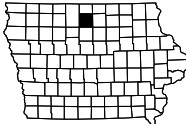


HANCOCK COUNTY

RCB Culvert Replacement
NHSN-018-4(038)--2R-41

LETTING DATE
DEC 15 2026



INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
A.2	Location Map Sheet
A.3 - 4	Project Concept
A.5 - 7	Design Criteria
A.8	D2 Exam Questions
B Sheets	Typical Cross Sections and Details
B.1 - 2	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	ML018
G Sheets	Survey Sheets
G.1 - 3	Reference Ties and Bench Marks
G.4	Horizontal Control Tab. & Super for all Alignments
J Sheets	Traffic Control and Staging Sheets
* J.2	Detour Plan
* J.3	Traffic Control Plan
V Sheets	Bridge and Culvert Situation Plans
V.1	Bridge and Culvert Situation Plans
W Sheets	Mainline Cross Sections
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 6	Mainline Cross Sections
	 * Color Plan Sheets



PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
HANCOCK COUNTY
RCB Culvert Replacement - Single Box
0.4 mi W of Crane Ave

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



D5 Date: 08/22/25
D4 Date: 08/11/26

DESIGN DATA RURAL			
2022	AADT	2980	V.P.D.
2042	AADT	-	V.P.D.
2042	DHV	-	V.P.H.
	TRUCKS	20	%
	Total		
	Design ESALs	-	

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

PRELIMINARY PLANS

Subject to change by final design.

D2/D3 PLAN - Date: 07/01/25

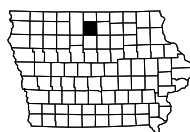
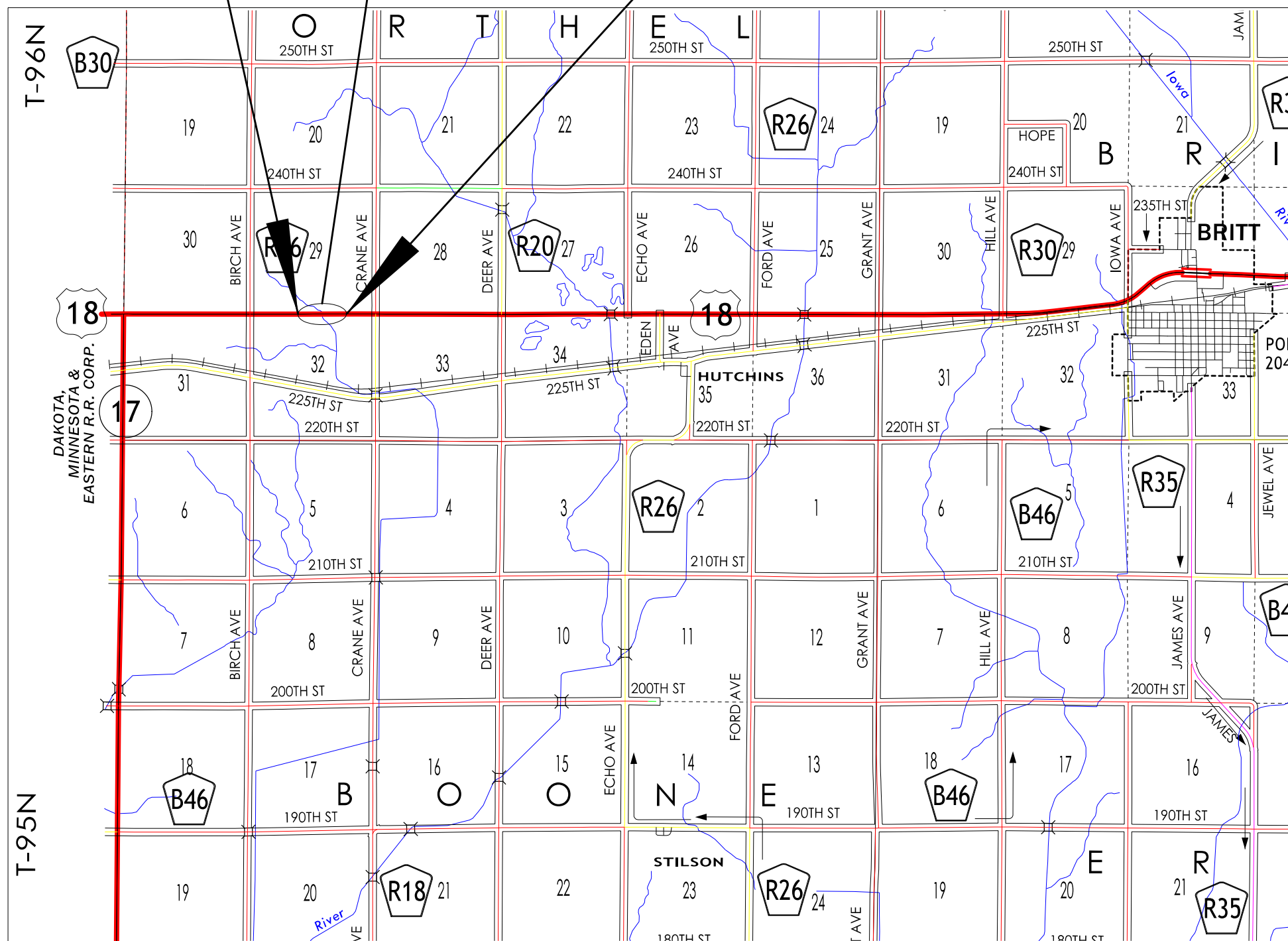
REVISIONS

TOTAL	
25	
PROJECT IDENTIFICATION NUMBER	
23-41-018-020	
PROJECT NUMBER	
NHSN-018-4(038)--2R-41	
R.O.W. PROJECT NUMBER	
NHSN-018-4(040)--2R-41	

STA 1520+00.00
BEGIN CONSTRUCTION

STA 1520+91.00
PROJECT LOCATION

STA 1523+00.00
END CONSTRUCTION





TO OFFICE: District 2

ATTENTION: Mitch Dillavou

FROM: Mary Kelly

OFFICE: District 2

SUBJECT: FY 2023 NR Concept Statement – FINAL

DATE: August 21, 2023

COUNTY: Hancock

PROJ. NO.: NHSN-018-4(038)--2R-41

PIN: 23-41-018-020

FOLDER: [4101802023](#)

DATE OF FIELD REVIEW: August 21, 2023

PARTICIPANTS: Mary Kelly

PROJECT LOCATION:

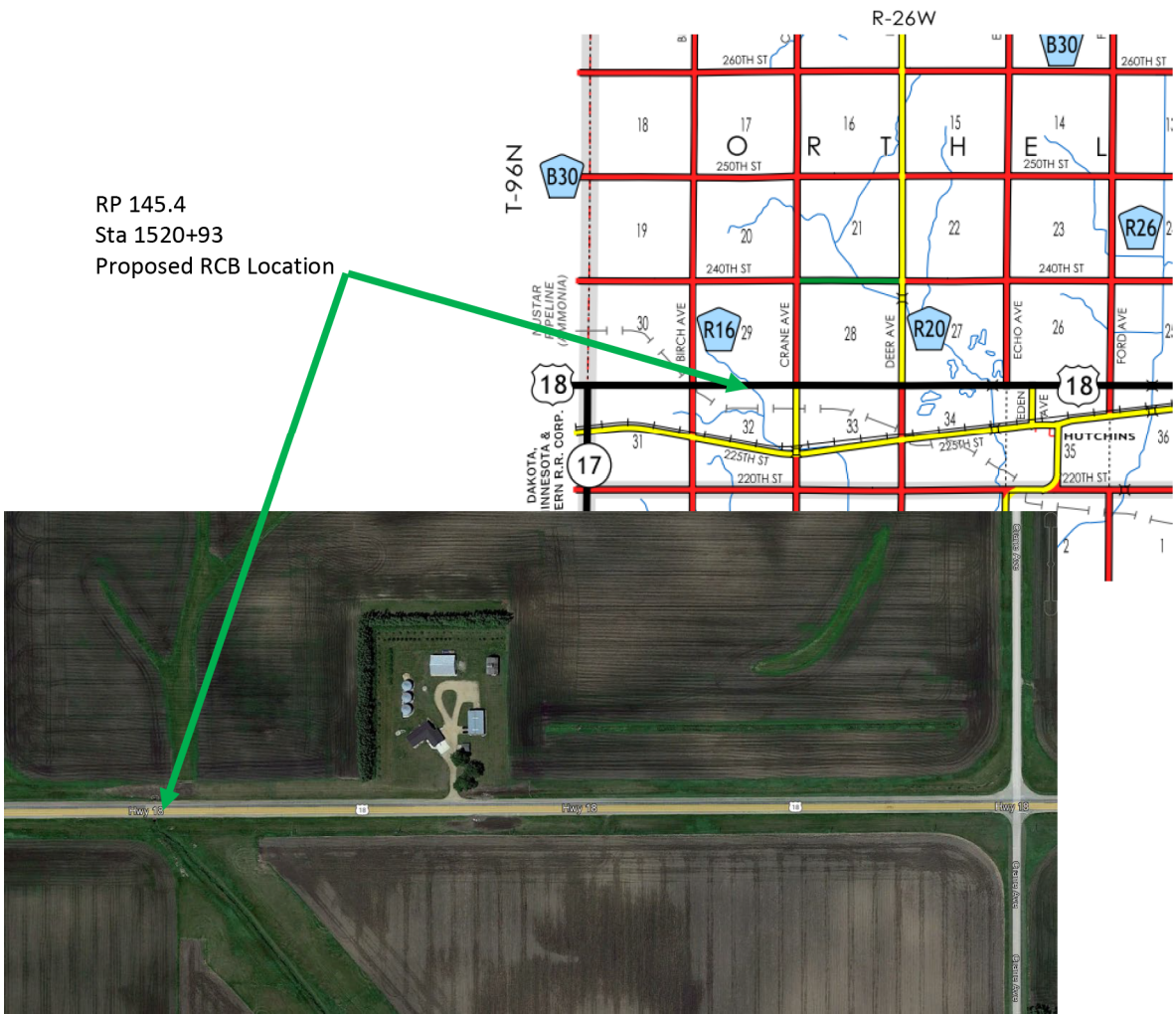


Photo Link:
[pw://projectwise.dot.int.lan:PWMain/Documents/Projects/4101802023/DistrictDesign/Photos/20230821/](#)

PROJECT DATA:
ROUTE: US 18
DESCRIPTION: 0.4 mi West of Crane Avenue
TRAFFIC: Current Year (2022): 2,980 ADT with 20% Trucks

PURPOSE AND NEED:
The plans list the existing structure at Station 1520+93 as an 8-foot wide concrete slab culvert with sheet pile walls. The inlet has steel sheet pile weir that appears to be about a foot or two below the bottom of the slab. In addition, there is a safety grate that can collect debris and restrict flow through the structure during rainfall events. The restrictive opening may be causing overtopping at this location. Based on the drainage area of 560 acres of flat topography it was recommended to replace the structure with a 10' x 5' RCB. The new box can be extended to clear zone to eliminate the safety grate and the box design can incorporate a concrete weir at the end of the headwall to match the grade upstream of the existing structure and provide for the tile outlets. It can be extended south to eliminate the guardrail on the south side of the roadway.

RECOMMENDATIONS:
It is recommended to replace the existing structure with a 10' X 5' RCB.

FUNDS PROGRAMMED:
The total cost to construction a new RCB and roadway work is estimated to be \$356,000. It is proposed to use NR funding in FY 2025.

Link to Cost Estimate: [NHSN-018-4\(038\)--2R-41 DO Estimate.pdf](#)

PROJECT IMPACTS: Designed by: Design and Bridge Bureau

Design Impact	Assistance Requested (Y/N)	Remarks
ADA:	N	
Agreements/Notification Letters:	N	
Bridges and Structures:	Y	Preliminary Bridge/Final Design
Consultant:	N	
Contracts:	N	
Design/Methods:	N	
Location and Environment:	Y	Permitting
Maintenance: (Shop Location)		Garner
Project Management:	N	

Railroad:	N	
RCE: (Office Name)		Mason City
Right of Way:	Y	
Soils:	Y	
Survey/Photogrammetry:	Y	Survey will be necessary
Systems Planning:	N	
Traffic and Safety:	N	
Utilities:	Y	Verify what is existing

Railroads:

None

Impacts Map:

According to the GIS portal, there are no hotspots within the project limits. There did not appear to e any wetlands or other environmental concerns. The project limits fall with in Drainage District #10 in Hancock County. There are several drainage district tile outlets present in through the steel weir on the north side of the structure. There are several tile outlets on the south side too. The main open ditch of the drainage district begins south of the project.

TSMO/Traffic Control:

This work will be performed requiring a closure and detour. The detour will be included in the plans for the contractor to post and maintain. No special traffic control needs are anticipated.

ROW:

PE and TE may be necessary to construct new RCB.

