DESIGN DATA				
Traffic	Average Daily			
Current 2020	Pass: 50	Trucks: 10	Total: 60	
Forecast 2040	Pass: 65	Trucks: 15	Total: 80	
Clear Zone Distance: 26' (4:1) 18' (flat)		Design Speed: 65		
Minimum Sight Dist. for Stopping: 645'		Bridges: NA		
Sight Dist. for No Passing Zone: 1100'				
Pavement Design Life 20 (years)				
Design Accumulated One-way Flexible ESALs: 44,343				

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	22876	1	1

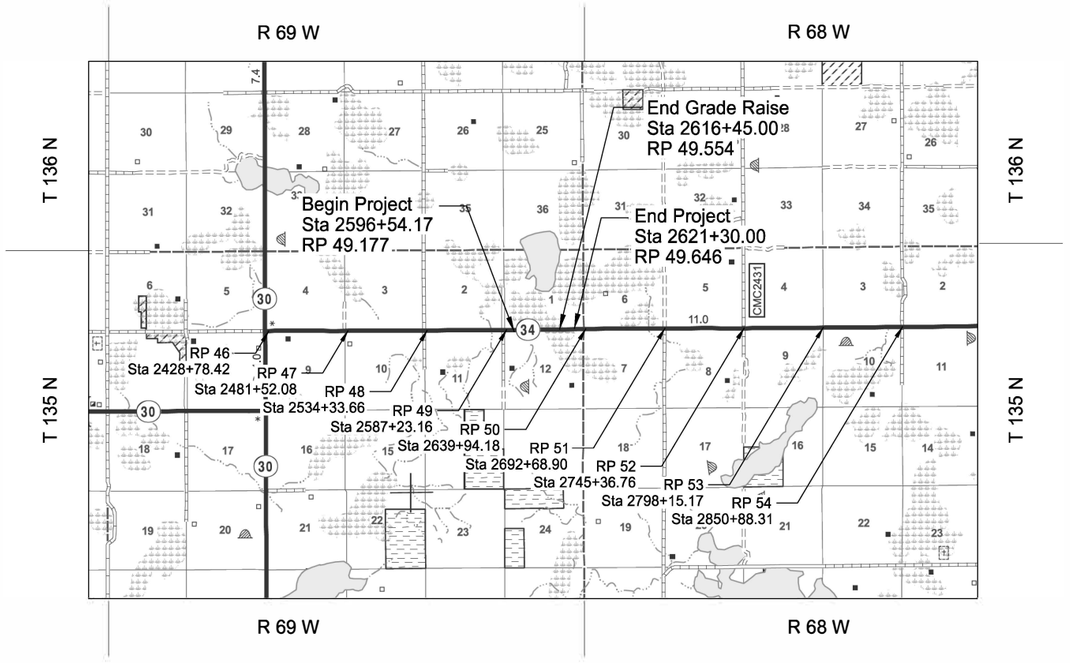
JOB # 33
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

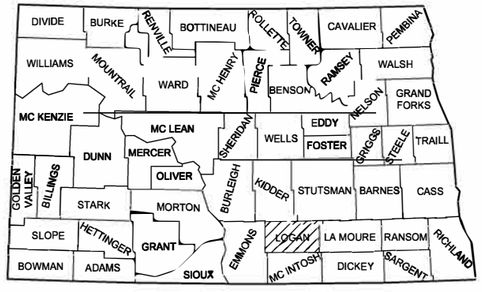
SERP-2-034(007)049

Logan County
ND 34 - RP 49, 3 Miles East of ND 30
Permanent Grade Raise
Embankment, Aggregate Base, Hot Bituminous Pavement
Culverts, Riprap, & Incidentals

GOVERNING SPECIFICATIONS	Date Published and Adopted by the North Dakota Department of Transportation
Standard Specifications	10/1/2020
Supplemental Specifications	NONE

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
SERP-2-034(007)049	0.469	0.469





STATE COUNTY MAP

DESIGNER
Adam McGill, PE
Andrew Krebs, PE
Matthew Tummel
Austin Scott
Zach Hudgik
Jonathon Backer

ND DEPARTMENT OF TRANSPORTATION
OFFICE OF PROJECT DEVELOPMENT

Approval Name	Date Signed
Kirk J Hoff	2-10-2021

KLJ

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	2	1

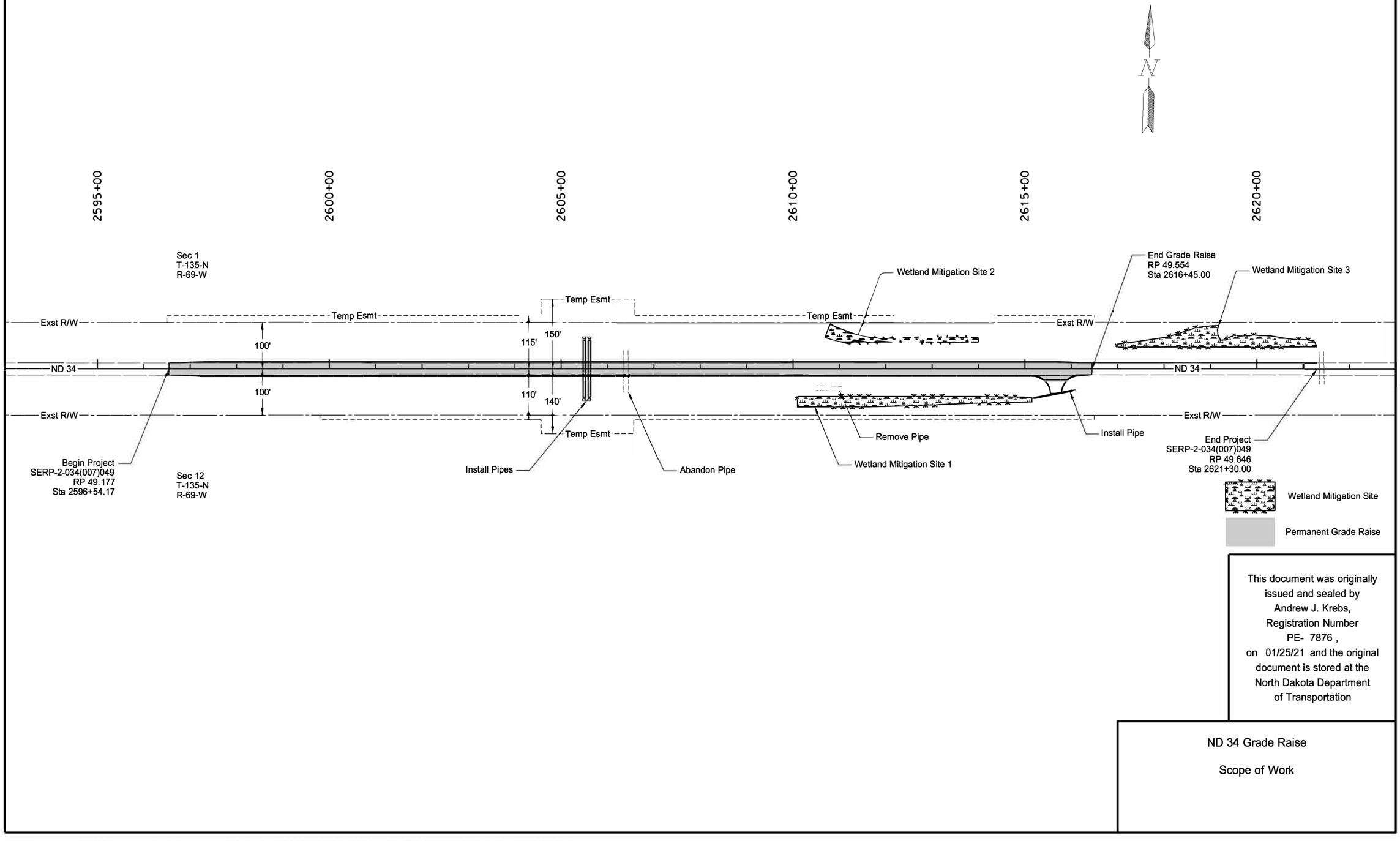
TABLE OF CONTENTS

PLAN SECTIONS

SPECIAL PROVISIONS

LIST OF STANDARD DRAWINGS

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	4	1



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ND 34 Grade Raise

Scope of Work

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	6	1

NOTES

104-P01 WATER LEVEL: The Contractor should be aware that the water levels on this project are expected to change. NDDOT reserves the right to change roadway profiles, grades, and any other aspect of the work that are affected by changing water levels.

It is the responsibility of the contractor to become informed in regard to the anticipated water level at the time of construction. The submission of a proposal will be considered conclusive evidence that the bidder is satisfied with the conditions to be encountered in performing the work and as to the requirements of the proposed work. For the purposes of preparing these plans, the water elevation was assumed to be 1858.14'.

During plan completion, the paving for a second temporary grade raise was performed, and the roadway raised to approximately 1860.2'.

105-P01 UTILITIES: No utility relocations or adjustments are planned. All utilities on the project need to be protected and remain in existing location.

107-P01 MAINTAINING TRAFFIC–DROP-OFFS: 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 and 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 E.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.

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 "Borrow-Excavation".

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

The requirements of Section 704.04 O, "Traffic Control for Uneven Pavement" apply to drop-offs created by milling or the placement of hot mix asphalt.

107-P02 HAUL ROAD RESTORATION: Use Class 13 aggregate for haul road restoration.

202-P01 REMOVAL OF BITUMINOUS SURFACING: The costs associated with removing the existing bituminous surfacing and aggregate base will be included in the bid item "Removal of Bituminous Surfacing".

202-P02 VERTICAL PANELS-BACK TO BACK: Remove and salvage all existing vertical panels-back to back located within the project limits. Deliver them to the NDDOT Gackle Satellite location at 5491 Hwy 56 Gackle, ND 58442-9701. Include all costs associated with salvaging and delivering the signs in the price bid for other items.

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

203-P01 SHRINKAGE: 50 percent additional volume is included for shrinkage in earth embankment placed into existing water. 30 percent additional volume is included for shrinkage in earth embankment placed above the existing water elevation.

203-P02 COMMON EXCAVATION-TYPE A: Include costs to excavate, place, dry, and compact the material in the price bid for "Common Excavation-Type A". Common Excavation will not be measured but paid for as Plan Quantity.

203-P03 TOPSOIL-IMPORTED: Strip, stockpile, and replace existing topsoil located above the water elevation within the areas of construction. Include the cost of stripping, stockpiling and replacing any existing topsoil in the price bid for "Topsoil-Imported".

203-P04 BORROW-EXCAVATION: One state optioned borrow site has been identified for this project as identified in Section 180. If the additional material is needed, it will be the Contractor's responsibility to obtain additional borrow.

203-P05 CONTRACTOR FURNISHED BORROW: A department optioned borrow source is provided for this project; however, the Contractor may choose to use a contractor furnished borrow site. Obtain proper clearance for contractor furnished borrow. The following are potential material sources identified as borrow clues which have not been cleared by NDDOT.

- Clue A: SSW and WSE, Section 2, T-135-N, R-68-W

Include all costs associated with contractor furnished borrow, including, but not limited to, temporary and permanent erosion control, access, and reclamation, in the contract unit price for "Borrow-Excavation".

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	6	2

NOTES

203-P06 BORROW EXCAVATION FOR PIPE EMBANKMENT: Construction of the pipe embankment as shown in the plans may require borrow excavation. Any borrow excavation material needed for the pipe embankment is required to have a group and subgroup classification of A-6 or A-7-6 as defined by AASHTO M 145. Obtain a sample of the proposed material and split it with the Engineer. Verify that the proposed material meets A-6 or A-7-6 as defined by AASHTO M 145. If the material meets A-6 or A-7-6 as defined by AASHTO M 145, Materials & Research will test the sample for final acceptance. Test results from Materials & Research will be completed within 7 working days from material delivery date. Complete the tests and final acceptance procedure for each borrow source. Borrow excavation material for the pipe embankment may not be incorporated into the project until the above test results are provided to the Engineer and final acceptance procedure is completed.

203-P07 KEYWAY/BERM: Construct a keyway/berm in areas where the foreslope extends into the water at locations shown in the plans. Construct the keyway/berm as shown in the plans.

Include all costs of material, dewatering, and construction in the price bid for “Borrow-Excavation”. The estimated quantity of borrow needed to construct the keyway/berm is included in the quantities for “Borrow-Excavation”.

203-P08 EMBANKMENT REMOVAL: Remove the embankment in its entirety at locations adjacent to newly installed culverts and where the embankment extends beyond the right of way after completion of the culvert installation. Protect the culverts during embankment removal to ensure no silt enters the pipe. An existing fiber optic line is located throughout the project limits at an approximate offset between 90 to 95 feet from the roadway centerline south of ND 34. Protect this fiber optic line in place during berm construction and removal operations. Any damage to this line will be repaired at the Contractor's expense.

In areas not adjacent to culvert pipes remove the embankment to an elevation one foot below the existing water elevation after the riprap is placed. Do not push the embankment into the water so it is below the water elevation; remove this embankment as described.

The removed embankment may be incorporated in other areas of the project. The Engineer will not pay for removed embankment material incorporated into other areas of the project a second time. The Engineer will only pay for the borrow material removed from the borrow site. All specifications of the new placement site apply to this material.

Dispose of all removed embankment, not incorporated into the project, outside the highway right of way in accordance with Section 107.17. If the removed embankment is disposed of in a borrow site, coordinate with the Engineer to cross-section the borrow site prior to disposal. Include all costs for placement, dewatering, removal, and disposal of the removed embankment in the price bid for “Borrow-Excavation”.

251-P01 SEEDING CLASS II: A department optioned borrow source is provided for this project. The department optioned borrow source is to be seeded with grass variety as determined by the landowner. Include all costs associated with seeding the department optioned borrow source in the contract unit price for “Seeding Class II”.

256-P01 RIPRAP-GRADE II: The contractor is responsible for maintenance of the earthwork before riprap has been placed.

Existing riprap may be salvaged for use as Riprap-Grade II. No additional payment will be made for salvaged riprap. Include all costs for materials, equipment, and labor for procuring, salvaging, and placing riprap in the unit price for “Riprap-Grade II”.

261-P01 PERMANENT FIBER ROLLS: If fiber rolls are to remain on the project, use fiber rolls that are composed of netting that meets either of the following:

Plastic or natural fiber photodegradable netting that has a life expectancy between 12 to 24 months. If the photodegradable netting is plastic, the netting color must be either clear or green. Black plastic netting will not be allowed.

262-P02 FLOTATION SILT CURTAIN: Install the Flotation Silt Curtain before any placement of fill for road embankment. A quantity of “Flotation Silt Curtain” has been provided to allow for installation of curtain along both sides of the roadway within the closed water basin as shown in the plans, without requiring curtain to be moved from one location to the next.

302-110 BASE COURSE: Trim base course as specified in Section 302.04 C.1, "Surface Tolerance Type B."

302-P01 TRAFFIC SERVICE AGGREGATE: Traffic Service Aggregate will be paid at actual quantity used up to plan quantity unless otherwise directed by the Engineer. Refer to Section 100 Sheet 5 for placement notes.

401-P01 APPLICATION OF BLOTTER MATERIAL: Include all costs of material and placement of the blotter material in the contract unit price for "Prime Coat".

401-P02 FOG SEAL: Fog seal after final rolling with a minimum mat temperature of 125° F.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	6	3

NOTES

704-500 PORTABLE RUMBLE STRIPS (PRS): Use PRS made of rubber or engineered polymers.

Install PRS as part of the temporary traffic control when the following signs are also part of the required traffic control set up:

- "Be Prepared to Stop" (W3-4); and
- "Flagger" symbol (W20-7)

Install PRS that meet the following criteria:

- Have no adhesives or fasteners required for placement;
- Have a manufacture's speed rating that meets or exceeds the posted speed limit; and
- Each strip in the array must weigh a minimum of 100 pounds.

Use individual PRS constructed in one of the following manners:

- A single piece;
- Inter locking segments; or
- Two pieces hinged at the midpoint.

An installed array of PRS consists of a minimum of 3 individual strips.

Move rumble strips with the flagging operation. Do not place rumble strips on horizontal curves.

The Engineer will count and measure each array as one unit. Include the cost of providing, installing, maintaining, and relocating PRS in the unit price bid for "Portable Rumble Strips".

704-P01 TRAFFIC CONTROL DEVICES: The traffic control devices list has been developed using the layouts shown in the plans and the following layouts shown on the Standard Drawings.

- D-704-2: For coring of HMA.
- Sheet 100-4: To be used throughout the limits of the project. Flag persons and pilot car will be required.
- D-704-20, Type G: For construction sign layout.
- D-704-22, Type K: For construction trucks hauling material.
- D-704-26, Type BB, CC, EE, FF, and GG as needed.
- D-704-27: For striping operations.
- D-704-56: For rumble strip grinding operations.
- D-704-5, 7, 8, 9, 10, 11, 11A, 13, 14, 30, and 50 are applicable.

704-P02 TRAFFIC CONTROL: Maintain a minimum of one lane of traffic during working hours and provide two lanes of traffic or 24-hour flagging and pilot car operations during non-working hours at no additional cost to the Department.

704-P03 PIPE INSTALLATION: Always maintain a minimum of one lane of traffic during pipe culvert installations. Complete all centerline pipe culvert installations by the end of the day to allow for two lanes of traffic during non-working hours. If the installation is not completed by sunset on that day, provide 24-hour flagging and pilot car operations during non-working hours at no additional cost to the Department.

706-P01 FIELD OFFICE: Provide a field office which meets the following requirements:

1. Be completely insulated and weather tight.
2. Minimum total area of 450 square feet.
3. Bathroom facilities, which includes sewer, potable water, and weekly cleaning or weekly service of a portapotty.
4. Have a dependable source of electricity for power and lights with a minimum of 6 electrical outlets spaced throughout the building and light fixtures spaced to uniformly light the entire interior (lumens required 110 foot-candles).
5. Be wired for DSL Broadband internet with wireless Wi-Fi and have the capability to allow for hard wiring the computer. Include the cost of the installation and monthly fees.
6. A heating and cooling system that is capable of maintaining the temperature between 65°F and 78°F year around.
7. A minimum of 3 desks and 3 desk chairs, 3 extra chairs, a drawer file cabinet with at least two drawers, one table minimum of 2.5 ft x 5 ft.
8. Photocopy machine/Printer capable of 11x17 photocopies/prints and toner to last the duration of the project. Engineer will provide paper. Other features to include digital copying & scanning. (Fax capabilities can be included but not necessary).
9. The location of the field office will be on, or as close to the project as possible and approved by the Engineer. Any rental fees will be paid by the Contractor.
10. Make the field office available for occupancy one week before the start of the project and remain through project completion. Provide a field office that is separate or independent from the contractor's field office.
11. Heat, electric, internet service, sewer, water hookups, and portapotty service to be furnished by Contractor, Contractor to pay utility bills.

All requirements of the Field Office are subject to approval by the Engineer. Include the costs for the field office in the bid item "Field Office" and the Schedule for Payment is as follows:

- 25% when set up on site.
- 50% when 30% of the work is complete.
- 75% when 60% of the work is complete.
- 100% when project is complete.

There will be 1 field office to be used for all 4 tied projects: SERP-2-046(051)006, PCN 22823, SERP-2-046(053)008, PCN 22874, and SERP-2-056(033)048, PCN 22899.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	6	4

NOTES

706-P02 LABORATORIES: There will be 1 aggregate laboratory, 1 bituminous laboratory, and 1 contractor's laboratory to be used for all 4 tied projects: SERP-2-046(051)006, PCN 22823, SERP-2-046(053)008, PCN 22874, and SERP-2-056(033)048, PCN 22899.

754-P01 OBJECT MARKERS – CULVERTS: In locations where the pipe ends are submerged underwater, install object markers higher up the inslope at a location approved by the Engineer.

762-050 PAVEMENT MARKING: If the Engineer and Contractor agree, plan quantity will be used as the measurement for payment for pavement marking items.

762-200 PERMANENT WATER BASED PAVEMENT MARKING: Replace the first paragraph of 762.04 C.2.a "Method of Application" with the following:

Allow new bituminous treatment to cool to a temperature below 125 °F and cure for a period of 72 hours before applying permanent pavement marking.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	6	5

ENVIRONMENTAL NOTES

ENVIRONMENTAL NOTES (EN): The North Dakota Department of Transportation and the Federal Highway Administration have made environmental commitments to secure approval of this project. The following environmental notes are requirements to comply with these commitments:

EN-1 AQUATIC NUISANCE SPECIES (ANS): Equipment that was last used outside of North Dakota or within a Class I infested waterbody (identified on the North Dakota Game and Fish Department (NDGFD) website) requires an inspection by NDGFD. Notify the NDGFD at least 10 business days prior to pumps, watercraft, or any equipment entering a public water to allow the NDGFD sufficient time to inspect any and all such equipment for ANS. Contact the NDGFD ANS Coordinator, Benjamin Holen at 701-368-9117 for equipment inspections. Supply one of the following to the engineer as proof of compliance prior to work taking place in the water: (1) the NDGFD inspection report, (2) documented NDGFD correspondence (email or signed letter). If an inspection is not required, no follow up documentation is required.

EN-2 TEMPORARY WETLAND IMPACT: Temporary impact areas within wetlands and or other waters are incorporated into the plans for this project. Remove fill placed for keyway/berm construction outside of the existing right of way as soon as roadway construction no longer necessitates its use. Restore these wetlands to preconstruction contours.

EN-3 WETLAND MITIGATION: Wetland mitigation is required for unavoidable permanent wetland impacts. The wetland mitigation plan is incorporated into the plans for this project. After completion of the mitigation area, the Engineer will complete the Onsite Mitigation Certification Form SFN 61042. Any sedimentation occurring within the mitigation area will be removed.

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	8	1

Estimated Quantities

SPEC	CODE	ITEM DESCRIPTION	UNIT	Mainline: Funding A				TOTAL
103	0100	CONTRACT BOND	L SUM	0.19				0.19
103	0200	ESCROW OF BID DOCUMENTATION	L SUM	0.19				0.19
202	0132	REMOVAL OF BITUMINOUS SURFACING	SY	1520				1520
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	54				54
202	0312	REMOVE EXISTING FENCE	LF	235				235
203	0101	COMMON EXCAVATION-TYPE A	CY	11127				11127
203	0119	TOPSOIL-IMPORTED	CY	2187				2187
203	0122	TOPSOIL-DEPT OPTION BORROW AREA	CY	15818				15818
203	0140	BORROW-EXCAVATION	CY	63270				63270
216	0100	WATER	M GAL	941				941
230	0165	SUBGRADE PREPARATION-TYPE A-12IN	STA	4.6				4.6
251	0200	SEEDING CLASS II	ACRE	23				23
251	1000	WETLAND SEED	ACRE	0.57				0.57
251	2000	TEMPORARY COVER CROP	ACRE	4				4
253	0101	STRAW MULCH	ACRE	28				28
255	0103	ECB TYPE 3	SY	21				21
256	0201	RIPRAP GRADE II	TON	12733				12733
260	0200	SILT FENCE SUPPORTED	LF	5120				5120
260	0201	REMOVE SILT FENCE SUPPORTED	LF	5120				5120
261	0112	FIBER ROLLS 12IN	LF	517				517
261	0113	REMOVE FIBER ROLLS 12IN	LF	365				365
262	0100	FLOTATION SILT CURTAIN	LF	2266				2266
262	0101	REMOVE FLOTATION SILT CURTAIN	LF	2266				2266
265	0100	STABILIZED CONSTRUCTION ACCESS	EA	1				1
265	0101	REMOVE STABILIZED CONSTRUCTION ACCESS	EA	1				1
302	0050	TRAFFIC SERVICE AGGREGATE	TON	6000				6000
302	0120	AGGREGATE BASE COURSE CL 5	TON	3580				3580
401	0050	TACK COAT	GAL	335				335
401	0060	PRIME COAT	GAL	2671				2671
401	0070	FOG SEAL	GAL	314				314
411	0105	MILLING PAVEMENT SURFACE	SY	150				150
430	0042	SUPERPAVE FAA 42	TON	1257				1257
430	1000	CORED SAMPLE	EA	25				25
430	5803	PG 58S-28 ASPHALT CEMENT	TON	74				74
702	0100	MOBILIZATION	L SUM	0.19				0.19
704	0100	FLAGGING	MHR	2200				2200
704	1000	TRAFFIC CONTROL SIGNS	UNIT	1536				1536
704	1048	PORTABLE RUMBLE STRIPS	EA	2				2
704	1067	TUBULAR MARKERS	EA	45				45
704	1080	STACKABLE VERTICAL PANELS	EA	160				160
704	1185	PILOT CAR	HR	1100				1100
706	0400	FIELD OFFICE	EA	0.19				0.19
706	0500	AGGREGATE LABORATORY	EA	0.19				0.19
706	0550	BITUMINOUS LABORATORY	EA	0.19				0.19
706	0600	CONTRACTOR'S LABORATORY	EA	0.19				0.19
709	0100	GEOSYNTHETIC MATERIAL TYPE G	SY	295				295
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	14838				14838

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	8	2

Estimated Quantities

SPEC	CODE	ITEM DESCRIPTION	UNIT	Mainline: Funding A				TOTAL
714	4106	PIPE CONDUIT 24IN-APPROACH	LF	84				84
714	4135	PIPE CONDUIT 60IN	LF	256				256
752	0200	FENCE BARBED WIRE 4 STRAND	LF	241				241
752	2100	VEHICLE GATE	EA	1				1
752	4100	DOUBLE BRACE ASSEMBLY BARBED WIRE	EA	4				4
754	0805	OBJECT MARKERS - CULVERTS	EA	6				6
760	0005	RUMBLE STRIPS - ASPHALT SHOULDER	MILE	0.8				0.8
760	0007	RUMBLE STRIPS - ASPHALT CENTERLINE	MILE	0.4				0.4
762	0430	SHORT TERM 4IN LINE-TYPE NR	LF	13180				13180
762	1104	PVMT MK PAINTED 4IN LINE	LF	5290				5290

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	10	1

PAVING SUMMARY: MAINLINE

Roadway	Begin Station	End Station	Length	Area (Cross Section)		302 0120 AGGREGATE BASE COURSE CL 5	401 0050 TACK COAT	401 0060 PRIME COAT	401 0070 FOG SEAL	430 0042 SUPERPAVE FAA 42	430 5803 PG 58S-28 ASPHALT CEMENT
				Aggregate Base	HMA						
			(LF)	(SF)	(SF)	(TON)	(GAL)	(GAL)	(GAL)	(TON)	(TON)
ND 34	2596+54	2596+79	25	-	3.57	-	4.0	-	4.0	7	0.4
	2596+79	2616+20	1,941	26.06	8.54	3,512	323	2,642	302	1,228	72
	2616+20	2616+45	25	-	3.57	-	4.0	-	4.0	7	0.4
TOTAL =			-	-	-	3,512	331	2,642	310	1,242	73

PAVING SUMMARY: APPROACHES

Roadway	Station	Offset	302 0120 AGGREGATE BASE COURSE CL 5	401 0050 TACK COAT	401 0060 PRIME COAT	401 0070 FOG SEAL	430 0042 SUPERPAVE FAA 42	430 5803 PG 58S-28 ASPHALT CEMENT
			(TON)	(GAL)	(GAL)	(GAL)	(TON)	(TON)
ND 34	2615+67	Rt	68	3.9	29	3.7	15	0.9
TOTAL =			68	4	29	4	15	1

760 0005 RUMBLE STRIPS - ASPHALT SHOULDER

Roadway	Begin Station	End Station	Basis	Quantity (MILE)
ND 34	2596+54	2616+45	5,280 LF/Mile/Shldr	0.8
			TOTAL =	0.8

754 0805 OBJECT MARKERS - CULVERTS

Roadway	Station	Offset	Quantity (EA)
ND 34	2605+57	CL	4
	2615+67	Rt	2
ND 34			6

760 0007 RUMBLE STRIPS - ASPHALT CENTERLINE

Roadway	Begin Station	End Station	Basis	Quantity (MILE)
ND 34	2596+54	2616+45	5,280 LF/Mile	0.4
			TOTAL =	0.4

430 1000 CORED SAMPLE

Roadway	Begin Station	End Station	Specification Section	A	B		C	D	Quantity	Quantity	Unit
				Distance (Ft) /1000	Lanes	Joints	Lifts	Sublots (A x B x C)	(D x 2)	(1 per mile)	
ND 34	2596+54	2616+45	430.04 I.2.b(1), "General"	2	2	N/A	2	8	16	N/A	EA
			SSP 4 Longitudinal Joint Density in HMA Pavements (Centerline)	2	N/A	1	2	4	8	N/A	EA
			430.04 I.2.b(2), "Pavement Thickness Determination Cores"	-	-		-	-	N/A	1	EA
					SUBTOTAL =				24	1	EA
					GRAND TOTAL =				25		EA

762-0430 SHORT TERM 4IN LINE - TYPE NR

Roadway	Begin Station	End Station	Basis	Quantity (LF)
Centerline - Prime Coat	2596+54	2616+45	Match Sec 110	1,300
Centerline - 1st Lift	2596+54	2616+45	Match Sec 110	1,300
Centerline & Edge Lines - Fog Seal	2596+54	2616+45	Match Sec 110	5,290
Centerline & Edge Lines - Rumble Strips	2596+54	2616+45	Match Sec 110	5,290
			TOTAL =	13,180

216 0100 WATER

Material	Basis	Basis Quantity	Quantity (MGAL)
Dust Palliative	25 M Gal/ Mile	0.34	9
Subgrade Preparation	25 M Gal/ Mile	0.09	2
Aggregate Base Course CL 5 & Traffic Service Aggregate	20 Gal/TON	9,580	192
Embankment	10 Gal/CY	73,750	738
		Project Total	941

