DESIGN DATA				
Traffic	Average Daily			
Current 2018	Pass: 22,835	Trucks: 380	Total: 23,215	
Forecast 2038	Pass: 29,595	Trucks: 465	Total: 30,060	
Clear Zone Distance: 14'		Design Speed: 40 MPH		
Minimum Sight Dist. for Stopping: 250'		Bridges: N.A.		
Sight Dist. for No Passing Zone: N.A.				
Pavement Design Life 30 (years)				
Design Accumulated One-way ESALs: N.A.				

	STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	21884	1	1

JOB # 6
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

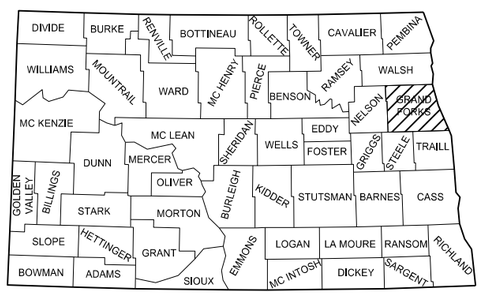
HEU-6-081(094)940

Grand Forks County
US Highway 81 (32nd Ave S) from I-29 to S 20th Street
Grand Forks, ND
Traffic Signals and Turn Lanes

GOVERNING SPECIFICATIONS:
2020 Standard Specifications adopted by the North Dakota Department of Transportation and the Supplemental Specifications effective on the date the project is advertised.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
HEU-6-081(094)940	1.712	1.712

Legal Descriptions
Sec 16-21 T151N R50W



STATE COUNTY MAP

DESIGNER
Eric Hodgson, PE

DESIGNER
Sara Schmidt

DESIGNER
Stacy Johnson, PE

ND DEPARTMENT OF TRANSPORTATION
OFFICE OF PROJECT DEVELOPMENT

Approval Name	Date Signed
Chad M. Orn /s/	8/31/2020

SRF Consulting Group, Inc.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	2	1

TABLE OF CONTENTS

PLAN SECTIONS

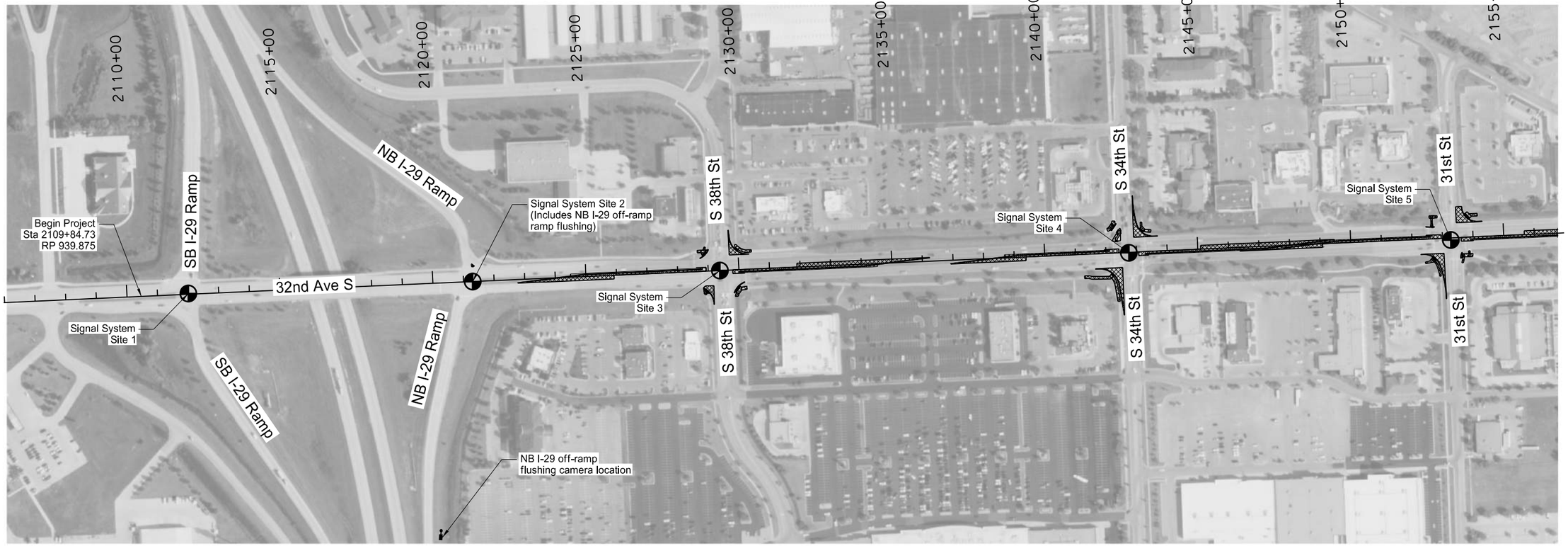
SPECIAL PROVISIONS

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	2	2

TABLE OF CONTENTS

LIST OF STANDARD DRAWINGS

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	4	1



Legend

Signal System Revisions & Replacements

Turn Lane / Median / Radii / Sidewalk / ADA Revisions

N

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Scope of Work

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

8/25/2020 4:55:06 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\004SW_001_Scope.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	4	2

Legend

Signal System Revisions & Replacements

Turn Lane / Median / Radii / Sidewalk / ADA Revisions

N

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Scope of Work

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	6	1

NOTES

100-P01 NIGHT WORK: In order to minimize interference with traffic operation, perform Traffic Signal Pole removals, installations, and revision work between 9:00 PM and 6:00 AM as approved by the Engineer.

Obtain a noise variance from the Grand Forks Health Department to perform work between 9:00 PM and 6:00 AM.

Allow and maintain access through the intersection as required. Remove night work traffic control no later than 7:00 AM that morning.

100-P02 NOISE RESTRICTIONS: Comply with the City of Grand Forks noise ordinance by scheduling operations between the hours of 6:00 AM and 10:00 PM. Submit written request to the Grand Forks Public Health Department at 151 South 4th Street, Suite N-301, Grand Forks, ND 58201-4735 for each occurrence to work outside these hours. Obtain approval from the Health Department 24 hours prior to beginning work. Follow procedures in Standard Specification 108.05 “Limitation of Operations” to perform work on holidays. Submit requests 72 hours prior to beginning work, stating the specific nature of the work, additional hours required and the number of days needed to complete the specified work. Furnish a copy of the approved permit to the Grand Forks Police Department a minimum of 24 hours prior to beginning of work and notify the department of the days and hours planned for work under the permit.

100-P03 EMERGENCY PERSONNEL: Provide the City of Grand Forks and Engineer the name, address, and telephone number of personnel who have access to equipment and are authorized to make emergency repairs to completed work. Provide personnel with authorization to maintain barricade, move excavated materials, and correct other problems during weekends and off-work hours, so access can be maintained for emergency equipment. Authorize personnel to make decisions and commit funds to correct work in an emergency situation.

105-P01 CITY UTILITIES: Follow City of Grand Forks Standard Construction Specifications and Standard Details for all city utility adjustments. Applicable City of Grand Forks standard plates are:

- STD. PLATE: 65.03 “STANDARD STORM SEWER MANHOLE”
- STD. PLATE: 65.03A “STANDARD SANITARY SEWER MANHOLE”
- STD. PLATE: 65.08 “FLOATING MANHOLE CASTING”
- STD. PLATE: 65.08A “R-1955-1 FLOATING MANHOLE CASTING”
- STD. PLATE: 65.09 “FLOATING CATCH BASIN CASTING”
- STD. PLATE: 66.02 “SANITARY SEWER WYE & SERVICE LEAD”
- STD. PLATE: 66.02 “CLEANOUT”
- STD. PLATE: 67.01 “STANDARD HYDRANT SETTING USING STANDARD TEE”
- STD. PLATE: 68.01 “BACKFILL”

38th Street Intersection:

1. "Adjust Inlet": Adjust existing casting to new curb and gutter. Existing rim elevation is 836.07’.

2. “Adjust Manhole”: Adjust casting to new street elevation. Existing rim elevation is 836.40’.

34th Street Intersection:

1. "Adjust Gate Valve Box": Adjust elevation of box to new street elevation. Gate valve box is for sanitary manhole sluice gate.

2. "Adjust Manhole": (Storm) Adjust existing casting to new street elevation. Existing rim elevation is 834.31’ with floating casting and 5 adjustment rings.

3. "Adjust Manhole": (Sanitary) Located at Sta. 2142+43, 80' RT. Adjust existing casting to new street elevation by saw cutting top of manhole off and resetting cover slab, sealing, adding adjustment rings, and resetting the existing casting. Include all materials, equipment, labor and incidentals to complete the work in the bid price for "Adjust Manhole". Existing rim elevation is 834.78’ with standard casting and zero adjustment rings.

4. "Adjust Manhole": (Sanitary) Located at Sta. 2142+31, 99' LT. Adjust existing casting to new sidewalk elevation. Existing rim elevation is 835.27’ with standard casting and 4 concrete adjustment rings as well as a 5-foot eccentric cone.

31st Street Intersection:

1. "Manhole Relocate": (Storm) Relocate manhole approximately 4 ft to the east, outside the proposed curb ramp and centered in the landing. Remove existing storm manhole and connected pipe, install new structure and pipe in new location, modify the structure to the south to accommodate the new pipe angle, backfill and grout storm sewer pipes into structures, and reset casting and adjustment rings. The existing structure and pipes may be salvaged, modified and reinstalled at the new location, as determined by the Engineer. Include all materials, equipment, labor and incidentals to complete the work in the bid price for "Manhole Relocate". Additional existing structure information can be found in section 20 sheet 6 “Existing Storm Drain Details”.

2. "Adjust Manhole": (Sanitary) Adjust existing casting to new street elevation by replacing 4.5' top cone with a shorter cone, adding adjustment rings, and supplying and installing a new Floating Manhole Casting. Existing rim elevation is 834.67’ with standard casting and zero adjustment rings.

NOTES

3. "Adjust Manhole": (Storm) Adjust existing casting to new boulevard and sidewalk grade. Existing rim elevation is 834.59’ with floating casting and 1 concrete adjustment ring.

Columbia Road Intersection:

1. "Adjust Manhole": (Storm) Adjust existing casting to new sidewalk elevation by saw cutting top of manhole off and resetting cover slab, sealing, adding adjustment rings, and resetting the existing casting. Field verify type of casting and number of adjustment rings. Existing rim elevation is 837.03’.

20th Street Intersection:

1. "Adjust Gate Valve Box": Adjust to new boulevard and sidewalk elevations.

2. "Adjust Hydrant": Remove existing hydrant, pipe lead, and gate valve as well as connection to existing watermain at tee with a new 6" gate valve, provide and install 17 LF new 6" PVC C900 watermain, and a new fire hydrant. Set fire hydrant behind the proposed sidewalk. Include all materials, equipment, labor and incidentals to complete the work in the bid price for “Adjust Hydrant”.

3. "Adjust 6IN Sewer Cleanout": Remove sanitary sewer cleanout to a depth of 1 foot below the proposed subgrade. Cap the top of the sewer cleanout as approved by the Engineer. Include all materials, equipment, labor and incidentals to complete the work in the bid price for “Adjust 6IN Sewer Cleanout”.

4. “Adjust Utility Appurtenance”: Remove the 12’ PVC vertical riser atop the 27” storm drain RCP. Plug the void left in the 27” RCP after the vertical riser is removed. Plug the 8” PVC pipe connected to the PVC vertical riser pipe. Submit a detailed plan before beginning work to the Engineer for approval. Include all materials, equipment, labor and incidentals to complete the work in the bid price for “Adjust Utility Appurtenance”.

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

107-P01 MAINTAINING TRAFFIC-DROP OFFS: If, at the end of the work-day, drop-offs greater than 2 inches and less than or equal to 12 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.

If drop-offs greater than 12 inches exist between the edge of a traffic lane and the outside edge of the proposed roadway, perform one of the following actions:

- Keep traffic 16’ away from drop-offs and limit drop-offs to no more than 7 days.
- Provide Precast Concrete Med Barrier, Attenuation Devices, and all hardware needed that meet the details of Standard Drawings D-704-01 and D-704-51. Additionally, close traffic lane adjacent to the barriers so long as traffic can still be maintained.

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

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

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

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

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.

Provide any additional Portable Precast Med Barriers, Attenuation devices, and hardware beyond current plan quantity 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. Meeting time and place to be determined mutually between the Contractor and 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. Prepare meeting agendas at least one day in advance of scheduled meetings and provide meeting minutes within three days of held meetings.

202-P01 REMOVAL OF CONCRETE PAVEMENT: Removal of concrete pavement consists of removing concrete pavement, bituminous pavement, concrete median, sidewalks, and

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	6	3

NOTES

aggregate base. Existing pavement thicknesses are based on old plan sets and maintenance data.

202-P02 PAVEMENT MARKING REMOVALS: Existing pavement markings consist of preformed patterned grooved and painted markings.

202-P03 REMOVAL OF CURB & GUTTER: Remove aggregate base course underneath the existing curb and gutter. Include work in the unit bid for “Removal of Curb & Gutter”.

302-709 BASE COURSE AND GEOGRID: Compact material over geosynthetic geogrid as specified in Section 709.04C, “Geosynthetic Geogrid (Type G)”.

302-P01 SALVAGED BASE COURSE: Water for compaction is incidental.

550-P01: CONCRETE JOINTS: Place joints at the beginning and ends of all tapers. Match the placement of the proposed joints with existing joints where possible. Locations of proposed joints shown in Section 90 are an approximation. In field jointing locations will vary. Submit a jointing plan to the Engineer for approval.

550-P02: CONCRETE PAVEMENT: Drill and epoxy tie bars and dowel bars where existing pavement abuts new pavement, and curb and gutter.

Adjust manhole castings with paving operation. Install casting with each adjoining full concrete panel. Manhole isolation or box outs will not be allowed.

Include all costs for work and materials in the unit bid for "8IN Non-Reinf Concrete Pvmt CL AE-Doweled", "9IN Non-Reinf Concrete Pvmt CL AE-Doweled", and "10IN Non-Reinf Concrete Pvmt CL AE-Doweled".

704-100: TRAFFIC CONTROL SUPERVISOR: Provide a Traffic Control Supervisor.

704-600 TEMPORARY CURB RAMP: Provide curb ramps with a firm, stable, non-slip surface the same width as the temporary pedestrian access route. Maintain a clear space above and below the curb ramp of at least 48 x 48 inches. Construct ramps with a slope of 12:1 or flatter.

Maintain a maximum curb ramp and turning platform cross-slope of 50:1 (2%) on parallel curb ramps.

Maintain 0.5” maximum width lateral joints or gaps between surfaces and maximum 0.5-inch surface height changes.

Maintain water flow in gutter system.

The pay item “Temporary Curb Ramp” includes both Temporary Perpendicular Curb Ramps and Temporary Parallel Curb Ramps. Include costs for materials and labor to provide, maintain, and remove curb ramps in the contract unit price for “Temporary Curb Ramp”.

704-610 PEDESTRIAN CHANNELIZATION: Provide pedestrian channelization meeting the following requirements:

- Interlocked with a 1" maximum gap between devices;
- Upper rail with a smooth continuous guide handrail positioned 32 to 38 inches above the walkway;
- A smooth lower edge on the pedestrian side of the wall to allow sight impaired cane tapping positioned based on the following requirements:
  - The bottom edge is less than 2 inches above the walkway; and
  - The top edge a minimum of 6 inches above the walkway
- Openings in the bottom of the wall to allow for water passage;
- Support legs that do not impede the clear walkway;
- In compliance with NCHRP Report 350 or MASH Test Level 3 (TL3);
- Channelization portions are orange or white, or a combination of orange and white, in color.

Install the pedestrian channelization as follows:

- Place pedestrian channelization to delineate a clear, temporary pedestrian pathway directing pedestrians through the work area;
- Provide a minimum, continuous, clear width of 48 inches, free of vertical discontinuities greater than 0.25 inches and obstructions;
- Where the clear width of a temporary pedestrian access route is less than 60 inches, provide passing spaces at maximum intervals of 200 feet that have minimum dimension of 60 × 60 inches.
- Move and reset the pedestrian channelization as needed for multiple phase construction.

The Engineer will pay for the maximum required length of pedestrian channelization used at one time. The Engineer will measure channelization in place and will not make any deductions in length for hinged gaps or connection hardware. If pedestrian channelization is necessary to delineate both sides of the walkway, the Engineer will measure both sides of the walkway.

Include all costs to furnish, install, maintain, move, relocate, replace, and remove pedestrian channelization in the contract unit price for "Pedestrian Channelization."

704-P01 PEDESTRIAN COORDINATION: Coordinate all changes to the pedestrian’s travel path with the Engineer and City of Grand Forks.

704-P02 CONSTRUCTION PHASING PLAN: Follow phasing plan for construction. Submit any alternate traffic control phasing plans to the Engineer for review and approval a minimum of one week in advance of the proposed work.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	6	4

NOTES

704-P03 TRAFFIC CONTROL DEVICES: The traffic control devices list has been developed using the layouts shown in the plans and the following layouts shown on the Standard Drawings:

D-704-25 Lane closure
D-704-34 Lane closure

704-P04 PORTABLE CHANGEABLE MESSAGE SIGN: Install two portable changeable message signs in advance of the project limits. Place one east of the I-29 interchange and one west of Washington Street 2 weeks prior to beginning construction. Location of portable changeable message signs may change depending upon active construction at the discretion of the Engineer.

704-P05 OBLITERATION OF PAVEMENT MARKING: Mask all pavement markings that conflict with the traffic control by use of tape. Include the cost to remove the tape in the unit bid for “Obliteration of Pavement Markings”.

704-P06 TRAFFIC CONTROL PHASING: The traffic control details, as indicated in the plans, have been developed based on the premise that the project will be constructed in three phases.

1. **Phase 1:**

   a. **Phase 1A**: Construct the medians at the intersections of 38th Street S and 31st Street S, and all work items at the I-29 Ramps. Coordinate work so that signals will be down and operational in the same workday. Use flaggers when the signals are not in operation.
   b. **Phase 1B:** Construct all work items north of the medians at the intersections of 38th Street S and 31st Street S.
   c. **Phase 1C:** Construct all work items south of the medians at the intersections of 38th Street S and 31st Street S.

2. **Phase 2:**

   a. **Phase 2A**: Construct the medians at the intersections of 34th Street S, Columbia Road, and 20th Street S.
   b. **Phase 2B:** Construct all work items north of the medians at the intersections of 34th Street S, Columbia Road, and 20th Street S.
   c. **Phase 2C:** Construct all work items south of the medians at the intersections of 34th Street S, Columbia Road, and 20th Street S.

3. **Phase 3:** Construct all work items at the intersections of 24th Street S.

Refer to plans for pedestrian and traffic detours during each phase.

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

1. Minimum total area of 800 square feet.
2. Indoor bathroom facilities with weekly cleaning services.
3. Hookups for heat, electricity, sewer, and potable water.
4. Minimum cabinet space of 32 cubic feet.
5. Minimum counter space of 60 square feet.
6. A heating and cooling system that is capable of maintaining the temperature between 65°F and 78°F.
7. Lighting with a minimum of 110 foot-candles.
8. Photocopier/Printer with scanning capabilities capable of producing 11x17 photocopies and enough toner to last the duration of the project. Other features to include digital copying and scanning. Provide a photocopier/printer with operating software compatible with that used by the NDDOT.
9. Microsoft Windows 10 compatible laser color printer with updated drivers that are capable of both LAN and Wireless printing.

Place the field office within one block of the project. The Contractor is responsible for the following fees:

- Rental fees
- Cleaning Service
- Heating
- Electricity
- Sewer
- Potable Water

Make the field office available for occupancy one week before the start of the project and remain through project completion. The Engineer will approve the location and the condition of the office.
The Engineer is responsible for the following items:

- Furnishing office equipment.
- Supplying paper.
- Supplying and paying for internet service.

All requirements of the Field Office are subject to approval by the Engineer. Include the costs for the field office in the contract unit price for “Field Office”.

Schedule for Payments:

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

708-P01 INLET PROTECTION-SPECIAL: Place inlet protection per City of Grand Forks Specifications and Standard Plate 69.04 “INLET PROTECTION”. Include all costs to furnish, install, maintain, replace, and remove inlet protection-special in the contract unit price for "Inlet Protection-Special".

714-P01 UNDERDRAIN PIPE PVC PERFORATED 4IN:

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	6	5

NOTES

1. Use polyvinyl chloride SCHEDULE 40 sewer pipe with solvent cemented joints as specified in ASTM Spec. No. F-758.
2. Perforations will be circular and 1/4" ± 1/16" in diameter. Arrange in rows parallel to the axis of the pipe and space approximately 3" center to center along the rows. The spigot end of the pipe will be unperforated for a length equal to the depth of the socket. The placement and total numbers of the rows will be as shown above with an allowable tolerance of ±10°.
3. Use Molded Fittings in accordance with ASTM Spec No. D 2665 or F1866. Cost of fitting and installation will be included in the price bid for "Underdrain Pipe PVC Perforated 4IN".
4. Encase perforated PVC in a Geosynthetic Material Type D4. Cost of fabric will be included in the price bid for "Underdrain Pipe PVC Perforated 4IN".
5. Insert a Tee, Link-Seal, or other approved equal may be utilized with Engineer approval.
6. Pipe Size: 4" diameter IPS SCH 40
7. Rows of Perforations: 4
8. Hole Size: 1/4"
9. Hole Spacing Per Row: 3"

748-P01 CURB & GUTTER-TYPE 1: Construct curb and gutter separate from adjacent concrete pavement. Match existing curb and gutter height whenever connecting into existing. Include all cost to perform this work in the unit bid for “Curb & Gutter-Type 1”.

750-P01 SIDEWALK CONCRETE: Provide salvaged base course for new sidewalk locations. Utilize the existing aggregate base in existing sidewalk locations and provide additional salvaged base course as necessary, or as directed by the Engineer. Include costs for steel reinforcement and salvaged base course used for sidewalk construction in the unit bid for “Sidewalk Concrete 4IN” & “Sidewalk Concrete 6IN”.

750-P02 PIGMENTED CONCRETE: Develop a mix design using any size coarse aggregate specified in Section 802.01 C.2, “Coarse Aggregate” and with a 60-40 fine aggregate-coarse 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 413 Terra Cotta, produced by Soloman Colors, Inc. http://www.solomoncolors.com/;
2. Terra Cotta Pigment Number 10134, produced by Davis Colors http:/www.daviscolors.com/; or

Use the same supplier for all colored concrete placed under the contract.

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 ot between 50 and 100 revolutions.

Cure concrete using curing compound that meets the requirements of ASTM C 309, Type 1.

750-P03 PIGMENTED CONCRETE: Match the stamped pattern of the existing concrete located in the island at the intersection of 32nd Avenue and Interstate-29. Include all costs to perform this work in the contract unit price for "Pigmented Concrete."

750-P04 CONCRETE MEDIAN NOSE PAVING: Measurement will be from the curb joint to the end of the median nose, excluding the area beyond the top if the median taper.

750-P05 CURB RAMPS AND LANDINGS: Construct adjacent roadway prior to curb ramps and landings. Install concrete landings labeled “D” in section 20, prior to adjacent ramps or sidewalk. Allow landings to cure at least 24 hours before constructing adjacent concrete. Adjust the elevations of the landings so that maximum grades are not exceeded.

Construct sidewalk, curb ramps and landings in accordance with D-750-3, and the details shown in Section 20 of these plans.

750-P06 DETECTABLE WARNING PANELS: Supply cast iron detectable warning panels.

750-P07 CONCRETE MEDIAN NOSE PAVING: Paint all median noses with yellow wet reflective epoxy. Include all costs for sandblasting and materials in the price bid for “Concrete Median Nose Paving”.

770-P01 RELOCATE LIGHT STANDARD: Coordinate with the city to identify the existing feed point for the light standard located in the northeast quadrant of the 32nd Avenue S and 38th Street intersection, and when the line will be de-energized for the relocate. Install a new concrete foundation in accordance with D-770-1. Field verify height of the light standard.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	6	6

NOTES

Light Standard Foundation Table		
Description	Footing Depth "D" 24" & 30" Diameters (FT)	Footing Depth "D" 36" & 42" Diameters (FT)
30'-44' Mounting Height	6	5
45'-50' Mounting Height	8	7

Location of light standard to be approved by the Engineer. Include all costs for all work materials, coordination and installation of a new concrete foundation in the price bid for "Relocate Light Standard".

770-P02 BREAKWAY LIGHT STANDARD: Furnish and install a breakaway light standard for use at SITE 2 that is davit type, galvanized, and designed for a 6' mast arm. Use this light standard to support a video detection camera for the ramp flush detection at SITE 2. Provide bases that are of the breakaway type and transformer style mounted on T-bases. Provide a shaft length of 40' from the top of the foundation to the bottom of the luminaire. Install duct seal to all conduit stubs in the concrete foundation. Include the cost for labor, materials, and equipment necessary for installing the breakaway light standard in the contract unit price for "REVISE TRAFFIC SIGNAL SYSTEM – SITE 2".

770-P03 LIGHTING FEED POINTS: Turn lighting circuit power off at the following feed points for removal and installation of lighting units on signal poles.

- 38th Street – The feed point for the lighting units in the northwest and southeast quadrants are located west of 34th Street and south of 32nd Avenue S.
- 34th Street – The feed point for the lighting units in the northwest and southwest quadrants are located west of 34th Street and south of 32nd Avenue S. The feed point for the lighting units in the northeast and southeast quadrants are in the northeast quadrant of the 34th Street and 32nd Avenue intersection.
- 31st Street – The feed point for the lighting units in the northwest and southwest quadrants are located in the northeast quadrant of the 34th Street and 32nd Avenue intersection. The feed point for the lighting units in the northeast and southeast quadrants are in the southwest quadrant of the Columbia Road and 32nd Avenue intersection.
- Columbia Road – The feed point for the lighting units in all four quadrants are in the southwest quadrant of the Columbia Road and 32nd Avenue intersection.
- 20th Street – The feed point for the lighting unit in the quadrants are in the southwest quadrant of the Columbia Road and 32nd Avenue intersection.

Maintain existing lighting levels along 32nd Avenue S during permanent signal construction to the satisfaction of the field engineer and the City of Grand Forks. Coordinate with City of Grand Forks one week prior to de-energizing the signal systems.

770-P04 LED LUMINAIRE: Provide LED luminaires on signal mast arms according to the plans. Provide new wiring as needed to connect the new signal luminaires to the existing street lighting circuits. Use the luminaire AEL American Autobahn (with Catalog Number ATB2 60BLEDE85 MVOLT R2 NR NL) or City-approved equal. Include the cost for labor, materials and equipment necessary for furnishing and installing the LED luminaires in the contract unit price for "REVISE TRAFFIC SIGNAL SYSTEM – SITE 7" and "TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8".

772-P01 REVISE TRAFFIC SIGNAL SYSTEM SITES 1, 2, and 7: This plan covers traffic signal revision work at three signalized intersection sites as follows:

Site 1: 32nd Avenue and I-29 SB Ramps
Site 2: 32nd Avenue and I-29 NB Ramps
Site 7: 32nd Avenue and 24th Street

Include the cost for labor and equipment necessary for the signal system revisions to be fully operational in the contract unit price for "REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7". This includes, but is not limited to, pedestrian countdown indications and bracketing, pedestrian pushbuttons, pushbutton posts and signs, pedestrian heads, flashing yellow left-turn vehicular heads, red light confirmation indicators, NO TURN ON RED LED blank out pictograph signs, EVP, controller, controller battery back-up, cabinet, foundations, video detection, removals and revisions, along with all cable, conduit, junction boxes, and appurtenances. Install continuous/un-spliced video detection cable from video cameras to controller cabinet. This also includes the removal of existing wiring or any other abandoned existing features that may conflict with the proposed traffic signal system improvements, and the removal and reinstallation of wiring as necessary to accommodate construction. Remove and salvage the existing signal pedestal in the southwest corner of SITE 7. Install new pedestal and signal components as shown in the plans in the southwest corner of SITE 7. At SITE 7, remove existing concrete plug covers and install traffic resistant cast iron cover castings in accordance with D-770-3, on existing pull boxes 1, 2, 3, 5, 6, and 7. Use polyvinyl chloride (PVC) SCHEDULE 40 conduit. Existing signal plans and timing plans are available from the City of Grand Forks for reference if necessary. Existing construction plans are available from the NDDOT for reference if necessary. Verify existing conditions. Bore additional conduit as required to accommodate new wiring.

772-P02 TRAFFIC SIGNAL SYSTEM SITES 3, 4, 5, 6, and 8: This plan covers furnishing and installing new traffic signals at five signalized intersection sites as follows:

Site 3: 32nd Avenue and 38th Street
Site 4: 32nd Avenue and 34th Street
Site 5: 32nd Avenue and 31st Street
Site 6: 32nd Avenue and Columbia Road
Site 8: 32nd Avenue and 20th Street

Include the cost for labor and equipment necessary for the signal systems to be fully operational in the contract unit price for "TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8". This includes, but is not limited to, pedestrian countdown

NOTES

indications and bracketing, pedestrian pushbuttons, pushbutton posts and signs, pedestrian heads, red light confirmation indicators, NO TURN ON RED LED blank out pictograph signs, EVP, controller, controller battery back-up, cabinet, foundations, video detection, removals, along with all cable, conduit, junction boxes, and appurtenances. Install continuous/un-spliced video detection cable from video cameras to controller cabinet. This also includes the removal of existing wiring or any other abandoned existing features that may conflict with the proposed traffic signal system improvements. Use polyvinyl chloride (PVC) SCHEDULE 40 conduit. Existing signal plans and timing plans are available from the City of Grand Forks for reference if necessary. Existing construction plans are available from the NDDOT for reference if necessary. Verify existing conditions. Bore additional conduit as required to accommodate new wiring.

772-P03 TRAFFIC SIGNAL CONTROLLER: Furnish the controller cabinet and auxiliary control equipment furnished from a manufacturer whose Econolite Cobalt RM with Transit Key/2M Series NEMA TS2/NTCIP operates on Centracs Software which has been approved by the City of Grand Forks. Include the cost for labor, materials and equipment required to install the new controller in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”. This includes, but is not limited to the emergency vehicle pre-emption unit, cabinet, new detector amplifiers (furnished and installed), other ancillary signal components (such as load switches, conflict monitors, etc.) and controller cabinet components connected as required to make the new controller equipment operational with the existing and proposed signal equipment.

772-P04 SIGNAL TIMING AND COORDINATION: Deliver the controllers and cabinets for the eight (8) Traffic Signal Sites to the City Electrician, Rick Hanson (701-738-8796), at the Public Works Department located at 724 N 47th Street a minimum of 35 days prior to installation. Due to limited space, begin coordination with the City at the start of the project to determine the dates and times to deliver and pick up the equipment. Provide controller preloaded with signal timing as shown in the Plans. The City Electrician will conduct operational tests and operate the controller for a test period of 30 consecutive days at the Public Works Department shop without any malfunctions of the controllers. Any controller that does not operate satisfactorily for the 30 days (as determined by the City Electrician) will be rejected and replaced. After the controllers have operated satisfactorily for the 30 days, they may be installed. Include the cost for labor, materials and equipment necessary for furnishing and installing the controllers, as well as delivery to the City Electrician in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”.

772-P05 GRAND FORKS TRAFFIC SIGNAL CABINET: Use Econolite 332D, pre-wired with all necessary ancillary components including a RENO A&E Traffic Signal Conflict Monitor with Ethernet port. Adhere to the City of Grand Forks Cabinet Specifications at Traffic Control Corporation. Include the cost for labor, materials and equipment necessary for furnishing and installing the cabinet in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”.

772-P06 CONCRETE CONTROLLER CABINET PAD: Install conduits towards the rear of the cabinet foundation – with the fiber conduit on the left half and the electrical conduits on the right half. Check shop drawings to ascertain the actual cabinet footprint as a structural member on the floor in the middle exists. Connect concrete controller cabinet pad to the sidewalk at SITE 5 and SITE 7. Include the cost for labor, materials, and equipment necessary for furnishing and installing a new concrete pad to mount the new traffic signal cabinet in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”.

772-P07 BATTERY BACKUP SYSTEM: Provide a ZincFive UPStealth 2 Extended Run Time (XRT) Battery system 3600Wh battery backup system for the traffic signal system. Include the cost for labor, materials, and equipment necessary for furnishing and installing the battery backup system in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”.

772-P08 EMERGENCY VEHICLE PREEMPTION: Use GTT Global GPS Vehicle Preemption; model 764 phase selector, Model 1010 GPS Radio Unit containing a GPS receiver with Antenna and a 2.4 Ghz Spread Spectrum Transceiver with Antenna and Model 1070 GPS Installation Cable.

The location of the GPS EVP detector as denoted in the plans may vary based upon GPS signal availability. Install continuous/un-spliced cable between the controller cabinet and the EVP Equipment on the pole/arm. Provide LED indicator lamps.

Ensure EVP equipment is compatible with the other EVP equipment used within the City of Grand Forks. Provide all labor and equipment necessary for the emergency vehicle preemption system to be fully operational. Notify the City of Grand Forks Fire Chief Gary Lorenz (701-746-2566) and City Electrician Rick Hanson (701-738-8796) when the proposed signalized intersection EVP system is tested and operable. Include the cost for labor, materials, and equipment necessary for furnishing and installing the EVP system in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”.

772-P09 MALFUNCTION MANAGEMENT UNIT: Use RENO A&E model with an Ethernet port. Perform a complete controller malfunction management unit test prior to unveiling the traffic heads. Include the cost for labor, materials, and equipment necessary for furnishing and installing the unit and to conduct the malfunction management unit testing in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”.

772-P10 WORK DRAWINGS: Furnish work drawings and a complete listing of materials proposed for installation. Due to a long delay time in manufacturing, submit Traffic Signal work

NOTES

drawings a maximum of 14 days after the date of award of contract. Provide the Engineer with proof of purchase, and delivery and manufacturing schedules for traffic signal materials indicating that acquisition of these materials is consistent with progress and completion requirements of this contract.

772-P11 VEHICULAR TRAFFIC SIGNAL HEADS: Use 12-inch vehicular signal heads with aluminum housings for each section. Equip all sections with General Electric GTx LED illuminating elements conforming to the Institute of Transportation Engineers Equipment and Materials Standards and Specifications. Include the cost for labor, materials, and equipment necessary for furnishing and installing the vehicular traffic signal heads in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”.

772-P12 PEDESTRIAN SIGNAL HEADS: Equip heads with LED illuminating elements displaying the pedestrian signals as shown. Include the cost for labor, materials, and equipment necessary for furnishing and installing the pedestrian signal heads in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”.

772-P13 PEDESTRIAN PUSH BUTTON POSTS: Use SMP2 with breakaway tabs per TIP indications with anodized natural gray finish. Paint pedestrian pushbutton housing black (use #27038 of Federal Standard No. 595B). Include the cost for labor, materials, and equipment necessary for furnishing and installing the pedestrian push button posts in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”.

772-P14 PEDESTRIAN PUSHBUTTON UNITS: Install Polara iNS2 2 wire Navigator System for a 332 Series cabinet. Mount each pedestrian sign and pushbutton on one framed enclosure to the signal pole or bolt directly to the pedestrian pushbutton post. Do not use bandit for this purpose. Do not extend the top of the pushbutton signs above the top of the pedestrian pushbutton post. Include the Advisor Advanced APC Pedestrian Controller and compatibility of remote network ether connection for real time monitoring and control of operating parameters. Use SMP2 High Visibility Pedestrian Station for standalone push button posts. Orient the pushbutton and its sign (with arrow) in accordance with the positioning shown in the plans.

Include the following items per intersection (SITES 3, 4, 5, 6, 7, and 8) for each Polara iNS2 2 wire Navigator System:

- POL-iCCU-C: iCCU Rack Mounted (330 series Cabinets) – 1 total
- POL-iN2-C4CABLE-C: C4 Cable for iCCU-C – 1 total
- POL-iN2-ICB-C: Interconnect Board for iCCU-C – 1 total
- POL-iN2-150WPS-C: 150-Watt Power Supply for iCCU-2 – 1 total
- POL-iN29CB1-B: Int-PBS-9x12 Option C (countdown signs) Brail-Special Message-Blk Pedestrian Push Buttons – 10 total at SITES 3, 4, 5, 6, and 8 and 6 total at SITE 7
- Factory Representative Setup

Include the cost for labor, materials, and equipment necessary for furnishing and installing the pedestrian pushbutton units in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”.

772-P15 TRAFFIC SIGNAL HEAD MOUNTINGS: Furnish piping to mount the vehicle and signal heads to the side of the poles. Do not mount heads directly to the pole or on the face of the pole directly adjacent to the street. No banding permitted. Include the cost for labor, materials, and equipment necessary for installing traffic signal heads in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”.

772-P16 TRAFFIC SIGNAL STANDARDS - TRANSFORMER BASES: Use “T” transformer base type standards. Include the cost for labor, materials, and equipment necessary for furnishing and installing the “T” transformer bases in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”.

772-P17 SIGNAL STANDARD PAINT COLOR: Paint all traffic signal system (“REVISE TRAFFIC SIGNAL SYSTEM – SITE 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”) components in accordance with the following:

- Transformer base – black
- Mast arm – black
- Signal head mounting hardware – black
- Shaft – black
- Signal housing – black

Galvanize the traffic signal standards at the following sites, “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”. The traffic signal standards are fatigue category 1. Use #27038 of Federal Standard No. 595B for the color black.

772-P18 PULL BOXES: Provide 4-foot-deep PVC pull boxes with traffic resistant cast iron cover casting in accordance with D-770-3.

772-P19 CONDUIT: Install conduit at the locations shown on the plans. Bore conduit under existing pavement. Dig potholes to verify that the conduit avoids the existing utility as necessary. Include the cost for labor, materials, and equipment necessary for furnishing and installing conduit, pushing and boring conduit, digging potholes and restoring the potholes with new material that ties into the existing surround material in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7”, “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”, and “IT SYSTEM”. Seal all conduits with duct seal at the controller cabinet and at the traffic signal standard foundations.

772-P20 ADDITIONAL CONDUIT: Install two additional 2 inch diameter PVC conduit in the controller cabinet foundation. Extend conduit 2’ beyond the slab footprint. The direction of the conduit will be determined in the field by the engineer. Cap the conduits underground and in the feed point cabinet

NOTES

with 2 inch expandable metal plugs and label which direction the conduits are facing. Include all costs to supply and install the additional conduit in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”.

772-P21 EXCAVATION AND RESTORATION: Include the cost for any excavation required to install conduit, connect conduit to existing conduit sweeps, install pull boxes, foundations or any other feature proposed in the plans in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”. This includes restoring the excavated area with the appropriate fill material. Use fill material that matches the surrounding surface material. At locations where the surrounding material is earth, include earth fill with 6” of topsoil and sod. At locations where the surrounding material is concrete, tie into the existing concrete. All material whether concrete or earth removed from the project are property of the Contractor and be disposed of accordingly. Use the compaction and density controls in accordance with Section 203.04 E.2 of the Standard Specifications AASHTO T-99.

772-P22 FOUNDATION REMOVAL: All foundations removed from the project are the property of the Contractor. Dispose all removed foundations accordingly. Include the cost for labor, materials, and equipment necessary for removing and disposing of concrete foundations in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”.

772-P23 CONDUCTOR COLOR CONTINUITY: Maintain conductor color continuity where any 12 AWG 2, 12 AWG 3, 12 AWG 5, 12 AWG 7, 12 AWG 12 conductor cables are connected to 14 AWG 2, 14 AWG 3, 14 AWG 5, 14 AWG 7, and/or 14 AWG 12 conductor cables within the terminal block of a traffic signal standard.

772-P24 WIRE SPLICING: Construct splices in signal bases, not in the pull boxes.

772-P25 LABEL ALL FIELD CABLES: Use City-approved labeling materials. Labels must be readable without moving the cables. When installing cable bundles in conduit, bundles will not be taped. Label all field cables with the cable designations:

TYPE	LABEL	LABEL LOCATION
Communication Cable	Comm./address of other end	Within 12" of conduit
Pedestrian Push Button	Phase/location (i.e. NW, SW, etc.)	Within 6” of terminals
Video Camera Cables	Detection zone (i.e. D2-1, D2-2, etc.)	Within 6” of terminals
Control Cable	Cable number & location (i.e. NW, SW, etc.)	Within 12” of conduit
Opticom Cable	Preempt number/location (i.e. NW, SW, etc.)	Within 6” of terminal

Include the cost for labor, materials, and equipment necessary for labeling field cables in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8”.

772-P26 FEED POINT: At SITES 1, 2, 3, 6, 7, and 8, connect the new traffic signal controllers to the existing feed points as shown in the plans.

For Xcel Energy facilities, coordinate with Deb Thompson (701-795-5229) to establish the service connection to ensure a fully operational traffic signal controller feed point at each location.

For Nodak Rural Electric Cooperative facilities, coordinate with Steve Breidenbach (701-795-6759) to establish the service connection to ensure a fully operational traffic signal controller feed point at each location.

Furnish and install new conduit from the new controller cabinets to the existing feed points. Furnish and install #6 U.S.E. cable between the new controllers and the existing feed points. Include the cost for labor, materials, and equipment required for feed point connections in the contract unit price for “REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7” and “TRAFFIC SIGNAL SYSTEM – SITE 3, 6, and 8”. At SITE 4 and 5, connect the new traffic signal controller to a new feed point. Install a 200-amp breaker at the feed point for traffic control signal and street lighting purposes. Coordinate with Xcel Energy to provide new pedestal power source and establish the service connection to ensure a fully operational traffic signal controller feed point at this location; contact Deb Thompson (701-795-5229).

Pay all utility company costs for the new feed point. Furnish and install new conduit from pedestal power source to the new feed point. Furnish and install new conduit from the new controller cabinet to the new feed point including three 3/0 copper service cables in 3” PVC rigid conduit and grounding as required by NEC. Furnish and install new conduit with #6 U.S.E. cable from the new controller to the new feed point.

Install two additional 2 inch diameter PVC conduit in the new feed point foundation. The direction will be determined by the Engineer. The conduits will extend 2 feet beyond the slab foot print. Cap the conduits underground and in the feed point cabinet with 2 inch expandable metal plugs and label which direction the conduits are facing.

The feed point fabrication details are noted on Combination Feed Point Detail.

Include the cost for labor, materials, and equipment required for feed point in the contract unit price for “TRAFFIC SIGNAL SYSTEM – SITE 4 and 5”.

772-P27 REMOVALS AND SALVAGING: Remove and salvage existing traffic signal and lighting equipment as shown on the

NOTES

plans. The equipment being removed includes but is not limited to signal standards, foundations, traffic signal controller and cabinet, video detection equipment, EVP equipment, pedestrian pushbuttons, pushbutton posts, light extensions and luminaires. Salvage and deliver the following removed equipment - pushbutton posts, signal controller and cabinet, video detection cameras and video detection wire from the camera to the cabinet, EVP equipment, and light extensions and luminaires to the City of Grand Forks at 714 South 47th Street, Grand Forks, ND. Coordinate delivery with City Electrician Rick Hanson (701-738-8796). All other removed equipment are the property of the Contractor and be disposed of properly. Include the cost for labor, materials, and equipment necessary for removing and salvaging these items in the contract unit price for "REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7" and "TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8".

772-P28 RED LIGHT CONFIRMATION INDICATORS: Furnish and install red light confirmation indicators ("blue lights") as shown on the plans. Include the cost for labor, materials, and equipment necessary for installing the confirmation lights in the contract unit price for "REVISE TRAFFIC SIGNAL SYSTEM – SITE 1, 2, and 7" and "TRAFFIC SIGNAL SYSTEM – SITE 3, 4, 5, 6, and 8".

772-P29 RE-PAINTING EXISTING SIGNAL STANDARDS: Use the following method when re-painting the signal standards at the 24th Street intersection (SITE 7).

Sandblast Signal Standard:

1. Remove all bandit mounting material, signs and pedestrian buttons, including video camera mounting bracket/bands.
2. Completely remove all rust and paint by White Metal Blasting the signal standard.
3. Use White Metal Blast cleaning when a totally cleaned surface is required. This method of cleaning is defined as a sandblasted cleaned surface with a gray-white uniform metallic color. Ensure the surface is free of all oil, grease, dirt, mill scale, rust, corrosion products, oxides, paint, stains, streaks or any other contaminant across 100% of every square inch.
4. Use steel grit angular carbon steel for the sandblasting material.
5. Perform sandblasting on site with the signal standards in place and operational. Protect all pedestrians and the traveling public from all debris. Collect all sandblasting material and removed pole paint/debris in a method that is approved by the EPA. Contain and clean up the existing pole paint-debris if it contains harmful chemicals or existing lead paint, which includes protecting pedestrians and the traveling public from these hazardous contaminates.
6. Before the primer is applied, coordinate inspection by the City of Grand Forks to ensure that the pole is free of all paint, rust and contaminates. Prep the pole according to Specifications and to the satisfaction of the Engineer in the field. Re-blast or clean the pole with Devoe DEVPREP 88 cleaner if needed. Coordinate with the Engineer in the field to determine which method shall be used.

Paint Signal Standard:

1. Mask all areas as desired by the Engineer.
2. Prime bare metal with Devoe Devran 205 Primer.
3. Apply two top coats of Devthane 379UVA manufactured by Devoe high performance coatings, and one coat of clear coat as recommended by the top coat manufacturer. Use #27038 of Federal Standard No. 595B for the color black.
4. Thickness of all coats applied shall be according to the manufacturer's recommended film thickness. Application of all materials shall follow the manufacturer's directions for use.
5. Re-install all pedestrian push buttons and signs without using bandit. Re-install iron pole plates for vehicle heads as per detail. Remove all masking.
6. After sandblasting has been approved, splice all conductor in T-base with lever nuts and splice according to the satisfaction of the Engineer in the Field.
7. Remove and replace ALL post mount plugs on standard before painting.
8. Install new video cameras with new bands per manufacturer's instructions after it is painted.

772-P30 NB I-29 RAMP FLUSH: Install video detection camera on light standard and make all the necessary connections into the new controller at 32nd Avenue and I-29 East Ramp intersection. The new cameras to be installed will be a Autoscope Vision manufactured by Econolite. Make all necessary modifications and upgrades to ensure the new cameras are integrated with the new controller cabinet.

Program the existing controller settings so when a queued vehicle is fully stopped in the detection zone, a call will be placed to activate the northbound pre-emption phase and allow the NB ramp traffic to proceed. Provide an appropriate (approximately 10 second) delay before placing the call to activate the ramp queue flush preempt. Provide an appropriate minimum dwell time (approximately 50 seconds) for the preempt to be able to substantially clear the queue.

The 32nd Avenue / I-29 East (NB) Ramp intersection operates in coordination with the 32nd Avenue / I-29 West (SB) Ramp and 32nd Avenue / 38th Street intersections. Use peer-to-peer programming to activate a westbound preempt at the West (SB) Ramp intersection when the East (NB) Ramp queue flush preempt is triggered, extending for an appropriate minimum dwell time (approximately 60 seconds). Similarly, use peer-to-peer programming to activate an eastbound left + eastbound through preempt at the 38th Street intersection when the East (NB) Ramp queue flush preempt is triggered, extending for an appropriate minimum dwell time (approximately 60 seconds). Program each intersection's ramp queue flush preempt to be of a lower priority than each intersection's standard emergency vehicle preempts.

Include all costs associated with installing the new video detection cameras in the contract unit price for "REVISE TRAFFIC SIGNAL SYSTEM – SITE 2".

772-P31 IT SYSTEM: The price bid for "IT SYSTEM" includes all labor and equipment necessary to interconnect the traffic signals at SITES 1, 2, 3, 4, 5, 6, 7, and 8, within the project limits as shown in Section 160. This includes, but is not be limited to,

NOTES

two fiber optic cables (12 pair single-mode, 12 pair multi-mode), pull boxes, vaults, conduit, conduit sweeps into existing pull boxes and connections required for the interconnected system to be fully operational, furnishing and installing Ethernet switches and fiber splice boxes/enclosures sized for all fibers at each SITE previously mentioned. Reconnect existing interconnect cables to the new controllers at SITE 3 and SITE 6. Use care when removing, protecting, and delivering the existing fiber optic cable to the City as shown in the plans. Damage on Contractor. Use High Density Polyethylene (HDPS) conduit with smooth inner bore with wall thickness equivalent to schedule 40 (refer to NDDOT specifications) and be UL listed. Bore conduit horizontally and directionally. Install portions of the salvaged fiber in new conduit as shown in the plans. Coordinate all interconnect work with the City of Grand Forks electrical department to cause minimum interference with other parts of the system.

772-P32 ETHERNET SWITCH: Produced by RuggedCom, be model type RuggedSwitch RS-900G-2L, contain dual fiber optic Gigabit Ethernet ports, and have two (2) single-mode fibers with LC connectors in and out included for the connections (for SITES 1, 2, 4, 5, 7, and 8). Produced by RuggedCom, be model type RuggedSwitch RS-2228 rack mounted with 4 LC fiber ports, (for SITE 3 and 6). Price bid for “IT SYSTEM” includes all costs, labor, materials and equipment necessary for furnishing and installing the Ethernet switch.

772-P33 IP ADDRESS: Coordinate with the City of Grand Forks to obtain any required IP addresses during installation.

772-P34 INTERCONNECT TRACER CONDUCTOR: Install and label a tracer conductor in each controller cabinet. Use a No. 14 AWG - Type THW single conductor as specified in Standard Specification section 895.03A1. Continuously unsplice the conductor from control cabinet to control cabinet. The price bid for “IT SYSTEM” includes furnishing and installing the conductor.

772-P35 MAXIMUM TENSILE PULL STRENGTH: Do not exceed a maximum tensile strength of 600 pounds when pulling the fiber optic interconnect cable.

772-P36 POLYMER CONCRETE PULL BOXES: Provide polymer concrete pull boxes in accordance with D-770-3 for the “controller vaults” as shown in the plans. Price bid for “IT SYSTEM” includes all costs, labor, materials and equipment necessary for furnishing and installing the polymer concrete pull boxes.

772-P37 TRAFFIC SIGNAL AND INTERCONNECT PHASING: Follow the Traffic Control Phasing in 701-P06 for traffic signal and interconnect work.

For SITE 1 and 2, place existing signal controller and cabinet on a temporary signal base that will structurally support the existing controller and cabinet. Disconnect existing signal wires and connect inside relocated cabinet. These first two steps can occur with flaggers directing the affected traffic. Remove existing cabinet foundation and working slab. Install necessary new conduit, wires, controller and cabinet as shown in the plans. Disconnect relocated cabinet and reconnect existing wires to new signal controller and cabinet during overnight hours to minimize impacts to traffic.

For “IT SYSTEM” work install all conduit, pull boxes, and fiber prior to signal system installations. Pull fiber into adjacent pull boxes and/or controller vaults nearest the intersections prior to new traffic signal controller and cabinet installation. Connect fiber to new controller cabinets.

970-P01 LANDSCAPE PERPARATION: Minimal grading will be required adjacent to the locations designated for pigmented concrete, sidewalk, and curb & gutter replacement and construction. Blend the existing topsoil adjacent to the sidewalk and or curb & gutter to eliminate any steep slopes or vertical edges. Any excess topsoil will become property of the Contractor and must be removed from the project site. Import any topsoil to the project if necessary.

Rake the final topsoil surface smooth to provide positive drainage. Hydroseed all disturbed areas with the following seed mixture:

Grass Species	Percentage Pure Live Seed
Creeping Red Fescue	40%
Kentucky Bluegrass	25%
Perennial Rye Grass	20%
Southport Chewings Fescue	15%
Total	100%

Seed Application Rate	260 Lbs/acre

Water and maintain seeded areas a minimum of four weeks after placement in order to provide sufficient moisture for growth as determined by the Engineer. Water and maintain seeded areas until acceptance by the Engineer. Prevent runoff and puddling. Do not drive watering trucks over turf areas or sidewalks.

Maintenance of the seeded areas includes eradicating weeds, maintaining erosion control devices and mulch, protecting installed areas from traffic, mowing, and watering.

Mow seeded areas to height of 3 inches with cutting no more than 1/3 of the grass leaf. Mow seeded areas 24 hours prior to final inspection.

Seeded areas will be rejected if they contain excessive weeds or bald spots larger than 3" in diameter.

Include the cost for all materials, equipment, labor, maintenance, and incidentals in the contract unit price for “Landscape Preparation”.

970-P02 TREES: Replace all trees that are shown to be removed.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	6	12

NOTES

Hire a nursery currently registered in the State of North Dakota to provide, stake, plant, and water trees of either Bur Oak, Triumph Elm, Hackberry, American Linden, or Kentucky Coffeetree species. Contact Grand Forks Park District to coordinate placement of the trees.

Sean Lee
City Forester
City of Grand Forks, ND
701-740-3759
slee@gfparks.org

For use in the following: “Berm” is defined as, the area within the city easement between the city street and the public sidewalk.

Planting Location

- Trees cannot be planted under power lines without approval of the Forestry Operations Manager.
- The berm must be a minimum width of 6 feet.
- Plant trees a minimum of 30 feet away from city street intersections and crosswalks.
- Plant trees in locations that do not block visibility of city “Stop”, “Yield”, “Speed Limit”, “Pedestrian” and “Railroad Crossing” signs.
- Plant trees a minimum distance of 12 feet away from streetlights, or 1/2 of the full mature width (radius) if greater.
- Plant trees a minimum of 8 feet away from located and marked underground water lines, and 12 feet away from hydrants.
- Plant trees in the center of the berm, or in-line with established trees.

Planting

- Plant trees at a depth where the first major root (that has a visible root flare) protruding from the trunk is even or slightly above final grade.
- Plant trees by hand. Use of machinery such as Tree Spades are NOT allowed.
- Trees are: Cultivated Nursery stock with straight trunk 6 to 10 feet in height, or per Land Development Code requirements when applicable.
- Space trees a maximum distance of 60 feet apart, and a minimum distance of 25 feet apart, or ¾ of the tree’s mature width if greater, from other berm trees and trees located on private property.
- Dig a planting hole twice the size of the diameter of the tree’s container or root system.
- Break up all large clumps of soil used for backfilling before filling the planting hole.
- Do not compact the soil used to backfill the planting hole either before or after planting.
- Remove all burlap, wire, twine, metal baskets and plastic containers from the tree, planting hole and site during planting.

Post Planting

- Install 3-4 inches of woodchip mulch over the planting area with a minimum diameter of 36 inches. Keep the woodchip mulch a minimum distance of 6 inches away from the tree trunk. Coordinate the maximum distance from the tree trunk with the City Forester.
- Install a minimum of 2 stakes with straps to support the tree. Located the stakes North-West and South-East of the tree, and outside the tree’s canopy.
- Used fabric straps that will not damage the tree for staking.
- Install the planting supports so they are tight enough to support the tree, but not so tight that it restricts all sway of the tree.
- Water the tree within 2 hours of planting.

Locate underground utilities at planting locations before excavation to ensure they are clear. Include the cost for all materials, equipment, and labor in the unit bid “Trees”.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	8	1

Estimated Quantities

SPEC	CODE	ITEM DESCRIPTION	UNIT	Estimated Quantity	TOTAL
103	100	CONTRACT BOND	L SUM	1	1
201	370	REMOVAL OF TREES 10IN	EA	2	2
201	395	STUMP REMOVAL	EA	1	1
202	114	REMOVAL OF CONCRETE PAVEMENT	SY	3449	3449
202	130	REMOVAL OF CURB & GUTTER	LF	8289	8289
202	230	REMOVAL OF INLETS	EA	2	2
203	103	COMMON EXCAVATION-TYPE C	CY	4921	4921
203	109	TOPSOIL	CY	1202	1202
261	112	FIBER ROLLS 12IN	LF	623	623
261	113	REMOVE FIBER ROLLS 12IN	LF	623	623
261	200	WEIGHTED FIBER ROLLS	LF	95	95
261	201	REMOVE WEIGHTED FIBER ROLLS	LF	95	95
302	100	SALVAGED BASE COURSE	TON	8212	8212
550	300	8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	1845	1845
550	305	9IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	2238	2238
550	310	10IN NON REINF CONCRETE PVMT CL AE-DOWELED	SY	3871	3871
702	100	MOBILIZATION	L SUM	1	1
704	100	FLAGGING	MHR	850	850
704	1000	TRAFFIC CONTROL SIGNS	UNIT	4597	4597
704	1035	ATTENUATION DEVICE-TYPE B-25	EA	1	1
704	1052	TYPE III BARRICADE	EA	78	78
704	1054	SIDEWALK BARRICADE	EA	17	17
704	1056	PEDESTRIAN CHANNELIZATION	LF	360	360
704	1060	DELINEATOR DRUMS	EA	349	349
704	1067	TUBULAR MARKERS	EA	97	97
704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	8	8
704	1500	OBLITERATION OF PAVEMENT MARKING	SF	5319	5319
704	2108	TEMPORARY CURB RAMP	EA	2	2
704	3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF	210	210
704	4011	PORTABLE CHANGEABLE MESSAGE SIGN	EA	3	3
706	400	FIELD OFFICE	EA	1	1
708	1540	INLET PROTECTION-SPECIAL	EA	18	18
708	1541	REMOVE INLET PROTECTION-SPECIAL	EA	18	18
709	100	GEOSYNTHETIC MATERIAL TYPE G	SY	9192	9192
714	9006	ADJUST 6IN SEWER CLEANOUT	EA	1	1
714	9720	UNDERDRAIN PIPE PVC PERFORATED 4IN	LF	20	20
722	3450	MANHOLE RELOCATE	EA	1	1
722	3510	INLET-TYPE 2	EA	2	2
722	6140	ADJUST GATE VALVE BOX	EA	3	3
722	6160	ADJUST INLET	EA	1	1
722	6200	ADJUST MANHOLE	EA	7	7
722	6240	ADJUST UTILITY APPURTENANCE	EA	1	1
724	427	ADJUST HYDRANT	EA	1	1
748	140	CURB & GUTTER-TYPE I	LF	7446	7446
748	520	CURB-TYPE I	LF	67	67
750	20	PIGMENTED CONCRETE	SY	1029	1029
750	115	SIDEWALK CONCRETE 4IN	SY	777	777

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	8	2

Estimated Quantities

SPEC	CODE	ITEM DESCRIPTION	UNIT	Estimated Quantity	TOTAL
750	140	SIDEWALK CONCRETE 6IN	SY	400	400
750	210	CONCRETE MEDIAN NOSE PAVING	SY	44	44
750	2115	DETECTABLE WARNING PANELS	SF	487	487
754	110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	619.5	619.5
754	112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	371	371
754	206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	149.8	149.8
754	592	RESET SIGN PANEL	EA	8	8
762	112	EPOXY PVMT MK MESSAGE	SF	496	496
762	115	EPOXY PVMT MK 8IN LINE	LF	4981	4981
762	117	EPOXY PVMT MK 24IN LINE	LF	1022	1022
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	20	20
762	1307	PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED	LF	200	200
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	6444	6444
770	4540	RELOCATE LIGHT STANDARD	EA	1	1
772	2906	REVISE TRAFFIC SIGNAL SYSTEM-SITE 1	EA	1	1
772	2907	REVISE TRAFFIC SIGNAL SYSTEM-SITE 2	EA	1	1
772	2913	REVISE TRAFFIC SIGNAL SYSTEM-SITE 7	EA	1	1
772	9200	IT SYSTEM	EA	1	1
772	9813	TRAFFIC SIGNAL SYSTEM - SITE 3	EA	1	1
772	9814	TRAFFIC SIGNAL SYSTEM - SITE 4	EA	1	1
772	9815	TRAFFIC SIGNAL SYSTEM - SITE 5	EA	1	1
772	9816	TRAFFIC SIGNAL SYSTEM - SITE 6	EA	1	1
772	9818	TRAFFIC SIGNAL SYSTEM - SITE 8	EA	1	1
970	8	LANDSCAPE PREPARATION	SY	3363	3363
970	1000	TREES	EA	2	2

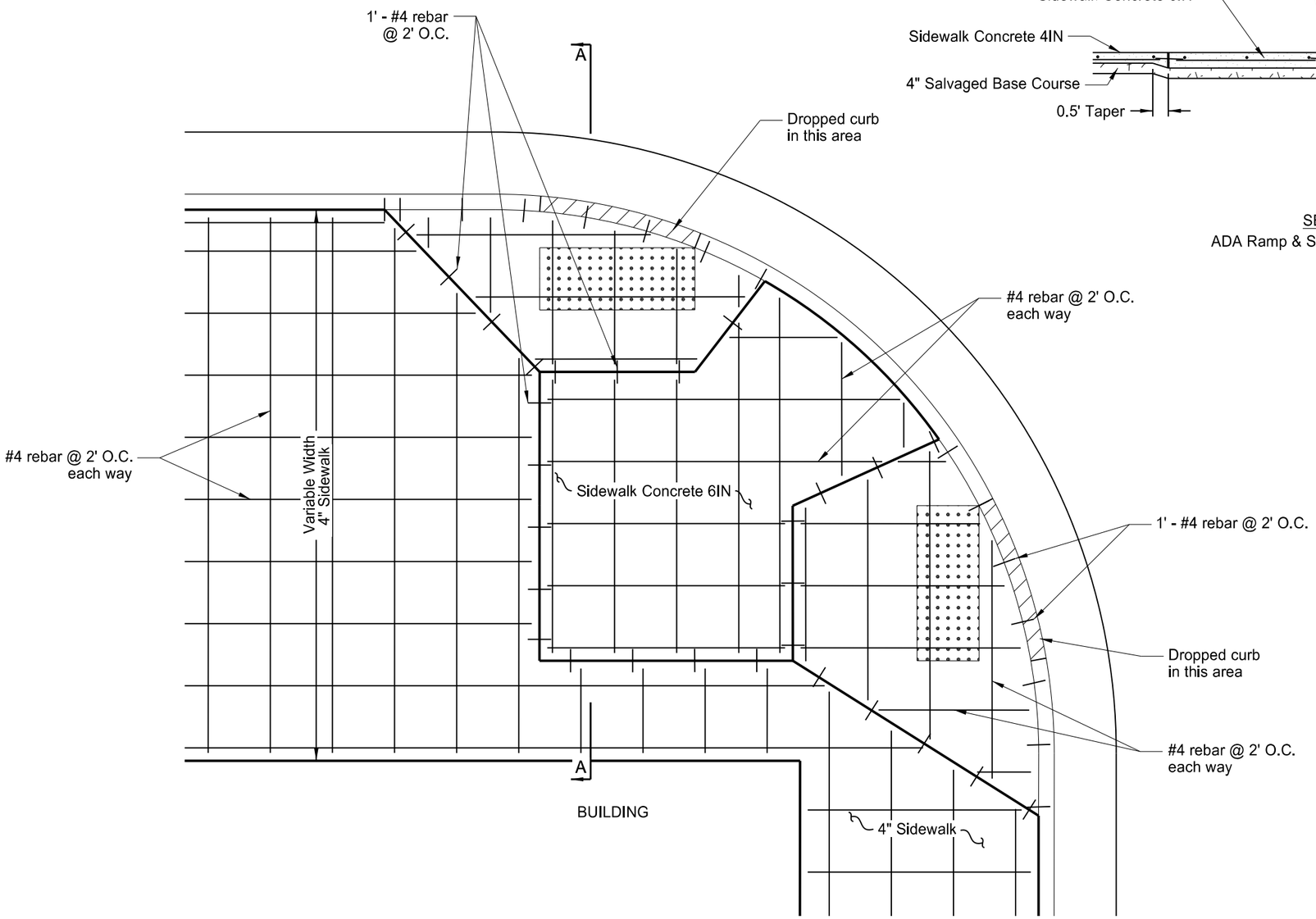
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	10	1

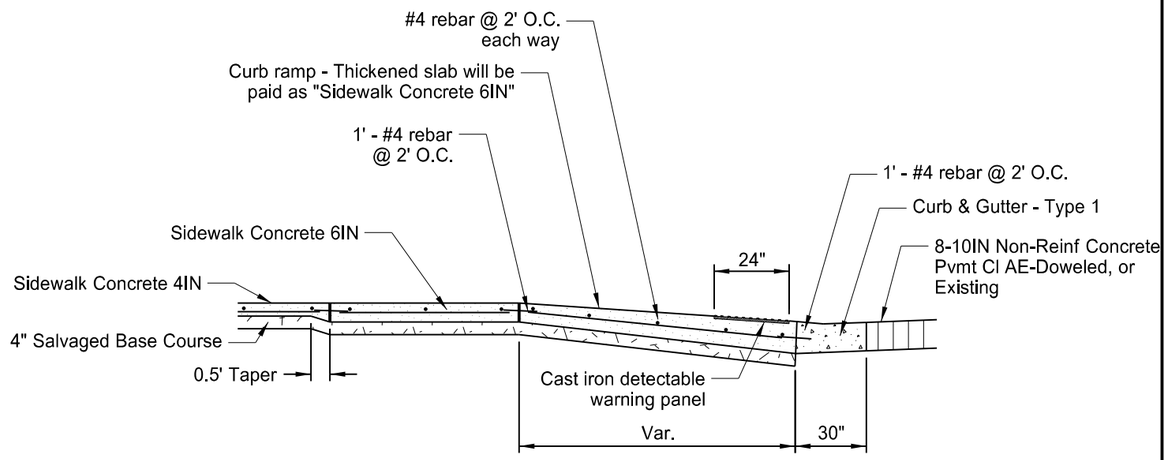
BASIS OF ESTIMATE

Salvaged Base Course
1.875 Ton/CY (1.5 Ton/CY + 25%)

Location	Area (SF)	Common Excavation - Type C (CY)	Topsoil (CY)
S 38th St			
-West Median	5310.03	328.4	98.3
-East Median	7664.77	474.1	141.9
-NE Corner	421.59	26.1	7.8
-SW Corner	131.79	8.2	2.4
S 34th St			
-West Median	4540.30	280.8	84.1
-East Median	6856.84	424.1	127.0
-NE Corner	1104.52	68.3	20.5
-SW Corner	1748.84	108.2	32.4
31st St			
-West Median	2747.20	169.9	50.9
-East Median	8076.55	499.5	149.6
-NE Corner	340.96	41.0	6.3
-SW Corner	1267.78	152.6	23.5
Columbia Rd			
-West Median	150.97	18.2	2.8
-East Median	8193.44	986.2	151.7
-North Median	175.44	21.1	3.2
-South Median	4183.39	503.6	77.5
-NE Corner	399.00	48.0	7.4
-SW Corner	395.75	47.6	7.3
S 24th St			
-SW Corner	399.52	48.1	7.4
S 20th St			
-West Median	3981.89	246.3	73.7
-East Median	3529.88	218.3	65.4
-NE Corner	1637.89	101.3	30.3
-SW Corner	1638.86	101.4	30.3
Totals		4,921	1,202

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	20	1





SECTION A-A
ADA Ramp & Sidewalk Reinforcing Detail

Note:

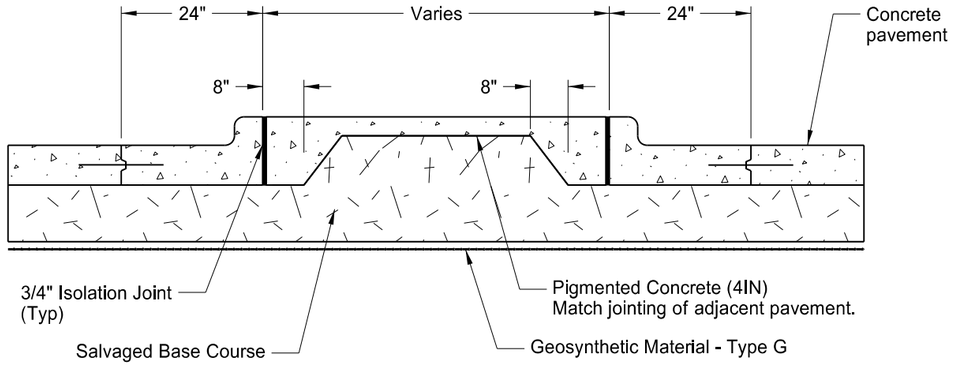
1. Provide detectable warning panels that are cast-in-place, powder-coated federal color FS 30166 (brick red), manufactured by East Jordan Iron Works, Neenah Foundry, or approved by the Engineer.
2. Include all sidewalk reinforcement, rebar ties, and dowels in price bid for "Sidewalk Concrete 4IN" and "Sidewalk Concrete 6IN".
3. Include all time, work, and materials needed to taper from 6" concrete to 4" in price bid for "Sidewalk Concrete 4IN".

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

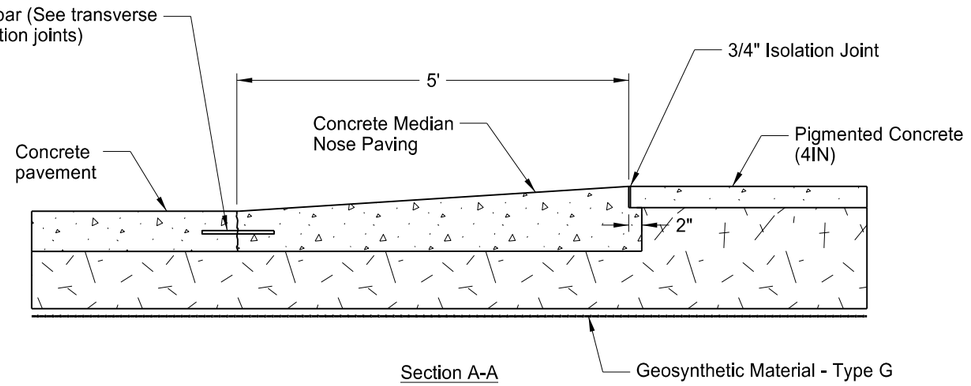
Sidewalk Reinforcement Details

US Hwy 81 Safety, Signal, and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	20	2

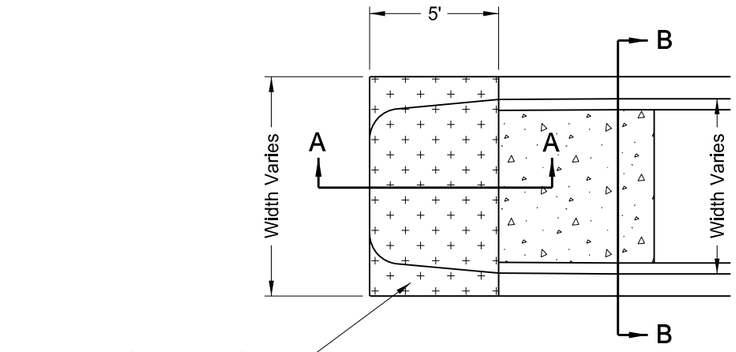


Median Section B-B



Section A-A

1/2" Isolation Joint



Concrete Median Nose Detail

Notes:

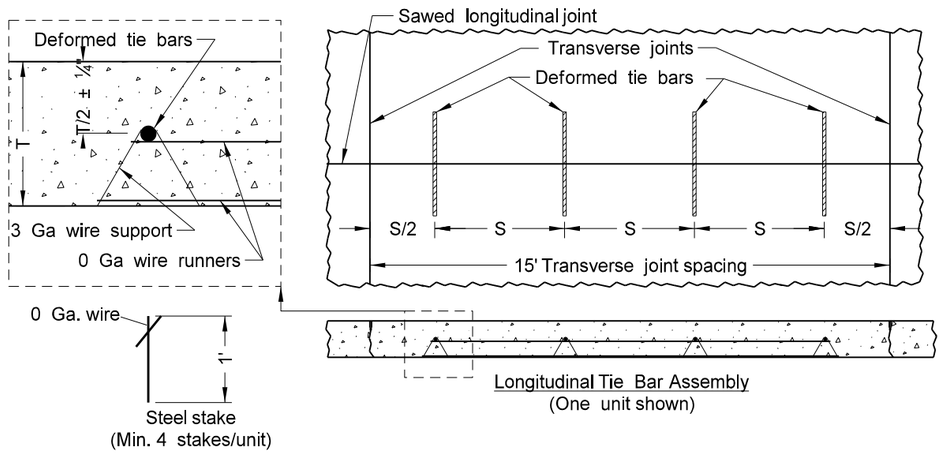
1. Construct Pigmented Concrete with positive drainage.
2. Saw transverse contraction joints in the Pigmented Concrete that are 1/8" wide and 1-1/4" deep.
3. Construct Pigmented Concrete panels to be no smaller then 2' x 2'.
4. Construct a transverse 3/4" Isolation Joint every 50' in the Pigmented Concrete.
5. Construct Pigmented Concrete in median areas less then 6' wide.
6. Include all costs for labor, equipment, material necessary to construct contraction and isolation joints in the price bid for sidewalk concrete.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

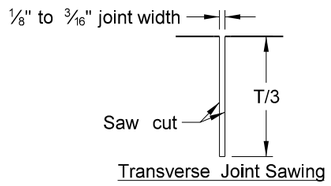
Concrete Median Paving Details

US Hwy 81 Safety, Signal, and Turn Lanes
I-29 to 20th Street

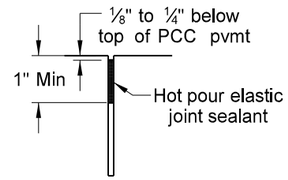
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	20	3



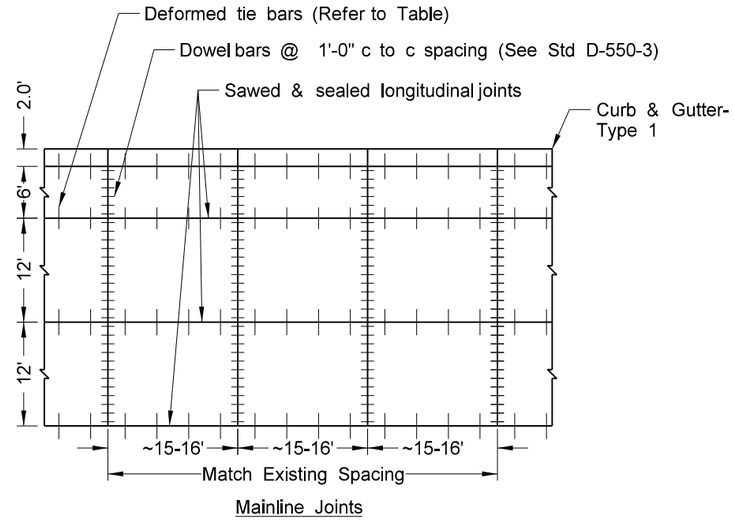
Longitudinal Tie Bar Assembly
(One unit shown)



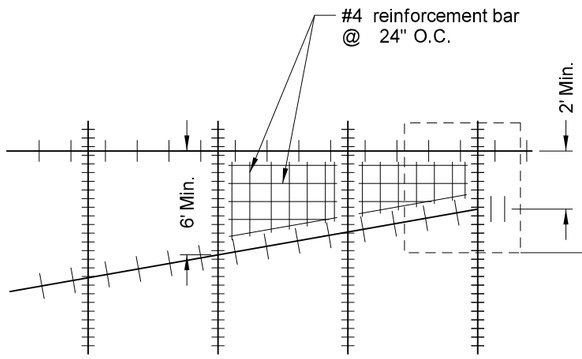
Transverse Joint Sawing

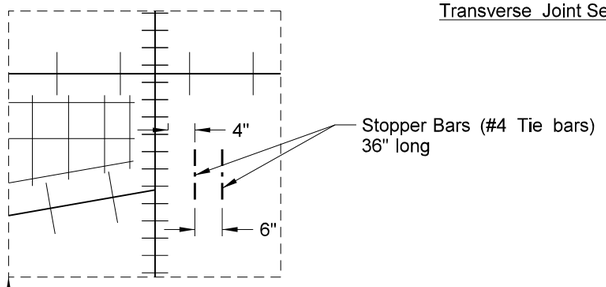


Transverse Joint Sealing

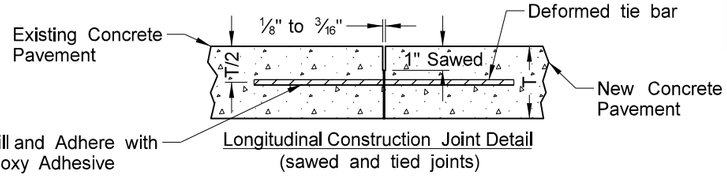


Mainline Joints





Panel Reinforcing Steel
Concrete panels 6' or less.
Install stopper bars at end of longitudinal joint.



Longitudinal Construction Joint Detail
(sawed and tied joints)

Longitudinal Joint Tie Bar Size, Length and Spacing

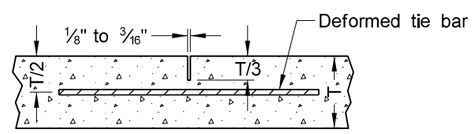
Grade 60 Longitudinal Joint Tie Bars	
PCC Depth	8"-9"
Mainline	
Bar Size x Length (S-24")	#5 x 42"

Longitudinal Joint Tie Bar Size, Length and Spacing

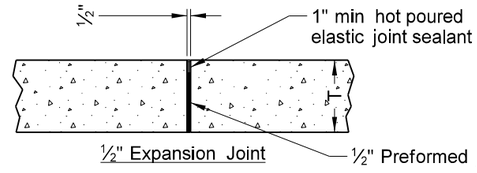
Grade 60 Longitudinal Joint Tie Bars	
PCC Depth	10"
Mainline	
Bar Size x Length (S-30")	#6 x 48"

Notes:

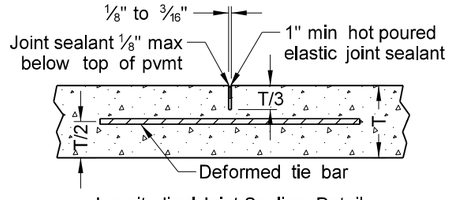
1. Do not place tie bars within 15" of a transverse joint.
2. Do not place panel reinforcing steel within 1' of the doweled contraction joint.
3. Include the cost for reinforcing steel in the unit price bid for "8IN Non-Reinf Concrete Pvmt CL AE-Doweled", "9IN Non-Reinf Concrete Pvmt CL AE-Doweled", and "10IN Non-Reinf Concrete Pvmt CL AE-Doweled".
4. Provide 1 1/4" x 18" dowel bars.
5. S = Tie bar spacing
6. T = Pavement Thickness
7. See Section 90 for paving/jointing layout. If the contractor decides to deviate from the paving plans, submit a revised paving/jointing plan to the Engineer for approval.



