

DESIGN DATA				
Traffic	Average Daily			
Current 2015	Pass: 38,249	Trucks: 386	Total: 38,635	
Forecast 2038	Pass: 47,421	Trucks: 479	Total: 47,900	
Clear Zone Distance: 16 ft		Design Speed: 35 mph		
Minimum Sight Dist. for Stopping: 250 ft		Bridges: HL-93		
Limited Access Control: N/A				
Pavement Design Life: 30 years				
Design Accumulated One-way Rigid ESALs: 13,940,129				

JOB #48
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

IM-8-094(090)351
NHU-8-081(039)924
City of Fargo Improvement District No PR-17-B1

Cass County
Business US 81 (University Drive)
21st Ave S to 18th Ave S, Fargo ND
Grading, Surfacing, Storm Drain

Lighting, Pavement Marking, City Utilities and Incidentals
Shared Use Path, Reinf. Concrete Sidewalk, Reinforced Concrete Box Culvert

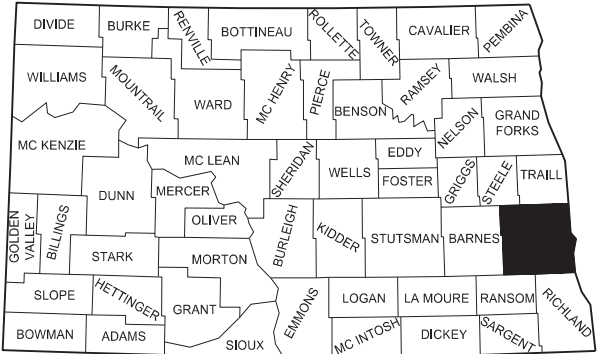
STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	21169	1	1

NHU-8-081(039)924 21400

GOVERNING SPECIFICATIONS:

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

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
IM-8-094(090)351	0.265	0.265
NHU-8-081(039)924	0.100	0.100
Total	0.365	0.365



STATE COUNTY MAP

DESIGNERS
Adam Ruud
Luke Beckermann
Gabriel Bladow
Jim Jussel
Joel Kath

DISTRICT REVIEW Robert Walton Jr /s/ FARGO DISTRICT	I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.	This document was originally issued and sealed by Jeremy L. McLaughlin Registration Number PE- 4883 , on 8/17/17 and the original document is stored at the North Dakota Department of Transportation
APPROVED DATE 8/28/17 Roger Weigel /s/ OFFICE OF PROJECT DEVELOPMENT ND DEPARTMENT OF TRANSPORTATION	APPROVED DATE 8/17/2017 Jeremy McLaughlin /s/ Houston Engineering, Inc.	

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2	1 - 2	Table of Contents	SP 497(14)	Lift Station and Pumping Equipment		
4	1 - 17	Scope of Work	SP 502(14)	Incentive/Disincentive		
6	1 - 7	Notes	SP 540(14)	Traffic Signal System		
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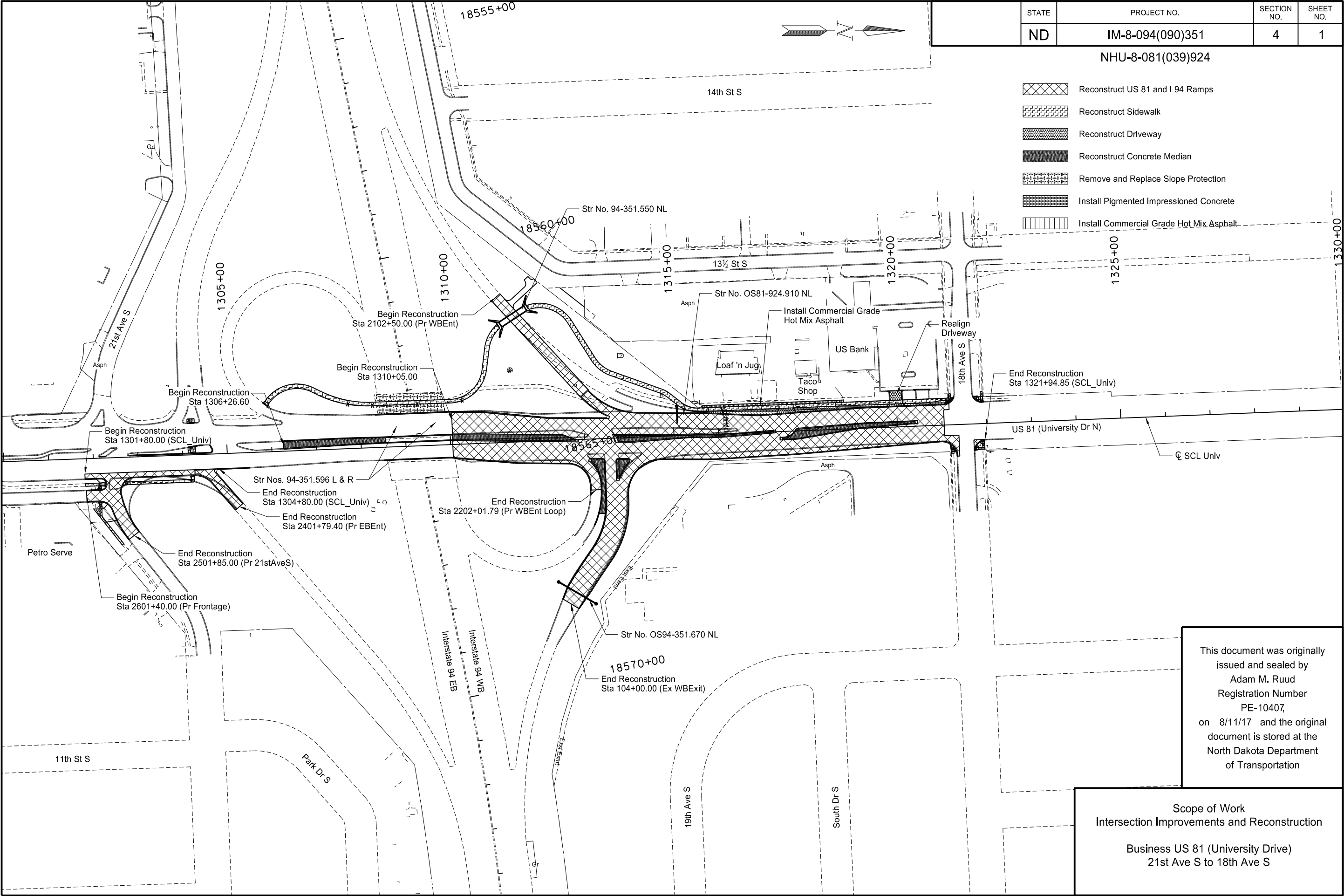
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D-261-1	Erosion Control - Fiber Roll Placement Details
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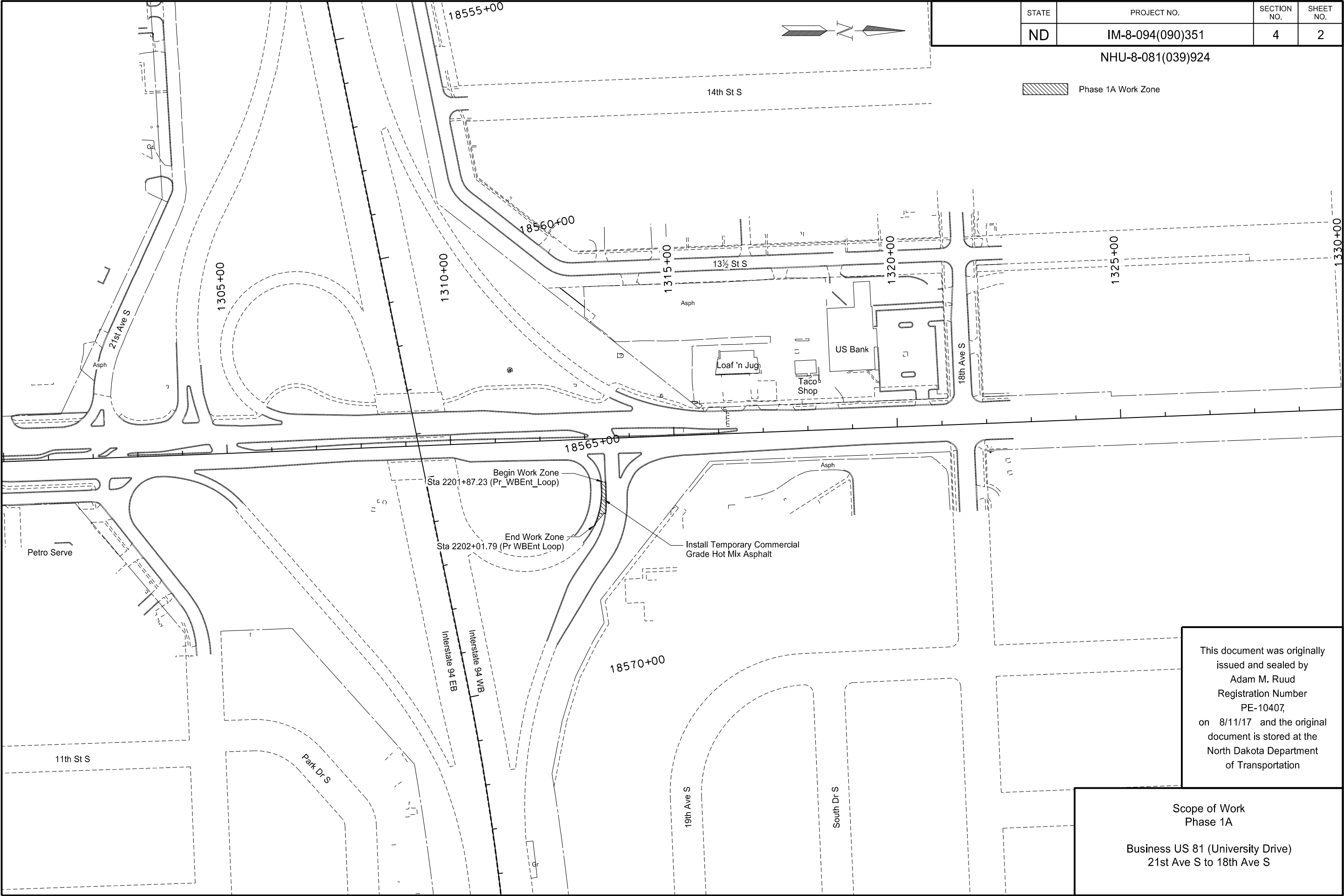
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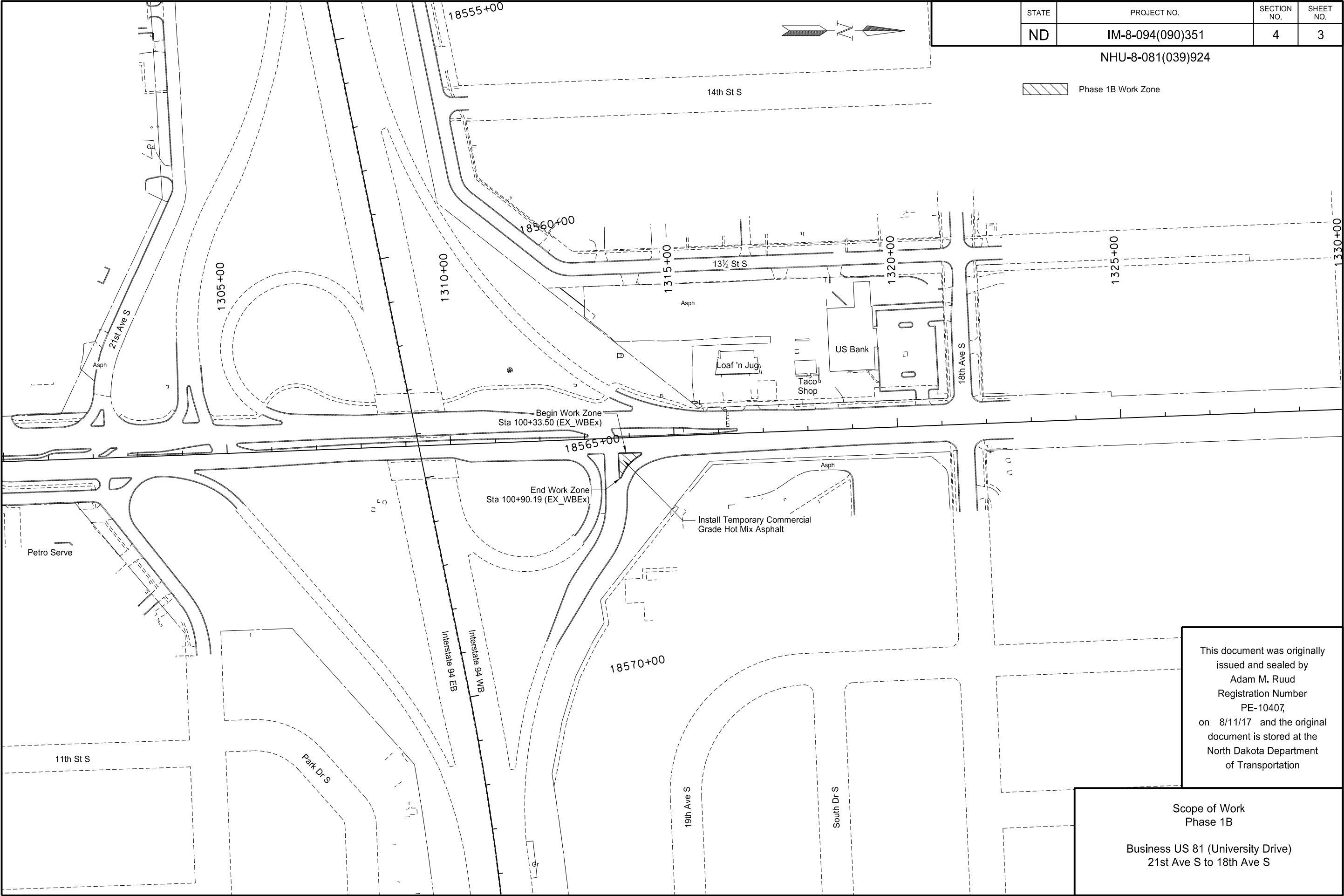
- Reconstruct US 81 and I 94 Ramps
- Reconstruct Sidewalk
- Reconstruct Driveway
- Reconstruct Concrete Median
- Remove and Replace Slope Protection
- Install Pigmented Impressed Concrete
- Install Commercial Grade Hot Mix Asphalt

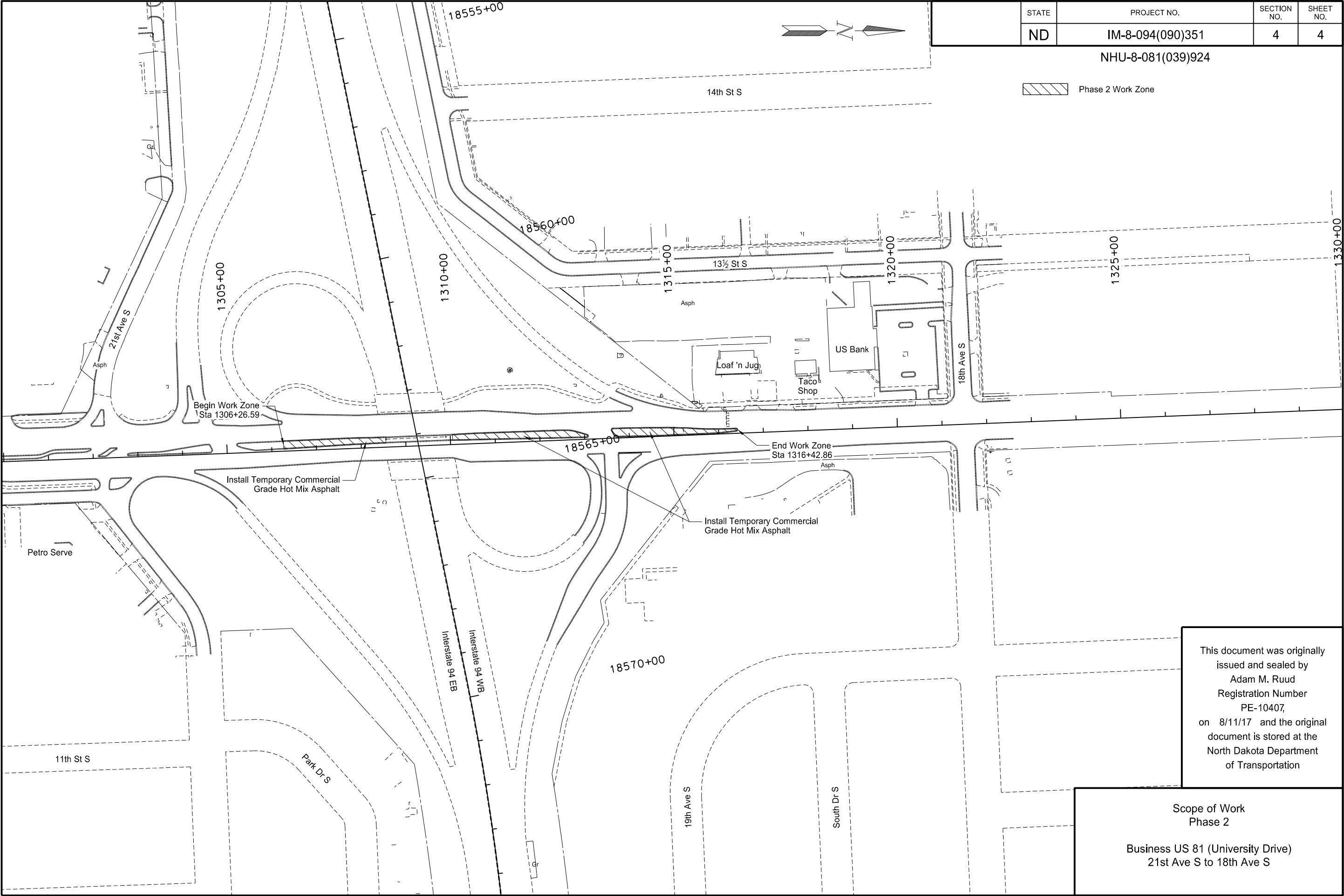
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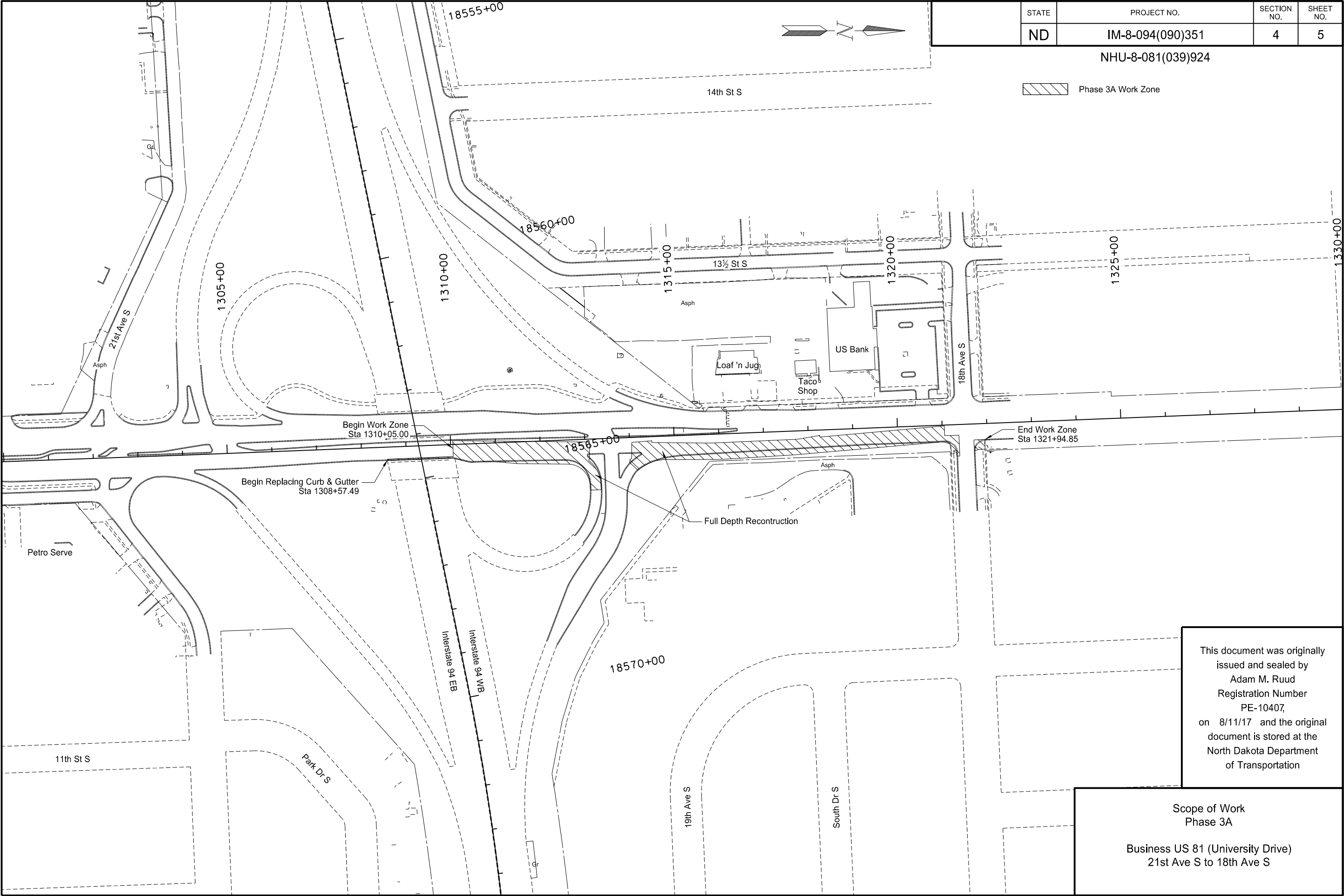
Scope of Work
Intersection Improvements and Reconstruction

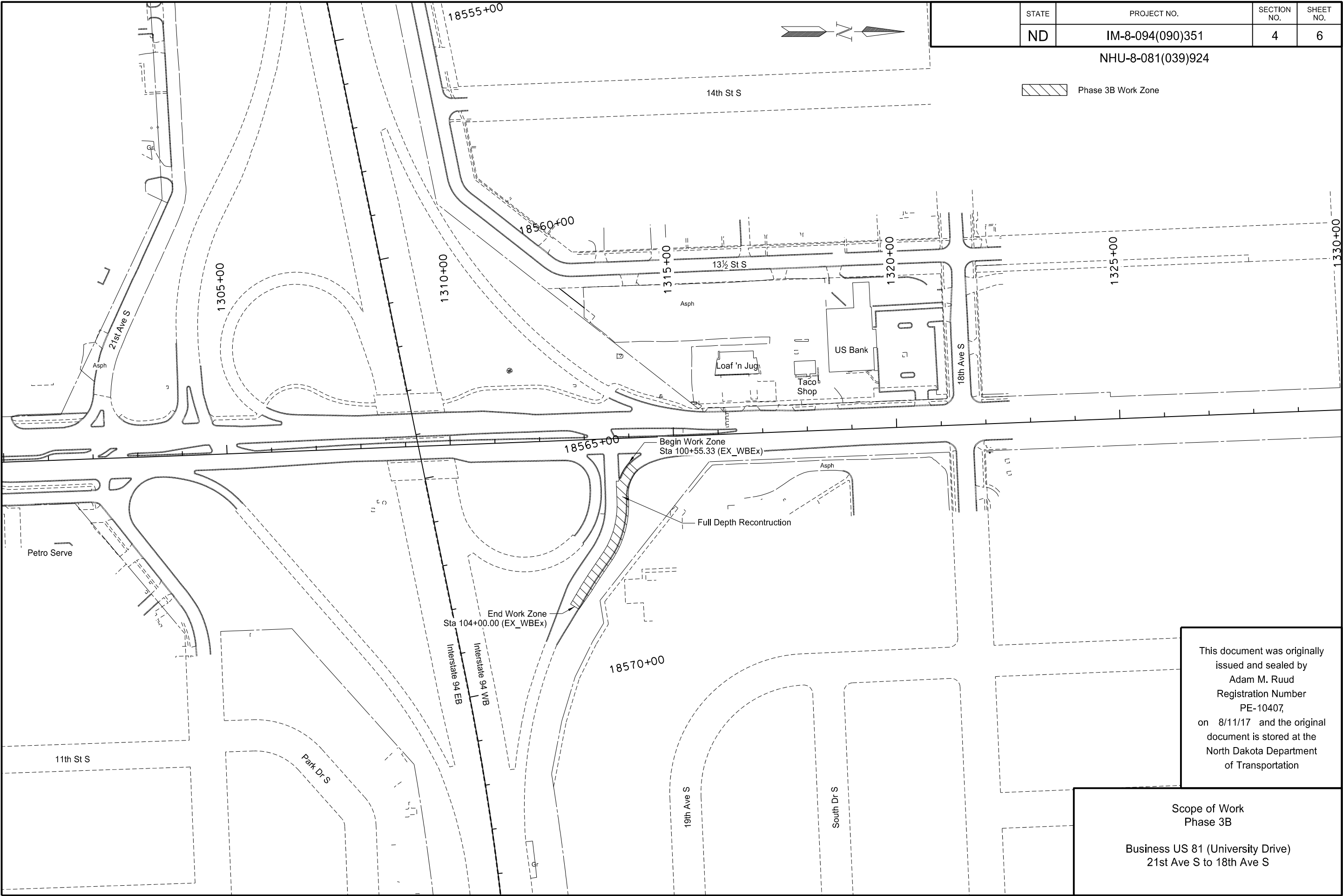
Business US 81 (University Drive)
21st Ave S to 18th Ave S





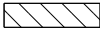






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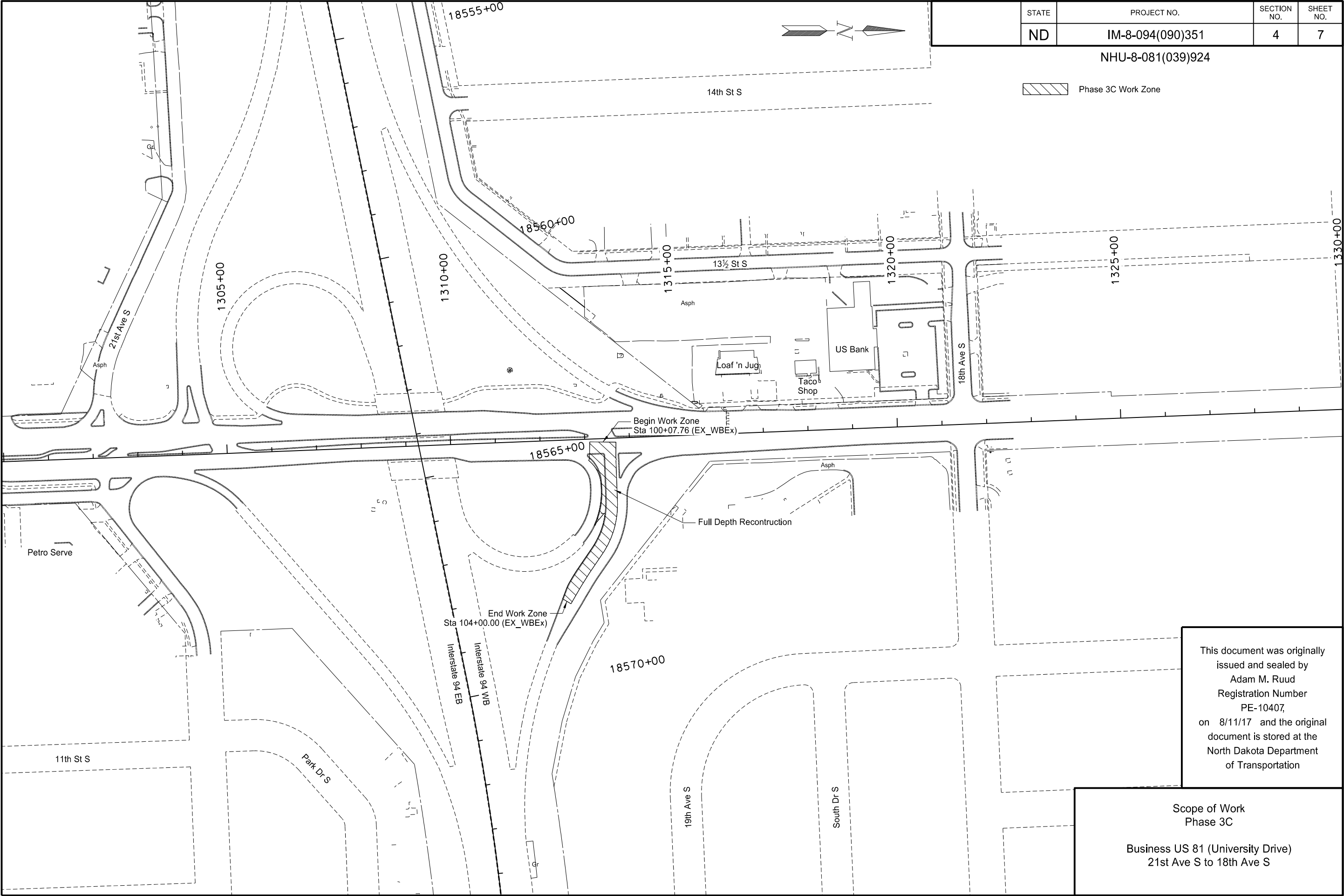
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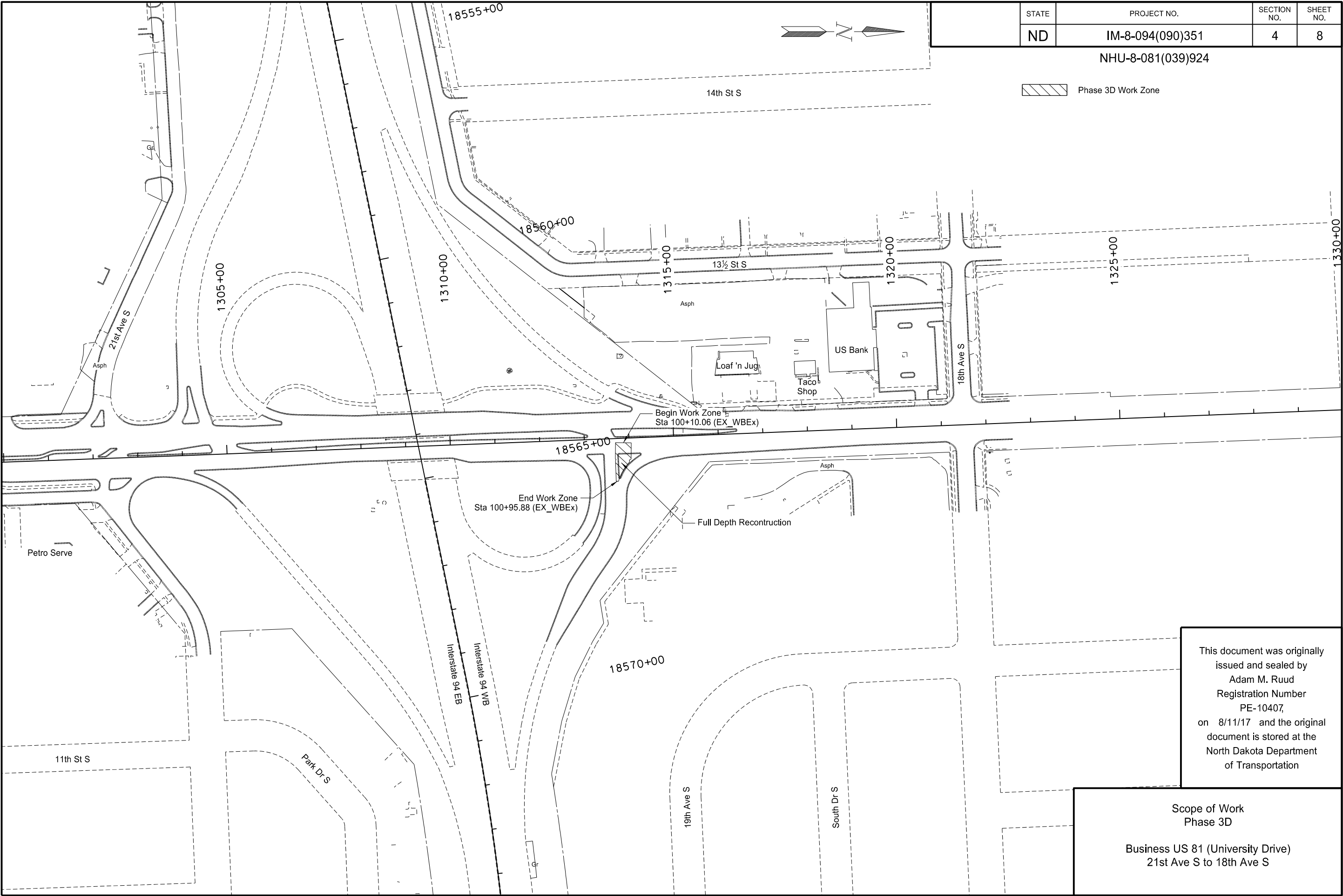
 Phase 3B Work Zone

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Scope of Work
Phase 3B

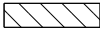
Business US 81 (University Drive)
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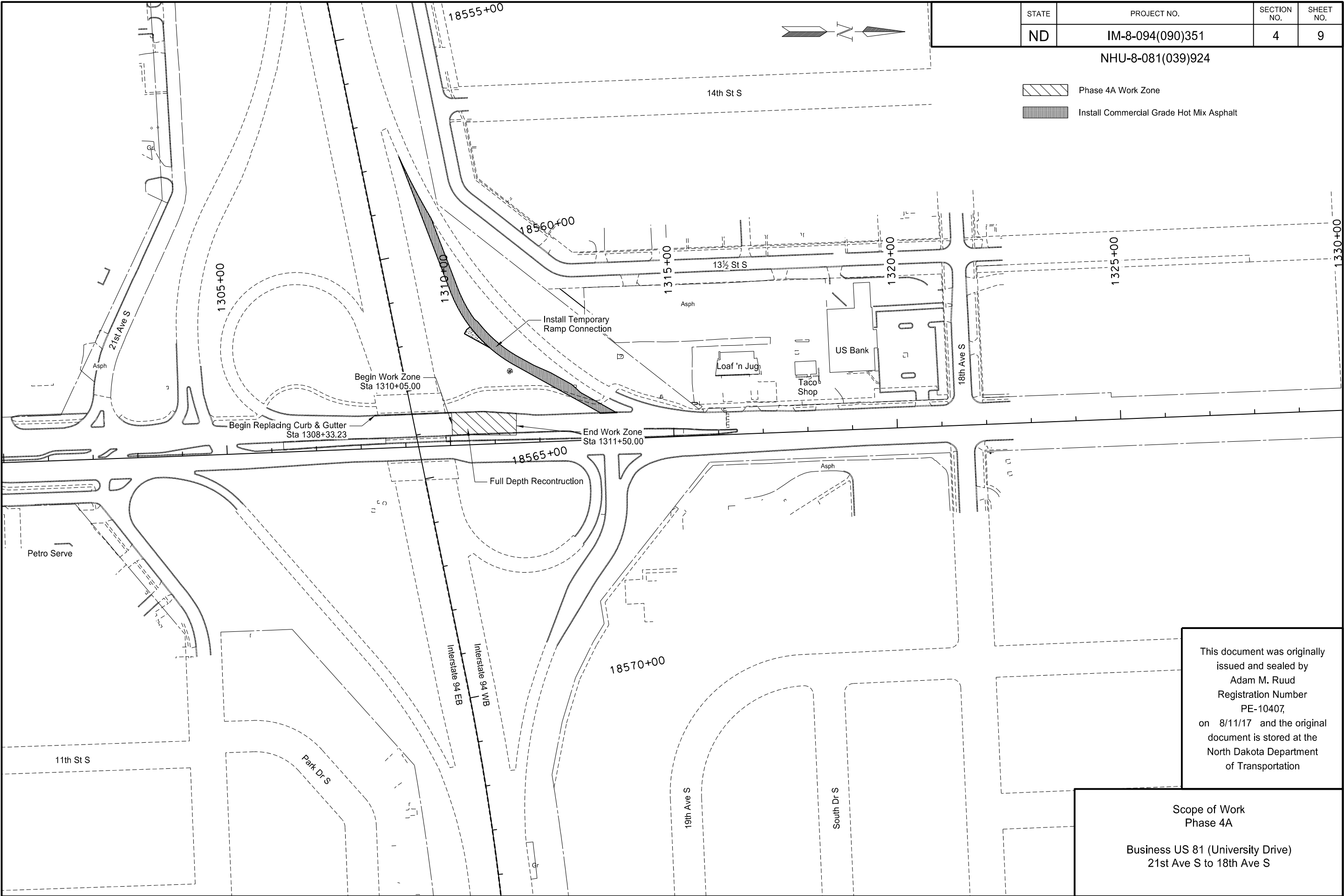
NHU-8-081(039)924

 Phase 3D Work Zone

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Scope of Work
Phase 3D

Business US 81 (University Drive)
21st Ave S to 18th Ave S



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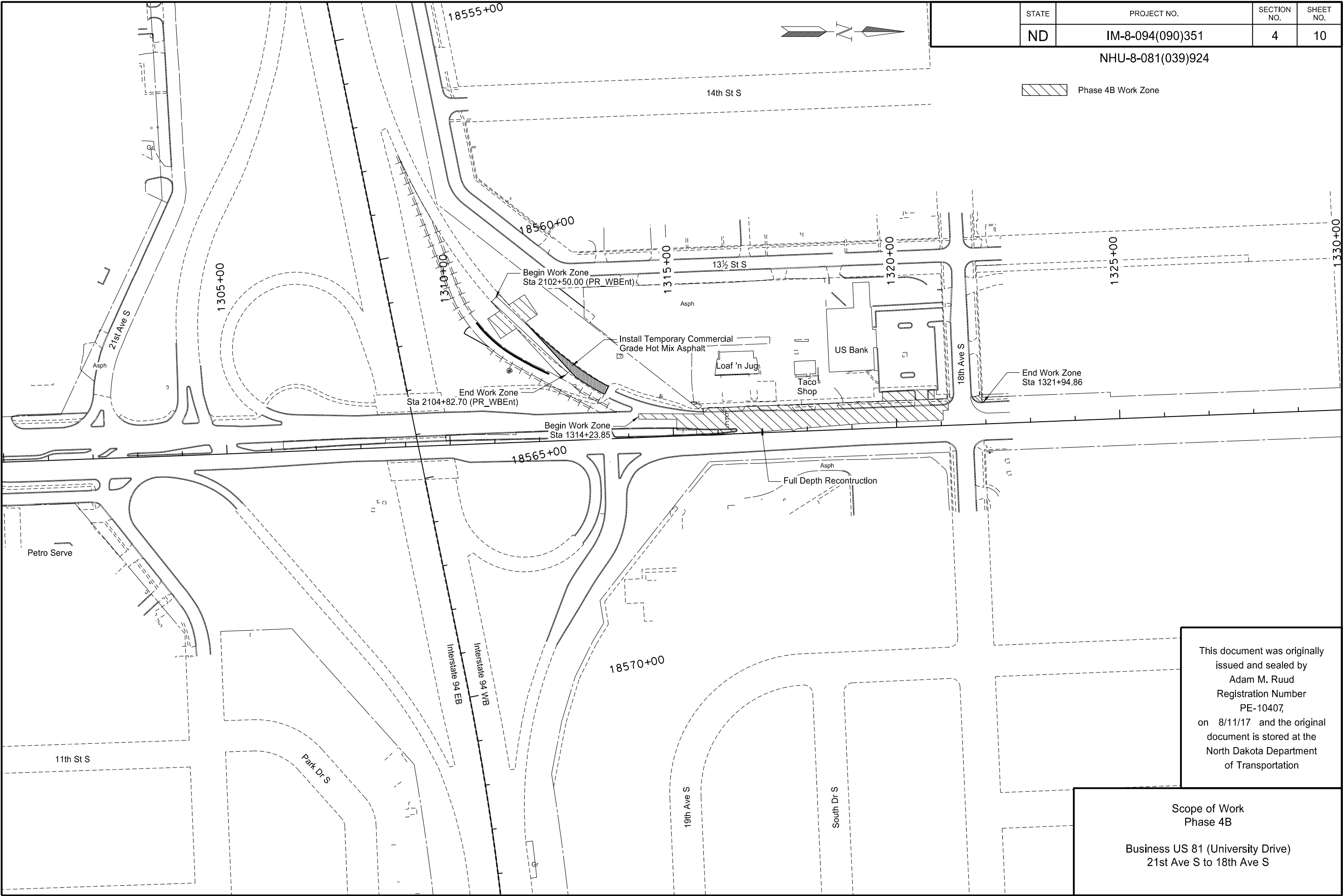
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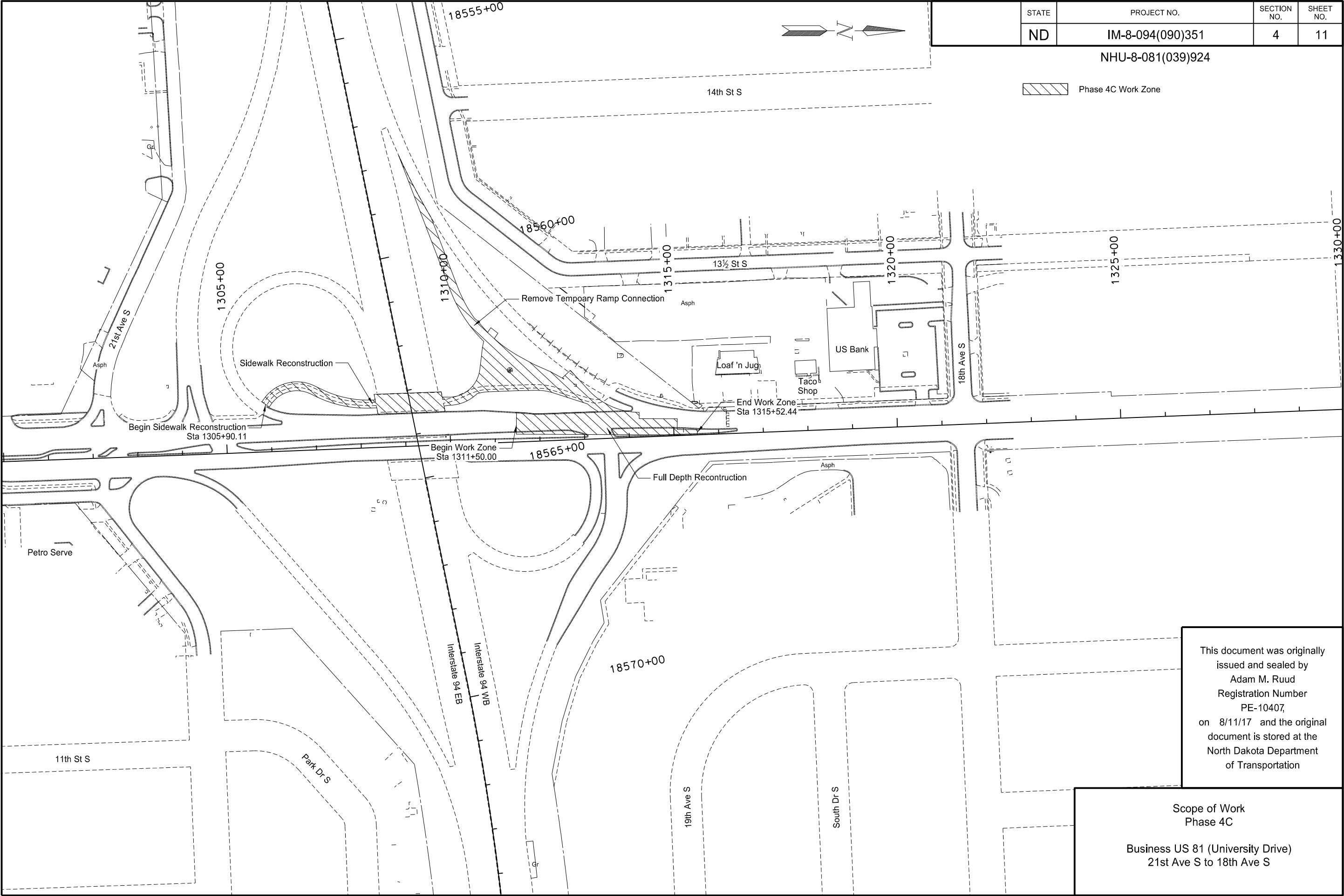
-  Phase 4A Work Zone
-  Install Commercial Grade Hot Mix Asphalt

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Scope of Work
Phase 4A

Business US 81 (University Drive)
21st Ave S to 18th Ave S

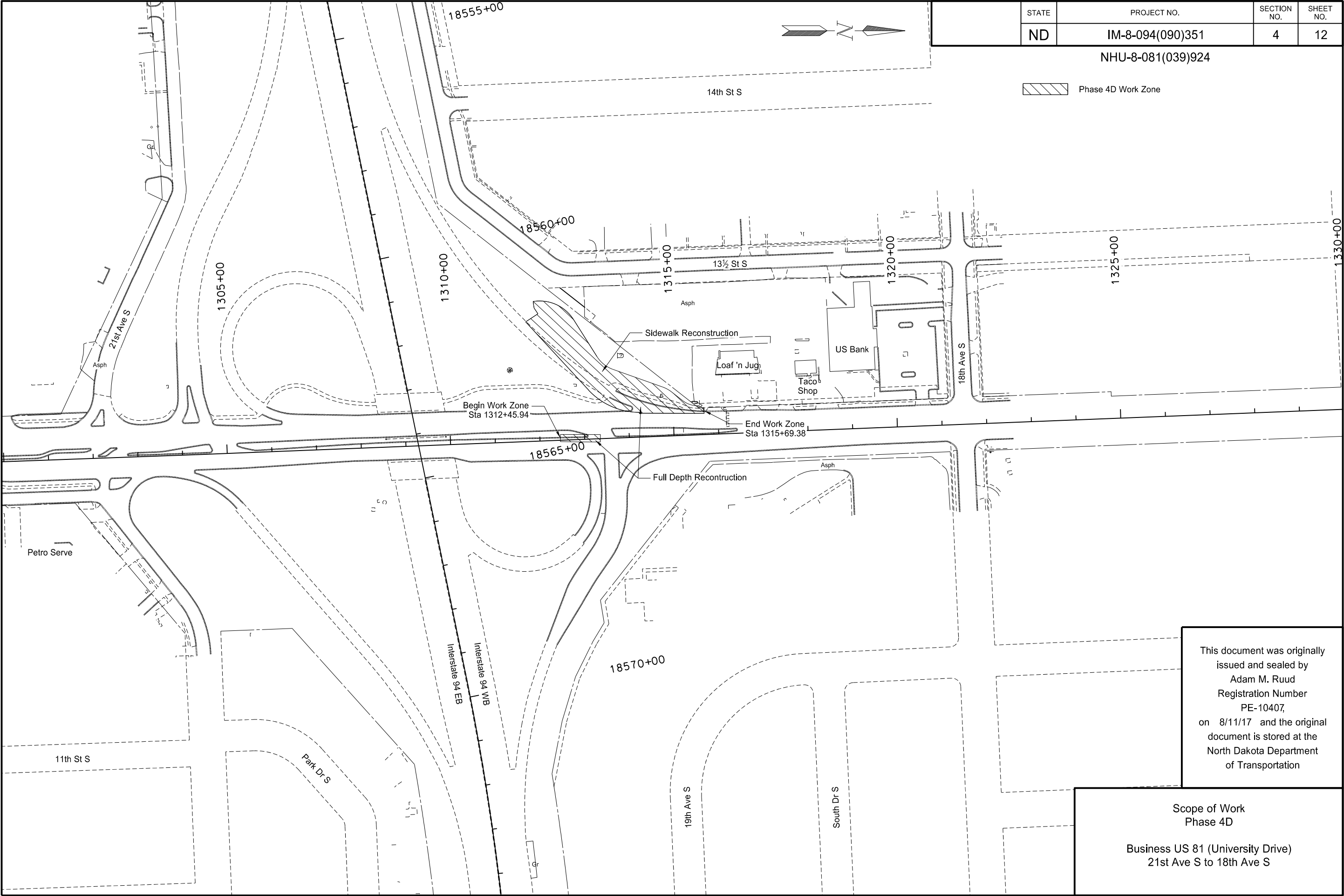


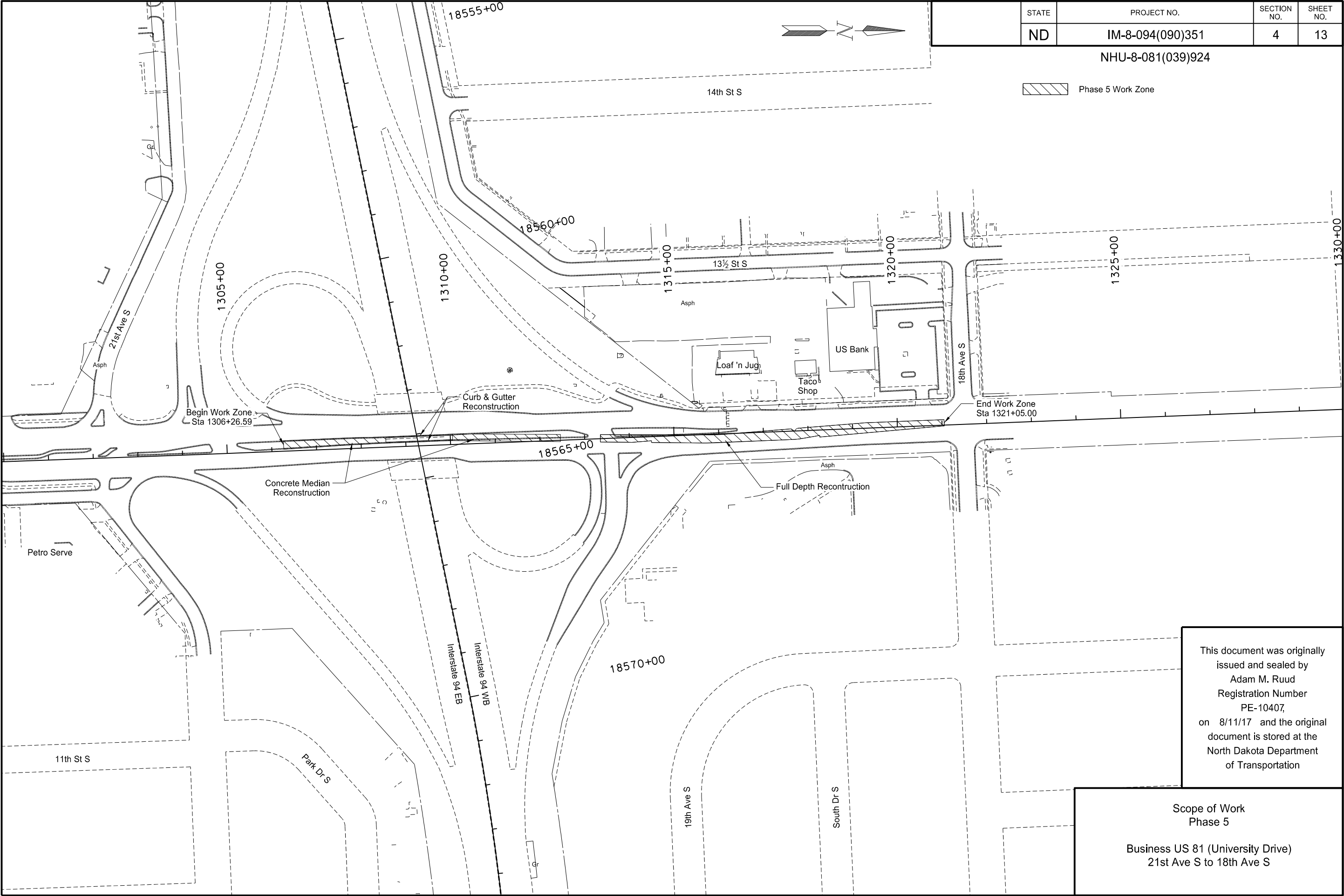


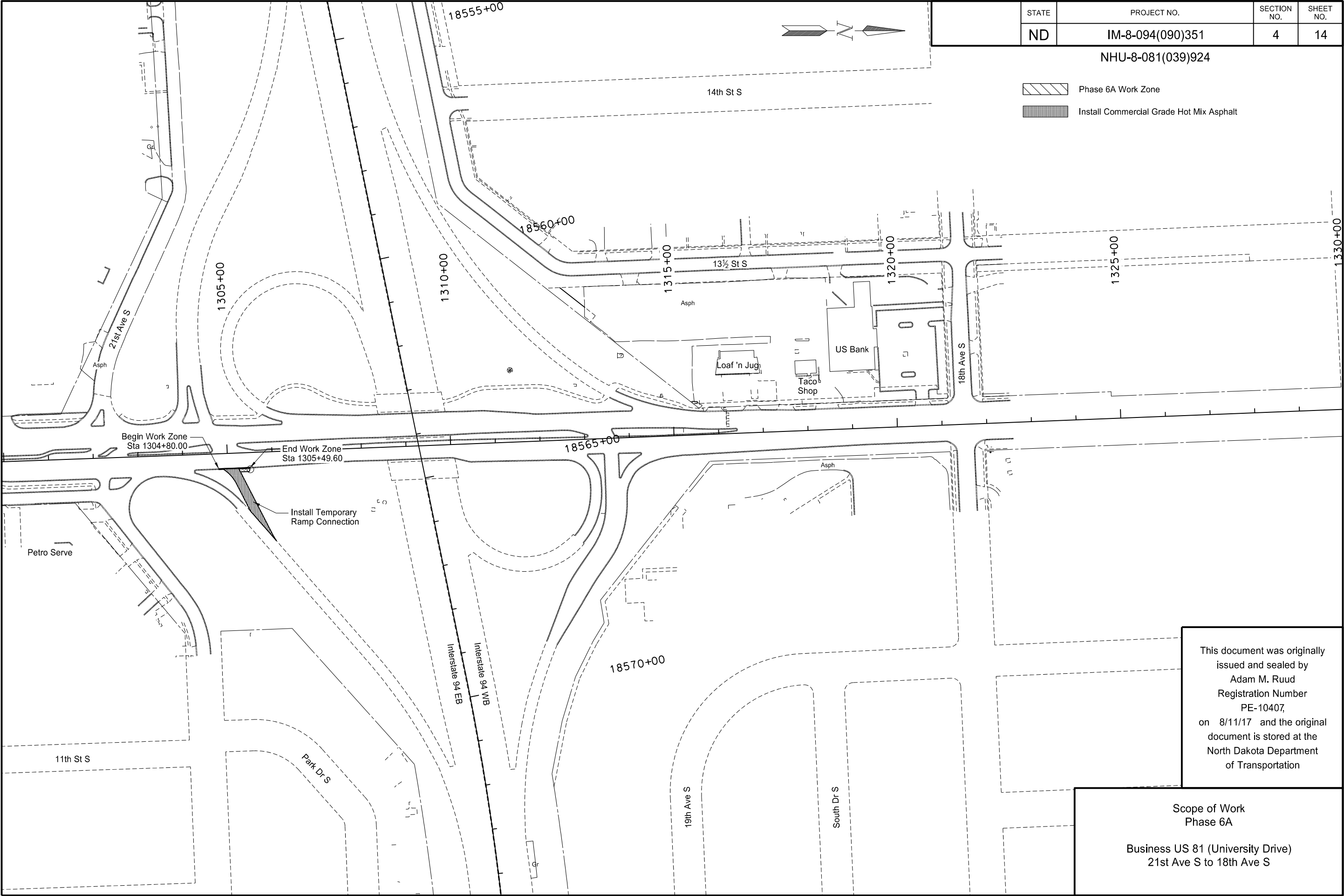
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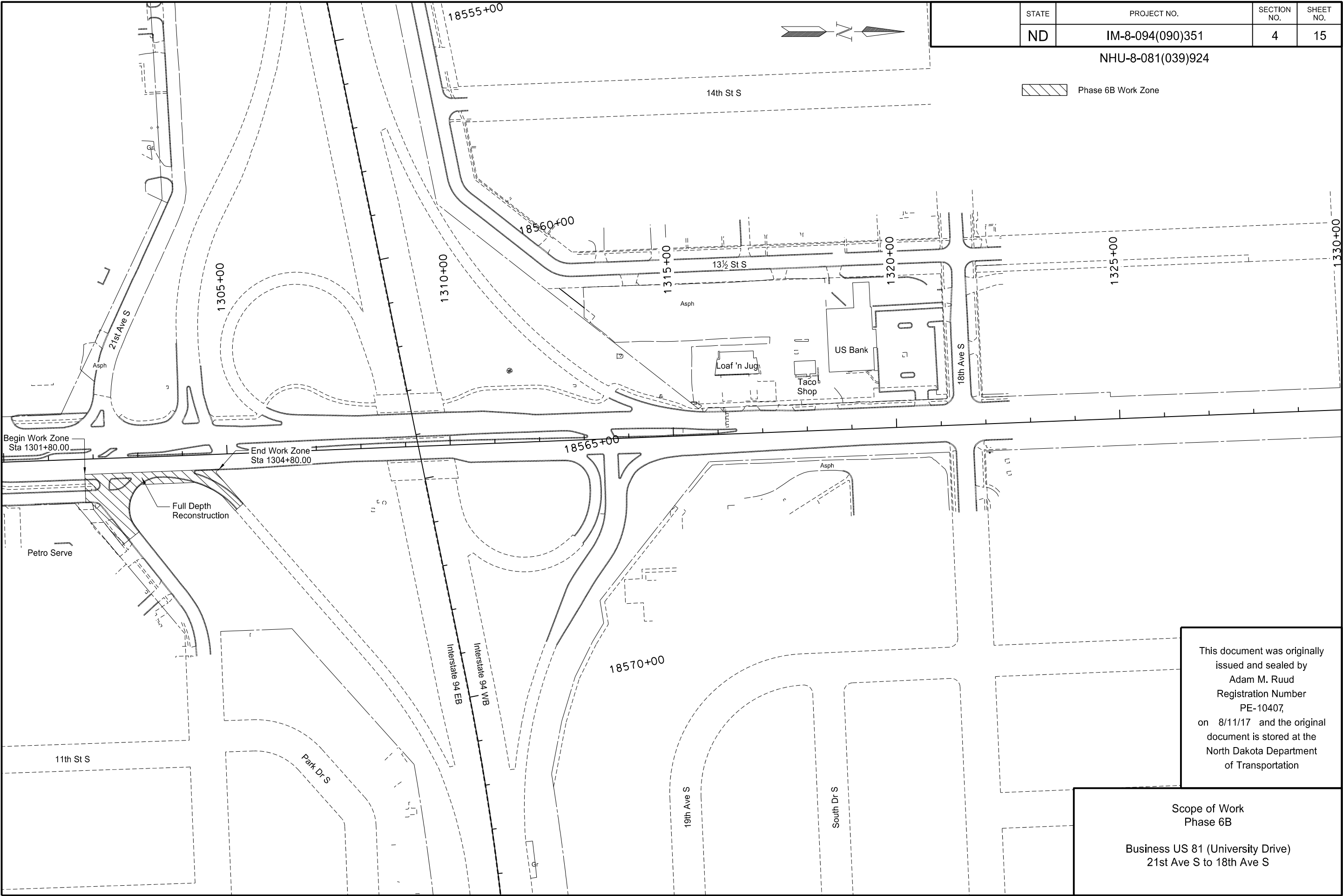
Scope of Work
Phase 4C

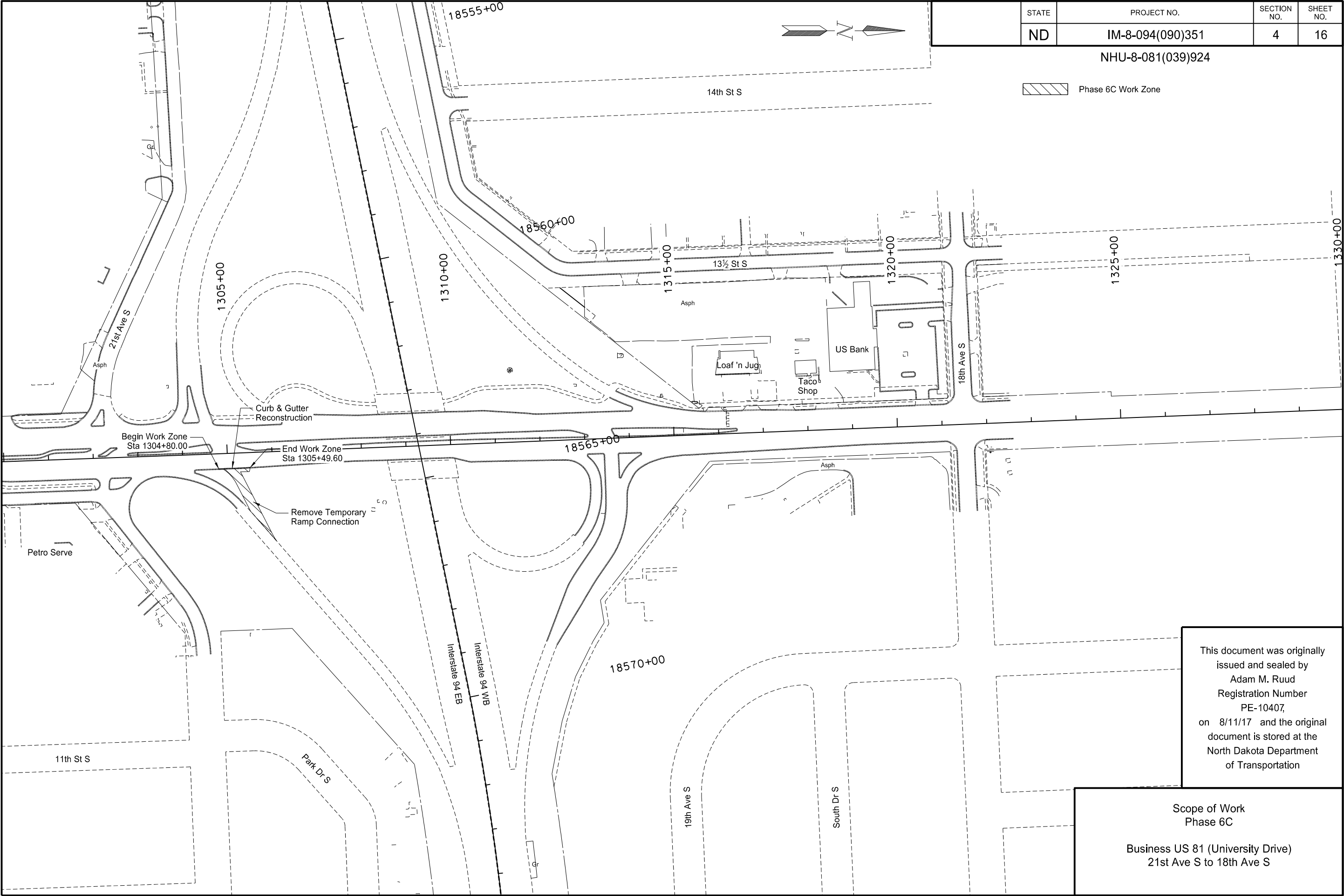
Business US 81 (University Drive)
21st Ave S to 18th Ave S





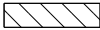






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 Phase 6C Work Zone

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Scope of Work
Phase 6C

Business US 81 (University Drive)
21st Ave S to 18th Ave S

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NOTES

- 105-110

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

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

Use a vacuum or pick-up type sweeper to perform this work.
- 105-200

UTILITY COORDINATION: A utility coordination meeting is required.
- 105-P01

UNDERGROUND UTILITY INSTALLATION: The City of Fargo Standard Specifications for Construction (most current version), along with the plan notes, govern underground utility construction.
- 107-P01

MAINTAINING TRAFFIC –DROP-OFFS: If, at the end of the work-day, drop-offs greater than 2 inches and less than 18 inches or slopes steeper than 4:1 exist between the edge of a traffic lane and the outside edge of the proposed roadway, perform one of the following actions:
 - Construct a traversable wedge in the area of the drop-off or steep slope; or
 - Close the lane adjacent to the drop-off or steep slope and provide 24-hour flagging or pilot car operations.
When constructing a wedge, construct a wedge composed of aggregate or earthen materials with a 4:1 or flatter slope along the entire length of the area. Compact materials using Type C compaction, as specified in 203.04 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 “Salvaged Base Course”.

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

The requirements of Section 704.04 O, “Traffic Control for Uneven Pavement” apply to drop-offs created by milling or the placement of hot mix asphalt.
- 108-100

WEEKLY PLANNING & REPORTING MEETING: A weekly planning and reporting meeting is required.
- 108-150

PUBLIC RELATIONS COORDINATOR: Provide a public relations and information coordinator. The coordinator cannot be the project superintendent or construction foreman. The coordinator should be knowledgeable in construction operations, be able to develop effective media releases, possess written and verbal communication skills, and be able to organize productive meetings.

Provide the name, work address, and work phone number to the relevant project, community, and media personnel.

The public relations coordinator is responsible for providing the following:
 - Organizing, scheduling, and conducting the meeting specified in Note 108-100, "Weekly Planning/Reporting Meeting".
 - Advise Jeremy Enquist, from the City of Fargo, PH: (701) 241-1545, of upcoming construction activities in regard to street closures and traffic detour routes so that city police, emergency services, schools, and other pertinent city agencies may be notified.
 - Provide news releases and necessary drawings to the media before and during construction. News releases should inform the public on construction activities, schedules, street closures, width or height restrictions to traffic, and traffic detour routes. Update news releases regarding construction activities every other week, at a minimum.
 - Be available for media interviews.
Work directly with property owners and businesses affected by construction activities. The coordinator must have sufficient knowledge and authority to resolve property owner and business concerns regarding scheduling, maintaining access, and construction operations.
- 202-P01

REMOVAL OF CONCRETE PAVEMENT: Include all costs for removal of concrete driveways, and sidewalks in the price bid for “Removal of Concrete Pavement”.
- 202-P02

REMOVAL OF PAVEMENT: Include all costs for removal of mainline concrete pavement, HMA parking lots, concrete median and aggregate base in the price bid for “Removal of Pavement”.
- 203-010

SHRINKAGE: 25 percent additional volume is included for shrinkage in earth embankment.

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203-360 COMPACTION AND DENSITY CONTROL: Compact material as specified in Section 203.04 E.2.b, "ND T-99".

Manipulate embankment material with disking equipment.

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

203-P01 PROOF ROLLING: In addition to density/moisture testing, perform a proof roll test to verify the uniformity of support and to identify unstable areas which will require correction. Perform a proof roll test on subgrade located under the roadway. In fill areas, perform a proof roll test per one foot of each compacted lift.

Complete proof rolling by using a fully loaded tandem dump truck. Other heavy equipment may be substituted to complete proof rolling upon prior approval of the Engineer. Offset each trip of the proof roller by no more than one tire width.

If the grade shows no signs of pumping, cracking, or rutting, the grade being tested is considered acceptable. Correct any defective areas discovered during proof rolling and proof roll again.

Include all costs associated with performing the proof roll test and any corrective work in the price bid for "Common Excavation-Type A."

251-P01 SEEDING CLASS III: Use the following seed mix for all permanent seeding.

Species	Percent by Weight	Purity	Germination
Kentucky Bluegrass	60%	90%	85%
Creeping Red Fescue	10%	90%	85%
Fine Leaf Perennial Ryegrass	30%	95%	90%

Rate of Seeding = 220 Lbs/Acre

Prior to or during grading and tillage operations, rake and clear the ground surface of all stumps, brush, sticks, roots, stones larger than ½ inch in diameter, concrete chunks, rebar, wire or other material that may hinder seeding and maintenance operations. Dispose of any accumulated material at no additional cost to the City/State.

Drill seed prior to installation of hydraulic mulch. Water the seeded areas sufficiently to moisten the seedbed to a depth of 2 inches. Apply water in a manner that provides uniform coverage and prevents erosion and damage to the final surface. Provide daily watering for the first five days and sufficient water to maintain surface moisture in the top 2 inches of the soil until such time as the grass (not cover crop) has been evenly established to a height of 2 inches. Include all costs for labor, equipment and materials necessary to complete the work in the price bid for "Seeding Class III".

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

- Plastic or natural fiber photodegradable netting that has a life expectancy between 12 to 24 months. If the photodegradable netting is plastic, the netting color must be either clear or green. Black plastic netting will not be allowed.
- 100 percent biodegradable jute netting that has a life expectancy between 6 to 12 months.

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

430-P01 COMMERCIAL GRADE HOT MIX ASPHALT: Supply and install a readily available mixture meeting or exceeding the requirements for Superpave FAA 42. Provide the asphalt mixture to the Engineer for approval.

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

704-200 PRECAST CONCRETE MEDIAN BARRIERS – STATE FURNISHED: Obtain 20 barriers from the Casselton storage yard. Return barriers to the Casselton storage yard.

Some 4 inch x 4 inch boards are available at the return location. Provide any additional 4 inch x 4 inch boards necessary to stack barriers. The boards will become property of the Department. Include the cost for boards in the contract unit price for "Precast Concrete Median Barrier - State Furnished".

704-510 OBLITERATION OF PAVEMENT MARKINGS: Masking of pavement markings designated for obliteration is allowed. Choose to remove or mask marking as specified in Section 704.04 N, "Obliteration of Pavement Markings".

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704-P01 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 six phases. The Traffic Control Devices List includes the required number of devices for each phase. Enough traffic control devices have been included to construct each phase independently. Include all costs to remove and reset traffic control devices in the price bid for each item.

Phase 1: Close the outside driving lane of northbound University Drive and Interstate 94 westbound exit ramp lanes for removal of existing curb, gutter, and median concrete. Install temporary pavement section consisting of 4" HMA on 12" salvaged base course.

Phase 2: Close the inside driving lanes of University Drive for removal of existing curb, gutter, and median concrete. Install temporary pavement section consisting of 4" HMA on 12" salvaged base course. Phase 2 may be completed prior to Phase 1.

Phase 3: Reconstruct northbound University Drive, Interstate 94 westbound exit ramp, and Interstate 94 westbound entrance loop ramp. Transition northbound University Drive traffic to the southbound University Drive traffic lanes. Maintain two lanes of northbound and southbound traffic. Construct the sidewalk and ADA improvements in the NE and SE quadrant of University Dr and 18th Ave S separately. Maintain an east/west pedestrian crossing of University Dr at 18th Ave at all times.

Close the Interstate 94 westbound exit ramp for the installation of the sign truss (Str No OS94-351.670NL). Detour traffic to 25th St as shown in the plans. Closure of the ramp is allowed for one night from 8:00 pm to 6:00 am.

Phase 4: Reconstruct southbound University Drive, Interstate 94 westbound entrance ramp, and the pedestrian underpass. Transition southbound University Drive traffic to the northbound University Drive traffic lanes. Maintain two lanes of northbound traffic and one lane of southbound traffic during Phase 4A and two lanes of northbound and southbound traffic during Phases 4B, 4C, and 4D. Construct the sidewalk and ADA improvements in the NW and SW quadrant of University Dr and 18th Ave separately. Maintain an east/west crossing of University Dr at 18th Ave S at all times.

Maintain access to Loaf 'N Jug and Taco Shop from University Drive throughout the duration of Phase 4. A minimum of one access point must remain open to each business at all times. Use the following existing/proposed driveways:

- Loaf 'N Jug: Sta. 1315+94 Lt, Sta. 1316+76 Lt, and Sta. 1317+53 Lt
- Taco Shop: Sta. 1317+53 Lt and Sta. 1318+44 Lt

Phase 5: Close the inside driving lanes of University Drive for removal of temporary pavement and installation of curb, gutter, and median concrete.

Phase 6: Close the intersection of University Drive and 21st Avenue South for completion of intersection and pedestrian improvements. Phases 6A through 6C may be constructed concurrently with Phase 3 construction. Phase 6D can be constructed concurrently with Phase 5.

704-P02 PORTABLE CHANGEABLE MESSAGE SIGN: Install two portable changeable message signs in advance of the project limits on University Drive and two in advance of the University Drive exit ramps on Interstate 94 as directed by the Engineer two weeks prior to beginning construction.

704-P03 SHORT TERM PAVEMENT MARKINGS – TYPE R: Mask pavement markings designated for obliteration as specified in Section 704.04 N.2, "Masking". Install preformed patterned pavement markings to reestablish existing pavement markings impacted by construction traffic control at the conclusion of the project. Existing pavement markings shown in the plans are approximate. Verify and document existing pavement markings to be reestablished prior to obliteration. The reestablished lines will be measured for payment. Include all costs to reestablish the existing pavement markings in the price bid for "Preformed Patterned Pvmt Mk _IN Line-Grooved".

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NOTES

704-P04 DETOUR SIGNING: Provide orange background with black lettering for detour route signing.

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. Supply a photocopier with enough toner to last the length of the project and with the following capabilities:
 - a. Printing;
 - b. Scanning; and
 - c. Producing 11x17 photocopies and prints.

Place the field office on the project, or as close to the project as possible. 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; and
- 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 bid item “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 project is complete.

708-P01 INLET PROTECTION SPECIAL: Place inlet protection as per the details. Include all costs for furnishing, installing, maintaining (cleaning), and replacing damaged devices in the bid price for “Inlet Protection Special”. Keep all installed devices in place until the turf has been established per Storm Water Pollution Prevention Plan (SWPPP) requirements or as directed by the Engineer.

If the turf has not been established by November 1st, remove all installed devices in the street section that have potential to cause damage to snow removal equipment. Reinstall these devices as directed. No additional compensation will be provided as this work is considered normal maintenance.

710-P01 REMOVAL OF TEMP CONNECTION: Upon completion of the Interstate 94 westbound entrance ramp, remove the temporary bypass and restore to original grade. Include all costs to remove and dispose of the temporary ramp bypass in the price bid for “Removal of Temp Connection”.

714-P01 CONNECT TO EXISTING PIPE: Meet requirements of Section 1500 of the City of Fargo Standard Specifications for all joints and/or connections of proposed pipe to existing pipe and/or existing pipe to proposed manholes or inlets. The existing pipe material and size shown in Section 55 of the plan set is based on record drawings and field data. No additional compensation will be paid for the pipe connection if the existing pipe encountered is different than material and size shown.

714-P02 PIPE BACKFILL: Use Aggregate Base Course Class 3 to backfill pipe installations and removals under sidewalks, driveways, and concrete roadways.

714-P03 TEMPORARY DRAINAGE: During phased construction, provide means of temporary drainage or pumping to the maintain the existing storm sewer system. This includes, but is not limited to, temporary grading, temporary pipe connections and pumping. Due to the limited work space shoring may be required. Include all costs to perform this work in the price bid for “Pipe Conduit __IN-Storm Sewer”.

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- 722-100 INLETS AND MANHOLES: Inlets and manholes were designed with a minimum 4 foot riser height. Fill the bottom of each drainage structure with concrete, up to the lowest invert elevation.
- 722-P01 MANHOLE CASTINGS: Use Neenah Foundry R-1733 or East Jordan Iron Works 1205Z for installations in the boulevard and floating Neenah Foundry R-1955-1 or East Jordon Iron Works 3025 SELFLEVEL for installations in pavement.
- 722-P02 INLET-BEEHIVE: Use Neenah Foundry R-4341-A or East Jordan Iron Works 4688 casting for beehive installations as stated in Section 50.
- 748-P01 CURB & GUTTER-TYPE 1: At curb inlets, install curb & gutter according to Standard Drawing D-748-1, but use a 24" gutter pan instead of an 18". Construct transitions as shown in the plans and include all costs in the price bid for "Curb & Gutter-Type 1".
- 750-P01 PIGMENTED IMPRINTED CONCRETE: Develop a mix design using any size coarse aggregate specified in Section 802.01 C.2, "Coarse Aggregate" and with a 60-40 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 338 Leather, produced by Soloman Colors, Inc.
<http://www.solomoncolors.com/>; or
2. Number 31078 Adobe, produced by Davis Colors

<http://www.daviscolors.com/>

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 or between 50 and 100 revolutions.

Form a pattern in the concrete using a roller to create a 4 inch × 8 inch brick pattern.

Cure concrete using curing compound that meets the requirements of ASTM C 309, Type 1.
- 750-P02 DETECTABLE WARNING PANELS: Install unpainted, cast iron plates manufactured by East Jordan Iron Works, Neenah Foundry, or approved equal.
- 752-P01 TEMPORARY SAFETY FENCE: Install and maintain temporary safety fence at the construction limits while the work zone is adjacent to existing business.

- 754-P01 REMOVE OVERHEAD SIGN STR TRUSS: Remove all existing truss foundations to a minimum of 3' below the proposed subgrade or topsoil. Dispose of removed materials offsite per Section 107 of the Standard Specifications.
- 762-050 PAVEMENT MARKING: If the Engineer and Contractor agree, plan quantity will be used as the measurement for payment for pavement marking items.
- 930-P01 RETAINING WALL: Remove and replace the existing retaining wall in the SW quadrant of University Drive and 18th Ave S. Construct the wall per manufacturer specifications with similar materials as the existing system as approved by the Engineer. Include costs in price bid for "Retaining Wall".

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SECTION 140

770-P01 THE CONTRACTOR SHALL FURNISH SHOP DRAWINGS FOR APPROVAL WITHIN 21 DAYS AFTER AWARDING OF THE CONTRACT. AFTER APPROVAL OF SHOP DRAWINGS, THE CONTRACTOR WILL HAVE 14 DAYS TO FURNISH EVIDENCE TO THE ENGINEER THAT ALL REQUIRED MATERIALS HAVE BEEN ORDERED.

770-P02 ONE INCH DIAMETER RIGID CONDUIT (INNERDUCT): INNERDUCT SHALL BE SCHEDULE 40, SMOOTH OUTSIDE, SMOOTH INSIDE, CONTROLLED OUTSIDE DIAMETER AT 1.315", INSIDE DIAMETER OF 1.029" MINIMUM WALL THICKNESS OF 0.133" AND COLOR "RED".

TWO INCH DIAMETER RIGID CONDUIT (INNERDUCT): INNERDUCT SHALL BE SCHEDULE 40, SMOOTH OUTSIDE, SMOOTH INSIDE, CONTROLLED OUTSIDE DIAMETER AT 2.375", INSIDE DIAMETER OF 2.047" MINIMUM WALL THICKNESS OF 0.154" AND COLOR "RED".

FOUR INCH RIGID CONDUIT (INNERDUCT): INNERDUCT SHALL BE SCHEDULE 40, SMOOTH OUTSIDE, SMOOTH INSIDE, CONTROLLED OUTSIDE DIAMETER AT 4.5", INSIDE DIAMETER OF 3.998", MINIMUM WALL THICKNESS OF 0.237" AND COLOR "RED". INNERDUCT SHALL BE INSTALLED AT A MINIMUM DEPTH OF 24" BELOW FINISHED GRADE. ROUTE INNERDUCT PARALLEL TO THE CURB LINE AS SHOWN ON THE PLAN. A DIVERGENCE IN INNERDUCT LOCATION SHALL BE VERIFIED WITH PROJECT ENGINEER AND SHOWN ON CONTRACTOR'S SET OF PLANS WITH A COPY TO BE PROVIDED TO THE ENGINEER UPON COMPLETION OF PROJECT. INNERDUCT WILL BE MEASURED BY THE LINEAR FOOT. MEASUREMENT WILL BE FROM CENTER OF BASE TO CENTER OF BASE/PULL BOX/FEED POINT. CONDUIT WILL NOT BE ALLOWED AS AN ALTERNATIVE. THE METHOD OF INSTALLATION AND REQUIRED TRACE WIRE SHALL BE INCLUDED IN THE PRICE BID FOR RIGID CONDUIT OF THE DIAMETER SPECIFIED. IT SHALL BE ACCEPTABLE FOR THE STREET LIGHTING INNERDUCT AND TRAFFIC SIGNAL INNERDUCT/CONDUIT TO BE INSTALLED IN A SHARED TRENCH.

770-P03 DUCT SEAL ALL INNERDUCT/CONDUIT ENTERING OR EXITING FOUNDATIONS, FEED POINTS AND PULL BOXES.

CONDUCTOR: THE CONDUCTOR BETWEEN LIGHTING STANDARDS, PULL BOXES, AND FEED POINTS SHALL BE:

FEED POINT (CITY OF FARGO STREET LIGHTING):
CIRCUIT 1 (WEST) CIRCUIT 2 (EAST)
(3) #6 RHW (3) #6 RHW

FEED POINT (NDDOT):
CIRCUIT 1
(3) #2 RHW

FEED POINT (PEDESTRIAN UNDERPASS):
CIRCUIT 1
(3) #8 RHW

ALL CONDUCTORS SHALL BE CONTINUOUSLY COLOR CODED. ALL CONDUCTORS SHALL BE INSTALLED IN INNERDUCT.

CONDUCTORS WITHIN STANDARDS, BETWEEN DISTRIBUTION CONDUCTORS AND LUMINAIRES SHALL BE #12 STRANDED COPPER 600-VOLT, TYPE RHW. ALL STANDARDS SHALL HAVE INDIVIDUAL CONDUCTOR RUNS AND FUSES FOR EACH FIXTURE.

CONDUCTOR CONNECTIONS IN STREET LIGHT BASES SHALL BE TYCO ELECTRONICS GELCAP SL SPLICE COVER KIT WITH CONNECTOR. NEW CONNECTORS AND FUSES ARE REQUIRED IN ALL NEW AND ANY EXISTING STREET LIGHTS WITH NEW INNERDUCT AND CONDUCTOR. ALL OTHER CONDUCTOR SPLICES SHALL BE UL LISTED WITH POWERGEL SEALANT TYPE CONNECTIONS MEETING ALL CODES FOR DESIRED APPLICATION. ALL LUMINAIRES SHALL BE GROUNDED.

770-P04 CONCRETE FOUNDATION: LOCATION AND SIZE OF CONCRETE FOUNDATION SHALL BE AS SHOWN ON THE STREET LIGHTING SCHEDULE. COLUMN FORM SHALL BE USED FOR A MINIMUM OF THE TOP 18". FOUNDATION LOCATIONS SHALL BE STAKED BY THE PROJECT SURVEYOR. TOP ELEVATION SHALL BE 4" ABOVE FINISHED GRADE. ANY CHANGE IN THE LOCATION OR ELEVATION SHALL BE VERIFIED WITH THE PROJECT ENGINEER. HAND DUG FOUNDATIONS MAY BE REQUIRED IN SOME CASES DUE TO OTHER UNDERGROUND UTILITIES. COSTS FOR HAND DUG FOUNDATIONS SHALL BE INCLUDED IN THE PRICE FOR THE LIGHTING SYSTEM. COLUMN FORMS SHALL BE REMOVED BEFORE SEEDING.

770-P05 40' STANDARD: MILLERBERND, 40' STAINLESS STEEL, 14 GAUGE, 16-SIDED TAPERED STANDARD WITH NON-BREAKAWAY "H" BASE, 2-3/8" OD X 6" TENON TOP, FROST FINISH, 1' SPOKE ARM BRACKET, MODEL #AMT-H-O94-E-400-PT2-W-FR-SR19, OR APPROVED EQUAL. CONTRACTOR SHALL FURNISH AND INSTALL MOUSE GUARD: XCLUDER LIGHT POLE GASKET 2800G. ITEM NO.: 162728 INCIDENTAL TO PRICE FOR STANDARD.

770-P06 ROADWAY LUMINAIRE: LUMINAIRE SHALL BE AMERICAN ELECTRIC LIGHTING, AUTOBAHN SERIES ATB2, 60 LED WITH DRIVE CURRENT OF 850MA, 173W, MULTI-VOLT, 4000K, ROADWAY TYPE II OPTICS, COLOR GRAY WITH 7 PIN PHOTOCONTROL RECEPTACLE, SHORTING CAP, AND NEMA LABEL, OR APPROVED EQUAL.

