

DESIGN DATA			
Traffic	Average Daily		
Current 2012	Pass: 25,919	Trucks: 533	Total: 26,452
Forecast 2032	Pass: 31,622	Trucks: 660	Total: 32,282
Clear Zone Distance: 14'		Design Speed: 40	
Minimum Sight Dist. for Stopping:		Bridges:	
Limited Access Control			
Pavement Design Life (years)			
Design Accumulated One-way Rigid ESALs: NA			

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ND	S-NHU-6-081(083)941	20102	1	1

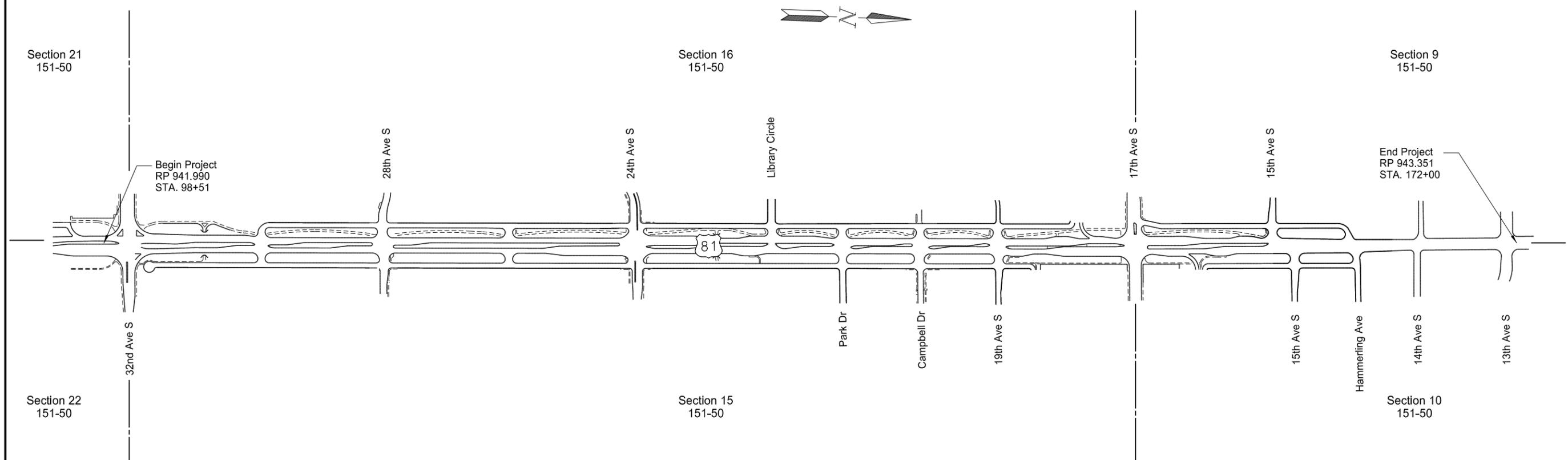
**JOB # 21**  
**NORTH DAKOTA**  
**DEPARTMENT OF TRANSPORTATION**

S-NHU-6-081(083)941

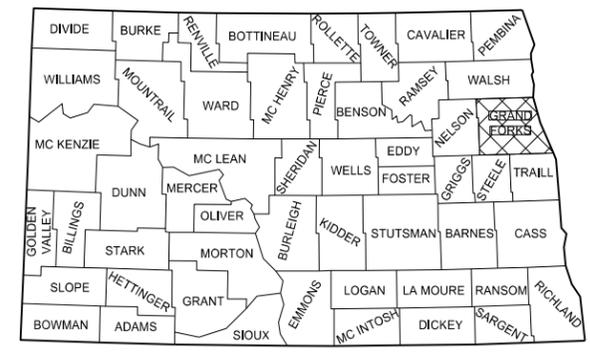
FHWA Limited Involvement  
Grand Forks County  
Grand Forks - Business US 81 (Washington Street)  
32nd Ave S to 13th Ave S  
CPR, Stitching, Grinding, Turn Lanes, ADA Curb Ramps, ATR,  
Traffic Signals, Fiber Optic, Video Detection, & Incidentals

**GOVERNING SPECIFICATIONS:**  
Standard Specifications adopted by the North Dakota  
Department of Transportation October 2008; Standard Drawings  
currently in effect; and other Contract Provisions submitted herein.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
S-NHU-6-081(083)941	1.361	1.361



DESIGNERS
Jesse Kadrmas /s/
Chad Eklund /s/
Blaine Johanneson /s/



STATE COUNTY MAP

APPROVED DATE 12/17/13  
for Roger Weigel /s/  
OFFICE OF PROJECT DEVELOPMENT  
ND DEPARTMENT OF TRANSPORTATION

I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.  
APPROVED DATE 12/13/13  
Christopher K. Beggs /s/  
NDDOT GRAND FORKS DISTRICT

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LIST OF STANDARD DRAWINGS

<u>Standard No.</u>	<u>Description</u>
D-20-1, 2, 3	NDDOT Abbreviations
D-20-10	NDDOT Utility Company Abbreviations
D-20-20, 21	Linestyles
D-20-30, 31, 32	Symbols
D-550-2	Longitudinal Joint Details
D-550-3	Transverse Contraction Joint Details
D-550-4	Transverse Expansion Joint Detail
D-704-7	Breakaway Systems for Construction Zone Signs Perforated Tube
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D-704-9, 10, 11	Construction Sign Detail
D-704-13	Barricade Details and Channelizing Device Details
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D-704-15	Road Closure Layouts
D-704-22	Construction Truck and Temporary Detour Layouts
D-704-23	Short Term Urban Detour and Lane Closure on a Divided Highway Layouts
D-704-27	Traffic Control Plan For Moving Operations
D-704-32	Sign Layout For One Lane Closure Divided Highway Moving Operation
D-704-34A	Traffic Control System Lane Shift Between a Lane Closure and an Opposite Lane Closure
D-704-50	Portable Sign Support Assembly
D-722-1	Inlet – Type I
D-722-1A	Inlet – Catch Basin
D-722-2	Inlet – Type 2
D-722-3	Inlet – Mountable Curb
D-722-5A	Floating Manhole Casting
D-748-1	Curb & Gutter and Valley Gutter
D-750-2	Sidewalk and Curb Ramps
D-750-3	Curb Ramp Detail
D-754-9	Letter and Arrow Details For Variable Length Signs
D-754-23	Perforated Tube Assembly Details
D-754-24, 25	Mounting Details Perforated Tube
D-754-26, 29	Sign Punching, Stringer and Support Location Details Regulatory, Warning and Guide Signs
D-754-80	Light Standard, Signal Standard, and Span Wire Mounted Sign Assembly Detail
D-762-1	Pavement Marking Message Details

LIST OF SPECIAL PROVISIONS (SP)