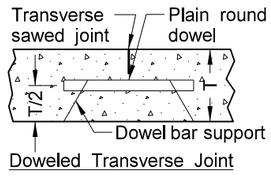
Longitudinal Joint Sawing Detail
(sawed and tied joints)



1/2" Expansion Joint



Longitudinal Joint Sealing Detail
(sawed and tied joints)



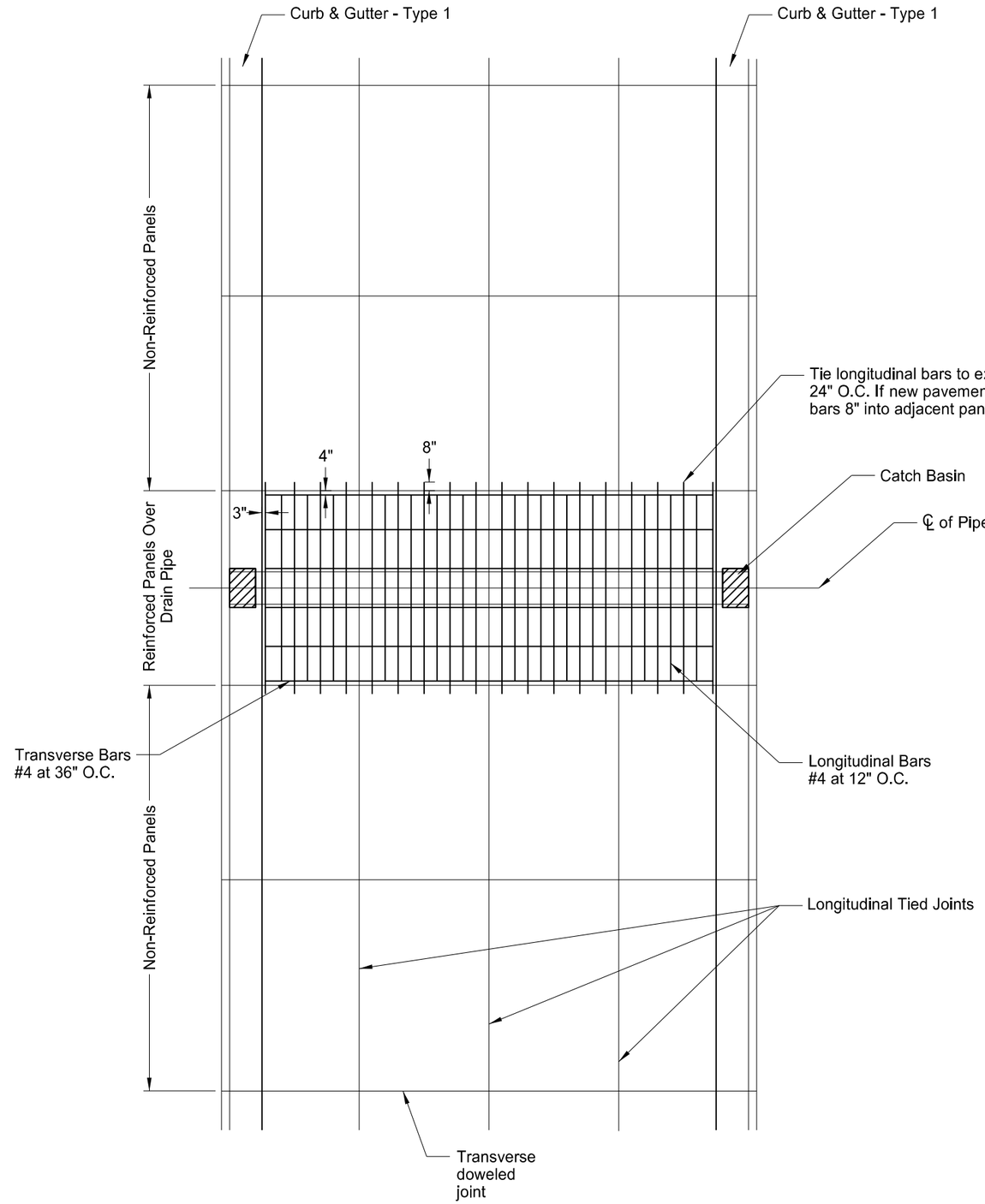
Doweled Transverse Joint

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

PCC Pavement Joint Details

US Hwy 81 Safety, Signal, and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	20	4



Notes:

1. Areas for reinforcement are determined by the Engineer. Include the cost for reinforcing steel in the unit price bid for "8IN Non-Reinf Concrete Pvmt CL AE-Doweled", "9IN Non-Reinf Concrete Pvmt CL AE-Doweled", and "10IN Non-Reinf Concrete Pvmt CL AE-Doweled".

2. Reinforce the entire concrete panel if any part is within 5' of the pipe centerline.

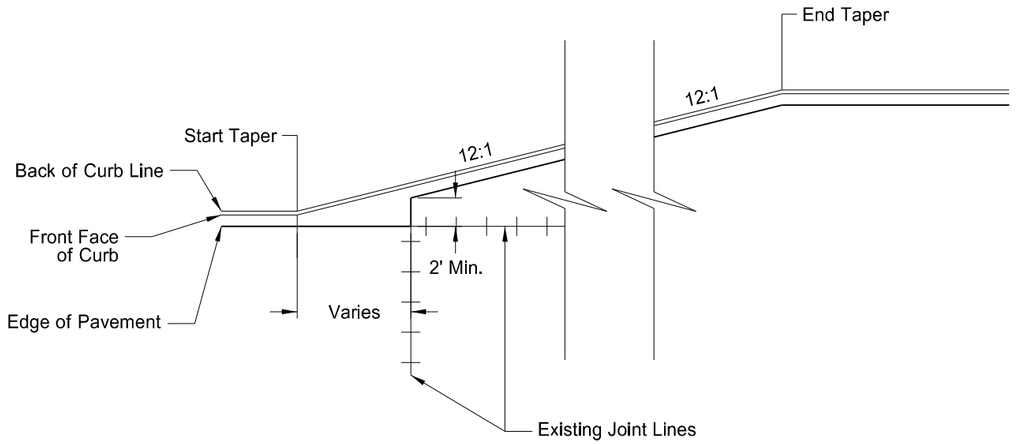
3. Support rebar mat with chairs at the mid-depth point of the slab.

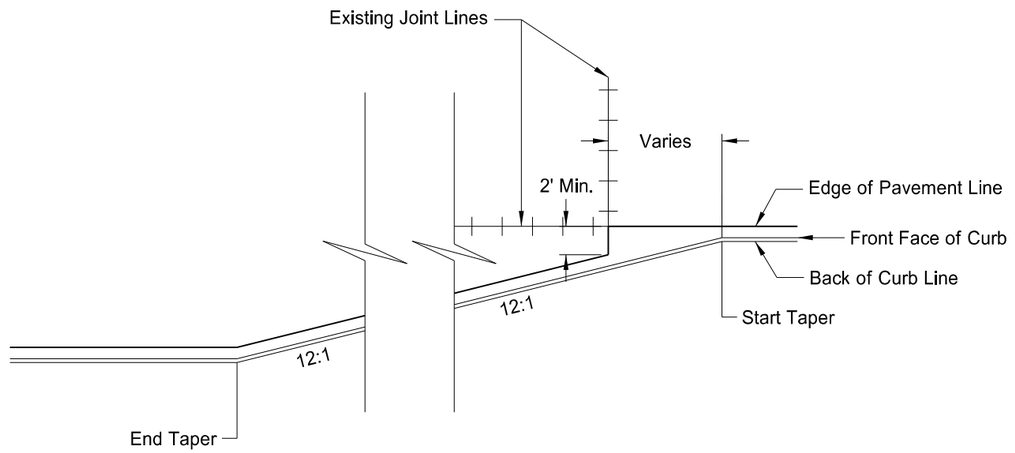
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pavement Reinforcement Over Pipe

US Hwy 81 Safety, Signal, and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	20	5





Extended Gutter Pan Detail

Note:

Refer to Section 20 Sheet 3 and Section 90 for joint details.

Include all cost associated with extending the gutter pan in the unit price bid for "Curb & Gutter - Type 1".

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Extended Gutter Pan Detail

US Hwy 81 Safety, Signal, and Turn Lanes
I-29 to 20th Street

8/25/2020 4:55:43 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\020GD__005_Extended_Gutter_Pan.dgn

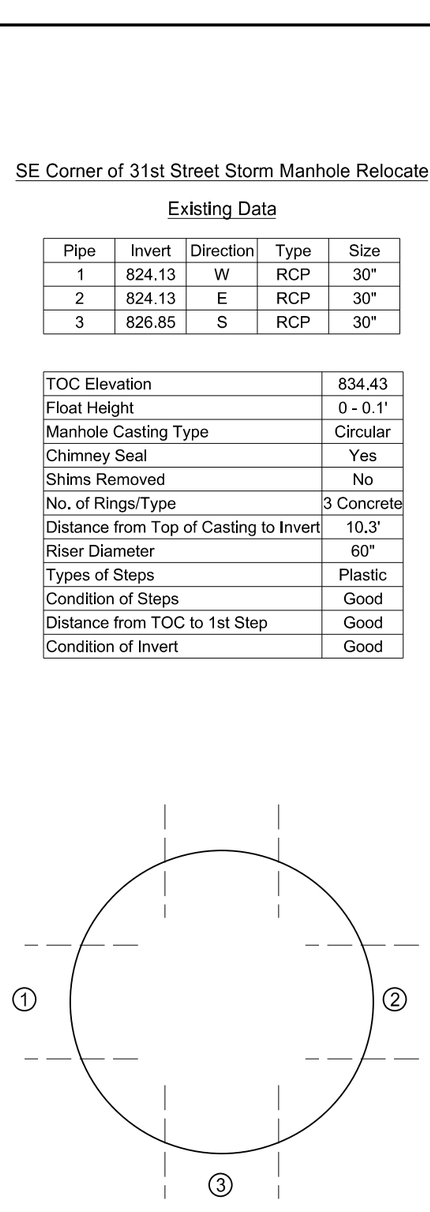
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	20	6

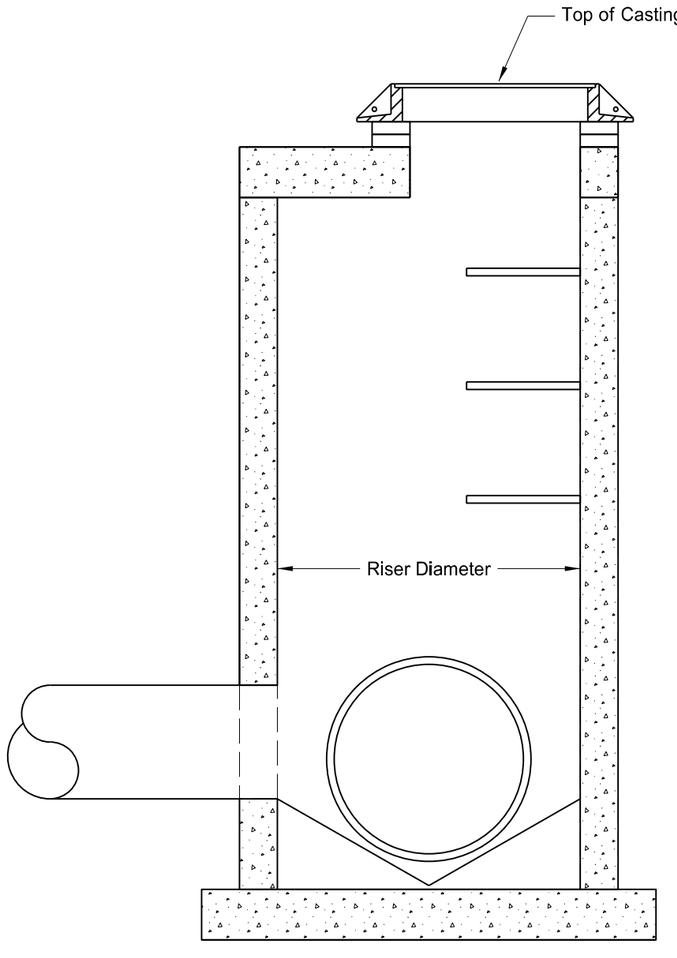
SE Corner of 31st Street Storm Manhole Relocate

Existing Data

Pipe	Invert	Direction	Type	Size
1	824.13	W	RCP	30"
2	824.13	E	RCP	30"
3	826.85	S	RCP	30"

TOC Elevation	834.43
Float Height	0 - 0.1'
Manhole Casting Type	Circular
Chimney Seal	Yes
Shims Removed	No
No. of Rings/Type	3 Concrete
Distance from Top of Casting to Invert	10.3'
Riser Diameter	60"
Types of Steps	Plastic
Condition of Steps	Good
Distance from TOC to 1st Step	Good
Condition of Invert	Good



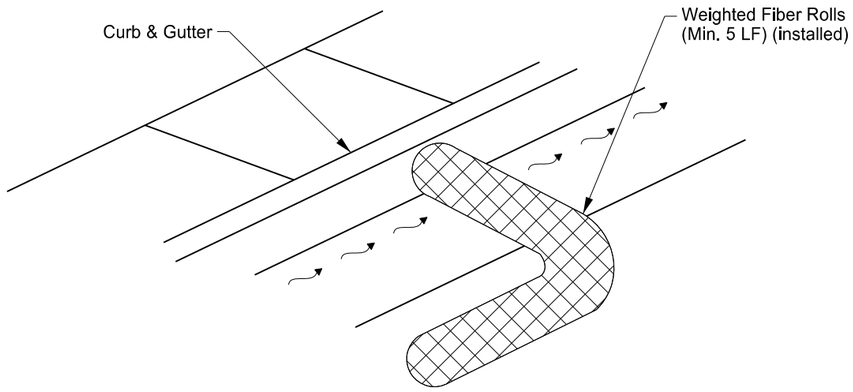


This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Existing Storm Sewer Detail

US Hwy 81 Safety, Signal, and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	20	7



Weighted Fiber Roll Detail

Notes:

1. Provide materials that meet the following specifications:
   Netting tube filled with wood curled
   excelsior and weighted inner core.
   Roll Diameter: 6 Inches
   Weight: 8.33 Pounds per Linear Foot

2. Place weighted fiber rolls down slope from unprotected downstream areas, tight against and along the curb and gutters, to provide complete protection.

3. Remove and properly dispose of accumulated silt and debris to allow for proper function of device after every rain event, or as necessary for proper function.

4. Include all cost including, supplying, placing, and maintaining in the unit price bid for "Weighted Fiber Rolls".

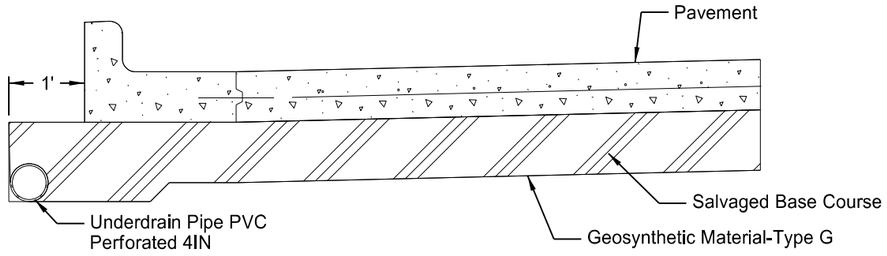
5. Remove weighted fiber rolls only after the up gradient surfaces are stabilized and surrounding streets and gutters are clean of debris.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

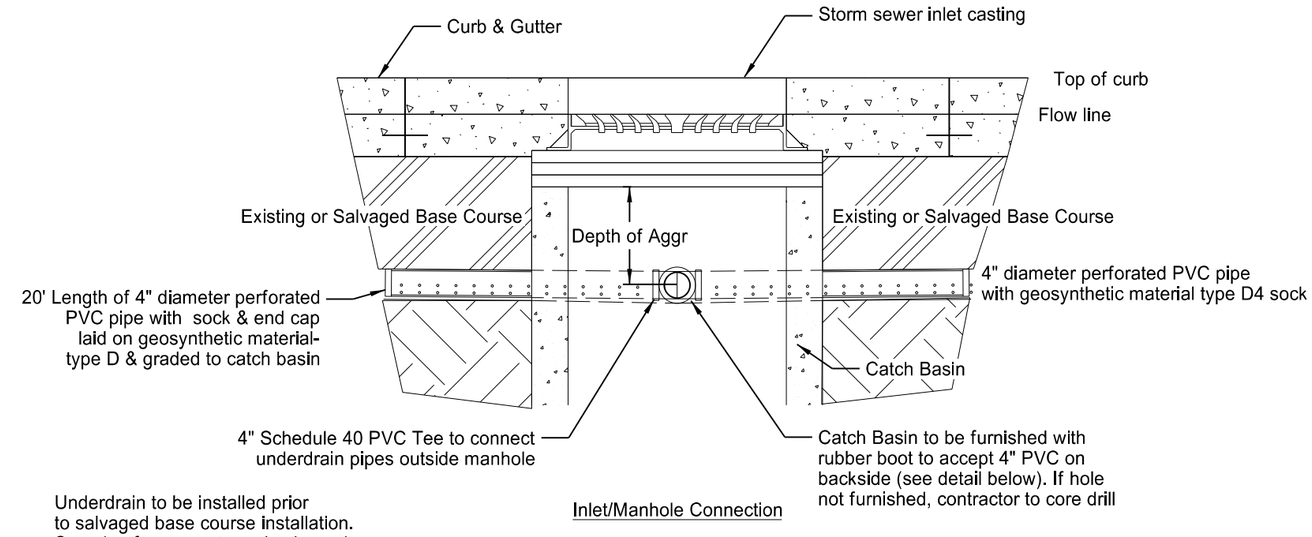
Weighted Fiber Rolls Detail

US Hwy 81 Safety, Signal, and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	20	8

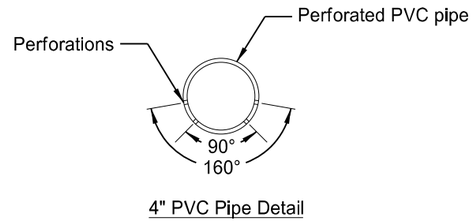


Underdrain Pipe PVC Perforated Placement

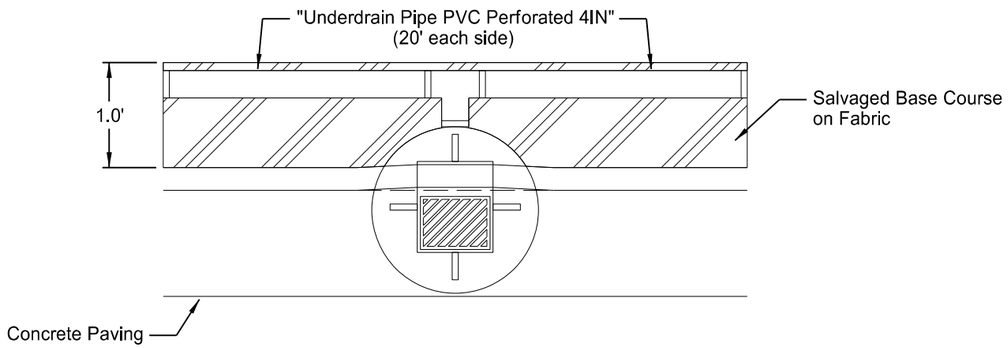


Underdrain to be installed prior to salvaged base course installation. See plan for concrete and salvaged base course depths.

Inlet/Manhole Connection



4" PVC Pipe Detail

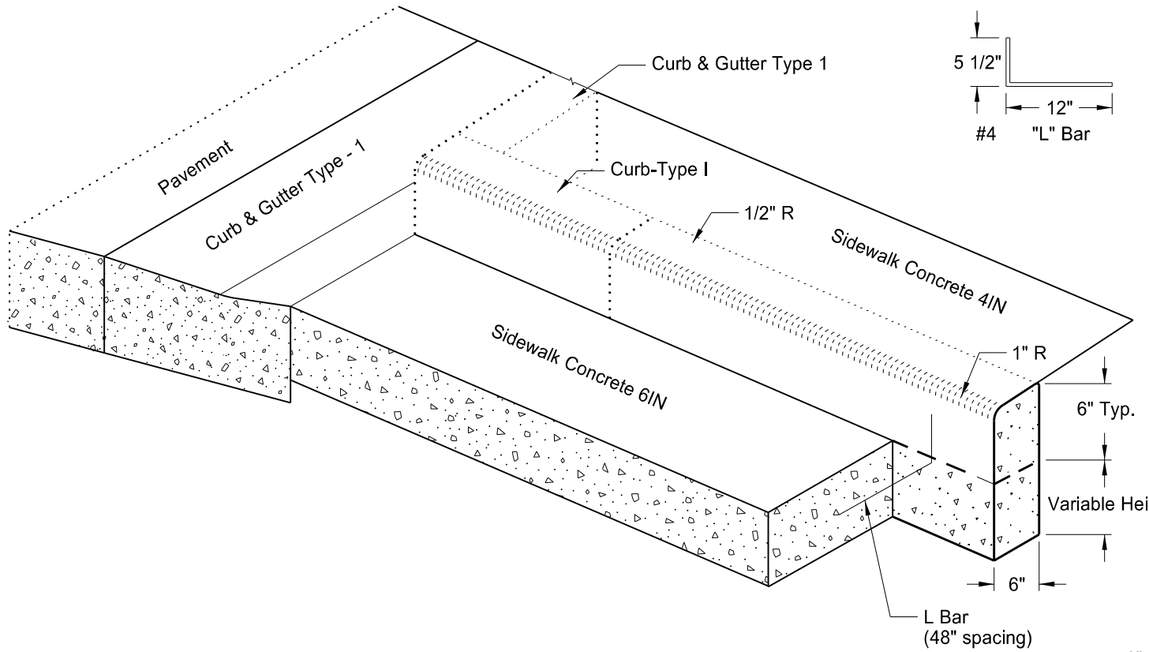


This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

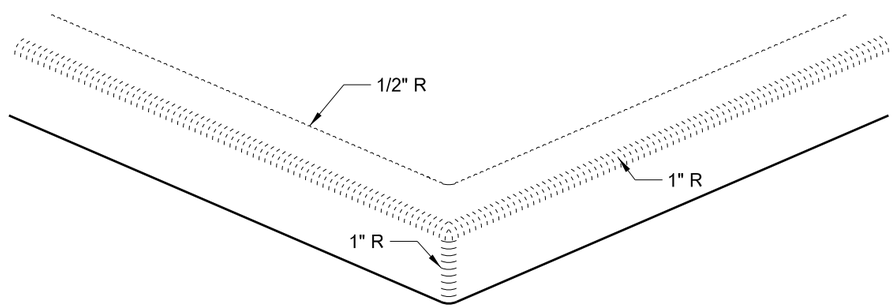
Underdrain Pipe PVC Perforated 4IN Details

US Hwy 81 Safety, Signal, and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NEU-6-081(094)940	20	9



Curb-Type I Adjacent to Landscape



Curb-Type I Intersection

Notes:

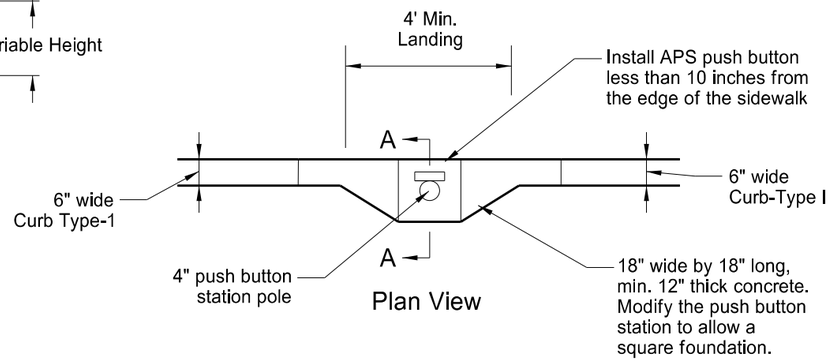
Match Curb-Type I contraction joints with concrete walk joints.

Transition Curb-Type I to match existing tie points

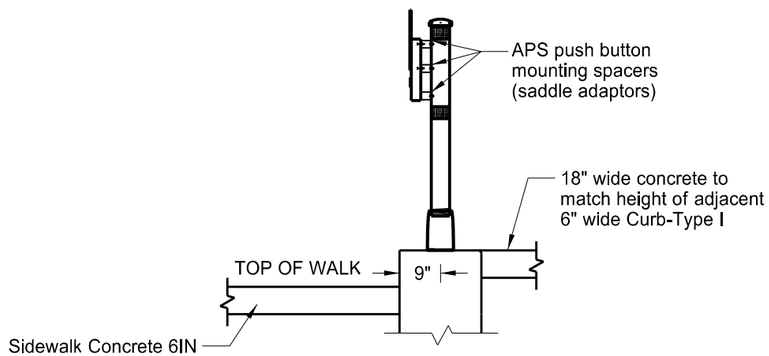
Match Curb-Type I with bottom of adjacent walk.

See curb ramp details of Curb-Type I.

Include cost for reinforcing steel, concrete blocks for push buttons, and all work to transition and match existing tie points in the unit price bid for "Curb-Type I".



Plan View



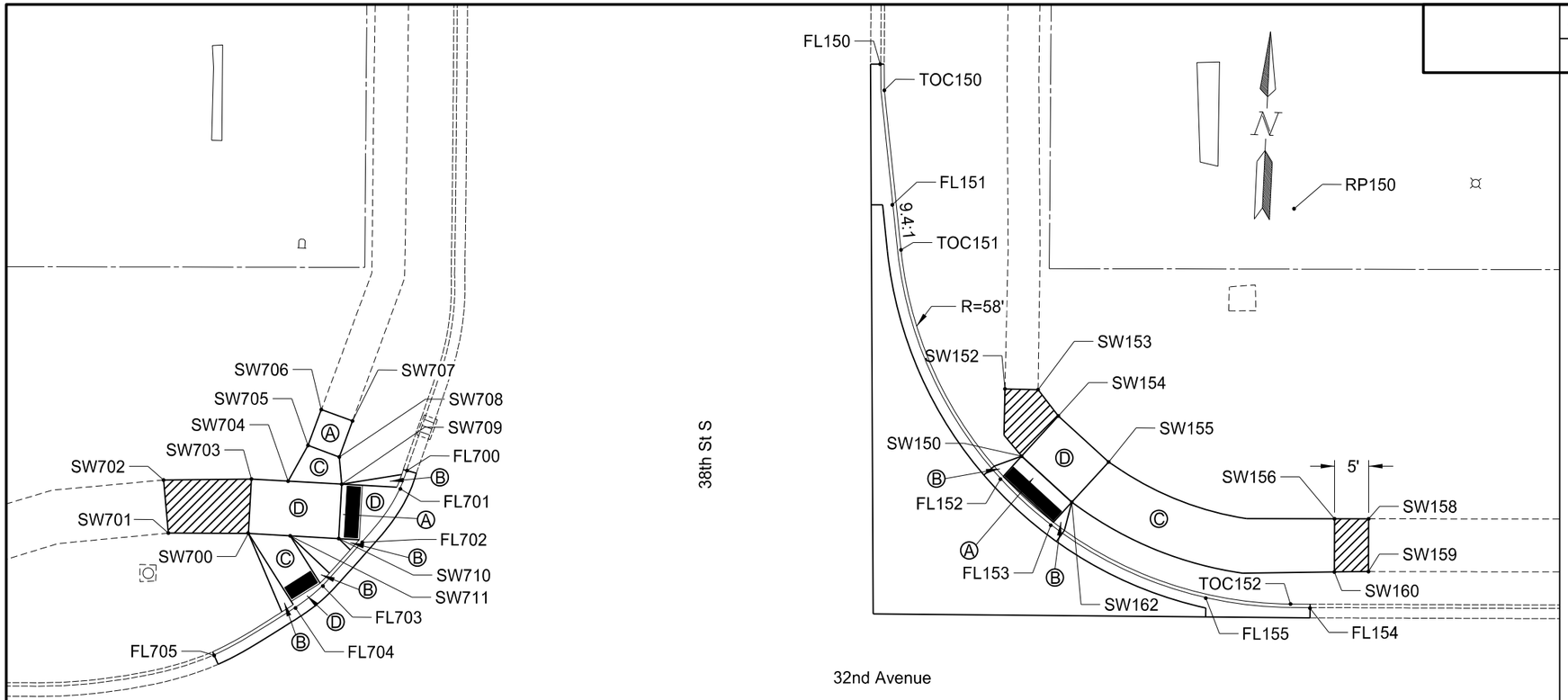
Section A-A
Push Button Station (Curb-Type I)

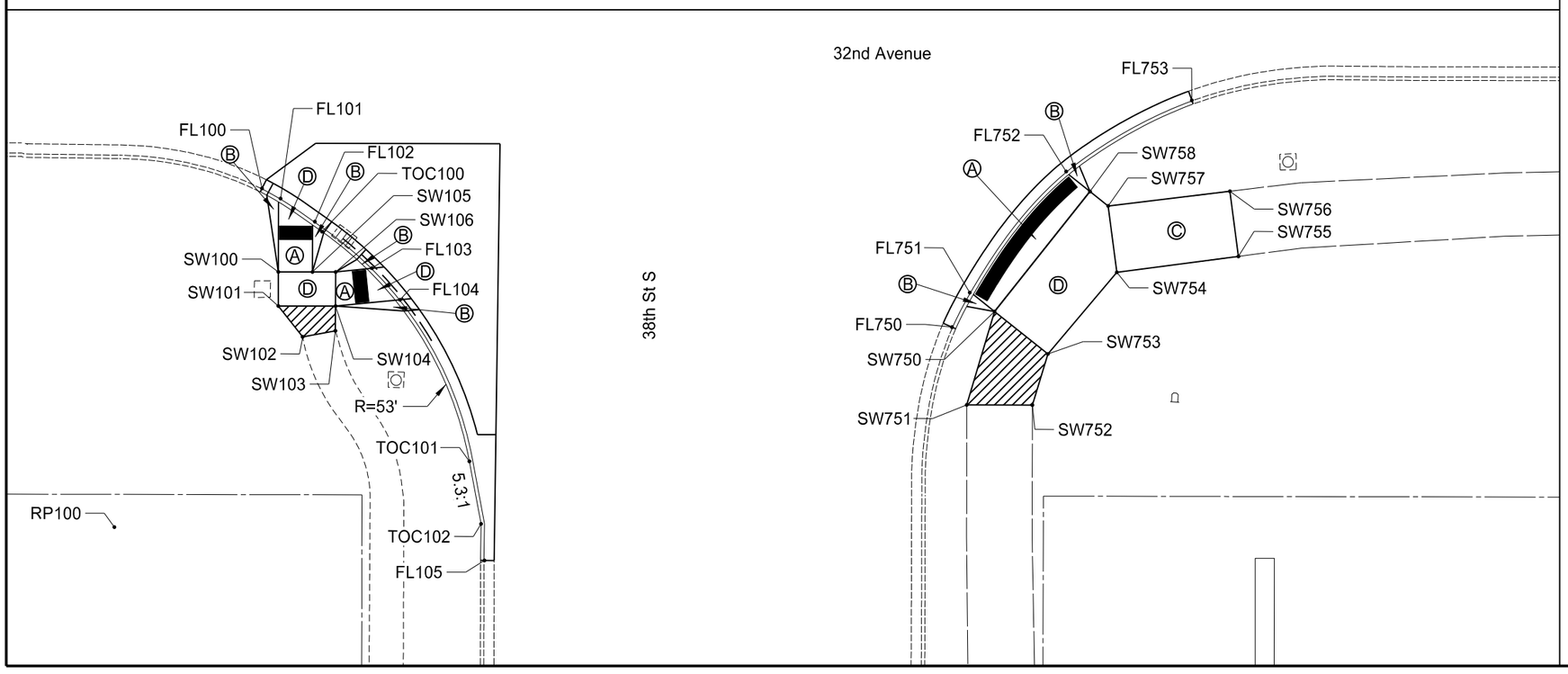
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Curb-Type I Detail

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	20	10





Ⓐ 8.3% Maximum Slope
50:1 Maximum Cross Slope

Ⓑ 4:1 Maximum Flare Slope

Ⓒ 20:1 Maximum Longitudinal Slope
50:1 Maximum Cross Slope

Ⓓ 50:1 Maximum Landing Slope (All Dir.)

Ⓔ 10:1 Maximum Flare Slope

Transition Panel

Existing Inlet

Detectable Warning Panel

Notes:

1. See Standard Drawing D-750-3 for more details.
2. Transition panels - To be used for transitioning the cross-slope from a compliant cross-slope to the existing cross-slope.
3. See Section 90 for quantities.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

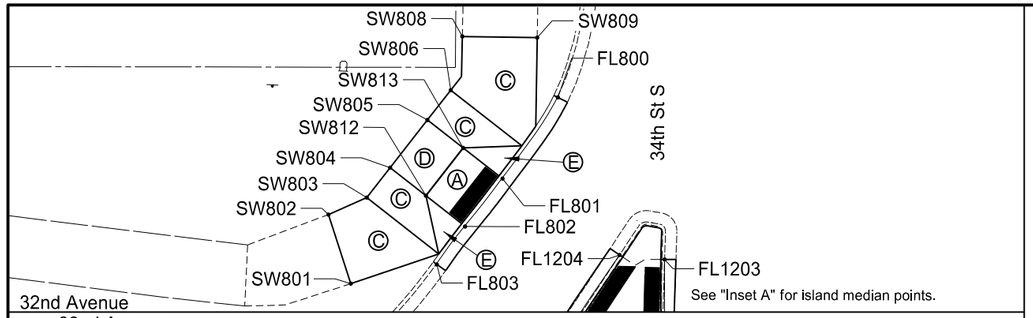
General Details

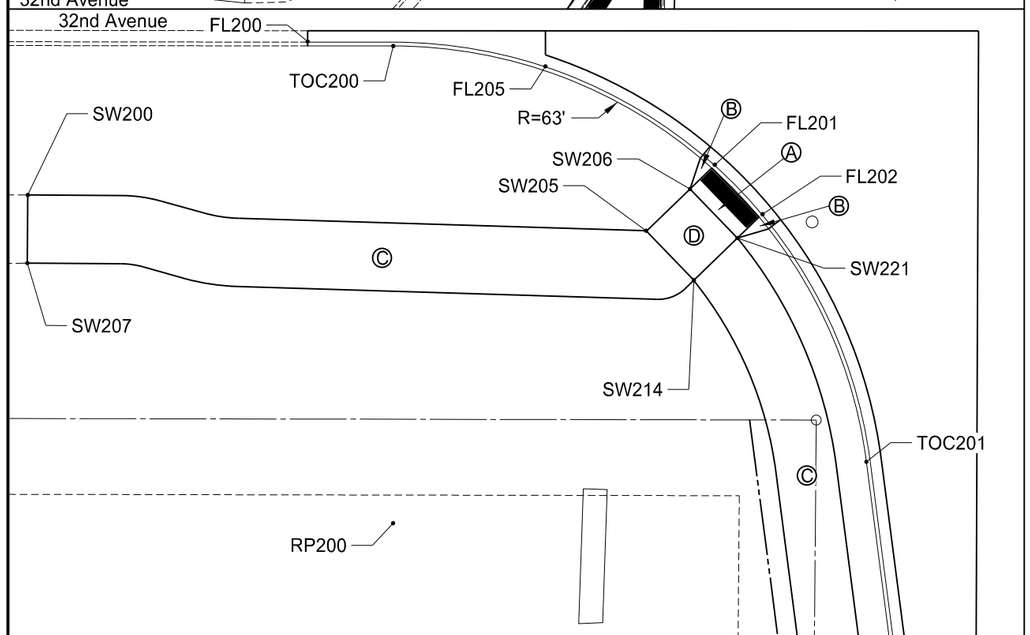
US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

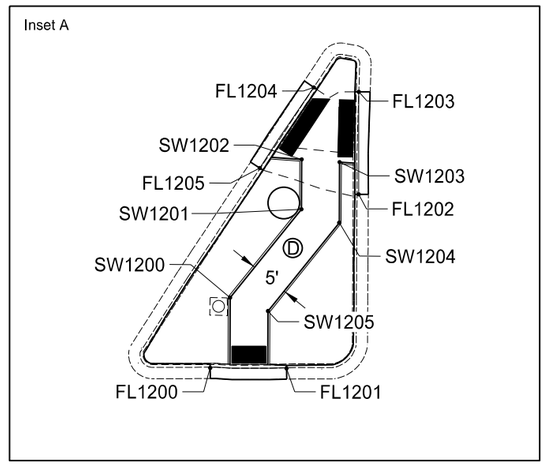
ADA Ramps

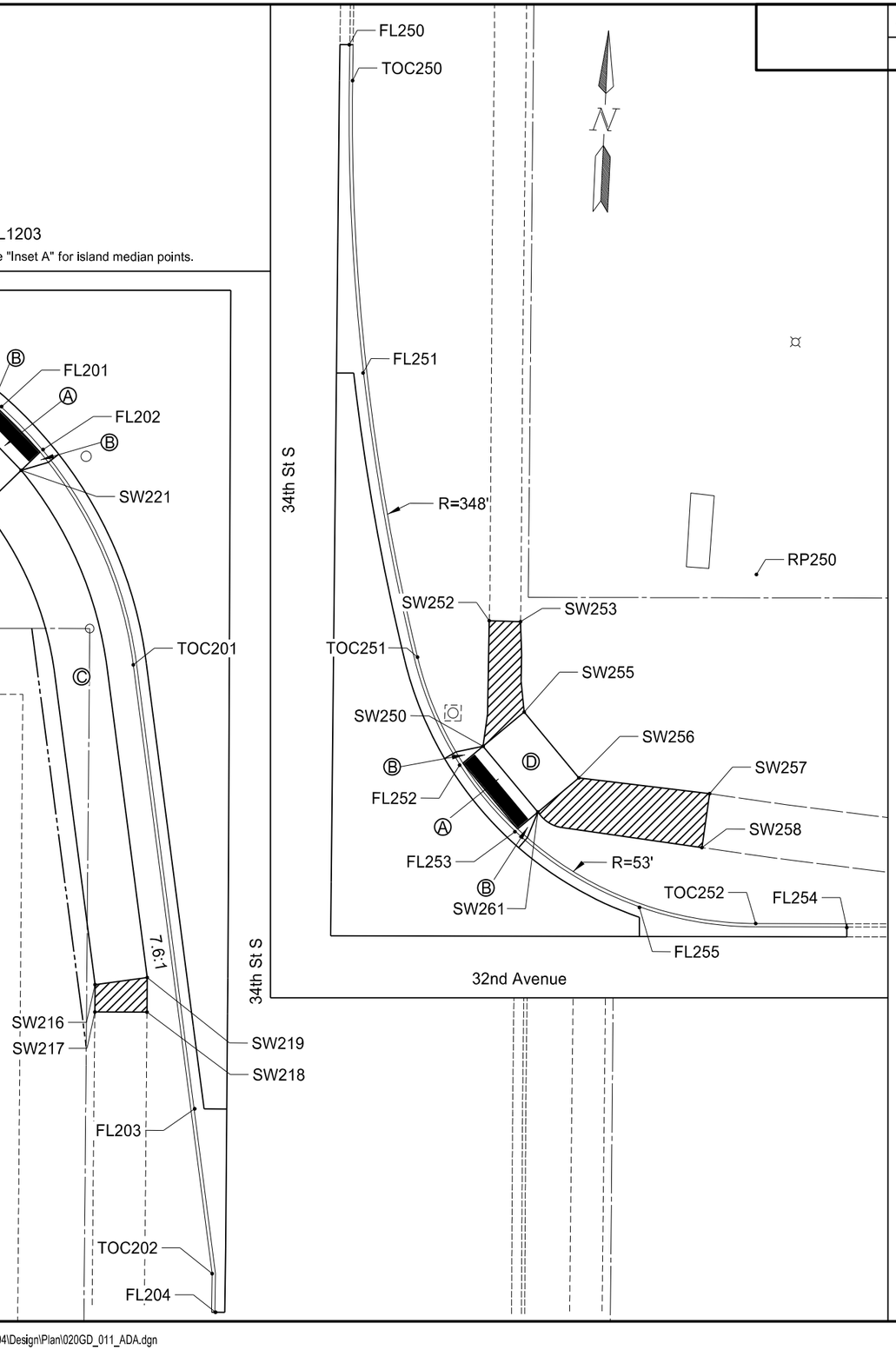
8/25/2020 4:56:08 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\020GD_010_ADA.dgn

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	20	11









Ⓐ 8.3% Maximum Slope
50:1 Maximum Cross Slope

Ⓑ 4:1 Maximum Flare Slope

Ⓒ 20:1 Maximum Longitudinal Slope
50:1 Maximum Cross Slope

Ⓓ 50:1 Maximum Landing Slope (All Dir.)

Ⓔ 10:1 Maximum Flare Slope

Transition Panel

Existing Inlet

Detectable Warning Panel

Notes:

1. See Standard Drawing D-750-3 for more details.
2. Transition panels - To be used for transitioning the cross-slope from a compliant cross-slope to the existing cross-slope.
3. See Section 90 for quantities.

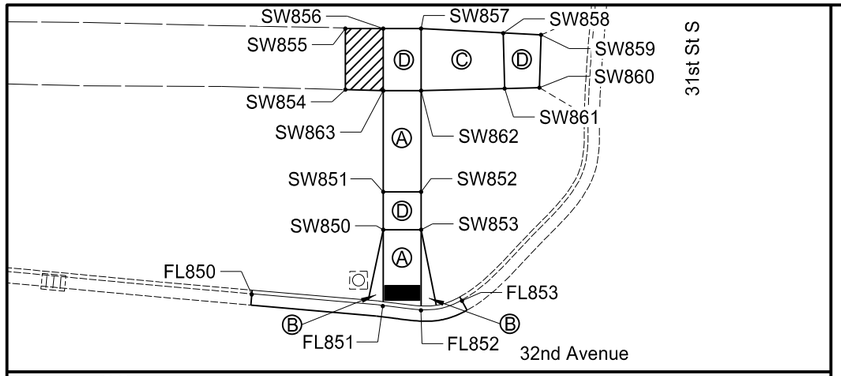
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

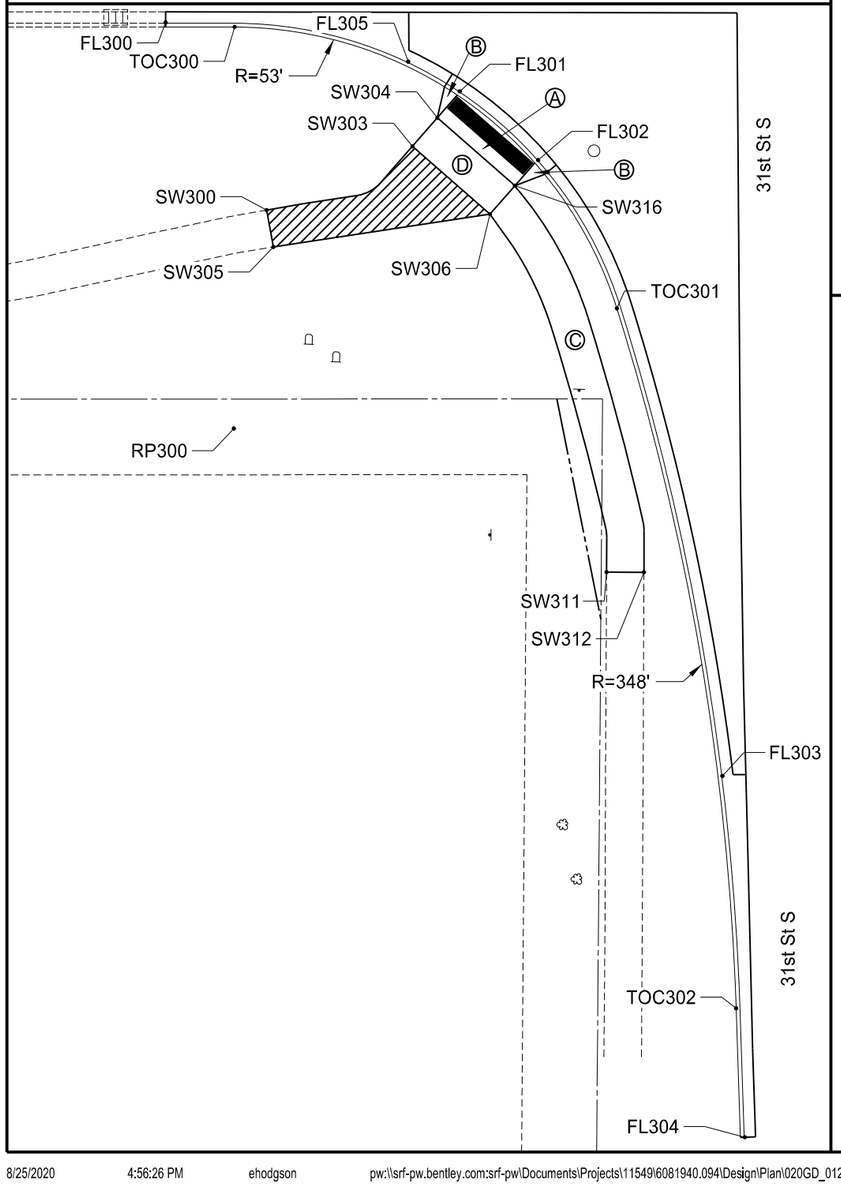
General Details

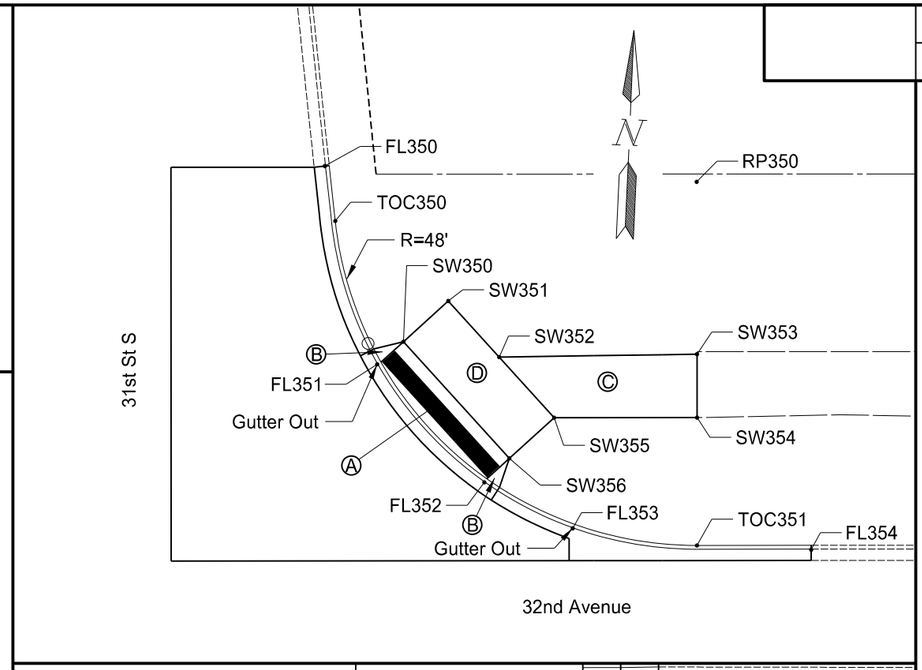
US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

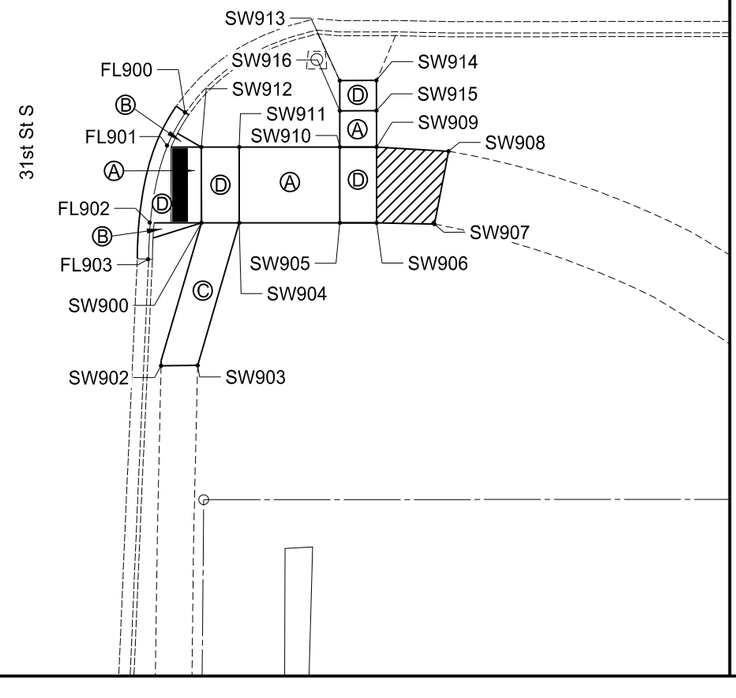
ADA Ramps

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	20	12









Ⓐ 8.3% Maximum Slope
50:1 Maximum Cross Slope

Ⓑ 4:1 Maximum Flare Slope

Ⓒ 20:1 Maximum Longitudinal Slope
50:1 Maximum Cross Slope

Ⓓ 50:1 Maximum Landing Slope (All Dir.)

Ⓔ 10:1 Maximum Flare Slope

Transition Panel

Existing Inlet

Detectable Warning Panel

Notes:

1. See Standard Drawing D-750-3 for more details.
2. Transition panels - To be used for transitioning the cross-slope from a compliant cross-slope to the existing cross-slope.
3. See Section 90 for quantities.

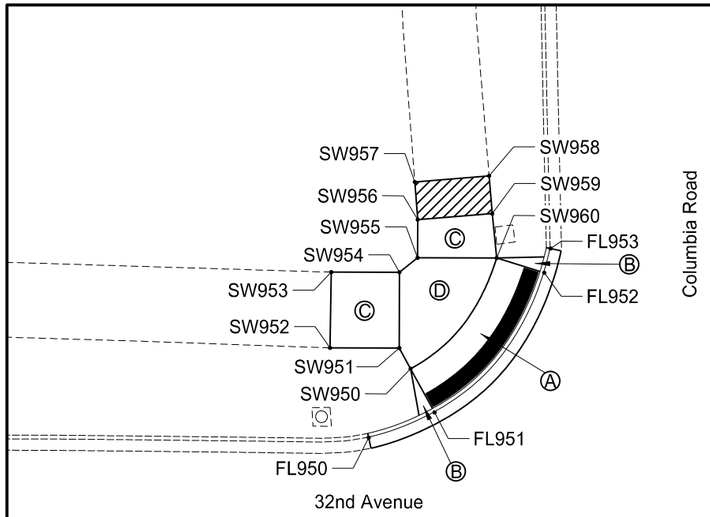
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

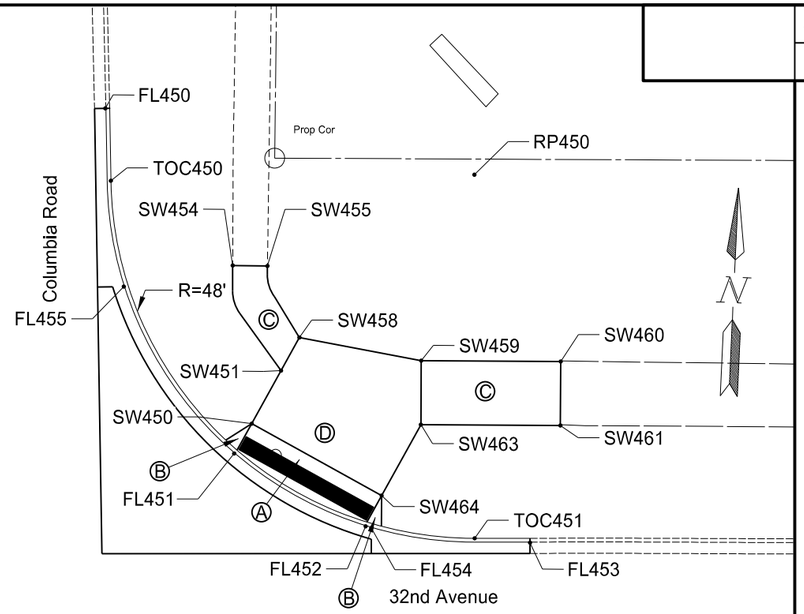
General Details

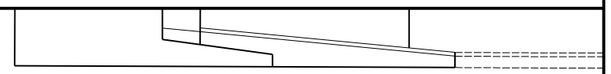
US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

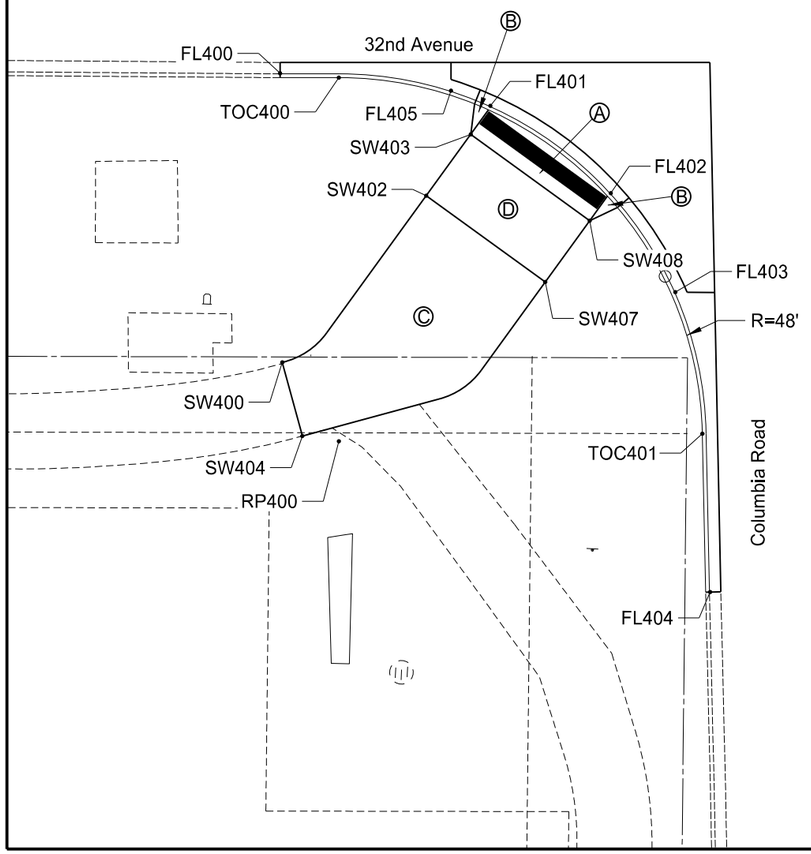
ADA Ramps

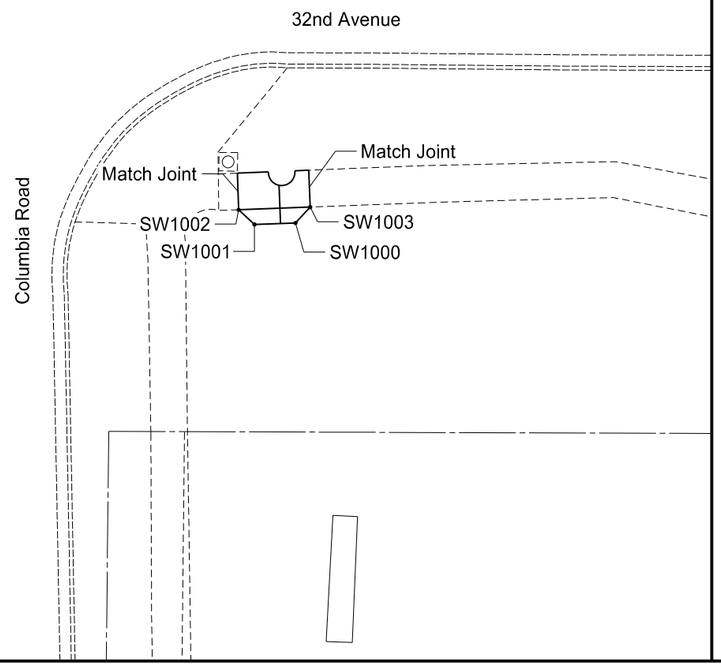
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	20	13











Ⓐ 8.3% Maximum Slope
50:1 Maximum Cross Slope

Ⓑ 4:1 Maximum Flare Slope

Ⓒ 20:1 Maximum Longitudinal Slope
50:1 Maximum Cross Slope

Ⓓ 50:1 Maximum Landing Slope (All Dir.)

Ⓔ 10:1 Maximum Flare Slope

Transition Panel

Existing Inlet

Detectable Warning Panel

Notes:

1. See Standard Drawing D-750-3 for more details.
2. Transition panels - To be used for transitioning the cross-slope from a compliant cross-slope to the existing cross-slope.
3. See Section 90 for quantities.

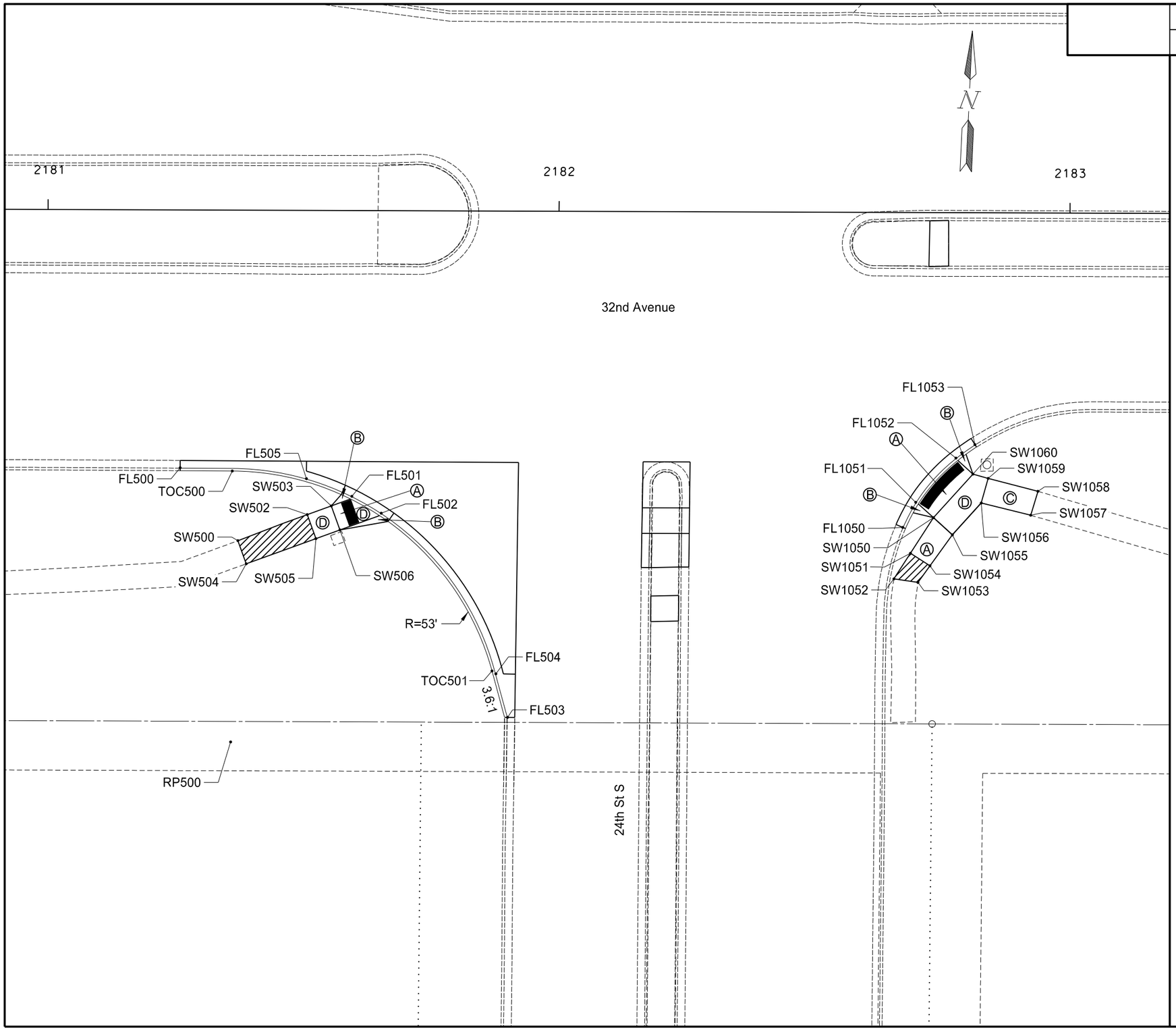
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

General Details

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

ADA Ramps

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	20	14



Ⓐ 8.3% Maximum Slope
50:1 Maximum Cross Slope

Ⓑ 4:1 Maximum Flare Slope

Ⓒ 20:1 Maximum Longitudinal Slope
50:1 Maximum Cross Slope

Ⓓ 50:1 Maximum Landing Slope (All Dir.)

Ⓔ 10:1 Maximum Flare Slope

Transition Panel

Existing Inlet

Detectable Warning Panel

Notes:

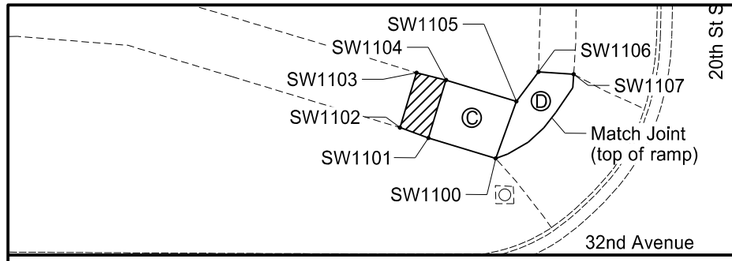
1. See Standard Drawing D-750-3 for more details.
2. Transition panels - To be used for transitioning the cross-slope from a compliant cross-slope to the existing cross-slope.
3. See Section 90 for quantities.

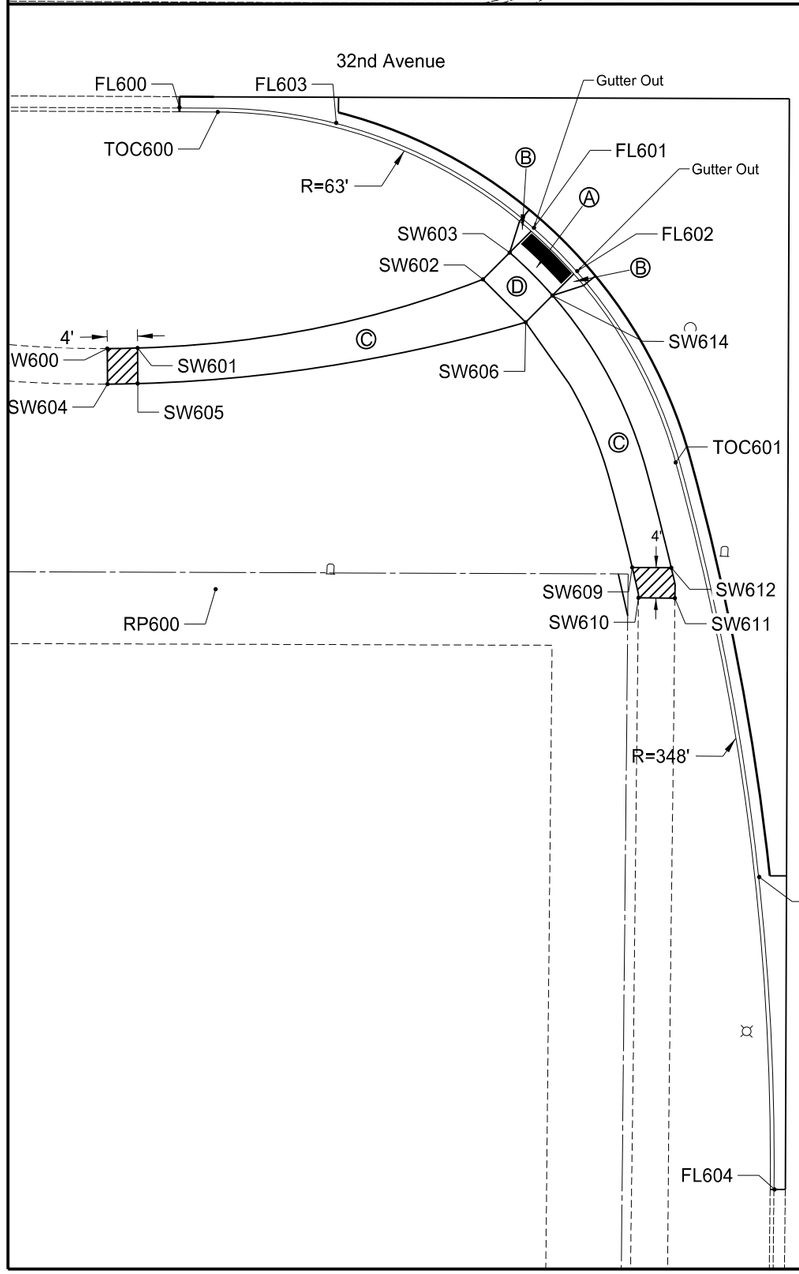
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

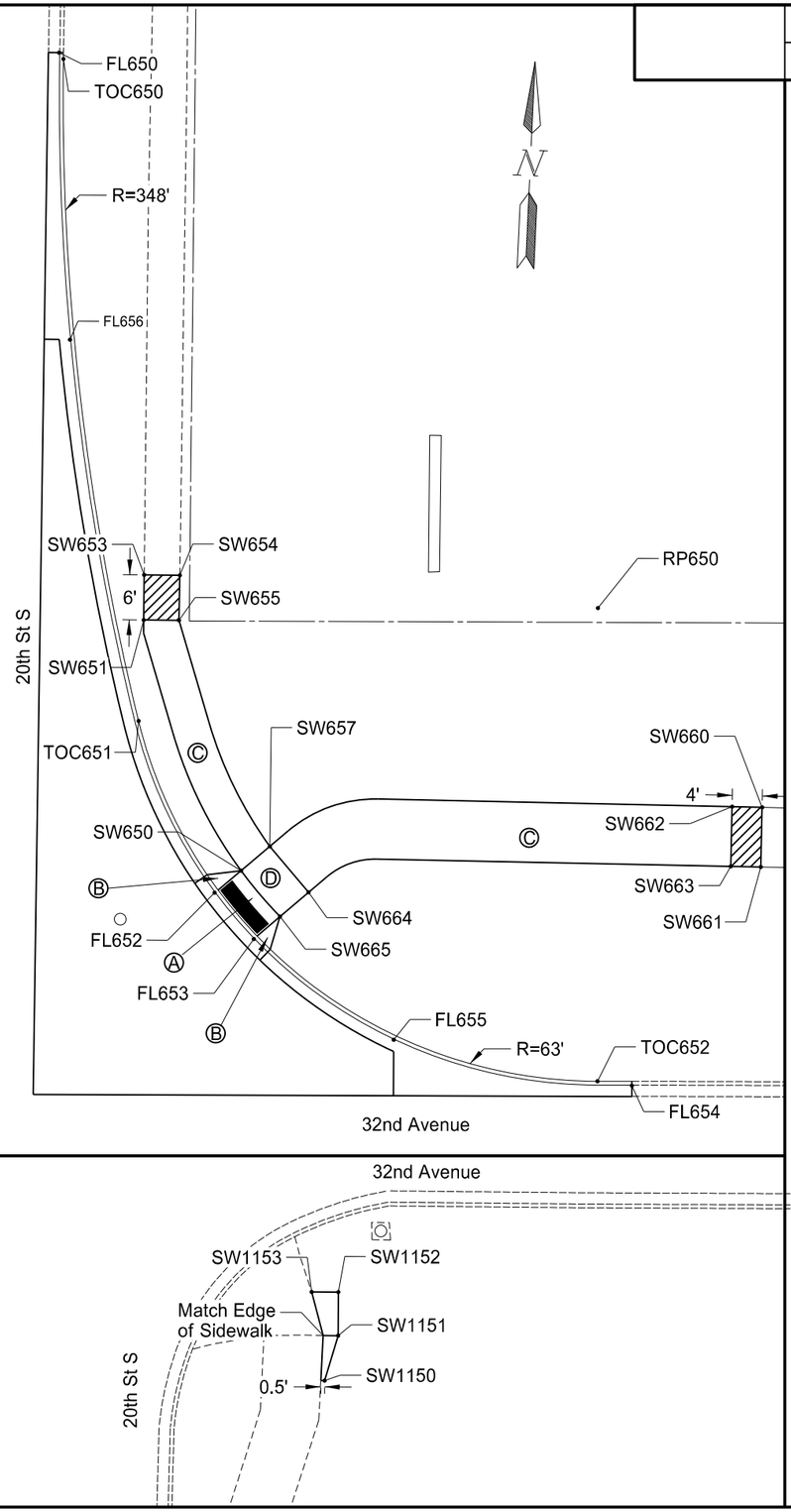
General Details

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

ADA Ramps







STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	20	15

Ⓐ 8.3% Maximum Slope
50:1 Maximum Cross Slope

Ⓑ 4:1 Maximum Flare Slope

Ⓒ 20:1 Maximum Longitudinal Slope
50:1 Maximum Cross Slope

Ⓓ 50:1 Maximum Landing Slope (All Dir.)

