

DESIGN DATA - 27TH ST NW				
Traffic	Average Daily			
Current 2026	Pass: 1591	Trucks: 39	Total: 1630	
Forecast 2046	Pass: 2364	Trucks: 58	Total: 2422	
Clear Zone Distance: 12'		Design Speed: 35 MPH		
Minimum Sight Dist. for Stopping: : 273 FT		Bridges: N/A		
Sight Dist. for No Passing Zone: N/A				
Pavement Design Life 20 (years)				
Design Accumulated One-way _____ ESALs: 150,000				

DESIGN DATA - 8TH AVE NW				
Traffic	Average Daily			
Current 2026	Pass: 380	Trucks: 5	Total: 385	
Forecast 2046	Pass: 565	Trucks: 8	Total: 573	
Clear Zone Distance: 7'		Design Speed: 35 MPH		
Minimum Sight Dist. for Stopping: 273 FT		Bridges: N/A		
Sight Dist. for No Passing Zone: N/A				
Pavement Design Life 20 (years)				
Design Accumulated One-way _____ ESALs: 150,000				

Morton County Ground, International Feet, NAVD-88, GEOID18

Begin SU-1-988(055): 8th Ave NW
Sta 43+96

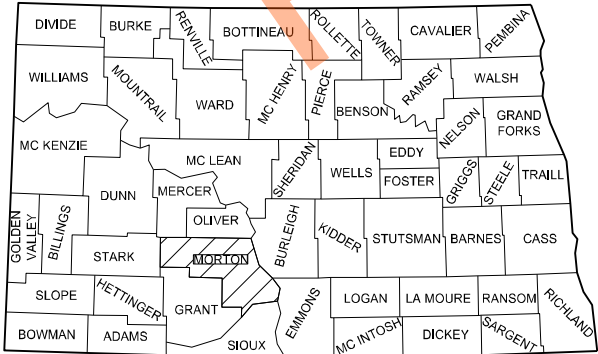
Sta 60+02

Sta 101+50

End SU-1-988(055): 27th St NW
Sta 120+64

End TAU-1-988(053): 8th Ave NW
Sta 52+61

Begin TAU-1-988(053): 8th Ave NW
Sta 44+02



STATE COUNTY MAP

DESIGNER James Erickson
DESIGNER Casey Nelson
DESIGNER Amy Schaaf

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

Morton County
8th Ave NW & 27th St NW
Mandan
Grading, Aggregate Base, Asphalt Pavement, Storm Sewer,
Watermain, Sidewalk, Signing, Pavement Markings,
Curb Ramps, & Lighting



	STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	24440	1	1

TAU-1-988(053)

24407

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
SU-1-988(055)	0.667	0.667
TAU-1-988(053)	0.163	0.163

Moore Engineering Inc.

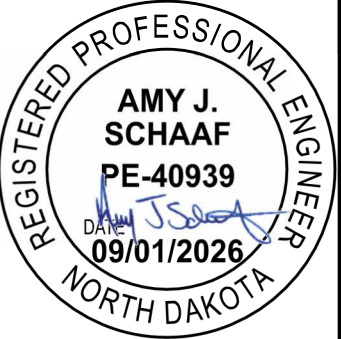
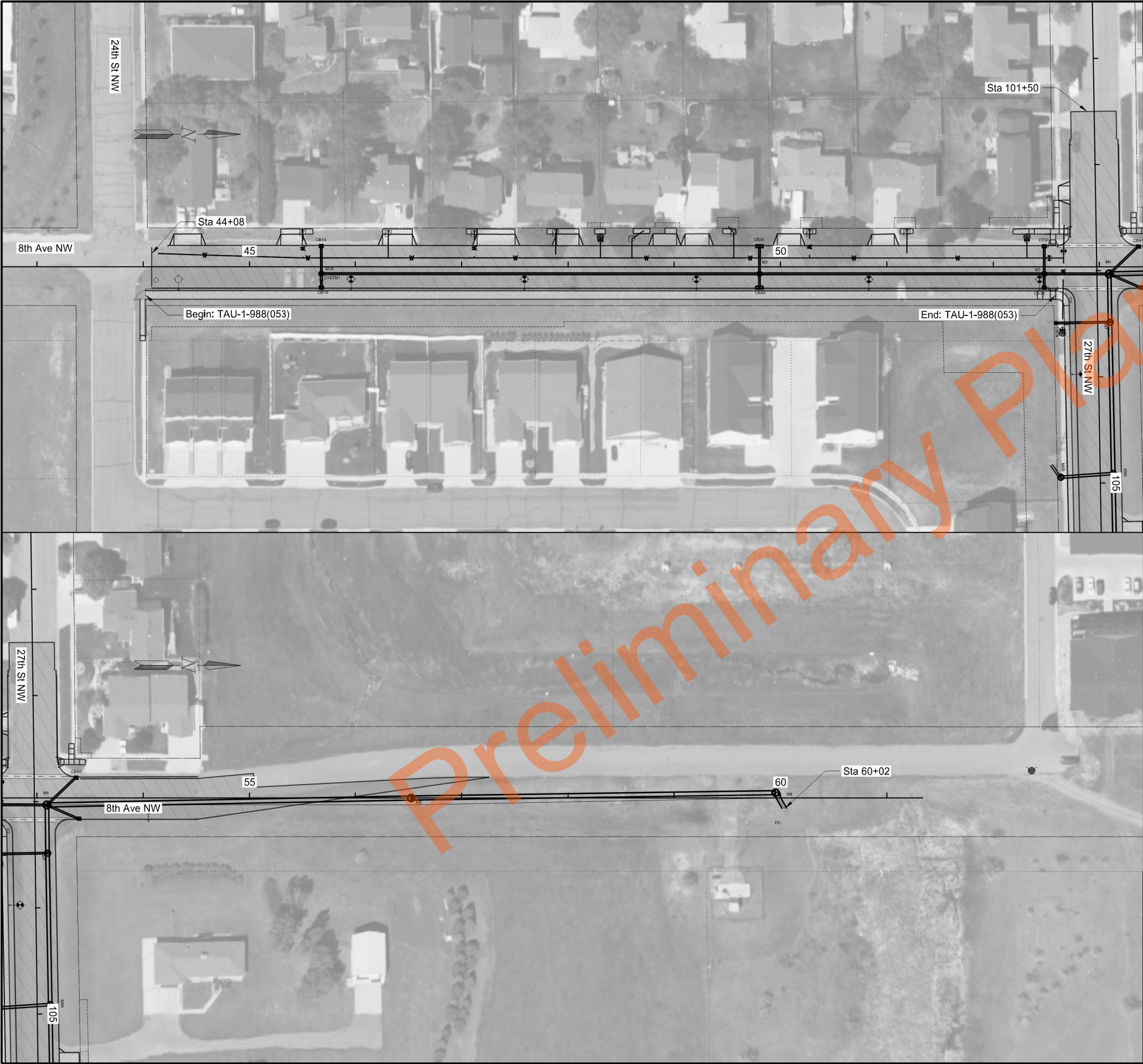


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					TAU-1-988(053)				
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2	1	Table of Contents	D-101-10	NDDOT Utility Company and Organization Abbreviations					
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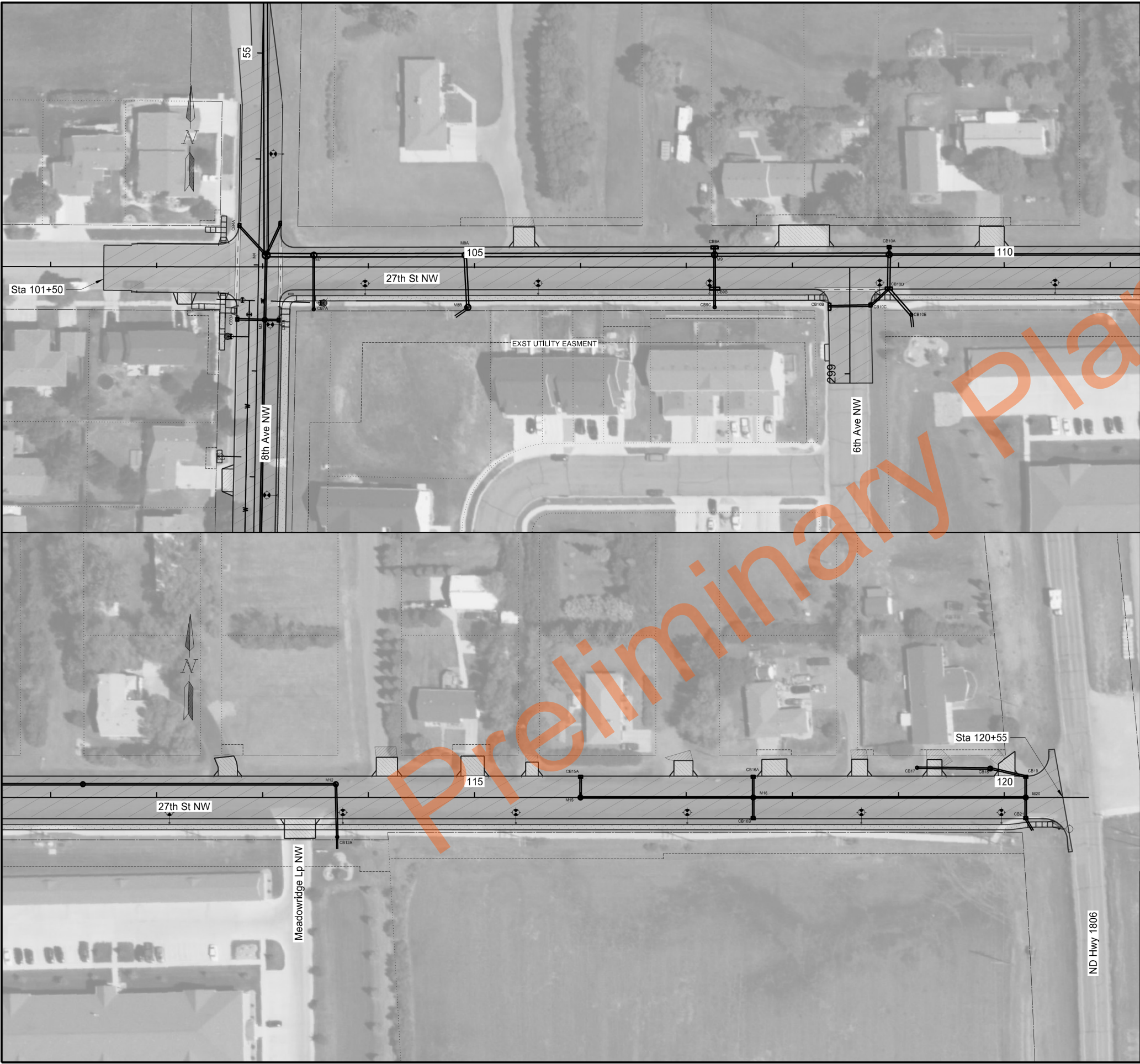
TAU-1-988(053)

LEGEND

-  SUPERPAVE FAA 43
-  VALLEY GUTTER SPECIAL
-  SIDEWALK CONCRETE 4IN & 6IN
-  DRIVEWAY CONCRETE
-  PIGMENTED IMPRINTED CONCRETE
-  AGGREGATE SURFACE COURSE CL 13

Scope of Work
8th Ave NW
Roadway Reconstruction
Mandan, ND





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LEGEND

- SUPERPAVE FAA 43
- VALLEY GUTTER SPECIAL
- SIDEWALK CONCRETE 4IN & 6IN
- DRIVEWAY CONCRETE
- PIGMENTED IMPRINTED CONCRETE
- AGGREGATE SURFACE COURSE CL 13

Scope of Work
27th St NW
Roadway Reconstruction
Mandan, ND



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NOTES

100-P01 COORDINATION OF PROJECTS: Other projects in the vicinity of this project are under contract during the 2027 construction season. These projects are as follows:

- Apex Stormwater Ponds (8th Ave NW, near storm outlet).

Access for construction vehicles to these sites must be coordinated/maintained at all times.

105-110 PAVEMENT SWEEPING: Sweep paved areas that were used by construction traffic before opening these areas to public traffic.

Sweep all newly constructed pavement no more than 24 hours before a scheduled final inspection.

Use a vacuum or pick-up type sweeper to perform this work.

105-P01 NOISE RESTRICTIONS: Conduct no construction activities or moving of equipment between the hours of 10:00 PM and 7:00 AM except for sawing of new concrete. When sawing is planned to occur during these hours, distribute written notices to residents located within ½ block of the work, a minimum of 4 hours prior to the start of any sawing.

105-P02 WBI GASLINE: WBI pipeline runs north-south within WBI’s parcel along east of 8th Ave NW. When working over and around the line, contractor must meet the following criteria laid out by WBI.

- Any equipment working over the top of the pipeline will need prior WBI Energy approval.
- Any proposed fill or removal of soil will need prior WBI Energy approval.

Contact Beau Ackerman at (406)359-7265 or beau.ackerman@wbienergy.com to get approval from WBI Energy.

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 or pilot car operations.

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

Install stackable vertical panels that meet the requirements of Section 704.03 H, "Stackable Vertical Panels", along the edge of the driving lane closest to the wedge.

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

The Engineer will not measure material used to construct the wedge. Include the cost of

materials, equipment, labor, and incidentals required for this operation in the price bid for “Aggregate Base Course CL 5.”

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

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.

108-P01 WEEKLY PLANNING & REPORTING MEETING: A weekly planning and reporting meeting is required. Provide a suitable meeting facility. Have the room approved by the Engineer. The meeting is to communicate the Contractor’s planned operations for the week, work performed the previous week, the Contractor’s needs of the Engineer, and any project issues. Provide meeting agendas at least one day in advance of scheduled meetings and provide meeting minutes within three days of held meetings.

201-P01 REMOVAL OF TREES: Engineer will mark all trees designated for removal. Provide 48 hour advance notice to Engineer for tree marking.

201-P02 CLEARING & GRUBBING: Remove existing shrubs, bushes, trees less than 10 inches in diameter, wood mulch, landscaping rock, landscaping boulders, edging, landscaping fabric & concrete edging located within the limits of construction. Coordinate with Engineer prior to removal of trees. Include all costs for removals in the price bid for “Clearing & Grubbing”. The following locations have been identified for clearing & grubbing:

- Sta 44+92 to 44+97 LT
- Sta 108+87 to 109+60 LT

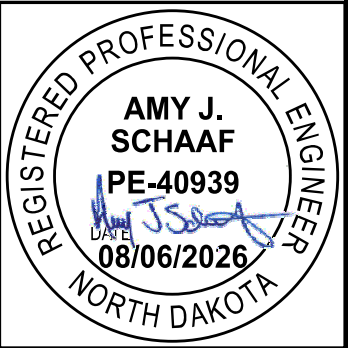
202-P01 REMOVAL OF CONCRETE PAVEMENT: Concrete driveways, sidewalk, and curb and gutter designated for removal may vary in thickness. There will be no additional compensation for removal of extra thickness. Removal of any existing base material under concrete will be incidental to this bid item. Include all costs associated with this work in the price bid for “Removal of Concrete Pavement.”

202-P02 REMOVAL OF BITUMINOUS SURFACING: The existing bituminous pavement varies in thickness. There will be no additional compensation for removal of extra thickness. Removal of existing aggregate base or fill (see existing typicals in section 30) under the surface will be incidental to this bid item. Existing thicknesses shown are pulled from boring logs, actual thickness may vary. Include all costs for removal of bituminous section in the price bid for “Removal of Bituminous Surfacing”.

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

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

203-P01 MAINTENANCE OF DRAINAGE: Maintain drainage such that water does not inundate driving lanes, sidewalk, shared use path, or adjacent properties by means of temporary grading and/or pumping. Include all costs associated with Maintenance of Drainage in the bid price for “Common Excavation-Type A.”



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203-P02 EARTHWORK: If Engineer and Contractor agree “COMMON EXCAVATION-TYPE A” and “COMMON EXCAVATION-WASTE” will be paid at plan quantity.

203-P03 SUBCUT AGGREGATE: Aggregate used in subcut repairs is subject to the requirements of 203.03. A quantity of 150 CY has been included to be used as directed by the Engineer. Aggregate used in subcut repairs will be paid for at the contract unit price for “SUBCUT AGGREGATE.”

230-P01 SUBGRADE PREPARATION: Scarify and recompact subgrade areas under the roadway section to a depth of 12 inches.

Proof roll all pavement subgrades prior to aggregate placement, along all travel lanes to verify the uniformity of the underlying subgrade throughout the roadway section and to check for the presence of localized soft or weak zones. Perform proof roll under the observation of the Engineer with a fully loaded, tandem axel dump truck with a weight of approximately 25 tons or an Engineer approved equal. Proof roll at a vehicle speed of between 1.5 and 3 miles per hour along the pavement subgrades such that unrolled areas between wheel paths are not wider than one foot. Limit yielding to less than 1 ½-inches for pavement subgrades, provided the underlying subgrade does not display permanent deformation. Correct areas that display excessive yielding, pumping, or rutting during the proof roll. Repeat proof roll procedures until accepted by the Engineer.

All costs associated with scarifying, recompacting, and proof rolling to be included in the price bid for “Subgrade Preparation – Type A”.

251-P01 SEEDING CLASS III: Seed disturbed ground as shown in section 77. Apply hydraulic mulch or bonded fiber matrix after the seed is raked into the topsoil. Use a seed mixture as follows:

Species	Pounds Live Seed/Acre	Percent by Weight
Kentucky Blue Grass	145.2	60
Perennial Ryegrass	72.6	30
Creeping Red Fescue or Durahard Fescue	24.2	10

After seeding wait fertilizer manufacturer recommended time before applying fertilizer. Use fertilizer mixture of 5-10-5 applied at a rate of 110 lbs. per acre.

Prior to or during grading and tillage operations, rake and clear the ground surface of all brush, sticks, roots, stones larger than ½ inch in diameter, concrete chunks, rebar, wire, or any other material that may hinder seeding and maintenance operations. Dispose of any accumulated material at no additional cost. Combine seed mixture with hydraulic mulch. Apply water in a manner that provides uniform coverage and prevents erosion and damage to the final surface. Provide daily watering for the first five days and sufficient water to maintain surface moisture in the top 2 inches of the soil, as approved by the Engineer, until such time as the grass has been evenly established to a height of 2 inches.

Include all costs for labor, equipment, and materials necessary to complete the work in the price bid for “Seeding Class III.”

302-110 BASE COURSE: Trim base course as specified in Section 302.04 C.2, "Surface Tolerance Type B."

302-P01 TRAFFIC SERVICE AGGREGATE: A quantity of 300 TON has been included in the plans to be used to maintain a traversable driving surface and/or as directed by the Engineer. Include all costs to provide, place, maintain, and remove the in the price bid for “Traffic Service Aggregate”.

302-P02 AGGREGATE BASE: Proof roll all aggregate bases prior to paving along all travel lanes to verify the uniformity of the underlying base throughout the roadway section and to check for the presence of localized soft or weak zones. Perform proof roll under the observation of the Engineer with a fully loaded, tandem axle dump truck with a weight of approximately 25 tons or an approved equal. Proof roll at a vehicle speed of between 1 1/2 and 3 miles per hour along the aggregate base such that unrolled areas between wheel paths are not wider than 1 foot. Limit yielding less than 1/2-inches for aggregate bases, provided the aggregate base does not display permanent deformation. Correct areas that display excessive yielding, pumping or rutting during the proof roll. Repeat proof roll procedures until accepted by the engineer.

Include all costs associated with proof rolling the aggregate base in the price bid for “Aggregate Base Course C15”.

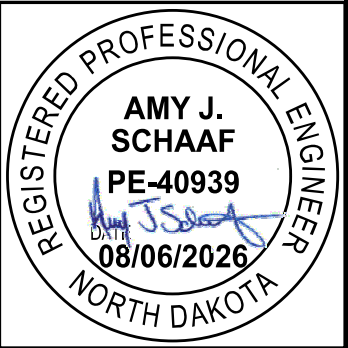
704-P01 TRAFFIC CONTROL PHASING: See Section 100 plan sheets, “Work Zone Traffic Control” for overview and detailed layouts of the construction phasing plan. Any alterations require the Engineer’s approval a minimum of 2 weeks prior to implementing.

General

- One way traffic may temporarily be reduced to 11’ minimum as needed for construction activity. Reestablish full width lanes as soon as possible. This condition may only be used while work is being completed.
- Driveway Access Considerations
 - Temporary Driveway Closure: When construction operations require additional construction area residential driveways may be temporarily closed to accommodate removals, paving operations, etc. Reestablish access as soon as possible. Minimize these closures to the hours of 8:00 am to 4:00pm. Coordination of access with residents is required.
 - Driveway Reconstruction Closure: In order to complete all work residential driveways may be closed to prep, pave, and cure for no more than 7 days. Coordinate with residents prior to removing their access.
- During removal and paving operations provide flaggers at intersections to direct traffic around equipment through intersections.
- 200 MHR for flagging have been included for use at the discretion of the Engineer.

Completion Dates and Phasing:

- Phases 1A and 1B cannot be under construction at the same time.
- Phase 2 cannot be started until May 28, 2027 and must be substantially complete by August 21, 2027.
- Phase 1A **OR** 1B can be constructed at the same time as Phase 2, but not both.
 - If Phase 1A or 1B is open concurrently with Phase 2, ensure access to 8th from the west side of 27th is maintained.



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- Final completion date for all phases is **October 16, 2027**.
- Substantial completion has been reached when the roadway has pavement markings and is open to traffic, lighting is installed, and permanent signing is in place. Grading/seeding work may continue after substantial completion, but must be completed by the final completion date.

Phase 1A – 8th Ave NW – East side of roadway

- Substantially complete all work along east side of 8th Ave NW from Sta 44+02 to 60+02. Skip over the 27th St. intersection. See section 100 for details.
- Traffic will be running one-way southbound on the west side of 8th Ave.
- Work items include:
 - Removals – leave approximately 14’ of roadway surface in place along the west side of the roadway to facilitate one-way southbound traffic and traffic control devices.
 - Storm trunk line, east inlets/runs, stub out west inlet runs
 - Grading and Base
 - Curb & Gutter
 - Lighting
 - Shared Use Path & Pigmented Imprinted Concrete
 - Seeding or stabilization of topsoil
 - Paving enough roadway to run one way traffic along east side of road and allow for traffic control devices to be placed

Phase 1B – 8th Ave NW – West side of roadway

- Substantially complete all work along west side of 8th Ave NW from Sta 44+02 to 60+02. Skip over the 27th St. intersection. See section 100 for details.
- Traffic will be running one-way northbound on the east side of 8th Ave.
- Work items include:
 - Remainder of 8th Ave Removals
 - Temporary Water
 - Watermain and service connections
 - West inlets and remainder of inlet runs not complete in Phase 1A
 - Grading and Base
 - Driveways
 - Sidewalk
 - Seeding or stabilization of topsoil
 - Remainder of 8th Ave paving not completed in Phase 1A
 - Pavement Markings

Phase 2 – 27th St NW

- Substantially complete all work along 27th St. NW from Sta 101+50 to 120+64 and 6th Ave NW from Sta 298+91 to 300+00. Roadway can be completely shut down to through traffic. Driveway access needs to be maintained for residents as stated under the **General** section of this note. Temporary access roads/driveways can be provided for residents at the Contractor’s discretion.
- If Phase 1A or 1B is under construction concurrently, maintain access to 8th Ave from the east side of the intersection with 27th St.
- Utilize Standard Drawing D-704-24 Type U along HWY 1806 as needed to account for encroaching work area onto HWY 1806.
- An additional 10 Type III Barricades and 25 Delineator Drums have been included in the quantities to block off driveways or other access as needed.

- Work items include:
 - Removals
 - Storm trunk line, inlets and inlet runs
 - Grading and Base
 - Curb & Gutter
 - Lighting
 - Driveways
 - Sidewalk
 - Seeding or stabilization of topsoil
 - Paving
 - Pavement Markings

704-P02 TRAFFIC CONTROL DEVICES: The traffic control devices list for each phase has been developed using traffic control sign layouts (shown in Section 100) and Standard Drawings as listed below:

- D-704-22: Type K & L, for use where conditions exist
- D-704-24: Type U
- D-704-26: Type EE, FF, and GG for maintaining temporary access.

704-P03 MAINTAINING ACCESS: Maintain a traversable driving surface for all public traffic operations at all times. Coordinate and alert residents/businesses regarding phase changes. Coordinate and alert residents/businesses regarding changes to access points, shifting traffic control, and temporary access restrictions along the construction zone with in each phase a minimum of 24 hours in advance.

708-P01 INLET PROTECTION SPECIAL: Include all costs for furnishing, installing, cleaning, removing sediment, maintaining, and replacing damaged devices in the price bid for “Inlet Protection-Special.” Keep all devices in place until final stabilization has been achieved or upon approval from the engineer. Include all costs for removing inlet protection at the completion of the project in the price bid for “Remove Inlet Protection-Special.”

714-P01 LARGE DIAMETER STORM SEWER PIPE: Install POPIT plugs in pipe lift holes (i.e. no concrete plugs) for all 42IN diameter and larger RCP storm sewer.

714-P02 EXISTING MANHOLE 1: Once the FES and 18” pipe heading out of EXSTM1 are removed, plug the existing hole with bricks and mortar. Inverts will need to be cut for the newly installed pipe. Cut with saw prior to breaking into MH with a hammer or any other device. Include all labor, equipment, and materials required for this work in the price bid for “MANHOLE 48IN.”

714-P03 BEDDING MATERIAL: Bedding material for the watermain and storm sewer installation will not be measured. Include costs for all work associated with providing and installing the bedding in the price bid for the various pipe bid items.

714-P04 POTHOLE UTILITY: Reliable data was not provided for the 24” concrete high pressure water distribution line that runs along 8th Ave. MH4, its associated catch basins, MH7, and its catch basin are not to be manufactured until the water line can be potholed by the contractor, and proposed locations and elevations can be verified. Include all labor, equipment, and materials for potholing in the bid price for the storm system items mentioned in this note.

REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

DATE 08/06/2026

NORTH DAKOTA

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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NOTES

- 722-P01

INLETS AND MANHOLES: All inlet and manhole offsets indicated in Section 50, Inlet and Manhole Summary, are to the center of structure. For Inlet Special structures, cast opening in center of cover.

Inlets and manholes were designed with a minimum 4 foot riser height. Fill the bottom of each drainage structure with concrete, up to the lowest invert elevation.
- 722-P02

MANHOLE CASTINGS: Manhole castings to be installed are as follows. Storm drain castings will have open pickholes, self-sealing platen lid, and “Storm Sewer” lettering.

Grass or Asphalt Pavement:

a)

Neenah R-1733

b)

East Jordan Iron Works 1205

c)

Municipal Castings, Inc. 301

d)

Approved Equivalent
- 722-P03

INLET CASTINGS: Inlet castings to be installed in curb & gutter, grass, or outside pavement are as follows. All bolts to be temper finish, double heat-treated 1038 S.A.E., Grade 5, Cad-Dichromate plated.

Curb & Gutter – Single Inlets:

a)

Neenah R-3295 (Type V Grate, NDDOT style back)

b)

East Jordan Iron Works 7030 (Type M4 Grate, Type T5 back)

c)

Approved Equivalent

Curb & Gutter – Double Inlets:

a)

Neenah R-3295-2 (Type V Grate, NDDOT style back)

b)

East Jordan Iron Works 7031 (Type M4 Grate, Type T5 back)

c)

Approved Equivalent

Curb & Gutter – Triple Inlets:

a)

Neenah R-3295-3 (Type V Grate, NDDOT style back)

b)

East Jordan Iron Works 7032 with additional inner sections (Type M4 Grate, Type T5 back)

c)

Approved Equivalent

Boulevard/Ditch – Beehive inlets:

a)

Neenah R-2573

b)

East Jordan 1130

c)

Approved Equivalent
- 722-P04

ADJUST MANHOLE: Remove existing adjustment rings and clean top of existing manhole structure. Prevent debris from falling into manholes and promptly remove any falling debris. Install new I/I barrier if manhole is a sanitary structure. Install new adjustment rings and reset casting to finished grade.

Manholes located at the following stations need to be adjusted:

•

Chain PR8, Sta 44+13

•

Chain PR8, Sta 45+68

- Chain PR8, Sta 48+96, 34’ LT
- Chain EX27, Sta 102+61, CL
- Chain EX27, Sta 103+76, CL

Include all costs for installing barrier if needed, new rings, and resetting casting on an existing structure in the price bid for “Adjust Manhole.”

- 722-P05

ADJUST GATE VALVE BOX: Adjust the gate valve boxes so that the top matches the finished surrounding surface. This may require the removal of additional material around the box. Install debris plugs into all existing gate valve boxes when they are adjusted. Include all labor, equipment, and materials required to adjust the gate valve boxes and install the plugs in the price bid for “Adjust Gate Valve Box.”
- 724-P01

TEMPORARY WATER SERVICE: Temporary water must be supplied to City water users affected by work.

Notify the Engineer and City 48 hours prior to disruption of water service. Contact City of Mandan, Utility Superintendent, Brad Glass at 701-955-2368 to locate gate valves & coordinate water shut off. Provide a written notice to any home or business 48 hours before disruption of the water service explaining anticipated method of providing temporary water service. Written notice to be approved by Engineer. Include all costs for labor, equipment, maintenance, and the material necessary for the installation and removal of temporary water service system in the price bid for “Temporary Water Service.”
- 724-P02

WATERMAIN GENERAL: Existing gate valves are to be operated by City of Mandan representatives only. Existing valves may not close tight enough to get a watertight closure. The contractor may have to work without a total water shut off with no extra charge to the City of Mandan.

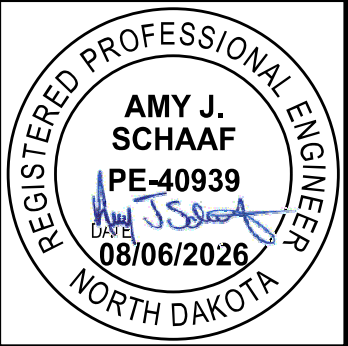
Locations and elevations of existing watermain connections shown on the plans are approximate. Locations and elevations of the proposed connections must be verified prior to installation. In the event that the elevations or locations differ from those shown in the plans immediately notify the Engineer.

All fittings shall be considered incidental to the price bid for “Watermain 6IN’ and “Watermain 8IN” as stated in section 901-2.4 of the City of Mandan Construction Specifications.
- 724-P03

WATER SERVICE CONNECTION 1IN: Due to change in elevations, additional pipe may be needed to complete connections to existing water services. Include all materials, equipment, and labor necessary to make connections in the bid price for “Water Service Connection 1IN.”
- 724-P04

ABANDONED WATERMAIN: All exposed ends of the watermain to be abandoned are to be plugged with concrete. Remove all existing valve boxes and hydrant heads on the abandoned line. Include all costs for this work in the bid price for “Removal of Pipe All Types and Sizes.”
- 724-P05

IRRIGATION SYSTEM: Existing sprinkler systems are located within the project limits. Repair lines and sprinkler heads damaged during construction. The location of existing known sprinkler systems are listed below.



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NOTES

- 900 24th St NW
- 2605 8th Ave NW
- 2609 8th Ave NW
- 2705 8th Ave NW
- 2801 8th Ave NW

Other sprinkler lines may exist on the project. Payment will be made upon testing the new lines to ensure they function as intended. Additional lines encountered will be paid by the each according to the size of the repair i.e. a sum agreed upon by the Engineer and Contractor.

744-P01 INSULATION BOARD: Furnish and install the insulation required to protect the watermain as shown in section 55. Insulation is to be installed where pipes are within 3’ of each other. Provide insulation board meeting the following requirements:

- Thermal conductivity of not more than 0.28 BTU per hour per square foot per degree Fahrenheit per inch of thickness as tested in accordance with ASTM C177
- Not to absorb moisture to an extent greater than 2.5 percent by volume as tested in accordance with ASTM D2842
- Compression strength greater than 20 psi as tested in accordance with ASTM D-1621
- Density between 0.9 and 1.3 pounds per cubic feet as tested in accordance with ASTM D-1622
- Specifically designed for protection of underground utilities. Install in accordance with the manufacturer’s recommendations

Minimum of 4-inches thick insulation is to be centered over the watermain. Install pipe bedding material between pipe and insulation.

750-P01 ADA CURB RAMP LANDINGS: Dimensions shown in Section 82 are approximate. Adjustments may be required so maximum grades are not exceeded. Flatter grades or slopes may be used as directed by the Engineer. The designated ADA turning spaces as shown in Section 82 per the legend as “Turning Space/Landing” are to be constructed separately and installed prior to adjacent ADA ramps and/or sidewalks allowing for a minimum of 24 hours of cure time. All sides of the “Landing” that adjoin concrete will be surrounded by expansion joint.

750-P02 PIGMENTED IMPRINTED CONCRETE: Develop a mix design using any size coarse aggregate specified in Section 802.01 C.2, "Coarse Aggregate" and with a 60-40 coarse aggregate-fine aggregate ratio.

Provide a pigment from the list below or provide an approved equal. To be considered an approved equal, pigments must meet the requirements of ASTM C 979.

1. Number 920 Smoke, produced by Soloman Colors, Inc. <http://www.solomoncolors.com/>
2. Silversmoke pigment Number 860, produced by Davis Colors <http://www.daviscolors.com/>

Use the same supplier for all colored concrete placed under the contract. The color shall be uniform throughout the entire project.

Add pigment at the ratio recommended by the manufacturer directly into the mixer along with the aggregate, cement, and water. Add pigment while the mixer is operating at mixing speed. Continue mixing for 5 to 10 minutes or between 50 and 100 revolutions.

Protect surface of adjacent white concrete cure compound from pigmented concrete mix.

Form a pattern in the concrete using a roller to create a slate pattern.

Cure concrete using curing compound that meets the requirements of ASTM C 309, Type 1 and include slip resistant additive. Include all costs in the price bid for “Pigmented Imprinted Concrete.”

750-P03 DETECTABLE WARNING PANELS: Provide safety yellow powder coated cast iron materials as specified below. Install radial or straight panels as indicated in Section 82. Panels may need to be cut to be installed properly.

The location of the detectable warning surfaces will comply with PROWAG R305.2 that states “where a concrete border is required for proper installation of a detectable warning surface, a concrete border not exceeding 2 inches shall be permitted on all sides of the detectable warning surface except between the detectable warning surface and the edge of pavement where a setback is already permitted.”

- TufTile – Cast Iron ADA Detectable Warning Tile
- Advantage Tactile Systems- Advantage Cast Iron Premiere ADA Tactile Detectable Warning Tile
- ADA Arcis Tactile
- Cast Iron Coated by East Jordan Iron Works
- Neenah Foundry Detectable Warning Plates
- An approved equal

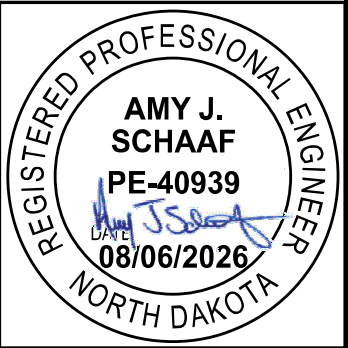
750-P04 CONCRETE CRACKING: Saw all concrete joints in a timely manner to prevent any uncontrolled random cracking. If random cracking occurs, remove and replace all damaged panels at the Contractor’s expense.

752-P01 FENCE CHAIN LINK REMOVE & RESET: Remove existing chain link fence at Sta 105+21 to 106+57 RT when grading makes it necessary and reset along right of way. If damage occurs, remove and replace all damaged posts/pieces at the contractor’s expense. Include all costs for labor, materials, and equipment necessary to remove and reset fence in the price bid for “Fence Chain Link Remove & Reset.”

752-P02 TEMPORARY SAFETY FENCE: Install and maintain temporary safety fence in the backyard for the following residences:

- 804 26th Street NW
- 802 26th Street NW
- 712 26th Street NW
- 710 26th Street NW

An additional quantity of 200 LF has been included be used to protect the project site and/or as directed by the Engineer.



NOTES

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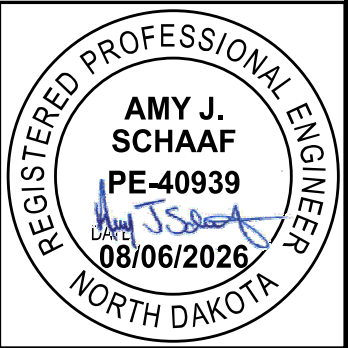
Include all costs for labor, materials, and equipment necessary to install, maintain, and remove fence in the price bid for “Temporary Safety Fence.”

766-P01 RESET MAILBOX: Construct a temporary wood base to hold mailboxes upright. Place in a location designated by the Postmaster for mail delivery as needed during construction. Engineer to confirm temporary locations with Postmaster (Tracy Tetzloff, (701)516-3123) prior to work beginning. Proposed temporary locations are as follows:

- For impacted boxes on 27th St NW set temporary structure near cluster boxes on 6th
- For impacted boxes on 8th Ave NW set temporary structure near the cluster box on 6th
- For impacted cluster box on 6th, move approximately one block south

Mailboxes are to be reinstalled with the front of the box 6-8” back from the face of curb with the bottom of the box 41-45” inches above the roadway surface. Boxes shall be plumb, level, set square with the street, and tamped solidly in place. See <https://www.usps.com/manage/mailboxes.htm> for more guidance.

Preliminary Plans



Estimated Quantities						STATE	PROJECT NO.	SECTION NO.	SHEET NO.
						ND	SU-1-988(055)	8	1
					TAU-1-988(053)				
SPEC	CODE	ITEM DESCRIPTION	UNIT	SU-1-988(055)	Drainage 72.80%/27.20%	TAU-1-988(053)	100% City	TOTAL	
103	0100	CONTRACT BOND	L SUM	0.58	0.26	0.05	0.11	1	
201	0300	CLEARING & GRUBBING	ACRE	0.034				0.034	
201	0370	REMOVAL OF TREES 10IN	EA	3				3	
202	0021	REMOVE AGGREGATE BASE & SURFACING	TON	973				973	
202	0114	REMOVAL OF CONCRETE PAVEMENT	SY	1872				1872	
202	0128	REMOVE AGGREGATE BASE	TON	2648				2648	
202	0130	REMOVAL OF CURB & GUTTER	LF	1324				1324	
202	0132	REMOVAL OF BITUMINOUS SURFACING	SY	6091				6091	
202	0169	REMOVAL OF END SECTION-ALL TYPES & SIZES	EA			1		1	
202	0170	REMOVAL OF CULVERTS-ALL TYPES & SIZES	LF	448				448	
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF				189	189	
202	0260	REMOVAL OF PAVERS	SY	9				9	
202	0400	REMOVAL OF RIPRAP - LOOSE ROCK	CY	16				16	
203	0101	COMMON EXCAVATION-TYPE A	CY	3356		350		3706	
203	0109	TOPSOIL	CY	1083				1083	
203	0113	COMMON EXCAVATION-WASTE	CY	3648				3648	
203	0238	SUBCUT AGGREGATE	CY	150				150	
216	0100	WATER	M GAL	251		5		256	
230	0165	SUBGRADE PREPARATION-TYPE A-12IN	STA	30				30	
251	0300	SEEDING CLASS III	ACRE	1.858		0.383		2.241	
253	0201	HYDRAULIC MULCH	ACRE	4.448		1.274		5.722	
255	0103	ECB TYPE 3	SY	15				15	
256	0200	RIPRAP GRADE II	CY	24				24	
260	0300	SILT FENCE	LF	87				87	
260	0301	REMOVE SILT FENCE	LF	87				87	
261	0112	FIBER ROLLS 12IN	LF	845				845	
261	0113	REMOVE FIBER ROLLS 12IN	LF	755				755	
261	0120	FIBER ROLLS 20IN	LF	220		902		1122	
261	0121	REMOVE FIBER ROLLS 20IN	LF	220		902		1122	
302	0050	TRAFFIC SERVICE AGGREGATE	TON	300				300	
302	0120	AGGREGATE BASE COURSE CL 5	TON	5374		128		5502	
302	0356	AGGREGATE SURFACE COURSE CL 13	TON	44				44	
401	0050	TACK COAT	GAL	651				651	
430	0043	SUPERPAVE FAA 43	TON	3616				3616	
430	0500	COMMERCIAL GRADE HOT MIX ASPHALT	TON	83				83	
430	1000	CORED SAMPLE	EA	18				18	
430	5815	PG 58S-34 ASPHALT CEMENT	TON	217				217	
702	0100	MOBILIZATION	L SUM	0.58	0.26	0.05	0.11	1	
704	0100	FLAGGING	MHR	200				200	
704	1000	TRAFFIC CONTROL SIGNS	UNIT	1574				1574	
704	1052	TYPE III BARRICADE	EA	39				39	
704	1054	SIDEWALK BARRICADE	EA	6				6	
704	1060	DELINEATOR DRUMS	EA	86				86	
704	1500	OBLITERATION OF PAVEMENT MARKING	SF	24				24	
708	1540	INLET PROTECTION-SPECIAL	EA	19				19	
708	1541	REMOVE INLET PROTECTION-SPECIAL	EA	19				19	
709	0100	GEOSYNTHETIC MATERIAL TYPE G	SY	15356				15356	

Estimated Quantities						STATE	PROJECT NO.	SECTION NO.	SHEET NO.
						ND	SU-1-988(055)	8	2
					TAU-1-988(053)				
SPEC	CODE	ITEM DESCRIPTION	UNIT	SU-1-988(055)	Drainage 72.80%/27.20%	TAU-1-988(053)	100% City	TOTAL	
714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN	LF		1545			1545	
714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN	LF		749			749	
714	0620	PIPE CONC REINF 24IN CL III-STORM DRAIN	LF		116			116	
714	0825	PIPE CONC REINF 30IN CL III-STORM DRAIN	LF		165			165	
714	0910	PIPE CONC REINF 36IN CL III-STORM DRAIN	LF		424			424	
714	1010	PIPE CONC REINF 42IN CL III-STORM DRAIN	LF		715			715	
714	3005	END SECT-CONC REINF 15IN	EA		1			1	
714	3040	END SECT-CONC REINF 42IN	EA		1			1	
714	9659	REMOVE & RELAY PIPE-ALL TYPES & SIZES	LF		62			62	
714	9696	EDGEDRAIN NON PERMEABLE BASE	LF	5476				5476	
714	9830	PIPE 24IN CORR PLASTIC	LF		15			15	
722	0100	MANHOLE 48IN	EA		9			9	
722	0110	MANHOLE 60IN	EA		5			5	
722	0120	MANHOLE 72IN	EA		3			3	
722	1100	MANHOLE RISER 48IN	LF		41.5			41.5	
722	1110	MANHOLE RISER 60IN	LF		46			46	
722	1120	MANHOLE RISER 72IN	LF		27.9			27.9	
722	3510	INLET-TYPE 2	EA		11			11	
722	3520	INLET-TYPE 2 DOUBLE	EA		4			4	
722	3521	INLET-TYPE 2 TRIPLE	EA		1			1	
722	3701	INLET SPECIAL-TYPE 2 48IN	EA		2			2	
722	3711	INLET SPECIAL-TYPE A 48IN	EA		2			2	
722	3740	INLET SPECIAL CATCH BASIN-TYPE A 48IN	EA		2			2	
722	3825	INLET SPECIAL-TYPE 2 DOUBLE 84IN	EA		1			1	
722	4000	INLET CATCH BASIN-TYPE A	EA		4			4	
722	6140	ADJUST GATE VALVE BOX	EA				1	1	
722	6200	ADJUST MANHOLE	EA	4				4	
724	0270	REMOVE GATE VALVE & BOX	EA				4	4	
724	0300	GATE VALVE & BOX 6IN	EA				3	3	
724	0310	GATE VALVE & BOX 8IN	EA				2	2	
724	0400	HYDRANT-INSTALL 6IN	EA				3	3	
724	0430	REMOVE HYDRANT	EA				2	2	
724	0670	TEMPORARY WATER SERVICE	L SUM				1	1	
724	0810	WATERMAIN 6IN PVC	LF				111	111	
724	0830	WATERMAIN 8IN PVC	LF				883	883	
724	0955	WATER SERVICE CONNECTION 11IN	EA				8	8	
724	1036	SPRINKLER REPAIR	L SUM	1				1	
744	0050	INSULATION BOARD	CF	147				147	
748	0140	CURB & GUTTER-TYPE I	LF	5542				5542	
748	0520	CURB-TYPE I	LF	32				32	
748	1280	VALLEY GUTTER SPECIAL	LF	163				163	
750	0030	PIGMENTED IMPRINTED CONCRETE	SY			189		189	
750	0115	SIDEWALK CONCRETE 4IN	SY	1049		762		1811	
750	0140	SIDEWALK CONCRETE 6IN	SY	37		2		39	
750	1000	DRIVEWAY CONCRETE	SY	947				947	
750	2115	DETECTABLE WARNING PANELS	SF	62		10		72	
752	0660	FENCE CHAIN LINK REMOVE & RESET	LF	162				162	

Estimated Quantities						STATE	PROJECT NO.	SECTION NO.	SHEET NO.
						ND	SU-1-988(055)	8	3
					TAU-1-988(053)				
SPEC	CODE	ITEM DESCRIPTION	UNIT	SU-1-988(055)	Drainage 72.80%/27.20%	TAU-1-988(053)	100% City	TOTAL	
752	0911	TEMPORARY SAFETY FENCE	LF	400				400	
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	87				87	
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	120				120	
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	243				243	
754	0592	RESET SIGN PANEL	EA	1				1	
762	0103	PVMT MK PAINTED-MESSAGE	SF	400				400	
762	1104	PVMT MK PAINTED 4IN LINE	LF	7192				7192	
762	1106	PVMT MK PAINTED 6IN LINE	LF	248				248	
762	1108	PVMT MK PAINTED 8IN LINE	LF	226				226	
762	1124	PVMT MK PAINTED 24IN LINE	LF	174				174	
766	0120	RESET MAILBOX	EA	24				24	
770	0001	LIGHTING SYSTEM	EA	1				1	

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	ND	SU-1-988(055)	10	1

		Stations - 8th Ave NW		Stations - 8th Ave NW		Stations - 8th Ave NW		Stations - 27th St N and 6th Ave NW		Additional Quantity for Intersections	Totals
		44+08 to 52+79		53+17 to 54+51		54+51 to 57+26		101+50 to 120+64 298+91 to 299+77			
Material	Unit	Width (ft)	Quantity Per Station	Width (ft)	Quantity Per Station	Width (ft)	Quantity Per Station	Width (ft)	Quantity Per Station	Quantity	
Subgrade Preperation-Type A-12IN	Sta	44	1	42	1	Varies	1	43	1	0	30
Geosynthetic Material Type G	SY	44	494	42	467	Varies	Varies	43	483	85	15356
Aggregate Base Course CI 5 @ 1.875 Ton/CY	CY	44	167	42	153	Varies	Varies	43	163	28	5177
Tack Coat @ 0.05 Gal/SY	Gal	37	21	37	21	Varies	Varies	37	21	3	651
Superpave FAA 43 @ 2 Ton/CY	Ton	37	114	37	114	Varies	Varies	37	114	19	3616
PG 58S-34 Asphalt Cement @ 6.0%(5")	Ton	37	7	37	7	Varies	Varies	37	7	1.1	217

Water	
25 MGal/Mile for Dust Palliative	16
20 Gal/Ton for Aggregates	198
10 Gal/CY for Embankment	37
TOTAL	251

430-1000 CORED SAMPLE - 8th Ave NW - Sta 44+08 to Sta 55+05						
	A	B		C		
Specification Section	Distance (Ft)/1000	Lanes	Joints	Lifts	Quantity (A x B x C)	Unit
430.04 I.2.b(1), "General"	1	2	N/A	2	4	EA
SSP 4 Longitudinal Joint Density in HMA Pavements (Centerline)	1	N/A	1	2	2	EA
				Total	6	EA

430-1000 CORED SAMPLE - 27th St NW - Sta 101+50 to Sta 120+55						
	A	B		C		
Specification Section	Distance (Ft)/1000	Lanes	Joints	Lifts	Quantity (A x B x C)	Unit
430.04 I.2.b(1), "General"	2	2	N/A	2	8	EA
SSP 4 Longitudinal Joint Density in HMA Pavements (Centerline)	2	N/A	1	2	4	EA
				Total	12	EA

Basis of Estimate
8th Ave NW & 27th St N
Roadway Reconstruction
Mandan, ND

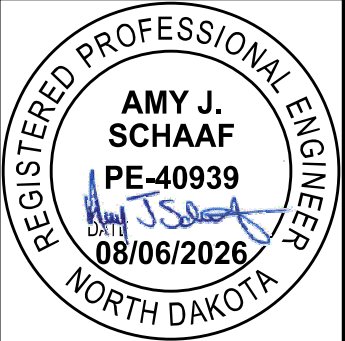


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	10	2

Base for Driveways 302-0120 Aggregate Base Course CL 5				
Chain	Sta	Offset	Base (CY@4" Depth)	Base (Tons)
PR8	44+42	LT	3.84	7.21
PR8	45+41	LT	4.40	8.25
PR8	46+42	LT	5.76	10.79
PR8	47+34	LT	7.23	13.56
PR8	48+00	LT	4.53	8.50
PR8	48+92	LT	3.44	6.46
PR8	49+23	LT	3.52	6.60
PR8	50+09	LT	3.40	6.38
PR8	50+96	LT	3.24	6.08
EX27	102+26	RT	2.26	4.23
EX27	105+48	LT	4.81	9.02
EX27	108+10	LT	12.02	22.54
EX27	109+87	LT	5.73	10.75
EX27	112+66	LT	4.28	8.02
EX27	113+35	RT	6.81	12.77
EX27	114+16	LT	4.51	8.46
EX27	114+98	LT	5.27	9.88
EX27	115+55	LT	2.13	4.00
EX27	116+97	LT	3.42	6.42
EX27	117+82	LT	4.81	9.02
EX27	118+63	LT	3.12	5.85
EX27	119+33	LT	2.86	5.35
EX27	120+02	LT	3.64	6.83
TOTAL			105.06	196.98

766-0120 RESET MAILBOX				
Chain	Existing Station	Proposed Station	Quantity	Unit
8" Ave NW	45+17, 21' LT	45+17, 21' LT	1	EA
8" Ave NW	46+17, 21' LT	46+17, 21' LT	1	EA
8" Ave NW	47+06, 20' LT	47+06, 21' LT	1	EA
8" Ave NW	47+84, 21' LT	47+84, 21' LT	1	EA
8" Ave NW	49+07, 20' LT	49+05, 21' LT	1	EA
8" Ave NW	49+09, 20' LT	49+07, 21' LT	1	EA
8" Ave NW	50+70, 21' LT	50+70, 21' LT	1	EA
8" Ave NW	50+71, 21' LT	50+71, 21' LT	1	EA
27' St	102+14, 24' RT	102+14, 24' RT	1	EA
27' St	102+15, 23' RT	102+15, 24' RT	1	EA
27' St	105+82, 12' LT	105+82, 21' LT	1	EA
27' St	107+78, 13' LT	107+78, 21' LT	1	EA
27' St	108+40, 13' LT	108+43, 21' LT	1	EA
27' St	110+17, 13' LT	110+17, 21' LT	1	EA
27' St	112+51, 13' LT	112+51, 21' LT	1	EA
27' St	113+88, 12' LT	113+88, 21' LT	1	EA
27' St	115+22, 13' LT	115+22, 21' LT	1	EA
27' St	117+35, 13' LT	117+35, 21' LT	2	EA
27' St	119+83, 12' LT	119+83, 21' LT	1	EA
6" Ave NW	299+14, 19' LT	299+14, 19' LT	1	EA
6" Ave NW	299+17, 19' LT	299+17, 19' LT	1	EA
6" Ave NW	299+20, 19' LT	299+20, 19' LT	1	EA
6" Ave NW	299+24, 19' LT	299+24, 19' LT	1	EA
Total			24	EA

Basis of Estimate
8th Ave NW & 27th St N
Roadway Reconstruction
Mandan, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	11	1

EARTHWORK SUMMARY					
	Excavation (CY)	Embankment (CY)*	203-0101 COMMON EXCAVATION- TYPE A (CY)	203-0113 COMMON EXCAVATION- WASTE (CY)	203-0109 TOPSOIL (CY)**
	A	B	C=B	D=A-B	
8th Ave NW	2012	1255	1255	757	293
27th St NW	5342	2451	2451	2891	790
TOTALS	7354	3706	3706	3648	1083

* Quantity Includes 25% for Shrinkage
** Assumed depth of topsoil removal is 6 inches. Topsoil to be spread evenly throughout project after construction is complete.
Note: Excavation and Embankment for 6th Ave NW are included in the quantities shown for 27th St NW.

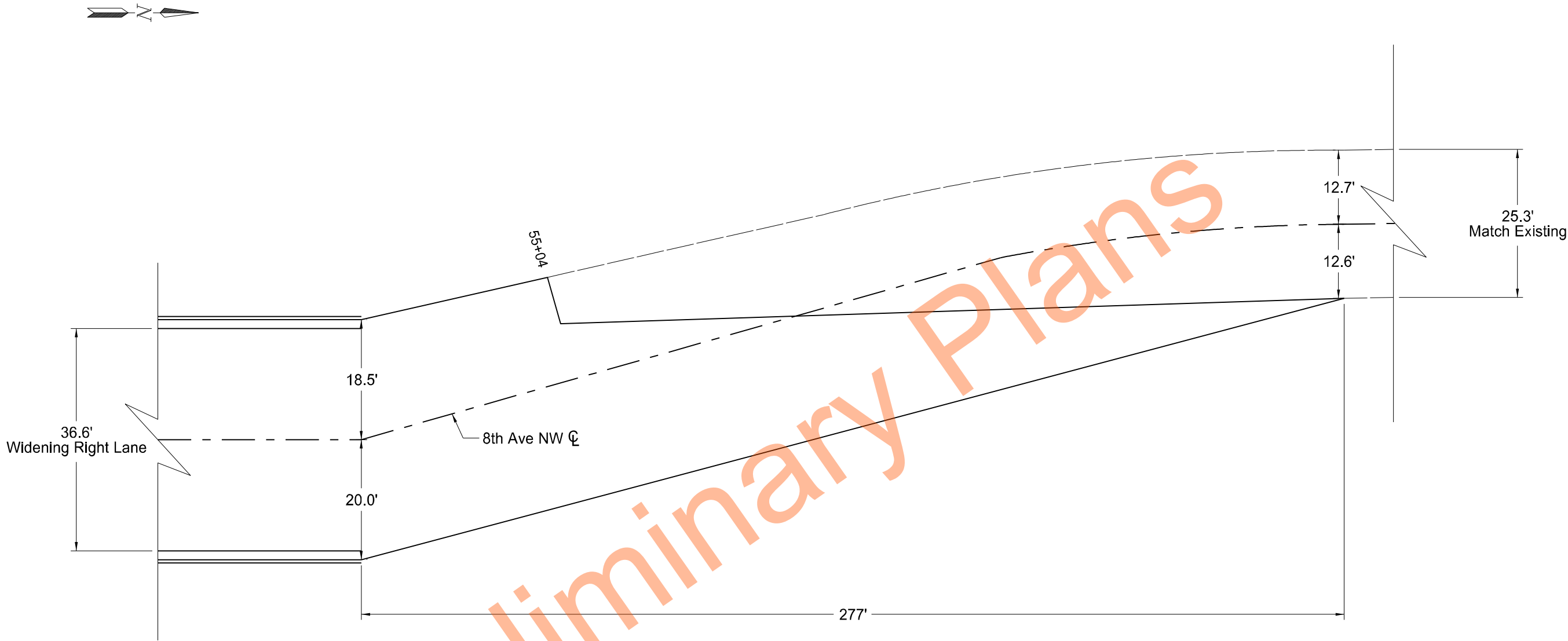
Earthwork Summary
8th Ave NW & 27th St NW
Roadway Reconstruction
Mandan, ND

REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF
PE-40939
DATE 08/06/2026

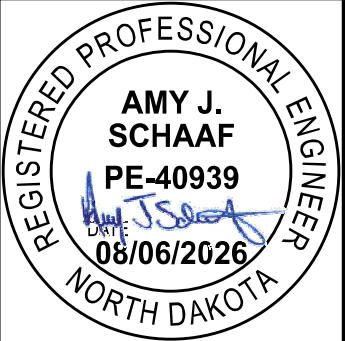
NORTH DAKOTA

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	20	1

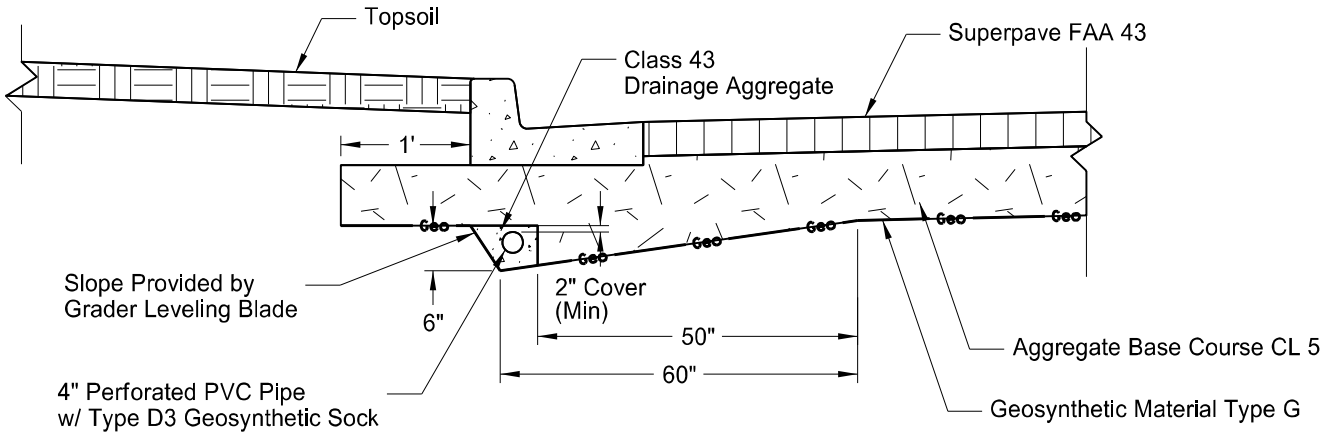


8th Ave NW
Transitioning Right Lane Widening
to match existing
Sta 54+51 to Sta 57+26

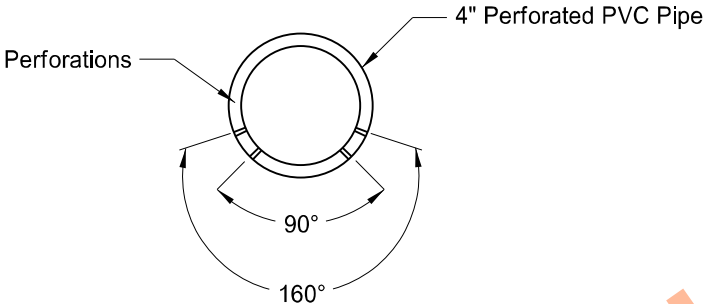
General Details
Lane Width Transition Detail
8th Ave NW
Roadway Reconstruction
Mandan, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	20	2



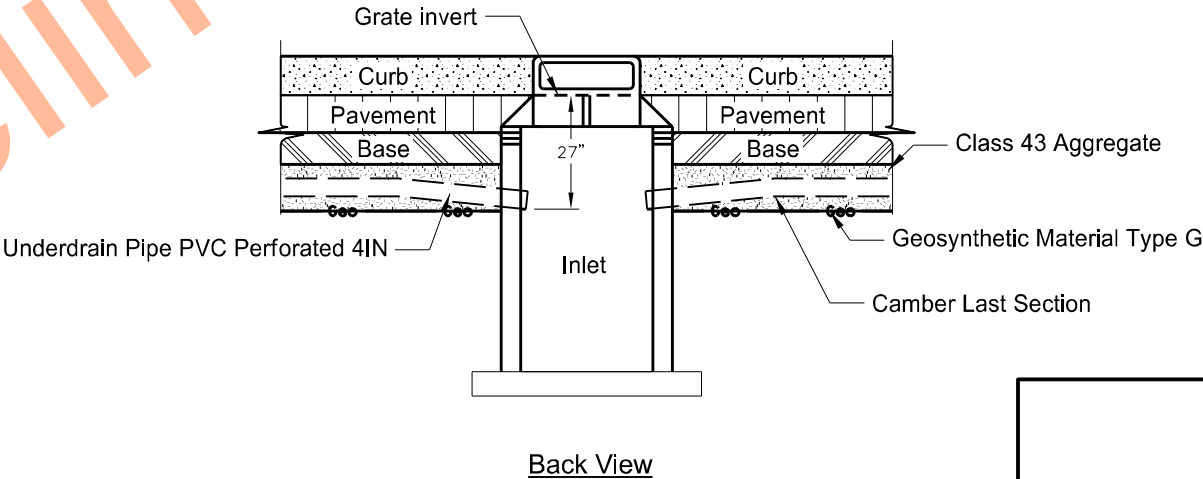
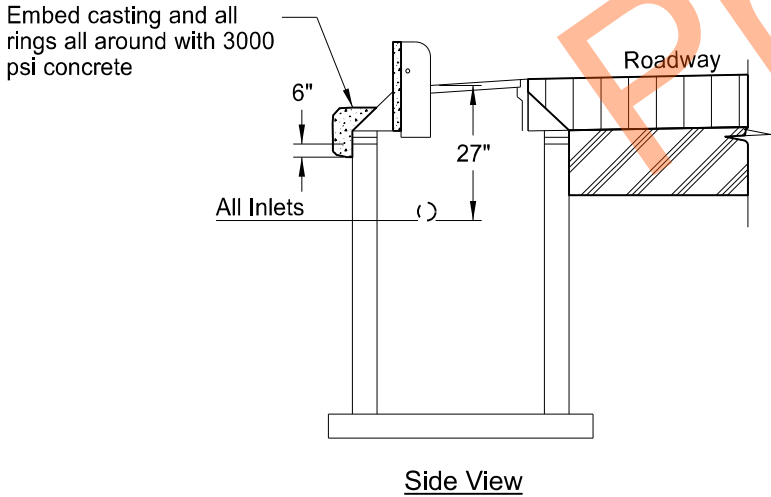
Edgedrain Detail
(Not to Scale)



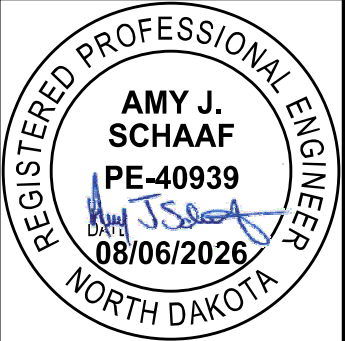
Perforated PVC Pipe Detail
(Not to Scale)

Notes

1. Provide knockouts in inlets to accommodate 4" PVC Perforated Pipe. Include cost of knockouts and rubber boot connection in the price bid for "Edgedrain Non Permeable Base".
2. Do not use bends or fittings unless approved by the Engineer. If used, use solvent weld fittings.
3. Use Polyvinyl Chloride Sewer Pipe with Solvent Cemented Joints as specified in ASTM Spec. No 3034.
4. Perforations to be circular and 1/4" ± 1/16" in diameter. Arrange in rows parallel to the axis of the pipe and spaced approximately 3" center to center along the rows. The placement and total numbers of the rows to be as shown above with an allowable tolerance of ± 10 Degrees. The spigot and bell end to be unperforated for a length equal to the depth of the joint.
5. Pipe Size: 4"
6. Rows of perforations: 4
7. Perforations per row: 48 (For 12.5' pipe laying lengths)
8. Wash drainage aggregate clean prior to use. Include cost for drainage aggregate in price bid for "Edgedrain Non Permeable Base".
9. Terminate 4" perforated pipe inside of inlets or manholes at least 1" with a maximum of 3".
10. Place perforations facing down.
11. Core boots installed in field.
12. Include cost of Type D3 Geosynthetic Sock in the price bid for "Edgedrain Non Permeable Base".



General Details
Edge Drain Detail
8th Ave NW & 27th St N
Roadway Reconstruction
Mandan, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	20	3

Inlet Protection Device

Installation Notes:

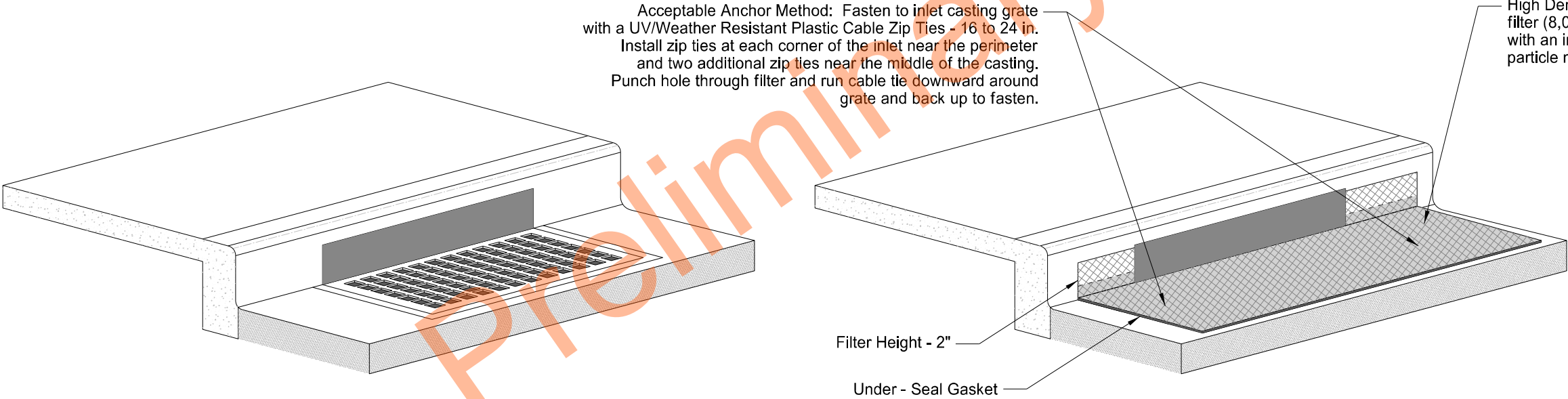
1. Place device tightly against drain opening and cover entire grate. Extend the device at least 2 inches past the grate toward the street.
2. Overlap the segments at longer openings.
3. Anchor the device so that water cannot flow behind it.

General Notes:

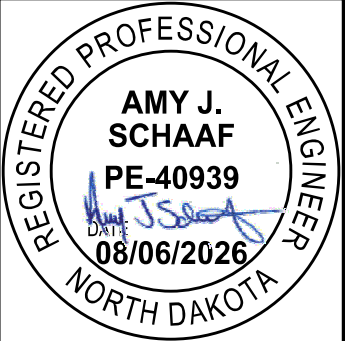
1. Remove material that falls into the inlet during maintenance or removal of the device.

Acceptable Anchor Method: Fasten to inlet casting grate with a UV/Weather Resistant Plastic Cable Zip Ties - 16 to 24 in. Install zip ties at each corner of the inlet near the perimeter and two additional zip ties near the middle of the casting. Punch hole through filter and run cable tie downward around grate and back up to fasten.