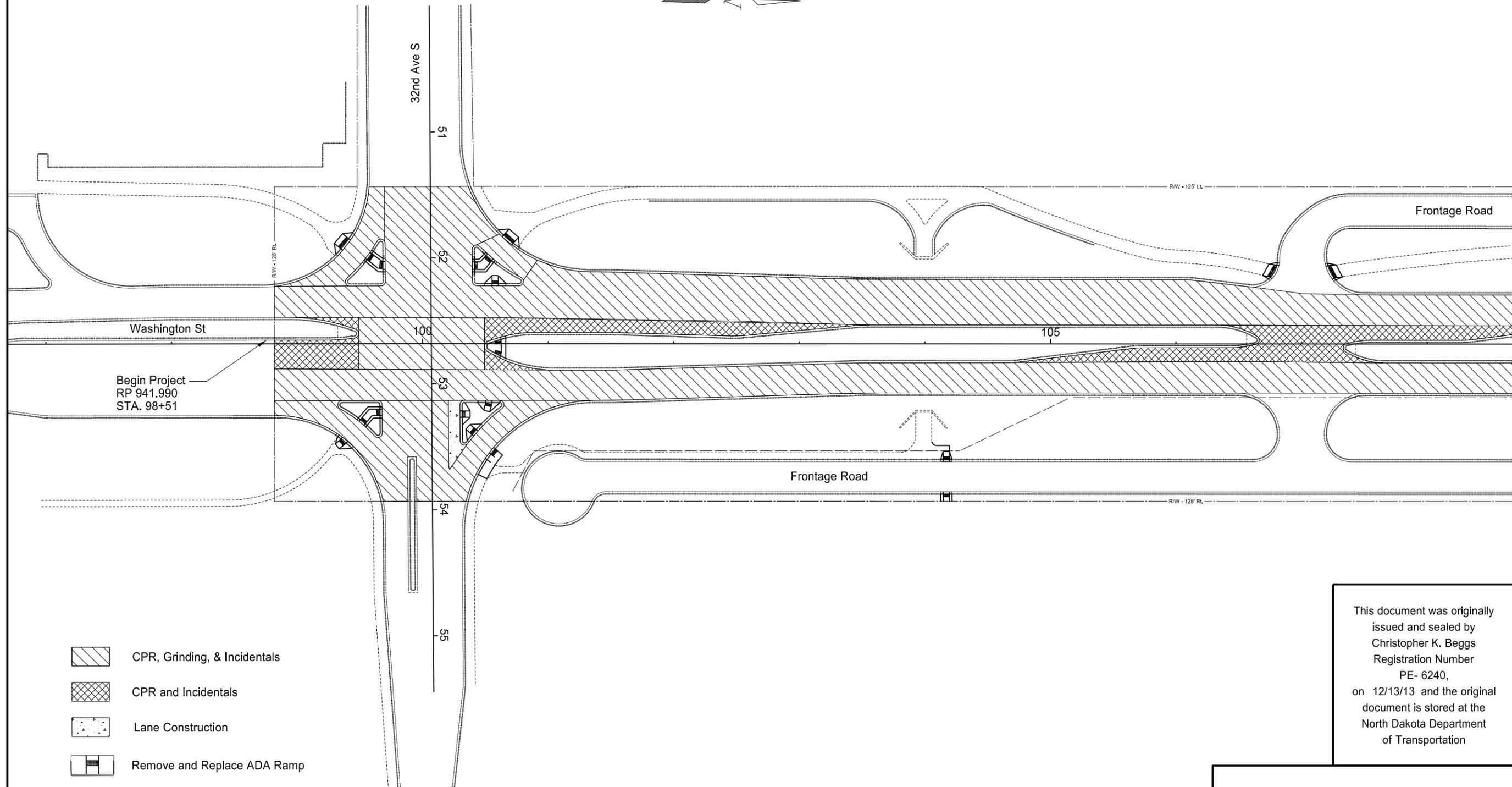
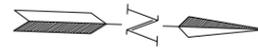
<u>SP #</u>	<u>Description</u>
SP 1101(08)	Split Sampling and Testing Requirements for Aggregate Base
SP 1287(08)	PCC Pavement - Uncontrolled Cracking
SP 1322(08)	Concrete Mix Design
SP 1337(08)	Interconnect Cable (Composite)

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LIST OF STANDARD DRAWINGS (Cont.)

<u>Standard No.</u>	<u>Description</u>
D-762-4	Pavement Marking
D-770-1	Concrete Foundations (Traffic Signals & Highway Lighting)
D-770-3	Pull Box Details
D-770-4	Lighting and Signal Details
D-770-5	Light Standard Details
D-772-1	Feed Point - Traffic Signals
D-772-2	Traffic Signal Standards
D-772-3	Traffic Signal Standards (Mast Arm Type)
D-772-4	Traffic Signal Head Mounting
D-772-5	Loop Detectors Details (Saw Slot)

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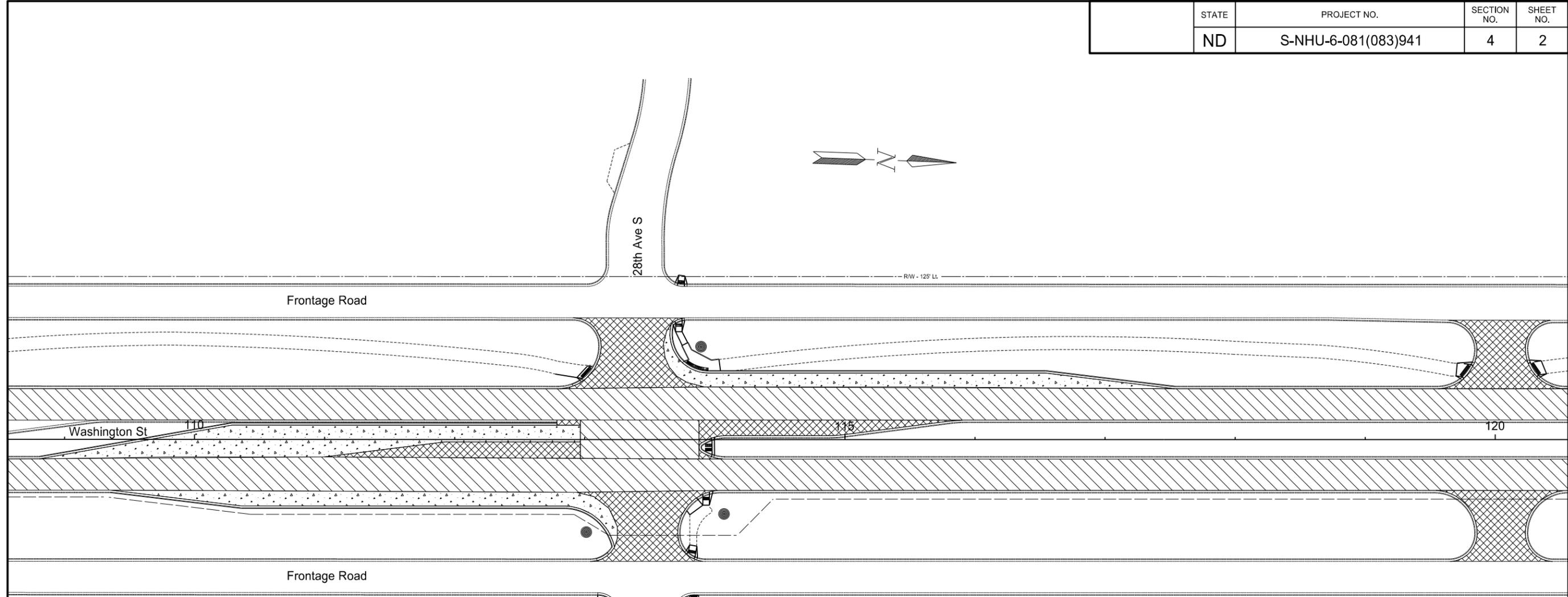
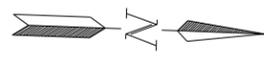


-  CPR, Grinding, & Incidentals
-  CPR and Incidentals
-  Lane Construction
-  Remove and Replace ADA Ramp
-  Fiber Optic - Interconnect

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Scope of Work

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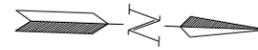


-  CPR, Grinding, & Incidentals
-  CPR and Incidentals
-  Turn Lane Construction
-  Remove and Replace ADA Ramp
-  Remove and Replace Traffic Signals
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24th Ave S

