

DESIGN DATA - East of 6th Ave NE				
Traffic	Average Daily			
Current 2015	Pass: 20,028	Trucks: 571	Total: 20,599	
Forecast 2035	Pass: 27,085	Trucks: 851	Total: 27,936	
Clear Zone Distance: 14 ft		Design Speed: 30/40 mph		
Minimum Sight Dist. for Stopping: 200/305 ft		Bridges: N/A		
Sight Dist. for No Passing Zone: 500/600 ft				
Pavement Design Life 30 (years)				
Design Accumulated One-way Flexible ESALs: N/A				
DESIGN DATA - West of 6th Ave NE				
Traffic	Average Daily			
Current 2015	Pass: 8,694	Trucks: 401	Total: 9,095	
Forecast 2035	Pass: 11,792	Trucks: 597	Total: 12,389	
Clear Zone Distance: 14 ft		Design Speed: 25/35 mph		
Minimum Sight Dist. for Stopping: 155/250 ft		Bridges: N/A		
Sight Dist. for No Passing Zone: 450/550 ft				
Pavement Design Life 30 (years)				
Design Accumulated One-way Flexible ESALs: N/A				

JOB # 5
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
UGP-SU-NHU-1-094(202)915

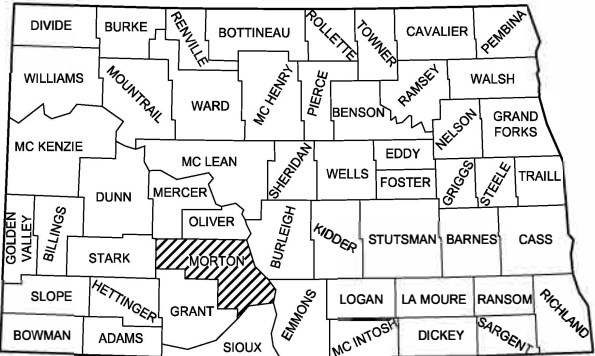
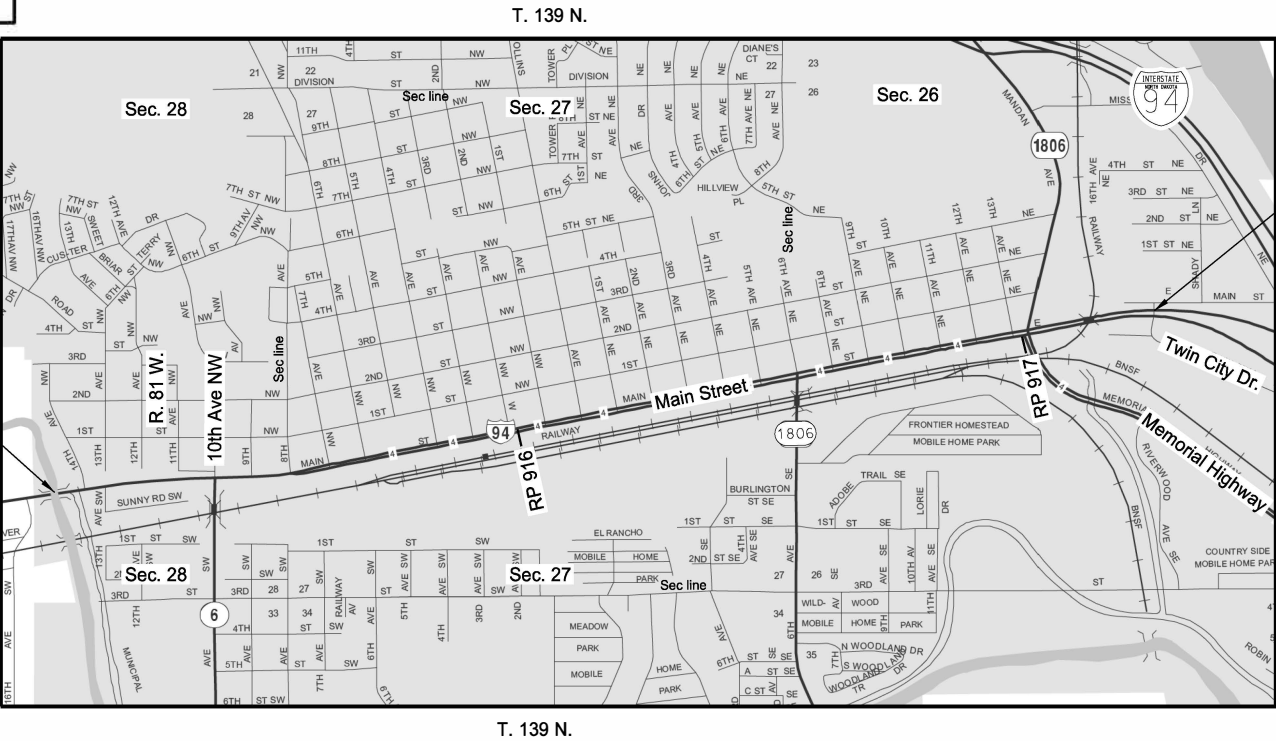
Morton County
City of Mandan
Heart River Bridge to Twin City Drive
CPR, Grinding, Sidewalk, Signals, Signing, Marking,
Bulb-Outs, Decorative Lighting, Planters

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GOVERNING SPECIFICATIONS: 2020 Standard Specifications adopted by the North Dakota Department of Transportation and the Supplemental Specifications effective on the date the project is advertised.		
PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
UGP-SU-NHU-1-094(202)915	2.234	2.234

Begin Project
UGP-SU-NHU-1-094(202)915
Sta 87+92
RP 915.129

End Project
UGP-SU-NHU-1-094(202)915
Sta 205+88.00
RP 917.363



STATE COUNTY MAP

DESIGNER Jonathan Morgenroth
DESIGNER Patrick Gallagher
DESIGNER Traci Sletmoe

ND DEPARTMENT OF TRANSPORTATION OFFICE OF PROJECT DEVELOPMENT
Chad M. Om /s/
08/28/2020

KLJ

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- 100-P01 CONTRACTOR PARKING/STAGING AREA RESTRICTIONS: Parking of personal vehicles, construction equipment, storage of construction materials, or work areas on private property is prohibited without written permission by the property owner.
- 100-P02 PROTECTION OF BUILDINGS: Exercise care and use appropriate construction means and methods to minimize disturbance or damage to buildings and canopies located along the project limits. Provide a method of pavement and sidewalk removal that will minimize vibration. No high impact guillotine style drop hammers will be allowed. Restore any damaged items to preexisting conditions at no cost.
- 100-P03 SCHEDULING: The events listed below are scheduled for Main Street in 2021. Coordination will be required for these events. Include the Mandan Progress Organization (701) 751-2983 on the scheduling of work activities related to the timing of these events. The Contractor may elect to start work on the downtown/bulb out areas after the 4th of July to avoid the events in the May-July time frame.
1. Ensure new concrete placement has achieved the required strength and clear traffic control from the roadway, from 2nd Avenue NE to 6th Avenue NW, for Touch a Truck and Buggies-n-Blues. Clear the bulbout areas of equipment and obstructions and ensure pedestrian access is clearly and safely provided through the construction areas.
 - Touch a Truck – May 15, 2021
 - Buggies-n-Blues – June 12-13, 2021
 2. Ensure new concrete placement has achieved the required strength and clear traffic control from the roadway, for the entire project, for Mandan Rodeo Days. Complete any work started on the bulbout areas prior to July 2nd, 2021, and have the sidewalks open for pedestrian access.
 - Mandan Rodeo Days – July 2-4, 2021
 3. Events where clearing of the temporary traffic control is not required. However, pedestrian access must be clearly and safely provided
 - Main Event – August 13-14, 2021
 - Oktoberest – Sept 25, 2021
- 107-500 PAVEMENT SWEEPING: Sweep the roadway adjacent to the construction area at the end of each day. Utilize a vacuum or pickup type sweeper.
- 107-P01 ACCESS FOR BUSINESSES: Provide an access plan that maintains access to all businesses for review by the Engineer and Mandan City Engineer (City) at least one week prior to the preconstruction meeting. This plan is subject to approval by the Engineer and City.
- 108-100 WEEKLY PLANNING & REPORTING MEETING: A weekly planning and reporting meeting is required.

- 202-P01 REMOVAL OF CONCRETE AND CURB & GUTTER: Concrete surfacing, concrete pavement, and curb and gutter designated for removal may vary in thickness. There will be no additional compensation for removal of extra thickness.
- 202-P02 EXISTING AGGREGATE: Include the cost of removing any existing aggregate in the cost for "Removal of Concrete Pavement," Removal of Bituminous Surfacing," and "Removal of Curb and Gutter."
- 202-P03 REMOVAL OF BITUMINOUS SURFACING: The depth of the existing bituminous surfacing and aggregate base on the sideroads is unknown.
- 302-P01 WATER: Include the labor and water used to control dust and to compact aggregate bases in the cost for "Aggregate Base Course CL5"
- 420-P01 AUTOMATIC TRAFFIC RECORDER EXCEPTION AREA: An Automatic Traffic Recorder site (ATR) is located on East Main Street at Sta 196+50. This area has a 6'x8' loop in each lane. The loops are buried in the concrete. Locate the loops in each lane and mark them on the roadway. Use caution when doing concrete pavement repair work in this area. Contact Robert Steckler 2 weeks prior to working in this area. The ND IT contact for the Department is:

Robert Steckler
216 Airport Road
Bismarck, ND 58504
Telephone: (701) 328-6935

- 570-P01 PCC PAVEMENT GRINDING: Grind the entire mainline. Feather to 0 depth in the parking lanes and sideroads. Quantities include 5ft of grinding width in parking lanes and sideroads. Where the mainline abuts curb and gutter, feather to 0 depth at the face of curb and gutter. Maintain Drainage.
- 570-P02 RIDE QUALITY: Remove Standard Spec 570.04 D. After grinding, the Engineer will measure PCC joints and other ground areas with a suspected deviation of 3/16" or greater with a 10 foot straightedge. Correct areas found to have a deviation of 3/16" or greater with a 2nd pass of grinding.
- 704-P01 TRAFFIC CONTROL FOR CONCRETE PAVEMENT REPAIR: Provide traffic control consisting of a temporary lane closure and flagging.

Place vertical panels on the roadway adjacent to full depth repair areas. Place panels every 10 feet and use a minimum of two panels at each full depth repair area.

Place Type I barricades in front of each full depth removal area. Position barricades so that they do not encroach into the traffic lane.

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The traffic control device list is based on the maximum work zone and the following list:

- 1. Standard D-704-20, Type G;
- 2. Standard D-704-34
- 3. Standard D-704-34A.

Quantities of Type I barricades and vertical panels are based on 25 full depth repair locations and 2 vertical panels per location. The Department will pay for additional barricades and panels at the contract unit price for the devices of additional full depth repair locations are found.

Remove or shorten lane closures after new concrete has reached the required strength for opening to traffic specified in Section 570.04 A.1.b, "Full Depth Repairs".

704-P02 TRAFFIC CONTROL FOR PCC PAVEMENT GRINDING: Provide traffic control consisting of a temporary lane closure and flagging.

- 1. Standard D-704-20, Type G;
- 2. Standard D-704-34
- 3. Standard D-704-34A.

704-P03 TRAFFIC CONTROL PHASING: Coordinate phasing for concrete pavement repair areas with the phasing for the construction of the bulbouts. The following traffic control phasing for the construction of the bulbouts and signals has been developed for this project:

Phase 1A: Close driving lanes, obliterate existing pavement marking, and install temporary pavement markings with lane closures and flaggers. Utilize existing signals.

Close the 4th Ave NW intersection and route pedestrians on the street utilizing temporary curb ramps and pedestrian channelization devices. Start work on 4th Ave drainage, and bulbout construction.

On all other intersections, maintain a pedestrian access route adjacent to the buildings on west side of remaining intersections. Install drainage, new pavement, and curb line on Main Street.

Phase 1B: Continue to work on 4th Ave NW Intersection.

On all other intersections, move pedestrian traffic on the west side of the intersections onto the street utilizing temporary curb ramps and pedestrian

channelization. Maintain access to businesses. Construct sidewalk, ramps, curb, pavement, conduit, signal foundations, and lighting foundations.

Phase 2A: Continue to work on 4th Ave NW Intersection.

Maintain a pedestrian access route adjacent to the buildings on east side of remaining intersections. Install drainage, new pavement, and curb line on Main Street.

Phase 2B: Complete work on 4th Ave NW Intersection.

On all other intersections, move pedestrian traffic on the east side of the intersections onto the street utilizing temporary curb ramps and pedestrian channelization. Maintain access to businesses. Construct sidewalk, ramps, curb, pavement, conduit, signal foundations, and lighting foundations.

Phase 3: Install permanent pavement markings, signals, and lighting utilizing lane closures and flagging.

704-P04 PEDESTRIAN FACILITIES AND ACCESS: Provide pedestrian access to all businesses along Main Street unless alternative access to the property is approved by the business owner. Leave 5' of the existing sidewalk in place for pedestrian use while constructing the new curb line and storm sewer on Main Street. Separate the sidewalk from the construction zone with pedestrian longitudinal barricades. Only remove sidewalk where it is necessary to install utilities until all work on the curbline is complete. Provide temporary pedestrian access routes to business accessed when the sidewalk adjacent to the buildings is removed.

708-P01 INLET PROTECTION: Furnish, install, and maintain (clean) drainage inlet filter assemblies to collect sediment in surface storm water runoff. Dispose of debris or silt that has accumulated in the bag off the project. Provide periodic cleaning of the filter as necessary. Remove drainage inlet filter when vegetation has established.

Provide Wimco, Lange IPD, Flexstorm, Dandy CurbSack, or an approved equal.

An additional 20 "Inlet Protection-Special" & "Remove Inlet Protection-Special" is provided for use in concrete panel repair areas. Relocate as necessary as the operations move. Include the cost to reinstall filters in the unit price bid.

Include all costs related to the material, installation, maintenance, relocation, and replacement in the price bid for "Inlet Protection-Special".

714-P01 STORM DRAINS AND CULVERTS: Provide bell and spigot with rubber gasket joints for reinforced concrete pipe storm

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drain. Provide tongue and groove joints sealed with butyl mastic and wrapped joints for reinforced concrete pipe culverts.

Tie all joints on reinforced concrete pipe runs from drainage structure (i.e. inlet, manhole, etc.) to end section. Pipe ties are not required for concrete pipe placed from drainage structure to drainage structure.

722-P01 CASTINGS: Provide floating manhole castings for all existing manholes that lie within the limits of new concrete pavement repair areas, sidewalk, or shared-use path. Install casting as shown Section 20. Place flush all castings to within 1/8 inch below the pavement that lie in the roadway.

Provide the standard casting (see Section 20) outfitted with an infiltration and inflow (I&I) barrier adhered to the manhole cover with the adjusting rings and casting set around the I&I barrier for all new manholes, adjusted manholes, or repaired manholes located outside of concrete.

722-P02 STORM DRAIN INLETS AND MANHOLES: All new inlets and manholes have a minimum 4.0-foot riser. Fill the bottom of the inlet or manhole with concrete up to the elevation that will accommodate the lowest invert elevation. Place and shape the concrete fill to eliminate trapping of debris or sediment. Backfill all new inlet and manholes with suitable material. Include all costs to accomplish this work in the price bid for the respective inlet or manhole.

Seal all barrel-to-barrel joints using a rubber gasketed joint.

Do not install steps in manholes or inlets.

722-P03 ADJUST MANHOLE: This bid item provides for the adjustment of various existing castings to the proper grade. Replace with new castings as stated in note 722-P01 with a maximum of 6 adjusting rings. Adding or removing adjusting rings will be paid by "Adjust Manhole". Include all labor, materials, and equipment necessary to complete the adjustment in the price bid for "Adjust Manhole".

722-P04 INLET SPECIAL: Include all costs for the manhole (base, riser, and cover), castings, grates, adjustment rings, trench excavation, aggregate base, and embankment in price bid for "Inlet Special – Type ____ IN."

722-P05 ADJUST GATE VALVE Install debris plugs, as manufactured by Infact Corporation or an approved equal, into all existing gate valve boxes when they are adjusted. Include all labor, equipment and materials required to install the plugs in the price bid for "Adjust Utility Appurtenance."

722-P06 ADJUST INLET: Adjust existing inlets to final grade by adding or removing adjusting rings. Include all labor, materials, and equipment necessary to complete the modification to the existing inlets in the price bid for "Adjust Inlet".

722-P07 MODIFY INLET: All connections to existing storm sewer involves cutting existing structures. Saw storm sewer opening, install pipe and mortar closed. Include all labor and materials required to perform this work in the price bid for 'Modify Inlet.

722-P08 ADJUST UTILITY APPURTENANCE: Include costs to adjust curb stops and monitoring well castings to finished grade in the price bid for "Adjust Utility Appurtenance".

724-P01 ADJUST HYDRANT: Adjust hydrant to final grade by adding or removing riser pipe. Install per manufacturer's recommendations. Provide a minimum distance between nozzle and ground of 24" and a maximum distance of 30". Wrap hydrant risers with 8-mil polyethylene plastic and securely tape. Include all costs associated with material, labor, and equipment necessary to complete the adjustments to the existing hydrants in the price bid for "Adjust Hydrant".

744-P01 INSULATION BOARD: Furnish and install the insulation required to protect the water main.

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

750-P01 SIDEWALK CONCRETE REINFORCED: Reinforce sidewalk with a No. 4 deformed reinforcing bar placed 24 inches on center both ways. Include an 18 inch minimum lap at splice locations. Use plastic chairs to support the bars at mid-depth of the slab and ensure a clearance of 3 inches to all side forms.

Saw a centerline longitudinal joint on concrete sidewalk greater than 8 feet in width. Saw all longitudinal and transverse contraction joints. Saw joints in a timely manner to prevent any uncontrolled random cracking. If random cracking occurs, remove and replace all damaged panels at the Contractor's expense.

Include all costs for the labor, equipment, and material necessary to construct the sidewalks in the price bid for "Sidewalk Concrete Reinf".

750-P02 SIDEWALK DECORATIVE: 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/course 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.

Charcoal Color:

- 1. Butterfield Uni-Mix | Number U49 Deep Charcoal
- 2. Scofield | Number C-34 Dark Gray
- 3. Davis Colors | Number 8084 Graphite

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Reinforce decorative sidewalks with a No. 4 deformed reinforcing bar placed 24 inches on center both ways. Include an 18 inch minimum lap at splice locations. Use plastic chairs to support the bars at mid-depth of the slab and ensure a clearance of 3 inches to all side forms. Tie all cold joints with a 24 inch long No. 4 deformed reinforcing bar placed 24 inches on center.

Saw a centerline longitudinal joint on concrete sidewalk greater than 8 feet in width. Saw all longitudinal and transverse contraction joints. Saw joints in a timely manner to prevent any uncontrolled random cracking. If random cracking occurs, remove and replace all damaged panels at the Contractor's expense.

Include all costs for the labor, equipment, and material necessary to construct the sidewalks in the price bid for "Sidewalk - Decorative".

750-P03 PIGMENTED IMPRINTED CONCRETE: Pigmented concrete as shown in the plans will be a colored and stamped 4-inch sidewalk with a brick running bond stamp pattern (4-inch by 8-inch brick pattern) and colored release agent/color hardener. Imprinted pattern to replicate the look of worn or used brick pavers with grout lines that are 1/4-inch to 1/2-inch deep. Provide the stamp used for patterning to the Owner upon completion of the work.

Include an integral concrete color mix, either dry or liquid and include a colored stamp release agent to be selected upon approved color choice below. 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.

Brown Color:

- 1. Butterfield Uni-mix | Number U29 Soapstone
- 2. Scofield | Number 1010 Brownstone
- 3. Soloman Colors Inc. | Number 338 Leather
- 4. Davis Colors | Number 61078 Adobe

Reinforce imprinted sidewalks with a No. 4 deformed reinforcing bar placed 24 inches on center both ways. Include an 18 inch minimum lap at splice locations. Use plastic chairs to support the bars at mid-depth of the slab and ensure a clearance of 3 inches to all side forms. Tie all cold joints with a 24 inch long No. 4 deformed reinforcing bar placed 24 inches on center.

Saw a centerline longitudinal joint on concrete sidewalk greater than 8 feet in width. Saw all longitudinal and transverse contraction joints. Saw joints in a timely manner to prevent any uncontrolled random cracking. If random cracking occurs, remove and replace all damaged panels at the Contractor's expense.

Include all costs for the labor, equipment, and material necessary to construct the sidewalks in the price bid for "Sidewalk - Decorative".

750-P04 COLORED CONCRETE: Use the same supplier for all colored concrete placed under the contract. Provide uniform color and imprinting throughout the entire project. As part of the approval process, provide a 2-foot by 2-foot, or large enough in order to place more than one width of the stamper, mockup depicting each of the color options specified above (from only one manufacturer or equal to be chosen by Contractor) for Engineer and Owner to evaluate two weeks prior to final selection. The approved mockup and final color choice will be the standard of which to compare project area concrete for color, texture, imprinting, and finish appearance. Cure and seal all colored concrete using curing compound that meets the requirements of ASTM C 309, Type 1 and include slip resistant additive. Include all costs in the price bid for "Sidewalk-Decorative" or "Pigmented Imprinted Concrete".

750-P05 SIDEWALK JOINTING: Saw a centerline longitudinal joint on concrete sidewalk greater than 7.5 feet in width. Do not exceed a 1 to 1.25 length to width ratio. Saw all longitudinal and transverse contraction joints. Saw joints in a timely manner to prevent any uncontrolled random cracking. If random cracking occurs, remove and replace all damaged panels at the Contractor's expense.

Before beginning work submit a reinforcement jointing plan for decorative sidewalk to the Engineer for approval.

Include all costs for the labor, equipment, and material necessary to construct the sidewalks in the price bid for "Pigmented Imprinted Concrete", "Sidewalk Decorative", & "Sidewalk Concrete- 4IN"

750-P06 DETECTABLE WARNING PANELS: Use unpainted ductile cast iron plates.

750-P07 ROOF DRAINS: Take care not to damage existing roof drains while replacing sidewalk. Adjust any castings or grates as needed. Include this work in the price bid for "Pigmented Imprinted Concrete", "Sidewalk Decorative", & "Sidewalk Concrete- 4IN"

750-P08 SEEDING: Seed all disturbed topsoil with Seeding Class I: Include costs for materials and labor to seed all disturbed areas in "Sidewalk Concrete-4IN" and "Curb & Gutter."

750-P09 HEATED CONCRETE SIDEWALK: The sidewalk in the NW quadrant of 6th Ave NW and Main St W and 104 3rd Ave NW is heated. Coordinate with the landowners to deactivate the heated sidewalk and reactivate after construction. Repair any damage to the heated sidewalk caused by the installation of the traffic signal foundation at 6th Ave NW. Reinstall the heated sidewalk at 104 3rd Ave matching the current design and footprint. Design details are as follows.

- 5/8 or ¾ inch Pex
- Foil lined
- Oxygen Barrier

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- 12” spacing
- Tied into the existing boiler

Include the cost for the repair and reinstallation of the heated sidewalk in the cost for “Sidewalk Snow Melting Mat”

762-050 PAVEMENT MARKING: If the Engineer and Contractor agree, plan quantity will be used as the measurement for payment for pavement marking items.

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770-P01 LIGHT STANDARD 6FT MA 40FT MT HT BREAKAWAY: Provide a steel, galvanized davit type, breakaway light standard with transformer bases and factory installed internal vibration dampeners. Face hand holes in the opposite direction of roadway. Duct seal all conduit stubs in the concrete foundation. Install double locknut washers on all anchor bolts. Provide a shaft with one longitudinal weld and a minimum yield strength of 50,000 psi. Construct davit type mast arm of same material and by the same method as the shaft. Provide a tenon adaptor in the mast arm for luminaire mounting. Provide grounding lug inside of the hand hold.

Verify anchor bolt spacing in the field prior to construction. Notify the Engineer at least 24 hours prior to pouring concrete foundations such that the form with the anchor bolt placement, rebar, conduit stub-ins and ground rod can be inspected. Finish the foundation with a 4" thick, 30"x30" square top with 1" chamfer around all sides.

Include all materials, labor and equipment necessary to furnish and install the light standard 6ft MA 40Ft Mt Ht Breakaway in the price bid "LIGHTING SYSTEM _"

770-P02 ORNAMENTAL LIGHT STANDARD: Provide the ornamental light standards as shown in the plans. Provide PEMCO PLB-112-4-12-F-0.125-T300-N-BK lighting standards or approved equal. The light standards shall be mounted on a foundation and shall not be direct burial.

Luminaires for the Ornamental Light Standard shall be PEMCO SENT-GG3-C10-64W4K-U-3-N-N-N-N-BK. Photometric data shall be provided for approval.

- Provide poles with the following accessories:
- Low Profile Duplex GFCI Receptacle with in use cover,
 - 2-Single Banner Arms Model Number: BA-24-1-BBA-F-2EB-BK
 - 1 Decorative Planter Arms with planter rings (PSC31)

Post wiring shall be No. 10 AWG stranded copper with ground, Type THHN-600 volt cable of the same type specified for the underground distribution circuits. Post wiring fuses shall be a type FNM 5 ampere fuse with a Buss type HEB in line fuse holder.

Ornamental Light Standard shall consist of: Luminaire with ballast and lamp, concrete butt type poles and brace, wiring and connections to underground circuits, ground rod with connection, fuse holder and fuses, concrete pads, and unit set in place and ready for operation.

Include all materials, labor and equipment necessary to furnish and install the type L1 street light standard in the price bid "LIGHTING SYSTEM _"

770-P03 LED LUMINAIRE (LED): Provide American Electric Lighting, Model ATB2-60BLEDE70-MVOLT-R3-4000K-NL-NR, or approved equal.

Include all materials, labor and equipment necessary to furnish and install the LED Luminaire in the price bid "LIGHTING SYSTEM _"

770-P04 FEED POINT-TYPE IV PAD MOUNTED: Coordinate with the electric utility company (Montana-Dakota Utilities/MDU). The utility is responsible for providing service connections and conductors from the utility transformer to the meter socket located on the feed point cabinet. The new electrical services for lighting shall be separate from traffic signals Coordinate the installation of new service conductors and conduit between the feed point and the utility transformer. The cost of bringing a Utility Service to power the feed point will be paid by the Contractor as part of this bid item.

Provide and install:

- A 200-amp meter socket, with stud type connectors, and mount on the side of the feed point cabinet.
- A 2" conduit sweep in the concrete foundation for the service conductors to the meter socket from a point 24" below grade.
- rigid steel conduit for all exposed conduit.
- A feed point cabinet manufactured by Povolny Specialties or States Manufacturing
- A cabinet made of a minimum 1/8" aluminum, with brushed aluminum finish, rated for NEMA 3R and be ETL or UL listed in accordance with UL 50.
- A cabinet with a doomed roof with NEMA 3R drip shield and two doors.
- an aluminum continuous piano-style hinge, a neoprene gasket, and a stainless steel 3-point latch capable of being padlocked. Equip the enclosure with back panel rails such that equipment may be mounted in the cabinet with no penetrations to the exterior of the cabinet.
- A galvanized steel back panel.
- Unistrut mounting brackets and non-corrosive hardware.
- All necessary breakers as shown in the detail and panel schedule.
- A contactor for each 120/240V circuit. Provide contactors that are heavy-duty electromagnetic lighting control relay housed in weatherproof case, 2 pole, rated at 60 amp, 120V control coil, 120V/240V rated load with load contactors normally open when coil is de-energized
- Trinetics, RCOC Model MR-UD No. 6342 relay contactors.
- A Hubbell PBT-1, Intermatic K4021C or approved equal photo cell designed to recess into the feed point cabinet. Face the photocell north.
- A Test-Auto switch to override the photocell control. Install a GFCI receptacle in a metal box inside the feed point cabinet with the branch circuit conductors in conduit to the load center.

Orient the feed point door as shown in the plan. Provide a permanent label for the exterior feed point cabinet and for the contactors inside the cabinet.

Include all materials, labor and equipment necessary to furnish and install the feed point and furnish and install the electrical service in the price bid for "LIGHTING SYTEM_".

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- 770-P05 MARKER TAPE: Install marker tape 5” below finished grade in cable trenches above underground conductors. Provide 6-inch wide, red plastic tape marked “Caution – Buried Electric Cable.”
- 770-P06 SPLICE CONNECTORS: Provide Penn-Union IPBNA2/0XS splice connectors at pole hand holes. Provide Homic, Type RAB-X-URD-BUSS submersible insulated subsurface terminal splice connectors at pull boxes.
- 770-P07 GFCI RECEPTACLE: Furnish and install GFCI receptacles, square tubing, L-brackets, and plugs per plan details shown in Sections 85 and 140 of the plans. Galvanize in accordance with Section 854 of the standard specifications.

GFCI Receptacle

Provide outdoor GFCI receptacles that meets the requirements listed below. Fasten GFCI receptacle to square tubing per manufacturer’s recommendations.

- 1-Gang outlet
- Outlet box hood is identified as “extra duty”
- Contains a while in use weatherproof cover
- Lockable tab
- Die-cast metal material painted with rust proof gloss black enamel paint (use 27038 of Federal Standard No. 595B)
- Vertical mount installation

Square Tubing

Provide square tubing that meets the requirements listed below.

- Minimum size = inner dimensions of square tubing must equal or exceed outer diameter of cable conduit plus length of exposed bolts, nuts, and washers used to secure L-brackets
- Material = galvanized steel painted with rust proof gloss black enamel paint (use 27038 of Federal Standard No. 595B)
- Minimum wall thickness = 14 gauge (0.083-inches)

L-Brackets for Square Tubing

Provide L-Brackets that meets the requirements listed below. Secure L-brackets to square tubing with galvanized steel bolts, nuts, and washers on all four sides.

- Material = galvanized steel painted with rust proof gloss black enamel paint (use 27038 of Federal Standard No. 595B)
- Size = 3-inch x 3-inch x 1/8-inch

Plug for Square Tubing

Provide plugs for square tubing that meets the requirements listed below.

- Material = galvanized steel painted with rust proof gloss black enamel paint (use 27038 of Federal Standard No. 595B)

- Friction fit plug type
- Plug to fit external tube size and wall thickness of square tubing
- Secure plug to square tubing per manufacturer’s recommendations

Method of Measurement

The GFCI receptacles, square tubing, L-brackets, and plugs will not be measured separately for payment

Basis of Payment

Include all costs for labor, equipment, and materials necessary to install GFCI receptacles, square tubing, L-brackets, and plugs in the price bid for “Lighting System E”.

- 770-P08 IN-GRADE LUMINAIRE: Furnish and install in-grade luminaires per plan details shown in Sections 85 and 140 of the plans. In-grade luminaires shall be Hydrel M9420-SS-12LED-WHT41K-MVOLT-WFL-FLCAS-34B-LDIM-LP , Kim Lighting Model LTV8SS with electric module 4K, slip resistant lens, and RCA83 rebar cage anchor,or approved equivalent.

Include all costs for labor, equipment, and materials necessary to install In-grade luminaires in the price bid for “Lighting System E”.

- 772-P01 FLASHING BEACON: The price bid for “Flashing Beacon” shall include all labor and equipment necessary for the Rectangular Rapid Flashing Beacon (RRFB) to be fully operational as shown in the plans upon construction completion. This includes, but is not limited to, the installation of the following features where applicable; feed point cabinet and foundation, Type II signal standards and foundations, flashing RRFB lights, controller, APS push buttons, utility service and all ancillary hardware, all cable, conduit, junction boxes, and appurtenance to install the flashing beacon completely. The control enclosure shall be installed as shown in the plans and shall not be battery powered or solar powered. Program the flash rate and illuminated period of each flash in accordance with the most current version of the MUTCD and NDDOT standards. The cost of the utility service will be paid by the Contractor. Coordinate with the electric utility company to provide new electrical services for the RRFBs.

The RRFB shall be TAPCO equipment. The Contractor shall provide work drawings for the flashing beacon to the Engineer prior to ordering materials.

- 772-P02 TRAFFIC SIGNALS SYSTEM: Include in the price bid for “Traffic Signal System – Site _” all labor and equipment necessary for the signal system to be fully operational as shown in the plans upon construction completion. This includes but is not limited to, the installation of the following features where applicable; traffic signal standards and foundations, vehicular heads, Autoscope Vision video detection system, traffic signal controller and all ancillary hardware (conflict monitor, load switch, flasher, etc.),

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controller cabinet and foundation, and all cable, conduit, junction boxes, and appurtenances to install the traffic signal system completely.

772-P03 TRAFFIC SIGNAL POLES: Provide galvanized steel traffic signal poles meeting the following requirements:

- Galvanizing meeting AASHTO Specification M111 (ASTM A123).
- Steel poles that meet ASTM A36, A242, A570, A572, A607 or A595 Grade A or B.
- Limit A595 material to a 3/8 inch maximum thickness.
- Steel pole material (thickness of 1/2 inch to 2 inches) that meets Charpy V-Notch toughness test requirements of 15 ft. lb. at 40 degrees F.
- Provide rotatable mast arms.

772-P04 TRAFFIC SIGNAL STANDARDS BASE: Provide galvanized “T” transformer base type standards for all traffic signal standards.

772-P05 SIGNAL COMPONENT COLORS:

Vehicle signal head housing - black
Signal head mounting hardware – unpainted aluminum

772-P06 TRAFFIC SIGNAL ELECTRICAL SERVICE: Coordinate with the electric utility company (MDU) to provide new electrical services for the traffic signals. Meter traffic signals separately from the lighting.

Provide 120/240V, 30 Amp, single phase electrical service. The utility is responsible for providing service conductors and connections from the utility transformer to the proposed meter and transfer switch rack mounted on the side of the traffic signal cabinet as per City of Mandan specifications. Drilling into the controller cabinet is not allowed. The utility will provide boring or trenching required up to the meter.

Provide a 200-amp meter socket with stud-type connectors and mount on the side of the controller cabinet using a mounting frame constructed of unistrut or perforated tube. Mount the frame in the controller cabinet concrete foundation and increase the foundation size accordingly. Provide and install a 2” conduit sweep in the concrete foundation for the service conductors to the meter socket from a point 24” below grade. Provide rigid steel conduit for all exposed conduit. The cost of the utility service will be paid by the Contractor.

Provide a 30-amp rated, fused disconnect (safety switch box) and install adjacent to the controller cabinet exterior on the mounting frame next to the meter socket. Provide SUSE rate disconnect to act as the main service disconnect and be bonded according to the NEC. Provide a disconnect that is lockable in both positions, NEMA 3R rated, 2-pole, double throw type, contain class H fuse spacings, and be fused at 30 amps. The disconnect will be used as a generator transfer switch with a 30-amp twist lock receptacle. Coordinate with the City of Mandan to ensure the receptacle

type matches their generators. Provide a receptacle with a weather proof cover. Verify the exact fault current rating with the utility, and provide a main disconnect with a minimum AIC rating as required by the NEC.

Include all materials, labor and equipment necessary to furnish and install the electrical service including the mounting frame, meter socket, and disconnect switch in the price bid for “Traffic Signal System – Site _.”

772-P07 TRAFFIC SIGNAL CONTROLLER/CABINET: Provide either Econolite Cobalt C or Cobalt G controllers/. Provide a traffic signal cabinet that conforms to the following specifications:

- a. Sized for P65 cabinet
- b. Equipped with GPS time clocks.
- c. Provide a minimum of three removable shelves that are a minimum of 10 inches deep.
- d. Punch holes in the front edge of the shelf every 6 inches to accommodate tie-wrapping of cables/harnesses.
- e. Include one computer drawer with the cabinet and mounted on the lowest shelf.
- f. Provide dual gang-four plug outlets (one on each side of cabinet interior).
- g. Mount two LED light panels in the cabinet to sufficiently illuminate the field terminals. Wire the LED light panels to a 15-amp ON/OFF toggle switch mounted on the power panel.
- h. Provide Emerson Brand type (plug & go) surge protection with green and red LED confirmation lights.
- i. Provide load switch flasher & switches of the RENO/EDI brand type (with input & output LED’s on each channel of the switches).
- j. Provide LED indicators for the flash transfer relay.
- k. Cabinet door
 - i. Provide a Filter/Heater mounting assembly with a spring-loaded flip latch or twist lever latch.
 - ii. Threaded bolt/nut types are not acceptable.
 - iii. North Dakota rated heat strip & thermostat.
 - iv. Fan & Heater must have separate thermostats.
- l. Test each controller and cabinet assembly as a complete entity under signal load for a minimum of 48 hours.
- m. Deliver each assembly with a signed document detailing the cabinet final tests performed.
- n. Provide cabinets assembled and tested by the controller manufacturer or authorized local distributor to ensure proper component integration and operation.
- o. Provide arc flash plexiglass cover of AC.
- p. Training to be provided for equipment/software.

Construct the concrete foundation as shown on standard detail D770-1 along with three spare 2” conduit sweeps in concrete foundation. Label the spare conduits as to which

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direction they face. Provide a GFCI receptacle in the controller cabinet. Include in the price bid for “Traffic Signal System – Site _” all labor, materials and equipment required to install the new controller. This includes but is not limited to the cabinet, new detector amplifiers (furnished and installed), concrete foundation, other ancillary signal components (such as load switches, conflict monitors, etc.), and controller cabinet components connected as required to make the new controller equipment operational with the proposed signal equipment. This also included any programming and data entry (i.e. signal timing plans) necessary to provide a fully functional traffic signal controller.

772-P08 CONTROLLER WORKING SLAB: Install a controller working slab, 6 feet wide that extends a minimum of 4 feet from the face of the controller foundation. Provide a slab that is 4 inches thick and reinforced with 6" x 6" x 10 GA welded wire fabric and tied to the controller foundation with 18-inch long #3 rebar spaced 18 inches on center. Provide a controller working slab that has a slope of .25 inches per foot away from the controller cabinet foundation. Closest point of the top of the slab to finished grade to be 2 inches above grade, except where it matches the sidewalk. Pour the slab in place with no voids. Include all costs for controller working slab in the price bid for “Traffic Signal System – Site _”.

772-P09 SIGNAL EQUIPMENT:

- A. Provide steel pedestal adapters/collars.
- B. Provide polycarbonate vehicle heads, installed level on all sides. Provide fasteners, made of the same material as the pole, with anti-seize lubricant. Provide cap/cut visors for vehicle heads
- C. Provide two-point mounting system such as Astro Brackets, Sky Brackets or approved equal for all mast arm mounted signals.
- D. Provide louvered aluminum traffic signal backplates.
- E. Provide LED indications on new signal heads.
- F. Furnishing and installing signal equipment is included in the price bid for “Traffic Signal System – Site _”.

772-P10 TRAFFIC SIGNAL HEAD BACK PLATES: Provide traffic signal head back plates with a yellow Type XI retroreflective border. Install a 1-inch yellow border around the perimeter of the face of the backplate. Install backplates with stainless steel fasteners including a washer. Apply anti-seize lubricant to the fastener threads. Include all costs for the border in the price bid for “Traffic Signal System – Site _”.

772-P11 EMERGENCY VEHICLE PRE-EMPTION: Notify the fire chief when the EVP systems are tested and operable. Place the confirmation light at the same location on the mast arm as the EVP detectors. The City of Mandan is responsible for setting the range of the system.

772-P12 CONDUIT: Provide HDPE conduit when boring. Seal all conduits with duct seal at the controller cabinet and at the traffic signal standard foundations. Install two spare 2” conduit sweeps in the controller cabinet foundation and one spare 2” conduit sweep in each traffic signal standard base. Cap spare conduits with an oil-tight plug with wing

nut and labeled as to which direction they face. Include all costs in the bid price for “Traffic Signal System – Site _”.

772-P13 LABEL ALL FIELD CABLES: Coordinate with the City for approved labeling materials. Provide readable labels without moving the cables. Label cables with the following designations:

TYPE	LABEL	LABEL LOCATION
Communication cable	Comm./address of other end	Within 12" of conduit
Pedestrian push button	Phase/location (i.e. NW, SW, etc.)	Within 6" of terminals
Video detection cable	Approach Detection (i.e. NW, SW, etc.)	Within 6" of terminals
Control cable	Cable number & location (i.e. NW, SW, etc.)	Within 12" of conduit
Opticom cable	Pre-empt number/location (i.e. NW, SW, etc.)	Within 6" of terminal

Not a separate pay item, cost to be included in the price bid for “Traffic Signal System – Site _”.

772-P14 CONTROLLER CABINET WIRING DIAGRAM: Label the following information on the cabinet wiring diagram, in addition to information required by NDDOT Standard Specification.

- A. Label the camera number (i.e., D2-1) from the plan on the detector panel drawing adjacent to the point for termination.
- B. Label the field wire terminals for the vehicle/pedestrian head control cables with the phase number and direction (i.e., Ø2, SB).
- C. Label the field wire terminals for the Opticom cable with the pre-empt number (i.e., P.E. #1).
- D. Label the field wire terminal for the pre-empt indicator lamps with the pre-empt number and direction (i.e., P.E. #1, NB).
- E. Label the field wire terminals for the pedestrian push-button cables with the phase number (i.e., Ø8 PED).
- F. Provide an intersection diagram on cabinet door showing phasing of intersection and camera numbering and detection zone numbering
- G. Provide a CAD drawing file of the as-built cabinet wiring diagram.

Use a heat-shrink labeling system. Do not strip cables back from the connection more than 12 to 18 inches. This work is not a separate pay item. Include all costs in the price bid for “Traffic Signal System – Site _”.

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- 772-P15 CONFLICT MONITOR TESTING: Perform a complete controller conflict monitor test prior to unveiling the traffic heads. Supply the conflict monitor maintenance record test form along with instructions that must be followed completely before the signals are put into operation. Include all materials, labor and equipment necessary to conduct the conflict monitor testing in the price bid "Traffic Signal System – Site _".
- 772-P16 WIRE SPLICING: Splicing is not allowed. Termination of conductors is allowed at the signal transformer base terminal strip, controller cabinet terminal blocks, and traffic signal head terminal blocks.
- 772-P17 TERMINAL STRIP PROTECTION: Mount the terminal strip on a ½" thick white plastic backing material and provide a terminal strip protection pipe within the signal transformer base. Provide a 3" to 3½" PVC pipe protection pipe with a minimum length of 12" and it must cover the entire terminal strip. Cap one end of the PVC pipe. Place the terminal strip within the PVC pipe with the cap side up inside the transformer base. Include all materials, labor and equipment necessary to provide and install the terminal strip protection pipe in the price bid "Traffic Signal System – Site _".
- 772-P18 PULL BOXES: Pull boxes shall be made of a lightweight, high-density polymer concrete composite, UL listed with knockouts for cable entrance. The box shall comply with ANSI/SCTE 77 with a design load of 22,500 pounds, a test load of 33,750 pounds, and meet ANSI Tier 22 test provisions. The cover shall meet an 8,000 pounds design load and 12,000 pounds test load. Boxes shall be resistant to sunlight exposure, weathering, chemicals, and unaffected by freeze-thaw cycles to -50°F. Minimum dimensions shall be 24" X 13" X 18"D with stackable boxes or extensions allowed to achieve required depth when approved by the ENGINEER. Box covers shall have stainless steel hex bolts and be stamped with standard logo "Traffic Signal."
- 772-P19 TRAFFIC SIGNAL FOUNDATIONS: Type IV and /or Combination Traffic Signal Standards shall have two spare 2-inch conduits in each foundation. Type II or V traffic signal foundations shall have one additional 2-inch conduit in each foundation.
- 772-P20 VIDEO DETECTION SYSTEM: Provide Autoscope Vision Video Detection Equipment. Provide all cable connections, camera aiming and system set-up, including programming detection zones and verification of reliable operation by the manufacturer's representative. The location of cameras in the plans are for reference only. Provide an extra camera / processor, interface panel and detector port master for each Video Detection System. Warrant the video detection system for a minimum of three years after final inspection and acceptance. Include ongoing software support by the supplier of the MVP sensor and application software. Provide updates free of charge for one year after final inspection and acceptance.
- Include all labor and equipment necessary for the video detection system to be fully operational. Include all costs, labor, materials and equipment necessary for furnishing and installing this item in the price bid for "Traffic Signal System – Site _"
- 772-P21 LAW ENFORCEMENT CONFIRMATION LIGHTS: Provide blue omni-directional LED law enforcement confirmation lights that are visible from 360° when mounted on the

signal heads. Provide a lens for the confirmation light in which the blue tint is integrated into the lens. Blue coating is not allowed. Provide law enforcement confirmation lights that are manufactured specifically for use as law enforcement confirmation lights and have been used for that purpose at intersections within the United States. Required temperature rating is -40 Degrees Celsius to 60 Degrees Celsius.

Provide the Engineer at the time of work drawing submittal a demo law enforcement confirmation light and mounting hardware that is intended to be used on the project. The law enforcement light and mounting hardware are subject to approval by the Engineer. Mount the law enforcement confirmation lights on a riser to the traffic signal heads as shown in the plans. Provide un-brushed aluminum risers that are capable of adjusting the height and angle of the confirmation lights. The confirmation lights must be visible above or below the signal head. The riser must not protrude or be visible above or below the signal head backplate. Provide a connection between the riser and traffic signal head that is weather proof and will not allow moisture into the traffic signal head. Connect the law enforcement confirmation lights to the red indication in the corresponding traffic signal head. Place anti-seize compound on all threaded components. Include all costs associated with furnishing and installing the law enforcement confirmation lights in the price bid for "Traffic Signal System – Site _".

772-P22 IT SYSTEM: Include all necessary labor, equipment and material to install the interconnect cable and connections in the price bid for "IT System" such that the communication link is complete and fully operational from 6th Ave NE to 6th Ave NW. See special provision for detailed specifications.

772-P23 IT PULL BOXES: Pull boxes shall be made of a lightweight, high-density polymer concrete composite, UL listed with knockouts for cable entrance. The pull box shall comply with ANSI/SCTE 77 with a design load of 22,500 pounds, a test load of 33,750 pounds, and meet ANSI Tier 22 test provisions. The cover shall meet an 8,000-pound design load and 12,000-pound test load. Pull boxes shall be resistant to sunlight exposure, weathering, chemicals, and unaffected by freeze-thaw cycles to -50F. Dimensions shall be 32" X 49" X 36"D with stackable boxes or extensions allowed to achieve required depth when approved by the ENGINEER. Pull box covers shall have stainless steel hex bolts and be stamped with standard logo "Traffic Signal." Pull Box shall be included in the price bid for "IT SYSTEM". Measurement for payment shall be lump sum.

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970-P01 TREES

1. Extend plant establishment period for a period of 1 year commencing on date of acceptance by Engineer/City Forester/City Arborist.
2. Notify the City of Mandan Forestry Department (701)751-7894 for an inspection of all plant material 1 week prior to installation.
3. Do not install plant material when ambient temperatures may drop below 35 degrees F or rise above 90 degrees F. Do not install plant material when wind velocity exceeds 30 mph. Acceptable planting dates are as follows:

Spring: April 15 – June 15
Fall: September 15 – October 15
June 15 – September 15, upon written approval by Engineer.

4. Properly care for all trees from the time of planting until the contract plant establishment period expires. Proper care consists of supplemental watering, weeding, pruning, spraying, tightening/adjusting tree tie straps and other work as necessary to keep the trees in a neat appearance and in a healthy growing condition.
5. Planting: Remove subsoil excavated in each planting hole and backfill all tree pits with planting soil mixture (See note below.). Install trees as shown in the details. Trees that are installed too deep or too shallow will not be accepted.
6. Furnish and install planting soil mixture in the tree pits as shown in the detail. Provide planting soil mixture which consists of a mixture of peat moss, topsoil, and sand in a ration of 1:1:1 by volume. Provide peat moss with:
 - 75% minimum of partially decomposed stems and leaves of sphagnum, hypnum, polytrichum, and other mosses in which the fibrous and cellular structure is still recognizable. It shall be nearly free of decomposed colloidal residue, wood, and other foreign matter, and shall be brown to black in color. Humus peat will not be acceptable.
 - a moisture content not exceeding 60% by weight.
 - ash content not exceeding 20%, based on the oven dry weight of the material.
 - pH value not less than 3.2 nor greater than 7.0 at 25° C.
 - water holding capacity not less than 400% by weight, on an oven dry basis.

Furnish a certificate stating the type of peat moss, brand name, and the country or place of origin. If packed in bales, provide certificate from marking on bales.

Provide sand that 100% passes a 3/8" sieve.

Install fertilizer planting tablets: AgSafe 20-10-5 Mycorrhizae BioFertilizer Tablets or otherwise approved by Engineer; slow-release nonburning, polymer coated – Install one 21gram tablet for every 1/2 inch of caliper.

Include all work required to furnish, prepare, deliver, and install planting soil mixture in the tree pits in the price bid for individual tree.

7. Water all trees within 2 hours of being planted to thoroughly saturate backfill and eliminate voids.
8. Perform complete watering at 5 to 7-day intervals, which may be adjusted when weather conditions and soil moisture permit. Additional watering may be ordered by the Engineer at any time during the plant establishment period should conditions require such watering. Furnish and install a 15-gallon slow release supplemental water bag for each tree planted.
9. Place a sufficient amount of water in each supplemental water bag at the time of each watering to keep plants in a moist condition, and to keep the plant in a healthy growing condition.
10. Supplemental water bags will become the property of the City of Mandan following acceptance of trees. The City of Mandan will remove all supplemental water bags after the growing season and will remove all bracing and guying materials.
11. Within 24 hours of installation, stake trees and install pea gravel in accordance with details.
12. Replace all trees that die, show evidence of dying, or disease, during the plant establishment period at the earliest appropriate planting time after this condition becomes apparent. Replacements are to be of the same size and species as originally specified.
13. Near the end of the applicable plant establishment period an inspection of the trees will be made and only those found to be in a healthy growing condition will be accepted. Those trees not in a healthy growing condition will be replaced by the Contractor at the Contractor's expense. Replacements are to be of the same size and species as originally specified.
14. Include all costs for maintenance, warranty, watering, supplemental water bags, pea gravel, fertilizer planting tablets, tree guy anchoring/staking systems, planting soil mixture, and other items necessary for completion

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of the tree plantings in the price bid for individual tree.

15. Payment for trees will be made at specific intervals. Fifty percent (50%) will be distributed after initial planting, twenty five percent (25%) on July 1, 2022 upon acceptance of proper plant care maintenance, and twenty five percent (25%) on September 15, 2022 upon acceptance of proper plant care maintenance and final acceptance. Keep detailed records of maintenance activities and notify the Engineer 24 hours in advance of maintenance activities in order to receive full payment for each period. Submit maintenance records to the Engineer prior to the partial payment dates listed above to receive payment.

970-P02 TREE GRATES: Furnish and install 60” square cast iron (natural cast iron finish) with ADA approved radial pattern. Tree grates are not to have openings greater than 1/2" wide. Install tree grates per the manufacturer’s recommendations and standard details, final locations will be approved by Engineer. Approved manufacturers are as follows:

Neenah Enterprises, Inc.
Product: Boulevard Collection, R-8713
Size: 60” x 60”
Tree Opening Size: 16” diameter

Canterbury Designs
Product: Sunburst Tree Grate, TGRA-5-SQ
Size: 60” x 60”
Tree Opening Size: 15” diameter

Ironsmith, Inc.
Product: Starburst 1Tree Grate
Size: 60” x 60”
Tree Opening Size: 16” diameter

East Jordan
Product: 48955000
Size: 60”x 60”
Tree Opening Size: 16” Diameter

Include all work necessary to provide and install trees grates in the unit price bid for “CAST IRON TREE GRATES.”

970-P03 TREE GUARDS: Furnish and install steel tree guards with powder coated black finish. Tree guards to be 60” in height and have a 16” standard diameter opening. Tree guard ordering and installation will be coordinated with tree grates for anchoring and matching diameter openings. Install tree guards around Northern Acclaim Honey Locust trees only, not around Gladiator Crabapple trees. Install corrugated plastic tree protectors; color: white, on all trees that do not receive tree guards. Approved tree guard manufacturers are as follows:

Ironsmith, Inc.
Product: M13 Tree Guard

Victor Stanley, Inc.
Product: Model S-6 from the Ironsites® Collection

Include all work necessary to provide and install tree guards in the unit price bid for “SITE FURNISHINGS.” This item will be bid as Bid Option 1.

970-P04 TRASH RECEPTACLE: Furnish and install steel trash receptacles, where indicated and shown on plans. All trash receptacles shall be surface mounted to the concrete pavement at the proposed locations per manufacturer’s recommendations and standard details. Install the following trash receptacle that matches existing trash receptacles installed in Downtown Mandan.

Dumor
Trash receptacle, Model: 102-32SH
Color: Black
Installation: Surface mount

Install all work necessary to provide and install trash receptacles in the unit price bid for “TRASH RECEPTACLE”.

970-P05 BENCH: Furnish and install 6’ metal benches, where indicated and shown on plans. All benches shall be surface mounted to the concrete pavement at the proposed locations per manufacturer’s recommendations and standard details. Install the following bench that matches existing benches installed in Downtown Mandan.

Dumor
Bench without backrest, 6-foot, Model: 92-60
Options: End armrests
Color: Black
Installation: Surface Mount

Provide and install 6-foot benches without backrests in the unit price bid for “BENCH”.

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SPEC	CODE	ITEM DESCRIPTION	UNIT	NHU Funding	UGP Funding	TOTAL			
103	0100	CONTRACT BOND	L SUM	0.78	0.22	1			
202	0114	REMOVAL OF CONCRETE PAVEMENT	SY	268	2198	2466			
202	0130	REMOVAL OF CURB & GUTTER	LF	454	966	1420			
202	0132	REMOVAL OF BITUMINOUS SURFACING	SY		34	34			
202	0170	REMOVAL OF CULVERTS-ALL TYPES & SIZES	LF		32	32			
202	0235	REMOVAL OF CATCH BASIN	EA		1	1			
302	0120	AGGREGATE BASE COURSE CL 5	TON	60	749	809			
430	0500	COMMERCIAL GRADE HOT MIX ASPHALT	TON		10	10			
550	0310	10IN NON REINF CONCRETE PVMT CL AE-DOWELED	SY		620	620			
570	0210	PCC PAVEMENT GRINDING	SY	72268		72268			
570	0650	CONCRETE PAVEMENT REPAIR-FULL DEPTH-DOWELED	SY	2004		2004			
570	0963	TRANSVERSE PCC JOINT CLEANING & SEALING	LF	54481		54481			
570	0965	LONGITUDINAL PCC JOINT CLEANING & SEALING	LF	75369		75369			
570	0966	RANDOM PCC CRACK CLEANING & SEALING	LF	684		684			
570	1512	SPALL REPAIR-PARTIAL DEPTH	SF	2342		2342			
702	0100	MOBILIZATION	L SUM	0.78	0.22	1			
704	0100	FLAGGING	MHR	1200		1200			
704	1000	TRAFFIC CONTROL SIGNS	UNIT	2072	790	2862			
704	1050	TYPE I BARRICADE	EA	25		25			
704	1052	TYPE III BARRICADE	EA		9	9			
704	1054	SIDEWALK BARRICADE	EA		21	21			
704	1058	PEDESTRIAN WALKWAY	LF		698	698			
704	1060	DELINEATOR DRUMS	EA	271		271			
704	1067	TUBULAR MARKERS	EA	136		136			
704	1080	STACKABLE VERTICAL PANELS	EA	50		50			
704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	4		4			
704	1500	OBLITERATION OF PAVEMENT MARKING	SF		376	376			
704	2108	TEMPORARY CURB RAMP	EA		6	6			
708	1540	INLET PROTECTION-SPECIAL	EA	57		57			
708	1541	REMOVE INLET PROTECTION-SPECIAL	EA	57		57			
714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN	LF		464	464			
714	9720	UNDERDRAIN PIPE PVC PERFORATED 4IN	LF		1029	1029			
722	0100	MANHOLE 48IN	EA		3	3			
722	0107	MANHOLE 54IN	EA		1	1			
722	1100	MANHOLE RISER 48IN	LF		13.2	13.2			
722	1106	MANHOLE RISER 54IN	LF		4	4			
722	3495	MODIFY INLET	EA		2	2			
722	3500	INLET-TYPE 1	EA		13	13			
722	3700	INLET SPECIAL-TYPE 1 48IN	EA		2	2			
722	6160	ADJUST INLET	EA	1		1			
722	6200	ADJUST MANHOLE	EA	15		15			
722	6240	ADJUST UTILITY APPURTENANCE	EA	5	20	25			
724	0427	ADJUST HYDRANT	EA		2	2			
744	0050	INSULATION BOARD	CF		16	16			
748	0100	CURB & GUTTER	LF	454		454			
748	0140	CURB & GUTTER-TYPE I	LF		1029	1029			
748	0520	CURB-TYPE I	LF		153	153			

Estimated Quantities						STATE	PROJECT NO.	SECTION NO.	SHEET NO.
						ND	UGP-SU-NHU-1-094(202)915	8	2
SPEC	CODE	ITEM DESCRIPTION	UNIT	NHU Funding	UGP Funding	TOTAL			
750	0030	PIGMENTED IMPRINTED CONCRETE	SY		255	255			
750	0101	SIDEWALK CONCRETE REINF	SY	268	799	1067			
750	0107	SIDEWALK - DECORATIVE	SY		439	439			
750	2115	DETECTABLE WARNING PANELS	SF		150	150			
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	744.2		744.2			
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	23		23			
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	814		814			
754	0592	RESET SIGN PANEL	EA	19		19			
762	0122	PREFORMED PATTERNED PVMT MK-MESSAGE(GROOVED)	SF	1206		1206			
762	0420	SHORT TERM 4IN LINE-TYPE R	LF		3002	3002			
762	0422	SHORT TERM 6IN LINE-TYPE R	LF		983	983			
762	0424	SHORT TERM 8IN LINE-TYPE R	LF		514	514			
762	0440	SHORT TERM MESSAGE-TYPE R	SF		96	96			
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	26031		26031			
762	1307	PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED	LF	2745		2745			
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	3866		3866			
762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	LF	1371		1371			
770	0003	LIGHTING SYSTEM A	EA		1	1			
772	2160	FLASHING BEACON	EA	2		2			
772	3125	REMOVE TRAFFIC SIGNAL SYSTEM	EA	6		6			
772	9200	IT SYSTEM	EA	1		1			
772	9811	TRAFFIC SIGNAL SYSTEM - SITE 1	EA	1		1			
772	9812	TRAFFIC SIGNAL SYSTEM - SITE 2	EA	1		1			
772	9813	TRAFFIC SIGNAL SYSTEM - SITE 3	EA	1		1			
772	9814	TRAFFIC SIGNAL SYSTEM - SITE 4	EA	1		1			
970	0300	BENCH	EA		9	9			
970	0320	TRASH RECEPTACLE	EA		9	9			
970	0600	CAST IRON TREE GRATES	EA		17	17			
970	2150	NORTHERN ACCLAIM HONEYLOCUST	EA		14	14			
970	2203	GLADIATOR CRABAPPLE	EA		3	3			
990	0215	SIDEWALK SNOW MELTING MAT	L SUM		1	1			
970	0350	SITE FURNISHINGS (TREE GUARDS)	EA	Bid Option - 1	14	14			
770	0004	LIGHTING SYSTEM B	EA	Bid Option - 2	1	1			

Pavement
Aggregate Base Course CL 5 @ 1.875 Ton/CY
Concrete Pavement @ 2 Ton/CY

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	10	1

Location	202-0114 Removal of Concrete Pavement (SY)	302-0120 Aggregate Base Course CL 5 (Ton)	750-0101 Sidewalk Concrete Reinf (SY)
10th Ave NW	26	6	26
6th Ave NW	82	18	82
4th Ave NW	5	2	5
3rd Ave NW	9	2	9
1st Ave NW	21	5	21
Collins Ave	40	9	40
6th Ave NE	85	18	85

Note: Quantities shown are for the removal/placement of lighting standards, signal poles, and pedestrian pushbuttons outside of the bulb-out construction areas.

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Main St
Basis of Estimate

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	11	1

UGP-NHU-1-094(202)915 Concrete Pavement Repair														
Begin Station	Side	Start Offset	Concrete Pavement Repair Full Depth-Doweled (1)			Spall Repair (2)			Random PCC Crack Cleaning & Sealing (2) (LF)	Removal of Curb & Gutter (LF)	Curb & Gutter (LF)	Adjust Utility Appurtenance (3) (EA)	Adjust Inlet (3) (EA)	Adjust Manhole (3) (EA)
			Length (FT)	Width (FT)	Area (SY)	Length (FT)	Width (FT)	Area (SF)						
87+92	RT	10				3	6	18						
88+02	RT	0							12					
89+14	RT	12				2	2	4						
90+59	LT	14							20					
91+14	LT	0	45	12	60.0									
91+24	LT	15							6					
91+28	RT	0	31	13	44.8									
91+31	RT	20							32					
91+42	LT	12	17	6	11.3					17	17			
91+42	RT	13	17	7	13.2					17	17			
94+06	RT	12				4	2	8						
94+62	RT	12				6	2	12						
94+76	RT	12				4	2	8						
95+04	RT	11				4	2	8						
95+32	RT	11				2	2	4						
95+73	RT	11				2	2	4						
95+83	RT	11							14					
96+99	RT	11				4	2	8						
97+13	RT	11				2	2	4						
97+25	RT	0	102	12	136.0									
98+25	RT	12				2	2	4						
98+67	RT	12				2	2	4						
98+92	RT	11				3	6	18						
99+76	RT	11	64	11	78.2									
101+20	LT	0	16	19	33.8									
101+20	RT	0	16	12	21.3									
101+35	RT	11	15	12	20.0									
101+35	RT	23				3	4	12						
101+50	RT	23				13	2	26						
101+61	RT	12				2	2	4						
101+68	RT	27							11					
101+75	RT	23				4	2	8						
102+00	RT	26								7	7			
102+28	LT	21				4	2	8	20					
102+35	LT	36	8	4	3.6					4	4			
102+46	LT	46				2	2	4						
102+50	LT	1	30	12	40.0									
102+54	LT	42	3	8	2.7									
102+54	LT	27	3	6	2.0									
102+55	LT	40				2	2	4						
102+57	LT	1				3	2	6						
102+67	LT	43				2	2	4						
102+69	LT	1				2	2	4						
102+69	RT	23				2	2	4						
102+71	RT	51								7	7			
103+00	RT	28							11					
103+38	LT	1	6	12	8.0									
103+55	LT	13				2	7	14						
103+55	LT	21				2	3	6						
104+06	LT	1				2	2	4						
104+40	RT	11	95	13	131.9									
105+95	RT	3				2	3	6						
105+95	LT	7				2	3	6						
105+95	RT	23				2	2	4						
106+66	RT	23				2	2	4						
106+66	LT	7				2	2	4						
106+66	LT	13				4	5	20						
107+18	RT	11				3	2	6						
107+18	RT	29				2	5	10						
107+32	RT	18							9					
107+44	RT	23				2	2	4						
107+89	RT	0							24					
108+09	RT	23				2	2	4						
108+25	RT	23				13	2	26						
108+61	RT	23				2	2	4						

Note: Removal of existing concrete and all dowel bars are to be included in the bid item "Concrete Pavement Repair-Full Depth-Doweled"

- (1) Refer to "Transverse Joint Dowel & Tie Bar Placement Full Depth Concrete Pavement Repair Perpendicular Joints (Longitudinal Joints Less than One Panel) & (Longitudinal Length of One Panel or More)" Details in Section 20
(2) Refer to "Spall Repair & Random Crack Sealing" Detail in Section 20
(3) See Section 6 for Further Information

This document was originally issued and sealed by
Jonathan P. Morgenroth
Registration Number
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Main St
Concrete Pavement Repair

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	11	2

UGP-NHU-1-094(202)915 Concrete Pavement Repair														
Begin Station	Side	Start Offset	Concrete Pavement Repair Full Depth-Doweled (1)			Spall Repair (2)			Random PCC Crack Cleaning & Sealing (2) (LF)	Removal of Curb & Gutter (LF)	Curb & Gutter (LF)	Adjust Utility Appurtenance (3) (EA)	Adjust Inlet (3) (EA)	Adjust Manhole (3) (EA)
			Length (FT)	Width (FT)	Area (SY)	Length (FT)	Width (FT)	Area (SF)						
108+87	RT	23				2	2	4						
109+00	RT	16							7					
109+12	RT	10				2	2	4						
109+63	RT	35				2	2	4						
109+96	RT	37								5	5			
109+99	RT	35				2	2	4						
110+60	RT	32							25					
110+98	LT	23								4	4			
111+00	LT	13				2	2	4						
111+40	RT	22				2	2	4						
114+29	RT	24	6	12	8.0									1
114+47	LT	8	6	12	8.0				9					1
114+87	RT	28								9	9			
114+88	LT	4							20					
115+01	RT	2				2	2	4						
115+18	RT	28	6	12	8.0									
115+40	RT	26				4	2	8						
116+18	RT	26				4	2	8						
116+31	RT	26				2	2	4						
116+45	RT	26				4	2	8						
117+26	RT	26				2	2	4						
117+39	RT	26				2	2	4						
117+52	RT	26				2	2	4						
117+79	RT	26				8	2	16						
117+80	LT	22				2	2	4						
118+51	LT	36							8					
118+56	LT	59								8	8			
118+75	LT	34				3	2	6						
118+76	LT	22				2	2	4						
118+76	LT	35				2	2	4						
119+03	LT	22				4	2	8						
119+16	LT	22				2	2	4						
119+80	LT	22				4	2	8						
125+47	LT	30				4	2	8						
125+85	RT	18	6	12	8.0									1
125+92	RT	26				3	2	6						
127+08	LT	22				2	16	32						
127+22	LT	10				3	2	6						
128+76	RT	8				2	2	4	21					
129+73	RT	18	6	12	8.0									1
130+05	RT	9							7					
130+53	RT	14				2	2	4						
131+95	LT	18							13					
132+08	LT	22							7					
132+15	LT	17							7					
133+00	LT	20				2	2	4						
133+14	LT	30				2	2	4						
133+51	RT	16	6	12	8.0									1
133+57	RT	10							10					
133+80	RT	2				2	2	4						
133+81	LT	30				2	3	6						
133+82	LT	30				2	2	4						
134+33	RT	26				2	2	4						
134+98	RT	26				2	2	4						
135+24	RT	26				3	2	6						
135+41	RT	28								12	12			
135+42	LT	10				2	2	4	12					
135+42	LT	22				2	3	6						
137+07	RT	26				2	2	4						
137+13	RT	26				4	2	8						
137+30	RT	32	6	6	4.0									
137+39	RT	26				6	2	12						
137+88	RT	17							7					
138+93	RT	26				5	2	10						
139+84	RT	26				2	2	4						

Note: Removal of existing concrete and all dowel bars are to be included in the bid item "Concrete Pavement Repair-Full Depth-Doweled"
(1) Refer to "Transverse Joint Dowel & Tie Bar Placement Full Depth Concrete Pavement Repair Perpendicular Joints (Longitudinal Joints Less than One Panel) & (Longitudinal Length of One Panel or More)" Details in Section 20
(2) Refer to "Spall Repair & Random Crack Sealing" Detail in Section 20
(3) See Section 6 for Further Information

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Registration Number
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Main St
Concrete Pavement Repair

UGP-NHU-1-094(202)915 Concrete Pavement Repair														
Begin Station	Side	Start Offset	Concrete Pavement Repair Full Depth-Doweled (1)			Spall Repair (2)			Random PCC Crack Cleaning & Sealing (2) (LF)	Removal of Curb & Gutter (LF)	Curb & Gutter (LF)	Adjust Utility Appurtenance (3) (EA)	Adjust Inlet (3) (EA)	Adjust Manhole (3) (EA)
			Length (FT)	Width (FT)	Area (SY)	Length (FT)	Width (FT)	Area (SF)						
141+31	LT	43				2	3	6						
141+31	LT	43				2	2	4						
141+35	LT	39				2	4	8						
141+47	LT	30				2	4	8						
142+94	RT	26				6	2	12						
143+49	RT	8							12					
144+22	RT	26				2	2	4						
144+30	RT	26				2	2	4						
144+48	RT	26				16	2	32						
144+93	RT	26				6	2	12						
145+35	RT	26				2	2	4						
146+71	RT	26				9	2	18						
147+17	RT	26				2	2	4						
147+43	RT	26				2	2	4						
148+08	LT	22				2	2	4						
148+31	RT	26				2	2	4						
148+32	LT	22				2	2	4						
148+40	RT	28								4	4			
148+42	LT	30				2	2	4						
148+55	LT	30				2	2	4						
148+80	LT	30				5	2	10						
149+25	RT	26				2	2	4						
149+25	LT	22				2	2	4						
151+80	LT	27				3	2	6						
151+98	RT	30.5								6	6			
152+02	LT	34.5				4	2	8						
152+30	LT	27				22	2	44						
152+64	LT	34.5				2	2	4						
152+70	RT	30.5								17	17			
152+75	LT	46	6	4	2.7									
153+00	RT	30.5								15	15			
153+36	RT	30.5								3	3			
153+40	LT	27				2	2	4						
153+40	LT	36								13	13			
153+40	RT	18				2	2	4						
154+36	LT	36								8	8			
154+44	LT	34.5				4	2	8						
154+56	LT	5				2	2	4						
154+63	LT	34.5				3	2	6						
154+80	LT	34.5				2	2	4						
155+47	RT	29				4	2	8						
157+76	RT	29				2	2	4						
157+91	RT	30				2	2	4						
157+91	LT	4				4	2	8						
158+27	RT	20				2	2	4						
158+41	LT	35								4	4			
158+55	LT	14				2	2	4						
159+12	LT	34								4	4			
159+14	LT	12				2	2	4						
159+84	LT	3				5	9	45						
160+00	RT	0				2	2	4						
160+00	LT	12				2	2	4						
160+11	RT	33	12	12	16.0									1
160+12	LT	12				2	2	4						
160+23	RT	21	6	12	8.0									1
160+26	LT	24				2	2	4						
160+39	LT	12				2	2	4						
160+46	LT	0	6	12	8.0									
160+49	LT	21							16					
160+65	LT	12				4	2	8						
160+77	LT	18							39					
161+28	LT	12	28	12	37.3							1		
161+55	LT	12				2	2	4						
161+68	LT	14				2	2	4						
161+82	LT	14				2	2	4						

Note: Removal of existing concrete and all dowel bars are to be included in the bid item "Concrete Pavement Repair-Full Depth-Doweled"

(1) Refer to "Transverse Joint Dowel & Tie Bar Placement Full Depth Concrete Pavement Repair Perpendicular Joints (Longitudinal Joints Less than One Panel) & (Longitudinal Length of One Panel or More)" Details in Section 20

(2) Refer to "Spall Repair & Random Crack Sealing" Detail in Section 20

(3) See Section 6 for Further Information

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Main St
Concrete Pavement Repair

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	11	4

UGP-NHU-1-094(202)915 Concrete Pavement Repair														
Begin Station	Side	Start Offset	Concrete Pavement Repair Full Depth-Doweled (1)			Spall Repair (2)			Random PCC Crack Cleaning & Sealing (2) (LF)	Removal of Curb & Gutter (LF)	Curb & Gutter (LF)	Adjust Utility Appurtenance (3) (EA)	Adjust Inlet (3) (EA)	Adjust Manhole (3) (EA)
			Length (FT)	Width (FT)	Area (SY)	Length (FT)	Width (FT)	Area (SF)						
161+95	RT	47								4	4			
162+33	RT	33	5	4	2.2									
162+47	LT	18				2	2	4						
162+48	LT	6				5	3	15						
162+53	RT	46				2	2	4						
162+66	RT	40							29					
162+87	LT	20				2	2	4						
163+35	RT	56	8	22	19.6									
163+37	LT	8	6	12	8.0									
163+52	LT	2							96					
163+62	LT	16				2	2	4						
163+62	RT	32				5	2	10						
163+71	LT	33				2	2	4						
163+71	LT	21				2	2	4						
163+80	RT	39				2	2	4						
163+83	RT	20				2	2	4						
163+90	LT	44				2	2	4						
163+90	LT	39				2	4	8						
163+96	RT	20				4	2	8						
164+01	LT	21				4	2	8						
164+09	RT	20				2	2	4						
164+10	RT	8				2	2	4						
164+14	LT	21				2	2	4						
164+18	LT	33				2	2	4						
164+18	RT	70								6	6			
164+22	LT	21				2	2	4						
164+28	LT	33				2	2	4						
164+30	LT	45				2	2	4						
164+32	LT	46								10	10			
164+36	LT	9	5	12	6.7									
164+38	LT	33				2	2	4						
164+39	RT	66				2	2	4						
164+39	RT	66				2	2	4						
164+39	RT	66				2	2	4						
164+47	RT	74				3	11	33						
164+47	RT	74				3	3	9						
164+48	LT	0				2	2	4						
164+48	LT	8				2	2	4						
164+48	RT	8				2	2	4						
164+50	LT	34								11	11			
164+50	LT	25				2	2	4						
164+50	RT	8				2	2	4						
164+55	RT	4								4	4			
164+66	LT	9				2	2	4						
164+75	LT	34								38	38			
164+86	LT	9				5	2	10						
164+88	LT	21				2	2	4						
164+98	LT	9				4	2	8						
165+12	LT	9				5	3	15						
165+25	RT	20	43	12	57.3									
165+27	RT	15							11					
165+27	RT	18				2	2	4						
165+27	RT	20				2	2	4						
165+40	LT	34								4	4			
165+45	RT	15							9					
165+53	LT	9				4	2	8						
165+53	RT	2				2	2	4						
165+54	RT	20				4	2	8						
165+66	RT	8				2	3	6						
165+80	RT	20				4	2	8						
165+89	RT	28							4					
166+05	LT	9				2	2	4						
166+17	LT	9				2	2	4						
166+29	LT	9				4	2	8						
166+42	RT	2				2	2	4						

Note: Removal of existing concrete and all dowel bars are to be included in the bid item "Concrete Pavement Repair-Full Depth-Doweled"
(1) Refer to "Transverse Joint Dowel & Tie Bar Placement Full Depth Concrete Pavement Repair Perpendicular Joints (Longitudinal Joints Less than One Panel) & (Longitudinal Length of One Panel or More)" Details in Section 20
(2) Refer to "Spall Repair & Random Crack Sealing" Detail in Section 20
(3) See Section 6 for Further Information

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Main St
Concrete Pavement Repair

UGP-NHU-1-094(202)915 Concrete Pavement Repair														
Begin Station	Side	Start Offset	Concrete Pavement Repair Full Depth-Doweled (1)			Spall Repair (2)			Random PCC Crack Cleaning & Sealing (2) (LF)	Removal of Curb & Gutter (LF)	Curb & Gutter (LF)	Adjust Utility Appurtenance (3) (EA)	Adjust Inlet (3) (EA)	Adjust Manhole (3) (EA)
			Length (FT)	Width (FT)	Area (SY)	Length (FT)	Width (FT)	Area (SF)						
166+43	LT	9				4	4	16						
166+97	RT	8	16	24	42.7									
167+21	LT	24				2	2	4						
167+24	RT	17				3	2	6						
167+27	LT	31				2	2	4						
167+44	LT	33				4	2	8						
167+47	LT	25				2	2	4						
167+63	LT	48								10	10			
168+08	LT	12	17	12	22.7									1
168+10	RT	4							14					
168+67	RT	21				2	2	4						
169+24	RT	21				4	2	8						
170+15	LT	12				2	2	4						
170+30	LT	12				2	2	4						
171+20	RT	29				4	2	8						
171+62	LT	34				5	2	10						
171+75	LT	22	18	12	24.0							2		
171+87	LT	12				2	2	4						
172+06	RT	21				3	3	9						
172+33	LT	23	33	12	44.0									1
172+51	RT	21				2	2	4						
173+25	LT	12				2	2	4						
173+26	RT	21				2	2	4						
173+41	RT	22				4	2	8						
173+56	RT	14				2	2	4						
174+15	RT	22				2	2	4						
174+76	RT	11				2	2	4						
175+04	LT	34.5				2	2	4						
175+08	LT	34.5				2	2	4						
175+17	LT	12				4	2	8						
175+17	RT	22				2	2	4						
175+42	RT	0				2	2	4						
175+55	LT	25				2	2	4						
175+62	LT	26				2	2	4						
175+63	LT	13				2	2	4						
175+66	LT	26				2	2	4						
175+67	LT	20				2	2	4						
175+67	LT	26				2	2	4						
175+67	LT	32				2	2	4						
175+71	LT	26				2	2	4						
175+74	LT	20				2	2	4						
176+16	RT	21	6	8	5.3									1
177+41	RT	30.5								5	5			
177+45	RT	20				2	2	4						
178+20	LT	34.5				2	2	4						
178+73	RT	22				2	2	4						
178+79	RT	22				2	2	4						
178+97	RT	22				2	2	4						
179+60	RT	0				2	2	4						
179+63	RT	22				2	2	4						
179+90	LT	24				2	2	4						
179+90	RT	22				2	3	6						
179+91	LT	12				2	2	4						
179+96	LT	12				4	2	8						
180+05	RT	29				3	2	6						
180+22	LT	12				2	2	4						
180+41	LT	12				2	2	4						
180+80	RT	22				2	2	4						
181+41	RT	22				5	2	10						
181+86	RT	29				2	2	4						
182+60	RT	27				2	2	4						
182+60	RT	29				2	2	4						
182+65	LT	35				2	2	4						
182+71	RT	22	10	7	7.8					10	10			1
182+73	LT	11				2	2	4						

Note: Removal of existing concrete and all dowel bars are to be included in the bid item "Concrete Pavement Repair-Full Depth-Doweled"

(1) Refer to "Transverse Joint Dowel & Tie Bar Placement Full Depth Concrete Pavement Repair Perpendicular Joints (Longitudinal Joints Less than One Panel) & (Longitudinal Length of One Panel or More)" Details in Section 20

(2) Refer to "Spall Repair & Random Crack Sealing" Detail in Section 20

(3) See Section 6 for Further Information

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Registration Number
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Main St
Concrete Pavement Repair

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	11	6

UGP-NHU-1-094(202)915 Concrete Pavement Repair														
Begin Station	Side	Start Offset	Concrete Pavement Repair Full Depth-Doweled (1)			Spall Repair (2)			Random PCC Crack Cleaning & Sealing (2) (LF)	Removal of Curb & Gutter (LF)	Curb & Gutter (LF)	Adjust Utility Appurtenance (3) (EA)	Adjust Inlet (3) (EA)	Adjust Manhole (3) (EA)
			Length (FT)	Width (FT)	Area (SY)	Length (FT)	Width (FT)	Area (SF)						
182+80	LT	50				2	2	4						
182+98	LT	11				4	2	8						
183+15	LT	11				2	2	4						
183+28	RT	23				4	2	8						
183+29	LT	11				2	2	4						
183+36	RT	23	13	11	15.9									1
183+58	RT	24				2	2	4						
183+74	RT	25				2	2	4						
184+18	RT	26				4	2	8						
184+48	RT	40				2	2	4						
184+76	RT	29	18	11	22.0									1
185+24	LT	31				2	2	4						
185+38	RT	29				2	2	4						
185+53	LT	19				2	2	4						
186+42	LT	29				3	2	6						
186+44	LT	30							3					
186+45	LT	5				2	2	4						
186+50	LT	28				7	2	14						
186+97	LT	4				2	2	4						
187+29	LT	3				2	2	4						
187+30	RT	49				2	2	4						
187+39	RT	52				2	2	4						
187+53	RT	34				4	2	8						
187+77	LT	27							12					
187+92	LT	31				3	2	6						
188+04	RT	44								12	12			
188+09	LT	26				2	2	4						
188+30	RT	56				2	2	4						
188+41	LT	26				4	2	8						
188+46	LT	27				2	2	4						
188+55	LT	26				2	2	4						
188+57	RT	68				2	2	4						
188+70	RT	68				4	2	8						
188+82	RT	44				4	2	8						
188+82	RT	40				2	2	4						
188+83	LT	53							6					
188+85	LT	33				2	2	4						
188+90	LT	50				2	2	4						
188+94	RT	41				2	3	6						
188+94	RT	44				2	2	4						
189+17	LT	1				2	2	4						
189+18	RT	35				4	4	16						
189+62	RT	13				4	2	8						
189+62	RT	17				2	6	12						
189+62	RT	20				2	2	4						
189+62	RT	38							7					
190+97	RT	23				2	2	4						
191+56	RT	36							8					
191+86	LT	25				4	2	8						
191+87	LT	1				4	2	8						
192+01	LT	13				4	2	8						
192+01	LT	1				2	2	4						
192+16	RT	4							6					
192+77	RT	12				2	2	4						
192+91	LT	13				2	2	4						
193+21	LT	25				2	2	4						
193+21	LT	13				2	4	8						
193+52	LT	23				2	2	4						
193+62	LT	25	6	8	5.3									
193+66	LT	25				2	2	4						
193+70	LT	25				2	2	4						
193+74	RT	36							8					
193+77	LT	25				2	2	4						
194+04	RT	36				2	2	4						
194+26	LT	12				4	2	8						

Note: Removal of existing concrete and all dowel bars are to be included in the bid item "Concrete Pavement Repair-Full Depth-Doweled"

- (1) Refer to "Transverse Joint Dowel & Tie Bar Placement Full Depth Concrete Pavement Repair Perpendicular Joints (Longitudinal Joints Less than One Panel) & (Longitudinal Length of One Panel or More)" Details in Section 20
(2) Refer to "Spall Repair & Random Crack Sealing" Detail in Section 20
(3) See Section 6 for Further Information

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Main St
Concrete Pavement Repair

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	11	7

UGP-NHU-1-094(202)915 Concrete Pavement Repair														
Begin Station	Side	Start Offset	Concrete Pavement Repair Full Depth-Doweled (1)			Spall Repair (2)			Random PCC Crack Cleaning & Sealing (2) (LF)	Removal of Curb & Gutter (LF)	Curb & Gutter (LF)	Adjust Utility Appurtenance (3) (EA)	Adjust Inlet (3) (EA)	Adjust Manhole (3) (EA)
			Length (FT)	Width (FT)	Area (SY)	Length (FT)	Width (FT)	Area (SF)						
194+26	RT	36				3	2	6						
194+42	LT	12				2	2	4						
194+50	LT	22							8					
194+56	LT	24				2	2	4						
194+56	LT	12				2	2	4						
194+56	LT	1				2	2	4						
194+96	LT	0	67	32	238.2									1
194+97	RT	12	59	32	209.8							2	1	1
195+06	RT	9								50	50			
195+75	RT	36				3	2	6						
195+78	RT	46								74	74			
195+79	RT	12				2	2	4						
195+89	RT	36	11	8	9.8									
196+10	RT	41							10					
196+14	RT	36				2	2	4						
196+36	RT	36				2	2	4						
196+36	RT	34				4	2	8						
196+37	LT	12				2	2	4						
196+42	RT	36				2	2	4						
196+42	RT	33				2	2	4						
196+52	RT	24				2	2	4						
196+82	LT	12				2	2	4						
196+97	LT	12				2	2	4						
197+26	RT	12				2	3	6						
197+27	LT	12				2	2	4						
198+00	LT	12				2	2	4						
198+30	LT	12				2	2	4						
198+58	RT	25	18	12	24.0									
198+74	LT	24				2	2	4						
198+89	LT	24				2	4	8						
199+27	LT	13				3	2	6						
199+33	LT	13				2	2	4						
199+46	RT	14	18	24	48.0									
199+92	LT	13				2	2	4						
200+10	LT	13				3	2	6						
200+65	RT	18				2	2	4						
200+87	LT	15				3	4	12						
200+90	LT	15				2	2	4						
201+08	RT	43	17	12	22.7									
201+21	LT	48				2	3	6						
201+30	LT	8				2	2	4						
201+37	RT	60				2	2	4						
201+64	LT	26	15	12	20.0									
201+66	LT	37				2	2	4						
201+71	LT	38				2	2	4						
201+71	LT	25				2	2	4						
201+75	LT	50				2	2	4						
201+75	RT	40				4	2	8						
201+75	RT	27				2	2	4						
201+78	LT	38				4	2	8						
201+78	LT	14				3	2	6						
201+80	LT	18				2	2	4						
201+85	RT	59				4	2	8						
201+97	LT	0	12	4	5.3									
202+04	LT	39				2	2	4						
202+04	LT	54							12					
202+62	LT	35				4	2	8						
203+13	RT	39				2	2	4						
203+13	RT	15				4	2	8						
203+14	RT	27				2	2	4						
203+17	LT	49				3	3	9						
203+23	LT	28				2	4	8						
203+97	LT	34				2	4	8						
204+21	LT	72								11	11			
204+22	LT	35	75	24	200.0									

Note: Removal of existing concrete and all dowel bars are to be included in the bid item "Concrete Pavement Repair-Full Depth-Doweled"

(1) Refer to "Transverse Joint Dowel & Tie Bar Placement Full Depth Concrete Pavement Repair Perpendicular Joints (Longitudinal Joints Less than One Panel) & (Longitudinal Length of One Panel or More)" Details in Section 20

(2) Refer to "Spall Repair & Random Crack Sealing" Detail in Section 20

(3) See Section 6 for Further Information

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Main St
Concrete Pavement Repair

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	11	8

UGP-NHU-1-094(202)915 Concrete Pavement Repair														
Begin Station	Side	Start Offset	Concrete Pavement Repair Full Depth-Doweled (1)			Spall Repair (2)			Random PCC Crack Cleaning & Sealing (2) (LF)	Removal of Curb & Gutter (LF)	Curb & Gutter (LF)	Adjust Utility Appurtenance (3) (EA)	Adjust Inlet (3) (EA)	Adjust Manhole (3) (EA)
			Length (FT)	Width (FT)	Area (SY)	Length (FT)	Width (FT)	Area (SF)						
204+23	LT	60				2	2	4						
204+24	LT	35				2	2	4						
204+52	LT	61				4	2	8						
205+06	RT	42				2	4	8						
205+20	RT	56				2	2	4						
205+33	RT	58				2	2	4						
205+62	RT	62				2	3	6						
205+75	RT	40	11	24	29.3									
Subtotal			1821.4			2129			622	413	413	5	1	15
Additional 10%			182.1			213			62	41	41	-	-	-
Total			2003.5			2342			684	454	454	5	1	15

Note: Removal of existing concrete and all dowel bars are to be included in the bid item "Concrete Pavement Repair-Full Depth-Doweled"

- (1) Refer to "Transverse Joint Dowel & Tie Bar Placement Full Depth Concrete Pavement Repair Perpendicular Joints (Longitudinal Joints Less than One Panel) & (Longitudinal Length of One Panel or More)" Details in Section 20
(2) Refer to "Spall Repair & Random Crack Sealing" Detail in Section 20
(3) See Section 6 for Further Information

Longitudinal & Transverse PCC Joint Cleaning & Sealing							
Begin Station	End Station	Transverse Joint Spacing	Longitudinal Joints	Width	Length	Total Longitudinal Length (LF)	Total Transverse Length (LF)
87+92	99+35	13	5	37	1143	5715	3256
99+35	104+10	13	5	42	475	2375	1554
104+10	107+65	13	6	54	355	2130	1512
107+65	110+00	13	6	55	235	1410	1045
110+00	118+75	13	6	56	875	5250	3808
118+75	122+10	13	6	60	335	2010	1560
122+10	149+25	13	6	56	2715	16290	11704
149+25	151+65	13	6	60	240	1440	1140
151+65	159+10	13	7	63.5	745	5215	3683
159+10	160+20	13	7	71	110	770	639
160+20	163+10	13	8	78	290	2320	1794
163+10	167+10	13	7	66	400	2800	2046
167+10	183+10	13	7	63.5	1600	11200	7874
183+10	184+10	13	7	68	100	700	544
184+10	189+20	13	7	72	510	3570	2880
189+20	192+30	13	8	80.5	310	2480	1932
192+30	193+00	13	9	79	70	630	474
193+00	198+35	13	8	77	535	4280	3234
199+61	202+00	13	9	82	239	2151	1558
202+00	205+86	13	3	38	386	1158	1140
202+00	204+95	13	5	48	295	1475	1104
Total						75369	54481

UGP-NHU-1-094(202)915 Concrete Grind		
Begin Station	End Station	Total (SY)
87+92	205+88	72,268

SPEC CODE BID ITEM QTY UNIT

202 0130 REMOVAL OF CURB & GUTTER
UGP-NHU-1-094(202)915 454 LF

570 0650 CONCRETE PAVEMENT REPAIR-FULL DEPTH-DOWELED
UGP-NHU-1-094(202)915 2,004 SY

570 0210 PCC PAVEMENT GRINDING
UGP-NHU-1-094(202)915 72,268 SY

570 0963 TRANSVERSE PCC JOINT CLEANING & SEALING
UGP-NHU-1-094(202)915 54,481 LF

570 0965 LONGITUDINAL PCC JOINT CLEANING & SEALING
UGP-NHU-1-094(202)915 75,369 LF

570 0966 RANDOM PCC CRACK CLEANING & SEALING
UGP-NHU-1-094(202)915 684 LF

570 1512 SPALL REPAIR-PARTIAL DEPTH
UGP-NHU-1-094(202)915 2,342 SF

722 6160 ADJUST INLET
UGP-NHU-1-094(202)915 1 EA

722 6200 ADJUST MANHOLE
UGP-NHU-1-094(202)915 15 EA

722 6240 ADJUST UTILITY APPURTENANCE
UGP-NHU-1-094(202)915 5 EA

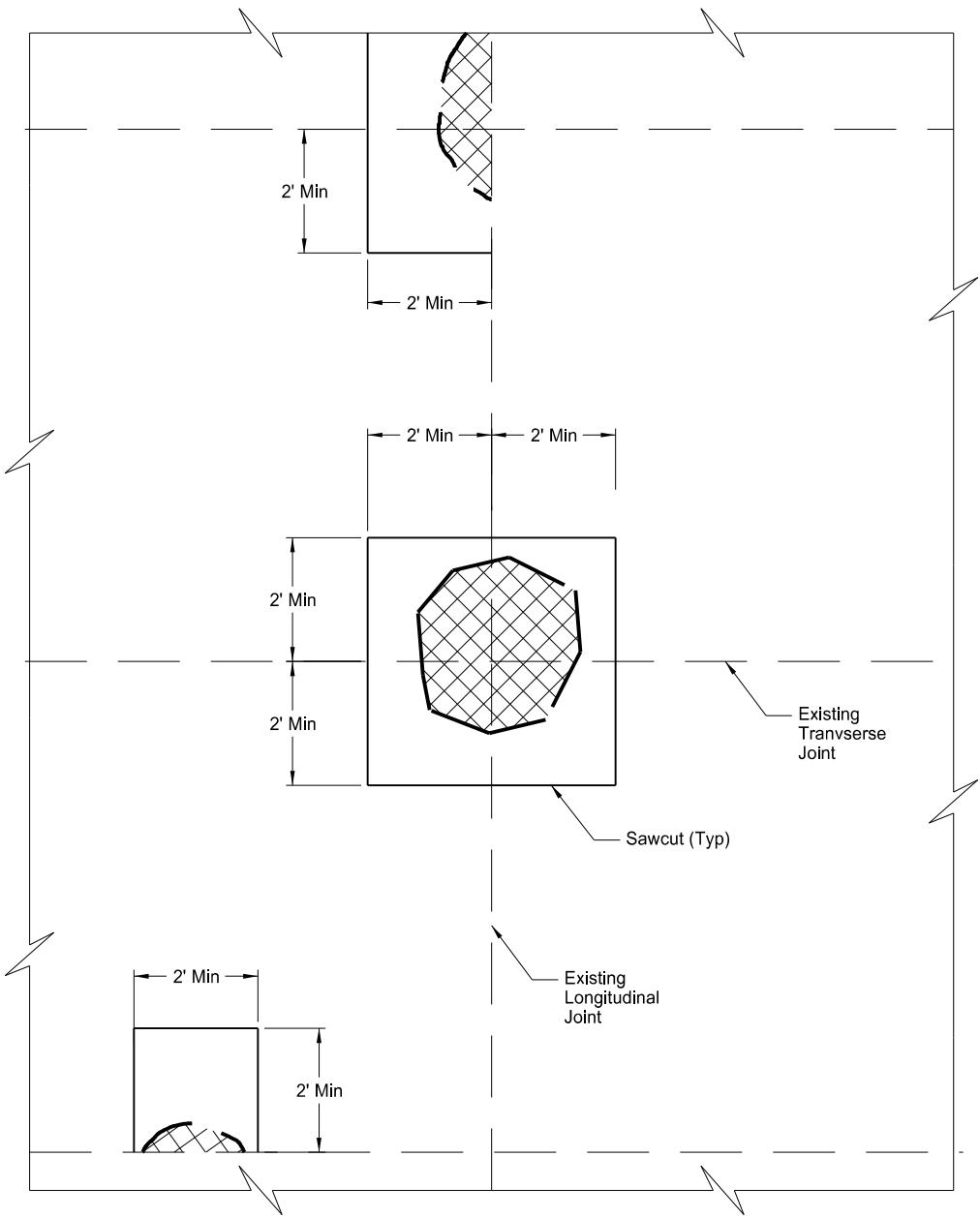
748 0100 CURB & GUTTER
UGP-NHU-1-094(202)915 454 LF

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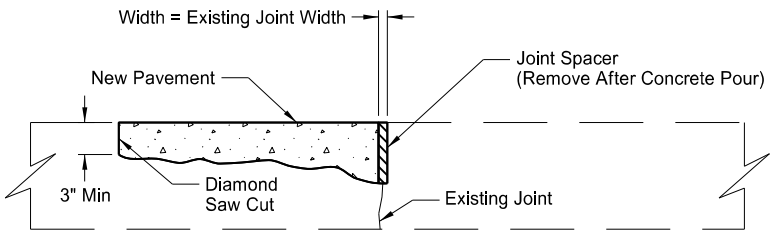
Main St

Concrete Pavement Repair

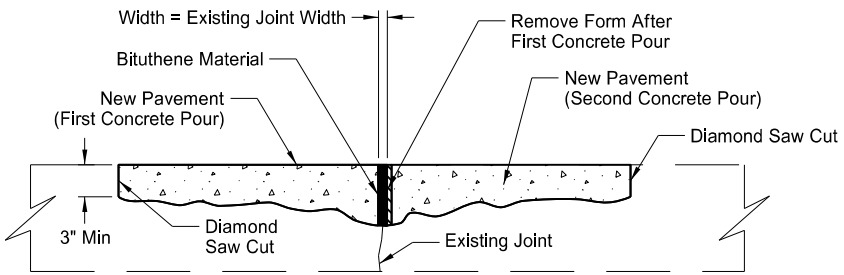
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	20	1



Spall Repair Detail
Plan View

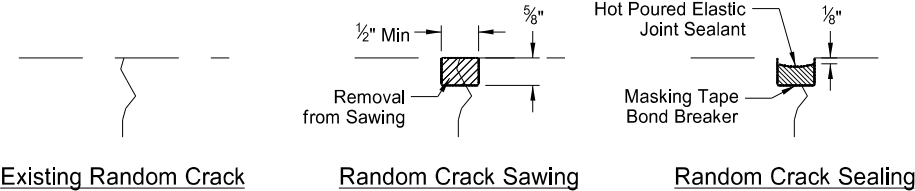


Repair Area on One Side of Transverse Joint
Cross Section View



Repair Area on Both Side of Transverse Joint
Cross Section View

- Notes:
1. Place a spacer material on the transverse joint face to maintain the joint during repair. The spacer material to have the capability of maintaining a width equal to that of the existing joint and being easily removed after the pour. A bituthene waterproofing material may be used for this purpose. Provide a minimum of 260 mil (approximately $\frac{1}{4}$ ") thick or equal to the width of the existing joint, whichever is greater. Cut it to fit over the entire face of the existing joint to provide for expansion and prevent water from entering the existing joint through the sides or bottom. Press it into place to conform to the face of the existing joint.
 2. Diamond saw cut not mandatory when using milling machine for spall repair removals.