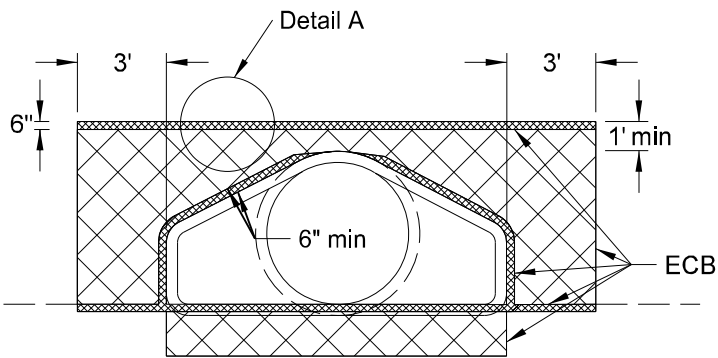
High Density Polyethylene (HDPE) high flow jacket filter (8,000 opening per SY) with an integrated 425 um (micron meter) fine filter particle mesh



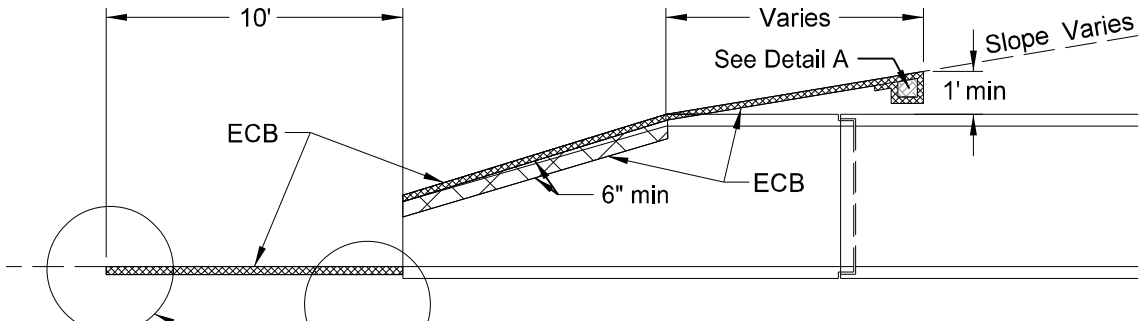
General Details
Inlet Protection Device
8th Ave NW & 27th St N
Roadway Reconstruction
Mandan, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	20	4

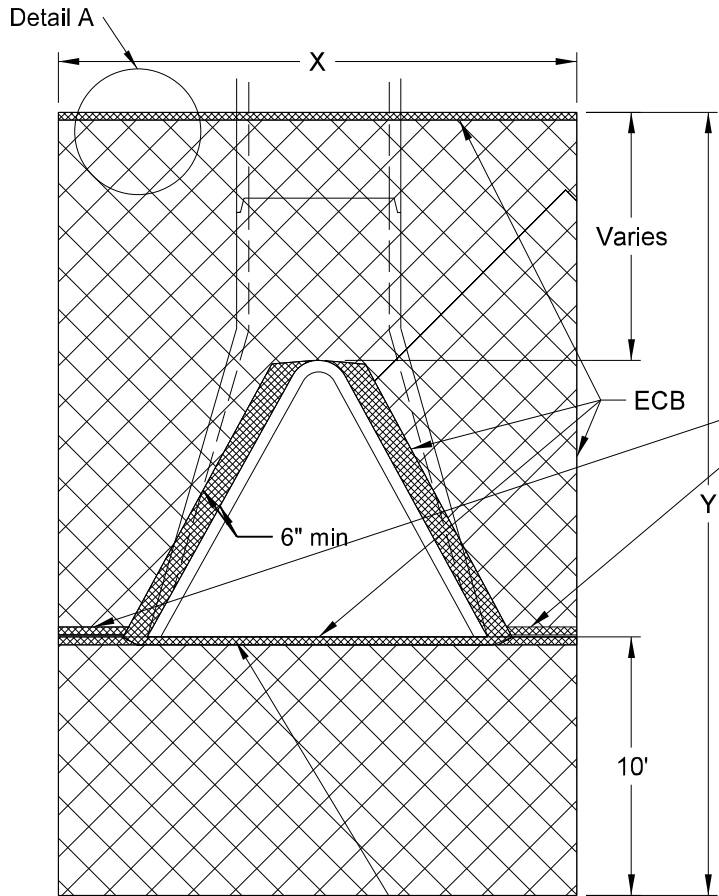


FRONT VIEW



SIDE VIEW

Erosion Control Blanket (ECB)								
Location to be Protected Station	Culvert Type Appr/CL	Pipe Diam (Inch)	No	Unit Quantity (SY)	Total Quantity			
					Type 1 (SY)	Type 2 (SY)	Type 3 (SY)	Type 4 (SY)
120+33 Rt	Appr	15	1	15			15	
Total (SYs)							15	



TOP VIEW

Tuck this end a minimum of 6" into the embankment.

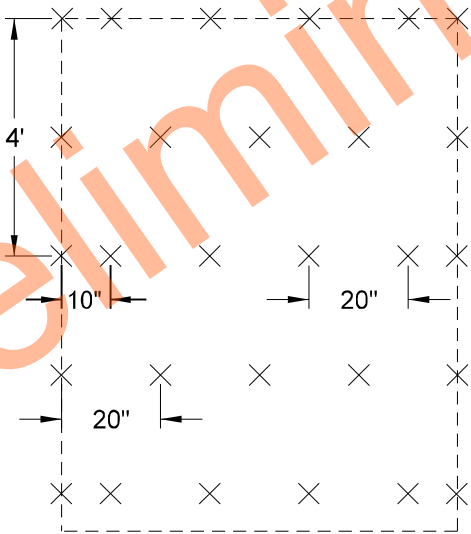
APPROACH CULVERTS				
DIA	X	Y	Surface area to be protected	ECB
In	Ft	Ft	SF	SY
15	9.0	20.0	176.0	20
18	9.5	20.7	190.7	22
21	9.5	21.0	190.9	22
24	10.5	21.6	214.1	24
27	11.0	22.0	226.3	25
30	11.6	22.5	241.5	27
36	12.7	23.3	268.8	30
42	13.3	23.3	279.7	31
48	13.8	24.0	293.2	33
54	14.5	23.4	300.6	34
60	15.0	23.0	307.5	35
66	15.6	24.0	325.6	37
72	16.2	24.5	340.6	38

Note: Quantities based on 8:1 slope.

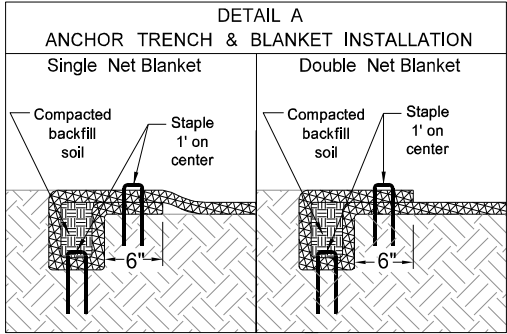
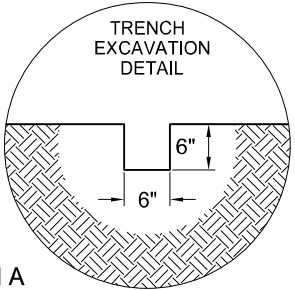
CENTERLINE CULVERTS				
DIA	X	Y	Surface area to be protected	ECB
In	Ft	Ft	SF	SY
24	10.5	19.6	193.1	22
27	11.0	20.0	204.3	23
30	11.6	20.5	218.3	25
36	12.7	21.2	242.1	27
42	13.3	21.2	251.8	28
48	13.8	22.0	265.6	30
54	14.5	21.5	273.7	31
60	15.0	21.0	278.3	31
66	15.6	22.0	295.7	33
72	16.2	22.5	309.2	35

Note: Quantities based on 6:1 slope.

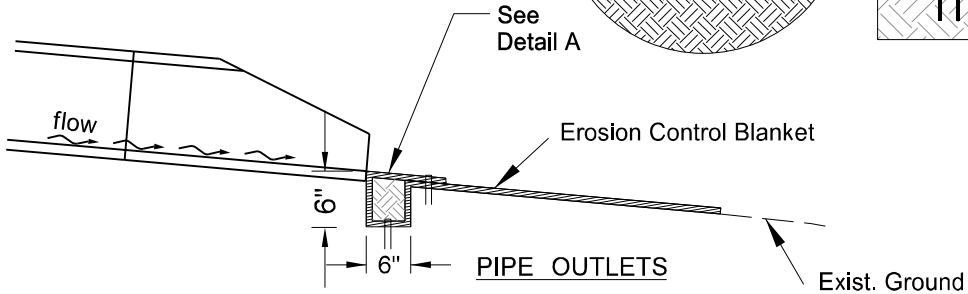
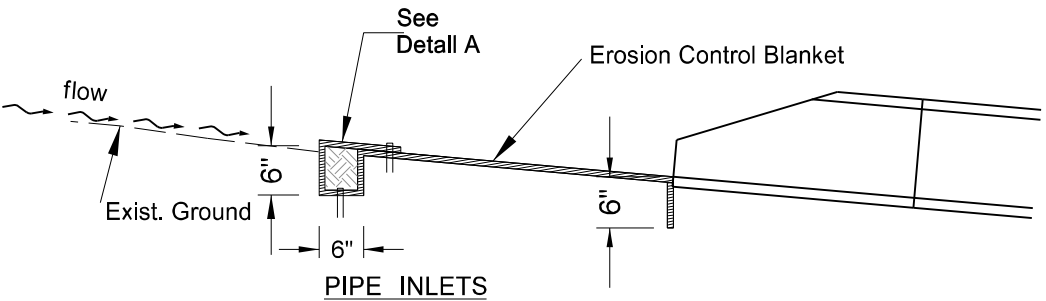
Note: Quantities based on 4:1 slope.



STAPLE PATTERN



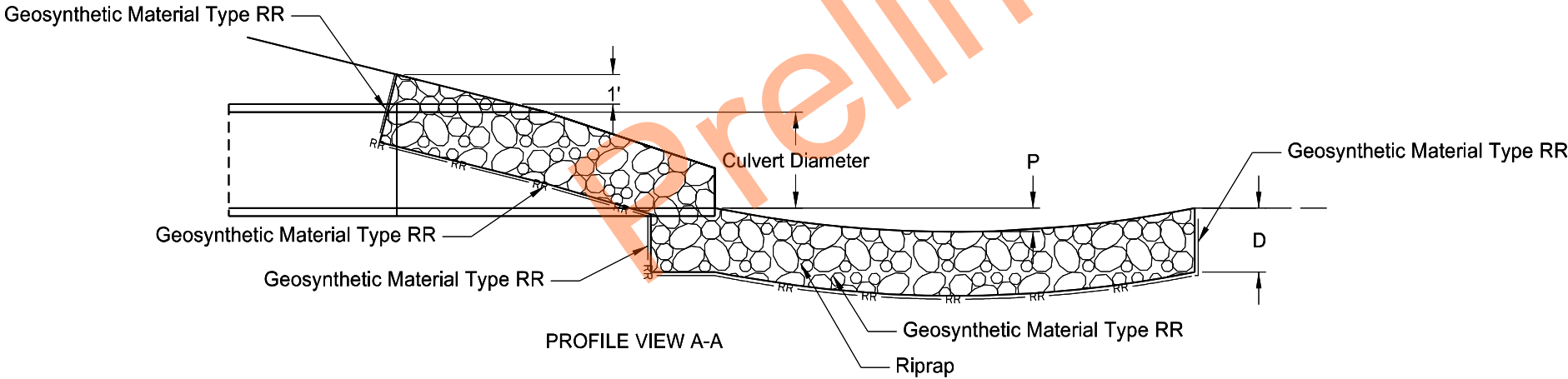
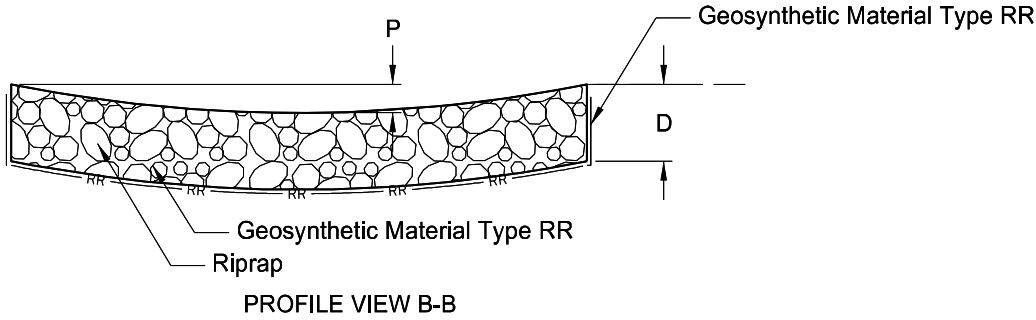
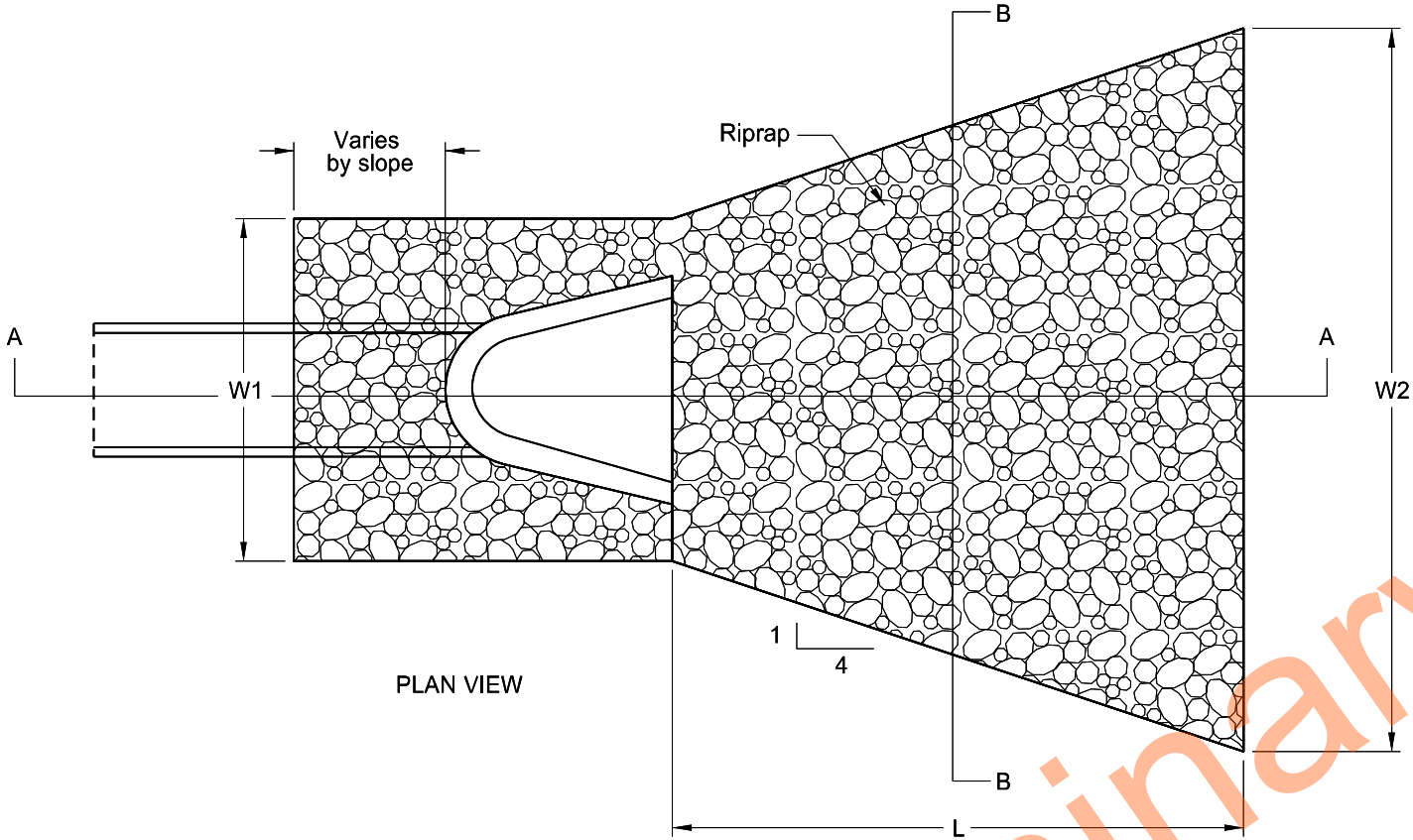
NOTE: Tuck the ECB a minimum of 6" into the embankment (against the flared end section) around the opening of the flared end section.



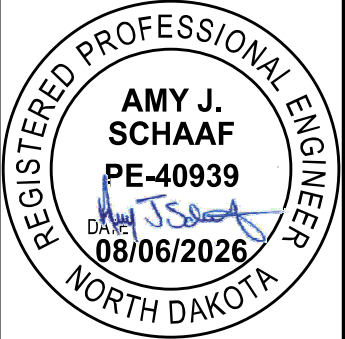
General Details
Erosion Control at Culvert Flared End Sections
8th Ave NW & 27th St N
Roadway Reconstruction
Mandan, ND

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	20	5

Location	Dimensions							Quantities		
	Culvert Diameter (inches)	L (feet)	W1 (feet)	W2 (feet)	P (feet)	Riprap Depth, D (inches)	Riprap Grade	Geosynthetic Material Type RR (SY)	Riprap Grade II (CY)	Riprap Grade III (CY)
59+95	42	16	8.62	19.25	1.5	24	II	41	24	
TOTAL								41	24	

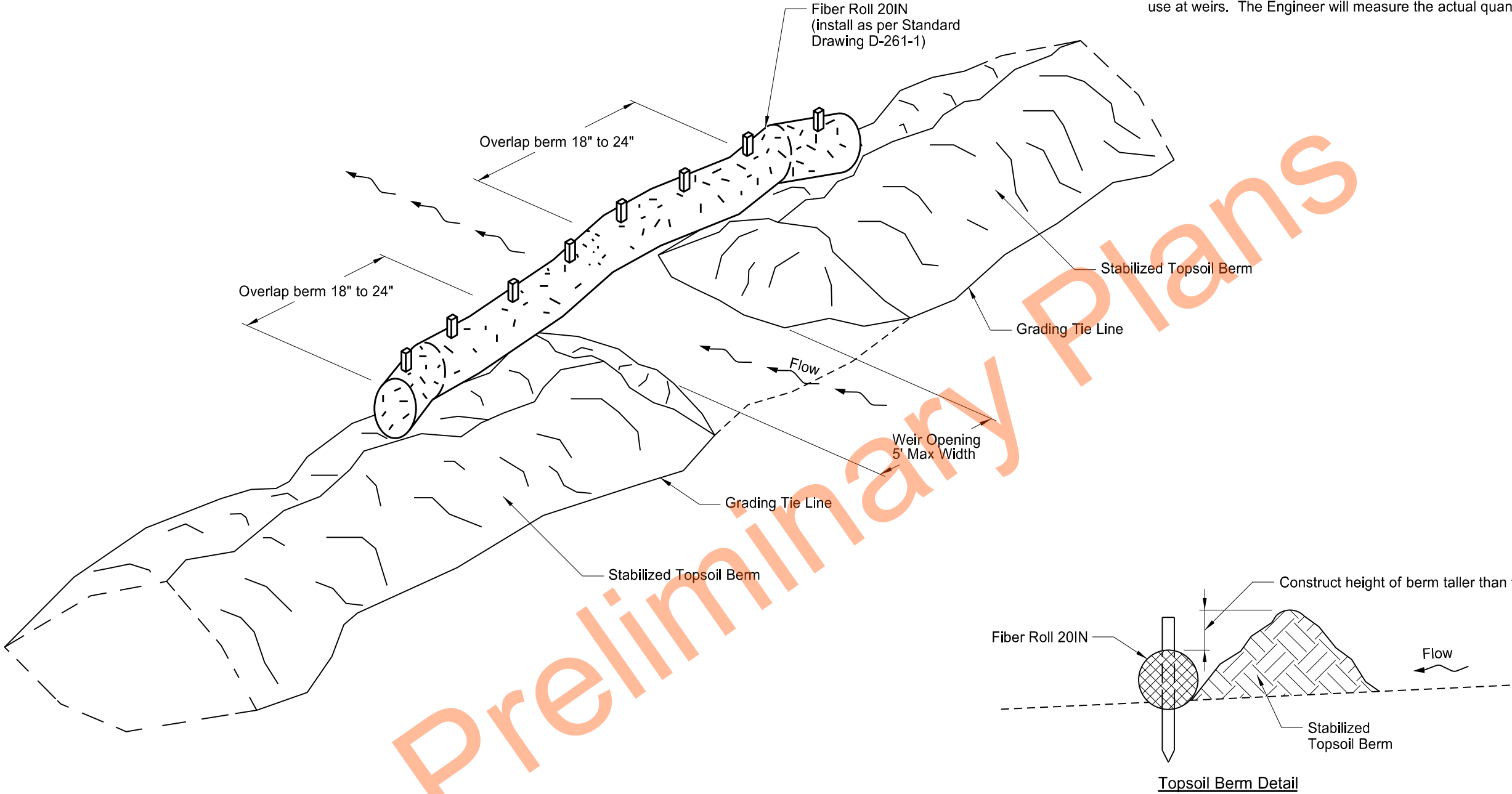


General Details
Riprap at Pipe Outlets
8th Ave NW & 27th St NW
Roadway Reconstruction
Mandan, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	20	6

A quantity of 100 LF of Fiber Roll 20 IN has been included in the quantities for use at weirs. The Engineer will measure the actual quantity required in the field.



- Notes:
1. Windrow the existing topsoil from the foreslope to create a berm at the grading tie line.
 2. Stabilize berms in accordance with the Construction General Permit.
 3. Place weirs intermittently throughout the length of the berm to allow stormwater to drain through the berm.
 4. Avoid placing weirs adjacent to waterbodies.
 5. Install fiber rolls as the weirs are created in the topsoil berm.
 6. Include costs to create, stabilize, maintain, and dismantle the berm in the unit price bid for "Topsoil".
 7. Include costs for fiber rolls in the unit price bid for "Fiber Rolls 20IN".

General Details

Temporary Topsoil Berm and Weir Detail

8th Ave NW & 27th St N

Roadway Reconstruction

Mandan, ND

REGISTERED PROFESSIONAL ENGINEER

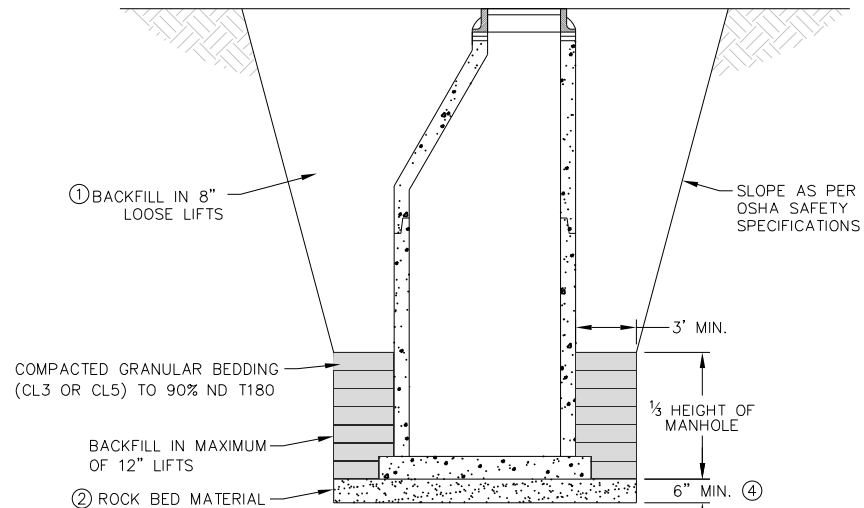
AMY J. SCHAAF

PE-40939

DATE 08/06/2026

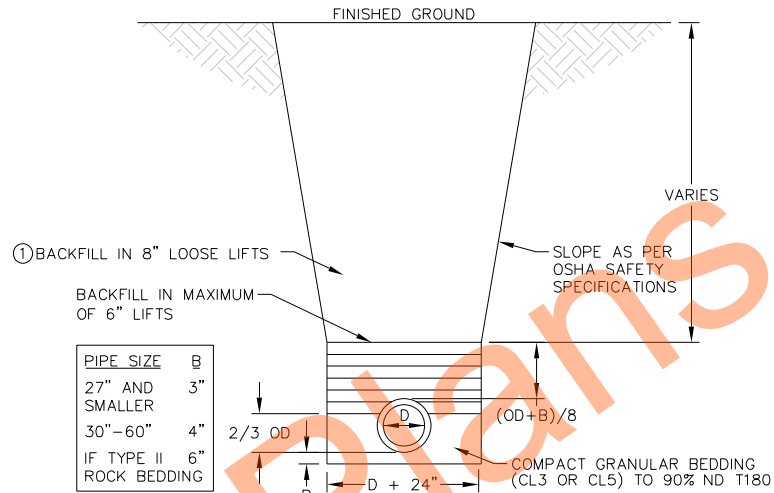
NORTH DAKOTA

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	20	7



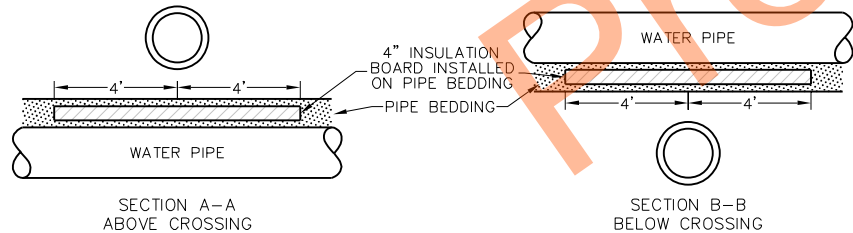
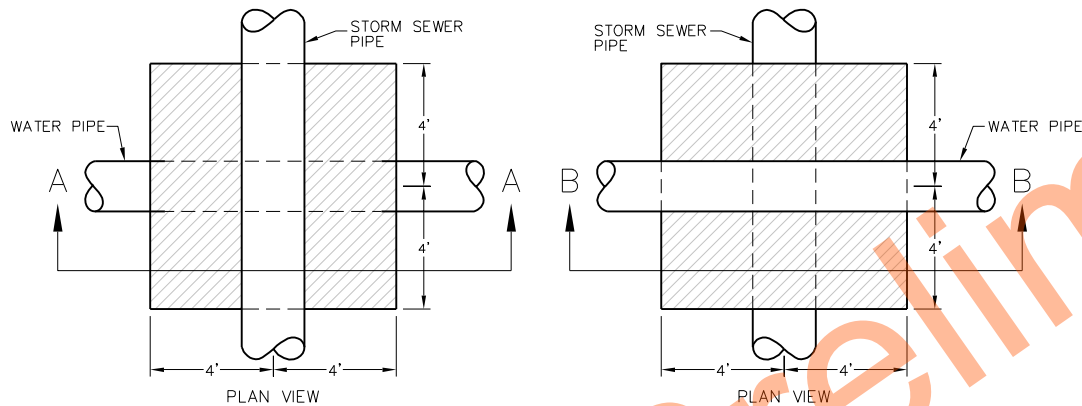
- ① COMPACT TO 95% MINIMUM ND T99 DENSITY. BACKFILL WITH EXISTING EXCAVATED MATERIAL.
- ② ROCK BED MATERIAL SHALL BE 1-1/4\"
- ③ DETAIL SHALL BE USED FOR ALL MANHOLES AND CATCH BASINS.
- ④ 12\"

MANHOLE/CATCH BASIN TRENCH
NO SCALE



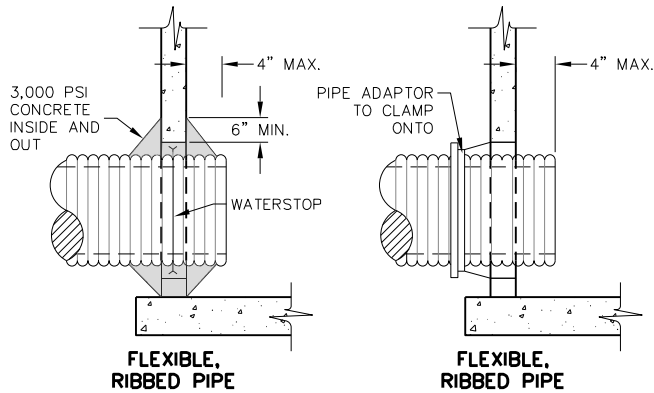
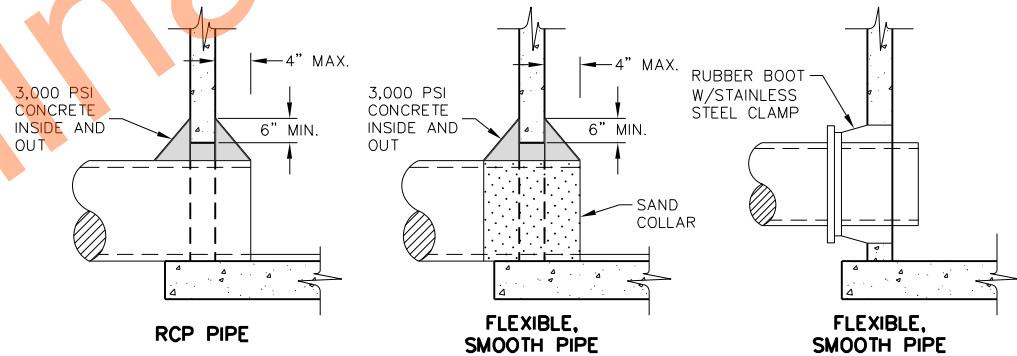
- ① COMPACT TO 95% MINIMUM ND T99 DENSITY. BACKFILL WITH EXISTING EXCAVATED MATERIAL.

RCP STORM SEWER TRENCH
NO SCALE



- NOTES:
1. THIS DETAIL APPLIES TO BOTH MAINS & SERVICES WHERE CROSSING IS WITHIN 36\"
2. WATER SERVICES MAY BE INSULATED WITH AN APPROVED ENCASEMENT INSULATION IN LIEU OF DETAIL.
3. IF STORM SEWER PIPE CROSSES ABOVE WATER PIPE, INSULATION BOARD SHALL BE PLACED 6\"

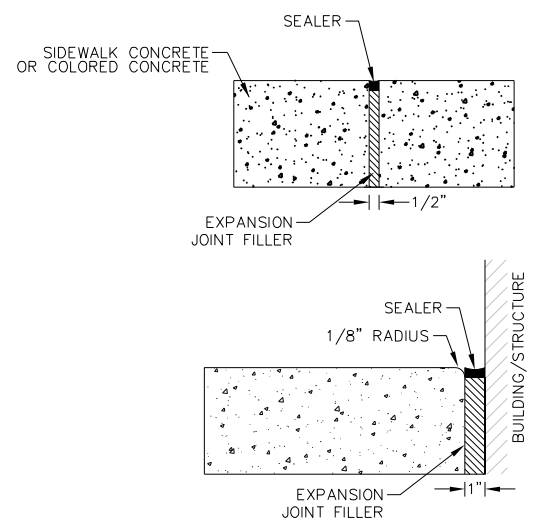
WATER INSULATION FOR STORM CROSSING
NO SCALE



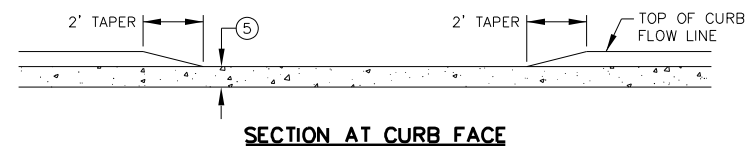
STORM SEWER PIPE CONNECTION
NO SCALE

General Details
Storm Sewer Details
8th Ave NW & 27th St N
Roadway Reconstruction
Mandan, ND

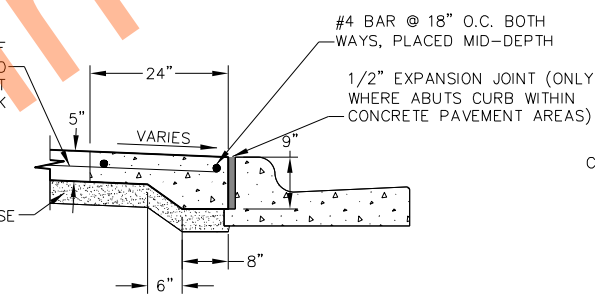




EXPANSION JOINT



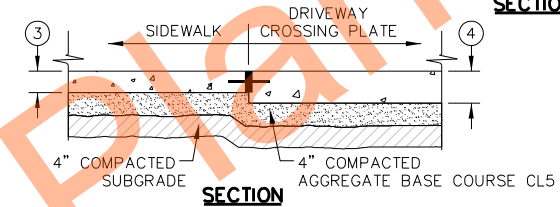
- NO SCALE WF-321313-16 10.17.16



NOTES:

1. SAW PER SIDEWALK DETAILS AND MATCH CURB & GUTTER JOINTS.
2. A COMBINED CURE/SEAL PRODUCT MAY BE USED. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR APPLICATION, INCLUDING WASHING OFF REMAINING RELEASE AGENT AND ALLOWING TO DRY IF APPLICABLE.
3. OF A SEPARATE SEALING AGENT IS USED, SEAL BETWEEN 14-30 DAYS AFTER CURE IS APPLIED.

NO SCALE

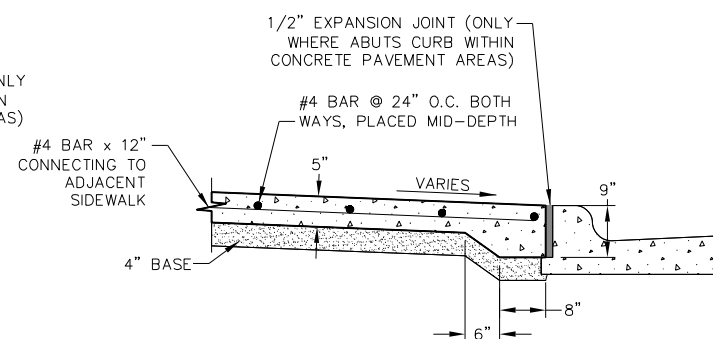


- ① JOINTS TO BE SPACED AT 5' FOR 5' WIDE SIDEWALK. JOINTS TO BE SPACED AT 8' FOR 8' WIDE SHARED USE PATH.
- ② 5'-0" FOR TYPICAL SIDEWALK.
8'-0" FOR SHARED USE PATH.
- ③ 4" THICK FOR SIDEWALK CONCRETE 4 IN.
6" THICK FOR SIDEWALK CONCRETE 6 IN.
- ④ SAME AS DRIVEWAY CONCRETE.
- MIN. 6"

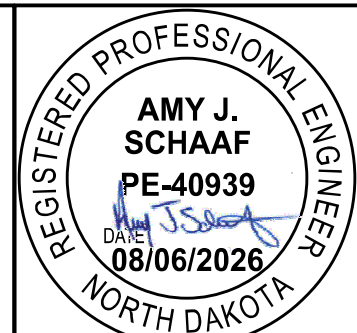
NOTES:

1. CROSS SLOPE: 1.5% TYPICAL, 2.1% MAXIMUM
2. SAW ALL JOINTS ON 6' PATH AND WIDER. LESS THAN 6' MAY BE TOOLED OR SAWED.
3. USE CHAIRS OR APPROVED SUPPORT DEVICES TO SUPPORT REBAR AT MIDDEPTH.
4. PLACE EXPANSION JOINTS AT PROPERTY LINES WHERE POSSIBLE.
5. PIGMENTED IMPRINTED CONCRETE SECTIONS NARROWER THAN 2.5' TO FOLLOW JOINTING DETAILS ABOVE BUT REBAR TO BE SPACED 18" O.C.

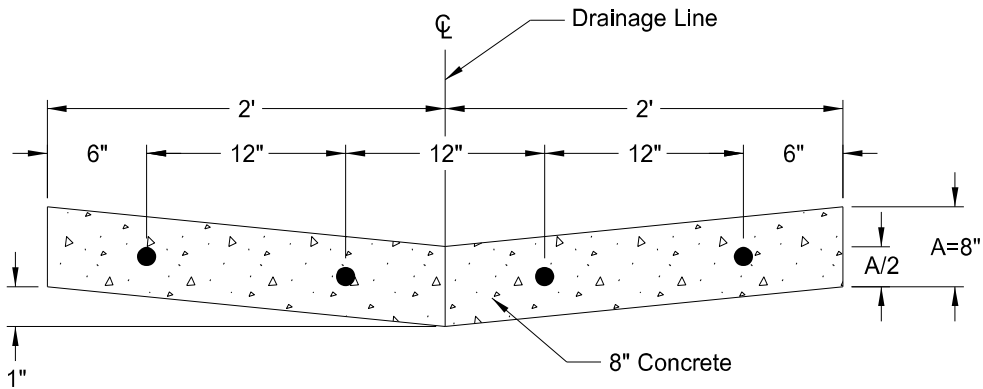
NO SCALE



Mandan, ND



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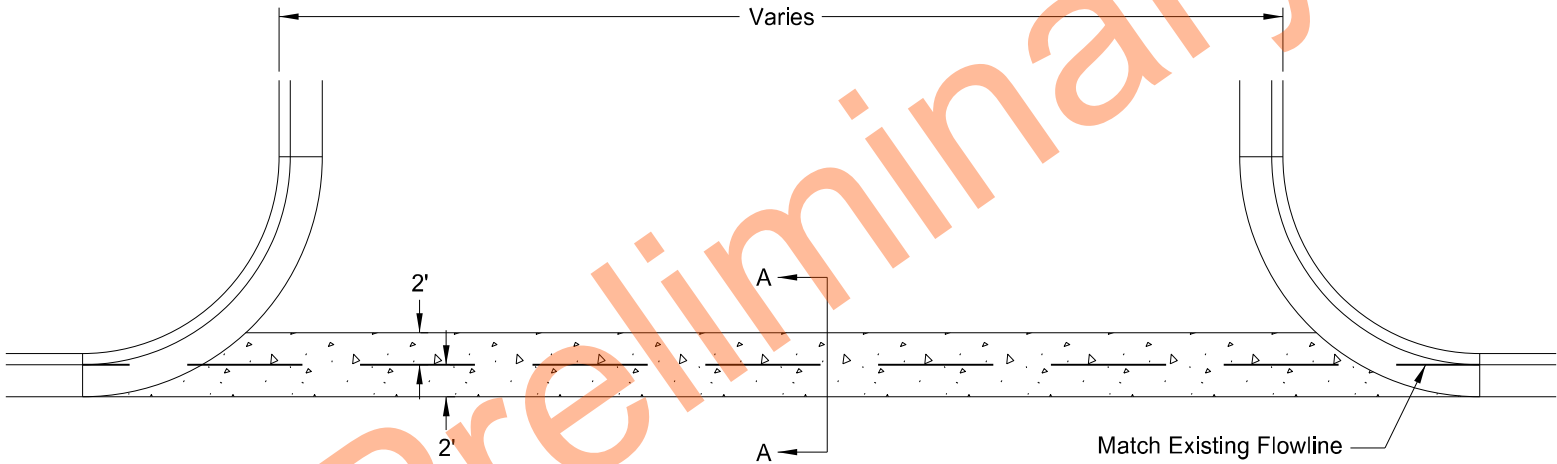


Section A-A

Note:
For new construction when spandrel is poured separately or for valley gutter repairs, 18" No. 5 deformed bars shall be drilled in 1' on center.

Contraction joint scored $\frac{1}{3}$ the depth of the concrete. All joints shall be sealed.

Drill in 1/2" X 12" smooth reinforcing steel or #4 reinforcing steel.
When using 5/8" drill bit, bond breaker material may be eliminated.



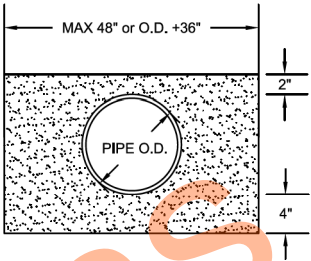
Plan View

General Details
Typical Valley Gutter Detail
8th Ave NW & 27th St N
Roadway Reconstruction
Mandan, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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- NOTE NO. 1: BLOCKING OF TYPICAL HORIZONTAL BEND WILL INCLUDE ALL BENDS 11 1/4°(1/32) TO 90° (1/4).
- NOTE NO. 2: BLOCK TEE AS SHOWN. IN THE EVENT THAT ONE SIDE OF THE MAIN IS PLUGGED, 2 THRUST BLOCKS WILL BE REQUIRED.
- NOTE NO. 3: BLOCKING OF PLUG IS TO INCLUDE PLYBOARD BETWEEN THE PLUG AND CONCRETE.
- NOTE NO. 4: BLOCKING OF CROSS WITH 2 PLUGS IS AS SHOWN. WITH ONLY 1 PLUG PROCEED SAME AS TEE.
- NOTE NO. 5: JOINTS SHALL BE RESTRAINED IF SIZE IS REDUCED 2 PIPES OR MORE.
- NOTE NO. 6: ALL VERTICAL BENDS SHALL BE RESTRAINED.
- NOTE NO. 7: ALL HYDRANTS TO BE BLOCKED AS SHOWN. KEEP CONCRETE AWAY FROM WEEP HOLES.
- NOTE NO. 8: THE END AREA OF CONCRETE THRUST BLOCKS SHALL BE SUBMITTED WITH SOIL BEARING CHARACTERISTICS TO THE ENGINEER FOR APPROVAL.



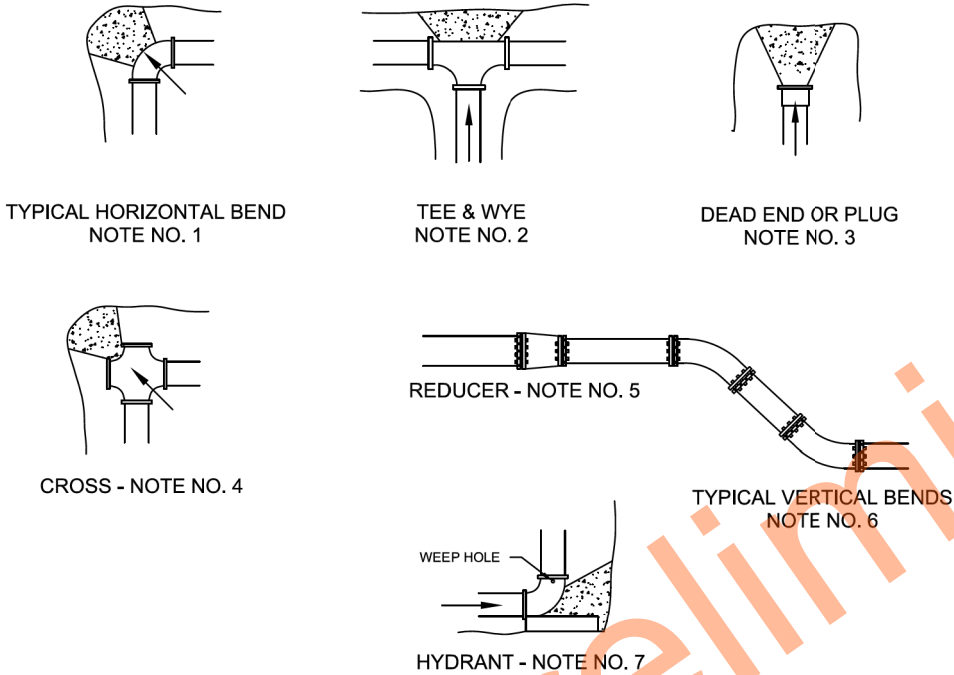
PIPE BEDDING QUANTITIES - WATERMAIN

6" to 18" Based on C900, C905 PVC or C909 PVCO

20" Based on CL250 DI

24" Based on CL250 DI

30" to 48" Based on CL250 DI



PIPE SIZE	TRENCH WIDTH	C.Y./FT.	TONS/FT.
4"	48"	0.1287	0.2188
6"	48"	0.1496	0.2543
8"	48"	0.1693	0.2878
10"	48"	0.1862	0.3165
12"	49"	0.2068	0.3516
16"	54"	0.2638	0.4485
18"	56"	0.2905	0.4939
20"	58"	0.3175	0.5398
24"	62"	0.3726	0.6334
30"	68"	0.4578	0.7783
36"	74"	0.5468	0.9296
42"	81"	0.6521	1.1086
48"	87"	0.7497	1.2745

5 Tons / Manhole

2.5 Tons / Hydrant

0.1 Tons / LF of Service Line (2" & Under)

CONCRETE THRUST BLOCKING DETAIL

NO SCALE

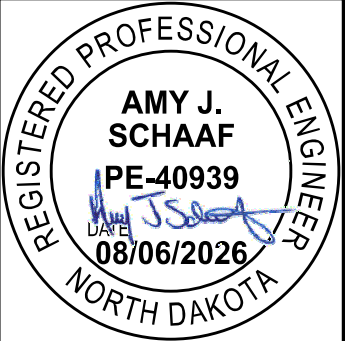
Incidental to:
724-0810 WATERMAIN 6IN PVC
724-0830 WATERMAIN 8IN PVC

Note:
Items to be paid and measured as
specified per NDDOT specifications.

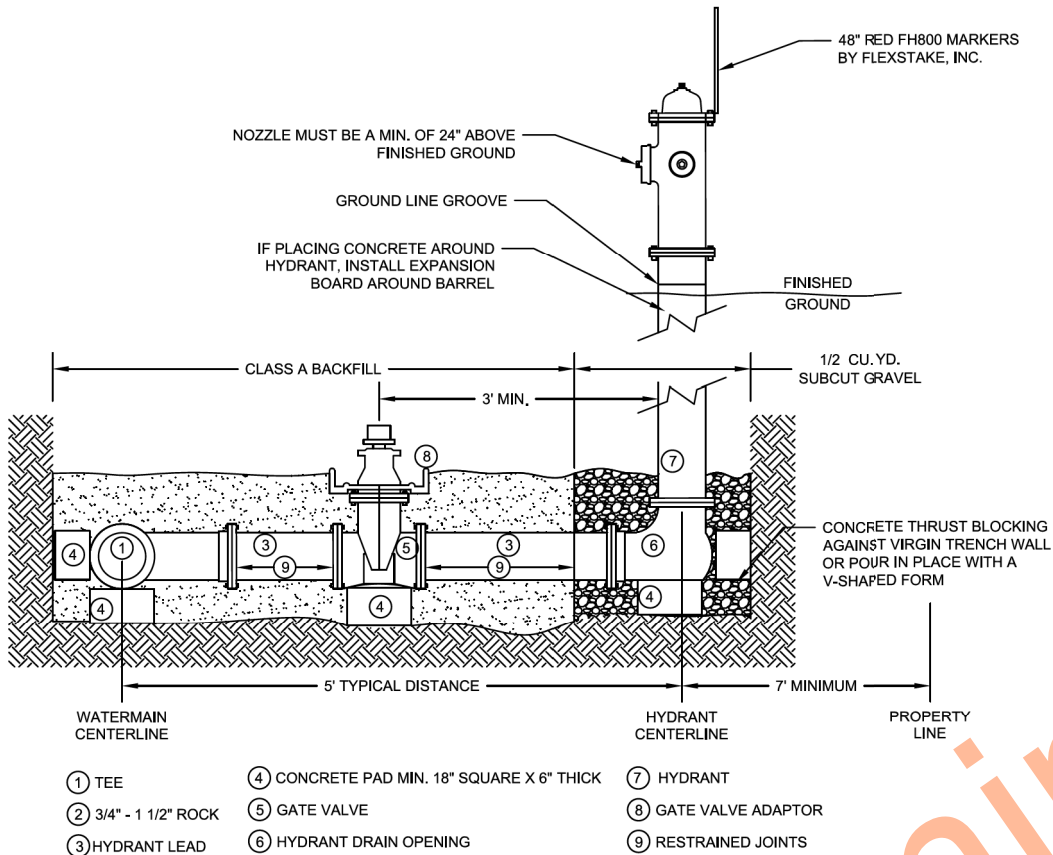
WATERMAIN PIPE BEDDING

Incidental to:
724-0810 WATERMAIN 6IN PVC
724-0830 WATERMAIN 8IN PVC

General Details
Mandan Construction Specifications
8th Ave NW & 27th St N
Roadway Reconstruction
Mandan, ND



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NOTES:

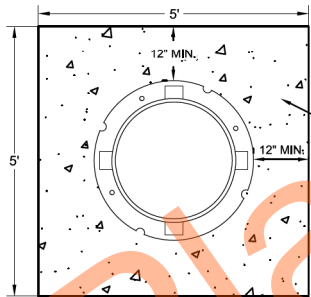
- 3/4" - 1 1/2" SIZE ROCK SHALL BE TO A LEVEL 6' ABOVE WASTE OPENING OR GREATER, WITH A MINIMUM 30' WIDE.
- ALL HYDRANT LEADS SHALL BE C-900 AND SHALL HAVE A TYPICAL OVERALL LENGTH OF 5 FT. VALVE AND HYDRANT SHALL HAVE 2 FT. MINIMUM DISTANCE BETWEEN THEM.
- WRAP HYDRANT UP TO GROUND LINE WITH 8 MILL (MIN.) POLY TAPE ENDS AND SEAMS. DO NOT ALLOW POLY OR CONCRETE TO COVER DRIP OR DRAIN OPENINGS.
- ALL JOINTS SHALL BE RESTRAINED.

HYDRANT SETTING

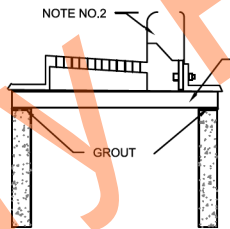
NO SCALE

Incidental to:
724-0300 GATE VALVE & BOX 6IN
724-0400 HYDRANT-INSTALL 6IN
724-0810 WATERMAIN 6IN PVC

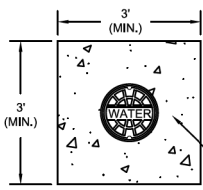
Note:
Items to be paid and measured as
specified per NDDOT specifications.



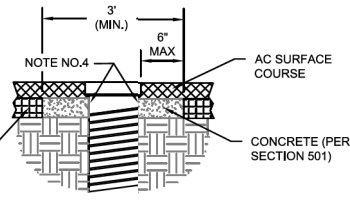
MANHOLE CASTING STANDARD ADJUSTMENT (PLAN VIEW)



INLET STANDARD ADJUSTMENT



VALVE BOX ADJUSTMENT (PLAN VIEW)



VALVE BOX ADJUSTMENT

NOTE NO.1 - USE PRECAST CONCRETE ADJUSTING RINGS FOR ADJUSTMENT OF MANHOLES AND TYPE 24" INLET AND TYPE 24" INLET/ MANHOLE. USE CONCRETE BLOCKS FOR ADJUSTMENT OF TYPE 36" AND TYPE 72" INLETS. GROUT SHALL BE PLACED BETWEEN ALL SURFACES. GROUT ON THE INSIDE EDGE OF ADJUSTING RINGS SHALL HAVE A SMOOTH FINISH.

NOTE NO.2 - INLET BACK SHALL BE ADJUSTED TO CONFORM WITH CURB & GUTTER GRADES AND CURB ALIGNMENT.

NOTE NO.3 - MANHOLE CASTING SHALL BE ADJUSTED TO CONFORM WITH SLOPE AND GRADE OF PROPOSED CONCRETE OR PAVEMENT.

NOTE NO.4 - MANHOLE CASTING SHALL BE ADJUSTED AFTER THE AC LEVELING COURSE OR THE AC BASE COURSE HAS BEEN PLACED.

NOTE NO.5 - INLET AND MANHOLE CASTINGS SHALL BE CONSIDERED ADJUSTED ONLY WHEN RAISED OR LOWERED BY ADDING OR REMOVING ADJUSTING RINGS OR GROUT.

NOTE NO.6 - ADAPTOR RING SHALL BE AMERICAN HIGHWAY PRODUCTS MANHOLE RISER OR AN APPROVED EQUAL.

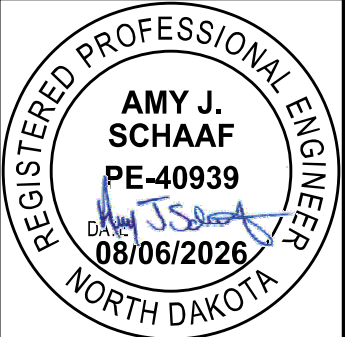
NOTE NO.7 - II BARRIER AS MANUFACTURED BY API/M PERMAFORM OR AN APPROVED EQUAL. IF SPECIFIED ADJUSTMENT RINGS SHALL NOT EXCEED THE HEIGHT OF THE II BARRIER.

MANHOLE, INLET, VALVE BOX ADJUSTMENT IN ASPHALT

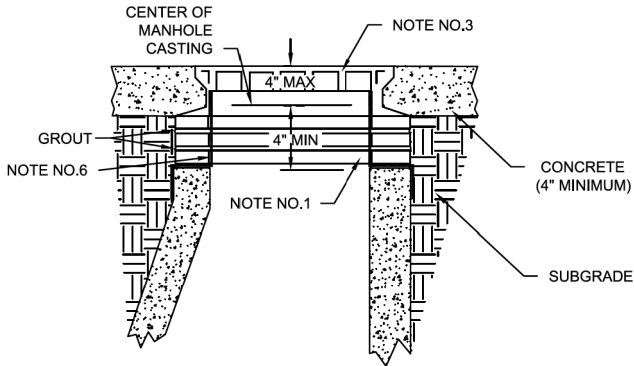
NO SCALE

Incidental to:
722-6140 ADJUST GATE VALVE BOX
722-6200 ADJUST MANHOLE
722-6160 ADJUST INLET

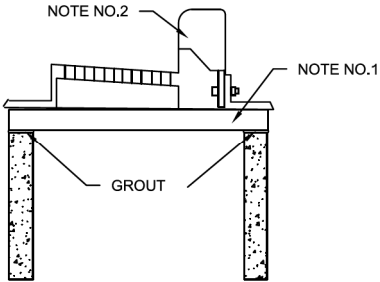
General Details
Mandan Construction Specifications
8th Ave NW & 27th St N
Roadway Reconstruction
Mandan, ND



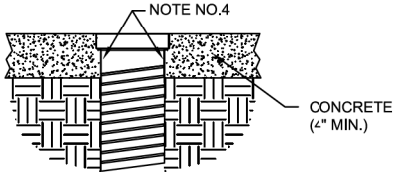
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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MANHOLE CASTING STANDARD ADJUSTMENT



INLET STANDARD ADJUSTMENT



VALVE BOX ADJUSTMENT

- NOTE NO.1 - USE PRECAST CONCRETE ADJUSTING RINGS FOR ADJUSTMENT OF MANHOLES AND TYPE 24" INLET AND TYPE 24" INLET/ MANHOLE. USE CONCRETE BLOCKS FOR ADJUSTMENT OF TYPE 36" AND TYPE 72" INLETS. GROUT SHALL BE PLACED BETWEEN ALL SURFACES. GROUT ON THE INSIDE EDGE OF ADJUSTING RINGS SHALL HAVE A SMOOTH FINISH.
- NOTE NO.2 - INLET BACK SHALL BE ADJUSTED TO CONFORM WITH CURB & GUTTER GRADES AND CURB ALIGNMENT.
- NOTE NO.3 - MANHOLE CASTING SHALL BE ADJUSTED TO CONFORM WITH SLOPE AND GRADE OF PROPOSED CONCRETE OR PAVEMENT.
- NOTE NO.4 - VALVES AND CURB STOP BOXES MUST BE WRAPPED IN ACCORDANCE WITH SECTION 1206.
- NOTE NO.5 - INLET AND MANHOLE CASTINGS SHALL BE CONSIDERED ADJUSTED ONLY WHEN RAISED OR LOWERED BY ADDING OR REMOVING ADJUSTING RINGS OR GROUT.
- NOTE NO.6 - I/I BARRIER AS MANUFACTURED BY AP/M PERMAFORM OR AN APPROVED EQUAL. IF SPECIFIED ADJUSTMENT RINGS SHALL NOT EXCEED THE HEIGHT OF THE I/I BARRIER.

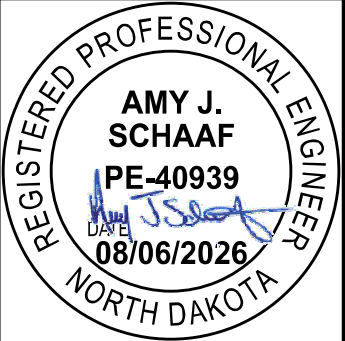
MANHOLE, INLET, VALVE BOX ADJUSTMENT IN CONCRETE

NO SCALE

Incidental to:
722-6140 ADJUST GATE VALVE BOX
722-6200 ADJUST MANHOLE
722-6160 ADJUST INLET

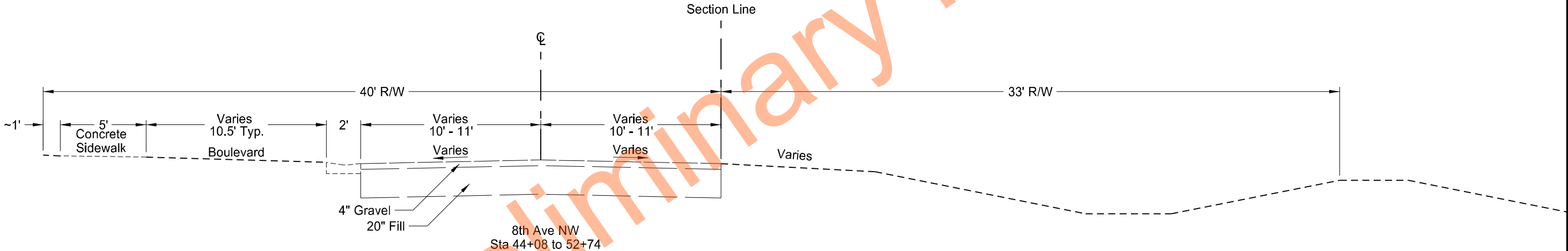
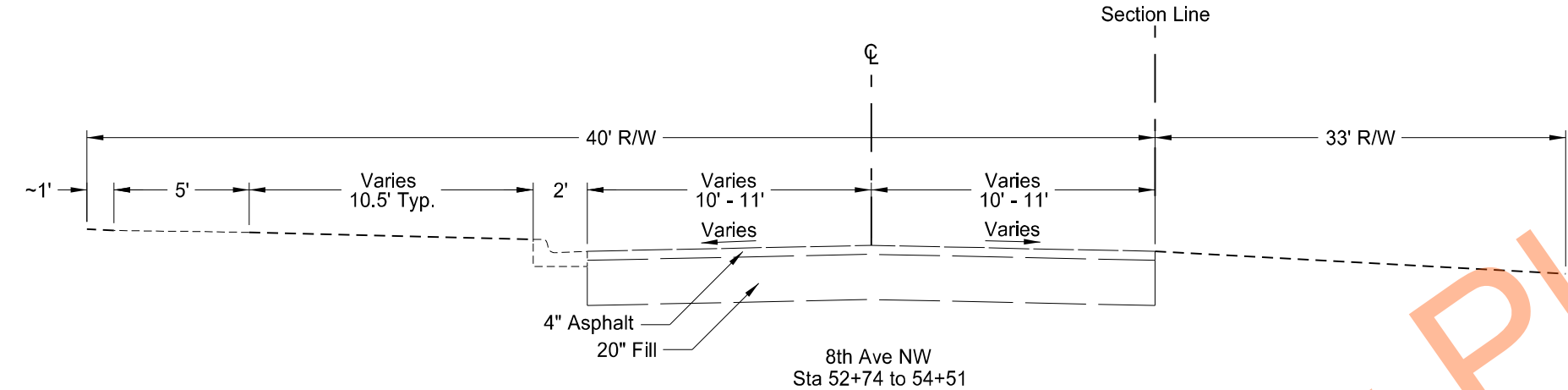
Note:
Items to be paid and measured as
specified per NDDOT specifications.

General Details
Mandan Construction Specifications
8th Ave NW & 27th St N
Roadway Reconstruction
Mandan, ND



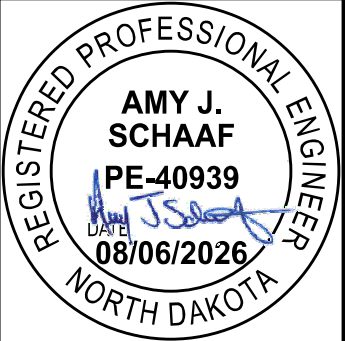
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	ND	SU-1-988(055)	30	1

TAU-1-988(053)

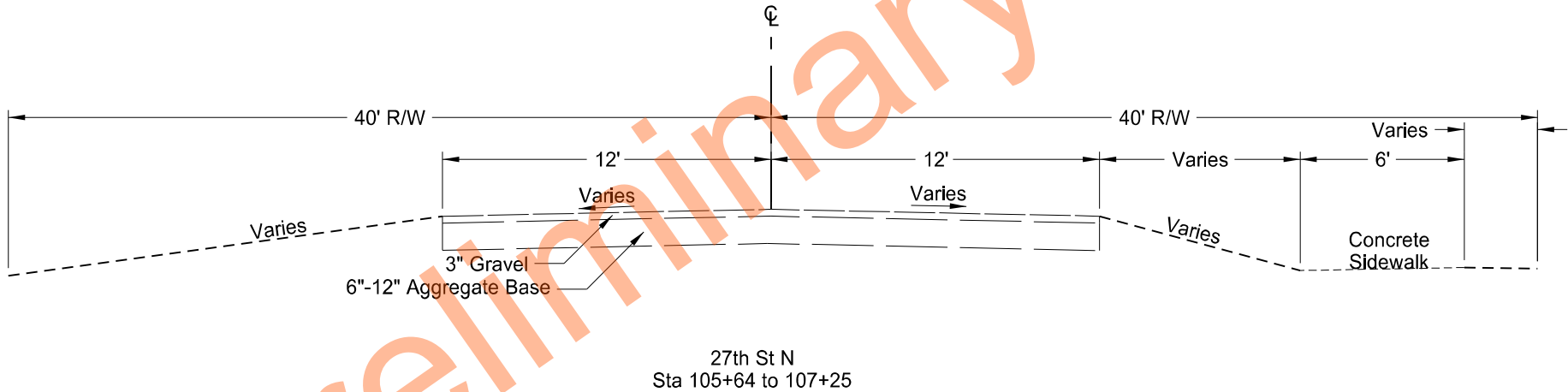
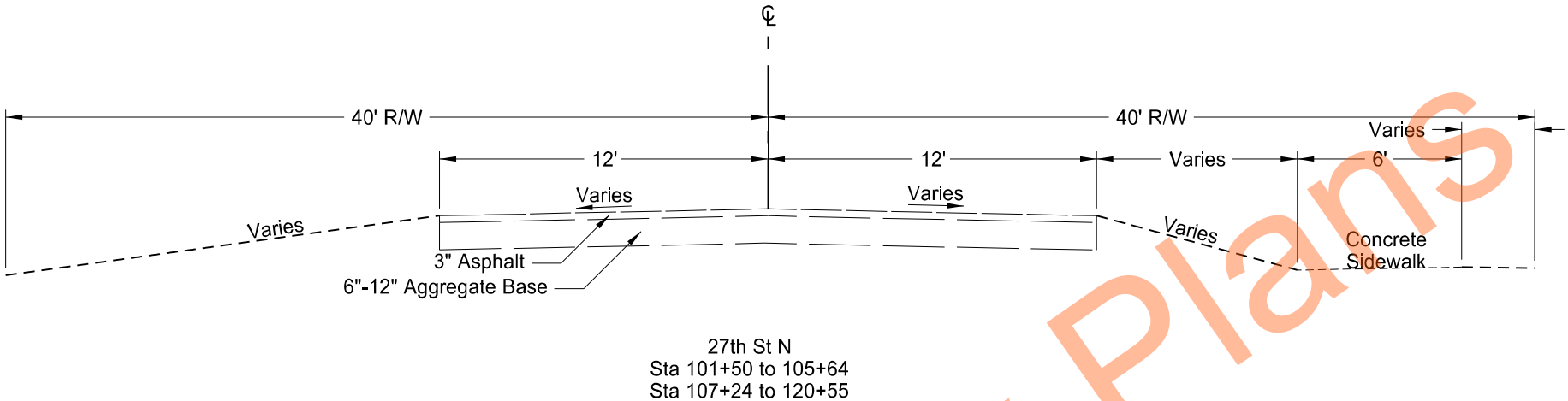


Note: Fill composed of lean clay, trace sand, and gravel.

