

DESIGN DATA				
Traffic	Average Daily			
Current 2020	Pass: 2,160	Trucks: 635	Total: 2,795	
Preventive Maintenance				

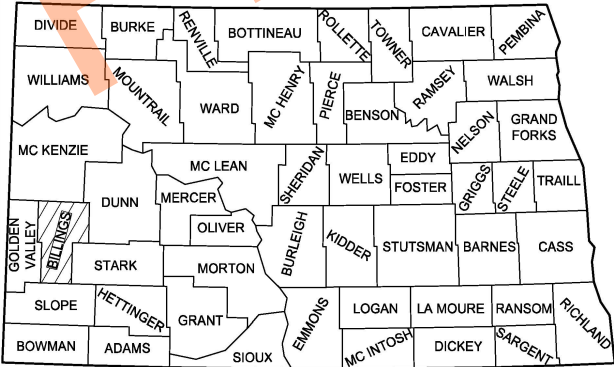
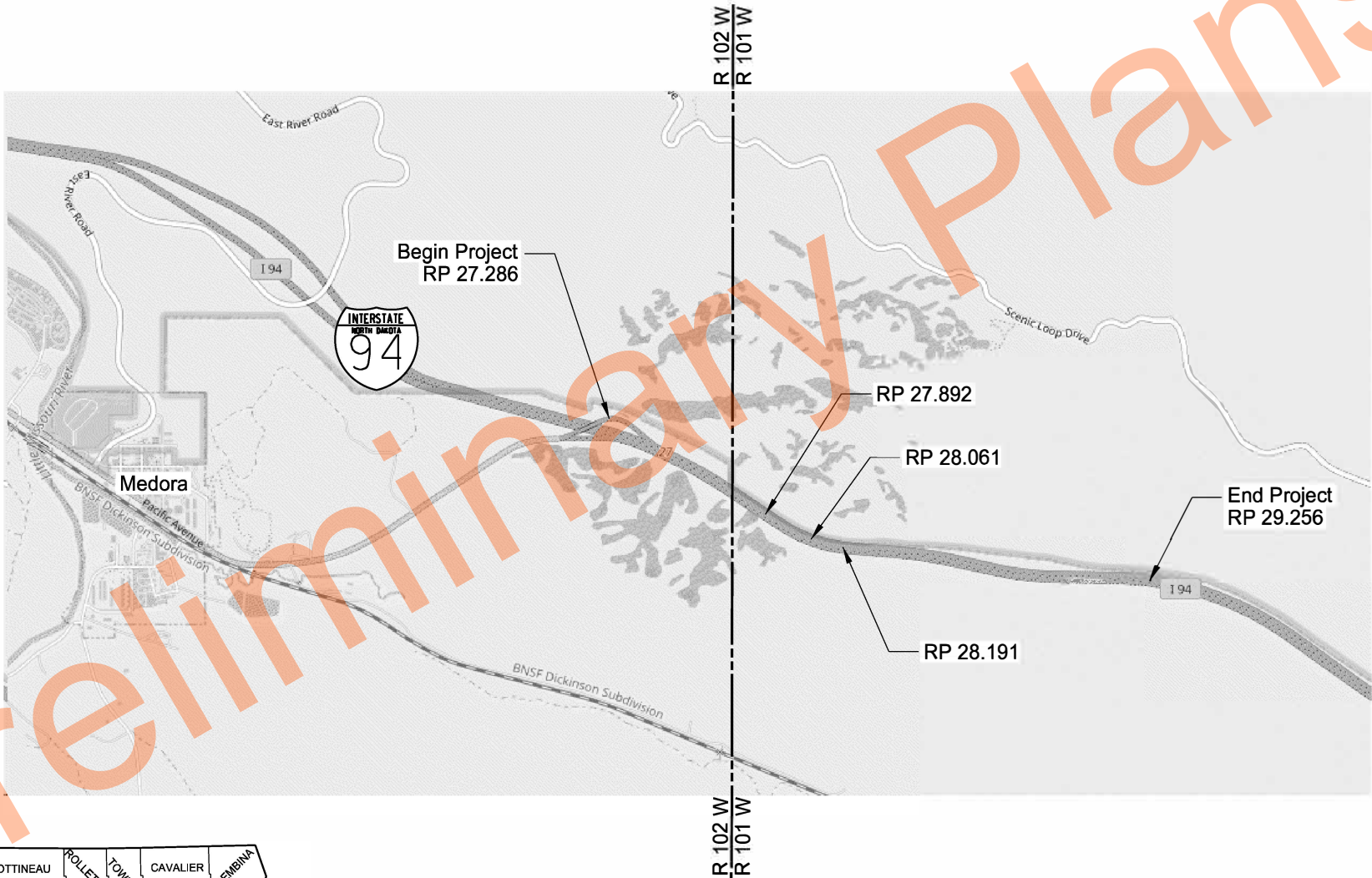
STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	IM-5-094(158)027	23518	1	1

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

IM-5-094(158)027
Billings County
Interstate 94, W of E Medora Int to 2 Mi E
Culvert Rehabilitation
Grading
Erosion Control

GOVERNING SPECIFICATIONS	Date Published and Adopted by the North Dakota Department of Transportation
Standard Specifications	7/1/2025
Supplemental Specifications	NONE

PROJECT NUMBER	DESCRIPTION	NET MILES	GROSS MILES
IM-5-094(158)027		0.00	1.97



STATE COUNTY MAP

DESIGNER Kyle Wieler, PE
DESIGNER Julian Yap, PE
DESIGNER Stuart Withers

UNITED STATES FOREST SERVICE
Approved by: Grasslands Engineer
CURTIS GRUDNIEWSKI
Digitally signed by CURTIS GRUDNIEWSKI
Date: 2025.12.09 12:49:56 -07'00'

ND DEPARTMENT OF TRANSPORTATION
OFFICE OF PROJECT DEVELOPMENT
Kirk Hoff 03/03/26

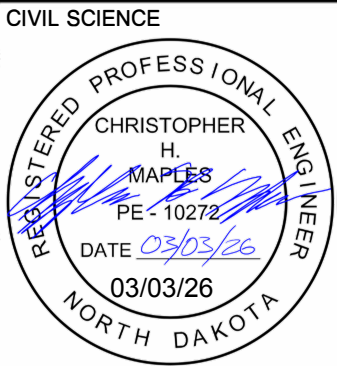
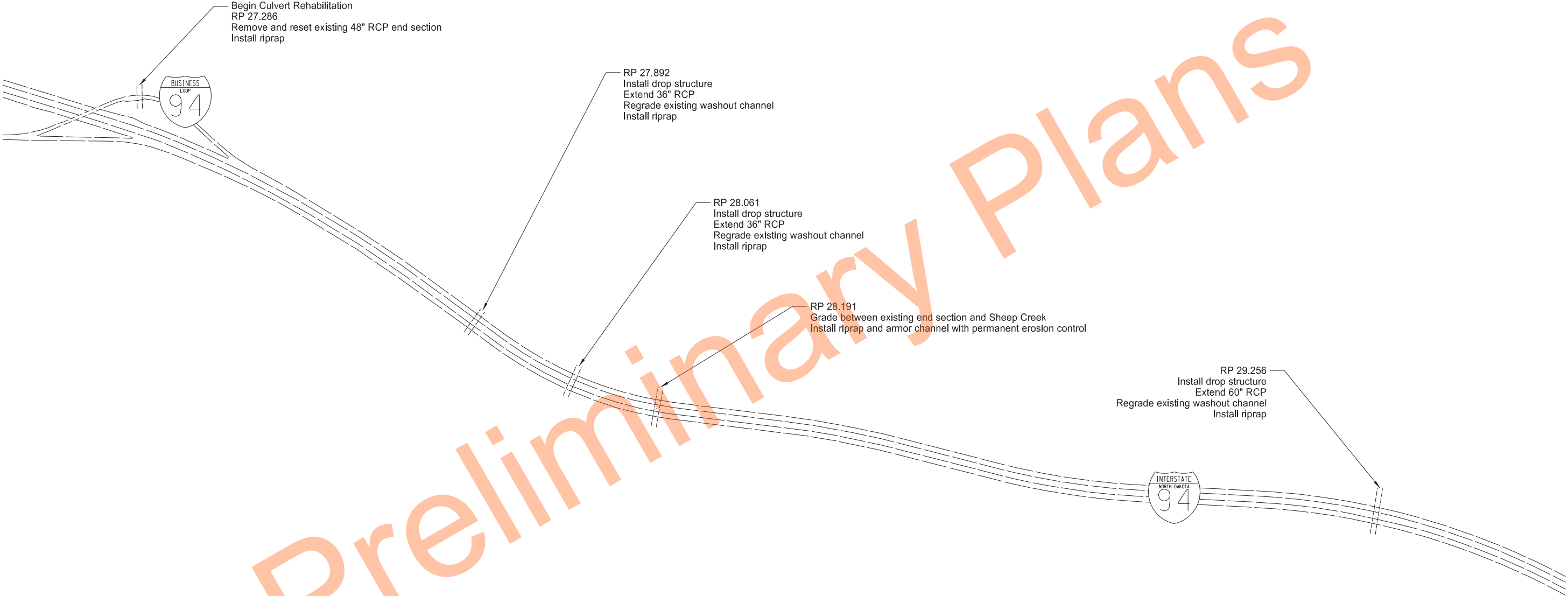


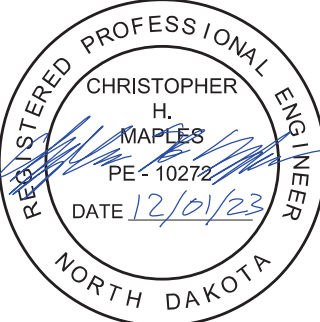
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6	1 - 3	Notes	D-101-30, 31, 32, 33	Symbols					
6	4	Environmental Notes	D-261-1	Erosion Control - Fiber Roll Placement Details					
8	1	Quantities	D-704-7	Breakaway Systems For Construction Zone Signs - Perforated Tube					
11	1	Data Tables	D-704-8	Breakaway Systems For Construction Zone Signs - U-Channel Post					
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PSP 32(25)	Permits and Environmental Considerations								
SP 212(25)	US Forest Service Considerations								

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Scope of Work
Project Area

W of Medora Int to 2 Mi E
Billings County



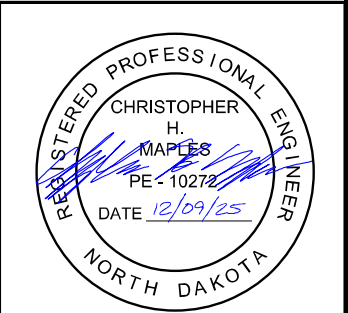
NOTES

GENERAL NOTES

- 100-P01 TIMING RESTRICTIONS: Timing of construction activities are limited in proximity to the Theodore Roosevelt National Park (TRNP). Timing restrictions are for the work areas located at:
- RP 27.892
 - RP 28.061
 - RP 28.191
 - RP 29.256
- In these areas, construction activities are limited to 6 am to 8 pm mountain time. Regular construction activities include any activity that adds additional noise to the environment such as movement of heavy equipment.
- Certain construction activities may require work outside of these times. Submit a written request to the Engineer at least 30 calendar days prior to working outside of the restricted time frame. The Engineer will notify the National Park Service (NPS) of the request. Requests that do not add substantial ambient noise will be considered.
- The Department bears no liability for costs or delays resulting from the Engineer's approval or rejection of a request to perform outside the restricted time frame.
- 100-P02 WORKING DAYS: Construction activities are to be limited to weekdays. Submit requests to perform work on weekends to the Engineer at least 7 days prior to the requested weekend work.
- The Engineer will notify the National Park Service (NPS) of the request.
- The Department bears no liability for costs or delays resulting from the Engineer's approval or rejection of a request to perform outside the restricted time frame.
- 100-P03 SCHEDULING: No construction activities will be allowed from June 27 to July 7. Remove all traffic control devices from I-94 prior to June 27. Resume work no earlier than July 8.
- 107-300 CONSTRUCTION TRAFFIC ACCESS: Access areas within the right of way only at interchanges.
- 109-P01 PAY PLAN QUANTITY: The Engineer will pay plan quantity for the following items and field measurements will not be taken.

- 203-0119 TOPSOIL-IMPORTED
- 251-0300 SEEDING CLASS III
- 251-1000 WETLAND SEED
- 251-2000 TEMPORARY COVER CROP
- 900-0700 FLEXIBLE GROWTH MEDIUM

- 201-P01 CLEARING & GRUBBING: Remove old CSP pipes, tires and garbage in the existing drainage channels. Include all cost for labor, materials, and equipment in the contract unit price bid for "CLEARING & GRUBBING".
- 203-010 SHRINKAGE: 25% percent additional volume is included for shrinkage in earth embankment.
- 203-P01 COMMON EXCAVATION-TYPE A: Common excavation quantities are provided for volume total amounts. Include all materials, labor, and equipment necessary for Common Excavation-Type A in the contract unit price bid for "RIPRAP GRADE _".
- 203-P02 COMMON EXCAVATION-TYPE B: Common excavation quantities are provided for volume total amounts. Include all materials, labor, and equipment necessary for Common Excavation-Type B in the contract unit price bid for "RIPRAP GRADE _".
- 203-P03 BORROW EXCAVATION: Earthwork quantities are provided for information purposes only. The borrow source material will be acquired by the Contractor. Include all materials, labor, and equipment necessary for Borrow Excavation in the contract unit price bid for "RIPRAP GRADE _".
- 203 P04 COMMON EXCAVATION-WASTE: Waste material will become the property of the Contractor.
- 251-P01 ORDER OF OPERATIONS FOR TEMPORARY STABILIZATION:
- 1) Seed Temporary Cover Crop
 - 2) Install Flexible Growth Medium
- 251-P02 ORDER OF OPERATIONS FOR SEEDING: Due to the spring seeding restriction for Seeding Class III, perform seeding as follows: Plant Seeding Class III in accordance with NDDOT Specifications 251.04 C.
- Year 1
- Seed temporary cover crop and place erosion control in disturbed areas as shown in Section 76.
- Year 2: Prior to June 15th
- Seed Class III and place erosion control as shown in Section 77.
 - Seed Class III through the established vegetation.



NOTES

251-P03 SEEDING CLASS III: Use the following seed mix for all permanent seeding. Include the cost for seeding in the contract unit price bid for "SEEDING CLASS III."

	Species	Variety	PLS (lbs/Acre)
Grasses	Canada Wildrye (c)	Mandan	2.8
	Green Needlegrass (c)	Lodorm	2.4
	Western Wheatgrass (c)	Rodan	4.9
	Blue grama (w)	Bad River	0.3
	Prairie Sandreed (w)	Goshen	0.8
	Little Bluestem (w)	Badlands	0.8
	Sideoats Grama (aw)	Pierre	1.2
Forbs	Purple Prairieclover	Local	0.25
	or		
	White Prairieclover	Antelope	0.3
	Stiff Sunflower	Bismarck	0.7
	or		
	Stiff Goldenrod	Local	0.1
	Purple Coneflower	Bismarck	0.5
	or		
	Prairie Coneflower	Local	0.1
	Totals	Forbs	13.4
		Alternate Forbs	12.5

(c) – cool season
(w) warm season
(aw) – alternate warm season (for one warm season species)

If any of the species or varieties are not available, contact Environmental and Transportation Services (ETS) Section (701-328-2592) for a replacement. Plant the Class III seed mix between May 1st and June 15th.

256-P01 RIPRAP: Existing riprap 12 inches or larger in diameter at project sites must be salvaged for use on the project if clean and free of debris and blended with imported riprap materials. Engineer has final authority to approve or deny use of existing riprap.

Place riprap within 7 days of pipe installation/channel construction to minimize erosion potential. All costs to complete the above-described work are included in the contract unit price bid for "RIPRAP GRADE _."

261-P01 FIBER ROLLS 12IN: Place fiber rolls as needed to stabilize slopes used for access to the project site locations. An additional 200 LF of FIBER ROLLS 12IN has been included for discretionary purposes.

704-P01 TRAFFIC CONTROL DEVICES: The traffic control devices list is based on Contractor performing work at one culvert location at a time. The developed list uses the Standard Drawings for traffic control:

D-704-24, Layout HH for Shoulder Closed on Freeway

D-704-35, Sign Layout for One Lane Closure Interstate System.

Limit the project to one lane closure at a time with a maximum length of 1 mile.

704-P02 SEQUENCING ARROW PANEL - TYPE C: Provide solar powered arrow panels that meet the requirements of the MUTCD and ITE and that are capable of operating for 20 days without a solar charge.

Include all costs for materials, equipment, labor, and incidentals in the contract unit price bid for "SEQUENCING ARROW PANEL - TYPE C".

714-P01 TRENCH SHORING: Utilize shoring between the proposed improvements and the edge of pavement in accordance with current OSHA standards. Protect existing pipe in place. Include all cost for labor, materials, and equipment in the contract unit price bid for "PIPE CONC REINF 36IN CL III" and "PIPE CONC REINF 60IN CL III".

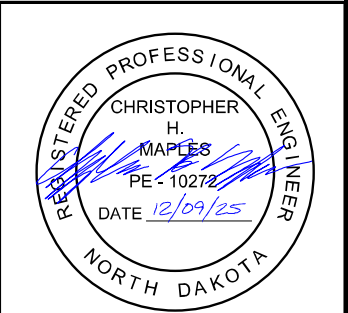
714-P02 CULVERT TIES: Tie all culvert joints in accordance with Std Dwg D-7-14-22. Include all cost for labor, materials, and equipment in the contract unit price bid for "PIPE CONC REINF 36IN CL III" and "PIPE CONC REINF 60IN CL III".

722-100 MANHOLES: Riser heights for manholes are noted in the plans. Fill the bottom of each manhole structure with concrete, up to the lowest invert elevation. See NDDOT standard detail D-722-5.

752-P01 FENCE REMOVE & RESET: At each culvert locations access Theodore Roosevelt National Park (TRNP) directly adjacent to the existing culvert. To access TRNP cut the existing park fence at the centerline of the culvert. Roll fence back no further than the nearest post with diagonal braces. Install brace assemblies at the limits of fence removal. Carefully remove existing fence posts to reuse when restoring fence. Protect existing braced posts in place. Construct temporary fence around the work area inside the NDDOT ROW utilizing 6' x 24' TRNP fence panels. Contact TRNP to arrange collection of 14 fence panels.

Philip McCall
Chief of Facility Management
701-623-730 x 1405

Provide 42' of separation between motorists and the fence panels. Arrange fence panels such that there are no gaps between panels as well as the existing fence. During working hours when the Contractor is active at a culvert location one fence panel may be moved to provide access to the site.



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During this time the Contractor will ensure that no wildlife enter the ROW through the gap. Whenever workers are not currently working at a culvert location fence panels must be positioned such that there are no gaps between panels as well as the existing fence. Allow TRNP and NDDOT to inspect the fence panels prior to picking them up and when they are returned. The Contractor is liable for any damage to fence panels and will repair or replace damaged panels.

After construction reset the existing fence. When resetting fence leave brace assemblies added for fence removal in place. Reset existing fence posts matching existing post spacing. Stretch the fence back to original position and reconnect using appropriate crimpers. Include all costs for labor, materials, and equipment in the contract unit price bid for "FENCE REMOVE & RESET".

