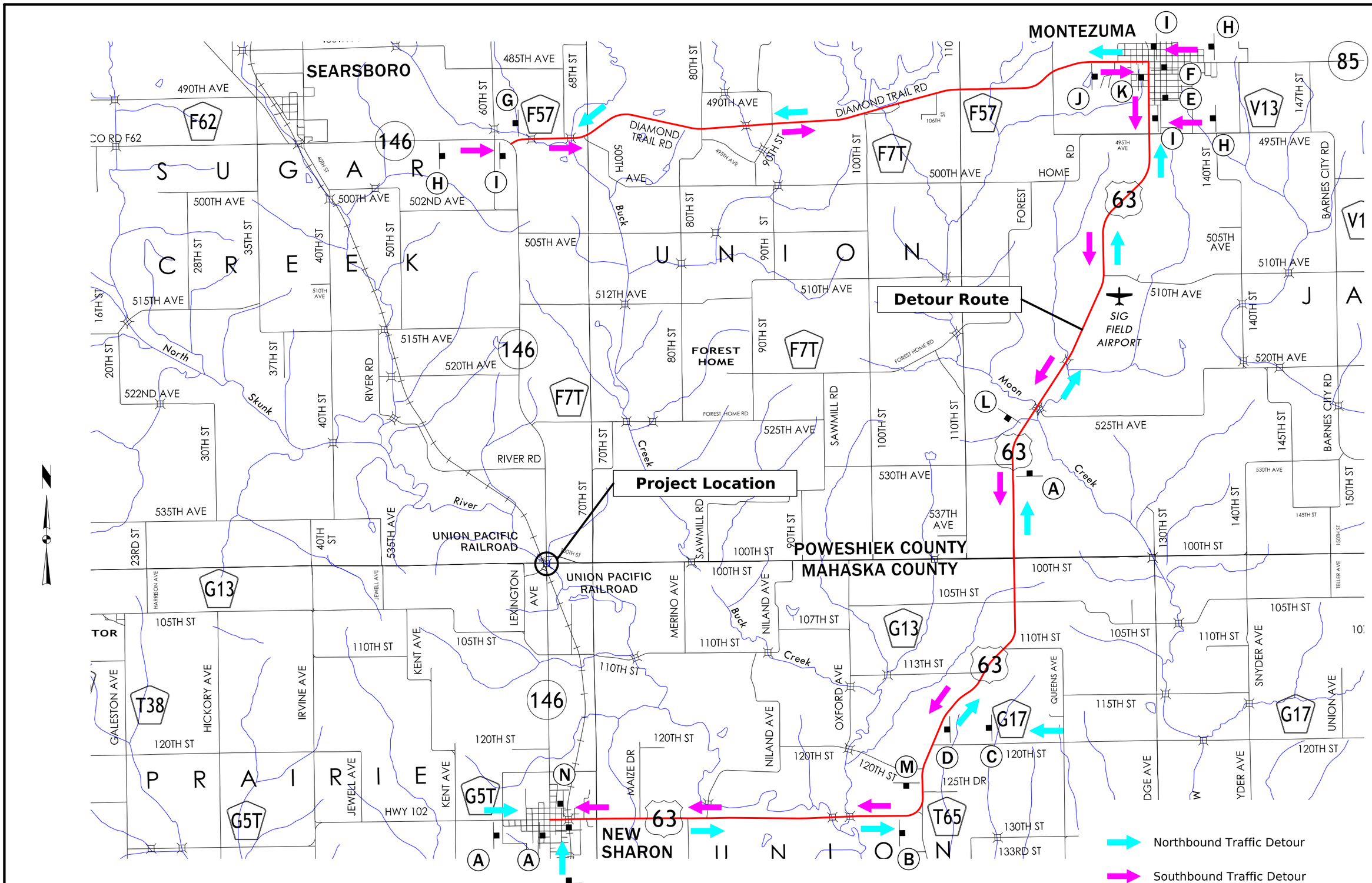
Southbound Traffic: Traffic will travel East on County Highway F57 to US 63 for 7.0 miles. Then South on US 63 for 8.6 miles. Then West on US 63 to IA 146 for 4.0 miles. Total Detour length is 19.6 miles.

The side road to Lexington Ave. on the West side of the road will be closed during construction. Robertson Access and the trail on the East side of the road will be closed during construction.

COORDINATED OPERATIONS

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

Project	Type of Work
District to provide.	



FILE NO. ---	ENGLISH	DESIGN TEAM **WHKS & CO.**	**POWESHIEK** COUNTY	PROJECT NUMBER **BRF-146-2(046)--38-79**	SHEET NUMBER **J.3**

12:28:00 PM 12/4/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Sheet_Files\SHT_79146046_j02_D2.dgn

A

M4-8, 30" X 15"
M3-1, 30" X 15"
M1-5, 24" X 24"
M6-3, 30" X 21"

B

M4-8, 30" X 15"
M3-1, 30" X 15"
M1-5, 24" X 24"
M6-2, 30" X 21"

C

M4-8, 30" X 15"
M3-1, 30" X 15"
M1-5, 24" X 24"
M5-1, 30" X 21"

D

M4-8, 30" X 15"
M3-1, 30" X 15"
M1-5, 24" X 24"
M6-1, 30" X 21"

E

M4-8, 30" X 15"
M3-1, 30" X 15"
M1-5, 24" X 24"
M5-1, 30" X 21"

F

M4-8, 30" X 15"
M3-1, 30" X 15"
M1-5, 24" X 24"
M6-1, 30" X 21"

G

M4-8b, 30" X 15"
M4-8, 30" X 15"
M3-1, 30" X 15"
M1-5, 24" X 24"

H

M4-8, 30" X 15"
M3-3, 30" X 15"
M1-5, 24" X 24"
M5-1, 30" X 21"

I

M4-8, 30" X 15"
M3-3, 30" X 15"
M1-5, 24" X 24"
M6-1, 30" X 21"

J

M4-8, 30" X 15"
M3-3, 30" X 15"
M1-5, 24" X 24"
M5-1, 30" X 21"

K

M4-8, 30" X 15"
M3-3, 30" X 15"
M1-5, 24" X 24"
M6-1, 30" X 21"

L

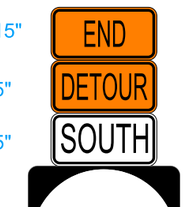
M4-8, 30" X 15"
M3-3, 30" X 15"
M1-5, 24" X 24"
M6-3, 30" X 21"

M

M4-8, 30" X 15"
M3-3, 30" X 15"
M1-5, 24" X 24"
M6-2B, 30" X 21"

N

M4-8b, 30" X 15"
M4-8, 30" X 15"
M3-3, 30" X 15"
M1-5, 24" X 24"



FILE NO. ---	ENGLISH	DESIGN TEAM **WHKS & CO.**	**POWESHIEK** COUNTY	PROJECT NUMBER **BRF-146-2(046)--38-79**	SHEET NUMBER **J.4**

12:28:01 PM 12/4/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Sheet_Files\SHT_79146046_j02_D2.dgn

Addendum: Sign Placements and Language for the Hwy 146 Bridge Over the North Skunk River

This stream is identified as a navigable water way and is granted protection in the interest of public safety under the Authority 7 of Iowa Code Chapter 462A.32.

Contractor shall contact the Iowa DNR water trails coordinator prior to starting and finishing project construction so the appropriate information can be entered into the DNR's interactive river mapping system.

- The Iowa DNR contact is John.wenck@dnr.iowa.gov
- The Iowa DNR shall be contacted no less than one week prior to placing and removing obstructions in channel.

Contractor shall provide, install, maintain, and remove all paddle route signs.

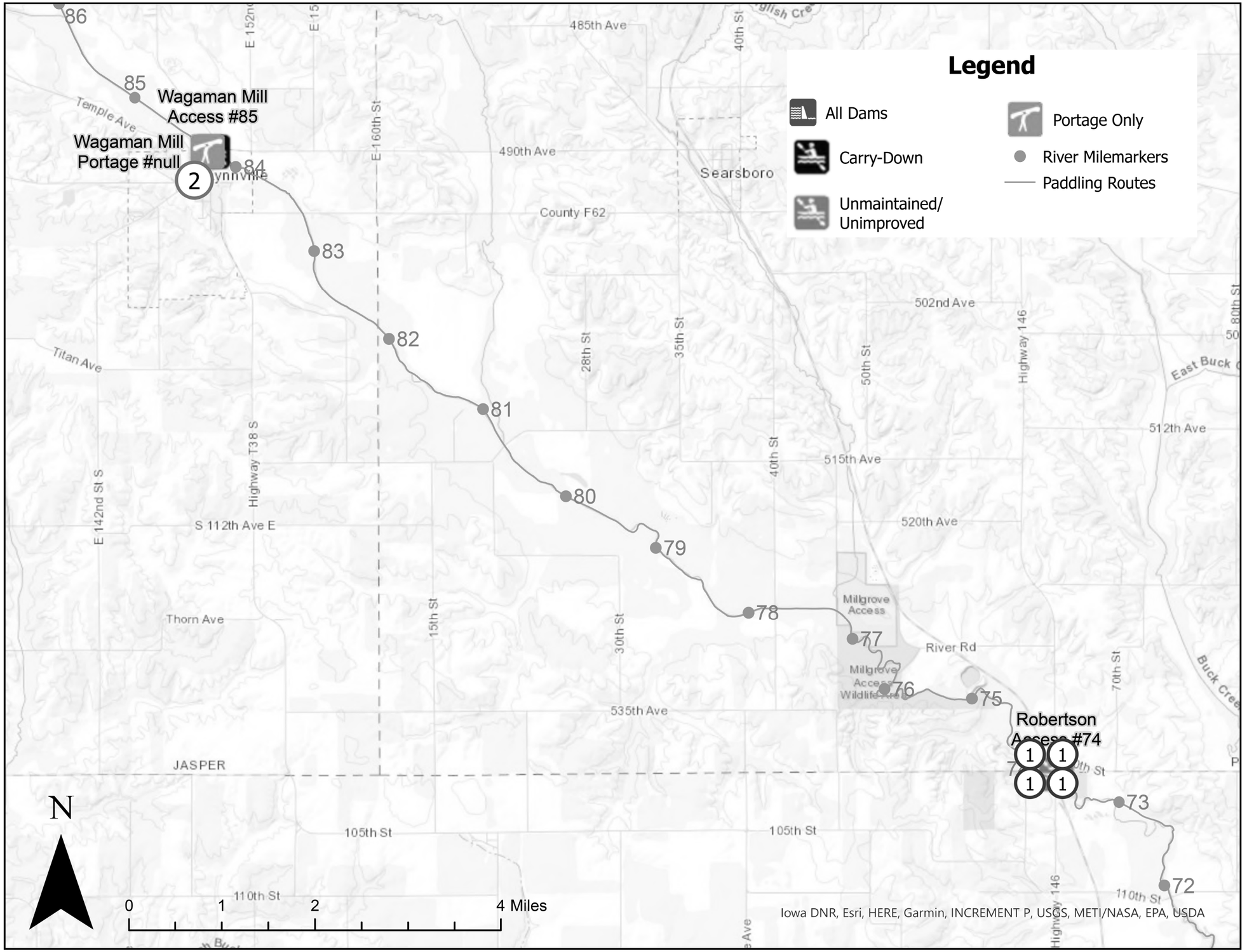
- Refer to map for Paddle Route sign locations
- Sign mounting methods used to install temporary signs shall be at the discretion of applicants and/or their contractors, and are not to be construed as limited to Iowa DNR methods listed in Chapter 6 of *Developing Water Trails in Iowa* found at https://www.iowadnr.gov/places-go/water-trails/water-trail-development#developing-water-trails-in-iowa.
- Contractor shall coordinate sign placement and installation with Conservation Officer Will Brickel via phone #641-521-2003 or email will.brickel@dnr.iowa.gov
- Contractor shall coordinate sign placement and management for Wagaman Accesses with Jasper CCB via phone #641-792-9780 or email conservation@jasperia.org

Maintenance of Paddle Route signage shall meet the same requirements as roadway traffic control per Standard Specifications articles 2528.01C, 2528.02 and 2528.03.

Signs shall be maintained by applicants and/or their contractor so as to be visible throughout the period the channel is obstructed. When obstructions to the channel are not needed for a period of 30 days or greater, signage should be temporarily removed.