Existing Typicals
8th Ave NW
Roadway Reconstruction
Mandan, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	30	2

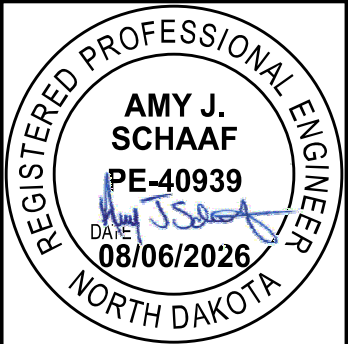


Existing Typicals

27th St N

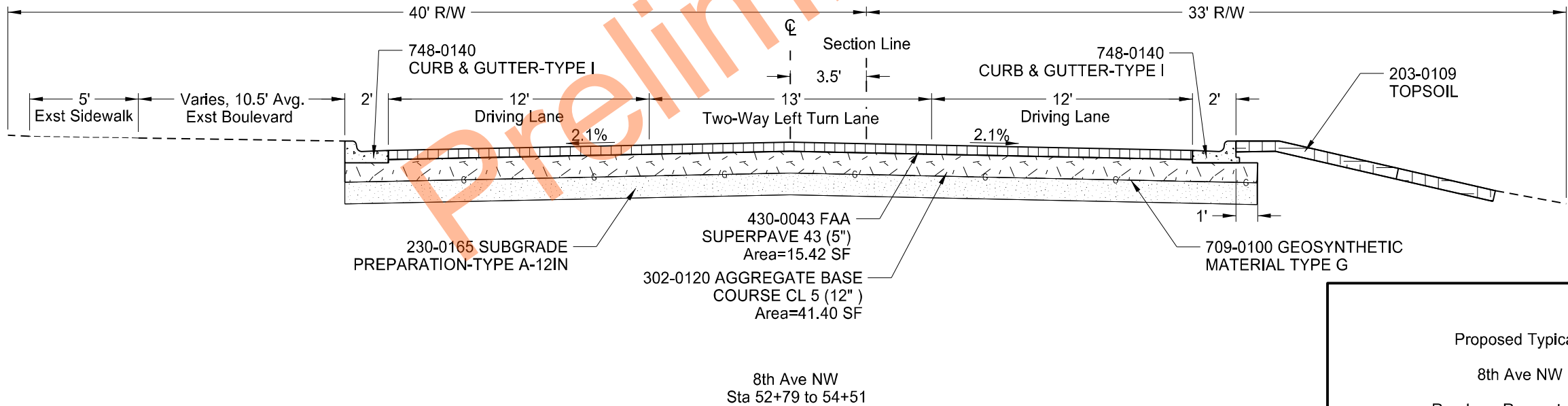
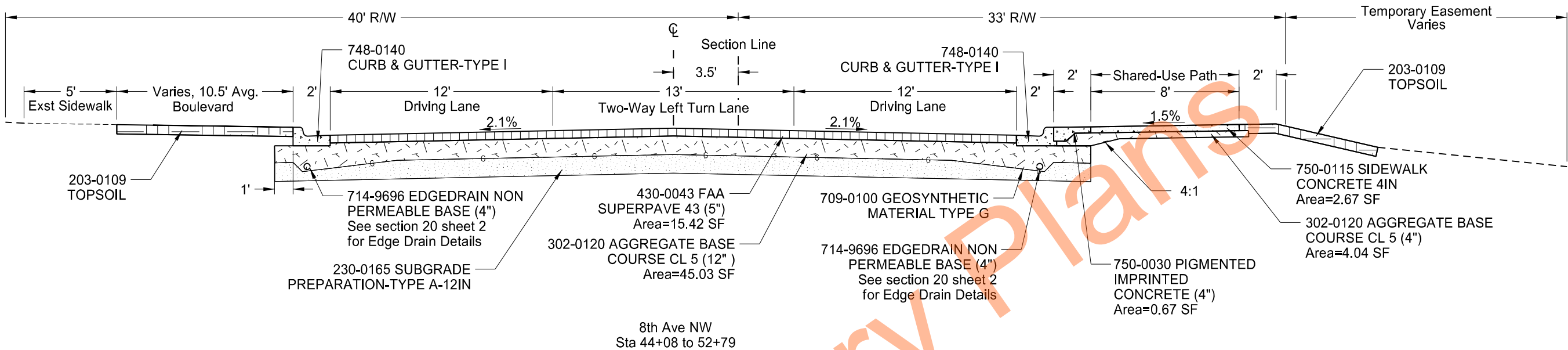
Roadway Reconstruction

Mandan, ND



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	30	3

TAU-1-988(053)



Proposed Typicals

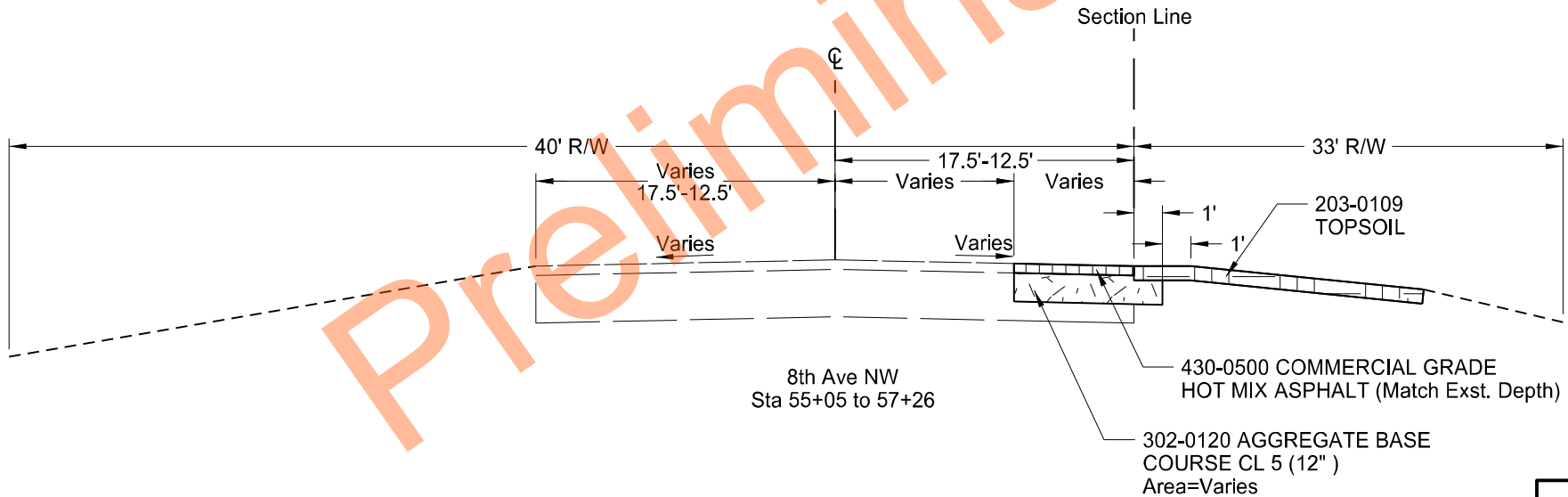
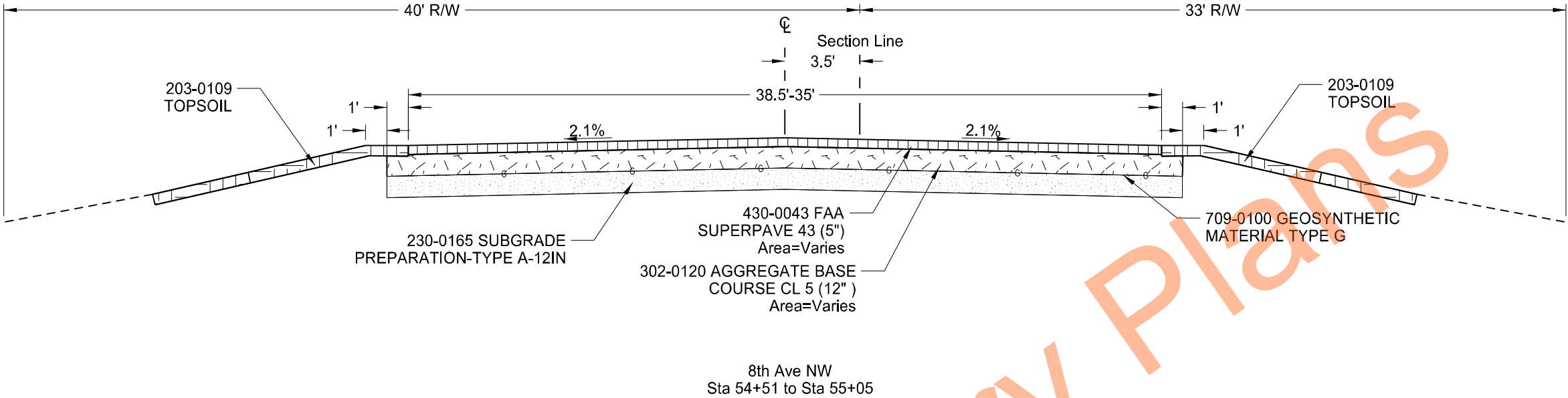
8th Ave NW

Roadway Reconstruction

Mandan, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	30	4



Proposed Typicals

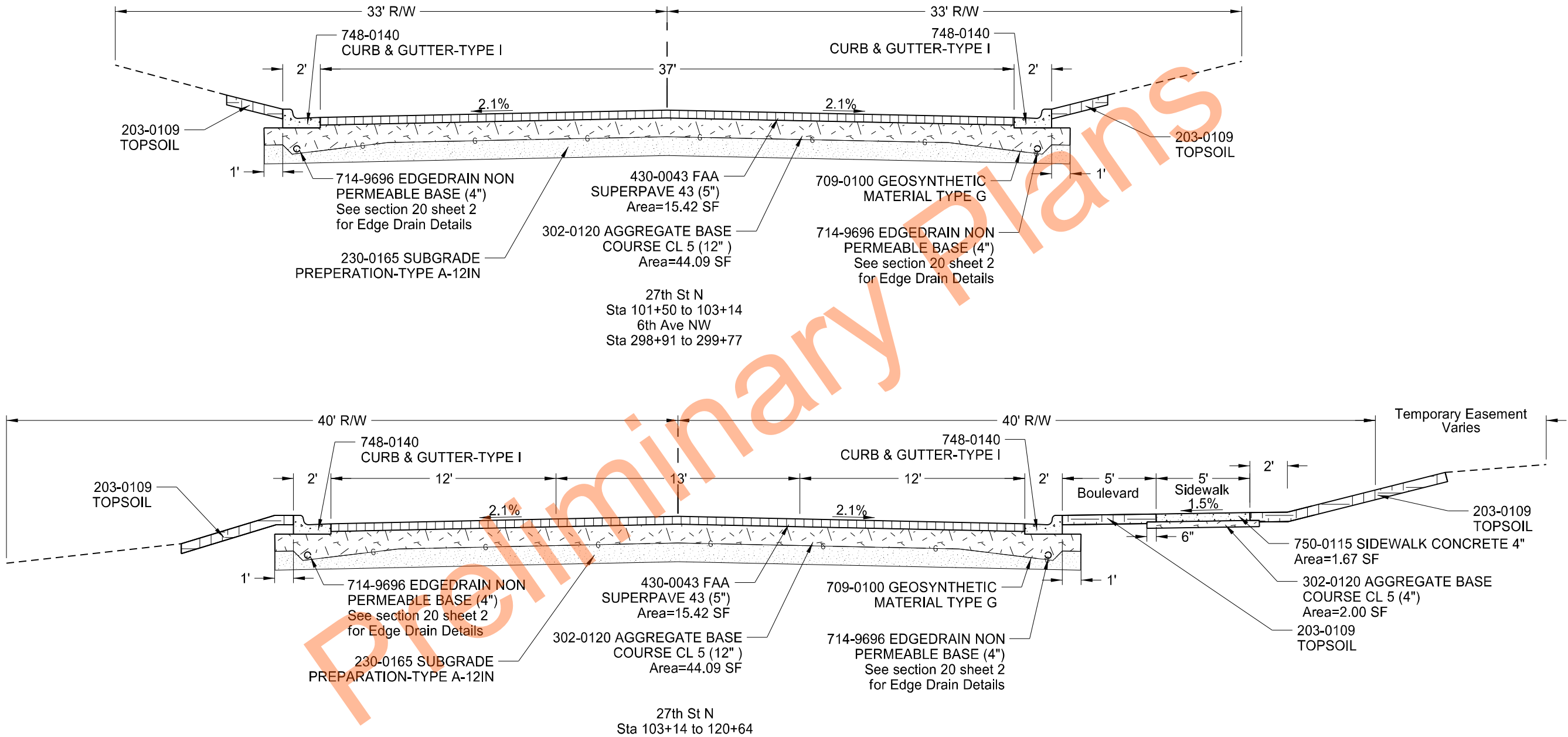
8th Ave NW

Roadway Reconstruction

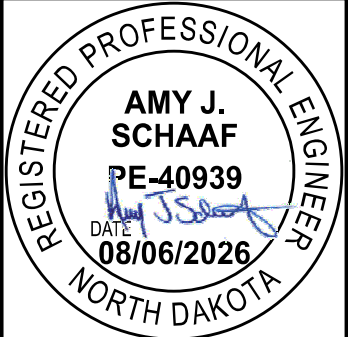
Mandan, ND

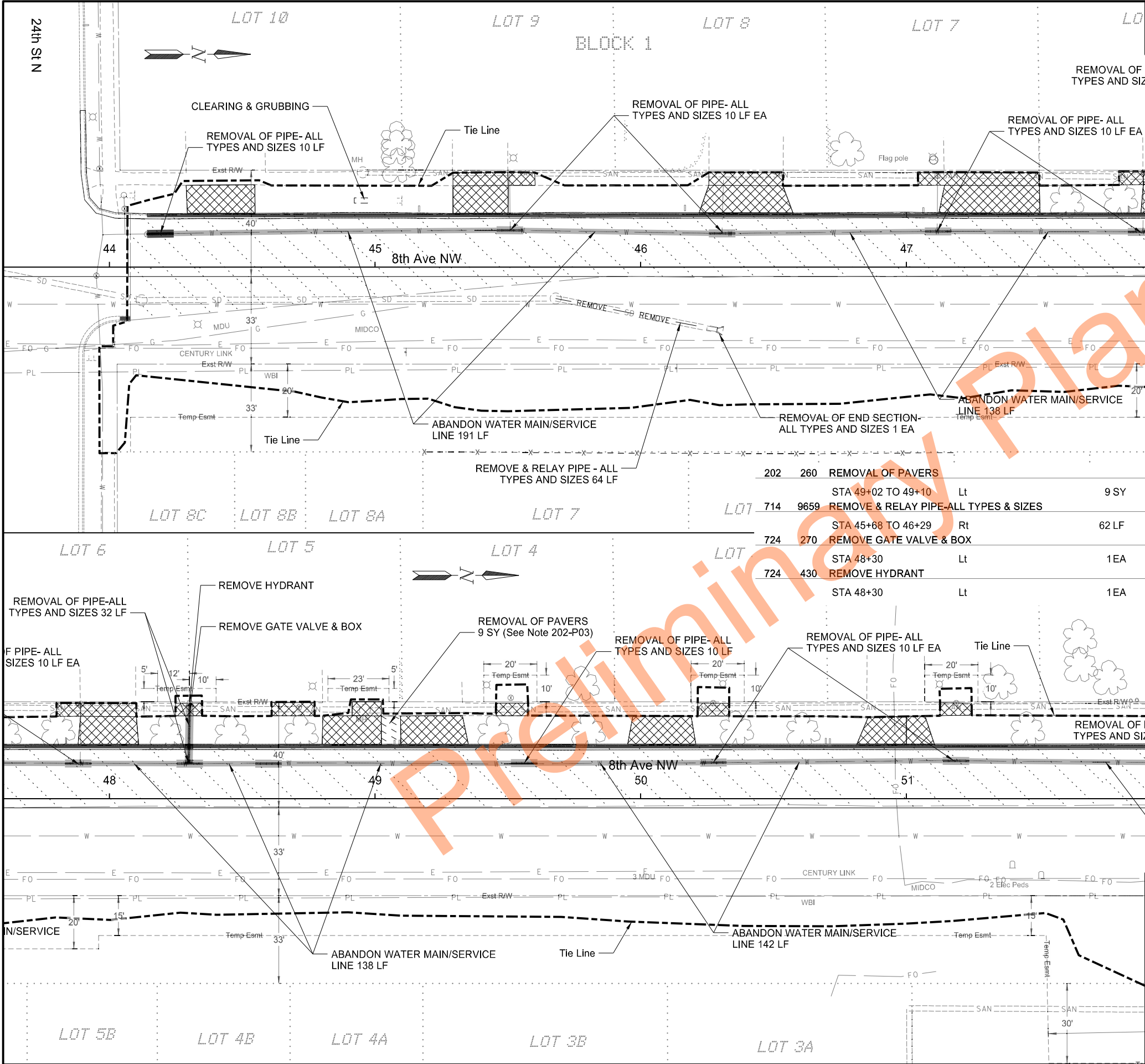


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	30	5

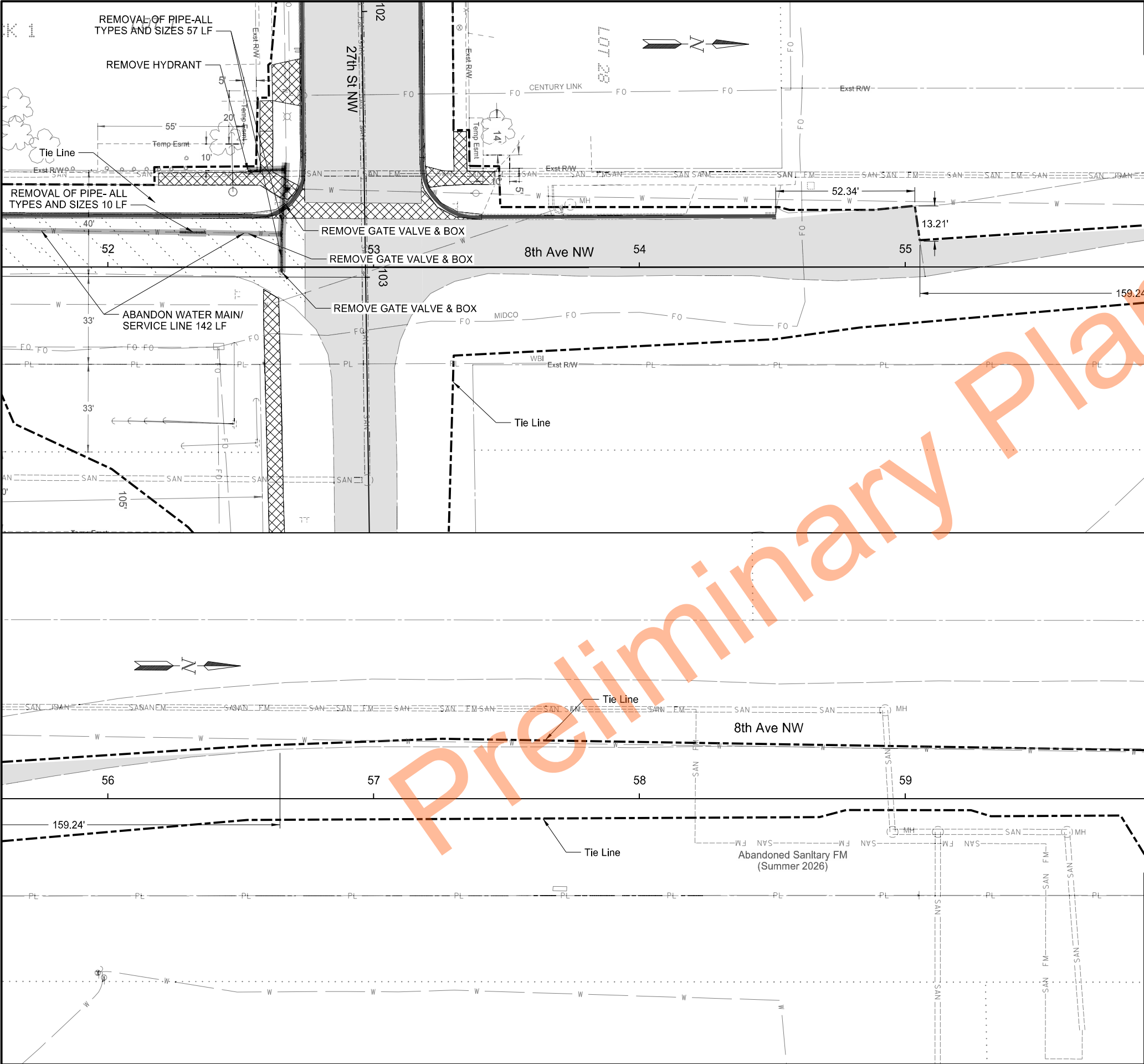


Proposed Typicals
27th St N & 6th Ave NW
Roadway Reconstruction
Mandan, ND





		STATE	PROJECT NO.		SECTION NO.	SHEET NO.
		ND	SU-1-988(055)		40	1
TAU-1-988(053)						
SPEC	CODE	PAY ITEM			QTY	UNIT
201	300	CLEARING & GRUBBING				
		STA 44+92 TO 44+97	Lt		0.001	ACRE
202	21	REMOVE AGGREGATE BASE & SURFACING				
		STA 44+08 TO 51+75			443	TON
202	114	REMOVAL OF CONCRETE PAVEMENT				
		STA 44+29 TO 44+55	Lt		30	SY
		STA 45+29 TO 45+50	Lt		36	SY
		STA 45+50 TO 45+60	Lt		6	SY
		STA 46+22 TO 46+57	Lt		52	SY
		STA 47+04 TO 47+50	Lt		67	SY
		STA 47+80 TO 47+89	Lt		5	SY
		STA 47+88 TO 48+11	Lt		37	SY
		STA 48+25 TO 48+35	Lt		5	SY
		STA 48+61 TO 48+77	Lt		9	SY
		STA 48+80 TO 49+02	Lt		26	SY
		STA 48+91 TO 49+02	Lt		6	SY
		STA 49+10 TO 49+35	Lt		29	SY
		STA 49+46 TO 49+58	Lt		6	SY
		STA 49+95 TO 50+21	Lt		28	SY
		STA 50+21 TO 50+33	Lt		6	SY
		STA 50+81 TO 51+11	Lt		29	SY
		STA 51+13 TO 51+25	Lt		6	SY
202	130	REMOVAL OF CURB & GUTTER				
		STA 44+14 TO 51+75	Lt		761	LF
202	169	REMOVAL OF END SECTION-ALL TYPES & SIZES				
		STA 46+29	Rt		1	EA
202	174	REMOVAL OF PIPE ALL TYPES AND SIZES				
		STA 44+14 TO 44+24	Lt		10	LF
		STA 45+46 TO 45+56	Lt		10	LF
		STA 46+26 TO 46+36	Lt		10	LF
		STA 47+07 TO 47+17	Lt		10	LF
		STA 47+83 TO 47+93	Lt		10	LF
		STA 48+25 TO 48+35	Lt		10	LF
		STA 48+30	Lt		22	LF
		STA 48+55 TO 48+65	Lt		10	LF
		STA 49+51 TO 49+61	Lt		10	LF
		STA 50+32 TO 50+22	Lt		10	LF
		STA 51+14 TO 51+24	Lt		10	LF
LEGEND						
		REMOVAL OF BITUMINOUS SURFACING				
		REMOVAL OF CONCRETE PAVEMENT				REMOVAL OF AGGREGATE BASE & SURFACING
		REMOVAL OF TREES/BRUSH				REMOVAL OF CURB & GUTTER
Removals						
8th Ave NW						
Sta 44+00 to Sta 51+75						
Roadway Reconstruction						
Mandan, ND						



		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-1-988(055)	40	2
TAU-1-988(053)					
SPEC	CODE	PAY ITEM	QTY UNIT		
202	21	REMOVE AGGREGATE BASE & SURFACING			
		STA 51+75 TO 52+74	53 TON		
202	114	REMOVAL OF CONCRETE PAVEMENT			
		STA 52+19 TO 52+72 Lt	45 SY		
		STA 53+20 TO 53+46 Lt	24 SY		
202	128	REMOVE AGGREGATE BASE			
		STA 53+18 TO 56+65	59 TON		
202	130	REMOVAL OF CURB & GUTTER			
		STA 51+75 TO 52+55 Lt	80 LF		
		STA 53+41 TO 54+51 Lt	115 LF		
202	132	REMOVAL OF BITUMINOUS SURFACING			
		STA 53+18 TO 56+65	569 SY		
202	174	REMOVAL OF PIPE ALL TYPES AND SIZES			
		STA 52+27 TO 52+37 Lt	10 LF		
		STA 52+65 Lt	14 LF		
		STA 52+66 TO 52+69 Lt	2 LF		
		STA 52+67 TO 52+53 Lt	14 LF		
		STA 52+67 TO 52+65 Lt	27 LF		
724	270	REMOVE GATE VALVE & BOX			
		STA 52+53 Lt	1 EA		
		STA 52+67 Lt	1 EA		
		STA 52+66 Rt	1 EA		
724	430	REMOVE HYDRANT			
		STA 52+53 Lt	1 EA		

LEGEND

REMOVAL OF BITUMINOUS SURFACING

REMOVAL OF CONCRETE PAVEMENT

REMOVAL OF TREES/BRUSH

REMOVAL OF AGGREGATE BASE & SURFACING

REMOVAL OF CURB & GUTTER

Removals

8th Ave NW

Sta 51+75 to Sta 59+75

Roadway Reconstruction

Mandan, ND

REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

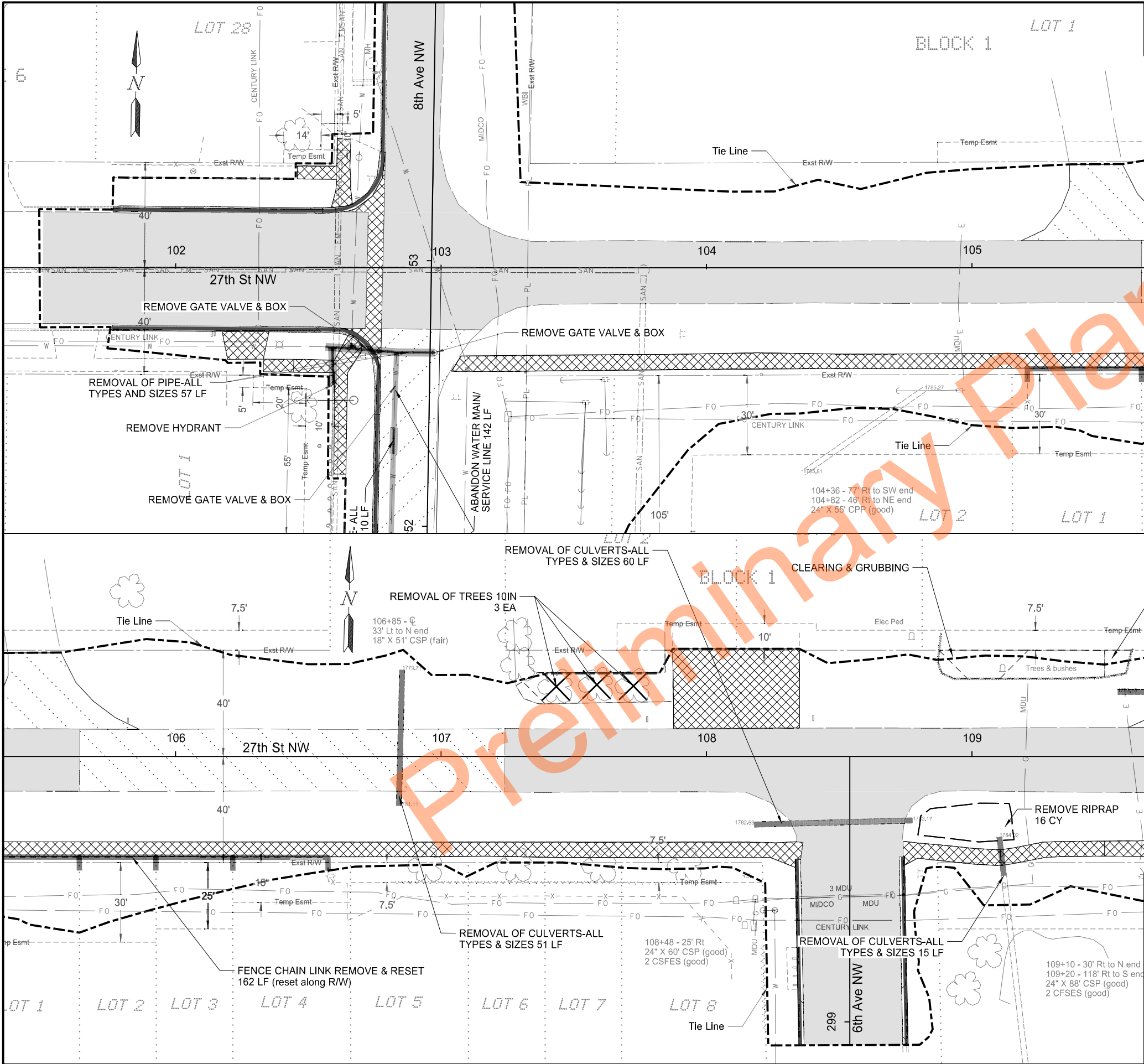
DATE 08/06/2026

NORTH DAKOTA

8/5/2026

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		STATE	PROJECT NO.		SECTION NO.	SHEET NO.
		ND	SU-1-988(055)		40	3
SPEC	CODE	PAY ITEM			QTY	UNIT
201	300	CLEARING & GRUBBING				
		STA 107+28 TO 107+88	Lt		0.016	ACRE
		STA 108+87 TO 109+50	Lt		0.015	ACRE
201	370	REMOVAL OF TREES 10IN				
		STA 107+43	Lt		1	EA
		STA 107+59	Lt		1	EA
		STA 107+72	Lt		1	EA
202	21	REMOVE AGGREGATE BASE & SURFACING				
		STA 105+19 TO 105+86	Lt		35	TON
		STA 105+64 TO 107+24			260	TON
202	114	REMOVAL OF CONCRETE PAVEMENT				
		STA 102+18 TO 102+35	Rt		18	SY
		STA 102+63 TO 102+79	Rt		45	SY
		STA 103+04 TO 108+36	Rt		336	SY
		STA 107+87 TO 108+35	Lt		159	SY
		STA 108+74 TO 109+11	Rt		25	SY
		STA 109+11 TO 109+50	Rt		25	SY
202	128	REMOVE AGGREGATE BASE				
		STA 101+50 TO 102+72			272	TON
		STA 102+78 TO 105+64			395	TON
		STA 107+24 TO 109+50			281	TON
		STA 298+91 TO 299+87			196	TON
202	130	REMOVAL OF CURB & GUTTER				
		STA 101+76 TO 102+78	Lt		115	LF
		STA 102+77 TO 101+76	Rt		112	LF
		STA 108+34 TO 108+35	Rt		70	LF
		STA 108+74 TO 108+75	Rt		71	LF
202	132	REMOVAL OF BITUMINOUS SURFACING				
		STA 101+50 TO 102+72			580	SY
		STA 102+78 TO 105+64			843	SY
		STA 107+24 TO 109+50			599	SY
		STA 298+91 TO 299+87			418	SY
202	170	REMOVAL OF CULVERTS-ALL TYPES & SIZES				
		STA 106+84 TO 106+85	Rt		51	LF
		STA 108+78 TO 108+18	Rt		60	LF
		STA 109+10 TO 109+12	Rt		15	LF
202	400	REMOVAL OF RIPRAP - LOOSE ROCK				
		STA 108+80 TO 109+16	Rt		16	CY
752	660	FENCE CHAIN LINK REMOVE & RESET				
		STA 105+21 TO 106+57	Rt		162	LF
LEGEND						
REMOVAL OF BITUMINOUS SURFACING REMOVAL OF CONCRETE PAVEMENT REMOVAL OF TREES/BRUSH REMOVAL OF AGGREGATE BASE & SURFACING REMOVAL OF CURB & GUTTER						

Removals

27th St NW

Sta 101+50 to Sta 109+50

Roadway Reconstruction

Mandan, ND

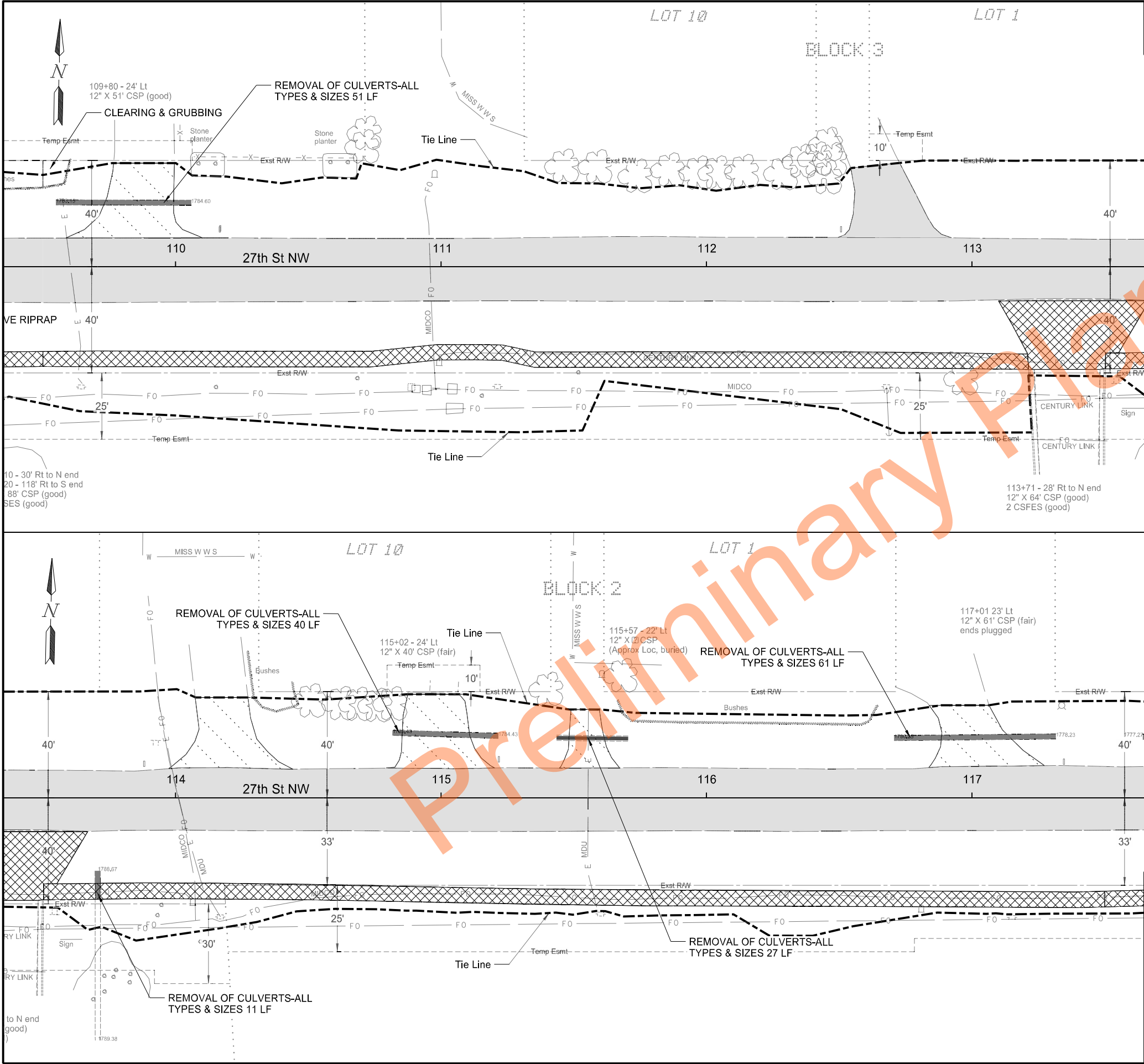
REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

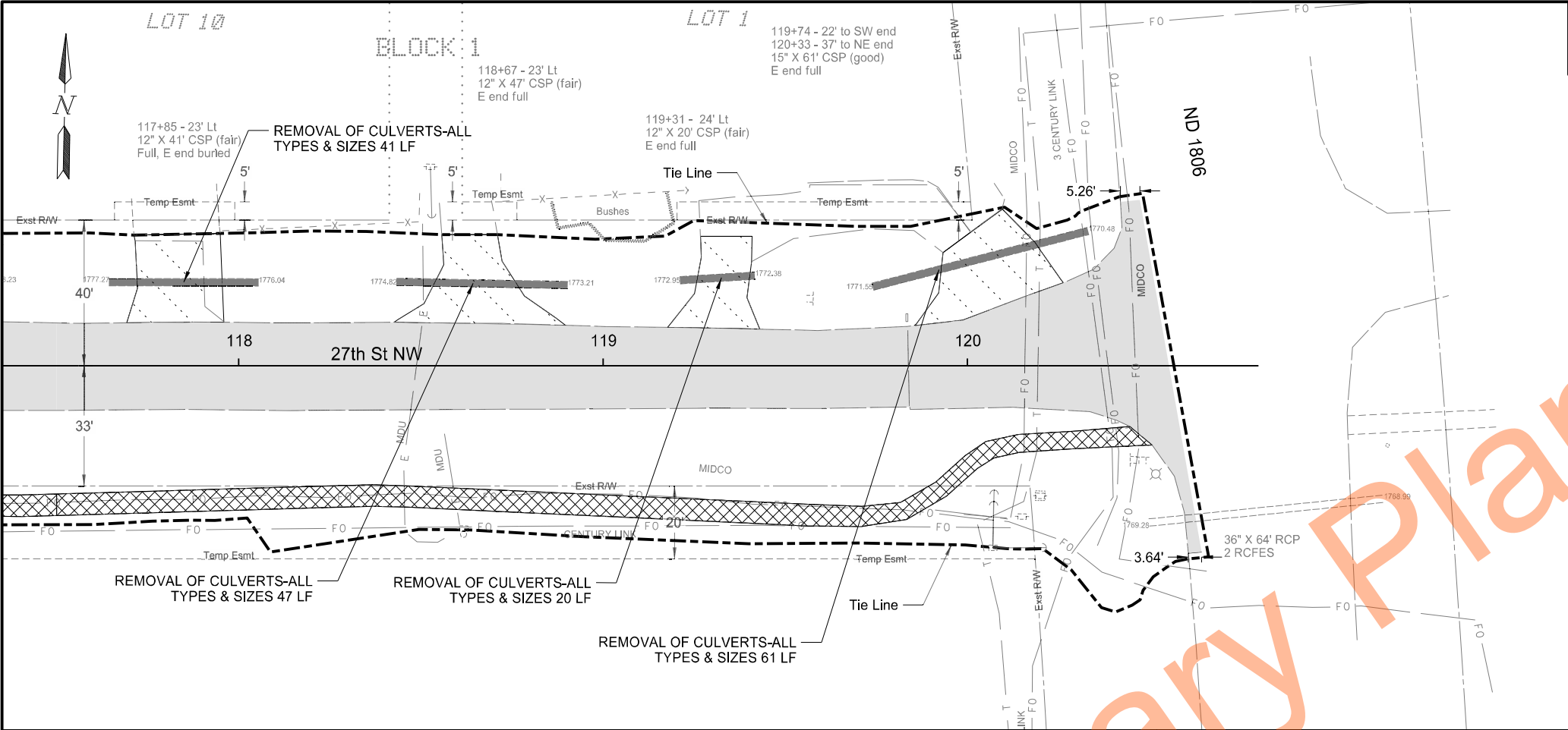
PE-40939

DATE 08/06/2026

NORTH DAKOTA



		STATE	PROJECT NO.		SECTION NO.	SHEET NO.
		ND	SU-1-988(055)		40	4
SPEC	CODE	PAY ITEM			QTY UNIT	
201	300	CLEARING & GRUBBING				
		STA 109+50 TO 109+60	Lt		0.002	ACRE
202	21	REMOVE AGGREGATE BASE & SURFACING				
		STA 109+59 TO 110+10	Lt		28	TON
		STA 113+97 TO 114+44	Lt		23	TON
		STA 114+79 TO 115+20	Lt		25	TON
		STA 115+45 TO 115+67	Lt		11	TON
		STA 116+84 TO 117+27	Lt		22	TON
202	114	REMOVAL OF CONCRETE PAVEMENT				
		STA 109+50 TO 113+21	Rt		242	SY
		STA 113+10 TO 113+67	Rt		119	SY
		STA 113+50 TO 117+50	Rt		261	SY
202	128	REMOVE AGGREGATE BASE				
		STA 109+50 TO 117+50			989	TON
		STA 112+50 TO 112+92			36.5625	TON
202	132	REMOVAL OF BITUMINOUS SURFACING				
		STA 109+50 TO 117+50			2109	SY
		STA 112+50 TO 112+92			78	SY
202	170	REMOVAL OF CULVERTS-ALL TYPES & SIZES				
		STA 110+06 TO 109+55	Lt		51	LF
		STA 113+71	Rt		11	LF
		STA 115+22 TO 114+82	Lt		40	LF
		STA 115+43 TO 115+70	Lt		27	LF
		STA 117+32 TO 116+71	Lt		61	LF
LEGEND REMOVAL OF BITUMINOUS SURFACING REMOVAL OF CONCRETE PAVEMENT REMOVAL OF AGGREGATE BASE & SURFACING X REMOVAL OF TREES/BRUSH REMOVAL OF CURB & GUTTER Removals 27th St NW Sta 109+50 to Sta 117+50 Roadway Reconstruction Mandan, ND REGISTERED PROFESSIONAL ENGINEER AMY J. SCHAAF PE-40939 DATE 08/06/2026 NORTH DAKOTA						



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	40	5

SPEC	CODE	PAY ITEM	QTY	UNIT
202	21	REMOVE AGGREGATE BASE & SURFACING		
		STA 117+69 TO 117+96 Lt	15	TON
		STA 118+43 TO 118+90 Lt	21	TON
		STA 119+18 TO 119+43 Lt	14	TON
		STA 119+85 TO 120+26 Lt	23	TON
202	114	REMOVAL OF CONCRETE PAVEMENT		
		STA 117+50 TO 120+51 Rt	190	SY
202	128	REMOVE AGGREGATE BASE		
		STA 117+50 TO 120+64	420	TON
202	132	REMOVAL OF BITUMINOUS SURFACING		
		STA 117+50 TO 120+64	895	SY
202	170	REMOVAL OF CULVERTS-ALL TYPES & SIZES		
		STA 117+64 TO 118+05 Lt	41	LF
		STA 118+43 TO 118+90 Lt	47	LF
		STA 119+21 TO 119+42 Lt	21	LF
		STA 119+74 TO 120+33 Lt	61	LF

LEGEND

REMOVAL OF BITUMINOUS SURFACING

REMOVAL OF CONCRETE PAVEMENT

REMOVAL OF AGGREGATE BASE & SURFACING

REMOVAL OF TREES/BRUSH

REMOVAL OF CURB & GUTTER

Removals

27th St NW

Sta 117+50 to Sta 120+80

Roadway Reconstruction

Mandan, ND

REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

DATE 08/06/2026

NORTH DAKOTA

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	50	1

Inlet No. CB1A
Chain Sta. 23EB
Sta. 45+68.0 19.9L
Type Inlet Type 2
Grate Style (B)
Grate Elev. 1822.47
Base Elev. 1816.72
Invert Elev. 1816.91
H' Dist 5.08 FT
15 In. RCP E 1816.91

Inlet No. CB3B
Chain Sta. 23EB
Sta. 52+48.4 19.9R
Type Inlet Type 2
Grate Style (B)
Grate Elev. 1788.39
Base Elev. 1783.36
Invert Elev. 1783.55
H' Dist 4.36 FT
15 In. RCP W 1783.55

Inlet No. CB9B
Chain Sta. 23EB
Sta. 107+26.7 20.0R
Type Inlet Type 2 Triple
Grate Style (D)
Grate Elev. 1782.94
Base Elev. 1777.71
Invert Elev. 1777.90
H' Dist 4.56 FT
15 In. RCP N 1777.90
15 In. RCP S 1777.90

Inlet No. CB10D
Chain Sta. 23EB
Sta. 108+90.7 20.0R
Type 84 IN Inlet Special Type 2 Double
Grate Style (D)
Grate Elev. 1785.07
Base Elev. 1777.26
Invert Elev. 1777.51
H' Dist 6.47 FT
24 In. RCP N 1777.51
15 In. RCP SE 1778.26
24 In. RCP SW 1778.11

Code	Inlet Grate Style	Casting Thickness (IN)
(A)	Neenah R-2573 (Concave Grate)	7
(B)	Neenah R-3067-V*	4
(C)	Neenah R-3295-3 East Jordan 7032	4
(D)	Neenah R-3295-2 East Jordan 7032	4

*Curb box shall be as shown in NDDOT Standard Drawing 722-2.

Inlet No. CB1B
Chain Sta. 23EB
Sta. 45+68.1 19.9R
Type Inlet Type 2
Grate Style (B)
Grate Elev. 1822.46
Base Elev. 1816.72
Invert Elev. 1816.91
H' Dist 5.07 FT
15 In. RCP W 1816.91

Inlet No. CB4A
Chain Sta. 23EB
Sta. 53+36.8 19.5L
Type Inlet Type 2
Grate Style (B)
Grate Elev. 1786.63
Base Elev. 1780.61
Invert Elev. 1780.80
H' Dist 5.35 FT
15 In. RCP SE 1780.80

Inlet No. CB9C
Chain Sta. 23EB
Sta. 107+26.7 37.0R
Type Inlet Type A
Grate Style (A)
Grate Elev. 1783.18
Base Elev. 1778.05
Invert Elev. 1778.24
H' Dist 4.21 FT
15 In. RCP N 1778.24

Inlet No. CB10E
Chain Sta. 23EB
Sta. 109+11.9 44.3R
Type 48 IN Inlet Special CB Type A
Grate Style (A)
Grate Elev. 1787.00
Base Elev. 1778.50
Invert Elev. 1778.75
H' Dist 6.92 FT
24 In. RCP NW 1778.75
24 In. Ex. CSP S 1784.22

Code	Manhole Casting Style	Casting Thickness (IN)
(V)	Neenah R-1733, East Jordan 1205, Municipal Castings Inc. 301	7

Inlet No. CB2A
Chain Sta. 23EB
Sta. 49+80.3 19.9L
Type Inlet Type 2 Double
Grate Style (C)
Grate Elev. 1799.57
Base Elev. 1794.67
Invert Elev. 1794.86
H' Dist 4.23 FT
15 In. RCP E 1794.86

Inlet No. CB4B
Chain Sta. 23EB
Sta. 53+39.6 19.9R
Type Inlet Type 2
Grate Style (B)
Grate Elev. 1786.54
Base Elev. 1780.61
Invert Elev. 1780.80
H' Dist 5.26 FT
15 In. RCP SW 1780.80

Inlet No. CB10A
Chain Sta. 23EB
Sta. 108+91.3 19.9L
Type Inlet Type 2
Grate Style (B)
Grate Elev. 1784.59
Base Elev. 1779.41
Invert Elev. 1779.60
H' Dist 4.51 FT
15 In. RCP S 1779.60

Inlet No. CB12A
Chain Sta. 23EB
Sta. 113+70.7 37.3R
Type Inlet Type A
Grate Style (A)
Grate Elev. 1790.60
Base Elev. 1785.68
Invert Elev. 1786.06
H' Dist 4.00 FT
15 In. RCP N 1786.06
12 In. Ex. CSP S 1788.77

Inlet No. CB2B
Chain Sta. 23EB
Sta. 49+80.3 19.9R
Type Inlet Type 2 Double
Grate Style (C)
Grate Elev. 1799.57
Base Elev. 1794.67
Invert Elev. 1794.86
H' Dist 4.23 FT
15 In. RCP W 1794.86

Inlet No. CB7A
Chain Sta. 23EB
Sta. 103+48.6 38.4R
Type Inlet Type A
Grate Style (A)
Grate Elev. 1787.26
Base Elev. 1782.35
Invert Elev. 1783.35
H' Dist 4.00 FT
15 In. RCP N 1783.35

Inlet No. CB10B
Chain Sta. 23EB
Sta. 108+34.1 36.2R
Type Inlet Type 2 Double
Grate Style (C)
Grate Elev. 1784.10
Base Elev. 1779.41
Invert Elev. 1779.60
H' Dist 4.02 FT
15 In. RCP E 1779.60

Inlet No. CB13A
Chain Sta. 23EB
Sta. 115+99.9 20.0L
Type Inlet Type 2
Grate Style (A)
Grate Elev. 1783.76
Base Elev. 1778.84
Invert Elev. 1779.90
H' Dist 4.00 FT
15 In. RCP S 1779.90

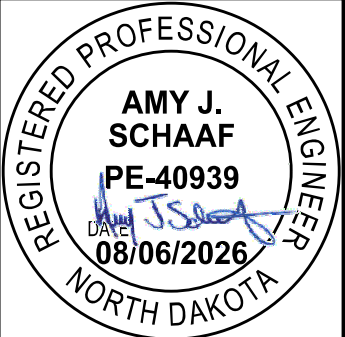
Inlet No. CB3A
Chain Sta. 23EB
Sta. 52+48.4 19.9L
Type Inlet Type 2
Grate Style (B)
Grate Elev. 1788.39
Base Elev. 1783.36
Invert Elev. 1783.55
H' Dist 4.36 FT
15 In. RCP E 1783.55

Inlet No. CB9A
Chain Sta. 23EB
Sta. 107+26.7 19.9L
Type Inlet Type 2 Double
Grate Style (C)
Grate Elev. 1782.45
Base Elev. 1777.20
Invert Elev. 1777.38
H' Dist 4.59 FT
15 In. RCP S 1777.38

Inlet No. CB10C
Chain Sta. 23EB
Sta. 108+74.0 35.6R
Type Inlet Type 2
Grate Style (B)
Grate Elev. 1785.08
Base Elev. 1778.51
Invert Elev. 1778.70
H' Dist 5.90 FT
15 In. RCP NE 1778.70
15 In. RCP W 1778.80

Inlet No. CB14A
Chain Sta. 23EB
Sta. 117+63.1 19.8L
Type Inlet Type 2
Grate Style (B)
Grate Elev. 1778.52
Base Elev. 1773.85
Invert Elev. 1774.41
H' Dist 4.00 FT
15 In. RCP E 1774.41

Inlet Manhole Summary
8th Ave NW & 27th St NW
Roadway Reconstruction
Mandan, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	50	2

Inlet No.	CB14B	Manhole No.	M1A	Manhole No.	M6	Manhole No.	M10
Chain		Chain		Chain		Chain	
Sta.	117+63.1	Sta.	45+68.1	Sta.	59+95.4	Sta.	108+91.2
Type	Inlet	Type	48 IN	Type	72 IN	Type	60 IN
Grate Style	(B)	Casting Style	(V)	Casting Style	(V)	Casting Style	(V)
Grate Elev.	1778.52	Rim Elev.	1822.94	Rim Elev.	1774.38	Rim Elev.	1784.80
Base Elev.	1773.85	Base Elev.	1815.90	Base Elev.	1768.51	Base Elev.	1776.07
Invert Elev.	1774.41	Invert Elev.	1816.11	Invert Elev.	1768.88	Invert Elev.	1776.36
H' Dist	4.00 FT	Riser	5.62 FT	Riser	4.46 FT	Riser	7.32 FT
15 In.	RCP	18 In.	RCP	42 In.	RCP	30 In.	RCP
RCP	W	15 In.	RCP	42 In.	RCP	15 In.	RCP
		18 In.	Ex. RCP		NE	24 In.	RCP
			S			15 In.	RCP
							E

*Curb box shall be as shown in NDDOT Standard Drawing 722-2.

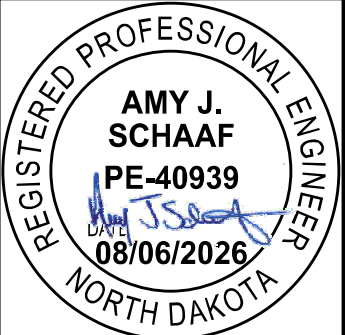
Inlet No.	CB15	Manhole No.	M2	Manhole No.	M7	Manhole No.	M11
Chain		Chain		Chain		Chain	
Sta.	119+17.5	Sta.	49+80.3	Sta.	103+48.7	Sta.	111+30.3
Type	Inlet	Type	48 IN	Type	60 IN	Type	48 IN
Grate Style	(A)	Casting Style	(V)	Casting Style	(V)	Casting Style	(V)
Grate Elev.	1775.94	Rim Elev.	1800.04	Rim Elev.	1788.13	Rim Elev.	1788.73
Base Elev.	1770.47	Base Elev.	1793.61	Base Elev.	1772.77	Base Elev.	1781.17
Invert Elev.	1770.66	Invert Elev.	1793.82	Invert Elev.	1773.10	Invert Elev.	1781.36
H' Dist	4.55 FT	Riser	5.01 FT	Riser	13.95 FT	Riser	6.14 FT
15 In.	RCP	18 In.	RCP	36 In.	RCP	15 In.	RCP
RCP	W	15 In.	RCP	15 In.	RCP	15 In.	RCP
		15 In.	RCP	36 In.	RCP		W
		18 In.	RCP		W		
			S				

Inlet No.	CB16	Manhole No.	M3	Manhole No.	M8A	Manhole No.	M12
Chain		Chain		Chain		Chain	
Sta.	119+87.2	Sta.	52+48.4	Sta.	104+91.2	Sta.	113+69.4
Type	48 IN	Type	48 IN	Type	60 IN	Type	48 IN
Grate Style	(A)	Casting Style	(V)	Casting Style	(V)	Casting Style	(V)
Grate Elev.	1774.63	Rim Elev.	1788.86	Rim Elev.	1788.01	Rim Elev.	1790.06
Base Elev.	1770.12	Base Elev.	1782.31	Base Elev.	1773.48	Base Elev.	1784.86
Invert Elev.	1770.31	Invert Elev.	1782.52	Invert Elev.	1773.81	Invert Elev.	1785.05
H' Dist	2.92 FT	Riser	5.13 FT	Riser	13.12 FT	Riser	3.78 FT
15 In.	RCP	18 In.	RCP	36 In.	RCP	15 In.	RCP
RCP	W	15 In.	RCP	24 In.	RCP	15 In.	RCP
	S	15 In.	RCP	36 In.	RCP		S
		18 In.	RCP		W		
			S				

Inlet No.	CB17	Manhole No.	M4	Manhole No.	M8B	Manhole No.	M13
Chain		Chain		Chain		Chain	
Sta.	120+20.3	Sta.	53+09.4	Sta.	104+93.8	Sta.	115+99.9
Type	48 IN	Type	72 IN	Type	60 IN	Type	48 IN
Grate Style	(B)	Casting Style	(V)	Casting Style	(V)	Casting Style	(V)
Grate Elev.	1773.66	Rim Elev.	1787.85	Rim Elev.	1788.56	Rim Elev.	1784.23
Base Elev.	1769.75	Base Elev.	1769.90	Base Elev.	1782.00	Base Elev.	1779.11
Invert Elev.	1769.94	Invert Elev.	1770.27	Invert Elev.	1782.25	Invert Elev.	1779.30
H' Dist	2.57 FT	Riser	16.54 FT	Riser	5.14 FT	Riser	3.70 FT
15 In.	RCP	42 In.	RCP	24 In.	RCP	15 In.	RCP
RCP	N	15 In.	RCP	24 In.	Ex. PVC	15 In.	RCP
	S	15 In.	RCP		SW		N
		18 In.	RCP				
		36 In.	RCP				
			E				

Inlet No.	CB19	Manhole No.	M5	Manhole No.	M9	Manhole No.	M14
Chain		Chain		Chain		Chain	
Sta.	120+20.3	Sta.	56+52.5	Sta.	107+26.7	Sta.	117+63.1
Type	48 IN	Type	72 IN	Type	60 IN	Type	48 IN
Grate Style	(B)	Casting Style	(V)	Casting Style	(V)	Casting Style	(V)
Grate Elev.	1773.62	Rim Elev.	1777.53	Rim Elev.	1782.66	Rim Elev.	1778.52
Base Elev.	1769.32	Base Elev.	1769.21	Base Elev.	1774.65	Base Elev.	1772.81
Invert Elev.	1769.50	Invert Elev.	1769.58	Invert Elev.	1774.98	Invert Elev.	1773.00
H' Dist	2.97 FT	Riser	6.91 FT	Riser	6.60 FT	Riser	4.29 FT
15 In.	RCP	42 In.	RCP	36 In.	RCP	15 In.	RCP
RCP	N	42 In.	RCP	15 In.	RCP	15 In.	RCP
	S		S	15 In.	RCP	15 In.	RCP
				30 In.	RCP		W
					E		

Inlet Manhole Summary
8th Ave NW & 27th St NW
Roadway Reconstruction
Mandan, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	50	3

Manhole No. M18
Chain Sta. 23EB
120+20.3 `

Type	48 IN	Manhole	
Casting Style			(V)
Rim Elev.			1773.62
Base Elev.			1769.43
Invert Elev.			1769.62
Riser			2.77 FT

15 In.	RCP	S	1769.62
15 In.	RCP	N	1769.84
15 In.	RCP	W	1770.20

Manhole No. EXSTM1
Chain Sta. 23EB
45+68.1 12.6R

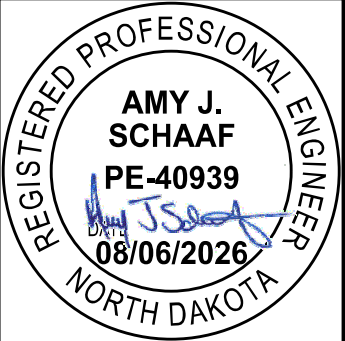
Type	48 IN	Manhole	
Casting Style			(V)
Rim Elev.			1822.67
Base Elev.			1816.19
Invert Elev.			1816.40
Riser			5.06 FT

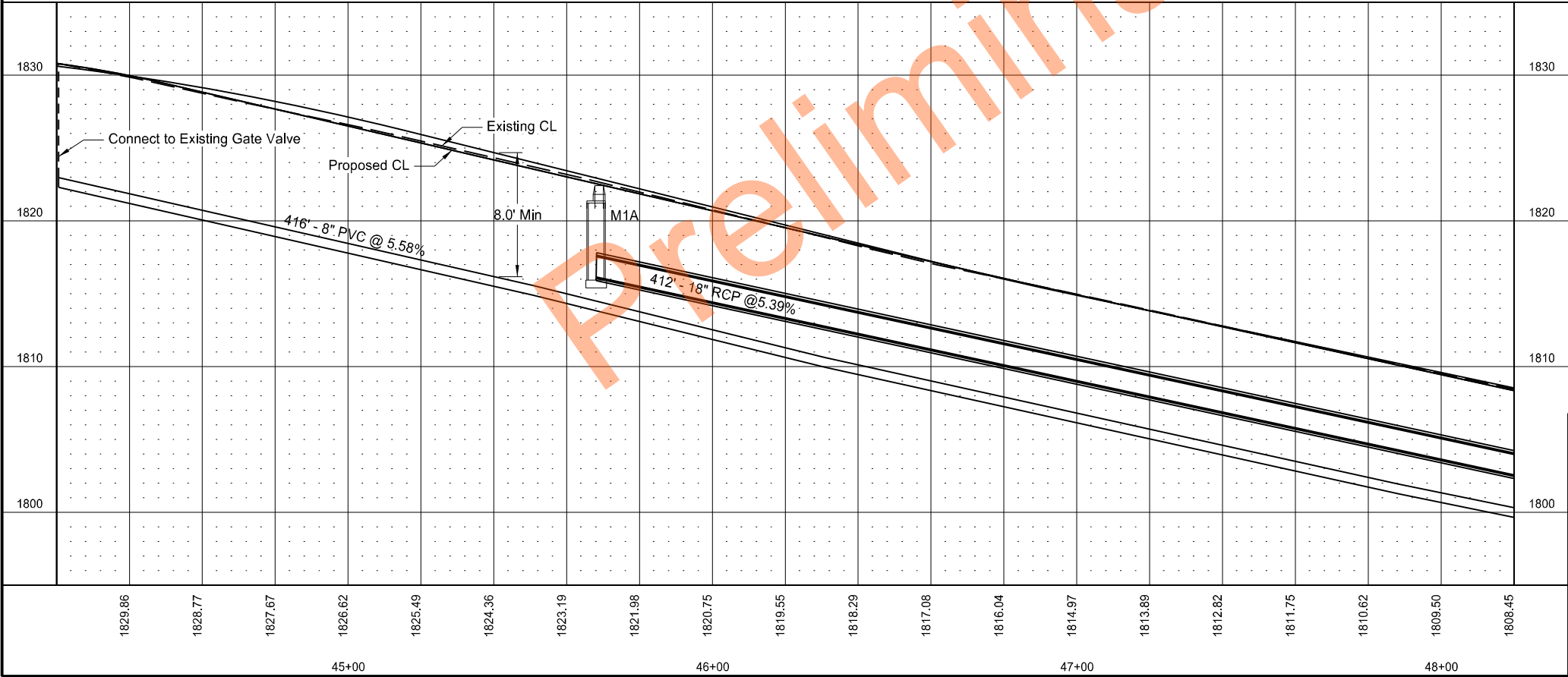
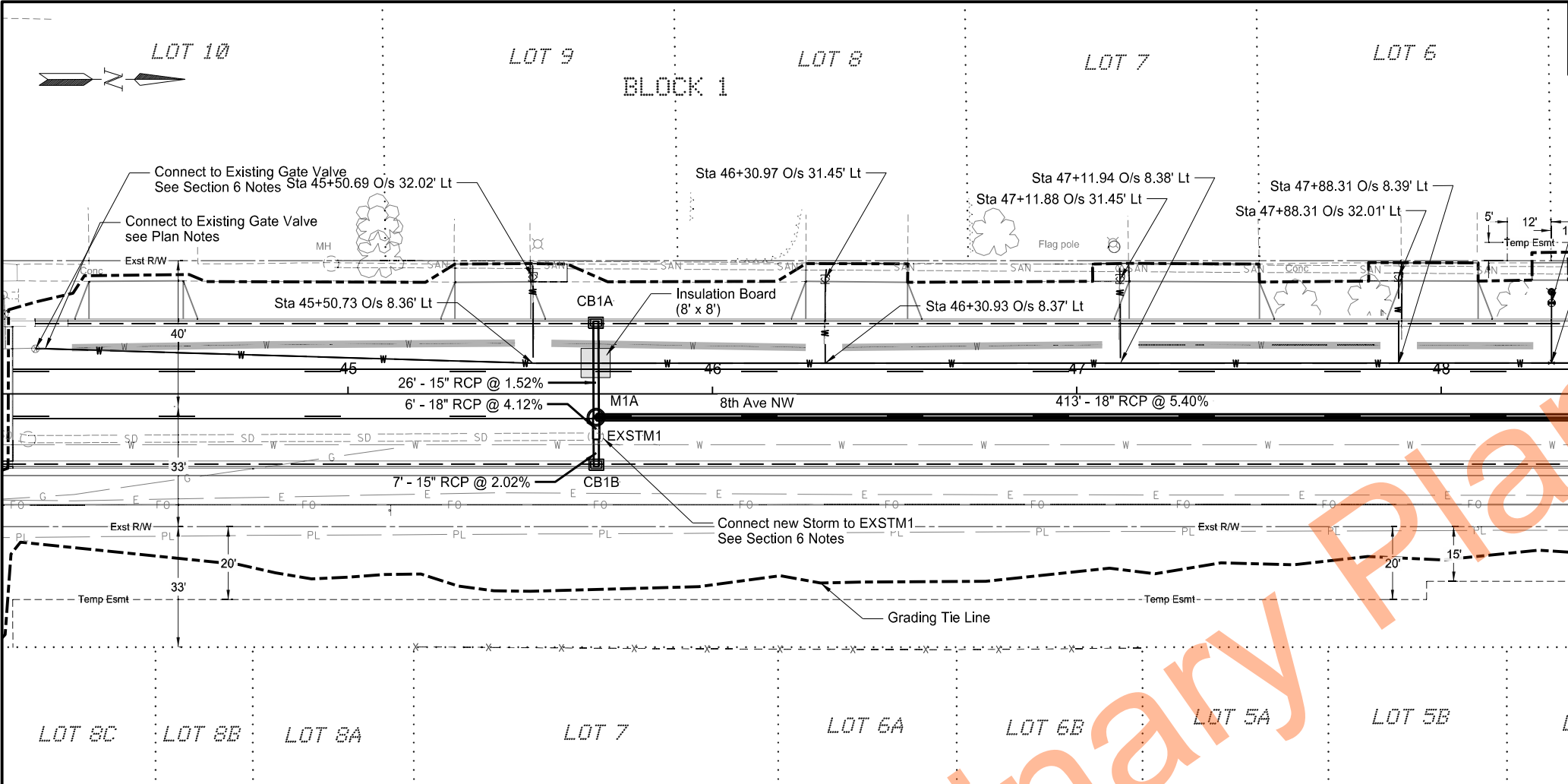
18 In.	RCP	W	1816.40
15 In.	RCP	E	1816.76
18 In.	RCP	S	1816.44

*Curb box shall be as shown in NDDOT Standard Drawing 722-2.