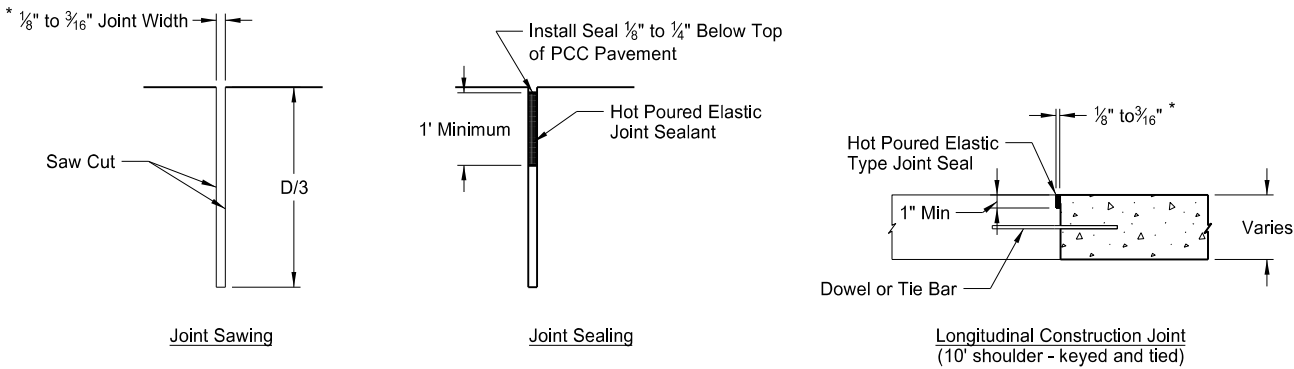
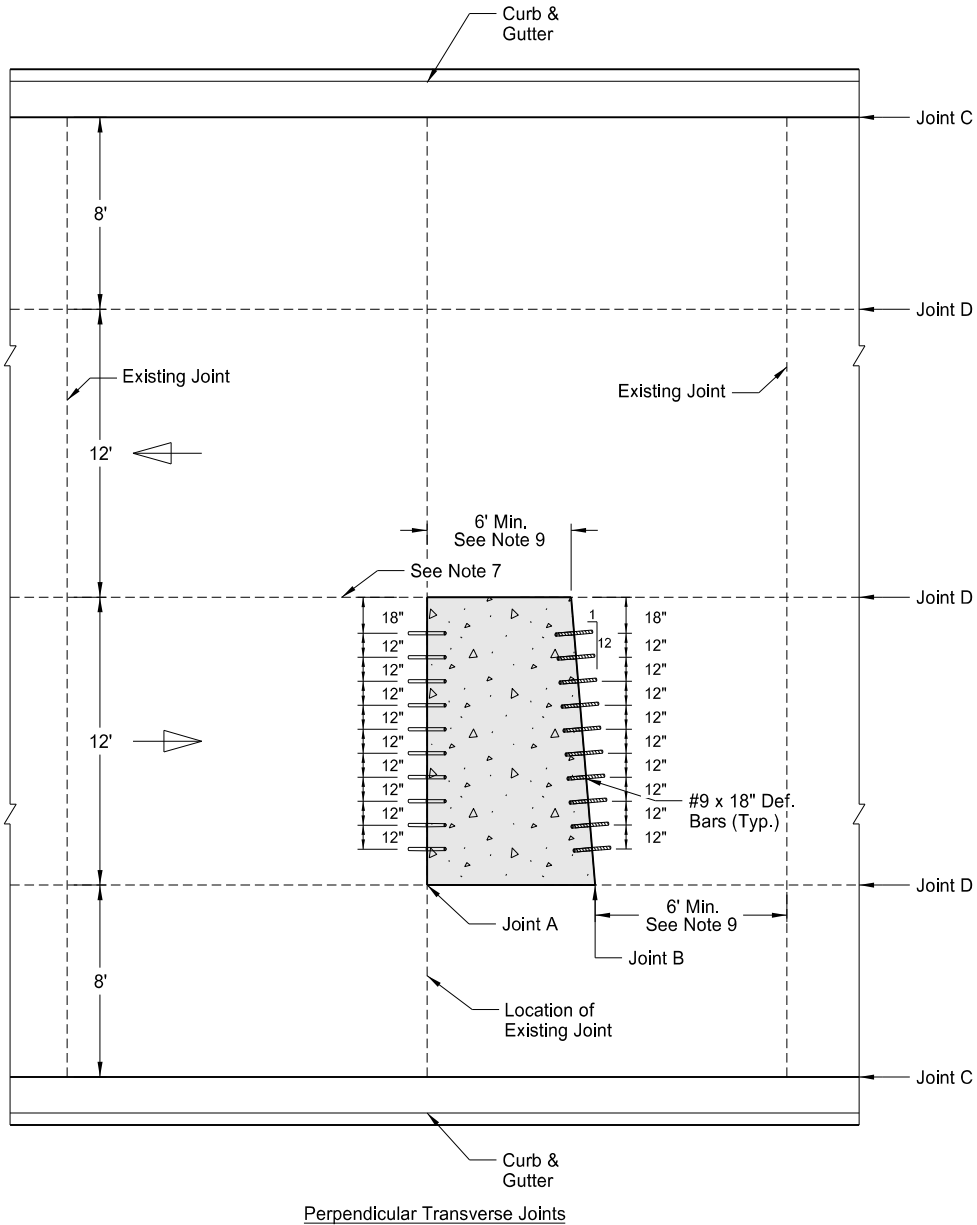


Spall
Concrete Removal Area

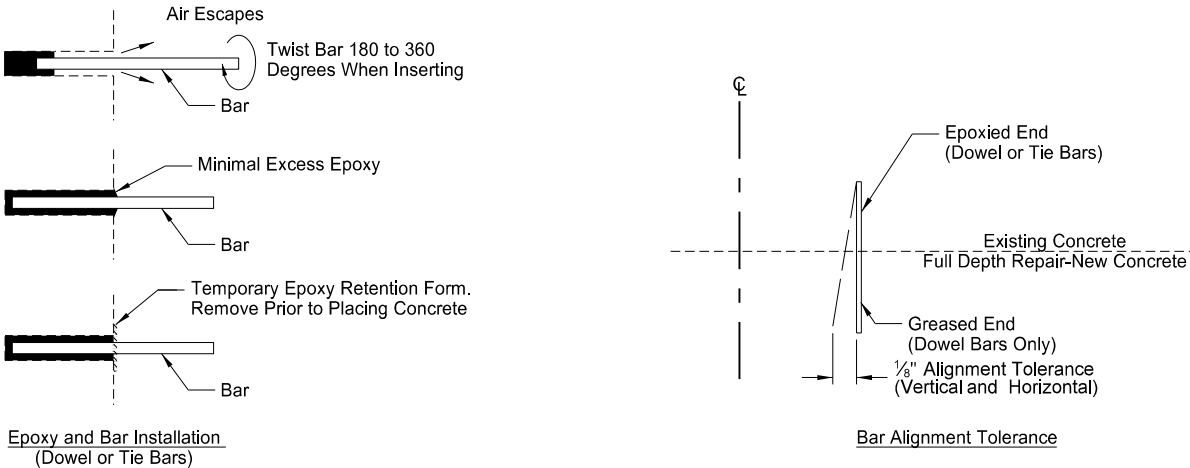
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Main St
Spall Repair &
Random Crack Sealing

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	20	2



T = Thickness of PCC Pavement
A = One-Third Thickness of PCC Pavement
* Width Requirement for Top 1" Only, Bottom Portion of Sawcut May Be Narrower



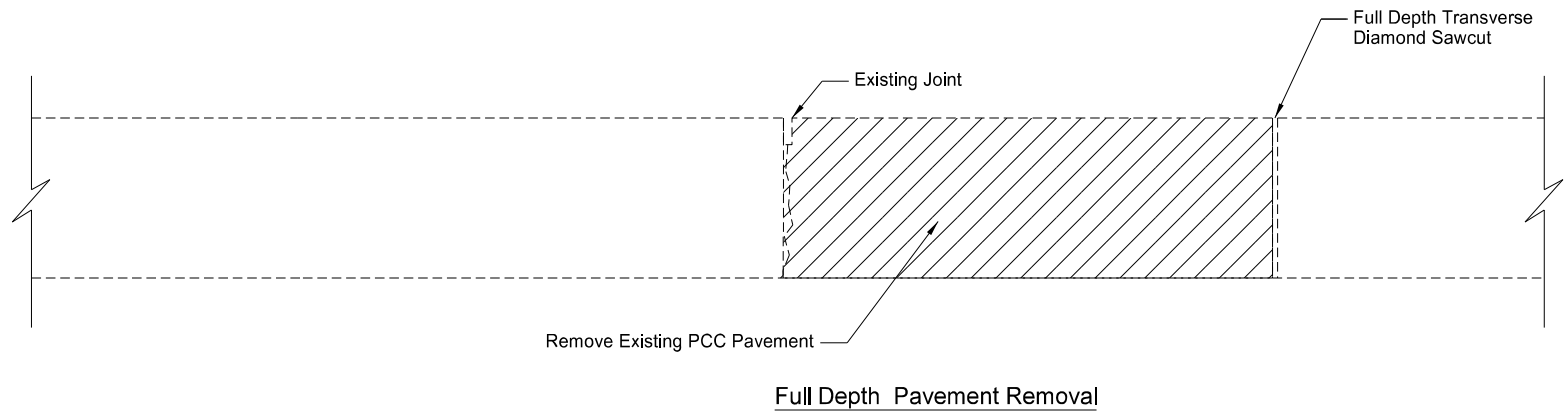
- NOTES:
- Align tie bars parallel to the roadway surface and perpendicular to the joint face.
 - Align dowel bars parallel to the roadway centerline and pavement surface (at vertical midpoint of slab.)
 - Place no tie bar within 15" of a transverse joint.
 - Construct Joint A (fixed joint) with the shortest distance to the next transverse joint or working random crack. Make the saw cut at a 1 to 12 skew.
 - Construct Joint B (free joint) with the greatest distance to the next transverse joint or working random crack.
 - Construct free joint (Joint B) on the approach side of the repair when the distance to the next transverse joint or working random crack is equal for both new joints.
 - Drill & Epoxy tie bars into adjacent pavement or curb and gutter to match the existing.
C = Existing tie bars are No. 3 x 18" spaced @ 4' - 0" C to C
D = Existing tie bars are No. 5 x 30" spaced @ 4' - 0" C to C
 - Refer to Detail "Jointed Concrete Pavement Repair Full-Depth, Non-Reinforced PCC Pavement (Longitudinal Length Less than One Panel)
 - Minimum 6' from existing joints or on next transverse joint

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Main St

Transverse Joint Dowel and Tie Bar Placement
Full Depth Concrete Pavement Repair-Perp Jts
(Longitudinal Length Less than One Panel)

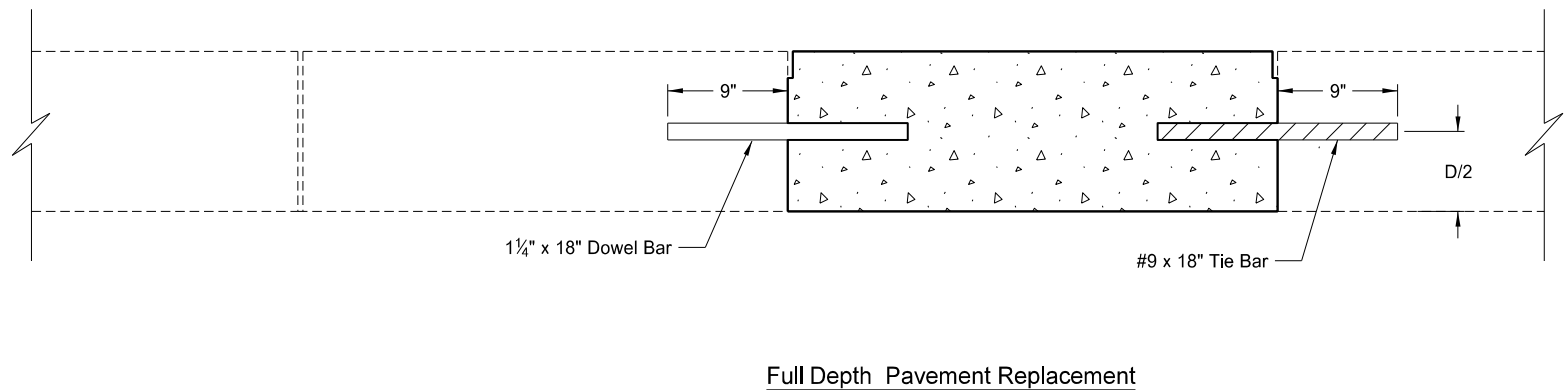
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	20	3



Notes:

1. Variables: D = Depth of Pavement

2. Removal and replacement also applies to full depth repairs at cracks.

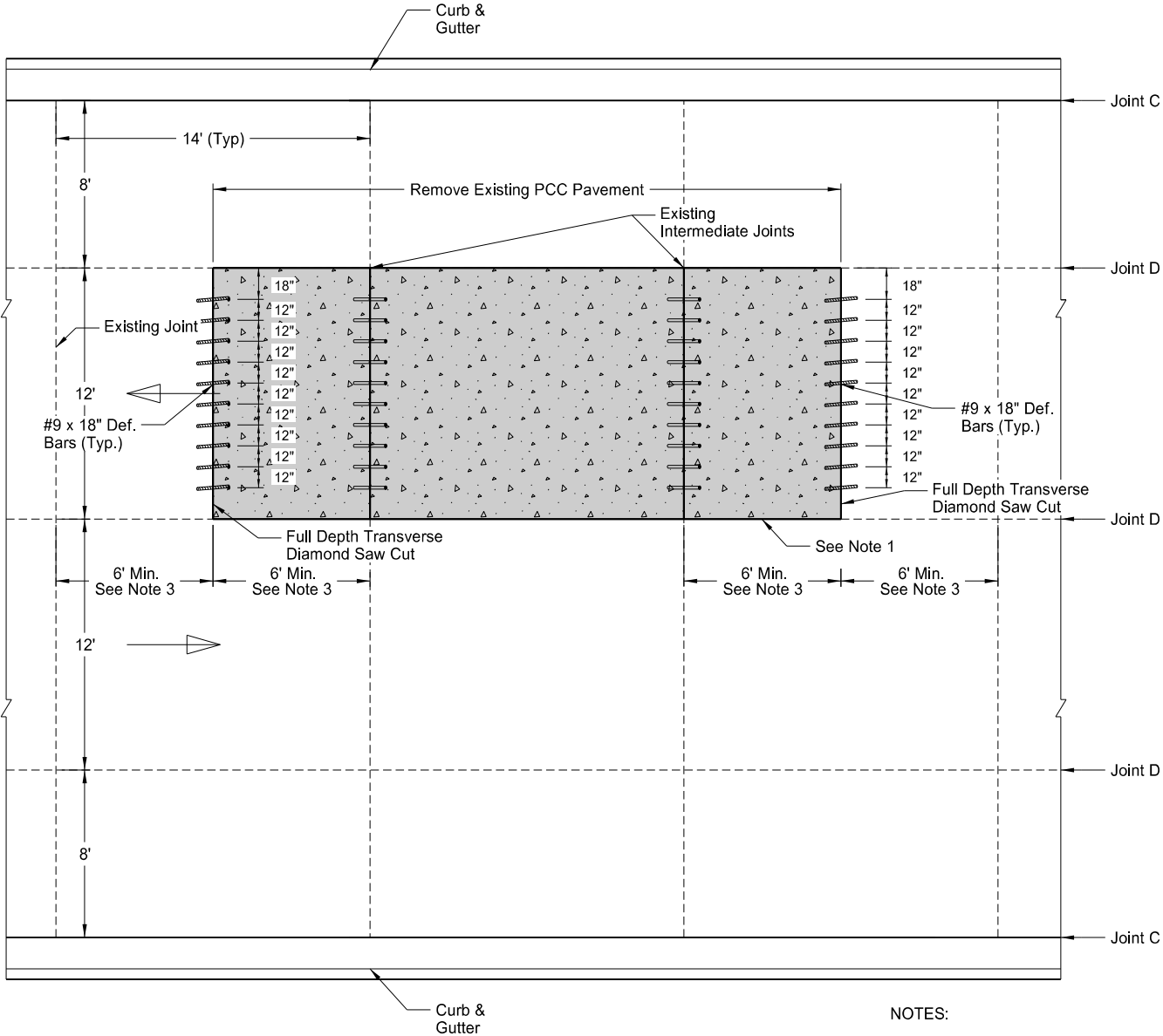


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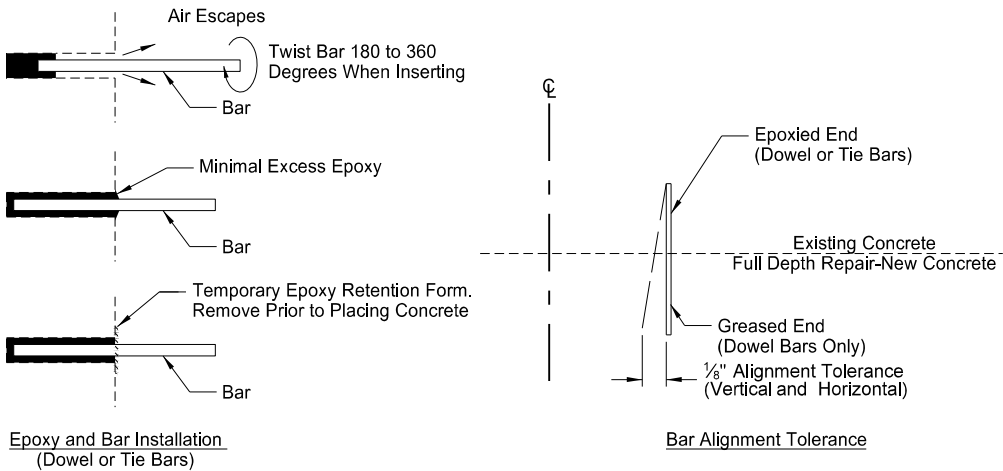
Main St

Jointed Concrete Pavement Repair
Full-Depth, Non-Reinforced PCC Pavement
(Longitudinal Length Less Than One Panel)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	20	4

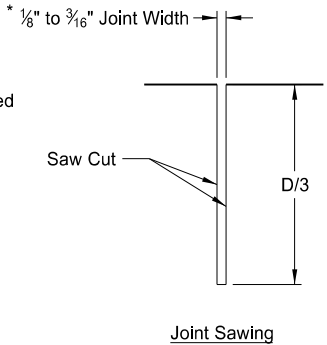


Perpendicular Transverse Joints

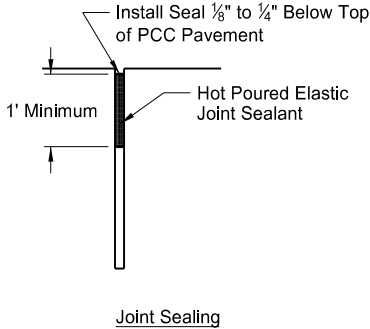


NOTES:

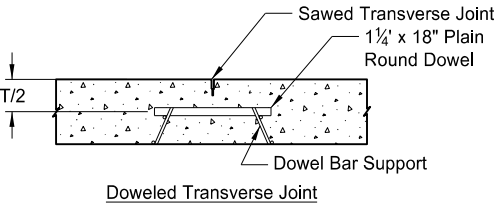
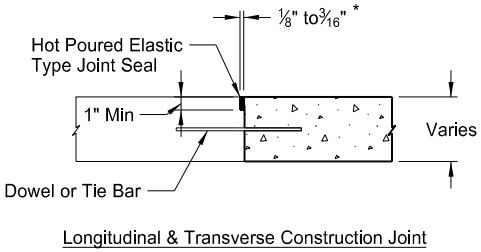
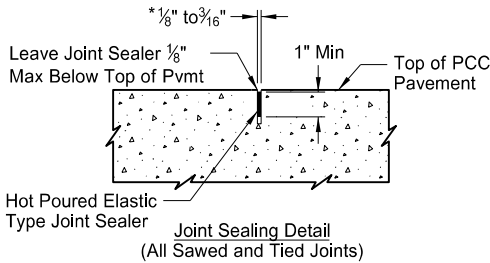
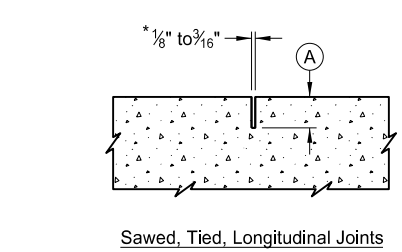
- Drill & Epoxy tie bars into adjacent pavement or curb and gutter to match the existing.
C = Existing tie bars are No. 3 x 18" spaced @ 4' - 0" C to C
D = Existing tie bars are No. 5 x 30" spaced @ 4' - 0" C to C
- See Jointed Concrete Pavement Repair Full Depth, Non-Reinforced PCC Pavement (Longitudinal Length of One Panel Or Longer)
- Minimum 6' from existing joints or on next transverse joint



Joint Sawing



Joint Sealing



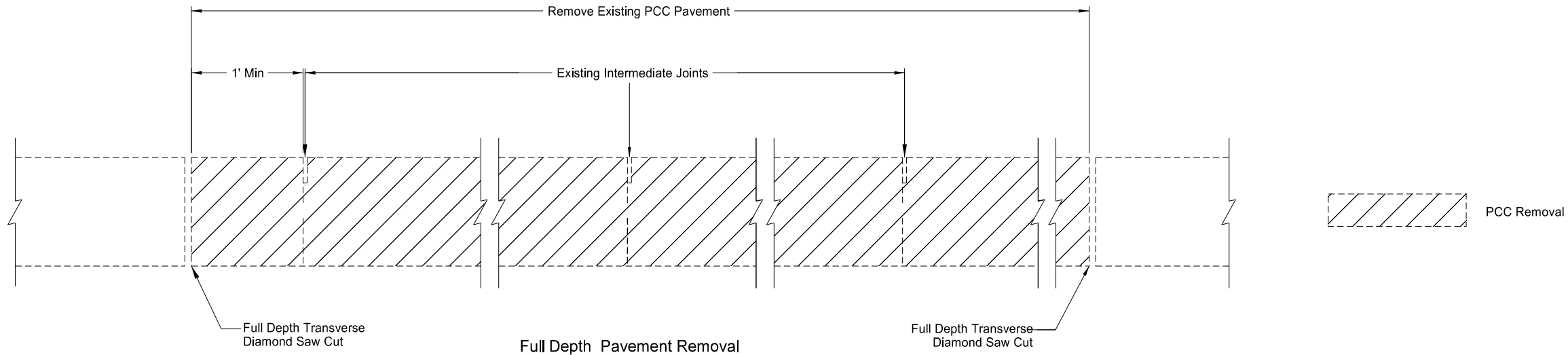
T = Thickness of PCC Pavement
A = One-Third Thickness of PCC Pavement
* Width Requirement for Top 1" Only, Bottom Portion of Sawcut May Be Narrower

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Main St

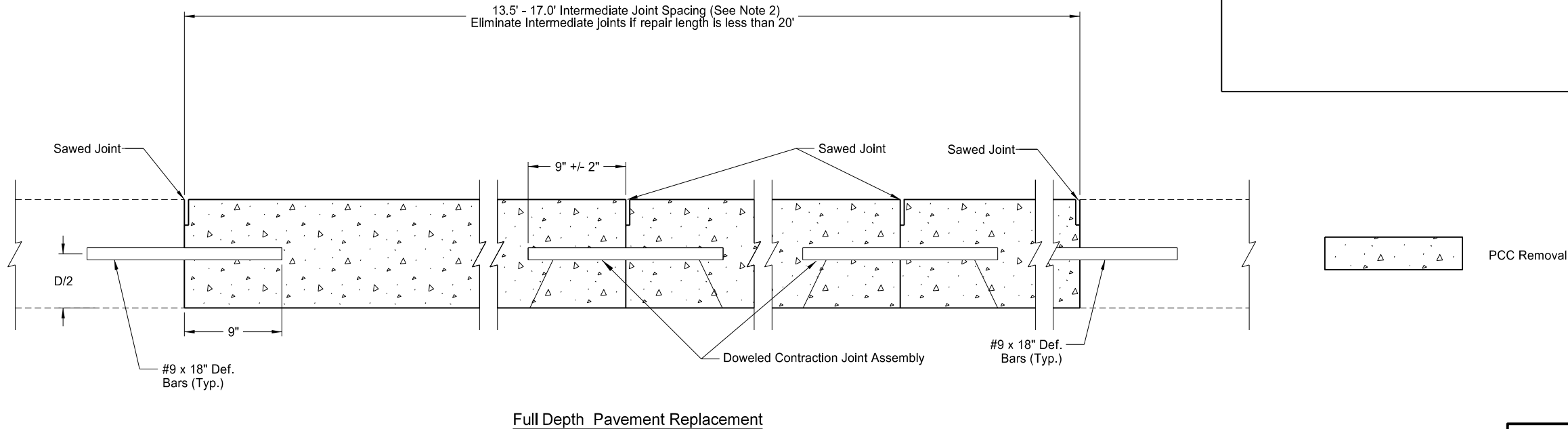
Transverse Joint Dowel and Tie Bar Placement Full Depth Concrete Pavement Repair-Perp Jts (Longitudinal Length One Panel or More)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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Notes:

1. Variables: D = Pavement Depth
2. Space joints 13.5' to 17.0'. Use a 10 foot minimum spacing when repair length requires.
3. Place new joints to match existing joints when repair widths are less than PCC pavement width.

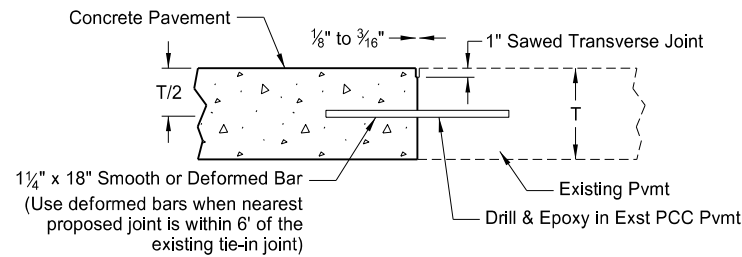


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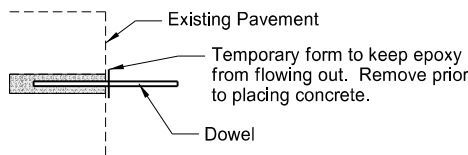
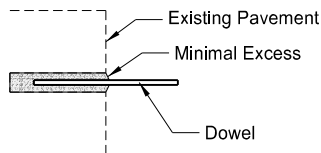
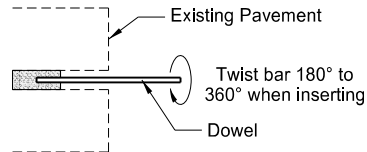
Main St

Jointed Concrete Pavement Repair
Full-Depth, Non-Reinforced PCC Pavement
(Longitudinal Length One Panel or Longer)

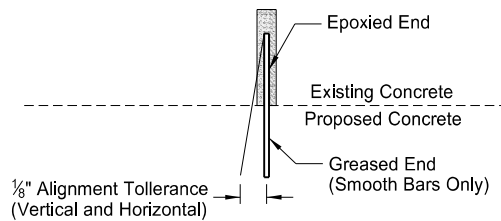
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	20	6



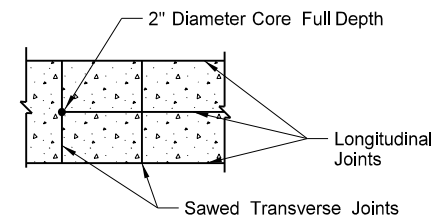
Dowel Bar Installation in Existing Pavement (1'-0" C to C)
(Transverse Joints)



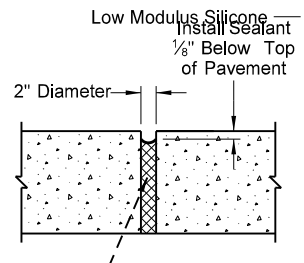
Placing Dowels in Existing Pavement
(Smooth or Deformed Bars)



Dowel Alignment Tolerance



2" Diameter Core Hole Detail
(Plan View)

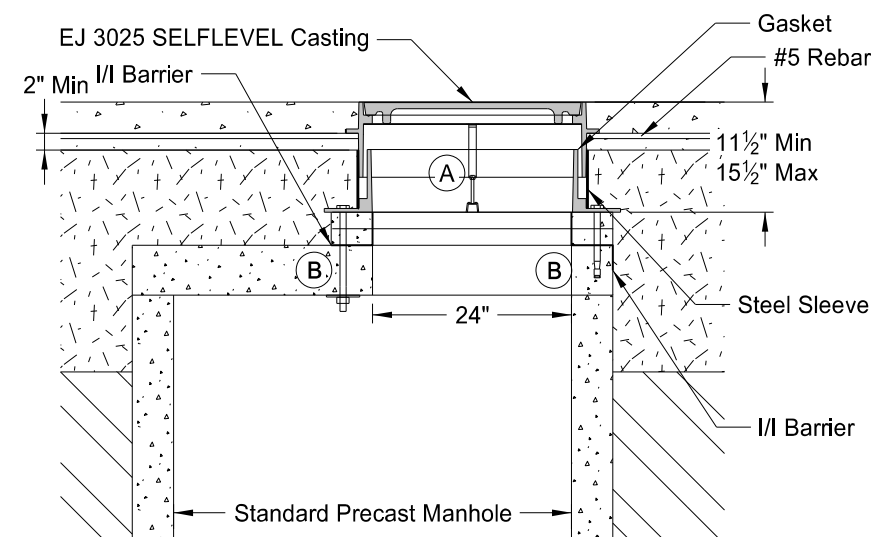


2" Diameter Core Hole Detail
(Elevation View)

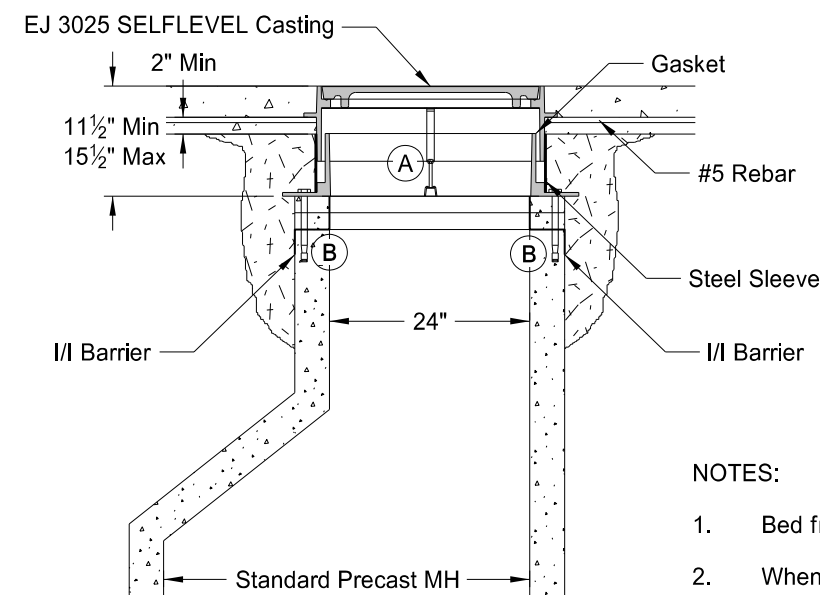
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Main St
PCC Pavement Joint Details

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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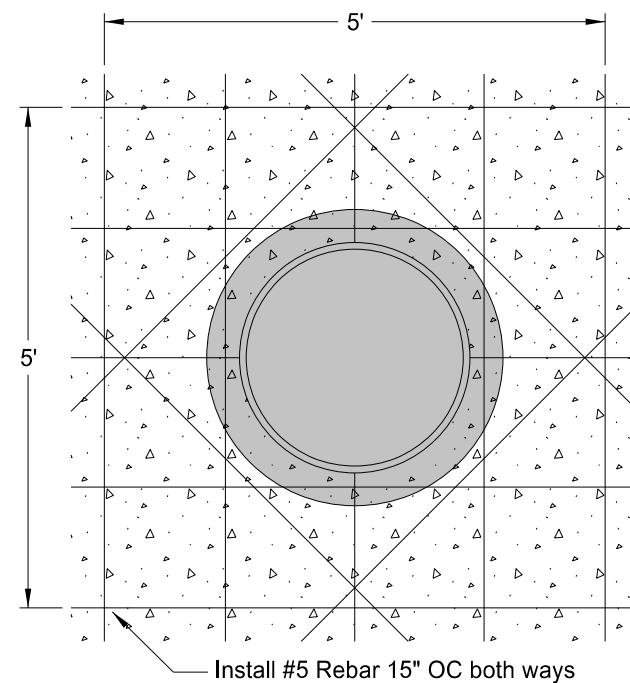
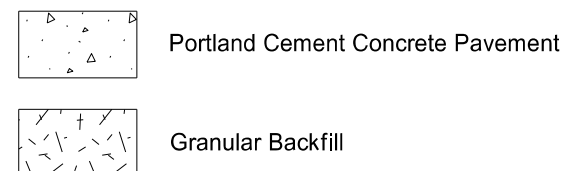


ELEVATION VIEW OF CONNECTION TO
STANDARD PRECAST MANHOLE - TYPICAL



ELEVATION VIEW OF CONNECTION TO
CONICAL MANHOLE - TYPICAL

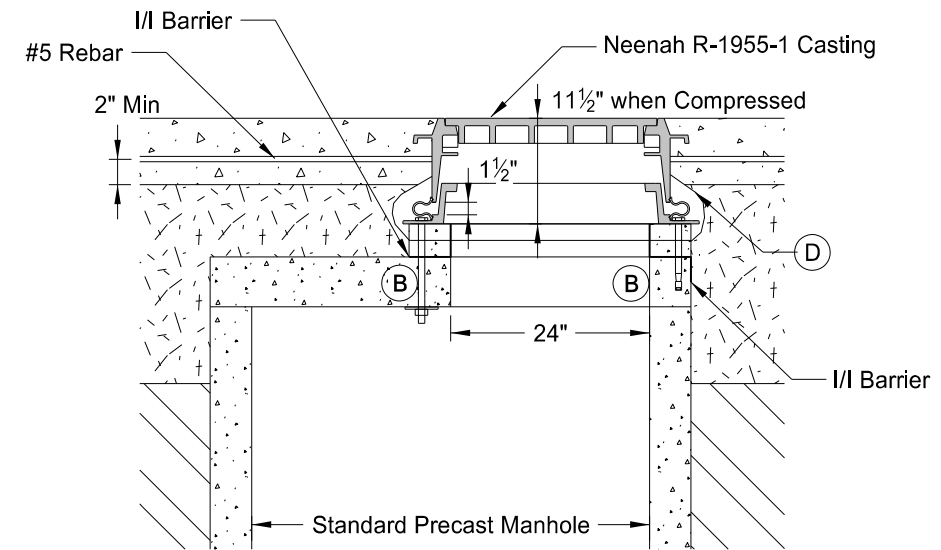
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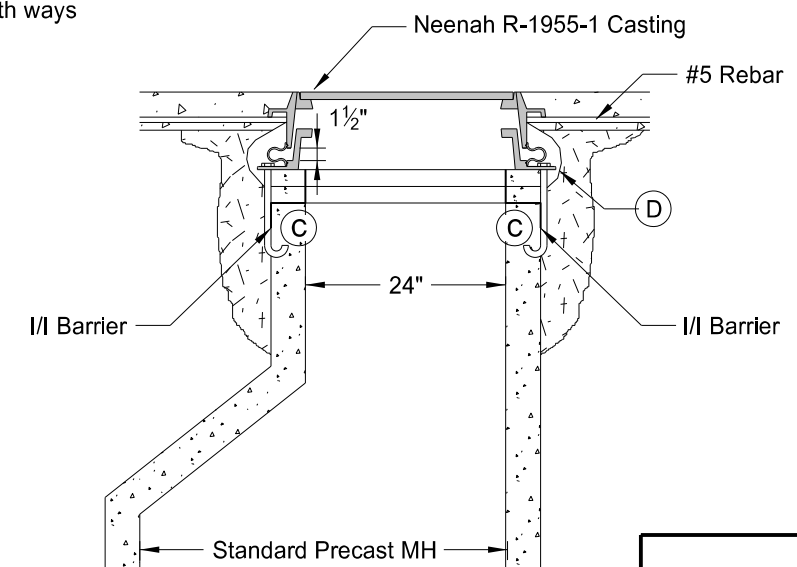
REBAR LAYOUT

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.



ELEVATION VIEW OF CONNECTION TO
STANDARD PRECAST MANHOLE - TYPICAL



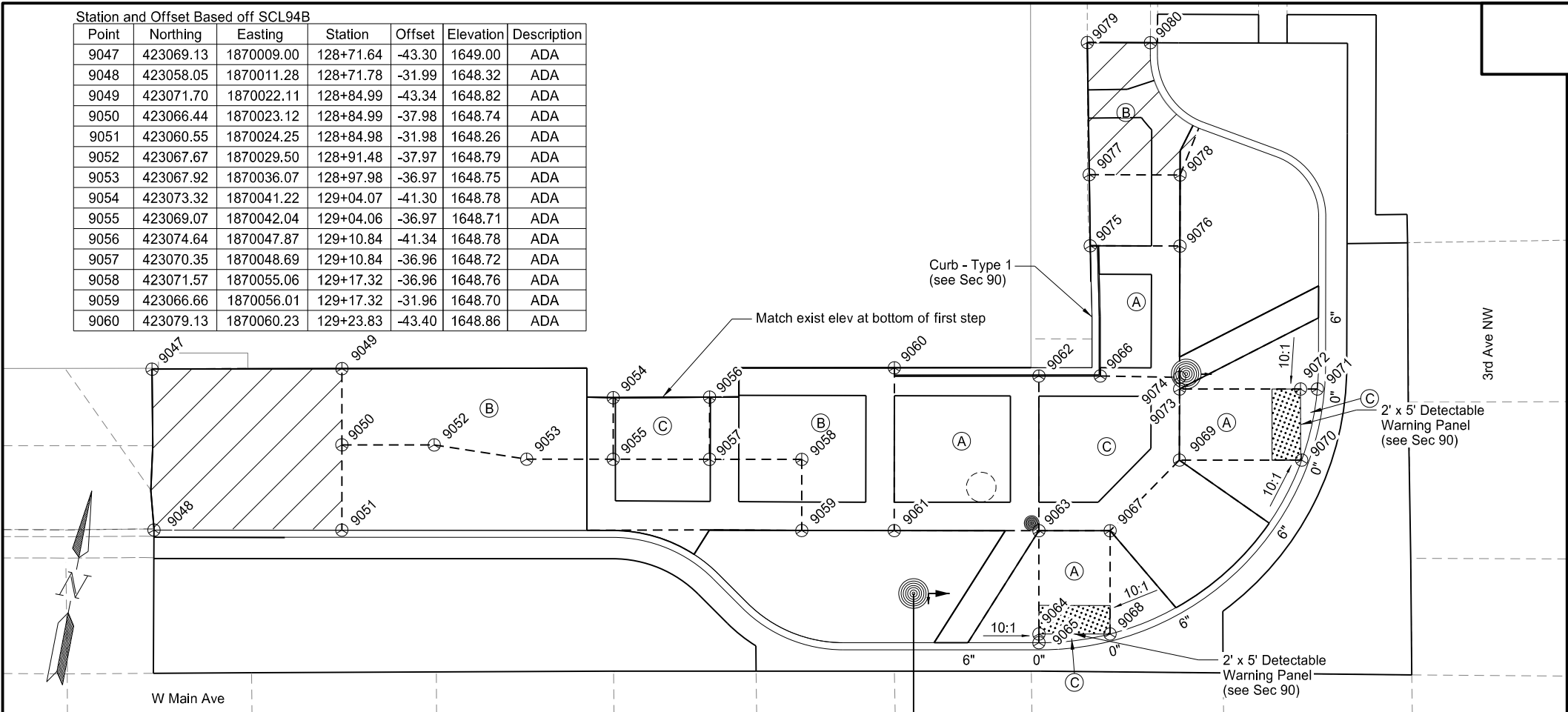
ELEVATION VIEW OF CONNECTION TO
CONICAL MANHOLE - TYPICAL

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Main St
Floating Manhole Details

Station and Offset Based off SCL94B

Point	Northing	Easting	Station	Offset	Elevation	Description
9047	423069.13	1870009.00	128+71.64	-43.30	1649.00	ADA
9048	423058.05	1870011.28	128+71.78	-31.99	1648.32	ADA
9049	423071.70	1870022.11	128+84.99	-43.34	1648.82	ADA
9050	423066.44	1870023.12	128+84.99	-37.98	1648.74	ADA
9051	423060.55	1870024.25	128+84.98	-31.98	1648.26	ADA
9052	423067.67	1870029.50	128+91.48	-37.97	1648.79	ADA
9053	423067.92	1870036.07	128+97.98	-36.97	1648.75	ADA
9054	423073.32	1870041.22	129+04.07	-41.30	1648.78	ADA
9055	423069.07	1870042.04	129+04.06	-36.97	1648.71	ADA
9056	423074.64	1870047.87	129+10.84	-41.34	1648.78	ADA
9057	423070.35	1870048.69	129+10.84	-36.96	1648.72	ADA
9058	423071.57	1870055.06	129+17.32	-36.96	1648.76	ADA
9059	423066.66	1870056.01	129+17.32	-31.96	1648.70	ADA
9060	423079.13	1870060.23	129+23.83	-43.40	1648.86	ADA



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Station and Offset Based off SCL94B

Point	Northing	Easting	Station	Offset	Elevation	Description
9061	423067.89	1870062.39	129+23.82	-31.95	1648.70	ADA
9062	423080.49	1870070.32	129+34.00	-42.82	1648.42	ADA
9063	423069.81	1870072.38	129+34.00	-31.94	1648.26	ADA
9064	423062.68	1870073.76	129+34.00	-24.68	1647.90	ADA
9065	423062.08	1870073.88	129+34.00	-24.07	1647.89	ADA
9066	423081.31	1870074.55	129+38.31	-42.82	1648.35	ADA
9067	423070.76	1870077.30	129+39.00	-31.94	1648.27	ADA
9068	423063.63	1870078.67	129+39.00	-24.68	1647.94	ADA
9069	423076.56	1870081.14	129+43.87	-36.91	1648.21	ADA
9070	423078.19	1870089.58	129+52.47	-36.91	1647.90	ADA
9071	423083.31	1870089.71	129+53.57	-41.91	1647.93	ADA
9072	423083.09	1870088.55	129+52.39	-41.91	1647.95	ADA
9073	423081.47	1870080.20	129+43.88	-41.91	1648.25	ADA
9074	423082.28	1870080.05	129+43.89	-42.73	1648.26	ADA
9075	423090.17	1870072.12	129+37.60	-51.97	1648.84	ADA
9076	423091.35	1870078.32	129+43.91	-51.96	1648.75	ADA
9077	423095.06	1870071.10	129+37.53	-56.97	1648.78	ADA
9078	423096.26	1870077.38	129+43.92	-56.96	1648.68	ADA
9079	423104.16	1870069.21	129+37.40	-66.27	1648.51	ADA
9080	423104.99	1870073.56	129+41.83	-66.26	1648.54	ADA
9081	423114.92	1870134.78	130+03.82	-64.39	1649.11	ADA
9082	423116.69	1870144.07	130+13.27	-64.37	1649.08	ADA
9083	423110.78	1870137.78	130+05.98	-59.75	1649.10	ADA
9084	423112.25	1870144.93	130+13.28	-59.85	1649.12	ADA
9085	423090.93	1870129.12	129+93.71	-41.91	1648.32	ADA
9086	423091.13	1870130.16	129+94.77	-41.91	1648.33	ADA
9087	423092.27	1870136.05	130+00.77	-41.91	1648.80	ADA
9088	423093.79	1870135.76	130+00.78	-43.45	1648.83	ADA
9089	423094.73	1870140.70	130+05.80	-43.44	1648.89	ADA
9090	423096.13	1870148.08	130+13.31	-43.42	1648.98	ADA
9091	423086.22	1870131.11	129+94.77	-36.91	1648.22	ADA
9092	423087.36	1870137.00	130+00.77	-36.91	1648.70	ADA
9093	423088.32	1870142.00	130+05.86	-36.91	1648.79	ADA
9094	423078.92	1870138.72	130+00.86	-28.29	1648.13	ADA
9095	423079.86	1870143.63	130+05.86	-28.29	1648.22	ADA

Transitional tie in segment
Max grade slope 8.3%
Grade Break

Ramp
8.33% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope
15' Maximum Ramp Length

Landing
2% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope
4'x4' Minimum, Match Width of
Shared Use Path

Sidewalk
5% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope

Notes:

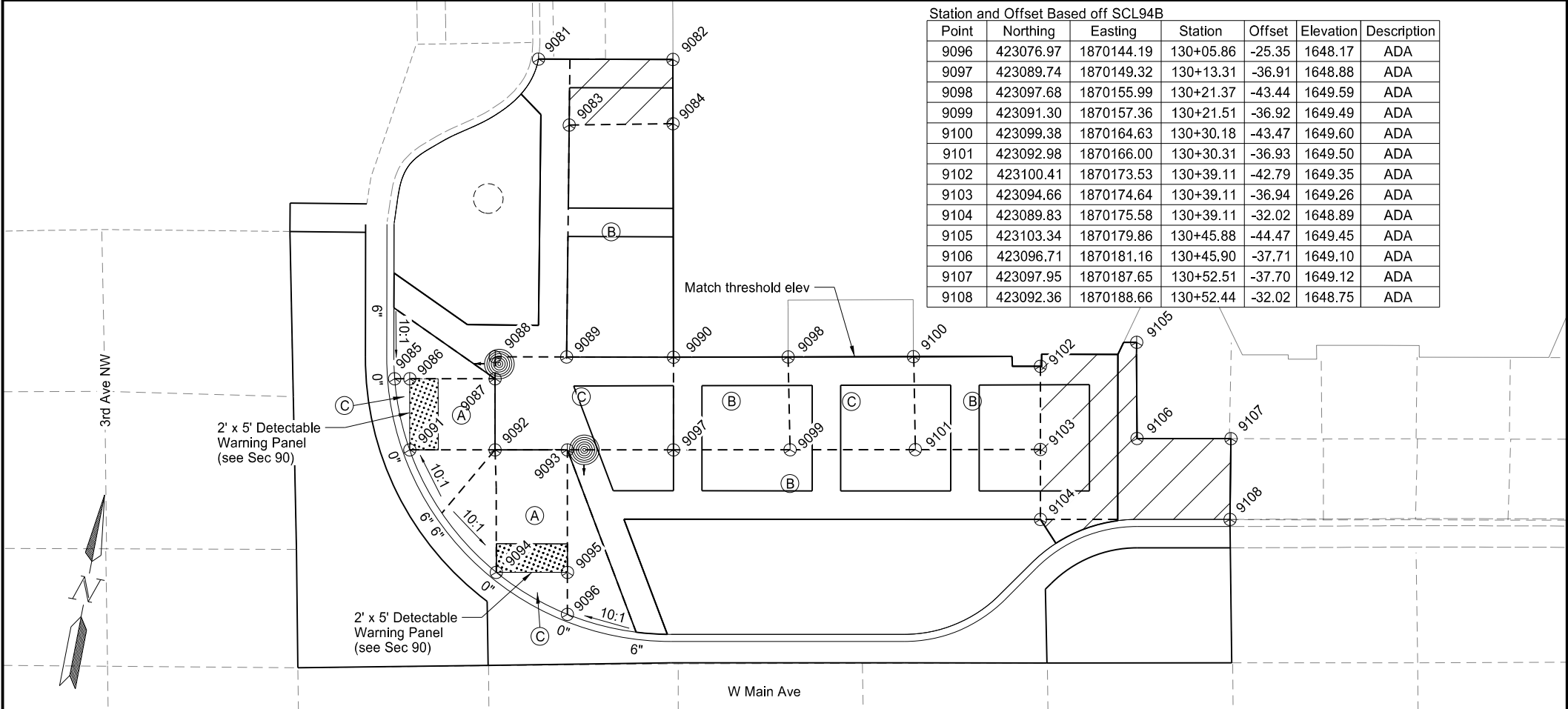
- Dimensions shown may vary from actual. Field adjust if maximum slopes cannot be met with dimensions shown.
- See Standard Drawing D-750-3 for more details.
- All form grades to be approved by engineer prior to placing concrete.

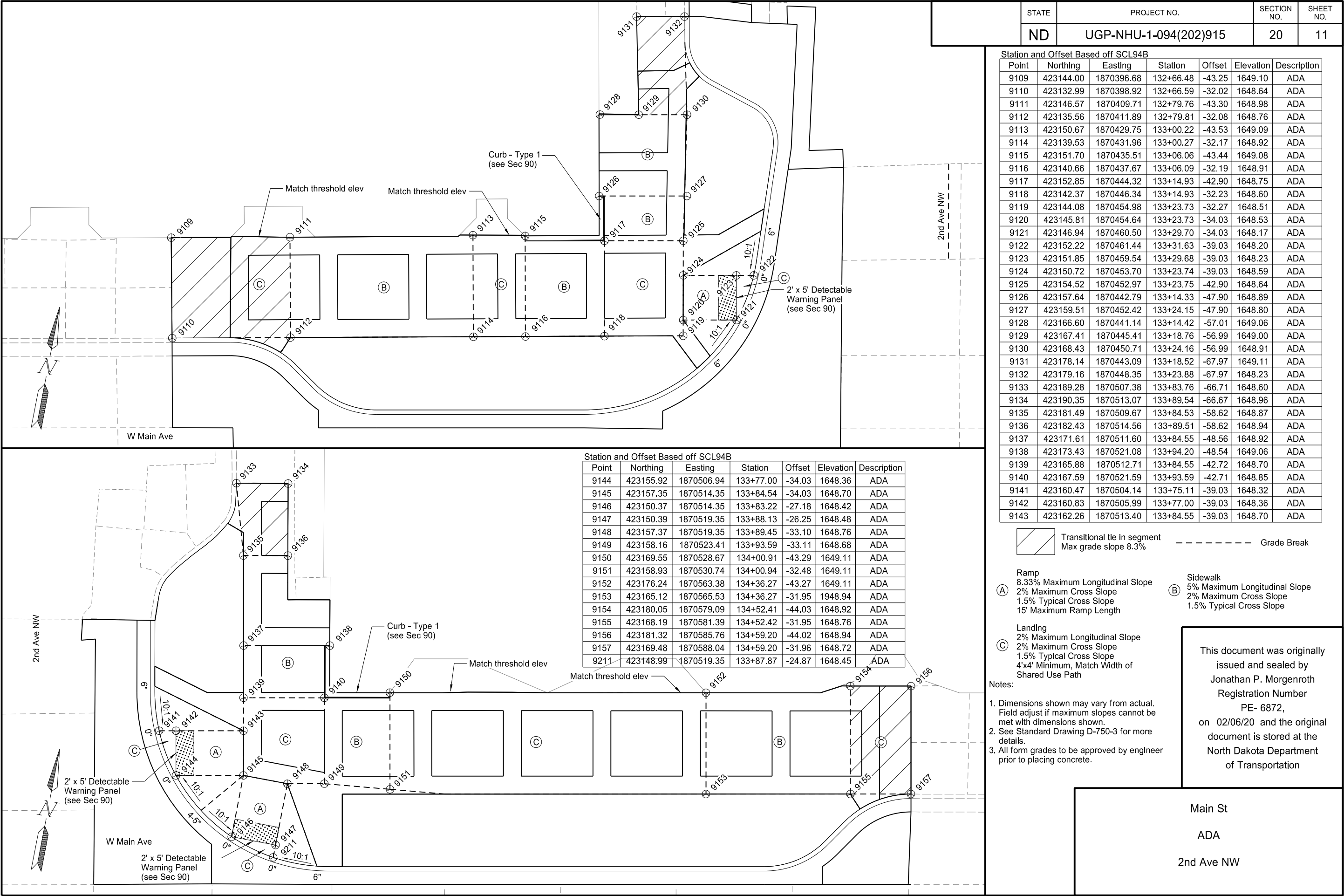
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Main St
ADA
3rd Ave NW

Station and Offset Based off SCL94B

Point	Northing	Easting	Station	Offset	Elevation	Description
9096	423076.97	1870144.19	130+05.86	-25.35	1648.17	ADA
9097	423089.74	1870149.32	130+13.31	-36.91	1648.88	ADA
9098	423097.68	1870155.99	130+21.37	-43.44	1649.59	ADA
9099	423091.30	1870157.36	130+21.51	-36.92	1649.49	ADA
9100	423099.38	1870164.63	130+30.18	-43.47	1649.60	ADA
9101	423092.98	1870166.00	130+30.31	-36.93	1649.50	ADA
9102	423100.41	1870173.53	130+39.11	-42.79	1649.35	ADA
9103	423094.66	1870174.64	130+39.11	-36.94	1649.26	ADA
9104	423089.83	1870175.58	130+39.11	-32.02	1648.89	ADA
9105	423103.34	1870179.86	130+45.88	-44.47	1649.45	ADA
9106	423096.71	1870181.16	130+45.90	-37.71	1649.10	ADA
9107	423097.95	1870187.65	130+52.51	-37.70	1649.12	ADA
9108	423092.36	1870188.66	130+52.44	-32.02	1648.75	ADA





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Point	Northing	Easting	Station	Offset	Elevation	Description
9109	423144.00	1870396.68	132+66.48	-43.25	1649.10	ADA
9110	423132.99	1870398.92	132+66.59	-32.02	1648.64	ADA
9111	423146.57	1870409.71	132+79.76	-43.30	1648.98	ADA
9112	423135.56	1870411.89	132+79.81	-32.08	1648.76	ADA
9113	423150.67	1870429.75	133+00.22	-43.53	1649.09	ADA
9114	423139.53	1870431.96	133+00.27	-32.17	1648.92	ADA
9115	423151.70	1870435.51	133+06.06	-43.44	1649.08	ADA
9116	423140.66	1870437.67	133+06.09	-32.19	1648.91	ADA
9117	423152.85	1870444.32	133+14.93	-42.90	1648.75	ADA
9118	423142.37	1870446.34	133+14.93	-32.23	1648.60	ADA
9119	423144.08	1870454.98	133+23.73	-32.27	1648.51	ADA
9120	423145.81	1870454.64	133+23.73	-34.03	1648.53	ADA
9121	423146.94	1870460.50	133+29.70	-34.03	1648.17	ADA
9122	423152.22	1870461.44	133+31.63	-39.03	1648.20	ADA
9123	423151.85	1870459.54	133+29.68	-39.03	1648.23	ADA
9124	423150.72	1870453.70	133+23.74	-39.03	1648.59	ADA
9125	423154.52	1870452.97	133+23.75	-42.90	1648.64	ADA
9126	423157.64	1870442.79	133+14.33	-47.90	1648.89	ADA
9127	423159.51	1870452.42	133+24.15	-47.90	1648.80	ADA
9128	423166.60	1870441.14	133+14.42	-57.01	1649.06	ADA
9129	423167.41	1870445.41	133+18.76	-56.99	1649.00	ADA
9130	423168.43	1870450.71	133+24.16	-56.99	1648.91	ADA
9131	423178.14	1870443.09	133+18.52	-67.97	1649.11	ADA
9132	423179.16	1870448.35	133+23.88	-67.97	1648.23	ADA
9133	423189.28	1870507.38	133+83.76	-66.71	1648.60	ADA
9134	423190.35	1870513.07	133+89.54	-66.67	1648.96	ADA
9135	423181.49	1870509.67	133+84.53	-58.62	1648.87	ADA
9136	423182.43	1870514.56	133+89.51	-58.62	1648.94	ADA
9137	423171.61	1870511.60	133+84.55	-48.56	1648.92	ADA
9138	423173.43	1870521.08	133+94.20	-48.54	1649.06	ADA
9139	423165.88	1870512.71	133+84.55	-42.72	1648.70	ADA
9140	423167.59	1870521.59	133+93.59	-42.71	1648.85	ADA
9141	423160.47	1870504.14	133+75.11	-39.03	1648.32	ADA
9142	423160.83	1870505.99	133+77.00	-39.03	1648.36	ADA
9143	423162.26	1870513.40	133+84.55	-39.03	1648.70	ADA

Transitional tie in segment
Max grade slope 8.3%

Grade Break

A

Ramp
8.33% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope
15' Maximum Ramp Length

B

Sidewalk
5% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope

C

Landing
2% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope
4'x4' Minimum, Match Width of
Shared Use Path

Notes:

- Dimensions shown may vary from actual. Field adjust if maximum slopes cannot be met with dimensions shown.
- See Standard Drawing D-750-3 for more details.
- All form grades to be approved by engineer prior to placing concrete.

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Main St

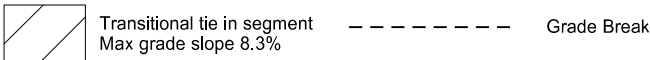
ADA

2nd Ave NW

Station and Offset Based off SCL94B						
Point	Northing	Easting	Station	Offset	Elevation	Description
9215	423217.35	1870772.55	136+49.44	-43.96	1649.08	ADA
9216	423205.59	1870774.74	136+49.35	-31.99	1648.45	ADA
9217	423219.77	1870782.04	136+59.21	-44.52	1649.12	ADA
9218	423213.00	1870783.35	136+59.21	-37.63	1648.98	ADA
9219	423221.15	1870789.29	136+66.59	-44.50	1649.12	ADA
9220	423214.40	1870790.60	136+66.60	-37.63	1648.98	ADA
9221	423208.86	1870791.67	136+66.60	-31.99	1648.87	ADA
9222	423224.21	1870811.66	136+89.14	-43.26	1648.12	ADA
9223	423213.14	1870813.80	136+89.14	-31.99	1648.96	ADA
9224	423224.85	1870818.02	136+95.50	-42.69	1648.62	ADA
9225	423215.60	1870819.80	136+95.50	-33.26	1648.46	ADA
9226	423207.85	1870826.00	137+00.11	-24.49	1647.79	ADA

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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Station and Offset Based off SCL94B						
Point	Northing	Easting	Station	Offset	Elevation	Description
9227	423209.79	1870825.63	137+00.11	-26.45	1647.83	ADA
9228	423216.47	1870824.33	137+00.11	-33.26	1648.37	ADA
9229	423210.73	1870830.54	137+05.11	-26.45	1647.83	ADA
9230	423217.42	1870829.24	137+05.11	-33.26	1648.37	ADA
9231	423218.76	1870836.18	137+12.17	-33.26	1647.89	ADA
9232	423222.33	1870828.29	137+05.11	-38.26	1648.46	ADA
9233	423223.67	1870835.23	137+12.17	-38.26	1647.97	ADA
9234	423224.08	1870837.36	137+14.34	-38.26	1647.93	ADA
9235	423226.67	1870827.46	137+05.11	-42.69	1648.53	ADA
9236	423230.63	1870816.30	136+94.92	-48.69	1649.03	ADA
9237	423232.56	1870826.32	137+05.11	-48.69	1648.89	ADA
9238	423235.04	1870815.44	136+94.91	-53.19	1649.05	ADA
9239	423236.98	1870825.46	137+05.11	-53.19	1648.90	ADA
9240	423247.03	1870813.13	136+94.91	-65.39	1649.08	ADA
9241	423248.83	1870822.80	137+04.75	-65.33	1648.41	ADA
9158	423257.85	1870883.14	137+65.71	-62.74	1648.51	ADA
9159	423259.44	1870892.42	137+75.12	-62.53	1648.69	ADA
9160	423248.09	1870885.21	137+65.89	-52.76	1648.59	ADA
9161	423249.89	1870894.31	137+75.17	-52.80	1648.67	ADA
9162	423237.76	1870887.25	137+65.93	-42.23	1648.30	ADA
9163	423239.40	1870895.75	137+74.59	-42.23	1648.35	ADA
9164	423233.87	1870888.02	137+65.95	-38.26	1648.23	ADA
9165	423232.53	1870881.08	137+58.88	-38.26	1647.88	ADA
9166	423232.12	1870878.97	137+56.73	-38.26	1647.83	ADA
9167	423227.62	1870882.02	137+58.86	-33.26	1647.79	ADA
9168	423228.97	1870888.99	137+65.97	-33.26	1648.14	ADA
9169	423230.61	1870897.49	137+74.63	-33.26	1648.19	ADA
9170	423242.81	1870912.76	137+91.93	-42.35	1649.20	ADA
9171	423232.62	1870914.73	137+91.93	-31.97	1649.04	ADA
9172	423243.99	1870918.83	137+98.12	-42.36	1649.20	ADA
9173	423233.79	1870920.79	137+98.11	-31.96	1649.04	ADA
9174	423245.22	1870922.67	138+02.12	-42.84	1648.89	ADA
9175	423234.56	1870924.73	138+02.12	-31.97	1648.73	ADA



Ramp
8.33% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope
15' Maximum Ramp Length

Sidewalk
5% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope

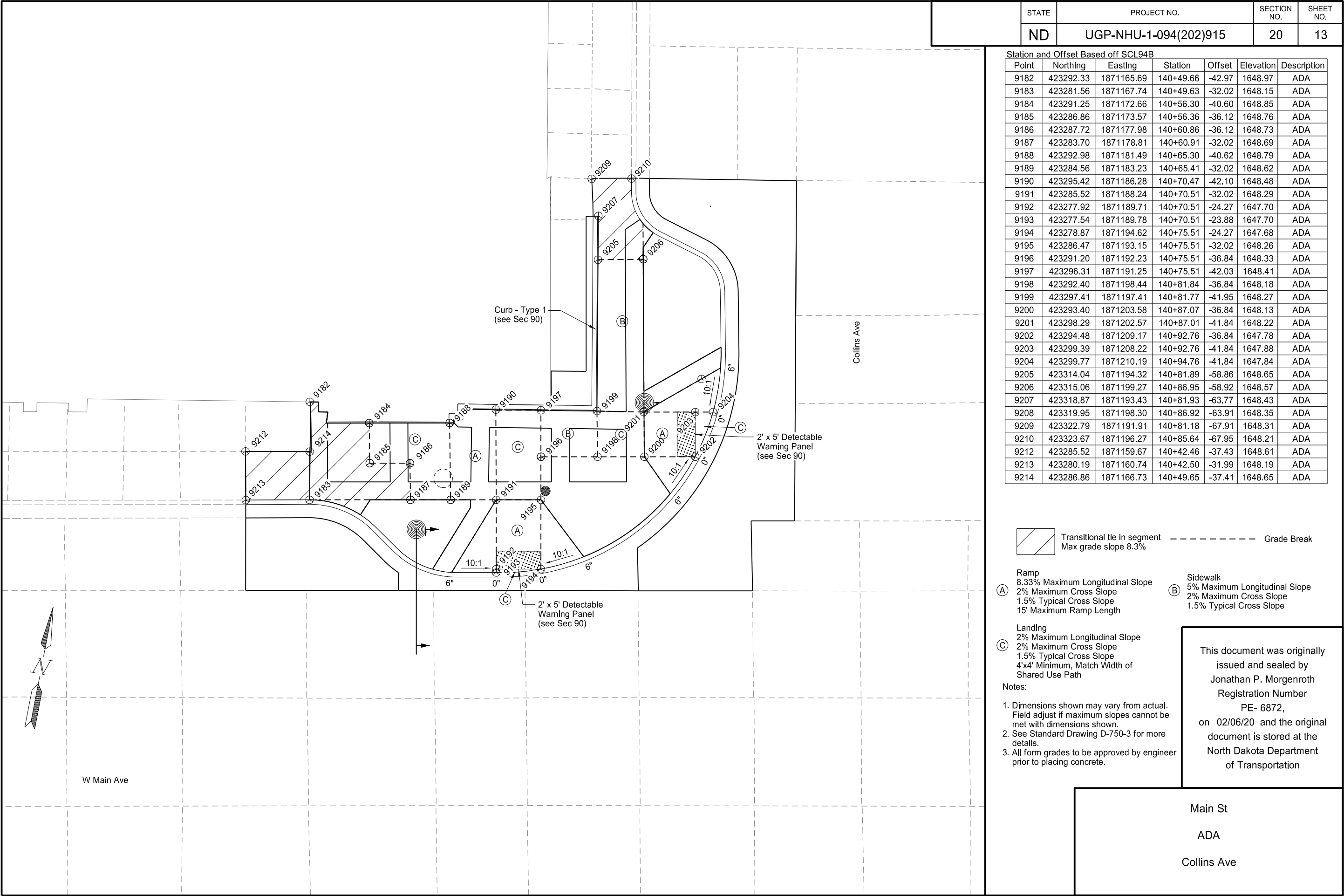
Landing
2% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope
4'x4' Minimum, Match Width of
Shared Use Path

Notes:

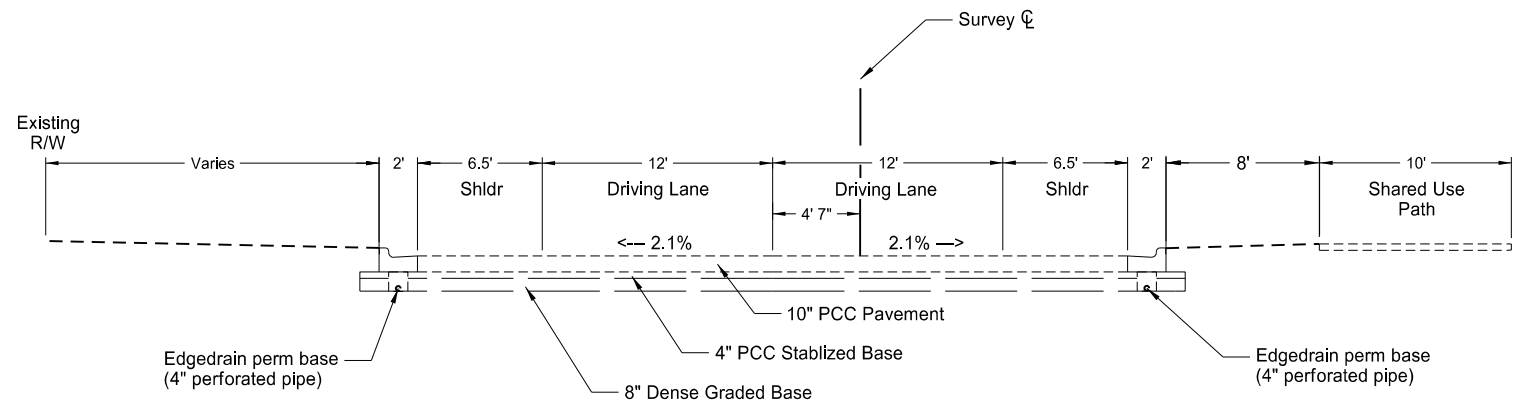
- Dimensions shown may vary from actual. Field adjust if maximum slopes cannot be met with dimensions shown.
- See Standard Drawing D-750-3 for more details.
- All form grades to be approved by engineer prior to placing concrete.

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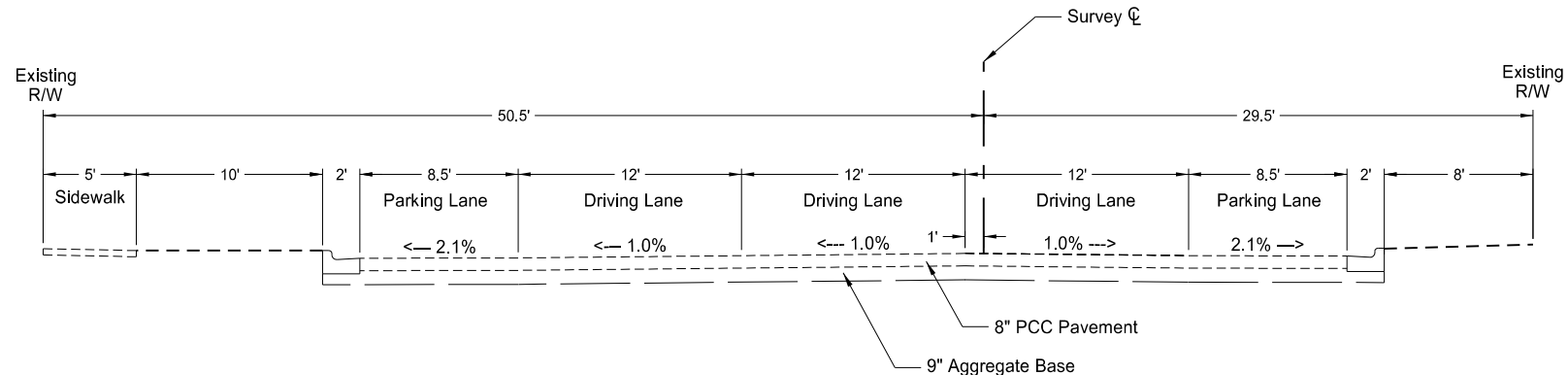
Main St
ADA
1st Ave NW



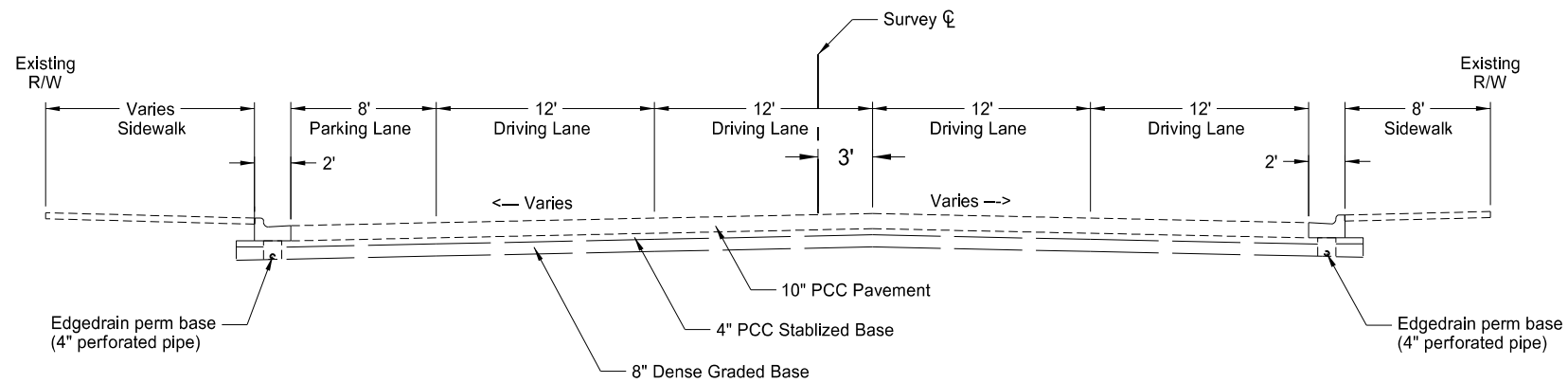
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	30	1



Main St Existing Typical
Sta 88+65.26 to Sta 101+54.50



Main St Existing Typical
Sta 101+54.5 to Sta 109+05

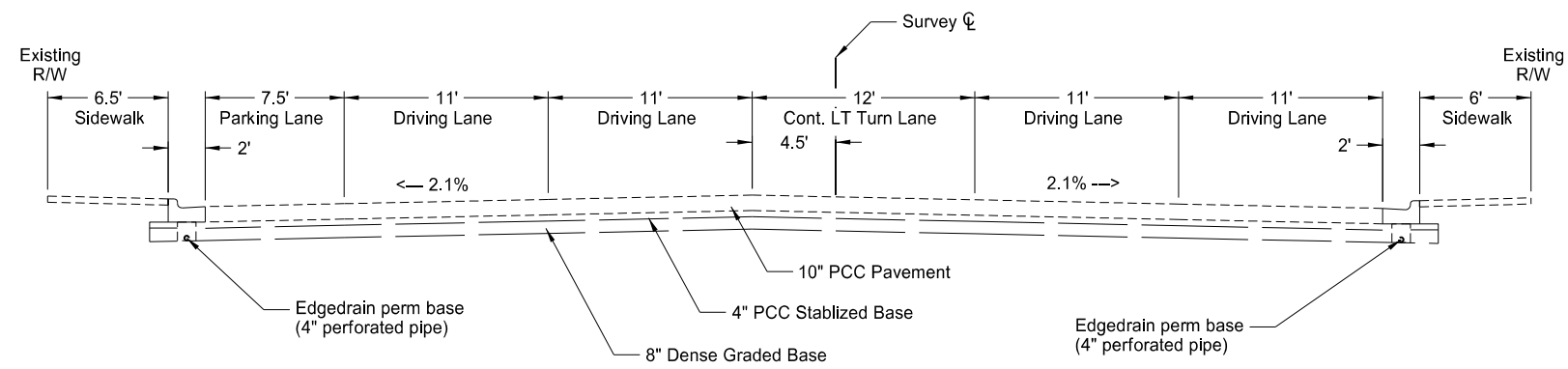


Main St Existing Typical (8th Ave NW to 2nd Ave NE)
Sta 109+05 to Sta 149+25

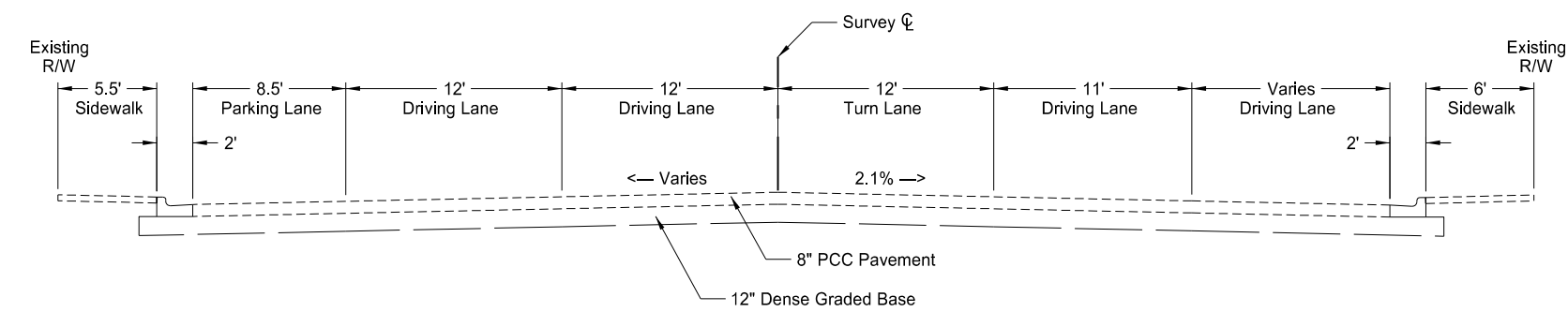
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Main St
Existing Typical Sections

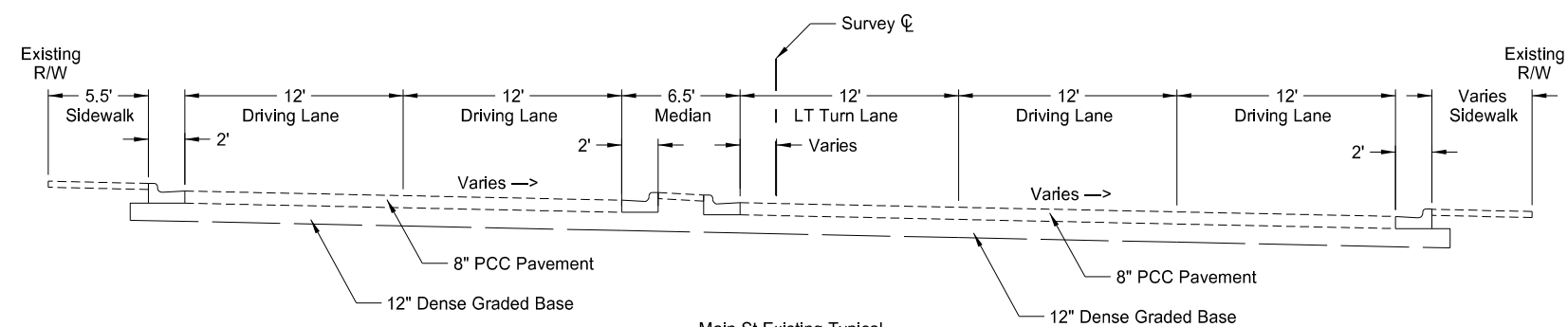
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	30	2



Main St Existing Typical
Sta 149+25 to Sta 159+20



Main St Existing Typical
Sta 159+20 to Sta 162+94

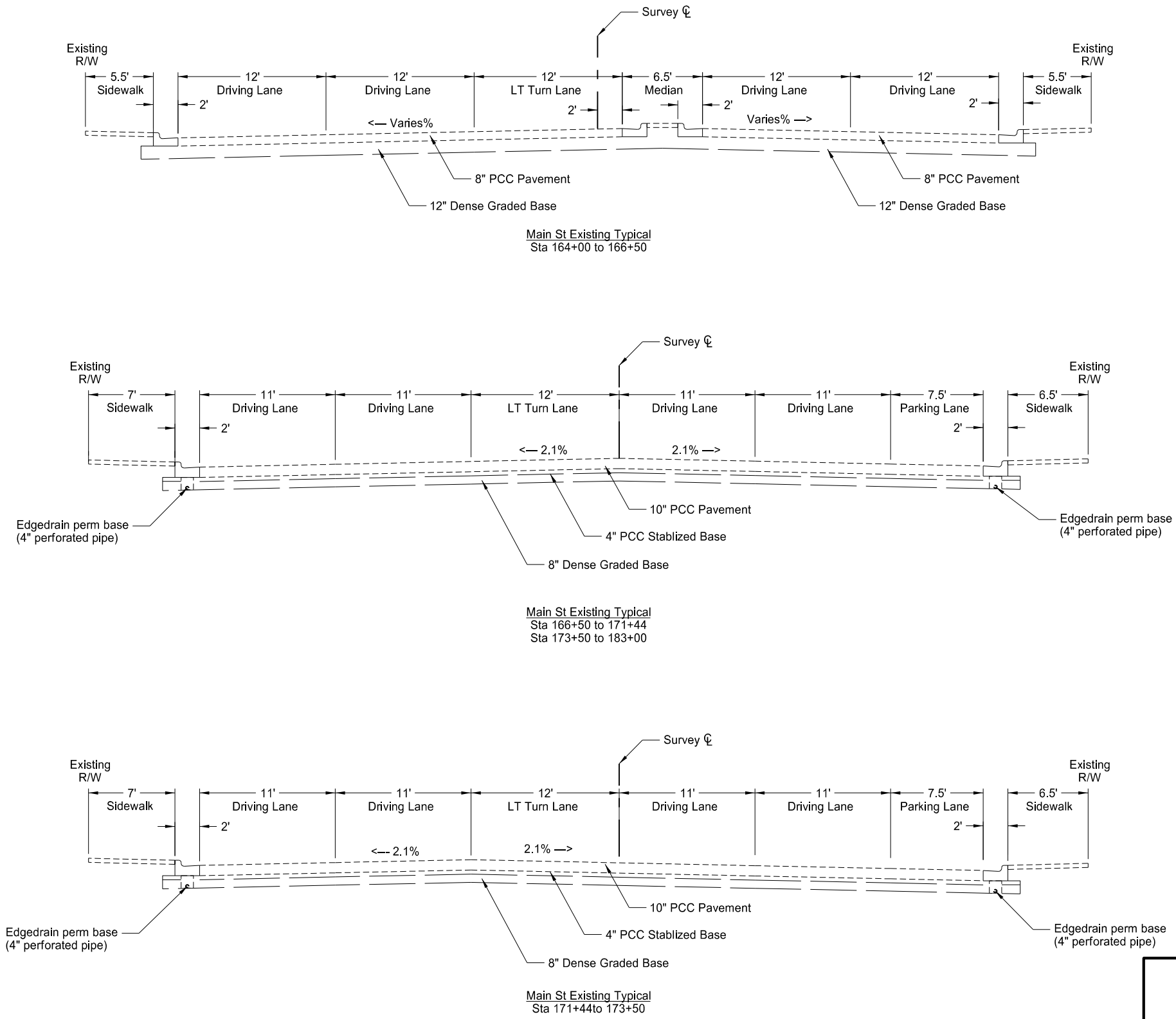


Main St Existing Typical
Sta 162+94 to Sta 164+00

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Main St
Existing Typical Sections

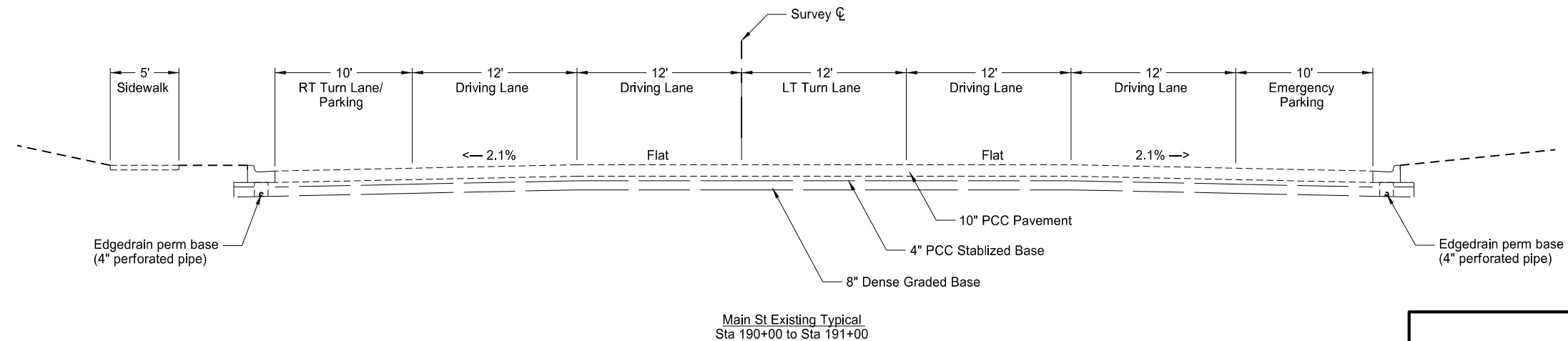
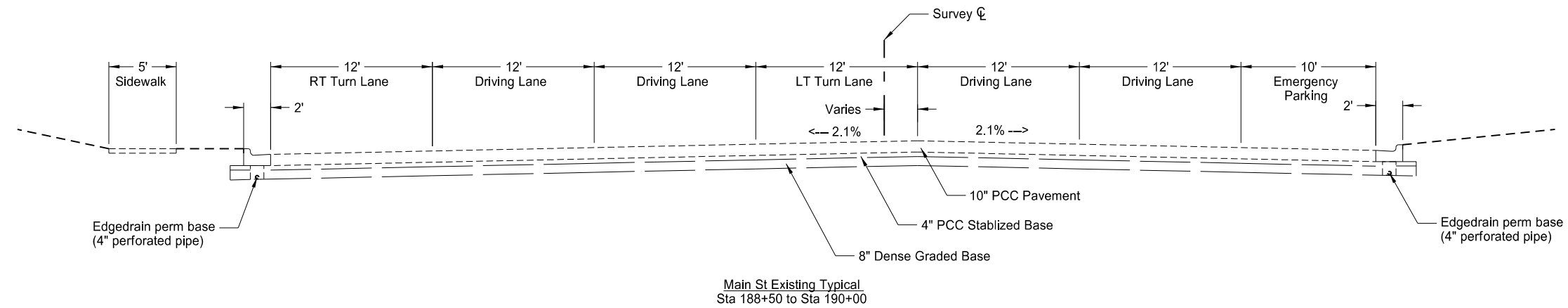
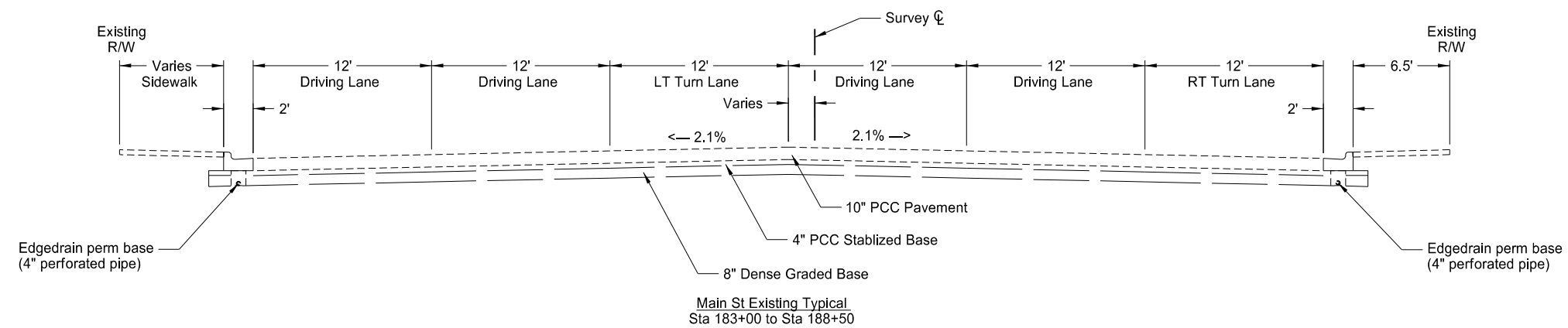
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	30	3



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Main St
Existing Typical Sections

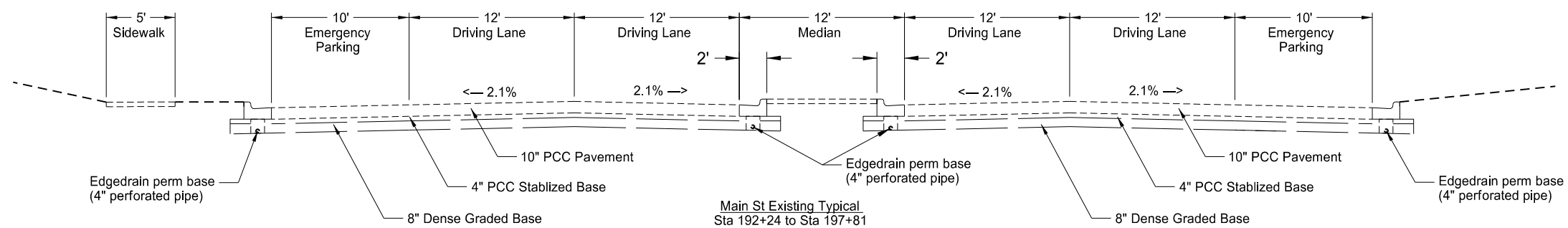
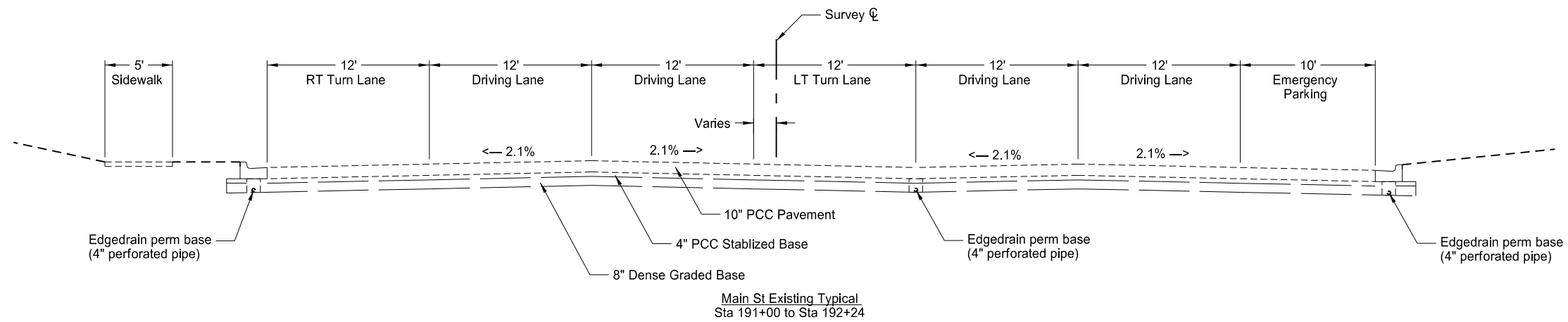
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	30	4



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Main St
Existing Typical Sections

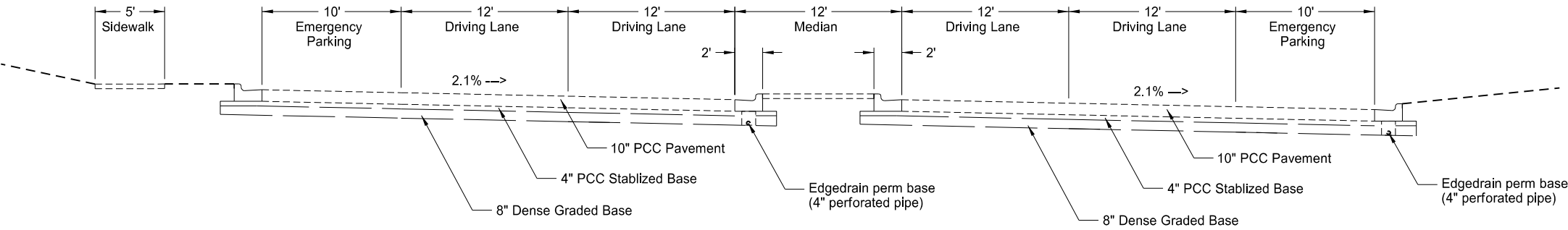
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	30	5



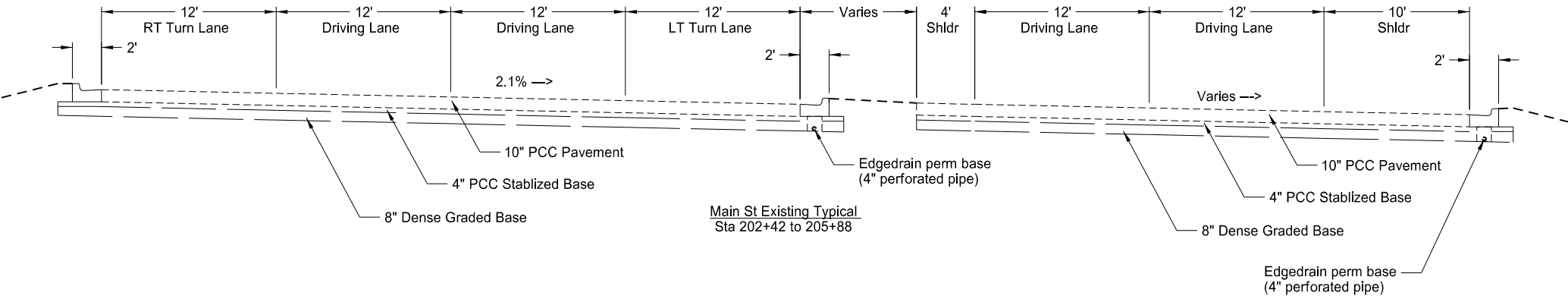
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Main St
Existing Typical Sections

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	30	6



Main St Existing Typical
Sta 197+81 to 202+42

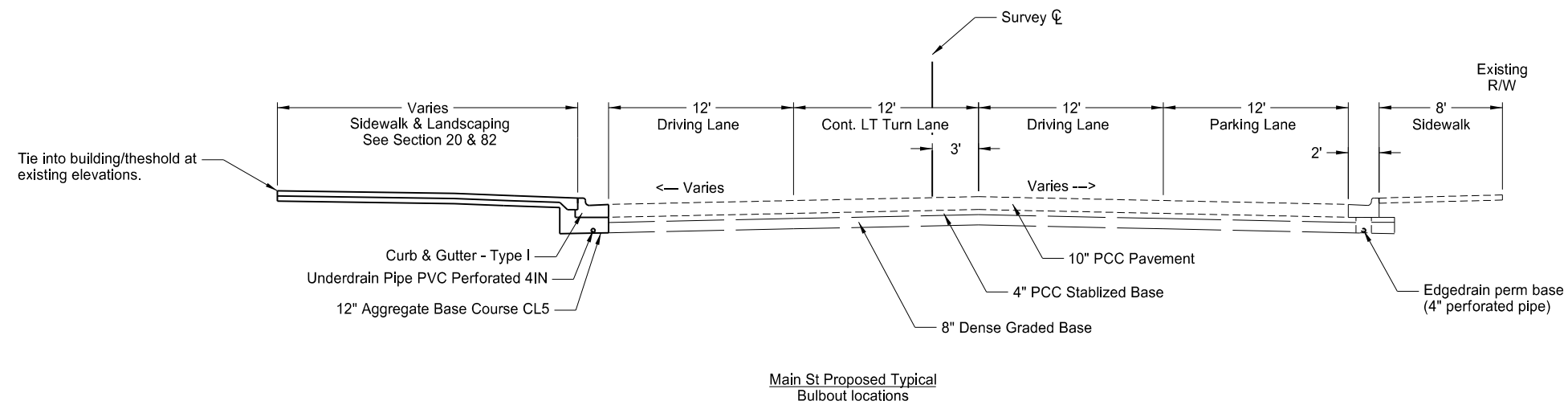


Main St Existing Typical
Sta 202+42 to 205+88

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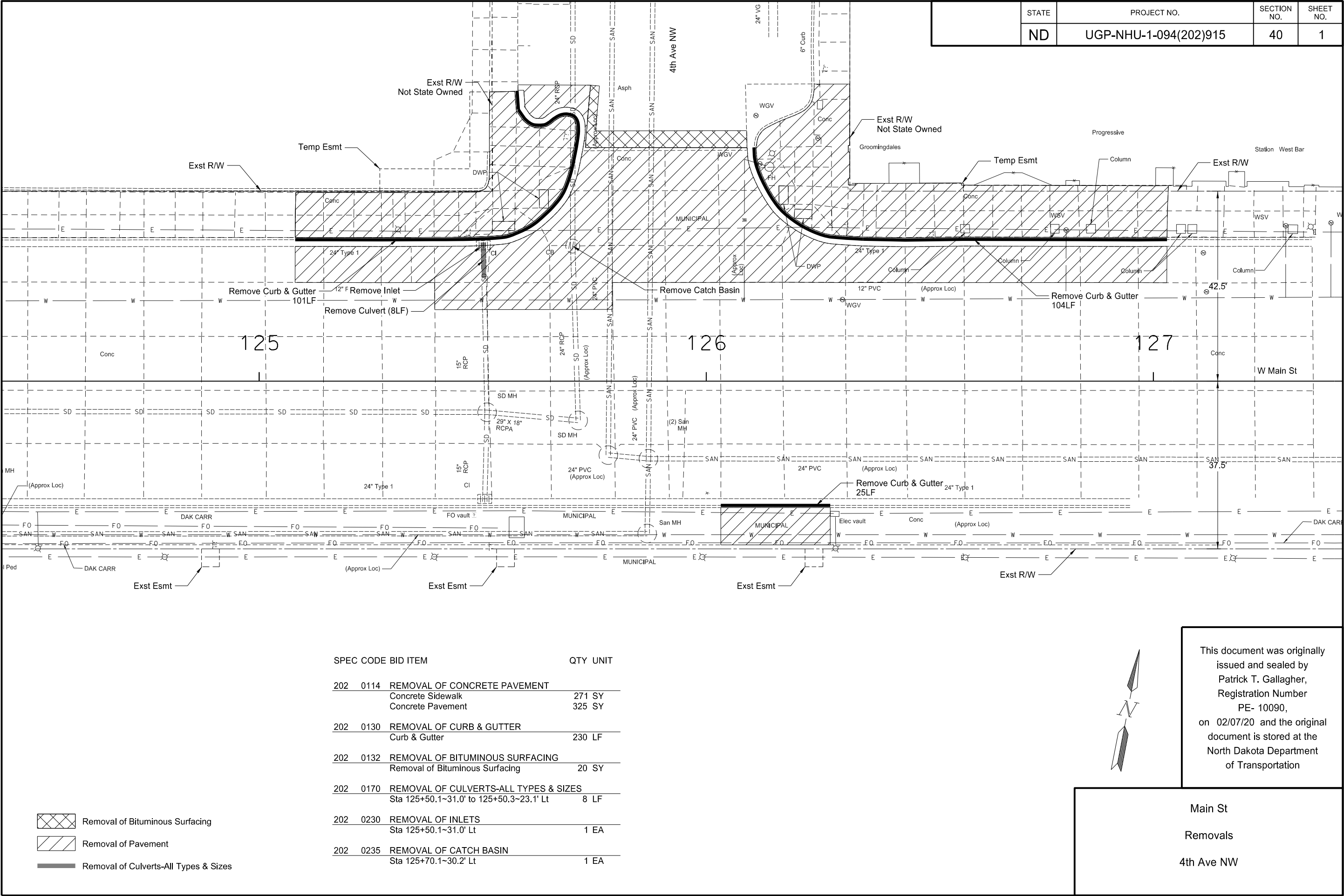
Main St
Existing Typical Sections

