

DESIGN DATA				
Traffic	Average Daily			
Current 2014	Pass: 2300	Trucks: 1380	Total: 3680	
Forecast 2034	Pass: 3430	Trucks: 2060	Total: 5490	
Clear Zone Dist. 34'	Design Speed:			
Minimum Sight Dist. for Stopping:	Bridges:			
Full Control of Access, No Point of Access Other Than at Interchange Ramps				
Pavement Design Life (years)				
Design Accumulated One-way	ESALs:			

JOB # 20
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

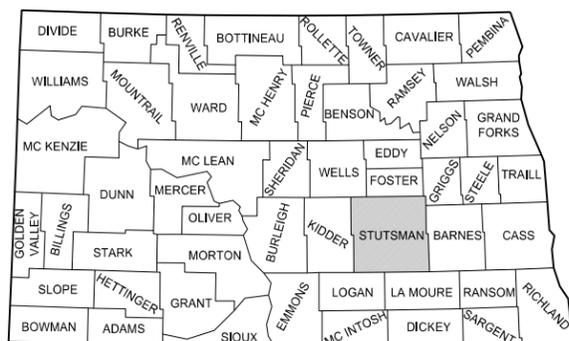
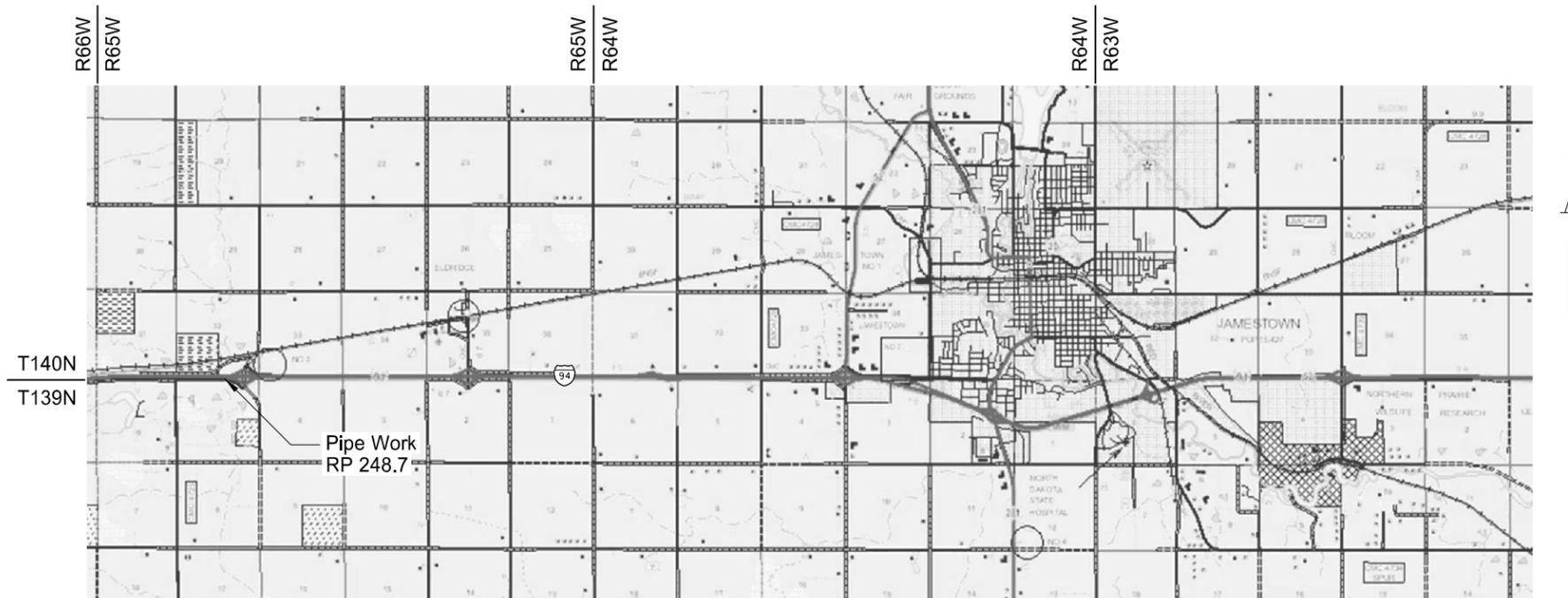
STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	20724	1	1

IM-2-094(135)248

GOVERNING SPECIFICATIONS:
 2014 Standard Specifications adopted by the North Dakota Department of Transportation and the Supplemental Specifications effective on the date the project is advertised.

Stutsman County
 Lippert Interchange
 I94 RP 248.7
 Pipe Work

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
IM-2-094(135)248	N/A	N/A



STATE COUNTY MAP

DESIGNERS
Aaron Murra /s/
Joe Wagner /s/

APPROVED DATE 03/14/16
 Roger Weigel /s/
 OFFICE OF PROJECT DEVELOPMENT
 ND DEPARTMENT OF TRANSPORTATION

I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.

APPROVED DATE 03/14/16
 James Rath
 NDDOT DESIGN DIVISION

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LIST OF STANDARD DRAWINGS

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D-704-10	Construction Sign Details - Regulatory Signs
D-704-11	Construction Sign Details - Warning Signs
D-704-12	Shoulder Closure Tapers
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SPECIAL PROVISIONS

Number	Description
SP 259(14)	Temporary Water Diversion
SP 5084(14)	Permits and Environmental Considerations
SP 0003(14)	Temporary Erosion and Sediment Best Management Practices



T: 140 N R: 065 W S: 32

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	4	1

BNSF Railroad

74th Ave SE

Installation of 6-66" Pipes
(Open Cut)
Sta 59+84.00

Sta 62+54.23
OS 206.7 R

Sta 58+98.75
OS 50.1 R

Clearing & Grubbing
Channel Excavation

 Pipe Conduit 54"
(Jack and Bore)

 Pipe Conduit 66"
(Open Cut)

 Channel Excavation

 Clearing & Grubbing

Sta 13132+23.00
OS 151.4 L

Sta 13136+06.61
OS 151.3 L

Installation of 7-54" Pipes
(Jack and Bore)
RP 248.7

T: 140 N R: 065 W S: 32

I-94 W

T: 139 N R: 065 W S: 5

I-94 E

36th Ave SE

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Scope of Work

Lippert Interchange

NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	6	1

- 100-P01 COORDINATION OF PROJECTS: Coordinate with other projects in the vicinity of this project during the 2016 construction season. Other projects are IM-2-094(144)248 located at West Lippert to East Bloom, Eastbound and SIM-2-094(103)247 located at West Lippert to East Bloom, Westbound. Coordinate work and traffic control in a manner that provides a minimum distance of 1 mile between temporary work zones. Provide a continuous temporary work zone when work on the 2 projects is less than 1 mile apart.
- 201-P01 CLEARING & GRUBBING: Include all costs necessary to remove cattails, brush, debris, and trees smaller than 3" in diameter in the unit price bid for "Clearing & Grubbing." The area to be cleared is shown in the plans. Do not cause ground disturbances or expose the dirt in the clearing and grubbing area. Mow vegetation to within 8" of the existing ground.
- 203-P01 TOPSOIL: Do not stockpile topsoil onsite.
- 203-P02 TOPSOIL – WETLAND: Include cost for removal, stockpiling and relaying wetland topsoil in the unit price bid for "Topsoil-Wetland."
- 210-P01 CHANNEL EXCAVATION: This work includes removing sediment from the existing channel and shaping the channel to the line and grade shown in the plans. Include all costs necessary for this work in the unit price bid for "Channel Excavation." Sediment removed from the channel will become property of the contractor and removed from the project site. Do not stockpile material onsite.
- 230-P01 RESHAPING DITCH: Use waste excavation from reshaping ditch areas for inslope flattening, excess material will become property of the contractor. Reshaping ditch areas are at the 4 pipe end locations. Strip topsoil prior to reshaping the ditch. Include all costs to reshape the ditch and dispose of waste material in the unit price bid for "Reshaping Ditch."
- "Reshaping Ditch" will be paid as plan quantity.
- 260-P01 SILT FENCE: Do not embed silt fence installed in standing water.
- 704-255 TRAFFIC CONTROL FOR SHOULDER DROP-OFF: If the shoulder and adjacent driving lane are not even at the end of the day, the following criteria will apply:
- Place the following sign assembly at the locations listed below.
- Sign Assembly: Sign No. W8-9a-48 "Shoulder Drop Off" and supplemental plate Sign No. W20-52-54 to identify the distance.
- Locations:
- In advance of the drop off;
 - Spaced at each mile from the advance sign; and
 - At major intersections (CMC routes, state and US highways, and Interstate Ramps).
- If the difference in elevation between the shoulder and the driving lane is 2" or greater, construct a slough on the driving lane that is 4:1 or flatter.
- If the difference in elevation between the shoulder and driving lane is less than 2", no slough is required.
- Sign assemblies will be measured and paid for according to Section 704 "Temporary Traffic Control."
- 704-P01 TRAFFIC CONTROL DEVICES: The traffic control devices list was developed using the following layouts on the Standard Drawings for traffic control.
- D-704-35 – Applied for lane closures on interstate
D-704-31 – For one lane closure on frontage road
- Maintain at least one 12' lane of traffic on the frontage road at all times.

- 714-P01 PIPE CONDUIT 66 IN: Include all costs for necessary cofferdams and dewatering in the unit price bid for "Pipe Conduit 66IN."

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ENVIRONMENTAL COMMITMENTS

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	6	2

ENVIRONMENTAL COMMITMENTS (EC): The North Dakota Department of Transportation has made environmental commitments to secure approval of this project. The environmental commitments are as follows:

EC-1: Unavoidable permanent impacts will be mitigated onsite, adjacent to the project, or at a NDDOT approved mitigation site or bank in accordance with the mitigation guidance^{2,3}.

ACTION REQUIRED /TAKEN: 0.00 acres of permanent USACE impacts to jurisdictional waters and 0.04 acres of permanent impacts to EO11990 wetlands will require mitigation. The NDDOT will mitigate jurisdictional and EO 11990 impacts onsite in the Missouri River Southern Regional Service Area. 4.05 acres of temporary impacts will result from construction. Temporary impact areas will be graded to preconstruction contours.

Wetland Impact Table																			
Wetland Number	Location	Cowardin Class.	Wetland Type	Wetland Size (acres)	Wetland Feature	USACE Jurisdictional Wetlands ¹	Wetland Impacts (acres)		USFWS Easement Impacts (acres)		Wetland Mitigation								
							Temp.	Perm.	Temp.	Perm.	Mitigation Required			Bank		Onsite			
											EO 11990	USACE	USFWS	Location	acres	Mitigation Location; Ratio	acres	Constructed Site #	Constructed size (acres)
1a	Sec. 5, T139N, R65W	PEMC	Basin	0.19	Natural	Yes	0.09	-	-	-	N	N	N	-	-	-	-	-	-
1b	Sec. 32, T140N, R65W	PEMC	Basin	0.10	Natural	Yes	0.06	-	-	-	N	N	N	-	-	-	-	-	-
1c	Sec. 32, T140N, R65W	PEMC	Mosaic	3.85	Natural	Yes	3.85	0.02	-	-	Y	N	N	-	-	1a; 1:1	0.0041	-	-
1d	Sec. 32, T140N, R65W	PEMC	Basin	0.64	Natural	Yes	0.05	0.02	-	-	Y	N	N	-	-	1b; 1:1	0.0310	-	-
2	Sec. 32, T140N, R65W	PEMAx	Ditch	0.05	Artificial	Yes	-	-	-	-	N	N	N	-	-	-	-	-	-
Totals				4.83			4.05	0.04	0.00	0.00					0.00		0.04		0.00

¹ A wetland Jurisdictional Determination was issued by the USACE on 10/17/2014; NWO-2014-2292-BIS.

² All impacts to natural wetlands (natural/jurisdictional and natural/non-jurisdictional), regardless of size, as well as impacts greater than 0.10 acre to artificial/jurisdictional wetlands require mitigation.

³ All artificial/non-jurisdictional, deep water (impacts greater than 6.6 feet), Other Waters less than 300 linear feet (determined by the USACE on a case by case), and temporary impacts do not require mitigation.