SPEC	CODE	BID ITEM	QTY	UNIT
216	0100	WATER		
		Water	941	M GAL
302	0120	AGGREGATE BASE COURSE CL 5		
		Mainline Paving	3,512	TON
		Approach Paving	68	TON
401	0050	TACK COAT		
		Mainline Paving	331	GAL
		Approach Paving	4	GAL
401	0060	PRIME COAT		
		Mainline Paving	2,642	GAL
		Approach Paving	29	GAL
401	0070	FOG SEAL		
		Mainline Paving	310	GAL
		Approach Paving	4	GAL
430	0042	SUPERPAVE FAA 42		
		Mainline Paving	1,242	TON
		Approach Paving	15	TON
430	1000	CORED SAMPLE		
		Cored Sample	25	EA
430	5803	PG 58S-28 ASPHALT CEMENT		
		Mainline Paving	73	TON
		Approach Paving	1	TON
754	0805	OBJECT MARKERS - CULVERTS		
		Object Markers - Culverts	6	EA
760	0005	RUMBLE STRIPS - ASPHALT SHOULDER		
		Rumble Strips - Asphalt Shoulder	0.8	MILE
760	0007	RUMBLE STRIPS - ASPHALT CENTERLINE		
		Rumble Strips - Asphalt Centerline	0.4	MILE
762	0430	SHORT TERM 4IN LINE-TYPE NR		
		Short Term Pavement Marking	13,180	LF

Pavement
Aggregate Base Course Cl 5 @ 1.875 Ton / CY
Traffic Service Aggregate @ 1.875 Ton / CY
Tack Coat @ 0.05 Gal / SY
Prime Coat @ 0.35 Gal / SY
Fog Seal @ 0.05 Gal / SY
Superpave FAA 42 @ 2 Ton / CY
PG 58S-28 Asphalt Cement @ 5.9% by Weight

Miscellaneous
Riprap Grade II @ 1.7 TON/CY

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ND 34 Grade Raise

Basis of Estimate

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	11	1

LOCATION	EARTHWORK SUMMARY					TOPSOIL SUMMARY	
	Excavation	Embankment ①	203 0101 COMMON EXCAVATION-TYPE A	203 0140 BORROW-EXCAVATION		203 0109 TOPSOIL-IMPORTED ②	203 0122 TOPSOIL-DEPT OPTION BORROW AREA
	(CY)	(CY)	(CY)	(CY)		(CY)	(CY)
	A	B	C = A	D = A - B		E	F
ND 34	7,831	74,397	7,831	66,566		1,692	-
Wetland Mitigation Site 1	1,110	-	1,110	-		193	-
Wetland Mitigation Site 2	772	-	772	-		93	-
Wetland Mitigation Site 3	1,414	-	1,414	-		209	-
Borrow Pit	-	-	-	-		-	15,818
TOTAL =	11,127	74,397	11,127	66,566		2,187	15,818

Notes:
① Additional 50% volume for shrinkage for fill below existing water and additional 30% volume for shrinkage for fill above existing water
② Additional 15% volume for shrinkage for topsoil

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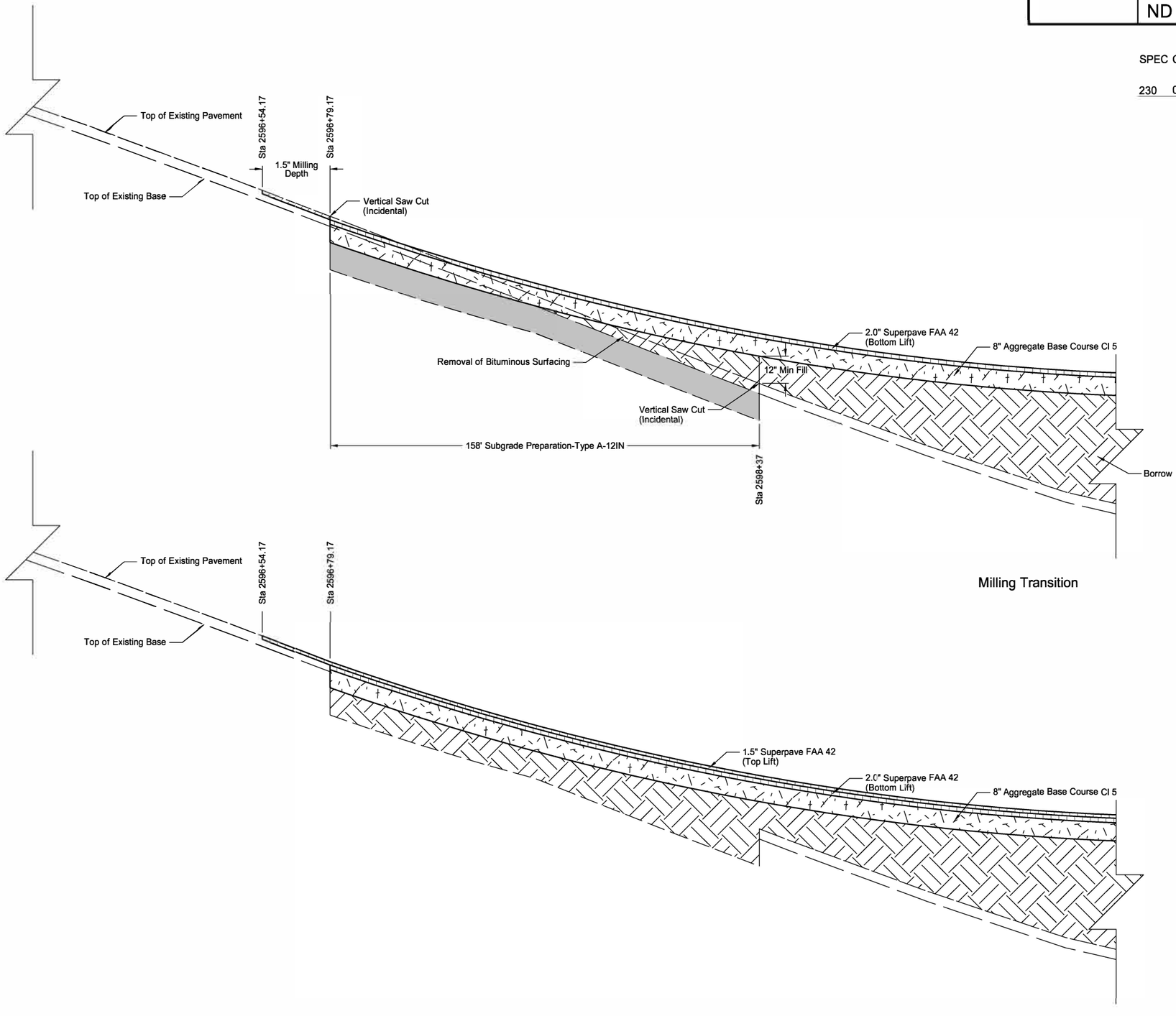
ND 34 Grade Raise

Earthwork Summary

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	20	1

SPEC CODE	BID ITEM	QTY	UNIT
230 0165	SUBGRADE PREPARATION-TYPE A-12IN		
	Sta 2596+79 to 2598+37	1.6	STA



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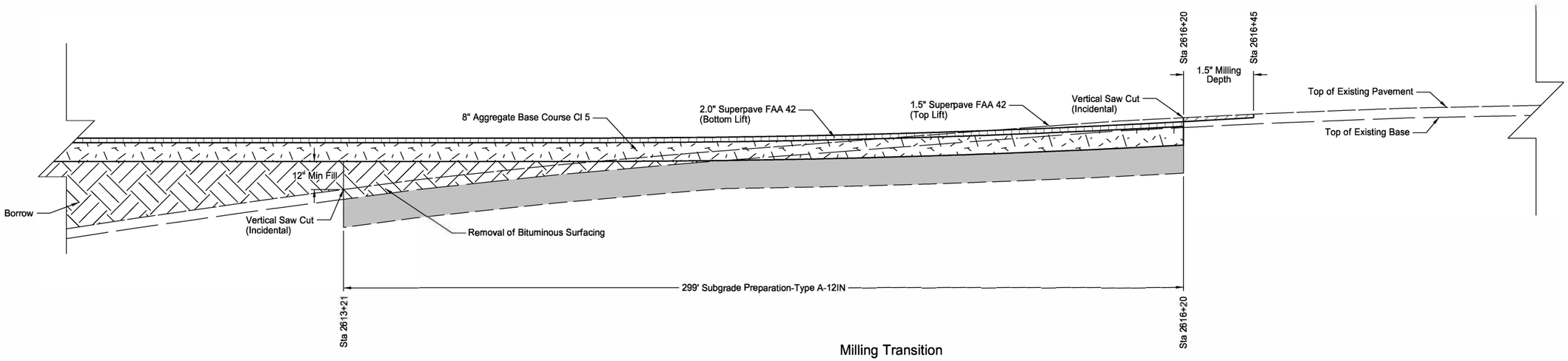
ND 34 Grade Raise

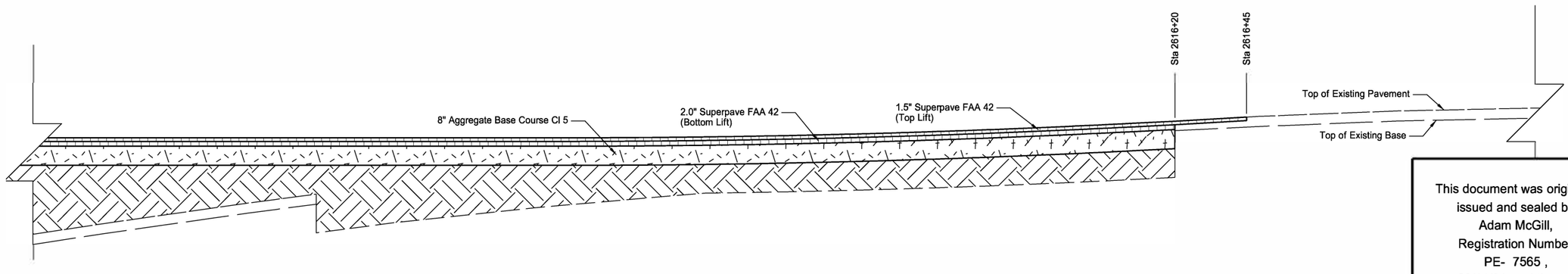
Milling & Paving Transition

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	20	2

SPEC	CODE	BID ITEM	QTY	UNIT
230	0165	SUBGRADE PREPARATION-TYPE A-12IN		
		Sta 2613+21 to 2616+20	3.0	STA



Milling Transition



Paving Transition

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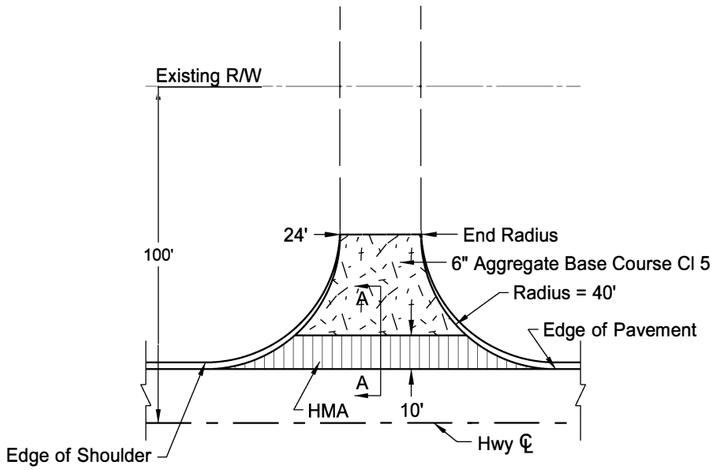
ND 34 Grade Raise

Milling & Paving Transition

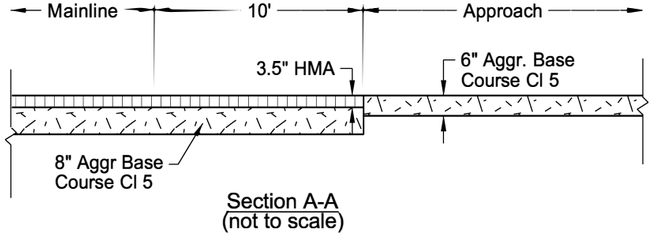
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	20	3

Notes:

1. Refer to Standard Drawing D-203-8 and to Section 200 Cross Sections for grading details.
2. Actual HMA paving and aggregate base course locations may vary in the field, as approved by the Engineer.
3. Quantity totals are shown in the Basis of Estimate and have been included in the bid items of the "Estimate of Quantities" of the plans.



(1) Field Drive Approach
w/ Shoulder Aggregate



Section A-A
(not to scale)

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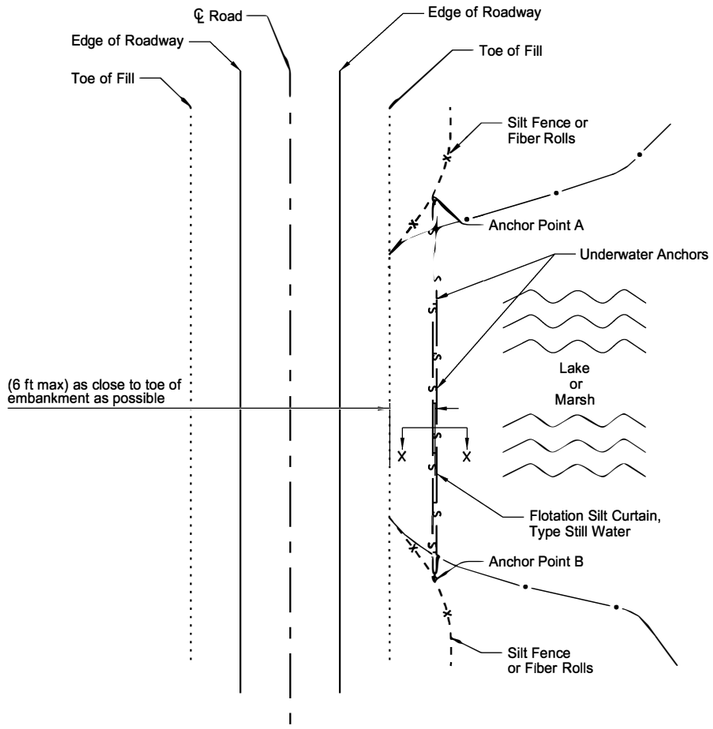
ND 34 Grade Raise

Approach Details

TYPICAL INSTALLATIONS
May vary with conditions

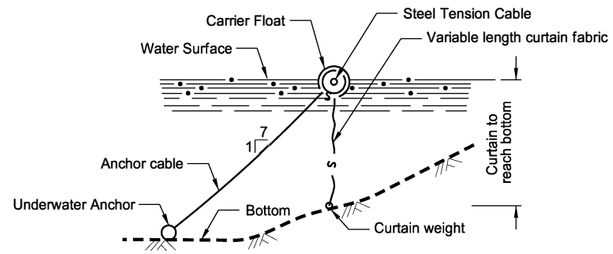
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	20	4



PLAN VIEW

FLOTATION SILT CURTAIN - TYPE STILL WATER

Extend silt curtain onto shore and anchor there also.



SECTION X-X
FLOTATION SILT CURTAINS

Note:
Maximum water velocity for moving water = 5 ft/sec

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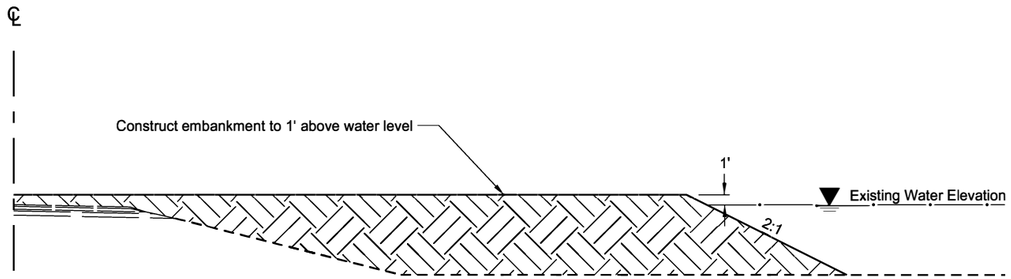
ND 34 Grade Raise

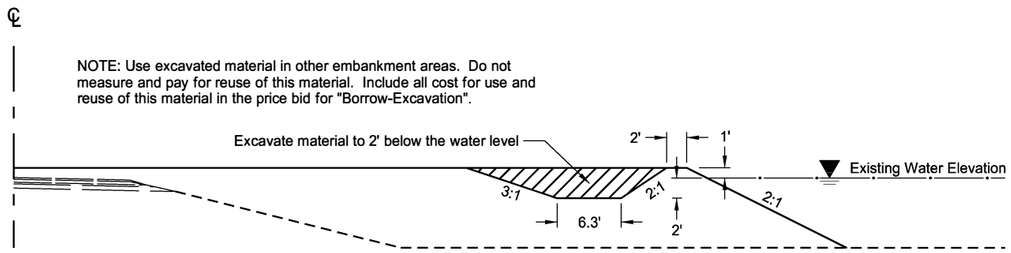
Flotation Silt Curtain Detail

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	20	5

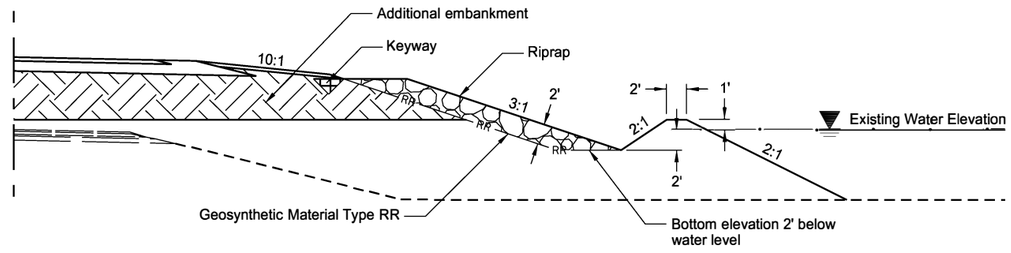
STAGE 1 - Embankment



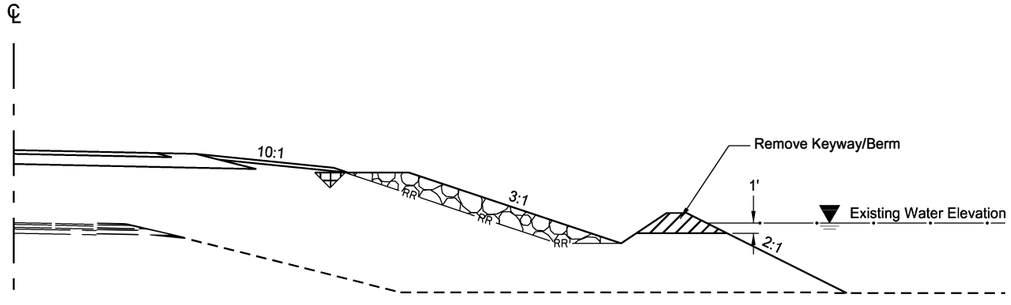
STAGE 2 - Excavation

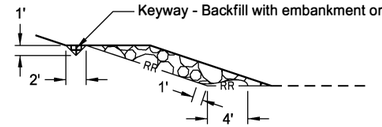


STAGE 3 - Place Fabric, Riprap, and Additional Embankment



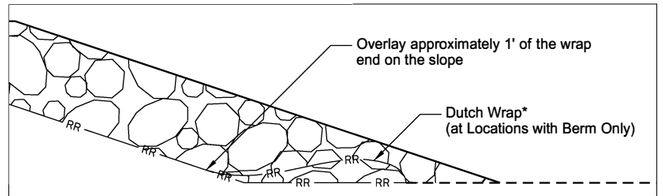
STAGE 4 - Remove Keyway / Berm





* Fabric Quantity for Dutch Wrap and Keyway Included in Geosynthetic Material Quantities.

Geosynthetic Material and Riprap Placement Detail



* Fabric Quantity for Dutch Wrap and Keyway Included in Geosynthetic Material Quantities.

Dutch Wrap Placement Detail

Note - An extra 3 feet of material width has been added for the keyway (top) and an extra 6 feet of material width has been added for the dutch wrap/overlay (bottom). The addtional material required for these items will be paid for as "Geosynthetic Material - Type RR".

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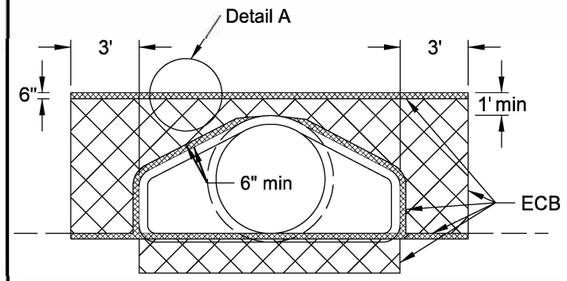
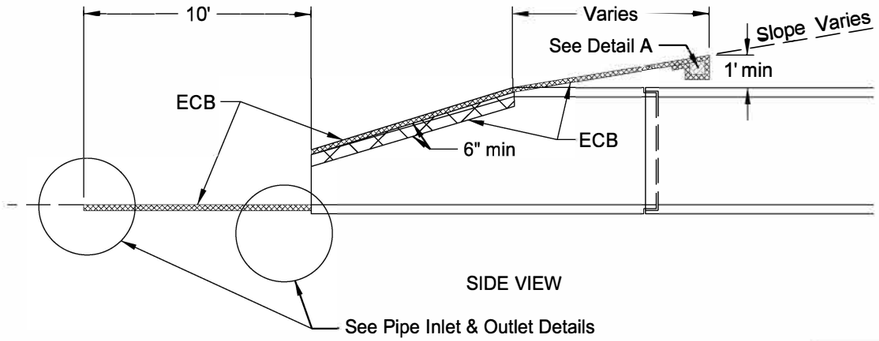
ND 34 Grade Raise

Riprap Placement Detail

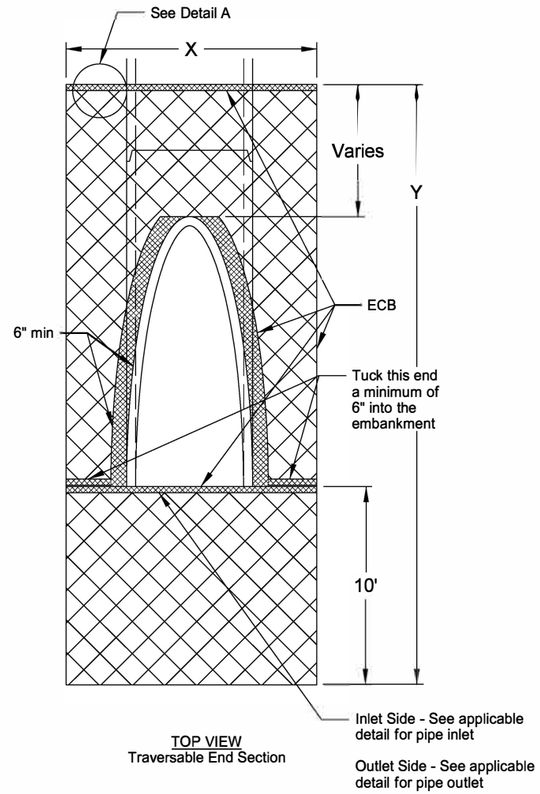
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	20	6



FRONT VIEW



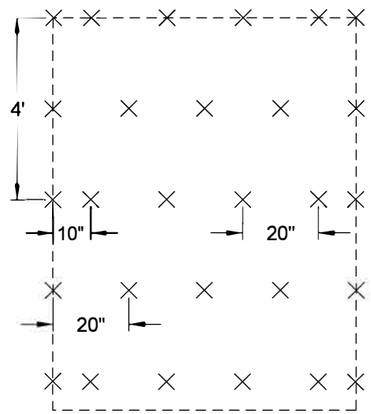
SIDE VIEW



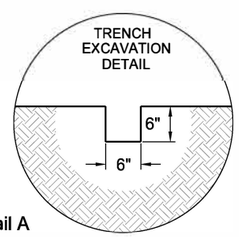
TOP VIEW
Traversable End Section

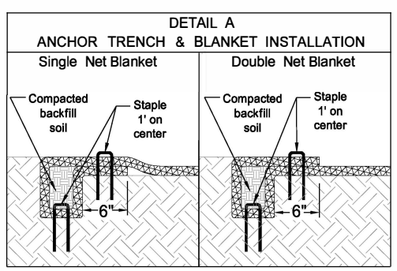
NOTE: Tuck the ECB a minimum of 6" into the embankment (against the flared end section) around the opening of the flared end section.

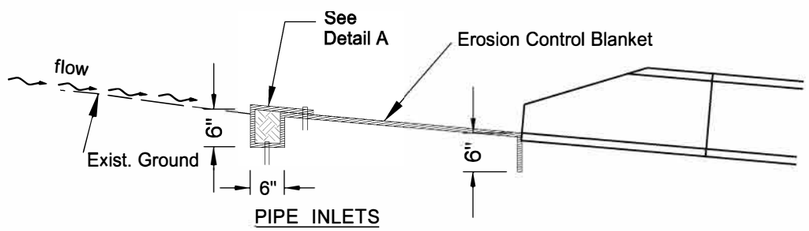
255 0103 ECB TYPE 3								
Roadway	Location of Surface Area		Pipe Diameter	No.	X	Y	Unit Quantity	Total Quantity
	Station	Offset	(IN)		(FT)	(FT)	(SY)	(SY)
ND 34	2616+03	Rt	24	1	8.5	22.0	21	21
							TOTAL =	21



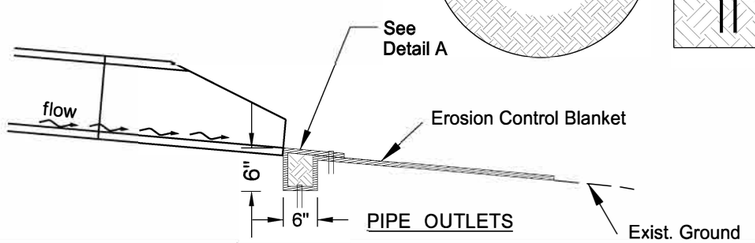
STAPLE PATTERN







PIPE INLETS



PIPE OUTLETS

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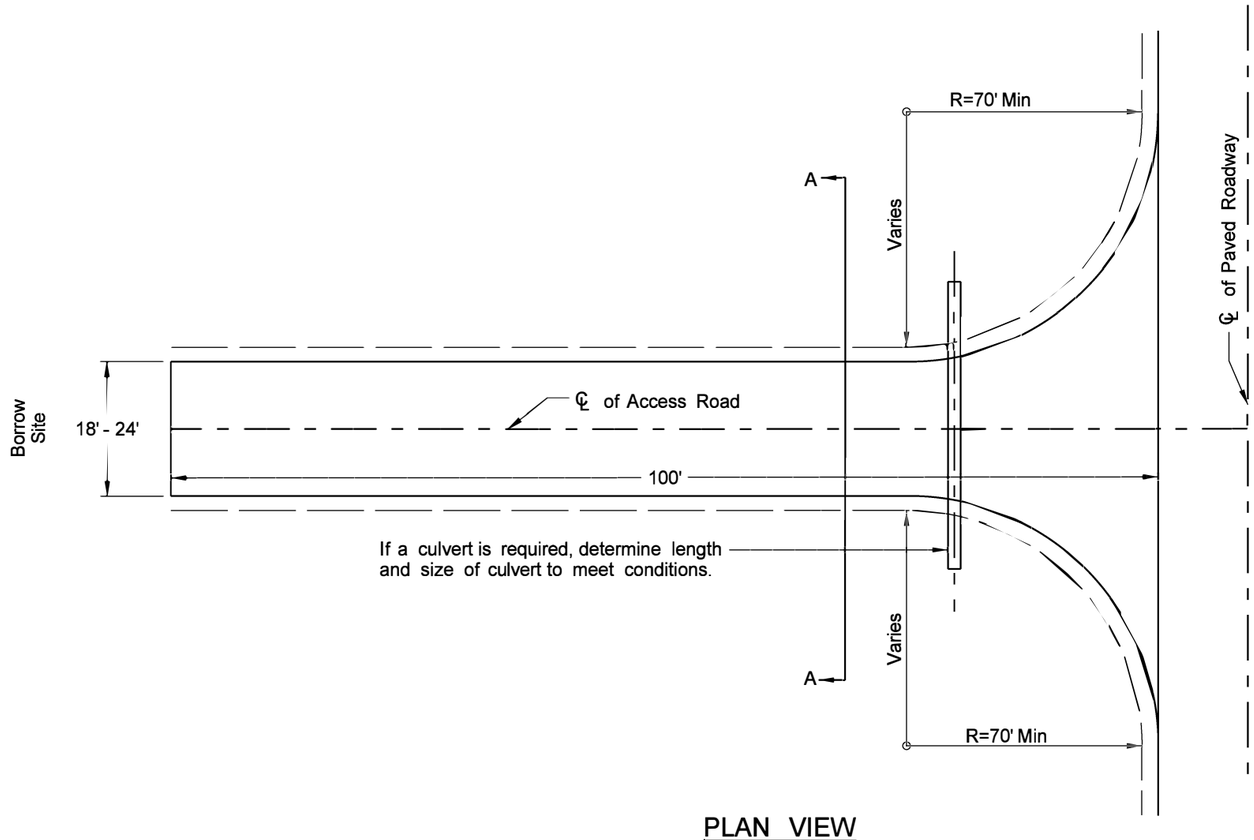
ND 34 Grade Raise

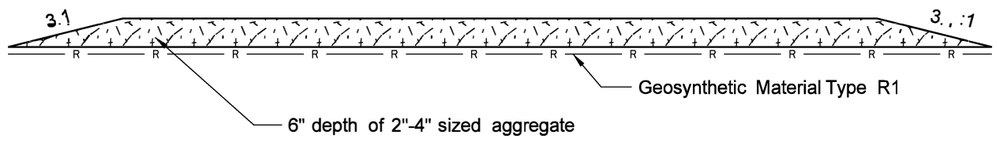
Erosion Control at Culvert Flared End Sections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	20	7

SPEC CODE	BID ITEM	QTY	UNIT
265 0100	STABILIZED CONSTRUCTION ACCESS		
	Borrow Site	1	EA
265 0101	REMOVE STABILIZED CONSTRUCTION ACCESS		
	Borrow Site	1	EA



PLAN VIEW



A - A Cross Section

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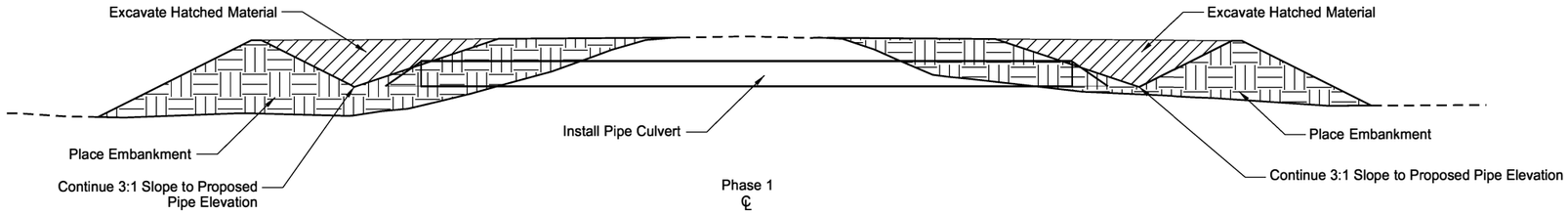
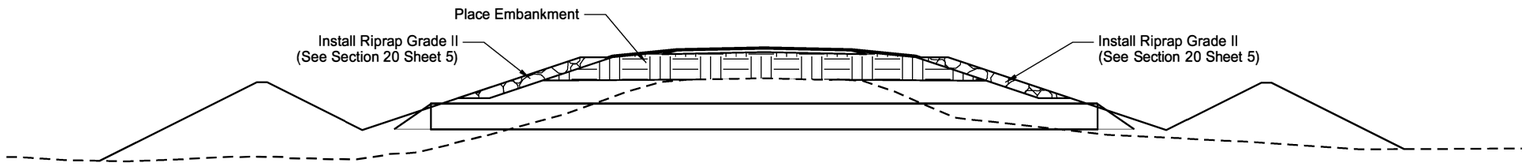
ND 34 Grade Raise

Stabilized Construction Access

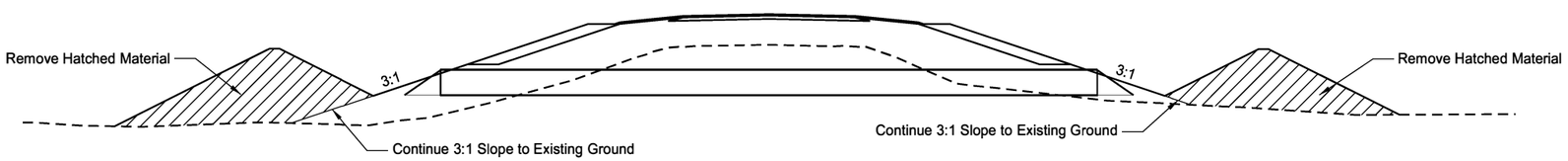
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	20	8



Phase 1
℄



Phase 2
℄



Phase 3
℄

Phasing Notes:

Phase 1: Construct embankment to the existing road elevation on both sides of the road as shown in Section 100 Sheet 5. Excavate hatched material and extend the berm out far enough to provide enough room for the pipe and end section installation. Install the pipe culverts and end sections.