Frontage Road

R/W - 125' LL

Washington St

Frontage Road

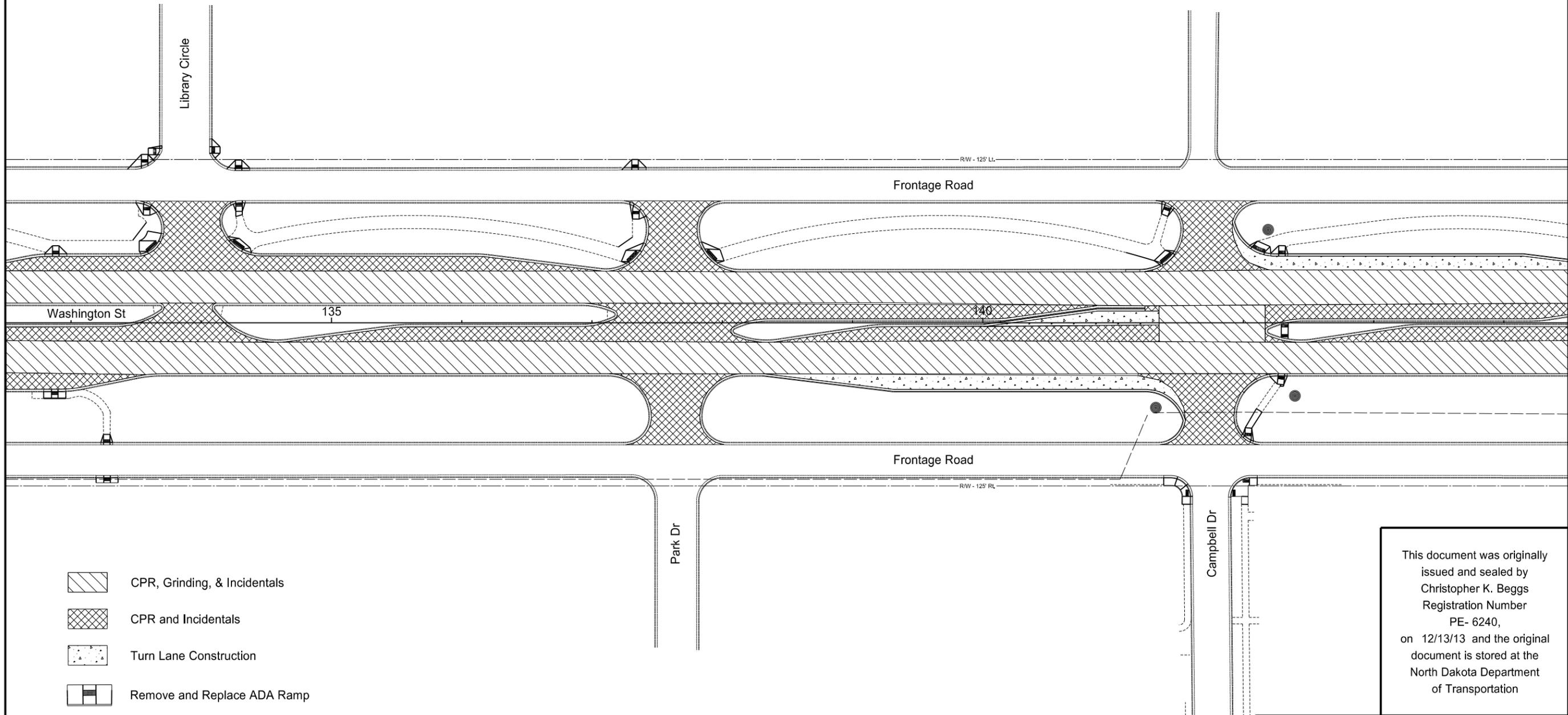
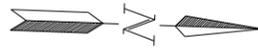
R/W - 125' RL

-  CPR, Grinding, & Incidentals
-  CPR, Grinding, ATR, & Incidentals
-  CPR and Incidentals
-  Turn Lane Construction
-  Remove and Replace ADA Ramp
-  Remove and Replace Traffic Signal
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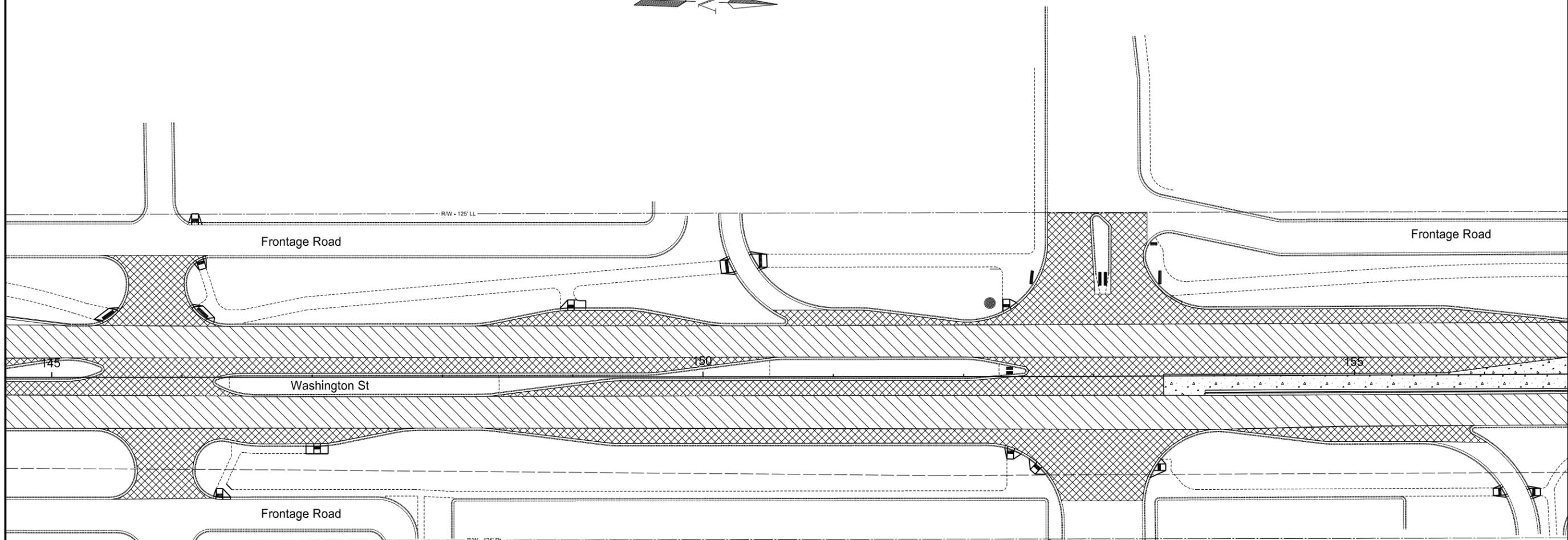
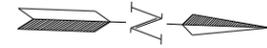


-  CPR, Grinding, & Incidentals
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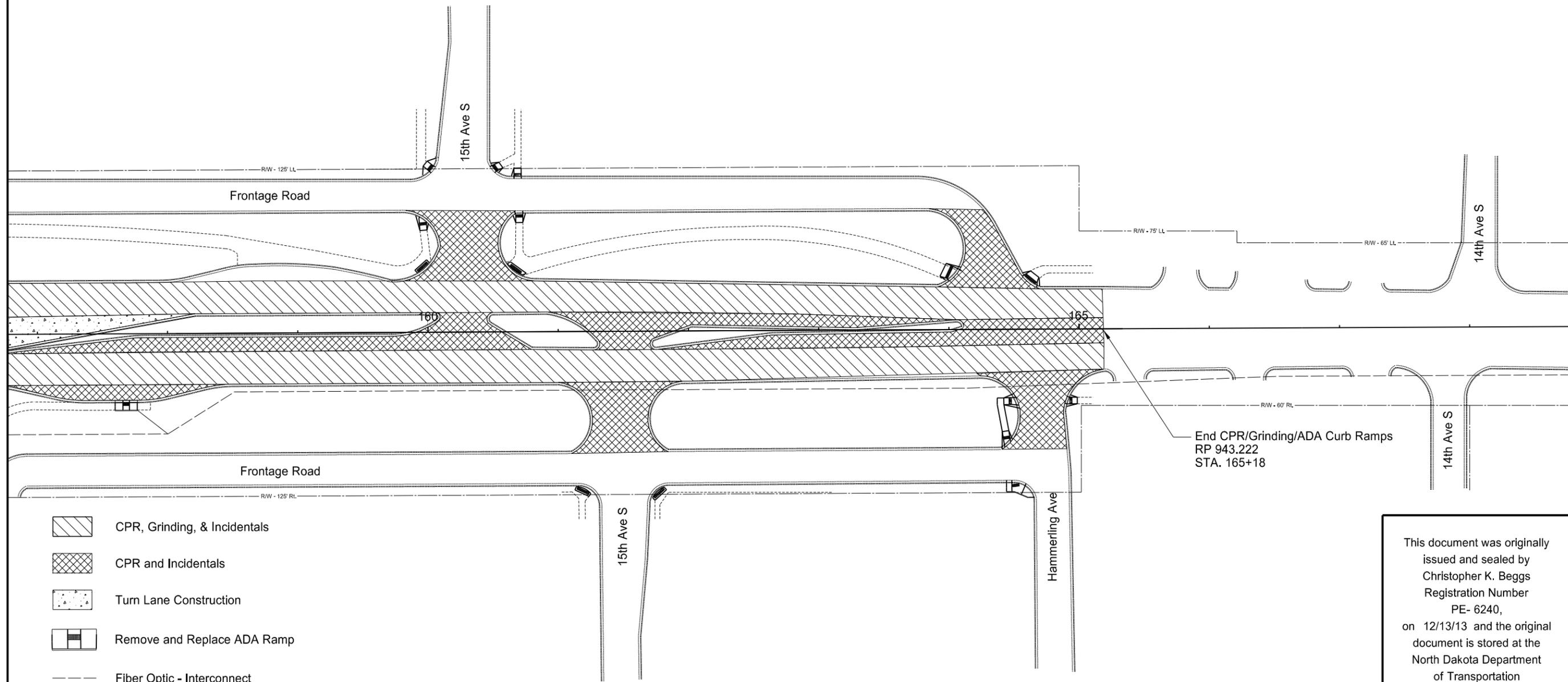
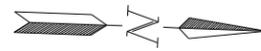