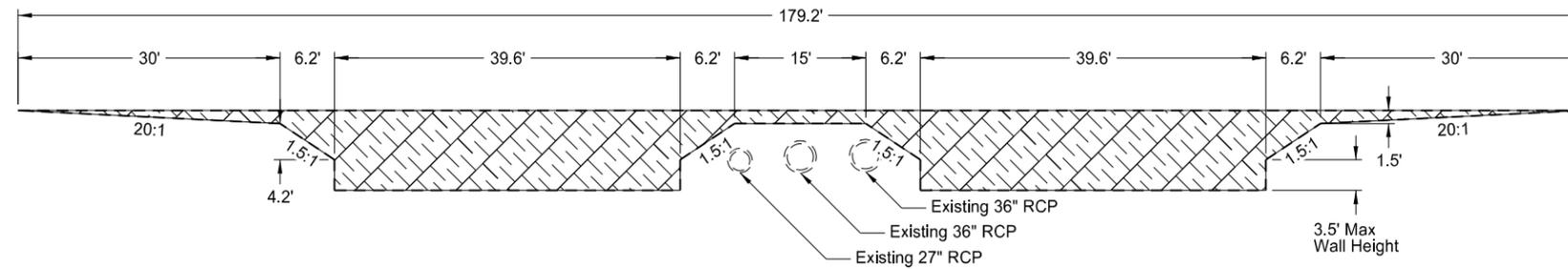
Summary Impact Table			
Total Permanent Impact Summary		Temporary Impacts and additional information	
Wetland Type	Total (Acres)	Wetland Type	Total (Acres/Lf)
Natural/JD	0.04	Temporary JD	4.05
Natural/Non-JD	-	Non-JD Temporary	-
Artificial/JD	-	Permanent JD > 0.10	-
Artificial/Non-JD	-	Permanent OW	-
Total	0.04	Temporary OW	-

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	8	1

SPEC CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
-----	-----	-----	-----	-----
103	0100 CONTRACT BOND	L SUM	0.26	0.26
201	0330 CLEARING & GRUBBING	L SUM	1	1
202	0312 REMOVE EXISTING FENCE	LF	98	98
203	0109 TOPSOIL	CY	439	439
203	0113 COMMON EXCAVATION-WASTE	CY	246	246
203	0121 TOPSOIL-WETLAND	CY	118	118
210	0127 CHANNEL EXCAVATION	L SUM	1	1
230	0107 RESHAPING DITCH	MILE	0.17	0.17
251	0200 SEEDING CLASS II	ACRE	0.544	0.544
251	1000 WETLAND SEED	ACRE	0.404	0.404
251	2000 TEMPORARY COVER CROP	ACRE	0.401	0.401
253	0101 STRAW MULCH	ACRE	0.65	0.65
253	0201 HYDRAULIC MULCH	ACRE	0.3	0.3
255	0101 ECB TYPE 1	SY	746	746
260	0200 SILT FENCE SUPPORTED	LF	830	830
261	0112 FIBER ROLLS 12IN	LF	928	928
302	0120 AGGREGATE BASE COURSE CL 5	TON	3,593	3,593
702	0100 MOBILIZATION	L SUM	0.26	0.26
704	1000 TRAFFIC CONTROL SIGNS	UNIT	2,971	2,971
704	1052 TYPE III BARRICADE	EA	4	4
704	1060 DELINEATOR DRUMS	EA	63	63
704	1067 TUBULAR MARKERS	EA	24	24
704	1087 SEQUENCING ARROW PANEL-TYPE C	EA	2	2
709	0151 GEOSYNTHETIC MATERIAL TYPE R1	SY	858	858
714	4130 PIPE CONDUIT 54IN	LF	170	170
714	4133 PIPE CONDUIT 54IN-JACKED OR BORED	LF	1,272	1,272
714	4140 PIPE CONDUIT 66IN	LF	360	360
752	0300 FENCE BARBED WIRE 4 STRAND-WOOD POST	LF	98	98
900	1000 TEMPORARY STREAM DIVERSION	EA	1	1

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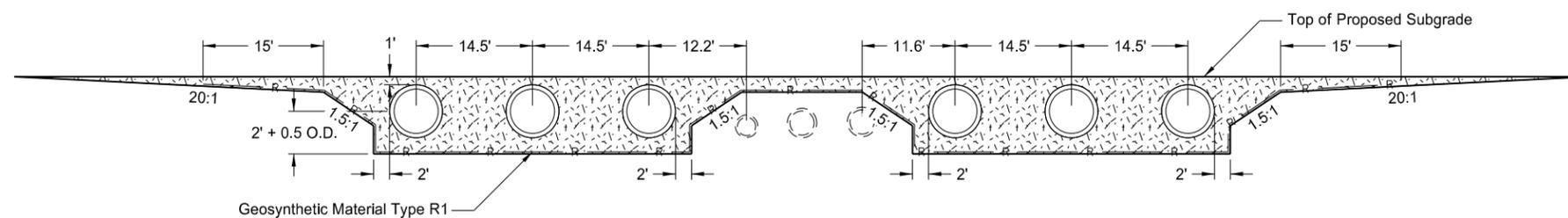


Excavation Detail for 6 - 66" pipe
at NW Frontage Road

- Pay Items
- 1) Pipe*
 - 2) Geosynthetic Material Type R1

- *Included in Pipe Pay Item
- 1) Pipe
 - 2) Trench Excavation
 - 3) Aggregate Base Course CI 5
 - 4) Embankment

-  Trench Excavation
-  Aggregate Base Course CI 5



Installation Detail for 6 - 66" Pipe
at NW Frontage Road

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Pipe Installation
NW Frontage Road
Lippert Interchange

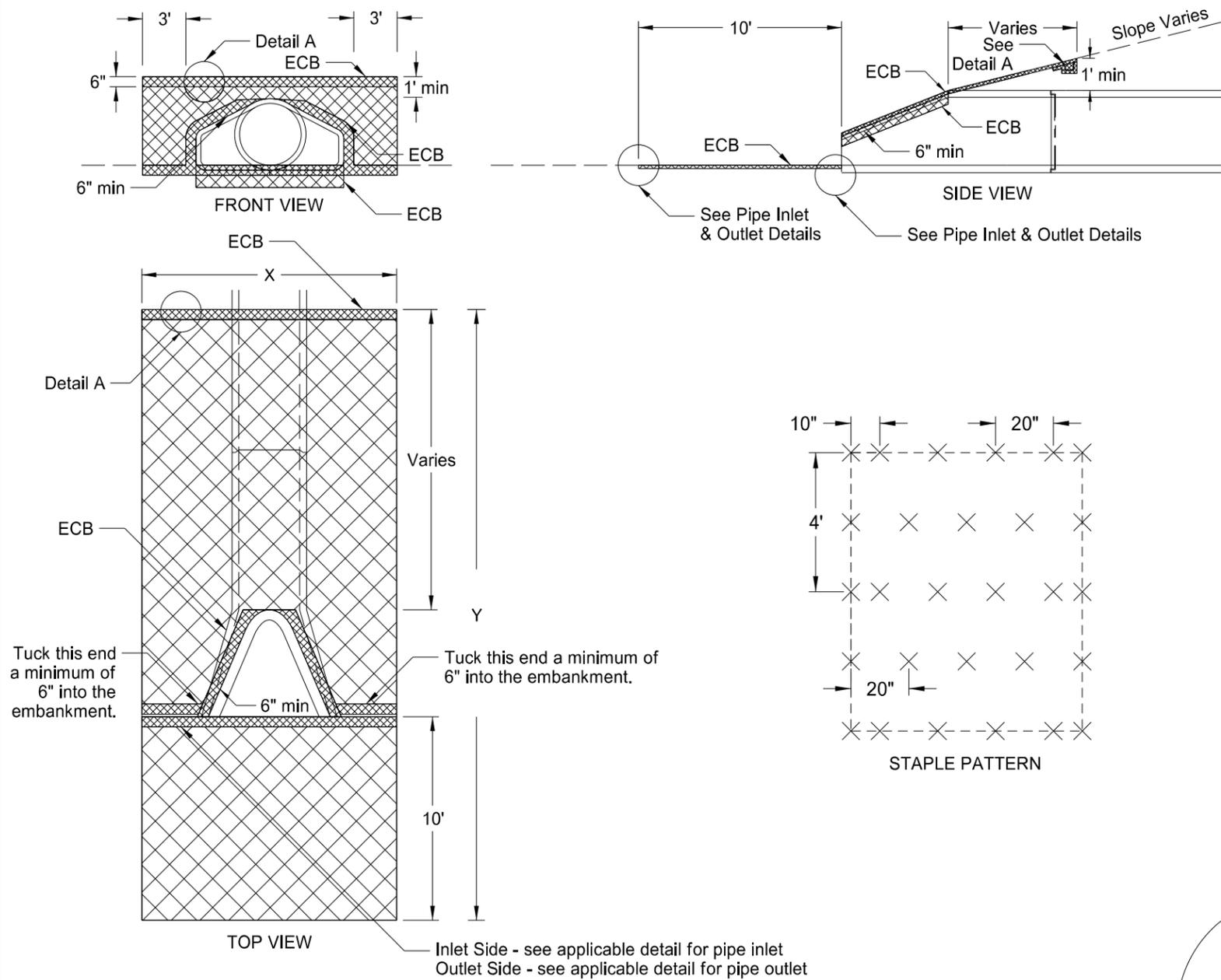
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	20	2

Erosion Control Blanket (ECB)								
Location to be Protected Station	Culvert Type Appr / CL	Pipe Dia. (IN)	No.	Unit Quantity (SY)	Total Quantity			
					Type 1 (SY)	Type 2 (SY)	Type 3 (SY)	Type 4 (SY)
13133+03.45 *	CL	54	2	31	62	-	-	-
13133+16.45 *	CL	54	2	31	62	-	-	-
13133+29.45 *	CL	54	2	31	62	-	-	-
13133+42.45 *	CL	54	2	31	62	-	-	-
13133+87.97 *	CL	54	2	31	62	-	-	-
13134+00.97 *	CL	54	2	31	62	-	-	-
13134+13.97 *	CL	54	2	31	62	-	-	-
60+33.21 **	CL	66	2	26	52	-	-	-
60+47.71 **	CL	66	2	26	52	-	-	-
60+62.21 **	CL	66	2	26	52	-	-	-
61+05.58 **	CL	66	2	26	52	-	-	-
61+20.08 **	CL	66	2	26	52	-	-	-
61+34.58 **	CL	66	2	26	52	-	-	-
Total (SY)					746	0	0	0

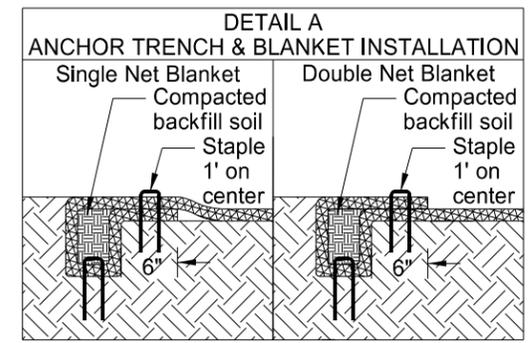
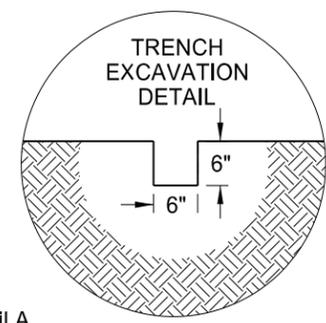
Notes: * Denotes stationing along I-94
 ** Denotes stationing along Frontage Road

CENTERLINE CULVERTS				
Dia. (IN)	X (FT)	Y (FT)	Surface Area to be Protected (SF)	ECB (SY)
54 *	14.42	21.42	276.3	31
66 **	15.42	18.00	235.5	26

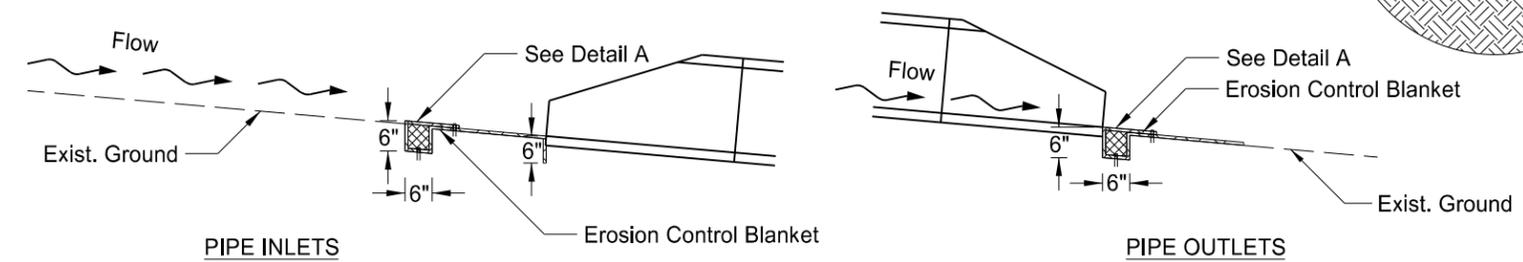
Note: * Quantities based on 6:1 slope.
 ** Quantities based on 2:1 slope.



