

DESIGN DATA				
Traffic	Average Daily			
Current 2023	Pass: 10,877	Trucks: 327	Total: 11,204	
Forecast _____	Pass: _____	Trucks: _____	Total: _____	
Clear Zone Distance: 22 FT		Design Speed: 55 MPH		
Minimum Sight Dist. for Stopping: 495 FT		Bridges: NONE		
Limited Access Control				
Pavement Design Life 20 (years)				
Design Accumulated One-way _____ ESALs: _____				

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

FTF-4-083(163)211

Ward County
Minot AFB-South Entrance
8 Mi N of Minot

Turn Lane Extension
Embankment, Pipe, Aggregate, HMA, Signing, Pavement Marking, & Lighting

GOVERNING SPECIFICATIONS

Date Published and Adopted
by the North Dakota
Department of Transportation

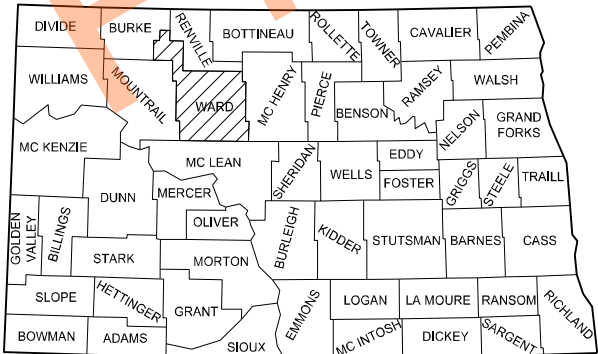
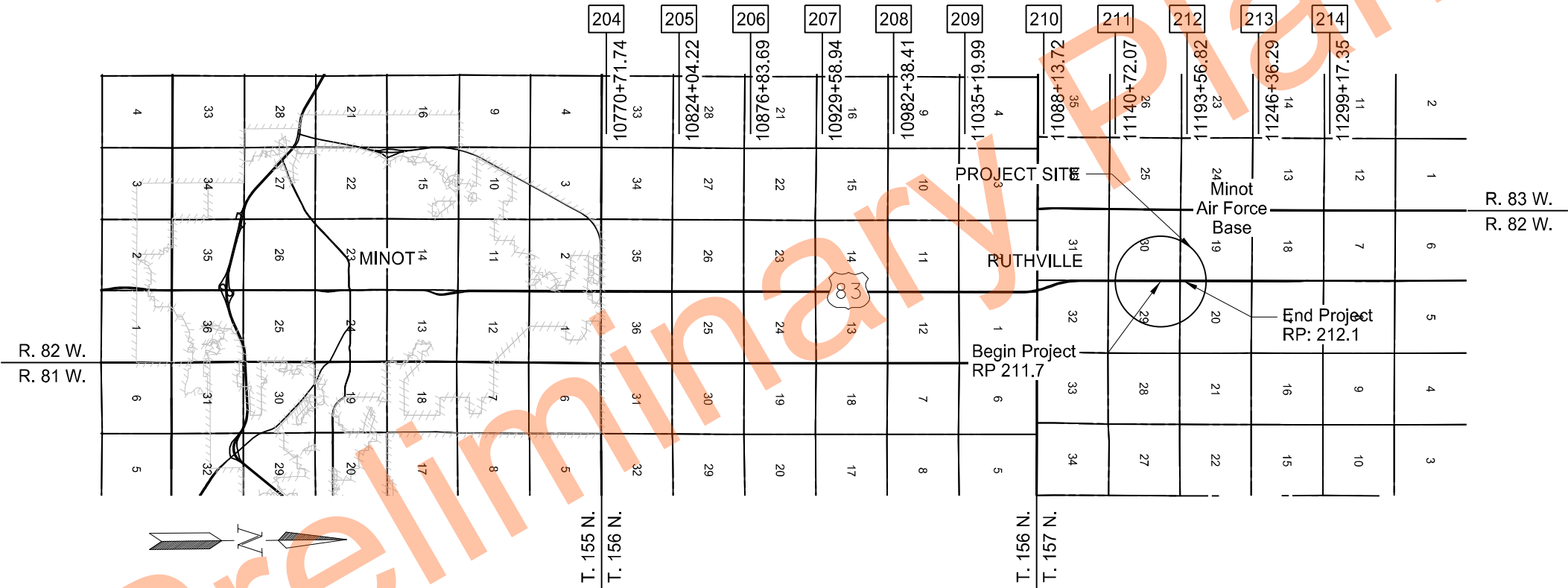
Standard Specifications

7/1/2024

Supplemental Specifications

NONE

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
FTF-4-083(163)211	0.35	0.35



STATE COUNTY MAP

DESIGNER Samantha Hettinger
DESIGNER
DESIGNER

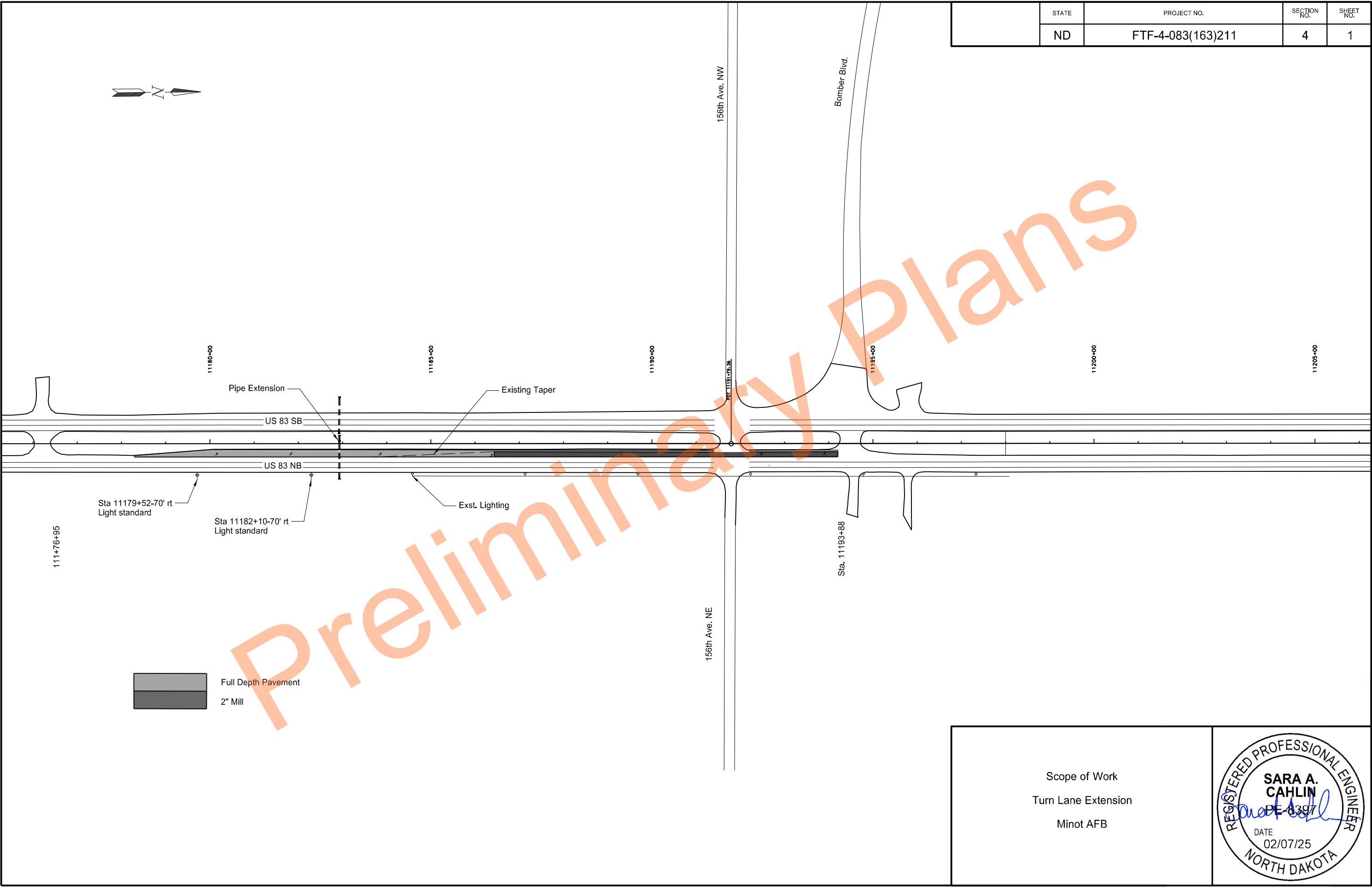
ND DEPARTMENT OF TRANSPORTATION
OFFICE OF PROJECT DEVELOPMENT

Kirk Hoff
02/12/25

NDDOT Design Division



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2	1-2	Table of Contents	D-101-10	NDDOT Utility Company and Organization Abbreviations				
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60	1-2	Plan & Profile	D-704-9	Construction Sign Details - Terminal And Guide Signs				
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			D-714-1	Reinforced Concrete Pipe Culverts And End Sections (Round Pipe)				
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SPECIAL PROVISIONS								
Number	Description							
SSP 1	Temporary Erosion and Sediment Best Management Practices							
SP 103(24)	Commercial Grade Asphalt							
SP 340(24)	Utility Coordination							



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Scope of Work
Turn Lane Extension
Minot AFB

REGISTERED PROFESSIONAL ENGINEER

SARA A. CAHLIN
PE-8397

DATE
02/07/25

NORTH DAKOTA

NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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107-P01 MAINTAINING TRAFFIC – UNEVEN SHOULDER: If a shoulder and the adjacent lane are uneven due to milling or paving operations, the requirements of Section 704.04 O, "Traffic Control for Uneven Pavement" apply. If the uneven shoulder and adjacent lane are due to other circumstance, the contents of this note apply. If, at the end of the work-day, drop-offs greater than 2 inches and less than 18 inches or slopes steeper than 4:1 exist between the edge of a traffic lane and the outside edge of the proposed roadway, perform one of the following actions:

- Construct a traversable wedge in the area of the drop-off or steep slope; or
- Close the lane adjacent to the drop-off or steep slope and provide 24-hour flagging or pilot car operations.

When constructing a wedge, construct a wedge composed of aggregate or earthen materials with a 4:1 or flatter slope along the entire length of the area. Compact materials using Type C compaction, as specified in 203.04 G.4, "Compaction Control Type C".

Install stackable vertical panels that meet the requirements of Section 704.03 H, "Stackable Vertical Panels", along the edge of the driving lane closest to the wedge at 50' c.c along the entire length of the work area.

The Engineer will measure stackable vertical panels as specified in Section 704.05, "Method of Measurement" and will pay for panels as specified in Section 704.06, "Basis of Payment".

The Engineer will not measure material used to construct the wedge. Include the cost of materials, equipment, labor, and incidentals required for this operation in the price bid for aggregate.

If a 4:1 or flatter wedge is not installed, provide 24 hour flagging or pilot car operations and associated traffic control at no additional cost to the Department.

108-P01 MINOT AIR FORCE BASE NOTIFICATION: US 83 is a mission essential route that is used by the 91st Missile Wing for convoy operations and may affect construction activities including work stoppage while convoys pass through the project area. Coordinate with Minot Air Force Base (MAFB) representatives to attend the pre-construction conference and provide a project schedule a minimum of 1 month prior to construction. Keep MAFB representatives informed of scheduling changes and lane or road closures/width restrictions occurring during construction. Contact information for the MAFB is below:

Mrs. Michelle Beavers, GS-11, DAFC
Engineering Technician, Missile Engineering
5 CES/CEM
Minot AFB, ND
Phone: (701) 723-3998

202-P01 REMOVAL OF BITUMINOUS SURFACING: Existing typical sections are based on old grading and paving plans. Actual thickness may vary due to previous construction methods or intermittent patching. Removal will also include the aggregate base. No additional payment will be made for unforeseen pavement thickness.

203-010 SHRINKAGE: 25 percent additional volume is included for shrinkage in earth embankment.

203-385 AVERAGE HAUL: No average haul has been computed for this project.

203-P01 COMMON EXCAVATION: The existing aggregate base to be removed is not required to be salvaged. It will be included in the price bid for "Common Excavation – Type A". Common Excavation will not be measured on the project and will be paid as plan quantity.

203-P02 COMPACTION AND DENSITY CONTROL: Compact material for embankment as specified in Section 203.04 G.3 Compaction Control Type B.

704-P01 TEMPORARY TRAFFIC CONTROL: Provide traffic control consisting of a one lane closure with flagging or a shoulder closure. The traffic control device list has been developed using the layouts shown in the plans and the following layouts shown on the Standard Drawings. The Department will pay for all necessary deployed devices.

- D-704-22, Layouts Type K and L for construction trucks hauling material.
- D-704-24, Layout Type HH: Shoulder closure on freeway
- D-704-34, One lane closure

704-P02 WORK ZONE TRAFFIC CONTROL PHASES: The device list and plan sheets have been developed based on the following phases:

Phase 1 – Lane closure:
A one lane closure has been provided for the left lane of northbound US 83 to permit construction of the left turn lane. Place signs and devices in accordance with Sec 100 Work Zone Traffic Control plan sheets based on D-704-34.

Provide flaggers to assist construction vehicles hauling materials to and from work area. The flaggers are to only slow US 83 traffic. Do not stop public traffic for construction vehicles entering and exiting the work area.

Phase 2 – Shoulder closure:
A shoulder closure has been provided for the right shoulder of northbound US 83 for signing and street lighting work. Place signs and devices in accordance with Sec 100 Work Zone Traffic Control plan sheets based on D-704-24 Type HH.



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NOTES

Complete Phase 1 work prior to commencing work on Phase 2 unless approved by the Engineer.

- 754-P01 OBJECT MARKERS – CULVERTS: Remove existing object markers located at culvert end sections that are impacted by earthwork activities and pipe extensions. Include the cost for removal and disposal in the price bid for “Object Markers – Culverts.”
- 762-050 PAVEMENT MARKING: If the Engineer and Contractor agree, plan quantity will be used as the measurement for payment for pavement marking items.
- 990-P01 PIPE CLEANOUT: Remove all silt and debris from the entire length of pipe designated in the plans for extension. Include all the costs for pipe cleanout in the contract unit price for “Pipe Cleanout”.

Preliminary Plans



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NOTES

SECTION 110

754-P02 VEHICLE SPEED FEEDBACK SIGN: Provide installation, programming, and maintenance manuals to the Engineer prior to installation. Submit work drawings with mounting details prior to installation.

Static Sign Requirements:

- Sign W13-20,
- Size 36"x48", and
- Type XI retroreflective sign sheeting.

Dynamic Sign Requirements:

- Digital number height of 12",
- Provide an LED display,
- Display the speed of the approaching vehicle as "XX" in MPH,
- Monitor traffic speed via radar detecting up to 1000 feet,
- Display face non-glare, UV resistant, and high impact polycarbonate,
- Weatherproof NEMA Type 3R rating,
- Display numerals yellow color with a black background,
- Operate at a temperature range of -34 degree C to +74 degree C,
- 22 degree viewing angle,
- Provide a minimum 2-year warranty, and
- Provide a mounting bracket for a 5" round pole.

Controller Requirements:

- Program display for the posted speed limit,
- Blank or zero displayed when no advancing traffic is detected,
- Blank or zero displayed when a vehicle exceeds the posted speed limit by 15 mph,
- Flash display if the detected speed exceeds the posted speed limit,
- Automatic nighttime dimming feature, and
- Operate 24 hours a day, 7 days a week.

Solar Power Requirements:

- Provide solar panels to charge battery,
- Provide a solar charge controller, and
- Provide AGM batteries sufficient to power the display sign for 3 days without sunlight.

Include costs associated with installation, supply, and testing of this sign equipment in the item "Vehicle Speed Feedback Sign".

754-P03 REMOVED SIGNS AND SUPPORTS: Dispose of all signs and supports that are not reset.

SECTION 140

770-P01 LED LUMINAIRE: Provide luminaires listed below:

Conventional Luminaire	Catalog Number
American Electric Autobahn ATB2	ATB2-P603-MVOLT-R2-NR-NL-P7-SH-BAA

The lighting system was designed using these values:

Photometric Requirements	
Roadway Classification	Principal Arterial-Residential
Average Maintained Illuminance	.8 foot-candles
Illuminance Uniformity Ratio	4.0:1
Minimum Illuminance	as uniformity allows
Light Loss Factor	0.81

Include all cost associated with the LED luminaire in the bid price for "Revise Lighting System".

770-P02 BREAKAWAY LIGHT STANDARD: Ensure the bases for the light standards are the breakaway transformer type with a minimum of 4 anchor bolts. Galvanize the light standards and provide davit style mast arms. Ensure the height is 42 feet from the top of the foundation to the bottom of the luminaire for all light standards.

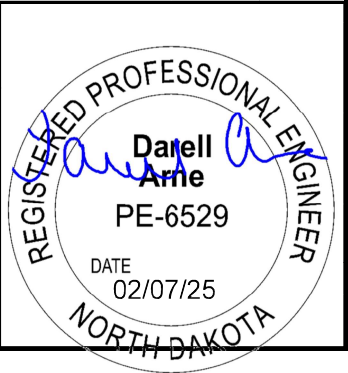
770-P03 STRUCTURAL SPLICE BOXES: Provide 20 feet of slack of conductor in the structural splice box/junction box at each location.

770-P04 EXISTING FEED POINT: The flashing beacons and lights connect to the feed point located at Sta 11195-51.5-148.5' lt. This equipment is owned and maintained by Verendrye Electric Coop. Build the new flashing beacon assembly and ensure it is connected in this feed point.

Disconnect the meter at the existing feed point at Sta 11176+87-172' rt and leave equipment in place. Contact Verendrye Electric at the address below.

Brad Doll
Verendrye Electric Coop
615 Hwy 52 W
Velva, ND 58790
bradgd@verendrye.com
(701) 338-2855

Include all costs in the price bid for the item "Revise Lighting System", "Vehicle Speed Feedback Sign" and Flashing Beacon – Post Mounted".