Preliminary Plans

Inlet Manhole Summary
8th Ave NW & 27th St NW
Roadway Reconstruction
Mandan, ND





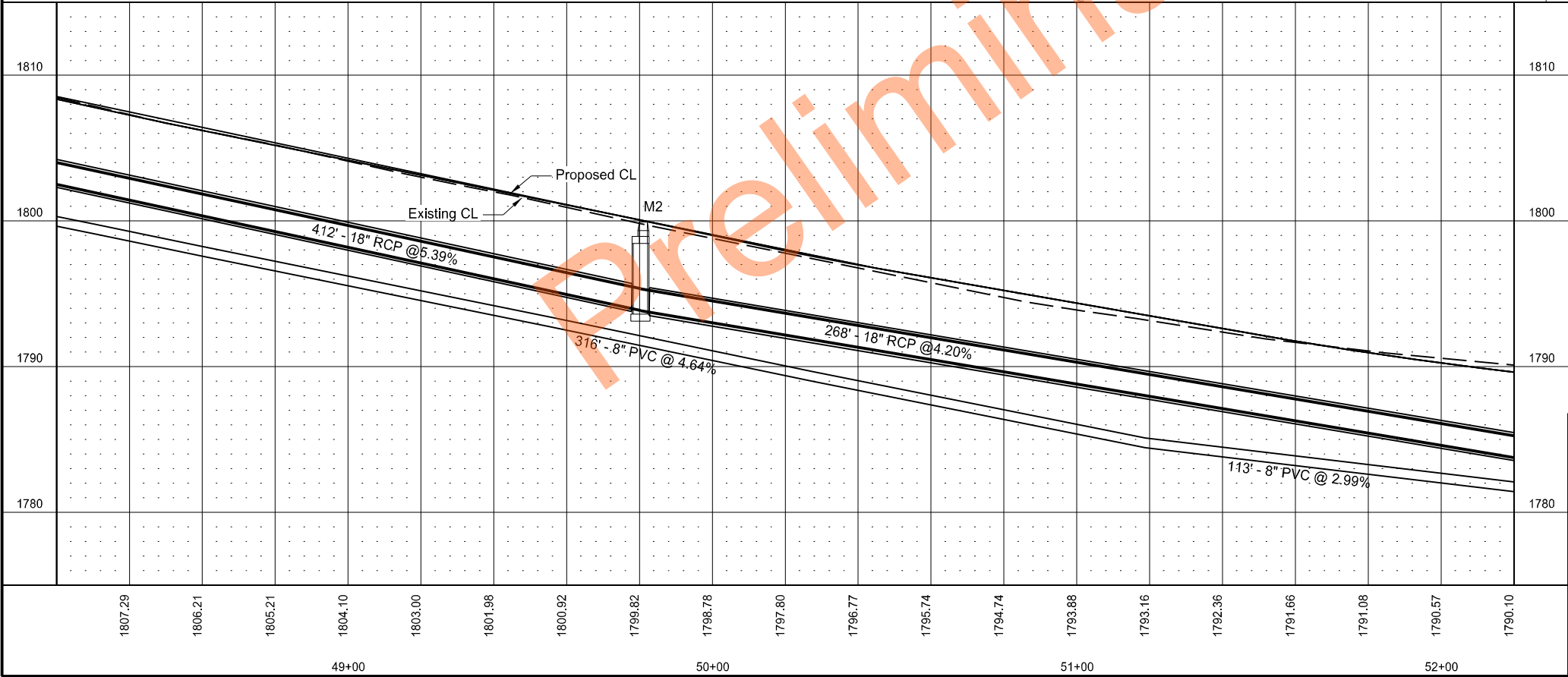
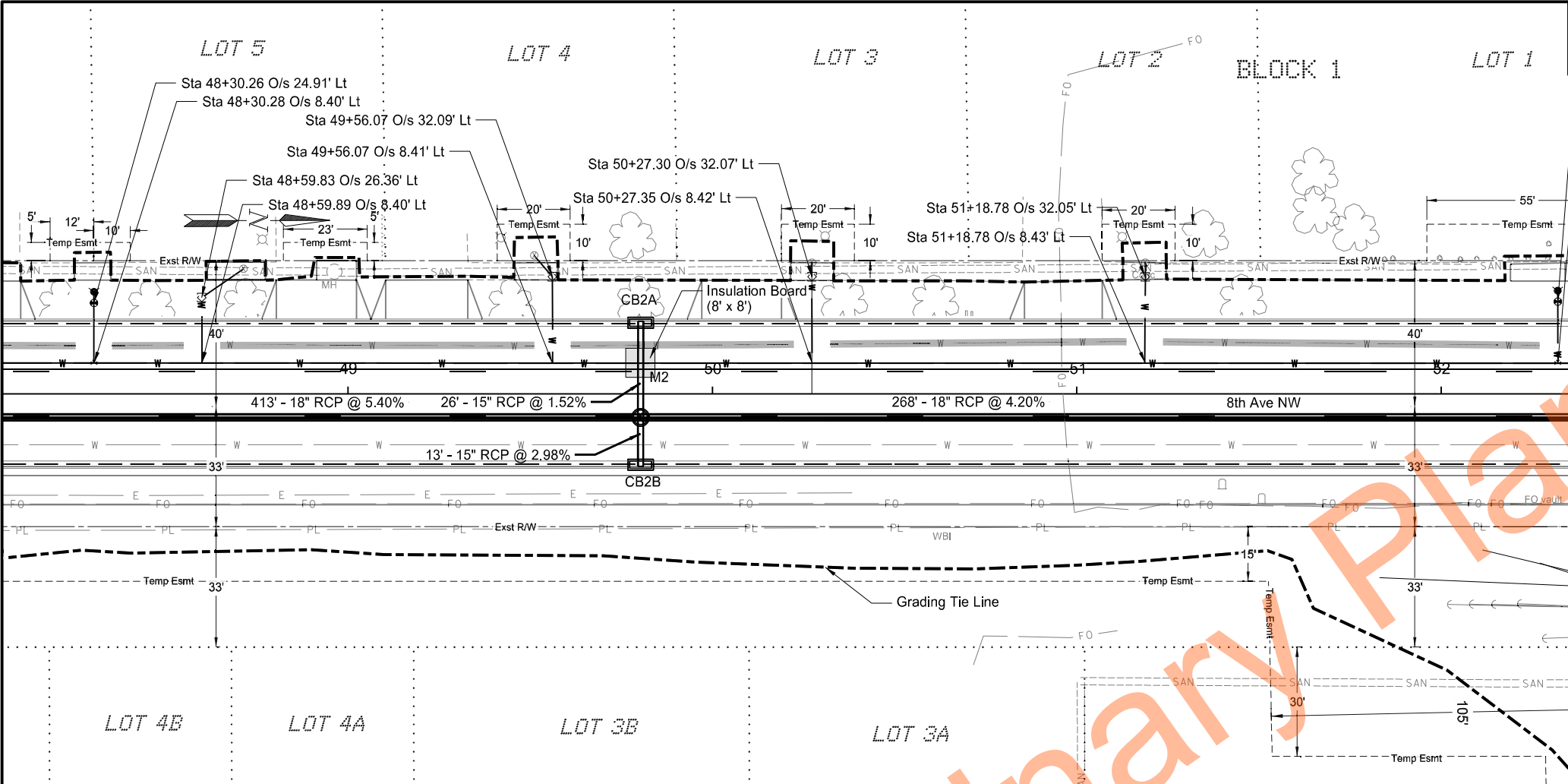
LEGEND

ABANDON WATER MAIN/SERVICE LINE

Drainage Layout
8th Ave NW
Sta 44+05 to Sta 48+20
Roadway Reconstruction
Mandan, ND



SPEC	CODE	PAY ITEM	QTY	UNIT
714	215	PIPE CONC REINF 15IN CL III-STORM DRAIN		
		CB1A - M1A	26	LF
		CB1B - EXSTM1	7	LF
714	337	PIPE CONC REINF 18IN CL III-STORM DRAIN		
		EXSTM1 - M1A	6	LF
		M1A - M2	413	LF
722	100	MANHOLE 48IN		
		EXSTM1	1	EA
		M1A	1	EA
722	1100	MANHOLE RISER 48IN		
		EXSTM1	5.1	LF
		M1A	5.6	LF
722	3510	INLET-TYPE 2		
		CB1A	1.0	EA
		CB1B	1	EA
724	830	WATERMAIN 8IN PVC		
		STA 44+14 TO STA 48+30 Lt	416	LF
724	955	WATER SERVICE CONNECTION 1IN		
		STA 45+51 Lt	1	EA
		STA 46+31 Lt	1	EA
		STA 47+12 Lt	1	EA
		STA 47+89 Lt	1	EA
744	50	INSULATION BOARD		
		STA 45+64 TO 45+72 Lt	21	CF



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	55	2

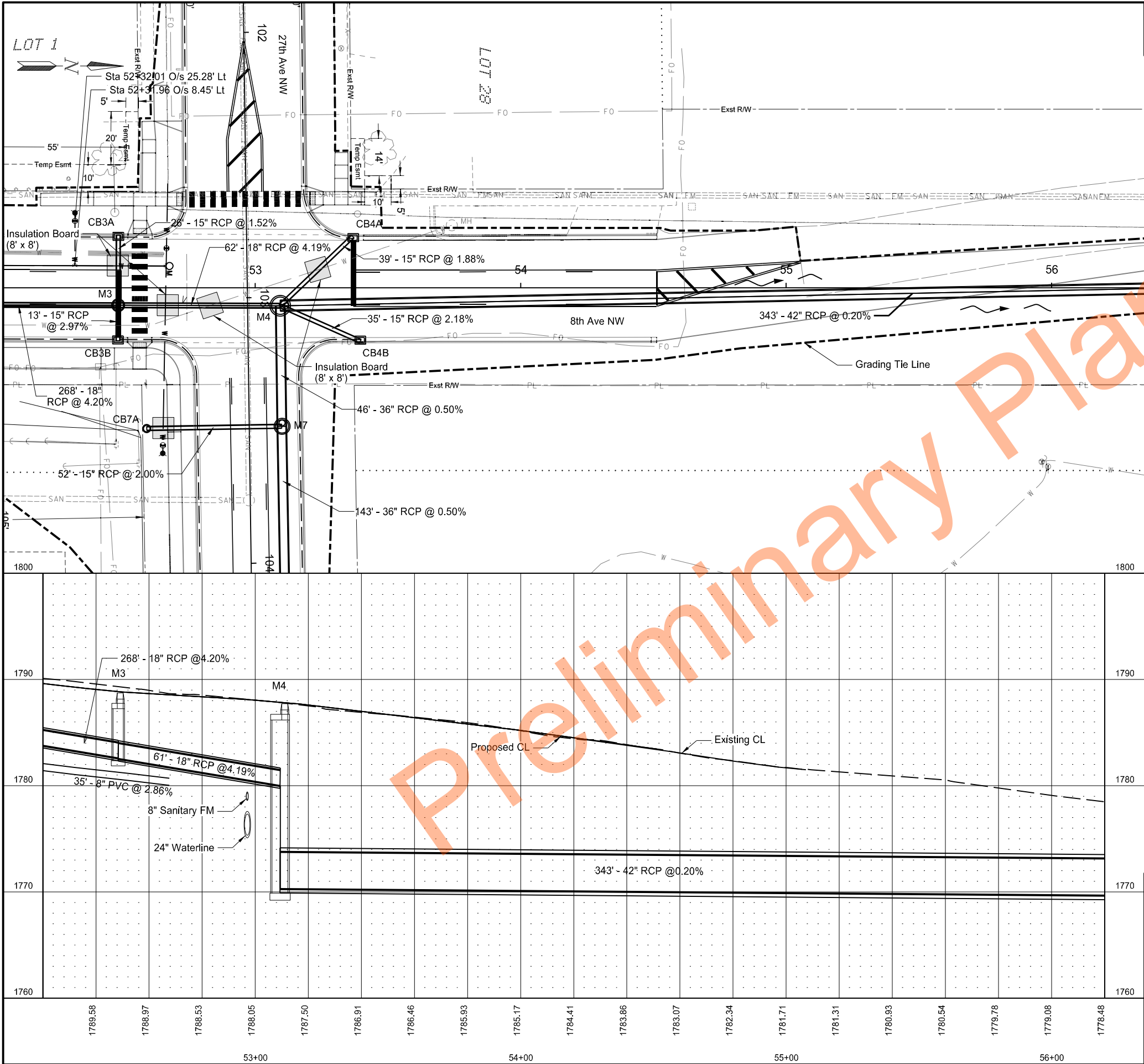
SPEC	CODE	PAY ITEM	QTY	UNIT
714	215	PIPE CONC REINF 15IN CL III-STORM DRAIN		
		CB2A - M2	26	LF
		CB2B - M2	13	LF
714	337	PIPE CONC REINF 18IN CL III-STORM DRAIN		
		M2 - M3	268	LF
722	100	MANHOLE 48IN		
		M2	1	EA
722	1100	MANHOLE RISER 48IN		
		M2	5.0	LF
722	3520	INLET-TYPE 2 DOUBLE		
		CB2A	1	EA
		CB2B	1	EA
724	300	GATE VALVE & BOX 6IN		
		STA 48+30	1	EA
724	400	HYDRANT-INSTALL 6IN		
		STA 48+30	1	EA
724	810	WATERMAIN 6IN PVC		
		STA 48+30	20	LF
724	830	WATERMAIN 8IN PVC		
		STA 48+30 TO STA 52+3	402	LF
724	955	WATER SERVICE CONNECTION 1IN		
		STA 48+71	1	EA
		STA 49+51	1	EA
		STA 50+27	1	EA
		STA 51+19	1	EA
744	50	INSULATION BOARD		
		STA 49+76 TO 49+84	21	CF

LEGEND

ABANDON WATER MAIN/SERVICE LINE

Drainage Layout
8th Ave NW
Sta 48+20 to Sta 52+20
Roadway Reconstruction
Mandan, ND





STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	55	3

SPEC	CODE	PAY ITEM	QTY	UNIT
714	215	PIPE CONC REINF 15IN CL III-STORM DRAIN		
		CB3A - M3	26	LF
		CB3B - M3	13	LF
		CB4A - M4	39	LF
		CB4B - M4	35	LF
714	337	PIPE CONC REINF 18IN CL III-STORM DRAIN		
		M3 - M4	62	LF
714	1010	PIPE CONC REINF 42IN CL III-STORM DRAIN		
		M4 - M5	343	LF
722	100	MANHOLE 48IN		
		M3	1	EA
722	120	MANHOLE 72IN		
		M4	1	EA
722	1100	MANHOLE RISER 48IN		
		M3	5.1	LF
722	1120	MANHOLE RISER 72IN		
		M4	16.5	LF
722	3510	INLET-TYPE 2		
		CB3A	1	EA
		CB3B	1	EA
		CB4A	1	EA
		CB4B	1	EA
724	300	GATE VALVE & BOX 6IN		
		STA 52+32 Lt	1	EA
		STA 52+65 Rt	1	EA
724	310	GATE VALVE & BOX 8IN		
		STA 52+53 Lt	1	EA
		STA 52+66 Lt	1	EA
724	400	HYDRANT-INSTALL 6IN		
		STA 52+32 Lt	1	EA
		STA 52+65 Rt	1	EA
724	810	WATERMAIN 6IN PVC		
		STA 52+32 Lt	20	LF
		STA 52+65 TO STA 52+6 Rt	71	LF
724	830	WATERMAIN 8IN PVC		
		STA 52+32 TO STA 52+6 Lt	34	LF
		STA 52+66 TO STA 52+6 Lt	31	LF
744	50	INSULATION BOARD		
		STA 52+44 TO 52+52 Lt	21	CF
		STA 52+63 TO 52+71 Rt	21	CF
		STA 52+78 TO 52+88 Rt	21	CF
		STA 53+19 TO 53+28 Lt	21	CF

LEGEND

ABANDON WATER MAIN/SERVICE LINE

Drainage Layout

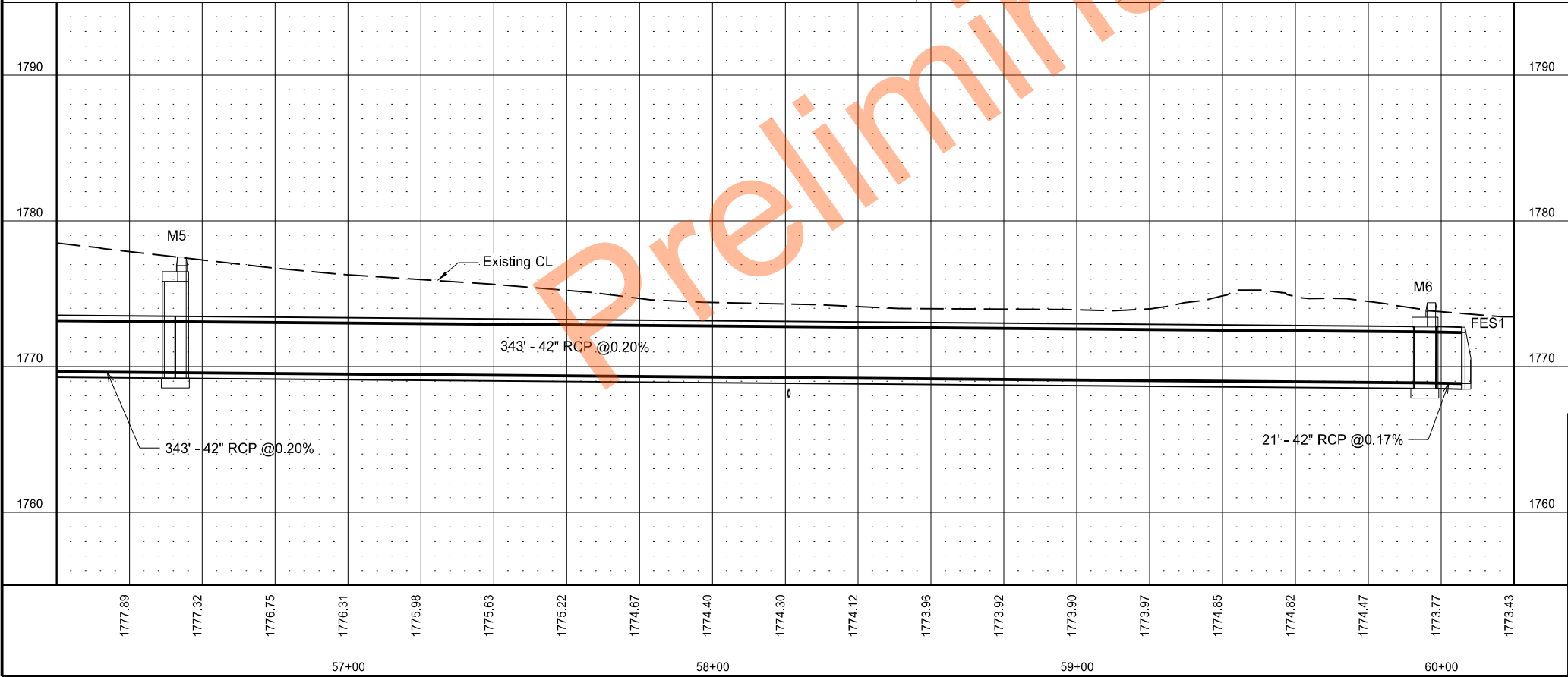
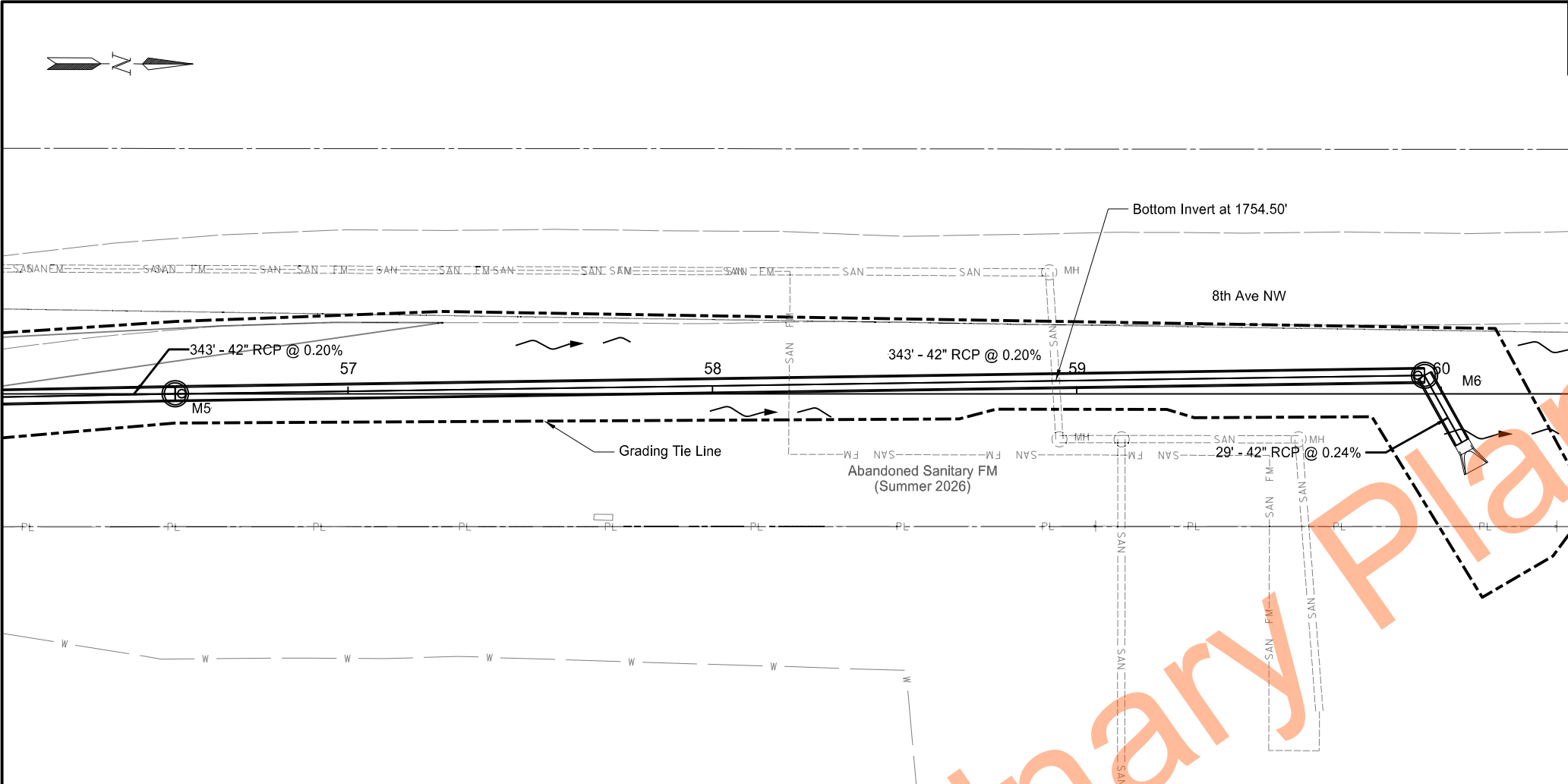
8th Ave NW

Sta 52+20 to Sta 56+20

Roadway Reconstruction

Mandan, ND





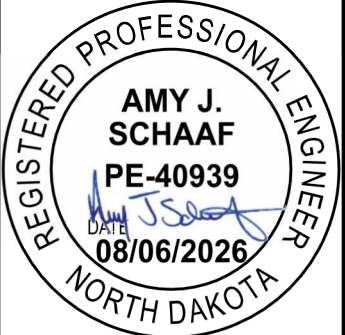
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	ND	SU-1-988(055)	55	4

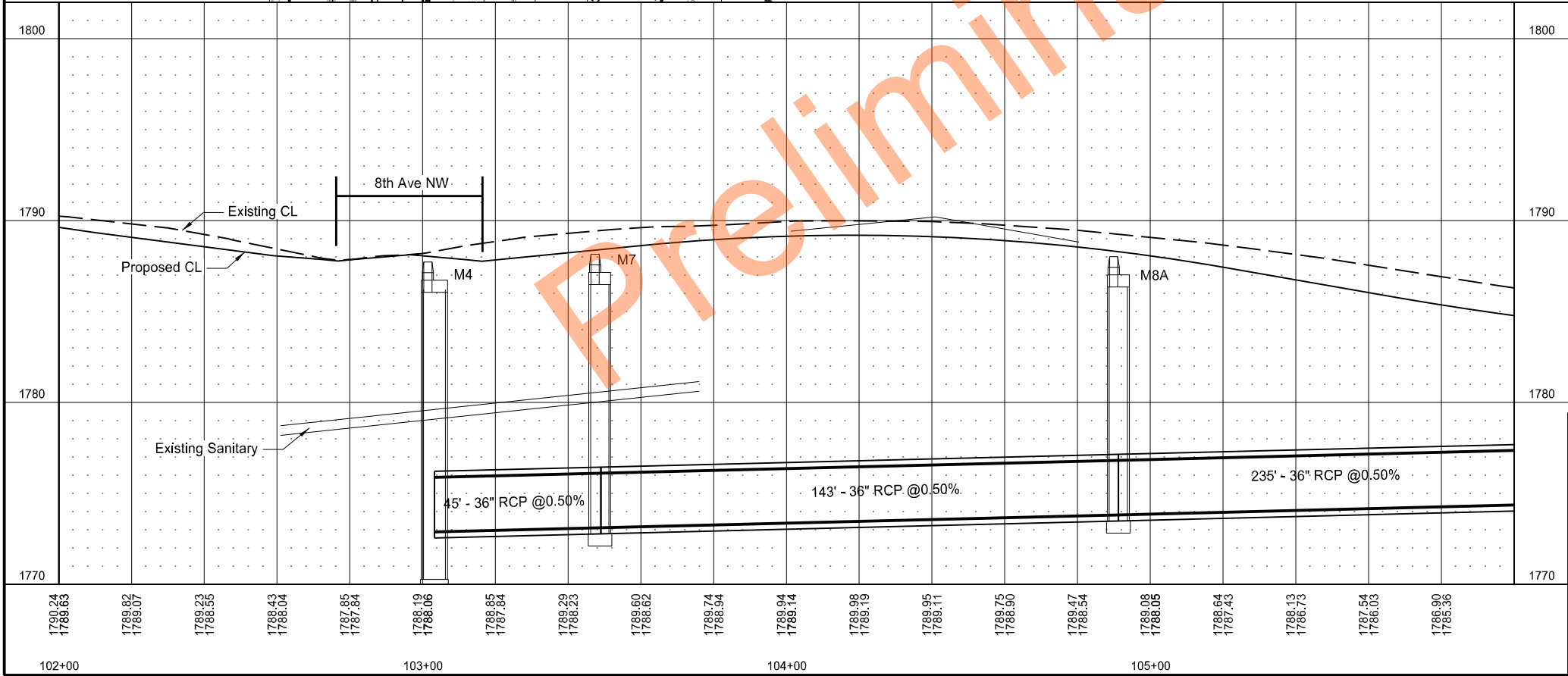
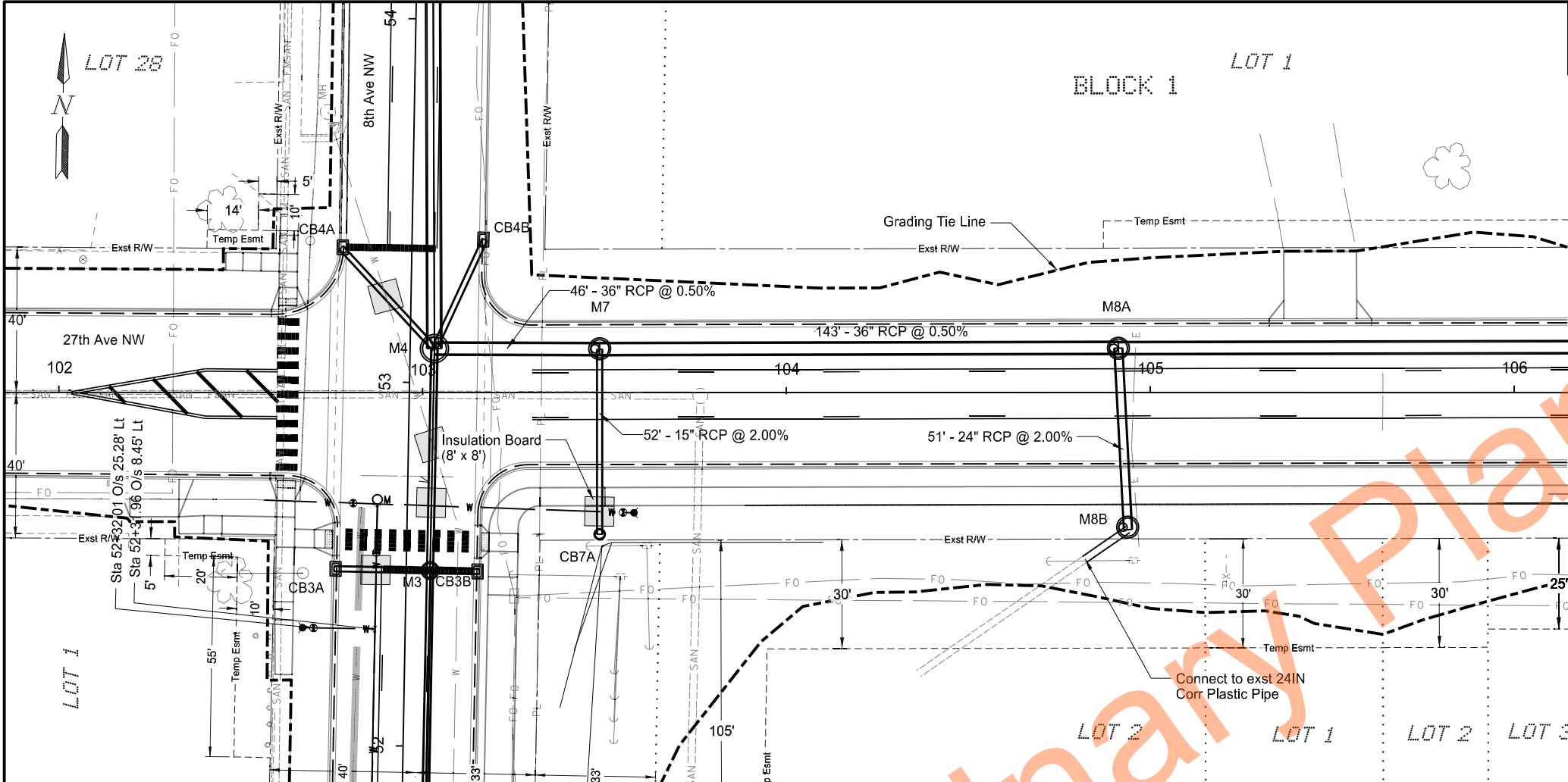
SPEC	CODE	PAY ITEM	QTY	UNIT
714	1002	PIPE CONC REINF 42IN CL III-STORM DRAIN		
		M5 - M6	343	LF
		M6 - FES1	29	LF
714	3040	END SECT-CONC REINF 42IN CL III		
		FES1	1	EA
722	120	MANHOLE 72IN		
		M5	1	EA
		M6	1	EA
722	1120	MANHOLE RISER 72IN		
		M5	6.9	LF
		M6	4.5	LF

LEGEND

ABANDON WATER MAIN/SERVICE LINE

Drainage Layout
8th Ave NW
Sta 56+20 to Sta 60+20
Roadway Reconstruction
Mandan, ND





STATE		PROJECT NO.	SECTION NO.	SHEET NO.
ND		SU-1-988(055)	55	5

SPEC	CODE	PAY ITEM	QTY	UNIT
714	215	PIPE CONC REINF 15IN CL III-STORM DRAIN		
		CB7A - M7	52	LF
714	620	PIPE CONC REINF 24IN CL III-STORM DRAIN		
		M8B - M8A	51	LF
714	870	PIPE CONC REINF 36IN CL III-STORM DRAIN		
		M7 - M4	46	LF
		M8A - M7	143	LF
714	9830	PIPE 24IN CORR PLASTIC		
		EXST-M8B RT	15	LF
722	110	MANHOLE 60IN		
		M7	1.0	EA
		M8A	1.0	EA
		M8B	1.0	EA
722	1110	MANHOLE RISER 60IN		
		M7	13.9	LF
		M8A	13.1	LF
		M8B	5.1	LF
722	4000	INLET CATCH BASIN-TYPE A		
		CB7A	1	EA
744	50	INSULATION BOARD		
		STA 103+44 TO 103+53 Rt	21	CF

LEGEND

ABANDON WATER MAIN/SERVICE LINE

Drainage Layout

27th St N

Sta 102+00 to Sta 106+00

Roadway Reconstruction

Mandan, ND

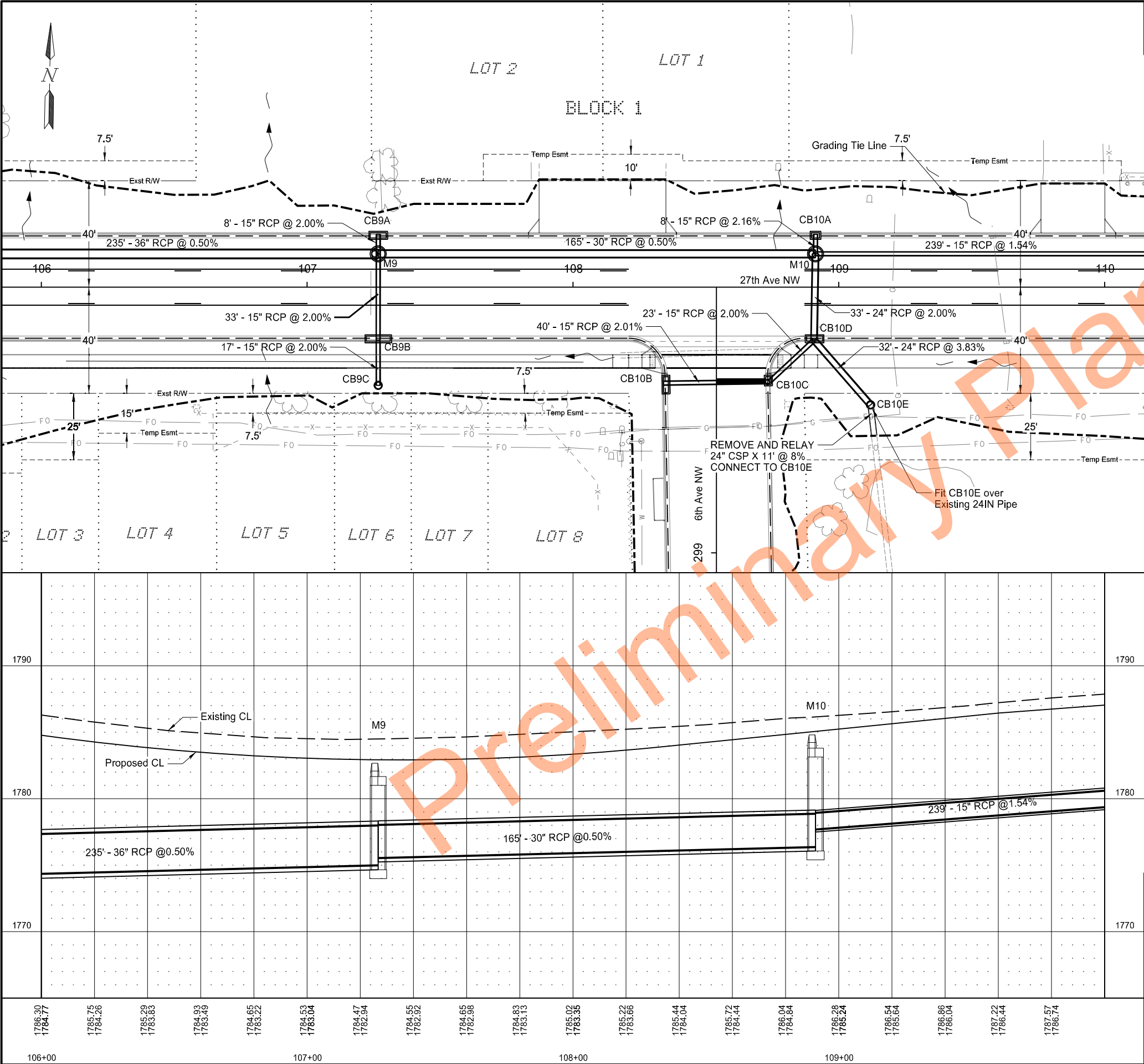
REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

DATE: 08/06/2026

NORTH DAKOTA



		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-1-988(055)	55	6
SPEC	CODE	PAY ITEM		QTY UNIT	
714	215	PIPE CONC REINF 15IN CL III-STORM DRAIN			
		CB9A - M9		8 LF	
		CB9B - M9		33 LF	
		CB9C - CB9B		17 LF	
		CB10A - M10		8 LF	
		CB10B - CB10C		40 LF	
		CB10C - CB10D		23 LF	
714	620	PIPE CONC REINF 24IN CL III-STORM DRAIN			
		CB10D - M10		33 LF	
		CB10E - CB10D		32 LF	
714	825	PIPE CONC REINF 30IN CL III-STORM DRAIN			
		M10 - M9		165 LF	
714	870	PIPE CONC REINF 36IN CL III-STORM DRAIN			
		M9 - M8A		235 LF	
722	110	MANHOLE 60IN			
		M9		1EA	
		M10		1EA	
722	1110	MANHOLE RISER 60IN			
		M9		6.6 LF	
		M10		7.3 LF	
722	3510	INLET-TYPE 2			
		CB10A		1EA	
		CB10C		1EA	
722	3520	INLET-TYPE 2 DOUBLE			
		CB9A		1EA	
		CB10B		1EA	
722	3521	INLET-TYPE 2 TRIPLE			
		CB9B		1.0 EA	
722	3740	INLET SPECIAL CATCH BASIN-TYPE A 48IN			
		CB10E		1EA	
722	3825	INLET SPECIAL-TYPE 2 DOUBLE 84IN			
		CB10D		1EA	
722	4000	INLET CATCH BASIN-TYPE A			
		CB9C		1EA	

LEGEND

ABANDON WATER MAIN/SERVICE LINE

Drainage Layout

27th St N

Sta 106+00 to Sta 110+00

Roadway Reconstruction

Mandan, ND

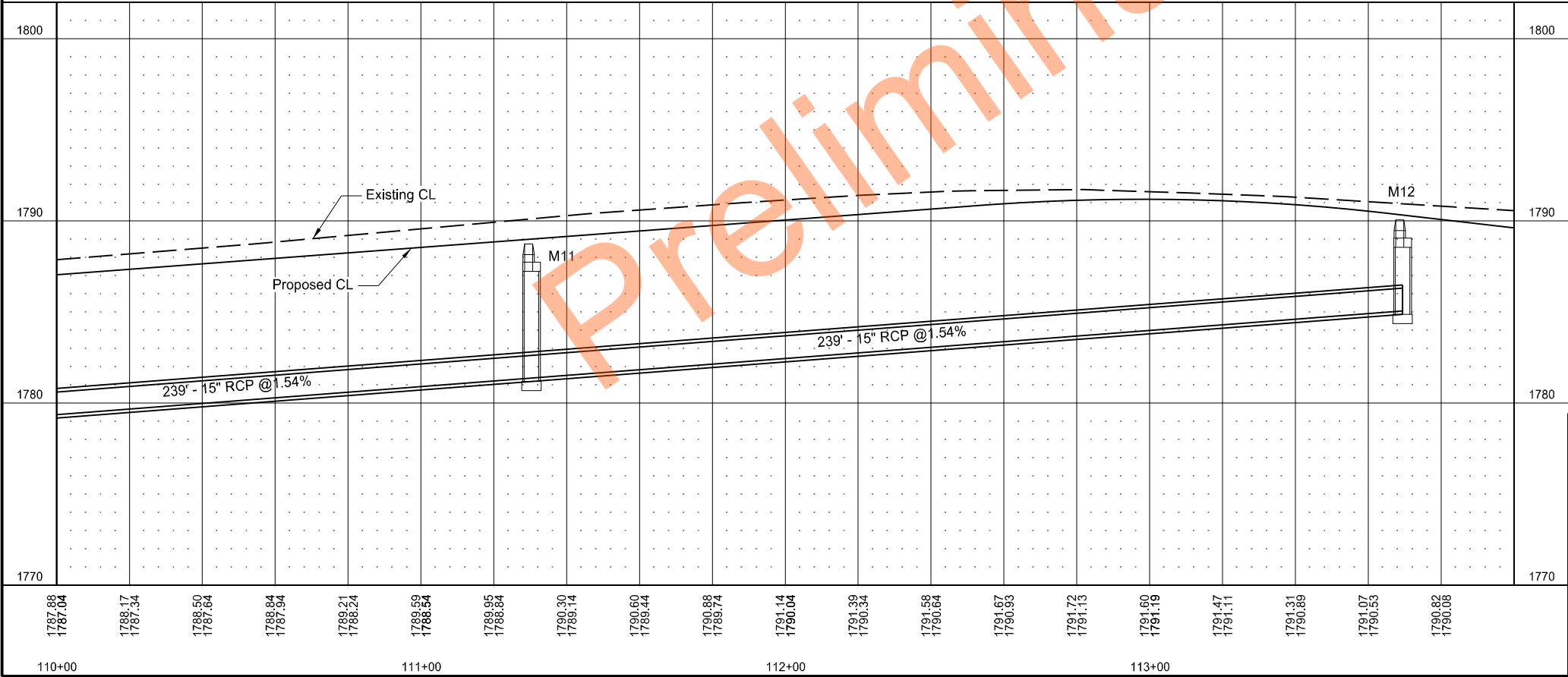
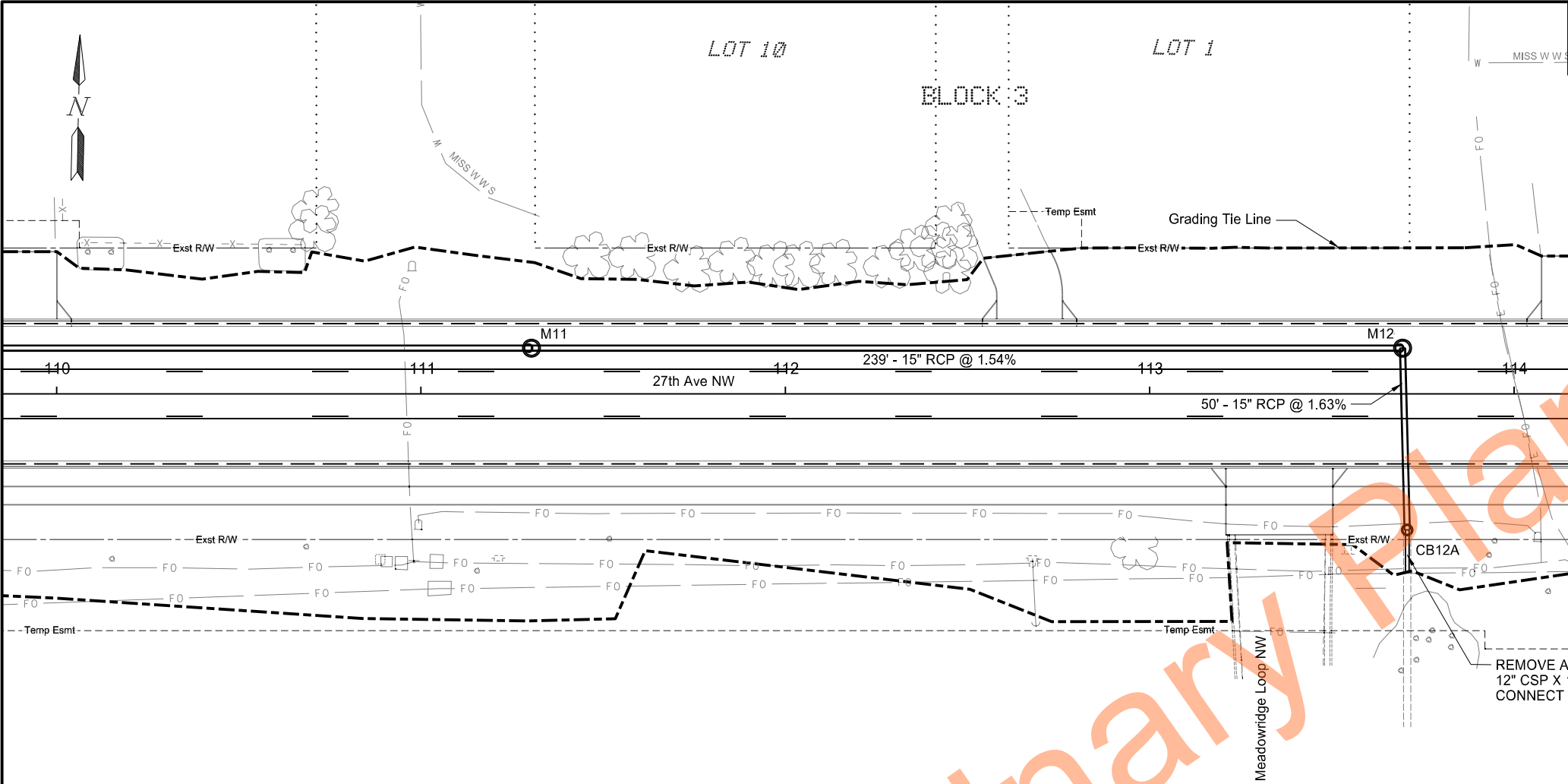
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AMY J. SCHAAF

PE-40939

DATE 08/06/2026

NORTH DAKOTA



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	55	7

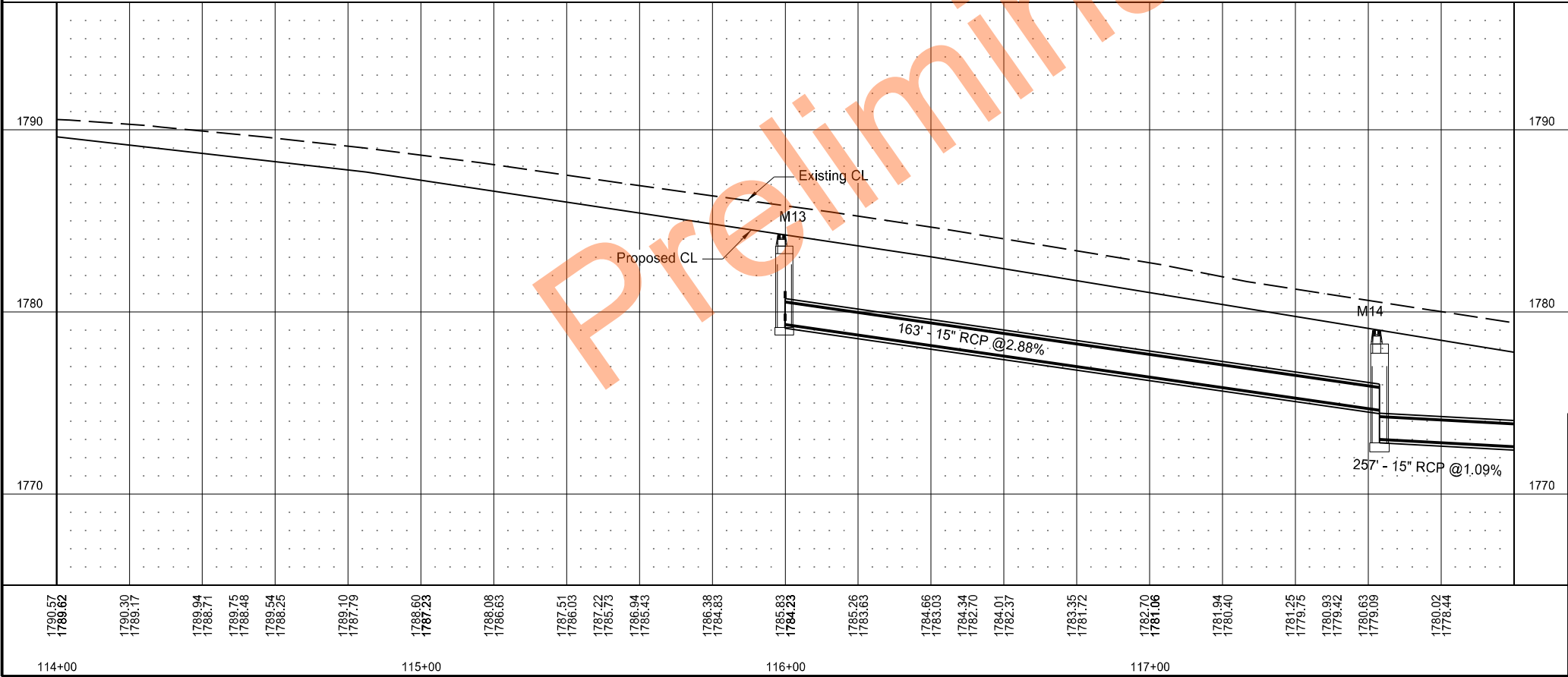
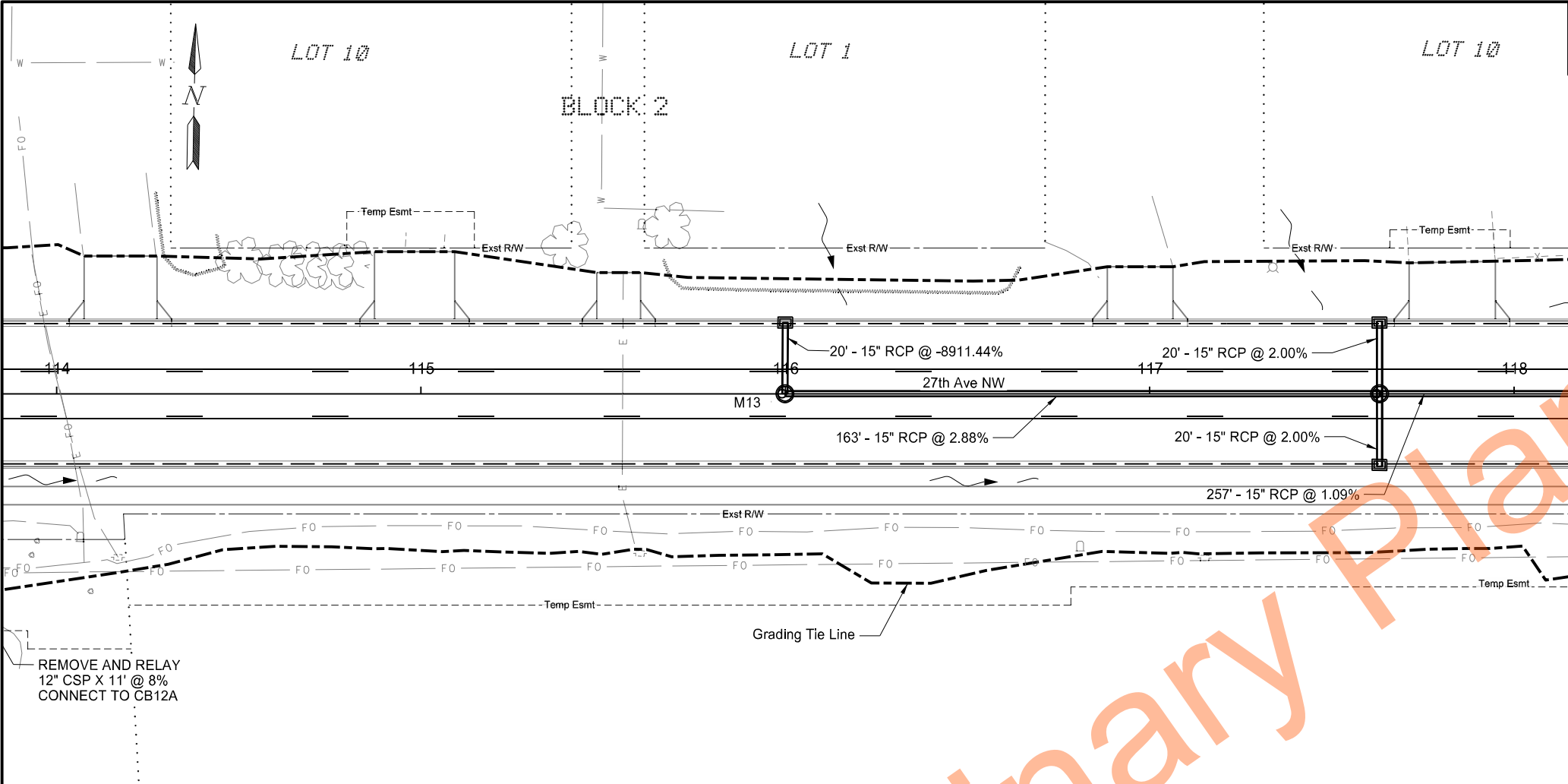
SPEC	CODE	PAY ITEM	QTY	UNIT
714	215	PIPE CONC REINF 15IN CL III-STORM DRAIN		
		CB12A - M12	50	LF
		M11 - M10	239	LF
		M12 - M11	239	LF
722	100	MANHOLE 48IN		
		M11	1	EA
		M12	1	EA
722	1100	MANHOLE RISER 48IN		
		M11	6.1	LF
		M12	3.8	LF
722	4000	INLET CATCH BASIN-TYPE A		
		CB12A	1.0	EA

LEGEND

ABANDON WATER MAIN/SERVICE LINE

Drainage Layout
27th St N
Sta 110+00 to Sta 114+00
Roadway Reconstruction
Mandan, ND





STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	55	8

SPEC	CODE	PAY ITEM	QTY	UNIT
714	215	PIPE CONC REINF 15IN CL III-STORM DRAIN		
		CB13A - M13	20	LF
		CB14A - M14	20	LF
		CB14B - M14	20	LF
		M13 - M14	163	LF
722	100	MANHOLE 48IN		
		M13	1	EA
		M14	1	EA
722	1100	MANHOLE RISER 48IN		
		M13	3.7	LF
		M14	4.3	LF
722	3510	INLET-TYPE 2		
		CB13A	1	EA
		CB14A	1	EA
		CB14B	1	EA

LEGEND

ABANDON WATER MAIN/SERVICE LINE

Drainage Layout
27th St N
Sta 114+00 to Sta 118+00
Roadway Reconstruction
Mandan, ND

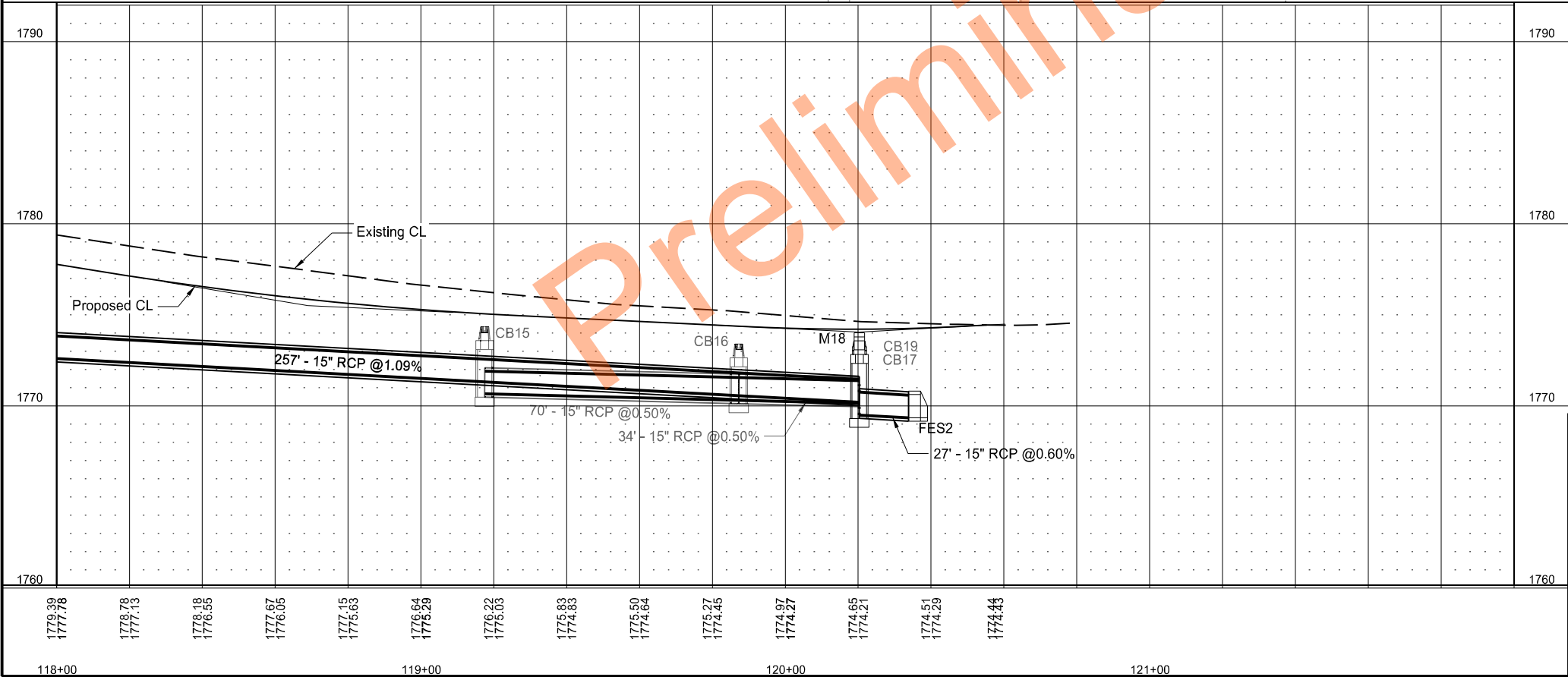
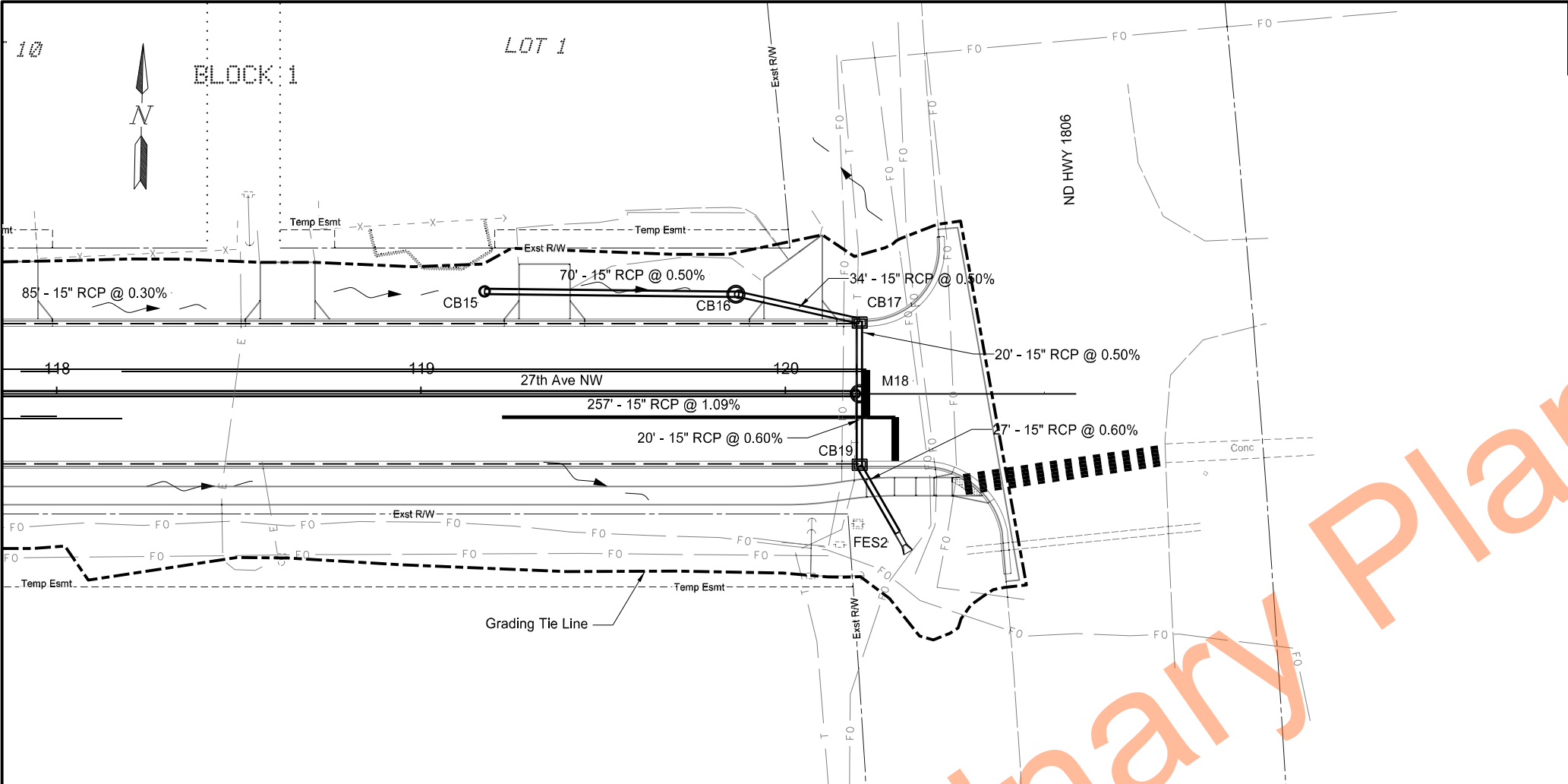
REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

DATE 08/06/2026

NORTH DAKOTA



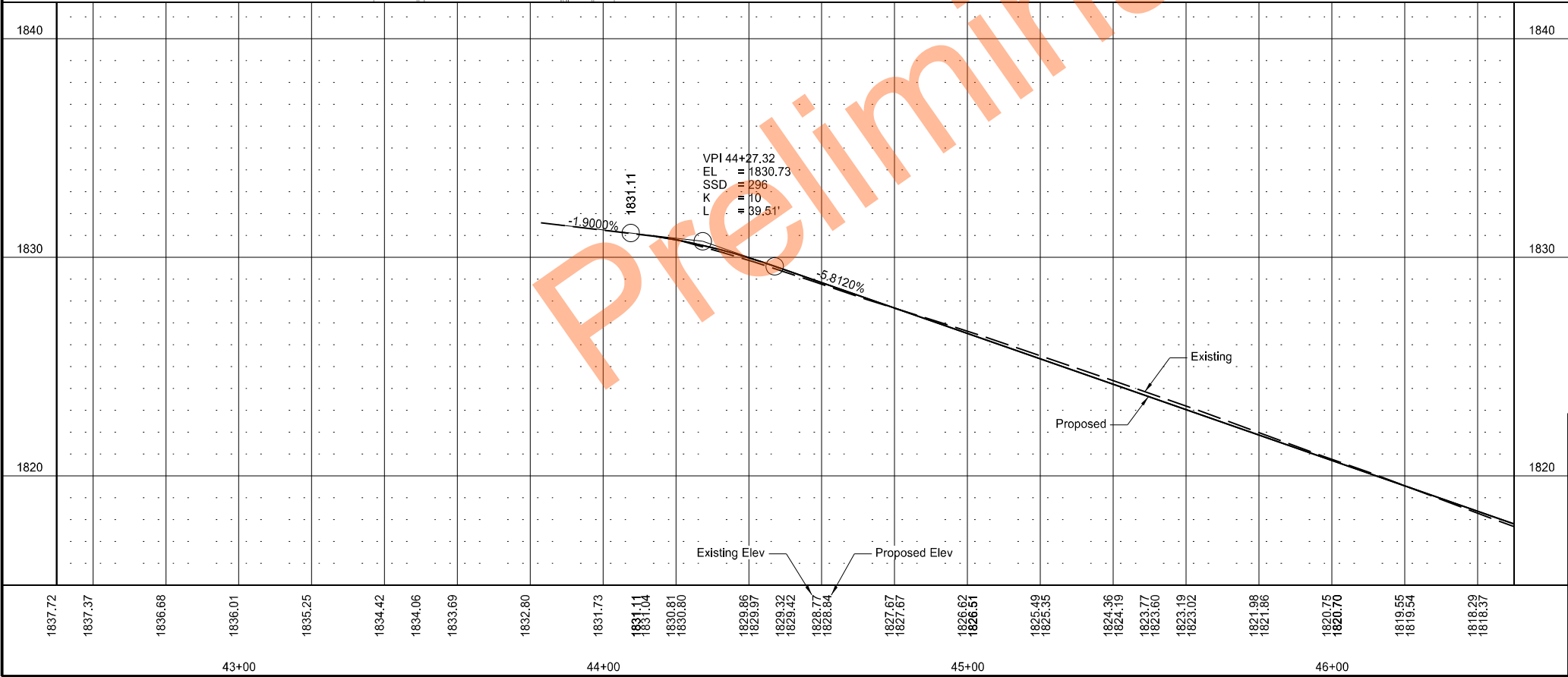
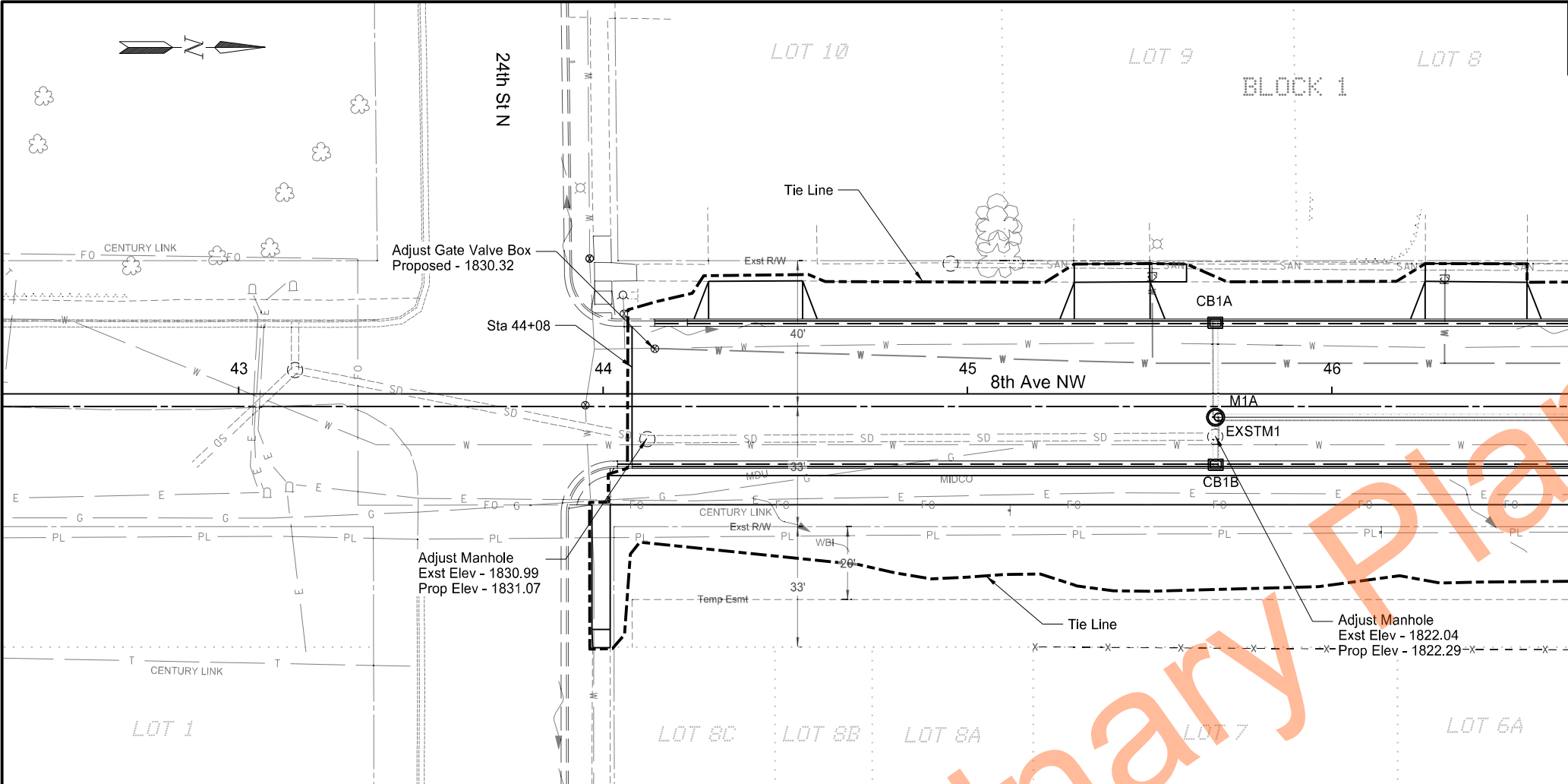
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	55	9

SPEC	CODE	PAY ITEM	QTY	UNIT
714	215	PIPE CONC REINF 15IN CL III-STORM DRAIN		
		CB15 - CB16	70	LF
		CB16 - CB17	34	LF
		CB17 - M18	20	LF
		CB19 - FES2	27	LF
		M14 - M18	257	LF
		M18 - CB19	20	LF
714	3005	END SECT-CONC REINF 15IN		
		FES2	1	EA
722	100	MANHOLE 48IN		
		M18 CL	1	EA
722	1100	MANHOLE RISER 48IN		
		M18 CL	2.8	LF
722	3701	INLET SPECIAL-TYPE 2 48IN		
		CB17	1	EA
		CB19	1	EA
722	3740	INLET SPECIAL CATCH BASIN-TYPE A 48IN		
		CB16	1	EA

LEGEND

— ABANDON WATER MAIN/SERVICE LINE

Drainage Layout
27th St NW
Sta 118+00 to Sta 120+60
Roadway Reconstruction
Mandan, ND



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	60	1

TAU-1-988(053)

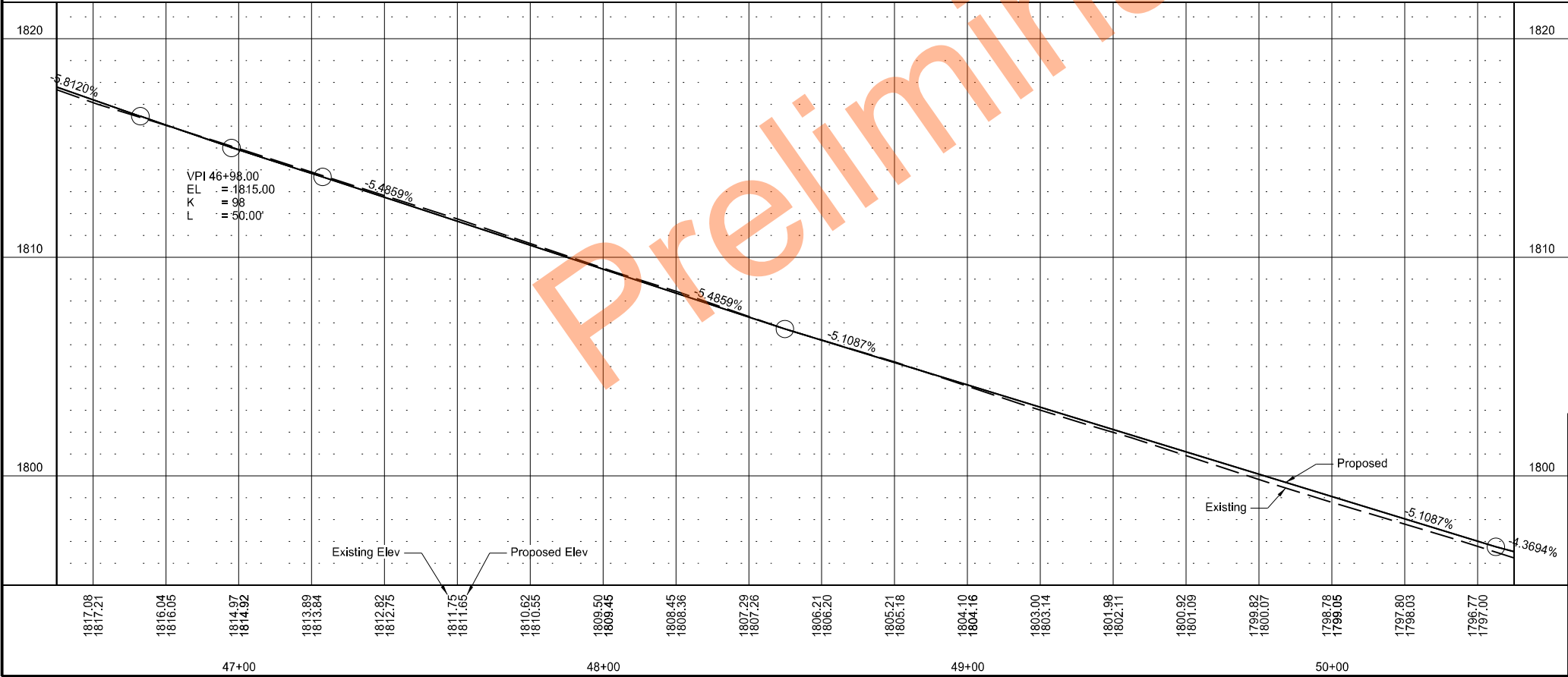
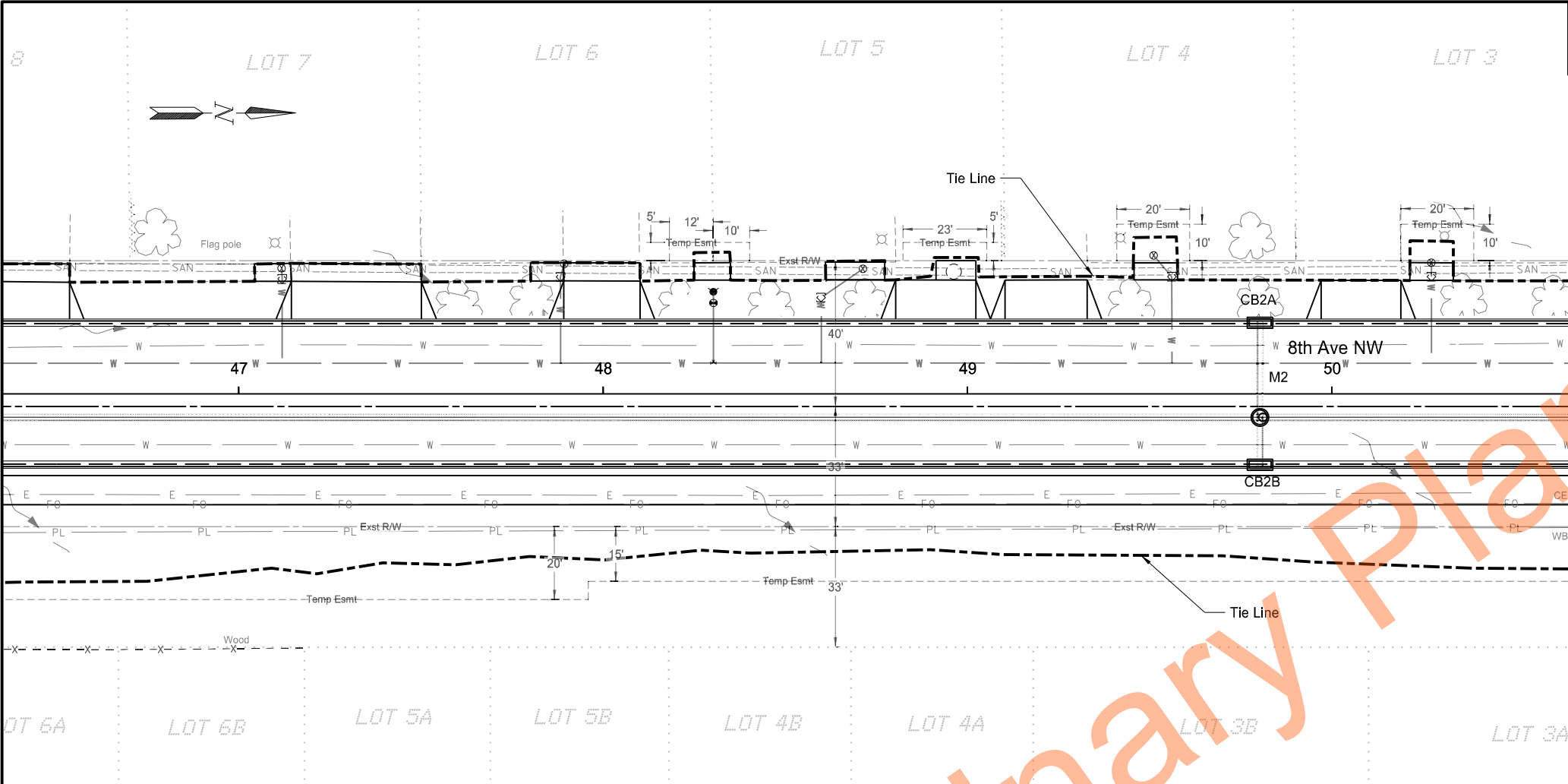
SPEC	CODE	PAY ITEM	QTY	UNIT
714	9696	EDGEDRAIN NON PERMEABLE BASE		
		STA 44+04 TO 46+50 Rt	246	LF
		STA 44+14 TO 46+50 Lt	236	LF
722	6140	ADJUST GATE VALVE BOX		
		STA 44+14 Lt	1	EA
722	6200	ADJUST MANHOLE		
		STA 44+12 Rt	1	EA
		STA 45+68 Rt	1	EA