-  CPR, Grinding, & Incidentals
-  CPR and Incidentals
-  Turn Lane Construction
-  Remove and Replace ADA Ramp
-  Remove and Replace Traffic Signal
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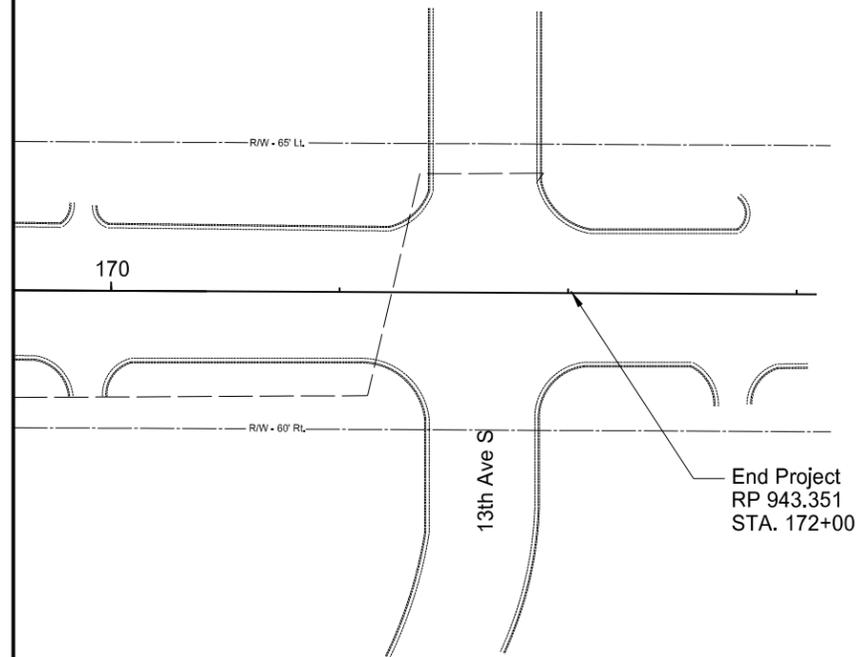
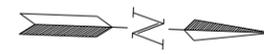
-  CPR, Grinding, & Incidentals
-  CPR and Incidentals
-  Turn Lane Construction
-  Remove and Replace ADA Ramp
-  Fiber Optic - Interconnect

End CPR/Grinding/ADA Curb Ramps  
 RP 943.222  
 STA. 165+18

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----- Fiber Optic - Interconnect

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Scope of Work

## NOTES

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### GENERAL NOTES

#### 100-P01 WEEKLY PLANNING / REPORTING MEETING:

##### A. Purpose of Weekly Meeting

1. The Contractor shall organize the weekly meeting to coordinate the efforts between subcontractors, utilities, local authorities, and others.

##### B. Contractor's Project Manager / Superintendent: Planning and Reporting.

1. The Contractor shall be responsible for sending a knowledgeable representative to conduct a weekly Planning / Reporting meeting. It will be the Contractor's responsibility to prepare minutes for each meeting and to make the appropriate distribution of the minutes. The minutes shall be approved by the Engineer prior to distribution
2. The Contractor shall provide a written schedule of the next week's work and tentative schedule of the following week.
3. Reporting/ Planning meeting shall include discussion of problems encountered during the current week; information of interest to local authorities, subcontractors, utilities, and next week's prospective schedule.
4. The Contractor shall organize the weekly meeting contacting interested agencies. The agencies include, but are not limited to, the following:
  - a. North Dakota Department of Transportation
  - b. City Engineer's representative
  - c. Police Department
  - d. Grand Forks Cities Area Transit
  - e. Fire Department
  - f. Ambulance Service
  - g. Telephone Co.
  - h. Power Co.
  - i. Cable T.V.
  - j. Gas Co.
  - k. Subcontractors
  - l. Chamber of Commerce
  - m. FHWA
  - n. Businesses
  - o. Local Government Agencies

100-P02 PUBLIC NOTIFICATION: The Contractor shall hand deliver written notices to each property owner and Business owner that surrounds the perimeter of the project limits at least 7 days in advance of work. The notice shall include proposed start/end date of construction, what the construction activities will consist of (Concrete Pavement Repair, Grinding, Traffic Signal Upgrades, Turn Lanes, etc.), and general schedule of activities for the project from start to end. Prior to hand delivering notices, Contractor shall submit notice to Project Engineer for approval.

100-P03 WORK SCHEDULE: In addition to North Dakota Supplemental Spec. 108.01B, a detailed schedule shall be approved prior to beginning work, between the Engineer, Contractor, Subcontractors, and utility companies, in order to minimize interference with traffic operations.

100-P04 NIGHT WORK: In order to minimize interference with traffic operations, Concrete Pavement Repair, Grinding, and Joint Sealing work through the intersections of 32<sup>nd</sup> Ave S, 28<sup>th</sup> Ave S, 24<sup>th</sup> Ave S, and 17<sup>th</sup> Ave S shall begin no earlier than 9:00 PM and must cease prior to 6:00 AM. A noise variance from the Grand Forks Health Department must be granted for work between the hours of 10:00 PM and 6:30 AM.

The Contractor may also perform various work items at night within the project limits in order to help minimize interference with traffic operations. The various work items may include the following: Concrete Pavement Repair, Grinding, and Joint Sealing. If the Contractor elects to work at night, work will not be allowed during daytime hours, unless approved by the Project Engineer. The Contractor shall define a schedule for a two week or longer time frame and shall not alternate from a night to day schedule on a reoccurring basis.

100-P05 NOISE RESTRICTIONS: The Contractor shall be required to comply with any City of Grand Forks noise ordinances, except where variance is specifically granted by the Grand Forks Health Department. The Contractor will contact the Grand Forks Health Department to determine the amount of notice they will need to consider the variance request. Should work need to be done outside this variance, the contractor shall make a written request 7 days in advance to the engineer stating the nature of the work, the additional hours required and the number of days needed to complete the work. This request must be approved by the Grand Forks Health Department prior to beginning the work.