ESTIMATE OF QUANTITIES

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SPEC CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
103	0100 CONTRACT BOND	L SUM	1	1
202	0132 REMOVAL OF BITUMINOUS SURFACING	SY	4,259	4,259
202	0169 REMOVAL OF END SECTION-ALL TYPES & SIZES	EA	1	1
203	0101 COMMON EXCAVATION-TYPE A	CY	569	569
203	0109 TOPSOIL	CY	1,398	1,398
203	0140 BORROW-EXCAVATION	CY	158	158
216	0100 WATER	M GAL	50	50
230	0165 SUBGRADE PREPARATION-TYPE A-12IN	STA	8	8
251	0200 SEEDING CLASS II	ACRE	1.81	1.81
251	2000 TEMPORARY COVER CROP	ACRE	1.73	1.73
253	0201 HYDRAULIC MULCH	ACRE	3.54	3.54
255	0102 ECB TYPE 2	SY	48	48
261	0112 FIBER ROLLS 12IN	LF	250	250
261	0113 REMOVE FIBER ROLLS 12IN	LF	125	125
302	0120 AGGREGATE BASE COURSE CL 5	TON	890	890
411	0114 MILLING PAVEMENT SURFACE - 2 INCH	SY	957	957
430	0500 COMMERCIAL GRADE HOT MIX ASPHALT	TON	559	559
702	0100 MOBILIZATION	L SUM	1	1
704	0100 FLAGGING	MHR	400	400
704	1000 TRAFFIC CONTROL SIGNS	UNIT	746	746
704	1052 TYPE III BARRICADE	EA	3	3
704	1060 DELINEATOR DRUMS	EA	23	23
704	1067 TUBULAR MARKERS	EA	26	26
704	1080 STACKABLE VERTICAL PANELS	EA	34	34
704	1087 SEQUENCING ARROW PANEL-TYPE C	EA	1	1
714	0615 PIPE CONC REINF 24IN CL III	LF	12	12
714	3020 END SECT-CONC REINF 24IN	EA	1	1
754	0110 FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	47	47
754	0112 FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	24	24
754	0206 STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	192	192
754	0214 GALV STEEL POSTS-W-SHAPE POSTS(TWO OR MORE)	LF	128	128
754	0534 PANEL FOR SIGNS-TYPE IV REFLECTIVE SHEETING	SF	156	156
754	0805 OBJECT MARKERS - CULVERTS	EA	1	1

ESTIMATE OF QUANTITIES

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SPEC CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
754	1104 REMOVE SIGN FOUNDATION	EA	5	5
754	8015 VEHICLE SPEED FEEDBACK SIGN	EA	1	1
762	0114 EPOXY PVMT MK 6IN LINE	LF	2,000	2,000
762	0134 EPOXY PVMT MK 12IN LINE-GROOVED	LF	1,035	1,035
762	0136 EPOXY PVMT MK MESSAGE-GROOVED	SF	48	48
770	4525 REVISE LIGHTING SYSTEM	EA	1	1
772	2110 FLASHING BEACON-POST MOUNTED	EA	1	1
990	0400 PIPE CLEANOUT	EA	1	1

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Location	EMBANKMENT (CY) B	203-0101 COMMON EXCAVATION - TYPE A (CY) Pay Item A	203-0140 BORROW EXCAVATION (CY) Pay Item C = B - A	203-0109 TOPSOIL STRIPPING (CY) Pay Item D
Section 1 (Sta 11178+85 to Sta 11193+88)	727.4	569.2	158.2	1397.15
TOTALS	727	569	158	1,398

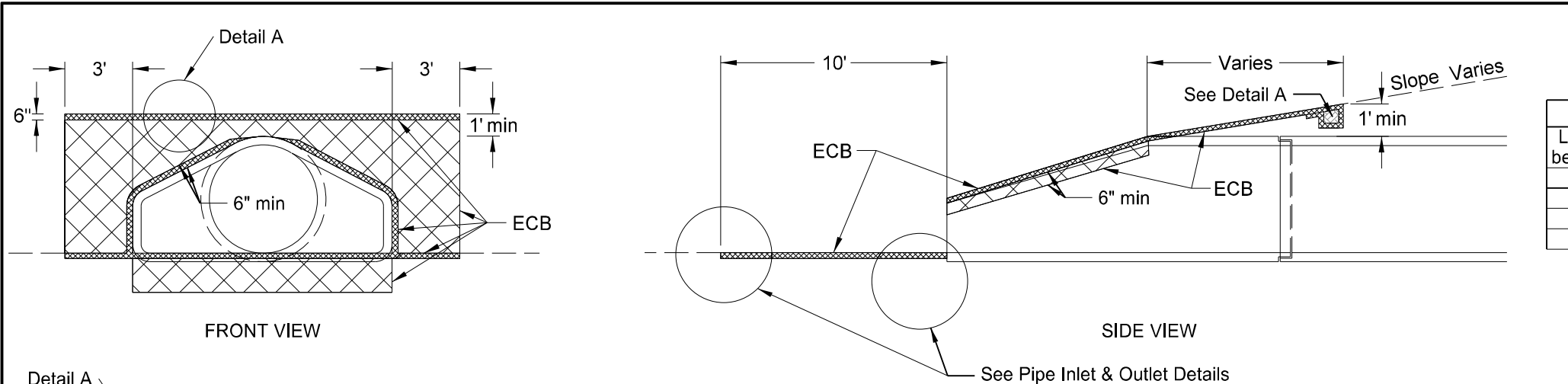
All excavation will be paid for as Common Excavation - Type A. Waste excess material within NDDOT Right of Way. See Section 6 for additional notes.

Water
25 MGal for Dust Palliative
20 Gal/Ton for Aggregates
10 Gal/CY for Embankments

Materials
Agg Base CL 5 1.875 Ton/CY
Commercial Grade Hot Mix Asphalt 2.0 Ton/CY
PG 58H-34 Asphalt Cement 6.0% Commercial Grade HMA (include in the bid price for "Commercial Grade Hot Mix Asphalt")

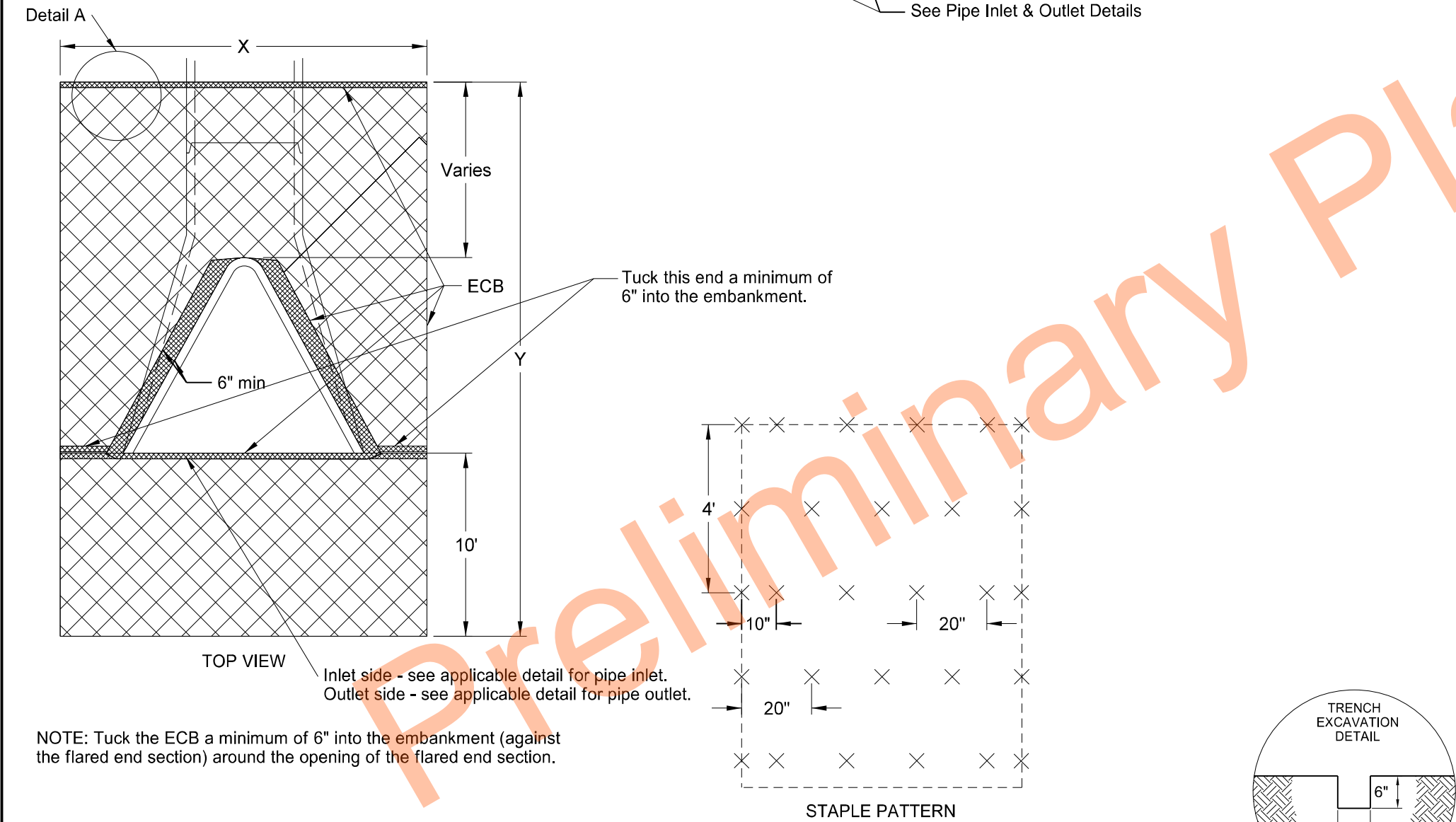
Basis of Estimate
Turn Lane Extension
Minot AFB





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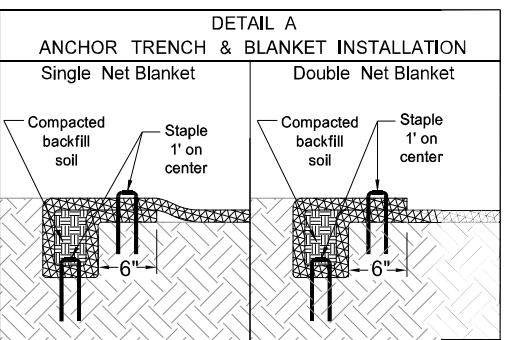
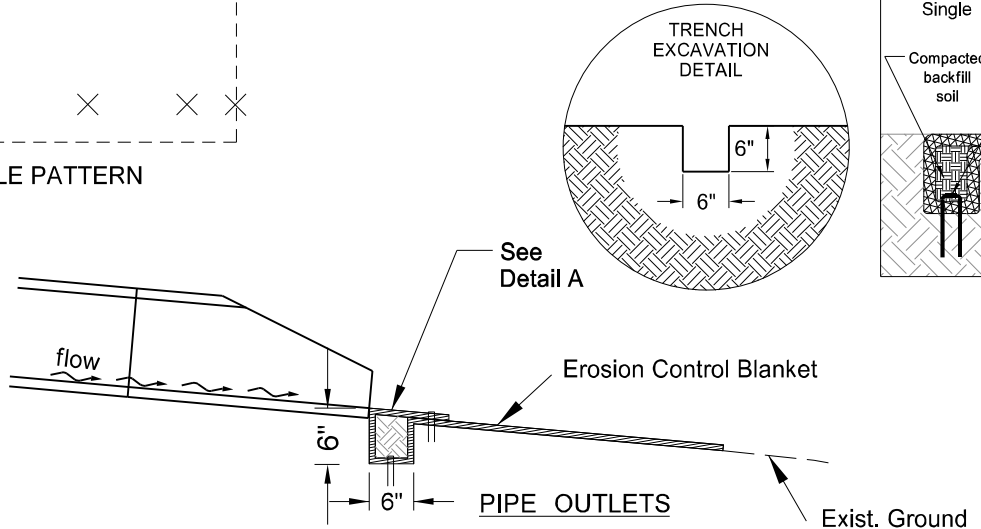
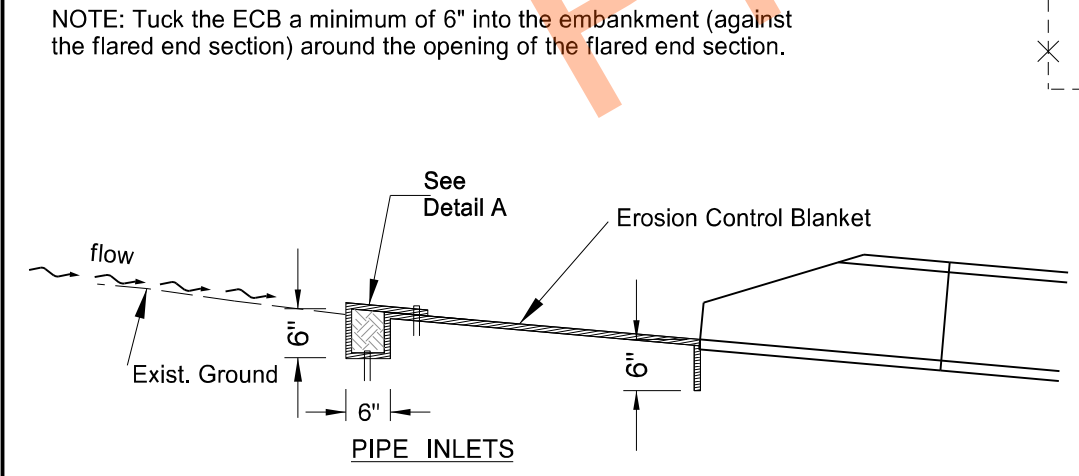
Erosion Control Blanket (ECB)								
Location to be Protected Station	Culvert Type Appr/CL	Pipe Diam (Inch)	No	Unit Quantity (SY)	Total Quantity			
					Type 1 (SY)	Type 2 (SY)	Type 3 (SY)	Type 4 (SY)
11182+73	CL	24	2	24		24		
11182+73	CL	24	2	24		24		
Total (SYs)						48		



CENTERLINE CULVERTS									
DIA In	X Ft	Y Ft	Surface area to be protected SF	ECB SY	DIA In	X Ft	Y Ft	Surface area to be protected SF	ECB SY
24	10.5	19.6	193.1	22	24	10.5	17.6	172.1	20

Note: Quantities based on 6:1 slope.

Note: Quantities based on 4:1 slope.

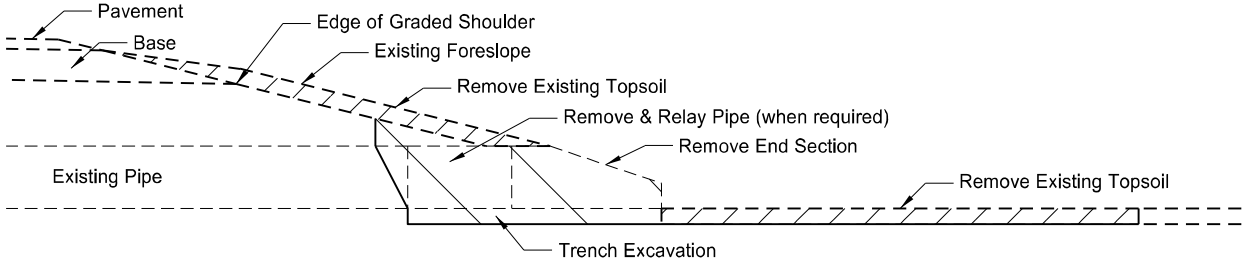


Erosion Control at Culvert Flared End Sections

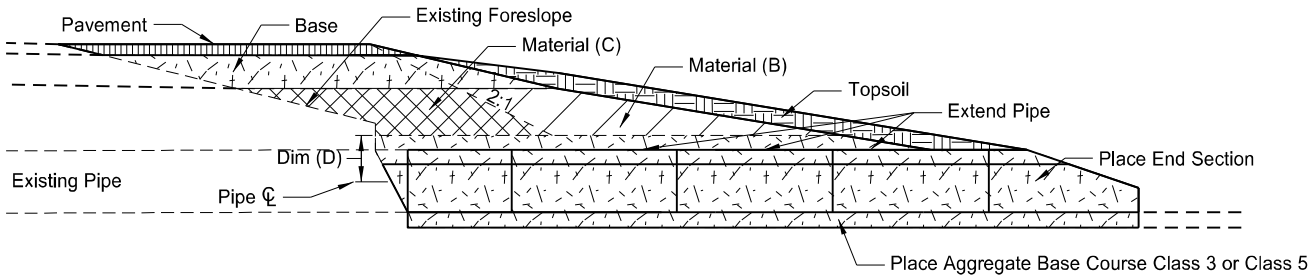
Project Description

Project Location

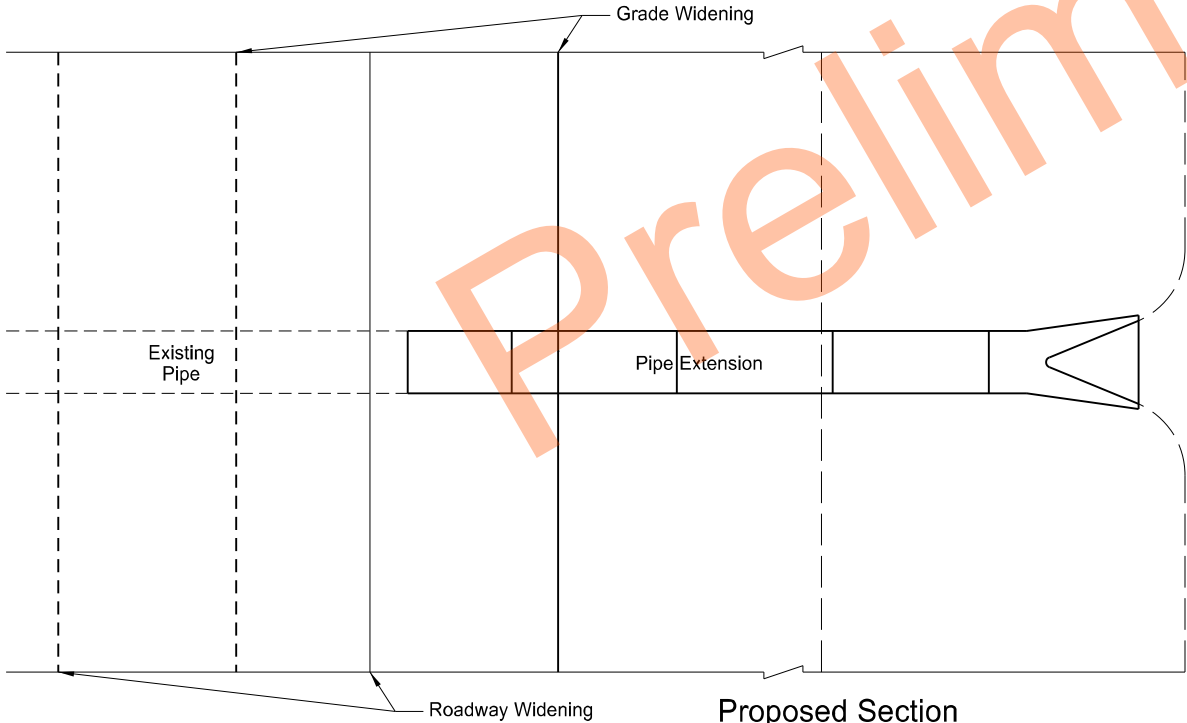
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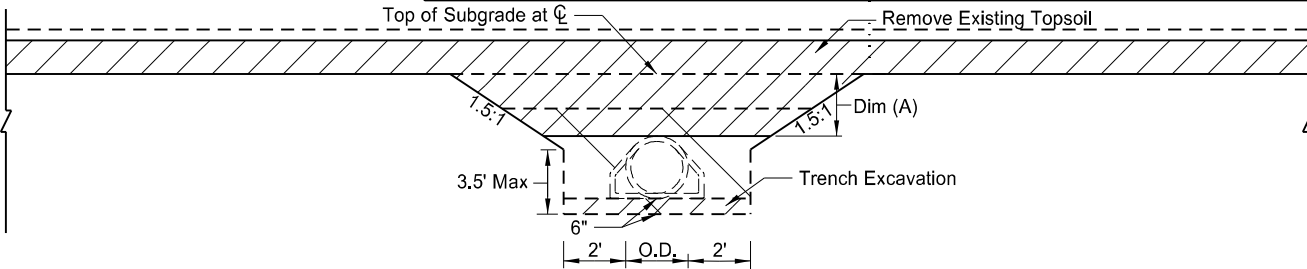
Removal Section
Cross Section View