LEGEND

----- EDGEDRAIN NON PERMEABLE BASE

Plan & Profile
8th Ave NW
Sta 44+04 to Sta 46+50
Roadway Reconstruction
Mandan, ND





STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	60	2

TAU-1-988(053)			
SPEC	CODE	PAY ITEM	QTY UNIT
714	9696	EDGEDRAIN NON PERMEABLE BASE	
		STA 46+50 TO 50+50 Lt	400 LF
		STA 46+50 TO 50+50 Rt	400 LF

LEGEND

----- EDGEDRAIN NON PERMEABLE BASE

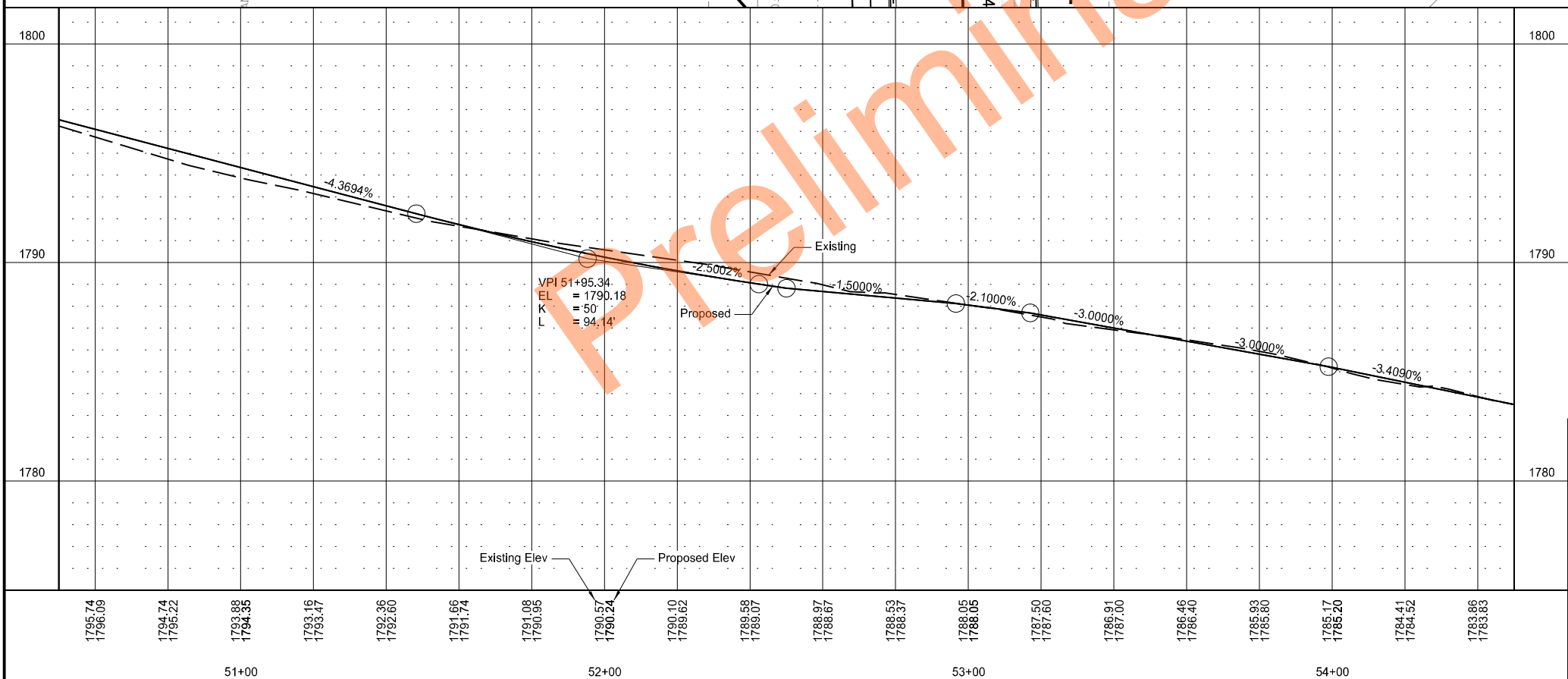
Plan & Profile
8th Ave NW
Sta 46+50 to Sta 50+50
Roadway Reconstruction
Mandan, ND



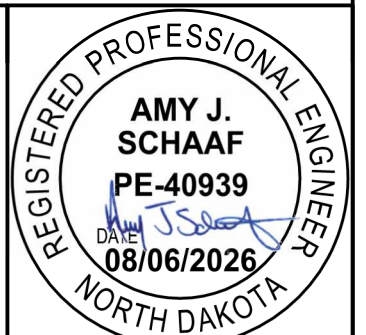
TAU-1-988(053)				
SPEC	CODE	PAY ITEM		QTY UNIT
714	9696	EDGEDRAIN NON PERMEABLE BASE		
		STA 50+50 TO 52+60	Lt	210 LF
		STA 50+50 TO 52+64	Rt	214 LF

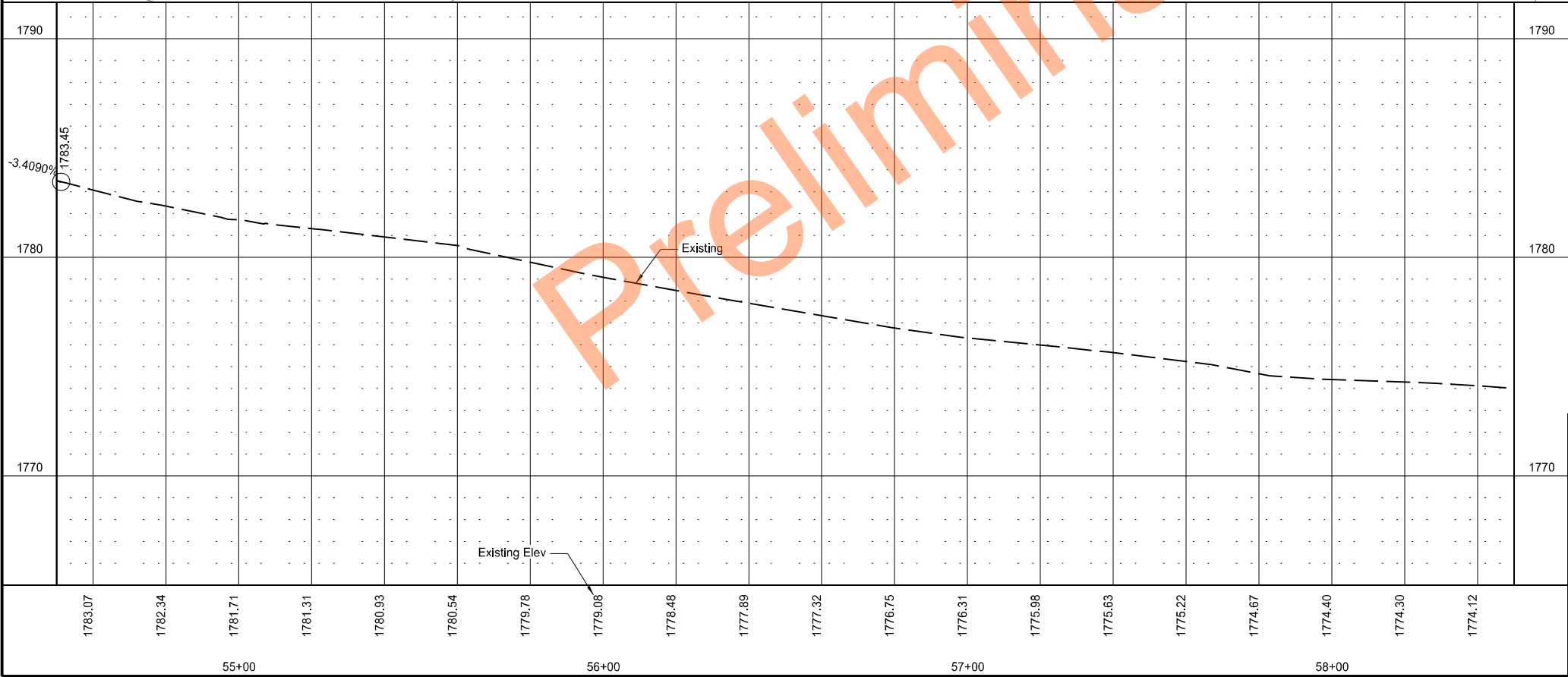
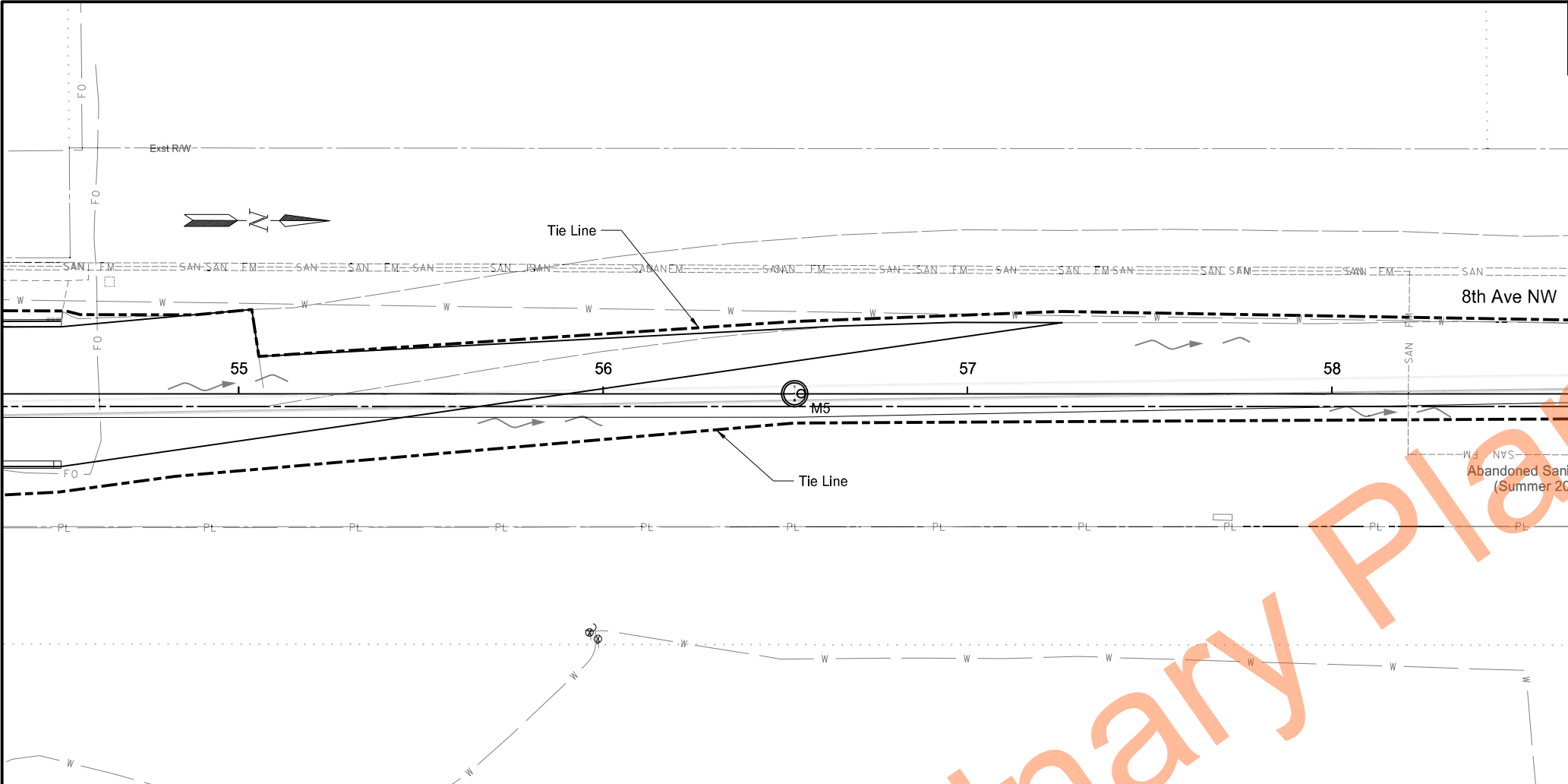
LEGEND

--- EDGEDRAIN NON PERMEABLE BASE



Plan & Profile
8th Ave NW
Sta 50+50 to Sta 54+50
Roadway Reconstruction
Mandan, ND





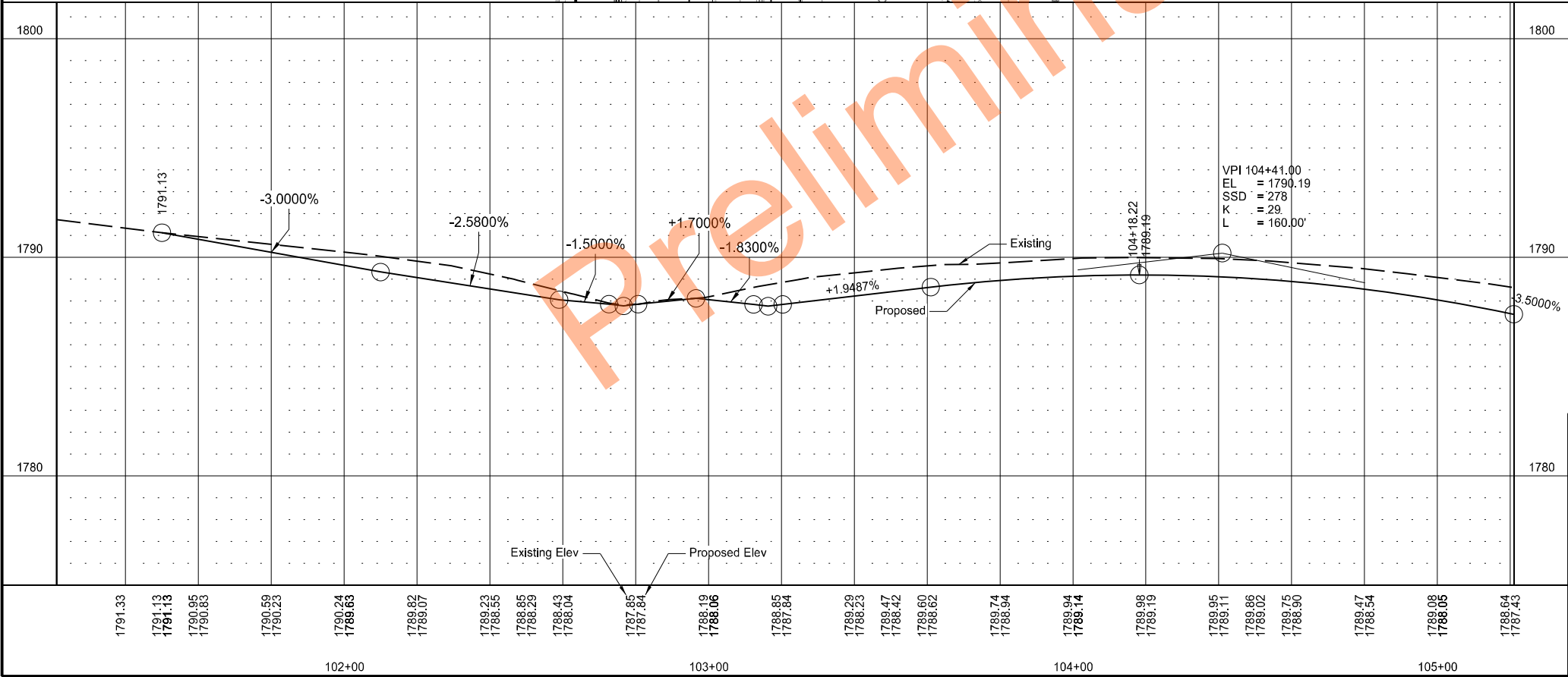
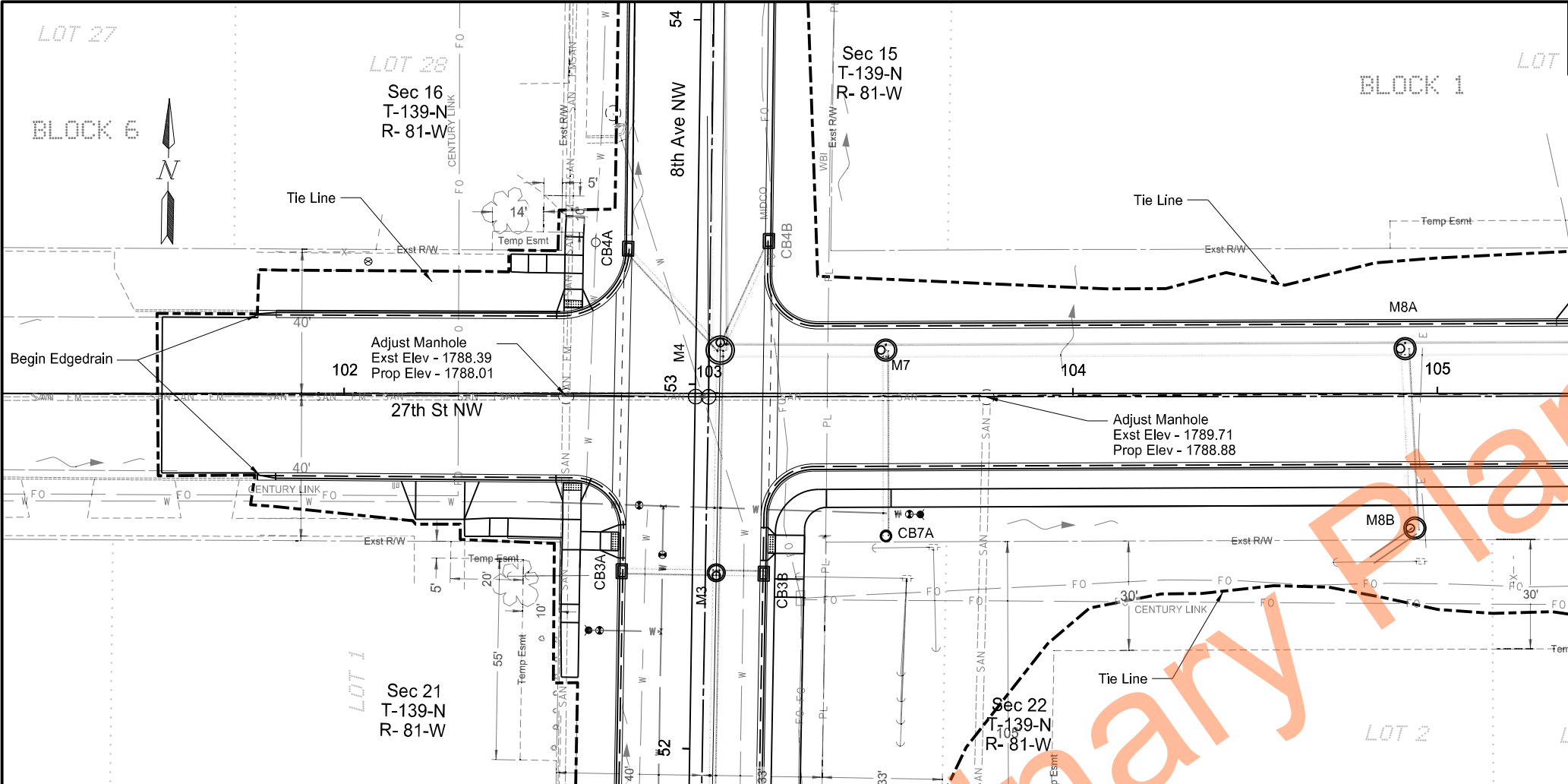
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	60	4

LEGEND

----- EDGEDRAIN NON PERMEABLE BASE

Plan & Profile
8th Ave NW
Sta 54+50 to Sta 58+50
Roadway Reconstruction
Mandan, ND





STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	60	5

SPEC	CODE	PAY ITEM	QTY	UNIT
714	9696	EDGEDRAIN NON PERMEABLE BASE		
		STA 101+76 TO 102+78 Lt	112	LF
		STA 101+77 TO 102+77 Rt	108	LF
		STA 103+15 TO 105+25 Rt	214	LF
		STA 103+17 TO 105+25 Lt	222	LF
722	6200	ADJUST MANHOLE		
		STA 102+61 CL	1	EA
		STA 103+76 CL	1	EA

LEGEND

----- EDGEDRAIN NON PERMEABLE BASE

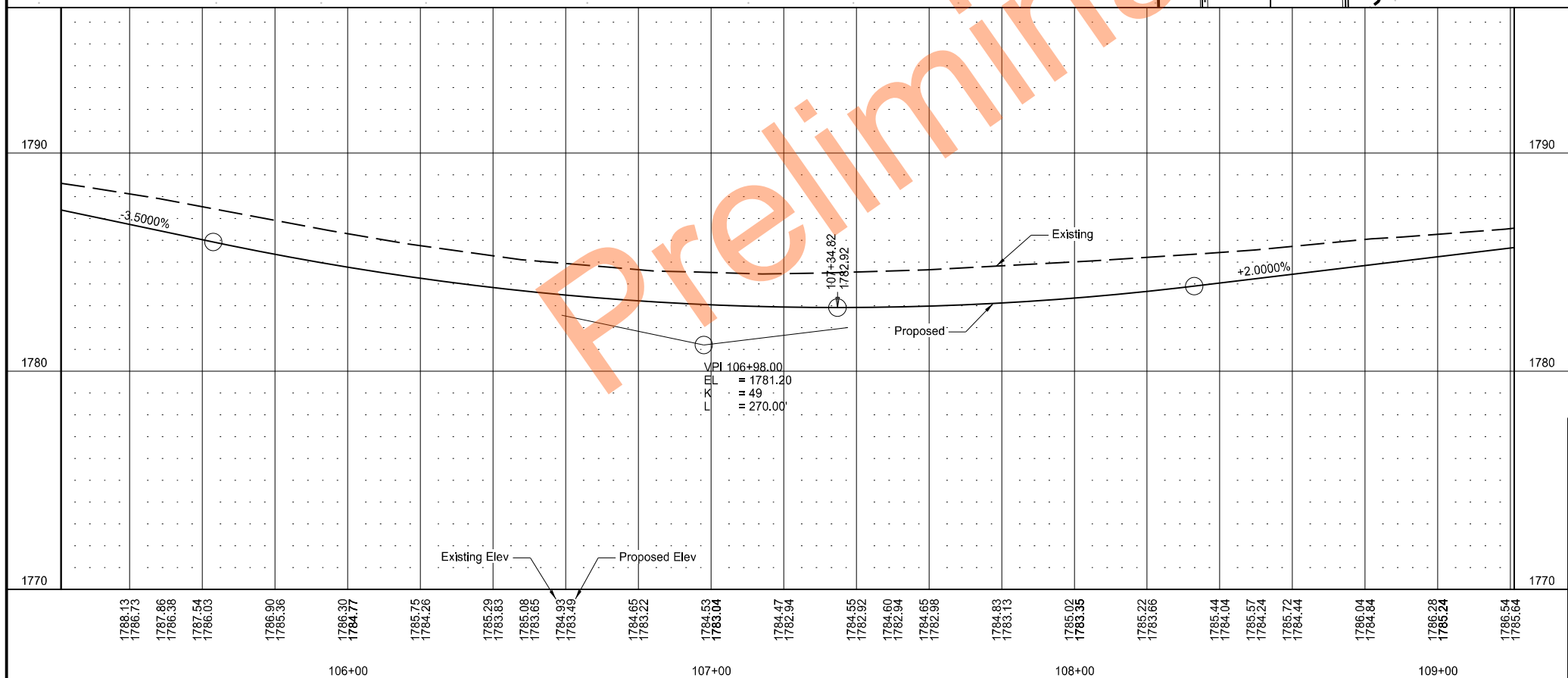
Plan & Profile
27th St NW
Sta 101+50 to Sta 105+25
Roadway Reconstruction
Mandan, ND



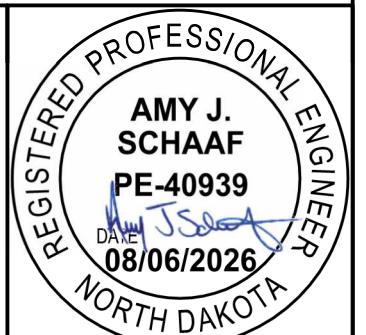
SPEC	CODE	PAY ITEM	QTY	UNIT
714	9696	EDGEDRAIN NON PERMEABLE BASE		
		STA 105+25 TO 108+21 Rt	300	LF
		STA 105+25 TO 109+25 Lt	400	LF
		STA 108+87 TO 109+25 Rt	38	LF

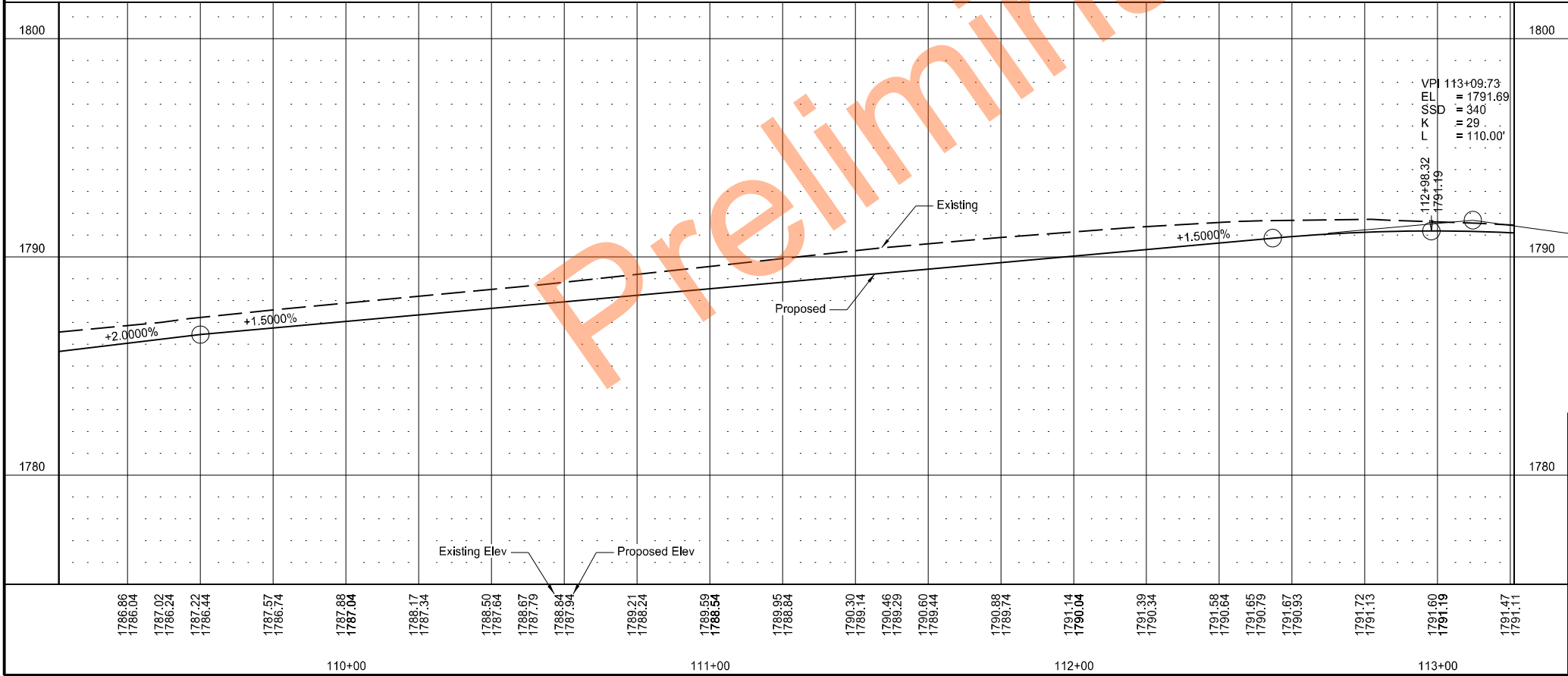
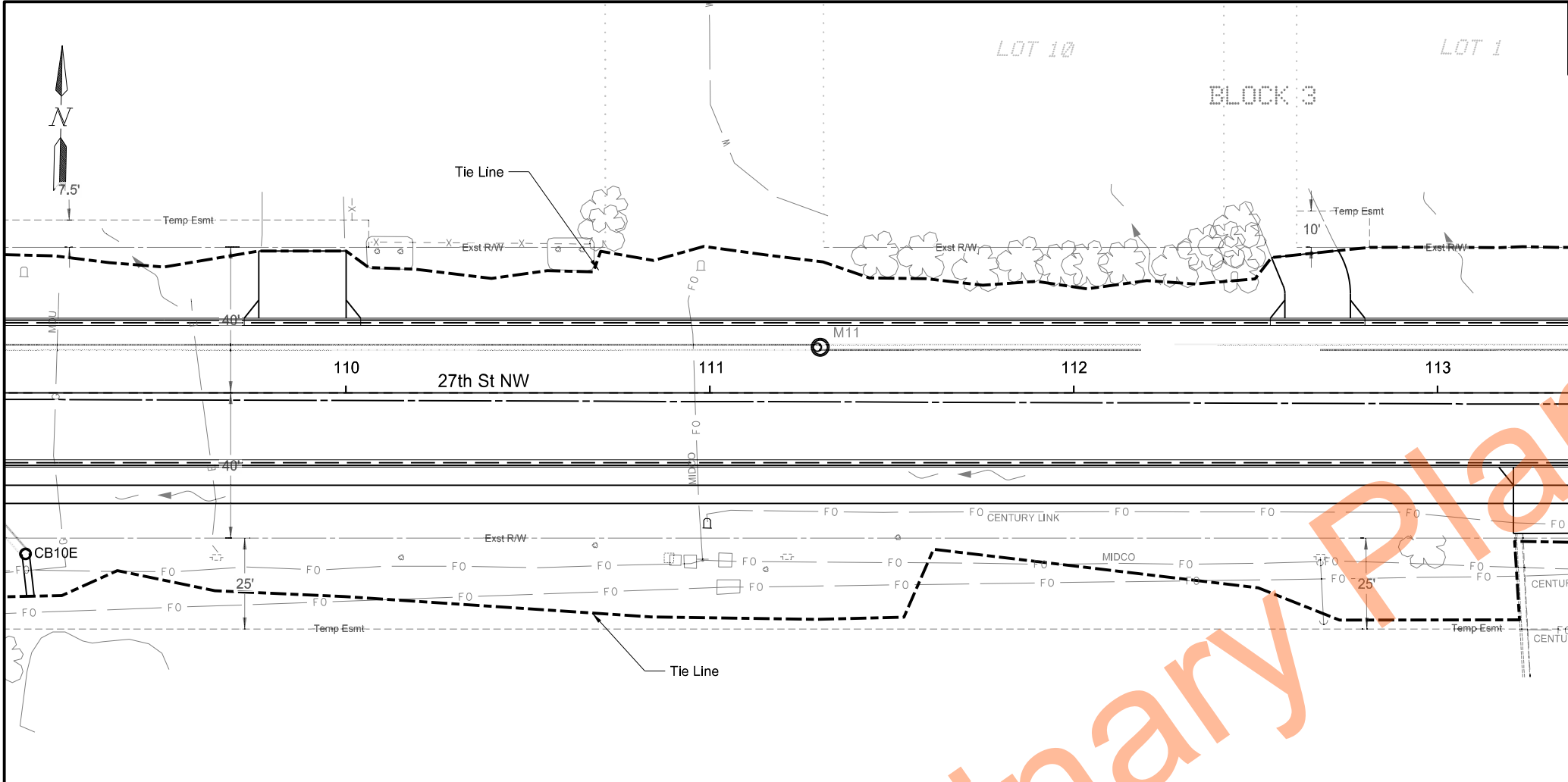
LEGEND

--- EDGEDRAIN NON PERMEABLE BASE



Plan & Profile
27th St NW
Sta 105+25 to Sta 109+25
Roadway Reconstruction
Mandan, ND





STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	60	7

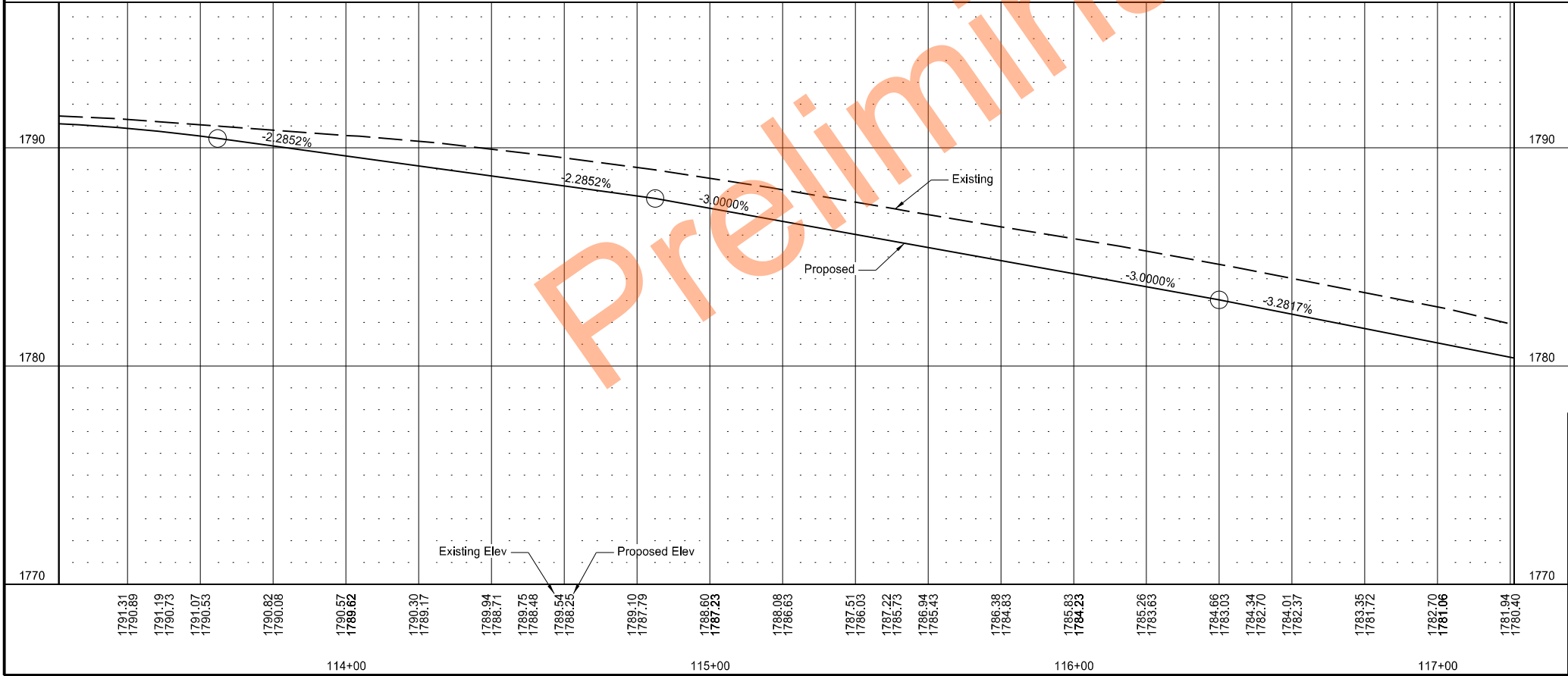
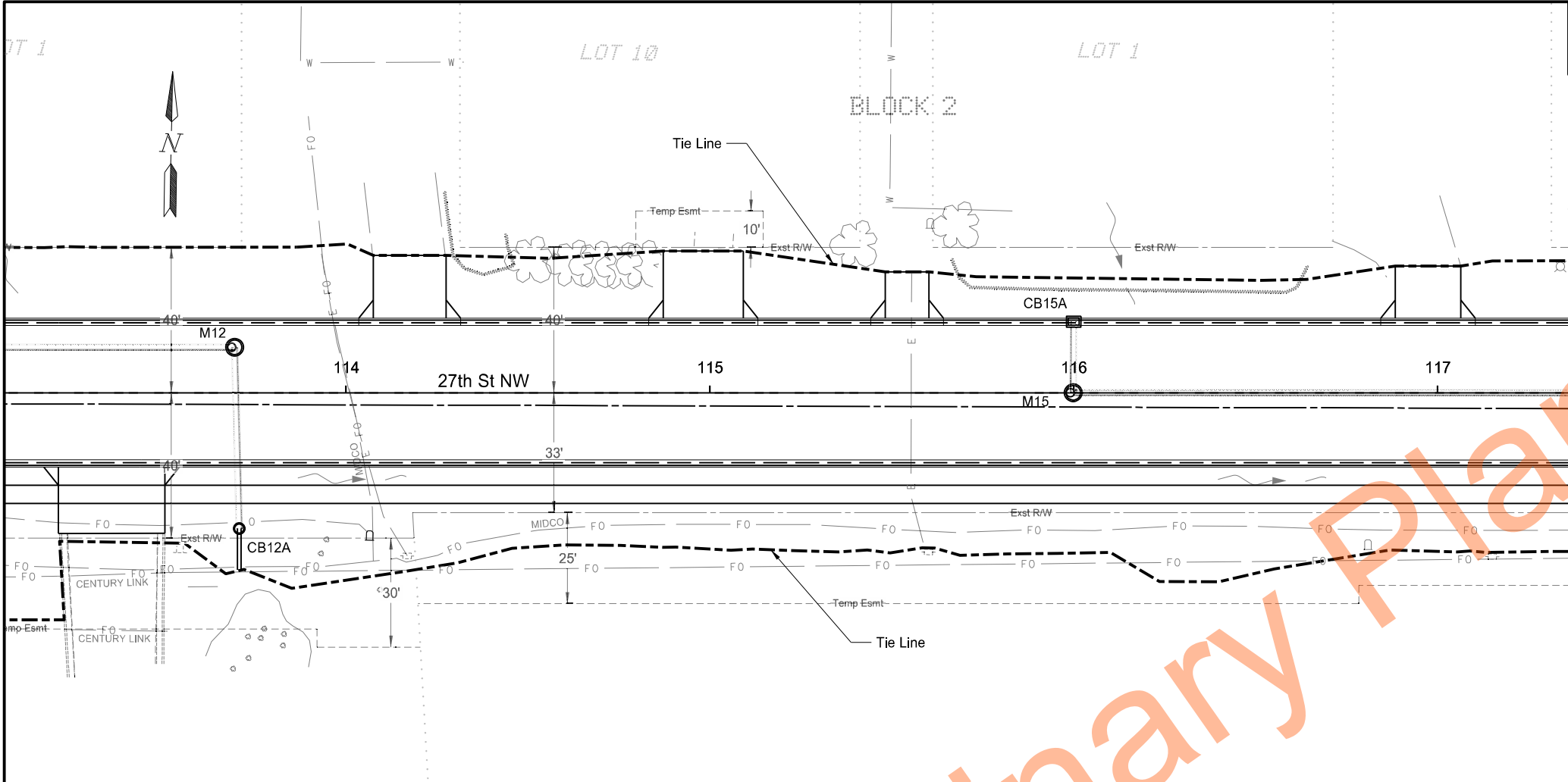
SPEC	CODE	PAY ITEM	QTY	UNIT
714	9696	EDGEDRAIN NON PERMEABLE BASE		
		STA 109+25 TO 113+25 Rt	400	LF
		STA 109+25 TO 113+25 Lt	400	LF

LEGEND

----- EDGEDRAIN NON PERMEABLE BASE

Plan & Profile
27th St NW
Sta 109+25 to Sta 113+25
Roadway Reconstruction
Mandan, ND





STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	60	8

SPEC	CODE	PAY ITEM	QTY	UNIT
714	9696	EDGEDRAIN NON PERMEABLE BASE		
		STA 113+25 TO 117+25 Rt	400	LF
		STA 113+25 TO 117+25 Lt	400	LF

LEGEND

----- EDGEDRAIN NON PERMEABLE BASE

Plan & Profile

27th St NW

Sta 113+25 to Sta 117+25

Roadway Reconstruction

Mandan, ND

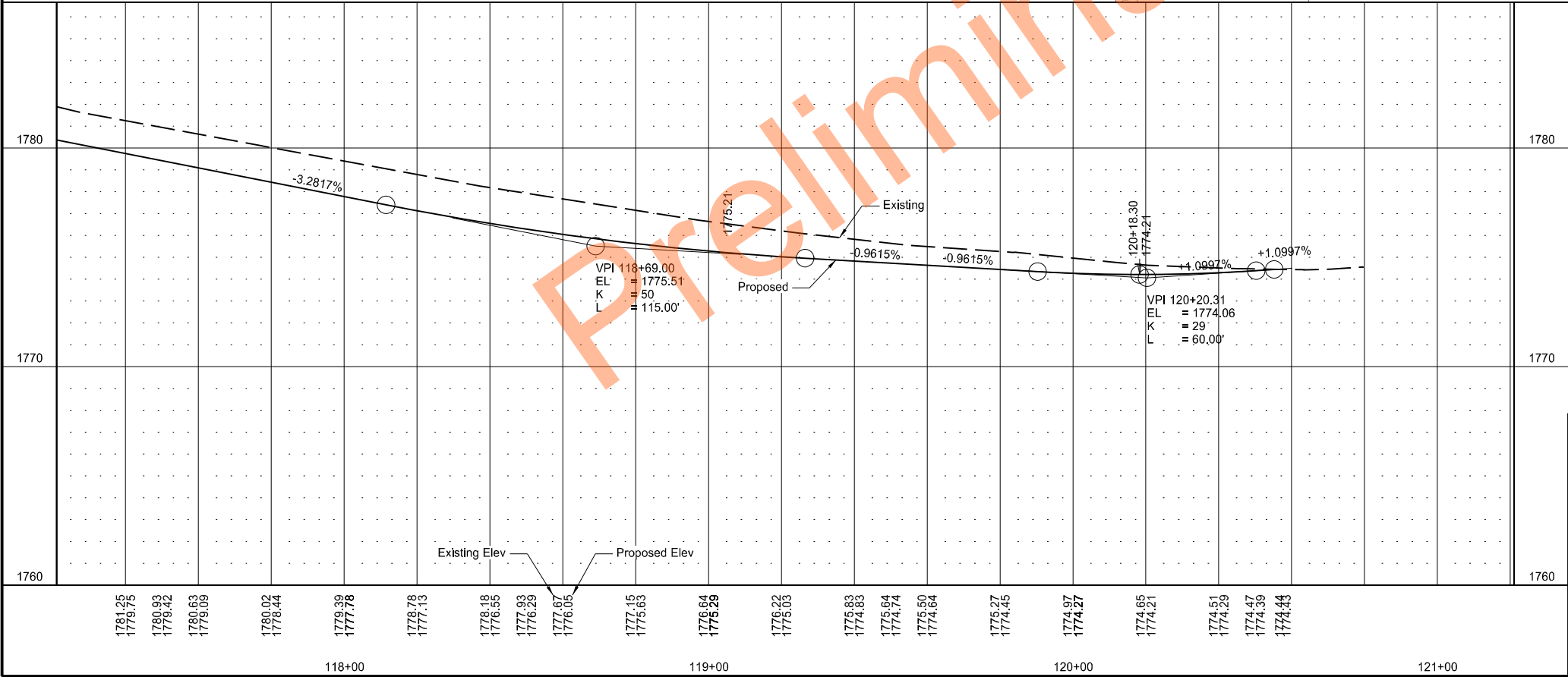
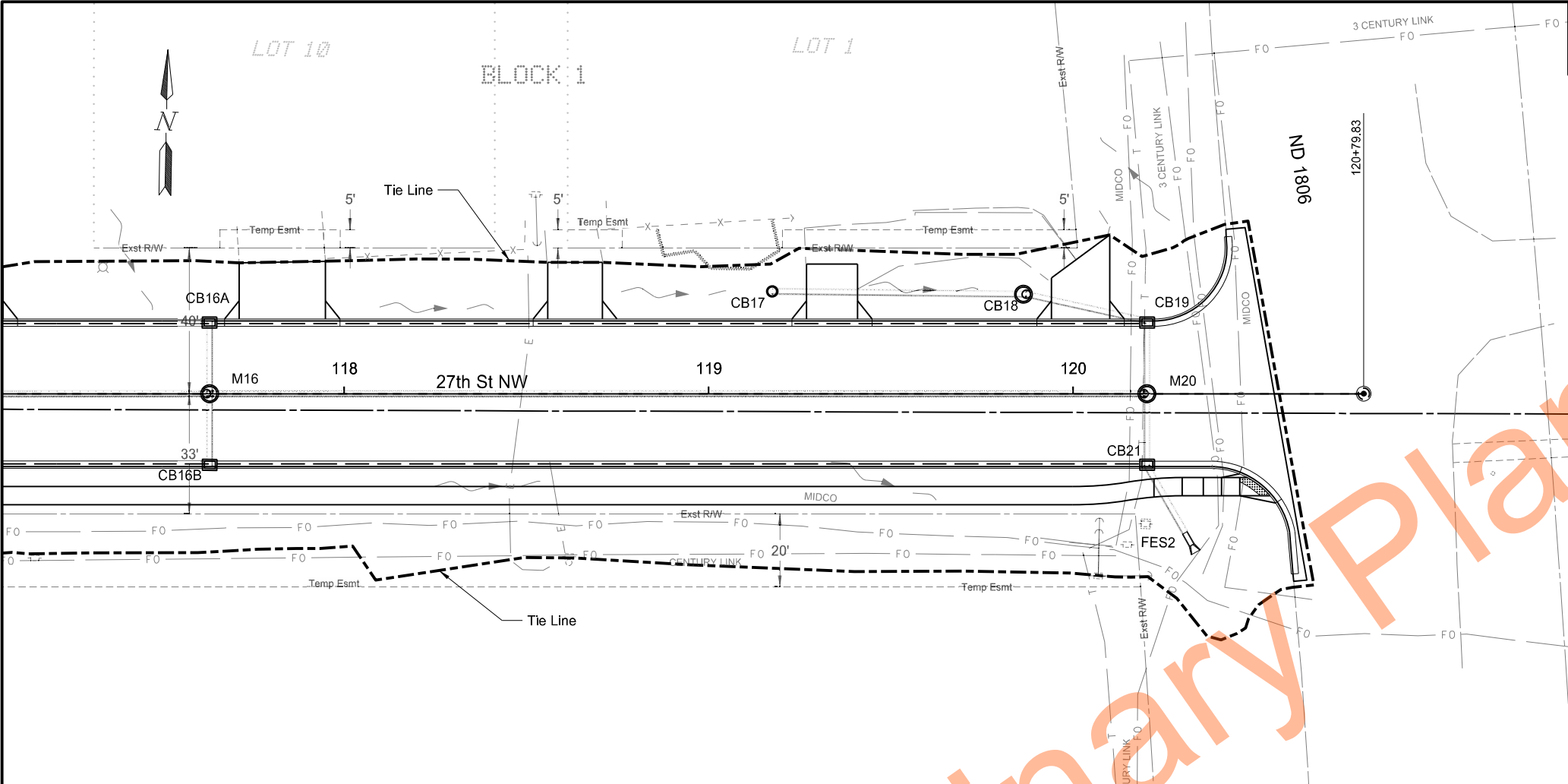
REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

DATE 08/06/2026

NORTH DAKOTA



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	60	9

SPEC	CODE	PAY ITEM	QTY	UNIT
714	9696	EDGEDRAIN NON PERMEABLE BASE		
		STA 117+25 TO 120+20 Rt	295	LF
		STA 117+25 TO 120+20 Lt	295	LF

LEGEND

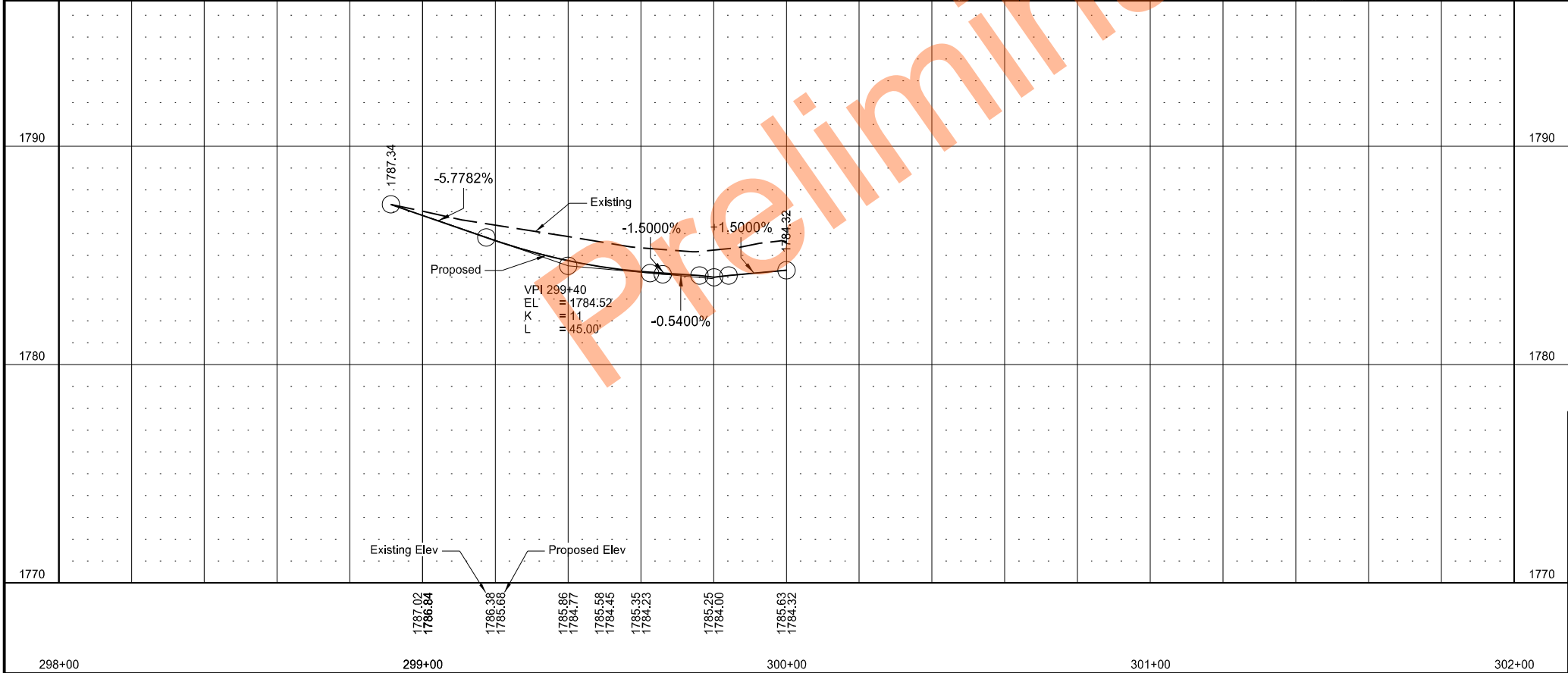
----- EDGEDRAIN NON PERMEABLE BASE

Plan & Profile
27th St NW
Sta 117+25 to Sta 120+55
Roadway Reconstruction
Mandan, ND



SPEC	CODE	PAY ITEM	QTY	UNIT
714	9696	EDGEDRAIN NON PERMEABLE BASE		
		STA 298+91 TO 299+81 Rt	93	LF
		STA 298+91 TO 299+81 Lt	93	LF

----- EDGEDRAIN NON PERMEABLE BASE



REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

DATE *J. SchAAF*

08/06/2026

NORTH DAKOTA

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	76	1

TAU-1-988(053)

SPEC	CODE	PAY ITEM	QTY	UNIT
253	201	HYDRAULIC MULCH		ACRE
		STA 43+96 TO 43+97	Rt	0.001 ACRE
		STA 44+02 TO 51+96	Rt	0.760 ACRE
		STA 44+07 TO 44+29	Lt	0.004 ACRE
		STA 44+55 TO 45+29	Lt	0.019 ACRE
		STA 45+50 TO 46+22	Lt	0.018 ACRE
		STA 46+54 TO 47+12	Lt	0.014 ACRE
		STA 47+50 TO 47+89	Lt	0.010 ACRE
		STA 48+10 TO 48+80	Lt	0.018 ACRE
		STA 48+25 TO 48+35	Lt	0.001 ACRE
		STA 49+02 TO 49+10	Lt	0.002 ACRE
		STA 49+33 TO 49+97	Lt	0.016 ACRE
		STA 49+46 TO 49+58	Lt	0.002 ACRE
		STA 50+19 TO 50+86	Lt	0.016 ACRE
		STA 50+21 TO 50+33	Lt	0.002 ACRE
		STA 51+07 TO 51+75	Lt	0.017 ACRE
		STA 51+12 TO 51+24	Lt	0.002 ACRE
261	120	FIBER ROLLS 20IN		LF
		STA 44+50 TO 45+30	Rt	95 LF
		STA 45+30 TO 46+10	Rt	95 LF
		STA 46+10 TO 46+90	Rt	95 LF
		STA 46+90 TO 47+70	Rt	95 LF
		STA 47+70 TO 48+44	Rt	87 LF
		STA 48+50 TO 49+24	Rt	87 LF
		STA 49+30 TO 50+04	Rt	87 LF
		STA 50+10 TO 50+84	Rt	87 LF
		STA 50+90 TO 51+64	Rt	87 LF
		STA 51+70 TO 51+75	Rt	5 LF
261	121	REMOVE FIBER ROLLS 20IN		LF
		STA 44+50 TO 45+30	Rt	95 LF
		STA 45+30 TO 46+10	Rt	95 LF
		STA 46+10 TO 46+90	Rt	95 LF
		STA 46+90 TO 47+70	Rt	95 LF
		STA 47+70 TO 48+44	Rt	87 LF
		STA 48+50 TO 49+24	Rt	87 LF
		STA 49+30 TO 50+04	Rt	87 LF
		STA 50+10 TO 50+84	Rt	87 LF
		STA 50+90 TO 51+64	Rt	87 LF
		STA 51+70 TO 51+75	Rt	5 LF

LEGEND

HYDRAULIC MULCH

FIBER ROLLS 12IN

FIBER ROLLS 20IN

FLOW DIRECTION

Temporary Erosion Control

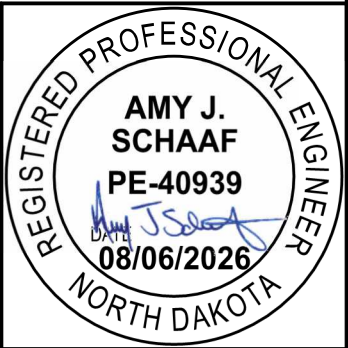
8th Ave NW

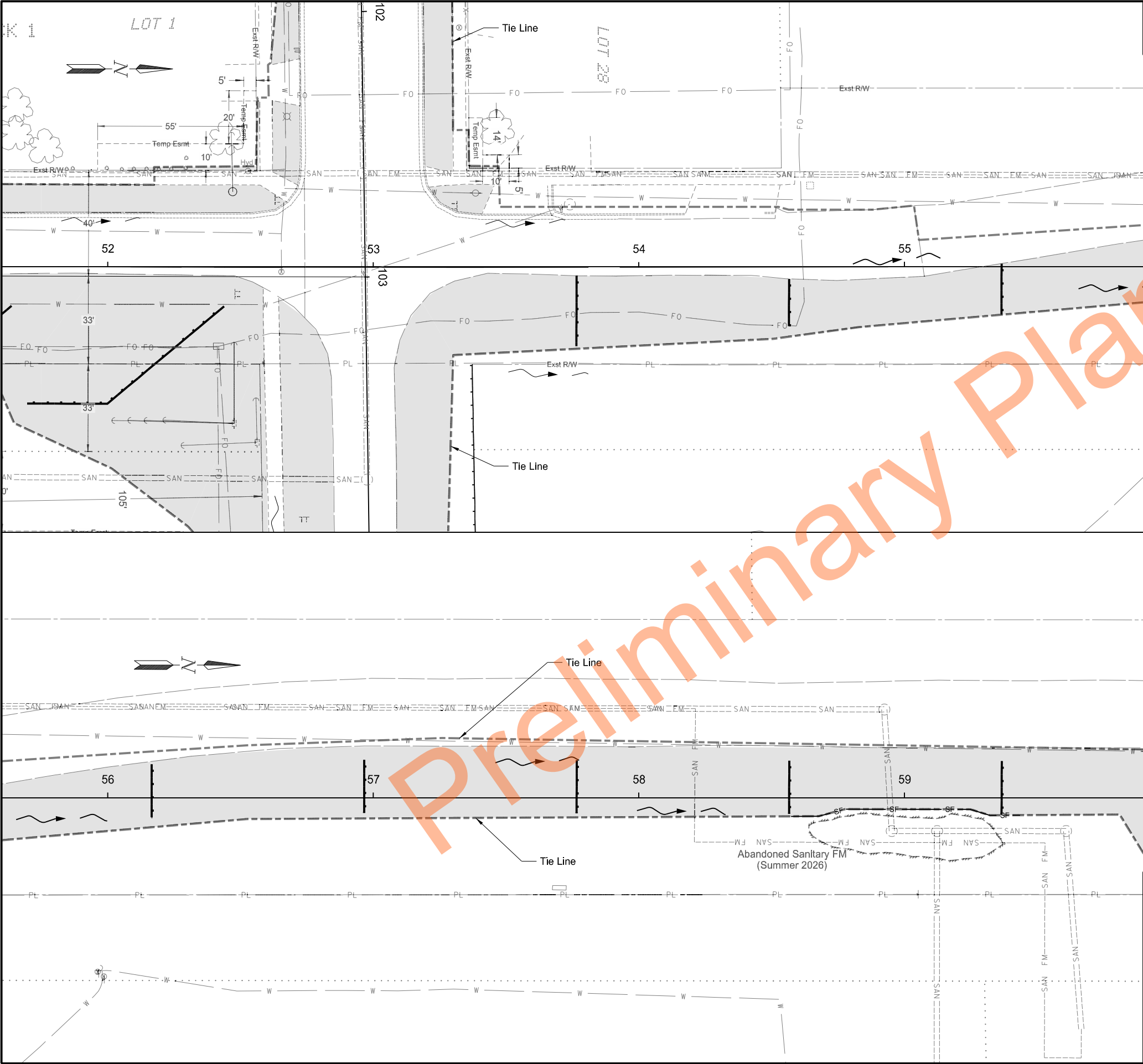
Sta 44+08 to Sta 51+75

Roadway Reconstruction

Mandan, ND







	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	76	2

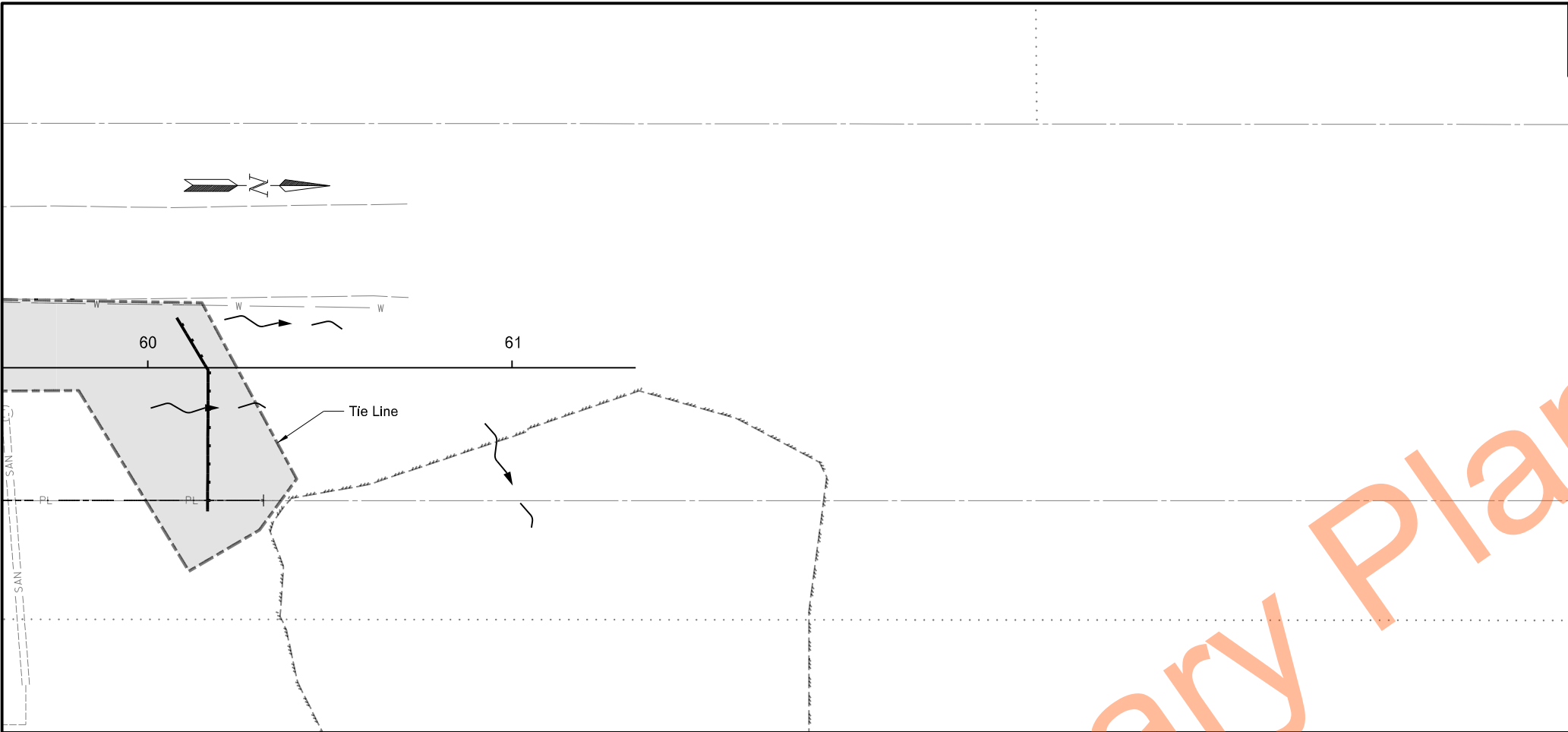
SPEC	CODE	PAY ITEM	QTY	UNIT
253	201	HYDRAULIC MULCH		ACRE
		STA 51+75 TO 52+59	Rt	0.130 ACRE
		STA 51+75 TO 52+67	Lt	0.022 ACRE
		STA 53+18 TO 59+75	Rt	0.368 ACRE
260	300	SILT FENCE		LF
		STA 58+57 TO 59+44	Rt	87 LF
260	301	REMOVE SILT FENCE		LF
		STA 58+57 TO 59+44	Rt	87 LF
261	120	FIBER ROLLS 20IN		LF
		STA 51+75 TO 52+44	Rt	82 LF
		STA 53+77 TO 53+76	Rt	27 LF
		STA 54+57 TO 54+56	Rt	18 LF
		STA 55+37 TO 55+36	Lt	19 LF
		STA 56+17	Lt	20 LF
		STA 56+97	Lt	20 LF
		STA 57+77	Lt	20 LF
		STA 58+57	Lt	20 LF
		STA 59+37	Lt	20 LF
261	121	REMOVE FIBER ROLLS 20IN		LF
		STA 51+75 TO 52+44	Rt	82 LF
		STA 53+77 TO 53+76	Rt	27 LF
		STA 54+57 TO 54+56	Rt	18 LF
		STA 55+37 TO 55+36	Lt	19 LF
		STA 56+17	Lt	20 LF
		STA 56+97	Lt	20 LF
		STA 57+77	Lt	20 LF
		STA 58+57	Lt	20 LF
		STA 59+37	Lt	20 LF

LEGEND

- HYDRAULIC MULCH
- FIBER ROLLS 12IN
- FIBER ROLLS 20IN
- FLOW DIRECTION

Temporary Erosion Control
8th Ave NW
Sta 51+75 to Sta 59+75
Roadway Reconstruction
Mandan, ND





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	76	3

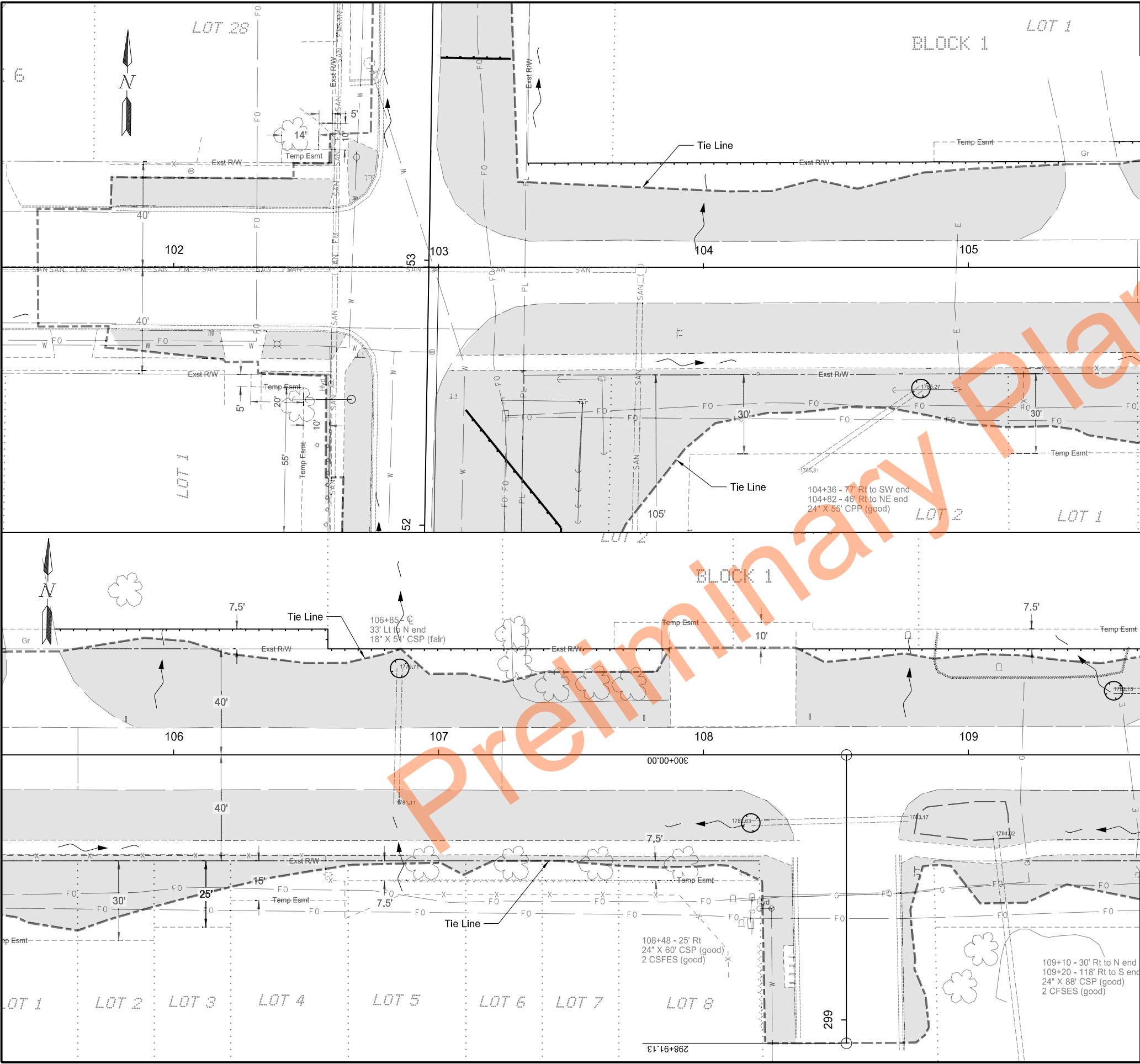
SPEC	CODE	PAY ITEM	QTY	UNIT
253	201	HYDRAULIC MULCH		ACRE
		STA 59+75 TO 60+44 Rt	0.069	ACRE
261	120	FIBER ROLLS 20IN		LF
		STA 60+08 TO 60+16 Lt	56	LF
261	121	REMOVE FIBER ROLLS 20IN		LF
		STA 60+08 TO 60+16 Lt	56	LF