Ⓔ 10:1 Maximum Flare Slope

Transition Panel

Existing Inlet

Detectable Warning Panel

Notes:

1. See Standard Drawing D-750-3 for more details.
2. Transition panels - To be used for transitioning the cross-slope from a compliant cross-slope to the existing cross-slope.
3. See Section 90 for quantities.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

General Details

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

ADA Ramps

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	20	16

38th Street S (SW Quad)

Point	Station	Offset	Northing	Easting	Elevation
FL100	2128+81.18	55.07	343023.72	2806855.36	Match Existing
FL101	2128+83.90	56.56	343022.35	2806858.14	836.35
FL102	2128+88.94	59.94	343019.2	2806863.32	836.28
FL103	2128+97.32	66.75	343012.76	2806872	836.03
FL104	2129+01.47	71.37	343008.33	2806876.35	835.99
FL105	2129+13.93	109.59	342970.7	2806890.49	Match Existing
TOC100	2128+89.99	61.39	343017.8	2806864.44	-
TOC101	2129+11.69	95.06	342985.12	2806887.62	-
TOC102	2129+13.41	104.23	342976.03	2806889.74	-
SW100	2128+83.60	67.32	343011.59	2806858.32	836.48
SW101	2128+83.60	72.31	343006.6	2806858.54	836.53
SW102	2128+87.18	76.83	343002.24	2806862.32	Match Existing
SW103	2128+91.98	75.94	343003.35	2806867.08	Match Existing
SW104	2128+92.01	72.31	343006.97	2806866.94	836.40
SW105	2128+88.60	67.31	343011.81	2806863.32	836.41
SW106	2128+92.00	67.31	343011.96	2806866.71	836.35

38th Street S (NE Quad)

Point	Station	Offset	Northing	Easting	Elevation
FL150	2129+71.55	-130	343212.58	2806937.42	Match Existing
FL151	2129+73.36	-109.3	343192.04	2806940.15	837.04
FL152	2129+89.31	-69.09	343152.56	2806957.87	836.44
FL153	2129+96.71	-62.35	343146.15	2806965.57	836.29
FL154	2130+34.78	-50.26	343135.76	2807004.14	Match Existing
FL155	2130+19.48	-51.71	343136.53	2806988.78	835.8
TOC150	2129+72.16	-126.1	343208.77	2806938.2	-
TOC151	2129+74.65	-102.7	343185.49	2806941.74	-
TOC152	2130+31.92	-50.87	343136.24	2807001.25	-
SW150	2129+92.40	-72.48	343156.07	2806960.81	836.6
SW152	2129+89.95	-82.34	343165.82	2806957.92	Match Existing
SW153	2129+94.81	-82.24	343165.94	2806962.78	Match Existing
SW154	2129+97.79	-78.39	343162.22	2806965.93	936.72
SW155	2130+05.18	-71.66	343155.82	2806973.62	836.57
SW156	2130+38.35	-63.68	343149.03	2807007.12	836.66
SW158	2130+43.35	-63.39	343149.25	2807012.12	Match Existing
SW159	2130+43.35	-55.65	343141.52	2807012.46	Match Existing
SW160	2130+38.35	-55.58	343141.23	2807007.47	836.56
SW162	2129+99.80	-65.74	343149.67	2806968.5	836.45

38th Street S (NW Quad)

Point	Station	Offset	Northing	Easting	Elevation
FL700	2129+02.23	-70.19	343149.79	2806870.83	Match Existing
FL701	2129+01.24	-67.5	343147.06	2806869.96	836.57
FL702	2128+95.67	-59.65	343138.96	2806864.75	836.62
FL703	2128+89.90	-53.24	343132.31	2806859.26	836.71
FL704	2128+85.89	-50	343128.9	2806855.4	836.75
FL705	2128+73.96	-43.01	343121.38	2806843.8	Match Existing
SW700	2128+78.95	-60.92	343139.49	2806847.99	837.00
SW701	2128+67.21	-60.96	343139.01	2806836.25	Match Existing
SW702	2128+66.48	-68.74	343146.75	2806835.18	Match Existing
SW703	2128+79.39	-68.91	343147.49	2806848.07	836.95
SW704	2128+84.76	-68.62	343147.44	2806853.45	836.87
SW705	2128+87.69	-73.86	343152.8	2806856.14	836.98
SW706	2128+89.62	-79.12	343158.15	2806857.84	Match Existing
SW707	2128+94.20	-77.46	343156.69	2806862.48	Match Existing
SW708	2128+92.28	-72.17	343151.32	2806860.8	836.91
SW709	2128+92.64	-68.19	343147.36	2806861.34	836.75
SW710	2128+92.21	-60.2	343139.36	2806861.26	836.80
SW711	2128+85.09	-60.59	343139.43	2806854.13	836.90

38th Street S (SE Quad)

Point	Station	Offset	Northing	Easting	Elevation
FL750	2129+82.48	75.23	343008.07	2806957.45	Match Existing
FL751	2129+85.08	70.16	343013.25	2806959.83	836.13
FL752	2129+99.19	52.37	343031.66	2806973.14	836.23
FL753	2130+17.62	41.89	343042.94	2806991.08	Match Existing
SW750	2129+88.72	72.93	343010.65	2806963.59	836.39
SW751	2129+84.67	86.64	342996.77	2806960.14	Match Existing
SW752	2129+94.30	86.64	342997.2	2806969.77	Match Existing
SW753	2129+96.56	79.14	343004.79	2806971.69	836.57
SW754	2130+06.66	67.15	343017.22	2806981.25	836.57
SW755	2130+24.50	64.77	343020.38	2806998.97	Match Existing
SW756	2130+23.23	55.22	343029.87	2806997.28	Match Existing
SW757	2130+05.36	57.41	343026.89	2806979.52	836.52
SW758	2130+02.70	55.3	343028.88	2806976.77	836.49

34th Street S (SW Quad)

Point	Station	Offset	Northing	Easting	Elevation
FL200	2141+63.72	50.16	343085.55	2808136.41	Match Existing
FL201	2142+17.49	66.32	343071.79	2808190.86	834.07
FL202	2142+23.81	72.84	343065.56	2808197.46	834.10
FL203	2142+47.04	172.91	342966.62	2808225.10	834.28
FL204	2142+50.26	203.80	342935.90	2808229.70	Match Existing
FL205	2141+95.10	53.36	343083.74	2808167.91	833.96
TOC200	2141+75.02	50.73	343085.48	2808147.73	-
TOC201	2142+37.58	105.50	343033.54	2808212.66	-
TOC202	2142+49.75	197.94	342941.74	2808228.92	-
SW200	2141+26.80	70.49	343063.60	2808100.44	Match Existing
SW205	2142+08.44	75.06	343062.66	2808182.20	934.30
SW206	2142+14.23	69.54	343068.43	2808187.74	934.22
SW207	2141+26.76	79.49	343054.61	2808100.80	Match Existing
SW214	2142+14.75	81.56	343056.44	2808188.79	834.43
SW216	2142+31.87	154.08	342984.75	2808209.11	835.53
SW217	2142+31.84	158.24	342980.60	2808209.27	Match Existing
SW218	2142+39.76	158.24	342980.95	2808217.18	Match Existing
SW219	2142+39.79	152.99	342986.20	2808216.98	835.41
SW221	2142+20.49	76.00	343062.25	2808194.28	834.31

34th Street S (NE Quad)

Point	Station	Offset	Northing	Easting	Elevation
FL250	2142+94.99	-183.88	343325.19	2808257.15	Match Existing
FL251	2142+97.18	-134.03	343275.48	2808261.56	834.84
FL252	2143+11.96	-74.50	343216.67	2808278.97	834.12
FL253	2143+20.38	-64.41	343206.96	2808287.83	833.99
FL254	2143+70.82	-49.95	343194.76	2808338.86	Match Existing
FL255	2143+39.32	-52.95	343196.36	2808307.26	833.88
TOC250	2142+95.50	-178.43	343319.77	2808257.91	-
TOC251	2143+05.52	-90.89	343232.75	2808271.81	-
TOC252	2143+56.98	-50.54	343194.73	2808325.01	-
SW250	2143+15.52	-77.38	343219.70	2808282.40	834.38
SW252	2143+16.41	-96.43	343238.78	2808282.45	Match Existing
SW253	2143+21.17	-96.30	343238.86	2808287.21	Match Existing
SW255	2143+21.75	-82.58	343225.18	2808288.39	834.50
SW256	2143+30.08	-72.60	343215.58	2808297.16	834.37
SW257	2143+49.94	-70.23	343214.09	2808317.10	Match Existing
SW258	2143+48.78	-62.04	343205.86	2808316.31	Match Existing
SW261	2143+23.84	-67.40	343210.10	2808291.16	834.25

34th Street S (NW Quad)

Point	Station	Offset	Northing	Easting	Elevation
FL800	2142+36.30	-96.07	343234.86	2808202.43	Match Existing
FL801	2142+29.01	-85.33	343223.80	2808195.63	834.44
FL802	2142+24.08	-79.00	343217.26	2808190.98	834.42
FL803	2142+20.35	-73.99	343212.09	2808187.48	Match Existing
SW801	2142+09.00	-71.43	343209.03	2808176.26	Match Existing
SW802	2142+06.03	-80.54	343218.00	2808172.88	Match Existing
SW803	2142+11.09	-82.80	343220.48	2808177.84	835.10
SW804	2142+14.16	-86.74	343224.55	2808180.73	834.91
SW805	2142+19.07	-93.05	343231.08	2808185.36	934.95
SW806	2142+22.14	-97.00	343235.15	2808188.25	835.10
SW808	2142+23.66	-104.09	343242.31	2808189.46	Match Existing
SW809	2142+33.55	-103.95	343242.61	2808199.34	Match Existing
SW812	2142+18.89	-83.05	343221.08	2808185.62	834.82
SW813	2142+23.81	-89.37	343227.60	2808190.25	834.86

34th Street S (NW Island)

Point	Station	Offset	Northing	Easting	Elevation
FL1200	2142+30.87	-38.22	343176.82	2808199.58	Match Existing
FL1201	2142+40.95	-38.18	343177.22	2808209.65	Match Existing
FL1202	2142+50.43	-61.18	343200.62	2808218.10	Match Existing
FL1203	2142+50.42	-74.69	343214.13	2808217.49	Match Existing
FL1204	2142+44.47	-75.28	343214.45	2808211.52	Match Existing
FL1205	2142+37.37	-64.62	343203.48	2808204.90	Match Existing
SW1200	2142+33.48	-47.50	343186.21	2808201.77	834.40
SW1201	2142+42.88	-59.19	343198.30	2808210.64	834.50
SW1202	2142+42.90	-65.77	343204.88	2808210.38	834.54
SW1203	2142+47.90	-65.42	343204.75	2808215.38	834.54
SW1204	214247.87	-57.42	343196.76	2808215.71	834.50
SW1205	2142+38.48	-45.74	343184.67	2808206.84	834.40

31st Street S (SW Quad)

Point	Station	Offset	Northing	Easting	Elevation
FL300	2152+27.34	50.28	343132.72	2809199.00	Match Existing
FL301	2152+66.18	59.39	343125.35	2809238.20	833.33
FL302	2152+76.52	68.45	343116.75	2809248.93	833.46
FL303	2153+00.81	149.78	343036.58	2809276.82	834.44
FL304	2153+03.75	197.49	342989.05	2809281.88	Match Existing
FL305	2152+59.37	55.46	343128.97	2809231.23	833.29
TOC300	2152+36.45	50.88	343132.52	2809208.13	-
TOC301	2152+86.90	88.05	343097.63	2809260.18	-
TOC302	2153+02.60	180.46	343006.02	2809279.97	-
SW300	2152+40.68	73.51	343108.57	2809213.42	Match Existing
SW303	2152+59.93	66.64	343117.82	2809232.28	833.67
SW304	2152+63.22	62.89	343121.72	2809235.40	833.59
SW305	2152+41.57	78.43	343103.74	2809214.53	Match Existing
SW306	2152+70.16	75.61	343109.32	2809242.90	833.80
SW311	2152+85.53	122.88	343062.78	2809260.36	Match Existing
SW312	2152+90.46	122.90	343062.98	2809265.28	Match Existing
SW316	2152+73.45	71.84	343113.23	2809246.02	833.72

31st Street S (NE Quad)

Point	Station	Offset	Northing	Easting	Elevation
FL350	2153+67.28	-101.07	343290.14	2809332.07	Match Existing
FL351	2153+74.17	-74.90	343264.31	2809340.11	834.02
FL352	2153+88.31	-59.31	343249.35	2809354.93	833.95
FL353	2153+99.98	-53.23	343243.81	2809366.86	833.91
FL354	2154+31.47	-50.39	343242.36	2809398.44	Match Existing
TOC350	2153+68.65	-93.83	343282.97	2809333.76	-
TOC351	2154+16.38	-50.97	343242.27	2809383.35	-
SW350	2153+77.64	-77.88	343267.43	2809343.45	834.28
SW351	2153+83.57	-83.26	343273.07	2809349.13	834.40
SW352	2153+90.28	-75.84	343265.96	2809356.17	834.36
SW353	2154+16.40	-76.21	343267.49	2809382.24	Match Existing
SW354	2154+16.40	-67.84	343259.13	2809382.62	Match Existing
SW355	2153+97.54	-67.84	343258.29	2809363.77	834.31
SW356	2153+91.61	-62.47	343252.66	2809358.09	834.19

31st Street S (NW Quad)

Point	Station	Offset	Northing	Easting	Elevation
FL850	2152+46.97	-40.33	343224.11	2809214.58	Match Existing
FL851	2152+64.27	-38.79	343223.34	2809231.93	833.40
FL852	2152+69.32	-38.22	343223.00	2809237.00	833.43
FL853	2152+74.72	-39.48	343224.50	2809242.34	Match Existing
SW850	2152+64.35	-48.87	343233.41	2809231.56	833.97
SW851	2152+64.34	-53.87	343238.41	2809231.33	834.03
SW852	2152+69.34	-53.87	343238.63	2809236.33	834.06
SW853	2152+69.35	-48.87	343233.64	2809236.55	834.00
SW854	2152+59.34	-67.37	343251.67	2809225.74	Match Existing
SW855	2152+59.34	-75.42	343259.72	2809225.38	Match Existing
SW856	2152+64.34	-75.42	343259.93	2809230.37	834.91
SW857	2152+69.34	-75.42	343260.16	2809235.37	834.85
SW858	2152+80.19	-74.80	343260.03	2809246.23	834.35
SW859	2152+85.19	-74.59	343260.03	2809251.23	Match Existing
SW860	2152+84.96	-67.61	343253.05	2809251.32	Match Existing
SW861	2152+80.38	-67.50	343252.74	2809246.74	834.36
SW862	2152+69.34	-67.22	343251.97	2809235.73	834.73
SW863	2152+64.34	-67.22	343251.75	2809230.74	834.79

31st Street S (SE Quad)

Point	Station	Offset	Northing	Easting	Elevation
FL900	2153+62.86	48.87	343140.15	2809334.32	Match Existing
FL901	2153+60.48	53.24	343135.68	2809332.14	833.83
FL902	2153+58.20	63.41	343125.42	2809330.31	833.85
FL903	2153+57.97	68.26	343120.57	2809330.29	Match Existing
SW900	2153+65.02	63.46	343125.67	2809337.13	834.09
SW902	2153+59.68	82.31	343106.60	2809332.63	Match Existing
SW903	2153+64.51	82.28	343106.85	2809337.46	Match Existing
SW904	2153+70.02	63.46	343125.90	2809342.12	834.15
SW905	2153+83.30	63.46	343126.49	2809355.38	834.97
SW906	2153+88.15	63.46	343126.70	2809360.23	835.03
SW907	2153+95.79	63.64	343126.87	2809367.87	Match Existing
SW908	2153+97.66	54.01	343136.56	2809369.31	Match Existing
SW909	2153+88.15	53.46	343136.69	2809359.78	835.03
SW910	2153+83.30	53.46	343136.48	2809354.94	834.97
SW911	2153+70.02	53.46	343135.89	2809341.68	834.13
SW912	2153+65.02	53.46	343135.66	2809336.68	834.07
SW913	2153+83.30	44.69	343145.24	2809354.55	Match Existing
SW914	2153+88.15	44.66	343145.48	2809359.39	Match Existing
SW915	2153+88.15	48.66	343141.48	2809359.57	834.73
SW916	2153+83.30	48.69	343141.24	2809354.73	834.68

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

General Details

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

ADA Points

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	20	17

Columbia Road (SW Quad)					
Point	Station	Offset	Northing	Easting	Elevation
FL400	2168+09.49	62.53	343190.84	2810780.12	Match Existing
FL401	2168+37.26	66.78	343187.83	2810808.05	835.39
FL402	2168+53.17	78.28	343177.04	2810824.47	835.49
FL403	2168+61.73	91.33	343164.39	2810833.59	835.43
FL404	2168+66.39	130.91	343125.05	2810840.01	Match Existing
FL405	2168+32.06	64.79	343189.58	2810802.77	835.35
TOC400	2168+17.24	63.09	343190.62	2810787.89	-
TOC401	2168+65.33	110.01	343145.89	2810838.02	-
SW400	2168+09.86	100.69	343152.73	2810782.19	Match Existing
SW402	2168+28.82	78.66	343175.58	2810800.15	835.73
SW403	2168+34.67	70.55	343183.94	2810805.64	835.58
SW404	2168+12.52	110.41	343143.14	2810785.28	Match Existing
SW407	2168+44.55	90.02	343164.93	2810816.37	835.86
SW408	2168+50.40	81.92	343173.29	2810821.86	835.71

Columbia Road (NE Quad)					
Point	Station	Offset	Northing	Easting	Elevation
FL450	2169+52.31	-107.34	343366.85	2810915.45	Match Existing
FL451	2169+69.50	-61.84	343322.12	2810934.56	835.64
FL452	2169+86.89	-52.29	343313.33	2810952.34	835.44
FL453	2170+08.61	-50.20	343312.17	2810974.13	Match Existing
FL454	2169+87.65	-52.07	343313.13	2810953.11	835.42
FL455	216954+85	-83.82	343343.46	2810918.98	835.46
TOC450	2169+53.09	-97.79	343357.34	2810916.63	-
TOC451	2170+01.30	-50.75	343312.41	2810966.80	-
SW450	2169+71.80	-65.78	343326.16	2810936.69	835.76
SW451	2169+75.66	-72.80	343333.34	2810940.24	835.88
SW454	2169+69.22	-86.66	343346.91	2810933.22	Match Existing
SW455	2169+73.80	-86.60	343347.05	2810937.80	Match Existing
SW458	2169+78.06	-77.18	343337.82	2810942.45	835.90
SW459	2169+94.16	-74.19	343335.51	2810958.66	835.82
SW460	2170+12.58	-74.14	343336.25	2810977.07	Match Existing
SW461	2170+12.56	-65.69	343327.81	2810977.41	Match Existing
SW463	2169+94.14	-65.74	343327.07	2810959.01	835.70
SW464	2169+88.99	-56.36	343317.48	2810954.26	835.56

Columbia Road (NW Quad)					
Point	Station	Offset	Northing	Easting	Elevation
FL950	2168+27.61	-40.19	343294.26	2810793.66	Match Existing
FL951	2168+36.29	-43.54	343298.00	2810802.19	835.80
FL952	2168+50.74	-62.01	343317.09	2810815.80	835.40
FL953	2168+51.58	-65.21	343320.32	2810816.49	Match Existing
SW950	2168+33.13	-49.30	343303.61	2810798.77	835.80
SW951	2168+31.62	-52.03	343306.27	2810797.14	835.80
SW952	2168+22.48	-52.03	343305.86	2810788.00	Match Existing
SW953	2168+22.63	-62.03	343315.86	2810787.71	Match Existing
SW954	2168+31.62	-62.03	343316.26	2810796.70	835.95
SW955	2168+34.01	-63.94	343318.27	2810799.00	835.91
SW956	2168+34.01	-68.99	343323.31	2810798.78	836.00
SW957	2168+33.63	-73.97	343328.27	2810798.17	Match Existing
SW958	2168+43.44	-74.78	343329.52	2810807.93	Match Existing
SW959	2168+43.85	-69.80	343324.56	2810808.57	835.90
SW960	2168+44.45	-63.94	343318.74	2810809.43	835.76

Columbia Road (SE Quad)					
Point	Station	Offset	Northing	Easting	Elevation
SW1000	2169+97.95	72.40	343189.22	2810968.72	836.26
SW1001	2169+92.54	72.62	343188.77	2810963.32	836.23
SW1002	2169+90.44	70.68	343190.62	2810961.14	Match Existing
SW1003	2169+99.89	70.30	343191.41	2810970.57	Match Existing

24th Street S (SW Quad)					
Point	Station	Offset	Northing	Easting	Elevation
FL500	2181+26.03	50.41	343259.38	2812094.83	Match Existing
FL501	2181+59.64	55.88	343255.34	2812128.64	833.85
FL502	2181+65.41	59.16	343252.31	2812134.54	833.91
FL503	2181+90.27	99.01	343213.56	2812161.09	Match Existing
FL504	2181+87.95	90.51	343221.96	2812158.41	834.45
FL505	2181+50.75	52.48	343258.37	2812119.61	833.81
TOC500	2181+36.22	51.02	343259.20	2812105.04	-
TOC501	2181+87.19	89.95	343222.49	2812157.62	-
SW500	2181+37.37	64.64	343245.64	2812106.76	Match Existing
SW502	2181+50.93	59.49	343251.36	2812120.09	834.19
SW503	2181+55.63	57.78	343253.28	2812124.71	834.11
SW504	2181+39.02	69.17	343241.19	2812108.60	Match Existing
SW505	2181+52.64	64.19	343246.74	2812122.01	834.24
SW506	2181+57.34	62.48	343248.66	2812126.63	834.18

24th Street S (SE Quad)					
Point	Station	Offset	Northing	Easting	Elevation
FL1050	2182+67.47	61.58	343254.26	2812236.61	Match Existing
FL1051	2182+70.00	56.67	343259.27	2812238.94	834.44
FL1052	2182+77.84	47.98	343268.28	2812246.39	834.29
FL1053	2182+81.54	45.33	343271.10	2812249.98	Match Existing
SW1050	2182+73.47	59.66	343256.43	2812242.53	834.68
SW1051	2182+69.00	66.63	343249.28	2812238.36	835.19
SW1052	2182+65.78	71.66	343244.12	2812235.36	Match Existing
SW1053	2182+70.48	72.33	343243.64	2812240.08	Match Existing
SW1054	2182+72.82	69.08	343246.99	2812242.28	835.24
SW1055	2182+77.18	63.01	343253.25	2812246.38	834.74
SW1056	2182+82.82	56.76	343259.73	2812251.74	834.63
SW1057	2182+92.50	59.12	343257.79	2812261.51	Match Existing
SW1058	2182+93.90	54.43	343262.53	2812262.71	Match Existing
SW1059	2182+84.15	51.94	343264.60	2812252.86	834.57
SW1060	2182+81.17	51.12	343265.30	2812249.86	834.53

20th Street S (SW Quad)					
Point	Station	Offset	Northing	Easting	Elevation
FL600	2194+58.36	38.62	343328.07	2813425.44	Match Existing
FL601	2195+05.23	54.35	343314.35	2813472.94	834.16
FL602	2195+10.96	60.04	343308.91	2813478.90	834.29
FL603	2194+79.08	40.59	343326.98	2813446.22	834.33
FL604	2195+37.45	181.19	343189.00	2813510.54	Match Existing
FL605	2195+35.28	139.95	343230.11	2813506.61	834.93
TOC600	2194+63.43	39.21	343327.69	2813430.53	0.00
TOC601	2195+24.05	85.26	343284.27	2813493.06	0.00
SW600	2194+48.95	70.49	343295.82	2813417.40	Match Existing
SW601	2194+79.08	40.59	343326.98	2813446.22	835.25
SW602	2194+98.50	61.19	343307.23	2813466.51	834.46
SW603	2195+02.03	57.64	343310.93	2813469.88	834.41
SW604	2194+48.98	75.18	343291.14	2813417.63	Match Existing
SW605	2194+52.99	75.09	343291.39	2813421.63	835.31
SW606	2195+04.18	66.83	343301.84	2813472.42	834.51
SW609	2195+18.36	99.14	343270.16	2813487.97	835.40
SW610	2195+19.19	103.14	343266.20	2813488.97	Match Existing
SW611	2195+24.00	103.18	343266.37	2813493.78	Match Existing
SW612	2195+23.51	99.17	343270.35	2813493.12	835.33
SW614	2195+07.70	63.27	343305.54	2813475.79	834.46

20th Street S (NE Quad)					
Point	Station	Offset	Northing	Easting	Elevation
FL650	2195+81.68	-175.59	343547.35	2813539.49	Match Existing
FL651	2195+85.82	-117.10	343489.09	2813546.13	834.54
FL652	2196+02.79	-63.82	343436.58	2813565.36	833.70
FL653	2196+08.02	-57.67	343430.66	2813570.85	833.59
FL654	2196+58.46	-38.33	343413.49	2813622.06	Match Existing
FL655	2196+26.72	-44.33	343418.13	2813590.10	834.54
FL656	2195+83.26	-137.38	343509.24	2813542.70	834.49
TOC650	2195+82.25	-174.76	343546.54	2813540.10	0.00
TOC651	2195+92.58	-86.65	343458.95	2813554.18	0.00
TOC652	2196+53.86	-38.90	343413.86	2813617.45	0.00
SW650	2196+06.31	-66.76	343439.67	2813568.75	833.91
SW651	2195+97.16	-85.06	343457.56	2813558.82	834.96
SW653	2195+93.26	-106.10	343478.41	2813554.03	Match Existing
SW654	2195+98.00	-106.06	343478.58	2813558.77	Match Existing
SW655	2195+97.91	-100.06	343472.58	2813558.94	835.04
SW657	2196+10.12	-70.01	343443.08	2813572.42	833.98
SW660	2196+75.67	-75.44	343451.31	2813637.68	Match Existing
SW661	2196+75.53	-67.50	343443.37	2813637.88	Match Existing
SW662	2196+24.39	-68.38	343442.06	2813586.74	834.42
SW663	2196+17.74	-65.99	343439.39	2813580.20	834.28
SW664	2196+15.31	-63.91	343437.21	2813577.86	833.86
SW665	2196+11.49	-60.67	343433.81	2813574.19	833.79

20th Street S (NW Quad)					
Point	Station	Offset	Northing	Easting	Elevation
SW1100	2195+04.79	-51.60	343420.18	2813467.97	834.90
SW1101	2194+95.90	-54.26	343422.46	2813458.97	834.95
SW1102	2194+92.13	-55.63	343423.67	2813455.15	Match Existing
SW1103	2194+94.30	-62.87	343430.99	2813457.01	Match Existing
SW1104	2194+98.19	-61.92	343430.22	2813460.94	835.07
SW1105	2195+07.49	-59.14	343427.83	2813470.35	834.91
SW1106	2195+10.41	-63.05	343431.87	2813473.10	Match Existing
SW1107	2195+15.05	-62.74	343431.76	2813477.74	Match Existing

20th Street S (SE Quad)					
Point	Station	Offset	Northing	Easting	Elevation
SW1150	2196+07.57	62.18	343310.90	2813575.52	834.80
SW1151	2196+09.36	56.18	343316.98	2813577.05	834.60
SW1152	2196+09.36	50.38	343322.77	2813576.81	834.57
SW1153	2196+05.82	50.38	343322.62	2813573.27	Match Existing

Radius Points						
Point	Station	Offset	Northing	Easting	Sidestreet	Radius
RP100	2128+59.60	104.81	2,806,836.00	342,973.07	S. 38th St	53'
RP150	2130+32.33	-108.86	2,806,999.08	343,194.20	S. 38th St	58'
RP200	2141+75.12	113.73	2,808,150.63	343,022.55	S. 34th St	63'
RP250	2143+56.99	-103.54	2,808,322.67	343,247.68	S. 34th St	53'
RP251	2146+43.47	-173.92	2,808,605.74	343,330.73	S. 34th St	348'
RP300	2152+36.32	103.88	2,809,210.35	343,079.57	S. 31st St	53'
RP301	2149+54.80	192.02	2,808,933.02	342,979.00	S. 31st St	348'
RP350	2154+16.37	-98.97	2,809,381.20	343,290.22	S. 31st St	48'
RP400	2168+17.35	111.09	2,810,790.13	343,142.67	Columbia Road	48'
RP450	2170+01.08	-98.75	2,810,964.53	343,360.35	Columbia Road	48'
RP500	2181+36.10	104.02	2,812,107.17	343,206.25	S. 24th St	53'
RP600	2194+63.37	102.21	2,813,433.16	343,264.75	S. 20th St	63'
RP601	2191+88.87	178.87	2,813,162.19	343,176.43	S. 20th St	348'
RP650	2196+53.71	-101.9	2,813,614.60	343,476.80	S. 20th St	63'
RP651	2199+30.23	-170.88	2,813,887.93	343,557.54	S. 20th St	348'

Note: Points SW151, SW157, SW161, SW201-204, SW208-213, SW215, SW220, SW251, SW254, SW257-260, SW301-302, SW307-310, SW313-315, SW401, SW405-406, SW452-453, SW456-457, SW462, SW501, SW607-608, SW613, SW652, SW656, SW658-659, SW807, SW810-811, SW901 are not used.

Points RP251, RP301, RP601, RP651 are not shown on the sheets.

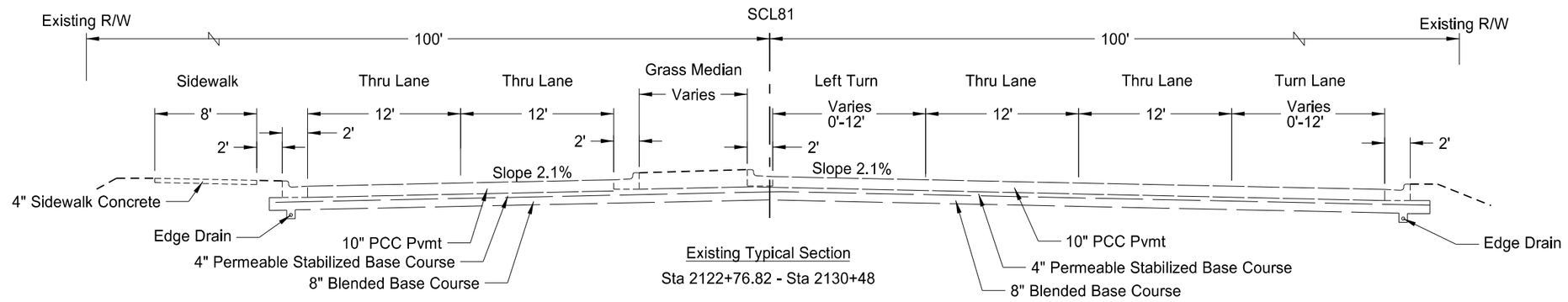
RP points are measured to the back of the curb.

General Details

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

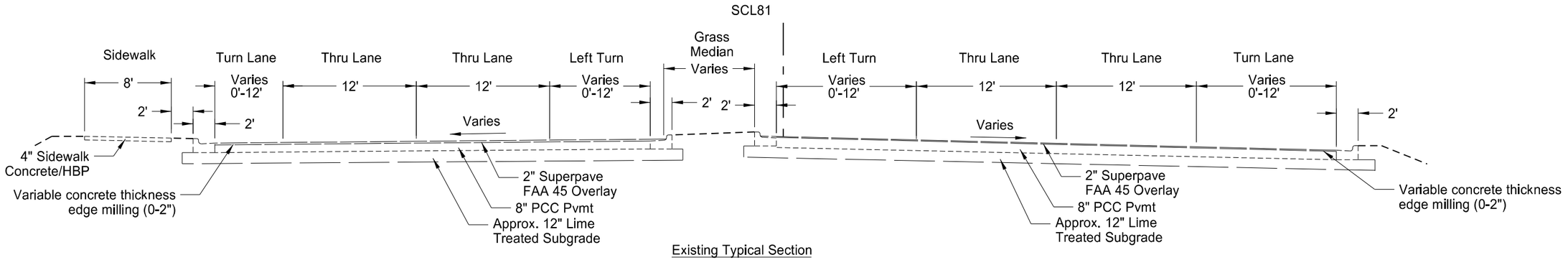
ADA Points

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	30	1



Existing Typical Section

Sta 2122+76.82 - Sta 2130+48



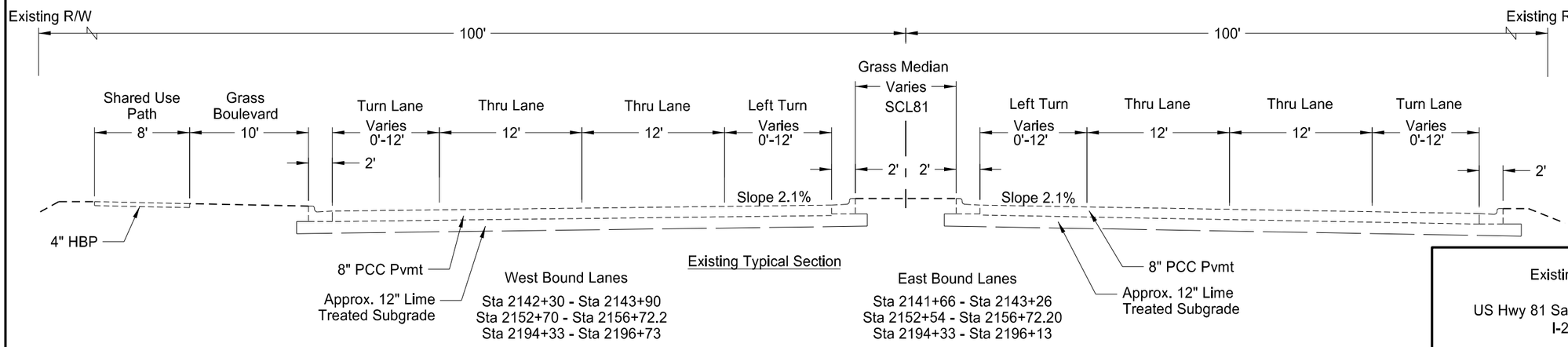
Existing Typical Section

West Bound Lanes

Sta 2130+48 - Sta 2142+30
Sta 2143+90 - Sta 2152+70
Sta 2183+80.8 - Sta 2194+33
Sta 2196+73 - Sta 2210+30

East Bound Lanes

Sta 2130+48 - Sta 2141+66
Sta 2143+26 - Sta 2152+54
Sta 2183+80.8 - Sta 2194+33
Sta 2196+13 - Sta 2210+30



Existing Typical Section

West Bound Lanes

Sta 2142+30 - Sta 2143+90
Sta 2152+70 - Sta 2156+72.2
Sta 2194+33 - Sta 2196+73

East Bound Lanes

Sta 2141+66 - Sta 2143+26
Sta 2152+54 - Sta 2156+72.20
Sta 2194+33 - Sta 2196+13

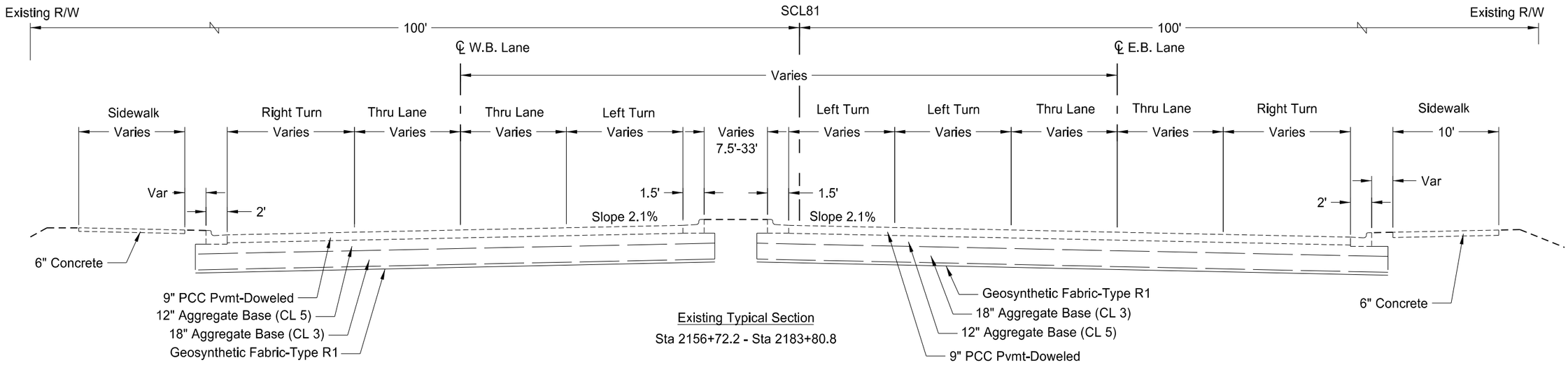
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Existing Typical Sections

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

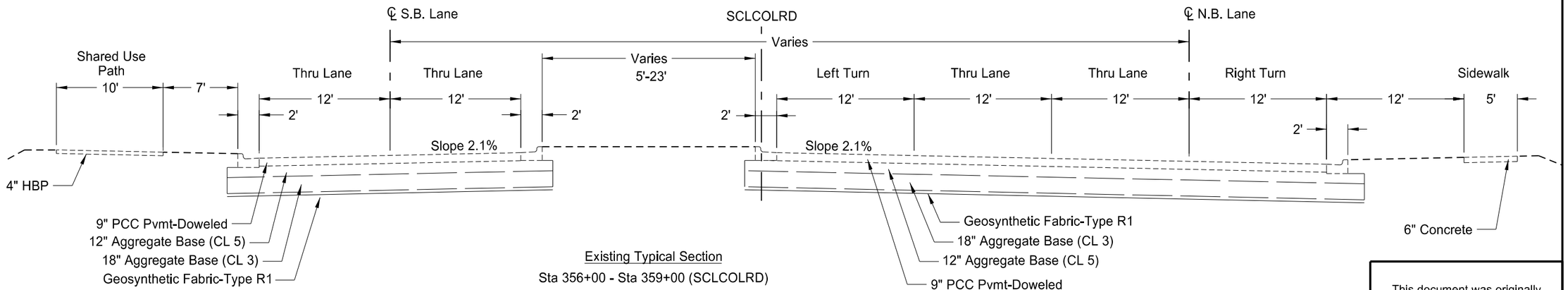
8/25/2020 4:57:12 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\030TP_001_TYP.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	30	2



Existing Typical Section

Sta 2156+72.2 - Sta 2183+80.8



Existing Typical Section

Sta 356+00 - Sta 359+00 (SCLCOLRD)

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Existing Typical Sections

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	30	3

Notes:

1. Stationing based on existing alignments:
   <SCL81> "32nd Avenue"
   <SCLCOLRD> "Columbia Road"

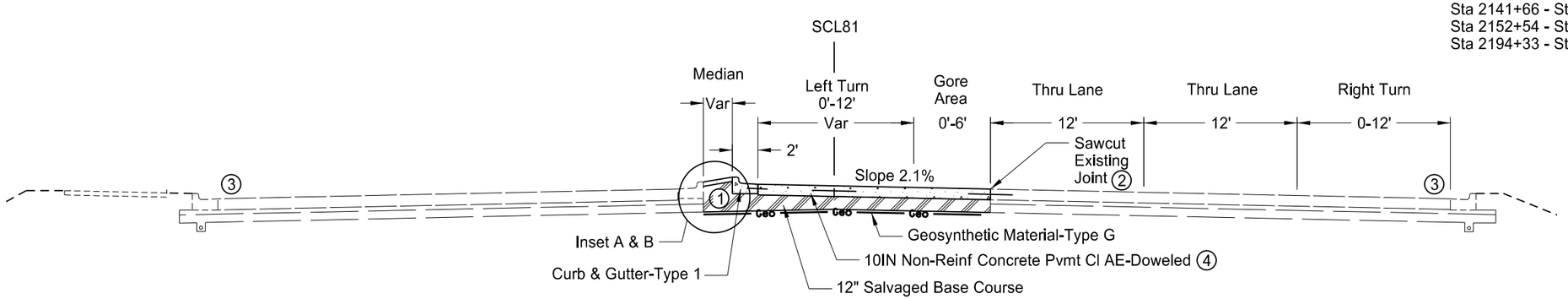
2. Refer to Section 20 and 90 for proposed sidewalk and ADA ramp information

(1) Inset A: For locations with concrete median
Inset B: For locations with grassy median

(2) Refer to Section 90 for additional information
do not remove aggregate base beyond front of gutter pan

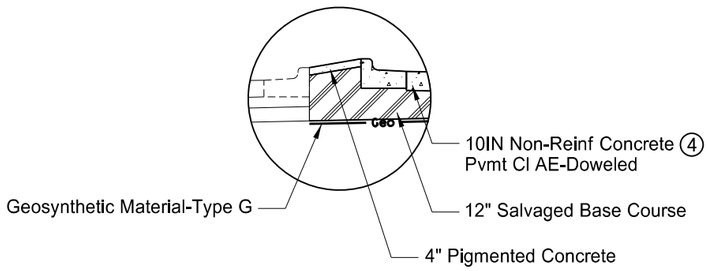
(3) See Detail: "Proposed Pavement Detail at Radii"

(4) Concrete Pavement Thickness is 8" at these eastbound locations:
Sta 2141+66 - Sta 2142+06.56
Sta 2152+54 - Sta 2152+58.16
Sta 2194+33 - Sta 2194+95.93

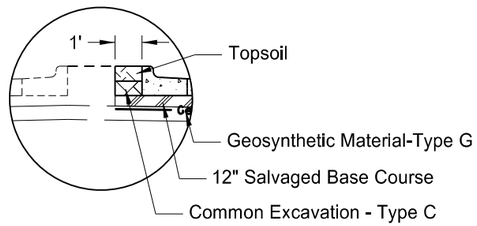


Proposed Typical Section
Sta 2122+76.82 - Sta 2128+75.52
Sta 2136+91.70 - Sta 2142+06.56
Sta 2149+47.10 - Sta 2152+58.16
Sta 2190+62.94 - Sta 2194+95.93

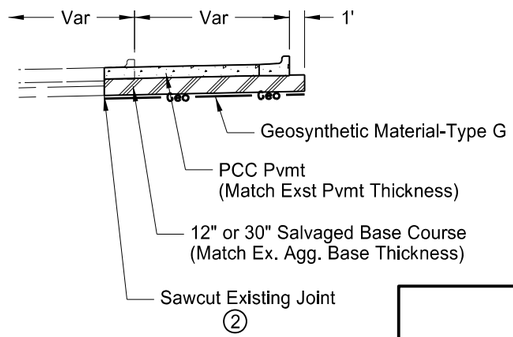
Inset A



Inset B



Proposed Pavement Detail for NE & SW Radii



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Proposed Typical Sections

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	30	4

Notes:

1. Stationing based on existing alignments:
   <SCL81> "32nd Avenue"
   <SCLCOLRD> "Columbia Road"

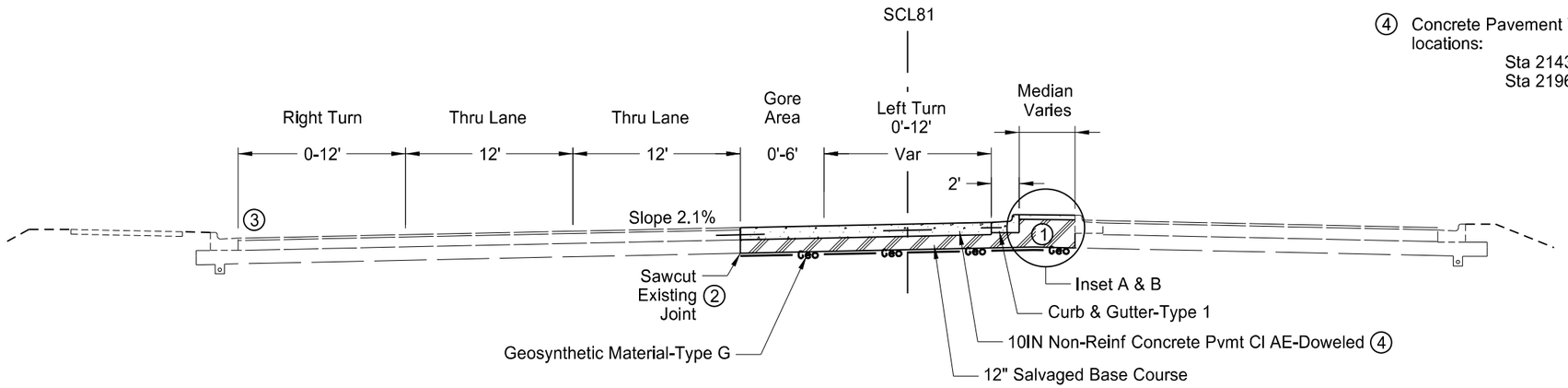
2. Refer to Section 20 and 90 for proposed sidewalk and ADA ramp information

(1) Inset A: For locations with concrete median
Inset B: For locations with grassy median

(2) Refer to Section 90 for additional information
do not remove aggregate base beyond front of gutter pan

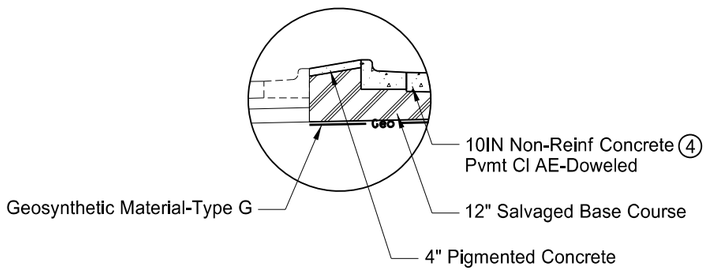
(3) See Detail: "Proposed Pavement Detail at Radii"

(4) Concrete Pavement Thickness is 8" at these westbound locations:
Sta 2143+32.21 - Sta 2143+90
Sta 2196+19.31 - Sta 2196+73

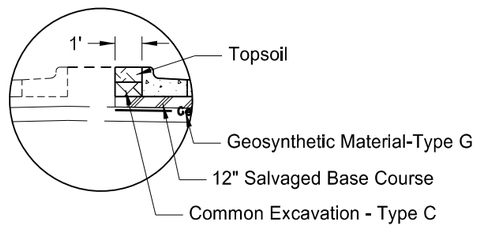


Proposed Typical Section
Sta 2130+06.24 - Sta 2136+24.39
Sta 2143+32.21 - Sta 2149+47.10
Sta 2196+19.31 - Sta 2200+21.50

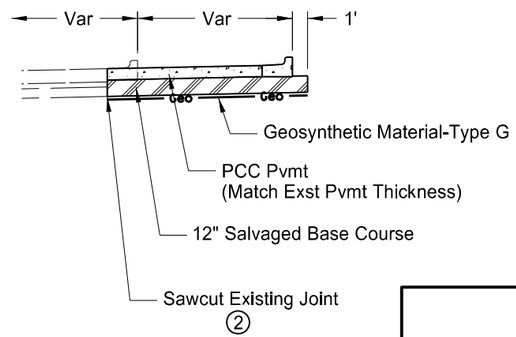
Inset A



Inset B



Proposed Pavement Detail for NE & SW Radii



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Proposed Typical Sections

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

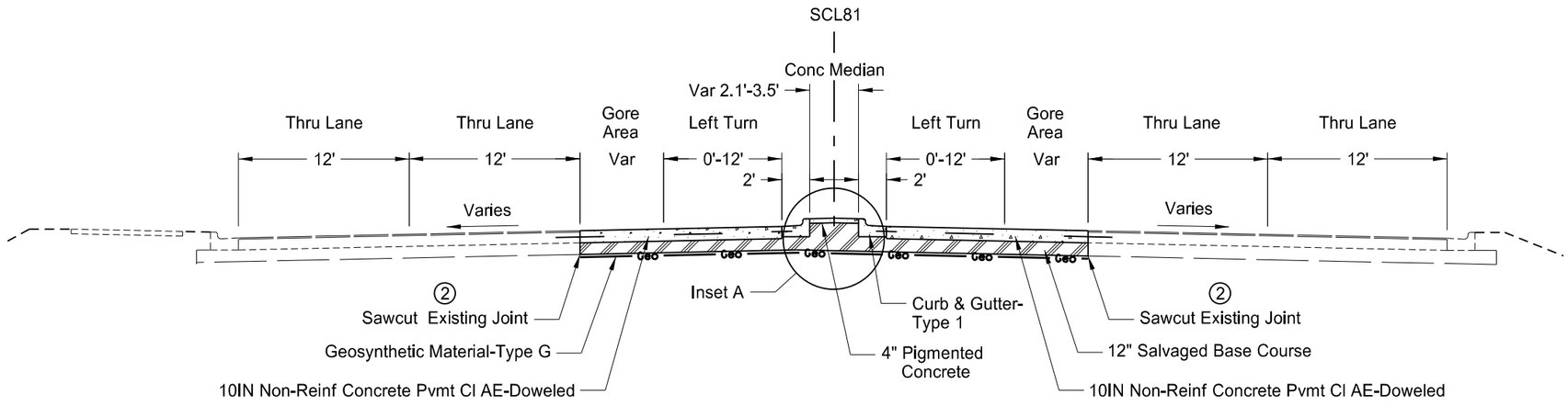
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	30	5

Notes:

1. Stationing based on existing alignments:
   <SCL81> "32nd Avenue"
   <SCLCOLRD> "Columbia Road"

2. Refer to Section 20 and 90 for proposed sidewalk and ADA ramp information

(2) Refer to Section 90 for additional information do not remove aggregate base beyond front of gutter pan



Proposed Typical Section
Sta 2146+37.61 - Sta 2149+47.10

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Proposed Typical Sections

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	30	6

Notes:

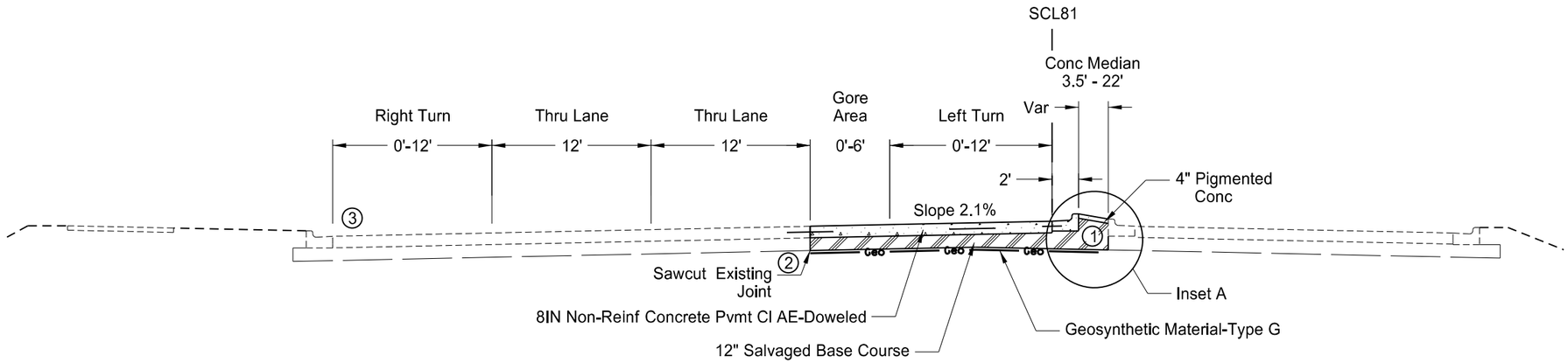
1. Stationing based on existing alignments:
   <SCL81> "32nd Avenue"
   <SCLCOLRD> "Columbia Road"

2. Refer to Section 20 and 90 for proposed sidewalk and ADA ramp information

(1) Inset A: For locations with concrete median
Inset B: For locations with grassy median

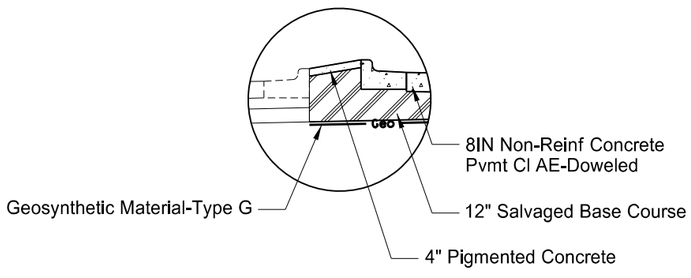
(2) Refer to Section 90 for additional information
do not remove aggregate base beyond front of gutter pan

(3) See Detail: "Proposed Pavement Detail at Radii"

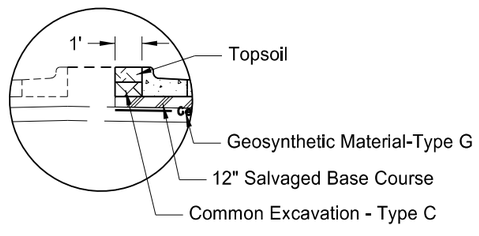


Proposed Typical Section
Sta 2153+95.85 - Sta 2156+72.2

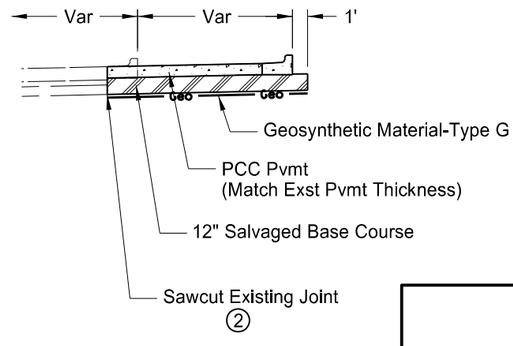
Inset A



Inset B



Proposed Pavement Detail for NE & SW Radii



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Proposed Typical Sections

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	30	7

Notes:

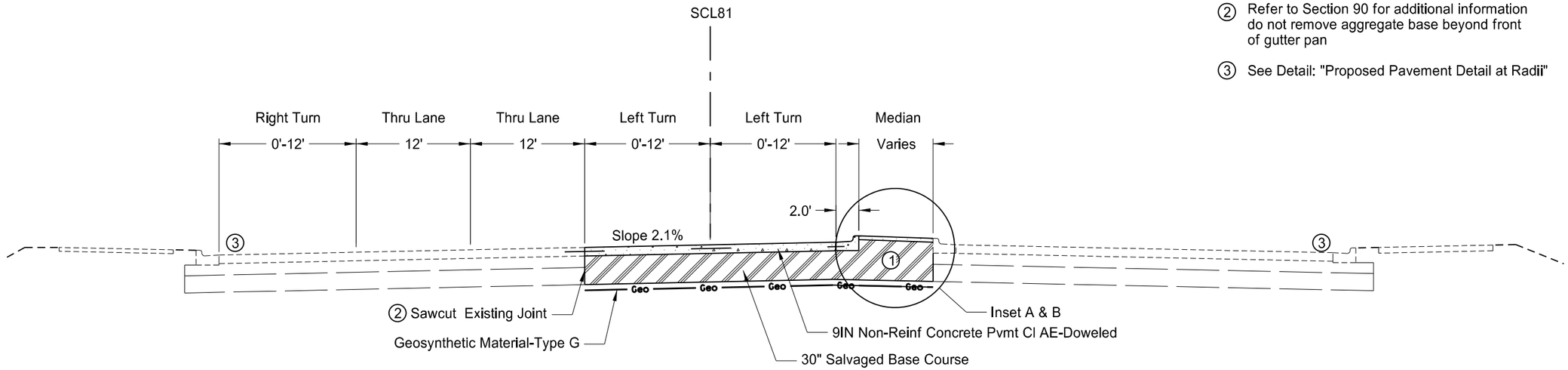
1. Stationing based on existing alignments:
   <SCL81> "32nd Avenue"
   <SCLCOLRD> "Columbia Road"

2. Refer to Section 20 and 90 for proposed sidewalk and ADA ramp information

(1) Inset A: For locations with concrete median
Inset B: For locations with grassy median

(2) Refer to Section 90 for additional information do not remove aggregate base beyond front of gutter pan

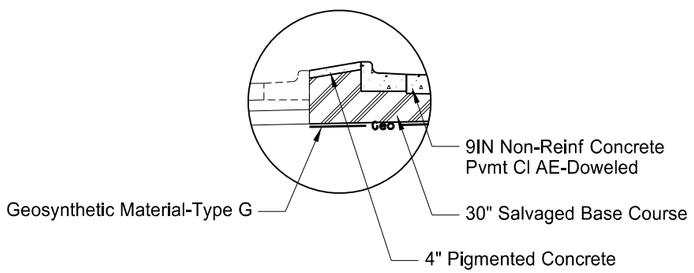
(3) See Detail: "Proposed Pavement Detail at Radii"



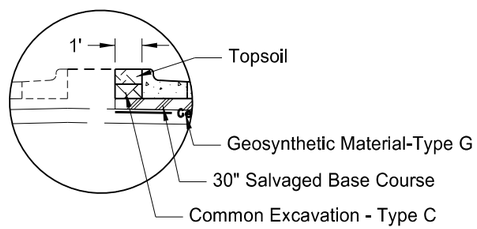
Proposed Typical Section

Sta 2156+72.20 - Sta 2160+11.52
Sta 2169+99.44 - Sta 2176+32.92

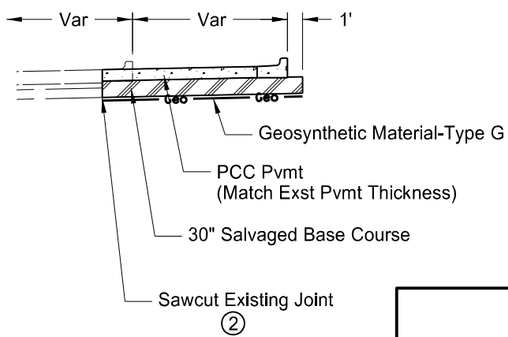
Inset A



Inset B



Proposed Pavement Detail for NE & SW Radii



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Proposed Typical Sections

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	30	8

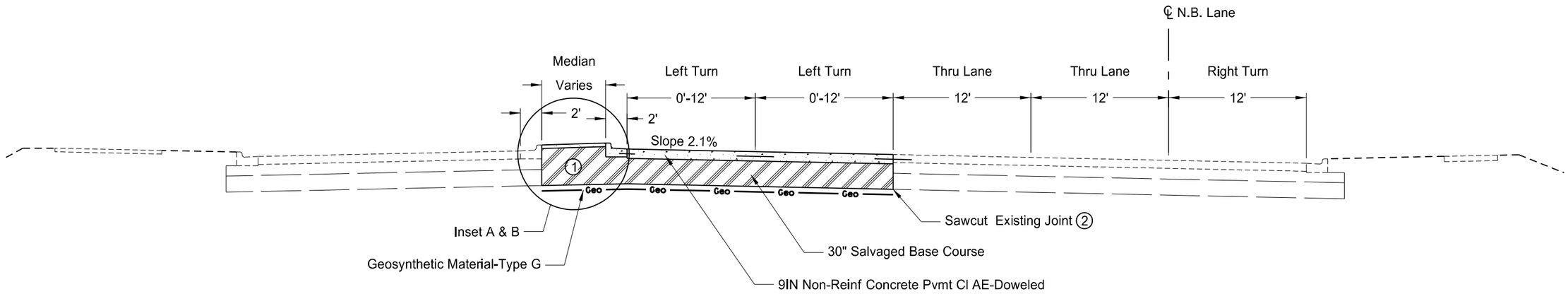
Notes:

1. Stationing based on existing alignments:
   <SCL81> "32nd Avenue"
   <SCLCOLRD> "Columbia Road"

2. Refer to Section 20 and 90 for proposed sidewalk and ADA ramp information

(1) Inset A: For locations with concrete median
Inset B: For locations with grassy median

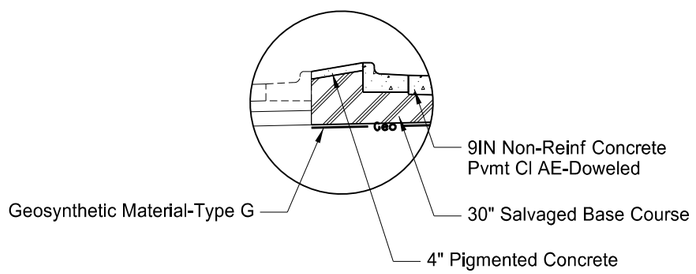
(2) Refer to Section 90 for additional information do not remove aggregate base beyond front of gutter pan



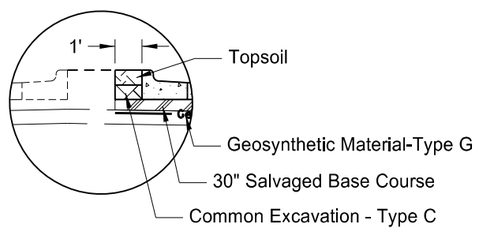
Proposed Typical Section

Sta 356+00 - Sta 359+00 (SCLCOLRD)

Inset A



Inset B



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Proposed Typical Sections

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	40	1

SPEC	CODE	BID ITEM	QTY	UNIT
202	0114	REMOVAL OF CONCRETE PAVEMENT		
		Median/Sidewalk - Sta 2116+00 to Sta 2122+00	5	SY

Notes:

1. All "Removal of Curb & Gutter" & "Removal of Pavement" callouts are intended to be shown at joint locations wherever joints occur. In some cases these callouts are appoximate. If the callout is not at an existing joint, the Engineer will determine if the removal needs to occur at the next closet joint, or if the removal can occur at the callout location.

2. Refer to Section 20 for sidewalk, curb & gutter, and pavement removal tie points at the radii.

Legend

- Obliteration of Pavement Marking (All Sizes)
- Saw Cut
- REMOVE – Remove Curb & Gutter
- Removal of Pavement
- Remove Tree 10IN / Stump

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/27/20 and the original document is stored at the North Dakota Department of Transportation

Removal Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2110+00 to 2116+00
2116+00 to 2122+00

8/28/2020 9:34:38 AM klarue pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\040RM_001.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	40	2

SPEC	CODE	BID ITEM	QTY	UNIT
202	0114	REMOVAL OF CONCRETE PAVEMENT		
		Mainline - Sta 2122+00 to Sta 2128+00	163	SY
		Mainline - Sta 2128+00 to Sta 2134+00	219	SY
		Median/Sidewalk - Sta 2128+00 to Sta 2134+00	200	SY
202	0130	REMOVAL OF CURB & GUTTER		
		Sta 2122+00 to Sta 2128+00	524	LF
		Sta 2128+00 to Sta 2134+00	868	LF
704	1500	OBLITERATION OF PAVEMENT MARKING		
		6" Crosswalk Lines	318	SF
		8" Lane Lines	316	SF
		24" Stop Lines	352	SF
		16 SF White Left Turn Arrows	80	SF

Notes:

1. All "Removal of Curb & Gutter" & "Removal of Pavement" callouts are intended to be shown at joint locations wherever joints occur. In some cases these callouts are appoximate. If the callout is not at an existing joint, the Engineer will determine if the removal needs to occur at the next closet joint, or if the removal can occur at the callout location.

2. Refer to Section 20 for sidewalk, curb & gutter, and pavement removal tie points at the radii.

Legend

- Obliteration of Pavement Marking (All Sizes)
- Saw Cut
- REMOVE – Remove Curb & Gutter
- Removal of Pavement
- Remove Tree 10IN / Stump

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/27/20 and the original document is stored at the North Dakota Department of Transportation

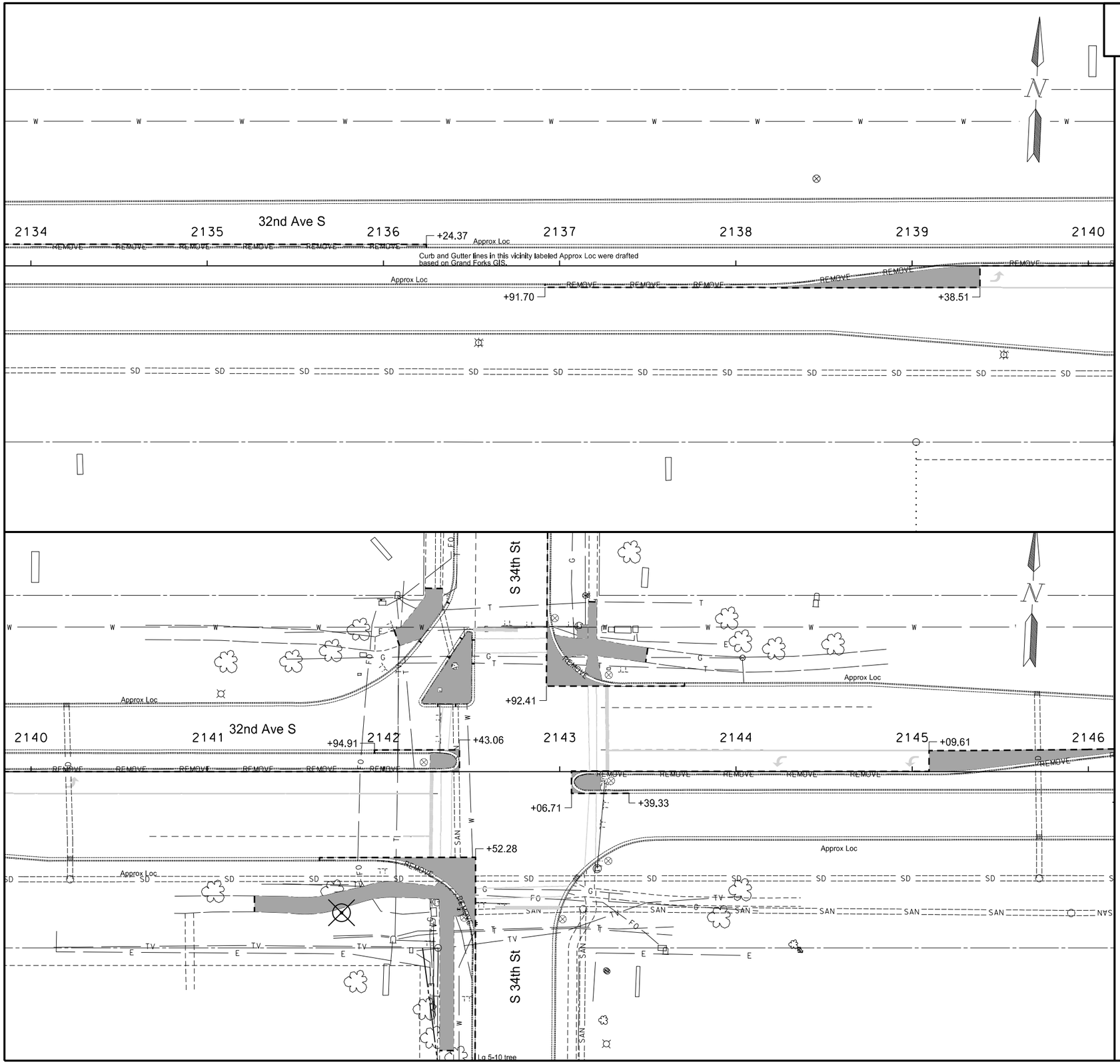
Removal Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2122+00 to 2128+00
2128+00 to 2134+00

8/28/2020 9:35:54 AM klarue pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\040RM_002.dgn

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	40	3



SPEC	CODE	BID ITEM	QTY	UNIT
201	0395	STUMP REMOVAL		
		Sta 2141+76.20 80.04' Rt	1	EA
202	0114	REMOVAL OF CONCRETE PAVEMENT		
		Mainline - Sta 2134 to Sta 2140+00	85	SY
		Mainline - Sta 2140+00 to Sta 2146+00	201	SY
		Median/Sidewalk - Sta 2140+00 to Sta 2146+00	407	SY
202	0130	REMOVAL OF CURB & GUTTER		
		Sta 2134+00 to Sta 2140+00	533	LF
		Sta 2140+00 to Sta 2146+00	1098	LF
704	1500	OBLITERATION OF PAVEMENT MARKING		
		6" Crosswalk Lines	253	SF
		8" Lane Lines	323	SF
		24" Stop Lines	318	SF
		16 SF White Left Turn Arrows	64	SF

Notes:

1. All "Removal of Curb & Gutter" & "Removal of Pavement" callouts are intended to be shown at joint locations wherever joints occur. In some cases these callouts are appoximate. If the callout is not at an existing joint, the Engineer will determine if the removal needs to occur at the next closet joint, or if the removal can occur at the callout location.

2. Refer to Section 20 for sidewalk, curb & gutter, and pavement removal tie points at the radii.

Legend

- Obliteration of Pavement Marking (All Sizes)
- Saw Cut
- REMOVE – Remove Curb & Gutter
- Removal of Pavement
- Remove Tree 10IN / Stump

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/27/20 and the original document is stored at the North Dakota Department of Transportation

Removal Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2134+00 to 2140+00
2140+00 to 2146+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	40	4

SPEC	CODE	BID ITEM	QTY	UNIT
202	0114	REMOVAL OF CONCRETE PAVEMENT		
		Mainline - Sta 2146+00 to Sta 2152+00	265	SY
		Mainline - Sta 2152+00 to Sta 2158+00	271	SY
		Median/Sidewalk - Sta 2152+00 to Sta 2158+00	255	SY
202	0130	REMOVAL OF CURB & GUTTER		
		Sta 2146+00 to Sta 2152+00	910	LF
		Sta 2152+00 to Sta 2158+00	977	LF
704	1500	OBLITERATION OF PAVEMENT MARKING		
		6" Crosswalk Lines	214	SF
		8" Lane Lines	362	SF
		24" Stop Lines	268	SF
		16 SF White Left Turn Arrows	80	SF

Notes:

1. All "Removal of Curb & Gutter" & "Removal of Pavement" callouts are intended to be shown at joint locations wherever joints occur. In some cases these callouts are appoximate. If the callout is not at an existing joint, the Engineer will determine if the removal needs to occur at the next closet joint, or if the removal can occur at the callout location.
2. Refer to Section 20 for sidewalk, curb & gutter, and pavement removal tie points at the radii.

Legend

- Obliteration of Pavement Marking (All Sizes)
- Saw Cut
- REMOVE – Remove Curb & Gutter
- Removal of Pavement
- Remove Tree 10IN / Stump

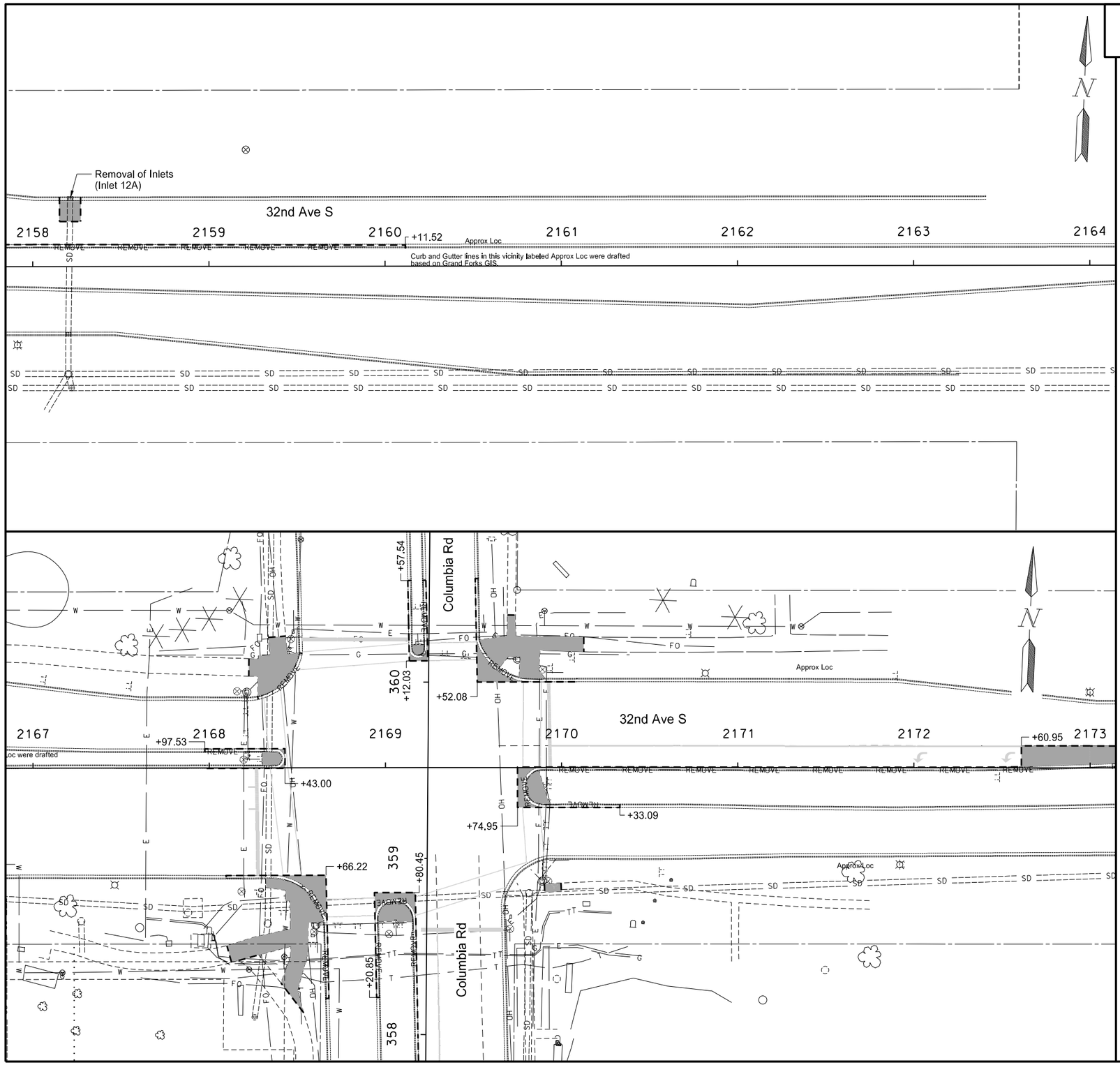
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/27/20 and the original document is stored at the North Dakota Department of Transportation

Removal Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2146+00 to 2152+00
2152+00 to 2158+00

8/28/2020 9:41:13 AM klarue pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\040RM_004.dgn



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	40	5

SPEC	CODE	BID ITEM	QTY	UNIT
202	0114	REMOVAL OF CONCRETE PAVEMENT		
		Mainline - Sta 2158+00 to Sta 2164+00	16	SY
		Mainline - Sta 2167+00 to Sta 2173+00	126	SY
		Median/Sidewalk - Sta 2167+00 to Sta 2173+00	329	SY
202	0130	REMOVAL OF CURB & GUTTER		
		Sta 2158+00 to Sta 2164+00	224	LF
		Sta 2167+00 to Sta 2173+00	969	LF
202	0230	REMOVAL OF INLETS		
		12A - Sta 2158+21 39' Lt	1	EA
704	1500	OBLITERATION OF PAVEMENT MARKING		
		6" Crosswalk Lines	354	SF
		8" Lane Lines	223	SF
		24" Stop Lines	432	SF
		16 SF White Left Turn Arrows	32	SF

Notes:

1. All "Removal of Curb & Gutter" & "Removal of Pavement" callouts are intended to be shown at joint locations wherever joints occur. In some cases these callouts are appoximate. If the callout is not at an existing joint, the Engineer will determine if the removal needs to occur at the next closet joint, or if the removal can occur at the callout location.
2. Refer to Section 20 for sidewalk, curb & gutter, and pavement removal tie points at the radii.

Legend

- Obliteration of Pavement Marking (All Sizes)
- Saw Cut
- REMOVE – Remove Curb & Gutter
- Removal of Pavement
- Remove Tree 10IN / Stump

Removal Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2158+00 to 2164+00
2167+00 to 2173+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	40	6

SPEC	CODE	BID ITEM	QTY	UNIT
202	0114	REMOVAL OF CONCRETE PAVEMENT		
		Mainline - Sta 2173+00 to Sta 2179+00	193	SY
		Mainline - Sta 2179+00 to Sta 2185+00	41	SY
		Median/Sidewalk - Sta 2179+00 to Sta 2185+00	66	SY
202	0130	REMOVAL OF CURB & GUTTER		
		Sta 2173+00 to Sta 2179+00	333	LF
		Sta 2179+00 to Sta 2185+00	160	LF
704	1500	OBLITERATION OF PAVEMENT MARKING		
		6" Crosswalk Lines	66	SF
		24" Stop Lines	80	SF

Notes:

1. All "Removal of Curb & Gutter" & "Removal of Pavement" callouts are intended to be shown at joint locations wherever joints occur. In some cases these callouts are appoximate. If the callout is not at an existing joint, the Engineer will determine if the removal needs to occur at the next closet joint, or if the removal can occur at the callout location.

2. Refer to Section 20 for sidewalk, curb & gutter, and pavement removal tie points at the radii.

Legend

- Obliteration of Pavement Marking (All Sizes)
- Saw Cut
- REMOVE – Remove Curb & Gutter
- Removal of Pavement
- Remove Tree 10IN / Stump

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/27/20 and the original document is stored at the North Dakota Department of Transportation

Removal Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2173+00 to 2179+00
2179+00 to 2185+00

8/28/2020 9:43:51 AM klarue pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\040RM_006.dgn

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	40	7

SPEC	CODE	BID ITEM		QTY	UNIT
201	0370	REMOVAL OF TREES 10IN			
		Sta 2195+12.58 72.64 Rt		1	EA
		Sta 2195+87.09 90.71 Lt		1	EA
202	0114	REMOVAL OF CONCRETE PAVEMENT			
		Mainline - Sta 2190+00 to Sta 2196+00		212	SY
		Mainline - Sta 2196+00 to Sta 2202+00		88	SY
		Median/Sidewalk - Sta 2190+00 to Sta 2202+00		229	SY
202	0130	REMOVAL OF CURB & GUTTER			
		Sta 2190+00 to Sta 2196+00		914	LF
		Sta 2196+00 to Sta 2202+00		507	LF
202	0230	REMOVAL OF INLETS			
		12A - Sta 2191+20 38' Rt		1	EA
704	1500	OBLITERATION OF PAVEMENT MARKING			
		4" Centerline Skip Lines	Length / 4	2	SF
		6" Crosswalk Lines		247	SF
		8" Lane Lines		254	SF
		24" Stop Lines		296	SF
		16 SF White Left Turn Arrows		64	SF

Notes:

1. All "Removal of Curb & Gutter" & "Removal of Pavement" callouts are intended to be shown at joint locations wherever joints occur. In some cases these callouts are appoximate. If the callout is not at an existing joint, the Engineer will determine if the removal needs to occur at the next closet joint, or if the removal can occur at the callout location.
2. Refer to Section 20 for sidewalk, curb & gutter, and pavement removal tie points at the radii.

Legend

- Obliteration of Pavement Marking (All Sizes)
- Saw Cut
- REMOVE – Remove Curb & Gutter
- Removal of Pavement
- Remove Tree 10IN / Stump

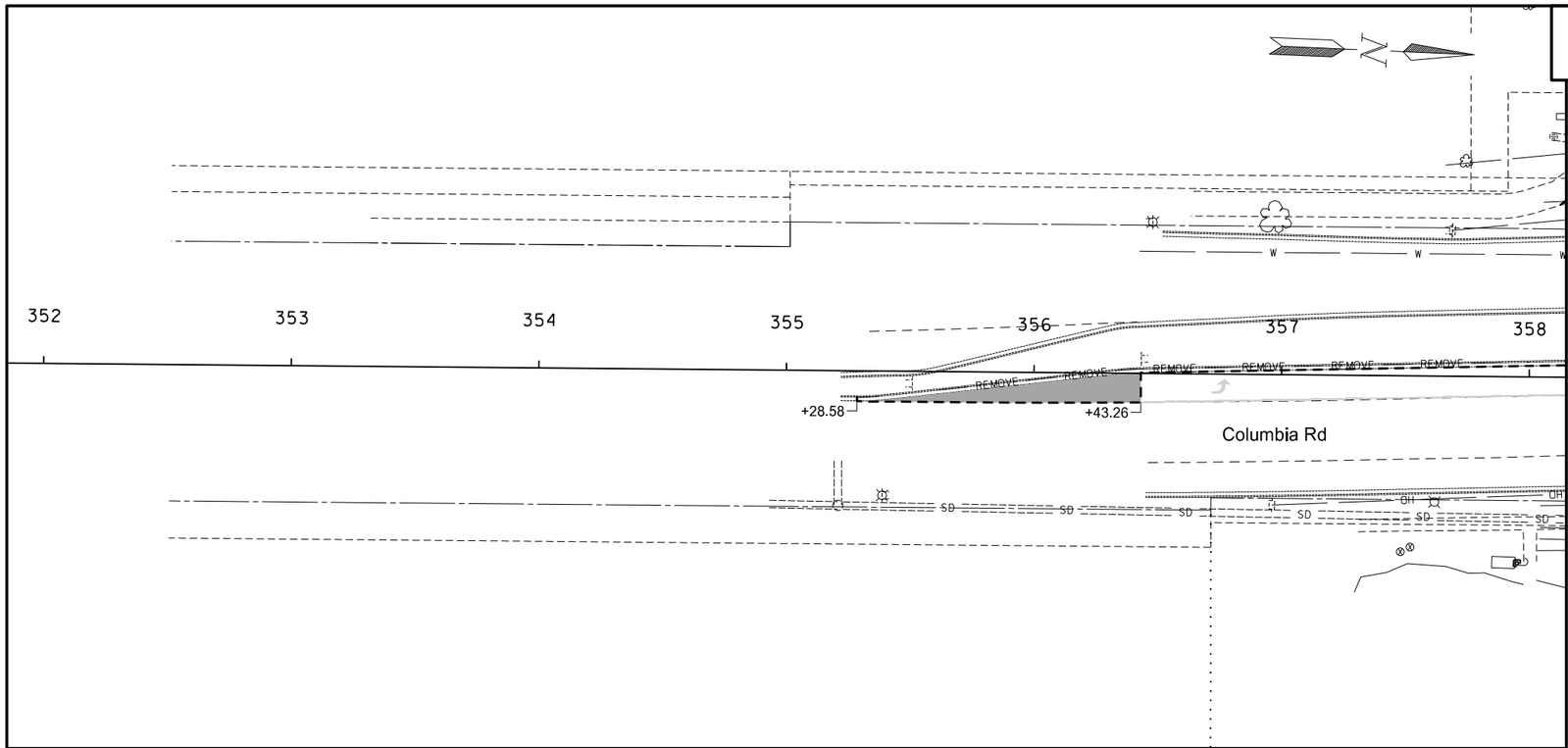
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/27/20 and the original document is stored at the North Dakota Department of Transportation

Removal Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2190+00 to 2196+00
2196+00 to 2202+00

8/28/2020 9:45:11 AM klarue pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\040RM_007.dgn



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	40	8

SPEC	CODE	BID ITEM	QTY	UNIT
202	0114	REMOVAL OF CONCRETE PAVEMENT		
		Mainline - Sta 355+28.58 to Sta 358+00	78	SY
202	0130	REMOVAL OF CURB & GUTTER		
		Sta 355+28.58 to Sta 358+00	272	LF
704	1500	OBLITERATION OF PAVEMENT MARKING		
		8" Lane Lines	105	SF
		16 SF White Left Turn Arrows	16	SF

Notes:

1. All "Removal of Curb & Gutter" & "Removal of Pavement" callouts are intended to be shown at joint locations wherever joints occur. In some cases these callouts are appoximate. If the callout is not at an existing joint, the Engineer will determine if the removal needs to occur at the next closet joint, or if the removal can occur at the callout location.
2. Refer to Section 20 for sidewalk, curb & gutter, and pavement removal tie points at the radii.

Legend

- Obliteration of Pavement Marking (All Sizes)
- Saw Cut
- REMOVE – Remove Curb & Gutter
- Removal of Pavement
- Remove Tree 10IN / Stump

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/27/20 and the original document is stored at the North Dakota Department of Transportation

Removal Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Columbia Rd
352+00 to 358+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	50	1

Inlet No. 12A
Inlet - Type 2
2158+21.31 - 38.5' LT
Grate Type: D
Top Elev = 834.02 (A)
Base Elev = 829.02
Invert Elev = 829.85
Riser = 4.0'

12 In. Conduit S = 829.85 (Existing) (B)

Inlet No. 24B
Inlet - Type 2
2191+20.04 - 37.5' RT
Grate Type: D
Top Elev = 833.66 (A)
Base Elev = 828.66
Invert Elev = 829.49
Riser = 4.0'

12 In. Conduit N = 829.49 (Existing) (B)
12 In. Conduit S = 829.49 (Existing) (B)

Note: (A) Set grate elevation to match existing curb.

(B) Field verify existing pipe size and elevation prior to structure fabrication.