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	30	7

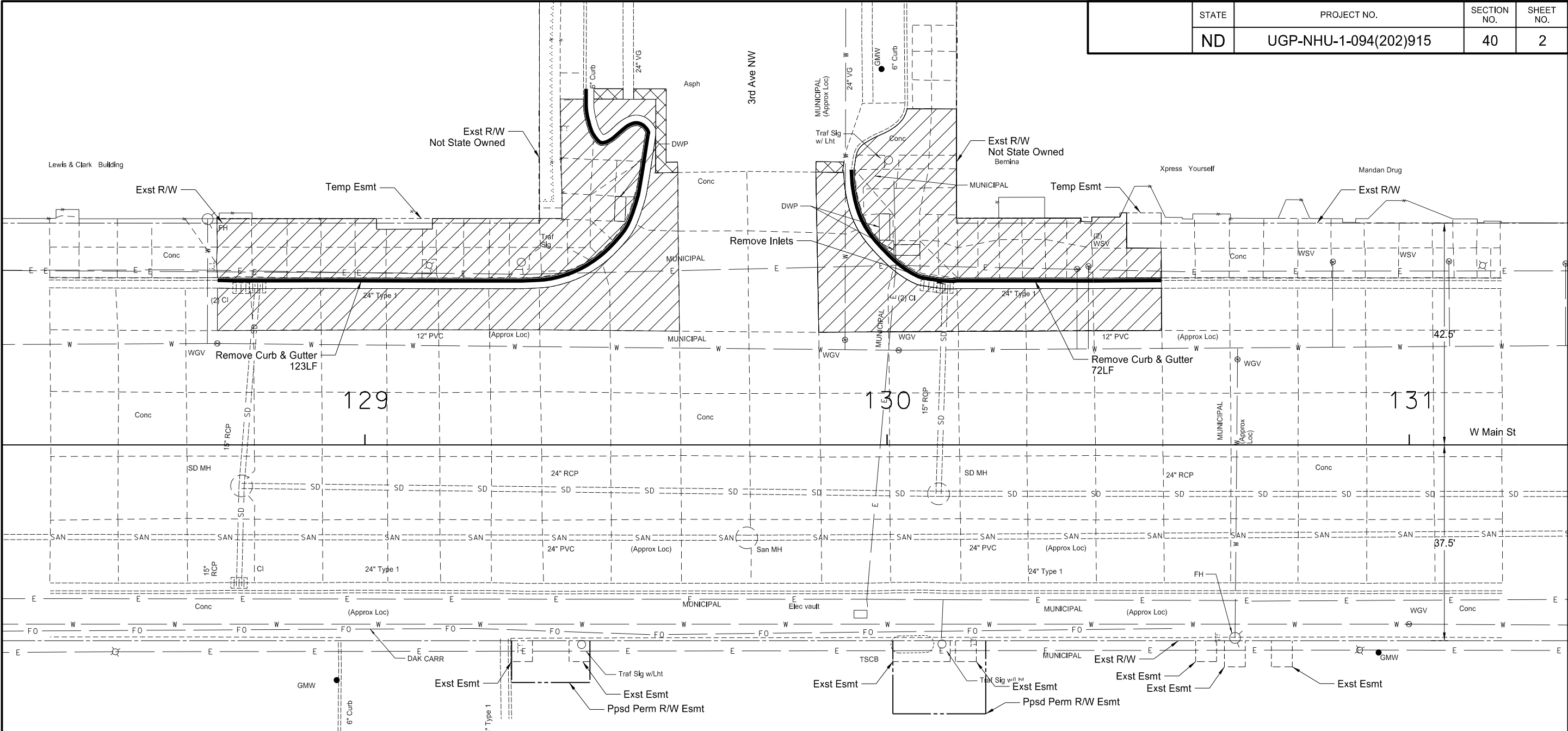


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Main St
Proposed Typical Section

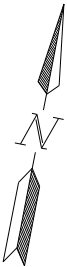


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	40	2



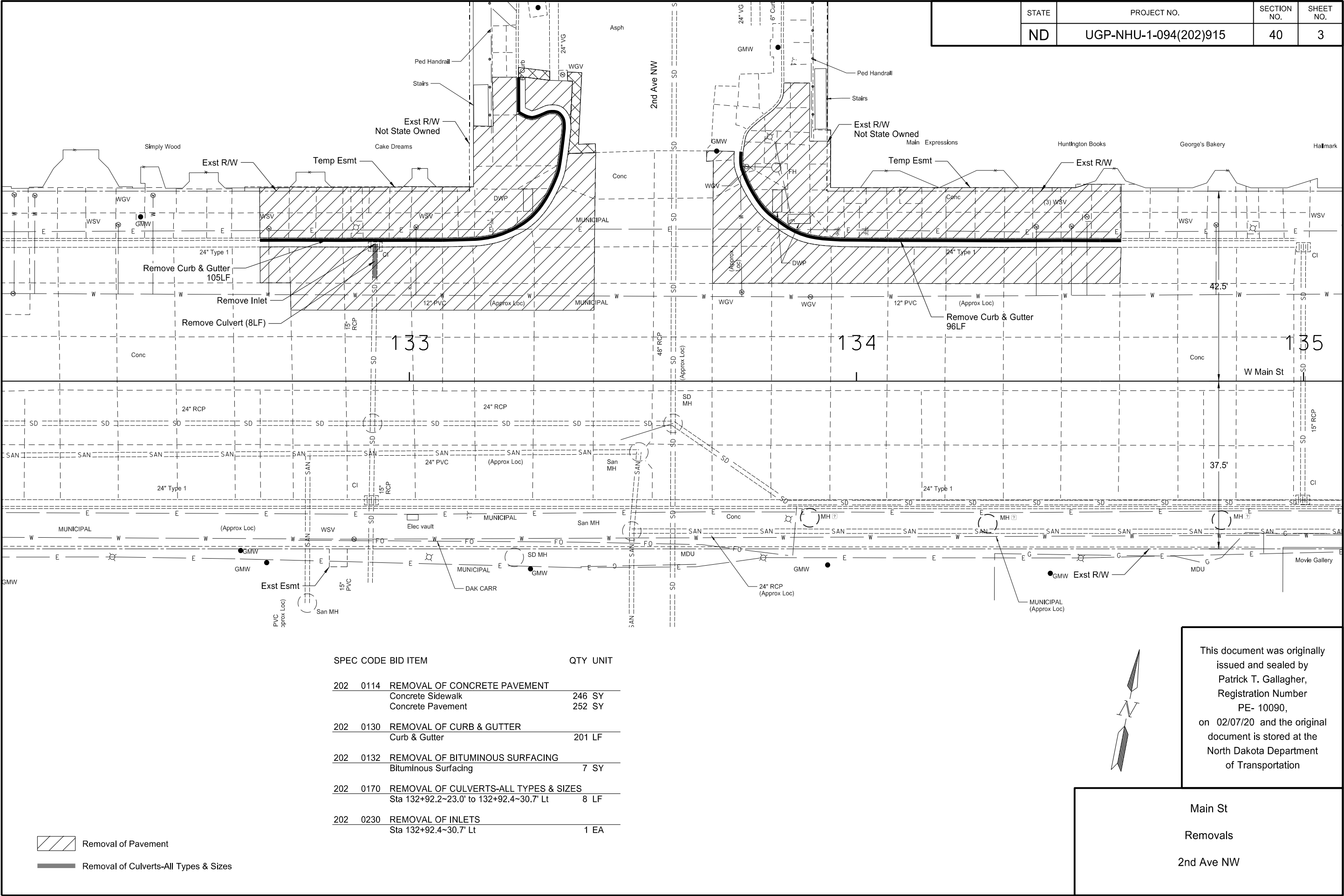
SPEC CODE	BID ITEM	QTY	UNIT
202 0114	REMOVAL OF CONCRETE PAVEMENT		
	Concrete Sidewalk	222	SY
	Concrete Pavement	188	SY
202 0130	REMOVAL OF CURB & GUTTER		
	Curb & Gutter	195	LF
202 0132	REMOVAL OF BITUMINOUS SURFACING		
	Removal of Bituminous Surfacing	7	SY
202 0230	REMOVAL OF INLETS		
	Sta 130+11.1~30.8' Lt	1	EA

- Removal of Bituminous Surfacing
- Removal of Pavement
- Removal of Culverts-All Types & Sizes

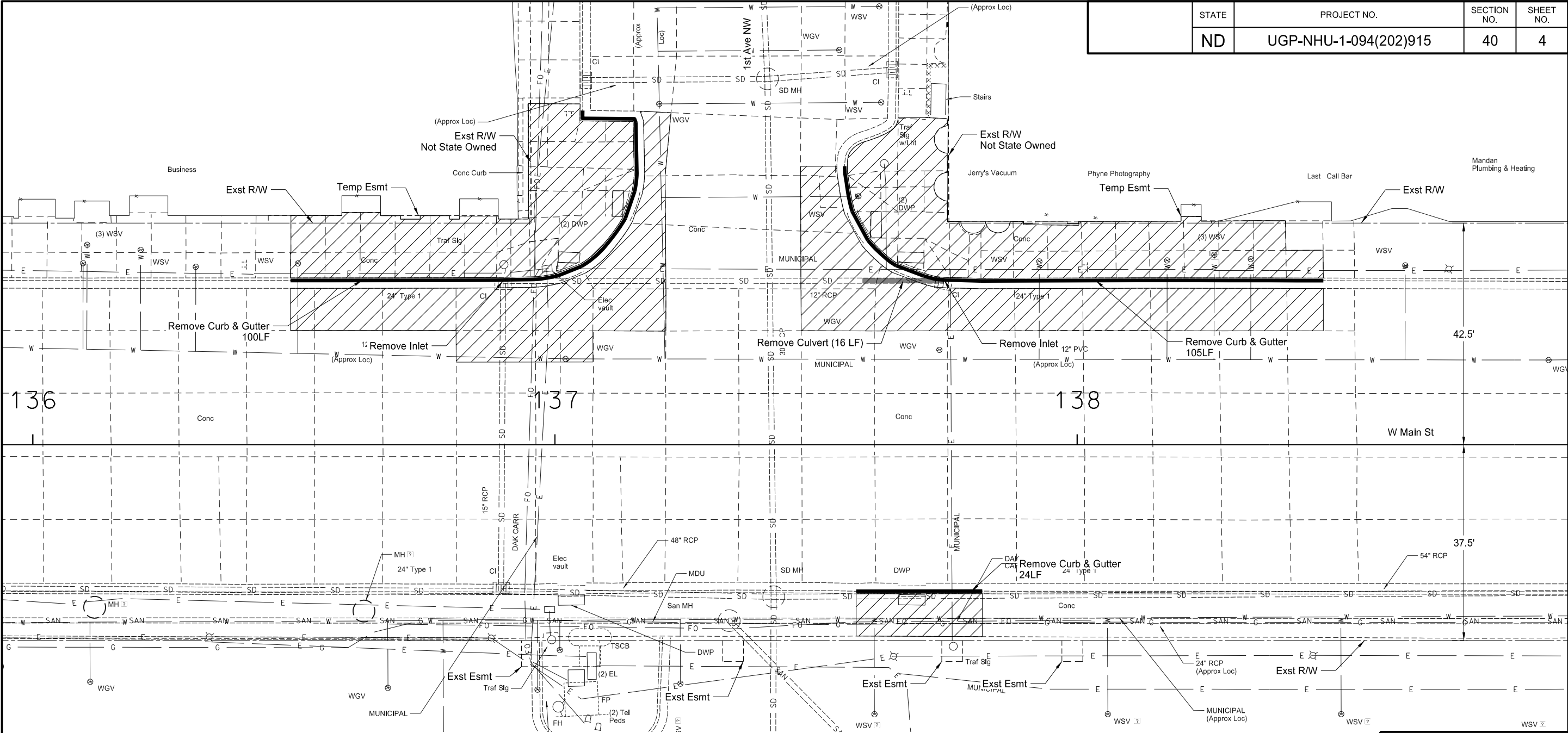


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Main St
Removals
3rd Ave NW

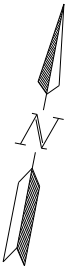


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	40	4



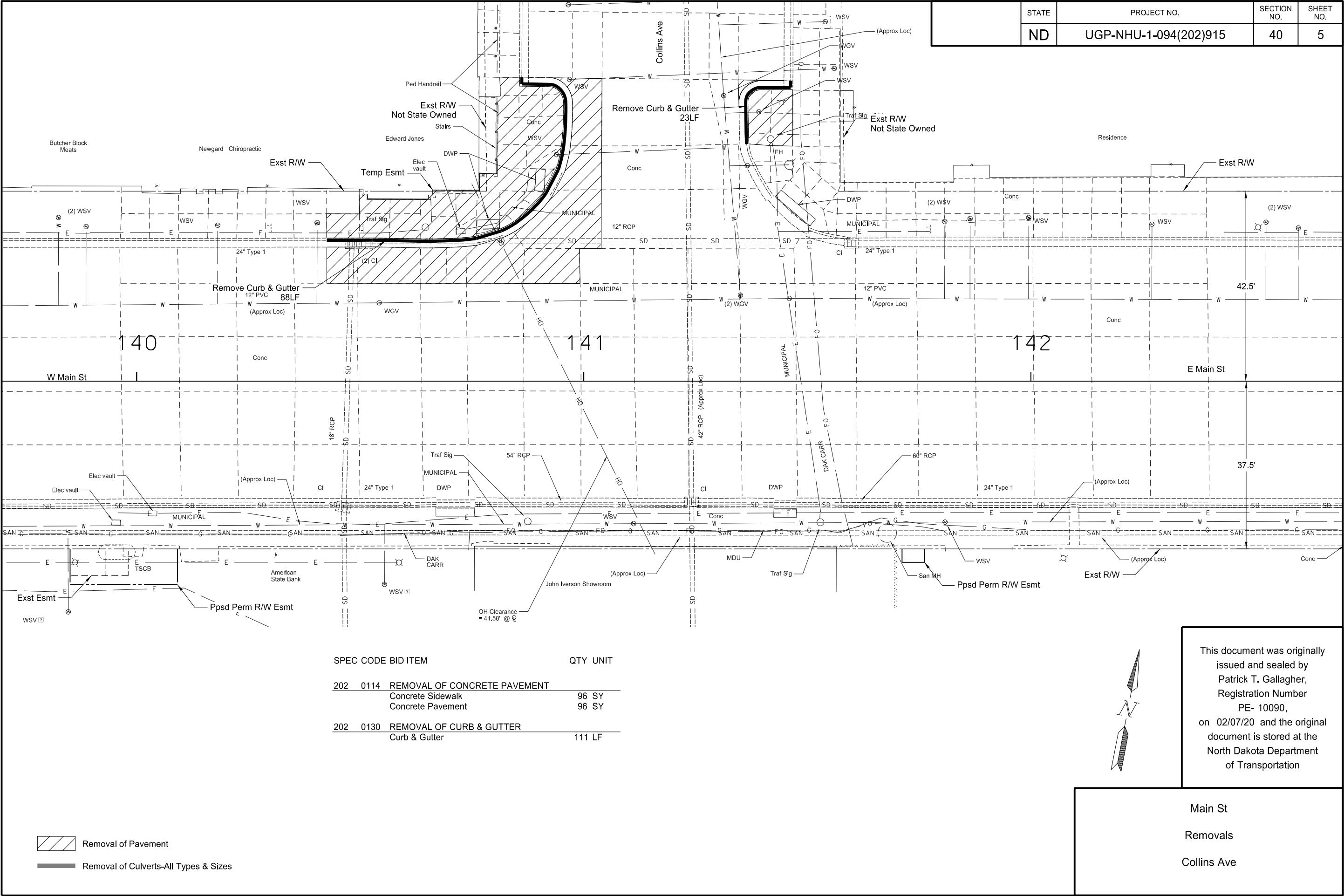
SPEC CODE	BID ITEM	QTY	UNIT
202 0114	REMOVAL OF CONCRETE PAVEMENT		
	Concrete Sidewalk	271	SY
	Concrete Pavement	231	SY
202 0130	REMOVAL OF CURB & GUTTER		
	Curb & Gutter	229	LF
202 0170	REMOVAL OF CULVERTS-ALL TYPES & SIZES		
	Sta 137+58.9~31.5' to 137+74.5~31.5' Lt	16	LF
202 0230	REMOVAL OF INLETS		
	Sta 136+90.1~31.4' Lt	1	EA
	Sta 137+74.5~31.5' Lt	1	EA

-  Removal of Pavement
-  Removal of Culverts-All Types & Sizes



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Main St
Removals
1st Ave NW



INLET NO. . . . 1A
TYPE. . . . INLET SPCL-TYPE 2 48IN
GRATE STYLE. . . . D
STA. 125+50.29~23.1' Lt
GRATE ELEV. . . . 1647.82
BASE ELEV. . . . 1642.62
INVERT ELEV. . . . 1644.76
'H' DIST. 4.00 FT
15 S 1644.76
15 W 1644.81

INLET NO. . . . EX3A
TYPE. . . . INLET-TYPE 2 DBL
GRATE STYLE. . . . D
STA. 128+79.39~30.0' Lt
GRATE ELEV. . . . 1647.60
BASE ELEV. . . . 1642.60
INVERT ELEV. . . . 1642.87
'H' DIST. 4.30 FT
15 S 1642.87
15 E 1642.97

INLET NO. . . . 5C
TYPE. . . . INLET-TYPE 1
GRATE STYLE. . . . D
STA. 133+28.52~30.6' Lt
GRATE ELEV. . . . 1648.16
BASE ELEV. . . . 1643.06
INVERT ELEV. . . . 1643.26
'H' DIST. 4.10 FT
15 W 1643.26

INLET NO. . . . 8A
TYPE. . . . INLET-TYPE 1
GRATE STYLE. . . . D
STA. 140+84.50~26.7' Lt
GRATE ELEV. . . . 1647.65
BASE ELEV. . . . 1642.65
INVERT ELEV. . . . 1643.89
'H' DIST. 4.00 FT
15 NW 1643.89

INLET NO. . . . 1B
TYPE. . . . INLET-TYPE 1
GRATE STYLE. . . . D
STA. 125+14.40~31.2' Lt
GRATE ELEV. . . . 1647.82
BASE ELEV. . . . 1642.82
INVERT ELEV. . . . 1645.00
'H' DIST. 4.00 FT
15 E 1645.00

INLET NO. . . . 4A
TYPE. . . . INLET-TYPE 1
GRATE STYLE. . . . D
STA. 129+97.50~30.2' Lt
GRATE ELEV. . . . 1648.10
BASE ELEV. . . . 1642.70
INVERT ELEV. . . . 1642.95
'H' DIST. 4.40 FT
15 E 1642.95

INLET NO. . . . 6A
TYPE. . . . INLET-TYPE 1
GRATE STYLE. . . . D
STA. 136+53.91~31.0' Lt
GRATE ELEV. . . . 1647.84
BASE ELEV. . . . 1642.84
INVERT ELEV. . . . 1643.80
'H' DIST. 4.00 FT
15 E 1643.80

MH NO. . . . MH8 48 IN
STA. 140+82.82~31.4' Lt
RIM ELEV. 1648.10
BASE ELEV. 1642.20
INVERT ELEV. . . . 1643.74
RISER (48 IN) 4.00 FT
15 E 1643.74
15 W 1643.74
15 SE 1643.84

INLET NO. . . . 2A
TYPE. . . . INLET-TYPE 1
GRATE STYLE. . . . D
STA. 126+14.47~31.0' Lt
GRATE ELEV. . . . 1648.01
BASE ELEV. . . . 1643.01
INVERT ELEV. . . . 1645.02
'H' DIST. 4.00 FT
15 W 1645.02
15 E 1645.12

INLET NO. . . . 4B
TYPE. . . . INLET-TYPE 1
GRATE STYLE. . . . D
STA. 130+45.89~31.0' Lt
GRATE ELEV. . . . 1648.22
BASE ELEV. . . . 1642.92
INVERT ELEV. . . . 1643.16
'H' DIST. 4.30 FT
15 W 1643.16

INLET NO. . . . 6B
TYPE. . . . INLET-TYPE 1
GRATE STYLE. . . . D
STA. 136+90.00~23.0' Lt
GRATE ELEV. . . . 1647.74
BASE ELEV. . . . 1642.74
INVERT ELEV. . . . 1643.38
'H' DIST. 4.00 FT
15 S 1643.38
15 N 1643.48

INLET NO. . . . 2B
TYPE. . . . INLET-TYPE 1
GRATE STYLE. . . . D
STA. 126+96.52~31.1' Lt
GRATE ELEV. . . . 1648.24
BASE ELEV. . . . 1643.24
INVERT ELEV. . . . 1645.53
'H' DIST. 4.00 FT
15 W 1645.53

MH NO. . . . MH4 48 IN
STA. 130+11.11~30.3' Lt
RIM ELEV. 1649.56
BASE ELEV. 1642.46
INVERT ELEV. . . . 1642.71
RISER (48 IN) 5.20 FT
15 S 1642.71
15 E 1642.81
15 W 1642.81

MH NO. . . . MH6 48 IN
STA. 136+90.06~30.9' Lt
RIM ELEV. 1648.74
BASE ELEV. 1642.84
INVERT ELEV. . . . 1643.52
RISER (48 IN) 4.00 FT
15 S 1643.52
15 W 1643.62
15 E 1643.74

MH NO. . . . MH2 54 IN
STA. 125+70.12~30.2' Lt
RIM ELEV. 1648.12
BASE ELEV. 1642.02
INVERT ELEV. . . . 1644.80
RISER (54 IN) 4.00 FT
15 E 1644.80

INLET NO. . . . 5A
TYPE. . . . INLET-TYPE 1
GRATE STYLE. . . . D
STA. 132+73.07~31.1' Lt
GRATE ELEV. . . . 1648.06
BASE ELEV. . . . 1642.86
INVERT ELEV. . . . 1643.10
'H' DIST. 4.20 FT
15 E 1643.10

INLET NO. . . . 7A
TYPE. . . . INLET-TYPE 1
GRATE STYLE. . . . D
STA. 137+58.88~31.5' Lt
GRATE ELEV. . . . 1647.78
BASE ELEV. . . . 1642.78
INVERT ELEV. . . . 1644.21
'H' DIST. 4.00 FT
15 W 1644.21
15 E 1644.31

INLET NO. . . . 3B
TYPE. . . . INLET-TYPE 1
GRATE STYLE. . . . D
STA. 129+49.92~30.5' Lt
GRATE ELEV. . . . 1647.87
BASE ELEV. . . . 1642.87
INVERT ELEV. . . . 1643.33
'H' DIST. 4.00 FT
15 W 1643.33

INLET NO. . . . 5B
TYPE. . . . INLET SPCL-TYPE 2 48IN
GRATE STYLE. . . . D
STA. 132+92.24~23.0' Lt
GRATE ELEV. . . . 1648.14
BASE ELEV. . . . 1642.54
INVERT ELEV. . . . 1642.79
'H' DIST. 4.40 FT
15 S 1642.79
15 E 1642.89
15 W 1642.89

INLET NO. . . . 7B
TYPE. . . . INLET-TYPE 1
GRATE STYLE. . . . D
STA. 138+40.14~31.0' Lt
GRATE ELEV. . . . 1648.15
BASE ELEV. . . . 1643.15
INVERT ELEV. . . . 1644.93
'H' DIST. 4.00 FT
15 W 1644.93

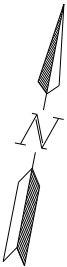
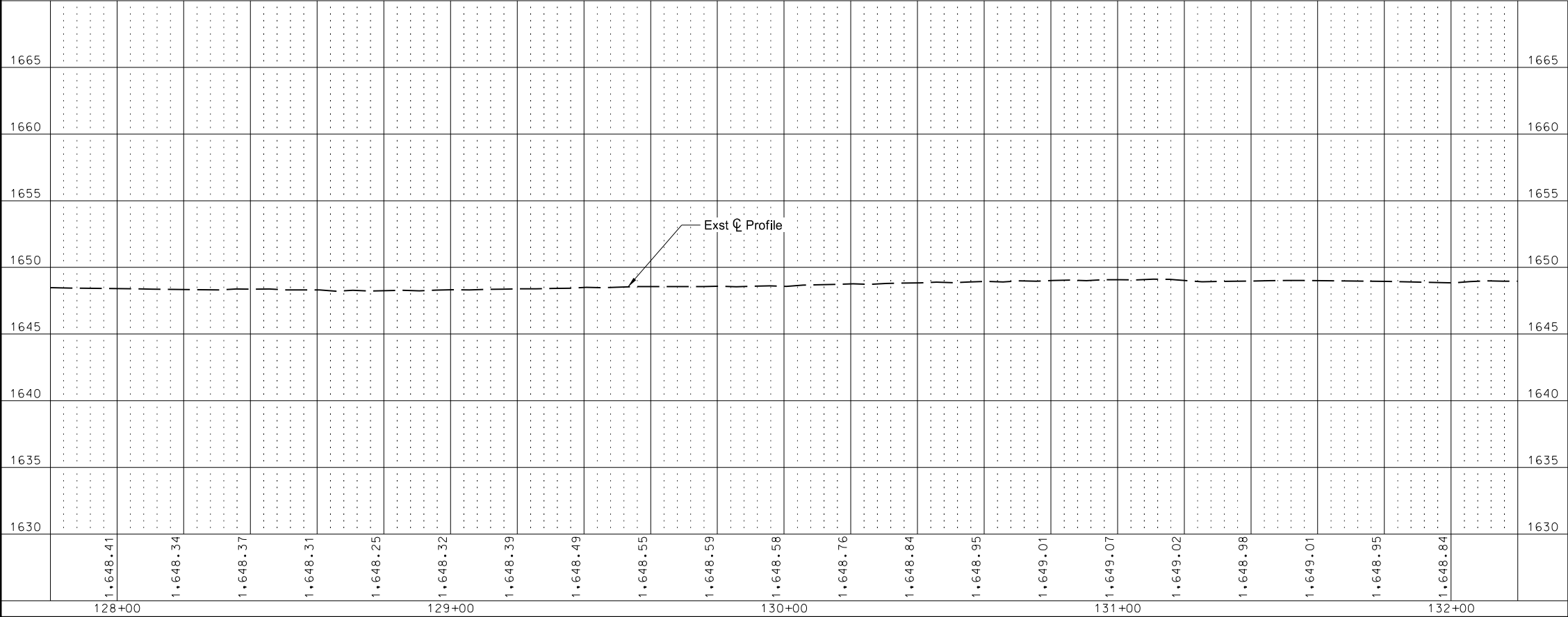
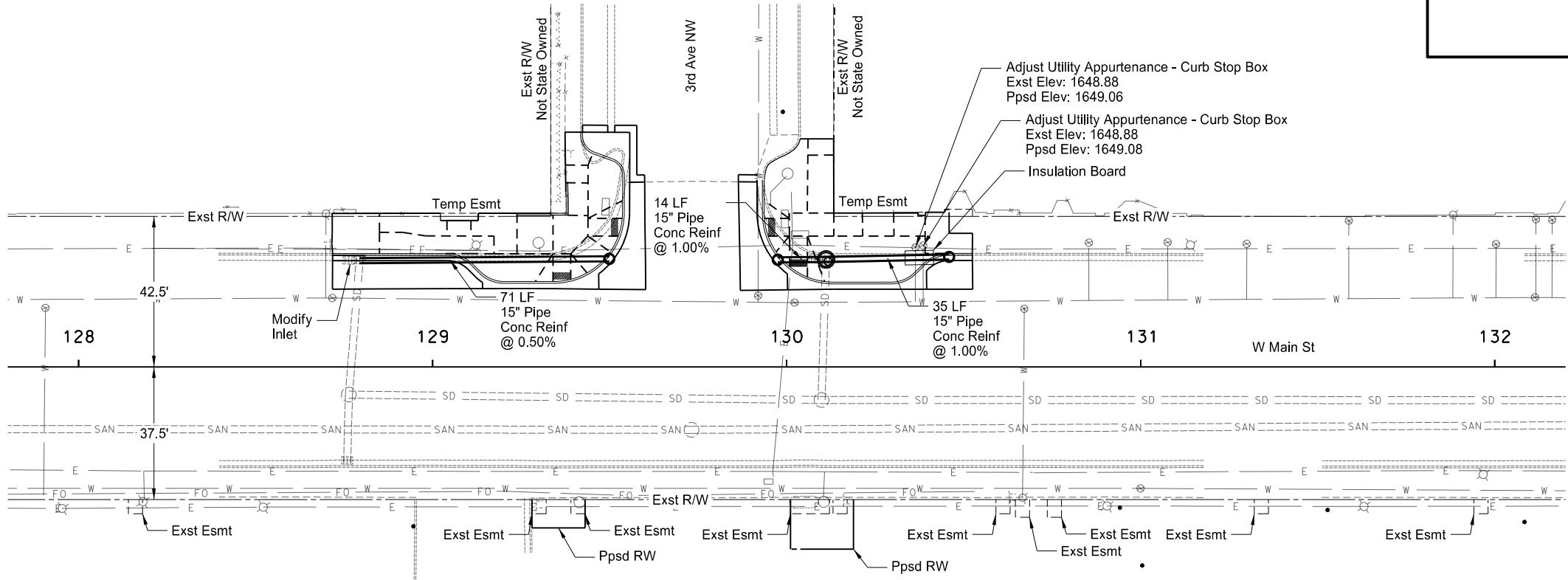
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Main St
Inlet & Manhole Summary

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	55	2

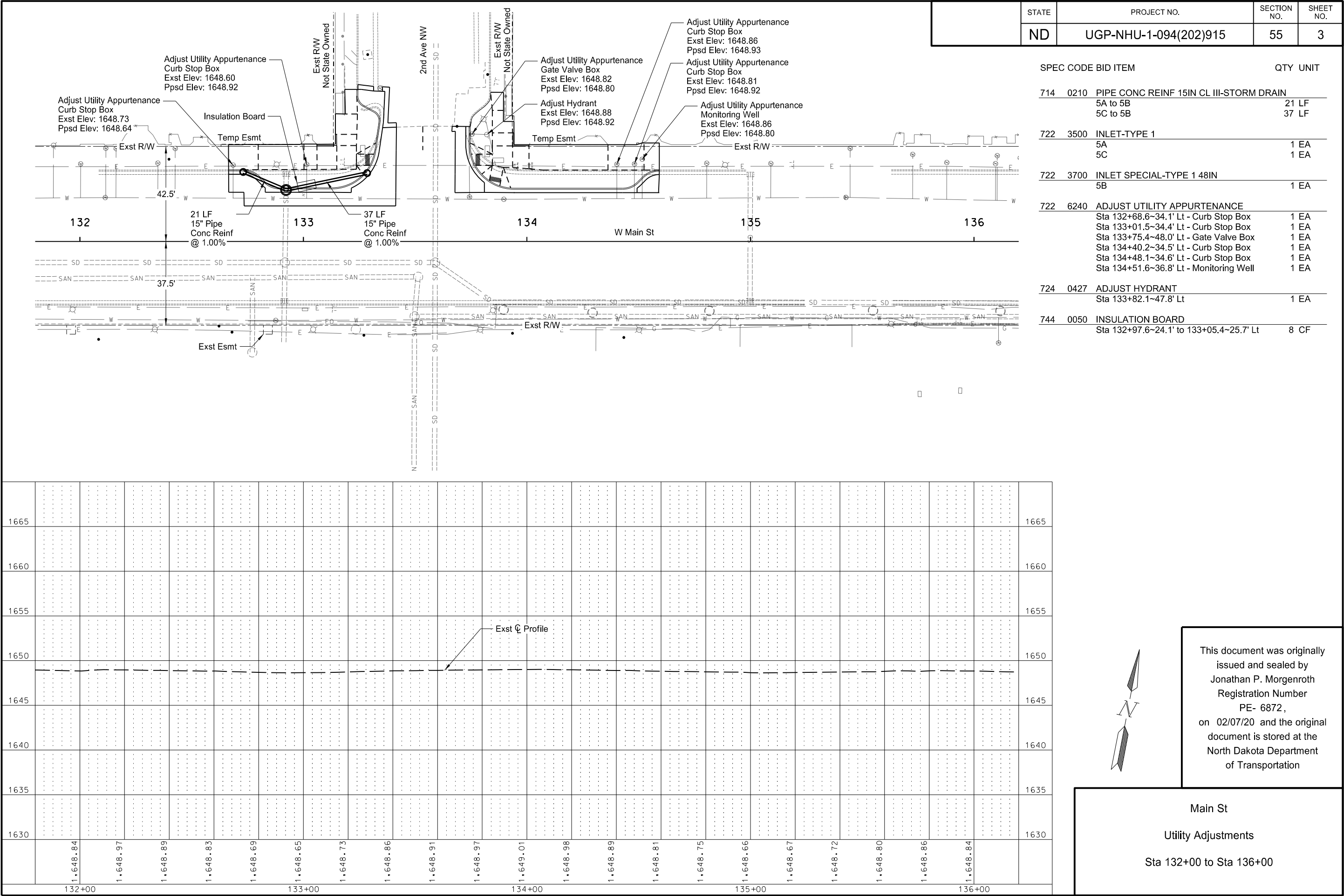
SPEC CODE BID ITEM QTY UNIT

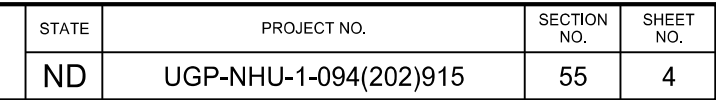
714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN	
		3B to EX3A	71 LF
		4A to MH4	14 LF
		4B to MH4	35 LF
722	0100	MANHOLE 48IN MH4	1 EA
722	1100	MANHOLE RISER 48IN MH4	5.2 LF
722	3495	MODIFY INLET EX3A	1 EA
722	3500	INLET-TYPE 1	
		3B	1 EA
		4A	1 EA
		4B	1 EA
722	6240	ADJUST UTILITY APPURTENANCE	
		Sta 130+36.4~33.7' Lt - Curb Stop Box	1 EA
		Sta 130+38.6~34.2' Lt - Curb Stop Box	1 EA
744	0050	INSULATION BOARD	
		Sta 130+33.5~30.8' to 130+41.5~31.0' Lt	8 CF

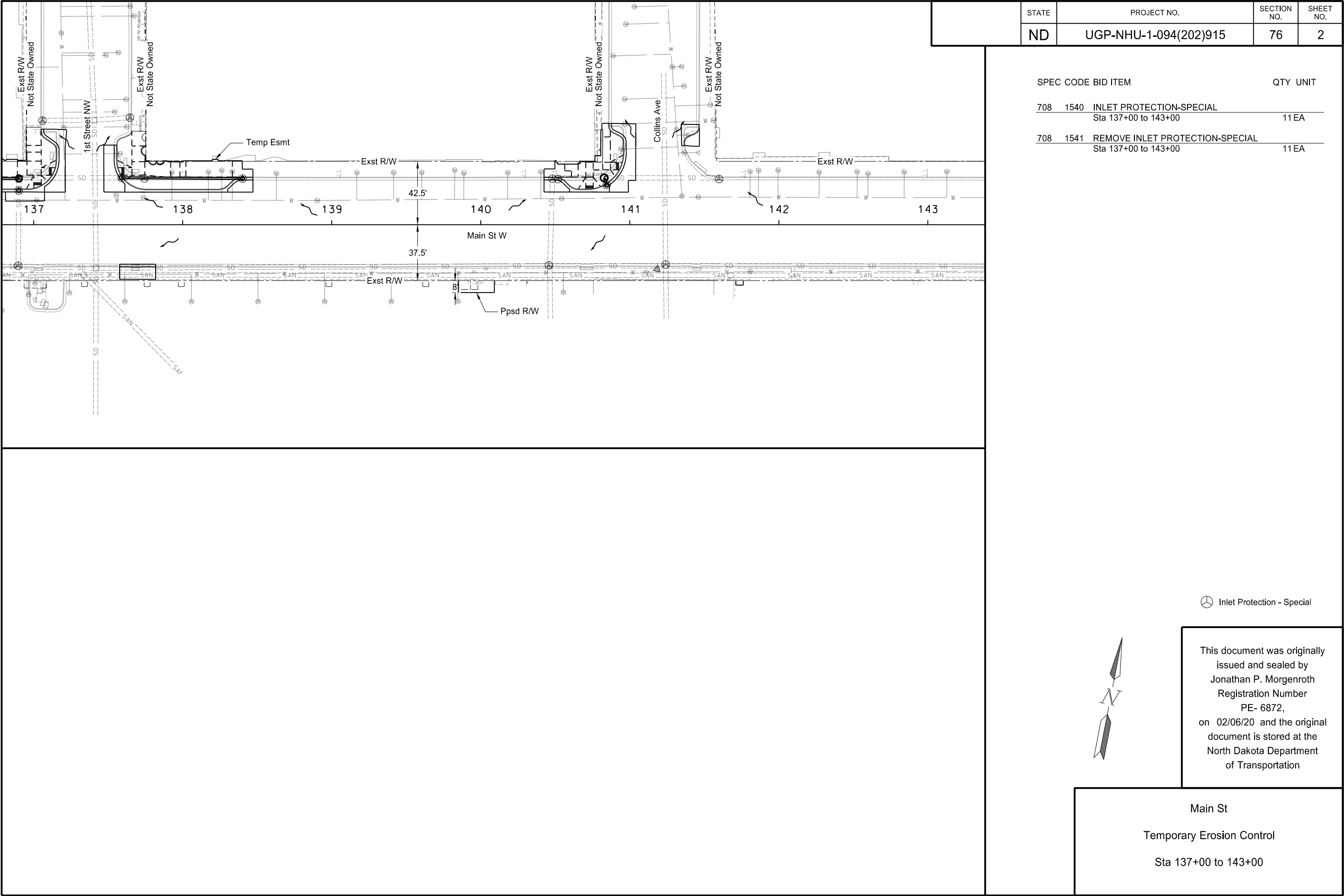


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Main St
Utility Adjustments
Sta 128+00 to Sta 132+00







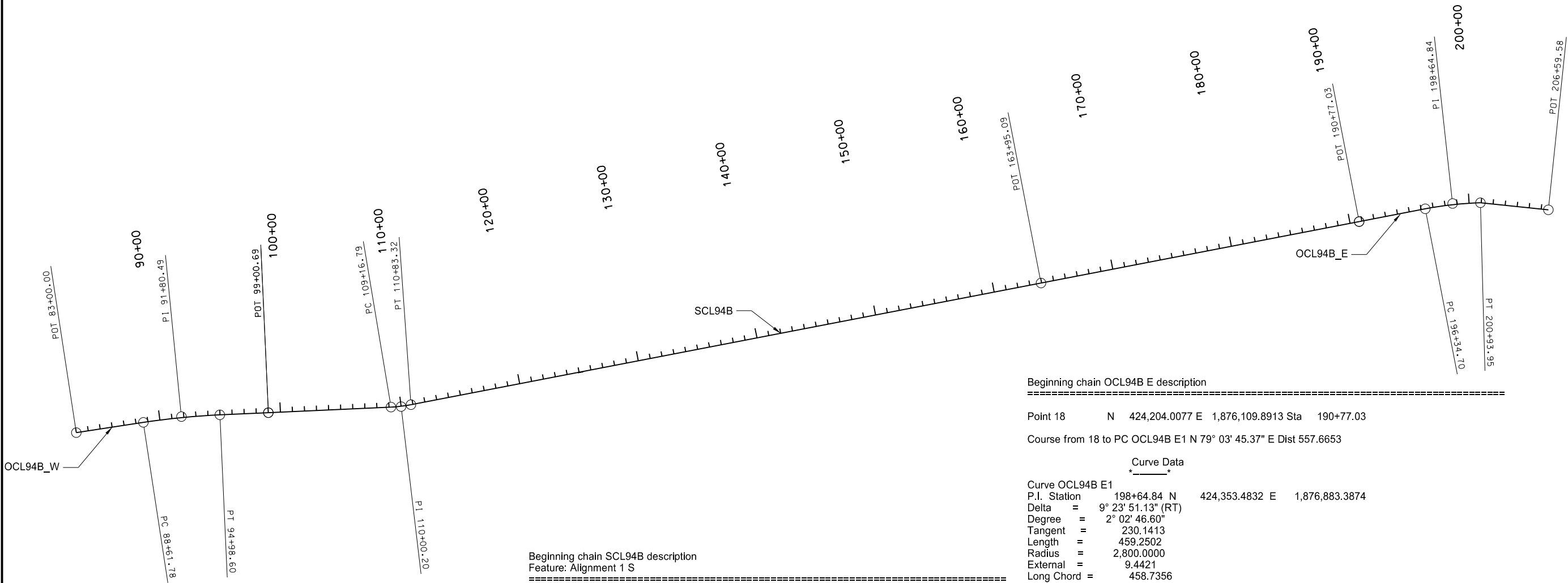
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	76	2

SPEC CODE	BID ITEM	QTY	UNIT
708 1540	INLET PROTECTION-SPECIAL Sta 137+00 to 143+00	11	EA
708 1541	REMOVE INLET PROTECTION-SPECIAL Sta 137+00 to 143+00	11	EA

⊗ Inlet Protection - Special

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Main St
Temporary Erosion Control
Sta 137+00 to 143+00



Beginning chain OCL94B W description

Point 15 N 422,455.4942 E 1,865,490.6907 Sta 83+00.00

Course from 15 to PC OCL94B W1 N 81° 18' 28.02" E Dist 561.7781

Curve Data
Curve OCL94B W1
P.I. Station 91+80.49 N 422,588.5594 E 1,866,361.0663
Delta = 6° 04' 52.35" (RT)
Degree = 0° 57' 17.75"
Tangent = 318.7105
Length = 636.8225
Radius = 6,000.0000
External = 8.4587
Long Chord = 636.5236
Mid. Ord. = 8.4468
P.C. Station 88+61.78 N 422,540.3938 E 1,866,046.0164
P.T. Station 94+98.60 N 422,603.0782 E 1,866,679.4460
C.C. N 416,609.3072 E 1,866,952.7755
Back = N 81° 18' 28.02" E
Ahead = N 87° 23' 20.37" E
Chord Bear = N 84° 20' 54.20" E

Course from PT OCL94B W1 to 16 N 87° 23' 20.37" E Dist 402.0894

Point 16 N 422,621.3954 E 1,867,081.1179 Sta 99+00.69

Ending chain OCL94B W description

Beginning chain SCL94B description
Feature: Alignment 1 S

Point 10 N 422,621.3954 E 1,867,081.1179 Sta 99+00.69

Course from 10 to PC SCL94B 3 N 87° 23' 20.37" E Dist 1,016.1001

Curve Data
Curve SCL94B 3
P.I. Station 110+00.20 N 422,671.4835 E 1,868,179.4865
Delta = 8° 19' 35.00" (LT)
Degree = 5° 00' 00.17"
Tangent = 83.4100
Length = 166.5263
Radius = 1,145.9050
External = 3.0317
Long Chord = 166.3798
Mid. Ord. = 3.0237
P.C. Station 109+16.79 N 422,667.6838 E 1,868,096.1631
P.T. Station 110+83.32 N 422,687.3094 E 1,868,261.3813
C.C. N 423,812.3991 E 1,868,043.9615
Back = N 87° 23' 20.37" E
Ahead = N 79° 03' 45.37" E
Chord Bear = N 83° 13' 32.87" E

Course from PT SCL94B 3 to 11 N 79° 03' 45.37" E Dist 5,311.7749

Point 11 N 423,695.1462 E 1,873,476.6683 Sta 163+95.09

Course from 11 to 12 N 79° 03' 45.37" E Dist 2,681.9402

Point 12 N 424,204.0078 E 1,876,109.8913 Sta 190+77.03

Ending chain SCL94B description

Beginning chain OCL94B E description

Point 18 N 424,204.0077 E 1,876,109.8913 Sta 190+77.03

Course from 18 to PC OCL94B E1 N 79° 03' 45.37" E Dist 557.6653

Curve Data
Curve OCL94B E1
P.I. Station 198+64.84 N 424,353.4832 E 1,876,883.3874
Delta = 9° 23' 51.13" (RT)
Degree = 2° 02' 46.60"
Tangent = 230.1413
Length = 459.2502
Radius = 2,800.0000
External = 9.4421
Long Chord = 458.7356
Mid. Ord. = 9.4104
P.C. Station 196+34.70 N 424,309.8171 E 1,876,657.4266
P.T. Station 200+93.95 N 424,359.6677 E 1,877,113.4456
C.C. N 421,560.6788 E 1,877,188.6883
Back = N 79° 03' 45.37" E
Ahead = N 88° 27' 36.50" E
Chord Bear = N 83° 45' 40.93" E

Course from PT OCL94B E1 to 19 S 84° 03' 59.11" E Dist 565.6367

Point 19 N 424,301.1947 E 1,877,676.0518 Sta 206+59.58

Ending chain OCL94B E description

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Main St

I-94B / Main St

Station and Offset Based on SCL94B, All PT's and PC's are to back of curb

Point	Northing	Easting	Station	Offset	Description
9242	422979.31	1869656.01	125+08.01	-22.09	BOC
9500	422989.17	1869654.14	125+08.05	-32.12	BOC
9501	422990.38	1869660.37	125+14.40	-32.12	PC
9502	422988.77	1869668.25	125+21.83	-29.05	PT
9503	422987.01	1869670.85	125+24.04	-26.83	PC
9504	422985.55	1869677.96	125+30.75	-24.05	PT
9505	422994.88	1869676.17	125+30.76	-33.55	RAD PT
9507	422984.33	1869671.60	125+24.27	-24.06	EOP
9508	422982.37	1869671.98	125+24.27	-22.06	EOP
9510	422980.07	1869662.37	125+14.40	-21.62	RAD PT
9511	422979.24	1869687.83	125+39.24	-15.98	EOP
9512	422985.19	1869686.66	125+39.23	-22.04	EOP

Station and Offset Based on SCL94B, All PT's and PC's are to back of curb

Point	Northing	Easting	Station	Offset	Description
9513	422986.85	1869726.92	125+79.07	-16.04	EOP
9514	422992.78	1869725.71	125+79.00	-22.09	EOP
9516	422989.46	1869698.25	125+51.41	-24.03	PC
9517	423008.61	1869694.56	125+51.43	-43.53	RAD PT
9518	423012.31	1869713.71	125+70.93	-43.53	PT
9519	423021.23	1869714.02	125+72.93	-52.24	CONC CRNR
9520	423028.10	1869749.55	126+09.11	-52.24	CONC CRNR
9523	423031.79	1869748.73	126+09.01	-56.02	ASP CRNR
9524	423019.95	1869753.16	126+11.11	-43.55	PC
9525	423023.65	1869772.31	126+30.61	-43.55	RAD PT

125

Station and Offset Based on SCL94B, All PT's and PC's are to back of curb

Point	Northing	Easting	Station	Offset	Description
9800	422990.922	1869689.48	125+43.08	-27.136	TREE GRT
9801	422995.83	1869688.53	125+43.08	-32.14	TREE GRT
9802	422991.87	1869694.39	125+48.08	-27.13	TREE GRT
9803	422996.78	1869693.44	125+48.08	-32.13	TREE GRT
9804	423014.08	1869701.95	125+59.71	-47.51	TREE GRT
9805	423018.99	1869700.99	125+59.71	-52.51	TREE GRT
9806	423019.94	1869705.88	125+64.69	-52.51	TREE GRT
9807	423015.03	1869706.83	125+64.69	-47.51	TREE GRT
9808	423027.84	1869759.51	126+18.84	-50.09	TREE GRT
9809	423028.75	1869764.42	126+23.84	-50.0565	TREE GRT
9810	423022.92	1869760.42	126+18.80	-45.09	TREE GRT
9811	423023.83	1869765.34	126+23.80	-45.06	TREE GRT
9812	423008.01	1869777.97	126+33.21	-27.12	TREE GRT
9813	423012.92	1869777.03	126+33.21	-32.12	TREE GRT
9814	423008.95	1869782.88	126+38.21	-27.12	TREE GRT
9815	423013.87	1869781.94	126+38.21	-32.12	TREE GRT
9816	423011.18	1869800.02	126+55.45	-26.05	ART PLTFM
9817	423017.14	1869798.87	126+55.45	-32.12	ART PLTFM
9818	423012.127	1869804.93	126+60.45	-26.0505	ART PLTFM
9819	423018.09	1869803.78	126+60.45	-32.12	ART PLTFM

126

127

Main St

Station and Offset Based on SCL94B, All PT's and PC's are to back of curb

Point	Northing	Easting	Station	Offset	Description
9526	423004.50	1869776.01	126+30.61	-24.05	PT
9527	423004.72	1869762.10	126+17.00	-26.91	EOP
9528	423000.04	1869763.02	126+17.02	-22.14	EOP
9529	423013.18	1869831.45	126+86.69	-22.05	EOP
9530	423015.14	1869831.07	126+86.69	-24.05	EOP
9531	423014.63	1869841.22	126+96.56	-21.62	RAD PT
9532	423016.25	1869847.46	127+02.99	-22.03	EOP
9533	423026.21	1869845.60	127+03.06	-32.16	BOC

Station and Offset Based on SCL94B, All PT's and PC's are to back of curb

Point	Northing	Easting	Station	Offset	Description
9534	423024.93	1869839.17	126+96.50	-32.12	PC
9535	423020.51	1869832.53	126+89.14	-29.04	PT
9536	423017.92	1869830.77	126+86.93	-26.83	PC
9538	423013.91	1869824.71	126+80.21	-24.05	PT
9539	423023.24	1869822.90	126+80.21	-33.55	RAD PT
9540	422947.92	1869759.08	126+03.25	28.29	BOC
9541	422952.57	1869783.10	126+27.73	28.29	BOC
9542	422939.76	1869760.65	126+03.25	36.60	CONC CRNR

Station and Offset Based on SCL94B, All PT's and PC's are to back of curb

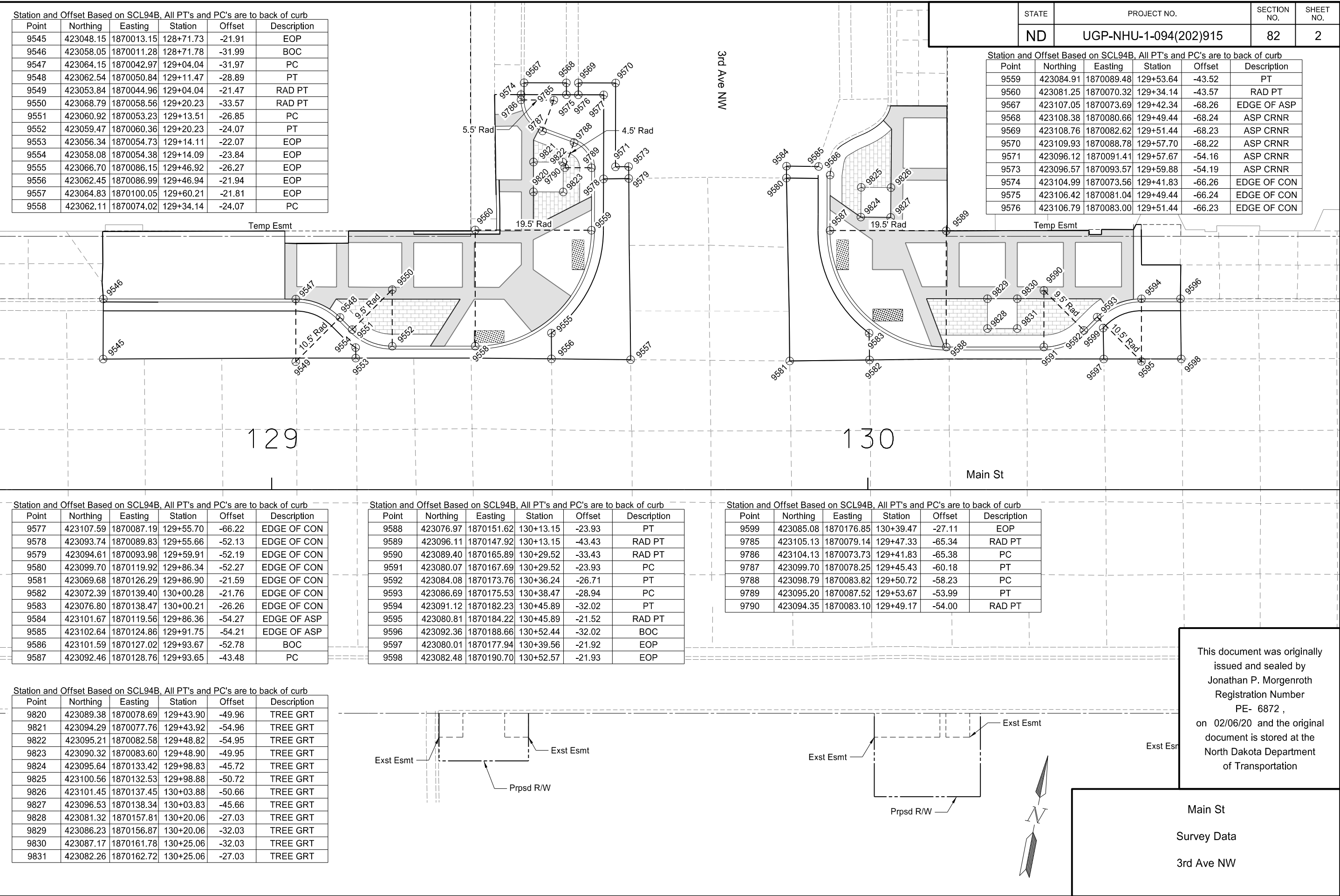
Point	Northing	Easting	Station	Offset	Description
9544	422944.40	1869784.68	126+27.73	36.61	CONC CRNR
9791	423030.63	1869696.35	125+57.36	-64.82	BOC
9792	423030.11	1869696.46	125+57.37	-64.29	PC
9793	423025.76	1869700.89	125+60.90	-59.18	PT
9794	423031.18	1869701.85	125+62.87	-64.31	RAD PT
9795	423024.43	1869708.43	125+68.04	-56.44	PC
9796	423020.85	1869712.06	125+70.93	-52.24	PT
9797	423020.00	1869707.64	125+66.43	-52.24	RAD PT

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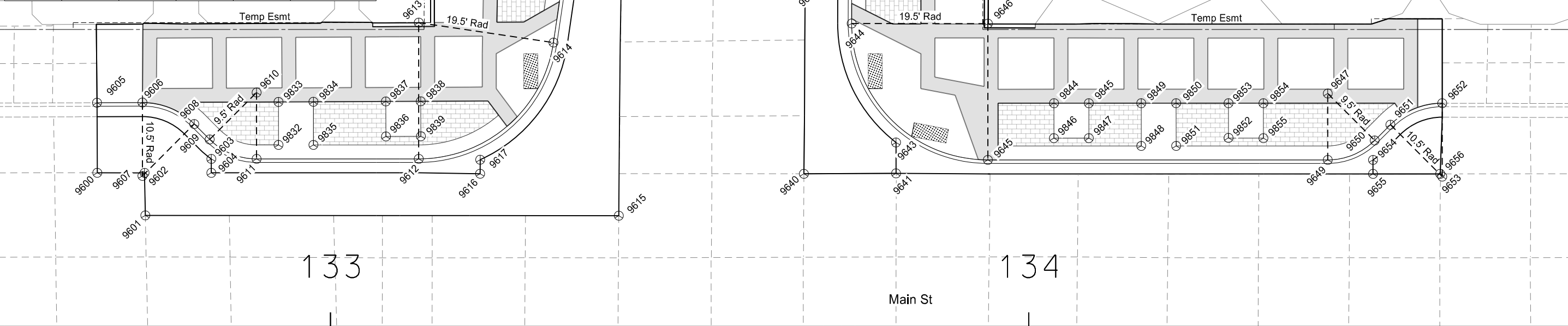
Main St

Survey Data

4th Ave NW



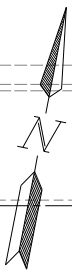
Station and Offset Based on SCL94B, All PT's and PC's are to back of curb					
Point	Northing	Easting	Station	Offset	Description
9600	423123.15	1870400.85	132+66.61	-21.99	EOP
9601	423118.47	1870408.76	132+73.49	-15.90	EOP
9602	423124.43	1870407.49	132+73.38	-21.98	EOP
9603	423128.21	1870416.50	132+82.94	-23.98	EOP
9604	423126.24	1870416.88	132+82.94	-21.98	EOP
9605	423132.99	1870398.90	132+66.57	-32.02	BOC
9606	423134.25	1870405.28	132+73.07	-32.05	PC
9607	423123.94	1870407.27	132+73.07	-21.55	RAD PT
9608	423132.64	1870413.15	132+80.50	-28.97	PT
9609	423130.89	1870415.74	132+82.70	-26.77	PC
9610	423138.76	1870421.06	132+89.42	-33.48	RAD PT
9611	423129.44	1870422.86	132+89.42	-23.98	PT
9612	423133.84	1870445.66	133+12.64	-23.98	PC
9613	423152.99	1870441.96	133+12.64	-43.48	RAD PT
9614	423153.85	1870461.44	133+31.93	-40.64	PT
9615	423131.29	1870475.33	133+41.29	-15.85	EOP
9616	423133.42	1870454.69	133+21.43	-21.86	EDGE OF CONC



Station and Offset Based on SCL94B, All PT's and PC's are to back of curb					
Point	Northing	Easting	Station	Offset	Description
9637	423171.09	1870493.38	133+66.57	-51.50	EOP
9638	423168.76	1870493.68	133+66.41	-49.15	EOP
9639	423169.18	1870495.21	133+67.99	-49.28	EOP
9640	423142.20	1870500.22	133+67.79	-21.84	EOP
9641	423144.77	1870513.16	133+80.99	-21.91	EOP
9643	423149.11	1870512.32	133+80.98	-26.33	EOP
9644	423164.63	1870502.85	133+74.63	-43.36	PC
9645	423149.16	1870525.70	133+94.13	-23.84	PT
9646	423168.31	1870522.00	133+94.13	-43.34	RAD PT
9647	423167.72	1870571.68	134+42.80	-33.34	RAD PT
9649	423158.39	1870573.48	134+42.80	-23.84	PC
9650	423162.40	1870579.55	134+49.52	-26.62	PT

Station and Offset Based on SCL94B, All PT's and PC's are to back of curb					
Point	Northing	Easting	Station	Offset	Description
9651	423165.04	1870581.34	134+51.77	-28.87	PC
9652	423169.47	1870588.04	134+59.20	-31.95	PT
9653	423159.16	1870590.03	134+59.20	-21.45	RAD PT
9654	423159.62	1870579.85	134+49.28	-23.84	EOP
9655	423157.66	1870580.23	134+49.28	-21.84	EOP
9656	423159.49	1870589.67	134+58.90	-21.84	EOP
9779	423177.47	1870454.32	133+29.42	-65.17	RAD PT
9780	423176.43	1870448.92	133+23.92	-65.18	PC
9781	423172.21	1870452.69	133+26.83	-60.33	PT
9782	423170.66	1870457.72	133+31.46	-57.84	PC
9783	423166.56	1870460.88	133+33.79	-53.22	PT
9784	423166.36	1870456.38	133+29.34	-53.88	RAD PT

Station and Offset Based on SCL94B, All PT's and PC's are to back of curb					
Point	Northing	Easting	Station	Offset	Description
9832	423132.00	1870425.56	132+92.56	-25.98	ART PLTFM
9833	423138.03	1870424.39	132+92.56	-32.13	ART PLTFM
9834	423139.00	1870429.30	132+97.56	-32.16	ART PLTFM
9835	423132.94	1870430.47	132+97.56	-25.98	ART PLTFM
9836	423136.11	1870440.44	133+07.95	-27.20	TREE GRT
9837	423141.02	1870439.47	133+07.93	-32.20	TREE GRT
9838	423141.99	1870444.38	133+12.93	-32.22	TREE GRT
9839	423137.08	1870445.35	133+12.95	-27.22	TREE GRT
9840	423159.30	1870452.21	133+23.90	-47.74	TREE GRT
9841	423164.23	1870451.35	133+23.99	-52.74	TREE GRT
9842	423165.09	1870456.28	133+28.99	-52.65	TREE GRT
9843	423160.16	1870457.14	133+28.90	-47.65	TREE GRT
9844	423158.92	1870533.46	134+03.61	-31.95	TREE GRT
9845	423159.87	1870538.36	134+08.59	-31.95	TREE GRT
9846	423154.01	1870534.40	134+03.59	-26.95	TREE GRT
9847	423154.96	1870539.31	134+08.59	-26.95	TREE GRT
9848	423155.29	1870546.88	134+16.09	-25.84	ART PLTFM
9849	423161.29	1870545.72	134+16.09	-31.95	ART PLTFM
9850	423162.24	1870550.63	134+21.09	-31.95	ART PLTFM
9851	423156.24	1870551.79	134+21.09	-25.84	ART PLTFM
9852	423158.79	1870558.94	134+28.59	-26.99	TREE GRT
9853	423163.66	1870557.99	134+28.59	-31.95	TREE GRT
9854	423164.61	1870562.90	134+33.59	-31.95	TREE GRT
9855	423159.70	1870563.85	134+33.59	-26.95	TREE GRT



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Main St
Survey Data
2nd Ave NW

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	82	5

Station and Offset Based on SCL94B, All PT's and PC's are to back of curb

Point	Northing	Easting	Station	Offset	Description
9726	423280.97	1871218.32	140+99.18	-21.84	EDGE OF CONC
9727	423278.55	1871205.77	140+86.40	-21.84	EDGE OF CONC
9728	423283.24	1871204.76	140+86.30	-26.64	EDGE OF CONC
9749	423327.44	1871254.36	141+43.38	-60.63	RAD PT
9750	423332.40	1871244.36	141+34.51	-67.40	EOC
9751	423320.17	1871259.19	141+46.74	-52.57	EOC
9752	423334.52	1871256.44	141+46.77	-67.19	BOC
9753	423318.78	1871249.45	141+36.92	-53.05	BOC
9754	423321.42	1871253.42	141+41.32	-54.89	RAD PT
9755	423332.02	1871251.32	141+41.26	-65.70	RAD PT
9756	423320.51	1871249.01	141+36.82	-54.83	PC
9757	423325.16	1871250.93	141+39.58	-59.04	PT
9758	423333.05	1871256.72	141+46.76	-65.69	PT
9759	423326.92	1871214.43	141+04.09	-67.69	EOP

Station and Offset Based on SCL94B, All PT's and PC's are to back of curb

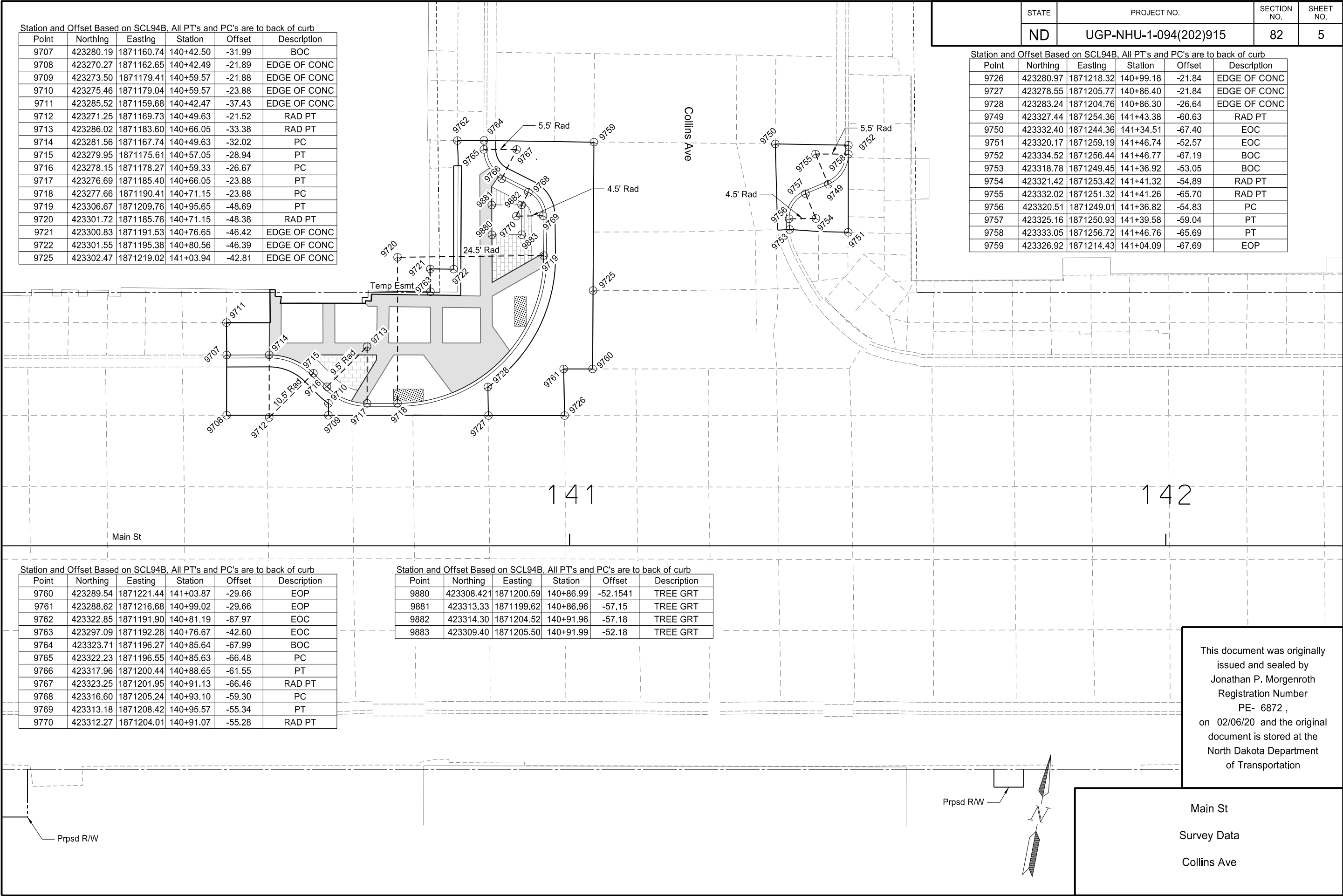
Point	Northing	Easting	Station	Offset	Description
9707	423280.19	1871160.74	140+42.50	-31.99	BOC
9708	423270.27	1871162.65	140+42.49	-21.89	EDGE OF CONC
9709	423273.50	1871179.41	140+59.57	-21.88	EDGE OF CONC
9710	423275.46	1871179.04	140+59.57	-23.88	EDGE OF CONC
9711	423285.52	1871159.68	140+42.47	-37.43	EDGE OF CONC
9712	423271.25	1871169.73	140+49.63	-21.52	RAD PT
9713	423286.02	1871183.60	140+66.05	-33.38	RAD PT
9714	423281.56	1871167.74	140+49.63	-32.02	PC
9715	423279.95	1871175.61	140+57.05	-28.94	PT
9716	423278.15	1871178.27	140+59.33	-26.67	PC
9717	423276.69	1871185.40	140+66.05	-23.88	PT
9718	423277.66	1871190.41	140+71.15	-23.88	PC
9719	423306.67	1871209.76	140+95.65	-48.69	PT
9720	423301.72	1871185.76	140+71.15	-48.38	RAD PT
9721	423300.83	1871191.53	140+76.65	-46.42	EDGE OF CONC
9722	423301.55	1871195.38	140+80.56	-46.39	EDGE OF CONC
9725	423302.47	1871219.02	141+03.94	-42.81	EDGE OF CONC

Station and Offset Based on SCL94B, All PT's and PC's are to back of curb

Point	Northing	Easting	Station	Offset	Description
9880	423308.421	1871200.59	140+86.99	-52.1541	TREE GRT
9881	423313.33	1871199.62	140+86.96	-57.15	TREE GRT
9882	423314.30	1871204.52	140+91.96	-57.18	TREE GRT
9883	423309.40	1871205.50	140+91.99	-52.18	TREE GRT

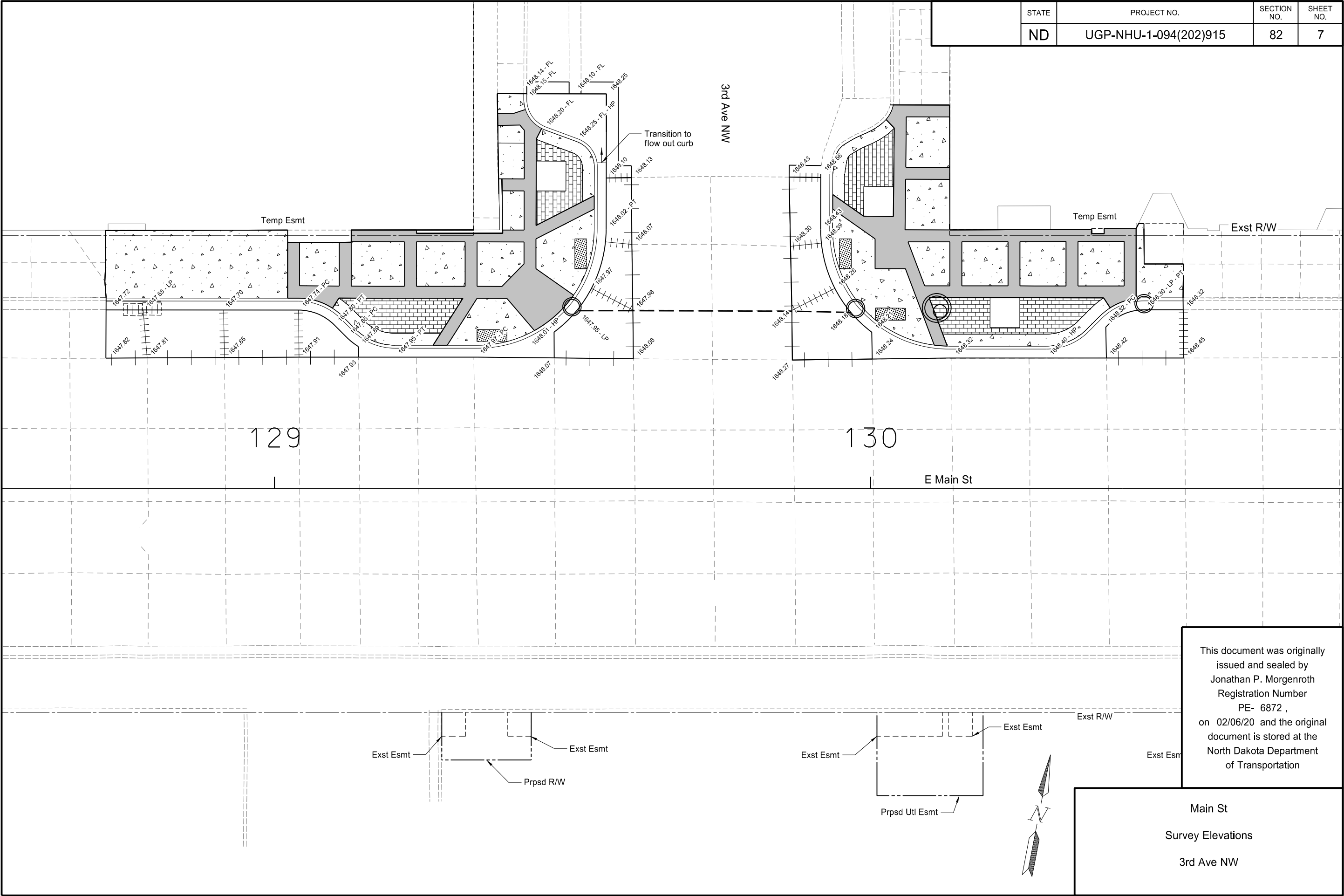
Station and Offset Based on SCL94B, All PT's and PC's are to back of curb

Point	Northing	Easting	Station	Offset	Description
9760	423289.54	1871221.44	141+03.87	-29.66	EOP
9761	423288.62	1871216.68	140+99.02	-29.66	EOP
9762	423322.85	1871191.90	140+81.19	-67.97	EOC
9763	423297.09	1871192.28	140+76.67	-42.60	EOC
9764	423323.71	1871196.27	140+85.64	-67.99	BOC
9765	423322.23	1871196.55	140+85.63	-66.48	PC
9766	423317.96	1871200.44	140+88.65	-61.55	PT
9767	423323.25	1871201.95	140+91.13	-66.46	RAD PT
9768	423316.60	1871205.24	140+93.10	-59.30	PC
9769	423313.18	1871208.42	140+95.57	-55.34	PT
9770	423312.27	1871204.01	140+91.07	-55.28	RAD PT



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Main St
Survey Data
Collins Ave

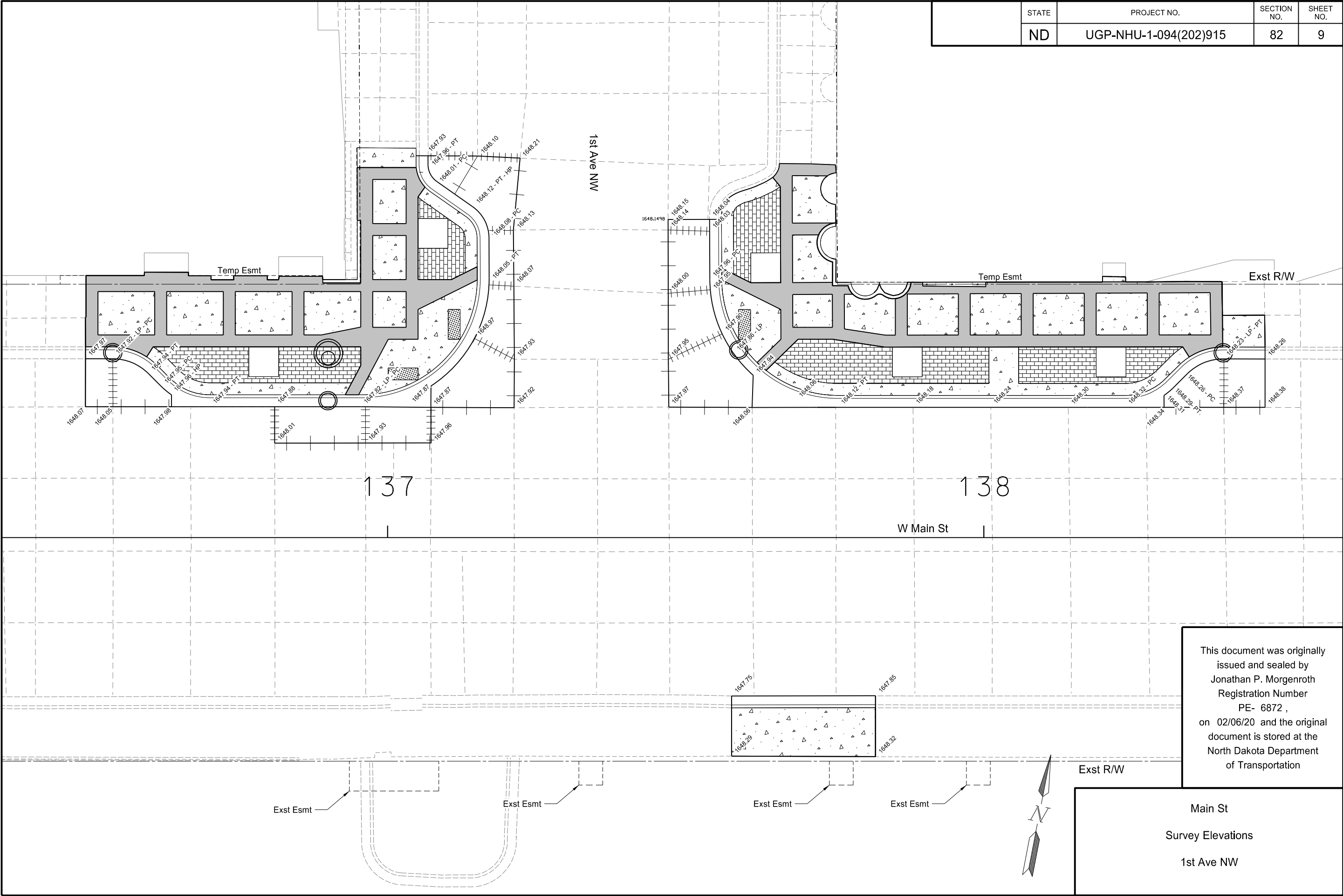


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ND	UGP-NHU-1-094(202)915	82	7

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Main St
Survey Elevations
3rd Ave NW

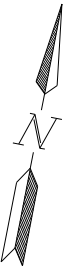
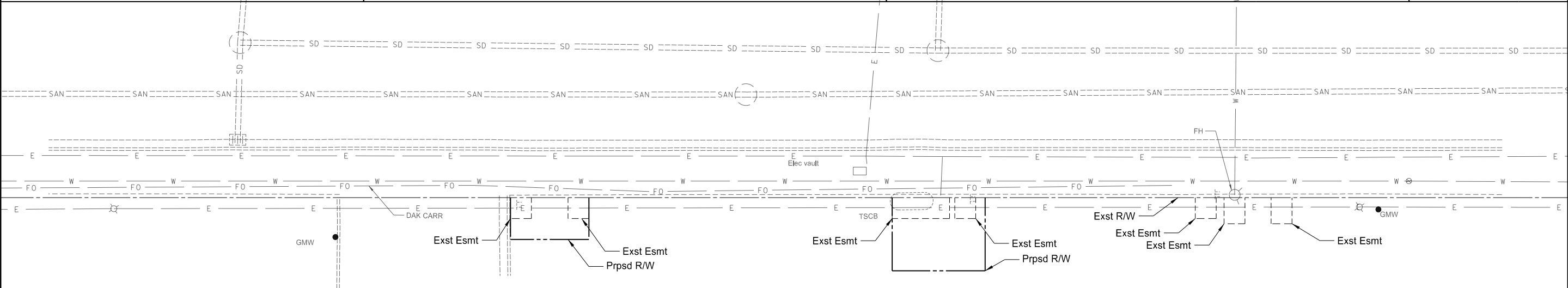
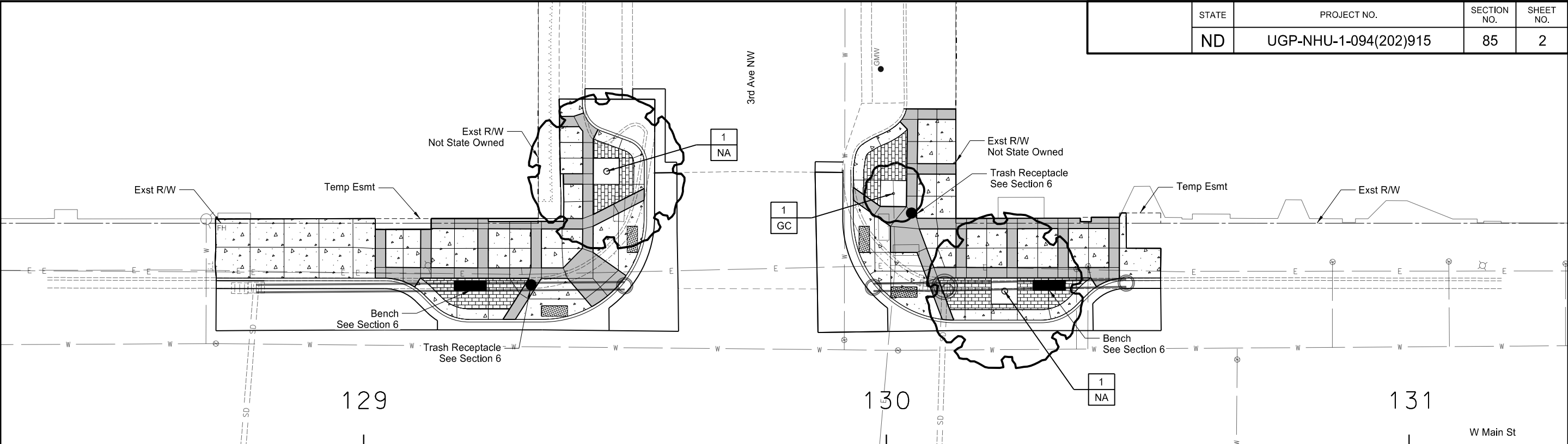
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	ND	UGP-NHU-1-094(202)915	82	9



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Main St
Survey Elevations
1st Ave NW

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	85	2



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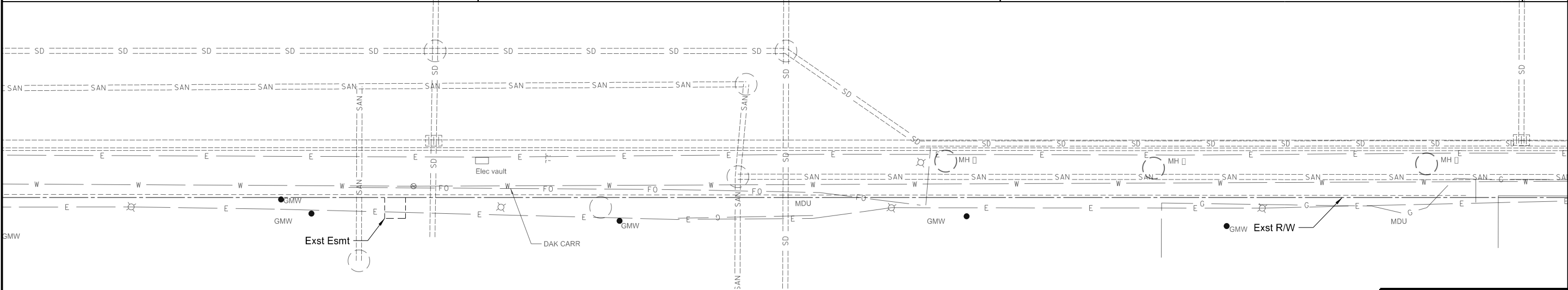
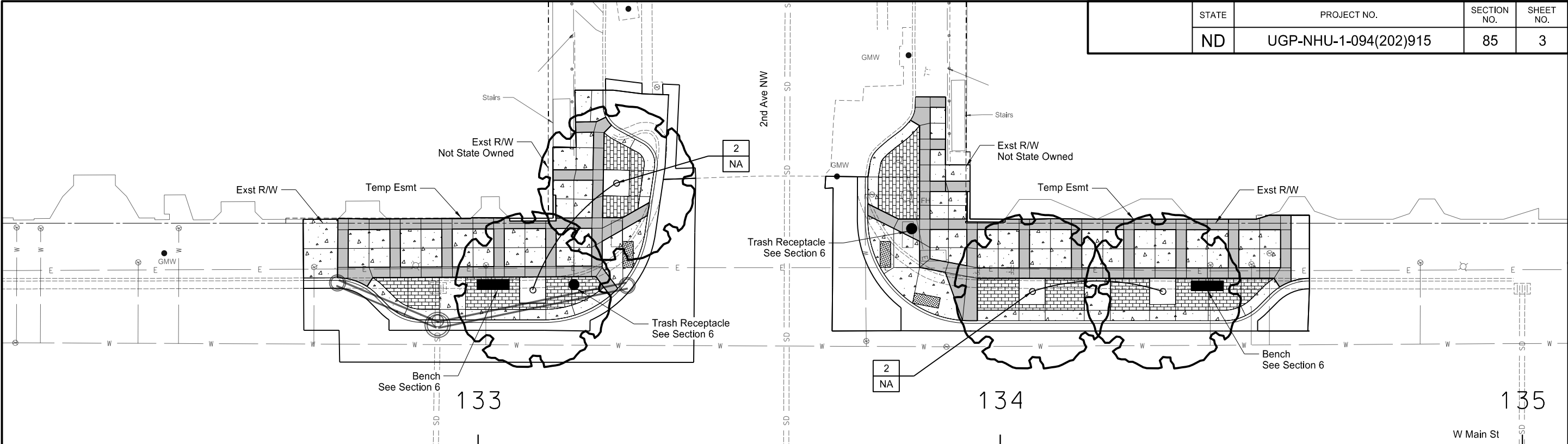
Tree symbols vary, for species, see Plant Schedule on Sheet 6 of Section 85
 See Detail 1 "Deciduous Tree Planting In Tree Grate Detail" on Sheet 6 of Section 85

1
AA

(1) Quantity
 (AA) Species, See Plant Schedule on Sheet 6

Main St
 Landscape Plan
 3rd Ave NW

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	85	3



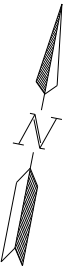
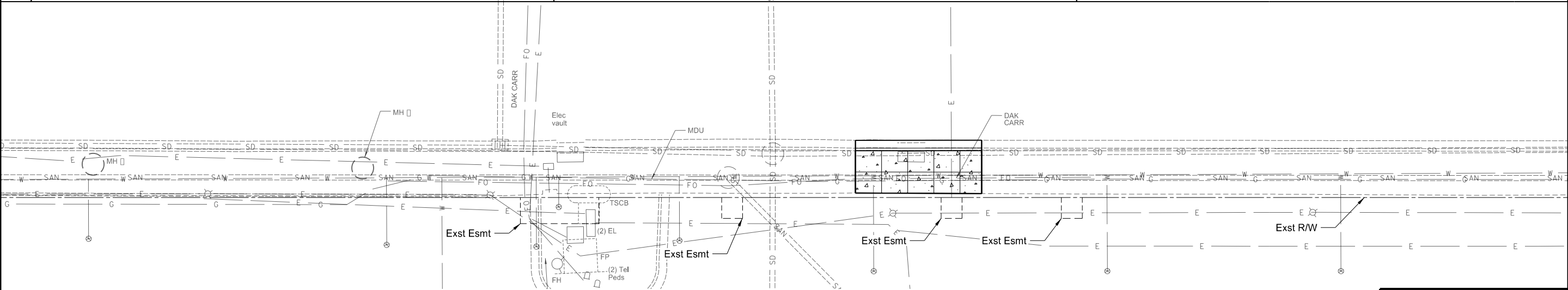
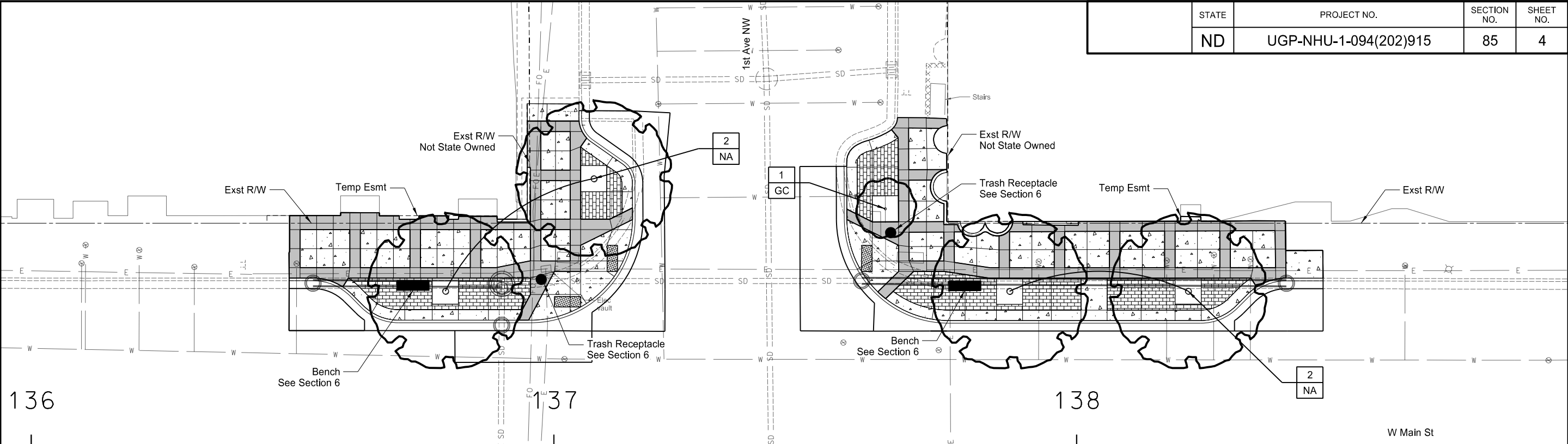
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Tree symbols vary, for species, see Plant Schedule on Sheet 6 of Section 85
See Detail 1 "Deciduous Tree Planting In Tree Grate Detail" on Sheet 6 of Section 85

1 (1) Quantity
AA (AA) Species, See Plant Schedule on Sheet 6

Main St
Landscape Plan
2nd Ave NW

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	85	4

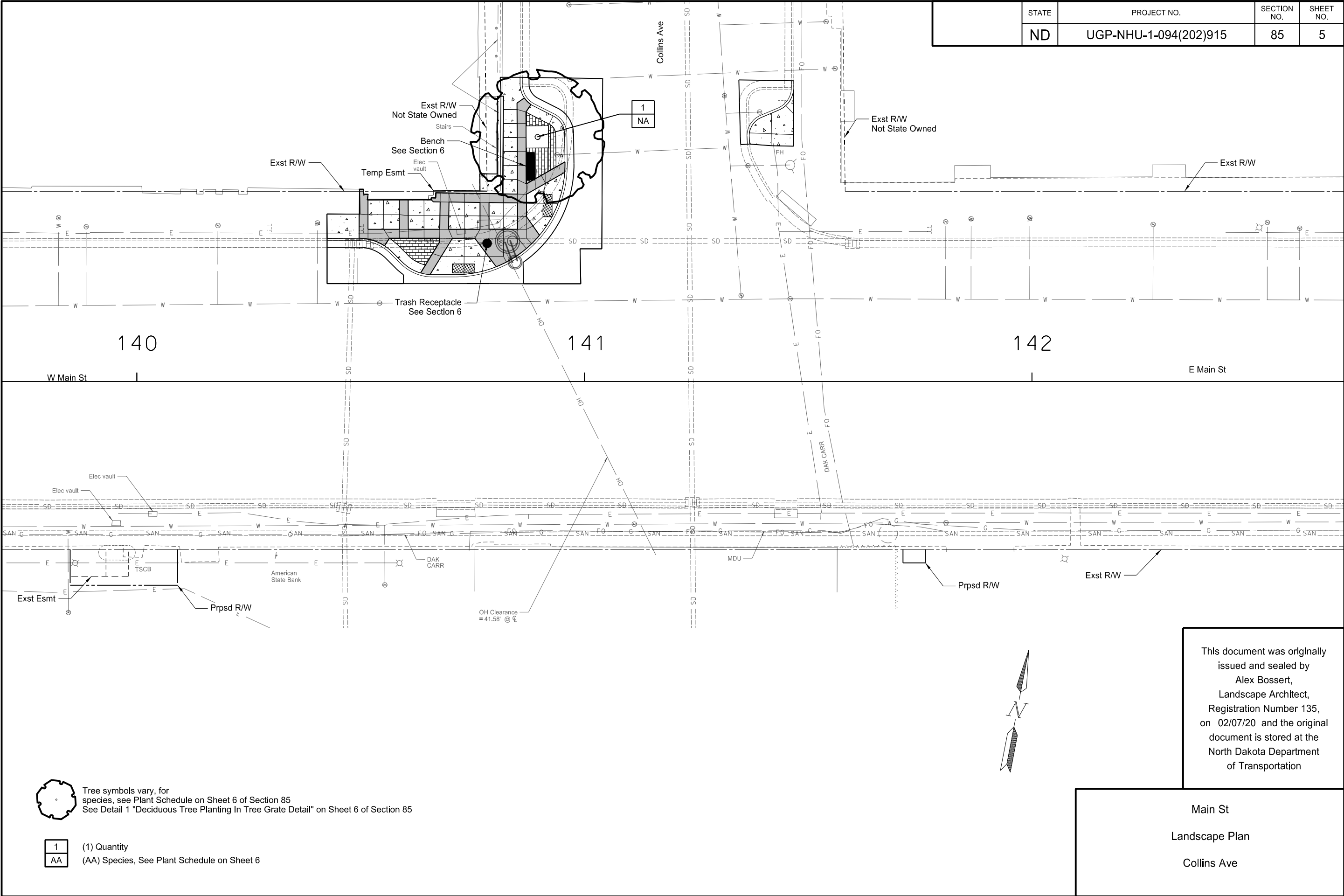


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Main St
 Landscape Plan
 1st Ave NW

- Tree symbols vary, for species, see Plant Schedule on Sheet 6 of Section 85
 See Detail 1 "Deciduous Tree Planting In Tree Grate Detail" on Sheet 6 of Section 85
- 1 (1) Quantity
 AA (AA) Species, See Plant Schedule on Sheet 6

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PLANT SCHEDULE						
SPEC	CODE	TREES	QTY	COMMON NAME	BOTANICAL NAME	TYPE SIZE
970	2150	NA	14	Northern Acclaim Honeylocust	Gleditsia triacanthos 'Harve'	CONT. or B&B 2" Cal.
970	2203	GC	3	Gladiator Crabapple	Malus x adstringens 'Durleo'	CONT. or B&B 1.5" Cal.

DECIDUOUS TREES: DO NOT HEAVILY PRUNE THE TREE AT PLANTING. PRUNE ONLY CROSSOVER LIMBS, CO-DOMINANT LEADERS, AND BROKEN OR DEAD BRANCHES. SOME INTERIOR TWIGS AND LATERAL BRANCHES MAY BE PRUNED; HOWEVER, DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN. PRUNE IN ACCORDANCE WITH ANSI A300 SPECIFICATIONS.

MARK THE NORTH SIDE OF THE TREE IN THE NURSERY, AND ROTATE TREE TO FACE NORTH AT THE SITE WHENEVER POSSIBLE

15 GALLON SUPPLEMENTAL WATER BAG

GFCI RECEPTACLE, SEE DETAILS ON SHEET 7 OF SECTION 85

HARDSCAPE, SEE PLAN

FINISH GRADE

BACKFILL ALL TREE PITS WITH PLANTING SOIL MIXTURE, SEE NOTES

SCARIFY THE SUBGRADE AND SIDES OF PLANTING PIT

TAMP SOIL AROUND ROOT BALL BASE FIRMLY WITH FOOT PRESSURE SO THAT ROOT BALL DOESN'T SHIFT

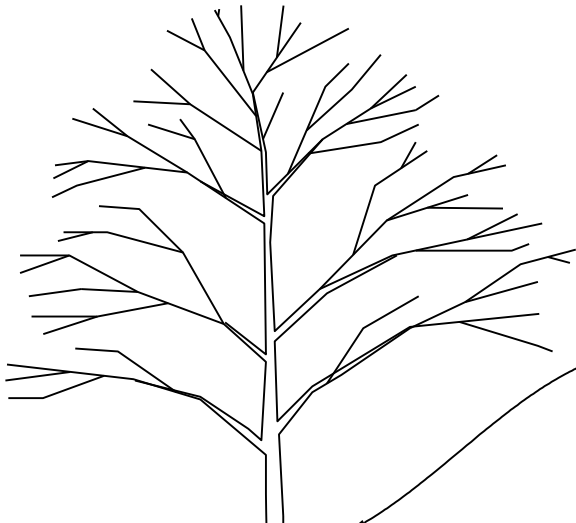
NOTES:

1. INSTALL TREE STAKES WITH ARBORTIE TREE TIE STRAPS FOR GLADIATOR CRABAPPLE TREES, AND INSTALL TREE GUARDS WITH ARBORTIE TREE TIE STRAPS FOR NORTHERN ACCLAIM HONEY LOCUST TREES.