Use color coding for all in this color style according to *Developing Water Trails In Iowa* (https://www.iowadnr.gov/places-go/water-trails/water-trail-development#developing-water-trails-in-iowa) criteria:

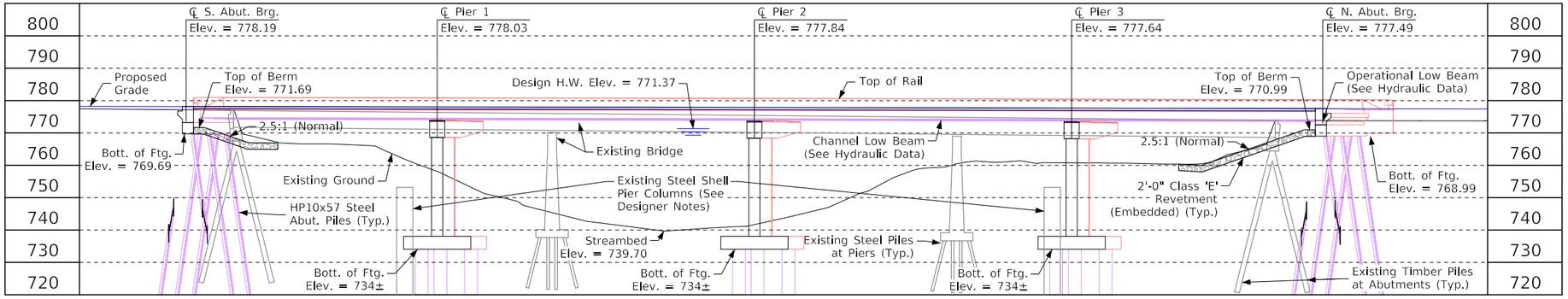
Sign # on Map	Quantity	Style	Minimum Letter Height	Language	Location Orientation
(2)	1	Orange/Warning	3"	Construction Hazard at Hwy 146 Bridge ---------- Don't Launch Here For Downstream Trip	At the top of the boat ramp or carry-down access, facing parking area.
(1)	4	Red/Danger	4"	No Thru Traffic	At bridge site, opposite sides of the river, 1 pair facing upstream, 1 pair facing downstream; OR, 2 signs placed near center of channel 12 feet above regular water level, one facing upstream, one facing downstream.



FILE NO. ---	ENGLISH	DESIGN TEAM **WHKS & CO.**	**POWESHIEK** COUNTY	PROJECT NUMBER **BRF-146-2(046)--38-79**	SHEET NUMBER **J.6**

12:28:08 PM 12/4/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Sheet_Files\SHT_79146046_j02_D2.dgn

Control Point: BM N87, Found NGS Monument NE Railroad Bridge Abut, N=7658958.53, E=19545004.82, Elev.=770.21
BM 500, Set RR Spike w/side PP 50' E of IA 146 CL, N=7658515.79, E=19545250.13, Elev.=770.77



-0.20 %

VPT Sta. = 2149+00.23
VPT Elev. = 778.545

VPT Sta. = 2154+30.00
VPT Elev. = 777.486

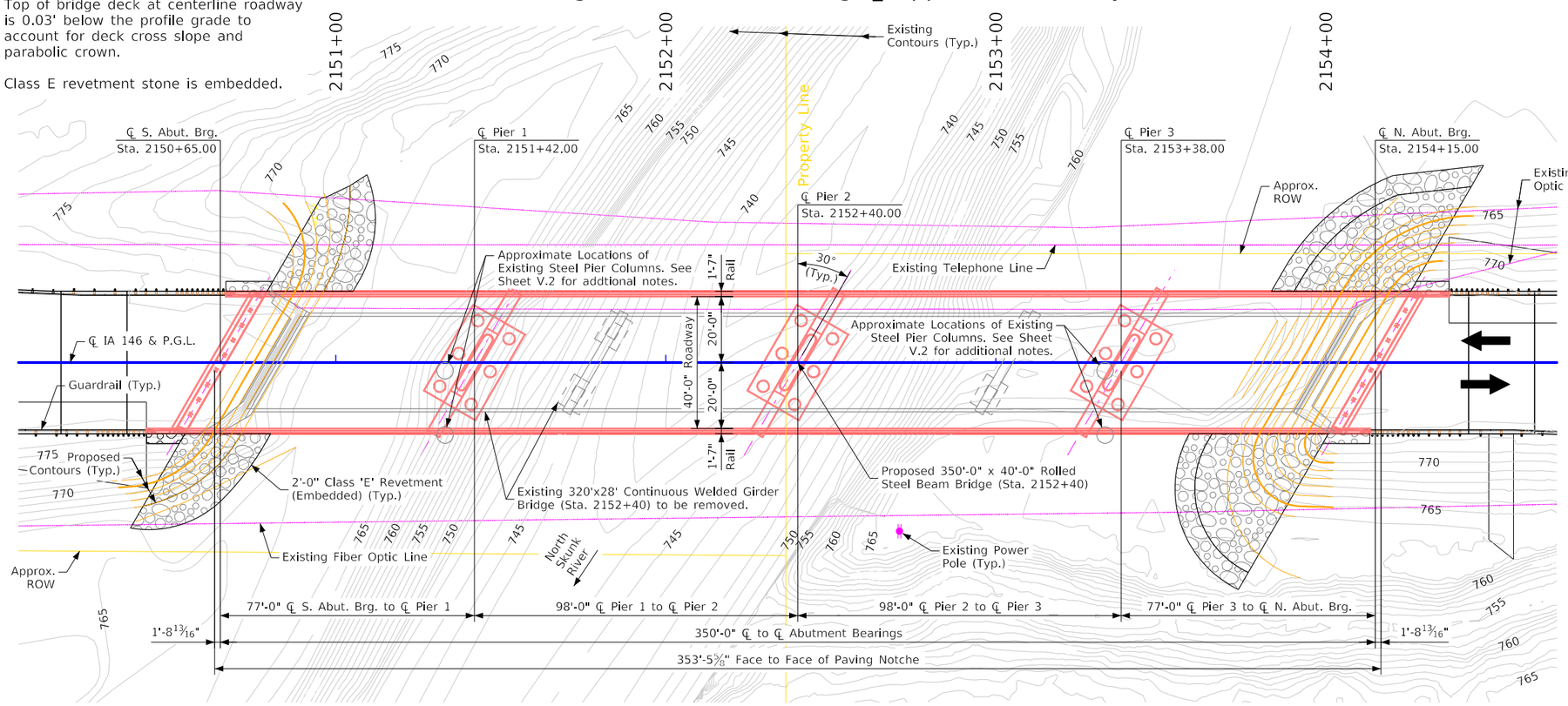
Proposed Profile Grade ℄ IA 146

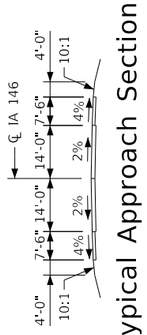
Notes:

Top of bridge deck at centerline roadway is 0.03' below the profile grade to account for deck cross slope and parabolic crown.

Class E revetment stone is embedded.

Longitudinal Section Along ℄ Approach Roadway





Typical Approach Section

Hydraulic Data

RIDB: SKUNKR_N_72.70
Drainage Area = 385 sq. mi.
Site Stream (HGL) Slope = 0.039% (2.1 ft/mi)

Discharges from USGS Regression Equations
USGS Report SIR 2013-5086, Region 2

Operational Low Beam (NW Corner) = 773.50
Channel Low Beam 2152+82 = 773.79
Ave. Low Water Stage = 749.0
Extreme Highwater = Unknown
Roadway Overtopping El. = 771.83
Sta. 2159+98 (~100-yr event)

Q_{25} = 16,800 cfs
Stage = 769.40

Q_{50} = 19,700 cfs
Stage = 770.43
Natural Stage (DNR No Bridge/Road) = 770.71
Backwater = 0.29 ft
Ave. Bridge Velocity = 5.4 ft/s
Operational Freeboard = 3.07 ft

Q_{100} (Design) = 22,500 cfs
Stage = 771.37
Backwater = 0.35 ft
Ave. Bridge Velocity = 5.8 ft/s
Operational Freeboard = 2.13 ft

Q_{200} = 28,200 cfs
Stage = 773.37
Backwater = 0.90 ft
Ave. Bridge Velocity = 6.0 ft/s
Operational Freeboard = 0.13 ft
Calculated Design Scour = 730.3

Q_{500} = 29,700 cfs
Stage = 773.81
Backwater = 0.99 ft
Ave. Bridge Velocity = 6.0 ft/s
Operational Freeboard = -0.31 ft
Channel Freeboard = -0.02 ft
Calculated Check Scour = 729.6

Utilities Note:

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

General Utility Symbols:

FO - Fiber Optic Line
T - Telephone Line
=●= - Power Poles

whks
engineers + planners + land surveyors

Location

IA 146 over North Skunk River
T-77 & 78 N R-16 W
Section 1 & 36
Prairie & Sugar Creek Township
Poweshiek County
FHWA No. 45970 (Existing)
FHWA No. 45971 (Proposed)
Bridge Maint. No. 7902.7S146
Latitude 41.508676°
Longitude -92.651647°

Situation Plan

0 20
Scale In Feet

N

Traffic Data

2024 AADT 1,320 V.P.D.
Trucks 19 %

Hydraulic Design

LICENSED PROFESSIONAL ENGINEER
Brian J. Birkland
17375
IOWA

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

Signature — Date: XX-XX-XXXX
Brian J. Birkland
Printed or Typed Name
My license renewal date is December 31, 2026
Pages or sheets covered by this seal: V.1-V.3

Preliminary Not for construction

Preliminary

Design For 30° Skew L.A.

350'-0" x 40'-0" Rolled Steel Beam Bridge

77'-0" End Spans — 2 - 98'-0" Interior Spans

Situation Plan

STA. 2152+40.00 (IA 146) — Turn-in Date: January 2025

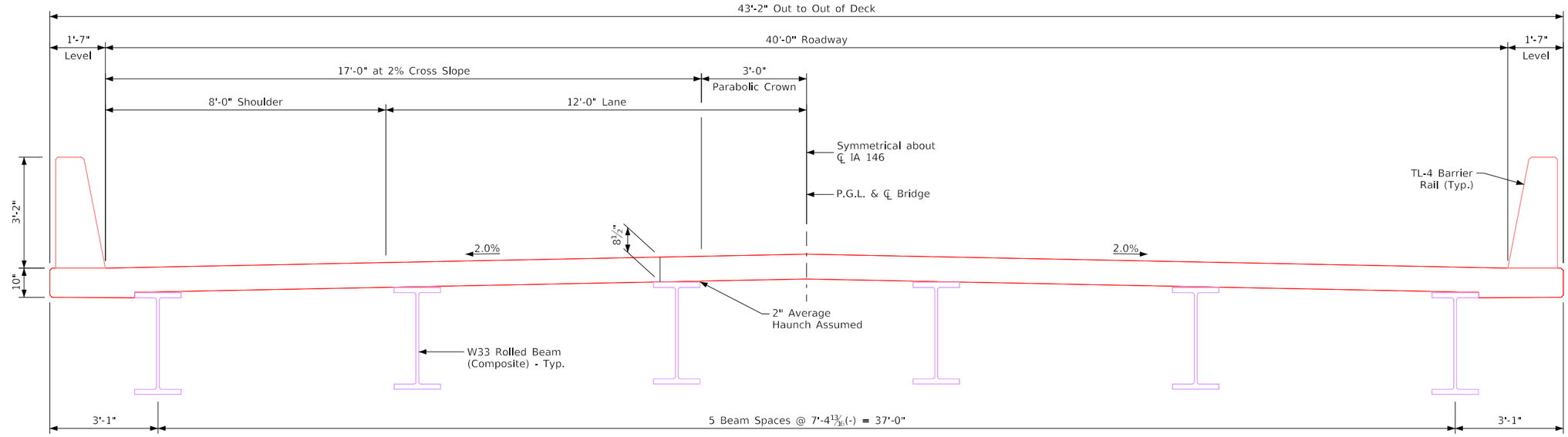
Poweshiek County

IOWA DEPARTMENT OF TRANSPORTATION

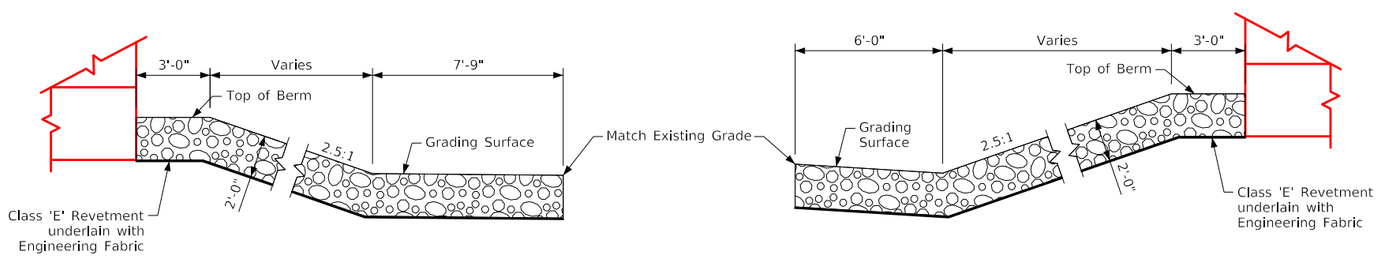
Design No. TBD — Design Sheet No. 1 of 3 — FHWA No. 45971

FILE NO. TBD	ENGLISH	DESIGN TEAM WHKS & Co.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER V.1

11:06:11 AM 10/3/2025 cmartin pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Bridge\(046)_Bridge-Unspecified\SHT_79146046_WHKS_DSN#_FHWA#_Z09



Transverse Section



South Abutment

North Abutment

Typical Berm Armoring Details

General Notes:

(Final designer to include in final plans)
This design is for the replacement of the existing 320'-0" x 28'-0" Continuous Welded Girder Bridge, Design No. 156, FHWA No. 45970, and Maint. No. 7902.7S146.