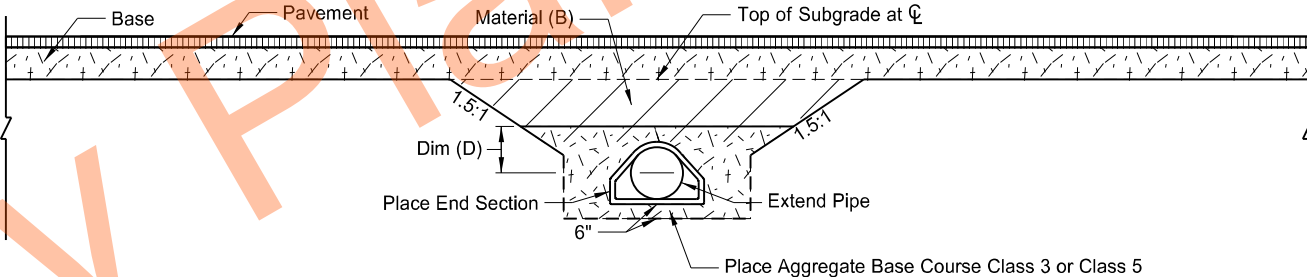
Proposed Section
Cross Section View



Proposed Section
Plan View



Removal Detail
Side View



Backfill Detail
Side View (Topsoil not shown)

Pay Items

- 1) Pipe*
- 2) Remove & Relay Pipe - All Types & Sizes (when required)
- 3) Remove & Reset End Section or
Remove End Section and Place New End Section
- 4) Borrow Excavation or Common Excavation
- 5) Topsoil
- 6) Seeding
- 7) Mulching

*Included in Pipe Pay Item

- 1) Pipe
- 2) Trench excavation
- 3) Aggregate Base Course Class 3 or Class 5

Pipe Materials	Dim (A) <= 4 Feet		Backfill Dimension
	Material (B)	Material (C)	Dim (D)
Concrete	Embank or Aggr	Aggregate	0.5 O.D.
Metal	Embank or Aggr	Aggregate	0.5 O.D.+1 Foot

Pipe Materials	Dim (A) > 4 Feet		Backfill Dimension
	Material (B)	Material (C)	Dim (D)
Concrete	Embankment	Embankment	0.5 O.D.
Metal	Embankment	Embankment	0.5 O.D.+1 Foot

NOTES:

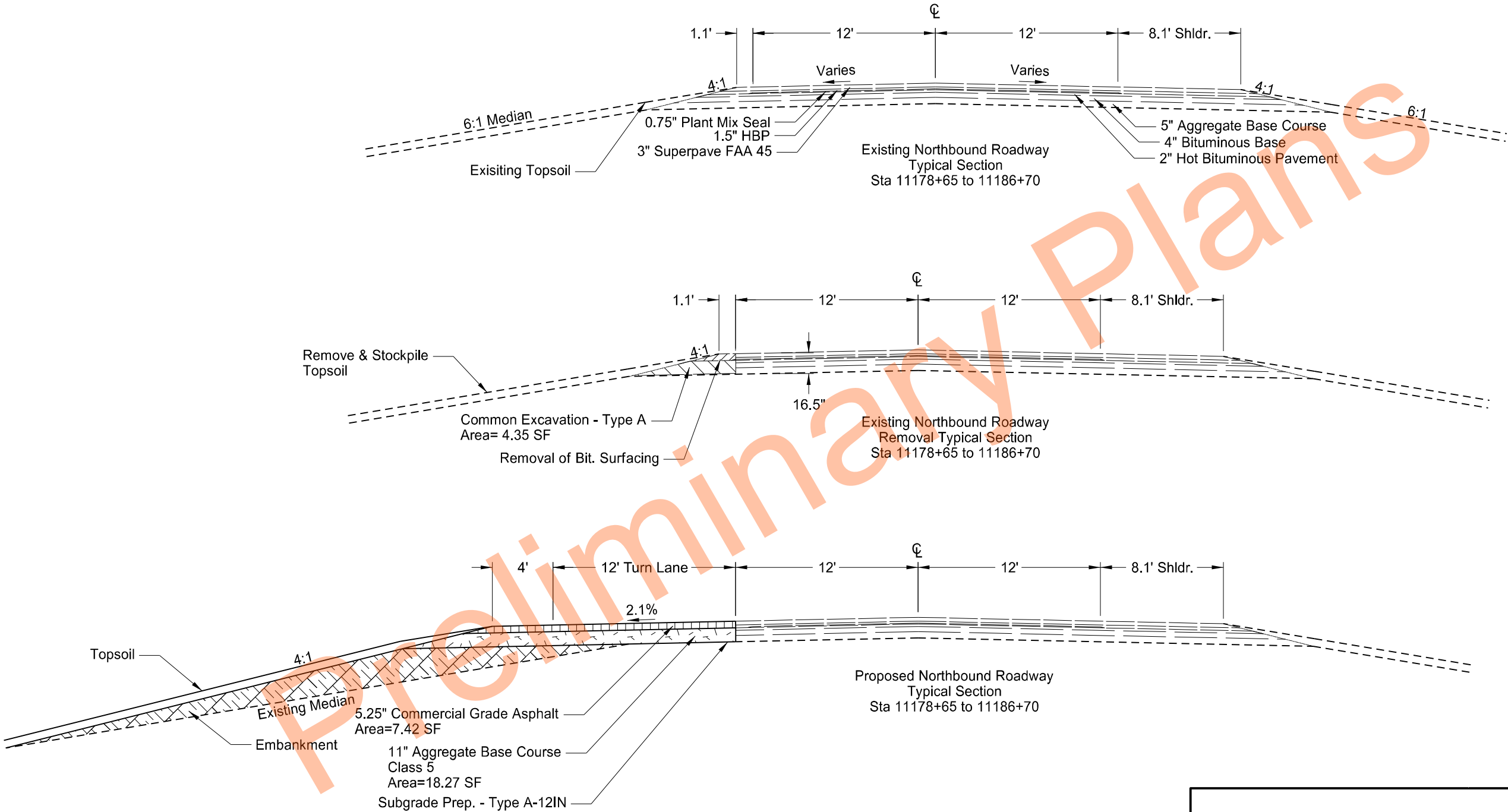
1. Embankment may be either Borrow Excavation or Common Excavation
2. Aggregate may be either Class 3 or Class 5 Aggregate Base Course.



Mainline Widening CL Pipe Extension Detail

Minot AFB

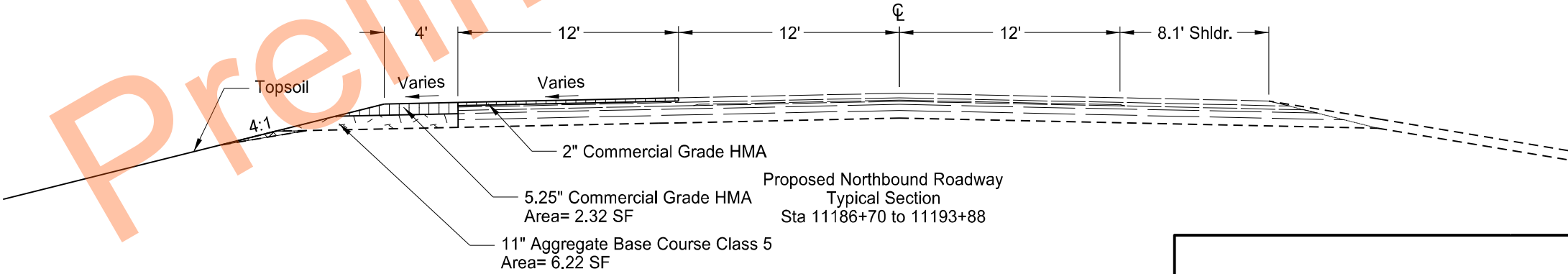
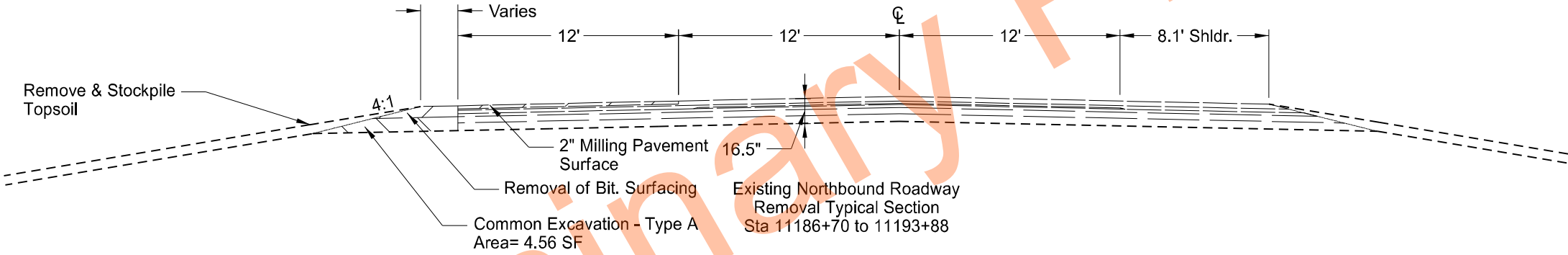
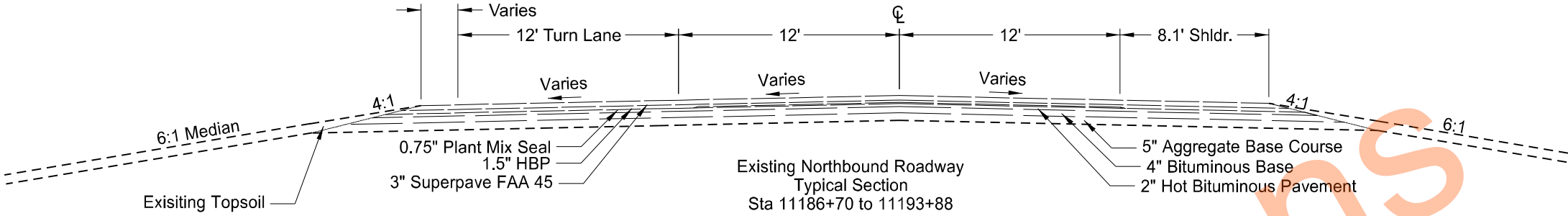
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Typical Sections
Turn Lane Extension
Minot AFB

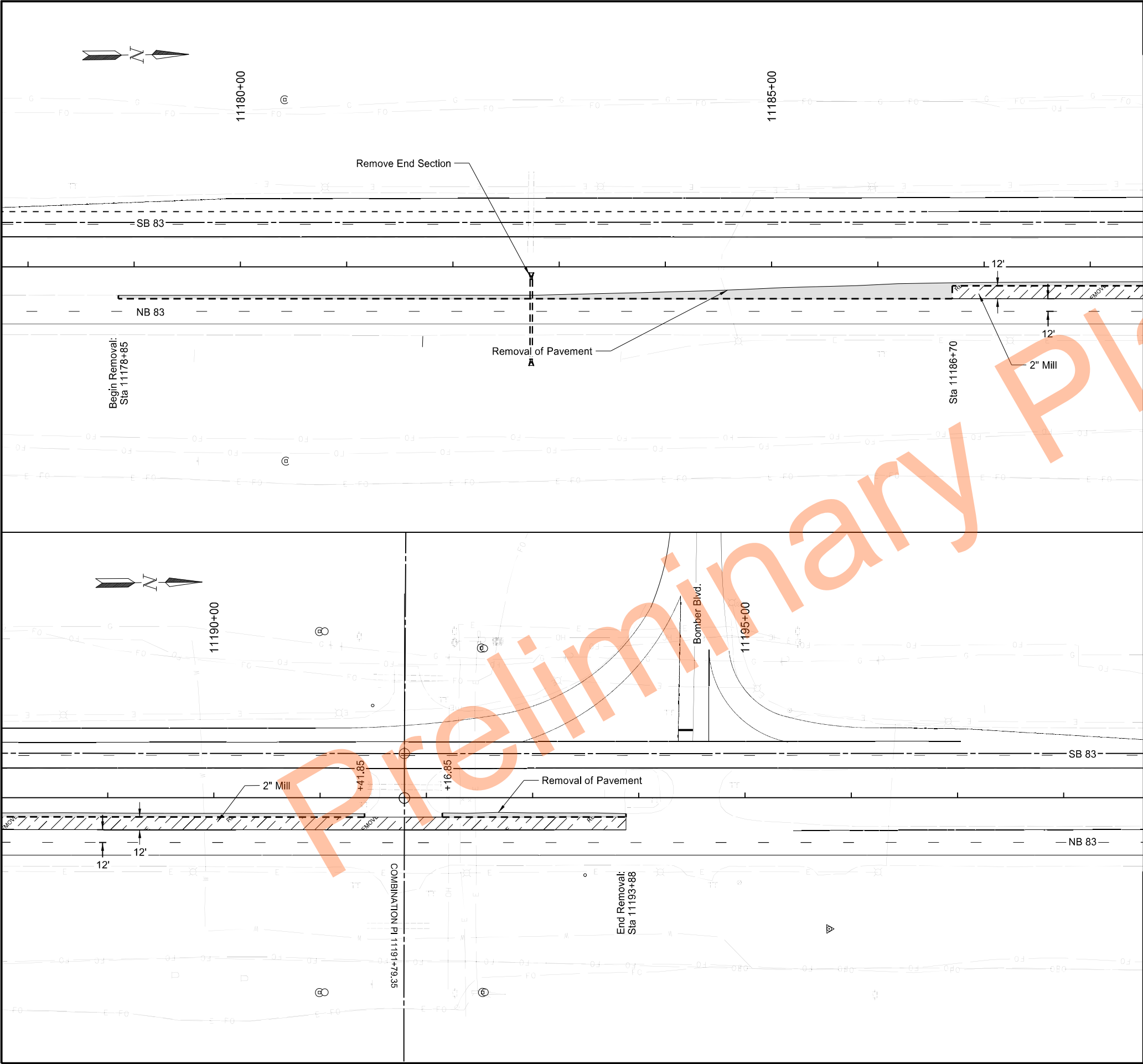


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Typical Sections
Turn Lane Extension
Minot AFB





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	40	1

SPEC	CODE	BID ITEM	QTY	UNIT	TOTAL
202	0132	REMOVAL OF BITUMINOUS SURFACING			
		Sta 11178+85 to 11193+88	4259	SY	4259
202	0169	REMOVAL OF END SECTION-ALL TYPES & SIZES			
		Sta 11182+73.8	1	EA	1
411	0114	MILLING PAVEMENT SURFACE - 2 INCH			
		Sta 11186+70 to 11193+88	957	SY	957

Legend

- Milling Pavement Surface - 2 Inch
- Removal of Bituminous Surfacing
- Saw Cut

Removals
Turn Lane Extension
Minot AFB

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Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	Geosynthetic Material - Type G (Pay Item)	(*) End Sections		Applicable Backfill
				In	Bid Item	LF		In	Type		In	SY	Begin	End	
11182+73.8	11.9' Rt	11182+73.8	2.1' Lt	24	Pipe Conc. Reinf. CL III (Extension)	12'	Reinforced Concrete Pipe - Class III (barrel length = 14 LF)	24						FES	Section 20 Sheet 1

Corrugations: 2 = 2-2/3"x1/2"
3 = 3"x1"
5 = 5"x1"

Coatings: Z = Zinc
A = Aluminum
P = Polymeric (over Zinc or Aluminum)

Spiral Ribs: 3/4 = 3/4"x3/4"@7-1/2"
1 = 3/4"x1"@11-1/2"

(*) End sections are measured and paid for separately for pipe extensions.
FES = Flared End Section
TES = Traversable End Section

Preliminary Plans

Allowable Pipe List
Turn Lane Extension
Minot AFB



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	60	1

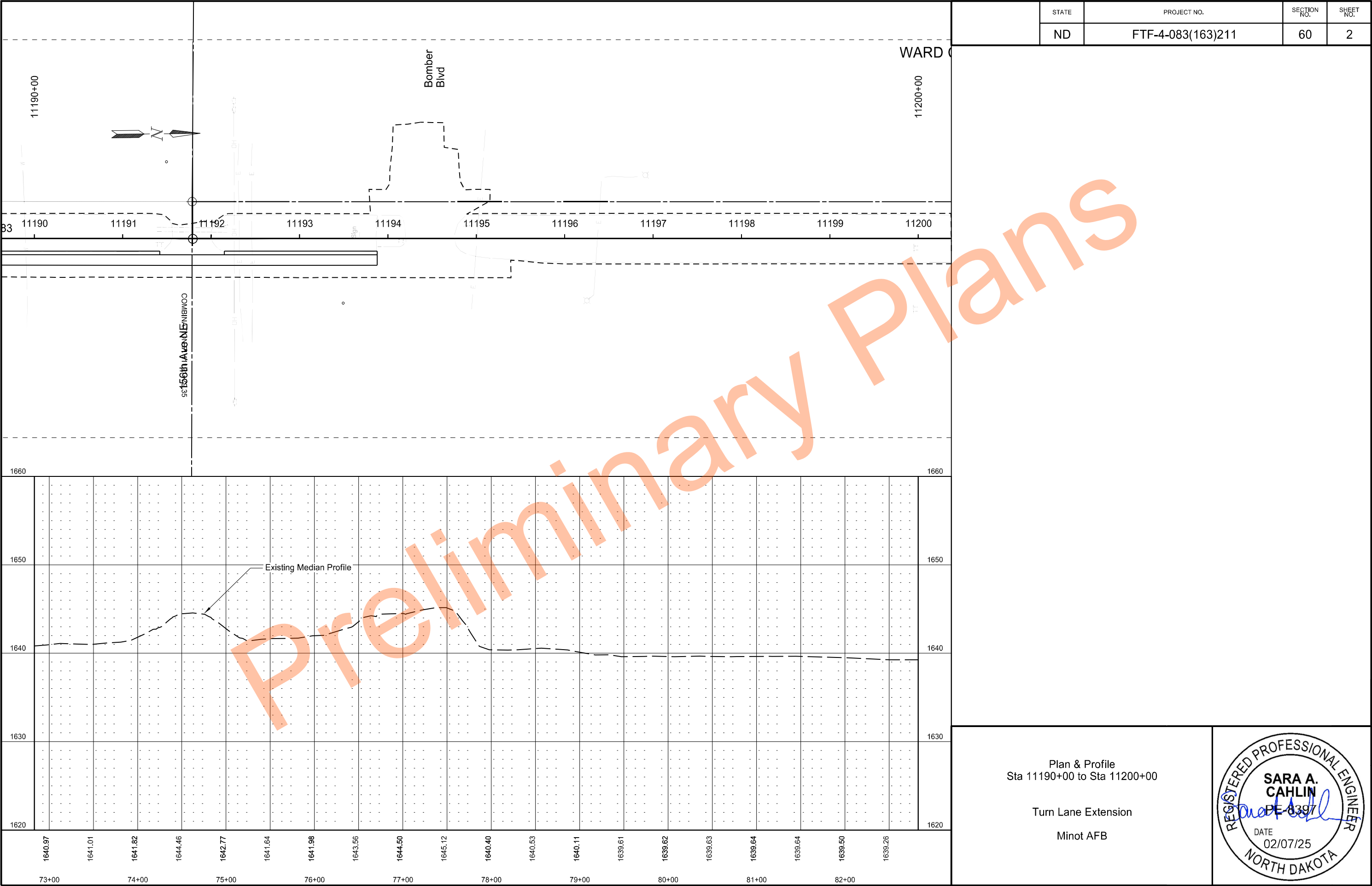
SPEC	CODE	BID ITEM	QTY	UNIT
714	0615	PIPE CONC REINF 24 IN CL III		
		Sta 11182+74 Lt	12	LF
714	3020	END SECT-CONC REINF 24IN		
		Sta 11182+74	1	EA
754	0805	OBJECT MARKERS - CULVERTS		
		Sta 11182+74	1	EA
990	0400	PIPE CLEANOUT		
		Sta 11182+74	1	EA