LEGEND

-  HYDRAULIC MULCH
-  FIBER ROLLS 12IN
-  FIBER ROLLS 20IN
-  FLOW DIRECTION

Temporary Erosion Control
8th Ave NW
Sta 59+75 to Sta 61+33
Roadway Reconstruction
Mandan, ND





STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	76	4

SPEC	CODE	PAY ITEM	QTY	UNIT
253	201	HYDRAULIC MULCH		ACRE
		STA 101+76 TO 102+20 Rt	0.009	ACRE
		STA 101+76 TO 102+60 Lt	0.020	ACRE
		STA 102+33 TO 102+65 Rt	0.007	ACRE
		STA 102+33 TO 102+60 Lt	0.003	ACRE
		STA 102+45 TO 102+61 Lt	0.001	ACRE
		STA 102+65 TO 102+77 Lt	0.005	ACRE
		STA 103+07 TO 108+34 Rt	0.223	ACRE
		STA 103+10 TO 105+37 Lt	0.110	ACRE
		STA 103+26 TO 108+35 Rt	0.167	ACRE
		STA 105+57 TO 107+88 Lt	0.118	ACRE
		STA 108+35 TO 109+50 Lt	0.065	ACRE
		STA 108+74 TO 109+50 Rt	0.034	ACRE
		STA 108+75 TO 109+50 Rt	0.028	ACRE
261	112	FIBER ROLLS 12IN		LF
		STA 105+37 TO 103+34 Lt	203	LF
		STA 107+87 TO 105+57 Lt	231	LF
		STA 104+82 Rt	15	LF
		STA 106+85 Lt	15	LF
		STA 108+18 Rt	15	LF
261	113	REMOVE FIBER ROLLS 12IN		LF
		STA 105+37 TO 103+34 Lt	203	LF
		STA 107+87 TO 105+57 Lt	231	LF
		STA 104+82 Rt	15	LF
		STA 106+85 Lt	15	LF
		STA 108+18 Rt	15	LF

LEGEND

- HYDRAULIC MULCH
- FIBER ROLLS 12IN
- FIBER ROLLS 20IN
- FLOW DIRECTION

Temporary Erosion Control
27th St NW
Sta 101+50 to Sta 109+50
Roadway Reconstruction
Mandan, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	76	5

SPEC	CODE	PAY ITEM	QTY	UNIT
253	201	HYDRAULIC MULCH		ACRE
		STA 109+50 TO 109+77 Lt	0.013	ACRE
		STA 109+50 TO 113+21 Rt	0.158	ACRE
		STA 109+50 TO 113+23 Rt	0.161	ACRE
		STA 109+99 TO 112+56 Lt	0.118	ACRE
		STA 112+73 TO 114+09 Lt	0.072	ACRE
		STA 113+50 TO 117+50 Rt	0.053	ACRE
		STA 113+55 TO 117+50 Rt	0.192	ACRE
		STA 114+28 TO 114+87 Lt	0.026	ACRE
		STA 115+09 TO 115+48 Lt	0.021	ACRE
		STA 115+60 TO 116+89 Lt	0.053	ACRE
		STA 117+06 TO 117+50 Lt	0.017	ACRE
261	112	FIBER ROLLS 12IN		LF
		STA 109+50 TO 108+35 Lt	115	LF
		STA 109+76 TO 109+50 Lt	26	LF
		STA 109+55 Lt	15	LF
		STA 113+71 Rt	15	LF
		STA 115+22 Lt	15	LF
		STA 117+32 Lt	15	LF
261	113	REMOVE FIBER ROLLS 12IN		LF
		STA 109+50 TO 108+35 Lt	115	LF
		STA 109+76 TO 109+50 Lt	26	LF
		STA 109+55 Lt	15	LF
		STA 113+71 Rt	15	LF
		STA 115+22 Lt	15	LF
		STA 117+32 Lt	15	LF

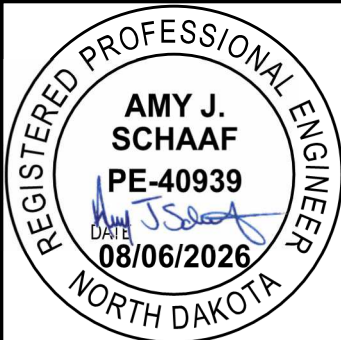
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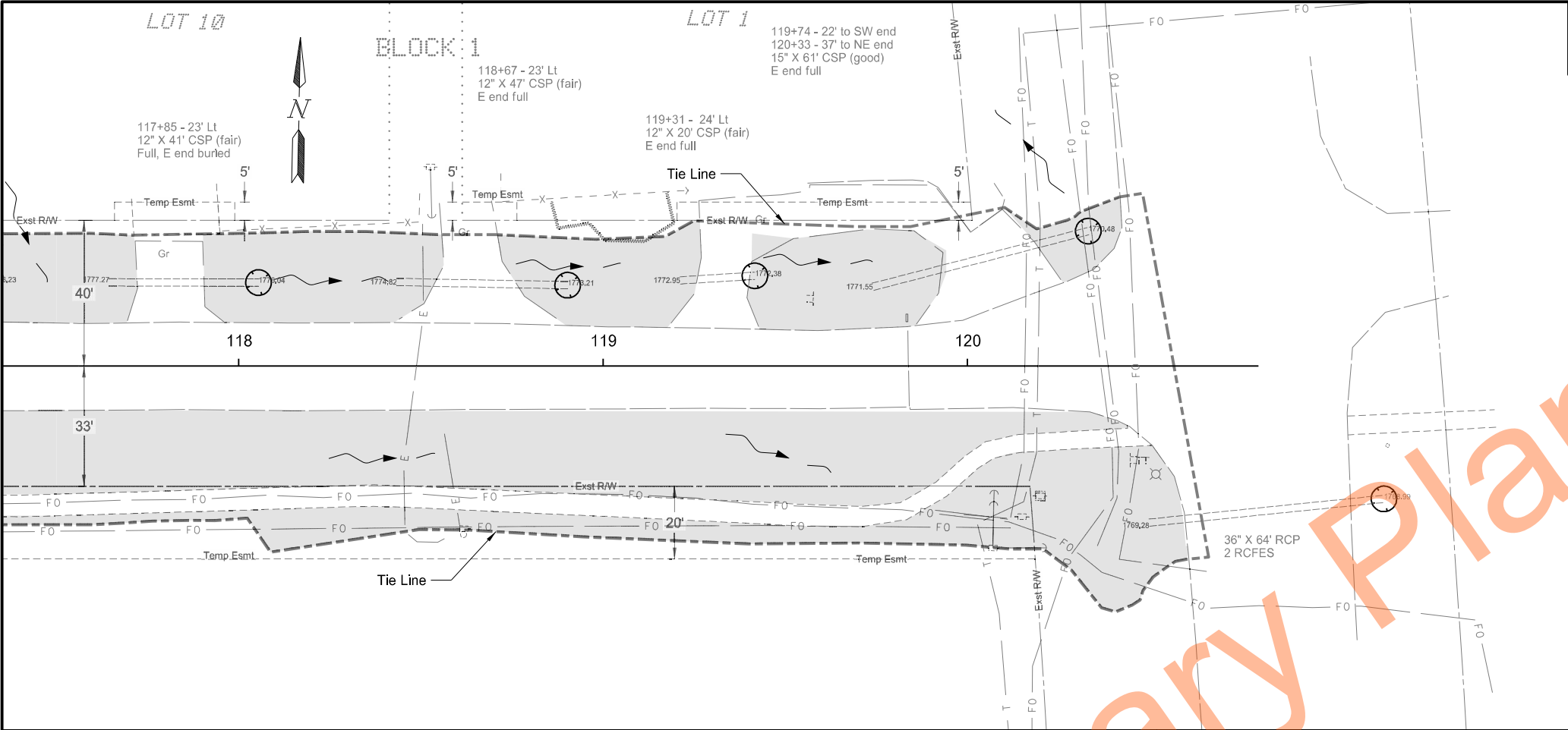
HYDRAULIC MULCH

FIBER ROLLS 12IN

FIBER ROLLS 20IN

FLOW DIRECTION

Temporary Erosion Control 27th St NW Sta 109+50 to Sta 117+50 Roadway Reconstruction Mandan, ND	
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		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-1-988(055)	76	6
SPEC	CODE	PAY ITEM		QTY UNIT	
253	201	HYDRAULIC MULCH			
		STA 117+50 TO 117+72	Lt	0.011	ACRE
		STA 117+50 TO 120+44	Rt	0.135	ACRE
		STA 117+50 TO 120+61	Rt	0.074	ACRE
		STA 117+90 TO 118+56	Lt	0.036	ACRE
		STA 118+71 TO 119+27	Lt	0.025	ACRE
		STA 119+39 TO 119+94	Lt	0.03	ACRE
		STA 120+10 TO 120+42	Lt	0.008	ACRE
261	112	FIBER ROLLS 12IN			
		STA 118+05	Lt	15	LF
		STA 118+90	Lt	15	LF
		STA 119+42	Lt	15	LF
		STA 120+33	Lt	15	LF
		STA 121+14	Rt	15	LF
261	113	REMOVE FIBER ROLLS 12IN			
		STA 118+05	Lt	15	LF
		STA 118+90	Lt	15	LF
		STA 119+42	Lt	15	LF
		STA 120+33	Lt	15	LF
		STA 121+14	Rt	15	LF

LEGEND

HYDRAULIC MULCH

FIBER ROLLS 12IN

FIBER ROLLS 20IN

FLOW DIRECTION

Temporary Erosion Control

27th St NW

Sta 117+50 to Sta 120+80

Roadway Reconstruction

Mandan, ND

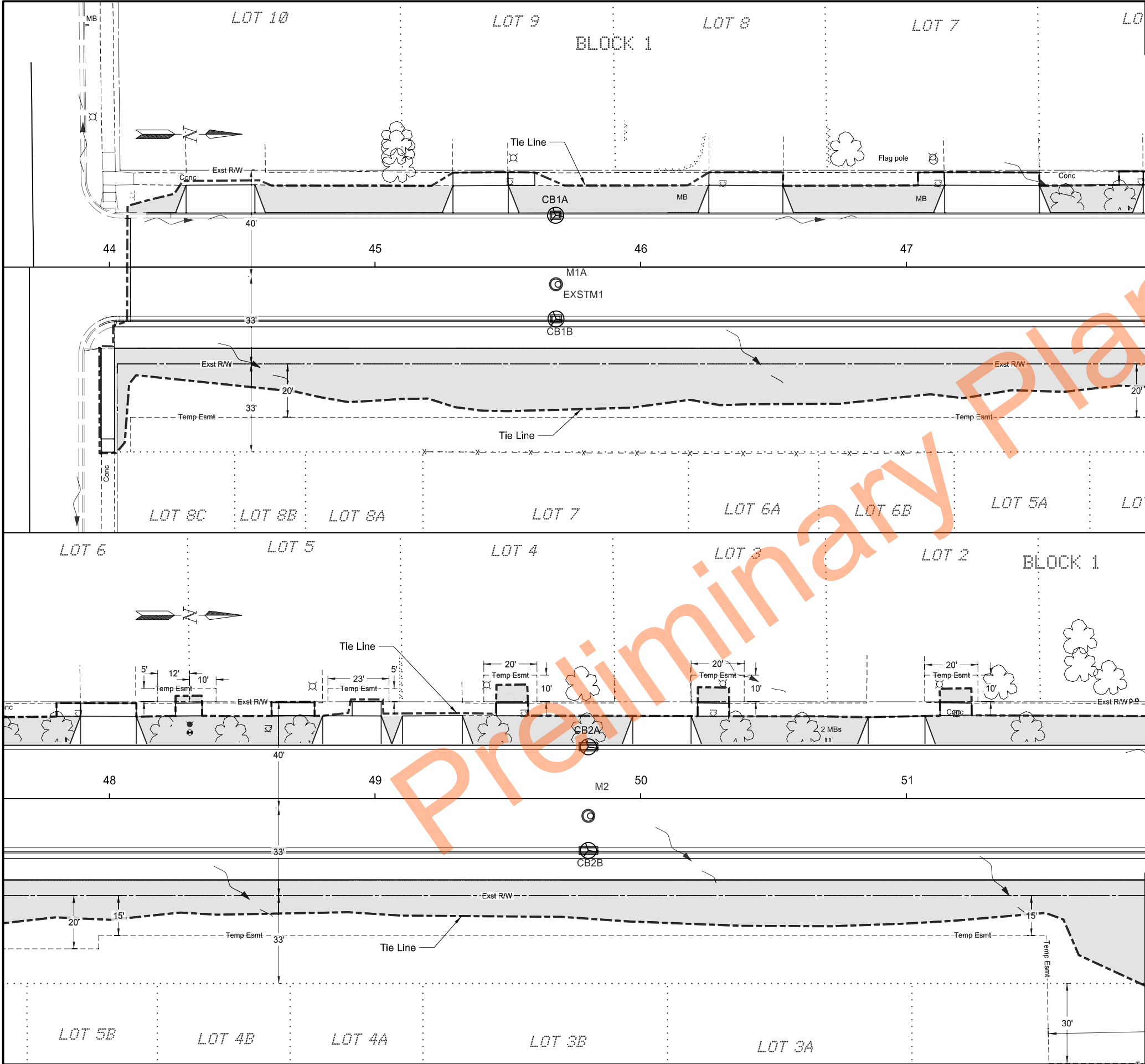
REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

DATE 08/06/2026

NORTH DAKOTA



		STATE	PROJECT NO.		SECTION NO.	SHEET NO.
		ND	SU-1-988(055)		77	1
SPEC CODE PAY ITEM						QTY UNIT
251	300	SEEDING CLASS III				
		STA 44+02 TO 51+75	Rt	0.279	ACRE	
		STA 44+07 TO 44+29	Lt	0.003	ACRE	
		STA 44+55 TO 45+29	Lt	0.017	ACRE	
		STA 45+50 TO 46+22	Lt	0.017	ACRE	
		STA 46+54 TO 47+12	Lt	0.014	ACRE	
		STA 47+50 TO 47+89	Lt	0.009	ACRE	
		STA 48+10 TO 48+80	Lt	0.017	ACRE	
		STA 48+25 TO 48+35	Lt	0.001	ACRE	
		STA 49+02 TO 49+11	Lt	0.001	ACRE	
		STA 49+33 TO 49+97	Lt	0.015	ACRE	
		STA 49+46 TO 49+58	Lt	0.002	ACRE	
		STA 50+19 TO 50+86	Lt	0.016	ACRE	
		STA 50+21 TO 50+33	Lt	0.002	ACRE	
		STA 51+07 TO 51+75	Lt	0.017	ACRE	
		STA 51+12 TO 51+24	Lt	0.002	ACRE	
253	201	HYDRAULIC MULCH				
		STA 44+02 TO 51+75	Rt	0.279	ACRE	
		STA 44+07 TO 44+29	Lt	0.003	ACRE	
		STA 44+55 TO 45+29	Lt	0.017	ACRE	
		STA 45+50 TO 46+22	Lt	0.017	ACRE	
		STA 46+54 TO 47+12	Lt	0.014	ACRE	
		STA 47+50 TO 47+89	Lt	0.009	ACRE	
		STA 48+10 TO 48+80	Lt	0.017	ACRE	
		STA 48+25 TO 48+35	Lt	0.001	ACRE	
		STA 49+02 TO 49+11	Lt	0.001	ACRE	
		STA 49+33 TO 49+97	Lt	0.015	ACRE	
		STA 49+46 TO 49+58	Lt	0.002	ACRE	
		STA 50+19 TO 50+86	Lt	0.016	ACRE	
		STA 50+21 TO 50+33	Lt	0.002	ACRE	
		STA 51+07 TO 51+75	Lt	0.017	ACRE	
		STA 51+12 TO 51+24	Lt	0.002	ACRE	
708	1540	INLET PROTECTION-SPECIAL				
		STA 45+68	Lt	1	EA	
		STA 45+68	Rt	1	EA	
		STA 49+80	Lt	1	EA	
		STA 49+80	Rt	1	EA	
708	1541	REMOVE INLET PROTECTION-SPECIAL				
		STA 45+68	Lt	1	EA	
		STA 45+68	Rt	1	EA	
		STA 49+80	Lt	1	EA	
		STA 49+80	Rt	1	EA	
LEGEND						
		6" TOPSOIL, SEEDING CLASS III, HYDRAULIC MULCH				
		ECB TYPE 2			INLET PROTECTION-SPECIAL	
		FIBER ROLLS 12IN			FLOW DIRECTION	

Permanent Erosion Control

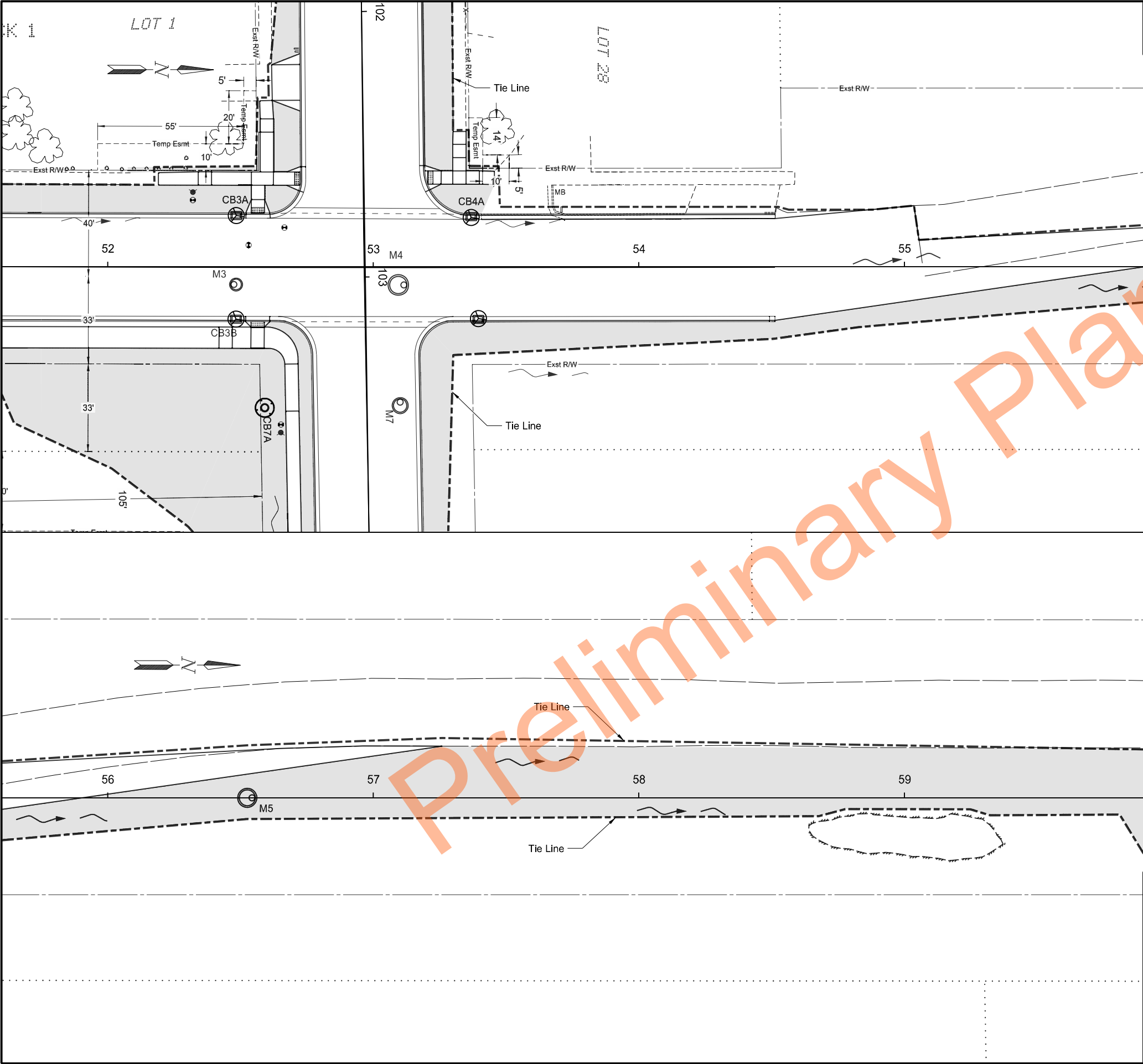
8th Ave NW

Sta 44+08 to Sta 51+75

Roadway Reconstruction

Mandan, ND





		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-1-988(055)	77	2
SPEC	CODE	PAY ITEM		QTY	UNIT
251	300	SEEDING CLASS III			
		STA 51+75 TO 52+59	Rt	0.105	ACRE
		STA 51+75 TO 52+54	Lt	0.019	ACRE
		STA 53+22 TO 59+75	Rt	0.261	ACRE
253	201	HYDRAULIC MULCH			
		STA 51+75 TO 52+59	Rt	0.105	ACRE
		STA 51+75 TO 52+54	Lt	0.019	ACRE
		STA 53+22 TO 59+75	Rt	0.261	ACRE
708	1540	INLET PROTECTION-SPECIAL			
		STA 52+48	Rt	1	EA
		STA 52+48	Lt	1	EA
		STA 53+37	Lt	1	EA
		STA 53+39	Rt	1	EA
708	1541	REMOVE INLET PROTECTION-SPECIAL			
		STA 52+48	Rt	1	EA
		STA 52+48	Lt	1	EA
		STA 53+37	Lt	1	EA
		STA 53+39	Rt	1	EA

LEGEND

6" TOPSOIL, SEEDING CLASS III, HYDRAULIC MULCH

ECB TYPE 2

FIBER ROLLS 12IN

INLET PROTECTION-SPECIAL

FLOW DIRECTION

Permanent Erosion Control

8th Ave NW

Sta 51+75 to Sta 59+75

Roadway Reconstruction

Mandan, ND

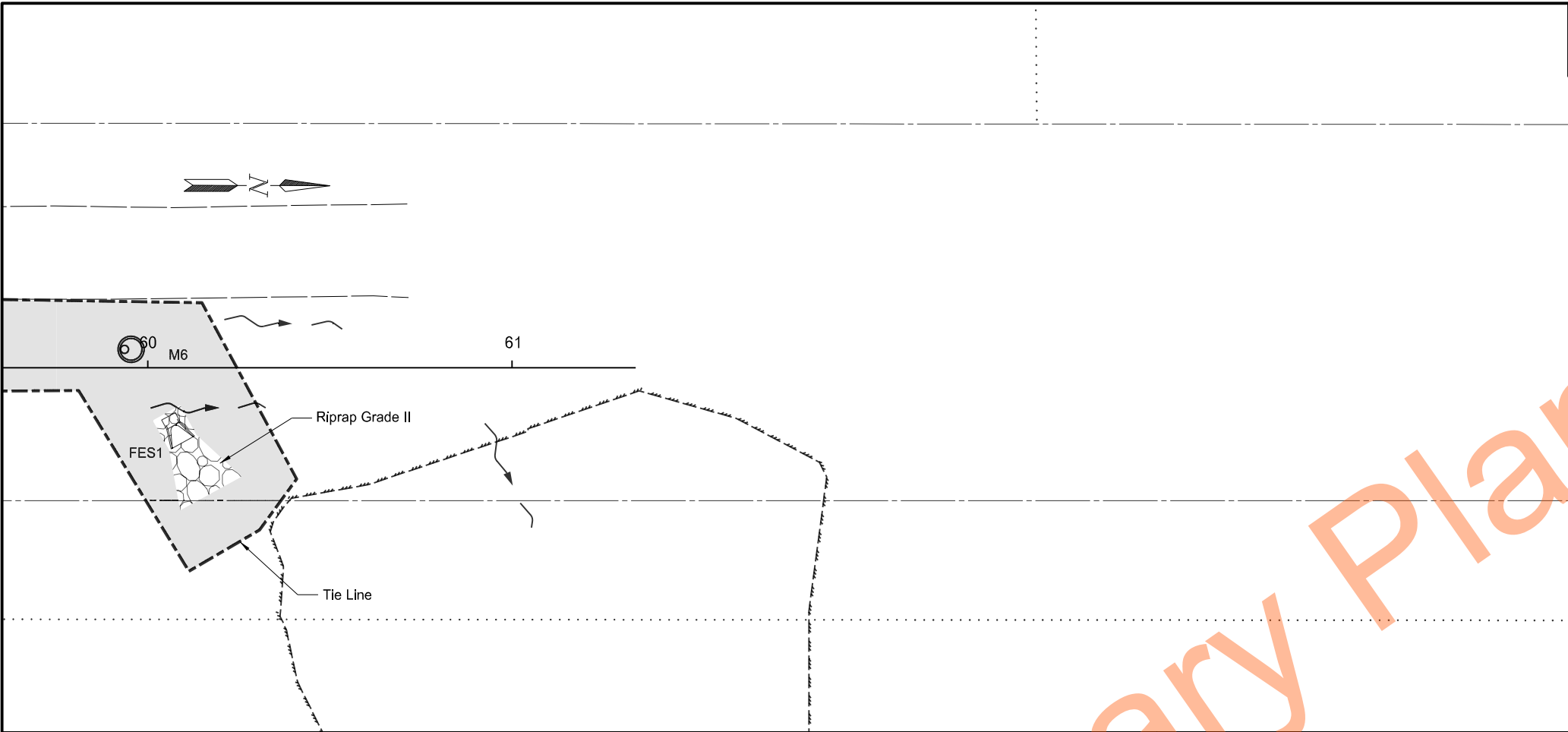
REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

DATE 08/06/2026

NORTH DAKOTA



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	77	3

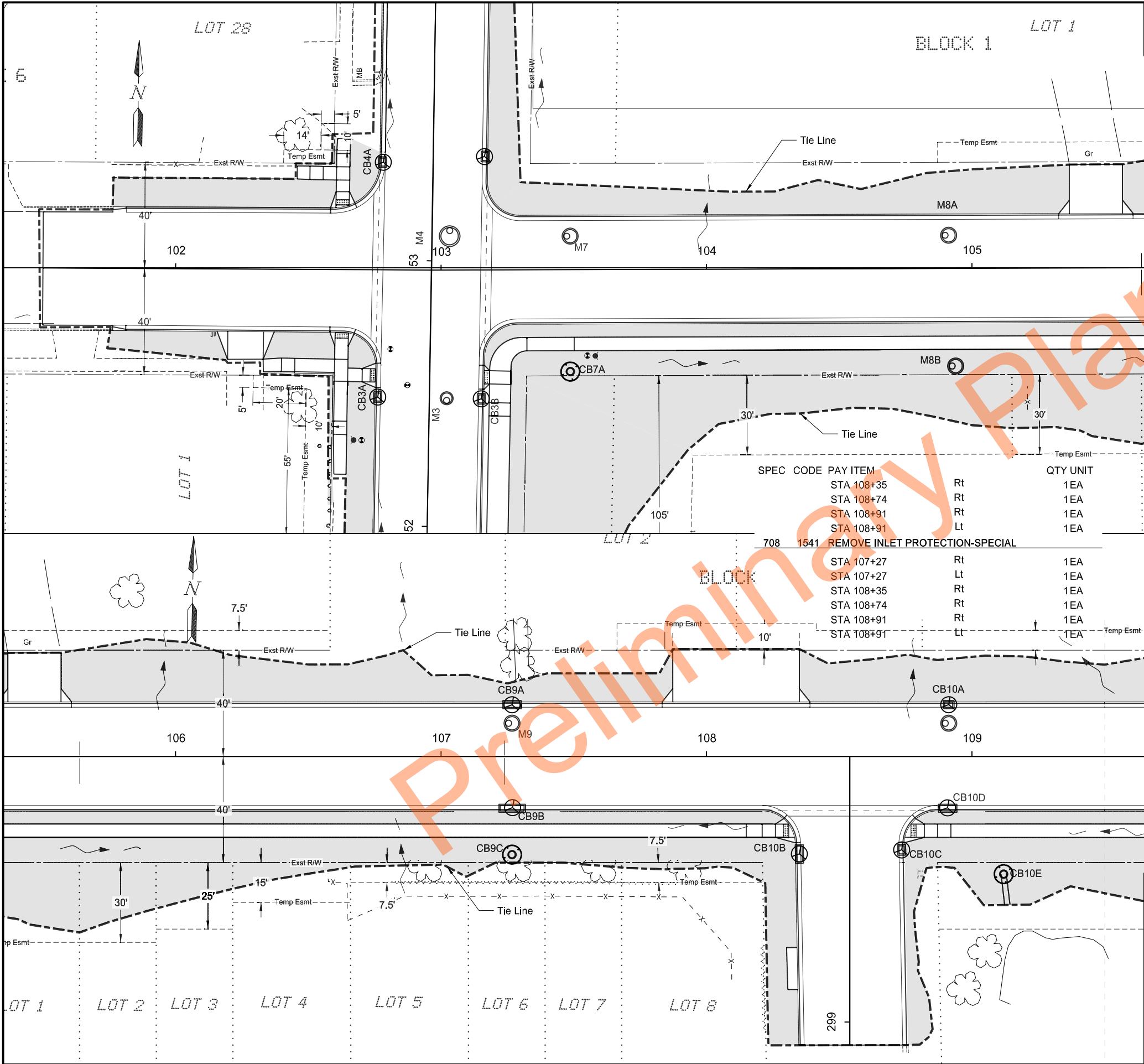
SPEC	CODE	PAY ITEM	QTY	UNIT
251	300	SEEDING CLASS III		
		STA 59+75 TO 60+44	0.062	ACRE
253	201	HYDRAULIC MULCH		
		STA 59+75 TO 60+44	0.062	ACRE
256	200	RIPRAP GRADE II		
		STA 60+01 TO 60+26	Rt	24 CY

LEGEND

- 6" TOPSOIL, SEEDING CLASS III, HYDRAULIC MULCH
- ECB TYPE 2
- INLET PROTECTION-SPECIAL
- FIBER ROLLS 12IN
- FLOW DIRECTION

Permanent Erosion Control
8th Ave NW
Sta 59+75 to Sta 61+33
Roadway Reconstruction
Mandan, ND





STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	77	4

SPEC CODE	PAY ITEM	QTY	UNIT
251	300 SEEDING CLASS III		
	STA 101+76 TO 102+20 Rt	0.009	ACRE
	STA 101+76 TO 102+60 Lt	0.02	ACRE
	STA 102+33 TO 102+60 Rt	0.006	ACRE
	STA 102+33 TO 102+60 Lt	0.003	ACRE
	STA 102+45 TO 102+61 Lt	0.001	ACRE
	STA 102+65 TO 102+76 Rt	0.003	ACRE
	STA 102+65 TO 102+77 Lt	0.005	ACRE
	STA 103+16 TO 108+29 Rt	0.06	ACRE
	STA 103+21 TO 105+37 Lt	0.061	ACRE
	STA 103+26 TO 108+35 Rt	0.255	ACRE
	STA 105+57 TO 107+87 Lt	0.07	ACRE
	STA 108+35 TO 109+50 Lt	0.039	ACRE
	STA 108+74 TO 109+50 Rt	0.038	ACRE
	STA 108+79 TO 109+50 Rt	0.008	ACRE
253	201 HYDRAULIC MULCH		
	STA 101+76 TO 102+20 Rt	0.009	ACRE
	STA 101+76 TO 102+60 Lt	0.02	ACRE
	STA 102+33 TO 102+60 Rt	0.006	ACRE
	STA 102+33 TO 102+60 Lt	0.003	ACRE
	STA 102+45 TO 102+61 Lt	0.001	ACRE
	STA 102+65 TO 102+76 Rt	0.003	ACRE
	STA 102+65 TO 102+77 Lt	0.005	ACRE
	STA 103+16 TO 108+29 Rt	0.06	ACRE
	STA 103+21 TO 105+37 Lt	0.061	ACRE
	STA 103+26 TO 108+35 Rt	0.255	ACRE
	STA 105+57 TO 107+87 Lt	0.07	ACRE
	STA 108+35 TO 109+50 Lt	0.039	ACRE
	STA 108+74 TO 109+50 Rt	0.038	ACRE
	STA 108+79 TO 109+50 Rt	0.008	ACRE
261	113 FIBER ROLLS 12IN		
	STA 103+43 TO 103+58 Rt	15	LF
	STA 107+21 TO 107+35 Rt	15	LF
	STA 109+08 TO 109+15 Rt	15	LF
708	1540 INLET PROTECTION-SPECIAL		
	STA 107+27 Rt	1EA	
	STA 107+27 Lt	1EA	

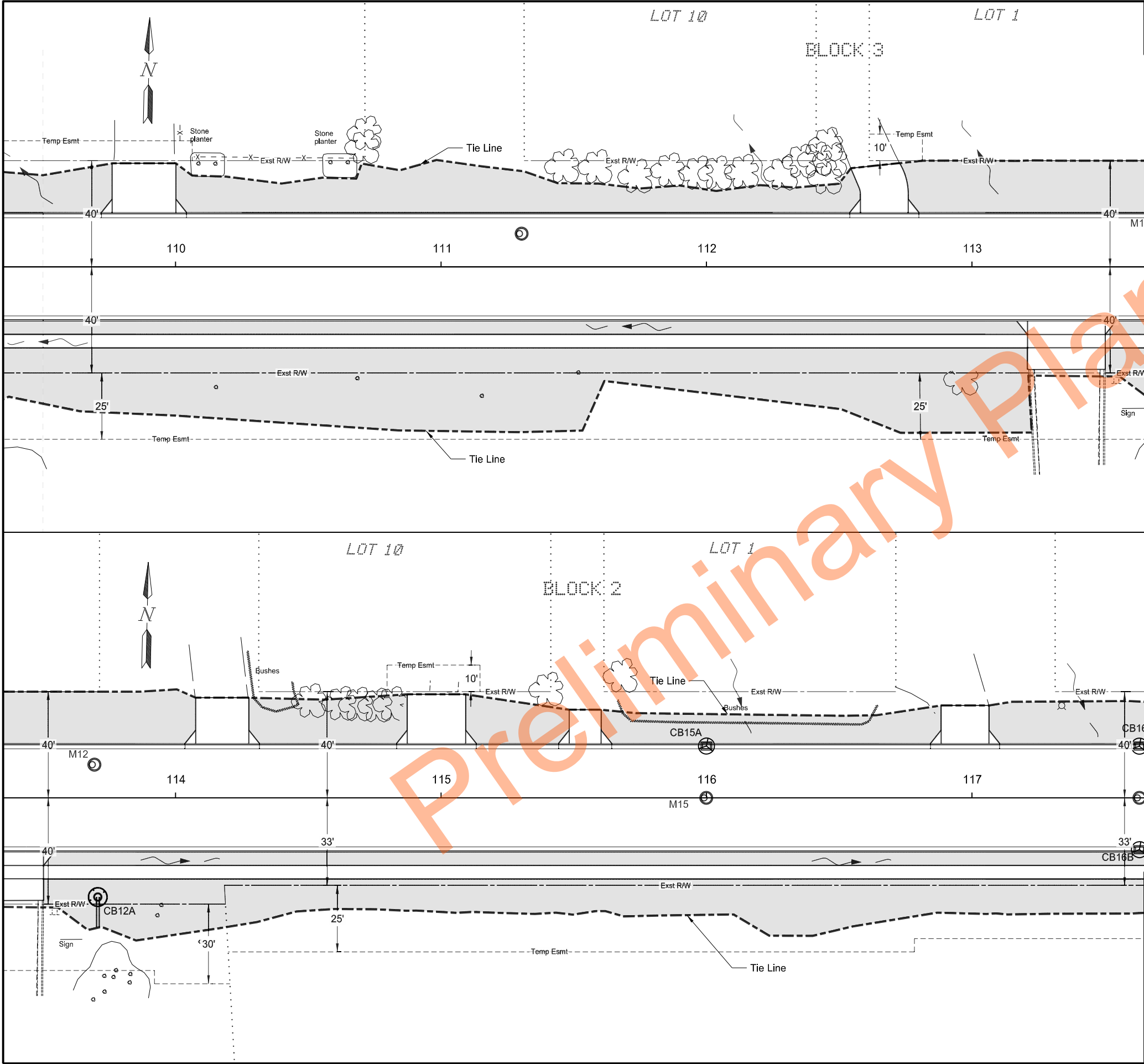
SPEC CODE	PAY ITEM	QTY	UNIT
708	1541 REMOVE INLET PROTECTION-SPECIAL		
	STA 108+35 Rt	1EA	
	STA 108+74 Rt	1EA	
	STA 108+91 Rt	1EA	
	STA 108+91 Lt	1EA	
	STA 107+27 Rt	1EA	
	STA 107+27 Lt	1EA	
	STA 108+35 Rt	1EA	
	STA 108+74 Rt	1EA	
	STA 108+91 Rt	1EA	
	STA 108+91 Lt	1EA	

LEGEND

- 6" TOPSOIL, SEEDING CLASS III, HYDRAULIC MULCH
- ECB TYPE 2
- INLET PROTECTION-SPECIAL
- FIBER ROLLS 12IN
- FLOW DIRECTION

Permanent Erosion Control
27th St NW
Sta 101+50 to Sta 109+50
Roadway Reconstruction
Mandan, ND





		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-1-988(055)	77	5
SPEC	CODE	PAY ITEM		QTY UNIT	
251	300	SEEDING CLASS III			
		STA 109+50 TO 109+76	Lt	0.01	ACRE
		STA 109+50 TO 113+21	Rt	0.043	ACRE
		STA 109+50 TO 113+21	Rt	0.191	ACRE
		STA 110+00 TO 112+58	Lt	0.063	ACRE
		STA 112+73 TO 114+08	Lt	0.046	ACRE
		STA 113+50 TO 117+50	Rt	0.046	ACRE
		STA 113+50 TO 117+50	Rt	0.132	ACRE
		STA 114+28 TO 114+87	Lt	0.016	ACRE
		STA 115+09 TO 115+48	Lt	0.014	ACRE
		STA 115+60 TO 116+88	Lt	0.016	ACRE
		STA 117+06 TO 117+50	Lt	0.006	ACRE
253	201	HYDRAULIC MULCH			
		STA 109+50 TO 109+76	Lt	0.01	ACRE
		STA 109+50 TO 113+21	Rt	0.043	ACRE
		STA 109+50 TO 113+21	Rt	0.191	ACRE
		STA 110+00 TO 112+58	Lt	0.063	ACRE
		STA 112+73 TO 114+08	Lt	0.046	ACRE
		STA 113+50 TO 117+50	Rt	0.046	ACRE
		STA 113+50 TO 117+50	Rt	0.132	ACRE
		STA 114+28 TO 114+87	Lt	0.016	ACRE
		STA 115+09 TO 115+48	Lt	0.014	ACRE
		STA 115+60 TO 116+88	Lt	0.016	ACRE
		STA 117+06 TO 117+50	Lt	0.006	ACRE
261	113	FIBER ROLLS 12IN			
		STA 113+63 TO 113+78	Rt	15	LF
708	1540	INLET PROTECTION-SPECIAL			
		STA 116+00	Lt	1	EA
708	1541	REMOVE INLET PROTECTION-SPECIAL			
		STA 116+00	Lt	1	EA

LEGEND

6" TOPSOIL, SEEDING CLASS III, HYDRAULIC MULCH

ECB TYPE 2

FIBER ROLLS 12IN

INLET PROTECTION-SPECIAL

FLOW DIRECTION

Permanent Erosion Control

27th St NW

Sta 109+50 to Sta 117+50

Roadway Reconstruction

Mandan, ND

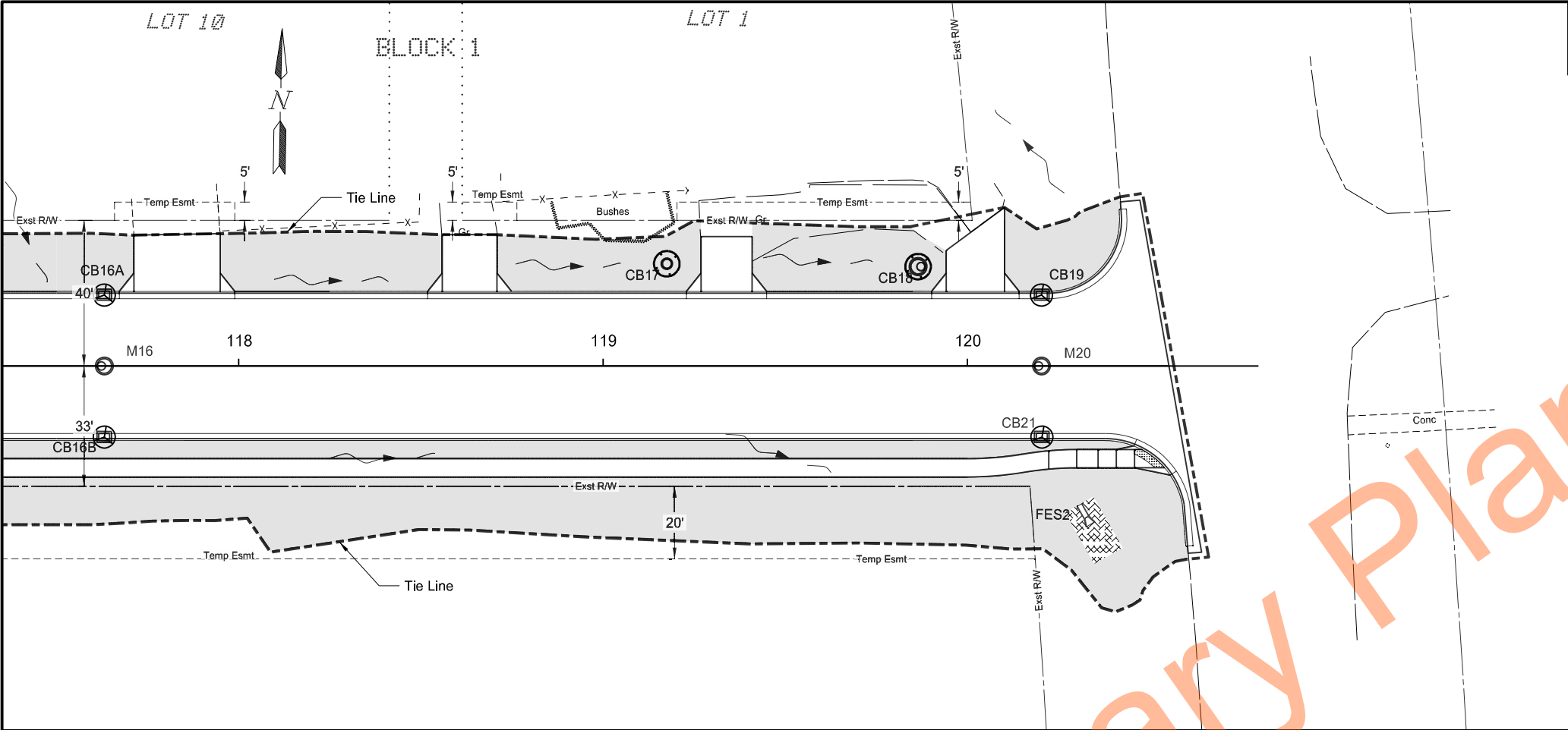
REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

DATE 08/06/2026

NORTH DAKOTA



		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-1-988(055)	77	6
SPEC	CODE	PAY ITEM		QTY UNIT	
251	300	SEEDING CLASS III			
		STA 117+50 TO 117+71	Lt	0.006	ACRE
		STA 117+50 TO 120+40	Rt	0.032	ACRE
		STA 117+95 TO 118+56	Lt	0.023	ACRE
		STA 118+71 TO 119+27	Lt	0.017	ACRE
		STA 119+41 TO 119+94	Lt	0.018	ACRE
		STA 120+10 TO 120+42	Lt	0.011	ACRE
		STA 117+50 TO 120+60	Rt	0.114	ACRE
253	201	HYDRAULIC MULCH			
		STA 117+50 TO 117+71	Lt	0.006	ACRE
		STA 117+50 TO 120+40	Rt	0.032	ACRE
		STA 117+95 TO 118+56	Lt	0.023	ACRE
		STA 118+71 TO 119+27	Lt	0.017	ACRE
		STA 119+41 TO 119+94	Lt	0.018	ACRE
		STA 120+10 TO 120+42	Lt	0.011	ACRE
		STA 117+50 TO 120+60	Rt	0.11	ACRE
255	103	ECB TYPE 3			
		STA 120+27 TO 120+43	Rt	15	SY
261	113	FIBER ROLLS 12IN			
		STA 119+14 TO 119+29	Lt	15	LF
		STA 119+84 TO 119+89	Lt	15	LF
708	1540	INLET PROTECTION-SPECIAL			
		STA 117+63	Lt	1	EA
		STA 117+63	Rt	1	EA
		STA 120+21	Rt	1	EA
		STA 120+21	Lt	1	EA
708	1541	REMOVE INLET PROTECTION-SPECIAL			
		STA 117+63	Lt	1	EA
		STA 117+63	Rt	1	EA
		STA 120+21	Rt	1	EA

LEGEND

6" TOPSOIL, SEEDING CLASS III, HYDRAULIC MULCH

ECB TYPE 2

FIBER ROLLS 12IN

INLET PROTECTION-SPECIAL

FLOW DIRECTION

Permanent Erosion Control

27th St NW

Sta 117+50 to Sta 120+80

Roadway Reconstruction

Mandan, ND

REGISTERED PROFESSIONAL ENGINEER

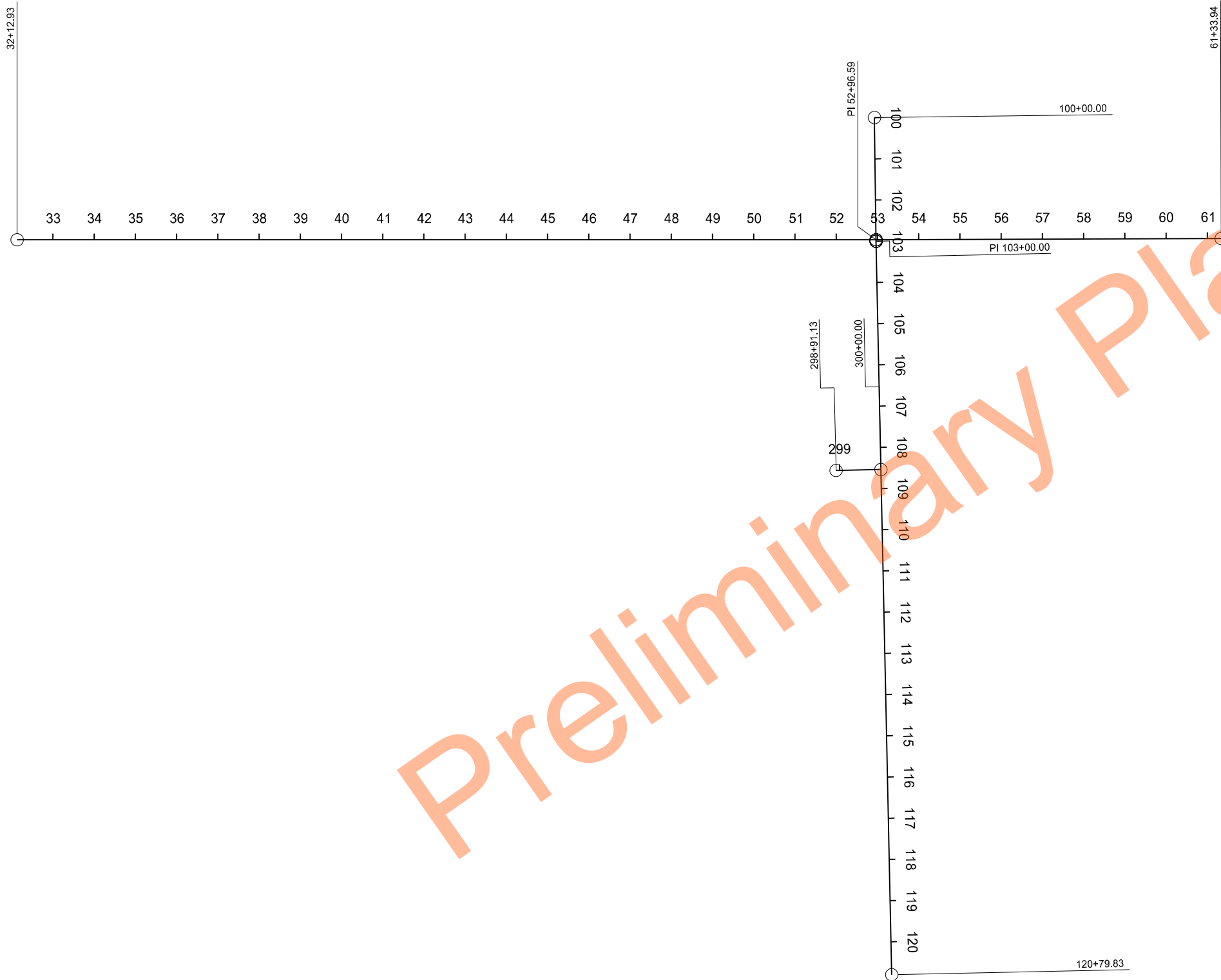
AMY J. SCHAAF

PE-40939

08/06/2026

NORTH DAKOTA

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Beginning chain PR8 description			
Start	32+12.93	429,859.89	1,868,174.61
Course from Start to PI N 0° 04' 00" E a distance of 2083.66			
PI	52+96.59	431,943.55	1,868,177.03
Course from PI to End N 0° 08' 06" W a distance of 837.35			
END	61+33.94	432,780.90	1,868,175.06
Ending chain PR8 description			

Beginning chain PR6 description			
START	298+91.13	431,845.86	1,868,736.60
Course from Start to PI N 1° 09' 13" W a distance of 108.87			
END	300+00.00	431,954.71	1,868,734.41
Ending chain PR6 description			

Beginning chain PR27 description			
Start	100+00.00	431,940.09	1,867,880.55
Course from Start to PI N 89° 20' 15" E a distance of 300.00			
PI	103+00.00	431,943.55	1,868,180.53
Course from PI to End N 88° 50' 47" E a distance of 1779.83			
END	120+79.83	431,979.38	1,869,960.00
Ending chain PR27 description			

Survey Data Layout
8th Ave NW, 6th Ave NW, & 27th St NW
Proposed Alignments
Roadway Reconstruction
Mandan, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	82	2

Detectable Warning Panel

Landscaping

Pedestrian Access Route (PAR)

Clear Space

4' long x width of PAR or
4' minimum clear space outside traffic lanes of travel.

Cross Slope

1.5 % preferred

2.0 % maximum

Running and Counter Slope

< 4.5 % preferred

5.0 % maximum

PTA

Pedestrian Access Transition Area (PTA)

Tie-in to nearest joint (if needed)

Transition Cross Slope

< 0.5 % change per foot longitudinally

Running Slope

< 4.5 % preferred

TS

Turning Space

Used at top of ramp or when changing directions.

Slope (all directions)

1.5 % preferred

2.0 % maximum

R

Ramp

Cross Slope

1.5 % Preferred

2.0 % maximum

Running Slope

< 7.5 % preferred

8.3 % maximum

B

Blended Transition

Cross Slope

1.5 % preferred

2.0 % maximum

Counter Slope

< 4.5 % preferred

5.0 % maximum

Flare

Cross Slope

④ 4:1 maxium (adjencet to non-walkable surface)

⑩ 10:1 maxium (adjecent to walkable surface)

Curb heights are noted adjacent to curb
0", 3", 6" or ME (Match Existing)

Note: All landing and turning spaces to be constructed as
separate pours from adjacent sidewalk or ramps.

Survey Data Layout

Legend

8th Ave NW & 27th St NW

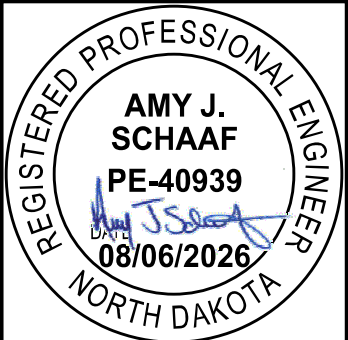
Roadway Reconstruction

Mandan, ND

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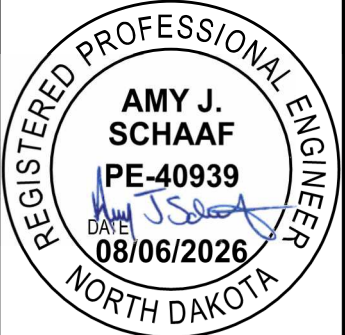
POINT	NORTHING	EASTING	ELEVATION	STATION	OFFSET
300	431965.687	1868135.837	1787.618	53+18.8	41.15 Lt
301	431965.774	1868140.534	1787.493	53+18.9	36.45 Lt
302	431966.832	1868145.533	1787.418	53+19.9	31.45 Lt
303	431983.669	1868157.418	1786.629	53+36.8	19.52 Lt
304	431972.452	1868140.526	1787.774	53+25.6	36.44 Lt
305	431976.837	1868140.523	1788.024	53+30.0	36.43 Lt
306	431976.833	1868135.523	1788.244	53+30.0	41.43 Lt
307	431976.829	1868130.523	1788.464	53+30.0	46.43 Lt
308	431976.951	1868125.773	1788.655	53+30.1	51.18 Lt
309	431981.825	1868125.716	1788.654	53+35.0	51.23 Lt
310	431981.829	1868130.519	1788.434	53+35.0	46.43 Lt
311	431981.833	1868135.519	1788.189	53+35.0	41.43 Lt
312	431981.837	1868140.519	1787.944	53+35.0	36.43 Lt
313	431986.837	1868140.515	1787.704	53+40.0	36.42 Lt
314	431992.526	1868140.765	1787.416	53+45.7	36.15 Lt
315	431992.462	1868145.707	1787.359	53+45.0	31.21 Lt
316	431986.841	1868145.515	1787.639	53+40.6	31.42 Lt
317	431981.841	1868145.519	1787.884	53+35.0	31.43 Lt
318	431976.841	1868145.523	1787.935	53+30.0	31.43 Lt
319	431972.456	1868145.526	1787.685	53+25.6	31.44 Lt
926	431971.906	1868156.782	1786.98	53+25.0	20.19 Lt
932	431967.144	1868197.461	1787.127	53+20.1	20.48 Rt
973	431964.074	1868210.324	1787.546	53+17.0	33.34 Rt
974	431977.121	1868196.872	1786.827	53+30.0	19.92 Rt
R300	431983.851	1868139.292		53+37.0	37.65 Lt
R900	431977.153	1868209.955		53+30.1	33.00 Rt

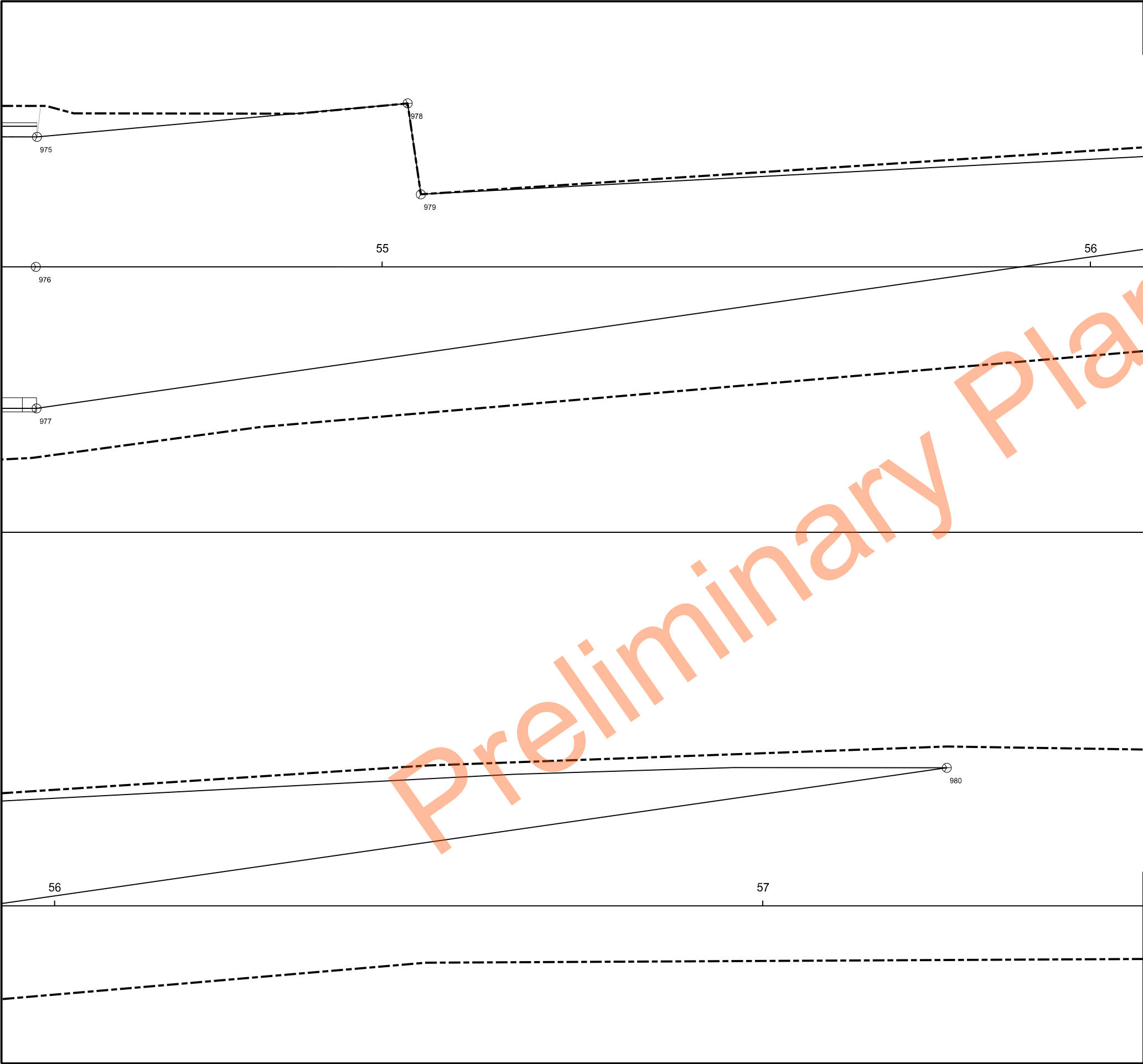
Survey Data Layouts
Curb Ramp Layout
8th Ave NW & 27th St NW
Roadway Reconstruction
Mandan, ND



POINT	NORTHING	EASTING	ELEVATION	STATION	OFFSET
400	431934.123	1868701.556	1783.197	108+20.7	19.92 Rt
401	431932.482	1868708.532	1783.213	108+27.7	21.70 Rt
402	431928.739	1868712.658	1783.35	108+31.7	25.52 Rt
403	431923.79	1868714.818	1783.441	108+33.8	30.52 Rt
404	431923.748	1868712.028	1783.459	108+31.0	30.50 Rt
405	431923.648	1868707.029	1783.609	108+26.0	30.50 Rt
406	431923.547	1868702.03	1783.634	108+21.0	30.50 Rt
407	431923.426	1868696.044	1783.752	108+15.0	30.50 Rt
408	431928.425	1868695.943	1783.684	108+15.0	25.50 Rt
409	431928.546	1868701.929	1783.557	108+21.0	25.50 Rt
410	431928.645	1868706.857	1783.532	108+25.9	25.50 Rt
500	431924.612	1868754.999	1784.524	108+74.0	30.50 Rt
501	431929.67	1868757.029	1784.45	108+76.1	25.49 Rt
502	431933.544	1868761.072	1784.428	108+80.2	21.69 Rt
503	431935.453	1868767.62	1784.504	108+86.8	19.92 Rt
504	431929.775	1868762.983	1784.866	108+82.1	25.50 Rt
505	431929.876	1868767.979	1784.941	108+87.1	25.50 Rt
506	431929.977	1868772.978	1785.140	108+92.1	25.50 Rt
507	431924.978	1868773.079	1785.219	108+92.1	30.50 Rt
508	431924.877	1868768.08	1785.008	108+87.1	30.50 Rt
509	431924.776	1868763.081	1784.933	108+82.1	30.50 Rt
510	431924.67	1868757.798	1784.563	108+76.8	30.50 Rt
600	431954.899	1869902.899	1774.152	120+22.2	23.33 Rt
601	431955.383	1869910.602	1774.229	120+30.0	23.00 Rt
602	431949.9	1869902.999	1774.227	120+22.2	28.33 Rt
603	431950.384	1869910.702	1774.304	120+30.0	28.00 Rt
604	431955.501	1869916.472	1774.300	120+35.8	23.00 Rt
605	431950.502	1869916.573	1774.383	120+35.8	28.00 Rt
606	431950.603	1869921.572	1774.333	120+40.8	28.00 Rt
607	431955.602	1869921.471	1774.250	120+40.8	23.00 Rt
608	431950.703	1869926.571	1774.008	120+45.8	28.00 Rt
609	431955.702	1869926.47	1773.925	120+45.8	23.00 Rt
610	431950.886	1869935.628	1773.971	120+54.9	28.00 Rt
611	431955.767	1869929.699	1773.889	120+49.1	23.00 Rt
937	431933.696	1868709.325	1783.298	108+28.5	20.50 Rt
938	431936.258	1868734.775	1783.931	108+54.0	18.45 Rt
939	431934.209	1868734.818	1783.886	108+54.0	20.50 Rt
940	431932.21	1868734.859	1783.941	108+54.0	22.50 Rt
941	431934.722	1868760.287	1784.511	108+79.5	20.50 Rt
970	431998.097	1869900.122	1773.617	120+20.3	19.92 Lt
971	431958.302	1869902.821	1773.607	120+22.2	19.92 Rt
972	431929.557	1869941.674	1774.206	120+60.5	49.45 Rt
981	432021.718	1869921.5	1773.763	120+42.2	43.10 Lt
982	432024.256	1869926.517		120+47.3	45.54 Lt
983	431927.941	1869945.43		120+64.2	51.14 Rt
R400	431921.118	1868701.993		108+20.9	32.93 Rt
R500	431922.449	1868767.764		108+86.7	32.92 Rt
R600	431936.546	1869918.886		120+37.9	42.00 Rt
R601	432018.215	1869901.623		120+22.2	40.00 Lt

Survey Data Layout
Curb Ramp Layout
27th St NW
Roadway Reconstruction
Mandan, ND

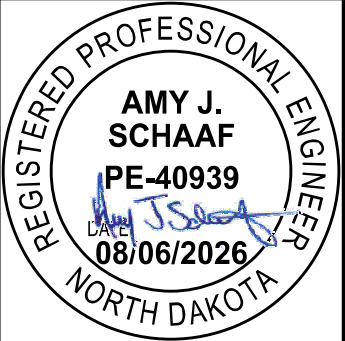


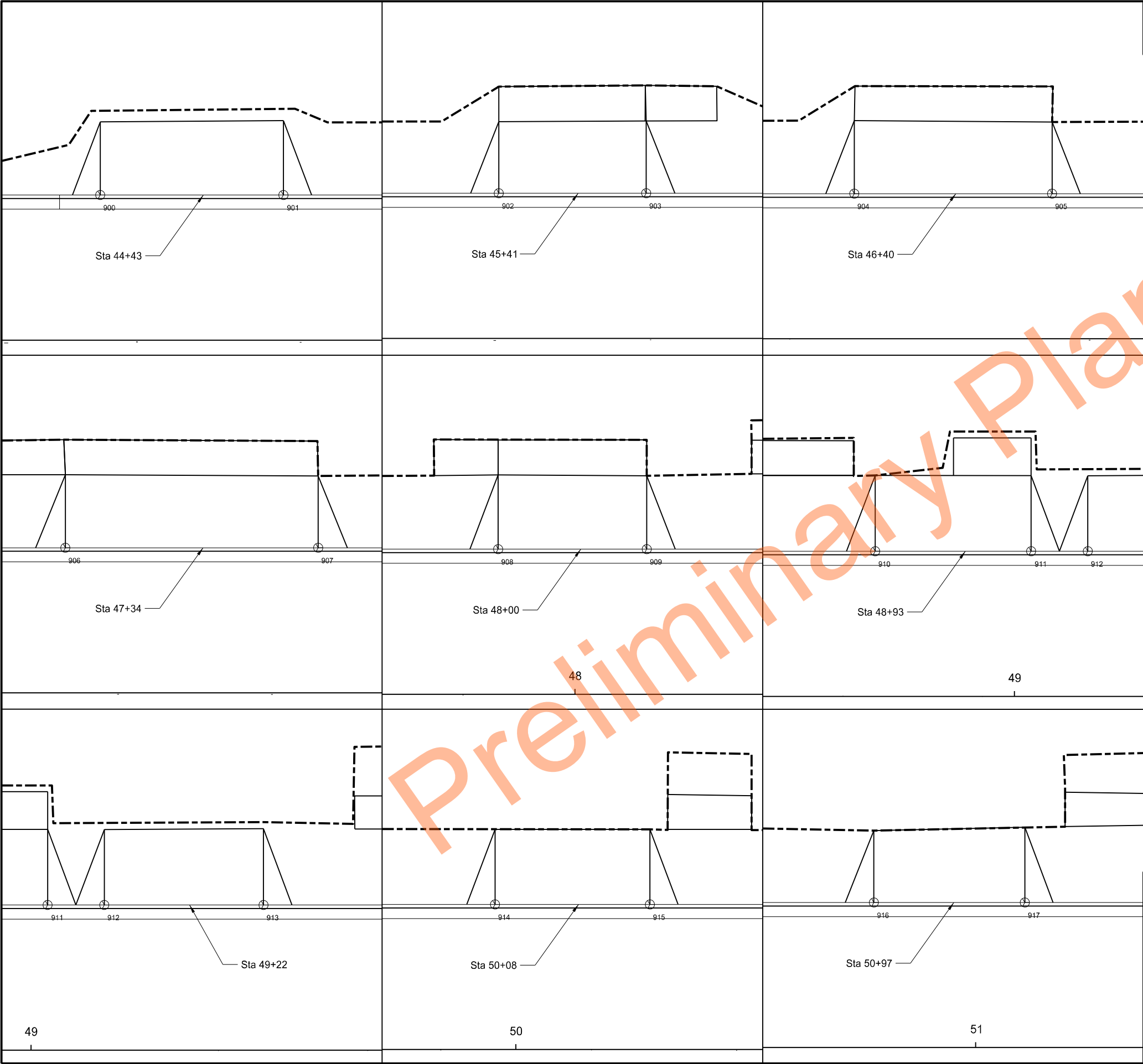


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	82	6

POINT	NORTHING	EASTING	ELEVATION	STATION	OFFSET
976	432098.066	1868176.670	1783.456	54+51.1	0.00 Rt
977	432098.217	1868196.670	1783.481	54+51.2	20.00 Rt
975	432098.183	1868158.310	1783.066	54+51.3	18.36 Lt
978	432150.515	1868153.455	1781.647	55+03.6	23.09 Lt
979	432152.403	1868166.298	1781.745	55+05.5	10.24 Lt
980	432372.883	1868156.523	1777.872	57+26.0	19.50 Lt