1
85-6

DECIDUOUS TREE PLANTING IN TREE GRATE DETAIL

NO SCALE



TREE STAKES - 2 INCH DIAMETER UNTREATED LODGE POLE PINE
WHERE TREE GUARDS ARE TO BE INSTALLED, NO TREE STAKES ARE TO BE INSTALLED;
SECURE TREE TIE STRAPS TO TREE GUARD

ARBORTIE TREE TIE STRAP, TYPICAL; WRAP STRAP AROUND STAKE AND SECURE ENDS PER MFR'S INSTRUCTIONS

PLANT 1" HIGHER THAN SURROUNDING SOIL

TREE GRATE - SEE NOTES, INSTALL PER MANUFACTURER'S INSTRUCTIONS

3/4" PEA GRAVEL - FILL TO FLUSH WITH BOTTOM OF GRATE (3 INCH THICK MIN.)

4 OZ. NON-WOVEN GEOTEXTILE FABRIC

FERTILIZER PLANTING TABLETS, SEE NOTES

FOR BALLED AND BURLAPPED PLANTS, REMOVE TWINE, BURLAP, AND WIRE FROM TOP THIRD OF ROOTBALL; CUT WIRE BASKET AND FOLD DOWN FLAT INTO THE PLANTING PIT

PLACE ROOT BALL ON UNEXCAVATED OR TAMPED SOIL

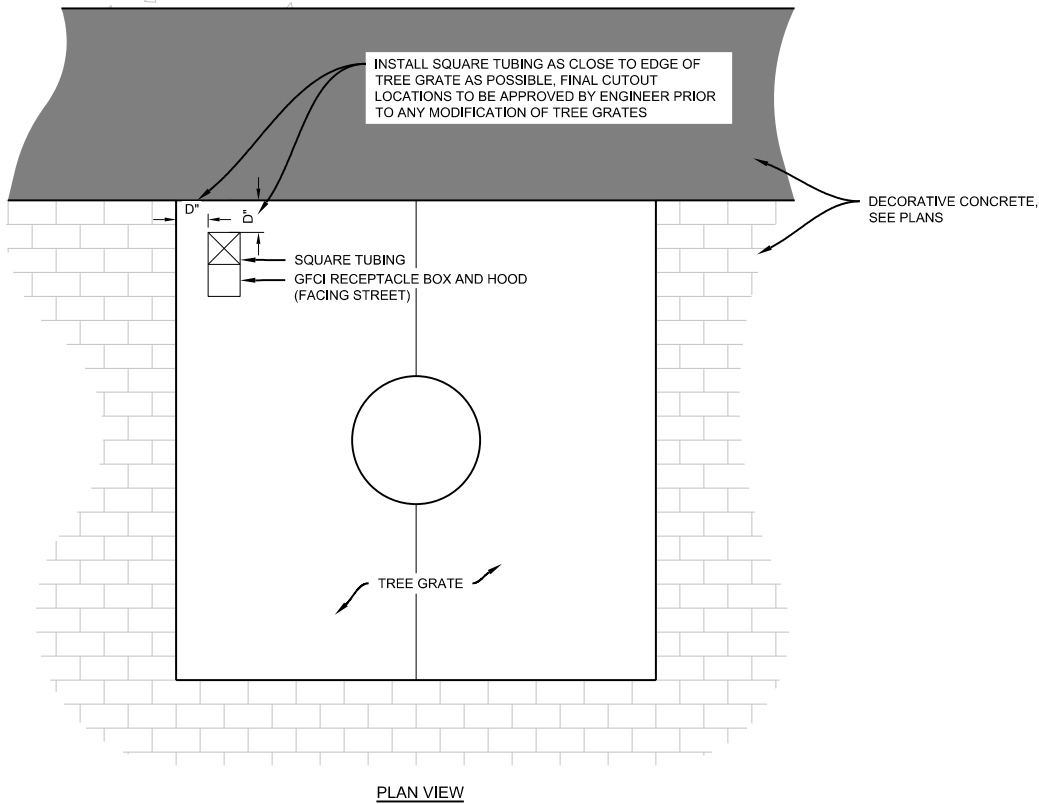
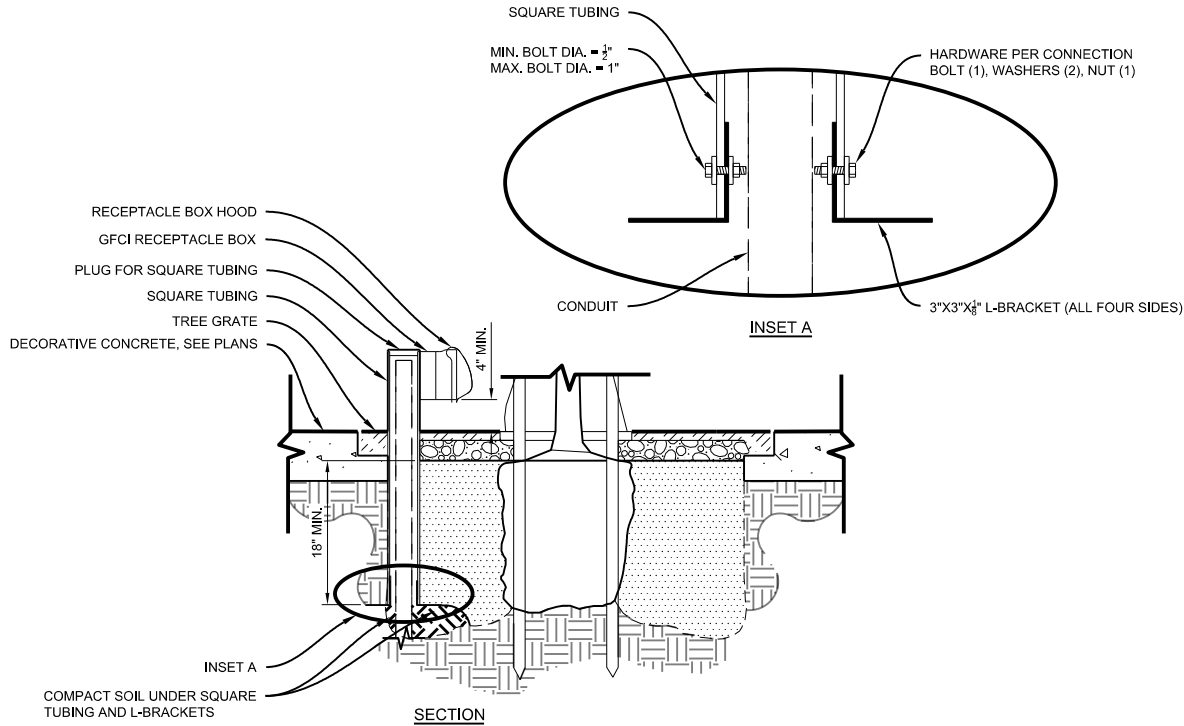
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Main St

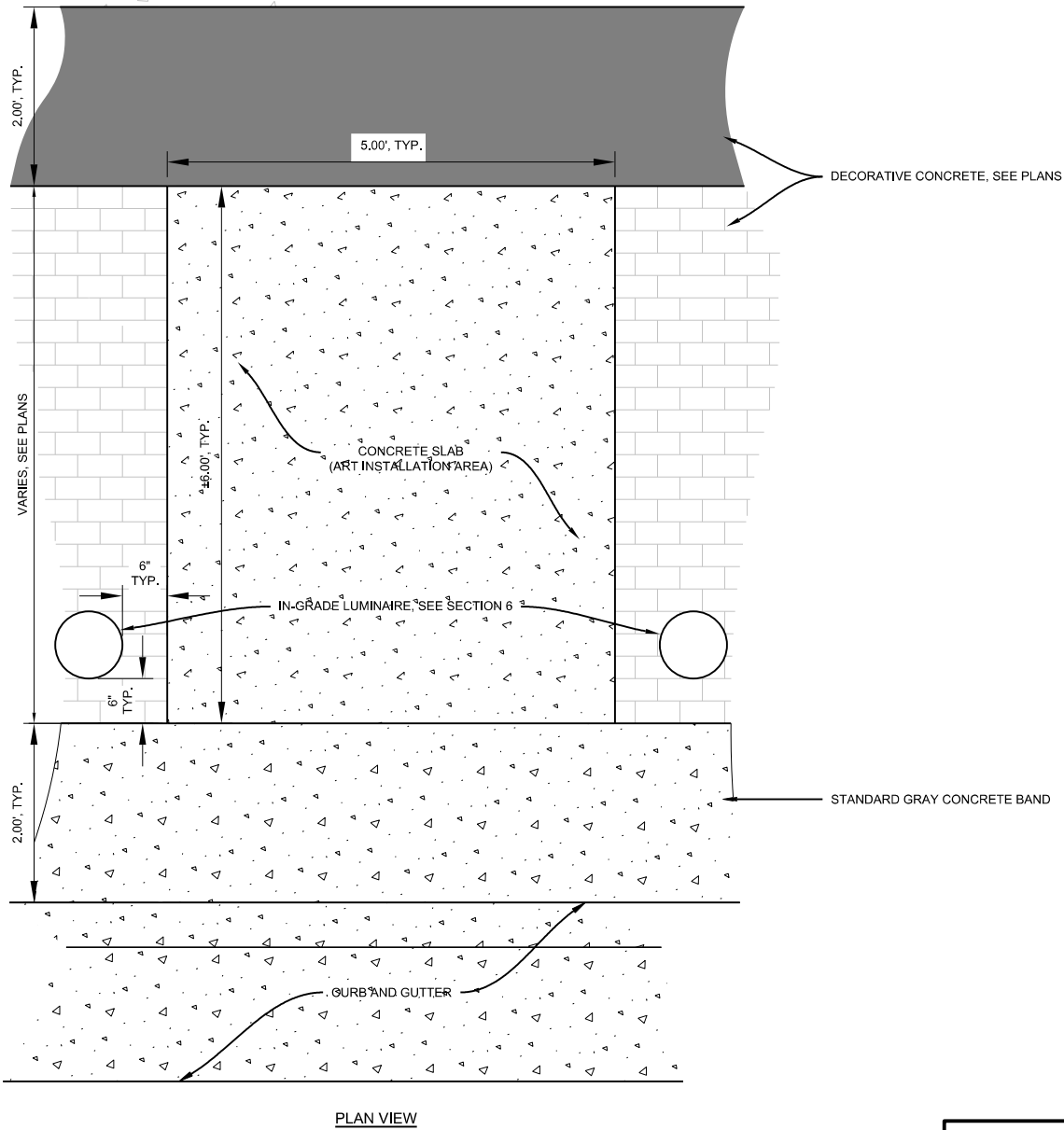
Landscape Plan

Landscaping Detail & Plant Schedule

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	85	7



1
85-7
GFCI RECEPTACLE DETAIL
NO SCALE



2
85-7
IN-GRADE LUMINAIRE DETAIL
NO SCALE

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Main St
Landscape Plan
Landscaping Detail

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	100	1

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED					TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL	
			BY PHASE NO.								
			1A	1B	2A	2B	CPR				
E5-1-48	48"x48"	EXIT GORE								35	
G20-1-60	60"x24"	ROAD WORK NEXT ___ MILES								28	
G20-1b-60	60"x24"	NO WORK IN PROGRESS (Sign and installation only)								18	
G20-2-48	48"x24"	END ROAD WORK								26	
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)								18	
G20-10-108	108"x48"	CONTRACTOR SIGN	2	2	2	2	2	2		70	140
G20-50a-72	72"x36"	ROAD WORK NEXT ___ MILES RT & LT ARROWS								43	
G20-52a-72	72"x24"	ROAD WORK NEXT ___ MILES RT or LT ARROW								36	
G20-55-96	96"x48"	SPEED LIMIT ENFORCED - MINIMUM FEE \$80 WHEN WORKERS PRESENT								59	
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)								10	
M1-4-24	24"x24"	U.S. ROUTE MARKER (Post and installation only)								10	
M1-5-24	24"x24"	STATE ROUTE MARKER (Post and installation only)								10	
M3-1-24	24"x12"	NORTH (Mounted on route marker post)								7	
M3-2-24	24"x12"	EAST (Mounted on route marker post)								7	
M3-3-24	24"x12"	SOUTH (Mounted on route marker post)								7	
M3-4-24	24"x12"	WEST (Mounted on route marker post)								7	
M4-8-24	24"x12"	DETOUR (Mounted on route marker post)								7	
M4-9-30	30"x24"	DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT								15	
M4-10-48	48"x18"	DETOUR (INSIDE ARROW) RIGHT or LEFT (Mounted on barricade)								7	
M5-1-21	21"x15"	ADVANCE TURN ARROW RT or LT(Mounted on route marker post)								7	
M5-1-30	30"x21"	ADVANCE TURN ARROW RT or LT(Mounted on route marker post)								9	
M6-1-21	21"x15"	DIRECTIONAL ARROW RT or LT (Mounted on route marker post)								7	
M6-1-30	30"x21"	DIRECTIONAL ARROW RT or LT (Mounted on route marker post)								9	
M6-3-21	21"x15"	DIRECTIONAL ARROW UP (Mounted on route marker post)								7	
R1-1-48	48"x48"	STOP	4	4	4	4		4		32	128
R1-2-60	60"x60"	YIELD								29	
R2-1-36	36"x48"	SPEED LIMIT ___ (Portable only)	2	2	2	2	8	8		30	240
R2-1-48	48"x60"	SPEED LIMIT ___								39	
R2-1aP-24	24"x18"	MINIMUM FEE \$80 (Mounted on Speed Limit post)	2	2	2	2	8	8		10	80
R3-2-48	48"x48"	NO LEFT TURN	1	1	1	1		1		35	35
R3-7-30	30"x30"	LEFT or RIGHT LANE MUST TURN LEFT or RIGHT	2	2	2	2		2		17	34
R4-1-48	48"x60"	DO NOT PASS								39	
R4-7-48	48"x60"	KEEP RIGHT								39	
R5-1-48	48"x48"	DO NOT ENTER								35	
R6-1-54	54"x18"	ONE WAY RIGHT or LEFT (Mounted on STOP or DO NOT ENTER post)								14	
R7-1-12	12"x18"	NO PARKING ANY TIME								11	
R9-9-24	24"x12"	SIDEWALK CLOSED (Mounted on barricade)	4	8	4	7		8		3	24
R9-10-24	24"x12"	SIDEWALK CLOSED USE OTHER SIDE (Mounted on barricade)	6	1	5	1		6		3	18
R9-11-24	24"x12"	SIDEWALK CLOSED AHEAD CROSS HERE (Mounted on barricade)	1	9	1	7		9		3	27
R9-11a-24	24"x12"	SIDEWALK CLOSED CROSS HERE (Mounted on barricade)	1	6	2	2		6		3	18
R10-6-24	24"x36"	STOP HERE ON RED	5	5	5	5		5		16	80
R10-12-30	30"x36"	LEFT TURN YIELD ON GREEN	2	2	2	2		2		9	18
R11-2-48	48"x30"	ROAD CLOSED (Mounted on barricade)								12	
R11-2a-48	48"x30"	STREET CLOSED (Mounted on barricade)	2	2	2	2		2		12	24
R11-3a-60	60"x30"	ROAD CLOSED ___ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)								15	
R11-3c-60	60"x30"	STREET CLOSED ___ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)								15	
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC (Mounted on barricade)								15	
W1-3-48	48"x48"	REVERSE TURN RIGHT or LEFT								35	
W1-4-48	48"x48"	REVERSE CURVE RIGHT or LEFT	2	2	2	2	6	6		35	210
W1-4b-48	48"x48"	TWO LANE REVERSE CURVE RIGHT or LEFT								35	
W1-6-48	48"x24"	ONE DIRECTION LARGE ARROW	1	1	1	1	4	4		26	104
W3-1-48	48"x48"	STOP AHEAD								35	
W3-3-48	48"x48"	SIGNAL AHEAD								35	
W3-4-48	48"x48"	BE PREPARED TO STOP					4	4		35	140
W3-5-48	48"x48"	SPEED REDUCTION AHEAD								35	
W4-2-48	48"x48"	LANE ENDS RIGHT or LEFT	1	1	1	1	6	6		35	210
W5-1-48	48"x48"	ROAD NARROWS					4	4		35	140
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE								35	
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW								35	
W6-3-48	48"x48"	TWO WAY TRAFFIC								35	
W8-1-48	48"x48"	BUMP								35	
W8-3-48	48"x48"	PAVEMENT ENDS								35	
W8-7-48	48"x48"	LOOSE GRAVEL								35	
W8-11-48	48"x48"	UNEVEN LANES								35	
W8-12-48	48"x48"	NO CENTER LINE								35	
W8-17-48	48"x48"	SHOULDER DROP-OFF SYMBOL								35	
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY								35	
W8-54-48	48"x48"	TRUCKS ENTERING AHEAD or ___ FT or _ MILE								35	
W8-55-48	48"x48"	TRUCKS CROSSING AHEAD or ___ FT or _ MILE								35	
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY								35	
W9-2-48	48"x48"	LANE ENDS MERGE LEFT	1	1	1	1		1		35	35
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL								35	
W11-2-36	36"x36"	PEDESTRIAN CROSSING (Fluorescent yellow-green)	5	5	4	5		5		27	135
W12-2-48	48"x48"	LOW CLEARANCE								35	
W13-1P-30	30"x30"	___ MPH ADVISORY SPEED PLAQUE (Mounted on warning sign post)								14	
W14-3-64	64"x48"	NO PASSING ZONE								28	
W16-2P-30	30"x24"	___ FEET PLAQUE (Mounted on warning sign post)								10	
W16-7p-24	24"x12"	LEFT or RIGHT DIAGONAL ARROW (Mounted on pedestrian sign post)	4	4	3	4		4		7	28
W16-9p-24	24"x12"	AHEAD (Mounted on sidewalk closed sign post)	2	2	2	2		2		3	6
W16-9p-30	30"x18"	AHEAD (Mounted on pedestrian sign post)	1	1	1	1		1		11	11
W20-1-48	48"x48"	ROAD WORK AHEAD or _ FT or _ MILE	6	6	6	6	19	19		35	665
W20-2-48	48"x48"	DETOUR AHEAD or ___ FT or _ MILE								35	

[illegible][illegible]

SPEC & CODE			
704-1000	TRAFFIC CONTROL SIGNS	TOTAL UNITS	2780

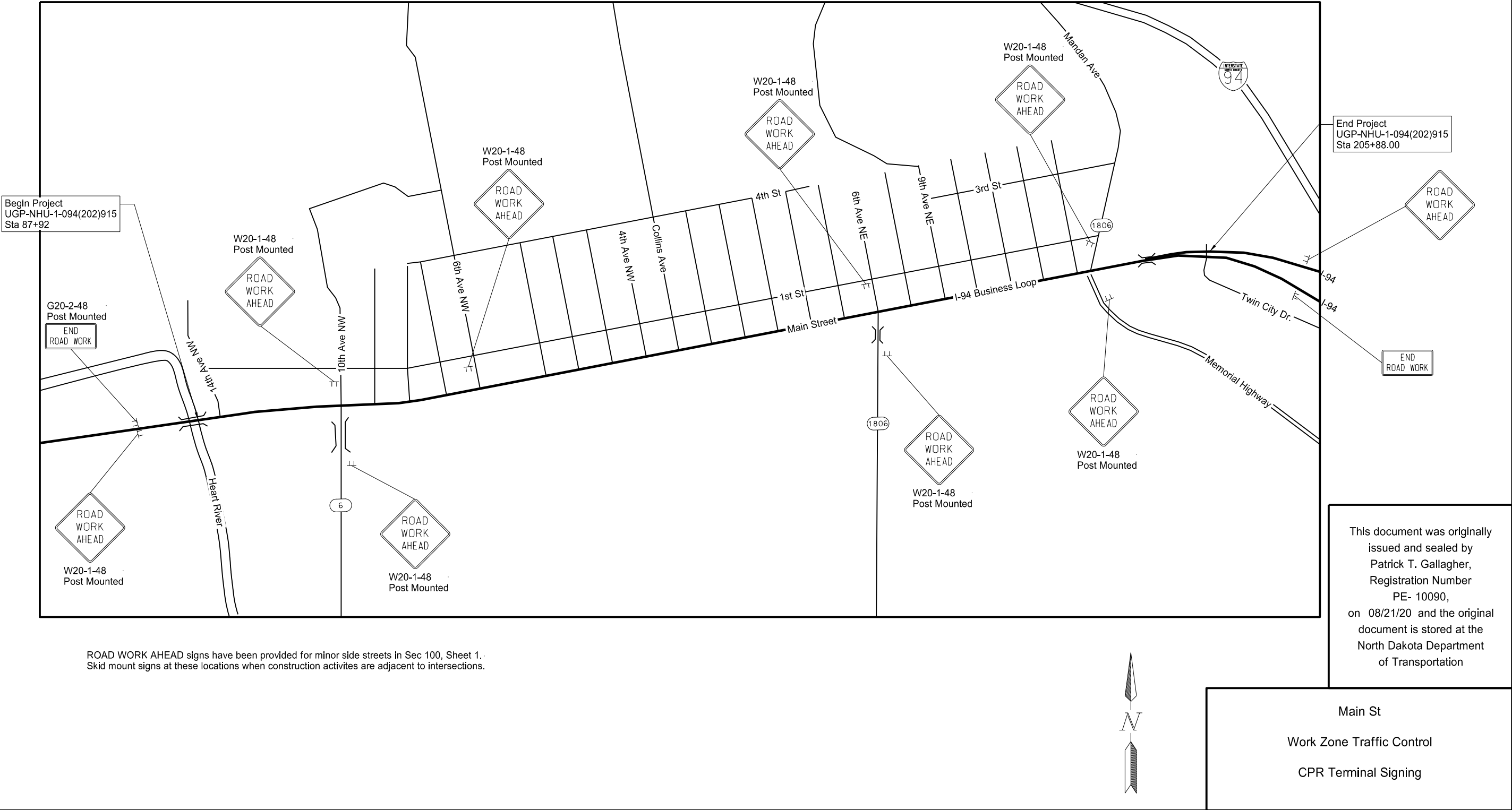
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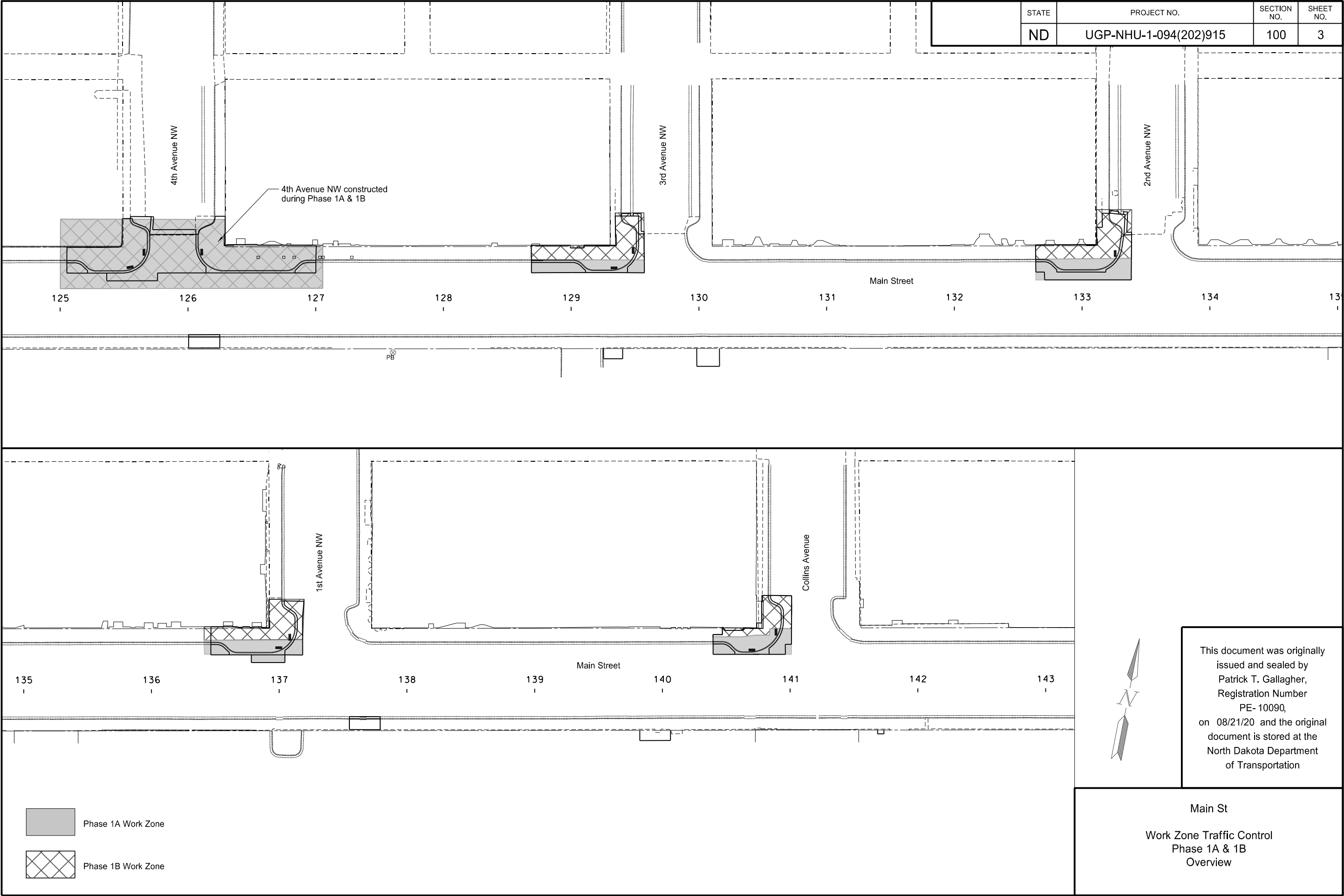
NOTE:
If additional signs are required, units will be calculated using the formula from Section III-18.06 of the Design Manual.
<http://www.dot.nd.gov/>

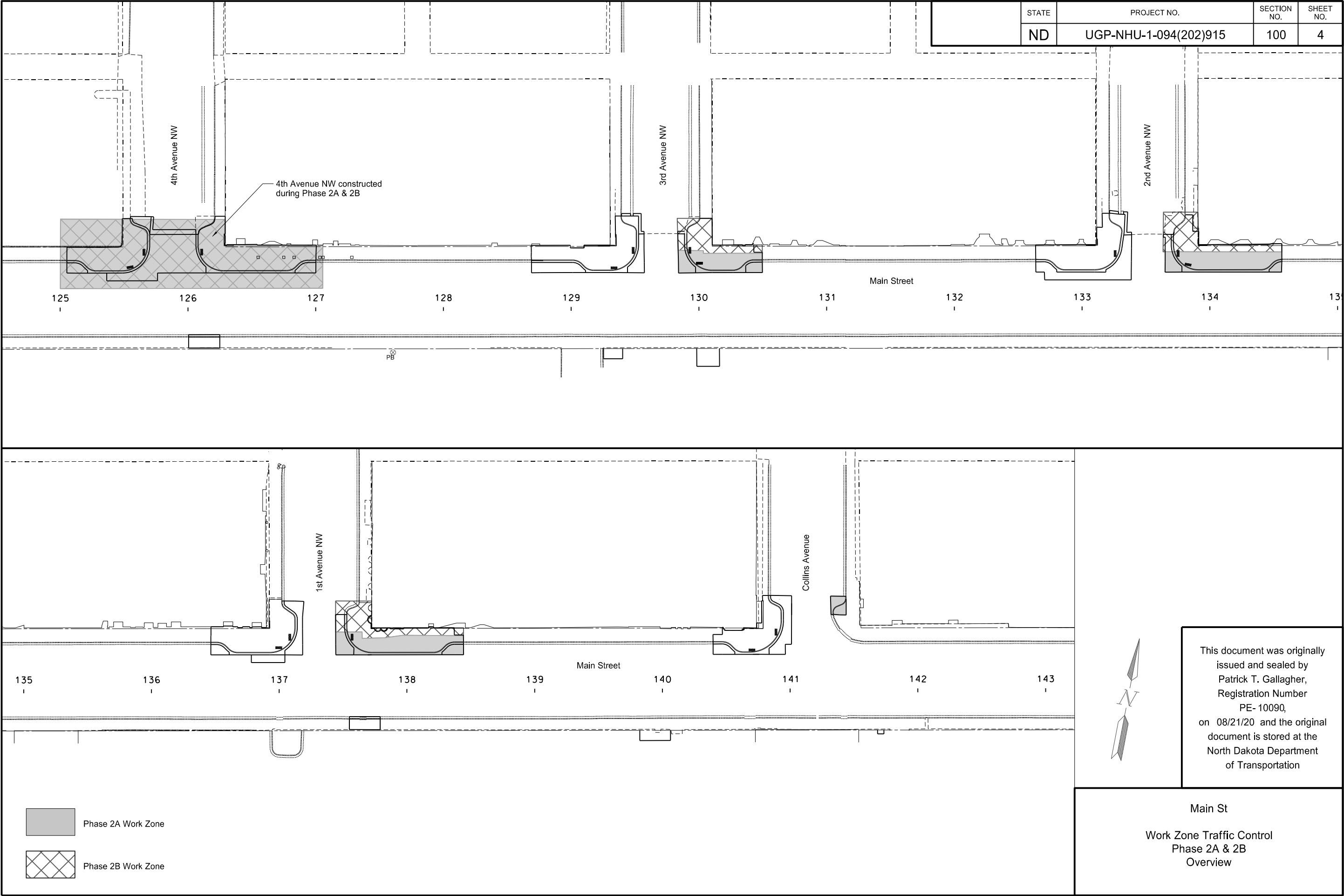
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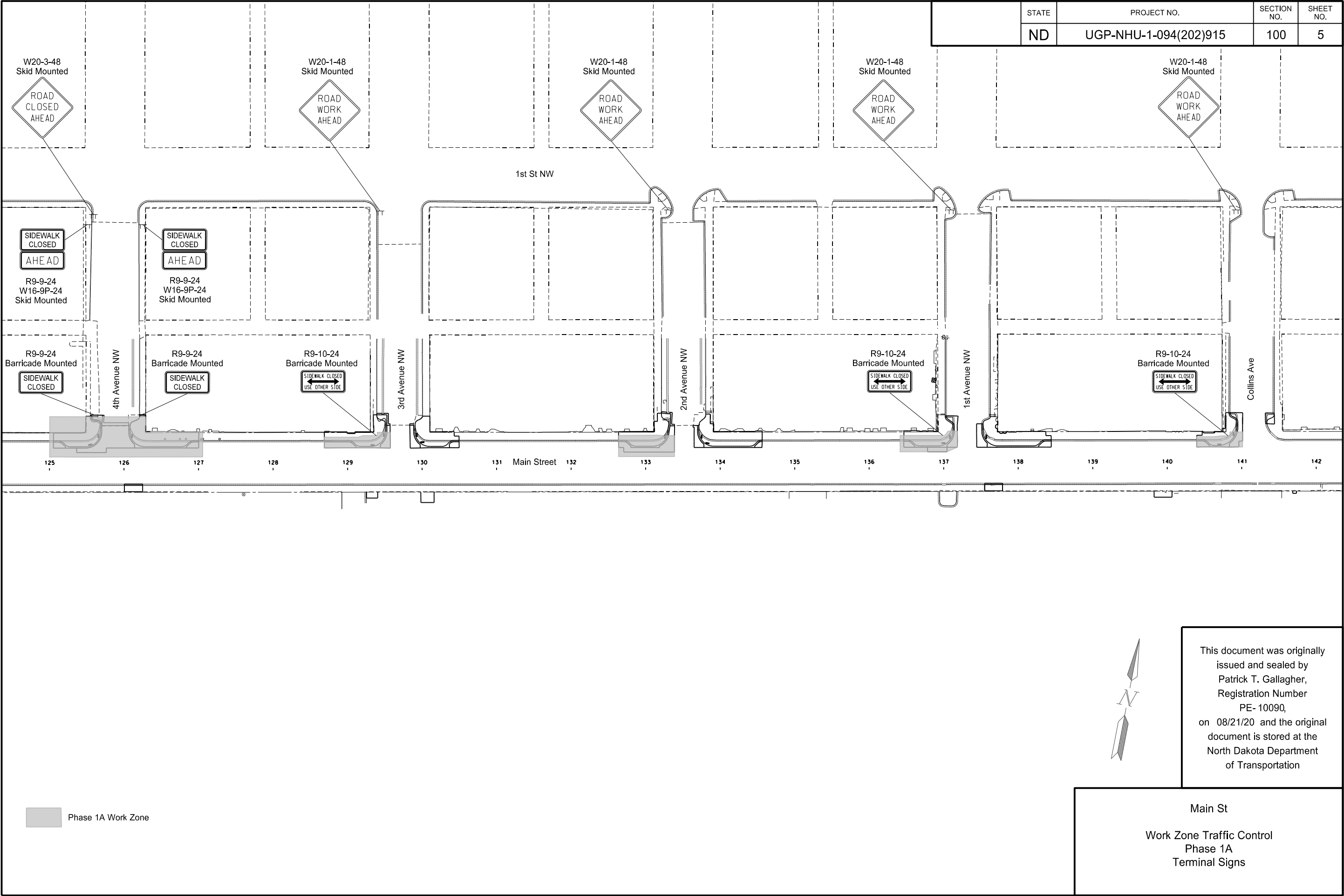
Traffic Control Devices List

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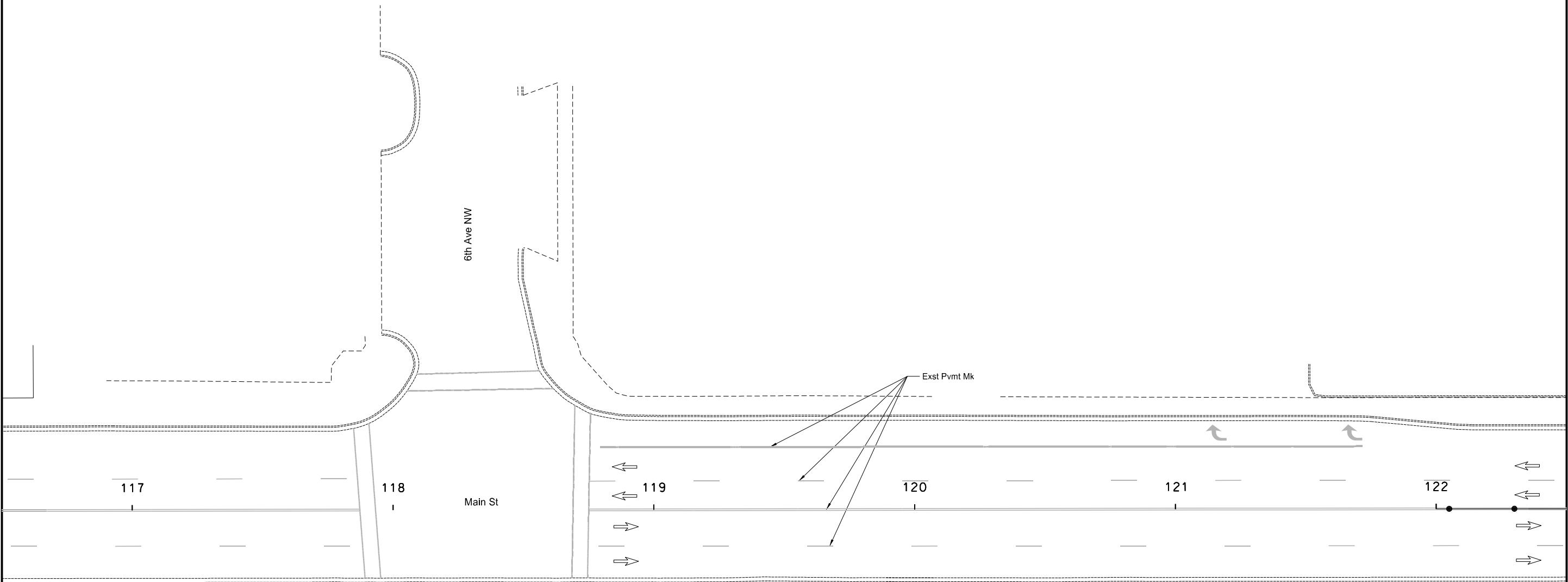








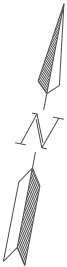
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	ND	UGP-NHU-1-094(202)915	100	6



ROAD
WORK
AHEAD
W20-1-48
Skid Mounted

LEFT LANE
CLOSED
AHEAD
W20-5L-48
Skid Mounted

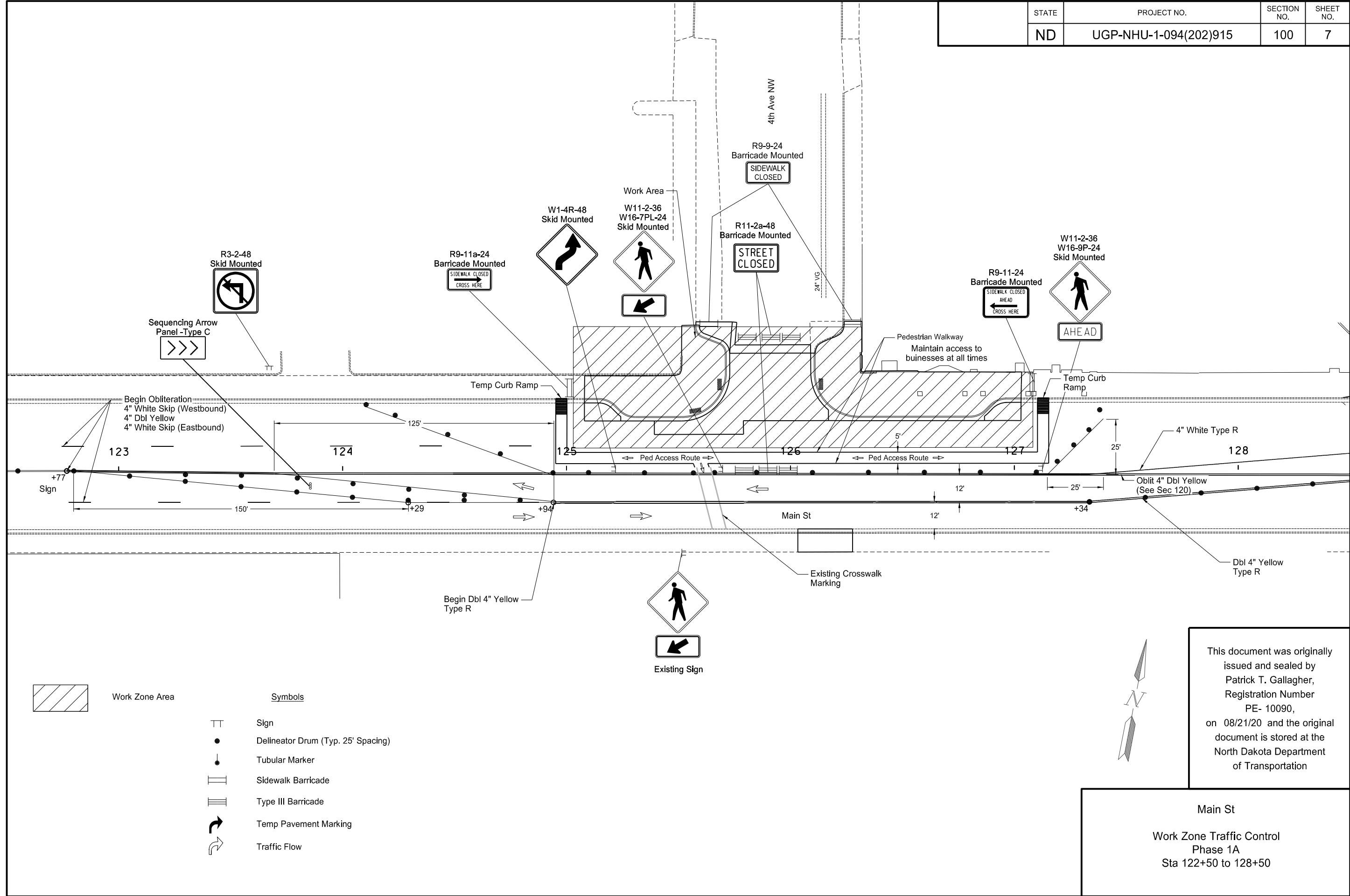
W4-2L-48
Skid Mounted



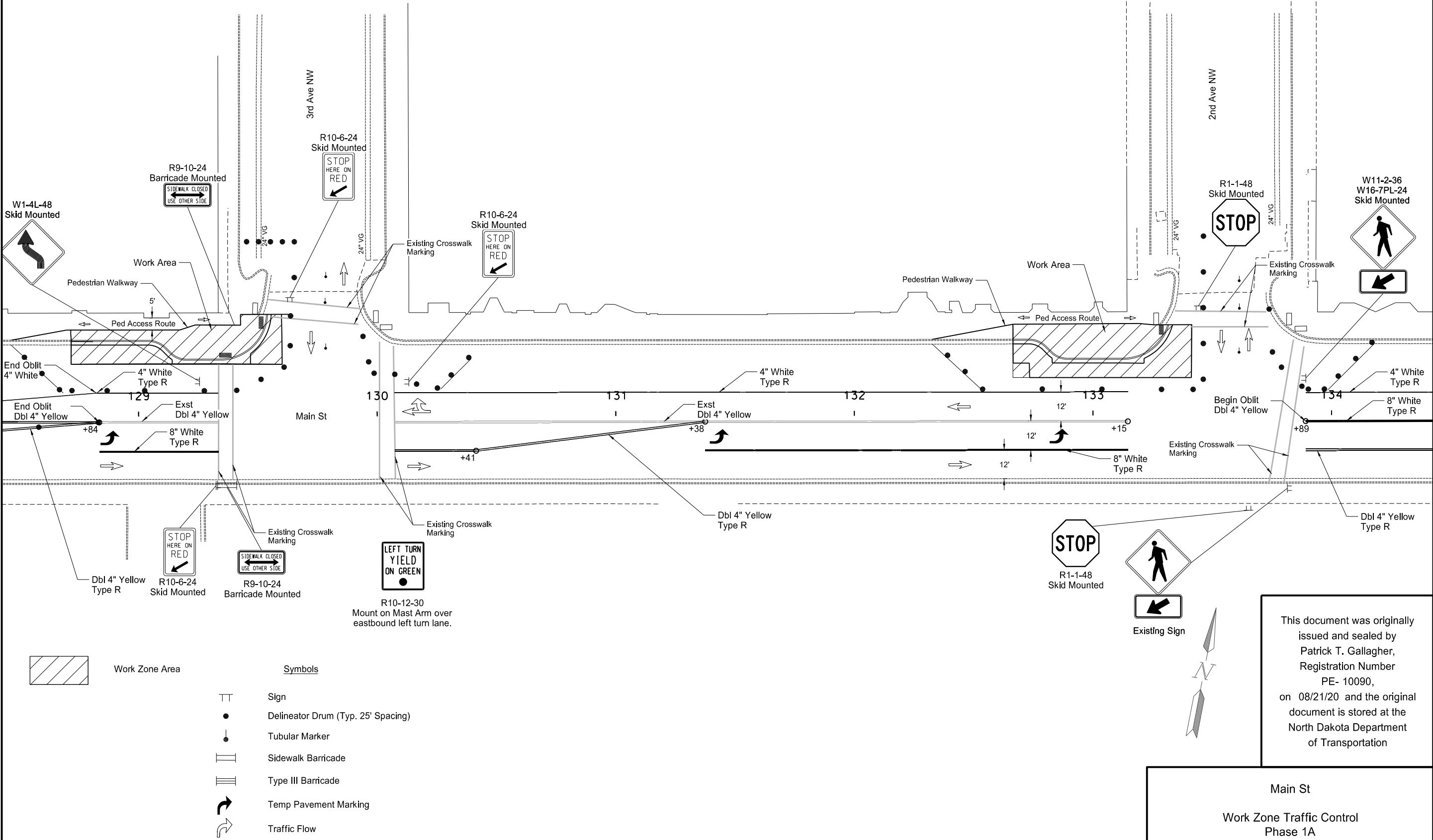
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Main St
Work Zone Traffic Control
Phase 1A
Sta 116+50 to 122+50

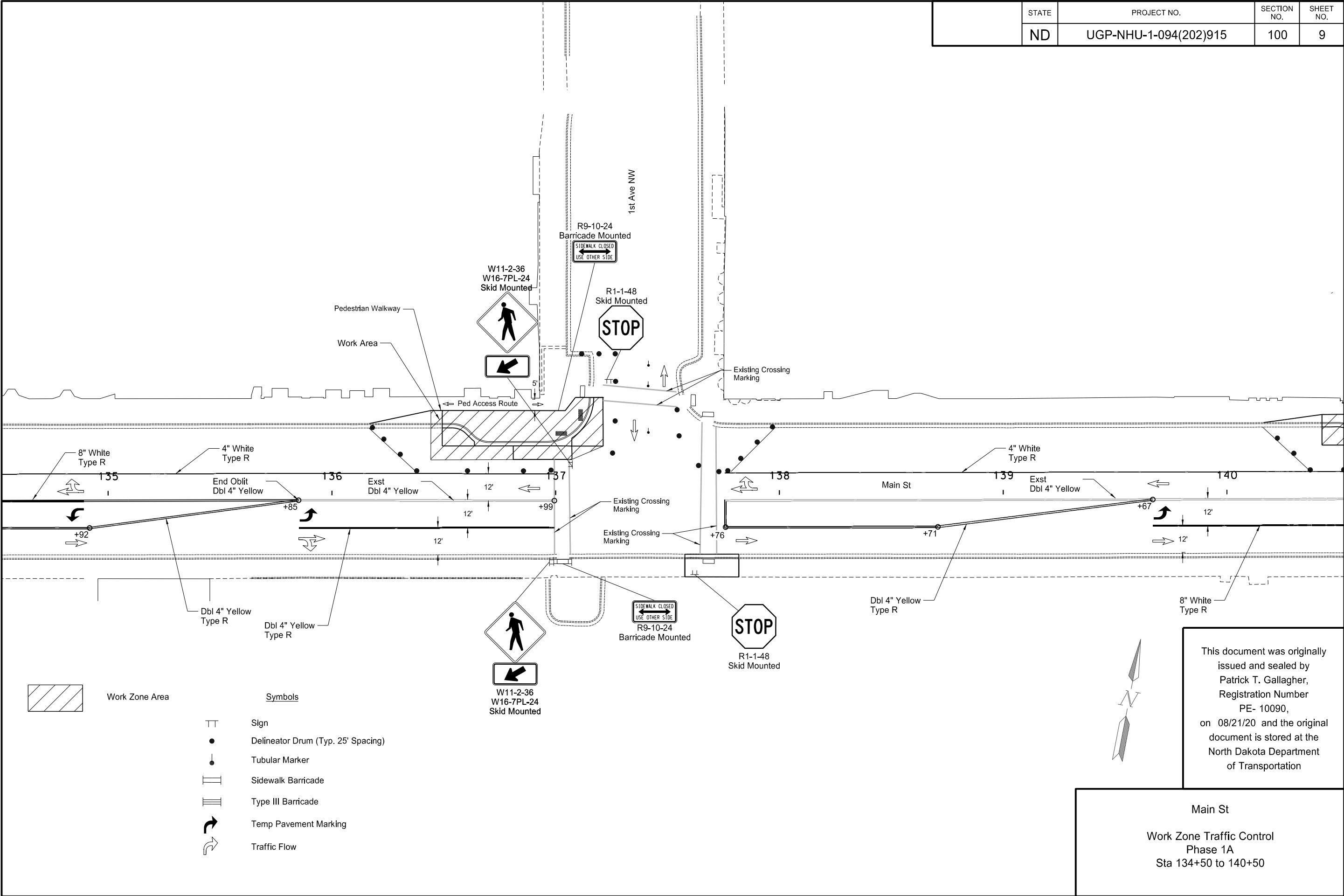
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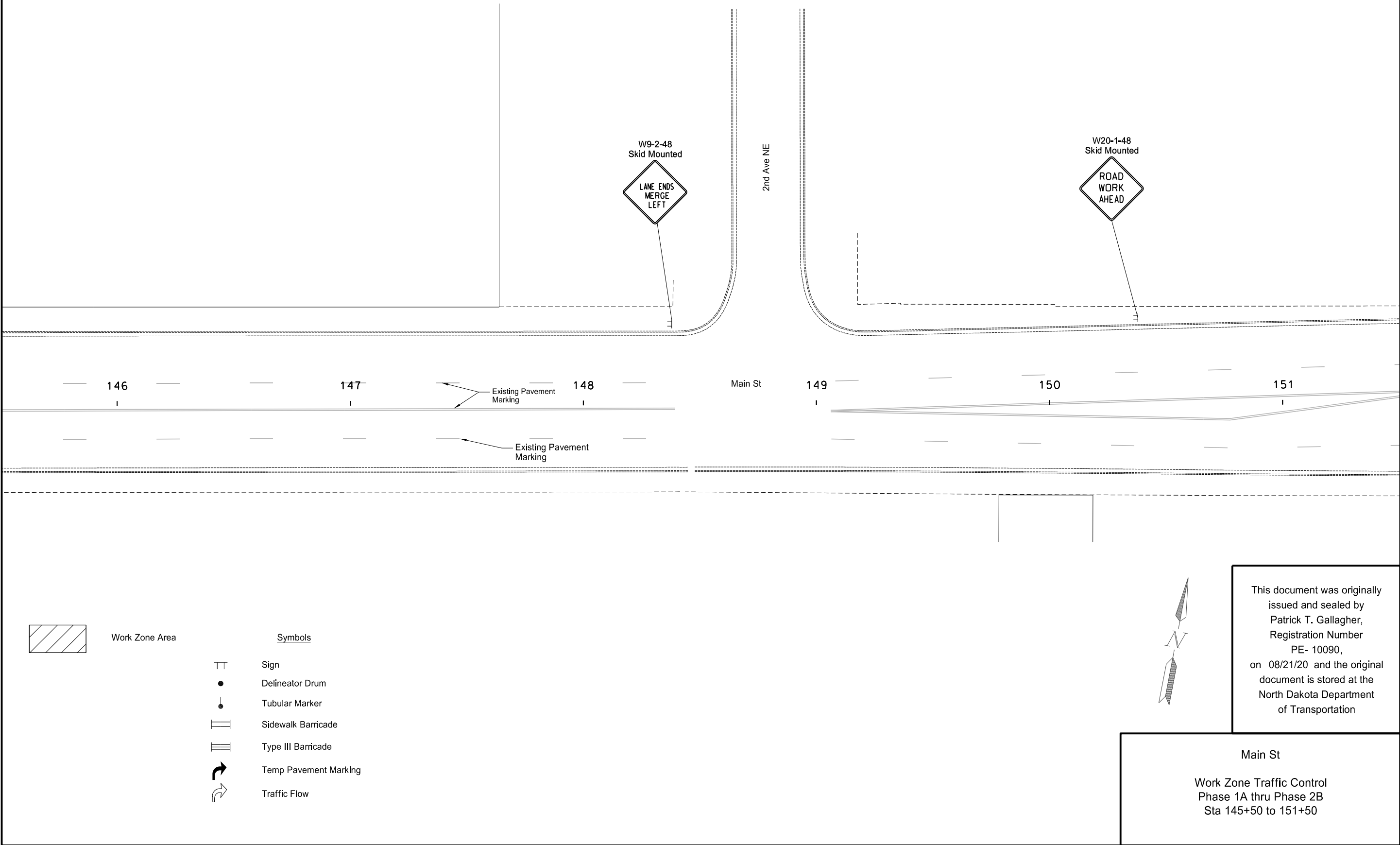
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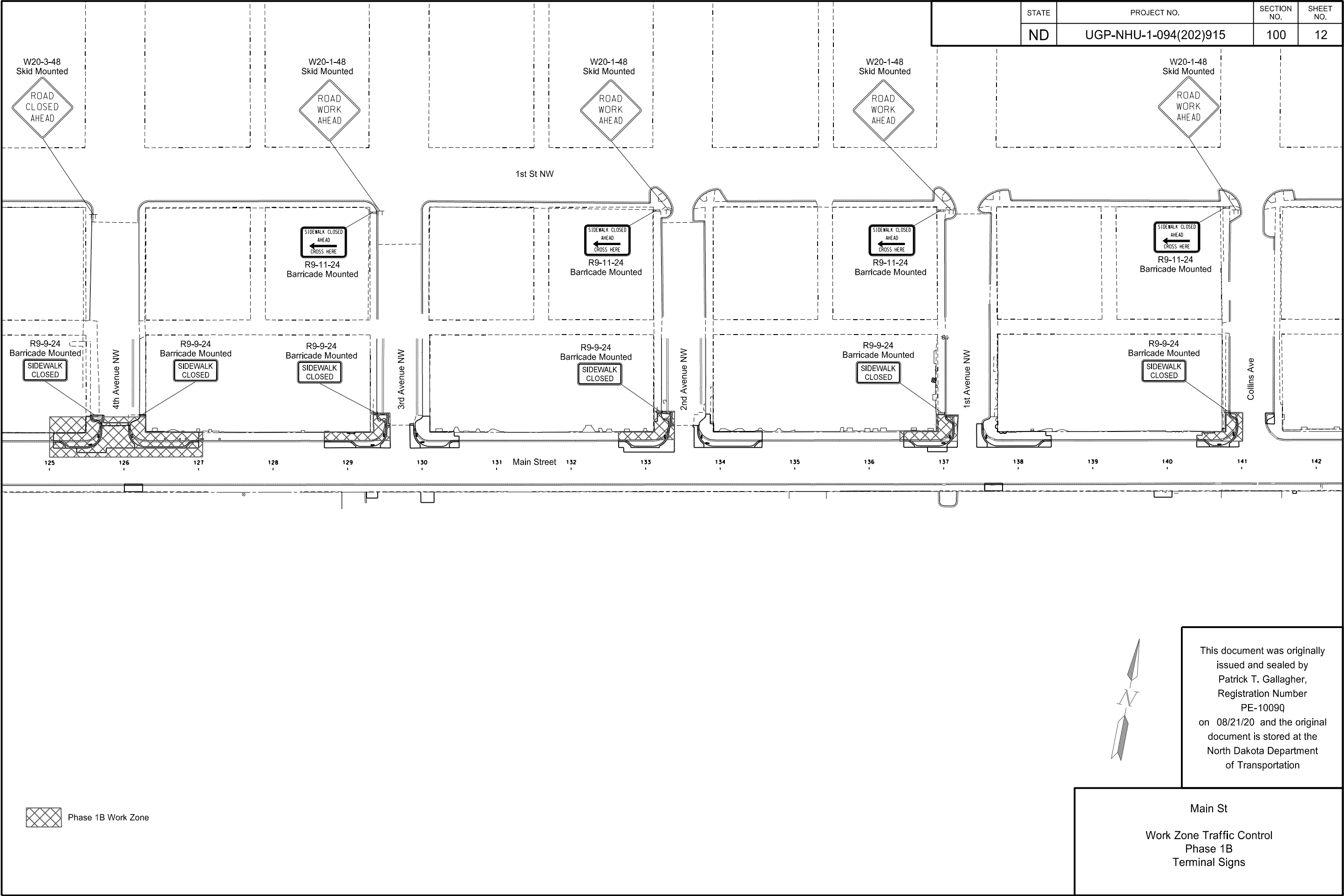


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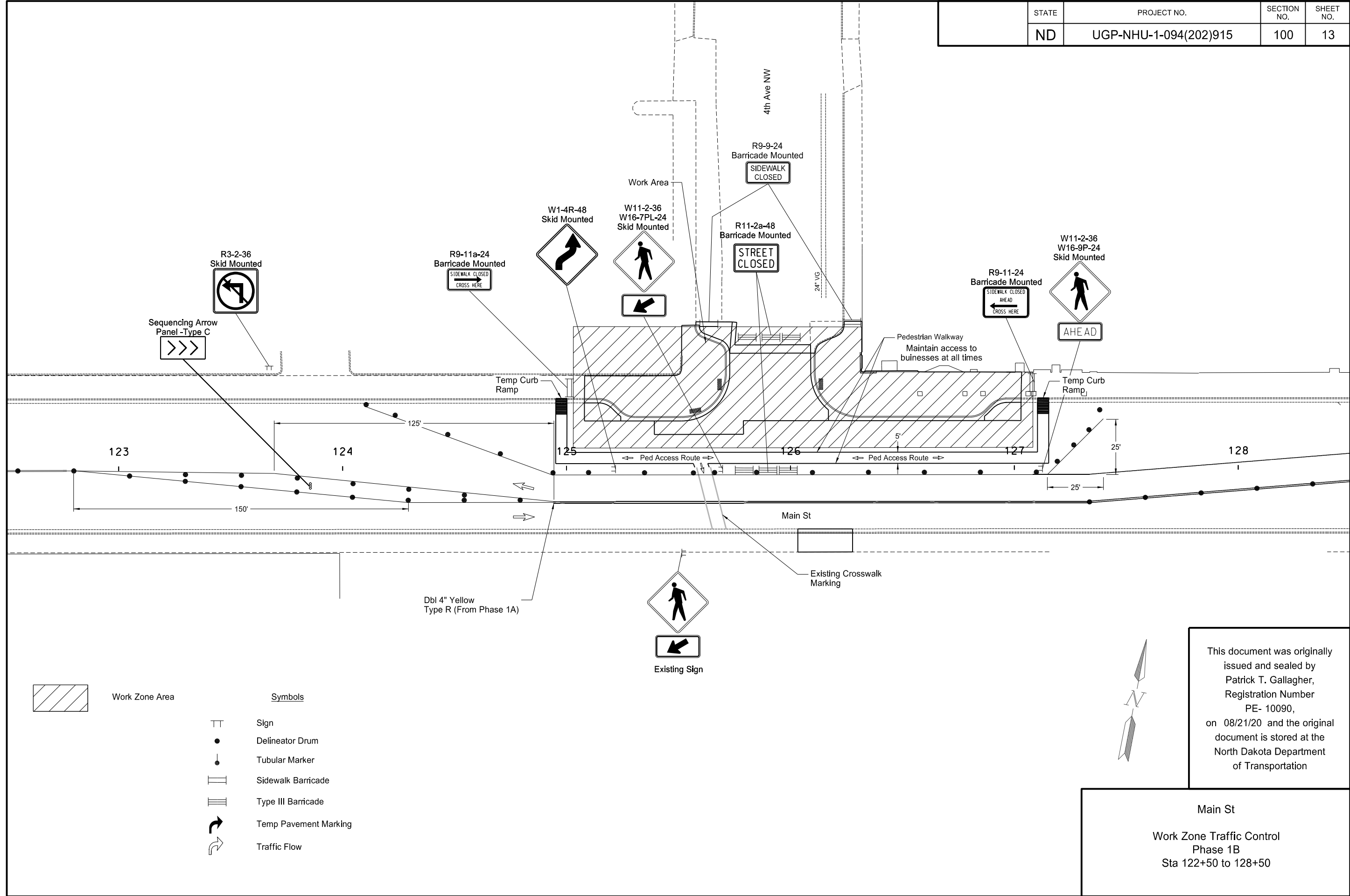


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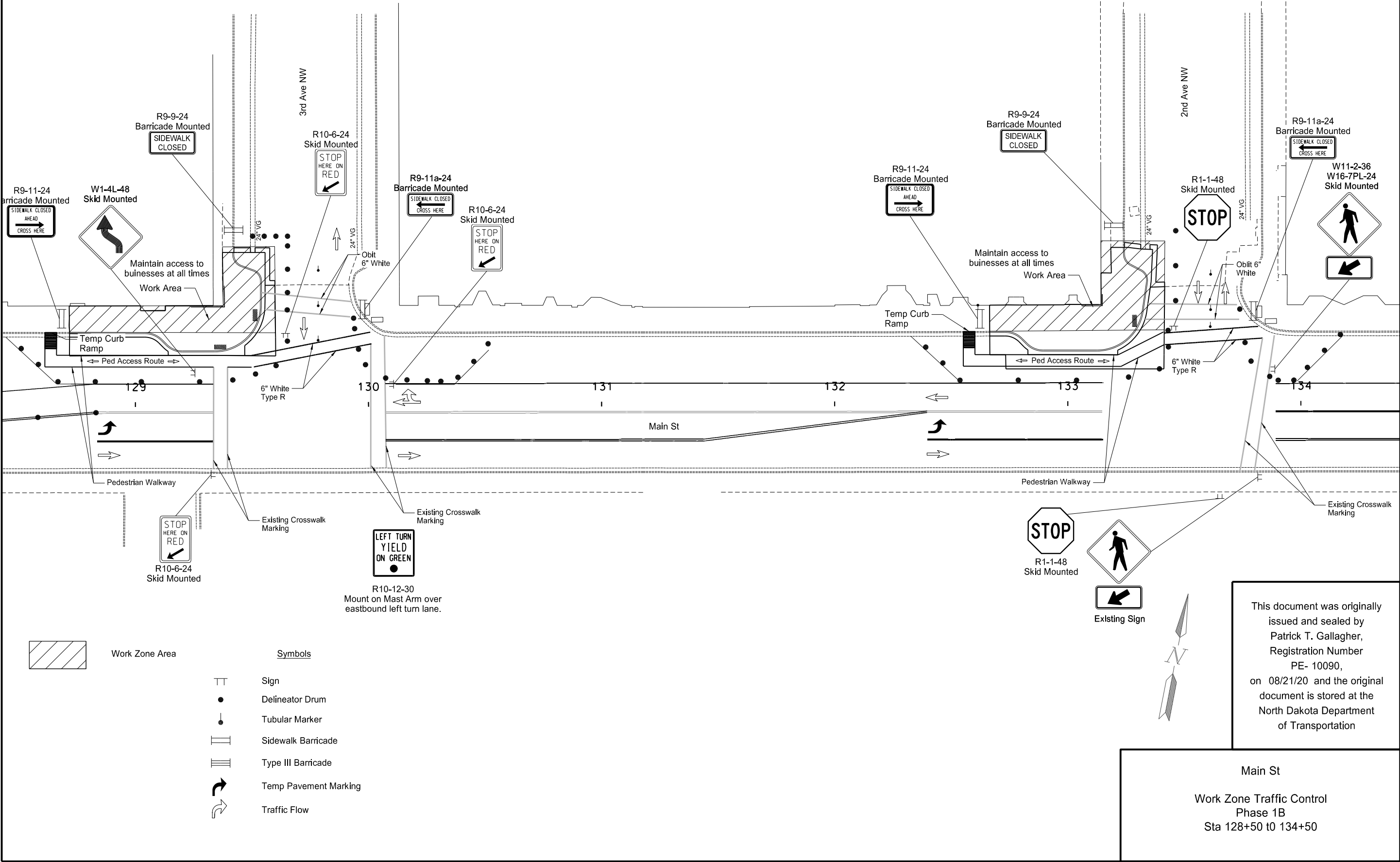
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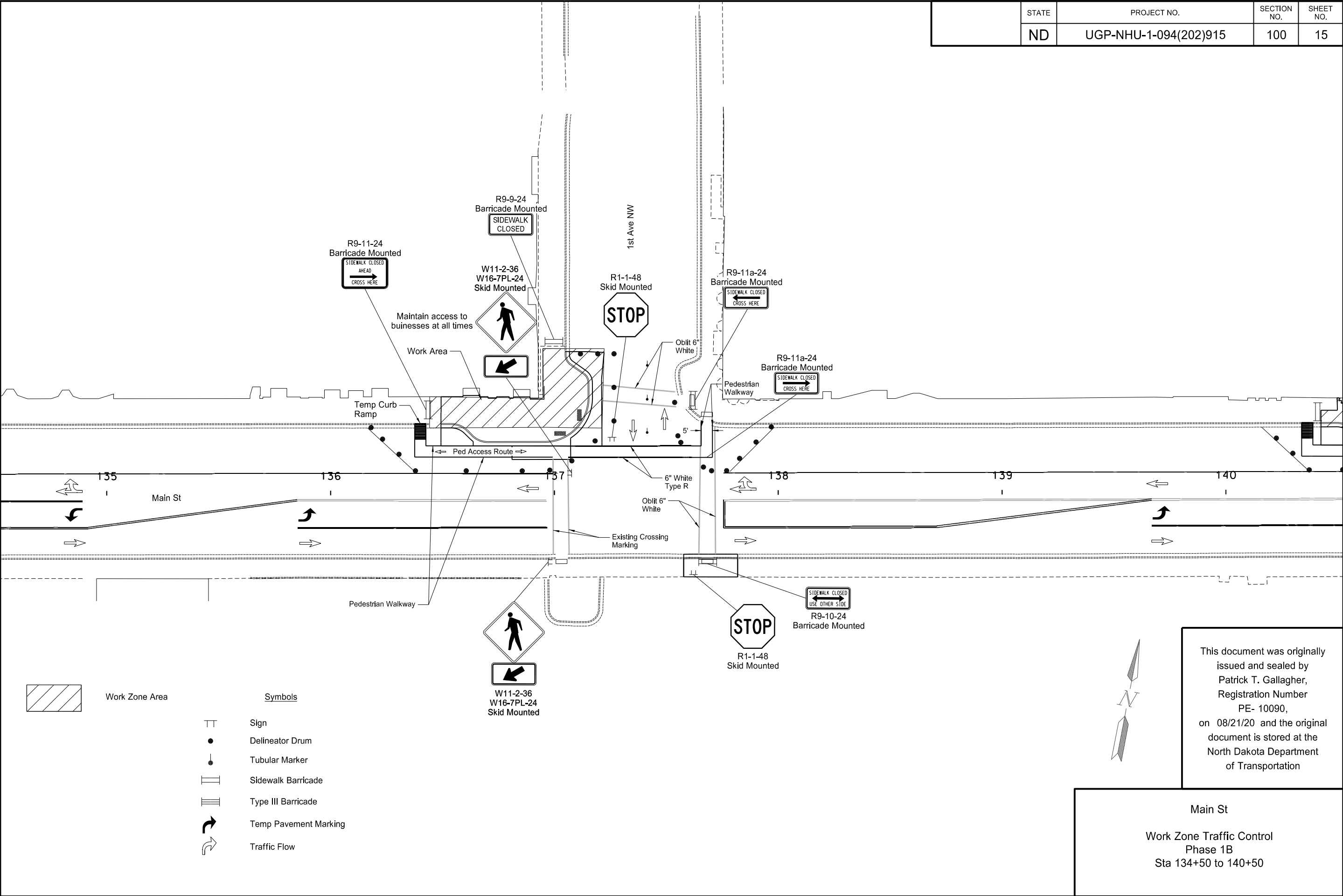


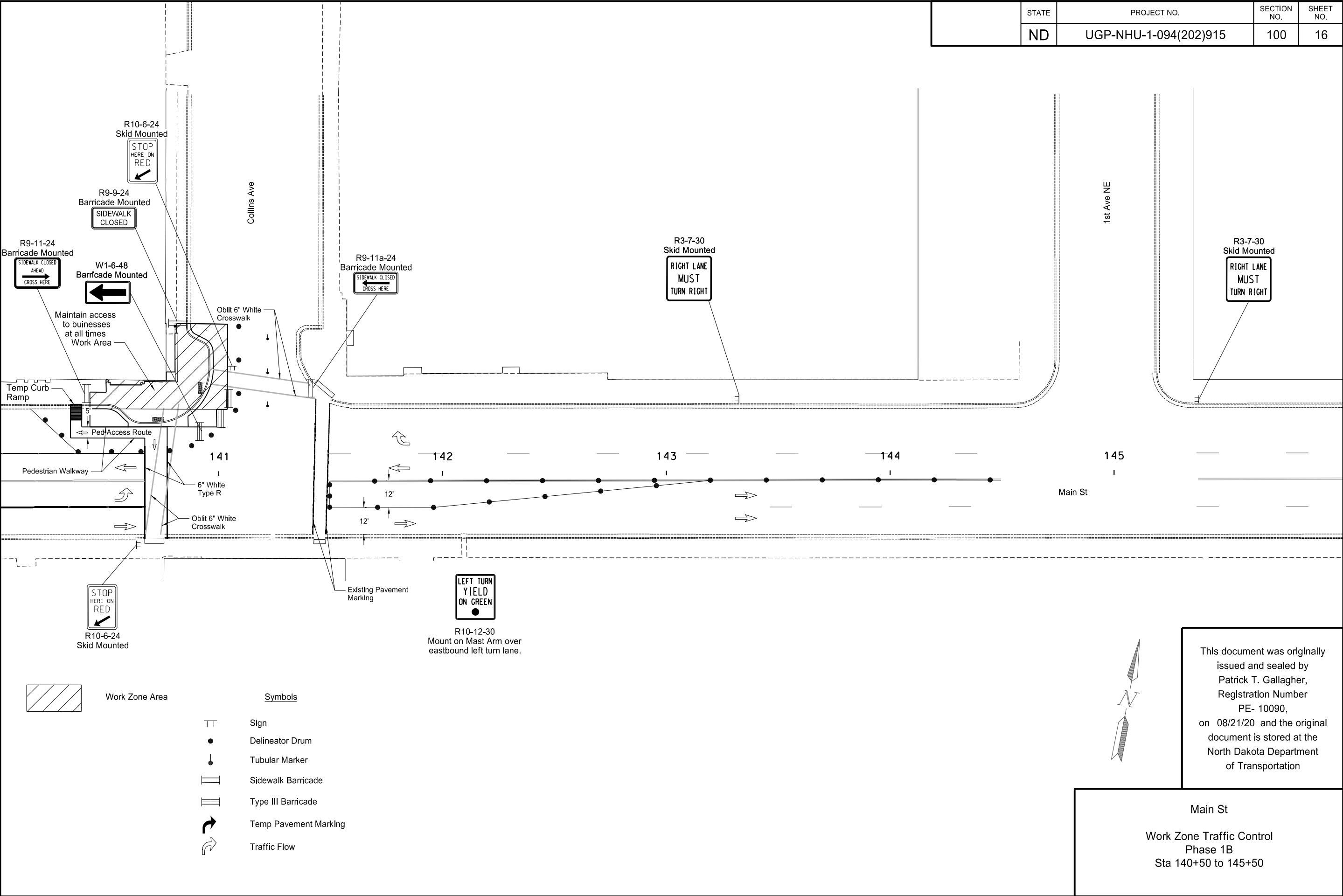
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Main St
Work Zone Traffic Control
Phase 1B
Sta 122+50 to 128+50

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	100	14

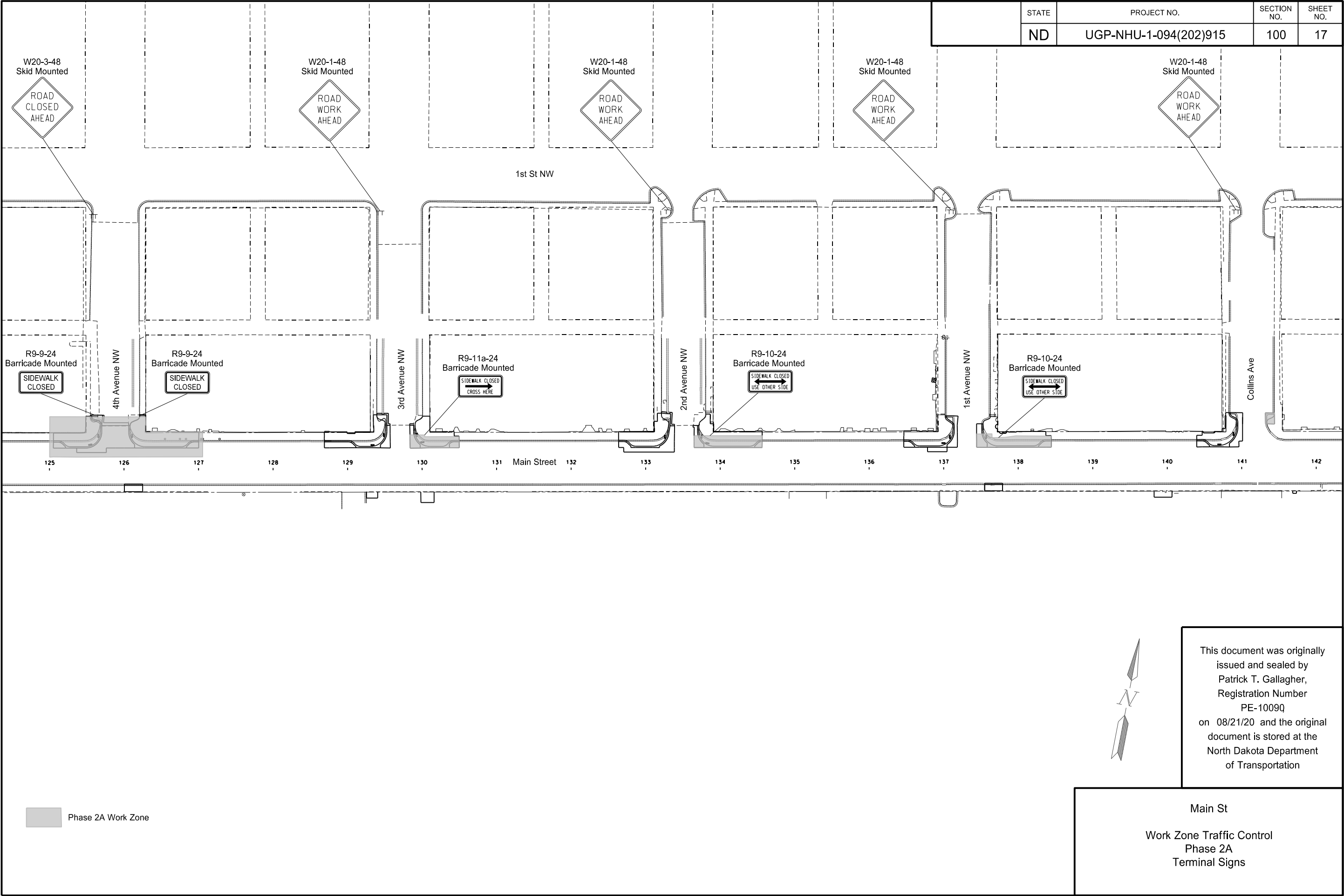




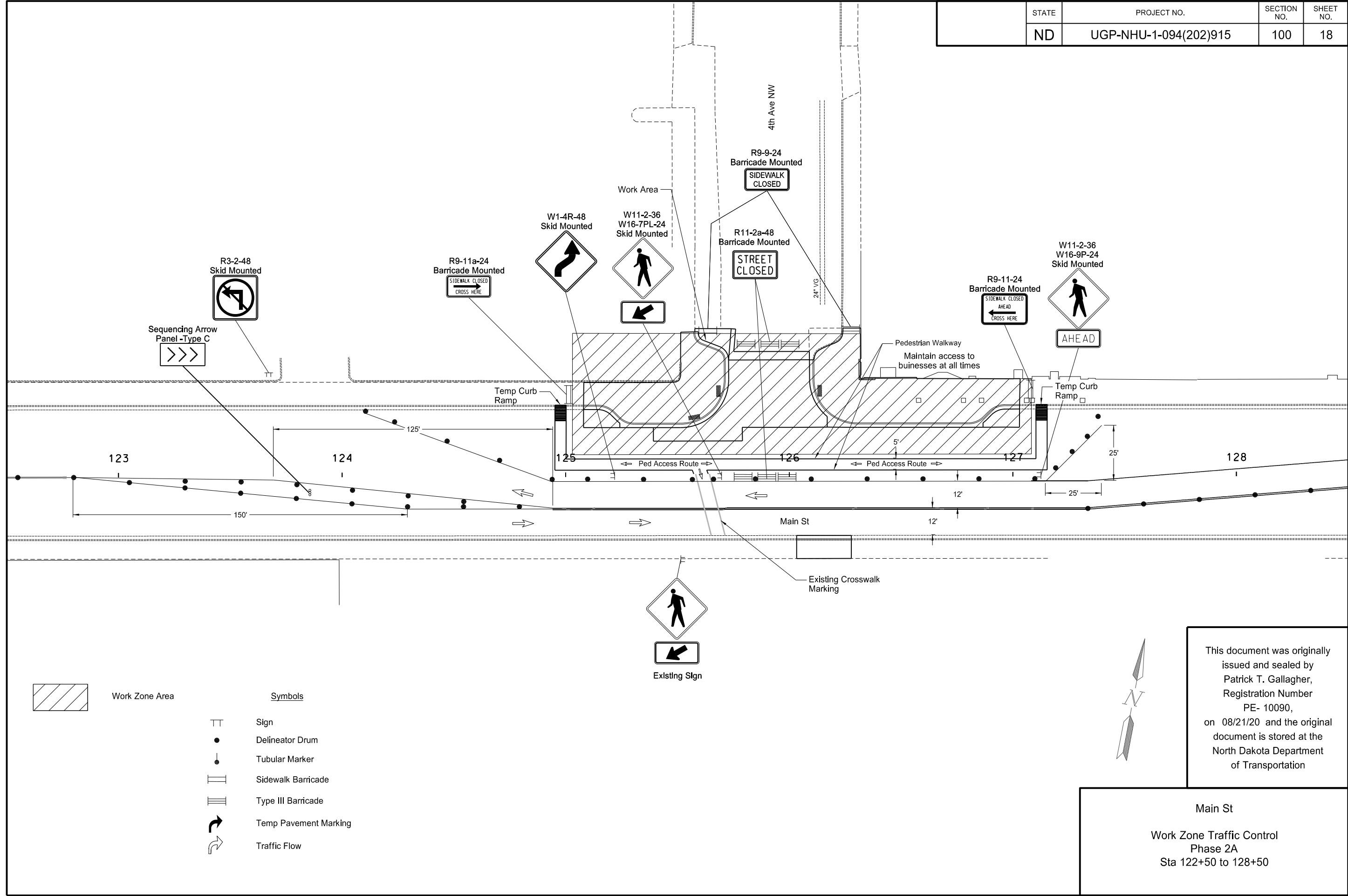


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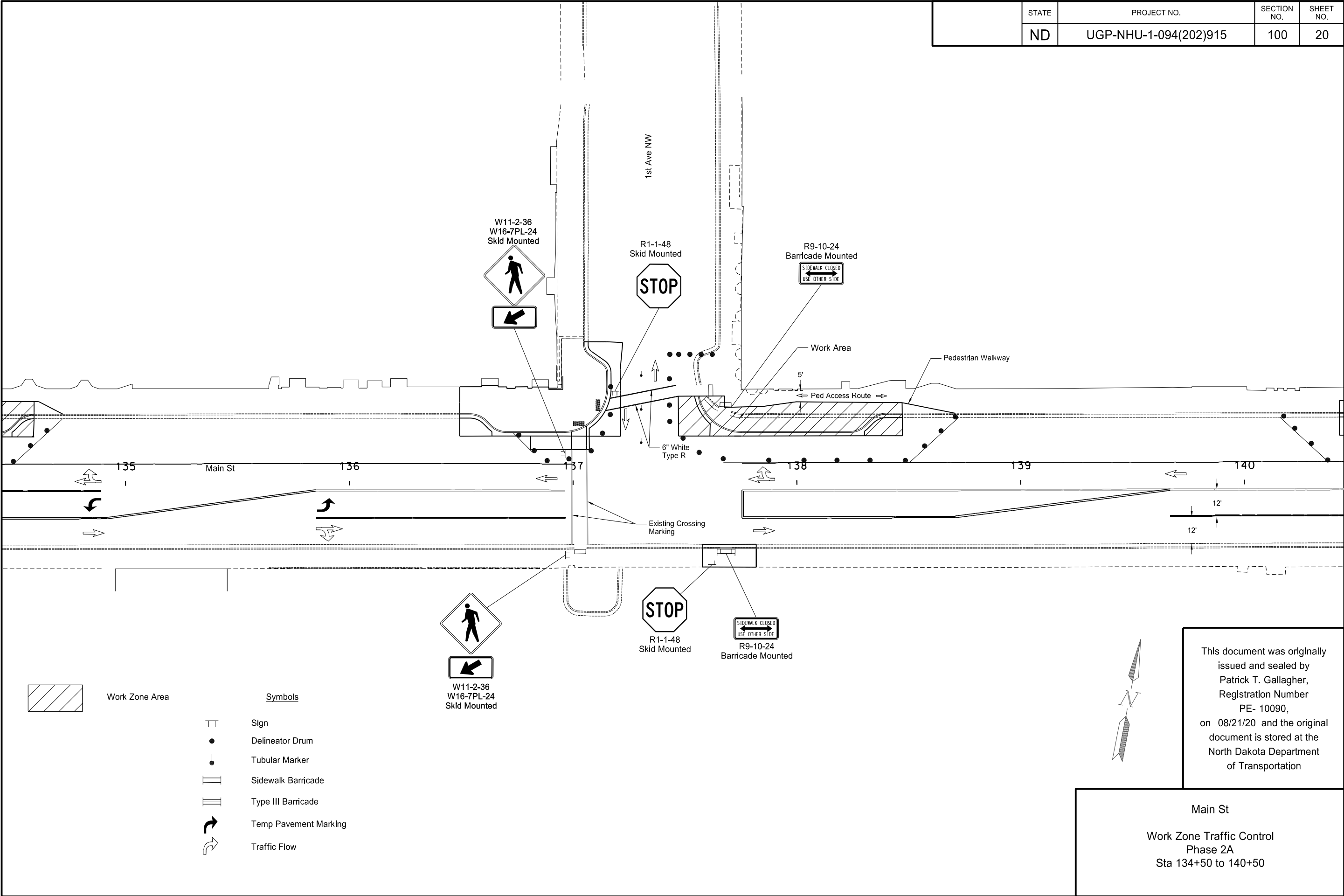
Main St
Work Zone Traffic Control
Phase 1B
Sta 140+50 to 145+50



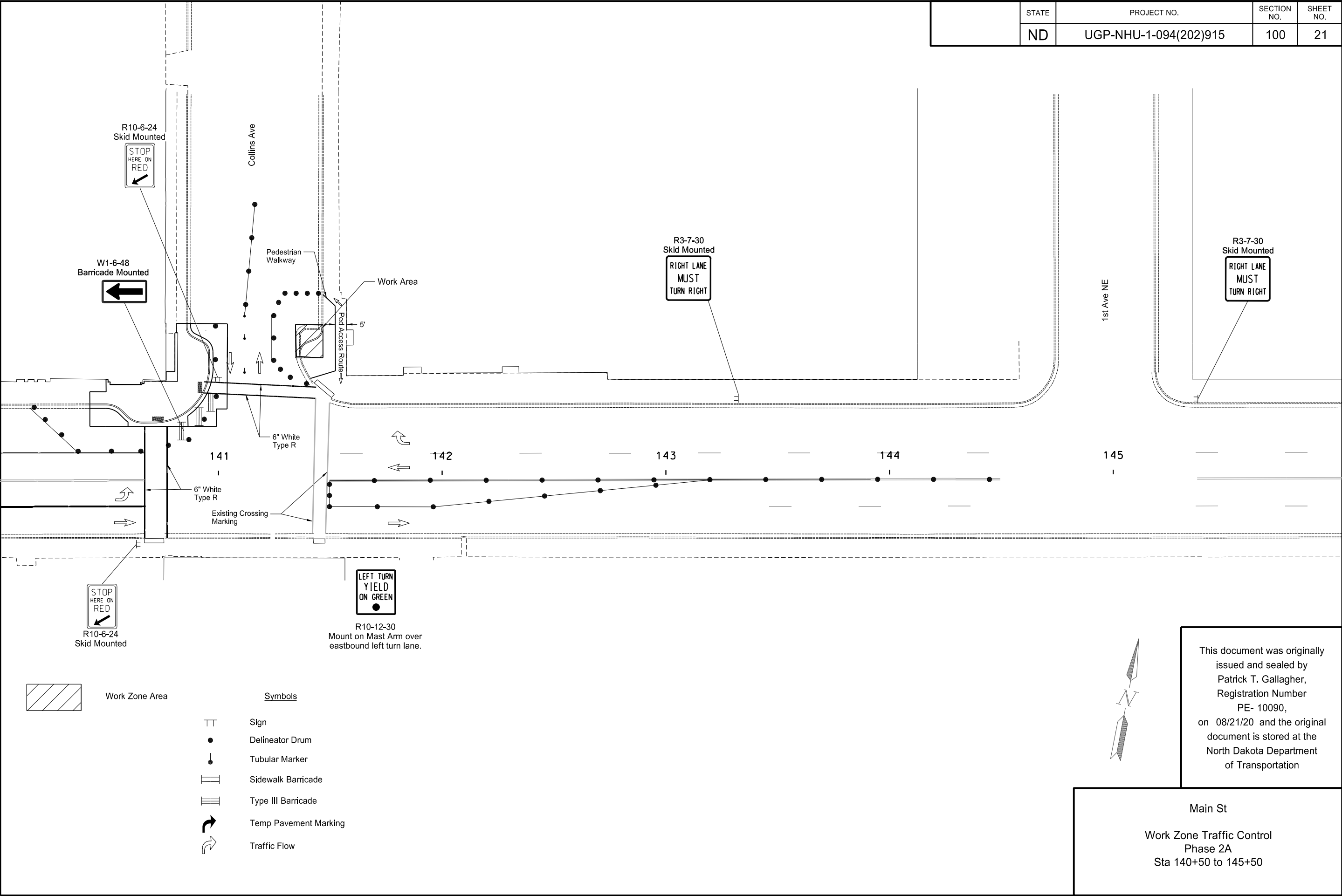
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	100	18



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	100	20



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	100	21



Work Zone Area

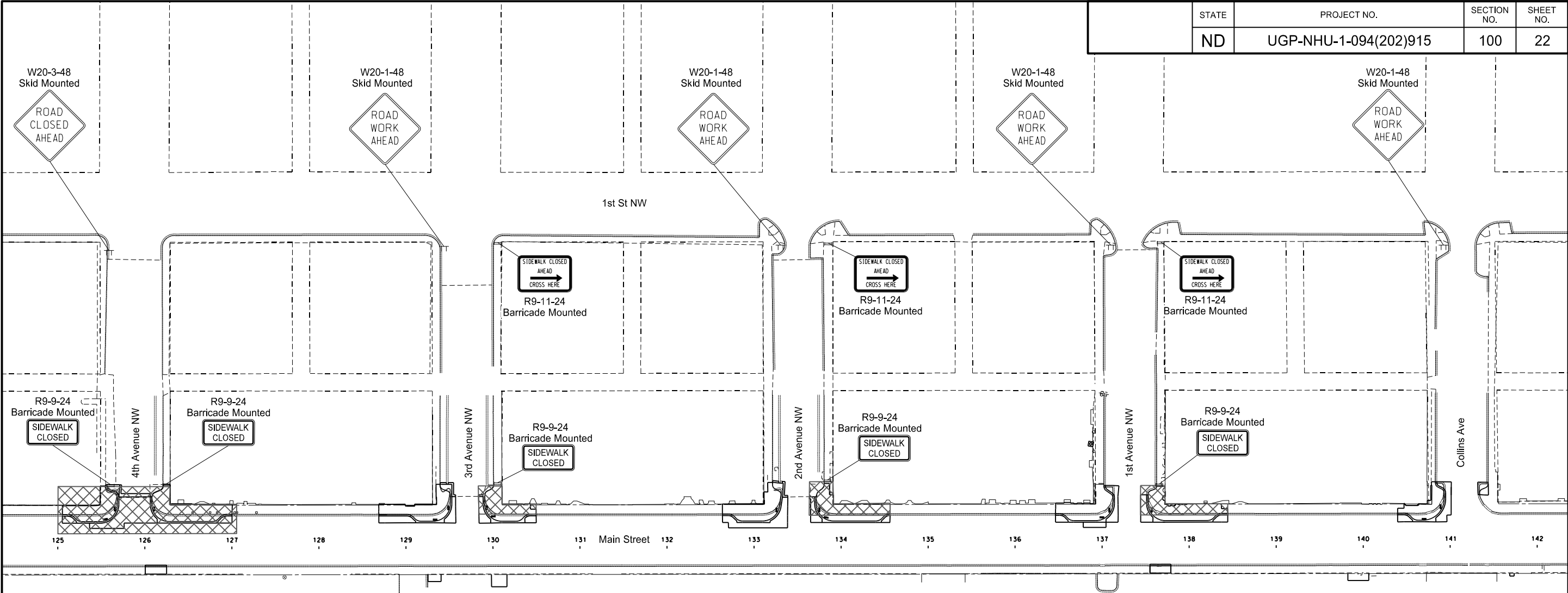
Symbols

- Sign
- Delineator Drum
- Tubular Marker
- Sidewalk Barricade
- Type III Barricade
- Temp Pavement Marking
- Traffic Flow


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Main St
Work Zone Traffic Control
Phase 2A
Sta 140+50 to 145+50

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	100	22

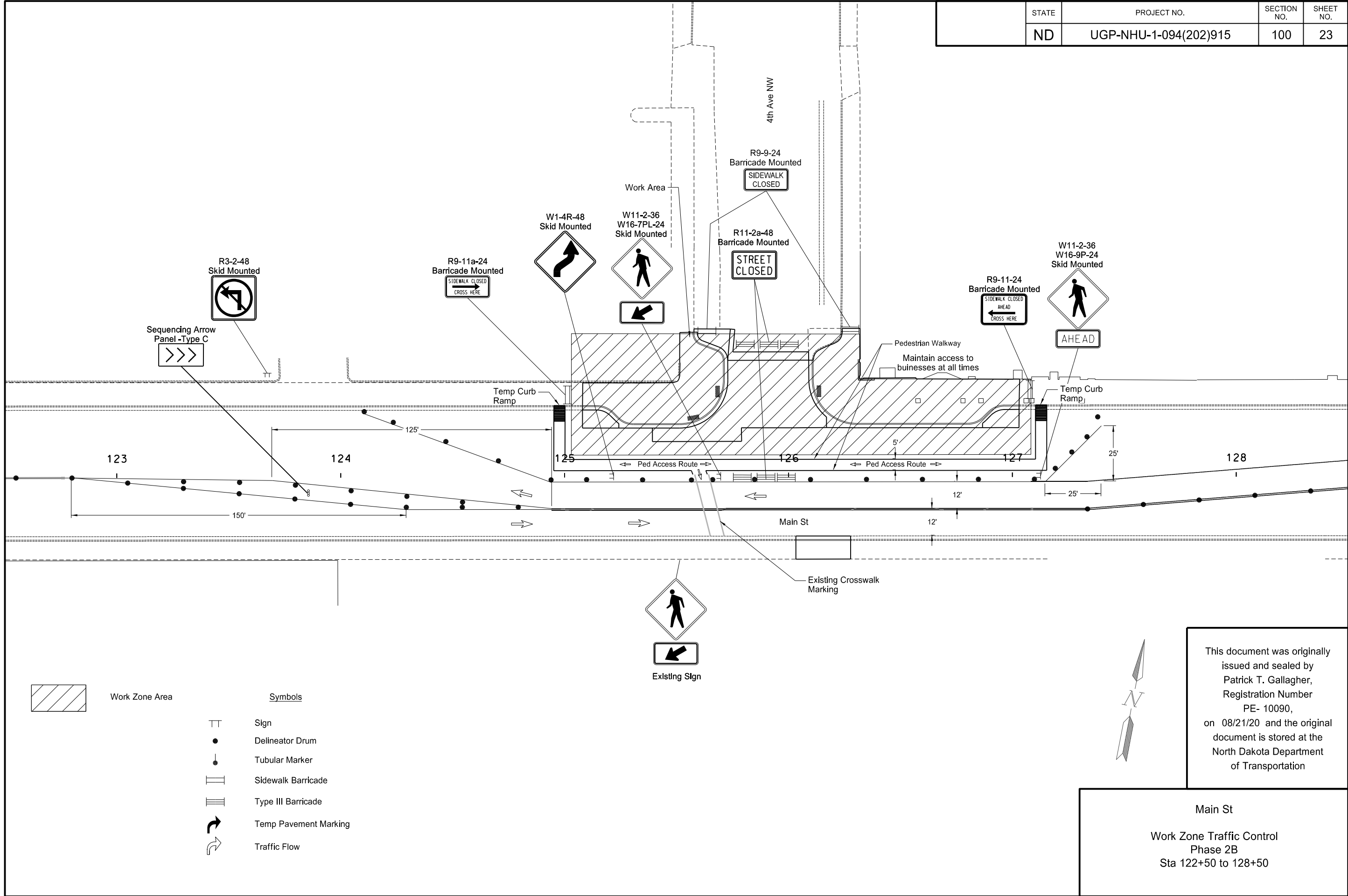


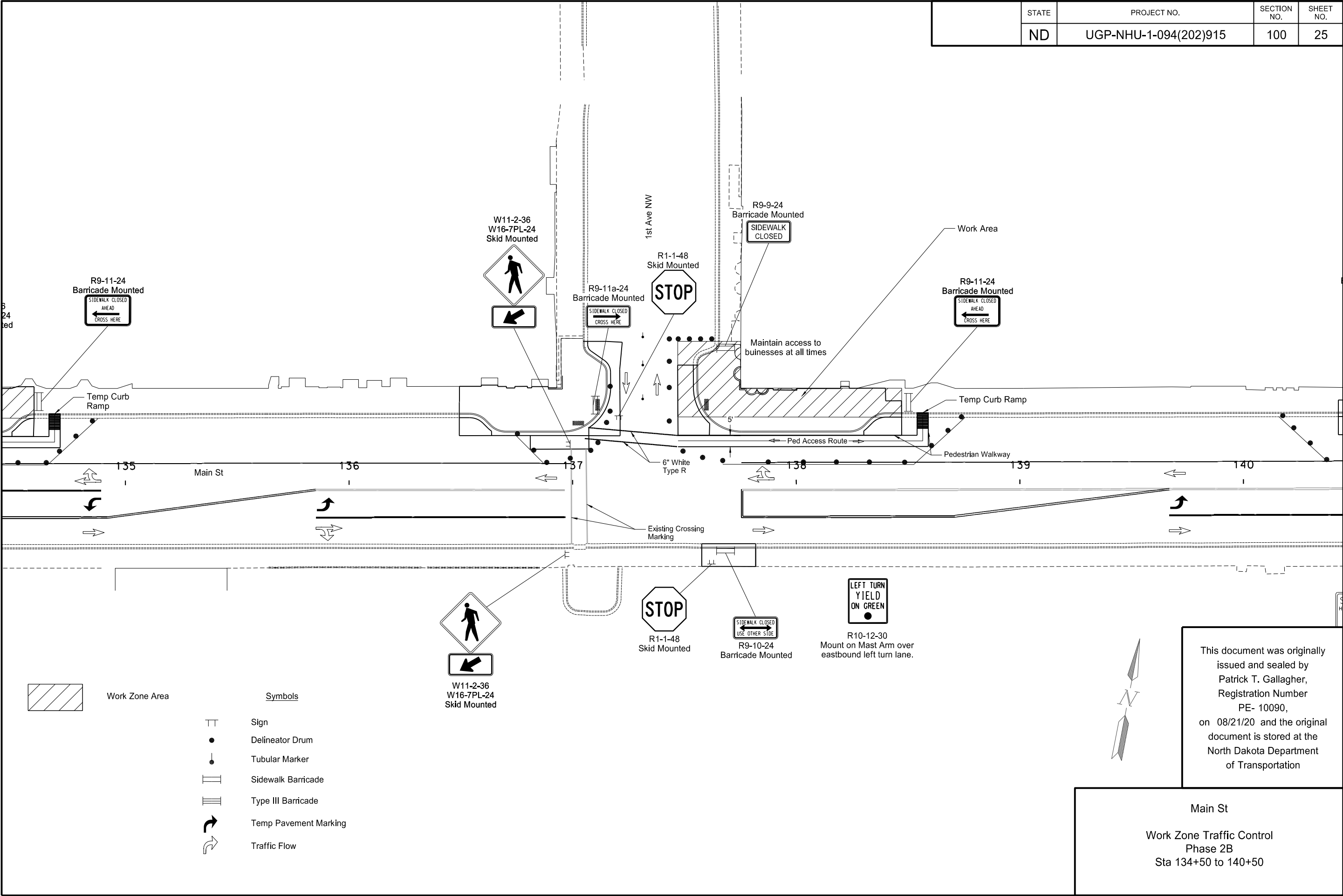
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 Phase 2B Work Zone