Plan & Profile

Sta 11185+00 to11190+00

Turn Lane Extension

Minot AFB



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	75	1

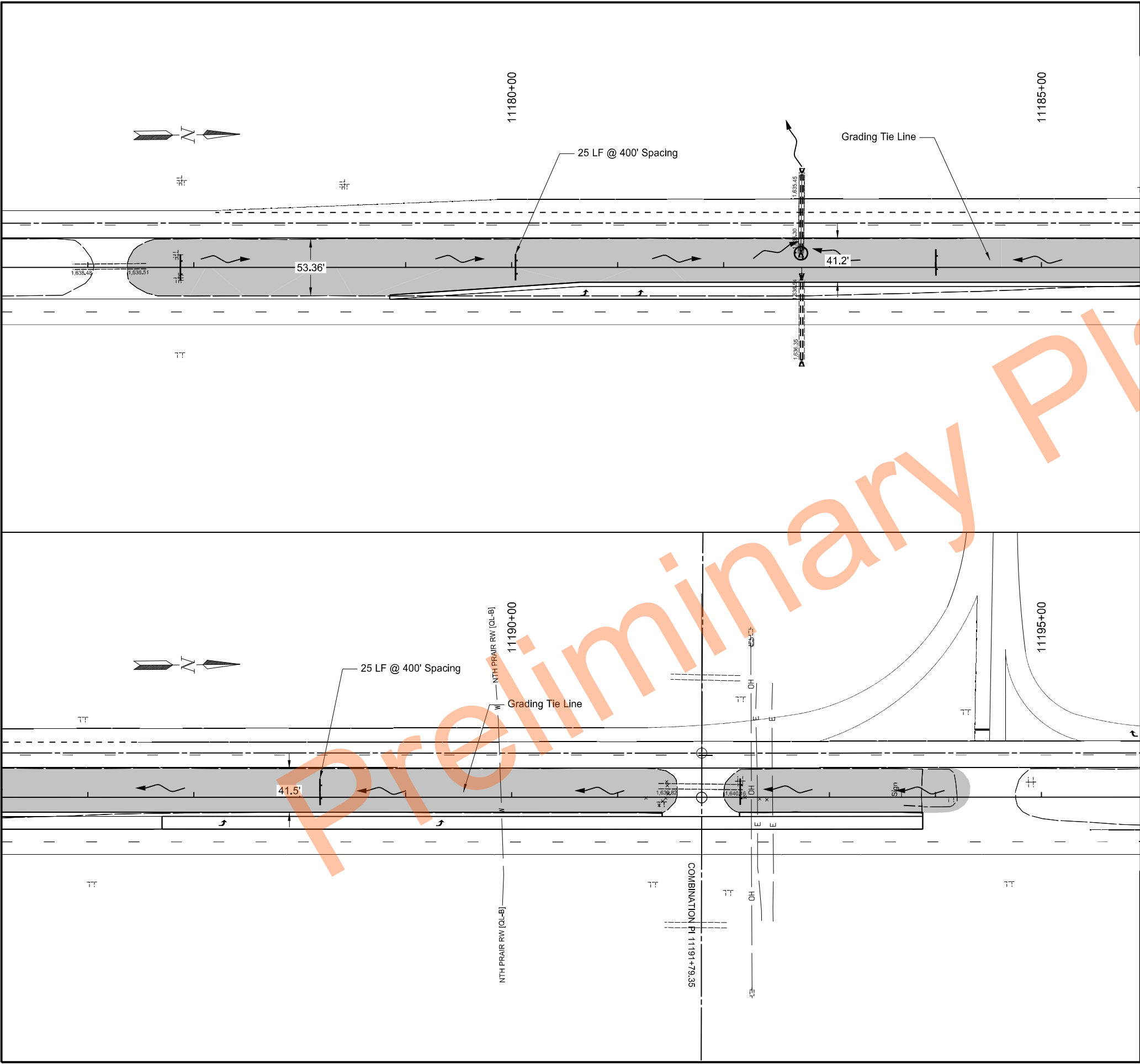
Wetland Impact Table												
Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impact					Wetland Mitigation		
					Wetland Impacts			USFWS Easement		Mitigation Proposed		
								Impacts				
					Temp.	Perm. (Fill/Drain)	Perm. (Cut)	Temp.	Perm.	EO 11990	USACE	USFWS
1	Sec 30 T-157-N R-82-W	Ditch	Created	N	0.000	0.000						
2a	Sec 30 T-157-N R-82-W	Ditch	Created	N	0.000	0.000						
2b	Sec 30 T-157-N R-82-W	Ditch	Created	N	0.293	0.157						
2c	Sec 30 T-157-N R-82-W	Ditch	Created	N	0.101	0.026						
2d	Sec 30 T-157-N R-82-W	Ditch	Created	N	0.014	0.000						
2e	Sec 19 T-157-N	Ditch	Created	N	0.040	0.000						
3	Sec 19 T-157-N	Ditch	Created	N	0.000	0.000						
				Totals	0.448	0.183						

A wetland Jurisdictional Determination was issued by thr USACE on 9/13/2024; NWO-2024-00629

Impact Summary Table			
Permanent Impact Summary		Temporary Impacts and additional information	
Wetland Type	Total Acre(s)	WaterType	Total Acre(s)
Natural/JD (Fill/Drain)	0.000	Temporary Wetland JD	0.000
Natural/Non-JD (Fill/Drain)	0.026	Non-JD Wetland Temporary	0.448
Artificial/JD (Fill/Drain)	0.000		
Artificial /Non-JD (Fill/Drain))	0.157	Permanent OW	0.000
Total	0.183	Temporary OW	0.000
JD Natural (Cut)		Permanent OW-d	0.000
JD Artificial (Cut)		Temporary OW-d	0.000
Non-JD Natural (Cut)			
Non-JD Artificial (Cut)			
Total	0.000		

Wetland Impact Table
Turn Lane Extension
Minot AFB

REGISTERED PROFESSIONAL ENGINEER
SARA A. CAHLIN
PE-8397
DATE 02/07/25
NORTH DAKOTA



STATE		PROJECT NO.	SECTION NO.	SHEET NO.
ND		FTF-4-083(163)211	76	1

SPEC	CODE	BID ITEM	QTY	UNIT
251	2000	TEMPORARY COVER CROP		
		Sta 11176+00 to 11195+00	1.73	ACRE
253	0201	HYDRAULIC MULCH		
		Sta 11193+70 to Sta 11194+00	1.73	ACRE
261	0112	FIBER ROLLS 12IN		
		Sta 11183+70 to Sta 11194+00	125	LF
261	0113	REMOVE FIBER ROLLS 12IN		
		Sta 11183+70 to Sta 11194+00	125	LF

Legend

- Temporary Cover Crop/ Hydraulic Mulch
- Fiber Rolls 12IN
- Flow Direction

Temporary Erosion Control

Turn Lane Extension

Sta 11176+50 to Sta 11194+00

Minot AFB

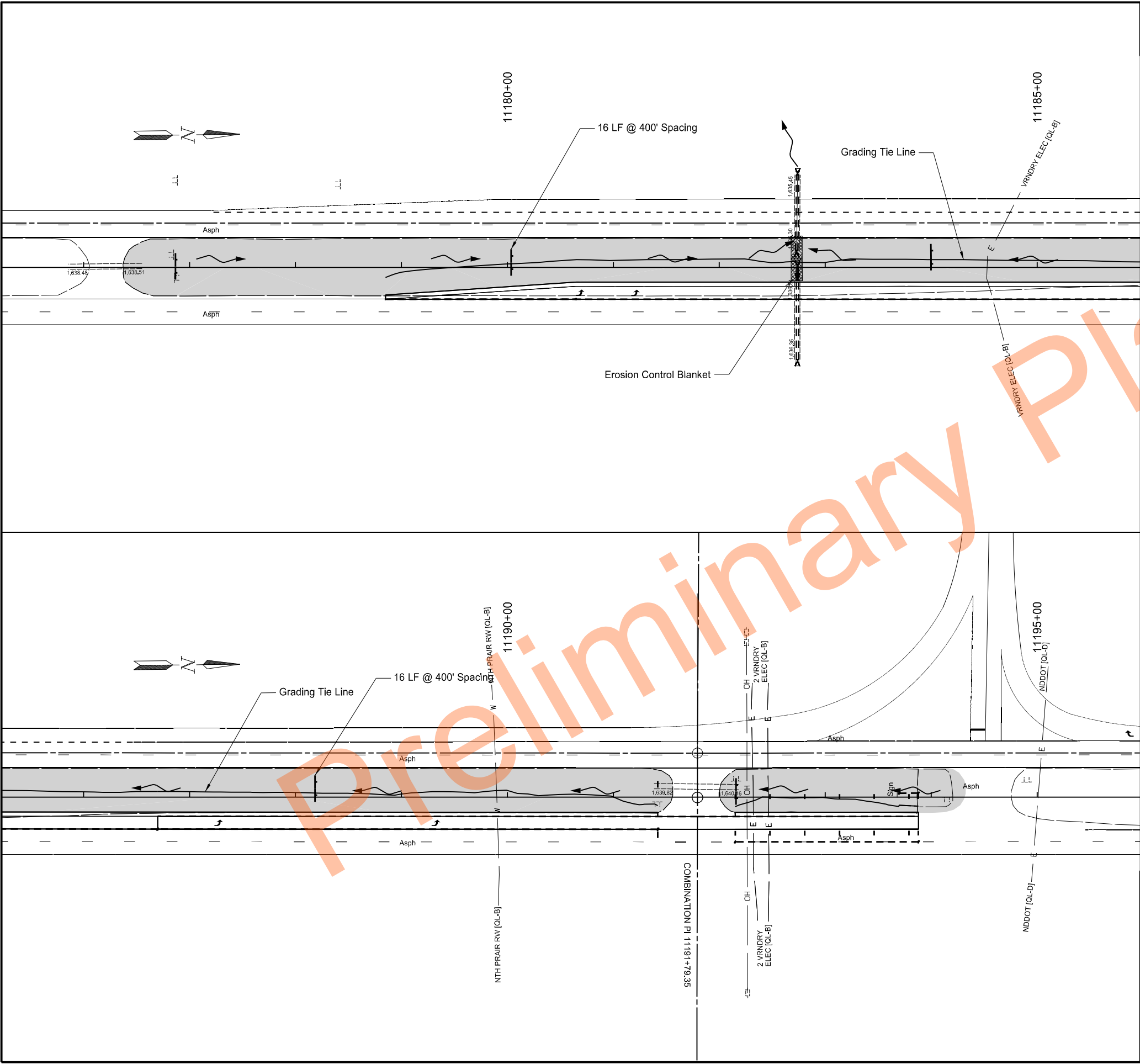
REGISTERED PROFESSIONAL ENGINEER

SARA A. CAHLIN

PE-8397

DATE 02/07/25

NORTH DAKOTA



		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	FTF-4-083(163)211	77	1

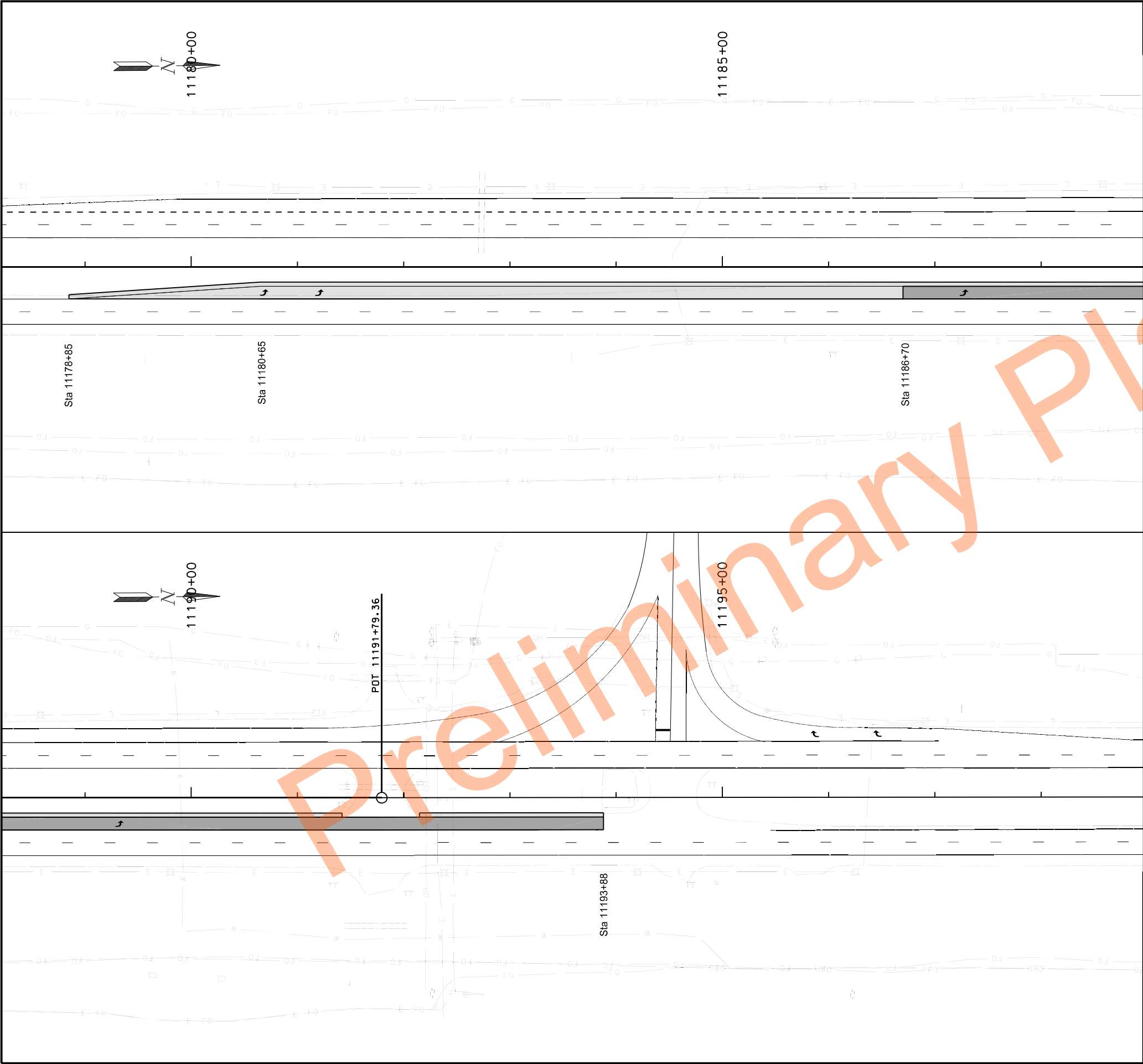
SPEC	CODE	BID ITEM	QTY	UNIT
251	0200	SEEDING CLASS II		
		Sta 11183+70 to Sta 11194+00	1.73	ACRE
253	0201	HYDRAULIC MULCH		
		Sta 11183+70 to Sta 11194+00	1.73	ACRE
255	0102	ECB Type 2		
		Sta 11182+73	48	SY
261	0112	FIBER ROLLS 12IN		
		Sta 11183+70 to Sta 11194+00	125	LF

Legend

- Seeding Class II & Hydraulic Mulch
- Fiber Rolls 12IN
- Flow Direction

Permanent Erosion Control

Turn Lane Extension
Sta 11176+50 to Sta 11194+00
Minot AFB



STATE		PROJECT NO.	SECTION NO.	SHEET NO.
ND		FTF-4-083(163)211	90	1

SPEC	CODE	BID ITEM	QTY	UNIT	TOTAL
302	0120	AGGREGATE BASE COURSE CL 5			
Sta 11178+85 to 11193+88			890	TON	890
430	0500	COMMERCIAL GRADE HOT MIX ASPHALT			
2" Overlay - Sta 11186+70 to 11198+88			106	TON	559
5.25" HMA - Sta 11178+85 to 11191+42			431	TON	
5.25" HMA - Sta 11192+14 to 11193+88			22	TON	

Legend

- HMA Overlay
- 2" Commercial Grade Hot Mix Asphalt
- Full Depth
- 5.25" Commercial Grade Hot Mix Asphalt
- 11" Aggregate Base Course CL 5

Paving Layouts

Turn Lane Extension

Sta 11176+50 to Sta 11194+00

Minot AFB

REGISTERED PROFESSIONAL ENGINEER

SARA A. CAHLIN

PE-8397

DATE 02/07/25

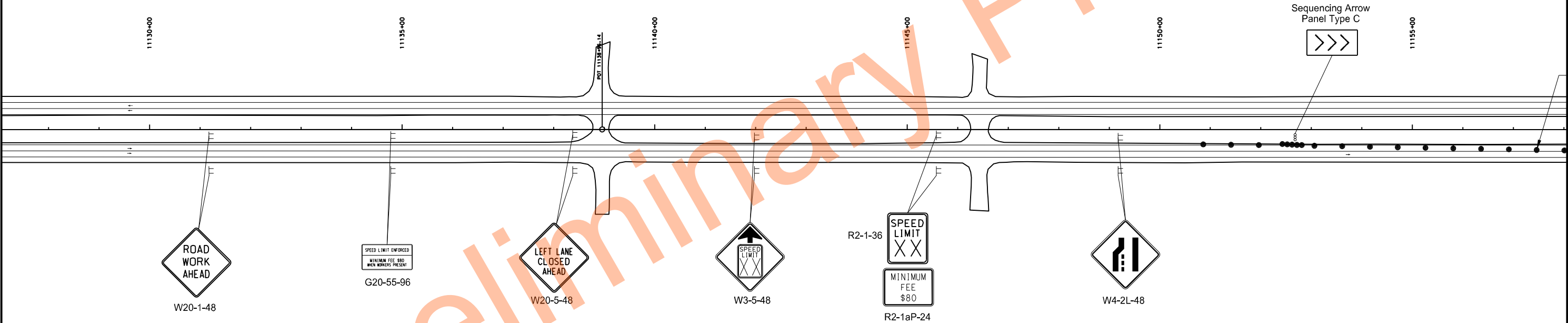
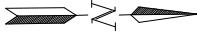
NORTH DAKOTA

[illegible]

A circular professional engineer seal for Sara A. Cahlin, PE-8397, North Dakota. The seal features the text "REGISTERED PROFESSIONAL ENGINEER" around the top and "NORTH DAKOTA" around the bottom. In the center, the name "SARA A. CAHLIN" and the number "PE-8397" are printed. A blue ink signature "Sara A. Cahlin" is written across the center, and the date "02/07/25" is printed below the signature. The word "DATE" is printed to the left of the date.