Survey Data Layout
Road Widening
8th Ave NW
Roadway Reconstruction
Mandan, ND





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	82	7

POINT	NORTHING	EASTING	ELEVATION	STATION	OFFSET
900	431075.874	1868155.526	1830.136	44+28.9	20.50 Lt
901	431101.741	1868155.556	1828.756	44+54.8	20.50 Lt
902	431176.307	1868155.643	1824.418	45+29.3	20.50 Lt
903	431197.122	1868155.667	1823.208	45+50.1	20.50 Lt
904	431272.566	1868155.755	1818.824	46+25.6	20.50 Lt
905	431300.497	1868155.787	1817.2	46+53.5	20.50 Lt
906	431361.39	1868155.858	1813.749	47+14.4	20.50 Lt
907	431397.093	1868155.899	1811.802	47+50.1	20.50 Lt
908	431436.133	1868155.945	1809.661	47+89.1	20.50 Lt
909	431457.113	1868155.969	1808.51	48+10.1	20.50 Lt
910	431527.315	1868156.051	1804.773	48+80.3	20.50 Lt
911	431549.331	1868156.076	1803.649	49+02.3	20.50 Lt
912	431557.331	1868156.085	1803.24	49+10.3	20.50 Lt
913	431579.812	1868156.112	1802.091	49+32.8	20.50 Lt
914	431644.041	1868156.186	1798.81	49+97.1	20.50 Lt
915	431665.91	1868156.212	1797.693	50+18.9	20.50 Lt
916	431732.611	1868156.289	1794.586	50+85.6	20.50 Lt
917	431753.922	1868156.314	1793.655	51+06.9	20.50 Lt

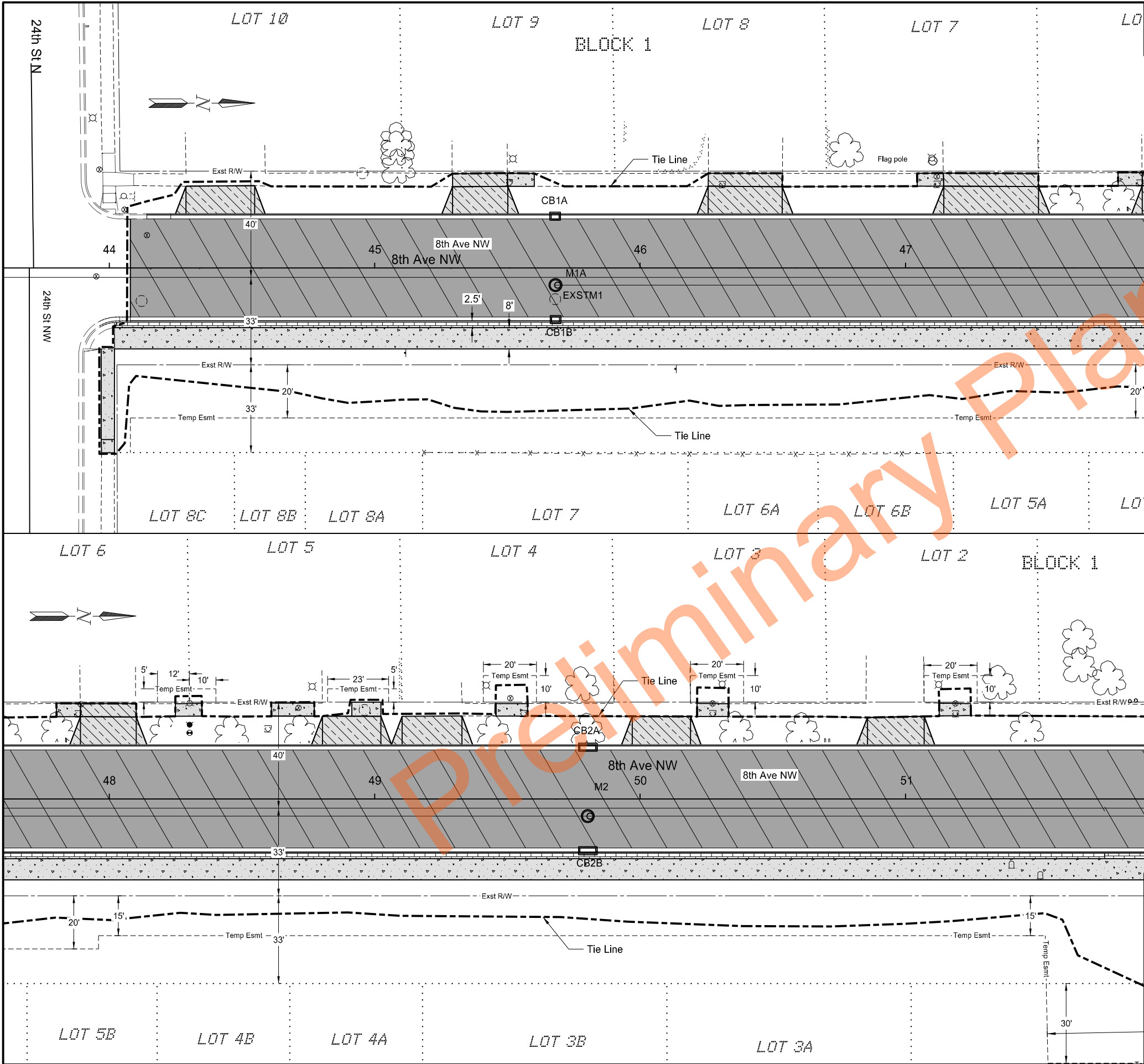
Survey Data Layout
Driveways
8th Ave NW
Roadway Reconstruction
Mandan, ND



POINT	NORTHING	EASTING	ELEVATION	STATION	OFFSET
918	431919.075	1868100.565	1788.831	52+72.0	76.44 Lt
919	431908.602	1868100.658	1789.51	52+61.6	76.34 Lt
920	431919.205	1868114.038	1788.698	52+72.2	62.97 Lt
933	431968.815	1868416.856	1786.453	105+36.8	20.50 Lt
934	431969.218	1868436.852	1785.753	105+56.8	20.50 Lt
935	431973.859	1868667.334	1782.81	107+87.3	20.50 Lt
936	431974.819	1868715.021	1783.551	108+35.0	20.50 Lt
942	431977.659	1868856.066	1786.292	109+76.1	20.50 Lt
943	431978.142	1868880.061	1786.652	110+00.1	20.50 Lt
944	431983.334	1869137.95	1790.519	112+58.0	20.50 Lt
945	431983.697	1869155.946	1790.715	112+76.0	20.50 Lt
946	431943.609	1869201.65	1790.711	113+20.9	20.50 Rt
947	431944.199	1869230.952	1790.335	113+50.2	20.50 Rt
948	431939.2	1869231.053	1790.795	113+50.2	25.50 Rt
949	431934.201	1869231.154	1790.87	113+50.2	30.50 Rt
950	431926.076	1869231.317	1790.881	113+50.2	38.63 Rt
951	431925.43	1869202.016	1791.063	113+20.9	38.68 Rt
952	431933.611	1869201.852	1791.246	113+20.9	30.50 Rt
953	431938.61	1869201.751	1791.171	113+20.9	25.50 Rt
954	431986.344	1869287.422	1789.062	114+07.5	20.50 Lt
955	431986.747	1869307.418	1788.605	114+27.5	20.50 Lt
956	431987.949	1869367.108	1787.225	114+87.2	20.50 Lt
957	431988.391	1869389.104	1786.565	115+09.2	20.50 Lt
958	431989.176	1869428.095	1785.395	115+48.2	20.50 Lt
959	431989.418	1869440.093	1785.035	115+60.2	20.50 Lt

AMY J. SCHAAF
 PE-40939
 DATE: 08/06/2026
 REGISTERED PROFESSIONAL ENGINEER
 NORTH DAKOTA

POINT	NORTHING	EASTING	ELEVATION	STATION	OFFSET
960	431991.998	1869568.234	1781.053	116+88.4	20.50 Lt
961	431992.36	1869586.23	1780.463	117+06.4	20.50 Lt
962	431993.665	1869651.01	1778.336	117+71.2	20.50 Lt
963	431994.141	1869674.672	1777.56	117+94.9	20.50 Lt
964	431995.369	1869735.657	1775.756	118+55.9	20.50 Lt
965	431995.671	1869750.654	1775.421	118+70.9	20.50 Lt
966	431996.799	1869806.664	1774.57	119+26.9	20.50 Lt
967	431997.081	1869820.661	1774.435	119+40.9	20.50 Lt
968	431998.153	1869873.912	1773.923	119+94.1	20.50 Lt
969	431998.475	1869889.908	1773.769	120+10.1	20.50 Lt



		STATE	PROJECT NO.		SECTION NO.	SHEET NO.
		ND	SU-1-988(055)		90	1

SPEC	CODE	PAY ITEM	QTY	UNIT
748	140	CURB & GUTTER-TYPE I		
		STA 44+08 TO 51+75 Rt	115	LF
		STA 44+14 TO 51+75 Lt	115	LF
750	30	PIGMENTED IMPRINTED CONCRETE		
		STA 44+02 TO 51+75 Rt	172	SY
750	115	SIDEWALK CONCRETE 4IN		
		STA 43+97 TO 44+02 Rt	22	SY
		STA 44+02 TO 51+75 Rt	687	SY
		STA 45+50 TO 45+60 Lt	6	SY
		STA 47+04 TO 47+14 Lt	5	SY
		STA 47+80 TO 47+89 Lt	5	SY
		STA 48+25 TO 48+35 Lt	5	SY
		STA 48+61 TO 48+77 Lt	9	SY
		STA 48+91 TO 49+02 Lt	6	SY
		STA 49+46 TO 49+58 Lt	6	SY
		STA 50+21 TO 50+33 Lt	6	SY
		STA 51+13 TO 51+25 Lt	6	SY
750	1000	DRIVEWAY CONCRETE		
		STA 44+25 TO 44+59 Lt	35	SY
		STA 45+25 TO 45+54 Lt	40	SY
		STA 46+22 TO 46+57 Lt	52	SY
		STA 47+10 TO 47+54 Lt	65	SY
		STA 47+85 TO 48+14 Lt	41	SY
		STA 48+76 TO 49+06 Lt	31	SY
		STA 49+06 TO 49+37 Lt	32	SY
		STA 49+93 TO 50+23 Lt	31	SY
		STA 50+82 TO 51+11 Lt	29	SY

LEGEND

SUPERPAVE FAA 43

CURB & GUTTER-TYPE I

VALLEY GUTTER SPECIAL

DRIVEWAY CONCRETE

DETECTABLE WARNING PANEL

PIGMENTED IMPRINTED CONCRETE

SIDEWALK CONCRETE 4IN

AGGREGATE SURFACE COURSE CL 13

SIDEWALK CONCRETE 6IN

COMMERCIAL GRADE HOT MIX ASPHALT

Paving Layout

8th Ave NW

Sta 44+08 to Sta 51+75

Roadway Reconstruction

Mandan, ND

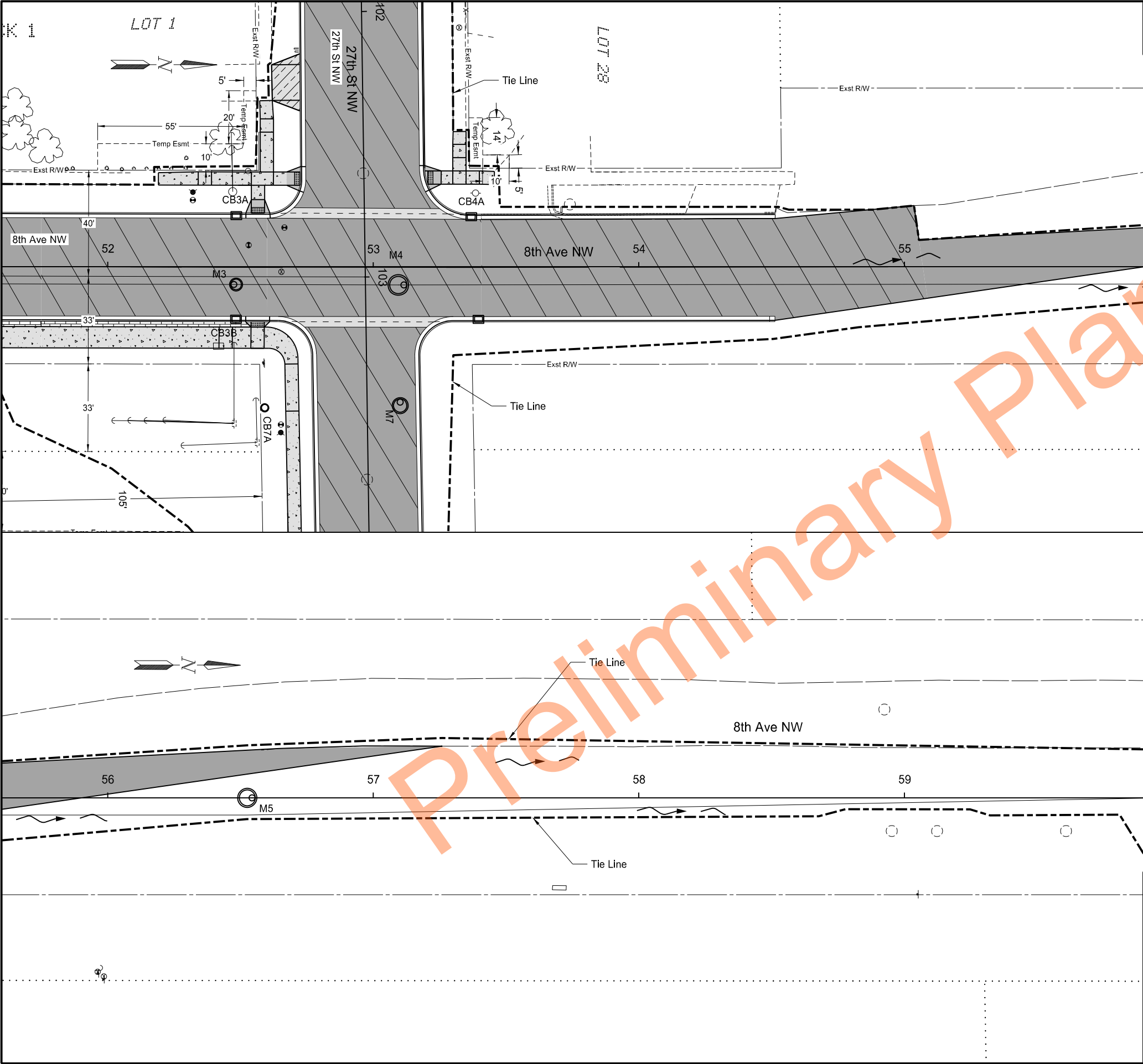
REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

DATE 08/06/2026

NORTH DAKOTA



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	90	2

SPEC	CODE	PAY ITEM	QTY	UNIT
430	500	COMMERCIAL GRADE HOT MIX ASPHALT		
		STA 55+05 TO 57+26	81	TON
748	140	CURB & GUTTER-TYPE I		
		STA 51+75 TO 52+64 Rt	115	LF
		STA 51+75 TO 52+60 Lt	115	LF
		STA 54+51 TO 53+41 Rt	115	LF
		STA 54+51 TO 53+41 Lt	115	LF
748	520	CURB-TYPE I		
		STA 52+39 TO 52+57 Lt	32	LF
750	30	PIGMENTED IMPRINTED CONCRETE		
		STA 51+75 TO 52+54 Rt	17	SY
750	115	SIDEWALK CONCRETE 4IN		
		STA 51+75 TO 52+59 Rt	75	SY
		STA 52+19 TO 52+67 Lt	44	SY
		STA 53+26 TO 53+46 Lt	19	SY
750	140	SIDEWALK CONCRETE 6IN		
		STA 52+52 TO 52+61 Lt	4	SY
		STA 52+52 TO 52+61 Rt	2	SY
		STA 52+67 TO 52+72 Lt	4	SY
		STA 53+19 TO 53+26 Lt	4	SY
750	2115	DETECTABLE WARNING PANELS		
		STA 52+54 TO 52+59 Lt	10	SF
		STA 52+54 TO 52+59 Rt	10	SF
		STA 52+70 TO 52+72 Lt	10	SF
		STA 53+21 TO 53+23 Lt	10	SF

SUPERPAVE FAA 43

VALLEY GUTTER SPECIAL

DETECTABLE WARNING PANEL

SIDEWALK CONCRETE 4IN

SIDEWALK CONCRETE 6IN

CURB & GUTTER-TYPE I

DRIVEWAY CONCRETE

PIGMENTED IMPRINTED CONCRETE

AGGREGATE SURFACE COURSE CL 13

COMMERCIAL GRADE HOT MIX ASPHALT

Paving Layout

8th Ave NW

Sta 51+75 to Sta 59+75

Roadway Reconstruction

Mandan, ND

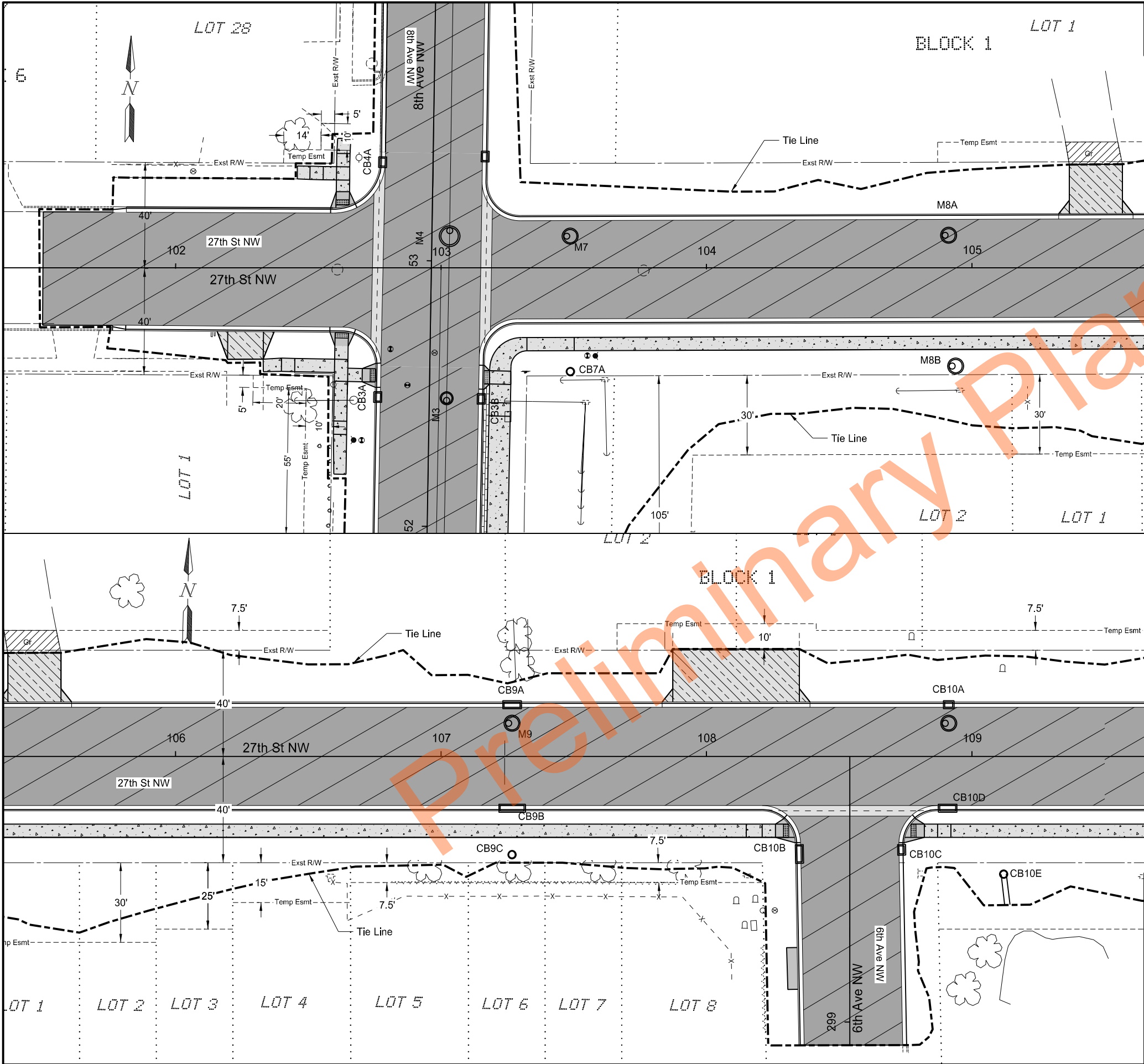
REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

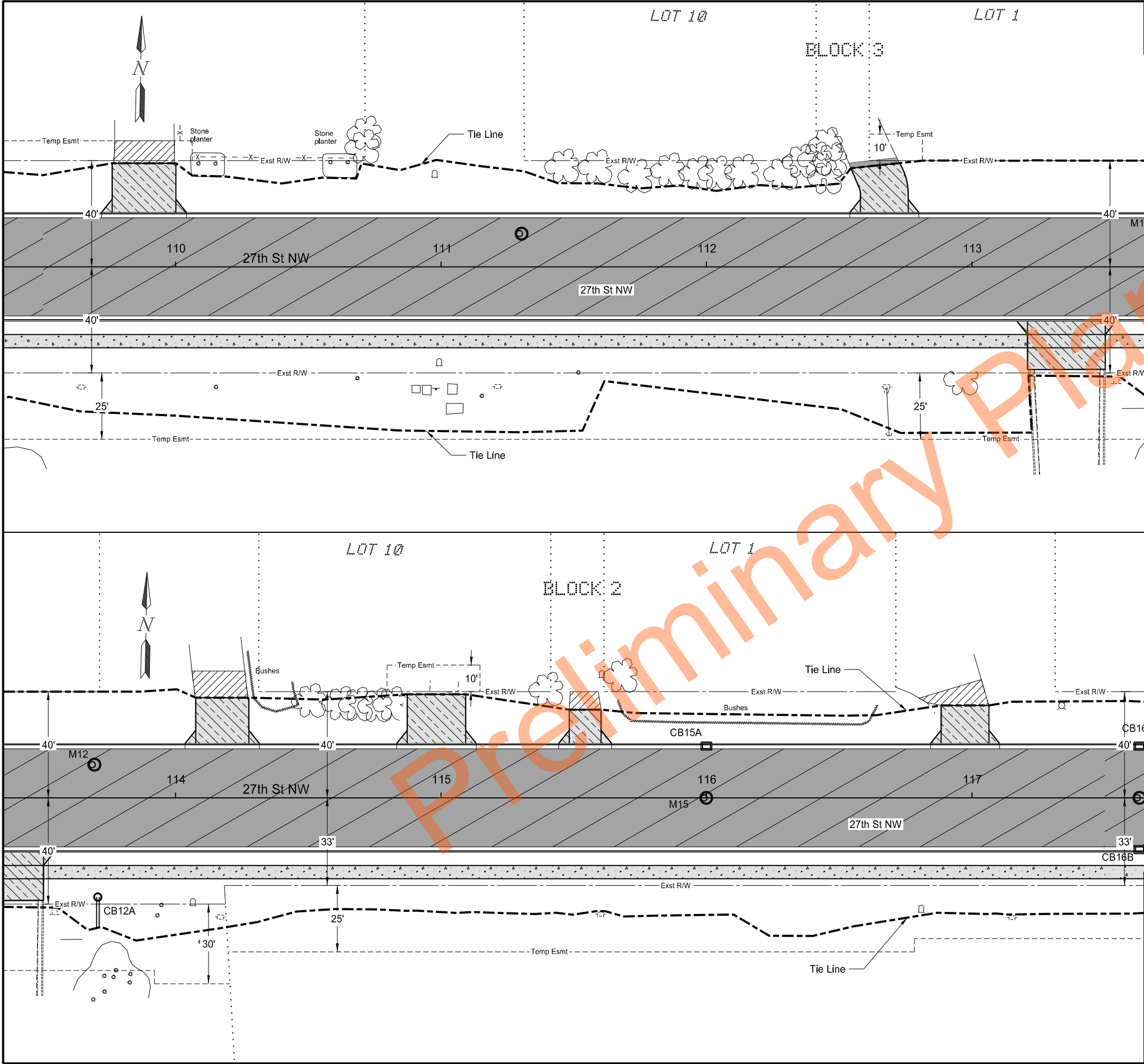
PE-40939

DATE 08/06/2026

NORTH DAKOTA



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	90	3
SPEC	CODE	PAY ITEM	QTY UNIT	
302	356	AGGREGATE SURFACE COURSE CL 13		
		STA 105+35 TO 105+57 Lt	6	TON
748	140	CURB & GUTTER-TYPE I		
		STA 101+76 TO 102+76 Rt	107	LF
		STA 101+76 TO 102+77 Lt	115	LF
		STA 103+16 TO 108+35 Rt	608	LF
		STA 103+17 TO 109+50 Lt	651	LF
		STA 108+75 TO 109+50 Rt	159	LF
748	1280	VALLEY GUTTER SPECIAL		
		STA 102+77 TO 102+76 Lt	61	LF
		STA 103+17 TO 103+16 Lt	51	LF
		STA 108+28 TO 108+80 Rt	51	LF
750	115	SIDEWALK CONCRETE 4IN		
		STA 103+18 TO 108+26 Rt	286	SY
		STA 108+82 TO 109+50 Rt	38	SY
750	140	SIDEWALK CONCRETE 6IN		
		STA 108+26 TO 108+33 Rt	5	SY
		STA 108+30 TO 108+34 Rt	7	SY
		STA 108+74 TO 108+82 Rt	5	SY
750	1000	DRIVEWAY CONCRETE		
		STA 102+16 TO 102+37 Rt	20	SY
		STA 105+33 TO 105+61 Lt	43	SY
		STA 107+83 TO 108+39 Lt	108	SY
750	2115	DETECTABLE WARNING PANELS		
		STA 108+29 TO 108+31 Rt	10	SF
		STA 108+77 TO 108+79 Rt	10	SF
LEGEND				
	SUPERPAVE FAA 43		CURB & GUTTER-TYPE I	
	VALLEY GUTTER SPECIAL		DRIVEWAY CONCRETE	
	DETECTABLE WARNING PANEL		PIGMENTED IMPRINTED CONCRETE	
	SIDEWALK CONCRETE 4IN		AGGREGATE SURFACE COURSE CL 13	
	SIDEWALK CONCRETE 6IN		COMMERCIAL GRADE HOT MIX ASPHALT	
Paving Layout 27th St NW Sta 101+50 to Sta 109+50 Roadway Reconstruction Mandan, ND				



		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-1-988(055)	90	4
SPEC	CODE	PAY ITEM		QTY UNIT	
302	356	AGGREGATE SURFACE COURSE CL 13			
		STA 109+77 TO 110+00	Lt	7	TON
		STA 114+06 TO 114+27	Lt	7	TON
		STA 115+48 TO 115+60	Lt	3	TON
		STA 116+80 TO 117+06	Lt	5	TON
430	500	COMMERCIAL GRADE HOT MIX ASPHALT			
		STA 112+54 TO 112+73	Lt	1	TON
748	140	CURB & GUTTER-TYPE I			
		STA 109+50 TO 117+50	Lt	1451.1	LF
		STA 109+50 TO 117+50	Rt	1126.9	LF
750	115	SIDEWALK CONCRETE 4IN			
		STA 109+50 TO 113+21	Rt	206	SY
		STA 113+50 TO 117+50	Rt	222	SY
750	1000	DRIVEWAY CONCRETE			
		STA 109+72 TO 110+04	Lt	52	SY
		STA 112+54 TO 112+80	Lt	39	SY
		STA 113+17 TO 113+54	Rt	61	SY
		STA 114+04 TO 114+32	Lt	41	SY
		STA 114+83 TO 115+13	Lt	47	SY
		STA 115+44 TO 115+64	Lt	19	SY
		STA 116+84 TO 117+10	Lt	31	SY

LEGEND

SUPERPAVE FAA 43

VALLEY GUTTER SPECIAL

DETECTABLE WARNING PANEL

SIDEWALK CONCRETE 4IN

SIDEWALK CONCRETE 6IN

CURB & GUTTER-TYPE I

DRIVEWAY CONCRETE

PIGMENTED IMPRINTED CONCRETE

AGGREGATE SURFACE COURSE CL 13

COMMERCIAL GRADE HOT MIX ASPHALT

Paving Layout

27th St NW

Sta 109+50 to Sta 117+50

Roadway Reconstruction

Mandan, ND

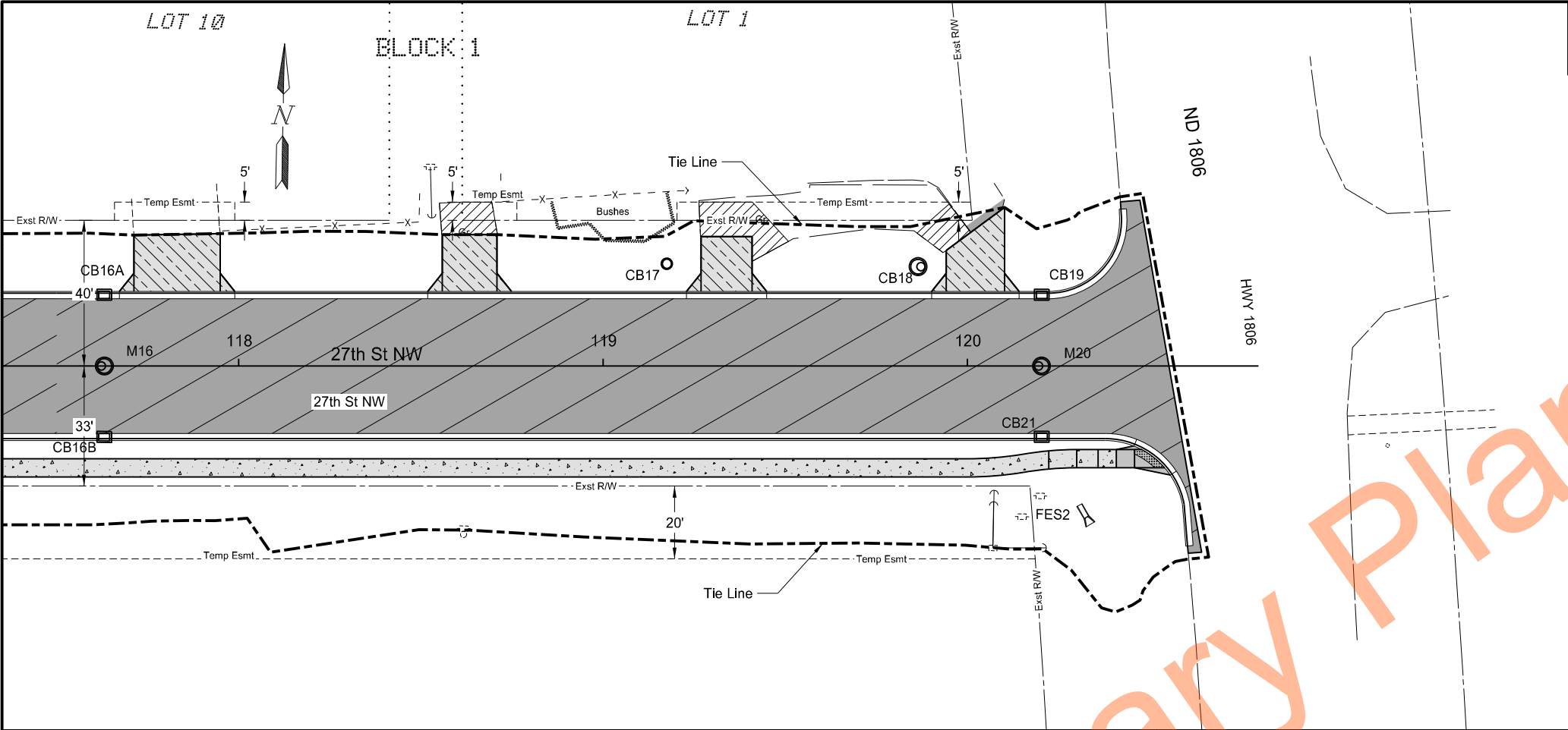
REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

DATE 08/06/2026

NORTH DAKOTA



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	90	5

SPEC	CODE	PAY ITEM	QTY	UNIT
302	356	AGGREGATE SURFACE COURSE CL 13		
		STA 118+55 TO 118+71 Lt	5	TON
		STA 119+26 TO 119+51 Lt	8	TON
		STA 119+86 TO 120+01 Lt	3	TON
430	500	COMMERCIAL GRADE HOT MIX ASPHALT		
		STA 120+00 TO 120+10 Lt	1	TON
748	140	CURB & GUTTER-TYPE I		
		STA 117+50 TO 120+60 Rt	327	LF
		STA 117+50 TO 120+42 Lt	307	LF
750	115	SIDEWALK CONCRETE 4IN		
		STA 117+50 TO 120+35 Rt	158	SY
750	140	SIDEWALK CONCRETE 6IN		
		STA 120+35 TO 120+52 Rt	8	SY
750	1000	DRIVEWAY CONCRETE		
		STA 117+67 TO 117+99 Lt	43	SY
		STA 118+52 TO 118+75 Lt	28	SY
		STA 119+23 TO 119+45 Lt	26	SY
		STA 119+90 TO 120+14 Lt	33	SY
750	2115	DETECTABLE WARNING PANELS		
		STA 120+40 TO 120+45 Rt	11	SF

LEGEND

SUPERPAVE FAA 43

CURB & GUTTER-TYPE I

VALLEY GUTTER SPECIAL

DRIVEWAY CONCRETE

DETECTABLE WARNING PANEL

PIGMENTED IMPRINTED CONCRETE

SIDEWALK CONCRETE 4IN

AGGREGATE SURFACE COURSE CL 13

SIDEWALK CONCRETE 6IN

COMMERCIAL GRADE HOT MIX ASPHALT

Paving Layout

27th St NW

Sta 117+50 to Sta 120+80

Roadway Reconstruction

Mandan, ND

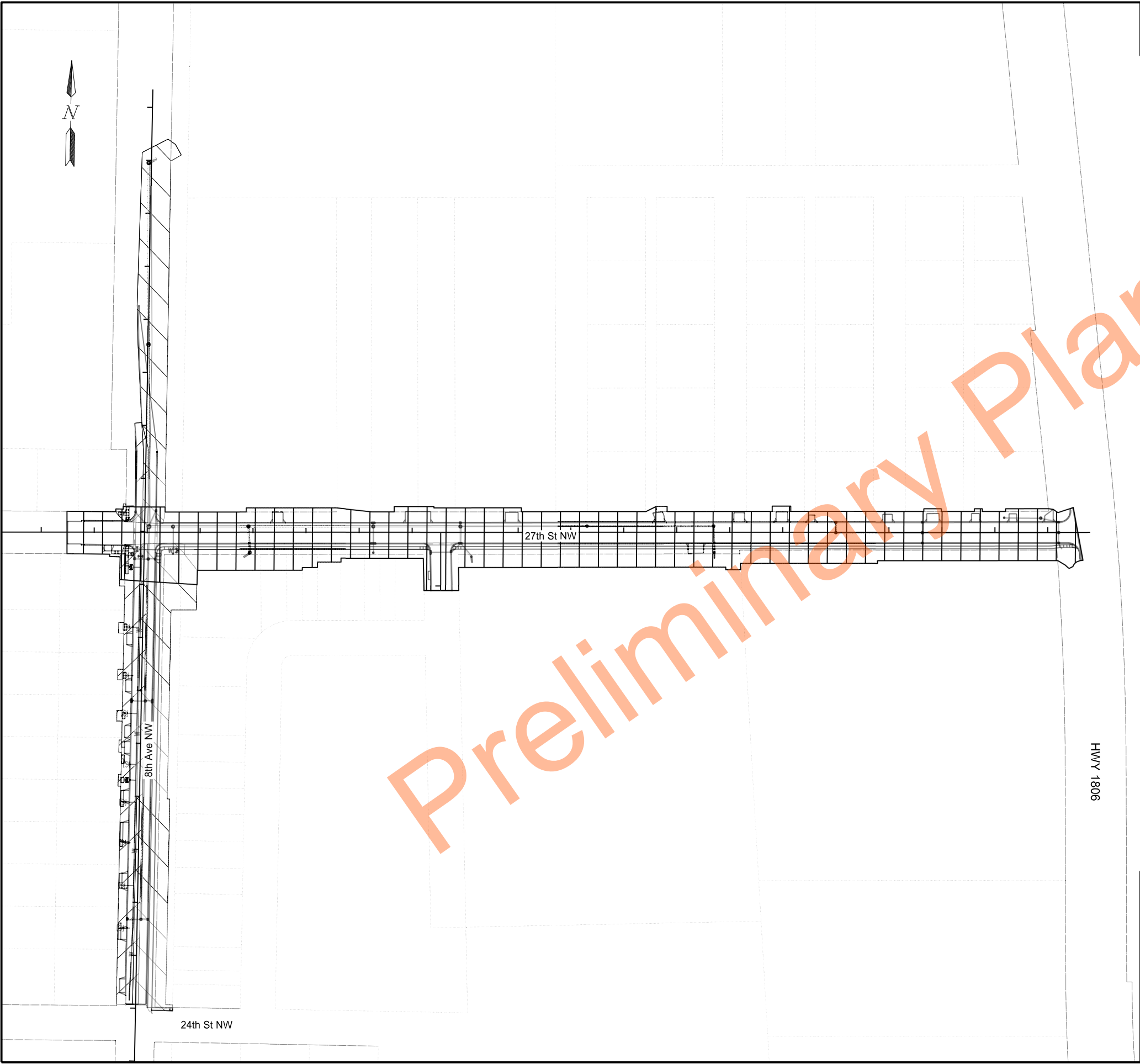
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AMY J. SCHAAF

PE-40939

DATE 08/06/2026

NORTH DAKOTA

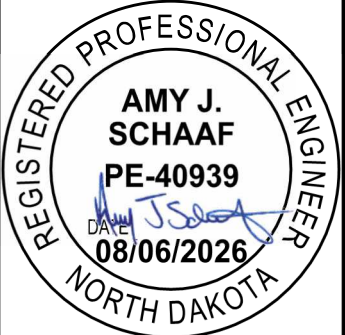


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	100	1

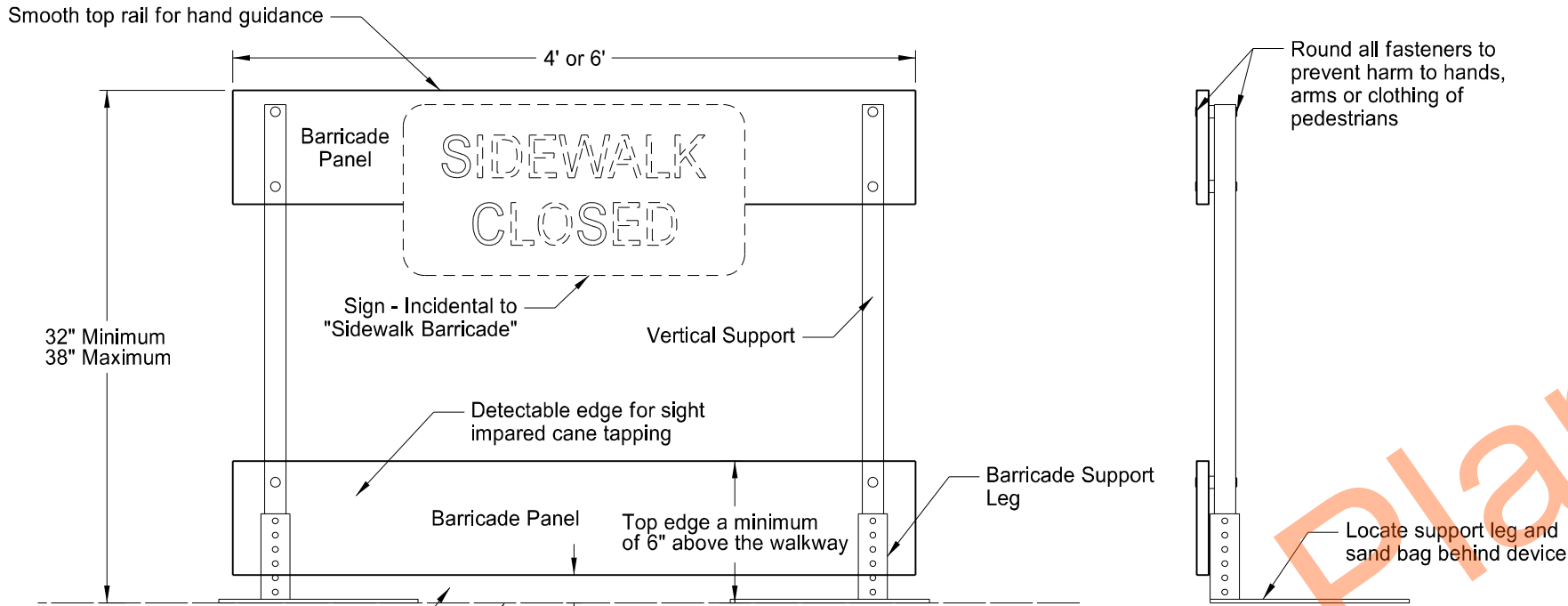
LEGEND

-  Phase 1A
-  Phase 1B
-  Phase 2

Work Zone Traffic Control
Phasing Overview
8th Ave NW & 27th St NW
Roadway Reconstruction
Mandan, ND



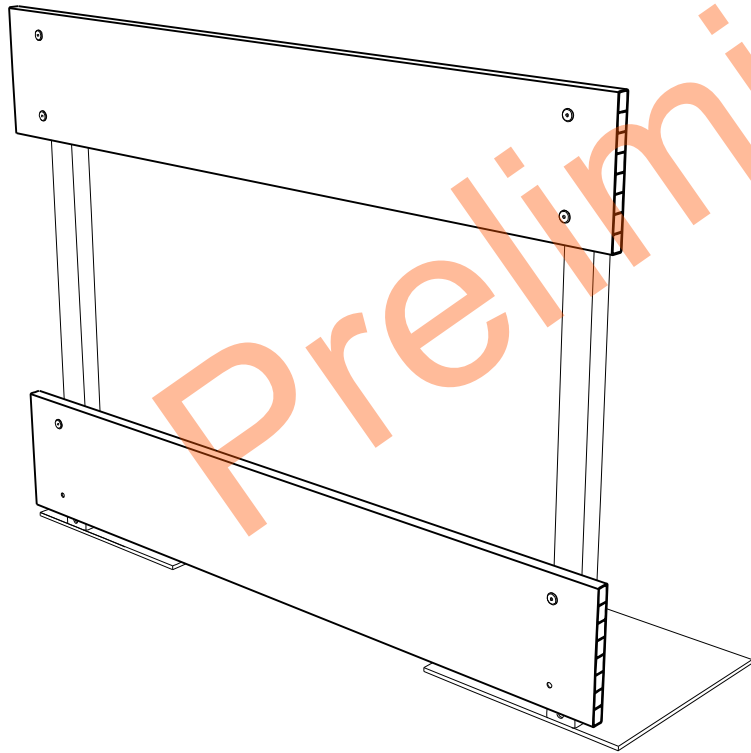
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	100	2



NOTES:

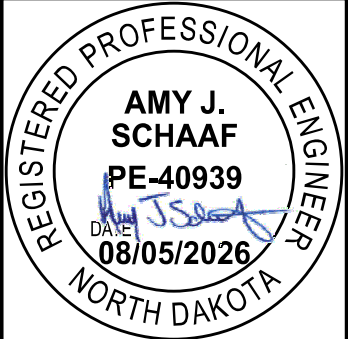
Sidewalk Barricades

1. Provide self standing sidewalk barricade with no supports extending into the pedestrians path.
2. Use orange or orange and white diagonal striped barricade panels contrasting with the walkway surface.
3. Provide ADA compliant and NCHRP 350 or Mash Test Level 3 (TL3) approved sidewalk barricades.
4. Include all costs to furnish, maintain and remove sidewalk barricades and signs in the price bid for "Sidewalk Barricade".



Perspective View

Sidewalk Barricade
Phases 1 & 2
8th Ave NW & 27th St NW
Roadway Reconstruction
Mandan, ND



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	100	3

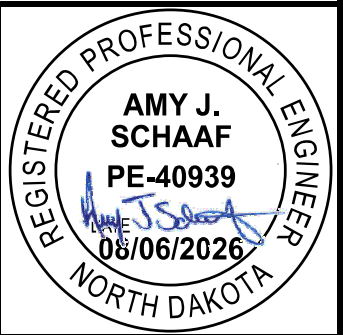
SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED		TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
			BY PHASE NO.				
			1A	1B			
E5-1-48	48"x48"	EXIT GORE				35	
G20-1-60	60"x24"	ROAD WORK NEXT ____ MILES				28	
G20-1b-60	60"x24"	NO WORK IN PROGRESS (Sign and installation only)				18	
G20-2-48	48"x24"	END ROAD WORK	6	6	6	26	156
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)				18	
G20-4b-36	36"x30"	WAIT FOR PILOT CAR				18	
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 \$150 WHEN WORKERS PRESENT				59	
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)				11	
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				32	
R1-2-60	60"x60"	YIELD				29	
R2-1-36	36"x48"	SPEED LIMIT ____ (Portable only)				30	
R2-1-48	48"x60"	SPEED LIMIT ____				39	
R2-1aP-24	24"x18"	MINIMUM FEE \$150 (Mounted on Speed Limit post)				10	
R3-1-48	48"x48"	NO RIGHT TURN	2	1	2	35	70
R3-2-48	48"x48"	NO LEFT TURN	2	1	2	35	70
R4-1-48	48"x60"	DO NOT PASS				39	
R4-7-48	48"x60"	KEEP RIGHT	1	1	1	39	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)	5	5	5	14	70
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)	3	3	3	12	36
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)		1	1	15	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	6	6	6	26	156
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				35	
W3-5-48	48"x48"	SPEED REDUCTION AHEAD				35	
W4-2-48	48"x48"	LANE ENDS RIGHT or LEFT				35	
W5-1-48	48"x48"	ROAD NARROWS	1		1	35	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				35	
W8-3-48	48"x48"	PAVEMENT ENDS				35	
W8-7-48	48"x48"	LOOSE GRAVEL				35	
W8-11-48	48"x48"	UNEVEN LANES				35	
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				35	
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	
W13-1P-30	30"x30"	____ MPH ADVISORY SPEED PLAQUE (Mounted on warning sign post)				14	
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	5	7	7	35	245
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	3	1	3	35	105
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				35	
W20-8-18	18"x18"	STOP - SLOW PADDLE Back to Back				5	
W20-52P-54	54"x12"	NEXT ____ MILES (Mounted on warning sign post)				12	
W21-1-48	48"x48"	WORKERS				35	
W21-2-48	48"x48"	FRESH OIL				35	
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or ____ FT or ____ MILE				35	
W21-5-48	48"x48"	SHOULDER WORK				35	
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED				35	

[illegible][illegible]

SPEC & CODE			
704-1000	TRAFFIC CONTROL SIGNS	TOTAL UNITS	997

[illegible]

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/>



Traffic Control Devices List

Phase 1A & 1B

8th Ave NW & 27th St NW

Roadway Reconstruction

Mandan, ND



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	100	4

1

STREET
CLOSED
AHEAD

W20-3-48
Post Mounted

2

STREET
CLOSED
XXX FT

W20-3-48
Post Mounted

3

END
ROAD WORK

G2-2a-48
Post Mounted

4

←

W1-6L-24
Barricade
Mounted

5

ONE WAY →

R6-1R-12
Drum Mounted

6

ROAD
WORK
AHEAD

W20-1-48
Post Mounted

7

ROAD
NARROWS

W5-1-48
Post Mounted

8

↗

R3-1-48
Post Mounted

9

↖

R3-2-48
Post Mounted

10

↗

R4-7c-18
Barrel Mounted

STREET
CLOSED

R11-2a-30
Barricade
Mounted

→

W1-6R-24
Barricade
Mounted

LEGEND

●

DELINATOR DRUM

●

TUBULAR MARKER

≡

TYPE III BARRICADE

≡

SIDEWALK BARRICADE

TT

TRAFFIC CONTROL SIGNS

→

DIRECTION OF TRAFFIC

Work Zone Traffic Control

Phase 1A

8th Ave NW & 27th St NW

Roadway Reconstruction

Mandan, ND

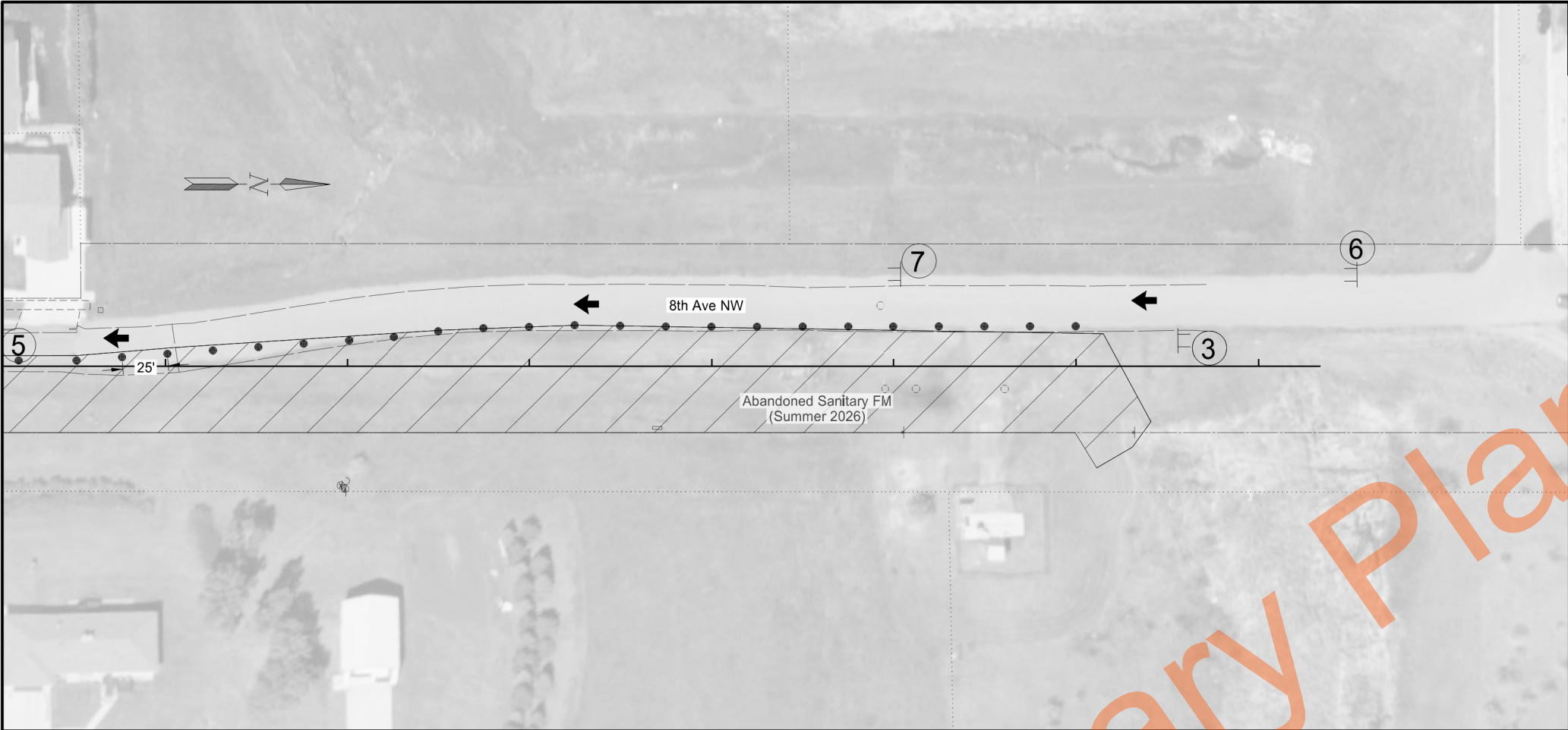
REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

DATE 08/06/2026

NORTH DAKOTA



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	100	5

1



W20-3-48
Post Mounted

2



W20-3-48
Post Mounted

3



G2-2a-48
Post Mounted

4



W1-6L-24
Barricade Mounted



R11-2a-30
Barricade Mounted



W1-6R-24
Barricade Mounted

5



R6-1R-12
Drum Mounted

6



W20-1-48
Post Mounted

7



W5-1-48
Post Mounted

8



R3-1-48
Post Mounted

9



R3-2-48
Post Mounted

10



R4-7c-18
Barrel Mounted

LEGEND

 DELINATOR DRUM

 TUBULAR MARKER

 TYPE III BARRICADE

 SIDEWALK BARRICADE

 TRAFFIC CONTROL SIGNS

 DIRECTION OF TRAFFIC

Work Zone Traffic Control
Phase 1A
8th Ave NW & 27th St NW
Roadway Reconstruction
Mandan, ND





STATE		PROJECT NO.	SECTION NO.	SHEET NO.
ND		SU-1-988(055)	100	6

1

STREET CLOSED AHEAD

W20-3-48
Post Mounted

2

STREET CLOSED XXX FT

W20-3-48
Post Mounted

3

END ROAD WORK

G2-2a-48
Post Mounted

4

←

W1-6L-24
Barricade Mounted

5

ONE WAY →

R6-1R-12
Drum Mounted

6

ROAD WORK AHEAD

W20-1-48
Post Mounted

7

ROAD WORK XXX FT

W20-1-48
Post Mounted

8

↗

R3-1-48
Post Mounted

9

↙

R3-2-48
Post Mounted

10

↗

R4-7c-18
Barrel Mounted

11

STREET CLOSED TO THRU TRAFFIC

R11-4a-60
Barricade Mounted

LEGEND

●

DELINATOR DRUM

●

TUBULAR MARKER

|||

TYPE III BARRICADE

|||

SIDEWALK BARRICADE

TT

TRAFFIC CONTROL SIGNS

➔

DIRECTION OF TRAFFIC

Work Zone Traffic Control

Phase 1B

8th Ave NW & 27th St NW

Roadway Reconstruction

Mandan, ND

REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

08/06/2026

NORTH DAKOTA



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	100	7

1

STREET CLOSED AHEAD

W20-3-48 Post Mounted

2

STREET CLOSED XXX FT

W20-3-48 Post Mounted

3

END ROAD WORK

G2-2a-48 Post Mounted

4

←

W1-6L-24 Barricade Mounted

5

ONE WAY →

R6-1R-12 Drum Mounted

6

ROAD WORK AHEAD

W20-1-48 Post Mounted

7

ROAD WORK XXX FT

W20-1-48 Post Mounted

8

↱

R3-1-48 Post Mounted

9

↶

R3-2-48 Post Mounted

10

↷

R4-7c-18 Barrel Mounted

11

STREET CLOSED TO THRU TRAFFIC

R11-4a-60 Barricade Mounted

LEGEND

⦿

DELINATOR DRUM

•

TUBULAR MARKER

≡

TYPE III BARRICADE

≡

SIDEWALK BARRICADE

TT

TRAFFIC CONTROL SIGNS

➔

DIRECTION OF TRAFFIC

Work Zone Traffic Control

Phase 1B

8th Ave NW & 27th St NW

Roadway Reconstruction

Mandan, ND

REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

DATE 08/06/2026

NORTH DAKOTA

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	100	8

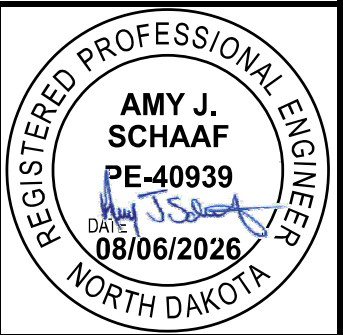
SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
E5-1-48	48"x48"	EXIT GORE		35	
G20-1-60	60"x24"	ROAD WORK NEXT ____ MILES		28	
G20-1b-60	60"x24"	NO WORK IN PROGRESS (Sign and installation only)		18	
G20-2-48	48"x24"	END ROAD WORK		26	
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)		18	
G20-4b-36	36"x30"	WAIT FOR PILOT CAR		18	
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 \$150 WHEN WORKERS PRESENT		59	
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)		11	
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		32	
R1-2-60	60"x60"	YIELD		29	
R2-1-36	36"x48"	SPEED LIMIT ____ (Portable only)		30	
R2-1-48	48"x60"	SPEED LIMIT ____		39	
R2-1aP-24	24"x18"	MINIMUM FEE \$150 (Mounted on Speed Limit post)		10	
R3-1-48	48"x48"	NO RIGHT TURN	1	35	35
R3-2-48	48"x48"	NO LEFT TURN	1	35	35
R4-1-48	48"x60"	DO NOT PASS		39	
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)	7	15	105
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	2	26	52
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		35	
W3-5-48	48"x48"	SPEED REDUCTION AHEAD		35	
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		35	
W8-3-48	48"x48"	PAVEMENT ENDS		35	
W8-7-48	48"x48"	LOOSE GRAVEL		35	
W8-11-48	48"x48"	UNEVEN LANES		35	
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		35	
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	
W13-1P-30	30"x30"	____ MPH ADVISORY SPEED PLAQUE (Mounted on warning sign post)		14	
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	8	35	280
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		35	
W20-8-18	18"x18"	STOP - SLOW PADDLE Back to Back		5	
W20-52P-54	54"x12"	NEXT ____ MILES (Mounted on warning sign post)		12	
W21-1-48	48"x48"	WORKERS		35	
W21-2-48	48"x48"	FRESH OIL		35	
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or ____ FT or ____ MILE		35	
W21-5-48	48"x48"	SHOULDER WORK		35	
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED		35	

[illegible][illegible]

SPEC & CODE			
704-1000	TRAFFIC CONTROL SIGNS	TOTAL UNITS	577

[illegible]

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/>



Traffic Control Devices List
Phase 2
8th Ave NW & 27th St NW
Roadway Reconstruction
Mandan, ND



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	100	9

1

STREET CLOSED AHEAD

W20-3-48 Post Mounted

2

STREET CLOSED XXX FT

W20-3-48 Post Mounted

3

STREET CLOSED

R11-2a-30 Barricade Mounted

4

← OR →

W1-6L-24 Barricade Mounted OR W1-6R-24 Barricade Mounted

5

R3-2-48 Post Mounted

6

R3-1-48 Post Mounted

7

ROAD WORK AHEAD

W20-1-48 Post Mounted

LEGEND

DELINATOR DRUM

TUBULAR MARKER

TYPE III BARRICADE

SIDEWALK BARRICADE

TRAFFIC CONTROL SIGNS

DIRECTION OF TRAFFIC

Work Zone Traffic Control

Phase 2

8th Ave NW & 27th St NW

Roadway Reconstruction

Mandan, ND

REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

DATE 08/06/2026

NORTH DAKOTA



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	100	10

1

W20-3-48
Post Mounted

2

W20-3-48
Post Mounted

3

R11-2a-30
Barricade Mounted

4

W1-6L-24
Barricade Mounted

OR

W1-6R-24
Barricade Mounted

5

R3-2-48
Post Mounted

6

R3-1-48
Post Mounted

7

W20-1-48
Post Mounted

LEGEND

DELINATOR DRUM

TUBULAR MARKER

TYPE III BARRICADE

SIDEWALK BARRICADE

TRAFFIC CONTROL SIGNS

DIRECTION OF TRAFFIC

Work Zone Traffic Control
Phase 2
8th Ave NW & 27th St NW
Roadway Reconstruction
Mandan, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	100	11

1

W20-3-48
Post Mounted

2

W20-3-48
Post Mounted

3

R11-2a-30
Barricade Mounted

4

W1-6L-24
Barricade Mounted

OR

W1-6R-24
Barricade Mounted

5

R3-2-48
Post Mounted

6

R3-1-48
Post Mounted

7

W20-1-48
Post Mounted

LEGEND

DELINATOR DRUM

TUBULAR MARKER

TYPE III BARRICADE

SIDEWALK BARRICADE

TRAFFIC CONTROL SIGNS

DIRECTION OF TRAFFIC

Work Zone Traffic Control
Phase 2
8th Ave NW & 27th St NW
Roadway Reconstruction
Mandan, ND

REGISTERED PROFESSIONAL ENGINEER

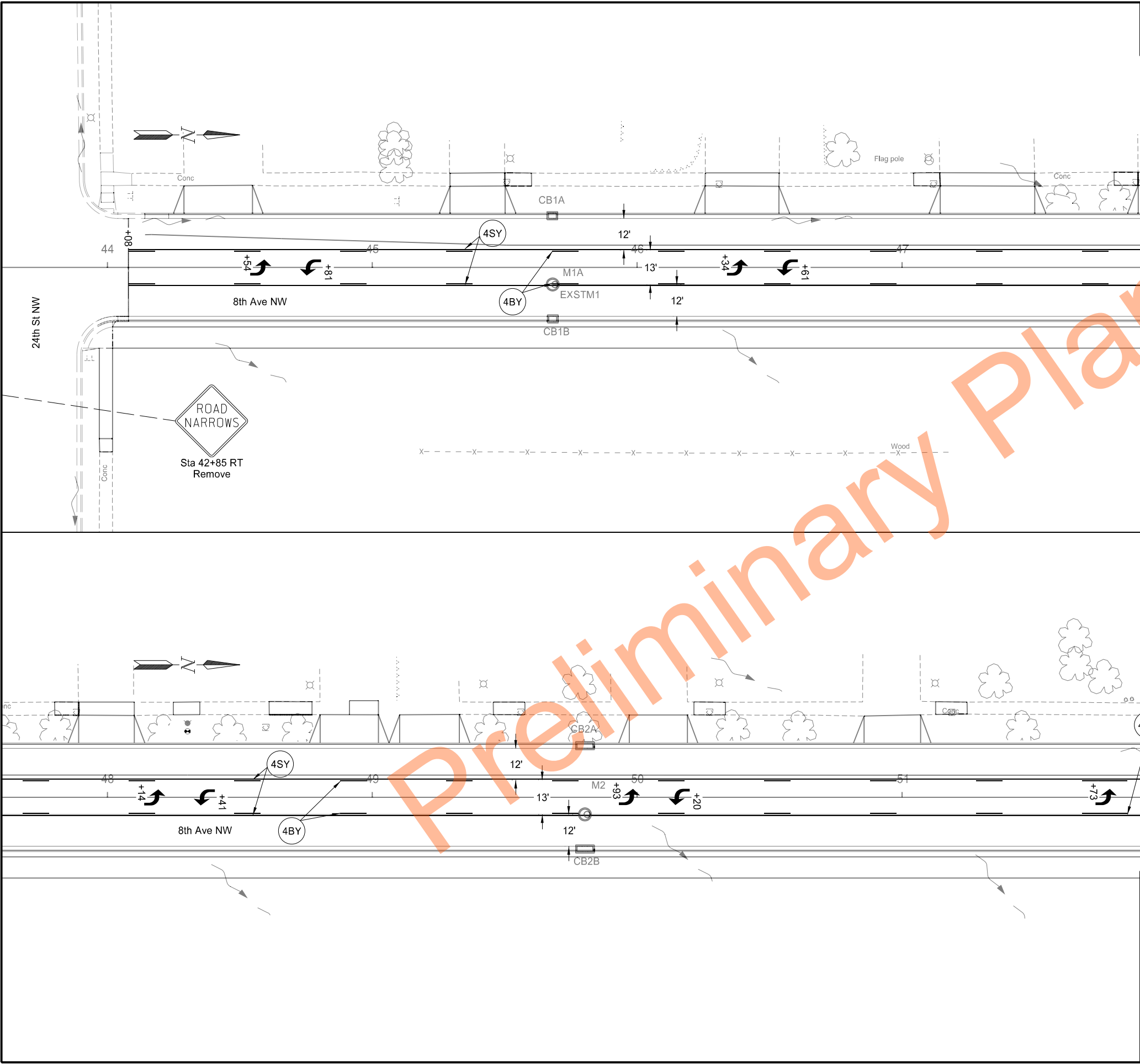
AMY J. SCHAAF

PE-40939

DATE 08/06/2026

NORTH DAKOTA

																		STATE	PROJECT NO.			SECTION NO.	SHEET NO.		
																		N.D.	SU-1-988(055)			110	1		
Station / RP	Sign No.	Assembly No.	Flat Sheet For Signs		Sign Support Length				Vert Clear- ance	Support Size	Max Post Len	Sleeve Length		3rd	4th	Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments		
			IV SF	XI SF	1st LF	2nd LF	3rd LF	4th LF	FT		LF	LF	LF	LF											
101+40 Rt	S1-1			8.8	11.2				7.0	2.5 x 2.5 12 ga	12.0						1	4	3 x 3 7 ga				Special Assembly A. Mount with W16-9P.		
102+00 Rt	W13-20	9		5.0	9.7	9.7			7.0	2 x 2 12 ga	11.5						2	4	2.25 x 2.25 12 ga						
102+55 Rt	S1-1			8.9	11.4				7.0	2.5 x 2.5 12 ga	12.0						1	4	3 x 3 7 ga				Special Assembly B. Mount with W16-7P		
102+70 Lt	S1-1			8.9	11.4				7.0	2.5 x 2.5 12 ga	12.0						1	4	3 x 3 7 ga				Special Assembly B. Mount with W16-7P		
102+72 Lt	R1-1		18.0	5.2	11.2				7.0	2.5 x 2.5 10 ga	12.7						1	4	3 x 3 7 ga			1	Assembly No. 2E. Mount with SN1 (2) & SN2 (2).		
103+17 Rt	R1-1		18.0	5.2	11.2				7.0	2.5 x 2.5 10 ga	12.7						1	4	3 x 3 7 ga			1	Assembly No. 2E. Mount with SN1 (2) & SN2 (2).		
103+71 Lt	S1-1			8.8	11.2				7.0	2.5 x 2.5 12 ga	12.0						1	4	3 x 3 7 ga				Speical Assembly A. Mount with W16-9P		
103+90 Rt	R2-1	9		5.0	9.7				7.0	2 x 2 12 ga	11.5						1	4	2.25 x 2.25 12 ga						
108+78 Rt	R1-1		18.0	5.2	11.2				7.0	2.5 x 2.5 10 ga	12.7						1	4	3 x 3 7 ga			1	Assembly No. 2E. Mount with SN2 (2) & SN3 (2).		
113+54 Rt	R1-1		27.8	5.2	12.0				7.0	2.5 x 2.5 10 ga	13.7						1	4	3 x 3 7 ga			1	Assembly No. 2E. Mount with SN2 (2) & SN4 (2).		
114+03 Lt	R1-1		18.0	5.2	11.2				7.0	2.5 x 2.5 10 ga	12.7						1	4	3 x 3 7 ga			1	Assembly No. 2E. Mount with SN2 (2) & SN3 (2).		
119+01 Lt	R2-1			10.0	11.7	11.7			7.0	2.5 x 2.5 10 ga	13.3						2	4	3 x 3 7 ga			1	Special Assembly C. Mount with W13-20.		
120+30 Rt	R1-1		20.0	5.2	11.2				7.0	2.5 x 2.5 10 ga	11.7						1	4	3 x 3 7 ga			1	Assembly No. 2E. Mount with SN2 (2) & SN5 (2).		
120+37 Rt	W11-2				13.5				7.0	2.25 x 2.25 12 ga	17.4	2.2			2.5 x 2.5 12 ga	1	4	3 x 3 7 ga	1		1		Reset W11-2 & W16-7P w/ RRFB, Push Button, & Solar Panel on New Post		
Sub Total			119.8	86.6	Total		179.2										Total	64.0		1	0	8			
Grand Total			119.8	86.6	Total		179.2										Total	64	0	1	0	8			



STATE		PROJECT NO.		SECTION NO.	SHEET NO.
ND		SU-1-988(055)		110	2

SPEC	CODE	PAY ITEM	QTY UNIT	
762	103	PVMT MK PAINTED-MESSAGE		
		STA 44+54	16	SF
		STA 46+34	16	SF
		STA 48+14	16	SF
		STA 49+93	16	SF
		STA 51+73	16	SF
762	1104	PVMT MK PAINTED 4IN LINE		
		STA 44+04 TO STA 51+75 Lt	964.6	LF
		STA 44+04 TO STA 51+75 Rt	964.6	LF

SYMBOLS & MATERIALS LEGEND

— — — BROKEN LINE - 40' CYCLE
NON-CONTRASTING (10' LINE, 30' GAP)
CONTRASTING (10' LINE WHITE, 10' LINE NON REFLECTIVE BLACK, 20' GAP)

... DOTTED LINE-12' CYCLE (3' LINE, 9' GAP), UNLESS SHOWN OTHERWISE IN THE PLAN

↩ PAVEMENT MESSAGE (ARROW)

STRIPING KEY

CIRCLE-PAINT	BOX-PREF TAPE
TRIANGLE-EPOXY	OCTAGON-PREF THERMO

1ST DIGIT WIDTH 4", 8", ETC.	2ND DIGIT PATTERN S - SOLID B - BROKEN T - DOTTED D - DOUBLE SOLID K - DOUBLE BROKEN H - DOUBLE DOTTED	3RD DIGIT COLOR W - WHITE Y - YELLOW B - BLACK
------------------------------------	---	--

G=GROUND IN C=CONTRAST	W=WET REFLECTIVE E=ENHANCED SKID RESISTANCE
---------------------------	--

EXAMPLE: = 4" SOLID LINE WHITE PREF THERMO
GCV = GROUND IN, CONTRAST, WET REFLECTIVE

Permanent Signing & Striping

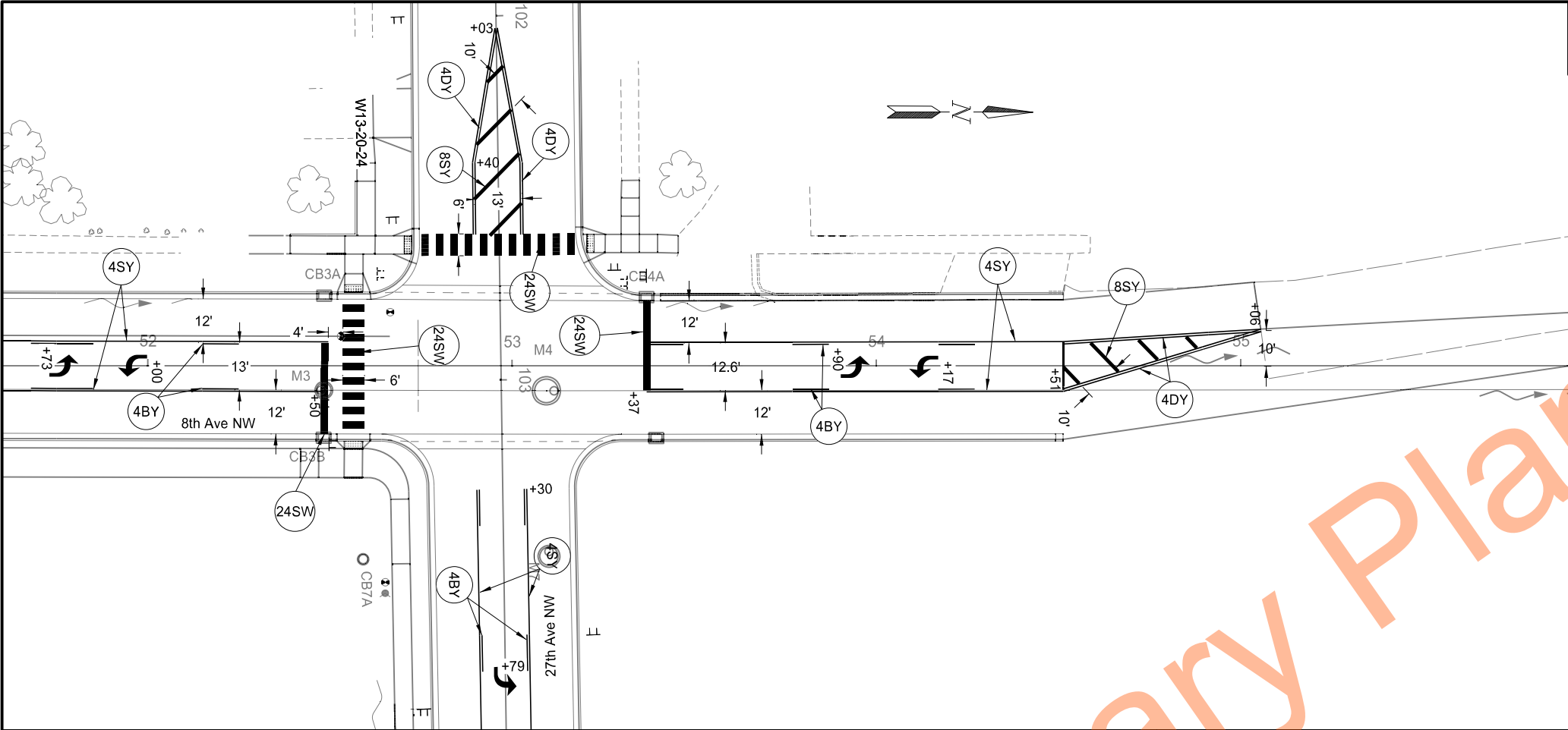
8th Ave NW

Sta 44+00 to Sta 51+75

Roadway Reconstruction

Mandan, ND

REGISTERED PROFESSIONAL ENGINEER
AMY J. SCHAAF
PE-40939
DATE 09/01/2026
NORTH DAKOTA



SPEC	CODE	PAY ITEM	QTY	UNIT
762	103	PVMT MK PAINTED-MESSAGE		
		STA 53+90	16	SF
		STA 54+17	16	SF
762	1104	PVMT MK PAINTED 4IN LINE		
		STA 51+75 TO STA 52+50 Lt	92.5	LF
		STA 51+75 TO STA 52+50 Rt	92.5	LF
		STA 53+37 TO STA 54+51 Rt	142.9	LF
		STA 53+37 TO STA 54+51 Lt	142.9	LF
		STA 54+51 TO STA 55+06 Lt	108.8	LF
		STA 54+51 TO STA 55+06 Rt	113.3	LF
762	1106	PVMT MK PAINTED 6IN LINE		
		STA 52+54	41	LF
		STA 52+59	41	LF
762	1108	PVMT MK PAINTED 8IN LINE		
		STA 54+51 TO STA 54+88	42	LF
762	1124	PVMT MK PAINTED 24IN LINE		
		STA 52+50	25	LF
		STA 53+37	24.6	LF

STATE

PROJECT NO.