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

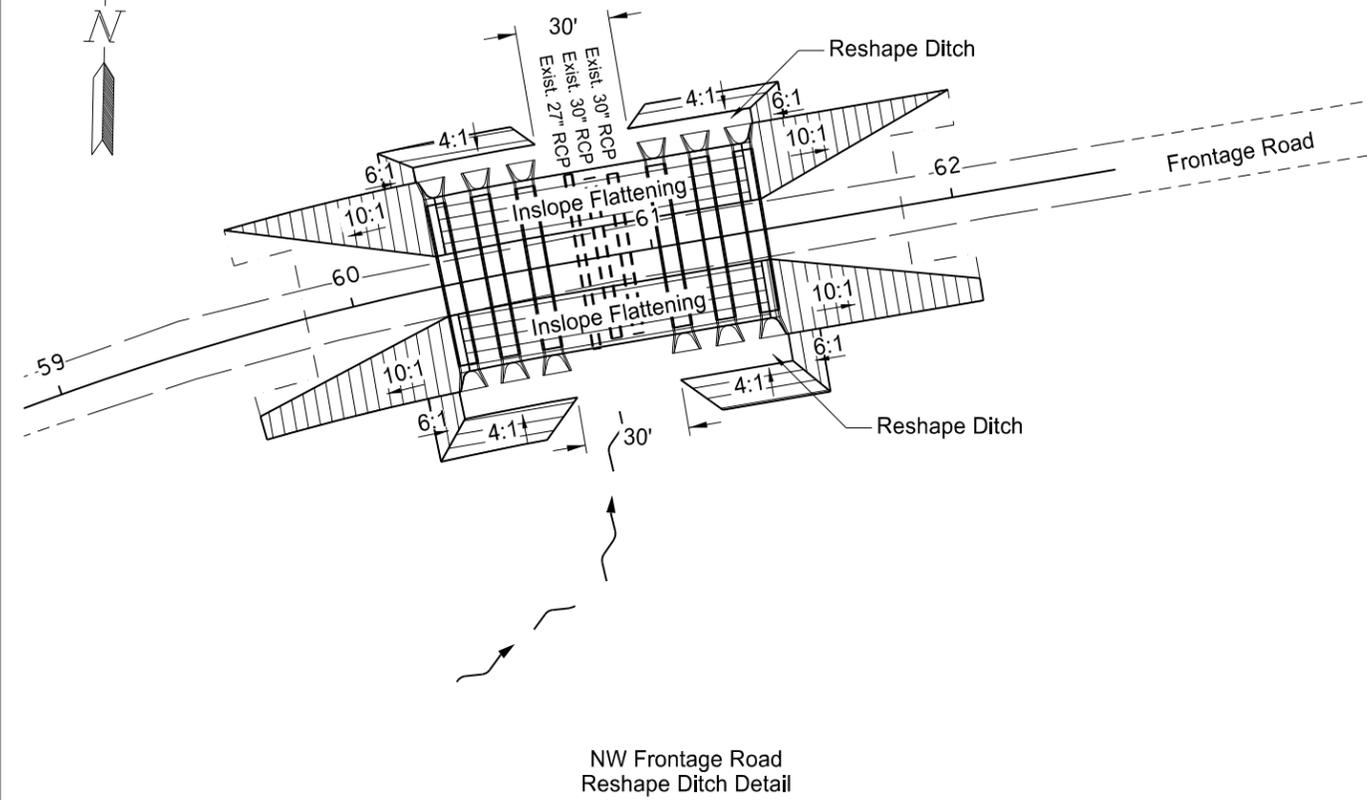


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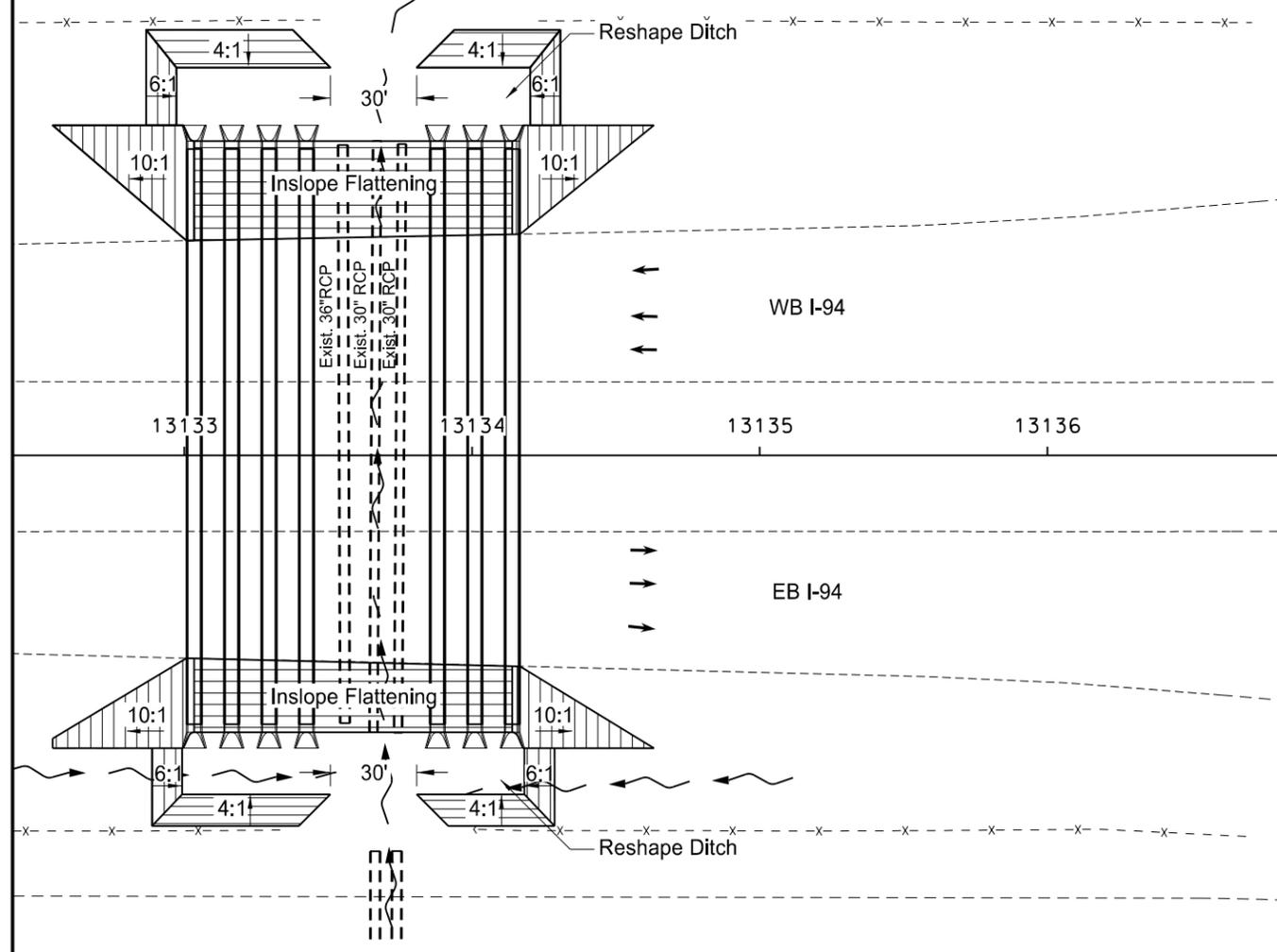


Erosion Control at Culvert Flared End Sections
 Lippert Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	20	3



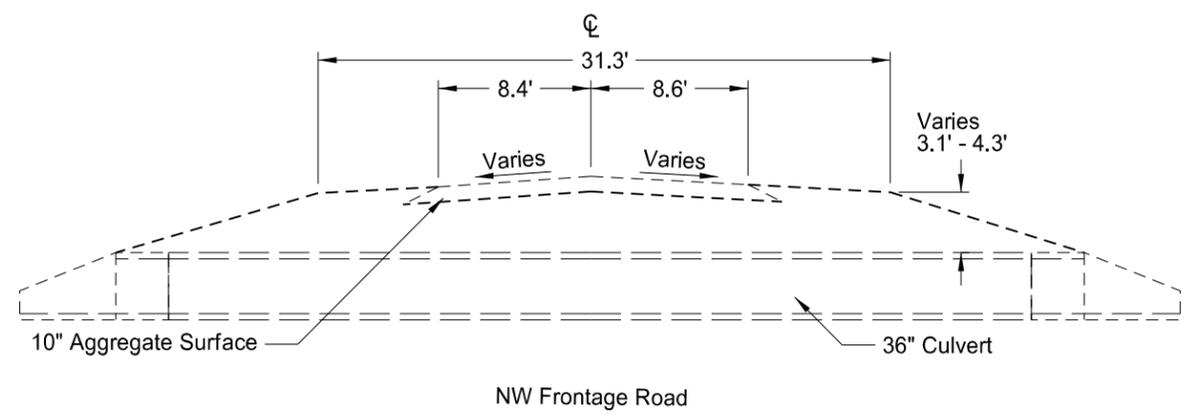
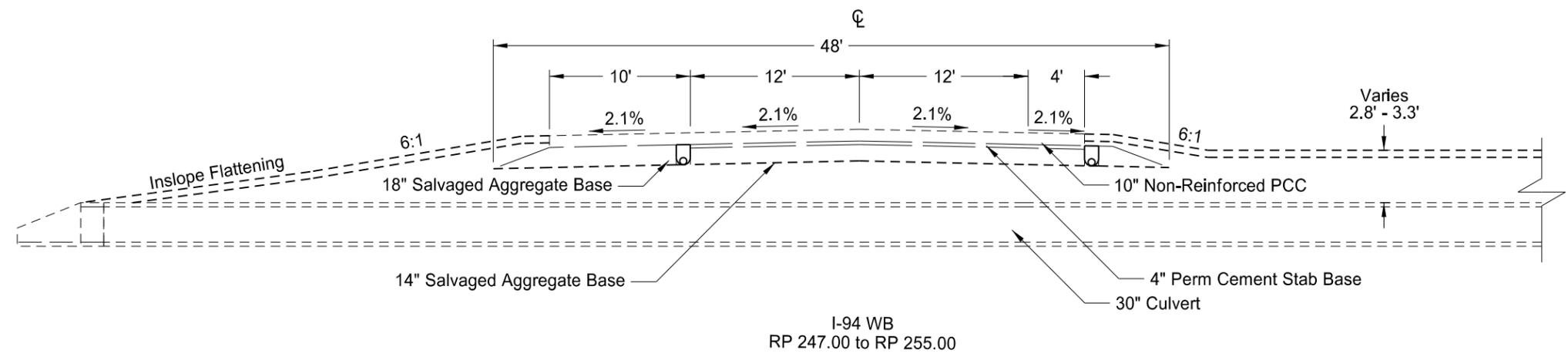
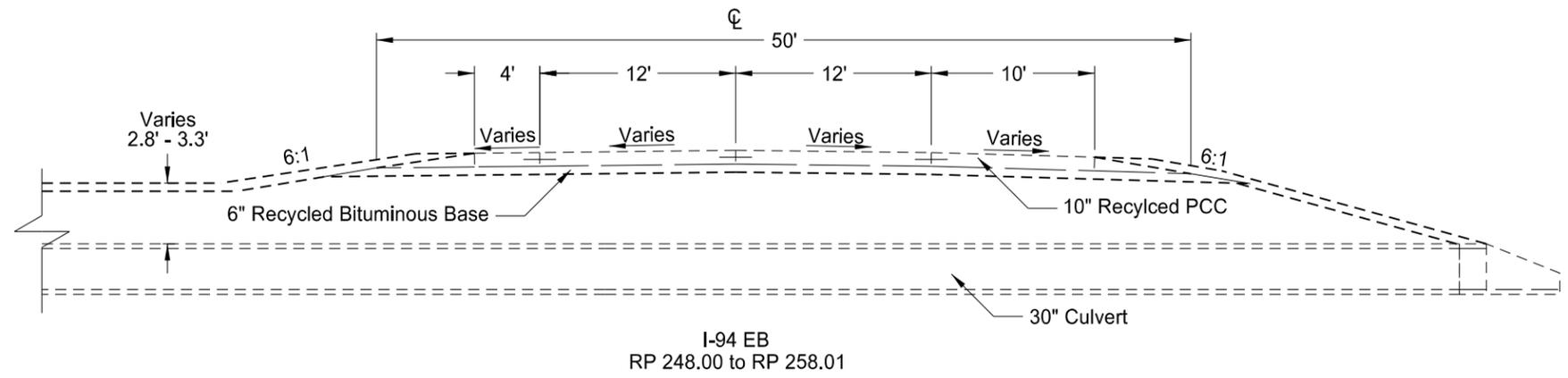
I-94
Reshape Ditch Detail



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Reshape Ditch
 Lippert Interchange

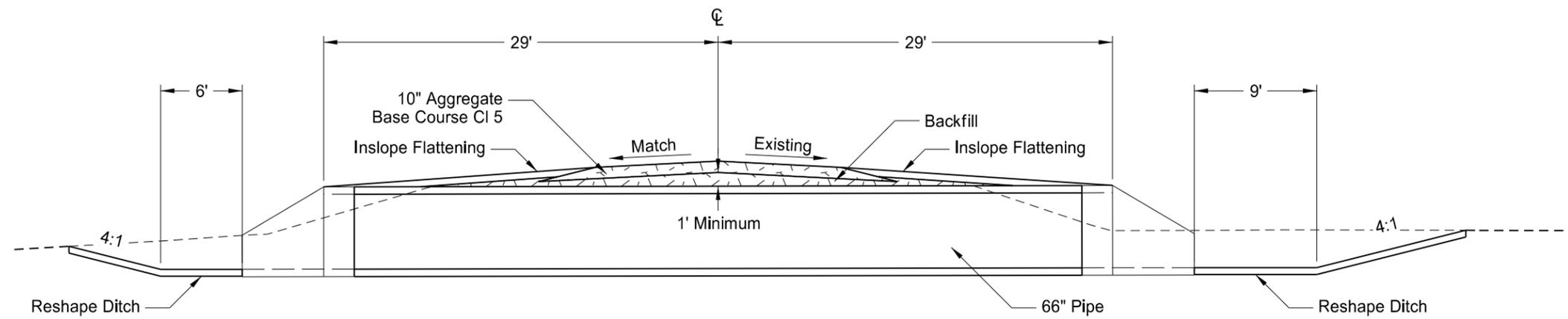
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	30	1