VERSION: 11.21.2022

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	100	2

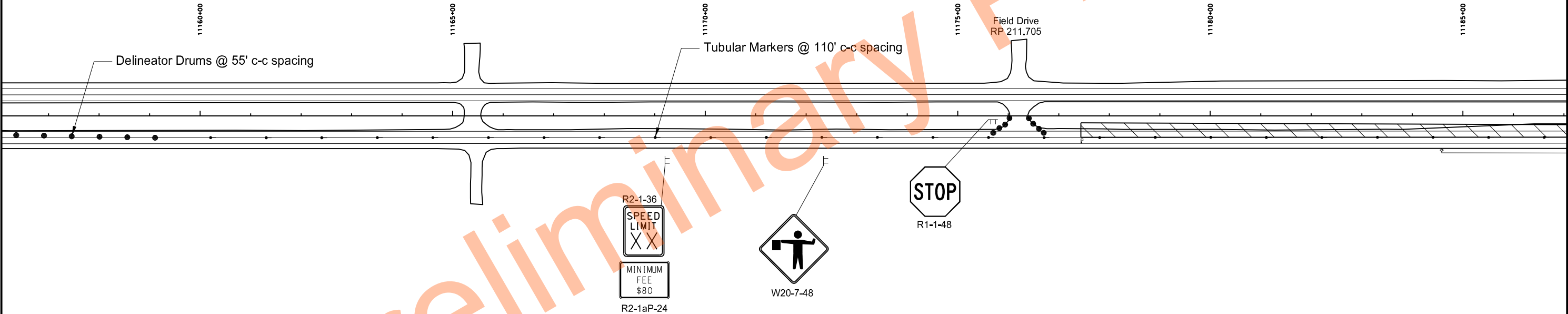
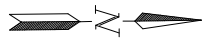


NOTE: See Std. Drawing D-704-34 for Sign & Device Spacing

Work Zone Traffic Control
Turn Lane Extension
Minot AFB
Left Lane Closure



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	100	3

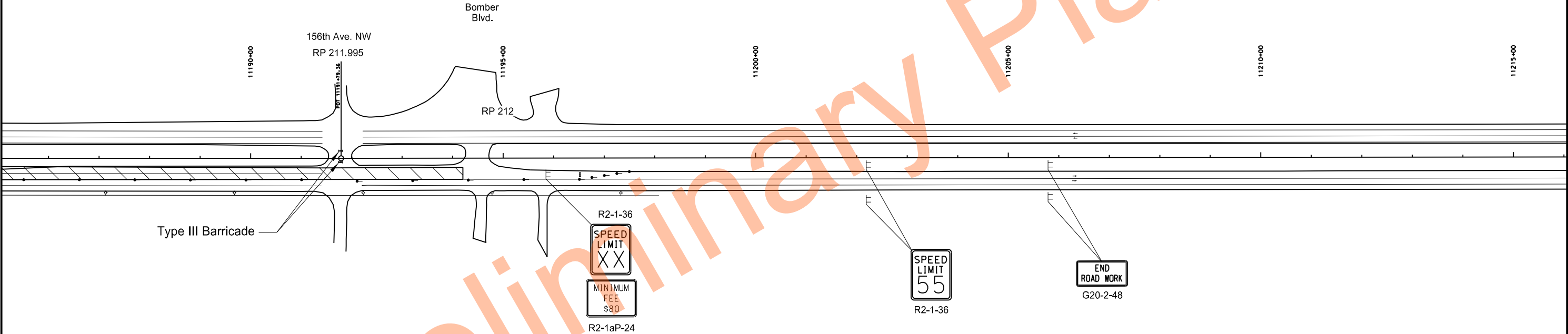
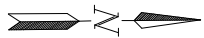


NOTE: See Std. Drawing D-704-34 for Sign & Device Spacing

Work Zone Traffic Control
Turn Lane Extension
Minot AFB
Left Lane Closure



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	100	4



NOTE: See Std. Drawing D-704-34 for Sign & Device Spacing

Work Zone Traffic Control
Turn Lane Extension
Minot AFB
Left Lane Closure



																		STATE	PROJECT NO.			SECTION NO.	SHEET NO.		
																	N.D.	FTF-4-083(163)211			110	1			
Station / RP	Sign No.	Assembly No.	Flat Sheet For Signs		Sign Support Length				Vert Clear-ance	Support Size	Max Post Len	Sleeve Length				Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments		
			IV SF	XI SF	1st LF	2nd LF	3rd LF	4th LF	FT		LF	1st LF	2nd LF	3rd LF	4th LF										
11169+00 Rt mdn		11		12.0	14.1	14.6			7.0	2.5 x 2.5 12 ga	16.0						2	4	3 x 3 7 ga			2			
11169+00 Rt	SA A			12.0	17.8	17.9	18.1		7.0	2.25 x 2.25 12 ga	18.7	5.5	5.6	5.8		2.5 x 2.5 12 ga	3	4	3 x 3 7 ga			3			
11179+50 Rt	SA C			22.5	14.0	14.8			7.0	2.25 x 2.25 12 ga	15.3	4.5	5.2			2.5 x 2.5 12 ga	2	4	3 x 3 7 ga			2			
11193+68 Rt mdn	SN 1		24.0		13.5	13.8	13.8		7.0	2.5 x 2.5 10 ga	14.1						3	4	3 x 3 7 ga			3			
Sub Total			24.0	46.5	Total		152.2										Total	40.0		0	0	10			
Grand Total			24.0	46.5	Total		152.2										Total	40	0	0	0	10			
Preliminary Plans																									
																	REGISTERED PROFESSIONAL ENGINEER Darell Arne PE-6529 DATE 01/31/25 NORTH DAKOTA		Sign Summary Perforated Tube						
																	Minot AFB US Hwy 83								

1/29/251:28:51PM

Page 1 of 1

[illegible]



SYMBOL	X	Y	WID	HT	ANGLE
ND_8IN_TYPE D	8.2	21.0	8.0	12.0	90.0

[illegible][illegible][illegible]

Dimensions are in inches tenths Letter locations are panel edge to lower left corner

SYMBOL	X	Y	WID	HT	ANGLE

[illegible]

Dimensions are in inches tenths Letter locations are panel edge to lower left corner

Minot AFB
US Hwy 83



STATION(S): 11173+00 rt	AREA: 103,5 Sq.Ft.
----------------------------	--------------------

Figure 1: Dimensions of the Minot AFB Northbound Exit Sign. The sign is a rectangular panel with a width of 11' 6" and a height of 87". It is divided into two vertical sections. The left section contains the text "Minot AFB" at the top and "USE LEFT LANE" at the bottom. The right section contains the text "NORTH" at the top, a "Route 83" shield in the middle, and "USE RIGHT LANE" at the bottom. The sign is mounted on a post. Dimensions are provided in feet and inches (FEM) and feet and inches (FE).

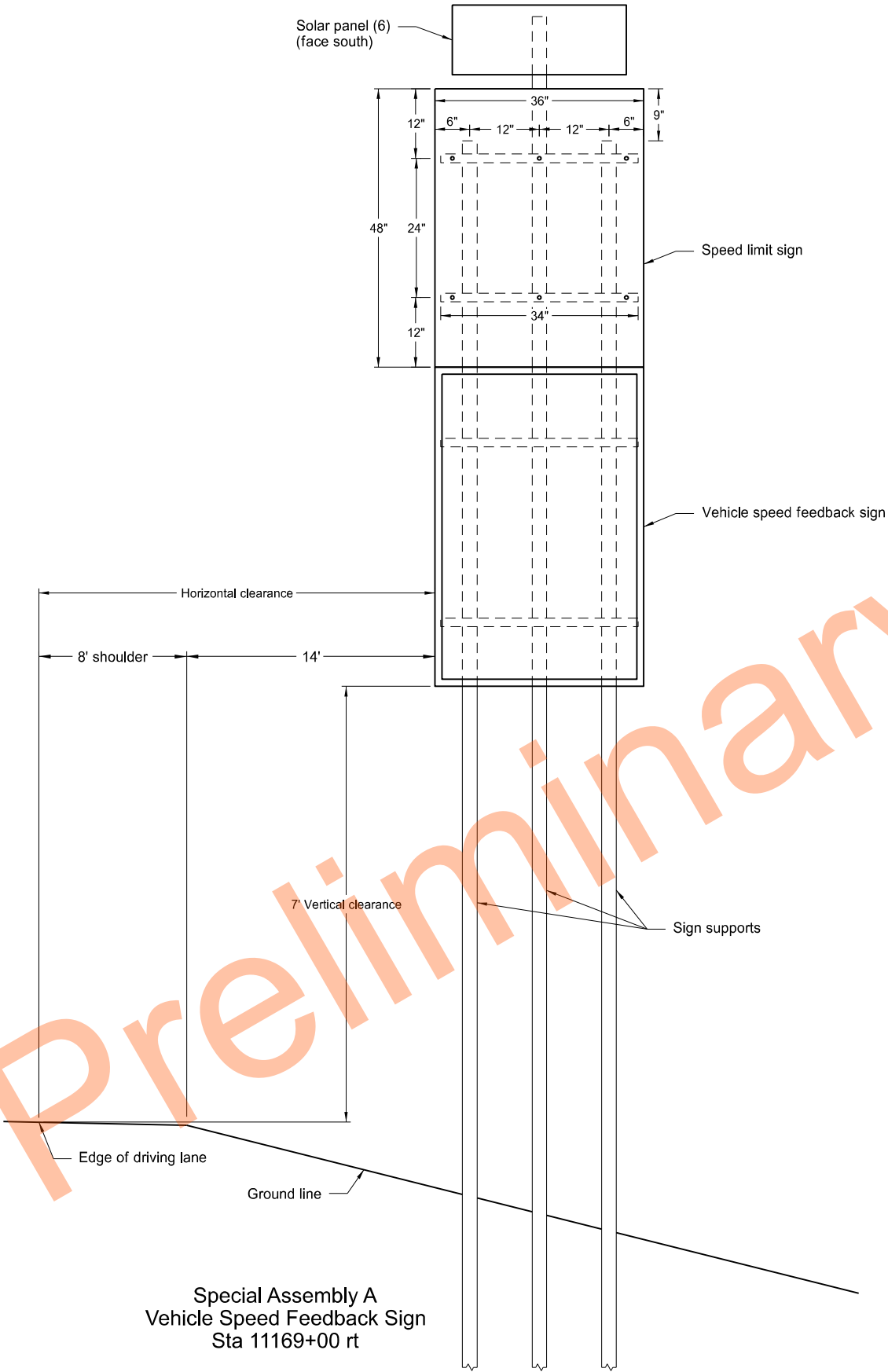
Dimensions are in inches tenths Letter locations are panel edge to lower left corner

Sign Details

Minot AFB
US Hwy 83



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	110	6



- Notes:
- See Standard D-754-7 for sign mounting details.
 - The minimum sign backing material thickness shall be 0.100 inch.
 - Stringers shall be 1 $\frac{5}{8}$ " steel channel.
 - All holes shall be punched round for $\frac{3}{8}$ " bolt.
 - Refer to manufacturer recommendations for mounting to sign supports.
 - Refer to manufacturer recommendations for solar panel mounting and orientation.

Sign Details

Special Assembly
Vehicle Speed Feedback Sign

Minot AFB
US Hwy 83



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	110	7

Notes:

Ensure the rigid galvanized conduit is securely fastened to the sign supports. Install the conduit in the web of the sign post as shown, on the side facing the ditch.

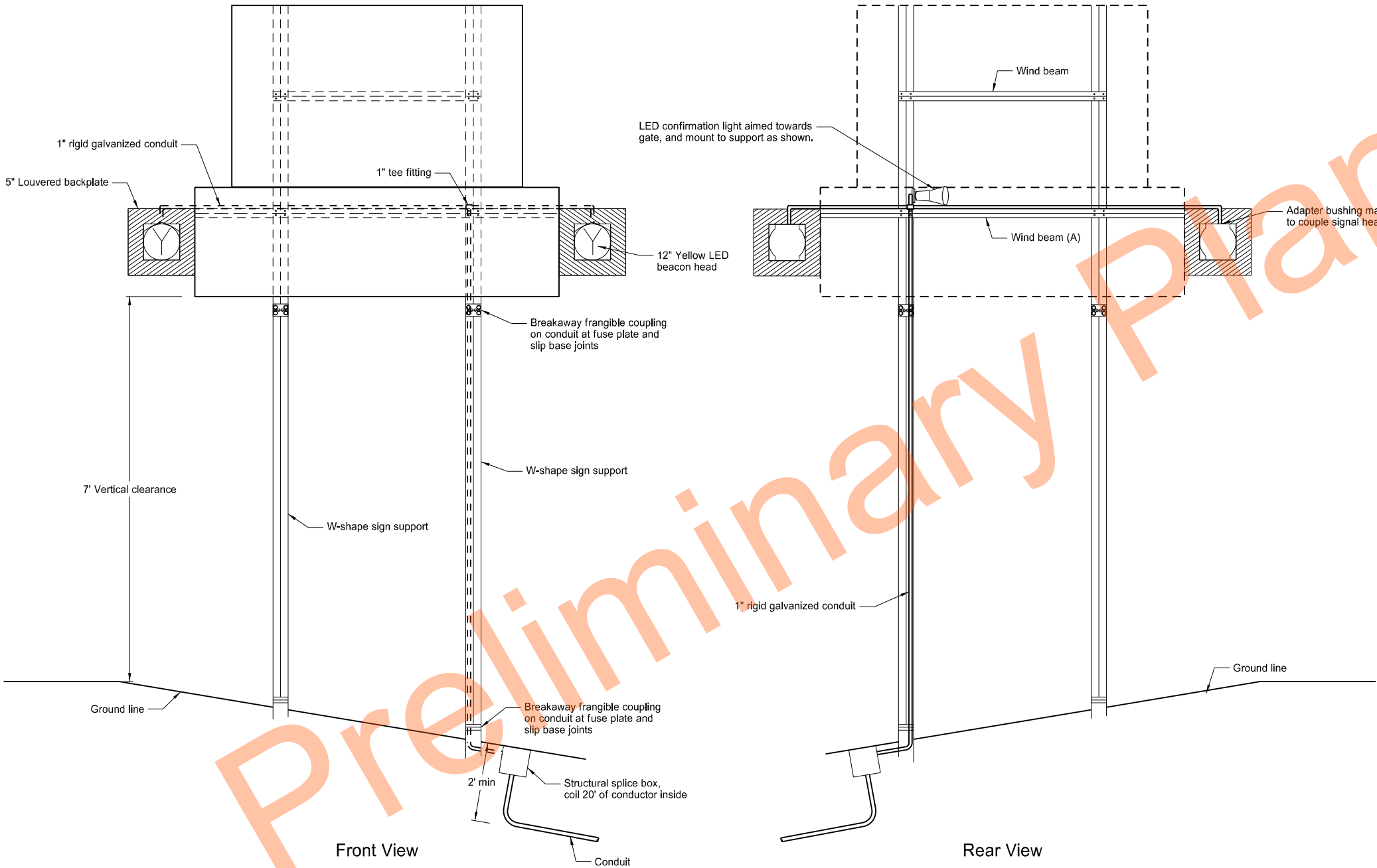
See Sign Summary for post sizes and Standard Drawing D-754-13 for sign mounting details.

Operate the flashing beacons on 120 volts.

Ensure the flashing beacon heads flash alternately.

Conduit, Conductor, LED modules Signal Heads, LED Confirmation Light, Backplates, Connectors, Clamps, and components needed to attach the Flashing Beacons to the Sign Structure and make it operational include with the pay item "Flashing Beacon - Post Mounted".

(A) Extend the wind beam the length of the sign and secure 1" conduit to it.



Special Assembly B
Flashing Beacon Details
Sta 11177+50-80' rt

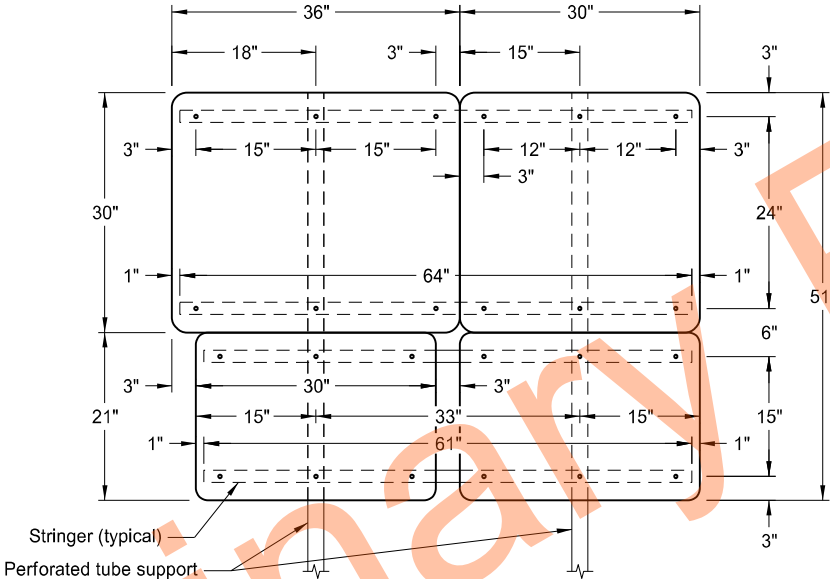
Sign Details
Special Assembly
Flashing Beacon Details

Minot AFB
US Hwy 83



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	110	8

- Notes:
- See Standard D-754-25 for sign mounting details.
 - The minimum sign backing material thickness shall be 0.100 inch.
 - Stringers shall be 1½" x 1½" perforated tube.
 - All holes shall be punched round for ⅜" bolt. See Bolt Mounting Detail on Standard D-754-25.