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- 770-P07 PEDESTRIAN UNDERPASS LUMINAIRE: LUMINAIRE SHALL BE LED LINEAR CONTINUOUS ROW, OF THE MANUFACTURER AND MODEL NOTED IN THE DETAIL DRAWINGS, OR APPROVED EQUAL.
- 770-P08 FURNISH AND INSTALL FEED POINT: PEDESTAL TYPE, FOUR CIRCUIT, STAINLESS STEEL FEED POINT CABINET, SHALL BE CONCRETE PAD MOUNTED (SEE DETAIL FOR SIZE OF CABINET). FEED POINT CABINET SHALL ALSO INCLUDE A PADLOCABLE LIFT-OFF SERVICE PANEL ALONG WITH A FACTORY INSTALLED, INTERIOR MOUNTED METER TRIM WHICH MEETS THE REQUIREMENTS OF THE LOCAL UTILITY COMPANY (CCEC). METER TO BE PROVIDED BY THE LOCAL UTILITY COMPANY.
- ALL EXPOSED CONDUIT SHALL BE 2" GALVANIZED STEEL. CONCRETE FOUNDATION/PAD, WEATHER HEAD AND RISER, 2" CONDUIT AND PROPERLY SIZED CONDUCTOR FOR CONNECTION TO CCEC TRANSFORMER OR TO CLOSEST UTILITY POLE AS REQUIRED BY CCEC AND OTHER MISCELLANEOUS ITEMS SHALL BE INCIDENTAL TO THE PRICE BID FOR FEED POINT. THE FEED POINT WILL BE MEASURED AS A COMPLETE UNIT INSTALLED AND OPERATIONAL. VERIFY FEED POINT LOCATION AND ELEVATION WITH THE PROJECT ENGINEER BEFORE INSTALLATION.
- FEED POINT: PREFABRICATED FEED POINT ENCLOSURE TO BE ASSEMBLED BY STATES, UL 508 LISTED, SERVICE ENTRANCE RATED, OR EQUAL.
- 770-P09 ALL WORK COMPLETED UNDER THIS CONTRACT SHALL MEET THE REQUIREMENTS OF "THE NORTH DAKOTA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR THE ROAD AND BRIDGE CONSTRUCTION" VOLUME TWO, UNLESS OTHERWISE SPECIFIED IN THIS PLAN, OR THE "SPECIAL INSTRUCTIONS TO BIDDERS".
- 770-P10 REMOVE LIGHT STANDARD: THIS ITEM WILL BE MEASURED BY THE NUMBER OF LIGHT STANDARDS REMOVED. THESE SALVAGED STANDARDS AND LUMINAIRES WILL BE TRANSPORTED AND STORED AT THE CITY OF FARGO STREET LIGHTING DEPARTMENT LOCATED AT 4630 15 AVENUE NORTH. ANY STANDARD/LUMINAIRE DAMAGED DURING THE REMOVAL OR TRANSPORTATION SHALL BE REPLACED AT THE CONTRACTORS EXPENSE. THE REMOVAL AND TRANSPORTING OF STANDARDS AND LUMINAIRES SHALL BE INCLUDED IN THE PRICE BID. BID ITEM NDDOT 770-4560.
- 770-P11 REMOVE CONCRETE FOUNDATION: THE CONTRACTOR SHALL BE RESPONSIBLE FOR BACK FILLING THE DISTURBED AREAS WHERE NO ADDITIONAL ROAD WORK IS BEING PERFORMED. PROPER COMPACTION WILL BE REQUIRED. THE REMOVAL, BACK FILLING, TRANSPORTING AND DISPOSAL OF BASES SHALL BE INCLUDED IN REMOVAL OF LIGHT STANDARD BID ITEM.
- 770-P12 REMOVE PULL BOX: THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF THE EXISTING PULL BOXES AND BACK FILLING THE

DISTURBED AREA. PROPER COMPACTION WILL BE REQUIRED IN DISTURBED AREA. THE PULL BOXES SHALL BE DELIVERED TO THE CITY OF FARGO STREET LIGHTING DEPARTMENT. ALL WORK ASSOCIATED WITH THE REMOVAL OF PULL BOXES SHALL BE SUBSIDIARY TO LIGHTING SYSTEM.

- 770-P13 PULL BOX: PVC PULL BOX WITH METAL FRAME AND COVER, THE SIZE SHALL BE 24" DIA. x 36" DEEP. 24" OF PEA ROCK SHALL BE INSTALLED FOR DRAINAGE BELOW THE PULL BOX AND WILL EXTEND 6" BEYOND THE OUTSIDE EDGE OF PULL BOX. THE TOP OF THE BOX SHALL BE FLUSH MOUNTED IN CONCRETE AREAS AND FLUSH TO 1" ABOVE FINAL GRADE AND SLOPED TO MATCH IN AREAS OF SOD. THE PULL BOX WILL BE MEASURED AS A COMPLETE UNIT INSTALLED. PROVIDE ENOUGH SLACK TO PULL CONDUCTOR AND SPLICES A MINIMUM OF FOUR FEET ABOVE FINISHED GRADE. PULL BOX CASTING, COVER, PEA ROCK AND OTHER MISCELLANEOUS ITEMS REQUIRED SHALL BE INCLUDED IN THE COST BID FOR PULL BOX. SEE PULL BOX, METAL FRAME AND COVER DETAIL FOR ADDITIONAL INFORMATION.
- 770-P14 LIGHTING SYSTEM DEFINITIONS:
LIGHTING SYSTEM A = UNIVERSITY DRIVE ROADWAY LIGHTING
LIGHTING SYSTEM B = 18TH AVE SOUTH INTERSECTION LIGHTING
LIGHTING SYSTEM C = WB I-94 RAMP (HIGH MAST CIRCUIT REVISION)
LIGHTING SYSTEM = WB I-94 RAMP PEDESTRIAN RAMP

SECTION 150

- 772-P01 TRAFFIC SIGNALS
ALL TRAFFIC SIGNAL ITEMS FOR THE 18TH AVE S INTERSECTION MUST BE INSTALLED FOLLOWING SECTION 4200 OF THE 2017 CITY OF FARGO SPECIFICATIONS.
- 772-P02 TRAFFIC SIGNAL SYSTEM DEFINITIONS:
TRAFFIC SIGNAL SYSTEM 1 = EB I-94 RAMP
TRAFFIC SIGNAL SYSTEM 2 = WB I-94 RAMP
TRAFFIC SIGNAL SYSTEM 3 = 18TH AVE SOUTH

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ENVIRONMENTAL NOTES

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

EN-1 TEMPORARY WETLAND IMPACT: Temporary impact areas within wetlands and/or other waters are incorporated into the plans for this project. Remove temporary fill placed and sedimentation in wetlands or other waters. Restore these wetlands to preconstruction contours.

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SPEC	CODE	ITEM DESCRIPTION	UNIT	IM-8-094(090)351	ELIGIBLE	NONELIGIBLE	TOTAL
103	0100	CONTRACT BOND	L SUM	0.5	0.5		1
201	0330	CLEARING & GRUBBING	L SUM	0.5	0.5		1
202	0114	REMOVAL OF CONCRETE PAVEMENT	SY	207	1,332		1,539
202	0130	REMOVAL OF CURB & GUTTER	LF	998	6,171		7,169
202	0136	REMOVAL OF PAVEMENT	TON	4,552	19,416		23,968
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	155	1,927		2,082
202	0210	REMOVAL OF MANHOLES	EA		6		6
202	0235	REMOVAL OF CATCH BASINS	EA	3	10		13
202	0290	REMOVAL OF SLOPE PROTECTION	SY		597		597
202	0293	REMOVE RETAINING WALL	LF		62		62
202	0312	REMOVE EXISTING FENCE	LF		270		270
203	0101	COMMON EXCAVATION-TYPE A	CY	2,048	951		2,999
203	0109	TOPSOIL	CY	1,912	1,291		3,203
203	0113	COMMON EXCAVATION-WASTE	CY	2,705			2,705
210	0050	BOX CULVERT EXCAVATION	EA	1			1
210	0210	FOUNDATION FILL	CY	1,415			1,415
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1			1
216	0100	WATER	M GAL	101	233		334
251	0300	SEEDING CLASS III	ACRE	2.38	1.60		3.98
251	2000	TEMPORARY COVER CROP	ACRE	2.38	1.60		3.98
253	0201	HYDRAULIC MULCH	ACRE	2.38	1.60		3.98
253	0301	BONDED FIBER MATRIX	ACRE	2.38	1.60		3.98
258	0100	CONCRETE SLOPE PROTECTION	SY		210		210
261	0112	FIBER ROLLS 12IN	LF	5,980	2,480		8,460
261	0113	REMOVE FIBER ROLLS 12IN	LF	2,990	1,240		4,230
302	0100	SALVAGED BASE COURSE	TON	4,078	11,015		15,093
430	0500	COMMERCIAL GRADE HOT MIX ASPHALT	TON	473	468		941
550	0315	11IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	3,205	11,581		14,786
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	114.3			114.3
612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	21,129			21,129
624	0123	PEDESTRIAN RAILING	LF		270		270
702	0100	MOBILIZATION	L SUM	1	1		1
704	0100	FLAGGING	MHR	400	400		800
704	1000	TRAFFIC CONTROL SIGNS	UNIT		4,487		4,487
704	1037	ATTENUATION DEVICE-TYPE B-35	EA	1	2		3
704	1052	TYPE III BARRICADE	EA		36		36
704	1060	DELINEATOR DRUMS	EA		162		162
704	1067	TUBULAR MARKERS	EA		198		198
704	1070	DELINEATOR	EA		40		40
704	1072	FLEXIBLE DELINEATORS	EA		88		88
704	1080	STACKABLE VERTICAL PANELS	EA		30		30
704	1087	SEQUENCING ARROW PANEL-TYPE C	EA		2		2
704	1500	OBLITERATION OF PVMT MK	SF		1,364		1,364
704	3510	PRECAST CONCRETE MED BARRIER-STATE FURNISHED	EA	20			20
704	4011	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2	2		4
706	0500	AGGREGATE LABORATORY	EA	0.5	0.5		1
706	0600	CONTRACTOR'S LABORATORY	EA	0.5	0.5		1

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SPEC	CODE	ITEM DESCRIPTION	UNIT	IM-8-094(090)351	ELIGIBLE	NONELIGIBLE	TOTAL
706	0400	FIELD OFFICE	EA	0.5	0.5		1
708	1540	INLET PROTECTION-SPECIAL	EA		27		27
708	1541	REMOVE INLET PROTECTION-SPECIAL	EA		27		27
709	0100	GEOSYNTHETIC MATERIAL TYPE G	SY	161			161
709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	4,394	15,516		19,910
710	0410	REMOVAL OF TEMP CONNECTION	EA	1	1		2
714	0120	PIPE C R 12IN CL III-STORM DRAIN 45DEG BEND	EA		1		1
714	4105	PIPE CONDUIT 24IN	LF	56			56
714	7040	SANITARY SEWER SERVICE CONNECTION	EA		2		2
722	0100	MANHOLE 48IN	EA		2	2	4
722	0110	MANHOLE 60IN	EA		4		4
722	1100	MANHOLE RISER 48IN	LF		22.54		22.54
722	1110	MANHOLE RISER 60IN	LF		20.03		20.03
722	3510	INLET-TYPE 2	EA	2	7		9
722	3701	INLET SPECIAL-TYPE 2 48IN	EA		3		3
722	3730	INLET SPECIAL CATCH BASIN 9IN BEEHIVE 48IN	EA	6			6
722	3910	INLET SLOTTED DRAIN 15IN	LF		20		20
722	4020	INLET CATCH BASIN 9IN BEEHIVE	EA	3			3
722	6140	ADJUST GATE VALVE BOX	EA		3		3
724	0425	RESET HYDRANT	EA		2		2
724	0810	WATERMAIN 6IN PVC	LF		6		6
724	1110	8IN SANITARY SEWER PIPE	LF			541	541
748	0140	CURB & GUTTER-TYPE I	LF	1,339	6,211		7,550
750	0030	PIGMENTED IMPRINTED CONCRETE	SY		333		333
750	0100	SIDEWALK CONCRETE	SY		1,986		1,986
750	0150	SIDEWALK TRENCH DRAIN	EA	3			3
750	0200	CONCRETE MEDIAN PAVING	SY	233	1,245		1,478
750	0210	CONCRETE MEDIAN NOSE PAVING	SY	11	26		37
750	1000	DRIVEWAY CONCRETE	SY		291		291
750	2115	DETECTABLE WARNING PANELS	SF		190		190
752	0911	TEMPORARY SAFETY FENCE	LF		317		317
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	331	167		498
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	38	71		109
754	0193	FLEXIBLE DELINEATORS-TYPE D	EA	3	8		11
754	0198	DIAMOND GRADE DELINEATORS-TYPE D	EA	18			18
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF		337		337
754	0210	GALV STEEL POSTS-STANDARD PIPE	LF	171			171
754	0530	PANEL FOR SIGNS-TYPE XI REFLECTIVE SHEETING	SF	693			693
754	0563	REFERENCE MARKER-TYPE C	EA		1		1
754	0592	RESET SIGN PANEL	EA		2		2
754	1100	CLASS AE CONCRETE-SIGN FOUNDATIONS	CY	86			86
754	1104	REMOVE SIGN FOUNDATION	EA	5			5
754	1325	OVERHEAD SIGN STR 40FT CANTILEVER	EA	1			1
754	1457	OVERHEAD SIGN STR 97FT TRUSS	EA	1			1
754	1590	REMOVE OVERHEAD SIGN STR TRUSS	EA	2			2
762	0122	PREFORMED PATTERNED PVMT MK - MESSAGE (GROOVED)	SF	127	245		372
762	0420	SHORT TERM 4IN LINE-TYPE R	LF		35,374		35,374

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762	0424	SHORT TERM 8IN LINE-TYPE R	LF		1,453		1,453
762	0426	SHORT TERM 24IN LINE-TYPE R	LF		393		393
762	0440	SHORT TERM MESSAGE-TYPE R	SF		300		300
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	586	1,259		1,845
762	1307	PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED	LF		518		518
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	957	1,865		2,822
762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	LF	48	198		246
762	1344	PREF PATT PVMT MK 7IN LINE CONTRAST-GROOVED	LF		1,038		1,038
770	0001	LIGHTING SYSTEM	EA		1		1
770	0003	LIGHTING SYSTEM A	EA		1		1
770	0004	LIGHTING SYSTEM B	EA		1		1
770	0005	LIGHTING SYSTEM C	EA	1			1
770	4560	REMOVE LIGHT STANDARD	EA		13		13
770	4570	REMOVE STREET LIGHT LUMINARE	EA		3		3
770	4590	REMOVE FEED POINT	EA		1		1
772	2800	INTERIM TRAFFIC SIGNALS	EA	2	1		3
772	9811	TRAFFIC SIGNALS SYSTEM - SITE 1	EA	1			1
772	9812	TRAFFIC SIGNALS SYSTEM - SITE 2	EA	1			1
772	9813	TRAFFIC SIGNALS SYSTEM - SITE 3	EA		1		1
920	0090	LIFT STATION	EA	1			1
930	9543	RETAINING WALL	SF		93		93

OPTION 1 - FLEXIBLE STORM SEWER PIPE

				NHU-8-081(039)924			
SPEC	CODE	ITEM DESCRIPTION	UNIT	IM-8-094(090)351	ELIGIBLE	NONELIGIBLE	TOTAL
714	4092	PIPE CONDUIT 12IN-STORM DRAIN	LF		12		12
714	4097	PIPE CONDUIT 15IN-STORM DRAIN	LF	637	277		914
714	4101	PIPE CONDUIT 18IN-STORM DRAIN	LF		767		767
714	4107	PIPE CONDUIT 24IN-STORM DRAIN	LF		313		313
714	4112	PIPE CONDUIT 30IN-STORM DRAIN	LF	52			52

OPTION 2 - CONCRETE STORM SEWER PIPE

				NHU-8-081(039)924			
SPEC	CODE	ITEM DESCRIPTION	UNIT	IM-8-094(090)351	ELIGIBLE	NONELIGIBLE	TOTAL
714	0115	PIPE CONC REINF 12IN CL III-STORM DRAIN	LF		12		12
714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN	LF	637	277		914
714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN	LF		767		767
714	0620	PIPE CONC REINF 24IN CL III-STORM DRAIN	LF		313		313
714	0825	PIPE CONC REINF 30IN CL III-STORM DRAIN	LF	52			52

BASIS OF ESTIMATE

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351 NHU-8-081(039)924	10	1

		Temporary Pavement							
		Phase 1A	Phase 1B	Phase 2	Phase 4A	Phase 4B	Phase 6A	Subtotal	Subtotal
Material	Unit	IM-8-094(090)351	IM-8-094(090)351	NHU-8-081(039)924	IM-8-094(090)351	NHU-8-081(039)924	NHU-8-081(039)924	NHU-8-081(039)924	IM-8-094(090)351
Salvaged Base Course @ 1.875 Ton/CY	Ton	74	104	933	1,254	139	283	1,355	1,432
Commercial Grade Hot Mix Asphalt @ 2 Ton/CY	SY	26	37	332	354	72	81	485	417

Phase	202-0114		202-0136						Removal Total		302-0100	
	Removal of Concrete Pavement		Removal of Pavement								Salvaged Base Course	
	Pay Item		Pay Item									
	Removal of Concrete		Removal of Aggregate		Removal of Asphalt		Removal of Concrete		(CY)	(Ton)	(CY)	(Ton)
	(SY)	(Ton) A	(CY)	(Ton) B	(CY)	(Ton) C	(CY)	(Ton) D	(CY)	E = A+B+C+D	(CY)	(Ton) F
Phase 1A			66	124			8	15	74	139	39	74
Phase 1B			106	199			14	28	120	227	55	104
Phase 2			871	1,633			111	223	982	1,856	497	933
Phase 3A	51	32	1,545	2,897	4	8	1,160	2,321	2,761	5,258	1,806	3,386
Phase 3B			314	589			243	486	557	1,075	357	670
Phase 3C			524	982	13	26	359	719	896	1,727	479	897
Phase 3D			56	105	13	25	40	79	108	209	70	131
Phase 4A			320	601	6	11	226	453	552	1,065	318	1,850
Phase 4B	464	290	1,304	2,445	45	91	1,014	2,027	2,827	4,853	1,285	2,630
Phase 4C	683	427	574	1,076	50	101	428	856	1,735	2,460	798	1,496
Phase 4D	207	129	278	522	40	79	168	336	693	1,066	131	245
Phase 5			690	1,294	88	176	523	1,046	1,301	2,516	684	1,283
Phase 6A			15	28					15	28	151	283
Phase 6B	134	84	689	1,292			435	870	1,258	2,246	537	1,007
Phase 6C									0	0	15	28
Phase 6D			98	183			11	22	108	205	41	78
Total		962		13,970		517		9,481		24,930		15,093

- Notes:
1. This is not a balance sheet, calculate own balance of materials.
 2. It is assumed 95% of removed materials may be reclaimed after the crushing process.

Removal of Pavement
Concrete Pavements @ 2.0 Ton/CY
Bituminous Pavements @ 2.0 Ton/CY
Aggregate Base @ 1.875 Ton/CY

Retaining Wall
62 LF x 1.5 Ft high = 93 SF

Water
25 MGal/Mile for Dust Palliative
15 Gal/SY for Blended Base
20 Gal/Ton for Aggregates
10 Gal/CY for Embankment

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BASIS OF ESTIMATE

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351 NHU-8-081(039)924	10	2

Phase 1A Short Term Pavement Markings								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
University Drive								
1306+90	1308+15	NB	10					4IN Line
1306+90	1312+00	NB			512			White Edge Line
1310+05	1312+00	NB	120					4IN Line, 8IN Line, Message
1311+00	1312+01	NB			102			White Edge Line
1311+00	1312+06	NB			205			White Edge Line
1312+01		NB		16				Right Arrow
1313+73	1314+77	NB			104			White Edge Line
I-94 Westbound Exit Ramp								
100+38	104+98	WB Lt Turn			454			Yellow Edge Line
100+38	104+98	WB Lt Turn	204					8IN Line
Total			334	16	1,377	0	0	

Phase 1B Short Term Pavement Markings								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
I-94 Westbound Exit Ramp								
100+21	104+18	WB Lt Turn			389			White Edge Line
103+51	104+18	WB Rt Turn			67			White Edge Line
Total			0	0	456	0	0	

Phase 2 Short Term Pavement Markings								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
University Drive								
1302+80	1304+65	NB	14					4IN Line
1302+80	1304+65	NB			186			Yellow Edge Line
1305+12	1312+44	SB			730			Yellow Edge Line
1305+62	1313+16	NB			756			Yellow Edge Line
1307+15	1308+05	NB			30			White Lane Line (10' Line, 30' Skip)
1310+35	1310+85	NB			20			White Lane Line (10' Line, 30' Skip)
1310+90	1312+01	NB				112		White Turn Lane Line
1311+34		NB		16				Right Arrow
1312+44	1313+16	WB			92			Yellow Edge Line
1313+58	1313+75	WB			49			White Edge Line
1313+58	1317+53	SB			395			Yellow Edge Line
1313+75	1317+53	NB			384			Yellow Edge Line
1315+75	1317+00	NB	33					4IN Line
1316+37	1317+71	NB			146			White Edge Line
1316+37	1320+00	NB			365			Yellow Edge Line
1317+35	1317+71	SB	18					4IN Line
1317+37	1318+12	NB	7					4IN Line
1317+71	1320+00	SB			229			Yellow Edge Line
1318+75	1320+00	SB	10					4IN Line
I-94 Westbound Exit Ramp								
100+38	103+51	WB Lt Turn				305		White Turn Lane Line
Total			82	16	3,382	417	0	

Phase 3A Short Term Pavement Markings								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
University Drive								
1299+01	1302+06	NB			296			White Edge Line
1299+19	1302+43	NB	31					4IN Line
1299+19	1302+43	NB			52			White Lane Line (2' Line, 6' Skip)
1302+41	1304+07	NB			168			White Edge Line
1302+43	1303+63	NB				120		White Turn Lane Line
1302+58		NB		16				Right Arrow
1302+80	1304+05	NB			36			White Lane Line (10' Line, 30' Skip)
1303+63	1308+55	NB			66			White Edge Line
1303+63	1308+55	NB						
1306+27	1308+33	SB			208			Yellow Edge Line
1306+35	1308+33	SB			476			Yellow Edge Line
1306+42	1308+33	NB	7					4IN Line
1306+42	1308+33	NB			196			White Lane Line
1306+42	1308+33	NB			196			Yellow Edge Line
1306+85		SB		28				Thru Arrow, Right Arrow
1306+85	1308+10	SB			126			White Lane Line
1308+10	1310+68	SB	216					8IN Line, Message
1308+10	1308+68	SB			60			White Lane Line (10' Line, 30' Skip)
1308+33	1312+94	NB/SB			924			Dbl Yellow Barrier Line
1309+91	1312+94	NB			304			White Edge Line
1310+68	1312+02	NB			134			White Lane Line
1310+68	1312+02	SB			134			White Lane Line
1312+02	1312+94	NB			20			White Lane Line (10' Line, 30' Skip)
1312+97		NB					24	White Stop Bar
1313+93		SB					24	White Stop Bar
1313+93	1321+14	NB/SB			1,442		24	Dbl Yellow Barrier Line
1313+93	1321+14	NB			180			White Lane Line (10' Line, 30' Skip)
1321+14		NB					24	White Stop Bar
1321+98	1324+38	NB	254					4IN Line, 8IN Line, Message
1321+98	1322+85	NB/SB			170			Dbl Yellow Barrier Line
1321+98	1322+83	NB			20			White Lane Line (10' Line, 30' Skip)
1322+06	1324+24	NB			223			White Edge Line
1322+83	1324+38	NB			156			White Lane Line
1322+83	1324+38	NB			156			Yellow Edge Line
1322+83	1325+55	SB			273			Yellow Edge Line
1324+25	1325+55	SB			131			White Lane Line
1324+25	1325+55	SB	10					4IN Line
18th Ave S								
1321+14	1321+34	EB			188			White Edge Line
1321+46	1321+54	EB			112			Yellow Edge Line
1321+54	1321+54	EB/WB			110			Dbl Yellow Barrier Line
1321+54	1321+58	WB			40			Yellow Edge Line
1321+54	1321+87	WB					33	White Stop Bar
1321+70	1322+05	WB			124			White Edge Line
Total			518	44	6,721	120	129	

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BASIS OF ESTIMATE

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351 NHU-8-081(039)924	10	3

Phase 3A Short Term Pavement Markings (Continued)								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
I-94 Westbound Exit Ramp								
99+90	100+40	WB Entrance Loop			78			White Edge Line
99+90	100+97	WB Lt Turn			220			DbI Yellow Barrier Line
99+90	101+41	WB Rt Turn			168			White Edge Line
100+02		WB					42	White Stop Bar
100+02	100+38	WB				36		White Turn Lane Line
100+81	101+22	WB Rt Turn	28					8IN Line
100+97	102+01	WB Entrance Loop			101			Yellow Edge Line
100+97	102+70	WB Entrance Loop			143			White Edge Line
101+97	104+98	WB Lt Turn			350			Yellow Edge Line
Total			28	0	1,060	36	42	

Phase 3B Short Term Pavement Markings								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
University Drive								
1311+85	1312+92	NB			134			White Edge Line
1312+31	1313+03	NB			96			White Edge Line
1312+31	1313+24	NB			93			White Edge Line
1313+95	1316+91	NB			305			White Edge Line
1314+95	1317+10	NB			221			White Lane Line
1314+95	1321+14	NB			623			Yellow Edge Line
1317+10	1321+14	NB			100			White Lane Line (10' Line, 30' Skip)
1317+10	1321+14	NB			100			White Lane Line (10' Line, 30' Skip)
1318+36	1321+14	NB	74					4IN Line, 8IN Line, Message
1319+13	1321+14	NB				192		White Turn Lane Line
1319+13		NB		16				Left Arrow
1319+81		NB		16				Left Arrow
1321+14		NB					47	White Stop Bar
1321+98	1324+37	NB			239			Yellow Edge Line
1323+68	1324+18	NB			20			White Lane Line (10' Line, 30' Skip)
1324+08	1324+18	NB			10			White Lane Line (10' Line, 30' Skip)
I-94 Westbound Exit Ramp								
99+90	100+38	WB Lt Turn			59			Yellow Edge Line
99+90	104+98	WB Rt Turn			522			White Edge Line
100+02		WB					28	White Stop Bar
100+02	103+72	WB				359		White Turn Lane Line
102+05		WB		32				Left Arrow, Right Arrow
103+02	103+52	WB	76					Message
103+57		WB		32				Left Arrow, Right Arrow
Total			150	96	2,522	551	75	

Phase 3C Short Term Pavement Markings								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
University Drive								
1312+94	1313+67	NB			73			White Edge Line
1313+90	1314+20	NB			30			White Edge Line
I-94 Westbound Exit Ramp								
99+90	100+62	WB Rt Turn			83			White Edge Line
99+90	101+27	WB Rt Turn			147			White Edge Line
99+90	101+27	WB Lt Turn			138			White Edge Line
99+90	104+98	WB Lt Turn			511			Yellow Edge Line
100+02		WB Rt Turn					18	White Stop Bar
100+02		WB Lt Turn					18	White Stop Bar
101+27	103+53	WB				229		White Turn Lane Line
102+05		WB		32				Left Arrow, Right Arrow
103+38		WB		32				Left Arrow, Right Arrow
Total			0	64	982	229	36	

Phase 3D Short Term Pavement Markings								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
University Drive								
1313+56	1314+20	NB			64			White Edge Line
I-94 Westbound Exit Ramp								
99+90	100+51	WB Lt Turn			62			Yellow Edge Line
99+90	104+18	WB Lt Turn			420			White Edge Line
100+02		WB					14	White Stop Bar
102+05		WB Lt Turn		16				Left Arrow
103+38		WB Lt Turn		16				Left Arrow
103+53	104+18	WB Rt Turn			66			White Edge Line
Total			0	32	612	0	14	

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351 NHU-8-081(039)924	10	4

Phase 4A Short Term Pavement Markings								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
University Drive								
1299+19	1302+49	NB			90			White Lane Line (10' Line, 30' Skip)
1302+80	1304+65	NB			186			Yellow Edge Line
1305+62	1308+52	NB			292			Yellow Edge Line
1306+27	1308+52	SB			229			Yellow Edge Line
1306+34	1308+58	SB			237			White Edge Line
1306+34	1306+91	SB	80					8IN Line
1308+52	1313+16	NB/SB			928			DbI Yellow Barrier Line
1310+05	1317+05	SB			707			White Edge Line
1313+79		SB					12	White Stop Bar
1313+79	1314+71	NB/SB			184			DbI Yellow Barrier Line
1314+11	1317+05	SB			298			White Edge Line
1314+71	1317+05	SB			231			Yellow Edge Line
1314+71	1317+10	NB			231			Yellow Edge Line
1316+55	1317+05	NB			20			White Lane Line (10' Line, 30' Skip)
I-94 Westbound Exit Ramp								
100+51	104+98	WB Lt Turn			439			Yellow Edge Line
Total			80	0	4,072	0	12	

Phase 4B Short Term Pavement Markings								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
University Drive								
1307+10	1308+55	SB			146			Yellow Edge Line
1308+39	1314+88	SB			658			White Edge Line
1309+85	1311+49	SB			171			White Lane Line
1309+98	1311+49	SB			151			Yellow Edge Line
1311+49	1312+99	SB			40			White Lane Line (10' Line, 30' Skip)
1313+44	1314+88	SB			158			White Edge Line
1313+71	1317+33	SB			391			White Edge Line
1313+79		SB					24	White Stop Bar
1313+79	1315+66	SB	20					4IN Line
1313+79	1321+14	SB			190			White Lane Line (10' Line, 30' Skip)
1314+71	1321+05	NB/SB			1,268			DbI Yellow Barrier Line
1317+73	1321+01	SB			355			White Edge Line
1321+98		SB					37	White Stop Bar
1321+98	1321+99	SB				100		White Turn Lane Line
1321+98	1324+08	SB			50			White Lane Line (10' Line, 30' Skip)
1321+98	1324+85	NB/SB			576			DbI Yellow Barrier Line
1324+08	1325+48	SB			344			White Edge Line
1322+49		SB		16				Right Arrow
1322+84		SB		16				Right Arrow
1324+08	1325+62	SB			156			White Lane Line
1324+85	1325+62	SB			77			Yellow Edge Line
18th Ave S								
1321+01	1321+31	EB			102			White Edge Line
1321+68	1322+08	WB			102			White Edge Line
I-94 Westbound Temporary Entrance Ramp								
2700+52	2702+36	WB	62					4IN Line
2700+52	2705+35	WB			481			White Edge Line
2707+00	2709+11	WB			211			White Edge Line
2700+52	2708+88	WB			839			Yellow Edge Line
Total			82	32	6,466	100	61	

Phase 4C Short Term Pavement Markings								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
University Drive								
1314+10	1316+70	SB			276			White Edge Line
1314+76	1317+18	SB			253			White Edge Line
1314+88	1315+66	SB			78			White Edge Line
1317+18	1317+37	SB			36			White Edge Line
1317+69	1318+01	SB			49			White Edge Line
I-94 Westbound Entrance Ramp								
316+54	319+77	WB			323			White Edge Line
316+54	320+41	WB			394			Yellow Edge Line
Total			0	0	1,409	0	0	

Phase 4D Short Term Pavement Markings								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
University Drive								
1305+12	1313+03	SB			791			Yellow Edge Line
1313+03	1313+55	WB			72			Yellow Edge Line
1303+48	1303+71	WB			49			White Edge Line
1303+48	1321+05	SB			757			Yellow Edge Line
1314+24	1316+21	SB			197			White Edge Line
1321+98		SB					24	
1321+98	1325+55	SB			358			Yellow Edge Line
1321+98	1324+25	SB			60			White Lane Line (10' Line, 30' Skip)
1324+25	1325+55	SB			131			White Lane Line
Total			0	0	2,415	0	24	

Phase 5 Short Term Pavement Markings								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
University Drive								
1312+37	1313+20	WB			97			Yellow Edge Line
1312+99	1313+45	WB			63			white Edge Line
1312+99	1313+48	SB			49			Yellow Edge Line
1313+45	1313+71	NB			26			Yellow Edge Line
I-94 Westbound Exit Ramp								
103+73	104+18	WB Lt Turn			47			white Edge Line
103+73	104+18	WB Rt Turn			45			white Edge Line
Total			0	0	327	0	0	

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BASIS OF ESTIMATE

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ND	IM-8-094(090)351 NHU-8-081(039)924	10	5

Phase 6A Short Term Pavement Markings								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
University Drive								
1295+55	1296+80	NB	10					4IN Line
1295+55	1297+80	NB			226			White Edge Line
1299+00	1301+91	NB			283			White Edge Line
1300+85	1302+06	NB			121			White Edge Line
1300+85	1302+06	NB			122			White Edge Line
1302+06		WB			12			White Edge Line
1302+45	1302+58	WB			18			White Edge Line
1302+45	1304+25	NB			181			White Edge Line
1302+58	1307+10	NB			453			White Edge Line
1306+35	1307+10	NB	7					4IN Line
Total			17	0	1,416	0	0	

Phase 6B Short Term Pavement Markings								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
University Drive								
1299+89	1300+85	NB			96			White Edge Line
1302+06	1302+58	NB			52			White Edge Line
1302+54	1304+43	SB			189			Yellow Edge Line
1302+79	1303+52	SB	49					8IN Line
I-94 Eastbound Entrance Ramp								
1304+71	1306+07	EB			258			White Edge Line
1305+16	1306+18	EB			228			Yellow Edge Line
Total			49	0	823	0	0	

Phase 6C Short Term Pavement Markings								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
University Drive								
1299+89	1301+80	NB			192			White Edge Line
1300+85	1302+29	NB			145			White Edge Line
1302+29		WB			13			White Edge Line
1302+90	1303+21	NB			34			White Edge Line
Total			0	0	384	0	0	

Phase 6D Short Term Pavement Markings								
Station Begin	Station End	Direction	Obliteration (SF)	Short Term Message Type R (LF)	Short Term 4IN Line Type R (LF)	Short Term 8IN Line Type R (LF)	Short Term 24IN Line Type R (LF)	Comments
University Drive								
1301+18	1302+43	NB	7					4IN Line
1301+18	1304+83	NB			366			Yellow Edge Line
1302+54	1303+29	SB	7					4IN Line
1302+54	1304+58	SB			205			Yellow Edge Line
1303+76	1304+47	SB			71			White Edge Line
1304+58	1304+83	EB			53			White Edge Line
1305+12	1307+15	SB			204			Yellow Edge Line
1305+90	1307+15	SB	10					4IN Line
I-94 Eastbound Exit Ramp								
1303+76	1304+00	EB Rt Turn			31			White Edge Line
1304+42	1304+47	EB Lt Turn			20			White Edge Line
Total			24	0	950	0	0	

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Earthwork Summary				
Location	Excavation (CY)	Embankment (CY)	Common Excavation - Type A (CY) Pay Item	Common Excavation Waste (CY) Pay Item
University Drive	799	1,710	799	0
WB Entrance Ramp	397	269	397	0
WB Entrance Ramp Loop	12	54	12	0
WB Exit Ramp	89	107	89	0
WB Exit Ramp Rt Turn Lane	13	0	13	0
21st Ave S	51	223	51	0
Frontage Road	10	0	10	0
EB Entrance Ramp	91	74	91	0
Proposed Path	4,242	562	1,537	2,705
Totals	5,704	2,999	2,999	2,705

University Drive								
Sta	Distance	Common Excavation - Type A			Embankment			Mass Ordinate
		Area (SF)	Volume (CY)	Accumulated Volume (CY)	Area (SF)	Adjusted Volume (CY)*	Accumulated Volume (CY)	
1302+00.00		1.23			4.14			
1302+25.00	25.00	0.00	1	1	1.86	3	3	-2
1303+25.00	100.00	0.03	0	1	11.35	31	34	-33
1303+75.00	50.00	0.00	0	1	13.30	29	63	-62
1304+25.00	50.00	4.35		1	13.39		63	-62
Exception Area								
1310+05.00		7.55	0	1	2.17	0	63	-62
1310+25.00	20.00	1.13	3	4	14.71	8	71	-67
1310+50.00	25.00	0.27	1	5	39.34	31	102	-97
1310+75.00	25.00	0.04	0	5	43.16	48	150	-145
1311+00.00	25.00	0.04	0	5	45.07	51	201	-196
1311+25.00	25.00	0.09	0	5	46.55	53	254	-249
1311+50.00	25.00	8.00	4	9	51.53	57	311	-302
1311+75.00	25.00	9.59	8	17	53.56	61	372	-355
1312+00.00	25.00	10.72	9	26	56.79	64	436	-410
1312+25.00	25.00	12.46	11	37	62.55	69	505	-468
1312+50.00	25.00	11.77	11	48	65.31	74	579	-531
1312+75.00	25.00	0.07	5	53	41.51	62	641	-588
1313+00.00	25.00	4.23	2	55	74.35	67	708	-653
1313+25.00	25.00	20.92	12	67	65.77	81	789	-722
1314+00.00	75.00	34.82	77	144	43.38	189	978	-834
1314+25.00	25.00	15.86	23	167	54.62	57	1,035	-868
1314+75.00	50.00	0.00	15	182	26.79	94	1,129	-947
1315+00.00	25.00	9.81	5	187	13.46	23	1,152	-965
1315+25.00	25.00	29.33	18	205	26.32	23	1,175	-970
1315+50.00	25.00	26.27	26	231	25.02	30	1,205	-974
1315+75.00	25.00	19.91	21	252	25.66	29	1,234	-982
1316+00.00	25.00	19.87	18	270	32.19	33	1,267	-997
1316+25.00	25.00	18.32	18	288	29.64	36	1,303	-1,015
1316+75.00	50.00	28.20	43	331	31.18	70	1,373	-1,042
1317+25.00	50.00	43.46	66	397	26.03	66	1,439	-1,042
1317+50.00	25.00	54.77	45	442	18.82	26	1,465	-1,023
1317+75.00	25.00	54.34	51	493	16.08	20	1,485	-992
1318+00.00	25.00	62.95	54	547	15.49	18	1,503	-956
1318+25.00	25.00	55.18	55	602	18.52	20	1,523	-921

*An additional volume of 25% has been included to allow for shrinkage.

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Earthwork Average End Area Tables

Business US 81 (University Drive)
21st Ave S to 18th Ave S

University Drive								
Sta	Distance	Common Excavation - Type A			Embankment			Mass Ordinate
		Area (SF)	Volume (CY)	Accumulated Volume (CY)	Area (SF)	Adjusted Volume (CY)*	Accumulated Volume (CY)	
1318+50.00	25.00	38.02	43	645	19.31	22	1,545	-900
1318+75.00	25.00	27.87	31	676	10.58	17	1,562	-886
1319+00.00	25.00	17.42	21	697	11.57	13	1,575	-878
1319+25.00	25.00	10.10	13	710	19.90	18	1,593	-883
1319+50.00	25.00	9.84	9	719	27.14	27	1,620	-901
1319+75.00	25.00	12.43	10	729	17.53	26	1,646	-917
1320+00.00	25.00	10.67	11	740	11.71	17	1,663	-923
1320+25.00	25.00	12.60	11	751	7.53	11	1,674	-923
1320+50.00	25.00	14.49	13	764	11.91	11	1,685	-921
1320+75.00	25.00	19.40	16	780	10.14	13	1,698	-918
1321+00.00	25.00	15.79	16	796	7.77	10	1,708	-912
1321+05.00	5.00	16.83	3	799	8.26	2	1,710	-911
Subtotal				799			1,710	

WB Entrance Ramp								
Sta	Distance	Common Excavation - Type A			Embankment			Mass Ordinate
		Area (SF)	Volume (CY)	Accumulated Volume (CY)	Area (SF)	Adjusted Volume (CY)*	Accumulated Volume (CY)	
2102+50.00		5.50			7.13			
2102+75.00	25.00	3.75	4	4	11.17	11	11	-7
2103+00.00	25.00	8.95	6	10	29.49	24	35	-25
2103+10.00	10.00	3.32	2	12	28.46	13	48	-36
2103+25.00	15.00	4.53	2	14	17.73	16	64	-50
2103+50.00	25.00	5.43	5	19	0.39	10	74	-55
2103+75.00	25.00	6.09	5	24	1.15	1	75	-51
2104+00.00	25.00	9.27	7	31	2.97	2	77	-46
2104+25.00	25.00	12.83	10	41	1.18	2	79	-38
2104+50.00	25.00	21.14	16	57	0.00	1	80	-23
2105+00.00	50.00	61.57	77	134	17.77	21	101	33
2105+25.00	25.00	62.44	57	191	26.00	25	126	65
2105+50.00	25.00	73.99	63	254	45.55	41	167	87
2105+75.00	25.00	84.53	73	327	46.24	53	220	107
2106+00.00	25.00	66.38	70	397	38.58	49	269	128
Subtotal				397			269	

WB Entrance Ramp Loop								
Sta	Distance	Common Excavation - Type A			Embankment			Mass Ordinate
		Area (SF)	Volume (CY)	Accumulated Volume (CY)	Area (SF)	Adjusted Volume (CY)*	Accumulated Volume (CY)	
2201+25.00		8.38			1.92			
2201+50.00	25.00	6.30	7	7	9.77	7	7	0
2201+75.00	25.00	0.00	3	10	29.09	22	29	-19
2202+00.00	25.00	3.52	2	12	13.19	24	53	-41
2202+01.79	1.79	4.40	0	12	12.98	1	54	-42
Subtotal				12			54	

*An additional volume of 25% has been included to allow for shrinkage.

WB Exit Ramp								
Sta	Distance	Common Excavation - Type A			Embankment			Mass Ordinate
		Area (SF)	Volume (CY)	Accumulated Volume (CY)	Area (SF)	Adjusted Volume (CY)*	Accumulated Volume (CY)	
100+50.00		18.14			8.02			
100+75.00	25.00	8.47	12	12	12.66	12	12	0
101+00.00	25.00	2.27	5	17	8.28	12	24	-7
101+25.00	25.00	9.37	5	22	4.35	7	31	-9
101+50.00	25.00	12.93	10	32	0.70	3	34	-2
101+75.00	25.00	12.76	12	44	1.09	1	35	9
102+00.00	25.00	11.82	11	55	1.75	2	37	18
102+25.00	25.00	7.95	9	64	4.51	4	41	23
102+50.00	25.00	7.01	7	71	7.09	7	48	23
102+75.00	25.00	5.75	6	77	8.29	9	57	20
103+00.00	25.00	3.89	4	81	9.18	10	67	14
103+25.00	25.00	3.05	3	84	10.94	12	79	5
103+50.00	25.00	2.90	3	87	13.14	14	93	-6
103+75.00	25.00	1.99	2	89	10.24	14	107	-18
Subtotal				89			107	

WB Exit Ramp Rt Turn Lane								
Sta	Distance	Common Excavation - Type A			Embankment			Mass Ordinate
		Area (SF)	Volume (CY)	Accumulated Volume (CY)	Area (SF)	Adjusted Volume (CY)*	Accumulated Volume (CY)	
2300+25.00		1.15			0.32			
2300+50.00	25.00	6.65	4	4	0.48	0	0	4
2300+75.00	25.00	13.75	9	13	0.09	0	0	13
Subtotal				13			0	

21st Ave S								
Sta	Distance	Common Excavation - Type A			Embankment			Mass Ordinate
		Area (SF)	Volume (CY)	Accumulated Volume (CY)	Area (SF)	Adjusted Volume (CY)*	Accumulated Volume (CY)	
2500+50.00		17.84			134.19			
2500+75.00	25.00	18.34	17	17	61.12	113	113	-96
2501+00.00	25.00	11.19	14	31	35.02	56	169	-138
2501+25.00	25.00	8.79	9	40	26.89	36	205	-165
2501+50.00	25.00	6.60	7	47	0.09	16	221	-174
2501+75.00	25.00	1.16	4	51	1.05	1	222	-171
2501+85.00	10.00	0.24	0	51	2.79	1	223	-172
Subtotal				51			223	

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Earthwork Average End Area Tables

Business US 81 (University Drive)
21st Ave S to 18th Ave S

Proposed Path								
Sta	Distance	Common Excavation - Type A			Embankment			Mass Ordinate
		Area (SF)	Volume (CY)	Accumulated Volume (CY)	Area (SF)	Adjusted Volume (CY)*	Accumulated Volume (CY)	
2000+00.00		0.32			2.02			
2000+25.00	25.00	0.00	0	0	3.77	3	3	-3
2000+50.00	25.00	0.00	0	0	2.12	3	6	-6
2000+75.00	25.00	0.63	0	0	0.12	1	7	-7
2001+00.00	25.00	1.97	1	1	0.05	0	7	-6
2001+25.00	25.00	1.92	2	3	0.28	0	7	-4
2001+50.00	25.00	1.23	1	4	0.15	0	7	-3
2001+75.00	25.00	1.47	1	5	0.13	0	7	-2
2002+00.00	25.00	0.61	1	6	0.44	0	7	-1
2002+25.00	25.00	0.00	0	6	1.61	1	8	-2
2002+50.00	25.00	0.00	0	6	1.36	2	10	-4
2002+75.00	25.00	0.18	0	6	1.25	2	12	-6
2003+00.00	25.00	0.33	0	6	1.12	1	13	-7
2003+25.00	25.00	0.91	1	7	0.34	1	14	-7
2003+50.00	25.00	1.10	1	8	0.18	0	14	-6
2003+75.00	25.00	1.29	1	9	0.16	0	14	-5
2004+00.00	25.00	1.19	1	10	0.22	0	14	-4
2004+25.00	25.00	0.00	1	11	1.80	1	15	-4
2004+50.00	25.00	0.24	0	11	2.52	3	18	-7
2004+75.00	25.00	1.63	1	12	0.13	2	20	-8
2005+00.00	25.00	34.28	17	29	0.06	0	20	9
2005+25.00	25.00	201.20	109	138	0.00	0	20	118
2005+50.00	25.00	370.58	265	403	1.49	1	21	382
2005+75.00	25.00	340.47	329	732	28.03	17	38	694
2006+00.00	25.00	456.44	369	1,101	23.76	30	68	1,033
2006+25.00	25.00	515.90	450	1,551	26.96	29	97	1,454
2006+50.00	25.00	203.37	333	1,884	0.04	16	113	1,771
2007+25.00		174.21	0	1,884	0.04	0	113	1,771
2007+50.00	25.00	581.76	350	2,234	0.00	0	113	2,121
2007+75.00	25.00	531.60	515	2,749	0.00	0	113	2,636
2008+00.00	25.00	437.84	449	3,198	0.00	0	113	3,085
2008+25.00	25.00	331.37	356	3,554	0.00	0	113	3,441
2008+50.00	25.00	235.70	263	3,817	0.00	0	113	3,704
2008+75.00	25.00	159.81	183	4,000	0.00	0	113	3,887

*An additional volume of 25% has been included to allow for shrinkage.

Proposed Path								
Sta	Distance	Common Excavation - Type A			Embankment			Mass Ordinate
		Area (SF)	Volume (CY)	Accumulated Volume (CY)	Area (SF)	Adjusted Volume (CY)*	Accumulated Volume (CY)	
2009+00.00	25.00	91.65	116	4,116	0.00	0	113	4,003
2009+25.00	25.00	35.88	59	4,175	0.00	0	113	4,062
2009+50.00	25.00	5.13	19	4,194	6.89	4	117	4,077
2009+75.00	25.00	6.38	5	4,199	64.49	41	158	4,041
2010+00.00	25.00	17.16	11	4,210	66.76	76	234	3,976
2010+25.00	25.00	17.96	16	4,226	61.27	74	308	3,918
2010+50.00	25.00	8.89	12	4,238	61.79	71	379	3,859
2010+75.00	25.00	0.00	4	4,242	63.91	73	452	3,790
2011+25.00	50.00	0.00	0	4,242	31.18	110	562	3,680
Subtotal		4,242			562			

Frontage Road								
Sta	Distance	Common Excavation - Type A			Embankment			Mass Ordinate
		Area (SF)	Volume (CY)	Accumulated Volume (CY)	Area (SF)	Adjusted Volume (CY)*	Accumulated Volume (CY)	
2601+40.00		0.00			1.98			
2601+50.00	10.00	5.64	1	1	0.00	0	0	1
2601+72.83	22.83	15.24	9	10	0.00	0	0	10
Subtotal		10			0			

EB Entrance Ramp								
Sta	Distance	Common Excavation - Type A			Embankment			Mass Ordinate
		Area (SF)	Volume (CY)	Accumulated Volume (CY)	Area (SF)	Adjusted Volume (CY)*	Accumulated Volume (CY)	
2400+50.00		5.01			24.70			
2400+75.00	25.00	27.96	15	15	25.62	29	29	-14
2401+00.00	25.00	40.47	32	47	19.38	26	55	-8
2401+25.00	25.00	15.47	26	73	3.73	13	68	5
2401+50.00	25.00	7.47	11	84	1.25	3	71	13
2401+75.00	25.00	6.07	6	90	2.98	2	73	17
2401+79.40	4.40	6.12	1	91	3.69	1	74	17
Subtotal		91			74			

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Earthwork Average End Area Tables

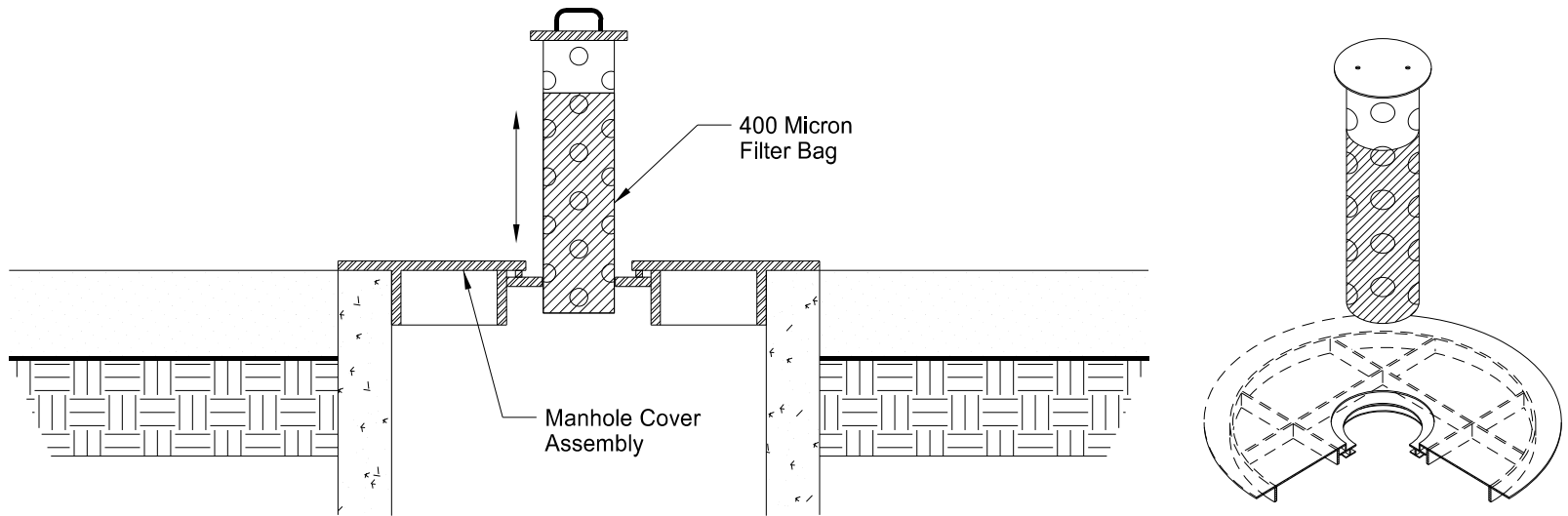
Business US 81 (University Drive)
21st Ave S to 18th Ave S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	20	3

NHU-8-081(039)924

NOTES:

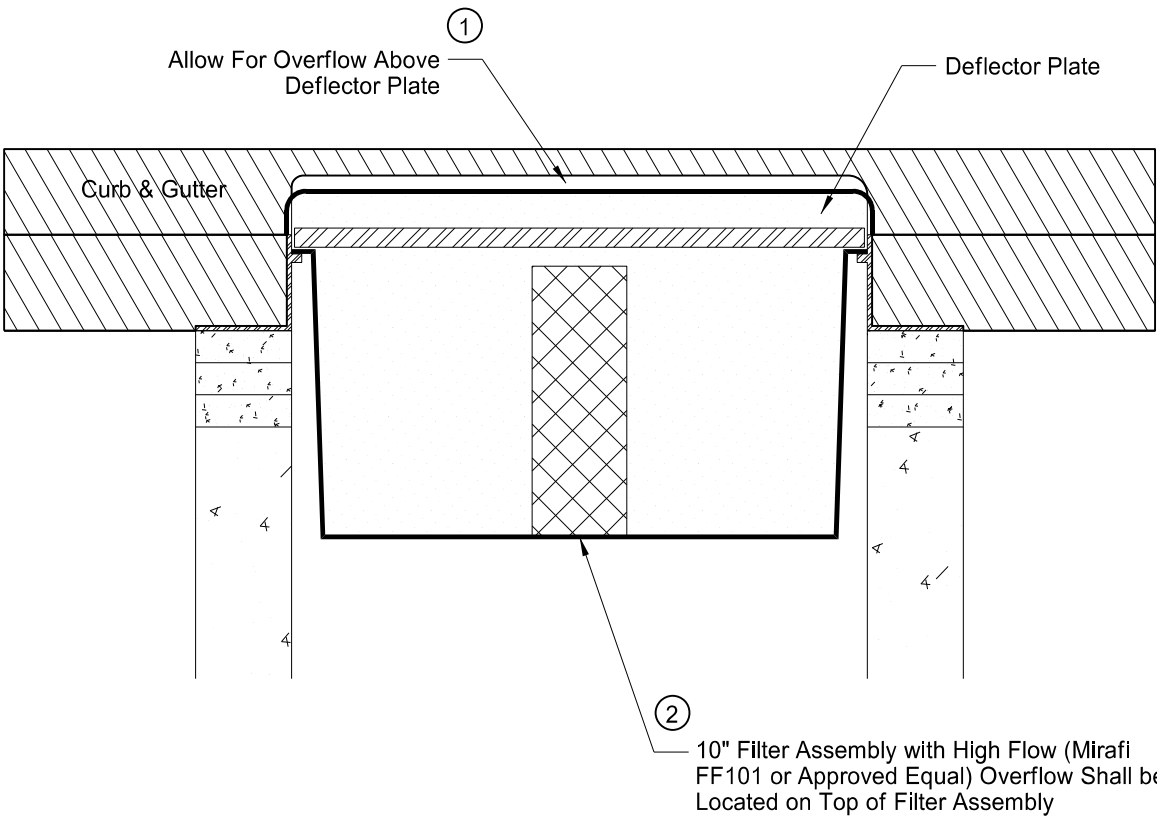
1. Install devices consisting of a reusable, open topped receptacle that rests inside a storm sewer inlet casting allowing the grating to be reinstalled in the casting. Incorporate a rebar deflector plate into the unit to protect open back castings from sediment, if needed. Provide a filtration system to filter storm water. Provide an overflow large enough to minimize/eliminate street flooding during rain events. Approved manufacturers are Wimco, Lange IPD, Flexstorm, or approved equal.
2. Install a prefabricated drop-in inlet protection device. Install the device by inserting the device into the casting and replacing the grate into the frame. This device is required in all inlets that receive water from the project area that are in a street section.
3. Keep this device on site for the duration of project. Perform maintenance throughout the duration project. Maintenance becomes the responsibility of the developer/property owner upon final completion of the project.



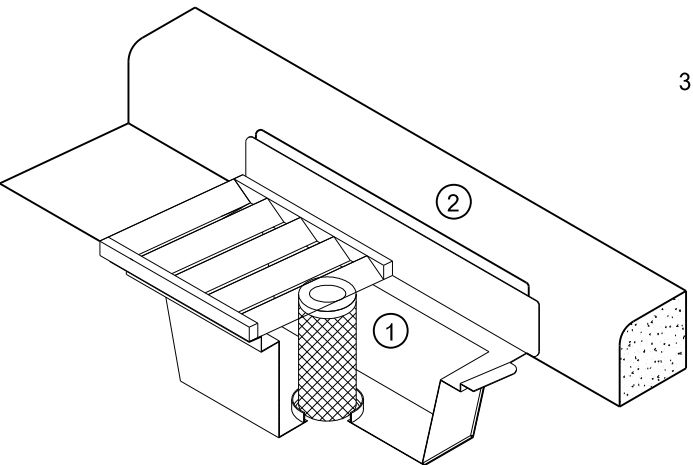
INLET PROTECTION FOR INLETS WITHIN PAVING SECTION TO BE INSTALLED BEFORE PAVING
(TYPE C)

NOTES:

1. Type C-2 inlet protection consists of a sediment collection plate meeting H2O loading per OSHA 1910.23. Paint the 1/4" steel plate yellow with a perforated steel lid. Provide a two position HDPE basket that is able to be fixed in the up or down position. Attach a 400 micron filter bag to filter sediment.
2. This work consists of installing a prefabricated plate that will fit into the top of the cone section of a catch basin or manhole. Install a 400 micro filter bag around the collection basket to further protect the storm sewer from fine materials.
3. This device is intended to protect inlets within the future paving section. The device is re useable and shall remain the property of the contractor.



INLET PROTECTION FOR INLETS WITHIN PAVING SECTION TO BE INSTALLED AFTER FINAL PAVING
(TYPE C-2)



Overflow ① - Center of Filter Assembly
Overflow ② - Top of Curb Box

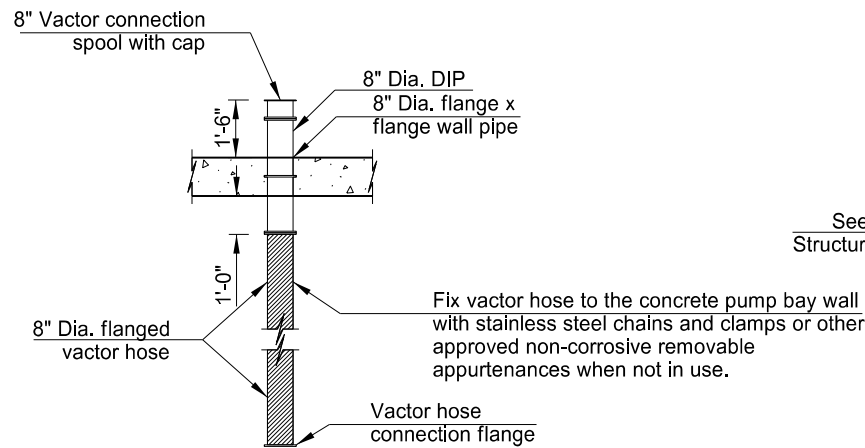
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Inlet Protection Detail

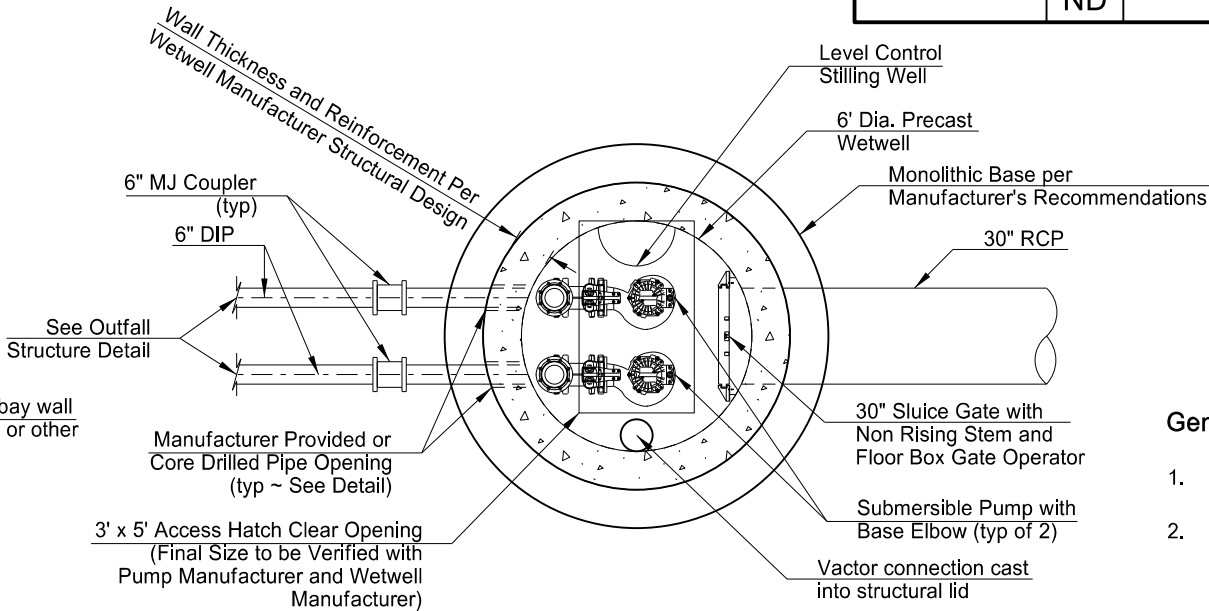
Business US 81 (University Drive)
21st Ave S to 18th Ave S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	20	4

NHU-8-081(039)924



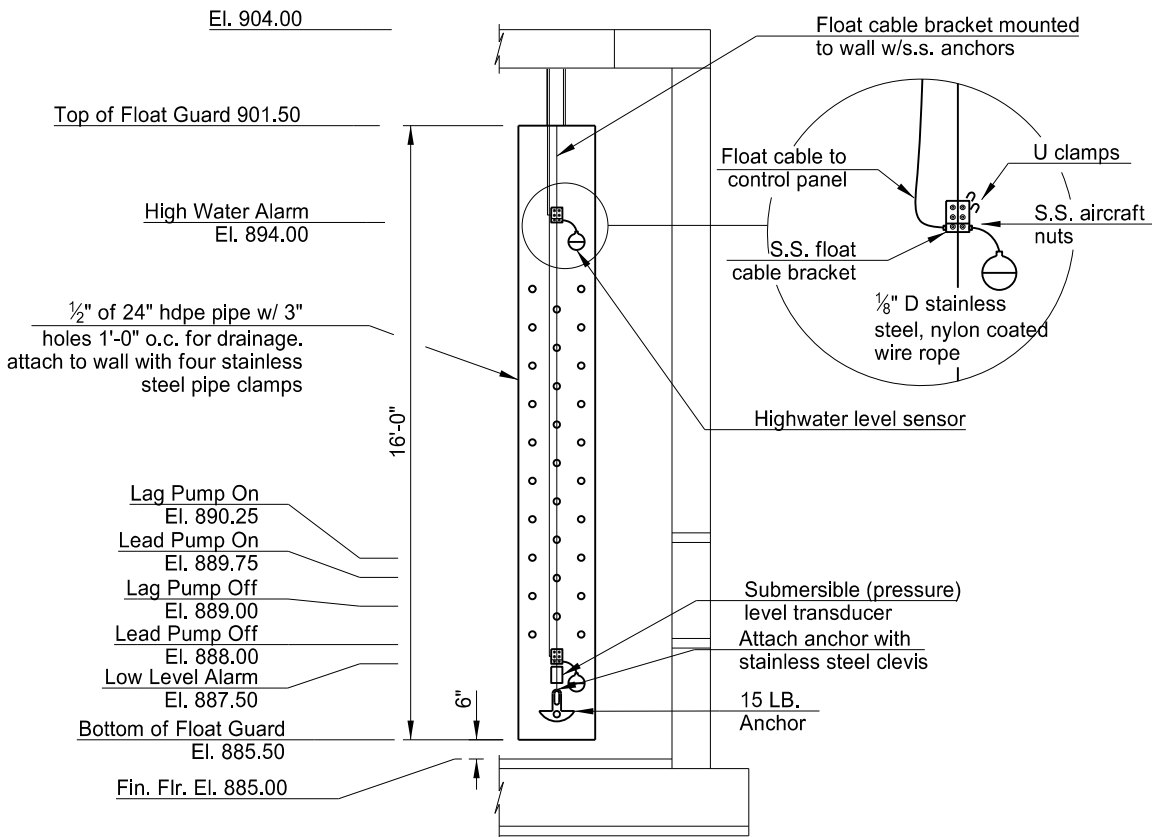
VACTOR CONNECTION DETAIL



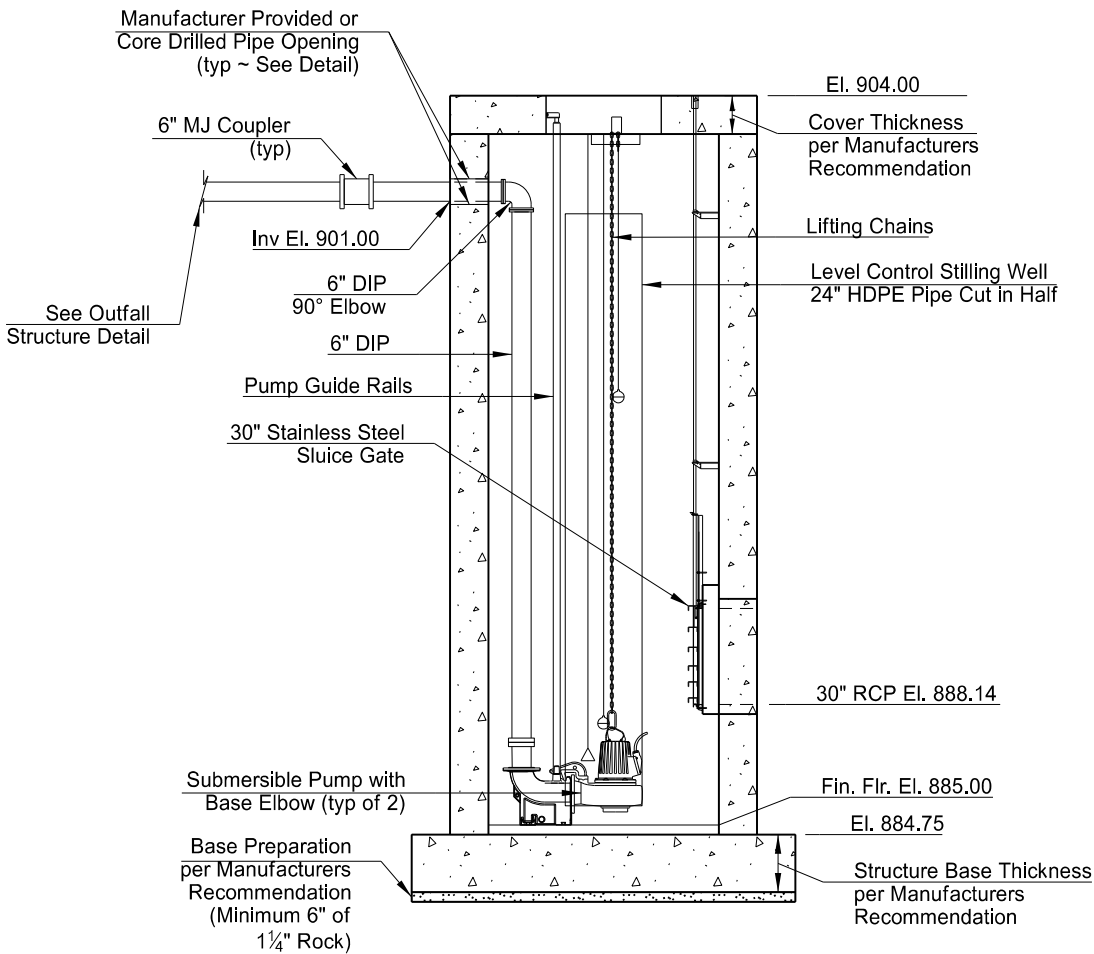
PLAN VIEW

General Sheet Notes:

- See Section 80 for site layout.
- Design access hatches for 300 psf live load. Include an integral fall protection grating system on all access hatches.
- Install flanged joints on all exposed ductile iron pipe and fittings unless otherwise noted.
- All ductile iron pipe interior to be coated with ceramic epoxy coating.
- Discharge piping to be anchored to wetwell per pipe manufacturer recommendation (See Detail)
- See Special Provisions for pump information



LEVEL CONTROL STILLING WELL DETAIL



SECTION
LIFT STATION

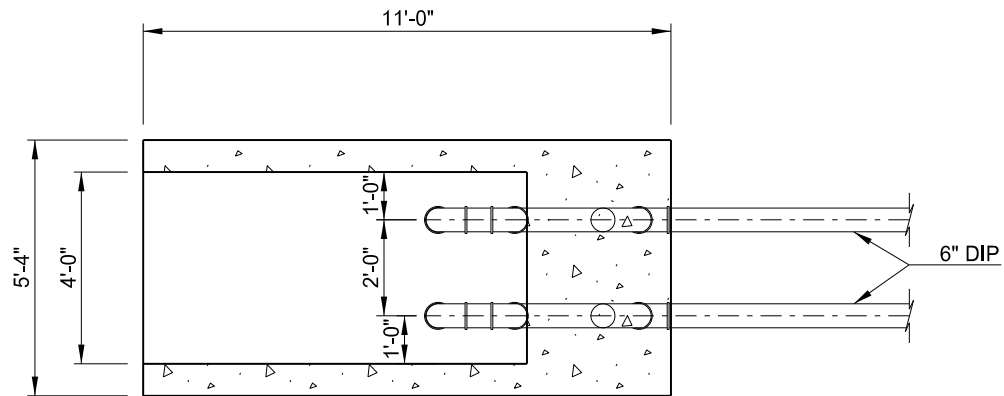
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Storm Sewer
Lift Station Foundation Plan & Section View

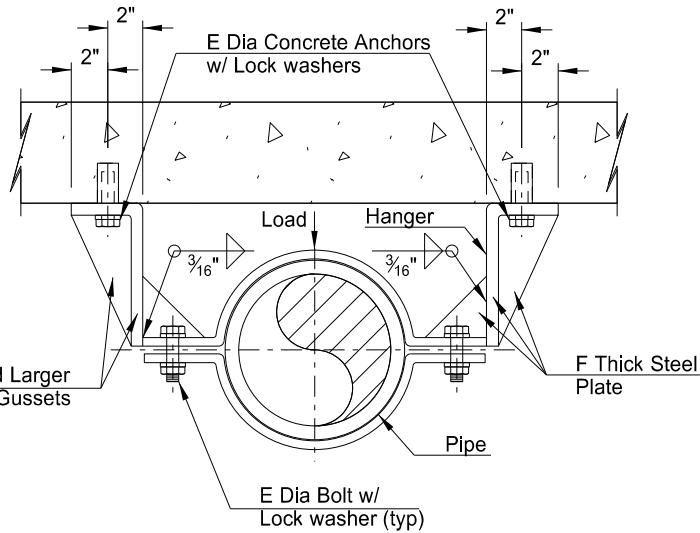
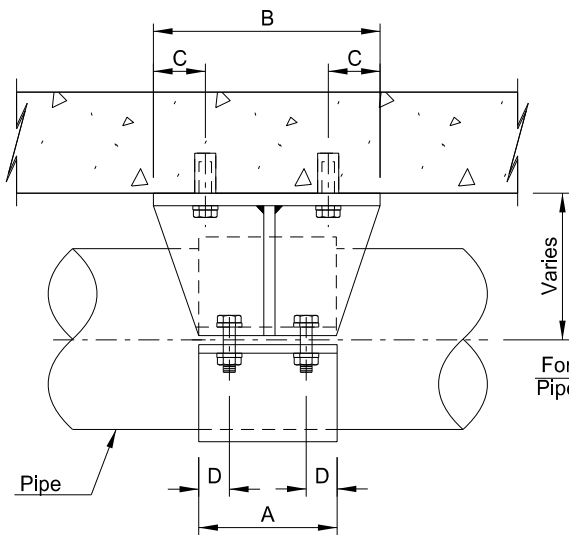
Business US 81 (University Drive)
21st Ave S to 18th Ave S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	20	5

NHU-8-081(039)924



PLAN VIEW

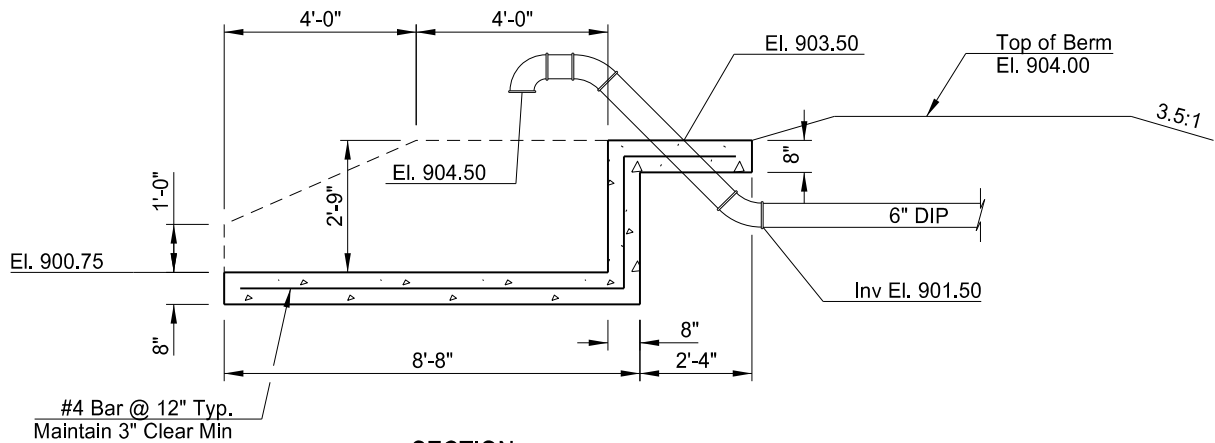


DIMENSIONS IN INCHES						
Nominal Pipe Dia	A	B	C	D	E	F
6	6	10	1 1/2	1	5/8	1/4

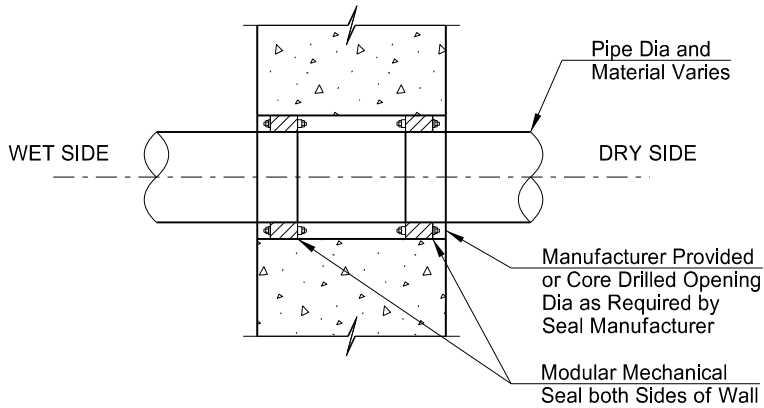
NOTE:

- Hot Dip Galvanize Parts after Fabrication.

PIPE ANCHOR



SECTION
OUTFALL STRUCTURE



PIPE OPENING DETAIL

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Gabriel L. Bladow
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Storm Sewer
Lift Station Details

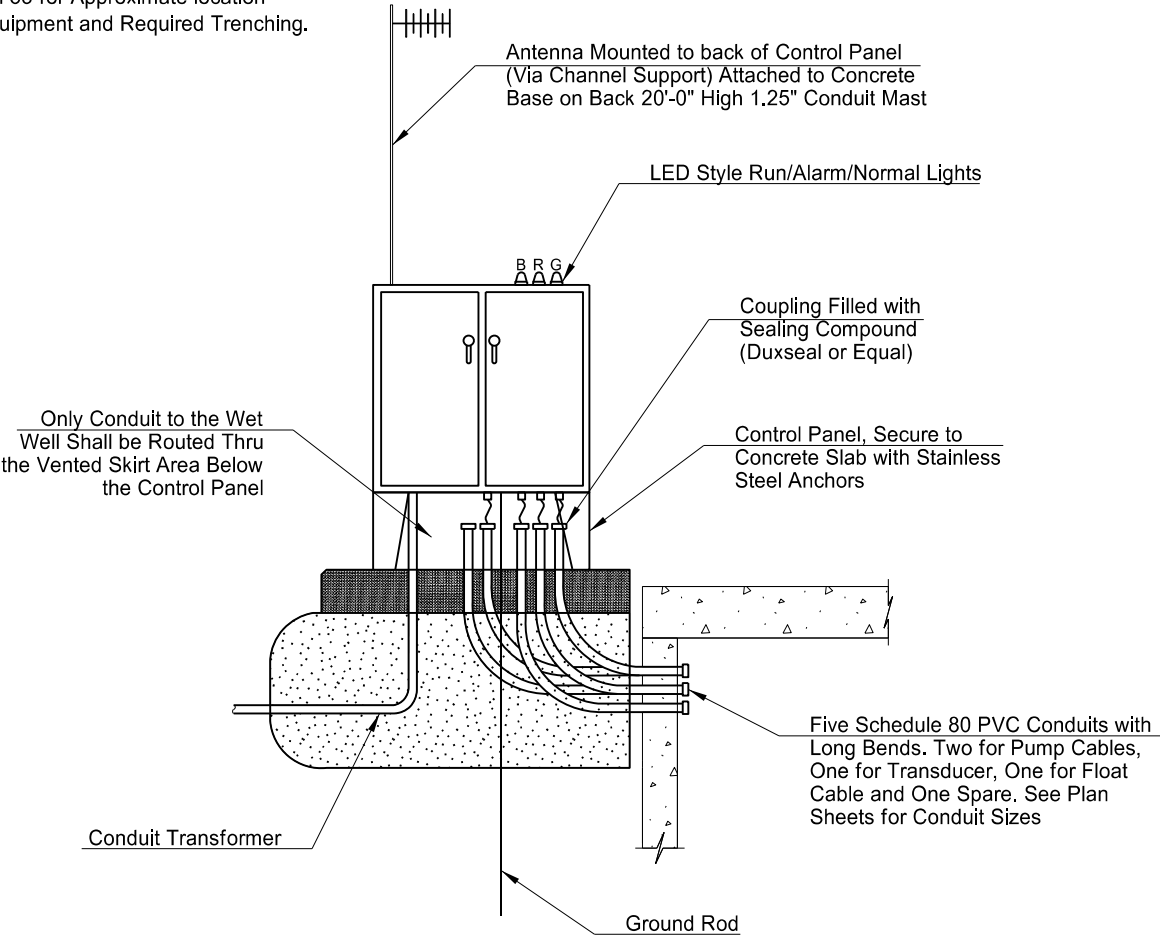
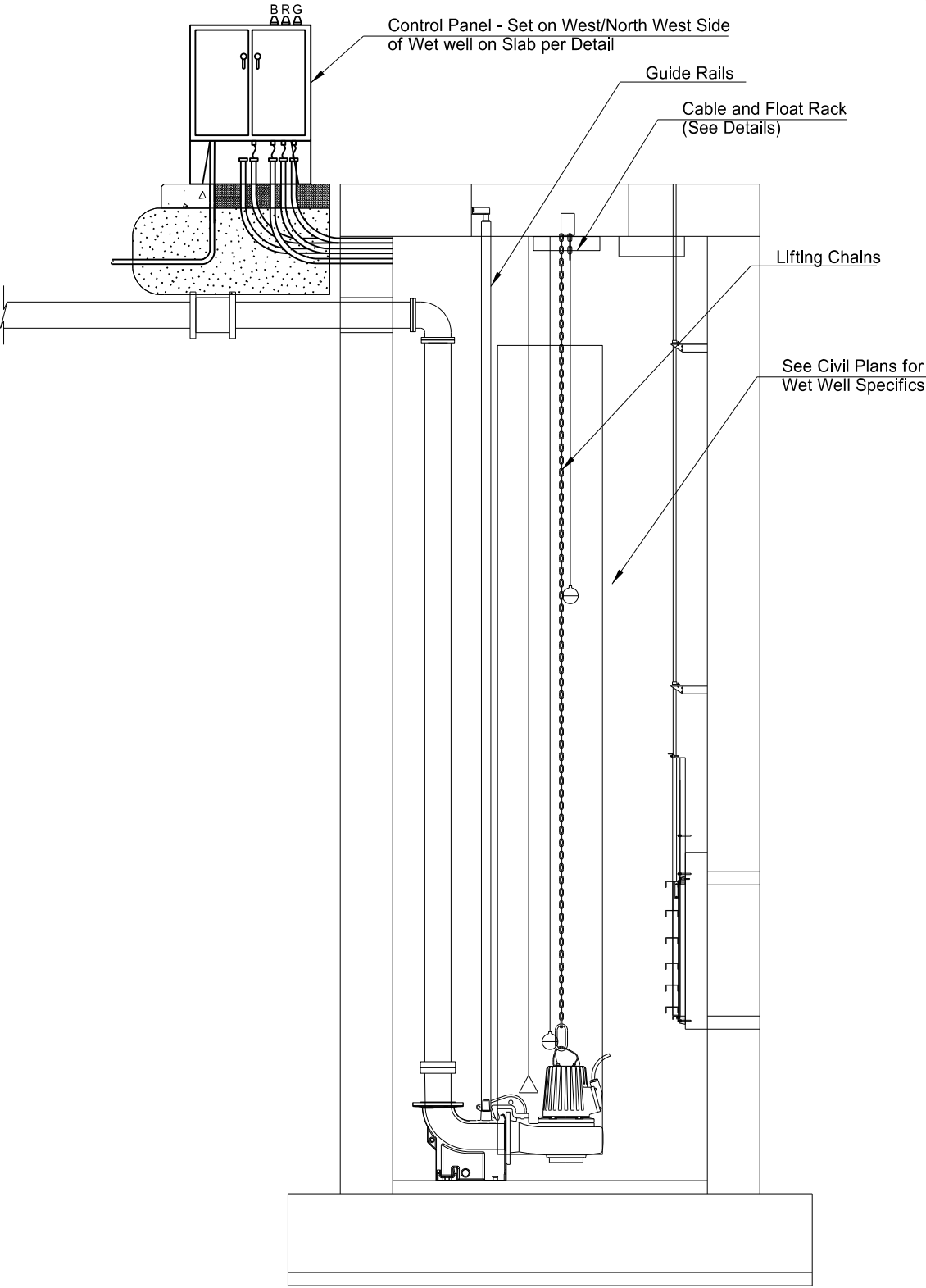
Business US 81 (University Drive)
21st Ave S to 18th Ave S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	20	6

NHU-8-081(039)924

NOTES:

- 1. See Civil for Wet Well Specifics
- 2. See Section 55 for Approximate location of Xcels Equipment and Required Trenching.



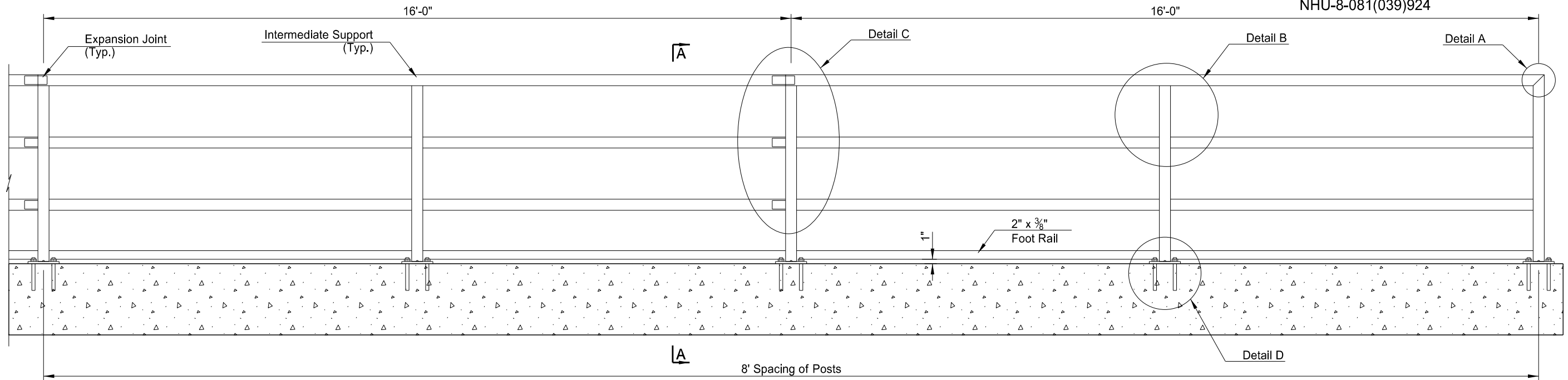
CONTROL PANEL DETAIL

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Electrical Details

Business US 81 (University Drive)
21st Ave S to 18th Ave S

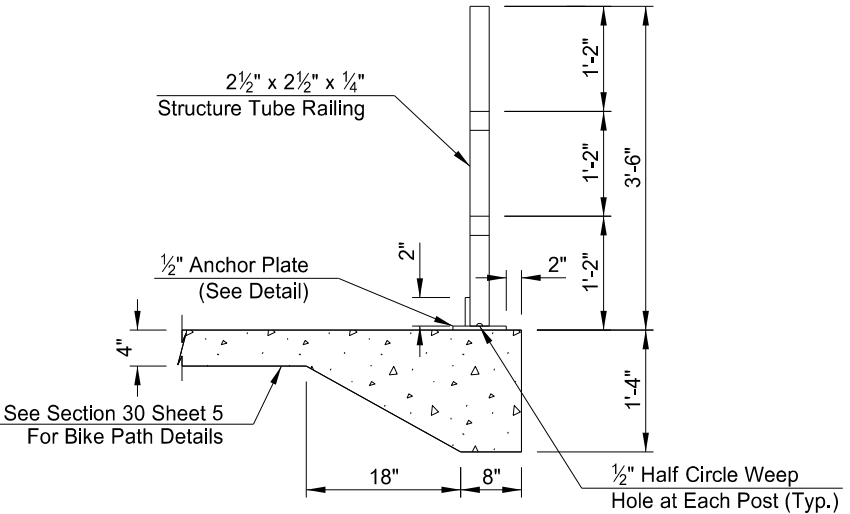
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	20	8



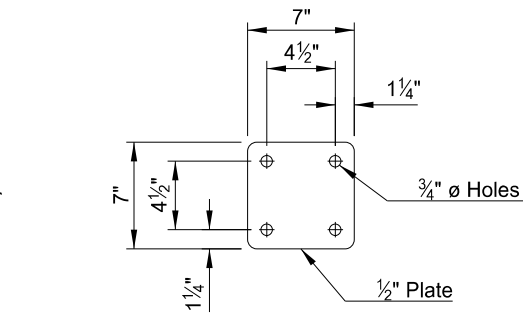
PEDESTRIAN RAILING DETAIL

NOTES:

- Align horizontal rails with finish grade. Install rail posts plumb. Fabricate railing in panel lengths as shown with expansion joints at every panel.
- Conform with AASHTO M 270, Grade 50, requirements for structural steel tubing.
- Meet the requirements of ASTM A 307 for all required bolts, nuts, and miscellaneous hardware. Conform to A36 structural steel for base plates, anchor bolt assemblies and rail expansion joints.
- All railing structural tubing, hardware, anchorage system material, and expansion joint material to be galvanized in accordance with NDDOT Standard Specification 854.
- Maintain a min. of 6" anchor embedment with chemical anchorage system to provide 10 kip pullout strength. Submitted products to engineer for approval and installed per manufacturers recommendations.
- Carefully place reinforcement to avoid anchors.
- Include cost of all materials and installation of railing in the bid price for "Pedestrian Railing".
- Install fence along east edge of pedestrian path beneath Structure No. 94-351,596 L & R, Sta 2001+95.00 to Sta 2004+65.00 (Pr_Path).