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- 100-P06 EMERGENCY PERSONNEL: The Contractor shall provide the City of Grand Forks and the Engineer with the name, address, and telephone number of personnel who have access to equipment and are authorized to make emergency repairs to the Contractor's work. Personnel shall have authorization to maintain barricades, move excavated materials, and correct other problems during weekends and off- work hours, so access can be maintained for emergency equipment. Contractor personnel shall have ability to make decisions and commit funds to correct work in an emergency situation.
- 100-P07 PROTECTION OF EXISTING FACILITIES: The Contractor shall exercise care in construction operations to ensure that trees, shrubs, grasses, fences, sod, signs, underground sprinklers, and other site improvements located in construction easements and outside construction limits are not disturbed. The construction limits may include the area required to match existing grades at driveway locations and minor grading behind the curb and gutter. Any damage caused by the Contractor shall be repaired by the Contractor at the Contractor's expense.
- 100-P08 PAVEMENT PROTECTION: The Contractor shall exercise care in his construction operations to ensure that no damage is done to the existing facilities that are to remain in place. All cost to repair any damage shall be at the Contractor's expense.
- 100-P09 SHARED USE PATH AND SIDEWALK CLOSURES: Closures of the shared use paths and sidewalks will be limited to no more than one week for each crosswalk location.
- 105-200 UTILITY COORDINATION: The Contractor shall arrange a Post Bid Utility Coordination Meeting with affected Utility Companies, NDDOT District Office, and the Project Engineer. This meeting shall be in addition to the preconstruction meeting. The Post Bid Utility Coordination Meeting shall be held near the project area or at the NDDOT Grand Forks District office and shall be held no later than two weeks after the Department and Contractor have executed the contract, as approved by the Engineer. The Contractor shall provide an agenda for the meeting, and be prepared to discuss the items on it. Items to discuss shall include, but not limited to; plan for constructing the project, work schedule, utility adjustment/relocates needed prior to project start, utility adjustments/relocates that can be done concurrent with project, utility locates and site access. The Contractor shall publish meeting minutes and distribute the minutes to all attendees and NDDOT Utilities Engineer one week after meeting.
- 105-P01 PAVEMENT SWEEPING: The Contractor shall sweep mainline pavement as directed by the Engineer before opening to traffic and for final acceptance. For this sweeping, the Contractor shall furnish and utilize a vacuum type sweeper to control the dust. All costs associated with this work shall be included in the price bid of other items.

- 202-P01 SAW CONCRETE: Where the new pavement will abut existing pavement, a full depth vertical saw cut will be made along the entire length of the joint. The material shall be removed without disturbing the material that is designated to remain. The sawed edge shall be free of frays and spalls, the new pavement shall be placed so as to match the existing pavement and so as to provide a satisfactory surface profile. Any intermediate saw cuts performed to aid in the removal of pavements shall not be paid for separately. The sawing of the concrete pavement shall be paid for as "Saw Concrete".
- 203-P01 REMOVE & SALVAGE TOPSOIL: Topsoil shall be removed to its full depth not to exceed 6 inches. The amount required to backfill behind curb & gutter at all newly constructed turn lanes shall be stockpiled at a site located by the Contractor. The remaining salvaged topsoil not used on the project shall become the property of the Contractor and disposed/hailed to a location approved by the Project Engineer. All labor, equipment, and materials required to strip, stockpile, spread, remove, and dispose of or supply topsoil shall be included in the price bid for "Remove & Salvage Topsoil".
- 203-P02 COMMON EXCAVATION – WASTE: In accordance with Section 203.02D of the North Dakota Standard Specifications, the material excavated for new lane construction shall become property of the contractor and shall be disposed of outside the highway right of way at a location approved by the Project Engineer. All labor, equipment, and materials required to perform this work shall be included in the unit price bid for "Common Excavation - Waste."
- 203-P03 EXISTING AGGREGATE: The existing aggregate base removed from locations where new lane construction is not required to be salvaged and shall be paid for as "Common Excavation – Waste".
- 550-P01 FINAL SURFACE FINISH: Standard Spec. 550.04 J.6 only applies to areas that will not receive PCC Pavement Grinding.
- 570-P01 CONCRETE PAVEMENT REPAIR: An additional 20% has been added to the quantities for "Saw Concrete", "Doweled Contraction Joint Assembly", "Dowel Bars", "8IN Concrete Pavement Repair – Full Depth – Doweled", "Random PCC Crack Cleaning and Sealing", "Spall Repair – Partial Depth", and "Epoxy Coated Deformed Bars" to be used as directed by the Engineer.

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570-P02 TRANSVERSE AND LONGITUDINAL JOINT SEALING: All costs for labor, materials, and equipment to form, saw, clean, and seal smooth doweled transverse and longitudinal joints within the repair areas shall be included in the unit price bid for "8IN Concrete Pavement Repair – Full Depth – Doweled" and "Spall Repair – Partial Depth".

Any existing transverse and longitudinal joints that are impacted by the pavement grinding operation shall be widened, cleaned, and resealed. All costs for labor, materials, and equipment to form, saw, clean, and seal these described joints shall be included in the unit price bid for "PCC Pavement Grinding".

570-P03 PCC PAVEMENT GRINDING: All slurry or residue resulting from the pavement grinding operation shall be contained, shall become the property of the Contractor and shall be disposed of properly. This slurry or residue shall not be placed along the ditch inslope, along the curb and gutter, or in the storm sewer. The Contractor shall completely grind up to and protect the metal of all castings, valve boxes, monument boxes, and face of curb.

570-P04 GRINDING TRANSITIONS: Grinding shall be full width of mainline pavement as per section 570.04 E.2.a of the North Dakota Standard Specification. A transition grinding pass may be required beginning at the mainline/gutter joint into the gutterline to maintain proper cross slope and positive drainage.

704-P01 TRAFFIC CONTROL SUPERVISOR: Section 704.03 U of the North Dakota Standard Specification shall be used on this project. The Contractor shall designate one person as the Traffic Control Supervisor and that person shall be on the project at all times when traffic control is being used on the project. All costs associated with providing a traffic control supervisor shall be included in the unit price bid for traffic control items.

704-P02 TRAFFIC CONTROL: Traffic control shall be in accordance with the layouts in Section 100 of these plans. The layouts for construction signing for various lane closures show the required devices for each phase.

The concrete pavement repairs must be completed for the entire length of one lane before starting any work in the adjacent lane.

Type 1 Barricades shall be placed in front of each open area or as directed by the engineer. The barricades shall not encroach onto the traffic lane. The quantities provide for 40 Type 1 barricades.

A lane closure shall not be set up without active work, including cure time, taking place in the closure. The Engineer will determine if a lane closure is warranted.

Consecutive left turn lanes at signalized intersections cannot be closed at the same time.

704-P03 VIDEO DETECTION: Where vehicle detection is currently achieved using micro-loop probes, and/or loops, the video camera vehicle detection system shall be installed in all intersections as shown on the plans and shall be operational prior to any concrete pavement repair or grinding in areas that will affect the existing detection system. If the Contractor's order of operations is restricted due to the scheduling of the new signalized light pole systems, the Contractor may have to install temporary video detection equipment on existing signals. The new signals are planned for the intersections of 17<sup>th</sup> Ave S, Campbell Dr, 24<sup>th</sup> Ave S, and 28<sup>th</sup> Ave S. All costs associated with this plan note shall be included in the unit price bid for "Video Detection System".

704-P04 TRAFFIC CONTROL PHASING:  
Phase 1A: Traffic control consists of closing inside lanes on Washington Street from 32<sup>nd</sup> Ave S to Hammerling Ave. Phase 1A traffic control layout is to be used for concrete pavement repair and grinding operations.

Phase 1B: Traffic control consists of closing outside lanes on Washington Street from 32<sup>nd</sup> Ave S to Hammerling Ave. Phase 1B traffic control layout is to be used for concrete pavement repair and grinding operations.