Designer Notes:

(Final designer to delete these notes from final Situation Plan)
--TL-4 Single Slope Bridge Railing Proposed
--Beam type - Rolled Steel Beams (33 in. maximum depth)
--Pier type - T-Piers (assumed width 3'-6"). Drilled shafts are proposed due to shallow rock and potential interference with buried steel shell piers at Piers 1 and 3. Bottom of pier footings set approx. 6 ft. below streambed elevation.
--Abutment type - Semi-integral (bridge exceeds length limits for integral abutments per BDM 3.7.2). Bottom of abutment footing elevations are based on 8½" deck, 2" haunch, 33" beam depth, 6" bearing thickness, and 4' footing depth.
--Remnants of steel shell pier columns from a previous 200'x18' steel high truss bridge are possible conflicts with Piers 1 and 3. Locations shown are approximate as plans are not available. The piers were removed to an elevation of 754± during construction of the current bridge; tip elevation is unknown. Proposed drilled shaft layout is intended to reduce conflicts with the approximate steel shell pier columns. Final Designer shall consider additional or complete removal, alternate layouts, and/or additional construction tolerance in case of conflicts.
--An Iowa DNR Flood Plain Permit is required. Preliminary Design will submit the application and place the permit in the PW Regulatory_Permits subdirectory folder upon receipt.
--Requirements for state water trail or paddling route are applicable. Signage, plan notes and bid items shall be addressed by the Design Bureau and included in the road plans.
--Density used for Class E Revetment quantity calculations is 1.6 Tons/CY.

Preliminary

Design For 30° Skew L.A.

350'-0" x 40'-0" Rolled Steel Beam Bridge

77'-0" End Spans — 2 - 98'-0" Interior Spans

Situation Plan - Misc.

STA. 2152+40.00 (IA 146)

Turn-in Date: January 2025

Poweshiek County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. TBD — Design Sheet No. 2 of 3 — FHWA No. 45971

whks
engineers + planners + land surveyors

FILE NO. TBD	ENGLISH	DESIGN TEAM WHKS & Co.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER V.2	

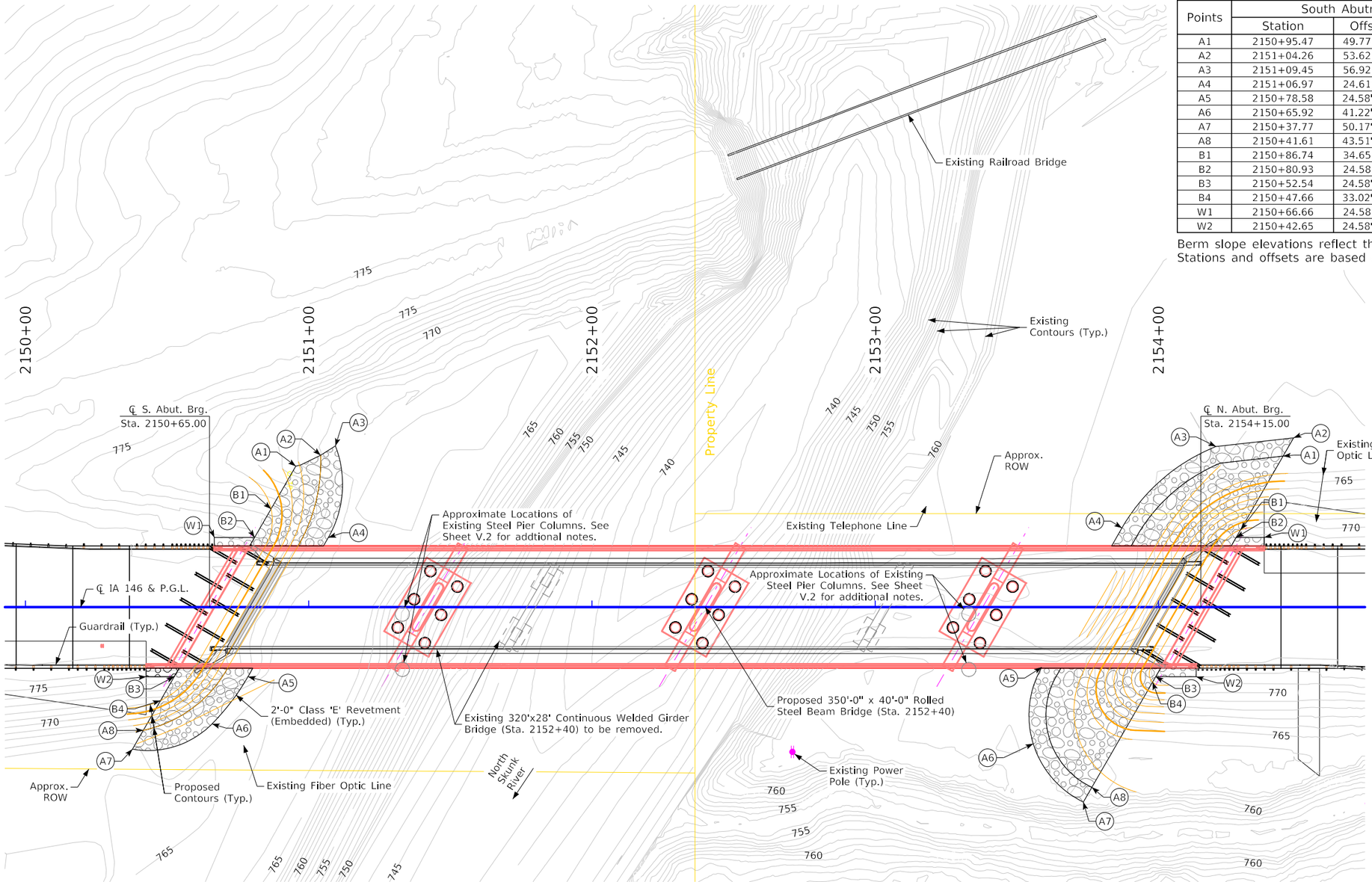
11:06:15 AM 10/3/2025 cmartin pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Bridge\(046)_Bridge-Unspecified\SHT_79146046_WHKS_DSN#_FHWA#_Z09

Control Point: BM N87, Found NGS Monument NE Railroad Bridge Abut, N=7658958.53, E=19545004.82, Elev.=770.21
BM 500, Set RR Spike w/side PP 50' E of IA 146 CL, N=7658515.79, E=19545250.13, Elev.=770.77

Berm Slope Location Table

Points	South Abutment			North Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	2150+95.47	49.77' LT.	768.00	2154+44.04	53.29' LT.	763.00
A2	2151+04.26	53.62' LT.	767.00	2154+47.76	59.75' LT.	763.60
A3	2151+09.45	56.92' LT.	766.31	2154+20.36	56.69' LT.	763.00
A4	2151+06.97	24.61' LT.	767.76	2153+87.14	27.93' LT.	762.50
A5	2150+78.58	24.58' RT.	768.50	2153+58.85	21.23' RT.	763.40
A6	2150+65.92	41.22' RT.	768.77	2153+55.82	48.23' RT.	763.32
A7	2150+37.77	50.17' RT.	766.85	2153+73.52	68.85' RT.	763.10
A8	2150+41.61	43.51' RT.	767.00	2153+76.53	63.64' RT.	763.22
B1	2150+86.74	34.65' LT.	771.69	2154+29.02	27.29' LT.	770.99
B2	2150+80.93	24.58' LT.	771.69	2154+27.46	24.58' LT.	770.99
B3	2150+52.54	24.58' RT.	771.69	2153+99.07	24.58' RT.	770.99
B4	2150+47.66	33.02' RT.	771.69	2153+97.96	26.51' RT.	770.99
W1	2150+66.66	24.58' LT.	777.66	2154+37.35	24.58' LT.	776.92
W2	2150+42.65	24.58' RT.	777.71	2154+13.34	24.58' RT.	776.97

Berm slope elevations reflect the grading surface.
Stations and offsets are based on the centerline of IA 146.



Site Plan

0 20
Scale In Feet

N

Estimated Berm Armoring Quantities

Location	Revetment Class E (Ton)	Engineering Fabric (SY)	Excavation Class 10 (CY)
South Berm	303.9	345.6	190.0
North Berm	563.4	602.3	352.1
Totals	867.3	947.9	542.1

Excavation quantities are calculated from grading surface.

Preliminary

Design For 30° Skew L.A.

350'-0" x 40'-0" Rolled Steel Beam Bridge

77'-0" End Spans — 2 - 98'-0" Interior Spans

Situation Plan - Site

STA. 2152+40.00 (IA 146) Turn-in Date: January 2025

Poweshiek County

IOWA DEPARTMENT OF TRANSPORTATION

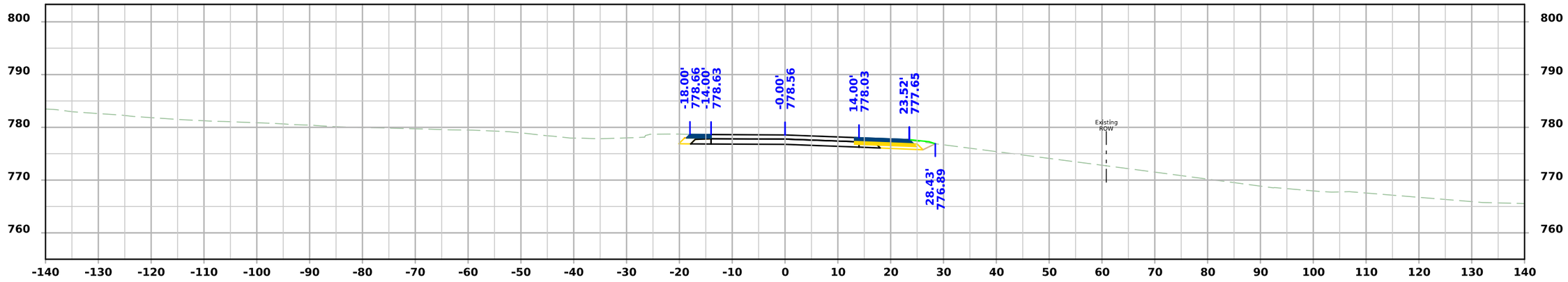
Design No. TBD Design Sheet No. 3 of 3 FHWA No. 45971

whks engineers + planners + land surveyors

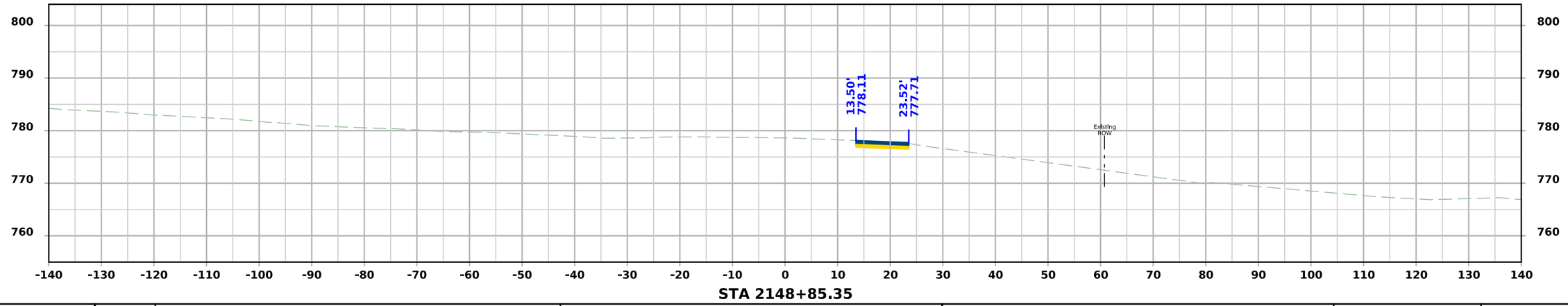
FILE NO. TBD	ENGLISH	DESIGN TEAM WHKS & Co.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER V.3