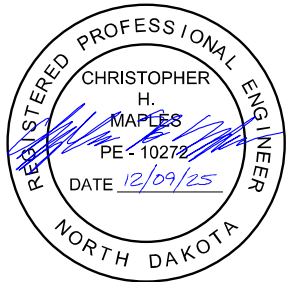
900-P01 FLEXIBLE GROWTH MEDIUM: Use one of the following Flexible Growth Medium products:

- Profile Flexterra HP-FGM
- Mat Inc. Flex Guard
- EarthGuard FM

If requested to the Engineer, Environmental & Transportation Services will review other manufacturers' products.

Apply Flexible Growth Medium (FGM) with hydraulic seeding equipment using a hose and a 50° nozzle. Apply FGM from opposing directions to assure 100% soil coverage. Apply FGM at a rate of 3000-3500 lbs/acre.

Include all costs associated with installation FGM areas in the unit price bid for "FLEXIBLE GROWTH MEDIUM."



ENVIRONMENTAL NOTES

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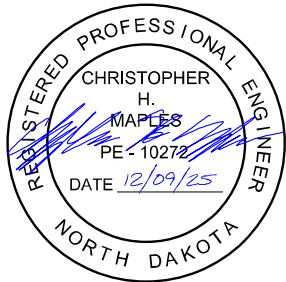
ENVIRONMENTAL NOTES (EN): The North Dakota Department of Transportation and the Federal Highway Administration have made environmental commitments to secure approval of this project. The following environmental notes are requirements to comply with these commitments:

EN-1 SPAWNING RESTRICTION: Do not work within Sheep Creek from April 15 to June 1.

EN-2 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, Ben Holen by e-mail - bholen@nd.gov 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).

EN-3 TEMPORARY WETLAND IMPACT: Temporary impact areas within wetlands and or other waters are incorporated into the plans for this project. Remove temporary fill placed and sedimentation in wetlands or other waters. Restore these wetlands to preconstruction contours.

EN-4 WOODY VEGETATION MITIGATION: Complete a tree/shrub count prior to tree/shrub removals. The count will be added to NDDOT's Tree Impact and Mitigation Ledger.



Estimated Quantities

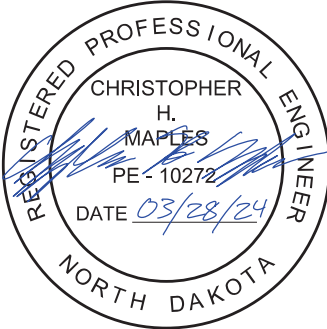
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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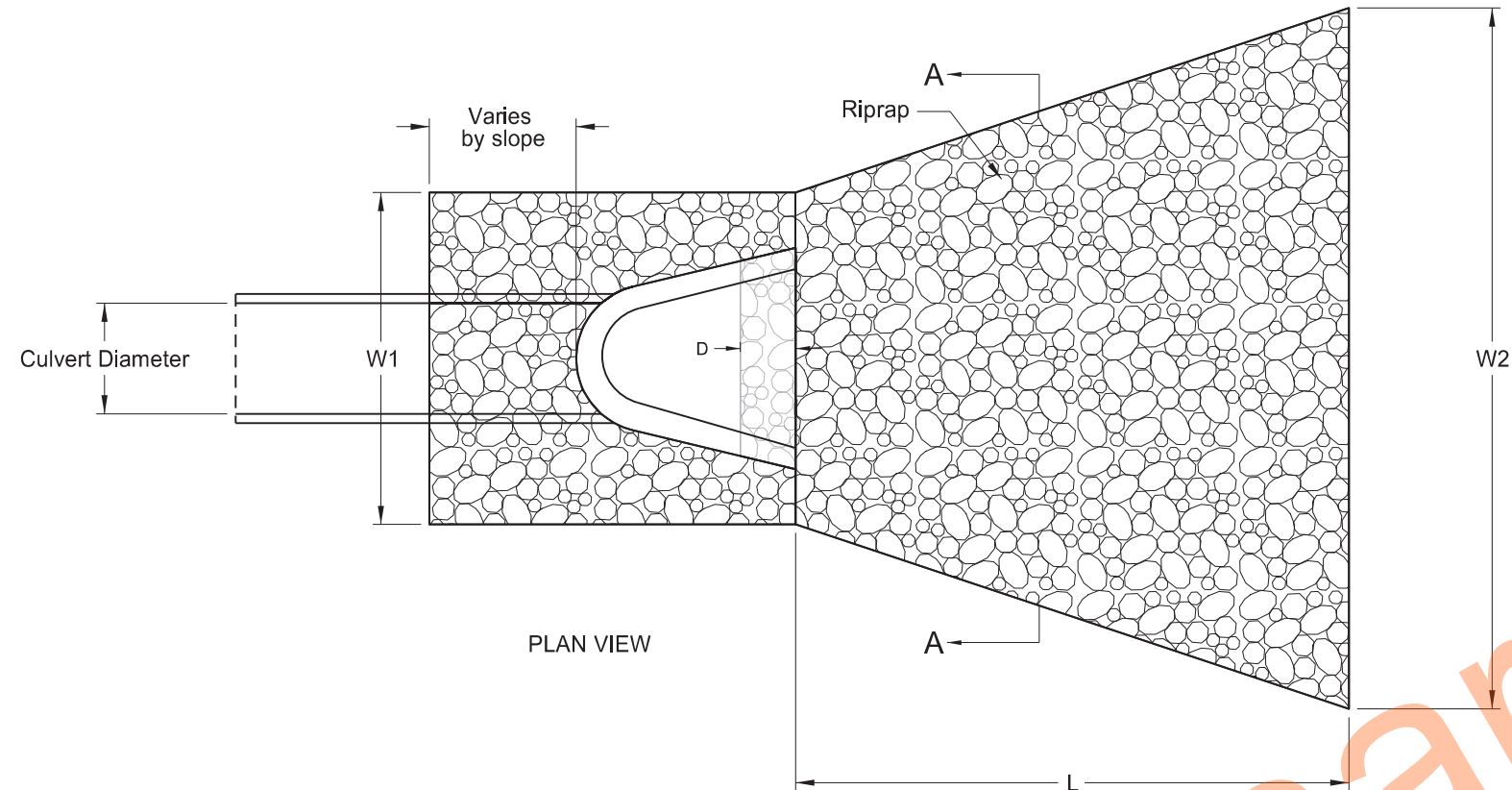
SPEC	CODE	ITEM DESCRIPTION	UNIT	IM-5-094(158)027	TOTAL
103	0100	CONTRACT BOND	L SUM	0.34	0.34
201	0330	CLEARING & GRUBBING	L SUM	0.64	0.64
202	0169	REMOVAL OF END SECTION-ALL TYPES & SIZES	EA	3	3
202	0170	REMOVAL OF CULVERTS-ALL TYPES & SIZES	LF	72	72
203	0119	TOPSOIL-IMPORTED	CY	447	447
251	0300	SEEDING CLASS III	ACRE	0.41	0.41
251	1000	WETLAND SEED	ACRE	0.07	0.07
251	2000	TEMPORARY COVER CROP	ACRE	0.48	0.48
256	0100	RIPRAP GRADE I	CY	96	96
256	0200	RIPRAP GRADE II	CY	199	199
256	0300	RIPRAP GRADE III	CY	580	580
261	0112	FIBER ROLLS 12IN	LF	1552	1552
261	0113	REMOVE FIBER ROLLS 12IN	LF	676	676
702	0100	MOBILIZATION	L SUM	0.34	0.34
704	1000	TRAFFIC CONTROL SIGNS	UNIT	508	508
704	1052	TYPE III BARRICADE	EA	1	1
704	1060	DELINEATOR DRUMS	EA	25	25
704	1067	TUBULAR MARKERS	EA	60	60
704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	1	1
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	666	666
714	0905	PIPE CONC REINF 36IN CL III	LF	180	180
714	1310	PIPE CONC REINF 60IN CL III	LF	76	76
714	3035	END SECT-CONC REINF 36IN	EA	2	2
714	3055	END SECT-CONC REINF 60IN	EA	1	1
714	9660	REMOVE & RELAY END SECTION-ALL TYPE & SIZES	EA	1	1
722	0107	MANHOLE 54IN	EA	2	2
722	0130	MANHOLE 84IN	EA	1	1
722	1106	MANHOLE RISER 54IN	LF	48.44	48.44
722	1130	MANHOLE RISER 84IN	LF	34.72	34.72
752	0920	FENCE REMOVE & RESET	L SUM	1	1
900	0700	FLEXIBLE GROWTH MEDIUM	SY	4670	4670
902	0400	MACHINE HYGIENE	L SUM	0.34	0.34

Culvert Rehabilitation Locations	Common Excavation – Type A* (CY)	Common Excavation – Type B* (CY)	Embankment* (CY)	Borrow – Excavation* (CY)		Common Excavation - Waste* (CY)	Topsoil - Imported** (CY) Pay Item
				Type A	Type B		
				C = B - A		D = A - B	F
RP 27.286	--	0	142	--	142	--	27
RP 27.892	31	--	1,314	1,283	--	--	106
RP 28.061	29	--	92	63	--	--	45
RP 28.191	--	1,032	5	--	--	1,027	146
RP 29.256	63	--	1,110	1,047	--	--	123
Subtotals				2,393	142		
Totals	123	1,032	2,663	2,535		1,027	447

* Earthwork quantities are for informational purposes only.
**Topsoil to be spread evenly within disturbed area.

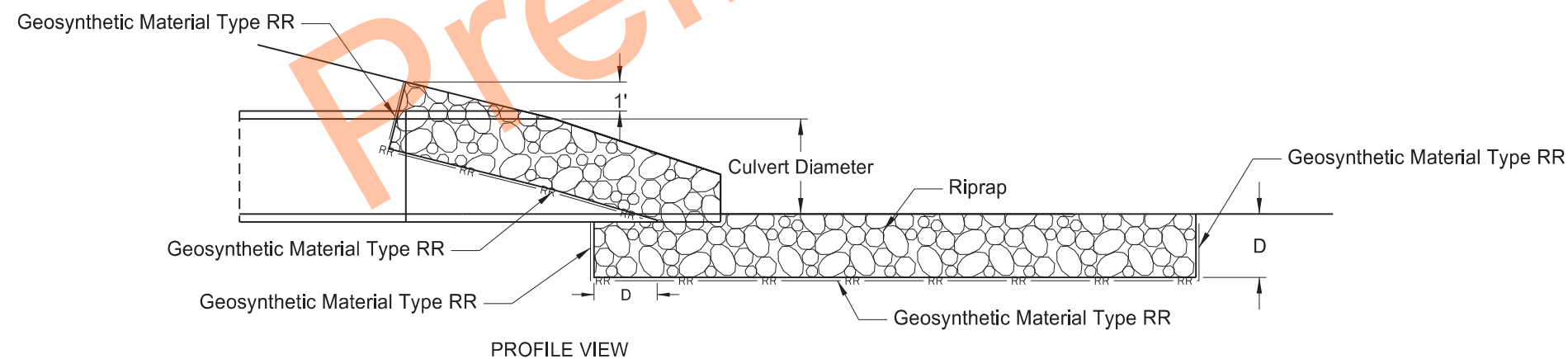
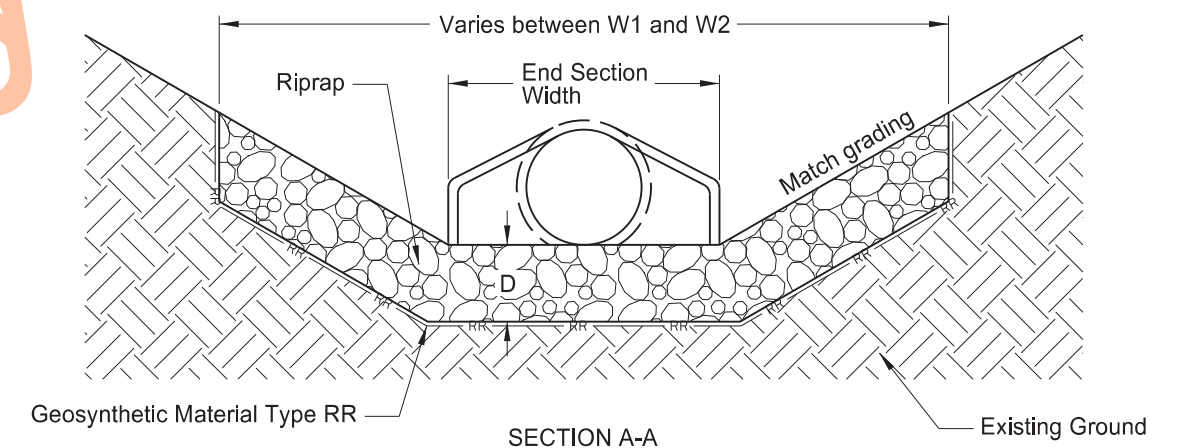
Earthwork Summary
All Locations





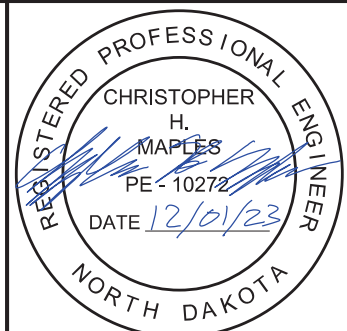
Location	Dimensions						Quantities			
	Culvert Diameter (inches)	L (feet)	W1 (feet)	W2 (feet)	Riprap Depth, D (inches)	Riprap Grade	Geosynthetic Material Type RR (SY)	Riprap Grade I (CY)	Riprap Grade II (CY)	Riprap Grade III (CY)
RP 27.286*	48	35	30	33	44	II	163		199	
RP 27.892	36	12	10	14	30	I	29	25		
RP 28.061	36	11	10	14	30	I	28	24		
RP 29.256	60	20	12	23	30	I	59	50		
TOTAL							279	99	199	

Note: These quantities are included in the total quantities in Section 77.
*See additional layout details on Section 77 Sheet 1.

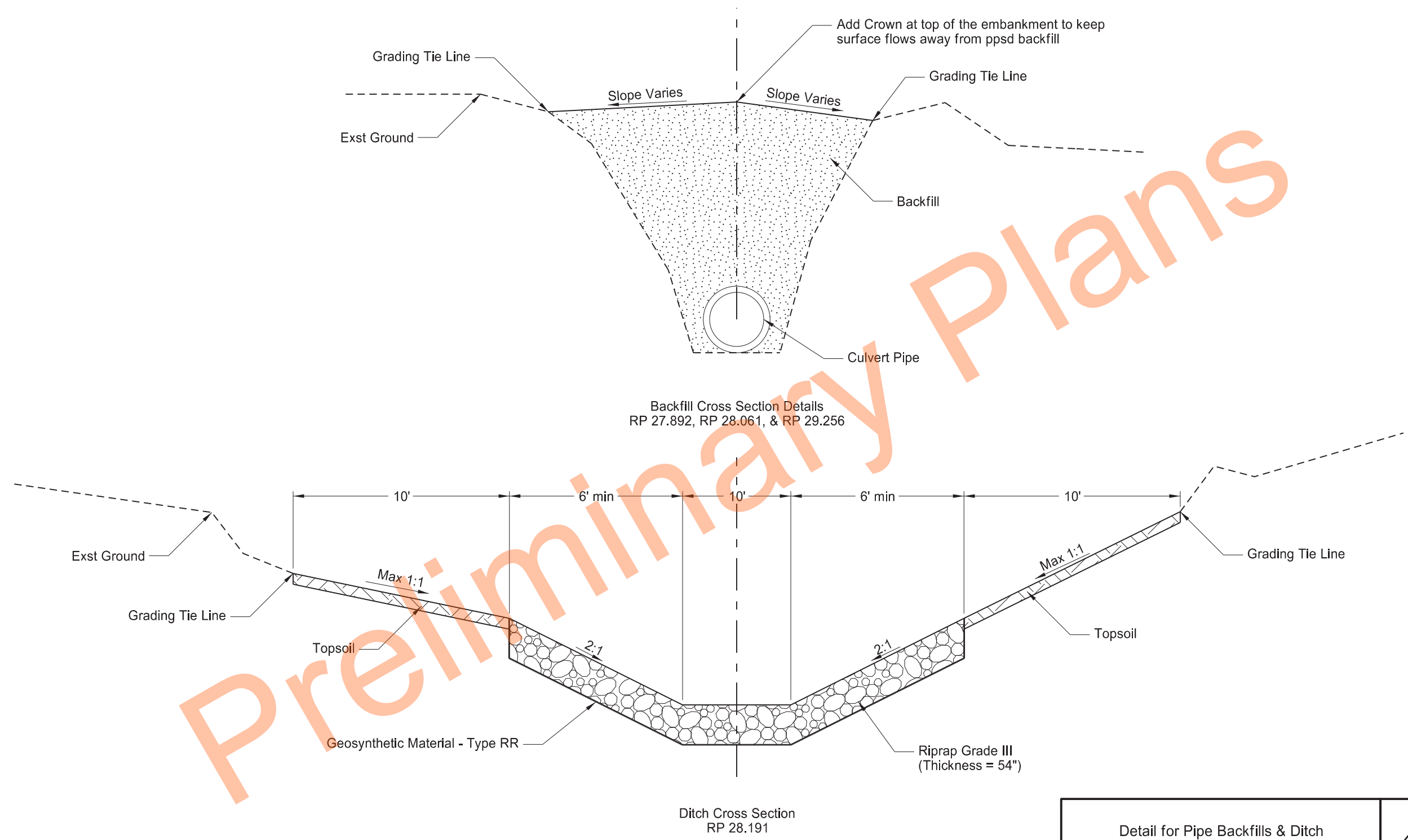


Riprap at Pipe Outlets

W of Medora Int to 2 Mi E
Billings County, ND



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Detail for Pipe Backfills & Ditch