Development Schedule:

D02 – 12/15/2023
D03 – 01/12/2024
B01 – 04/12/2024
D04 – 08/20/2024
B03 – 10/01/2024
L05 – 12/17/2024

CC:

N. Abuissa	C. Brakke	M. Eilders	R. Harris
P. Andera	K. Brink	E. Engle	J. Hart
S. Anderson	M. Buttz	D. Erickson	D. Heeren
B. Azeltine	G. Cagle	M. Frank	P. Hjelmstad
J. Bacon	M. Chambers	E. Gansen	M. Hobbs
J. Bartholomew	N. Cuva	J. Garton	B. Hofer
C. Bernhard	M. Dell	R. Gelhaus	N. Humpal
K. Billhorn	J. Dighton	S. Gent	A. Johnson
T. Blake	B. Dolan	J. Harris	G. Karssen

M. Kelly	J. Nelson	T. Quam	A. Swisher
M. Kennerly	D. Newell	K. Rauk	B. Thede
T. Kubik	K. Nicholson	R. Reichter	J. Vortherms
J. Laaser-Webb	T. Nicholson	M. Ross	B. Walls
R. Larsen	D. Nie	J. Ruter	J. Weber
P. Leanos	S. Nielsen	M. Serio	A. Welch
R. Loecher	M. Nop	K. Siems	R. Welper
T. Lovan	K. Olson	K. L. Smith	C. Wood
D. Maifield	M. Ortiz-Pagan	W. Sorenson	E. Wright
S. Majors	K. Patel	D. Sprengeler	B. Younie
D. Matulac	G. Pedersen	B. Struecker	D. Zeimen
T. Meise	A. Poole	L. Su	G. Zittergruen
J. Monroe	C. Poole	C. Suntken	
W. Musgrove	C. Purcell	M. Swenson	

Roadway					
PIN Number		23-41-018-020	Submittal Date		
Project Number		NHSN-018-4(038)--2R-41		Approval Date	
District		District 2	Assistant District Engineer		
County		HANCOCK	or		
Route		US 18	Office Director		
Location					
Work Type					
Segment Manager					
Designer					
Design Manual Section 1C-1 Last Updated: 04-29-19					
Rural Two-Lane Highways (Rural Arterials)					
Design Element		Preferred	Acceptable	Project Values	
Design speed (mph)		60	50	60	
Maximum superelevation rate (Refer to Section 2A-2)		6%	8%	N/A	
Design lane width (ft)		12	12	12	
Full depth paved width (ft)		12	12	12	
Right turn lane (ft)		12	10	N/A	
Climbing Lane (ft)		12	12	N/A	
Left turn lane (ft)		12	10	N/A	
Pavement cross-slope (on tangent sections)	Through lanes	2%	1.5% minimum, 2% maximum	2%	
	Auxiliary and turn lanes	3%	3% maximum	N/A	
	Crown break at centerline	4%	4% maximum	4%	
Shoulder cross-slope (on tangent sections)		4%	Shoulder cross-slope cannot be less than the adjacent lane, 6% max for paved or granular shoulders, 8% max for earth shoulders	4%	
Curb type (Refer to Section 3C-2)	Design speed = 50 or 55 mph	6-inch sloped	6-inch standard	N/A	
	Design speed ≥ 60 mph	4-inch sloped	6-inch sloped	4-inch sloped	
Foreslope (For fill areas greater than 40 ft, contact the Soils Design Section for assistance)	Adjacent to shoulder	10:1 for 4' then 6:1	3:1	10:1 for 4' then 6:1	
	Beyond standard ditch depth and design clear zone	3.5:1	3:1	3:1	
	Curbed roadways	2%	not steeper than 3:1	N/A	
Backslope (For cut areas greater than 25 feet, contact the Soils Design Section for assistance with backslope benches.)		3:1	2.5:1	3:1	
Transverse Slopes	w/ drainage structures	8:1	6:1	N/A	
	w/o drainage structures	10:1	6:1	N/A	
Ditches (Refer to Section 3G-1)		Outside ditch (depth x width) (ft)	5 x 10	--	5 x 10
Bridge width—new*	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths	design lane widths + effective shoulder widths	N/A	
	Bridge length > 200 ft	design lane widths + effective shoulder widths	design lane width + 4' right and left of the design lane widths	N/A	
Bridge width—existing*		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft. offset left and right	N/A	
Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)	Over primary	16.5	16	N/A	
	Over non-primary	16.5 at interchange locations, 15 at all other locations	14	N/A	
	Over railroad	23.3	23.3	N/A	
	Sign trusses and pedestrian bridges	17.5	17	N/A	
Structural Capacity		Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	
Level of Service		B	B	B	
*FHWA notification via email is required if acceptable critera is not met on the NHS system (No formal design exeption is required)					

Roadway Design Speed (mph) =															
Design Manual Section 1C-1 Last Updated: 04-29-19					Design Criteria for High Speed Roadways										
Design Element			Preferred Criteria						Acceptable Criteria						Project Values
			Design Speed, mph						Design Speed, mph						
			50	55	60	65	70	75	50	55	60	65	70	75	
Stopping sight distance (ft) (Refer to Section 6D-1)			425	495	570	645	730	820	425	495	570	645	730	820	570
Minimum horizontal curve radius (ft) (Refer to Sections 2A-2 and 2A-3)	Method 5 superelevation and side friction distribution	e _{max} = 6%	833	1060	1330	1660	2040	2500	833	1060	1330	1660	2040	2500	1330
		e _{max} = 8%	--	--	--	--	--	--	758	960	1200	1480	1810	2210	1200
Minimum vertical curve length (ft) (Refer to Section 2B-1)			150	165	180	195	210	225	150	165	180	195	210	225	180
Minimum rate of vertical curvature (K) (Refer to Section 2B-1)	crest vertical curves		84	114	151	193	247	312	84	114	151	193	247	312	151
	sag vertical curves	roadways without fixed-source lighting	96	115	136	157	181	206	96	115	136	157	181	206	136
		roadways with fixed-source lighting	96	115	136	157	181	206	54	66	78	91	106	121	78
Minimum gradient (%)	(Refer to Section 2B-1)		0.5						0.3% with a curb, 0.0% without a curb						N/A
Maximum gradient (%)	(Refer to Section 2B-1)	Urban roadways	4	3					7	6	6	--	--	--	3
		Rural roadways							5	5	4	4	4	4	3
		Interstates							5	5	4	4	4	4	3
Clear zone			See "Preferred Clear Zone" table in Section 8A-2						See "Acceptable Clear Zone" table in Section 8A-2						30

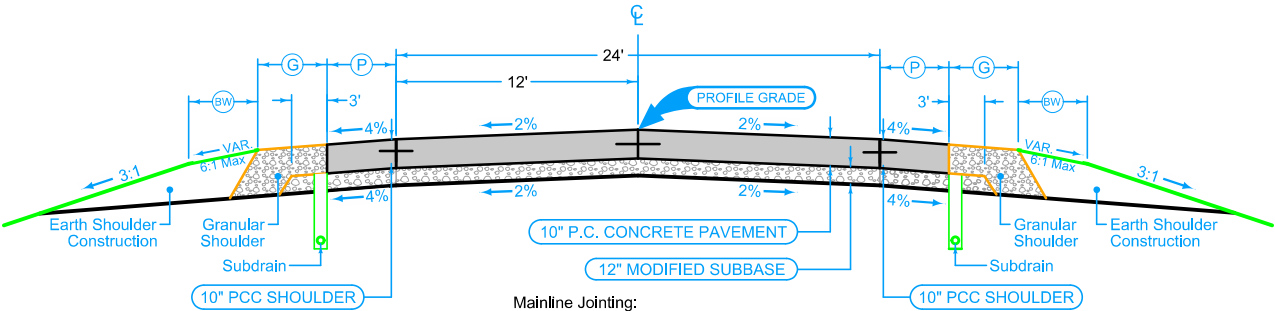
D2 Questions:

- We propose not removing the guardrail blisters from the old RCB location, as they do not pose a safety concern.
- For drainage we removed 4' 1:10 grading on the northside of the road at RCB. The slope is very shallow in order to meet the headwall on the north, and removing the 4' makes it slightly steeper.