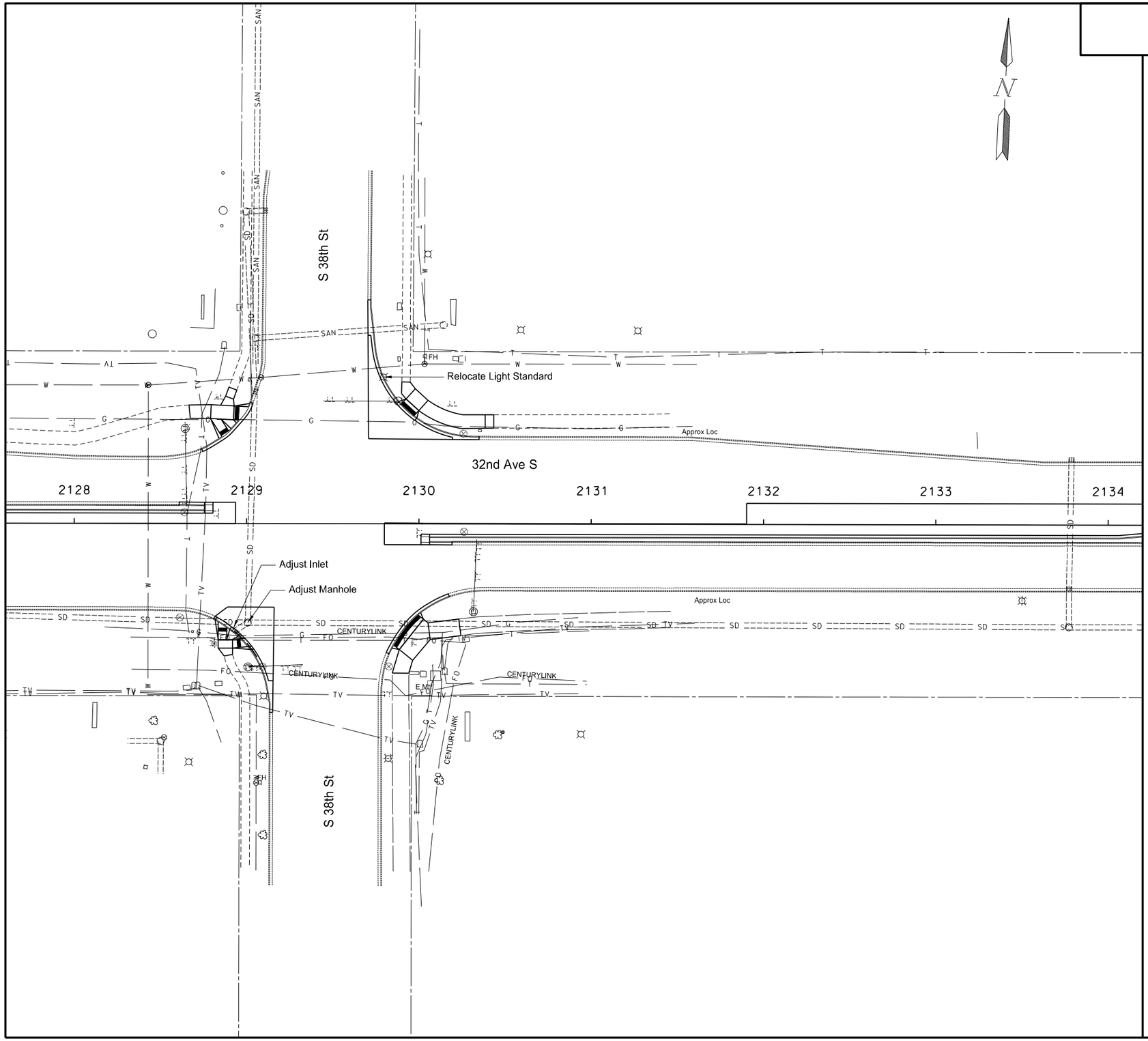
This document was originally issued and sealed by Devin S. Power, Registration Number PE- 28149, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Inlet & Manhole Summary

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	55	1

SPEC	CODE	BID ITEM	QTY	UNIT
722	6160	ADJUST INLET		
		Sta 2128+93 62' Rt	1	EA
722	6200	ADJUST MANHOLE		
		Sta 2129+01 57' Rt	1	EA
770	4540	RELOCATE LIGHT STANDARD		
		Sta 2129+79 85' Lt	1	EA



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

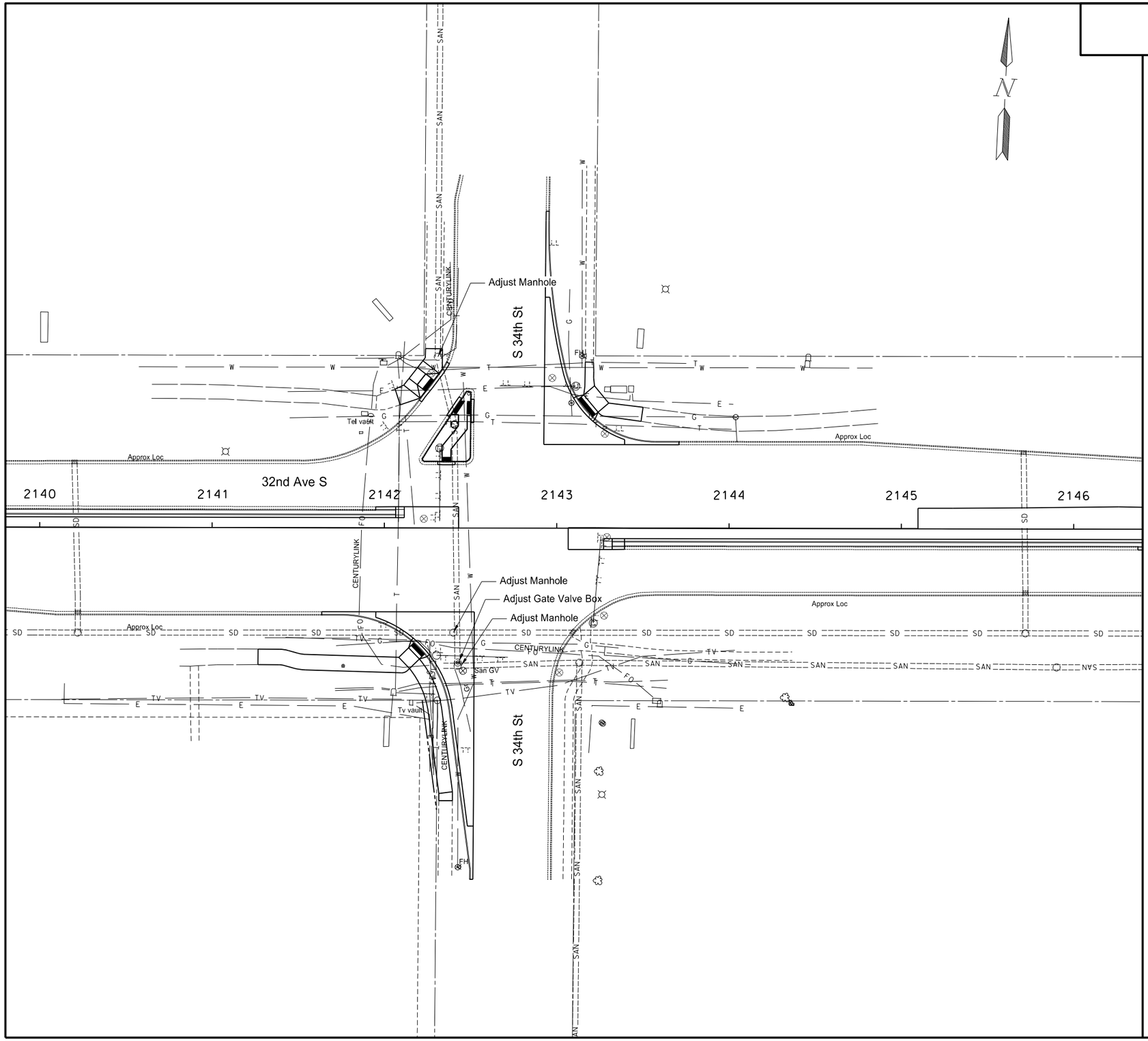
Proposed Utilities

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2128+00 to 2134+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	55	2

SPEC	CODE	BID ITEM	QTY	UNIT
722	6140	ADJUST GATE VALVE BOX		
		Sta 2142+43 78' Rt	1	EA
722	6200	ADJUST MANHOLE		
		Sta 2142+40 61' Rt (Storm Manhole)	1	EA
		Sta 2142+43 80' Rt (Sanitary Manhole)	1	EA
		Sta 2142+31 99' Lt (Sanitary Manhole)	1	EA



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

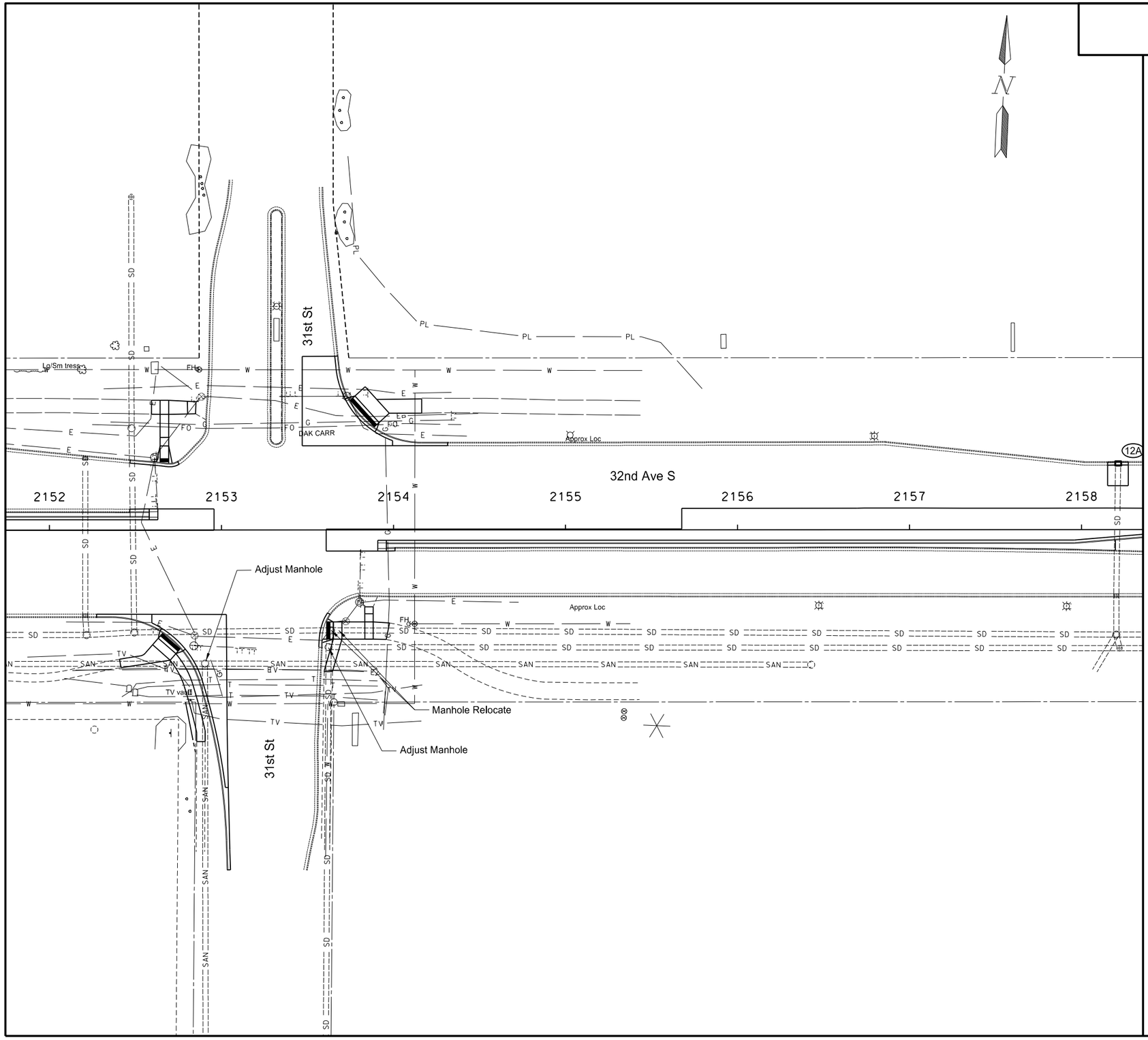
Proposed Utilities

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2140+00 to 2146+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	55	3

SPEC	CODE	BID ITEM	QTY	UNIT
722	3450	MANHOLE RELOCATE		
		Sta 2153+64 58' Rt (Storm Manhole)	1	EA
722	3510	INLET-TYPE 2		
		24B	1	EA
722	6200	ADJUST MANHOLE		
		Sta 2152+90 78' Rt (Sanitary Manhole)	1	EA
		Sta 2153+62 68' Rt (Storm Manhole)	1	EA



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

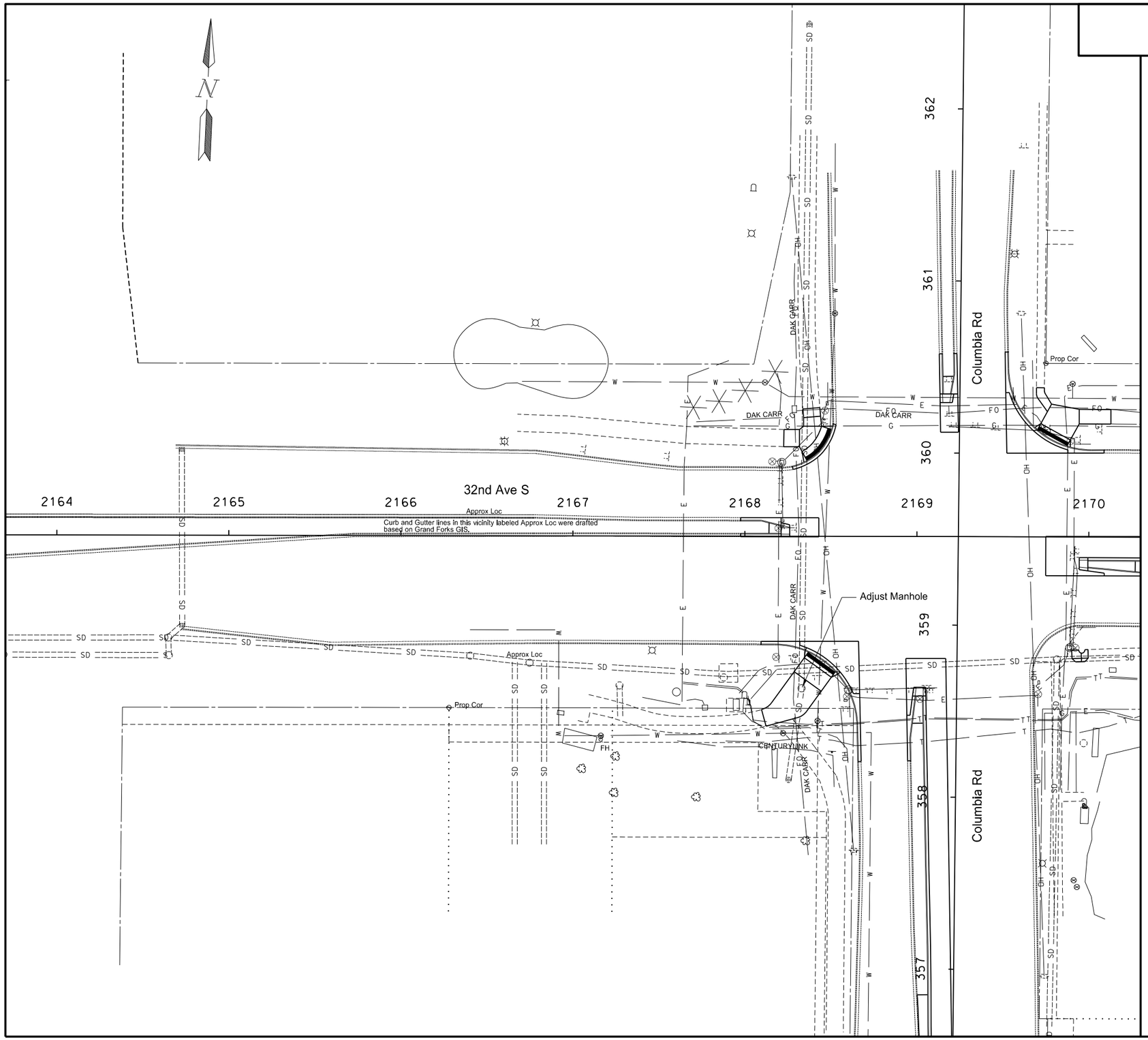
Proposed Utilities

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2152+00 to 2158+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	55	4

SPEC	CODE	BID ITEM	QTY	UNIT
722	6200	ADJUST MANHOLE		
		Sta 2168+33 88' Rt (Storm Manhole)	1	EA



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

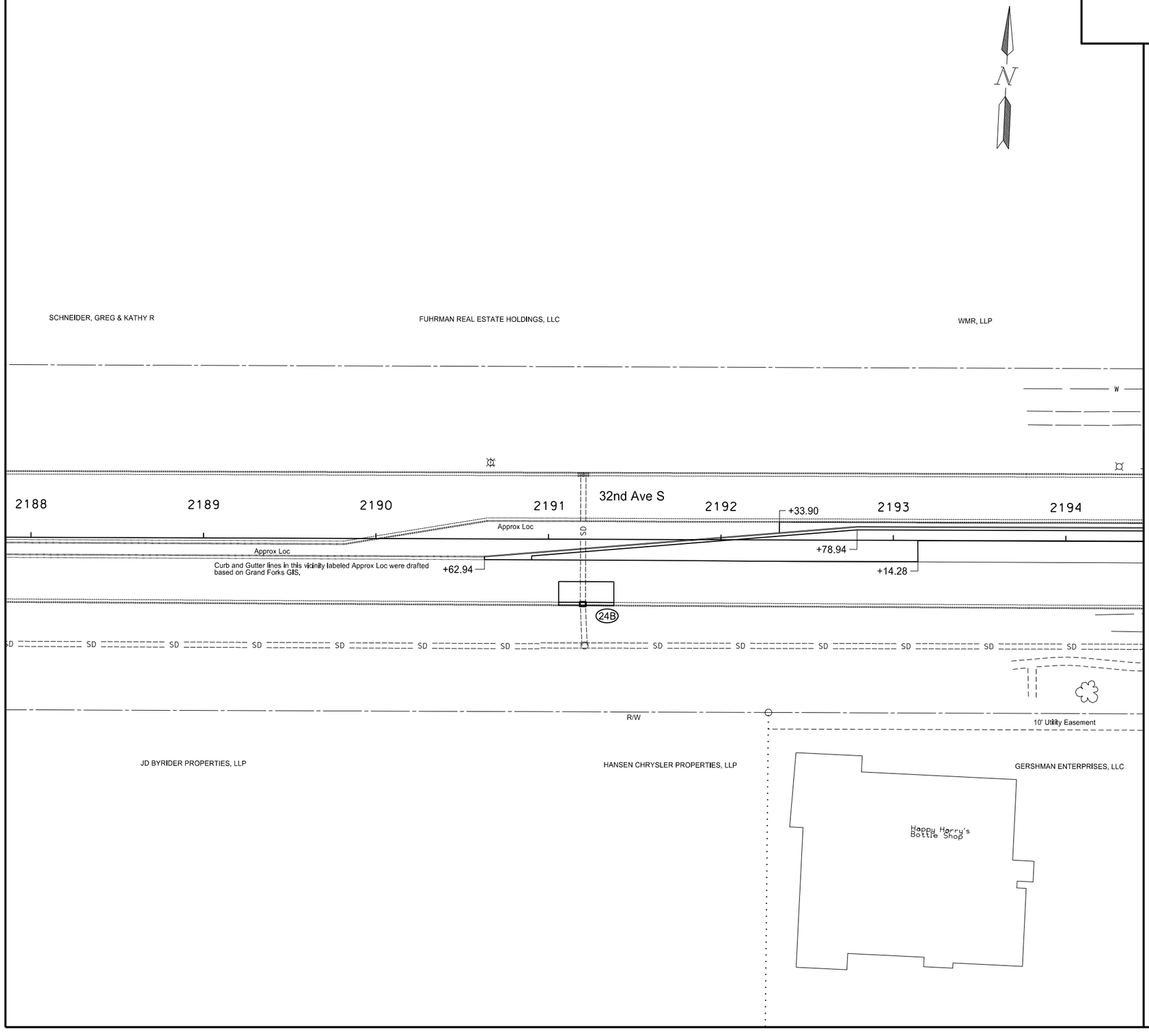
Proposed Utilities

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2164+00 to 2170+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	55	5

SPEC	CODE	BID ITEM	QTY	UNIT
722	3510	INLET-TYPE 2		
		24B	1	EA



Notes:

1. Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/27/20 and the original document is stored at the North Dakota Department of Transportation

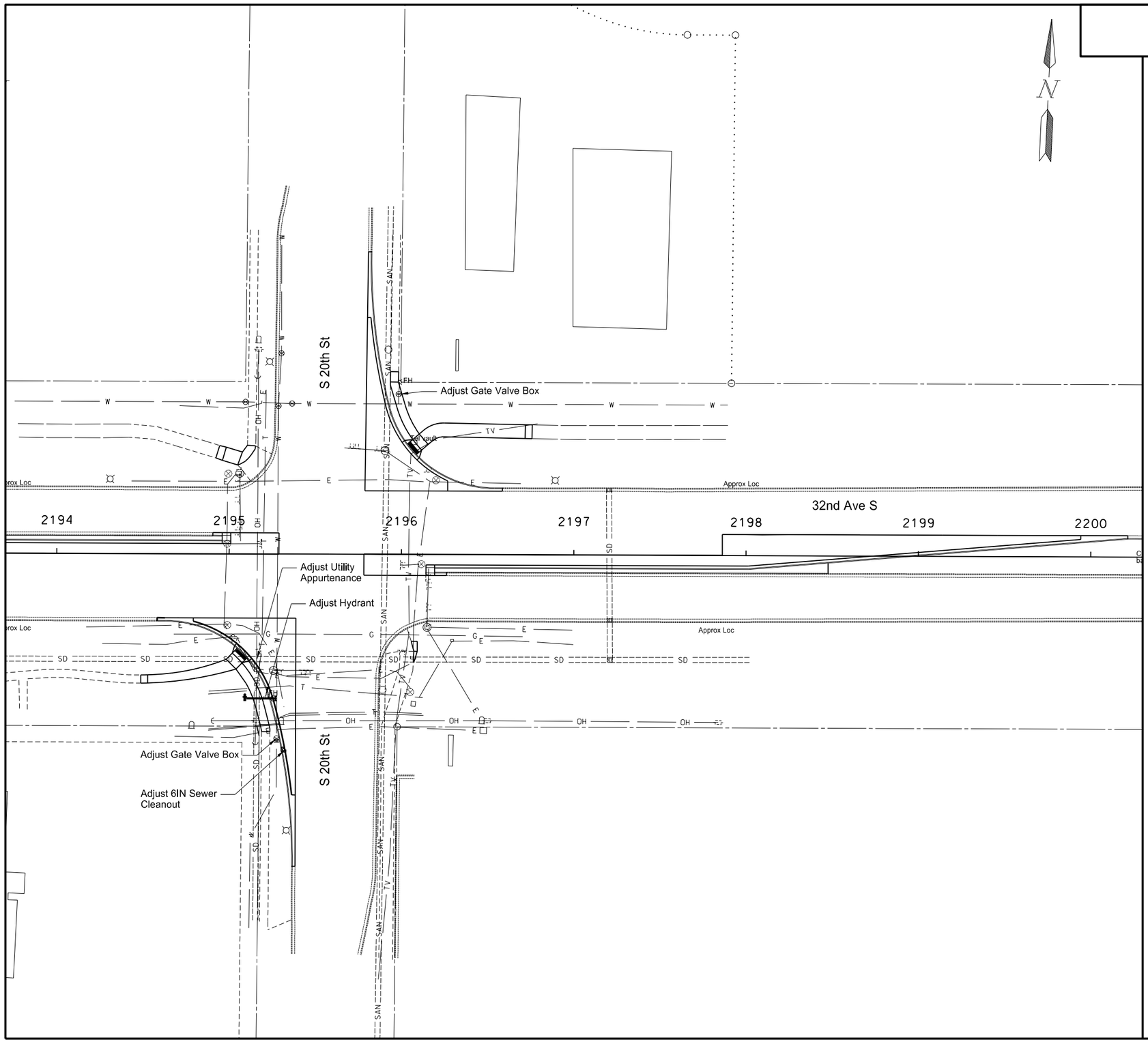
Proposed Utilities

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2188+00 to 2194+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	55	6

SPEC	CODE	BID ITEM	QTY	UNIT
714	9006	ADJUST 6IN SEWER CLEANOUT		
		Sta 2195+32 113' Rt	1	EA
722	6240	ADJUST UTILITY APPURTENANCE		
		Sta 2195+16 61' Rt	1	EA
722	6140	ADJUST GATE VALVE BOX		
		Sta 2195+28 107' Rt	1	EA
		Sta 2195+98 93' Lt	1	EA
724	0427	ADJUST HYDRANT		
		Sta 2195+22 83' Rt	1	EA



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/27/20 and the original document is stored at the North Dakota Department of Transportation

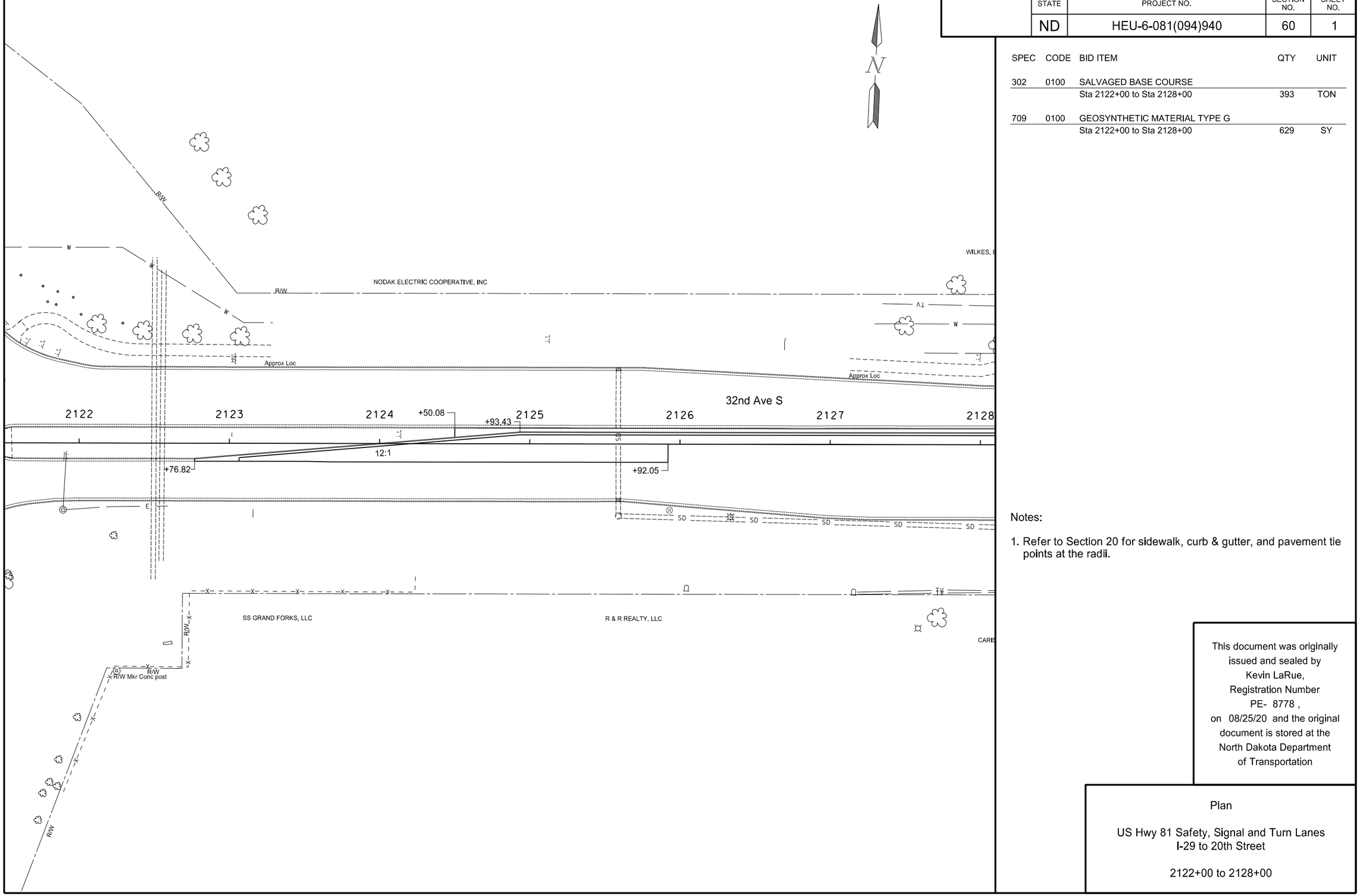
Proposed Utilities

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2194+00 to 2200+25

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	60	1

SPEC	CODE	BID ITEM	QTY	UNIT
302	0100	SALVAGED BASE COURSE		
		Sta 2122+00 to Sta 2128+00	393	TON
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		Sta 2122+00 to Sta 2128+00	629	SY



Notes:

1. Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2122+00 to 2128+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	60	2

SPEC	CODE	BID ITEM	QTY	UNIT
302	0100	SALVAGED BASE COURSE		
		Sta 2128+00 to Sta 2134+00 - Mainline	503	TON
		NE Quad	46	TON
		SW Quad	20	TON
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		Sta 2128+00 to Sta 2134+00 - Mainline	804	SY
		NE Quad	74	SY
		SW Quad	31	SY
714	9720	UNDERDRAIN PIPE PVC PERFORATED 4IN		
		SW Quad	20	LF

Notes:

1. Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

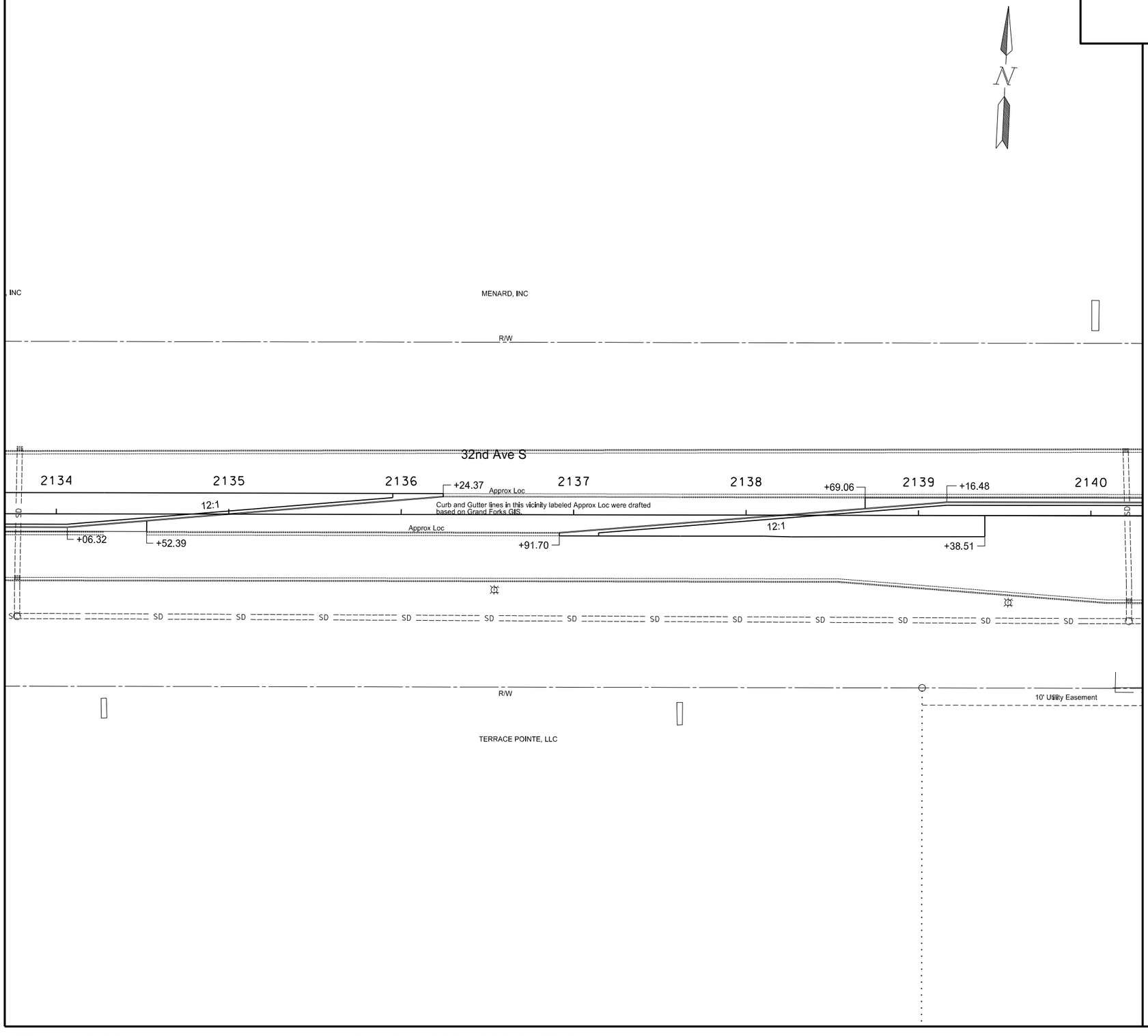
Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2128+00 to 2134+00

8/25/2020 5:03:02 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\060PP_002.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	60	3



SPEC	CODE	BID ITEM	QTY	UNIT
302	0100	SALVAGED BASE COURSE		
		Sta 2134+00 to Sta 2140+00	432	TON
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		Sta 2134+00 to Sta 2140+00	692	SY

Notes:

1. Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2134+00 to 2140+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	60	4

SPEC	CODE	BID ITEM	QTY	UNIT
302	0100	SALVAGED BASE COURSE		
		Sta 2140+00 to Sta 2146+00 - Mainline	415	TON
		NE Quad	103	TON
		SW Quad	152	TON
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		Sta 2140+00 to Sta 2146+00 - Mainline	665	SY
		NE Quad	166	SY
		SW Quad	243	SY

Notes:

1. Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

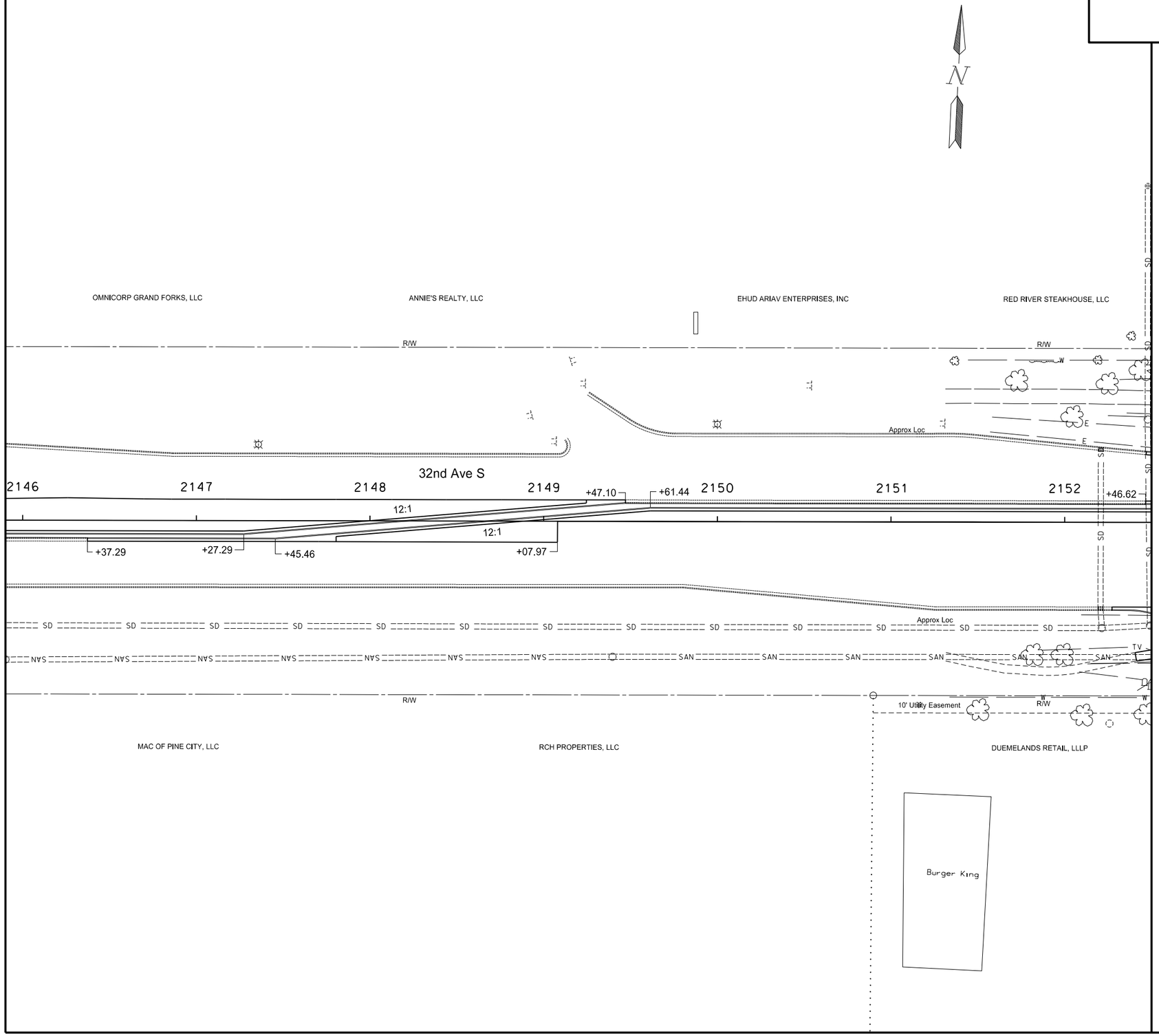
Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2140+00 to 2146+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	60	5

SPEC	CODE	BID ITEM	QTY	UNIT
302	0100	SALVAGED BASE COURSE		
		Sta 2146+00 to Sta 2152+00	625	TON
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		Sta 2146+00 to Sta 2152+00	1000	SY



Notes:

1. Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2146+00 to 2152+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	60	6

SPEC	CODE	BID ITEM	QTY	UNIT
302	0100	SALVAGED BASE COURSE		
		Sta 2152+00 to Sta 2158+00 - Mainline	864	TON
		NE Quad	33	TON
		SW Quad	116	TON
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		Sta 2152+00 to Sta 2158+00 - Mainline	890	SY
		NE Quad	53	SY
		SW Quad	186	SY

Notes:

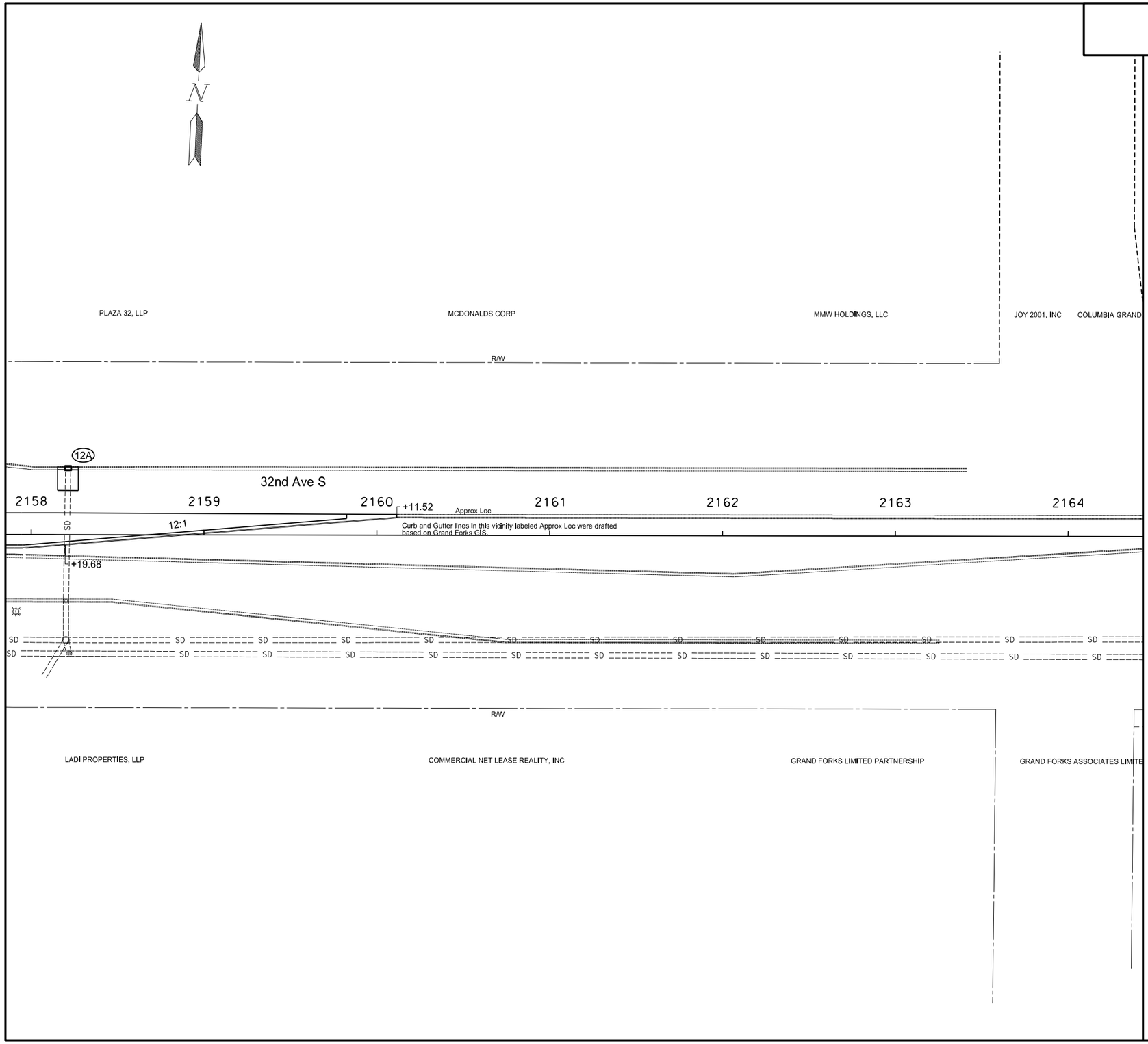
1. Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2152+00 to 2158+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	60	7



SPEC	CODE	BID ITEM	QTY	UNIT
302	0100	SALVAGED BASE COURSE		
		Sta 2158+00 to Sta 2164+00	485	TON
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		Sta 2158+00 to Sta 2164+00	294	SY

Notes:

1. Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2158+00 to 2164+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	60	8

SPEC	CODE	BID ITEM	QTY	UNIT
302	0100	SALVAGED BASE COURSE		
		Sta 2167+00 to Sta 2173+00 - Mainline	979	TON
		NE Quad	104	TON
		SW Quad	107	TON
		Sta 357+00 to Sta 360+57.54 - Columbia Rd	552	TON
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		Sta 2167+00 to Sta 2173+00 - Mainline	626	SY
		NE Quad	67	SY
		SW Quad	69	SY
		Sta 357+00 to Sta 360+57.54 - Columbia Rd	353	SY

Notes:

1. Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.
2. Station callouts along Columbia Road use the <SCLCOLRD> alignment.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Plan

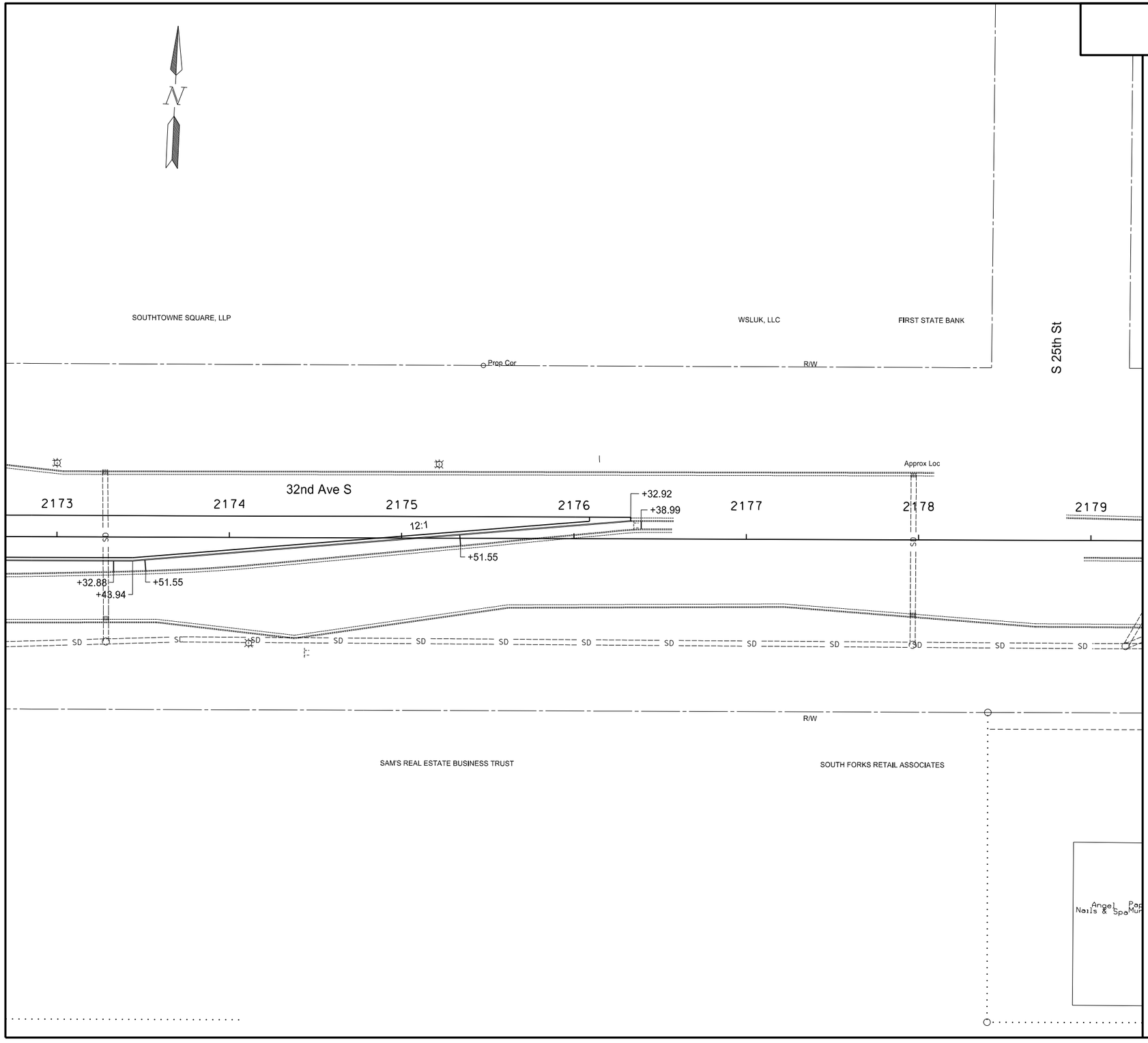
US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2167+00 to 2173+00

8/25/2020 5:04:07 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\060PP_008.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	60	9

SPEC	CODE	BID ITEM	QTY	UNIT
302	0100	SALVAGED BASE COURSE		
		Sta 2173+00 to Sta 2179+00	783	TON
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		Sta 2173+00 to Sta 2179+00	501	SY



Notes:

1. Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

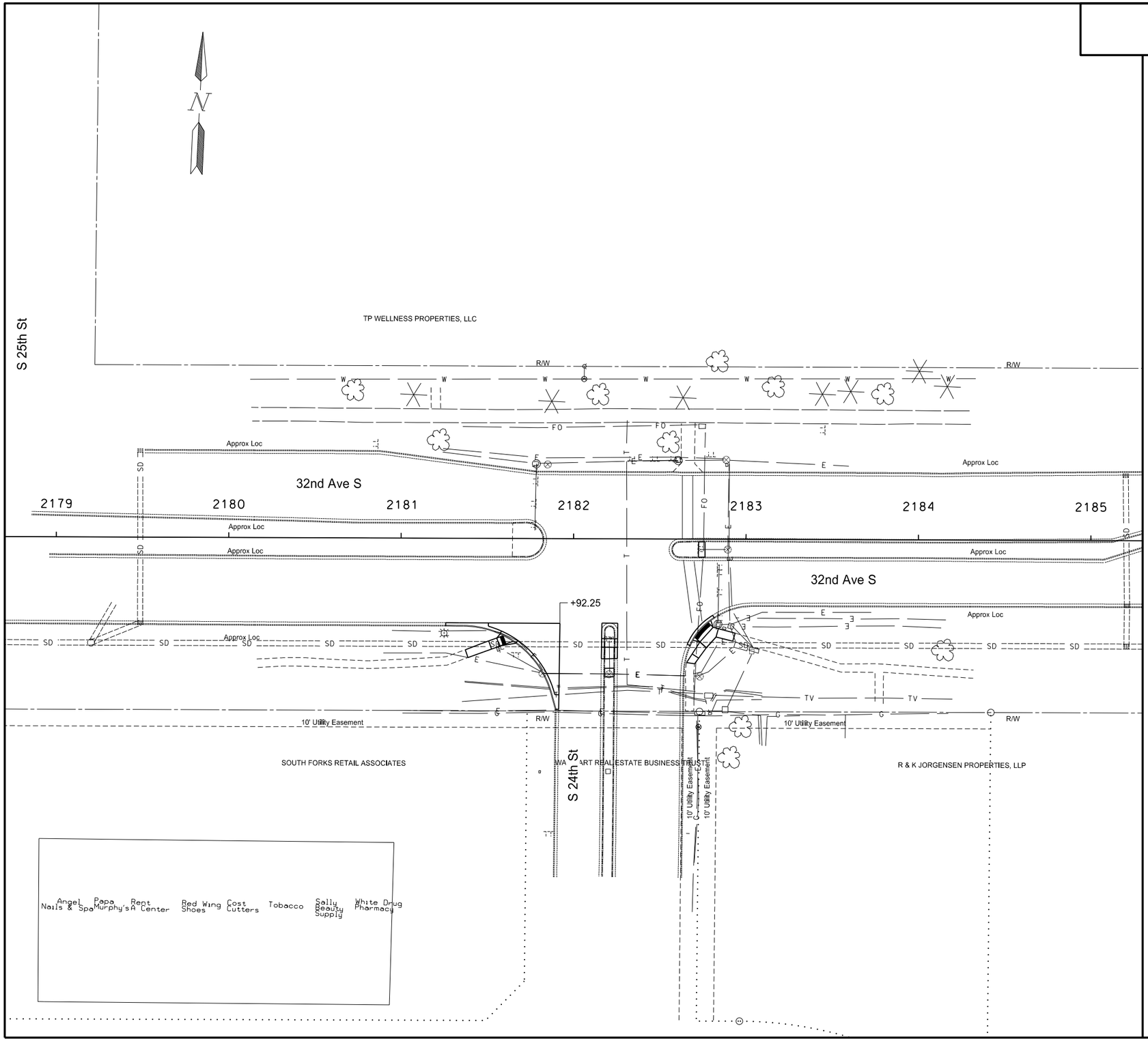
Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2173+00 to 2179+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	60	10

SPEC	CODE	BID ITEM	QTY	UNIT
302	0100	SALVAGED BASE COURSE		
		SW Quad	103	TON
		South Median	31	TON
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		SW Quad	66	SY
		South Median	20	SY



Notes:

1. Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Plan

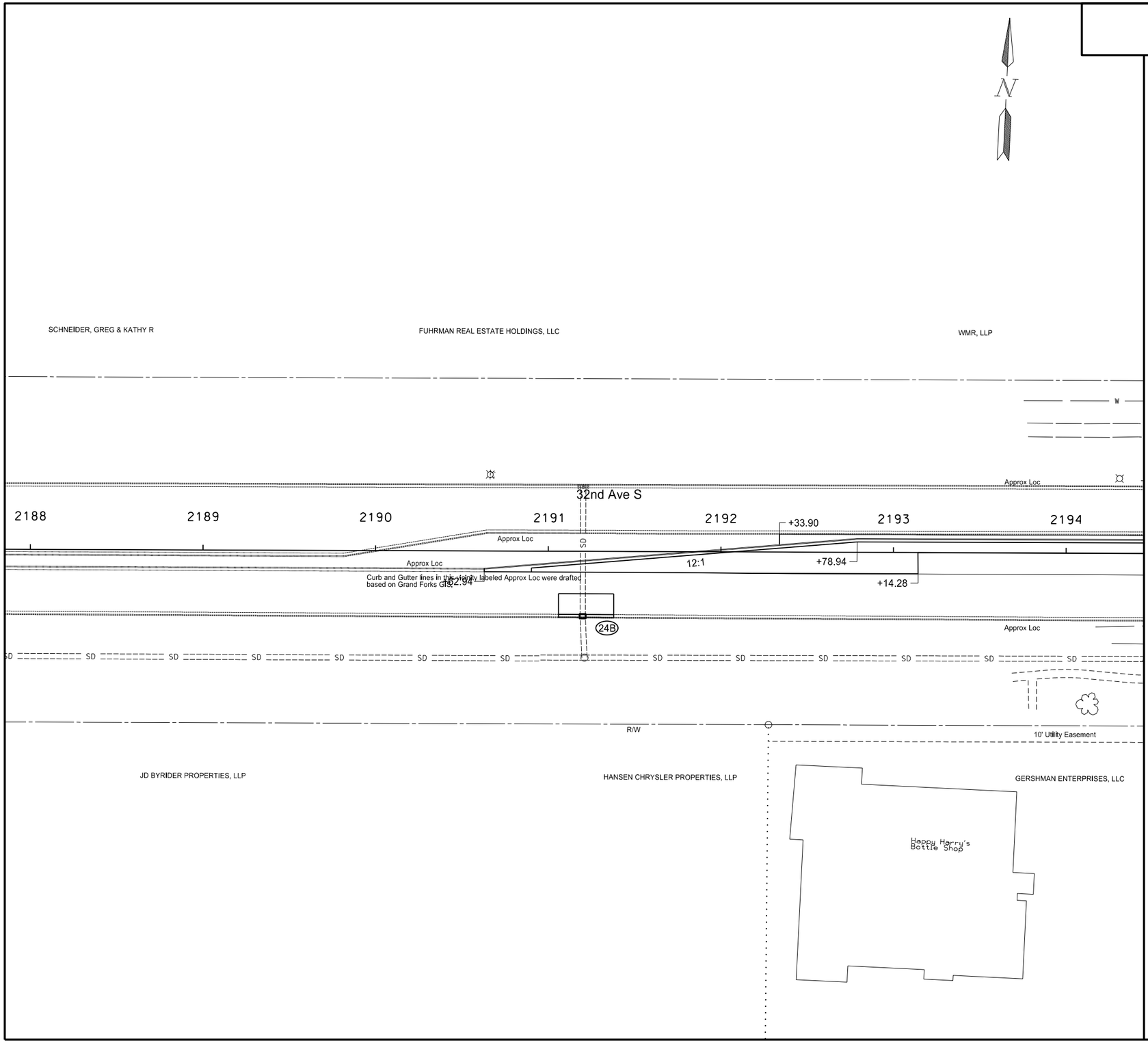
US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2179+00 to 2185+00

8/25/2020 5:04:26 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\060PP_010.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	60	11

SPEC	CODE	BID ITEM	QTY	UNIT
302	0100	SALVAGED BASE COURSE		
		Sta 2188+00 to Sta 2194+00	280	TON
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		Sta 2188+00 to Sta 2194+00	406	SY



Notes:

1. Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2188+00 to 2194+00

8/25/2020 5:04:36 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\060PP_011.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	60	12

SPEC	CODE	BID ITEM	QTY	UNIT
302	0100	SALVAGED BASE COURSE		
		Sta 2194+00 to Sta 2200+25 - Mainline	405	TON
		NE Quad	142	TON
		SW Quad	143	TON
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		Sta 2194+00 to Sta 2200+25 - Mainline	648	SY
		NE Quad	227	SY
		SW Quad	228	SY

Notes:

1. Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Plan

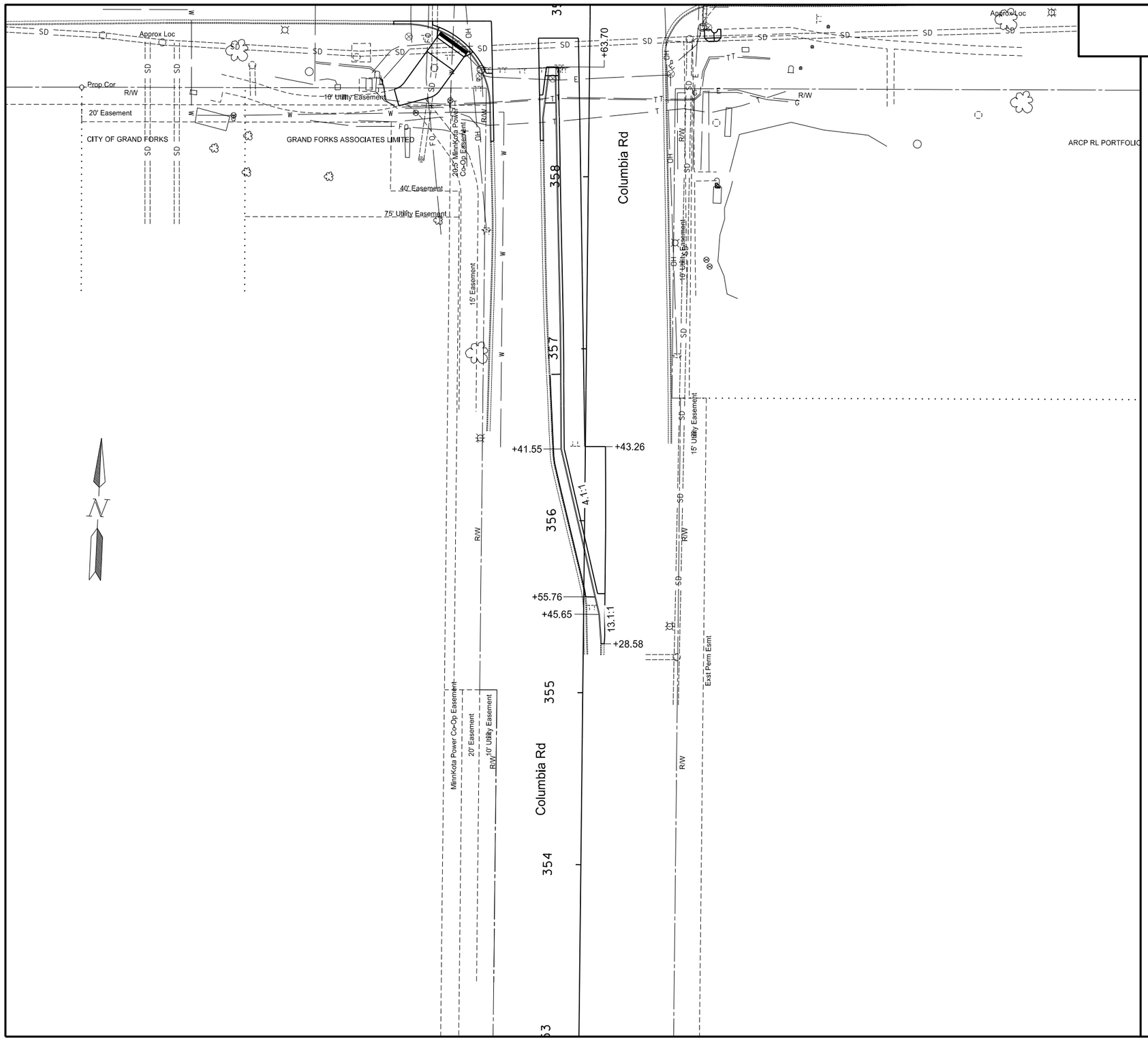
US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2194+00 to 2200+25

8/25/2020 5:04:46 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\060PP_012.dgn

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	60	13

SPEC	CODE	BID ITEM	QTY	UNIT
302	0100	SALVAGED BASE COURSE		
		Sta 355+28.58 to Sta 357+00	396	TON
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		Sta 355+28.58 to Sta 357+00	254	SY



Notes:

1. Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.
2. Station callouts along Columbia Road use the <SCLCOLRD> alignment.

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

351+00 to 357+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	75	1

Wetland Impact Table

Wetland Number	Location	Wetland Feature	USACE Jurisdictional Wetlands[1]	Wetland Impacts Acre(s)		USFWS Easement Impacts Acre(s)		Wetland Mitigation											
								Mitigation Required			USACE/11990 Bank		11990 Bank		USFWS Bank		Onsite			
				Temp.	Perm.	Temp.	Perm.	EO 11990	USACE	USFWS	Location	Acre(s)	Location	Acre(s)	Location	Acre(s)	Mitigation Location; Ratio	Acre(s)	Constructed Site #	Constructed Size Acre(s)
1	Sec.18, T151N, R50W	Artificial	Yes	0	0	0	0	N	N	N		0		0		0		0		0
2	Sec. 20, T151N, R50W	Artificial	Yes	0	0	0	0	N	N	N		0		0		0		0		
				0	**0**	**0**	**0**					**0**		**0**		**0**		**0**		0

[1] A wetland Jurisdictional Determination was issued by the USACE on 3/07/2019; NWO-2019-00252-BIS.

[2] 11990 Mitigation requirements - All impacts to natural wetlands (natural/jurisdictional and natural/non-jurisdictional), regardless of size, as well as impacts greater than 0.10 acre to wetlands require mitigation.
USACE Mitigation Requirements – All jurisdictional impacts greater than 0.10 acre to each resource (cumulative. eg 1a ,1b,1c..etc.) requires mitigation. Other Water impact greater than 300 linear feet requires mitigation.

Impact Summary Table

Permanent Impact Summary		Temporary Impacts and additional information	
Wetland Type	**Total (Acres)**	**Wetland Type**	**Total (Acres/Lf)**
Natural/JD	0.00	**Temporary JD**	0.00
Natural/Non-JD	0.00	**Non-JD Temporary**	0.00
Artificial/JD	0.00	**Permanent JD > 0.10**	0.00
Artificial /Non-JD	0.00	**Permanent OW**	0.00
Total	**0.00**	**Temporary OW**	0.00

This document was originally issued and sealed by Kevin LaRue, Registration Number PE-8778, on 8/25/20 and the original document is stored at the North Dakota Department of Transportation.

Wetlands Mitigation and Environmental

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Wetland Impact and Mitigation Table

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	76	1

SPEC	CODE	BID ITEM	QTY	UNIT
261	0200	WEIGHTED FIBER ROLLS		
		Sta 2128+00 to Sta 2134+00	15	LF
261	0201	REMOVE WEIGHTED FIBER ROLLS		
		Sta 2128+00 to Sta 2134+00	15	LF
708	1540	INLET-PROTECTION SPECIAL		
		Sta 2122+00 to Sta 2128+00	1	EA
		Sta 2128+00 to Sta 2134+00	2	EA
708	1541	REMOVE INLET-PROTECTION SPECIAL		
		Sta 2122+00 to Sta 2128+00	1	EA
		Sta 2128+00 to Sta 2134+00	2	EA

Sec 17
T-151-N
R-50-W

Exst R/W

Approx Loc

32nd Ave S

2122 2123 2124 2125 2126 2127 2128

Sec 20
T-151-N
R-50-W

Exst R/W

S 38th St

Exst R/W

Sec 17
T-151-N
R-50-W

Approx Loc

32nd Ave S

2128 2129 2130 2131 2132 2133 2134

Approx Loc

Exst R/W

S 38th St

Sec 20
T-151-N
R-50-W

Legend

Weighted Fiber Roll

Inlet Protection

Flow Direction

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

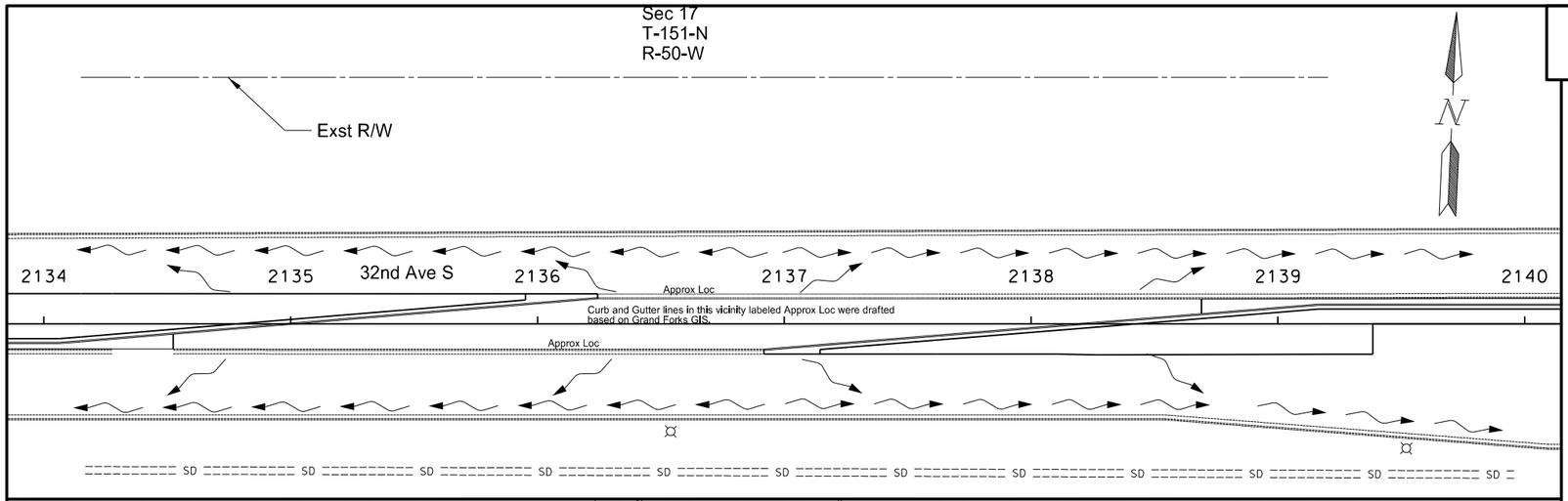
Temporary Sediment and Erosion Control

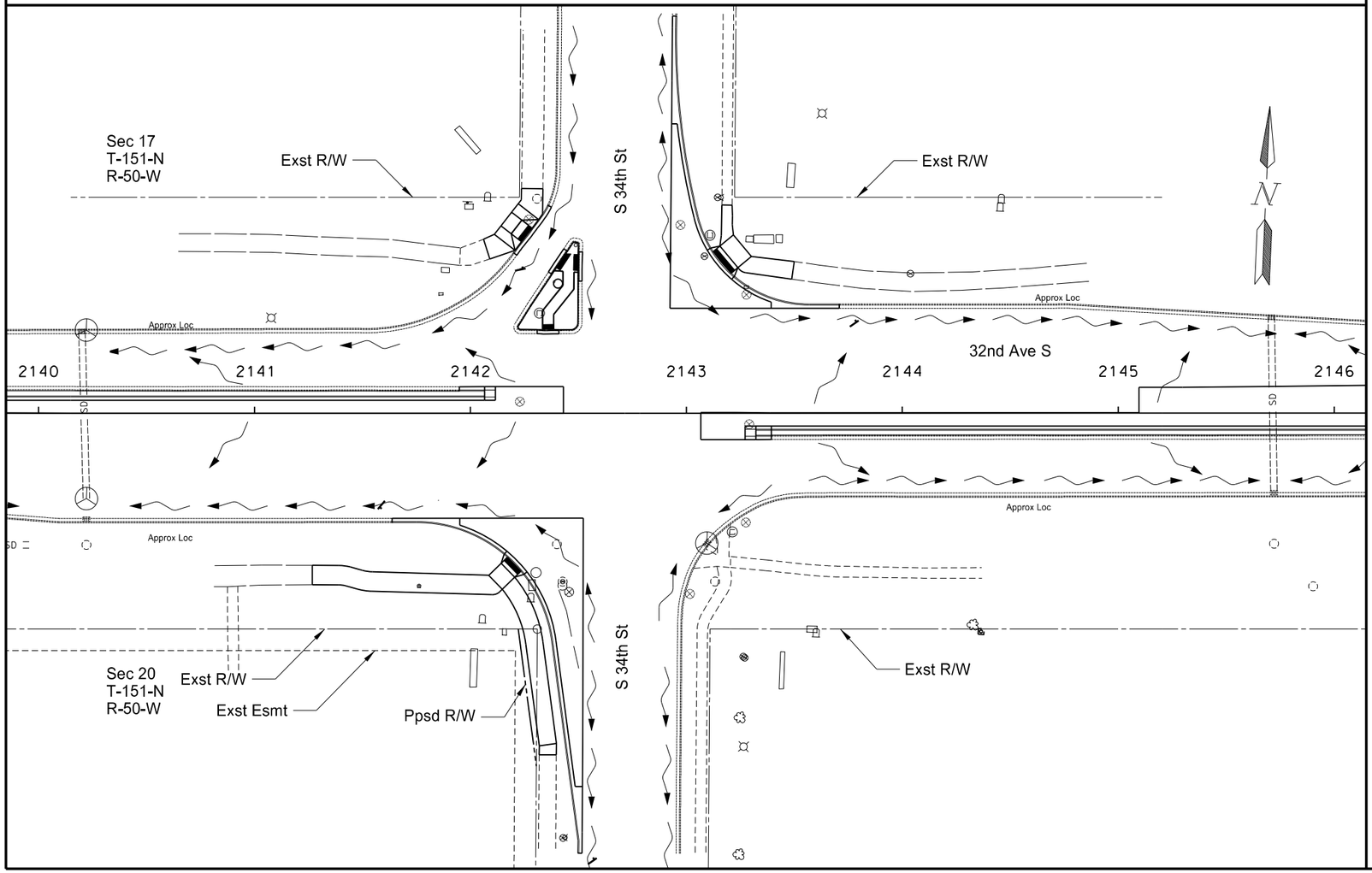
US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2122+00 to 2128+00
2128+00 to 2134+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	76	2

SPEC	CODE	BID ITEM	QTY	UNIT
261	0200	WEIGHTED FIBER ROLLS		
		Sta 2140+00 to Sta 2146+00	20	LF
261	0201	REMOVE WEIGHTED FIBER ROLLS		
		Sta 2140+00 to Sta 2146+00	20	LF
708	1540	INLET-PROTECTION SPECIAL		
		Sta 2140+00 to Sta 2146+00	3	EA
708	1541	REMOVE INLET-PROTECTION SPECIAL		
		Sta 2140+00 to Sta 2146+00	3	EA





Legend

- Weighted Fiber Roll
- Inlet Protection
- Flow Direction

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

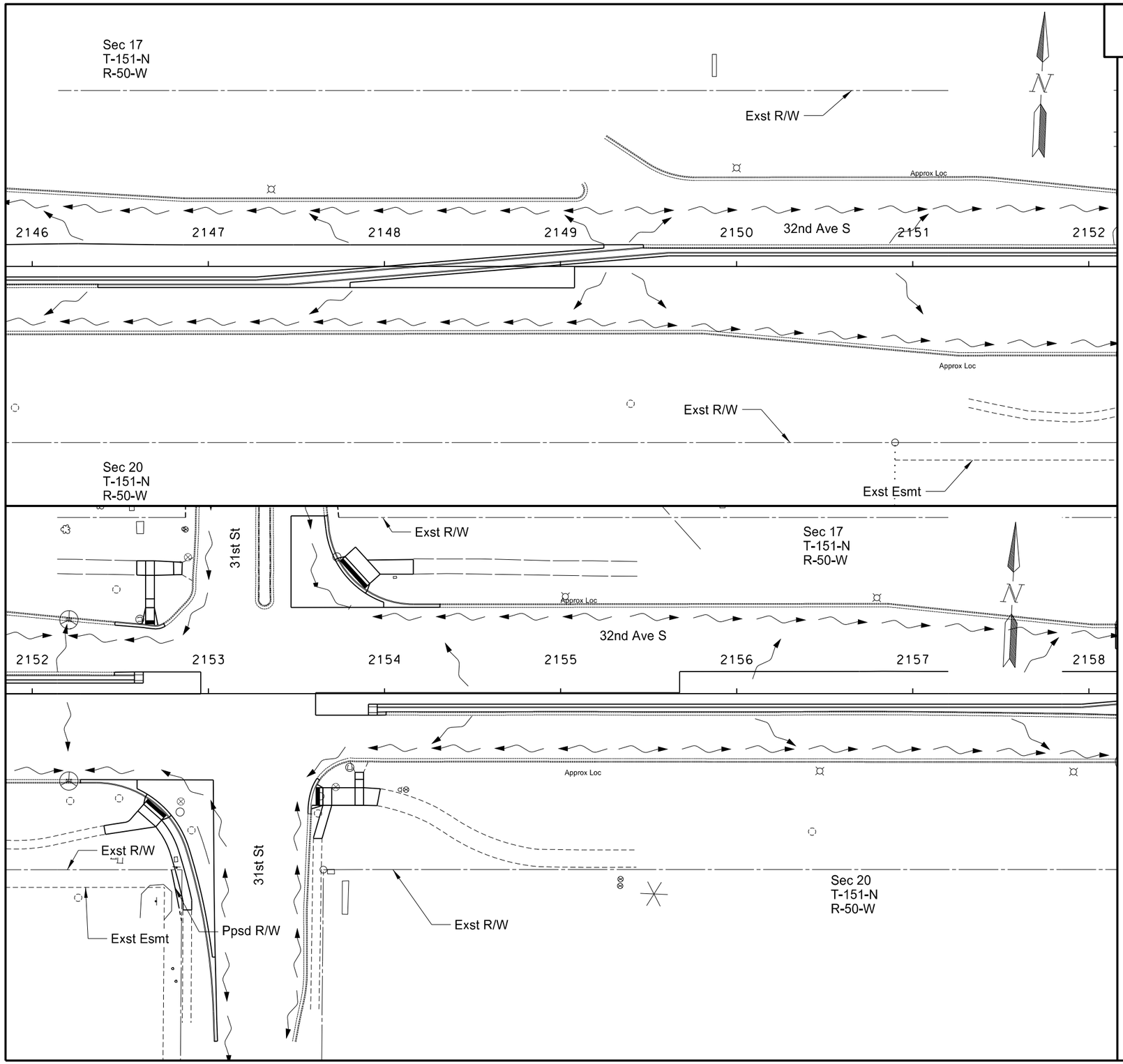
Temporary Sediment and Erosion Control

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2134+00 to 2140+00
2140+00 to 2146+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	76	3

SPEC	CODE	BID ITEM	QTY	UNIT
708	1540	INLET-PROTECTION SPECIAL Sta 2152+00 to Sta 2158+00	2	EA
708	1541	REMOVE INLET-PROTECTION SPECIAL Sta 2152+00 to Sta 2158+00	2	EA



Legend

- Weighted Fiber Roll
- Inlet Protection
- Flow Direction

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

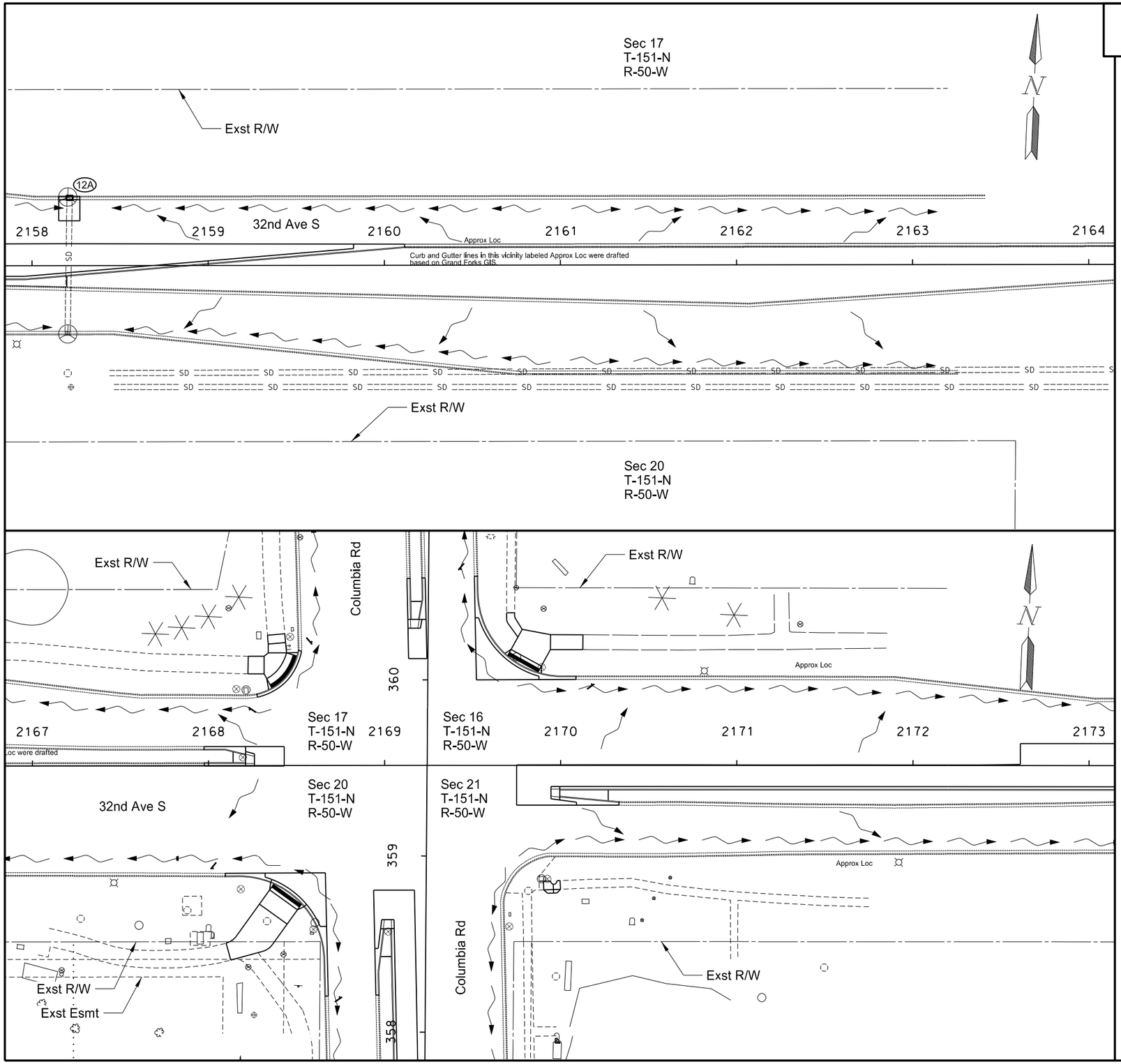
Temporary Sediment and Erosion Control

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2146+00 to 2152+00
2152+00 to 2158+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	76	4

SPEC	CODE	BID ITEM	QTY	UNIT
261	0200	WEIGHTED FIBER ROLLS		
		Sta 2164+00 to Sta 2173+00	30	LF
261	0201	REMOVE WEIGHTED FIBER ROLLS		
		Sta 2164+00 to Sta 2173+00	30	LF
708	1540	INLET-PROTECTION SPECIAL		
		Sta 2158+00 to Sta 2164+00	2	EA
708	1541	REMOVE INLET-PROTECTION SPECIAL		
		Sta 2158+00 to Sta 2164+00	2	EA