11:06:15 AM 10/3/2025 cmartin pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Bridge\(046)_Bridge-Unspecified\SHT_79146046_WHKS_DSN#_FHWA#_Z09

IA 146



STA 2149+00.00

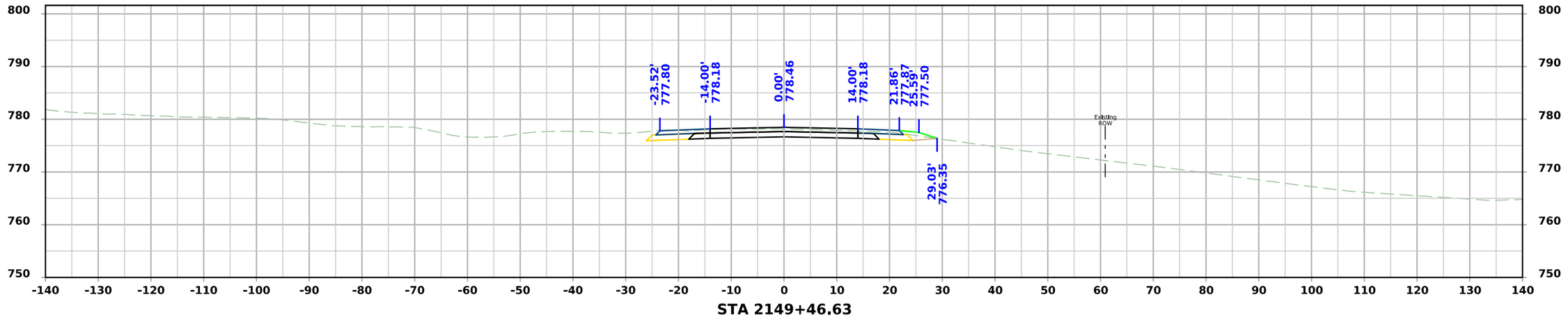


STA 2148+85.35

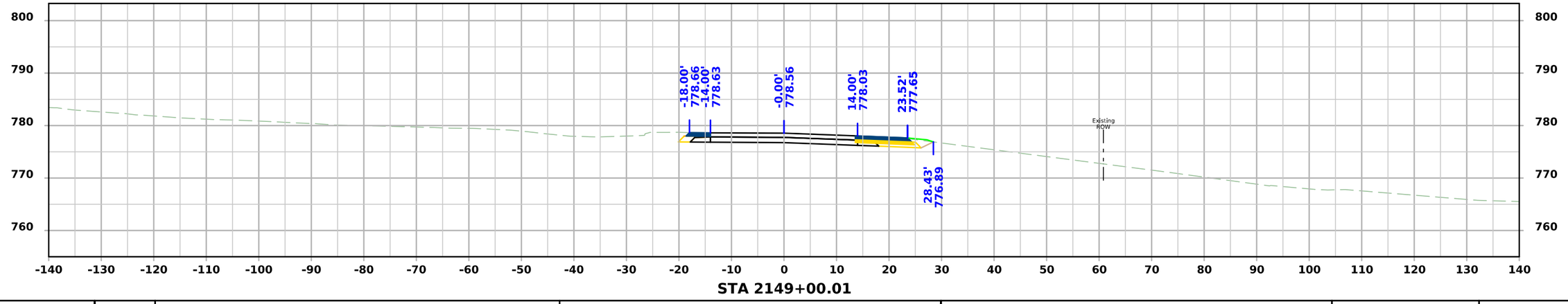
FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER W.1

9:07:30 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_w01_79146046_WHKS.dgn

IA 146



STA 2149+46.63

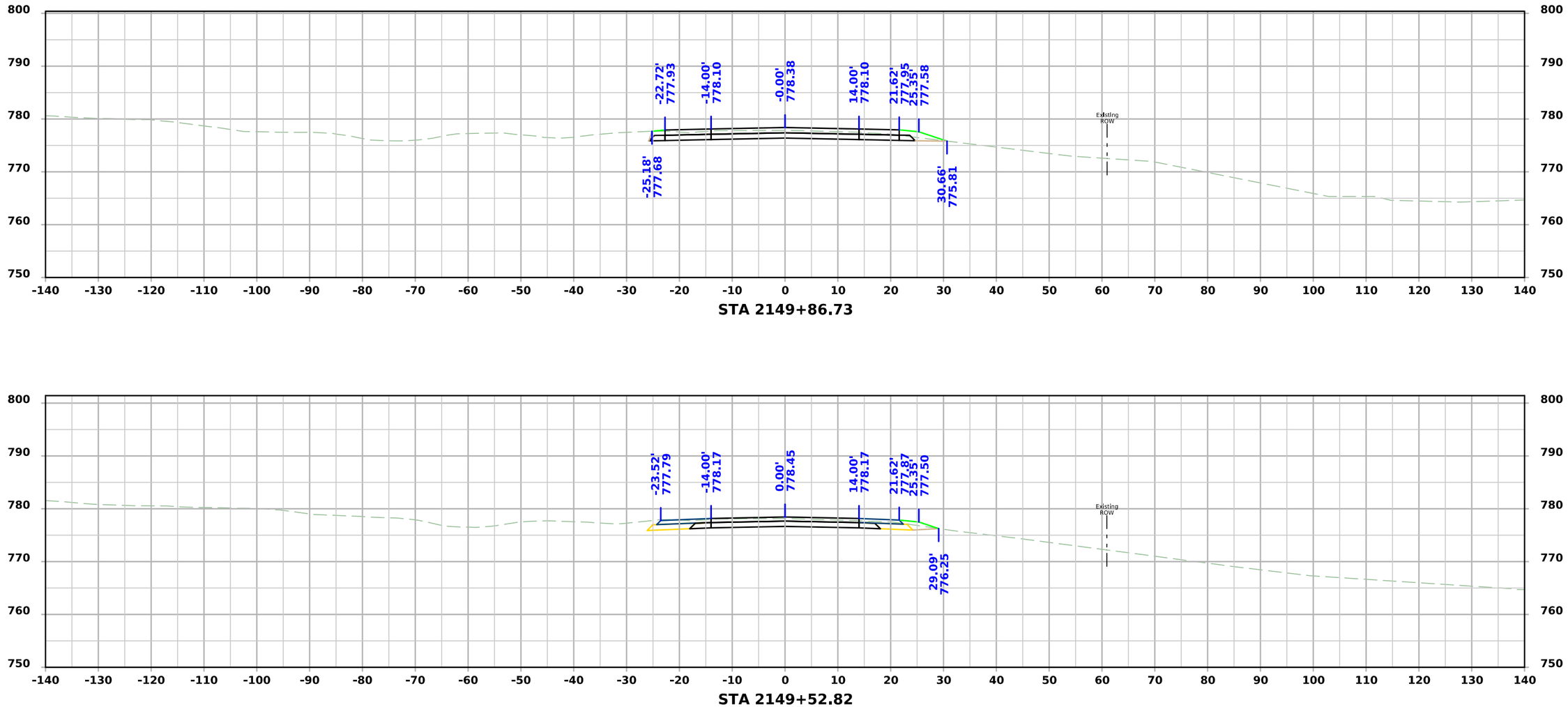


STA 2149+00.01

FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER W.2

9:07:36 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_w01_79146046_WHKS.dgn

IA 146



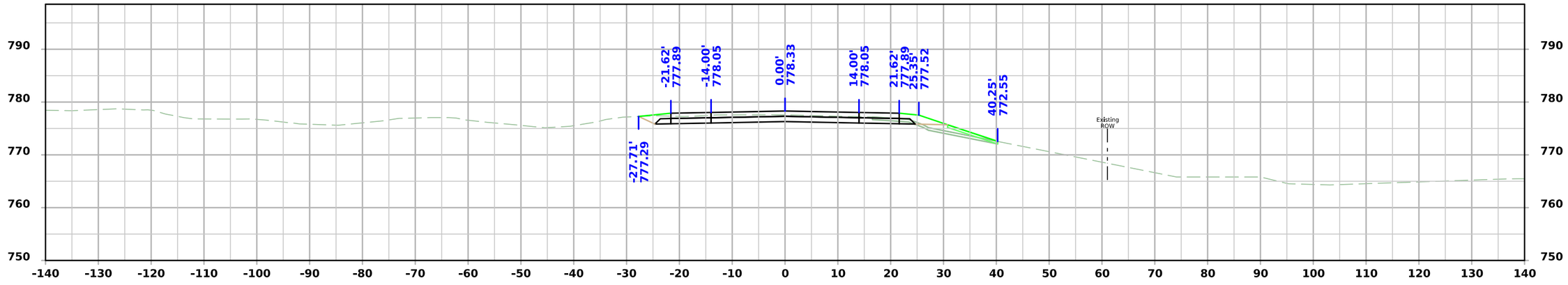
STA 2149+86.73

STA 2149+52.82

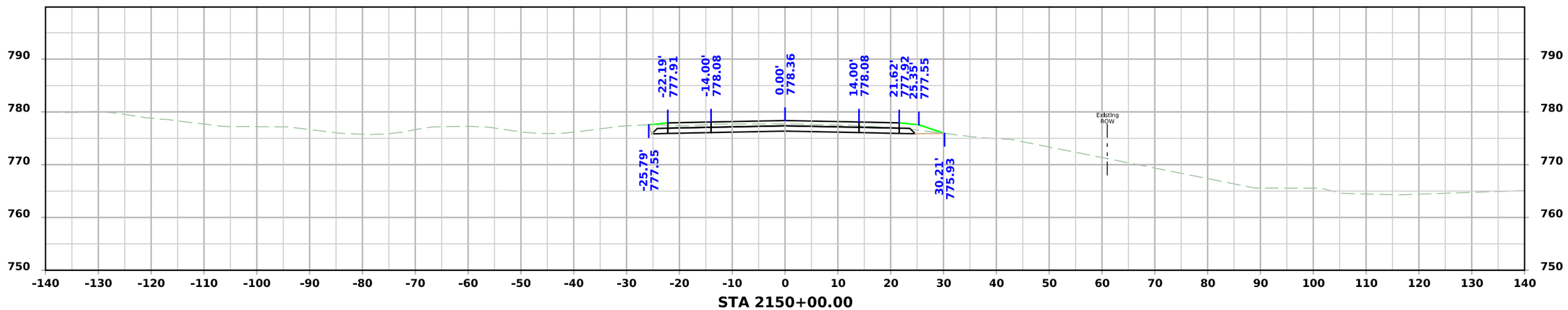
FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER W.3

9:07:37 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_w01_79146046_WHKS.dgn

IA 146



STA 2150+14.35

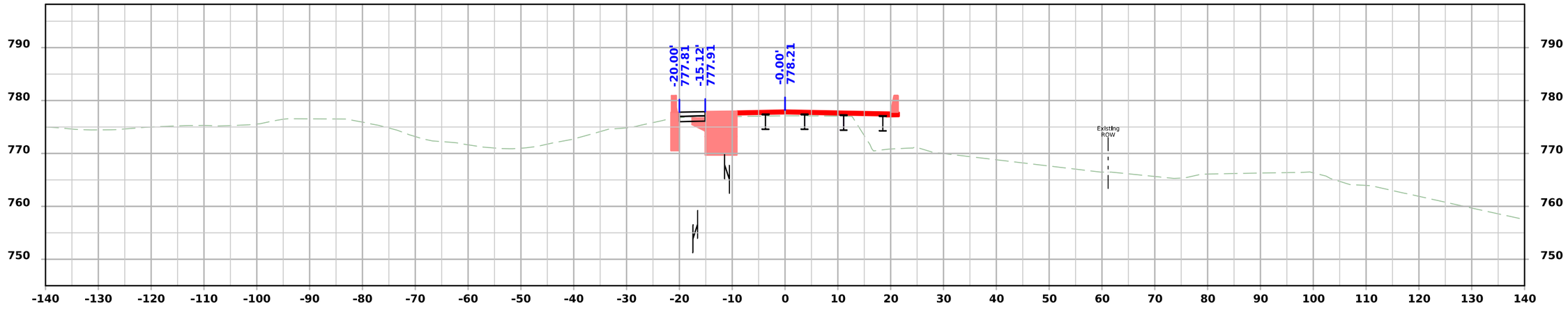


STA 2150+00.00

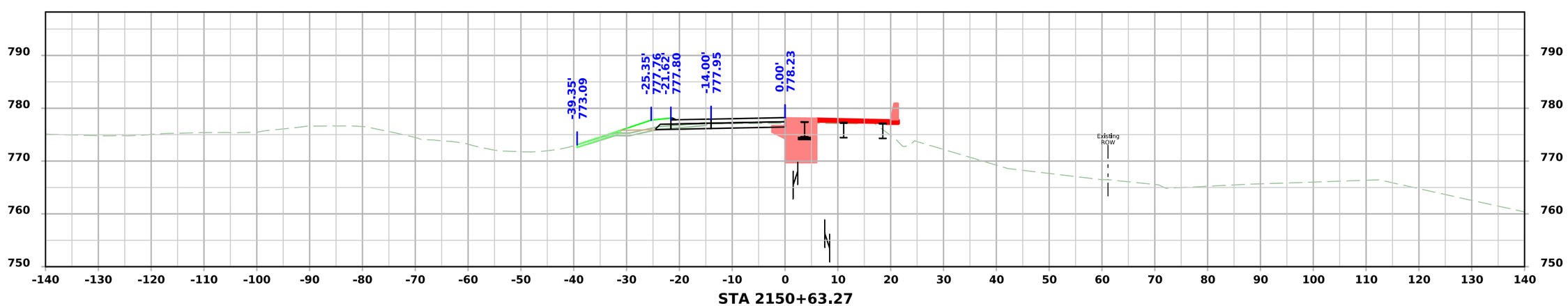
FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER W.4