Full Depth PCC Combination Shoulder

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

		2_C_FullPCC_04-15-25		
STATION TO STATION		(P) Feet	(G) Feet	(BW) Feet
1520+60.00	1520+80.00	6	4	4
1520+80.00	1521+38.00	6	4	4 - 20
1521+38.00	1521+58.00	6	4	20
1521+72.00	1521+92.00	6	4	20
1521+92.00	1522+00.00	6	4	20 - 18.5



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

2P_04-21-20	
STATION TO STATION	
1520+60.00	1522+00.00

Full Depth PCC Combination Shoulder

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

		2_C_FullPCC_04-15-25		
STATION TO STATION		(P) Feet	(G) Feet	(BW) Feet
1520+60.00	1520+80.00	6	4	4
1520+80.00	1521+38.00	6	4	4 - 20
1521+38.00	1521+58.00	6	4	20
1521+72.00	1521+92.00	6	4	20
1521+92.00	1522+00.00	6	4	20 - 18.5

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

US 18
Mainline Pavement

SURVEY SYMBOLS

	Interstate Highway Symbol		Septic Tank
	U.S. Highway Symbol		Cistern
	Iowa Highway Symbol		L.P. Gas Tank (No Footing)
	County Road Highway Symbol		Underground Storage Tank
	Evergreen Tree		Latrine
	Deciduous Tree		Satellite TV Dish
	Fruit Tree		Water Hook Up
	Shrub (Bushes)		Radio Tower
	Timber		Tower Anchor
	Hedge		Guardrail (Beam or Cable)
	Stump		Guard Post (one or two)
	Swamp		Guard Post (over two)
	Rock Outcrop		Filler Pipe
	Broken Concrete		Gas Valve
	Revetment (Rip Rap)		Water Valve
	Cemetery		Speed Limit Sign
	Grave		Mile Marker Post
	Cave		Sign
	Sink Hole		Traffic Signal Control Box
	Board Fence		Rail Road Signal Control Box
	Chain Link or Security Fence		Telephone Switch Box
	Wire Fence		Electric Box
	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)		

UTILITY LEGEND

	PPA, Power Pole Alliant Energy Billie Reid billiereid@alliantenergy.com
	TL1D, Telephone CenturyLink - Quality D Steven Parker (507) 358-1978 Steven.Parker4@lumen.com
	Justin French justin.french@lumen.com
	FO1D, Fiber Optic Iowa Communications Network - Quality D David Augspurger (515) 229-2013 david.augspurger@icn.state.ia.us
	FO2D, Fiber Optic Mediacom- Quality D Jerry Broughton (845) 587-2521 jbroughton@mediacomcc.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
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
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
Red	(3)		Proposed Structure Shading
Red	(3)		Delineates Restricted Areas

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

	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)

ORTHEL TWP.
T-96N R-26W
SEC. 29

Sta. 1520+90.6
8.0'x46.9' SPAN CON SLAB CULV
WITH CON SHEET PILE
WALLS AND WINGS NO FLOOR
D.A.=820.0 A-RF
(Remove)

STA. 1521+65.24
Install Single 12'x4'x84' RCB
(Plans by others)

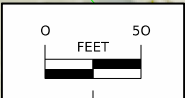
Begin Construction
STA 1520+00.00

End Construction
STA 1523+00.00

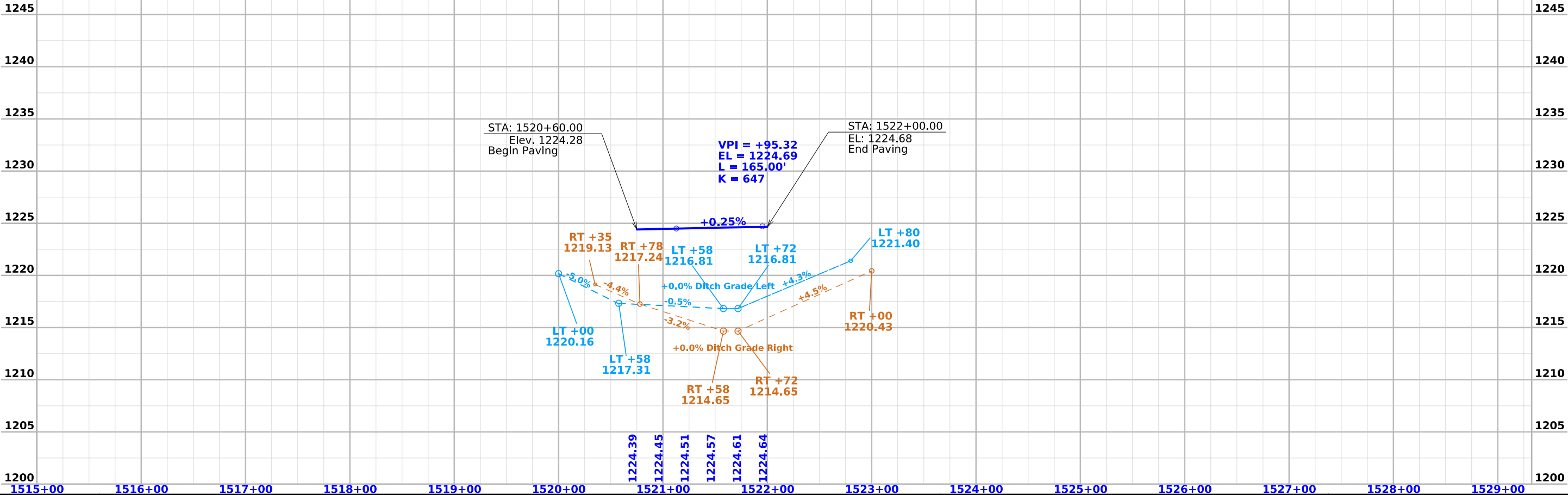
Begin Paving
STA 1520+60.00

End Paving
STA 1522+00.00

Sect. No. 32



US 18



Survey Information

SURVEY INDEX

County: Hancock
PIN: 23-41-018-020
Project Number: NHSN-018-4(038)--2R-41
Location: 0.4 mi W of Crane Ave
Type of Work: RCB Culvert Replacement - Single Box
Project Directory: 4101802023

Survey Personnel

Dan Duncan – Survey Party Chief

Date(s) of Survey

Begin Date 10/09/2023
End Date 10/23/2023

General Information

This survey is for US Hwy 18 box culvert replacement 0.4 mi West of Crane Avenue.
This project is a Full Field DTM 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

Coordinates were determined for primary project control points by conducting
concurrent six-hour static observations. Post processing is constrained to nearby Iowa
Real Time Network reference stations. 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 02
(U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u3

Alignment Information

The horizontal alignment for U.S. Hwy 18 was provided by District 2 Land Survey.