SECTION A-A



ANCHOR PLATE DETAIL

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Railing Details

Business US 81 (University Drive) 21st Ave S to 18th Ave S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	20	9

NHU-8-081(039)924

NOTES

Two locations (See Plan & Profile Sheets)

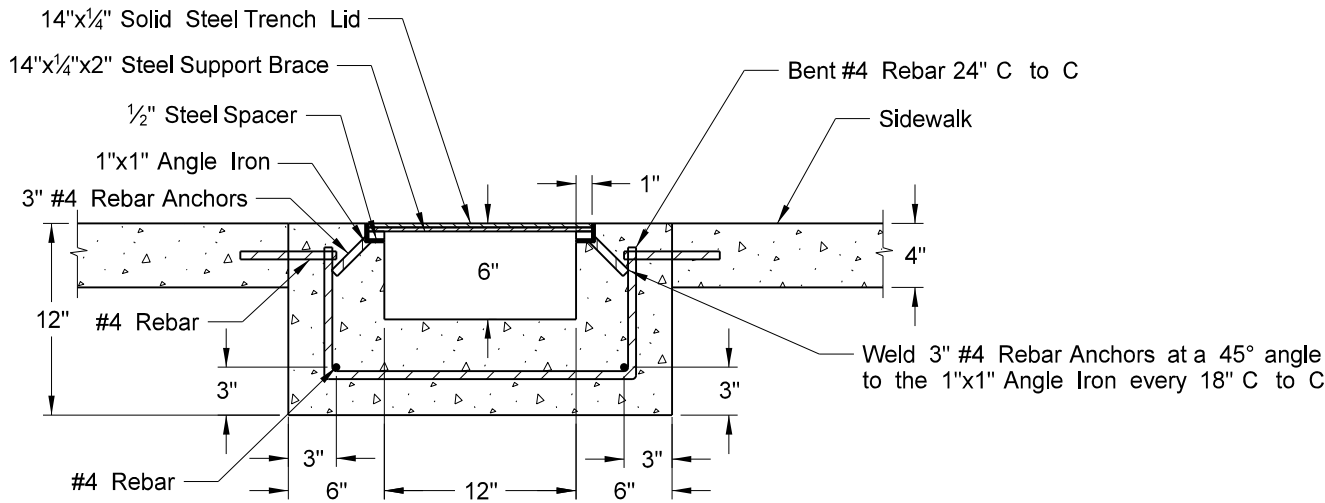
Approximate lengths:

1 trench drain approximately 6' length

1 trench drain approximately 10' length

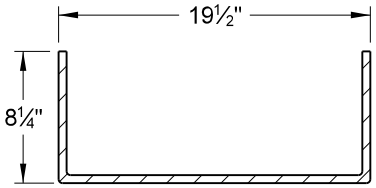
*Verify exact length required in the field prior to fabrication.

*Sidewalk Trench Drain as shown, or approved equal

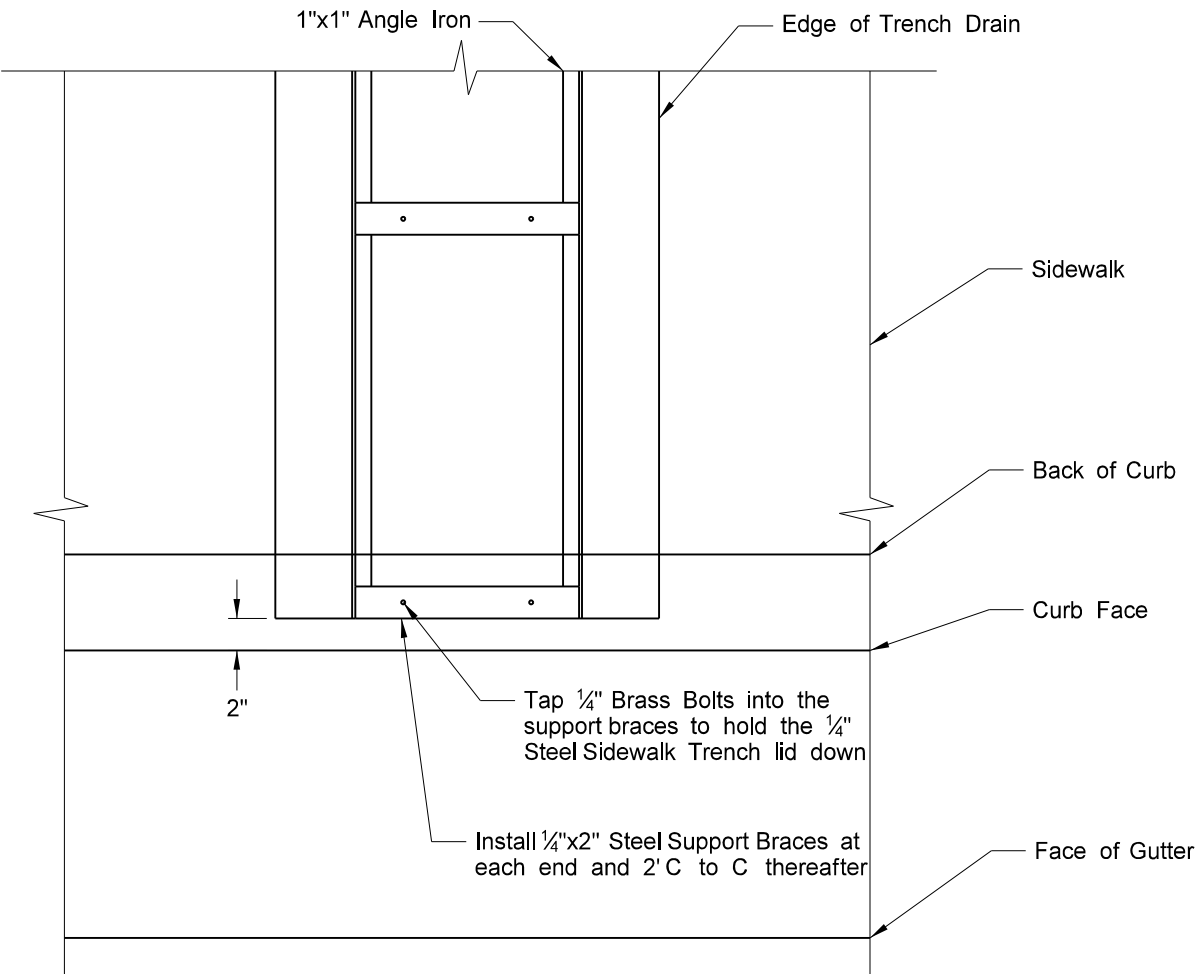


Sidewalk Trench Drain Detail

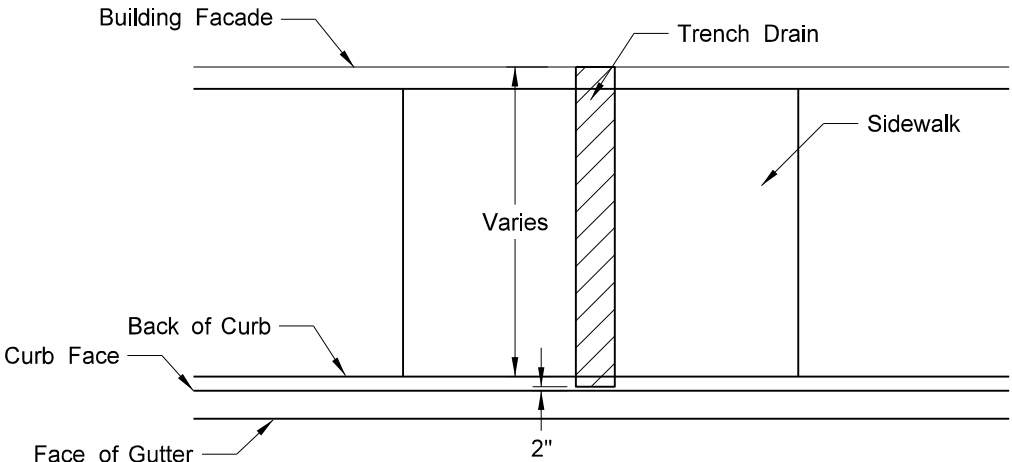
Note: Weld 1/4"x2" Steel Support Braces and 1/2" Steel Spacers to the 1"x1" Angle Iron



Bent Rebar Detail



Steel Support Brace Detail



Trench Drain Layout

Note: Begin Trench Drains at property line or building facade and extend to 2" from the face of the curb.

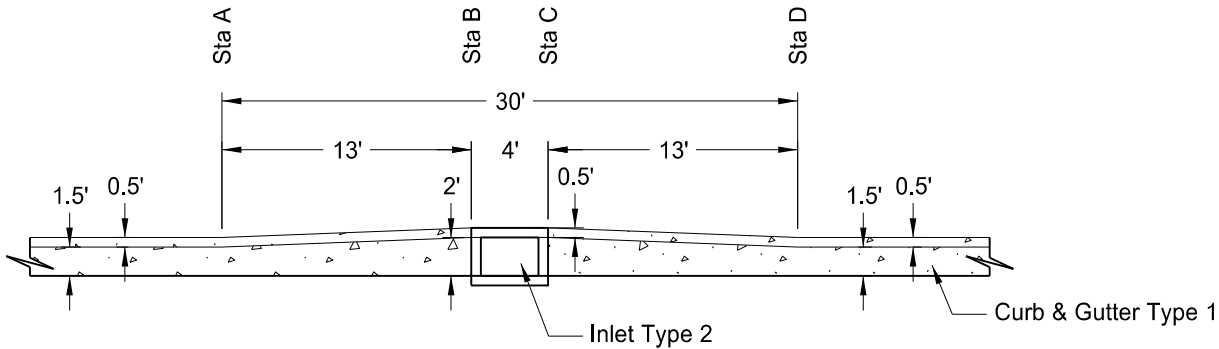
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Trench Drain Installation

Business US 81 (University Drive)
21st Ave S to 18th Ave S

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	ND	IM-8-094(090)351	20	10

NHU-8-081(039)924



Curb & Gutter Inlet Transition
See Table for Locations

Curb & Gutter-Type 1 Inlet Transition				
Location	Sta A	Sta B	Sta C	Sta D
STS 1A - Sta 1304+47.87, 51.29' Rt	1304+33.43	1304+45.37	1304+48.91	1304+58.89
STS 2A - Sta 1310+45.51, 71.34' Lt	1310+30.47	1310+43.46	1310+47.46	1310+60.45
STS 2B - Sta 1310+45.41, 34.71' Rt	1310+30.39	1310+43.29	1310+47.26	1310+60.17
STS 3A - Sta 1312+60.73, 52.81' Rt	1312+45.69	1312+58.71	1312+62.67	1312+74.92
STS 4A - Sta 1313+43.02, 52.79' Rt	1313+37.15 46.13' Rt	1313+41.91 55.79' Rt	1313+41.92 59.79' Rt	1313+41.92 72.79' Rt
STS 4B - Sta 1313+99.07, 97.05' Rt	1313+95.58	1313+99.29	1314+00.88	1314+07.26
STS 5A - Sta 1314+74.08, 52.21' Lt	1314+59.14	1314+72.10	1314+76.12	1314+89.11
STS 5B - Sta 1314+74.08, 51.32' Rt	1314+59.20	1314+72.03	1314+76.03	1314+89.01
STS 6A - Sta 1318+09.98, 50.13' Rt	1317+95.05	1318+08.03	1318+12.03	1318+25.01
STS 8A - Sta 1318+09.98, 42.23' Lt	1317+94.95	1318+07.95	1318+11.95	1318+24.94
STS 8B - Sta 1321+14.65, 40.97' Rt	1321+00.79	1321+12.64	1321+15.84	1321+24.47
STS 12C - Sta 2010+14.34, 38.41 Rt	2010+01.78	2010+12.50	2010+15.85	2010+26.83

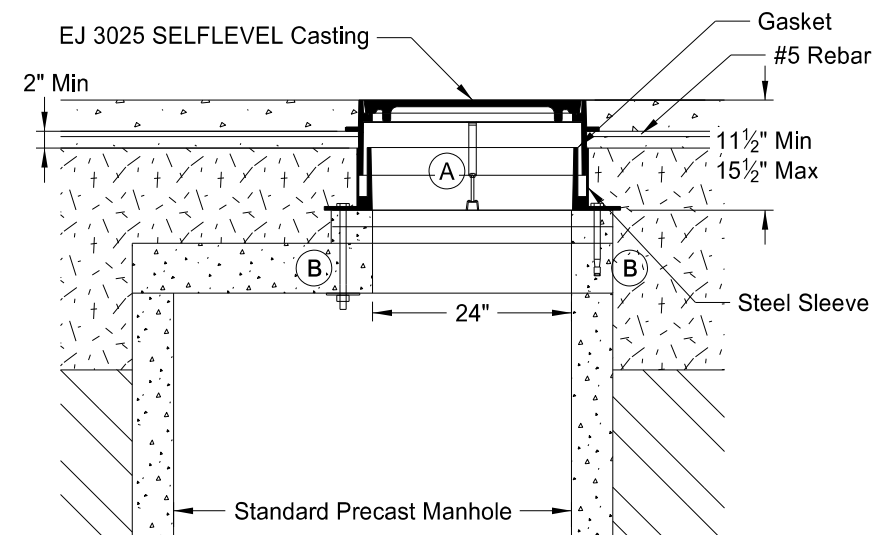
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Curb & Gutter Inlet Transition

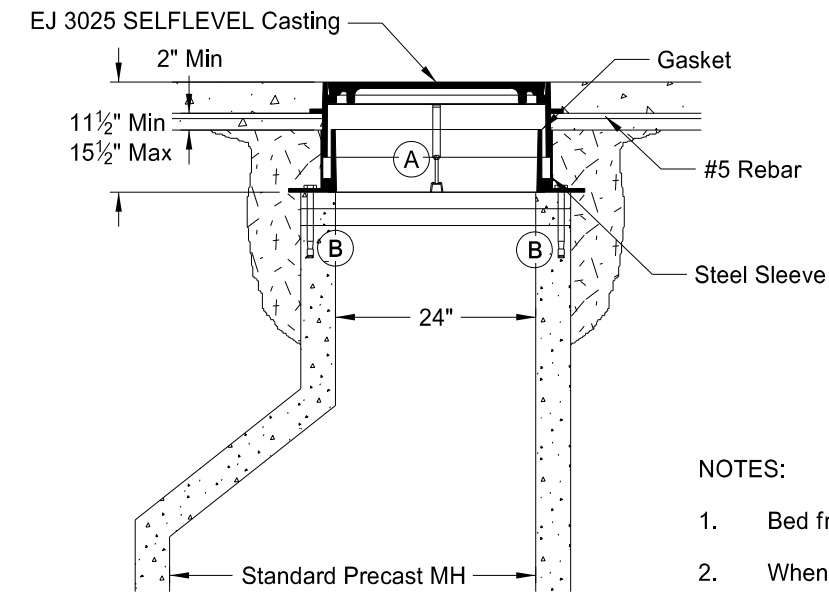
Business US 81 (University Drive)
21st Ave S to 18th Ave S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	20	11

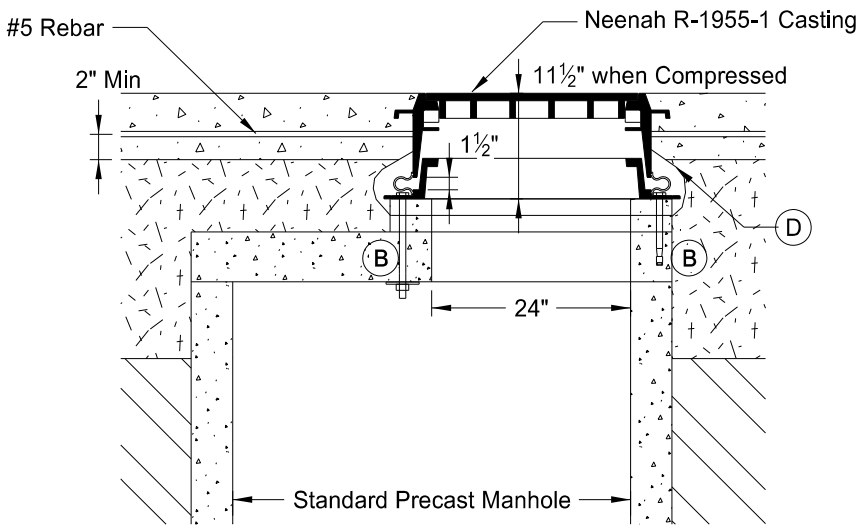
NHU-8-081(039)924



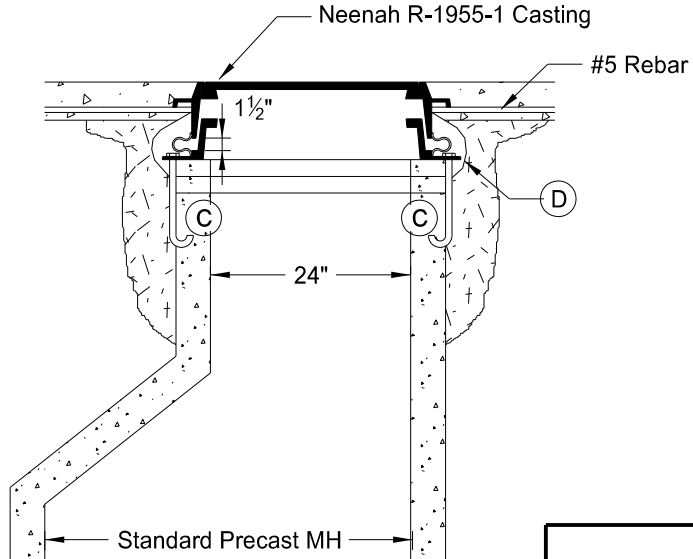
ELEVATION VIEW OF CONNECTION TO
STANDARD PRECAST MANHOLE - TYPICAL



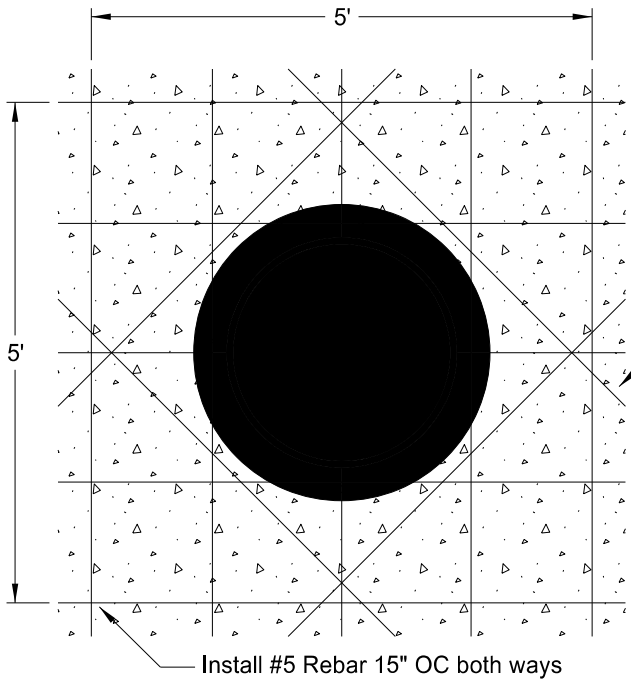
ELEVATION VIEW OF CONNECTION TO
CONICAL MANHOLE - TYPICAL



ELEVATION VIEW OF CONNECTION TO
STANDARD PRECAST MANHOLE - TYPICAL



ELEVATION VIEW OF CONNECTION TO
CONICAL MANHOLE - TYPICAL

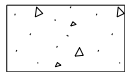


REBAR LAYOUT

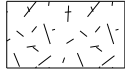
NOTES:

1. Bed frame in mortar, install precast two-inch rings, and plaster inside and out with mortar.
 2. When installing an existing box out, drill 20" - #5 rebar into existing pavement 6" deep - 15" OC.
 3. The length of anchor bolts varies with the number of adjusting rings.
 4. Include installation costs at existing locations in the unit price bid for "MANHOLE CASTING TYPE ____."
 5. Include installation costs at new manhole locations in the unit price bid for "MANHOLE ____ IN."
- (A) (3) 6" full thread adjusting bolt and bracket (To be removed after concrete cures.)
- (B) Provide 3/4" diameter stainless steel bolts, nut assemblies, and 1/2"x4"x4" plates to extend through the manhole cover, or provide anchor bolts to extend a minimum of 4" into the MH cover. Provide 4 bolts per casting.
- (C) Provide 3/4" diameter stainless steel bolts with nuts to extend 5" below the adjusting rings. Provide 4 bolts per casting.
- (D) Wrap and tape 6 mil polyethelene on casting above the rubber gasket and tape to adjusting rings below the gasket.

KEY:



Portland Cement Concrete Pavement



Granular Backfill

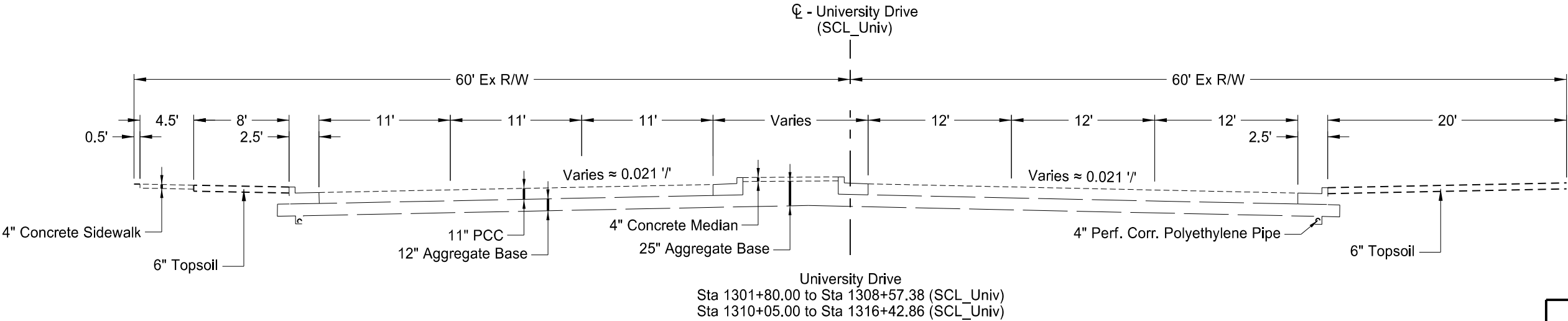
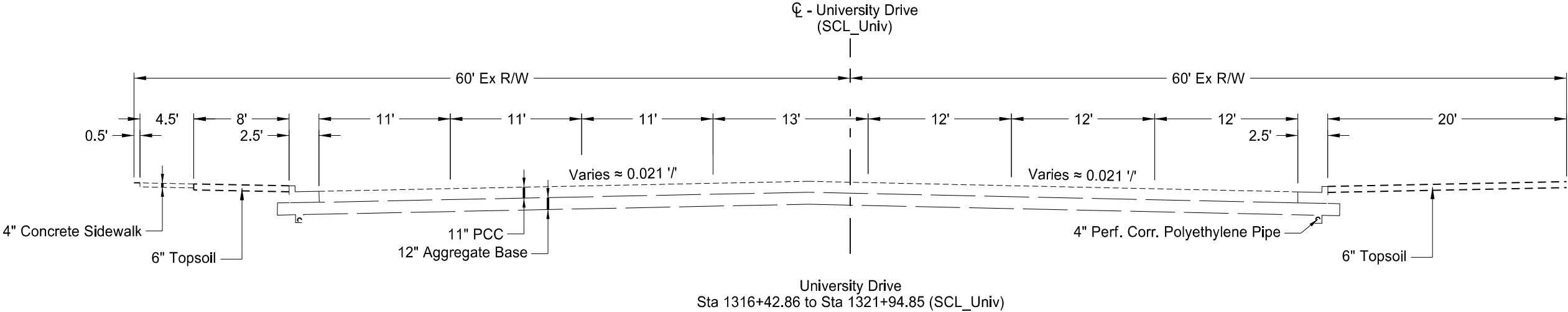
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Floating Manhole Details

Business US 81 (University Drive)
21st Ave S to 18th Ave S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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NHU-8-081(039)924



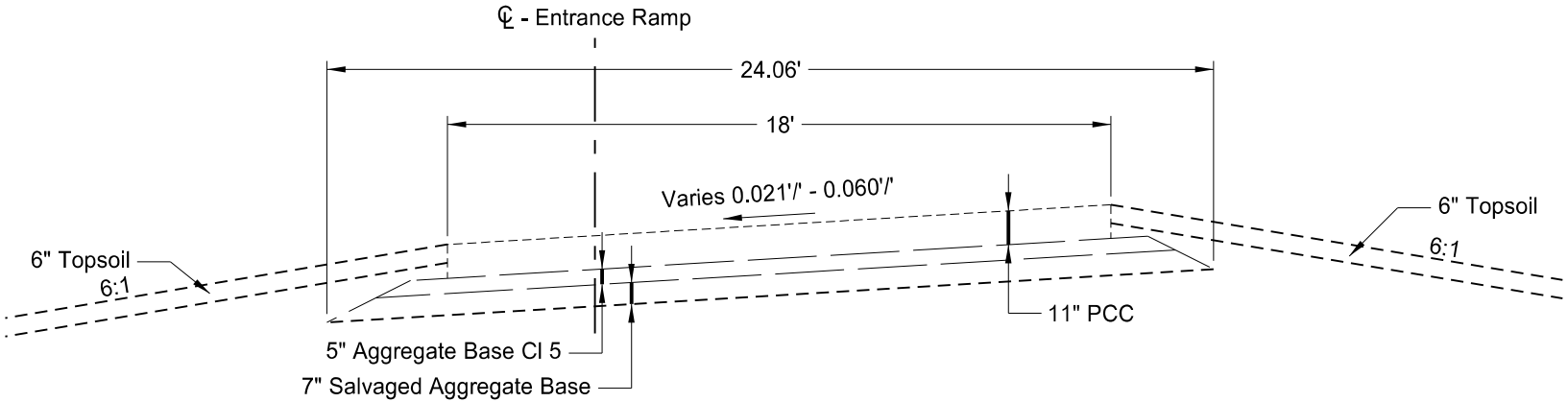
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Existing Typical Section
University Drive

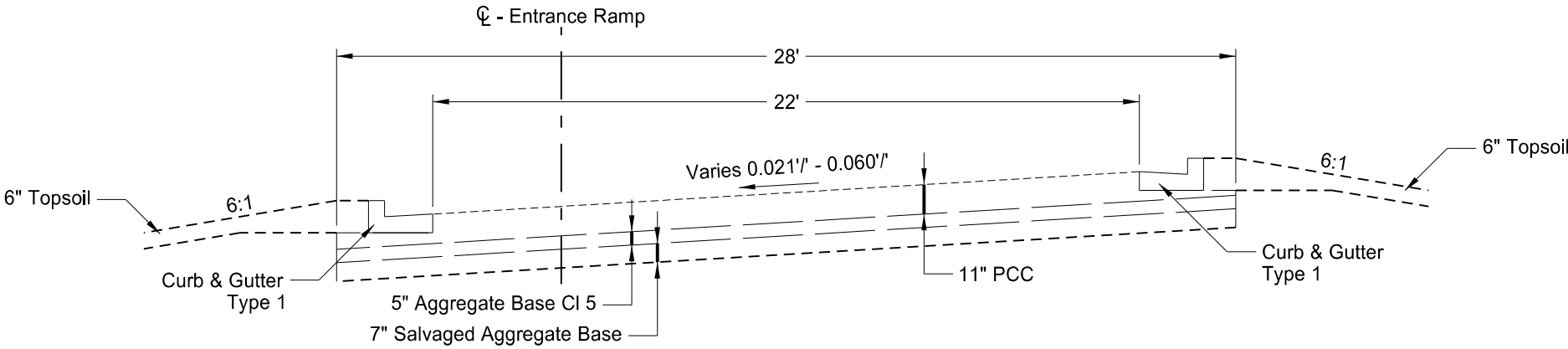
Business US 81 (Universty Drive)
21st Ave S to 18th Ave S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	30	2

NHU-8-081(039)924



I-94 WB Entrance Ramp
Sta 2102+50.00 to Sta 2105+94.27 (Pr_WBEnt)



I-94 WB Entrance Ramp
Sta 2105+94.27 to Sta 2108+20.18 (Pr_WBEnt)

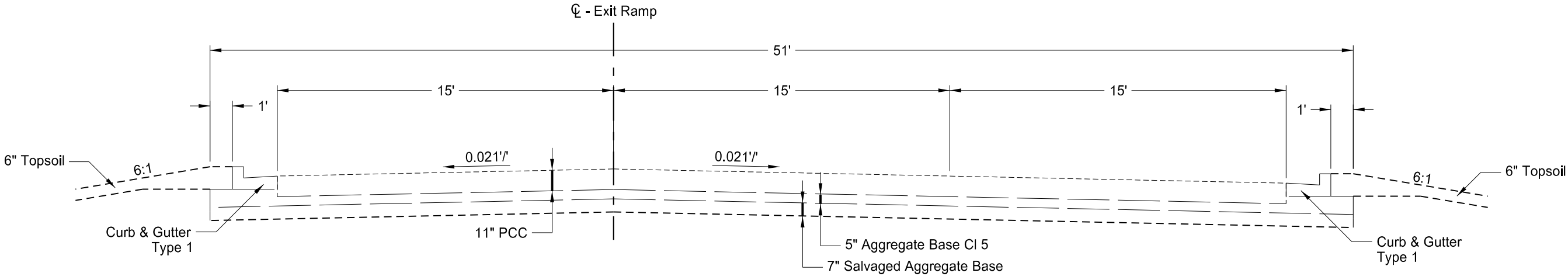
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Existing Typical Section
North Entrance Ramps

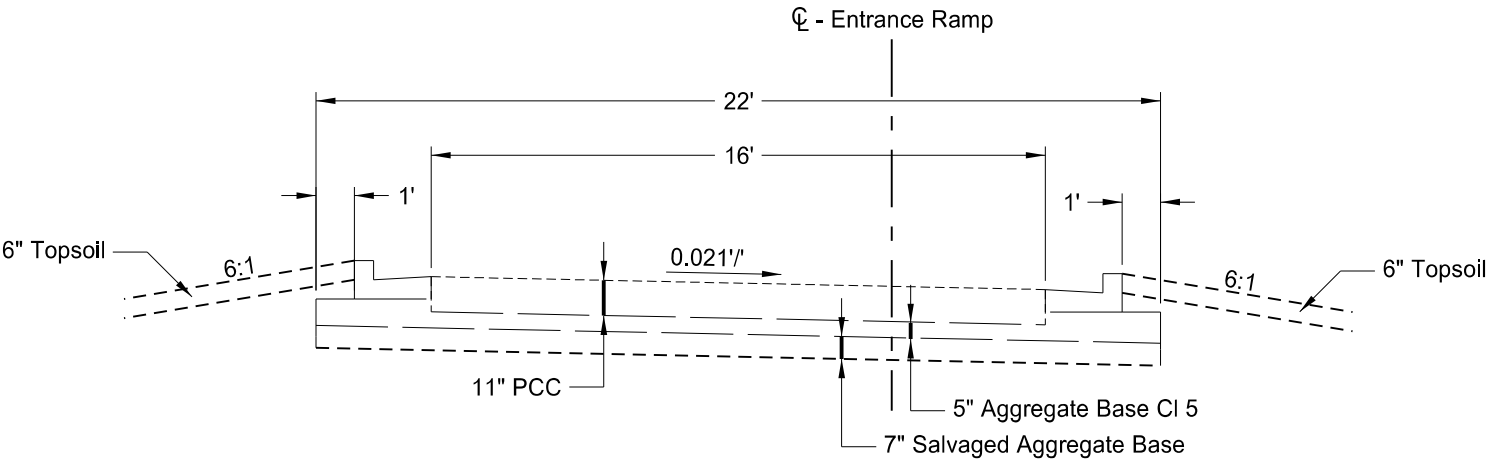
Business US 81 (University Drive)
21st Ave S to 18th Ave S

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	30	3

NHU-8-081(039)924



I-94 WB Exit Ramp
Sta 100+33.58 to Sta 104+00.00 (Ex_WBExit)



I-94 EB Entrance Ramp & I-94 WB Entrance Loop Ramp
Sta 2400+00.00 to Sta 2401+79.40 (Pr_EBEnt)
Sta 2201+09.00 to Sta 2202+01.79 (Pr_WBEnt_Loop)

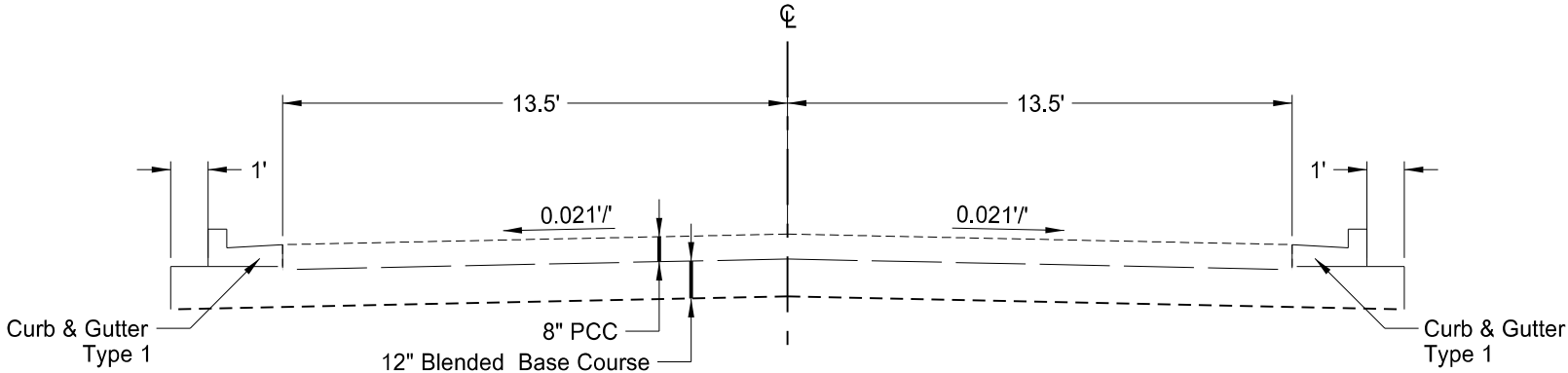
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Existing Typical Section
East Ramps

Business US 81 (University Drive)
21st Ave S to 18th Ave S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	30	4

NHU-8-081(039)924



21st Ave S & Frontage Road
Sta 2500+46.94 to Sta 2501+85.00 (Pr_21stAve)
Sta 2601+40.00 to Sta 2601+71.82 (Pr_Frontage)

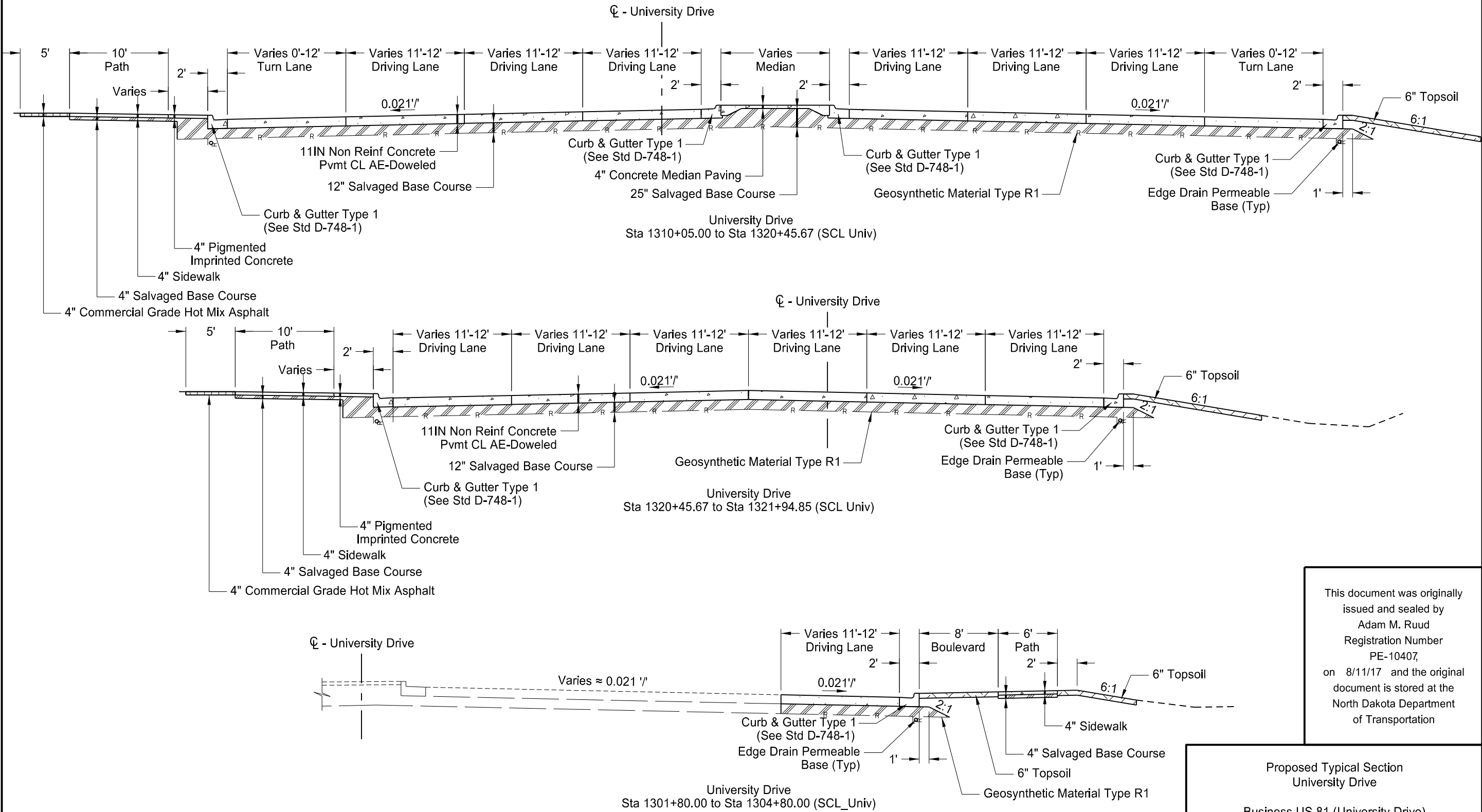
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Existing Typical Section
21st Ave S

Business US 81 (University Drive)
21st Ave S to 18th Ave S

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	30	5

NHU-8-081(039)924

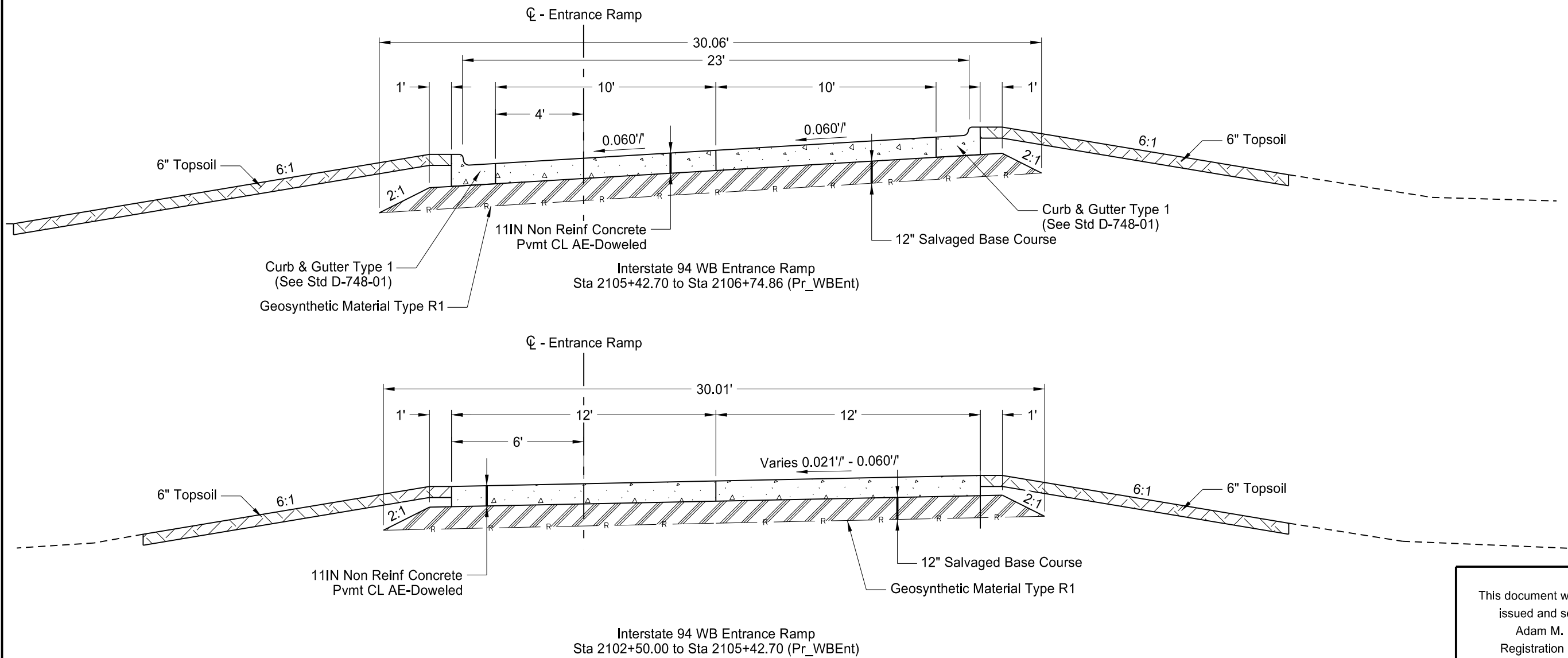


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Proposed Typical Section University Drive Business US 81 (University Drive) 21st Ave S to 18th Ave S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	30	6

NHU-8-081(039)924



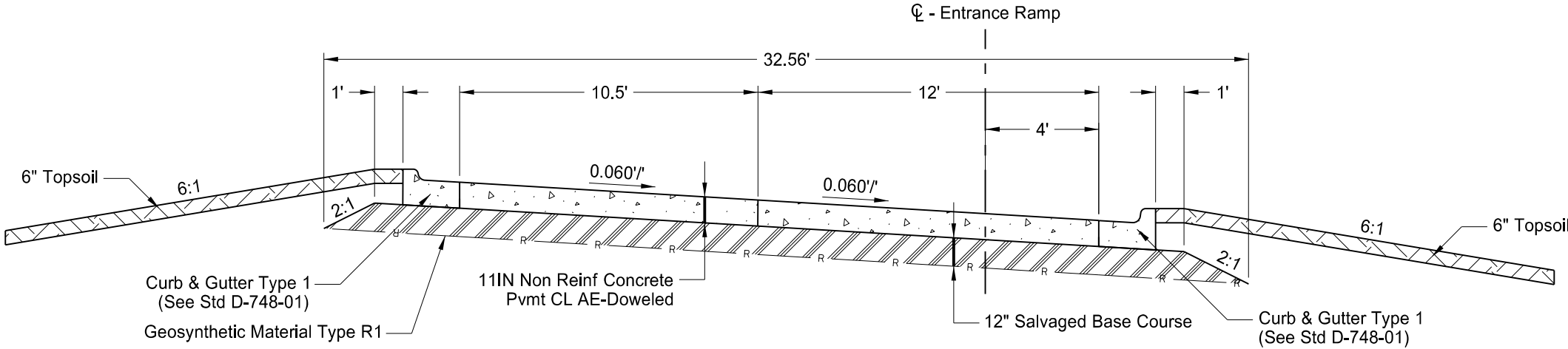
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Proposed Typical Section Northwest Entrance Ramp

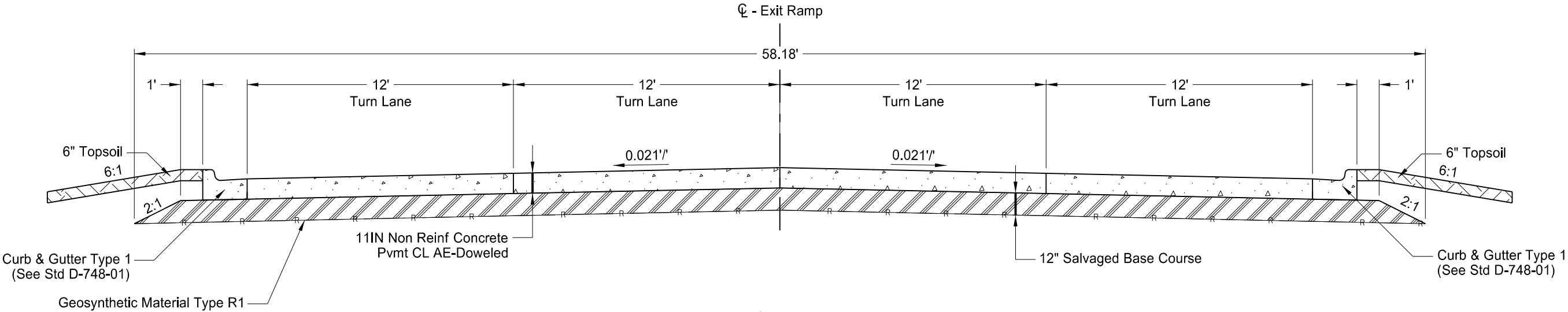
Business US 81 (University Drive)
21st Ave S to 18th Ave S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	30	7

NHU-8-081(039)924



Interstate 94 WB Entrance Loop Ramp
Sta 2201+12.53 to Sta 2202+01.79 (Pr_WBEnt_Loop)



Interstate 94 WB Exit Ramp
Sta 100+45.78 to Sta 104+00.00 (Ex_WBEx)

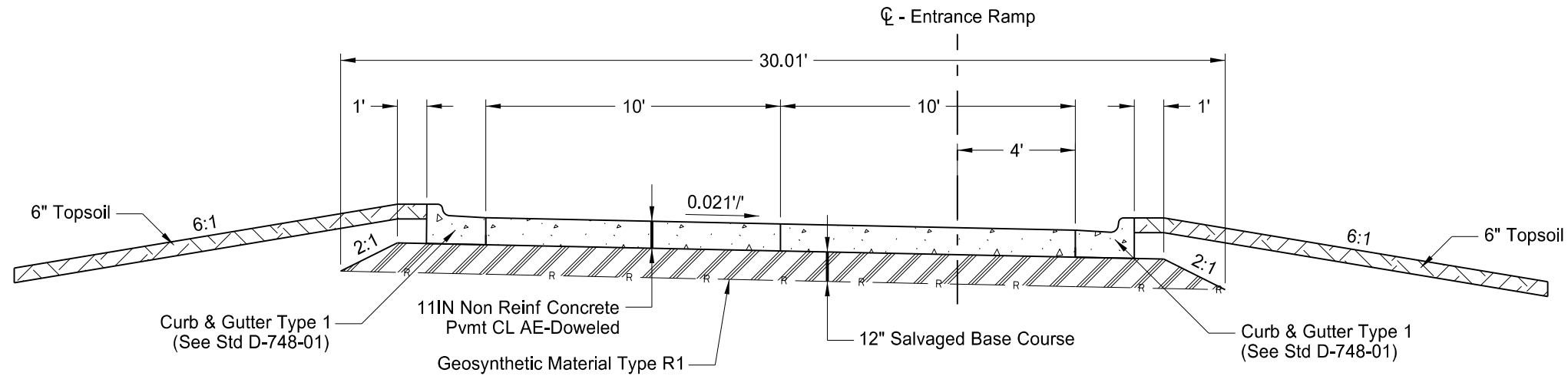
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Proposed Typical Section
Northeast Ramps

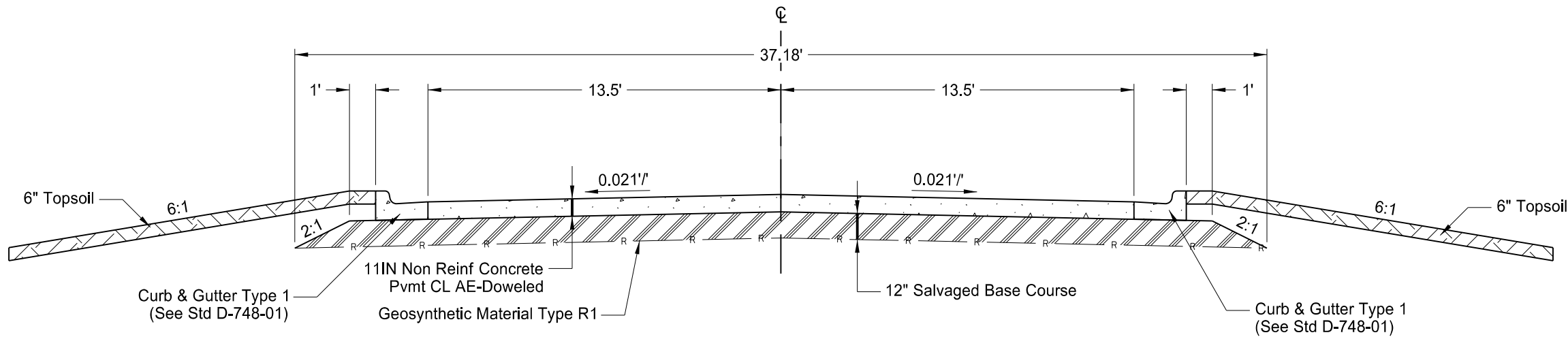
Business US 81 (University Drive)
21st Ave S to 18th Ave S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	30	8

NHU-8-081(039)924



Interstate 94 EB Entrance Ramp
Sta 2400+50.00 to Sta 2401+79.40 (Pr_EBEnt)

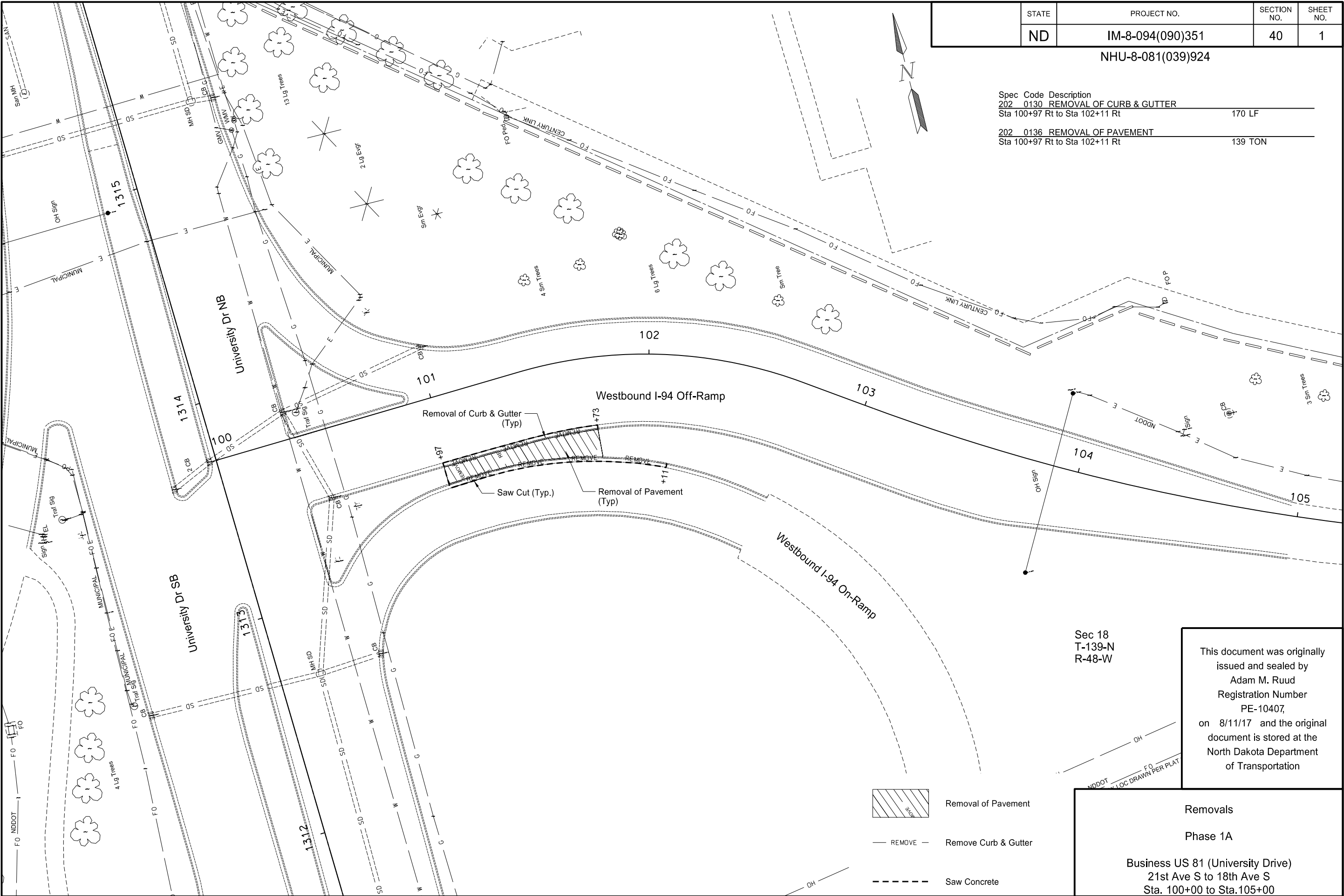


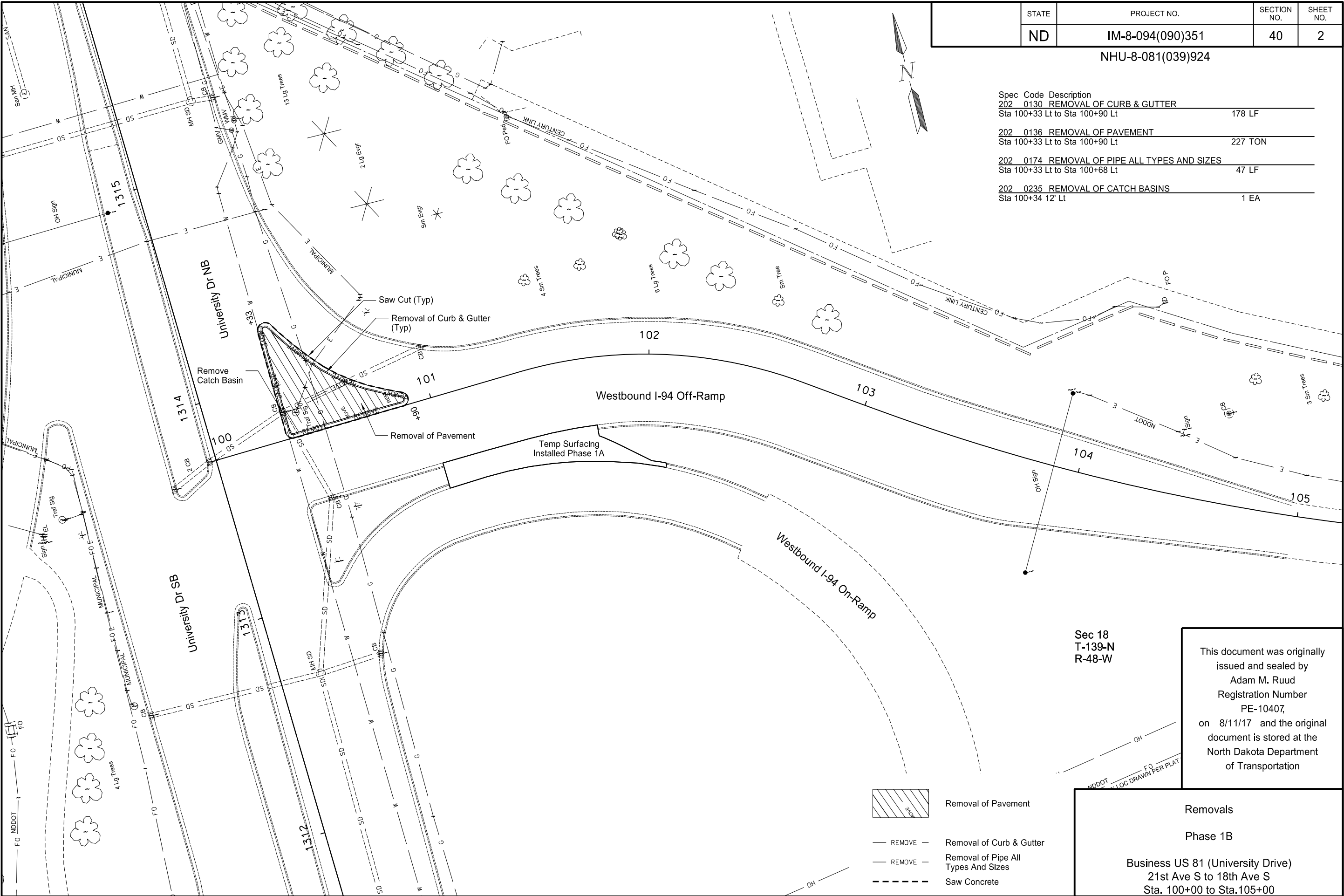
21st Ave S & Frontage Road
Sta 2500+45.00 to Sta 2501+85.00 (Pr_21stAveS)
Sta 2601+40.00 to Sta 2601+86.33 (Pr_Frontage)

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Proposed Typical Section
Southeast Ramp & 21st Ave S

Business US 81 (University Drive)
21st Ave S to 18th Ave S





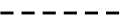
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	40	2

NHU-8-081(039)924

Spec	Code	Description	
202	0130	REMOVAL OF CURB & GUTTER	
Sta 100+33 Lt to Sta 100+90 Lt			178 LF
202	0136	REMOVAL OF PAVEMENT	
Sta 100+33 Lt to Sta 100+90 Lt			227 TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	
Sta 100+33 Lt to Sta 100+68 Lt			47 LF
202	0235	REMOVAL OF CATCH BASINS	
Sta 100+34 12' Lt			1 EA

Sec 18
T-139-N
R-48-W

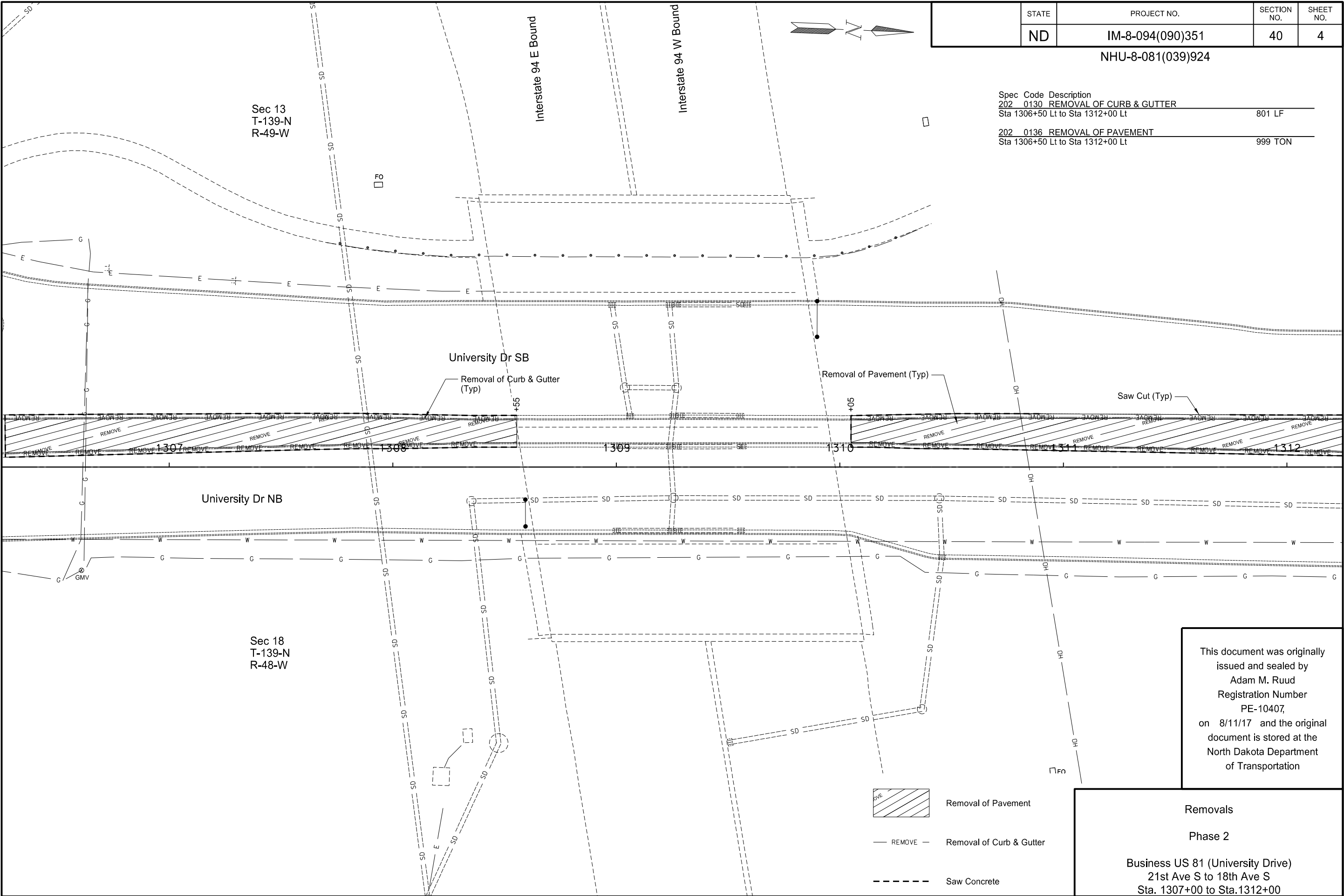
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-  Removal of Pavement
-  REMOVE — Removal of Curb & Gutter
-  REMOVE — Removal of Pipe All Types And Sizes
-  Saw Concrete

Removals

Phase 1B

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 100+00 to Sta.105+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	40	4

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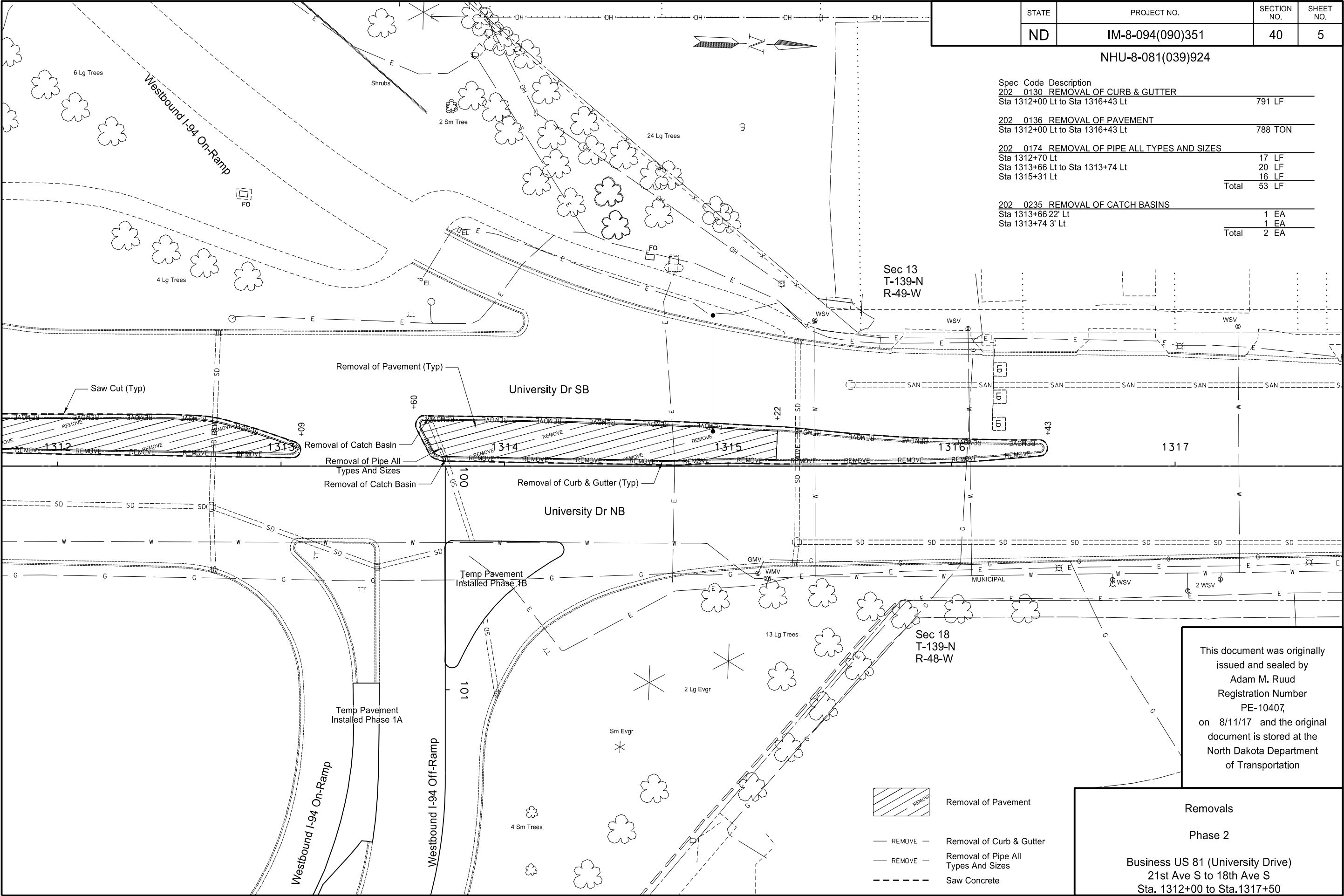
Spec Code	Description	
202 0130	REMOVAL OF CURB & GUTTER	
	Sta 1306+50 Lt to Sta 1312+00 Lt	801 LF
202 0136	REMOVAL OF PAVEMENT	
	Sta 1306+50 Lt to Sta 1312+00 Lt	999 TON

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Removals

Phase 2

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 1307+00 to Sta.1312+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	40	5

NHU-8-081(039)924

Spec	Code	Description	
202	0130	REMOVAL OF CURB & GUTTER	
		Sta 1312+00 Lt to Sta 1316+43 Lt	791 LF
202	0136	REMOVAL OF PAVEMENT	
		Sta 1312+00 Lt to Sta 1316+43 Lt	788 TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	
		Sta 1312+70 Lt	17 LF
		Sta 1313+66 Lt to Sta 1313+74 Lt	20 LF
		Sta 1315+31 Lt	16 LF
		Total	53 LF
202	0235	REMOVAL OF CATCH BASINS	
		Sta 1313+66 22' Lt	1 EA
		Sta 1313+74 3' Lt	1 EA
		Total	2 EA

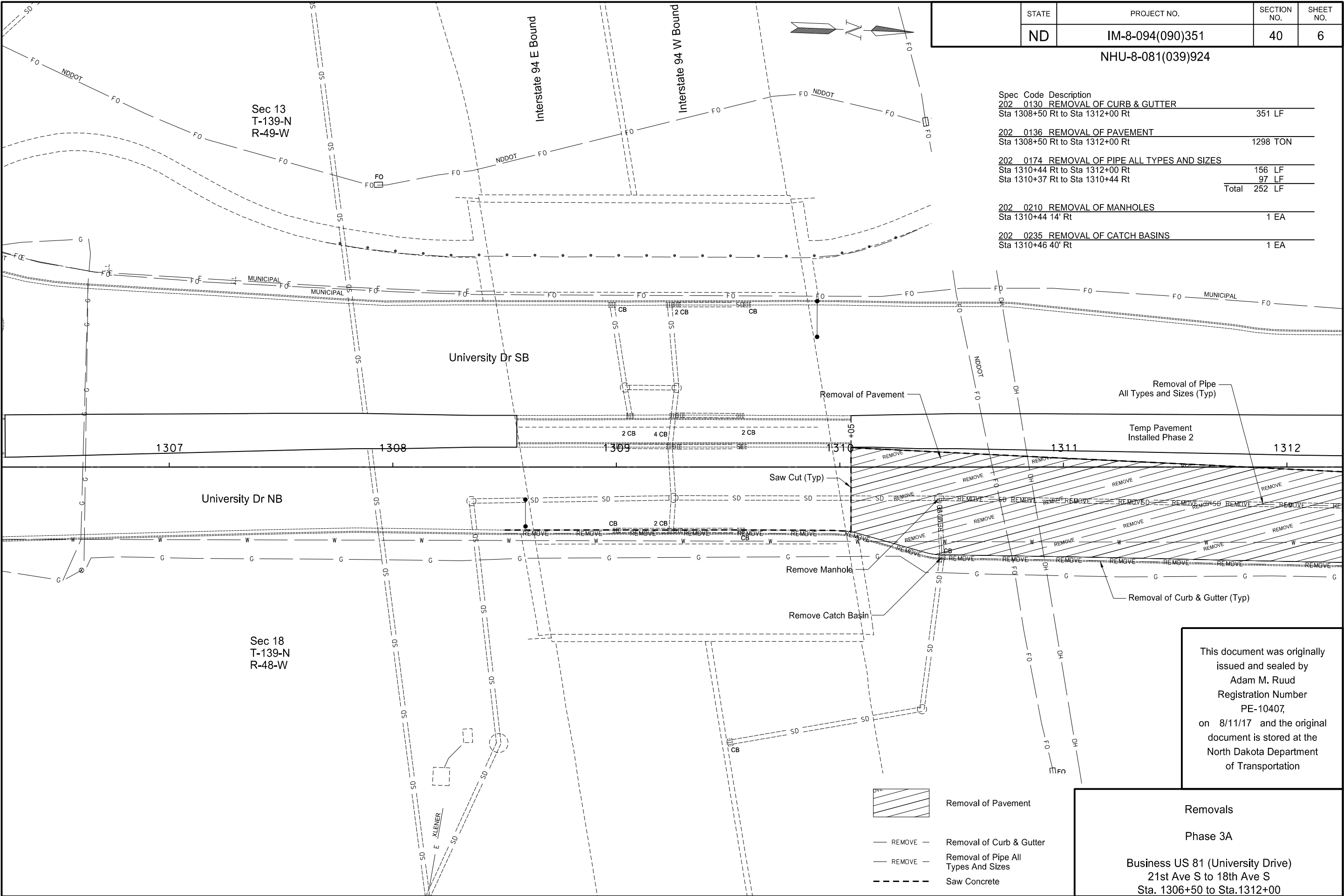
Sec 13
T-139-N
R-49-W

Sec 18
T-139-N
R-48-W

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- Removal of Pavement
- Removal of Curb & Gutter
- Removal of Pipe All Types And Sizes
- Saw Concrete

Removals
Phase 2
Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 1312+00 to Sta.1317+50



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	40	6

NHU-8-081(039)924

Spec Code Description	
202 0130 REMOVAL OF CURB & GUTTER	
Sta 1308+50 Rt to Sta 1312+00 Rt	351 LF
202 0136 REMOVAL OF PAVEMENT	
Sta 1308+50 Rt to Sta 1312+00 Rt	1298 TON
202 0174 REMOVAL OF PIPE ALL TYPES AND SIZES	
Sta 1310+44 Rt to Sta 1312+00 Rt	156 LF
Sta 1310+37 Rt to Sta 1310+44 Rt	97 LF
Total	252 LF
202 0210 REMOVAL OF MANHOLES	
Sta 1310+44 14' Rt	1 EA
202 0235 REMOVAL OF CATCH BASINS	
Sta 1310+46 40' Rt	1 EA

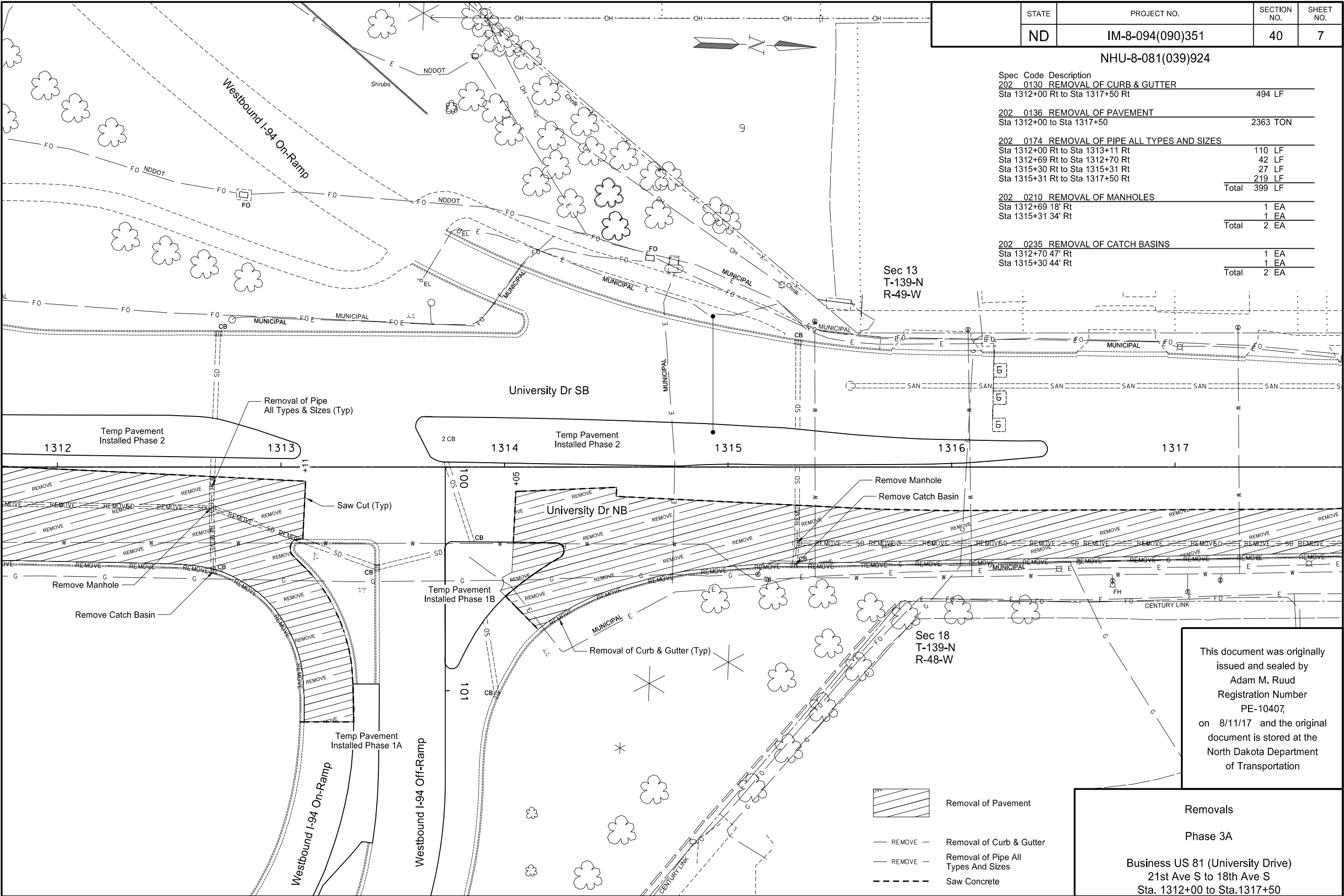
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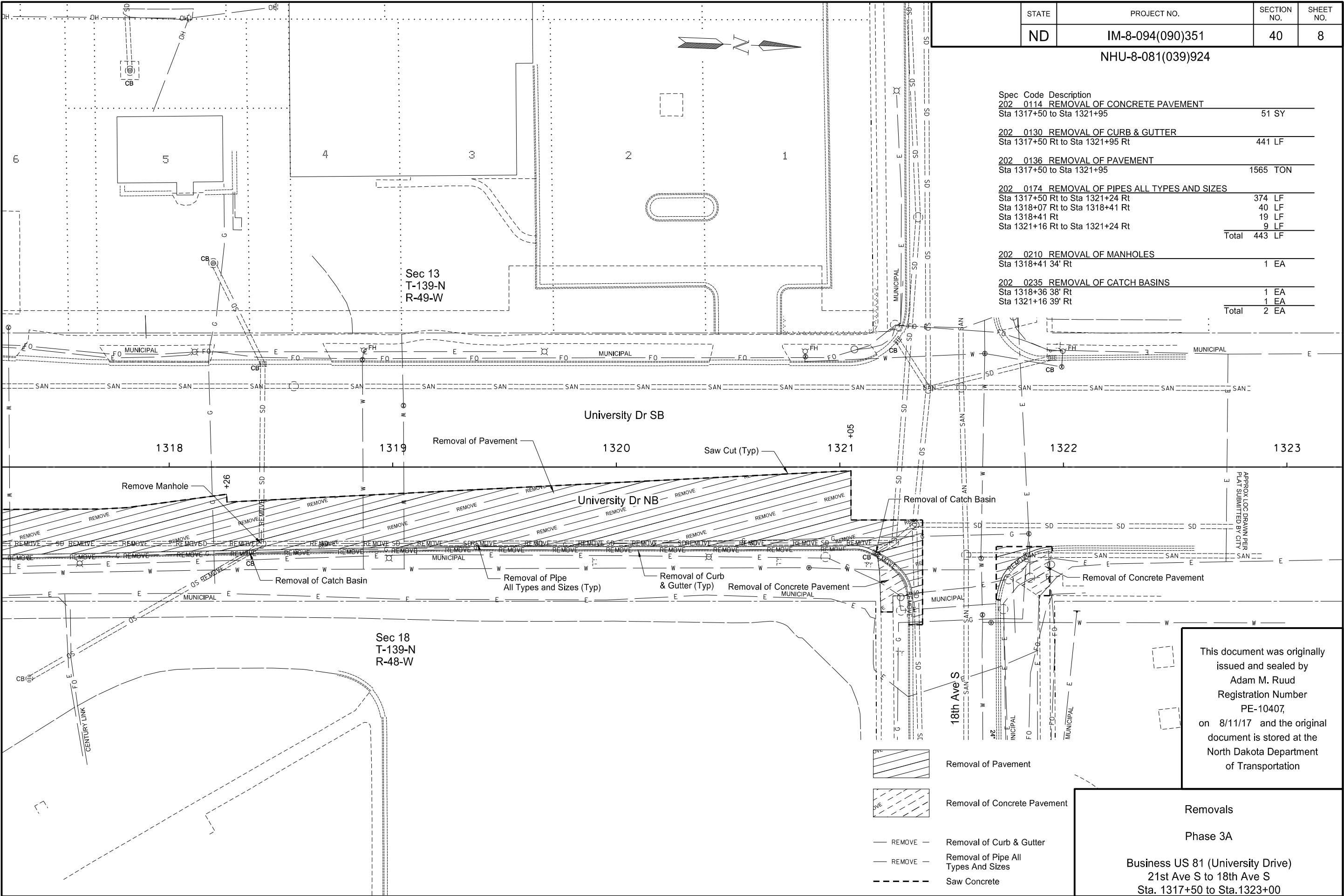
- Removal of Pavement
- Removal of Curb & Gutter
- Removal of Pipe All Types And Sizes
- Saw Concrete

Removals

Phase 3A

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 1306+50 to Sta.1312+00

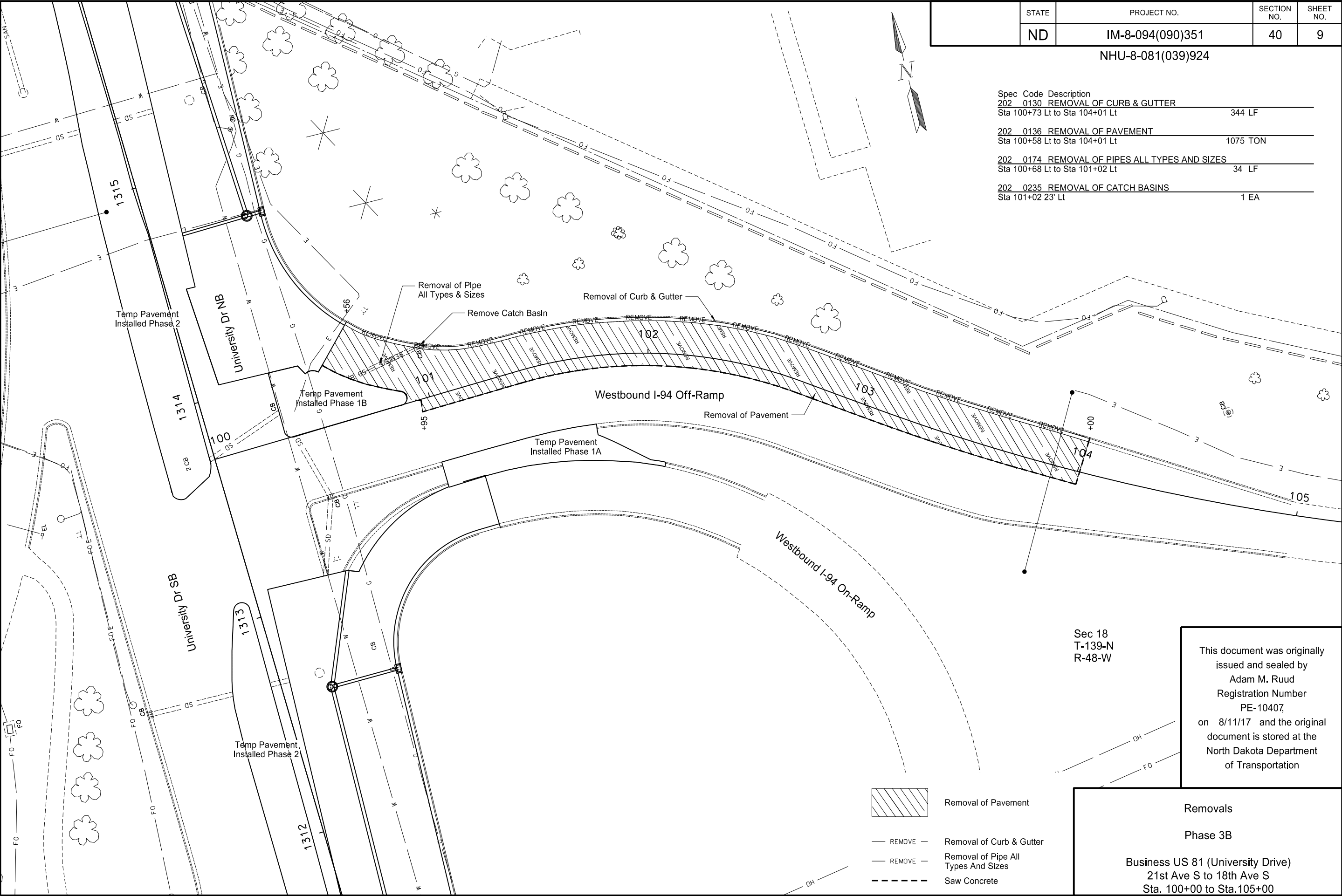




	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	40	9

NHU-8-081(039)924

Spec Code	Description	
202 0130	REMOVAL OF CURB & GUTTER	
	Sta 100+73 Lt to Sta 104+01 Lt	344 LF
202 0136	REMOVAL OF PAVEMENT	
	Sta 100+58 Lt to Sta 104+01 Lt	1075 TON
202 0174	REMOVAL OF PIPES ALL TYPES AND SIZES	
	Sta 100+68 Lt to Sta 101+02 Lt	34 LF
202 0235	REMOVAL OF CATCH BASINS	
	Sta 101+02 23' Lt	1 EA