W of Medora Int to 2 Mi E
Billings County, ND

REGISTERED PROFESSIONAL ENGINEER

CHRISTOPHER H. MAPLES

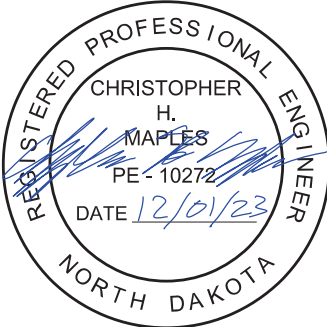
PE - 10272

DATE 12/01/23

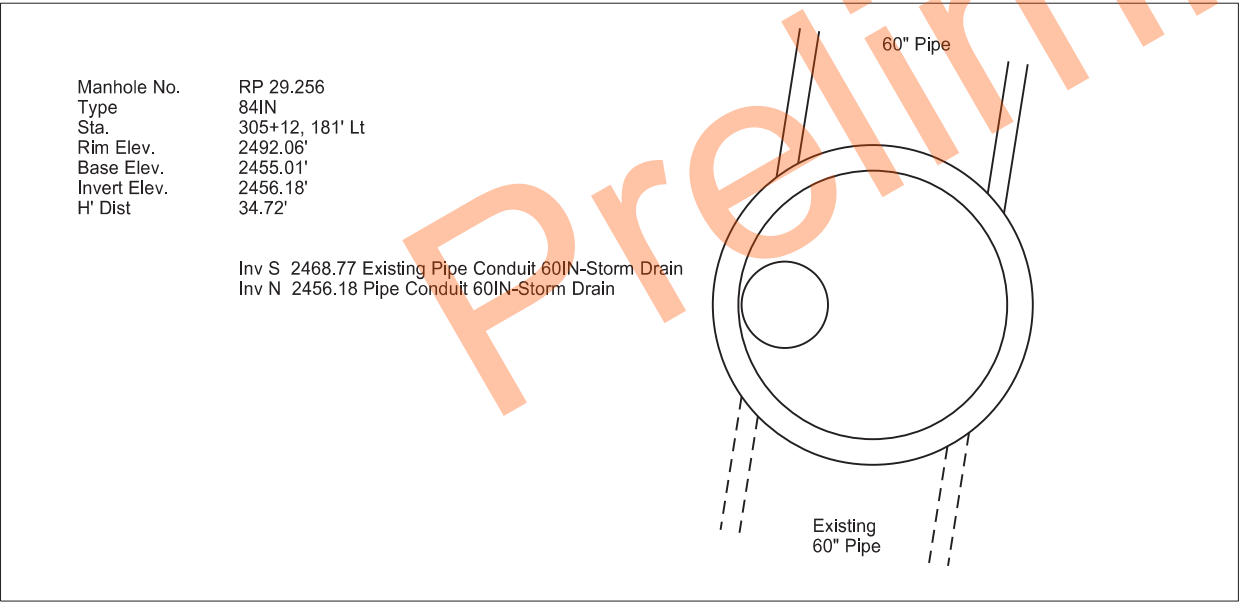
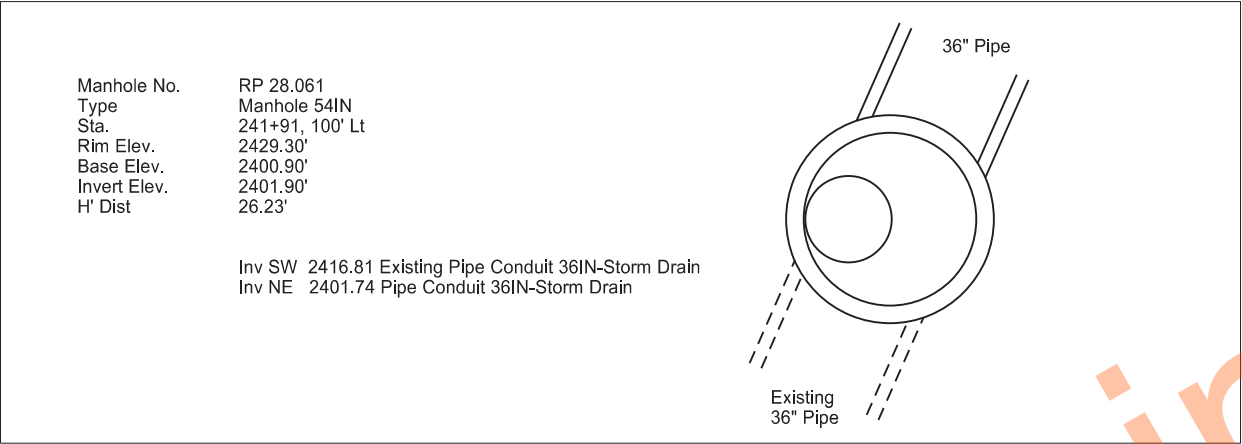
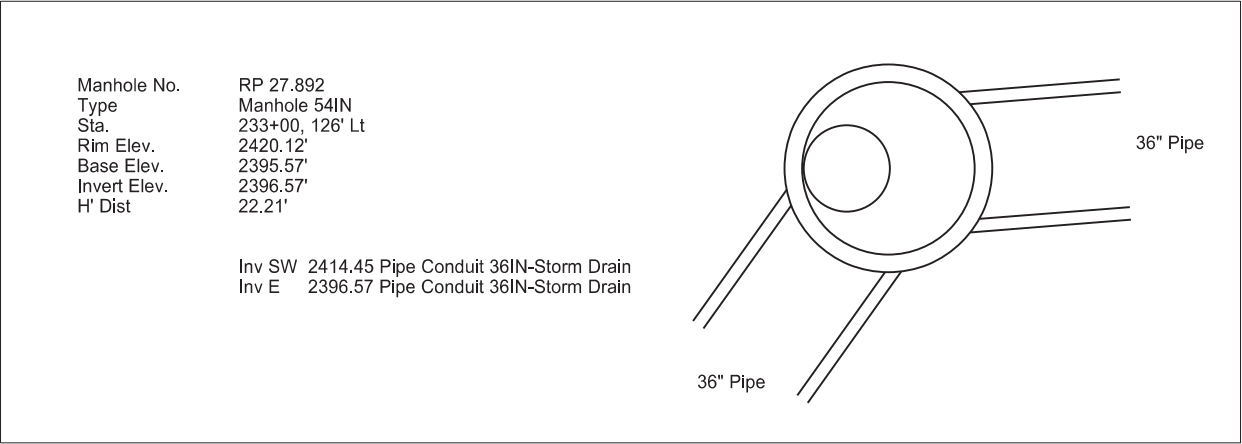
NORTH DAKOTA

HYDRAULIC DATA FOR IM-5-094(158)027 (A)									
RP	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)
27.892	36"x216' RCP	36" (B)	19.7	55	4.36	8.2	2425.34	125	2428.10
28.061	36"x252' RCP	36" (B)	17.5	50	3.94	7.6	2429.83	114	2438.38
29.256	60"x360' RCP	60" (B)	61.5	133	5.13	8.0	2483.85	153	2484.44
(A) Hydraulic Data provided is for smooth-walled (Manning's n=0.012) type conduits.									
(B) Includes drop manhole structure.									

Culvert Hydraulic Data
All Locations



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Manhole Summary
All Locations

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER H. MAPLES
PE - 10272
DATE 12/01/23
NORTH DAKOTA

Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	Geosynthetic Material - Type G	(*) End Sections		Applicable Backfill
				In	Bid Item	LF							Begin	End	
				In				In	Type		In	SY	EA	EA	
233+00 / RP 27.892	112' Lt	233+00 / RP 27.892	126' Lt	36	714 0905	14	Reinforced Concrete Pipe - Class III (barrel length = 14 LF)	36							Standard D-714-27
233+00 / RP 27.892	126' Lt	233+77 / RP 27.892	204' Lt	36	714 0905	112	Reinforced Concrete Pipe - Class III (barrel length = 112 LF) With 15° Horiz. Bend (**)	36						FES	Standard D-714-27
241+91 / RP 28.061	100' Lt	241+91 / RP 28.061	154' Lt	36	714 0905	54	Reinforced Concrete Pipe - Class III (barrel length = 54 LF)	36						FES	Standard D-714-27
305+12 / RP 29.256	181' Lt	305+08 / RP 29.256	257' Lt	60	714 1310	76	Reinforced Concrete Pipe - Class III (barrel length = 76 LF)	60						FES	Standard D-714-27

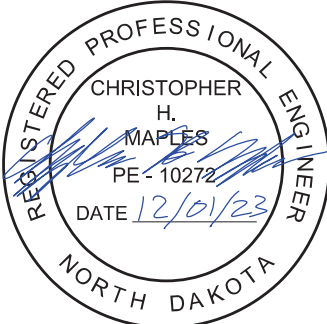
Corrugations: 2 = 2-2/3"x1/2"
3 = 3"x1"
5 = 5"x1"

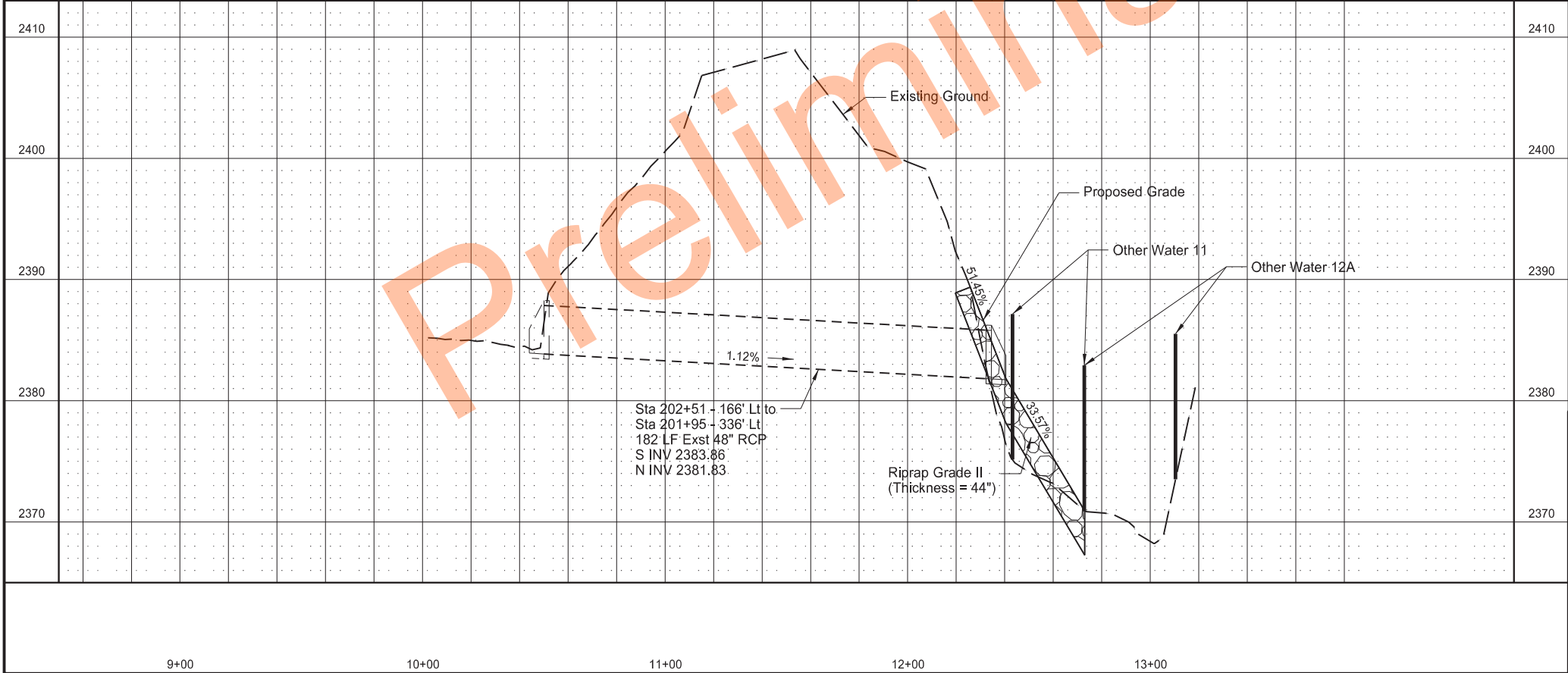
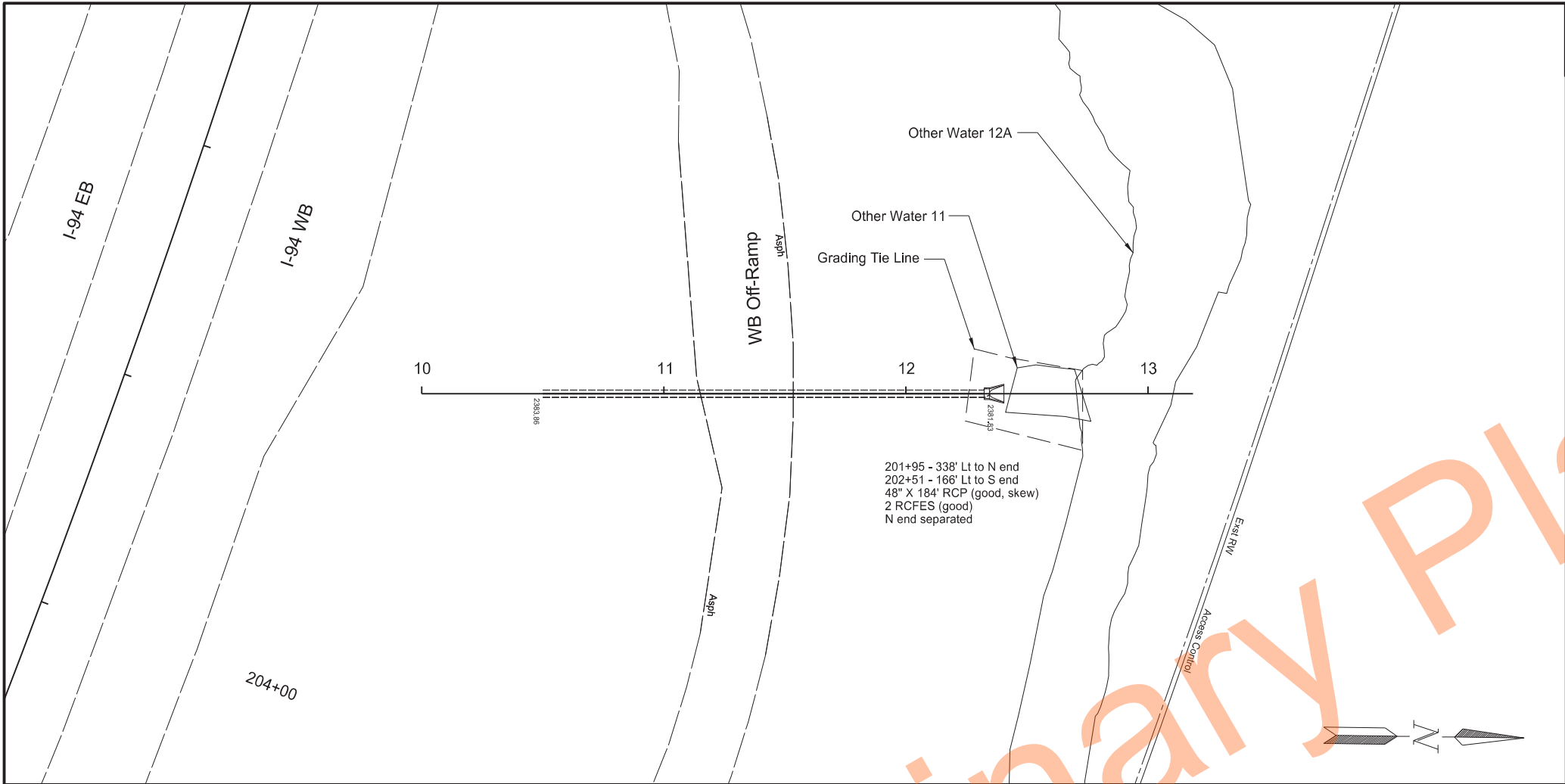
Coatings: Z = Zinc
A = Aluminum
P = Polymeric (over Zinc or Aluminum)

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

(*) End sections are measured and paid for separately for pipe extensions.
FES = Flared End Section
TES = Traversable End Section
(**) 15° Horizontal Bend is incidental to 714-0905 PIPE CONC REINF 36IN CL III

Allowable Pipe List
All Locations

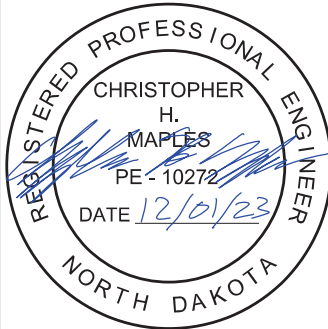


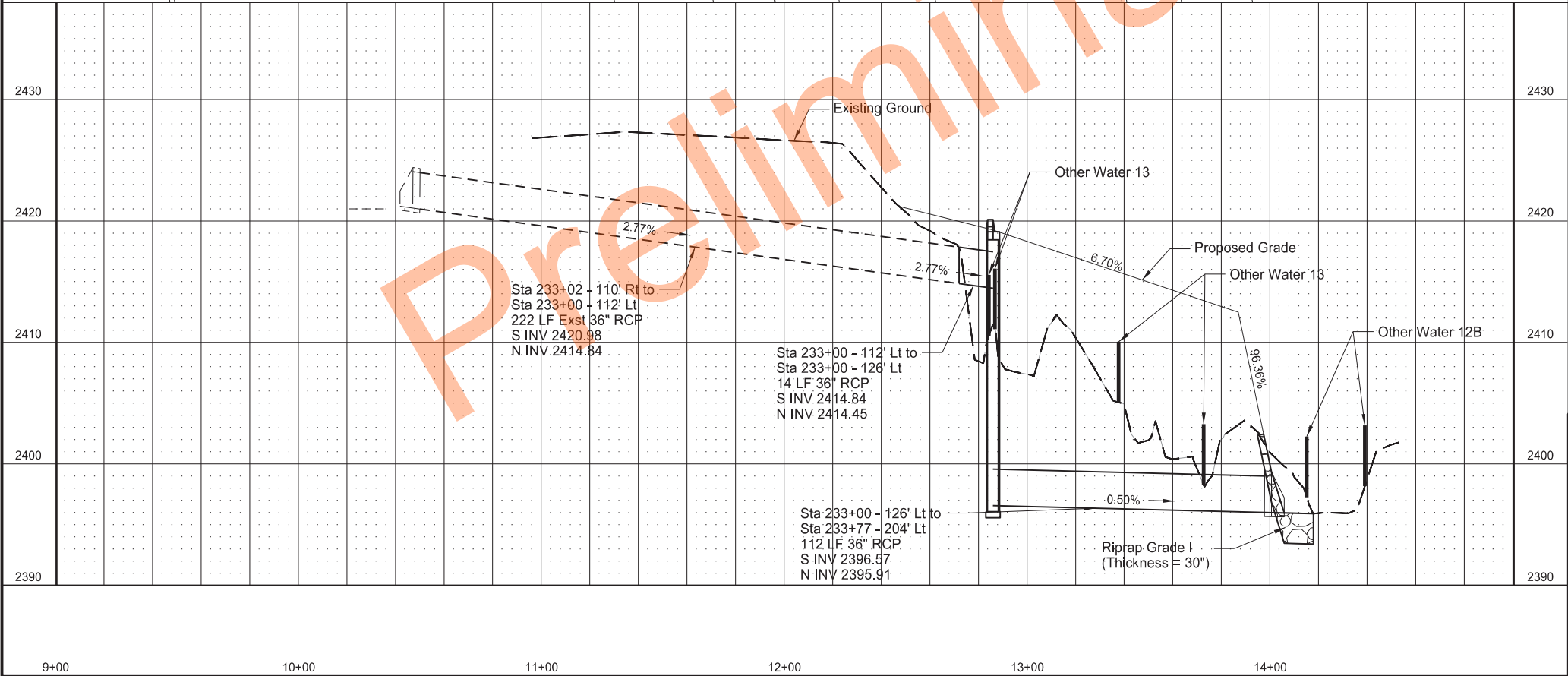
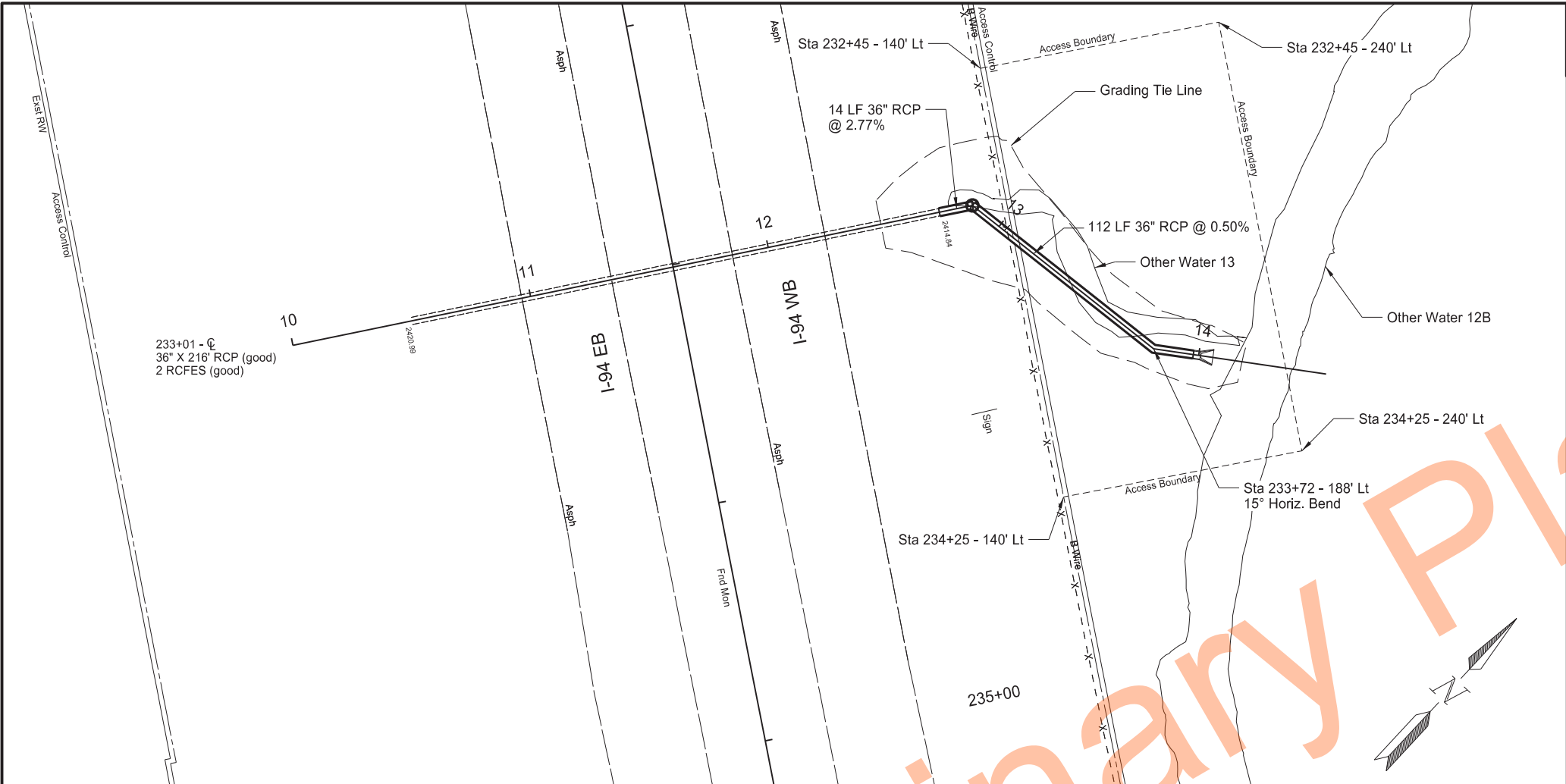