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 02 (U.S. Survey Foot)

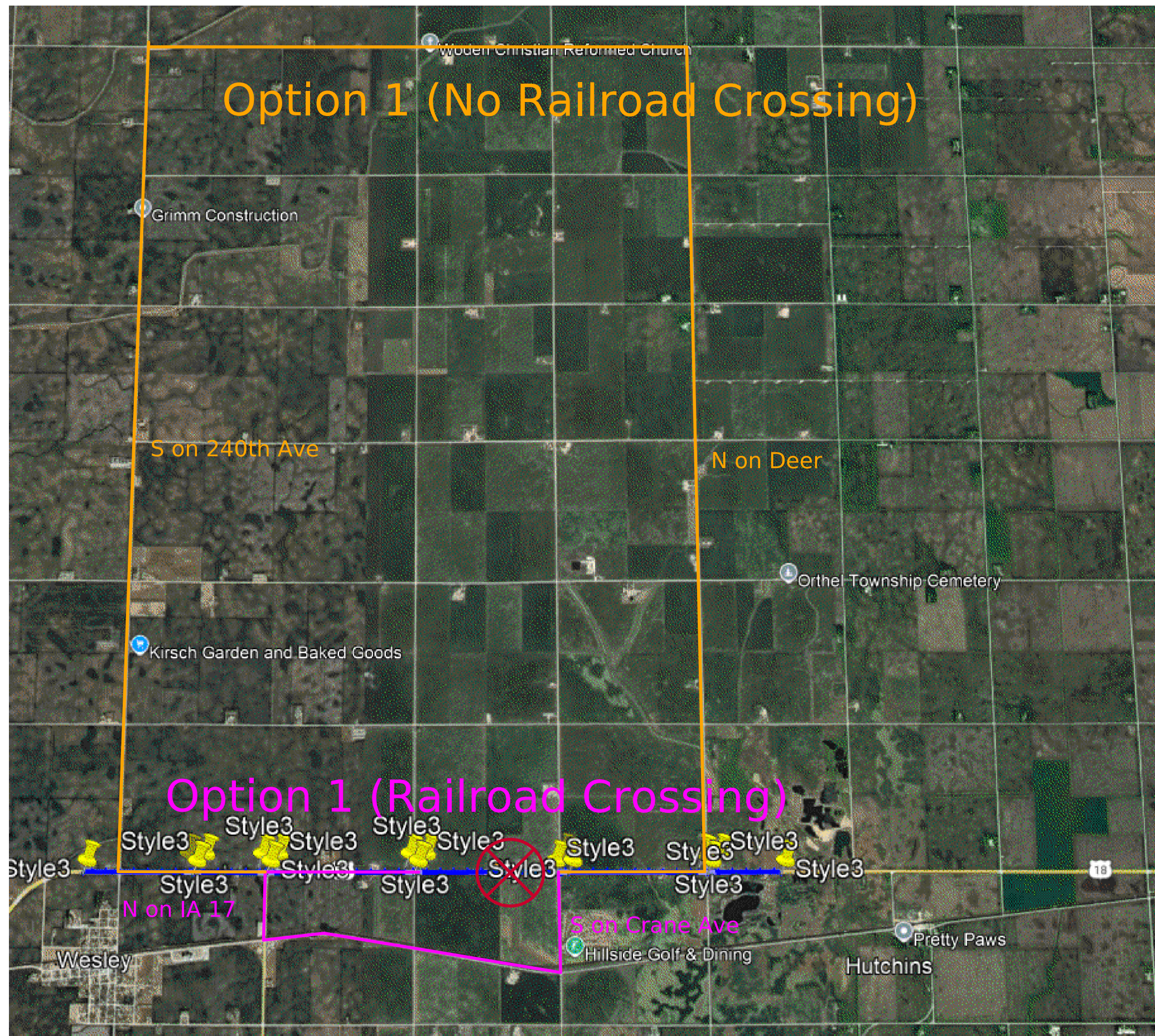
VERT. DATUM: NAVD88 - Geoid Model: 2018u3

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

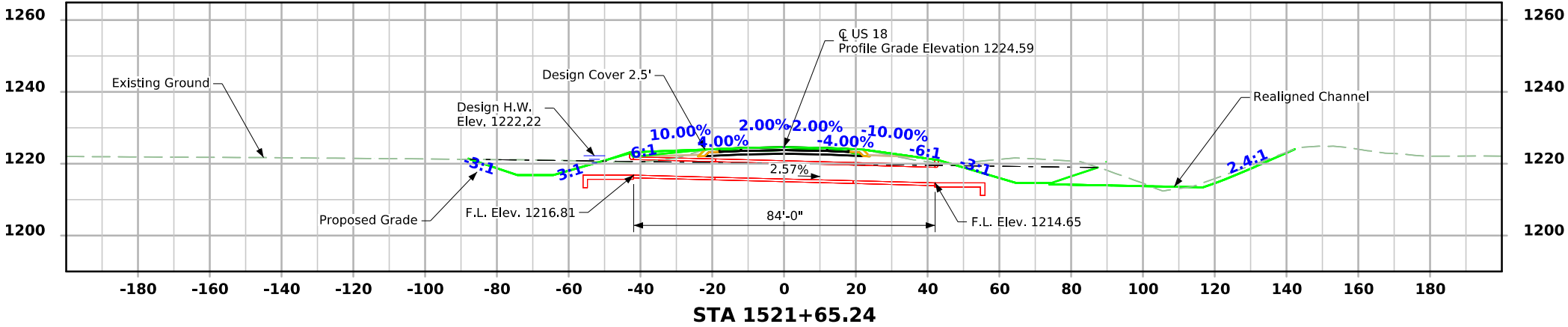
HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING
HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment)
Ia. Regional Coordinate System Zone 02 (U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2018u3

Point Number	Northing	Easting	Elevation	Feature Definition-Description
23	9771820.61	12173995.70	1267.01	CP FND HANCOCK CO GPS CONTROL POINT DESIGNATION 97-023 AS DESCRIBED IN GOOD CONDITION
76	9771494.78	12189841.51	1194.84	CP FND HANCOCK CO GPS CONTROL POINT DESIGNATION 97-076 AS DESCRIBED IN GOOD CONDITION
410181448	9777029.23	12179185.55	1250.61	CP FND IDOT ROW RAIL 6IN ABOVE GROUND SET DIMPLE IN BALL, LOCATED IN NW QUAD. OF US18 AND BIRCH AVE
410181458	9776988.36	12184454.79	1246.72	CP FND IDOT ROW RAIL 4IN ABOVE GROUND SET DIMPLE IN FLANGE, LOCATED IN NW QUAD. OF US18 AND CRANE AVE