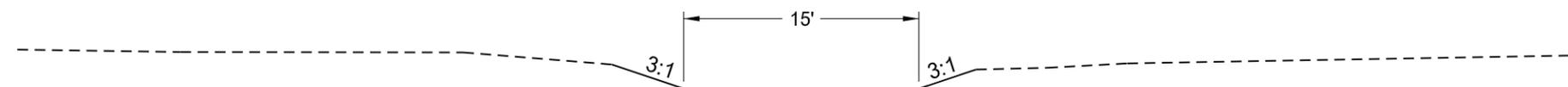
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Existing Typical
 Lippert Interchange

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ND	IM-2-094(135)248	30	2



NW Frontage Road
Sta. 60+33.21 - 61+34.58

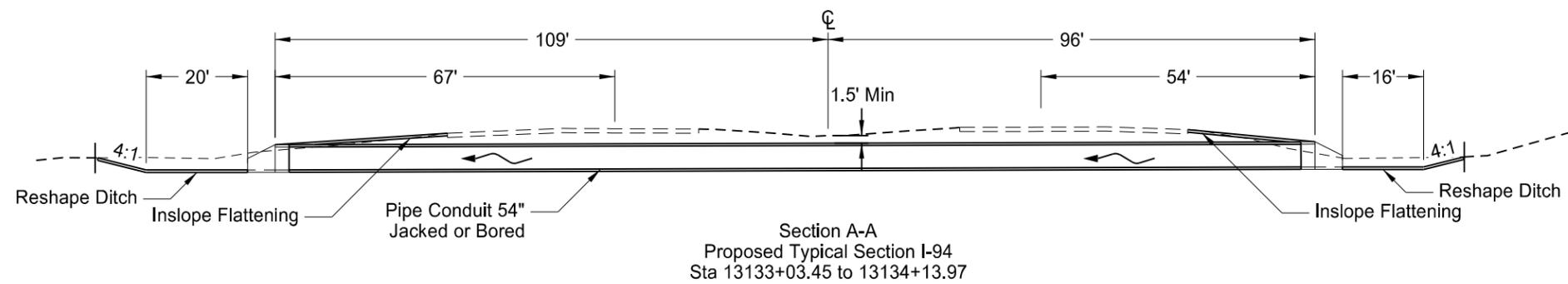


Channel Excavation
Sta: 150+00.00 - 158+79.79

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Proposed Typical Sections
Lippert Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	30	3



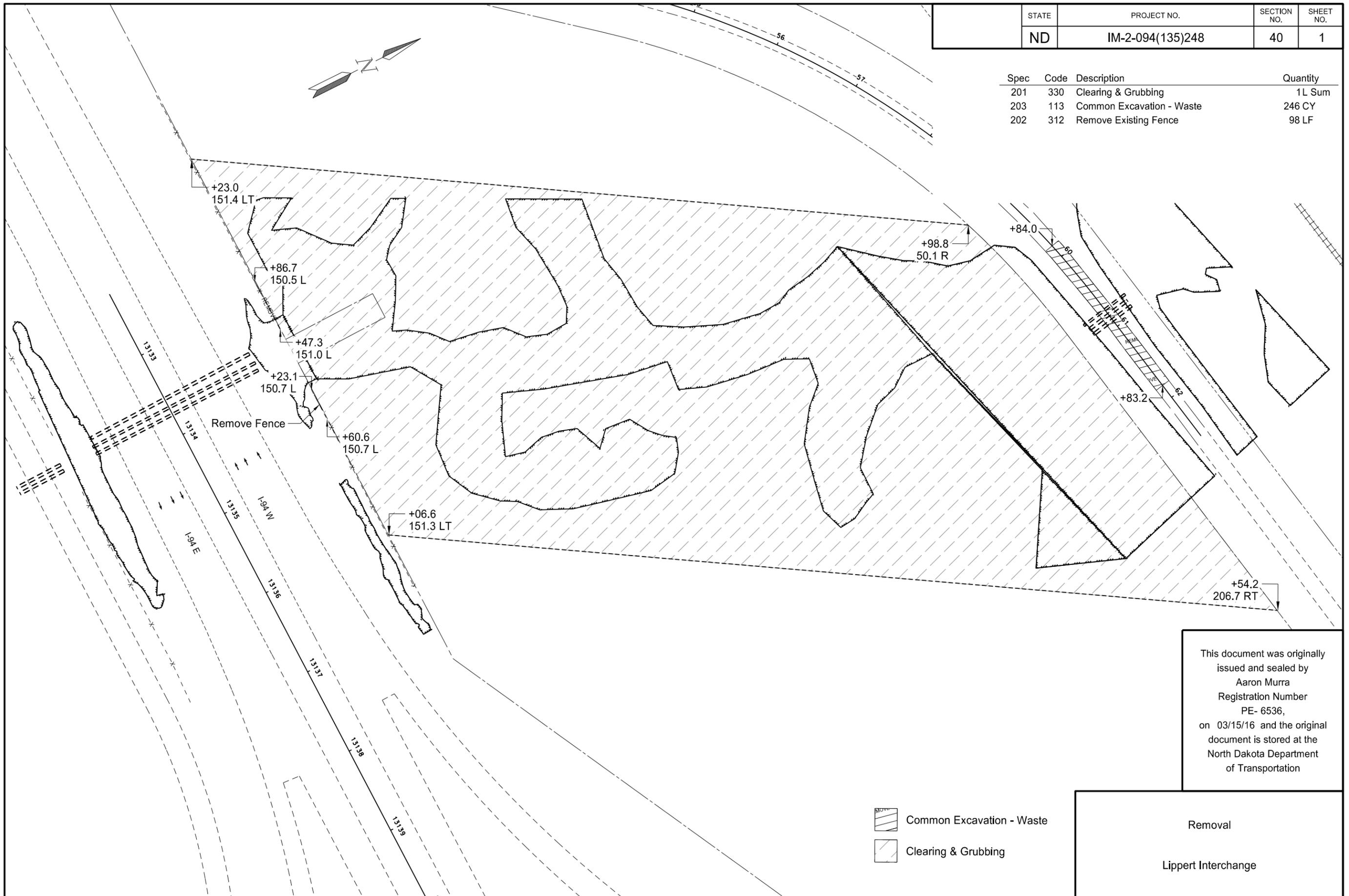
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Proposed Typical Section
 I-94
 Lippert Interchange

*Note: Existing pavement details for I-94 can be found on page 1 of section 30.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	40	1

Spec	Code	Description	Quantity
201	330	Clearing & Grubbing	1L Sum
203	113	Common Excavation - Waste	246 CY
202	312	Remove Existing Fence	98 LF



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-  Common Excavation - Waste
-  Clearing & Grubbing

Removal
 Lippert Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-2-094(135)248	50	1

HYDRAULIC DATA FOR IM-2-094(135)248 - I-94 (A)									
STATION	EXISTING PIPE	PROPOSED PIPE SIZE	DRAINAGE AREA (ACRES)	50-YEAR DATA				100-YEAR DATA	
				DESIGN DISCHARGE (CFS)	DESIGN HEADWATER (FT)	DESIGN VELOCITY (FPS)	DESIGN STAGE (NAVD 88)	100-YEAR DISCHARGE (CFS)	100-YEAR STAGE (NAVD 88)
522+42	36" RCP + DBL 30" RCP	Existing 36" RCP Existing DBL 30" RCP + 7 - 54"	8184.1	656.4	5.72	5.21	1571.51	847.5	1572.13
(A) Hydraulic data provided is for smooth-walled (Manning's n=0.012) type conduits.									

HYDRAULIC DATA FOR IM-2-094(135)248 - Frontage Road (A)									
STATION	EXISTING PIPE	PROPOSED PIPE SIZE	DRAINAGE AREA (ACRES)	10-YEAR DATA				100-YEAR DATA	
				DESIGN DISCHARGE (CFS)	DESIGN HEADWATER (FT)	DESIGN VELOCITY (FPS)	DESIGN STAGE (NAVD 88)	100-YEAR DISCHARGE (CFS)	100-YEAR STAGE (NAVD 88)
526+36	27" RCP + DBL 36" RCP	Existing 27" RCP Existing DBL 36" RCP + 6 - 66"	8257.7	293.9	4.16	2.10	1567.89	848.2	1568.88
(A) Hydraulic data provided is for smooth-walled (Manning's n=0.012) type conduits.									

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Culvert Hydraulic Data

Drainage Improvements

Lippert Interchange, I-94 RP 248 - EB/WB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	51	1

Roadway	Begin Station / Location	Begin Offset	Begin Elev	End Station / Location	End Offset	End Elev	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	R1 Fabric (Pay Item)	(*) End Sections		Applicable Detail				
							In	Bid Item	LF							In	Type		In	SY	Begin	End
																					EA	EA
I-94	13133+03.5	109.0' Lt	1565.99	13133+03.5	96.0' Rt	1565.51	54	Pipe Conduit - Storm Drain - N	19	Reinforced Concrete Pipe - Class II(barrel length = 200 LF)	54			0	FES	FES	D-714-16					
								Pipe Conduit - Storm Drain - S	9													
								Pipe Conduit - Bored	178													
	13133+16.5	109.0' Lt	1565.99	13133+16.5	96.0' Rt	1565.51	54	Pipe Conduit - Storm Drain - N	19	Reinforced Concrete Pipe - Class II(barrel length = 200 LF)	54			0	FES	FES	D-714-16					
								Pipe Conduit - Storm Drain - S	9													
								Pipe Conduit - Bored	178													
	13133+29.5	109.0' Lt	1565.99	13133+29.5	96.0' Rt	1565.51	54	Pipe Conduit - Storm Drain - N	19	Reinforced Concrete Pipe - Class II(barrel length = 200 LF)	54			0	FES	FES	D-714-16					
								Pipe Conduit - Storm Drain - S	9													
								Pipe Conduit - Bored	178													
	13133+42.5	109.0' Lt	1565.99	13133+42.5	96.0' Rt	1565.51	54	Pipe Conduit - Storm Drain - N	19	Reinforced Concrete Pipe - Class II(barrel length = 200 LF)	54			0	FES	FES	D-714-16					
								Pipe Conduit - Storm Drain - S	9													
								Pipe Conduit - Bored	178													
	13133+88.0	109.0' Lt	1564.99	13133+88.0	96.0' Rt	1564.51	54	Pipe Conduit - Storm Drain - N	15	Reinforced Concrete Pipe - Class II(barrel length = 200 LF)	54			0	FES	FES	D-714-16					
								Pipe Conduit - Storm Drain - S	7													
								Pipe Conduit - Bored	184													
	13134+01.0	109.0' Lt	1564.99	13134+01.0	96.0' Rt	1564.51	54	Pipe Conduit - Storm Drain - N	15	Reinforced Concrete Pipe - Class II(barrel length = 200 LF)	54			0	FES	FES	D-714-16					
								Pipe Conduit - Storm Drain - S	3													
								Pipe Conduit - Bored	188													
	13134+14.0	109.0' Lt	1564.99	13134+14.0	96.0' Rt	1564.51	54	Pipe Conduit - Storm Drain - N	15	Reinforced Concrete Pipe - Class II(barrel length = 200 LF)	54			0	FES	FES	D-714-16					
								Pipe Conduit - Storm Drain - S	3													
								Pipe Conduit - Bored	188													

Coatings: Z = Zinc

A = Aluminum

P = Polymeric (over Zinc or Aluminum)

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

3 = 3"x1"

5 = 5"x1"

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

1 = 3/4"x1"@11-1/2"

(*) Include the cost for end sections in the price bid for "Pipe Conduit."