Phase 2: Place remaining embankment and install Riprap Grade II as shown in Section 20 Sheet 5.

Phase 3: Remove hatched material. Extend the 3:1 slope to tie into the existing ground. Protect the pipe to ensure no silt enters the pipe.

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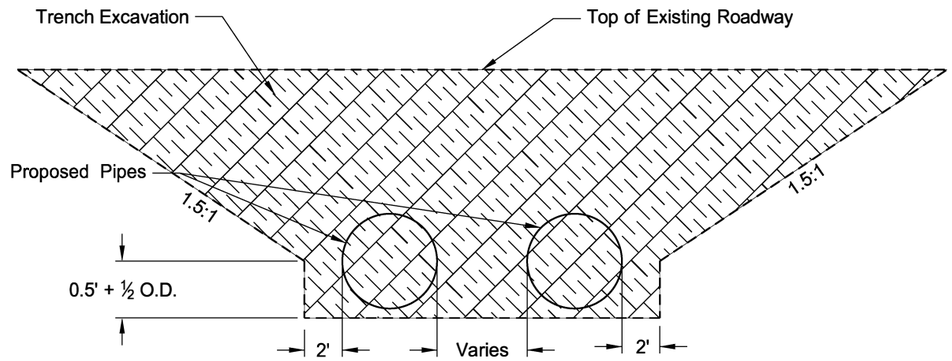
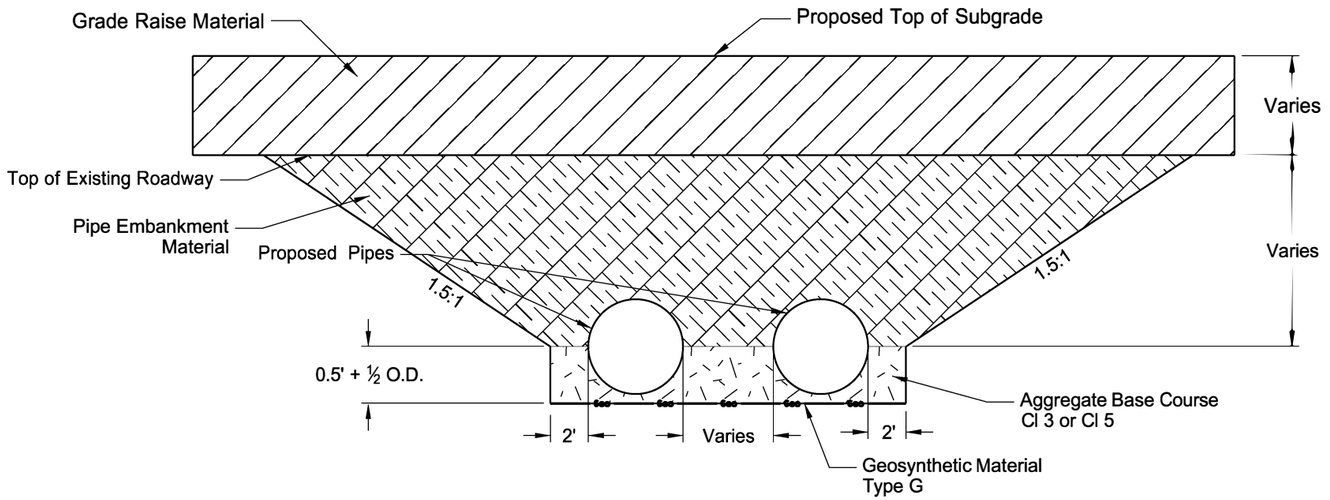
ND 34 Grade Raise

Pipe Conduit Berm Details

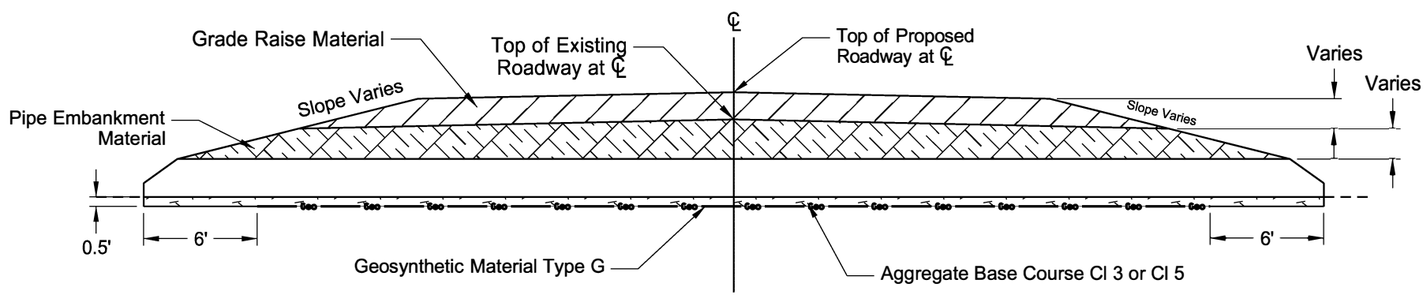
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	20	9



TRENCH EXCAVATION DETAIL-MULTIPLE PIPE



INSTALLATION DETAIL-MULTIPLE PIPE



CROSS SECTION

Pay Items
1) Pipe*
2) Geosynthetic Material Type G
3) Removal of Pipe (If Required)

*Included in Pipe Pay Item
1) Pipe
2) Trench Excavation
3) Pipe Embankment Material
4) Aggregate Base Course Cl 3 or Cl 5

NOTES:

1) Pipe Embankment material may be either Borrow Excavation or Common Excavation - Type A. Borrow Excavation used as the pipe embankment material is required to have a group and subgroup classification of A-6 or A-7-6 as defined by AASHTO M 145. Common Excavation - Type A is required to be the material excavated during trench excavation (excluding any granular or bedding material that may be present around any existing pipe).

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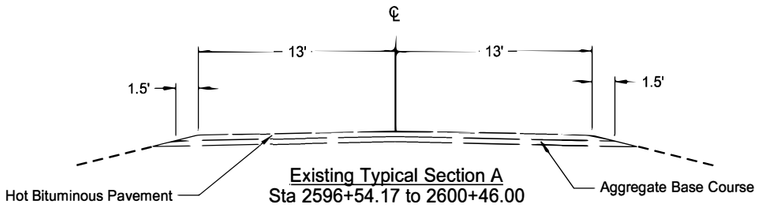
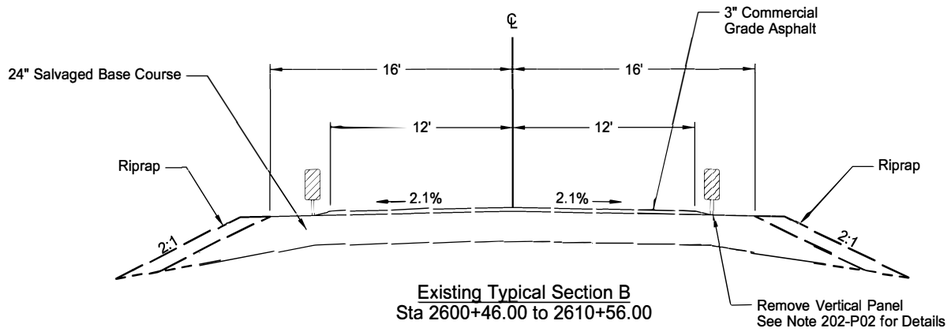
ND 34 Grade Raise

Pipe Backfill Detail

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	30	1



Existing Typical Section A
Sta 2596+54.17 to 2600+46.00
Sta 2610+56.00 to 2616+45.00



Existing Typical Section B
Sta 2600+46.00 to 2610+56.00

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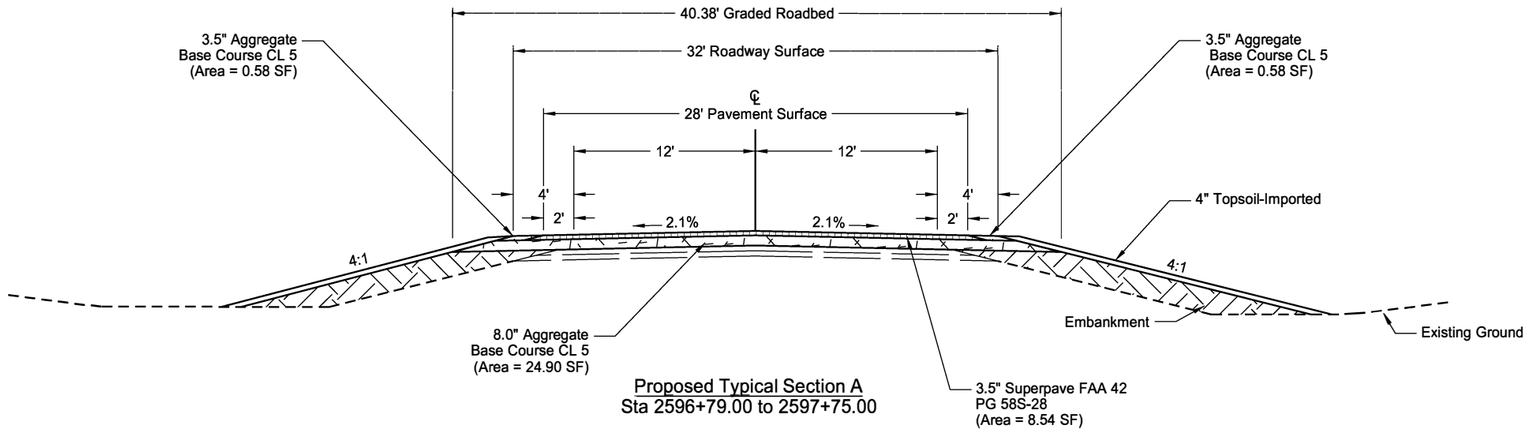
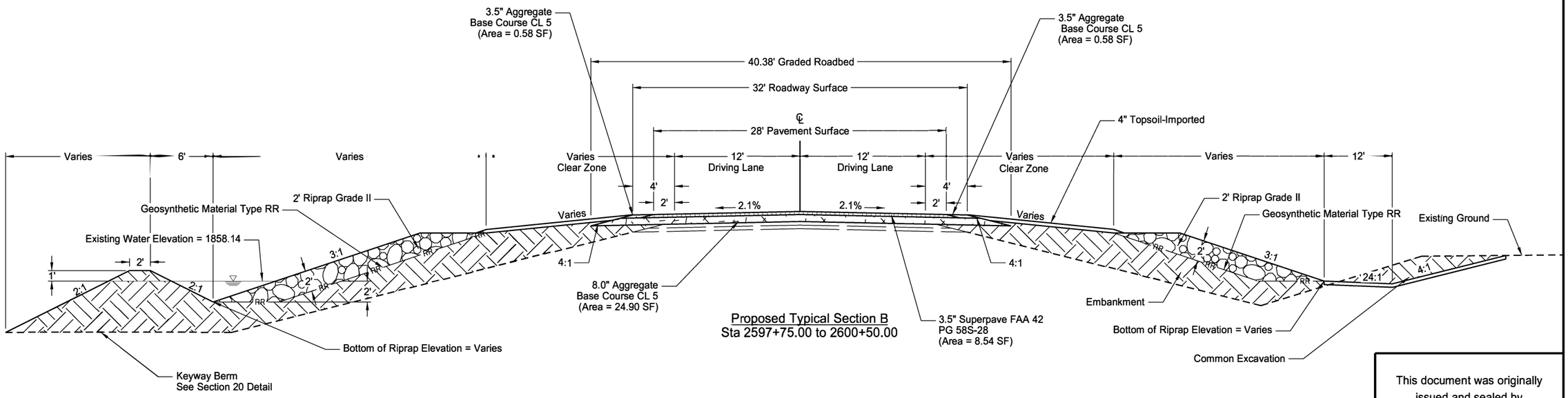
ND 34 Grade Raise

Existing Typical Sections

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	30	2



Proposed Typical Section A
Sta 2596+79.00 to 2597+75.00

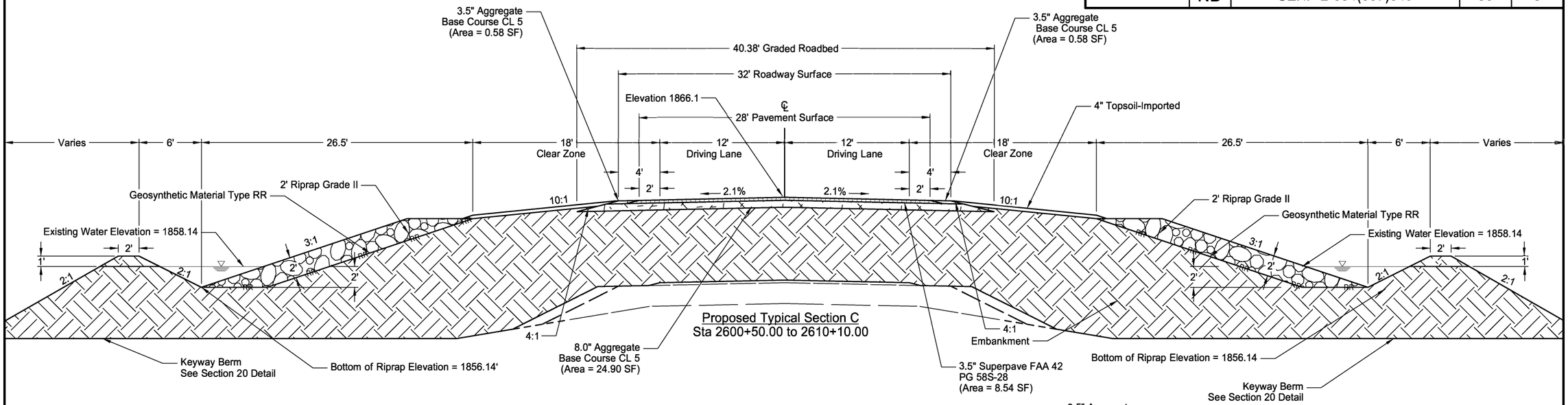


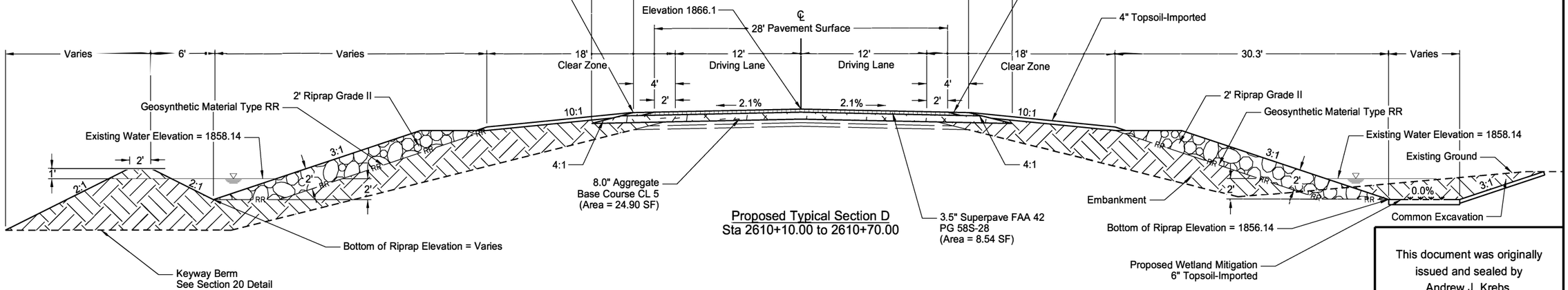
Proposed Typical Section B
Sta 2597+75.00 to 2600+50.00

ND 34 Grade Raise

Proposed Typical Sections

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	30	3





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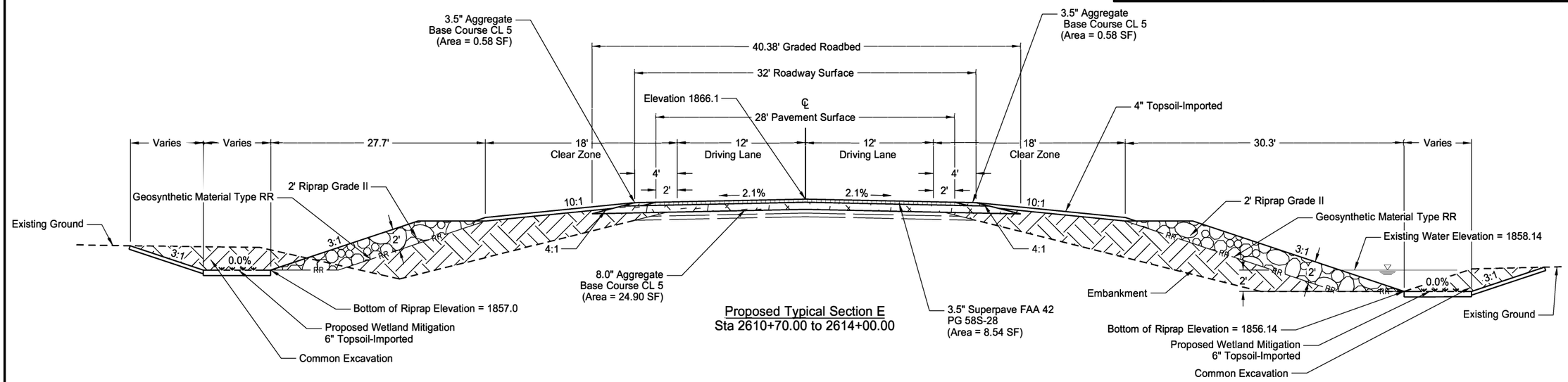
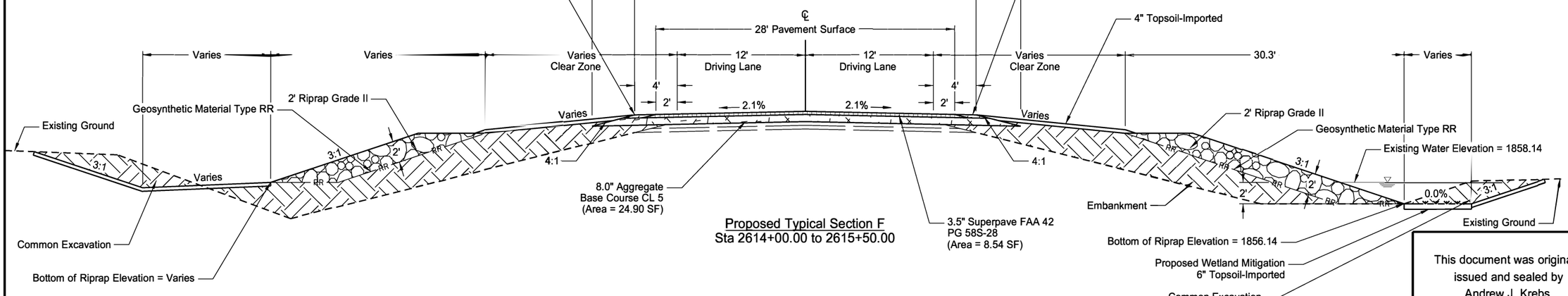
ND 34 Grade Raise

Proposed Typical Sections

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	30	4



Proposed Typical Section E
Sta 2610+70.00 to 2614+00.00

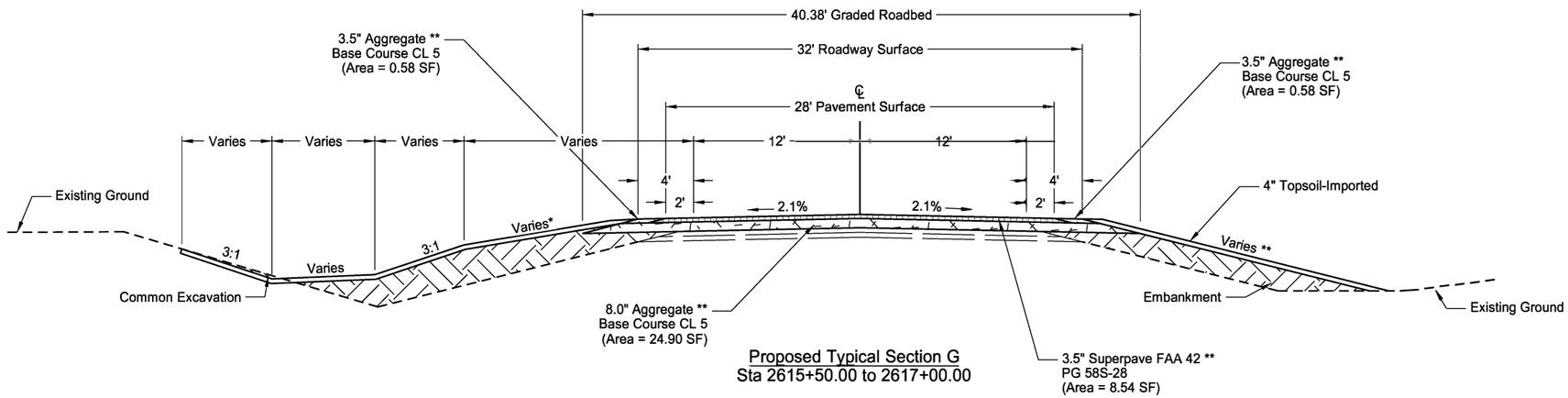


Proposed Typical Section F
Sta 2614+00.00 to 2615+50.00

ND 34 Grade Raise

Proposed Typical Sections

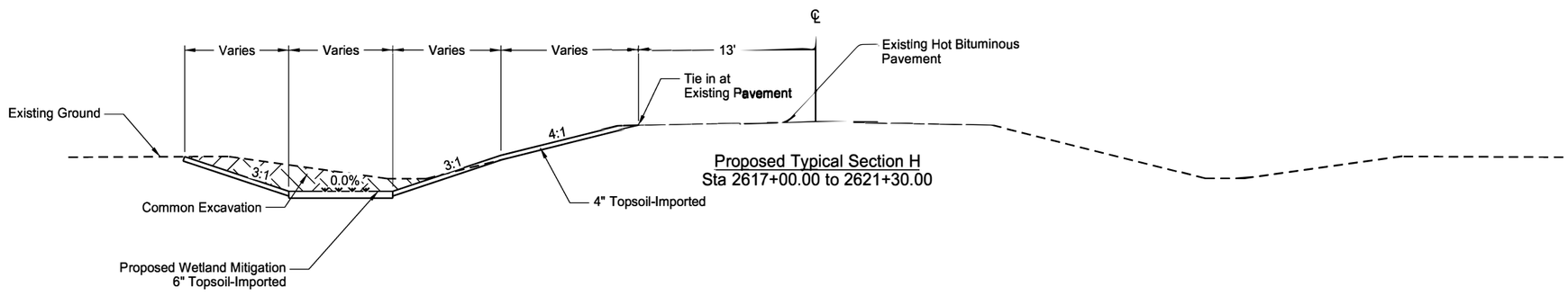
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	30	5



Proposed Typical Section G
Sta 2615+50.00 to 2617+00.00

* Connect ditch foreslope to existing shoulder from:
Sta 2616+45.00 to 2617+00.00

** Full reconstruction ends at Sta 2616+20.00



Proposed Typical Section H
Sta 2617+00.00 to 2621+30.00

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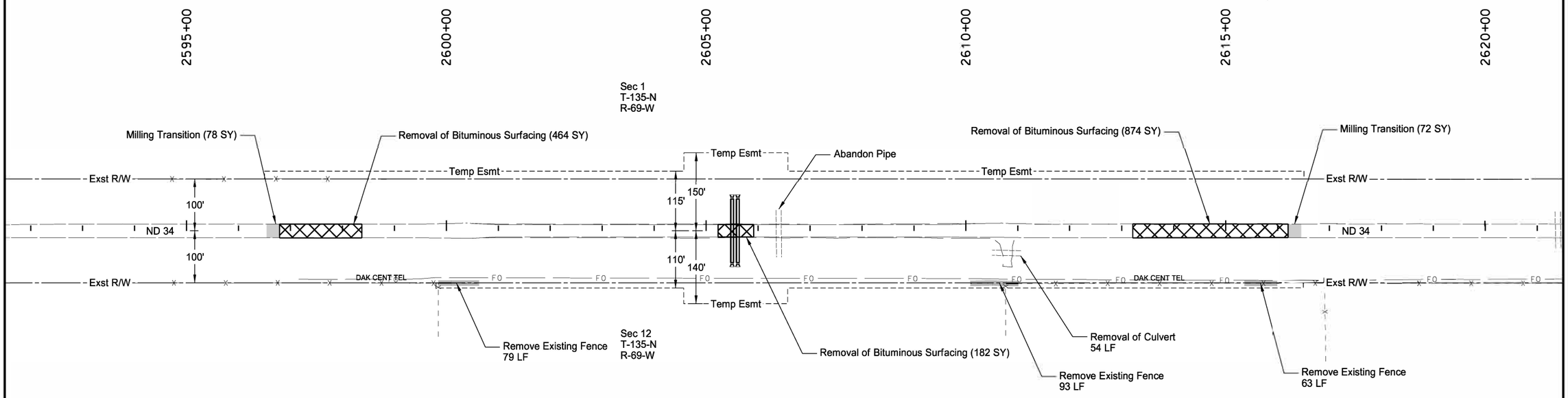
ND 34 Grade Raise

Proposed Typical Sections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	40	1

SPEC	CODE	BID ITEM	QTY	UNIT
202	0132	REMOVAL OF BITUMINOUS SURFACING		
		Sta 2596+79.16 to 2598+37.16	464	SY
		Sta 2605+23.08 to 2605+91.43	182	SY
		Sta 2613+21.00 to 2616+20.00	874	SY
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
		Removal of Culverts	54	LF
202	0312	REMOVE EXISTING FENCE		
		Sta 2599+84 - 100.8' Rt to 2600+63 - 100.6' Rt	79	LF
		Sta 2610+09 - 101.2' Rt to 2611+01 - 101.1' Rt	93	LF
		Sta 2615+36 - 101.0' Rt to 2615+99 - 101.0' Rt	63	LF
411	0105	MILLING PAVEMENT SURFACE		
		Milling	150	SY



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ND 34 Grade Raise

Removals

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	50	1

HYDRAULIC DATA FOR SERP-2-034(007)049 (A)									
				25-YEAR DATA				100-YEAR DATA	
STATION	EXISTING PIPE	PROPOSED PIPE SIZE	DRAINAGE AREA (ACRES)	DESIGN DISCHARGE (CFS)	DESIGN HEADWATER (FT)	DESIGN VELOCITY (FPS)	DESIGN STAGE (NAVD 88)	100-YEAR DISCHARGE (CFS)	100-YEAR STAGE (NAVD 88)
2606+40 (B)	42"x90' RCP	Dbl 60"	4326.5	128.5	-	-	1858.39	207.5	1858.79

(A) Hydraulic data provided is for smooth-walled (Manning's n=0.012) type conduits.
(B) Centerline culvert at 2606+40 acts as an equalizer and is not evaluated as a conventional culvert.