Main St
Work Zone Traffic Control
Phase 2B
Terminal Signs

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	100	23

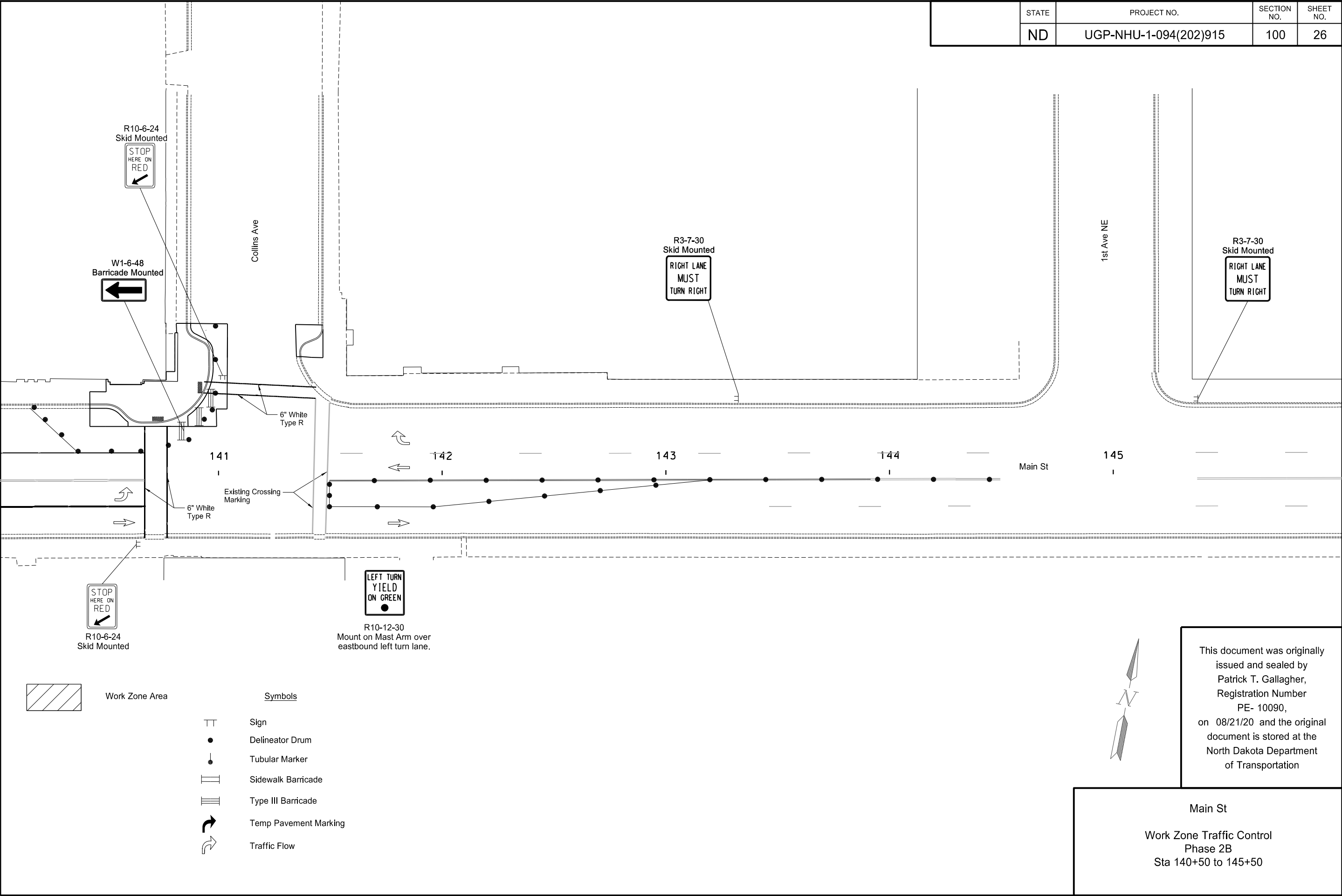




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Main St
Work Zone Traffic Control
Phase 2B
Sta 134+50 to 140+50

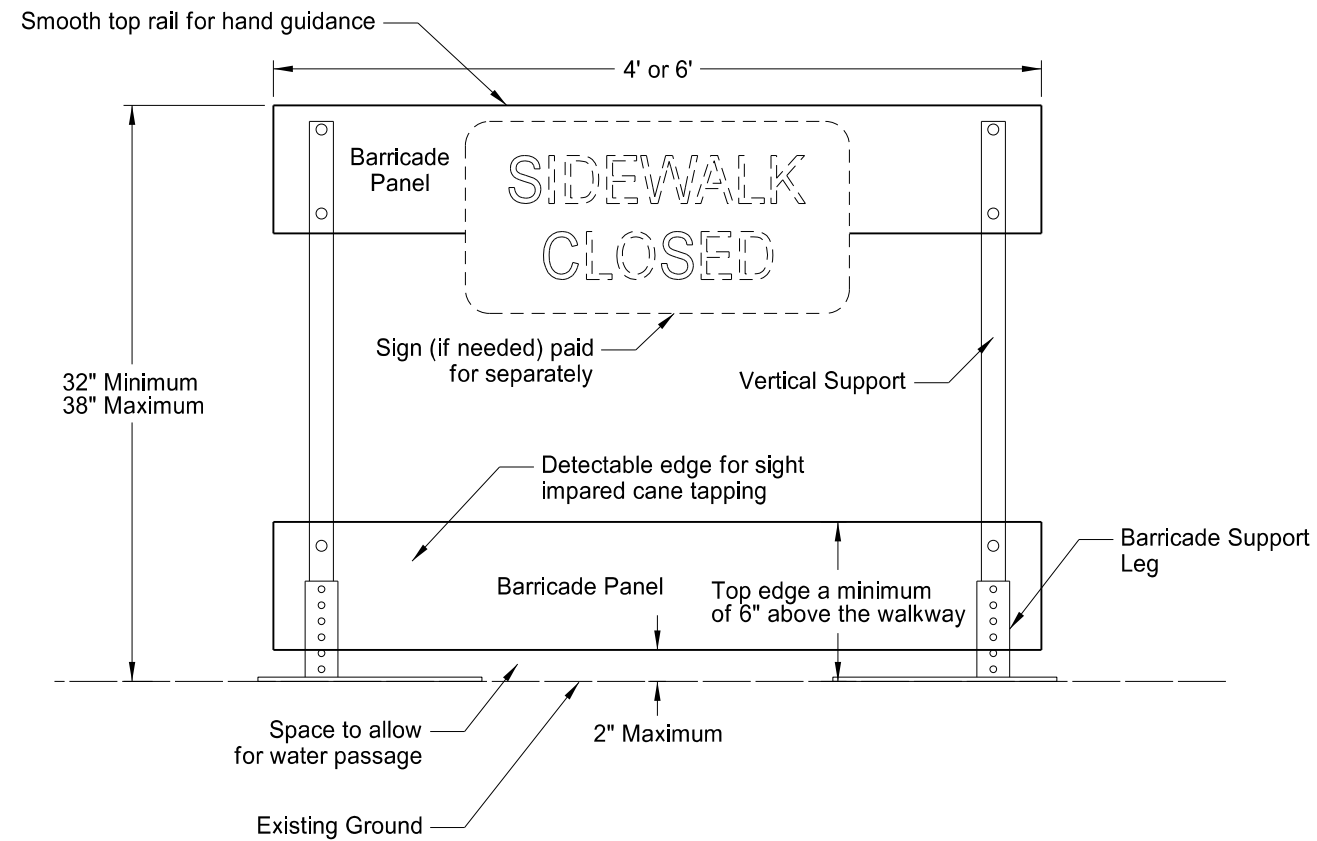
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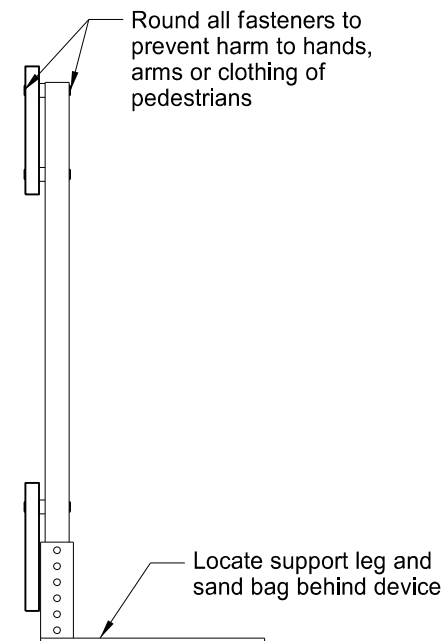
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Main St
Work Zone Traffic Control
Phase 2B
Sta 140+50 to 145+50

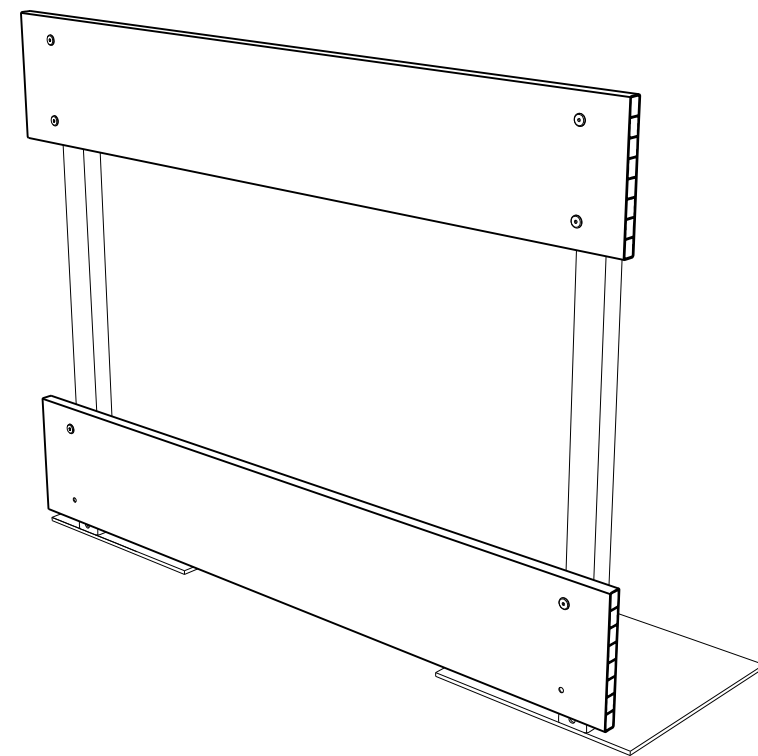
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	100	27



Front View



End View



Perspective View

NOTES:

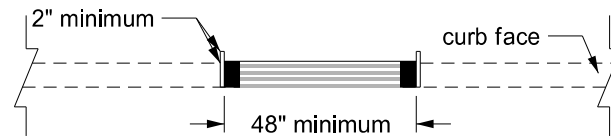
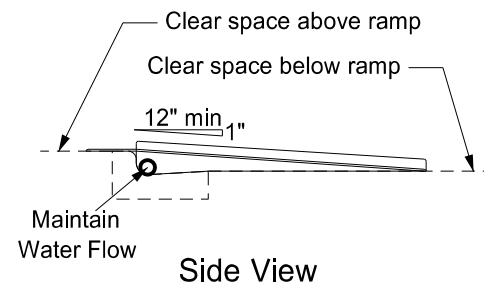
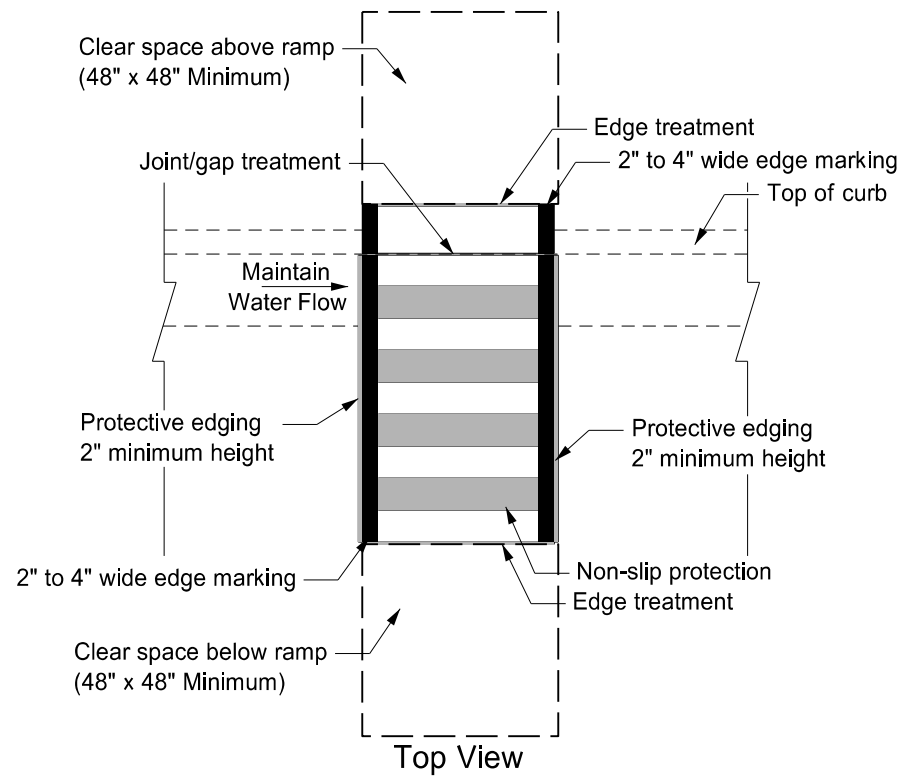
Sidewalk Barricades

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

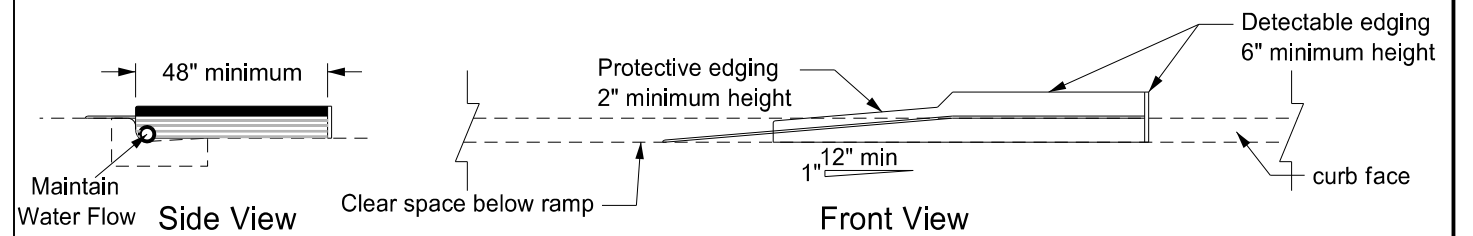
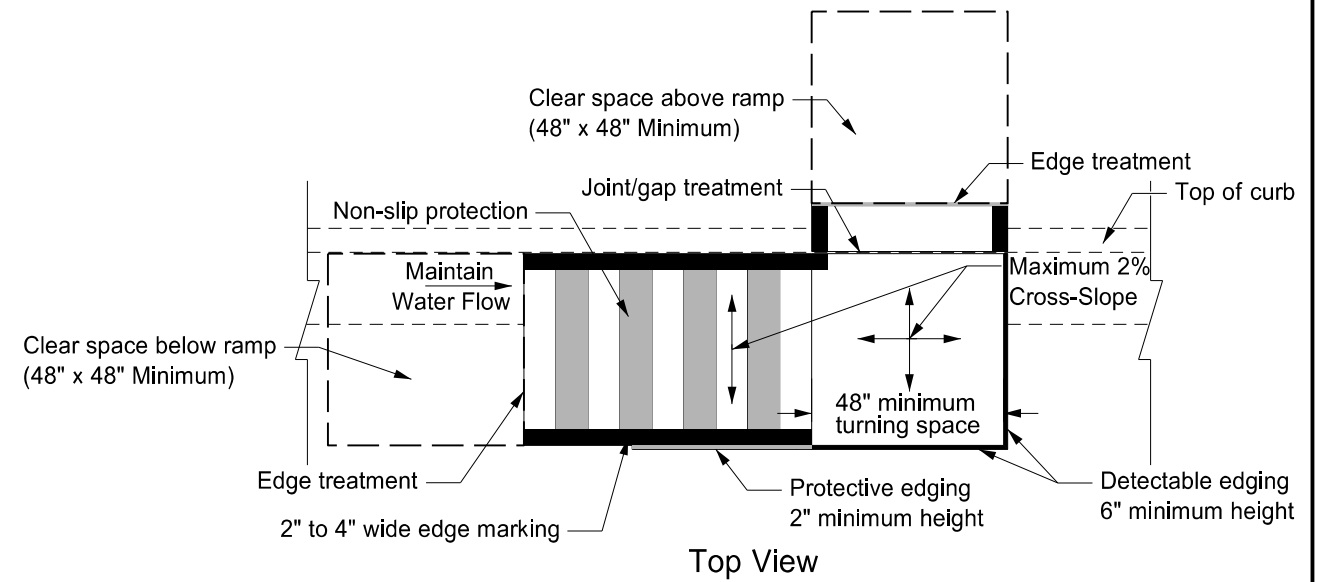
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Main St
Work Zone Traffic Control
Sidewalk Barricade

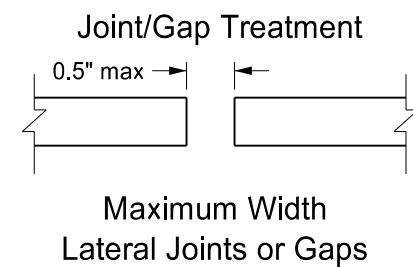
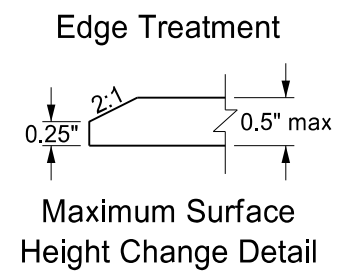
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	100	28



Temporary Perpendicular Curb Ramp



Temporary Parallel Curb Ramp



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Main St
Work Zone Traffic Control
Temporary Pedestrian Curb Ramp Details

																				STATE	PROJECT NO.			SECTION NO.	SHEET NO.
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Station / RP	Sign No.	Assembly No.	Flat Sheet For Signs		Sign Support Length				Vert Clear- ance FT	Support Size	Max Post Len LF	Sleeve Length				Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments		
			IV SF	XI SF	1st LF	2nd LF	3rd LF	4th LF				1st LF	2nd LF	3rd LF	4th LF										
Main St																									
101+75 Rt	SA-F				10.2				6.0	2.5 x 2.5 12 ga	12.4						1	4	3 x 3 7 ga	1					
102+31 Lt	SA-E			7.2	11.2				6.0	2.5 x 2.5 12 ga	12.3						1	4	3 x 3 7 ga	1					
102+73 Rt	SA-E			7.2	9.7				6.0	2.25 x 2.25 12 ga	11.3						1	4	2.5 x 2.5 12 ga						
102+93 Lt	SA-F			8.3	10.2				6.0	2.5 x 2.5 12 ga	12.4						1	4	3 x 3 7 ga	1					
103+05 Rt	SA-F				10.2				6.0	2.5 x 2.5 12 ga	12.4						1	4	3 x 3 7 ga	1					
103+23 Rt	R1-2	4			9.8				7.0	2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga	1					
103+92 Rt	SA-D			3.0	10.2				7.0	2 x 2 12 ga	15.1						1	4	2.25 x 2.25 12 ga						
104+09 Lt	SA-B			4.5	11.7				7.0	2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga						
105+72 Lt	SA-B			4.5	11.7				7.0	2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga						
105+88 Lt	SS19	8		3.0																		Mount on Light Standard			
106+68 Rt	SA-C			8.5	11.2				7.0	2.5 x 2.5 12 ga	12.4						1	4	3 x 3 7 ga						
107+00 Lt	SA-B			4.5	11.7				7.0	2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga						
107+78 Rt	SS3			4.5					7.0													Mount on Light Standard			
109+57 Lt	SA-B			4.5	11.7				7.0	2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga						
109+79 Lt	SS19	8		3.0																		Mount on Light Standard			
111+06 Lt	SA-A			6.0	13.2				7.0	2.25 x 2.25 12 ga	14.4						1	4	2.5 x 2.5 12 ga						
111+31 Rt	SS3			4.5					7.0													Mount on Light Standard			
112+76 Lt	SS19			7.5					7.0													Mount on Light Standard			
113+66 Lt	SA-A			6.0	13.2				7.0	2.25 x 2.25 12 ga	14.4						1	4	2.5 x 2.5 12 ga						
114+25 Rt	SS3			4.5					7.0													Mount on Light Standard			
115+40 Lt	SA-A			4.5					7.0											1			Mount on Light Standard		
116+00 Lt	SS19	8		3.0	9.2				7.0	2 x 2 12 ga	14.6						1	4	2.25 x 2.25 12 ga						
116+93 Rt	SS19	8		3.0																		Mount on Light Standard			
117+56 Lt	SA-A			6.0	13.2				7.0	2.25 x 2.25 12 ga	14.4						1	4	2.5 x 2.5 12 ga						
117+58 Rt	SA-D			3.0	10.2				7.0	2 x 2 12 ga	15.1						1	4	2.25 x 2.25 12 ga						
117+80 Lt	SS17			16.0																		Mount on Mast Arm			
117+80 Lt	SS18			18.0																		Mount on Mast Arm			
117+87 Rt	SS10			16.0																		Mount on Mast Arm			
117+87 Rt	SS17			16.0																		Mount on Mast Arm			
118+69 Lt	SS10			16.0																		Mount on Mast Arm			
118+87 Rt	SS18			18.0																		Mount on Mast Arm			
118+87 Rt	SS17			16.0																		Mount on Mast Arm			
119+05 Rt	SA-D			3.0	10.2				7.0	2 x 2 12 ga	15.1						1	4	2.25 x 2.25 12 ga						
120+48 Rt	SS3			4.5					7.0													Mount on Light Standard			
																			This document was originally issued and sealed by Jonathan P. Morgenroth, Registration Number 6872, on 2/7/20 and is stored at the North Dakota Department of Transportation.			Sign Summary Perforated Tube Main St Permanent Signing			
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																				STATE	PROJECT NO.			SECTION NO.	SHEET NO.
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Station / RP	Sign No.	Assembly No.	Flat Sheet For Signs		Sign Support Length				Vert Clear- ance FT	Support Size	Max Post Len LF	Sleeve Length				Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments		
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122+38 Rt	SS3			4.5					7.0														Mount on Light Standard		
123+17 Lt	SA-A			4.5	13.2				7.0	2.25 x 2.25 12 ga	14.4						1	4	2.5 x 2.5 12 ga	1					
123+21 Rt	SA-C			8.5	11.2				7.0	2.5 x 2.5 12 ga	12.4						1	4	3 x 3 7 ga						
123+37 Lt	SA-C			11.5					7.0														Mount on Light Standard		
125+31 Lt	SA-A			6.0					7.0														Mount on Light Standard		
125+36 Rt	SA-D			3.0	10.2				7.0	2 x 2 12 ga	15.1						1	4	2.25 x 2.25 12 ga						
125+69 Lt	SA-2E				11.0				7.0	2.25 x 2.25 12 ga	11.4						1	4	2.5 x 2.5 12 ga	1					
125+97 Rt	SA-B			4.5	11.7				7.0	2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga						
126+75 Rt	R2-1	9		5.0	9.7				7.0	2 x 2 12 ga	11.5						1	4	2.25 x 2.25 12 ga						
126+87 Lt	SA-A			6.0	13.2				7.0	2.25 x 2.25 12 ga	14.4						1	4	2.5 x 2.5 12 ga						
127+35 Lt	SS19	8		3.0																			Mount on Light Standard		
128+18 Lt	SS19	8		3.0																			Mount on Light Standard		
128+71 Rt	SA-B			4.5	11.7				7.0	2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga						
128+71 Lt	SS7			1.5																			Mount on Existing Supports		
129+25 Lt	SS11			18.0																			Mount on Mast Arm		
129+36 Rt	SS10			16.0																			Mount on Mast Arm		
129+38 Lt	No Parking Tue/Thur	7			8.7				7.0	2 x 2 12 ga	25.5						1	4	2.25 x 2.25 12 ga	1					
130+16 Rt	SS11			18.0																			Mount on Mast Arm		
130+16 Rt	SS17			16.0																			Mount on Mast Arm		
130+16 Rt	OneWay																		1				Mount on Signal		
130+39 Lt	SA-A			6.0	13.2				7.0	2.25 x 2.25 12 ga	14.4						1	4	2.5 x 2.5 12 ga						
130+92 Rt	SA-D			3.0	13.2				7.0	2 x 2 12 ga	16.6						1	4	2.25 x 2.25 12 ga						
131+14 Lt	SS19			7.5																			Mount on Light Standard		
131+65 Rt	SS19	8		3.0	9.2				7.0	2 x 2 12 ga	14.6						1	4	2.25 x 2.25 12 ga						
132+88 Lt	SA-A			6.0					7.0														Mount on Light Standard		
132+93 Rt	SA-B			4.5	11.7				7.0	2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga						
133+27 Lt	SS8	7		1.5	8.7				7.0	2 x 2 12 ga	25.5						1	4	2.25 x 2.25 12 ga						
133+30 Lt	SA-2E			5.2	11.0				7.0	2.5 x 2.5 12 ga	13.7						1	4	3 x 3 7 ga	1					
133+36 Rt	D3-1				8.5				7.0	2 x 2 12 ga	19.7						1	4	2.25 x 2.25 12 ga	1					
133+95 Lt	SA-F			8.3	11.8				7.0	2.5 x 2.5 12 ga	12.4						1	4	3 x 3 7 ga	1					
134+24 Rt	SA-B			4.5	11.7				7.0	2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga						
134+50 Lt	SA-A			6.0	13.2				7.0	2.25 x 2.25 12 ga	14.4						1	4	2.5 x 2.5 12 ga						
134+89 Lt	SS19	8		3.0																			Mount on Light Standard		
																			This document was originally issued and sealed by Jonathan P. Morgenroth, Registration Number 6872, on 2/7/20 and is stored at the North Dakota Department of Transportation.			Sign Summary Perforated Tube Main St Permanent Signing			

2/7/20

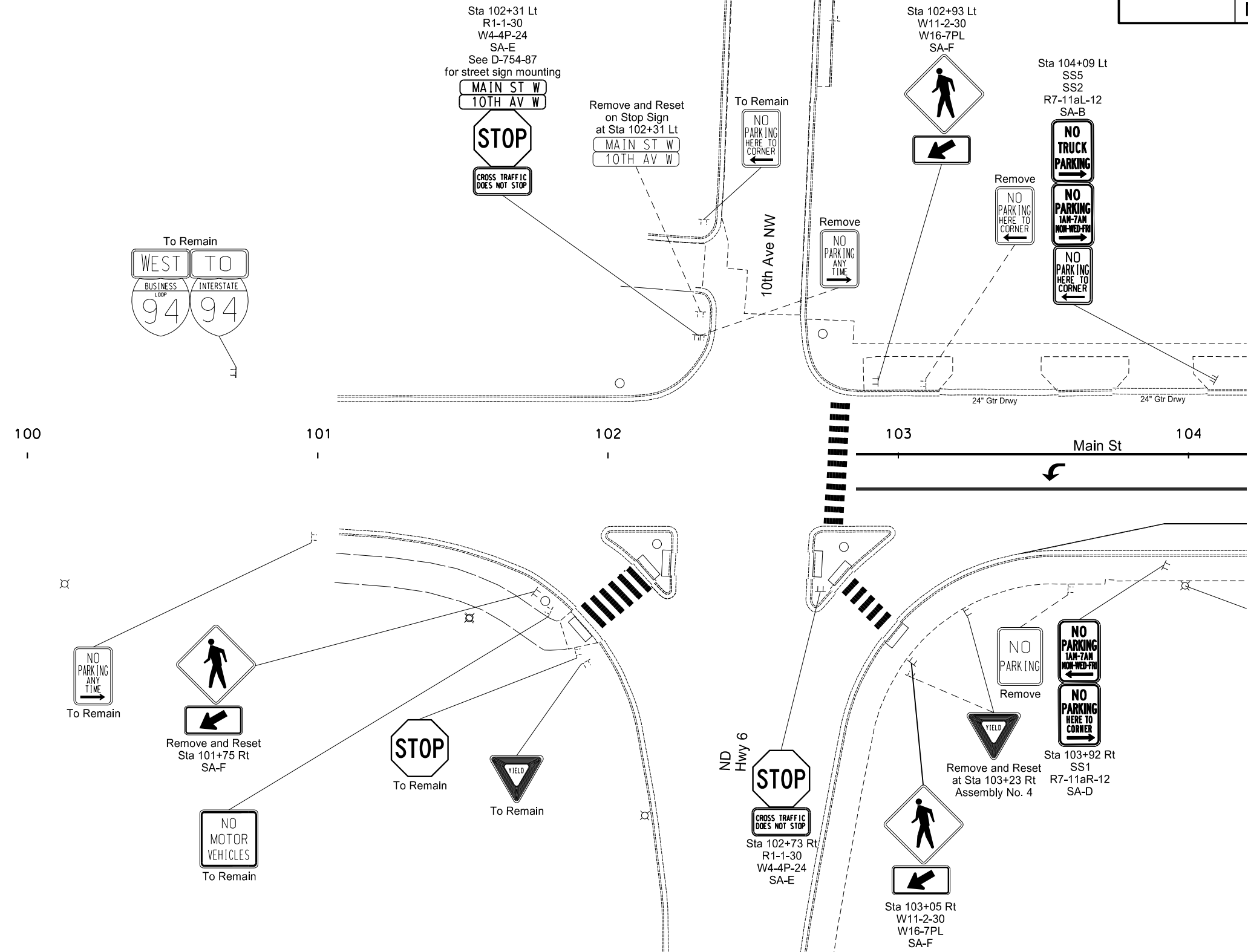
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																		STATE	PROJECT NO.			SECTION NO.	SHEET NO.		
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Station / RP	Sign No.	Assembly No.	Flat Sheet For Signs		Sign Support Length				Vert Clear- ance	Support Size	Max Post Len	Sleeve Length				Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments		
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136+00 Lt	SA-B	8		4.5	11.7				7.0	2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga			Mount on Light Standard			
136+07 Rt	SS19			3.0													1	4	2.5 x 2.5 12 ga						
136+65 Lt	SA-A			6.0	13.2					7.0	2.25 x 2.25 12 ga	14.4						1	4	2.5 x 2.5 12 ga					
136+70 Rt	SA-B	13.0		4.5	11.7				7.0	2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga	1		1			
137+08 Lt	SA-D			1.5	10.2					7.0	2 x 2 12 ga	15.1						1	4	2.25 x 2.25 12 ga					
137+12 Lt	SA-2D			5.2	11.7					7.0	2.5 x 2.5 12 ga	11.8						1	4	3 x 3 7 ga					
138+06 Rt	SA-B			4.5	11.7					7.0	2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga					
138+31 Lt	SA-A			6.0	13.2					7.0	2.25 x 2.25 12 ga	14.4						1	4	2.5 x 2.5 12 ga					
138+71 Lt	SS19	8		3.0																		Mount on Light Standard			
139+39 Lt	SA-B	10.0		4.5	11.7				7.0	2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga				Mount on Mast Arm		
140+39 Rt	SA-B			4.5	11.7					7.0	2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga					
140+51 Lt	SA-A			6.0	13.2					7.0	2.25 x 2.25 12 ga	14.4						1	4	2.5 x 2.5 12 ga					
140+62 Lt	SS12			17.0																					
140+93 Rt	SS13			10.0																				Mount on Signal	
140+93 Lt	SA-B		1.5	11.7					7.0	2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga	1		1			
141+39 Lt	SA-B		1.5	11.7					7.0	2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga	1			Mount on Mast Arm		
141+74 Rt	SS12		17.0																					Mount on Mast Arm	
141+74 Rt	SS17		16.0																			Mount on Light Standard			
142+51 Lt	SS19	8		3.0																			Mount on Light Standard		
142+97 Lt	R3-7R	16		9.0	9.9				7.0	2.5 x 2.5 12 ga	10.5						1	4	3 x 3 7 ga	1		1			
143+17 Lt	SA-A			6.0	13.2					7.0	2.25 x 2.25 12 ga	14.4						1	4	2.5 x 2.5 12 ga					
144+12 Lt	SA-A			6.0	13.2					7.0	2.25 x 2.25 12 ga	14.4						1	4	2.5 x 2.5 12 ga					
144+50 Lt	D3-1																								
144+55 Lt	R3-7R	16		9.0	9.9				7.0	2.5 x 2.5 12 ga	10.5						1	4	3 x 3 7 ga				Mount on Light Standard		
163+06 Rt	R1-2	4		3.9																		Mount on Signal			
163+58 Rt	M6-1R																							1	
163+58 Rt	SS14		15.0																						
163+58 Rt	SS17		16.0																						
163+59 Lt	SS17		16.0																				Mount on Mast Arm		
163+59 Lt	SS15		38.5																			Mount on Mast Arm			
164+39 Lt	SS14		15.0																					Mount on Mast Arm	
164+39 Lt	SS17		16.0																						Mount on Mast Arm
164+40 Rt	SS17		16.0																						
164+40 Rt	SS16		38.5																				Mount on Mast Arm		
164+57 Rt	R1-2	4		3.9																		Mount on Light Standard			
2/7/20 9:22:41AM Page 3 of 4																	This document was originally issued and sealed by Jonathan P. Morgenroth, Registration Number 6872, on 2/7/20 and is stored at the North Dakota Department of Transportation.			Sign Summary Perforated Tube Main St Permanent Signing					

																		STATE	PROJECT NO.			SECTION NO.	SHEET NO.			
																	N.D.	UGP-NHU-1-094(202)915			110	4				
Station / RP	Sign No.	Assembly No.	Flat Sheet For Signs IV SF XI SF		Sign Support Length 1st LF 2nd LF 3rd LF 4th LF				Vert Clear- ance FT	Support Size	Max Post Len LF	Sleeve Length 1st LF 2nd LF 3rd LF 4th LF				Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments			
Sub Total			23.0	744.2	Total	601.1										Total	212.0			19	0	0				
Grand Total			23.0	744.2	Total	601.1										Total	212	0		19	0	0				
																	This document was originally issued and sealed by Jonathan P. Morgenroth, Registration Number 6872, on 2/7/20 and is stored at the North Dakota Department of Transportation.					Sign Summary Perforated Tube				
																						Main St Permanent Signing				
2/7/20 9:22:41AM Page 4 of 4																										

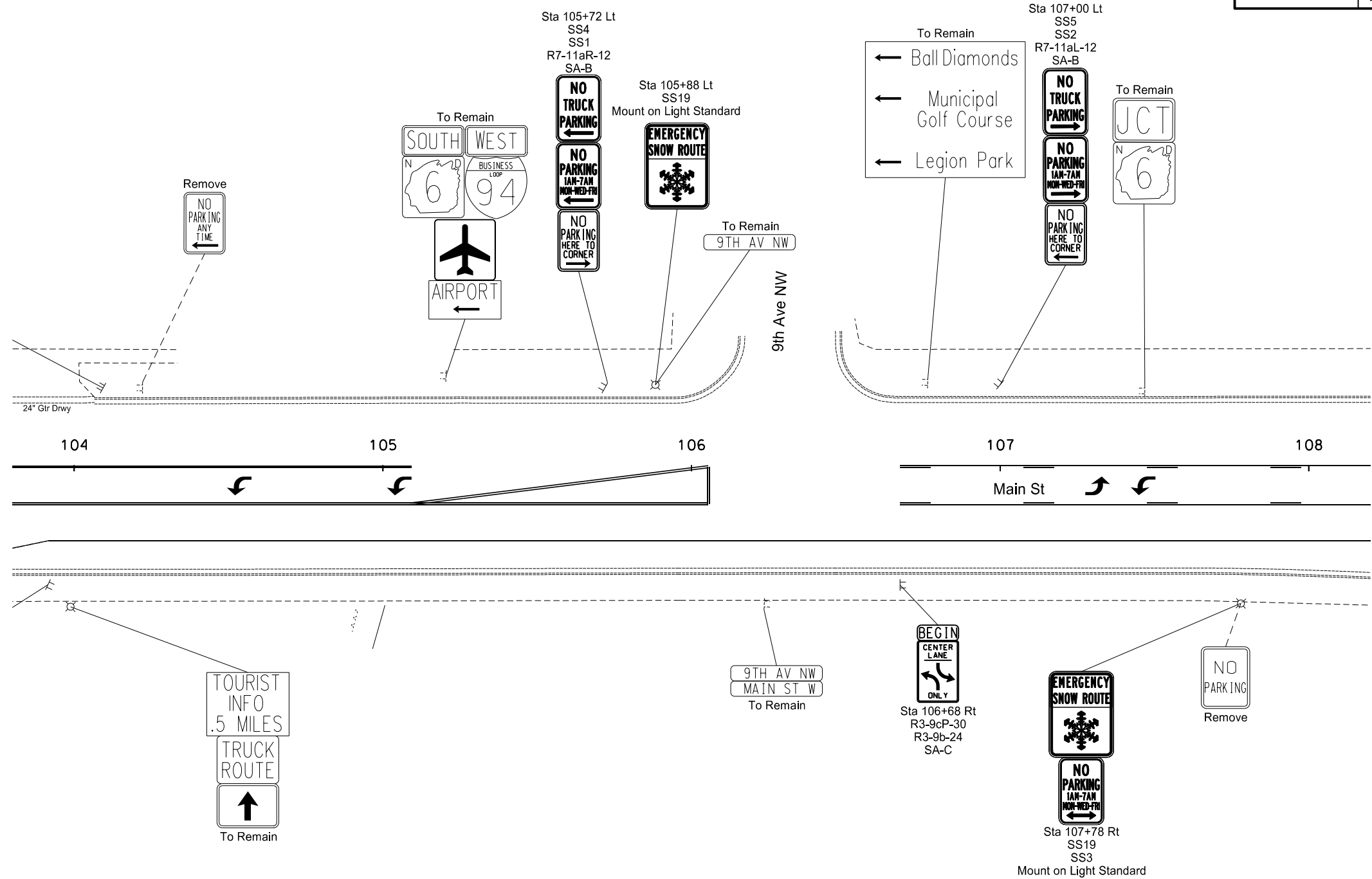
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	110	5



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Main St
Permanent Signing
Sta 100+00 to Sta 104+00

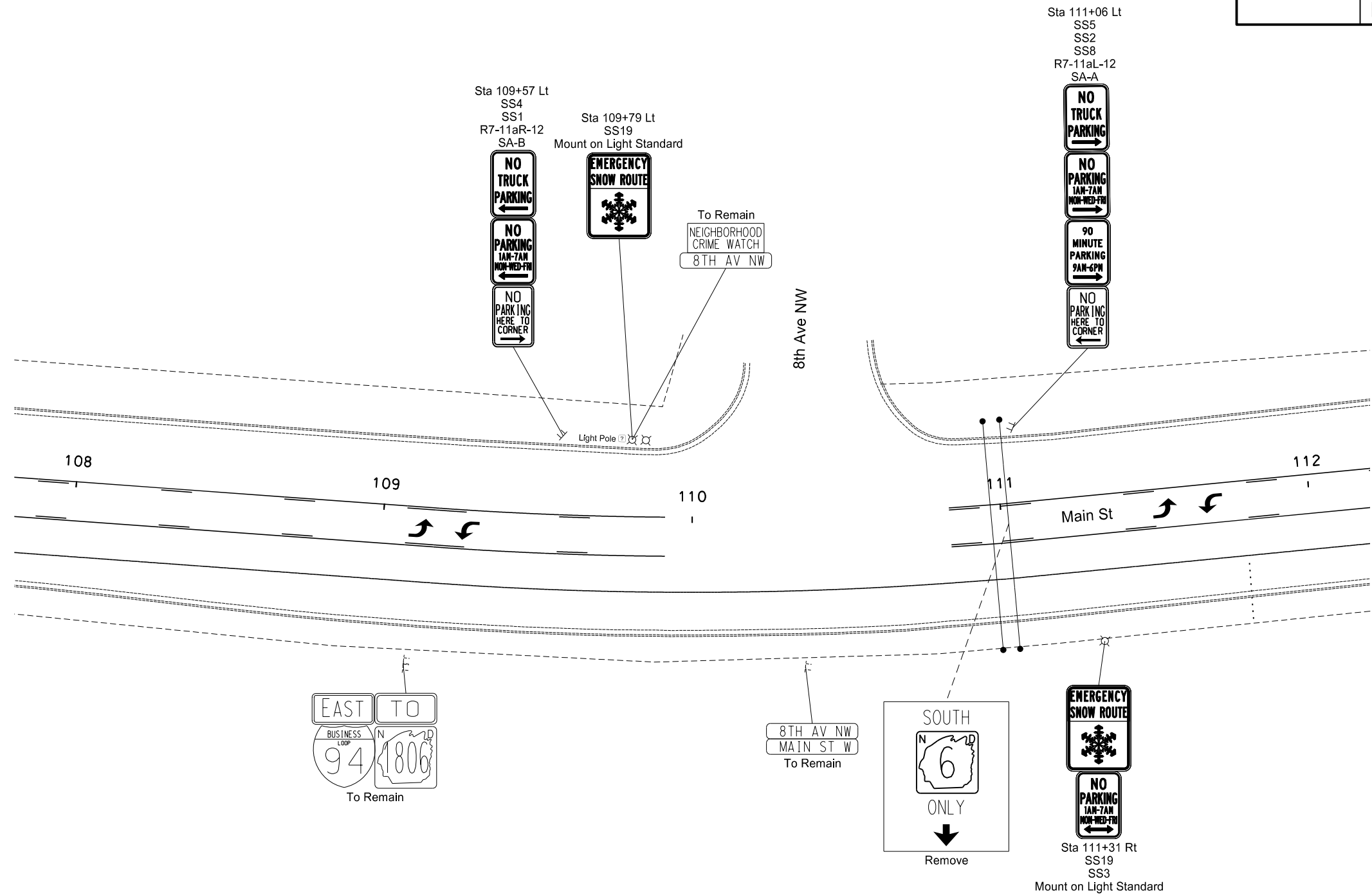
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	ND	UGP-NHU-1-094(202)915	110	6



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Main St
Permanent Signing
Sta 104+00 to Sta 108+00

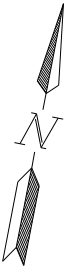
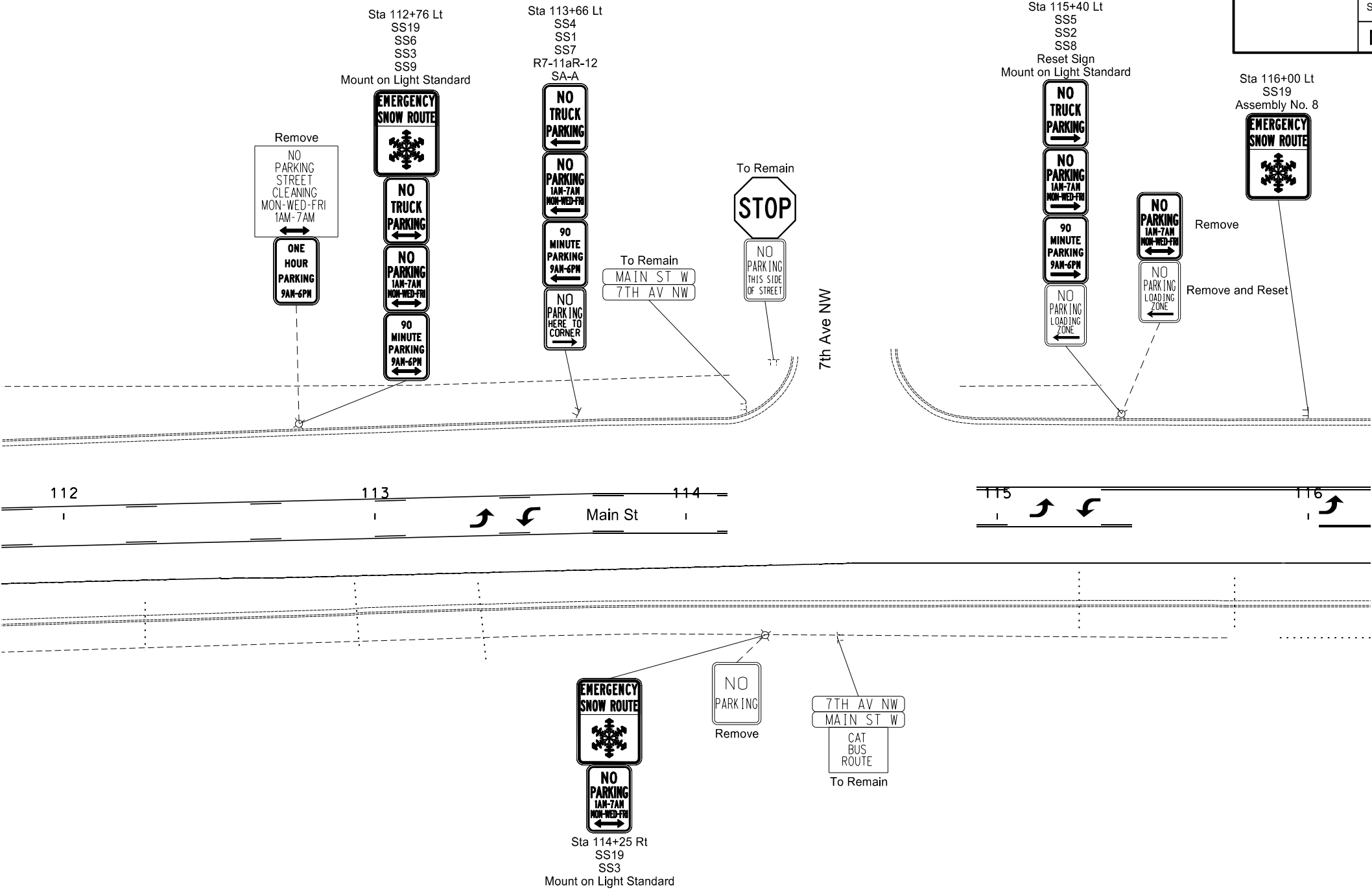
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	110	7



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Main St
Permanent Signing
Sta 108+00 to Sta 112+00

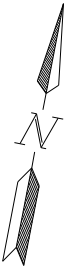
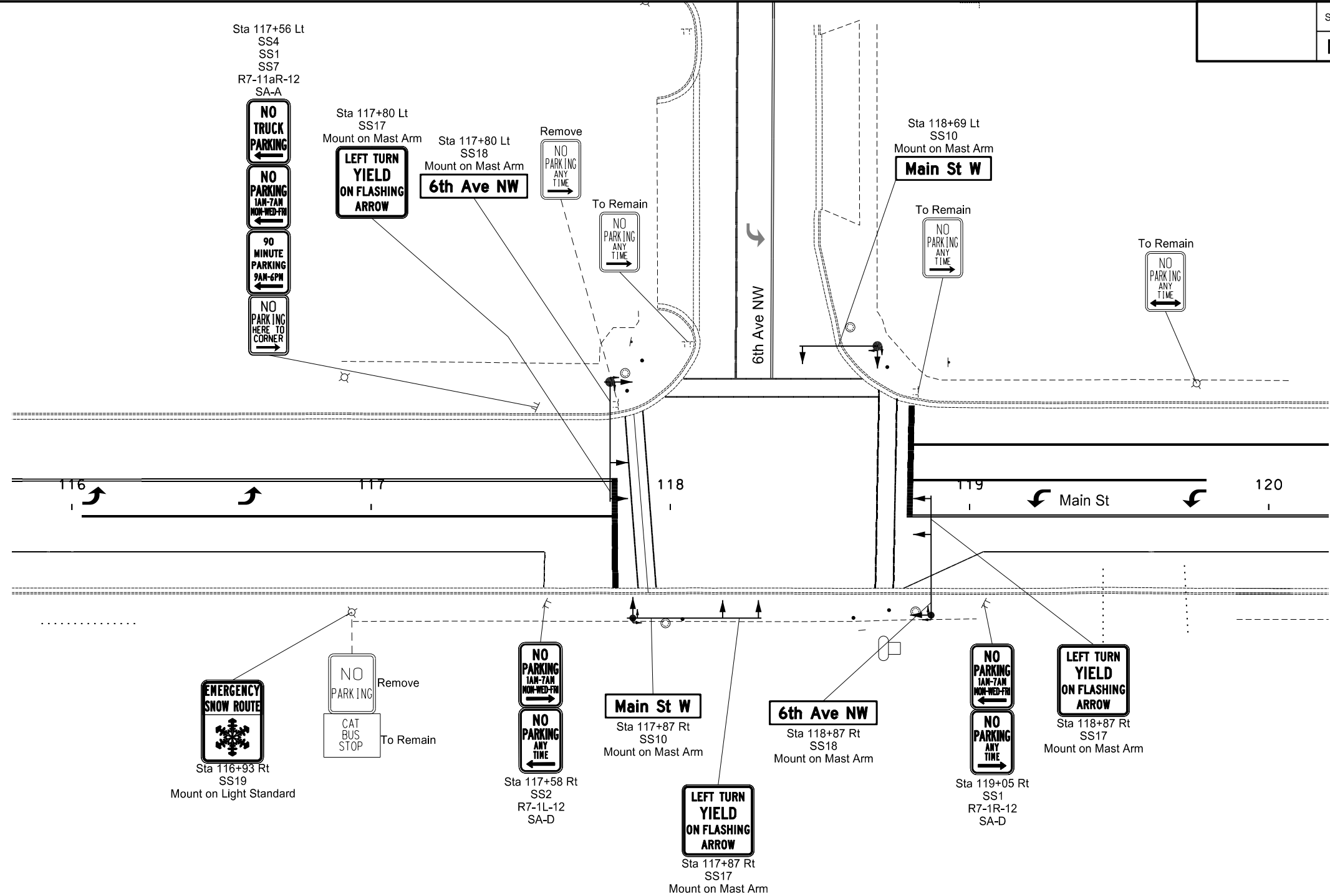
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	110	8



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Main St
Permanent Signing
Sta 112+00 to Sta 116+00

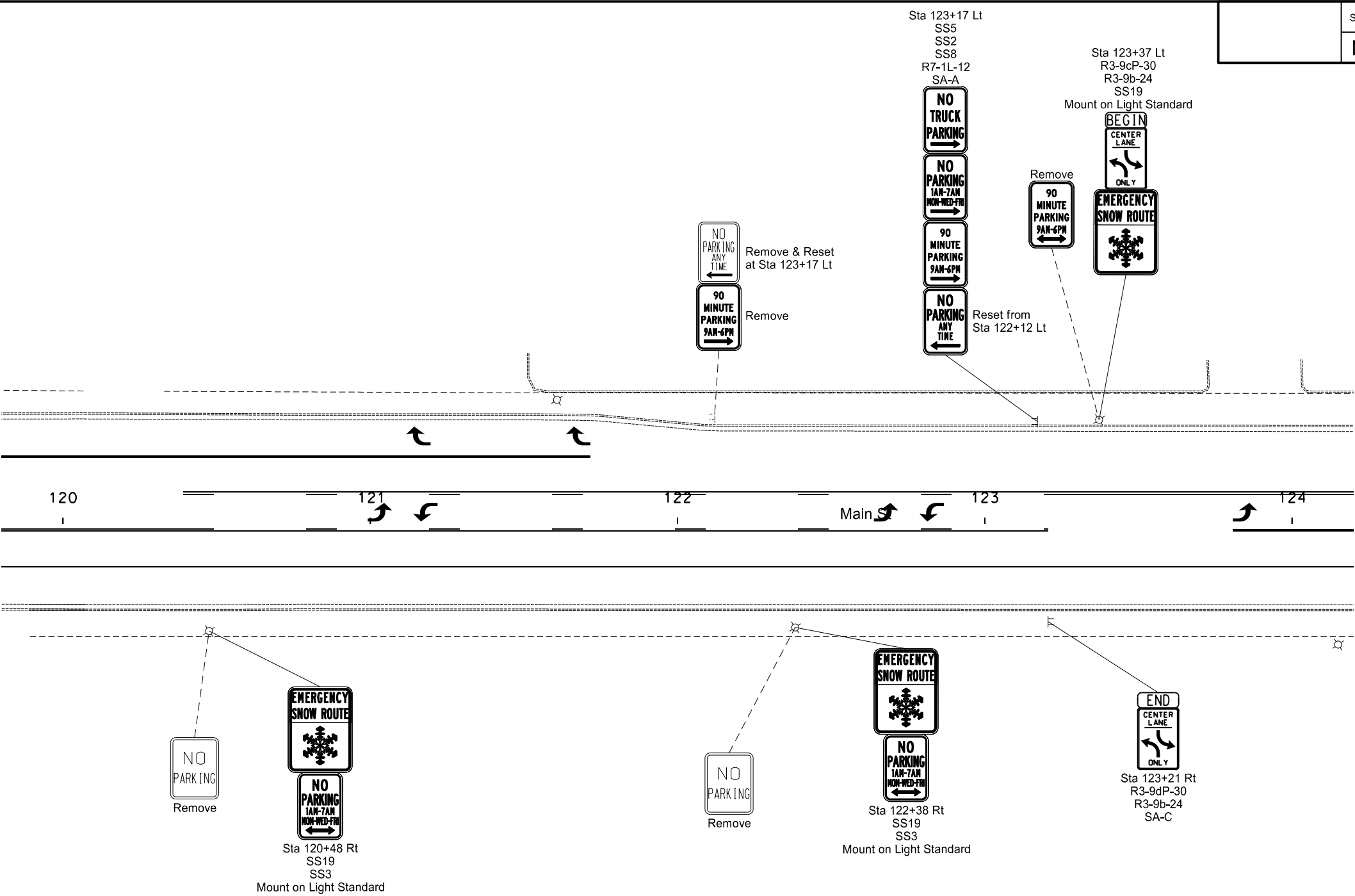
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	110	9



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Main St
Permanent Signing
Sta 116+00 to Sta 120+00

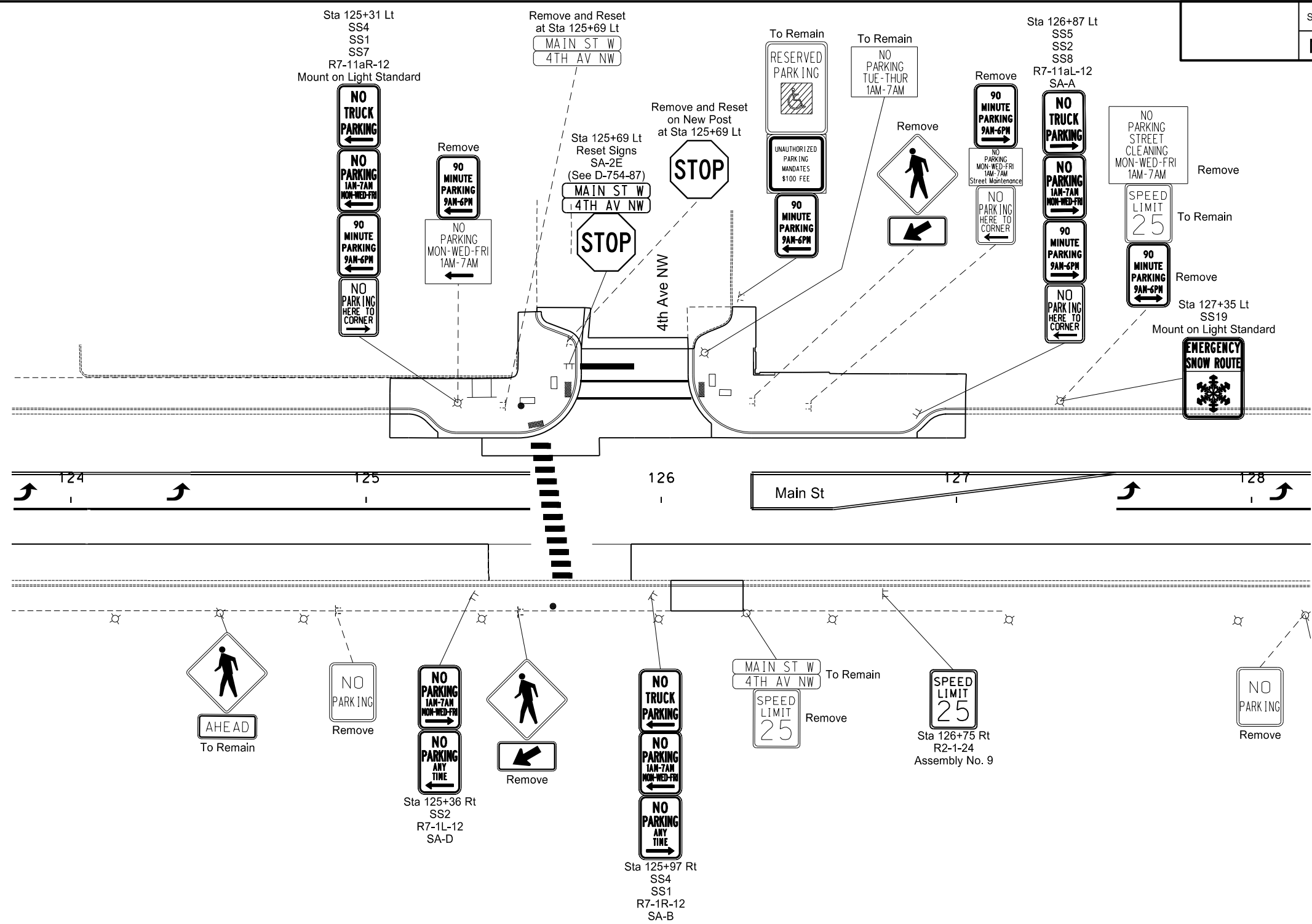
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	110	10



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Main St
Permanent Signing
Sta 120+00 to Sta 124+00

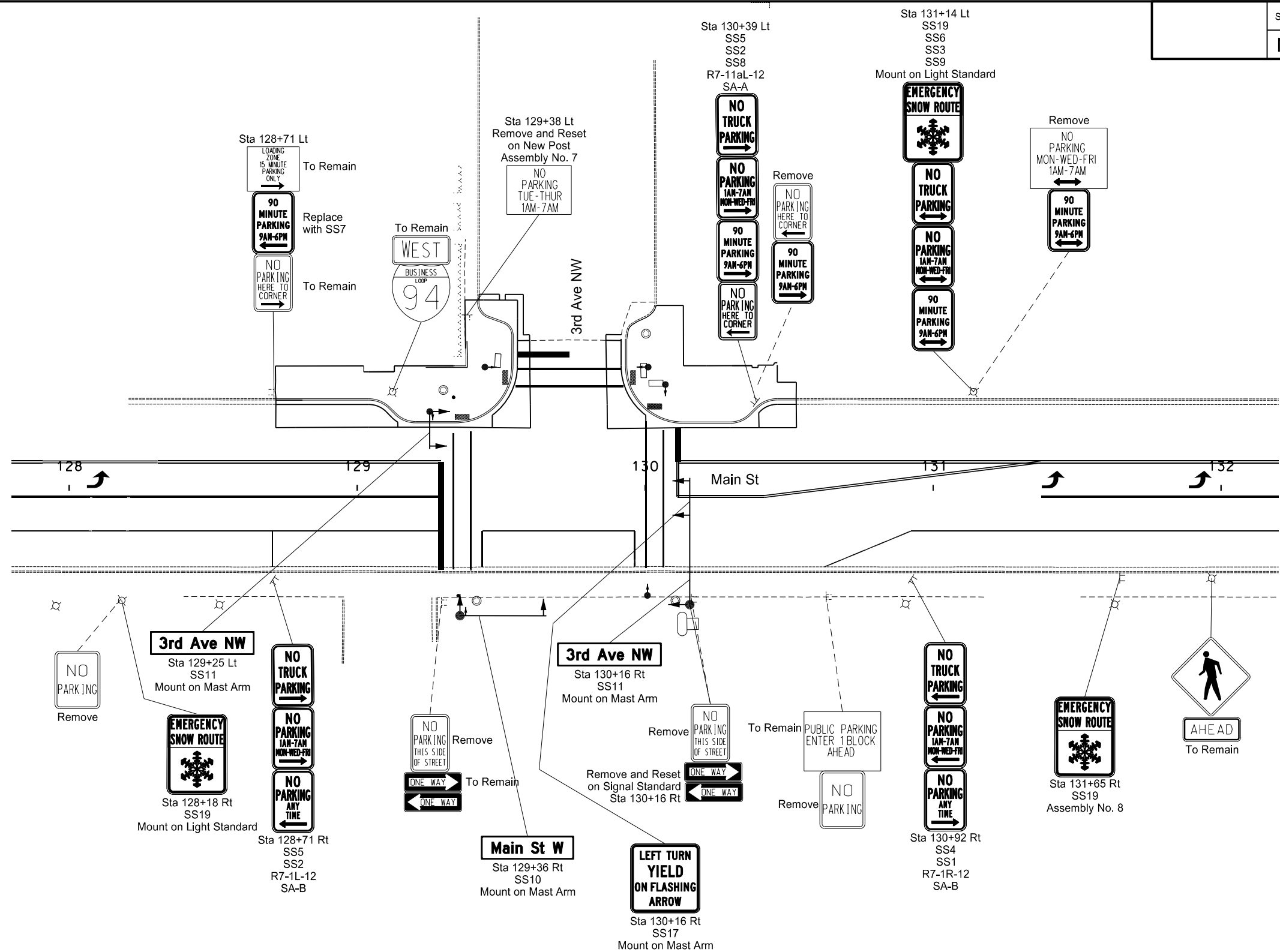
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	110	11



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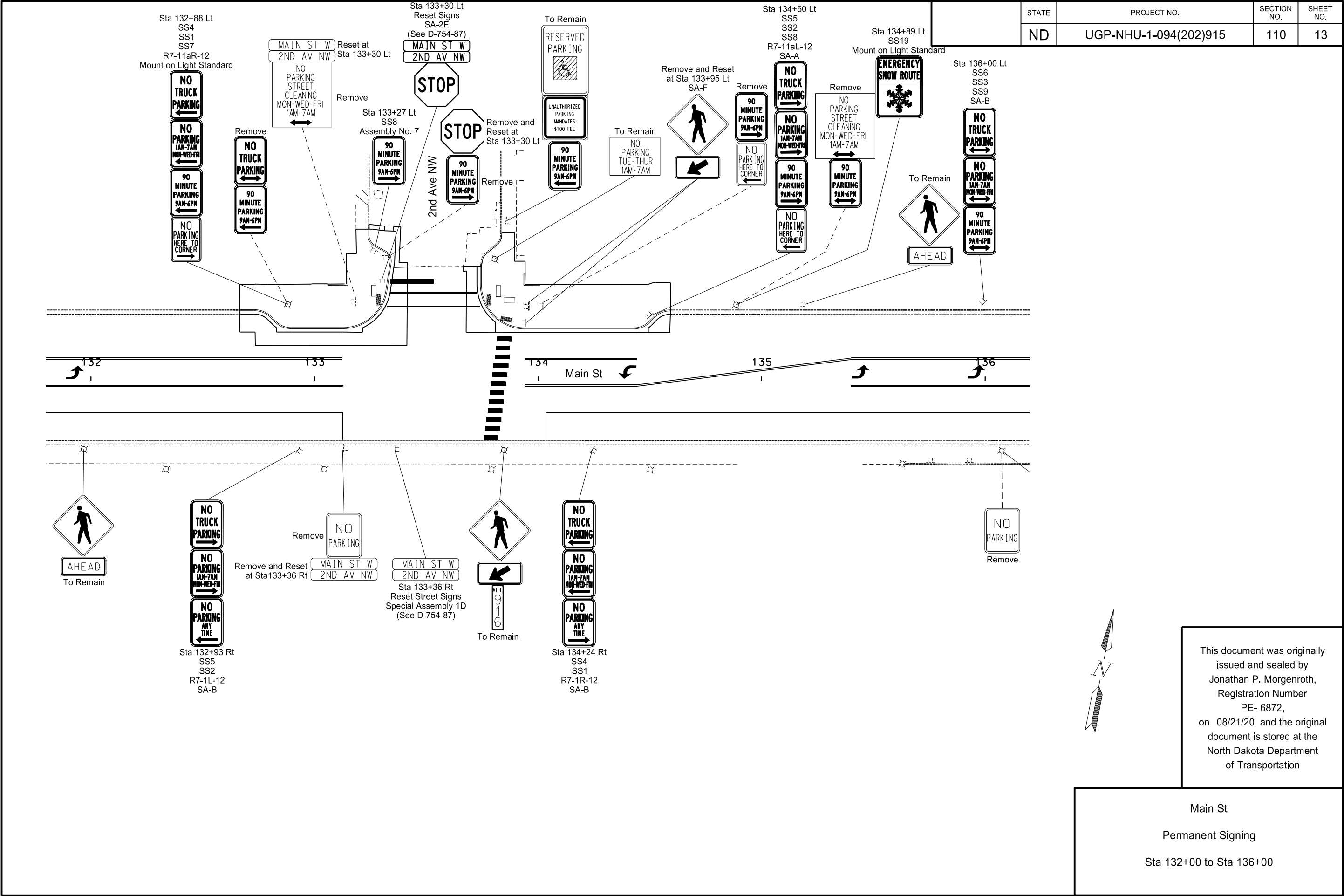
Main St
Permanent Signing
Sta 124+00 to Sta 128+00

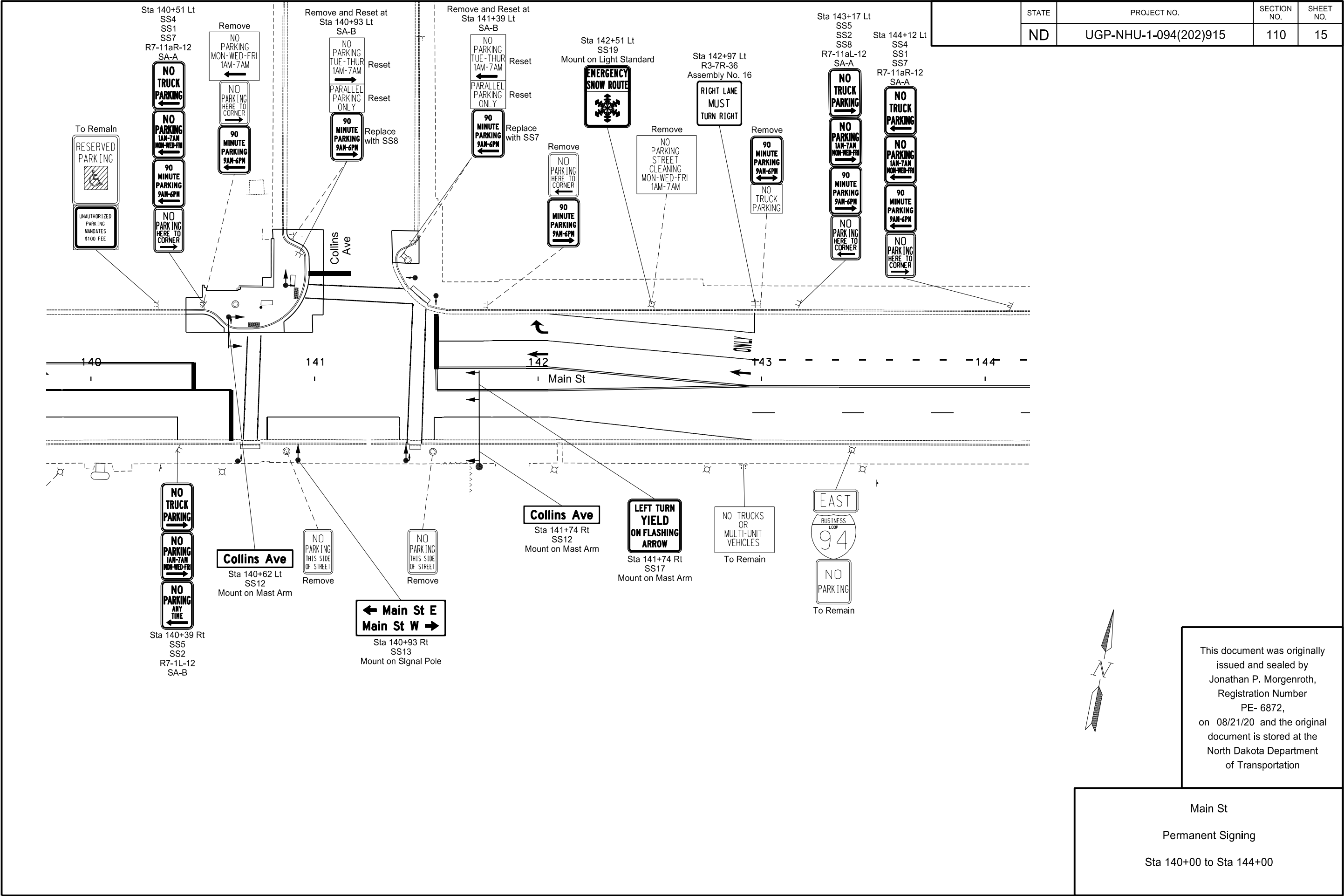
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	110	12



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Main St
Permanent Signing
Sta 128+00 to Sta 132+00



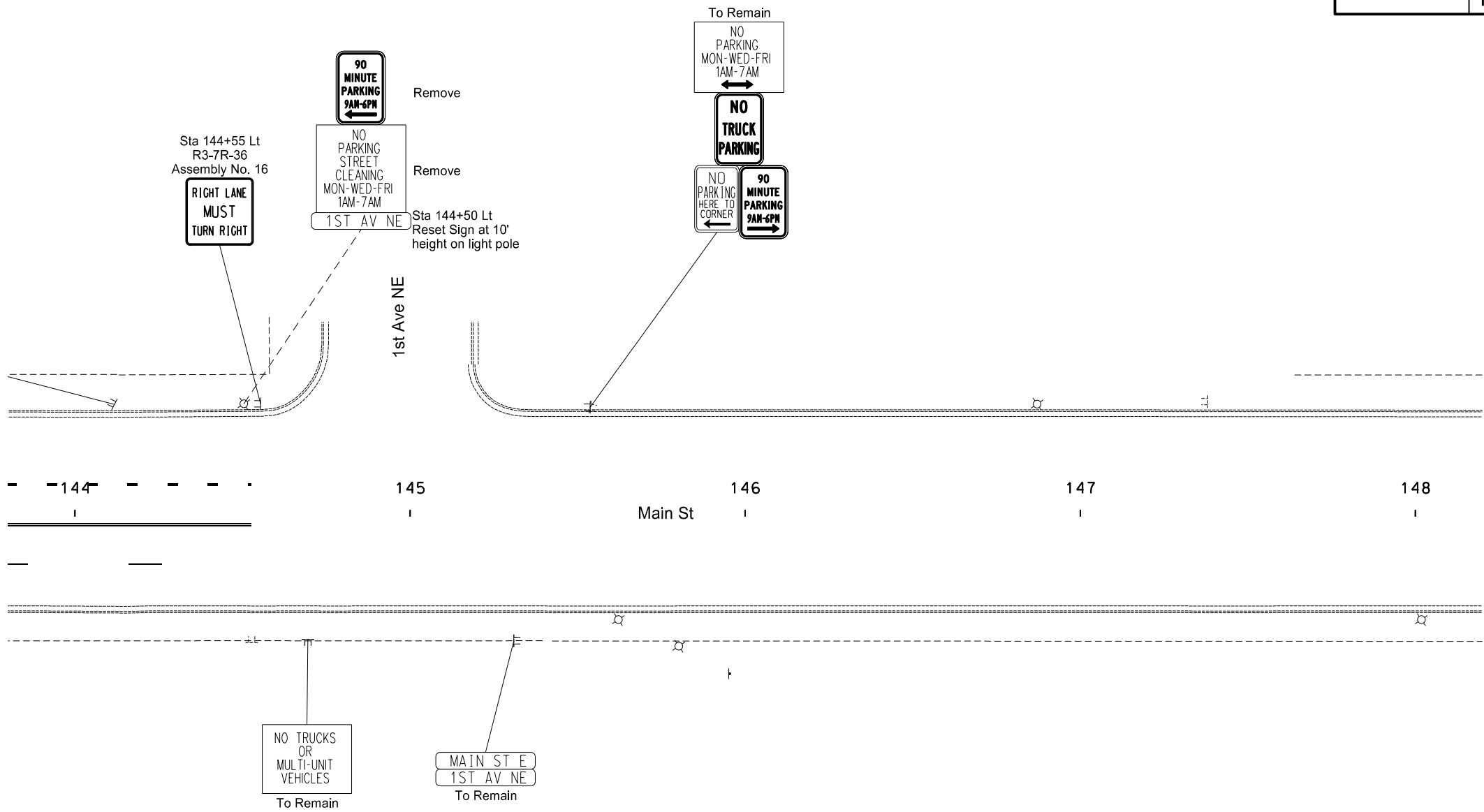


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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Main St
Permanent Signing
Sta 140+00 to Sta 144+00

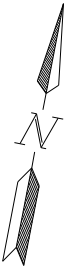
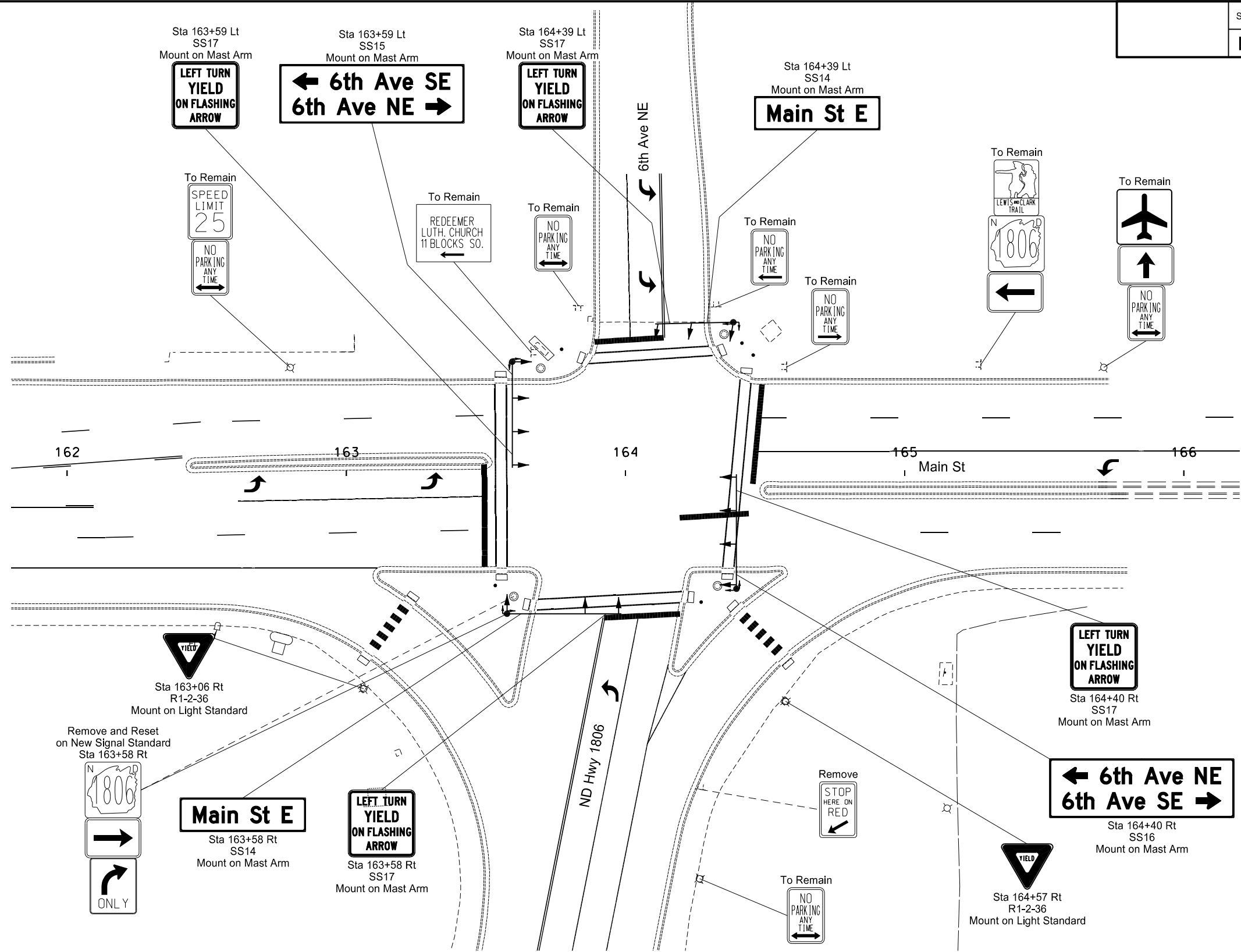
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	110	16



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Main St
Permanent Signing
Sta 144+00 to Sta 148+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	110	17



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Main St
Permanent Signing
Sta 162+00 to Sta 166+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	110	20

SYMBOL	X	Y	WID	HT	ANGLE
ND_0.75IN	2.1	1.5	2	7.8	90

Diagram of a 90 Minute Parking sign. The sign is rectangular with rounded corners, measuring 12" wide by 18" high. The text on the sign reads "90 MINUTE PARKING" and "9AM-6PM" with a left-pointing arrow below. The sign is mounted on a post. Dimensions for mounting hardware are provided: 2.25" for the top plate, 2"C for the top plate to sign gap, 1.25" for the sign to bottom plate gap, 2"C for the bottom plate to sign gap, 1.25" for the bottom plate, 2"B for the bottom plate to post gap, 0.5" for the post, 2" for the post to bottom plate gap, and 1.5" for the bottom plate. The sign is centered on the post. The mounting hardware dimensions are: 1.4" for the top plate, 9.2" for the sign, and 1.4" for the bottom plate.

Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

LETTER POSITION (X)																	LENGTH	SIZE	SERIES
9	0																2.6	2	C 2000
4.7	6.1																		
M	I	N	U	T	E												7.8	2	C 2000
2.1	3.9	4.6	6.2	7.6	8.9														
P	A	R	K	I	N	G											9.2	2	C 2000
1.4	2.8	4.3	5.8	7.2	8	9.5													
9	A	M	-	6	P	M											7.7	2	B 2000
2.1	3.2	4.5	5.8	6.5	7.8	8.9													

SYMBOL	X	Y	WID	HT	ANGLE
ND_0.75IN_DBL	2.1	1.5	2	7.7	0

Diagram of a 90 Minute Parking sign. The sign is rectangular with rounded corners. The overall dimensions are 18" high and 12" wide. The sign features the text "90 MINUTE PARKING" and "9AM-6PM" with a double-headed arrow below it. The dimensions are detailed as follows:

- Overall width: 12"
- Overall height: 18"
- Top margin: 2.25"
- Text "90" height: 2"
- Text "MINUTE" height: 1.25"
- Text "PARKING" height: 2"
- Text "9AM-6PM" height: 1.25"
- Double-headed arrow height: 2"
- Bottom margin: 1.5"
- Left margin: 1.4"
- Right margin: 1.4"
- Text "90" width: 9.2"

Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

[illegible]

SYMBOL	X	Y	WID	HT	ANGLE
ND_0.75IN	2.1	1.5	2	7.8	270

Diagram of a 90 Minute Parking sign. The sign is rectangular with rounded corners. The overall dimensions are 18" high by 12" wide. The sign features the text "90 MINUTE PARKING" and "9AM-6PM" with a right-pointing arrow below. The dimensions are broken down as follows:

- Overall height: 18"
- Overall width: 12"
- Top border: 2.25"
- Text "90": 2"C"
- Text "MINUTE": 1.25"
- Text "PARKING": 2"C"
- Text "9AM-6PM": 1.25"
- Arrow: 2"C"
- Bottom border: 0.5"
- Right border: 1.5"
- Left border: 1.4"
- Bottom text area: 9.2"
- Bottom right corner: 1.4"

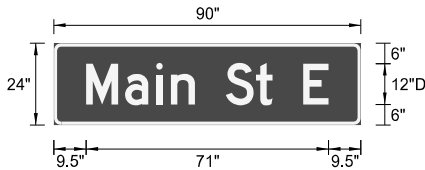
Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

[illegible]

Main St
Permanent Signing
Sign Details

SYMBOL	X	Y	WID	HT	ANGLE

AREA: 15.0 Sq.Ft.

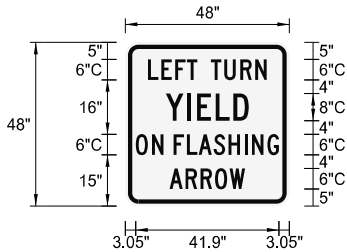


Letter locations are panel edge to lower left corner

[illegible]

SYMBOL	X	Y	WID	HT	ANGLE

AREA: 16.0 Sq.Ft.



Letter locations are panel edge to lower left corner

[illegible]

SYMBOL	X	Y	WID	HT	ANGLE
ND_12IN_TYPE D	9.2	24	12	18	90
ND_12IN_TYPE D	104.8	6	12	18	270

AREA: 38.5 Sq.Ft.



Letter locations are panel edge to lower left corner

LETTER POSITION (X)																		LENGTH	SIZE	SERIES
6	t	h		A	v	e		S	E									85.7	12/9	D 2000
36.2	45.7	51.8	58.9	67.9	78.7	88.2	95.3	104.3	114.5											
6	t	h		A	v	e		N	E									86.5	12/9	D 2000
9.2	18.7	24.8	31.9	40.9	51.7	61.2	68.3	77.3	88.3											

SYMBOL	X	Y	WID	HT	ANGLE
ND_12IN_TYPE D	9.2	24	12	18	90
ND_12IN_TYPE D	104.8	6	12	18	270

AREA: 38.5 Sq.Ft.



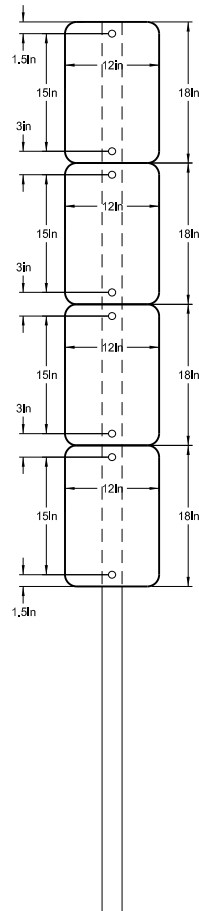
Letter locations are panel edge to lower left corner

LETTER POSITION (X)																		LENGTH	SIZE	SERIES
6	t	h		A	v	e		N	E									86.5	12/9	D 2000
36.2	45.7	51.8	58.9	67.9	78.7	88.2	95.3	104.3	115.3											
6	t	h		A	v	e		S	E									85.7	12/9	D 2000
9.2	18.7	24.8	31.9	40.9	51.7	61.2	68.3	77.3	87.5											

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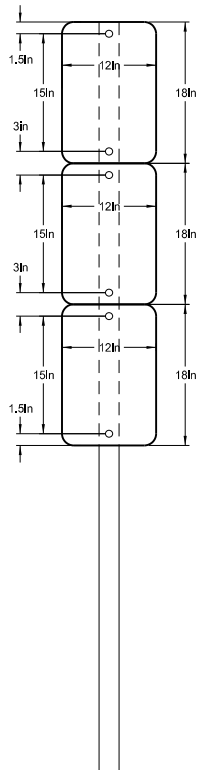
Main St
Permanent Signing
Sign Details

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	110	27



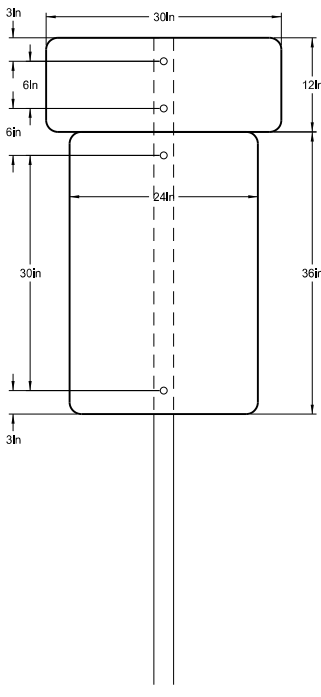
SPECIAL ASSEMBLY A
AREA = 6.0 SF
(PERFORATED STEEL TUBE)

Sta 111+06 Lt
Sta 113+66 Lt
Sta 117+56 Lt
Sta 123+17 Lt
Sta 126+87 Lt
Sta 130+39 Lt
Sta 134+50 Lt
Sta 136+65 Lt
Sta 138+31 Lt
Sta 140+51 Lt
Sta 143+17 Lt
Sta 144+12 Lt



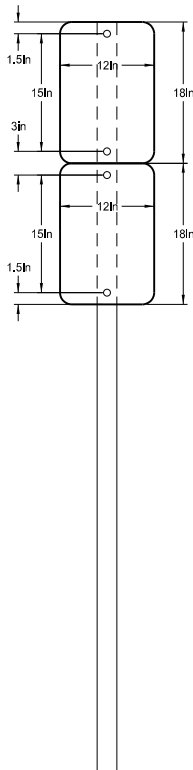
SPECIAL ASSEMBLY B
AREA = 4.5 SF
(PERFORATED STEEL TUBE)

Sta 104+09 Lt
Sta 105+72 Lt
Sta 107+00 Lt
Sta 109+57 Lt
Sta 125+97 Rt
Sta 128+71 Rt
Sta 130+92 Rt
Sta 132+93 Rt
Sta 134+24 Rt
Sta 136+00 Lt
Sta 136+70 Rt
Sta 138+06 Rt
Sta 139+39 Lt
Sta 140+39 Rt
Sta 140+93 Lt
Sta 141+39 Lt



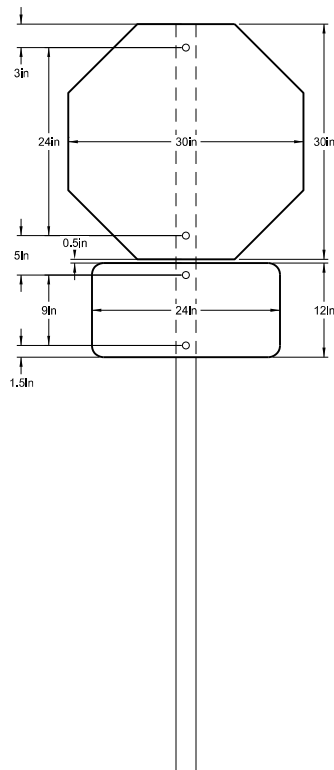
SPECIAL ASSEMBLY C
AREA = 8.5 SF
(PERFORATED STEEL TUBE)

Sta 106+68 Rt
Sta 123+21 Rt



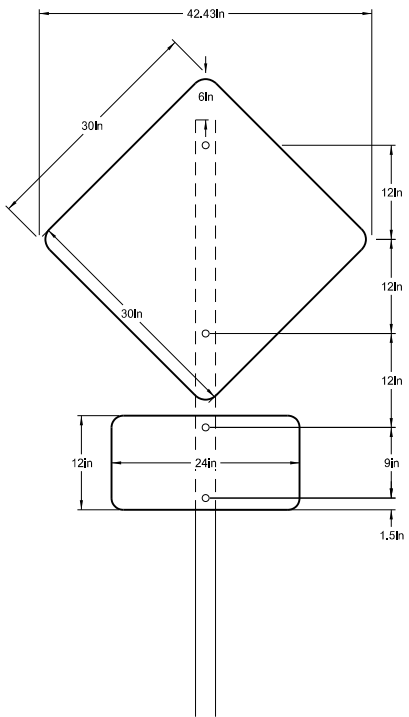
SPECIAL ASSEMBLY D
AREA = 3.0 SF
(PERFORATED STEEL TUBE)

Sta 103+92 Rt
Sta 117+58 Rt
Sta 119+05 Rt
Sta 125+36 Rt



SPECIAL ASSEMBLY E
AREA = 7.2 SF
(PERFORATED STEEL TUBE)

Sta 102+31 Lt
Sta 102+73 Rt



SPECIAL ASSEMBLY F
AREA = 8.3 SF
(PERFORATED STEEL TUBE)

Sta 101+75 Rt
Sta 102+93 Lt
Sta 103+05 Rt
Sta 133+95 Lt

- Notes:
- See Standard D-754-25 for mounting details.
 - The minimum sign backing material thickness should be 0.100 inch.
 - Perforated square tube stringer shall be 1½" x 1½"
 - All holes shall be punched round for ⅜" bolt

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Main St
Permanent Signing
Special Assemblies

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	120	1

Begin Station	End Station	762 1305 PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED			762 1309 PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	762 1325 PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	762 0122 PREFORMED PATTERNED PVMT MK-MESSAGE(GROOVED)		
		4IN Yellow		4IN White	8IN White	24IN White	White	White	White
		Dbl Barrier Line	Two-Way Left Turn Lane Line	10' Skip	Channel Line	Crosswalk	Left Arrow	Right Arrow	ONLY
		(LF)	(LF)	(LF)	(LF)	(LF)	(SF)	(SF)	(SF)
89+22	90+61	278	-	-	-	-	-	-	-
91+41	99+41	1,600	-	-	-	-	-	-	-
99+41	101+50	836	-	-	-	-	-	-	-
101+50	102+24	148	-	-	74	-	32	-	-
145+38	148+47	618	-	155	-	-	-	-	-
149+09	151+70	1,044	-	131	-	-	-	-	-
151+70	152+37	134	-	34	67	-	32	-	-
153+02	156+04	-	755	151	-	-	32	-	-
156+76	159+91	-	788	158	-	-	32	-	-
160+20	162+11	764	-	96	191	-	-	32	-
162+11	163+51	70	-	70	196	66	32	-	-
164+46	166+29	-	-	92	183	72	32	-	-
166+29	167+47	472	-	59	-	-	-	-	-
168+19	171+17	-	745	149	-	-	32	-	-
172+05	175+04	-	748	150	-	-	32	-	-
175+82	178+86	-	760	152	-	-	32	-	-
179+94	182+63	-	673	135	-	-	32	-	-
183+47	186+37	-	725	145	230	-	32	32	-
186+37	187+33	168	-	48	187	290	16	-	-
189+05	190+77	344	-	86	580	-	16	16	44
190+77	199+60	-	-	442	-	-	-	-	-
199+60	201+00	-	-	70	260	-	16	16	44
Sta 89+22 to Sta 102+44; Sta 145+00 to Sta 201+00 =		6,476	5,193	2,319	1,968	428	400	96	88
		13,987			1,968	428	584		

Right Turn Arrow Staking Points (SCL94B)
Sta 160+20
Sta 161+43
Sta 183+98
Sta 184+51
Sta 191+79
Sta 200+14

Left Turn Arrow Staking Points (SCL94B)
Sta 101+50*
Sta 102+00*
Sta 151+70*
Sta 152+27*
Sta 153+90
Sta 157+82
Sta 162+63*
Sta 163+26*
Sta 165+78*
Sta 166+29*
Sta 169+50
Sta 173+22
Sta 177+15
Sta 180+30
Sta 184+69
Sta 191+19*
Sta 200+14*

*Single Arrow Locations

Stop Bar Locations (Not on Plan View Sheets)				
Street	Station (SCL94B)	Offset	Material	Length (LF)
Sunny Road	Sta 91+21	41.2' Rt	Preformed Patterned Pvmt Mk 24IN-Grooved	18
1st Avenue NE	Sta 144+75	45.0' Lt	Preformed Patterned Pvmt Mk 24IN-Grooved	24
2nd Avenue NE	Sta 148+63	46.0' Lt	Preformed Patterned Pvmt Mk 24IN-Grooved	18
3rd Avenue NE	Sta 152+39	51.0' Lt	Preformed Patterned Pvmt Mk 24IN-Grooved	24
4th Avenue NE	Sta 156+24	48.0' Lt	Preformed Patterned Pvmt Mk 24IN-Grooved	18
5th Avenue NE	Sta 160+03	46.4' Lt	Preformed Patterned Pvmt Mk 24IN-Grooved	18
8th Avenue NE	Sta 167+65	54.3' Lt	Preformed Patterned Pvmt Mk 24IN-Grooved	18
9th Avenue NE	Sta 171+46	60.0' LT	Preformed Patterned Pvmt Mk 24IN-Grooved	18
10th Avenue NE	Sta 175+25	52.2' LT	Preformed Patterned Pvmt Mk 24IN-Grooved	18
11th Avenue NE	Sta 179+05	54.5' LT	Preformed Patterned Pvmt Mk 24IN-Grooved	18
12th Avenue NE	Sta 182+79	51.0' LT	Preformed Patterned Pvmt Mk 24IN-Grooved	24
13th Avenue NE	Sta 186+59	47.0' Lt	Preformed Patterned Pvmt Mk 24IN-Grooved	24
Mandan Avenue	Sta 189+02	25.6' Lt	Preformed Patterned Pvmt Mk 24IN-Grooved	40
Twin City Drive	Sta 200+95	5.7' Lt	Preformed Patterned Pvmt Mk 24IN-Grooved	52
Total				332

6" Crosswalk Locations (Not on Plan View Sheets)					
Street	Station (SCL94B)	Offset*	Crosswalk Width	Material	Length (LF)**
Sunny Road	Sta 90+71	26.2' Rt	10'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	109
1st Avenue NE	Sta 144+68	34.0' Lt	6'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	101
2nd Avenue NE	Sta 148+68	35.0' Lt	6'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	84
3rd Avenue NE	Sta 152+31	40.0' Lt	6'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	103
4th Avenue NE	Sta 156+16	39.0' Lt	6'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	84
5th Avenue NE	Sta 159+98	36.4' Lt	6'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	80
6th Avenue NE	Sta 163+50	X	6'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	128
	Sta 163+85	38.4' Lt	6'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	95
	Sta 163+69	43.0' Rt	6'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	100
	Sta 164+70	X	6'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	136
8th Avenue NE	Sta 167+62	44.0' Lt	6'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	76
9th Avenue NE	Sta 171+43	50.0' Lt	6'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	76
10th Avenue NE	Sta 175+20	42.6' Lt	6'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	82
11th Avenue NE	Sta 179+01	44.6' Lt	6'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	77
12th Avenue NE	Sta 182+74	41.0' Lt	6'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	100
13th Avenue NE	Sta 186+52	35.7' Lt	6'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	110
Mandan Avenue	Sta 187+88	X	6'	Preformed Patterned Pvmt Mk 6IN Line-Grooved	146
Total					1687

*Crosswalk offsets are to the nearest line to the roadway

**Includes length of both lines

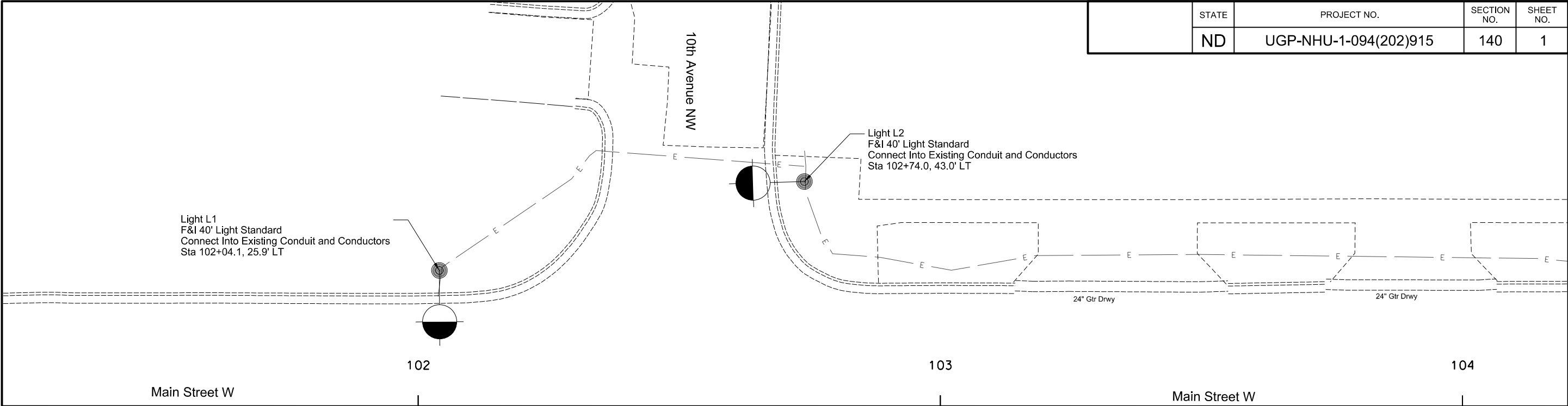
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Main St

Pavement Marking

Sta 89+22 to Sta 102+44
Sta 145+00 to Sta 201+00

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	ND	UGP-NHU-1-094(202)915	140	1



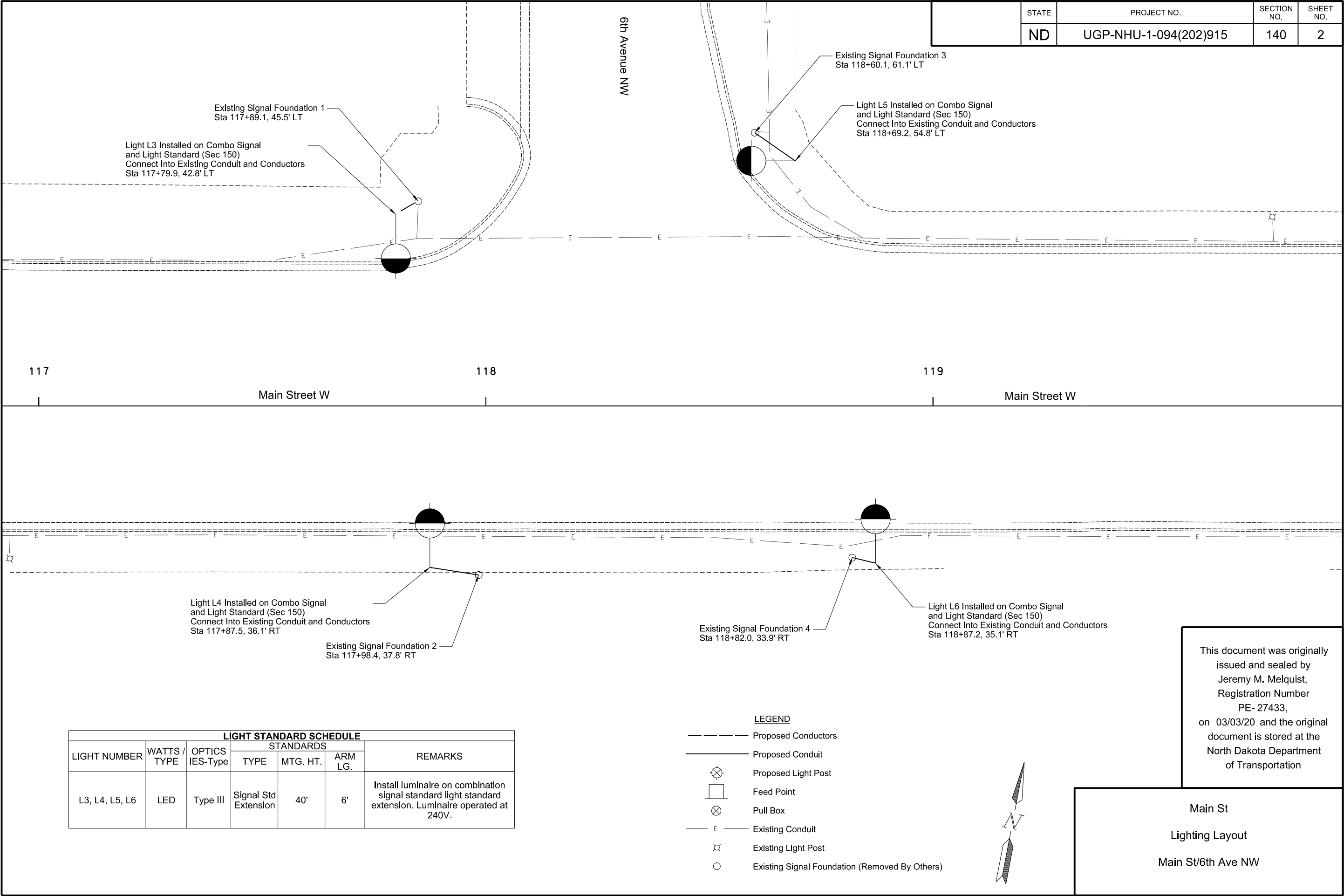
LIGHT STANDARD SCHEDULE						
LIGHT NUMBER	WATTS / TYPE	OPTICS IES-Type	STANDARDS			REMARKS
			TYPE	MTG. HT.	ARM LG.	
L1, L2	LED	Type III	Round Tapered Steel	40'	6'	Install light standard on concrete foundation, breakaway transformer base. Luminaire operated at 240V.