9:07:38 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_w01_79146046_WHKS.dgn

IA 146



STA 2150+72.00

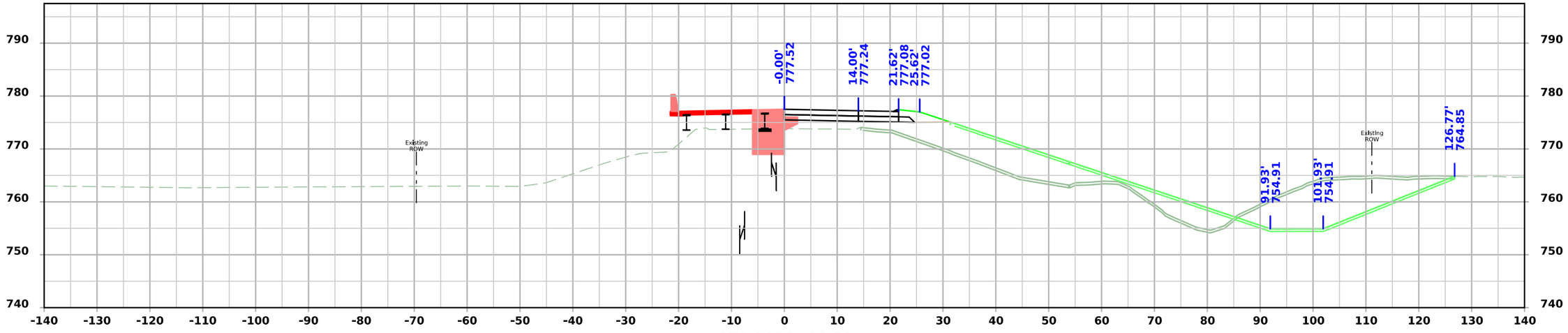


STA 2150+63.27

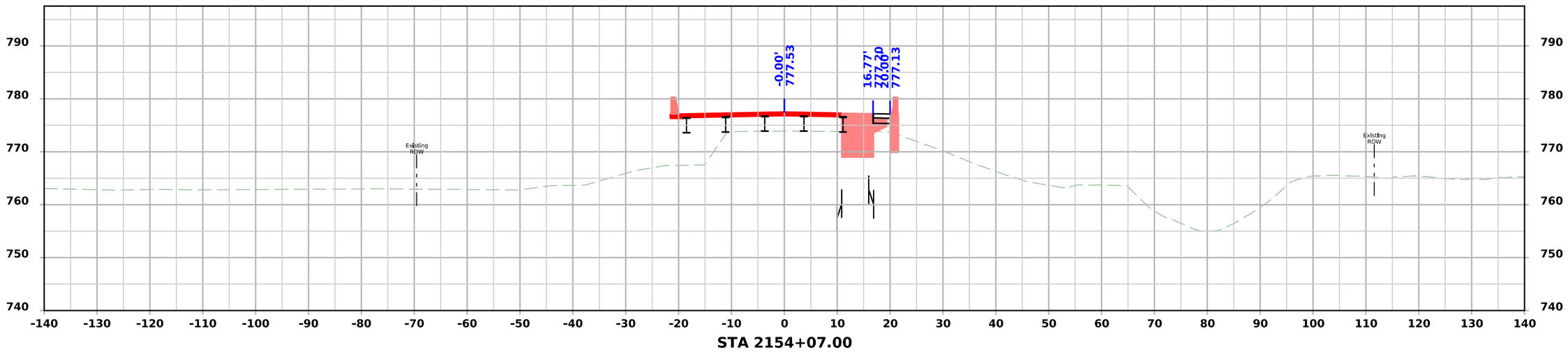
FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER W.5

9:07:39 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_w01_79146046_WHKS.dgn

IA 146



STA 2154+16.73

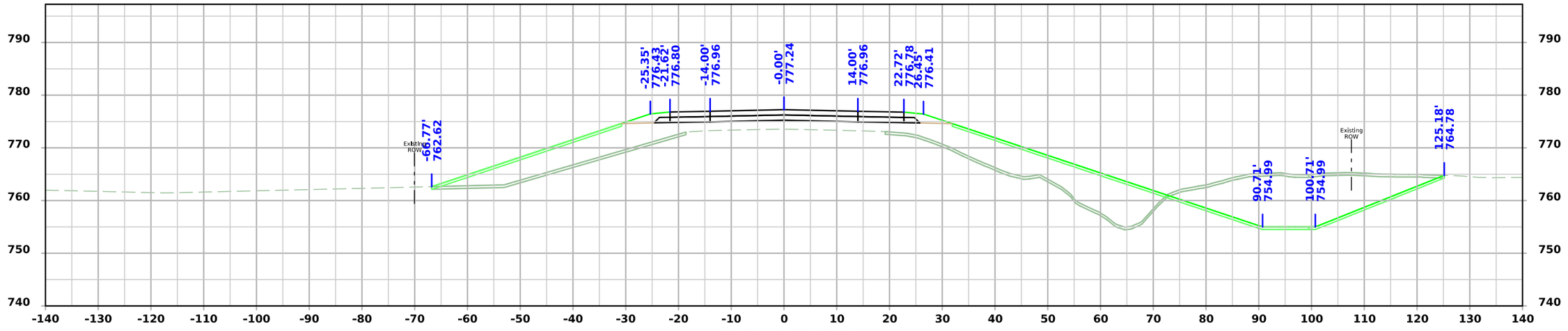


STA 2154+07.00

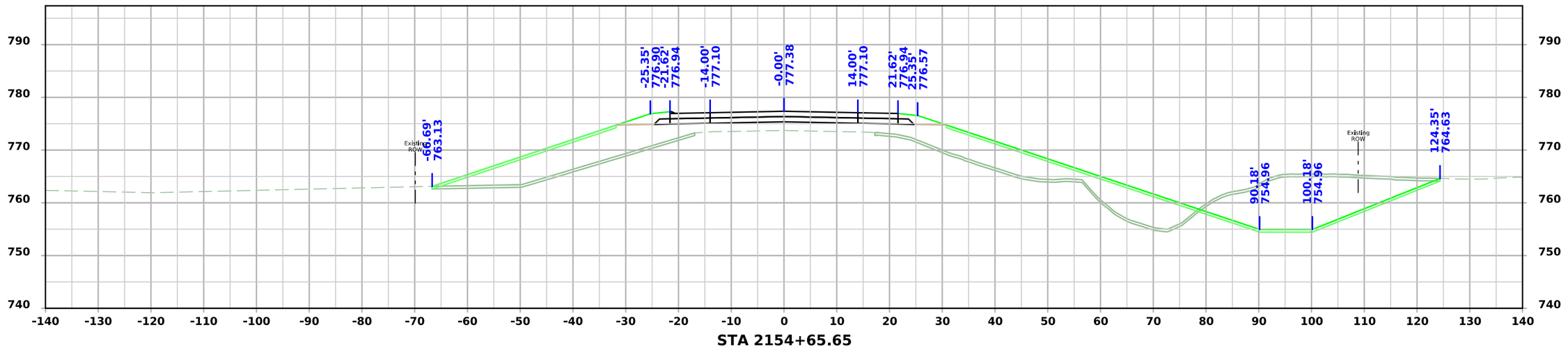
FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER W.6

9:07:41 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_w01_79146046_WHKS.dgn

IA 146



STA 2154+93.27

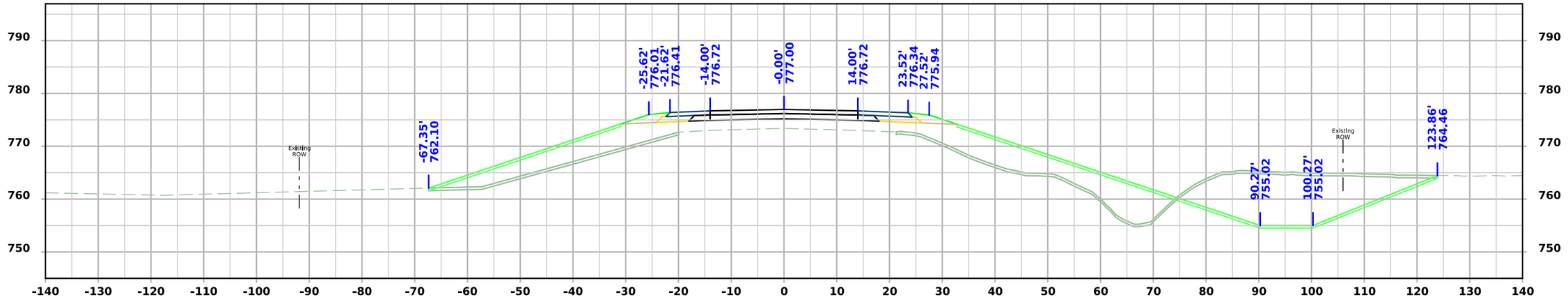


STA 2154+65.65

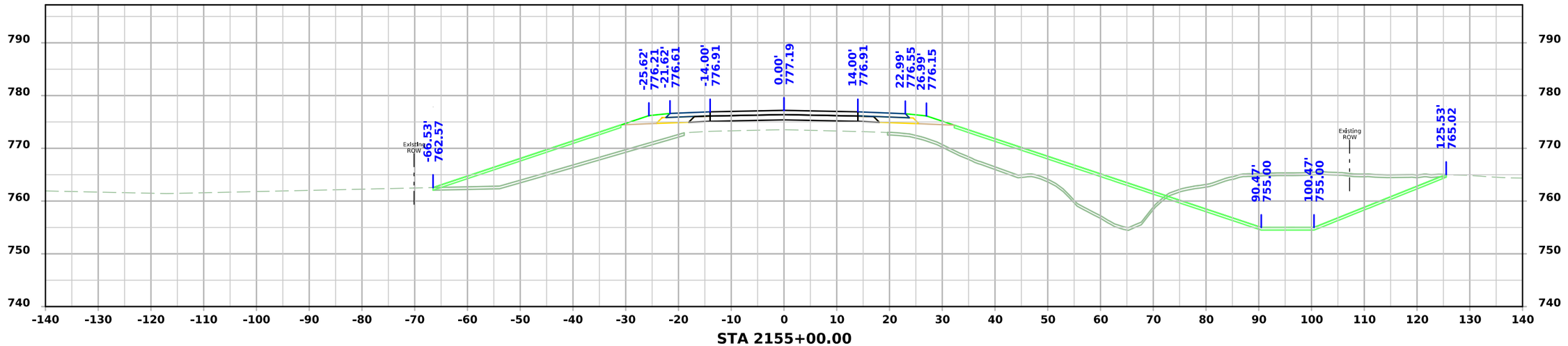
FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER W.7

9:07:42 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_w01_79146046_WHKS.dgn