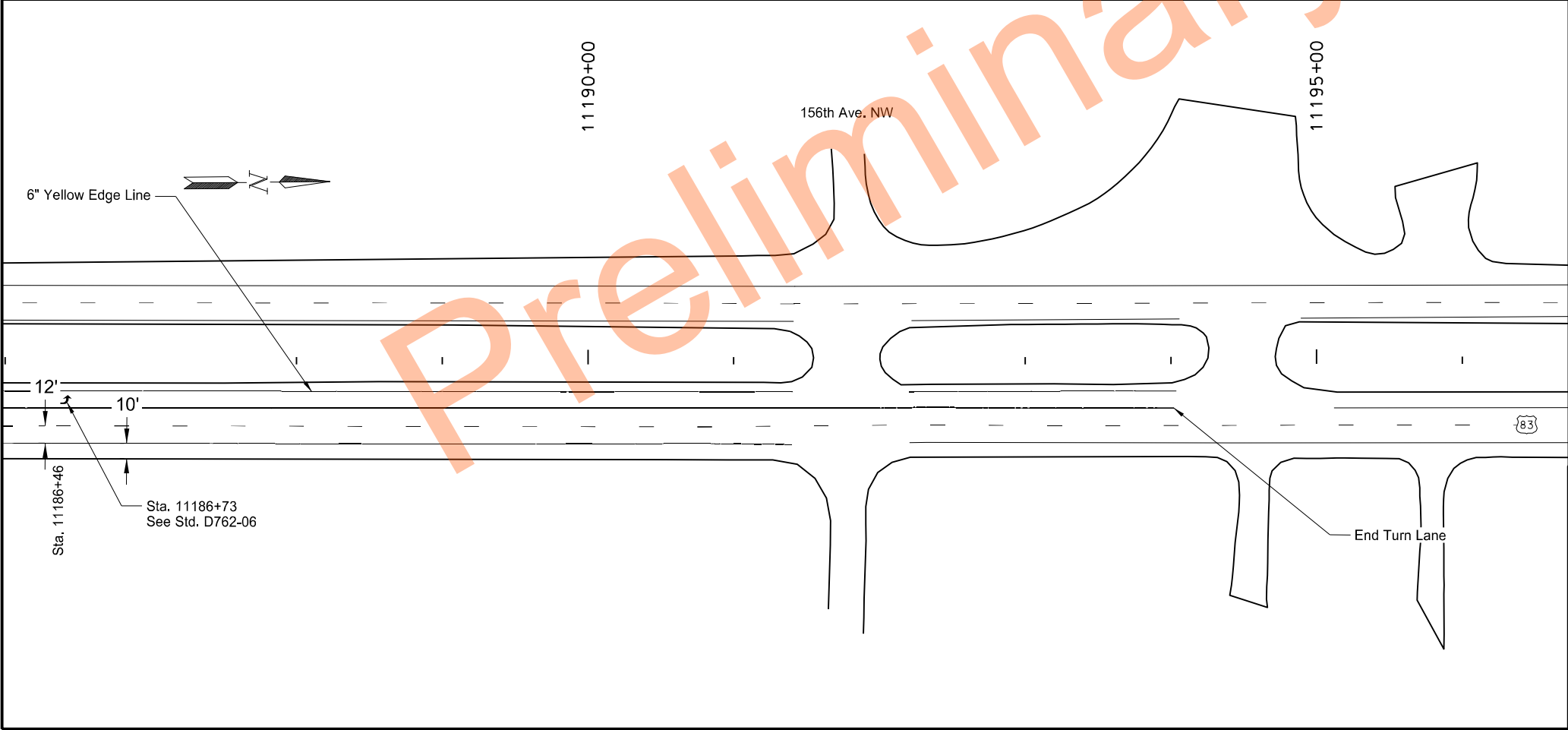
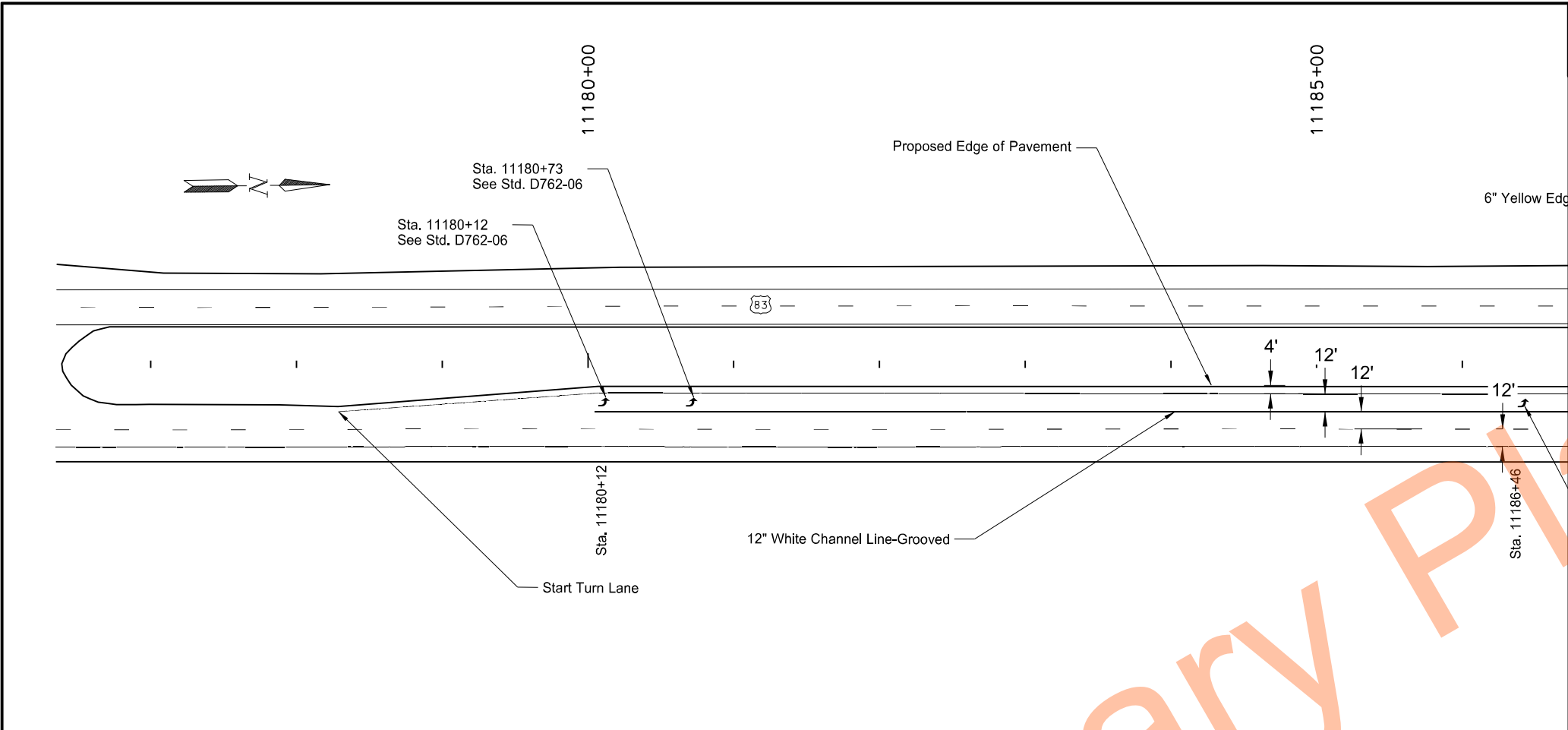


Special Assembly C
(Perforated Tube)
Sta 11179+50 rt

Sign Details
Special Assemblies

Minot AFB
US Hwy 83





		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	FTF-4-083(163)211	120	1
SPEC	CODE	BID ITEM		QTY	UNIT
762	0114	Epoxy PVTM 6in Line			
		6" Yellow Edge Line		2,000	LF
762	0134	Epoxy PVTM 12in Line-Grooved			
		12" White Channel Line		1,035	LF
762	0136	Epoxy PVTM MK Message-Grooved			
		Left Turn Arrow (3)		48	SF

Pavement Marking

Turn Lane Extension

Sta 11180+00 to 11195+00

MInot AFB

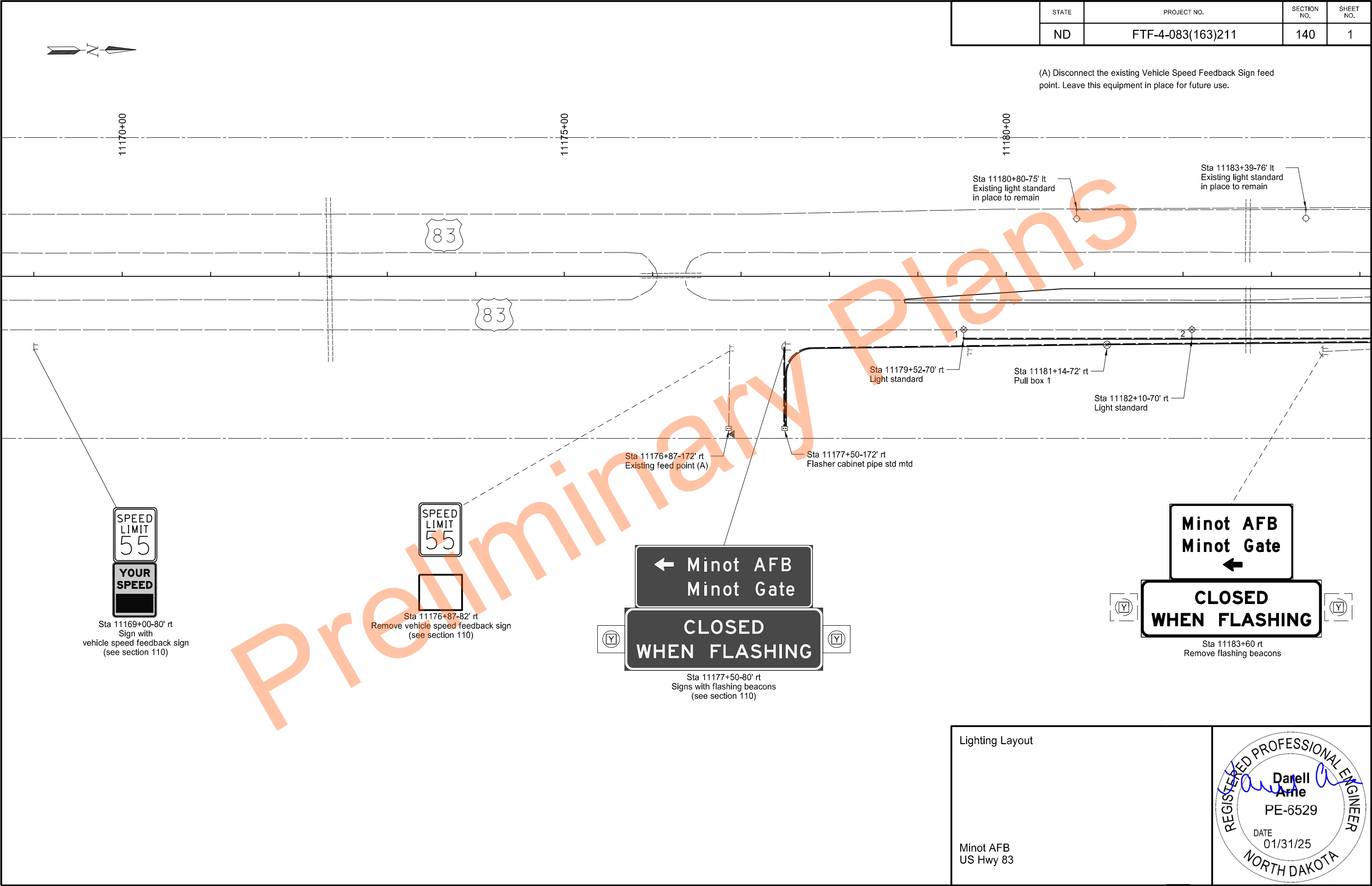
REGISTERED PROFESSIONAL ENGINEER

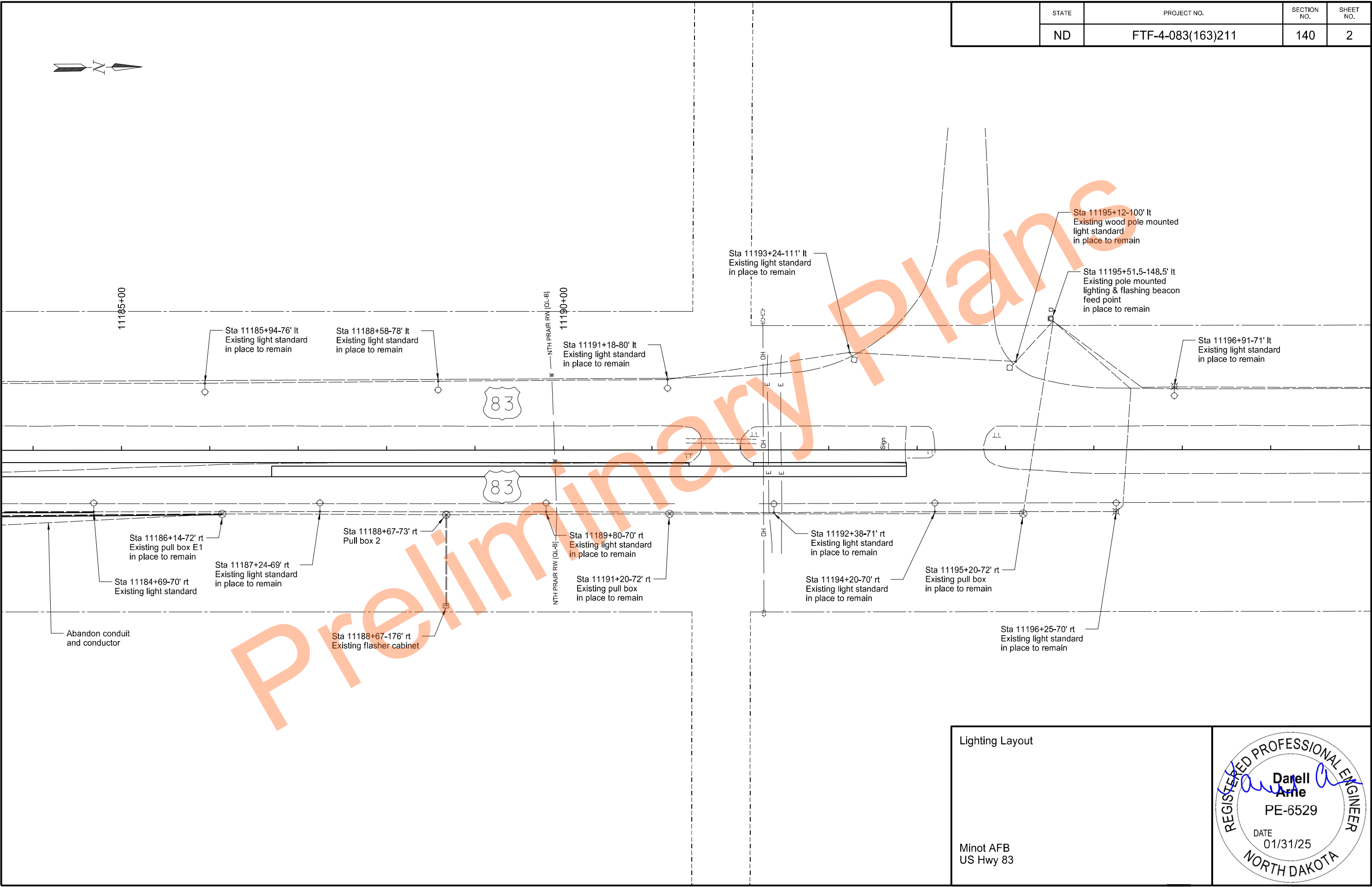
SARA A. CAHLIN

PE-8397

DATE 02/07/25

NORTH DAKOTA





Lighting Quantities (A)		
Description	Unit	Qty
2 Inch Diameter Rigid Conduit	LF	532
Underground Conductor No 4 Type RHW	LF	1076
Underground Conductor No 6 Type THW	LF	538
Light Std 12' MA 42' Pole Breakaway	EA	2
Concrete Foundation - Highway Lighting	EA	2
LED Luminaire	EA	2

Lighting Cable & Conduit Runs						
Run		Conduit		Cable		
No	Station	Size IN	LF	# of Cables	Size/Type	LF
1	11179+52-70' rt to	2	262	2	Underground Conductor No 4-Type RHW	532
2	11182+10-70' rt			1	Underground Conductor No 6-Type THW	266
2	11182+10-70' rt to	2	270	2	Underground Conductor No 4-Type RHW	544
Ex Lt Std	11184+69-70' rt			1	Underground Conductor No 6-Type THW	272

Light Standard List							
No	Station	Circuit	Light Distribution Type	Wattage	Pole Height FT	Mast Arm FT	Break-away Pole
1	11179+52-70' rt	(B)	2	145	42	12	X
2	11182+10-70' rt	(B)	2	145	42	12	X

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	140	3

SPEC	CODE	BID ITEM	QTY	UNIT
770	4525	Revise Lighting System	1	EA

(A) Include these quantities in the price bid for the item "Revise Lighting System".
(B) Connect to existing lighting circuit.

Lighting Foundation Table		
Description	Footing Depth "D" 24" and 30" Dia	Footing Depth "D" 36" and 42" Dia
Light Standard 42' Pole	6'	5'

Quantities

Minot AFB
US Hwy 83

REGISTERED PROFESSIONAL ENGINEER

Darell Arne
PE-6529

DATE 01/31/25

NORTH DAKOTA

Vehicle Speed Feedback Sign Quantities (A)		
Description	Unit	Qty
Vehicle Speed Feedback Sign with cables and mounting hardware	EA	1
Solar Panel and mounting hardware	EA	1

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	140	4

SPEC	CODE	BID ITEM	QTY	UNIT
754	8015	Vehicle Speed Feedback Sign		
			1	EA

(A) Include these quantities in the price bid for the item "Vehicle Speed Feedback Sign".

Preliminary Plans

Quantities

Minot AFB
US Hwy 83

REGISTERED PROFESSIONAL ENGINEER

Darell Arne

PE-6529

DATE 01/31/25

NORTH DAKOTA

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	140	5

Flashing Beacon Quantities (A)		
Description	Unit	Qty
Junction Box	EA	1
Pull Box	EA	2
1 Inch Diameter Rigid Conduit with pipe straps	LF	30
2 Inch Diameter Rigid Conduit	LF	1098
No 12 AWG 5 Conductor Cable	LF	342
Underground Conductor No 6 Type RHW	LF	2730
Underground Conductor No 6 Type THW	LF	1365
Flashing Beacon Head with Backplate	EA	2
LED Par Lamp	EA	1
Flasher Cabinet Pipe Stand Mounted	EA	1

SPEC	CODE	BID ITEM	QTY	UNIT
772	2110	Flashing Beacon - Post Mounted	1	EA

- (A) Include these quantities in the price bid for the item "Flashing Beacon - Post Mounted".
- (B) This run is for connecting to the existing flashing beacon switch near the gate.
- (C) Disconnect the old flashing beacon wires. Connect the new flashing beacon wires to the existing wires that run to the lighting/flashing beacon feed point circuit.
- (D) These runs include existing conduit.