FES = Flared End Section

TES = Traversable End Section

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Allowable Pipe List

Lippert Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	51	2

Roadway	Begin Station / Location	Begin Offset	Begin Elev	End Station / Location	End Offset	End Elev	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	R1 Fabric (Pay Item)	(*) End Sections		Applicable Detail				
							In	Bid Item	LF							In	Type		In	SY	Begin	End
																					EA	EA
NW Service Road	60+33.2	29.0' Lt	1563.8	60+33.2	29.0' Rt	1563.9	66	Pipe Conduit - Storm Drain	60	Reinforced Concrete Pipe - Class III(barrel length = 54 LF)	66	A	2	0.138	858	FES	FES	Sec 20 Sht 1				
										Aluminum Coated Corrugated Steel (Type 2)			3, 5	0.064								
													3/4	0.109								
													1	0.079								
	60+47.7	29.0' Lt	1563.8	60+47.7	29.0' Rt	1563.9	66	Pipe Conduit - Storm Drain	60	Reinforced Concrete Pipe - Class III(barrel length = 54 LF)	66	A	2	0.138	858	FES	FES	Sec 20 Sht 1				
										Aluminum Coated Corrugated Steel (Type 2)			3, 5	0.064								
													3/4	0.109								
													1	0.079								
	60+62.2	29.0' Lt	1563.8	60+62.2	29.0' Rt	1563.9	66	Pipe Conduit - Storm Drain	60	Reinforced Concrete Pipe - Class III(barrel length = 54 LF)	66	A	2	0.138	858	FES	FES	Sec 20 Sht 1				
										Aluminum Coated Corrugated Steel (Type 2)			3, 5	0.064								
													3/4	0.109								
													1	0.079								
	61+05.6	29.0' Lt	1563.8	61+05.6	29.0' Rt	1563.9	66	Pipe Conduit - Storm Drain	60	Reinforced Concrete Pipe - Class III(barrel length = 54 LF)	66	A	2	0.138	858	FES	FES	Sec 20 Sht 1				
										Aluminum Coated Corrugated Steel (Type 2)			3, 5	0.064								
													3/4	0.109								
													1	0.079								
	61+20.1	29.0' Lt	1563.8	61+20.1	29.0' Rt	1563.9	66	Pipe Conduit - Storm Drain	60	Reinforced Concrete Pipe - Class III(barrel length = 54 LF)	66	A	2	0.138	858	FES	FES	Sec 20 Sht 1				
										Aluminum Coated Corrugated Steel (Type 2)			3, 5	0.064								
													3/4	0.109								
													1	0.079								
	61+34.6	29.0' Lt	1563.8	61+34.6	29.0' Rt	1563.9	66	Pipe Conduit - Storm Drain	60	Reinforced Concrete Pipe - Class III(barrel length = 54 LF)	66	A	2	0.138	858	FES	FES	Sec 20 Sht 1				
										Aluminum Coated Corrugated Steel (Type 2)			3, 5	0.064								
													3/4	0.109								
													1	0.079								

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

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

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

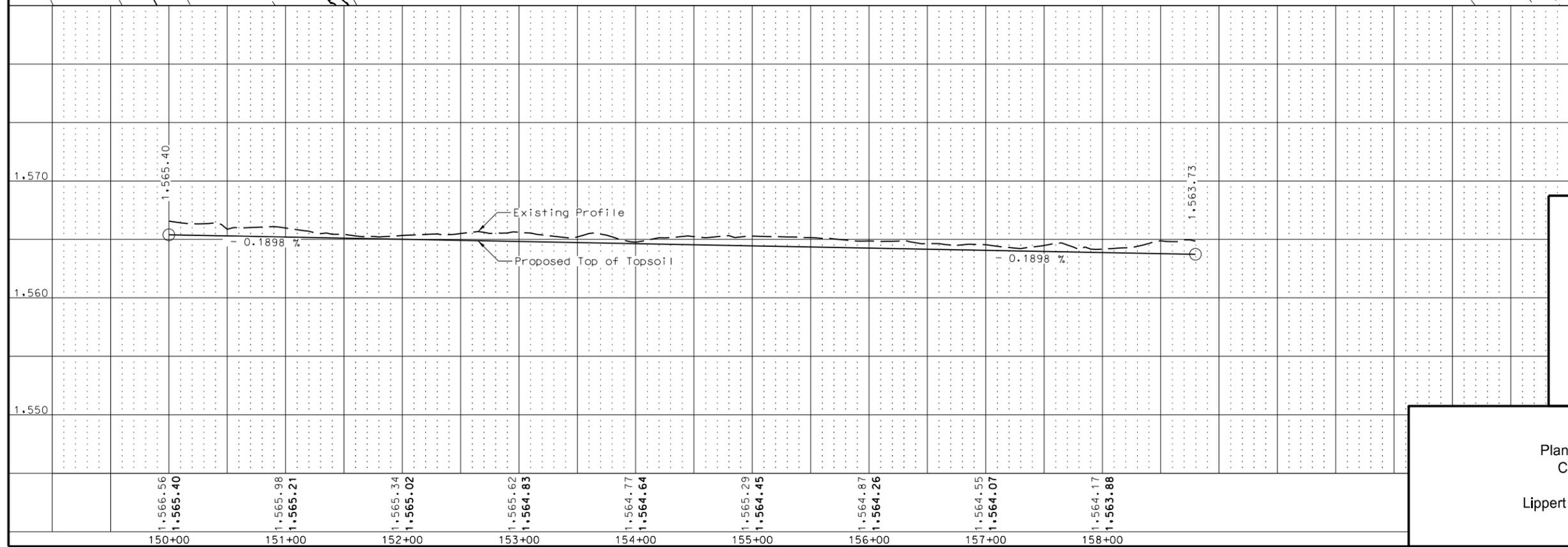
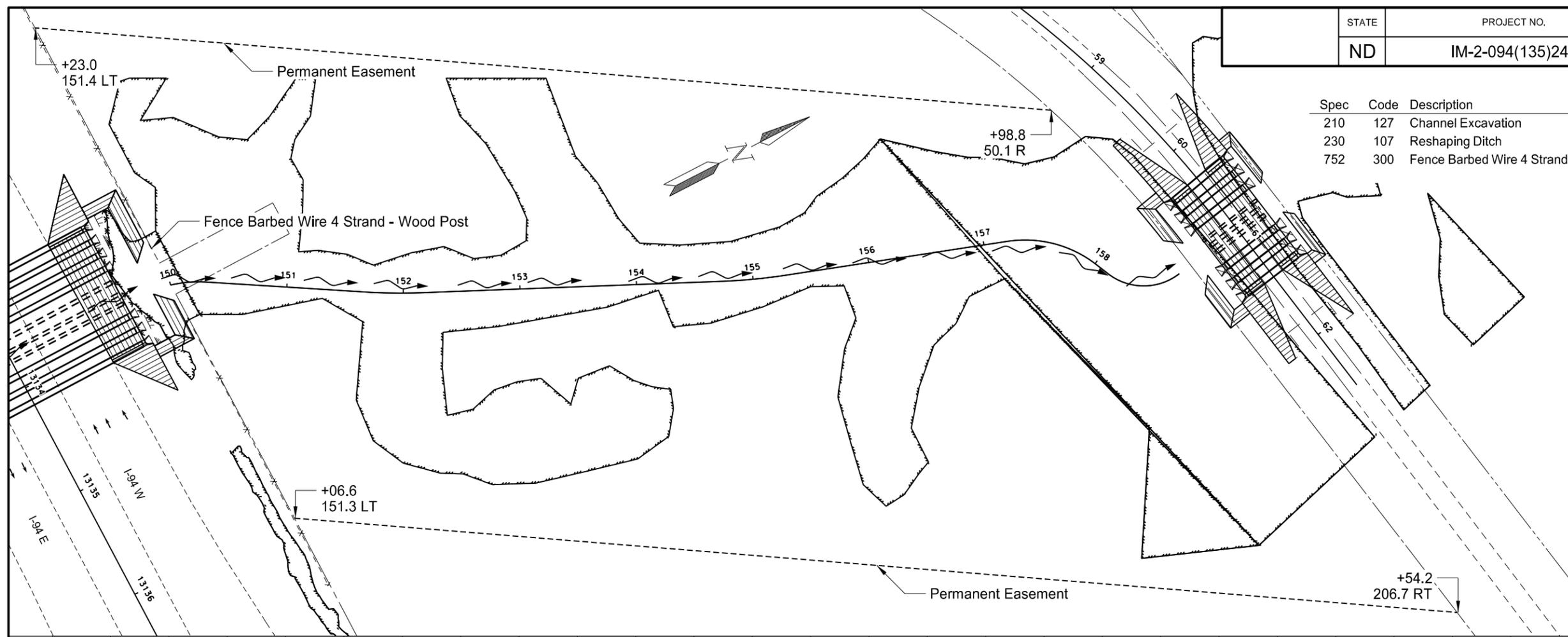
(*) Include the cost for end sections in the price bid for "Pipe Conduit."
FES = Flared End Section
TES = Traversable End Section

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Allowable Pipe List
Lippert Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	60	1

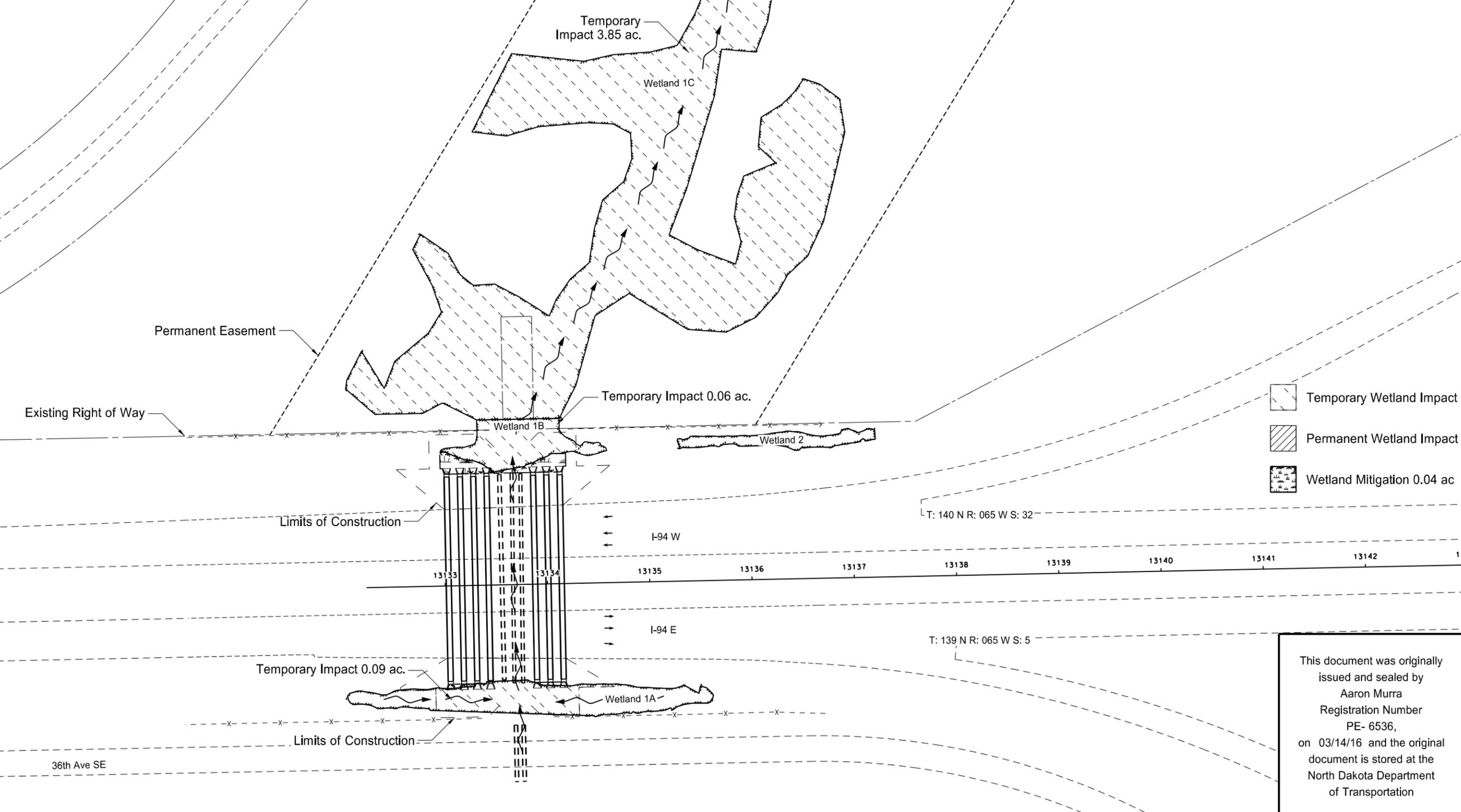
Spec	Code	Description	Quantity
210	127	Channel Excavation	1L Sum
230	107	Reshaping Ditch	0.17 Mile
752	300	Fence Barbed Wire 4 Strand - Wood Post	98 LF



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Plan & Profile
 Channel
 Lippert Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	75	1