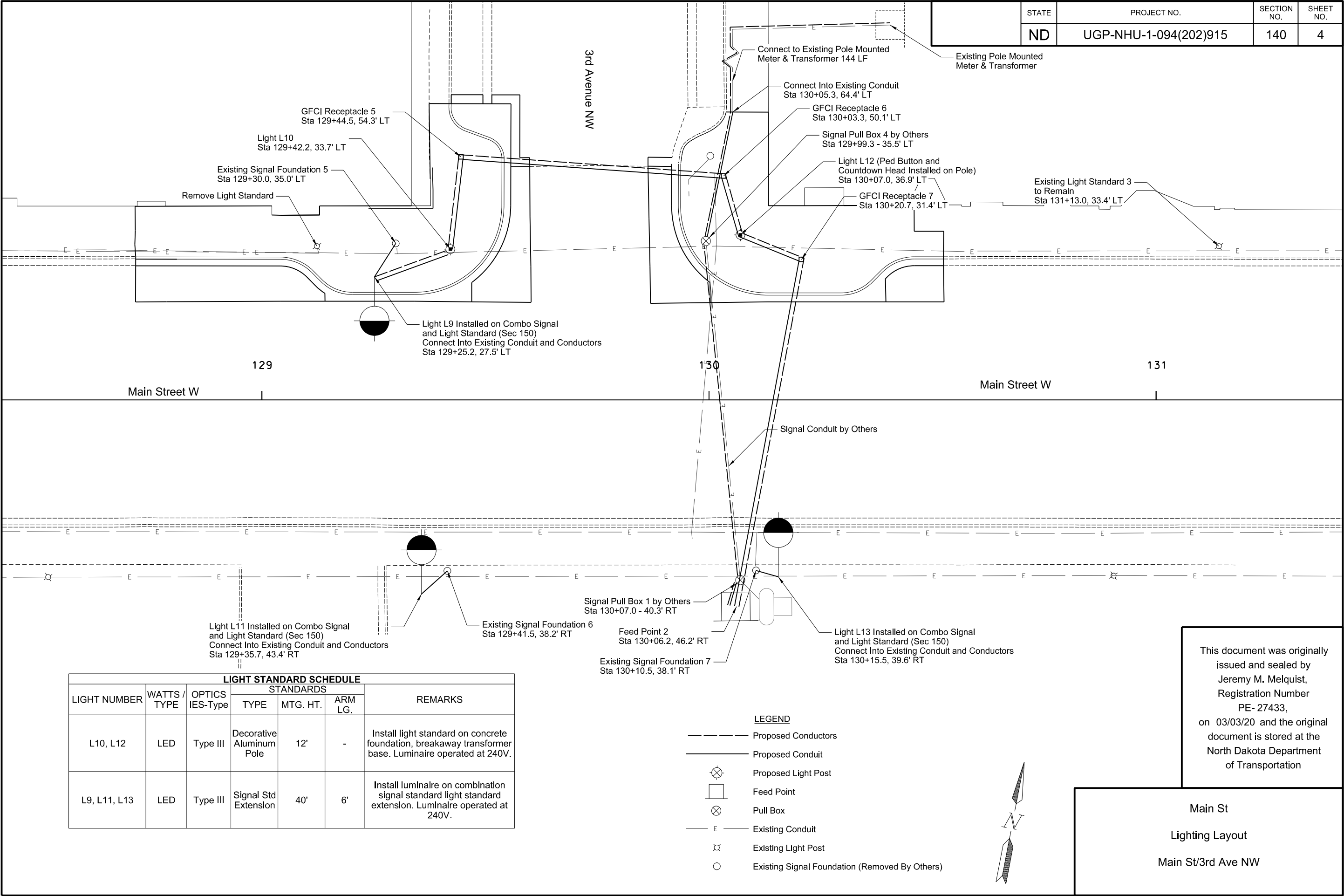
LEGEND

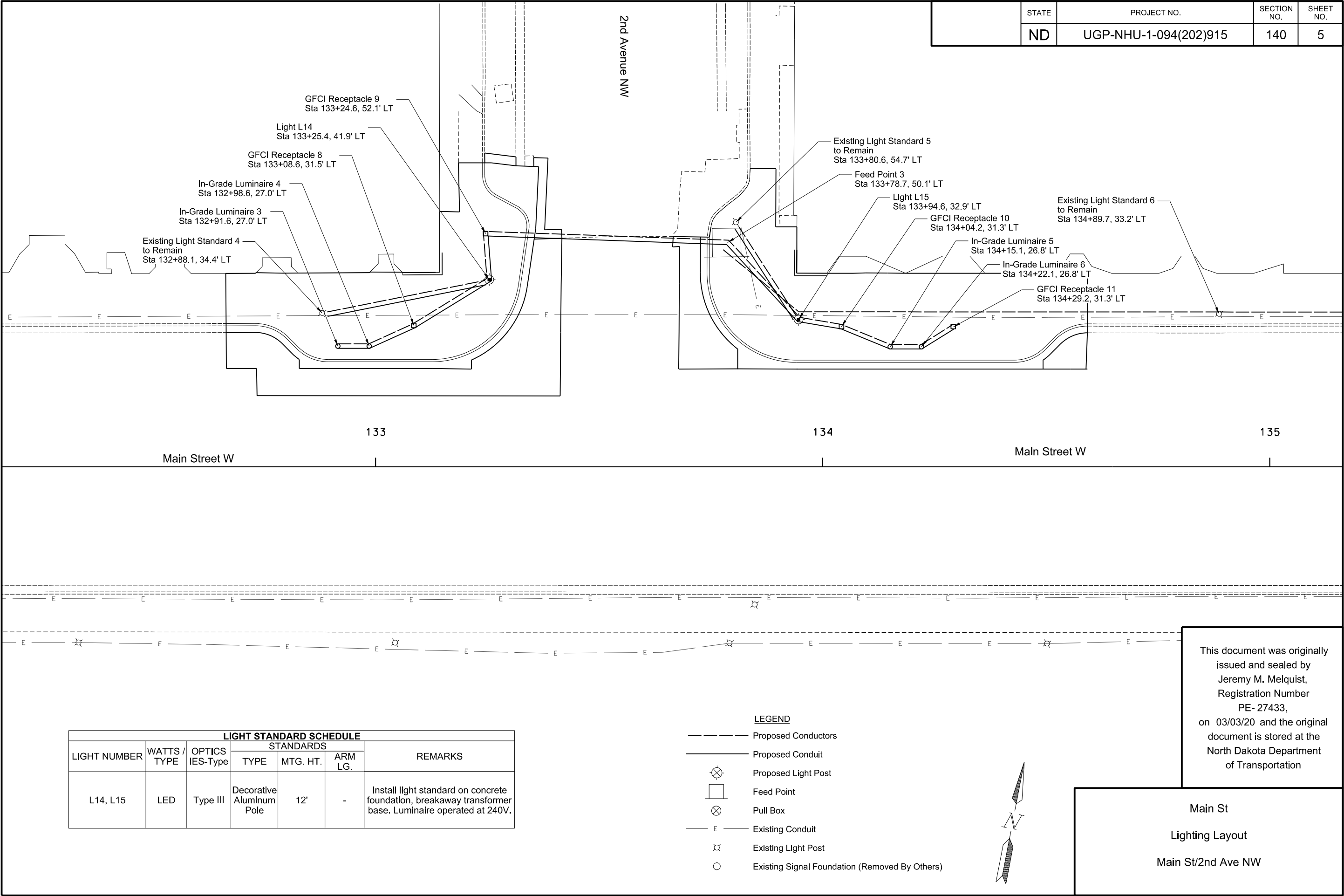
- Proposed Conductors
- Proposed Conduit
- Proposed Light Post
- Feed Point
- Pull Box
- Existing Conduit
- Existing Light Post
- Existing Signal Foundation (Removed By Others)

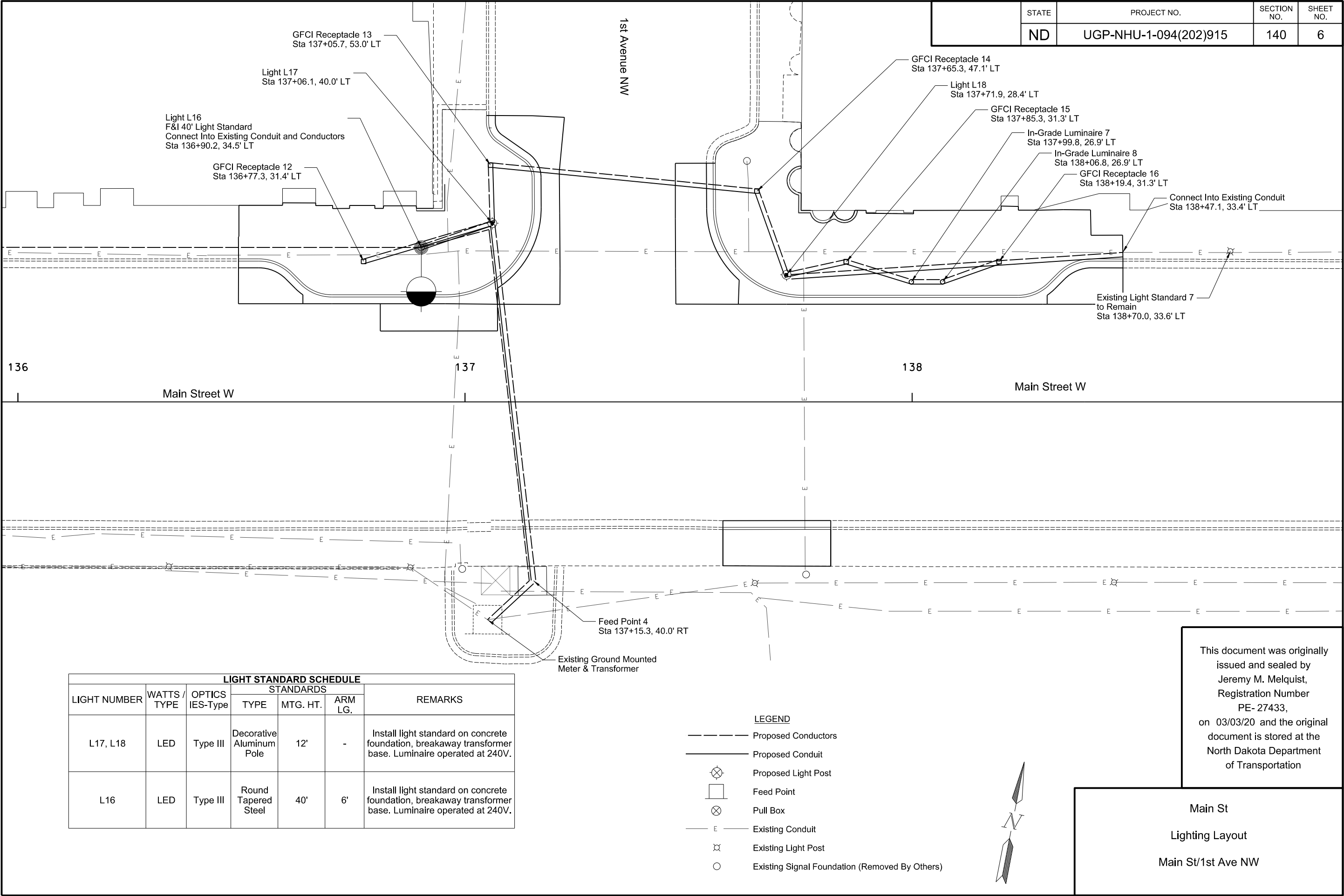
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Main St
Lighting Layout
Main St/10th Ave NW

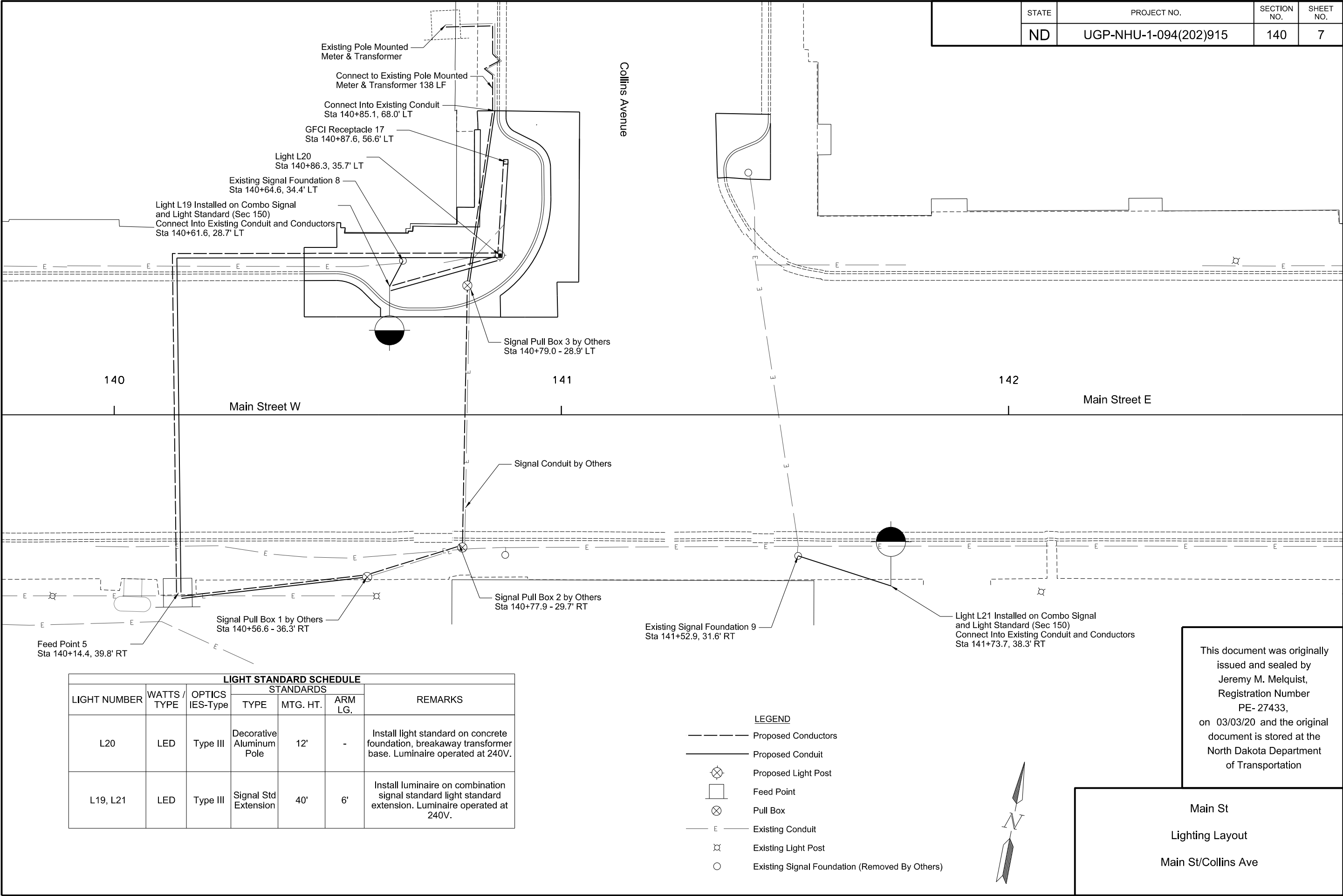






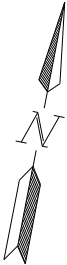


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	140	7



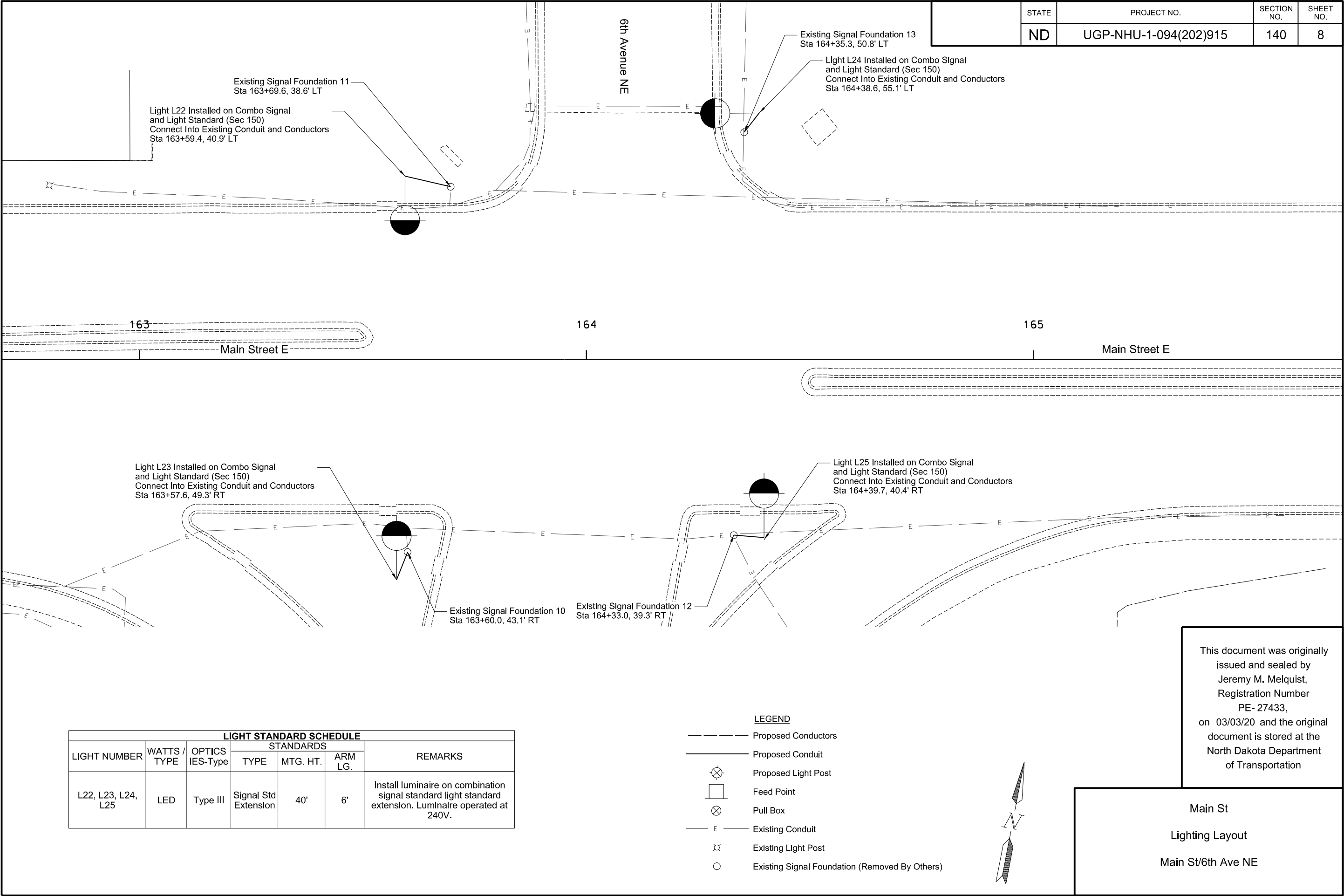
LIGHT STANDARD SCHEDULE						
LIGHT NUMBER	WATTS / TYPE	OPTICS IES-Type	STANDARDS			REMARKS
			TYPE	MTG. HT.	ARM LG.	
L20	LED	Type III	Decorative Aluminum Pole	12'	-	Install light standard on concrete foundation, breakaway transformer base. Luminaire operated at 240V.
L19, L21	LED	Type III	Signal Std Extension	40'	6'	Install luminaire on combination signal standard light standard extension. Luminaire operated at 240V.

- LEGEND**
- Proposed Conductors
 - Proposed Conduit
 - Proposed Light Post
 - Feed Point
 - Pull Box
 - Existing Conduit
 - Existing Light Post
 - Existing Signal Foundation (Removed By Others)



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Main St
Lighting Layout
Main St/Collins Ave



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	140	9

SPEC CODE BID ITEM QTY UNIT

770 0003 LIGHTING SYSTEM A 1 EA

770 0004 LIGHTING SYSTEM B 1 EA

Lighting Quantities (A) UPG-NHU-1-094(202)915							
LT STD 6FT MA 40FT MT HT BREAKAWAY	LED LUMINAIRE	ORNAMENTAL LIGHT STANDARD	CONCRETE FOUNDATION-HIGHWAY LIGHTING	2" DIAMETER RIGID CONDUIT	UNDERGROUND CONDUCTOR NO 4 TYPE RHW	UNDERGROUND CONDUCTOR NO 6 TYPE THW	REMOVE LIGHT STANDARD
EA	EA	EA	EA	LF	LF	LF	EA
3	16	9	12	518	880	440	1

Lighting Quantities (B) UPG-NHU-1-094(202)915									
FEED POINT	IN-GRADE LUMINAIRE	GFCI RECEPTACLE	2" DIAMETER RIGID CONDUIT	UNDERGROUND CONDUCTOR NO 10 TYPE RHW	UNDERGROUND CONDUCTOR NO 8 TYPE RHW	UNDERGROUND CONDUCTOR NO 6 TYPE RHW	UNDERGROUND CONDUCTOR NO 2 TYPE RHW	UNDERGROUND CONDUCTOR NO 6 TYPE THW	UNDERGROUND CONDUCTOR NO 2 TYPE THW
EA	EA	EA	LF	LF	LF	LF	LF	LF	LF
5	8	26	1,065	1,516	2,612	1,038	2,924	2,583	1,462

LIGHTING FOUNDATION TABLE (LT STD 6FT MA 40 FT MT HT)		
Description	Footing Depth D 24" and 30" Dia	Footing Depth D 36" and 42" Dia
Light Standard 40' Pole	6'	5'
Ornamental 12' Pole	6'	5'

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Main St
Lighting Quantities

LIGHTING SYSTEM: CABLE & CONDUIT SCHEDULE (4TH AVENUE NW)									
RUN			CONDUIT						
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	# of Cables	SIZE/TYPE	Total LF	
1	<i>Origin Destination</i>	Feed Point 1 GFCI Receptacle 1	125+29.5, 39.0' LT 125+43.7, 31.5' LT	2 & 2" spare	16	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	60	
						2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	60	
						2	UNDERGROUND CONDUCTOR NO6-TYPE RHW	60	
						3	UNDERGROUND CONDUCTOR NO6-TYPE THW	90	
2	<i>Origin Destination</i>	GFCI Receptacle 1 Festoon - L7	125+43.7, 31.5' LT 125+61.3, 42.3' LT	2	21	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	58	
						2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	58	
						2	UNDERGROUND CONDUCTOR NO6-TYPE RHW	58	
						3	UNDERGROUND CONDUCTOR NO6-TYPE THW	87	
3	<i>Origin Destination</i>	Festoon - L7 GFCI Receptacle 2	125+61.3, 42.3' LT 125+60.3, 51.9' LT	2	10	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	36	
						2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	36	
						2	UNDERGROUND CONDUCTOR NO6-TYPE RHW	36	
						3	UNDERGROUND CONDUCTOR NO6-TYPE THW	54	
4	<i>Origin Destination</i>	GFCI Receptacle 2 GFCI Receptacle 3	125+60.3, 51.9' LT 126+23.2, 49.5' LT	2	63	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	142	
						2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	142	
						2	UNDERGROUND CONDUCTOR NO6-TYPE RHW	142	
						3	UNDERGROUND CONDUCTOR NO6-TYPE THW	213	
5	<i>Origin Destination</i>	GFCI Receptacle 3 Festoon - L8	126+23.2, 49.5' LT 126+24.6, 33.1' LT	2	16	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	48	
						2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	48	
						2	UNDERGROUND CONDUCTOR NO6-TYPE RHW	48	
						3	UNDERGROUND CONDUCTOR NO6-TYPE THW	72	
6	<i>Origin Destination</i>	Festoon - L8 GFCI Receptacle 4	126+24.6, 33.1' LT 126+33.8, 31.4' LT	2	9	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	34	
						2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	34	
						2	UNDERGROUND CONDUCTOR NO6-TYPE RHW	34	
						3	UNDERGROUND CONDUCTOR NO6-TYPE THW	51	
7	<i>Origin Destination</i>	GFCI Receptacle 4 In-Grade Luminaire 1	126+33.8, 31.4' LT 126+54.5, 27.1' LT	2	21	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	58	
						1	UNDERGROUND CONDUCTOR NO6-TYPE THW	29	
8	<i>Origin Destination</i>	In-Grade Luminaire 1 In-Grade Luminaire 2	126+54.5, 27.1' LT 126+61.5, 27.1' LT	2	7	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	30	
						1	UNDERGROUND CONDUCTOR NO6-TYPE THW	15	

EXISTING LIGHTING (4TH AVENUE NW)									
RUN			CONDUIT						
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	# of Cables	SIZE/TYPE	Total LF	
1	<i>Origin Destination</i>	Luminaire - L7 Existing Light - E1	125+61.3, 42.3' LT 125+31.1, 33.9' LT	2	29	2 1	UNDERGROUND CONDUCTOR NO4-TYPE RHW	74	
							UNDERGROUND CONDUCTOR NO6-TYPE THW	37	
2	<i>Origin Destination</i>	Luminaire - L8 Existing Light - E2	126+24.6, 33.1' LT 126+14.7, 51.0' LT	2	18	2 1	UNDERGROUND CONDUCTOR NO4-TYPE RHW	52	
							UNDERGROUND CONDUCTOR NO6-TYPE THW	26	

SERVICE CONNECTION (4TH AVENUE NW)									
RUN			CONDUIT						
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	# of Cables	SIZE/TYPE	Total LF	
1	<i>Origin Destination</i>	Feed Point 1 Existing Light - E1	125+29.5, 39.0' LT 125+31.1, 33.9' LT	2	5	2 1	UNDERGROUND CONDUCTOR NO2-TYPE RHW	38	
							UNDERGROUND CONDUCTOR NO2-TYPE THW	19	
2	<i>Origin Destination</i>	Existing Light - E1 Existing Light - E2	125+31.1, 33.9' LT 126+14.7, 51.0' LT	EX		2 1	UNDERGROUND CONDUCTOR NO2-TYPE RHW	192	
							UNDERGROUND CONDUCTOR NO2-TYPE THW	96	
3	<i>Origin Destination</i>	Existing Light - E2 Existing Pull Box	126+14.7, 51.0' LT 126+25.0, 59.0' LT	EX		2 1	UNDERGROUND CONDUCTOR NO2-TYPE RHW	46	
							UNDERGROUND CONDUCTOR NO2-TYPE THW	23	
4	<i>Origin Destination</i>	Existing Pull Box Existing Meter & Transformer	126+25.0, 59.0' LT 126+58.0, 191.0' LT	EX		2 1	UNDERGROUND CONDUCTOR NO2-TYPE RHW	362	
							UNDERGROUND CONDUCTOR NO2-TYPE THW	181	

LIGHTING SYSTEM: CABLE & CONDUIT SCHEDULE (3RD AVENUE NW)									
RUN			CONDUIT						
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	# of Cables	SIZE/TYPE	Total LF	
1	<i>Origin Destination</i>	Feed Point 2 GFCI Receptacle 7	130+06.2, 46.2' RT 130+20.7, 31.4' LT	2 & 2" spare	79	4 2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	372	
							UNDERGROUND CONDUCTOR NO6-TYPE THW	186	
2	<i>Origin Destination</i>	GFCI Receptacle 7 Festoon - L12	130+20.7, 31.4' LT 130+07.0, 36.9' LT	2	15	4 2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	92	
							UNDERGROUND CONDUCTOR NO6-TYPE THW	46	
3	<i>Origin Destination</i>	Festoon - L12 GFCI Receptacle 6	130+07.0, 36.9' LT 130+03.3, 50.1' LT	2	14	4 2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	88	
							UNDERGROUND CONDUCTOR NO6-TYPE THW	44	
4	<i>Origin Destination</i>	GFCI Receptacle 6 GFCI Receptacle 5	130+03.3, 50.1' LT 129+44.5, 54.3' LT	2	59	4 2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	268	
							UNDERGROUND CONDUCTOR NO6-TYPE THW	134	
5	<i>Origin Destination</i>	GFCI Receptacle 5 Festoon - L10	129+44.5, 54.3' LT 129+42.2, 33.7' LT	2	21	2 1	UNDERGROUND CONDUCTOR NO8-TYPE RHW	58	
							UNDERGROUND CONDUCTOR NO6-TYPE THW	29	

EXISTING LIGHTING (3RD AVENUE NW)									
RUN			CONDUIT						
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	# of Cables	SIZE/TYPE	Total LF	
1	<i>Origin Destination</i>	Luminaire - L10 Light Standard - L9	129+42.2, 33.7' LT 129+25.2, 27.5' LT	2	17	2 1	UNDERGROUND CONDUCTOR NO4-TYPE RHW	50	
							UNDERGROUND CONDUCTOR NO6-TYPE THW	25	

SERVICE CONNECTION (3RD AVENUE NW)									
RUN			CONDUIT						
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	# of Cables	SIZE/TYPE	Total LF	
1	<i>Origin Destination</i>	Feed Point 2 Signal Pull Box 1	130+06.2, 46.2' RT 130+07.0, 40.3' RT	2	5	2 1	UNDERGROUND CONDUCTOR NO2-TYPE RHW	42	
							UNDERGROUND CONDUCTOR NO2-TYPE THW	21	
2	<i>Origin Destination</i>	Signal Pull Box 1 Signal Pull Box 4	130+07.0, 40.3' RT 129+99.3, 35.5' LT	EX		2 1	UNDERGROUND CONDUCTOR NO2-TYPE RHW	172	
							UNDERGROUND CONDUCTOR NO2-TYPE THW	86	
3	<i>Origin Destination</i>	Signal Pull Box 4 Existing Conduit	129+99.3, 35.5' LT 130+05.3, 64.4' LT	2	28	2 1	UNDERGROUND CONDUCTOR NO2-TYPE RHW	68	
							UNDERGROUND CONDUCTOR NO2-TYPE THW	34	
4	<i>Origin Destination</i>	Existing Conduit Existing Meter & Transformer	130+05.3, 64.4' LT 130+40.0, 173.0' LT	EX		2 1	UNDERGROUND CONDUCTOR NO2-TYPE RHW	308	
							UNDERGROUND CONDUCTOR NO2-TYPE THW	154	

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Main St
Cable & Conduit Schedule

LIGHTING SYSTEM: CABLE & CONDUIT SCHEDULE (2ND AVENUE NW)								
RUN			CONDUIT					
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	# of Cables	SIZE/TYPE	Total LF
1	Origin	Feed Point 3	133+78.7, 50.1' LT	2	54	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	136
	Destination	GFCI Receptacle 9	133+24.6, 52.1' LT	&		2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	136
				2" spare		2	UNDERGROUND CONDUCTOR NO6-TYPE THW	136
2	Origin	GFCI Receptacle 9	133+24.6, 52.1' LT	2	10	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	36
	Destination	Festoon - L14	133+25.4, 41.9' LT			2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	36
						2	UNDERGROUND CONDUCTOR NO6-TYPE THW	36
3	Origin	Festoon - L14	133+25.4, 41.9' LT	2	20	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	56
	Destination	GFCI Receptacle 8	133+08.6, 31.5' LT			2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	56
						2	UNDERGROUND CONDUCTOR NO6-TYPE THW	56
4	Origin	GFCI Receptacle 8	133+08.6, 31.5' LT	2	11	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	38
	Destination	In-Grade Luminaire 4	132+98.6, 27.0' LT			2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	38
						2	UNDERGROUND CONDUCTOR NO6-TYPE THW	38
5	Origin	In-Grade Luminaire 4	132+98.6, 27.0' LT	2	7	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	30
	Destination	In-Grade Luminaire 3	132+91.6, 27.0' LT			2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	30
						2	UNDERGROUND CONDUCTOR NO6-TYPE THW	30
6	Origin	Feed Point 3	133+78.7, 50.1' LT	2	23	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	74
	Destination	Festoon - L15	133+94.6, 32.9' LT			2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	74
						2	UNDERGROUND CONDUCTOR NO6-TYPE THW	74
7	Origin	Festoon - L15	133+94.6, 32.9' LT	2	10	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	36
	Destination	GFCI Receptacle 10	134+04.2, 31.3' LT			2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	36
						2	UNDERGROUND CONDUCTOR NO6-TYPE THW	36
8	Origin	GFCI Receptacle 10	134+04.2, 31.3' LT	2	12	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	40
	Destination	In-Grade Luminaire 5	134+15.1, 26.8' LT			2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	40
						2	UNDERGROUND CONDUCTOR NO6-TYPE THW	40
9	Origin	In-Grade Luminaire 5	134+15.1, 26.8' LT	2	7	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	30
	Destination	In-Grade Luminaire 6	134+22.1, 26.8' LT			2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	30
						2	UNDERGROUND CONDUCTOR NO6-TYPE THW	30
10	Origin	In-Grade Luminaire 6	134+22.1, 26.8' LT	2	8	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	32
	Destination	GFCI Receptacle 11	134+29.2, 31.3' LT			2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	32
						2	UNDERGROUND CONDUCTOR NO6-TYPE THW	32

LIGHTING SYSTEM: CABLE & CONDUIT SCHEDULE (1ST AVENUE NW)								
RUN				CONDUIT				
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	# of Cables	SIZE/TYPE	Total LF
1	Origin Destination	Feed Point 4 Festoon - L17	137+15.3, 40.0' RT 137+06.1, 40.0' LT	2 & 2" spare	80	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	188
						2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	188
						2	UNDERGROUND CONDUCTOR NO6-TYPE RHW	188
						3	UNDERGROUND CONDUCTOR NO6-TYPE THW	282
2	Origin Destination	Festoon - L17 GFCI Receptacle 12	137+06.1, 40.0' LT 136+77.3, 31.4' LT	2	30	2	UNDERGROUND CONDUCTOR NO6-TYPE RHW	76
						1	UNDERGROUND CONDUCTOR NO6-TYPE THW	38
3	Origin Destination	Festoon - L17 GFCI Receptacle 13	137+06.1, 40.0' LT 137+05.7, 53.0' LT	2	13	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	42
						2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	42
						2	UNDERGROUND CONDUCTOR NO6-TYPE RHW	42
						3	UNDERGROUND CONDUCTOR NO6-TYPE THW	63
4	Origin Destination	GFCI Receptacle 13 GFCI Receptacle 14	137+05.7, 53.0' LT 137+65.3, 47.1' LT	2	60	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	136
						2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	136
						2	UNDERGROUND CONDUCTOR NO6-TYPE RHW	136
						3	UNDERGROUND CONDUCTOR NO6-TYPE THW	204
5	Origin Destination	GFCI Receptacle 14 Festoon - L18	137+65.3, 47.1' LT 137+71.9, 28.4' LT	2	20	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	56
						2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	56
						2	UNDERGROUND CONDUCTOR NO6-TYPE RHW	56
						3	UNDERGROUND CONDUCTOR NO6-TYPE THW	84
6	Origin Destination	Festoon - L18 GFCI Receptacle 15	137+71.9, 28.4' LT 137+85.3, 31.3' LT	2	14	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	44
						2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	44
						2	UNDERGROUND CONDUCTOR NO6-TYPE RHW	44
						3	UNDERGROUND CONDUCTOR NO6-TYPE THW	66
7	Origin Destination	GFCI Receptacle 15 In-Grade Luminaire 7	137+85.3, 31.3' LT 137+99.8, 26.9' LT	2	15	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	46
						2	UNDERGROUND CONDUCTOR NO6-TYPE RHW	46
						2	UNDERGROUND CONDUCTOR NO6-TYPE THW	46
8	Origin Destination	In-Grade Luminaire 7 In-Grade Luminaire 8	137+99.8, 26.9' LT 138+06.8, 26.9' LT	2	7	2	UNDERGROUND CONDUCTOR NO10-TYPE RHW	30
						2	UNDERGROUND CONDUCTOR NO6-TYPE RHW	30
						2	UNDERGROUND CONDUCTOR NO6-TYPE THW	30
9	Origin Destination	In-Grade Luminaire 8 GFCI Receptacle 16	138+06.8, 26.9' LT 138+19.4, 31.3' LT	2	13	2	UNDERGROUND CONDUCTOR NO6-TYPE RHW	42
						1	UNDERGROUND CONDUCTOR NO6-TYPE THW	21

EXISTING LIGHTING (2ND AVENUE NW)								
RUN				CONDUIT				
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	# of Cables	SIZE/TYPE	Total LF
1	Origin	Luminaire - L14	133+25.4, 41.9' LT	2	36	2	UNDERGROUND CONDUCTOR NO4-TYPE RHW	88
	Destination	Existing Light - E4	132+88.1, 34.4' LT			1	UNDERGROUND CONDUCTOR NO6-TYPE THW	44
2	Origin	Luminaire - L15	133+94.6, 32.9' LT	2	24	2	UNDERGROUND CONDUCTOR NO4-TYPE RHW	64
	Destination	Existing Light - E5	133+80.6, 54.7' LT			1	UNDERGROUND CONDUCTOR NO6-TYPE THW	32

EXISTING LIGHTING (1ST AVENUE NW)								
RUN				CONDUIT				
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	# of Cables	SIZE/TYPE	Total LF
1	Origin	Luminaire - L17	137+06.1, 40.0' LT	2	17	2	UNDERGROUND CONDUCTOR NO4-TYPE RHW	50
	Destination	Light Standard - L16	136+90.2, 34.5' LT			1	UNDERGROUND CONDUCTOR NO6-TYPE THW	25
2	Origin	Luminaire - L18	137+71.9, 28.4' LT	2	97	2	UNDERGROUND CONDUCTOR NO4-TYPE RHW	210
	Destination	Existing Light - E7	138+70.0, 33.6' LT			1	UNDERGROUND CONDUCTOR NO6-TYPE THW	105

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Main St
Cable & Conduit Schedule

SERVICE CONNECTION (1ST AVENUE NW)								
RUN			CONDUIT					
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	# of Cables	SIZE/TYPE	Total LF
1	<i>Origin</i>	Feed Point 3	133+78.7, 50.1' LT	EX		2	UNDERGROUND CONDUCTOR NO2-TYPE RHW	74
	<i>Destination</i>	Light Standard - L15	133+94.6, 32.9' LT			1	UNDERGROUND CONDUCTOR NO2-TYPE THW	37
2	<i>Origin</i>	Light Standard - L15	133+94.3, 32.9' LT	EX		2	UNDERGROUND CONDUCTOR NO2-TYPE RHW	202
	<i>Destination</i>	Existing Light - E6	134+89.7, 33.2' LT			1	UNDERGROUND CONDUCTOR NO2-TYPE THW	101
3	<i>Origin</i>	Existing Light - E6	134+89.7, 33.2' LT	EX		2	UNDERGROUND CONDUCTOR NO2-TYPE RHW	418
	<i>Destination</i>	Light Standard - L16	136+90.2, 34.5' LT			1	UNDERGROUND CONDUCTOR NO2-TYPE THW	209
4	<i>Origin</i>	Light Standard - L16	136+90.2, 34.5' LT	EX		2	UNDERGROUND CONDUCTOR NO2-TYPE RHW	48
	<i>Destination</i>	Light Standard - L17	137+06.1, 40.0' LT			1	UNDERGROUND CONDUCTOR NO2-TYPE THW	24
5	<i>Origin</i>	Light Standard - L17	137+06.1, 40.0' LT	EX		2	UNDERGROUND CONDUCTOR NO2-TYPE RHW	186
	<i>Destination</i>	Feed Point 4	137+15.3, 40.0' RT			1	UNDERGROUND CONDUCTOR NO2-TYPE THW	93
6	<i>Origin</i>	Feed Point 4	137+15.3, 40.0' RT	2	13	2	UNDERGROUND CONDUCTOR NO2-TYPE RHW	66
	<i>Destination</i>	Existing Meter & Transformer	137+05.1, 48.7' RT			1	UNDERGROUND CONDUCTOR NO2-TYPE THW	33

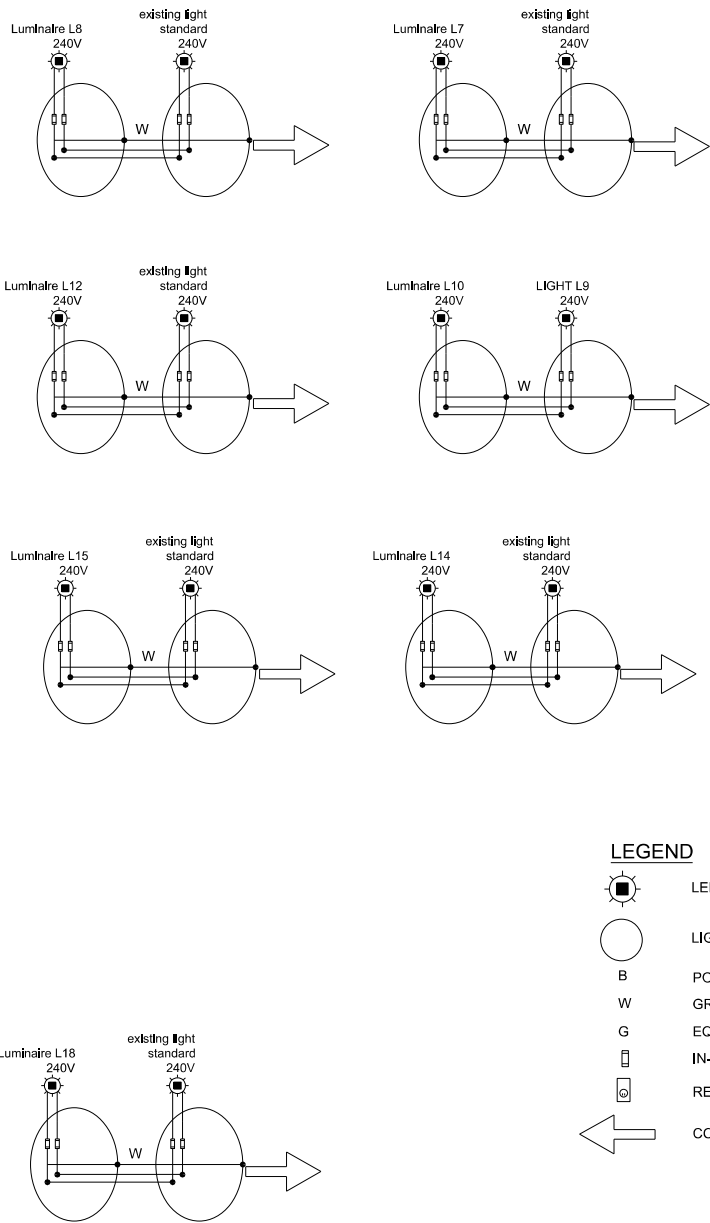
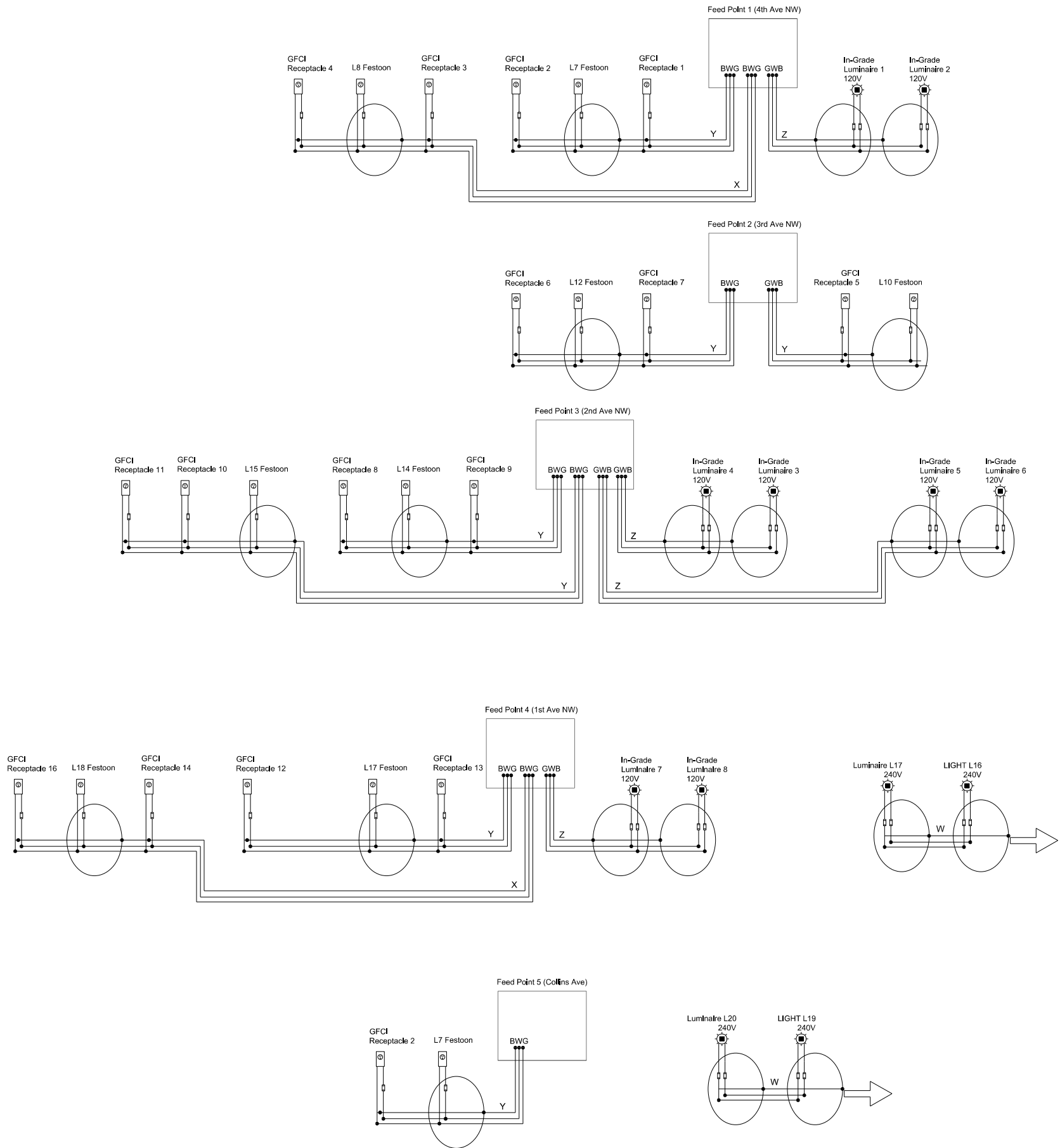
LIGHTING SYSTEM: CABLE & CONDUIT SCHEDULE (COLLINS AVENUE)								
RUN			CONDUIT					
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	# of Cables	SIZE/TYPE	Total LF
1	<i>Origin</i>	Feed Point 5	140+14.4, 398' RT	2	148	2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	324
	<i>Destination</i>	Festoon - L20	140+86.3, 35.7' LT	& 2" spare		1	UNDERGROUND CONDUCTOR NO6-TYPE THW	162
2	<i>Origin</i>	Festoon - L20	140+86.3, 35.7' LT	2	21	2	UNDERGROUND CONDUCTOR NO8-TYPE RHW	58
	<i>Destination</i>	GFCI Receptacle 17	140+87.6, 56.6' LT			1	UNDERGROUND CONDUCTOR NO6-TYPE THW	29

EXISTING LIGHTING (COLLINS AVENUE)								
RUN			CONDUIT					
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	# of Cables	SIZE/TYPE	Total LF
1	<i>Origin</i>	Luminaire - L20	140+86.3, 35.7' LT	2	25	2	UNDERGROUND CONDUCTOR NO4-TYPE RHW	66
	<i>Destination</i>	Light Standard - L19	140+61.6, 28.7' LT			1	UNDERGROUND CONDUCTOR NO6-TYPE THW	33

SERVICE CONNECTION (COLLINS AVENUE)								
RUN			CONDUIT					
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	# of Cables	SIZE/TYPE	Total LF
1	<i>Origin</i>	Feed Point 5	140+14.4, 398' RT	2	41	2	UNDERGROUND CONDUCTOR NO2-TYPE RHW	114
	<i>Destination</i>	Signal Pull Box 1	140+56.6, 36.3' RT			1	UNDERGROUND CONDUCTOR NO2-TYPE THW	57
2	<i>Origin</i>	Signal Pull Box 1	140+56.6, 36.3' RT	EX		2	UNDERGROUND CONDUCTOR NO2-TYPE RHW	64
	<i>Destination</i>	Signal Pull Box 2	140+77.9, 29.7' RT			1	UNDERGROUND CONDUCTOR NO2-TYPE THW	32
3	<i>Origin</i>	Signal Pull Box 2	140+77.9, 29.7' RT	EX		2	UNDERGROUND CONDUCTOR NO2-TYPE RHW	138
	<i>Destination</i>	Signal Pull Box 3	140+79.0, 28.9' LT			1	UNDERGROUND CONDUCTOR NO2-TYPE THW	69
4	<i>Origin</i>	Signal Pull Box 3	140+79.0, 28.9' LT	2	39	2	UNDERGROUND CONDUCTOR NO2-TYPE RHW	90
	<i>Destination</i>	Existing Conduit	140+85.1, 68.0' LT			1	UNDERGROUND CONDUCTOR NO2-TYPE THW	45
5	<i>Origin</i>	Existing Conduit	140+85.1, 68.0' LT	EX		2	UNDERGROUND CONDUCTOR NO2-TYPE RHW	296
	<i>Destination</i>	Existing Meter & Transformer	140+78.0, 193.0' LT			1	UNDERGROUND CONDUCTOR NO2-TYPE THW	148

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Main St
Cable & Conduit Schedule



- LEGEND**
- LED LUMINAIRE
 - LIGHT STANDARD, REFER TO SCHEDULES AND SPECS
 - B POWER CONDUCTOR
 - W GROUNDED CONDUCTOR (NEUTRAL)
 - G EQUIP GROUNDD CONDUCTOR (#6 THW)
 - IN-LINE FUSE, REFER TO SPECS
 - RECEPTACLE (120V)
 - CONNECT TO EXISTING WIRING

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Main St
Wiring Schematic Details

- W (2) #4 RHW/USE, (1) #6 THW GROUND, TRACER WIRE
X (2) #6 RHW/USE, (1) #6 THW GROUND, TRACER WIRE
Y (2) #8 RHW/USE, (1) #6 THW GROUND, TRACER WIRE
Z (2) #10 RHW/USE, (1) #6 THW GROUND, TRACER WIRE

4th Ave NW FEED POINT PANEL SCHEDULE										
200 Amp Main Breaker, 120/240 Volt, 1Ø, All breakers 22 kAIC minimum. NEMA 1 enclosure (inside cabinet). 12 space minimum loadcenter. Fed from Utility Metersocket. UL SUSE Rated. (3) - #2 AWG Cu RHW/USE feeder conductors in Conduit from Utility Metersocket. Install loadcenter main service conductors in conduit inside feed point cabinet. Provide Typed Identifications according to NEC 408 & 110. Per NEC provide and bond #6 AWG ground electrodes to 2 ground rods minimum 6' apart along with cabinet.										
CKT	DESCRIPTION	BRK	V-A	AMPS	Φ	AMPS	V-A	BRK	DESCRIPTION	CKT
1	Light Pole 7 GFCI Circuit	40	2880	24	A	20.0	2400	50	Light Pole 8 GFCI Circuit	2
3	In-Grade Luminaires	20	480	4.0	B					4
5					A					6
7					B					8
9					A					10
11					B					12
13					A					14
15	GFI Receptical (Feedpoint Internal	20	600	5.0	B	0.1	12	15	Photo Cell Control	16
17					A					18
19					B					20
Total Connected VA and Amps			6,372	44.0 9.1						

1st Ave NW FEED POINT PANEL SCHEDULE										
200 Amp Main Breaker, 120/240 Volt, 1Ø, All breakers 22 kAIC minimum. NEMA 1 enclosure (inside cabinet). 12 space minimum loadcenter. Fed from Utility Metersocket. UL SUSE Rated. (3) - #2 AWG Cu RHW/USE feeder conductors in Conduit from Utility Metersocket. Install loadcenter main service conductors in conduit inside feed point cabinet. Provide Typed Identifications according to NEC 408 & 110. Per NEC provide and bond #6 AWG ground electrodes to 2 ground rods minimum 6' apart along with cabinet.										
CKT	DESCRIPTION	BRK	V-A	AMPS	Φ	AMPS	V-A	BRK	DESCRIPTION	CKT
1	Light Pole 16 & 17 GFCI Circuit	40	2400	20	A	12.0	1440	50	Light Pole 15 GFCI Circuit	2
3	In-Grade Luminaires	20	480	4.0	B					4
5					A					6
7					B					8
9					A					10
11					B					12
13					A					14
15	GFI Receptical (Feedpoint Internal	20	600	5.0	B	0.1	12	15	Photo Cell Control	16
17					A					18
19					B					20
Total Connected VA and Amps			4,932	32.0 9.1						

3rd Ave NW FEED POINT PANEL SCHEDULE										
200 Amp Main Breaker, 120/240 Volt, 1Ø, All breakers 22 kAIC minimum. NEMA 1 enclosure (inside cabinet). 12 space minimum loadcenter. Fed from Utility Metersocket. UL SUSE Rated. (3) - #2 AWG Cu RHW/USE feeder conductors in Conduit from Utility Metersocket. Install loadcenter main service conductors in conduit inside feed point cabinet. Provide Typed Identifications according to NEC 408 & 110. Per NEC provide and bond #6 AWG ground electrodes to 2 ground rods minimum 6' apart along with cabinet.										
CKT	DESCRIPTION	BRK	V-A	AMPS	Φ	AMPS	V-A	BRK	DESCRIPTION	CKT
1	Light Pole 12 GFCI Circuit	40	1920	16	A	12.0	1440	40	Light Pole 10 GFCI Circuit	2
3					B					4
5					A					6
7					B					8
9					A					10
11					B					12
13					A					14
15	GFI Receptical (Feedpoint Internal	20	600	5.0	B	0.1	12	15	Photo Cell Control	16
17					A					18
19					B					20
Total Connected VA and Amps			3,972	28.0 5.1						

Collins Ave FEED POINT PANEL SCHEDULE										
200 Amp Main Breaker, 120/240 Volt, 1Ø, All breakers 22 kAIC minimum. NEMA 1 enclosure (inside cabinet). 12 space minimum loadcenter. Fed from Utility Metersocket. UL SUSE Rated. (3) - #2 AWG Cu RHW/USE feeder conductors in Conduit from Utility Metersocket. Install loadcenter main service conductors in conduit inside feed point cabinet. Provide Typed Identifications according to NEC 408 & 110. Per NEC provide and bond #6 AWG ground electrodes to 2 ground rods minimum 6' apart along with cabinet.										
CKT	DESCRIPTION	BRK	V-A	AMPS	Φ	AMPS	V-A	BRK	DESCRIPTION	CKT
1	Light Pole 20 GFCI Circuit	40	1440	12	A					2
3					B					4
5					A					6
7					B					8
9					A					10
11					B					12
13					A					14
15	GFI Receptical (Feedpoint Internal	20	600	5.0	B	0.1	12	15	Photo Cell Control	16
17					A					18
19					B					20
Total Connected VA and Amps			2,052	12.0 5.1						

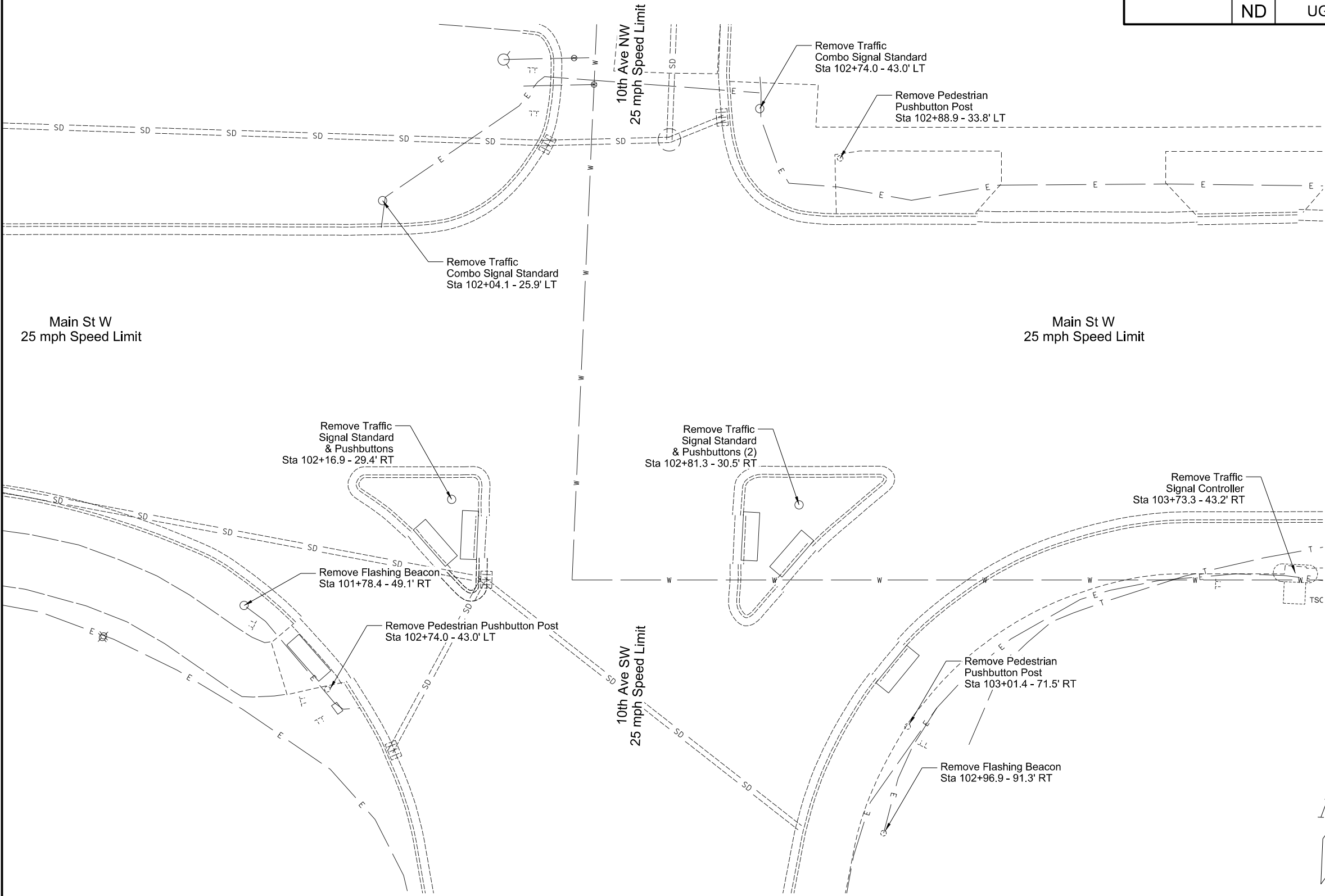
2nd Ave NW FEED POINT PANEL SCHEDULE										
200 Amp Main Breaker, 120/240 Volt, 1Ø, All breakers 22 kAIC minimum. NEMA 1 enclosure (inside cabinet). 12 space minimum loadcenter. Fed from Utility Metersocket. UL SUSE Rated. (3) - #2 AWG Cu RHW/USE feeder conductors in Conduit from Utility Metersocket. Install loadcenter main service conductors in conduit inside feed point cabinet. Provide Typed Identifications according to NEC 408 & 110. Per NEC provide and bond #6 AWG ground electrodes to 2 ground rods minimum 6' apart along with cabinet.										
CKT	DESCRIPTION	BRK	V-A	AMPS	Φ	AMPS	V-A	BRK	DESCRIPTION	CKT
1	Light Pole 14 GFCI Circuit	40	2400	20.0	A	20.0	2400	40	Light Pole 15 GFCI Circuit	2
3	In-Grade Luminaires	20	480	4.0	B					4
5					A					6
7					B					8
9					A					10
11					B					12
13					A					14
15	GFI Receptical (Feedpoint Internal	20	600	5.0	B	0.1	12	15	Photo Cell Control	16
17					A					18
19					B					20
Total Connected VA and Amps				40.0						

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Main St

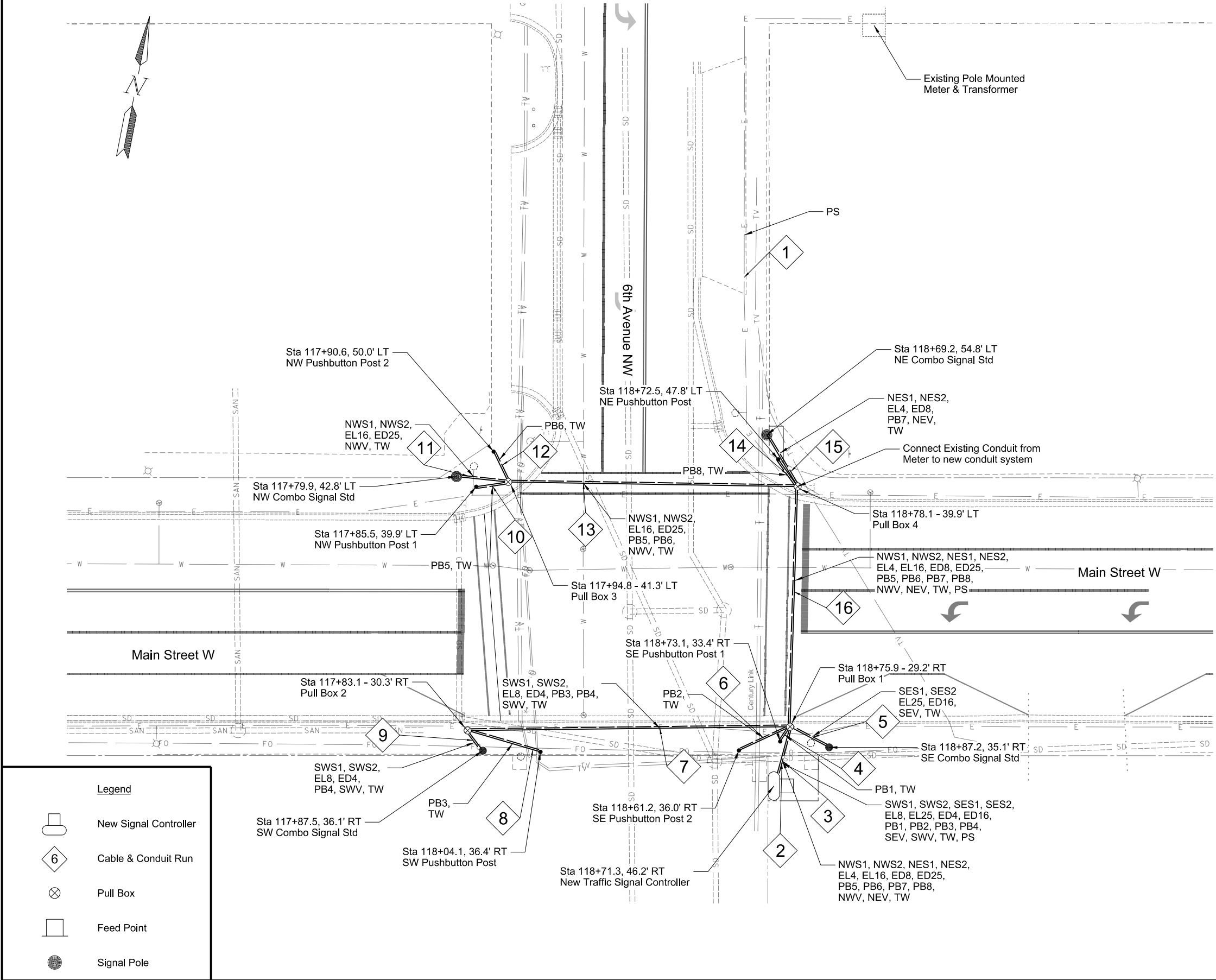
Panel Schedule

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	150	1



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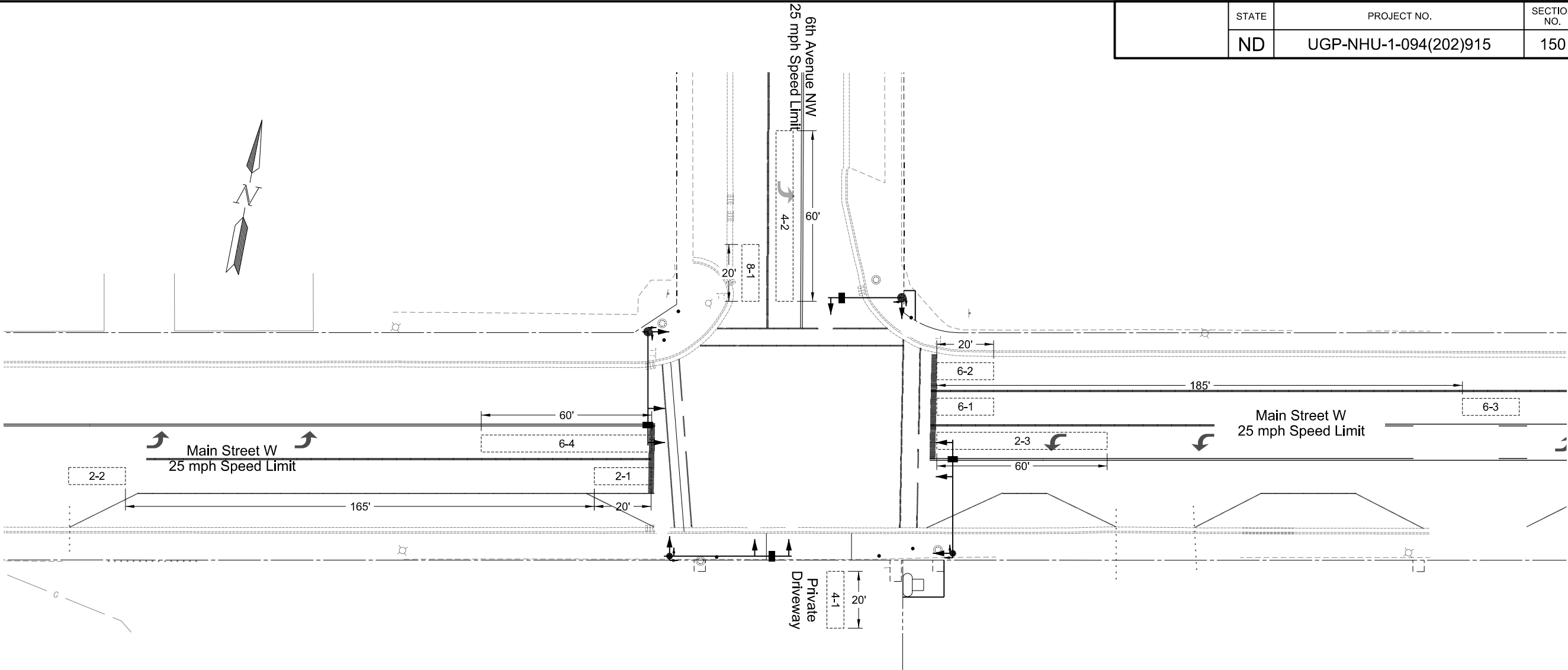
Main St
Signal Removal
Main St / 10th Ave NW



CABLE NAMES	
NWS1	= Northwest Combo Signal Std
NES1	= Northeast Combo Signal Std
SWS1	= Southwest Combo Signal Std
SES1	= Southeast Combo Signal Std
NWS2	= Northwest Combo Signal Std
SES2	= Southeast Combo Signal Std
NES2	= Northeast Combo Signal Std
SWS2	= Southwest Combo Signal Std
NWV	= Northwest Video Detection Unit
NEV	= Northeast Video Detection Unit
SEV	= Southeast Video Detection Unit
SWV	= Southwest Video Detection Unit
EL16	= Ø1+Ø6 EVP Light
EL25	= Ø2+Ø5 EVP Light
EL4	= Ø4 EVP Light
EL8	= Ø8 EVP Light
ED16	= Ø1+Ø6 EVP Detector
ED25	= Ø2+Ø5 EVP Detector
ED4	= Ø4 EVP Detector
ED8	= Ø8 EVP Detector
PB1	= Pedestrian Pushbutton 1
PB2	= Pedestrian Pushbutton 2
PB3	= Pedestrian Pushbutton 3
PB4	= Pedestrian Pushbutton 4
PB5	= Pedestrian Pushbutton 5
PB6	= Pedestrian Pushbutton 6
PB7	= Pedestrian Pushbutton 7
PB8	= Pedestrian Pushbutton 8
TW	= Tracer Wire
PS	= Power Supply Cables

Note:
1. Stationing based on Chain SCL94B

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DETECTION ZONE SCHEDULE						
Phase-N umber	Distance From Stop Bar (feet)	Length (feet)	Presence/Counting	Passage/Counting	Queue/Counting	Locking Memory Non-Locking Memory
2-1	0	20			X	X
2-2	185	20		X		
2-3	0	60	X			X
4-1	0	20	X			X
4-2	0	60	X			X
6-1	0	20			X	X
6-2	0	20			X	X
6-3	185	20		X		
6-4	0	60	X			X
8-1	0	20	X			X

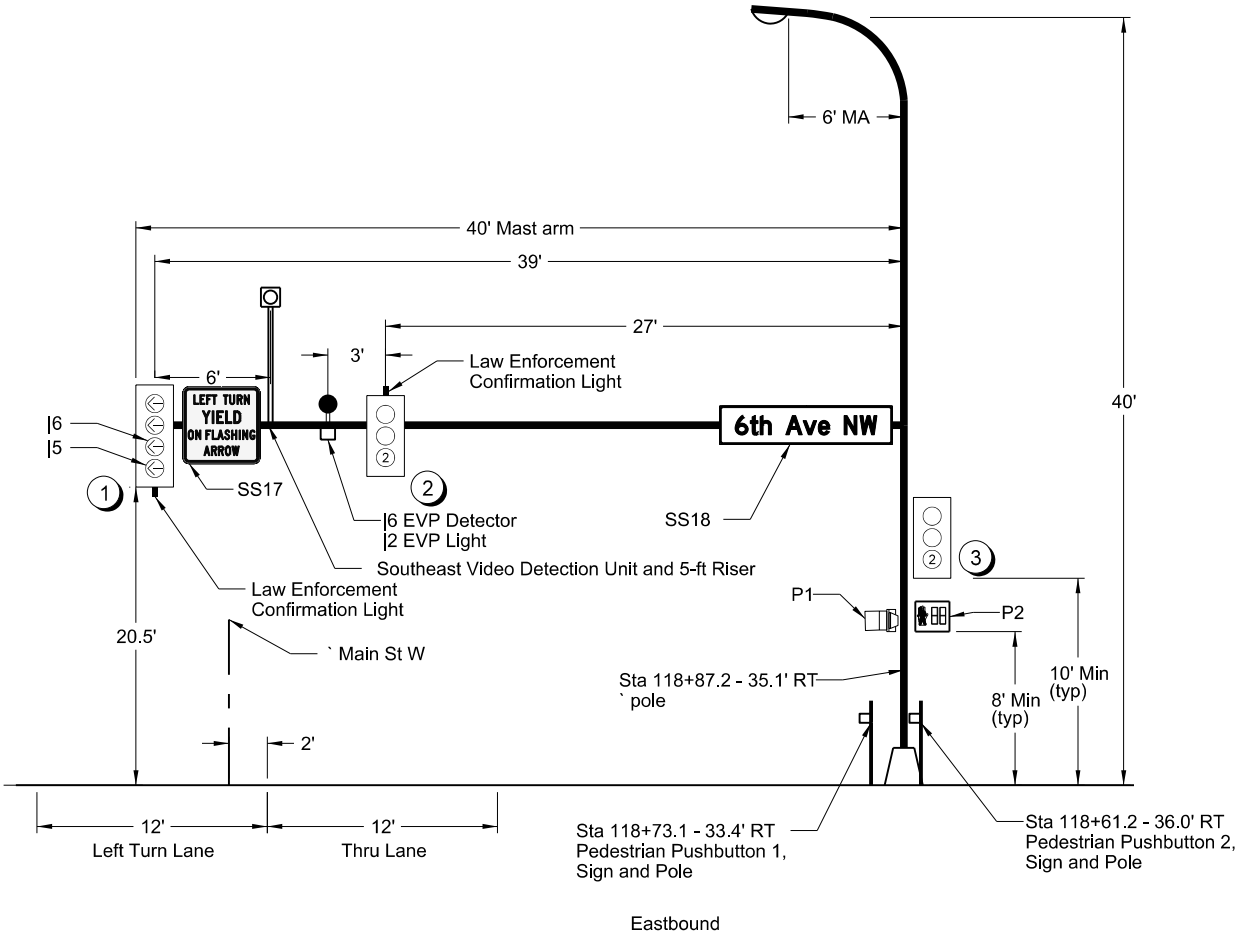
Note:
1. Stationing based on Chain SCL94B
2. The final size of all detection zones shall be as recommended by the video detection manufacturer.

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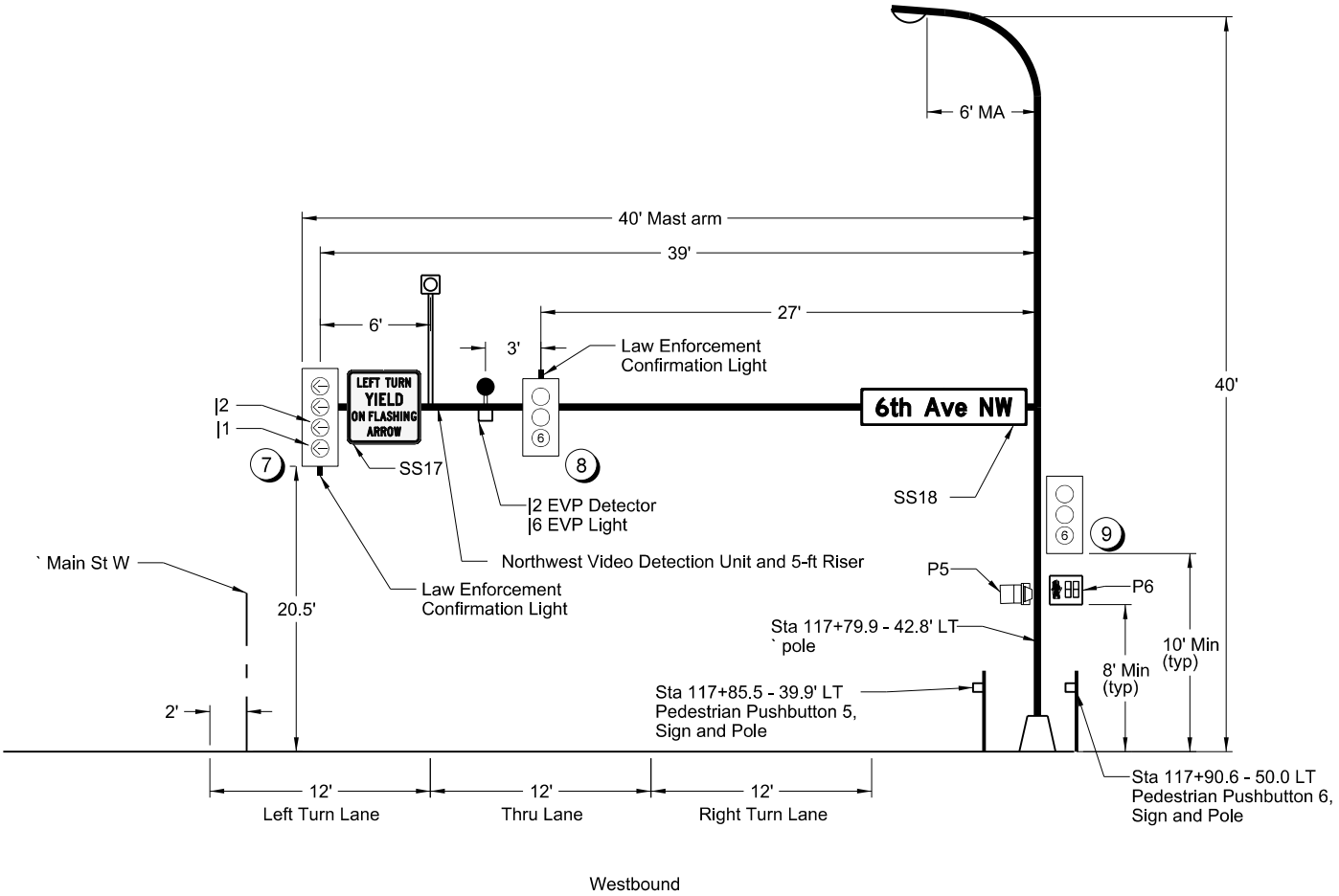
Main St
Video Detection Zone Layout

Main St / 6th Ave NW
Traffic Signal System - Site 1

Southeast Combo Signal Standard



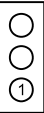
Northwest Combo Signal Standard



LEGEND



Video Detection Camera



Traffic Signal Head w/ associated phase



Signal Head Number



EVP Light



EVP Detector



Law Enforcement Confirmation Light

Notes:
1.Face the EVP Detector the opposite direction of signal heads on corresponding mast arm.
2. Stationing based on chaun SCL94B

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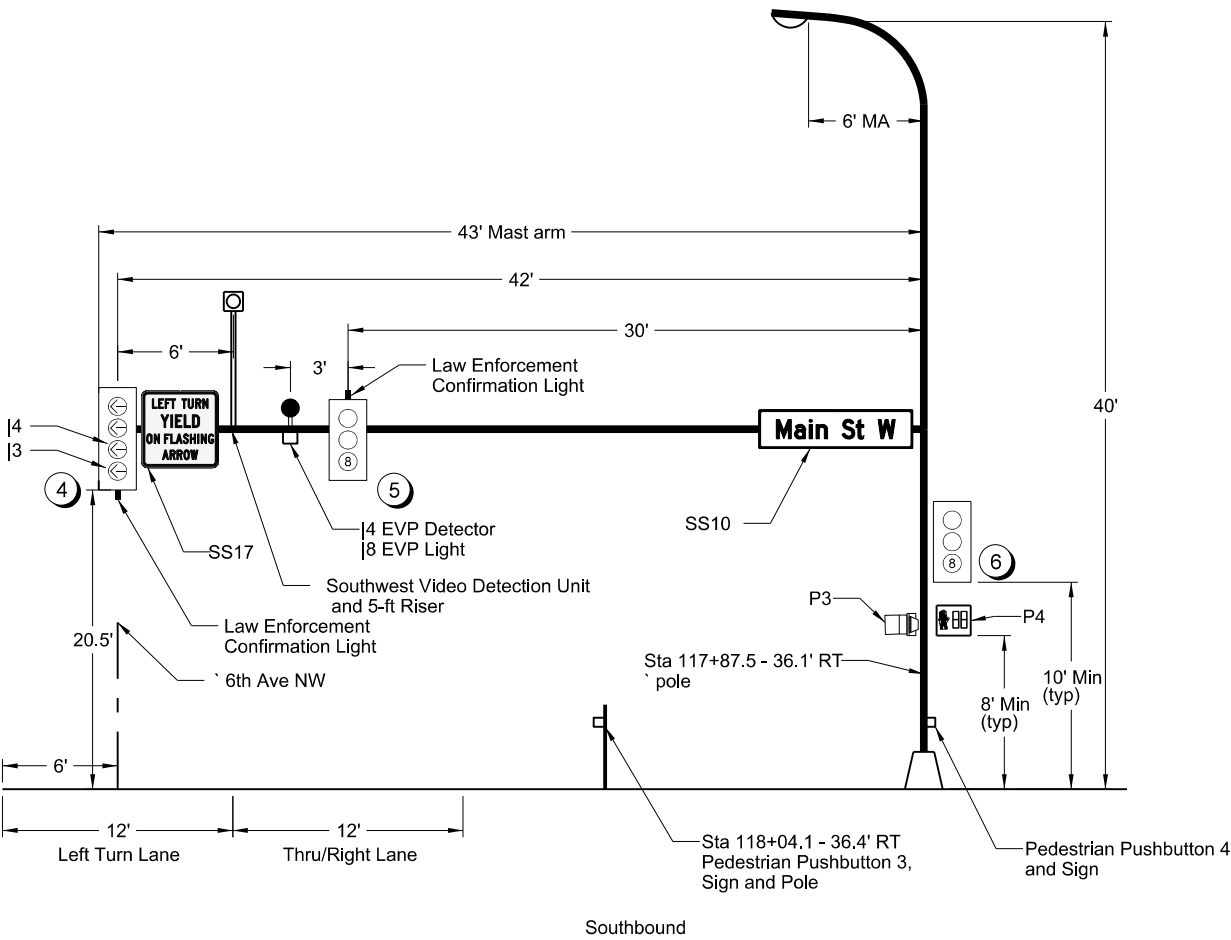
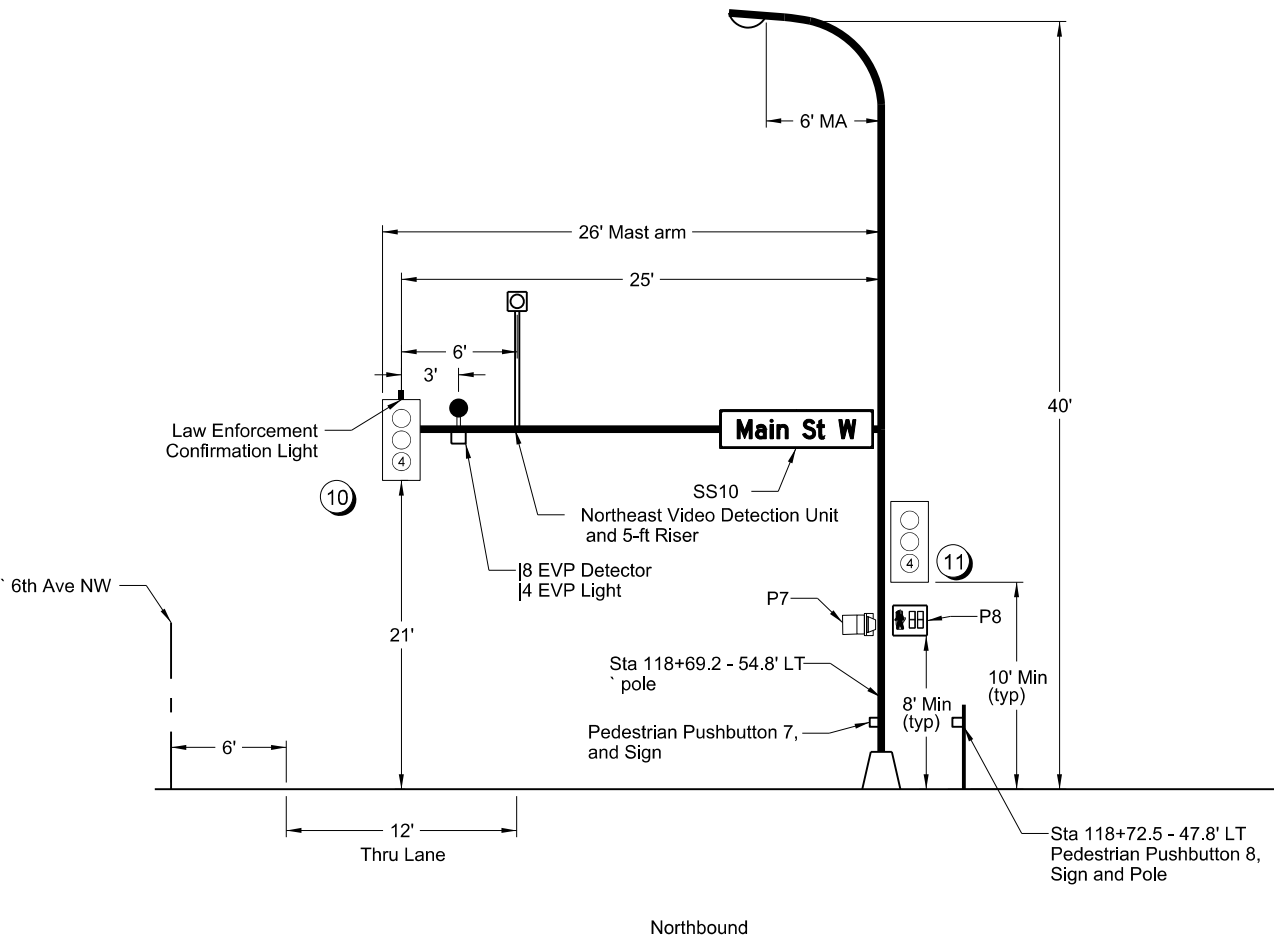
Main St

Signal Standards and Head Locations

Main St / 6th Ave NW
Traffic Signal System - Site 1

Northeast Combination Signal Standard

Southwest Combination Signal Standard



LEGEND

- Video Detection Camera
- Traffic Signal Head w/ associated phase
- Signal Head Number
- EVP Light
- EVP Detector
- Law Enforcement Confirmation Light

Notes:
1. Face the EVP Detector the opposite direction of signal heads on corresponding mast arm.
2. Stationing based on chain SCL94B

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Main St

Signal Standards and Head Locations

Main St / 6th Ave NW
Traffic Signal System - Site 1

Time of Day Plan for All Three Intersections			
Day	Coord Pattern	Start Time	Description
Weekdays (Mon-Fri)	0	0:00	Free
	1	7:00	Normal
	2	15:30	School Peak
	3	16:00	PM Peak
	1	17:30	Normal
	0	20:00	Free
Saturday	0	0:00	Free
	1	8:00	Normal
	0	20:00	Free
Sunday	0	0:00	Free
	1	11:00	Normal
	0	20:00	Free

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Main St
Controller Phasing &
Signal Timings
Main St / 6th Ave NW
Traffic Signal System - Site 1

Blank spaces denote a "Red" Indication
G= Green Ball Indication
Y= Yellow Ball Indication
GL= Green Left Arrow Indication
YL= Yellow Left Arrow Indication
FYA = Flashing Yellow Arrow Indication
GR=Green Right Arrow Indication
YR=Yellow Right Arrow Indication

[illegible]

Chart A	
Phase	Non-conflicting Phase allowed to time concurrently
1	5, 6
2	5, 6
3	8
4	8
5	1, 2
6	1, 2
7	3, 4
8	3, 4

N= Continue to display right of way indication.
When any phase is on alone, any
non-conflicting

	Phase 1 WB Left	Phase 2 EB Thru/Right	Phase 3 SB Left	Phase 4 NB Left/Thru/Right	Phase 5 EB Left	Phase 6 WB Thru/Right	Phase 7	Phase 8 SB Thru/Right
BASIC INTERVALS (OR FUNCTIONS)								
Minimum Initial	5.0	10.0	5.0	7.0	5.0	10.0		7.0
Minimum Initial with Pedestrian Actuation*		27.0		25.0		25.0		24.0
Passage Time/Vehicle Extension	3.0	5.0	3.0	3.0	3.0	5.0		3.0
Max Green	20.0	40.0	20.0	40.0	20.0	40.0		20.0
Yellow Change	3.0	3.0	3.0	3.0	3.0	3.0		3.0
Red Clearance	1.5	1.5	1.5	1.3	1.6	1.4		1.2
Walk		7.0		7.0		7.0		7.0
Pedestrian Clearance*		20.0		18.0		18.0		17.0

VOLUME DENSITY TIMING FUNCTIONS - ONLY APPLICABLE DURING "FREE" (UNCOORDINATED) TIMING PLAN

Time Before Reduction		15.0			15.0		
Time to Reduce to Minimum Gap		5.0			5.0		
Minimum Gap		2.0			2.0		
Recall		Minimum		No	Minimum		No
Flashing-Normal & Conflict Monitor		R		R	R		R
Start Up Phasing		G		R	G		R
Emergency Vehicle Pre-emption		x		x	x		x
Type of Detector	Presence	Refer to Detector Zone Table					
	Calling						
	Passage						
Locking Memory							
Non-Locking Memory							

Conductor		Cable NWS1 (Northwest Combo Signal) (14 AWG 12 Conductor)		Cable NWS2 (Northwest Combo Signal) (14 AWG 7 Conductor)		Cable NES1 (Northeast Combo Signal) (14 AWG 12 Conductor)		Cable NES2 (Northeast Combo Signal) (14 AWG 5 Conductor)	
Base	Tracer	Head	Indication	Head	Indication	Head	Indication	Head	Indication
1	Black		Spare	P6	Ø6 Walk		Spare	P7	Ø6 Walk
2	White		Neutral		Neutral		Neutral		Neutral
3	Red	8, 9	Ø6 Red	P6	Ø6 Don't Walk	10, 11	Ø4 Red	P7	Ø6 Don't Walk
4	Green		Ground		Ground		Ground		Ground
5	Orange	8, 9	Ø6 Yellow	P5	Ø8 Walk	10, 11	Ø4 Yellow		Spare
6	Blue	8, 9	Ø6 Green	P5	Ø8 Don't Walk	10, 11	Ø4 Green		
7	White	Black	Spare		Spare		Spare		
8	Red	Black	Ø1 Red ←			P8	Ø4 Don't Walk		
9	Green	Black	Spare				Spare		
10	Orange	Black	Ø1 Yellow ←				Spare		
11	Blue	Black	Ø1 Green Green ←				Spare		
12	Black	White	Ø2 FYA ←			P8	Ø4 Walk		

Conductor		Cable SWS1 (Southwest Combo Signal) (14 AWG 12 Conductor)		Cable SWS2 (Southwest Combo Signal) (14 AWG 7 Conductor)		Cable SES1 (Southeast Combo Signal) (14 AWG 12 Conductor)		Cable SES2 (Southeast Combo Signal) (14 AWG 7 Conductor)	
Base	Tracer	Head	Indication	Head	Indication	Head	Indication	Head	Indication
1	Black		Spare	P3	Ø2 Walk		Spare	P2	Ø2 Walk
2	White		Neutral		Neutral		Neutral		Neutral
3	Red	5, 6	Ø8 Red	P3	Ø2 Don't Walk	2, 3	Ø2 Red	P2	Ø2 Don't Walk
4	Green		Ground		Ground		Ground		Ground
5	Orange	5, 6	Ø8 Yellow	P4	Ø8 Walk	2, 3	Ø2 Yellow	P1	Ø4 Walk
6	Blue	5, 6	Ø8 Green	P4	Ø8 Don't Walk	2, 3	Ø2 Green	P1	Ø4 Don't Walk
7	White	Black	Spare		Spare		Spare		Spare
8	Red	Black	Ø3 Red ←			1	Ø5 Red ←		
9	Green	Black	Spare				Spare		
10	Orange	Black	Ø3 Yellow ←			1	Ø5 Yellow ←		
11	Blue	Black	Ø3 Green Green ←			1	Ø5 Green ←		
12	Black	White	Ø4 FYA ←			1	Ø6 FYA ←		

INTERNAL MAST ARM/STANDARD SIGNAL HEAD CABLE				
Origin	Destination	# of Cables	SIZE/TYPE	Total LF
Southeast Combo Signal Std Transformer Base	Vehicle Head 1	1	14 AWG 7 CONDUCTOR CABLE	68
	Vehicle Head 2	1	14 AWG 5 CONDUCTOR CABLE	56
	Vehicle Head 3	1	14 AWG 5 CONDUCTOR CABLE	18
	Pedestrian Head 1	1	14 AWG 3 CONDUCTOR CABLE	17
	Pedestrian Head 2	1	14 AWG 3 CONDUCTOR CABLE	17
Southwest Combo Signal Std Transformer Base	Vehicle Head 4	1	14 AWG 7 CONDUCTOR CABLE	71
	Vehicle Head 5	1	14 AWG 5 CONDUCTOR CABLE	59
	Vehicle Head 6	1	14 AWG 5 CONDUCTOR CABLE	18
	Pedestrian Head 3	1	14 AWG 3 CONDUCTOR CABLE	17
	Pedestrian Head 4	1	14 AWG 3 CONDUCTOR CABLE	17
Northwest Combo Signal Std Transformer Base	Vehicle Head 7	1	14 AWG 7 CONDUCTOR CABLE	68
	Vehicle Head 8	1	14 AWG 5 CONDUCTOR CABLE	56
	Vehicle Head 9	1	14 AWG 5 CONDUCTOR CABLE	18
	Pedestrian Head 5	1	14 AWG 3 CONDUCTOR CABLE	17
	Pedestrian Head 6	1	14 AWG 3 CONDUCTOR CABLE	17
Northeast Combo Signal Std Transformer Base	Vehicle Head 10	1	14 AWG 5 CONDUCTOR CABLE	54
	Vehicle Head 11	1	14 AWG 5 CONDUCTOR CABLE	18
	Pedestrian Head 7	1	14 AWG 3 CONDUCTOR CABLE	17
	Pedestrian Head 8	1	14 AWG 3 CONDUCTOR CABLE	17