Flashing Beacon Cable & Conduit Runs							
Run		Conduit		Cable			
Location		Station	Size IN	LF	# of Cables	Size/Type	LF
	Flashing Beacons	11177+50-80' rt to	1	30	2	No 14 AWG 5	342
	Flasher Cabinet	11177+50-172' rt	2	123			
(B)	Flasher Cabinet	11177+50-172' rt to	2	471	2	Underground Conductor No 6-Type RHW	948
	Pull Box 1	11181+14-72' rt			1	Underground Conductor No 6-Type THW	474
	Pull Box 1	11181+14-72' rt to	2	504	2	Underground Conductor No 6-Type RHW	1020
	Existing Pull Box E1	11186+14-72' rt			1	Underground Conductor No 6-Type THW	510
	Existing Pull Box E1	11186+14-72' rt to		(D)	2	Underground Conductor No 6-Type RHW	526
	Pull Box 2	11188+67-73' rt			1	Underground Conductor No 6-Type THW	263
	Pull Box 2	11188+67-73' rt to		(D)	2	Underground Conductor No 6-Type RHW	236
	Existing Flasher Cabinet (C)	11188+67-176' rt			1	Underground Conductor No 6-Type THW	118

Quantities

Minot AFB
US Hwy 83

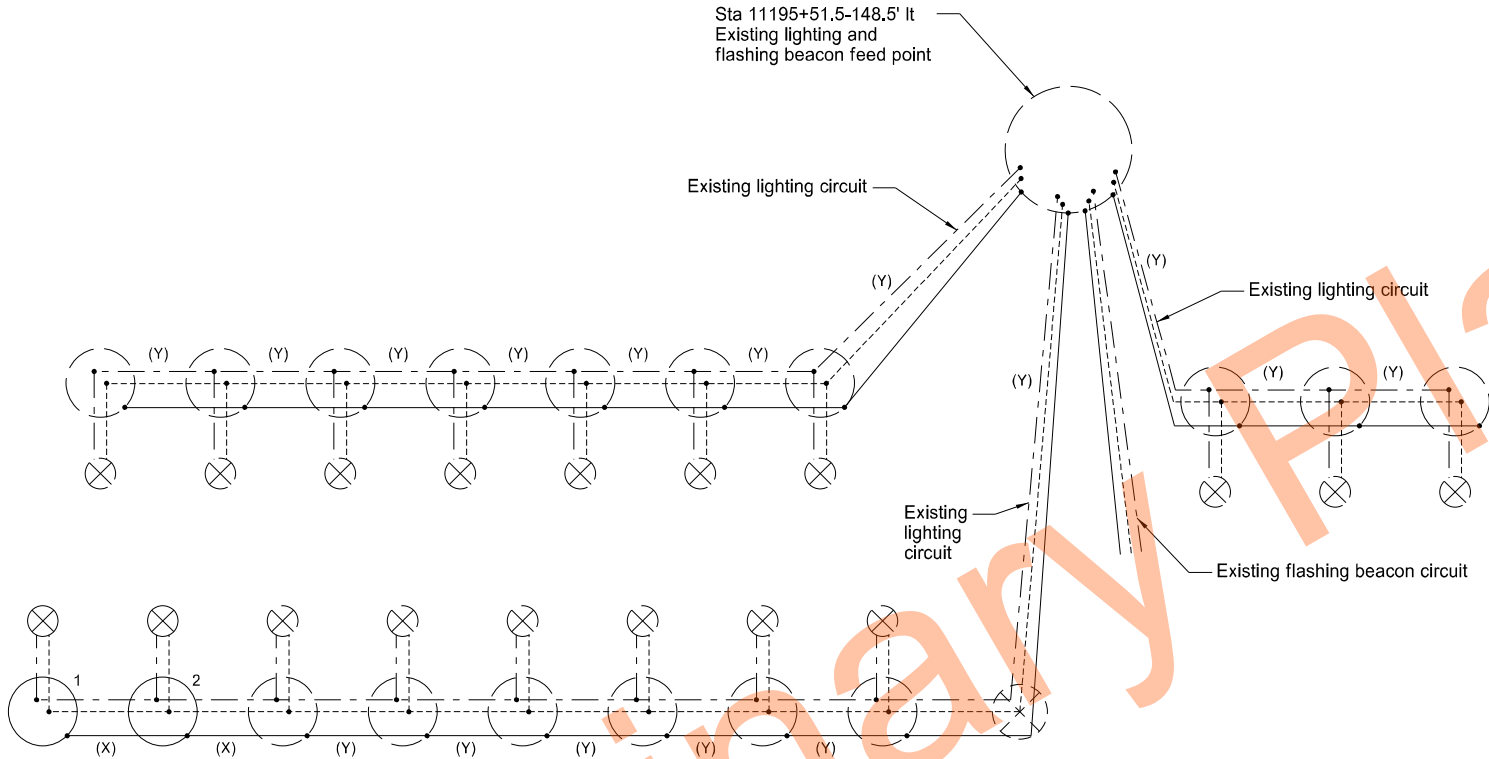
REGISTERED PROFESSIONAL ENGINEER

Darell Arne
PE-6529

DATE
01/31/25

NORTH DAKOTA

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	140	6



LEGEND

1	Light standard number		LED luminaire 120v x 240v operated on 240v		Existing LED luminaire 120v x 240v operated on 240v
	Phase conductor		Proposed Light Standard		Existing Light Standard
	Neutral conductor		Existing Feed Point		Existing pull box
	Ground conductor				
(X)	Underground Conductor (2) No 4 RHW & (1) No 6 THW				
(Y)	Existing Conductor				

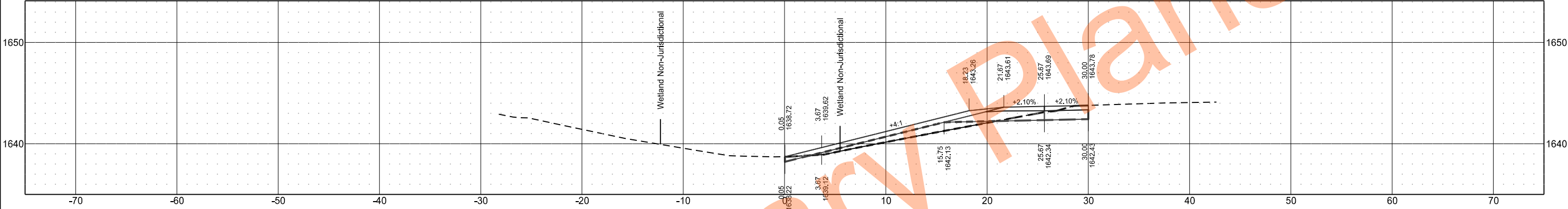
Lighting Schematic

Minot AFB
US Hwy 83

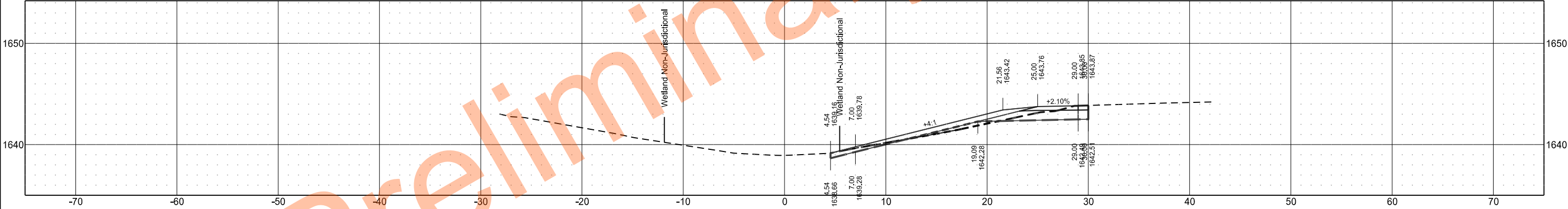


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	FTF-4-083(163)211	200	1

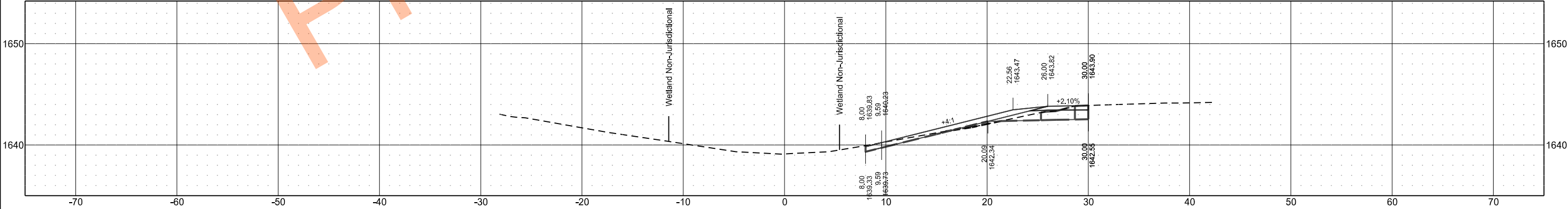
Sta 11179+50.00



Sta 11179+00.00

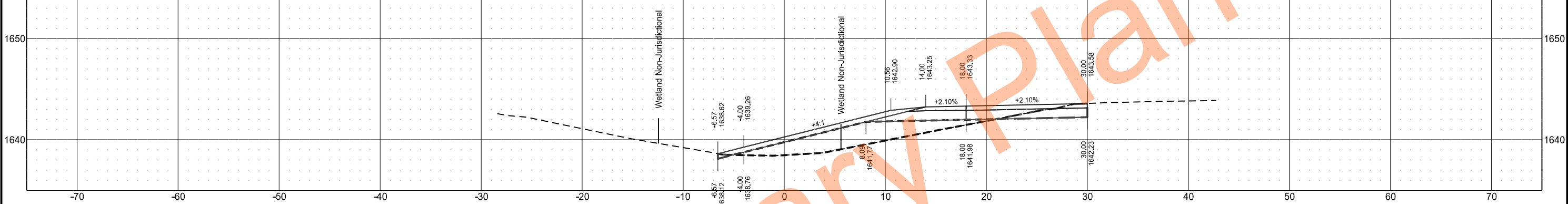


Sta 11178+85.00

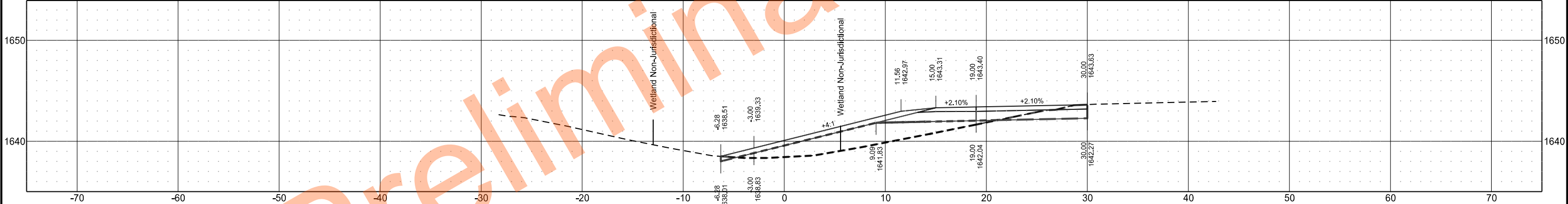


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	200	2

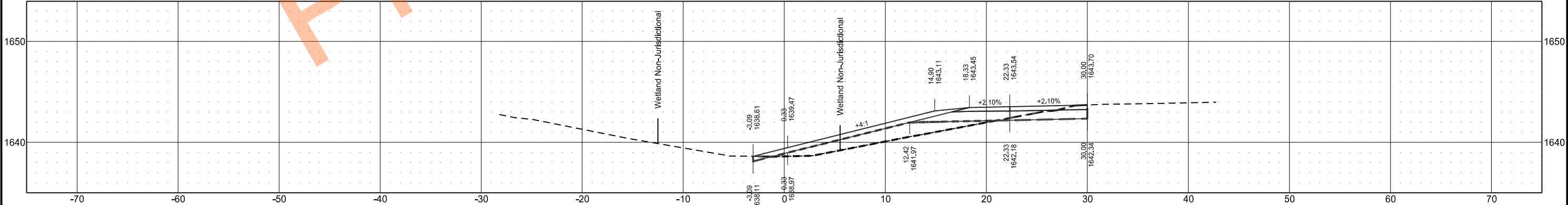
Sta 11181+00.00



Sta 11180+50.00

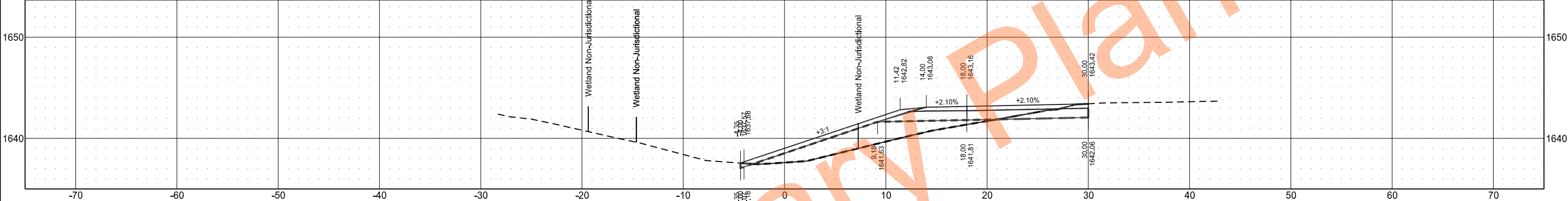


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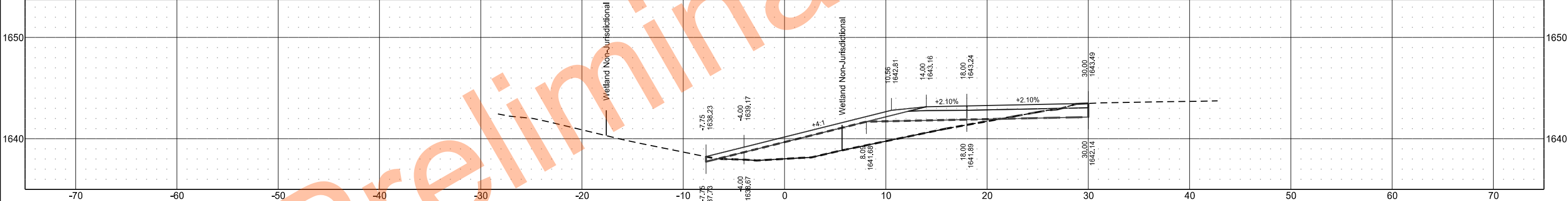


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	200	3

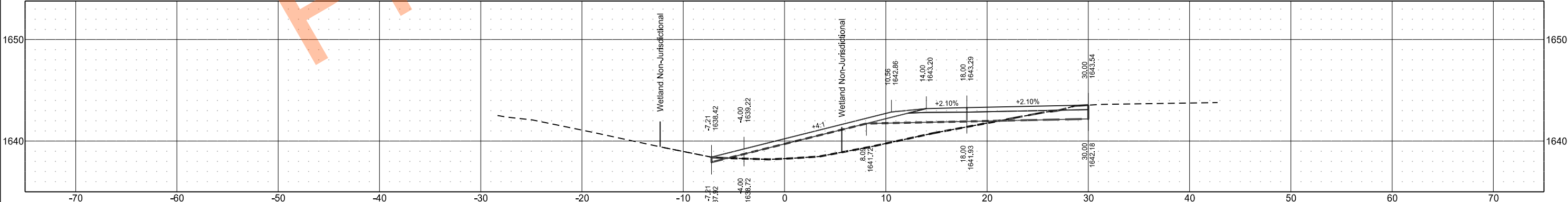
Sta 11182+50.00



Sta 11182+00.00

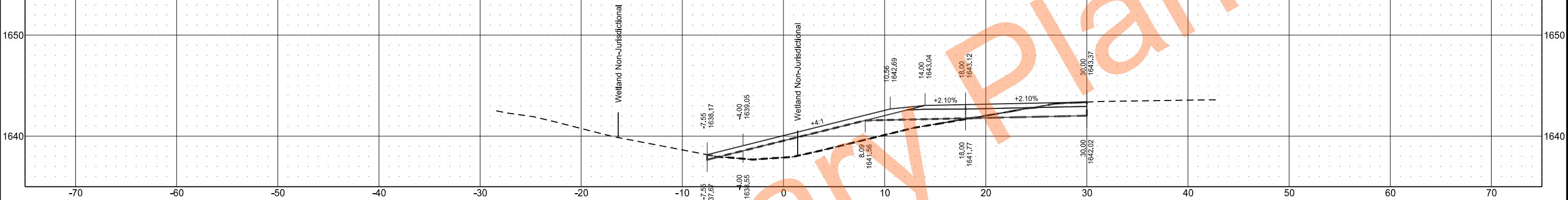


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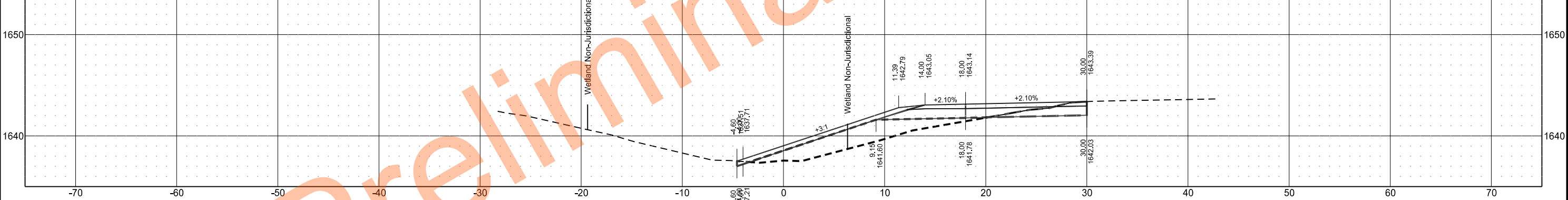


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	200	4

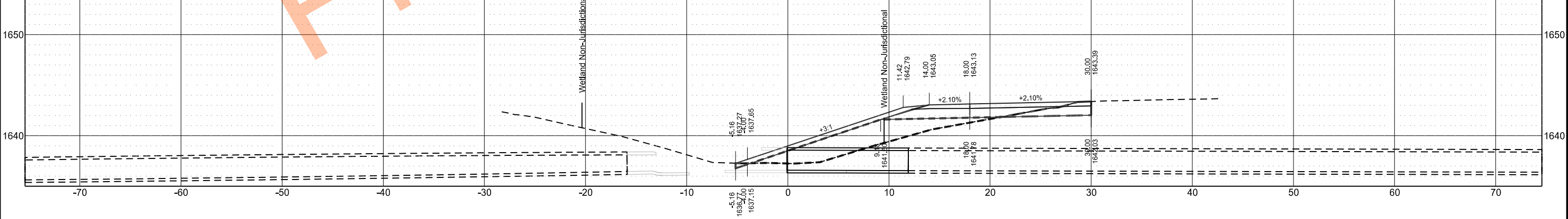
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Sta 11183+00.00

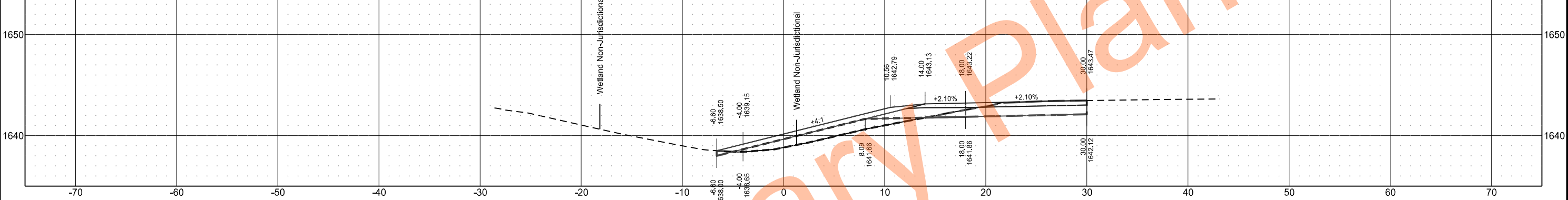


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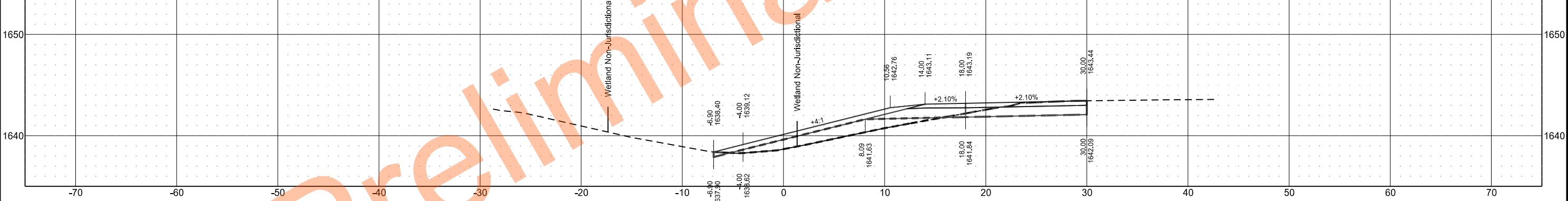