IA 146



STA 2155+27.18

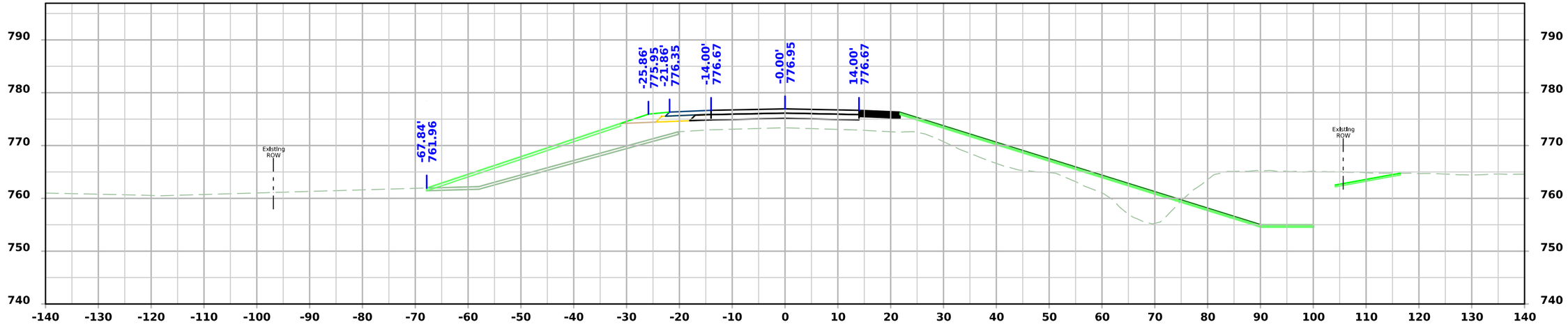


STA 2155+00.00

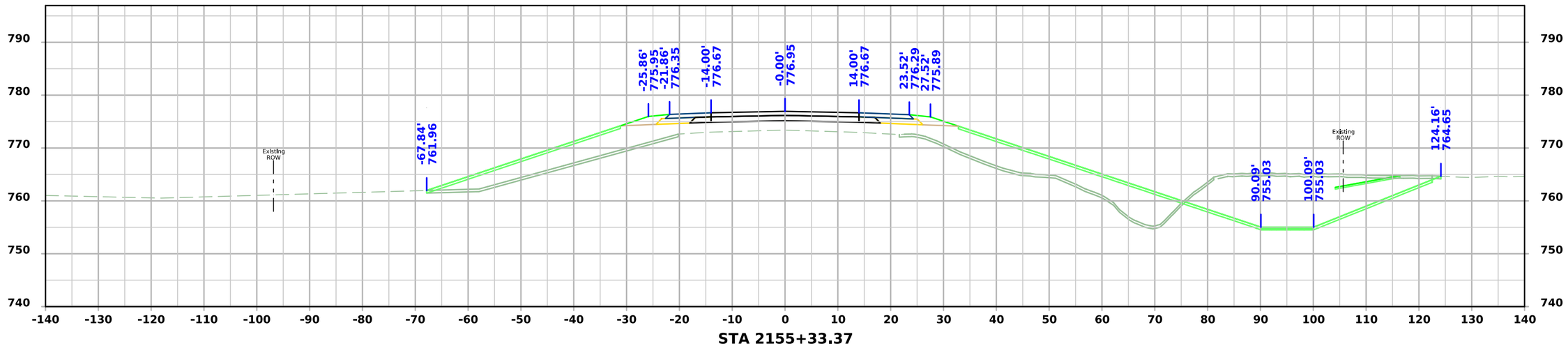
FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER W.8

9:07:44 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_w01_79146046_WHKS.dgn

IA 146



STA 2155+33.39

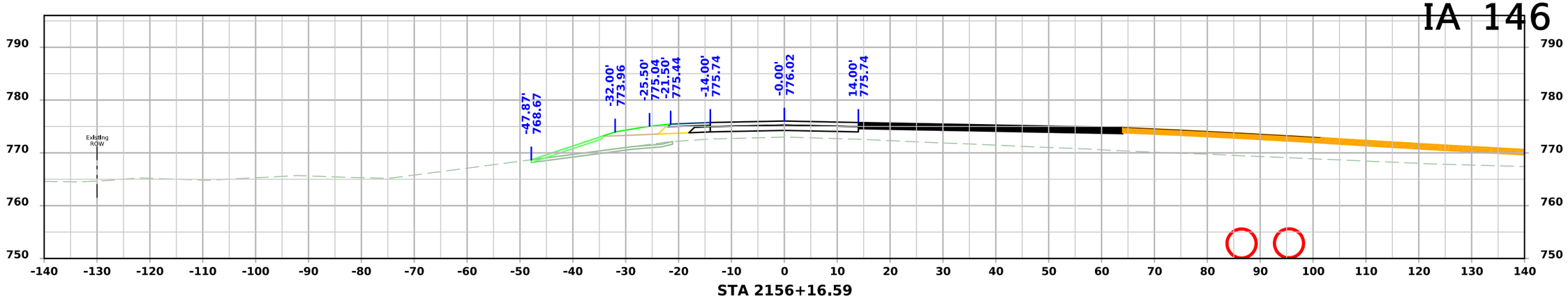


STA 2155+33.37

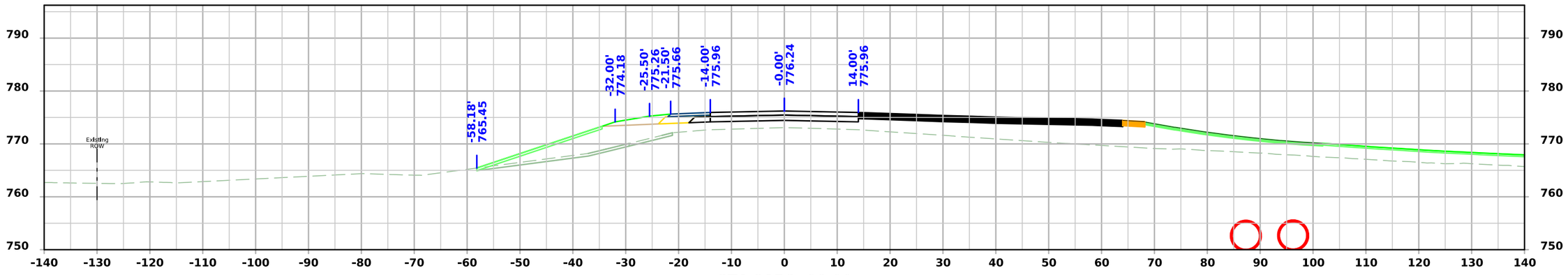
FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER W.9

9:07:45 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_w01_79146046_WHKS.dgn

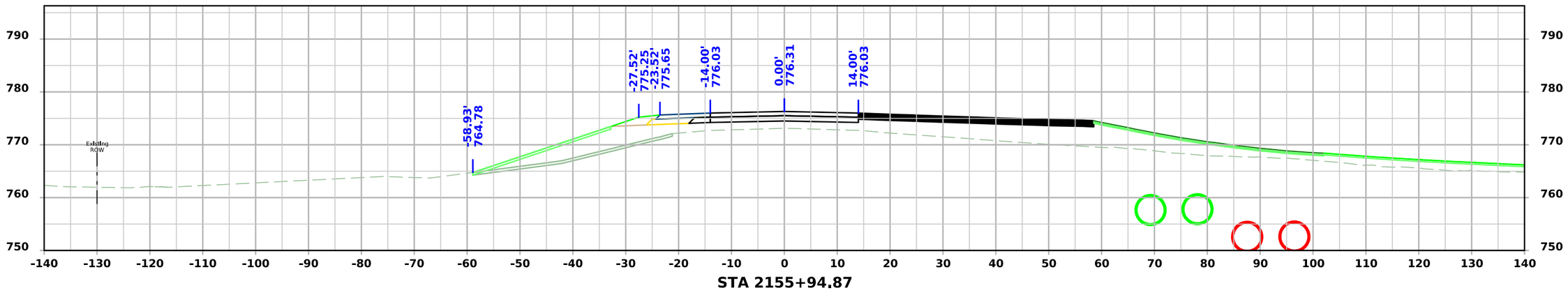
IA 146



STA 2156+16.59



STA 2156+00.00

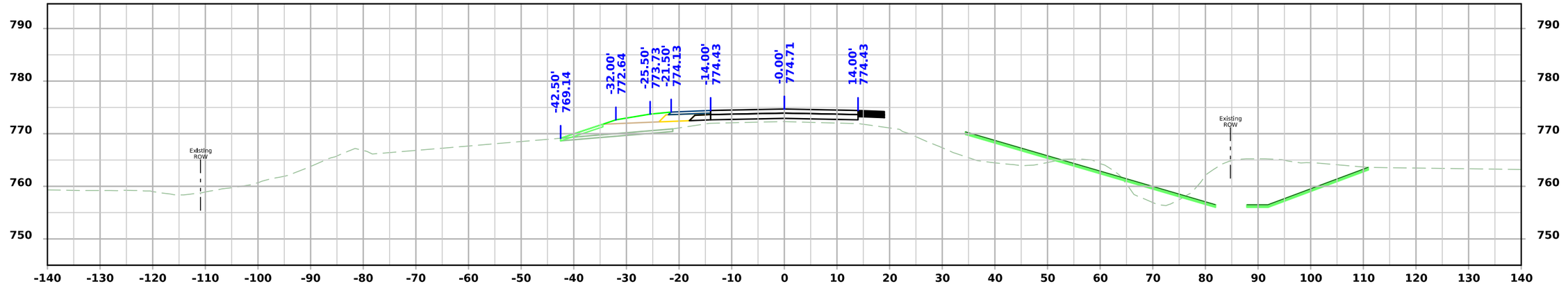


STA 2155+94.87

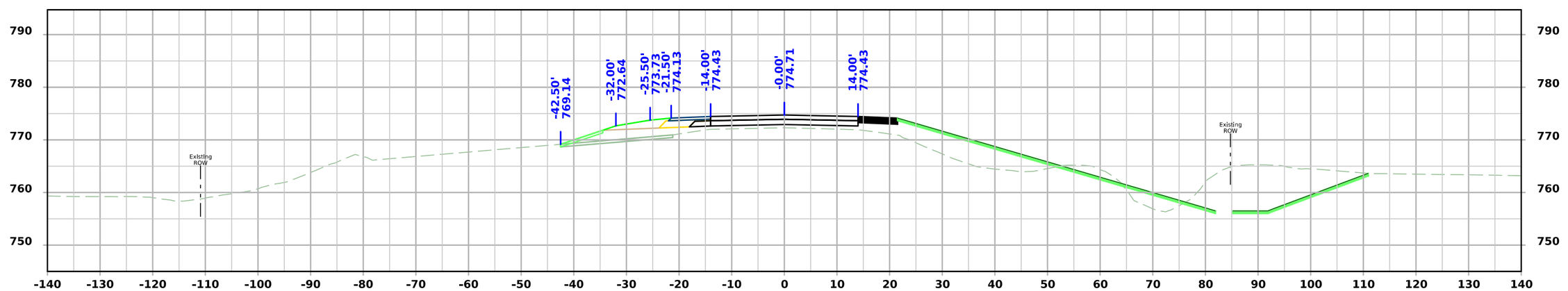
FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER W.10

9:07:48 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_w01_79146046_WHKS.dgn

IA 146



STA 2156+99.44

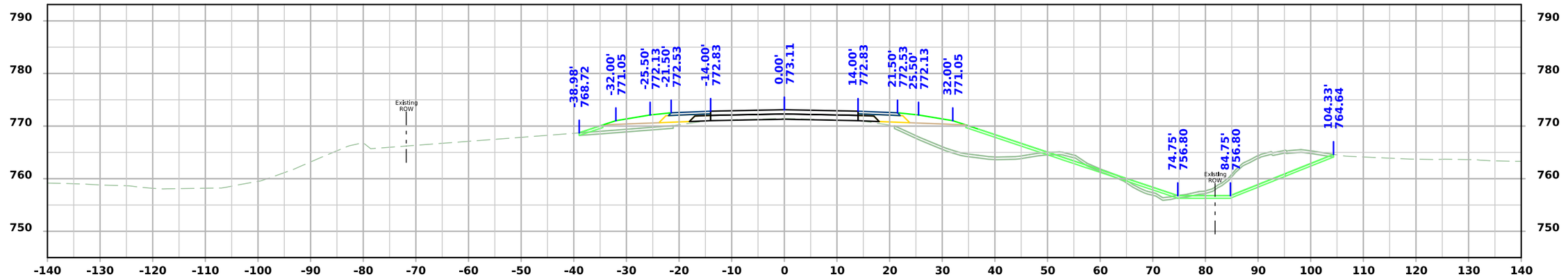


STA 2156+99.42

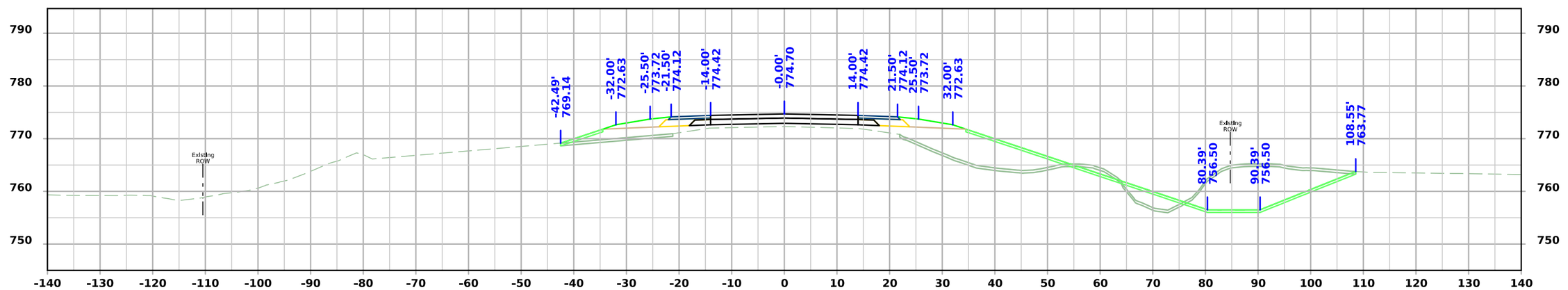
FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER W.11