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-5-094(158)027	60	1

SPEC	CODE	BID ITEM	QTY	UNIT
714	9660	REMOVE & RELAY END SECTION-ALL TYPE & SIZES Sta 201+95 - 338' Lt	1	EA

Plan & Profile
RP 27.286

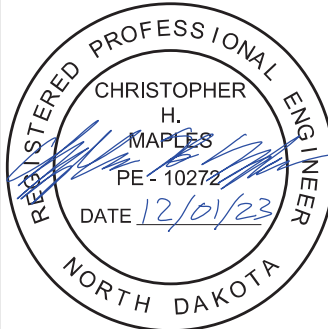


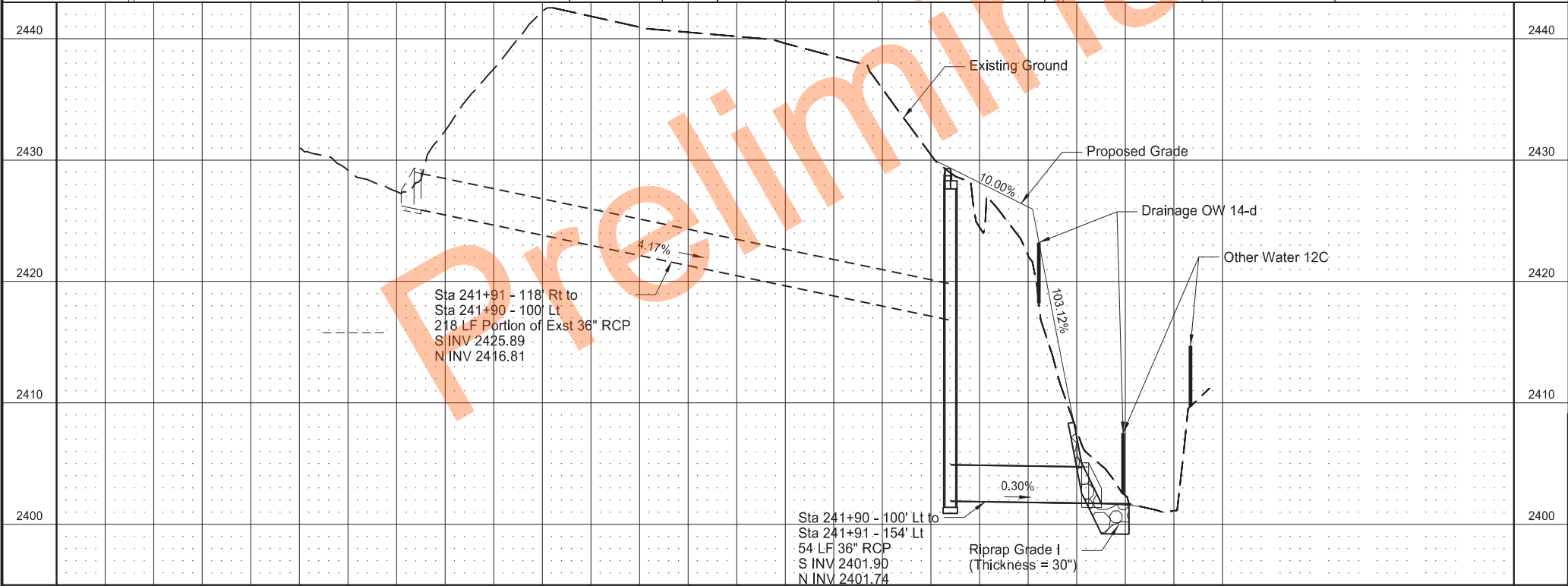
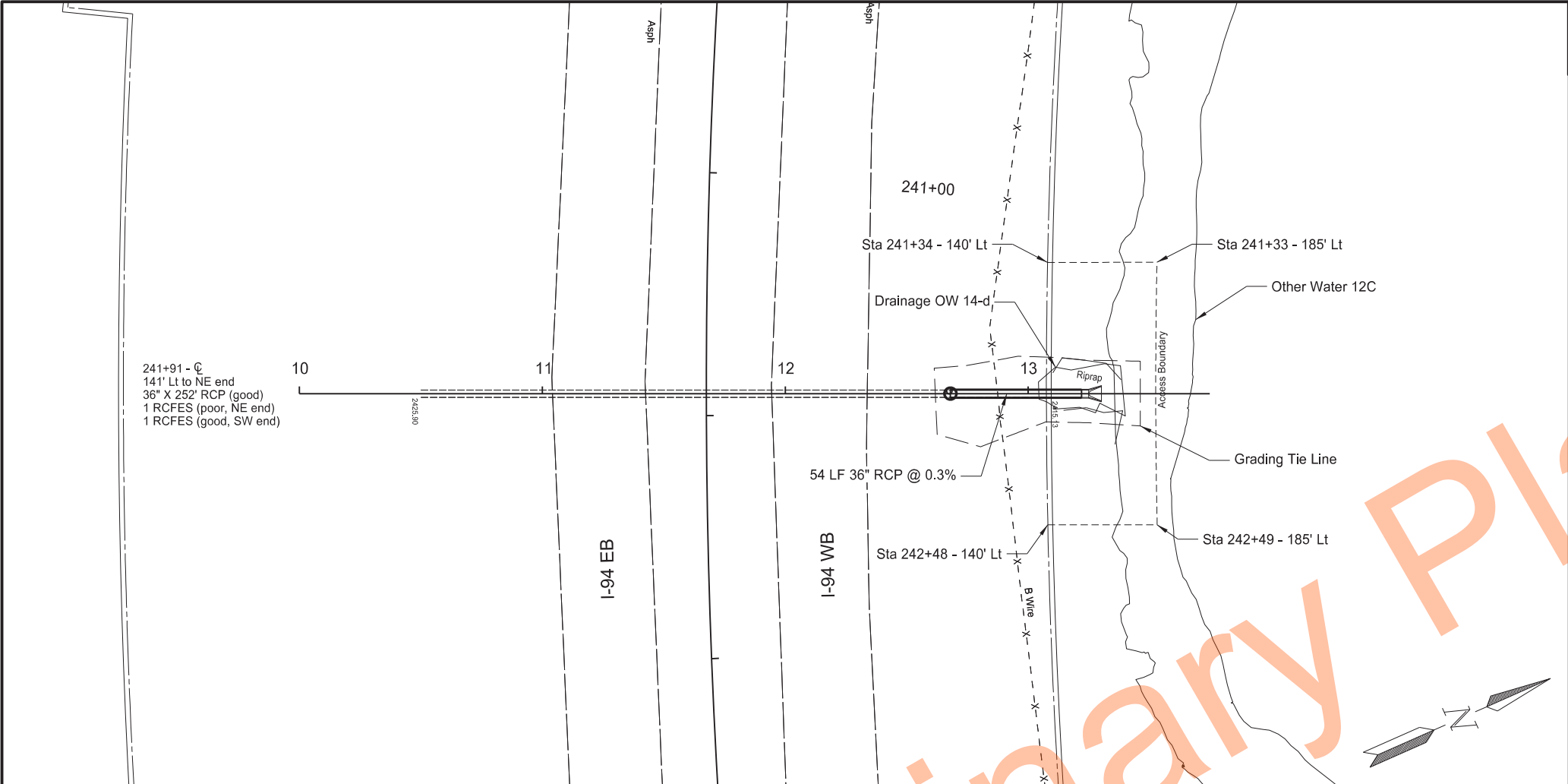


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-5-094(158)027	60	2

SPEC	CODE	BID ITEM	QTY	UNIT
202	0169	REMOVAL OF END SECTION-ALL TYPES & SIZES		
		Sta 233+00 - 112' Lt	1	EA
714	0905	PIPE CONC REINF 36IN CL III		
		Sta 233+00 - 112' Lt to Sta 233+00 - 126' Lt	14	LF
		Sta 233+00 - 126' Lt to Sta 233+77 - 204' Lt	112	LF
		TOTAL	126	LF
714	3035	END SECT CONC REINF 36IN		
		Sta 233+77 - 204' Lt	1	EA
722	0107	MANHOLE 54IN		
		Sta 233+00 - 126' Lt	1	EA
722	1106	MANHOLE RISER 54IN		
		Sta 233+00 - 126' Lt	22.21	LF

Plan & Profile
RP 27.892

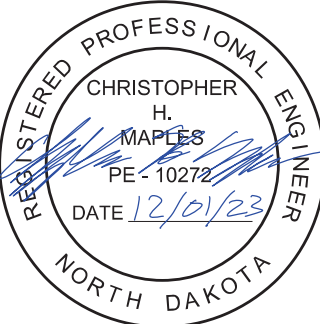


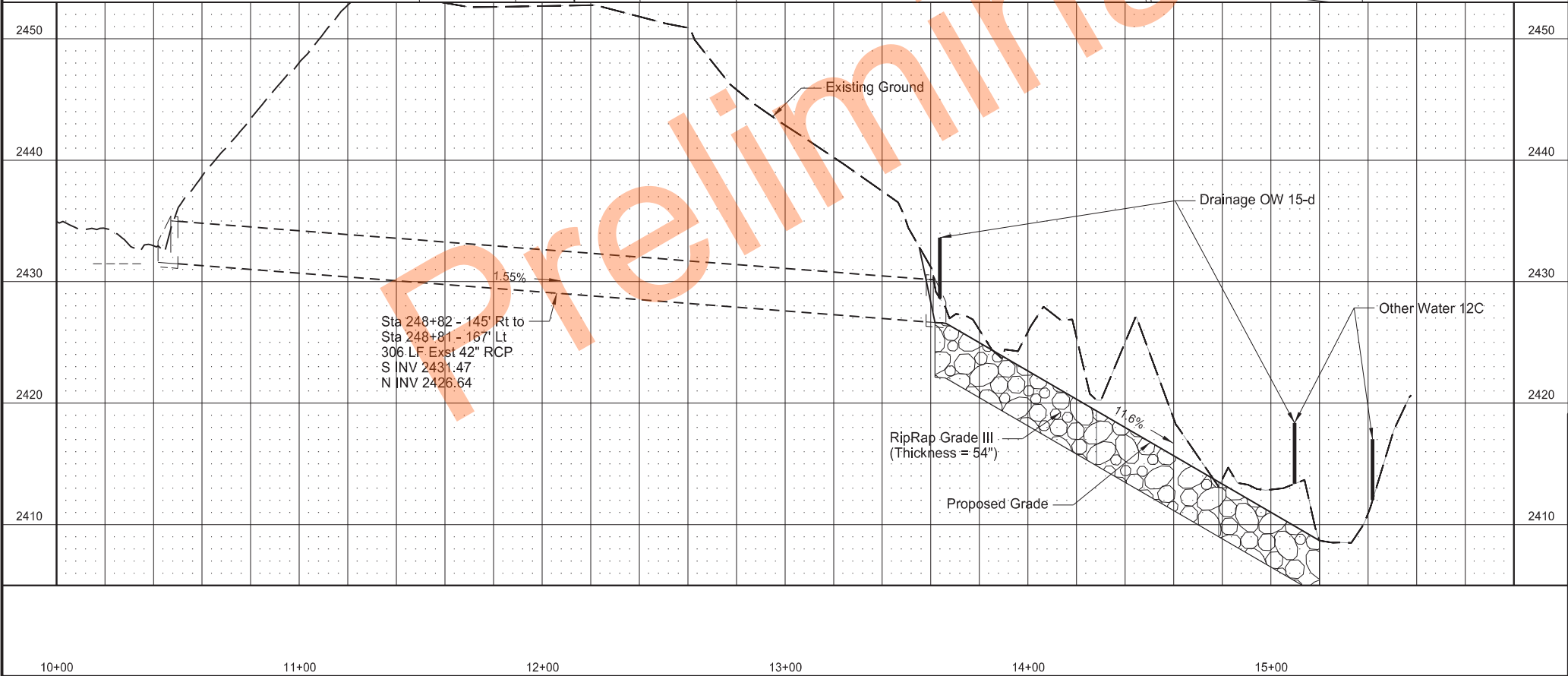
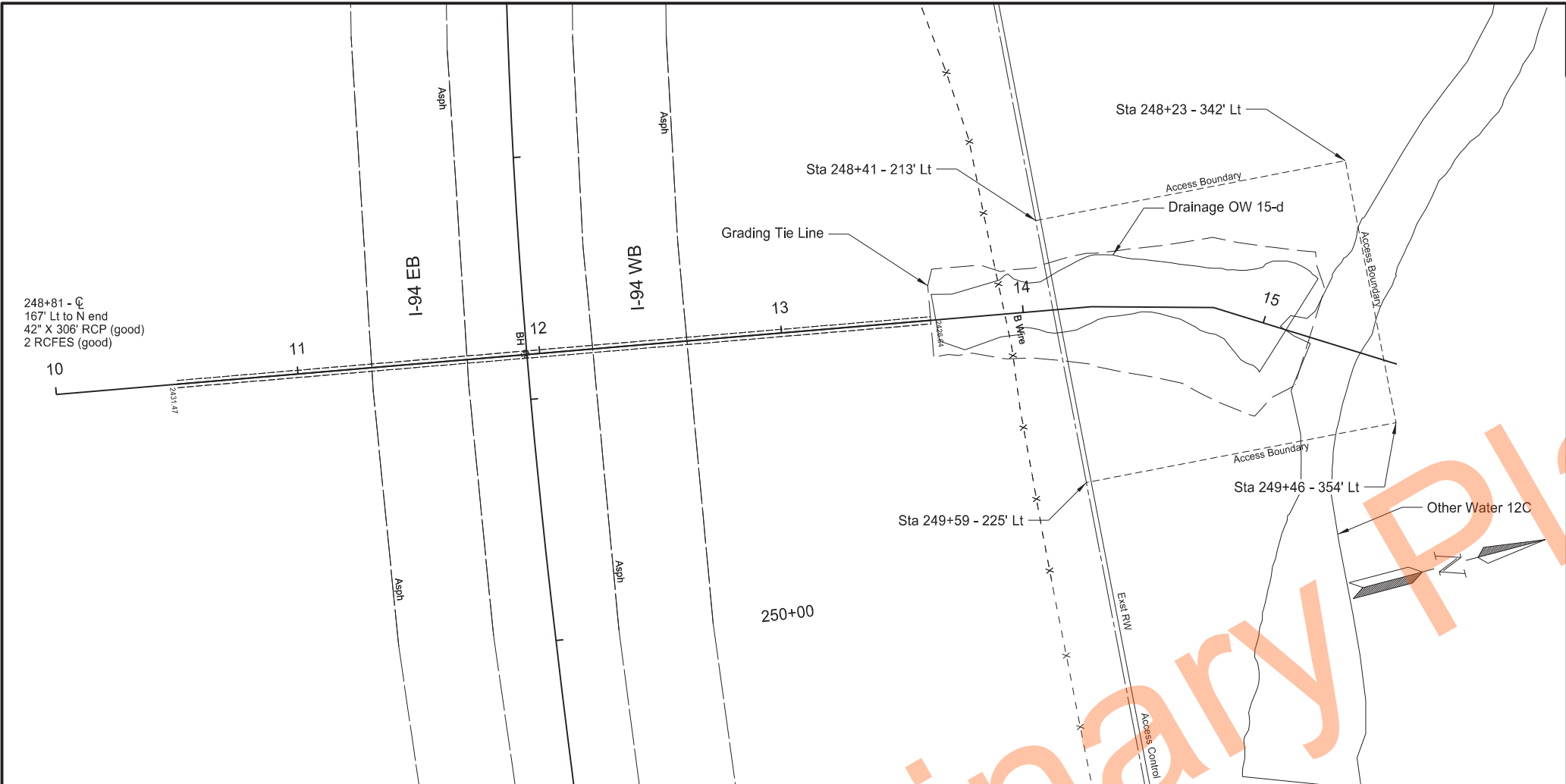


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-5-094(158)027	60	3

SPEC	CODE	BID ITEM	QTY	UNIT
202	0169	REMOVAL OF END SECTION-ALL TYPES & SIZES		
		Sta 241+91 - 140' Lt	1	EA
202	0170	REMOVAL OF CULVERTS-ALL TYPES & SIZES		
		Sta 241+91 - 100' Lt to Sta 241+91 - 140' Lt	38	LF
714	0905	PIPE CONC REINF 36IN CL III		
		Sta 241+91 - 100' Lt to Sta 241+91 - 154' Lt	54	LF
714	3035	END SECT CONC REINF 36IN		
		Sta 241+91 - 154' Lt	1	EA
722	0107	MANHOLE 54IN		
		Sta 241+91 - 100' Lt	1	EA
722	1106	MANHOLE RISER 54IN		
		Sta 241+91 - 100' Lt	26.23	LF