Phase 1C: Traffic control consists of closing inside lanes and median at the major intersections of 17<sup>th</sup> Ave S, 24<sup>th</sup> Ave S, Campbell Dr, 28<sup>th</sup> Ave S, and 32<sup>nd</sup> Ave S. Phase 1C traffic control layout is to be used for concrete pavement repair and grinding operations. Phase 1C will be allowed to be setup no earlier than 9:00 PM and removed no later than 7:00 AM the following morning. Contractor shall be responsible for allowing and maintaining access through the intersection while maintaining the closure around the repaired areas during cure time. Consecutive signalized intersections cannot utilize Phase 1C at the same time. Phase 1C shall be used in conjunction with Phase 1A.

Phase 1D: Traffic control consists of closing outside lanes at the major intersections of 17<sup>th</sup> Ave S, 24<sup>th</sup> Ave S, Campbell Dr, 28<sup>th</sup> Ave S, and 32<sup>nd</sup> Ave S. Phase 1D traffic control layout is to be used for concrete pavement repair and grinding operations. Phase 1D will be allowed to be setup no earlier than 9:00 PM and removed no later than 7:00 AM the following morning. Contractor shall be responsible for allowing and maintaining access through the intersection while maintaining the closure around the repaired areas during cure time. Consecutive signalized intersections cannot utilize Phase 1C at the same time. Phase 1D shall be used in conjunction with Phase 1B.

Phase 2A: Traffic control consists of closing designated lanes to allow for turn lane construction at the following locations: Washington St Southbound left turn lane at 17<sup>th</sup> Ave S, Washington St Northbound left turn lane at Campbell Dr, Washington St Northbound left turn lane at 24<sup>th</sup> Ave S, and Washington St Northbound / Southbound right turn lanes at 28<sup>th</sup> Ave S.

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Phase 2B: Traffic control consist of closing designated lanes to allow for turn lane construction at the following locations: Washington St Northbound / Southbound right turn lanes at Campbell Dr and Washington St Northbound left turn lane at 28<sup>th</sup> Ave S.

704-P05 MAINTENANCE & PROTECTION OF TRAFFIC FOR CONCRETE PAVEMENT REPAIRS: The layouts for construction signing for various lane closures show the required devices for each situation. In full depth removal areas vertical panels shall be spaced at 10 feet on centerline of the roadway until the concrete has been replaced. A minimum of two (2) stackable vertical panels shall be used at each full depth removal area.

704-P06 PORTABLE CHANGEABLE MESSAGE SIGN: Portable Changeable Message Signs (PCMS) shall be staged 2 weeks prior to the placement of the traffic control devices. PCMS will be used to display information prior to and throughout the project duration. The engineer will determine the locations for PCMS and messages to be displayed. The contractor shall be trained in the operation and shall have the message displayed on both signs within one hour of the engineer's request. The PCMS shall conform to the requirements of the MUTCD, Part 6 and specifications. Upon completion of the project, the Contractor shall retain ownership of the PCMS.

704-P07 SHARED USE PATH & SIDEWALK CLOSURES: Quantities have been included for signing for closures that will be required at ADA curb ramp construction locations. Layouts for the closures have not been included in the plans. Layouts for the closures shall be based on Section 6F.14 of the MUTCD and will be required during ADA/sidewalk construction.

704-P08 STACKABLE VERTICAL PANEL: The stackable vertical panel made of hollow low density polyethylene orange plastic panel which is held in an upright position by a molded rubber base shall be provided. The panel shall be a minimum 43 inches high with a minimum bottom dimension 15 inches x 9 inches. The panel shall be held down with a molded rubber base. The minimum weight of the panel shall be 4 pounds. The minimum weight of the molded rubber base shall be 30 pounds. The reflective sheeting shall have a minimum width of 8 inches and 36 inches long. The reflective sheeting shall be as specified for vertical panel and shall have 6" wide stripes sloping downward at an angle of 45 degrees in the direction vehicular traffic is to pass. The reflective sheeting shall be on both sides of the Stackable Vertical Panels. The Stackable Vertical Panel shall meet the requirements of NCHRP Report 350 as a Category II Traffic Control Device. The item "Stackable Vertical Panel" shall be measured by the number of each installed. The quantities measured will be paid for at the contract price and be shall be full compensation for all labor, equipment, materials, relocation and removal, necessary to complete the installation.

708-P01 SEEDING: Seeding shall cover all disturbed areas. Seeding shall be Type B, Class V as follows:

Grass Species	Variety	Lbs PLS per Acre
Western Blue Grass	Park	100
Perennial Rye Grass	----	40
Six-Week Fescue or Dural-hard Fescue	----	60
Annual Rye Grass	----	50

The hydro mulch material shall be as specified in the NDDOT specification 708.02 B.3.a. In urban areas, the hydro mulch shall be applied after the seed is drilled into the topsoil. Fertilizer shall be a mixture of 5-10-5 applied at a rate of 100 pounds per acre.

The seed shall be watered for three weeks minimum after placement in order to provide sufficient moisture for growth as determined by the engineer. Run-off and puddling shall be prevented; water trucks shall not be driven over turf areas.

Mowing shall be done as needed to maintain lawn areas at a normal height of 3 inches until final acceptance, except not more than 1/3 of the grass leaf shall be removed by the initial cutting. Clippings shall be removed when the amount of cut turf is heavy enough to damage the turfed areas. Seeded areas shall be mowed immediately prior to final inspection. Maintenance of the seeded areas shall include eradicating weeds, maintaining erosion control materials and mulch, protecting the installed areas from traffic, mowing, watering and post-fertilization. If any portion of the surface becomes riled, gullied, damaged, or destroyed, that portion shall be repaired and re-established at the Contractor's expense. The Contractor shall control erosion during the maintenance period by using ditch checks, sod swales, silt fences or other methods until a proper stand of turf is established.

Turf establishment after seeding shall extend for 3 cuttings after completion of the seeding on the entire project, unless desired growth is established, and shortening the period of the Contractor's responsibility for acceptably established areas is authorized by the Engineer. Grass plants shall be evaluated for species and health when the grass plants are a minimum of 1 inch high. At acceptance, the turf will be free of weeds, have no bald spots greater than 2" and a minimum of 150 plants per square foot. All costs for labor, equipment, and materials necessary to complete the work and provided maintenance will be included in the unit price bid for "Seeding – Hydro Mulch".

722-P02 ADJUST UTILITY APPURTENANCE: The contractor may have to adjust gate valves boxes, survey monument boxes, pull boxes, manholes, and inlets due to concrete pavement repair, ADA ramp installation, sidewalk installation, pcc pavement grinding, and turn lane construction operations at the direction of the engineer in the field. The adjustment of these utilities will be as per Section 722 of the North Dakota Standard Specifications. All labor, materials, and equipment necessary shall be included in the unit price bid for "Adjust Utility Appurtenance".

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## NOTES

748-P01 CURB & GUTTER – TYPE I: Tie bars will be drilled approximately one half of the length of the bar and epoxied into place where existing condition pavement abuts new curb and gutter. The tie bars shall be #3-18 inches in length with 4' center to center spacing. All cost shall be included in the unit price bid for "Curb & Gutter – Type I".

750-P01 MIX DESIGN (SIDEWALK, CURB RAMPS, AND FOUNDATIONS): The Contractor shall submit a concrete class AE-3 mix design for all of the sidewalk, curb ramp, and light signal foundation concrete required for this project. The mix design shall be submitted a minimum of 7 working days prior to concrete placement for approval.

The mix designs shall include the following:

- a. A list of all ingredients
- b. The source of all materials
- c. Gradation of the aggregates
- d. The absorption of the aggregates
- e. The SSD bulk specific gravity of the aggregates
- f. The specific gravity of the pozzolan
- g. Results of 7 day compressive strength tests
- h. Water/Cement Ratio

i. Mixture Proportions:

1. Water - lb/CY
2. Cement - lb/CY
3. Fly ash - lb/CY
4. Coarse Aggregate - lb/CY
5. Intermediate Aggregate - lb/CY
6. Fine Aggregate - lb/CY
7. Air content %
8. Air-entraining admixture - fl oz.
9. Water-reducing admixture – fl oz.