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Culvert Hydraulic Data

ND 34
RP 49, 3 Miles East of ND 30

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	51	1

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	Geosythetic Material - Type G (Pay Item)	(*) End Sections		Applicable Backfill
													Begin	End	
				In	Bid Item	LF		In	Type		In	SY	EA	EA	
2605+50	61' Lt	2605+50	61' Rt	60	Pipe Conduit	128'	Reinforced Concrete Pipe - Class III (barrel length = 122 LF)	60				295	FES	FES	See Section 20 Sheet 9
2605+61	61' Lt	2605+61	61' Rt	60	Pipe Conduit	128'	Reinforced Concrete Pipe - Class III (barrel length = 122 LF)	60					FES	FES	See Section 20 Sheet 9
2615+20	63' Rt	2616+03	47' Rt	24	Pipe Conduit - Approach	84'	Reinforced Concrete Pipe - Class III (barrel length = 80 LF)	24					FES	TES (6:1)	Specification 714.04 A
							Corrugated Steel Pipe	24	Z, A, P	2	0.064				
							Spiral Rib Steel Pipe	24	Z, A, P	3/4, 1	0.064				
							High-Density Polyethylene	24							
							Polypropylene Pipe (AASHTO M330, Type S)	24							

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"

(*) The price bid for "Pipe Conduit" bid items includes end sections.
FES = Flared End Section
TES = Traversable End Section

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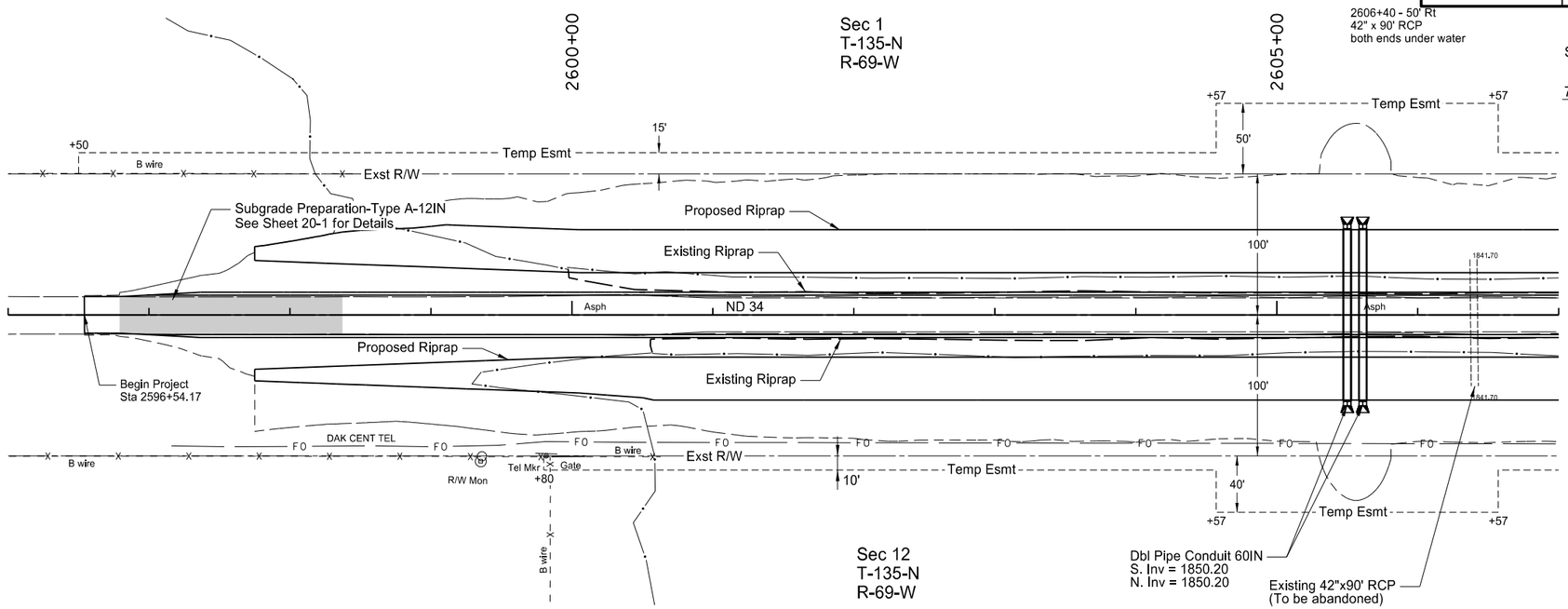
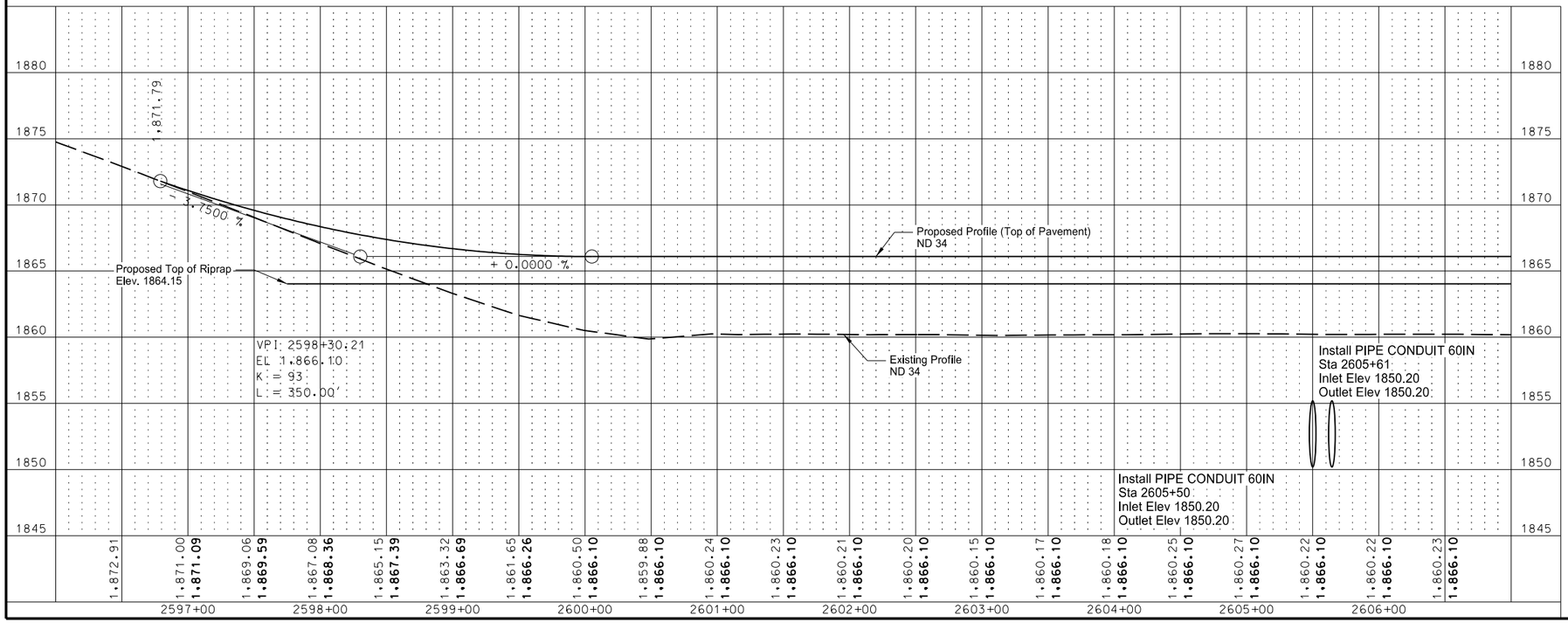
ND 34 Grade Raise

Allowable Pipe List

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	60	1



SPEC	CODE	BID ITEM	QTY	UNIT
714	4135	PIPE CONDUIT 60IN		
		Sta 2605+50 ℄	128	LF
		Sta 2605+61 ℄	128	LF
			256	LF



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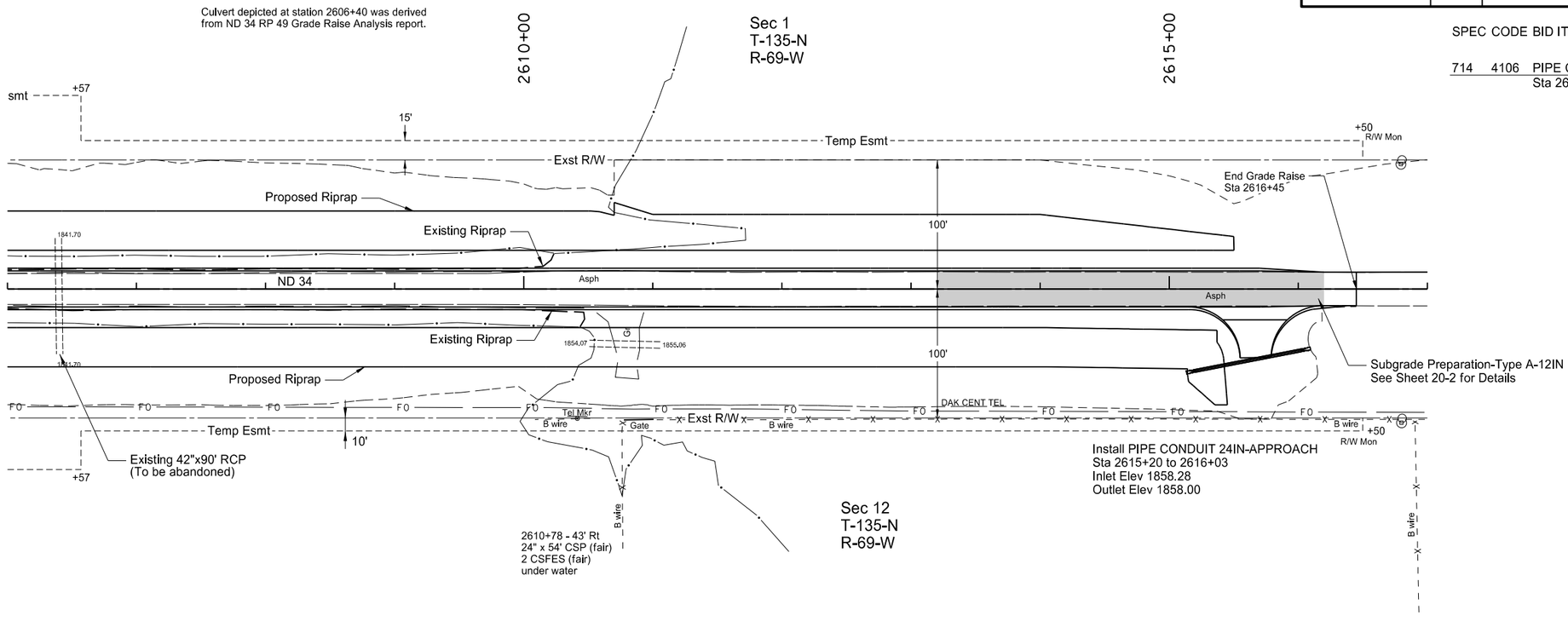
ND 34 Grade Raise

Plan & Profile

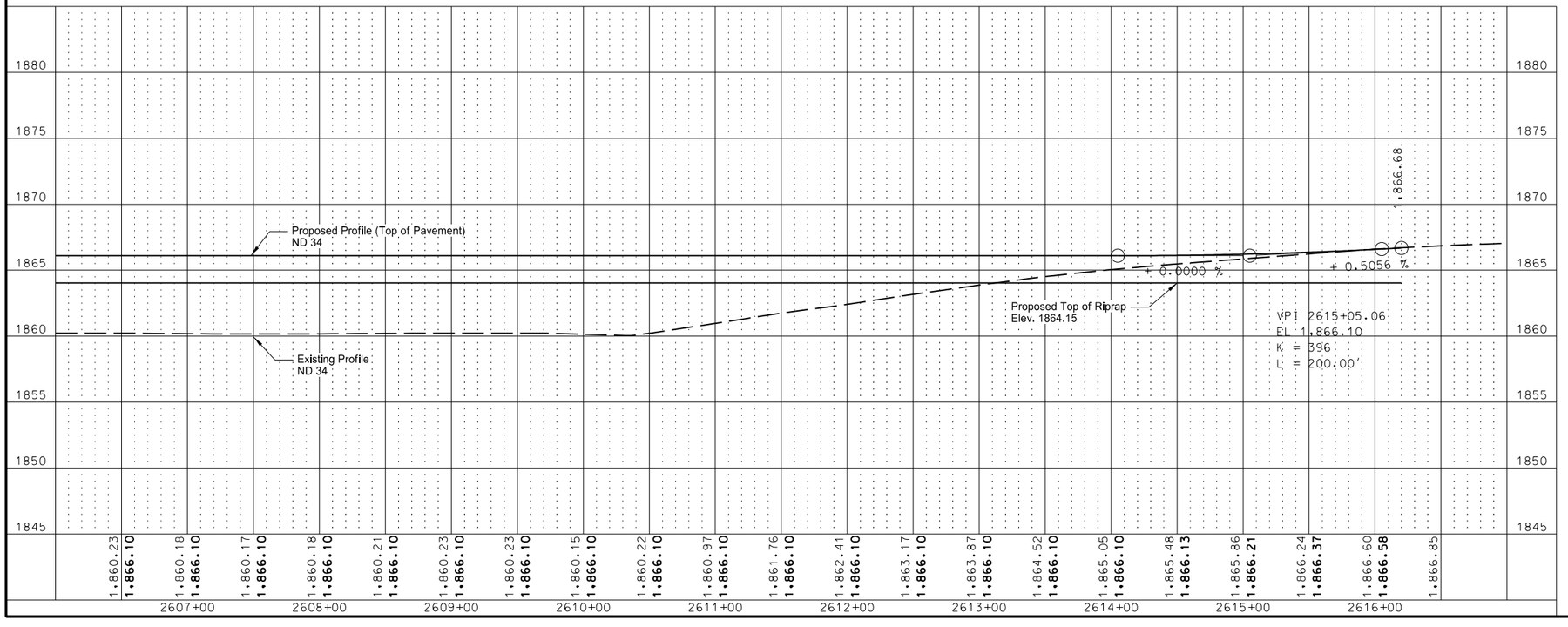
Sta 2596+50 to 2616+50

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	60	2

Culvert depicted at station 2606+40 was derived from ND 34 RP 49 Grade Raise Analysis report.



SPEC CODE	BID ITEM	QTY	UNIT
714 4106	PIPE CONDUIT 24IN-APPROACH Sta 2615+20 Rt to 2616+03 Rt	84	LF



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ND 34 Grade Raise

Plan & Profile

Sta 2606+50 to 2616+50

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	75	1

Wetland Impact Table

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands[1]	Wetland Impact Acre(s)			USFWS Easement Impacts Acre(s)		Wetland Mitigation						
										Mitigation Required			Onsite			
					Temp.	Perm. (Fill/ Drain)	Perm. (Cut)	Temp.	Perm.	EO 11990	USACE	USFWS	Mitigation Location; Ratio	Acre(s)	Constructed Site #	Constructed Size Acre(s)
1a	Sec 12 T-135-N R-69-W	Basin	Natural	Y	0.079	0.202	0.024[2]	-	-	Y	Y	N	Site 1: (1:1)	0.098	-	-
													Site 3: (1:1)	0.104		
1b	Sec 1 T-135-N R-69-W	Basin	Natural	Y	0.101	0.178	-	-	-	Y	Y	N	Site 2: (1:1)	0.098	Site 2	0.098
													Site 3: (1:1)	0.080		
1c	Sec 12 T-135-N R-69-W	Ditch	Created	Y	-	0.090	-	-	-	N	Y	N	Site 1: (1:1)	0.090	Site 1	0.188
1d	Sec 12 T-135-N R-69-W	Basin	Natural	Y	-	-	-	-	-	N	N	N	-	-	-	-
1e	Sec 1 T-135-N R-69-W	Basin	Natural	Y	0.058	-	0.032[2]	-	-	N	N	N	-	-	Site 3	0.225
					0.238	0.470	0.056	NA	NA					0.470		0.511

[1] A wetland Jurisdictional Determination was issued by the USACE on 11/24/2020; NWO-2020-1869-BIS.
[2] Wetland area expected to reestablish; therefore, a permanent loss of waters of the US is not anticipated and mitigation for this impact is not proposed.

Other Waters Impact Table

Other Waters													Other Water Mitigation				
			Size				Impacts to Other Waters						Mitigation Required				
							Acres			Linear Feet							
Number	Location	Type	Acre(s)	Linear Feet	Feature	USACE Jurisdictional[1]	Temp	Perm (Fill/ Drain)	Perm (Cut)	Temp	Perm (Fill/ Drain)	Perm (Cut)	EO 11990	USACE	USFWS	Mitigation Location; ratio	Method
OW 1a	Sec 12 T-135-N R-69-W	Deep Water[3]	3.152	130	Natural	Y	0.384	0.740	-	21	40	-	N	N	N	-	-
OW 1b	Sec 1 T-135-N R-69-W	Deep Water[3]	2.382	135	Natural	Y	0.472	0.529	-	20	23	-	N	N	N	-	-
		Totals	5.534	265			0.856	1.269	NA	41	63	NA					

[3] Deep Water area is the 2 meter depth based on survey.

Impact Summary Table

Permanent Impact Summary		Temporary Impacts and additional information	
Wetland Type	Total (Acres)	Wetland Type	Total (Acres/Lf)
Natural/JD (Fill/Drain)	0.380	Temporary JD	0.238
Natural/Non-JD (Fill/Drain)	0.000	Non-JD Temporary	0.000
Created/JD (Fill/Drain)	0.090	Permanent JD > 0.10	0.470
Created/Non-JD (Fill/Drain)	0.000	Permanent OW (Fill/Drain)	1.269 / 63
Total	0.470	Permanent OW (Cut)	NA / NA
Natural/JD (Cut)	0.056	Temporary OW	0.856 / 41
Natural/Non-JD (Cut)	0.000		
Created/JD (Cut)	0.000		
Created/Non-JD (Cut)	0.000		
Total	0.056		

Mitigation Summary Table

	Location	Onsite Acre(s)	11990 Bank Acre(s)	USACE/11990 Bank Acre(s)	USFWS Bank Acre(s)
USACE Only					
EO 11990 Only					
USACE/11990	Onsite	0.511			
USFWS					
	Total	0.511	0.000	0.000	0.000

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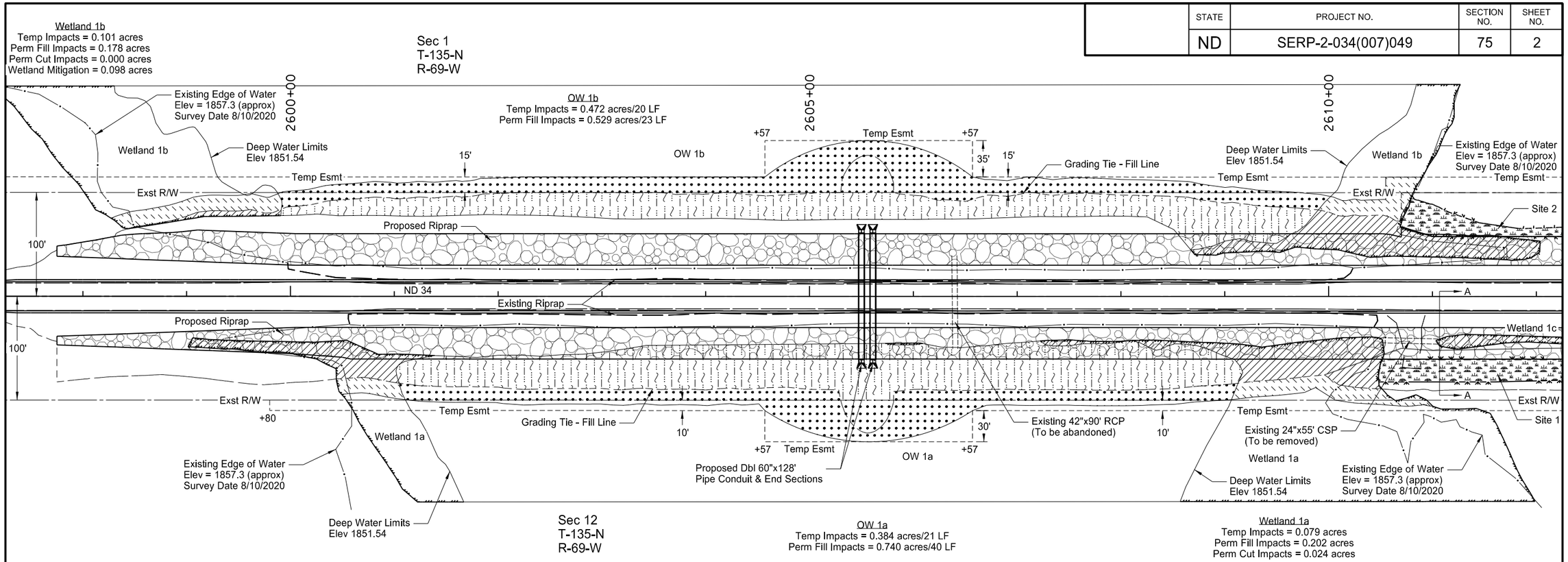
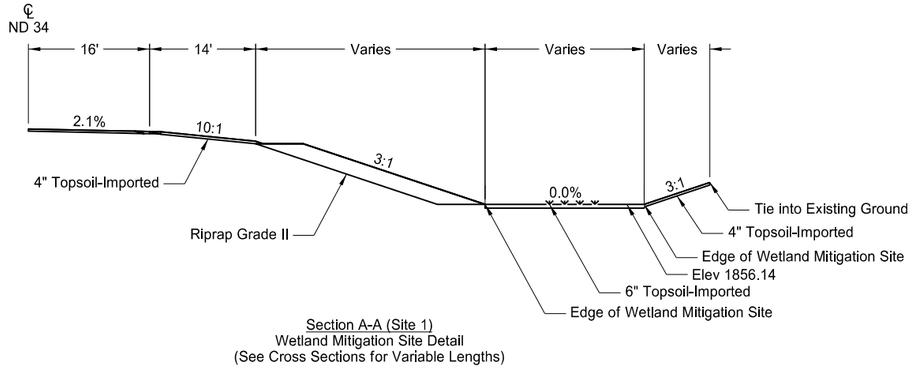
ND 34 Grade Raise

Wetlands and OW Impact Tables

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	75	2



Other Water Line was drawn based on contours developed from field survey obtained for the existing ground surface currently under water. Other Water Line is drawn approximately at Elev. 1851.54; 6.6 feet below current water surface elevation of 1858.14, obtained from survey completed May 9, 2020.



Section A-A (Site 1)
Wetland Mitigation Site Detail
(See Cross Sections for Variable Lengths)

LEGEND

- Wetland Impact Permanent
- Wetland Impact Temporary
- Other Water Impact Permanent
- Other Water Impact Temporary
- Proposed Wetland Mitigation
- Existing Delineated Wetland
- Existing Other Waters

N

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ND 34 Grade Raise

Wetland Impacts

Sta 2598+00 to 2612+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	75	3

Sec 1
T-135-N
R-69-W

2615+00

2620+00

2625+00

15'

Temp Esmt

Grading Tie - Cut Line

+50

B

Exst R/W

Site 2

Grading Tie - Fill Line

100'

Wetland 1e
Temp Impacts = 0.058 acres
Perm Fill Impacts = 0.000 acres
Perm Cut Impacts = 0.032 acres
Wetland Mitigation = 0.225 acres

Wetland 1e

C

Grading Tie - Cut Line

Site 3

Exst R/W

ND 34

B

C

Wetland 1c

Grading Tie - Fill Line

Wetland 1c

100'

Exst R/W

Temp Esmt

+50

Site 1

Grading Tie - Cut Line

10'

Proposed 24"x84'
Pipe Conduit & End Sections

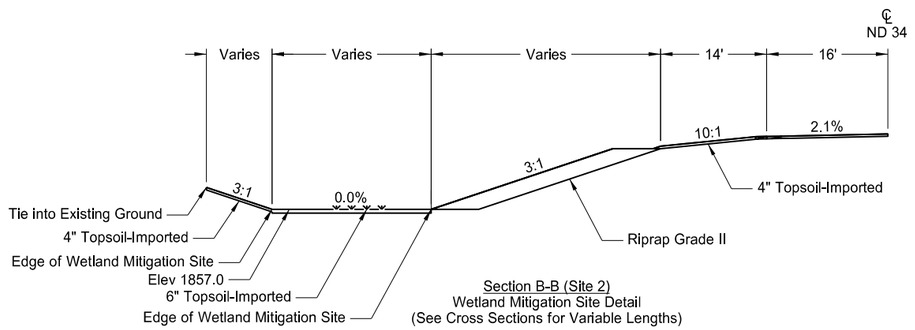
Wetland 1d

Exst R/W

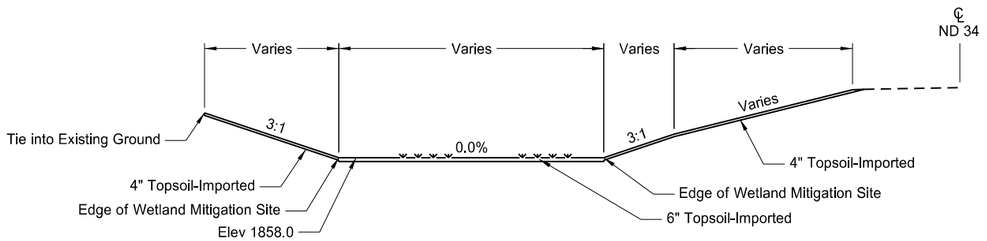
Wetland 1c
Temp Impacts = 0.000 acres
Perm Fill Impacts = 0.090 acres
Perm Cut Impacts = 0.000 acres
Wetland Mitigation = 0.188 acres

Sec 12
T-135-N
R-69-W

Wetland 1d
Temp Impacts = 0.000 acres
Perm Fill Impacts = 0.000 acres
Perm Cut Impacts = 0.000 acres



Section B-B (Site 2)
Wetland Mitigation Site Detail
(See Cross Sections for Variable Lengths)



Section C-C (Site 3)
Wetland Mitigation Site Detail
(See Cross Sections for Variable Lengths)

LEGEND

- Wetland Impact Permanent
- Wetland Impact Temporary
- Other Water Impact Permanent
- Other Water Impact Temporary
- Proposed Wetland Mitigation
- Existing Delineated Wetland
- Existing Other Waters

N

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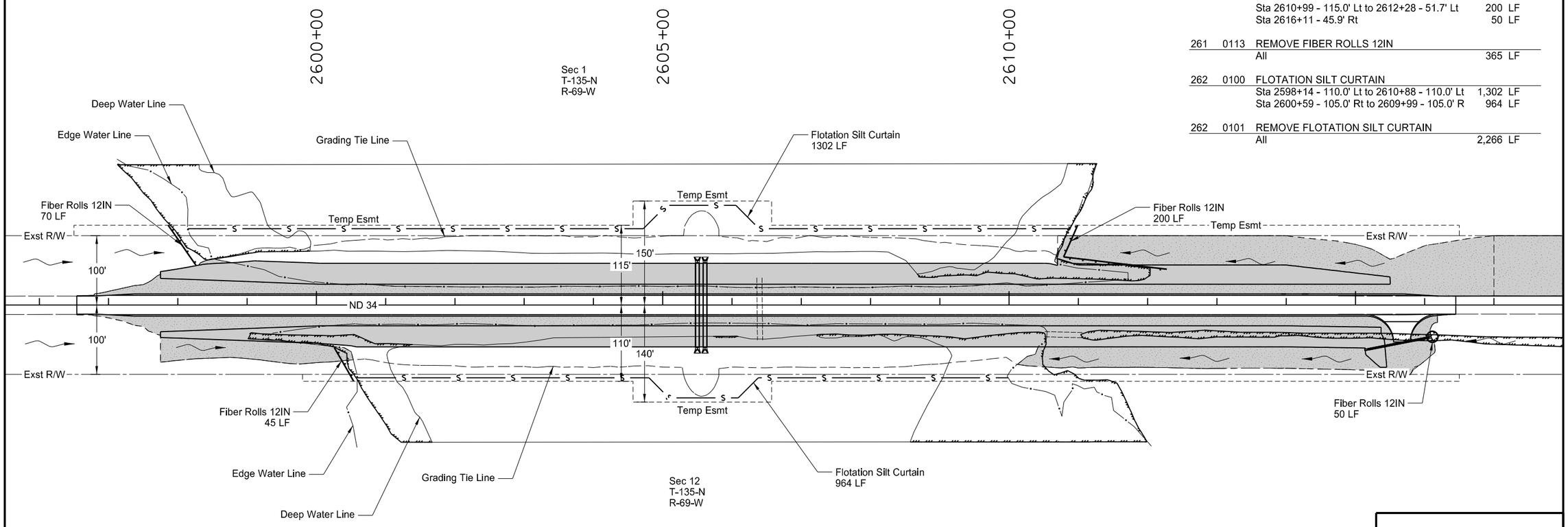
ND 34 Grade Raise

Wetland Impacts

Sta 2612+00 to 2626+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	76	1

SPEC	CODE	BID ITEM	QTY	UNIT
251	2000	TEMPORARY COVER CROP		
		Temporary Cover Crop	2.49	ACRE
253	0101	STRAW MULCH		
		Straw Mulch	4.88	ACRE
261	0112	FIBER ROLLS 12IN		
		Sta 2597+86 - 115.0' Lt to 2598+26 - 57.8' Lt	70	LF
		Sta 2600+26 - 61.5' Rt to 2600+54 - 110.0' Rt	45	LF
		Sta 2610+99 - 115.0' Lt to 2612+28 - 51.7' Lt	200	LF
		Sta 2616+11 - 45.9' Rt	50	LF
261	0113	REMOVE FIBER ROLLS 12IN		
		All	365	LF
262	0100	FLOTATION SILT CURTAIN		
		Sta 2598+14 - 110.0' Lt to 2610+88 - 110.0' Lt	1,302	LF
		Sta 2600+59 - 105.0' Rt to 2609+99 - 105.0' R	964	LF
262	0101	REMOVE FLOTATION SILT CURTAIN		
		All	2,266	LF