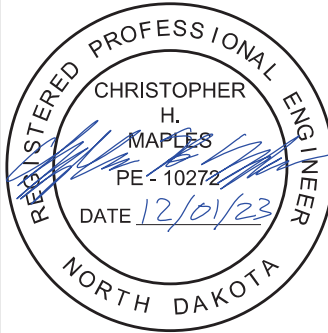
Plan & Profile
RP 28.061

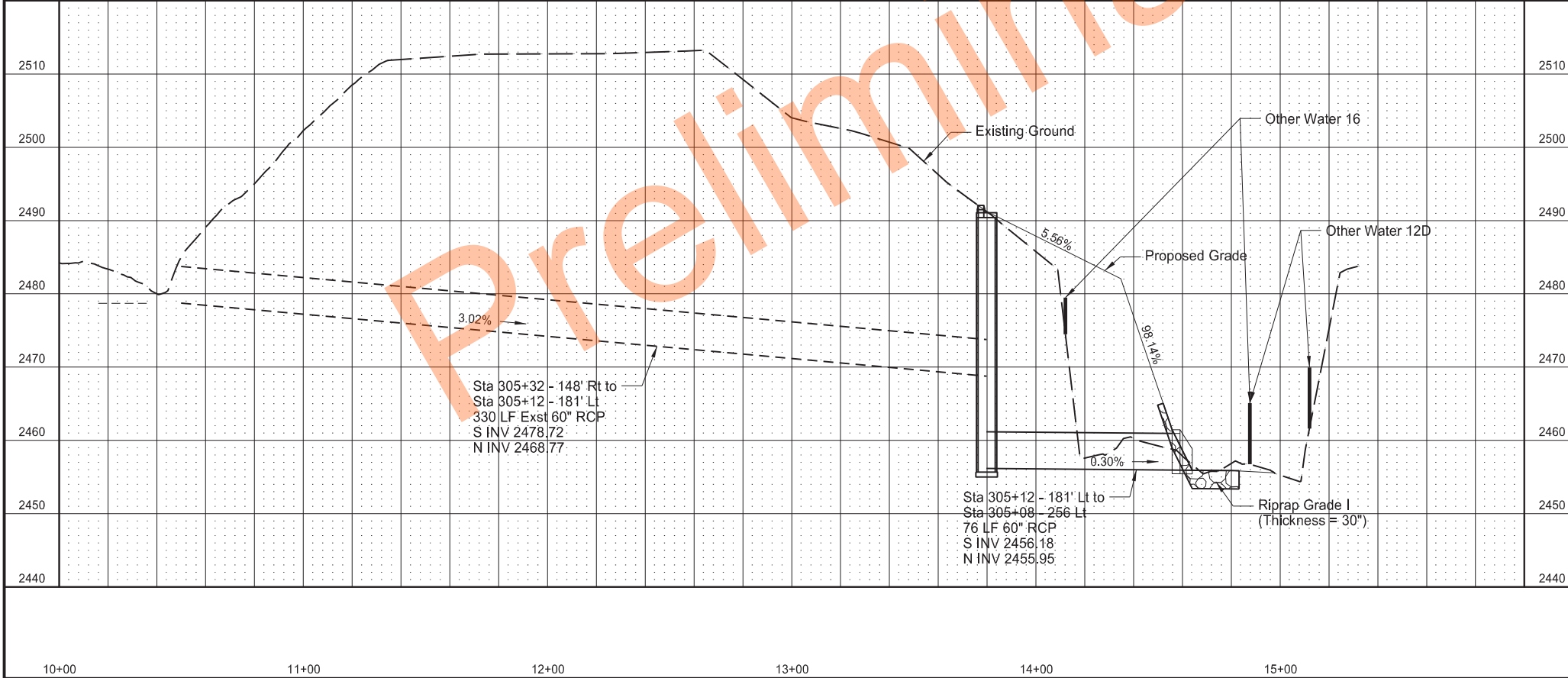
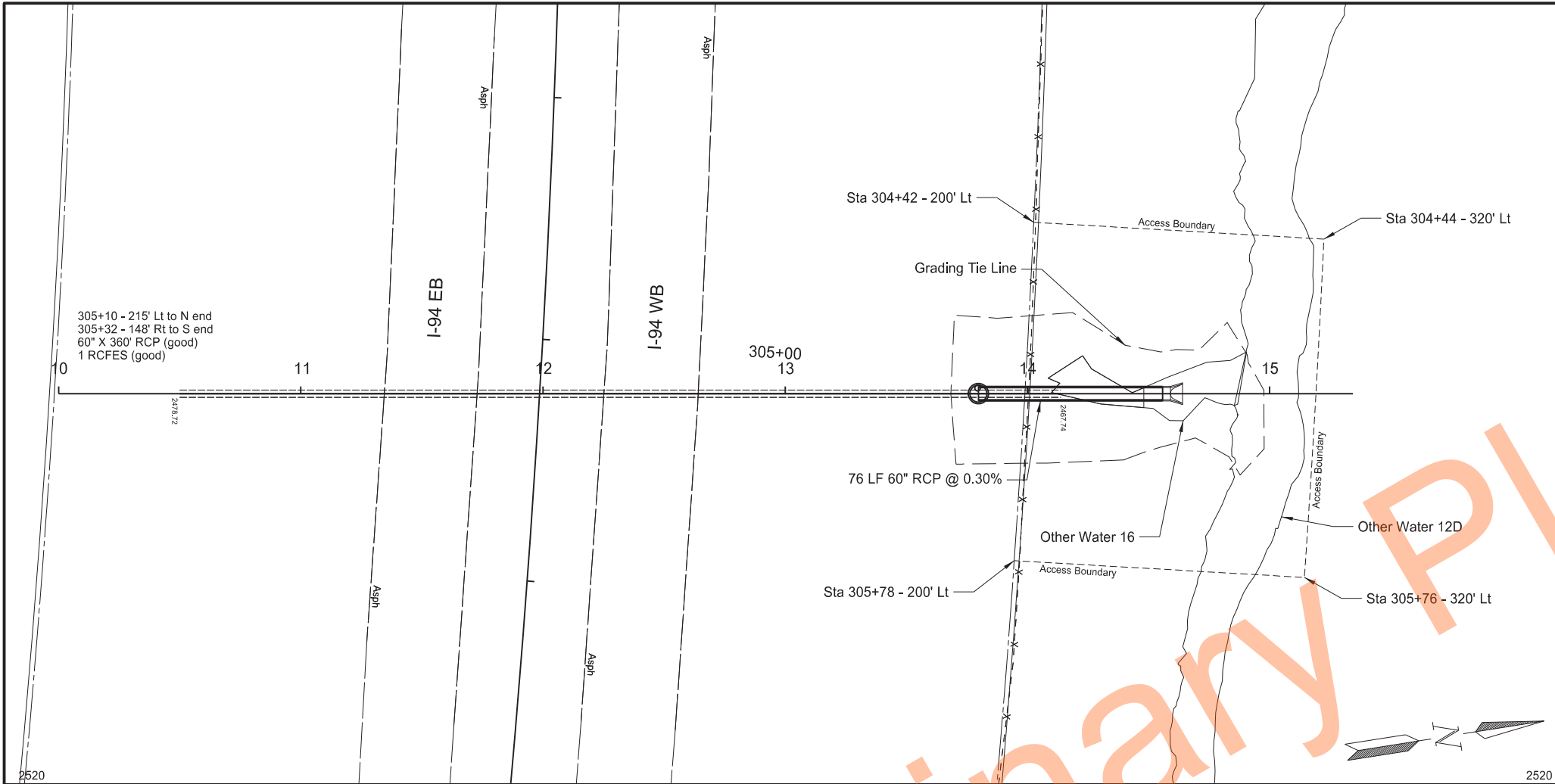




STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-5-094(158)027	60	4

Plan & Profile
RP 28.191

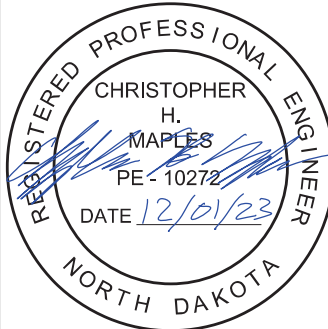




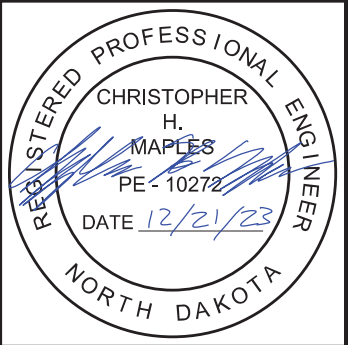
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-5-094(158)027	60	5

SPEC	CODE	BID ITEM	QTY	UNIT
202	0169	REMOVAL OF END SECTION-ALL TYPES & SIZES		
		Sta 305+10 - 212' Lt	1	EA
202	0170	REMOVAL OF CULVERTS-ALL TYPES & SIZES		
		Sta 305+12 - 181' Lt to Sta 305+10 - 212' Lt	34	LF
714	1310	PIPE CONC REINF 60IN CL III		
		Sta 305+12 - 181' Lt to Sta 305+08 - 257' Lt	76	LF
714	3055	END SECT-CONC REINF 60IN		
		Sta 305+08 - 257' Lt	1	EA
722	0130	MANHOLE 84IN		
		Sta 305+12 - 181' Lt	1	EA
722	1130	MANHOLE RISER 84IN		
		Sta 305+12 - 181' Lt	34.72	LF

Plan & Profile
RP 29.256



Other Waters Impact Table															
Other Waters											Other Water Mitigation				
Number	Location	Type	Size		Feature	USACE Jurisdictional ¹	Impacts to Other Waters				Mitigation Required			Mitigation Location; ratio	Method
			Acre(s)	Linear Feet			Acre(s) TempPerm		Linear Feet TempPerm		EO 11990	USACE	USFWS		
OW 11	Sec.25, T140N, R102W	Stream	0.01	35	Natural	Yes	0.000	0.013	3	32	N	N	N		
OW 12A	Sec.25, T140N, R102W	Stream	0.40	462	Natural	Yes	0.011	0.001	54	33	N	N	N		
OW 12B	Sec.30, T140N, R101W	Stream	0.54	758	Natural	Yes	0.010	0.001	43	20	N	N	N		
OW 12C	Sec.30, T140N, R101W	Stream	0.89	1337	Natural	Yes	0.024	0.009	111	53	N	N	N		
OW 12D	Sec.29, T140N, R101W	Stream	0.34	578	Natural	Yes	0.030	0.000	88	22	N	N	N		
OW 13	Sec.30, T140N, R101W	Stream	0.03	138	Natural	Yes	0.000	0.027	4	134	N	N	N		
OW 16	Sec. 29, T140N R101W	Stream	0.02	69	Natural	Yes		0.025		69	N	N	N		
		Totals	2.23	3377			0.075	0.076	303	363					



Wetlands, Mitigation and Environmental

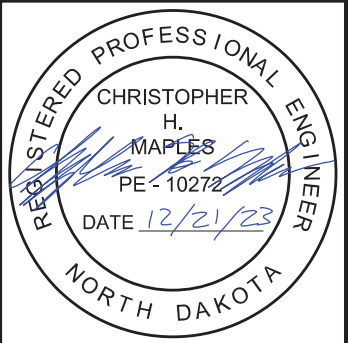
W of Medora Int to 2 Mi E
Billings County, ND

Other Waters-d Impact Table															
Other Waters										Other Water Mitigation					
Number	Location	Type	Size		Feature	USACE Jurisdictional ¹	Impacts to Other Waters				Mitigation Required			Mitigation Location; ratio	Method
			Acre(s)	Linear Feet			Acre(s) TempPerm		Linear Feet TempPerm		EO 11990	USACE	USFWS		
OW 14-d	Sec.30, T140N, R101W	Ephemeral Swale	0.01	22	Natural	No		0.013		22	N	N	N		
OW 15-d	Sec.30, T140N, R101W	Ephemeral Swale	0.09	137	Natural	No		0.091		137	N	N	N		
		Totals	0.10	159				0.104		159					

¹ A wetland Jurisdictional Determination was issued by the USACE on 01/06/2023; NWO-2014-00225-BIS.

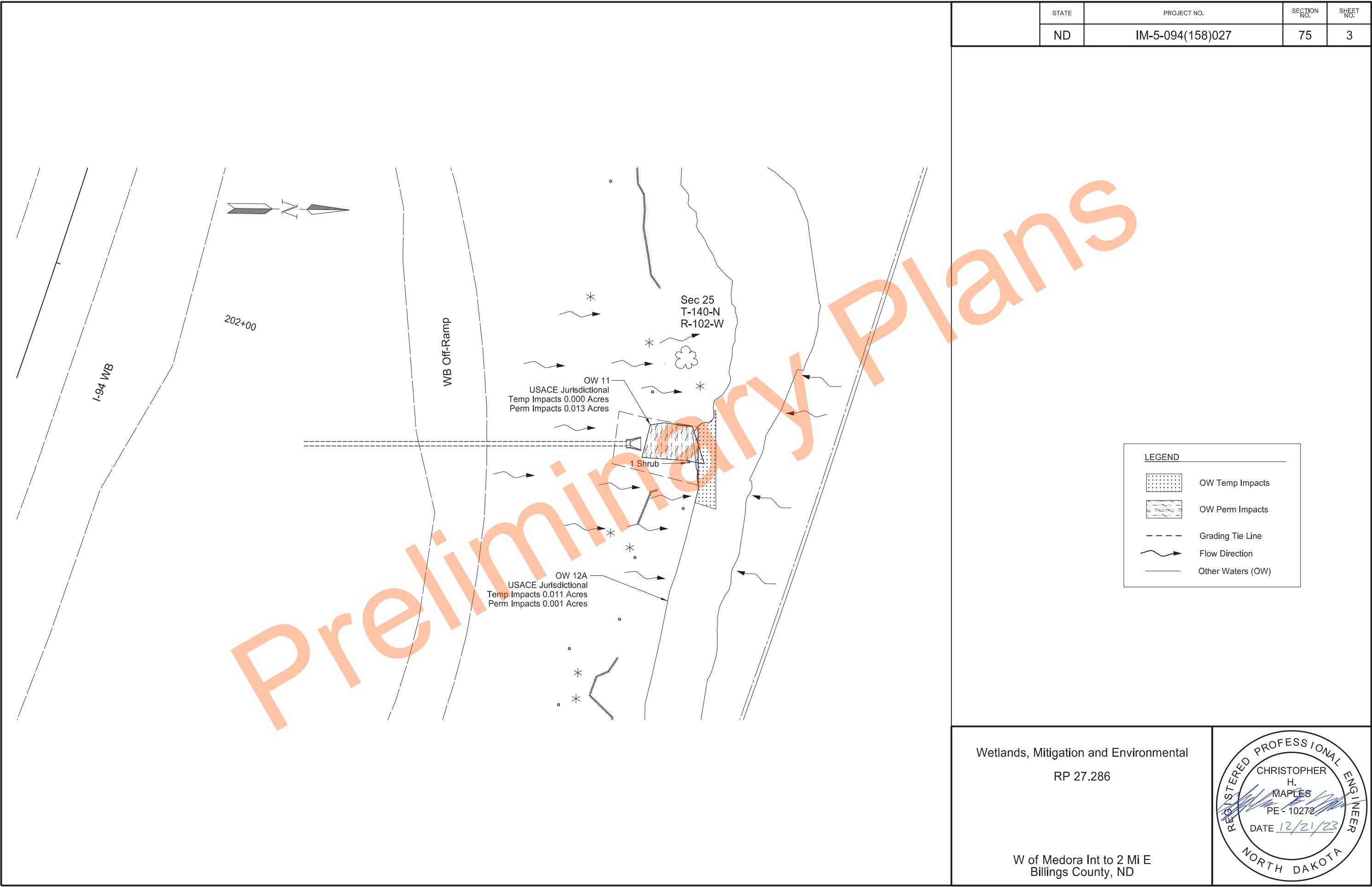
Impact Summary Table			
Permanent Impact Summary		Temporary Impacts and additional information	
Wetland Type	Total (Acres)	Wetland Type	Total Acre(s)
Natural/JD		Temporary JD	
Natural/Non-JD		Non-JD Temporary	
Artificial/JD		Permanent JD > 0.10	
Artificial /Non-JD		Permanent OW	0.076
Total		Temporary OW	0.075
		Permanent OW-d	0.104
		Temporary OW-d	

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					
USFWS					
Total					



Wetlands, Mitigation and Environmental

W of Medora Int to 2 Mi E
Billings County, ND



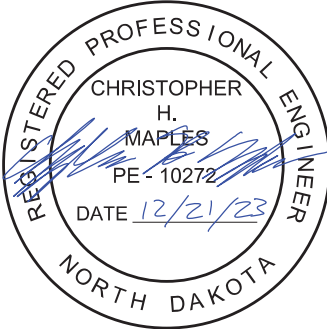
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-5-094(158)027	75	3

LEGEND

- OW Temp Impacts
- OW Perm Impacts
- Grading Tie Line
- Flow Direction
- Other Waters (OW)

Wetlands, Mitigation and Environmental
RP 27.286

W of Medora Int to 2 Mi E
Billings County, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-5-094(158)027	75	4

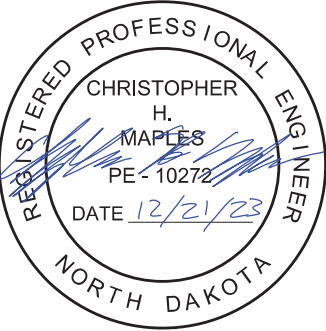


LEGEND

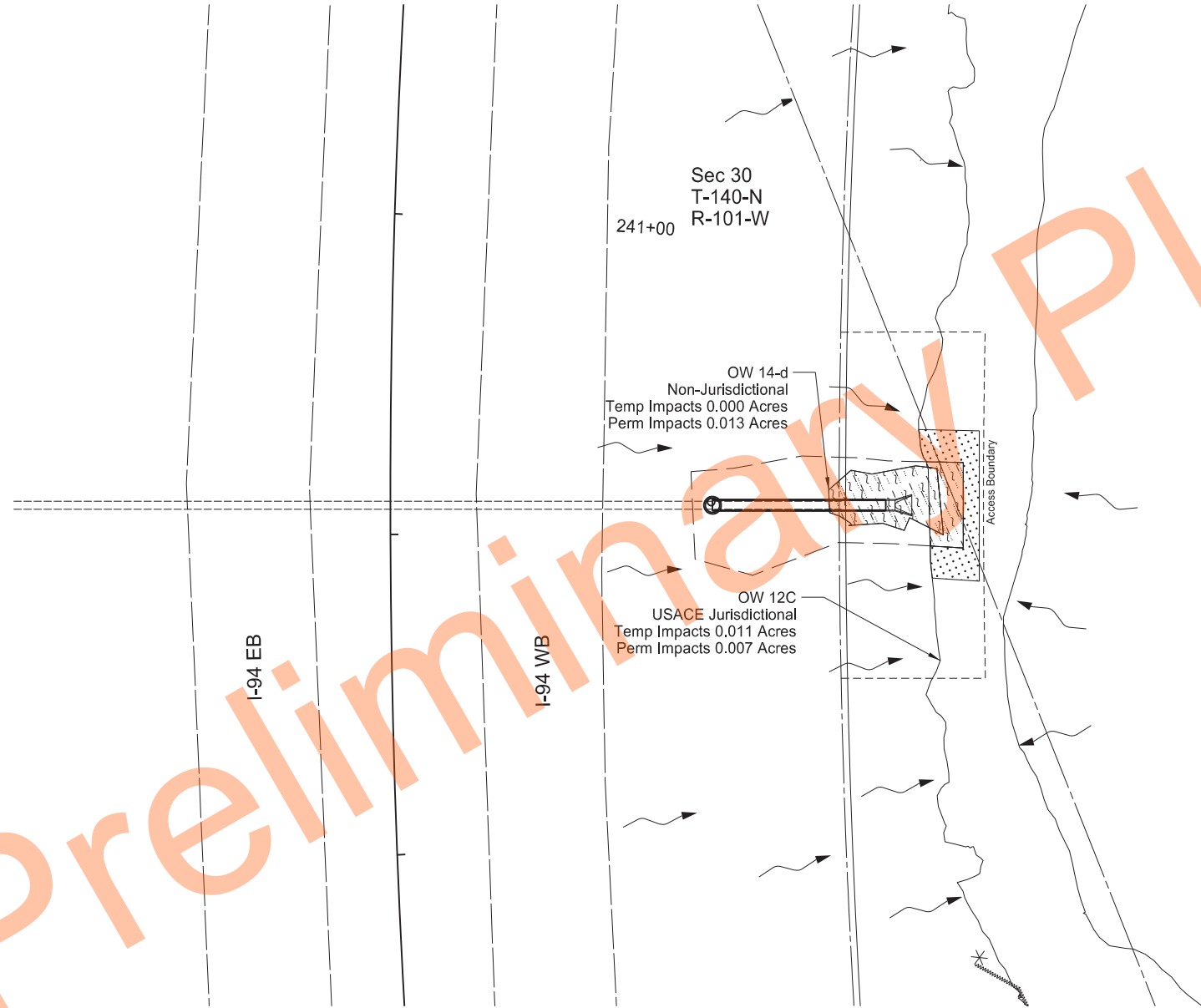
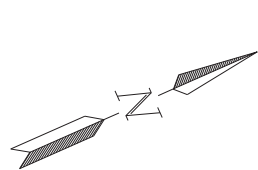
- OW Temp Impacts
- OW Perm Impacts
- Grading Tie Line
- Flow Direction
- Other Waters (OW)