9:07:49 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_w01_79146046_WHKS.dgn

IA 146



STA 2158+00.00

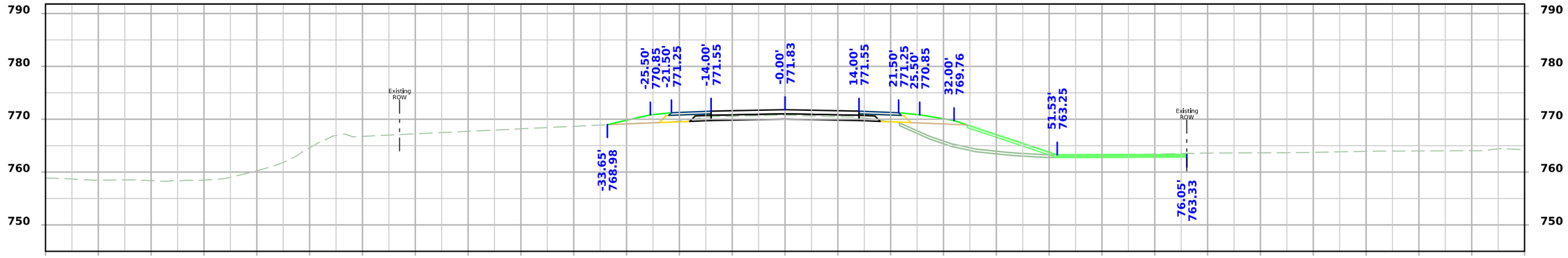


STA 2157+00.00

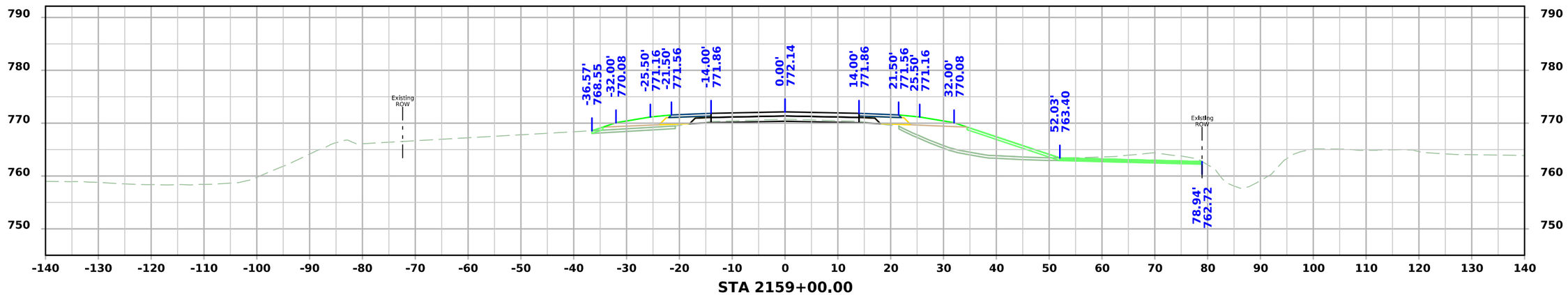
FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER W.12

9:07:50 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_w01_79146046_WHKS.dgn

IA 146



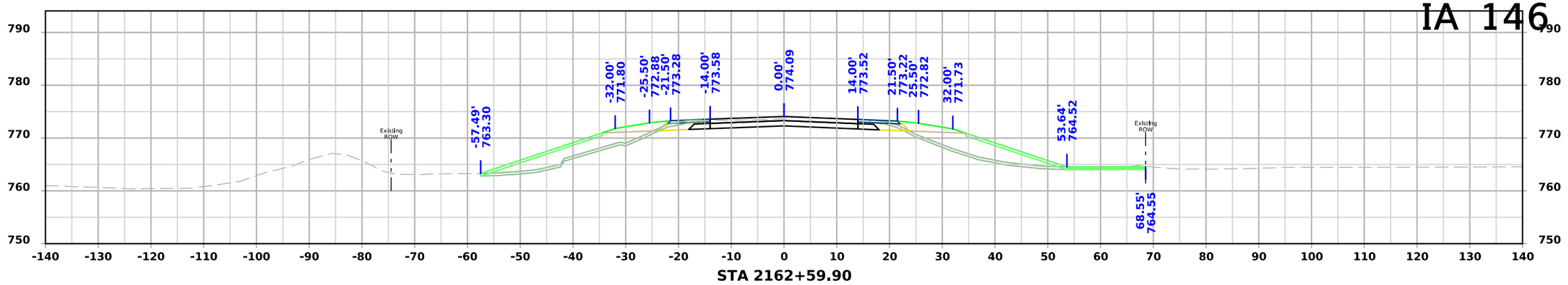
STA 2160+00.00



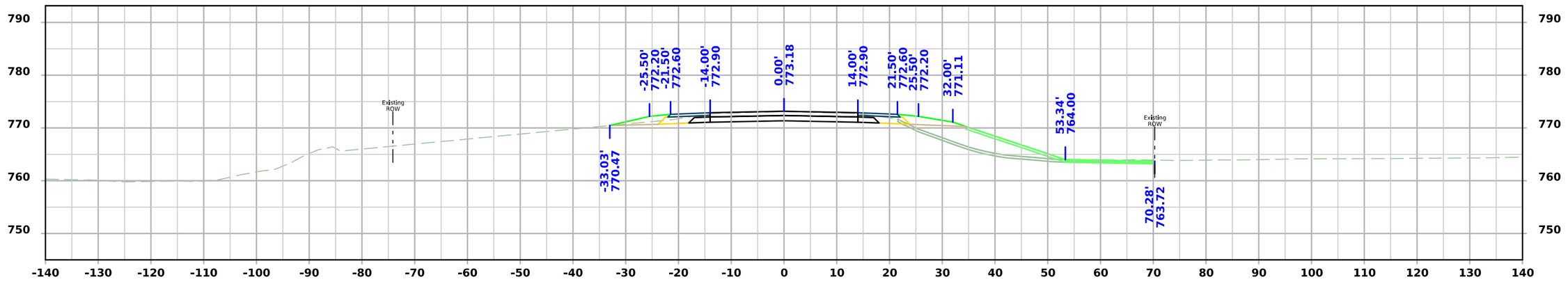
STA 2159+00.00

FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER W.13

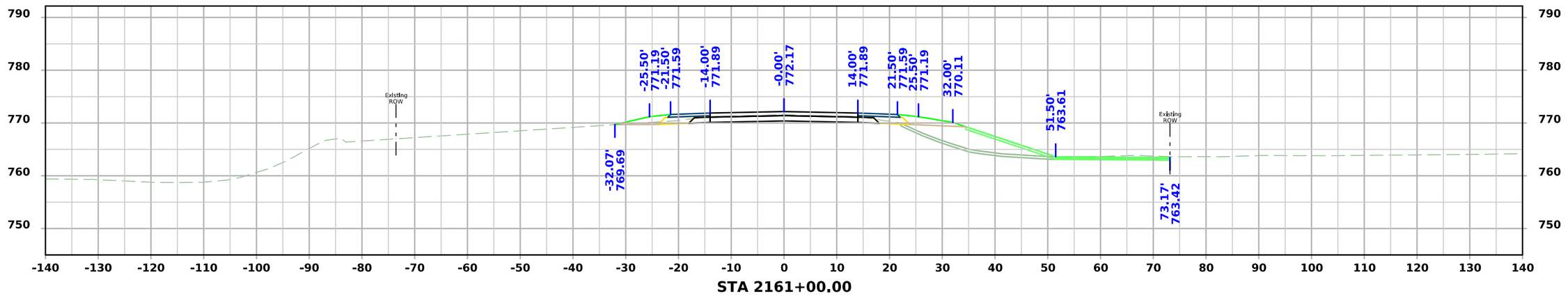
9:07:54 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_w01_79146046_WHKS.dgn



STA 2162+59.90



STA 2162+00.00

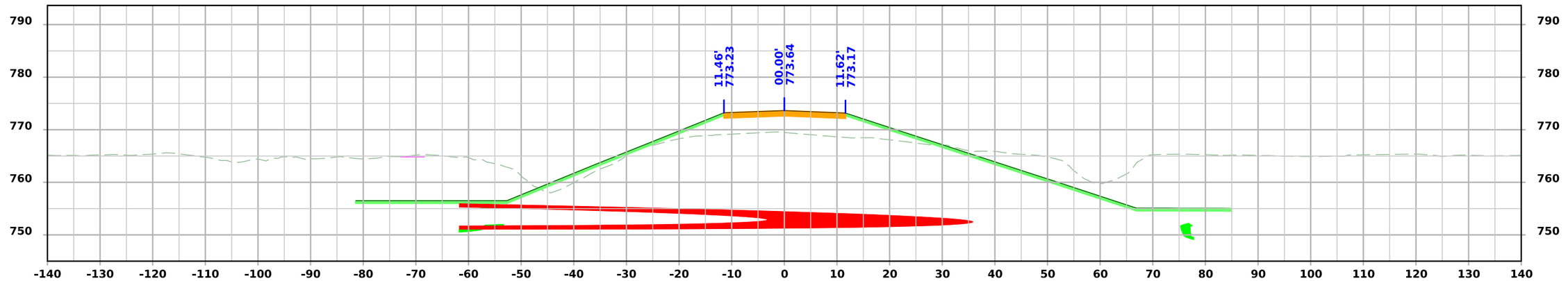


STA 2161+00.00

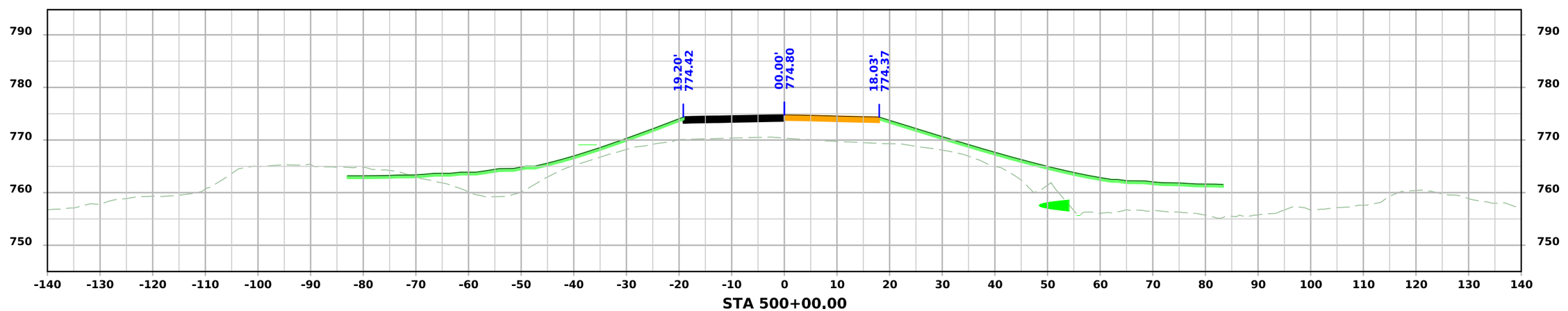
FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER W.14

9:07:55 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_w01_79146046_WHKS.dgn

540TH ST.