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Main St

Signal Heads and Conductors

Main St / 6th Ave NW
Traffic Signal System - Site 1

SIGNAL CABLE & CONDUIT SCHEDULE											
RUN			CONDUIT		CABLE						
#	ITEM	STATION, OFFSET	SIZE (IN)	LF	Origin	Destination	# of Cables	SIZE/TYPE	Total LF	TITLE	
1	<i>Origin</i> Existing Meter <i>Destination</i> Traffic Signal Controller	Sta 119+00, 173.0' LT Sta 118+71.3, 46.2' RT	EX		Existing Meter Existing Meter	Traffic Signal Controller Traffic Signal Controller	2 1	UNDERGROUND CONDUCTOR NO2-TYPE RHW UNDERGROUND CONDUCTOR NO2-TYPE THW	560 266	PS. Fed through existing conduit and signal conduit.	
2	<i>Origin</i> <i>Destination</i> Traffic Signal Controller Pull Box 1	Sta 118+71.3, 46.2' RT Sta 118+75.9, 29.2' RT	3	18	Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller	Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1	2 1 1 2 2 4 2 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 5 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	66 33 33 66 66 132 66 23	NES1, NWS1 NWS2 NES2 EL4, EL16 ED8, ED25 PB1, PB2, PB3, PB4 NWV, NEV TW	
3	<i>Origin</i> <i>Destination</i> Traffic Signal Controller Pull Box 1	Sta 118+71.3, 46.2' RT Sta 118+75.9, 29.2' RT	3	18	Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller	Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1	2 1 1 2 2 4 2 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 5 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	66 33 33 66 66 132 66 23	SWS1, SES1 SES2 SWS2 EL8, EL25 ED4, ED16 PB5, PB6, PB7, PB8 SEV, SWV TW	
4	<i>Origin</i> <i>Destination</i> Pull Box 1 Southeast Pushbutton Post 1	Sta 118+75.9, 29.2' RT Sta 118+73.1, 33.4' RT	2	6	Pull Box 1 Pull Box 1	Pushbutton 1 Pushbutton 1	1 1	16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	20 11	PB1 TW	
5	<i>Origin</i> <i>Destination</i> Pull Box 1 Southeast Combo Signal Std	Sta 118+75.9, 29.2' RT Sta 118+87.2, 35.1' RT	2	13	Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1	Southeast Combo Signal Std Transformer Base Southeast Combo Signal Std Transformer Base Southeast Emergency Preemption Lamp Southeast Emergency Preemption Detector Southeast Video Detection Unit Southeast Combo Signal Std Transformer Base	1 1 1 1 1 1 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	24 24 73 73 80 18	SES1 SES2 EL25 ED16 SEV TW	
6	<i>Origin</i> <i>Destination</i> Pull Box 1 Southeast Pushbutton Post 2	Sta 118+75.9, 29.2' RT Sta 118+61.2, 36.0' RT	2	17	Pull Box 1 Pull Box 1	Pushbutton 2 Pushbutton 2	1 1	16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	31 22	PB2 TW	
7	<i>Origin</i> <i>Destination</i> Pull Box 1 Pull Box 2	Sta 118+75.9, 29.2' RT Sta 117+83.1, 30.3' RT	2	93	Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1	Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2	1 1 1 1 2 1 1 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 5 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	105 105 105 105 210 105 98	SWS1 SWS2 EL8 ED4 PB3, PB4 SWV TW	
8	<i>Origin</i> <i>Destination</i> Pull Box 2 Southwest Pushbutton Post	Sta 117+83.1, 30.3' RT Sta 118+04.1, 36.4' RT	2	22	Pull Box 2 Pull Box 2	Pushbutton 3 Pushbutton 3	1 1	16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	36 27	PB3 TW	
9	<i>Origin</i> <i>Destination</i> Pull Box 2 Southwest Combo Signal Std	Sta 117+83.1, 30.3' RT Sta 117+87.5, 36.1' RT	2	8	Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2	Southwest Combo Signal Std Transformer Base Southwest Combo Signal Std Transformer Base Southwest Emergency Preemption Lamp Southwest Emergency Preemption Detector Pushbutton 4 Southwest Video Detection Unit Southwest Combo Signal Std Transformer Base	1 1 1 1 1 1 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 5 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	19 19 71 71 22 78 13	SWS1 SWS2 EL8 ED4 PB4 SWV TW	
10	<i>Origin</i> <i>Destination</i> Pull Box 3 Northwest Pushbutton Post 1	Sta 117+94.8, 41.3' LT Sta 117+85.5, 39.9' LT	2	10	Pull Box 3 Pull Box 3	Pushbutton 5 Pushbutton 5	1 1	16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	24 15	PB5 TW	
11	<i>Origin</i> <i>Destination</i> Pull Box 3 Northwest Combo Signal Std	Sta 117+94.8, 41.3' LT Sta 117+79.9, 42.8' LT	2	15	Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3	Northwest Combo Signal Std Transformer Base Northwest Combo Signal Std Transformer Base Northwest Emergency Preemption Lamp Northwest Emergency Preemption Detector Northwest Video Detection Unit Northwest Combo Signal Std Transformer Base	1 1 1 1 1 1 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	26 26 75 75 82 20	NWS1 NWS2 EL16 ED25 NWV TW	
12	<i>Origin</i> <i>Destination</i> Pull Box 3 Northwest Pushbutton Post 2	Sta 117+94.8, 41.3' LT Sta 117+90.6, 50.0' LT	2	10	Pull Box 3 Pull Box 3	Pushbutton 6 Pushbutton 6	1 1	16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	24 23	PB6 TW	
13	<i>Origin</i> <i>Destination</i> Pull Box 4 Pull Box 3	Sta 118+78.1, 39.9' LT Sta 117+94.8, 41.3' LT	2	84	Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4	Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3	1 1 1 1 2 1 1 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	96 96 96 96 192 96 89	NWS1 NWS2 EL16 ED25 PB5, PB6 NWV TW	

CABLE NAMES
NWS1 = Northwest Combo Signal Std NES1 = Northeast Combo Signal Std SWS1 = Southwest Combo Signal Std SES1 = Southeast Combo Signal Std NWS2 = Northwest Combo Signal Std SES2 = Southeast Combo Signal Std NES2 = Northeast Combo Signal Std SWS2 = Southwest Combo Signal Std NWV = Northwest Video Detection Unit NEV = Northeast Video Detection Unit SEV = Southeast Video Detection Unit SWV = Southwest Video Detection Unit EL16 = Ø1+Ø6 EVP Light EL25 = Ø2+Ø5 EVP Light EL4 = Ø4 EVP Light EL8 = Ø8 EVP Light ED16 = Ø1+Ø6 EVP Detector ED25 = Ø2+Ø5 EVP Detector ED4 = Ø4 EVP Detector ED8 = Ø8 EVP Detector PB1 = Pedestrian Pushbutton 1 PB2 = Pedestrian Pushbutton 2 PB3 = Pedestrian Pushbutton 3 PB4 = Pedestrian Pushbutton 4 PB5 = Pedestrian Pushbutton 5 PB6 = Pedestrian Pushbutton 6 PB7 = Pedestrian Pushbutton 7 PB8 = Pedestrian Pushbutton 8 TW = Tracer Wire PS = Power Supply Cables

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Main St

Cable & Conduit Schedule

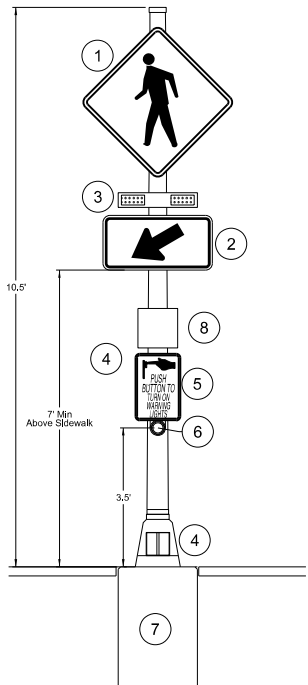
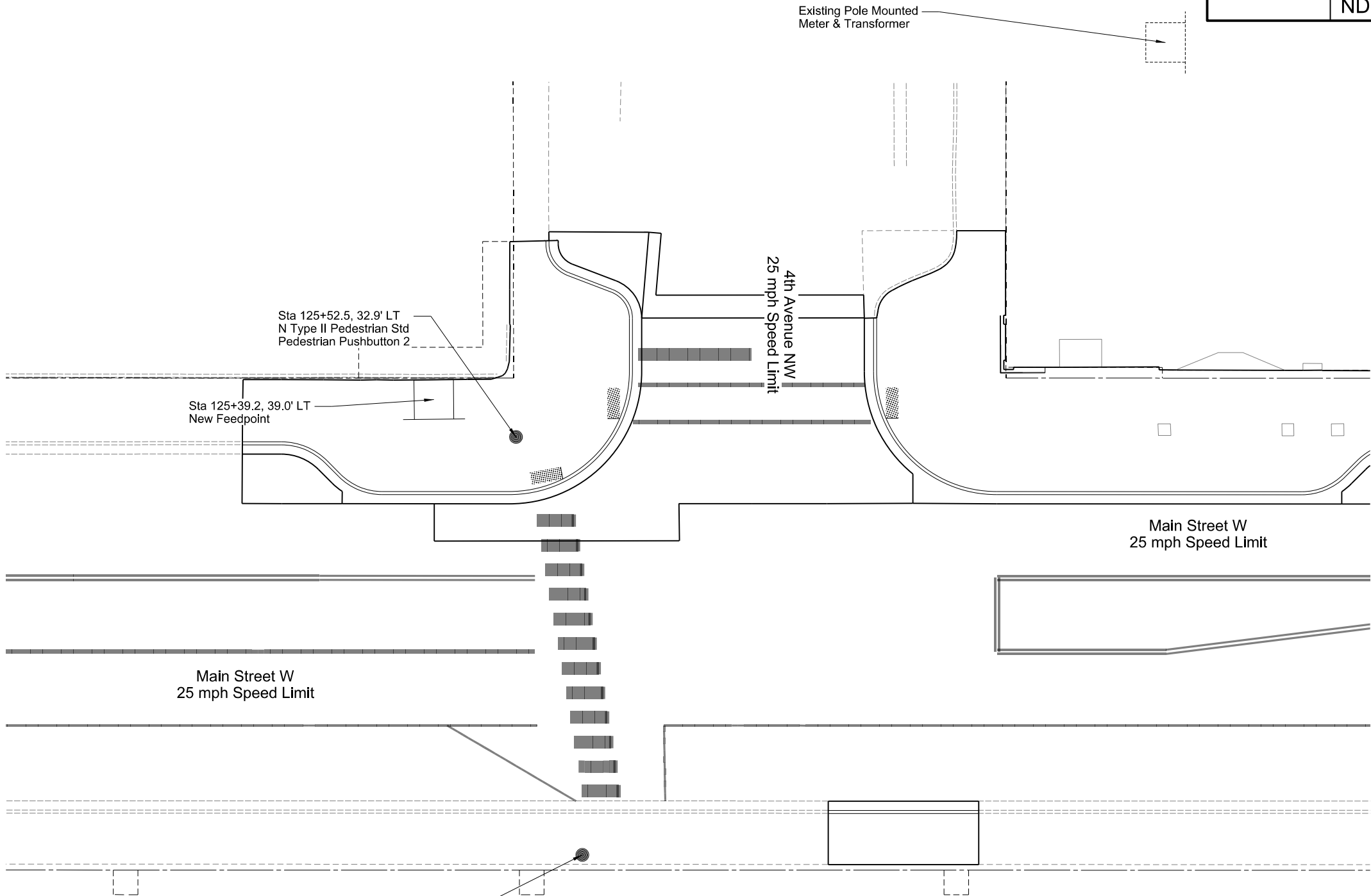
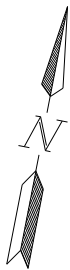
Main St / 6th Ave NW
Traffic Signal System - Site 1

SIGNAL CABLE & CONDUIT SCHEDULE											
RUN			CONDUIT		CABLE						
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	Origin	Destination	# of Cables	SIZE/TYPE	Total LF	TITLE
14	<i>Origin</i>	Pull Box 4	Sta 118+78.1, 39.9' LT	2	10	Pull Box 4	Pushbutton 8	1	16 AWG 3 CONDUCTOR CABLE	24	PB8
		Northeast Pushbutton Post	Sta 118+72.5, 47.8' LT			Pull Box 4	Pushbutton 8	1	UNDERGROUND CONDUCTOR NO6-TYPE THW	15	TW
15	<i>Origin</i>	Pull Box 4	Sta 118+78.1, 39.9' LT	2	18	Pull Box 4	Northeast Combo Signal Std Transformer Base	1	14 AWG 12 CONDUCTOR CABLE	29	NES1
		Northeast Combo Signal Std	Sta 118+69.2, 54.8' LT			Pull Box 4	Northeast Combo Signal Std Transformer Base	1	14 AWG 5 CONDUCTOR CABLE	29	NES2
						Pull Box 4	Northeast Emergency Preemption Lamp	1	14 AWG 3 CONDUCTOR CABLE	70	EL4
						Pull Box 4	Northeast Emergency Preemption Detector	1	EMERGENCY VEHICLE DETECTOR CABLE	70	ED8
						Pull Box 4	Pushbutton 7	1	16 AWG 3 CONDUCTOR CABLE	32	PB7
						Pull Box 4	Northeast Video Detection Unit	1	VIDEO DETECTION CABLE	73	NEV
						Pull Box 4	Northeast Combo Signal Std Transformer Base	1	UNDERGROUND CONDUCTOR NO6-TYPE THW	23	TW
16	<i>Origin</i>	Pull Box 1	Sta 118+75.9, 29.2' RT	3	70	Pull Box 1	Pull Box 4	2	14 AWG 12 CONDUCTOR CABLE	164	NES1, NWS1
		Pull Box 4	Sta 118+78.1, 39.9' LT			Pull Box 1	Pull Box 4	1	14 AWG 7 CONDUCTOR CABLE	82	NWS2
						Pull Box 1	Pull Box 4	1	14 AWG 5 CONDUCTOR CABLE	82	NES2
						Pull Box 1	Pull Box 4	2	14 AWG 3 CONDUCTOR CABLE	164	EL4, EL 16
						Pull Box 1	Pull Box 4	2	EMERGENCY VEHICLE DETECTOR CABLE	164	ED8, ED25
						Pull Box 1	Pull Box 4	4	16 AWG 3 CONDUCTOR CABLE	328	PB5, PB6, PB7, PB8
						Pull Box 1	Pull Box 4	2	VIDEO DETECTION CABLE	164	NWV, NEV
						Pull Box 1	Pull Box 4	1	UNDERGROUND CONDUCTOR NO6-TYPE THW	75	TW

CABLE NAMES
NWS1 = Northwest Combo Signal Std
NES1 = Northeast Combo Signal Std
SWS1 = Southwest Combo Signal Std
SES1 = Southeast Combo Signal Std
NWS2 = Northwest Combo Signal Std
SES2 = Southeast Combo Signal Std
NES2 = Northeast Combo Signal Std
SWS2 = Southwest Combo Signal Std
NWV = Northwest Video Detection Unit
NEV = Northeast Video Detection Unit
SEV = Southeast Video Detection Unit
SWV = Southwest Video Detection Unit
EL16 = Ø1+Ø6 EVP Light
EL25 = Ø2+Ø5 EVP Light
EL4 = Ø4 EVP Light
EL8 = Ø8 EVP Light
ED16 = Ø1+Ø6 EVP Detector
ED25 = Ø2+Ø5 EVP Detector
ED4 = Ø4 EVP Detector
ED8 = Ø8 EVP Detector
PB1 = Pedestrian Pushbutton 1
PB2 = Pedestrian Pushbutton 2
PB3 = Pedestrian Pushbutton 3
PB4 = Pedestrian Pushbutton 4
PB5 = Pedestrian Pushbutton 5
PB6 = Pedestrian Pushbutton 6
PB7 = Pedestrian Pushbutton 7
PB8 = Pedestrian Pushbutton 8
TW = Tracer Wire
PS = Power Supply Cables

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Main St
Cable & Conduit Schedule
Main St / 6th Ave NW
Traffic Signal System - Site 1

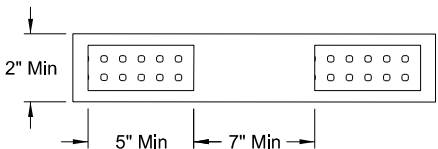


PEDESTAL MOUNTED RRFB
ASSEMBLY DETAIL
(Not To Scale)
(Some Details May Vary)

- ① W11-2-36
- ② W16-7PL-24 (arrows pointing toward crosswalk)
- ③ Double-sided TAPCO rectangular rapid-flashing beacon (RRFB) unit. Install per manufacturer's recommendations, see detail.
- ④ See NDDOT Standard Drawing D-772-2 Type II Traffic Signal Standard for Pedestal Details.
- ⑤ R10-25-9 black on white.
- ⑥ Pedestrian pushbutton.
- ⑦ See NDDOT Standard Drawing S-770-1 "Signal Standard Foundation" for Type II Signal foundation details.
- ⑧ RRFB Controller Cabinet. Install per manufacturer's recommendations.

Sta 125+63.3, 35.0' RT
S Type II Pedestrian Std
Pedestrian Pushbutton 1

RRFB UNIT DETAIL
(Not To Scale)



RRFB Pushbutton Sign
(Not to Scale)



Pedestrian Pushbutton Schedule		
Location	Pushbutton & Sign Location on	Direction of Arrow on Sign
Pushbutton 1	East	Right
Pushbutton 2	East	Left

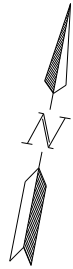
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Main St
Flashing Beacon Layout
Main St / 4th Ave NW
Flashing Beacon System - Site 1

LEGEND

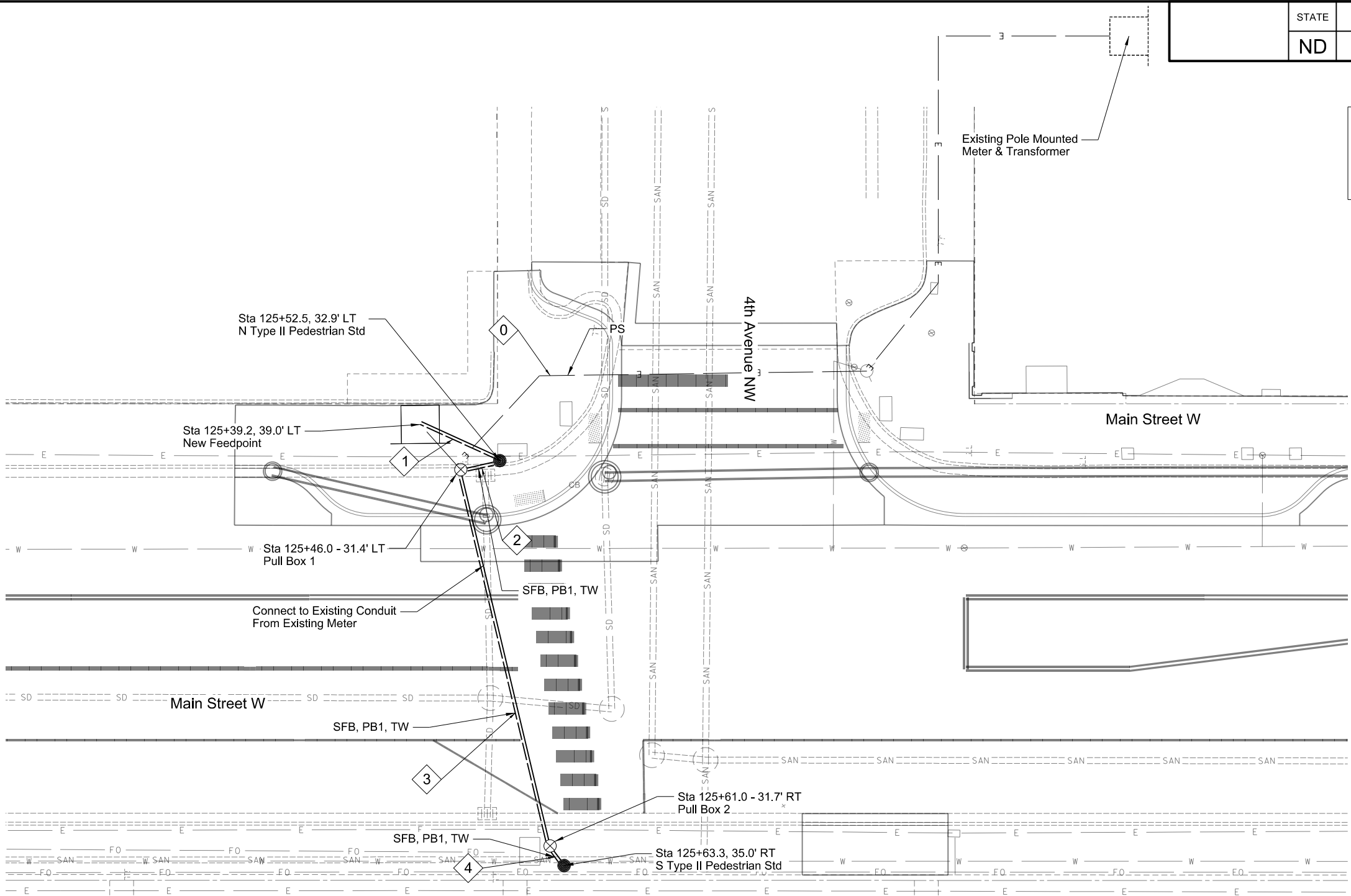
Feed Point

Type II Ped Std Foundation



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	150	12

NFB = North Flashing Beacon
SFB = South Flashing Beacon
PB1 = Pedestrian Pushbutton 1
PB2 = Pedestrian Pushbutton 2
TW = Tracer Wire
PS = Power Supply Cables



Note:
1. Stationing based on Chain SCL94B

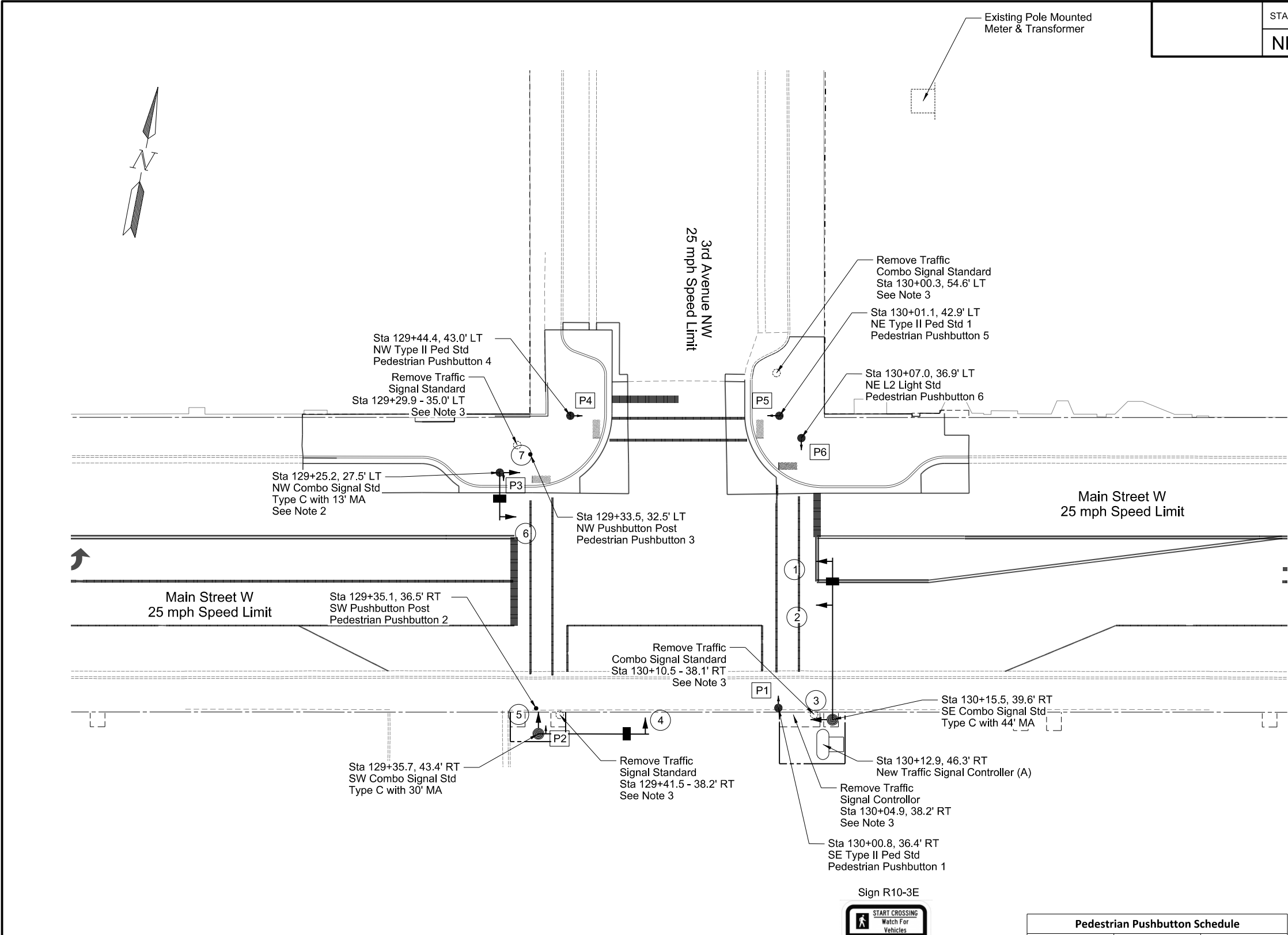
Legend	
	Cable & Conduit Run
	Pull Box
	Feed Point
	Signal Pole

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SIGNAL CABLE & CONDUIT SCHEDULE									
RUN			CONDUIT		CABLE				
#	ITEM	STATION, OFFSET	SIZE (IN)	LF	Origin	Destination	# of Cables	SIZE/TYPE	TITLE
0	<i>Origin</i> Existing Meter Feed Point	Sta 126+58.0, 191.0' LT Sta 125+39.5, 39.0' LT	2	20	Existing Meter Existing Meter	Feed Point Feed Point	2	UNDERGROUND CONDUCTOR NO2-TYPE RHW UNDERGROUND CONDUCTOR NO2-TYPE THW	PS. Fed through existing conduit.
1	<i>Origin</i> Feed Point North Type II Pedestrian Std	Sta 125+39.5, 39.0' LT Sta 125+52.5, 32.9' LT	2	20	Feed Point Feed Point	RRFB Controller RRFB Controller	2	UNDERGROUND CONDUCTOR NO6-TYPE RHW UNDERGROUND CONDUCTOR NO6-TYPE THW	TW
2	<i>Origin</i> North Type II Pedestrian Std Pull Box 1	Sta 125+52.5, 32.9' LT Sta 125+46.0, 31.4' LT	2	7	North Type II Pedestrian Std Transformer Base North Type II Pedestrian Std Transformer Base North Type II Pedestrian Std Transformer Base	Pull Box 1 Pull Box 1 Pull Box 1	1 1 1	14 AWG 5 CONDUCTOR CABLE 16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	SFB PB1 TW
3	<i>Origin</i> Pull Box 1 Pull Box 2	Sta 125+46.0, 31.4' LT Sta 125+61.0, 31.7' RT	2	68	Pull Box 1 Pull Box 1 Pull Box 1	Pull Box 2 Pull Box 2 Pull Box 2	1 1 1	14 AWG 5 CONDUCTOR CABLE 16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	SFB PB1 TW
4	<i>Origin</i> Pull Box 2 South Type II Pedestrian Std	Sta 125+61.0, 31.7' RT Sta 125+63.3, 35.0' RT	2	7	Pull Box 2 Pull Box 2 Pull Box 2	South Type II Pedestrian Std Transformer Base Pushbutton 1 South Type II Pedestrian Std Transformer Base	1 1 1	14 AWG 5 CONDUCTOR CABLE 16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	SFB PB1 TW

Main St
Conduit & Conductor Layout
Main St / 4th Ave NW
Flashing Beacon System - Site 1

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	150	13



Note:
1. Stationing based on Chain SCL94B
2. 2' foundation required for utility clearance
3. Signals to remain in place until new signals are ready to be installed.
(A) Door on East with Hinge on South

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HEADS 2-7

HEADS 1

COUNTDOWN PEDESTRIAN HEADS
P1, P2, P3,
P4, P5, P6,

LEGEND

- Signal controller
- Signal head
- Feed Point
- Video Detection Unit

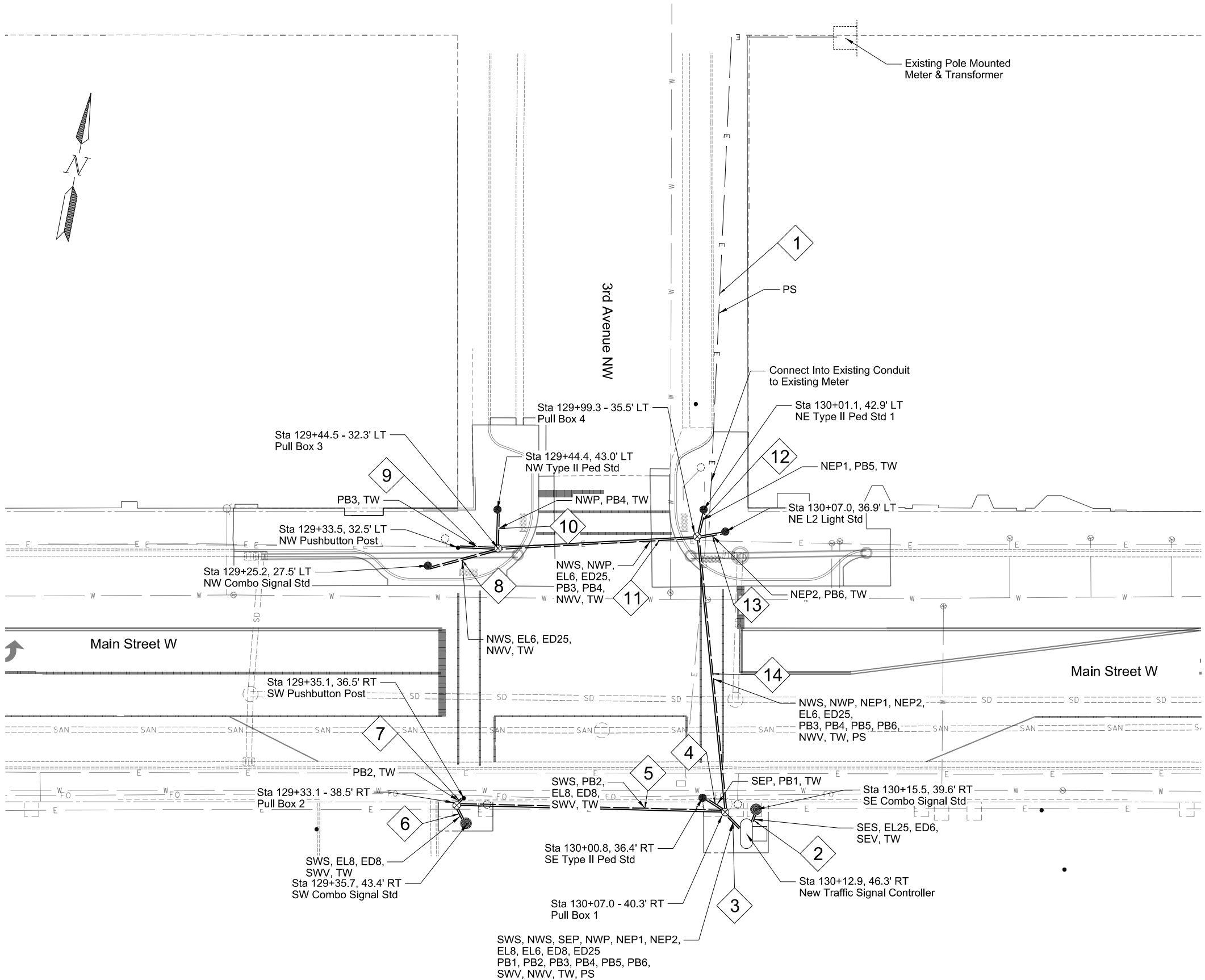
All Signal Heads: 12" LED Lenses & 5" Louvered Backplates



Pedestrian Pushbutton Schedule		
Location	Pushbutton & Sign Location on	Direction of Arrow on Sign
Pushbutton 1	East	Right
Pushbutton 2	East	Right
Pushbutton 3	East	Left
Pushbutton 4	South	Right
Pushbutton 5	South	Left
Pushbutton 6	West	Right






Main St
Signal Layout
Main St / 3rd Ave NW
Traffic Signal System - Site 2

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	150	14



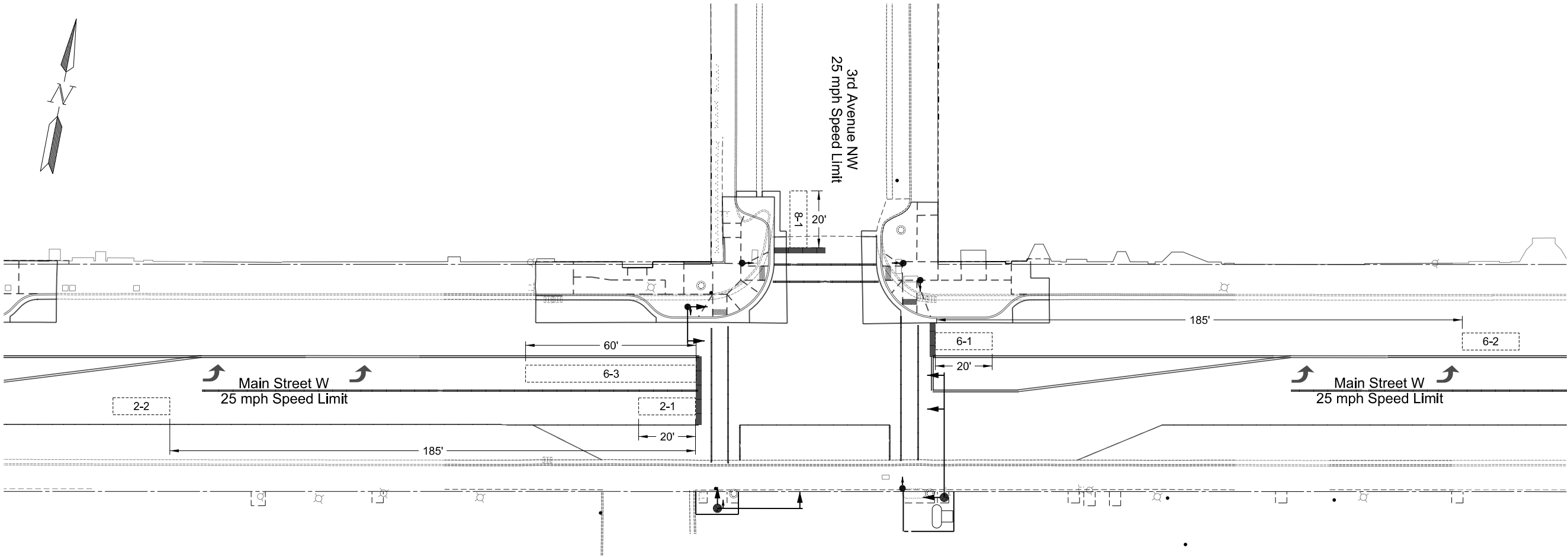
CABLE NAMES
NWS = Northwest Combo Signal Std
SWS= Southwest Combo Signal Std
SES= Southeast Combo Signal Std
NWP = Northwest Type II Ped Std
NEP1 = Northeast Type II Ped Std 1
NEP2 = Northeast Type II Ped Std 2
SEP = Southeast Type II Ped Std
NWV = Northwest Video Detection Unit
SWV = Southwest Video Detection Unit
SEV = Southeast Video Detection Unit
EL6 = Ø6 EVP Light
EL25 = Ø2+Ø5 EVP Light
EL8 = Ø8 EVP Light
ED6 = Ø6 EVP Detector
ED25 = Ø2+Ø5 EVP Detector
ED8 = Ø8 EVP Detector
PB1 = Pedestrian Pushbutton 1
PB2 = Pedestrian Pushbutton 2
PB3 = Pedestrian Pushbutton 3
PB4 = Pedestrian Pushbutton 4
PB5 = Pedestrian Pushbutton 5
PB6 = Pedestrian Pushbutton 6
TW = Tracer Wire
PS = Power Supply Cables

Note:
1. Stationing based on Chain SCL94B

<u>Legend</u>	
	New Signal Controller
	Cable & Conduit Run
	Pull Box
	Feed Point
	Signal Pole

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Main St
Conduit & Conductor Layout
Main St / 3rd Ave NW
Traffic Signal System - Site 2



Note:
1. Stationing based on Chain SCL94B
2. The final size of all detection zones shall be as recommended by the video detection manufacturer.

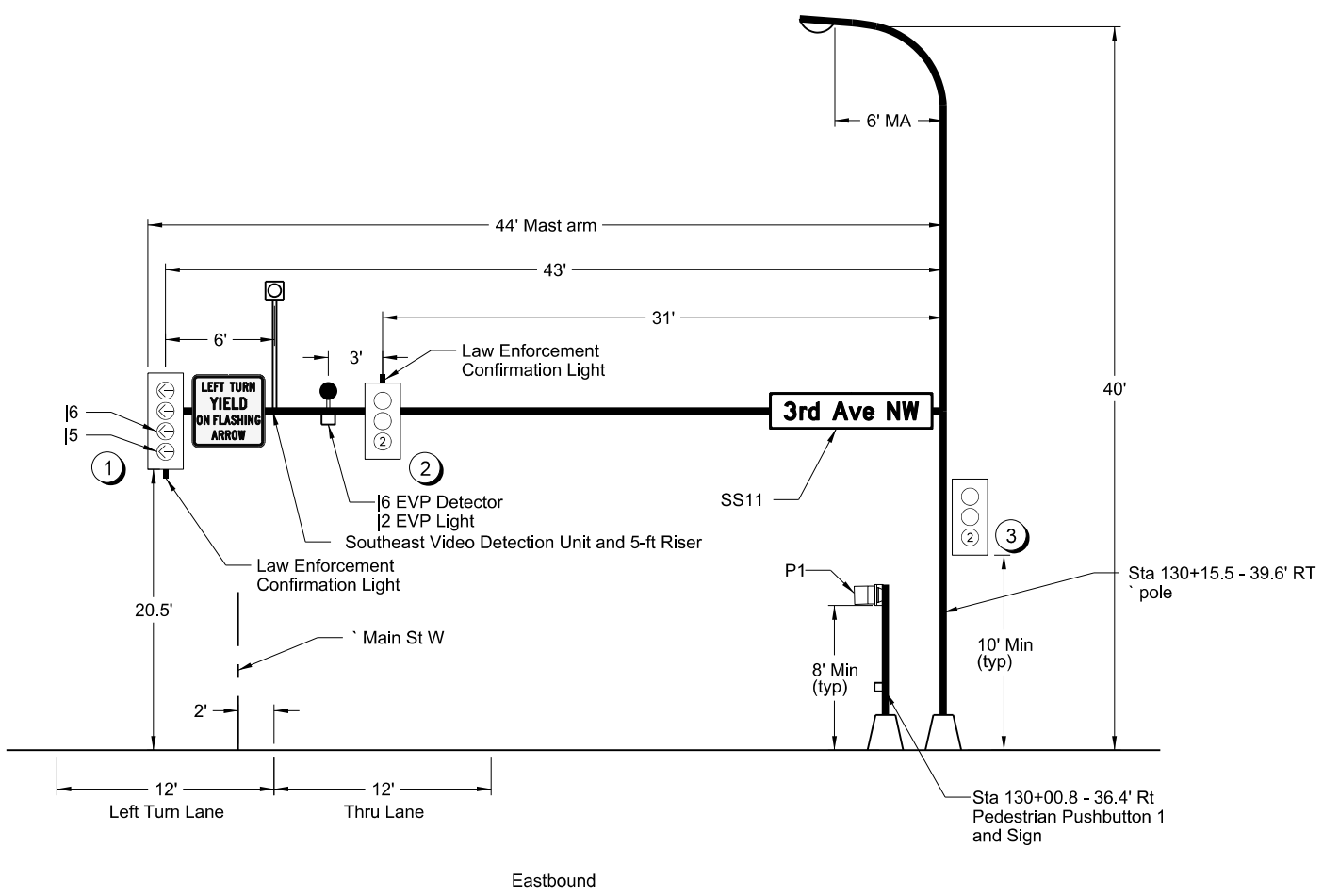
DETECTION ZONE SCHEDULE						
Phase-N umber	Distance From Stop Bar (feet)	Length (feet)	Presence/Counting	Passage/Counting	Queue/Counting	Locking Memory Non-Locking Memory
2-1	0	20			X	X
2-2	185	20		X		
6-1	0	20			X	X
6-2	185	20		X		
6-3	0	60	X			X
8-1	0	20	X			X

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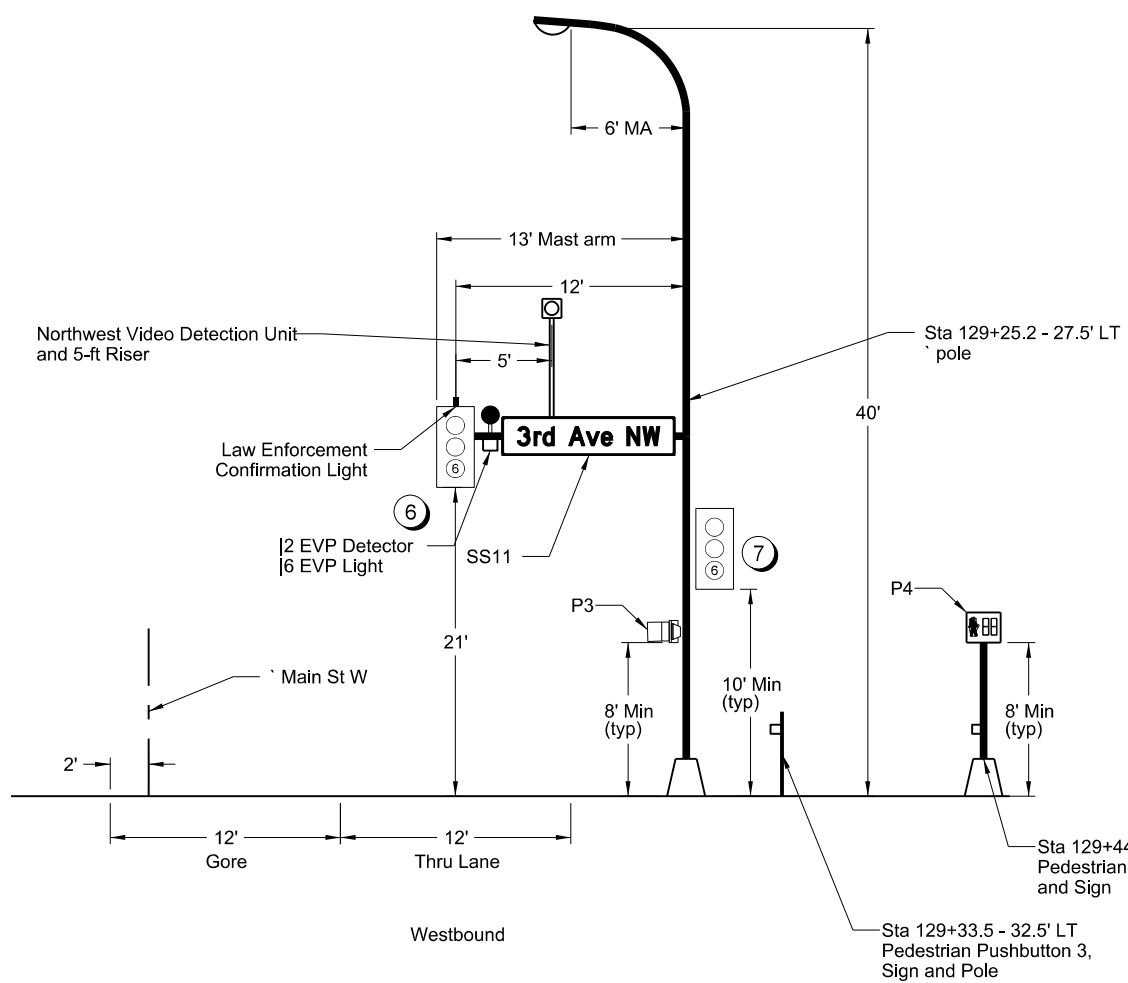
Main St
Video Detection Zone Layout
Main St / 3rd Ave NW
Traffic Signal System - Site 2

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	150	16

Southeast Combination & Type II Pedestrian Signal Standard



Northwest Combination & Type II Pedestrian Signal Standard



LEGEND

- Video Detection Camera
- Traffic Signal Head w/ associated phase
- Signal Head Number
- EVP Light
- EVP Detector
- Law Enforcement Confirmation Light

Notes:
Face the EVP Detector the opposite direction of signal heads on corresponding mast arm.

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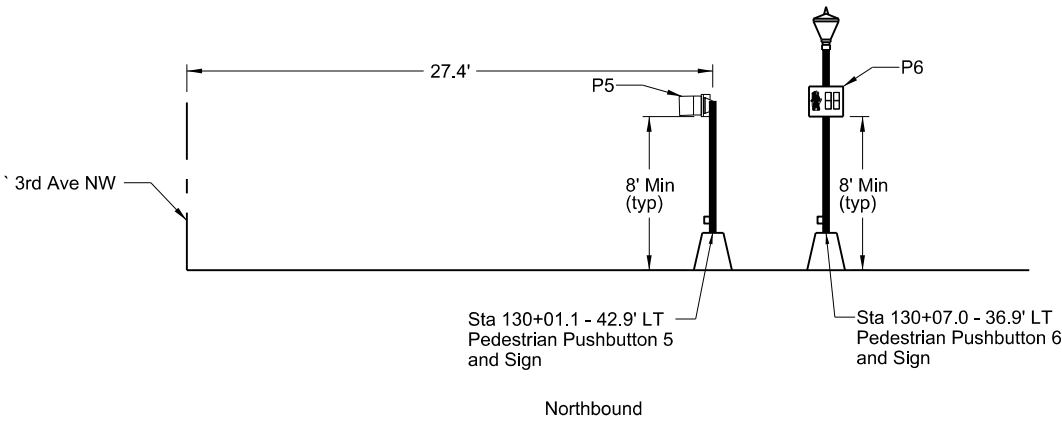
Main St

Signal Standards and Head Locations

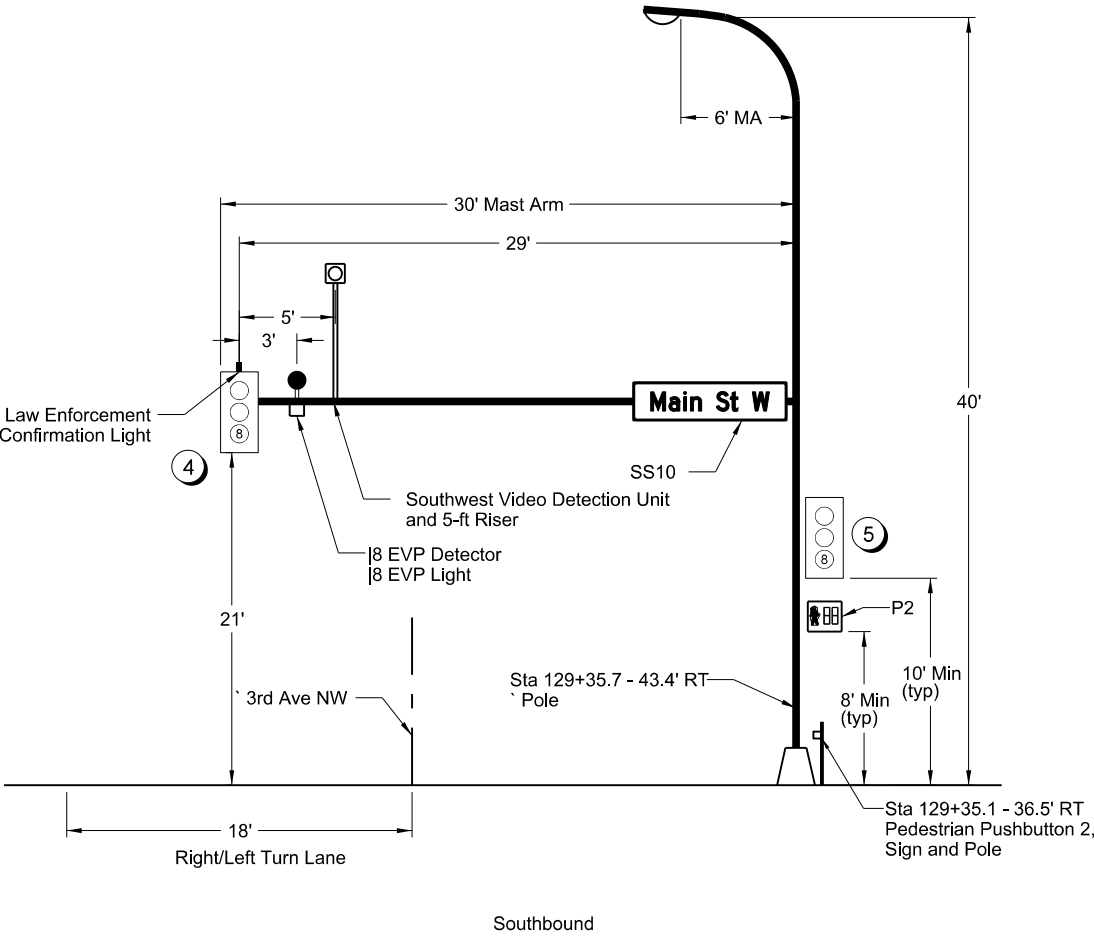
Main St / 3rd Ave NW
Traffic Signal System - Site 2

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	150	17

Northeast Type II & L2 Light Standard



Southwest Combination Signal Standard



LEGEND

- Video Detection Camera
- Traffic Signal Head w/ associated phase
- Signal Head Number
- EVP Light
- EVP Detector
- Law Enforcement Confirmation Light

Notes:
Face the EVP Detector the same direction of signal heads on Southwest mast arm.

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Main St

Signal Standards and Head Locations

Main St / 3rd Ave NW
Traffic Signal System - Site 2

Time of Day Plan for All Three Intersections			
Day	Coord Pattern	Start Time	Description
Weekdays (Mon-Fri)	0	0:00	Free
	1	7:00	Normal
	2	15:30	School Peak
	3	16:00	PM Peak
	1	17:30	Normal
	0	20:00	Free
Saturday	0	0:00	Free
	1	8:00	Normal
	0	20:00	Free
Sunday	0	0:00	Free
	1	11:00	Normal
	0	20:00	Free

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North ARROW	Phase 1								Phase 2								Phase 3								Phase 4								Phase 5								Phase 6								Phase 7								Phase 8																															
																																																																																								
	Not Used								Eastbound								Future								Northbound Ped Only								Future								Westbound								Not Used								Southbound																															
Head Number	RW	Clear to Phase							RW	Clear to Phase							RW	Clear to Phase							RW	Clear to Phase							RW	Clear to Phase							RW	Clear to Phase							RW	Clear to Phase																																						
		2	3	4	5	6	7	8	RW	3	4	5	6	7	8	1	RW	4	5	6	7	8	1	2	RW	5	6	7	8	1	2	3	RW	6	7	8	1	2	3	4	RW	7	8	1	2	3	4	5	RW	8	1	2	3	4	5	6	RW	1	2	3	4	5	6	7																								
1																																																																																								
2									G	Y	Y	N	N	Y	Y	Y																	GL	YL	YL	YL	N	N	YL	YL	FYA	YL	YL	N	N	YL	YL	YL																																								
3									G	Y	Y	N	N	Y	Y	Y																																																																								
4																																																																																								
5																																																																																								
6																																																																																								
7																																									G	Y	Y	N	N	Y	Y	Y																																								
7																																									G	Y	Y	N	N	Y	Y	Y																																								

N= Continue to display right of way indication.
When any phase is on alone, any
non-conflicting

Preemption Controller Settings																																	
Head Number		Phase 2 Eastbound						Phase 4 Northbound						Phase 6 Westbound						Phase 8 Southbound													
		Clear to Phase						Clear to Phase						Clear to Phase						Clear to Phase													
		RW	3	4	5	6	7	8	1	RW	5	6	7	8	1	2	3	RW	7	8	1	2	3	4	5	RW	1	2	3	4	5	6	7
1	GL		YL	YL	N		YL																										
2	G		YL	N	N		Y																										
3	G		Y	N	N		Y																										
4																																	
5																									G		Y			Y	Y		
6																									G		Y			Y	Y		
7																	G		Y	N	N		Y	Y									

Chart A	
Phase	Non-conflicting Phase allowed to time concurrently
1	5.6
2	5.6
3	8
4	8
5	2
6	2
7	4
8	4

	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8
		EB Thru/Right		NB Ped Phase	EB Left	WB Thru/Right		SB Left/Right
BASIC INTERVALS (OR FUNCTIONS)								
Minimum Initial		10.0			5.0	10.0		7.0
Minimum Initial with Pedestrian Actuation*				23.0		18.0		21.0
Passage Time		3.0			3.0	3.0		3.0
Max Green		40.0			20.0	40.0		20.0
Yellow Change					3.0	3.0		3.0
Red Clearance					1.5	1.1		1.5
Walk				7.0		7.0		7.0
Pedestrian Clearance*				16.0		11.0		14.0

Time to Reduce to Minimum Gap		5.0			5.0		
Minimum Gap		2.0			2.0		
Recall		Minimum			Minimum		No
Flashing-Normal & Conflict Monitor		R			R		R
Start Up Phasing		G			G		R
Emergency Vehicle Pre-emption		x			x		x
Type of Detector	Presence	Refer to Detector Zone Table					
	Calling						
	Passage						
Locking Memory							
Non-Locking Memory							

Conductor			Cable NWS (Northwest Combo Signal) (14 AWG 12 Conductor)		Cable NWP (Northwest Type II Ped Std) (14 AWG 5 Conductor)		Cable NEP1 (Northeast Type II Ped Std 1) (14 AWG 5 Conductor)		Cable NEP2 (Northeast L2 Light Std) (14 AWG 5 Conductor)	
Base	Tracer		Head	Indication	Head	Indication	Head	Indication	Head	Indication
1	Black			Spare	P4	Ø6 Walk	P5	Ø6 Walk	P6	Ø4 Walk
2	White			Neutral		Neutral		Neutral		Neutral
3	Red		6, 7	Ø6 Red	P4	Ø6 Don't Walk	P5	Ø6 Don't Walk	P6	Ø4 Don't Walk
4	Green			Ground		Ground		Ground		Ground
5	Orange		6, 7	Ø6 Yellow		Spare		Spare		Spare
6	Blue		6, 7	Ø6 Green						
7	White	Black		Spare						
8	Red	Black	P3	Ø8 Don't Walk						
9	Green	Black		Spare						
10	Orange	Black		Spare						
11	Blue	Black		Spare						
12	Black	White	P3	Ø8 Walk						

Conductor			Cable SWS (Southwest Combo Signal) (14 AWG 12 Conductor)		Cable SES (Southeast Combo Signal) (14 AWG 12 Conductor)		Cable SEP (Southeast Type II Ped Std) (14 AWG 5 Conductor)	
Base	Tracer		Head	Indication	Head	Indication	Head	Indication
1	Black			Spare		Spare	P1	Ø4 Walk
2	White			Neutral		Neutral		Neutral
3	Red		4, 5	Ø8 Red	2, 3	Ø2 Red	P1	Ø4 Don't Walk
4	Green			Ground		Ground		Ground
5	Orange		4, 5	Ø8 Yellow	2, 3	Ø2 Yellow		Spare
6	Blue		4, 5	Ø8 Green	2, 3	Ø2 Green		
7	White	Black		Spare		Spare		
8	Red	Black	P2	Ø8 Don't Walk	1	Ø5 Red ←		
9	Green	Black		Spare		Spare		
10	Orange	Black		Spare	1	Ø5 Yellow ←		
11	Blue	Black		Spare	1	Ø5 Green ←		
12	Black	White	P2	Ø8 Walk	1	Ø6 FYA ←		

INTERNAL MAST ARM/STANDARD SIGNAL HEAD CABLE

Origin	Destination	# of Cables	SIZE/TYPE	Total LF
Southeast Combo Signal Std Transformer Base	Vehicle Head 1	1	14 AWG 7 CONDUCTOR CABLE	72
	Vehicle Head 2	1	14 AWG 5 CONDUCTOR CABLE	60
	Vehicle Head 3	1	14 AWG 5 CONDUCTOR CABLE	18
Southeast Type II Pedestrian Std Transformer Base	Pedestrian Head 1	1	14 AWG 3 CONDUCTOR CABLE	17
Southwest Combo Signal Std Transformer Base	Vehicle Head 4	1	14 AWG 5 CONDUCTOR CABLE	58
	Vehicle Head 5	1	14 AWG 5 CONDUCTOR CABLE	18
	Pedestrian Head 2	1	14 AWG 5 CONDUCTOR CABLE	17
Northwest Combo Signal Std Transformer Base	Vehicle Head 6	1	14 AWG 5 CONDUCTOR CABLE	41
	Vehicle Head 7	1	14 AWG 5 CONDUCTOR CABLE	18
	Pedestrian Head 3	1	14 AWG 5 CONDUCTOR CABLE	17
Northwest Type II Pedestrian Std Transformer Base	Pedestrian Head 4	1	14 AWG 3 CONDUCTOR CABLE	17
Northeast Type II Pedestrian Std Transformer Base 1	Pedestrian Head 5	1	14 AWG 3 CONDUCTOR CABLE	17
Northeast L2 Light Std Transformer Base	Pedestrian Head 6	1	14 AWG 5 CONDUCTOR CABLE	17

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Main St
Signal Heads and Conductors
Main St / 3rd Ave NW
Traffic Signal System - Site 2

SIGNAL CABLE & CONDUIT SCHEDULE											
RUN				CONDUIT		CABLE					
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	Origin	Destination	# of Cables	SIZE/TYPE	Total LF	TITLE
1	<i>Origin</i>	Existing Meter	Sta 130+40.0, 173.0' LT	2	10	Existing Meter	Traffic Signal Controller	2	UNDERGROUND CONDUCTOR NO2-TYPE RHW	548	PS. Fed through
	<i>Destination</i>	Traffic Signal Controller	Sta 130+12.9, 46.3' RT			Existing Meter	Traffic Signal Controller	1	UNDERGROUND CONDUCTOR NO2-TYPE THW	274	existing conduit.
2	<i>Origin</i>	Traffic Signal Controller	Sta 130+12.9, 46.3' RT	2	8	Traffic Signal Controller	Southeast Combo Signal Std Transformer Base	1	14 AWG 12 CONDUCTOR CABLE	22	SES
	<i>Destination</i>	Southeast Combo Signal Std	Sta 130+15.5, 39.6' RT			Traffic Signal Controller	Southeast Emergency Preemption Lamp	1	14 AWG 3 CONDUCTOR CABLE	75	EL25
						Traffic Signal Controller	Southeast Emergency Preemption Detector	1	EMERGENCY VEHICLE DETECTOR CABLE	75	ED6
						Traffic Signal Controller	Southeast Video Detection Unit	1	VIDEO DETECTION CABLE	83	SEV
						Traffic Signal Controller	Southeast Combo Signal Std Transformer Base	1	UNDERGROUND CONDUCTOR NO6-TYPE THW	13	TW
3	<i>Origin</i>	Traffic Signal Controller	Sta 130+12.9, 46.3' RT	3	9	Traffic Signal Controller	Pull Box 1	2	14 AWG 12 CONDUCTOR CABLE	48	SWS, NWS
	<i>Destination</i>	Pull Box 1	Sta 130+07.0, 40.3' RT			Traffic Signal Controller	Pull Box 1	4	14 AWG 5 CONDUCTOR CABLE	96	SEP, NWP, NEP1, NEP2
						Traffic Signal Controller	Pull Box 1	2	14 AWG 3 CONDUCTOR CABLE	48	EL8, EL6
						Traffic Signal Controller	Pull Box 1	2	EMERGENCY VEHICLE DETECTOR CABLE	48	ED8, ED25
						Traffic Signal Controller	Pull Box 1	6	16 AWG 3 CONDUCTOR CABLE	144	PB1, PB2, PB3, PB4, PB5, PB6
						Traffic Signal Controller	Pull Box 1	2	VIDEO DETECTION CABLE	48	SWV, NWV
						Traffic Signal Controller	Pull Box 1	1	UNDERGROUND CONDUCTOR NO6-TYPE THW	14	TW
4	<i>Origin</i>	Pull Box 1	Sta 130+07.0, 40.3' RT	2	8	Pull Box 1	Southeast Type II Pedestrian Std Transformer Base	1	14 AWG 5 CONDUCTOR CABLE	19	SEP
	<i>Destination</i>	Southeast Type II Pedestrian Std	Sta 130+00.8, 36.4' RT			Pull Box 1	Pushbutton 1	1	16 AWG 3 CONDUCTOR CABLE	22	PB1
						Pull Box 1	Southeast Type II Pedestrian Std Transformer Base	1	UNDERGROUND CONDUCTOR NO6-TYPE THW	13	TW
5	<i>Origin</i>	Pull Box 1	Sta 130+07.0, 40.3' RT	2	74	Pull Box 1	Pull Box 2	1	14 AWG 12 CONDUCTOR CABLE	86	SWS
	<i>Destination</i>	Pull Box 2	Sta 129+33.1, 38.5' RT			Pull Box 1	Pull Box 2	1	14 AWG 3 CONDUCTOR CABLE	86	EL8
						Pull Box 1	Pull Box 2	1	EMERGENCY VEHICLE DETECTOR CABLE	86	ED8
						Pull Box 1	Pull Box 2	1	16 AWG 3 CONDUCTOR CABLE	86	PB2
						Pull Box 1	Pull Box 2	1	VIDEO DETECTION CABLE	86	SWV
						Pull Box 1	Pull Box 2	1	UNDERGROUND CONDUCTOR NO6-TYPE THW	79	TW
6	<i>Origin</i>	Pull Box 2	Sta 129+33.1, 38.5' RT	2	6	Pull Box 2	Southwest Combo Signal Std Transformer Base	1	14 AWG 12 CONDUCTOR CABLE	17	SWS
	<i>Destination</i>	Southwest Combo Signal Std	Sta 129+35.7, 43.4' RT			Pull Box 2	Southwest Emergency Preemption Lamp	1	14 AWG 3 CONDUCTOR CABLE	62	EL8
						Pull Box 2	Southwest Emergency Preemption Detector	1	EMERGENCY VEHICLE DETECTOR CABLE	62	ED8
						Pull Box 2	Southwest Video Detection Unit	1	VIDEO DETECTION CABLE	64	SWV
						Pull Box 2	Southwest Combo Signal Std Transformer Base	1	UNDERGROUND CONDUCTOR NO6-TYPE THW	11	TW
7	<i>Origin</i>	Pull Box 2	Sta 129+33.1, 38.5' RT	2	3	Pull Box 2	Pushbutton 2	1	16 AWG 3 CONDUCTOR CABLE	17	PB2
	<i>Destination</i>	Southwest Pushbutton Post	Sta 129+35.1, 36.5' RT			Pull Box 2	Pushbutton 2	1	UNDERGROUND CONDUCTOR NO6-TYPE THW	8	TW
8	<i>Origin</i>	Pull Box 3	Sta 129+44.5, 32.3' LT	2	20	Pull Box 3	Northwest Combo Signal Std Transformer Base	1	14 AWG 12 CONDUCTOR CABLE	31	NWS
	<i>Destination</i>	Northwest Combo Signal Std	Sta 129+25.2, 27.5' LT			Pull Box 3	Northwest Emergency Preemption Lamp	1	14 AWG 3 CONDUCTOR CABLE	60	EL6
						Pull Box 3	Northwest Emergency Preemption Detector	1	EMERGENCY VEHICLE DETECTOR CABLE	60	ED25
						Pull Box 3	Northwest Video Detection Unit	1	VIDEO DETECTION CABLE	64	NWV
						Pull Box 3	Northwest Combo Signal Std Transformer Base	1	UNDERGROUND CONDUCTOR NO6-TYPE THW	25	TW
9	<i>Origin</i>	Pull Box 3	Sta 129+44.5, 32.3' LT	2	11	Pull Box 3	Pushbutton 3	1	16 AWG 3 CONDUCTOR CABLE	25	PB3
	<i>Destination</i>	Northwest Pushbutton Post	Sta 129+33.5, 32.5' LT			Pull Box 3	Pushbutton 3	1	UNDERGROUND CONDUCTOR NO6-TYPE THW	16	TW
10	<i>Origin</i>	Pull Box 3	Sta 129+44.5, 32.3' LT	2	11	Pull Box 3	Northwest Type II Pedestrian Std Transformer Base	1	14 AWG 5 CONDUCTOR CABLE	22	NWP
	<i>Destination</i>	Northwest Type II Pedestrian Std	Sta 129+44.4, 43.0' LT			Pull Box 3	Pushbutton 4	1	16 AWG 3 CONDUCTOR CABLE	25	PB4
						Pull Box 3	Northwest Type II Pedestrian Std Transformer Base	1	UNDERGROUND CONDUCTOR NO6-TYPE THW	16	TW
11	<i>Origin</i>	Pull Box 4	Sta 129+99.3, 35.5' LT	2	56	Pull Box 4	Pull Box 3	1	14 AWG 12 CONDUCTOR CABLE	68	NWS
	<i>Destination</i>	Pull Box 3	Sta 129+44.5, 32.3' LT			Pull Box 4	Pull Box 3	1	14 AWG 5 CONDUCTOR CABLE	68	NWP
						Pull Box 4	Pull Box 3	1	14 AWG 3 CONDUCTOR CABLE	68	EL6
						Pull Box 4	Pull Box 3	1	EMERGENCY VEHICLE DETECTOR CABLE	68	ED25
						Pull Box 4	Pull Box 3	2	16 AWG 3 CONDUCTOR CABLE	136	PB3, PB4
						Pull Box 4	Pull Box 3	1	VIDEO DETECTION CABLE	68	NWV
						Pull Box 4	Pull Box 3	1	UNDERGROUND CONDUCTOR NO6-TYPE THW	61	TW

CABLE NAMES
NWS = Northwest Combo Signal Std
SWS= Southwest Combo Signal Std
SES= Southeast Combo Signal Std
NWP = Northwest Type II Ped Std
NEP1 = Northeast Type II Ped Std 1
NEP2 = Northeast Type II Ped Std 2
SEP = Southeast Type II Ped Std
NWV = Northwest Video Detection Unit
SWV = Southwest Video Detection Unit
SEV = Southeast Video Detection Unit
EL6 = Ø6 EVP Light
EL25 = Ø2+Ø5 EVP Light
EL8 = Ø8 EVP Light
ED6 = Ø6 EVP Detector
ED25 = Ø2+Ø5 EVP Detector
ED8 = Ø8 EVP Detector
PB1 = Pedestrian Pushbutton 1
PB2 = Pedestrian Pushbutton 2
PB3 = Pedestrian Pushbutton 3
PB4 = Pedestrian Pushbutton 4
PB5 = Pedestrian Pushbutton 5
PB6 = Pedestrian Pushbutton 6
TW = Tracer Wire
PS = Power Supply Cables

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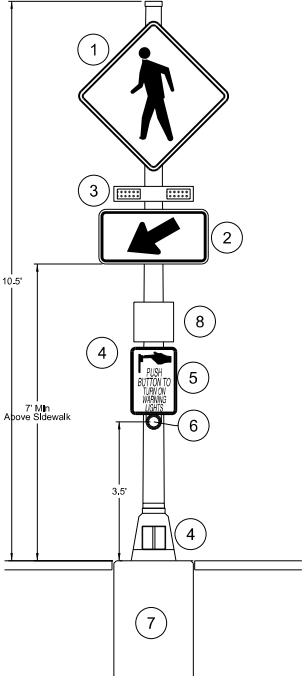
Main St
Cable & Conduit Schedule
Main St / 3rd Ave NW
Traffic Signal System - Site 2

SIGNAL CABLE & CONDUIT SCHEDULE											
RUN				CONDUIT		CABLE					
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	Origin	Destination	# of Cables	SIZE/TYPE	Total LF	TITLE
12	Origin	Pull Box 4	Sta 129+99.3, 35.5' LT	2	8	Pull Box 4	Northeast Type II Pedestrian Std Transformer Base 1	1	14 AWG 5 CONDUCTOR CABLE	19	NEP1
	Destination	Northeast Type II Pedestrian Std 1	Sta 130+01.1, 42.9' LT			Pull Box 4	Pushbutton 5	1	16 AWG 3 CONDUCTOR CABLE	22	PB5
						Pull Box 4	Northeast Type II Pedestrian Std Transformer Base 1	1	UNDERGROUND CONDUCTOR NO6-TYPE THW	19	TW
13	Origin	Pull Box 4	Sta 129+99.3, 35.5' LT	2	8	Pull Box 4	Northeast L2 Light Std Transformer Base	1	14 AWG 5 CONDUCTOR CABLE	19	NEP2
	Destination	Northeast L2 Light Std	Sta 130+07.0, 36.9' LT			Pull Box 4	Pushbutton 6	1	16 AWG 3 CONDUCTOR CABLE	22	PB6
						Pull Box 4	Northeast L2 Light Std Transformer Base	1	UNDERGROUND CONDUCTOR NO6-TYPE THW	19	TW
14	Origin	Pull Box 1	Sta 130+07.0, 40.3' RT	3	77	Pull Box 1	Pull Box 4	1	14 AWG 12 CONDUCTOR CABLE	89	NWS
	Destination	Pull Box 4	Sta 129+99.3, 35.5' LT			Pull Box 1	Pull Box 4	3	14 AWG 5 CONDUCTOR CABLE	267	NWP, NEP1, NEP2
						Pull Box 1	Pull Box 4	1	14 AWG 3 CONDUCTOR CABLE	89	EL6
						Pull Box 1	Pull Box 4	1	EMERGENCY VEHICLE DETECTOR CABLE	89	ED25
						Pull Box 1	Pull Box 4	4	16 AWG 3 CONDUCTOR CABLE	356	PB3, PB4, PB5, PB6
						Pull Box 1	Pull Box 4	1	VIDEO DETECTION CABLE	89	NWV
						Pull Box 1	Pull Box 4	1	UNDERGROUND CONDUCTOR NO6-TYPE THW	89	TW

CABLE NAMES
NWS = Northwest Combo Signal Std
SWS= Southwest Combo Signal Std
SES= Southeast Combo Signal Std
NWP = Northwest Type II Ped Std
NEP1 = Northeast Type II Ped Std 1
NEP2 = Northeast Type II Ped Std 2
SEP = Southeast Type II Ped Std
NWV = Northwest Video Detection Unit
SWV = Southwest Video Detection Unit
SEV = Southeast Video Detection Unit
EL6 = Ø6 EVP Light
EL25 = Ø2+Ø5 EVP Light
EL8 = Ø8 EVP Light
ED6 = Ø6 EVP Detector
ED25 = Ø2+Ø5 EVP Detector
ED8 = Ø8 EVP Detector
PB1 = Pedestrian Pushbutton 1
PB2 = Pedestrian Pushbutton 2
PB3 = Pedestrian Pushbutton 3
PB4 = Pedestrian Pushbutton 4
PB5 = Pedestrian Pushbutton 5
PB6 = Pedestrian Pushbutton 6
TW = Tracer Wire
PS = Power Supply Cables

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Main St
Cable & Conduit Schedule
Main St / 3rd Ave NW
Traffic Signal System - Site 2

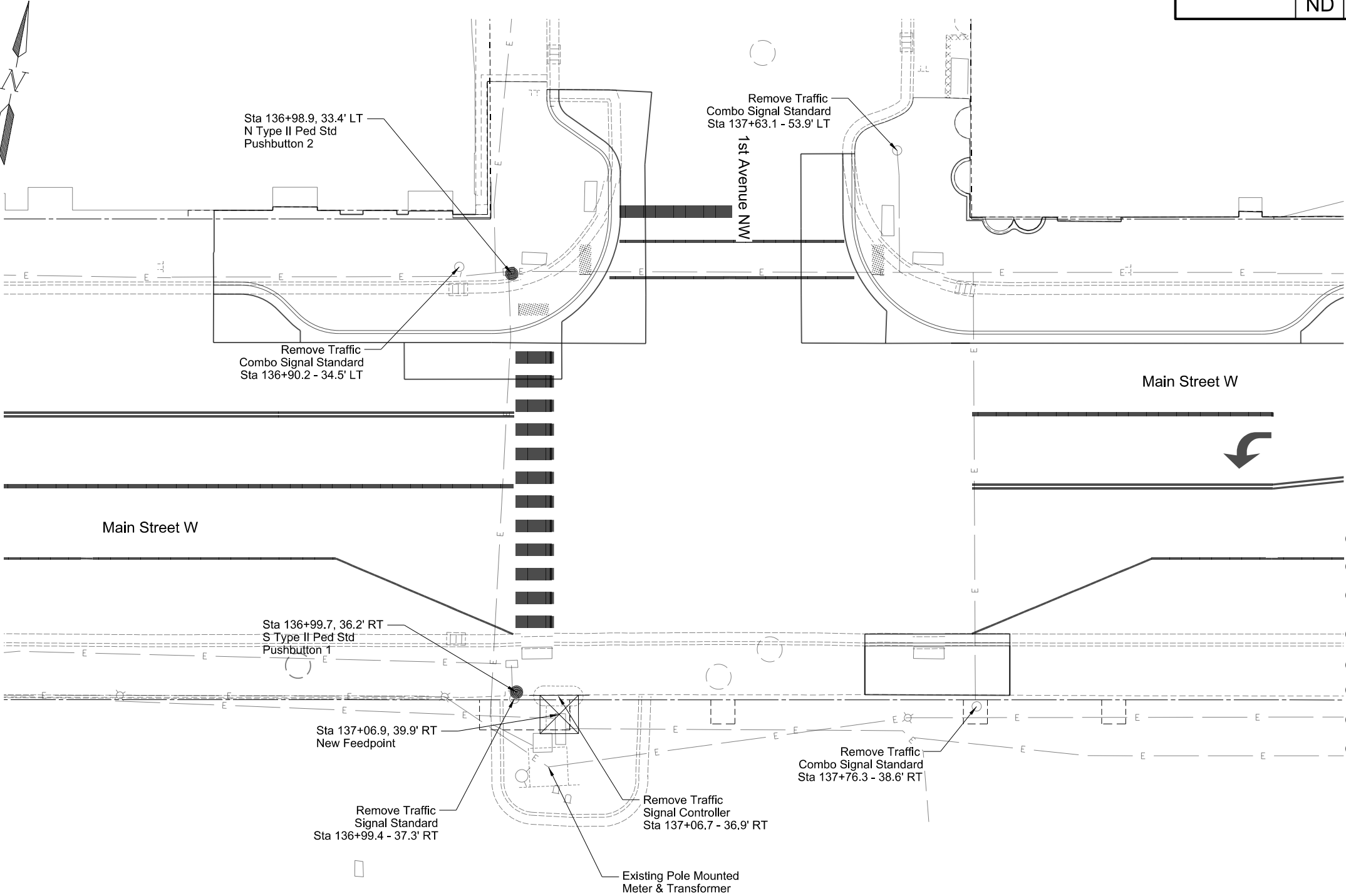


PEDESTAL MOUNTED RRFB
ASSEMBLY DETAIL
(Not To Scale)
(Some Details May Vary)

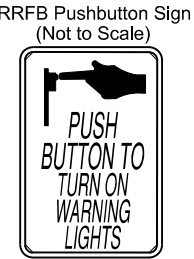
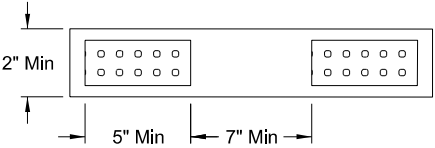
- 1 W11-2-36
- 2 W16-7PL-24 (arrows pointing toward crosswalk)
- 3 Double-sided TAPCO rectangular rapid-flashing beacon (RRFB) unit. Install per manufacturer's recommendations, see detail.
- 4 See NDDOT Standard Drawing D-772-2 Type II Traffic Signal Standard for Pedestal Details.
- 5 R10-25-9 black on white.
- 6 Pedestrian pushbutton.
- 7 See NDDOT Standard Drawing S-770-1 "Signal Standard Foundation" for Type II Signal foundation details.
- 8 RRFB Controller Cabinet. Install per manufacturer's recommendations.

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Main St
Flashing Beacon Layout
Main St / 1st Ave NW
Flashing Beacon System - Site 2



RRFB UNIT DETAIL
(Not To Scale)

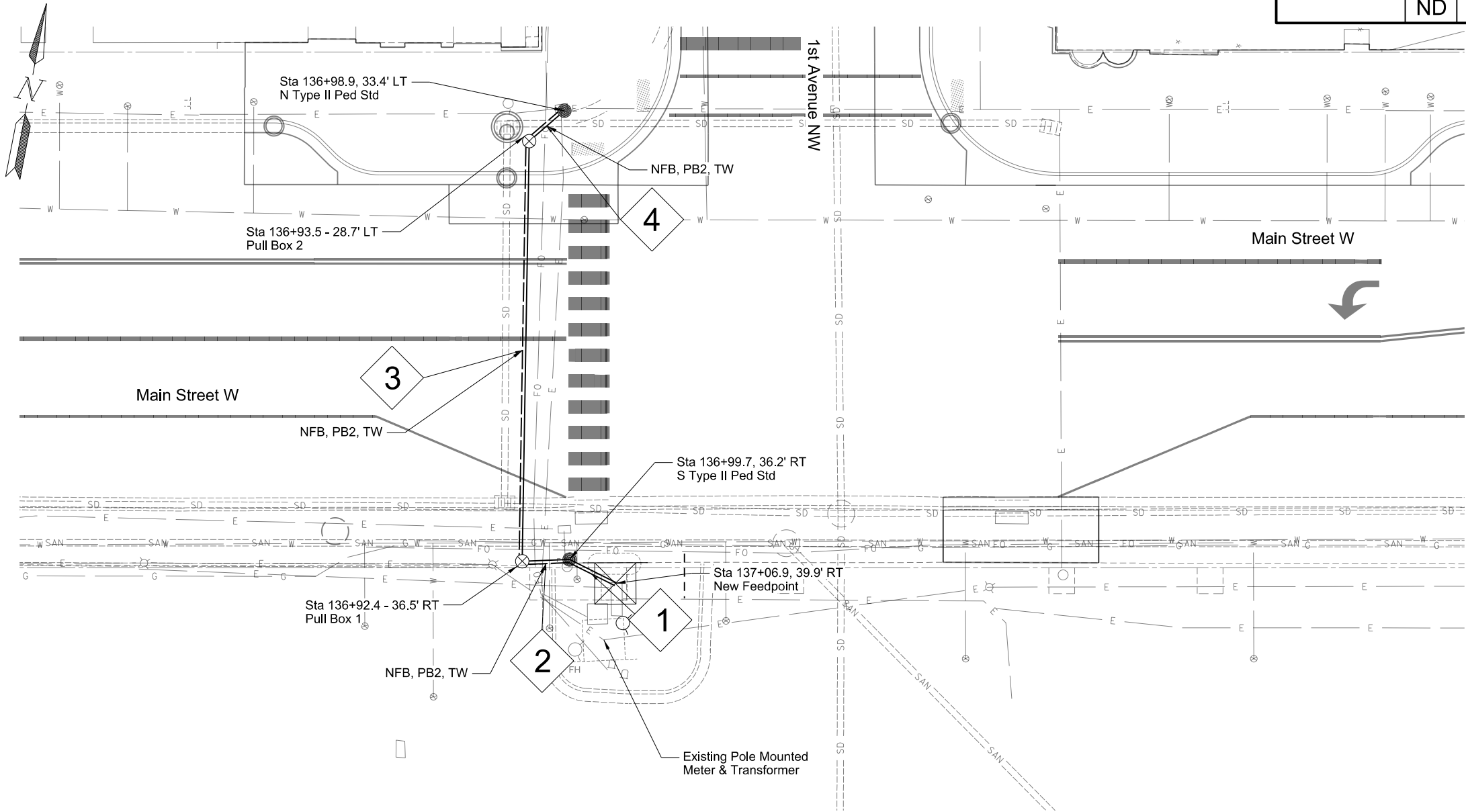


Pedestrian Pushbutton Schedule		
Location	Pushbutton & Sign Location on	Direction of Arrow on Sign
Pushbutton 1	East	Right
Pushbutton 2	East	Left

LEGEND

Feed Point

Type II Ped Std Foundation



NFB = North Flashing Beacon
SFB = South Flashing Beacon
PB1 = Pedestrian Pushbutton 1
PB2 = Pedestrian Pushbutton 2
TW = Tracer Wire
PS = Power Supply Cables

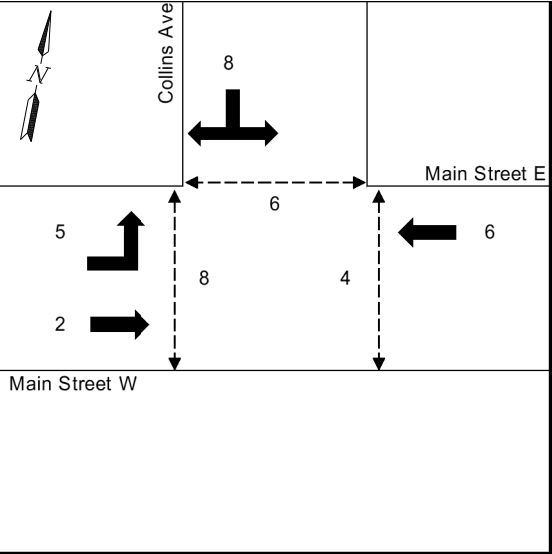
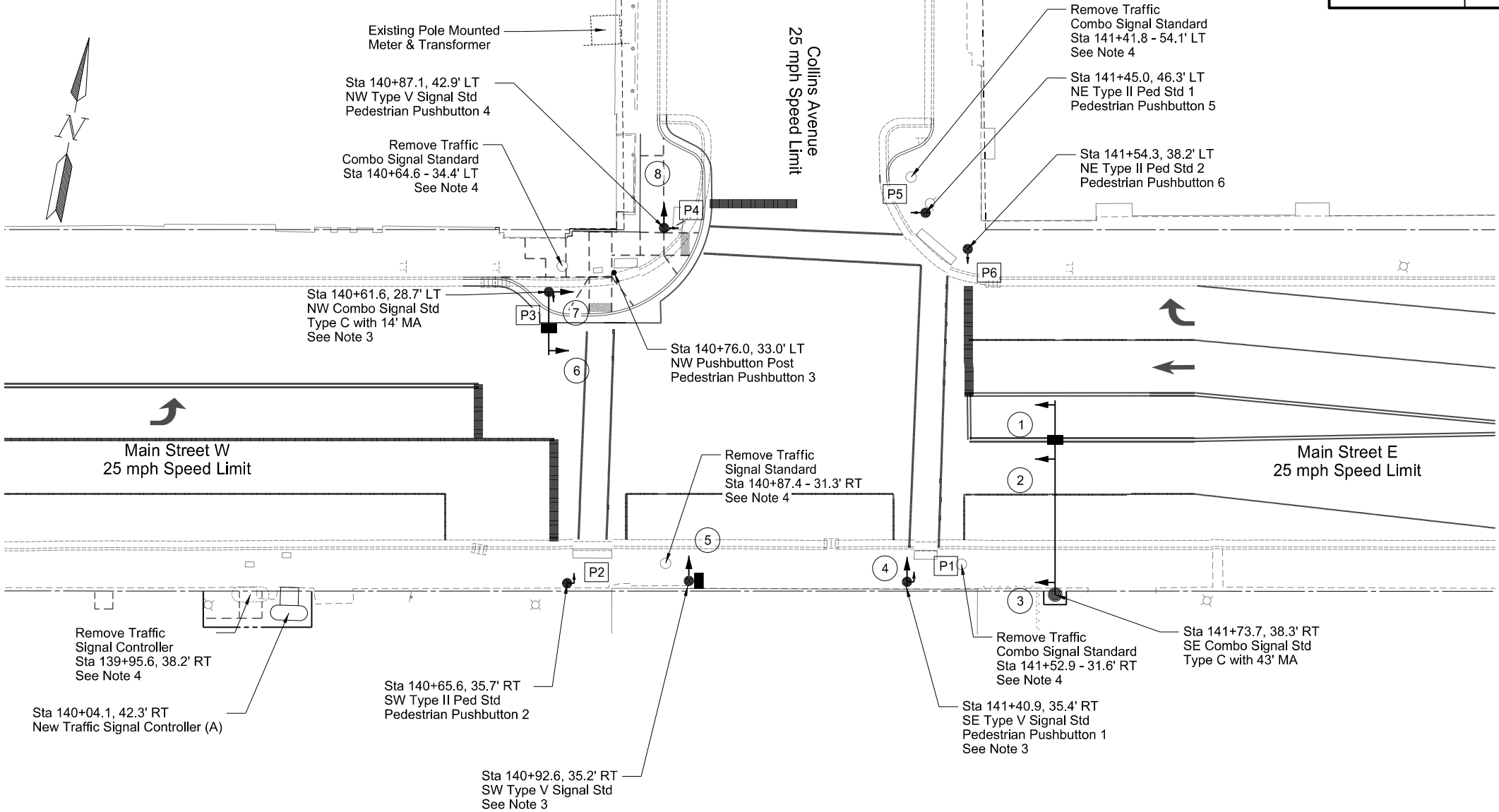
Note:
1. Stationing based on Chain SCL94B

Legend	
	Cable & Conduit Run
	Pull Box
	Feed Point
	Signal Pole

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SIGNAL CABLE & CONDUIT SCHEDULE									
RUN				CONDUIT		CABLE			
#	ITEM	STATION, OFFSET	SIZE (IN)	LF	Origin	Destination	# of Cables	SIZE/TYPE	TITLE
0	Origin Destination	Existing Meter Feed Point	Sta 137+05.0, 50.0' RT Sta 137+06.9, 39.9' RT	2	20	Existing Meter Existing Meter	2 1	UNDERGROUND CONDUCTOR NO2-TYPE RHW UNDERGROUND CONDUCTOR NO2-TYPE THW	PS
1	Origin Destination	Feed Point South Type II Pedestrian Std	Sta 137+06.9, 39.9' RT Sta 136+99.7, 36.2' RT	2	13	Feed Point Feed Point	2 1	UNDERGROUND CONDUCTOR NO6-TYPE RHW UNDERGROUND CONDUCTOR NO6-TYPE THW	TW
2	Origin Destination	South Type II Pedestrian Std Pull Box 1	Sta 136+99.7, 36.2' RT Sta 136+92.4, 36.5' RT	2	8	North Type II Pedestrian Std Transformer Base North Type II Pedestrian Std Transformer Base North Type II Pedestrian Std Transformer Base	1 1 1	14 AWG 5 CONDUCTOR CABLE 16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	NFB PB2 TW
3	Origin Destination	Pull Box 1 Pull Box 2	Sta 136+92.4, 36.5' RT Sta 136+93.5, 28.7' LT	2	66	Pull Box 1 Pull Box 1 Pull Box 1	1 1 1	14 AWG 5 CONDUCTOR CABLE 16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	NFB PB2 TW
4	Origin Destination	Pull Box 2 North Type II Pedestrian Std	Sta 136+93.5, 28.7' LT Sta 136+98.9, 33.4' LT	2	8	Pull Box 2 Pull Box 2 Pull Box 2	1 1 1	14 AWG 5 CONDUCTOR CABLE 16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	NFB PB2 TW

Main St
Conduit & Conductor Layout
Main St / 1st Ave NW
Flashing Beacon System - Site 2



Note:
1. Stationing based on Chain SCL94B
2. Field Verify positions of SE Type V Signal Std and SW Type V Signal Std to ensure they are not in front of bank windows.
3. 2' foundation required for utility clearance
4. Signals to remain in place until new signals are ready to be installed.
(A) Door on North with Hinge on West

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Main St
Signal Layout
Main St / Collins Ave
Traffic Signal System - Site 3

HEADS
2-8

HEADS
1

COUNTDOWN
PEDESTRIAN HEADS
P1, P2, P3,
P4, P5, P6,
All Signal Heads: 12" LED Lenses & 5" Louvered Backplates

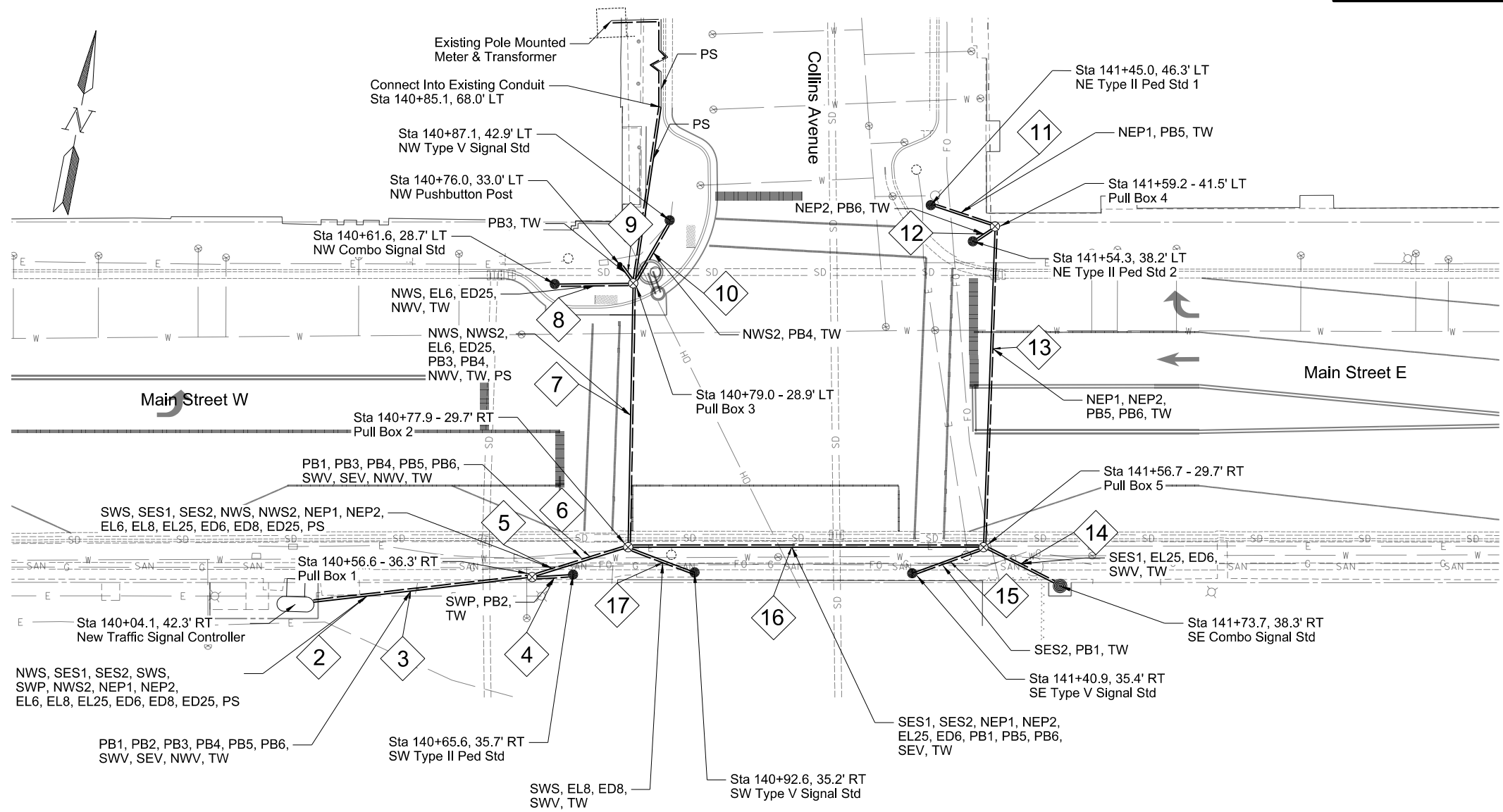
LEGEND

- Signal controller
- Signal head
- Feed Point
- Video Detection Unit



Pedestrian Pushbutton Schedule		
Location	Pushbutton & Sign Location on	Direction of Arrow on Sign
Pushbutton 1	East	Right
Pushbutton 2	East	Right
Pushbutton 3	West	Right
Pushbutton 4	South	Right
Pushbutton 5	South	Left
Pushbutton 6	West	Right

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	150	25



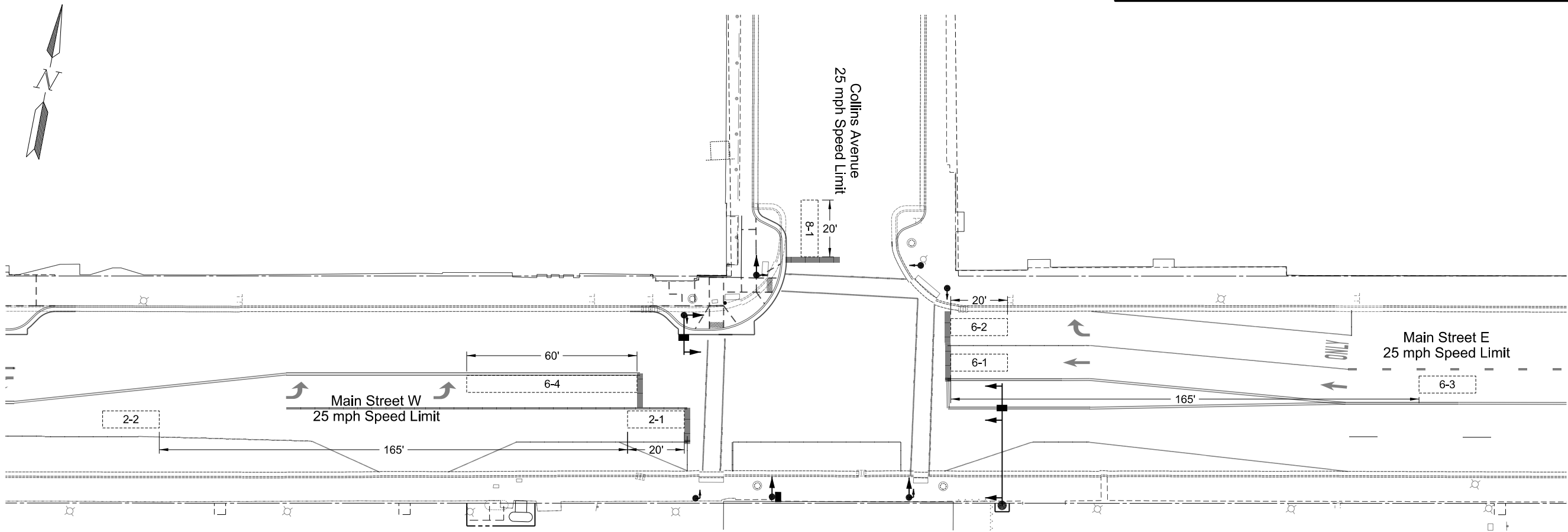
CABLE NAMES
NWS = Northwest Combo Signal Std
SWS= Southwest Type V Signal Std
SES1 = Southeast Combo Signal Std
NWS2 = Northwest Type V Signal Std
NEP1 = Northeast Type II Ped Std
NEP2 = Northeast Type II Ped Std
SES2 = Southeast Type V Signal Std
SWP = Southwest Type II Ped Std
NWV = Northwest Video Detection Unit
SWV = Southwest Video Detection Unit
SEV = Southeast Video Detection Unit
EL6 = Ø6 EVP Light
EL25 = Ø2+Ø5 EVP Light
EL4 = Ø4 EVP Light
EL8 = Ø8 EVP Light
ED6 = Ø6 EVP Detector
ED25 = Ø2+Ø5 EVP Detector
ED4 = Ø4 EVP Detector
ED8 = Ø8 EVP Detector
PB1 = Pedestrian Pushbutton 1
PB2 = Pedestrian Pushbutton 2
PB3 = Pedestrian Pushbutton 3
PB4 = Pedestrian Pushbutton 4
PB5 = Pedestrian Pushbutton 5
PB6 = Pedestrian Pushbutton 6
TW = Tracer Wire
PW = Power Supply Cables

Note:
1. Stationing based on Chain SCL94B

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Main St
Conduit & Conductor Layout
Main St / Collins Ave
Traffic Signal System - Site 3

Legend	
	New Signal Controller
	Cable & Conduit Run
	Pull Box
	Feed Point
	Signal Pole



Note:
1. Stationing based on Chain SCL94B
2. The final size of all detection zones shall be as recommended by the video detection manufacturer.