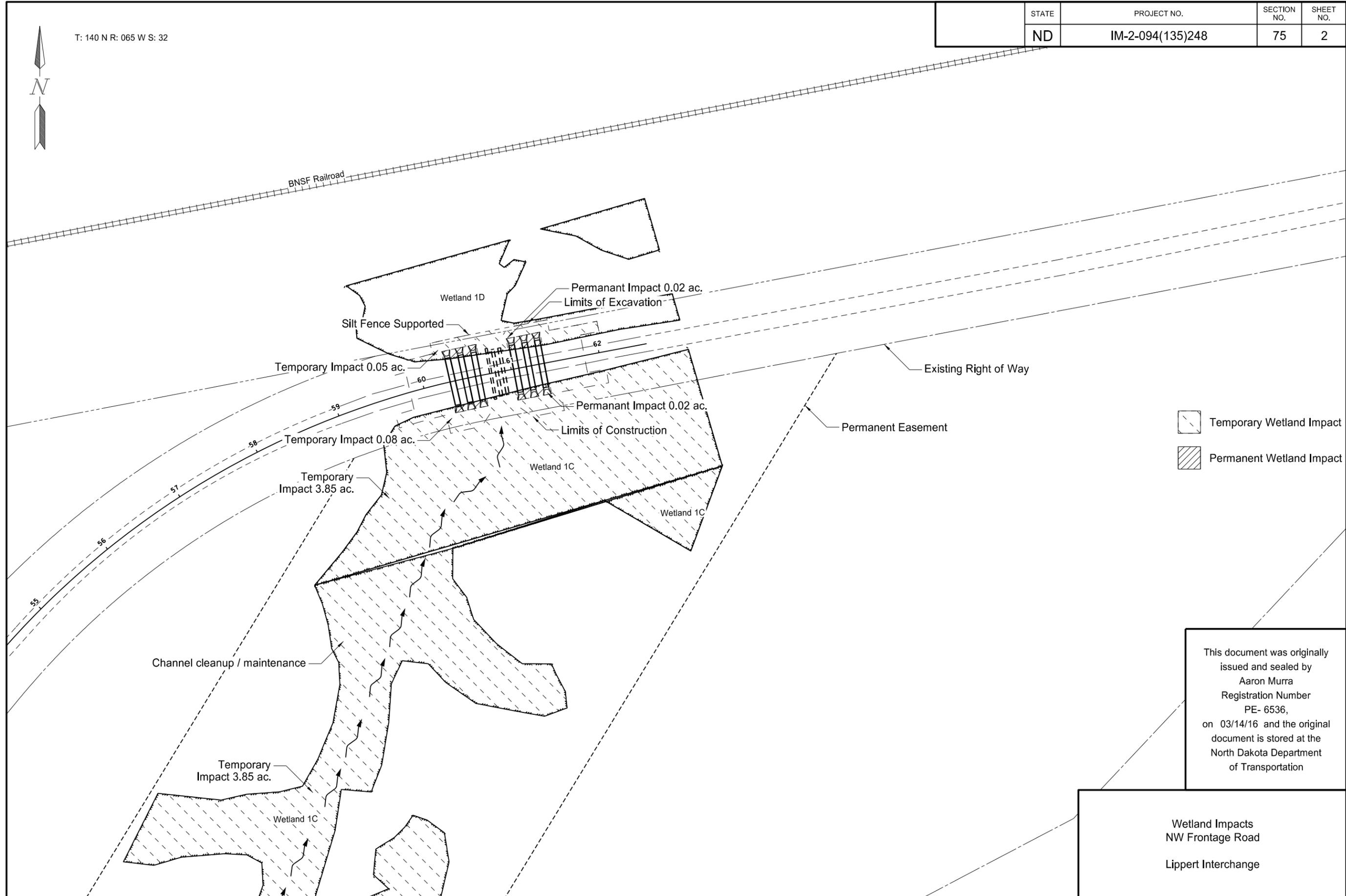
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Wetland Impacts
 I-94
 Lippert Interchange



T: 140 N R: 065 W S: 32

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	75	2



- Temporary Wetland Impact
- Permanent Wetland Impact

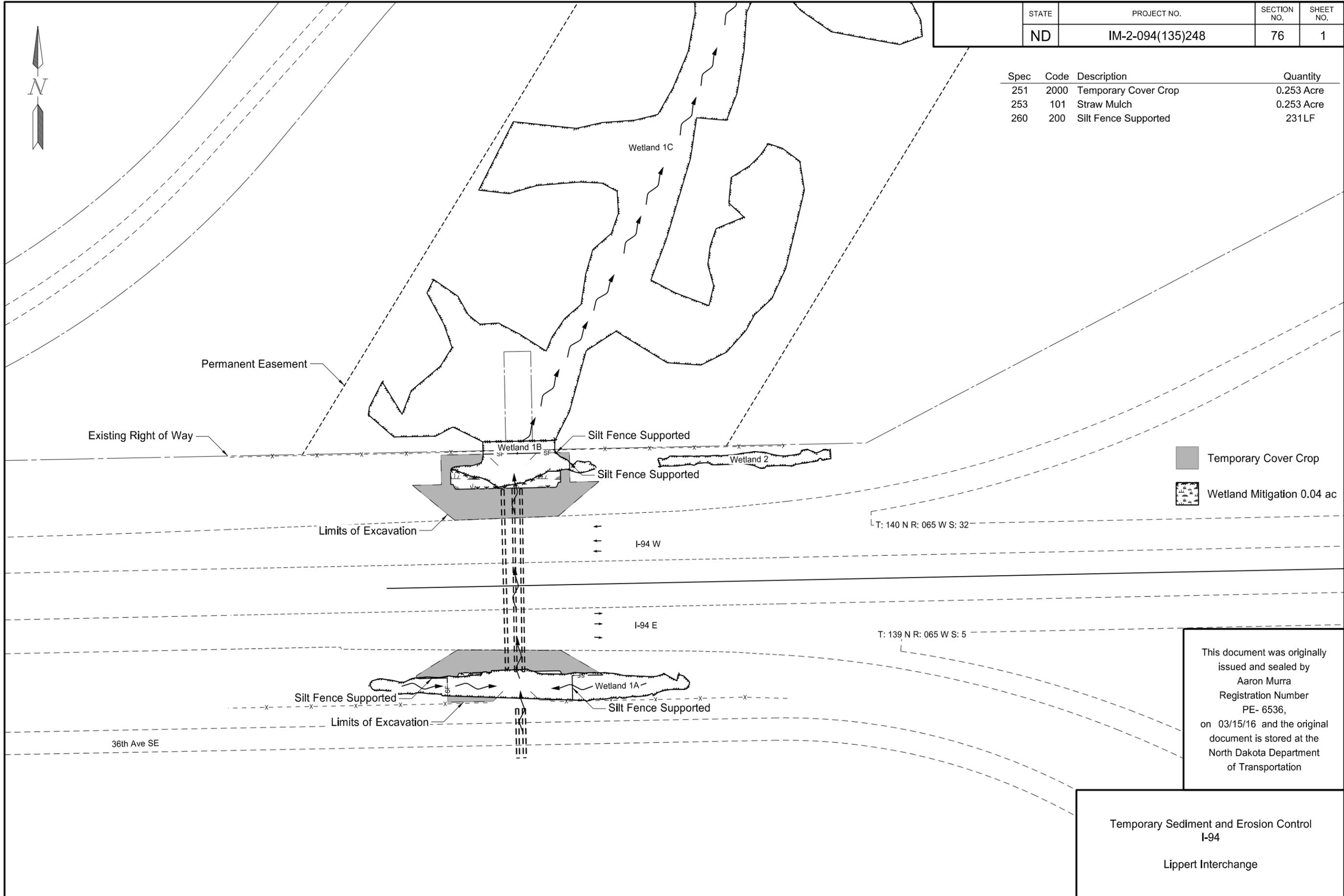
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Wetland Impacts
 NW Frontage Road
 Lippert Interchange



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	76	1

Spec	Code	Description	Quantity
251	2000	Temporary Cover Crop	0.253 Acre
253	101	Straw Mulch	0.253 Acre
260	200	Silt Fence Supported	231 LF



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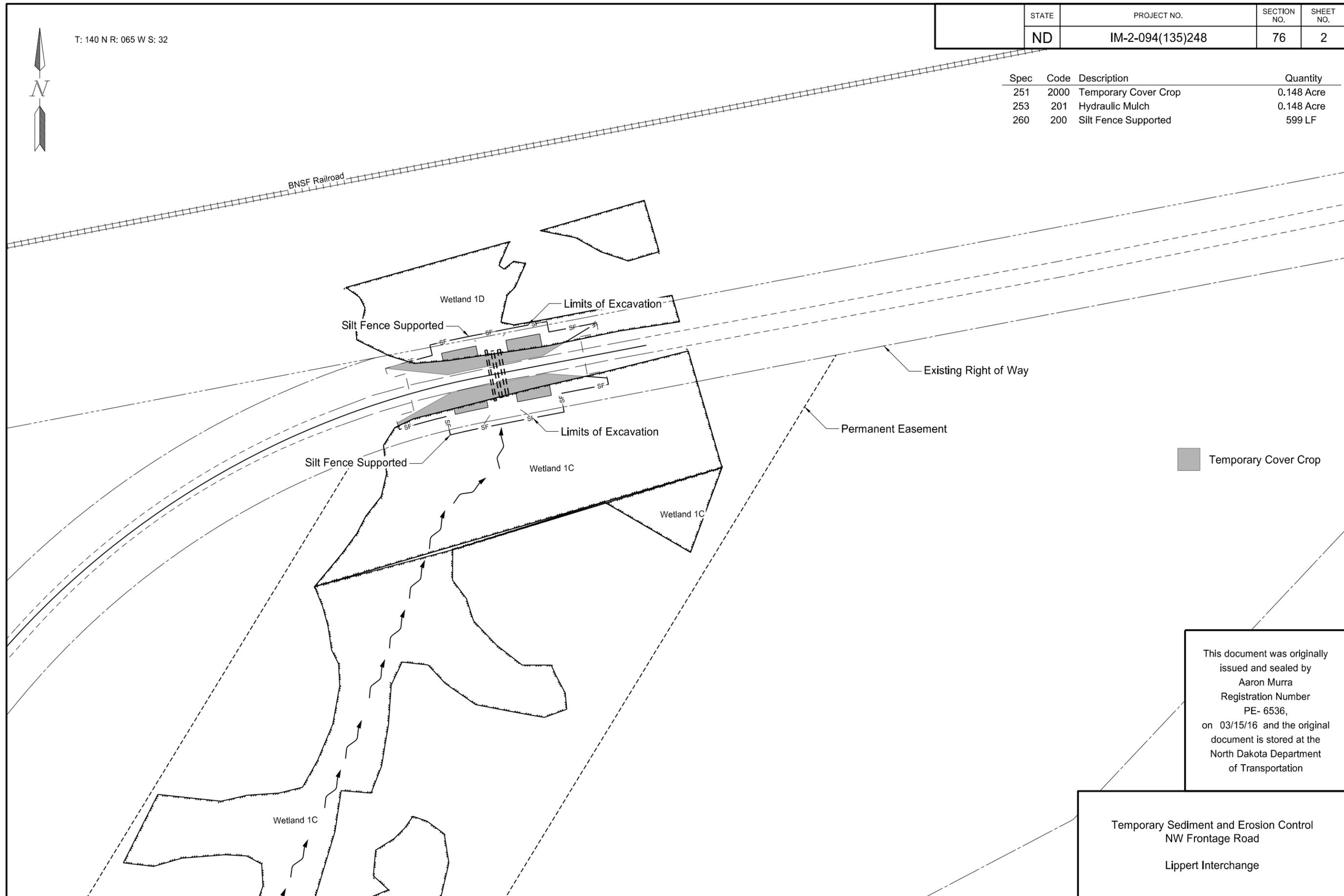
Temporary Sediment and Erosion Control
 I-94
 Lippert Interchange



T: 140 N R: 065 W S: 32

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-2-094(135)248	76	2

Spec	Code	Description	Quantity
251	200	Temporary Cover Crop	0.148 Acre
253	201	Hydraulic Mulch	0.148 Acre
260	200	Silt Fence Supported	599 LF



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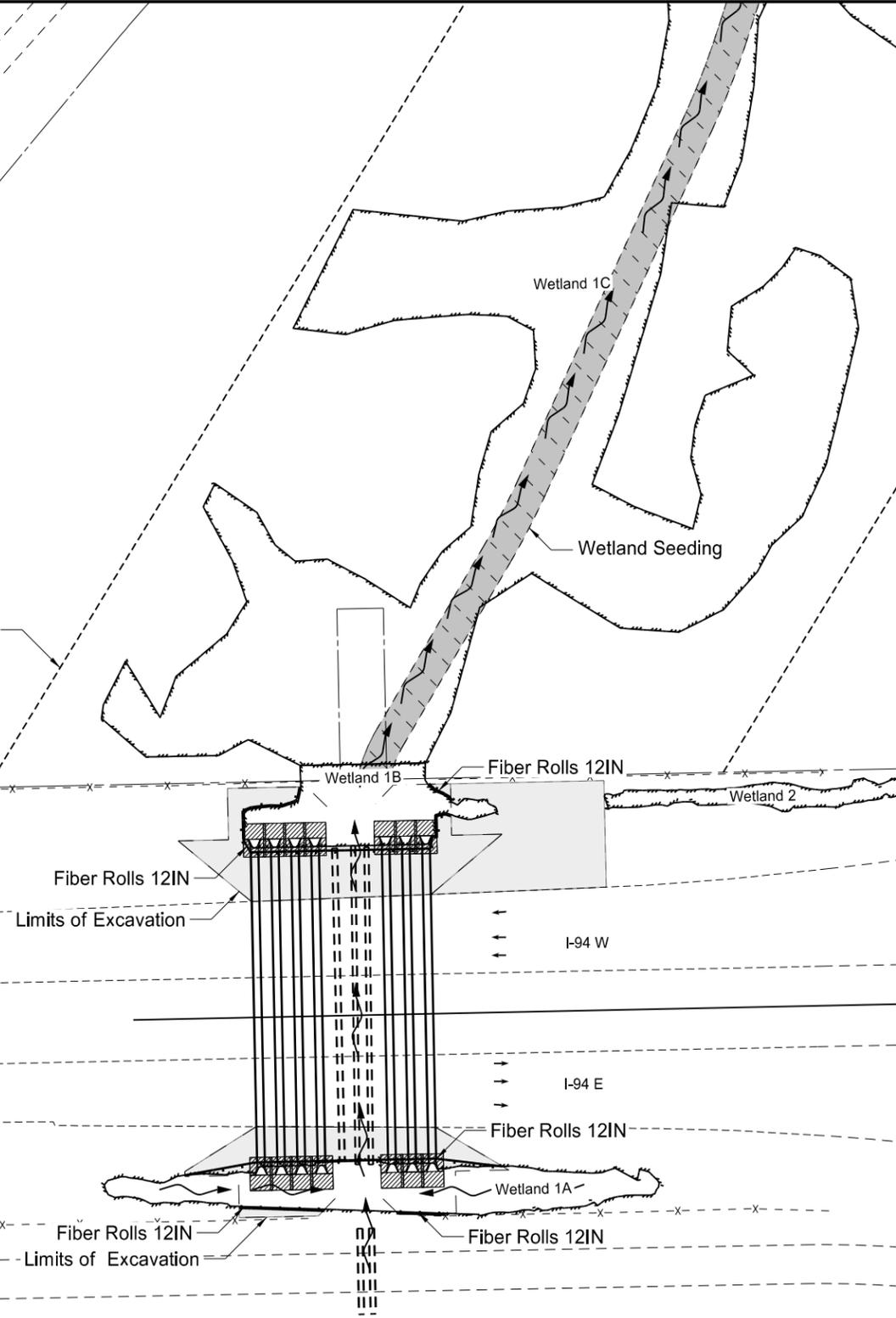
Temporary Sediment and Erosion Control
 NW Frontage Road
 Lippert Interchange