STA 500+25.00

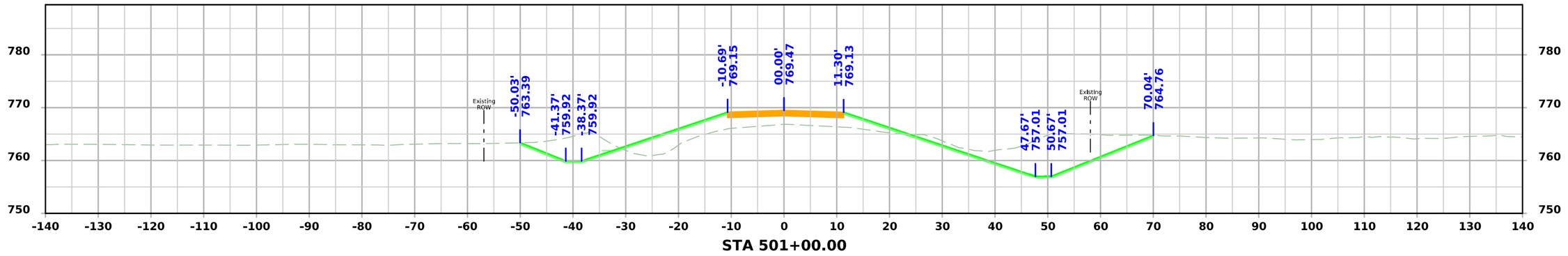


STA 500+00.00

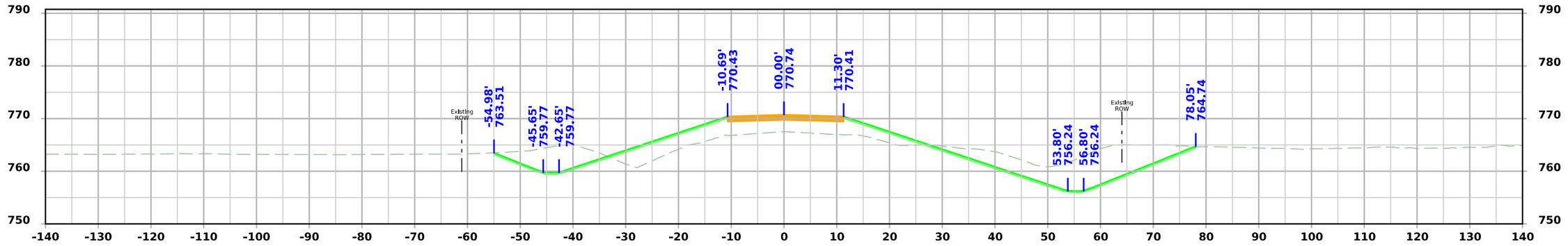
FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER X.1

9:24:40 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_x01_79146046_WHKS.dgn

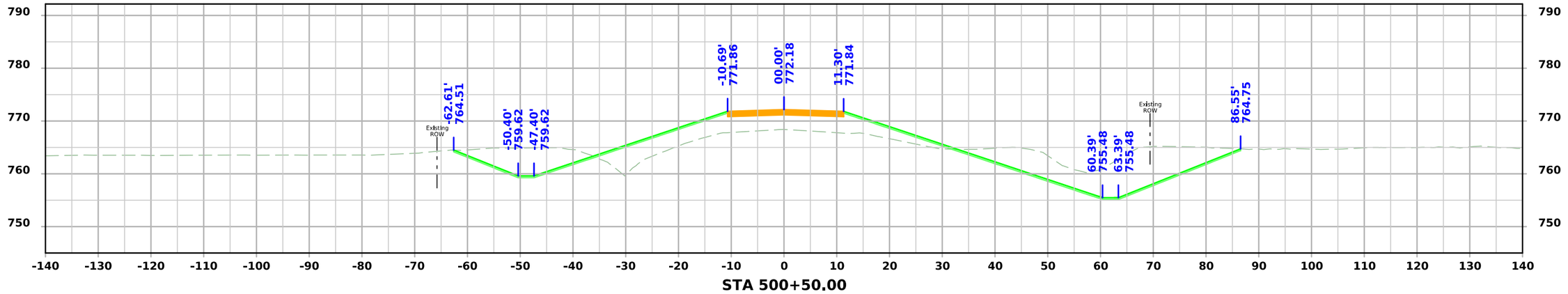
540TH ST.



STA 501+00.00



STA 500+75.00

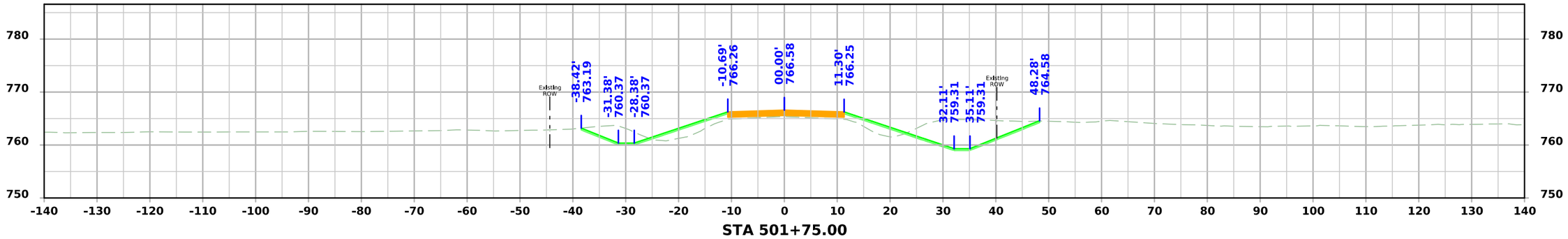


STA 500+50.00

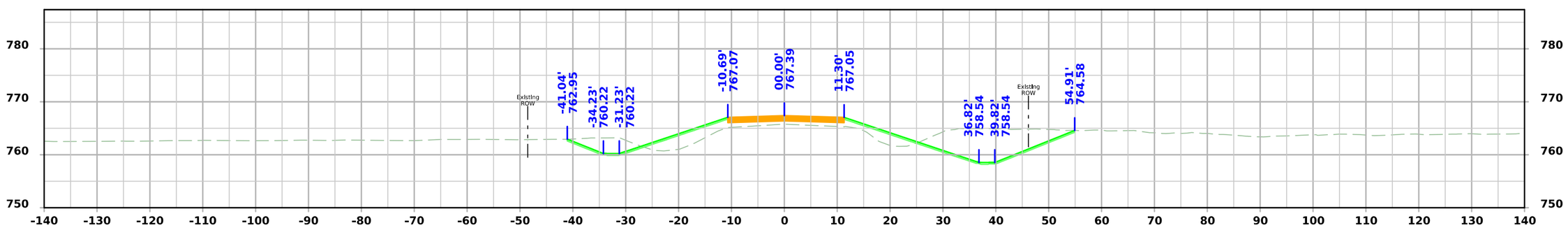
FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER X.2

9:24:48 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_x01_79146046_WHKS.dgn

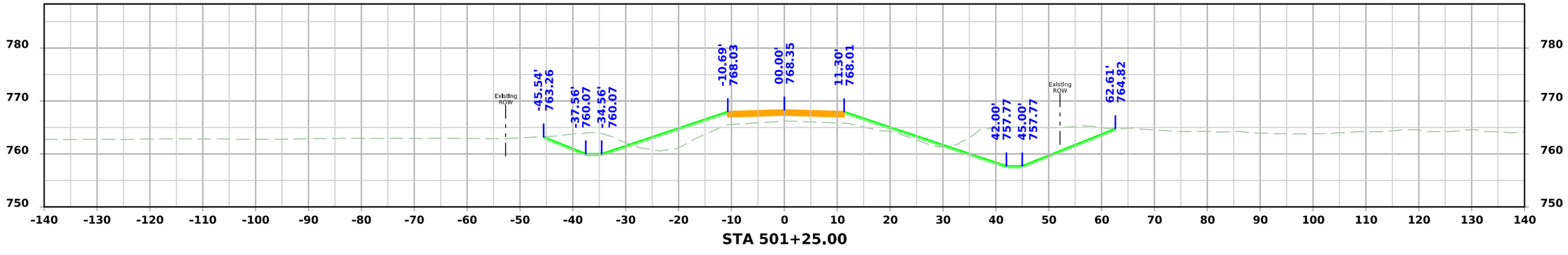
540TH ST.



STA 501+75.00



STA 501+50.00

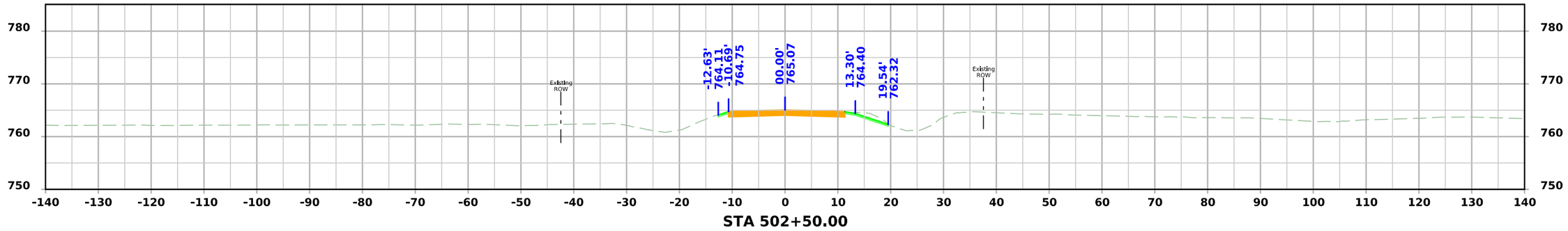


STA 501+25.00

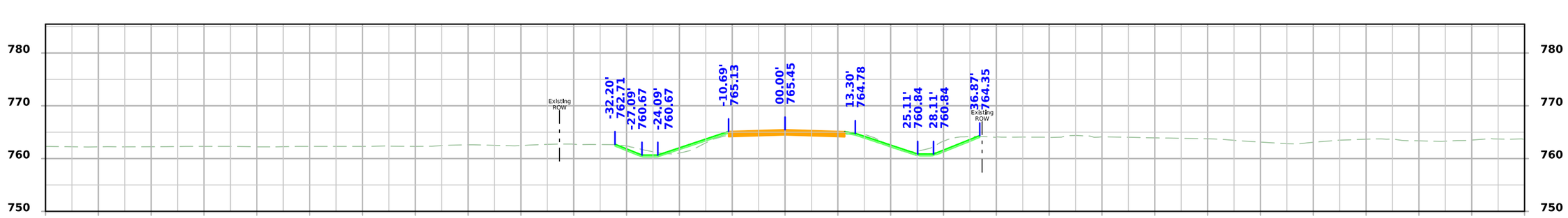
FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER X.3

9:24:49 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_x01_79146046_WHKS.dgn

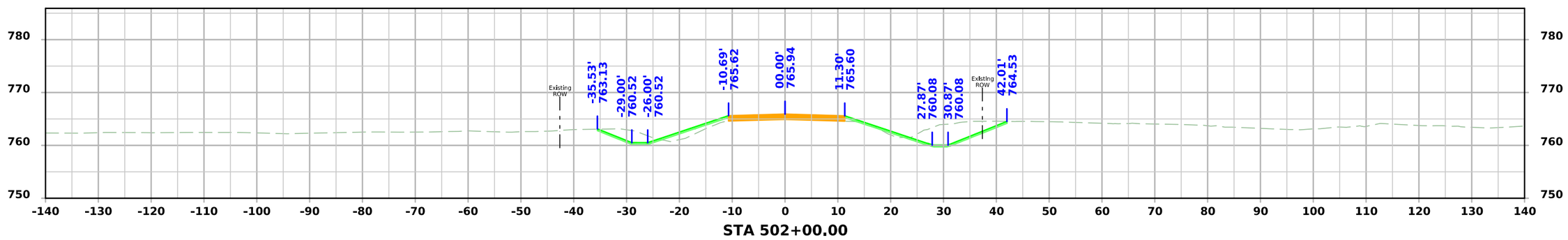
540TH ST.



STA 502+50.00



STA 502+25.00

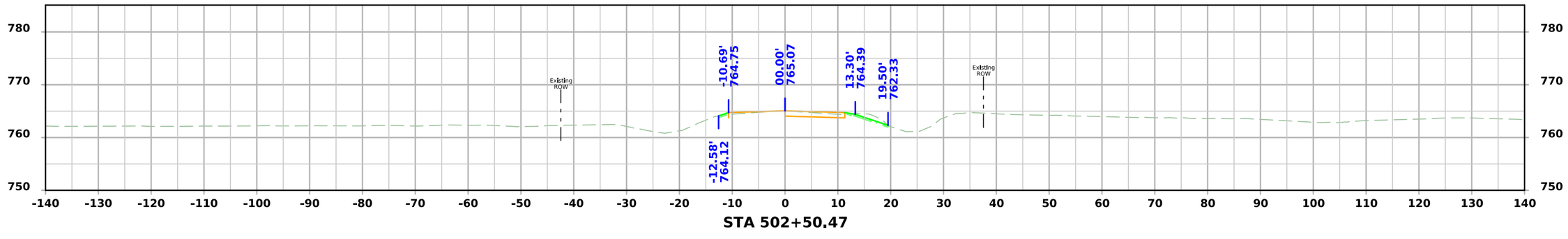


STA 502+00.00

FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER X.4

9:24:51 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_x01_79146046_WHKS.dgn

540TH ST.



STA 502+50.47

FILE NO. ---	ENGLISH	DESIGN TEAM WHKS & CO.	POWESHIEK COUNTY	PROJECT NUMBER BRF-146-2(046)--38-79	SHEET NUMBER X.5

9:24:52 AM 12/19/2025 tclevenger pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7914601024\Design\CADD_Files\Cross_Sections\SHT_x01_79146046_WHKS.dgn