Temporary Cover Crop

Straw Mulch

Flotation Silt Curtain

Fiber Rolls 12IN

N

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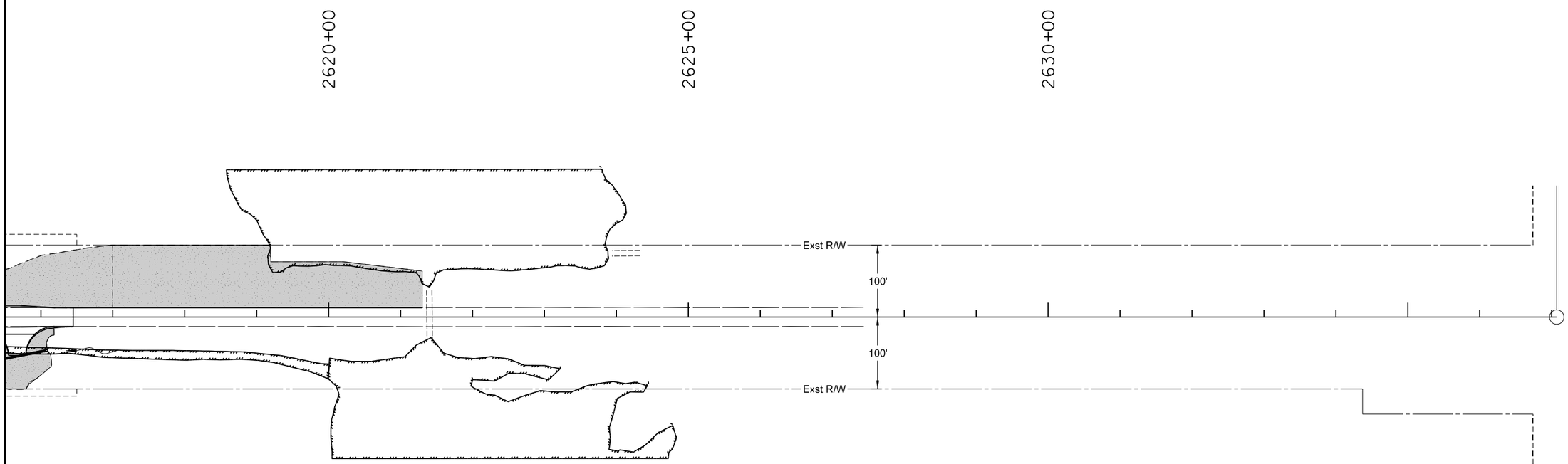
ND 34 Grade Raise

Temporary Erosion Control

Sta 2596+00 to 2617+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	76	2

SPEC	CODE	BID ITEM	QTY	UNIT
251	2000	TEMPORARY COVER CROP		
		Temporary Cover Crop	0.73	ACRE
253	0101	STRAW MULCH		
		Straw Mulch	0.73	ACRE



Temporary Cover Crop

Straw Mulch

Flotation Silt Curtain

Fiber Rolls 12IN

N

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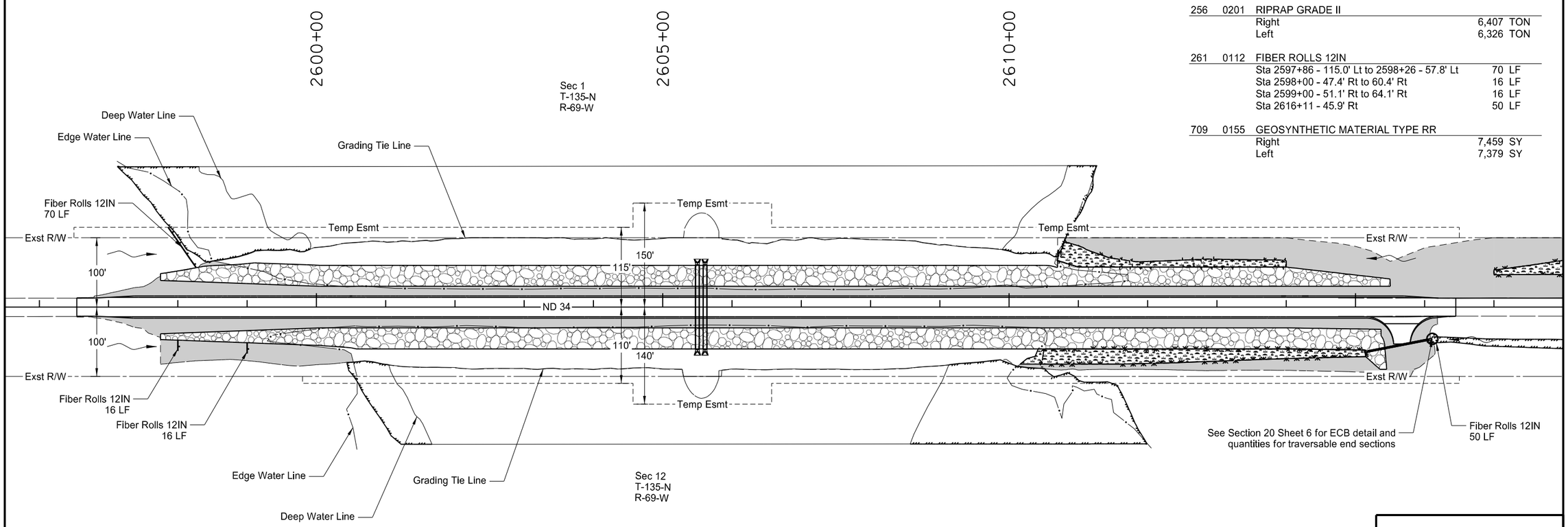
ND 34 Grade Raise

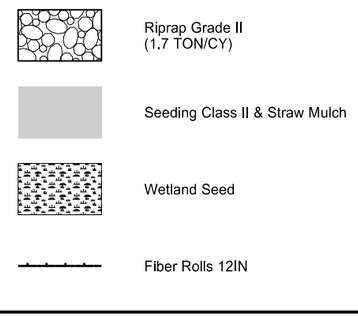
Temporary Erosion Control

Sta 2617+00 to 2621+30

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	77	1

SPEC	CODE	BID ITEM	QTY	UNIT
251	0200	SEEDING CLASS II		
		Seeding Class II	2.26	ACRE
251	1000	WETLAND SEED		
		Wetland Mitigation Site 1 & 2	0.31	ACRE
253	0101	STRAW MULCH		
		Straw Mulch	2.26	ACRE
256	0201	RIPRAP GRADE II		
		Right	6,407	TON
		Left	6,326	TON
261	0112	FIBER ROLLS 12IN		
		Sta 2597+86 - 115.0' Lt to 2598+26 - 57.8' Lt	70	LF
		Sta 2598+00 - 47.4' Rt to 60.4' Rt	16	LF
		Sta 2599+00 - 51.1' Rt to 64.1' Rt	16	LF
		Sta 2616+11 - 45.9' Rt	50	LF
709	0155	GEOSYNTHETIC MATERIAL TYPE RR		
		Right	7,459	SY
		Left	7,379	SY





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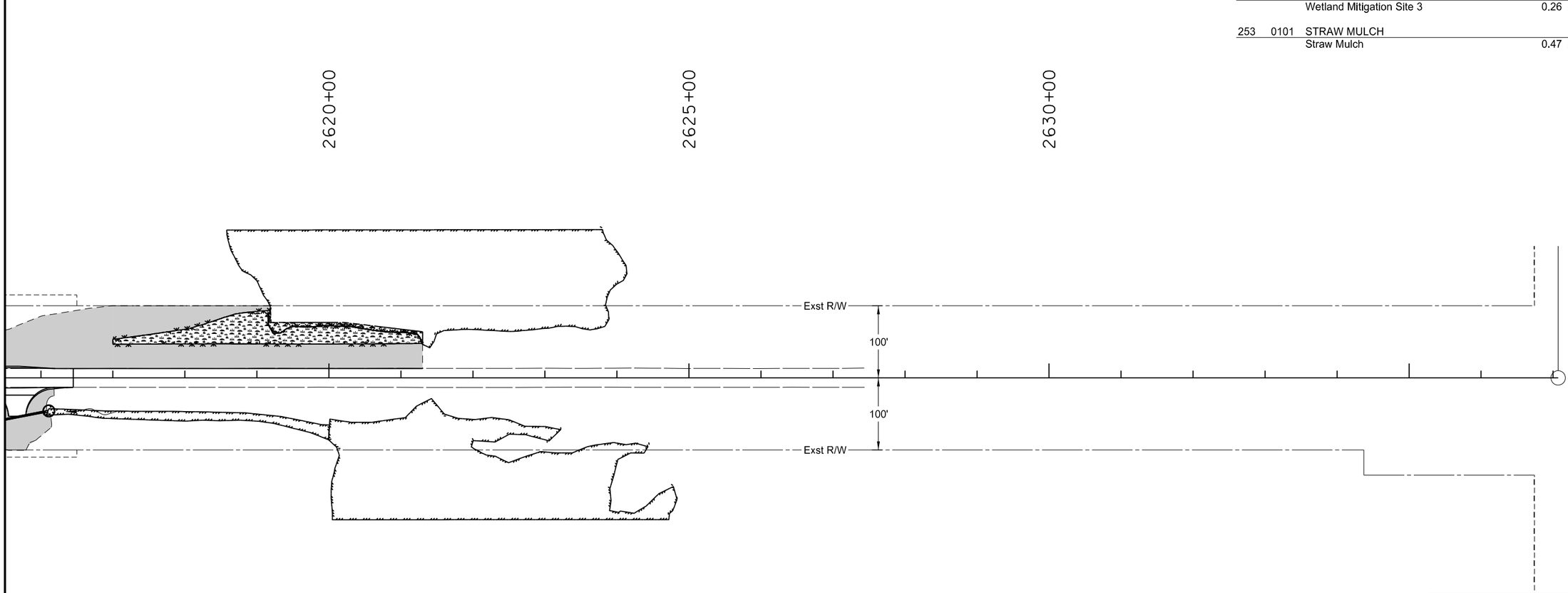
ND 34 Grade Raise

Permanent Erosion Control

Sta 2596+00 to 2617+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	77	2

SPEC	CODE	BID ITEM	QTY	UNIT
251	0200	SEEDING CLASS II		
		Seeding Class II	0.47	ACRE
251	1000	WETLAND SEED		
		Wetland Mitigation Site 3	0.26	ACRE
253	0101	STRAW MULCH		
		Straw Mulch	0.47	ACRE



Riprap Grade II
(1.7 TON/CY)

Seeding Class II & Straw Mulch

Wetland Seed

Fiber Rolls 12IN

N

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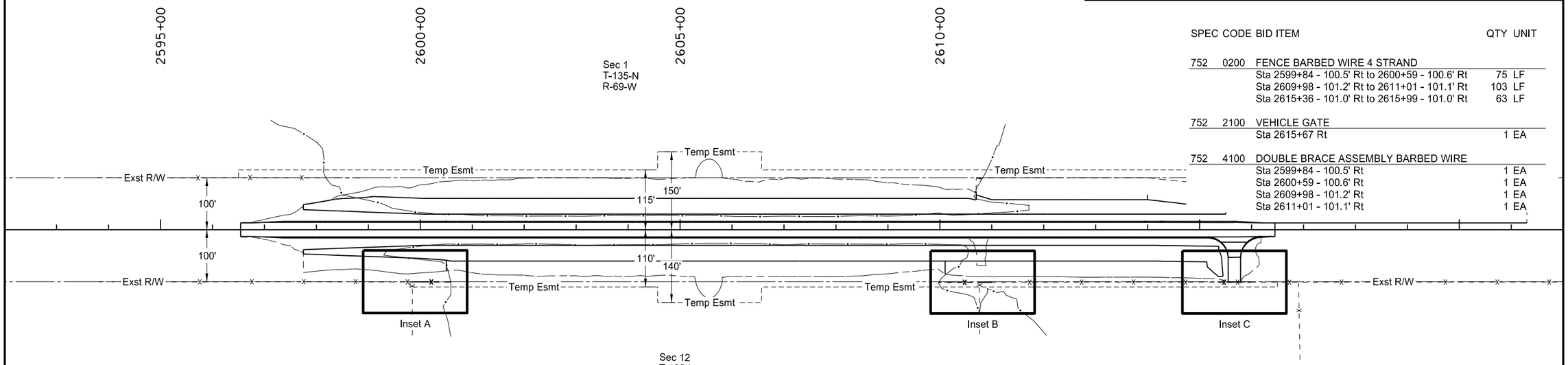
ND 34 Grade Raise

Permanent Erosion Control

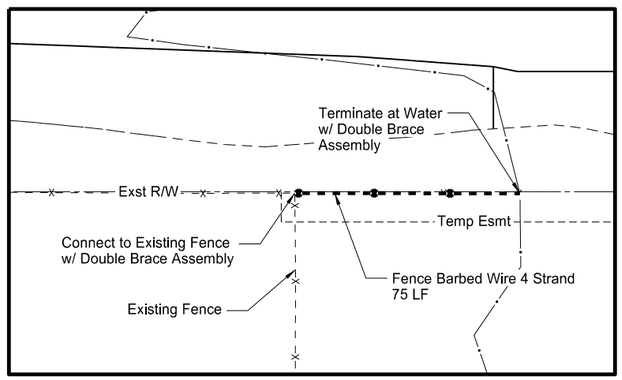
Sta 2617+00 to 2621+30

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	80	1

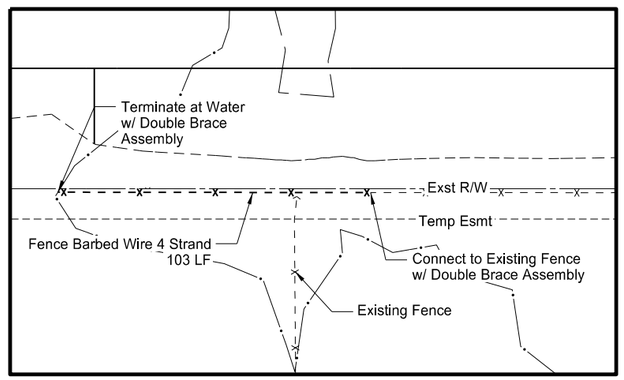


SPEC	CODE	BID ITEM	QTY	UNIT
752	0200	FENCE BARBED WIRE 4 STRAND		
		Sta 2599+84 - 100.5' Rt to 2600+59 - 100.6' Rt	75	LF
		Sta 2609+98 - 101.2' Rt to 2611+01 - 101.1' Rt	103	LF
		Sta 2615+36 - 101.0' Rt to 2615+99 - 101.0' Rt	63	LF
752	2100	VEHICLE GATE		
		Sta 2615+67 Rt	1	EA
752	4100	DOUBLE BRACE ASSEMBLY BARBED WIRE		
		Sta 2599+84 - 100.5' Rt	1	EA
		Sta 2600+59 - 100.6' Rt	1	EA
		Sta 2609+98 - 101.2' Rt	1	EA
		Sta 2611+01 - 101.1' Rt	1	EA

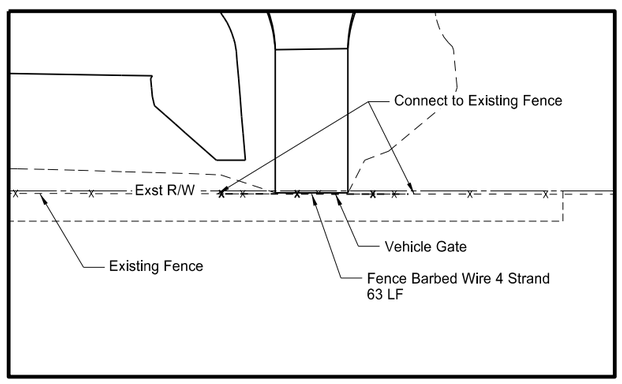
Sec 12
T-135-N
R-69-W



Inset A



Inset B



Inset C

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ND 34 Grade Raise

Fencing Layout

PRELIMINARY SURVEY COORDINATE AND CURVE DATA - ND 34 - 3 MILES E OF ND 30

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	81	1

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING
ND 34 (CHAIN SCL34)			
BEGIN Rec Sec Cor	2584+48.01	316,843.50	2,268,491.92
END Rec Sec Cor	2637+07.04	316,949.51	2,273,749.88

CURVE DATA

ARC DEFINITION

US PUBLIC LAND SURVEY DATA

CORNER	IRN	NORTHING	EASTING
T-135-N R-69-W			
NE Cor Sec 12	13-C	316,843.50	2,268,491.92
NW Cor Sec 12	11-C	316,949.51	2,273,749.88

SURVEY CONTROL POINTS

PNT	NORTHING	EASTING	ELEV	STATION	OFFSET
MONUMENT DESCRIPTION					
Primary Control (Station/Offset from Chain SCL34)					
GPS 1	316,884.96	2,274,905.67	1,932.89	N/A	N/A
#5 Rebar w/ 2" Alum Cap marked "34-1 RM 50.1"					
Secondary Control (Station/Offset from Chain SCL34)					
RTK 2	316,934.42	2,268,440.65	1,889.28	N/A	N/A
#5 Rebar w/ Pink Plastic Cap marked "KLJ CTRL PT"					

REFERENCE MARKERS

R MKR #	NORTHING	EASTING	STATION	OFFSET
ND 34 - (CHAIN SCL34)				
49	316,820.11	2,268,767.60	2587+23	29' RT

NOTES: Sheet 1 of 1

Date Survey Completed 08/26/2020

☐ Assumed Coordinates

☒ All coordinates on this sheet are Burleigh County ground coordinates. They are derived from the NAD83(2011) reference frame; North Dakota South Zone Combination Factor (cf) = 0.9998720

All coordinates and measurements on this document derived from the International Foot definition.

INITIALIZING BENCH MARK
MIDSTATES VRS (TRIMBLE VRS NOW)

☒ NAVD-88

☐ _____

☐ GEOID12B ☐ _____

☒ GEOID18

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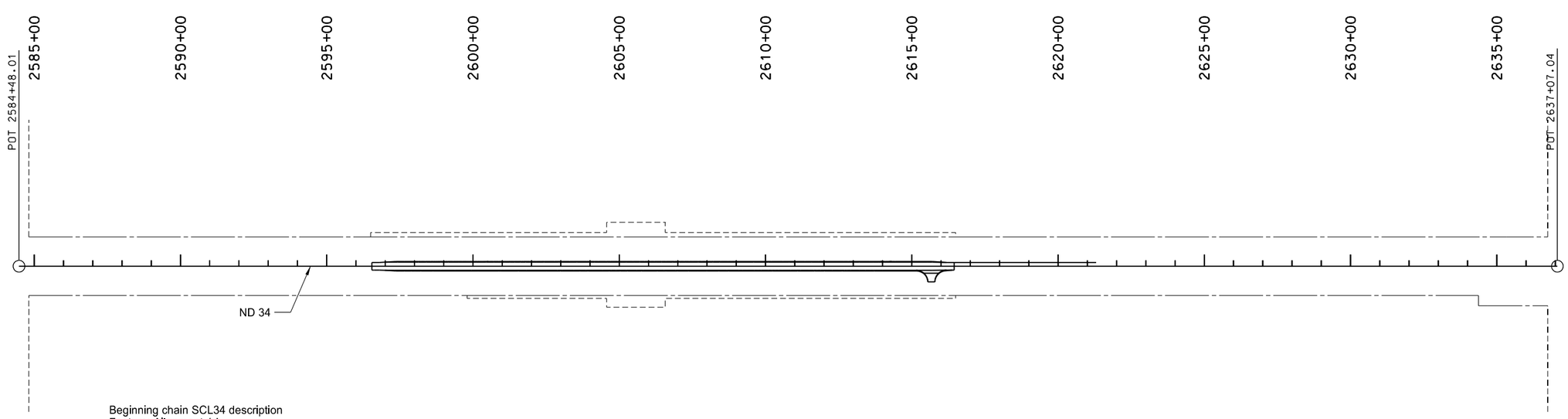
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	82	1



Beginning chain SCL34 description
Feature: Alignment 1 L

==========

Point SCL341 N 316,843.4960 E 2,268,491.9160 Sta 2584+48.01

Course from SCL341 to SCL342 N 88° 50' 41.81" E Dist 5,259.0286

Point SCL342 N 316,949.5080 E 2,273,749.8760 Sta 2637+07.04

==========

Ending chain SCL34 description

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ND 34 Grade Raise

Survey Data Layouts

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	100	1

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
E5-1-48	48"x48"	EXIT GORE		35	
G20-1-60	**60"x24"**	**ROAD WORK NEXT __ MILES**	**2**	**28**	**56**
G20-1b-60	60"x24"	NO WORK IN PROGRESS (Sign and installation only)		18	
G20-2-48	**48"x24"**	**END ROAD WORK**	**2**	**26**	**52**
G20-4-36	**36"x18"**	**PILOT CAR FOLLOW ME (Mounted to back of pilot car)**	**1**	**18**	**18**
G20-4b-36	36"x30"	WAIT FOR PILOT CAR		18	
G20-10-108	**108"x48"**	**CONTRACTOR SIGN**	**2**	**70**	**140**
G20-50a-72	72"x36"	ROAD WORK NEXT __ MILES RT & LT ARROWS		43	
G20-52a-72	72"x24"	ROAD WORK NEXT __ MILES RT or LT ARROW		36	
G20-55-96	**96"x48"**	**SPEED LIMIT ENFORCED - MINIMUM FEE $80 WHEN WORKERS PRESENT**	**2**	**59**	**118**
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)		10	
M1-4-24	24"x24"	U.S. ROUTE MARKER (Post and installation only)		10	
M1-5-24	24"x24"	STATE ROUTE MARKER (Post and installation only)		10	
M3-1-24	24"x12"	NORTH (Mounted on route marker post)		7	
M3-2-24	24"x12"	EAST (Mounted on route marker post)		7	
M3-3-24	24"x12"	SOUTH (Mounted on route marker post)		7	
M3-4-24	24"x12"	WEST (Mounted on route marker post)		7	
M4-8-24	24"x12"	DETOUR (Mounted on route marker post)		7	
M4-9-30	30"x24"	DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT		15	
M4-10-48	48"x18"	DETOUR (INSIDE ARROW) RIGHT or LEFT (Mounted on barricade)		7	
M5-1-21	21"x15"	ADVANCE TURN ARROW RT or LT(Mounted on route marker post)		7	
M5-1-30	30"x21"	ADVANCE TURN ARROW RT or LT(Mounted on route marker post)		9	
M6-1-21	21"x15"	DIRECTIONAL ARROW RT or LT (Mounted on route marker post)		7	
M6-1-30	30"x21"	DIRECTIONAL ARROW RT or LT (Mounted on route marker post)		9	
M6-3-21	21"x15"	DIRECTIONAL ARROW UP (Mounted on route marker post)		7	
R1-1-48	**48"x48"**	**STOP**	**1**	**32**	**32**
R1-2-60	60"x60"	YIELD		29	
R2-1-36	**36"x48"**	**SPEED LIMIT __ (Portable only)**	**4**	**30**	**120**
R2-1-48	48"x60"	SPEED LIMIT __		39	
R2-1aP-24	**24"x18"**	**MINIMUM FEE $80 (Mounted on Speed Limit post)**	**2**	**10**	**20**
R3-2-48	48"x48"	NO LEFT TURN		35	
R4-1-48	**48"x60"**	**DO NOT PASS**	**2**	**39**	**78**
R4-7-48	48"x60"	KEEP RIGHT		39	
R5-1-48	48"x48"	DO NOT ENTER		35	
R6-1-54	54"x18"	ONE WAY RIGHT or LEFT (Mounted on STOP or DO NOT ENTER post)		14	
R7-1-12	12"x18"	NO PARKING ANY TIME		11	
R10-6-24	24"x36"	STOP HERE ON RED		16	
R11-2-48	48"x30"	ROAD CLOSED (Mounted on barricade)		12	
R11-2a-48	48"x30"	STREET CLOSED (Mounted on barricade)		12	
R11-3a-60	60"x30"	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)		15	
R11-3c-60	60"x30"	STREET CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)		15	
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC (Mounted on barricade)		15	
W1-3-48	48"x48"	REVERSE TURN RIGHT or LEFT		35	
W1-4-48	48"x48"	REVERSE CURVE RIGHT or LEFT		35	
W1-4b-48	48"x48"	TWO LANE REVERSE CURVE RIGHT or LEFT		35	
W1-6-48	48"x24"	ONE DIRECTION LARGE ARROW		26	
W3-1-48	48"x48"	STOP AHEAD		35	
W3-3-48	48"x48"	SIGNAL AHEAD		35	
W3-4-48	**48"x48"**	**BE PREPARED TO STOP**	**2**	**35**	**70**
W3-5-48	**48"x48"**	**SPEED REDUCTION AHEAD**	**2**	**35**	**70**
W4-2-48	48"x48"	LANE ENDS RIGHT or LEFT		35	
W5-1-48	48"x48"	ROAD NARROWS		35	
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE		35	
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW		35	
W6-3-48	48"x48"	TWO WAY TRAFFIC		35	
W8-1-48	**48"x48"**	**BUMP**	**4**	**35**	**140**
W8-3-48	**48"x48"**	**PAVEMENT ENDS**	**2**	**35**	**70**
W8-7-48	48"x48"	LOOSE GRAVEL		35	
W8-11-48	**48"x48"**	**UNEVEN LANES**	**2**	**35**	**70**
W8-12-48	48"x48"	NO CENTER LINE		35	
W8-17-48	48"x48"	SHOULDER DROP-OFF SYMBOL		35	
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY		35	
W8-54-48	**48"x48"**	**TRUCKS ENTERING AHEAD or __ FT or _ MILE**	**2**	**35**	**70**
W8-55-48	48"x48"	TRUCKS CROSSING AHEAD or __ FT or _ MILE		35	
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY		35	
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL		35	
W12-2-48	48"x48"	LOW CLEARANCE		35	
W13-1P-30	**30"x30"**	**__ MPH ADVISORY SPEED PLAQUE (Mounted on warning sign post)**	**2**	**14**	**28**
W14-3-64	64"x48"	NO PASSING ZONE		28	
W16-2P-30	30"x24"	__ FEET PLAQUE (Mounted on warning sign post)		10	
W20-1-48	**48"x48"**	**ROAD WORK AHEAD or _FT or _ MILE**	**2**	**35**	**70**
W20-2-48	48"x48"	DETOUR AHEAD or __ FT or _ MILE		35	
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or __ FT or _ MILE		35	
W20-4-48	48"x48"	ONE LANE ROAD AHEAD or __ FT or _ MILE		35	
W20-5-48	48"x48"	RIGHT or CENTER or LEFT LANE CLOSED AHEAD or __ FT or _ MILE		35	
W20-7-48	**48"x48"**	**FLAGGER**	**2**	**35**	**70**
W20-8-18	**18"x18"**	**STOP - SLOW PADDLE Back to Back**	**2**	**5**	**10**
W20-52P-54	**54"x12"**	**NEXT __ MILES (Mounted on warning sign post)**	**2**	**12**	**24**
W21-1-48	48"x48"	WORKERS		35	
W21-2-48	**48"x48"**	**FRESH OIL**	**2**	**35**	**70**
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or __ FT or _ MILE		35	
W21-5-48	**48"x48"**	**SHOULDER WORK**	**2**	**35**	**70**
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED		35	
W21-5b-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or __ FT or _ MILE		35	
W21-6-48	48"x48"	SURVEY CREW		35	
W21-50-48	48"x48"	BRIDGE PAINTING AHEAD or __ FT		35	
W21-51-48	48"x48"	MATERIAL ON ROADWAY		35	
W21-52-48	48"x48"	PAVEMENT BREAKS		35	
W21-53-48	**48"x48"**	**RUMBLE STRIPS AHEAD**	**2**	**35**	**70**
W22-8-48	48"x48"	FRESH OIL LOOSE ROCK		35	

SPECIAL SIGNS

SPEC & CODE

704-1000	**TRAFFIC CONTROL SIGNS**	**TOTAL UNITS**	**1536**

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY
704-0100	**FLAGGING**	**MHR**	**2200**
704-1048	**PORTABLE RUMBLE STRIPS**	**EACH**	**2**
704-1050	TYPE I BARRICADES	EACH	
704-1052	TYPE III BARRICADES	EACH	
704-1060	DELINEATOR DRUMS	EACH	
704-1065	TRAFFIC CONES	EACH	
704-1067	**TUBULAR MARKERS**	**EACH**	**45**
704-1070	DELINEATOR	EACH	
704-1072	FLEXIBLE DELINEATORS	EACH	
704-1080	**STACKABLE VERTICAL PANELS**	**EACH**	**160**
704-1081	VERTICAL PANELS - BACK TO BACK	EACH	
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH	
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH	
704-1087	SEQUENCING ARROW PANEL - TYPE C	EACH	
704-1185	**PILOT CAR**	**HR**	**1100**
704-1500	OBLITERATION OF PVMT MK	SF	
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF	
704-3510	PRECAST CONCRETE MED BARRIER - STATE FURNISHED	EACH	
762-0200	RAISED PAVEMENT MARKERS	EACH	
762-0420	SHORT TERM 4IN LINE - TYPE R	LF	
762-0430	**SHORT TERM 4IN LINE - TYPE NR**	**LF**	**13180**

NOTE:
If additional signs are required, units will be calculated using the formula from Section III-18.06 of the Design Manual.
http://www.dot.nd.gov/

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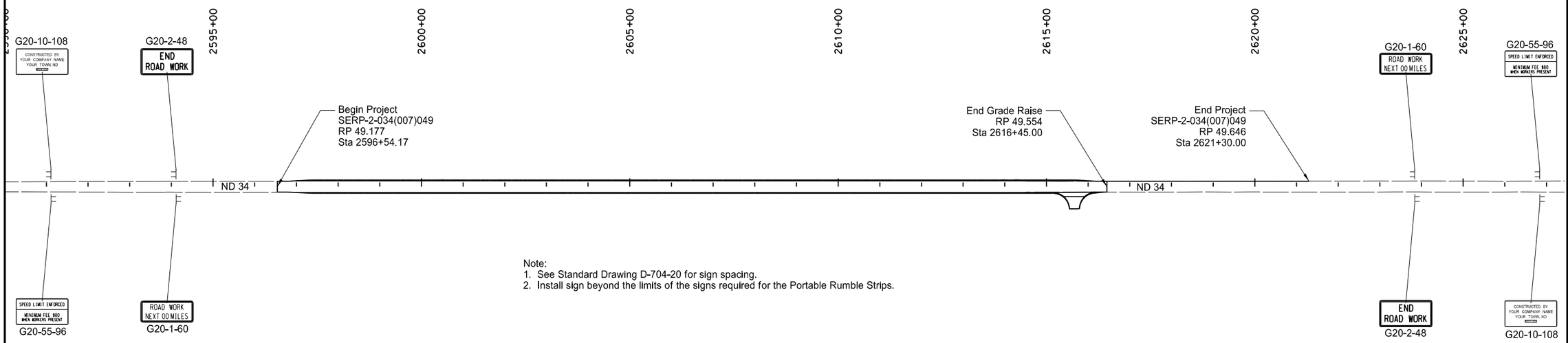
Traffic Control Devices List

ND 34 Grade Raise

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	100	2



Note:
1. See Standard Drawing D-704-20 for sign spacing.
2. Install sign beyond the limits of the signs required for the Portable Rumble Strips.