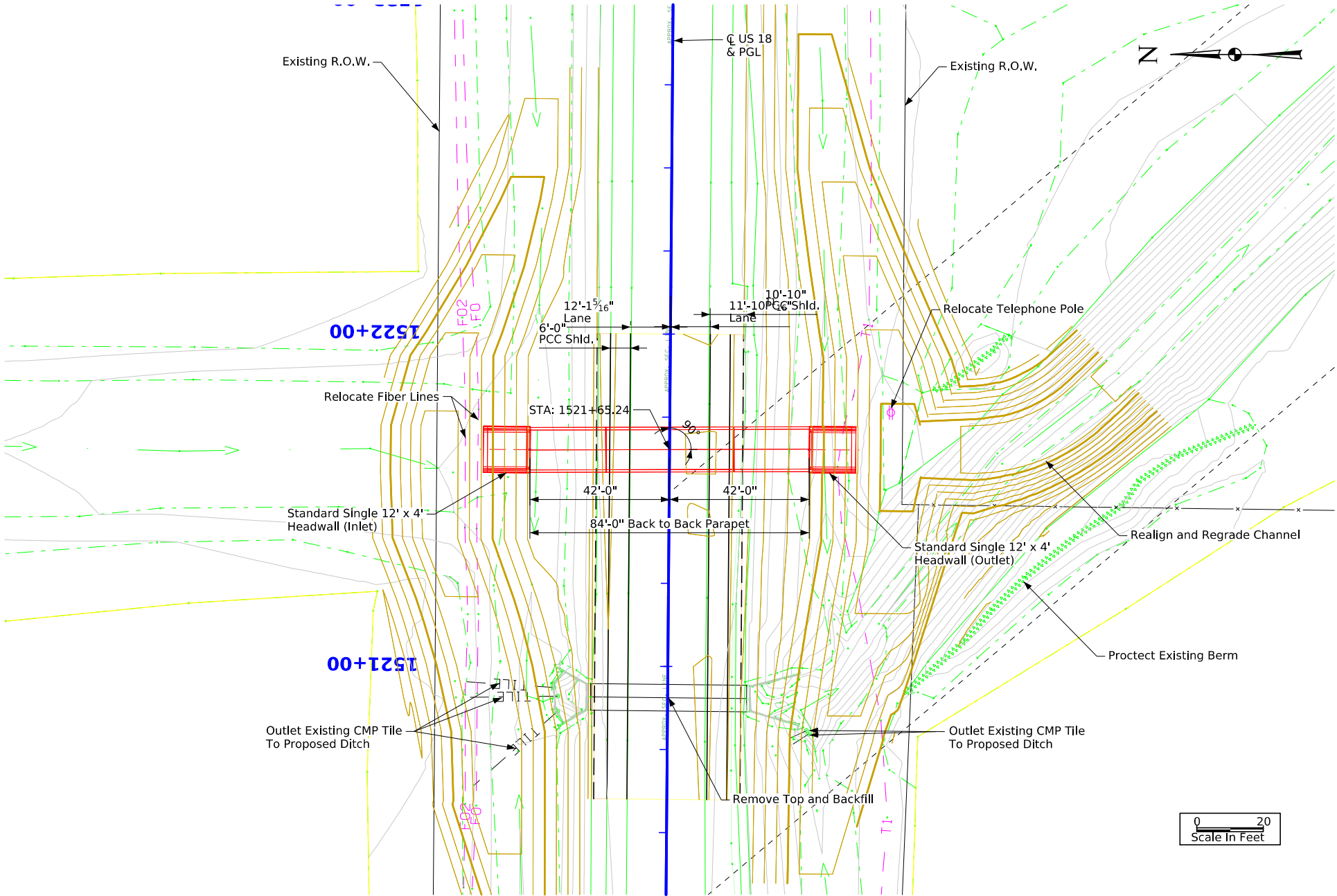
ALIGNMENT COORDINATES																			101-16 10-20-09	
Name	Location	Point on Tangent			Begin Spiral			Begin Curve			Simple Curve PI or Master PI of SCS			End Curve			End Spiral			
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)	
1	ML018	1371+56.47	9777120.04	12167442.21																
2	ML018							1408+10.923	9777050.22	12171095.99				1414+10.922	9777040.27	12171695.91				
3	ML018	1414+10.922	9777040.27	12171695.91																
4	ML018							1434+42.705	9777011.69	12173727.49				1440+42.703	9777004.68	12174327.45				
5	ML018	1440+42.703	9777004.68	12174327.45																
6	ML018							1487+36.97	9776961.02	12179021.51				1493+36.97	9776955.90	12179621.49				
7	ML018	1493+36.97	9776955.90	12179621.49																
8	ML018							1540+02.139	9776919.63	12184286.52				1546+02.138	9776913.20	12184886.48				
9	ML018	1546+02.138	9776913.20	12184886.48																
10	ML018							1592+83.643	9776849.20	12189567.55										
11	ML018	1598+83.637	9776844.40	12190167.52																
12	ML018	1622+22.618	9776838.96	12192506.50																



Control Point:



Longitudinal Section Along Culvert



Situation Plan

Hydraulic Data

RIDB: "StreamID_Rivermile" or "Not Applicable"
Drainage Area = 678 Acres
Stream Slope = 14.3 Ft./Mi.
Q₅₀ = 376 cfs
HW Elev. = 1222.22
Exit Velocity = 7.83 fps

Q₁₀₀ = 451 cfs
HW Elev. = 1223.23
Exit Velocity = 9.40 fps

Location

US 18 over Drainage Ditch Number 10
T-96N R-26W
Section 32
Orthel Township
Hancock County
Bridge Maint. No. ?? (if applicable)
Asset ID No. ?? (if applicable)
Latitude ??,123456°
Longitude -??,123456°

Traffic Estimate

20?? AADT	???	V.P.D.
20?? AADT	???	V.P.D.
20?? DHV	???	V.P.H.
TRUCKS	??	%
Total	???	
Design ESALs	???	

Utilities Note:

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

General Utility Symbols:

- | | |
|-----------------------|-------------------------|
| E - Electric Line | FO - Fiber Optic Line |
| G - Gas Line | GHP - Gas High Pressure |
| SAN. - Sanitary Sewer | ST S - Storm Sewer |
| T - Telephone Line | TV - TV |
| W - Water Line | ● - Power Poles |

Design For 0°
Single 12'-0" x 4'-0" x 84'-0" Reinforced
Concrete Box Culvert

Situation Plan - C.I.P.

STA. 1521+65.24 (US 18) Turn-in Date: June 2025

Hancock County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 2222 Design Sheet No. 1 of 1 FHWA/Asset 223344