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	77	1

Spec	Code	Description	Quantity
251	200	Seeding Class II	0.397 Acre
251	1000	Wetland Seed	0.202 Acre
253	101	Straw Mulch	0.397 Acre
255	101	ECB Type 1	434 SY
261	112	Fiber Roll 12IN	533 LF

Permanent Easement
Existing Right of Way



-  ECB Type 1
-  Wetland Seeding
-  Seeding Class II

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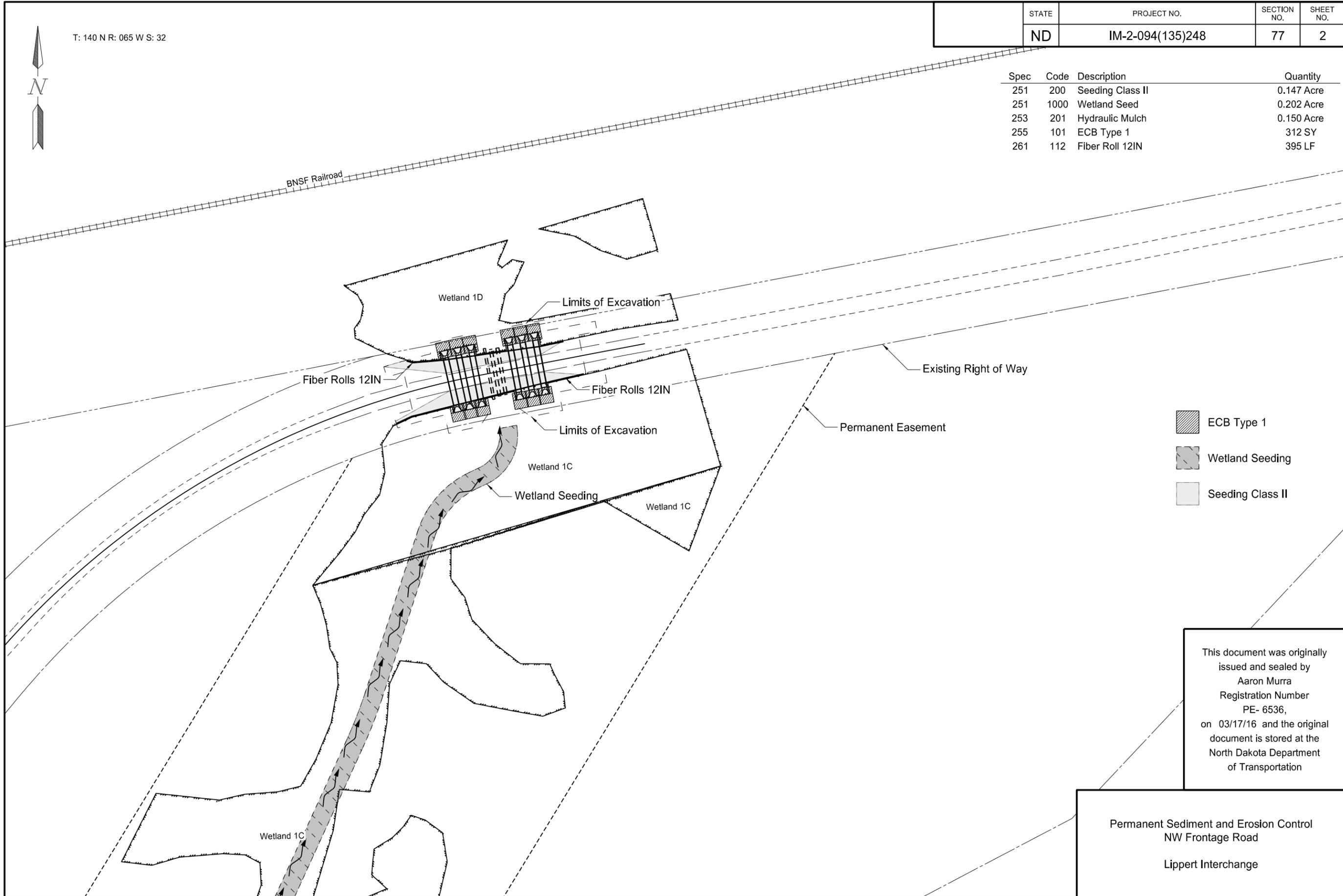
Permanent Sediment and Erosion Control
I-94
Lippert Interchange



T: 140 N R: 065 W S: 32

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	77	2

Spec	Code	Description	Quantity
251	200	Seeding Class II	0.147 Acre
251	1000	Wetland Seed	0.202 Acre
253	201	Hydraulic Mulch	0.150 Acre
255	101	ECB Type 1	312 SY
261	112	Fiber Roll 12IN	395 LF



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Permanent Sediment and Erosion Control
 NW Frontage Road
 Lippert Interchange

PRELIMINARY SURVEY COORDINATE AND CURVE DATA - West Lippert, east to east Bloom interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	81	1

HORIZONTAL ALIGNMENT				CURVE DATA		US PUBLIC LAND SURVEY DATA				SURVEY CONTROL POINTS					
PNT	STATION	NORTHING	EASTING	ARC DEFINITION		DESC.	SEC-TWP-RGE	NORTHING	EASTING	PNT	NORTHING	EASTING	ELEV	STATION	OFFSET
I-94 (Chain: SCL94)						SW Cor Sec 5 T-139-N R-65-W		445761.30	2362676.83	CONTROL POINT DESCRIPTION					
BEG	491+68.61	451016.76	2362489.96			SW Cor Sec 32 T-140-N R-65-W		450987.24	2362491.03	PRIMARY CONTROL					
END	544+60.70	451124.49	2367780.94			SE Cor Sec 32 T-140-N R-65-W		451094.99	2367781.43	GPS 1	451162.52	2362501.13	1596.32	491+83	146' Lt
						E 1/4 Cor Sec 32 T-140-N R-65-W		453746.59	2367737.79	NGS vertical monument set along north row of I-94					
						NW Cor Sec 32 T-140-N R-65-W		456296.05	2362366.87	GPS 2	451277.90	2366794.15	1591.18	534+77	173' Lt
						NE Cor Sec 32 T-140-N R-65-W		456398.58	2367700.12	#5 Rebar with plastic cap set along guardrail, NW corner of exit 248					
						SECONDARY CONTROL									
										RTK 2502	452159.85	2366581.53	1568.52	532+83	1060' Lt
						REFERENCE MARKERS									
										R Mkr #	NORTHING	EASTING	STATION	OFFSET	
										248	450934.65	2361575.41	N/A	N/A	
										248	451073.49	2361596.00	N/A	N/A	
										249	451175.19	2366880.53	535+62	69' Lt	
										249	451031.79	2366884.92	535+63	74' Rt	
						<input type="checkbox"/> Assumed Coordinates <input checked="" type="checkbox"/> All coordinates on this sheet are Stutsman County ground coordinates. They are derived from the NAD83(2011) reference frame; North Dakota South Zone Combination Factor (cf) = 0.9998560									
NOTES: Sheet 1 of 1				Date Survey Completed 11/05/15						All coordinates and measurements on this document derived from the International Foot definition. INITIALIZING BENCH MARK NDGPS Stations (OPUS) <input checked="" type="checkbox"/> NAVD-88 <input type="checkbox"/> NGVD-29 <input type="checkbox"/> GEOID 09 <input type="checkbox"/> _____ <input checked="" type="checkbox"/> GEOID 12A			This document was originally issued and sealed by Robert D. Zahn Registration Number LS- 3659 , on 11/05/15 and the original document is stored at the North Dakota Department of Transportation		

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	82	1

Beginning chain OCL FR description

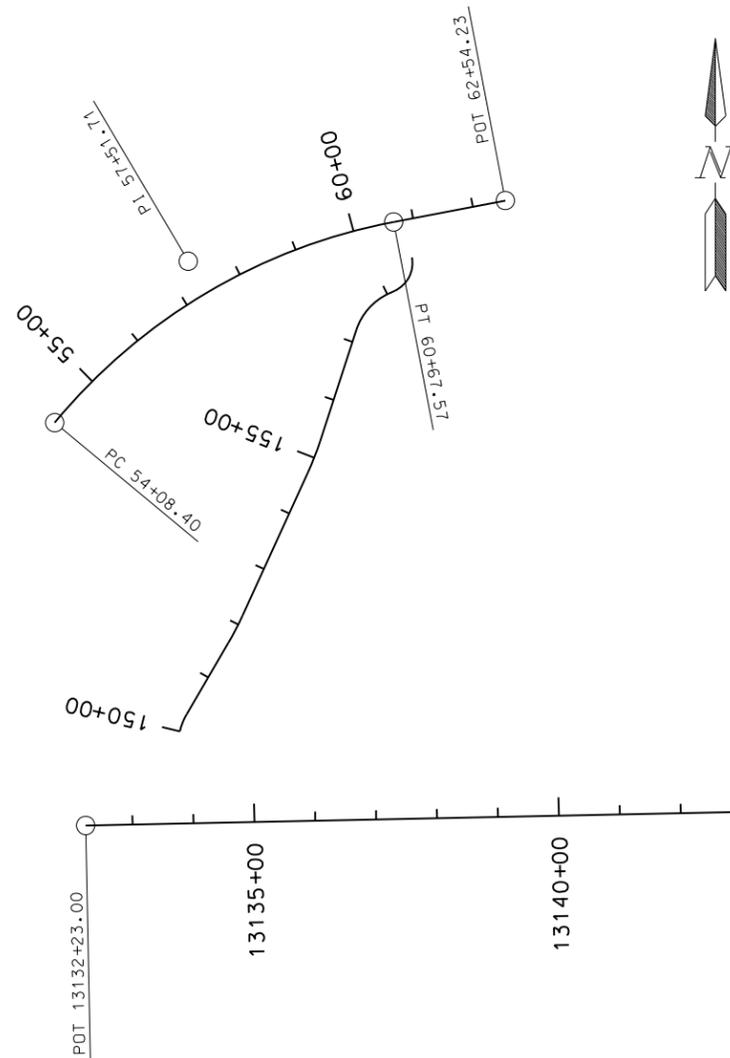
Curve Data

 Curve OCL FR-1
 P.I. Station 57+51.71 N 451,996.0909 E 2,365,578.5141
 Delta = 39° 31' 55.10" (RT)
 Degree = 5° 59' 50.04"
 Tangent = 343.3138
 Length = 659.1700
 Radius = 955.3700
 External = 59.8128
 Long Chord = 646.1727
 Mid. Ord. = 56.2888
 P.C. Station 54+08.40 N 451,731.7518 E 2,365,359.4496
 P.T. Station 60+67.57 N 452,060.5311 E 2,365,915.7259
 C.C. N 451,122.1417 E 2,366,095.0496
 Back = N 39° 38' 57.81" E
 Ahead = N 79° 10' 52.91" E
 Chord Bear = N 59° 24' 55.36" E

Course from PT OCL FR-1 to 80001 N 79° 10' 52.91" E Dist 186.6633

Point 80001 N 452,095.5680 E 2,366,099.0715 Sta 62+54.23

Ending chain OCL FR description



Beginning chain CHANNEL description

Curve Data

 Curve CHANNEL-1
 P.I. Station 150+15.10 N 451,241.1836 E 2,365,568.2948
 Delta = 17° 10' 12.46" (RT)
 Degree = 57° 17' 44.81"
 Tangent = 15.0969
 Length = 29.9675
 Radius = 100.0000
 External = 1.1332
 Long Chord = 29.8555
 Mid. Ord. = 1.1205
 P.C. Station 150+00.00 N 451,226.4849 E 2,365,564.8502
 P.T. Station 150+29.97 N 451,254.2103 E 2,365,575.9251
 C.C. N 451,203.6681 E 2,365,662.2124
 Back = N 13° 11' 21.17" E
 Ahead = N 30° 21' 33.63" E
 Chord Bear = N 21° 46' 27.40" E