Wetlands, Mitigation and Environmental
RP 27.892

W of Medora Int to 2 Mi E
Billings County, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-5-094(158)027	75	5

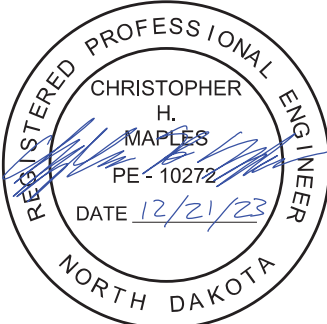


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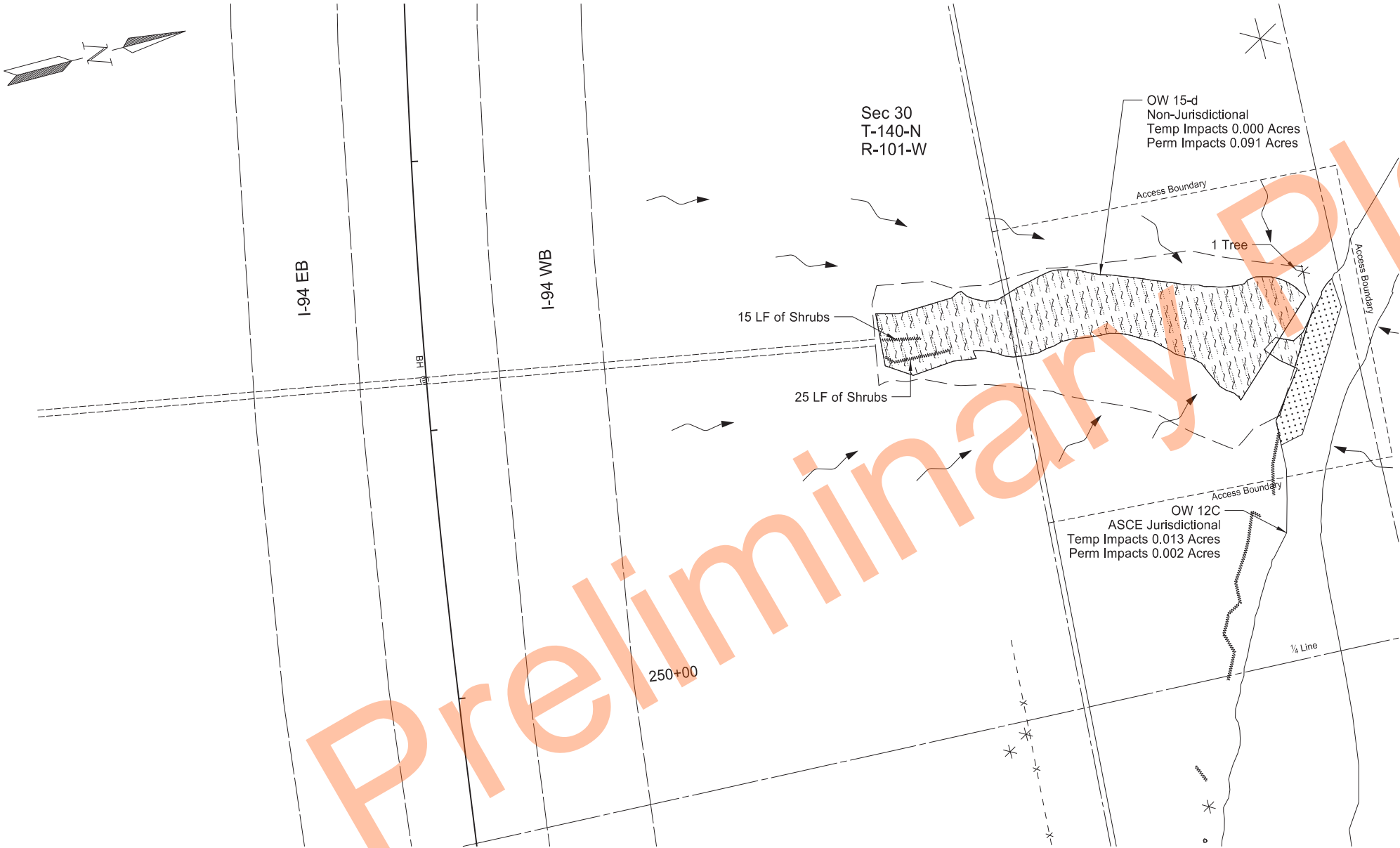
- OW Temp Impacts
- OW Perm Impacts
- Grading Tie Line
- Flow Direction
- Other Waters (OW)

Wetlands, Mitigation and Environmental
RP 28.061

W of Medora Int to 2 Mi E
Billings County, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-5-094(158)027	75	6

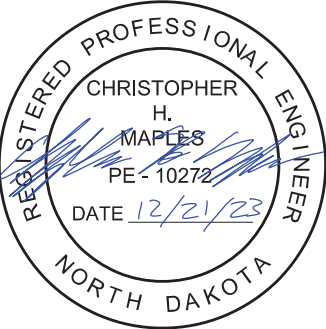


LEGEND

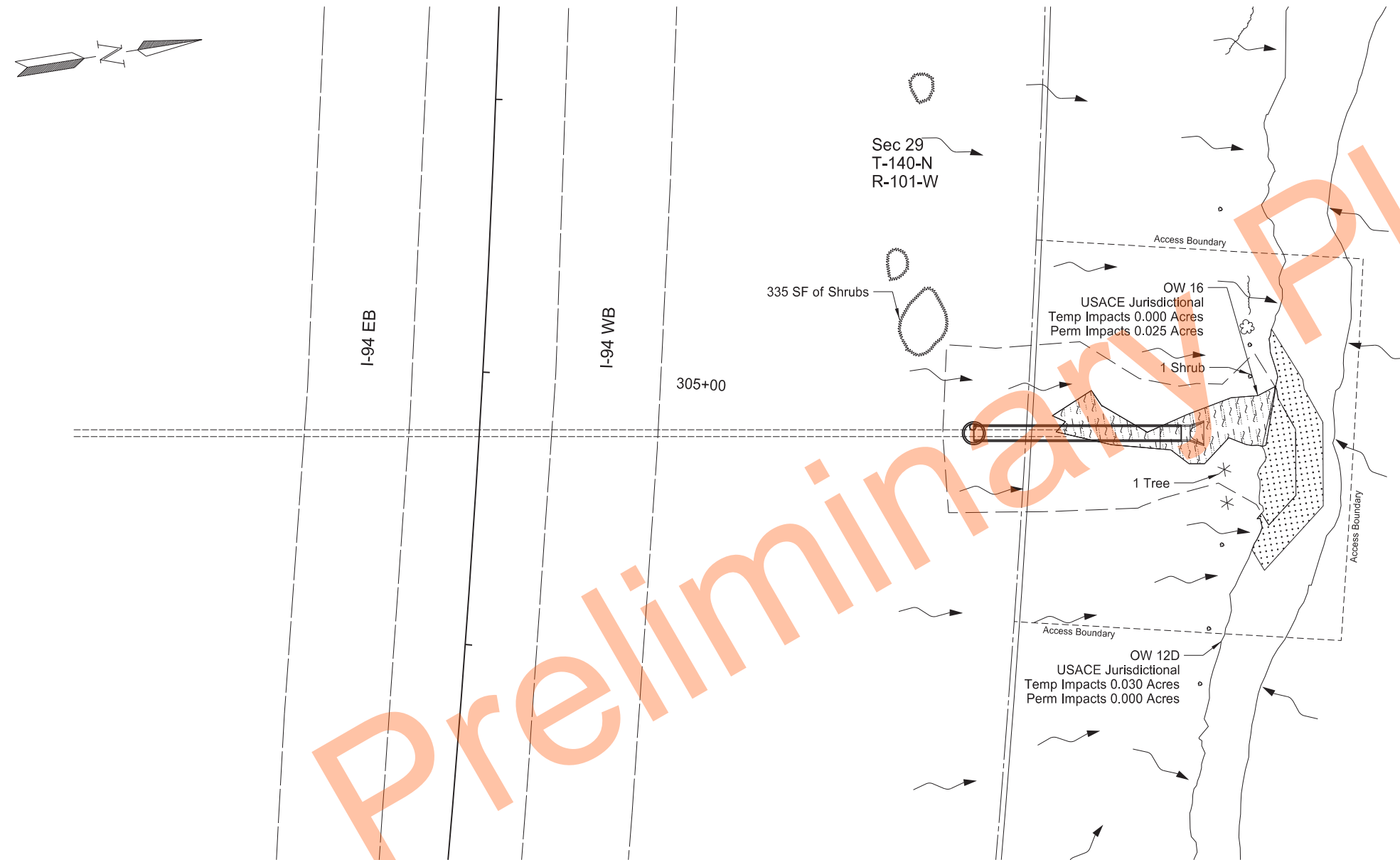
- OW Temp Impacts
- OW Perm Impacts
- Grading Tie Line
- Flow Direction
- Other Waters (OW)

Wetlands, Mitigation and Environmental
RP 28.191

W of Medora Int to 2 Mi E
Billings County, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-5-094(158)027	75	7



LEGEND	
	OW Temp Impacts
	OW Perm Impacts
	Grading Tie Line
	Flow Direction
	Other Waters (OW)

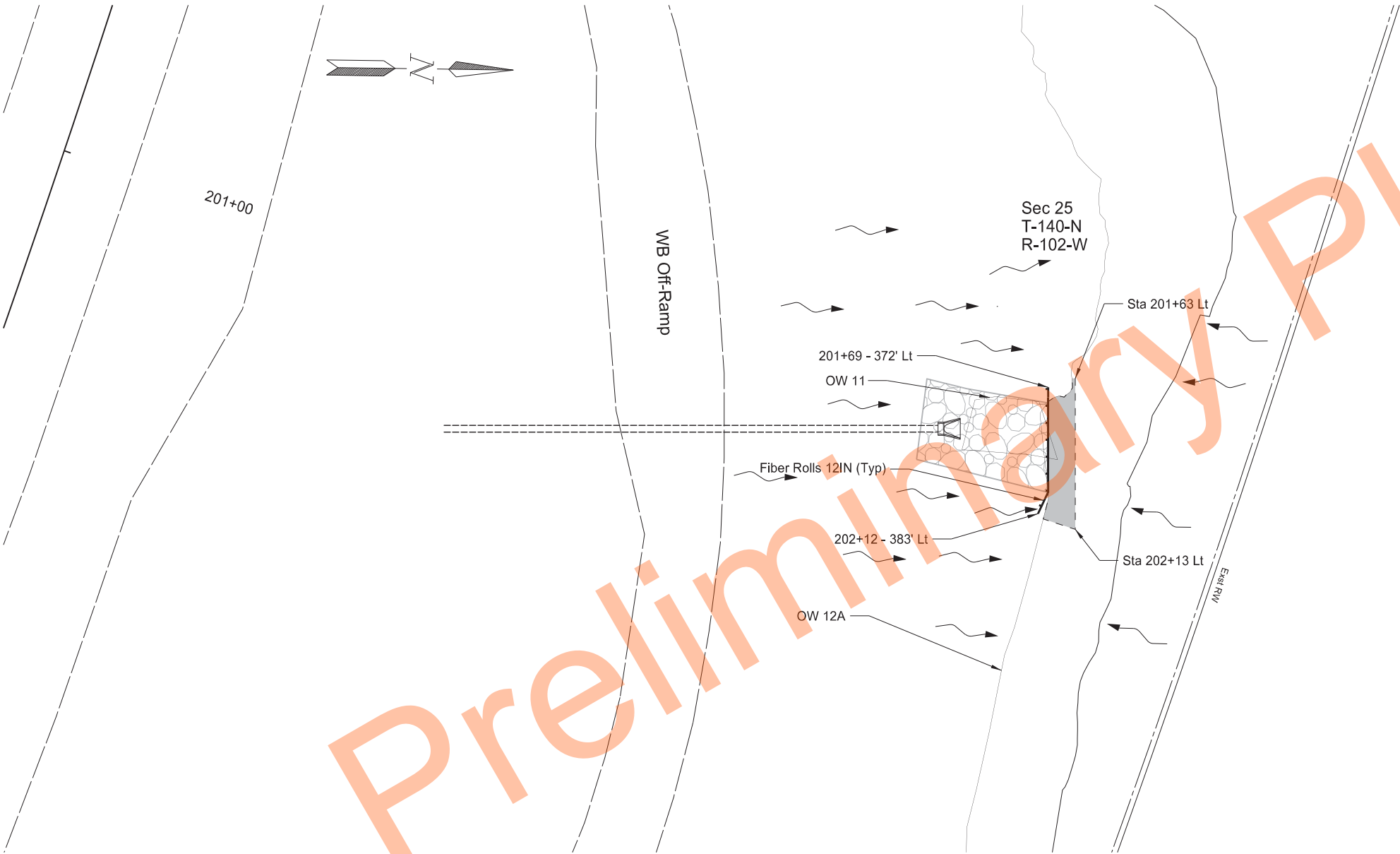
Wetlands, Mitigation and Environmental
RP 29.256

W of Medora Int to 2 Mi E
Billings County, ND

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER H. MAPLES
PE - 10272
DATE 12/21/23
NORTH DAKOTA

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-5-094(158)027	76	1

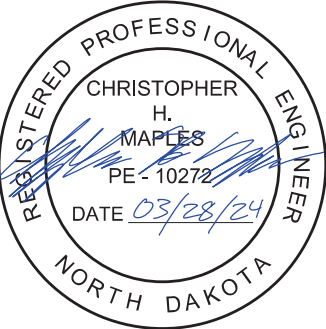
SPEC	CODE	BID ITEM	QTY	UNIT
251	2000	TEMPORARY COVER CROP		
		Sta 201+63 Lt to Sta 202+13 Lt	0.01	ACRE
261	0112	FIBER ROLLS 12IN		
		Sta 201+69 - 372' Lt to Sta 202+12 - 383' Lt	47	LF
261	0113	REMOVE FIBER ROLLS 12IN		
		Sta 201+69 - 372' Lt to Sta 202+12 - 383' Lt	47	LF
900	0700	FLEXIBLE GROWTH MEDIUM		
		Sta 201+63 Lt to Sta 202+13 Lt	54	SY



LEGEND	
	Temporary Cover Crop & Flexible Growth Medium
	Riprap (Paid in Section 77)
	Fiber Rolls 12 IN
	Existing Other Waters
	Flow Direction
	Grading Tie Line

Temporary Erosion Control
RP 27.286

W of Medora Int to 2 Mi E
Billings County, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-5-094(158)027	76	2

SPEC	CODE	BID ITEM	QTY	UNIT
251	2000	TEMPORARY COVER CROP		
		Sta 232+73 Lt to Sta 234+05 Lt	0.14	ACRE
261	0112	FIBER ROLLS 12IN		
		Sta 232+92 - 146' Lt to Sta 233+18 - 116' Lt	40	LF
		Sta 233+11 - 155' Lt to Sta 233+30 - 133' Lt	30	LF
		Sta 233+26 - 168' Lt to Sta 233+46 - 146' Lt	30	LF
		Sta 233+43 - 180' Lt to Sta 233+59 - 161' Lt	25	LF
		Sta 233+58 - 193' Lt to Sta 233+74 - 174' Lt	25	LF
		Sta 233+63 - 200' Lt to Sta 233+86 - 192' Lt	25	LF
		Sta 233+69 - 224' Lt to Sta 233+93 - 204' Lt	41	LF
		TOTAL	216	LF
261	0113	REMOVE FIBER ROLLS 12IN		
		Sta 232+92 - 146' Lt to Sta 233+18 - 116' Lt	40	LF
		Sta 233+11 - 155' Lt to Sta 233+30 - 133' Lt	30	LF
		Sta 233+26 - 168' Lt to Sta 233+46 - 146' Lt	30	LF
		Sta 233+43 - 180' Lt to Sta 233+59 - 161' Lt	25	LF
		Sta 233+58 - 193' Lt to Sta 233+74 - 174' Lt	25	LF
		Sta 233+63 - 200' Lt to Sta 233+86 - 192' Lt	25	LF
		Sta 233+69 - 224' Lt to Sta 233+93 - 204' Lt	41	LF
		TOTAL	216	LF
900	0700	FLEXIBLE GROWTH MEDIUM		
		Sta 232+73 Lt to Sta 234+05 Lt	661	SY

LEGEND

Temporary Cover Crop & Flexible Growth Medium

Riprap (Paid in Section 77)