CROSS SECTION VIEW COLOR LEGEND			
Design Color No.	Feature	Design Color No.	Feature
Aggregate		Grading	
(64)	Choke Stone	(8)	Behind Curb Cut
(42)	Engineering Fabric	(6)	Granular
(8)	Flooded Backfill	(13)	Granular Back Fill
(92)	Macadam Stone	(48)	Rock Undercut
(20)	Modified	(8)	Shoulder Earth Fill
(12)	Plowing Shaping	(2)	Side Slopes
(14)	Porous Backfill	(226)	Side Slopes Dressing
(8)	Revetment Class A	Substrata	
(6)	Revetment Class B	(128)	Boulder
(62)	Revetment Class C	(209)	Boulder Removed
(188)	Revetment Class D	(48)	Broken Weathered
(28)	Revetment Class E	(210)	Broken Weathered Removed
(12)	Shoulder Special Backfill	(3)	Core Out
(12)	Special Backfill	(115)	Core Out Remove Only
(20)	Subbase	(195)	Core Out Remove and Replace
(20)	Subbase Lower	(203)	Existing Pavement
(20)	Subbase Upper	(184)	Existing Pavement Remove Only
(118)	Subgrade Treatment	(200)	Existing Pavement Remove and Replace
Asphalt		(6)	Loam
(207)	HMA Base Course	(211)	Loam Removed
(207)	HMA Interim Course	(80)	Rock
(207)	HMA Surface Course	(212)	Rock Removed
Bridge		(4)	Select Sand
(0)	Bridge	(214)	Select Sand Removed
Concrete		(3)	Shale
(0)	Barrier Concrete	(215)	Shale Removed
(0)	Barrier Concrete Footing	(10)	Topsoil
(0)	Curb Gutter	(2)	Topsoil Remove Only
(48)	Flowable Mortar	(4)	Topsoil Remove and Replace
(0)	Median Concrete	Unsuitable / Waste	
(0)	PCC Pavement	(3)	Unsuitable Type A
(0)	Sidewalk	(216)	Unsuitable Type A Removed
Existing		(13)	Unsuitable Type B
(0)	Existing Pavement	(217)	Unsuitable Type B Removed
Shoulder		(11)	Unsuitable Type C
(209)	Shoulder HMA	(218)	Unsuitable Type C Removed
(0)	Shoulder PCC	(3)	Waste
(6)	Shoulder Granular	(219)	Waste Removed
Structural			
(112)	Noise Wall		
(112)	Noise Wall Footing		
(112)	Retaining Wall Back		
(112)	Retaining Wall Back Excavate		
(112)	Retaining Wall Face		
(112)	Retaining Wall Front Excavate		
(112)	Retaining Wall Front Footing		
(112)	Retaining Wall MSE Gutter		
(112)	Retaining Wall Reinforced Earth		

NOTES:

Text

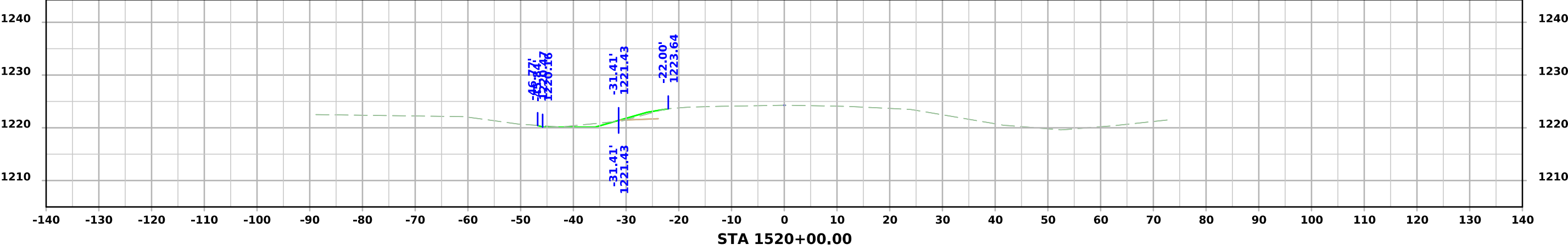
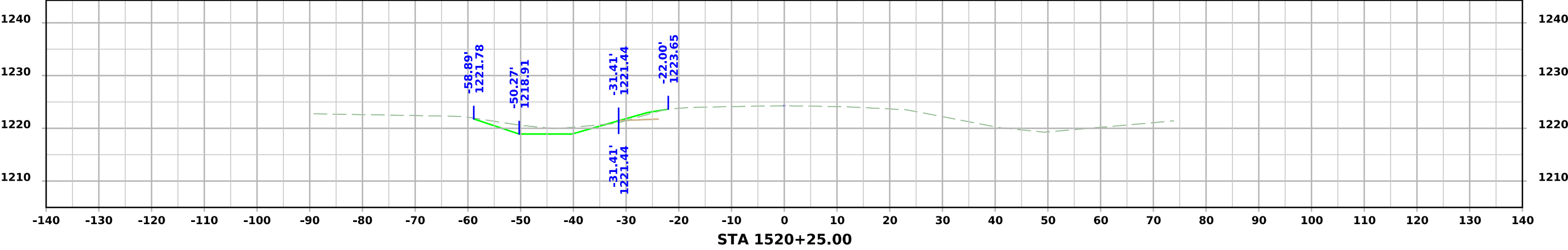
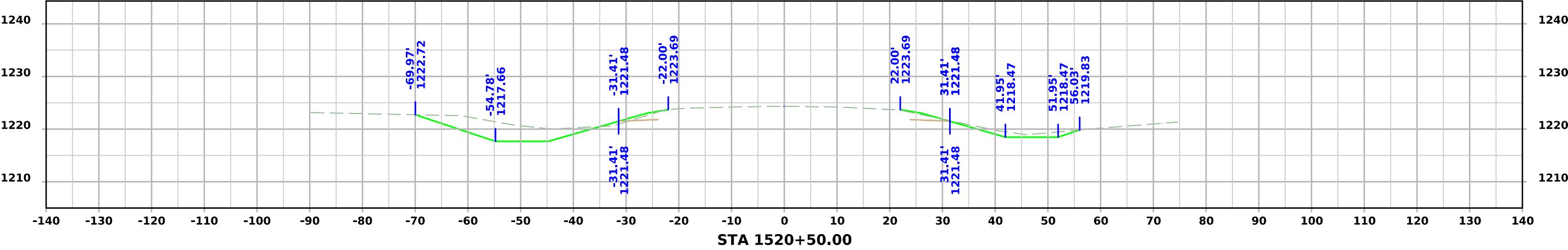
NOTES:

Text

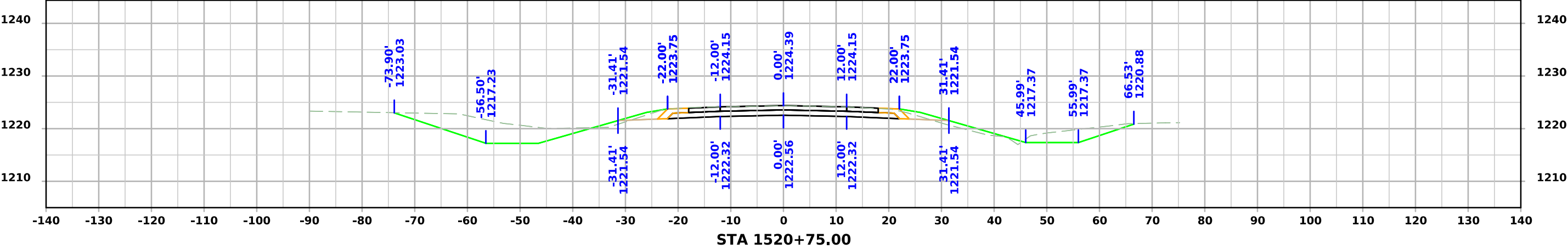
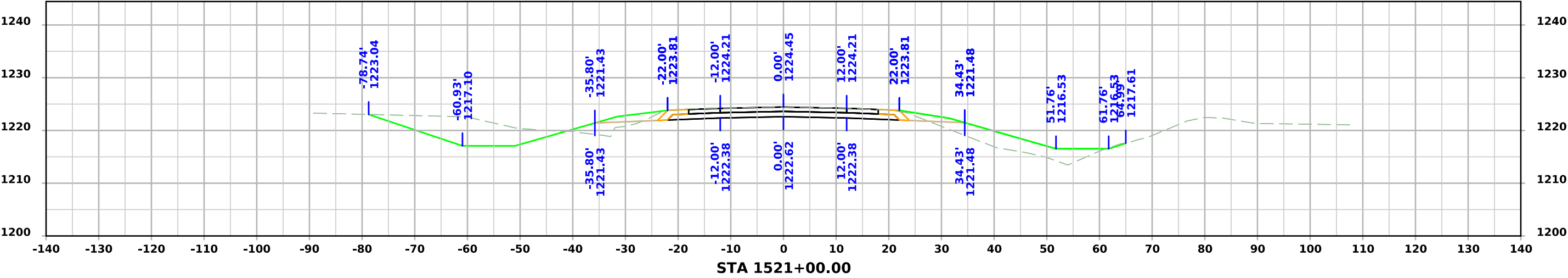
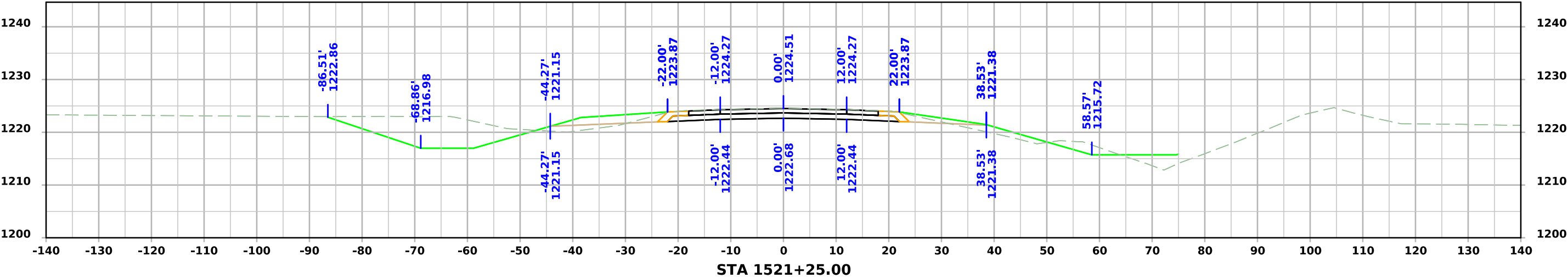
CROSS SECTIONS
LEGEND AND INFORMATION SHEET

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

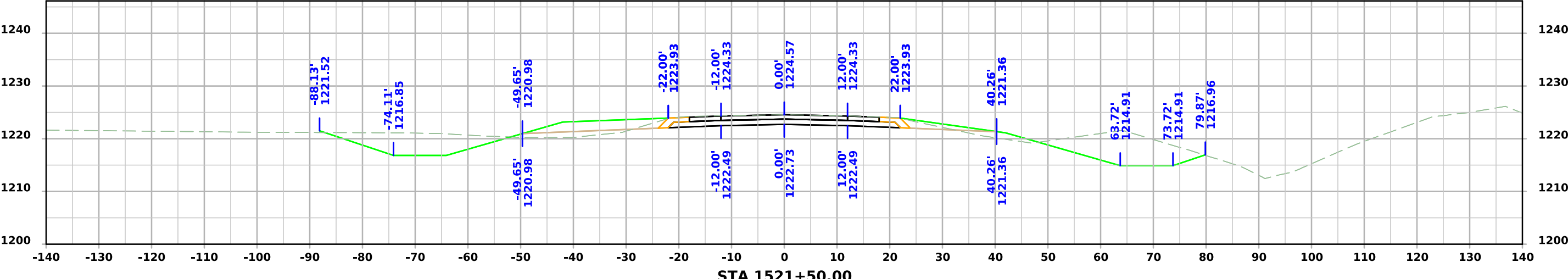
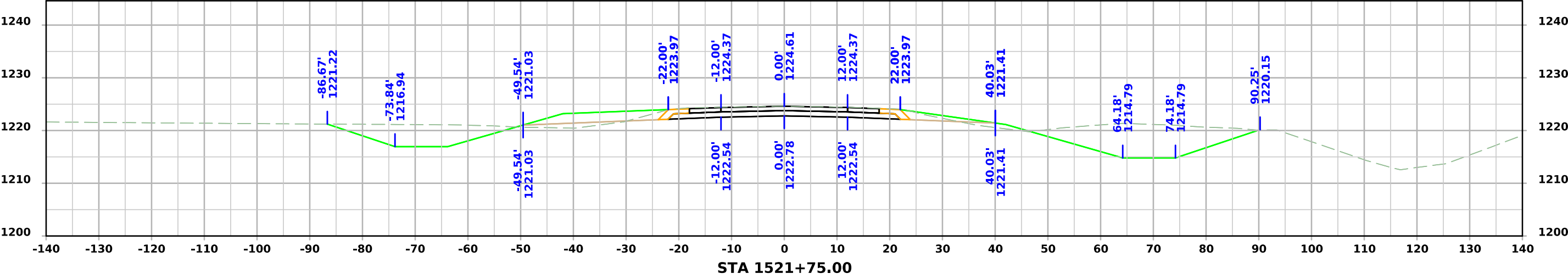
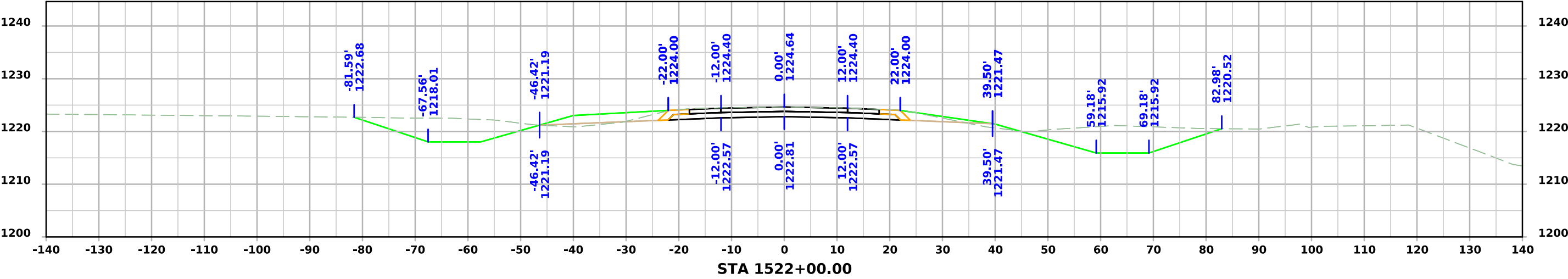
ML - US18



ML - US18



ML - US18



ML - US18