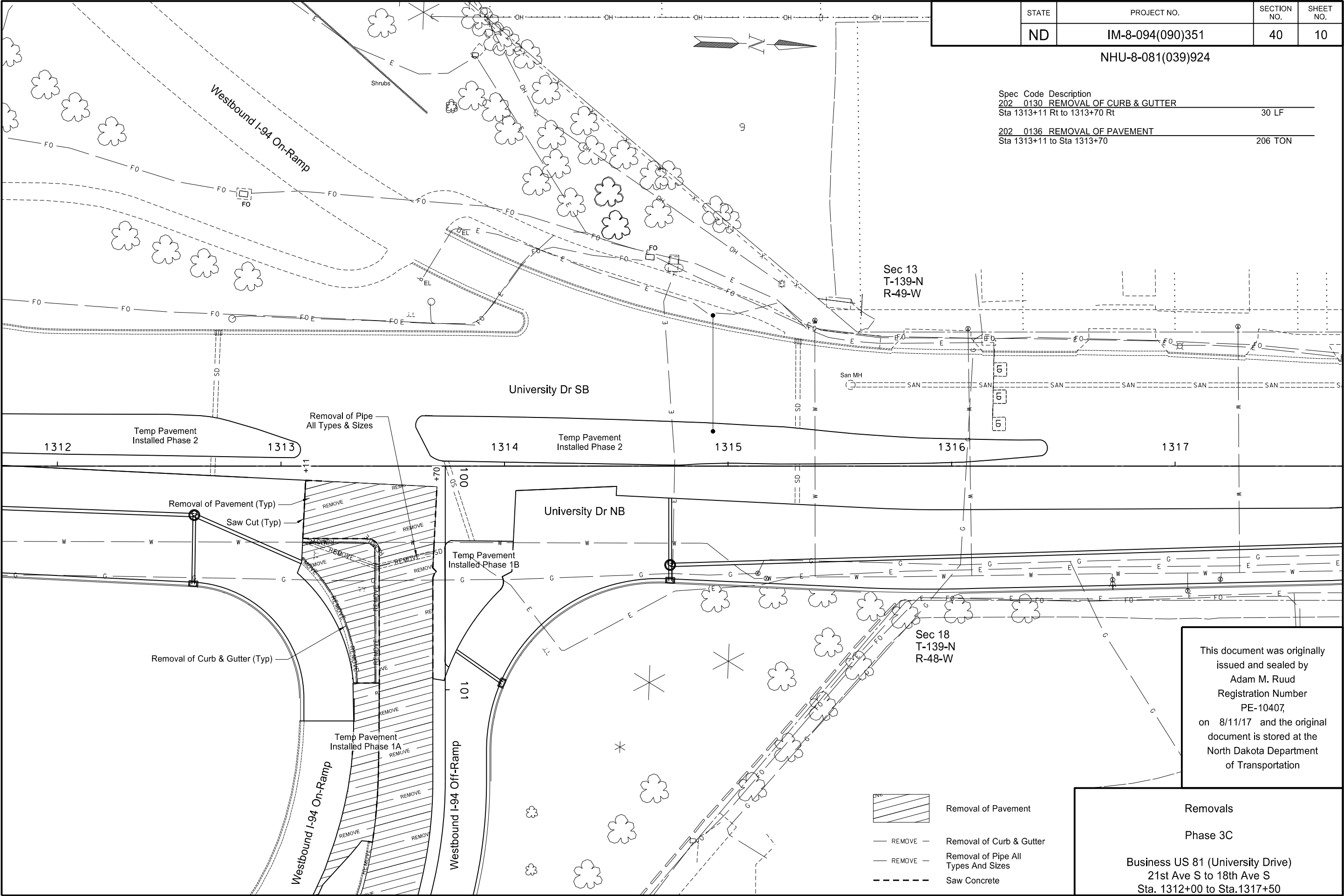
Sec 18
T-139-N
R-48-W

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Removals

Phase 3B

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 100+00 to Sta.105+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	40	10

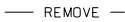
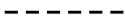
NHU-8-081(039)924

Spec Code	Description	
202 0130	REMOVAL OF CURB & GUTTER	
	Sta 1313+11 Rt to 1313+70 Rt	30 LF
202 0136	REMOVAL OF PAVEMENT	
	Sta 1313+11 to Sta 1313+70	206 TON

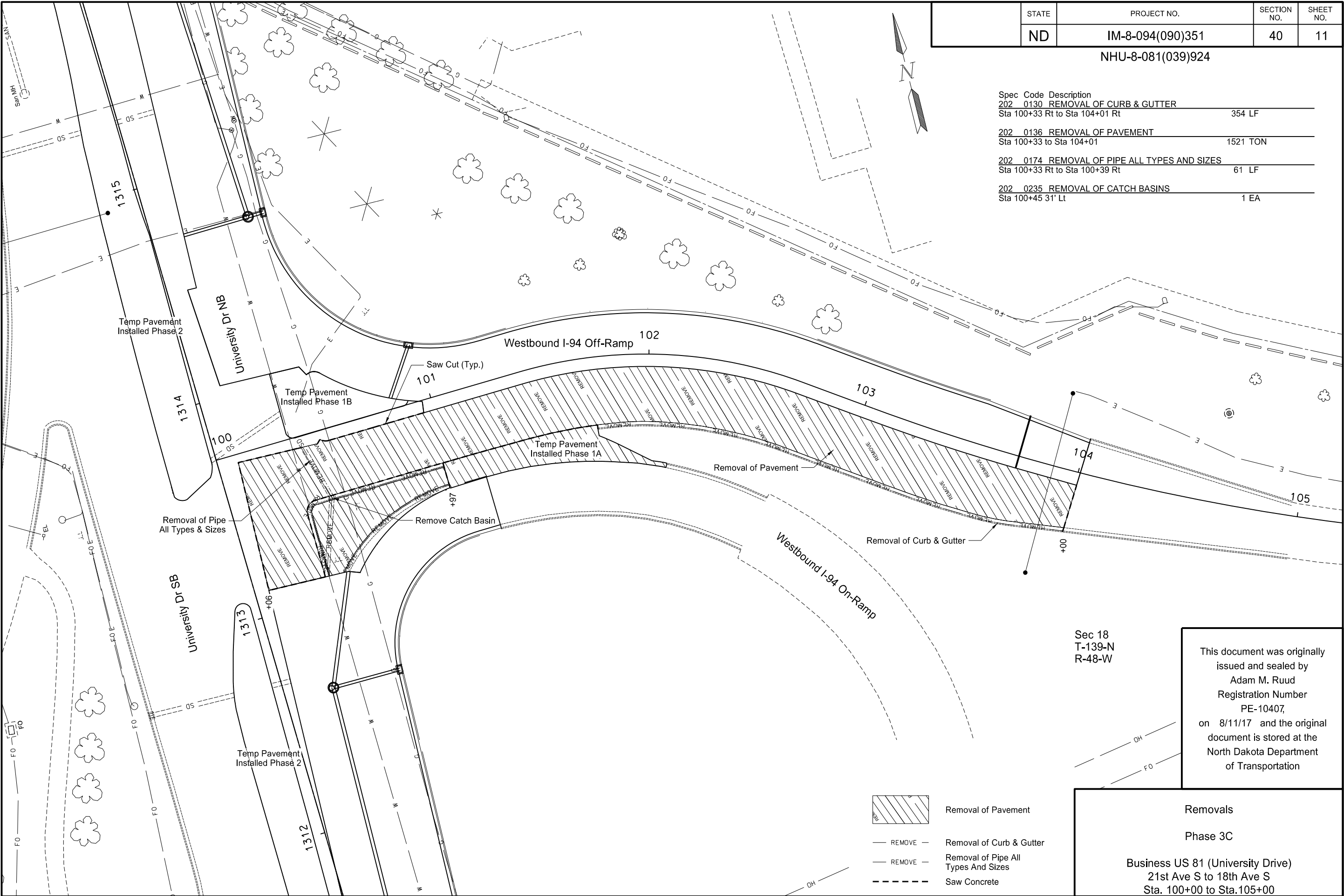
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-  Removal of Pavement
-  Removal of Curb & Gutter
-  Removal of Pipe All Types And Sizes
-  Saw Concrete

Removals
Phase 3C
Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 1312+00 to Sta.1317+50



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	40	11

NHU-8-081(039)924

Spec Code	Description	
202 0130	REMOVAL OF CURB & GUTTER	
	Sta 100+33 Rt to Sta 104+01 Rt	354 LF
202 0136	REMOVAL OF PAVEMENT	
	Sta 100+33 to Sta 104+01	1521 TON
202 0174	REMOVAL OF PIPE ALL TYPES AND SIZES	
	Sta 100+33 Rt to Sta 100+39 Rt	61 LF
202 0235	REMOVAL OF CATCH BASINS	
	Sta 100+45 31' Lt	1 EA

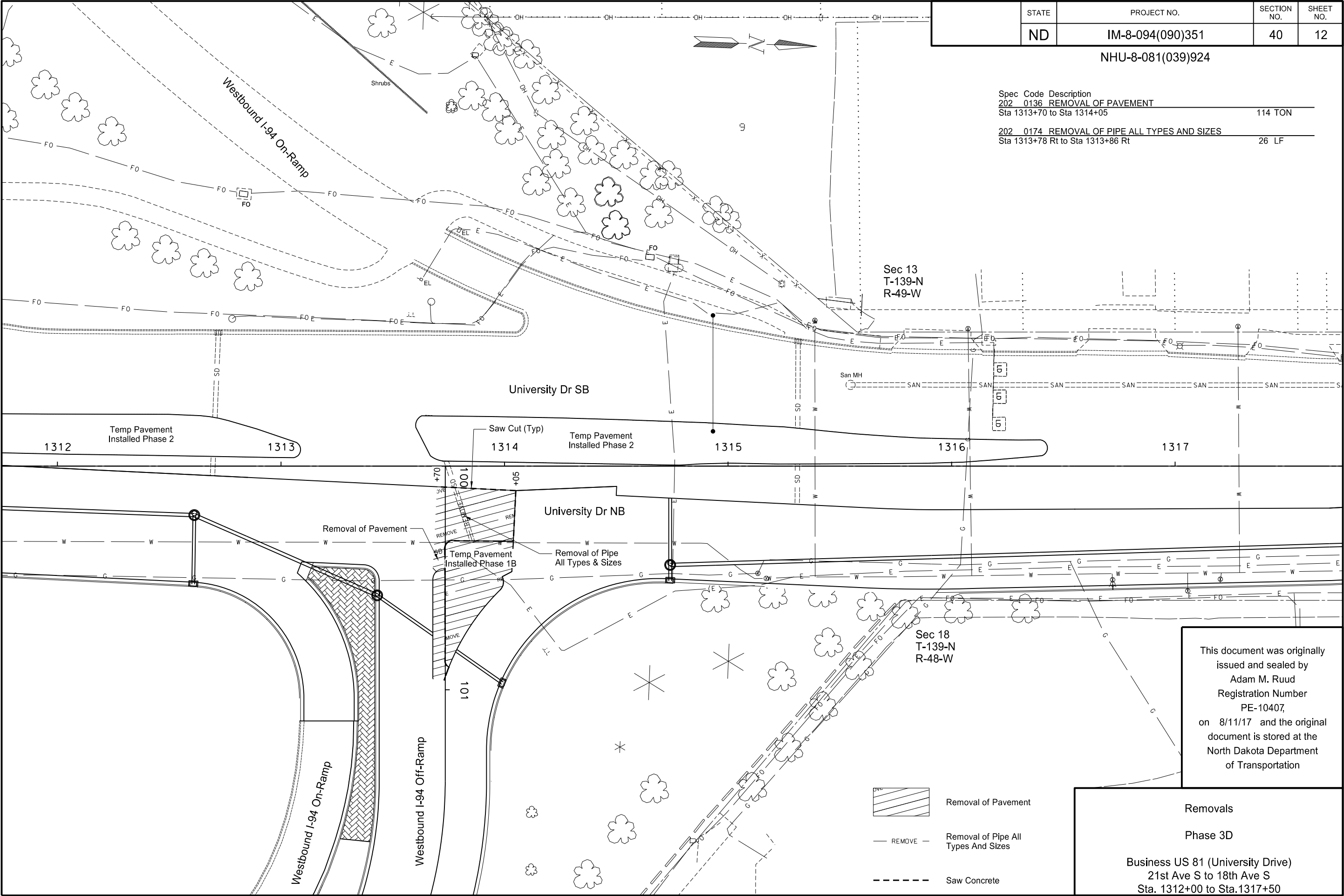
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Removals

Phase 3C

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 100+00 to Sta.105+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	40	12

NHU-8-081(039)924

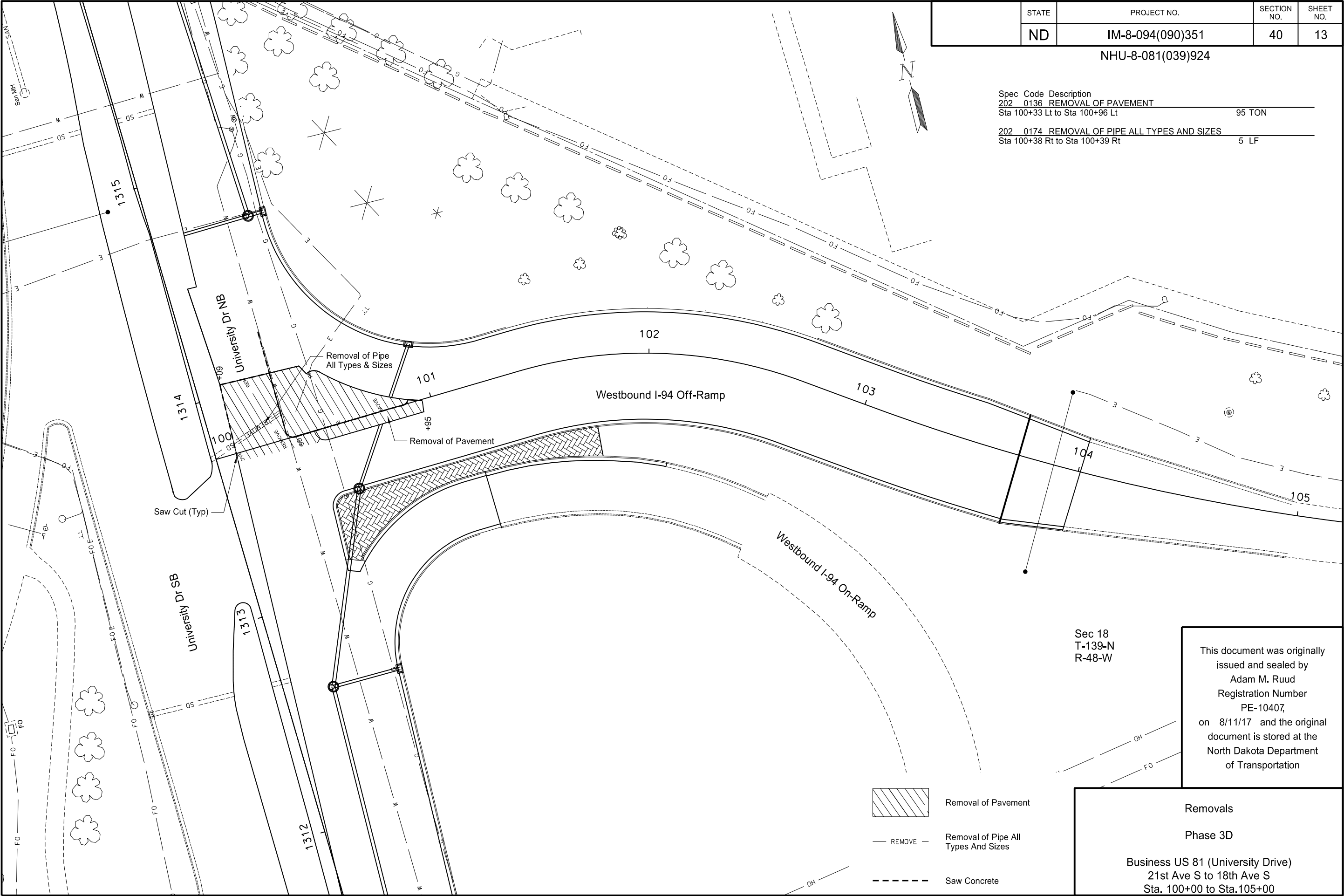
Spec Code Description	
202 0136 REMOVAL OF PAVEMENT	114 TON
Sta 1313+70 to Sta 1314+05	
202 0174 REMOVAL OF PIPE ALL TYPES AND SIZES	26 LF
Sta 1313+78 Rt to Sta 1313+86 Rt	

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Removals

Phase 3D

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 1312+00 to Sta.1317+50



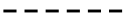
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	40	13

NHU-8-081(039)924

Spec	Code	Description	
202	0136	REMOVAL OF PAVEMENT	
		Sta 100+33 Lt to Sta 100+96 Lt	95 TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	
		Sta 100+38 Rt to Sta 100+39 Rt	5 LF

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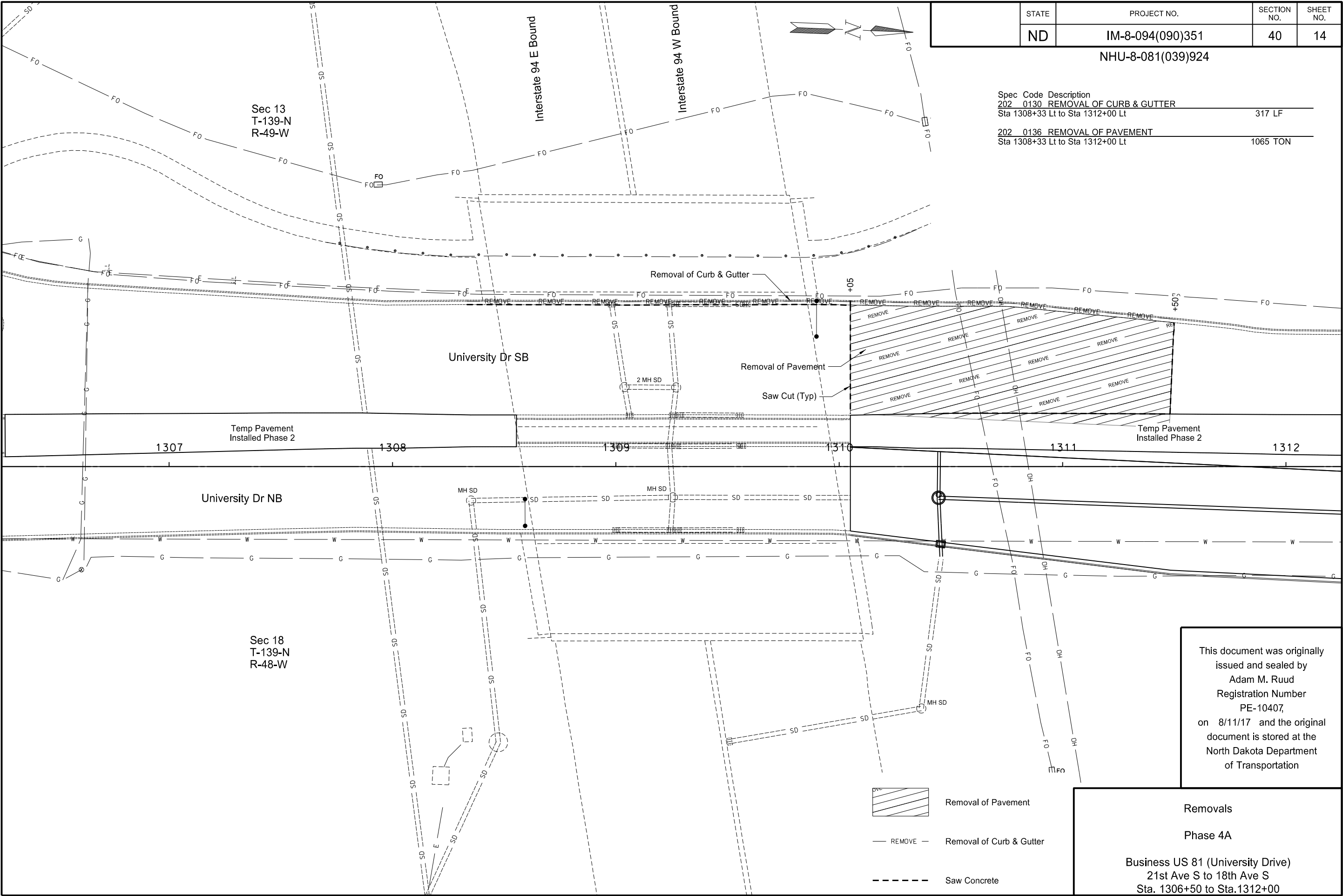
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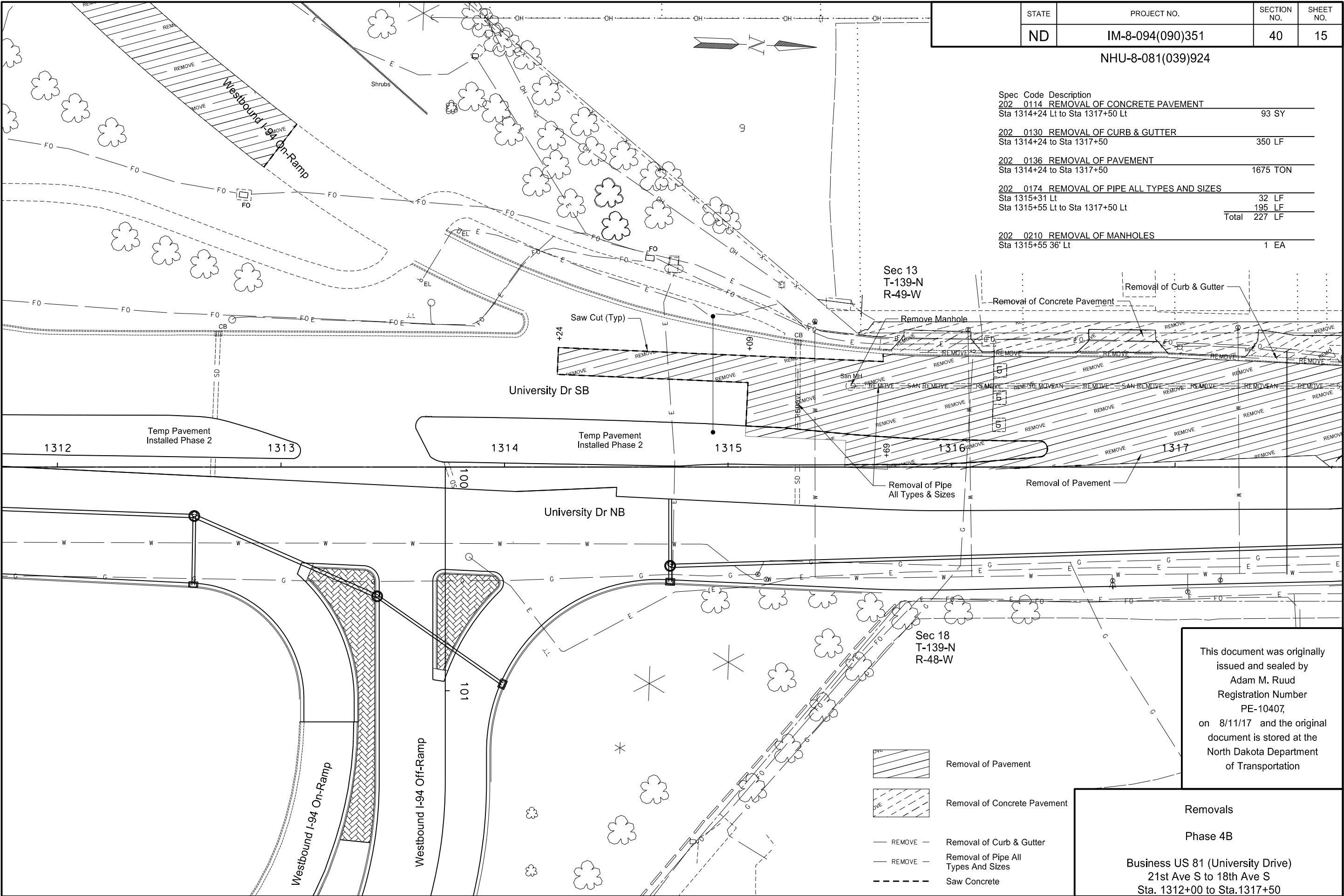
	Removal of Pavement
	Removal of Pipe All Types And Sizes
	Saw Concrete

Removals

Phase 3D

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 100+00 to Sta.105+00





STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	40	15

NHU-8-081(039)924

Spec Code	Description	
202 0114	REMOVAL OF CONCRETE PAVEMENT	
	Sta 1314+24 Lt to Sta 1317+50 Lt	93 SY
202 0130	REMOVAL OF CURB & GUTTER	
	Sta 1314+24 to Sta 1317+50	350 LF
202 0136	REMOVAL OF PAVEMENT	
	Sta 1314+24 to Sta 1317+50	1675 TON
202 0174	REMOVAL OF PIPE ALL TYPES AND SIZES	
	Sta 1315+31 Lt	32 LF
	Sta 1315+55 Lt to Sta 1317+50 Lt	195 LF
	Total	227 LF
202 0210	REMOVAL OF MANHOLES	
	Sta 1315+55 36' Lt	1 EA

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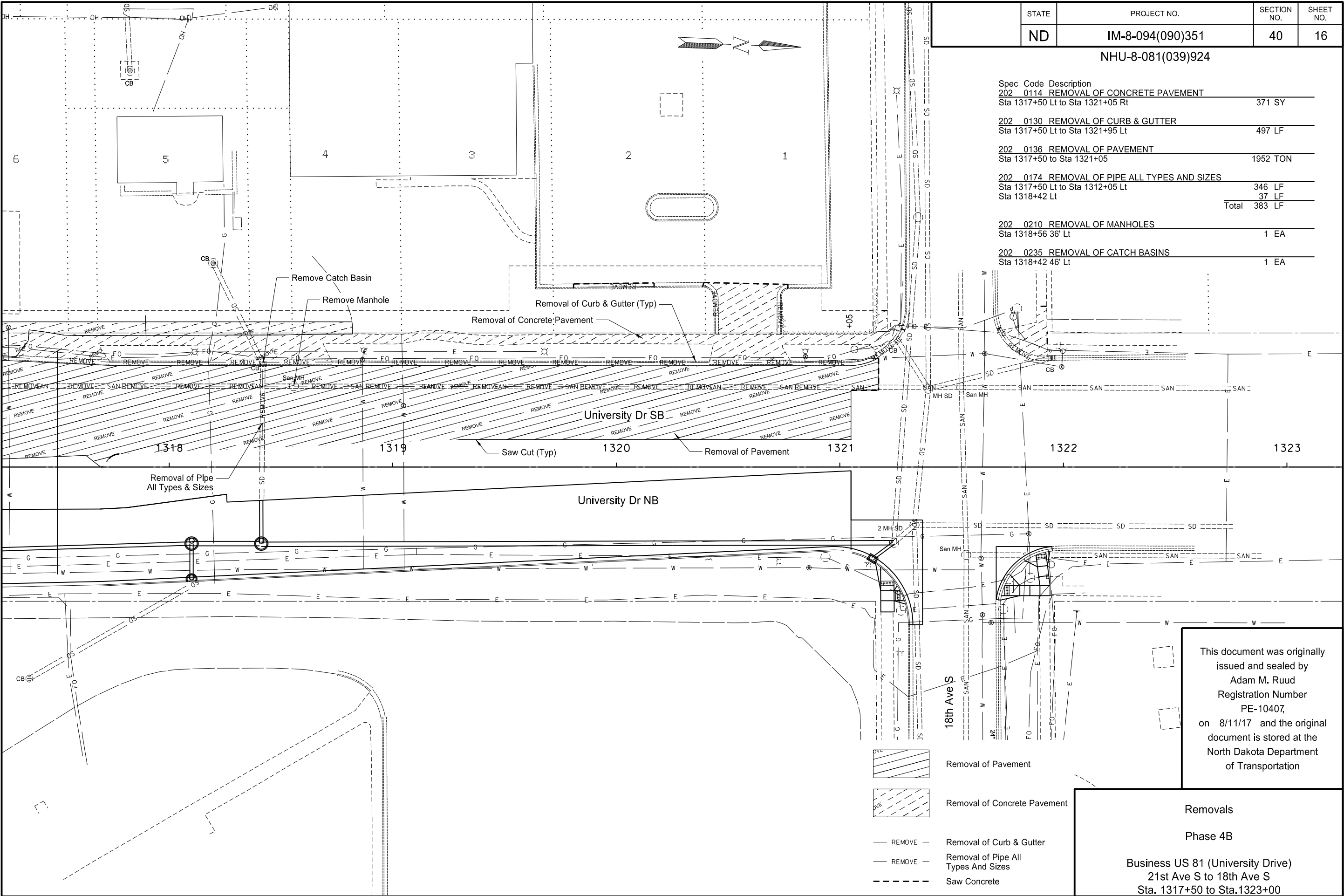
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- Removal of Pavement
- Removal of Concrete Pavement
- REMOVE — Removal of Curb & Gutter
- REMOVE — Removal of Pipe All Types And Sizes
- Saw Concrete

Removals

Phase 4B

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 1312+00 to Sta.1317+50



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	40	16

NHU-8-081(039)924

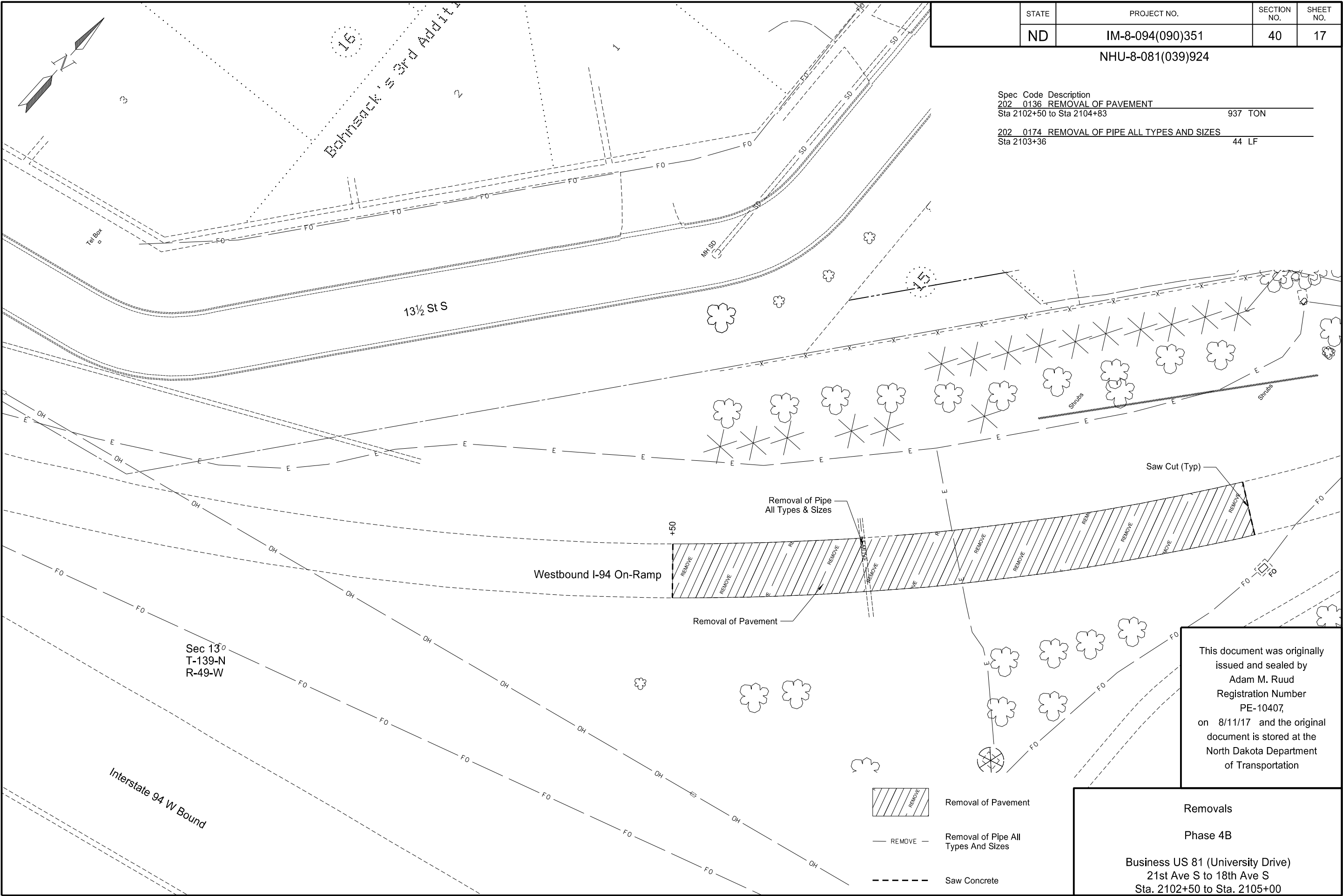
Spec Code	Description	
202 0114	REMOVAL OF CONCRETE PAVEMENT	
	Sta 1317+50 Lt to Sta 1321+05 Rt	371 SY
202 0130	REMOVAL OF CURB & GUTTER	
	Sta 1317+50 Lt to Sta 1321+95 Lt	497 LF
202 0136	REMOVAL OF PAVEMENT	
	Sta 1317+50 to Sta 1321+05	1952 TON
202 0174	REMOVAL OF PIPE ALL TYPES AND SIZES	
	Sta 1317+50 Lt to Sta 1312+05 Lt	346 LF
	Sta 1318+42 Lt	37 LF
	Total	383 LF
202 0210	REMOVAL OF MANHOLES	
	Sta 1318+56 36' Lt	1 EA
202 0235	REMOVAL OF CATCH BASINS	
	Sta 1318+42 46' Lt	1 EA

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Removals

Phase 4B

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 1317+50 to Sta.1323+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	40	17

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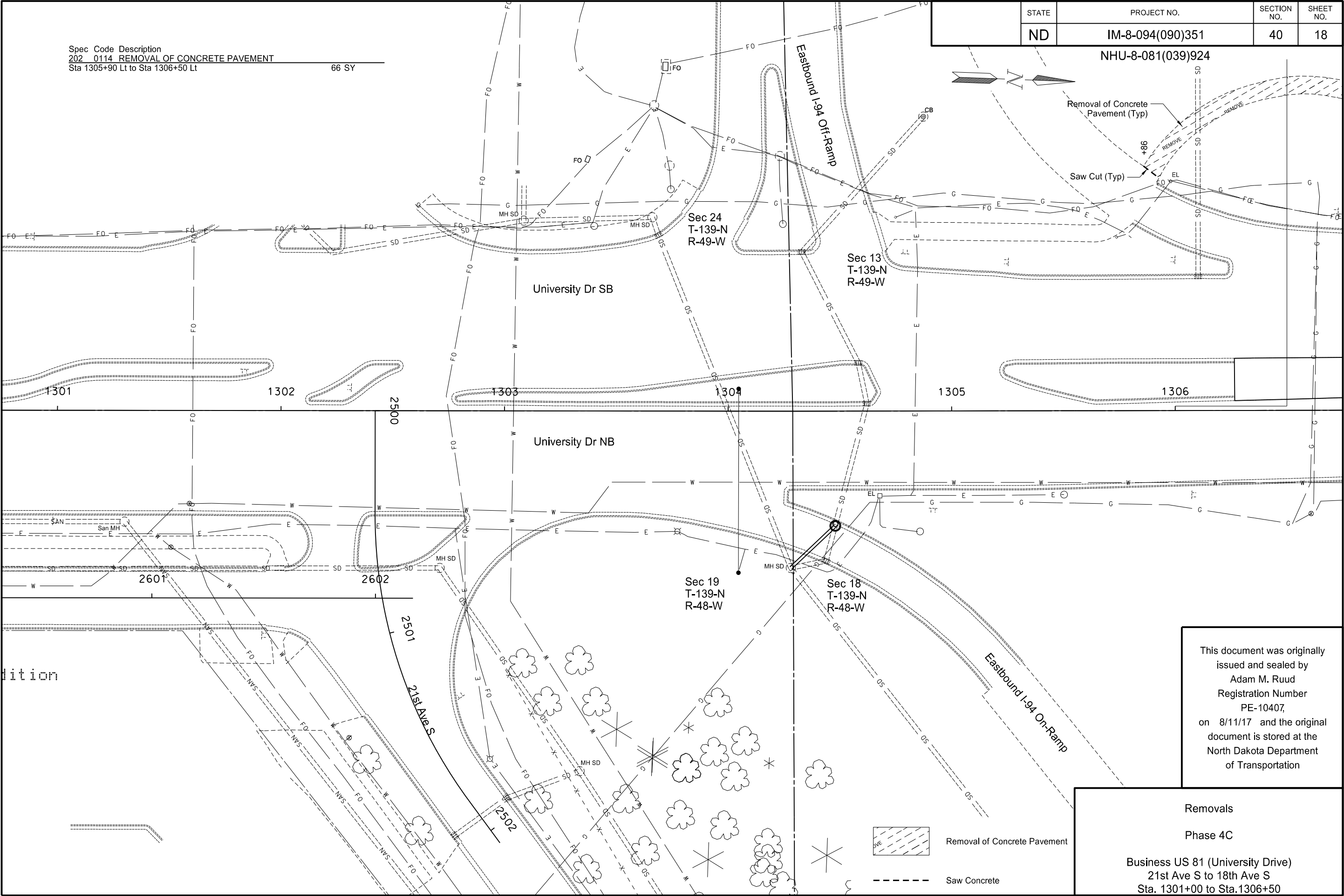
Spec	Code	Description	
202	0136	REMOVAL OF PAVEMENT	
		Sta 2102+50 to Sta 2104+83	937 TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	
		Sta 2103+36	44 LF

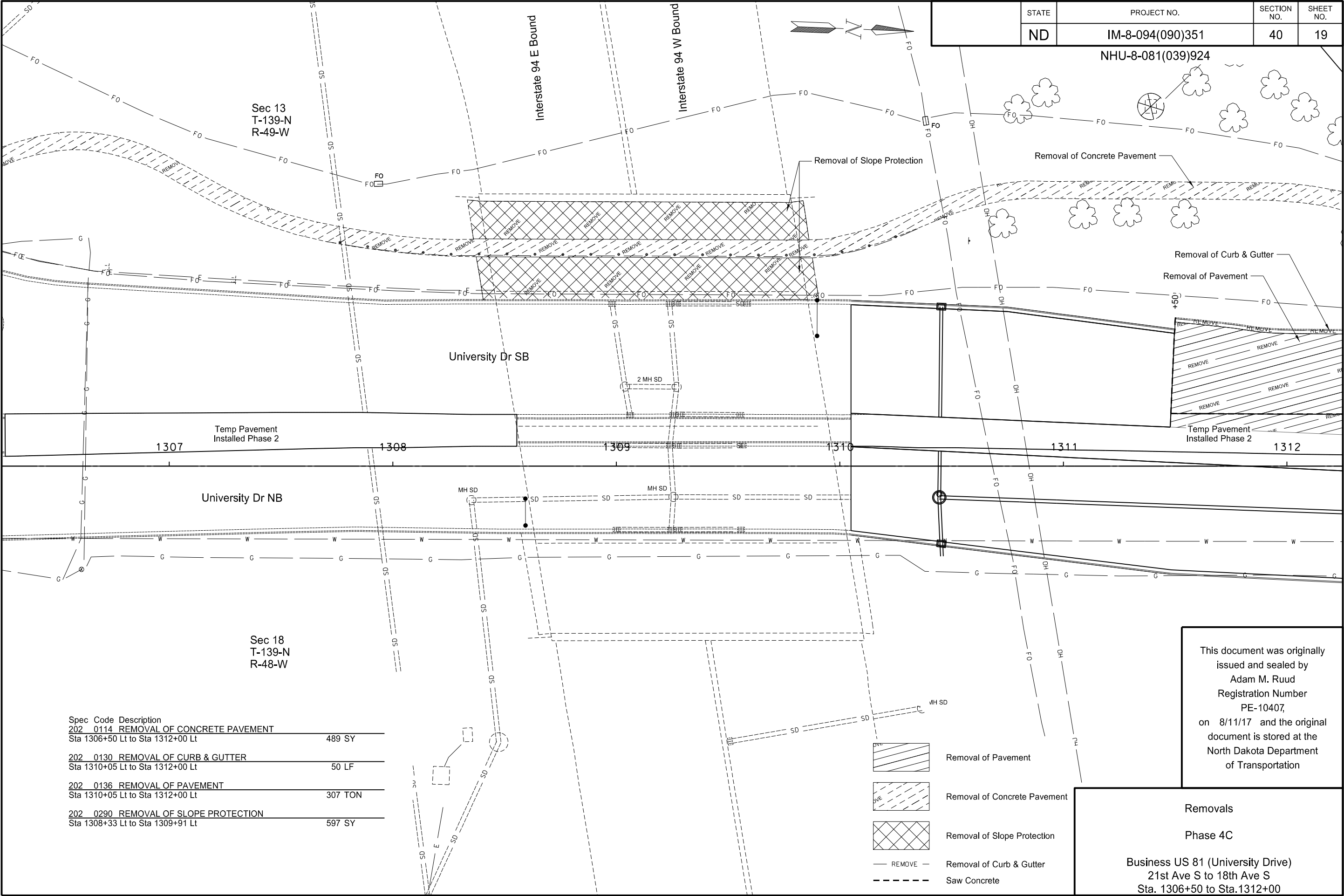
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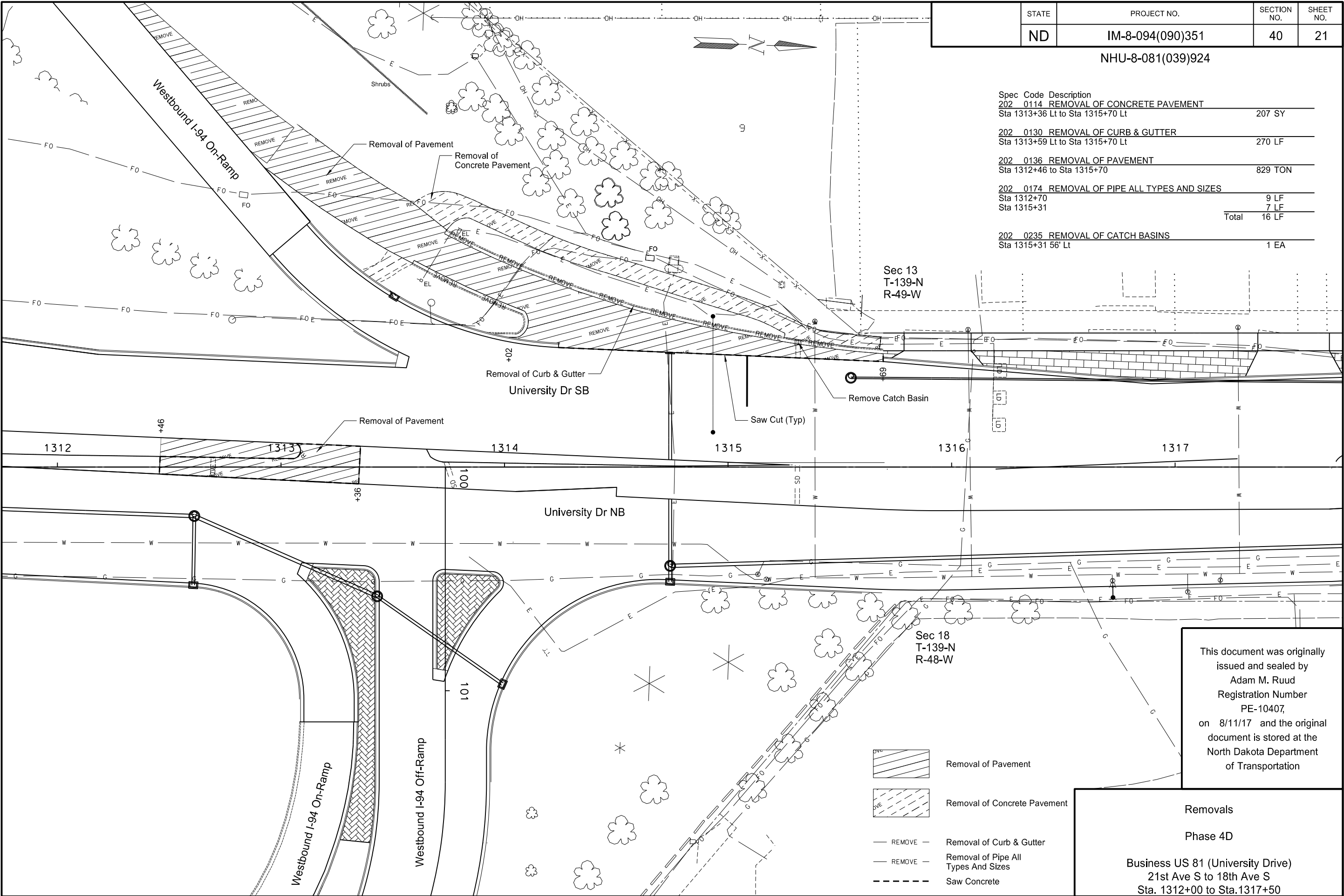
Removals

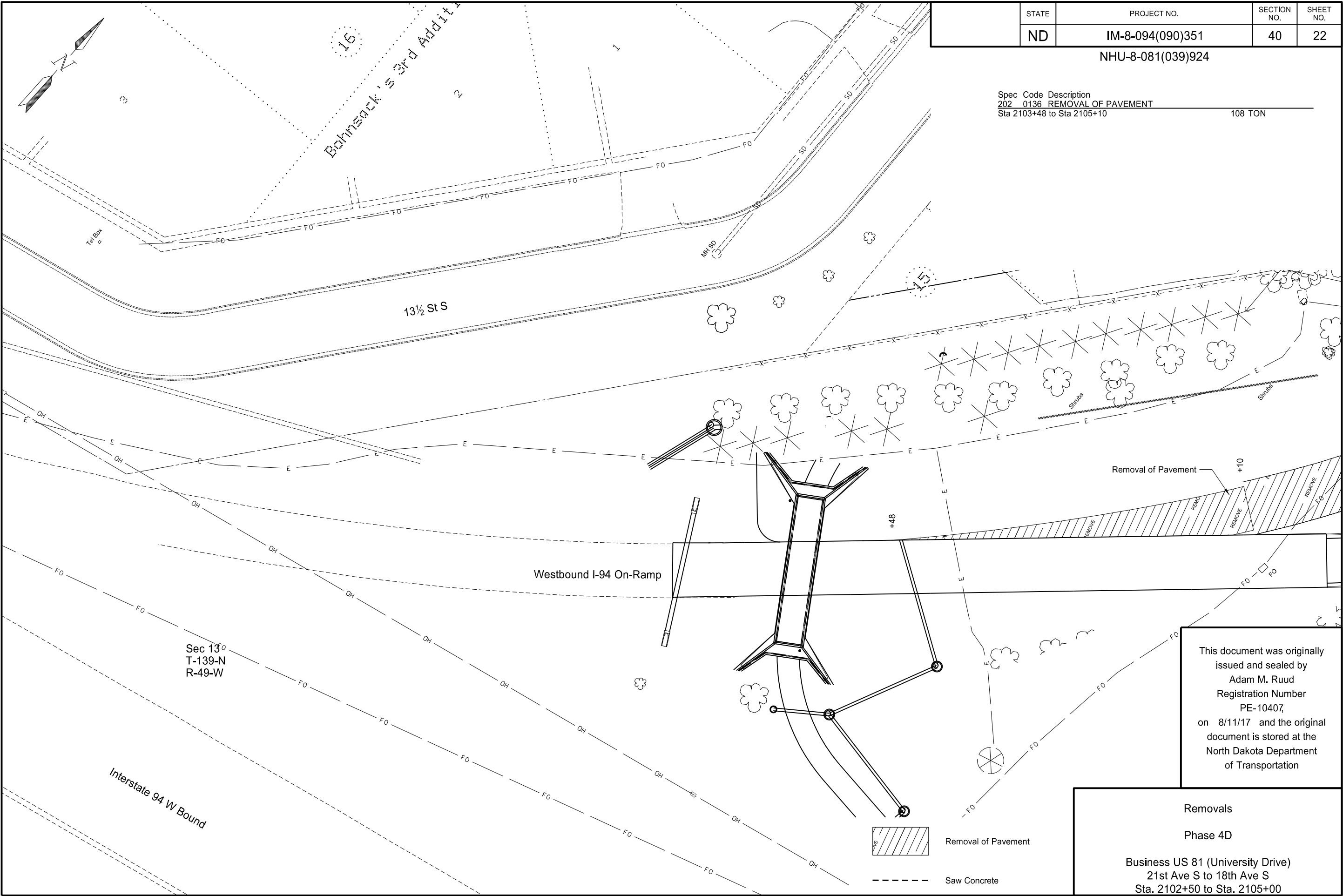
Phase 4B

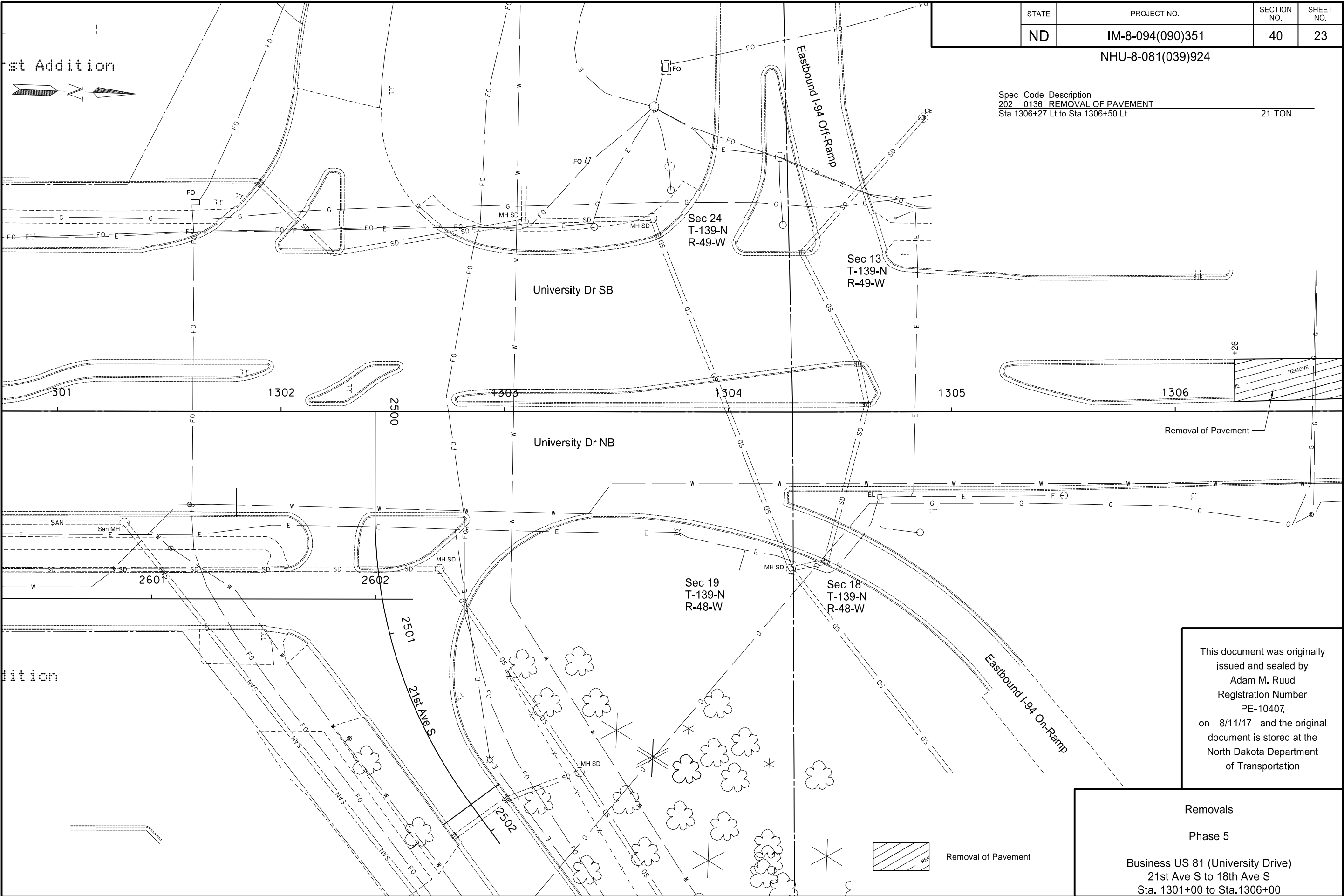
Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 2102+50 to Sta. 2105+00











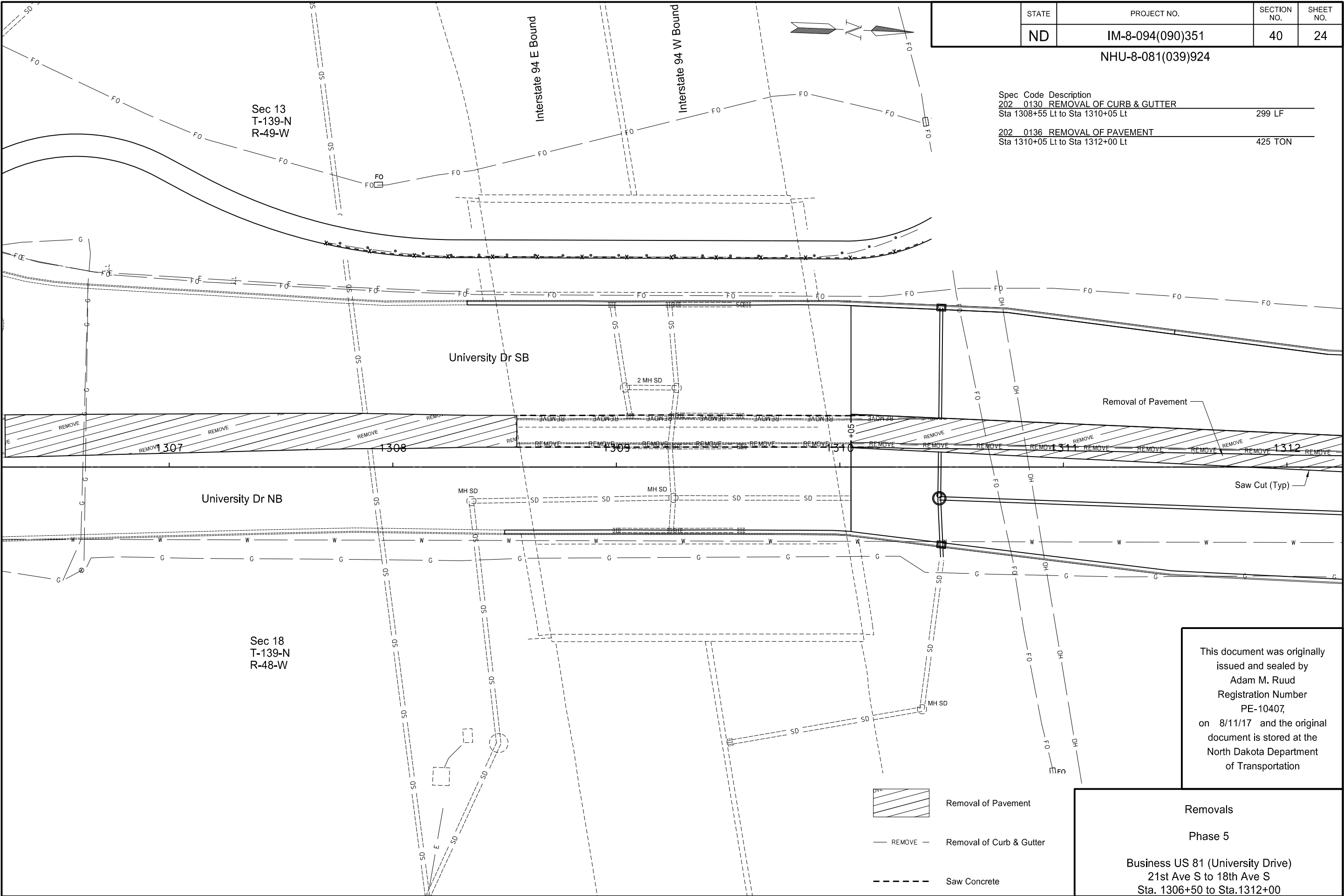
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	40	23

NHU-8-081(039)924

Spec Code Description
202 0136 REMOVAL OF PAVEMENT
Sta 1306+27 Lt to Sta 1306+50 Lt 21 TON

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Removals
Phase 5
Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 1301+00 to Sta.1306+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	40	24

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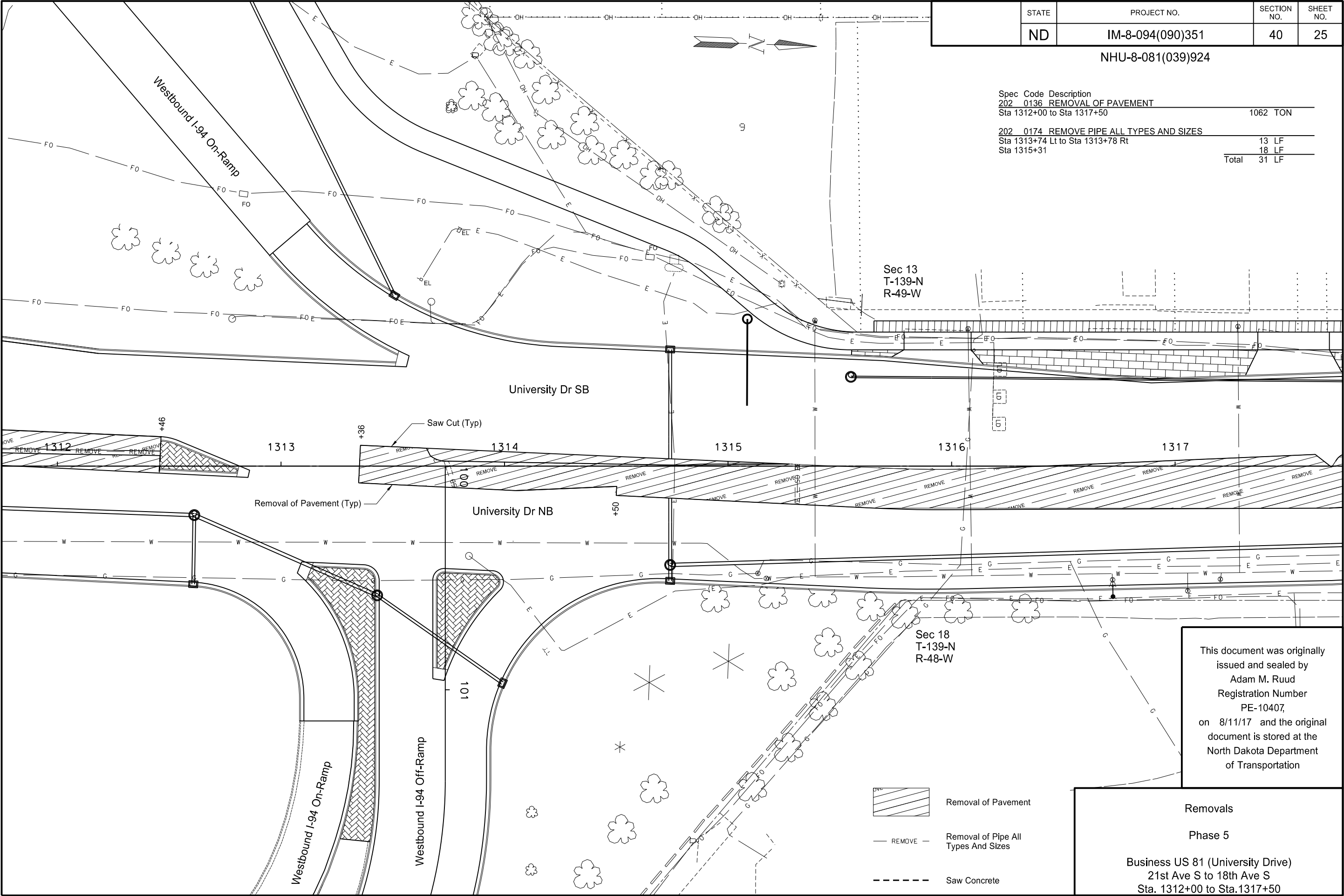
Spec Code	Description	
202 0130	REMOVAL OF CURB & GUTTER	
	Sta 1308+55 Lt to Sta 1310+05 Lt	299 LF
202 0136	REMOVAL OF PAVEMENT	
	Sta 1310+05 Lt to Sta 1312+00 Lt	425 TON

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Removals

Phase 5

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 1306+50 to Sta.1312+00



Spec Code	Description	
202 0136	REMOVAL OF PAVEMENT	
	Sta 1312+00 to Sta 1317+50	1062 TON
202 0174	REMOVE PIPE ALL TYPES AND SIZES	
	Sta 1313+74 Lt to Sta 1313+78 Rt	13 LF
	Sta 1315+31	18 LF
	Total	31 LF

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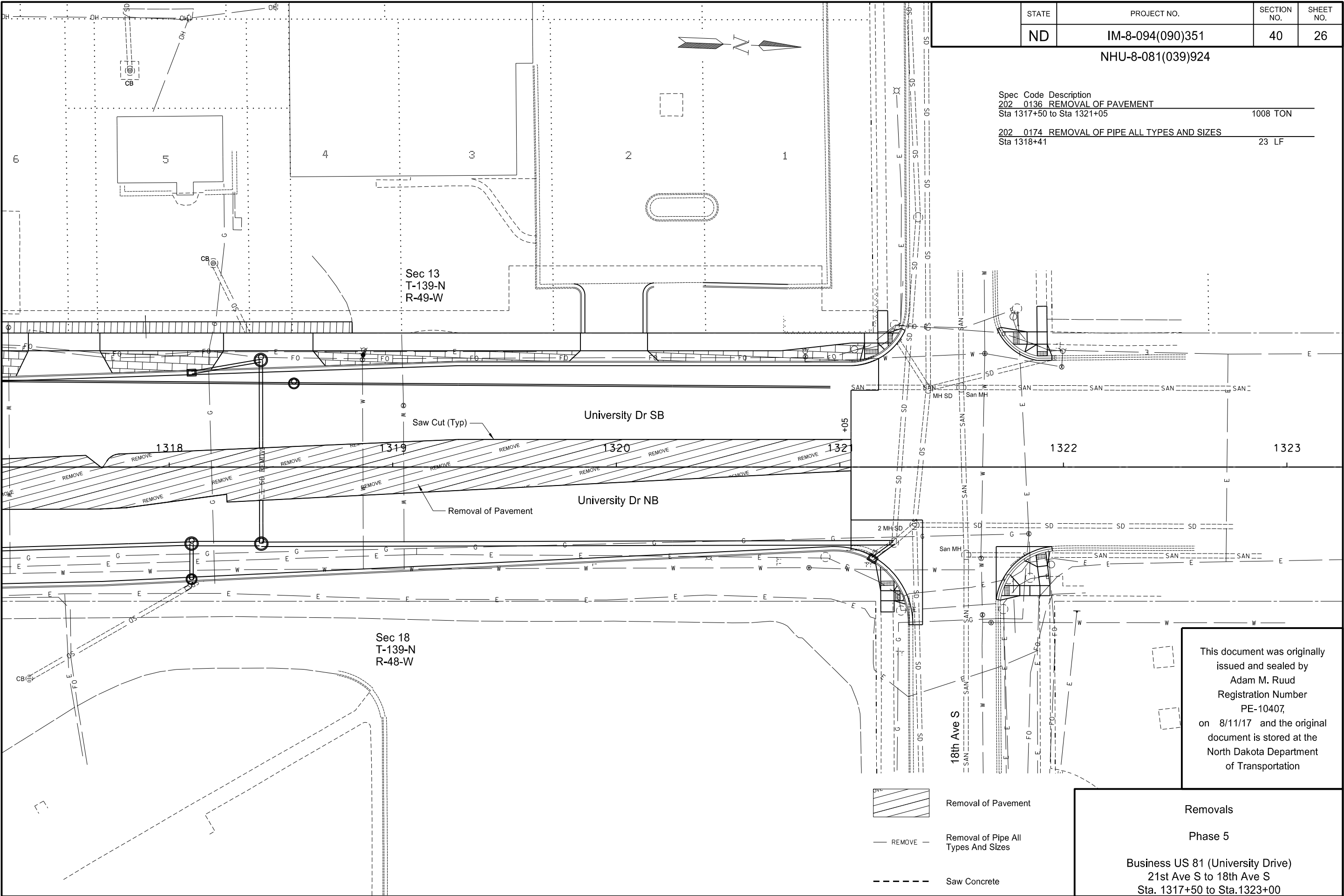
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Removals

Phase 5

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 1312+00 to Sta.1317+50



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	40	26

NHU-8-081(039)924

Spec Code	Description	
202 0136	REMOVAL OF PAVEMENT	
	Sta 1317+50 to Sta 1321+05	1008 TON
202 0174	REMOVAL OF PIPE ALL TYPES AND SIZES	
	Sta 1318+41	23 LF

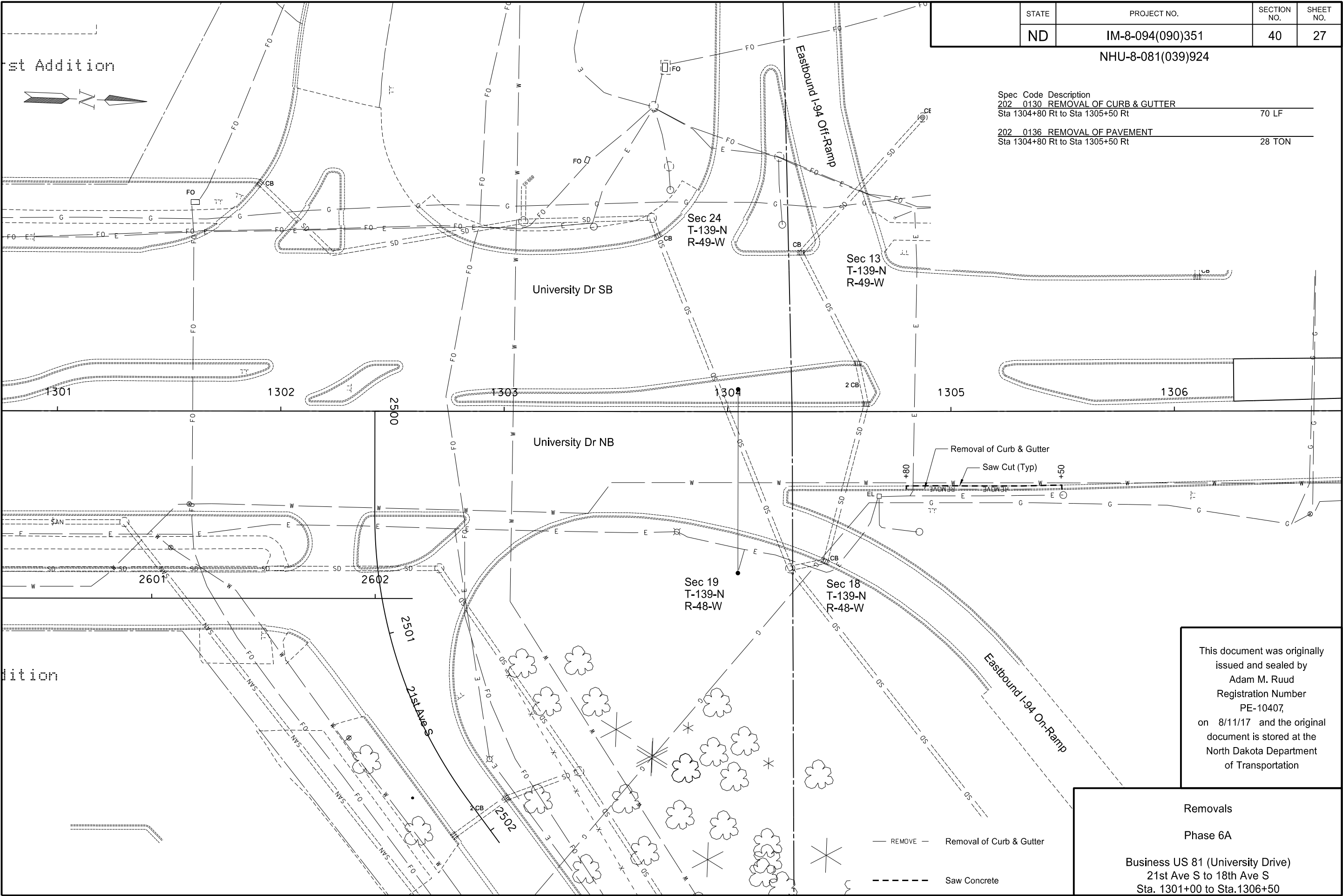
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- Removal of Pavement
- Removal of Pipe All Types And Sizes
- Saw Concrete

Removals

Phase 5

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 1317+50 to Sta.1323+00



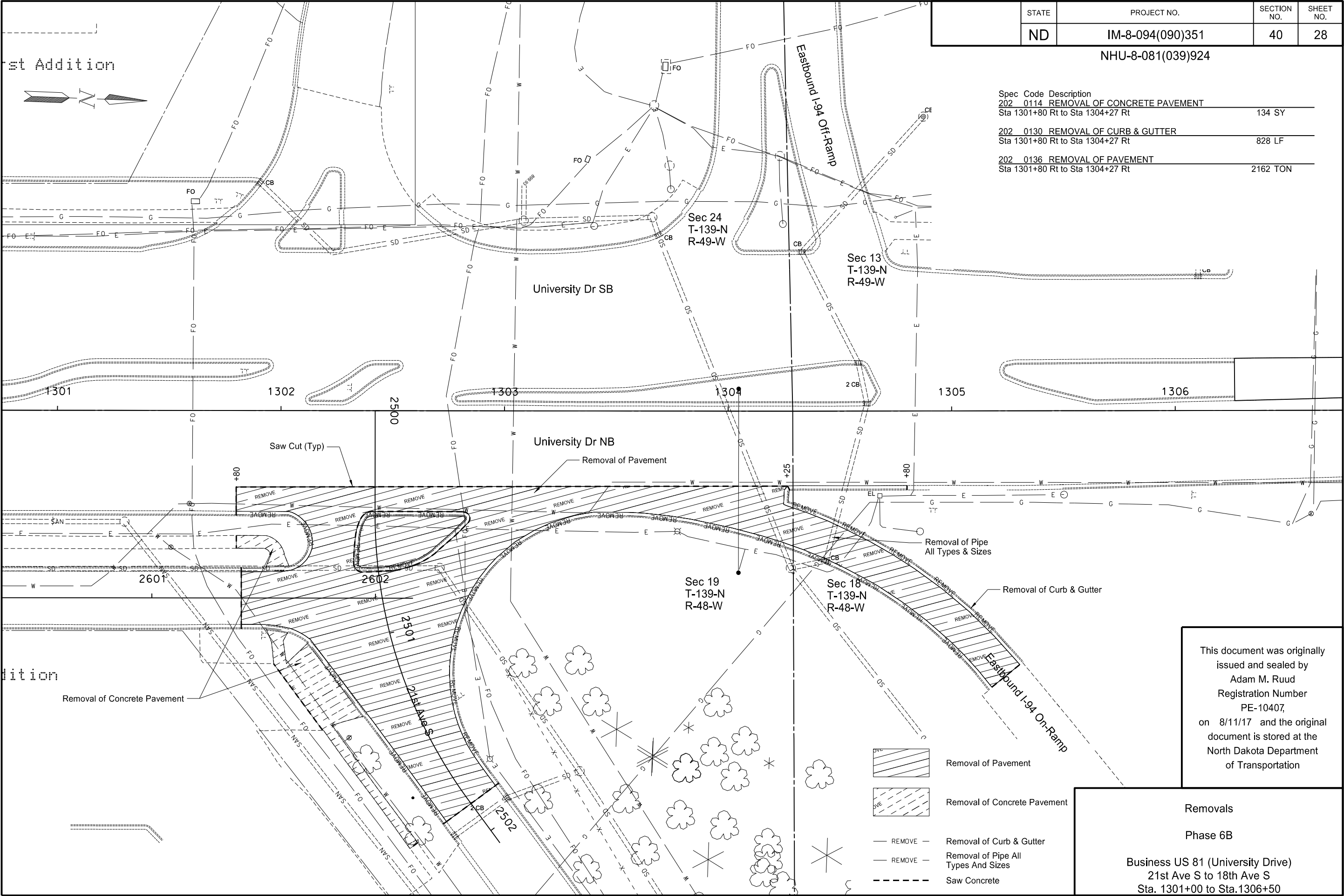
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	40	27

NHU-8-081(039)924

Spec Code	Description	
202 0130	REMOVAL OF CURB & GUTTER	
	Sta 1304+80 Rt to Sta 1305+50 Rt	70 LF
202 0136	REMOVAL OF PAVEMENT	
	Sta 1304+80 Rt to Sta 1305+50 Rt	28 TON

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Removals
Phase 6A
Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 1301+00 to Sta.1306+50



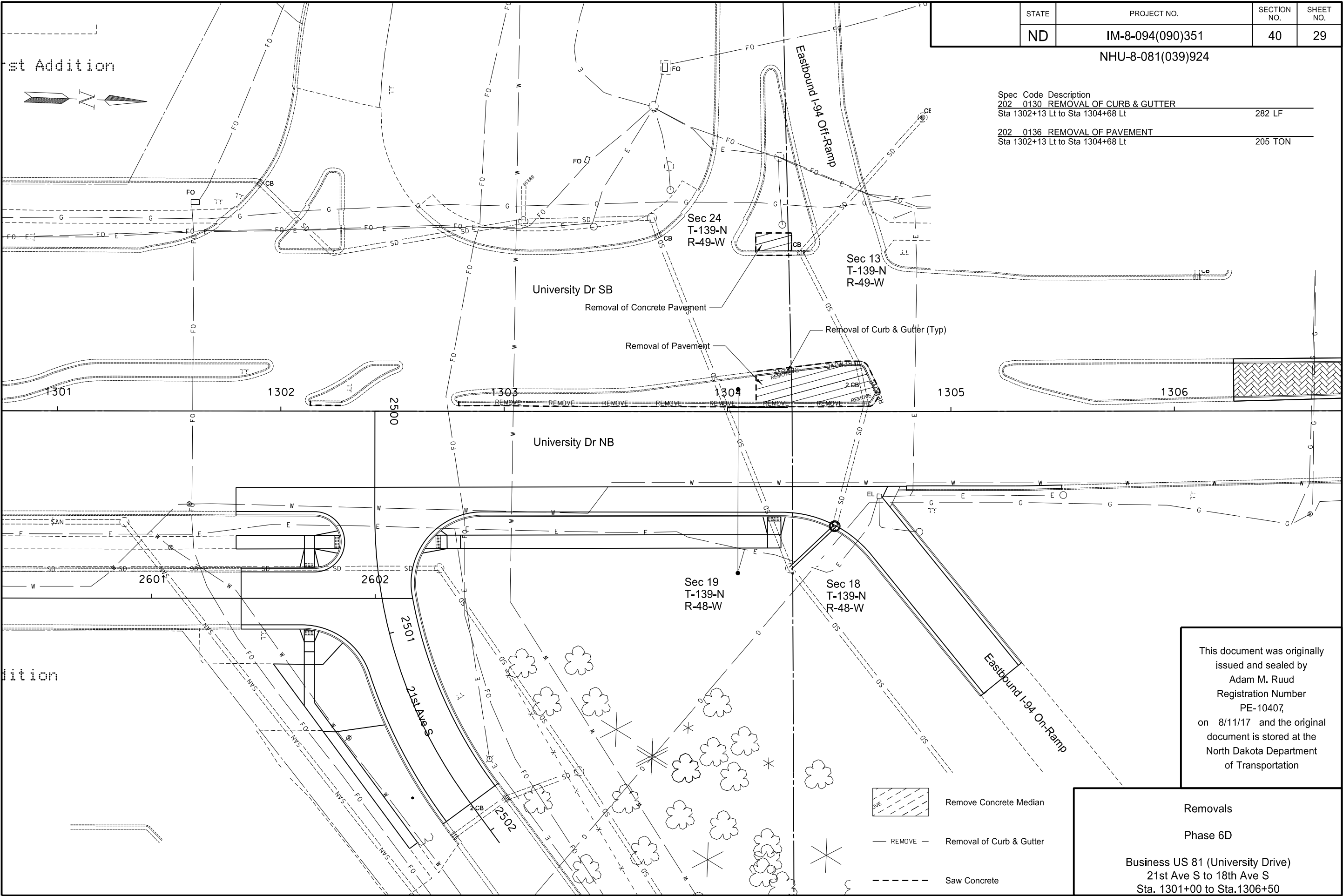
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	40	28

NHU-8-081(039)924

Spec Code	Description	
202 0114	REMOVAL OF CONCRETE PAVEMENT	
	Sta 1301+80 Rt to Sta 1304+27 Rt	134 SY
202 0130	REMOVAL OF CURB & GUTTER	
	Sta 1301+80 Rt to Sta 1304+27 Rt	828 LF
202 0136	REMOVAL OF PAVEMENT	
	Sta 1301+80 Rt to Sta 1304+27 Rt	2162 TON

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Removals
Phase 6B
Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 1301+00 to Sta.1306+50



Inlet and Manhole Summary					STATE	PROJECT NO.	SECTION NO.	SHEET NO.
					ND	IM-8-094(090)351	50	1
NHU-8-081(039)924								
Inlet No. 1A		Inlet No. 3A		Inlet No. 5B		Inlet No. 8A		
Type Special-Type 2 48IN		Type Type 2		Type Type 2		Type Type 2		
Grate Style V		Grate Style V		Grate Style V		Grate Style L		
Sta. 1304+47.87 - 51.29 Rt (SCL_Univ)		Sta. 1312+60.73 - 52.81 Rt (SCL_Univ)		Sta. 1314+74.08 - 51.32 Rt (SCL_Univ)		Sta. 1318+09.98 - 42.23 Lt (SCL_Univ)		
Grate Elev 902.02		Grate Elev 900.30		Grate Elev 904.12		Grate Elev 904.52		
Base Elev 886.27		Base Elev 895.63		Base Elev 899.88		Base Elev 899.85		
Invert Elev 886.87		Invert Elev 896.30		Invert Elev 900.55		Invert Elev 900.52		
Riser 14.65		H' Dist. 4.00		H' Dist. 3.57		H' Dist. 4.00		
18In Conduit S 886.87		15In Conduit W 896.30		15In Conduit W 900.55		15In Conduit N 900.52		
18In Conduit W 886.87								
Manhole No. 2-60IN		Inlet No. 4A		Manhole No. 6-60IN		Inlet No. 8B		
Sta. 1310+44.47 - 71.34 Lt (SCL_Univ)		Type Special-Type 2 48IN		Sta. 1318+09.98 - 44.71 Rt (SCL_Univ)		Type Type 2		
Top Elev 893.48		Grate Style V		Top Elev 904.25		Grate Style L		
Base Elev 887.93		Sta. 1313+43.02 - 57.79 Rt (SCL_Univ)		Base Elev 898.30		Sta. 1318+09.98 - 42.23 Lt (SCL_Univ)		
Invert Elev 888.60		Grate Elev 902.56		Invert Elev 898.97		Grate Elev 904.28		
Riser 3.63		Base Elev 897.78		Riser 4.61		Base Elev 899.61		
15In Conduit W 888.85		Invert Elev 898.28		18In Conduit E 899.93		Invert Elev 900.28		
15In Conduit E 888.76		H' Dist. 4.28		18In Conduit S 899.07		H' Dist. 4.00		
18In Conduit N 888.80		15In Conduit N 898.38		24In Conduit N 898.97		15In Conduit N 900.28		
18In Conduit S 888.60		18In Conduit S 898.28						
Inlet No. 2A		Inlet No. 4B		Inlet No. 6A		Inlet No. 9A		
Type Type 2		Type Type 2		Type Special-Type 2 48IN		Type Inlet-9IN Beehive		
Grate Style V		Grate Style L		Grate Style L		Grate Style See Note 1		
Sta. 1310+45.51 - 71.34 Lt (SCL_Univ)		Sta. 1313+99.07 - 97.05 Rt (SCL_Univ)		Sta. 1318+09.98 Rt (SCL_Univ)		Sta. 2006+30.00 - 15.00 Lt (Pr_Path)		
Grate Elev 893.36		Grate Elev 902.86		Grate Elev 904.10		Grate Elev 894.16		
Base Elev 888.69		Base Elev 898.19		Base Elev 899.53		Base Elev 889.49		
Invert Elev 889.36		Invert Elev 898.86		Invert Elev 900.03		Invert Elev 890.16		
H' Dist. 4		H' Dist. 4.00		H' Dist. 4.07		H' Dist. 4.00		
15In Conduit E 889.36		15In Conduit S 898.86		15In Conduit W 900.03		15In Conduit E 890.16		
				12In Conduit E 900.03				
Inlet No. 2B		Manhole No. 5-48IN		Manhole No. 7-60IN		Inlet No. 9B		
Type Type 2 w/20 LF of 15" Slotted Drain		Sta. 1314+74.08 - 44.18 Rt (SCL_Univ)		Sta. 1318+35.94 - 38.13 Rt (SCL_Univ)		Type Inlet-9IN Beehive		
Grate Style V		Top Elev 904.48		Top Elev 904.54		Grate Style See Note 1		
Sta. 1310+45.41 - 34.71 Rt(SCL_Univ)		Base Elev 899.92		Base Elev 898.08		Sta. 2005+62.50 - 15.00 Lt (Pr_Path)		
Grate Elev 893.08		Invert Elev 900.42		Invert Elev 898.75		Grate Elev 896.89		
Base Elev 888.23		Riser 3.56		Riser 5.79		Base Elev 892.22		
Invert Elev 888.90		15In Conduit E 900.52		24In Conduit S 898.85		Invert Elev 892.89		
H' Dist. 4.18		18In Conduit N 900.42		24In Conduit N 898.75		H' Dist. 4.00		
15In Conduit W 888.90		15In Conduit W 900.52		18In Conduit W 899.70		15In Conduit N 892.89		
15In Conduit E 889.00								
Manhole No. 3-48IN		Inlet No. 5A		Manhole No. 8-60IN		Inlet No. 10A		
Sta. 1312+61.21 - 21.90 Rt (SCL_Univ)		Type Type 2		Sta. 1318+40.97 - 47.91 Lt (SCL_Univ)		Type Special-48IN		
Top Elev 901.03		Grate Style V		Top Elev 904.87		Grate Style See Note 1		
Base Elev 895.24		Sta. 1314+74.08 - 52.21 Lt (SCL_Univ)		Base Elev 898.20		Sta. 2006+20.00 - 8.00 Rt (Pr_Path)		
Invert Elev 895.74		Grate Elev 904.29		Invert Elev 898.87		Grate Elev 893.62		
Riser 4.79		Base Elev 900.23		Riser 6.00		Base Elev 889.12		
15In Conduit E 896.15		Invert Elev 900.90		18In Conduit E 900.19		Invert Elev 889.62		
18In Conduit N 896.10		H' Dist. 3.39		12In Conduit W 901.54		H' Dist. 4.00		
18In Conduit S 895.74		15In Conduit E 900.90		15In Conduit S 900.39		15In Conduit W 889.73		
						15In Conduit N 889.63		
						15In Conduit S 889.73		
						Inlet & Manhole Summary		
						Business US 81 (University Drive) 21st Ave S to 18th Ave S		
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Inlet and Manhole Summary

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	50	2

NHU-8-081(039)924

Inlet No.	10B
Type	Special-48IN
Grate Style	See Note 1
Sta.	2005+62.50 - 8.00 Rt (Pr_Path)
Grate Elev	896.33
Base Elev	891.66
Invert Elev	892.33
H' Dist.	4.00
15In Conduit W	892.33
15In Conduit S	892.43

Inlet No.	12C
Type	Type 2
Grate Style	L
Sta.	2105+95.00 - 4.90 Lt (Pr_WBEnt)
Grate Elev	901.89
Base Elev	893.03
Invert Elev	893.70
H' Dist.	8.19
15In Conduit W	893.70

Manhole No.	Ex MH 2
Sta.	1321+24.22 - 25.90 Rt (SCL_Univ)
Top Elev	904.90
Base Elev	878.80
Invert Elev	879.30
Riser	25.10
24In Conduit S	897.90
12In Conduit E	879.30
30In Conduit W	896.80
12In Conduit NW	896.80

Inlet No.	11A
Type	Special-48IN
Grate Style	See Note 1
Sta.	2006+24.59 - 60.73 Rt (Pr_Path)
Grate Elev	902.31
Base Elev	888.77
Invert Elev	889.27
H' Dist.	13.04
15In Conduit W	889.27
15In Conduit S	889.37

Inlet No.	13A
Type	Special-48IN
Grate Style	See Note 1
Sta.	2103+20.87 - 59.50 Lt (Pr_WBEnt)
Grate Elev	893.58
Base Elev	887.69
Invert Elev	888.19
H' Dist.	5.39
30In Conduit W	888.19
15In Conduit E	888.54

Inlet No.	12A
Type	Special-48IN
Grate Style	See Note 1
Sta.	2103+41.14 - 47.45 Lt (Pr_WBEnt)
Grate Elev	893.03
Base Elev	888.16
Invert Elev	888.66
H' Dist.	4.37
15In Conduit W	888.66
15In Conduit E	888.76
15In Conduit N	888.76

Inlet No.	13B
Type	Inlet-9IN Beehive
Grate Style	See Note 1
Sta.	2103+72.40 - 88.27 Lt (Pr_WBEnt)
Grate Elev	895.40
Base Elev	890.90
Invert Elev	891.40
H' Dist.	4.00
15In Conduit S	891.40

Inlet No.	12B
Type	Special-48IN
Grate Style	See Note 1
Sta.	2103+85.59 - 66.60 Lt (Pr_WBEnt)
Grate Elev	895.35
Base Elev	888.79
Invert Elev	889.29
H' Dist.	6.06
15In Conduit W	891.24
15In Conduit E	891.35

Manhole No.	Ex MH
Sta.	1304+28.13 - 70.09 Rt (SCL_Univ)
Top Elev	902.54
Base Elev	896.14
Invert Elev	896.64
Riser	5.40
30In Conduit E	896.64
24In Conduit W	896.64
18In Conduit N	896.80

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Inlet & Manhole Summary

Business US 81 (University Drive)
21st Ave S to 18th Ave S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	50	3

NHU-8-081(039)924

HYDRAULIC DATA FOR IM-8-094(090)351 & NHU-8-081(039)924 (A)									
STATION	EXISTING PIPE	PROPOSED PIPE SIZE	DRAINAGE AREA (ACRES)	25-YEAR DATA				100-YEAR DATA	
				DESIGN DISCHARGE (CFS)	DESIGN HEADWATER (FT)	DESIGN VELOCITY (FPS)	DESIGN STAGE (NAVD 88)	100-YEAR DISCHARGE (CFS)	100-YEAR STAGE (NAVD 88)
2102+54	24" RCP	24"	1.33	4.46	1.10	7.75	903.09	5.72	903.25

- (A) Hydraulic data provided is for smooth-walled type conduits
(B) Culvert diameter given at this location is the NDDOT Policy minimum diameter and exceeds hydraulic requirements.