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	200	5

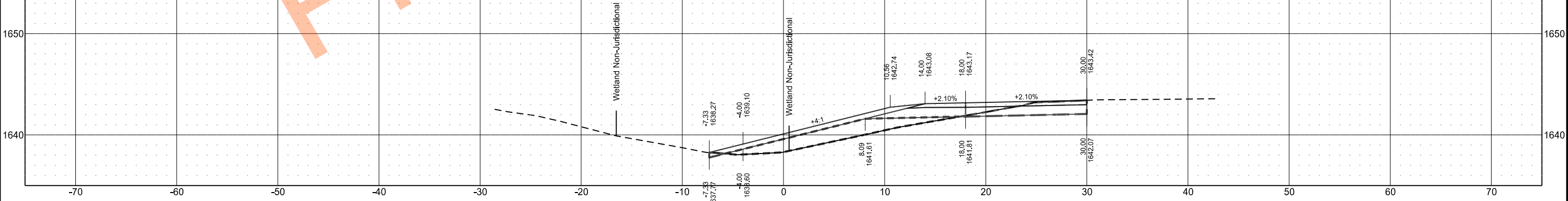
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Sta 11184+50.00

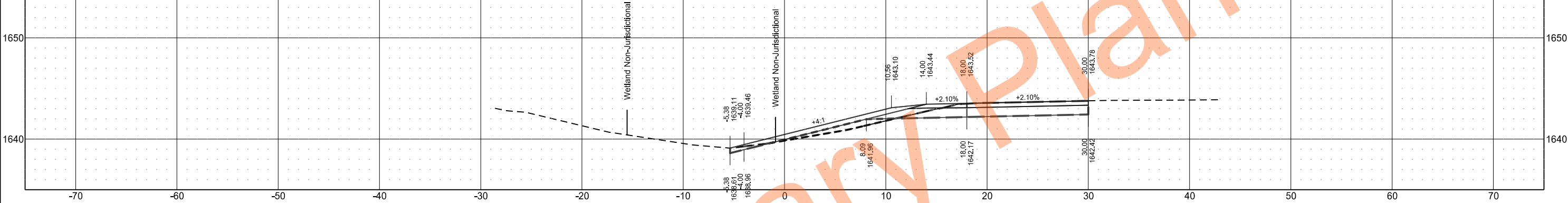


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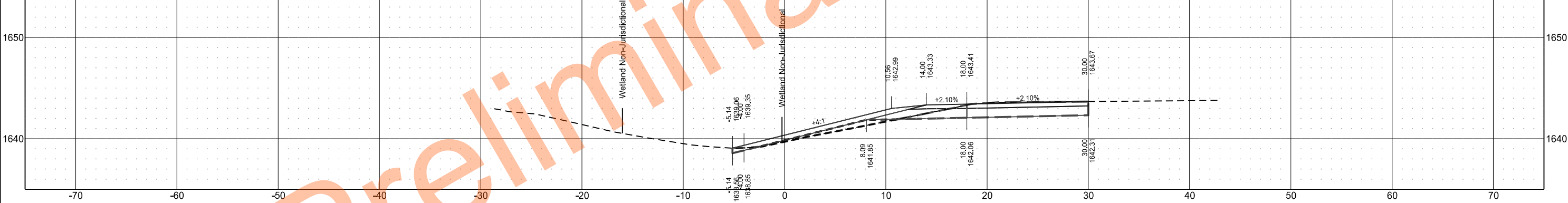


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	200	6

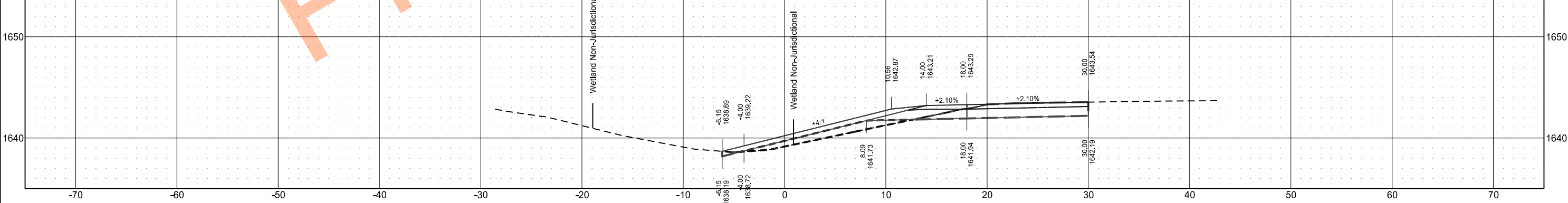
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Sta 11186+00.00

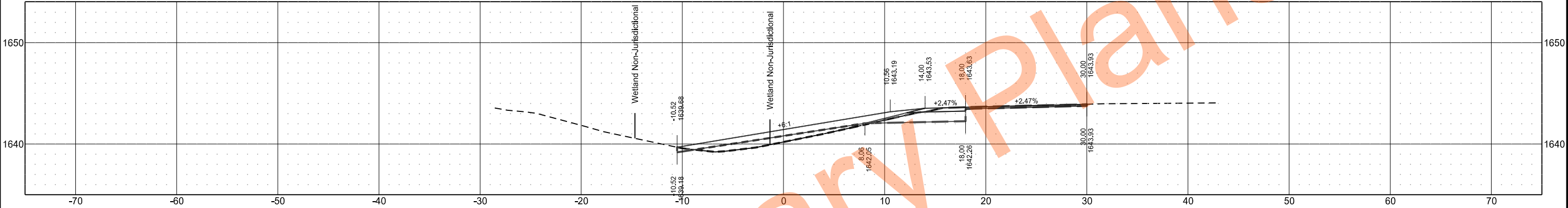


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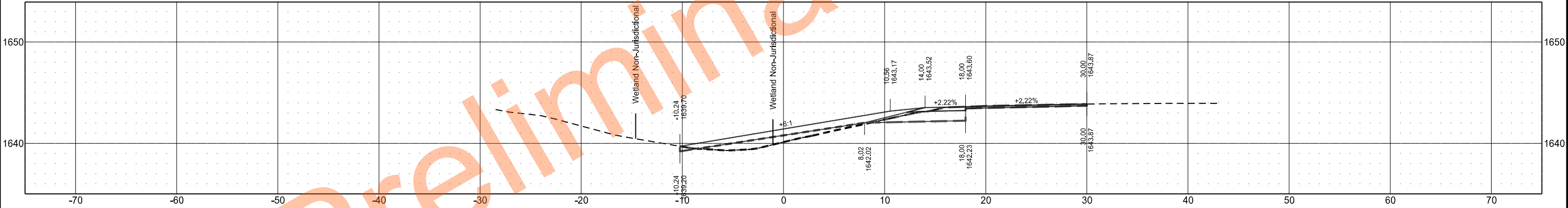


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	200	7

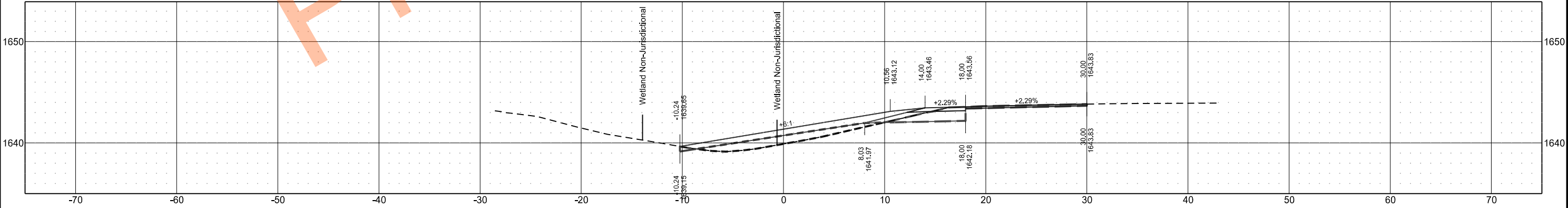
Sta 11188+00.00



Sta 11187+50.00

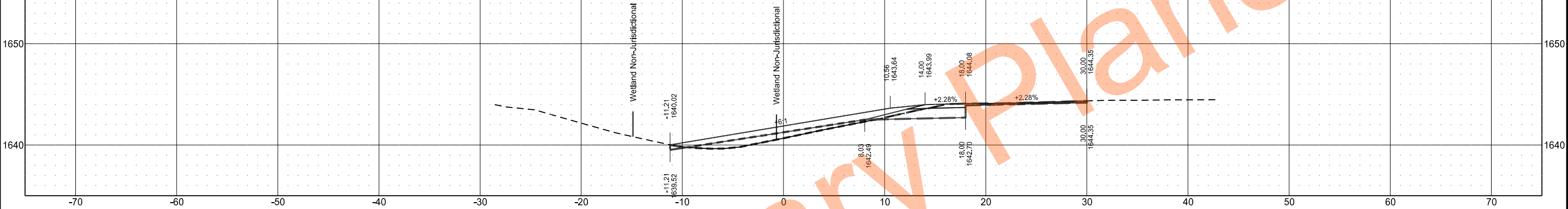


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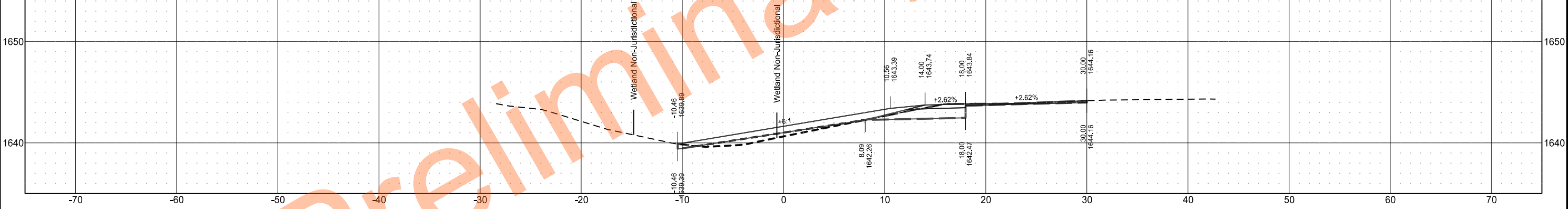


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	200	8

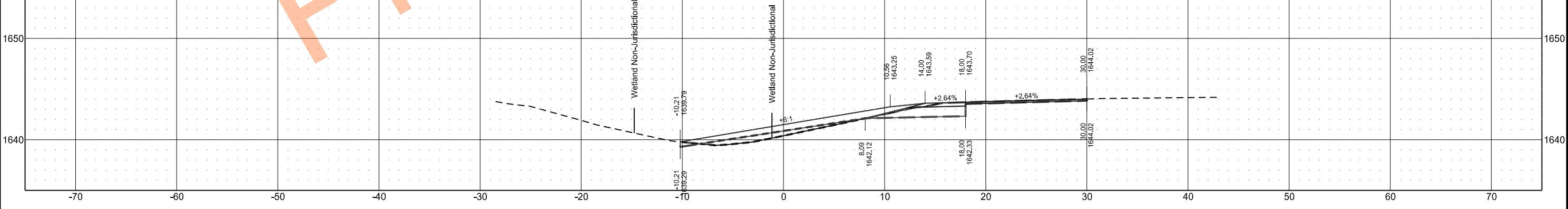
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Sta 11189+00.00

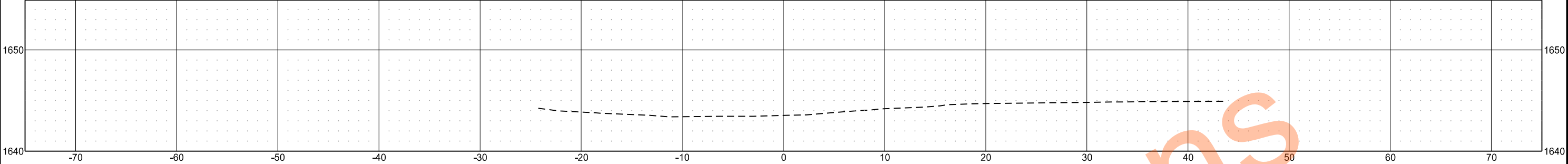


Sta 11188+50.00

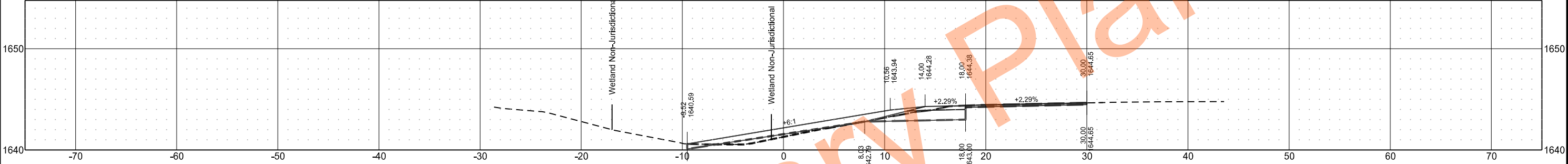


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	200	9

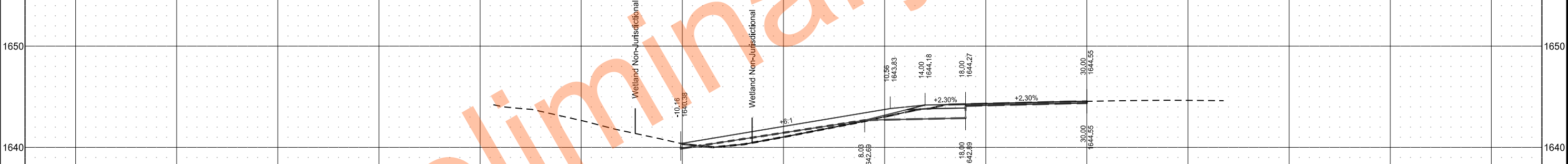
Sta 11191+50.00



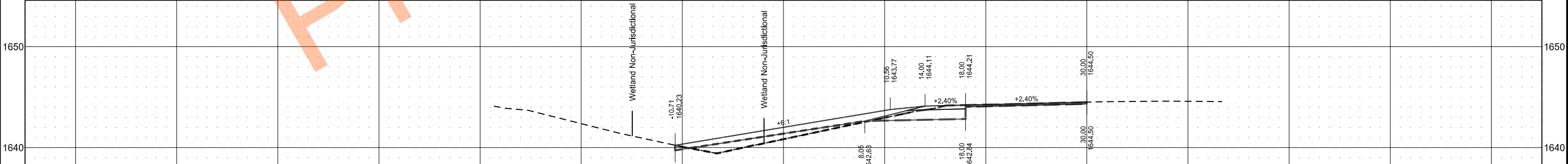
Sta 11191+00.00



Sta 11190+50.00

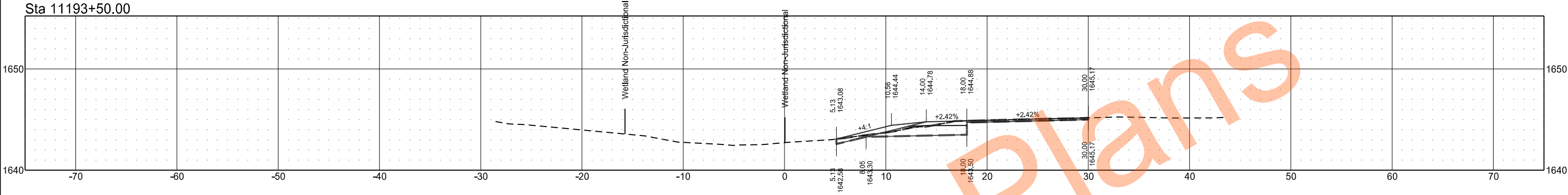


Sta 11190+00.00

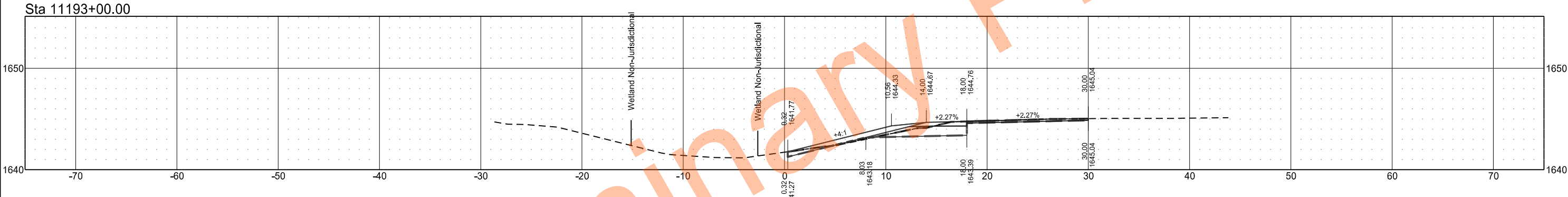


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	200	11

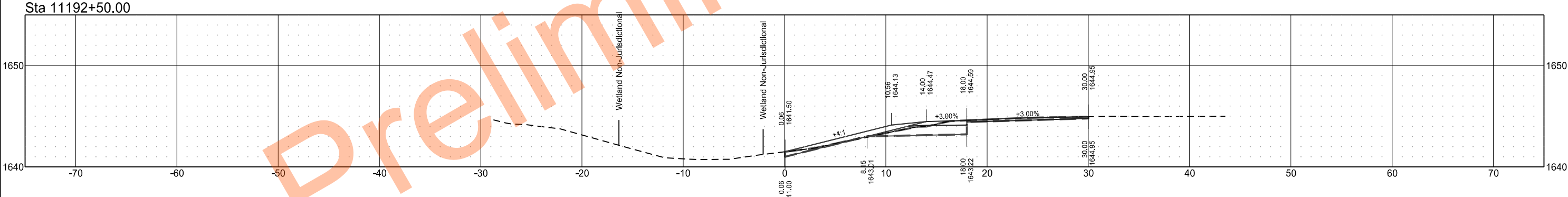
Sta 11193+50.00



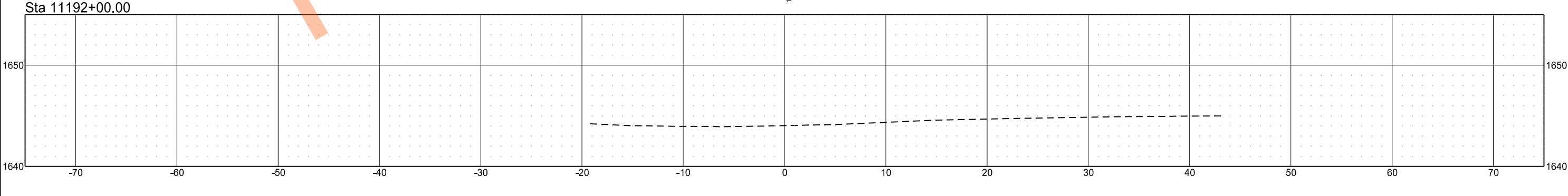
Sta 11193+00.00



Sta 11192+50.00



Sta 11192+00.00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	FTF-4-083(163)211	200	11

Preliminary Plans

Sta 11193+87.97