Legend

- Weighted Fiber Roll
- Inlet Protection
- Flow Direction

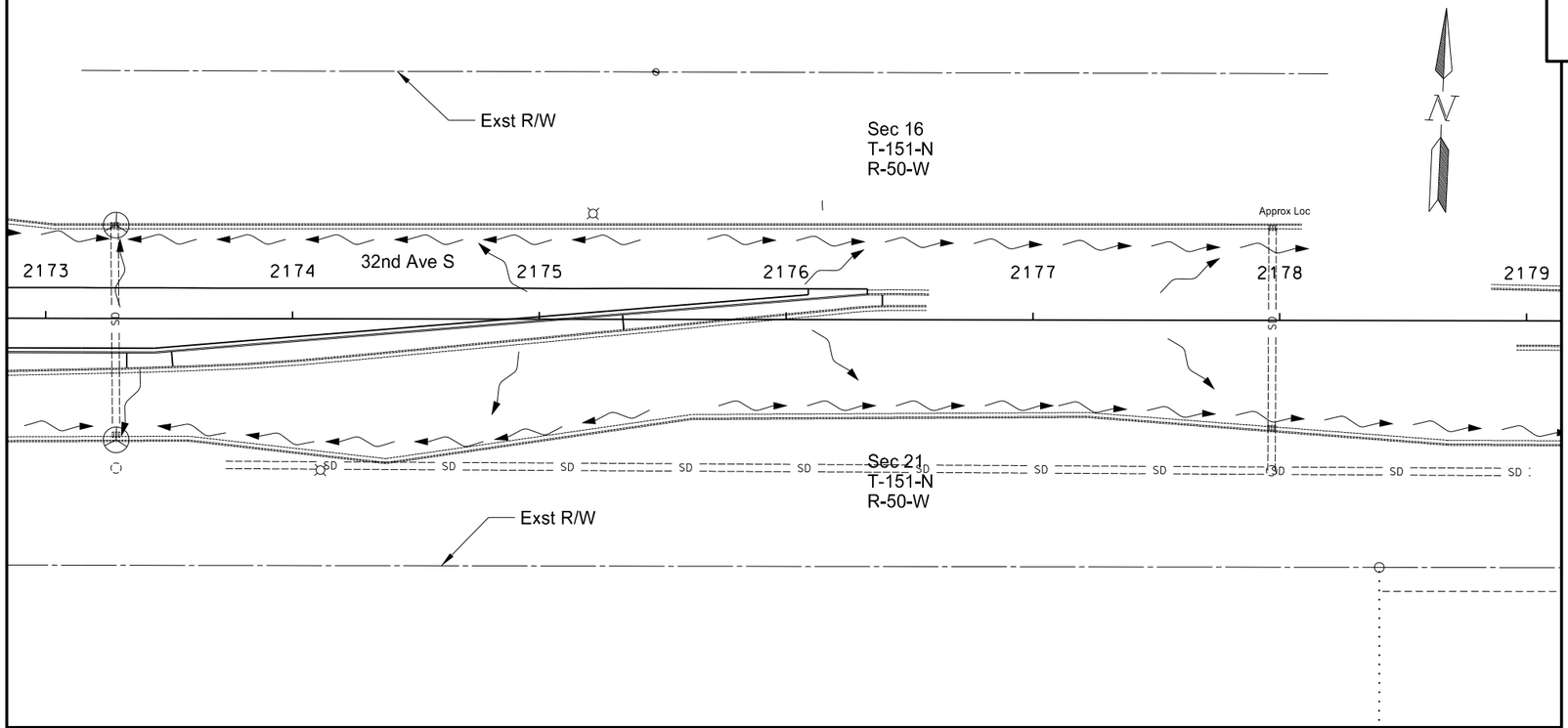
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

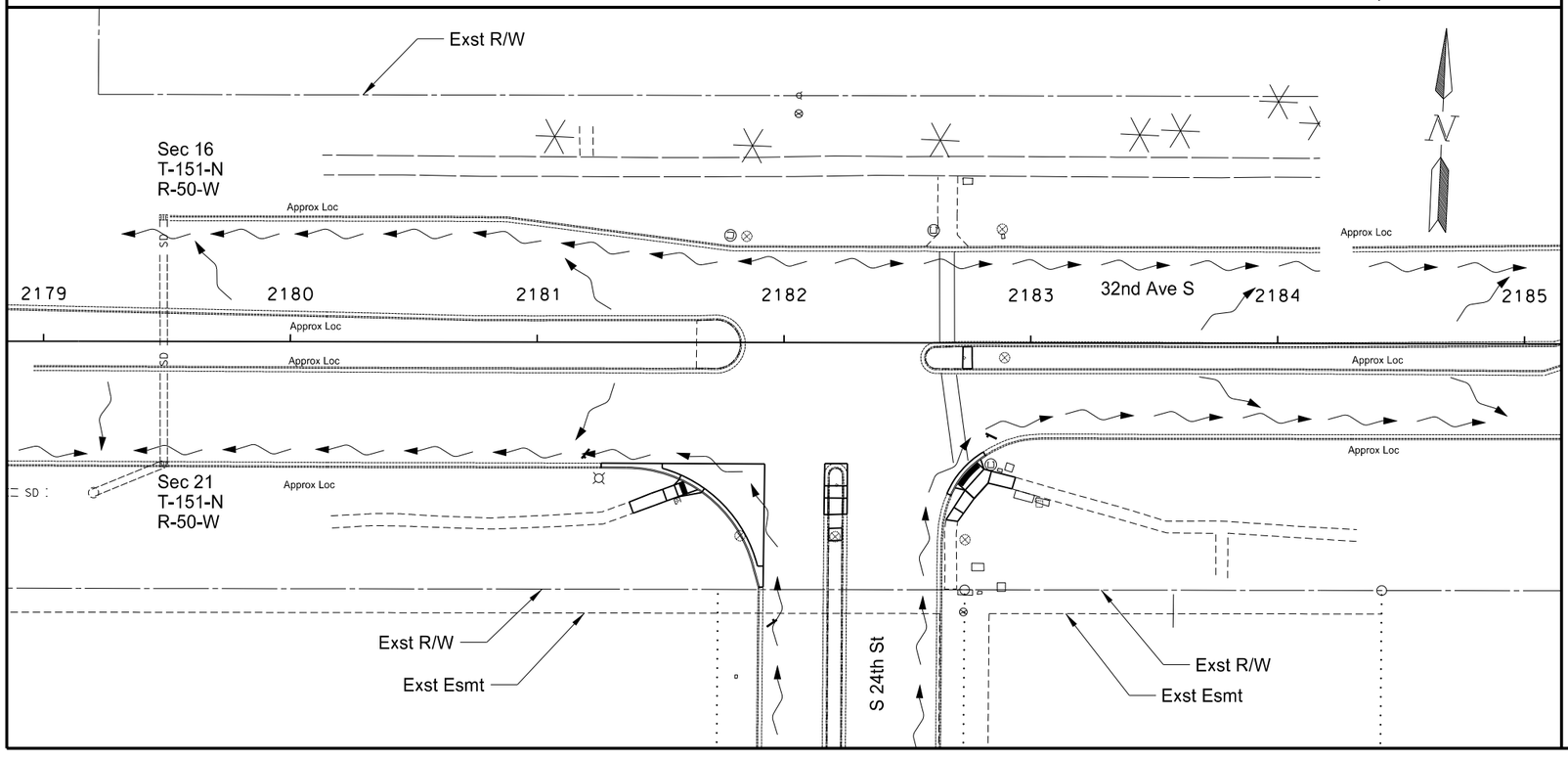
Temporary Sediment and Erosion Control

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2158+00 to 2164+00
2167+00 to 2173+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	76	5





SPEC	CODE	BID ITEM	QTY	UNIT
261	0200	WEIGHTED FIBER ROLLS		
		Sta 2179+00 to Sta 2185+00	15	LF
261	0201	REMOVE WEIGHTED FIBER ROLLS		
		Sta 2179+00 to Sta 2185+00	15	LF
708	1540	INLET-PROTECTION SPECIAL		
		Sta 2173+00 to Sta 2179+00	2	EA
708	1541	REMOVE INLET-PROTECTION SPECIAL		
		Sta 2173+00 to Sta 2179+00	2	EA

Legend

Weighted Fiber Roll

Inlet Protection

Flow Direction

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Temporary Sediment and Erosion Control

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2173+00 to 2179+00
2179+00 to 2185+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	76	6

SPEC	CODE	BID ITEM	QTY	UNIT
261	0200	WEIGHTED FIBER ROLLS		
		Sta 2190+00 to Sta 2196+00	10	LF
		Sta 2196+00 to Sta 2202+00	5	LF
261	0201	REMOVE WEIGHTED FIBER ROLLS		
		Sta 2190+00 to Sta 2196+00	10	LF
		Sta 2196+00 to Sta 2202+00	5	LF
708	1540	INLET-PROTECTION SPECIAL		
		Sta 2190+00 to Sta 2196+00	2	EA
		Sta 2196+00 to Sta 2202+00	2	EA
708	1541	REMOVE INLET-PROTECTION SPECIAL		
		Sta 2190+00 to Sta 2196+00	2	EA
		Sta 2196+00 to Sta 2202+00	2	EA

Legend

Weighted Fiber Roll

Inlet Protection

Flow Direction

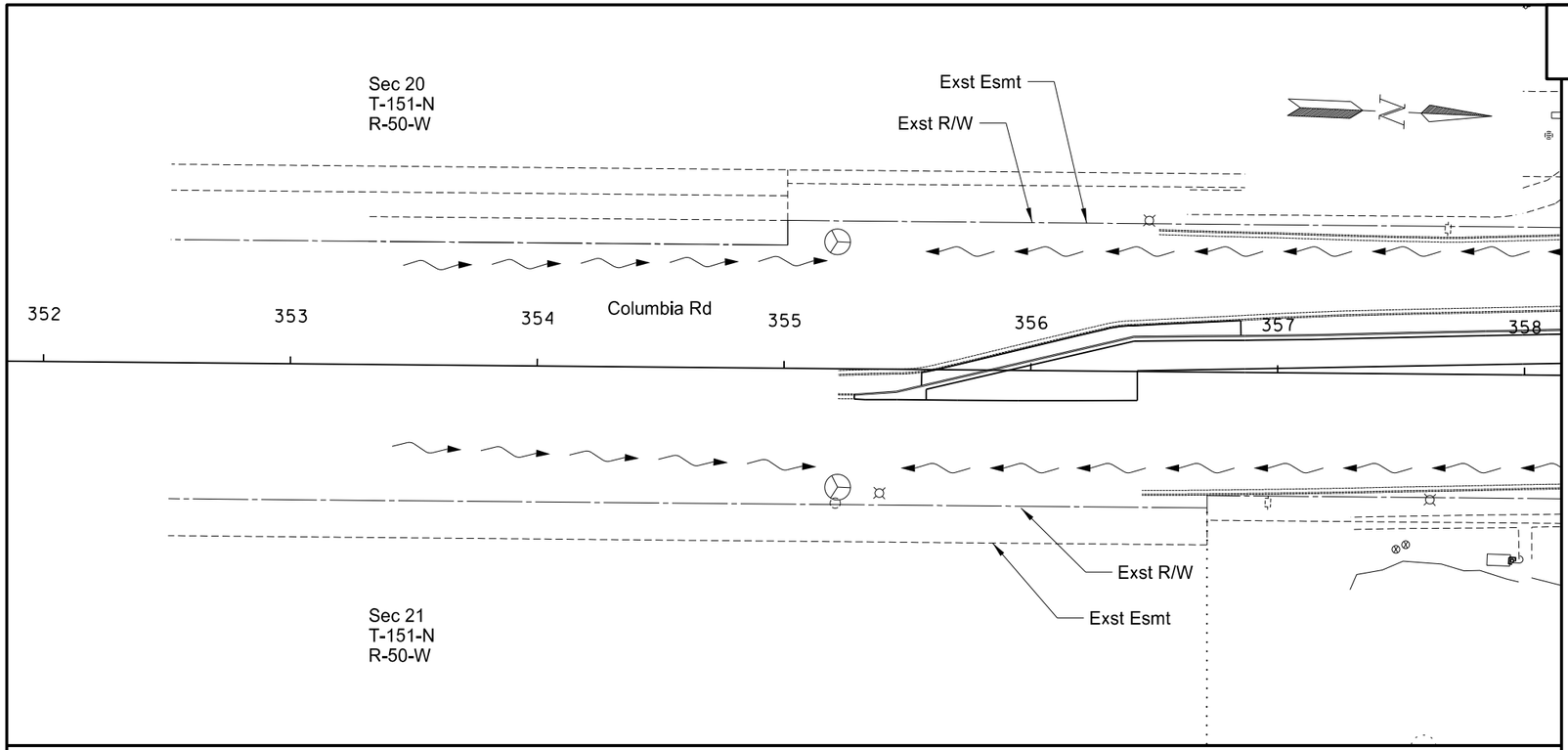
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Temporary Sediment and Erosion Control

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2190+00 to 2196+00
2196+00 to 2202+00

8/25/2020 5:06:27 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\076TE_006.dgn



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	76	7

SPEC	CODE	BID ITEM	QTY	UNIT
708	1540	INLET-PROTECTION SPECIAL		
		Sta 352+00 to Sta 358+00	2	EA
708	1541	REMOVE INLET-PROTECTION SPECIAL		
		Sta 352+00 to Sta 358+00	2	EA

Legend

Weighted Fiber Roll

Inlet Protection

Flow Direction

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Temporary Sediment and Erosion Control

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

352+00 to 358+00

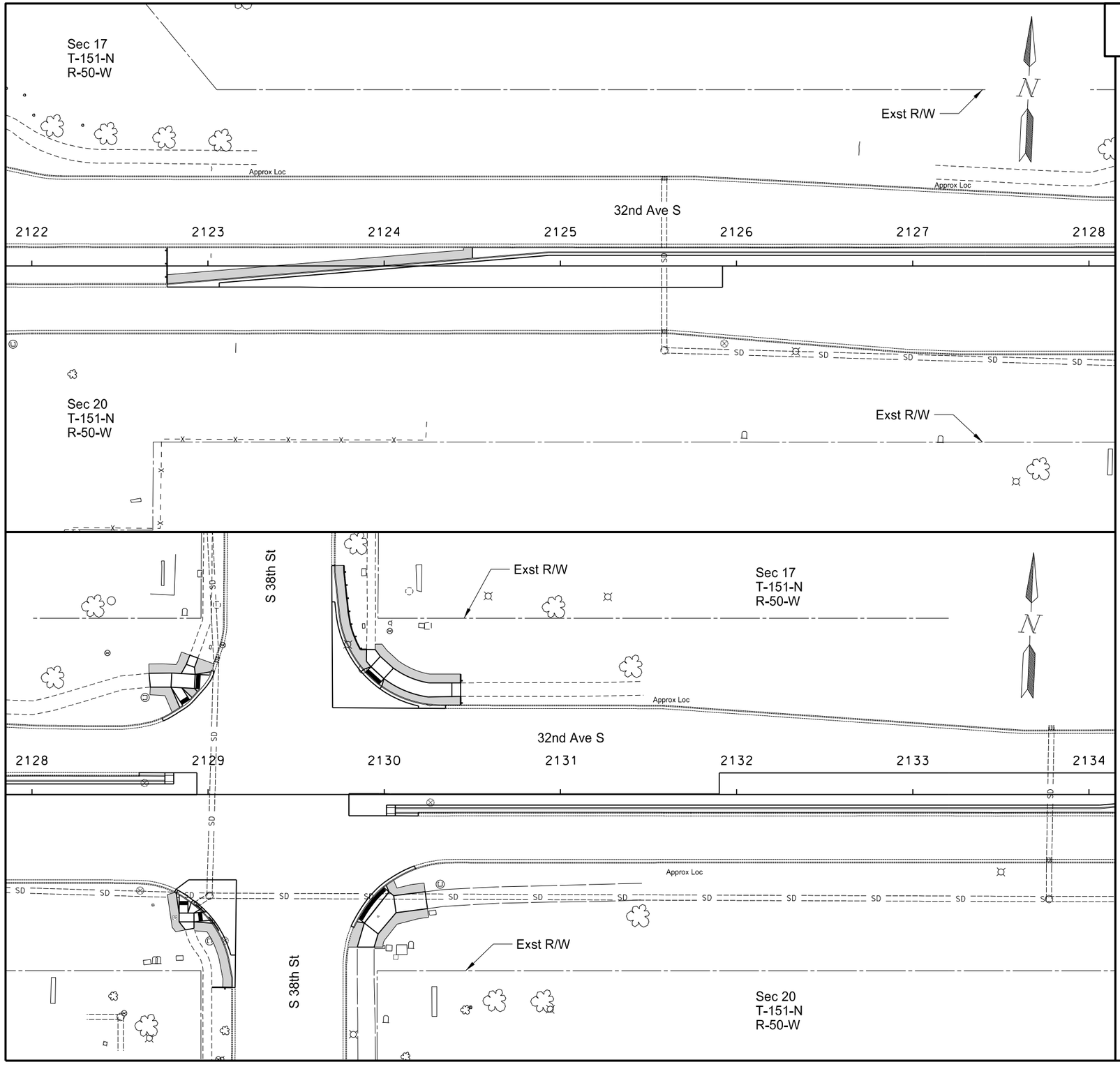
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	77	1

SPEC	CODE	BID ITEM	QTY	UNIT
261	0112	FIBER ROLLS 12IN		
		Sta 2122+00 to Sta 2128+00	21	LF
		Sta 2128+00 to Sta 2134+00	74	LF
261	0113	REMOVE FIBER ROLLS 12IN		
		Sta 2122+00 to Sta 2128+00	21	LF
		Sta 2128+00 to Sta 2134+00	74	LF
970	0008	LANDSCAPE PREPARATION		
		Sta 2122+00 to Sta 2128+00	97	SY
		Sta 2128+00 to Sta 2134+00	201	SY

Legend

Fiber Rolls 12IN

Landscape Preparation

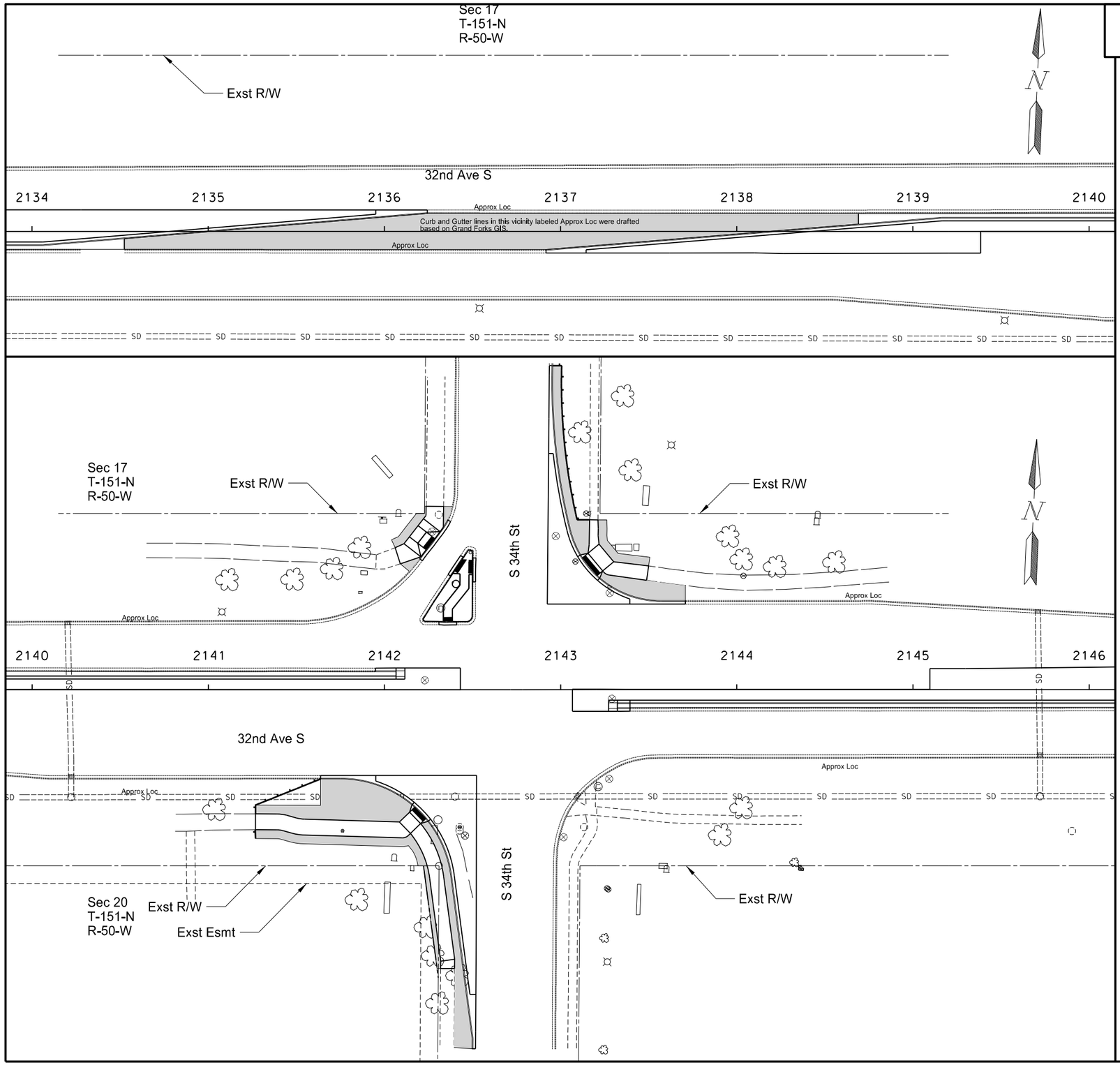


This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Permanent Sediment and Erosion Control

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2122+00 to 2128+00
2128+00 to 2134+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	77	2

SPEC	CODE	BID ITEM	QTY	UNIT
261	0112	FIBER ROLLS 12IN		
		Sta 2140+00 to Sta 2146+00	150	LF
261	0113	REMOVE FIBER ROLLS 12IN		
		Sta 2140+00 to Sta 2146+00	150	LF
970	0008	LANDSCAPE PREPARATION		
		Sta 2134+00 to Sta 2140+00	664	SY
		Sta 2140+00 to Sta 2146+00	454	SY

Legend

Fiber Rolls 12IN

Landscape Preparation

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

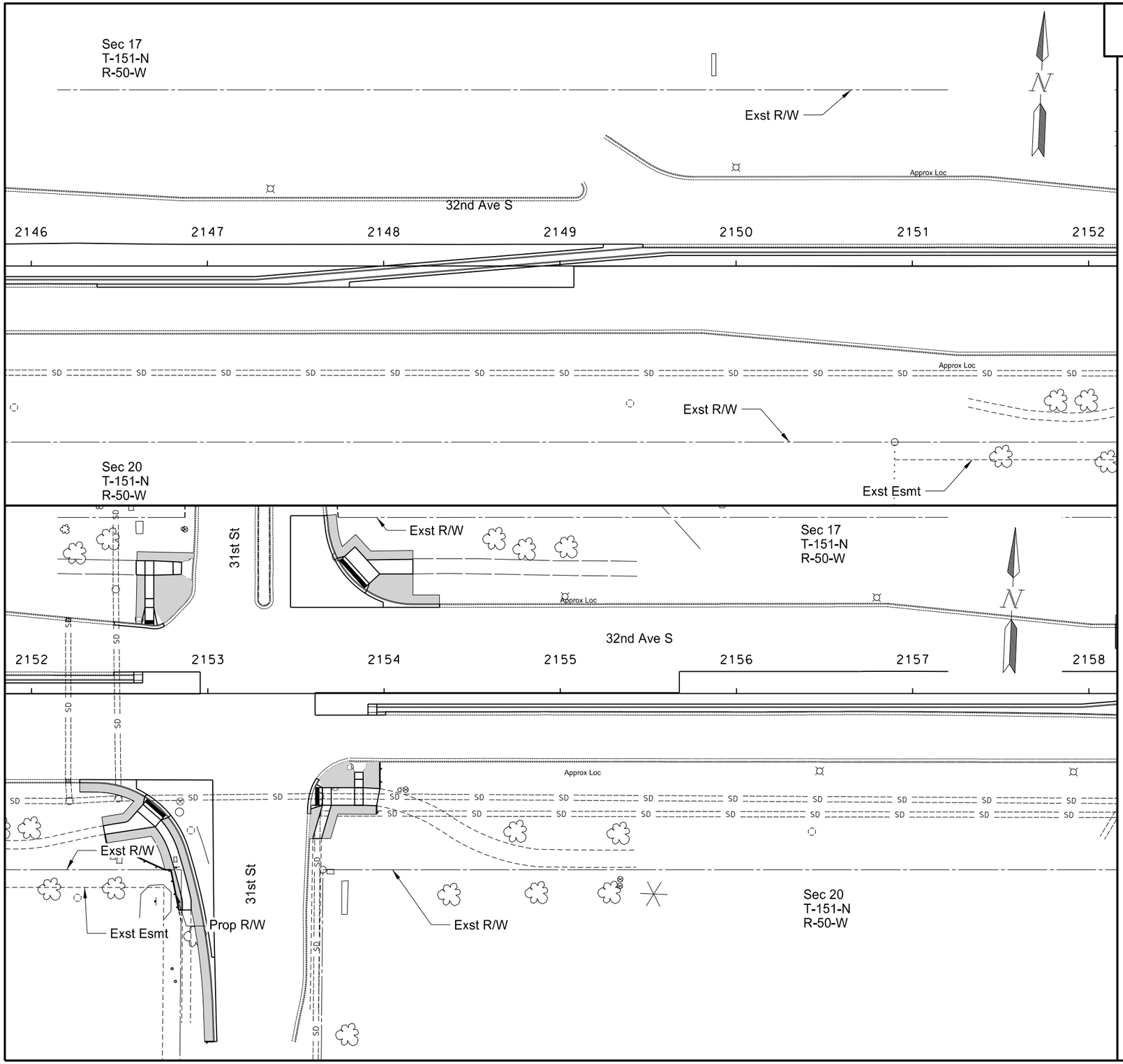
Permanent Sediment and Erosion Control

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2134+00 to 2140+00
2140+00 to 2146+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	77	3

SPEC	CODE	BID ITEM	QTY	UNIT
261	0112	FIBER ROLLS 12IN		
		Sta 2152+00 to Sta 2158+00	90	LF
261	0113	REMOVE FIBER ROLLS 12IN		
		Sta 2152+00 to Sta 2158+00	90	LF
970	0008	LANDSCAPE PREPARATION		
		Sta 2152+00 to Sta 2158+00	372	SY



Legend

Fiber Rolls 12IN

Landscape Preparation

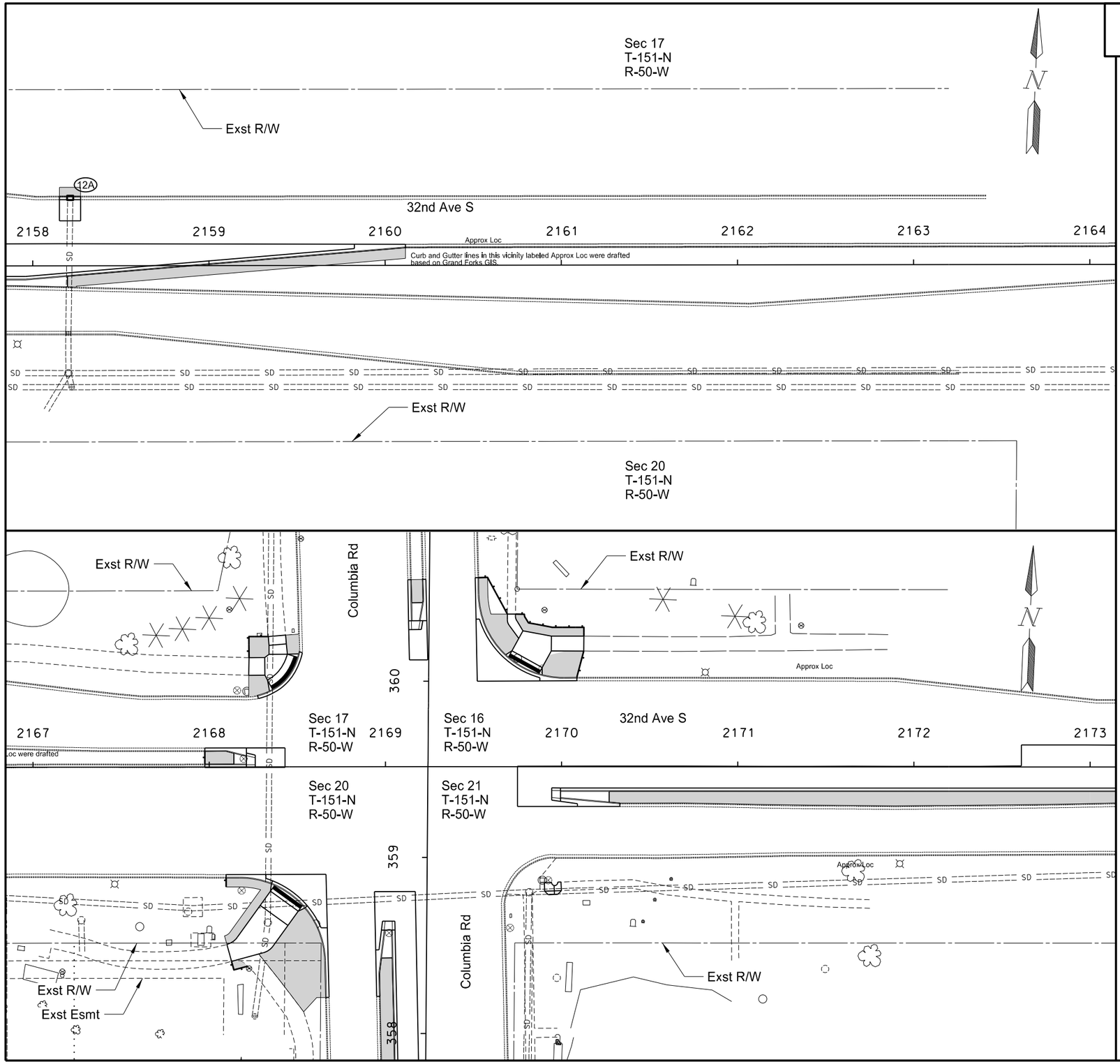
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Permanent Sediment and Erosion Control

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2146+00 to 2152+00
2152+00 to 2158+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	77	4



SPEC	CODE	BID ITEM	QTY	UNIT
261	0112	FIBER ROLLS 12IN		
		Sta 2164+00 to Sta 2173+00	140	LF
261	0113	REMOVE FIBER ROLLS 12IN		
		Sta 2164+00 to Sta 2173+00	140	LF
970	0008	LANDSCAPE PREPARATION		
		Sta 2158+00 to Sta 2164+00	135	SY
		Sta 2164+00 to Sta 2173+00	588	SY

Legend

Fiber Rolls 12IN

Landscape Preparation

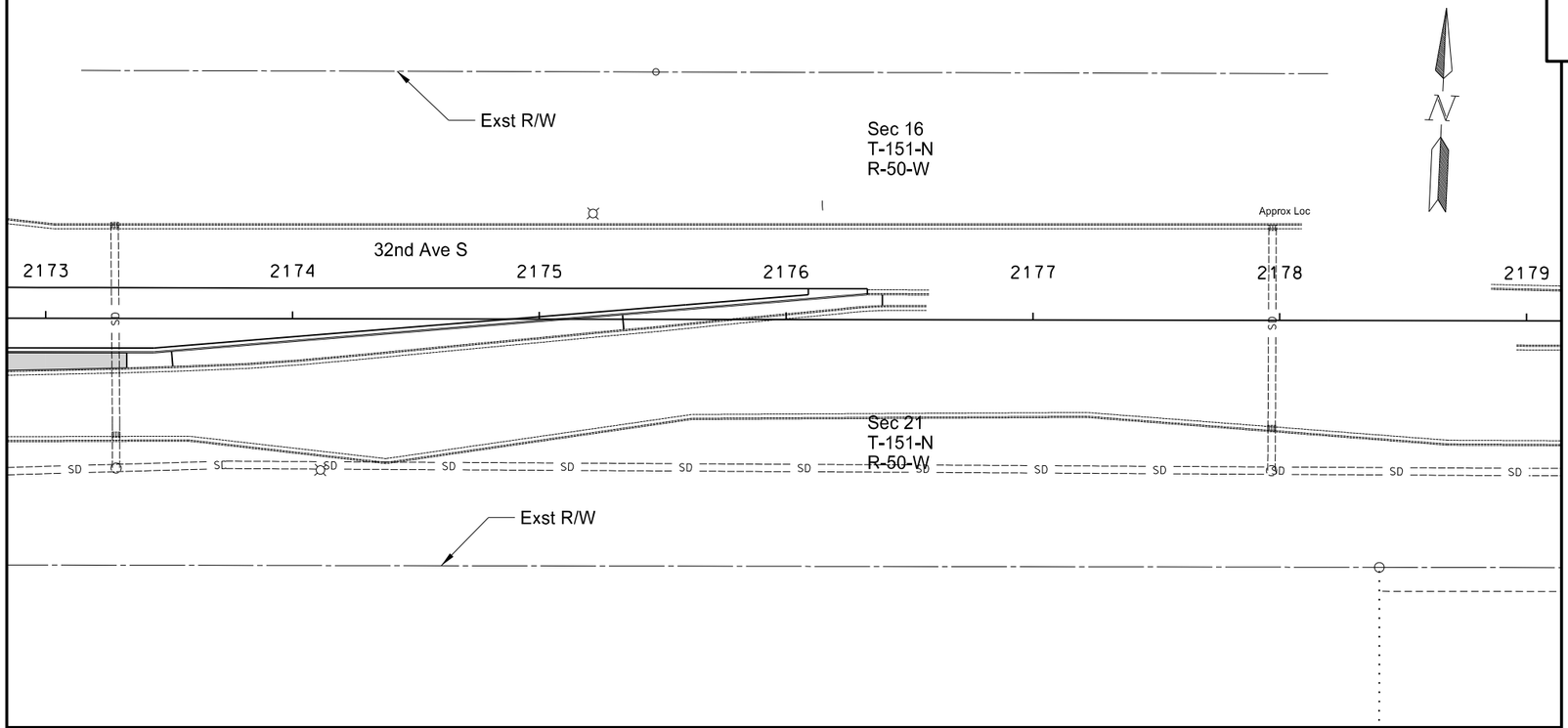
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

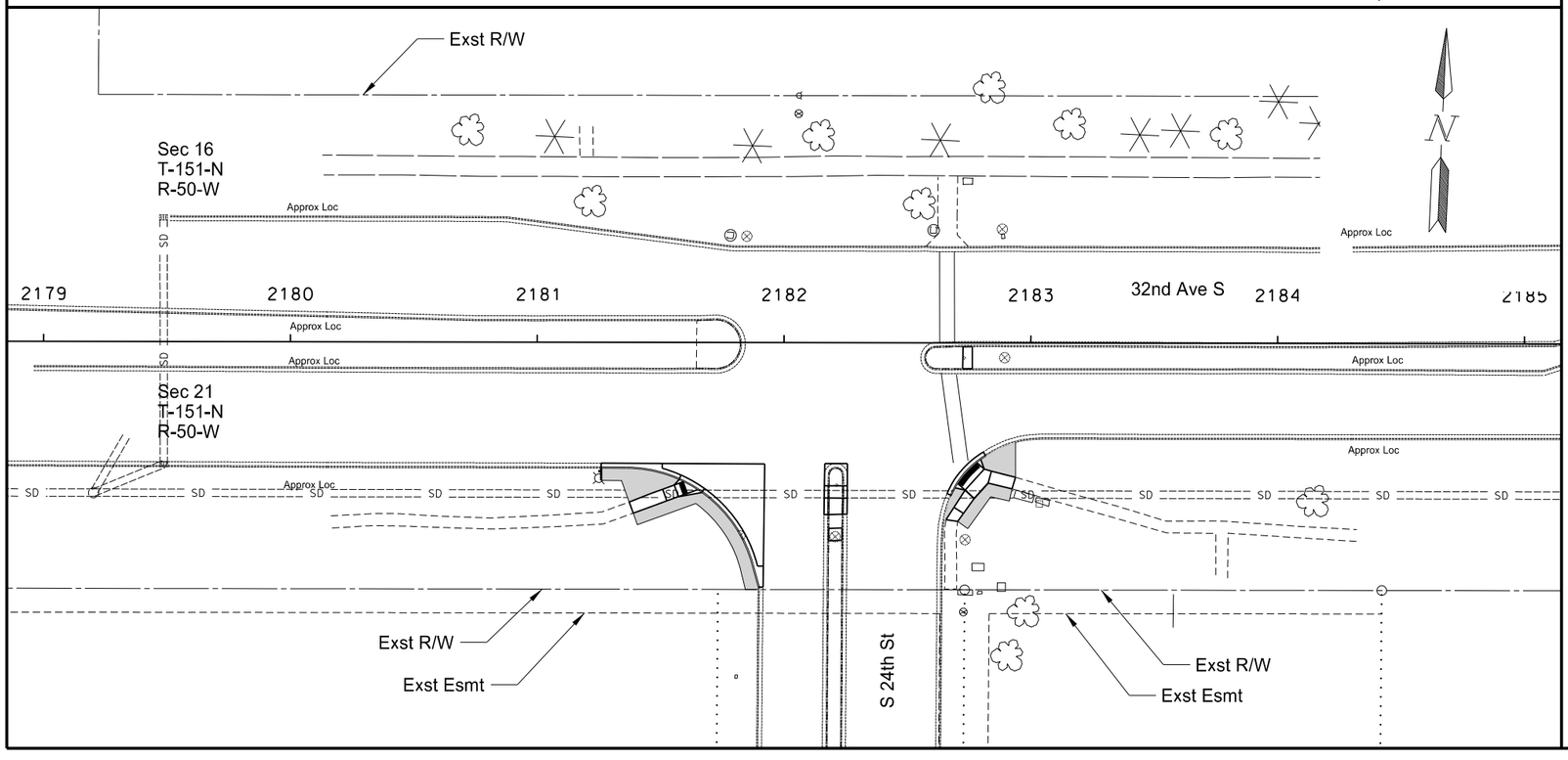
Permanent Sediment and Erosion Control

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2158+00 to 2164+00
2167+00 to 2173+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	77	5





SPEC	CODE	BID ITEM	QTY	UNIT
261	0112	FIBER ROLLS 12IN		
		Sta 2179+00 to Sta 2185+00	5	LF
261	0113	REMOVE FIBER ROLLS 12IN		
		Sta 2179+00 to Sta 2185+00	5	LF
970	0008	LANDSCAPE PREPARATION		
		Sta 2173+00 to Sta 2179+00	23	SY
		Sta 2179+00 to Sta 2185+00	98	SY

Legend

Fiber Rolls 12IN

Landscape Preparation

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Permanent Sediment and Erosion Control

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2173+00 to 2179+00
2179+00 to 2185+00

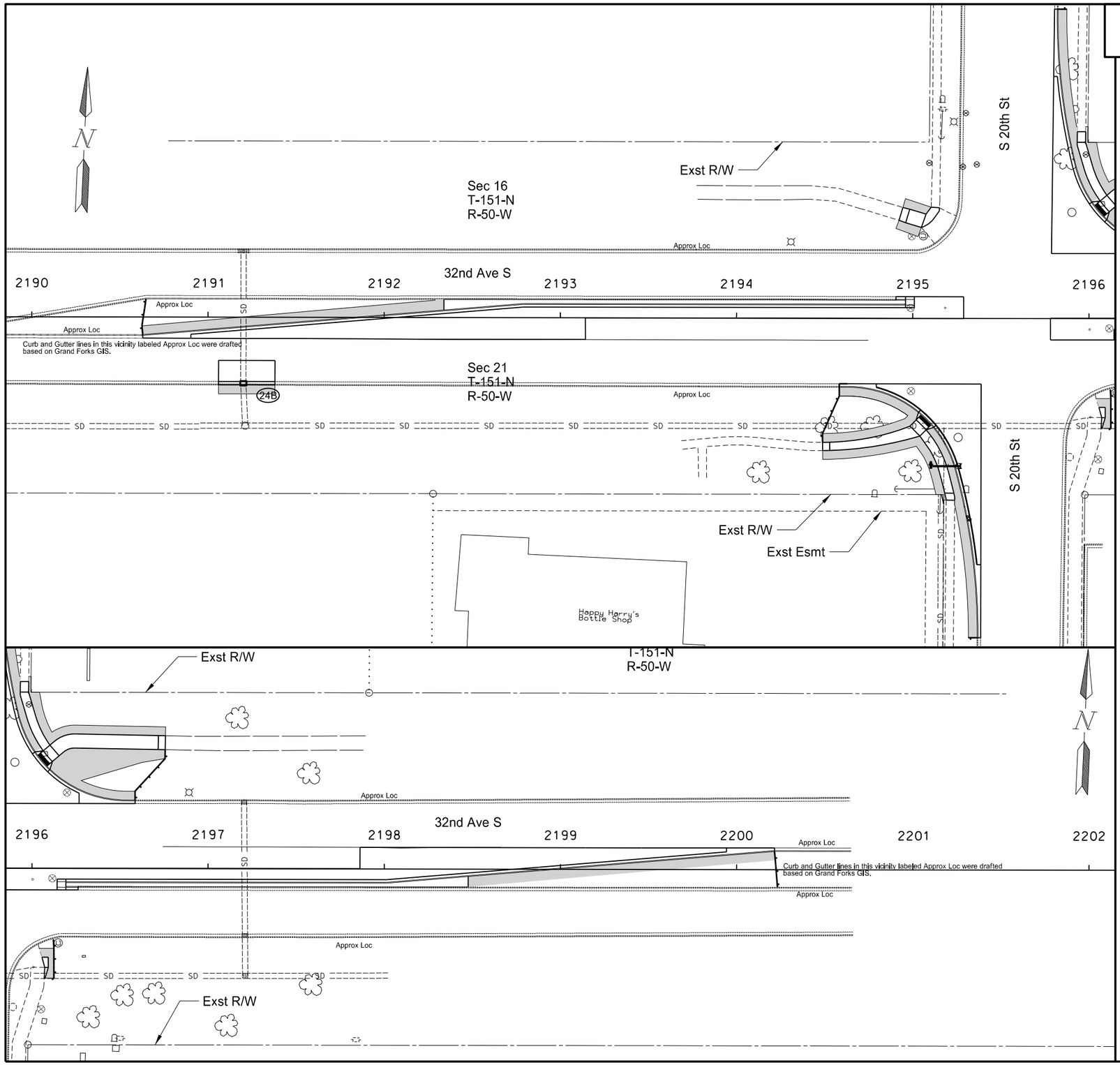
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	77	6

SPEC	CODE	BID ITEM	QTY	UNIT
261	0112	FIBER ROLLS 12IN		
		Sta 2190+00 to Sta 2196+00	64	LF
		Sta 2196+00 to Sta 2202+00	79	LF
261	0113	REMOVE FIBER ROLLS 12IN		
		Sta 2190+00 to Sta 2196+00	64	LF
		Sta 2196+00 to Sta 2202+00	79	LF
970	0008	LANDSCAPE PREPARATION		
		Sta 2190+00 to Sta 2196+00	364	SY
		Sta 2196+00 to Sta 2202+00	277	SY

Legend

Fiber Rolls 12IN

Landscape Preparation



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

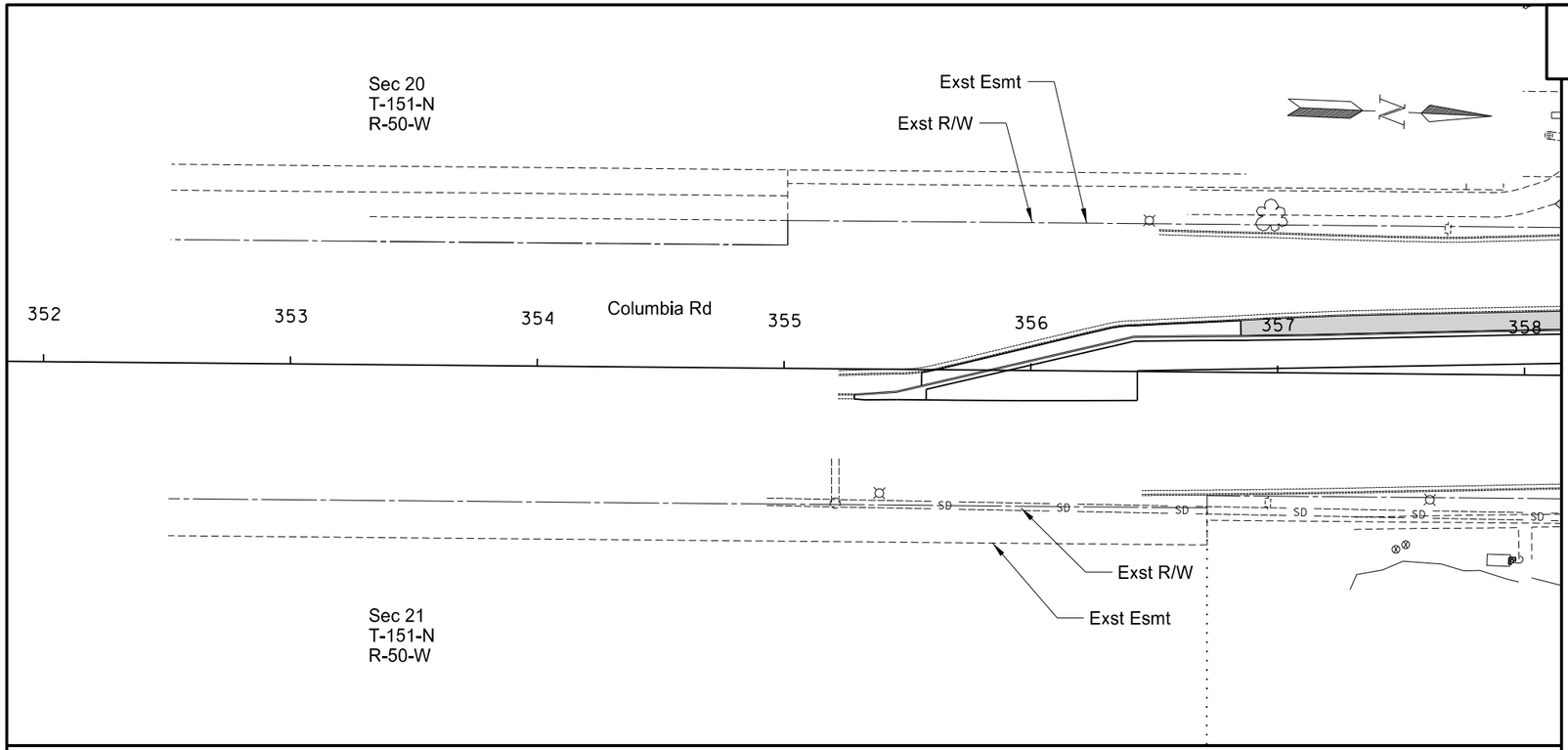
Permanent Sediment and Erosion Control

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2190+00 to 2196+00
2196+00 to 2202+00

8/25/2020 5:09:03 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\077PE_006.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	77	7



SPEC	CODE	BID ITEM	QTY	UNIT
970	0008	LANDSCAPE PREPARATION		
		Sta 352+00 to Sta 358+00	90	SY

Legend

Fiber Rolls 12IN

Landscape Preparation

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Permanent Sediment and Erosion Control

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

352+00 to 358+00

PRELIMINARY SURVEY COORDINATE AND CURVE DATA - 32ND AVE SOUTH, I-29 TO SOUTH 20TH ST

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	81	1

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING
ND 81 (Chain: SCL81)			
BEG (Rec 1/4 Cor)	2089+72.62	342903.25	2802948.30
PI (Rec Sec Cor)	2116+19.13	343022.72	2805592.11
PI (Rec 1/4 Cor)	2142+71.63	343140.45	2808241.99
Station Equation ND 81(SCL81) at COL RD(SCLCOLRD)			
ND 81 Rec Sec Cor	2169+24.15	343258.40	2810891.89
COL RD Rec Sec Cor	359+51.49	343258.40	2810891.89
PI (Rec 1/4 Cor)	2195+58.40	343370.92	2813523.73
END (Rec Sec Cor)	2221+92.64	343483.50	2816155.57
COL RD (Chain: SCLCOLRD)			
BEG (Rec 1/4 Cor)	333+00.11	340608.68	2810985.63
Station Equation ND 81(SCL81) at COL RD(SCLCOLRD)			
COL RD Rec Sec Cor	359+51.49	343258.40	2810891.89
ND 81 Rec Sec Cor	2169+24.15	343258.40	2810891.89
END (Rec 1/4 Cor)	386+00.85	345906.10	2810798.04

CURVE DATA

ARC DEFINITION

US PUBLIC LAND SURVEY DATA

DESC.	SEC-TWP-RGE	NORTHING	EASTING
S 1/4 Cor	Sec 18 T-151-N R-50-W	342903.25	2802948.30
SE Cor	Sec 18 T-151-N R-50-W	343022.72	2805592.11
S 1/4 Cor	Sec 17 T-151-N R-50-W	343140.45	2808241.99
SE Cor	Sec 17 T-151-N R-50-W	343258.40	2810891.89
E 1/4 Cor	Sec 17 T-151-N R-50-W	345906.10	2810798.04
E 1/4 Cor	Sec 20 T-151-N R-50-W	340608.68	2810985.63
S 1/4 Cor	Sec 16 T-151-N R-50-W	343370.92	2813523.73
SE Cor	Sec 16 T-151-N R-50-W	343483.50	2816155.57

SURVEY CONTROL POINTS

PNT	NORTHING	EASTING	ELEV	STATION	OFFSET	ALIGN
CONTROL POINT DESCRIPTION						
PRIMARY CONTROL						
GPS 81-1	343001.51	2804058.99	836.86	2100+87	48' LT	SCL81
#6 REBAR / 2" ALUMINUM CAP STAMPED GPS 18-1						
GPS 81-2	343358.52	2814516.31	835.01	2205+50	55' RT	SCL81
#6 REBAR / 2" ALUMINUM CAP STAMPED GPS 18-2						
SECONDARY CONTROL						
RTK 103	343135.64	2810695.76	835.74	2167+23	114' RT	SCL81
RTK 104	343433.07	2813918.47	834.66	2199+55	45' LT	SCL81
RTK 105	343016.90	2804491.68	837.20	2105+20	44' LT	SCL81
RTK 106	342946.22	2806458.81	836.21	2124+82	115' RT	SCL81
RTK 107	343212.75	2808867.04	835.17	2148+99	44' LT	SCL81
RTK 108	343241.27	2811862.53	834.18	2178+93	59' RT	SCL81

NOTES: Sheet 1 of 1

Date Survey Completed 11/07/18

☐ Assumed Coordinates

☒ All coordinates on this sheet are Grand Forks County ground coordinates.
They are derived from the NAD83(2011) reference frame; North Dakota North Zone
Combination Factor (cf) = 0.9998805

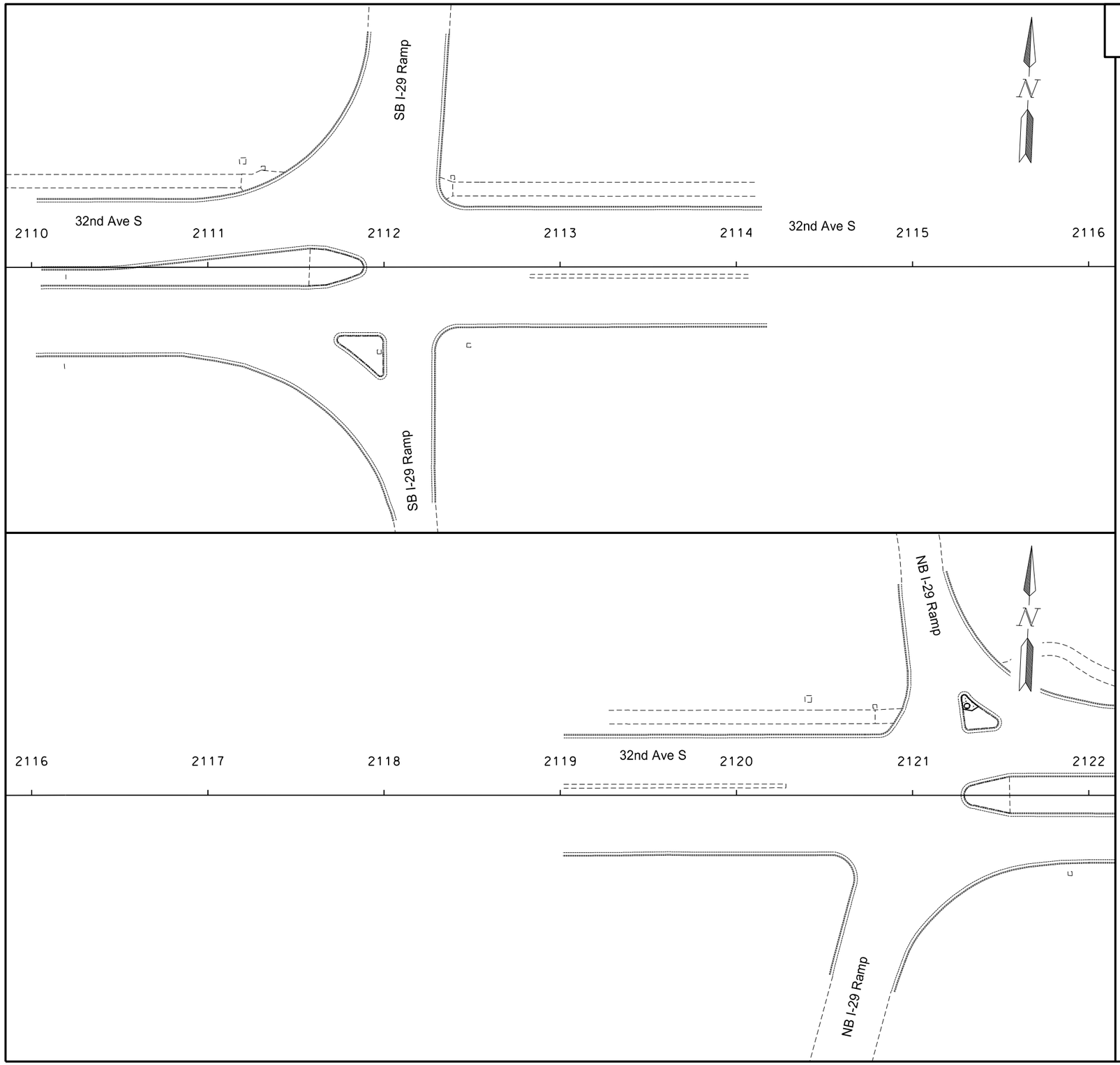
All coordinates and measurements on this document derived from the International Foot definition.

INITIALIZING BENCH MARK
NDGPS Stations (OPUS)

☒ NAVD-88
☐ NGVD-29

☐ GEOID 09 ☒ GEOID 12B
☐ GEOID 12A

This document was originally issued and sealed by Patrick M. Krug Registration Number LS- 3289 , on 03/06/18 and the original document is stored at the office of CPS, Ltd. Grand Forks, ND



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	90	1

SPEC	CODE	BID ITEM	QTY	UNIT
750	0020	PIGMENTED CONCRETE		
		Sta 2116+00 to Sta 2121+00	5	SY

Notes:

Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

Legend

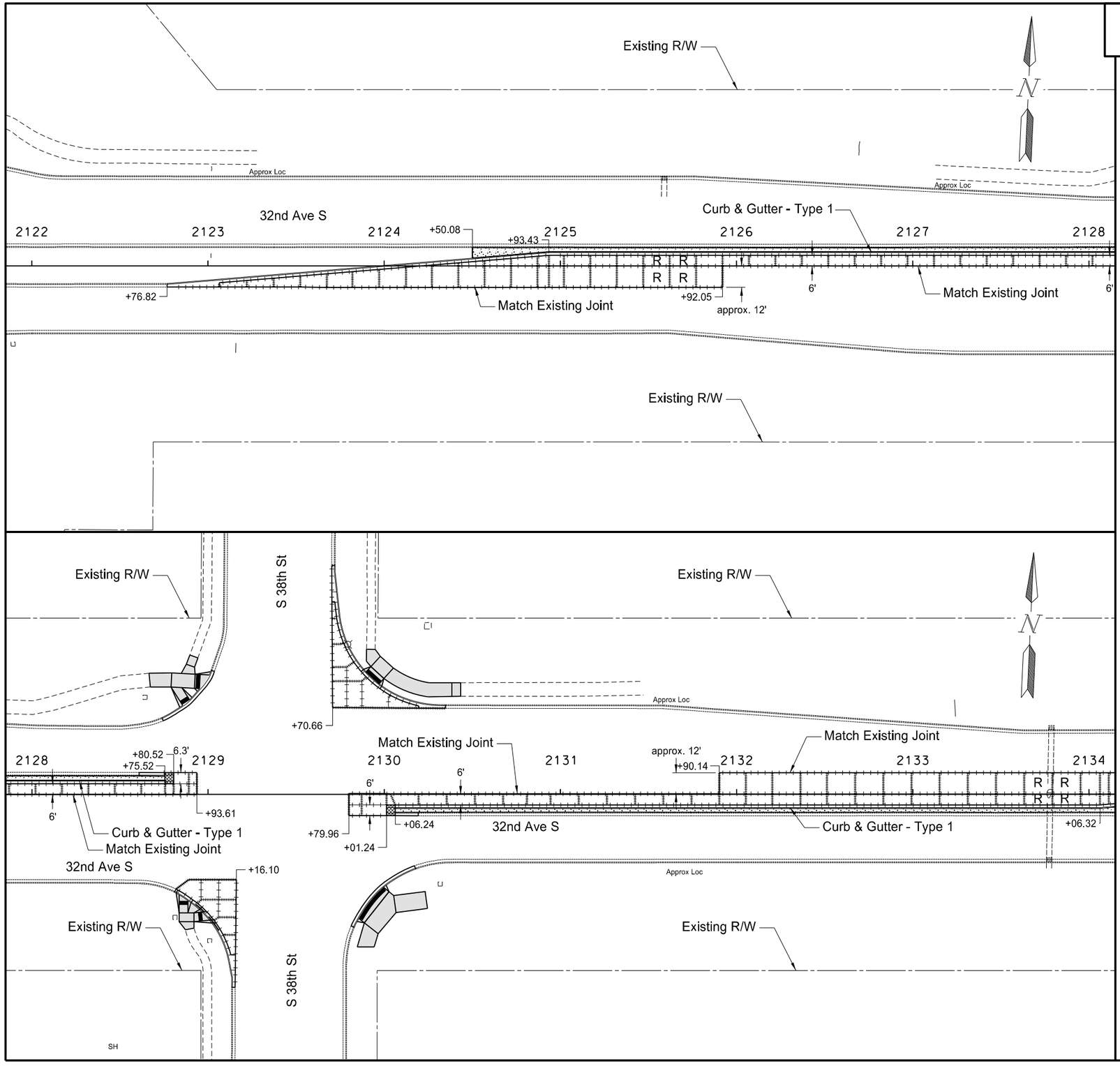
- Doweled Joint - Match Existing
- Deformed Tie Bar
- R — Pavement Reinf.
- Pigmented Concrete
- Concrete Median Nose Paving
- Sidewalk Concrete

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Paving Layout

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2110+00 to 2116+00
2116+00 to 2122+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	90	2

SPEC	CODE	BID ITEM	QTY	UNIT
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED		
		Sta 2122+77 to Sta 2129+50	705	SY
		Sta 2129+50 to Sta 2134+00	684	SY
748	0140	CURB & GUTTER-TYPE 1		
		Sta 2122+77 to Sta 2129+50	721	LF
		Sta 2129+50 to Sta 2134+00	578	LF
750	0020	PIGMENTED CONCRETE		
		Sta 2122+77 to Sta 2129+50	120	SY
		Sta 2129+50 to Sta 2134+00	93	SY
750	0115	SIDEWALK CONCRETE 4IN		
		SW Quad	3	SY
		SE Quad	31	SY
		NW Quad	17	SY
		NE Quad	44	SY
750	0140	SIDEWALK CONCRETE 6IN		
		SW Quad	18	SY
		SE Quad	36	SY
		NW Quad	26	SY
		NE Quad	14	SY
750	0210	CONCRETE MEDIAN NOSE PAVING		
		Sta 2128+81	4	SY
		Sta 2130+01	3	SY
750	2115	DETECTABLE WARNING PANELS		
			104	SF

Notes:

Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

Legend

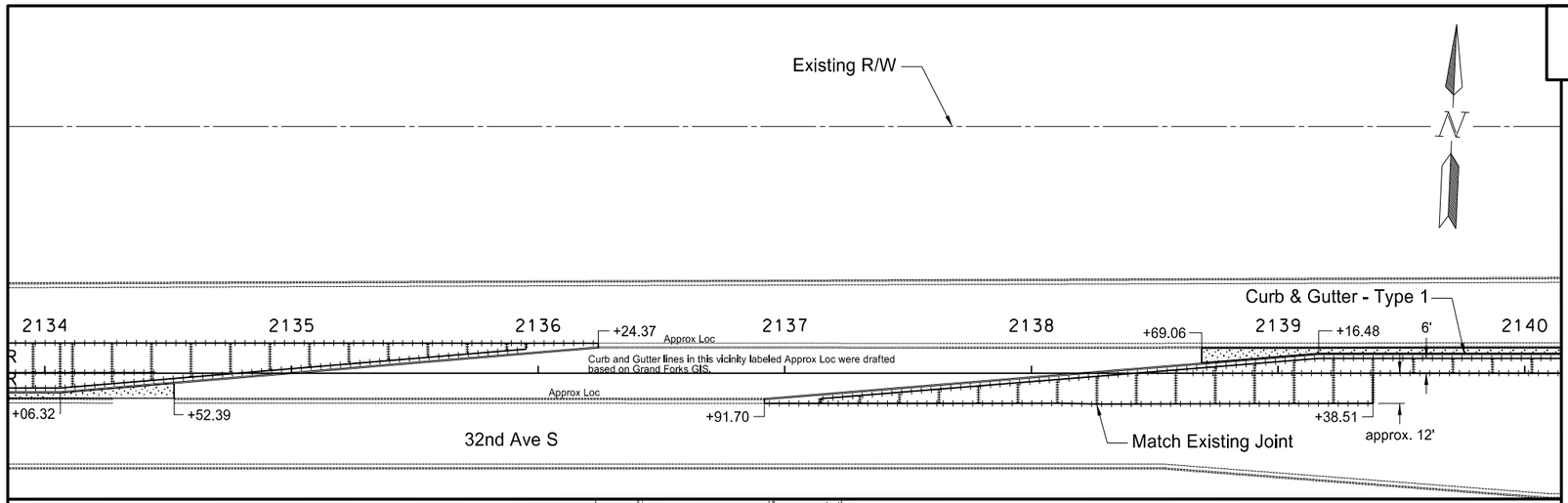
- Doweled Joint - Match Existing
- Deformed Tie Bar
- R — Pavement Reinf.
- Pigmented Concrete
- Concrete Median Nose Paving
- Sidewalk Concrete

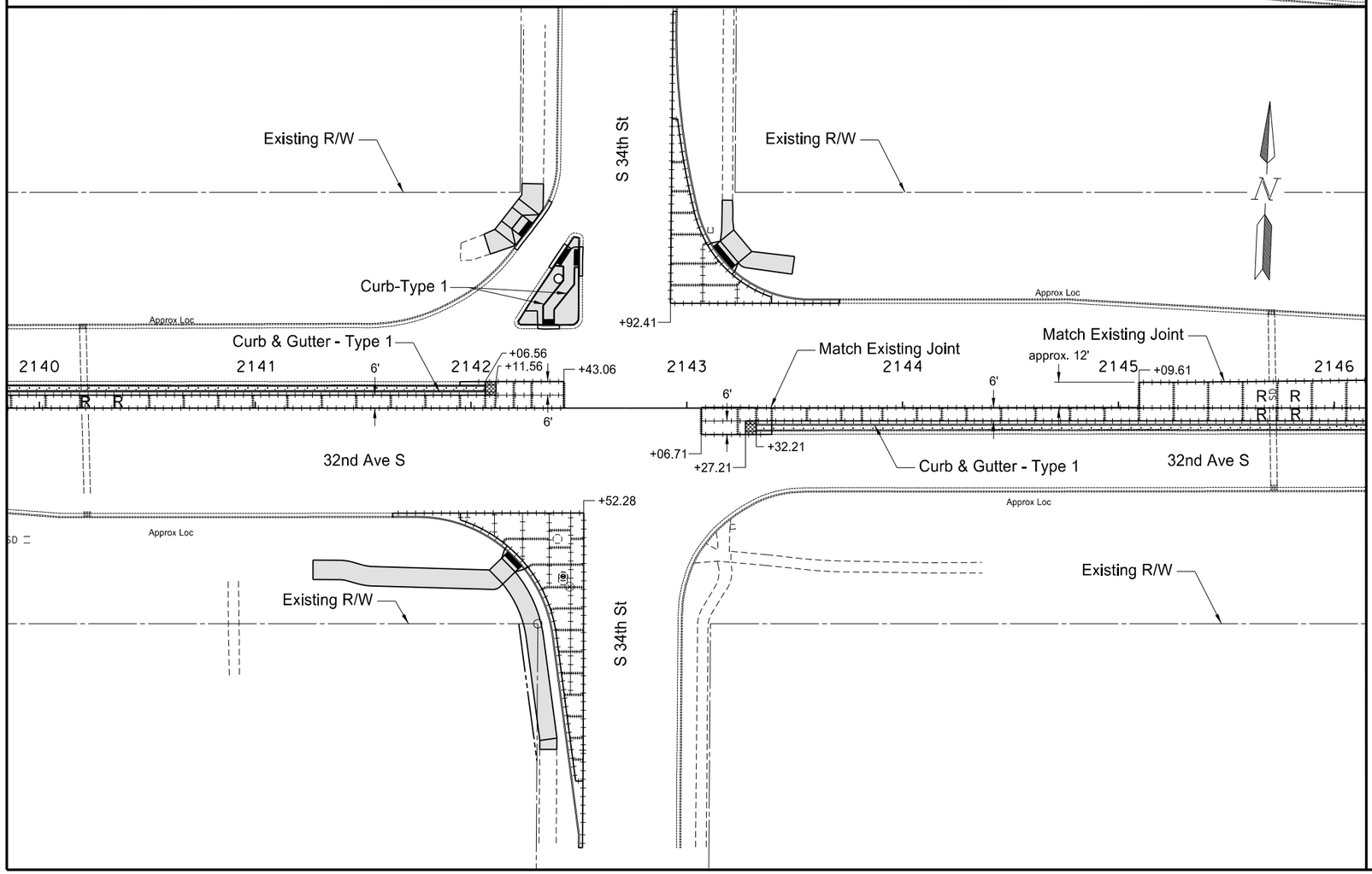
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Paving Layout

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2122+00 to 2128+00
2128+00 to 2134+00





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	90	3

SPEC	CODE	BID ITEM	QTY	UNIT
550	0030	8IN NON-REINF CONCRETE PVMT CL AE-DOWELED		
		Sta 2141+66 to Sta 2142+50	309	SY
		Sta 2142+50 to Sta 2143+90	215	SY
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED		
		Sta 2134+00 to Sta 2141+66	654	SY
		Sta 2143+90 to Sta 2146+00	265	SY
748	0140	CURB & GUTTER-TYPE 1		
		Sta 2134+00 to Sta 2142+50	1012	LF
		Sta 2142+50 to Sta 2146+00	454	LF
748	0520	CURB-TYPE 1		
		NW Quad	67	LF
750	0020	PIGMENTED CONCRETE		
		Sta 2134+00 to Sta 2142+50	117	SY
		Sta 2142+50 to Sta 2146+00	63	SY
750	0115	SIDEWALK CONCRETE 4IN		
		SW Quad	159	SY
		NW Quad	76	SY
		NE Quad	30	SY
750	0140	SIDEWALK CONCRETE 6IN		
		SW Quad	13	SY
		NW Quad	38	SY
		NE Quad	19	SY
750	0210	CONCRETE MEDIAN NOSE PAVING		
		Sta 2142+12	4	SY
		Sta 2143+27	4	SY
750	2115	DETECTABLE WARNING PANELS		
			100	SF

Notes:

Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

Legend

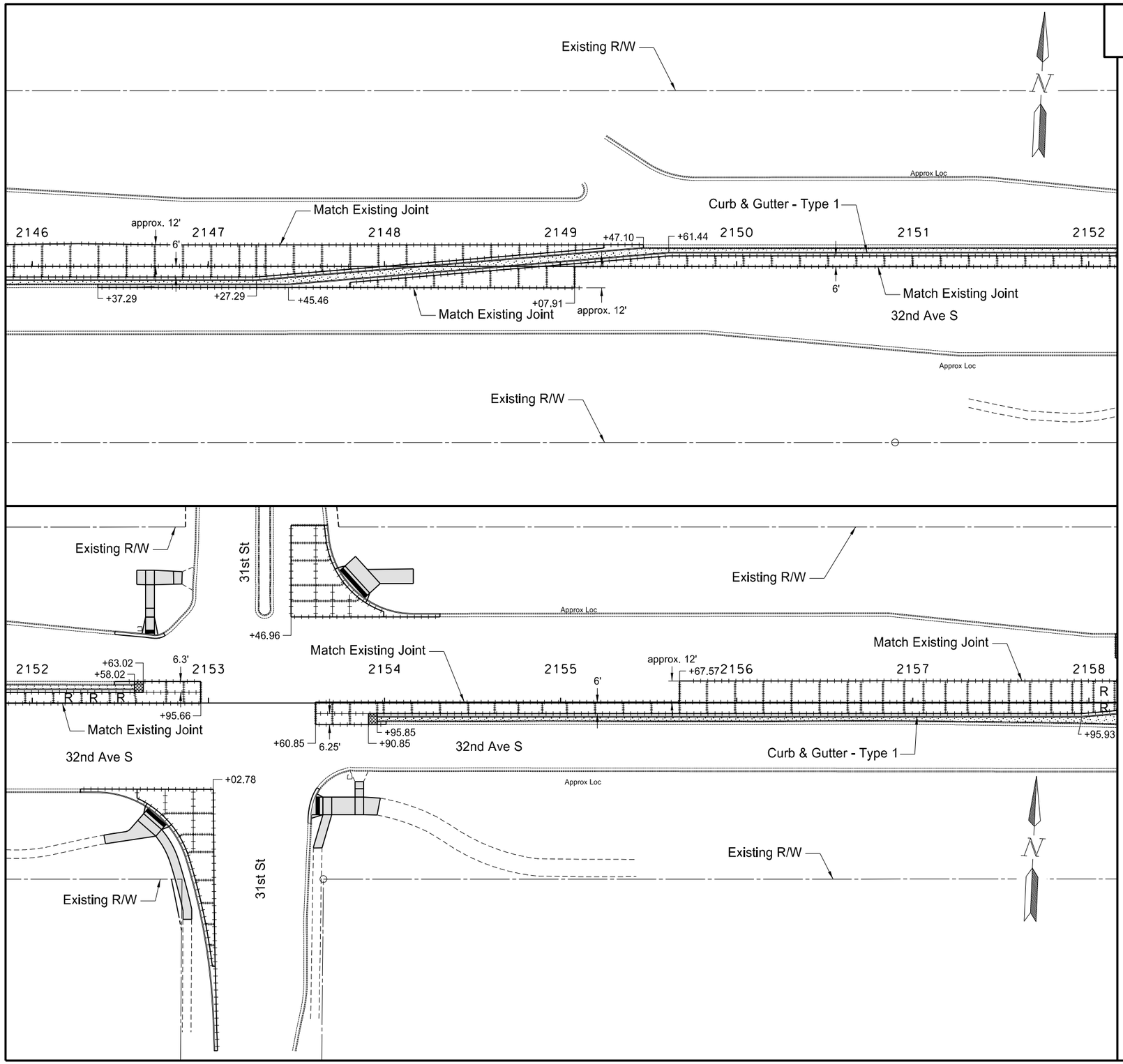
- Doweled Joint - Match Existing
- Deformed Tie Bar
- R — Pavement Reinf.
- Pigmented Concrete
- Concrete Median Nose Paving
- Sidewalk Concrete

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Paving Layout

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2134+00 to 2140+00
2140+00 to 2146+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	90	4

SPEC	CODE	BID ITEM	QTY	UNIT
550	0300	8IN NON-REINF CONCRETE PVMT CL AE-DOWELED		SY
		Sta 2152+54 to Sta 2153+25	214	SY
		Sta 2153+25 to Sta 2156+72.20	555	SY
550	0305	9IN NON-REINF CONCRETE PVMT CL AE-DOWELED		
		Sta 2156+72.20 to Sta 2158+00	263	SY
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED		
		Sta 2146+00 to Sta 2152+54	823	SY
748	0140	CURB & GUTTER-TYPE 1		
		Sta 2146+00 to Sta 2153+25	1197	LF
		Sta 2153+25 to Sta 2158+00	523	LF
750	0020	PIGMENTED CONCRETE		
		Sta 2146+00 to Sta 2153+25	192	SY
		Sta 2153+25 to Sta 2158+00	105	SY
750	0115	SIDEWALK CONCRETE 4IN		
		SW Quad	47	SY
		SE Quad	37	SY
		NW Quad	21	SY
		NE Quad	21	SY
750	0140	SIDEWALK CONCRETE 6IN		
		SW Quad	15	SY
		SE Quad	20	SY
		NW Quad	19	SY
		NE Quad	30	SY
750	0210	CONCRETE MEDIAN NOSE PAVING		
		Sta 2152+63	3	SY
		Sta 2153+91	3	SY
750	2115	DETECTABLE WARNING PANELS		
			100	SF

Notes:

Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

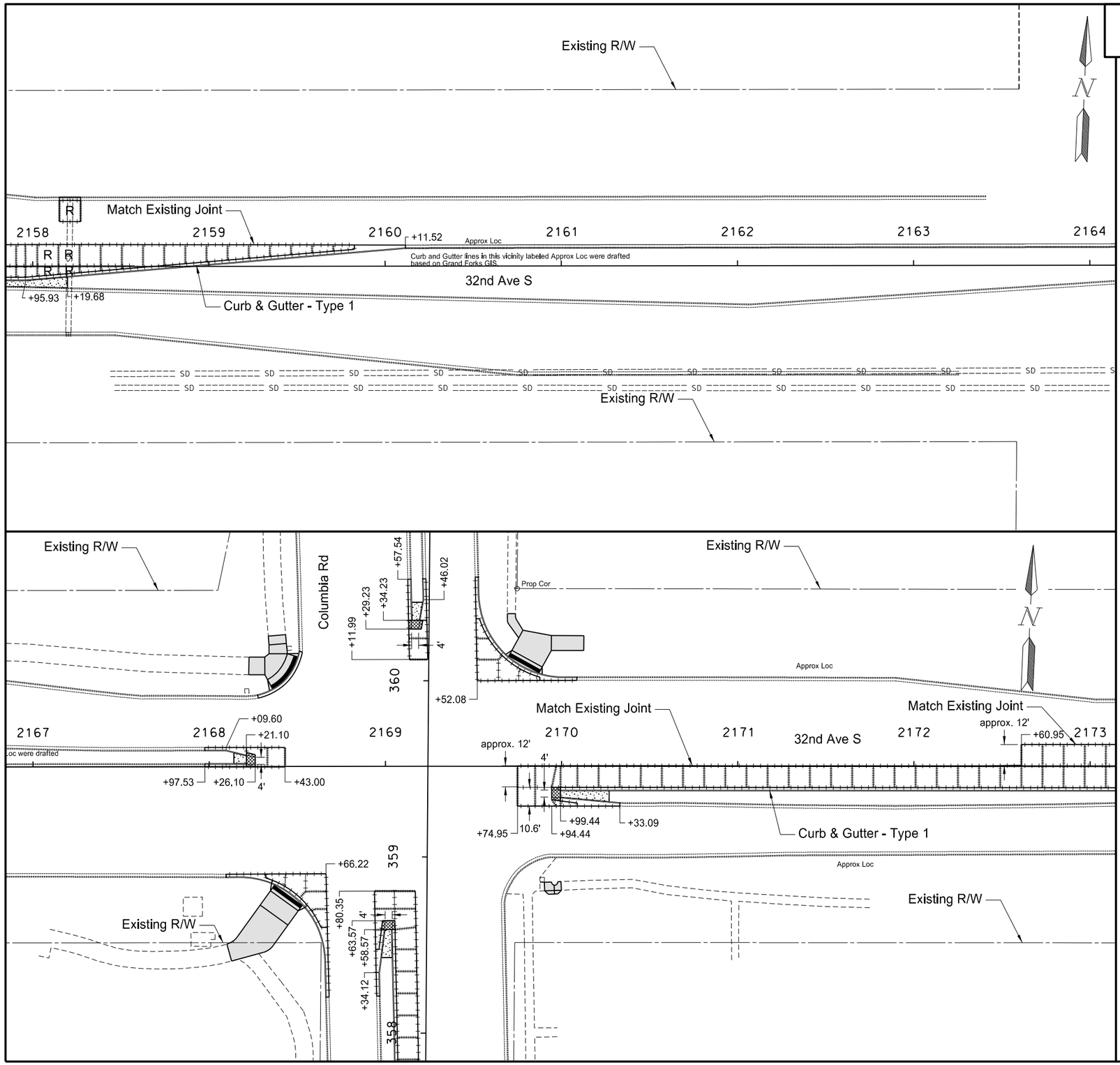
Legend

- Doweled Joint - Match Existing
- Deformed Tie Bar
- R — Pavement Reinf.
- Pigmented Concrete
- Concrete Median Nose Paving
- Sidewalk Concrete

Paving Layout

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2146+00 to 2152+00
2152+00 to 2158+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	90	5

SPEC	CODE	BID ITEM	QTY	UNIT
550	0305	9IN NON-REINF CONCRETE PVMT CL AE-DOWELED		
		Sta 2158+00 to Sta 2164+00	226	SY
		Sta 2167+00 to Sta 2173+00	811	SY
748	0140	CURB & GUTTER-TYPE 1		
		Sta 2158+00 to Sta 2164+00	225	LF
		Sta 2167+00 to Sta 2173+00	758	LF
750	0020	PIGMENTED CONCRETE		
		Sta 2158+00 to Sta 2164+00	11	SY
		Sta 2167+00 to Sta 2173+00	33	SY
750	0115	SIDEWALK CONCRETE 4IN		
		SW Quad	62	SY
		SE Quad	6	SY
		NW Quad	22	SY
		NE Quad	24	SY
750	0140	SIDEWALK CONCRETE 6IN		
		SW Quad	32	SY
		NW Quad	29	SY
		NE Quad	44	SY
750	0210	CONCRETE MEDIAN NOSE PAVING		
		Sta 2167+00 to Sta 2173+00 (4 @ Columbia)	17	SY
750	2115	DETECTABLE WARNING PANELS		
			122	SF

Notes:

Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

Legend

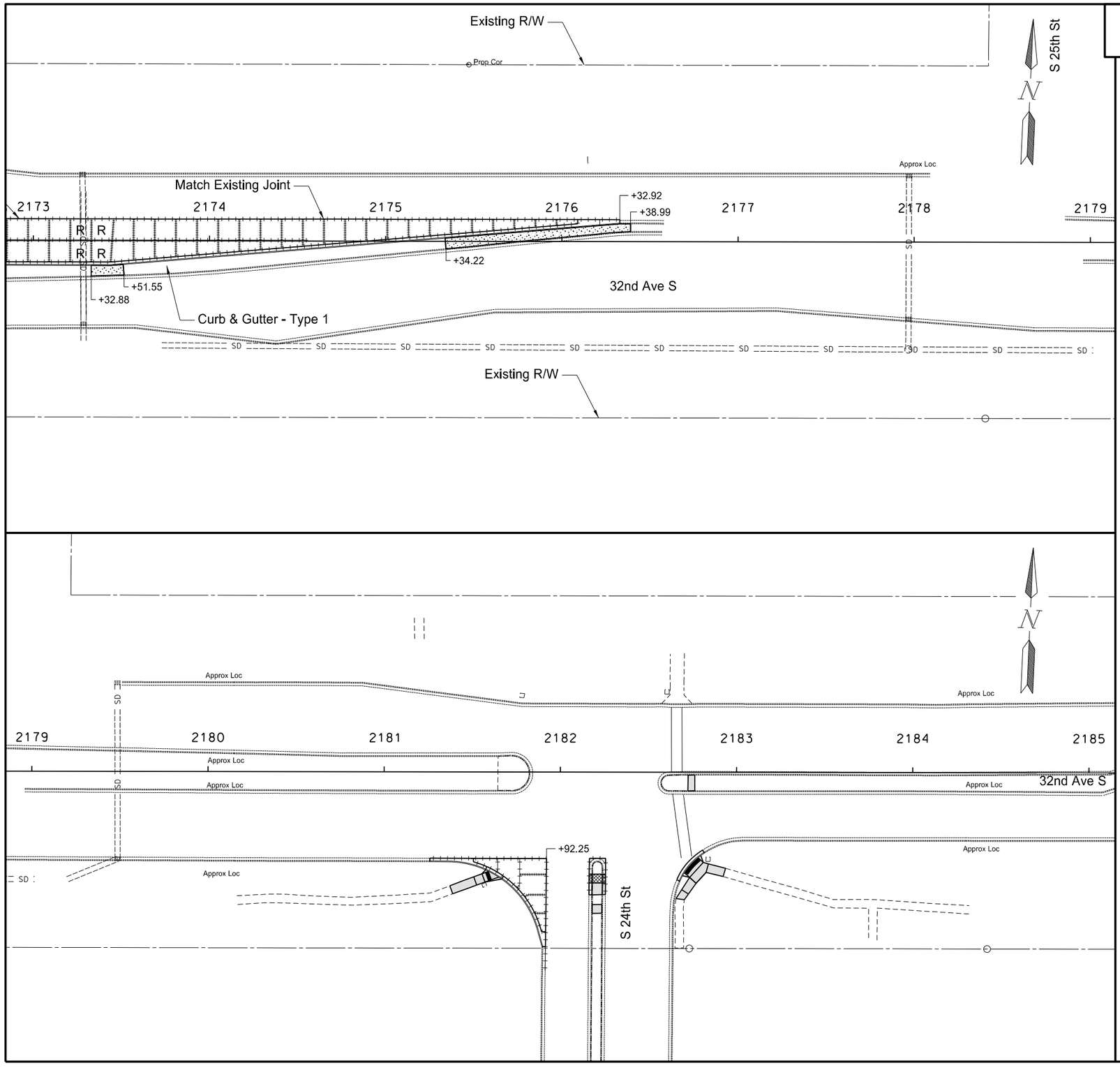
- Doweled Joint - Match Existing
- Deformed Tie Bar
- R — Pavement Reinf.
- Pigmented Concrete
- Concrete Median Nose Paving
- Sidewalk Concrete

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Paving Layout

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2158+00 to 2164+00
2167+00 to 2173+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	90	6

SPEC	CODE	BID ITEM	QTY	UNIT
550	0305	9IN NON-REINF CONCRETE PVMT CL AE-DOWELED		
		Sta 2173+00 to Sta 2179+00	515	SY
		Sta 2181+00 to Sta 2185+00	83	SY
748	0140	CURB & GUTTER-TYPE 1		
		Sta 2173+00 to Sta 2179+00	334	LF
		Sta 2181+00 to Sta 2185+00	125	LF
750	0020	PIGMENTED CONCRETE		
		Sta 2173+00 to Sta 2179+00	73	SY
750	0115	SIDEWALK CONCRETE 4IN		
		SW Quad	8	SY
		SE Quad	12	SY
		Medians	11	SY
750	0140	SIDEWALK CONCRETE 6IN		
		SW Quad	7	SY
		SE Quad	13	SY
750	2115	DETECTABLE WARNING PANELS		
			31	SF

Notes:

Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

Legend

- Doweled Joint - Match Existing
- Deformed Tie Bar
- R — Pavement Reinf.
- Pigmented Concrete
- Concrete Median Nose Paving
- Sidewalk Concrete

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Paving Layout

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2173+00 to 2179+00
2179+00 to 2185+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	90	7

SPEC	CODE	BID ITEM	QTY	UNIT
550	0300	8IN NON-REINF CONCRETE PVMT CL AE-DOWELED		
		Sta 2194+33 to Sta 2196+00	447	SY
		Sta 2196+00 to Sta 2196+73	105	SY
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED		
		Sta 2190+00 to Sta 2194+33	412	SY
		Sta 2196+73 to Sta 2202+00	328	SY
748	0140	CURB & GUTTER-TYPE 1		
		Sta 2190+00 to Sta 2196+00	766	LF
		Sta 2196+00 to Sta 2202+00	479	LF
750	0020	PIGMENTED CONCRETE		
		Sta 2190+00 to Sta 2196+00	76	SY
		Sta 2196+00 to Sta 2202+00	66	SY
750	0115	SIDEWALK CONCRETE 4IN		
		SW Quad	55	SY
		NW Quad	12	SY
		NE Quad	79	SY
750	0140	SIDEWALK CONCRETE 6IN		
		SW Quad	9	SY
		SE Quad	3	SY
		NW Quad	6	SY
		NE Quad	9	SY
750	0210	CONCRETE MEDIAN NOSE PAVING		
		Sta 2194+96	3	SY
		Sta 2196+14	3	SY
750	2115	DETECTABLE WARNING PANELS		
			30	SF

Notes:

Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

Legend

- Doweled Joint - Match Existing
- Deformed Tie Bar
- R — Pavement Reinf.
- Pigmented Concrete
- Concrete Median Nose Paving
- Sidewalk Concrete

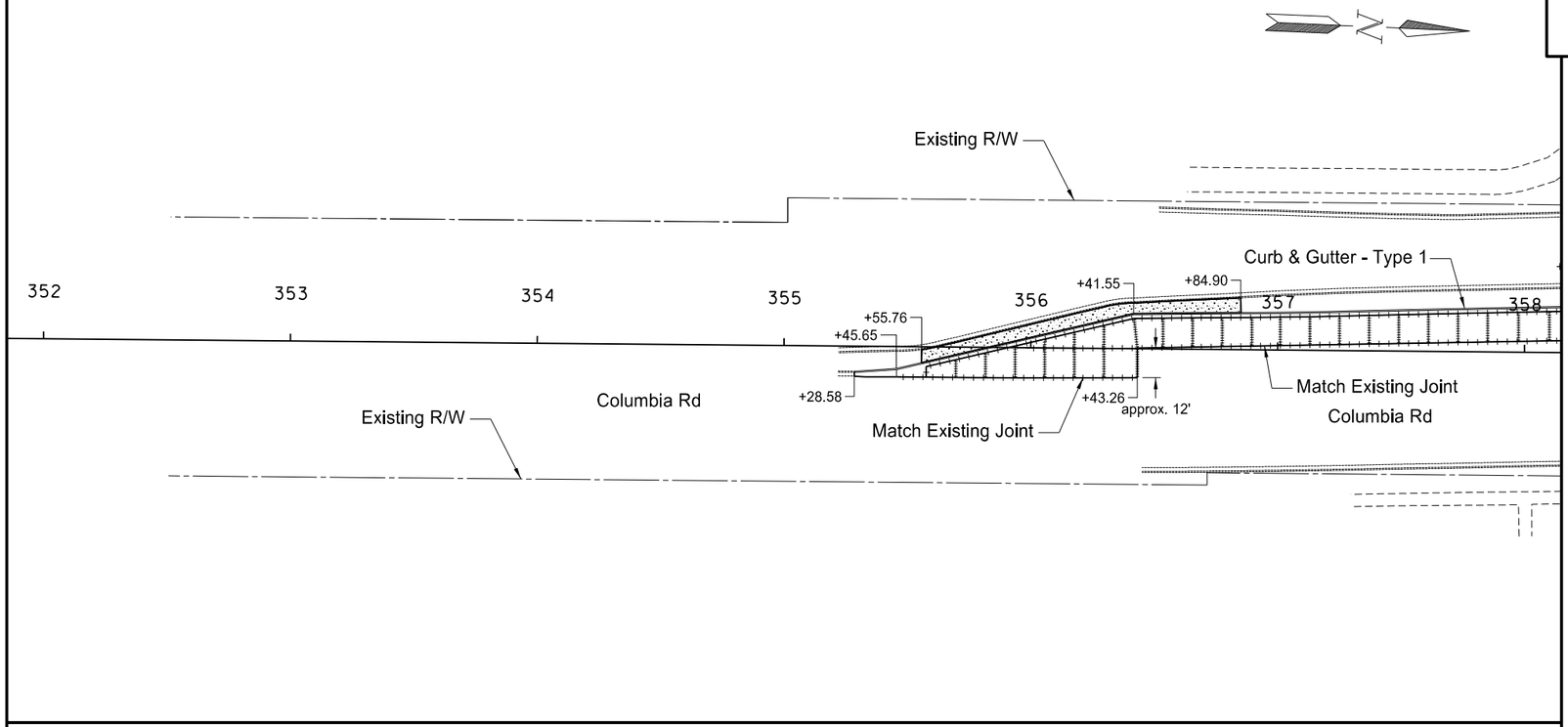
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Paving Layout

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2190+00 to 2196+00
2196+00 to 2202+00

8/25/2020 5:11:21 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\090PL_007.dgn



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	90	8

SPEC	CODE	BID ITEM	QTY	UNIT
550	0305	9IN NON-REINF CONCRETE PVMT CL AE-DOWELED		
		Sta 352+00 to Sta 358+00	340	SY
748	0140	CURB & GUTTER-TYPE 1		
		Sta 355+00 to Sta 358+00	274	LF
750	0020	PIGMENTED CONCRETE		
		Sta 355+00 to Sta 358+00	75	SY

Notes:

Refer to Section 20 for sidewalk, curb & gutter, and pavement tie points at the radii.