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Culvert Hydraulic Data

Business US 81 (University Drive)
21st Ave S to 18th Ave S

NHU-8-081(039)924

Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	R1 Fabric (Pay Item)	(*) End Sections		Applicable Backfill
													Begin	End	
				In	Bid Item	LF		In	Type		In	SY	EA	EA	
Ex STS		1A		18	Pipe Conduit - Storm Drain	27	Reinforced Concrete Pipe - Class III (barrel length = 27 LF)	18							Standard D-714-27
							Spiral Rib Steel Pipe	18	Z	3/4, 1	0.168				
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.138				
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064				
2		2A		15	Pipe Conduit - Storm Drain	85	Reinforced Concrete Pipe - Class III (barrel length = 85 LF)	15							Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1	0.168				
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.138				
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064				
2		2B		15	Pipe Conduit - Storm Drain	21	Reinforced Concrete Pipe - Class III (barrel length = 21 LF)	15							Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1	0.168				
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.138				
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064				
2B		Ex Inlet		15	Pipe Conduit - Storm Drain	6	Reinforced Concrete Pipe - Class III (barrel length = 6 LF)	15							Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1	0.168				
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.138				
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064				
2		3		18	Pipe Conduit - Storm Drain	217	Reinforced Concrete Pipe - Class III (barrel length = 217 LF)	18							Standard D-714-27
							Spiral Rib Steel Pipe	18	Z	3/4, 1	0.168				
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.138				
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064				
3		3A		15	Pipe Conduit - Storm Drain	31	Reinforced Concrete Pipe - Class III (barrel length = 31 LF)	15							Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1	0.168				
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.138				
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064				
3		4A		18	Pipe Conduit - Storm Drain	89	Reinforced Concrete Pipe - Class III (barrel length = 89 LF)	18							Standard D-714-27
							Spiral Rib Steel Pipe	18	Z	3/4, 1	0.168				
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.138				
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064				
4A		4B		15	Pipe Conduit - Storm Drain	68	Reinforced Concrete Pipe - Class III (barrel length = 68 LF)	15							Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1	0.168				
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.138				
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064				
5		5A		15	Pipe Conduit - Storm Drain	96	Reinforced Concrete Pipe - Class III (barrel length = 96 LF)	15							Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1	0.168				
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.138				
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064				
5		5B		15	Pipe Conduit - Storm Drain	7	Reinforced Concrete Pipe - Class III (barrel length = 7 LF)	15							Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1	0.168				
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.138				
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064				
5		6		18	Pipe Conduit - Storm Drain	336	Reinforced Concrete Pipe - Class III (barrel length = 336 LF)	18							Standard D-714-27
							Spiral Rib Steel Pipe	18	Z	3/4, 1	0.168				
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.138				
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064				

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

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

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

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

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Allowable Pipe List

Business US 81 (University Drive)
21st Ave S to 18th Ave S

NHU-8-081(039)924

Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)		Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	R1 Fabric (Pay Item)	(*) End Sections		Applicable Backfill
												Begin	End	
				In	Bid Item	LF	In	Type		In	SY	EA	EA	
6		6A		18	Pipe Conduit - Storm Drain	16	Reinforced Concrete Pipe - Class III (barrel length = 16 LF)	18						Standard D-714-27
							Spiral Rib Steel Pipe	18	Z	3/4, 1				
							Spiral Rib Steel Pipe	18	A	3/4, 1				
							Spiral Rib Steel Pipe	18	P	3/4, 1				
6		7		24	Pipe Conduit - Storm Drain	30	Reinforced Concrete Pipe - Class III (barrel length = 30 LF)	24						Standard D-714-27
							Spiral Rib Steel Pipe	24	Z	3/4, 1				
							Spiral Rib Steel Pipe	24	A	3/4, 1				
							Spiral Rib Steel Pipe	24	P	3/4, 1				
7		8		18	Pipe Conduit - Storm Drain	82	Reinforced Concrete Pipe - Class III (barrel length = 82 LF)	18						Standard D-714-27
							Spiral Rib Steel Pipe	18	Z	3/4, 1				
							Spiral Rib Steel Pipe	18	A	3/4, 1				
							Spiral Rib Steel Pipe	18	P	3/4, 1				
8		8A		15	Pipe Conduit - Storm Drain	31	Reinforced Concrete Pipe - Class III (barrel length = 31 LF)	15						Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1				
							Spiral Rib Steel Pipe	15	A	3/4, 1				
							Spiral Rib Steel Pipe	15	P	3/4, 1				
7		Ex MH 2		24	Pipe Conduit - Storm Drain	283	Reinforced Concrete Pipe - Class III (barrel length = 283 LF)	24						Standard D-714-27
							Spiral Rib Steel Pipe	24	Z	3/4, 1				
							Spiral Rib Steel Pipe	24	A	3/4, 1				
							Spiral Rib Steel Pipe	24	P	3/4, 1				
8B		Ex MH 2		12	Pipe Conduit - Storm Drain	12	Reinforced Concrete Pipe - Class III (barrel length = 12 LF)	12						Standard D-714-27
							Spiral Rib Steel Pipe	12	Z	3/4, 1				
							Spiral Rib Steel Pipe	12	A	3/4, 1				
							Spiral Rib Steel Pipe	12	P	3/4, 1				
2102+48	34' Rt	2102+60	20' Lt	24	Pipe Conduit	56	Reinforced Concrete Pipe - Class III (barrel length = 54 LF)	24				TES (6:1)	TES (6:1)	Standard D-714-25
LS 1		13A		30	Pipe Conduit - Storm Drain	52	Reinforced Concrete Pipe - Class III (barrel length = 52 LF)	30						Standard D-714-27
							Spiral Rib Steel Pipe	30	Z	3/4, 1				
							Spiral Rib Steel Pipe	30	A	3/4, 1				
							Spiral Rib Steel Pipe	30	P	3/4, 1				
13A		12A		15	Pipe Conduit - Storm Drain	24	Reinforced Concrete Pipe - Class III (barrel length = 24 LF)	15						Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1				
							Spiral Rib Steel Pipe	15	A	3/4, 1				
							Spiral Rib Steel Pipe	15	P	3/4, 1				
12A		12B		15	Pipe Conduit - Storm Drain	48	Reinforced Concrete Pipe - Class III (barrel length = 48 LF)	15						Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1				
							Spiral Rib Steel Pipe	15	A	3/4, 1				
							Spiral Rib Steel Pipe	15	P	3/4, 1				
12B		13B		15	Pipe Conduit - Storm Drain	25	Reinforced Concrete Pipe - Class III (barrel length = 25 LF)	15						Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1				
							Spiral Rib Steel Pipe	15	A	3/4, 1				
							Spiral Rib Steel Pipe	15	P	3/4, 1				
12B		12C		15	Pipe Conduit - Storm Drain	214	Reinforced Concrete Pipe - Class III (barrel length = 214 LF)	15						Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1				
							Spiral Rib Steel Pipe	15	A	3/4, 1				
							Spiral Rib Steel Pipe	15	P	3/4, 1				

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

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

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

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

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Allowable Pipe List

Business US 81 (University Drive)
21st Ave S to 18th Ave S

NHU-8-081(039)924

Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	R1 Fabric (Pay Item)	(*) End Sections		Applicable Backfill
				In	Bid Item	LF							Begin	End	
				In	Bid Item	LF		In	Type		In	SY	EA	EA	
9B		10B		15	Pipe Conduit - Storm Drain	23	Reinforced Concrete Pipe - Class III (barrel length = 23 LF)	15							Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1	0.168				
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.138				
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064				
10B		10A		15	Pipe Conduit - Storm Drain	55	Reinforced Concrete Pipe - Class III (barrel length = 55 LF)	15							Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1	0.168				
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.138				
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064				
9A		10A		15	Pipe Conduit - Storm Drain	25	Reinforced Concrete Pipe - Class III (barrel length = 25 LF)	15							Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1	0.168				
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.138				
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064				
10A		11A		15	Pipe Conduit - Storm Drain	53	Reinforced Concrete Pipe - Class III (barrel length = 53 LF)	15							Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1	0.168				
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.138				
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064				
11A		12A		15	Pipe Conduit - Storm Drain	102	Reinforced Concrete Pipe - Class III (barrel length = 102 LF)	15							Standard D-714-27
							Spiral Rib Steel Pipe	15	Z	3/4, 1	0.168				
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.138				
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064				

Coatings: Z = Zinc

A = Aluminum

P = Polymeric (over Zinc or Aluminum)

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

3 = 3"x1"

5 = 5"x1"

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

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

(*) The price bid for "Pipe Conduit" bid items includes end sections. Pipe Extensions shall pay for end sections separately.

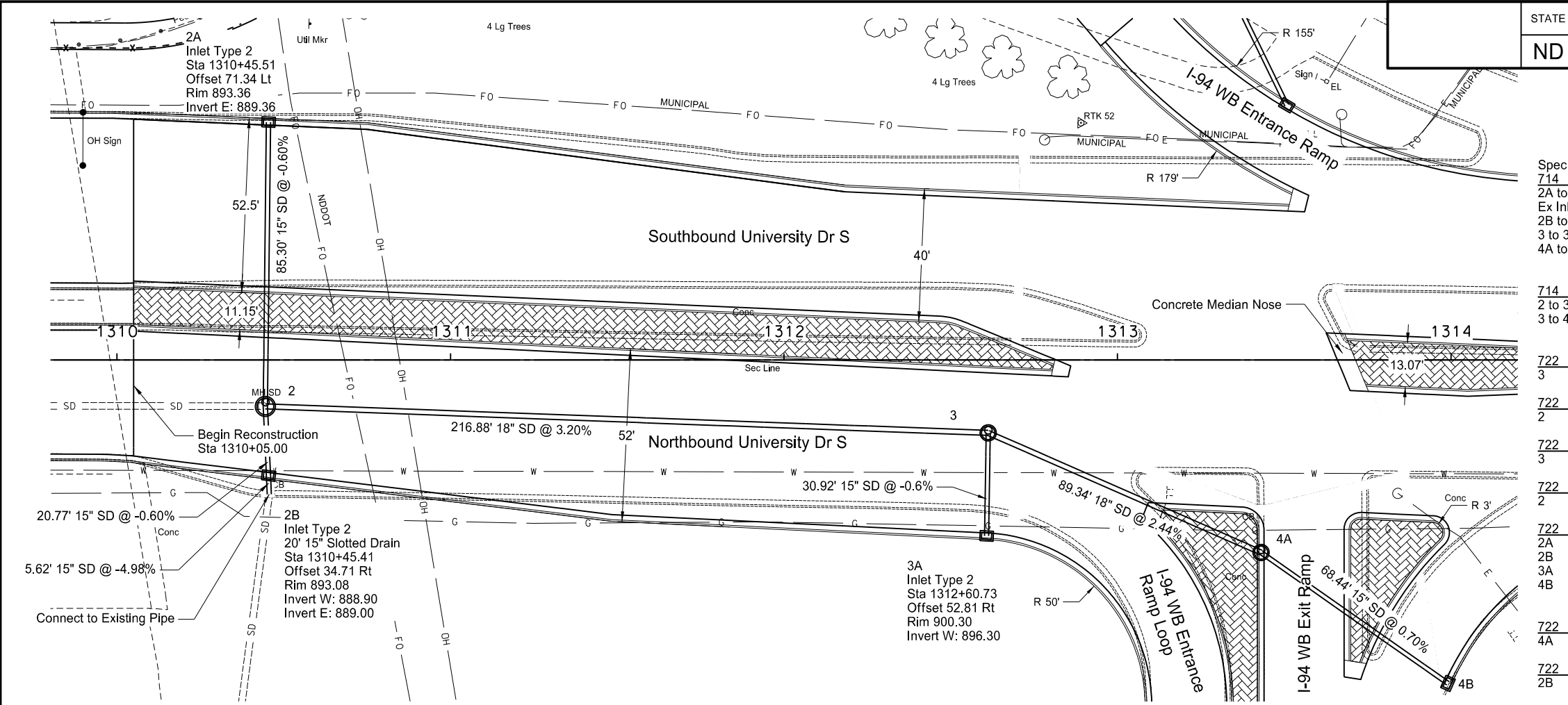
FES = Flared End Section

TES = Traversable End Section

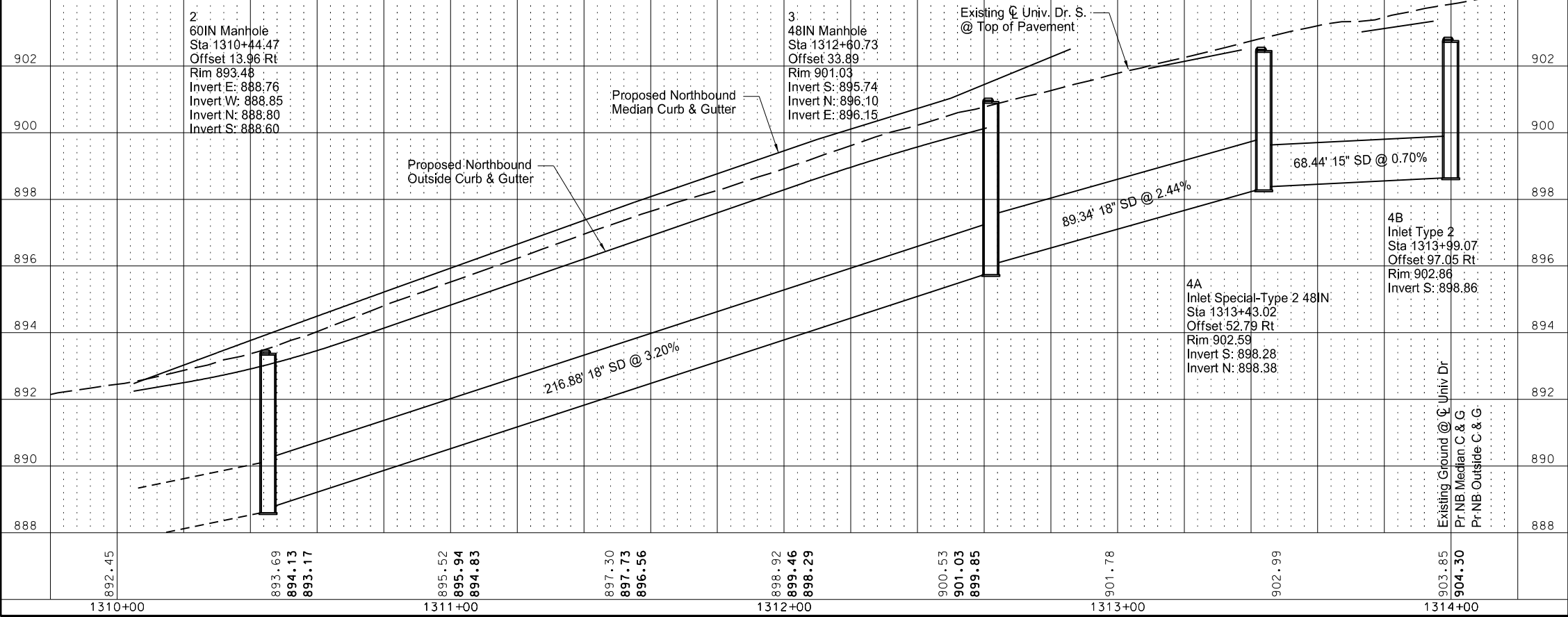
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Allowable Pipe List

Business US 81 (University Drive)
21st Ave S to 18th Ave S



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	55	2
NHU-8-081(039)924			
Spec	Code	Description	
714	4097	PIPE CONDUIT 15IN-STORM DRAIN	
2A to 2			85 LF
Ex Inlet to 2B			6 LF
2B to 2			21 LF
3 to 3A			31 LF
4A to 4B			68 LF
Total			211 LF
714	4101	PIPE CONDUIT 18IN-STORM DRAIN	
2 to 3			217 LF
3 to 4A			89 LF
Total			306 LF
722	0100	MANHOLE 48IN	
3			1 EA
722	0110	MANHOLE 60IN	
2			1 EA
722	1100	MANHOLE RISER 48IN	
3			4.79 LF
722	1110	MANHOLE RISER 60IN	
2			3.63 LF
722	3510	INLET -TYPE 2	
2A			1 EA
2B			1 EA
3A			1 EA
4B			1 EA
Total			4 EA
722	3701	INLET SPECIAL- TYPE 2 48IN	
4A			1 EA
722	3910	INLET SLOTTED DRAIN 15IN	
2B			20 LF

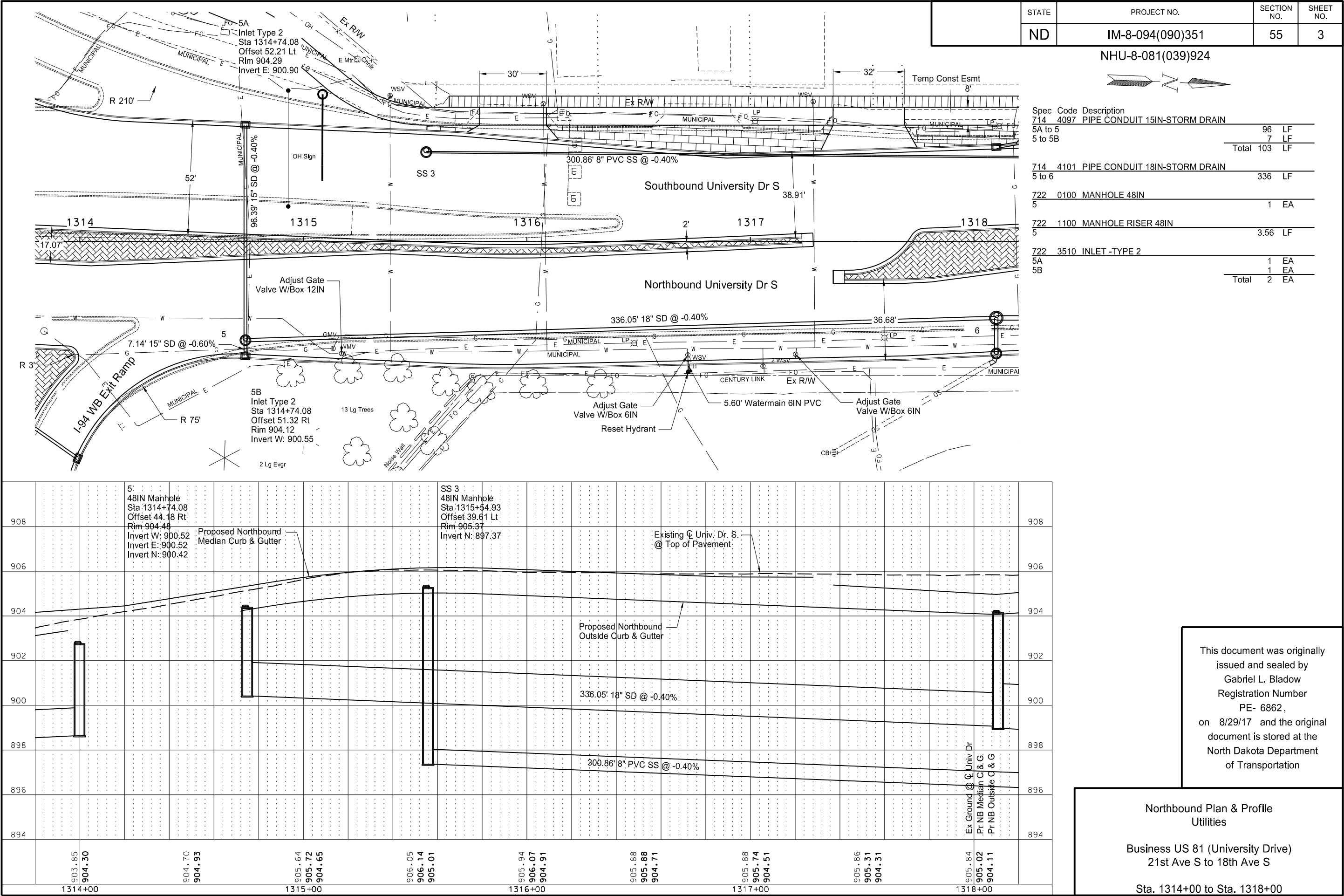


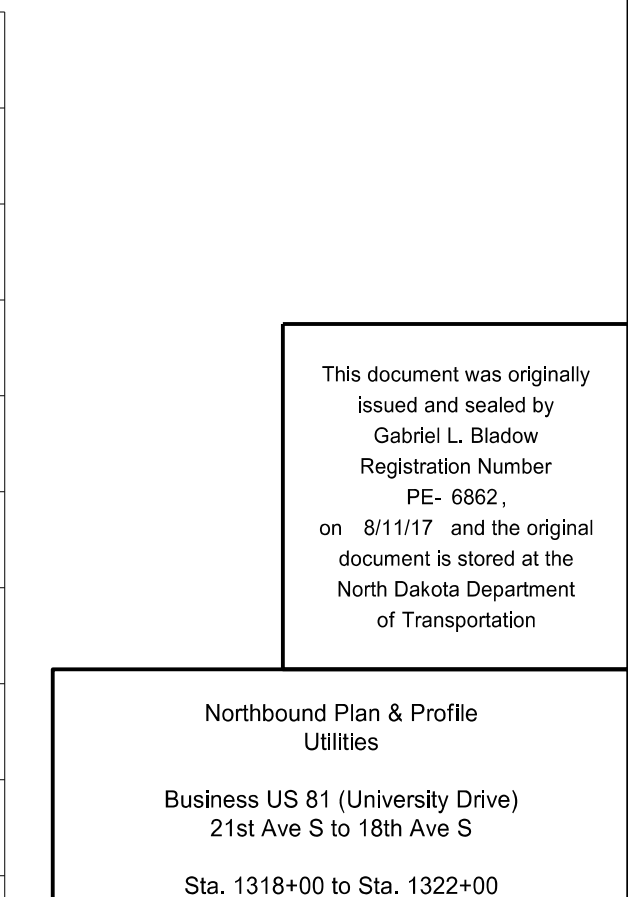
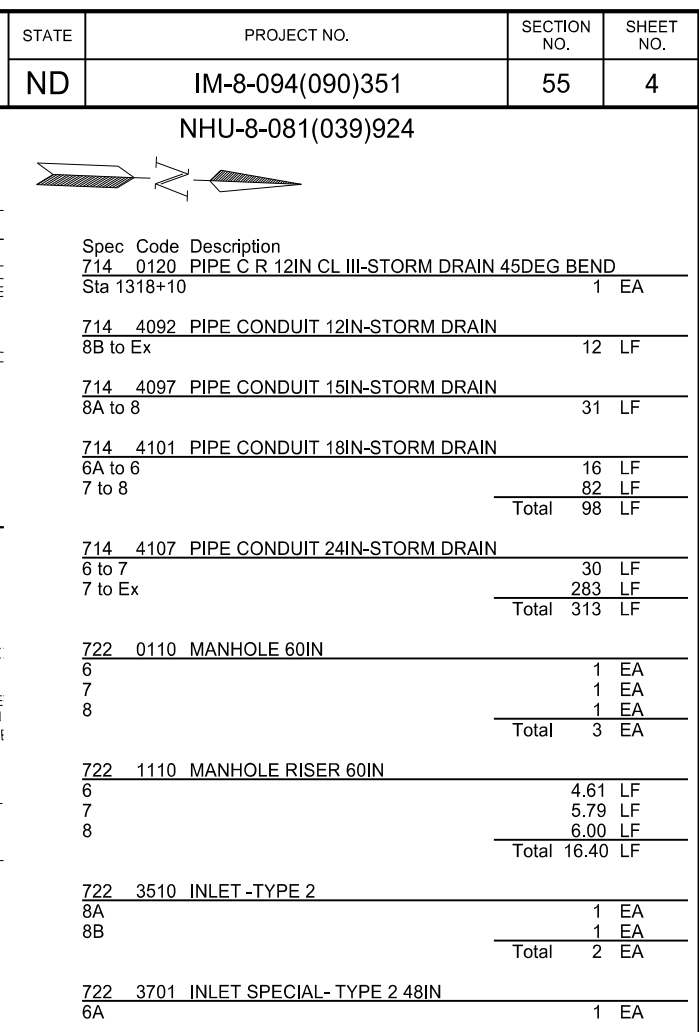
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Northbound Plan & Profile
Utilities

Business US 81 (University Drive)
21st Ave S to 18th Ave S

Sta. 1310+00 to Sta. 1314+00





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Northbound Plan & Profile
Utilities

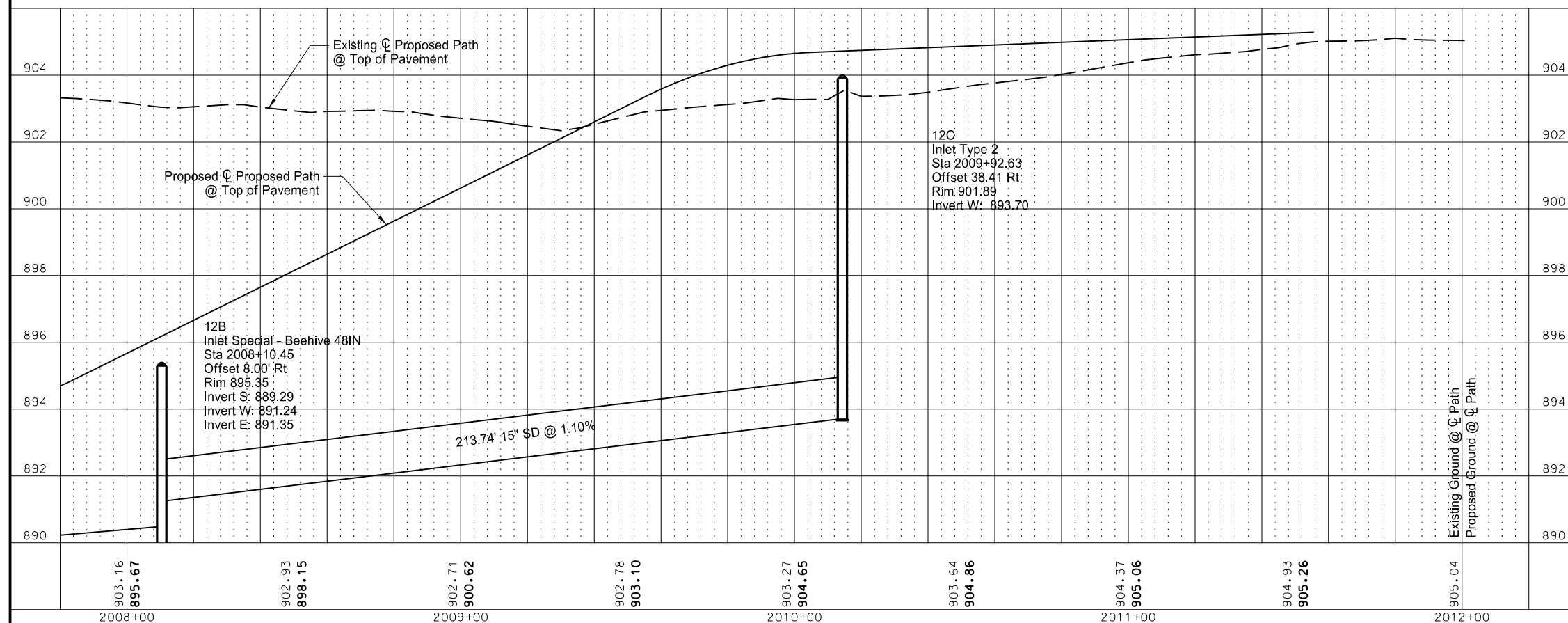
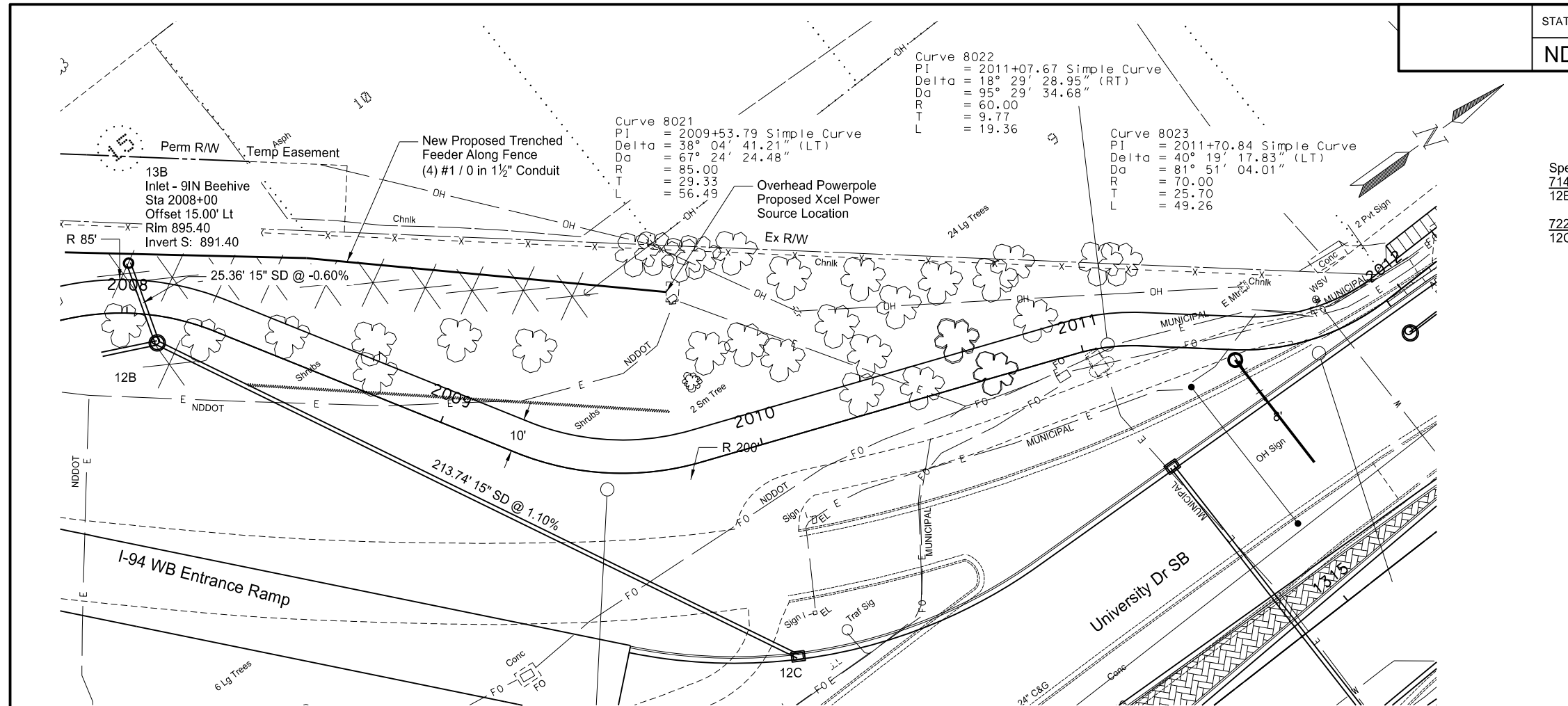
Business US 81 (University Drive)
21st Ave S to 18th Ave S

Sta. 1318+00 to Sta. 1322+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	55	6

NHU-8-081(039)924

Spec	Code	Description		
714	0210	PIPE CONDUIT 15IN-STORM DRAIN		
12B	to 12C		214	LF
722	3510	INLET -TYPE 2		
12C			1	EA

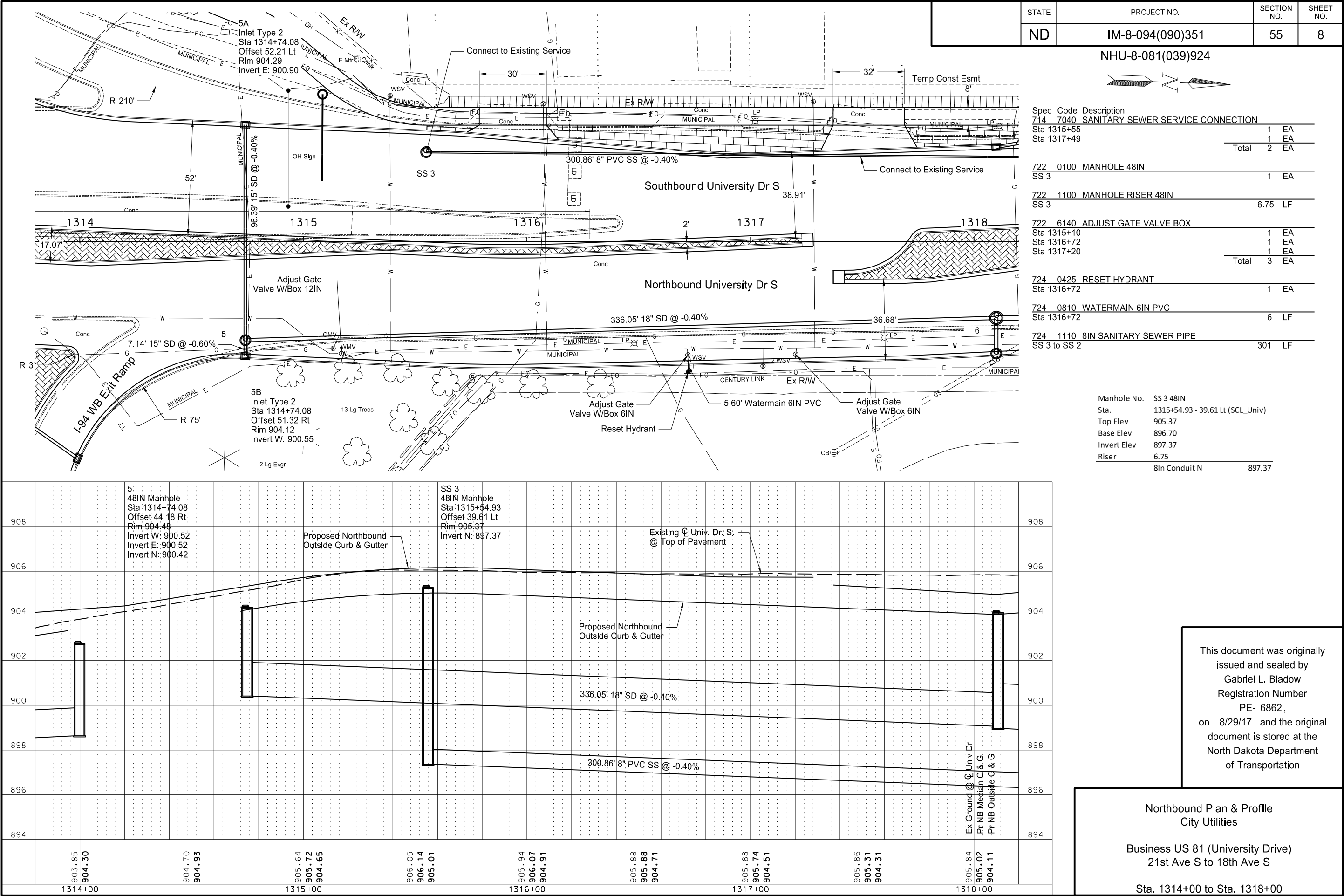


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Pedestrian Path Plan & Profile
Utilities

Business US 81 (University Drive)
21st Ave S to 18th Ave S

Sta 2008+00 to Sta 2012+00



5' 48IN Manhole
Sta 1314+74.08
Offset 44.18 Rt
Rim 904.48
Invert W: 900.52
Invert E: 900.52
Invert N: 900.42

SS 3
48IN Manhole
Sta 1315+54.93
Offset 39.61 Lt
Rim 905.37
Invert N: 897.37

Existing Univ. Dr. S
@ Top of Pavement

Proposed Northbound
Outside Curb & Gutter

336.05' 18" SD @ -0.40%

300.86' 8" PVC SS @ -0.40%

Ex Ground @ Univ Dr
Pr NB Median C & G
Pr NB Outside C & G

908

906

904

902

900

898

896

894

903.85
904.30

904.70
904.93

905.64
905.72
904.65

906.05
906.14
905.01

905.94
906.07
904.91

905.88
905.88
904.71

905.88
905.74
904.51

905.86
905.31
904.31

905.84
905.02
904.11

1314+00

1315+00

1316+00

1317+00

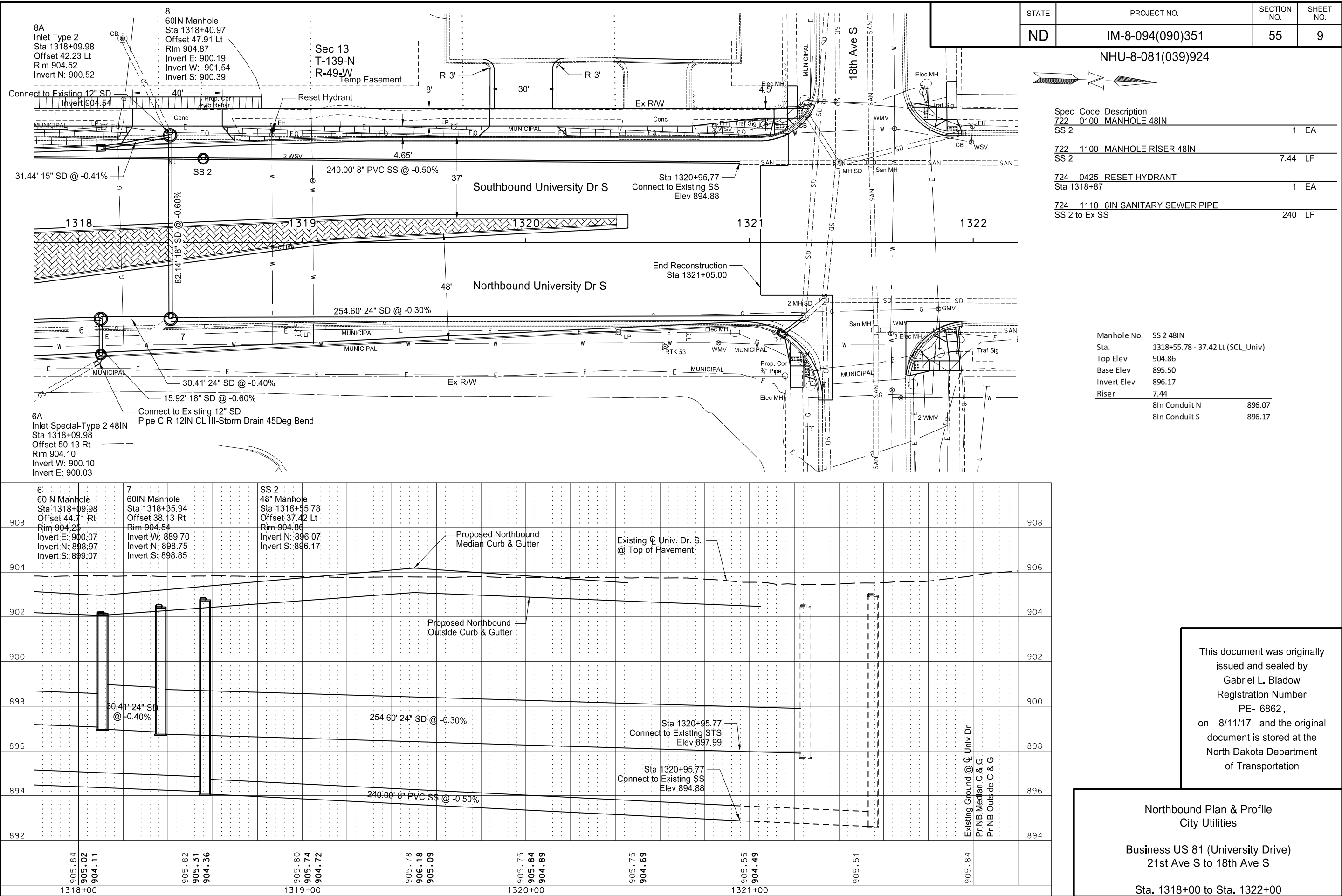
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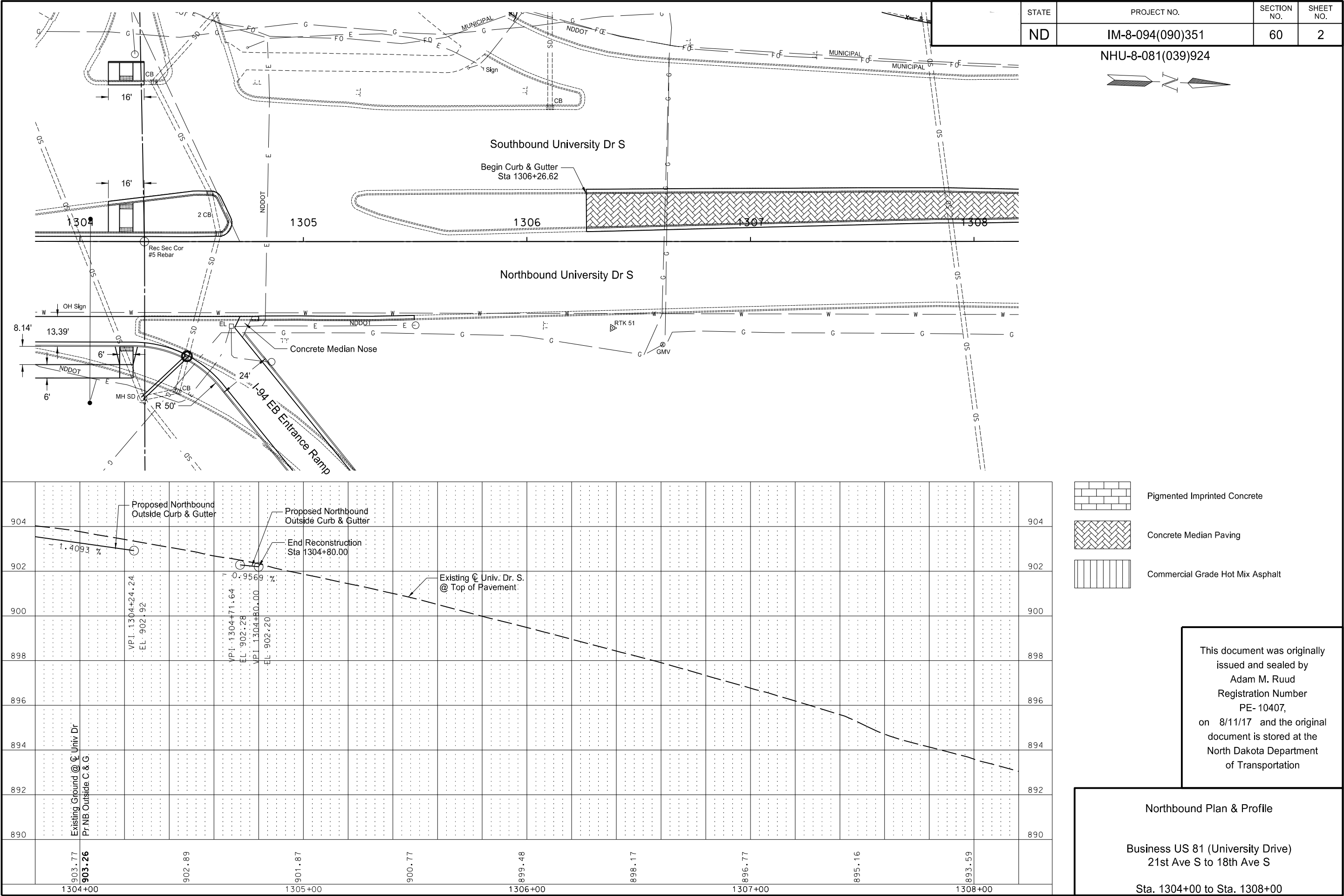
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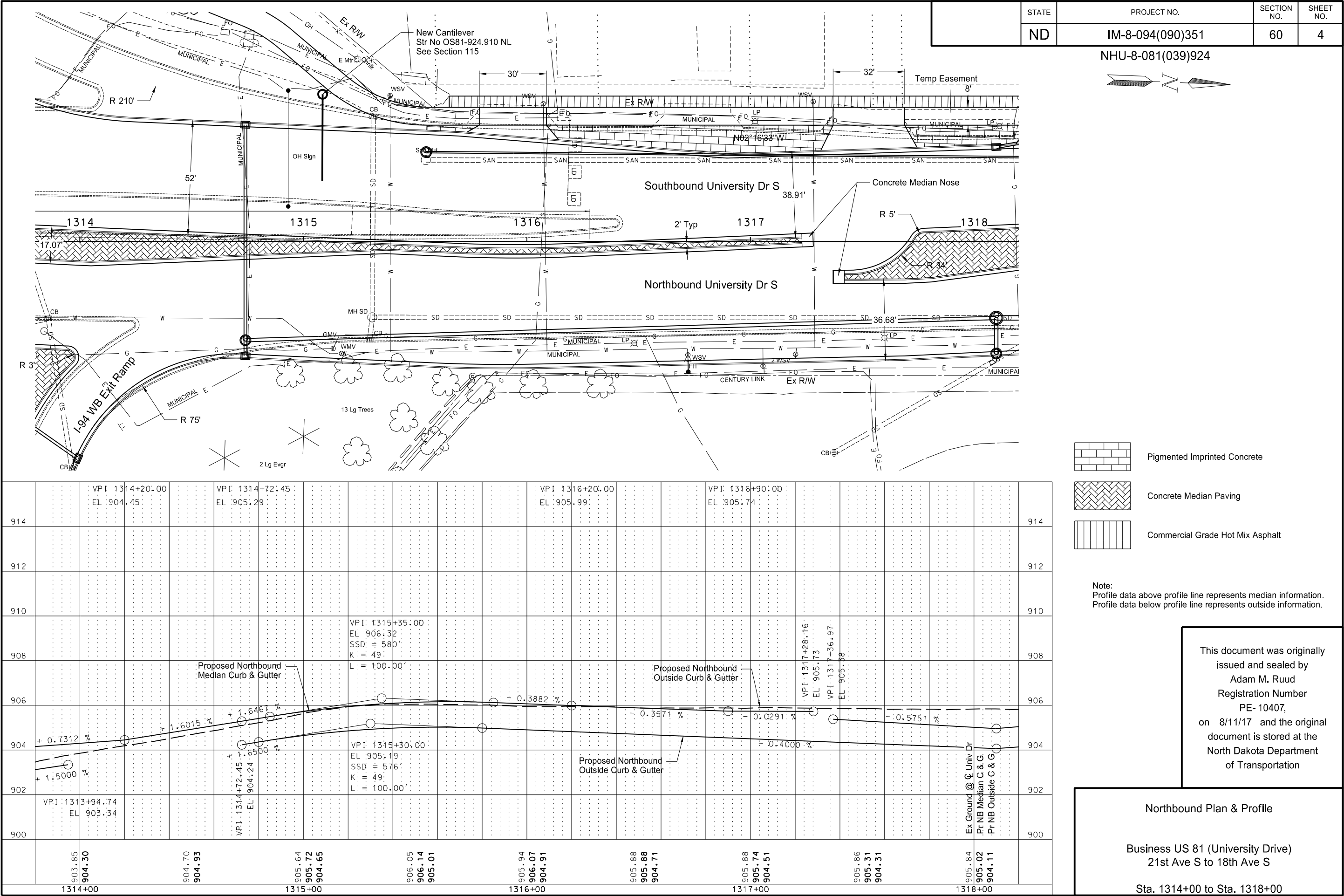
Northbound Plan & Profile City Utilities

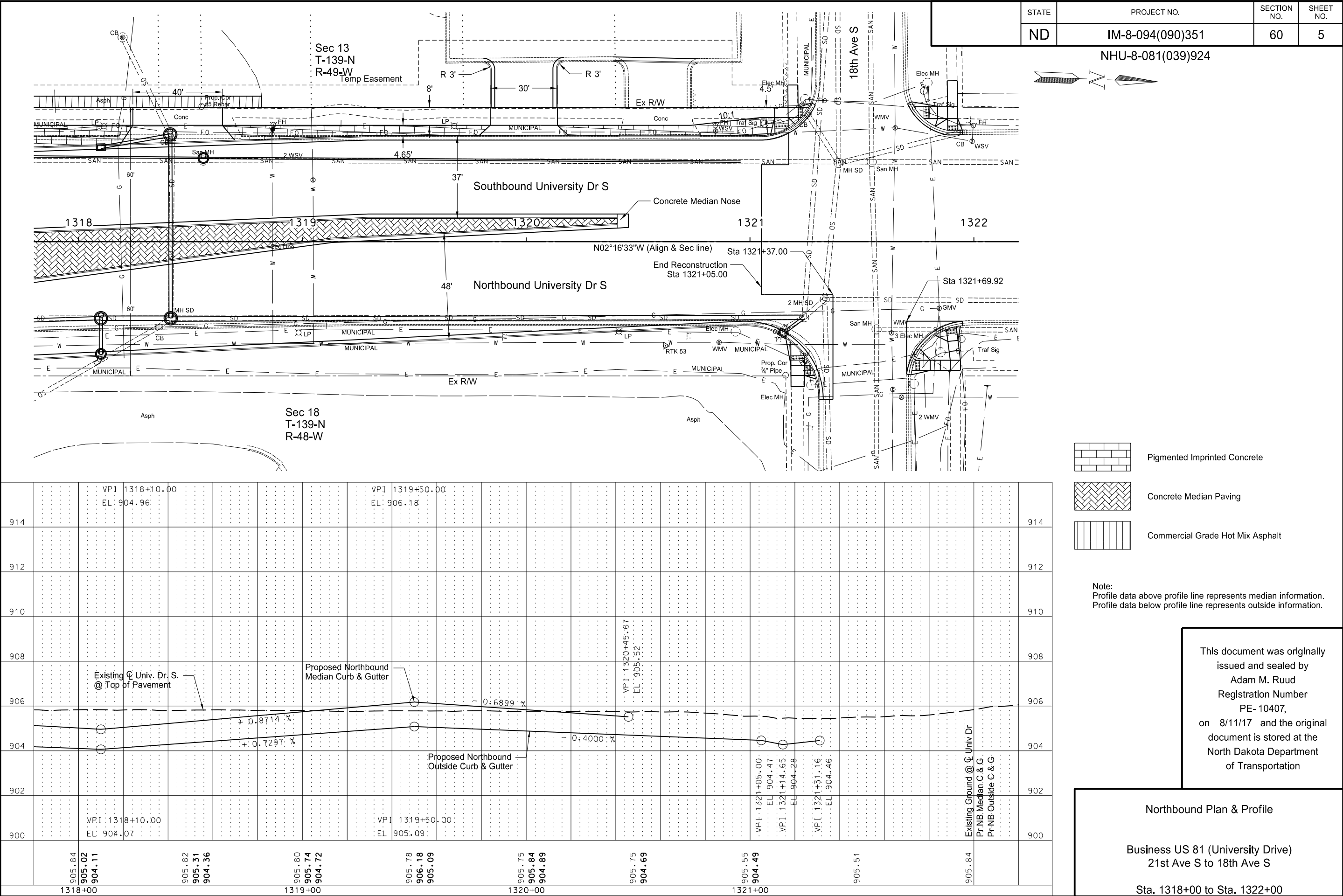
Business US 81 (University Drive) 21st Ave S to 18th Ave S

Sta. 1314+00 to Sta. 1318+00



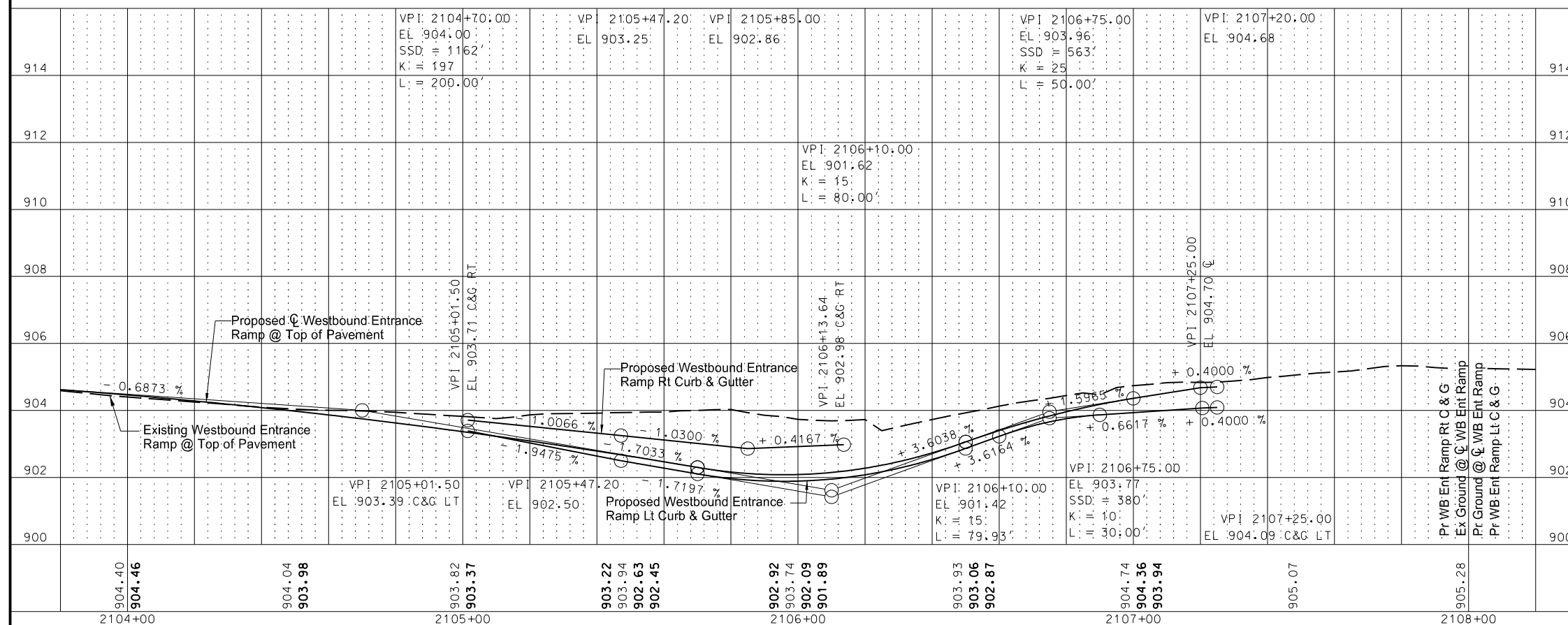
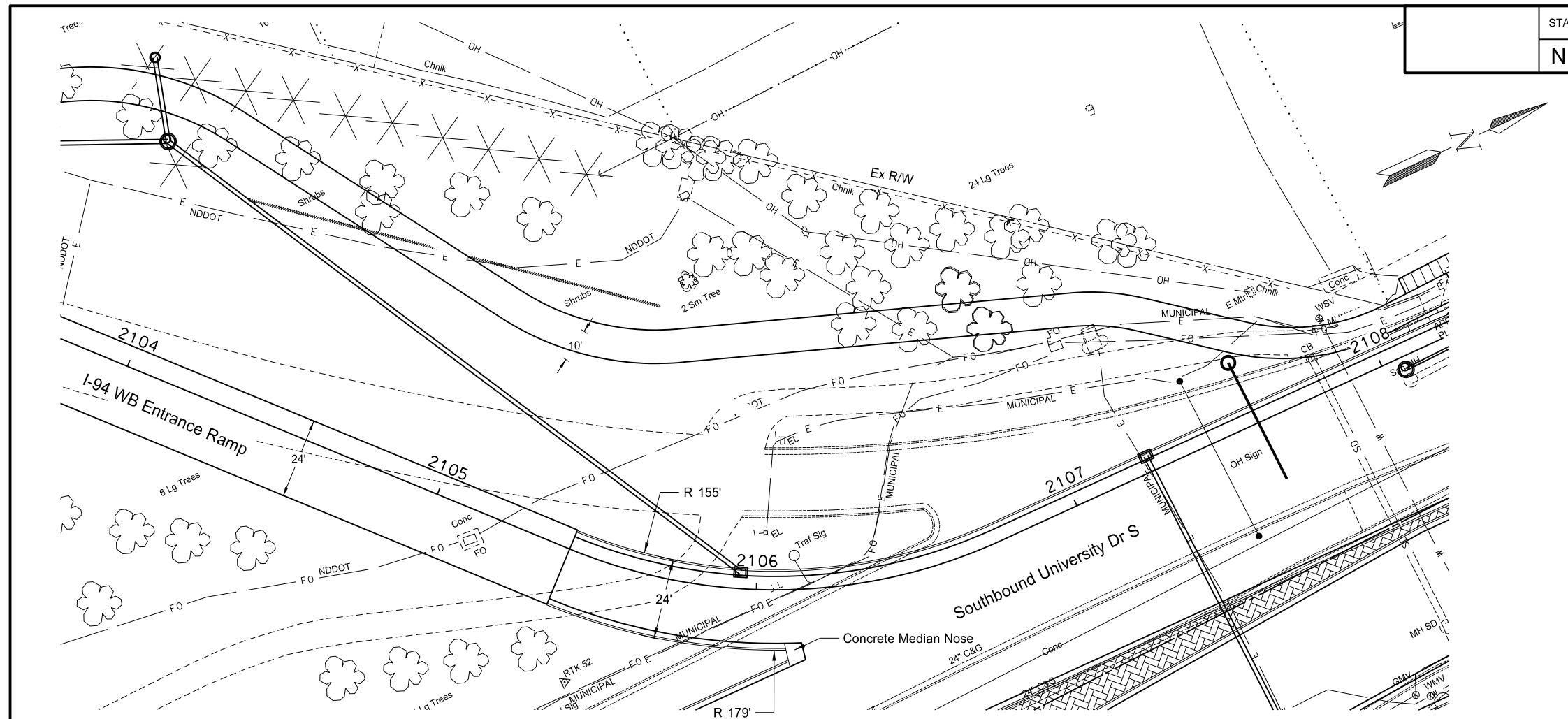






100	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	60	10

NHU-8-081(039)924



	Pigmented Imprinted Concrete
	Concrete Median Paving
	Commercial Grade Hot Mix Asphalt

Note:
Profile data above profile line represents Rt Curb & Gutter.
Profile data below profile line represents Lt Curb & Gutter.

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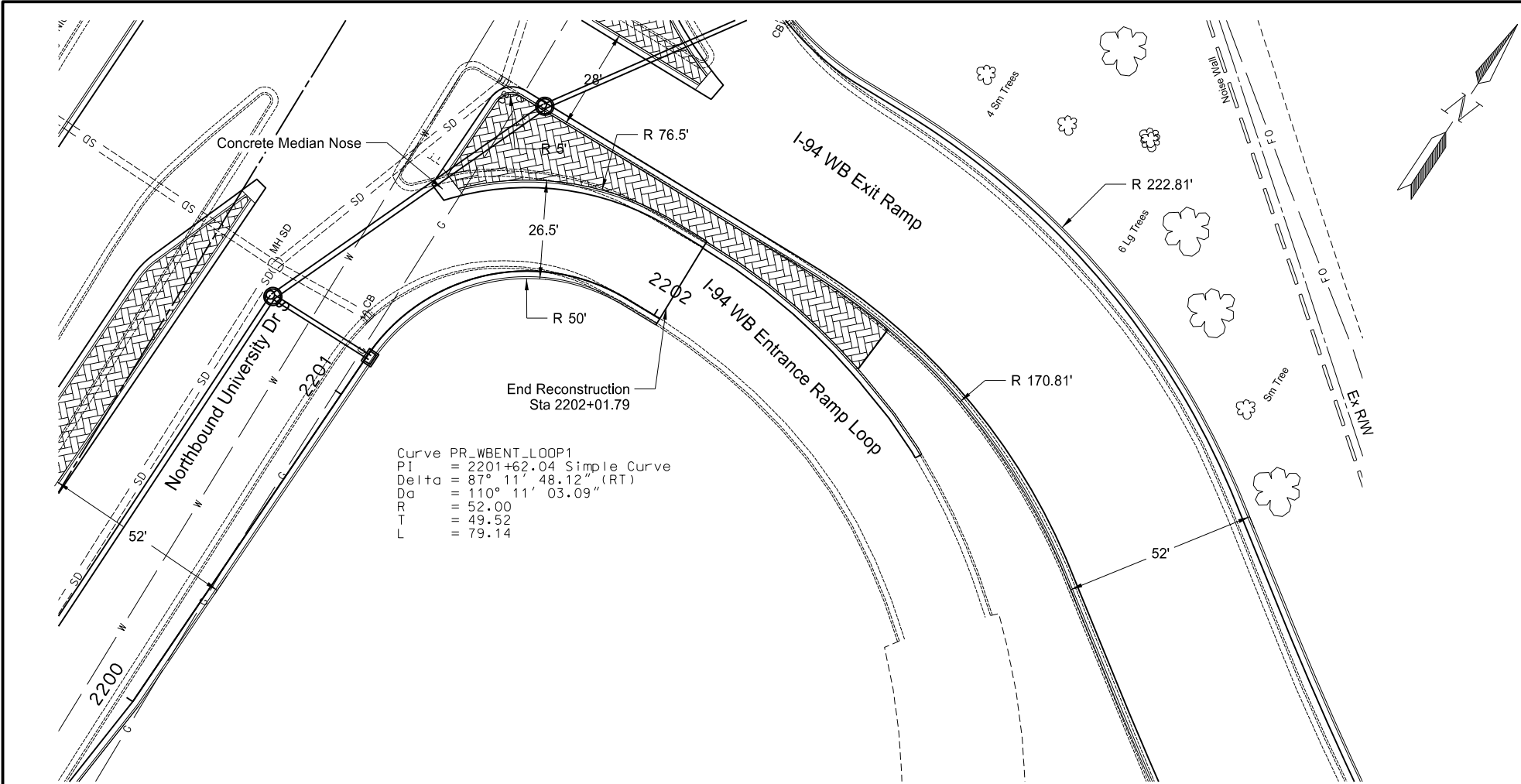
WB Entrance Ramp Plan & Profile

Business US 81 (University Drive)
21st Ave S to 18th Ave S

Sta. 2104+00 to Sta. 2108+00

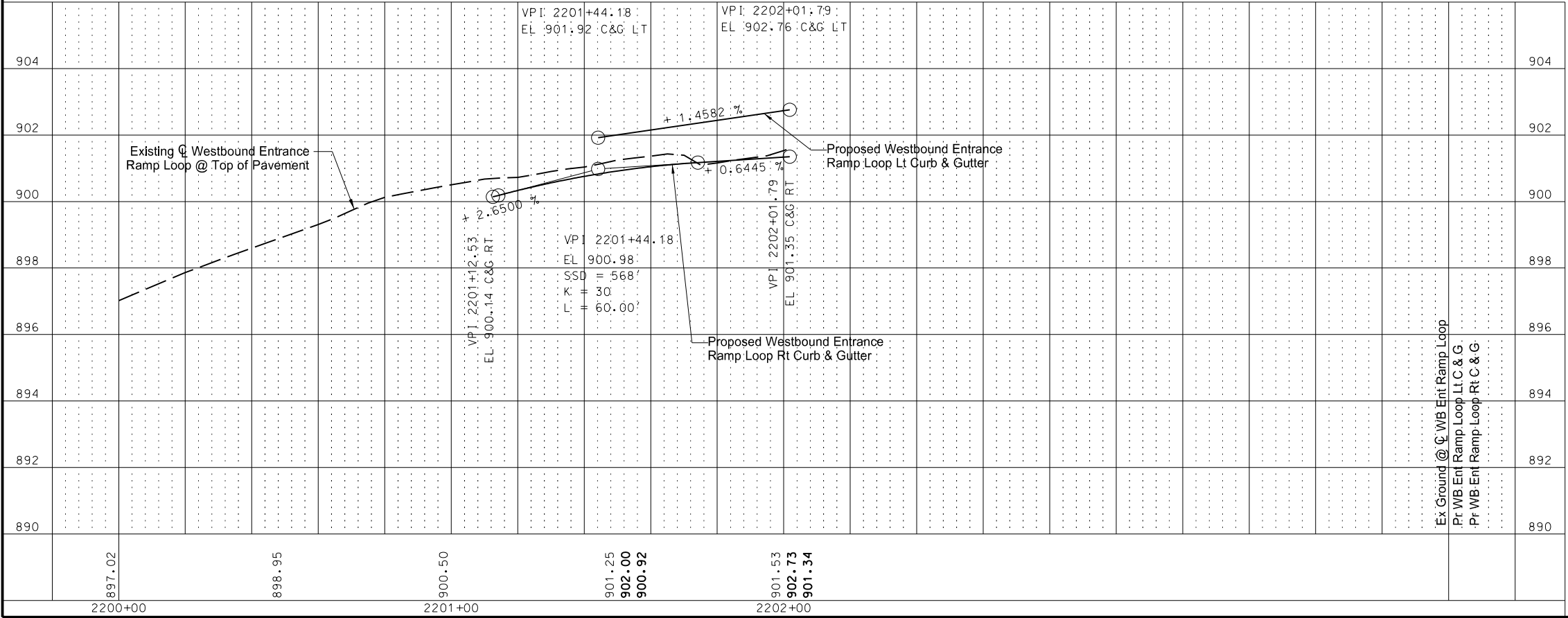
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	60	11

NHU-8-081(039)924



- Pigmented Imprinted Concrete
- Concrete Median Paving
- Commercial Grade Hot Mix Asphalt

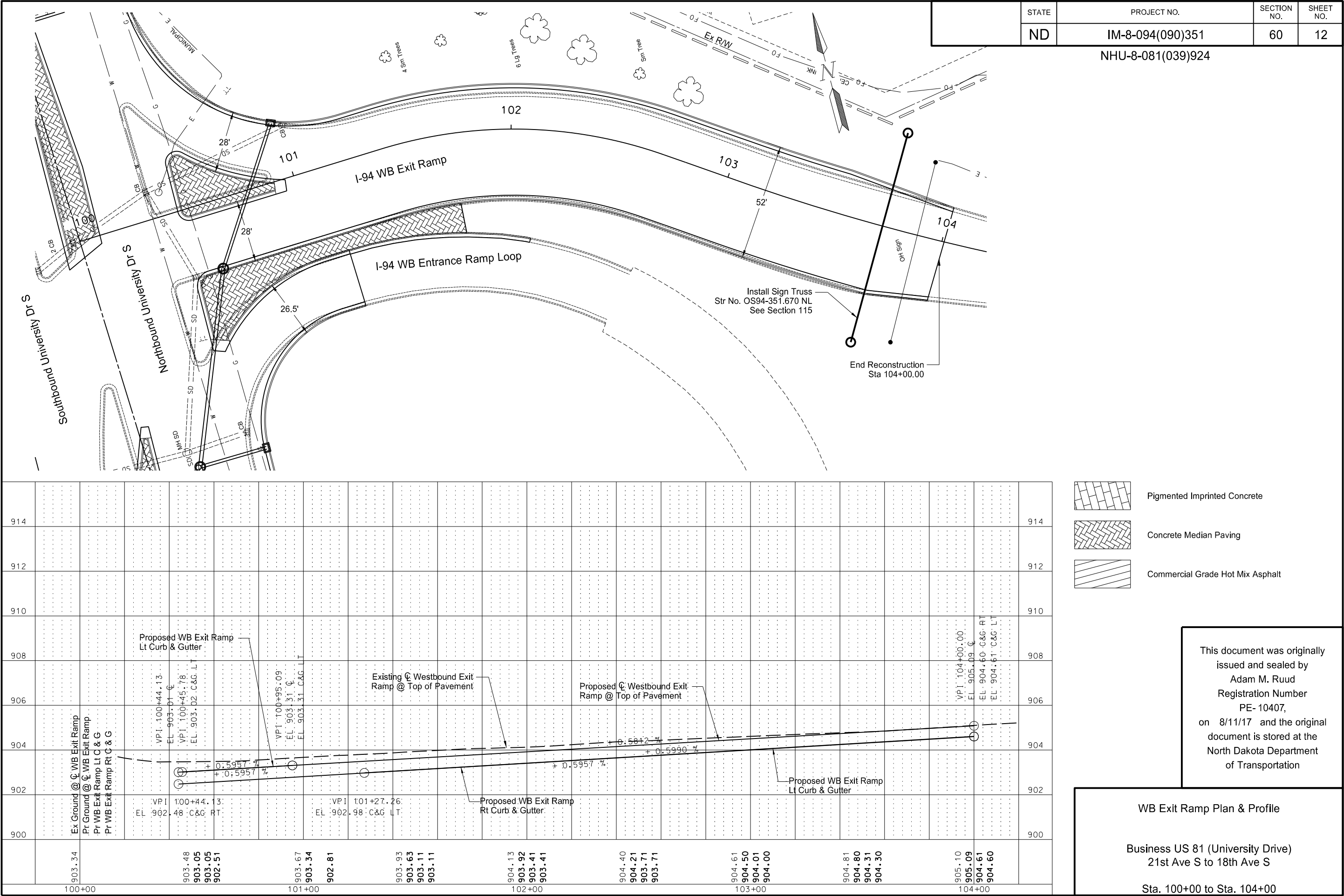
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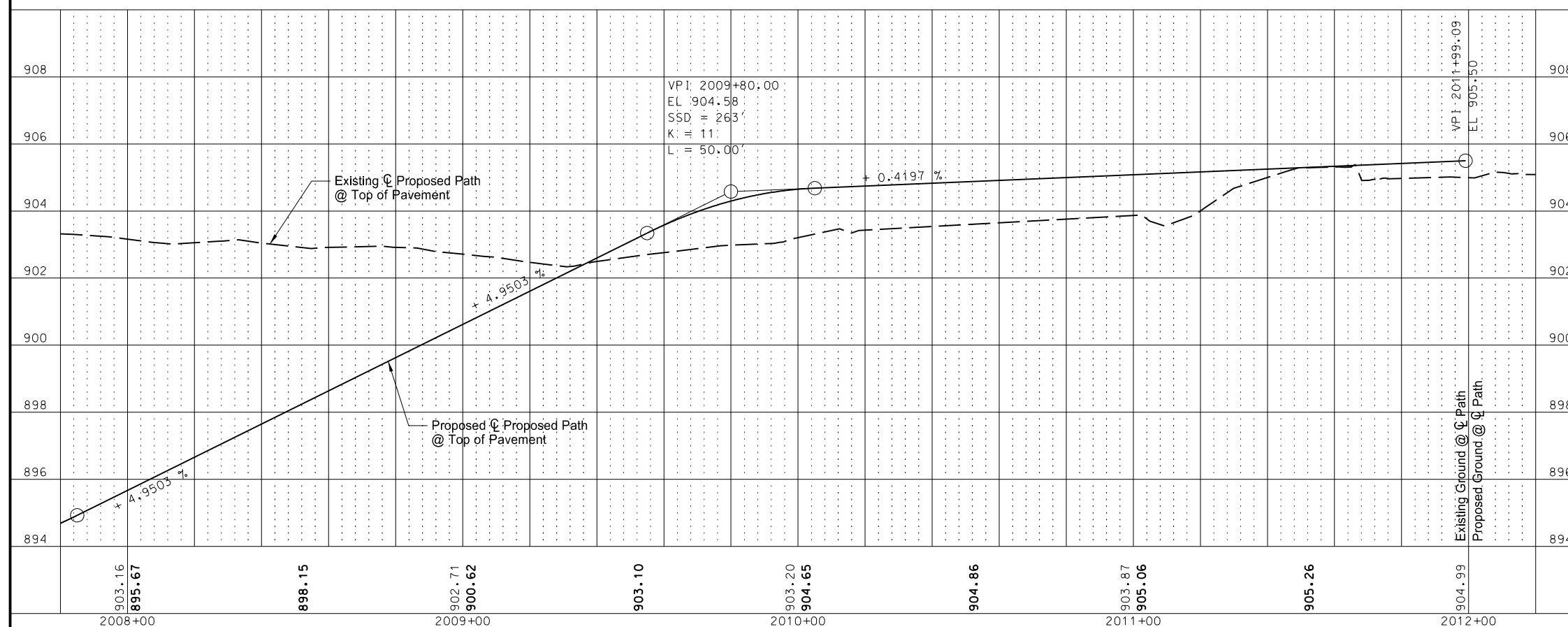
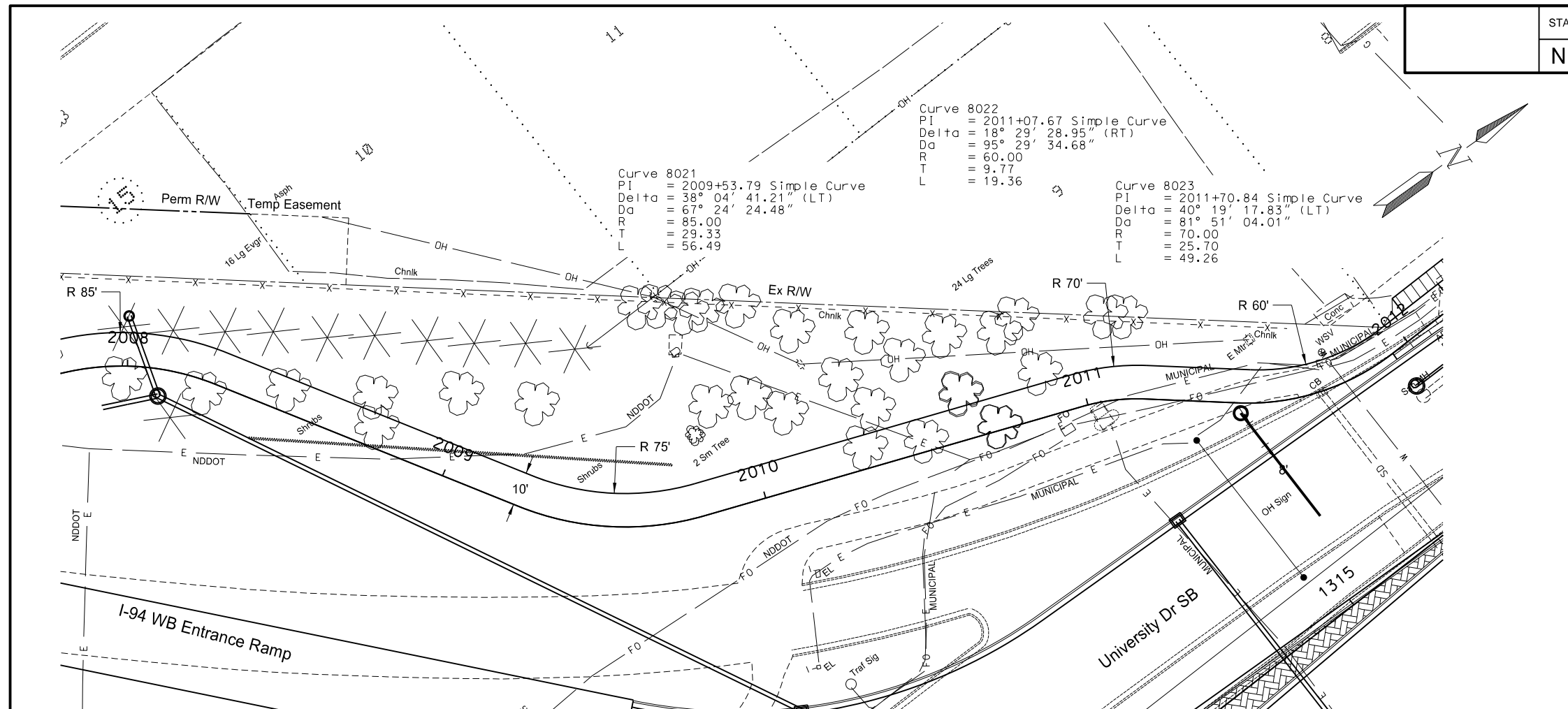
WB Entrance Ramp Loop Plan & Profile

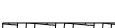
Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 2200+00 to Sta. 2202+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	60	18

NHU-8-081(039)924



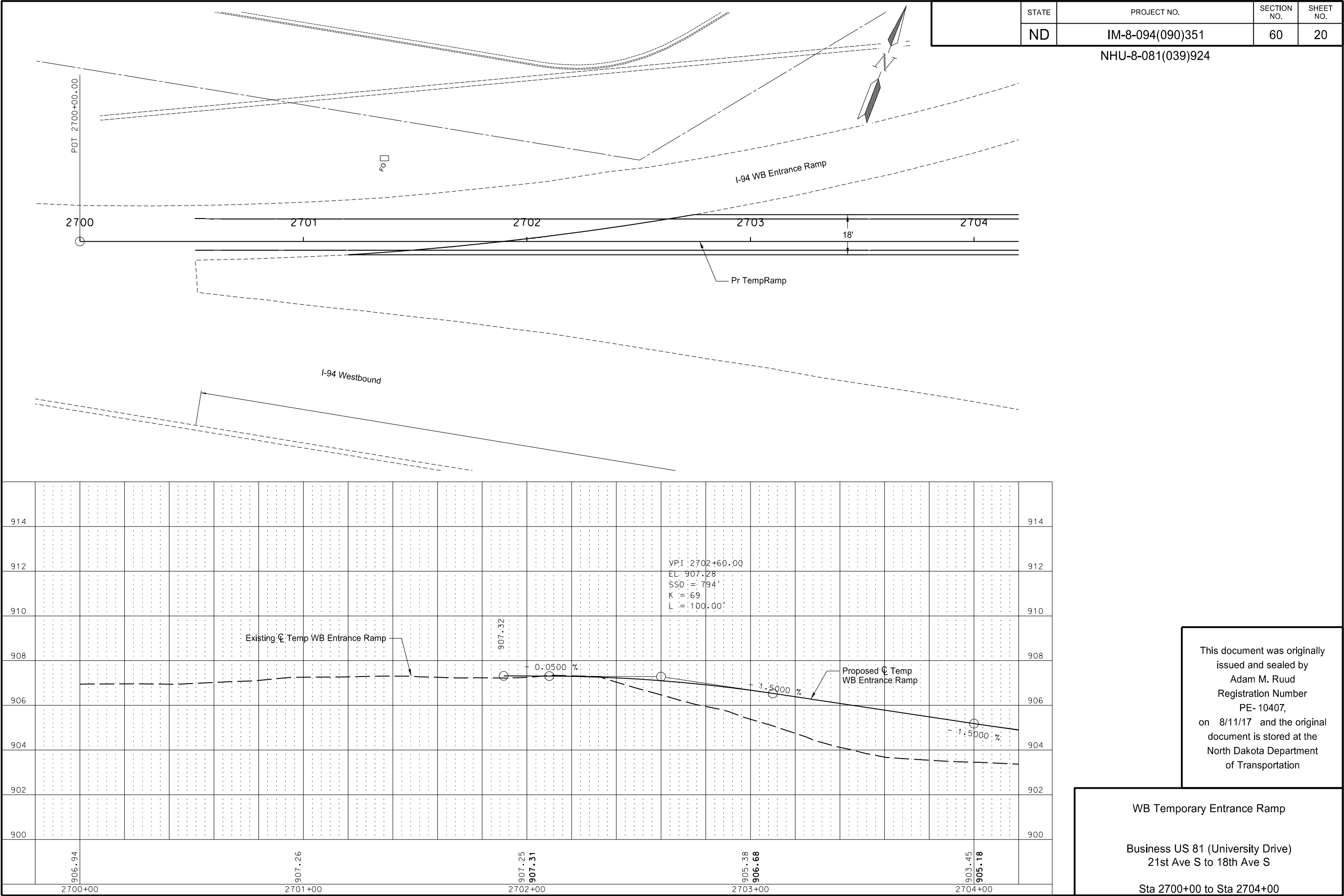
	Pigmented Imprinted Concrete
	Concrete Median Paving
	Commercial Grade Hot Mix Asphalt

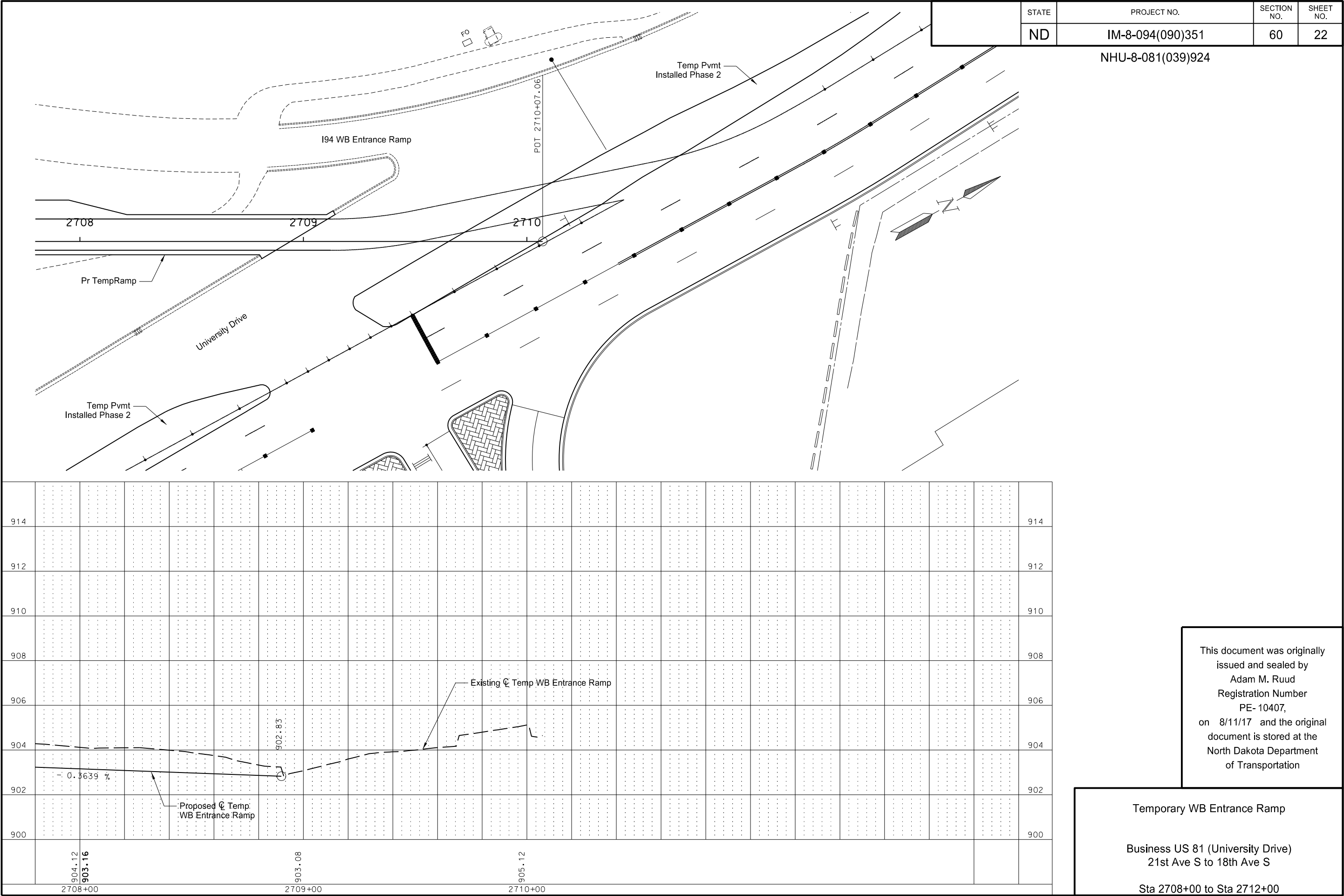
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Pedestrian Path Plan & Profile

Business US 81 (University Drive)
21st Ave S to 18th Ave S

Sta 2008+00 to Sta 2012+00





NHU-8-081(039)924

Wetland Impact Table											
Wetland Number	Location	Type	Wetland Feature	USACE Jurisdictional Wetlands ¹	Wetland Impacts Acre(s)		USFWS Easement Impacts Acre(s)		Wetland Mitigation		
									Mitigation Required		
					Temp.	Perm.	Temp.	Perm.	EO 11990	USACE	USFWS
1	Sec. 13, T153N, R49W	Ditch	Artificial	No	0	0	0	0	N	N	N
2	Sec. 18, T153N, R49W	Ditch	Artificial	No	0	0	0	0	N	N	N
3	Sec. 13, T153N, R49W	Ditch	Artificial	No	0	0	0	0	N	N	N
4	Sec. 13, T153N, R49W	Ditch	Artificial	No	0	0.02	0	0	N	N	N
5	Sec. 18, T153N, R49W	Ditch	Artificial	No	<0.01	<0.01	0	0	N	N	N
Totals					0	0.02	0	0			

¹ A wetland Jurisdictional Determination was issued by the USACE on 1/20/2017; NWO-2006-60024-BIS.