N

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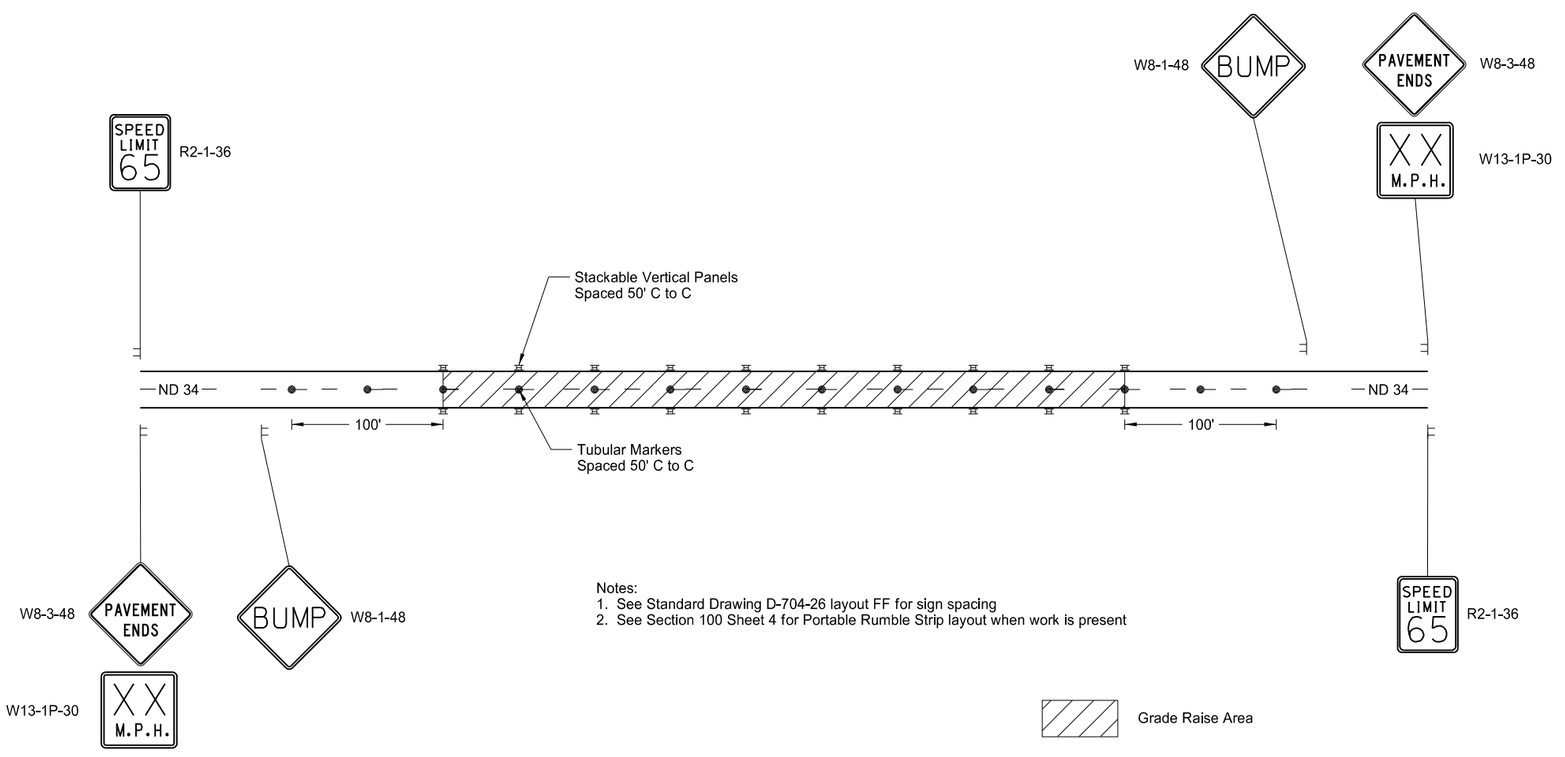
ND 34 Grade Raise

Traffic Control Layouts
Overview

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	100	3



Notes:
1. See Standard Drawing D-704-26 layout FF for sign spacing
2. See Section 100 Sheet 4 for Portable Rumble Strip layout when work is present

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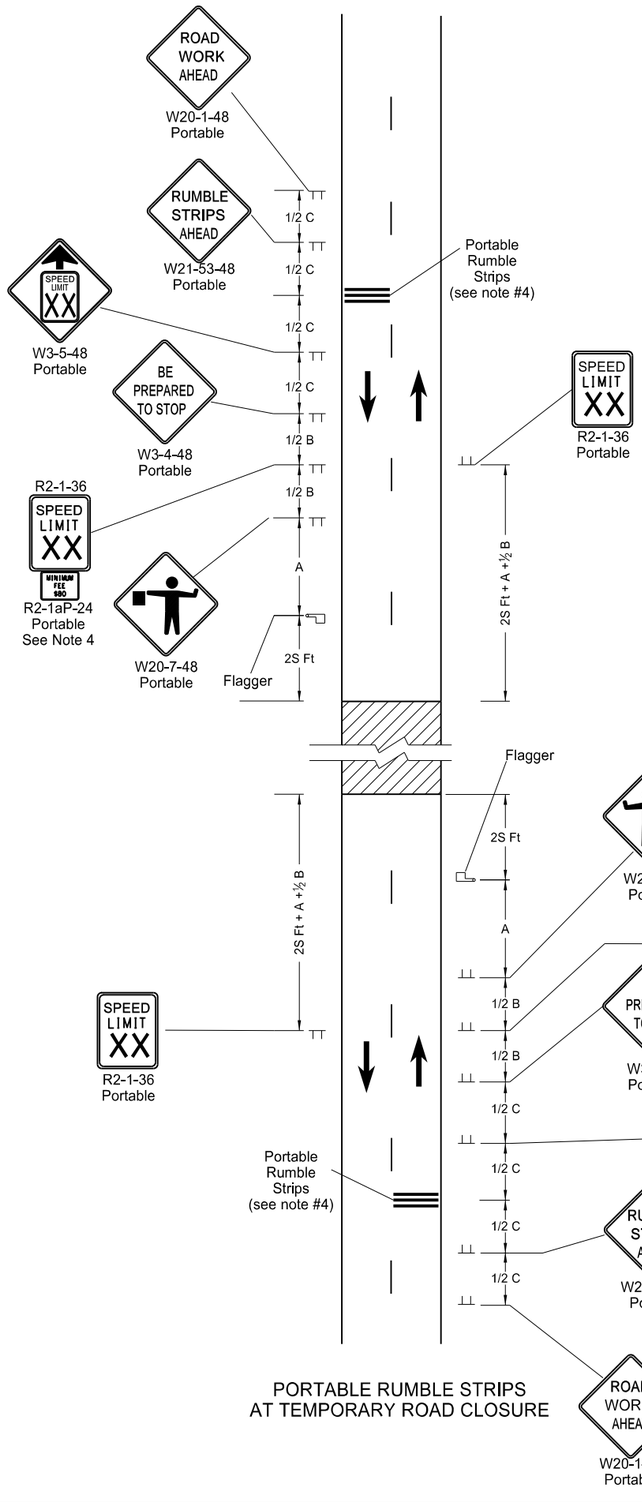
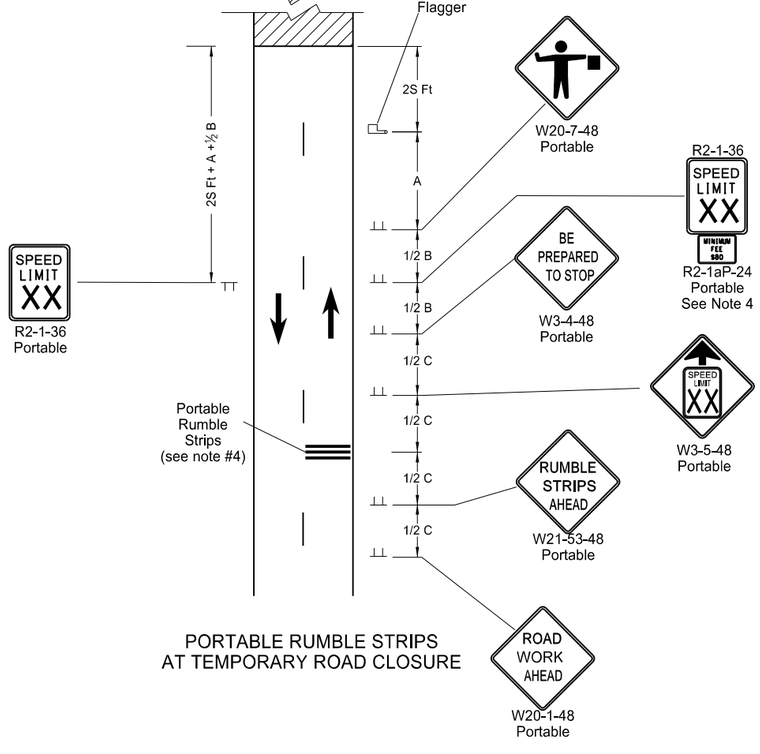
ND 34 Grade Raise

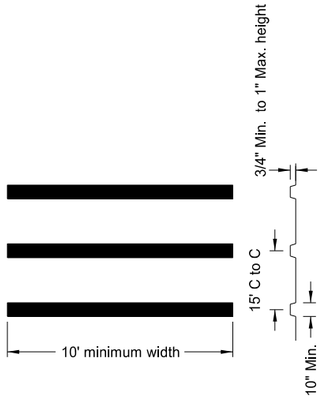
Traffic Control Layouts
Non-Working Hours

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	100	4

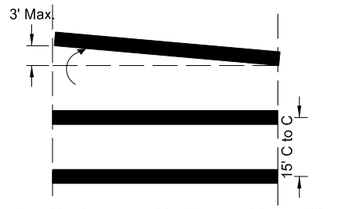


PORTABLE RUMBLE STRIPS AT TEMPORARY ROAD CLOSURE

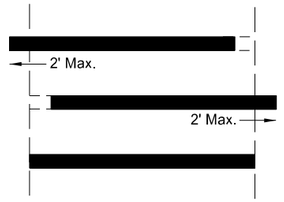




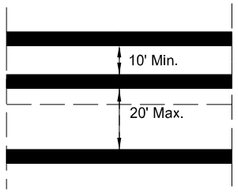
PORTABLE RUMBLE STRIPS ARRAY DETAIL



Reposition if movement is >3' from original position.
Skewing



Reposition if movement is >2' from original position.
Lateral



Reposition if distance between strips is <10' or >20'.
Perpendicular to Travel with or against traffic

PORTABLE RUMBLE STRIPS ARRAY TYPES OF MOVEMENT AND MAXIMUM ALLOWANCES

Notes:
1. Number of devices were calculated using 40 mph. Speed determined in the field based on location and conditions.
2. Re-establish the speed limit. Determine the exact speed limit in the field, dependent on location and conditions.
3. Sign R2-1aP-24 is not required when pilot car operation is used.
4. Rumble strips are not used on a non paved surface or in a pre-construction speed zone of 25 mph or less.

ADVANCE WARNING SIGN SPACING			
Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720

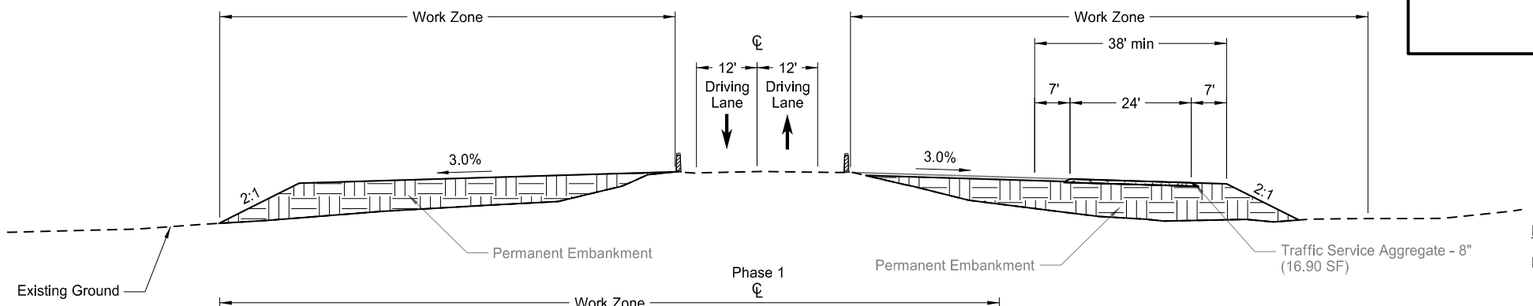
KEY
- Work area
- Flagger
- Sign

S = Numerical value of speed limit or 85th percentile.

ND 34 Grade Raise

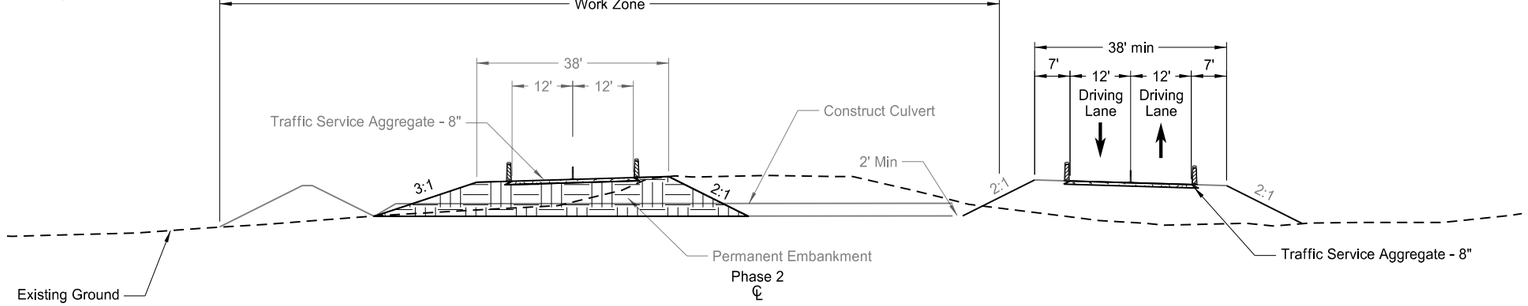
Traffic Control Layouts
Two-Lane Portable Rumble Strips

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	100	5

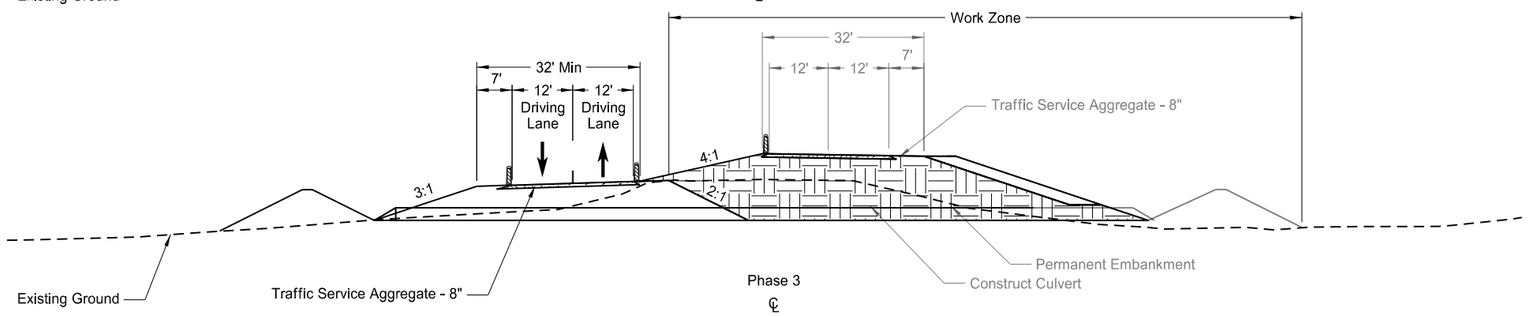


Phase 1

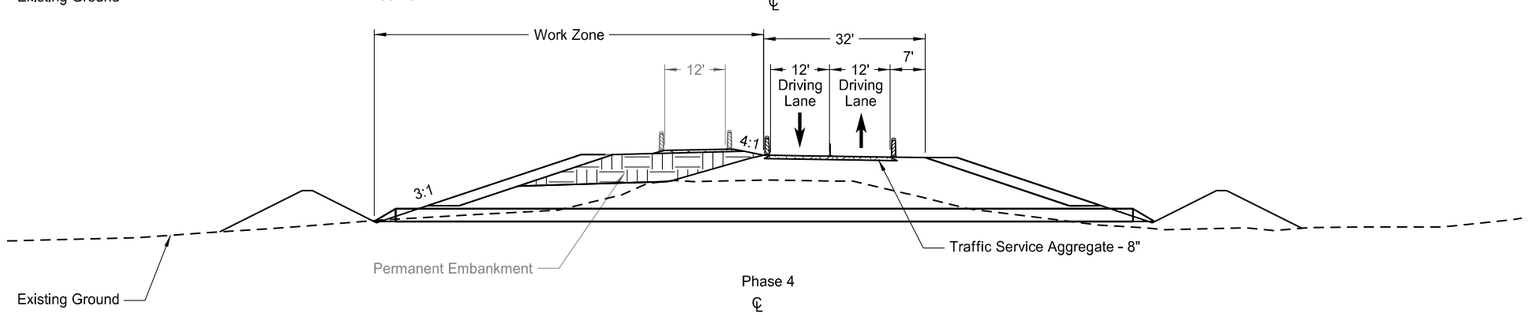
Phase 2



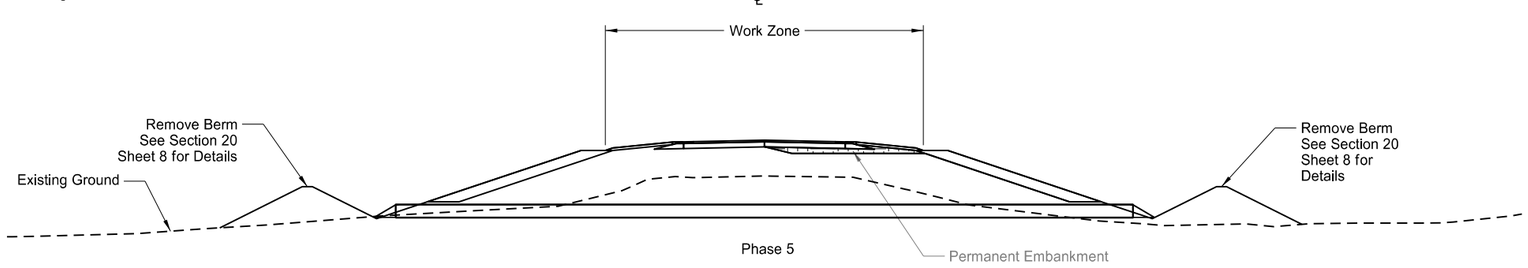
Phase 3



Phase 4



Phase 5



SPEC CODE	BID ITEM	QTY	UNIT
302 0050	TRAFFIC SERVICE AGGREGATE		
	Traffic Service Aggregate	6,000	TON

Phasing Notes:

Phase 1: Construct embankment to the existing road elevation on both sides of the road, extending out to the end of the berm. Place 8" of Traffic Service Aggregate 24' wide 7' from the south side of the embankment and shift traffic to the Traffic Service Aggregate.

Phase 2: -On the north side, excavate embankment, leaving the berm, and construct as much of the pipe as possible while leaving at least a 2:1 inslope.
-Place embankment on top of the pipe up to the existing roadway grade and place 8" of Traffic Service Aggregate.
-Shift traffic to the new driving surface and salvage the traffic service aggregate.

Phase 3: -On the south side, excavate embankment, leaving the berm and construct the remaining pipe while leaving at least a 2:1 inslope.
-Place embankment on top of the pipe and build the embankment up to provide a 32' minimum flat surface with a 4:1 minimum inslope.
-Place Traffic Service Aggregate 7' from the south edge.
-Shift traffic to the new driving surface and salvage the traffic service aggregate.

Phase 4: -Place the permanent embankment on the north side up to the finished subgrade elevation with a 4:1 minimum inslope.
-Place a minimum of 12' of Aggregate Base Course Cl 5 on the north end to allow for one lane of traffic.

Phase 5: -Build remaining embankment and aggregate base to finished grade elevation, shifting traffic back and forth as necessary.

Notes:

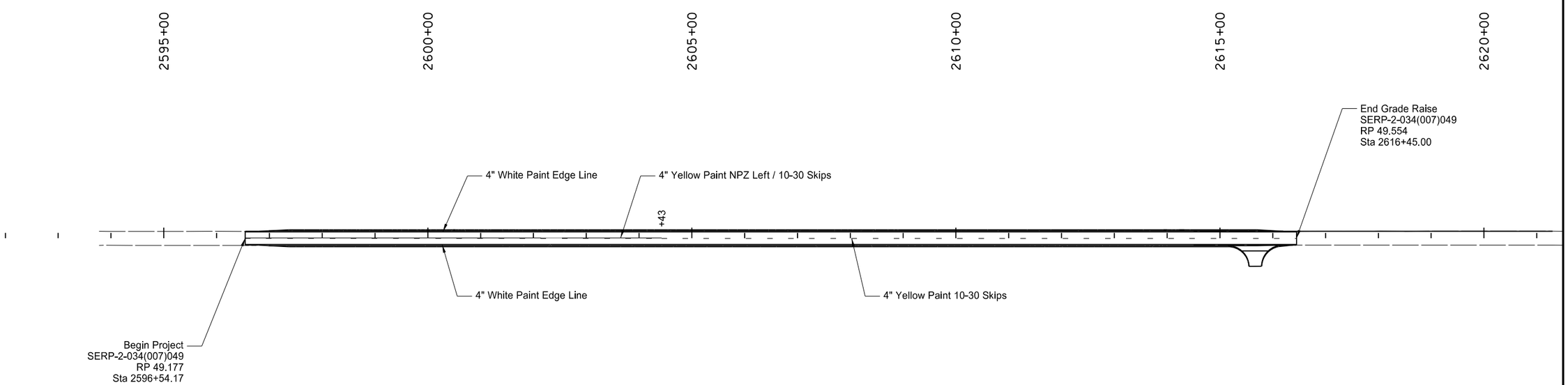
1. Lane widths shown are measured from the inside of the traffic channelization device.
2. See Section 6, Sheet 3 for more traffic control information.
3. Salvage Traffic Service Aggregate for reuse in subsequent phases.

ND 34 Grade Raise

Traffic Control Phasing

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	120	1

SPEC	CODE	BID ITEM	QTY	UNIT
762	1104	PVMT MK PAINTED 4IN LINE		
		Edge Line (White)	3,990	LF
		10-30 Skips (Yellow)	310	LF
		NPZ Left / 10-30 Skips (Yellow)	990	LF



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ND 34 Grade Raise

Pavement Marking

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SERP-2-034(007)049	180	1

SPEC	CODE	BID ITEM	QTY	UNIT
203	0122	TOPSOIL-DEPT OPTION BORROW AREA		
		Borrow Pit Location	15,818	CY
251	0200	SEEDING CLASS II		
		Borrow Pit Location	19.60	ACRE
253	0101	STRAW MULCH		
		Borrow Pit Location	19.60	ACRE
260	0200	SILT FENCE SUPPORTED		
		Borrow Pit Perimeter	5,120	LF
260	0201	REMOVE SILT FENCE SUPPORTED		
		Borrow Pit Perimeter	5,120	LF

Note:
1) Topsoil, Seeding, Mulch bid items are calculated from a square borrow area two feet deep.

2) Chain for borrow area staking will be provided in supplemental design data.

3) Maintain access road and restore to preconstruction condition or better at no cost to the owner.

SF — Silt Fence

Area available for borrow removal and associated construction activities. Keep all work and stockpile material within hatched area.

N

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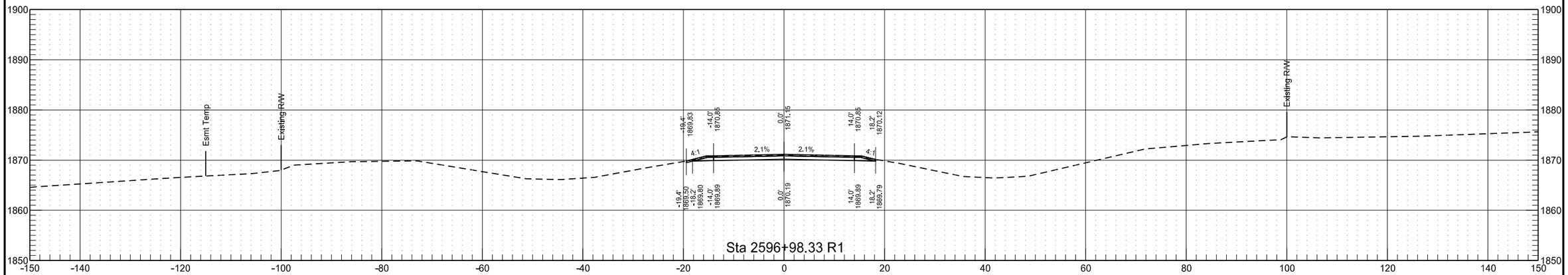
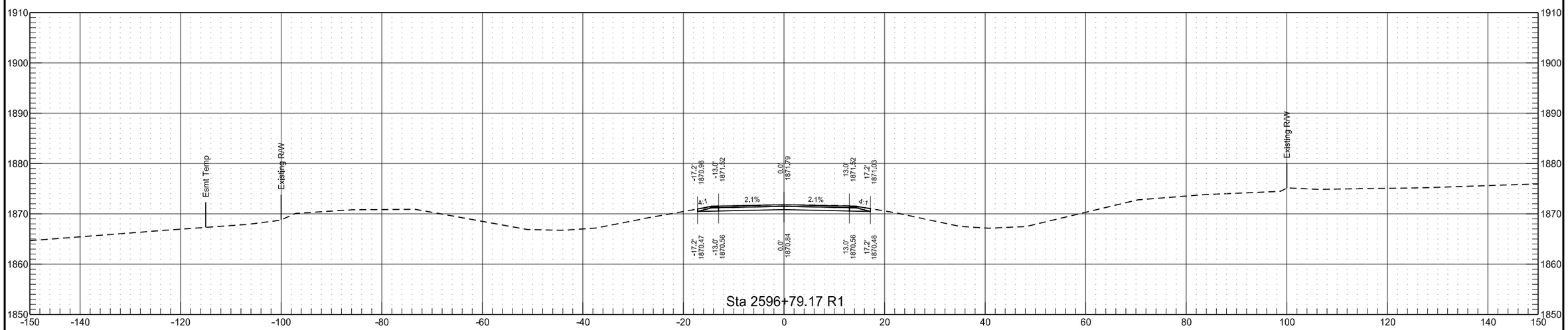
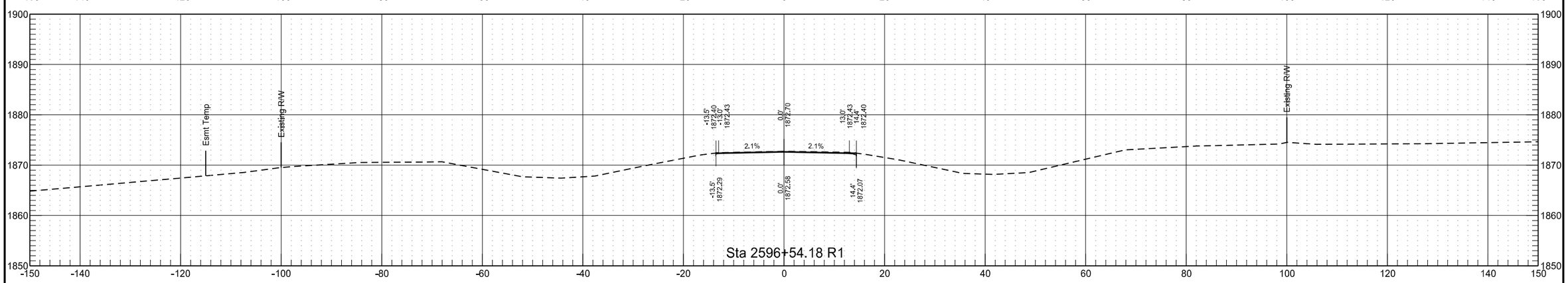
ND 34 Grade Raise

Borrow Pit Locations

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SERP-2-034(007)049	200	1







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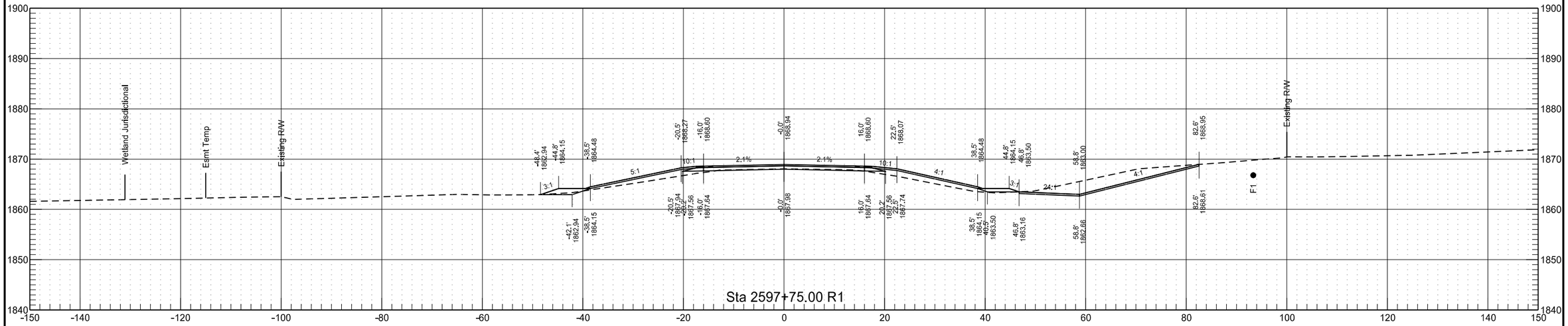