Fiber Rolls 12 IN

Existing Other Waters

Flow Direction

Grading Tie Line

Temporary Erosion Control
RP 27.892

W of Medora Int to 2 Mi E
Billings County, ND

REGISTERED PROFESSIONAL ENGINEER

CHRISTOPHER H. MAPLES

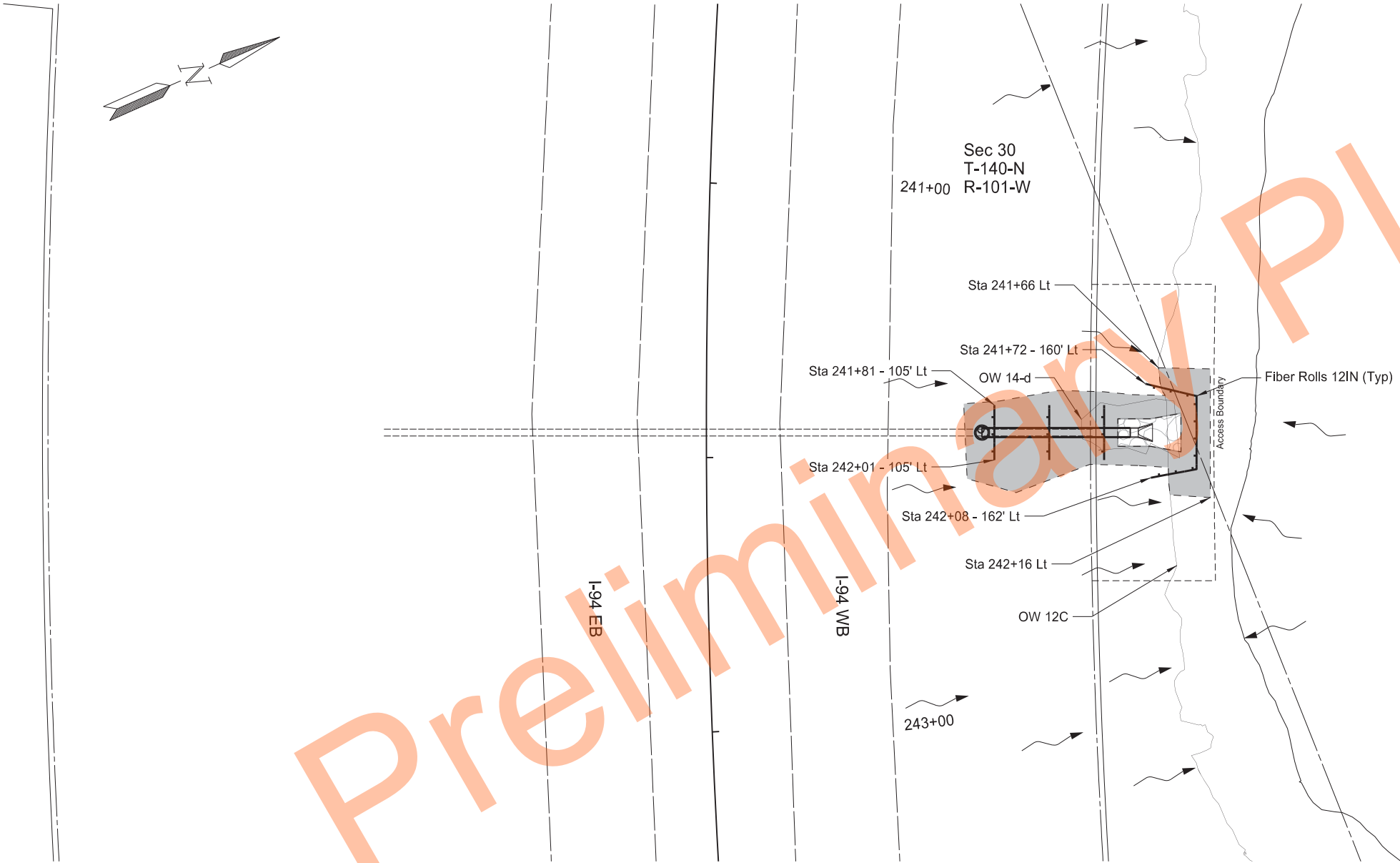
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DATE 03/28/24

NORTH DAKOTA

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-5-094(158)027	76	3

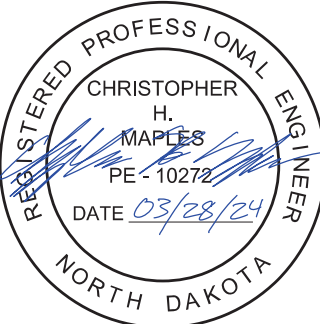
SPEC	CODE	BID ITEM	QTY	UNIT
251	2000	TEMPORARY COVER CROP		
		Sta 241+66 Lt to Sta 242+16 Lt	0.06	ACRE
261	0112	FIBER ROLLS 12IN		
		Sta 241+72 - 160' Lt to Sta 242+08 - 162' Lt	63	LF
		Sta 241+81 - 105' Lt to Sta 242+01 - 105' Lt	20	LF
		Sta 241+81 - 125' Lt to Sta 242+01 - 125' Lt	20	LF
		Sta 241+81 - 145' Lt to Sta 242+02 - 145' Lt	20	LF
		TOTAL	123	LF
261	0113	REMOVE FIBER ROLLS 12IN		
		Sta 241+72 - 160' Lt to Sta 242+08 - 162' Lt	63	LF
		Sta 241+81 - 105' Lt to Sta 242+01 - 105' Lt	20	LF
		Sta 241+81 - 125' Lt to Sta 242+01 - 125' Lt	20	LF
		Sta 241+81 - 145' Lt to Sta 242+02 - 145' Lt	20	LF
		TOTAL	123	LF
900	0700	FLEXIBLE GROWTH MEDIUM		
		Sta 241+66 Lt to Sta 242+16 Lt	293	SY



LEGEND	
	Temporary Cover Crop & Flexible Growth Medium
	Riprap (Paid in Section 77)
	Fiber Rolls 12 IN
	Existing Other Waters
	Flow Direction
	Grading Tie Line

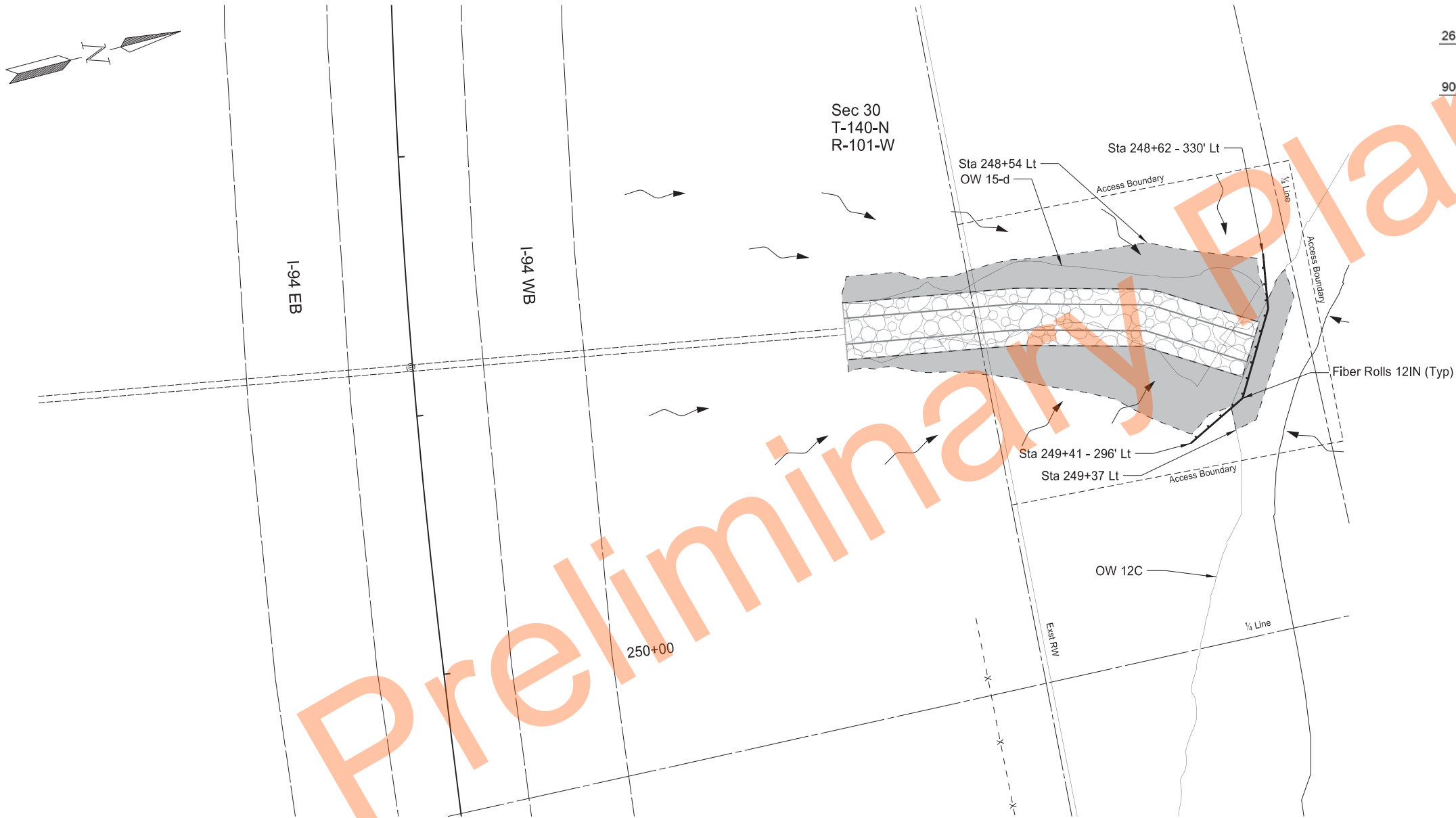
Temporary Erosion Control
RP 28.061

W of Medora Int to 2 Mi E
Billings County, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-5-094(158)027	76	4

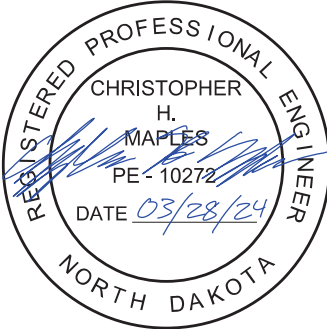
SPEC	CODE	BID ITEM	QTY	UNIT
251	2000	TEMPORARY COVER CROP Sta 248+54 Lt to Sta 249+37 Lt	0.11	ACRE
261	0112	FIBER ROLLS 12IN Sta 248+62 - 330' Lt to Sta 249+41 - 296' Lt	84	LF
261	0113	REMOVE FIBER ROLLS 12IN Sta 248+62 - 330' Lt to Sta 249+41 - 296' Lt	84	LF
900	0700	FLEXIBLE GROWTH MEDIUM Sta 248+54 Lt to Sta 249+37 Lt	553	SY



LEGEND	
	Temporary Cover Crop & Flexible Growth Medium
	Riprap (Paid in Section 77)
	Fiber Rolls 12 IN
	Existing Other Waters
	Flow Direction
	Grading Tie Line

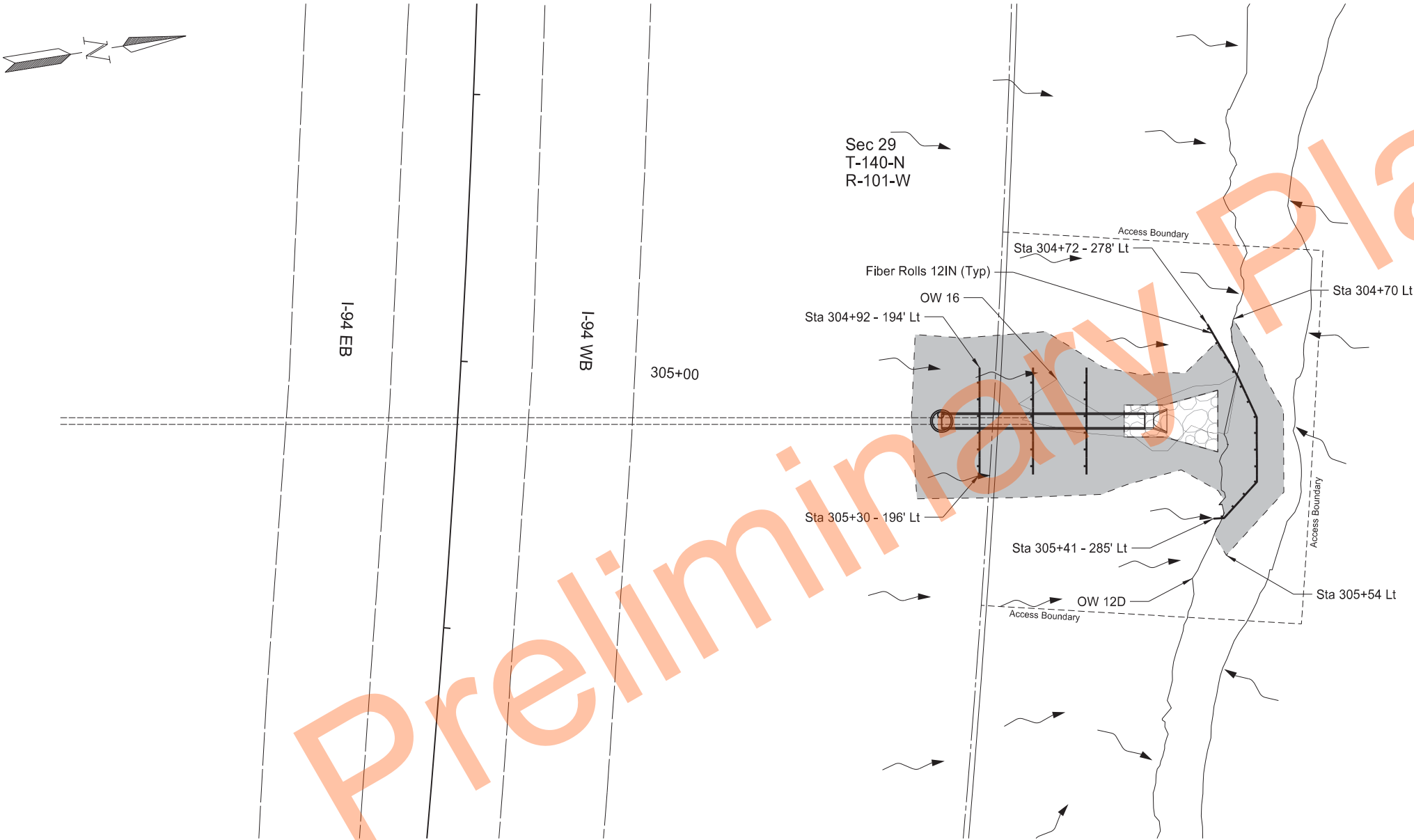
Temporary Erosion Control
RP 28.191

W of Medora Int to 2 Mi E
Billings County, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-5-094(158)027	76	5

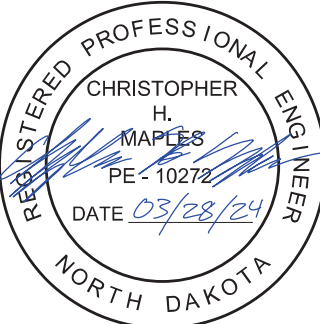
SPEC	CODE	BID ITEM	QTY	UNIT
251	2000	TEMPORARY COVER CROP		
		Sta 304+70 Lt to Sta 305+54 Lt	0.16	ACRE
261	0112	FIBER ROLLS 12IN		
		Sta 304+72 - 278' Lt to Sta 305+41 - 285' Lt	86	LF
		Sta 304+90 - 234' Lt to Sta 305+28 - 236' Lt	40	LF
		Sta 304+91 - 2' 4' Lt to Sta 305+29 - 216' Lt	40	LF
		Sta 304+92 - 194' Lt to Sta 305+30 - 196' Lt	40	LF
		TOTAL	206	LF
261	0113	REMOVE FIBER ROLLS 12IN		
		Sta 304+72 - 278' Lt to Sta 305+41 - 285' Lt	86	LF
		Sta 304+90 - 234' Lt to Sta 305+28 - 236' Lt	40	LF
		Sta 304+91 - 2' 4' Lt to Sta 305+29 - 216' Lt	40	LF
		Sta 304+92 - 194' Lt to Sta 305+30 - 196' Lt	40	LF
		TOTAL	206	LF
900	0700	FLEXIBLE GROWTH MEDIUM		
		Sta 304+70 Lt to Sta 305+54 Lt	774	SY



LEGEND	
	Temporary Cover Crop & Flexible Growth Medium
	Riprap (Paid in Section 77)
	Fiber Rolls 12 IN
	Existing Other Waters
	Flow Direction
	Grading Tie Line

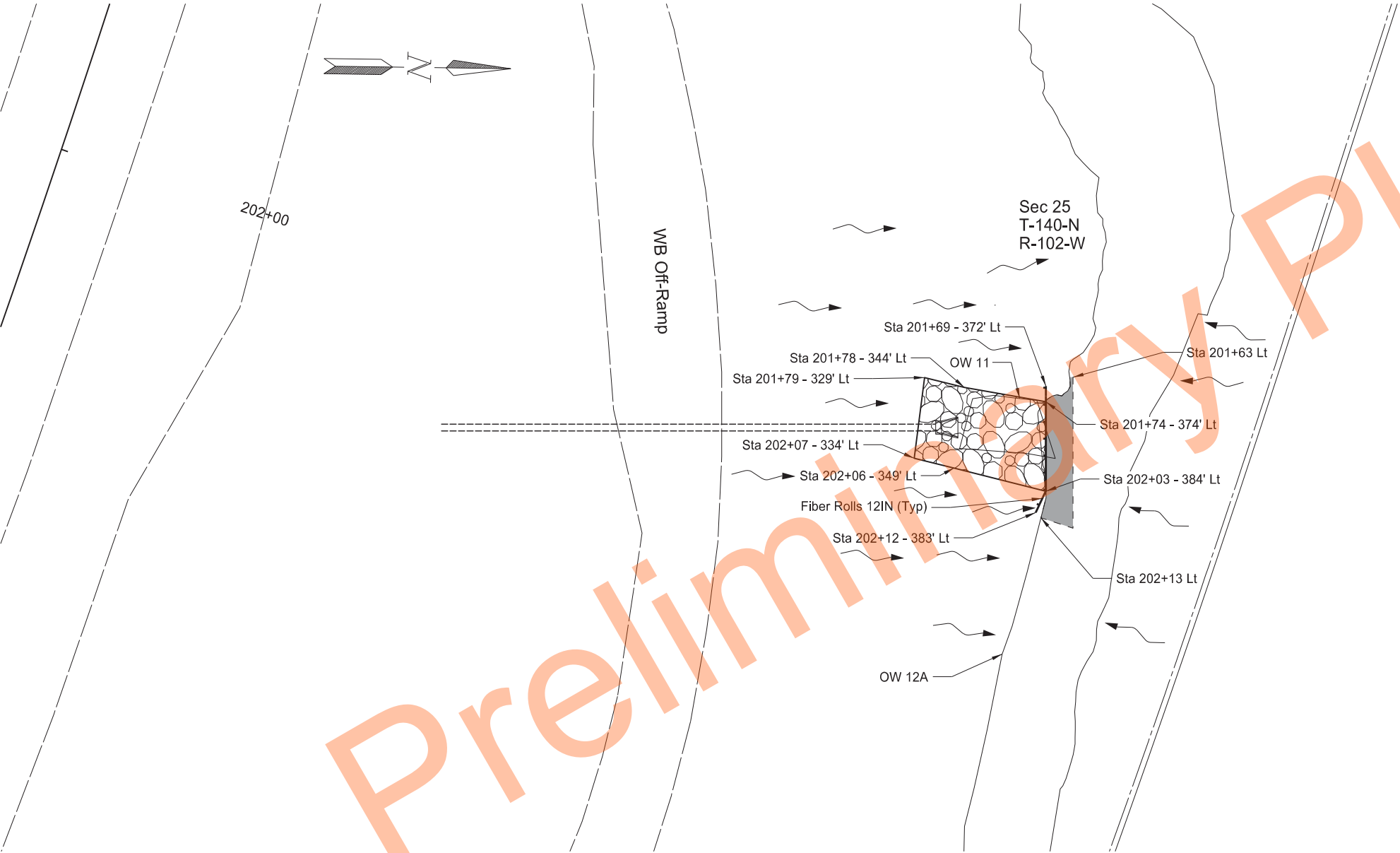
Temporary Erosion Control
RP 29.256

W of Medora Int to 2 Mi E
Billings County, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-5-094(158)027	77	1