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

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

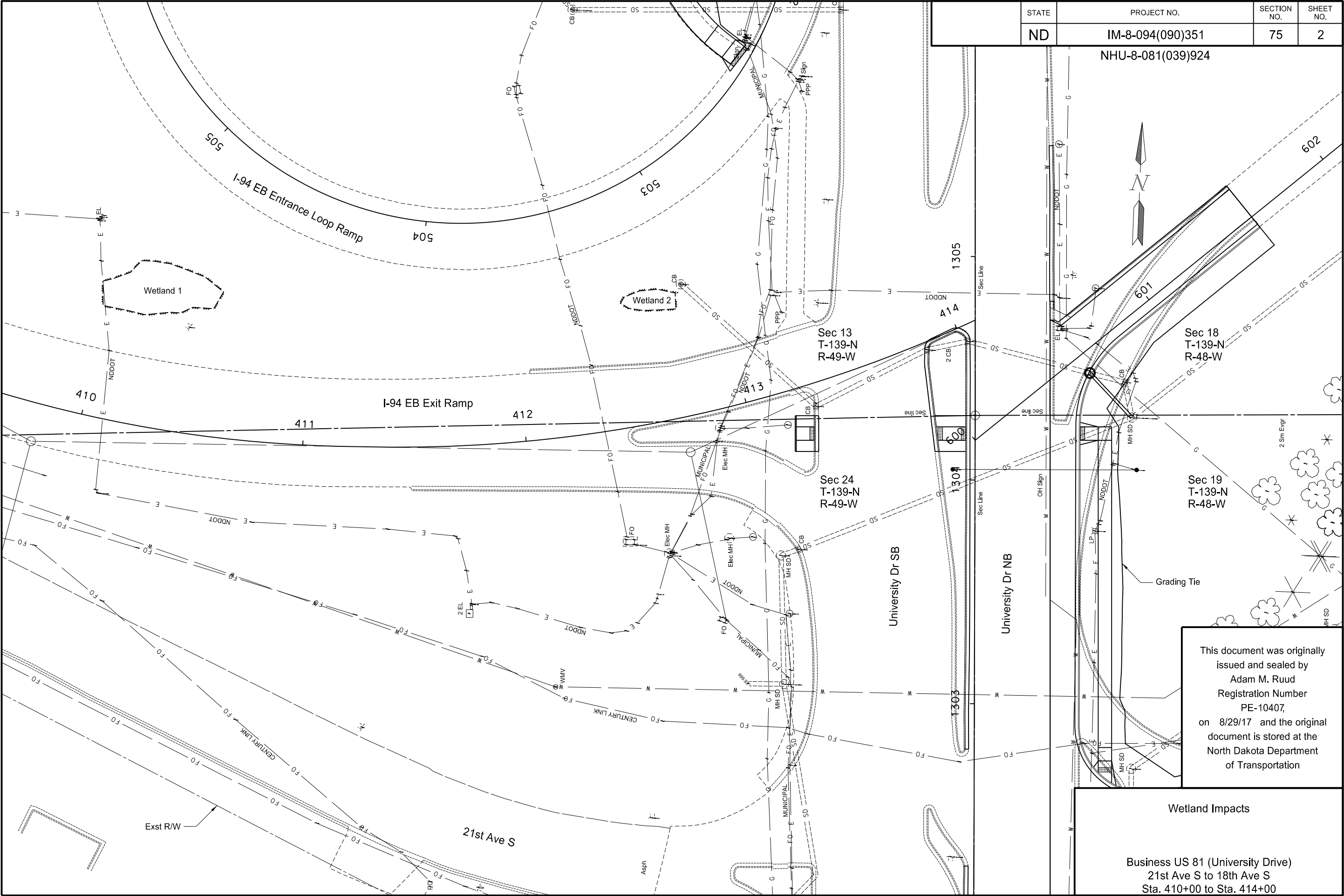
Impact Summary Table			
Permanent Impact Summary		Temporary Impacts and additional information	
Wetland Type	Total (Acres)	Wetland Type	Total (Acres/Lf)
Natural/JD	0.00	Temporary JD	0.00
Natural/Non-JD	0.00	Non-JD Temporary	0.00
Artificial/JD	0.00	Permanent JD > 0.10	0.00
Artificial /Non-JD	0.02		
Total	0.02		

Mitigation Summary Table					
	Location	Onsite Acre(s)	11990 Bank Acre(s)	USACE/11990 Bank Acre(s)	USFWS Bank Acre(s)
USACE Only	Onsite	0			
	Total	0	0	0	0

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Wetland Impacts

Business US 81 (University Drive)
21st Ave S to 18th Ave S



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	75	2

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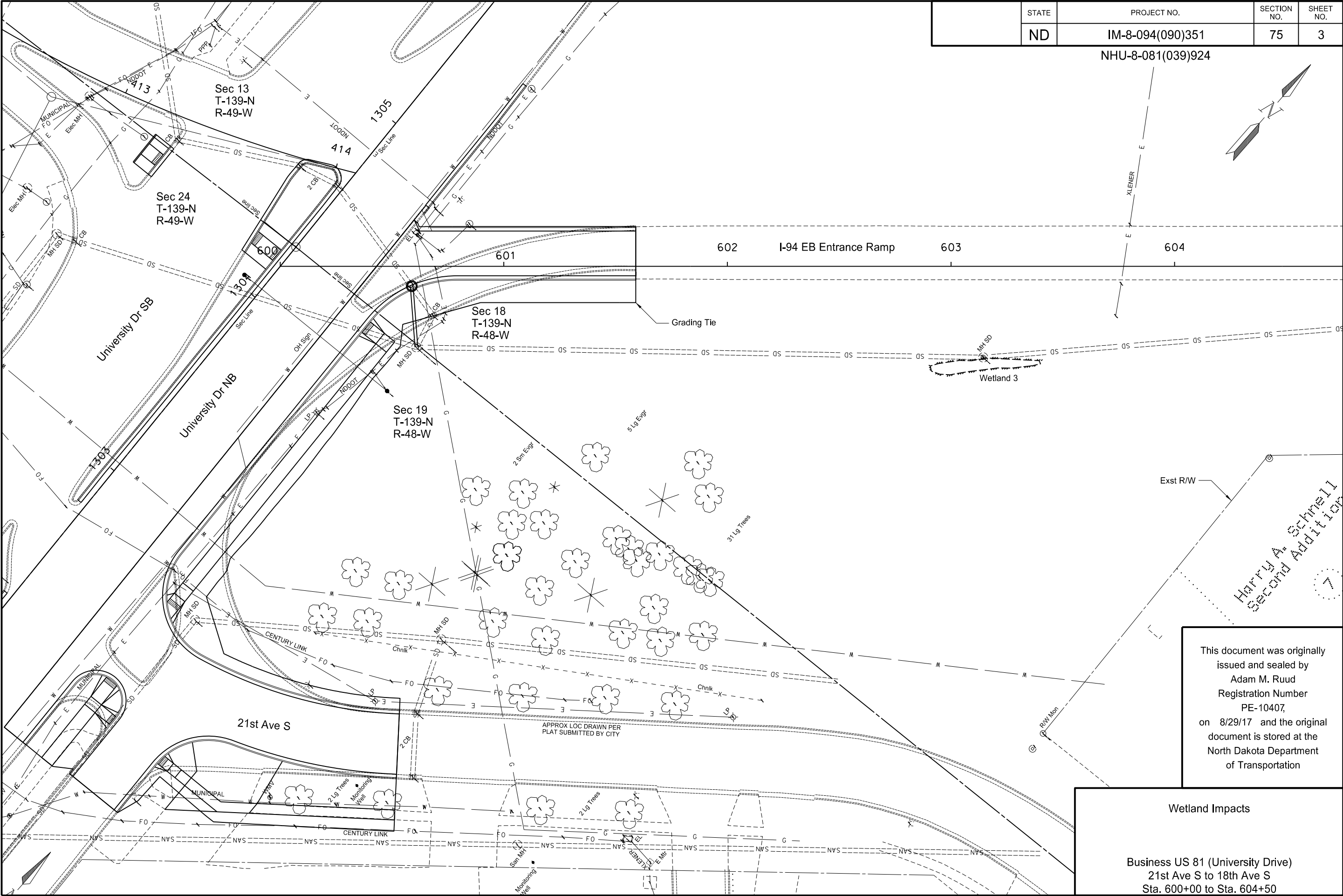
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Wetland Impacts

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 410+00 to Sta. 414+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	75	3

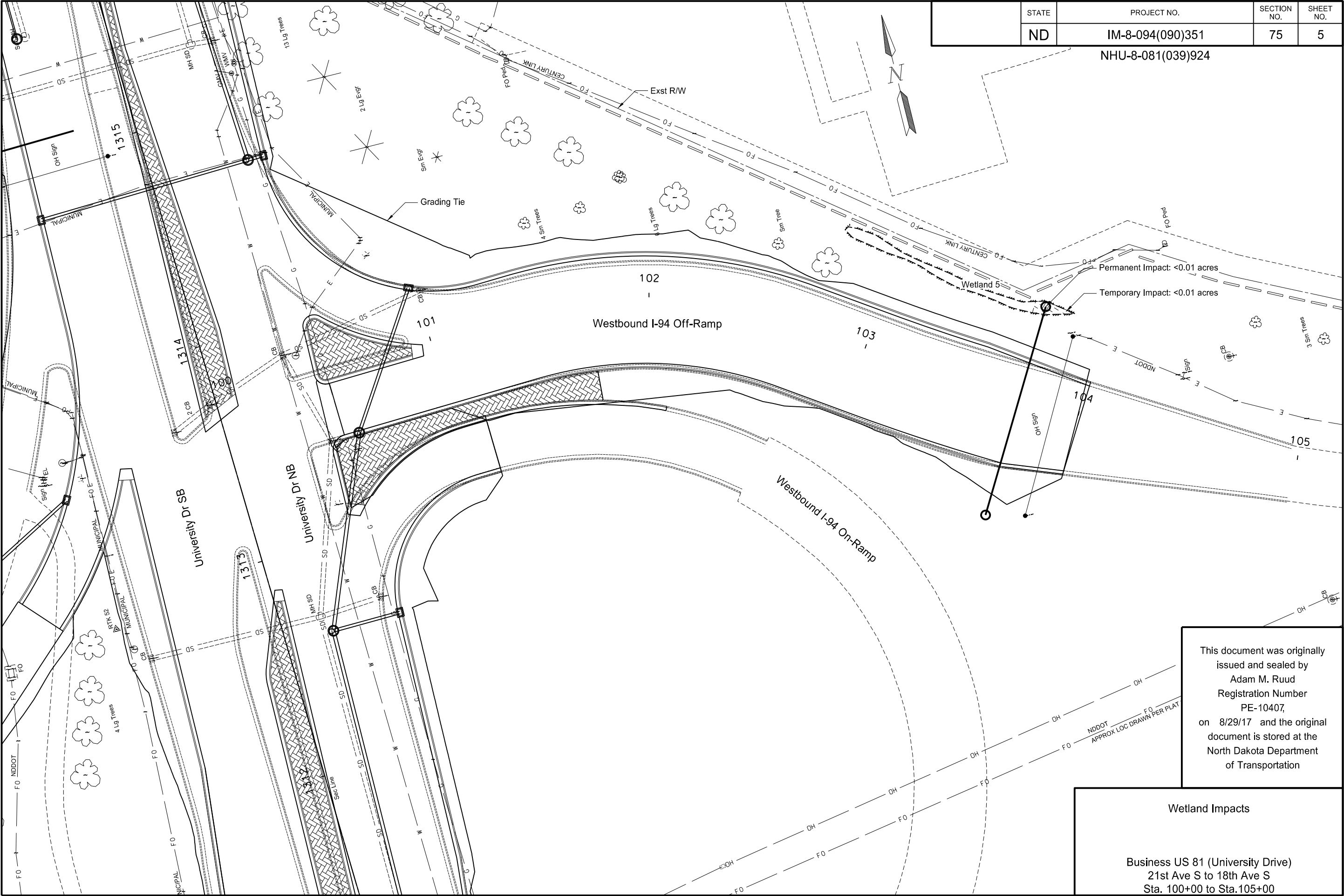
NHU-8-081(039)924

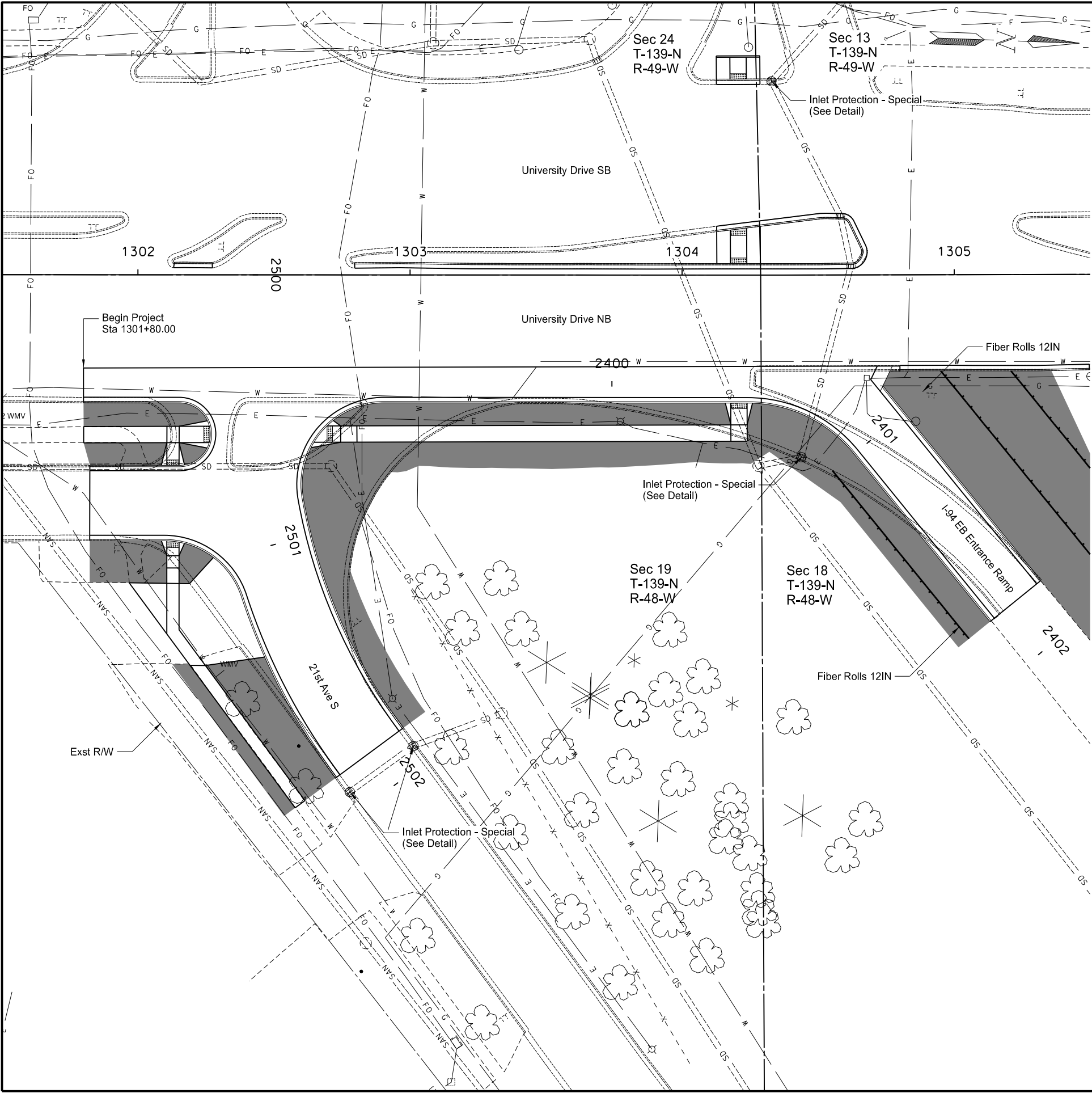


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Wetland Impacts

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 600+00 to Sta. 604+50





STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	76	1

NHU-8-081(039)924

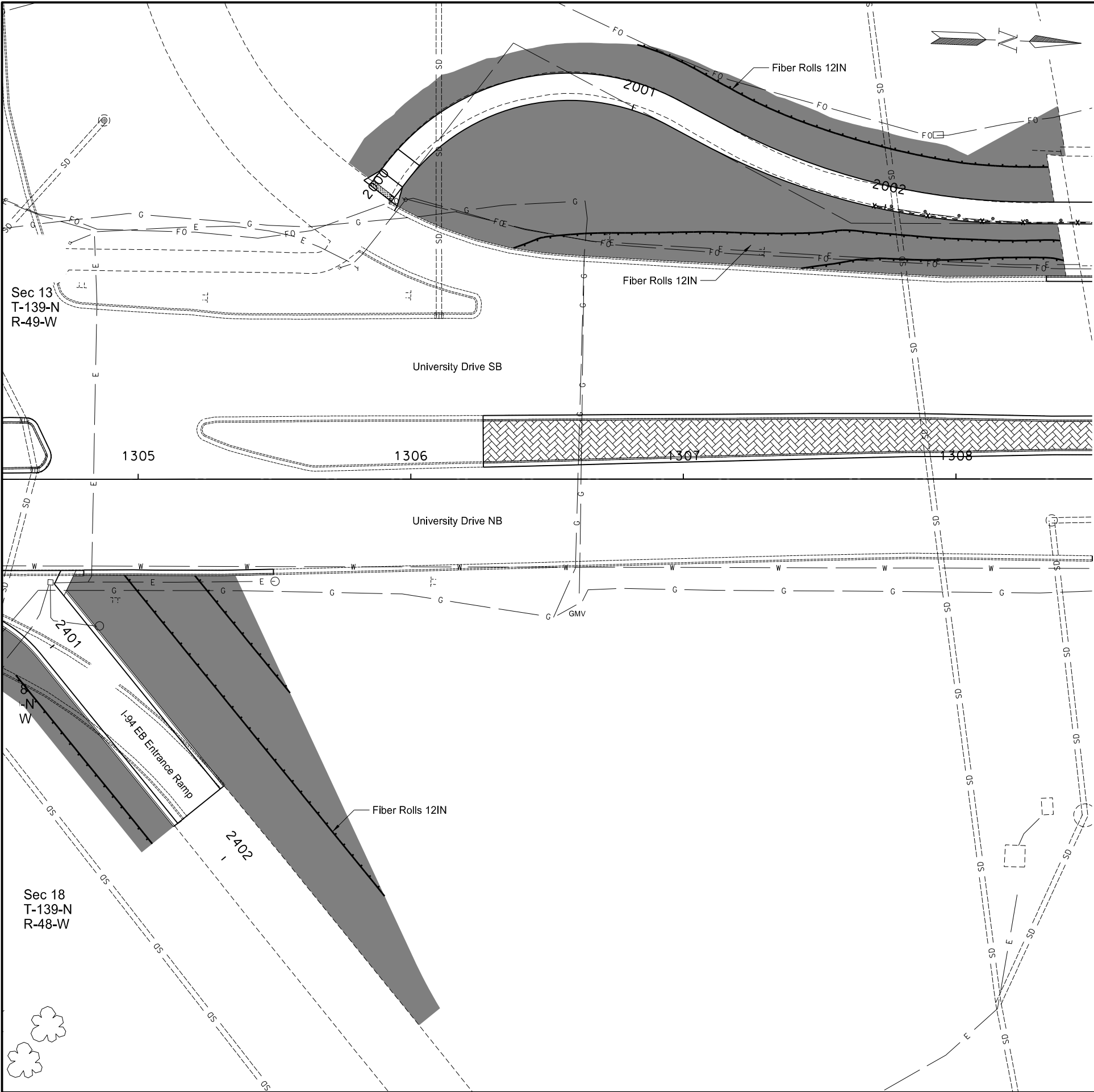
Spec Code	Description	
251	2000 TEMPORARY COVER CROP	
	Sta 1301+80 to Sta 1305+00	0.20 ACRE
253	0201 HYDRAULIC MULCH	
	Sta 1301+80 to Sta 1305+00	0.20 ACRE
261	0112 FIBER ROLLS 12IN	
	Sta 1301+80 to Sta 1305+00	80 LF
261	0113 REMOVE FIBER ROLLS 12IN	
	Sta 1301+80 to Sta 1305+00	80 LF
708	1540 INLET PROTECTION-SPECIAL	
	Sta 1302+78 190' Rt	1 EA
	Sta 1303+01 173' Rt	1 EA
	Sta 1304+33 71' Lt	1 EA
	Sta 1304+44 67' Rt	1 EA
	Total	4 EA
708	1541 REMOVE INLET PROTECTION-SPECIAL	
	Sta 1302+78 190' Rt	1 EA
	Sta 1303+01 173' Rt	1 EA
	Sta 1304+33 71' Lt	1 EA
	Sta 1304+44 67' Rt	1 EA
	Total	4 EA

- Temporary Cover Crop
- Fiber Rolls 12IN

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Temporary Erosion Control

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 1301+80 to Sta 1305+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	76	2

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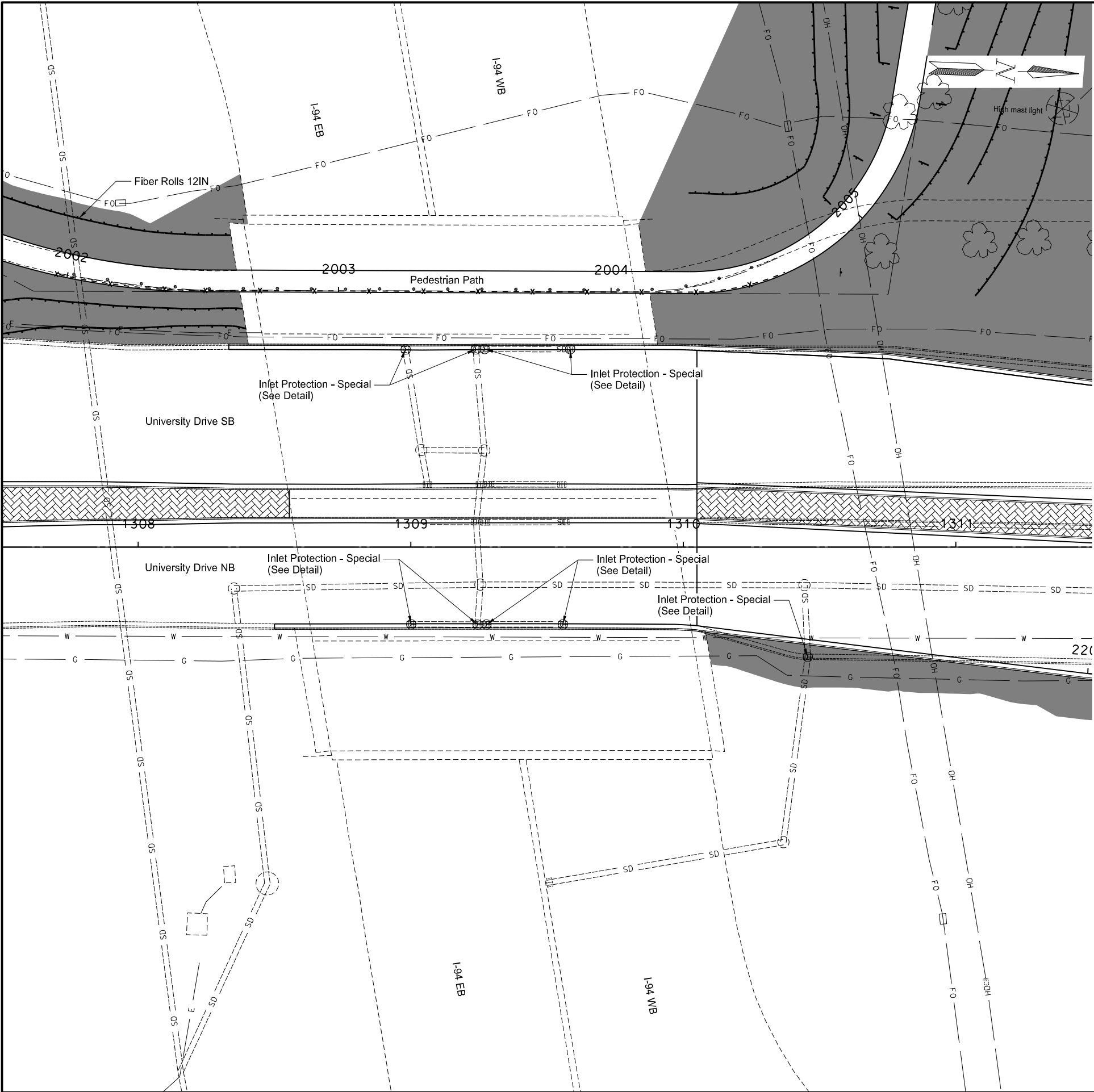
Spec	Code	Description	
251	2000	TEMPORARY COVER CROP	
Sta 1305+00 to Sta 1308+00			0.39 ACRE
253	0201	HYDRAULIC MULCH	
Sta 1305+00 to Sta 1308+00			0.39 ACRE
261	0112	FIBER ROLLS 12IN	
Sta 1305+00 to Sta 1308+00			552 LF
261	0113	REMOVE FIBER ROLLS 12IN	
Sta 1305+00 to Sta 1308+00			552 LF

- Temporary Cover Crop
- Fiber Rolls 12IN

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Temporary Erosion Control

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 1305+00 to Sta 1308+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	76	3

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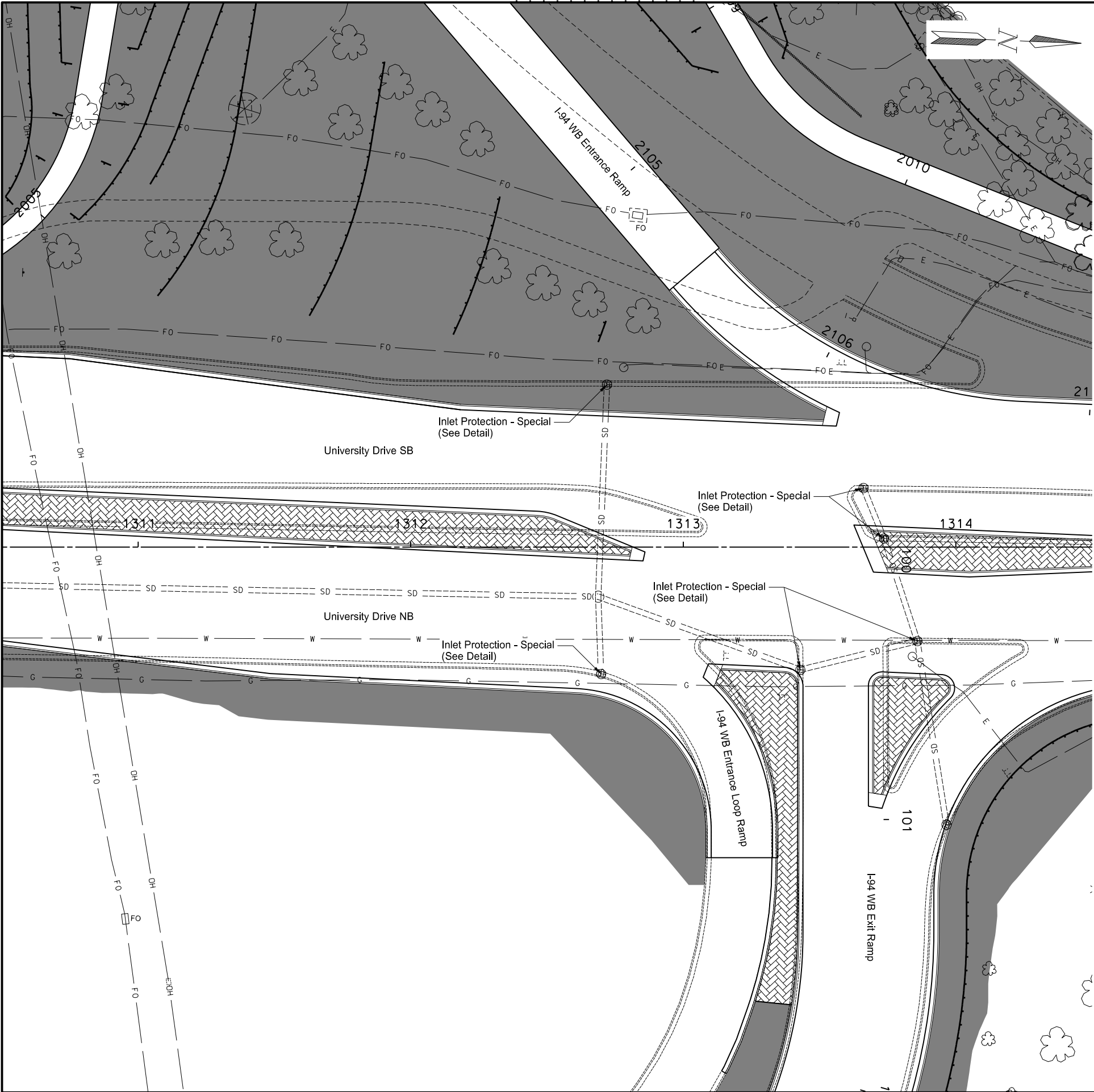
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Sta 1308+00 to Sta 1311+00			0.07 ACRE
253	0201	HYDRAULIC MULCH	
Sta 1308+00 to Sta 1311+00			0.07 ACRE
261	0112	FIBER ROLLS 12IN	
Sta 1308+00 to Sta 1311+00			112 LF
261	0113	REMOVE FIBER ROLLS 12IN	
Sta 1308+00 to Sta 1311+00			112 LF
708	1540	INLET PROTECTION-SPECIAL	
Sta 1308+98 73' Lt			1 EA
Sta 1309+00 28' Rt			1 EA
Sta 1309+24 73' Lt			1 EA
Sta 1309+25 28' Rt			1 EA
Sta 1309+27 73' Lt			1 EA
Sta 1309+28 28' Rt			1 EA
Sta 1309+56 28' Rt			1 EA
Sta 1309+59 73' Lt			1 EA
Sta 1310+46 40' Rt			1 EA
Total			9 EA
708	1541	REMOVE INLET PROTECTION-SPECIAL	
Sta 1308+98 73' Lt			1 EA
Sta 1309+00 28' Rt			1 EA
Sta 1309+24 73' Lt			1 EA
Sta 1309+25 28' Rt			1 EA
Sta 1309+27 73' Lt			1 EA
Sta 1309+28 28' Rt			1 EA
Sta 1309+56 28' Rt			1 EA
Sta 1309+59 73' Lt			1 EA
Sta 1310+46 40' Rt			1 EA
Total			9 EA

- Temporary Cover Crop
- Fiber Rolls 12IN

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Temporary Erosion Control

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 1308+00 to Sta 1311+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	76	4

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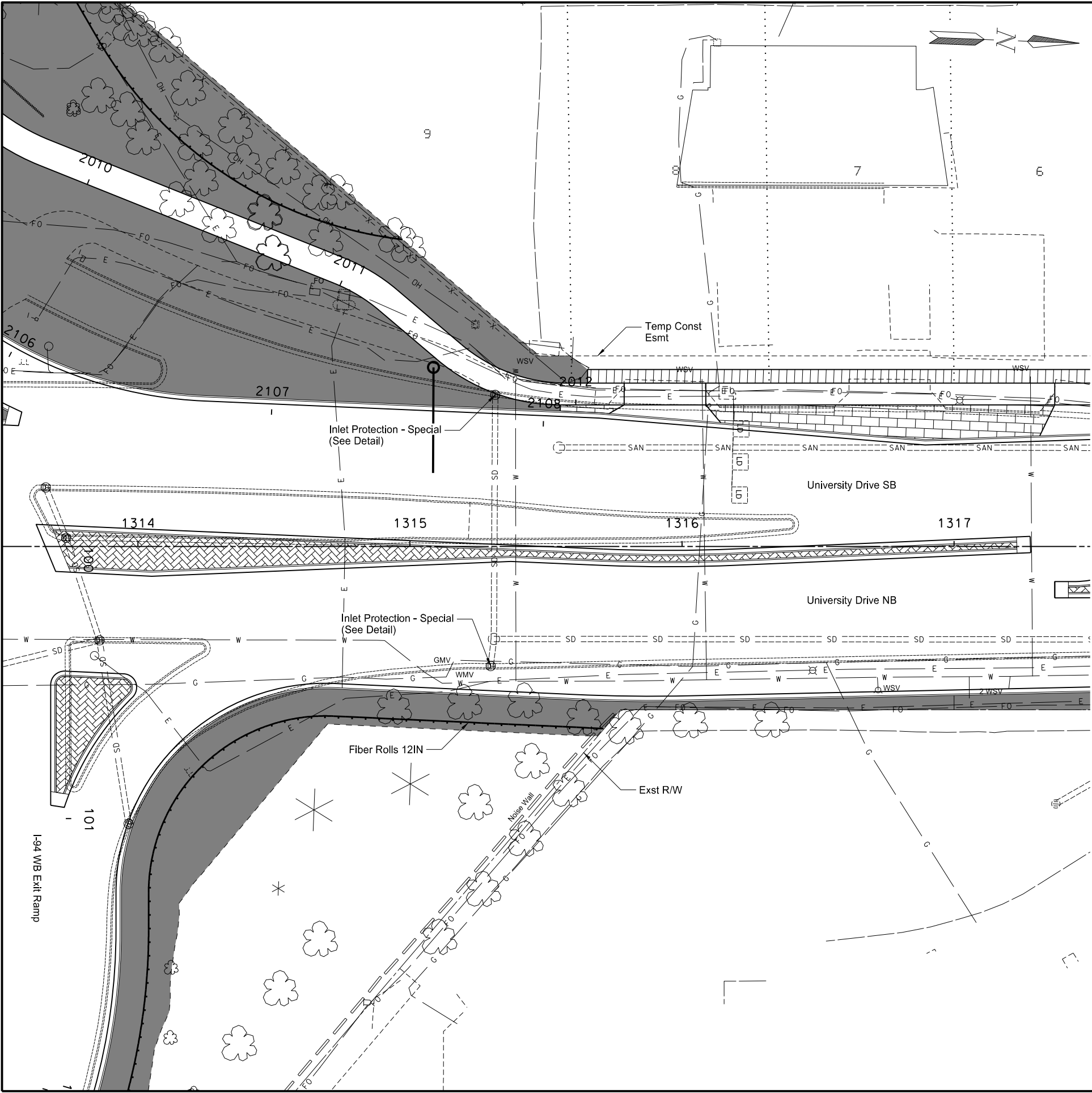
Spec	Code	Description	
251	2000	TEMPORARY COVER CROP	
Sta 1311+00 to Sta 1314+00			0.10 ACRE
253	0201	HYDRAULIC MULCH	
Sta 1311+00 to Sta 1314+00			0.10 ACRE
708	1540	INLET PROTECTION-SPECIAL	
Sta 1312+70 47' Rt			1 EA
Sta 1312+72 60' Lt			1 EA
Sta 1313+43 45' Rt			1 EA
Sta 1313+66 22' Lt			1 EA
Sta 1313+74 3' Lt			1 EA
Sta 1313+86 34' Rt			1 EA
Total			6 EA
708	1541	REMOVE INLET PROTECTION-SPECIAL	
Sta 1312+70 47' Rt			1 EA
Sta 1312+72 60' Lt			1 EA
Sta 1313+43 45' Rt			1 EA
Sta 1313+66 22' Lt			1 EA
Sta 1313+74 3' Lt			1 EA
Sta 1313+86 34' Rt			1 EA
Total			6 EA

- Temporary Cover Crop
- Fiber Rolls 12IN

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Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 1311+00 to Sta 1314+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	76	5

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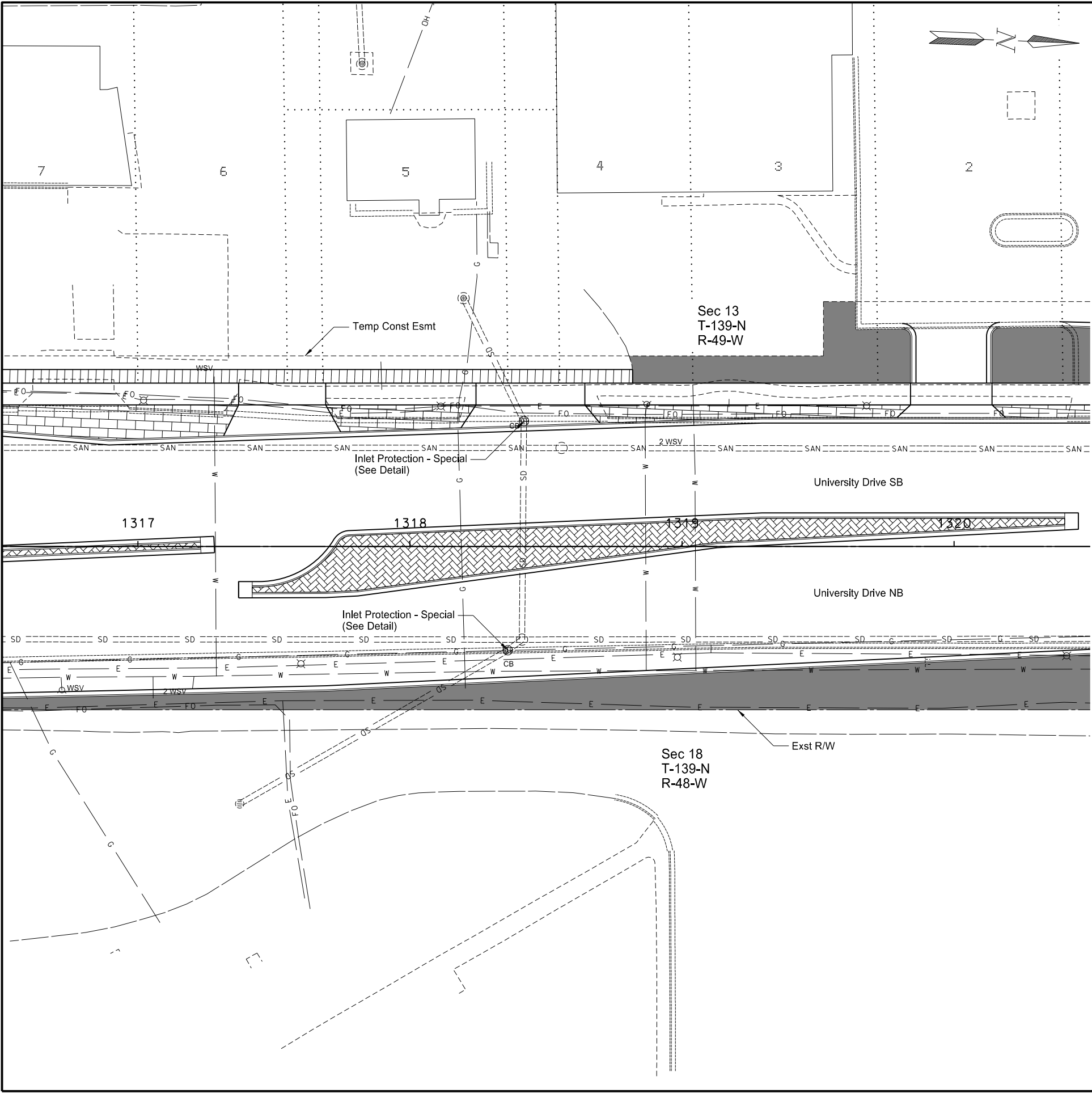
Spec	Code	Description	
251	2000	TEMPORARY COVER CROP	
Sta 1314+00 to Sta 1317+00			0.04 ACRE
253	0201	HYDRAULIC MULCH	
Sta 1314+00 to Sta 1317+00			0.04 ACRE
261	0112	FIBER ROLLS 12IN	
Sta 1314+00 to Sta 1317+00			99 LF
261	0113	REMOVE FIBER ROLLS 12IN	
Sta 1314+00 to Sta 1317+00			99 LF
708	1540	INLET PROTECTION-SPECIAL	
Sta 1315+30 44' Rt			1 EA
Sta 1315+31 56' Lt			1 EA
Total			2 EA
708	1541	REMOVE INLET PROTECTION-SPECIAL	
Sta 1315+30 44' Rt			1 EA
Sta 1315+31 56' Lt			1 EA
Total			2 EA

-  Temporary Cover Crop
-  Fiber Rolls 12IN

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Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 1314+00 to Sta 1317+00



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ND	IM-8-094(090)351	76	6

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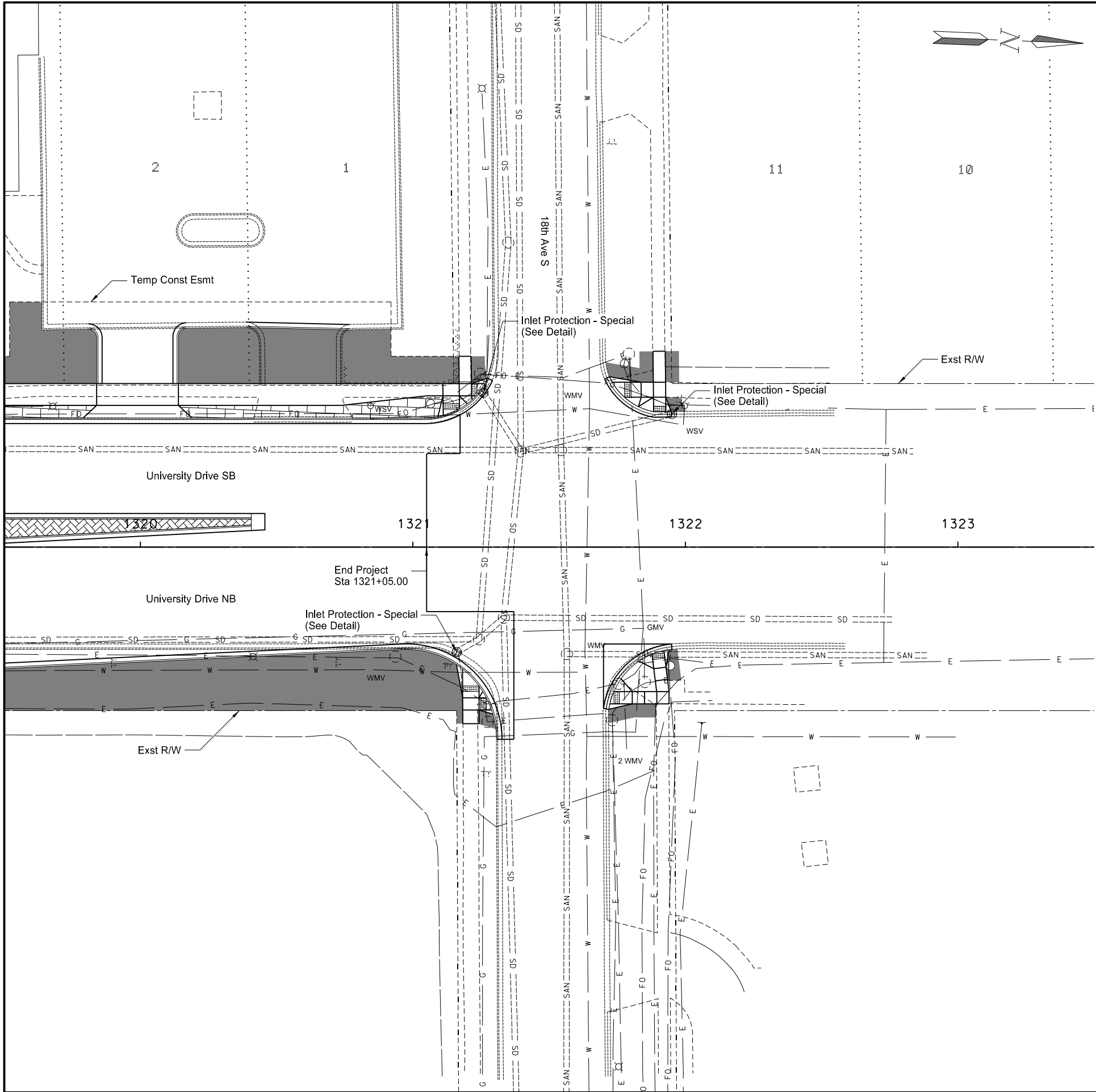
Spec Code	Description	
251	2000 TEMPORARY COVER CROP	
	Sta 1317+00 to Sta 1320+00	0.11 ACRE
253	0201 HYDRAULIC MULCH	
	Sta 1311+00 to Sta 1314+00	0.11 ACRE
708	1540 INLET PROTECTION-SPECIAL	
	Sta 1318+36 38' Rt	1 EA
	Sta 1318+42 46' Lt	1 EA
	Total	2 EA
708	1541 REMOVE INLET PROTECTION-SPECIAL	
	Sta 1318+36 38' Rt	1 EA
	Sta 1318+42 46' Lt	1 EA
	Total	2 EA



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Temporary Erosion Control

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 1317+00 to Sta 1320+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	76	7

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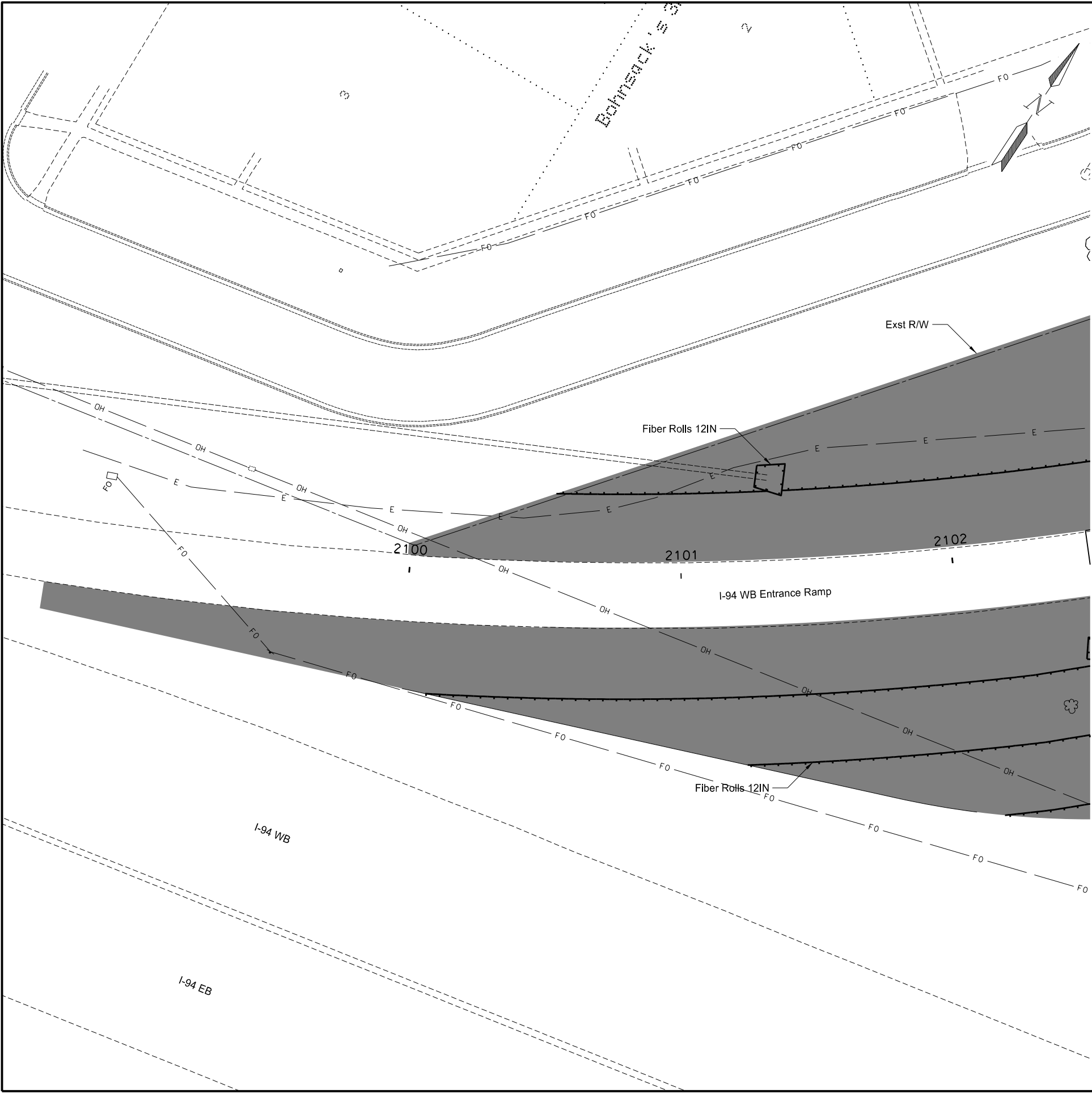
Spec Code Description		
251	2000	TEMPORARY COVER CROP
Sta 1320+00 to Sta 1322+00		0.11 ACRE
253	0201	HYDRAULIC MULCH
Sta 1320+00 to Sta 1322+00		0.11 ACRE
708	1540	INLET PROTECTION-SPECIAL
Sta 1321+16 39' Rt		1 EA
Sta 1321+26 57' Lt		1 EA
Sta 1321+95 49' Lt		1 EA
Total		3 EA
708	1541	REMOVE INLET PROTECTION-SPECIAL
Sta 1321+16 39' Rt		1 EA
Sta 1321+26 57' Lt		1 EA
Sta 1321+95 49' Lt		1 EA
Total		3 EA



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Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 1320+00 to Sta 1322+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	76	8

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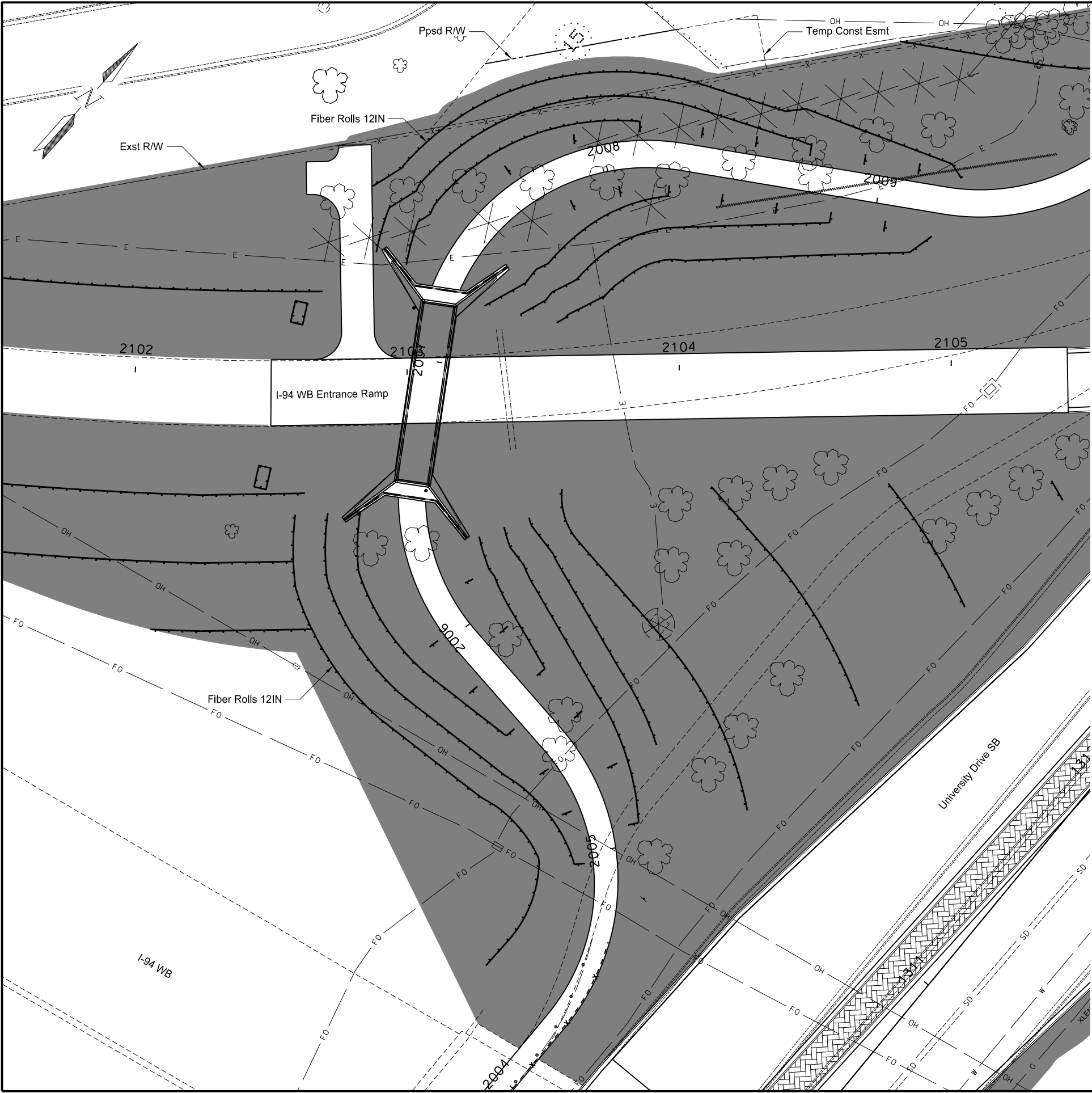
Spec	Code	Description	
251	2000	TEMPORARY COVER CROP	
Sta 2100+00 to Sta 2102+00			0.45 ACRE
253	0201	HYDRAULIC MULCH	
Sta 2100+00 to Sta 2102+00			0.45 ACRE
261	0112	FIBER ROLLS 12IN	
Sta 2100+00 to Sta 2102+00			459 LF
261	0113	REMOVE FIBER ROLLS 12IN	
Sta 2100+00 to Sta 2102+00			459 LF

- Temporary Cover Crop
- Fiber Rolls 12IN

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Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 2100+00 to Sta 2102+00



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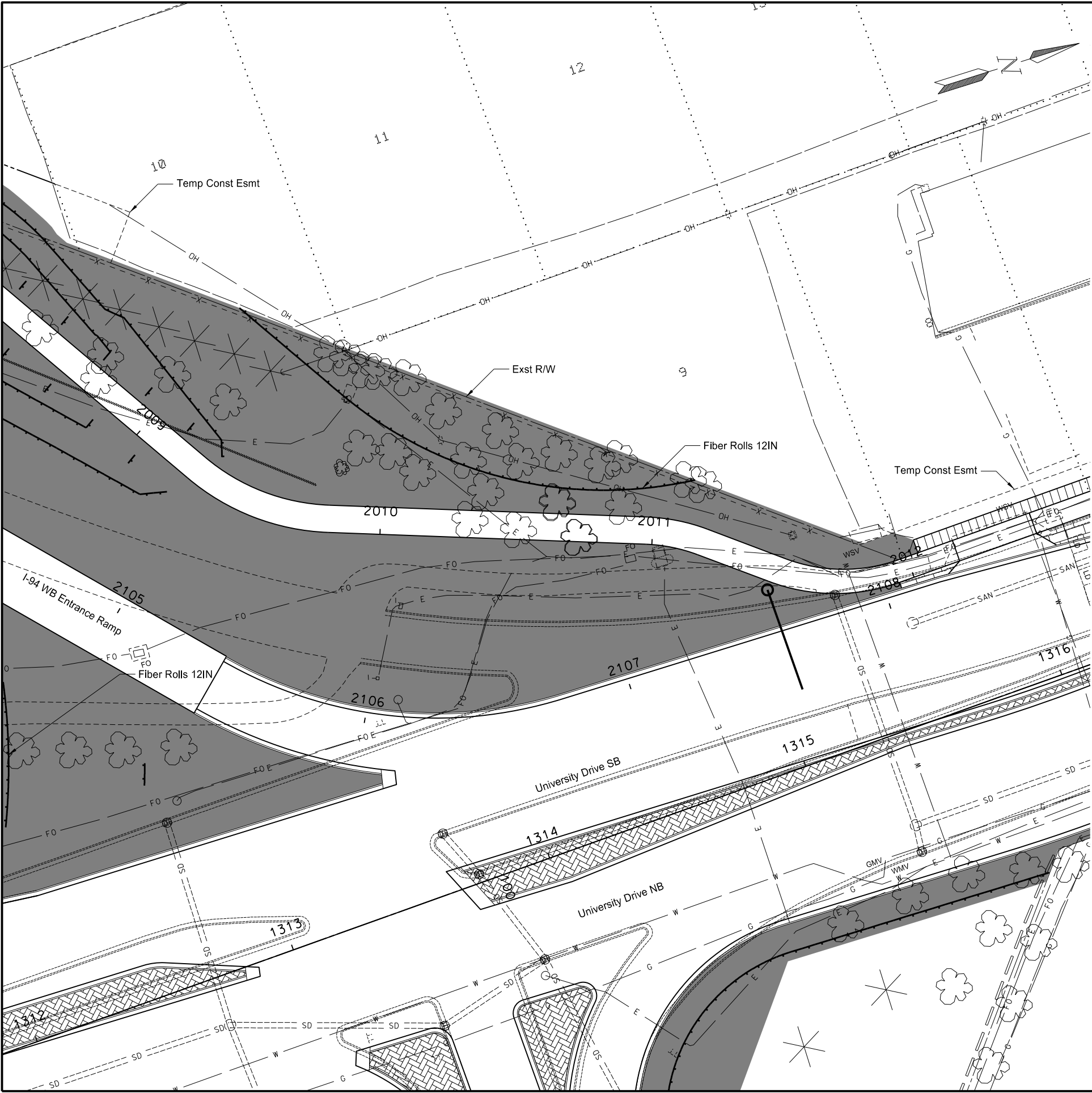
Spec	Code	Description	
251	2000	TEMPORARY COVER CROP	
Sta 2102+00 to Sta 2105+00			1.62 ACRE
253	0201	HYDRAULIC MULCH	
Sta 2102+00 to Sta 2105+00			1.62 ACRE
261	0112	FIBER ROLLS 12IN	
Sta 2102+00 to Sta 2105+00			2339 LF
261	0113	REMOVE FIBER ROLLS 12IN	
Sta 2102+00 to Sta 2105+00			2339 LF

- Temporary Cover Crop
- Fiber Rolls 12IN

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Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 2102+00 to Sta 2105+00



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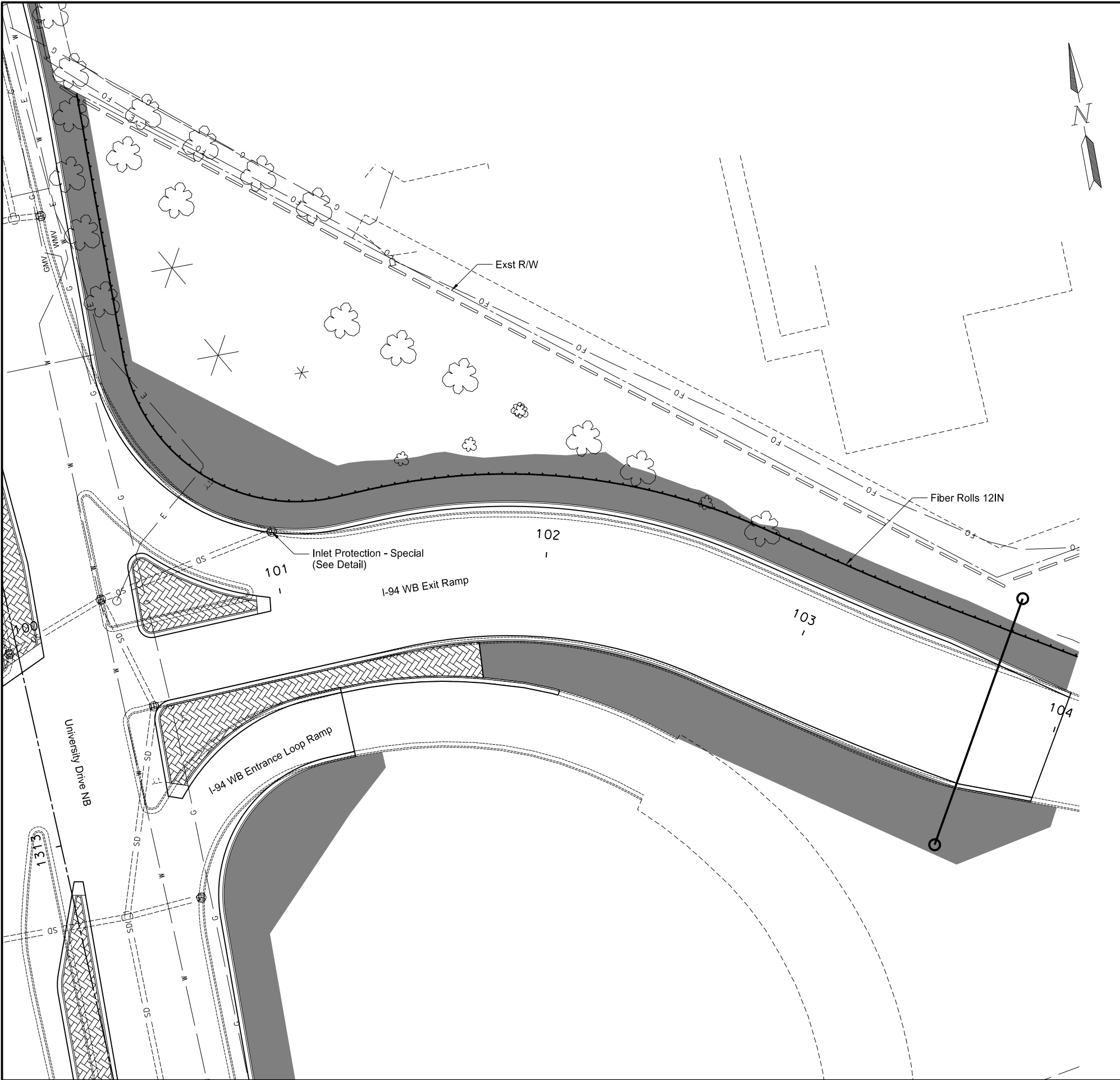
Spec	Code	Description	
251	2000	TEMPORARY COVER CROP	
Sta 2105+00 to Sta 2108+20			0.61 ACRE
253	0201	HYDRAULIC MULCH	
Sta 2105+00 to Sta 2108+20			0.61 ACRE
261	0112	FIBER ROLLS 12IN	
Sta 2105+00 to Sta 2108+20			195 LF
261	0112	REMOVE FIBER ROLLS 12IN	
Sta 2105+00 to Sta 2108+20			195 LF

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- Fiber Rolls 12IN

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Temporary Erosion Control

Business US 81 (Univeristy Drive)
21st Ave S to 18th Ave S
Sta 2105+00 to Sta 2108+20



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	76	11

NHU-8-081(039)924

Spec	Code	Description	
251	2000	TEMPORARY COVER CROP	
Sta 100+00 to Sta 104+00			0.28 ACRE
253	0201	HYDRAULIC MULCH	
Sta 100+00 to Sta 104+00			0.28 ACRE
261	0112	FIBER ROLLS 12IN	
Sta 100+00 to Sta 104+00			394 LF
261	0113	REMOVE FIBER ROLLS 12IN	
Sta 100+00 to Sta 104+00			394 LF
708	1540	INLET PROTECTION-SPECIAL	
Sta 101+02 23' Lt			1 EA
708	1541	REMOVE INLET PROTECTION-SPECIAL	
Sta 101+02 23' Lt			1 EA

- Temporary Cover Crop
- Fiber Rolls 12IN

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Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 100+00 to Sta 104+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	76	12

NHU-8-081-(039)924

Temporary Fiber Rolls 12 IN				
Sheet 1 - Sta 1301+80 to Sta 1305+00 (Chain SCL_Univ)				
Start Sta	Offset	End Sta	Offset	Length
1304+55	72' Rt	1305+00	127' Rt	72
1304+95	35' Rt	1305+00	42' Rt	8
Total				80

Temporary Fiber Rolls 12 IN				
Sheet 2 - Sta 1305+00 to Sta 1308+00 (Chain SCL_Univ)				
Start Sta	Offset	End Sta	Offset	Length
1305+00	42' Rt	1305+90	153' Rt	144
1305+00	127' Rt	1305+05	134' Rt	8
1305+21	35' Rt	1305+56	78' Rt	55
1306+38	85' Lt	1308+00	88' Lt	163
1306+83	159' Lt	1308+00	116' Lt	125
1307+43	77' Lt	1308+00	80' Lt	57
Total				552

Temporary Fiber Rolls 12 IN				
Sheet 3 - Sta 1308+00 to Sta 1311+00 (Chain SCL_Univ)				
Start Sta	Offset	End Sta	Offset	Length
1308+00	88' Lt	1308+38	87' Lt	38
1308+00	80' Lt	1308+40	80' Lt	40
1308+00	116' Lt	1308+34	114' Lt	34
Total				112

Temporary Fiber Rolls 12 IN				
Sheet 5 - Sta 1314+00 to Sta 1317+00 (Chain SCL_Univ)				
Start Sta	Offset	End Sta	Offset	Length
1314+72	62' Rt	1315+71	67' Rt	99
Total				99

Temporary Fiber Rolls 12 IN				
Sheet 8 - Sta 2100+00 to Sta 2102+00 (Chain PR_WBEnt)				
Start Sta	Offset	End Sta	Offset	Length
2100+08	44' Rt	2102+00	44' Rt	198
2100+54	31' Lt	2101+33	31' Lt	78
2101+22	69' Rt	2102+00	69' Rt	82
2101+28	33' Lt	2101+40	41' Lt	41
2101+38	31' Lt	2102+00	31' Lt	60
Total				459

Temporary Fiber Rolls 12 IN				
Sheet 9 - Sta 2102+00 to Sta 2105+00 (Chain PR_WBEnt)				
Start Sta	Offset	End Sta	Offset	Length
2102+00	31' Lt	2102+69	31' Lt	67
2102+00	44' Rt	2102+62	43' Rt	64
2102+00	69' Rt	2102+58	68' Rt	62
2102+09	94' Rt	2102+65	93' Rt	59
2102+44	41' Rt	2102+50	34' Rt	25
2102+57	20' Lt	2102+63	27' Lt	25
2102+59	51' Rt	2103+25	218' Rt	209
2102+70	50' Rt	2103+62	181' Rt	170
2102+88	69' Lt	2105+00	75' Lt	230
2102+82	50' Rt	2103+37	131' Rt	109
2102+89	45' Lt	2104+49	78' Lt	192
2103+00	40' Lt	2103+87	88' Lt	114
2103+07	100' Rt	2103+10	98' Rt	4
2103+20	77' Rt	2103+23	75' Rt	3
2103+21	117' Rt	2103+24	115' Rt	4
2103+26	60' Rt	2103+46	111' Rt	59
2103+29	25' Lt	2103+97	68' Lt	84
2103+32	96' Rt	2103+36	93' Rt	4
2103+35	57' Rt	2103+78	167' Rt	125
2103+37	76' Lt	2103+39	73' Lt	4
2103+42	22' Lt	2104+57	57' Lt	128
2103+44	53' Rt	2103+89	138' Rt	96
2103+46	148' Rt	2103+50	146' Rt	4
2103+54	163' Rt	2103+58	161' Rt	4
2103+55	18' Lt	2104+94	48' Lt	147
2103+56	43' Rt	2104+22	162' Rt	139
2103+59	127' Rt	2103+62	125' Rt	4
2103+61	63' Lt	2103+63	59' Lt	4
2103+63	87' Lt	2103+63	84' Lt	4
2103+71	146' Rt	2103+75	144' Rt	4
2103+79	68' Lt	2103+79	64' Lt	4
2104+10	85' Lt	2104+10	89' Lt	4
2104+11	43' Rt	2104+64	124' Rt	98
2104+16	61' Lt	2104+17	65' Lt	4
2104+29	82' Lt	2104+30	86' Lt	4
2104+36	57' Lt	2104+37	61' Lt	4
2104+69	74' Lt	2104+70	78' Lt	4
2104+76	50' Lt	2104+77	54' Lt	4
2104+76	43' Rt	2105+00	81' Rt	45
2104+83	120' Lt	2105+00	116' Lt	17
2104+89	71' Lt	2104+90	75' Lt	4
Total				2,339

Temporary Fiber Rolls 12 IN				
Sheet 10 - Sta 2105+00 to Sta 2108+20 (Chain PR_WBEnt)				
Start Sta	Offset	End Sta	Offset	Length
2105+00	116' Lt	2105+31	111' Lt	32
2105+31	111' Lt	2107+45	66' Lt	139
2105+36	43' Rt	2105+40	50' Rt	8
2105+00	75' Lt	2105+05	69' Lt	8
2105+00	81' Rt	2105+04	89' Rt	8
Total				195

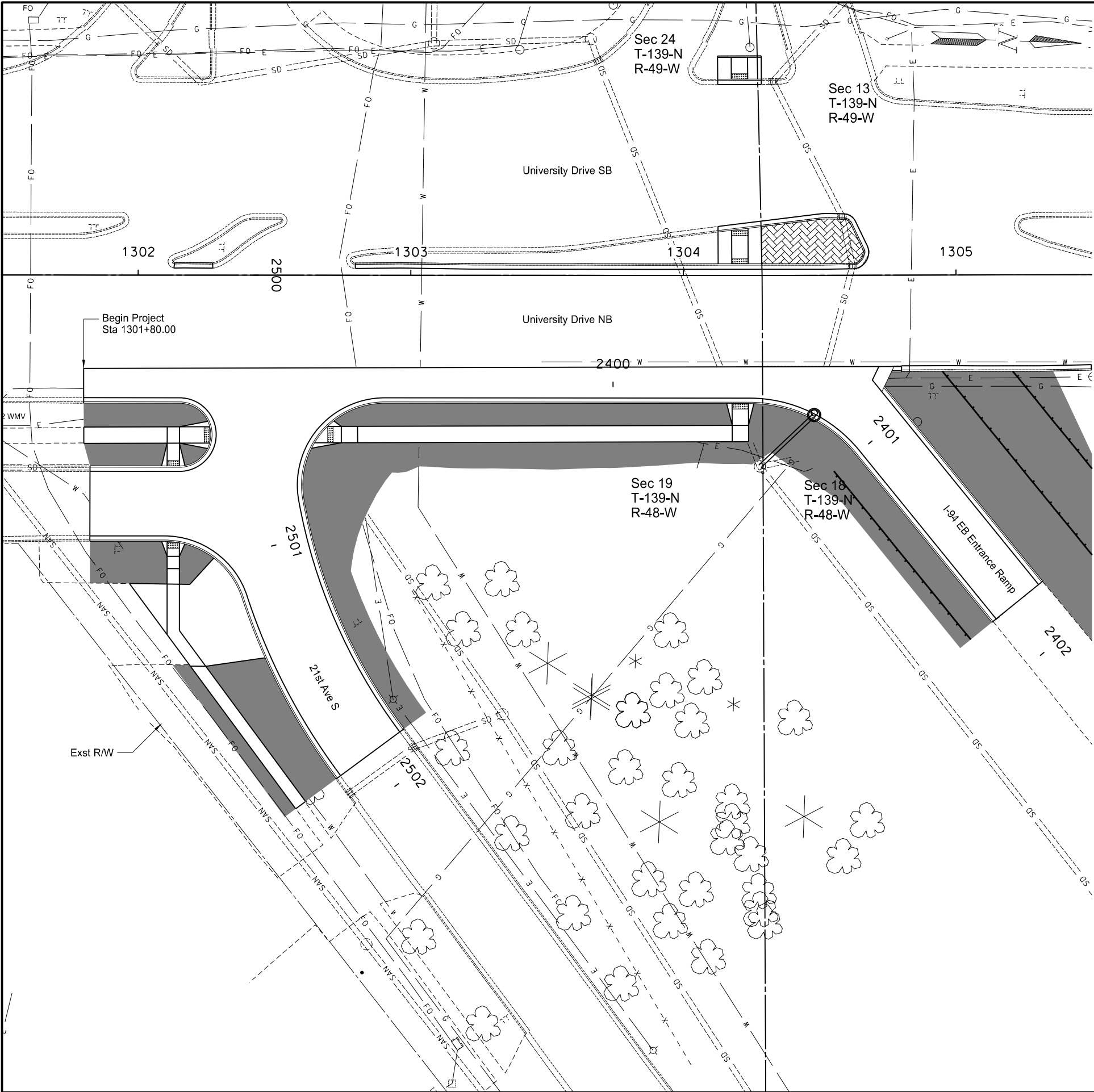
Temporary Fiber Rolls 12 IN				
Sheet 11 - Sta 100+00 to Sta 104+00 (Chain EX_WBEx)				
Start Sta	Offset	End Sta	Offset	Length
100+62	98' Lt	104+00	29' Lt	394
Total				394

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Temporary Erosion Control

Temporary Fiber Rolls Table

Business US 81 (University Drive)
21st Ave S to 18th Ave S



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	77	1

NHU-8-081(039)924

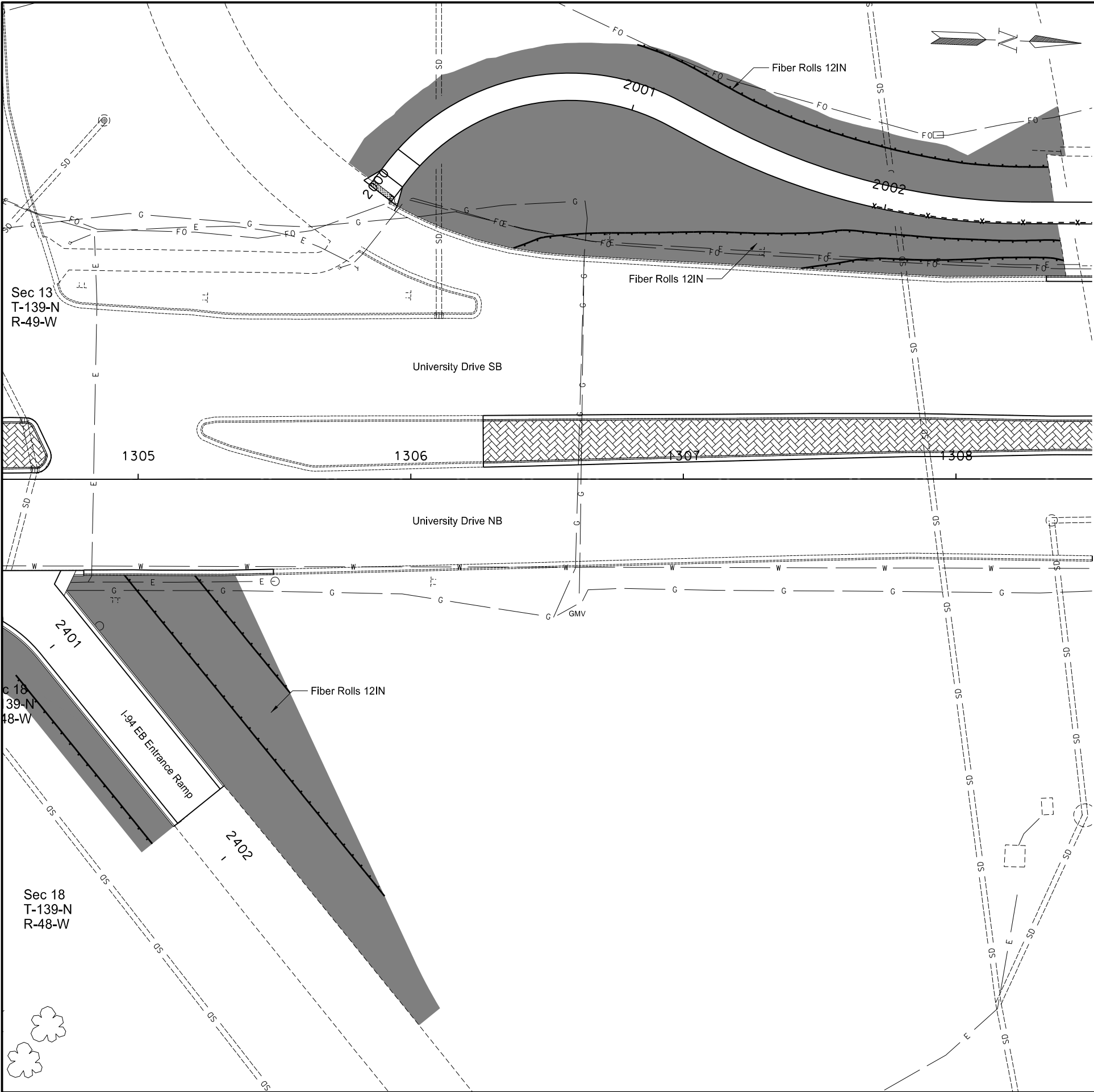
Spec Code	Description	
251 0300	SEEDING CLASS III	
	Sta 1301+80 to Sta 1305+00	0.20 ACRE
253 0301	BONDED FIBER MATRIX	
	Sta 1301+80 to Sta 1305+00	0.20 ACRE
261 0112	FIBER ROLLS 12IN	
	Sta 1301+80 to Sta 1305+00	80 LF

-  Seeding Class III
-  Fiber Rolls 12IN

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Permanent Erosion Control

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 1301+80 to Sta 1305+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	77	2

NHU-8-081(039)924

Spec Code	Description	
251	0300 SEEDING CLASS III	
Sta 1305+00 to Sta 1308+00		0.39 ACRE
253	0301 BONDED FIBER MATRIX	
Sta 1305+00 to Sta 1308+00		0.39 ACRE
261	0112 FIBER ROLLS 12IN	
Sta 1305+00 to Sta 1308+00		552 LF

-  Seeding Class III
-  Fiber Rolls 12IN

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Permanent Erosion Control

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 1305+00 to Sta 1308+00



NHU-8-081(039)924

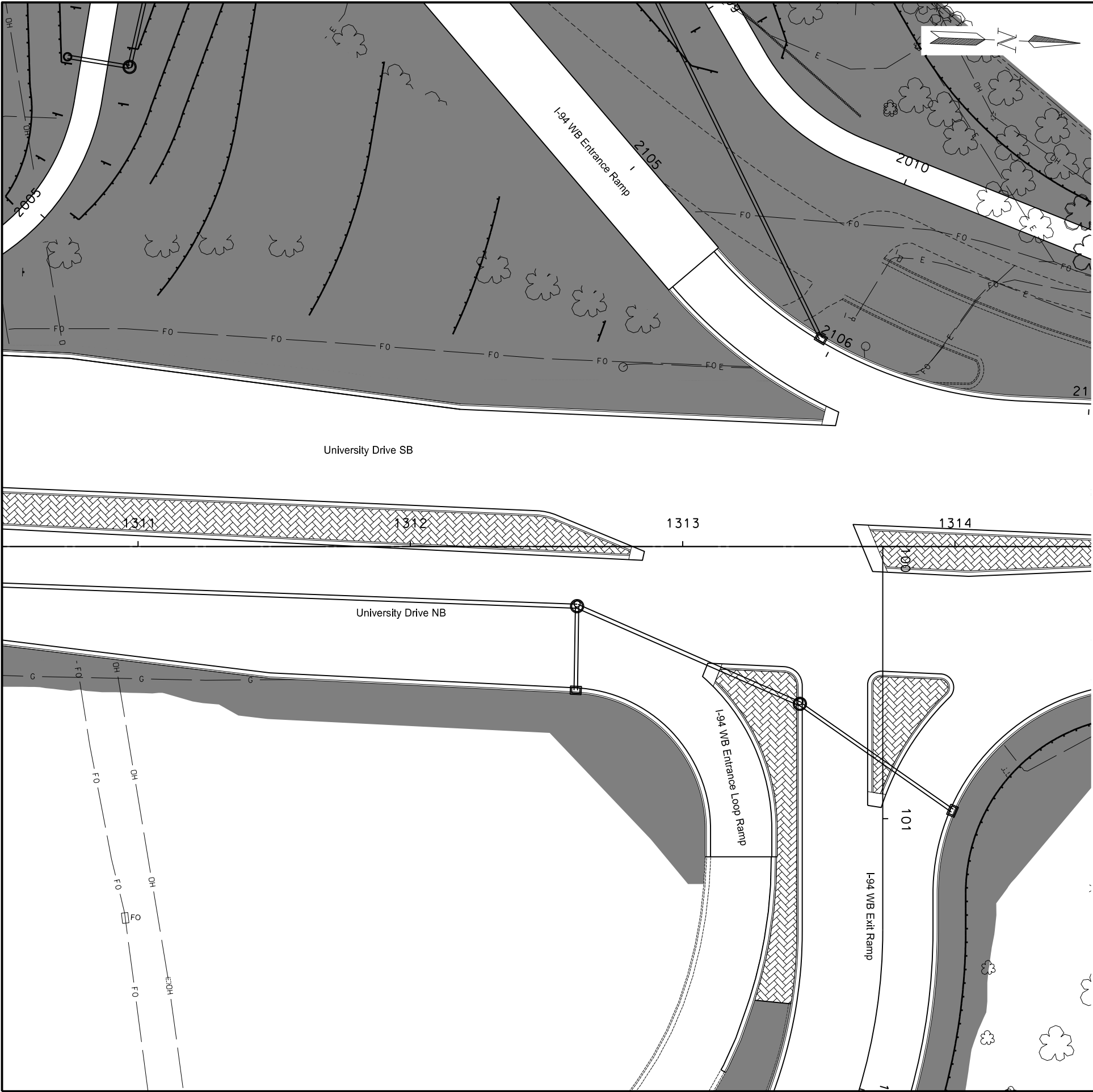


Seeding Class III

Fiber Rolls 12IN

Permanent Erosion Control

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 1308+00 to Sta 1311+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	77	4

NHU-8-081(039)924

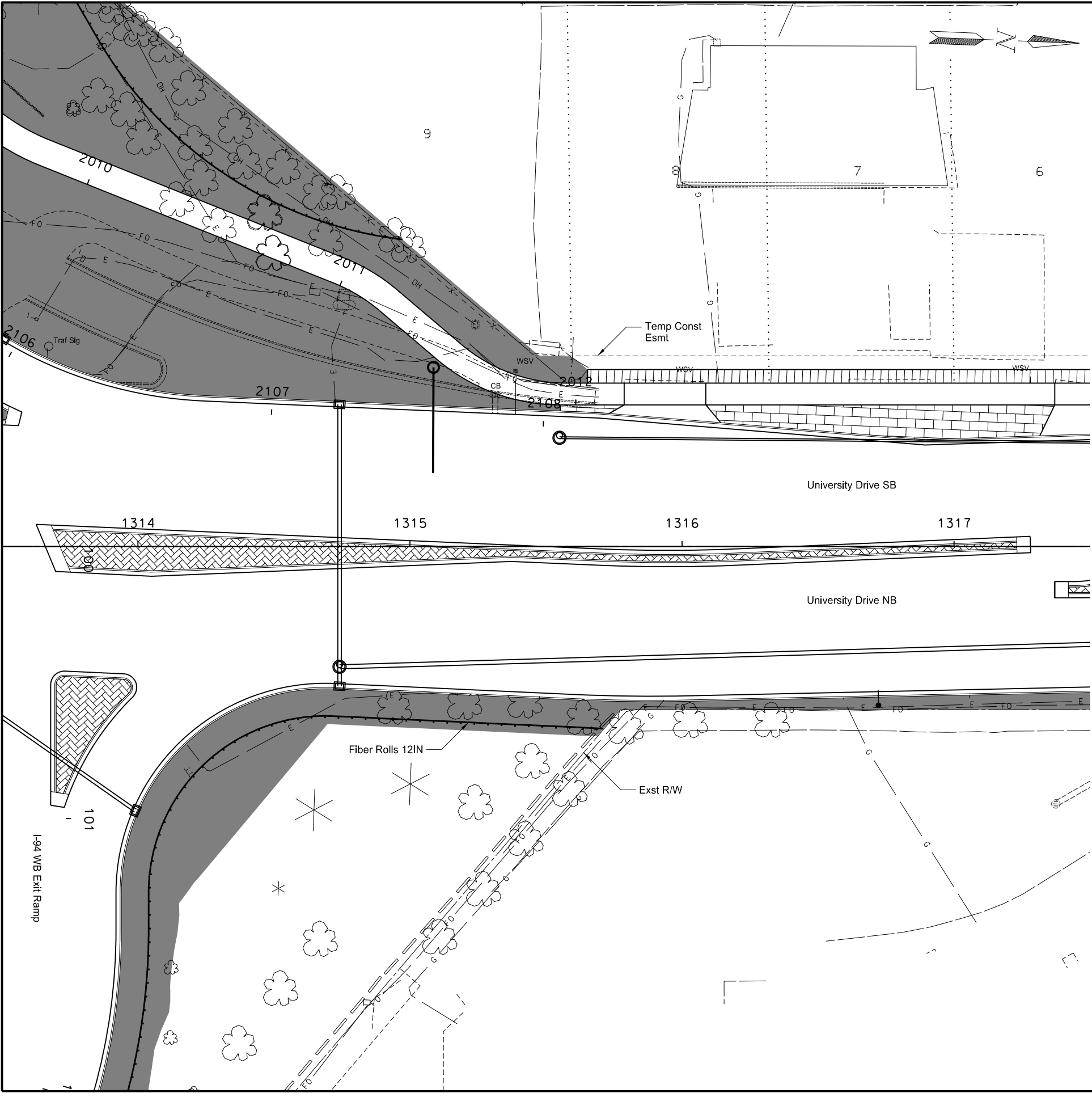
Spec Code	Description	
251 0300	SEEDING CLASS III	
	Sta 1311+00 to Sta 1314+00	0.10 ACRE
253 0301	BONDED FIBER MATRIX	
	Sta 1311+00 to Sta 1314+00	0.10 ACRE