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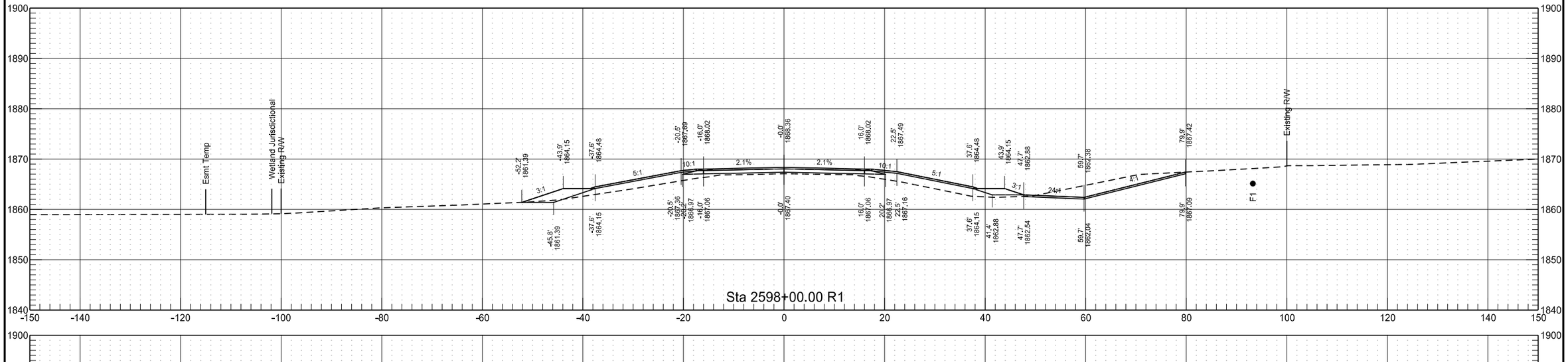

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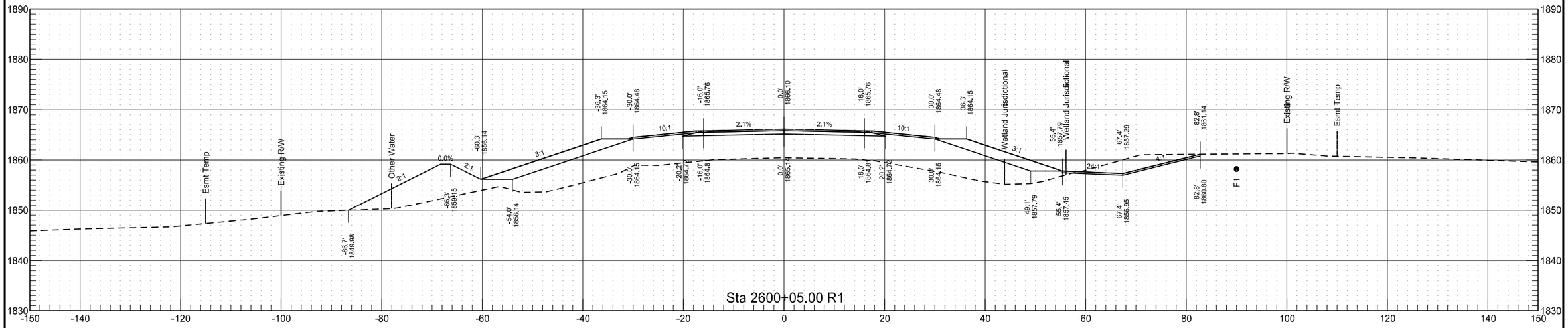

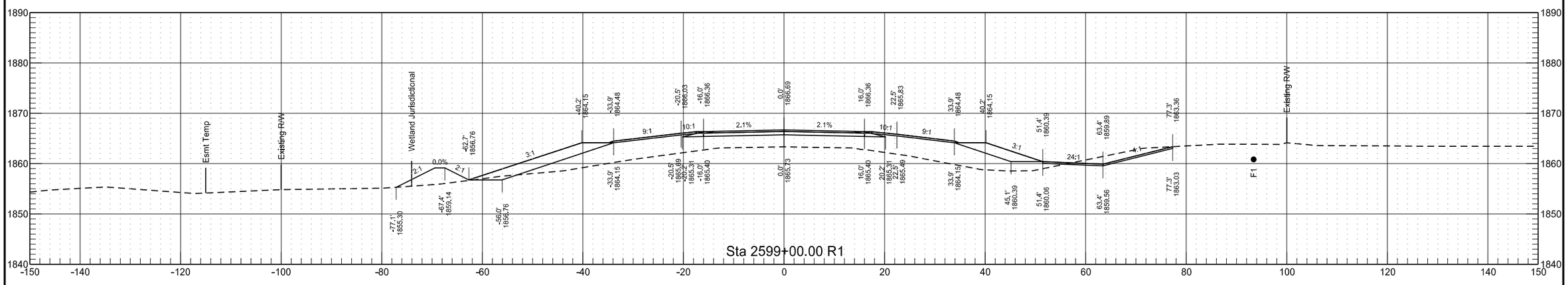

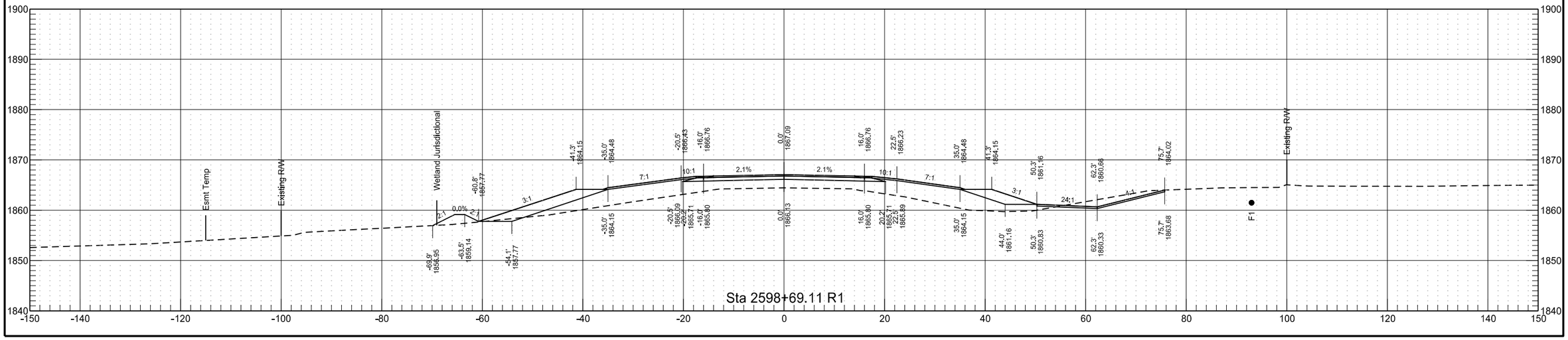

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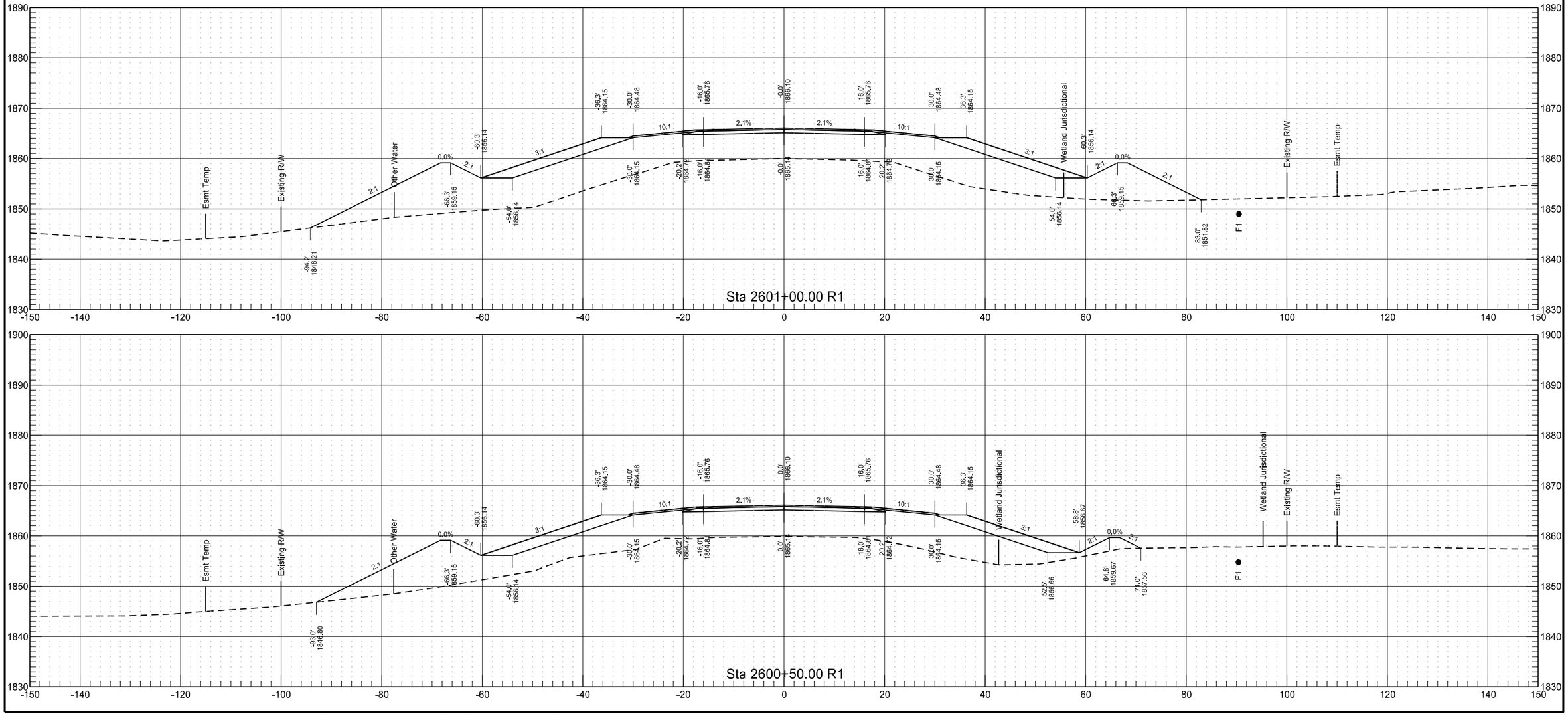

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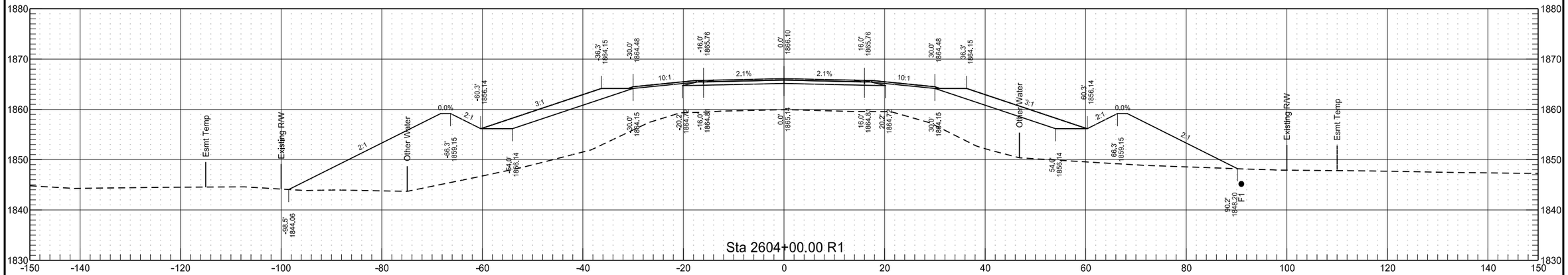

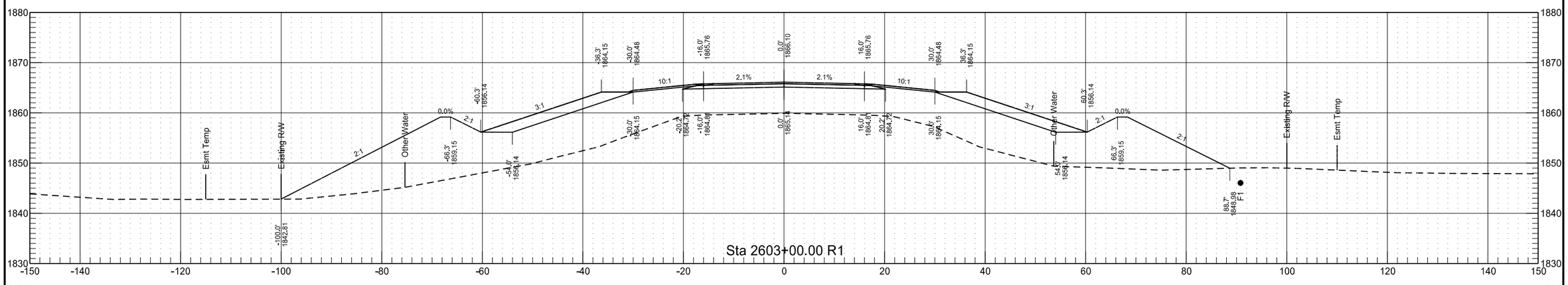

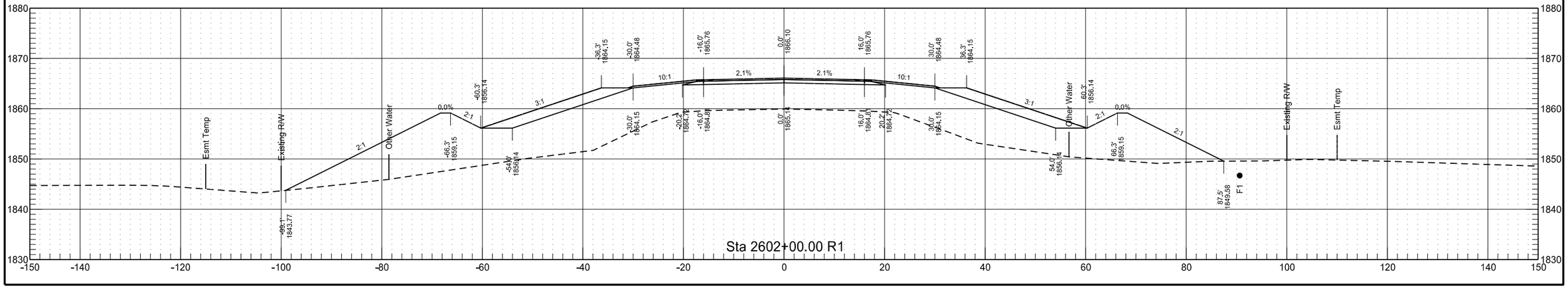

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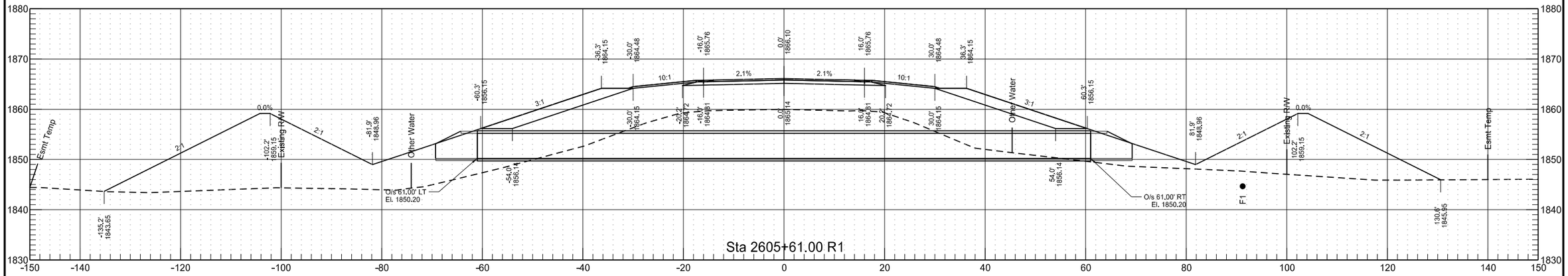

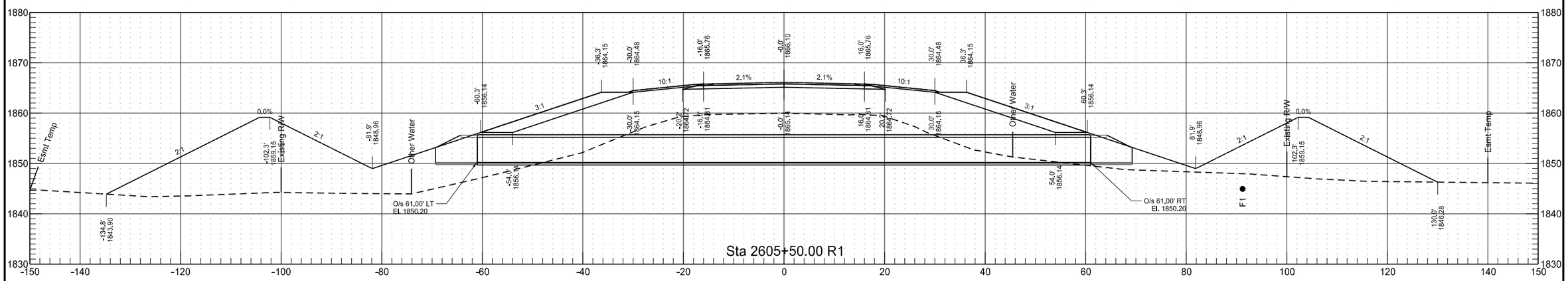

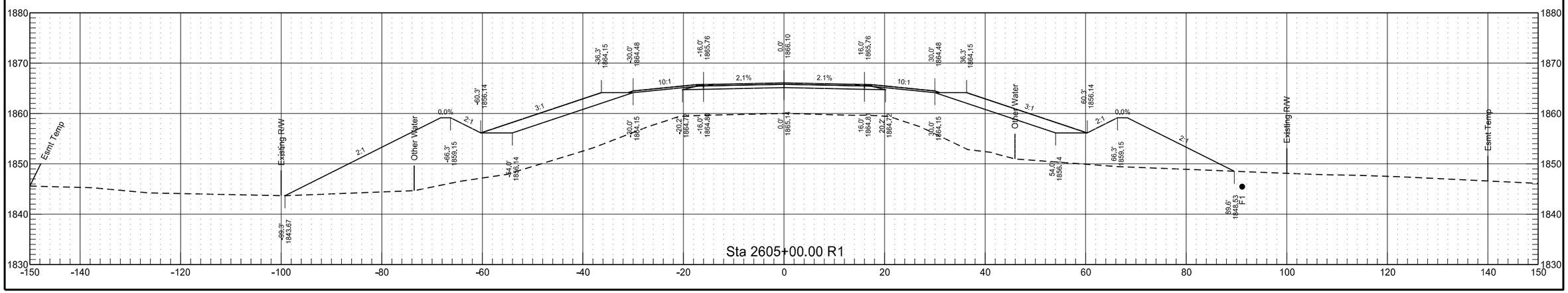

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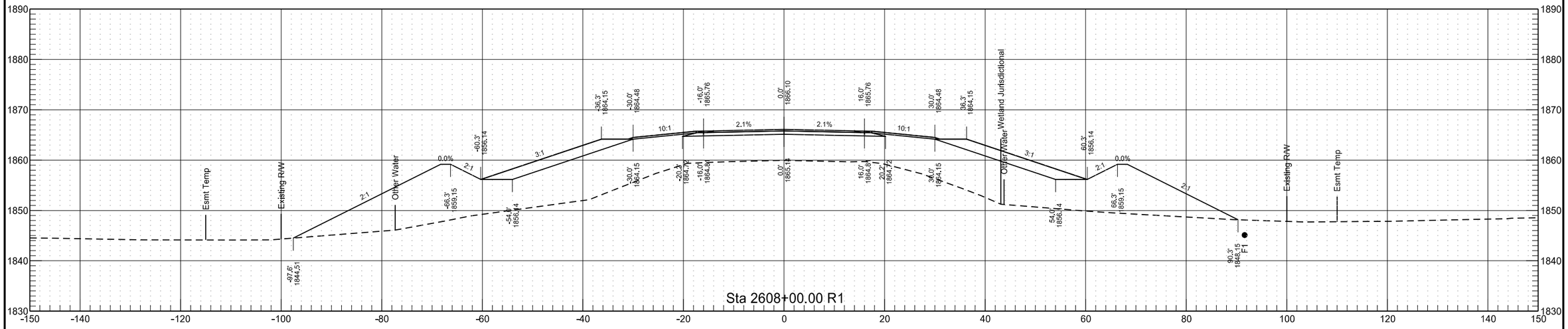

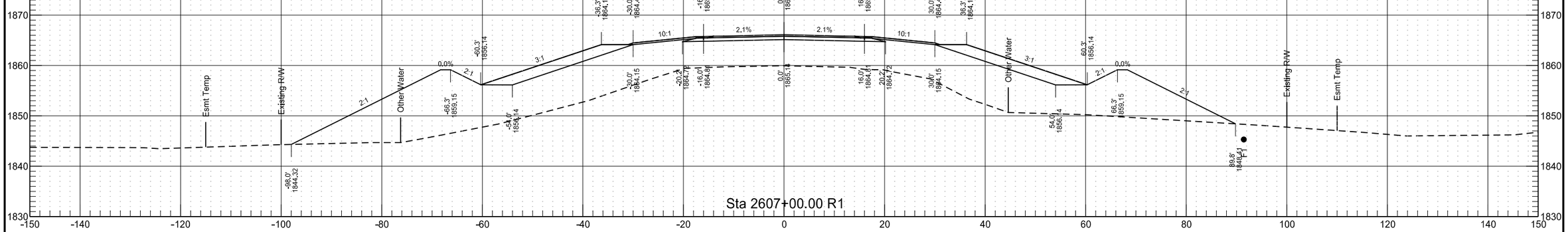

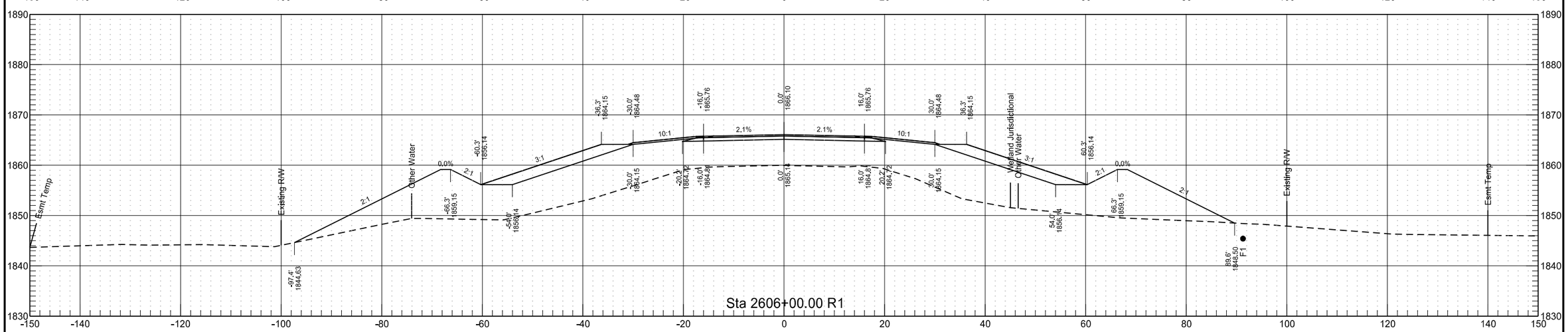

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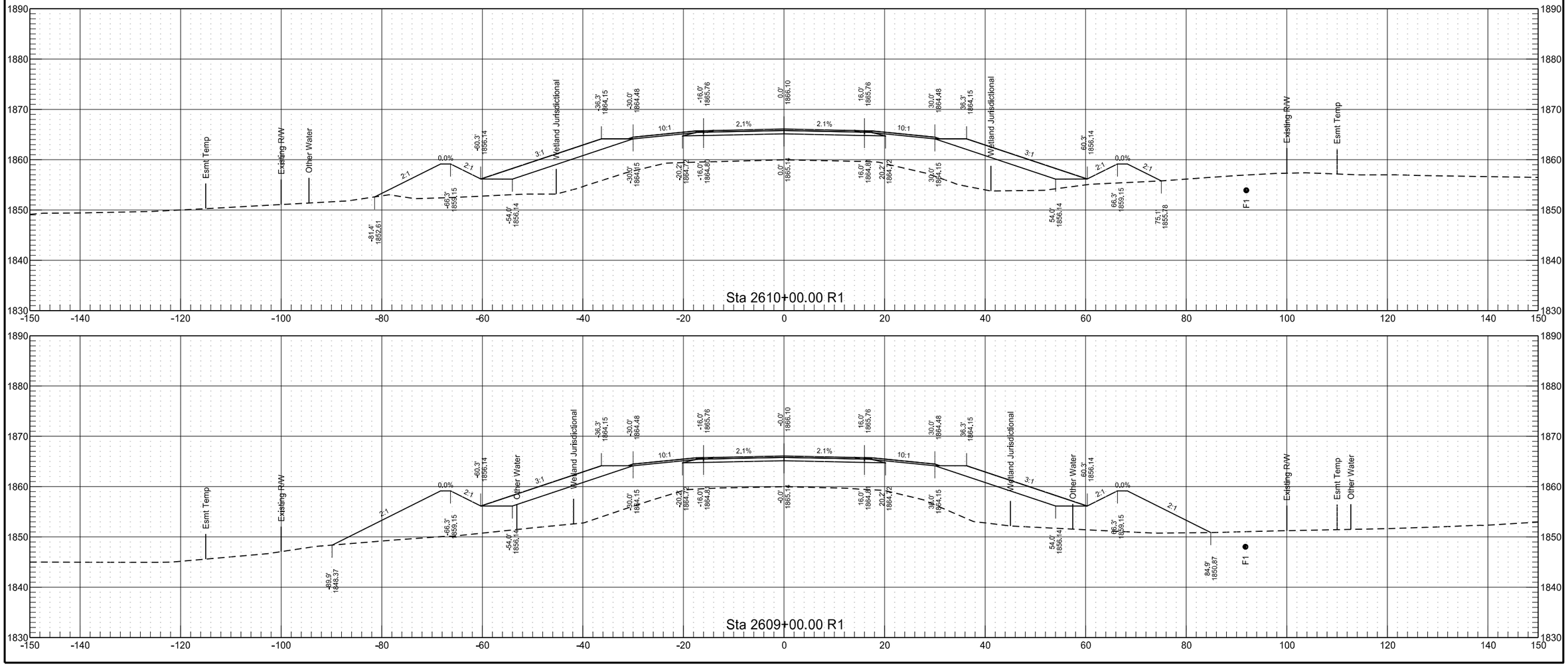

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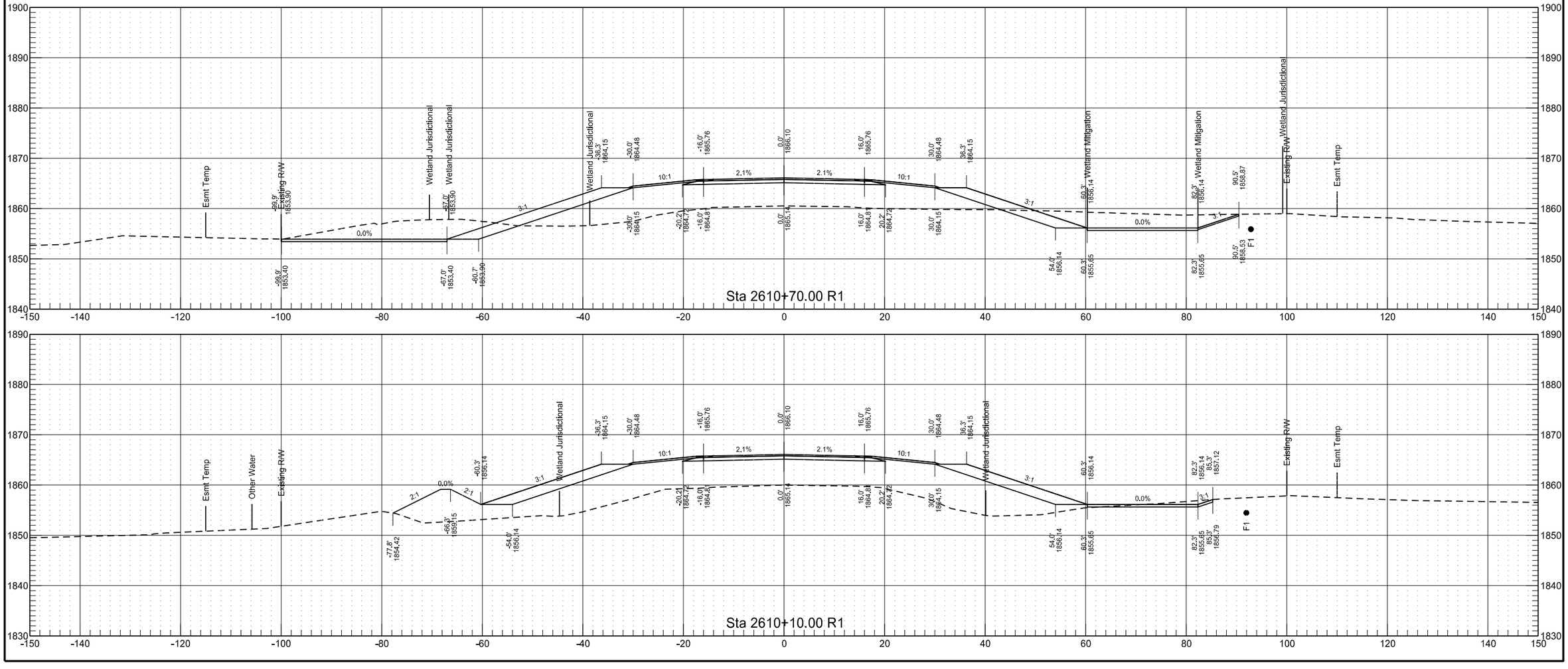