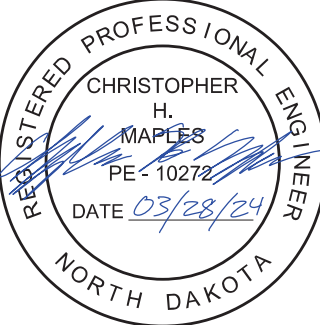
SPEC	CODE	BID ITEM	QTY	UNIT
251	1000	WETLAND SEED		
		Sta 201+63 Lt to Sta 202+13 Lt	0.01	ACRE
256	0200	RIPRAP GRADE II		
		Sta 201+74 Lt to Sta 202+07 Lt	199	CY
261	0112	FIBER ROLLS 12IN		
		Sta 201+69 - 372' Lt to Sta 202+12 - 383' Lt	47	LF
709	0155	GEOSYNTHETIC MATERIAL TYPE RR		
		Sta 201+74 Lt to Sta 202+07 Lt	163	SY
900	0700	FLEXIBLE GRCWTH MEDIUM		
		Sta 201+63 Lt to Sta 202+13 Lt	54	SY



LEGEND	
	Wetland Seed & Flexible Growth Medium
	Riprap Grade II
	Fiber Rolls 12 IN
	Existing Other Waters
	Flow Direction

Permanent Erosion Control
RP 27.286

W of Medora Int to 2 Mi E
Billings County, ND



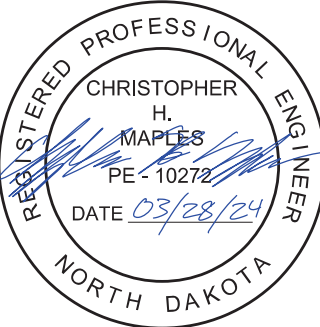
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-5-094(158)027	77	2

SPEC	CODE	BID ITEM	QTY	UNIT
251	0300	SEEDING CLASS III Sta 232+73 Lt to Sta 233+95 Lt	0.13	ACRE
251	1000	WETLAND SEED Sta 233+68 Lt to Sta 234+05 Lt	0.01	ACRE
256	0100	RIPRAP GRADE I Sta 233+71 Lt to Sta 233+91 Lt	24	CY
261	0112	FIBER ROLLS 12IN		
		Sta 232+92 - 146' Lt to Sta 233+18 - 116' Lt	40	LF
		Sta 233+11 - 155' Lt to Sta 233+30 - 133' Lt	30	LF
		Sta 233+26 - 168' Lt to Sta 233+46 - 146' Lt	30	LF
		Sta 233+43 - 180' Lt to Sta 233+59 - 161' Lt	25	LF
		Sta 233+58 - 193' Lt to Sta 233+74 - 174' Lt	25	LF
		Sta 233+63 - 200' Lt to Sta 233+86 - 192' Lt	25	LF
		Sta 233+69 - 224' Lt to Sta 233+93 - 204' Lt	41	LF
		TOTAL	216	LF
709	0155	GEOSYNTHETIC MATERIAL TYPE RR Sta 233+71 Lt to Sta 233+91 Lt	29	SY
900	0700	FLEXIBLE GROWTH MEDIUM Sta 232+73 Lt to Sta 234+05 Lt	661	SY

LEGEND	
	Seeding Class III & Flexible Growth Medium
	Wetland Seed & Flexible Growth Medium
	Riprap Grade I
	Fiber Rolls 12 IN
	Existing Other Waters
	Flow Direction

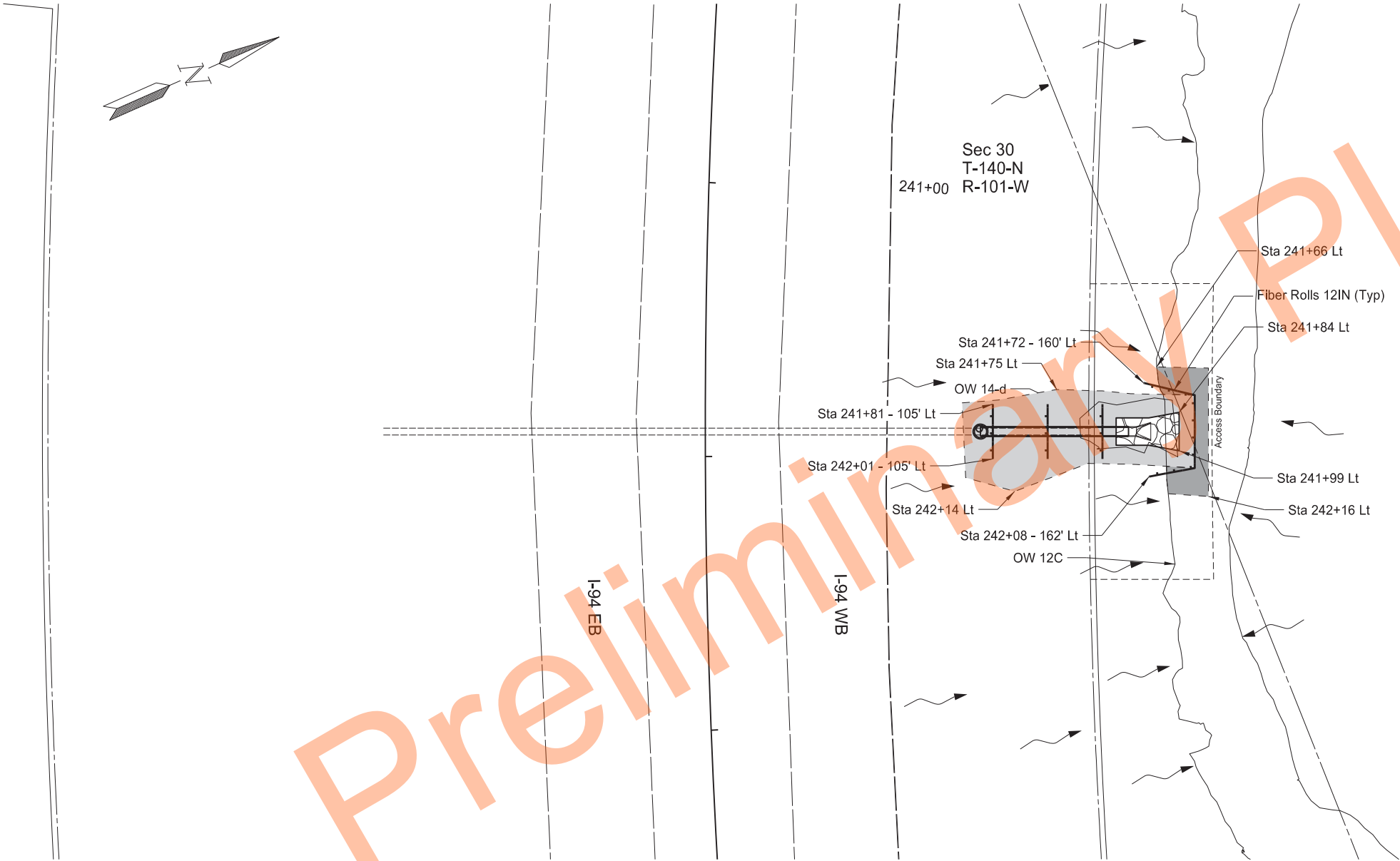
Permanent Erosion Control
RP 27.892

W of Medora Int to 2 Mi E
Billings County, ND



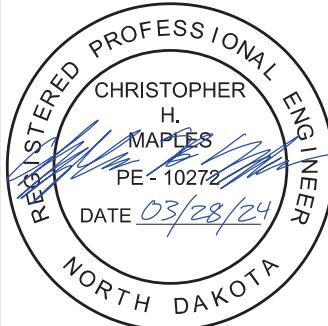
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-5-094(158)027	77	3

SPEC	CODE	BID ITEM	QTY	UNIT
251	0300	SEEDING CLASS III Sta 241+75 Lt to Sta 242+14 Lt	0.05	ACRE
251	1000	WETLAND SEED Sta 241+66 Lt to Sta 242+16 Lt	0.01	ACRE
256	0100	RIPRAP GRADE I Sta 241+84 Lt to Sta 241+99 Lt	23	CY
261	0112	FIBER ROLLS 12IN Sta 241+72 - 160' Lt to Sta 242+08 - 162' Lt	63	LF
		Sta 241+81 - 105' Lt to Sta 242+01 - 105' Lt	20	LF
		Sta 241+81 - 125' Lt to Sta 242+01 - 125' Lt	20	LF
		Sta 241+81 - 145' Lt to Sta 242+02 - 145' Lt	20	LF
		TOTAL	123	LF
709	0155	GEOSYNTHETIC MATERIAL TYPE RR Sta 241+84 Lt to Sta 241+99 Lt	28	SY
900	0700	FLEXIBLE GROWTH MEDIUM Sta 241+66 Lt to Sta 242+16 Lt	293	SY



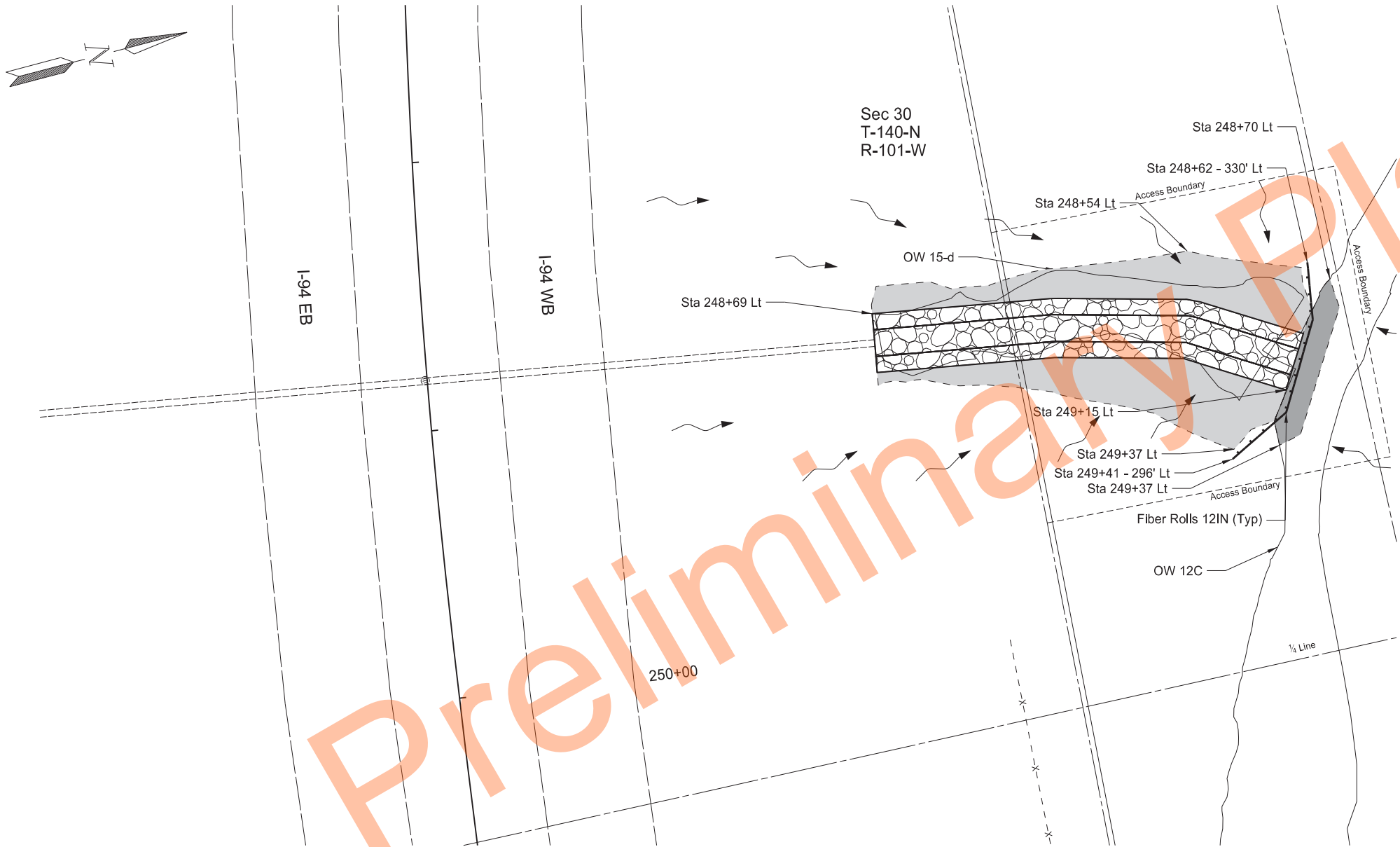
Permanent Erosion Control
RP 28.061

W of Medora Int to 2 Mi E
Billings County, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-5-094(158)027	77	4

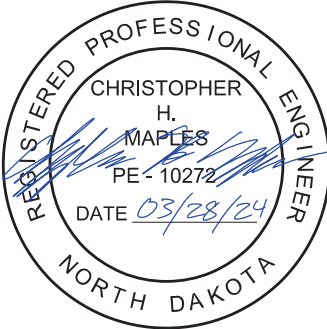
SPEC	CODE	BID ITEM	QTY	UNIT
251	0300	SEEDING CLASS III Sta 248+54 Lt to Sta 249+37 Lt	0.10	ACRE
251	1000	WETLAND SEED Sta 248+70 Lt to Sta 249+37 Lt	0.01	ACRE
256	0300	RIPRAP GRADE III Sta 248+69 Lt to Sta 249+15 Lt	580	CY
261	0112	FIBER ROLLS 12IN Sta 248+62 - 330' Lt to Sta 249+41 - 296' Lt	84	LF
709	0155	GEOSYNTHETIC MATERIAL TYPE RR Sta 248+69 Lt to Sta 249+15 Lt	387	SY
900	0700	FLEXIBLE GRCWTH MEDIUM Sta 248+54 Lt to Sta 249+37 Lt	553	SY



LEGEND	
	Seeding Class III & Flexible Growth Medium
	Wetland Seed & Flexible Growth Medium
	Riprap Grade III
	Fiber Rolls 12 IN
	Existing Other Waters
	Flow Direction

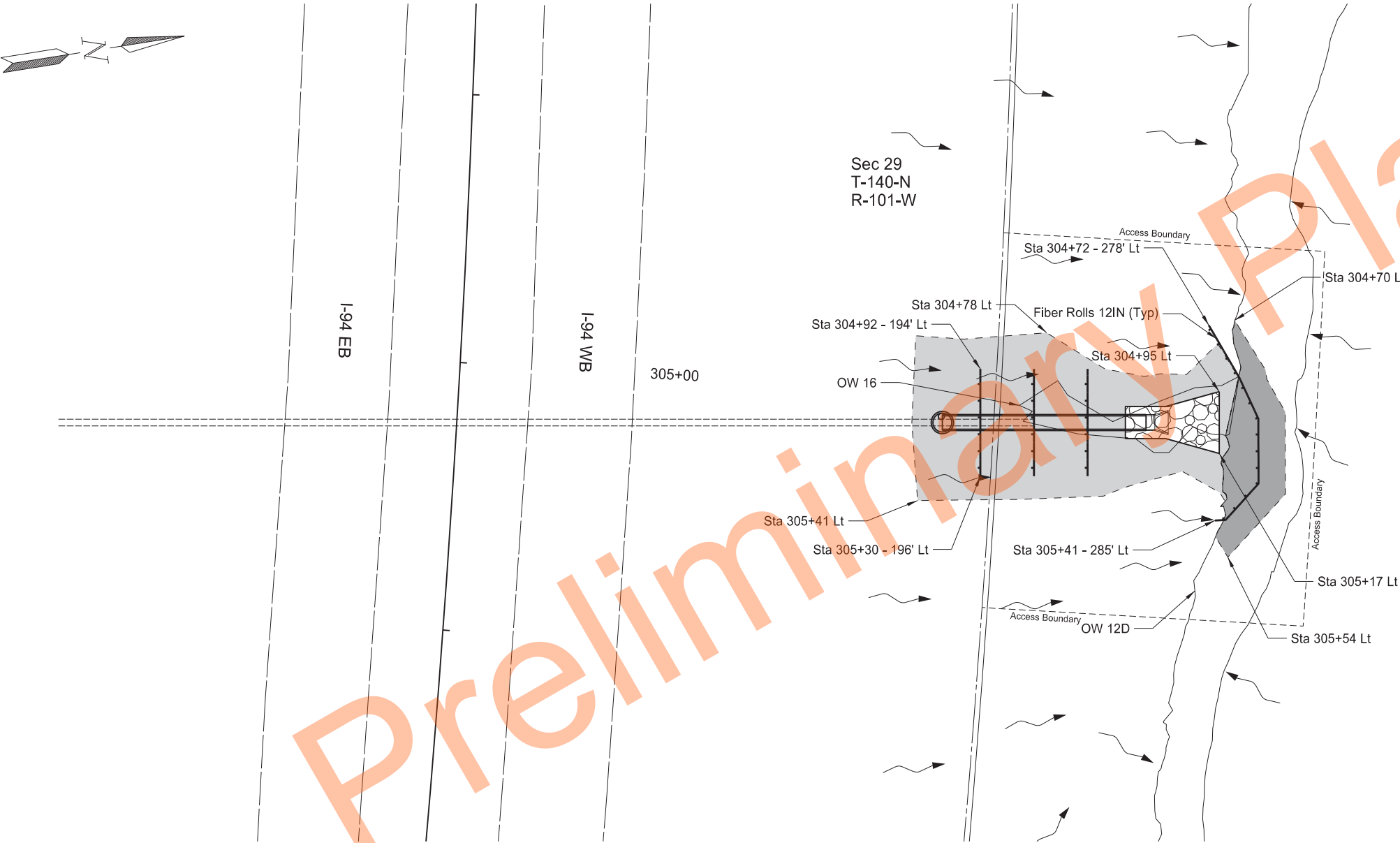
Permanent Erosion Control
RP 28.191

W of Medora Int to 2 Mi E
Billings County, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-5-094(158)027	77	5

SPEC	CODE	BID ITEM	QTY	UNIT
251	0300	SEEDING CLASS III Sta 304+78 Lt to Sta 305+41 Lt	0.13	ACRE
251	1000	WETLAND SEED Sta 304+70 Lt to Sta 305+54 Lt	0.03	ACRE
256	0100	RIPRAP GRADE I Sta 304+95 Lt to Sta 305+17 Lt	49	CY
261	0112	FIBER ROLLS 12IN Sta 304+72 - 278' Lt to Sta 305+41 - 285' Lt	86	LF
		Sta 304+90 - 234' Lt to Sta 305+28 - 236' Lt	40	LF
		Sta 304+91 - 214' Lt to Sta 305+29 - 216' Lt	40	LF
		Sta 304+92 - 194' Lt to Sta 305+30 - 196' Lt	40	LF
		TOTAL	206	LF
709	0155	GEOSYNTHETIC MATERIAL TYPE RR Sta 304+95 Lt to Sta 305+17 Lt	59	SY
900	0700	FLEXIBLE GROWTH MEDIUM Sta 304+70 Lt to Sta 305+54 Lt	774	SY



LEGEND	
	Seeding Class III & Flexible Growth Medium
	Wetland Seed & Flexible Growth Medium
	Riprap Grade I
	Fiber Rolls 12 IN
	Existing Other Waters
	Flow Direction

Permanent Erosion Control
RP 29.256

W of Medora Int to 2 Mi E
Billings County, ND