-  Seeding Class III
-  Fiber Rolls 12IN

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Permanent Erosion Control

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 1311+00 to Sta 1314+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	77	5

NHU-8-081(039)924

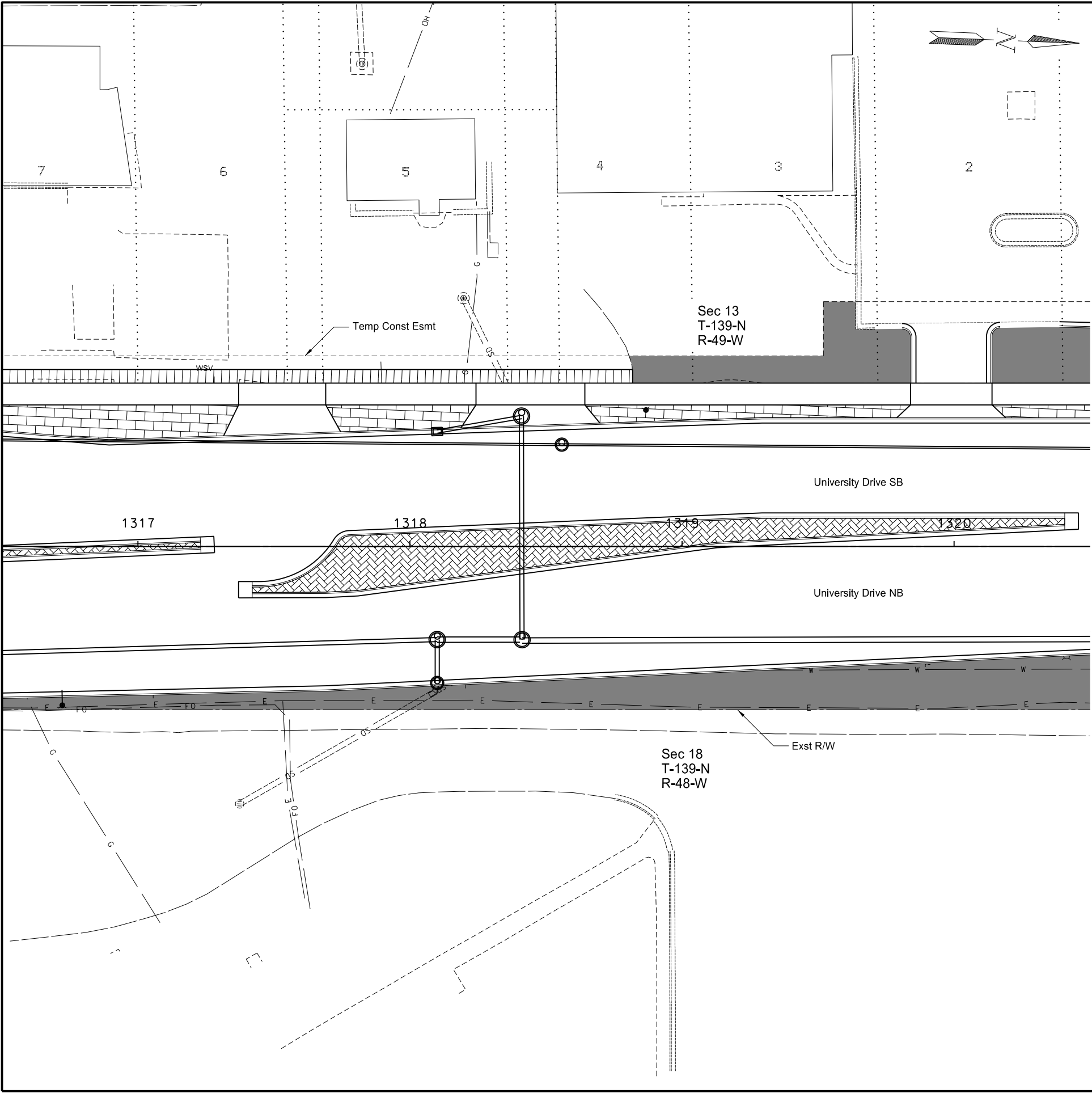
Spec Code Description	
251 0300 SEEDING CLASS III	
Sta 1314+00 to Sta 1317+00	0.04 ACRE
253 0301 BONDED FIBER MATRIX	
Sta 1314+00 to Sta 1317+00	0.04 ACRE
261 0112 FIBER ROLLS 12IN	
Sta 1314+00 to Sta 1317+00	99 LF

- Seeding Class III
- Fiber Rolls 12IN

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Permanent Erosion Control

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 1314+00 to Sta 1317+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	77	6

NHU-8-081(039)924

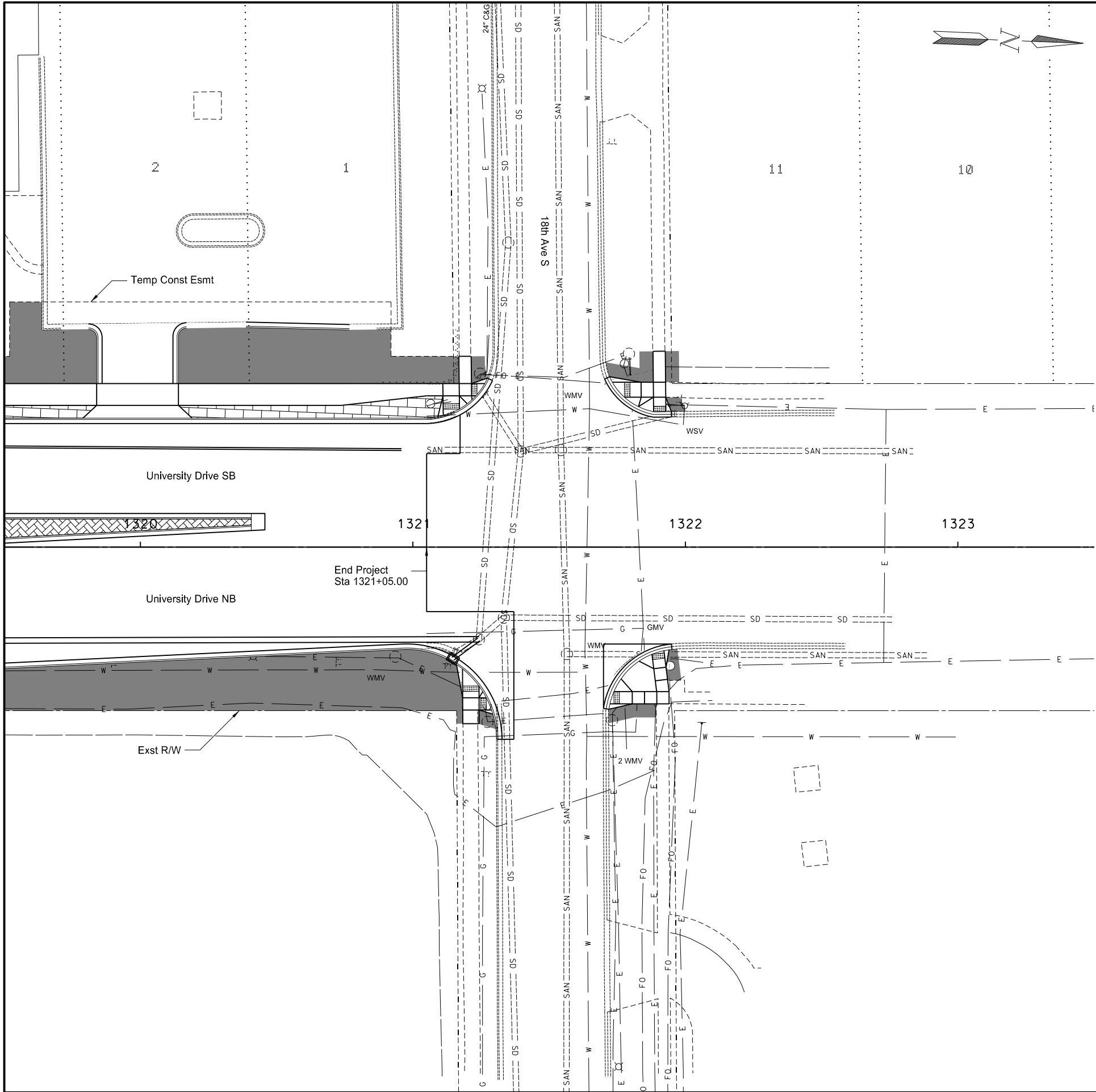
Spec Code Description	
251 0300 SEEDING CLASS III	
Sta 1317+00 to Sta 1320+00	0.11 ACRE
253 0301 BONDED FIBER MATRIX	
Sta 1311+00 to Sta 1314+00	0.11 ACRE

Seeding Class III

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Permanent Erosion Control

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 1317+00 to Sta 1320+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	77	7

NHU-8-081(039)924

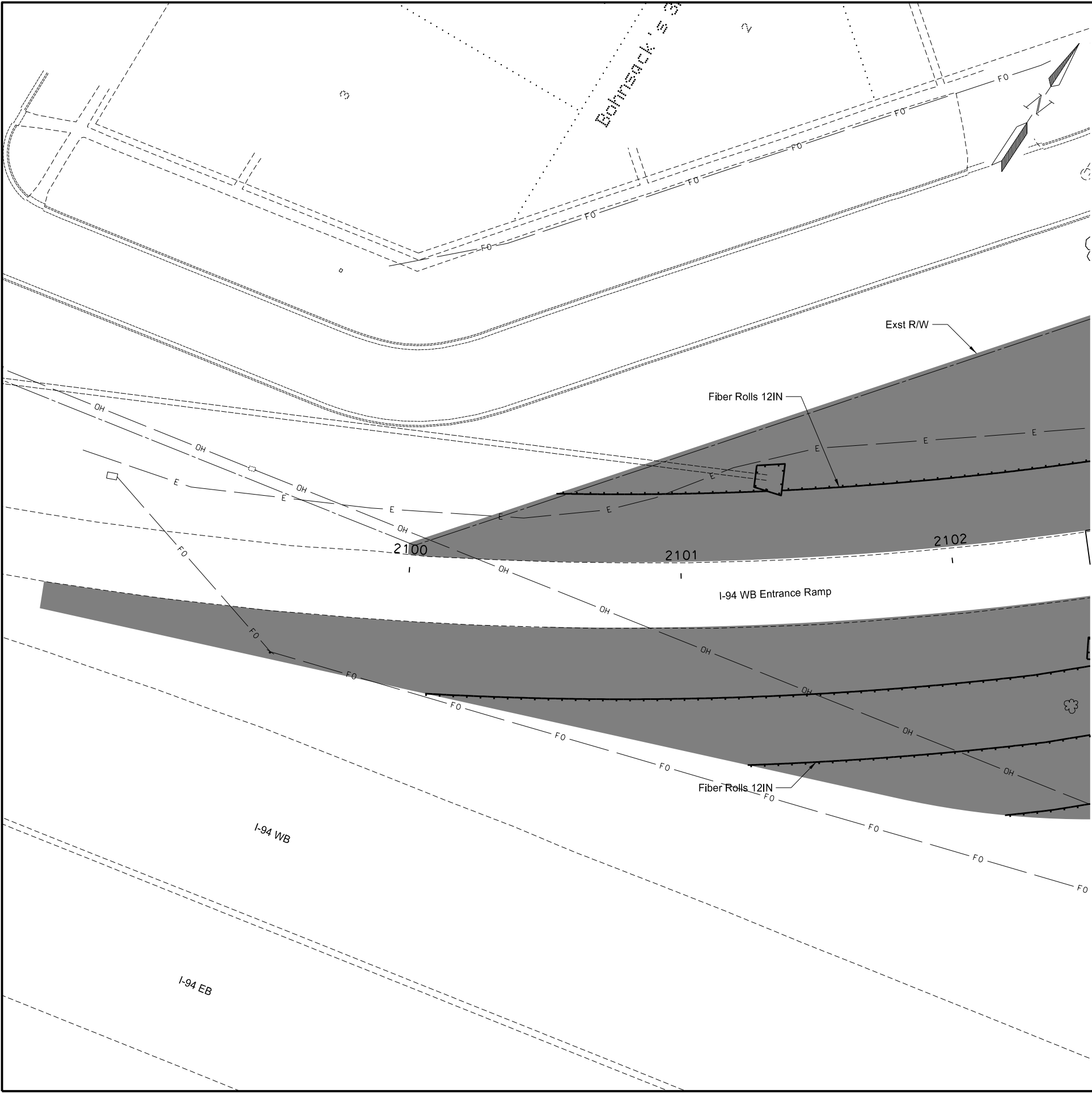
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251 0300 SEEDING CLASS III	
Sta 1320+00 to Sta 1322+00	0.11 ACRE
253 0301 BONDED FIBER MATRIX	
Sta 1320+00 to Sta 1322+00	0.11 ACRE



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Permanent Erosion Control

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 1320+00 to 1322+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	77	8

NHU-8-081(039)924

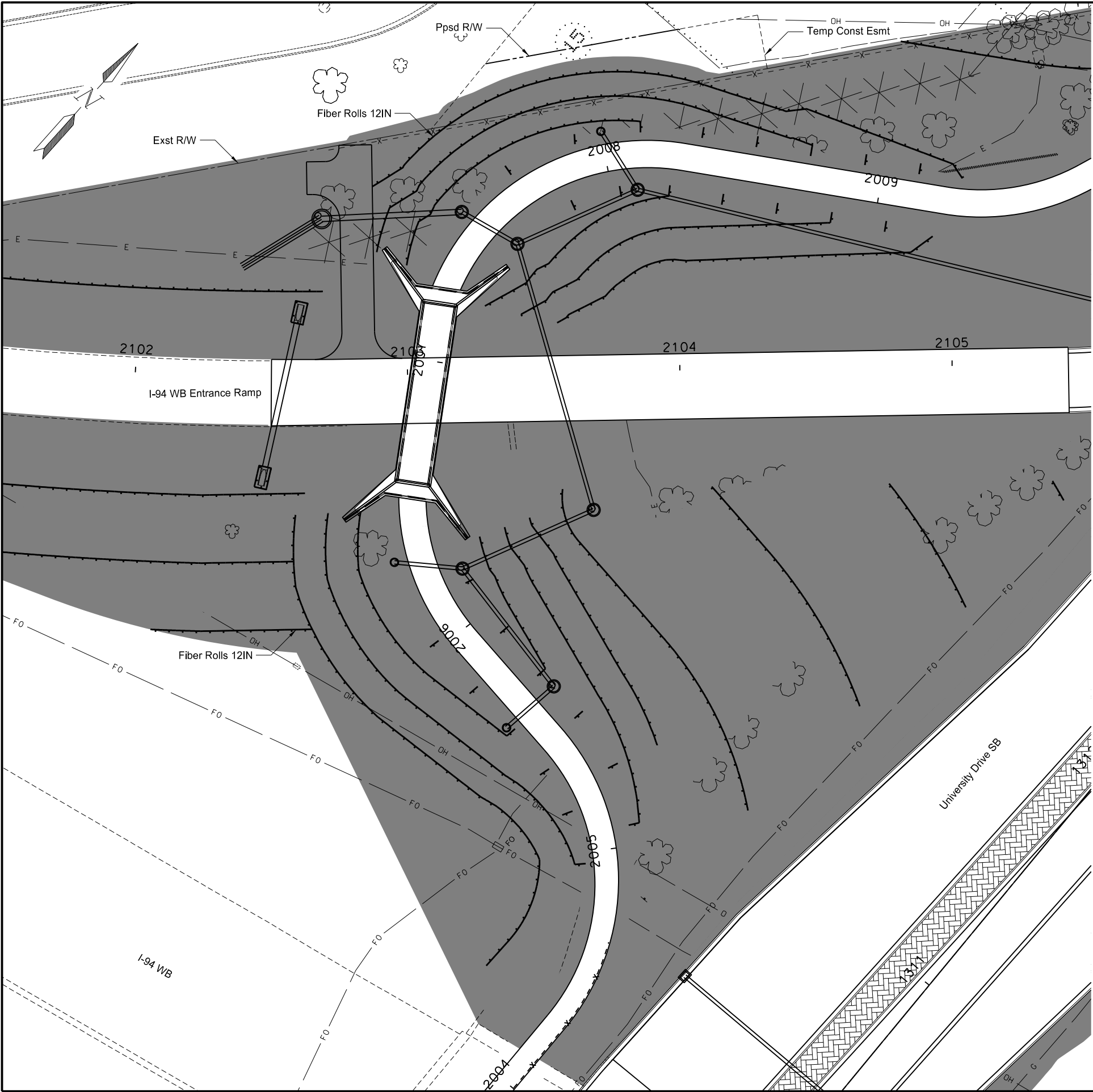
Spec	Code	Description	
251	0300	SEEDING CLASS III	
Sta 2100+00 to Sta 2102+00			0.45 ACRE
253	0301	BONDED FIBER MATRIX	
Sta 2100+00 to Sta 2102+00			0.45 ACRE
261	0112	FIBER ROLLS 12IN	
Sta 2100+00 to Sta 2102+00			459 LF

-  Seeding Class III
-  Fiber Rolls 12IN

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Permanent Erosion Control

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 2100+00 to Sta 2102+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	77	9

NHU-8-081(039)924

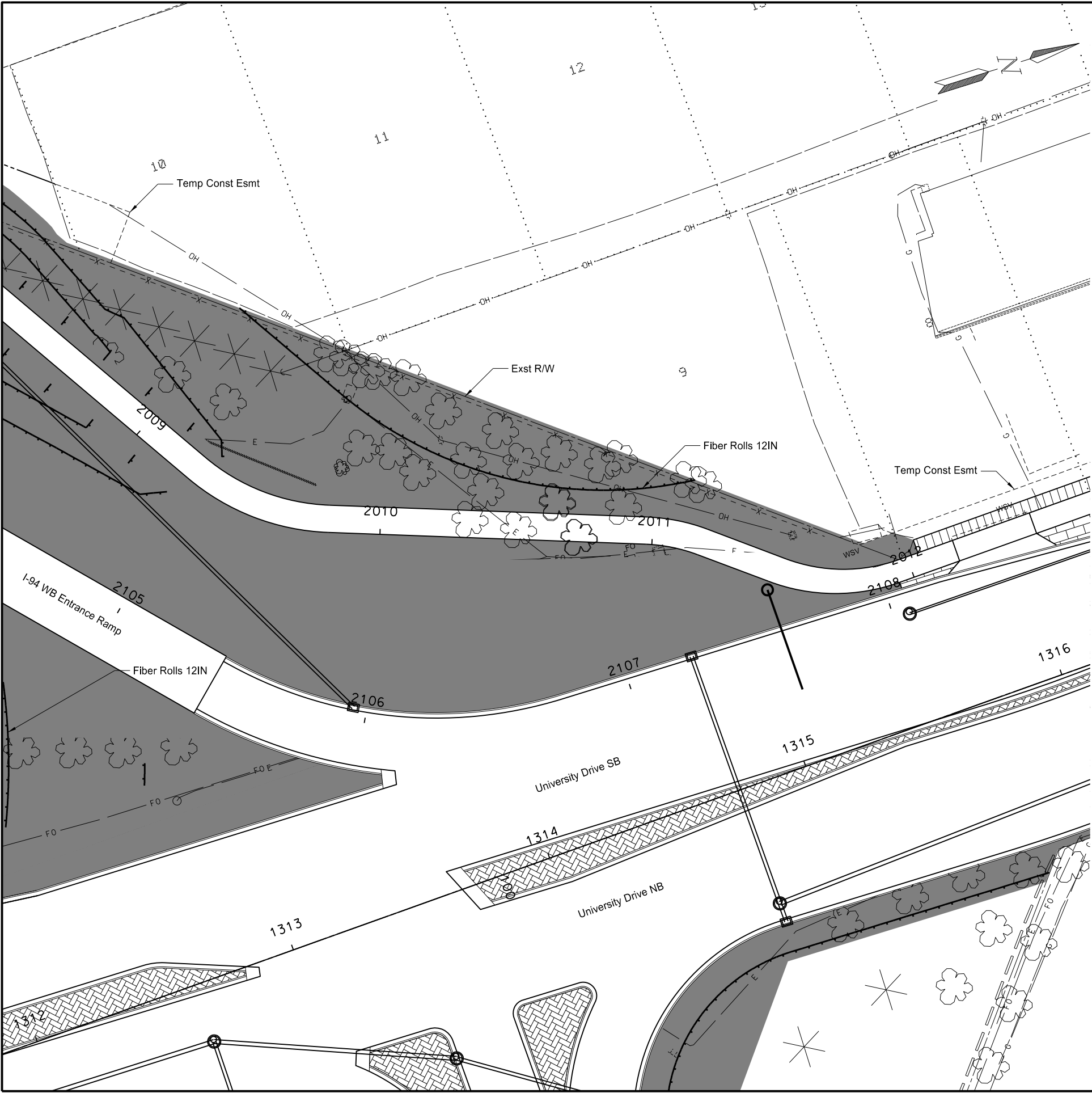
Spec	Code	Description	
251	0300	SEEDING CLASS III	
Sta 2102+00 to Sta 2105+00			1.62 ACRE
253	0301	BONDED FIBER MATRIX	
Sta 2102+00 to Sta 2105+00			1.62 ACRE
261	0112	FIBER ROLLS 12IN	
Sta 2102+00 to Sta 2105+00			2339 LF

- Seeding Class III
- Fiber Rolls 12IN

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Permanent Erosion Control

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 2102+00 to Sta 2105+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	77	10

NHU-8-081(039)924

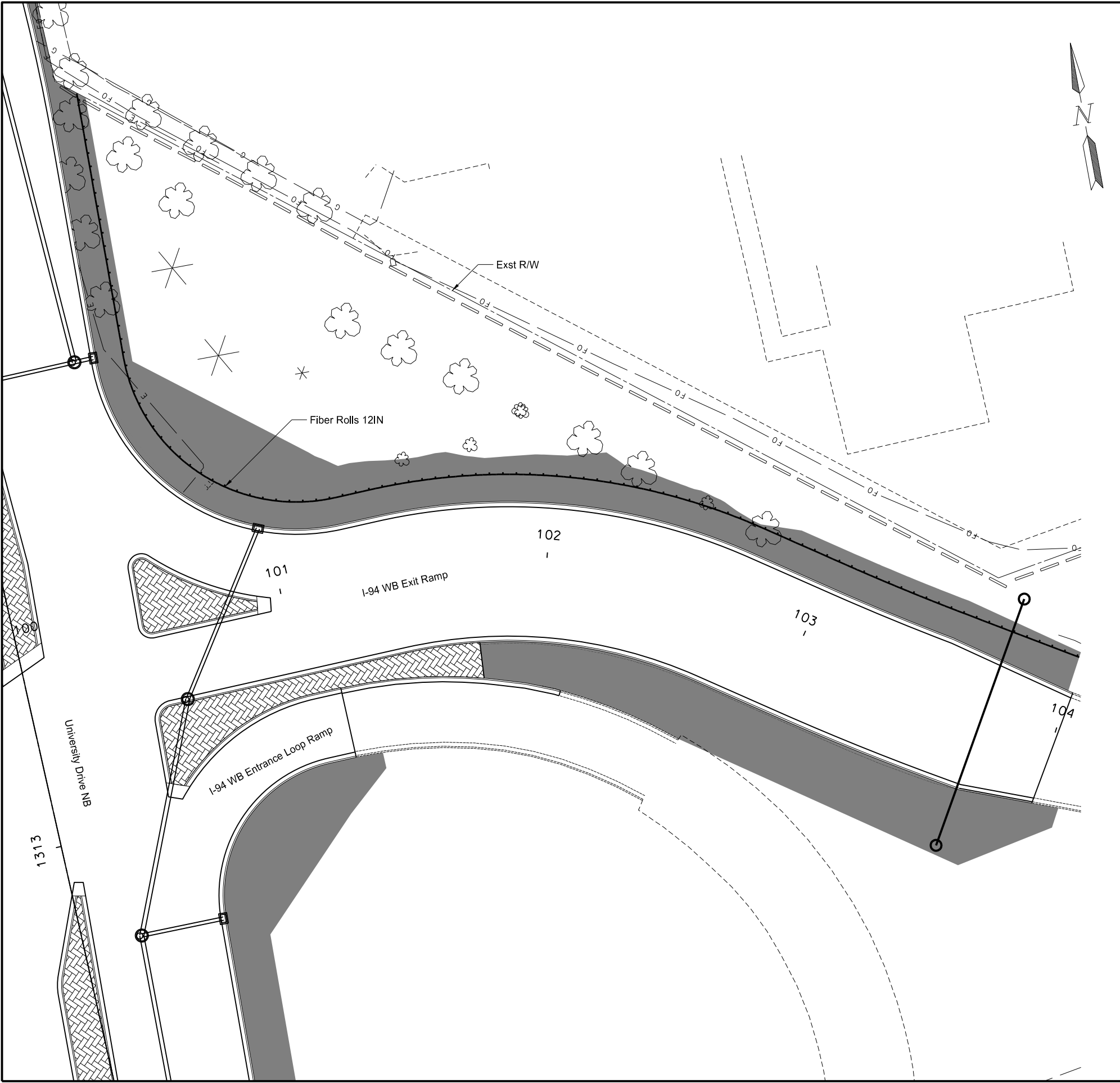
Spec Code Description	
251 0300 SEEDING CLASS III	
Sta 2105+00 to Sta 2108+20	0.61 ACRE
253 0301 BONDED FIBER MATRIX	
Sta 2105+00 to Sta 2108+20	0.61 ACRE
261 0112 FIBER ROLLS 12IN	
Sta 2105+00 to Sta 2108+20	195 LF

-  Seeding Class III
-  Fiber Rolls 12IN

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Permanent Erosion Control

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 2105+00 to Sta 2108+20



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	77	11

NHU-8-081(039)924

Spec	Code	Description	
251	0300	SEEDING CLASS III	
Sta 100+00 to Sta 104+00			0.28 ACRE
253	0301	BONDED FIBER MATRIX	
Sta 100+00 to Sta 104+00			0.28 ACRE
261	0112	FIBER ROLLS 12IN	
Sta 100+00 to Sta 104+00			394 LF

-  Seeding Class III
-  Fiber Rolls 12IN

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Permanent Erosion Control

Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta 100+00 to Sta 104+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	77	12

NHU-8-081-(039)924

Permanent Fiber Rolls 12 IN				
Sheet 1 - Sta 1301+80 to Sta 1305+00 (Chain SCL_Univ)				
Start Sta	Offset	End Sta	Offset	Length
1304+55	72' Rt	1305+00	127' Rt	72
1304+95	35' Rt	1305+00	42' Rt	8
Total				80

Permanent Fiber Rolls 12 IN				
Sheet 2 - Sta 1305+00 to Sta 1308+00 (Chain SCL_Univ)				
Start Sta	Offset	End Sta	Offset	Length
1305+00	42' Rt	1305+90	153' Rt	144
1305+00	127' Rt	1305+05	134' Rt	8
1305+21	35' Rt	1305+56	78' Rt	55
1306+38	85' Lt	1308+00	88' Lt	163
1306+83	159' Lt	1308+00	116' Lt	125
1307+43	77' Lt	1308+00	80' Lt	57
Total				552

Permanent Fiber Rolls 12 IN				
Sheet 3 - Sta 1308+00 to Sta 1311+00 (Chain SCL_Univ)				
Start Sta	Offset	End Sta	Offset	Length
1308+00	88' Lt	1308+38	87' Lt	38
1308+00	80' Lt	1308+40	80' Lt	40
1308+00	116' Lt	1308+34	114' Lt	34
Total				112

Permanent Fiber Rolls 12 IN				
Sheet 5 - Sta 1314+00 to Sta 1317+00 (Chain SCL_Univ)				
Start Sta	Offset	End Sta	Offset	Length
1314+72	62' Rt	1315+71	67' Rt	99
Total				99

Permanent Fiber Rolls 12 IN				
Sheet 8 - Sta 2100+00 to Sta 2102+00 (Chain PR_WBEnt)				
Start Sta	Offset	End Sta	Offset	Length
2100+08	44' Rt	2102+00	44' Rt	198
2100+54	31' Lt	2101+33	31' Lt	78
2101+22	69' Rt	2102+00	69' Rt	82
2101+28	33' Lt	2101+40	41' Lt	41
2101+38	31' Lt	2102+00	31' Lt	60
Total				459

Permanent Fiber Rolls 12 IN				
Sheet 9 - Sta 2102+00 to Sta 2105+00 (Chain PR_WBEnt)				
Start Sta	Offset	End Sta	Offset	Length
2102+00	31' Lt	2102+69	31' Lt	67
2102+00	44' Rt	2102+62	43' Rt	64
2102+00	69' Rt	2102+58	68' Rt	62
2102+09	94' Rt	2102+65	93' Rt	59
2102+44	41' Rt	2102+50	34' Rt	25
2102+57	20' Lt	2102+63	27' Lt	25
2102+59	51' Rt	2103+25	218' Rt	209
2102+70	50' Rt	2103+62	181' Rt	170
2102+88	69' Lt	2105+00	75' Lt	230
2102+82	50' Rt	2103+37	131' Rt	109
2102+89	45' Lt	2104+49	78' Lt	192
2103+00	40' Lt	2103+87	88' Lt	114
2103+07	100' Rt	2103+10	98' Rt	4
2103+20	77' Rt	2103+23	75' Rt	3
2103+21	117' Rt	2103+24	115' Rt	4
2103+26	60' Rt	2103+46	111' Rt	59
2103+29	25' Lt	2103+97	68' Lt	84
2103+32	96' Rt	2103+36	93' Rt	4
2103+35	57' Rt	2103+78	167' Rt	125
2103+37	76' Lt	2103+39	73' Lt	4
2103+42	22' Lt	2104+57	57' Lt	128
2103+44	53' Rt	2103+89	138' Rt	96
2103+46	148' Rt	2103+50	146' Rt	4
2103+54	163' Rt	2103+58	161' Rt	4
2103+55	18' Lt	2104+94	48' Lt	147
2103+56	43' Rt	2104+22	162' Rt	139
2103+59	127' Rt	2103+62	125' Rt	4
2103+61	63' Lt	2103+63	59' Lt	4
2103+63	87' Lt	2103+63	84' Lt	4
2103+71	146' Rt	2103+75	144' Rt	4
2103+79	68' Lt	2103+79	64' Lt	4
2104+10	85' Lt	2104+10	89' Lt	4
2104+11	43' Rt	2104+64	124' Rt	98
2104+16	61' Lt	2104+17	65' Lt	4
2104+29	82' Lt	2104+30	86' Lt	4
2104+36	57' Lt	2104+37	61' Lt	4
2104+69	74' Lt	2104+70	78' Lt	4
2104+76	50' Lt	2104+77	54' Lt	4
2104+76	43' Rt	2105+00	81' Rt	45
2104+83	120' Lt	2105+00	116' Lt	17
2104+89	71' Lt	2104+90	75' Lt	4
Total				2,339

Permanent Fiber Rolls 12 IN				
Sheet 10 - Sta 2105+00 to Sta 2108+20 (Chain PR_WBEnt)				
Start Sta	Offset	End Sta	Offset	Length
2105+00	116' Lt	2105+31	111' Lt	32
2105+31	111' Lt	2107+45	66' Lt	139
2105+36	43' Rt	2105+40	50' Rt	8
2105+00	75' Lt	2105+05	69' Lt	8
2105+00	81' Rt	2105+04	89' Rt	8
Total				195

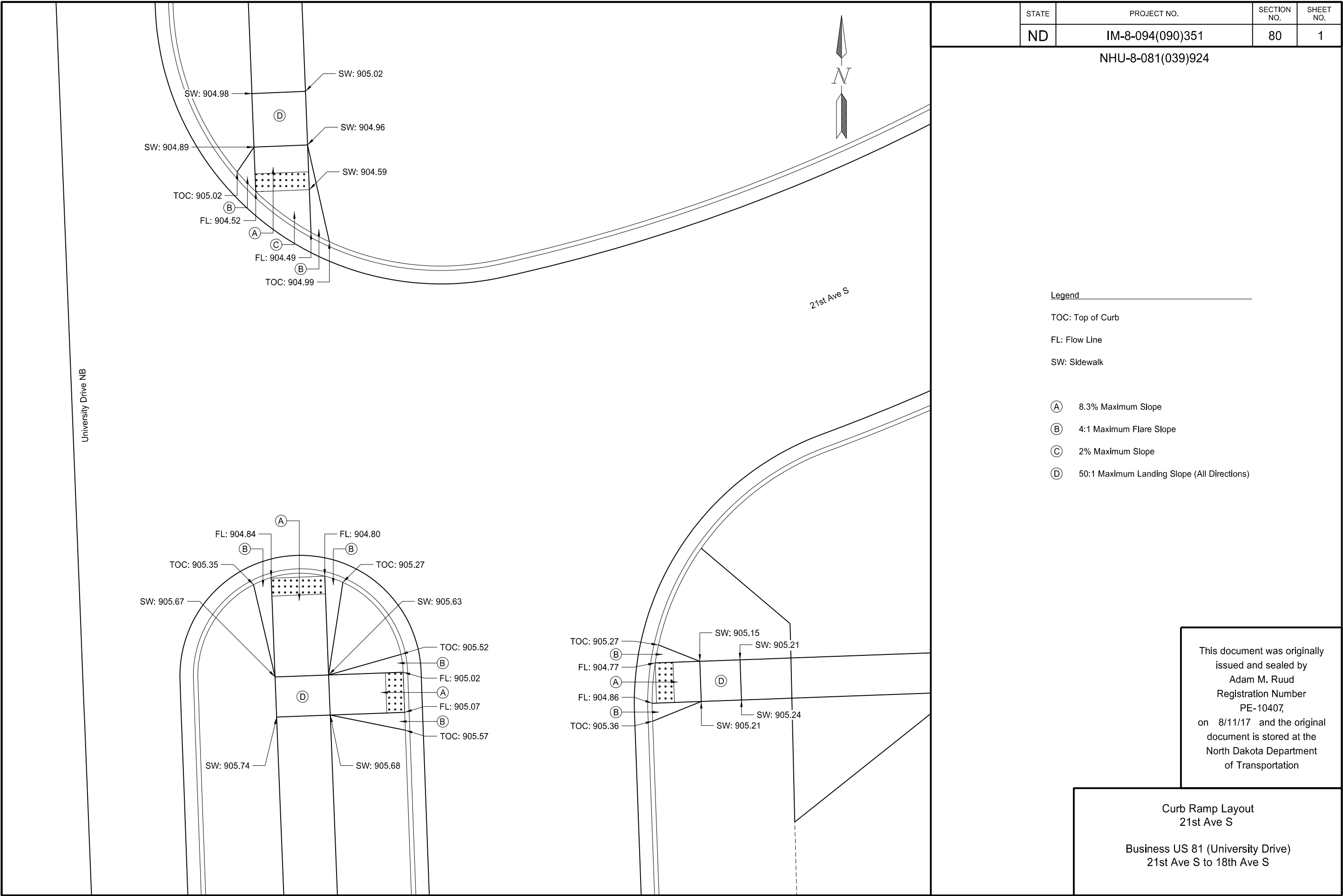
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Sheet 11 - Sta 100+00 to Sta 104+00 (Chain EX_WBEx)				
Start Sta	Offset	End Sta	Offset	Length
100+62	98' Lt	104+00	29' Lt	394
Total				394

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Permanent Erosion Control

Permanent Fiber Rolls Table

Business US 81 (University Drive)
21st Ave S to 18th Ave S



STATE	PROJECT NO.	SECTION NO.	SHEET NO.

ND	IM-8-094(090)351	80	1
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NHU-8-081(039)924

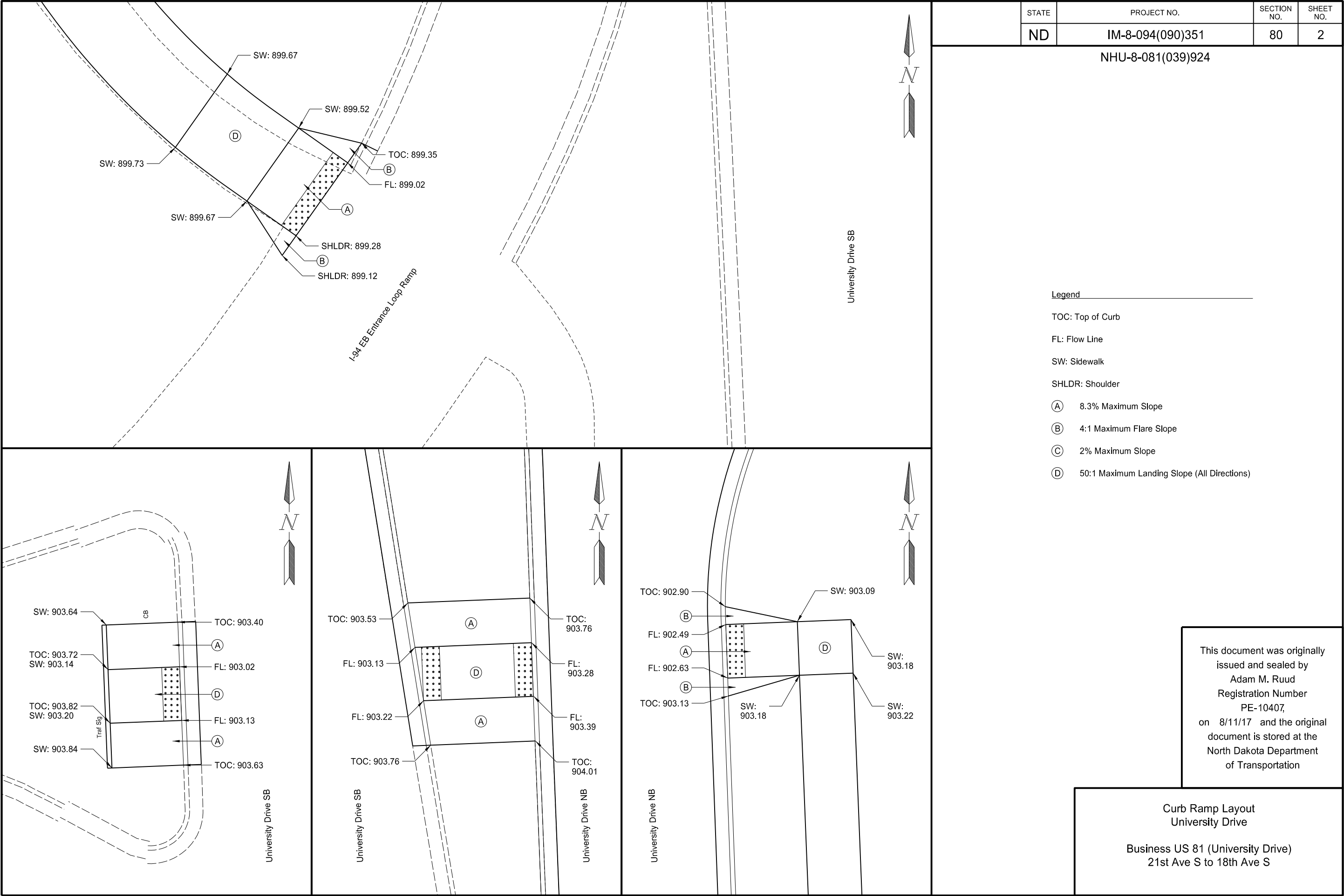
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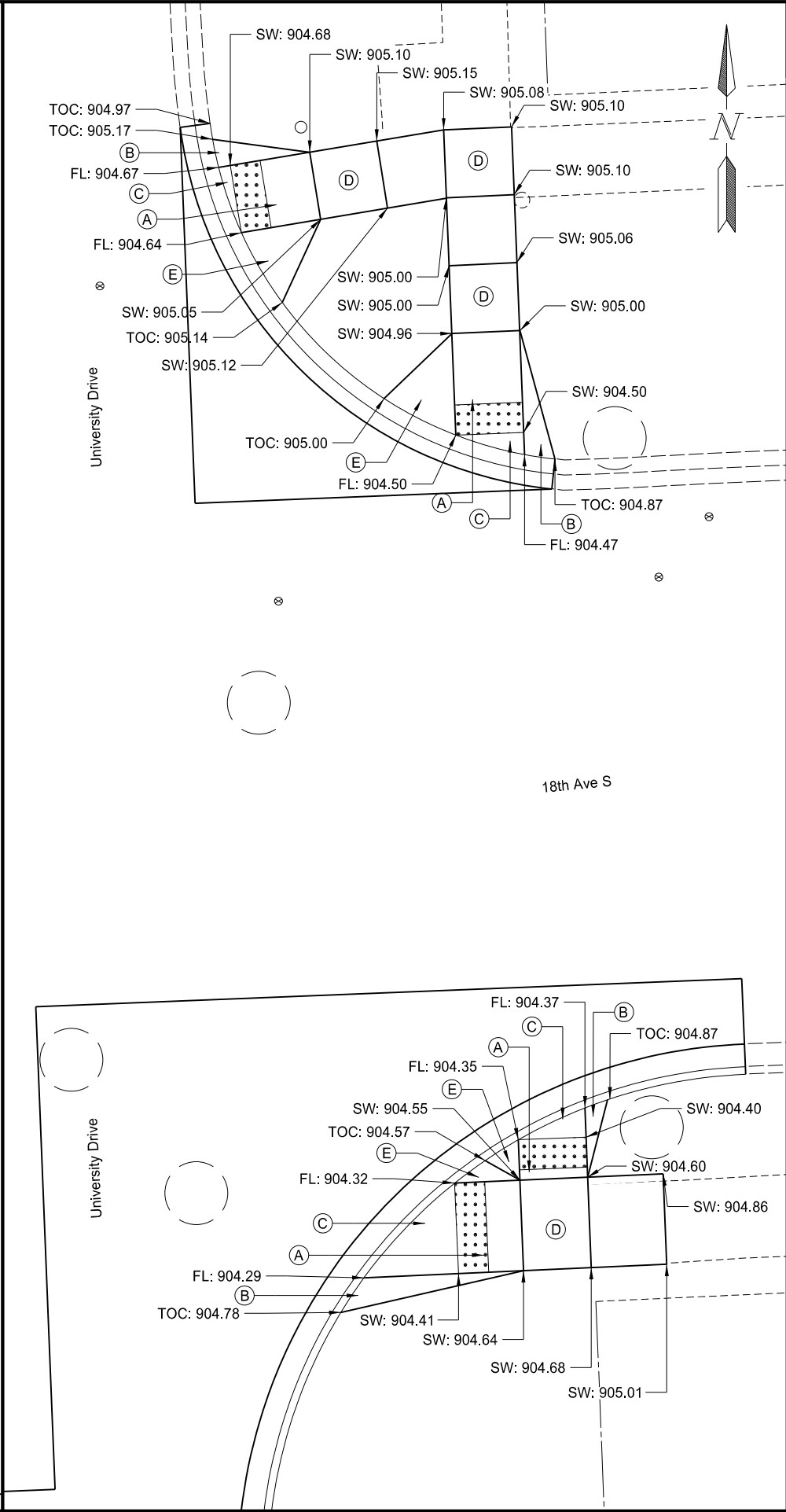
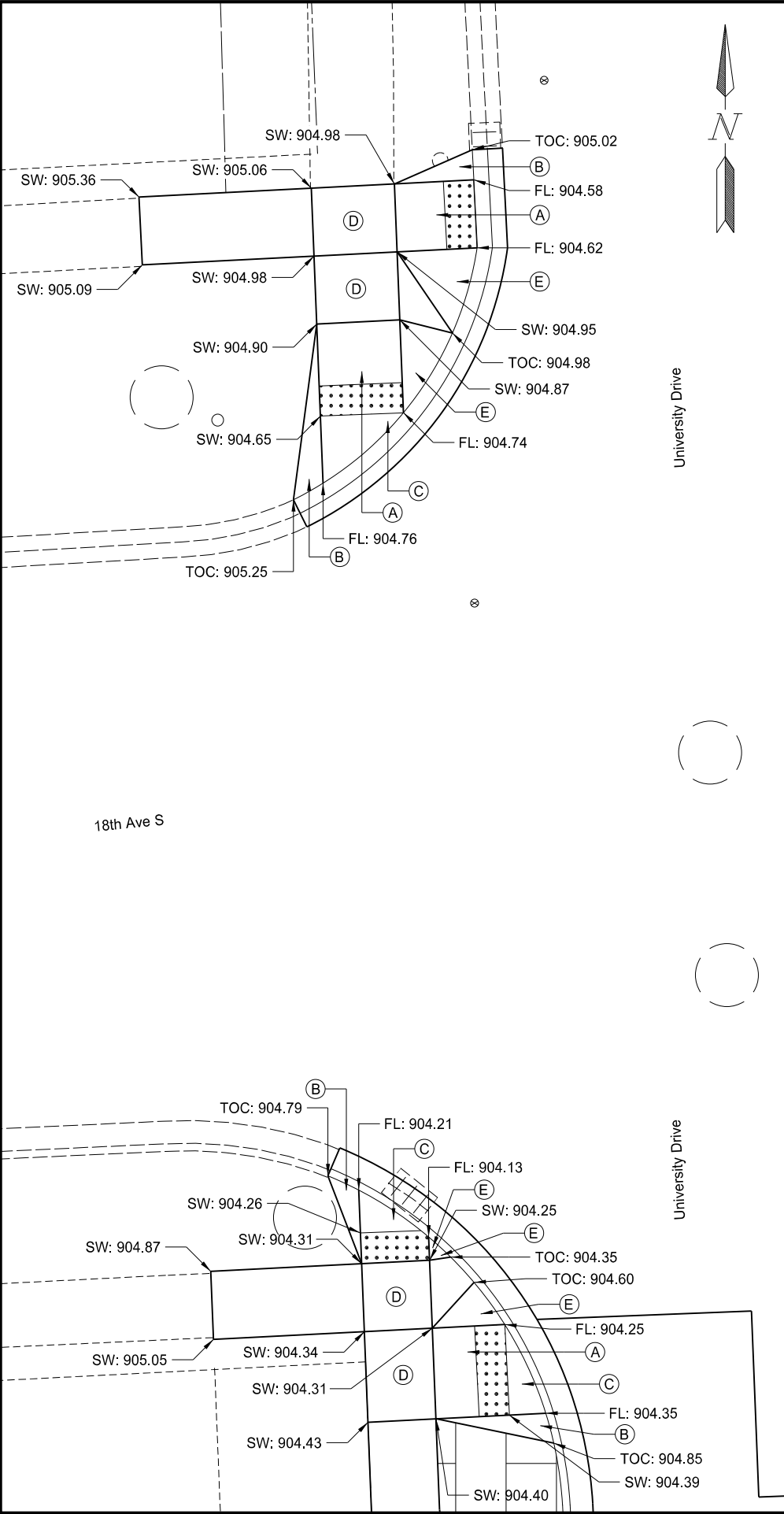
TOC: Top of Curb
FL: Flow Line
SW: Sidewalk

- (A) 8.3% Maximum Slope
- (B) 4:1 Maximum Flare Slope
- (C) 2% Maximum Slope
- (D) 50:1 Maximum Landing Slope (All Directions)

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Curb Ramp Layout
21st Ave S
Business US 81 (University Drive)
21st Ave S to 18th Ave S





STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	80	3

NHU-8-081(039)924

Legend

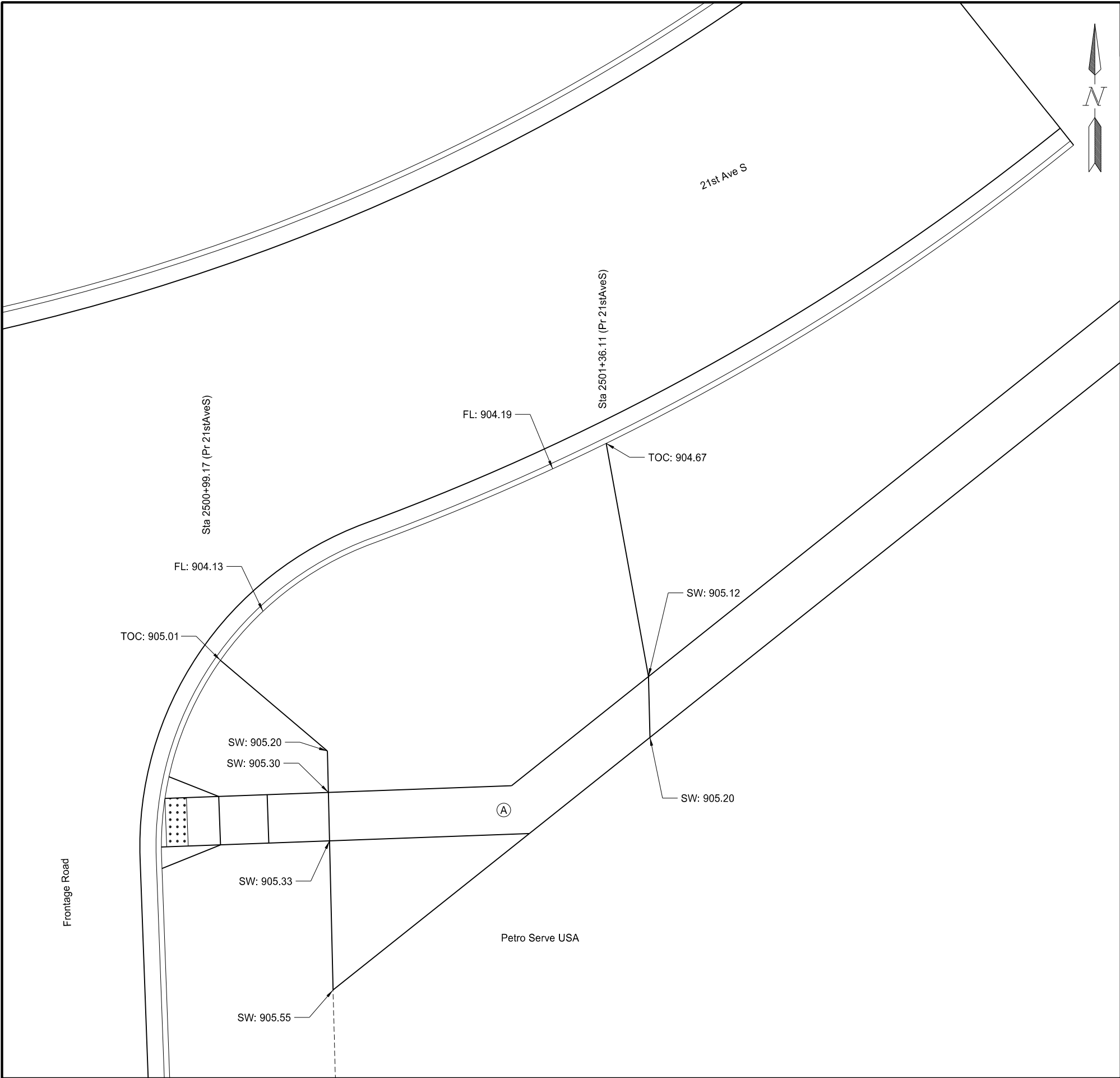
TOC: Top of Curb
FL: Flow Line
SW: Sidewalk

(A) 8.3% Maximum Slope
(B) 4:1 Maximum Flare Slope
(C) 2% Maximum Slope
(D) 50:1 Maximum Landing Slope (All Directions)
(E) 10:1 Maximum Flare Slope

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Curb Ramp Layout
18th Ave S

Business US 81 (University Drive)
21st Ave S to 18th Ave S



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	80	4

NHU-8-081(039)924

Legend

TOC: Top of Curb

FL: Flow Line

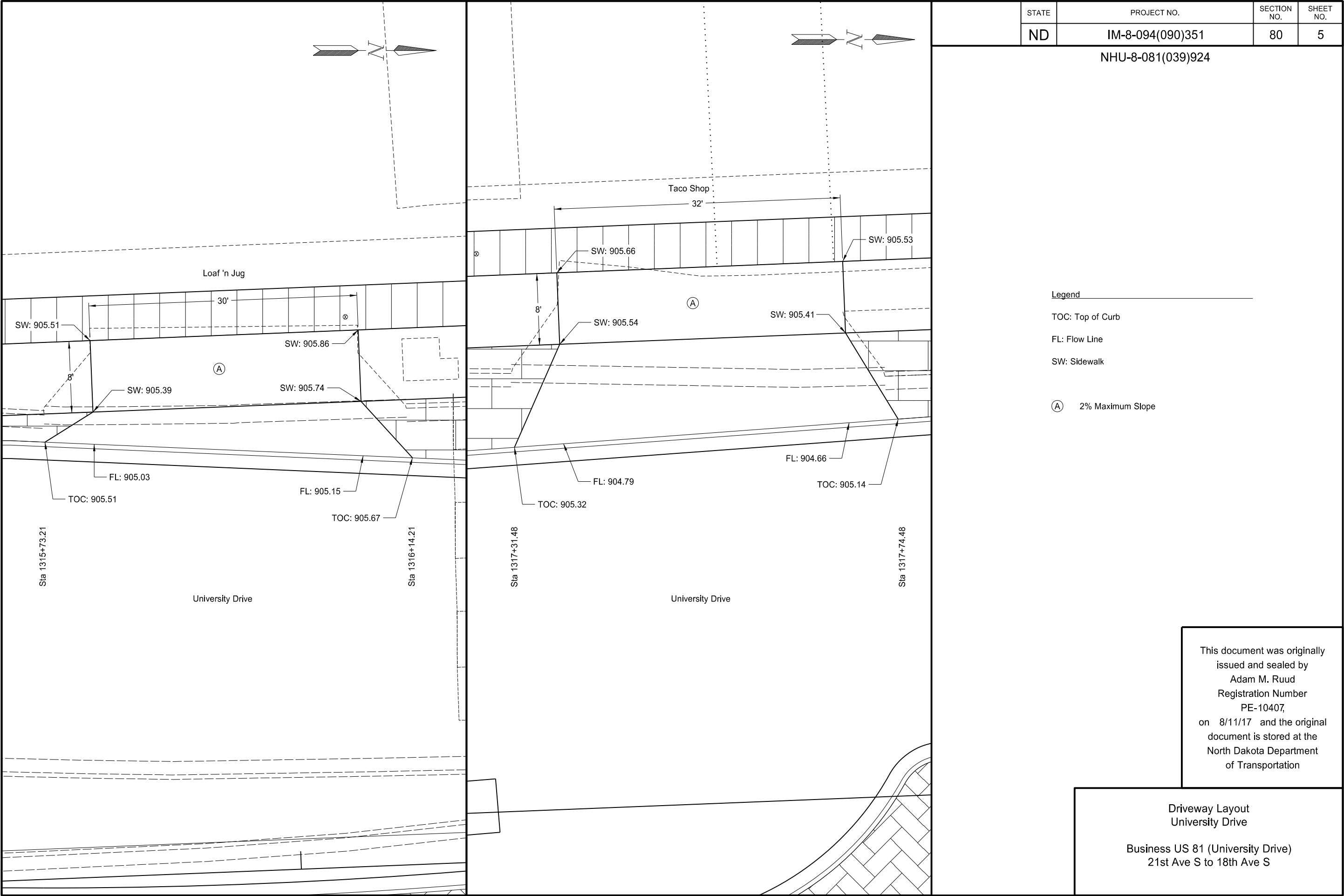
SW: Sidewalk

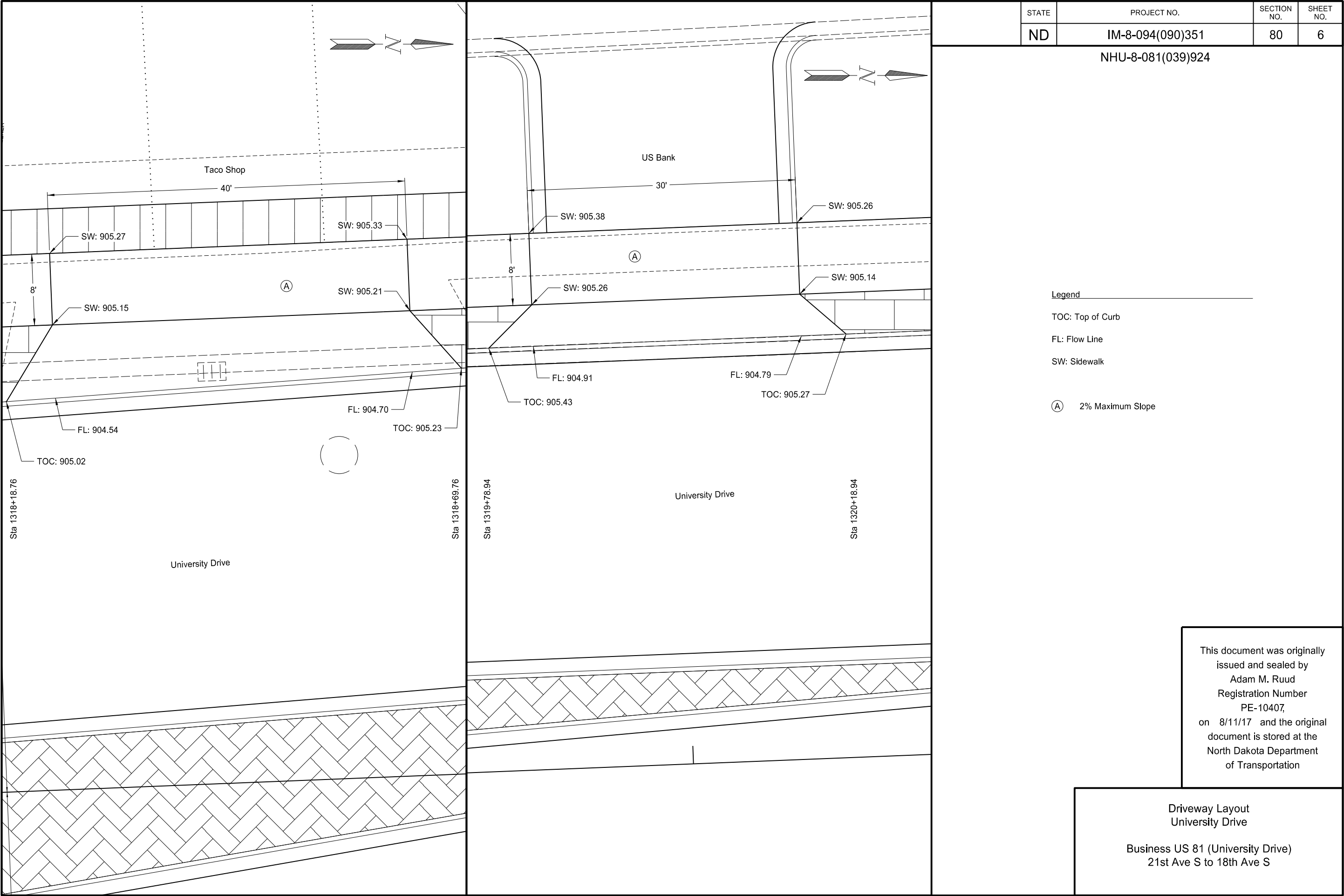
Ⓐ 2% Maximum Slope

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Driveway Layout
Petro Serve USA

Business US 81 (University Drive)
21st Ave S to 18th Ave S





STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	80	6

NHU-8-081(039)924

Legend

TOC: Top of Curb

FL: Flow Line

SW: Sidewalk

(A) 2% Maximum Slope

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Driveway Layout
University Drive

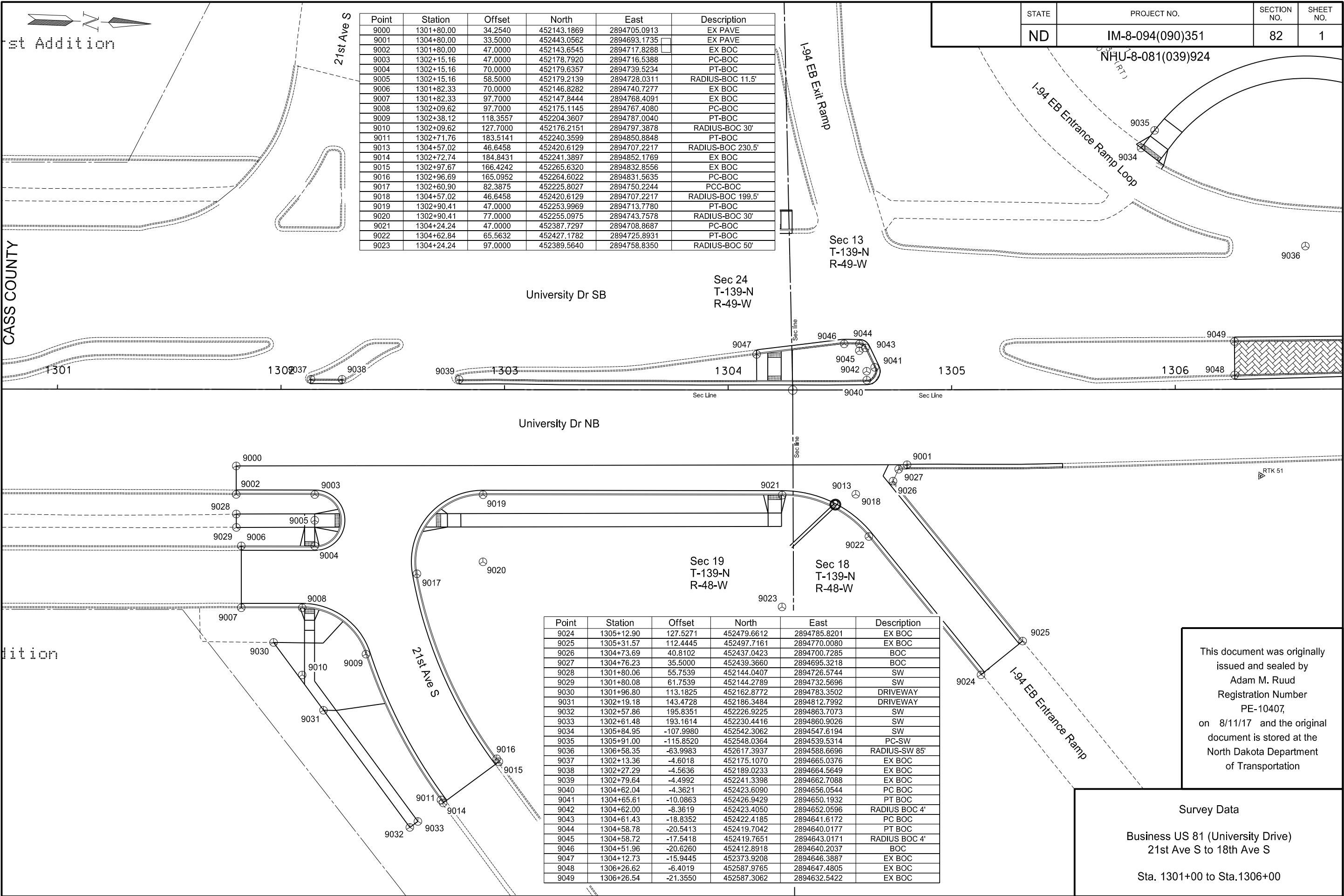
Business US 81 (University Drive)
21st Ave S to 18th Ave S

PRELIMINARY SURVEY COORDINATE AND CURVE DATA - UNIVERSITY DRIVE - 21ST AVE S. TO 18TH AVE S.											STATE	PROJECT NO.		SECTION NO.	SHEET NO.					
										ND		IM-8-094(090)351 ; NHU-8-081(039)924		81	2					
HORIZONTAL ALIGNMENT				CURVE DATA			US PUBLIC LAND SURVEY DATA				SURVEY CONTROL POINTS									
PNT	STATION	NORTHING	EASTING	ARC DEFINITION			DESC.	SEC-TWP-RGE	NORTHING	EASTING	PNT	NORTHING	EASTING	ELEV	STATION	OFFSET				
I-94 (Chain: SCL_94)				C31		C32						CONTROL POINT DESCRIPTION								
BEG	18510+98.49	452189.14	2889372.18	PI STA	= 18537+44.48	PI STA	= 18579+02.53													
PC	18533+34.92	452323.93	2891604.54	Delta	= 8° 10' 38" LT	Delta	= 18° 53' 18" RT													
PI C31	18537+44.48	452348.62	2892013.36	D _a	= 1° 00' 00"	D _a	= 1° 00' 00"													
PT	18541+52.66	452431.20	2892414.51	R	= 5729.65'	R	= 5729.65'													
Station equation I-94 (SCL_94) at I-94 WB Entrance Ramp (EX_WBENT)				T	= 409.57'	T	= 953.08'													
I-94 50.00' Lt	18545+08.84	452551.99	2892753.30	L	= 817.74'	L	= 1888.87'													
WBENT	300+00.00	452551.99	2892753.30																	
Station equation I-94 (SCL_94) at I-94 EB Exit Ramp (EX_EBEX)																				
I-94 49.74' Rt	18550+47.03	452562.82	2893300.55																	
EBEX	400+00.00	452562.82	2893300.55																	
Station equation I-94 (SCL_94) at I-94 WB Ent Loop Ramp (EX_WBENT_LOOP)																				
I-94 50.00' Lt	18557+26.01	452797.41	2893945.47																	
WBENT LP	214+11.35	452797.41	2893945.47																	
POT1 / US81	18564+26.75	452889.74	2894641.89																	
PC	18569+49.45	452995.14	2895153.86																	
Station equation I-94 (SCL_94) at I-94 EB Ent Loop Ramp (EX_EBENT_LOOP)																				
I-94 49.42' Rt	18571+46.89	452982.89	2895356.18																	
EBENT LP	518+17.86	452982.89	2895356.18																	
PI C32	18579+02.53	453187.31	2896087.37																	
Station equation I-94 (SCL_94) at I-94 EB Entrance Ramp (EX_EBENT)																				
I-94 49.42' Rt	18582+74.82	453061.13	2896469.84																	
EBENT	620+19.44	453061.13	2896469.84																	
Station equation I-94 (SCL_94) at I-94 WB Exit Ramp (EX_WBEX)																				
I-94 49.59' Lt	18585+03.69	453148.96	2896703.21																	
WBEX	121+28.59	453148.96	2896703.21																	
PT	18588+38.32	453066.94	2897032.82																	
END	18625+17.91	452602.21	2900682.94																	
NOTES: Sheet 2 of 5				Date Survey Completed 11/18/16			☐ Assumed Coordinates ☒ All coordinates on this sheet are Cass County ground coordinates. They are derived from the NAD83(2011) reference frame; North Dakota South Zone Combination Factor (cf) = 0.9998875				All coordinates and measurements on this document derived from the International Foot definition. INITIALIZING BENCH MARK GPS FARGO Station (OPUS) ☒ NAVD-88 ☐ NGVD-29 ☐ GEOID 09 ☒ GEOID 12A					This document was originally issued and sealed by Curtis A. Skarphol Registration Number LS- 4723 , on 8/11/17 and the original document is stored at the North Dakota Department of Transportation				

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PRELIMINARY SURVEY COORDINATE AND CURVE DATA - UNIVERSITY DRIVE - 21ST AVE S. TO 18TH AVE S.											STATE	PROJECT NO.		SECTION NO.	SHEET NO.
										ND		IM-8-094(090)351 ; NHU-8-081(039)924		81	4
HORIZONTAL ALIGNMENT				CURVE DATA		US PUBLIC LAND SURVEY DATA				SURVEY CONTROL POINTS					
PNT	STATION	NORTHING	EASTING	ARC DEFINITION		DESC.	SEC-TWP-RGE	NORTHING	EASTING	PNT	NORTHING	EASTING	ELEV	STATION	OFFSET
I-94 EB Exit Ramp (Chain: EX_EBEX)				EX_EBEX-1		EX_EBEX-2				CONTROL POINT DESCRIPTION					
BEG / I-94	400+00.00	452562.82	2893300.55	PI STA = 401+08.02		PI STA = 402+98.87									
PI EX_EBEX-1	401+08.02	452584.60	2893406.36	Delta = 12° 03' 18" RT		Delta = 6° 05' 12" RT									
PCC	402+15.24	452583.81	2893514.36	D _a = 5° 36' 03"		D _a = 3° 38' 32"									
PI EX_EBEX-2	402+98.87	452583.19	2893597.99	R = 1023.00'		R = 1573.11'									
PCC	403+82.35	452573.71	2893681.09	T = 108.02'		T = 83.63'									
PI EX_EBEX-3	405+56.16	452554.01	2893853.78	L = 215.24'		L = 167.11'									
PT	407+26.48	452476.77	2894009.48												
PC	408+42.46	452425.23	2894113.39	EX_EBEX-3		EX_EBEX-4									
PI EX_EBEX-4	409+83.92	452362.37	2894240.11	PI STA = 405+56.16		PI STA = 409+83.92									
PT	411+19.83	452365.64	2894381.52	Delta = 19° 52' 29" RT		Delta = 27° 42' 31" LT									
PC	411+33.18	452365.95	2894394.87	D _a = 5° 46' 31"		D _a = 9° 59' 23"									
PI EX_EBEX-5	412+73.52	452369.20	2894535.17	R = 992.07'		R = 573.55'									
END / US 81	414+09.09	452433.27	2894660.04	T = 173.81'		T = 141.45'									
				L = 344.13'		L = 277.37'									
				EX_EBEX-5											
				PI STA = 412+73.52											
				Delta = 25° 50' 19" LT		EX_WBENT-1									
				D _a = 9° 21' 53"		PI STA = 312+28.73									
				R = 611.82'		Delta = 19° 37' 07" LT									
				T = 140.34'		D _a = 4° 00' 00"									
				L = 275.91'		R = 1432.39'									
						T = 247.66'									
						L = 490.46'									
I-94 WB Entrance Ramp (Chain: EX_WBENT)															
BEG / I-94	300+00.00	452551.99	2892753.30												
PC	309+81.07	452769.37	2893709.99	EX_WBENT-2		EX_WBENT-3									
PI EX_WBENT-1	312+28.73	452824.25	2893951.49	PI STA = 316+82.69		PI STA = 320+69.64									
PCC	314+71.54	452957.02	2894160.55	Delta = 20° 52' 52" LT		Delta = 38° 58' 29" LT									
PI EX_WBENT-2	316+82.69	453070.23	2894338.79	D _a = 5° 00' 00"		D _a = 11° 14' 04"				All coordinates and measurements on this document derived from the International Foot definition.					
PCC	318+89.16	453239.53	2894464.98	R = 1145.93'		R = 510.00'									
PI EX_WBENT-3	320+69.64	453384.23	2894572.83	T = 211.15'		T = 180.47'									
PT	322+36.08	453564.56	2894565.66	L = 417.62'		L = 346.92'		☐ Assumed Coordinates ☒ All coordinates on this sheet are Cass County ground coordinates. They are derived from the NAD83(2011) reference frame; North Dakota South Zone Combination Factor (cf) = 0.9998875		INITIALIZING BENCH MARK GPS FARGO Station (OPUS)		This document was originally issued and sealed by Curtis A. Skarphol Registration Number LS- 4723 , on 8/11/17 and the original document is stored at the North Dakota Department of Transportation			
END / US 81	323+59.31	453687.69	2894560.77							☒ NAVD-88 ☐ NGVD-29					
NOTES: Sheet 4 of 5				Date Survey Completed 11/18/16						☐ GEOID 09 ☐ _____ ☒ GEOID 12A					

PRELIMINARY SURVEY COORDINATE AND CURVE DATA - UNIVERSITY DRIVE - 21ST AVE S. TO 18TH AVE S.											STATE	PROJECT NO.		SECTION NO.	SHEET NO.				
										ND		IM-8-094(090)351 ; NHU-8-081(039)924		81	5				
HORIZONTAL ALIGNMENT				CURVE DATA		US PUBLIC LAND SURVEY DATA				SURVEY CONTROL POINTS									
PNT	STATION	NORTHING	EASTING	ARC DEFINITION		DESC.	SEC-TWP-RGE	NORTHING	EASTING	PNT	NORTHING	EASTING	ELEV	STATION	OFFSET				
I-94 WB Entrance Loop Ramp (Chain: EX_WBENT_LOOP)				EX_WBENT_LOOP-1						CONTROL POINT DESCRIPTION									
BEG / US 81	200+00.00	453271.80	2894626.71	PI STA = 214+42.36															
PC	201+13.97	453276.33	2894740.59	Delta = 167° 08' 21" RT															
PI EX_WBENT_LOOP-1	214+42.36	453329.08	2896067.93	D _a = 38° 16' 11"															
PT	205+50.71	452982.21	2894785.63	R = 149.72'															
PI	212+69.28	452837.32	2894081.83	T = 1328.39'															
END / I-94	214+11.35	452797.41	2893945.47	L = 436.74'															
I-94 WB Exit Ramp (Chain: EX_WBEX)				EX_WBEX-1		EX_WBEX-2													
BEG / US 81	100+00.00	453334.48	2894624.22	PI STA = 102+07.63		PI STA = 106+46.59													
PC	101+40.92	453340.08	2894765.03	Delta = 36° 29' 33" RT		Delta = 39° 36' 13" LT													
PI EX_WBEX-1	102+07.63	453342.73	2894831.68	D _a = 28° 18' 56"		D _a = 6° 01' 27"													
PT	102+69.80	453305.21	2894886.85	R = 202.35'		R = 951.09'													
PC	103+04.14	453285.90	2894915.25	T = 66.71'		T = 342.45'													
PI EX_WBEX-2	106+46.59	453093.34	2895198.42	L = 128.88'		L = 657.41'													
PT	109+61.55	453125.49	2895539.36																
PC	110+23.48	453131.30	2895601.02	EX_WBEX-3															
PI EX_WBEX-3	114+47.23	453183.11	2896021.59	PI STA = 114+47.23															
PT	118+69.48	453173.16	2896445.22	Delta = 8° 22' 10" RT															
END / I-94	121+28.59	453148.96	2896703.21	D _a = 0° 59' 21"															
				R = 5791.59'															
				T = 423.75'															
				L = 845.99'															
				</															



Point	Station	Offset	North	East	Description
9000	1301+80.00	34.2540	452143.1869	2894705.0913	EX PAVE
9001	1304+80.00	33.5000	452443.0562	2894693.1735	EX PAVE
9002	1301+80.00	47.0000	452143.6545	2894717.8288	EX BOC
9003	1302+15.16	47.0000	452178.7920	2894716.5388	PC-BOC
9004	1302+15.16	70.0000	452179.6357	2894739.5234	PT-BOC
9005	1302+15.16	58.5000	452179.2139	2894728.0311	RADIUS-BOC 11.5'
9006	1301+82.33	70.0000	452146.8282	2894740.7277	EX BOC
9007	1301+82.33	97.7000	452147.8444	2894768.4091	EX BOC
9008	1302+09.62	97.7000	452175.1145	2894767.4080	PC-BOC
9009	1302+38.12	118.3557	452204.3607	2894787.0040	PT-BOC
9010	1302+09.62	127.7000	452176.2151	2894797.3878	RADIUS-BOC 30'
9011	1302+71.76	183.5141	452240.3599	2894850.8848	PT-BOC
9013	1304+57.02	46.6458	452420.6129	2894707.2217	RADIUS-BOC 230.5'
9014	1302+72.74	184.8431	452241.3897	2894852.1769	EX BOC
9015	1302+97.67	166.4242	452265.6320	2894832.8556	EX BOC
9016	1302+96.69	165.0952	452264.6022	2894831.5635	PC-BOC
9017	1302+60.90	82.3875	452225.8027	2894750.2244	PCC-BOC
9018	1304+57.02	46.6458	452420.6129	2894707.2217	RADIUS-BOC 199.5'
9019	1302+90.41	47.0000	452253.9969	2894713.7780	PT-BOC
9020	1302+90.41	77.0000	452255.0975	2894743.7578	RADIUS-BOC 30'
9021	1304+24.24	47.0000	452387.7297	2894708.8687	PC-BOC
9022	1304+62.84	65.5632	452427.1782	2894725.8931	PT-BOC
9023	1304+24.24	97.0000	452389.5640	2894758.8350	RADIUS-BOC 50'

Point	Station	Offset	North	East	Description
9024	1305+12.90	127.5271	452479.6612	2894785.8201	EX BOC
9025	1305+31.57	112.4445	452497.7161	2894770.0080	EX BOC
9026	1304+73.69	40.8102	452437.0423	2894700.7285	BOC
9027	1304+76.23	35.5000	452439.3660	2894695.3218	BOC
9028	1301+80.06	55.7539	452144.0407	2894726.5744	SW
9029	1301+80.08	61.7539	452144.2789	2894732.5696	SW
9030	1301+96.80	113.1825	452162.8772	2894783.3502	DRIVEWAY
9031	1302+19.18	143.4728	452186.3484	2894812.7992	DRIVEWAY
9032	1302+57.86	195.8351	452226.9225	2894863.7073	SW
9033	1302+61.48	193.1614	452230.4416	2894860.9026	SW
9034	1305+84.95	-107.9980	452542.3062	2894547.6194	SW
9035	1305+91.00	-115.8520	452548.0364	2894539.5314	PC-SW
9036	1306+58.35	-63.9983	452617.3937	2894588.6696	RADIUS-SW 85'
9037	1302+13.36	-4.6018	452175.1070	2894665.0376	EX BOC
9038	1302+27.29	-4.5636	452189.0233	2894664.5649	EX BOC
9039	1302+79.64	-4.4992	452241.3398	2894662.7088	EX BOC
9040	1304+62.04	-4.3621	452423.6090	2894656.0544	PC BOC
9041	1304+65.61	-10.0863	452426.9429	2894650.1932	PT BOC
9042	1304+62.00	-8.3619	452423.4050	2894652.0596	RADIUS BOC 4'
9043	1304+61.43	-18.8352	452422.4185	2894641.6172	PC BOC
9044	1304+58.78	-20.5413	452419.7042	2894640.0177	PT BOC
9045	1304+58.72	-17.5418	452419.7651	2894643.0171	RADIUS BOC 4'
9046	1304+51.96	-20.6260	452412.8918	2894640.2037	BOC
9047	1304+12.73	-15.9445	452373.9208	2894646.3887	EX BOC
9048	1306+26.62	-6.4019	452587.9765	2894647.4805	EX BOC
9049	1306+26.54	-21.3550	452587.3062	2894632.5422	EX BOC

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	82	1

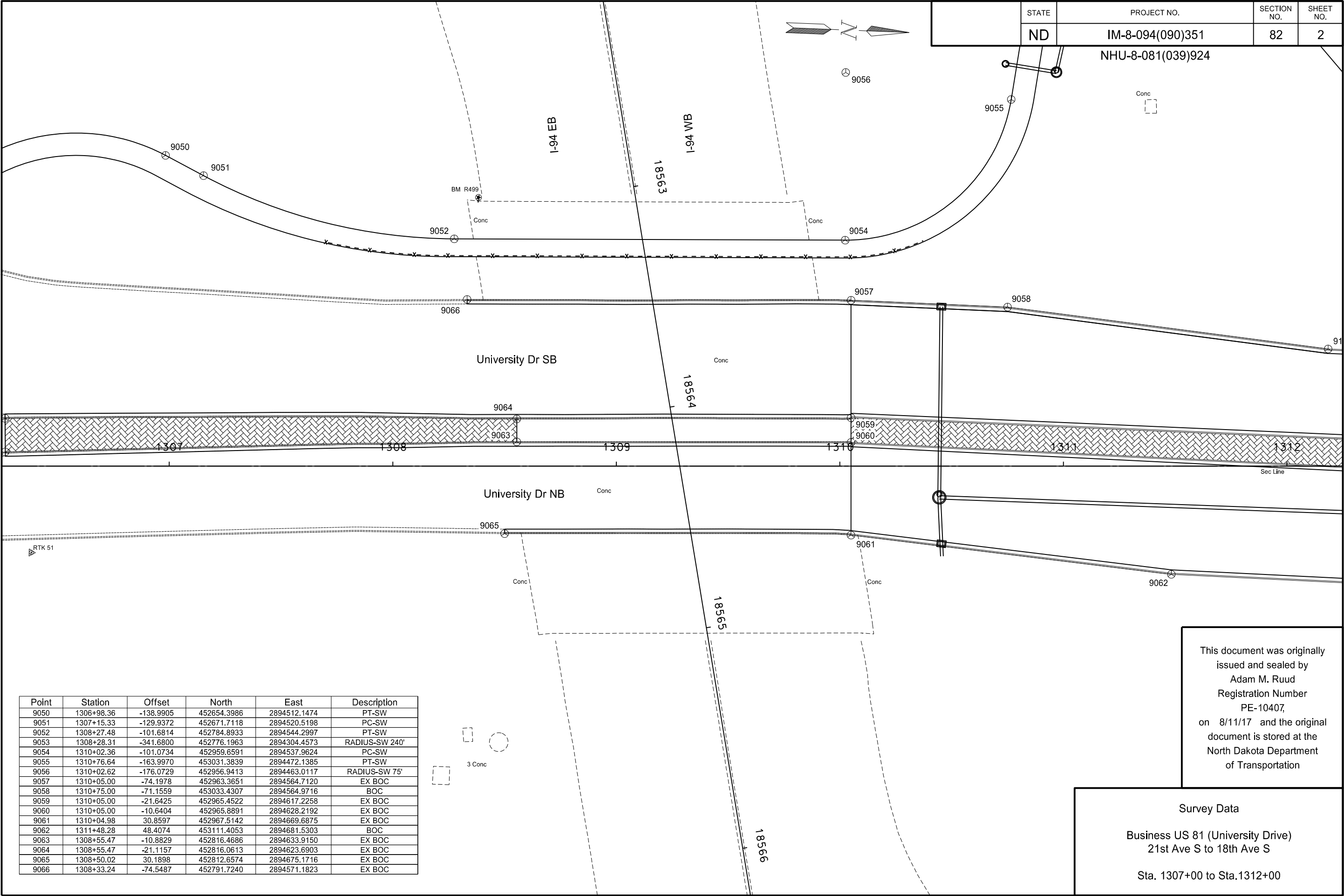
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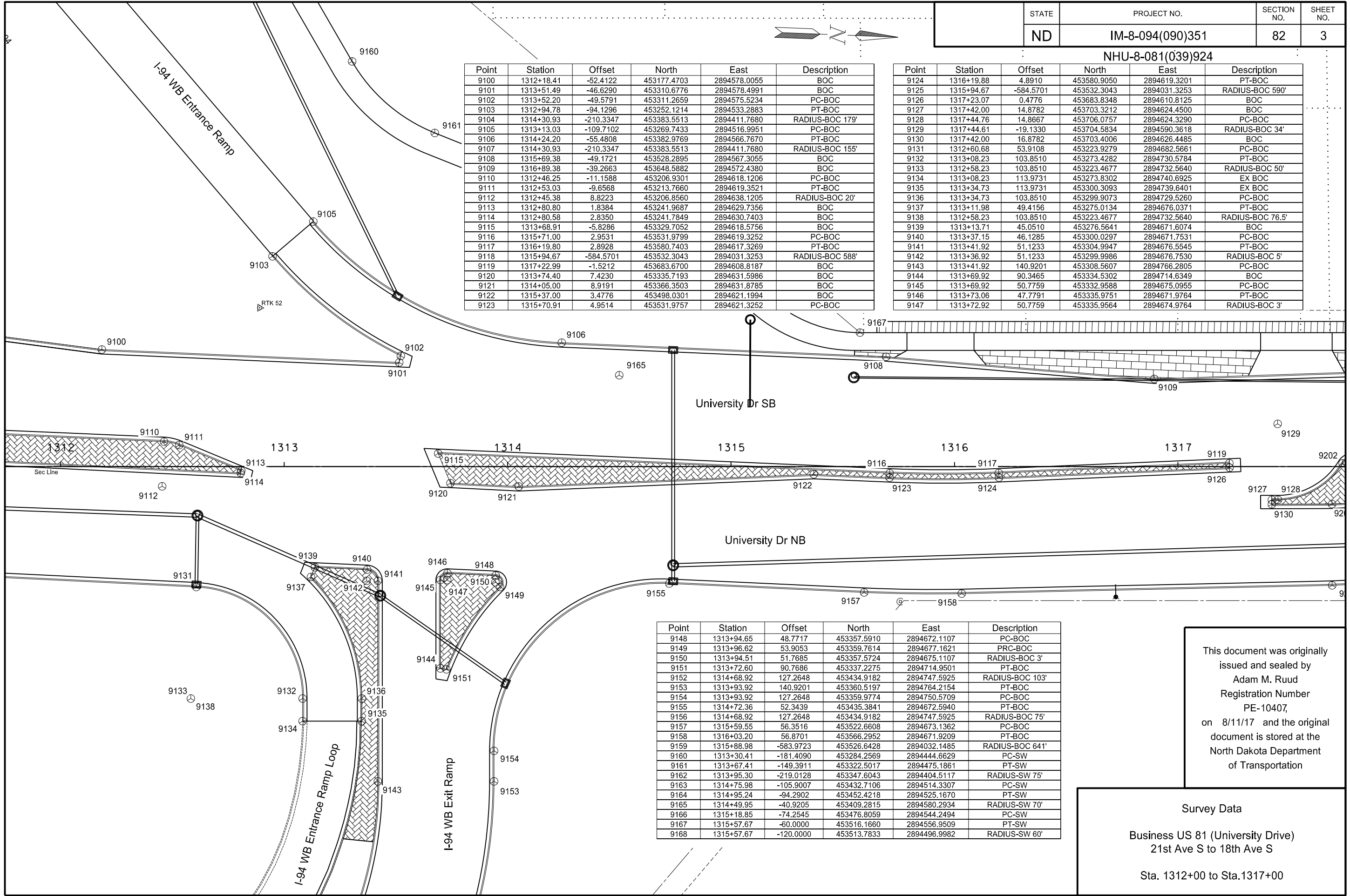
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Survey Data