Course from PT CHANNEL-1 to PC CHANNEL-2 N 30° 21' 33.63" E Dist 135.8929

Curve Data

 Curve CHANNEL-2
 P.I. Station 151+90.91 N 451,393.0850 E 2,365,657.2700
 Delta = 5° 44' 11.92" (LT)
 Degree = 11° 27' 32.96"
 Tangent = 25.0518
 Length = 50.0617
 Radius = 500.0000
 External = 0.6272
 Long Chord = 50.0408
 Mid. Ord. = 0.6264
 P.C. Station 151+65.86 N 451,371.4685 E 2,365,644.6083
 P.T. Station 152+15.92 N 451,415.8588 E 2,365,667.7076
 C.C. N 451,624.1793 E 2,365,213.1720
 Back = N 30° 21' 33.63" E
 Ahead = N 24° 37' 21.71" E
 Chord Bear = N 27° 29' 27.67" E

Course from PT CHANNEL-2 to PC CHANNEL-3 N 24° 37' 21.71" E Dist 256.4736

Curve Data

 Curve CHANNEL-3
 P.I. Station 155+00.91 N 451,674.9370 E 2,365,786.4470
 Delta = 6° 31' 44.06" (LT)
 Degree = 11° 27' 32.96"
 Tangent = 28.5186
 Length = 56.9755
 Radius = 500.0000
 External = 0.8126
 Long Chord = 56.9446
 Mid. Ord. = 0.8113
 P.C. Station 154+72.40 N 451,649.0116 E 2,365,774.5650
 P.T. Station 155+29.37 N 451,702.0453 E 2,365,795.3041
 C.C. N 451,857.3320 E 2,365,320.0294
 Back = N 24° 37' 21.71" E
 Ahead = N 18° 05' 37.64" E
 Chord Bear = N 21° 21' 29.68" E

Course from PT CHANNEL-3 to PC CHANNEL-4 N 18° 05' 37.64" E Dist 190.8270

Curve Data

 Curve CHANNEL-4
 P.I. Station 157+63.47 N 451,924.5712 E 2,365,868.0101
 Delta = 46° 48' 05.15" (RT)
 Degree = 57° 17' 44.81"
 Tangent = 43.2753
 Length = 81.6839
 Radius = 100.0000
 External = 8.9622
 Long Chord = 79.4319
 Mid. Ord. = 8.2250
 P.C. Station 157+20.20 N 451,883.4358 E 2,365,854.5699
 P.T. Station 158+01.88 N 451,942.9318 E 2,365,907.1973
 C.C. N 451,852.3785 E 2,365,949.6248
 Back = N 18° 05' 37.64" E
 Ahead = N 64° 53' 42.80" E
 Chord Bear = N 41° 29' 40.22" E

Course from PT CHANNEL-4 to PC CHANNEL-5 N 64° 53' 42.80" E Dist 11.8334

Curve Data

 Curve CHANNEL-5
 P.I. Station 158+52.58 N 451,964.4412 E 2,365,953.1051
 Delta = 75° 42' 49.89" (LT)
 Degree = 114° 35' 29.61"
 Tangent = 38.8636
 Length = 66.0728
 Radius = 50.0000
 External = 13.3276
 Long Chord = 61.3692
 Mid. Ord. = 10.5227
 P.C. Station 158+13.72 N 451,947.9524 E 2,365,917.9128
 P.T. Station 158+79.79 N 452,002.6141 E 2,365,945.8104
 C.C. N 451,993.2291 E 2,365,896.6991
 Back = N 64° 53' 42.80" E
 Ahead = N 10° 49' 07.09" W
 Chord Bear = N 27° 02' 17.85" E

Ending chain CHANNEL description

Beginning chain OCL 94 description

Point 8000 N 451,072.3007 E 2,365,410.2608 Sta 13132+23.00

Course from 8000 to 8001 N 88° 49' 27.19" E Dist 1,405.1101

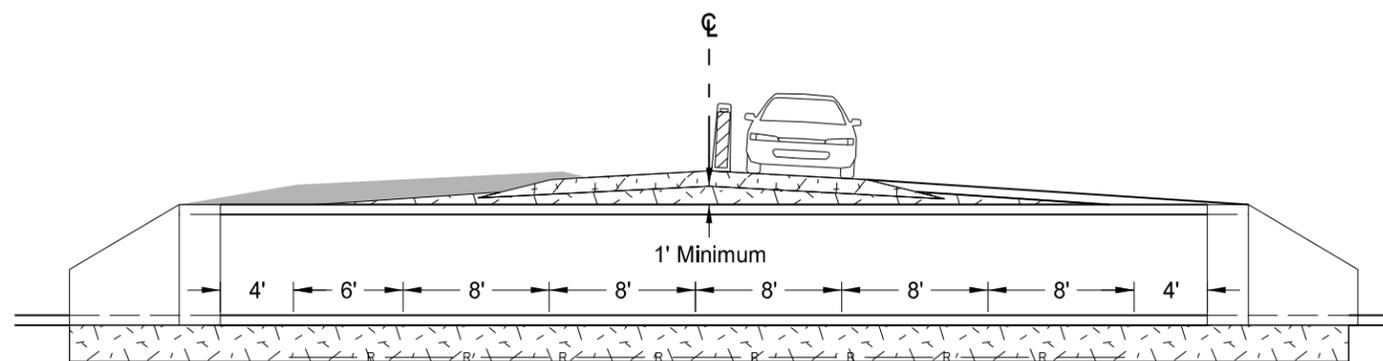
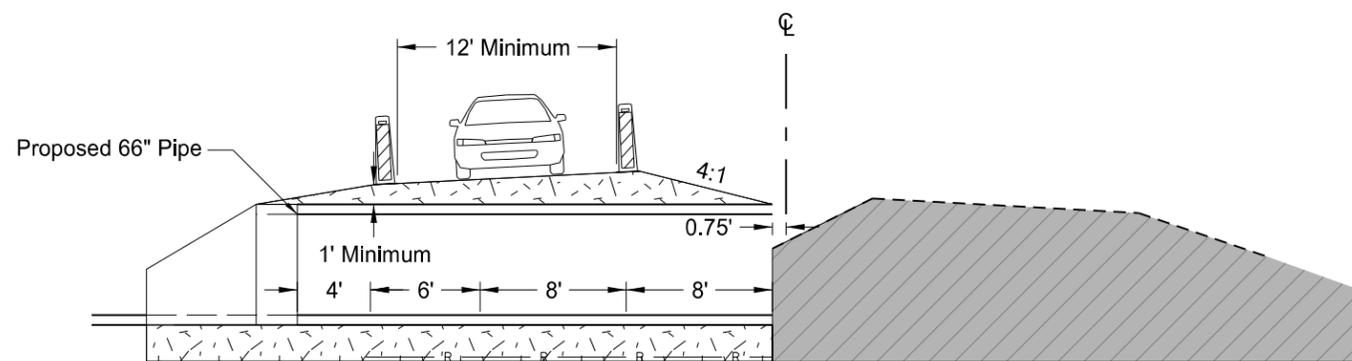
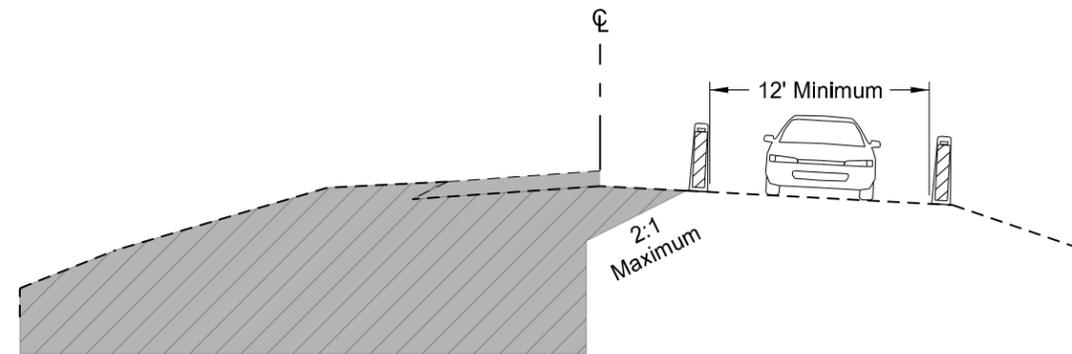
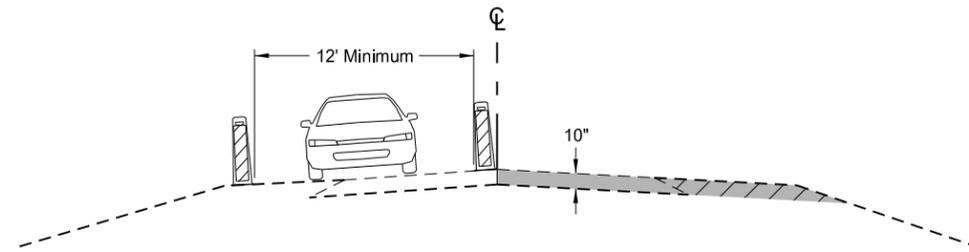
Point 8001 N 451,101.1333 E 2,366,815.0750 Sta 13146+28.11

Ending chain OCL 94 description

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Survey Data Layout
 Lippert Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-2-094(135)248	100	2



-  Common Excavation - Waste
-  Trench Excavation
-  Aggregate Base Course CI 5

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One-Lane Closure
 NW Frontage Road
 Lippert Interchange

CHANNEL

STATE

PROJECT NO.

SECTION NO.

SHEET NO.

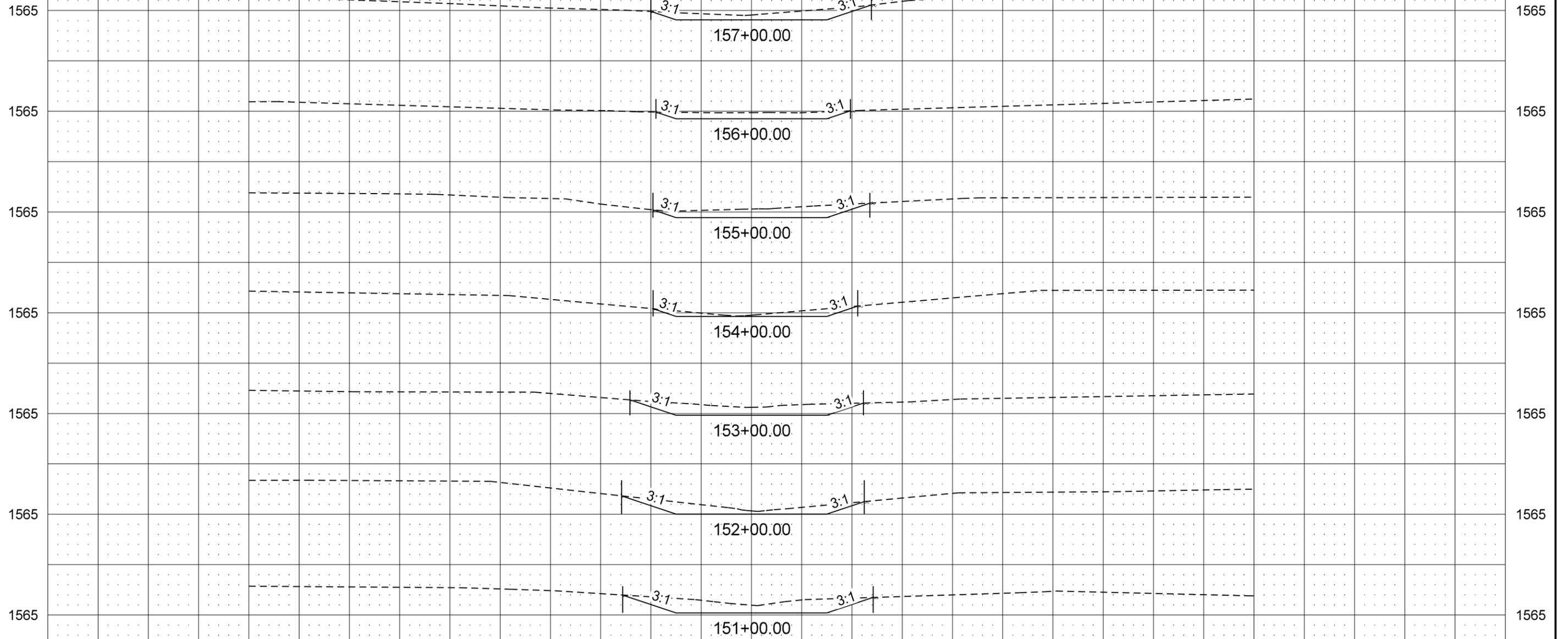
ND

IM-2-094(135)248

200

1

70 60 50 40 30 20 10 0 10 20 30 40 50 60 70



151+00.00 to 157+00.00