Legend

- Doweled Joint - Match Existing
- Deformed Tie Bar
- R — Pavement Reinf.
- Pigmented Concrete
- Concrete Median Nose Paving
- Sidewalk Concrete

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Paving Layout

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

352+00 to 358+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	100	1

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED BY PHASE NO. 1	2	3		TOTAL 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**	**4**	**2**	**2**		**4**	**26**	**104**
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)						18	
G20-10-108	108"x48"	CONTRACTOR SIGN						70	
G20-50a-72	72"x36"	ROAD WORK NEXT __ MILES RT & LT ARROWS						43	
G20-52a-72	72"x24"	ROAD WORK NEXT __ MILES RT or LT ARROW						36	
G20-55-96	**96"x48"**	**SPEED LIMIT ENFORCED - MINIMUM FEE $80 WHEN WORKERS PRESENT**	**2**	**2**	**2**		**2**	**59**	**118**
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)						10	
M1-4-24	24"x24"	U.S. ROUTE MARKER (Post and installation only)						10	
M1-5-24	24"x24"	STATE ROUTE MARKER (Post and installation only)						10	
M3-1-24	24"x12"	NORTH (Mounted on route marker post)						7	
M3-2-24	24"x12"	EAST (Mounted on route marker post)						7	
M3-3-24	24"x12"	SOUTH (Mounted on route marker post)						7	
M3-4-24	24"x12"	WEST (Mounted on route marker post)						7	
M4-8-24	24"x12"	DETOUR (Mounted on route marker post)						7	
M4-8a-24	**24"x18"**	**END DETOUR**	**1**	**1**			**1**	**13**	**13**
M4-9-30	**30"x24"**	**DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT**	**3**	**2**			**3**	**15**	**45**
M4-9aL-30	**30"X24"**	**BIKE/PEDESTRIAN DETOUR LEFT**	**8**	**21**	**3**		**21**	**15**	**315**
M4-9aR-30	**30"X24"**	**BIKE/PEDESTRIAN DETOUR RIGHT**	**7**	**20**	**2**		**20**	**15**	**300**
M4-9aT-30	**30"X24"**	**BIKE/PEDESTRIAN DETOUR THRU**	**2**	**6**	**2**		**6**	**15**	**90**
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	
M6-2-21	**21"x15"**	**DIRECTIONAL ARROW DIAGONAL RT or LT**	**8**	**4**			**8**	**7**	**56**
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**	**5**	**6**			**6**	**29**	**174**
R2-1-36	36"x48"	SPEED LIMIT __ (Portable only)						30	
R2-1-48	**48"x60"**	**SPEED LIMIT __**	**7**	**9**			**9**	**39**	**351**
R2-1aP-24	**24"x18"**	**MINIMUM FEE $80 (Mounted on Speed Limit post)**	**5**	**7**			**7**	**10**	**70**
R3-1-48	**48"x48"**	**NO RIGHT TURN**	**4**	**6**	**1**		**6**	**35**	**210**
R3-2-48	**48"x48"**	**NO LEFT TURN**	**4**	**7**			**7**	**35**	**245**
R3-5-30	**30"x48"**	**TURN ONLY**	**5**	**8**			**8**	**21**	**168**
R3-7-36	**36"X36"**	**LEFT or RIGHT LANE MUST TURN LEFT or RIGHT**	**2**	**4**			**4**	**27**	**108**
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	
R9-9-24	**24"x12"**	**SIDEWALK CLOSED (Mounted on barricade)**	**16**	**26**	**5**		**26**	**7**	**182**
R9-11-24	**24"x12"**	**SIDEWALK CLOSED AHEAD CROSS HERE LT or RT (Mounted on barricade)**	**4**	**6**			**6**	**3**	**18**
R9-11a-24	**24"x12"**	**SIDEWALK CLOSED CROSS HERE LT or RT (Mounted on barricade)**	**1**	**1**			**1**	**3**	**3**
R10-6-24	24"x36"	STOP HERE ON RED						16	
R11-2-48	48"x30"	ROAD CLOSED (Mounted on barricade)						12	
R11-2a-48	48"x30"	STREET CLOSED (Mounted on barricade)						12	
R11-3a-60	60"x30"	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)						15	
R11-3c-60	60"x30"	STREET CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)						15	
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC (Mounted on barricade)						15	
W1-3-48	48"x48"	REVERSE TURN RIGHT or LEFT						35	
W1-4-48	**48"x48"**	**REVERSE CURVE RIGHT or LEFT**	**4**	**4**			**4**	**35**	**140**
W1-4b-48	48"x48"	TWO LANE REVERSE CURVE RIGHT or LEFT						35	
W1-6-48	48"x24"	ONE DIRECTION LARGE ARROW						26	
W3-1-48	48"x48"	STOP AHEAD						35	
W3-3-48	48"x48"	SIGNAL AHEAD						35	
W3-4-48	48"x48"	BE PREPARED TO STOP						35	
W3-5-48	**48"x48"**	**SPEED REDUCTION AHEAD**	**5**	**7**			**7**	**35**	**245**
W4-2-48	**48"x48"**	**LANE ENDS RIGHT or LEFT**	**6**	**9**			**9**	**35**	**315**
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	
W9-2-48	**48"x48"**	**LANE ENDS MERGE LEFT or RIGHT**	**2**	**4**			**4**	**35**	**140**
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL						35	
W12-1-30	**30"x30"**	**DOUBLE ARROW POINTING DOWNWARD**	**2**	**3**			**3**	**8**	**24**
W12-2-48	48"x48"	LOW CLEARANCE						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	

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED BY PHASE NO. 1	2	3		TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
W16-9p-24	**24"x12"**	**AHEAD (Mounted on barricade)**	**7**	**9**	**3**		**9**	**7**	**63**
W20-1-48	**48"x48"**	**ROAD WORK AHEAD or _FT or _ MILE**	**7**	**8**	**2**		**8**	**35**	**280**
W20-2-48	**48"x48"**	**DETOUR AHEAD or __ FT or _ MILE**	**1**	**1**			**1**	**35**	**35**
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or __ FT or _ MILE						35	
W20-4-48	48"x48"	ONE LANE ROAD AHEAD or __ FT or _ MILE						35	
W20-5-48	**48"x48"**	**RIGHT or CENTER or LEFT LANE CLOSED AHEAD or __ FT or _ MILE**	**7**	**13**			**13**	**35**	**455**
W20-7-48	**48"x48"**	**FLAGGER**	**4**	**6**	**1**		**6**	**35**	**210**
W20-8-18	**18"x18"**	**STOP - SLOW PADDLE Back to Back**	**2**	**3**	**1**		**3**	**5**	**15**
W20-52P-54	54"x12"	NEXT __ MILES (Mounted on warning sign post)						12	
W21-1-48	**48"x48"**	**WORKERS**	**2**	**3**	**1**		**3**	**35**	**105**
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	
W21-5b-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or __ FT or _ MILE						35	
W21-6-48	48"x48"	SURVEY CREW						35	
W21-50-48	48"x48"	BRIDGE PAINTING AHEAD or __ FT						35	
W21-51-48	48"x48"	MATERIAL ON ROADWAY						35	
W21-52-48	48"x48"	PAVEMENT BREAKS						35	
W21-53-48	48"x48"	RUMBLE STRIPS AHEAD						35	
W22-8-48	48"x48"	FRESH OIL LOOSE ROCK						35	

SPECIAL SIGNS

SPEC & CODE

704-1000	**TRAFFIC CONTROL SIGNS**	**TOTAL UNITS 4597**

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY BY PHASE NO. 1	2	3		TOTAL QUANTITY
704-0100	**FLAGGING**	MHR	**400**	**400**	**50**		**850**
704-1035	**ATTENUATION DEVICE-TYPE B-25**	EA	**1**	**1**			**1**
704-1048	PORTABLE RUMBLE STRIPS	EACH					
704-1050	TYPE I BARRICADES	EACH					
704-1052	**TYPE III BARRICADES**	EACH	**53**	**78**	**2**		**78**
704-1054	**SIDEWALK BARRICADE**	EA	**11**	**17**	**3**		**17**
704-1056	**PEDESTRIAN CHANNELIZATION**	LF	**360**	**310**			**360**
704-1060	**DELINEATOR DRUMS**	EACH	**287**	**349**	**16**		**349**
704-1065	TRAFFIC CONES	EACH					
704-1067	**TUBULAR MARKERS**	EACH	**14**	**97**			**97**
704-1070	DELINEATOR	EACH					
704-1072	FLEXIBLE DELINEATORS	EACH					
704-1080	STACKABLE VERTICAL PANELS	EACH					
704-1081	VERTICAL PANELS - BACK TO BACK	EACH					
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH					
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH					
704-1087	**SEQUENCING ARROW PANEL - TYPE C**	EACH	**4**	**8**			**8**
704-1500	**OBLITERATION OF PVMT MK**	SF	**100**	**100**			**200**
704-2108	**TEMPORARY CURB RAMP**	EA	**2**	**1**			**2**
704-3501	**PORTABLE PRECAST CONCRETE MED BARRIER**	LF	**150**				**150**
704-3510	PRECAST CONCRETE MED BARRIER - STATE FURNISHED	EACH					
704-4011	**PORTABLE CHANGEABLE MESSAGE SIGN**	EA	**3**	**3**	**2**		**3**
762-0200	RAISED PAVEMENT MARKERS	EACH					
762-0420	SHORT TERM 4IN LINE - TYPE R	LF					
762-0430	SHORT TERM 4IN LINE - TYPE NR	LF					

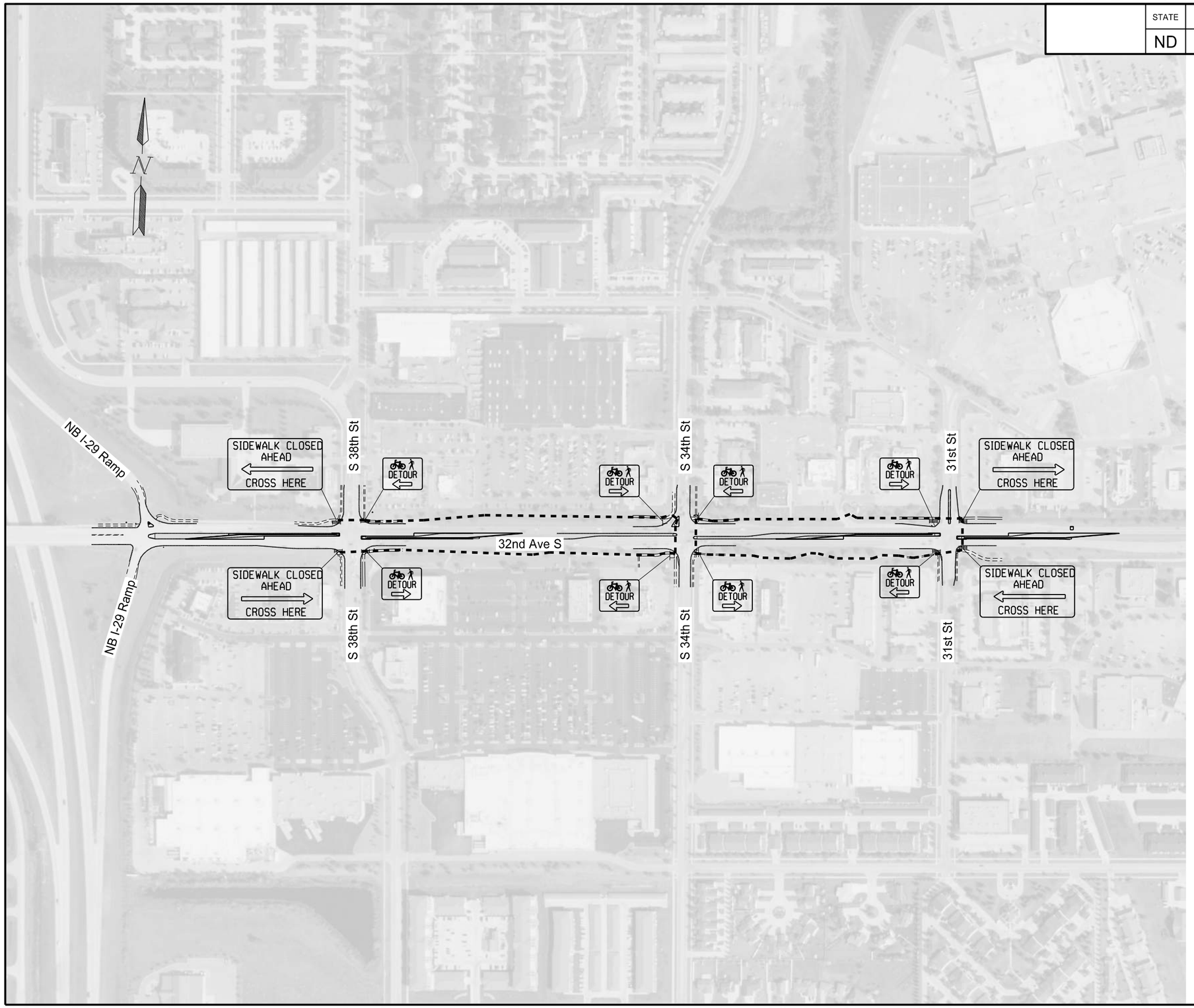
NOTE:
If additional signs are required, units will be calculated using the formula from Section III-18.06 of the Design Manual.
http://www.dot.nd.gov/

This document was originally issued and sealed by Kevin LaRue, Registration Number PE-8778, on 8/25/20 and the original document is stored at the North Dakota Department of Transportation.

Traffic Control Devices List

US Hwy 81 Safety, Signal and Turn Lane
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	2



Legend

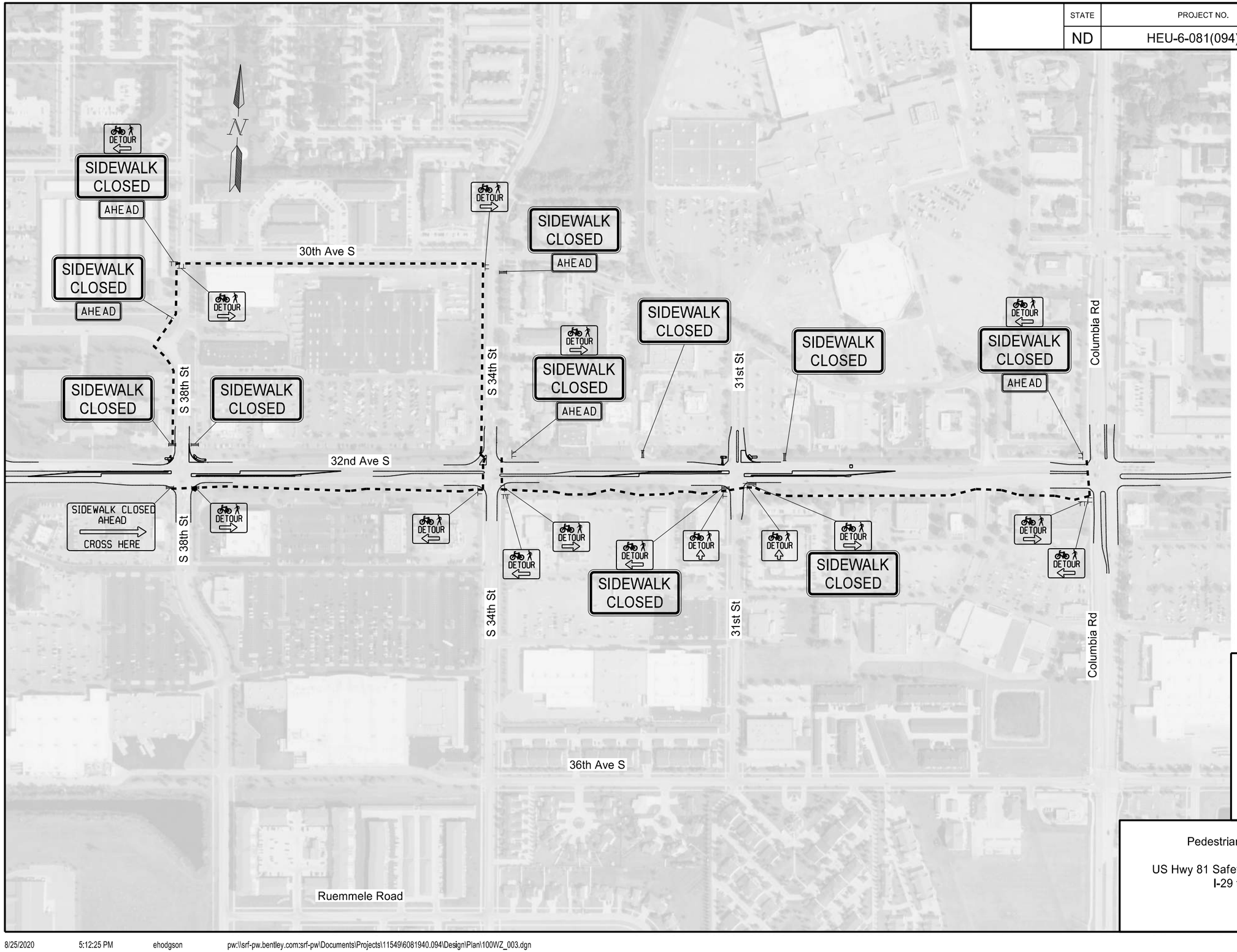
Phase 1A

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pedestrian Detour Phase 1A

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	3



Legend

Phase 1B

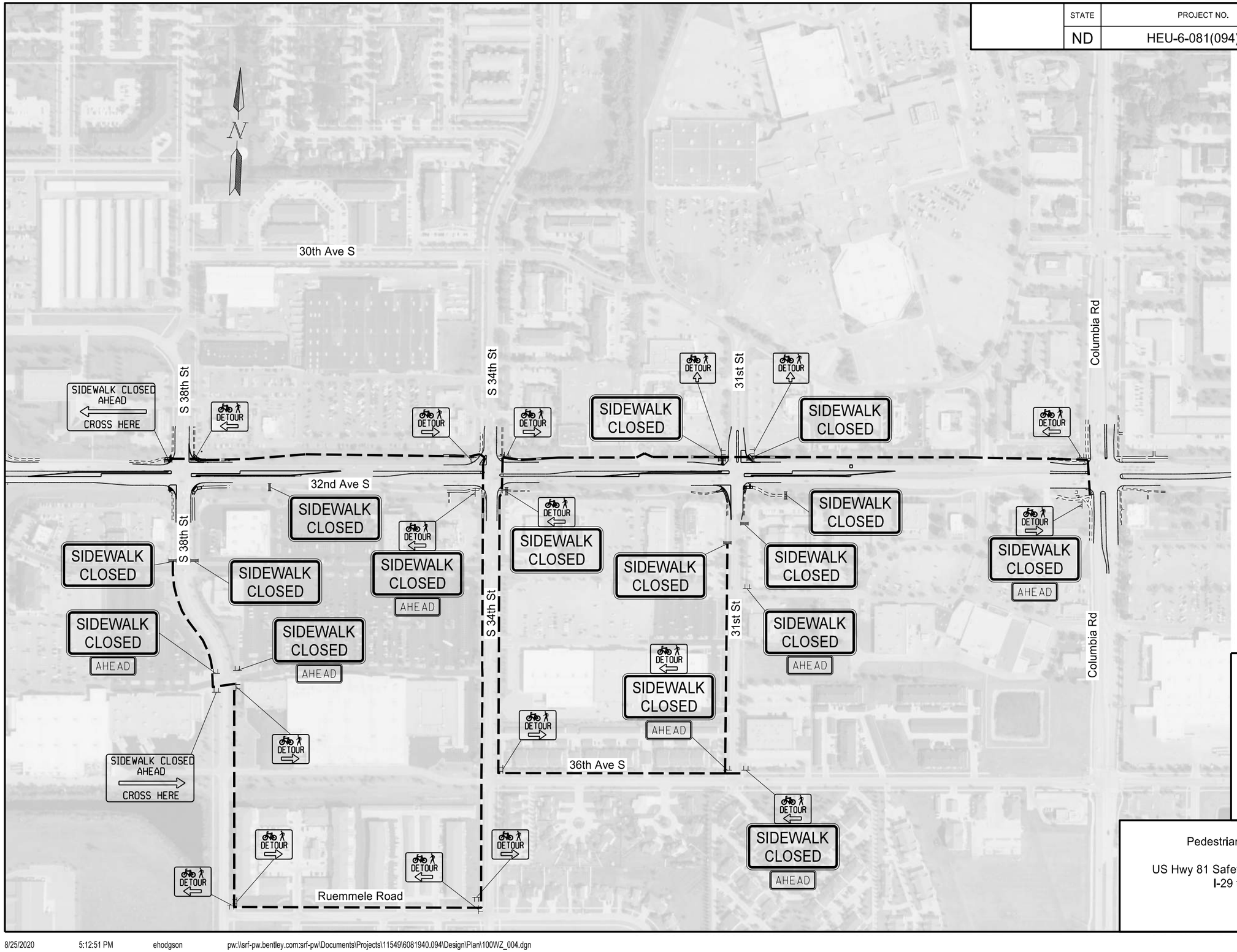
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pedestrian Detour Phase 1B

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

8/25/2020 5:12:25 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\100WZ_003.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	4



Legend

Phase 1C

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pedestrian Detour Phase 1C

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

8/25/2020 5:12:51 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\100WZ_004.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	5

N

Legend

Phase 2A

SIDEWALK CLOSED AHEAD
CROSS HERE

DETOUR

S 34th St

31st St

Columbia Rd

S 25th St

S 24th St

S 23rd St

S 20th St

32nd Ave S

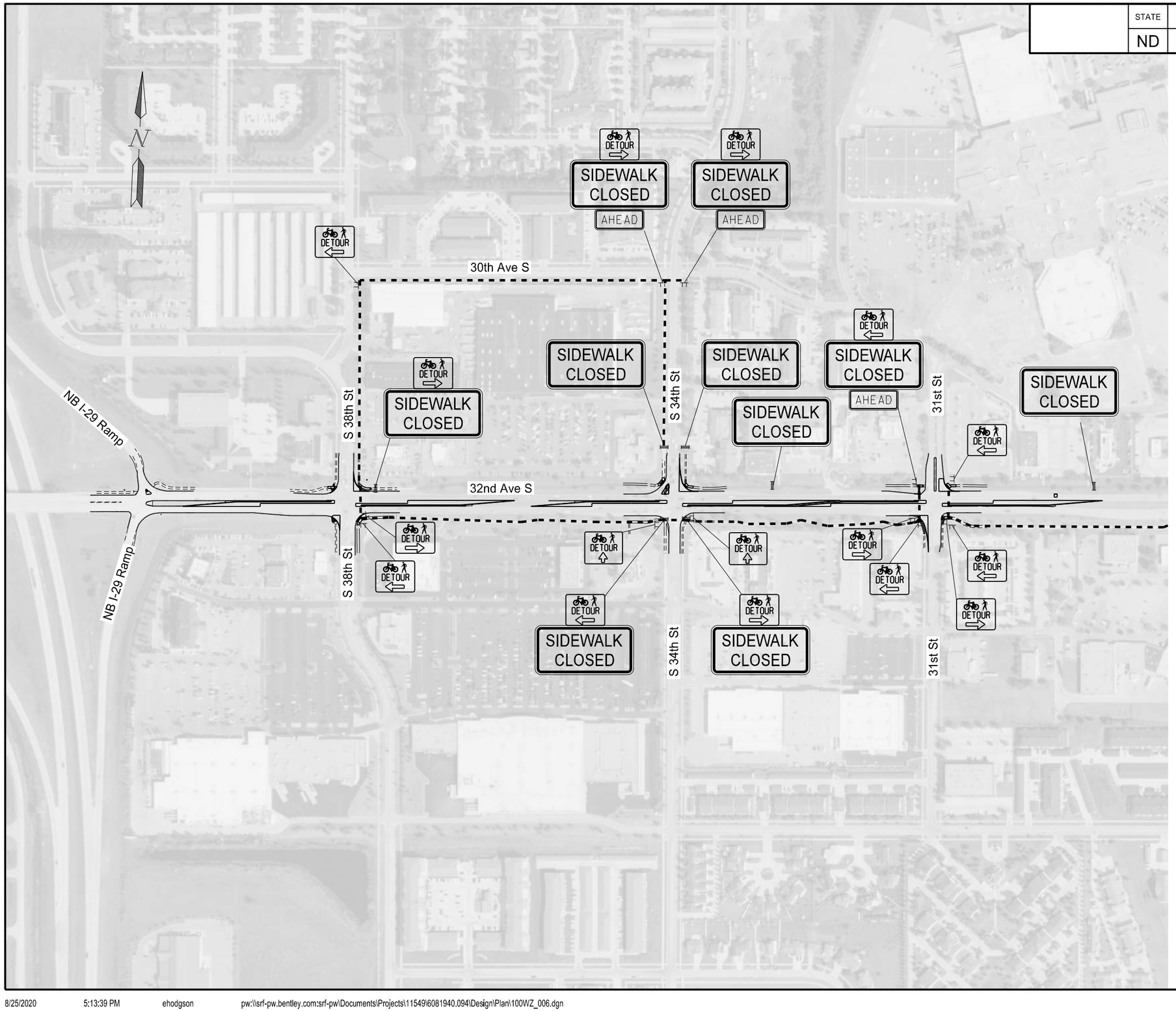
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pedestrian Detour Phase 2A

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

8/25/2020 5:13:17 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\100WZ_005.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	6



Legend

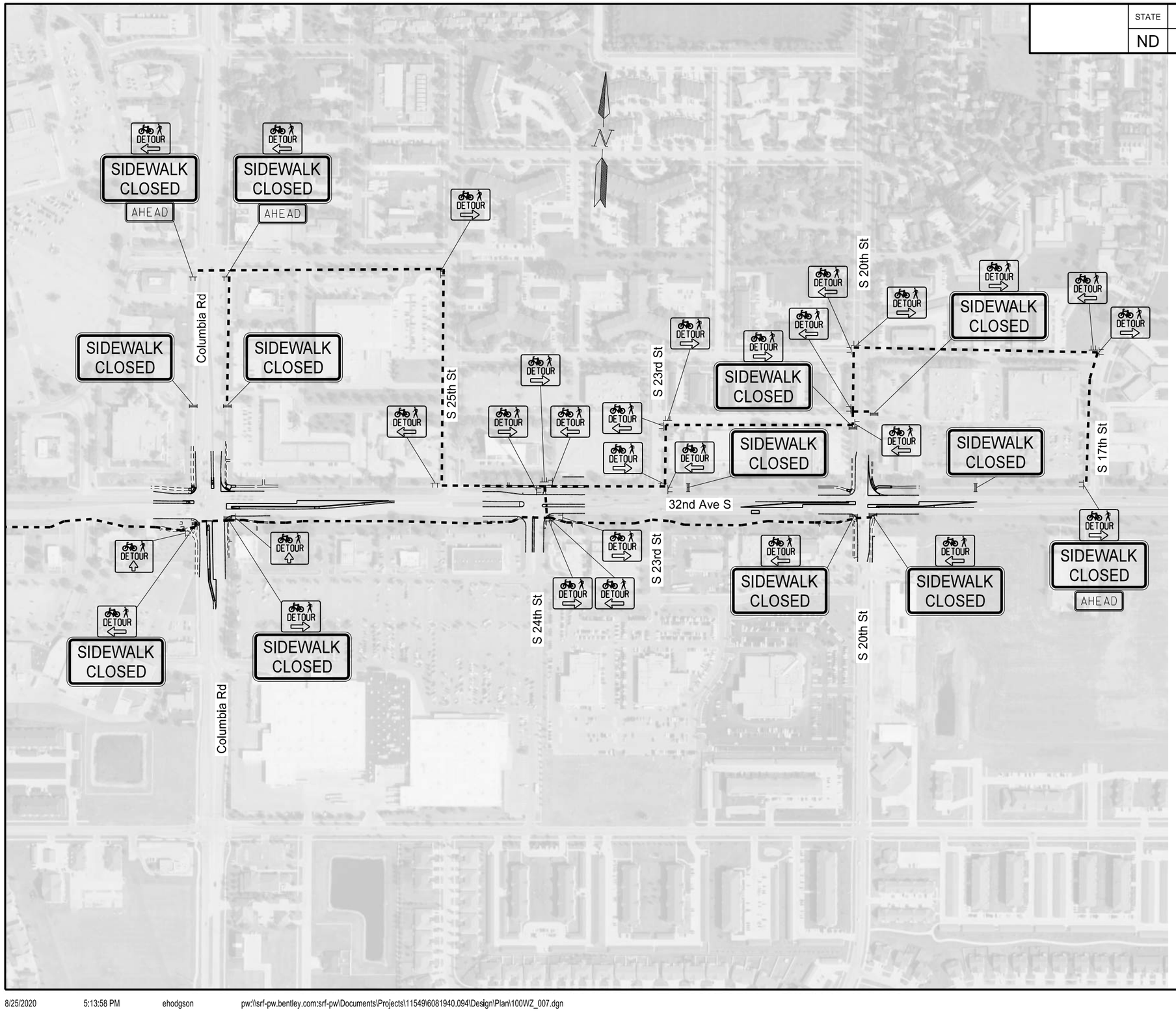
Phase 2B

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pedestrian Detour Phase 2B

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	7



Legend

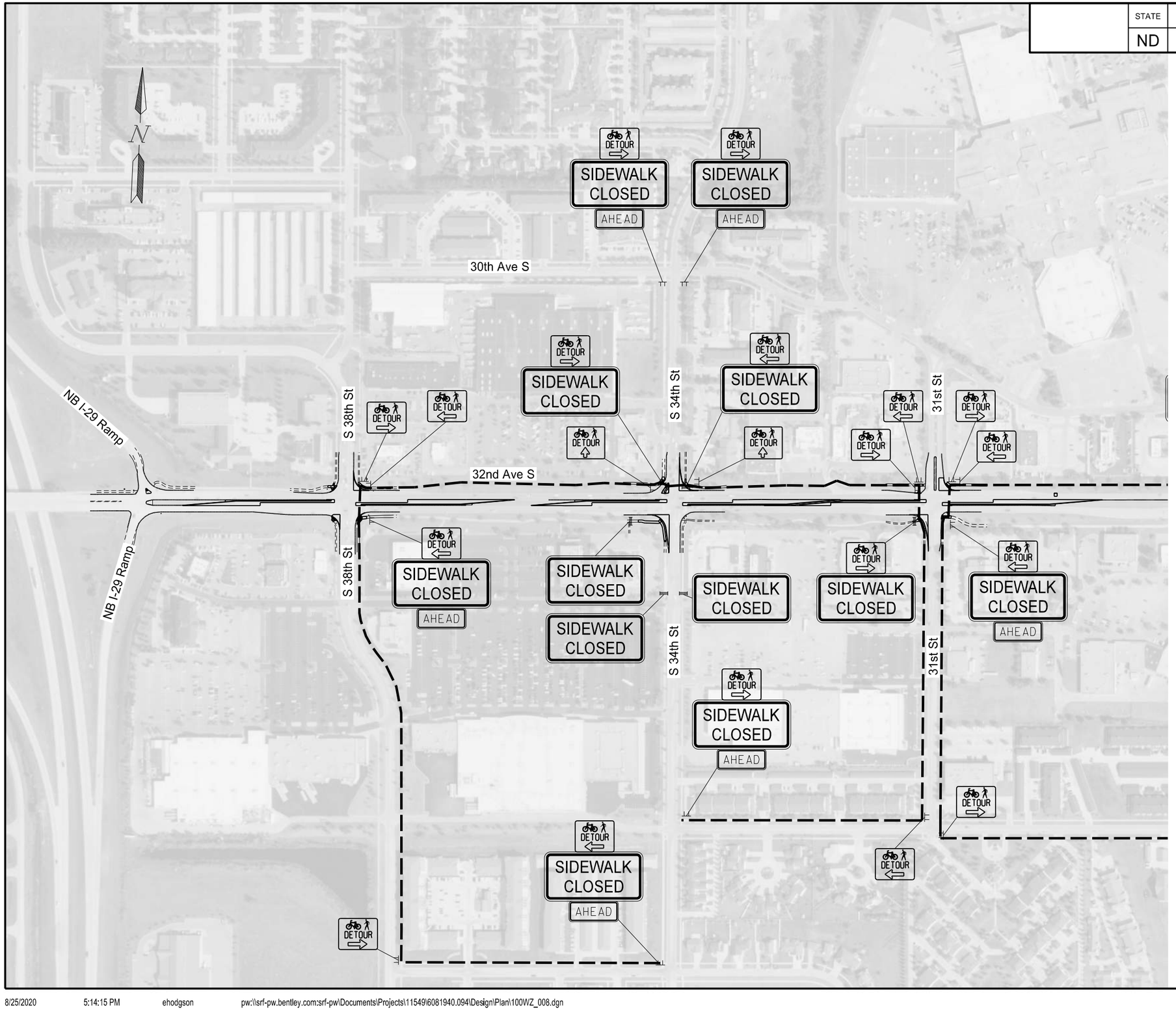
Phase 2B

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pedestrian Detour Phase 2B

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	8



Legend

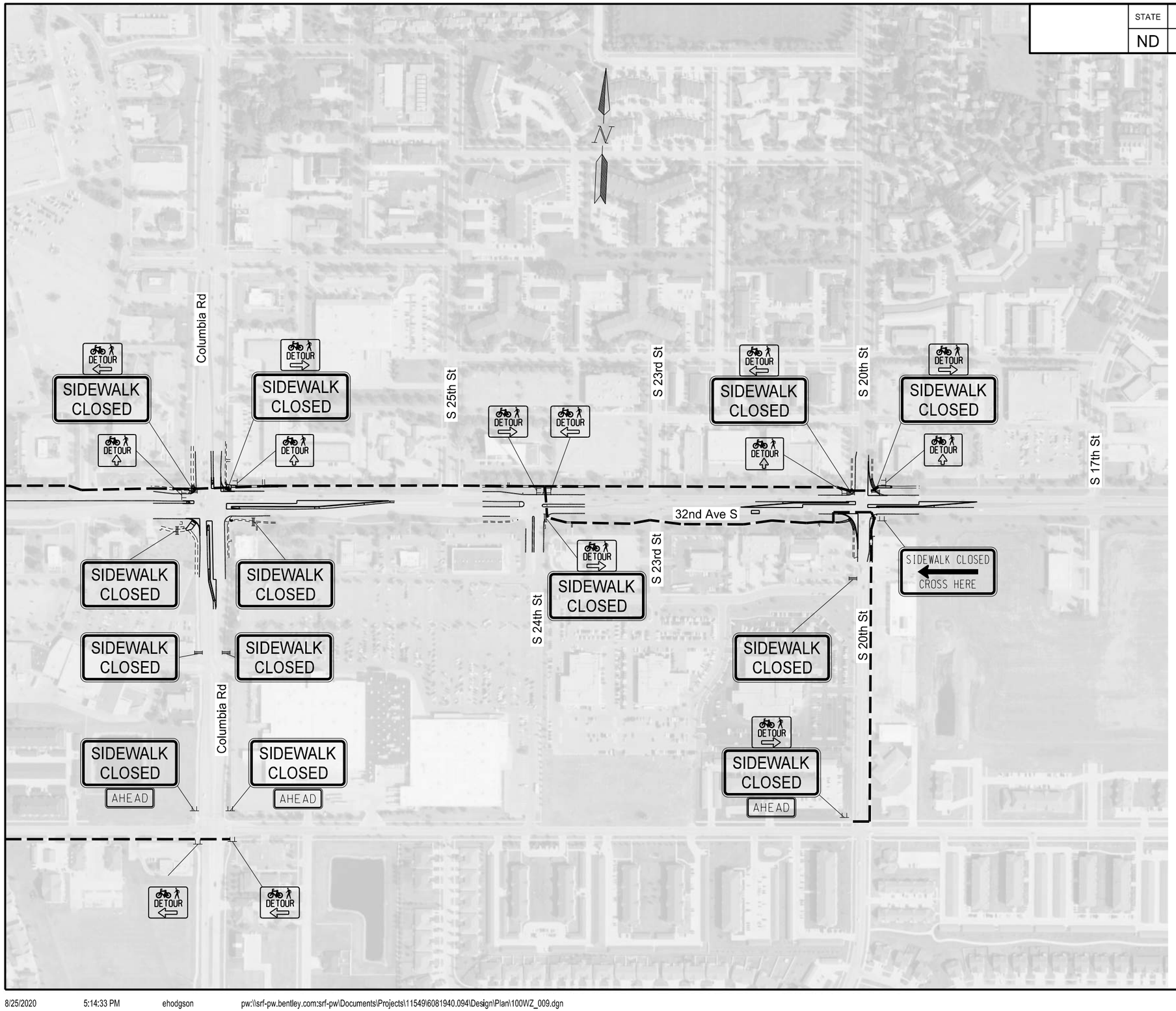
Phase 2C

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pedestrian Detour Phase 2C

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	9



Legend

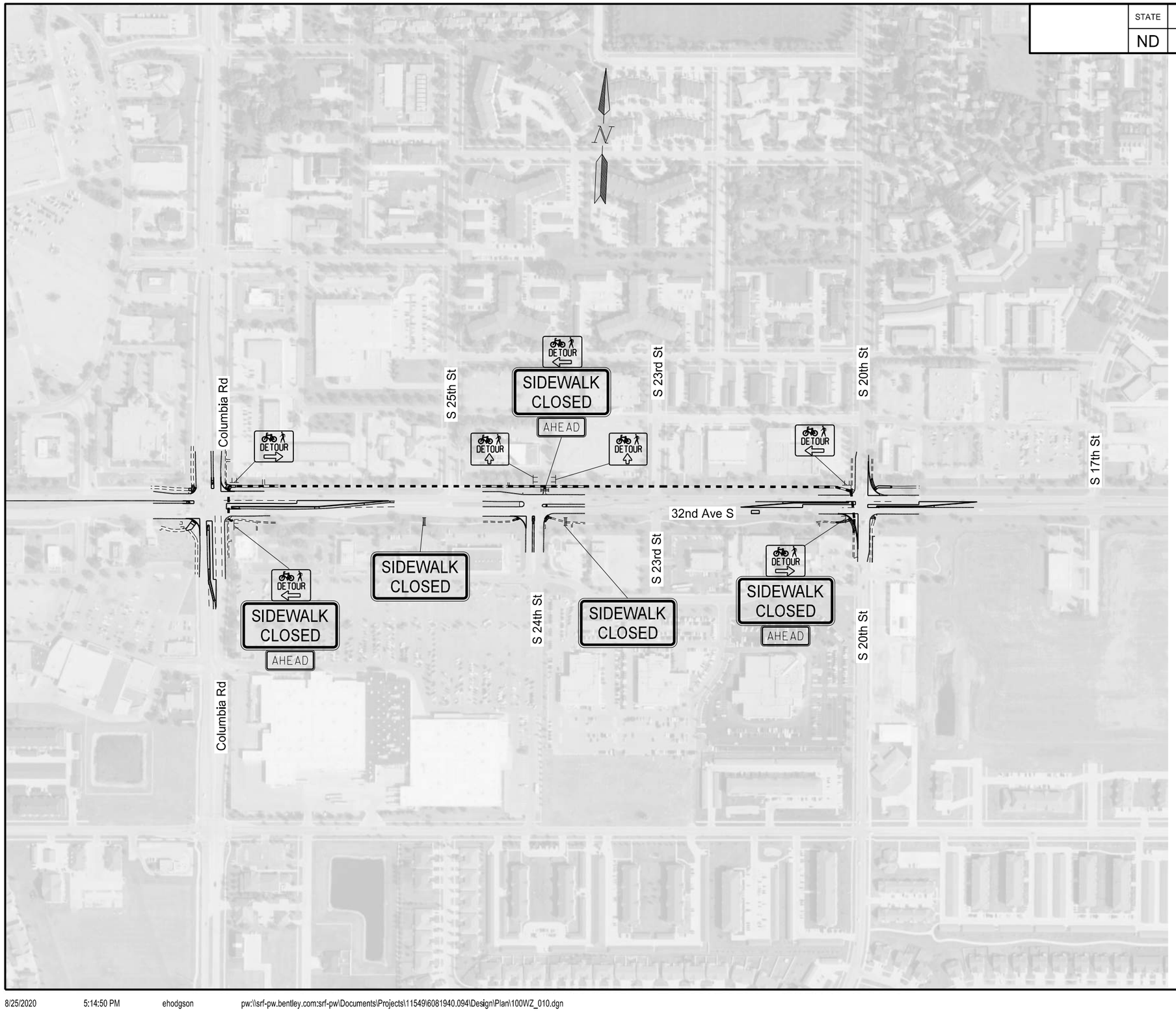
Phase 2C

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pedestrian Detour Phase 2C

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	10



Legend

Phase 3

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pedestrian Detour Phase 3

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	11

Notes:

PCMS = Portable Changeable Message Sign

Program 38th & 20th Street PCMS to say:

"RIGHT ONLY AT 32ND"	"USE DETOUR FOR LEFT"

Phase 1A-C:
Program westbound 32nd Avenue PCMS to say:

"NO RIGHT OR LEFT AT 38TH"	"USE 34TH STREET"

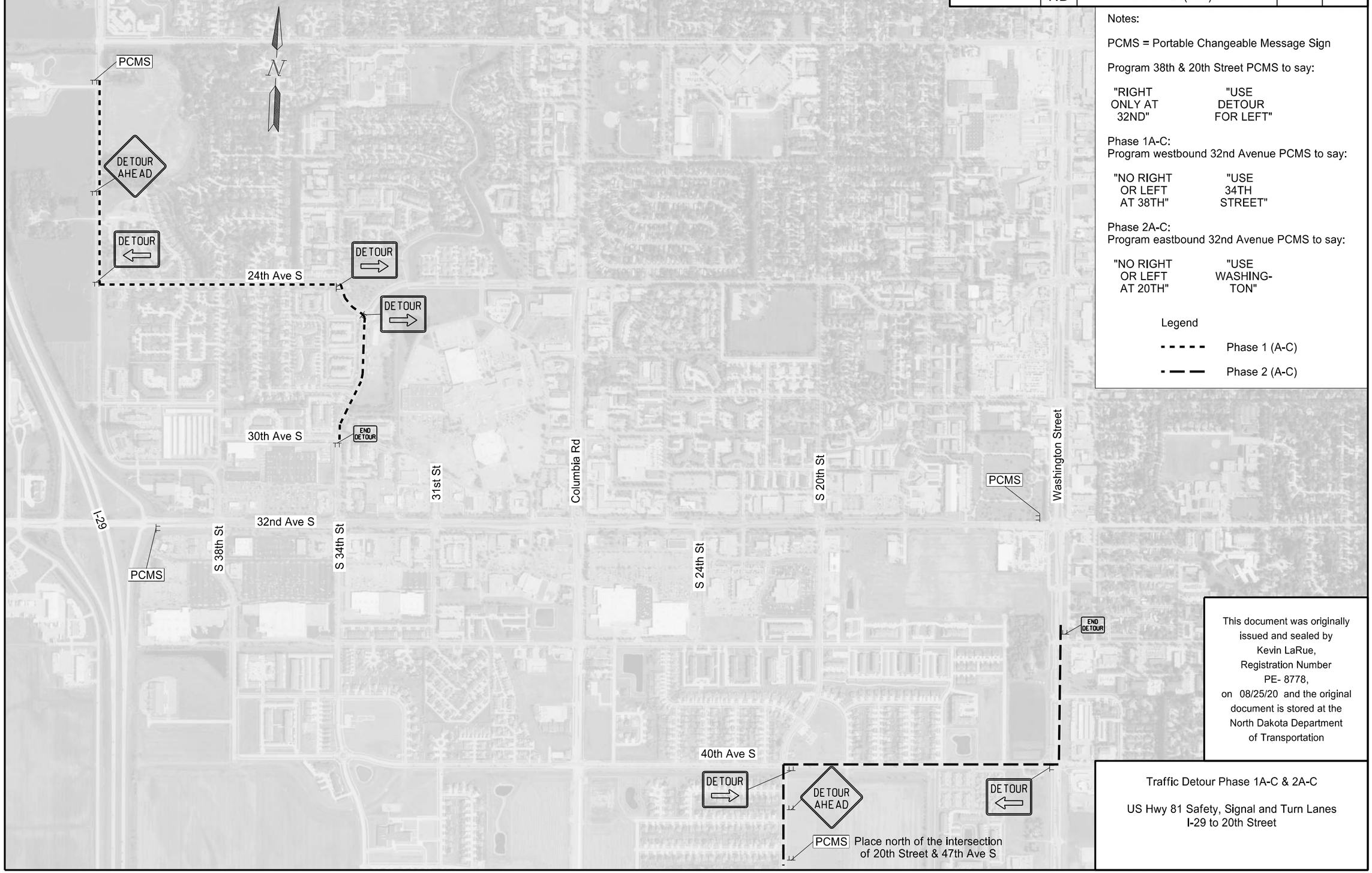
Phase 2A-C:
Program eastbound 32nd Avenue PCMS to say:

"NO RIGHT OR LEFT AT 20TH"	"USE WASHING-TON"

Legend

- - - - - Phase 1 (A-C)

- — — Phase 2 (A-C)

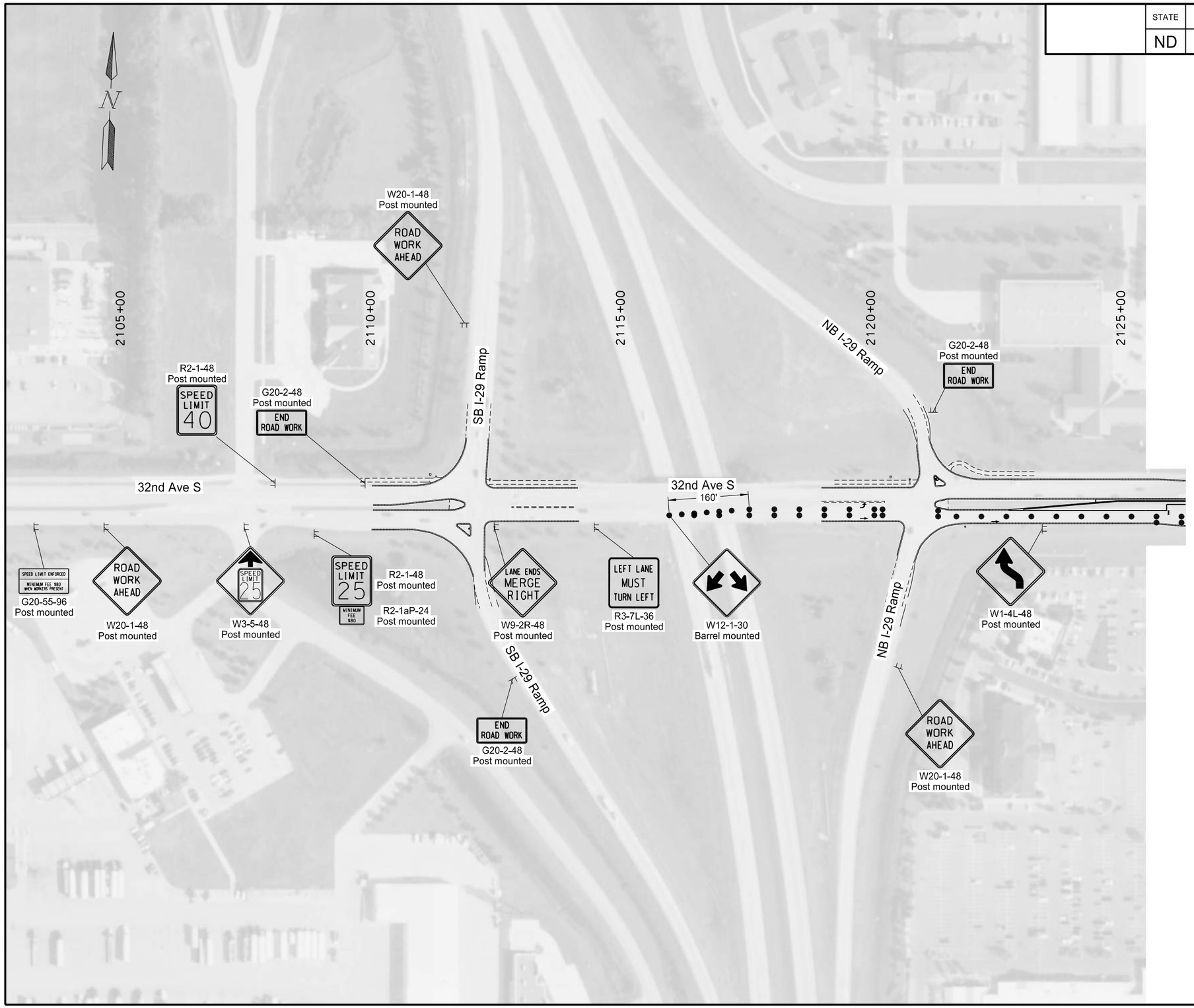


This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Traffic Detour Phase 1A-C & 2A-C

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	12



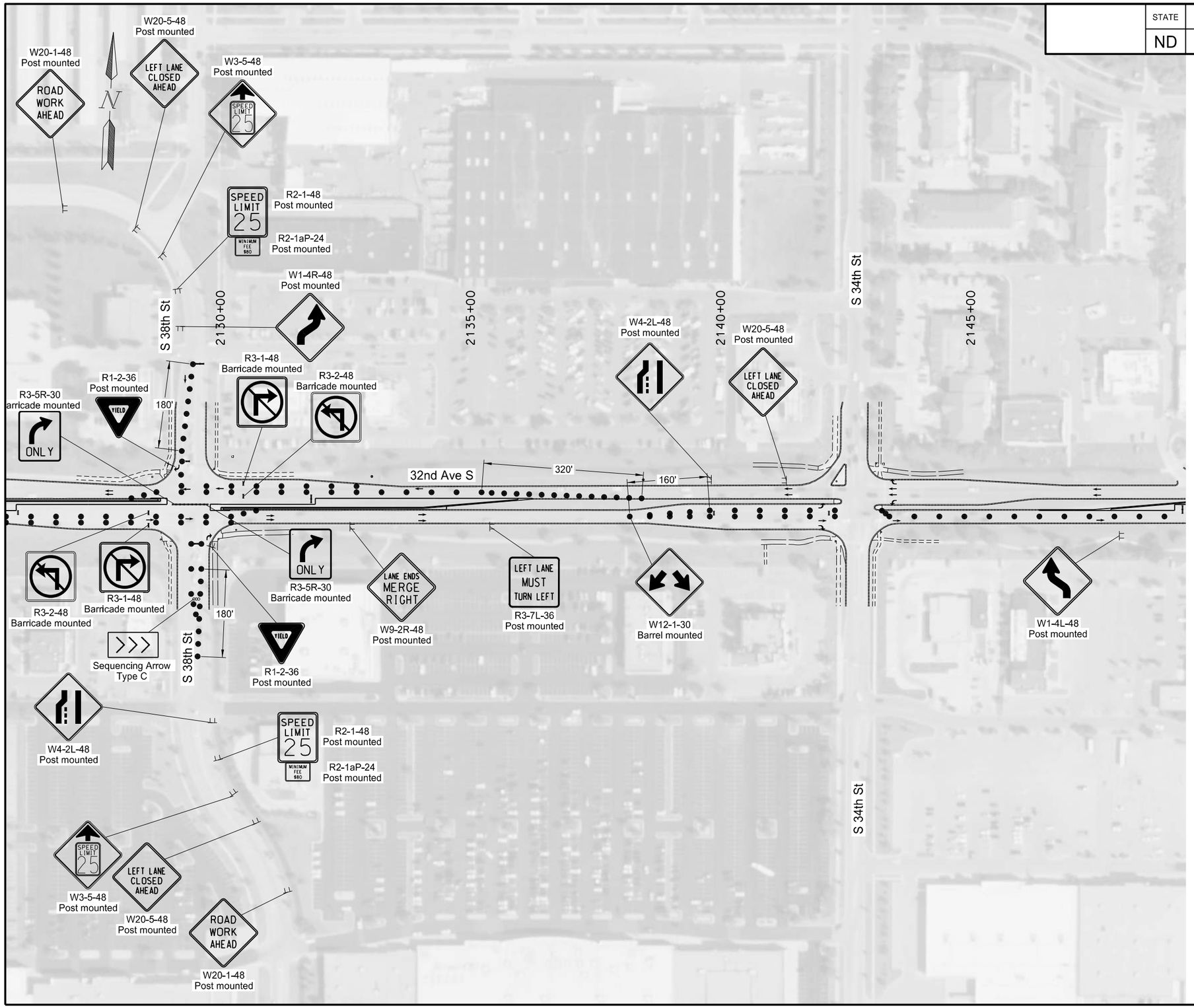
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 1A

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	13



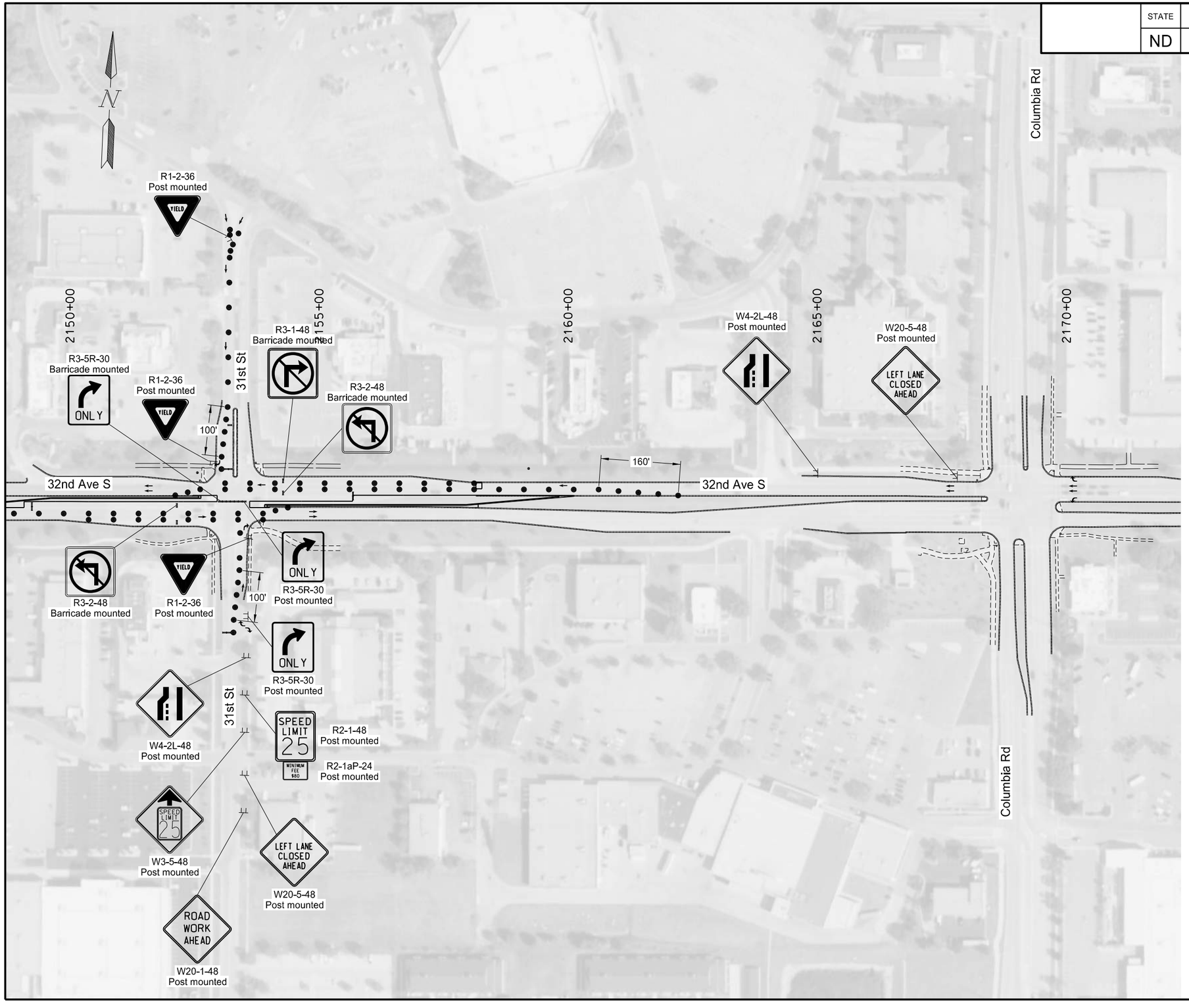
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 1A

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	14



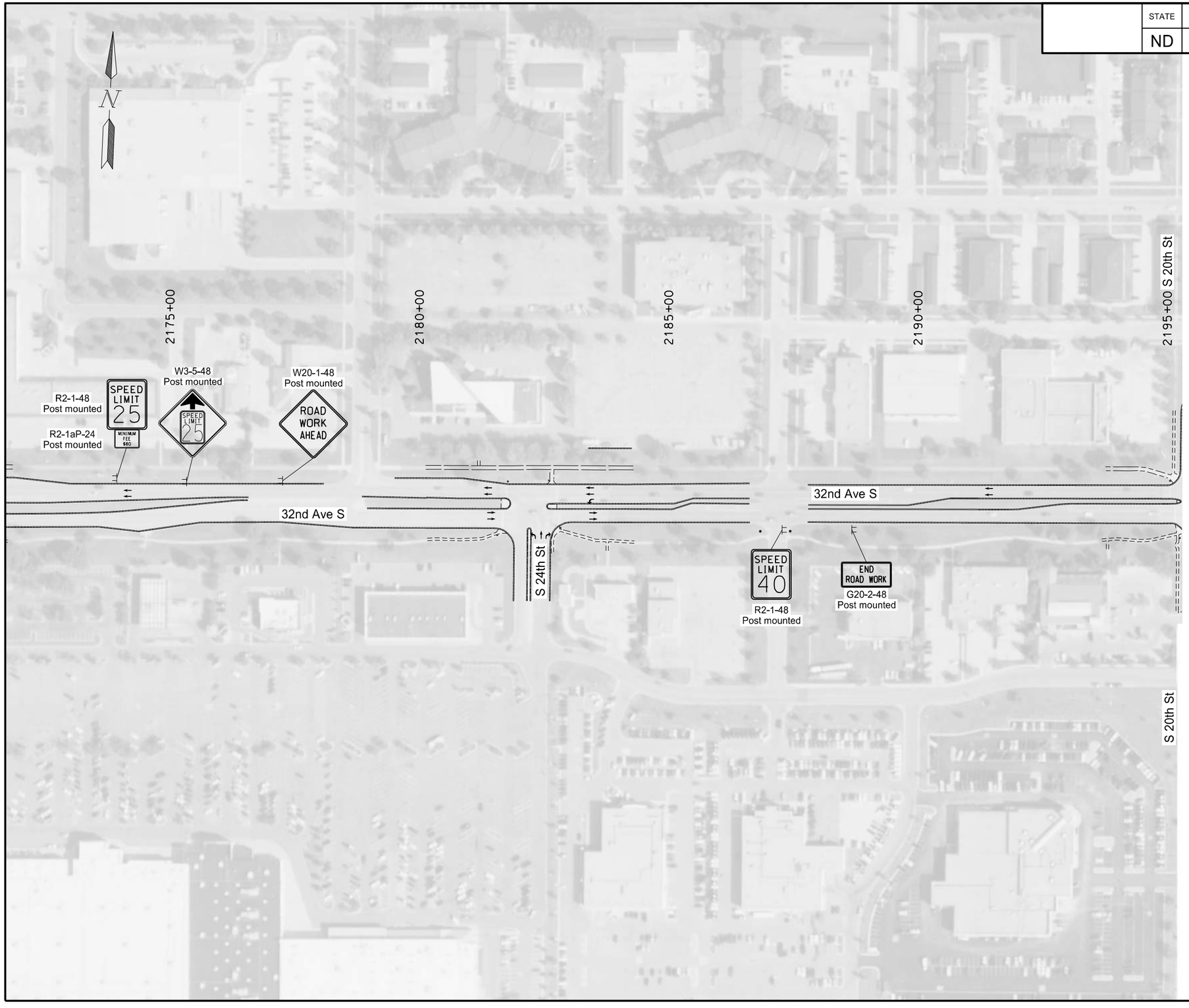
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 1A

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	15



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 1A

8/25/2020 5:16:32 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\100WZ_015.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	16

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 1A

8/25/2020 5:16:56 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\100WZ_016.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	17

N

2105+00

2110+00

2115+00

2120+00

2125+00

W20-1-48
Post mounted
ROAD WORK AHEAD

R2-1-48
Post mounted
SPEED LIMIT 40

G20-2-48
Post mounted
END ROAD WORK

SB I-29 Ramp

NB I-29 Ramp

G20-2-48
Post mounted
END ROAD WORK

32nd Ave S

32nd Ave S
160'

SPEED LIMIT ENFORCED
MINIMUM FEE $80
WHEN WORKERS PRESENT
G20-55-96
Post mounted

ROAD WORK AHEAD
W20-1-48
Post mounted

SPEED LIMIT 25
W3-5-48
Post mounted

SPEED LIMIT 25
MINIMUM FEE $80
R2-1-48
Post mounted
R2-1aP-24
Post mounted

LANE ENDS MERGE RIGHT
W9-2R-48
Post mounted

LEFT LANE MUST TURN LEFT
R3-7L-36
Post mounted

W12-1-30
Barrel mounted

W1-4L-48
Post mounted

SB I-29 Ramp

END ROAD WORK
G20-2-48
Post mounted

NB I-29 Ramp

ROAD WORK AHEAD
W20-1-48
Post mounted

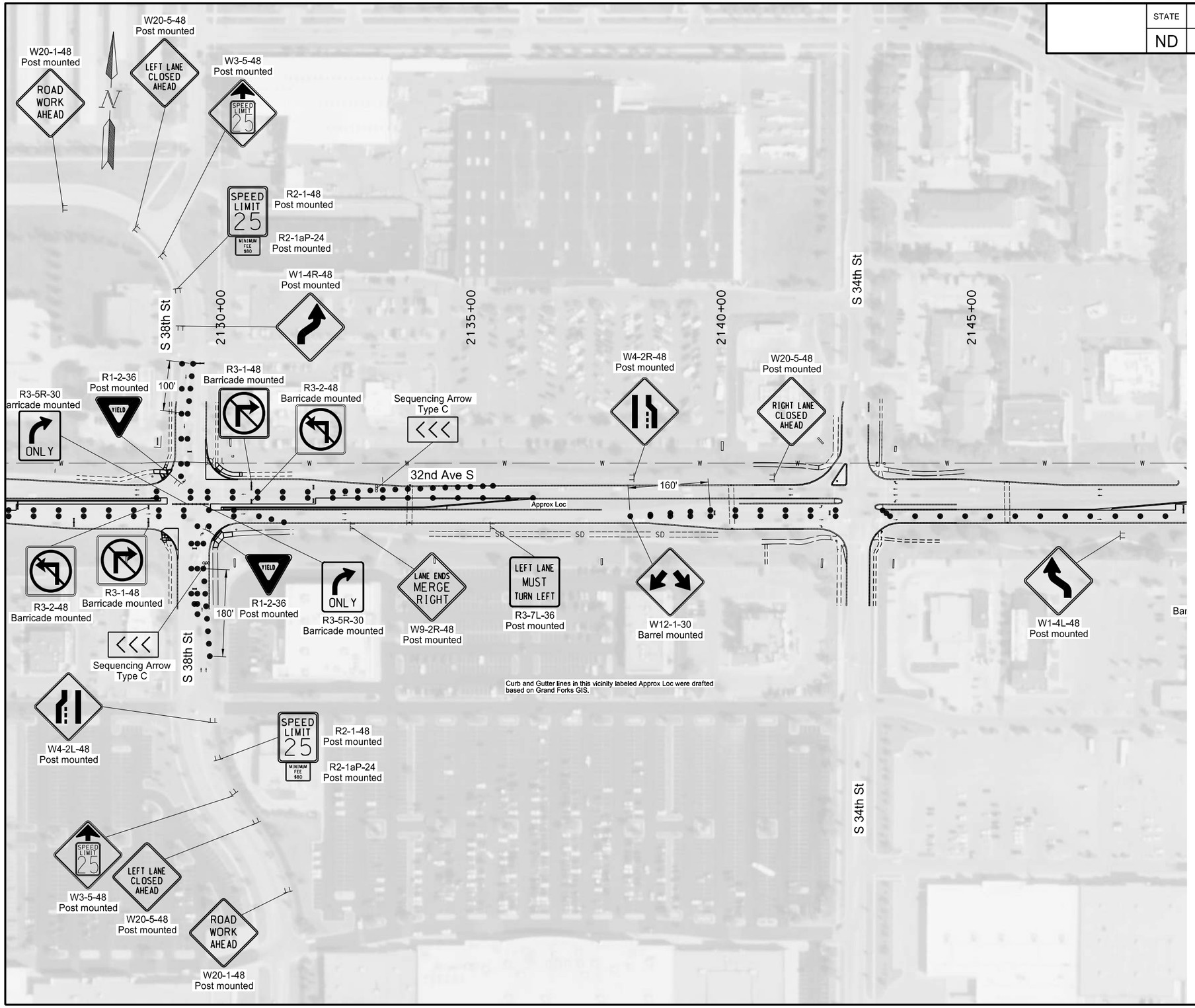
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 1B & 1C

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	18



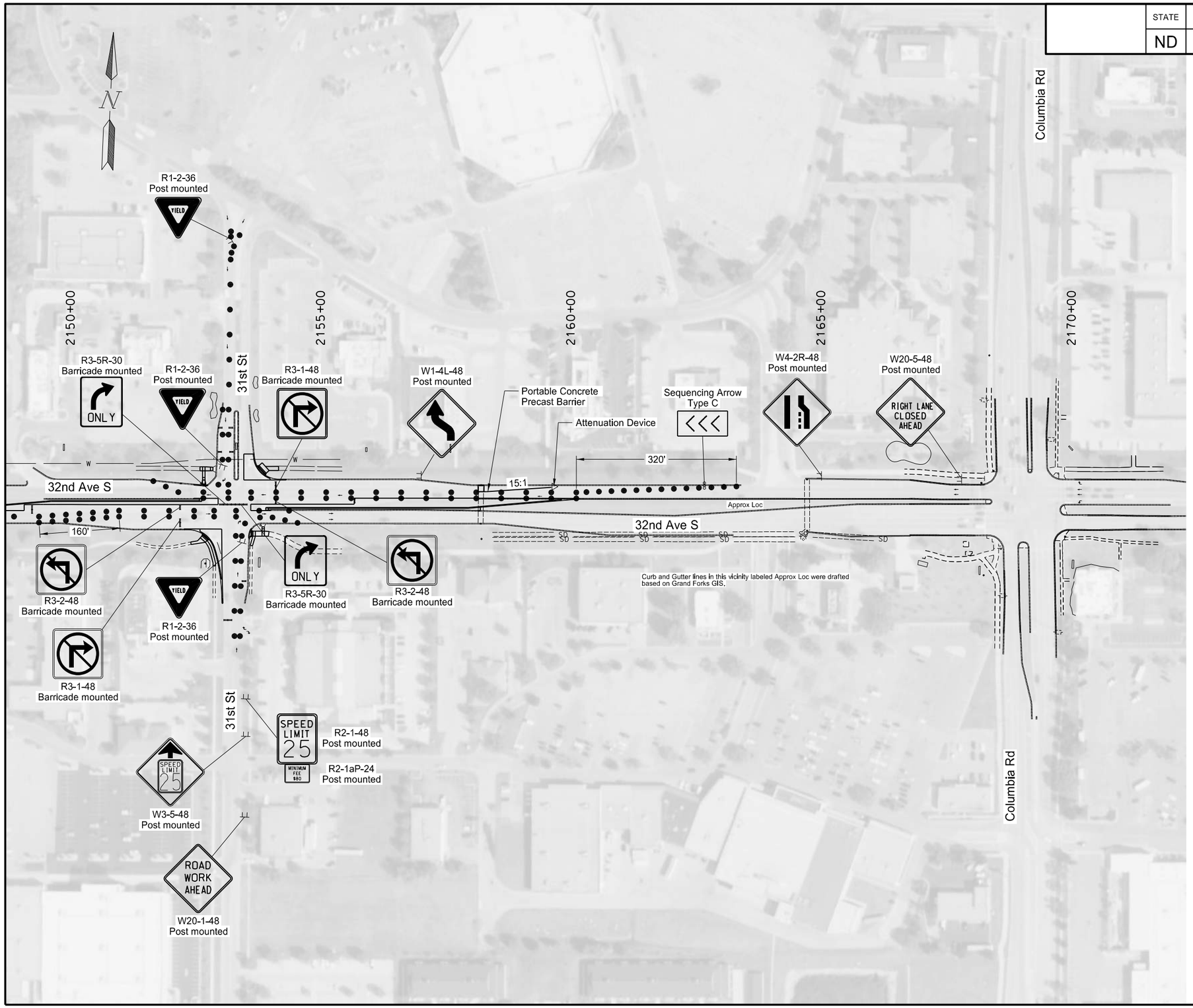
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 1B & 1C