Business US 81 (University Drive)
21st Ave S to 18th Ave S

Sta. 1301+00 to Sta.1306+00





STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	82	3

NHU-8-081(039)924

Point	Station	Offset	North	East	Description
9100	1312+18.41	-52.4122	453177.4703	2894578.0055	BOC
9101	1313+51.49	-46.6290	453310.6776	2894578.4991	BOC
9102	1313+52.20	-49.5791	453311.2659	2894575.5234	PC-BOC
9103	1312+94.78	-94.1296	453252.1214	2894533.2883	PT-BOC
9104	1314+30.93	-210.3347	453383.5513	2894411.7680	RADIUS-BOC 179'
9105	1313+13.03	-109.7102	453269.7433	2894516.9951	PC-BOC
9106	1314+24.20	-55.4808	453382.9769	2894566.7670	PT-BOC
9107	1314+30.93	-210.3347	453383.5513	2894411.7680	RADIUS-BOC 155'
9108	1315+69.38	-49.1721	453528.2895	2894567.3055	BOC
9109	1316+89.38	-39.2663	453648.5882	2894572.4380	BOC
9110	1312+46.25	-11.1588	453206.9301	2894618.1206	PC-BOC
9111	1312+53.03	-9.6568	453213.7660	2894619.3521	PT-BOC
9112	1312+45.38	8.8223	453206.8560	2894638.1205	RADIUS-BOC 20'
9113	1312+80.80	1.8384	453241.9687	2894629.7356	BOC
9114	1312+80.58	2.8350	453241.7849	2894630.7403	BOC
9115	1313+68.91	-5.8286	453329.7052	2894618.5756	BOC
9116	1315+71.00	2.9531	453531.9799	2894619.3252	PC-BOC
9117	1316+19.80	2.8928	453580.7403	2894617.3269	PT-BOC
9118	1315+94.67	-584.5701	453532.3043	2894031.3253	RADIUS-BOC 588'
9119	1317+22.99	-1.5212	453683.6700	2894608.8187	BOC
9120	1313+74.40	7.4230	453335.7193	2894631.5986	BOC
9121	1314+05.00	8.9191	453366.3503	2894631.8785	BOC
9122	1315+37.00	3.4776	453498.0301	2894621.1994	BOC
9123	1315+70.91	4.9514	453531.9757	2894621.3252	PC-BOC

Point	Station	Offset	North	East	Description
9124	1316+19.88	4.8910	453580.9050	2894619.3201	PT-BOC
9125	1315+94.67	-584.5701	453532.3043	2894031.3253	RADIUS-BOC 590'
9126	1317+23.07	0.4776	453683.8348	2894610.8125	BOC
9127	1317+42.00	14.8782	453703.3212	2894624.4500	BOC
9128	1317+44.76	14.8667	453706.0757	2894624.3290	PC-BOC
9129	1317+44.61	-19.1330	453704.5834	2894590.3618	RADIUS-BOC 34'
9130	1317+42.00	16.8782	453703.4006	2894626.4485	BOC
9131	1312+60.68	53.9108	453223.9279	2894682.5661	PC-BOC
9132	1313+08.23	103.8510	453273.4282	2894730.5784	PT-BOC
9133	1312+58.23	103.8510	453223.4677	2894732.5640	RADIUS-BOC 50'
9134	1313+08.23	113.9731	453273.8302	2894740.6925	EX BOC
9135	1313+34.73	113.9731	453300.3093	2894739.6401	EX BOC
9136	1313+34.73	103.8510	453299.9073	2894729.5260	PC-BOC
9137	1313+11.98	49.4156	453275.0134	2894676.0371	PT-BOC
9138	1312+58.23	103.8510	453223.4677	2894732.5640	RADIUS-BOC 76.5'
9139	1313+13.71	45.0510	453276.5641	2894671.6074	BOC
9140	1313+37.15	46.1285	453300.0297	2894671.7531	PC-BOC
9141	1313+41.92	51.1233	453304.9947	2894676.5545	PT-BOC
9142	1313+36.92	51.1233	453299.9986	2894676.7530	RADIUS-BOC 5'
9143	1313+41.92	140.9201	453308.5607	2894766.2805	PC-BOC
9144	1313+69.92	90.3465	453334.5302	2894714.6349	BOC
9145	1313+69.92	50.7759	453332.9588	2894675.0955	PC-BOC
9146	1313+73.06	47.7791	453335.9751	2894671.9764	PT-BOC
9147	1313+72.92	50.7759	453335.9564	2894674.9764	RADIUS-BOC 3'

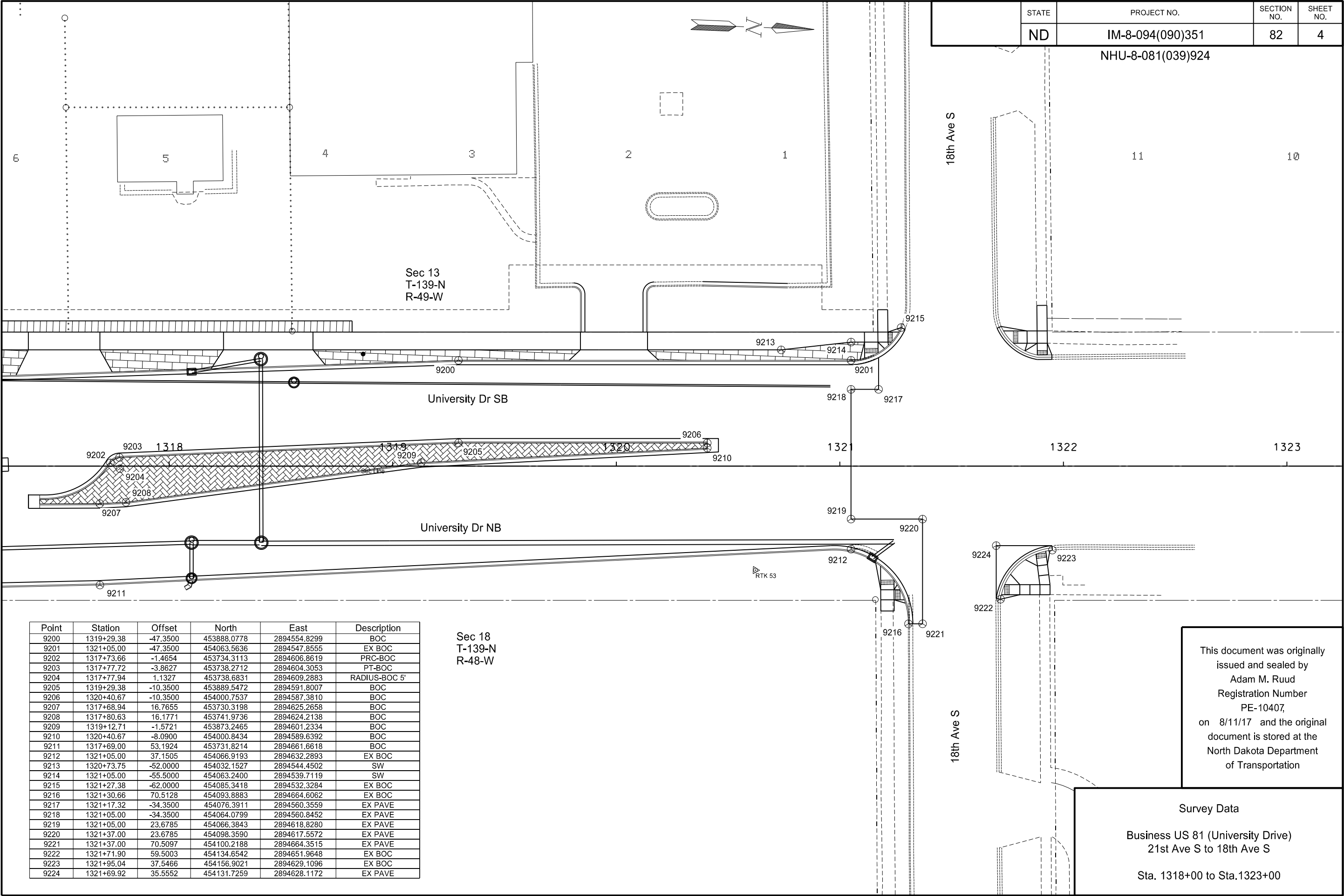
Point	Station	Offset	North	East	Description
9148	1313+94.65	48.7717	453357.5910	2894672.1107	PC-BOC
9149	1313+96.62	53.9053	453359.7614	2894677.1621	PRC-BOC
9150	1313+94.51	51.7685	453357.5724	2894675.1107	RADIUS-BOC 3'
9151	1313+72.60	90.7686	453337.2275	2894714.9501	PT-BOC
9152	1314+68.92	127.2648	453434.9182	2894747.5925	RADIUS-BOC 103'
9153	1313+93.92	140.9201	453360.5197	2894764.2154	PT-BOC
9154	1313+93.92	127.2648	453359.9774	2894750.5709	PC-BOC
9155	1314+72.36	52.3439	453435.3841	2894672.5940	PT-BOC
9156	1314+68.92	127.2648	453434.9182	2894747.5925	RADIUS-BOC 75'
9157	1315+59.55	56.3516	453522.6608	2894673.1362	PC-BOC
9158	1316+03.20	56.8701	453566.2952	2894671.9209	PT-BOC
9159	1315+88.98	-583.9723	453526.6428	2894032.1485	RADIUS-BOC 641'
9160	1313+30.41	-181.4090	453284.2569	2894444.6629	PC-SW
9161	1313+67.41	-149.3911	453322.5017	2894475.1861	PT-SW
9162	1313+95.30	-219.0128	453347.6043	2894404.5117	RADIUS-SW 75'
9163	1314+75.98	-105.9007	453432.7106	2894514.3307	PC-SW
9164	1314+95.24	-94.2902	453452.4218	2894525.1670	PT-SW
9165	1314+49.95	-40.9205	453409.2815	2894580.2934	RADIUS-SW 70'
9166	1315+18.85	-74.2545	453476.8059	2894544.2494	PC-SW
9167	1315+57.67	-60.0000	453516.1660	2894556.9509	PT-SW
9168	1315+57.67	-120.0000	453513.7833	2894496.9982	RADIUS-SW 60'

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Survey Data

Business US 81 (University Drive)
21st Ave S to 18th Ave S

Sta. 1312+00 to Sta.1317+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	82	4

NHU-8-081(039)924

Sec 13
T-139-N
R-49-W

University Dr SB

University Dr NB

18th Ave S

18th Ave S

Point	Station	Offset	North	East	Description
9200	1319+29.38	-47.3500	453888.0778	2894554.8299	BOC
9201	1321+05.00	-47.3500	454063.5636	2894547.8555	EX BOC
9202	1317+73.66	-1.4654	453734.3113	2894606.8619	PRC-BOC
9203	1317+77.72	-3.8627	453738.2712	2894604.3053	PT-BOC
9204	1317+77.94	1.1327	453738.6831	2894609.2883	RADIUS-BOC 5'
9205	1319+29.38	-10.3500	453889.5472	2894591.8007	BOC
9206	1320+40.67	-10.3500	454000.7537	2894587.3810	BOC
9207	1317+68.94	16.7655	453730.3198	2894625.2658	BOC
9208	1317+80.63	16.1771	453741.9736	2894624.2138	BOC
9209	1319+12.71	-1.5721	453873.2465	2894601.2334	BOC
9210	1320+40.67	-8.0900	454000.8434	2894589.6392	BOC
9211	1317+69.00	53.1924	453731.8214	2894661.6618	BOC
9212	1321+05.00	37.1505	454066.9193	2894632.2893	EX BOC
9213	1320+73.75	-52.0000	454032.1527	2894544.4502	SW
9214	1321+05.00	-55.5000	454063.2400	2894539.7119	SW
9215	1321+27.38	-62.0000	454085.3418	2894532.3284	EX BOC
9216	1321+30.66	70.5128	454093.8883	2894664.6062	EX BOC
9217	1321+17.32	-34.3500	454076.3911	2894560.3559	EX PAVE
9218	1321+05.00	-34.3500	454064.0799	2894560.8452	EX PAVE
9219	1321+05.00	23.6785	454066.3843	2894618.8280	EX PAVE
9220	1321+37.00	23.6785	454098.3590	2894617.5572	EX PAVE
9221	1321+37.00	70.5097	454100.2188	2894664.3515	EX PAVE
9222	1321+71.90	59.5003	454134.6542	2894651.9648	EX BOC
9223	1321+95.04	37.5466	454156.9021	2894629.1096	EX BOC
9224	1321+69.92	35.5552	454131.7259	2894628.1172	EX PAVE

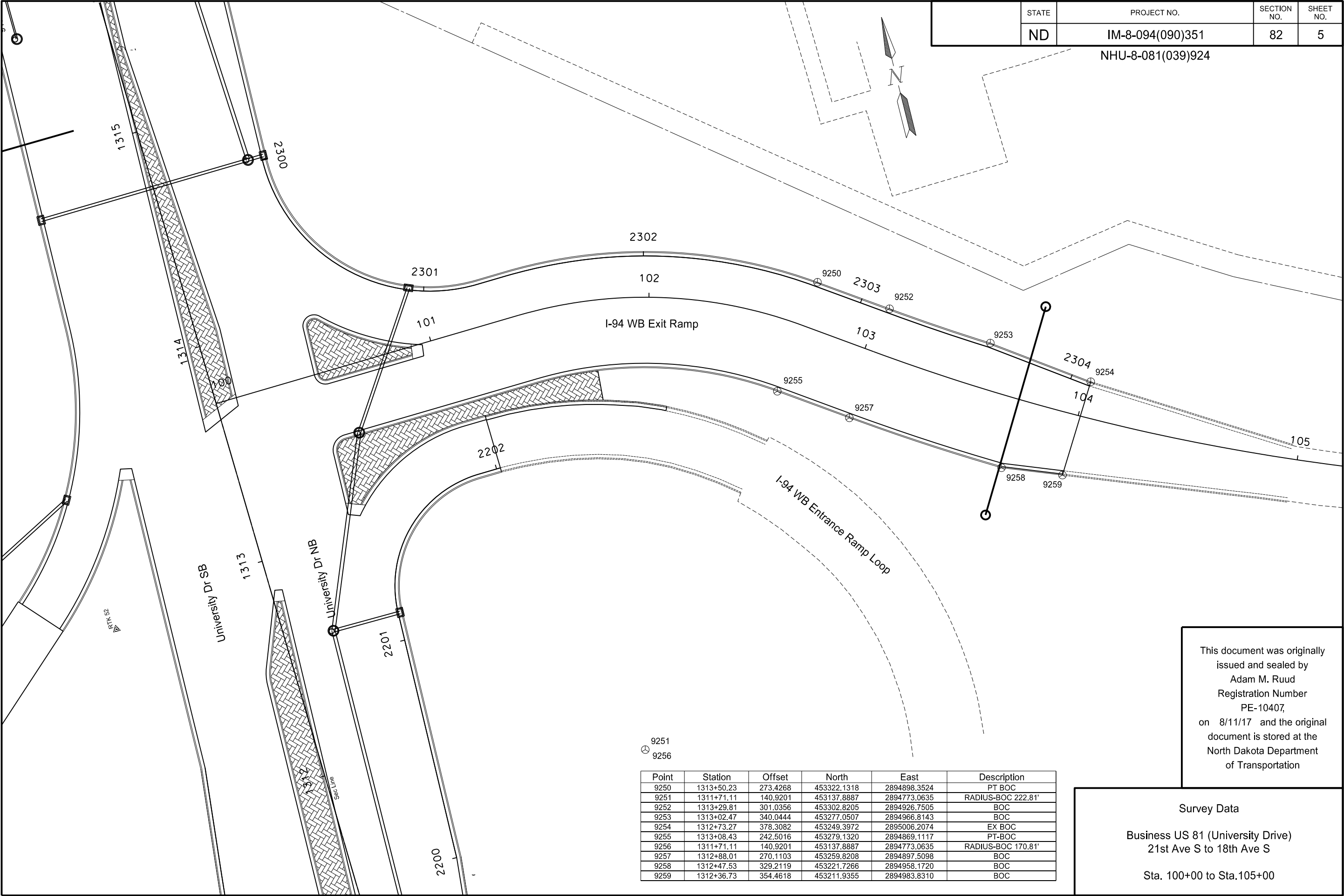
Sec 18
T-139-N
R-48-W

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Survey Data

Business US 81 (University Drive)
21st Ave S to 18th Ave S

Sta. 1318+00 to Sta.1323+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	82	5

NHU-8-081(039)924

9251
9256

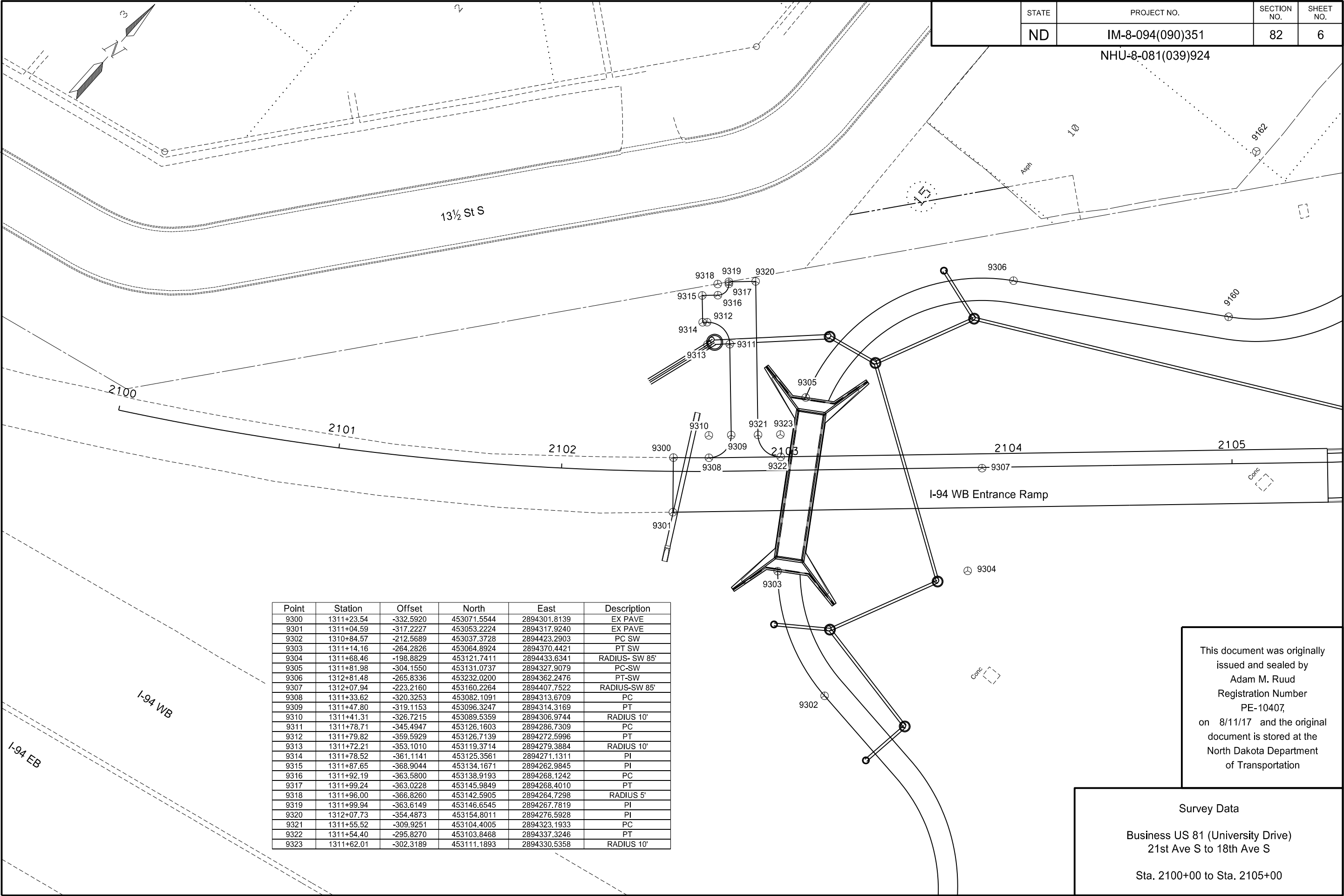
Point	Station	Offset	North	East	Description
9250	1313+50.23	273.4268	453322.1318	2894898.3524	PT BOC
9251	1311+71.11	140.9201	453137.8887	2894773.0635	RADIUS-BOC 222.81'
9252	1313+29.81	301.0356	453302.8205	2894926.7505	BOC
9253	1313+02.47	340.0444	453277.0507	2894966.8143	BOC
9254	1312+73.27	378.3082	453249.3972	2895006.2074	EX BOC
9255	1313+08.43	242.5016	453279.1320	2894869.1117	PT-BOC
9256	1311+71.11	140.9201	453137.8887	2894773.0635	RADIUS-BOC 170.81'
9257	1312+88.01	270.1103	453259.8208	2894897.5098	BOC
9258	1312+47.53	329.2119	453221.7266	2894958.1720	BOC
9259	1312+36.73	354.4618	453211.9355	2894983.8310	BOC

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Business US 81 (University Drive)
21st Ave S to 18th Ave S

Sta. 100+00 to Sta.105+00



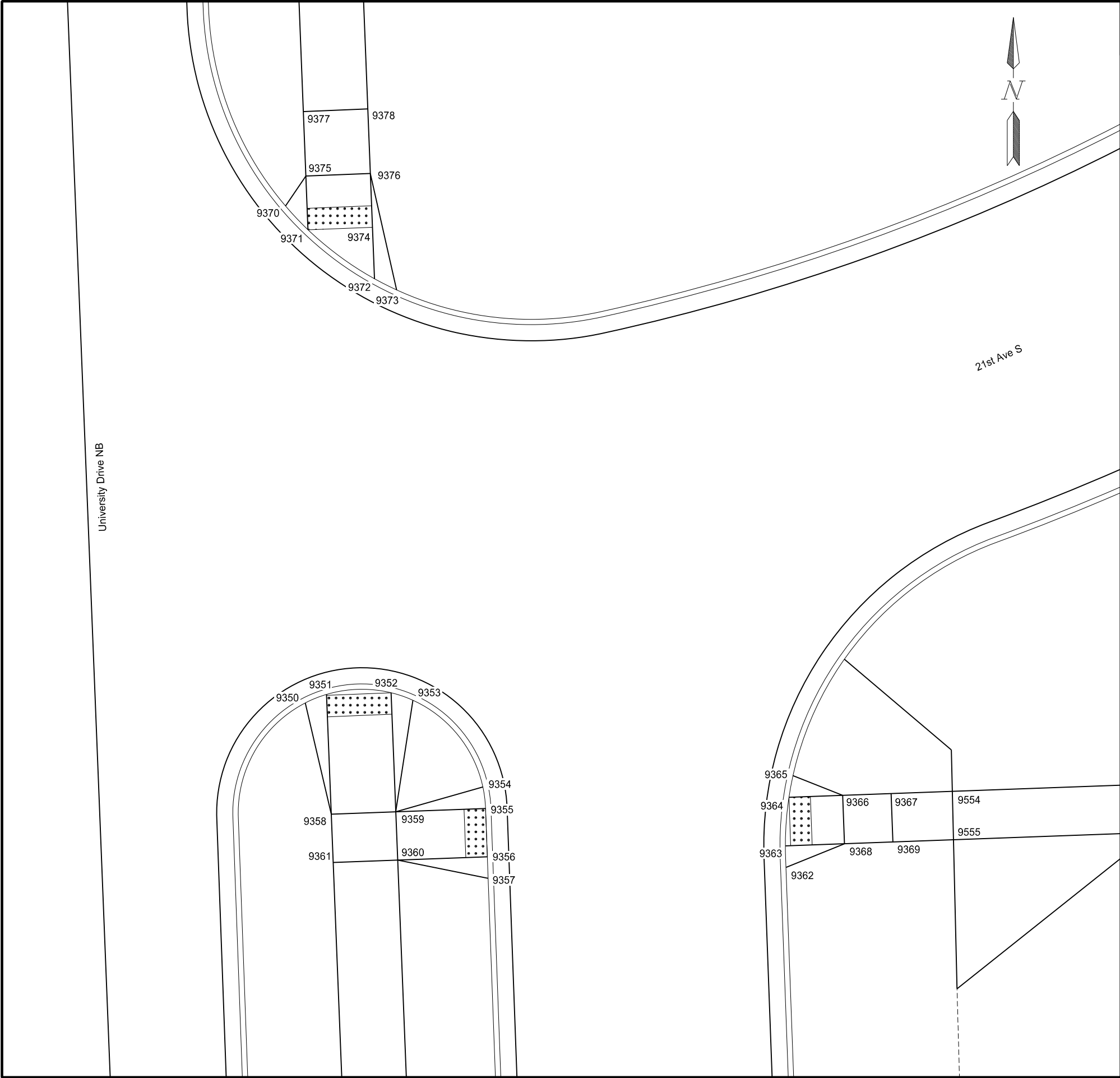
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(090)351	82	6

NHU-8-081(039)924

Point	Station	Offset	North	East	Description
9300	1311+23.54	-332.5920	453071.5544	2894301.8139	EX PAVE
9301	1311+04.59	-317.2227	453053.2224	2894317.9240	EX PAVE
9302	1310+84.57	-212.5689	453037.3728	2894423.2903	PC SW
9303	1311+14.16	-264.2826	453064.8924	2894370.4421	PT SW
9304	1311+68.46	-198.8829	453121.7411	2894433.6341	RADIUS- SW 85'
9305	1311+81.98	-304.1550	453131.0737	2894327.9079	PC-SW
9306	1312+81.48	-265.8336	453232.0200	2894362.2476	PT-SW
9307	1312+07.94	-223.2160	453160.2264	2894407.7522	RADIUS-SW 85'
9308	1311+33.62	-320.3253	453082.1091	2894313.6709	PC
9309	1311+47.80	-319.1153	453096.3247	2894314.3169	PT
9310	1311+41.31	-326.7215	453089.5359	2894306.9744	RADIUS 10'
9311	1311+78.71	-345.4947	453126.1603	2894286.7309	PC
9312	1311+79.82	-359.5929	453126.7139	2894272.5996	PT
9313	1311+72.21	-353.1010	453119.3714	2894279.3884	RADIUS 10'
9314	1311+78.52	-361.1141	453125.3561	2894271.1311	PI
9315	1311+87.65	-368.9044	453134.1671	2894262.9845	PI
9316	1311+92.19	-363.5800	453138.9193	2894268.1242	PC
9317	1311+99.24	-363.0228	453145.9849	2894268.4010	PT
9318	1311+96.00	-366.8260	453142.5905	2894264.7298	RADIUS 5'
9319	1311+99.94	-363.6149	453146.6545	2894267.7819	PI
9320	1312+07.73	-354.4873	453154.8011	2894276.5928	PI
9321	1311+55.52	-309.9251	453104.4005	2894323.1933	PC
9322	1311+54.40	-295.8270	453103.8468	2894337.3246	PT
9323	1311+62.01	-302.3189	453111.1893	2894330.5358	RADIUS 10'

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Survey Data
Business US 81 (University Drive)
21st Ave S to 18th Ave S
Sta. 2100+00 to Sta. 2105+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	82	7

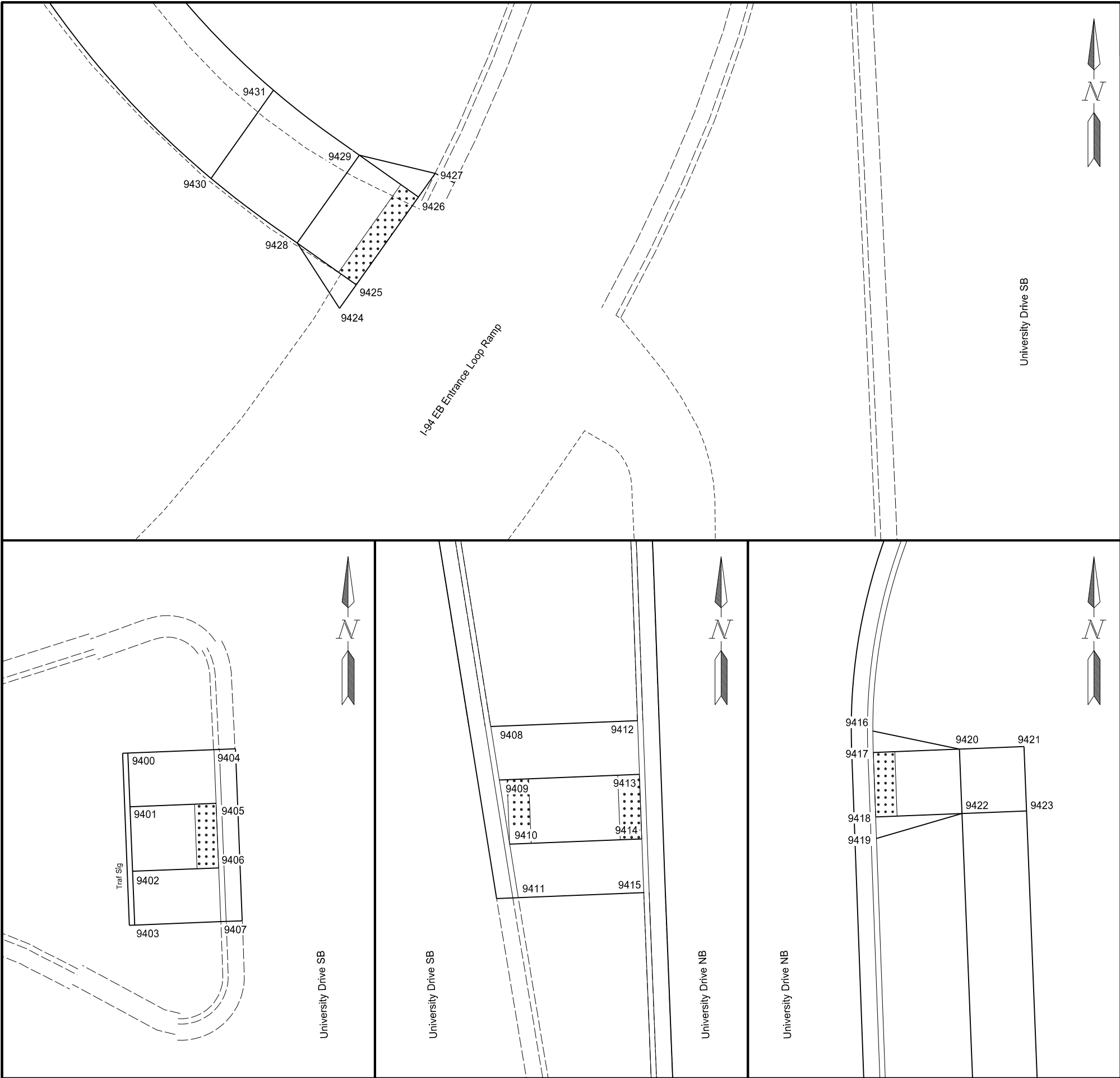
NHU-8-081(039)924

Point	Station	Offset	North	East	Description
9350	1302+25.57	53.6161	452189.4391	2894722.7685	TOC
9351	1302+26.29	55.6139	452190.2324	2894724.7385	FL
9352	1302+26.23	61.6141	452190.3910	2894730.7370	FL
9353	1302+25.46	63.6164	452189.6937	2894732.7663	TOC
9354	1302+17.16	69.8248	452181.6280	2894739.2749	TOC
9355	1302+15.16	70.0000	452179.6357	2894739.5234	FL
9356	1302+10.66	70.0000	452175.1388	2894739.6885	FL
9357	1302+08.66	70.0000	452173.1401	2894739.7618	TOC
9358	1302+15.16	55.6537	452179.1094	2894725.1867	SW
9359	1302+15.16	61.6476	452179.3293	2894731.1766	SW
9360	1302+10.66	61.6613	452174.8329	2894731.3553	SW
9361	1302+10.66	55.6673	452174.6130	2894725.3654	SW
9362	1302+08.66	97.7000	452174.1563	2894767.4432	TOC
9363	1302+10.66	97.7181	452176.1556	2894767.3879	FL
9364	1302+15.16	98.2162	452180.6709	2894767.7206	FL
9365	1302+17.16	98.6633	452182.6859	2894768.0940	TOC
9366	1302+15.16	103.2162	452180.8543	2894772.7172	SW
9367	1302+15.16	107.7162	452181.0194	2894777.2142	SW
9368	1302+10.66	103.2162	452176.3573	2894772.8823	SW
9369	1302+10.66	107.7162	452176.5224	2894777.3792	SW
9370	1302+71.80	53.4761	452235.6292	2894720.9328	TOC
9371	1302+69.51	55.4830	452233.4172	2894723.0222	FL
9372	1302+64.73	61.4975	452228.8620	2894729.2080	FL
9373	1302+63.62	63.5009	452227.8290	2894731.2507	TOC
9374	1302+69.53	61.4830	452233.6555	2894729.0175	SW
9375	1302+74.51	55.4679	452238.4133	2894722.8237	SW
9376	1302+74.53	61.4678	452238.6515	2894728.8190	SW
9377	1302+80.51	55.4497	452244.4085	2894722.5854	SW
9378	1302+80.53	61.4497	452244.6468	2894728.5807	SW

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Survey Data Curb Ramp
21st Ave S

Business US 81 (University Drive)
21st Ave S to 18th Ave S

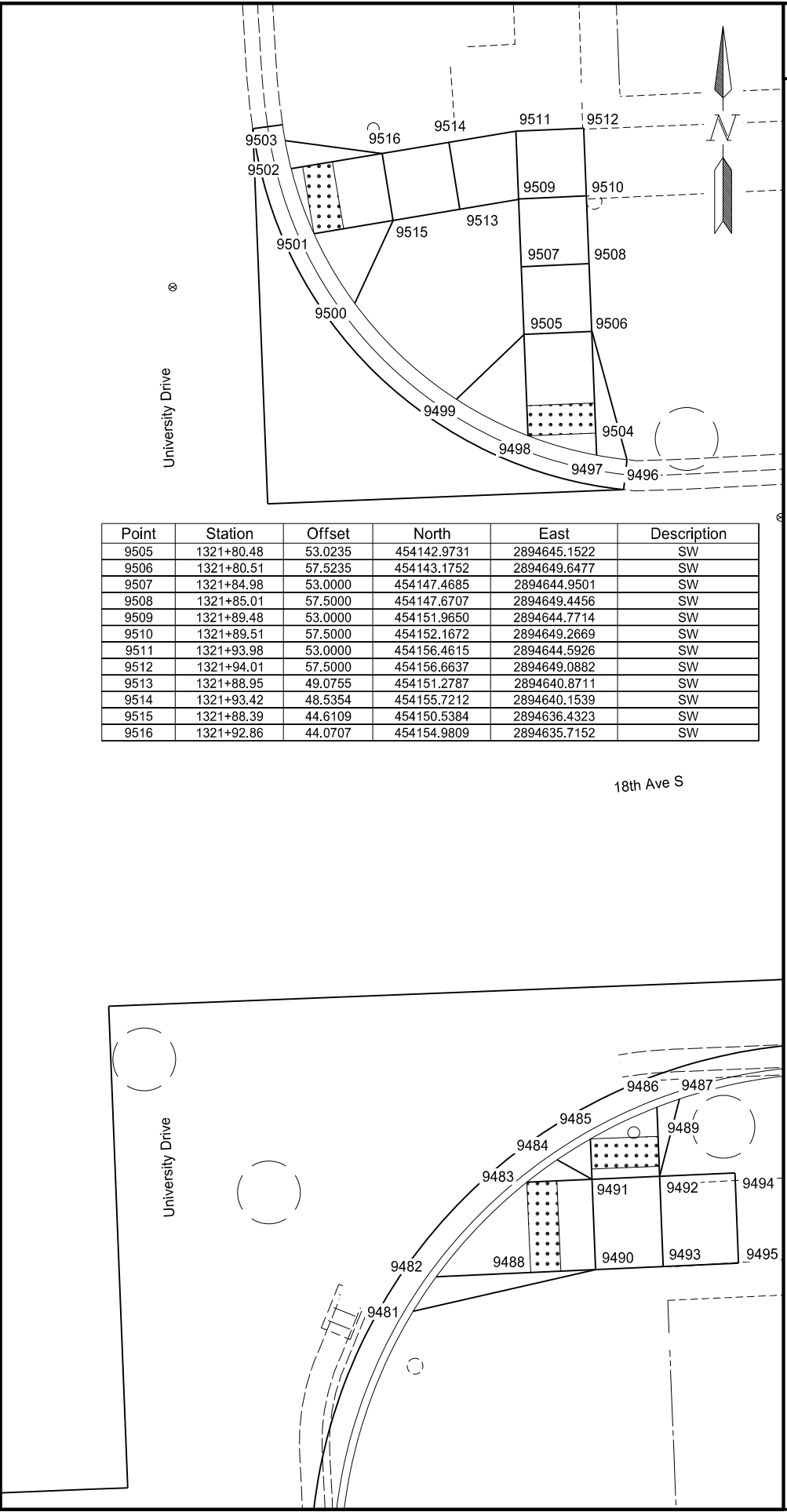
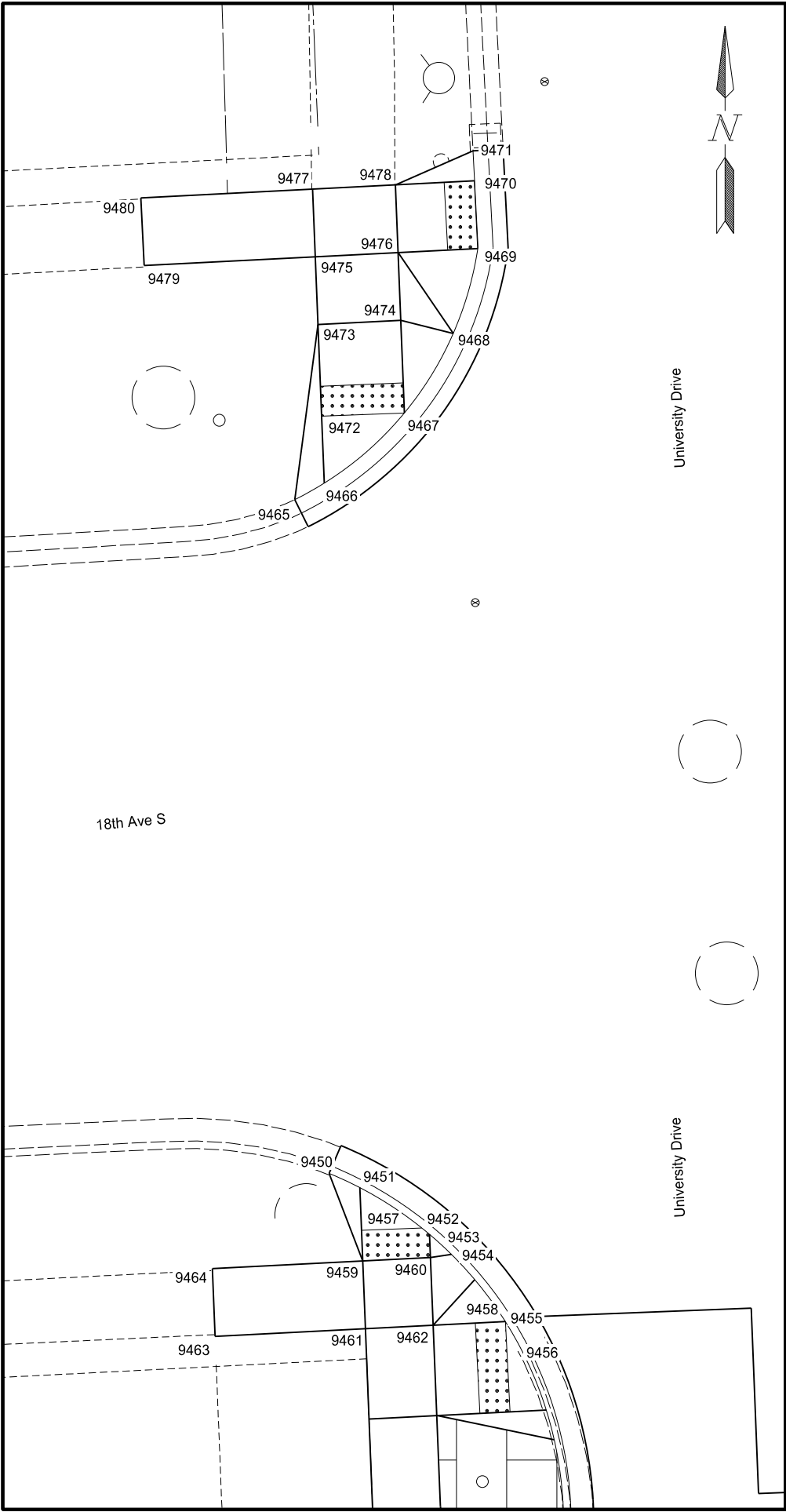


STATE		PROJECT NO.		SECTION NO.	SHEET NO.
ND		IM-8-094(090)351		82	8
NHU-8-081(039)924					
Point	Station	Offset	North	East	Description
9400	1304+28.53	-80.0568	452387.3641	2894581.7397	SW
9401	1304+23.53	-80.0417	452382.3680	2894581.9382	SW
9402	1304+17.53	-80.0235	452376.3727	2894582.1765	SW
9403	1304+12.53	-80.0084	452371.3767	2894582.3751	SW
9404	1304+28.56	-72.0569	452387.6818	2894589.7334	TOC
9405	1304+23.56	-72.0417	452382.6857	2894589.9319	FL
9406	1304+17.56	-72.0235	452376.6904	2894590.1702	FL
9407	1304+12.56	-72.0084	452371.6944	2894590.3688	TOC
9408	1304+28.72	-17.9232	452389.8315	2894643.8246	TOC
9409	1304+23.72	-17.3052	452384.8594	2894644.6255	FL
9410	1304+17.73	-16.5637	452378.8929	2894645.5866	FL
9411	1304+12.73	-15.9457	452373.9207	2894646.3875	TOC
9412	1304+28.76	-4.2700	452390.3737	2894657.4671	TOC
9413	1304+23.76	-4.2548	452385.3777	2894657.6657	FL
9414	1304+17.76	-4.2367	452379.3824	2894657.9039	FL
9415	1304+12.76	-4.2215	452374.3863	2894658.1025	TOC
9416	1304+25.92	47.0283	452389.4129	2894708.8352	TOC
9417	1304+23.92	47.0000	452387.4131	2894708.8803	FL
9418	1304+17.92	47.0000	452381.4171	2894709.1004	FL
9419	1304+15.92	47.0000	452379.4184	2894709.1738	TOC
9420	1304+23.94	55.0153	452387.7314	2894716.8893	SW
9421	1304+23.96	61.0153	452387.9697	2894722.8846	SW
9422	1304+17.94	55.0335	452381.7361	2894717.1276	SW
9423	1304+17.96	61.0334	452381.9744	2894723.1228	SW
9424	1305+82.82	-109.6394	452540.1108	2894546.0639	SHLDR
9425	1305+84.95	-107.9980	452542.3062	2894547.6194	SHLDR
9426	1305+92.88	-101.8975	452550.4659	2894553.4003	FL
9427	1305+95.01	-100.2561	452552.6614	2894554.9558	TOC
9428	1305+89.06	-113.3279	452546.1949	2894542.1307	SW
9429	1305+96.98	-107.2275	452554.3545	2894547.9116	SW
9430	1305+95.37	-121.0847	452552.1991	2894534.1291	SW
9431	1306+03.33	-114.9619	452560.3886	2894539.9313	SW

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Survey Data Curb Ramp
University Drive

Business US 81 (University Drive)
21st Ave S to 18th Ave S



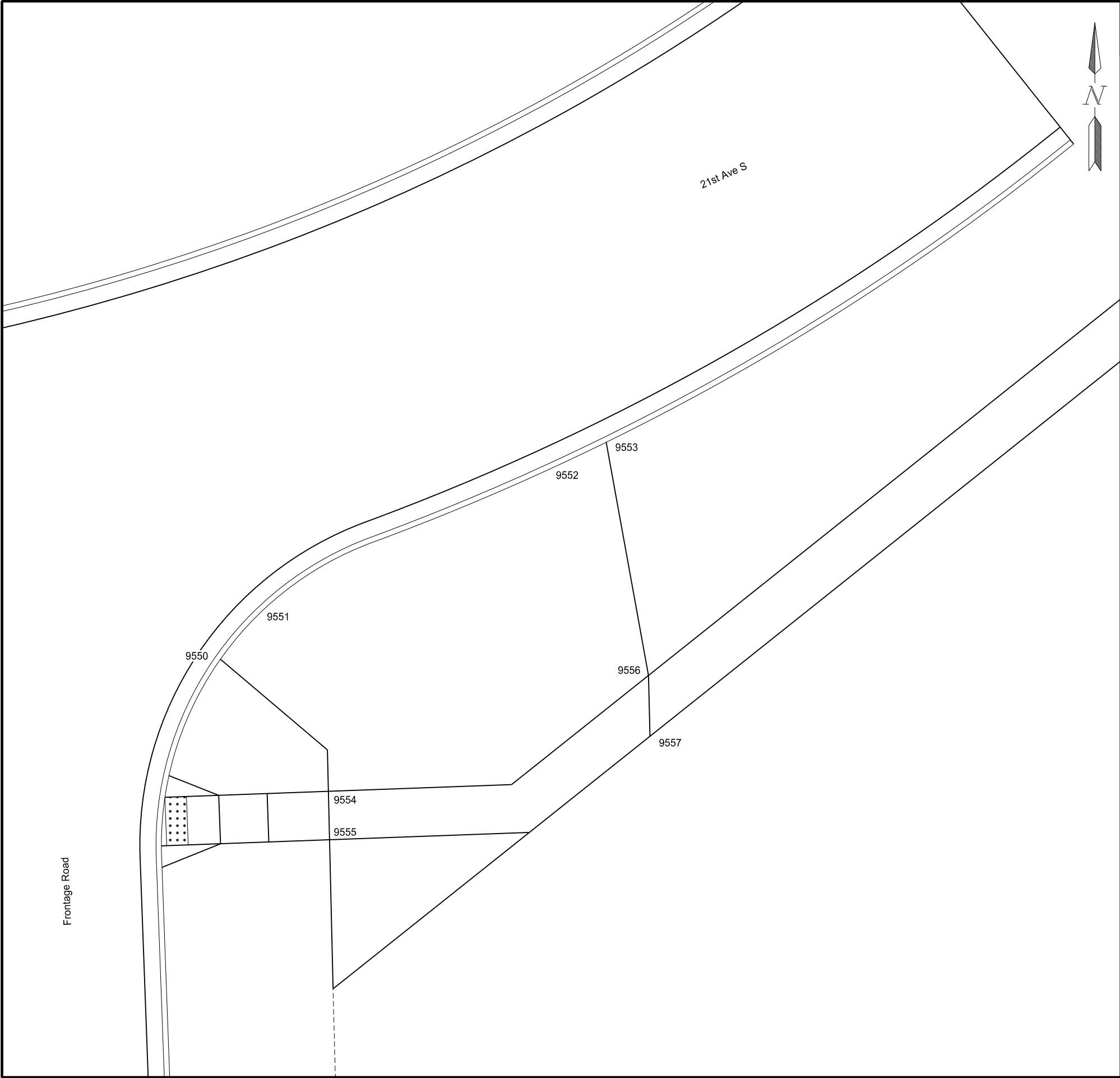
Point	Station	Offset	North	East	Description
9505	1321+80.48	53.0235	454142.9731	2894645.1522	SW
9506	1321+80.51	57.5235	454143.1752	2894649.6477	SW
9507	1321+84.98	53.0000	454147.4685	2894644.9501	SW
9508	1321+85.01	57.5000	454147.6707	2894649.4456	SW
9509	1321+89.48	53.0000	454151.9650	2894644.7714	SW
9510	1321+89.51	57.5000	454152.1672	2894649.2669	SW
9511	1321+93.98	53.0000	454156.4615	2894644.5926	SW
9512	1321+94.01	57.5000	454156.6637	2894649.0882	SW
9513	1321+88.95	49.0755	454151.2787	2894640.8711	SW
9514	1321+93.42	48.5354	454155.7212	2894640.1539	SW
9515	1321+88.39	44.6109	454150.5384	2894636.4323	SW
9516	1321+92.86	44.0707	454154.9809	2894635.7152	SW

	STATE	PROJECT NO.		SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351		82	9
NHU-8-081(039)924					
Point	Station	Offset	North	East	Description
9450	1321+27.25	-62.0000	454085.2141	2894532.3335	TOC
9451	1321+26.19	-60.0000	454084.2358	2894534.3739	FL
9452	1321+22.81	-55.5000	454081.0389	2894539.0045	FL
9453	1321+22.19	-54.8639	454080.4431	2894539.6648	TOC
9454	1321+21.54	-54.2391	454079.8127	2894540.3152	FL
9455	1321+17.07	-50.9648	454075.4825	2894543.7642	FL
9456	1321+15.08	-49.9346	454073.5364	2894544.8725	TOC
9457	1321+23.51	-60.0000	454081.5563	2894534.4804	SW
9458	1321+17.04	-53.5438	454075.3513	2894541.1883	SW
9459	1321+21.47	-60.0000	454079.5195	2894534.5614	SW
9460	1321+21.52	-55.5000	454079.7485	2894539.0558	SW
9461	1321+16.97	-60.0000	454075.0228	2894534.7401	SW
9462	1321+17.02	-55.5000	454075.2518	2894539.2345	SW
9463	1321+16.86	-70.0000	454074.5140	2894524.7524	SW
9464	1321+21.36	-70.0000	454079.0107	2894524.5737	SW
9465	1321+72.17	-62.5000	454130.0761	2894530.0501	TOC
9466	1321+73.18	-60.5000	454131.1717	2894532.0081	FL
9467	1321+77.63	-55.0000	454135.8373	2894537.3271	FL
9468	1321+82.77	-51.5499	454141.1055	2894540.5705	TOC
9469	1321+88.34	-49.7034	454146.7450	2894542.1944	FL
9470	1321+92.84	-49.7316	454151.2403	2894541.9875	FL
9471	1321+94.84	-49.7527	454153.2384	2894541.8870	TOC
9472	1321+77.62	-60.5000	454135.6090	2894531.8318	SW
9473	1321+83.72	-60.5000	454141.6989	2894531.5898	SW
9474	1321+83.78	-55.0000	454141.9787	2894537.0830	SW
9475	1321+88.22	-60.5000	454146.1956	2894531.4110	SW
9476	1321+88.28	-55.0000	454146.4755	2894536.9043	SW
9477	1321+92.73	-60.5000	454150.6979	2894531.2321	SW
9478	1321+92.78	-55.0000	454150.9722	2894536.7256	SW
9479	1321+88.09	-71.8829	454145.6164	2894520.0422	SW
9480	1321+92.59	-71.9332	454150.1106	2894519.8133	SW
9481	1321+15.97	43.0792	454078.1134	2894637.7778	TOC
9482	1321+18.19	44.6974	454080.3973	2894639.3065	FL
9483	1321+24.22	50.9494	454086.6735	2894645.3140	FL
9484	1321+25.64	53.0297	454088.1703	2894647.3364	TOC
9485	1321+26.93	55.2845	454089.5495	2894649.5382	FL
9486	1321+28.86	59.7845	454091.6624	2894653.9578	FL
9487	1321+29.35	61.3014	454092.2045	2894655.4544	TOC
9488	1321+18.22	50.9807	454080.6796	2894645.5835	SW
9489	1321+26.93	59.7845	454089.7282	2894654.0347	SW
9490	1321+18.24	55.2845	454080.8729	2894649.8831	SW
9491	1321+24.24	55.2845	454086.8682	2894649.6448	SW
9492	1321+24.27	59.7845	454087.0704	2894654.1403	SW
9493	1321+18.27	59.7845	454081.0751	2894654.3786	SW
9494	1321+24.29	64.7845	454087.2950	2894659.1353	SW
9495	1321+18.29	64.7845	454081.2997	2894659.3736	SW
9496	1321+71.90	59.5000	454134.6520	2894651.9646	TOC
9497	1321+72.27	57.5000	454134.9482	2894649.9512	FL
9498	1321+73.75	53.0000	454136.2397	2894645.3963	FL
9499	1321+76.36	48.3496	454138.6631	2894640.6459	TOC
9500	1321+82.98	41.8570	454145.0293	2894633.8952	TOC
9501	1321+87.72	39.3306	454149.6628	2894631.1827	FL
9502	1321+92.09	37.9940	454153.9733	2894629.6737	FL
9503	1321+93.97	37.6689	454155.8365	2894629.2743	TOC
9504	1321+73.75	57.5000	454136.4184	2894649.8928	SW

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Survey Data Curb Ramp
18th Ave S

Business US 81 (University Drive)
21st Ave S to 18th Ave S



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	82	10

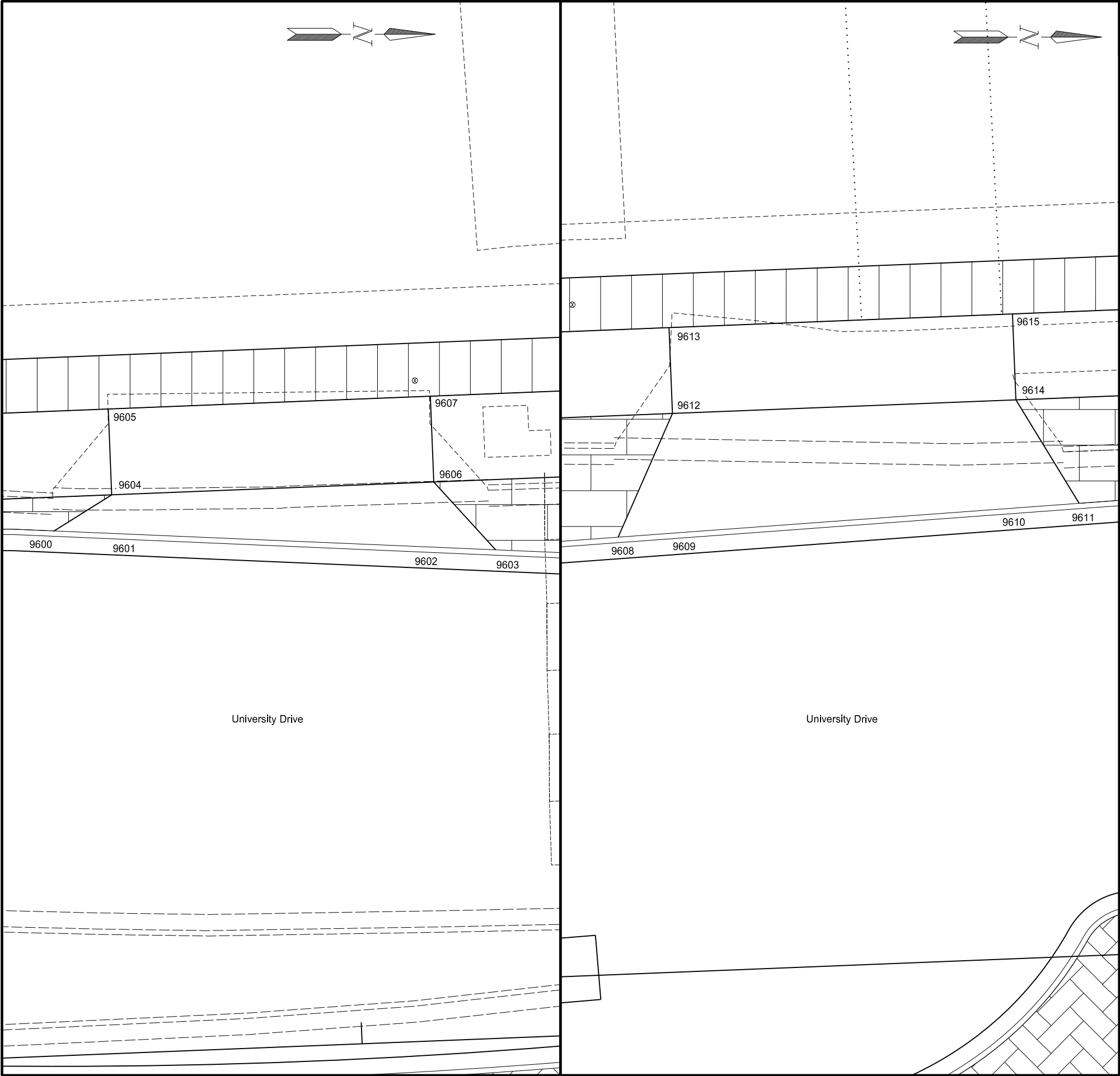
NHU-8-081(039)924

Point	Station	Offset	North	East	Description
9550	1302+27.80	103.8363	452193.5077	2894772.8732	TOC
9551	1302+32.20	107.9565	452198.0630	2894776.8290	FL
9552	1302+44.45	135.3547	452211.3029	2894803.7596	FL
9553	1302+46.63	140.4050	452213.6660	2894808.7265	TOC
9554	1302+15.16	113.4186	452181.2286	2894782.9127	SW
9555	1302+10.66	113.3607	452176.7295	2894783.0200	SW
9556	1302+24.83	143.5454	452191.9955	2894812.6646	SW
9557	1302+19.18	143.4728	452186.3484	2894812.7992	SW

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Survey Data Driveway
Petro Serve USA

Business US 81 (University Drive)
21st Ave S to 18th Ave S



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	82	11

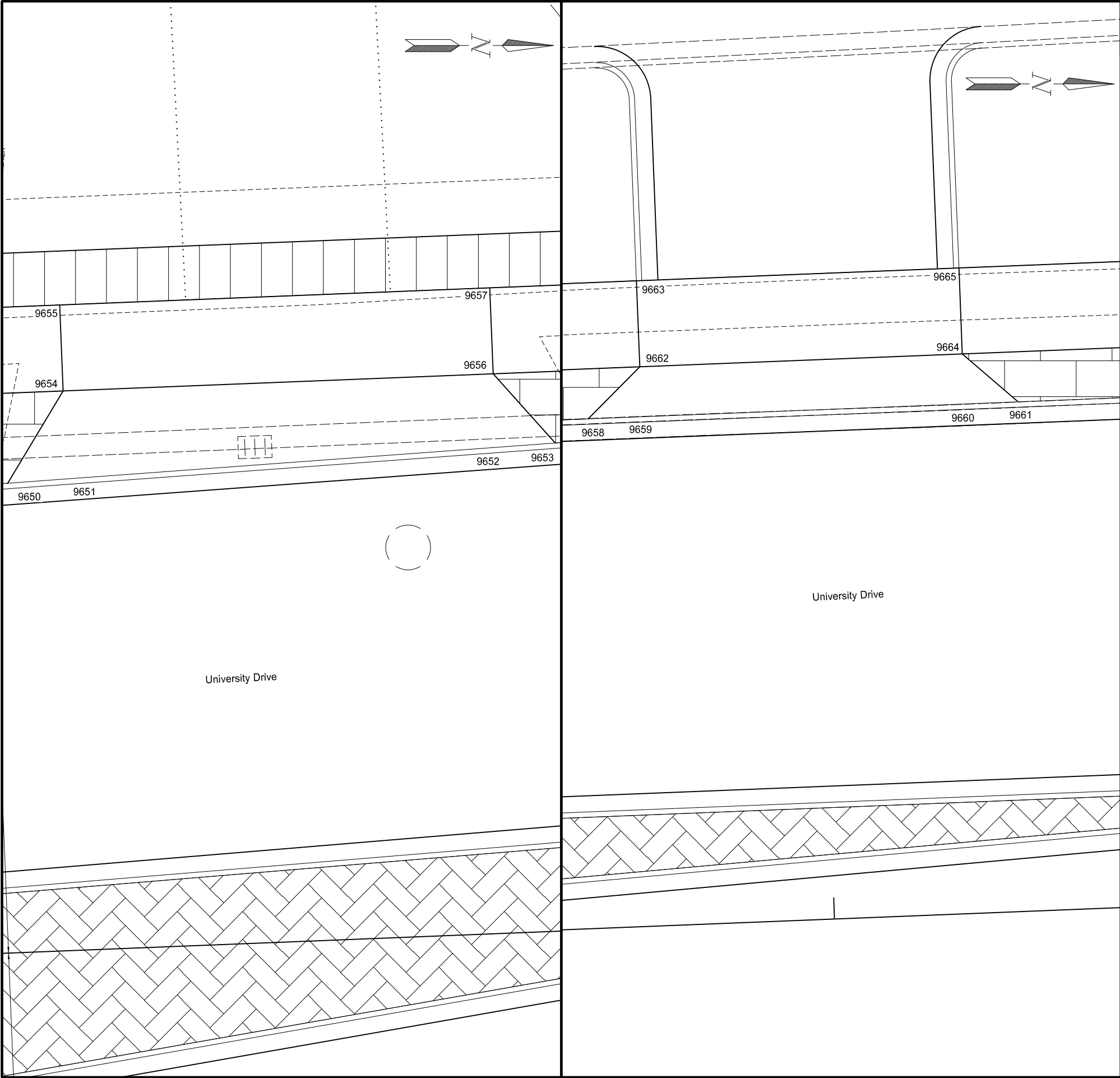
NHU-8-081(039)924

Point	Station	Offset	North	East	Description
9600	1315+73.21	-48.8553	453532.1371	2894567.4696	TOC
9601	1315+78.71	-48.4013	453537.6508	2894567.7049	FL
9602	1316+08.71	-45.9248	453567.7255	2894568.9880	FL
9603	1316+14.21	-45.4708	453573.2392	2894569.2233	TOC
9604	1315+78.71	-52.0000	453537.5079	2894564.1090	SW
9605	1315+78.71	-60.0000	453537.1902	2894556.1153	SW
9606	1316+08.71	-52.0000	453567.4842	2894562.9176	SW
9607	1316+08.71	-60.0000	453567.1665	2894554.9239	SW
9608	1317+31.48	-40.6846	453690.6062	2894569.3487	TOC
9609	1317+36.98	-40.8698	453696.0945	2894568.9452	FL
9610	1317+68.98	-41.9476	453728.0265	2894566.5974	FL
9611	1317+74.48	-42.1329	453733.5148	2894566.1939	TOC
9612	1317+36.98	-52.0000	453695.6525	2894557.8238	SW
9613	1317+36.98	-60.0000	453695.3348	2894549.8301	SW
9614	1317+68.98	-52.0000	453727.6273	2894556.5530	SW
9615	1317+68.98	-60.0000	453727.3096	2894548.5593	SW

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Survey Data Driveway
University Drive

Business US 81 (University Drive)
21st Ave S to 18th Ave S



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	82	12

NHU-8-081(039)924

Point	Station	Offset	North	East	Description
9650	1318+18.76	-43.6243	453777.6983	2894562.9454	TOC
9651	1318+24.26	-43.8095	453783.1866	2894562.5419	FL
9652	1318+64.26	-45.1568	453823.1015	2894559.6072	FL
9653	1318+69.76	-45.3420	453828.5898	2894559.2036	TOC
9654	1318+24.26	-52.0000	453782.8613	2894554.3578	SW
9655	1318+24.26	-60.0000	453782.5436	2894546.3641	SW
9656	1318+64.26	-52.0000	453822.8298	2894552.7694	SW
9657	1318+64.26	-60.0000	453822.5121	2894544.7757	SW
9658	1319+78.94	-47.3500	453937.6001	2894552.8617	TOC
9659	1319+83.94	-47.3500	453942.5962	2894552.6631	FL
9660	1320+13.94	-47.3500	453972.5725	2894551.4718	FL
9661	1320+18.94	-47.3500	453977.5686	2894551.2732	TOC
9662	1319+83.94	-52.0000	453942.4115	2894548.0168	SW
9663	1319+83.94	-60.0000	453942.0938	2894540.0231	SW
9664	1320+13.94	-52.0000	453972.3879	2894546.8254	SW
9665	1320+13.94	-60.0000	453972.0702	2894538.8317	SW

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Survey Data Driveway
University Drive

Business US 81 (University Drive)
21st Ave S to 18th Ave S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	82	13

NHU-8-081(039)924

Chain PR 21STAVES contains:
8000 CUR C8001 8002

Beginning chain PR 21STAVES description

Point 8000 N 452,204.0496 E 2,894,668.5800 Sta 2500+00.00

Course from 8000 to PC C8001 N 87° 53' 51.33" E Dist 46.5605

Curve Data

Curve C8001
P.I. Station 2501+17.36 N 452,208.3549 E 2,894,785.8594
Delta = 36° 27' 09.77" (LT)
Degree = 26° 38' 57.12"
Tangent = 70.7980
Length = 136.7873
Radius = 215.0000
External = 11.3567
Long Chord = 134.4919
Mid. Ord. = 10.7869
P.C. Station 2500+46.56 N 452,205.7577 E 2,894,715.1091
P.T. Station 2501+83.35 N 452,252.4810 E 2,894,841.2241
C.C. N 452,420.6129 E 2,894,707.2217
Back = N 87° 53' 51.33" E
Ahead = N 51° 26' 41.56" E
Chord Bear = N 69° 40' 16.45" E

Course from PT C8001 to 8002 N 51° 26' 41.56" E Dist 23.4885

Point 8002 N 452,267.1207 E 2,894,859.5924 Sta 2502+06.84

Ending chain PR 21STAVES description

Chain PR_EBENT contains:
8120 CUR 8121 8122

Beginning chain PR_EBENT description

Point 8120 N 452,337.5432 E 2,894,704.7070 Sta 2400+00.00

Course from 8120 to PC 8121 N 2° 06' 08.67" W Dist 50.0000

Curve Data

Curve 8121
P.I. Station 2400+76.65 N 452,414.1370 E 2,894,701.8952
Delta = 50° 53' 27.91" (RT)
Degree = 102° 18' 50.01"
Tangent = 26.6453
Length = 49.7402
Radius = 56.0000
External = 6.0159
Long Chord = 48.1211
Mid. Ord. = 5.4323
P.C. Station 2400+50.00 N 452,387.5096 E 2,894,702.8727
P.T. Station 2400+99.74 N 452,431.6919 E 2,894,721.9401
C.C. N 452,389.5640 E 2,894,758.8350
Back = N 2° 06' 08.67" W
Ahead = N 48° 47' 19.25" E
Chord Bear = N 23° 20' 35.29" E

Course from PT 8121 to 8122 N 48° 47' 19.25" E Dist 144.0030

Point 8122 N 452,526.5666 E 2,894,830.2714 Sta 2402+43.74

Ending chain PR_EBENT description

Chain PR_FRONTAGE contains:
8130 8131

Beginning chain PR_FRONTAGE description

Point 8130 N 452,007.4306 E 2,894,759.7044 Sta 2600+00.00

Course from 8130 to 8131 N 2° 06' 08.67" W Dist 216.8101

Point 8131 N 452,224.0947 E 2,894,751.7506 Sta 2602+16.81

Ending chain PR_FRONTAGE description

Chain PR_WBENT contains:
CUR PR_WBENT1 CUR PR_WBENT2 8011

Beginning chain PR_WBENT description

Curve Data

Curve PR_WBENT1
P.I. Station 2101+33.67 N 452,988.2396 E 2,894,218.8336
Delta = 12° 12' 27.91" (LT)
Degree = 4° 35' 01.18"
Tangent = 133.6720
Length = 266.3319
Radius = 1,250.0000
External = 7.1270
Long Chord = 265.8284
Mid. Ord. = 7.0866
P.C. Station 2100+00.00 N 452,921.7078 E 2,894,102.8952
P.T. Station 2102+66.33 N 453,077.7830 E 2,894,318.0818
C.C. N 454,005.8770 E 2,893,480.7399
Back = N 60° 09' 01.62" E
Ahead = N 47° 56' 33.70" E
Chord Bear = N 54° 02' 47.66" E

Course from PT PR_WBENT1 to PC PR_WBENT2 N 47° 15' 46.06" E Dist 276.3158

Curve Data

Curve PR_WBENT2
P.I. Station 2106+12.74 N 453,312.8661 E 2,894,572.5072
Delta = 47° 03' 01.70" (LT)
Degree = 35° 35' 14.79"
Tangent = 70.0891
Length = 132.2109
Radius = 161.0000
External = 14.5947
Long Chord = 128.5272
Mid. Ord. = 13.3816
P.C. Station 2105+42.65 N 453,265.3010 E 2,894,521.0286
P.T. Station 2106+74.86 N 453,382.9547 E 2,894,572.7669
C.C. N 453,383.5513 E 2,894,411.7680
Back = N 47° 15' 46.06" E
Ahead = N 0° 12' 44.36" E
Chord Bear = N 23° 44' 15.21" E

Course from PT PR_WBENT2 to 8011 N 0° 12' 44.36" E Dist 145.3226

Point 8011 N 453,528.2763 E 2,894,573.3055 Sta 2108+20.18

Ending chain PR_WBENT description

Chain PR_WBENT_LOOP contains:
8030 CUR PR_WBENT_LOOP1 8031

Beginning chain PR_WBENT_LOOP description

Point 8030 N 453,111.4237 E 2,894,679.5304 Sta 2200+00.00

Course from 8030 to PC PR_WBENT_LOOP1 N 0° 31' 38.56" E Dist 112.5273

Curve Data

Curve PR_WBENT_LOOP1
P.I. Station 2201+62.04 N 453,273.4603 E 2,894,681.0219
Delta = 87° 11' 48.12" (RT)
Degree = 110° 11' 03.09"
Tangent = 49.5161
Length = 79.1372
Radius = 52.0000
External = 19.8042
Long Chord = 71.7183
Mid. Ord. = 14.3420
P.C. Station 2201+12.53 N 453,223.9463 E 2,894,680.5662
P.T. Station 2201+91.66 N 453,275.4267 E 2,894,730.4989
C.C. N 453,223.4677 E 2,894,732.5640
Back = N 0° 31' 38.56" E
Ahead = N 87° 43' 26.68" E
Chord Bear = N 44° 07' 32.62" E

Course from PT PR_WBENT_LOOP1 to 8031 N 87° 43' 26.68" E Dist 10.1221

Point 8031 N 453,275.8286 E 2,894,740.6131 Sta 2202+01.79

Ending chain PR_WBENT_LOOP description

Chain TEMPRAMP contains:
8150 CUR C8151 8152

Beginning chain TEMPRAMP description

Point 8150 N 452,807.6188 E 2,893,878.3121 Sta 2700+00.00

Course from 8150 to PC C8151 N 69° 02' 28.49" E Dist 443.8324

Curve Data

Curve C8151
P.I. Station 2705+56.66 N 453,006.7349 E 2,894,398.1455
Delta = 40° 00' 00.00" (LT)
Degree = 18° 28' 57.03"
Tangent = 112.8308
Length = 216.4208
Radius = 310.0000
External = 19.8951
Long Chord = 212.0525
Mid. Ord. = 18.6953
P.C. Station 2704+43.83 N 452,966.3758 E 2,894,292.7798
P.T. Station 2706+60.25 N 453,105.3795 E 2,894,452.9179
C.C. N 453,255.8656 E 2,894,181.8941
Back = N 69° 02' 28.49" E
Ahead = N 29° 02' 28.49" E
Chord Bear = N 49° 02' 28.49" E

Course from PT C8151 to 8152 N 29° 02' 28.49" E Dist 346.8114

Point 8152 N 453,408.5865 E 2,894,621.2738 Sta 2710+07.06

Ending chain TEMPRAMP description

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Survey Data
Alignment Definitions

Business US 81 (University Drive)
21st Ave S to 18th Ave S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(090)351	82	14

NHU-8-081(039)924

Chain PR_PATH contains:
8015 CUR 8016 CUR 8017 CUR 8018 CUR 8019 CUR 8020 CUR 8021 8022

Beginning chain PR_PATH description

Point 8015 N 452,551.4641 E 2,894,551.9915 Sta 2000+00.00

Course from 8015 to PC 8016 N 54° 40' 59.82" W Dist 8.1855

Curve Data

Curve 8016
P.I. Station 2000+71.67 N 452,592.8947 E 2,894,493.5130
Delta = 80° 29' 27.50" (RT)
Degree = 76° 23' 39.74"
Tangent = 63.4820
Length = 105.3624
Radius = 75.0000
External = 23.2597
Long Chord = 96.9096
Mid. Ord. = 17.7537
P.C. Station 2000+08.19 N 452,556.1960 E 2,894,545.3124
P.T. Station 2001+13.55 N 452,650.0451 E 2,894,521.1500
C.C. N 452,617.3937 E 2,894,588.6696
Back = N 54° 40' 59.82" W
Ahead = N 25° 48' 27.68" E
Chord Bear = N 14° 26' 16.07" W

Course from PT 8016 to PC 8017 N 25° 48' 27.68" E Dist 14.9550

Curve Data

Curve 8017
P.I. Station 2001+90.57 N 452,719.3824 E 2,894,554.6805
Delta = 27° 53' 03.88" (LT)
Degree = 22° 55' 05.92"
Tangent = 62.0642
Length = 121.6687
Radius = 250.0000
External = 7.5888
Long Chord = 120.4715
Mid. Ord. = 7.3652
P.C. Station 2001+28.50 N 452,663.5085 E 2,894,527.6607
P.T. Station 2002+50.17 N 452,781.4059 E 2,894,552.4314
C.C. N 452,772.3465 E 2,894,302.5956
Back = N 25° 48' 27.68" E
Ahead = N 2° 04' 36.20" W
Chord Bear = N 11° 51' 55.74" E

Course from PT 8017 to PC 8018 N 2° 04' 36.20" W Dist 178.9796

Curve Data

Curve 8018
P.I. Station 2005+01.66 N 453,032.7320 E 2,894,543.3179
Delta = 80° 56' 00.77" (LT)
Degree = 67° 24' 24.48"
Tangent = 72.5117
Length = 120.0673
Radius = 85.0000
External = 26.7271
Long Chord = 110.3312
Mid. Ord. = 20.3335
P.C. Station 2004+29.15 N 452,960.2679 E 2,894,545.9456
P.T. Station 2005+49.22 N 453,041.5560 E 2,894,471.3452
C.C. N 452,957.1877 E 2,894,461.0014
Back = N 2° 04' 36.20" W
Ahead = N 83° 00' 36.97" W
Chord Bear = N 42° 32' 36.59" W

Course from PT 8018 to PC 8019 N 83° 00' 36.97" W Dist 47.1887

Chain PR_WBEX_RT contains:
CUR PR_WBEX_RT1 CUR PR_WBEX_RT2 CUR PR_WBEX_RT3 8033

Beginning chain PR_WBEX_RT description

Curve Data

Curve PR_WBEX_RT1
P.I. Station 2300+80.62 N 453,354.7774 E 2,894,670.0932
Delta = 92° 37' 54.68" (LT)
Degree = 74° 24' 36.37"
Tangent = 80.6208
Length = 124.4883
Radius = 77.0000
External = 34.4841
Long Chord = 111.3665
Mid. Ord. = 23.8175
P.C. Station 2300+00.00 N 453,435.3966 E 2,894,670.5940
P.T. Station 2301+24.49 N 453,357.9790 E 2,894,750.6504
C.C. N 453,434.9182 E 2,894,747.5925
Back = S 0° 21' 21.36" W
Ahead = N 87° 43' 26.68" E
Chord Bear = S 45° 57' 35.98" E

Course from PT PR_WBEX_RT1 to PC PR_WBEX_RT2 N 87° 43' 26.68" E Dist 13.6553

Curve Data

Curve PR_WBEX_RT2
P.I. Station 2302+10.94 N 453,361.4121 E 2,894,837.0323
Delta = 36° 29' 32.63" (RT)
Degree = 25° 56' 54.21"
Tangent = 72.7949
Length = 140.6345
Radius = 220.8067
External = 11.6900
Long Chord = 138.2695
Mid. Ord. = 11.1022
P.C. Station 2301+38.14 N 453,358.5212 E 2,894,764.2949
P.T. Station 2302+78.78 N 453,320.4780 E 2,894,897.2278
C.C. N 453,137.8887 E 2,894,773.0635
Back = N 87° 43' 26.68" E
Ahead = S 55° 47' 00.69" E
Chord Bear = S 74° 01' 47.01" E

Course from PT PR_WBEX_RT2 to PC PR_WBEX_RT3 S 55° 47' 00.69" E Dist 34.3420

Curve Data

Curve PR_WBEX_RT3
P.I. Station 2303+36.70 N 453,287.9095 E 2,894,945.1212
Delta = 2° 53' 46.06" (LT)
Degree = 6° 08' 36.39"
Tangent = 23.5759
Length = 47.1418
Radius = 932.6332
External = 0.2979
Long Chord = 47.1367
Mid. Ord. = 0.2978
P.C. Station 2303+13.12 N 453,301.1667 E 2,894,925.6259
P.T. Station 2303+60.26 N 453,275.6542 E 2,894,965.2615
C.C. N 454,072.3787 E 2,895,450.0652
Back = S 55° 47' 00.69" E
Ahead = S 58° 40' 46.75" E
Chord Bear = S 57° 13' 53.72" E

Course from PT PR_WBEX_RT3 to 8033 S 54° 58' 22.79" E Dist 48.7464

Point 8033 N 453,247.6756 E 2,895,005.1790 Sta 2304+09.01

Ending chain PR_WBEX_RT description

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Survey Data
Alignment Definitions

Business US 81 (University Drive)
21st Ave S to 18th Ave S

NHU-8-081(039)924

Chain PR_PATH contains:
8015 CUR 8016 CUR 8017 CUR 8018 CUR 8019 CUR 8020 CUR 8021 CUR 8022 CUR 8023 8-024

Beginning chain PR_PATH description
=====

Point 8015 N 452,551.4641 E 2,894,551.9915 Sta 2000+00.00

Course from 8015 to PC 8016 N 54° 40' 59.82" W Dist 8.1855

Curve Data

Curve 8016
P.I. Station 2000+71.67 N 452,592.8947 E 2,894,493.5130
Delta = 80° 29' 27.50" (RT)
Degree = 76° 23' 39.74"
Tangent = 63.4820
Length = 105.3624
Radius = 75.0000
External = 23.2597
Long Chord = 96.9096
Mid. Ord. = 17.7537
P.C. Station 2000+08.19 N 452,556.1960 E 2,894,545.3124
P.T. Station 2001+13.55 N 452,650.0451 E 2,894,521.1500
C.C. N 452,617.3937 E 2,894,588.6696
Back = N 54° 40' 59.82" W
Ahead = N 25° 48' 27.68" E
Chord Bear = N 14° 26' 16.07" W

Course from PT 8016 to PC 8017 N 25° 48' 27.68" E Dist 14.9550

Curve Data

Curve 8017
P.I. Station 2001+90.57 N 452,719.3824 E 2,894,554.6805
Delta = 27° 53' 03.88" (LT)
Degree = 22° 55' 05.92"
Tangent = 62.0642
Length = 121.6687
Radius = 250.0000
External = 7.5888
Long Chord = 120.4715
Mid. Ord. = 7.3652
P.C. Station 2001+28.50 N 452,663.5085 E 2,894,527.6607
P.T. Station 2002+50.17 N 452,781.4059 E 2,894,552.4314
C.C. N 452,772.3465 E 2,894,302.5956
Back = N 25° 48' 27.68" E
Ahead = N 2° 04' 36.20" W
Chord Bear = N 11° 51' 55.74" E

Course from PT 8017 to PC 8018 N 2° 04' 36.20" W Dist 178.9796

Curve Data

Curve 8018
P.I. Station 2005+01.66 N 453,032.7320 E 2,894,543.3179
Delta = 80° 56' 00.77" (LT)
Degree = 67° 24' 24.48"
Tangent = 72.5117
Length = 120.0673
Radius = 85.0000
External = 26.7271
Long Chord = 110.3312
Mid. Ord. = 20.3335
P.C. Station 2004+29.15 N 452,960.2679 E 2,894,545.9456
P.T. Station 2005+49.22 N 453,041.5560 E 2,894,471.3452
C.C. N 452,957.1877 E 2,894,461.0014
Back = N 2° 04' 36.20" W
Ahead = N 83° 00' 36.97" W
Chord Bear = N 42° 32' 36.59" W

Course from PT 8018 to PC 8019 N 83° 00' 36.97" W Dist 47.1887

Curve Data

Curve 8019
P.I. Station 2006+30.66 N 453,051.4664 E 2,894,390.5120
Delta = 49° 05' 20.30" (RT)
Degree = 76° 23' 39.74"
Tangent = 34.2498
Length = 64.2573
Radius = 75.0000
External = 7.4503
Long Chord = 62.3099
Mid. Ord. = 6.7771
P.C. Station 2005+96.41 N 453,047.2985 E 2,894,424.5072
P.T. Station 2006+60.66 N 453,079.8870 E 2,894,371.3987
C.C. N 453,121.7411 E 2,894,433.6341
Back = N 83° 00' 36.97" W
Ahead = N 33° 55' 16.67" W
Chord Bear = N 58° 27' 56.82" W

Course from PT 8019 to PC 8020 N 33° 55' 16.67" W Dist 46.3788

Curve Data

Curve 8020
P.I. Station 2007+84.11 N 453,182.3187 E 2,894,302.5122
Delta = 91° 33' 13.44" (RT)
Degree = 76° 23' 39.74"
Tangent = 77.0619
Length = 119.8436
Radius = 75.0000
External = 32.5339
Long Chord = 107.4944
Mid. Ord. = 22.6909
P.C. Station 2007+07.04 N 453,118.3724 E 2,894,345.5169
P.T. Station 2008+26.89 N 453,223.5737 E 2,894,367.6011
C.C. N 453,160.2264 E 2,894,407.7522
Back = N 33° 55' 16.67" W
Ahead = N 57° 37' 56.77" E
Chord Bear = N 11° 51' 20.05" E

Course from PT 8020 to PC 8021 N 57° 37' 56.77" E Dist 97.5754

Curve Data

Curve 8021
P.I. Station 2009+53.79 N 453,291.5138 E 2,894,474.7916
Delta = 38° 04' 41.21" (LT)
Degree = 67° 24' 24.48"
Tangent = 29.3327
Length = 56.4900
Radius = 85.0000
External = 4.9189
Long Chord = 55.4561
Mid. Ord. = 4.6498
P.C. Station 2009+24.46 N 453,275.8106 E 2,894,450.0164
P.T. Station 2009+80.95 N 453,319.1547 E 2,894,484.6093
C.C. N 453,347.6043 E 2,894,404.5117
Back = N 57° 37' 56.77" E
Ahead = N 19° 33' 15.56" E
Chord Bear = N 38° 35' 36.17" E

Course from PT 8021 to PC 8022 N 19° 33' 15.56" E Dist 116.9542

Curve Data

Curve 8022
P.I. Station 2011+07.67 N 453,438.5672 E 2,894,527.0229
Delta = 18° 29' 28.95" (RT)
Degree = 95° 29' 34.68"
Tangent = 9.7670
Length = 19.3641
Radius = 60.0000
External = 0.7898
Long Chord = 19.2802
Mid. Ord. = 0.7795
P.C. Station 2010+97.91 N 453,429.3635 E 2,894,523.7539
P.T. Station 2011+17.27 N 453,446.2589 E 2,894,533.0422
C.C. N 453,409.2815 E 2,894,580.2934
Back = N 19° 33' 15.56" E
Ahead = N 38° 02' 44.51" E
Chord Bear = N 28° 48' 00.03" E

Course from PT 8022 to PC 8023 N 38° 02' 44.51" E Dist 27.8724

Curve Data

Curve 8023
P.I. Station 2011+70.84 N 453,488.4487 E 2,894,566.0588
Delta = 40° 19' 17.83" (LT)
Degree = 81° 51' 04.01"
Tangent = 25.7006
Length = 49.2622
Radius = 70.0000
External = 4.5689
Long Chord = 48.2519
Mid. Ord. = 4.2890
P.C. Station 2011+45.14 N 453,468.2090 E 2,894,550.2197
P.T. Station 2011+94.41 N 453,514.1291 E 2,894,565.0381
C.C. N 453,511.3493 E 2,894,495.0933
Back = N 38° 02' 44.51" E
Ahead = N 2° 16' 33.32" W
Chord Bear = N 17° 53' 05.59" E

Course from PT 8023 to 8024 N 2° 16' 33.32" W Dist 53.3973

Point 8024 N 453,567.4842 E 2,894,562.9176 Sta 2012+47.80

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Ending chain PR_PATH description

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Survey Data
Alignment Definitions

Business US 81 (University Drive)
21st Ave S to 18th Ave S