SECTION NO.

SHEET NO.

ND

SU-1-988(055)

110

3

SYMBOLS & MATERIALS LEGEND

BROKEN LINE - 40' CYCLE

NON-CONTRASTING (10' LINE, 30' GAP)

CONTRASTING (10' LINE WHITE, 10' LINE NON REFLECTIVE BLACK, 20' GAP)

DOTTED LINE-12' CYCLE (3' LINE, 9' GAP), UNLESS SHOWN OTHERWISE IN THE PLAN

PAVEMENT MESSAGE (ARROW)

STRIPING KEY

CIRCLE-PAINT

BOX-PREF TAPE

TRIANGLE-EPOXY

OCTAGON-PREF THERMO

1ST DIGIT

WIDTH

4", 8", ETC.

2ND DIGIT

PATTERN

S - SOLID

B - BROKEN

T - DOTTED

D - DOUBLE SOLID

K - DOUBLE BROKEN

H - DOUBLE DOTTED

3RD DIGIT

COLOR

W - WHITE

Y - YELLOW

B - BLACK

G=GROUND IN

C=CONTRAST

W=WET REFLECTIVE

E=ENHANCED SKID RESISTANCE

EXAMPLE:

4SW

GCW

=

4" SOLID LINE WHITE PREF THERMO

GROUND IN, CONTRAST, WET REFLECTIVE

Permanent Signing & Striping

8th Ave NW

Sta 51+75 to Sta 55+06

Roadway Reconstruction

Mandan, ND

REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

DATE

08/06/2026

NORTH DAKOTA

8/5/2026 4:36:57 PM james.erickson U:\PROJECTS\22183A\1988.044\Design\110SN_LSIGN.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	US-1-988(055)	110	4

SPEC	CODE	PAY ITEM	QTY	UNIT
762	103	PVMT MK PAINTED-MESSAGE		
		STA 103+79	16	SF
		STA 104+06	16	SF
		STA 105+83	16	SF
		STA 106+10	16	SF
		STA 107+88	16	SF
		STA 108+15	16	SF
762	1104	PVMT MK PAINTED 4IN LINE		
		STA 102+03 TO STA 102+60 Rt	114	LF
		STA 102+03 TO STA 102+60 Lt	115	LF
		STA 103+30 TO STA 109+50 Rt	775	LF
		STA 103+30 TO STA 109+51 Lt	775	LF
762	1106	PVMT MK PAINTED 6IN LINE		
		STA 102+60	42.9	LF

SYMBOLS & MATERIALS LEGEND

— — — BROKEN LINE - 40' CYCLE
 NON-CONTRASTING (10' LINE, 30' GAP)
 CONTRASTING (10' LINE WHITE, 10' LINE
 NON REFLECTIVE BLACK, 20' GAP)

. . . DOTTED LINE-12' CYCLE (3' LINE, 9' GAP),
 UNLESS SHOWN OTHERWISE IN THE PLAN

 **PAVEMENT MESSAGE (ARROW)**

STRIPING KEY


 CIRCLE-PAINT


 BOX-PREF TAPE


 TRIANGLE-EPOXY


 OCTAGON-PREF THERMO

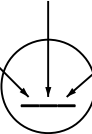
1ST DIGIT
WIDTH
4", 8", ETC.

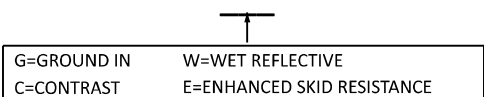
2ND DIGIT
PATTERN

S - SOLID
 B - BROKEN
 T - DOTTED
 D - DOUBLE SOLID
 K - DOUBLE BROKEN
 H - DOUBLE DOTTED

3RD DIGIT
COLOR

W - WHITE
 Y - YELLOW
 B - BLACK





EXAMPLE:  = 4" SOLID LINE WHITE PREF THERMO
 GCW GROUND IN, CONTRAST, WET REFLECTIVE

Permanent Signing & Striping

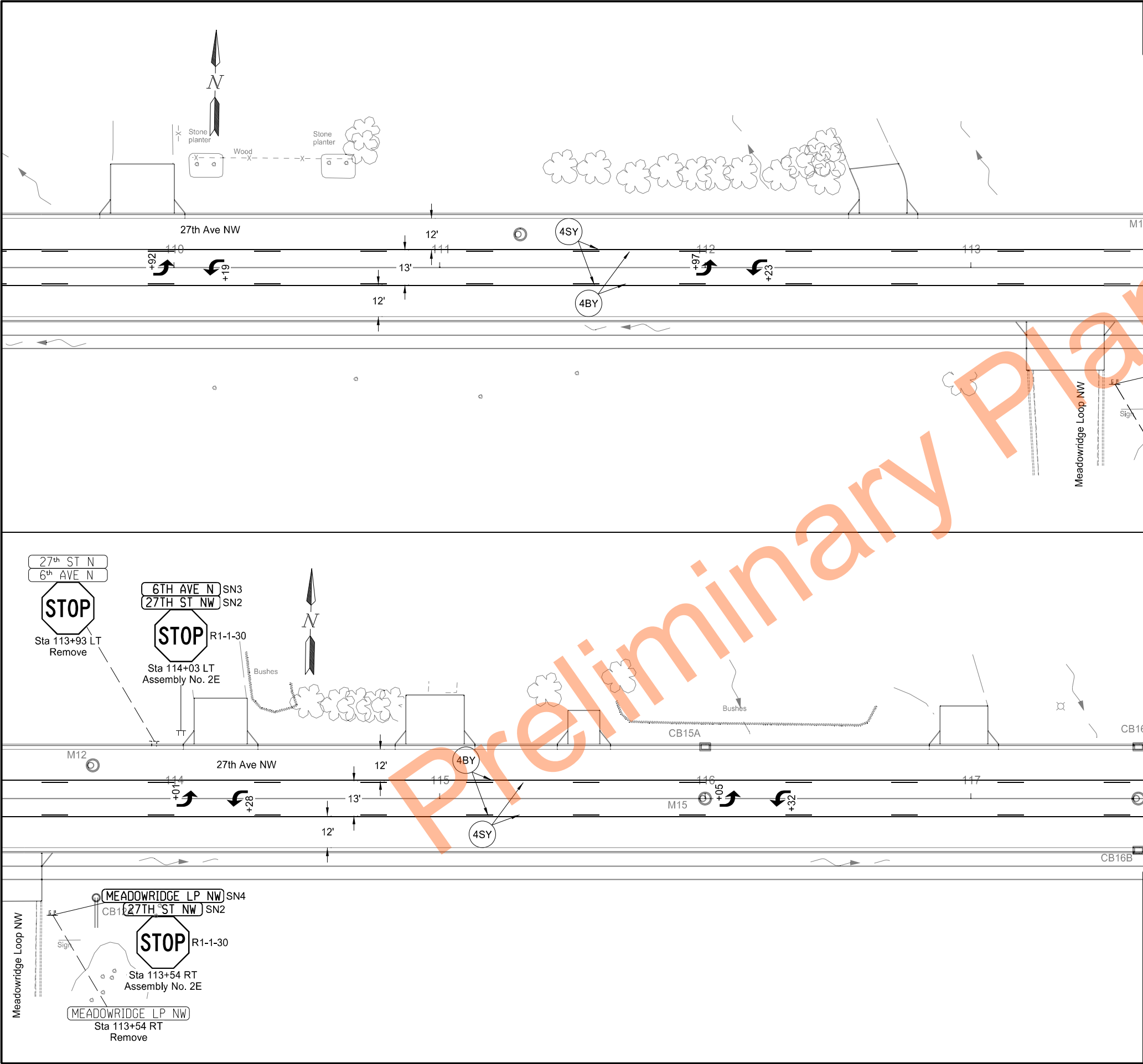
27th St NW

Sta 101+50 to Sta 109+50

Roadway Reconstruction

Mandan, ND





STATE		PROJECT NO.		SECTION NO.	SHEET NO.
ND		SU-1-988(055)		110	5

SPEC	CODE	PAY ITEM	QTY	UNIT
762	103	PVMT MK PAINTED-MESSAGE		
		STA 109+92	16	SF
		STA 110+19	16	SF
		STA 111+97	16	SF
		STA 112+23	16	SF
		STA 114+01	16	SF
		STA 114+28	16	SF
		STA 116+05	16	SF
		STA 116+32	16	SF
762	1104	PVMT MK PAINTED 4IN LINE		
		STA 109+50 TO STA 117+50 Lt	1000	LF
		STA 109+50 TO STA 117+50 Rt	1000	LF

SYMBOLS & MATERIALS LEGEND

— — — BROKEN LINE - 40' CYCLE
NON-CONTRASTING (10' LINE, 30' GAP)
CONTRASTING (10' LINE WHITE, 10' LINE NON REFLECTIVE BLACK, 20' GAP)

- - - DOTTED LINE-12' CYCLE (3' LINE, 9' GAP),
UNLESS SHOWN OTHERWISE IN THE PLAN

↩ PAVEMENT MESSAGE (ARROW)

STRIPING KEY

CIRCLE-PAINT	BOX-PREF TAPE
TRIANGLE-EPOXY	OCTAGON-PREF THERMO

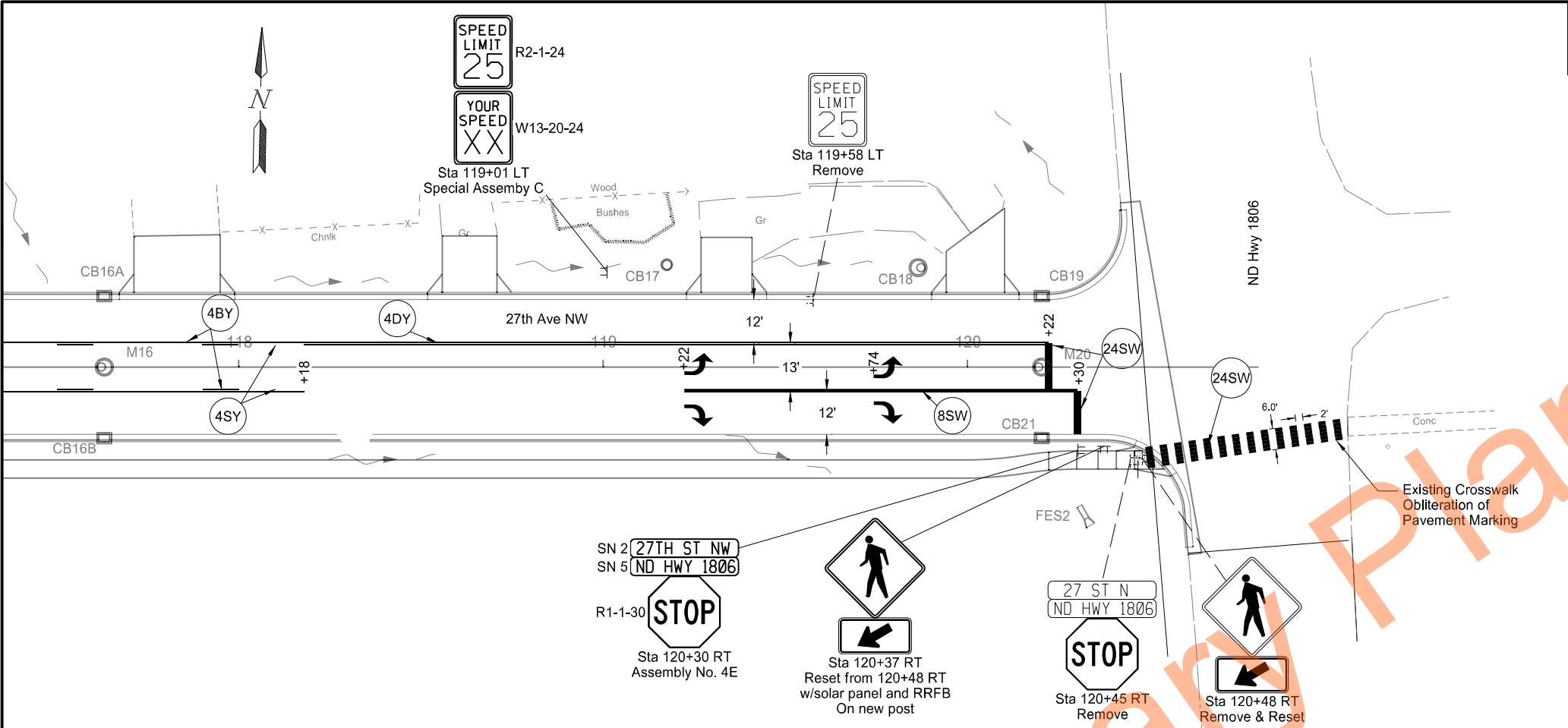
1ST DIGIT WIDTH 4", 8", ETC.	2ND DIGIT PATTERN S - SOLID B - BROKEN T - DOTTED D - DOUBLE SOLID K - DOUBLE BROKEN H - DOUBLE DOTTED	3RD DIGIT COLOR W - WHITE Y - YELLOW B - BLACK
------------------------------------	---	--

G=GROUND IN
C=CONTRAST

W=WET REFLECTIVE
E=ENHANCED SKID RESISTANCE

EXAMPLE: = 4" SOLID LINE WHITE PREF THERMO
GCV = GROUND IN, CONTRAST, WET REFLECTIVE

Permanent Signing & Striping
27th St NW
Sta 109+50 to Sta 117+50
Roadway Reconstruction
Mandan, ND



SPEC	CODE	PAY ITEM	QTY	UNIT
762	103	PVMT MK PAINTED-MESSAGE		
		STA 119+22	16	SF
		STA 119+22 Rt	16	SF
		STA 119+74	16	SF
		STA 119+74 Rt	16	SF
762	1104	PVMT MK PAINTED 4IN LINE		
		STA 117+50 TO STA 118+18 Rt	85	LF
		STA 117+50 TO STA 118+18 Lt	85	LF
		STA 118+18 TO STA 119+22	210.3	LF
		STA 118+18 TO STA 120+22 Lt	408.6	LF
762	1108	PVMT MK PAINTED 8IN LINE		
		STA 118+18 TO STA 119+22 Rt	26.1	LF
		STA 119+22 TO STA 120+30 Rt	107.9	LF
762	1124	PVMT MK PAINTED 24IN LINE		
		STA 120+22	13	LF
		STA 120+30	12	LF
		1806 CROSSWALK	81	LF

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	110	6

SYMBOLS & MATERIALS LEGEND

- — —

BROKEN LINE - 40' CYCLE
NON-CONTRASTING (10' LINE, 30' GAP)
CONTRASTING (10' LINE WHITE, 10' LINE
NON REFLECTIVE BLACK, 20' GAP)
- - -

DOTTED LINE-12' CYCLE (3' LINE, 9' GAP),
UNLESS SHOWN OTHERWISE IN THE PLAN

PAVEMENT MESSAGE (ARROW)

STRIPING KEY

- CIRCLE-PAINT

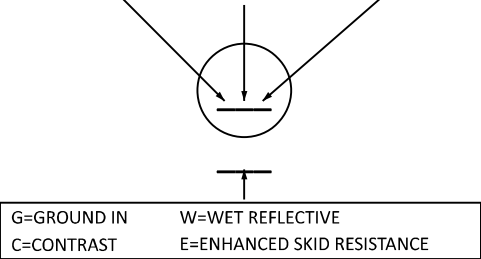
BOX-PREF TAPE
- TRIANGLE-EPOXY

OCTAGON-PREF THERMO

- 1ST DIGIT
WIDTH
4", 8", ETC.

2ND DIGIT
PATTERN
S - SOLID
B - BROKEN
T - DOTTED
D - DOUBLE SOLID
K - DOUBLE BROKEN
H - DOUBLE DOTTED

3RD DIGIT
COLOR
W - WHITE
Y - YELLOW
B - BLACK

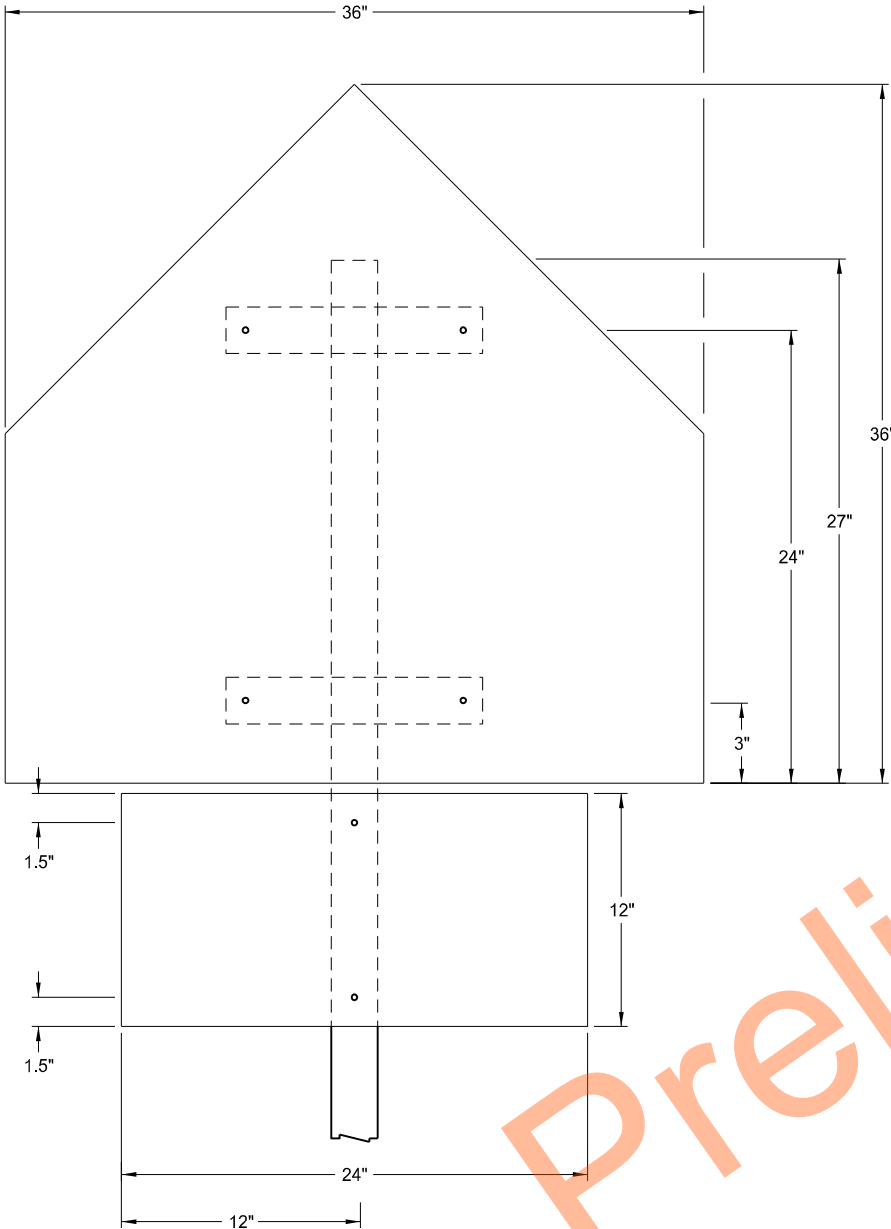


EXAMPLE: 4SW = 4" SOLID LINE WHITE PREF THERMO
GCW GROUND IN, CONTRAST, WET REFLECTIVE

Permanent Signing & Striping
27th St NW
Sta 117+50 to Sta 121+04
Roadway Reconstruction
Mandan, ND

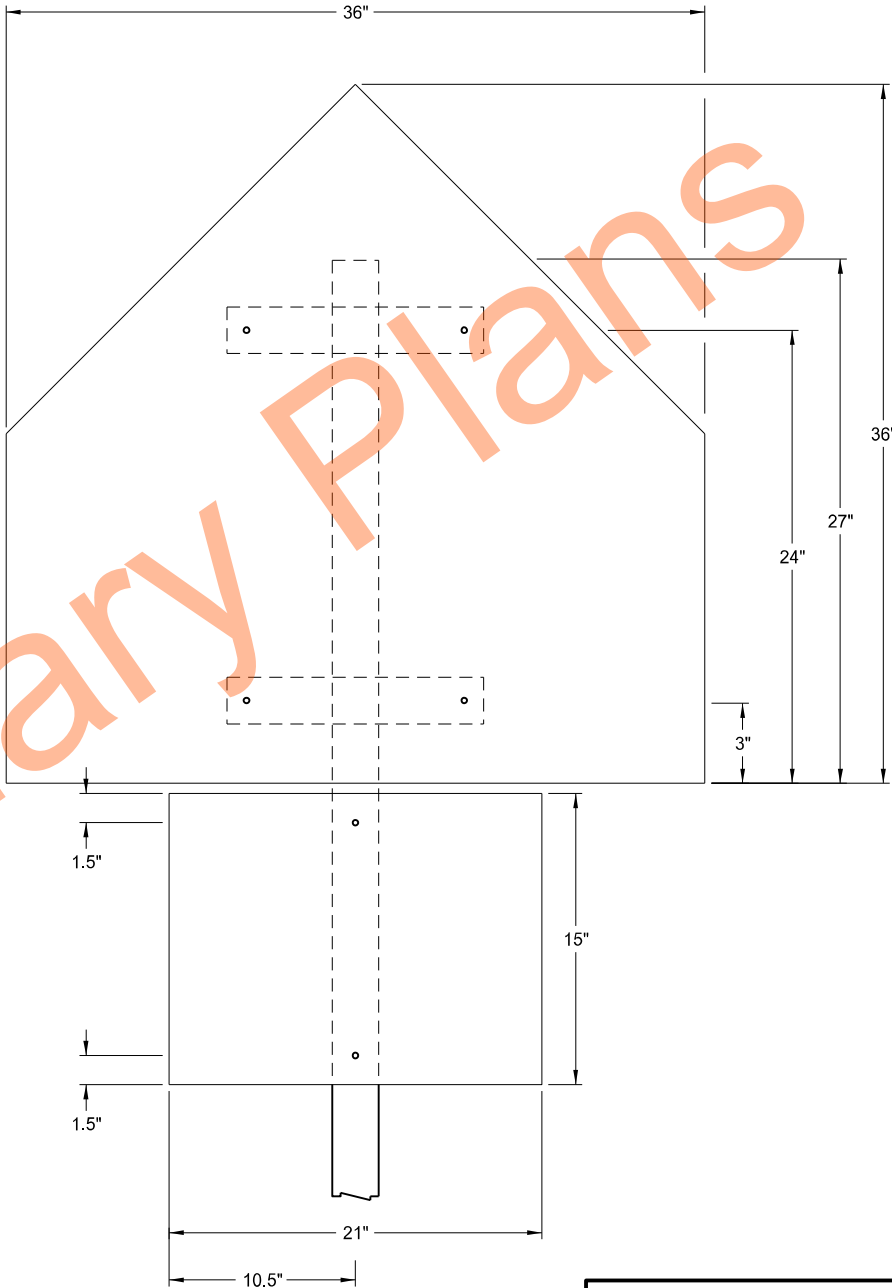


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	110	7



SPECIAL ASSEMBLY A
NO SCALE
101+40 RT
103+71 LT

NOTES:
Design Area: 8.75 SF
Pay Area: 8.75 SF



SPECIAL ASSEMBLY B
NO SCALE
102+55 RT
102+70 RT

NOTES:
Design Area: 8.94 SF
Pay Area: 8.94 SF

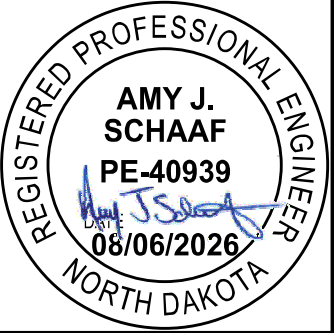
Signing & Pavement Marking
Permanent Signing & Striping

Special Assemblies

27th St NW

Roadway Reconstruction

Mandan, ND





The diagram is a technical drawing of a plan view, likely for a bridge or a similar structure. It features a central rectangular area with rounded corners. The overall width is dimensioned as 30 inches. The height is divided into three sections: a top section of 3 inches, a middle section of 30 inches, and a bottom section of 3 inches. A horizontal dimension of 6 inches is shown at the bottom left. A large, orange, diagonal watermark with the text "Preliminary Plans" is overlaid across the entire image.

REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

State of North Dakota

08/06/2026

NORTH DAKOTA

Diagram illustrating the dimensions and letter locations for a rectangular panel:

- Panel Dimensions: 4' 6" (width) x 1' (height).
- Text: 8th Ave NW
- Letter Locations (inches from panel edge to lower left corner):
 - Top Left: 4.8
 - Top Center: 44.3
 - Top Right: 4.8
 - Right Side: 3 (for 'D'), 6 (for 'Ave'), 3 (for 'NW')

[illegible]

STATION(S):
108+78 RT
114+03 LT

AREA: 4.5 Sq.Ft.

4' 6"

1'

6th Ave NW

3
6
3

4.8 44.3 4.8

Dimensions are in inches

Letter locations are panel edge to lower left corner

[illegible]

Diagram illustrating the dimensions and stationing for a rectangular sign:

- Sign Dimensions:**
 - Width: 4' 6"
 - Height: 1'
- Sign Text:** 27th St NW
- Stationing (Left Side):**
 - 120+30 RT
 - 114+03 LT
 - 113+54 RT
 - 108+78 RT
 - 103+17 RT
 - 102+72 LT
- Stationing (Right Side):**
 - AREA: 4.5 Sq.Ft.
- Dimensions (Bottom):**
 - Left offset: 5.8
 - Sign width: 42.4
 - Right offset: 5.8
- Dimensions (Right Side):**
 - 3
 - 6D
 - 3
- Dimensions (Bottom Left):** Dimensions are in inches
- Letter locations:** Letter locations are panel edge to lower left corner

[illegible]

REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

08/06/2026

NORTH DAKOTA

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-1-988(055)	110	10

SIGN NUMBER	SN4
WIDTH X HEIGHT	5'-0" x 1'-10-1/2"
BORDER WIDTH	0" (inset 0")
CORNER RADIUS	1-1/2"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

STATION(S):
113+54 RT

AREA: 9.375 Sq.Ft.

5'

1' 10.5"

Meadowridge
Loop NW

3
6D
4.5
6D
3

6 48 6

Dimensions are in inches

Letter locations are panel edge to lower left corner

SYMBOL	X	Y	WID	HT	ANGLE

LETTER POSITION (X)															LENGTH	SIZE	SERIES
M	e	a	d	o	w	r	i	d	g	e					48	6/4.5	D 2000
6	11.8	15.875	20.2	24.75	28.9	36.4	39.4	41.3	45.875	50.4							
L	o	o	p		N	W									31.7	6/4.5	D 2000
14.2	18.4	22.8	27.4	31	35.5	40.5											

SIGN NUMBER	SN5
WIDTH X HEIGHT	5'-6" x 1'-0"
BORDER WIDTH	0" (inset 0")
CORNER RADIUS	1-1/2"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

STATION(S):
120+30 RT

AREA: 5.5 Sq.Ft.

5' 6"

1'

ND Hwy 1806

3
6D
3

6.7 52.7 6.7

Dimensions are in inches

Letter locations are panel edge to lower left corner

SYMBOL	X	Y	WID	HT	ANGLE

LETTER POSITION (X)															LENGTH	SIZE	SERIES
N	D		H	w	y		1	8	0	6					52.7	6/4.5	D 2000
6.7	12.2	16.3	20.8	25.7	32.7	37.2	41.7	44.5	49.8	55.25							

Signing & Pavement Marking

Sign Details

8th Ave NW & 27th St NW

Roadway Reconstruction

Mandan, ND

REGISTERED PROFESSIONAL ENGINEER

AMY J. SCHAAF

PE-40939

08/06/2026

NORTH DAKOTA

NOTES

- EXISTING FEEDPOINT LOCATION.
- EXTEND NEW CIRCUITRY FROM EXISTING LIGHTING UNIT AS INDICATED.

Quantities - This Sheet

Spec	Code	Item Description	Unit	Total
770	0110	Junction Box	EA	0
770	0330	2IN Diameter Rigid Conduit	LF	326
770	0504	Underground Conductors NO4-Type RHW	LF	684
770	0605	Underground Conductors NO6-Type THW	LF	342
770	1003	Ornamental Light Standard	EA	2
770	4210	LED Luminaire	EA	2

Quantities shown for reference only. Project to be bid as "Lump Sum Lighting System"

Ornamental Pole/Luminaire Information

Provide units per City of Mandan Specifications as follows:

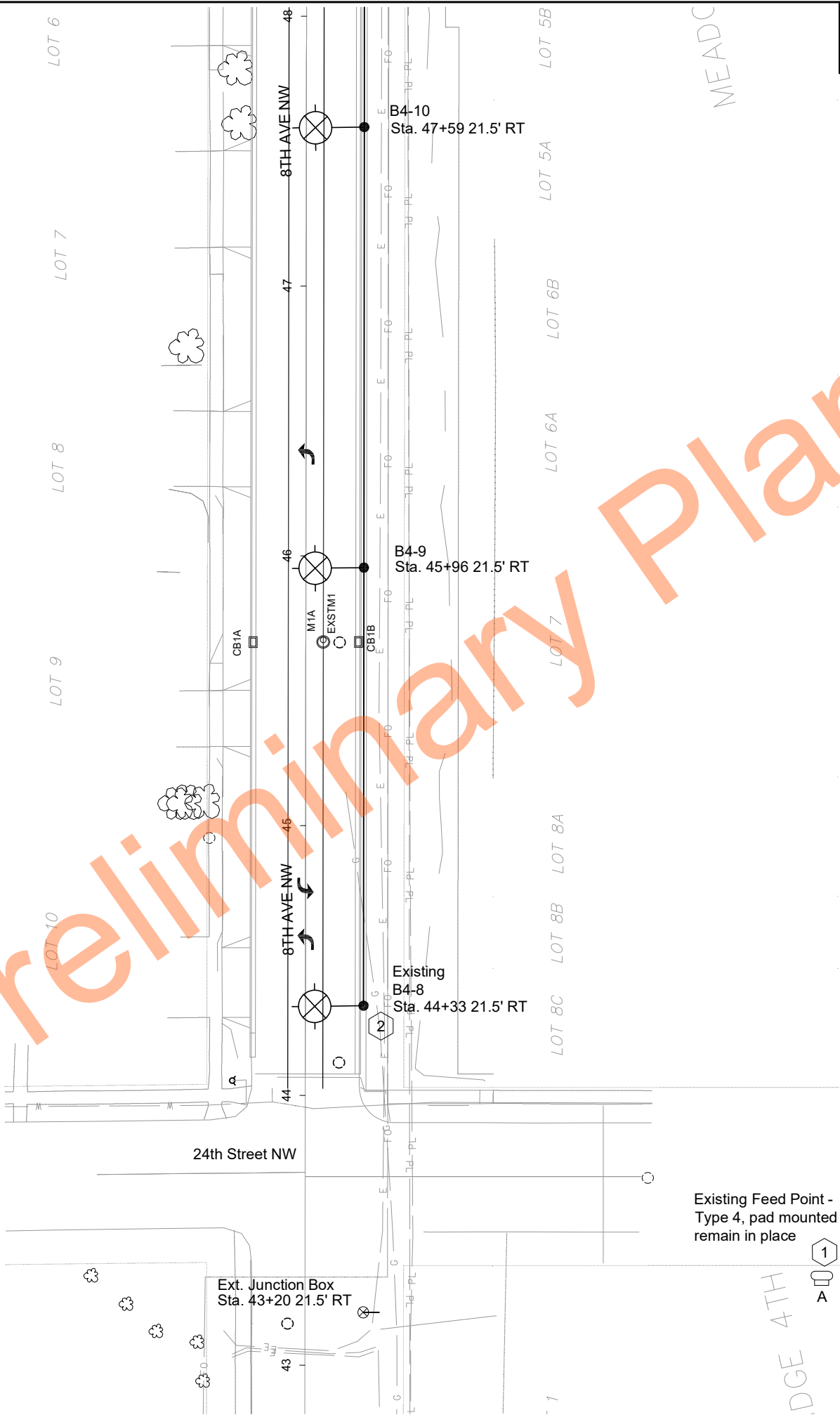
Light Standard: Type B, precast type as manufactured by Ameron MEO08.5, Ameron SEOO4SPL-No. 112A - gray natural, polished aggregate finish. Stresscrete E330-BPO-G-S30-AG-C/W Brace No. KA31-S-Clamp-Salt & Pepper natural polished finished or approved equivalent with a minimum mounting height of 28'-0".

LED Luminaire: Type B, Cooper Navion Series NVN-SA2-B-740-U-T3R-AP-10K Series or approved equivalent.

See City of Mandan specifications and details for installation requirements of 770-0001 Lighting System:

- Section 1000 of City of Mandan Specifications
- Detail 1000-1
- Detail 1001-4
- Detail 1001-6
- Detail 1001-9
- Detail 1001-11
- Detail 1001-13

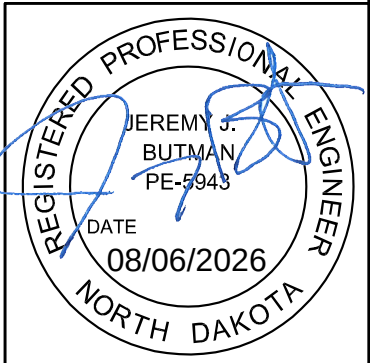
All scales are 1" = 50'-0".



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-1-988(055)	140	1

Fixture Number	Station & Offset	Luminaire Wattage	Luminaire Distribution	Mtg. Ht.	Mast Arm
B4-9	45+96 25'RT	110 (LED)	M-S-III	28'-10"	6'
B4-10	47+59 25'RT	110 (LED)	M-S-III	28'-10"	6'

Item	Station & Offset	2" Diameter Rigid Conduit	Underground Conductor No. 4-RHW	Underground Conductor No. 6-THW
Pole B4-8 to Pole B4-9	44+33 21.5'RT to 45+96 25'RT	163 LF	342 LF	171 LF
Pole B4-9 to Pole B4-10	45+96 25' RT to 47+59 25'RT	163 LF	342 LF	171 LF



Lighting Plan

8th Ave NW
Sta 44+00 to Sta 48+00

NOTES

1. ---

STATE

PROJECT NO.

SECTION
NO.

SHEET
NO.

ND

SU-1-988(055)

140

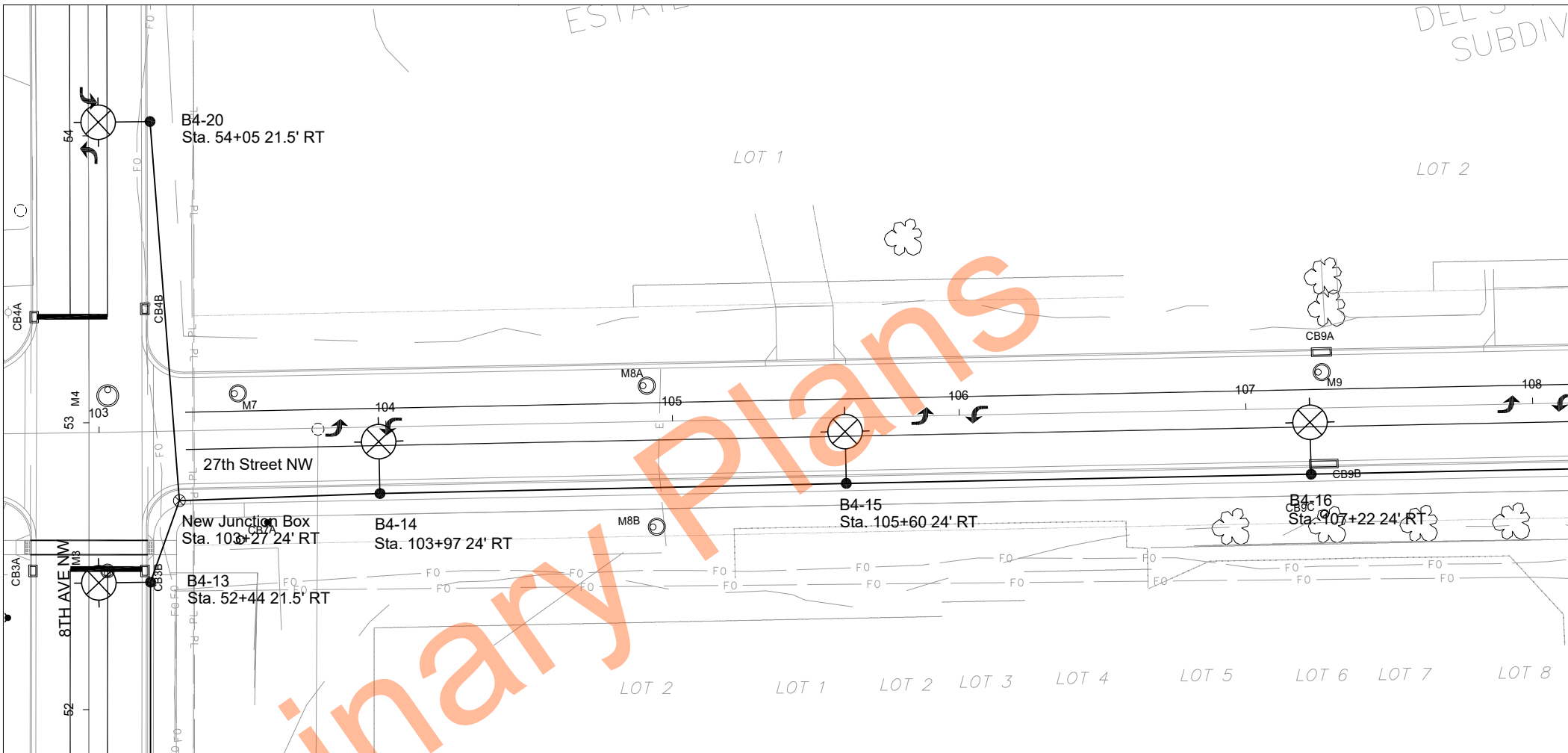
3

Quantities - This Sheet

Spec	Code	Item Description	Unit	Total
770	0110	Junction Box	EA	1
770	0330	2IN Diameter Rigid Conduit	LF	717
770	0504	Underground Conductors NO4-Type RHW	LF	1574
770	0605	Underground Conductors NO6-Type THW	LF	787
770	1003	Ornamental Light Standard	EA	5
770	4210	LED Luminaire	EA	5

Quantities shown for reference only. Project to be bid as "Lump Sum Lighting System"

Fixture Number	Station & Offset	Luminaire Wattage	Luminaire Distribution	Mtg. Ht.	Mast Arm
B4-13	52+44 25'RT	110 (LED)	M-S-III	28'-10"	6'
B4-14	103+97 24'RT	110 (LED)	M-S-III	28'-10"	6'
B4-15	105+60 24'RT	110 (LED)	M-S-III	28'-10"	6'
B4-16	107+22 24'RT	110 (LED)	M-S-III	28'-10"	6'
B4-20	54+05 25'RT	110 (LED)	M-S-III	28'-10"	6'



Item	Station & Offset	2" Diameter Rigid Conduit	Underground Conductor No. 4-RHW	Underground Conductor No. 6-THW
Pole B4-12 to Pole B4-13	50+83 25'RT to 52+44 25'RT	161 LF	338 LF	169 LF
Pole B4-13 to Junction Box	52+44 25' RT to 103+27 24'RT	29 LF	86 LF	43 LF
Junction Box to Pole B4-14	103+27 24' RT to 103+97 24'RT	70 LF	168 LF	84 LF
Junction Box to Pole B4-20	103+27 24' RT to 54+05 25'RT	132 LF	300 LF	150 LF
Pole B4-14 to Pole B4-15	103+97 24' RT to 105+60 24'RT	163 LF	342 LF	171 LF
Pole B4-15 to Pole B4-16	105+60 24' RT to 107+22 24'RT	162 LF	340 LF	170 LF

Ornamental Pole/Luminaire Information

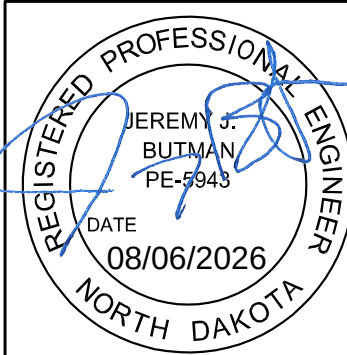
Provide units per City of Mandan Specifications as follows:

Light Standard: Type B, precast type as manufactured by Ameron MEO08.5, Ameron SEOO4SPL-No. 112A - gray natural, polished aggregate finish. Stresscrete E330-BPO-G-S30-AG-C/W Brace No. KA31-S-Clamp-Salt & Pepper natural polished finished or approved equivalent with a minimum mounting height of 28'-0".

LED Luminaire: Type B, Cooper Navion Series NVN-SA2-B-740-U-T3R-AP-10K Series or approved equivalent.

See City of Mandan specifications and details for installation requirements.

All scales are 1" = 50'-0".



Lighting Plan

8th Ave NW
Sta 52+00 to Sta 54+50
27th Street NW
Sta 103+00 to 108+00

Quantities - This Sheet

Spec	Code	Item Description	Unit	Total
770	0330	2IN Diameter Rigid Conduit	LF	489
770	0504	Underground Conductors NO4-Type RHW	LF	1026
770	0605	Underground Conductors NO6-Type THW	LF	513
770	1003	Ornamental Light Standard	EA	3
770	4210	LED Luminaire	EA	3

Quantities shown for reference only. Project to be bid as "Lump Sum Lighting System"

Fixture Number	Station & Offset	Luminaire Wattage	Luminaire Distribution	Mtg. Ht.	Mast Arm
B4-17	108+85 24'RT	110 (LED)	M-S-III	28'-10"	6'
B4-18	110+48 24'RT	110 (LED)	M-S-III	28'-10"	6'
B4-19	112+12 24'RT	110 (LED)	M-S-III	28'-10"	6'

Item	Station & Offset	2" Diameter Rigid Conduit	Underground Conductor No. 4-RHW	Underground Conductor No. 6-THW
Pole B4-16 to Pole B4-17	107+22 24'RT to 108+85 24'RT	163 LF	342 LF	171 LF
Pole B4-17 to Pole B4-18	108+85 24' RT to 110+48 24'RT	163 LF	342 LF	171 LF
Pole B4-18 to Pole B4-19	110+48 24' RT to 112+12 24'RT	163 LF	342 LF	171 LF

Ornamental Pole/Luminaire Information

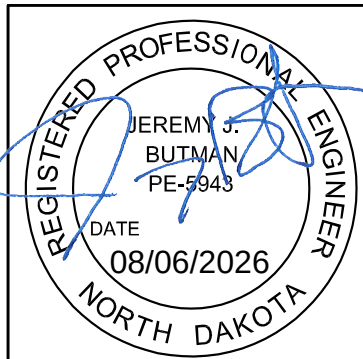
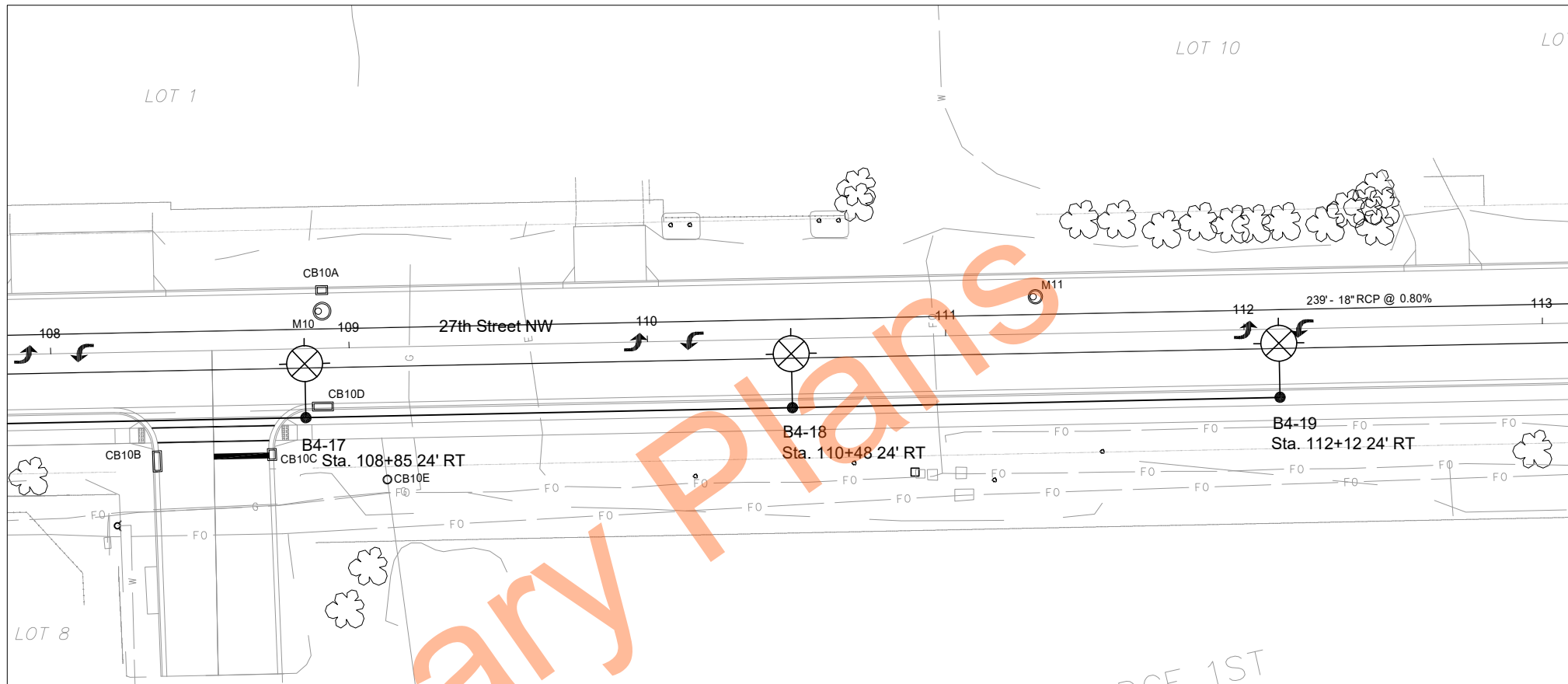
Provide units per City of Mandan Specifications as follows:

Light Standard: Type B, precast type as manufactured by Ameron MEO08.5, Ameron SEOO4SPL-No. 112A - gray natural, polished aggregate finish. Stresscrete E330-BPO-G-S30-AG-C/W Brace No. KA31-S-Clamp-Salt & Pepper natural polished finished or approved equivalent with a minimum mounting height of 28'-0".

LED Luminaire: Type B, Cooper Navion Series NVN-SA2-B-740-U-T3R-AP-10K Series or approved equivalent.

See City of Mandan specifications and details for installation requirements.

All scales are 1" = 50'-0".



Lighting Plan

27th Street NW
Sta 108+00 to Sta 115+00

NOTES

1. ---

STATE

PROJECT NO.

SECTION
NO.

SHEET
NO.

ND

SU-1-988(055)

140

5

Quantities - This Sheet

Spec	Code	Item Description	Unit	Total
770	0330	2IN Diameter Rigid Conduit	LF	326
770	0504	Underground Conductors NO4-Type RHW	LF	684
770	0605	Underground Conductors NO6-Type THW	LF	342
770	1003	Ornamental Light Standard	EA	3
770	4210	LED Luminaire	EA	3

Quantities shown for reference only. Project to be bid as "Lump Sum Lighting System"

Fixture Number	Station & Offset	Luminaire Wattage	Luminaire Distribution	Mtg. Ht.	Mast Arm
B-4	117+01 24'RT	110 (LED)	M-S-III	28'-10"	6'
B-5	115+39 24'RT	110 (LED)	M-S-III	28'-10"	6'
B-6	113+76 24'RT	110 (LED)	M-S-III	28'-10"	6'

Item	Station & Offset	2" Diameter Rigid Conduit	Underground Conductor No. 4-RHW	Underground Conductor No. 6-THW
Pole B-6 to Pole B-5	113+76 24'RT to 115+39 24'RT	163 LF	342 LF	171 LF
Pole B-5 to Pole B-4	115+39 24' RT to 117+01 24'RT	163 LF	342 LF	171 LF

Ornamental Pole/Luminaire Information

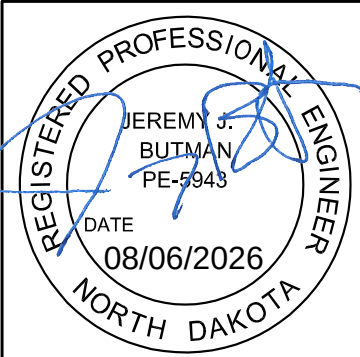
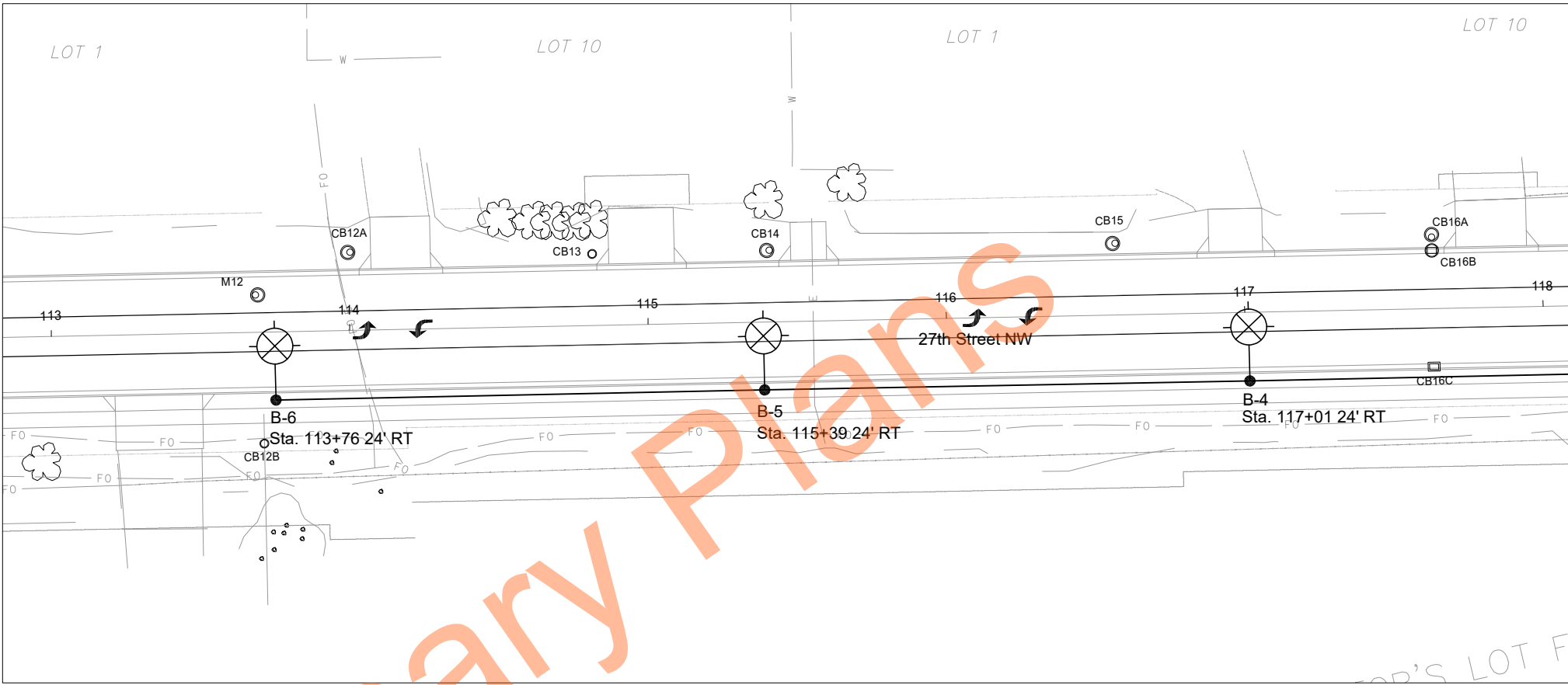
Provide units per City of Mandan Specifications as follows:

Light Standard: Type B, precast type as manufactured by Ameron MEO08.5, Ameron SEOO4SPL-No. 112A - gray natural, polished aggregate finish. Stresscrete E330-BPO-G-S30-AG-C/W Brace No. KA31-S-Clamp-Salt & Pepper natural polished finished or approved equivalent with a minimum mounting height of 28'-0".

LED Luminaire: Type B, Cooper Navion Series NVN-SA2-B-740-U-T3R-AP-10K Series or approved equivalent.

See City of Mandan specifications and details for installation requirements.

All scales are 1" = 50'-0".



Lighting Plan

27th Street NW
Sta 113+00 to Sta 118+00

NOTES

1. EXISTING POLE. EXTEND CIRCUITRY FROM EXISTING POLE TO NEW POLE B-2 AS INDICATED. FIELD COORDINATE EXACT LOCATION OF EXISTING POLE (STATIONING SHOWN BASED ON CURRENT PROJECT STATIONING).

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Quantities - This Sheet

Spec	Code	Item Description	Unit	Total
770	0330	2IN Diameter Rigid Conduit	LF	350
770	0504	Underground Conductors NO4-Type RHW	LF	748
770	0605	Underground Conductors NO6-Type THW	LF	374
770	1003	Ornamental Light Standard	EA	2
770	4210	LED Luminaire	EA	2

Quantities shown for reference only. Project to be bid as "Lump Sum Lighting System"

Fixture Number	Station & Offset	Luminaire Wattage	Luminaire Distribution	Mtg. Ht.	Mast Arm
B-2	119+97 24'RT	110 (LED)	M-S-III	28'-10"	6'
B-3	118+65 24'RT	110 (LED)	M-S-III	28'-10"	6'
B-6	113+76 24'RT	110 (LED)	M-S-III	28'-10"	6'

Item	Station & Offset	2" Diameter Rigid Conduit	Underground Conductor No. 4-RHW	Underground Conductor No. 6-THW
Pole B-4 to Pole B-3	117+01 24'RT to 118+65 24'RT	163 LF	342 LF	171 LF
Pole B-3 to Pole B-2	118+65 24' RT to 119+97 24'RT	132 LF	280 LF	140 LF
Pole B-2 to Existing Pole	119+97 24' RT to 120+50 32'RT	55 LF	126 LF	63 LF

Ornamental Pole/Luminaire Information

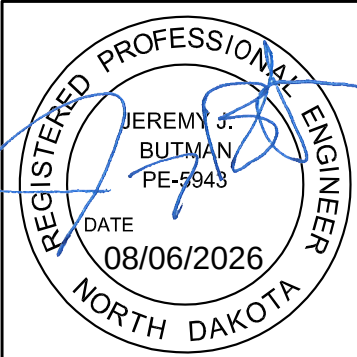
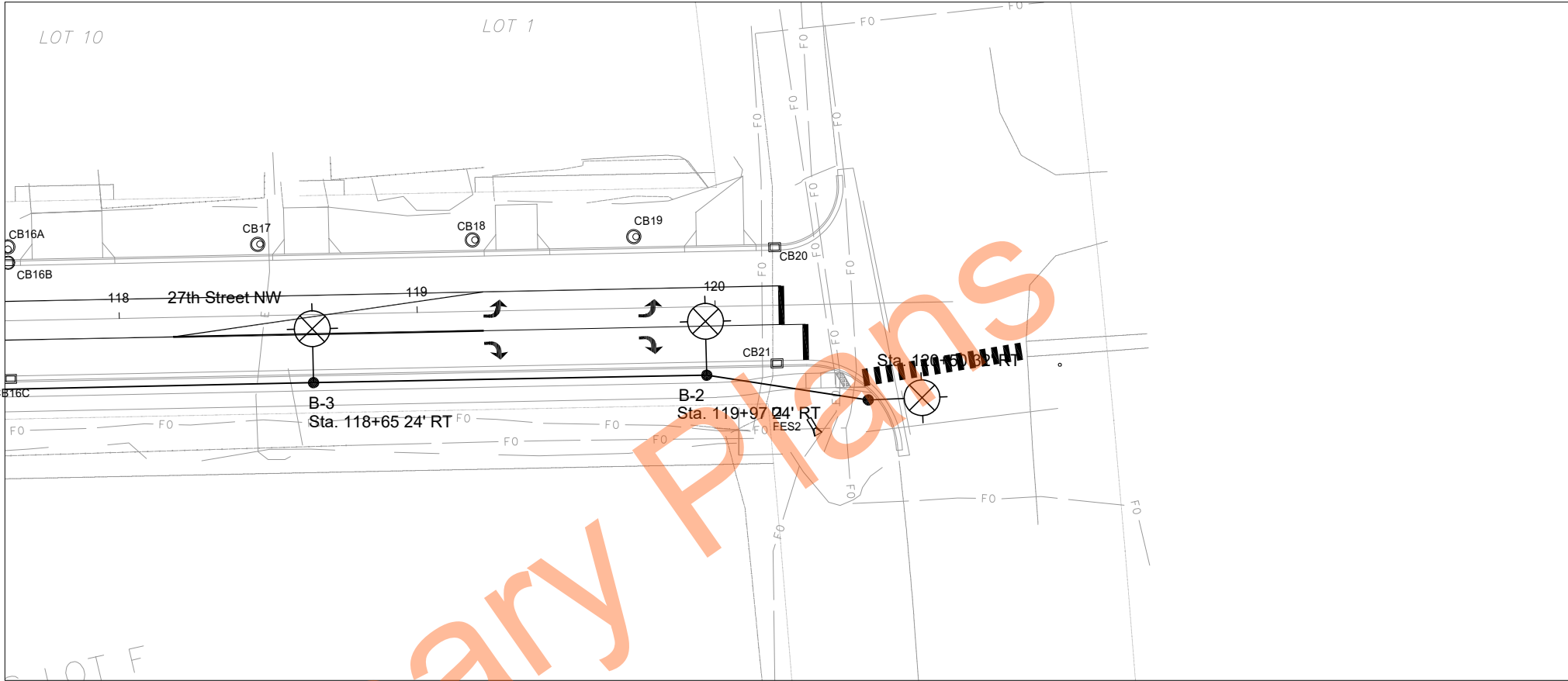
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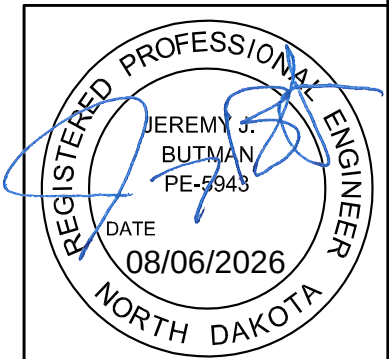
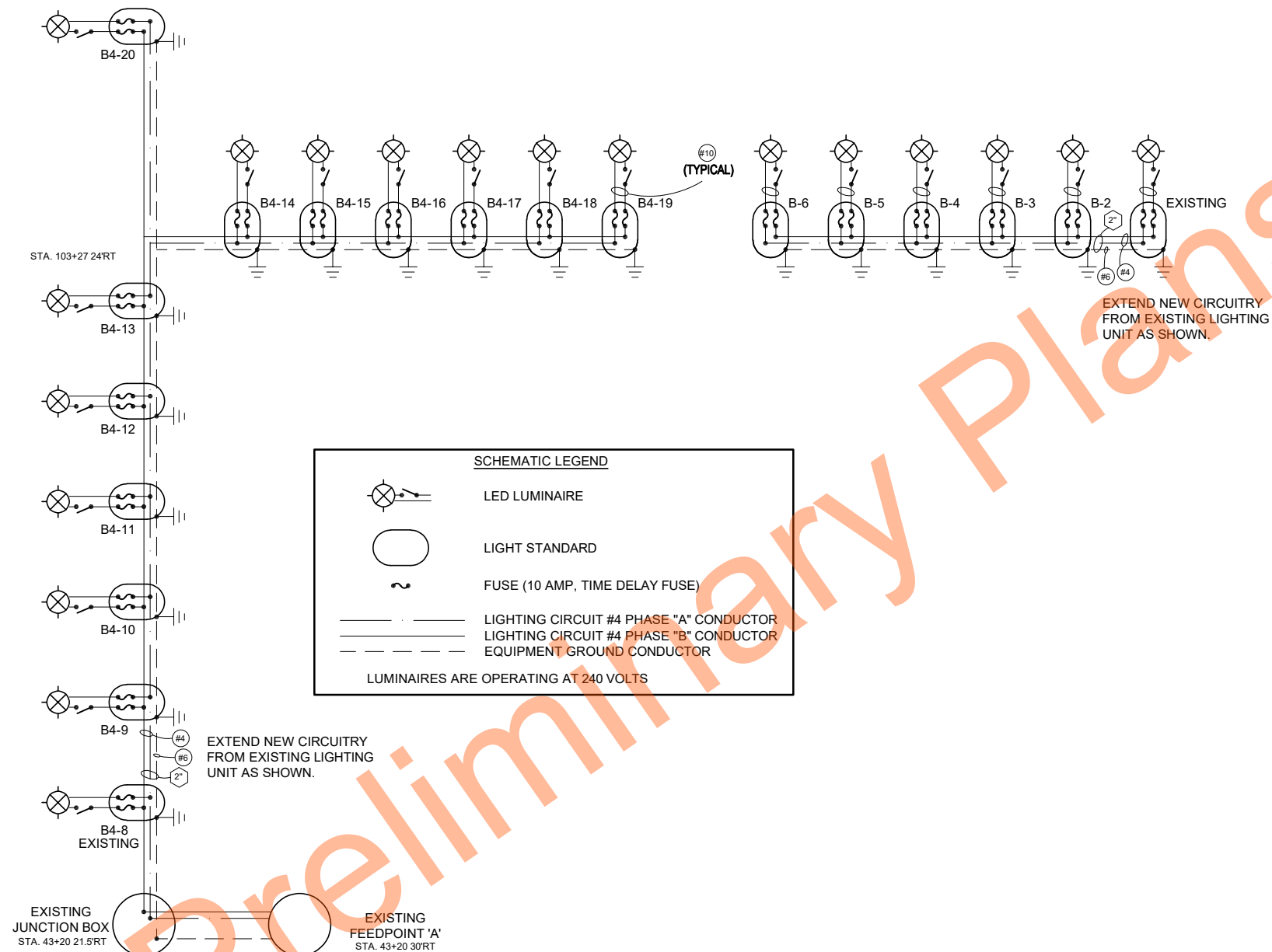
All scales are 1" = 50'-0".



Lighting Plan

27th Street NW
Sta 118+00 to Sta 121+00

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Lighting Plan

Lighting System Schematic