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	19



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

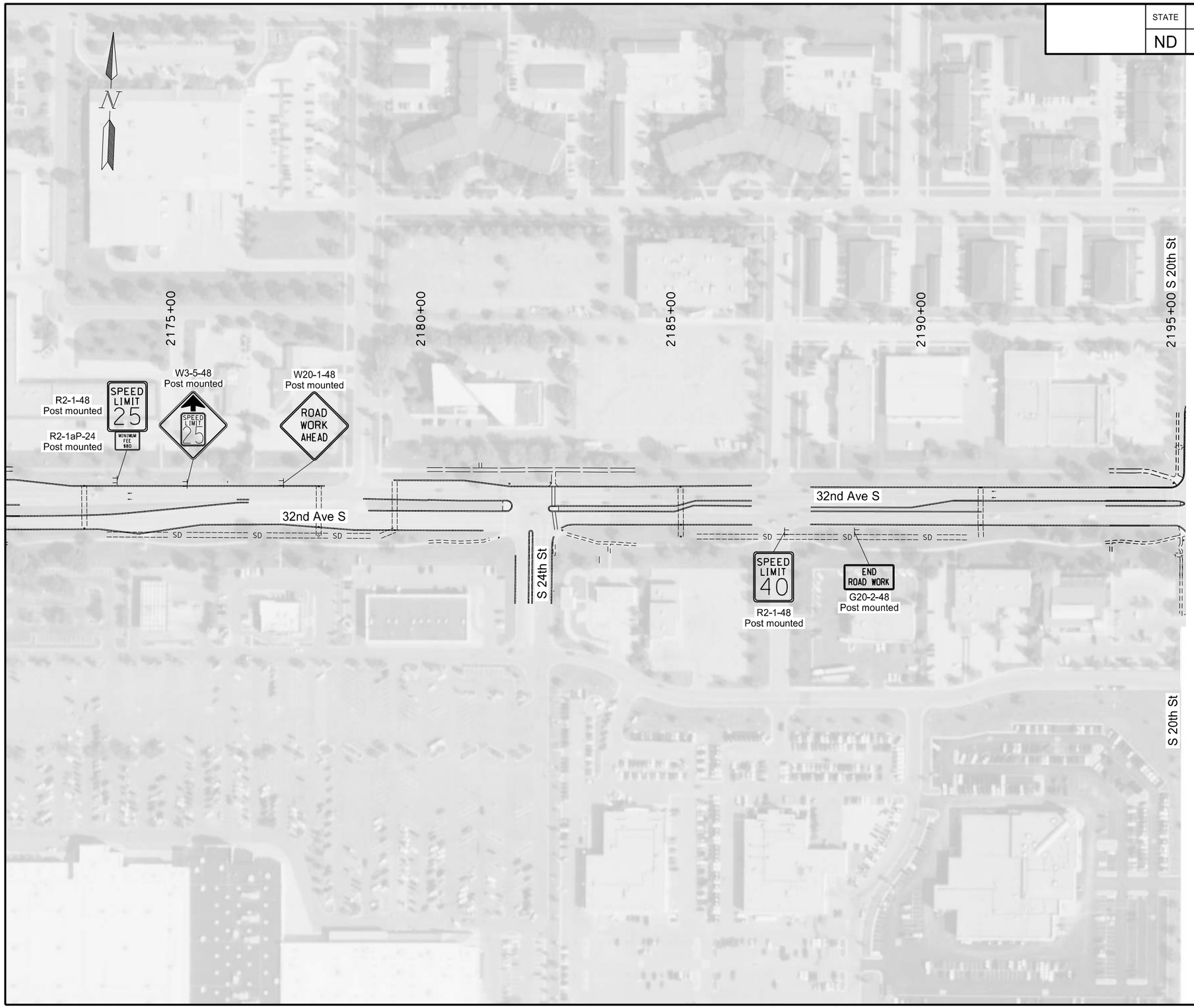
Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 1B & 1C

8/25/2020 5:18:07 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\100WZ_019.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	20



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 1B & 1C

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	21

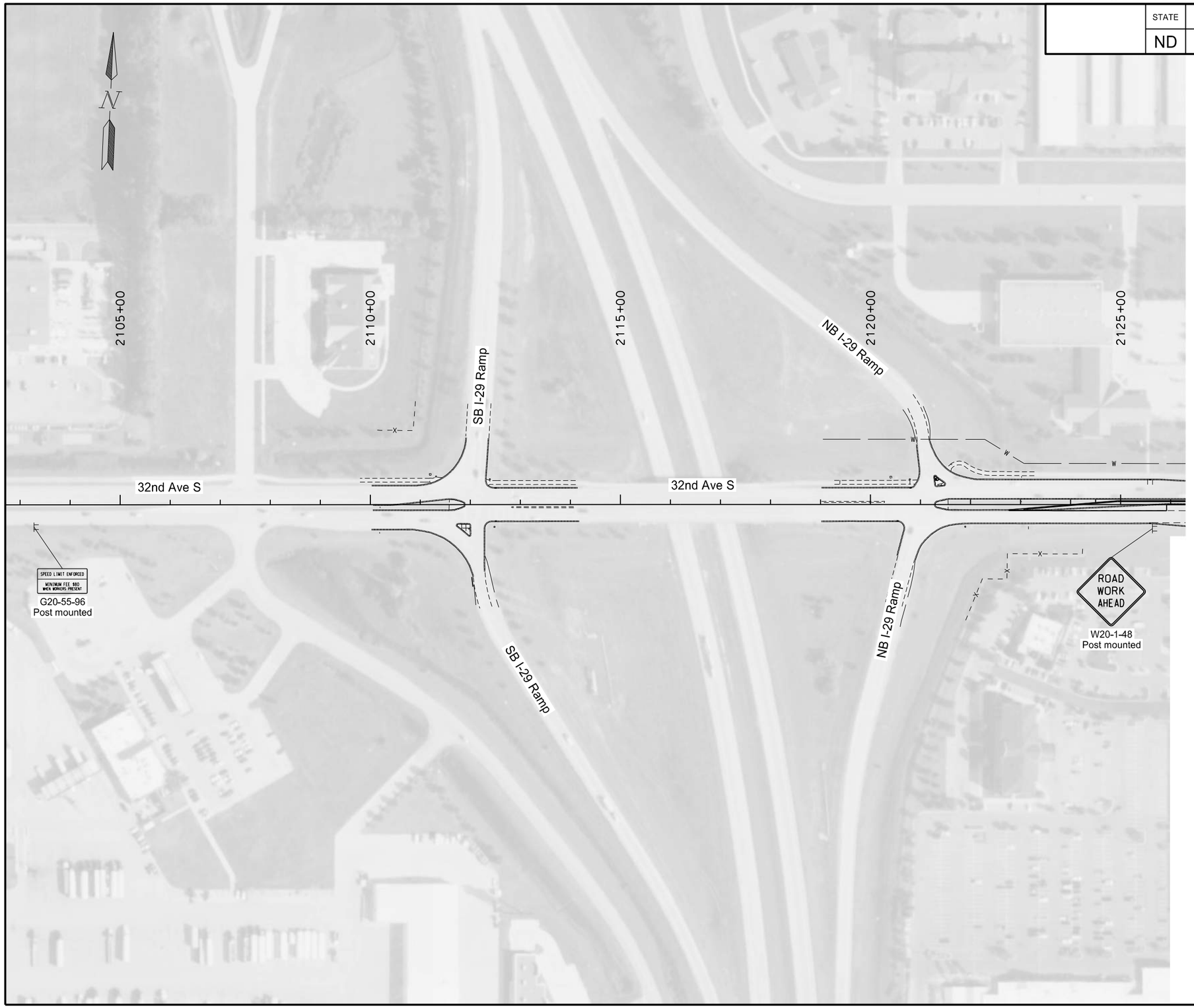
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 1B & 1C

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	22



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

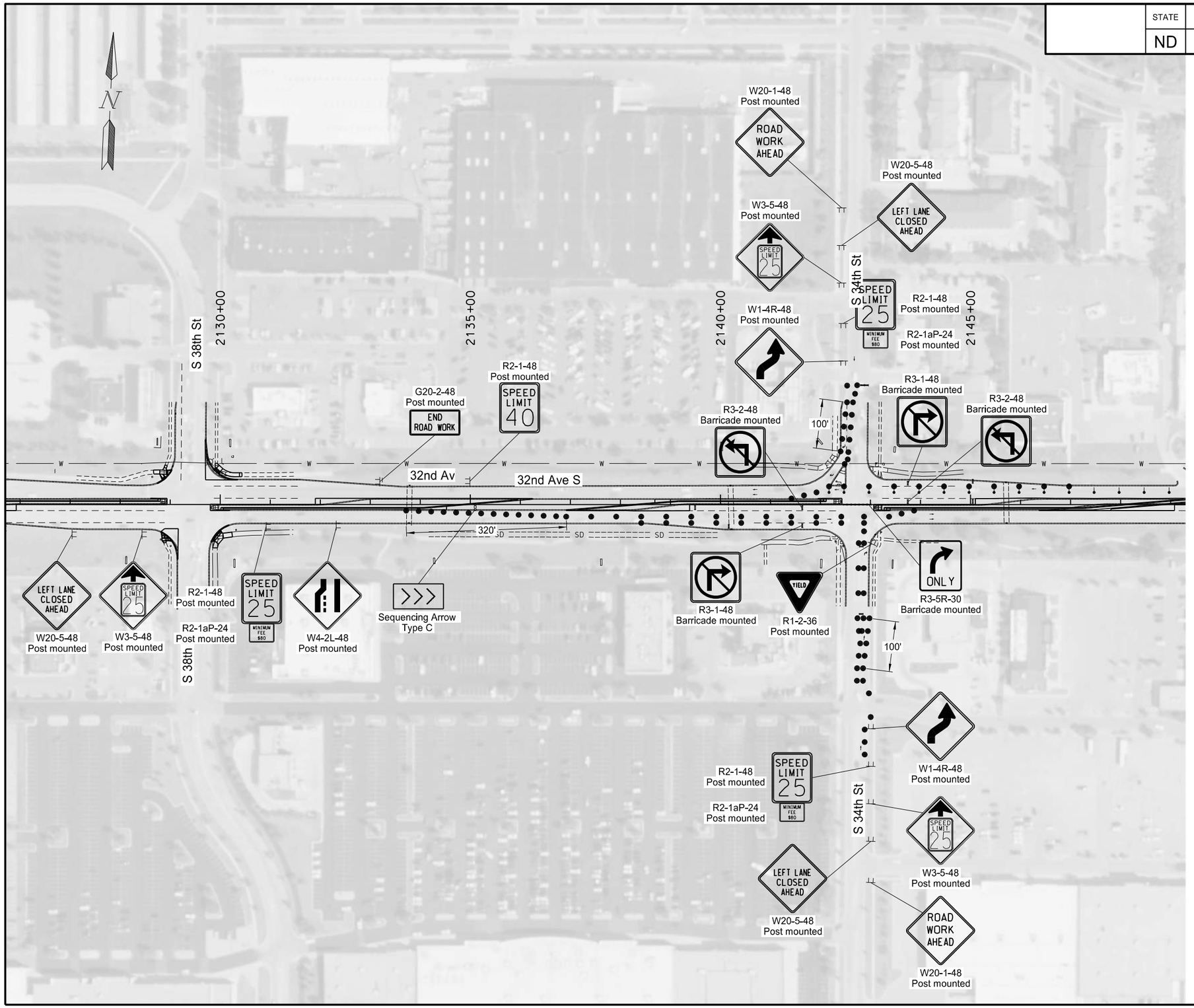
Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 2A

8/25/2020 5:19:21 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\100WZ_022.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	23



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

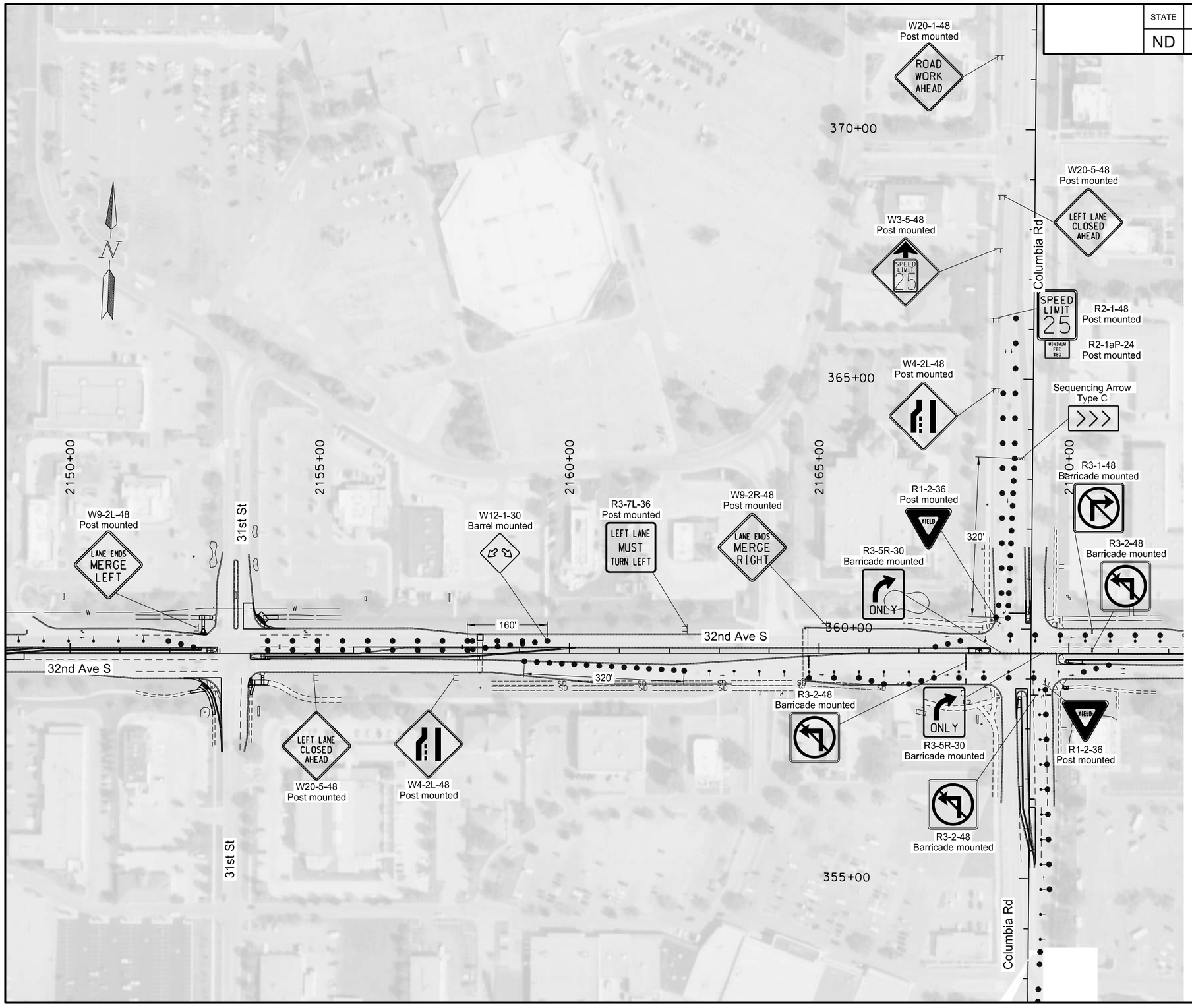
Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 2A

8/25/2020 5:19:56 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\100WZ_023.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	24



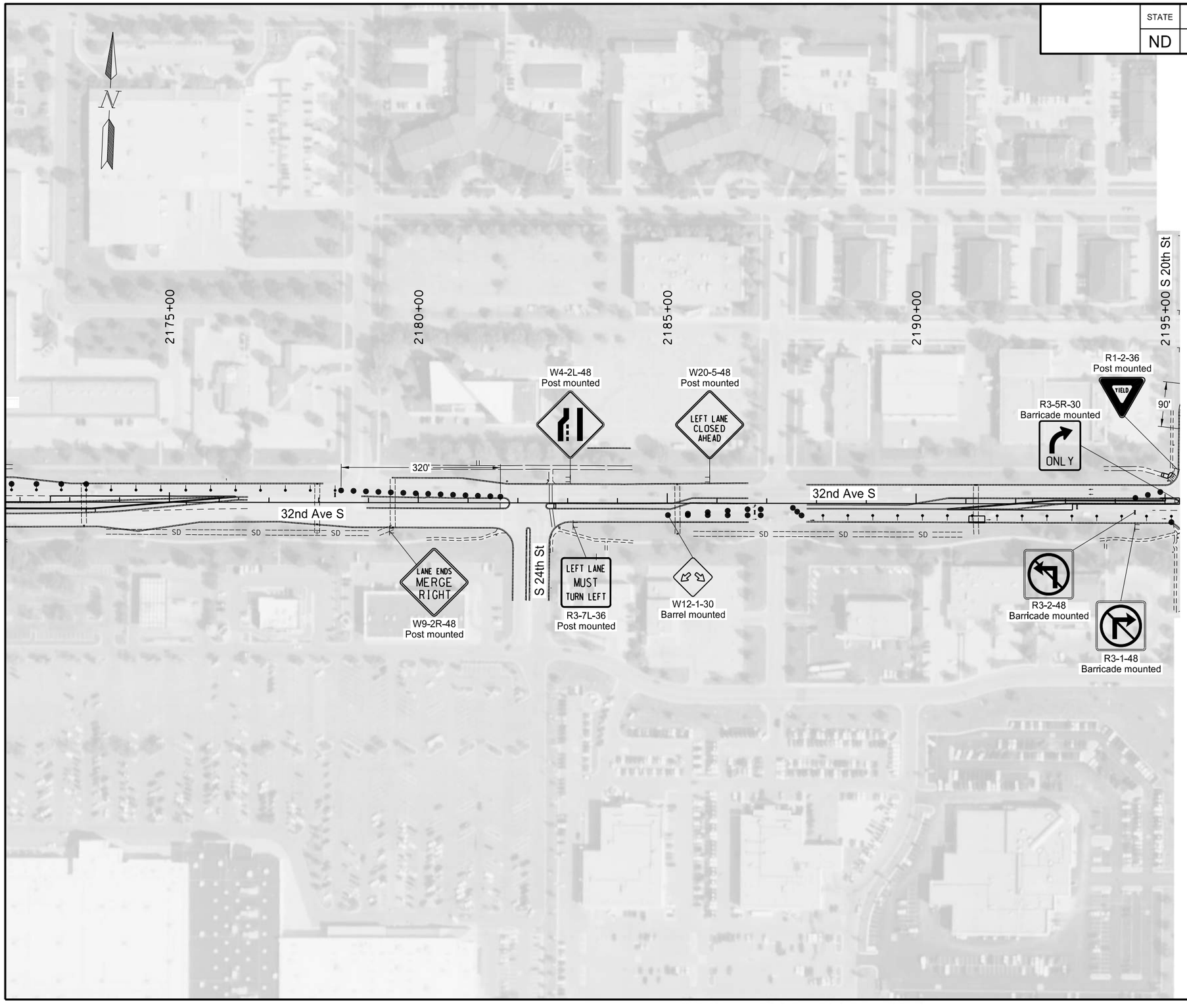
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 2A

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	25



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

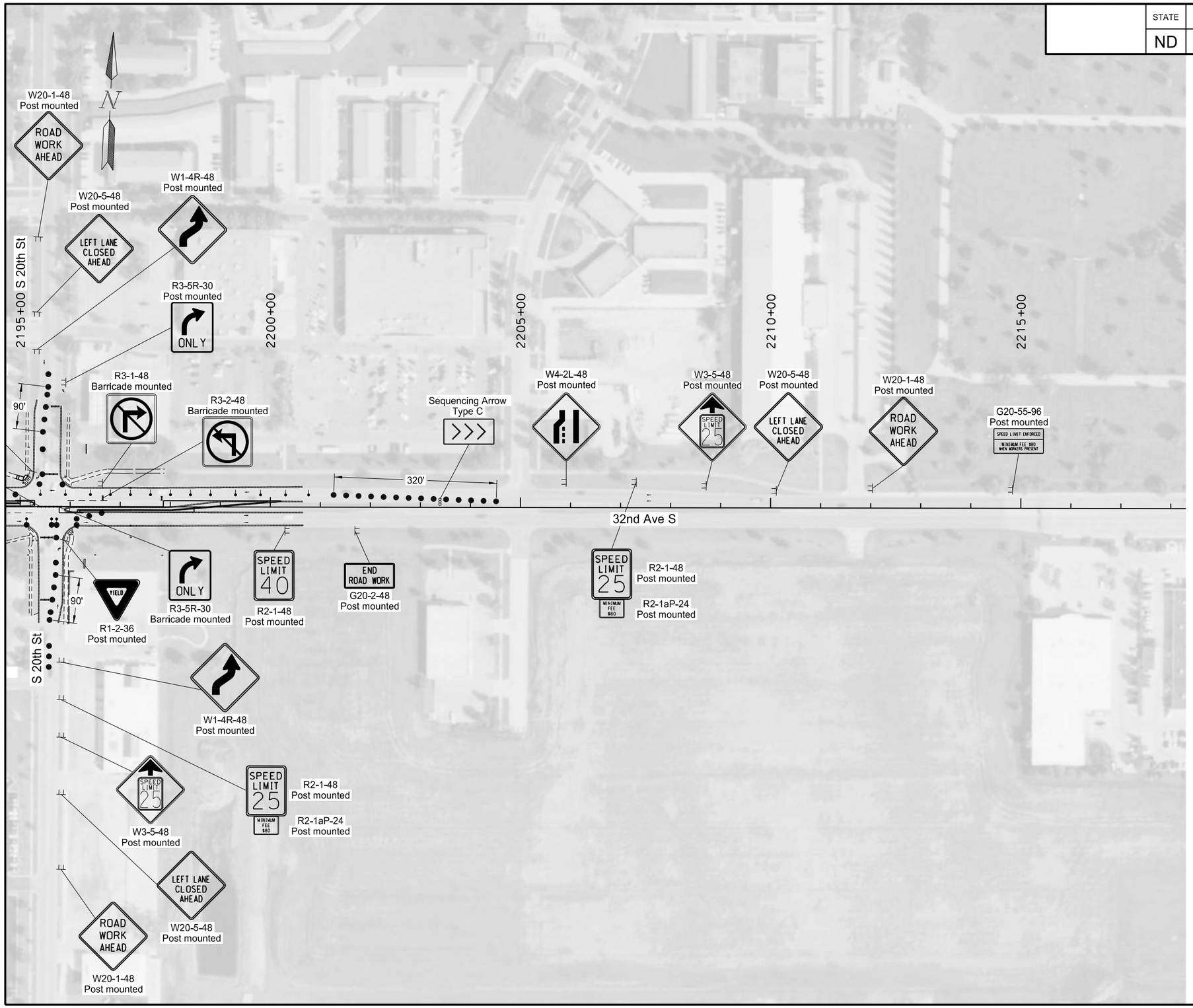
Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 2A

8/25/2020 5:20:47 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\100WZ_025.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	26



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 2A

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	27

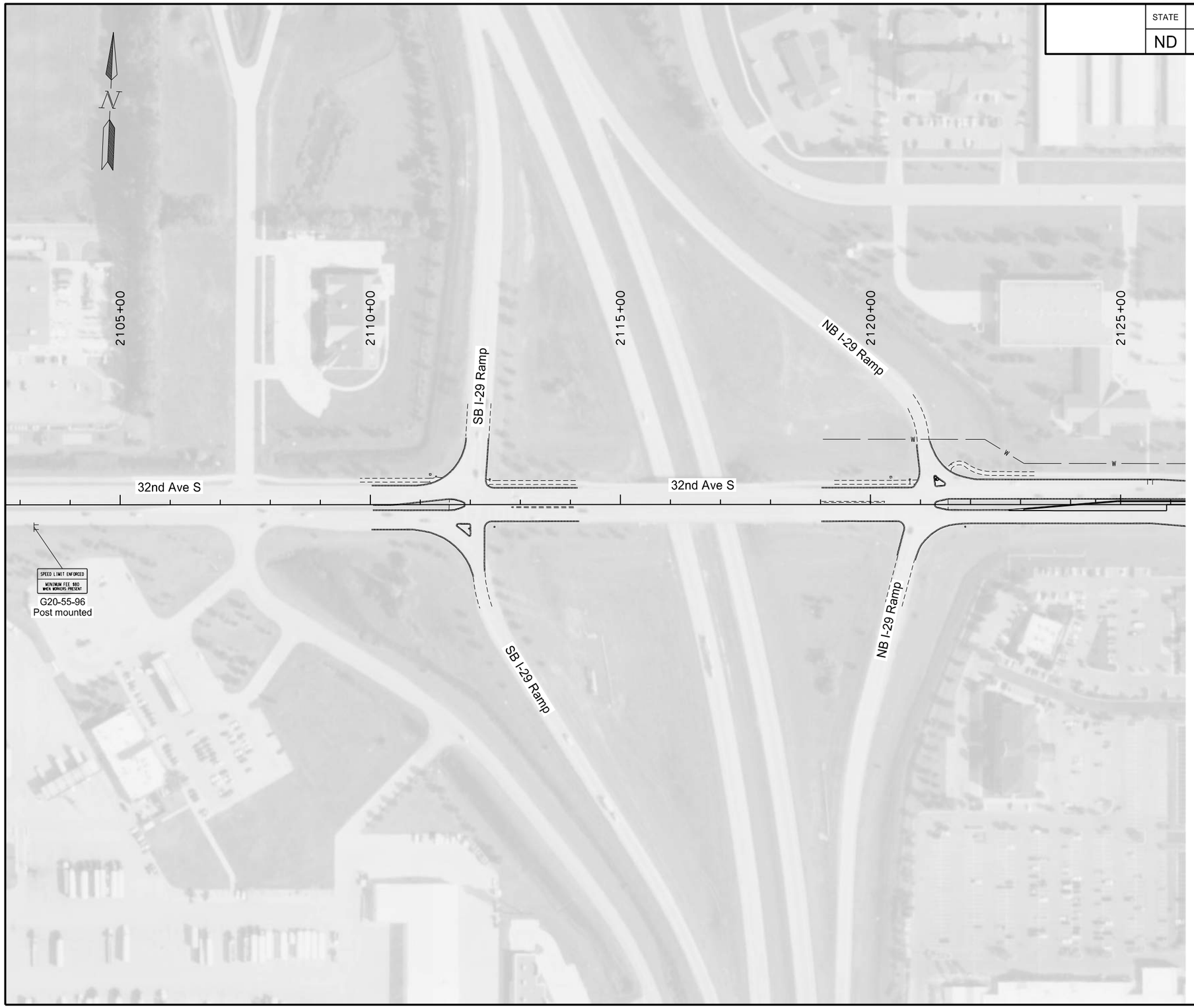
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 2A

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	28



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

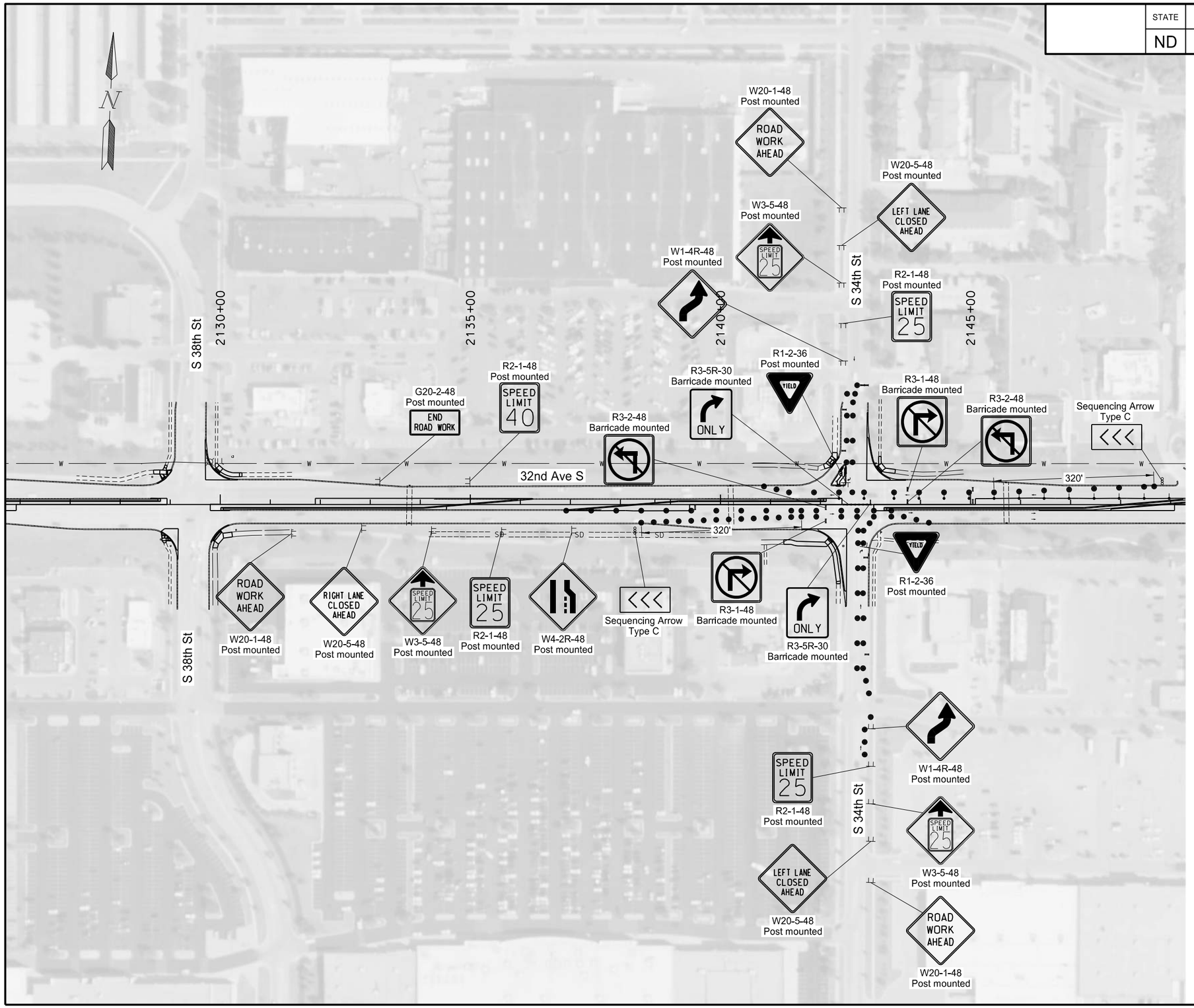
Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 2B & 2C

8/25/2020 5:22:04 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\100WZ_028.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	29



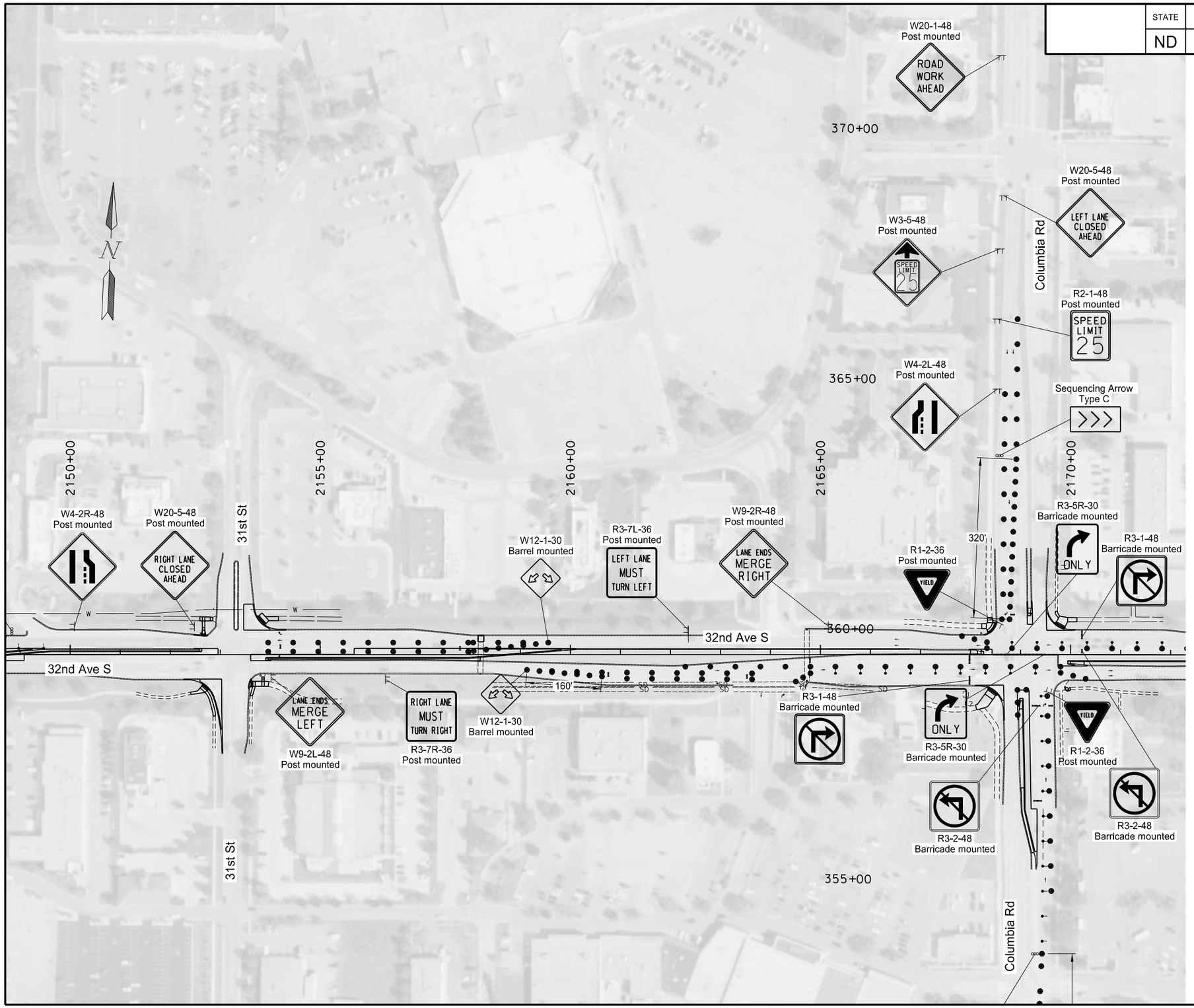
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 2B & 2C

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	30



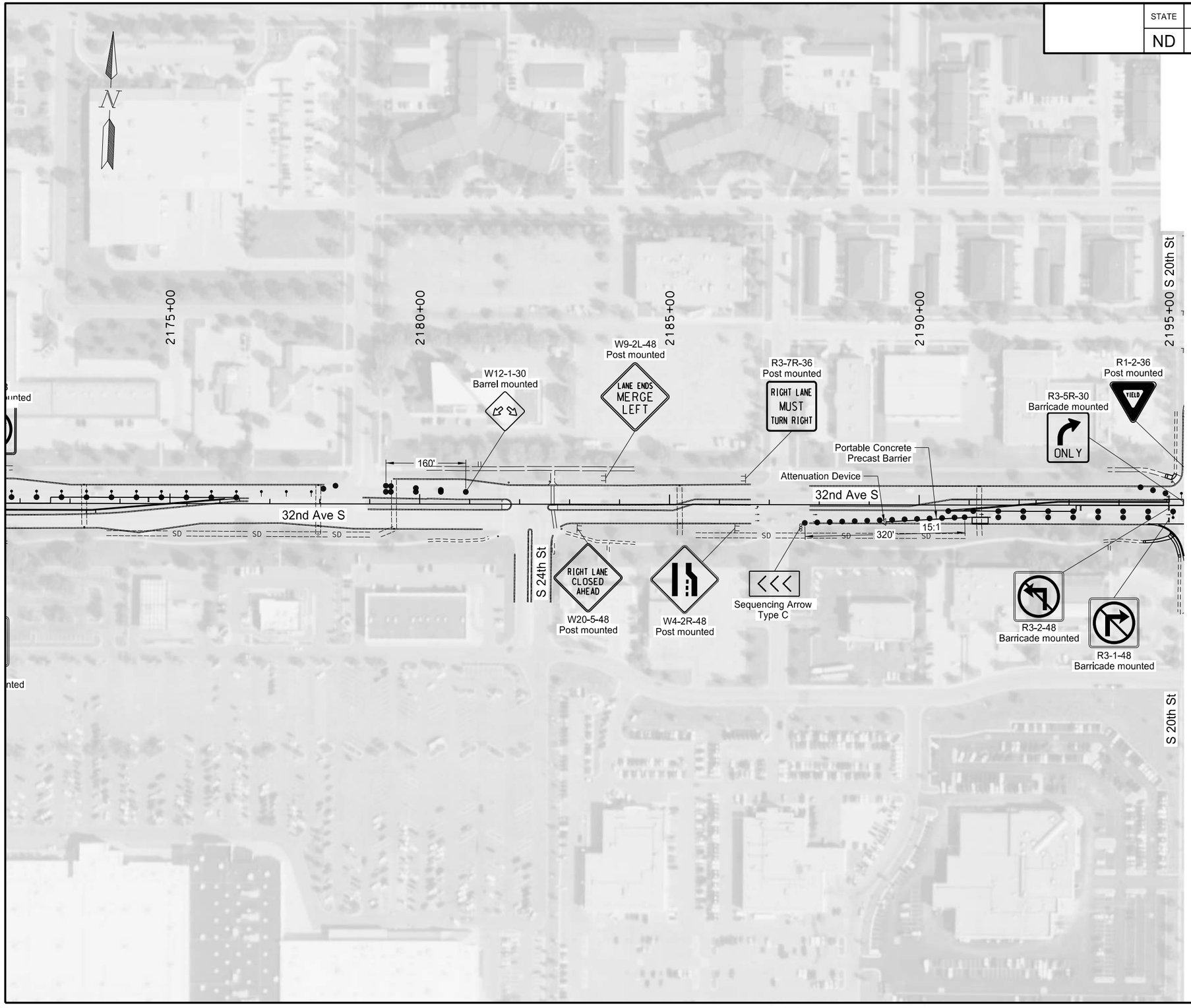
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 2B & 2C

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	31



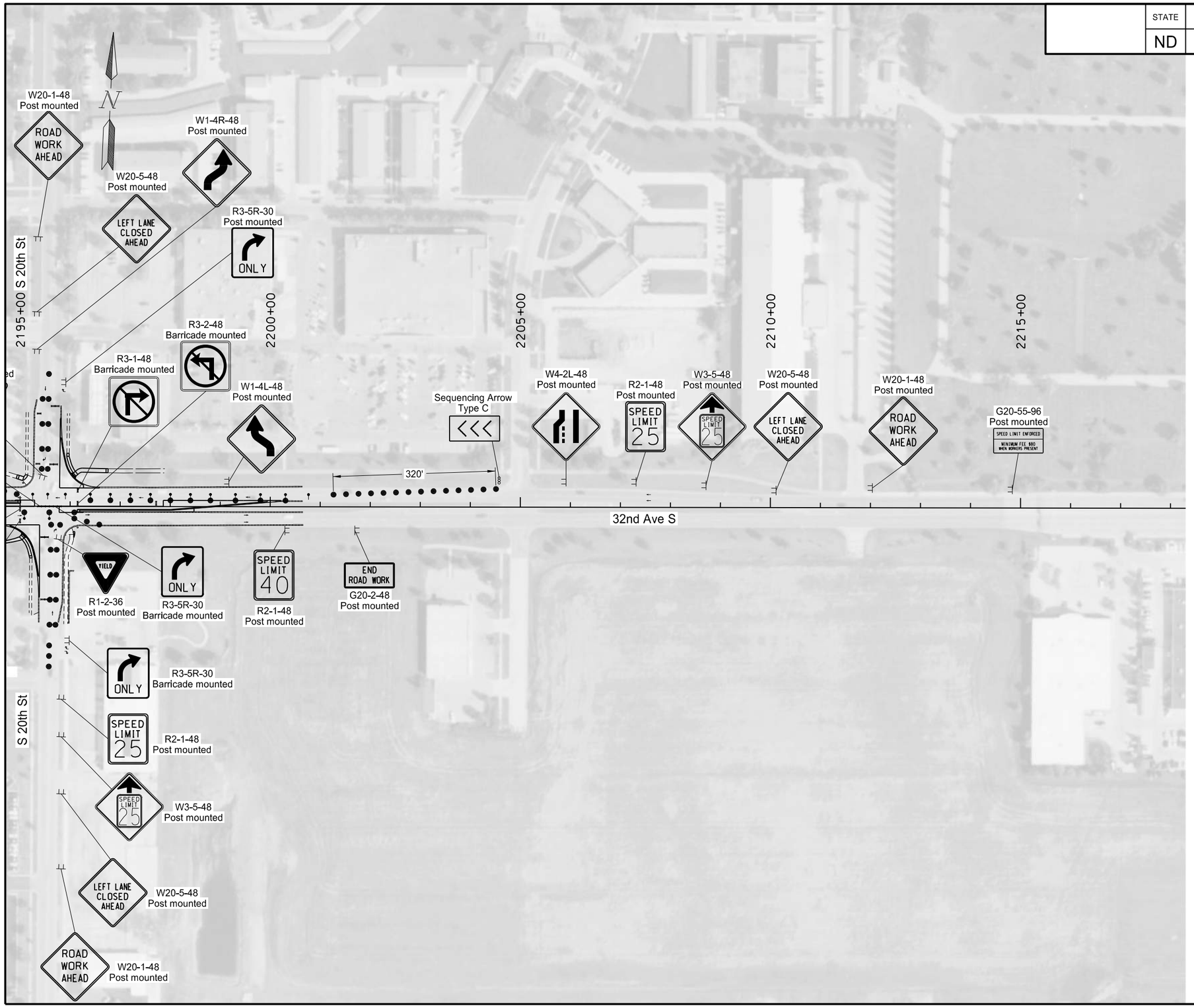
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 2B & 2C

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	32



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 2B & 2C

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	33

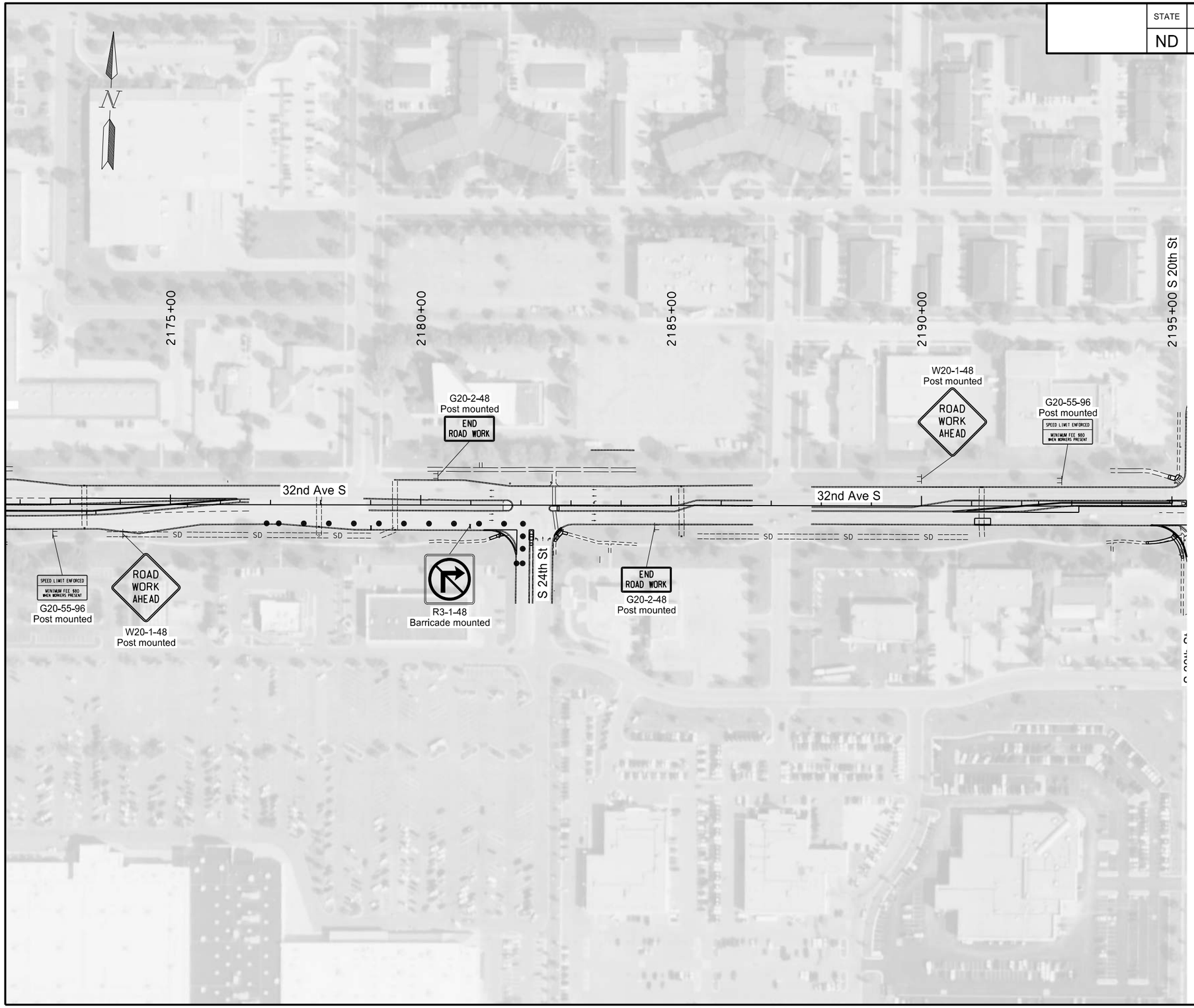
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 2B & 2C

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	34



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Detour Plan and Phasing

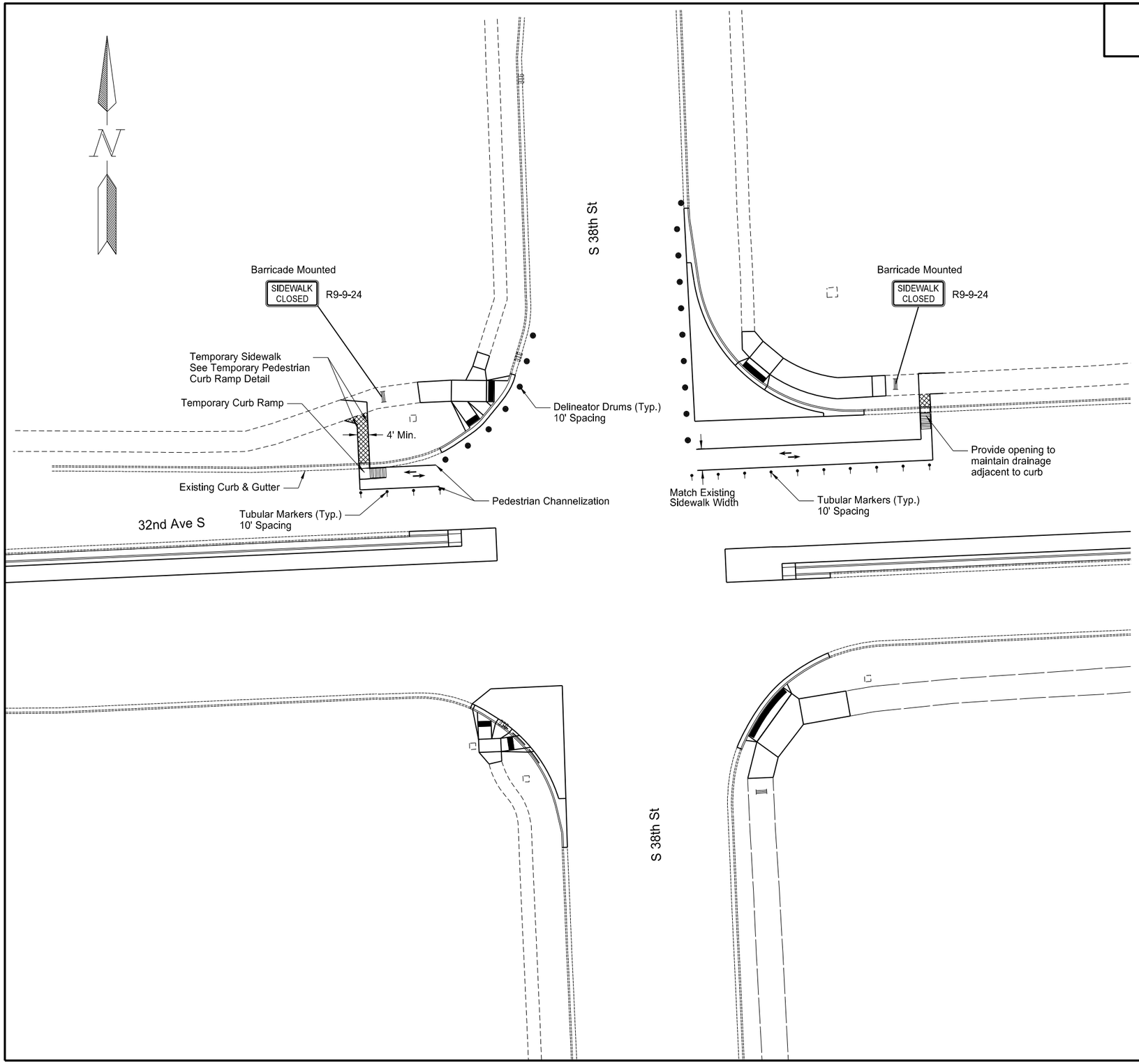
US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Phase 3

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	35

NOTES:

1. North side of intersection is Phase 1B
2. See construction signing sheets for lane closure details.



LEGEND

- Tubular Marker
- Delineator Drum
- Sidewalk Barricade (See detail)
- Arrows indicate temporary pedestrian path
- Temporary Walkway

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pedestrian Detour Phase 1B

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

38th Street

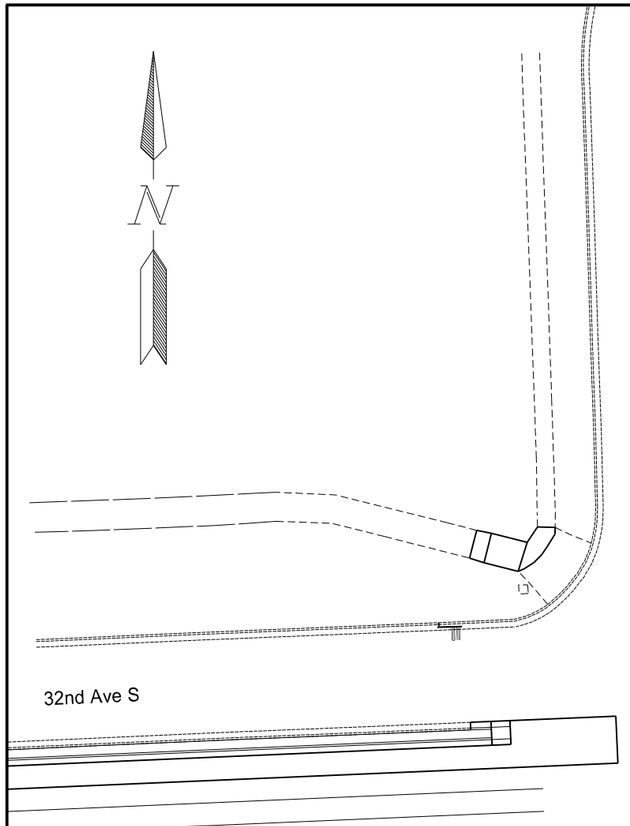
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	36

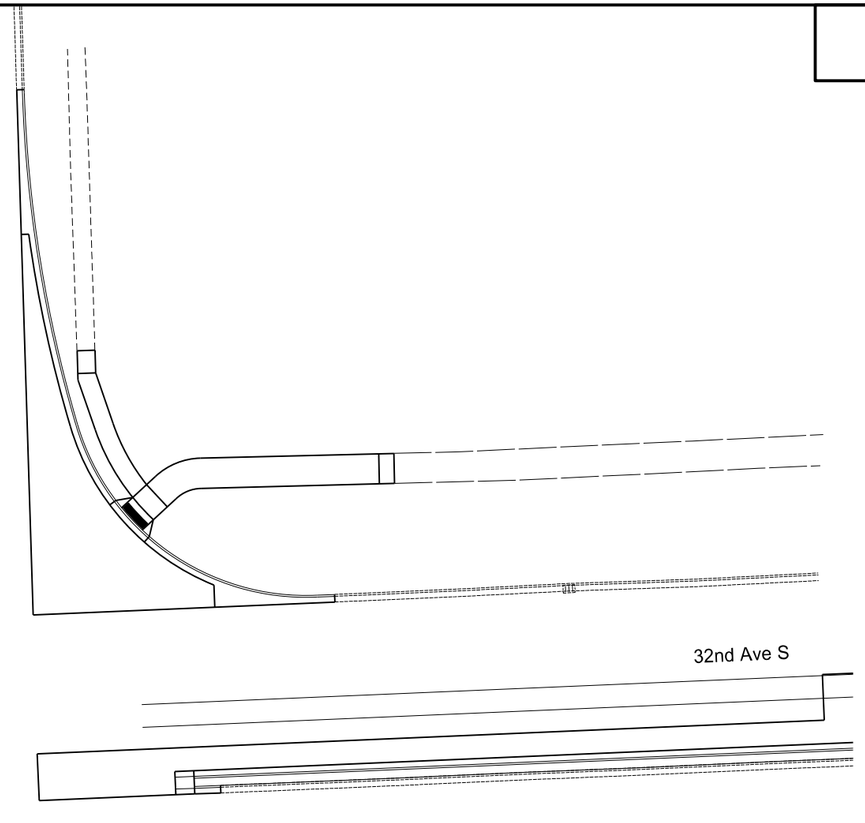
NOTES:

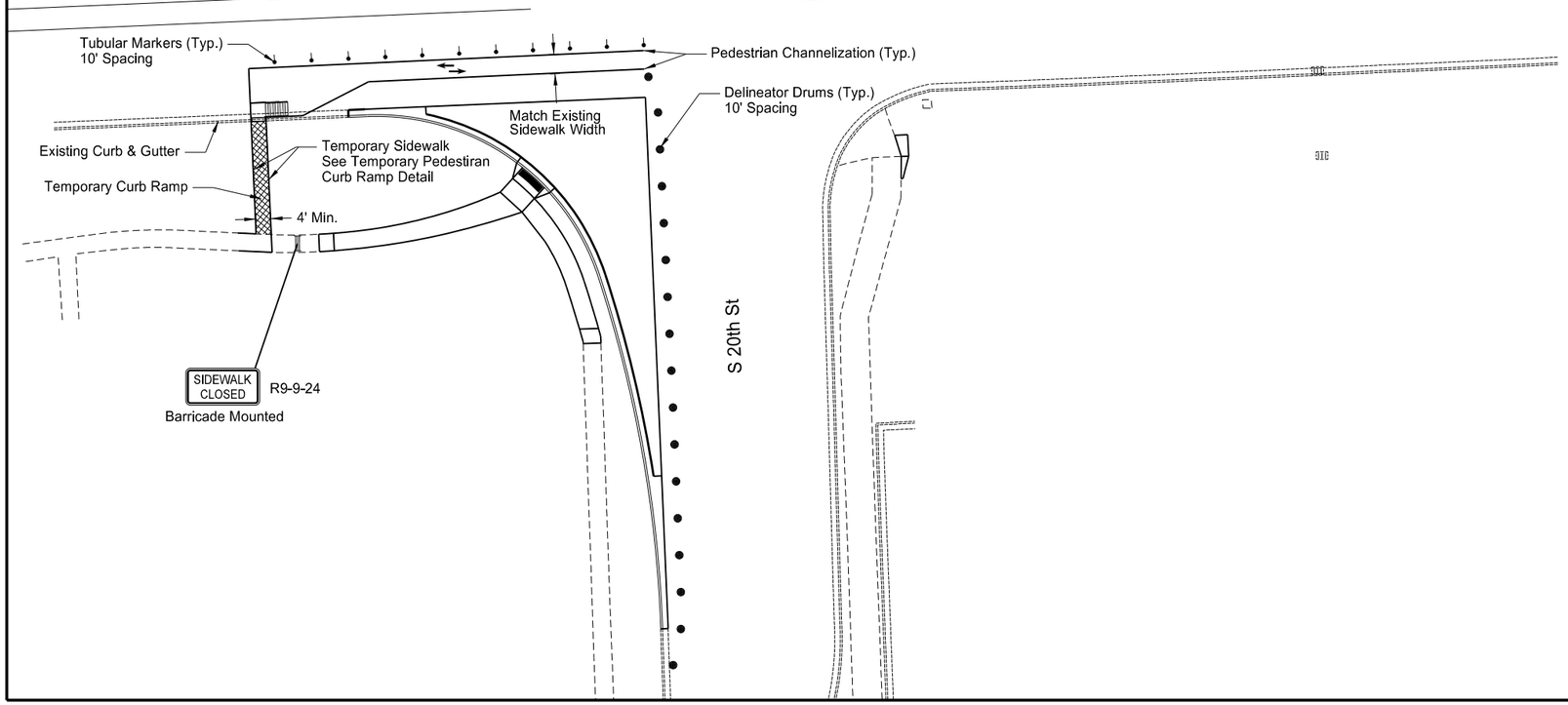
1. South side of intersection is Phase 2C
2. See construction signing sheets for lane closure details.

LEGEND

- Tubular Marker
- Delineator Drum
- Sidewalk Barricade (See detail)
- Arrows indicate temporary pedestrian path
- Temporary Walkway







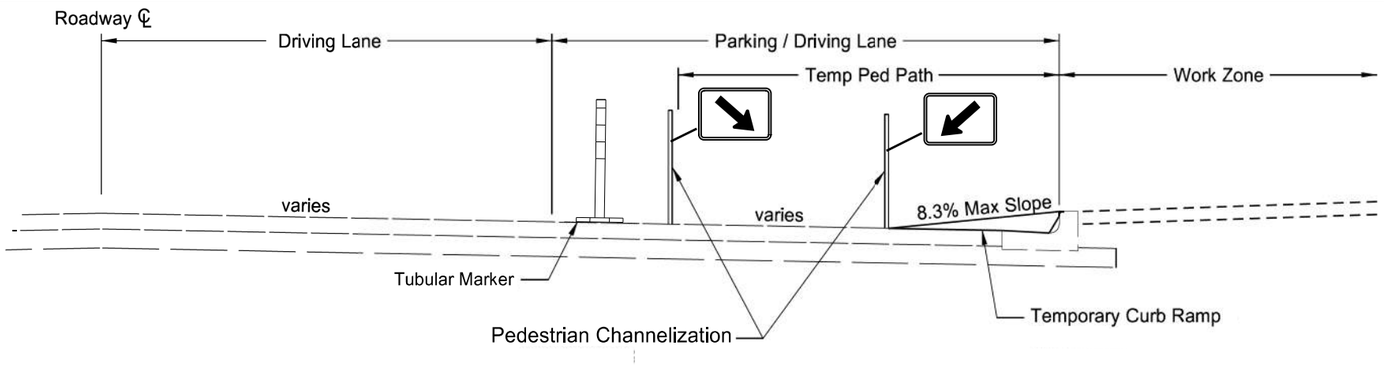
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pedestrian Detour Phase 2C

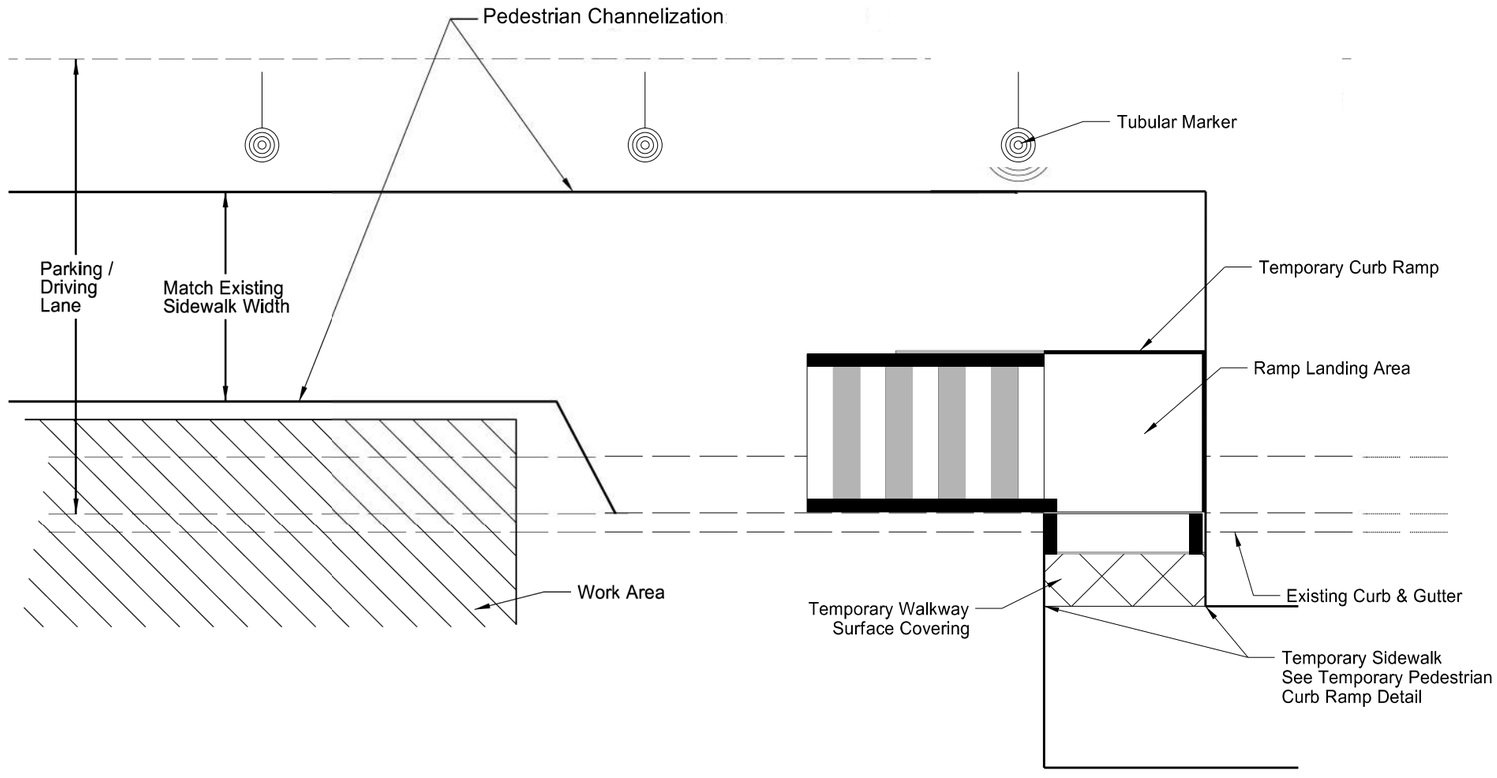
US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	37



Temporary Curb Ramp
Cross Section View



NOTES:

Pedestrian Channelization:

1. Place pedestrian channelization at locations as shown in the Construction Signing - Section 100 plan sheets.

2. Pedestrian channelization must be self supporting with no supports projecting into the pedestrian path way.

3. Pedestrian channelization must be ADA compliant and NCHRP 350 approved.

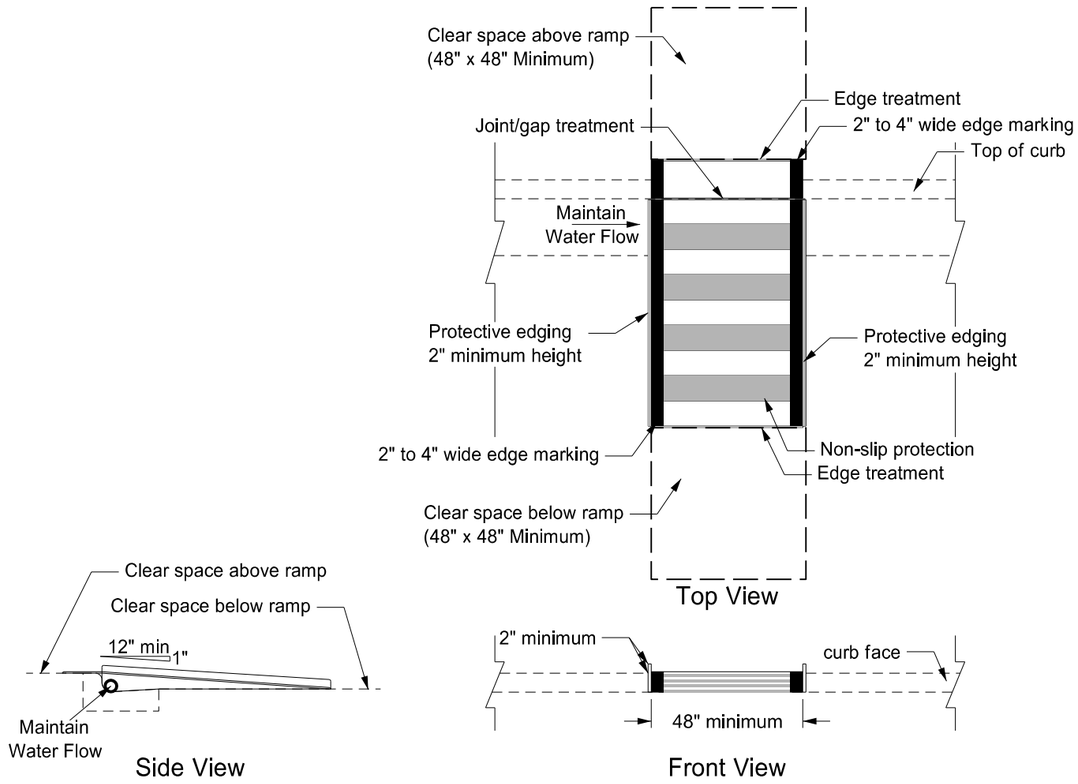
4. Include all costs to furnish, maintain, relocate and remove the pedestrian barricades in the price bid for "Traffic Control Signs".

5. Note 704-P03 Traffic Control Devices, applies to Pedestrian Longitudinal Barriers.

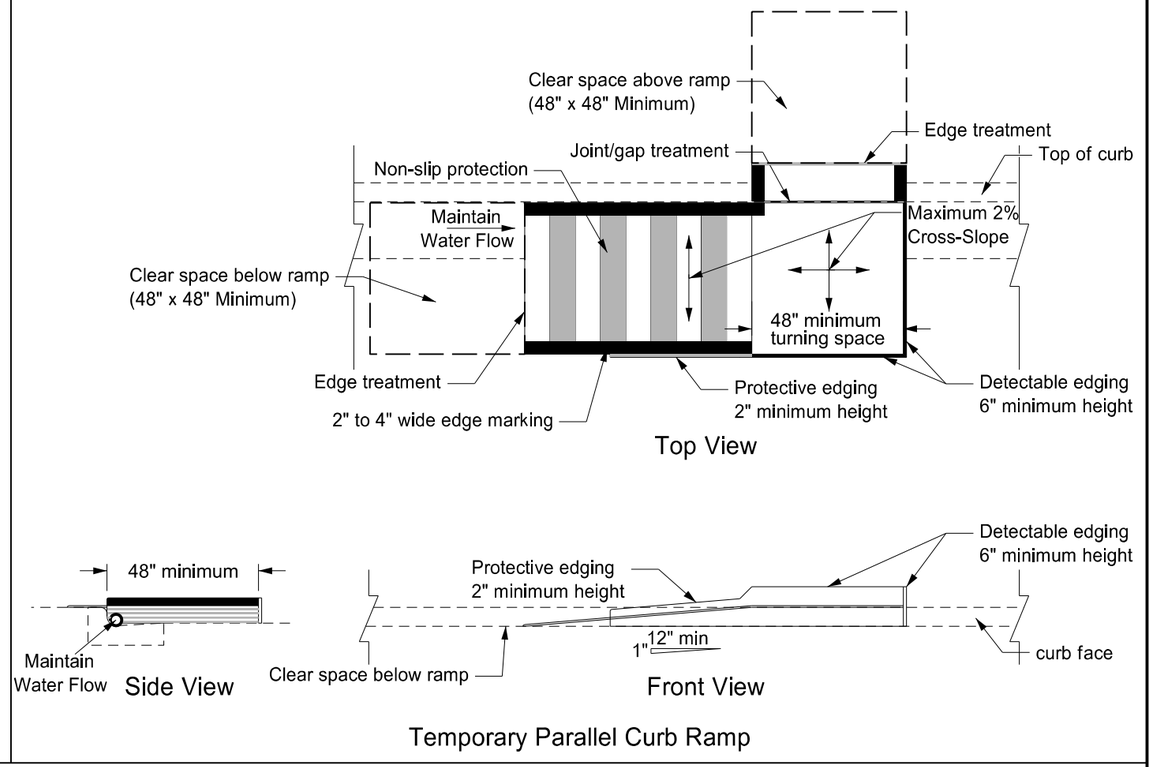
Pedestrian Channelization Detail

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	38



Temporary Perpendicular Curb Ramp

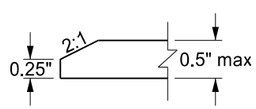


Temporary Parallel Curb Ramp

NOTES:

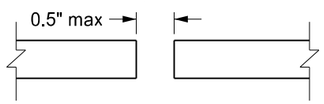
Place temporary curb ramps at location as shown in the Construction Signing - Section 100 plan sheets.

Edge Treatment



Maximum Surface
Height Change Detail

Joint/Gap Treatment



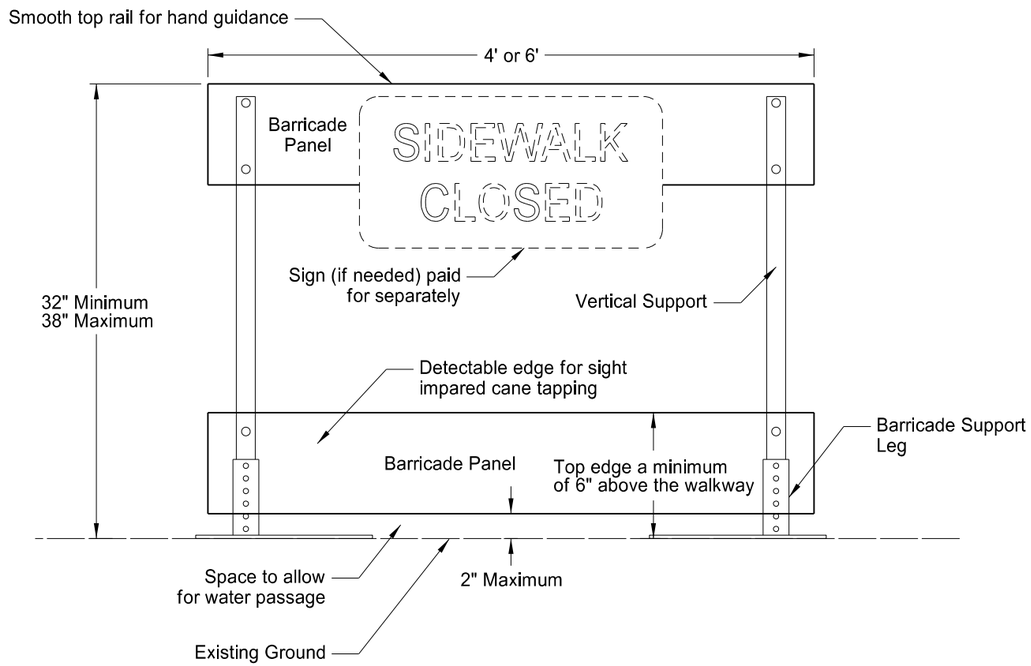
Maximum Width
Lateral Joints or Gaps

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

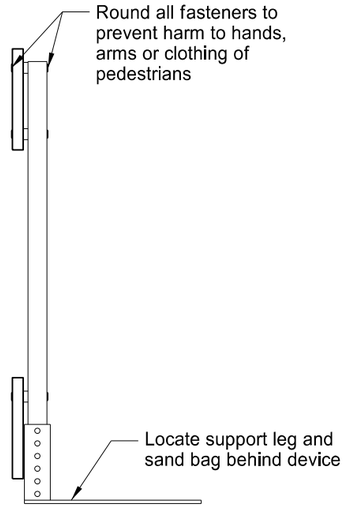
Temporary Pedestrian Curb Ramp Details

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	100	39



Front View

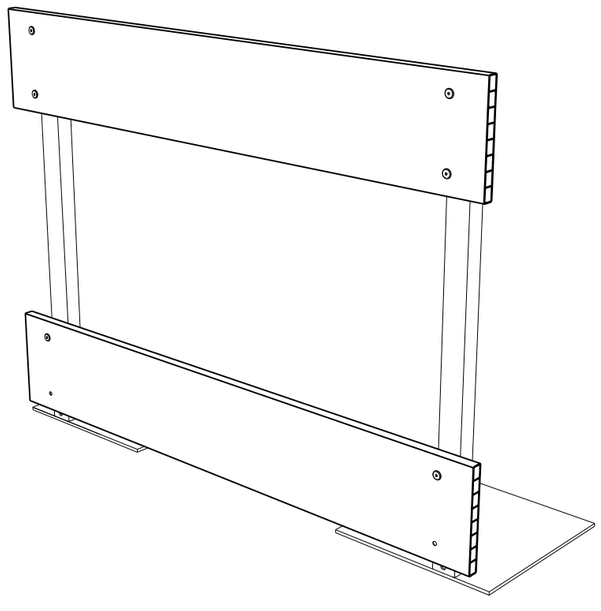


End View

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 in the price bid for "Sidewalk Barricade".



Perspective View

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Sidewalk Barricade

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	HEU-6-081(094)940	110	1

Station / RP	Sign No.	Assembly No.	Flat Sheet For Signs IV SF	Flat Sheet For Signs XI SF	Sign Support Length 1st LF	2nd LF	3rd LF	4th LF	Vert Clear-ance FT	Support Size	Max Post Len LF	Sleeve Length 1st LF	2nd LF	3rd LF	4th LF	Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments
32nd Ave S																							
2111+33 Lt	SN 1			10.5																			Mount on Mast Arm
2121+90 Rt	SN 1			10.5																			Mount on Mast Arm
2128+80 Lt				7.5																			Mount on Mast Arm
2128+80 Lt				7.5																			Mount on Mast Arm
2128+80 Lt				7.5																			Mount on Mast Arm
2128+80 Lt	SN 3, SN 4		37.0																				Mount on Mast Arm
2128+80 Lt	SN 1			10.5																			Mount on Mast Arm
2129+04 Rt				7.5																			Mount on Mast Arm
2129+05 Rt	SN 5		17.0																				Mount on Mast Arm
2129+23 Rt				7.5																			Mount on Mast Arm
2129+42 Rt	SN 1			10.5																			Mount on Mast Arm
2129+48 Lt	SN 1			10.5																			Mount on Mast Arm
2129+60 Lt				7.5																			Mount on Mast Arm
2129+78 Lt	SN 5		17.0																				Mount on Mast Arm
2129+89 Lt				7.5																			Mount on Mast Arm
2130+09 Rt				7.5																			Mount on Mast Arm
2130+09 Rt				7.5																			Mount on Mast Arm
2130+09 Rt				7.5																			Mount on Mast Arm
2130+09 Rt	SN 1			10.5																			Mount on Mast Arm
2130+09 Lt	SN 3, SN 6		37.0																				Mount on Mast Arm
2141+99 Rt		27			8.2			7.0		2 x 2 12 ga	13.2						1	4	2.25 x 2.25 12 ga	1			
2142+18 Rt	S.A. A		3.0	4.0	7.7			4.0		2 x 2 12 ga	9.0						1	4	2.25 x 2.25 12 ga				
2142+34 Lt	SN 7		14.0																				Mount on Mast Arm
2142+34 Lt				7.5																			Mount on Mast Arm
2142+34 Lt				7.5																			Mount on Mast Arm
2142+34 Lt				7.5																			Mount on Mast Arm
2142+34 Lt	SN 1			10.5																			Mount on Mast Arm
2142+36 Rt	SN 5		17.0																				Mount on Mast Arm
2142+40 Rt		15			9.7			7.0		2.25 x 2.25 12 ga	11.6						1	4	2.5 x 2.5 12 ga	1			
2142+55 Rt				7.5																			Mount on Mast Arm
2142+67 Lt	SN 1			10.5																			Mount on Mast Arm
2142+70 Rt	SN 1			10.5																			Mount on Mast Arm
2142+83 Lt				7.5																			Mount on Mast Arm

This document was originally issued and sealed by Kevin LaRue, Registration Number 8778, on 8/25/20 and is stored at the North Dakota Department of Transportation.