750-P01 SIDEWALK CONCRETE: Sidewalk concrete is for the installation of ADA ramps at the locations shown on the plans. The ramps shall be constructed as per detail layouts as per Section 80 Sheet No. 19-40. All sidewalk replacement areas shall have a #3 deformed reinforcing bar placed 24" on center both longitudinally and transversely. The bar shall be six (6) inches shorter than the width of the slab and placed accurately at one-half the depth of the slab. Plastic chairs will be used. Contraction joints shall be constructed according to D-750-2. One-half-inch expansion joints shall be placed at intervals not to exceed three hundred (300) feet. All longitudinal and transverse contraction joints shall be sawed. Joints shall be sawed in a timely manner to prevent any uncontrolled random cracking. If random cracking occurs, the contractor shall be required to remove and replace all damaged panels at his own expense. At sidewalk replacement areas, the Contractor shall excavate material to accommodate the proposed aggregate base, strip and salvage the existing topsoil, dispose of excess excavation. The cost of labor, equipment and materials to perform the above referenced work shall be included in the price bid for "Sidewalk Concrete."

970-P01 LANDSCAPE PREPARATION: All areas designated in Section 80 and Section 90 "Landscape Preparation" shall involve backfilling (including material), all grading to blend the surrounding ground into ADA curb ramps prior to seeding, and removal of any excess material from grading. All costs to complete backfilling and grading shall be included in the unit price bid for "Landscape Preparation".

970-P02 REPLANT TREE: The construction of the new right turn lanes at 28<sup>th</sup> Street and Campbell Drive in the South bound lane drive will require a total of 2 trees to be removed and transported to a new location for replant. Locations of the trees to be replanted are listed below:

Sta. 114+94 Offset 51' LT shall be moved to Sta. 116+48 Offset 62' LT – 28<sup>th</sup> Ave S  
 Sta. 144+07 Offset 50' LT shall be moved to Sta. 144+07 Offset 62' LT – Campbell Dr.

Contractor shall use a tree spade large enough to accommodate a root ball that will sufficient enough to sustain the tree after planting. The root ball of the tree shall be watered thoroughly prior to digging to keep the root ball intact and reduce as much soil loss as possible during transports. When positioning the tree in the new hole, it shall be places 2-3" higher than the original grade to allow for settling.

The newly planted tree shall be anchored by placing 2 steel fence posts across on either side of the tree and using #12 gauge galvanized wire with a 12-15" garden hose around the tree and twisted to straighten the tree and/or stabilize through root establishment. The staking shall be removed as soon as the tree is well-rooted. Newly transplanted trees shall be watered so original soil ball and surrounding soil is saturated to a depth of 12". Apply water slowly to entire area, allowing adequate penetration.

970-P03 SITE CONDITIONS: The contractor shall notify the Project Engineer in writing of any site conditions which the Contractor considers detrimental to plant growth such as chemical residue, rubble fill, clay fill, adverse drainage conditions, and obstructions. It is highly recommended that the Contractor contact the appropriate state, county, and/or city weed control agencies to assure planting areas are free of chemical residue. The Contractor will be responsible for healthy plant growth throughout the maintenance period without exception.

970-P04 TREE PIT SUBSOIL PREPARATION: Prior to placing topsoil within the tree pits, the Contractor shall rototill to a minimum 6" depth within the bottom of the tree pit. The Contractor shall break up large clumps, remove any extraneous material, and re-shape the subgrade prior to placing topsoil. All costs associated with tree pit subsoil preparation will be included in the unit price bid for "Bur Oak", "American Linden", and "Emerald Lustre Maple".

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**NOTES**

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970-P05 PLANT LOCATIONS: The Contractor shall coordinate with utilities as per section 105.03 of the North Dakota Standard Specification. If obstructions are encountered that are not shown on Drawings, planting operations shall not commence until alternate plant locations have been selected and reviewed with the Project Engineer.

There are a total of 3 trees that are to be planted. Location and type of tree that are to be planted are listed below:

- Bur Oak – Sta. 115+23 Offset 82' LT – 28<sup>th</sup> Ave S
- American Linden – Sta. 142+86 Offset 82' LT – Campbell Dr.
- Emerald Lustre Maple – Sta. 144+54 Offset 59' LT

A Total of 3 trees shall be removed and disposed of outside the highway right of way at a location approved by the Project Engineer. Locations of the trees to be removed are listed below:

- Sta. 116+33 Offset 50' LT – 28<sup>th</sup> Ave S.
- Sta. 142+85 Offset 48' LT – Campbell Dr.
- Sta. 144+66 Offset 49' LT – Campbell Dr.

970-P06 PRODUCT DELIVERY, STORAGE, AND HANDLING: The Contractor shall take all precautions customary in good trade practice in preparing plants for transport. All plants shall be protected from drying out and all roots shall be protected from exposure to sunlight. Dig, transport, and handle plants with care to ensure protection against injury. Inspection certificates required by law shall accompany each shipment invoice and upon arrival, the certificate shall be filed with the Project Engineer.

970-P07 MULCH: Mulch materials shall be free of all foreign debris. Mulch shall be kept 6" away from plant trunks and stems. The Contractor shall obtain approval mulch material from the Project Engineer prior to installation. Any mulch material installed without prior approval shall be deemed unacceptable by the Project Engineer and shall be removed from the project. The Contractor shall provide mulch samples to the Project Engineer for approval.

All planting areas shall be completely weed-free at the time of mulch installations. Mulch areas immediately after plant installation to avoid open soil weed growth problems. The minimum 3" mulch depth will be strictly enforced. Maintain mulch depth unless excess soil moisture or poor drainage at site limits potential survivability. If conditions are such that an adjustment to the mulch depth is necessary to maintain healthy plant materials, the Contractor shall notify the Project Engineer in writing to obtain written approval for any changes to the plans and/or specifications.

Wood mulch shall be long, fibrous in nature, 2" to 4" in length. Trees shall have a minimum 6' diameter (or three foot radius) mulched ring if not planted in a mass tree/shrub bed. Thoroughly water mulched areas to a soil depth of at least 6". The Contractor shall repair all mulch loss and erosion from water damage immediately.

All costs associated with furnishing, installing, and maintenance within the planting beds shall be included in the bid prices for "Bur Oak", "American Linden", and "Emerald Lustre Maple".

970-P08 INITIAL ACCEPTANCE/MAINTENANCE SCHEDULE: Upon completion of installation of all trees, the Project Engineer will make an inspection of all trees and planting areas for acceptability. Any establishment procedures that have not been performed will be brought to the Contractor's attention for immediate correction. Upon the completion of any corrections, a letter of initial acceptance will be provided by the Project Engineer.

Initial planting of trees shall be completed between the dates of April 15<sup>th</sup> to June 15<sup>th</sup>. The Contractor shall be responsible for maintenance on all plantings throughout the duration of the working day contract. The Contractor shall be responsible for watering the planted trees a minimum of once a week. All costs for labor, equipment, maintenance, and materials necessary to complete the work and provided maintenance will be included in the unit price bid for "Bur Oak", "American Linden", "Emerald Lustre Maple", and "Replant Tree".

970-P09 FINAL ACCEPTANCE: Upon completion of the contract, the Project Engineer and City of Grand Forks Forester will make an inspection of the plant material and planting bed conditions for acceptability. Trees shall be considered dead when the main leader has died back, or 25% of the crown is dead. Removal of the designated plant material shall occur immediately; replacement shall occur immediately or as soon as possible in accordance with the planting dates and weather conditions. All items of maintenance shall have been performed prior to inspection. Any items of maintenance that have not been performed may make the tree unacceptable. Any establishment procedures that have not been performed shall be brought to the Contractor's attention for immediate correction. Upon completion of any corrections, a letter of final acceptance shall be provided by the Project Engineer notifying the Contractor of completion of the project.

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**NOTES**

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**SECTION 110**

894-100 RETROREFLECTIVE SHEETING: Provide Type IV retroreflective sheeting that meets ASTM D 4956, Type IV. Provide Type XI retroreflective sheeting that meets ASTM D 4956, Type XI.