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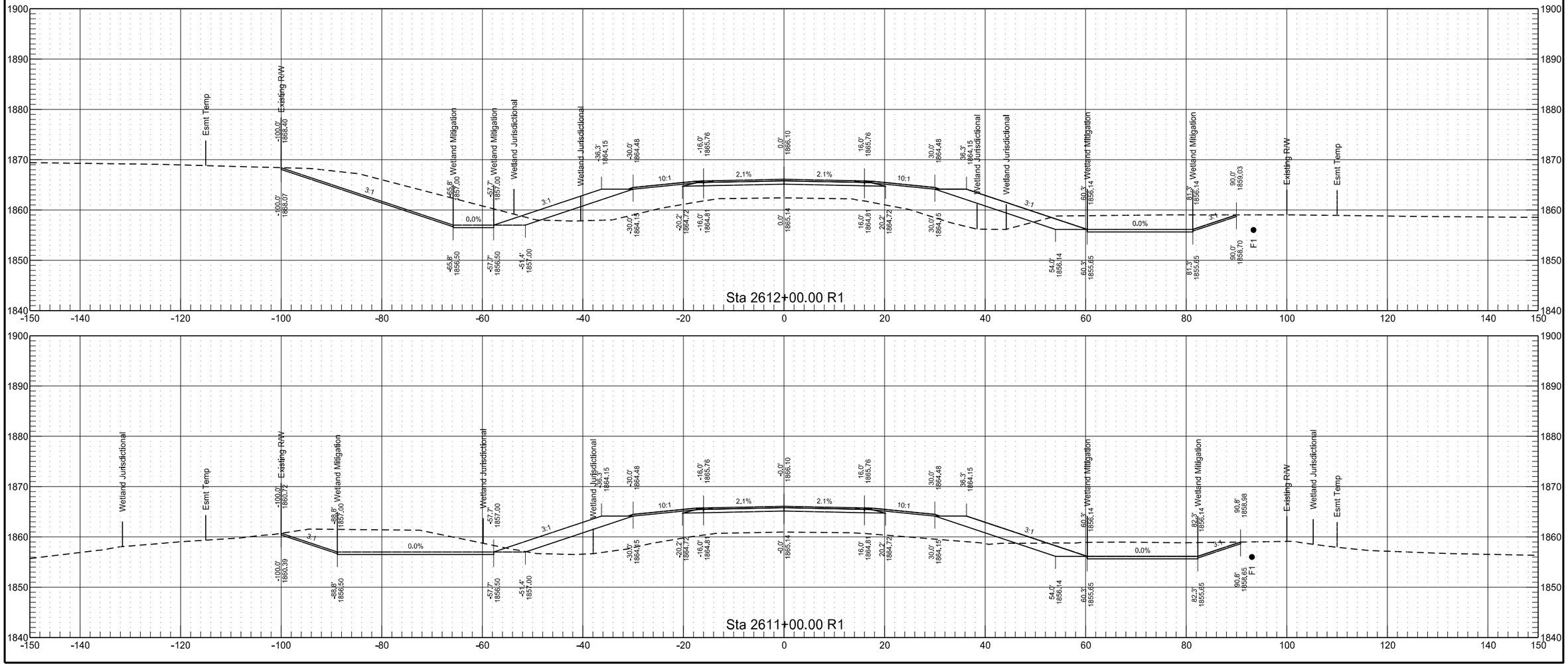

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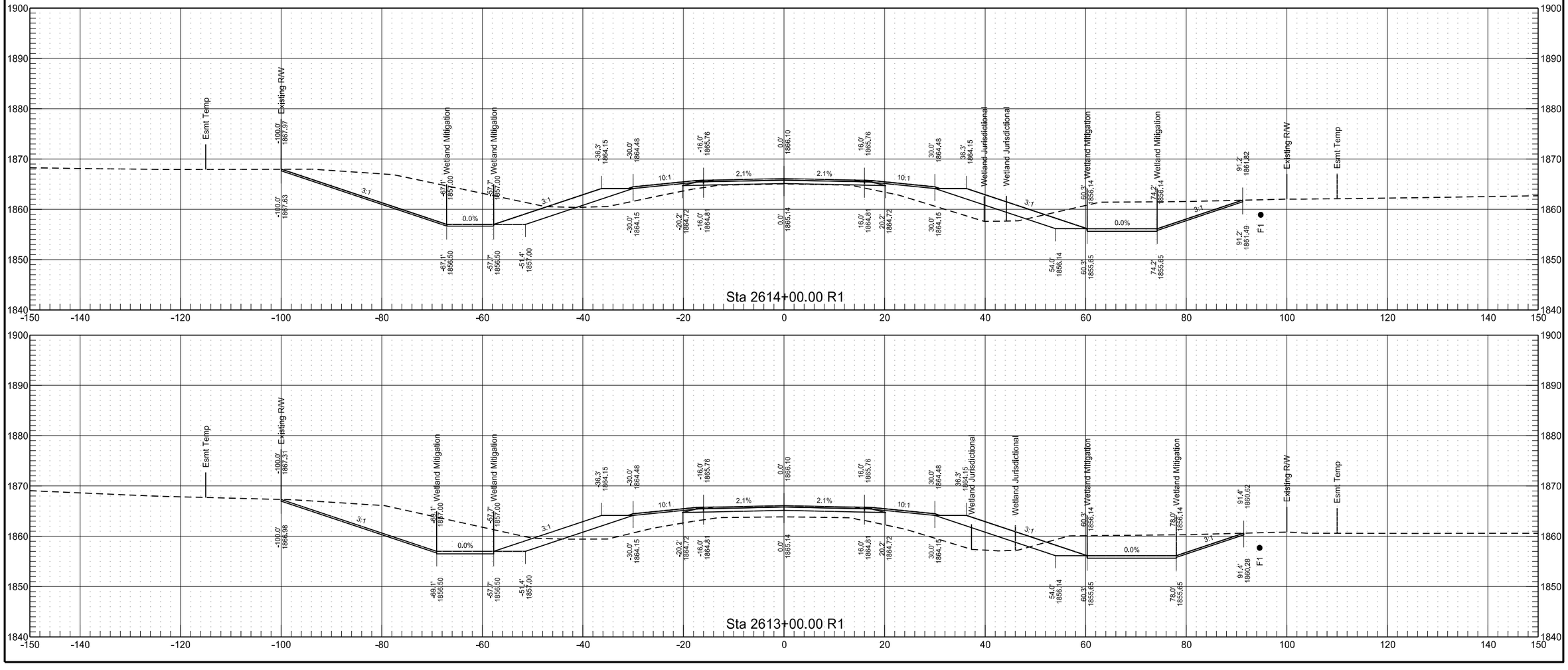

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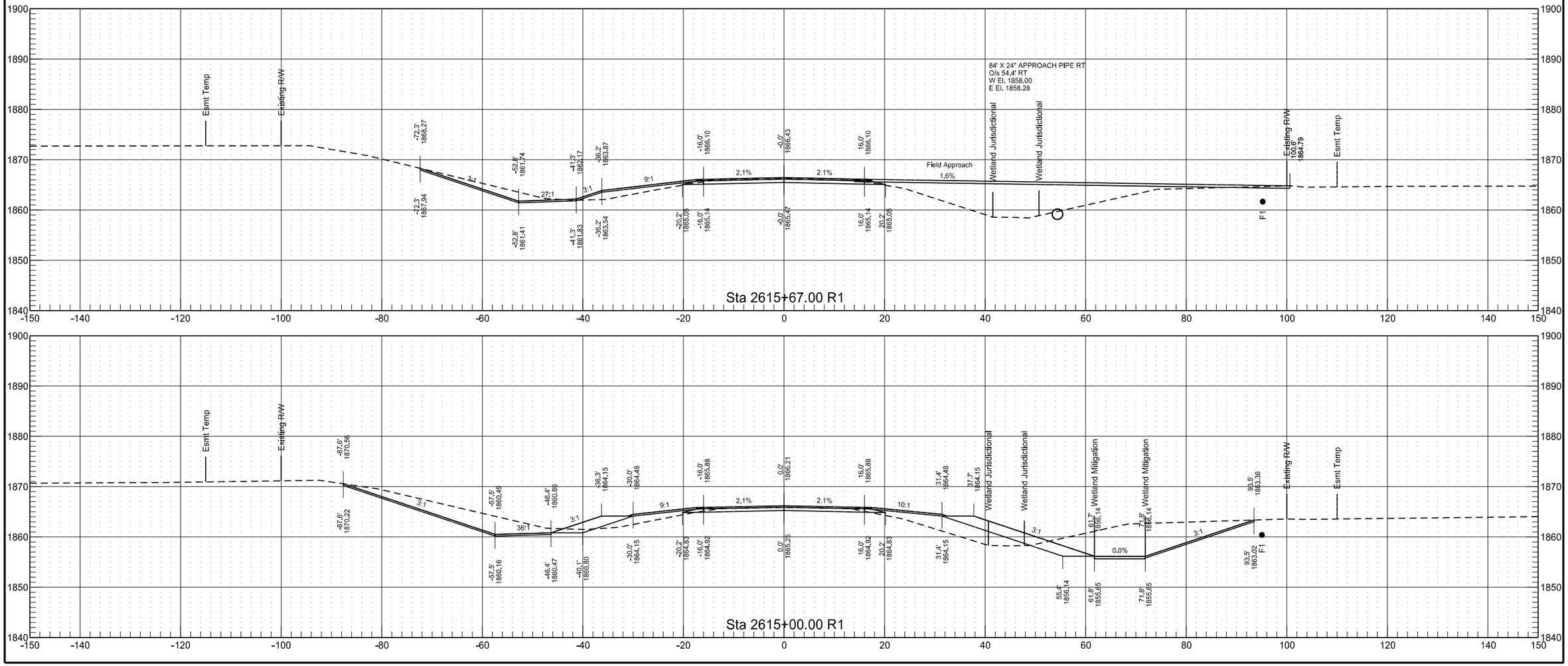

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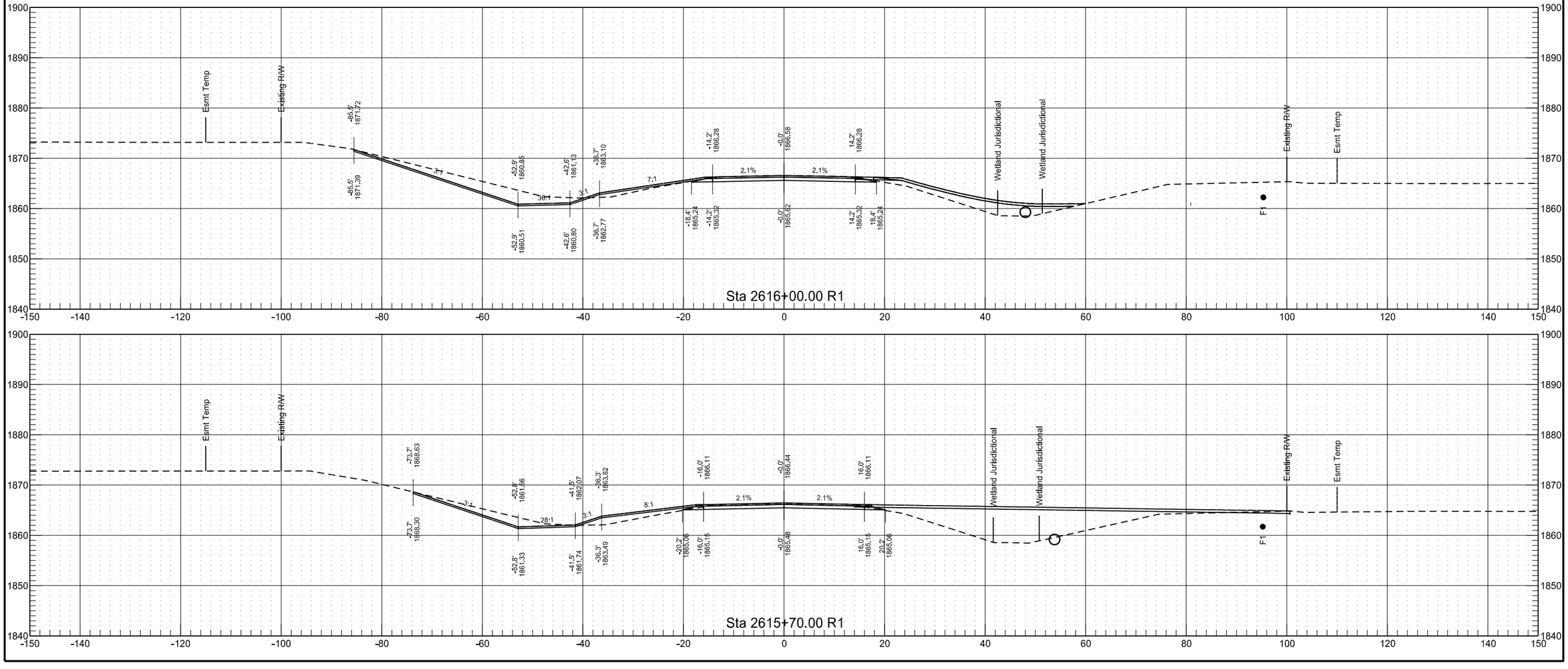

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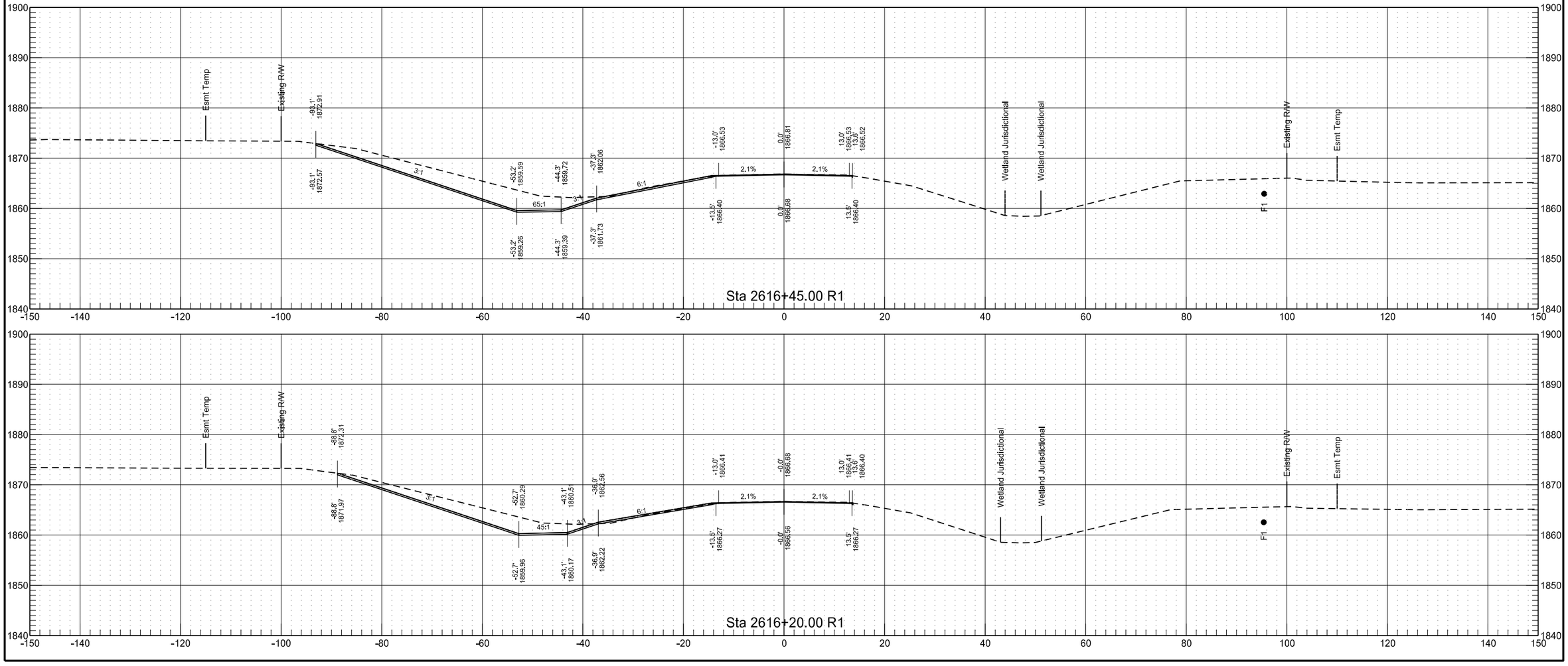

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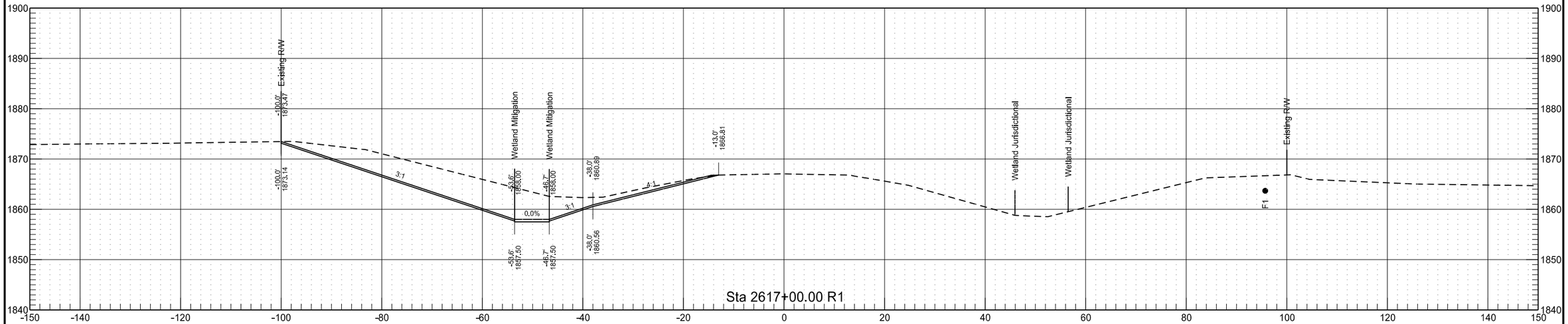

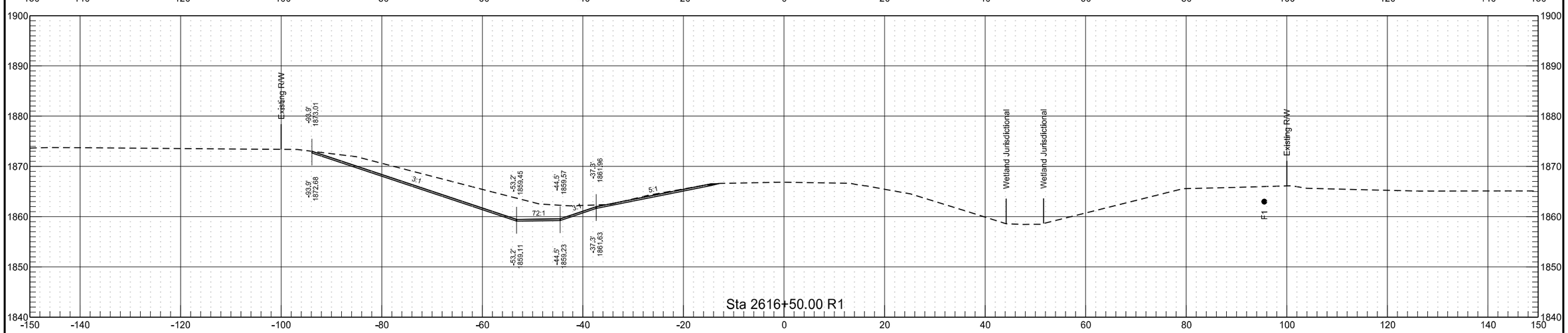

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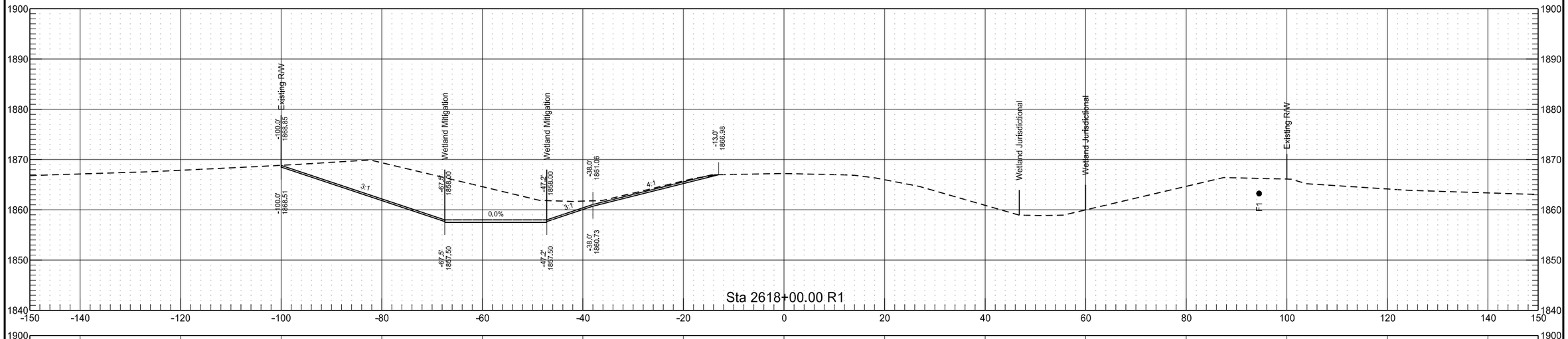

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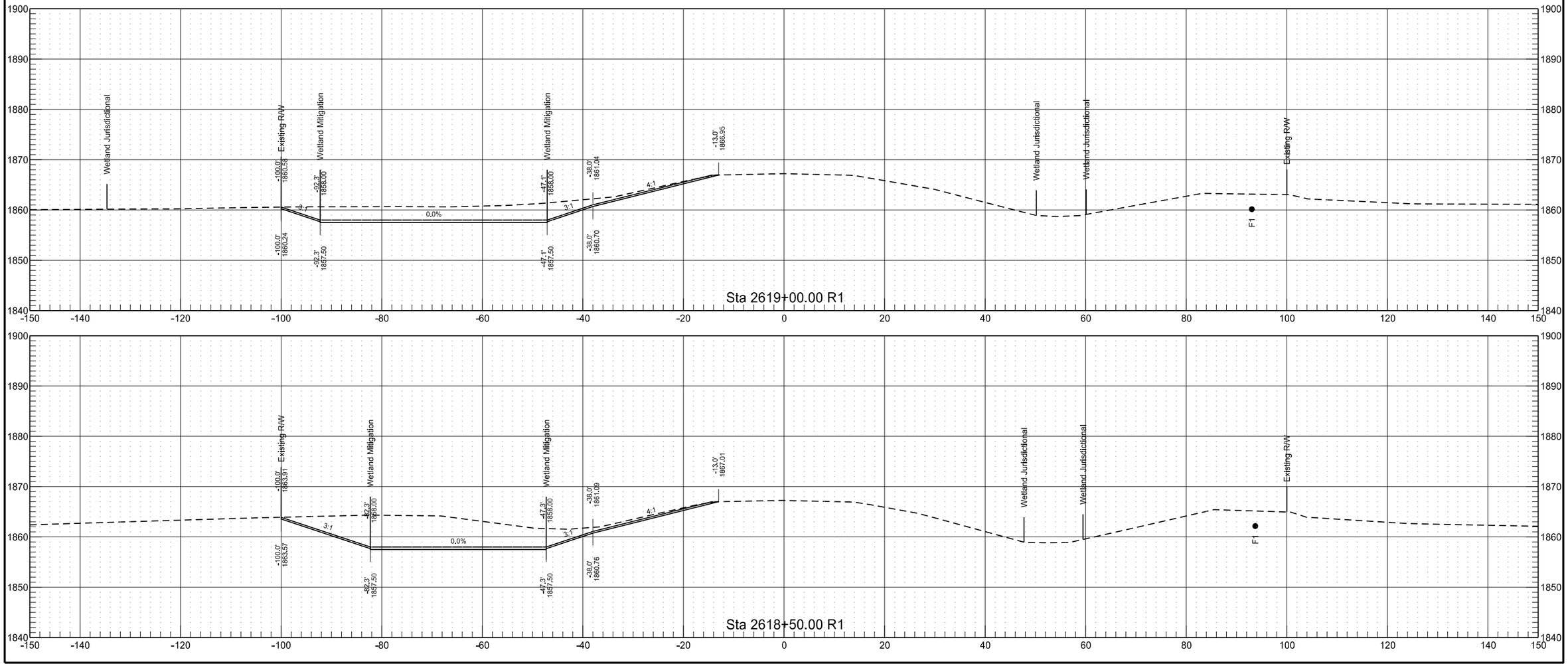

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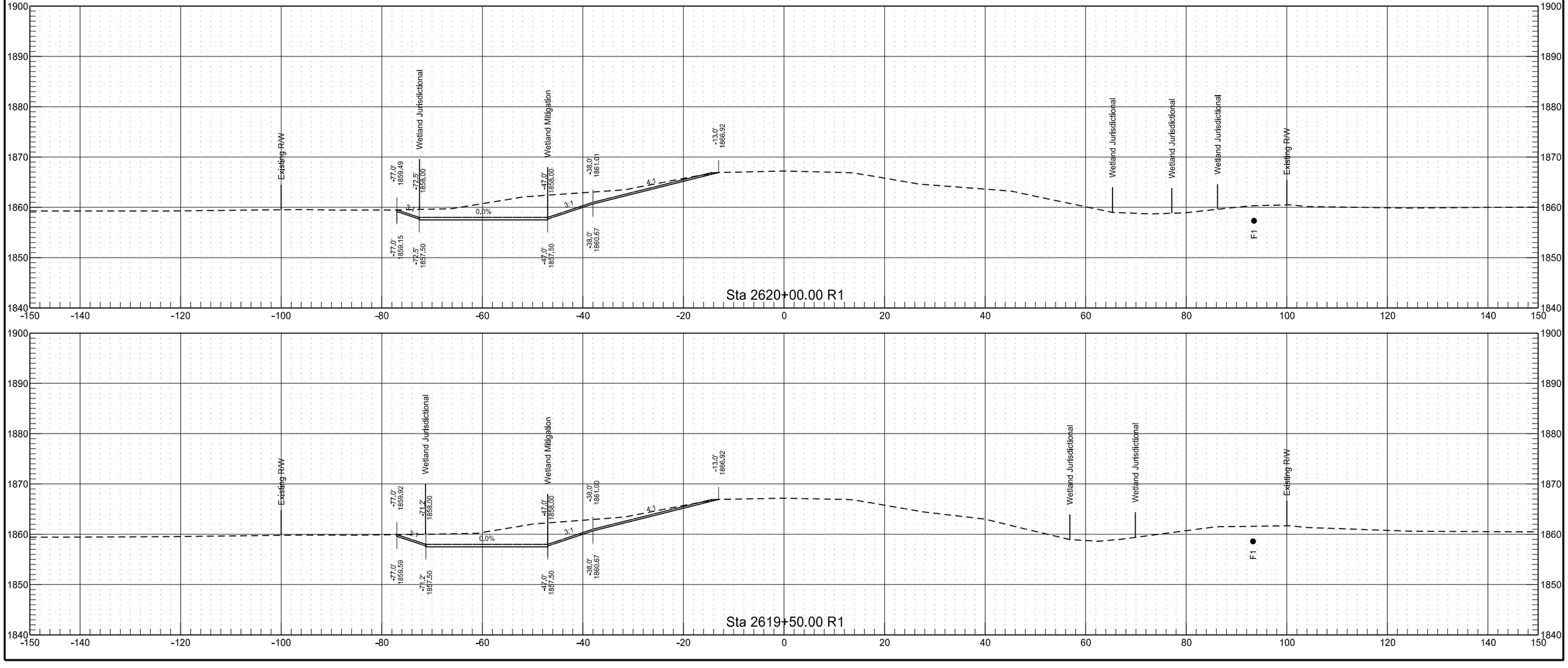

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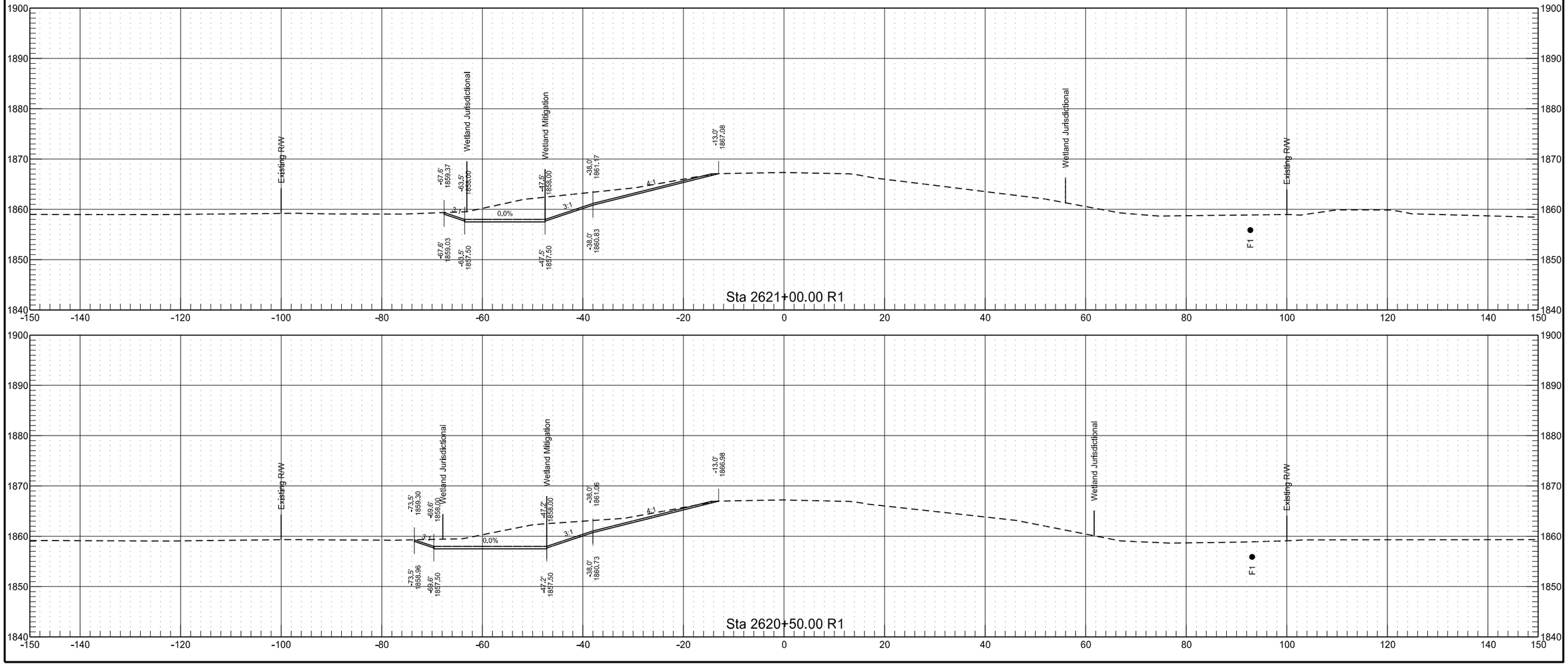

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