Sign Summary
Perforated Tube

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	HEU-6-081(094)940	110	2

Station / RP	Sign No.	Assembly No.	Flat Sheet For Signs IV SF	Flat Sheet For Signs XI SF	Sign Support Length 1st LF	2nd LF	3rd LF	4th LF	Vert Clear-ance FT	Support Size	Max Post Len LF	Sleeve Length 1st LF	2nd LF	3rd LF	4th LF	Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments
2143+06 Lt	SN 5		17.0																				Mount on Mast Arm
2143+12 Lt				7.5																			Mount on Mast Arm
2143+26 Rt				7.5																			Mount on Mast Arm
2143+26 Rt				7.5																			Mount on Mast Arm
2143+26 Rt				7.5																			Mount on Mast Arm
2143+26 Rt	SN 1			10.5																			Mount on Mast Arm
2143+26 Rt	SN 7		14.0																				Mount on Mast Arm
2143+36 Lt		27			8.2				7.0	2 x 2 12 ga	13.2						1	4	2.25 x 2.25 12 ga	1			
2152+56 Rt		27			8.2				7.0	2 x 2 12 ga	13.2						1	4	2.25 x 2.25 12 ga	1			
2152+61 Lt	SN 1			10.5																			Mount on Mast Arm
2152+61 Lt				7.5																			Mount on Mast Arm
2152+61 Lt				7.5																			Mount on Mast Arm
2152+61 Lt				7.5																			Mount on Mast Arm
2152+61 Lt	SN 8		14.0																				Mount on Mast Arm
2152+85 Rt				7.5																			Mount on Mast Arm
2152+86 Rt	SN 5		17.0																				Mount on Mast Arm
2153+10 Rt				7.5																			Mount on Mast Arm
2153+21 Rt	SN 1			10.5																			Mount on Mast Arm
2153+21 Rt	SN 1			10.5																			Mount on Mast Arm
2153+28 Lt				7.5																			Mount on Mast Arm
2153+41 Lt	SN 5		17.0																				Mount on Mast Arm
2153+69 Lt				7.5																			Mount on Mast Arm
2153+73 Lt	SN 8		14.0																				Mount on Mast Arm
2153+92 Rt				7.5																			Mount on Mast Arm
2153+92 Rt				7.5																			Mount on Mast Arm
2153+92 Rt				7.5																			Mount on Mast Arm
2153+92 Rt	SN 1			10.5																			Mount on Mast Arm
2168+21 Lt	SN 9		20.0																				Mount on Mast Arm
2168+21 Lt				7.5																			Mount on Mast Arm
2168+21 Rt				7.5																			Mount on Mast Arm
2168+21 Rt				9.0																			Mount on Mast Arm
2168+22 Rt		27			8.2				7.0	2 x 2 12 ga	13.2						1	4	2.25 x 2.25 12 ga	1			
2168+23 Rt		14	4.0		6.2				4.0	2 x 2 12 ga	13.0						1	4	2.25 x 2.25 12 ga				
2168+60 Rt				7.5																			Mount on Mast Arm

This document was originally issued and sealed by Kevin LaRue, Registration Number 8778, on 8/25/20 and is stored at the North Dakota Department of Transportation.

Sign Summary
Perforated Tube

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	HEU-6-081(094)940	110	3

Station / RP	Sign No.	Assembly No.	Flat Sheet For Signs IV SF	Flat Sheet For Signs XI SF	Sign Support Length 1st LF	2nd LF	3rd LF	4th LF	Vert Clear-ance FT	Support Size	Max Post Len LF	Sleeve Length 1st LF	2nd LF	3rd LF	4th LF	Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments
2168+63 Rt	SN 5		17.0																				Mount on Mast Arm
2168+73 Rt				7.5																			Mount on Mast Arm
2168+84 Rt				7.5																			Mount on Mast Arm
2169+18 Lt		9			9.7				7.0	2 x 2 12 ga	11.5						1	4	2.25 x 2.25 12 ga	1			
2169+34 Lt				7.5																			Mount on Mast Arm
2169+46 Lt				7.5																			Mount on Mast Arm
2169+71 Lt	SN 5		17.0																				Mount on Mast Arm
2169+76 Lt				7.5																			Mount on Mast Arm
2169+96 Lt	SN 9		20.0																				Mount on Mast Arm
2169+96 Rt				7.5																			Mount on Mast Arm
2169+96 Rt				7.5																			Mount on Mast Arm
2169+96 Rt				7.5																			Mount on Mast Arm
2176+35 Lt	SN 2			14.0	9.7				7.0	2.5 x 2.5 12 ga	11.8	2.5				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
2181+78 Lt	SN 1			10.5																			Mount on Mast Arm
2195+00 Rt		27			8.2				7.0	2 x 2 12 ga	13.2						1	4	2.25 x 2.25 12 ga	1			
2195+03 Lt	SN 10		14.0																				Mount on Mast Arm
2195+03 Lt	SN 1			10.5																			Mount on Mast Arm
2195+03 Lt				7.5																			Mount on Mast Arm
2195+03 Lt				7.5																			Mount on Mast Arm
2195+03 Lt				7.5																			Mount on Mast Arm
2195+26 Rt				7.5																			Mount on Mast Arm
2195+29 Rt	SN 5		17.0																				Mount on Mast Arm
2195+48 Rt				7.5																			Mount on Mast Arm
2195+57 Lt	SN 1			10.5																			Mount on Mast Arm
2195+59 Rt	SN 1			10.5																			Mount on Mast Arm
2195+73 Lt				7.5																			Mount on Mast Arm
2195+87 Lt	SN 5		17.0																				Mount on Mast Arm
2195+90 Lt				7.5																			Mount on Mast Arm
2196+11 Rt				7.5																			Mount on Mast Arm
2196+11 Rt				7.5																			Mount on Mast Arm
2196+11 Rt				7.5																			Mount on Mast Arm
2196+11 Rt	SN 1			10.5																			Mount on Mast Arm
2196+11 Rt	SN 10		14.0																				Mount on Mast Arm
2196+19 Lt		27			8.2				7.0	2 x 2 12 ga	13.2						1	4	2.25 x 2.25 12 ga	1			

This document was originally issued and sealed by Kevin LaRue, Registration Number 8778, on 8/25/20 and is stored at the North Dakota Department of Transportation.

Sign Summary
Perforated Tube

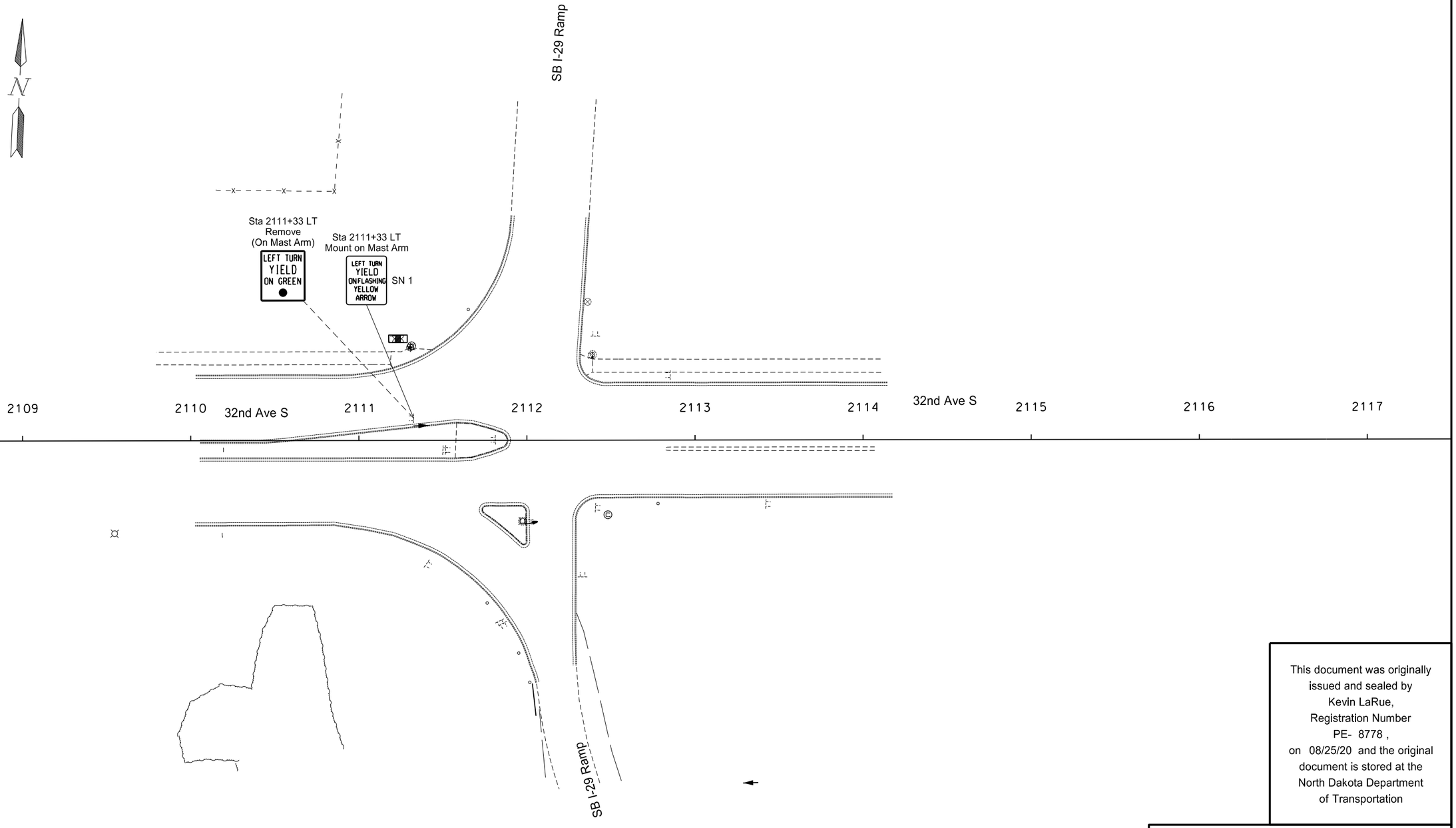
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	HEU-6-081(094)940	110	4

Station / RP	Sign No.	Assembly No.	Flat Sheet For Signs IV SF	Flat Sheet For Signs XI SF	Sign Support Length 1st LF	2nd LF	3rd LF	4th LF	Vert Clear-ance FT	Support Size	Max Post Len LF	Sleeve Length 1st LF	2nd LF	3rd LF	4th LF	Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments
Sub Total			371.0	605.5		**Total**	92.1										**Total**	44.0		8	0	1	
Columbia Rd																							
355+51 Rt	SN 2			14.0	9.7				7.0	2.5 x 2.5 12 ga	11.8	2.5				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
Sub Total			0.0	14.0		**Total**	9.7										**Total**	4.0		0	0	1	
Grand Total			**371.0**	**619.5**		**Total**	**101.8**										**Total**	**48**	**0**	**8**	**0**	**2**	

This document was originally issued and sealed by Kevin LaRue, Registration Number 8778, on 8/25/20 and is stored at the North Dakota Department of Transportation.

Sign Summary
Perforated Tube

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	110	5



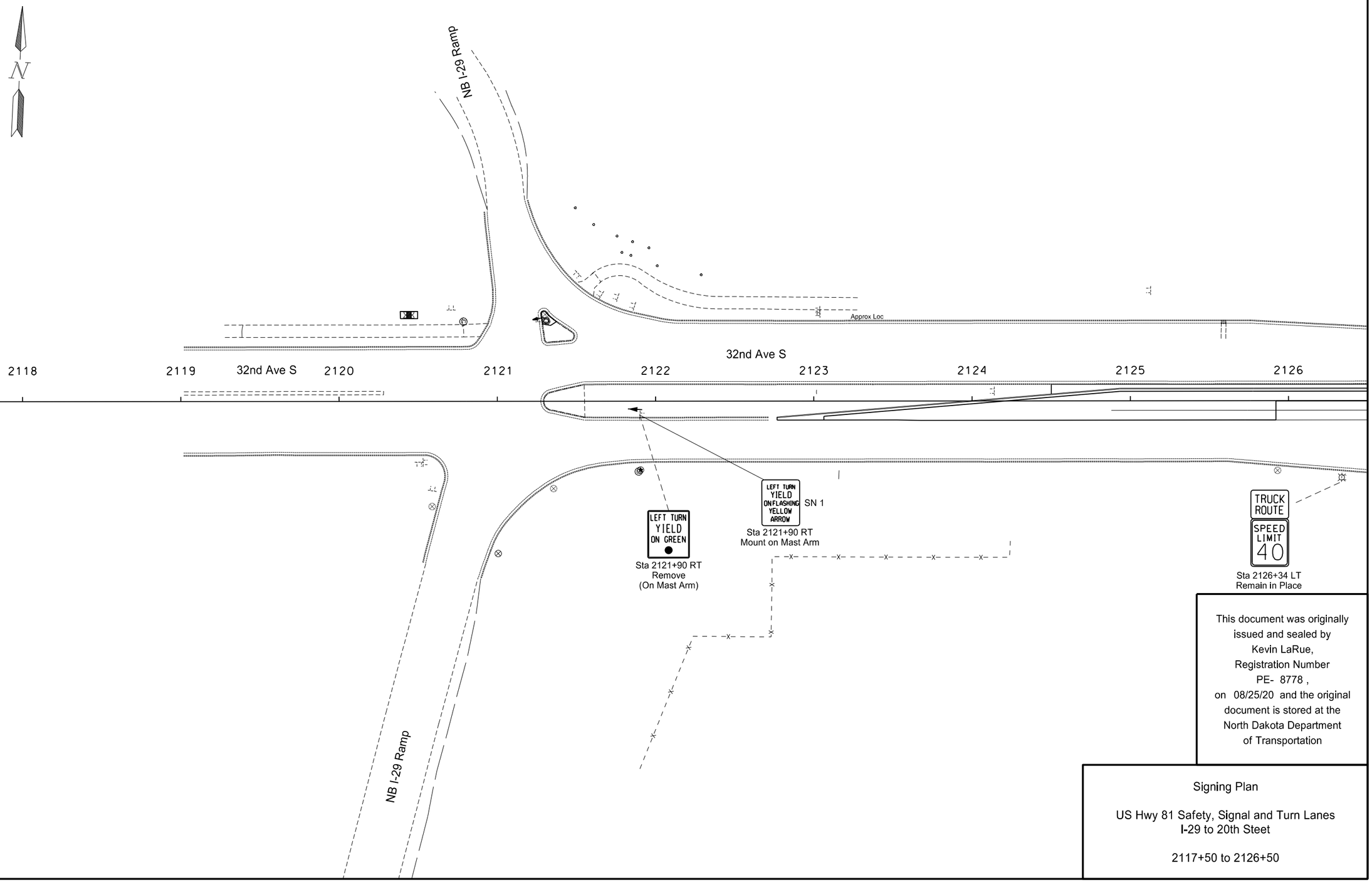
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Signing Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Steet

2108+50 to 2117+50

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	110	6



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

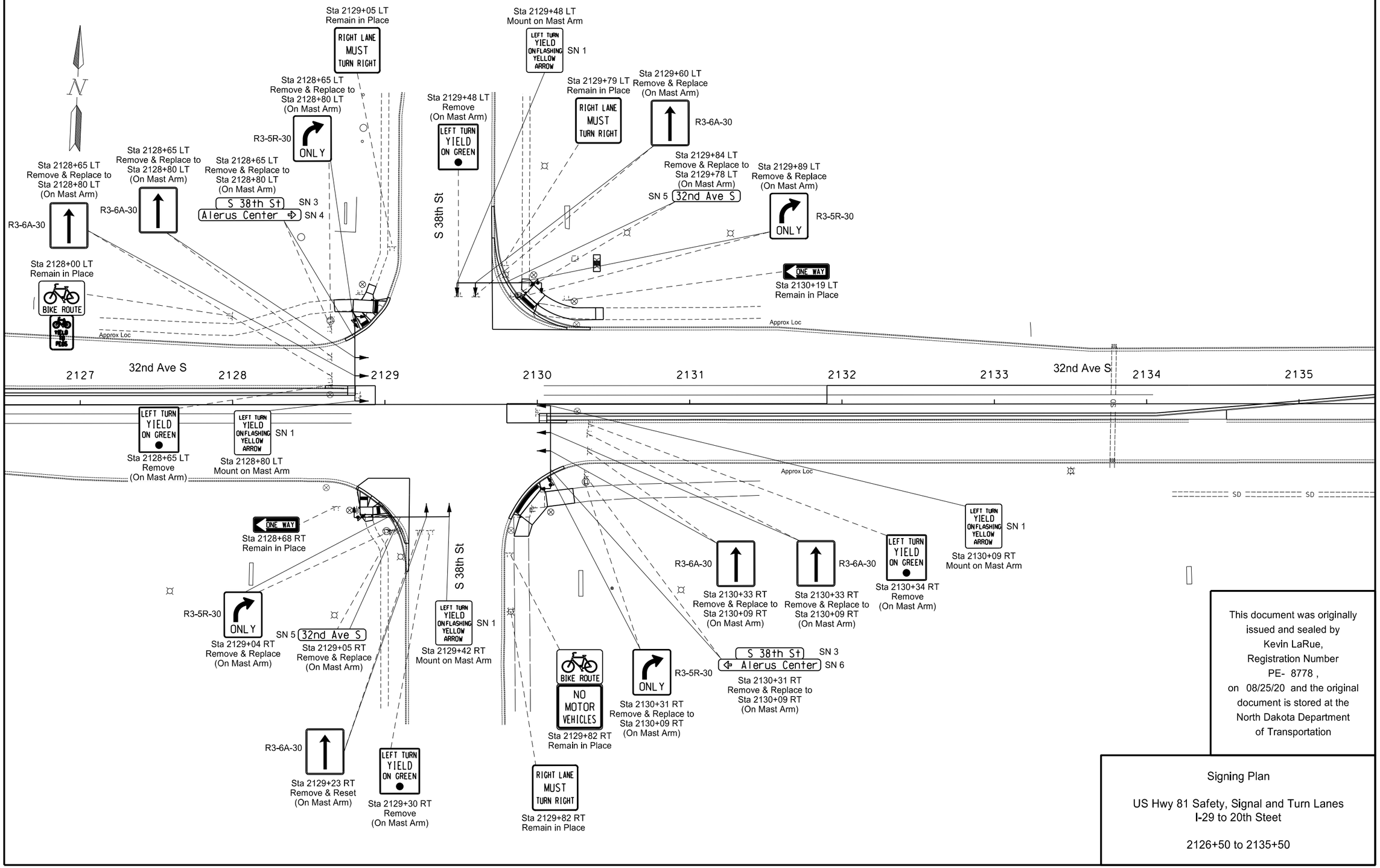
Signing Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Steet

2117+50 to 2126+50

8/25/2020 5:25:20 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\110SN_006.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	110	7



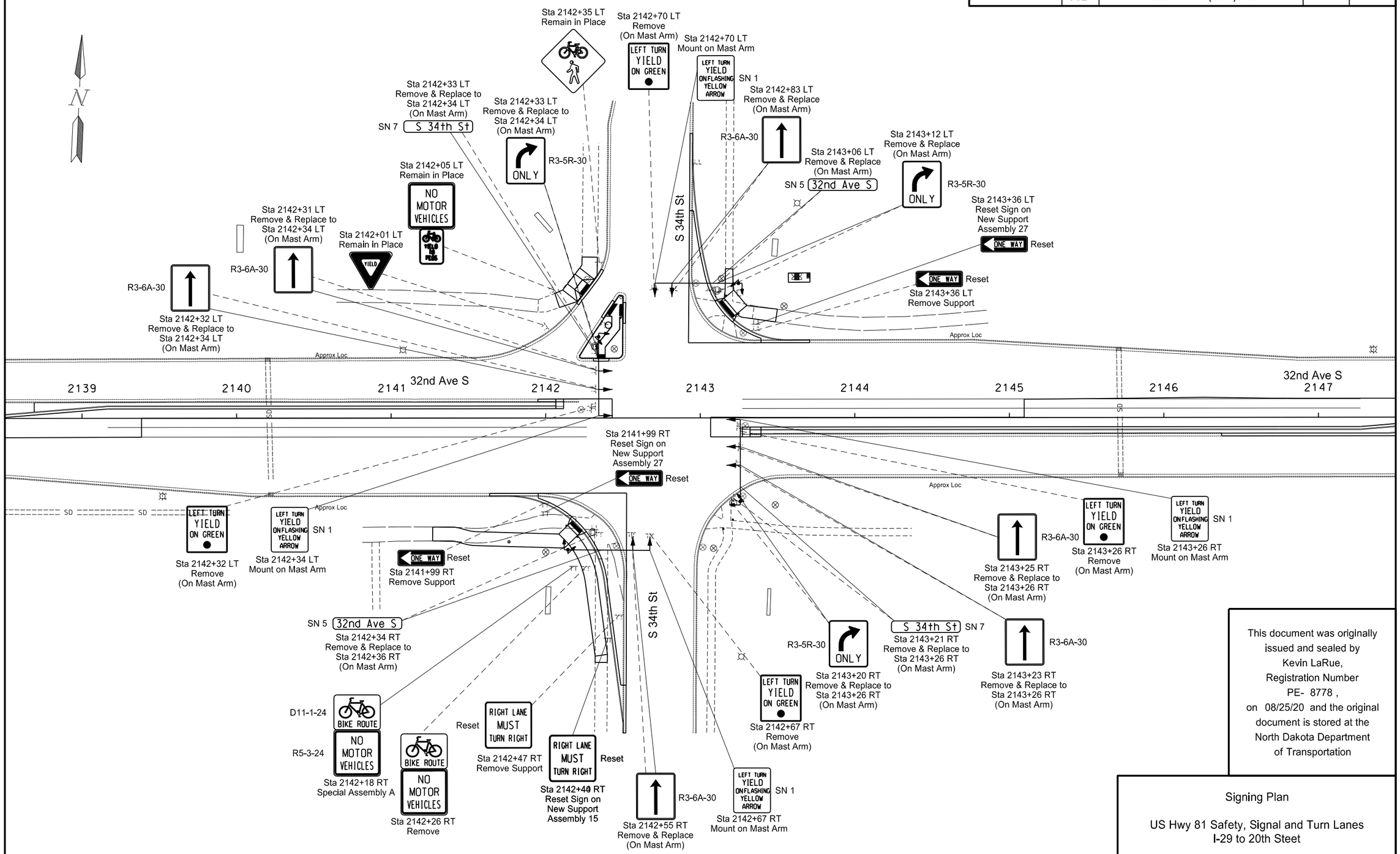
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Signing Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Steet

2126+50 to 2135+50

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	110	8



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Signing Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Steet

2138+50 to 2147+50

8/25/2020 5:25:42 PM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\11549\6081940.094\Design\Plan\110SN_008.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	110	9

N

Sta 2150+00 LT
Remain in Place
SPEED LIMIT 40
EXIT

Sta 2150+54 LT
Remain in Place

Sta 2151+31 LT
Remain in Place
RIGHT LANE MUST TURN RIGHT

Sta 2152+62 LT
Remove & Replace to
Sta 2152+61 LT
(On Mast Arm)
R3-6A-30

Sta 2152+63 LT
Remove & Replace to
Sta 2152+61 LT
(On Mast Arm)
R3-6A-30

Sta 2152+61 LT
Remove & Replace to
Sta 2152+61 LT
(On Mast Arm)
SN 8 S 31st St

Sta 2152+62 RT
Remove & Replace to
Sta 2152+61 LT
(On Mast Arm)
R3-5R-30
ONLY

Sta 2153+28 LT
Mount on Mast Arm
LEFT TURN YIELD ON FLASHING YELLOW ARROW
SN 1

Sta 2153+36 LT
Remove
(On Mast Arm)
LEFT TURN YIELD ON GREEN

Sta 2153+41 LT
Remove & Replace
(On Mast Arm)
R3-6A-30

Sta 2153+73 LT
Remove & Replace
(On Mast Arm)
R3-5R-30
ONLY

Sta 2153+69 LT
Remove & Replace
(On Mast Arm)
SN 5 32nd Ave S

Sta 2153+85 LT
Remain in Place
YIELD TO PEDS

Sta 2154+34 LT
Remain in Place
BIKE ROUTE

Sta 2156+80 LT
Remain in Place
RIGHT LANE MUST TURN RIGHT

31st St

Approx Loc

Approx Loc

ONE WAY
Sta 2154+00 LT
Remain in Place

32nd Ave S

32nd Ave S

2150 2151 2152 2153 2154 2155 2156 2157 2158

SD

Sta 2152+62 RT
Remove Support
ONE WAY Reset

Approx Loc

Approx Loc

LEFT TURN YIELD ON GREEN
Sta 2152+62 LT
Remove
(On Mast Arm)

LEFT TURN YIELD ON FLASHING YELLOW ARROW SN 1
Sta 2152+61 LT
Mount on Mast Arm

ONE WAY Reset
Sta 2152+56 RT
Reset Sign on
New Support
Assembly 27

R3-5R-30
ONLY
Sta 2152+85 RT
Remove & Replace
(On Mast Arm)

SN 5 32nd Ave S
Sta 2152+86 RT
Remove & Replace
(On Mast Arm)

Burger King

R3-6A-30
Sta 2153+10 RT
Remove & Replace
(On Mast Arm)

LEFT TURN YIELD ON GREEN
Sta 2153+18 RT
Remove
(On Mast Arm)

LEFT TURN YIELD ON FLASHING YELLOW ARROW SN 1
Sta 2153+21 RT
Mount on Mast Arm

31st St

S 31st St SN 8
Sta 2153+80 RT
Remove & Replace to
Sta 2153+92 RT
(On Mast Arm)

R3-5R-30
ONLY
Sta 2153+81 RT
Remove & Replace to
Sta 2153+92 RT
(On Mast Arm)

R3-6A-30
Sta 2153+79 RT
Remove & Replace to
Sta 2153+92 RT
(On Mast Arm)

R3-6A-30
Sta 2153+81 RT
Remove & Replace to
Sta 2153+92 RT
(On Mast Arm)

LEFT TURN YIELD ON GREEN
Sta 2153+81 RT
Remove
(On Mast Arm)

LEFT TURN YIELD ON FLASHING YELLOW ARROW SN 1
Sta 2153+92 RT
Mount on Mast Arm

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Signing Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Steet

2149+50 to 2158+50

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	110	10

Sta 2168+22 LT
Remove & Replace to
Sta 2168+21 LT
(On Mast Arm)
R3-6A-30

Sta 2168+22 LT
Remove & Replace to
Sta 2168+21 LT
(On Mast Arm)
R3-6A-30

Sta 2168+22 LT
Remove & Replace to
Sta 2168+21 LT
(On Mast Arm)
SN 9 S Columbia Rd

Sta 2168+21 LT
Remove & Replace to
Sta 2168+21 LT
(On Mast Arm)
R3-5R-30
ONLY

Sta 2169+34 LT
Remove & Replace
(On Mast Arm)
R3-6A-30

Sta 2169+19 LT
Remove Support
Reset

Sta 2169+18 LT
Reset Sign on
New Support
Assembly 9
Reset

Sta 2169+46 LT
Remove & Replace
(On Mast Arm)
R3-6A-30

Sta 2169+76 LT
Remove & Replace
(On Mast Arm)
R3-5R-30
ONLY

Sta 2169+71 LT
Remove & Replace
(On Mast Arm)
SN 5 32nd Ave S

Sta 2170+73 LT
Remain in Place

Sta 2171+91 LT
Remain in Place
RIGHT LANE
MUST
TURN RIGHT

Sta 2172+49 RT
Remove
LEFT LANE
MUST
TURN LEFT

Sta 2167+56 LT
Remain in Place
SPEED
LIMIT
40

32nd Ave S

2165 2166 2167 2168 2169 2170 2171 2172 2173

Approx Loc

Curb and Gutter lines in this vicinity labeled Approx Loc were drafted based on Grand Forks GIS.

Columbia Rd

360

LEFT
TURN
SIGNAL
Sta 2169+20 LT
Remove
(On Mast Arm)

ONE WAY
Sta 2169+95 LT
Remain in Place

Approx Loc
BIKE ROUTE
Sta 2170+07 LT
Remain in Place

LEFT
TURN
SIGNAL
Sta 2168+30 LT
Remove
(On Mast Arm)

Sta 2168+22 RT
Reset Sign on
New Support
Assembly 27
Reset
ONE WAY

Sta 2168+28 RT
Remove Support
Reset
ONE WAY

Approx Loc

359

LEFT
TURN
SIGNAL
Sta 2169+91 RT
Remove
(On Mast Arm)

Approx Loc

LEFT
TURN
SIGNAL
Sta 2169+91 RT
Remove
(On Mast Arm)

Sta 2169+92 RT
Remove
(On Mast Arm)

R5-3-24
NO
MOTOR
VEHICLES
Sta 2168+23 RT
Assembly 14

NO
MOTOR
VEHICLES
Sta 2168+42 RT
Remove

R3-5R-30
ONLY
32nd Ave S
SN 5
Sta 2168+60 RT
Remove & Replace
(On Mast Arm)
Sta 2168+63 RT
Remove & Replace
(On Mast Arm)

SN 9 S Columbia Rd
Sta 2169+89 RT
Remove & Replace to
Sta 2169+96 RT
(On Mast Arm)

R3-5R-30
ONLY
Sta 2169+89 RT
Remove & Replace to
Sta 2169+96 RT
(On Mast Arm)

R3-6A-30
Sta 2169+90 RT
Remove & Replace to
Sta 2169+96 RT
(On Mast Arm)

R3-6A-30
Sta 2169+90 RT
Remove & Replace to
Sta 2169+96 RT
(On Mast Arm)

SPEED
LIMIT
40
Sta 2170+55 RT
Remain in Place

358

Columbia Rd

R3-6A-30
Sta 2168+84 RT
Remove & Replace
(On Mast Arm)

R3-6A-30
Sta 2168+73 RT
Remove & Replace
(On Mast Arm)

YIELD
TO
PEDS
Sta 2168+59 RT
Remain in Place

LEFT
TURN
SIGNAL
Sta 2169+08 RT
Remove
(On Mast Arm)

LEFT
TURN
SIGNAL
Sta 2168+97 RT
Remove
(On Mast Arm)

357

Sta 2169+06 RT
Remove
(On Mast Arm)

SPEED
LIMIT
40
Sta 357+68 LT
Remain in Place

RIGHT LANE
MUST
TURN RIGHT
Sta 356+47 LT
Remain in Place

356

LEFT LANE
MUST
TURN LEFT
Sta 356+43 LT
Remove

SN 2
ONLY ONLY
Sta 355+51 RT
Variable Length Assembly

LEFT LANE
MUST
TURN LEFT
Sta 355+51 RT
Remain in Place

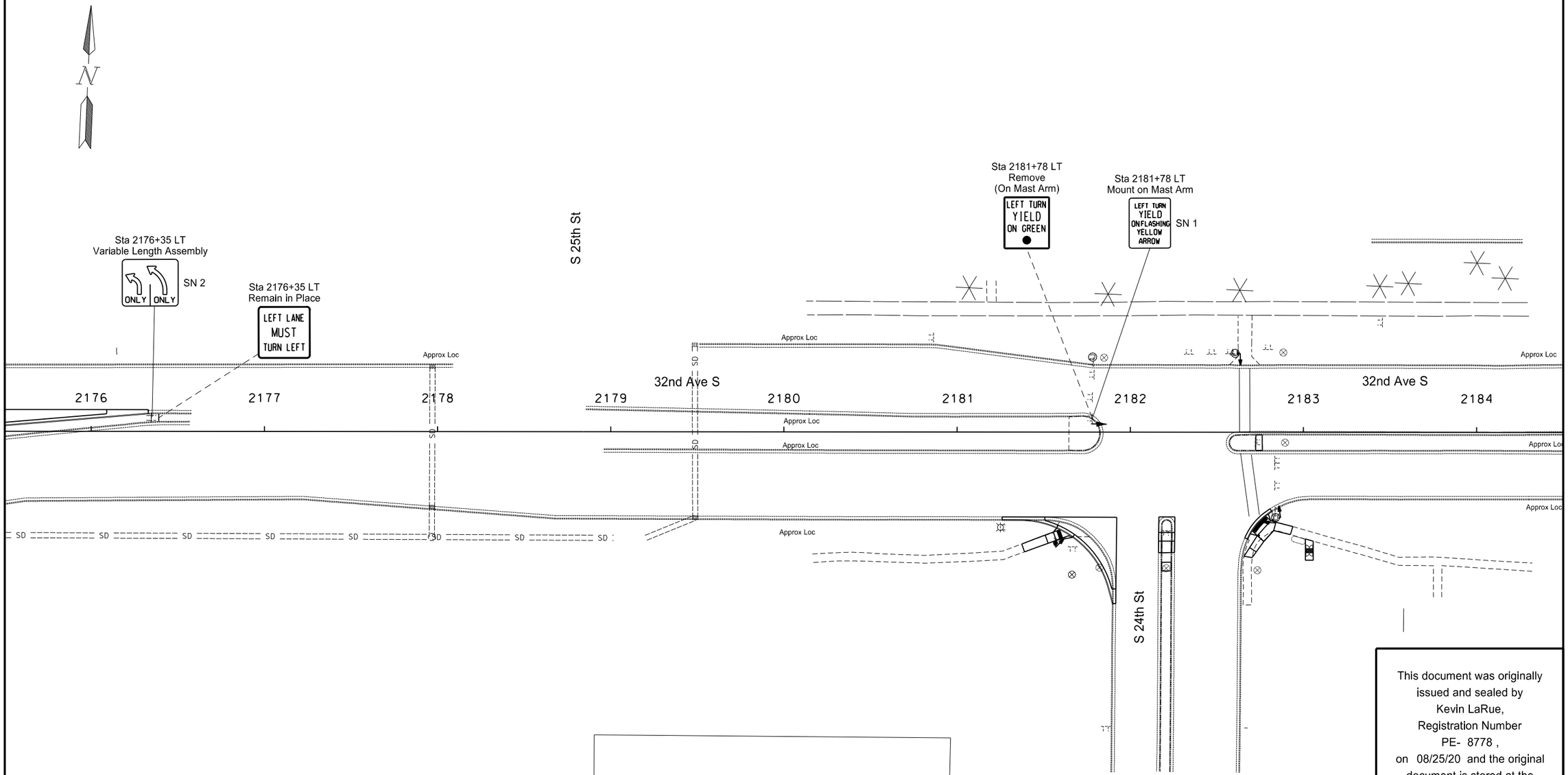
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Signing Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Steet

2164+50 to 2173+50

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	110	11



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Signing Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Steet

2175+50 to 2184+50

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	110	12

N

Sta 2190+66 LT
Remain in Place
SPEED LIMIT 40

Sta 2195+07 LT
Remove & Replace to
Sta 2195+03 LT
(On Mast Arm)
R3-6A-30

Sta 2195+03 LT
Mount on mast Arm
R3-6A-30

Sta 2195+06 LT
Remove
(On Mast Arm)

Sta 2195+06 LT
Remove & Replace to
Sta 2195+03 LT
(On Mast Arm)
SN 10 S 20th St

Sta 2195+03 LT
Mount on mast Arm
R3-6R-30

Sta 2195+57 LT
Mount on Mast Arm
LEFT TURN YIELD ONFLASHING YELLOW ARROW SN 1

Sta 2195+71 LT
Remove
(On Mast Arm)
LEFT TURN YIELD ON GREEN

Sta 2195+73 LT
Remove & Replace
(On Mast Arm)
R3-6A-30

S 20th St

Sta 2195+87 LT
Remove & Replace
(On Mast Arm)
32nd Ave S SN 5

Sta 2195+90 LT
Remove & Replace
(On Mast Arm)
R3-5R-30
ONLY

Sta 2196+19 LT
Reset Sign on
New Support
Assembly 27
ONE WAY Reset

CENEX

Sta 2196+16 LT
Remove Support
ONE WAY Reset

Approx Loc

32nd Ave S

2190 2191 2192 2193 2194 2195 2196 2197 2198

Approx Loc

Approx Loc

Curb and Gutter lines in this vicinity labeled Approx Loc were drafted based on Grand Forks GIS.

SD SD SD

Sta 2195+06 LT
Remove
(On Mast Arm)
LEFT TURN YIELD ON GREEN

SN 1 LEFT TURN YIELD ONFLASHING YELLOW ARROW
Sta 2195+03 LT
Mount on Mast Arm

Reset ONE WAY
Sta 2195+03 RT
Remove Support

Approx Loc

R3-5R-30
ONLY
Sta 2195+26 RT
Remove & Replace
(On Mast Arm)

SN 5 32nd Ave S
Sta 2195+29 RT
Remove & Replace
(On Mast Arm)

R3-6A-30
Sta 2195+48 RT
Remove & Replace
(On Mast Arm)

Happy Harry's Bottle Shop

LEFT TURN YIELD ON GREEN
Sta 2195+46 RT
Remove
(On Mast Arm)

LEFT TURN YIELD ONFLASHING YELLOW ARROW SN 1
Sta 2195+59 RT
Mount on Mast Arm

Sta 2195+00 RT
Reset Sign on
New Support
Assembly 27
ONE WAY Reset

Approx Loc

S 20th St

R3-6A-30
Sta 2196+11 RT
Mount on mast Arm

LEFT TURN YIELD ON GREEN
Sta 2196+14 RT
Remove
(On Mast Arm)

LEFT TURN YIELD ONFLASHING YELLOW ARROW SN 1
Sta 2196+11 RT
Mount on Mast Arm

R3-6A-30
Sta 2196+15 RT
Remove & Replace at
Sta 2196+11 RT
(On Mast Arm)

R3-6R-30
Sta 2196+15 RT
Remove & Replace at
Sta 2196+11 RT
(On Mast Arm)

S 20th St SN 10
Sta 2196+15 RT
Remove & Replace at
Sta 2196+11 RT
(On Mast Arm)

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Signing Plan

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Steet

2189+50 to 2198+50

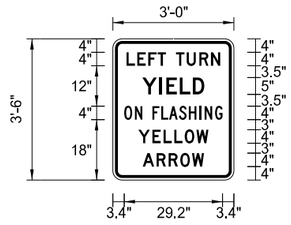
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	110	13

SIGN NUMBER	Sign 1
WIDTH X HEIGHT	3'-0" x 3'-6"
BORDER WIDTH	0.88" (inset 0.63")
CORNER RADIUS	2.25"
MOUNTING	Overhead
BACKGROUND	TYPE: XI Reflective
	COLOR: White
LEGEND/BORDER	TYPE: XI Non-reflective
	COLOR: Black

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S):
2111+33 LT
2121+90 RT
2128+58 LT
2129+39 RT
2129+48 LT
2130+37 RT
2142+32 LT
2142+70 RT
2142+70 LT
2143+56 RT
2143+56 LT
2153+21 RT
2153+28 LT
2153+90 RT
2181+78 LT
2194+92 LT
2195+57 LT
2195+59 RT
2196+24 RT

AREA: 10.5 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Reg_36_Med.ssl

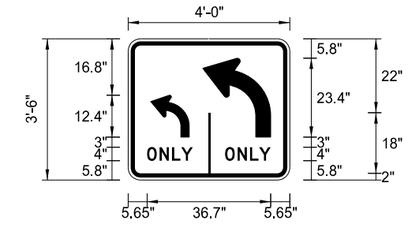
LETTER POSITION (X)																				LENGTH	SIZE	SERIES
L	E	F	T																	11.7	4	D 2000
4.1	7.3	10.6	13.3																			
T	U	R	N																	13.1	4	D 2000
18.8	21.9	25.7	29.2																			
Y	I	E	L	D																18.4	5	D 2000
8.8	13.9	15.9	19.9	23.8																		
O	N																			5.4	4	C 2000
3.4	6.6																					
F	L	A	S	H	I	N	G													20.8	4	C 2000
11.8	14.4	16.7	19.7	22.6	25.8	27.3	30.4															
Y	E	L	L	O	W															20.8	4	D 2000
7.6	11.8	15.1	18.3	21.4	24.8																	
A	R	R	O	W																18.2	4	D 2000
8.9	13	16.6	20.1	23.5																		

SIGN NUMBER	Sign 2
WIDTH X HEIGHT	4'-0" x 3'-6"
BORDER WIDTH	1.25" (inset 0.75")
CORNER RADIUS	3"
MOUNTING	Ground
BACKGROUND	TYPE: XI Reflective
	COLOR: White
LEGEND/BORDER	TYPE: XI Non-Reflective
	COLOR: Black

SYMBOL	X	Y	WID	HT	ANGLE
ND_2.5IN_LT	6.7	12.8	11.4	12.4	0
ND_4.5IN_LT	22.1	12.8	20.2	23.4	0

STATION(S):
2176+35 LT
355+51 RT (SCLCOLRD)

AREA: 14.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Reg_48_Large.ssl

LETTER POSITION (X)																				LENGTH	SIZE	SERIES
O	N	L	Y																	13.6	4	D 2000
5.6	9.4	13	15.8																			
O	N	L	Y																	13.6	4	D 2000
28.8	32.5	36.2	38.9																			

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Sign Details

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Steet

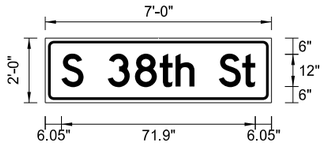
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	110	14

SIGN NUMBER	Sign 3
WIDTH X HEIGHT	7'-0" x 2'-0"
BORDER WIDTH	1" (inset 1")
CORNER RADIUS	2.25"
MOUNTING	Overhead
BACKGROUND	TYPE: IV Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S):
2128+58 LT
2130+37 LT

AREA: 14.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: SRF_Overhead_Street_Name_Grand Forks.ssl

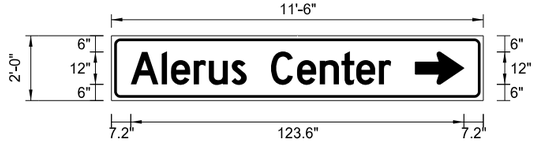
LETTER POSITION (X)																			LENGTH	SIZE	SERIES
S		3	8	t	h		S	t													
6	14.2	23.2	33.3	42.5	48.3	55.4	64.4	73.2											71.9	12/9	D 2000

SIGN NUMBER	Sign 4
WIDTH X HEIGHT	11'-6" x 2'-0"
BORDER WIDTH	1" (inset 1")
CORNER RADIUS	2.25"
MOUNTING	Overhead
BACKGROUND	TYPE: IV Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ND_12IN_TYPE D	112.8	6	12	18	270

STATION(S):
2128+58 LT

AREA: 23.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: SRF_Overhead_Street_Name_Grand Forks.ssl

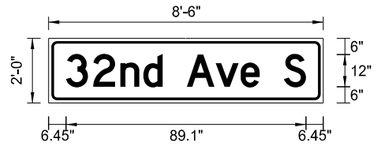
LETTER POSITION (X)																			LENGTH	SIZE	SERIES
A	l	e	r	u	s		C	e	n	t	e	r									
7.2	18.6	22.1	30.5	36.1	44.6	50.2	59.2	68.9	77.3	85.4	90.8	99.3							96.6	12/9	D 2000

SIGN NUMBER	Sign 5
WIDTH X HEIGHT	8'-6" x 2'-0"
BORDER WIDTH	1" (inset 1")
CORNER RADIUS	2.25"
MOUNTING	Overhead
BACKGROUND	TYPE: IV Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S):
2129+05 RT
2129+78 LT
2142+36 RT
2143+06 LT
2152+86 RT
2153+69 LT
2168+63 RT
2169+71 LT
2195+29 RT
2195+87 LT

AREA: 17.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: SRF_Overhead_Street_Name_Grand Forks.ssl

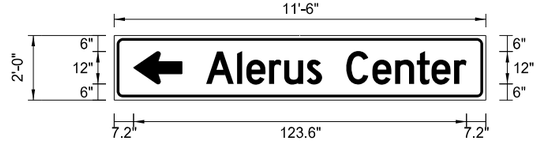
LETTER POSITION (X)																			LENGTH	SIZE	SERIES
3	2	n	d		A	v	e		S												
6.5	16.5	26.6	35.1	42.3	51.3	62	71.3	78.4	87.4										89.1	12/9	D 2000

SIGN NUMBER	Sign 6
WIDTH X HEIGHT	11'-6" x 2'-0"
BORDER WIDTH	1" (inset 1")
CORNER RADIUS	2.25"
MOUNTING	Overhead
BACKGROUND	TYPE: IV Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ND_12IN_TYPE D	7.2	6	12	18	90

STATION(S):
2130+37 RT

AREA: 23.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: SRF_Overhead_Street_Name_Grand Forks.ssl

LETTER POSITION (X)																			LENGTH	SIZE	SERIES
A	l	e	r	u	s		C	e	n	t	e	r									
34.2	45.6	49.1	57.5	63.1	71.6	77.2	86.2	95.9	104.3	112.4	117.8	126.3							96.6	12/9	D 2000

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Sign Details

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Steet

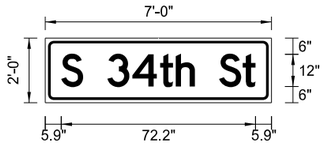
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HEU-6-081(094)940	110	15

SIGN NUMBER	Sign 7
WIDTH X HEIGHT	7'-0" x 2'-0"
BORDER WIDTH	1" (inset 1")
CORNER RADIUS	2.25"
MOUNTING	Overhead
BACKGROUND	TYPE: IV Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S):
2142+31 LT
2143+86 RT

AREA: 14.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: SRF_Overhead_Street_Name_Grand Forks.ssl

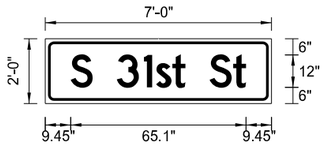
LETTER POSITION (X)																			LENGTH	SIZE	SERIES
S		3	4	t	h		S	t											72.2	12/9	D 2000
5.9	14.1	23.1	32.4	42.6	48.5	55.6	64.6	73.3													

SIGN NUMBER	Sign 8
WIDTH X HEIGHT	7'-0" x 2'-0"
BORDER WIDTH	1" (inset 1")
CORNER RADIUS	2.25"
MOUNTING	Overhead
BACKGROUND	TYPE: IV Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S):
2152+56 LT
2153+90 RT

AREA: 14.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: SRF_Overhead_Street_Name_Grand Forks.ssl

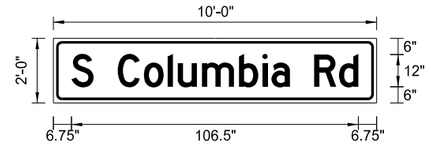
LETTER POSITION (X)																			LENGTH	SIZE	SERIES
S		3	1	s	t		S	t											65.1	12/9	D 2000
9.4	17.6	26.6	36.7	41.2	47.2	52	61	69.8													

SIGN NUMBER	Sign 9
WIDTH X HEIGHT	10'-0" x 2'-0"
BORDER WIDTH	1" (inset 1")
CORNER RADIUS	2.25"
MOUNTING	Overhead
BACKGROUND	TYPE: IV Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S):
2168+13 LT
2170+03 LT

AREA: 20.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: SRF_Overhead_Street_Name_Grand Forks.ssl

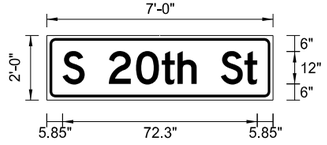
LETTER POSITION (X)																			LENGTH	SIZE	SERIES
S		C	o	l	u	m	b	i	a		R	d							106.5	12/9	D 2000
6.7	14.9	23.9	33.6	42.5	46.2	55.2	68.9	77.6	81	87.8	96.8	106.1									

SIGN NUMBER	Sign 10
WIDTH X HEIGHT	7'-0" x 2'-0"
BORDER WIDTH	1" (inset 1")
CORNER RADIUS	2.25"
MOUNTING	Overhead
BACKGROUND	TYPE: IV Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S):
2194+93 LT
2196+24 RT

AREA: 14.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: SRF_Overhead_Street_Name_Grand Forks.ssl

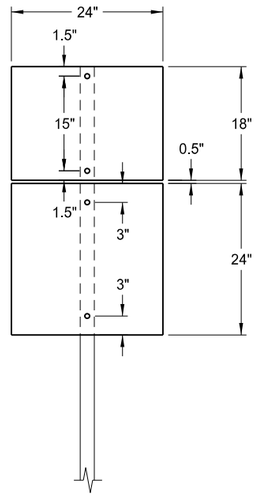
LETTER POSITION (X)																			LENGTH	SIZE	SERIES
S		2	0	t	h		S	t											72.3	12/9	D 2000
5.9	14	23	33.1	42.7	48.5	55.6	64.6	73.3													

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778 , on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Sign Details

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Steet

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	110	16



Special Assembly A
Sta 2142+18 RT

Pay Area: 7.0 SF

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

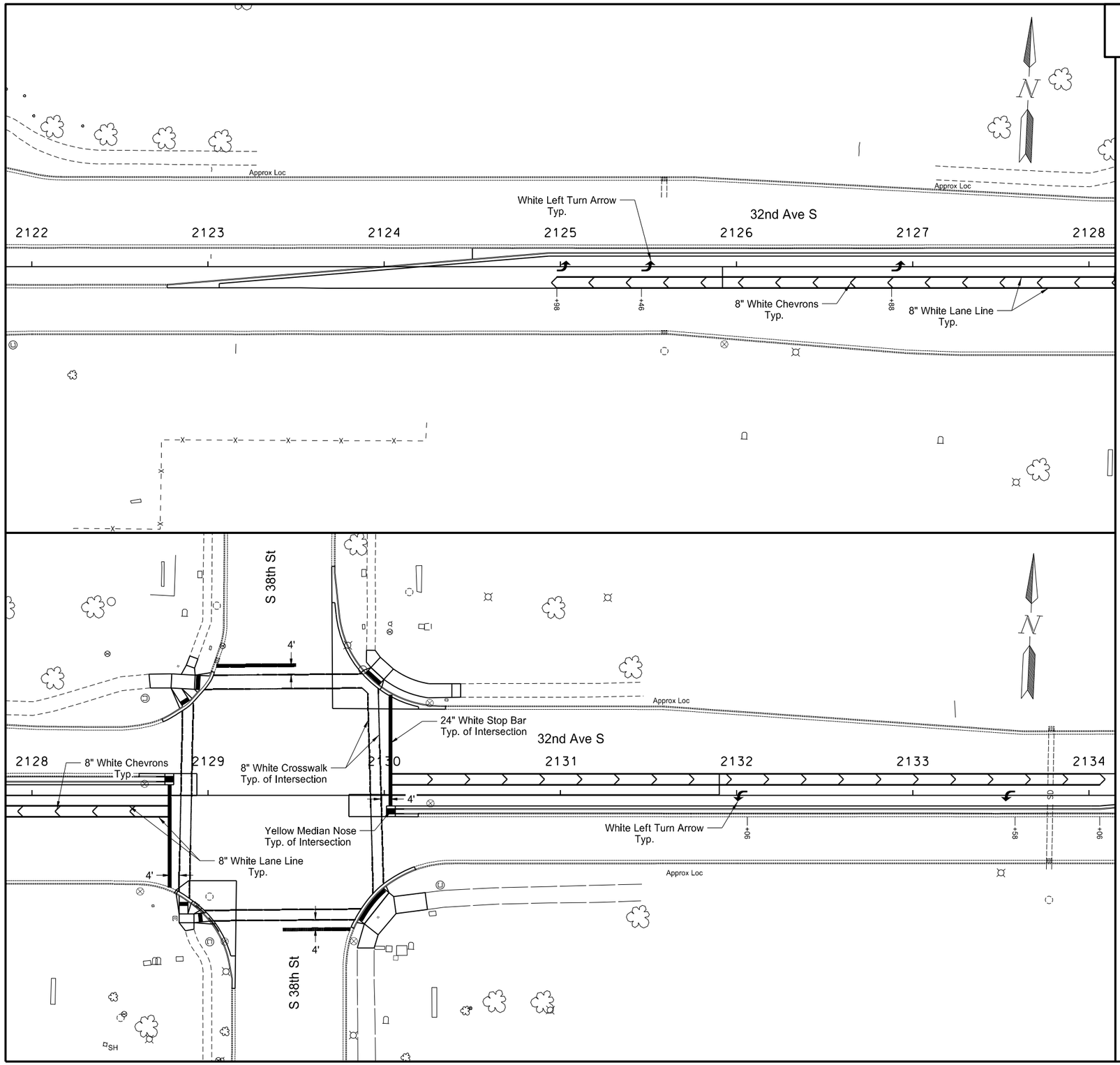
Signing Details

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

Special Assemblies

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	120	1

SPEC	CODE	BID ITEM	QTY	UNIT
762	0112	EPOXY PVMT MK MESSAGE		
		Left Turn Arrow (5 ea)	80	SF
762	0115	EPOXY PVMT MK 8IN LINE		
		Cross Walk	786	LF
		White Chevron Line	317	LF
762	0117	EPOXY PVMT MK 24IN LINE		
		White Stop Bar	203	LF
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE - GROOVED		
		White Channel Line	1553	LF



This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

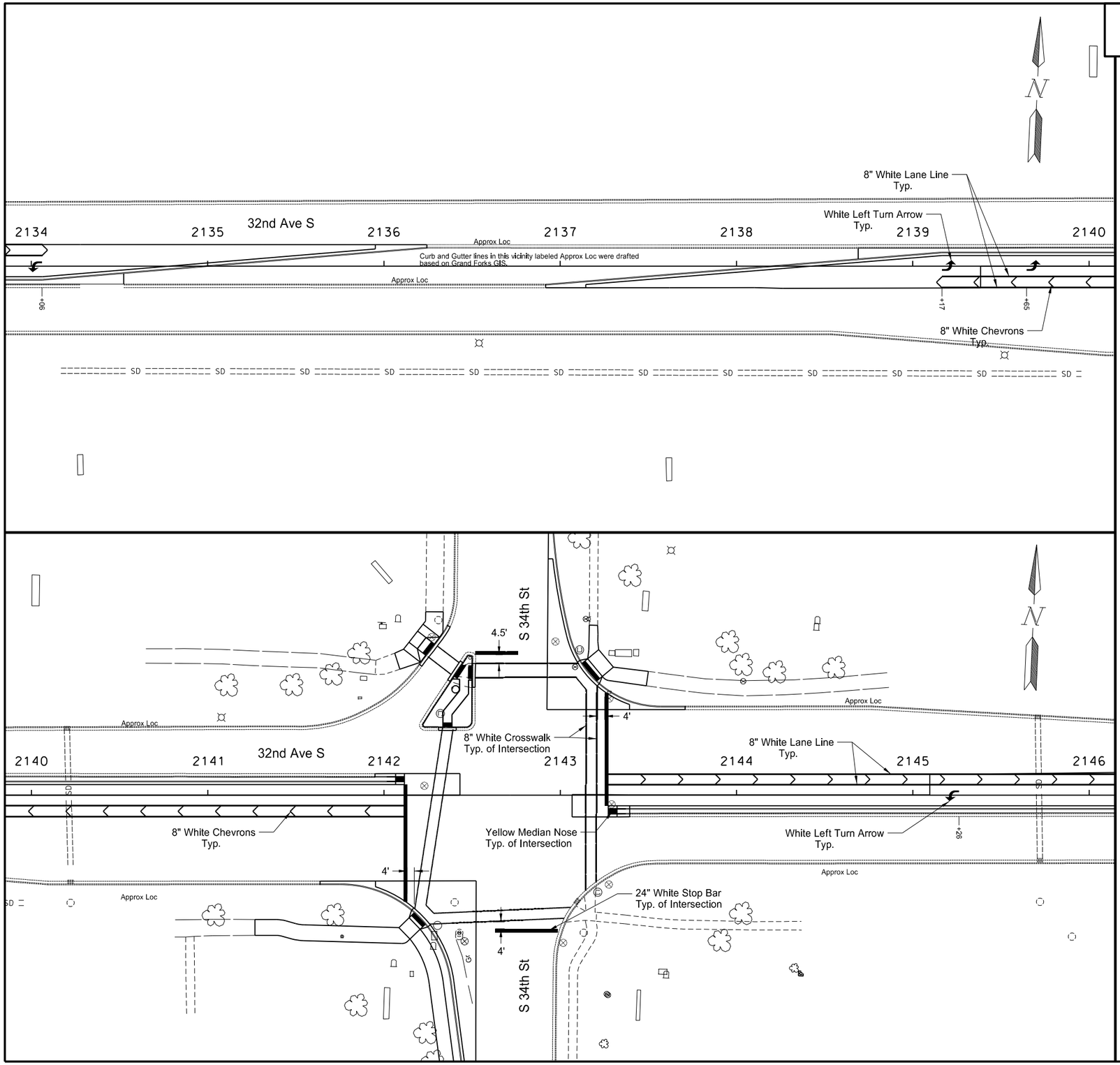
Pavement Marking Layout

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2122+00 to 2128+00
2128+00 to 2134+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	120	2

SPEC	CODE	BID ITEM	QTY	UNIT
762	0112	EPOXY PVMT MK MESSAGE		
		Left Turn Arrow (4 ea)	64	SF
762	0115	EPOXY PVMT MK 8IN LINE		
		Cross Walk	747	LF
		White Chevron Line	235	LF
762	0117	EPOXY PVMT MK 24IN LINE		
		White Stop Bar	190	LF
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE - GROOVED		
		White Channel Line	1151	LF

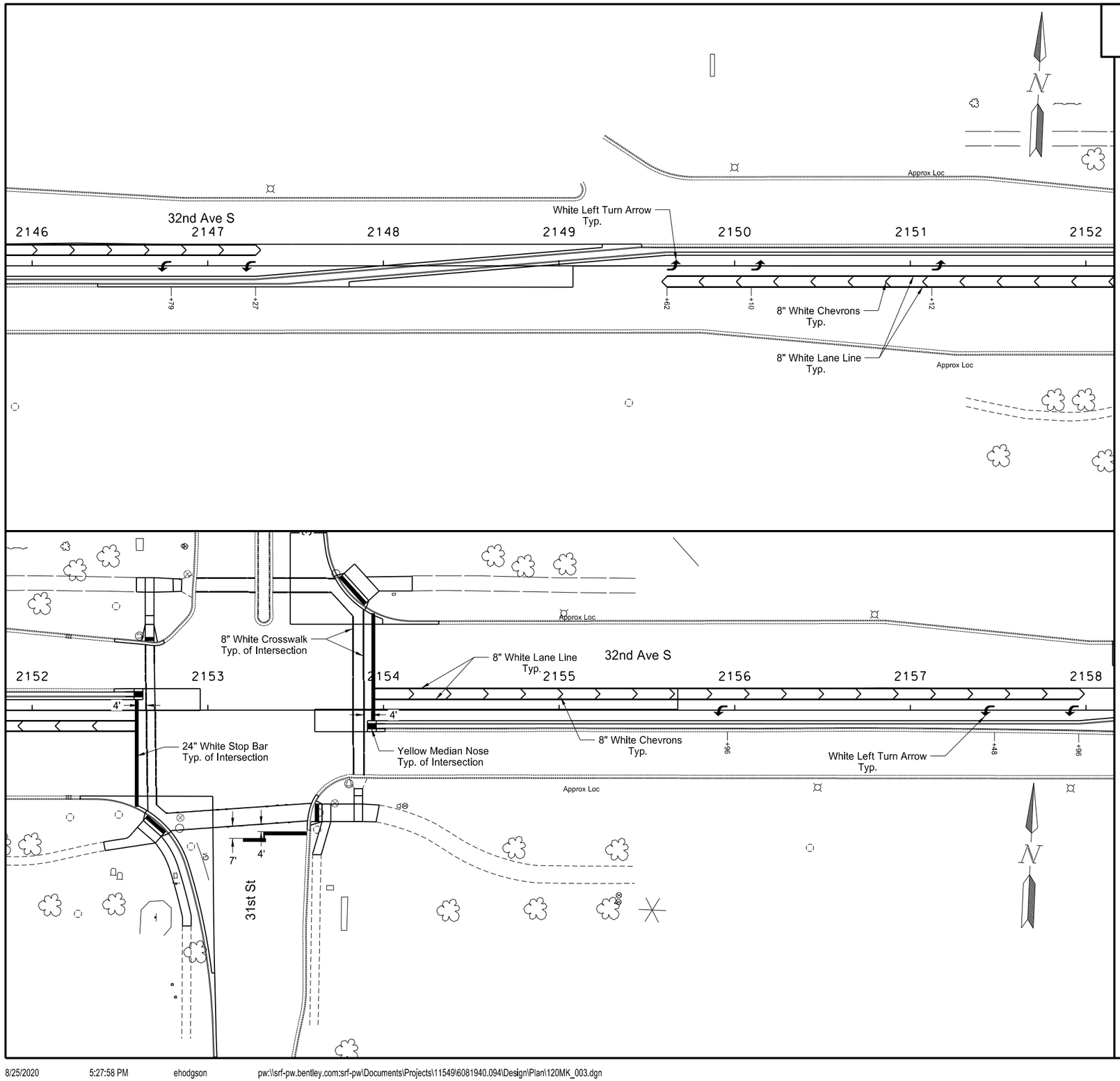


This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pavement Marking Layout

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2134+00 to 2140+00
2140+00 to 2146+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	120	3

SPEC	CODE	BID ITEM	QTY	UNIT
762	0112	EPOXY PVMT MK MESSAGE		
		Left Turn Arrow (8 ea)	128	SF
762	0115	EPOXY PVMT MK 8IN LINE		
		Cross Walk	693	LF
		White Chevron Line	353	LF
762	0117	EPOXY PVMT MK 24IN LINE		
		White Stop Bar	157	LF
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE - GROOVED		
		White Channel Line	1660	LF

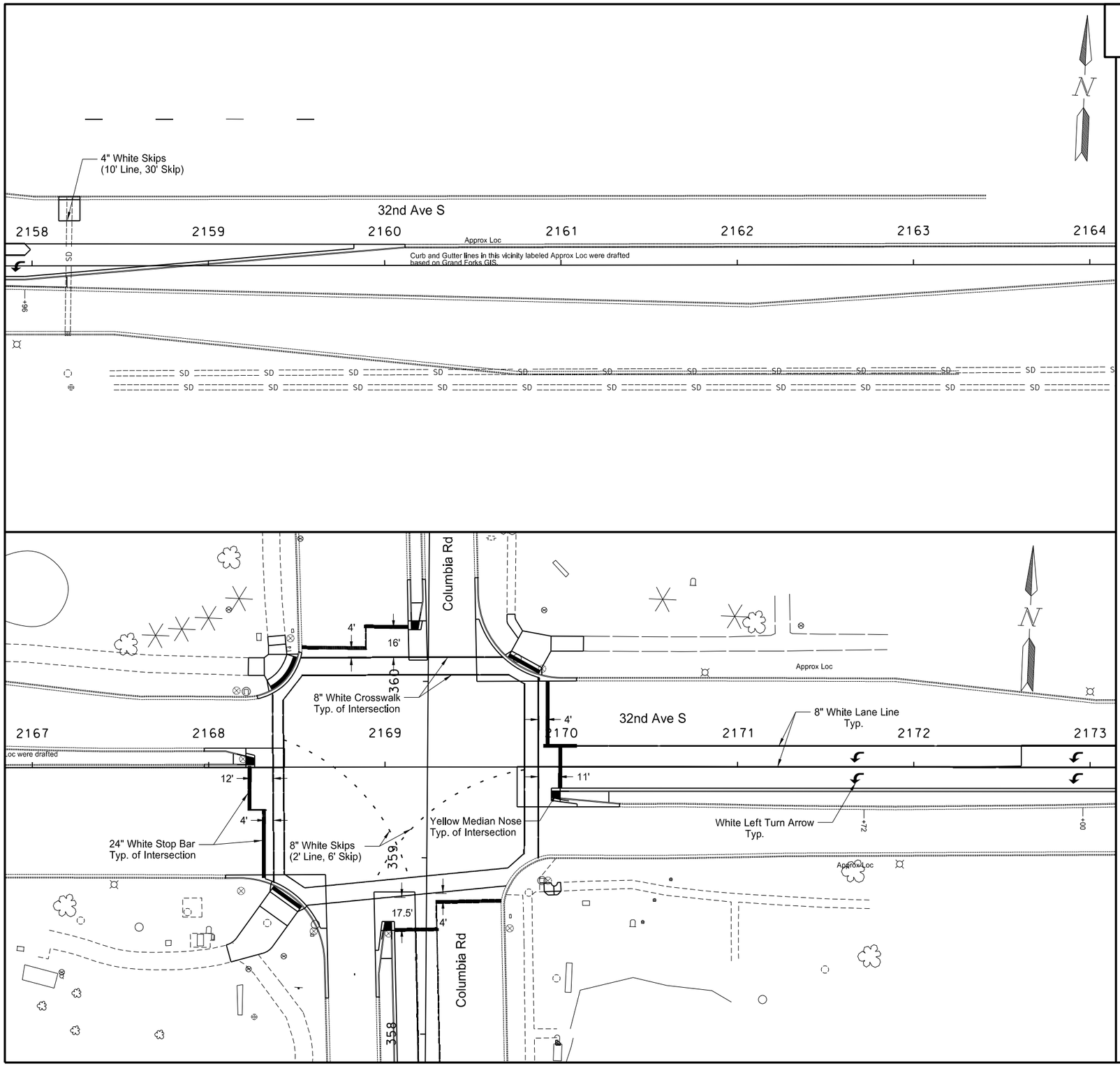
This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pavement Marking Layout

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2146+00 to 2152+00
2152+00 to 2158+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	120	4



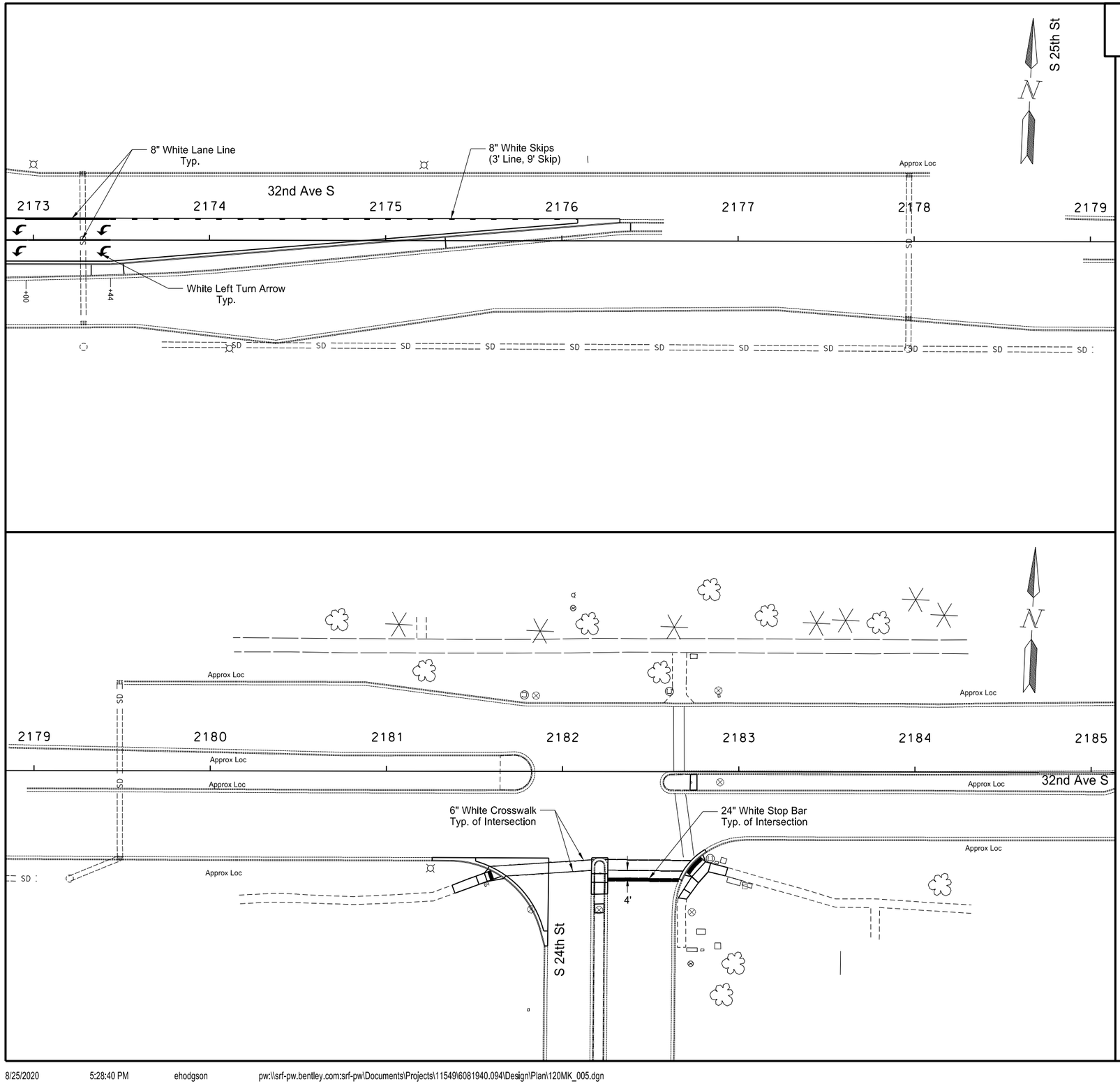
SPEC	CODE	BID ITEM		QTY	UNIT
762	0112	EPOXY PVMT MK MESSAGE			
		Left Turn Arrow (4 ea)		64	SF
762	0115	EPOXY PVMT MK 8IN LINE			
		Cross Walk		920	LF
		White Skips (2' Line, 6' Skip)	Length / 4	55	LF
762	0117	EPOXY PVMT MK 24IN LINE			
		White Stop Bar		244	LF
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE - GROOVED			
		White Skips (10' Line, 30' Skip)		10	LF
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE - GROOVED			
		White Channel Line		769	LF

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pavement Marking Layout

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2158+00 to 2164+00
2167+00 to 2173+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	120	5

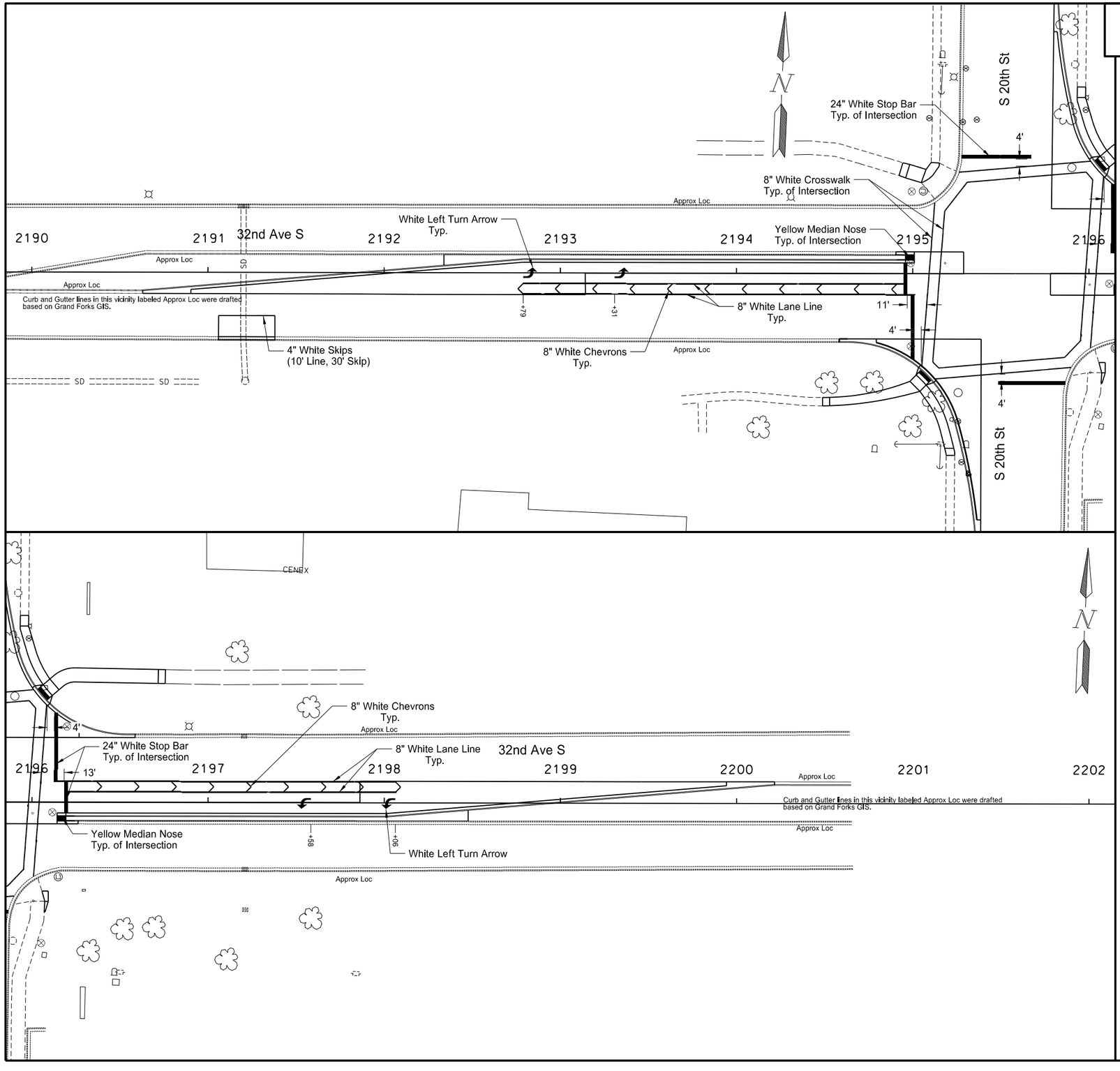
SPEC	CODE	BID ITEM		QTY	UNIT
762	0112	EPOXY PVMT MK MESSAGE			
		Left Turn Arrow (2 ea)		32	SF
762	0117	EPOXY PVMT MK 24IN LINE			
		White Stop Bar		40	LF
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE - GROOVED			
		White Skips (10' Line, 30' Skip)		10	LF
762	1307	PREFORMED PATTERNED PVMT MK 6IN LINE - GROOVED			
		Cross Walk		200	LF
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE - GROOVED			
		White Channel Line		88	LF
		White Skips (3' Line, 9' Skip)	Length / 4	66	LF

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pavement Marking Layout

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2173+00 to 2179+00
2179+00 to 2185+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	120	6

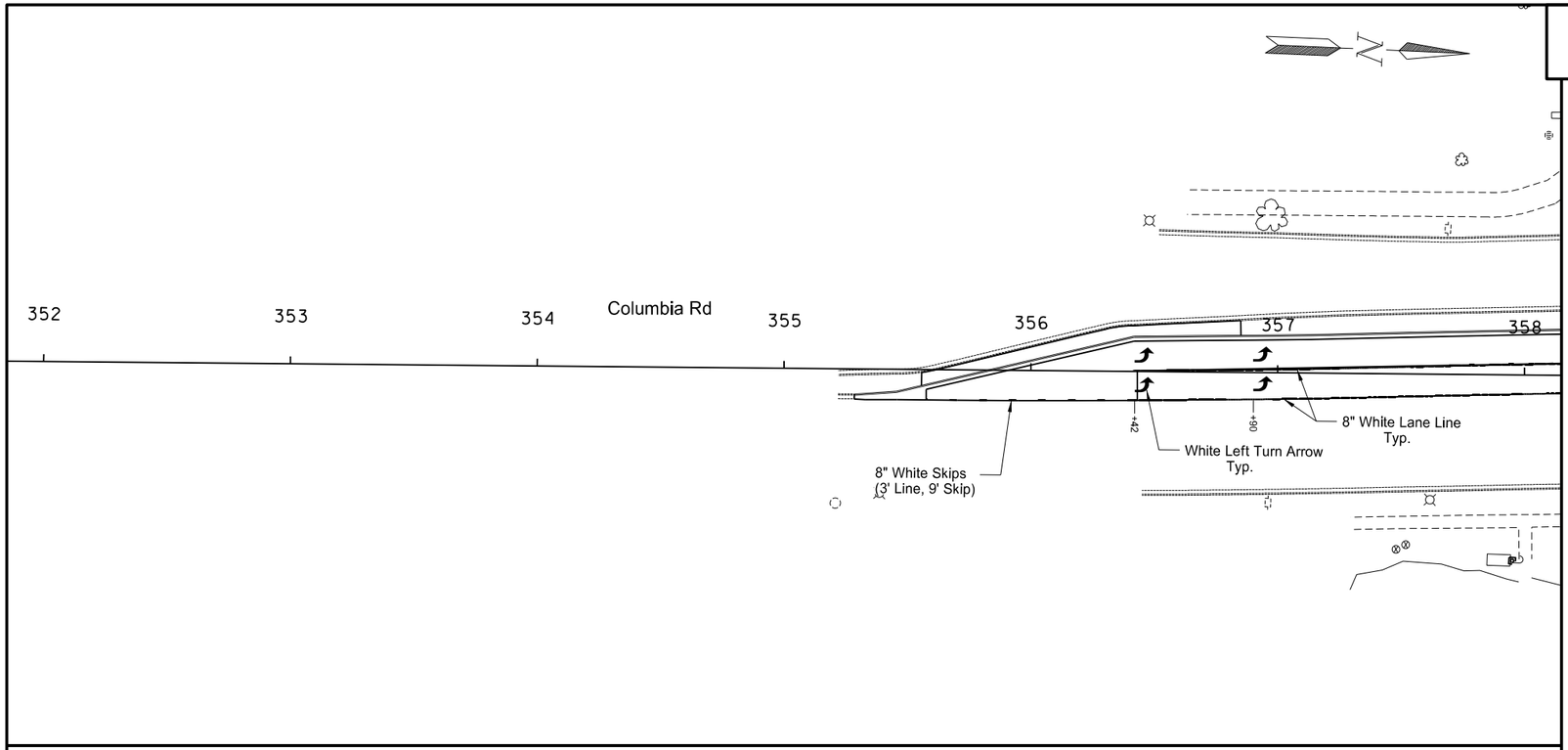
SPEC	CODE	BID ITEM	QTY	UNIT
762	0112	EPOXY PVMT MK MESSAGE		
		Left Turn Arrow (4 ea)	64	SF
762	0115	EPOXY PVMT MK 8IN LINE		
		Cross Walk	705	LF
		White Chevron Line	170	LF
762	0117	EPOXY PVMT MK 24IN LINE		
		White Stop Bar	188	LF
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE - GROOVED		
		White Channel Line	820	LF

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pavement Marking Layout

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

2190+00 to 2196+00
2196+00 to 2202+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HEU-6-081(094)940	120	7

SPEC	CODE	BID ITEM		QTY	UNIT
762	0112	EPOXY PVMT MK MESSAGE			
		Left Turn Arrow (4 ea)		64	SF
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE - GROOVED			
		White Channel Line		316	LF
		White Skips (3' Line, 9' Skip)	Length / 4	21	LF

This document was originally issued and sealed by Kevin LaRue, Registration Number PE- 8778, on 08/25/20 and the original document is stored at the North Dakota Department of Transportation

Pavement Marking Layout

US Hwy 81 Safety, Signal and Turn Lanes
I-29 to 20th Street

352+00 to 358+00