DETECTION ZONE SCHEDULE						
Phase-N umber	Distance From Stop Bar (feet)	Length (feet)	Presence/Counting	Passage/Counting	Queue/Counting	Non-Locking Memory
2-1	0	20			X	X
2-2	185	20		X		
6-1	0	20			X	X
6-2	0	20			X	X
6-3	185	20		X		
6-4	0	60	X			X
8-1	0	20			X	X

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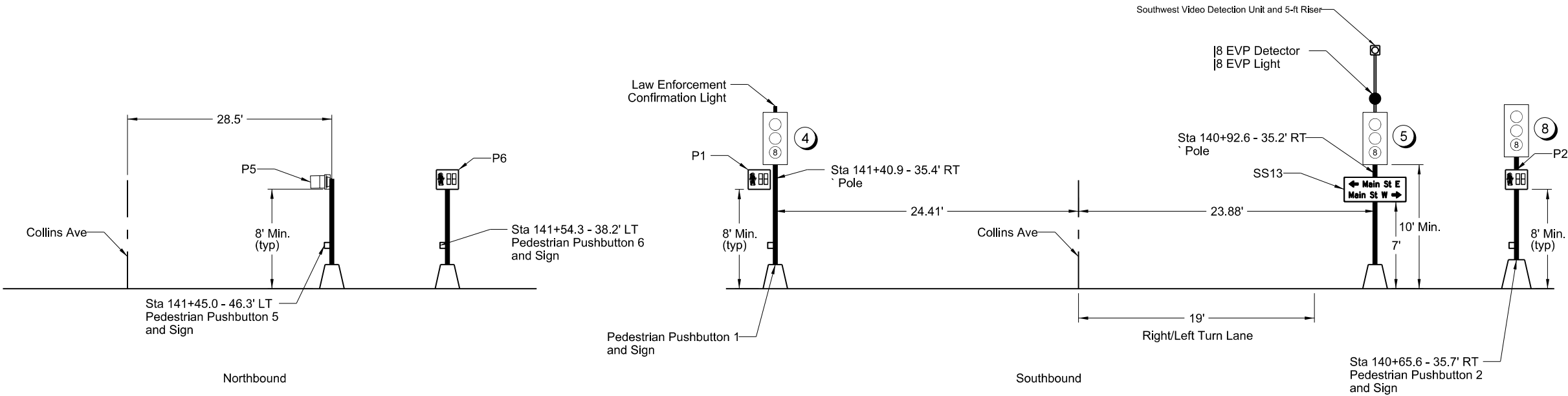
Main St
Video Detection Zone Layout

Main St / Collins Ave
Traffic Signal System - Site 3

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	UGP-NHU-1-094(202)915	150	28

Northeast Type II Pedestrian Signal Standards

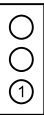
Southwest & Southeast
Type V Signal Standard



LEGEND



Video Detection Camera



Traffic Signal Head
w/ associated phase



Signal Head Number



EVP Light



EVP Detector



Law Enforcement
Confirmation Light

Notes:
1. Face the EVP Detector the same direction of signal heads on Southwest mast arm.
2. Stationing based on SCL94B

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Main St

Signal Standards and Head Locations

Main St / Collins Ave
Traffic Signal System - Site 3

[illegible]

Blank spaces denote a "Red" Indication
G= Green Ball Indication
Y= Yellow Ball Indication
GL= Green Left Arrow Indication
YL= Yellow Left Arrow Indication
FYA = Flashing Yellow Arrow Indication
GR=Green Right Arrow Indication
YR=Yellow Right Arrow Indication

N= Continue to display right of way indication. When any phase is on alone, any non-conflicting phase may start timing without a clearance interval. See Chart A.

Head Number		Preemption Controller Settings																																					
		Phase 2								Phase 4								Phase 6								Phase 8													
		Eastbound								Northbound								Westbound								Southbound													
		Clear to Phase										Clear to Phase										Clear to Phase										Clear to Phase							
		RW	3	4	5	6	7	8	1	RW	5	6	7	8	1	2	3	RW	7	8	1	2	3	4	5	RW	1	2	3	4	5	6	7						
1		GL		YL	YL	N		YL																															
2		G		YL	N	N		Y																															
3		G		Y	N	N		Y																															
4																																							
5																										G		Y				Y	Y						
6																										G		Y				Y	Y						
7																										G		Y	N	N		Y	Y						
8																											G		Y				Y	Y					

Chart A	
Phase	Non-conflicting Phase allowed to time concurrently
1	5,6
2	5,6
3	8
4	8
5	2
6	2
7	4
8	4
8	4

Time of Day Plan for All Three Intersections			
Day	Coord Pattern	Start Time	Description
Weekdays (Mon-Fri)	0	0:00	Free
	1	7:00	Normal
	2	15:30	School Peak
	3	16:00	PM Peak
	1	17:30	Normal
	0	20:00	Free
Saturday	0	0:00	Free
	1	8:00	Normal
	0	20:00	Free
Sunday	0	0:00	Free
	1	11:00	Normal
	0	20:00	Free

Main St & Collins Ave										
TOD Pattern	Cycle Length	Coord Offset	Phase Splits (sec)							
			1	2	3	4	5	6	7	8
			WBL	EB	SBL	NB	EBL	WB	NBL	SB
1 & 2	60	22		36				36		24
3	70	25		41				41		29

	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8
		EB Thu/Right		NB Ped Phase	EB Left	WB Thru/Right		SB Left/Right
BASIC INTERVALS (OR FUNCTIONS)								
Minimum Initial		10.0			5.0	10.0		7.0
Minimum Initial with Pedestrian Actuation*				25.0		20.9		20.5
Passage Time		3.0			3.0	3.0		3.0
Max Green		40.0			20.0	40.0		20.0
Yellow Change		3.6			3.0	3.0		3.0
Red Clearance		1.0			2.1	1.1		1.5
Walk				7.0		7.0		7.0
Pedestrian Clearance				18.0		15.0		15.0

*yellow change time is removed from this calculation

VOLUME DENSITY TIMING FUNCTIONS - ONLY APPLICABLE DURING "FREE" (UNCOORDINATED) TIMING PLAN

Time to Reduce to Minimum Gap		5.0				5.0	
Minimum Gap		2.0				2.0	
Recall		Minimum				Minimum	No
Flashing-Normal & Conflict Monitor		R				R	R
Start Up Phasing		G				G	R
Emergency Vehicle Pre-emption		x				x	x
Type of Detector	Presence	Refer to Detector Zone Table					
	Calling						
	Passage						
Locking Memory							
Non-Locking Memory							

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Main St
Controller Phasing &
Signal Timings
Main St / Collins Ave
Traffic Signal System - Site 3

Conductor			Cable NWS (Northwest Combo Signal) (14 AWG 12 Conductor)		Cable NWP (Northwest Type II Ped Std) (14 AWG 12 Conductor)		Cable NEP1 (Northeast Type V Signal Std) (14 AWG 5 Conductor)		Cable NEP2 (Northeast Type II Ped Std 2) (14 AWG 5 Conductor)	
Base	Tracer		Head	Indication	Head	Indication	Head	Indication	Head	Indication
1	Black			Spare		Spare	P5	Ø6 Walk	P6	Ø4 Walk
2	White			Neutral		Neutral		Neutral		Neutral
3	Red		6, 7	Ø6 Red	P8	Ø8 Red	P5	Ø6 Don't Walk	P6	Ø4 Don't Walk
4	Green			Ground		Ground		Ground		Ground
5	Orange		6, 7	Ø6 Yellow	8	Ø8 Yellow		Spare		Spare
6	Blue		6, 7	Ø6 Green	8	Ø8 Red	<div></div>		<div></div>	
7	White	Black		Spare		Spare				
8	Red	Black	P3	Ø8 Don't Walk	P4	Ø6 Walk				
9	Green	Black		Spare		Spare				
10	Orange	Black		Spare		Spare				
11	Blue	Black		Spare		Spare				
12	Black	White	P3	Ø8 Walk	P4	Ø6 Don't Walk				

Conductor			Cable SWS (Southwest Type V Signal) (14 AWG 7 Conductor)		Cable SWP (Southwest Type II Ped Std) (14 AWG 5 Conductor)		Cable SES1 (Southeast Combo Signal) (14 AWG 12 Conductor)		Cable SES2 (Southeast Type V Signal) (14 AWG 12 Conductor)			
Base	Tracer		Head	Indication	Head	Indication	Head	Indication	Head	Indication		
1	Black			Spare	P2	Ø8 Walk		Spare		Spare		
2	White			Neutral		Neutral		Neutral		Neutral		
3	Red		5	Ø8 Red	P2	Ø8 Don't Walk	2, 3	Ø2 Red	4	Ø8 Red		
4	Green			Ground		Ground		Ground		Ground		
5	Orange		5	Ø8 Yellow		Spare	2, 3	Ø2 Yellow	4	Ø8 Yellow		
6	Blue		5	Ø8 Green	<div></div>		2, 3	Ø2 Green	4	Ø8 Green		
7	White	Black		Spare				Spare		Spare		
8	Red	Black	<div></div>				1	Ø5 Red ←	P1	Ø4 Don't Walk		
9	Green	Black						Spare		Spare		
10	Orange	Black					1	Ø5 Yellow ←		Spare		
11	Blue	Black					1	Ø5 Green ←		Spare		
12	Black	White					1	Ø6 FYA ←	P1	Ø4 Walk		

INTERNAL MAST ARM/STANDARD SIGNAL HEAD CABLE

Origin	Destination	# of Cables	SIZE/TYPE	Total LF
Southeast Combo Signal Std Transformer Base	Vehicle Head 1	1	14 AWG 7 CONDUCTOR CABLE	71
	Vehicle Head 2	1	14 AWG 5 CONDUCTOR CABLE	59
	Vehicle Head 3	1	14 AWG 5 CONDUCTOR CABLE	18
Southeast Type V Signal Std Transformer Base	Vehicle Head 4	1	14 AWG 5 CONDUCTOR CABLE	18
	Pedestrian Head 1	1	14 AWG 3 CONDUCTOR CABLE	17
Southwest Type V Signal Std Transformer Base	Vehicle Head 5	1	14 AWG 5 CONDUCTOR CABLE	18
Southwest Type II Pedestrian Std Transformer Base	Pedestrian Head 2	1	14 AWG 3 CONDUCTOR CABLE	17
Northwest Combo Signal Std Transformer Base	Vehicle Head 6	1	14 AWG 7 CONDUCTOR CABLE	42
	Vehicle Head 7	1	14 AWG 5 CONDUCTOR CABLE	18
	Pedestrian Head 3	1	14 AWG 5 CONDUCTOR CABLE	17
Northwest Type V Signal Std Transformer Base	Vehicle Head 8	1	14 AWG 5 CONDUCTOR CABLE	18
	Pedestrian Head 4	1	14 AWG 3 CONDUCTOR CABLE	17
Northeast Type II Pedestrian Std Transformer Base 1	Pedestrian Head 5	1	14 AWG 3 CONDUCTOR CABLE	17
Northeast Type II Pedestrian Std Transformer Base 2	Pedestrian Head 6	1	14 AWG 5 CONDUCTOR CABLE	17

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Main St
Signal Heads & Conductors
Main St / Collins Ave
Traffic Signal System - Site 3

												STATE	PROJECT NO.		SECTION NO.	SHEET NO.
												ND	UGP-NHU-1-094(202)915		150	31

SIGNAL CABLE & CONDUIT SCHEDULE												
RUN			CONDUIT		CABLE							
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	Origin	Destination	# of Cables	SIZE/TYPE	Total LF	TITLE	
1	Origin Destination	Existing Meter Traffic Signal Controller	Sta 140+73.7, 194.1' RT Sta 140+04.1, 42.3' RT	2	50	Existing Meter Existing Meter	Traffic Signal Controller Traffic Signal Controller	2 1	UNDERGROUND CONDUCTOR NO2-TYPE RHW UNDERGROUND CONDUCTOR NO2-TYPE THW	700 350	PS	
2	Origin Destination	Traffic Signal Controller Pull Box 1	Sta 140+04.1, 42.3' RT Sta 140+56.6, 36.3' RT	3	53	Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller	Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1	3 1 4 3 3	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 5 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE	204 68 272 204 204	NWS, SES1, SES2 SWS SWP, NWP, NEP1, NEP2 EL6, EL8, EL25 ED6, EL8, ED25	
3	Origin Destination	Traffic Signal Controller Pull Box 1	Sta 140+04.1, 42.3' RT Sta 140+56.6, 36.3' RT	2	10	Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller	Pull Box 1 Pull Box 1 Pull Box 1	6 3 1	16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	150 75 15	PB1, PB2, PB3, PB4, PB5, PB6 SWV, SEV, NWV TW	
4	Origin Destination	Pull Box 1 Southwest Type II Pedestrian Std	Sta 140+56.6, 36.3' RT Sta 140+65.6, 35.7' RT	2	10	Pull Box 1 Pull Box 1 Pull Box 1	Southwest Type II Pedestrian Std Transformer Base Pushbutton 2 Southwest Type II Pedestrian Std Transformer Base	1 1 1	14 AWG 5 CONDUCTOR CABLE 16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	21 24 15	SWP PB2 TW	
5	Origin Destination	Pull Box 1 Pull Box 2	Sta 140+56.6, 36.3' RT Sta 140+77.9, 29.7' RT	3	23	Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1	Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2	3 1 3 3 3	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 5 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE	105 35 105 105 105	NWS, SES1, SES2 SWS NWP, NEP1, NEP2 EL6, EL8, EL25 ED6, ED8, ED25	
6	Origin Destination	Pull Box 1 Pull Box 2	Sta 140+56.6, 36.3' RT Sta 140+77.9, 29.7' RT	2	23	Pull Box 1 Pull Box 1 Pull Box 1	Pull Box 2 Pull Box 2 Pull Box 2	5 3 1	16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	175 105 28	PB1, PB3, PB4, PB5, PB6 SWV, SEV, NWV TW	
7	Origin Destination	Pull Box 2 Pull Box 3	Sta 140+77.9, 29.7' RT Sta 140+79.0, 28.9' LT	2	59	Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2	Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3	1 1 1 1 1 2 1 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 5 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	71 71 71 71 142 71 64	NWS NWP EL6 ED25 PB3, PB4 NWV TW	
8	Origin Destination	Pull Box 3 Northwest Combo Signal Std	Sta 140+79.0, 28.9' LT Sta 140+61.6, 28.7' LT	2	18	Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3	Northwest Combo Signal Std Transformer Base Northwest Emergency Preemption Lamp Northwest Emergency Preemption Detector Northwest Emergency Preemption Detector Northwest Combo Signal Std Transformer Base	1 1 1 1 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	29 59 59 59 23	NWS EL6 ED25 NWV TW	
9	Origin Destination	Pull Box 3 Northwest Pushbutton Post	Sta 140+79.0, 28.9' LT Sta 140+76.0, 33.0' LT	2	6	Pull Box 3 Pull Box 3	Pushbutton 3 Pushbutton 3	1 1	16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	20 11	PB3 TW	
10	Origin Destination	Pull Box 3 Northwest Type V Signal Std	Sta 140+79.0, 28.9' LT Sta 140+87.1, 42.9' LT	2	17	Pull Box 3 Pull Box 3 Pull Box 3	Northwest Type V Signal Std Transformer Base Pushbutton 4 Northwest Type V Signal Std Transformer Base	1 1 1	14 AWG 12 CONDUCTOR CABLE 16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	28 31 22	NWS2 PB4 TW	
11	Origin Destination	Pull Box 4 Northeast Type II Pedestrian Std 1	Sta 141+59.2, 41.5' LT Sta 141+45.0, 46.3' LT	2	16	Pull Box 4 Pull Box 4 Pull Box 4	Northeast Type II Pedestrian Std 1 Transformer Base Pushbutton 5 Northeast Type II Pedestrian Std 1 Transformer Base	1 1 1	14 AWG 5 CONDUCTOR CABLE 16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	27 30 21	NEP1 PB5 TW	
12	Origin Destination	Pull Box 4 Northeast Type II Pedestrian Std 2	Sta 141+59.2, 41.5' LT Sta 141+54.3, 38.2' LT	2	6	Pull Box 4 Pull Box 4 Pull Box 4	Northeast Type II Pedestrian Std 2 Transformer Base Pushbutton 6 Northeast Type II Pedestrian Std 2 Transformer Base	1 1 1	14 AWG 5 CONDUCTOR CABLE 16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	17 20 11	NEP2 PB6 TW	
13	Origin Destination	Pull Box 5 Pull Box 4	Sta 141+56.7, 29.7' RT Sta 141+59.2, 41.5' LT	2	72	Pull Box 5 Pull Box 5 Pull Box 5	Pull Box 4 Pull Box 4 Pull Box 4	2 2 1	14 AWG 5 CONDUCTOR CABLE 16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	168 168 77	NEP1, NEP2 PB5, PB6 TW	

CABLE NAMES
NWS = Northwest Combo Signal Std
SWS= Southwest Type V Signal Std
SES1 = Southeast Combo Signal Std
NWS2 = Northwest Type V Signal Std
NEP1 = Northeast Type II Ped Std
NEP2 = Northeast Type II Ped Std
SES2 = Southeast Type V Signal Std
SWP = Southwest Type II Ped Std
NWV = Northwest Video Detection Unit
SWV = Southwest Video Detection Unit
SEV = Southeast Video Detection Unit
EL6 = Ø6 EVP Light
EL25 = Ø2+Ø5 EVP Light
EL4 = Ø4 EVP Light
EL8 = Ø8 EVP Light
ED6 = Ø6 EVP Detector
ED25 = Ø2+Ø5 EVP Detector
ED4 = Ø4 EVP Detector
ED8 = Ø8 EVP Detector
PB1 = Pedestrian Pushbutton 1
PB2 = Pedestrian Pushbutton 2
PB3 = Pedestrian Pushbutton 3
PB4 = Pedestrian Pushbutton 4
PB5 = Pedestrian Pushbutton 5
PB6 = Pedestrian Pushbutton 6
TW = Tracer Wire
PS = Power Supply Conduit

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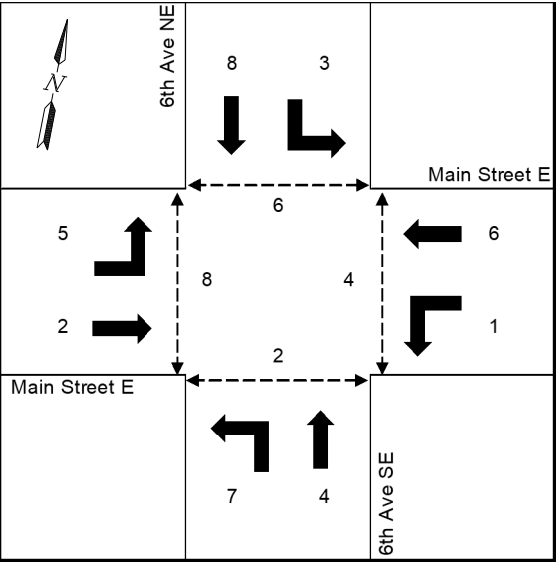
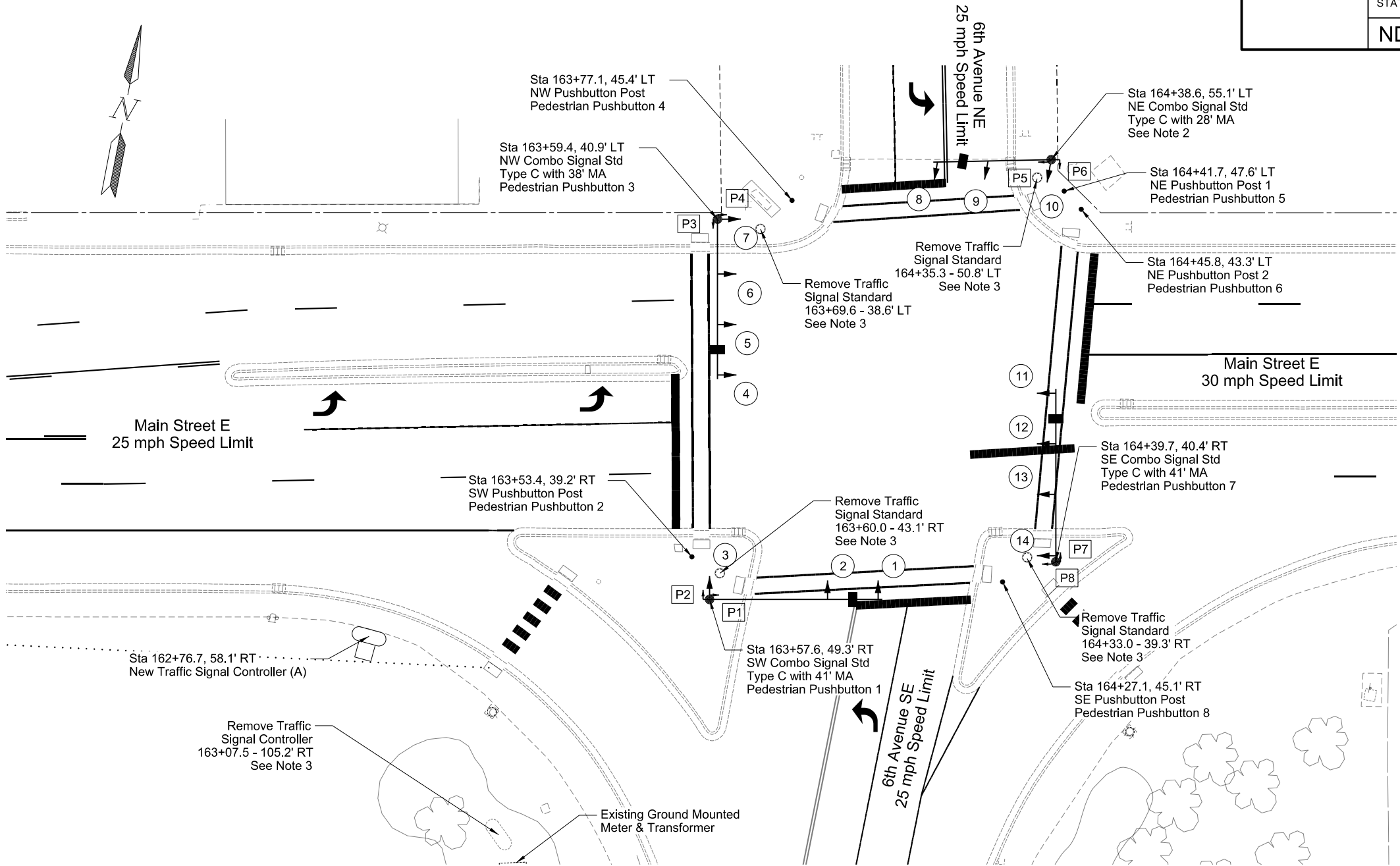
Main St
Cable & Conduit Schedule
Main St / Collins Ave
Traffic Signal System - Site 3

SIGNAL CABLE & CONDUIT SCHEDULE												
RUN				CONDUIT		CABLE						
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	Origin	Destination	# of Cables	SIZE/TYPE		Total LF	TITLE
14	<i>Origin</i> <i>Destination</i>	Pull Box 5 Southeast Combo Signal Std	Sta 141+56.7, 29.7' RT Sta 141+73.7, 38.3' RT	2	20	Pull Box 5	Southeast Combo Signal Std Transformer Base	1	14 AWG 12 CONDUCTOR CABLE		31	SES1
						Pull Box 5	Southeast Emergency Preemption Lamp	1	14 AWG 3 CONDUCTOR CABLE		83	EL25
						Pull Box 5	Southeast Emergency Preemption Lamp	1	EMERGENCY VEHICLE DETECTOR CABLE		83	ED6
						Pull Box 5	Southeast Video Detection Unit	1	VIDEO DETECTION CABLE		88	SEV
						Pull Box 5	Southeast Combo Signal Std Transformer Base	1	UNDERGROUND CONDUCTOR NO6-TYPE THW		25	TW
15	<i>Origin</i> <i>Destination</i>	Pull Box 5 Southeast Type V Signal Std	Sta 141+56.7, 29.7' RT Sta 141+40.9, 35.4' RT	2	17	Pull Box 5	Southeast Type V Signal Std Transformer Base	1	14 AWG 12 CONDUCTOR CABLE		28	SES2
						Pull Box 5	Pushbutton 1	1	16 AWG 3 CONDUCTOR CABLE		31	PB1
						Pull Box 5	Southeast Type V Signal Std Transformer Base	1	UNDERGROUND CONDUCTOR NO6-TYPE THW		22	TW
16	<i>Origin</i> <i>Destination</i>	Pull Box 2 Pull Box 5	Sta 140+77.9, 29.7' RT Sta 141+56.7, 29.7' RT	3	79	Pull Box 2	Pull Box 5	2	14 AWG 12 CONDUCTOR CABLE		182	SES1, SES2
						Pull Box 2	Pull Box 5	2	14 AWG 5 CONDUCTOR CABLE		182	NEP1, NEP2
						Pull Box 2	Pull Box 5	1	14 AWG 3 CONDUCTOR CABLE		91	EL25
						Pull Box 2	Pull Box 5	1	EMERGENCY VEHICLE DETECTOR CABLE		91	ED6
						Pull Box 2	Pull Box 5	3	16 AWG 3 CONDUCTOR CABLE		273	PB1, PB5, PB6
						Pull Box 2	Pull Box 5	1	VIDEO DETECTION CABLE		91	SEV
						Pull Box 2	Pull Box 5	1	UNDERGROUND CONDUCTOR NO6-TYPE THW		84	TW
17	<i>Origin</i> <i>Destination</i>	Pull Box 2 Southwest Type V Signal Std	Sta 140+77.9, 29.7' RT Sta 140+92.6, 35.2' RT	2	16	Pull Box 2	Southwest Type V Signal Std Transformer Base	1	14 AWG 7 CONDUCTOR CABLE		27	SWS
						Pull Box 2	Southwest Emergency Preemption Lamp	1	14 AWG 3 CONDUCTOR CABLE		37	EL8
						Pull Box 2	Southwest Emergency Preemption Detector	1	EMERGENCY VEHICLE DETECTOR CABLE		37	ED8
						Pull Box 2	Southwest Video Detection Unit	1	VIDEO DETECTION CABLE		45	SWV
						Pull Box 2	Southwest Type V Signal Std Transformer Base	1	UNDERGROUND CONDUCTOR NO6-TYPE THW		21	TW

CABLE NAMES
NWS = Northwest Combo Signal Std
SWS= Southwest Type V Signal Std
SES1 = Southeast Combo Signal Std
NWS2 = Northwest Type V Signal Std
NEP1 = Northeast Type II Ped Std
NEP2 = Northeast Type II Ped Std
SES2 = Southeast Type V Signal Std
SWP = Southwest Type II Ped Std
NWV = Northwest Video Detection Unit
SWV = Southwest Video Detection Unit
SEV = Southeast Video Detection Unit
EL6 = Ø6 EVP Light
EL25 = Ø2+Ø5 EVP Light
EL4 = Ø4 EVP Light
EL8 = Ø8 EVP Light
ED6 = Ø6 EVP Detector
ED25 = Ø2+Ø5 EVP Detector
ED4 = Ø4 EVP Detector
ED8 = Ø8 EVP Detector
PB1 = Pedestrian Pushbutton 1
PB2 = Pedestrian Pushbutton 2
PB3 = Pedestrian Pushbutton 3
PB4 = Pedestrian Pushbutton 4
PB5 = Pedestrian Pushbutton 5
PB6 = Pedestrian Pushbutton 6
TW = Tracer Wire
PS = Power Supply Conduit

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Main St
Cable & Conduit Schedule
Main St / Collins Ave
Traffic Signal System - Site 3



Note:
1. Stationing based on Chain SCL94B
2. 2' foundation required for utility clearance
3. Signals to remain in place until new signals are ready to be installed.

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Sign R10-3E



Pedestrian Pushbutton Schedule		
Location	Pushbutton & Sign Location on	Direction of Arrow on Sign
Pushbutton 1	North	Left
Pushbutton 2	East	Right
Pushbutton 3	East	Left
Pushbutton 4	South	Right
Pushbutton 5	South	Left
Pushbutton 6	West	Right
Pushbutton 7	West	Left
Pushbutton 8	North	Right

LEGEND

- Signal controller
- Signal head
- Feed Point
- Video Detection Unit

1" yellow Type XI reflective sheeting

All Signal Heads: 12" LED Lenses & 5" Louvered Backplates

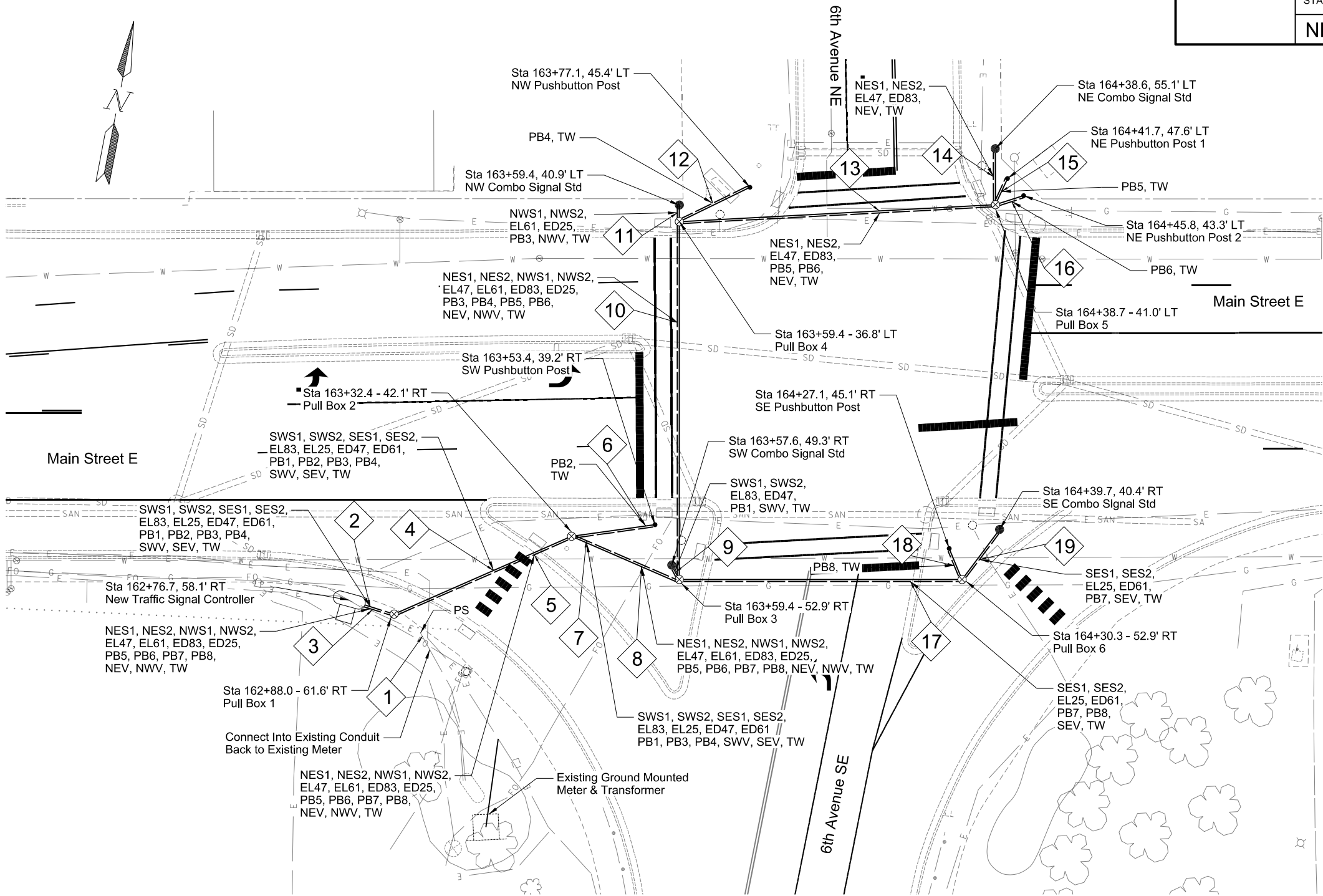
Main St

Signal Layout

Main St / 6th Ave E

Traffic Signal System - Site 4

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	150	34








CABLE NAMES
NWS1 = Northwest Combo Signal Std
SWS1 = Southwest Combo Signal Std
SES1 = Southeast Combo Signal Std
NES1 = Northeast Combo Signal Std
NWS2 = Northwest Combo Signal Std
SWS2 = Southwest Combo Signal Std
SES2 = Southeast Combo Signal Std
NES2 = Northeast Combo Signal Std
SWP1 = Southwest Type II Ped Std 1
SWP2 = Southwest Type II Ped Std 2
SEP1 = Southeast Type II Ped Std 1
SEP2 = Southeast Type II Ped Std 2
NWV = Northwest Video Detector Unit
NEV = Northeast Video Detector Unit
SWV = Southwest Video Detector Unit
SEV = Southeast Video Detector Unit
EL25 = Ø2+Ø5 EVP Light
EL47 = Ø4+Ø7 EVP Light
EL61 = Ø6+Ø1 EVP Light
EL83 = Ø8+Ø3 EVP Light
ED25 = Ø2+Ø5 EVP Detector
ED47 = Ø4+Ø7 EVP Detector
ED61 = Ø6+Ø1 EVP Detector
ED83 = Ø8+Ø3 EVP Detector
PB1 = Pedestrian Pushbutton 1
PB2 = Pedestrian Pushbutton 2
PB3 = Pedestrian Pushbutton 3
PB4 = Pedestrian Pushbutton 4
PB5 = Pedestrian Pushbutton 5
PB6 = Pedestrian Pushbutton 6
PB7 = Pedestrian Pushbutton 7
PB8 = Pedestrian Pushbutton 8
TW = Tracer Wire
PS = Power Supply Cables

Note:
1. Stationing based on Chain SCL94B

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Main St
Conduit & Conductor Layout
Main St / 6th Ave E
Traffic Signal System - Site 4

<u>Legend</u>	
	New Signal Controller
	Cable & Conduit Run
	Pull Box
	Feed Point
	Signal Pole

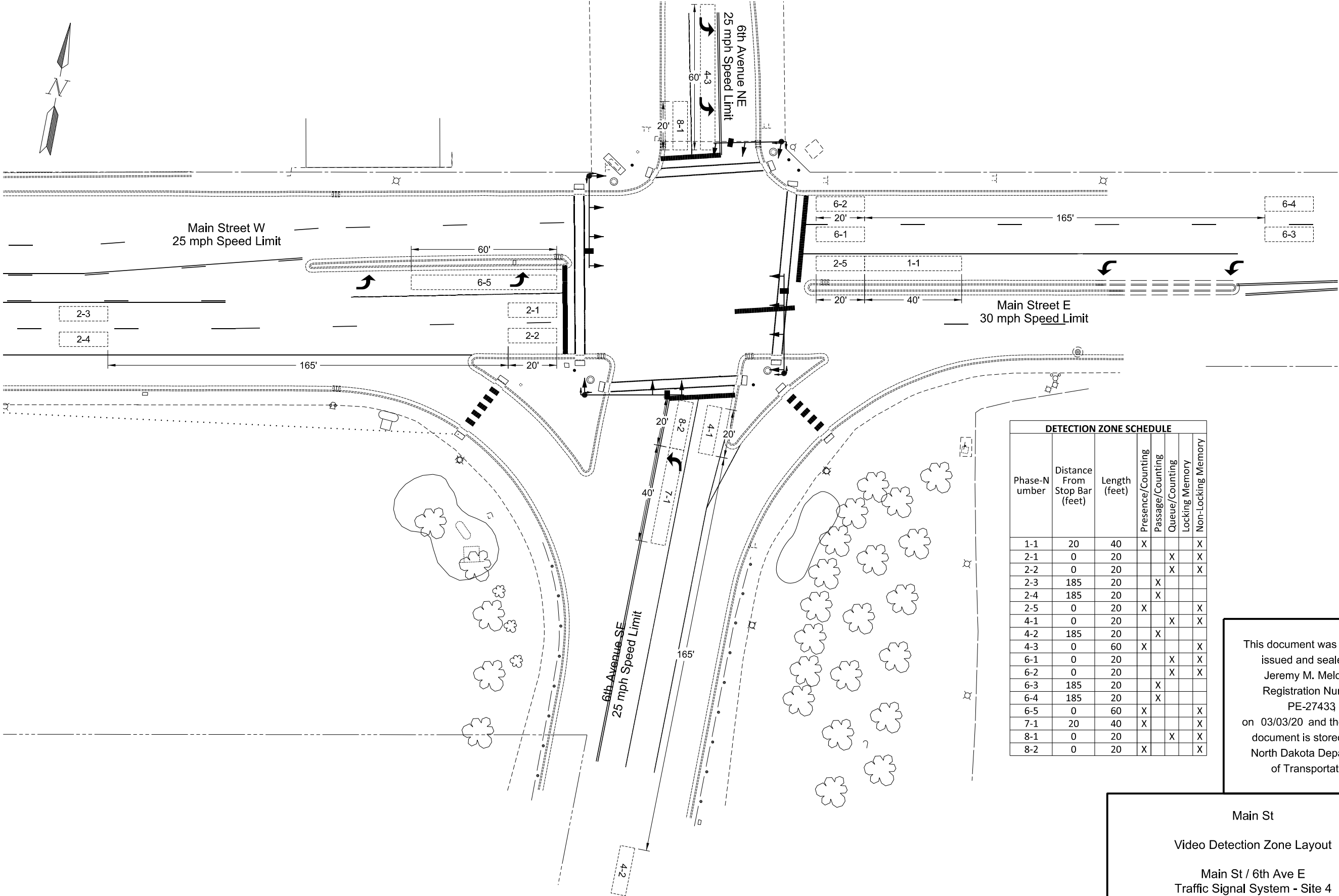


Chart A	
Phase	Non-conflicting Phase allowed to time concurrently
1	5, 6
2	5, 6
3	7, 8
4	7, 8
5	1, 2
6	1, 2
7	3, 4
8	3, 4

*yellow change time is removed from this calculation

Time to Reduce to Minimum Gap			5.0				5.0		
Minimum Gap			2.0				2.0		
Recall		No	Minimum		No		Minimum	No	No
Flashing-Normal & Conflict Monitor		R	R		R		R	R	R
Start Up Phasing		R	G		R		G	R	R
Emergency Vehicle Pre-emption		x	x		x		x	x	x
Type of Detector	Presence	Refer to Detector Zone Table							
	Calling								
	Passage								
Locking Memory									
Non-Locking Memory									

Main St
Controller Phasing &
Signal Timings
Main St / 6th Ave E
Traffic Signal System - Site 4

Conductor		Cable SWS1 (Southwest Combo Signal) (14 AWG 12 Conductor)		Cable SWS2 (Southwest Combo Signal) (14 AWG 7 Conductor)		Cable SES1 (Southeast Combo Signal) (14 AWG 12 Conductor)		Cable SES2 (Southeast Combo Signal) (14 AWG 7 Conductor)	
Base	Tracer	Head	Indication	Head	Indication	Head	Indication	Head	Indication
1	Black		Spare	P1	Ø2 Walk		Spare	P7	Ø4 Walk
2	White		Neutral		Neutral		Neutral		Neutral
3	Red	2, 3	Ø8 Red	P1	Ø2 Don't Walk	12, 13, 14	Ø6 Red	P7	Ø4 Don't Walk
4	Green		Ground		Ground		Ground		Ground
5	Orange	2, 3	Ø8 Yellow	P2	Ø8 Walk	12, 13, 14	Ø6 Yellow	P8	Ø2 Walk
6	Blue	2, 3	Ø8 Green	P2	Ø8 Don't Walk	12, 13, 14	Ø6 Green	P8	Ø2 Don't Walk
7	White	Black	Spare		Spare		Spare		Spare
8	Red	Black	Ø3 Red ←			11	Ø1 Red ←		
9	Green	Black	Spare				Spare		
10	Orange	Black	Ø3 Yellow ←			11	Ø1 Yellow ←		
11	Blue	Black	Ø3 Green ←			11	Ø1 Green ←		
12	Black	Black	Ø4 FYA ←			11	Ø2 FYA ←		

Conductor		Cable NWS1 (Northwest Combo Signal) (14 AWG 12 Conductor)		Cable NWS2 (Northwest Combo Signal) (14 AWG 7 Conductor)		Cable NES1 (Northeast Combo Signal) (14 AWG 12 Conductor)		Cable NES2 (Northeast Combo Signal) (14 AWG 7 Conductor)	
Base	Tracer	Head	Indication	Head	Indication	Head	Indication	Head	Indication
1	Black		Spare	P4	Ø6 Walk		Spare	P5	Ø6 Walk
2	White		Neutral		Neutral		Neutral		Neutral
3	Red	5, 6, 7	Ø6 Red	P4	Ø6 Don't Walk	9, 10	Ø4 Red	P5	Ø6 Don't Walk
4	Green		Ground		Ground		Ground		Ground
5	Orange	5, 6, 7	Ø6 Yellow	P3	Ø8 Walk	9, 10	Ø4 Yellow	P6	Ø4 Walk
6	Blue	5, 6, 7	Ø6 Green	P3	Ø8 Don't Walk	9, 10	Ø4 Green	P6	Ø4 Don't Walk
7	White	Black	Spare		Spare		Spare		Spare
8	Red	Black	Ø1 Red ←			8	Ø7 Red ←		
9	Green	Black	Spare				Spare		
10	Orange	Black	Ø1 Yellow ←			8	Ø7 Yellow ←		
11	Blue	Black	Ø1 Green ←			8	Ø7 Green ←		
12	Black	Black	Ø2 FYA ←			8	Ø8 FYA ←		

INTERNAL MAST ARM/STANDARD SIGNAL HEAD CABLE

Origin	Destination	# of Cables	SIZE/TYPE	Total LF
Southwest Combo Signal Std Transformer Base	Vehicle Head 1	1	14 AWG 7 CONDUCTOR CABLE	69
	Vehicle Head 2	1	14 AWG 5 CONDUCTOR CABLE	57
	Vehicle Head 3	1	14 AWG 5 CONDUCTOR CABLE	18
	Pedestrian Head 1	1	14 AWG 3 CONDUCTOR CABLE	17
	Pedestrian Head 2	1	14 AWG 3 CONDUCTOR CABLE	17
Northwest Combo Signal Std Transformer Base	Vehicle Head 4	1	14 AWG 7 CONDUCTOR CABLE	18
	Vehicle Head 5	1	14 AWG 5 CONDUCTOR CABLE	66
	Vehicle Head 6	1	14 AWG 5 CONDUCTOR CABLE	54
	Vehicle Head 7	1	14 AWG 5 CONDUCTOR CABLE	42
	Pedestrian Head 3	1	14 AWG 3 CONDUCTOR CABLE	17
Northeast Combo Signal Std Transformer Base	Pedestrian Head 4	1	14 AWG 3 CONDUCTOR CABLE	17
	Vehicle Head 8	1	14 AWG 7 CONDUCTOR CABLE	18
	Vehicle Head 9	1	14 AWG 5 CONDUCTOR CABLE	56
	Vehicle Head 10	1	14 AWG 5 CONDUCTOR CABLE	44
	Pedestrian Head 5	1	14 AWG 3 CONDUCTOR CABLE	17
Southeast Combo Signal Std Transformer Base	Pedestrian Head 6	1	14 AWG 3 CONDUCTOR CABLE	17
	Vehicle Head 11	1	14 AWG 7 CONDUCTOR CABLE	18
	Vehicle Head 12	1	14 AWG 5 CONDUCTOR CABLE	69
	Vehicle Head 13	1	14 AWG 5 CONDUCTOR CABLE	57
	Vehicle Head 14	1	14 AWG 5 CONDUCTOR CABLE	45
	Pedestrian Head 7	1	14 AWG 3 CONDUCTOR CABLE	17
	Pedestrian Head 8	1	14 AWG 3 CONDUCTOR CABLE	17

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Main St

Signal Heads and Conductors

Main St / 6th Ave E
Traffic Signal System - Site 4

												STATE	PROJECT NO.	SECTION NO.	SHEET NO.
												ND	UGP-NHU-1-094(202)915	150	40

SIGNAL CABLE & CONDUIT SCHEDULE												
RUN				CONDUIT		CABLE						
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	Origin	Destination	# of Cables	SIZE/TYPE	Total LF	TITLE	
1	Origin Destination	Existing Meter Traffic Signal Controller	Sta 163+11.0, 115.0' RT Sta 162+76.7, 58.1' RT	2	5	Existing Meter Existing Meter	Traffic Signal Controller Traffic Signal Controller	2 1	UNDERGROUND CONDUCTOR NO2-TYPE RHW UNDERGROUND CONDUCTOR NO2-TYPE THW	188 94	PS, Fed through existing conduit.	
2	Origin Destination	Traffic Signal Controller Pull Box 1	Sta 162+76.7, 58.1' RT Sta 162+88.0, 61.6' RT	3	12	Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller	Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1	2 2 2 2 2 2 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	54 54 54 54 54 54 17	SWS1, SES1 SWS2, SES2 EL83, EL25 ED47, ED61 PB1, PB2, PB3, PB4 SWV, SEV TW	
3	Origin Destination	Traffic Signal Controller Pull Box 1	Sta 162+76.7, 58.1' RT Sta 162+88.0, 61.6' RT	3	12	Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller Traffic Signal Controller	Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1	2 2 2 2 4 2 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	54 54 54 54 108 54 17	NES1, NWS1 NES2, NWS2 EL47, EL61 ED83, ED25 PB5, PB6, PB7, PB8 NEV, NWV TW	
4	Origin Destination	Pull Box 1 Pull Box 2	Sta 162+88.0, 61.6' RT Sta 163+32.4, 42.1' RT	3	49	Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1	Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2	2 2 2 2 4 2 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	122 122 122 122 244 122 54	SWS1, SES1 SWS2, SES2 EL83, EL25 ED47, ED61 PB1, PB2, PB3, PB4 SWV, SEV TW	
5	Origin Destination	Pull Box 1 Pull Box 2	Sta 162+88.0, 61.6' RT Sta 163+32.4, 42.1' RT	3	49	Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1 Pull Box 1	Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2	2 2 2 2 4 2 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	122 122 122 122 244 122 54	NES1, NWS1 NES2, NWS2 EL47, EL61 ED83, ED25 PB5, PB6, PB7, PB8 NEV, NWV TW	
6	Origin Destination	Pull Box 2 Southwest Pushbutton Post	Sta 163+32.4, 42.1' RT Sta 163+53.4, 39.2' RT	2	22	Pull Box 2 Pull Box 2	Pushbutton 2 Pushbutton 2	1 1	16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	36 27	PB2 TW	
7	Origin Destination	Pull Box 2 Pull Box 3	Sta 163+32.4, 42.1' RT Sta 163+59.4, 52.9' RT	3	57	Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2	Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3	2 2 2 2 3 2 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	138 138 138 138 207 138 62	SWS1, SES1 SWS2, SES2 EL83, EL25 ED47, ED61 PB1, PB3, PB4 SWV, SEV TW	
8	Origin Destination	Pull Box 2 Pull Box 3	Sta 163+32.4, 42.1' RT Sta 163+59.4, 52.9' RT	3	57	Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2 Pull Box 2	Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3	2 2 2 2 4 2 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	138 138 138 138 276 138 62	NES1, NWS1 NES2, NWS2 EL47, EL61 ED83, ED25 PB5, PB6, PB7, PB8 NEV, NWV TW	
9	Origin Destination	Pull Box 3 Southwest Combo Signal Std	Sta 163+59.4, 52.9' RT Sta 163+57.6, 49.3' RT	2	5	Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3	Southwest Combo Signal Std Transformer Base Southwest Combo Signal Std Transformer Base Southwest Emergency Preemption Lamp Southwest Emergency Preemption Detector Pushbutton 1 Southwest Video Detection Unit Southwest Combo Signal Std Transformer Base	1 1 1 1 1 1 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	16 16 66 66 19 73 10	SWS1 SWS2 EL83 ED47 PB1 SWV TW	

CABLE NAMES

NWS1 = Northwest Combo Signal Std
SWS1 = Southwest Combo Signal Std
SES1 = Southeast Combo Signal Std
NES1 = Northeast Combo Signal Std
NWS2 = Northwest Combo Signal Std
SWS2 = Southwest Combo Signal Std
SES2 = Southeast Combo Signal Std
NES2 = Northeast Combo Signal Std
SWP1 = Southwest Type II Ped Std 1
SWP2 = Southwest Type II Ped Std 2
SEP1 = Southeast Type II Ped Std 1
SEP2 = Southeast Type II Ped Std 2
NWV = Northwest Video Detector Unit
NEV = Northeast Video Detector Unit
SWV = Southwest Video Detector Unit
SWV = Southeast Video Detector Unit
EL25 = Ø2+Ø5 EVP Light
EL47 = Ø4+Ø7 EVP Light
EL61 = Ø6+Ø1 EVP Light
EL83 = Ø8+Ø3 EVP Light
ED25 = Ø2+Ø5 EVP Detector
ED47 = Ø4+Ø7 EVP Detector
ED61 = Ø6+Ø1 EVP Detector
ED83 = Ø8+Ø3 EVP Detector
PB1 = Pedestrian Pushbutton 1
PB2 = Pedestrian Pushbutton 2
PB3 = Pedestrian Pushbutton 3
PB4 = Pedestrian Pushbutton 4
PB5 = Pedestrian Pushbutton 5
PB6 = Pedestrian Pushbutton 6
PB7 = Pedestrian Pushbutton 7
PB8 = Pedestrian Pushbutton 8
TW = Tracer Wire
PS = Power Supply Cables

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Main St
Cable and Conduit Schedule
Main St / 6th Ave E
Traffic Signal System - Site 4

											STATE	PROJECT NO.		SECTION NO.	SHEET NO.
										ND		UGP-NHU-1-094(202)915		150	41

SIGNAL CABLE & CONDUIT SCHEDULE											
RUN				CONDUIT		CABLE					
#	ITEM		STATION, OFFSET	SIZE (IN)	LF	Origin	Destination	# of Cables	SIZE/TYPE	Total LF	TITLE
10	Origin Destination	Pull Box 3 Pull Box 4	Sta 163+59.4, 52.9' RT Sta 163+59.4, 36.8' LT	3	90	Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3	Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4	2 2 2 2 4 2 2 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	204 204 204 204 408 204 95	NES1, NWS1 NES2, NWS2 EL47, EL61 ED83, ED25 PB3, PB4, PB5, PB6 NEV, NWV TW
11	Origin Destination	Pull Box 4 Northwest Combo Signal Std	Sta 163+59.4, 36.8' LT Sta 163+59.4, 40.9' LT	2	5	Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4	Northwest Combo Signal Std Transformer Base Northwest Combo Signal Std Transformer Base Northwest Emergency Preemption Lamp Northwest Emergency Preemption Detector Pushbutton 3 Northwest Video Detection Unit Northwest Combo Signal Std Transformer Base	1 1 1 1 1 1 1 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	16 16 63 63 19 70 10	NWS1 NWS2 EL61 ED25 PB3 NWV TW
12	Origin Destination	Pull Box 4 Northwest Pushbutton Post	Sta 163+59.4, 36.8' LT Sta 163+77.1, 45.4' LT	2	20	Pull Box 4 Pull Box 4	Pushbutton 4 Pushbutton 4	1 1	16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	34 34	PB4 TW
13	Origin Destination	Pull Box 4 Pull Box 5	Sta 163+59.4, 36.8' LT Sta 164+38.7, 41.0' LT	2	80	Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4 Pull Box 4	Pull Box 5 Pull Box 5 Pull Box 5 Pull Box 5 Pull Box 5 Pull Box 5 Pull Box 5 Pull Box 5	1 1 1 1 2 1 1 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	92 92 92 92 184 92 85	NES1 NES2 EL47 ED83 PB5, PB6 NEV TW
14	Origin Destination	Pull Box 5 Northeast Combo Signal Std	Sta 164+38.7, 41.0' LT Sta 164+38.6, 55.1' LT	2	15	Pull Box 5 Pull Box 5 Pull Box 5 Pull Box 5 Pull Box 5 Pull Box 5 Pull Box 5 Pull Box 5	Northeast Combo Signal Std Transformer Base Northeast Combo Signal Std Transformer Base Northeast Emergency Preemption Lamp Northeast Emergency Preemption Detector Northeast Video Detection Unit Northeast Combo Signal Std Transformer Base	1 1 1 1 1 1 1 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	26 26 63 63 70 20	NES1 NES2 EL47 ED83 NEV TW
15	Origin Destination	Pull Box 5 Northeast Pushbutton Post 1	Sta 164+38.7, 41.0' LT Sta 164+41.7, 47.6' LT	2	8	Pull Box 5 Pull Box 5	Pushbutton 5 Pushbutton 5	1 1	16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	22 13	PB5 TW
16	Origin Destination	Pull Box 5 Northeast Pushbutton Post 2	Sta 164+38.7, 41.0' LT Sta 164+45.8, 43.3' LT	2	8	Pull Box 5 Pull Box 5	Pushbutton 6 Pushbutton 6	1 1	16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	22 13	PB6 TW
17	Origin Destination	Pull Box 3 Pull Box 6	Sta 163+59.4, 52.9' RT Sta 164+30.3, 52.9' RT	2	71	Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3 Pull Box 3	Pull Box 6 Pull Box 6 Pull Box 6 Pull Box 6 Pull Box 6 Pull Box 6 Pull Box 6 Pull Box 6	1 1 1 1 2 1 1 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	83 83 83 83 166 83 76	SES1 SES2 EL25 ED61 PB7, PB8 SEV TW
18	Origin Destination	Pull Box 6 Southeast Pushbutton Post	Sta 164+30.3, 52.9' RT Sta 164+27.1, 45.1' RT	2	9	Pull Box 6 Pull Box 6	Pushbutton 8 Pushbutton 8	1 1	16 AWG 3 CONDUCTOR CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	23 14	PB8 TW
19	Origin Destination	Pull Box 6 Southeast Combo Signal Std	Sta 164+30.3, 52.9' RT Sta 164+39.7, 40.4' RT	2	16	Pull Box 6 Pull Box 6 Pull Box 6 Pull Box 6 Pull Box 6 Pull Box 6 Pull Box 6 Pull Box 6	Southeast Combo Signal Std Transformer Base Southeast Combo Signal Std Transformer Base Southeast Emergency Preemption Lamp Southeast Emergency Preemption Detector Pushbutton 7 Southeast Video Detection Unit Southeast Combo Signal Std Transformer Base	1 1 1 1 1 1 1 1	14 AWG 12 CONDUCTOR CABLE 14 AWG 7 CONDUCTOR CABLE 14 AWG 3 CONDUCTOR CABLE EMERGENCY VEHICLE DETECTOR CABLE 16 AWG 3 CONDUCTOR CABLE VIDEO DETECTION CABLE UNDERGROUND CONDUCTOR NO6-TYPE THW	27 27 77 77 30 84 21	SES1 SES2 EL25 ED61 PB7 SEV TW

CABLE NAMES

NWS1 = Northwest Combo Signal Std
SWS1 = Southwest Combo Signal Std
SES1 = Southeast Combo Signal Std
NES1 = Northeast Combo Signal Std
NWS2 = Northwest Combo Signal Std
SWS2 = Southwest Combo Signal Std
SES2 = Southeast Combo Signal Std
NES2 = Northeast Combo Signal Std
SWP1 = Southwest Type II Ped Std 1
SWP2 = Southwest Type II Ped Std 2
SEP1 = Southeast Type II Ped Std 1
SEP2 = Southeast Type II Ped Std 2
NWV = Northwest Video Detector Unit
NEV = Northeast Video Detector Unit
SWV = Southwest Video Detector Unit
SWV = Southeast Video Detector Unit
EL25 = Ø2+Ø5 EVP Light
EL47 = Ø4+Ø7 EVP Light
EL61 = Ø6+Ø1 EVP Light
EL83 = Ø8+Ø3 EVP Light
ED25 = Ø2+Ø5 EVP Detector
ED47 = Ø4+Ø7 EVP Detector
ED61 = Ø6+Ø1 EVP Detector
ED83 = Ø8+Ø3 EVP Detector
PB1 = Pedestrian Pushbutton 1
PB2 = Pedestrian Pushbutton 2
PB3 = Pedestrian Pushbutton 3
PB4 = Pedestrian Pushbutton 4
PB5 = Pedestrian Pushbutton 5
PB6 = Pedestrian Pushbutton 6
PB7 = Pedestrian Pushbutton 7
PB8 = Pedestrian Pushbutton 8
TW = Tracer Wire
PS = Power Supply Cables

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Main St
Cable and Conduit Schedule
Main St / 6th Ave E
Traffic Signal System - Site 4

SIGNAL STANDARD FOUNDATION SELECTION TABLE		
Description	Footing Depth "D" 24" & 30" Diameter	Footing Depth "D" 36" & 42" Diameter
Signal Standard Type II	4'	3'
Type V	4'	3'
Combination 40' Mounting Height 0' - 25' 26' - 30' 36' - 39' 40' - 45'	11', 11' 12', 12' 14', 14' 16', 16'	11', 11' 12', 12' 14', 14' 15', 15'

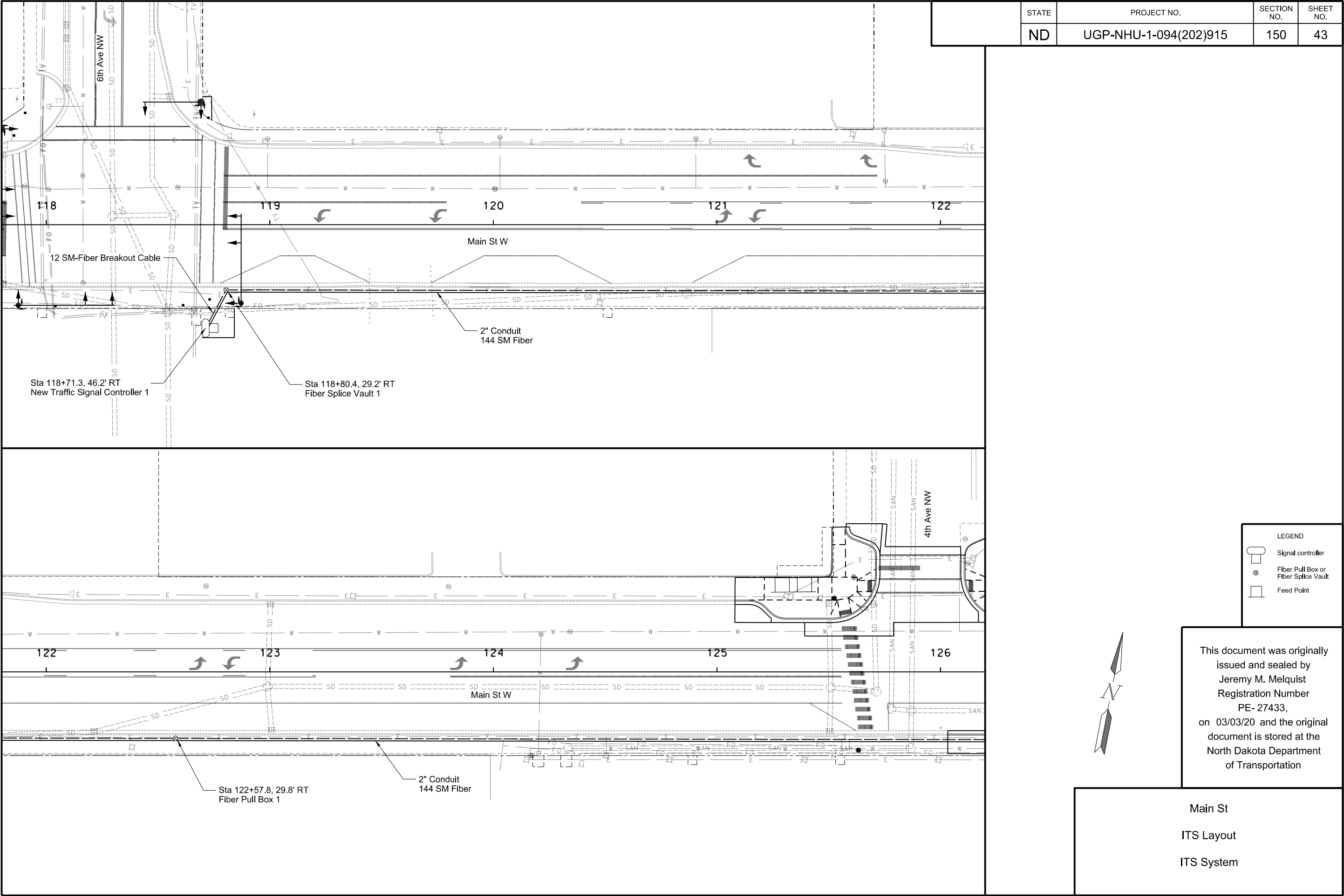
NOTES FOR SIGNAL STANDARD FOUNDATIONS:

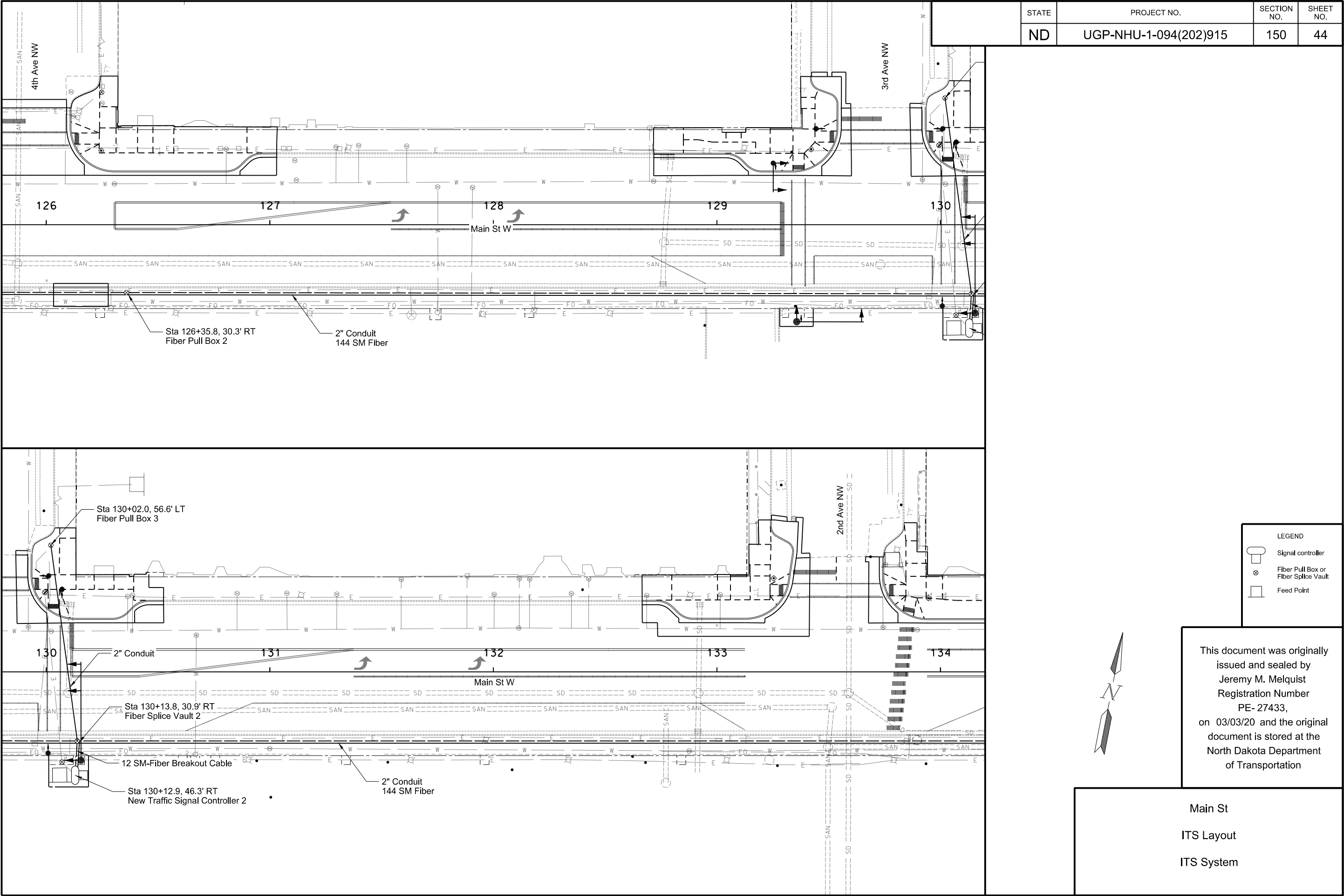
1. For Signal Standards, the foundation diamter shall be the largest of the following scenarios:

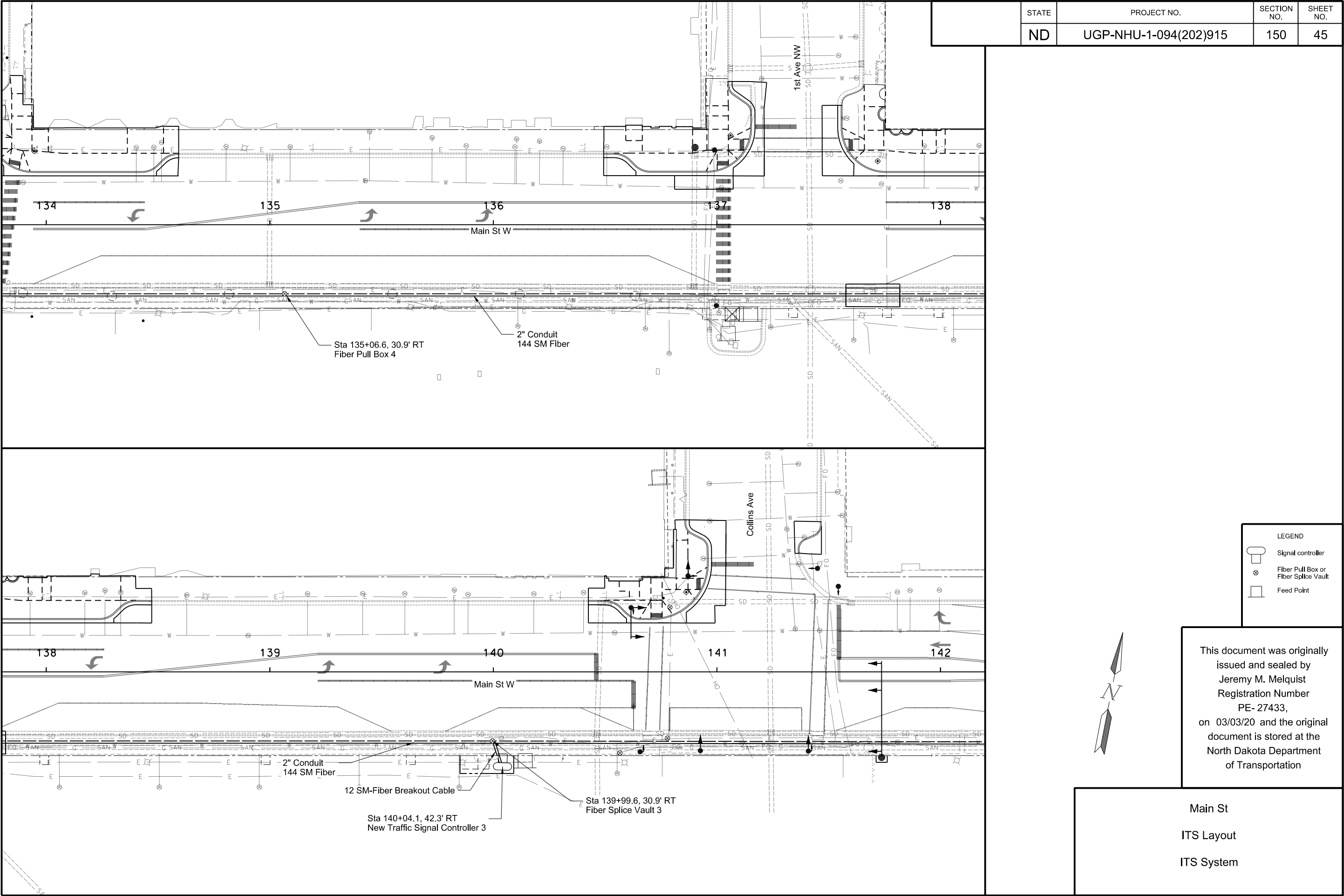
-Anchor bolt cage circle diamter plus 12"
-Base plus 6"
-24"
- Determine the foundation diameter and include the corresponding costs for the actual diameter in the unit price bid for "Traffic Signal System - Site ____"
2. Concrete used in the work shall be Class AAE-3 as specified in Section 802
3. All reinforcing steel shall be Grade 60
4. Temporary casing may be used to maintain the opening prior to placement of concrete. Remove the casing prior to curing of the concrete. If casing is used, it shall be of sufficient strength to withstand handling and installation procedures. Submit casing material proposal to the Engineer for review two weeks prior to ordering casing material. All costs associated with the temporary shall be included in the unit price bid for "Traffic Signal System - Site ____". Permanent casing of the foundation shall not be used.
5. All costs associated with the construction of the foundation shall be included in the unit price bid for "Traffic Signal System - Site ____". This includes but not limited to excavation, concrete, reinforcing steel, anchor bolts, anchor bolt cage, conduit, ground rod, and temporary casing.
6. See Standard Drawing D-770-1 for additional foundation information.
7. Light standards shall have a minimum of 4 anchor bolts. Signal standards shall have a minimum of 6 anchor bolts.

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Main St
Signal Foundations





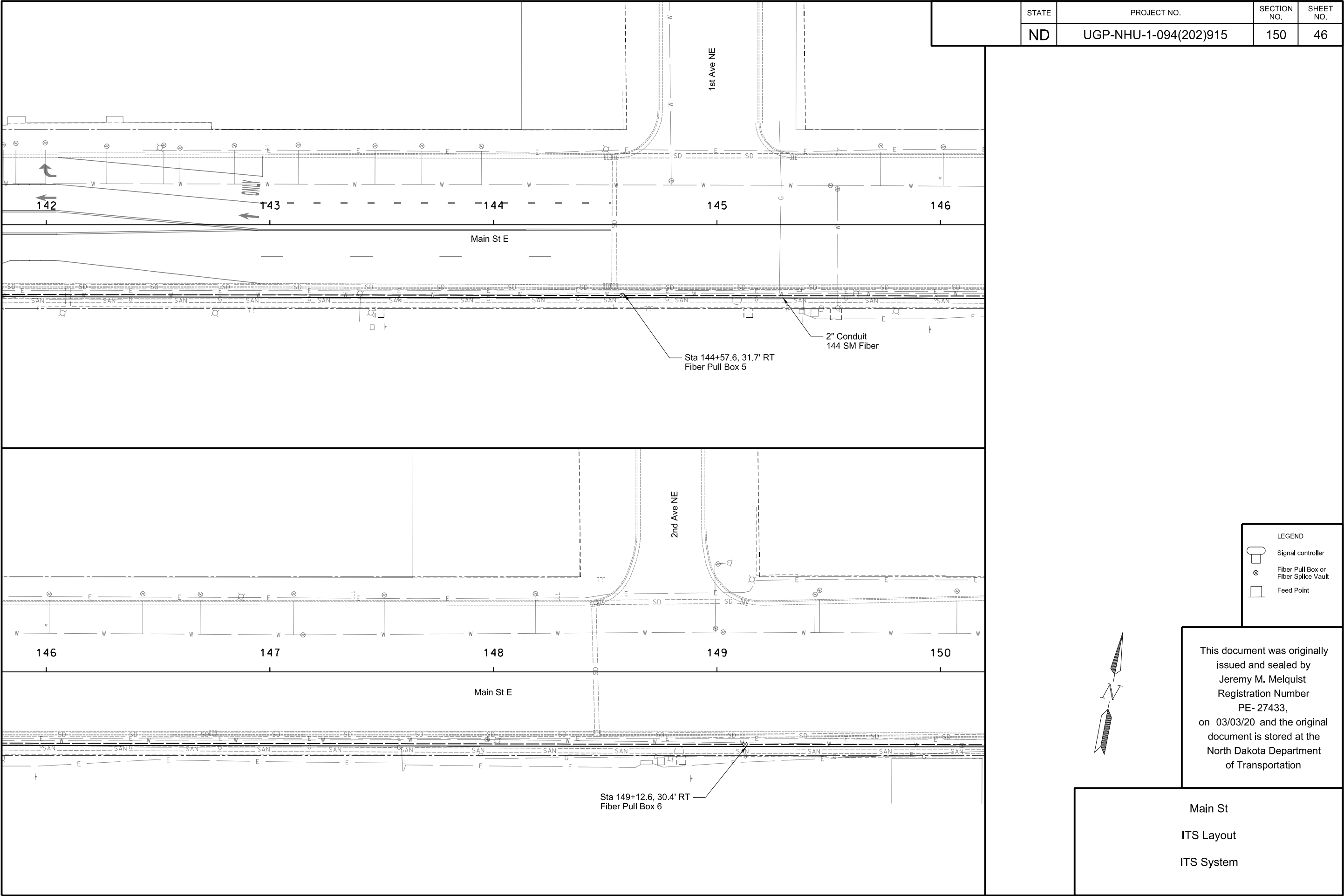


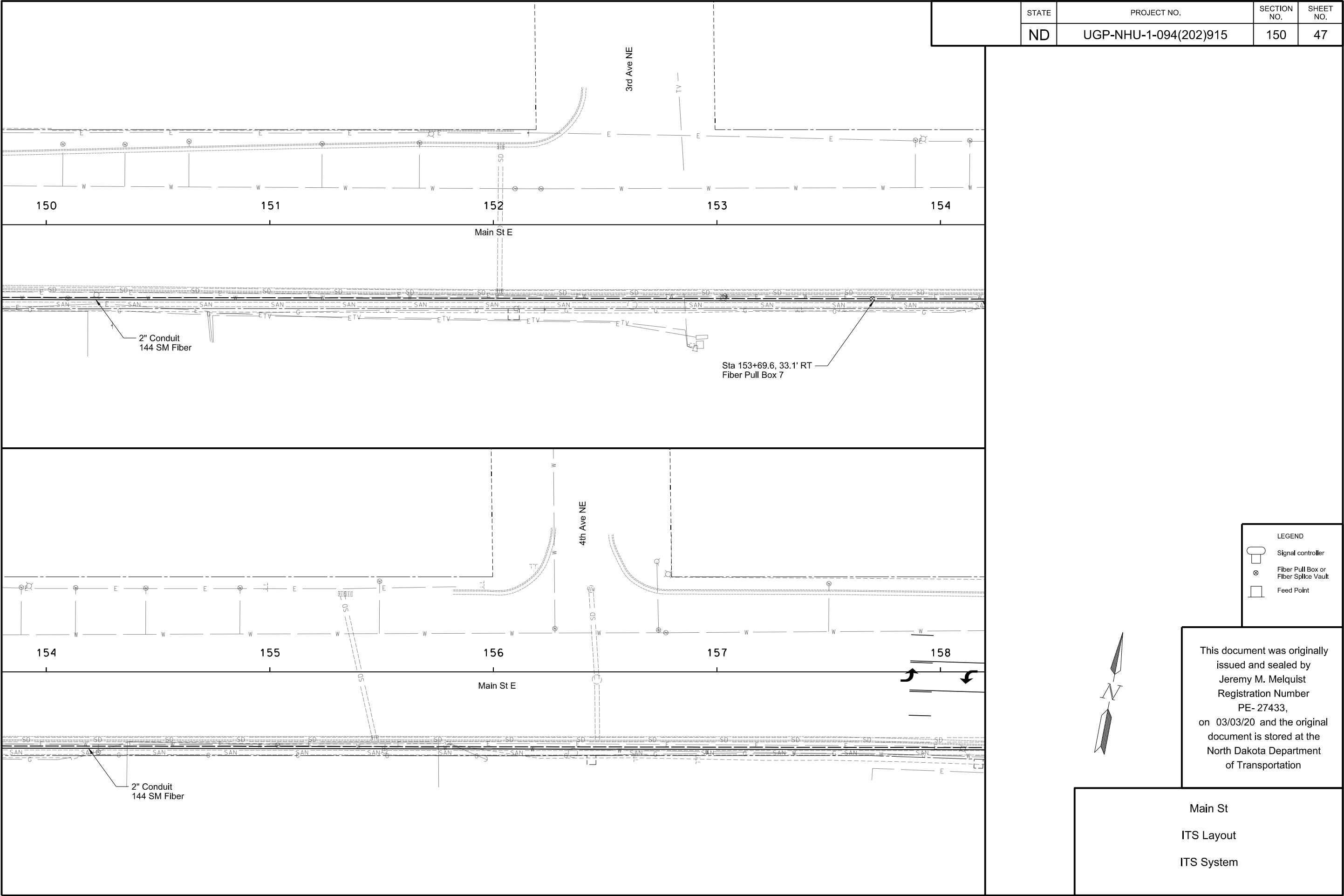
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	UGP-NHU-1-094(202)915	150	45

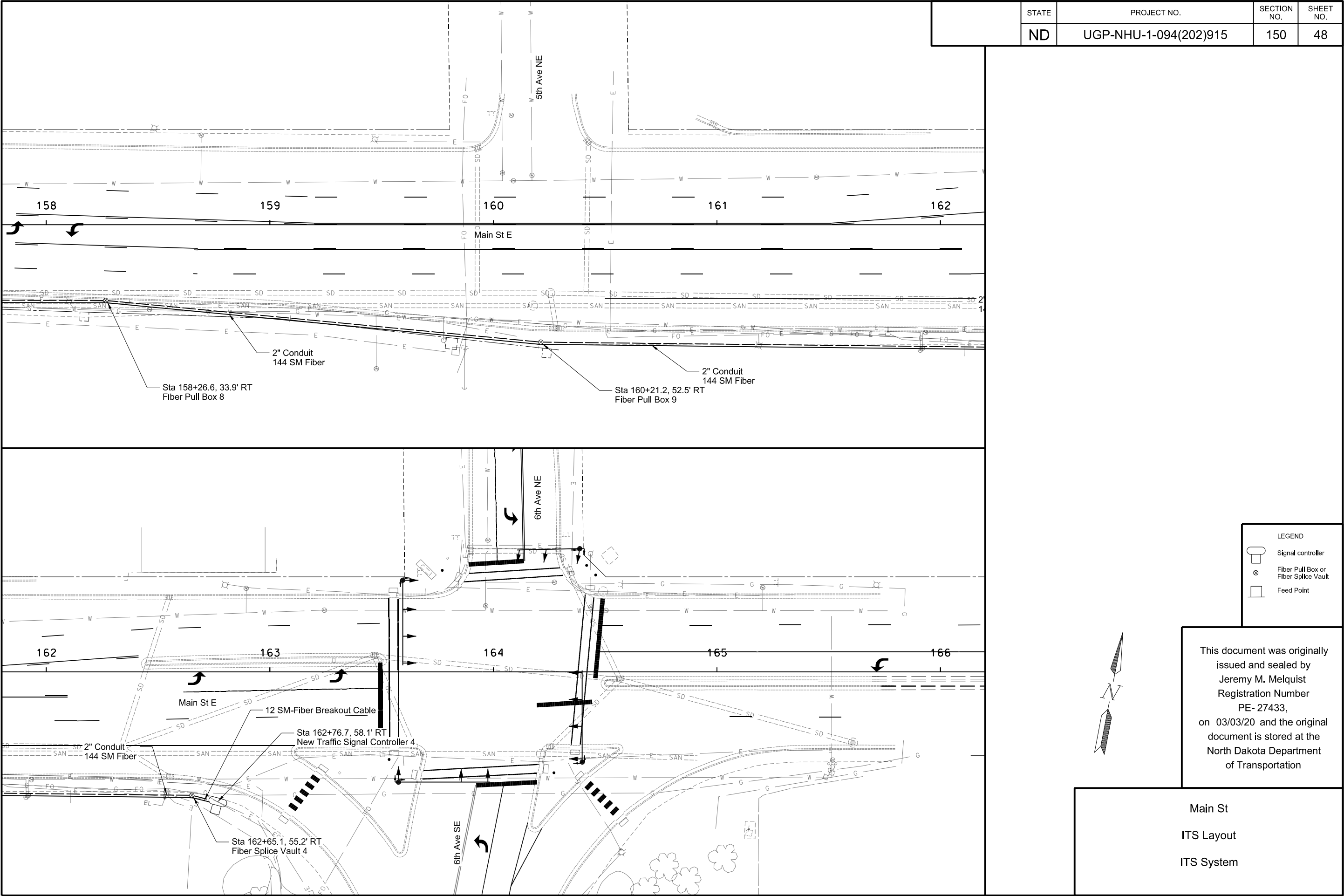
LEGEND	
	Signal controller
	Fiber Pull Box or Fiber Splice Vault
	Feed Point

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Main St
ITS Layout
ITS System







SIGNAL CABLE & CONDUIT SCHEDULE									
RUN				CONDUIT					
#		ITEM	STATION, OFFSET	SIZE (IN)	LF	# of Cables	SIZE/TYPE	Total LF	
1	<i>Origin</i> <i>Destination</i>	Controller Cabinet 1 Fiber Splice Vault 1	Sta 118+71.3, 46.2' RT Sta 118+80.4, 29.2' RT	2 HDPE	22	1 1	12-SM Fiber Tracer Wire	111 27	
2	<i>Origin</i> <i>Destination</i>	Fiber Splice Vault 1 Fiber Pull Box 1	Sta 118+80.4, 29.2' RT Sta 122+57.8, 29.8' RT	2 HDPE	382	1	144-SM Fiber Tracer Wire	542 387	
3	<i>Origin</i> <i>Destination</i>	Fiber Pull Box 1 Fiber Pull Box 2	Sta 122+57.8, 29.8' RT Sta 126+35.8, 30.3' RT	2 HDPE	382	1 1	144-SM Fiber Tracer Wire	542 387	
4	<i>Origin</i> <i>Destination</i>	Fiber Pull Box 2 Fiber Splice Vault 2	Sta 126+35.8, 30.3' RT Sta 130+13.8, 30.9' RT	2 HDPE	382	1 1	144-SM Fiber Tracer Wire	542 387	
5	<i>Origin</i> <i>Destination</i>	Fiber Splice Vault 2 Controller Cabinet 2	Sta 130+13.8, 30.9' RT Sta 130+12.9, 46.3' RT	2 HDPE	16	1 1	144-SM Fiber Tracer Wire	105 21	
6	<i>Origin</i> <i>Destination</i>	Fiber Splice Vault 2 Fiber Pull Box 3	Sta 130+13.8, 30.9' RT Sta 135+06.6, 30.9' RT	2 HDPE	497	1 1	144-SM Fiber Tracer Wire	657 502	
7	<i>Origin</i> <i>Destination</i>	Fiber Pull Box 3 Fiber Splice Vault 3	Sta 135+06.6, 30.9' RT STA 139+99.6, 30.9' RT	2 HDPE	497	1 1	144-SM Fiber Tracer Wire	657 502	
8	<i>Origin</i> <i>Destination</i>	Fiber Splice Vault 3 Controller Cabinet 3	STA 139+99.6, 30.9' RT Sta 140+04.1, 42.3' RT	2 HDPE	14	1 1	12-SM Fiber Tracer Wire	103 19	
9	<i>Origin</i> <i>Destination</i>	Fiber Splice Vault 3 Fiber Pull Box 4	STA 139+99.6, 30.9' RT Sta 144+57.6, 31.7' RT	2 HDPE	462	1 1	144-SM Fiber Tracer Wire	622 467	
10	<i>Origin</i> <i>Destination</i>	Fiber Pull Box 4 Fiber Pull Box 5	Sta 144+57.6, 31.7' RT Sta 149+12.6, 30.4' RT	2 HDPE	459	1 1	144-SM Fiber Tracer Wire	619 464	
11	<i>Origin</i> <i>Destination</i>	Fiber Pull Box 5 Fiber Pull Box 6	Sta 149+12.6, 30.4' RT Sta 153+69.6, 33.1' RT	2 HDPE	461	1 1	144-SM Fiber Tracer Wire	621 466	
12	<i>Origin</i> <i>Destination</i>	Fiber Pull Box 6 Fiber Pull Box 7	Sta 153+69.6, 33.1' RT Sta 158+26.6, 33.9' RT	2 HDPE	461	1 1	144-SM Fiber Tracer Wire	621 466	
13	<i>Origin</i> <i>Destination</i>	Fiber Pull Box 7 Fiber Pull Box 8	Sta 158+26.6, 33.9' RT Sta 160+21.2, 52.5' RT	2 HDPE	200	1 1	144-SM Fiber Tracer Wire	360 205	
14	<i>Origin</i> <i>Destination</i>	Fiber Pull Box 8 Fiber Splice Vault 4	Sta 160+21.2, 52.5' RT Sta 162+65.1, 55.2' RT	2 HDPE	247	1 1	144-SM Fiber Tracer Wire	407 252	
15	<i>Origin</i> <i>Destination</i>	Fiber Splice Vault 4 Controller Cabinet 4	Sta 162+65.1, 55.2' RT Sta 162+76.7, 58.1' RT	2 HDPE	13	1 1	12-SM Fiber Tracer Wire	102 18	

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Main St

Cable and Conduit Schedule

Main Street
Traffic Signal System

ITEM DESCRIPTION	UNIT	TRAFFIC SIGNAL SYSTEM SITE 1 - 6TH AVE NW & MAIN ST	FLASHING BEACON SITE 1 - 4TH AVE NW & MAIN ST	TRAFFIC SIGNAL SYSTEM SITE 2 - 3RD AVE NW & MAIN ST	FLASHING BEACON SITE 2 - 1ST AVE NW & MAIN ST	TRAFFIC SIGNAL SYSTEM SITE 3- COLLINS AVE & MAIN	TRAFFIC SIGNAL SYSTEM SITE 4- 6TH AVE NE & MAIN ST	IT SYSTEM	Remove Traffic Signal System - 10th Ave NW	Remove Traffic Signal System - 6th Ave NW	Remove Traffic Signal System - 3rd Ave NW	Remove Traffic Signal System - 1st Ave NW	Remove Traffic Signal System - Collins Ave	Remove Traffic Signal System - 6th Ave NE
CONCRETE FOUNDATION-TRAFFIC SIGNALS	EA	4	2	7	2	8	4	-	-	-	-	-	-	-
CONCRETE FOUNDATION-FEED POINT-TYPE B	EA	-	1	-	1	-	-	-	-	-	-	-	-	-
PULLBOX	EA	4	2	4	2	5	7	9	-	-	-	-	-	-
STRUCTURAL SPLICE BOX	EA	-	-	-	-	-	-	4	-	-	-	-	-	-
2IN DIAMETER RIGID CONDUIT	LF	306	122	223	115	340	264	4583	-	-	-	-	-	-
3IN DIAMETER RIGID CONDUIT	LF	106	-	86	-	155	314	-	-	-	-	-	-	-
UNDERGROUND CONDUCTOR NO2-TYPE RHW	LF	560	576	548	60	700	188	-	-	-	-	-	-	-
UNDERGROUND CONDUCTOR NO2-TYPE THW	LF	266	288	274	30	350	94	-	-	-	-	-	-	-
UNDERGROUND CONDUCTOR NO6-TYPE RHW	LF	48	60	-	46	-	-	-	-	-	-	-	-	-
UNDERGROUND CONDUCTOR NO6-TYPE THW	LF	505	127	364	115	439	684	-	-	-	-	-	-	-
EMERGENCY VEHICLE DETECTOR CABLE	LF	786	-	488	-	650	1276	-	-	-	-	-	-	-
NO16 AWG 3 CONDUCTOR CABLE	LF	1207	119	855	119	1064	2096	-	-	-	-	-	-	-
NO14 AWG 3 CONDUCTOR CABLE	LF	1057	-	539	-	718	990	-	-	-	-	-	-	-
NO14 AWG 5 CONDUCTOR CABLE	LF	976	116	774	116	1046	508	-	-	-	-	-	-	-
NO14 AWG 7 CONDUCTOR CABLE	LF	568	-	72	-	243	1161	-	-	-	-	-	-	-
NO14 AWG 12 CONDUCTOR CABLE	LF	595	-	361	-	678	1092	-	-	-	-	-	-	-
TYPE II SIGNAL STANDARD	EA	-	2	3	2	3	-	-	-	-	-	-	-	-
TYPE V SIGNAL STANDARD	EA	-	-	-	-	3	-	-	-	-	-	-	-	-
COMBO 13FT MA SIG & LT STD-TYPE C	EA	-	-	1	-	-	-	-	-	-	-	-	-	-
COMBO 14FT MA SIG & LIGHT STD-TYPE C	EA	-	-	-	-	1	-	-	-	-	-	-	-	-
COMBO 26FT MA SIG & LT STD-TYPE C	EA	1	-	-	-	-	-	-	-	-	-	-	-	-
COMBO 28FT MA SIG & LT STD-TYPE C	EA	-	-	-	-	-	1	-	-	-	-	-	-	-
COMBO 30FT MA SIG & LT STD-TYPE C	EA	-	-	1	-	-	-	-	-	-	-	-	-	-
COMBO 38FT MA SIG & LT STD-TYPE C	EA	-	-	-	-	-	1	-	-	-	-	-	-	-
COMBO 40FT MA SIG & LT STD-TYPE C	EA	2	-	-	-	-	-	-	-	-	-	-	-	-
COMBO 41FT MA SIG & LT STD-TYPE C	EA	-	-	-	-	-	2	-	-	-	-	-	-	-
COMBO 43FT MA SIG & LT STD-TYPE C	EA	1	-	-	-	1	-	-	-	-	-	-	-	-
COMBO 44FT MA SIG & LT STD-TYPE C	EA	-	-	1	-	-	-	-	-	-	-	-	-	-
1-WAY 3 SEC HEAD W/12IN LENS-POST MTD	EA	4	-	3	-	2	4	-	-	-	-	-	-	-
1-WAY 3 SEC HEAD W/12IN LENS-PEDESTAL MTD	EA	-	-	-	-	3	-	-	-	-	-	-	-	-
1-WAY 3 SEC HEAD W/12IN LENS-MA MTD	EA	4	-	3	-	2	6	-	-	-	-	-	-	-
1-WAY 4 SEC HEAD W/12IN LENS-MA MTD	EA	3	-	2	-	1	4	-	-	-	-	-	-	-
PEDESTRIAN COUNTDOWN SIGNAL HEAD-POST MTD	EA	8	-	3	-	2	8	-	-	-	-	-	-	-
PEDESTRIAN COUNTDOWN SIGNAL HEAD-PEDESTAL MTD	EA	-	-	3	-	4	-	-	-	-	-	-	-	-
LAW ENFORCEMENT CONFIRMATION LIGHT	EA	7	-	4	-	4	8	-	-	-	-	-	-	-
PEDESTRIAN PUSHBUTTON POST	EA	6	-	2	-	1	-	-	-	-	-	-	-	-
PEDESTRIAN PUSHBUTTON & SIGN	EA	8	2	6	2	6	8	-	-	-	-	-	-	-
VIDEO DETECTION CABLE	EA	810	-	502	-	534	1304	-	-	-	-	-	-	-
VIDEO DETECTION SYSTEM (A)	EA	1	-	1	-	1	1	-	-	-	-	-	-	-
EMERGENCY VEHICLE PRE-EMPTION UNIT (C)	EA	1	-	1	-	1	1	-	-	-	-	-	-	-
TYPE B CONTROLLER & CABINET	EA	1	-	1	-	1	1	-	-	-	-	-	-	-
RRFB & SIGN	EA	-	2	-	2	-	-	-	-	-	-	-	-	-
12-SM FIBER BREAKOUT CABLE	EA	-	-	-	-	-	-	316	-	-	-	-	-	-
144-SM FIBER OPTIC CABLE	EA	-	-	-	-	-	-	6295	-	-	-	-	-	-
12 PORT TERMINATION PANEL	EA	-	-	-	-	-	-	4	-	-	-	-	-	-
MOXA EDS-P510 ETHERNET SWITCH	EA	-	-	-	-	-	-	4	-	-	-	-	-	-
REMOVE COMBINATION SIGNAL & LIGHT STANDARDS	EA	-	-	-	-	-	-	-	2	3	2	-	3	4
REMOVE CONCRETE FOUNDATIONS	EA	-	-	-	-	-	-	-	4	4	4	-	4	6
REMOVE CONTROLLER & CABINET	EA	-	-	-	-	-	-	-	1	1	1	-	1	1
REMOVE FLASHING BEACON	EA	-	-	-	-	-	-	-	2	-	-	-	-	-
REMOVE PEDESTRIAN HEADS	EA	-	-	-	-	-	-	-	4	8	6	-	6	12
REMOVE PEDESTRIAN PUSHBUTTON	EA	-	-	-	-	-	-	-	4	-	-	-	-	12
REMOVE TRAFFIC SIGNAL STANDARD	EA	-	-	-	-	-	-	-	2	1	2	-	1	2
REMOVE VEHICULAR HEADS	EA	-	-	-	-	-	-	-	9	8	6	-	6	12

Items shown are for informational purposes, contractor shall provide all labor and equipment necessary for the signal system to be fully operational as shown in the plans.

772	2160	FLASHING BEACON SYSTEM - SITE 1	
		4th Ave NW & Main St	1 EA
772	2161	FLASHING BEACON SYSTEM - SITE 2	
		1st Ave NW & Main St	1 EA
772	9811	TRAFFIC SIGNAL SYSTEM - SITE 1	
		6th Ave NW & Main St	1 EA
772	9812	TRAFFIC SIGNAL SYSTEM - SITE 2	
		3rd Ave NW & Main St	1 EA
772	9813	TRAFFIC SIGNAL SYSTEM - SITE 3	
		Collins Ave & Main St	1 EA

772	9814	TRAFFIC SIGNAL SYSTEM - SITE 4	
		6th Ave NE & Main St	1 EA
772	3125	REMOVE TRAFFIC SIGNAL SYSTEM	
		10th Ave NW & Main St	1 EA
		6th Ave NW & Main St	1 EA
		3rd Ave NW & Main St	1 EA
		1st Ave NW & Main St	1 EA
		Collins Ave & Main St	1 EA
		6th Ave NE & Main St	1 EA
772	9200	IT SYSTEM	
		Main St	1 EA

(A) Includes cameras, video monitor, access point and all other equipment required for a fully operational video detection system.
(B) Includes cabinet, working slab, conflict monitor, load switches, flashers, bus interface units and all other equipment required for a fully operational traffic signal controller.
(C) Includes detectors, lights and all other equipment required for a fully operation preemption system.

This document was originally issued and sealed by
Jeremy M. Melquist
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of Transportation

Main St

Quantities