**SECTION 150**

772-100 PAINT: The traffic signal system components shall be painted in accordance with the following:

- Transformer base - yellow
- Mast arm - yellow
- Signal head mounting hardware - yellow
- Shaft - yellow
- Signal housing - yellow
- Pedestrian pushbutton post - yellow
- Pedestrian pushbutton housing – yellow

772-P01 AUTOMATIC TRAFFIC RECORDER SYSTEM: The Contractor shall furnish and install the Automatic Traffic Recorder (ATR) site as shown in the plans. Complete the work on this site after grinding and CPR work in this area is completed.

Representative

The Contractor shall ensure that a qualified PEEK Traffic Corp. representative will be on site to assist and supervise the system installation and all work. The Contractor shall ensure that a PEEK Traffic Corp. representative is certified for the ATR equipment installation, operation, calibration and vehicle verification processes.

Loops

All detector loops must follow minimum curing specifications for the sealant according to the detector loop manufacturer.

The detector loops shall be installed as shown in the plans. The loop wire shall extend to the recorder cabinet and shall only have one splice per loop.

Loop wire shall meet the requirements of Spec. 896.03.B. Loops shall be installed as shown in the plans. Loop saw slots shall be 2 inches deep, or as recommended by the manufacturer. The loop slot shall be sealed as per Spec. 772.03 F.8.

Loop lead-in conductor shall meet the requirements of Spec. 896.03.B and shall not be spliced from the pull box to the recorder cabinet. All loop splices will be made in the pull box. All loop splices will be soldered along with a 3M splice kit, or CK 137 Shake-N-Seal from Uraseal.

Sawing & Sealing Joints

The Contractor shall follow the provisions of Spec. 772.03 F when sealing any joints. Hot Poured Joint Seal shall not be used for sealing any saw slots.

Cabinet

The Contractor is responsible for all wire termination. All lug terminals for wire termination shall be crimped and soldered. The conductors shall meet the requirements of section 896 of the Std. Specs.

The 2” rigid conduit shall be at a minimum depth of 24” below finished grade. Conduit trenches will require final grading and seeding. This conduit shall meet the requirements of Spec. 896.02.B and shall not be spliced from the pull box to recorder cabinet, and shall be a continuous run.

All holes made or existing in the pull box for conduit access shall be plugged/sealed and made watertight. All conduit containing electrical wire (both in the pull box and the cabinet) shall be sealed and made watertight after the wire has been pulled through and terminated.

The ADR-6000 traffic recorder shall be manufactured by PEEK Traffic Corp.

All AC power feeds, data lines, and loops shall be protected with approved surge/line protectors. A 6 outlet AC line protector unit must be provided for the 120 volt 60 Hz power source. The protector unit will include a thermal circuit breaker, and EMI/RFI noise suppression for diverting and clamping high voltage surges so as to limit the maximum voltage reaching the sensitive electronic equipment during a transient pulse. The unit will be approved by Underwriter Laboratories (UL).

The Contractor shall install a 4G Cellular Modem in the ATR cabinet. The Contractor shall contact the Information Technology Division within the NDDOT:

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

The Contractor must contact Robert Steckler a minimum of 3 weeks in advance of the installation.

Ground rods must be placed at all four (4) corners, located outside of the foundation pad. Each ground rod must be 5/8 inch diameter by 10 feet long. Connection of ground rods must be with a No. 2/0 AWG copper wire bonded to the cabinet. All buried connections will be made with a Cadweld type connection. The earth ground resistance will test to 25 ohm or less, and be tested with an earth/ground resistance tester capable of measuring earth ground resistance less than 25 ohm. The Contractor will install any additional ground rods to achieve the 25 ohm or less earth ground resistance. All test results will be documented by the Contractor and furnished to NDDOT in a clean, organized format.

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**NOTES**

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Foundations

The ATR cabinet foundation and working slab shall be constructed using the ATR Detail Sheet and standard drawing D-770-1.

The cabinet foundation shall be of sufficient size so there is a minimum of 2" of clearance from the outside edge of cabinet to the outside edge of the foundation on any side. The Contractor shall ensure a water-tight seal between the cabinet and the foundation by caulking, except for V groove. Rodent protection shall be placed in the V groove between the concrete foundation and the cabinet, which shall allow water to drain properly from the cabinet. The materials and preparation of the Working Slab shall be as approved by the Engineer.

Testing

All new loops shall be tested after installation and must test to manufacturers specifications or be replaced. If the loops meet manufacturer's specifications after installation, but do not perform traffic count or classification correctly, the Contractor will be responsible for any corrections up to and including replacing the defective part or parts. This includes loops and electronics.

The Contractor shall verify vehicle classification by comparing ATR results with base line traffic counts and classification obtained by videotaping and manually counting and classifying vehicles for a period of 2 hours. This includes 1 hour for the northbound roadway and 1 hour for the southbound roadway. The Contractor shall verify that the site is functioning properly for each roadway.

Acceptance

Acceptance of the Automatic Traffic Recorder site will be determined after the site is in operation for 30 days and is working correctly. Any damage caused as a result of construction practices or techniques shall be paid at the Contractor's expense. This includes new items installed by this contract such as new detector loops.

The Contractor shall provide the operation and maintenance manuals and detailed wiring schematics for this ATR site.

Completion of work requires the following items to be completed: the Automatic Traffic Recorder site in working order as approved by the PEEK Traffic Corp. representative, site passed inspection by the Engineer, and successful completion of testing.

All costs for labor, equipment, materials, PEEK representative, and all testing necessary to install the ATR equipment, shall be included in the item "Revise Automatic Traffic Recorder System".

772-P02 EXISTING ATR EQUIPMENT: An ATR site is currently located at Sta 121+47 rt. NDDOT personnel will remove the components inside the cabinet and the solar panels. The Contractor shall remove the cabinet, pedestal and pull boxes, which shall become property of the Contractor.

All costs associated with removing this equipment shall be included in the item "Revise Automatic Traffic Recorder System".

772-P03 REMOVE PULL BOX: The area of the removed pull boxes shall be backfilled with earth and compacted. The disturbed areas shall be seeded. The removed pull boxes shall be disposed of outside the right of way at the contractor's expense. The cost to remove the pull boxes, backfill, compact, and seed shall be included in the items "Revise Traffic Signal System – Site 2, Revise Traffic Signal System – Site 3, Revise Traffic Signal – Site 4, and Revise Traffic Signal System Site 5".

772-P04 VIDEO DETECTION SYSTEM: The video detection system shall be Autoscope Encore manufactured by Econolite. Cameras shall include Tip Tap Setup.

A video monitor LCDI-104-CCTV-LCD shall be included in the controller cabinet for viewing the video detection.

The contractor shall provide one spare video detection camera, one video detection processor, and one camera interface panel for each video detection system.

The cost of the video detection system, video monitor, and spare equipment shall be included in the items Revise Traffic Signal System – Site 2, "Revise Traffic Signal System – Site 3, Revise Traffic Signal System – Site 4, and Revise Traffic Signal System – Site 5".

772-P05 GPS EMERGENCY PRE-EMPTION: The GPS emergency pre-emption shall be provided with a GTT Global GPS Vehicle Preemption, Model 764 detector, Model 1010 GPS radio unit containing a GPS receiver with antenna and a 2.4 Ghz spread spectrum transceiver with antenna, and Model 1070 installation cable.

The location of the GPS EVP detector will be on a signal mast arm and may vary based upon GPS signal availability. No splices are allowed between the controller cabinet and the EVP equipment on the mast arm.

The cost of the GPS emergency vehicle pre-emption, shall be included in the items "Revise Traffic Signal System – Site 1, Revise Traffic Signal System – Site 2, Revise Traffic Signal System – Site 3".

772-P06 TRAFFIC SIGNAL LUMINAIRE EXTENSION: The luminaire extension provided shall be the truss type.

772-P07 REVISE CONTROLLER: The item revise controller shall consist of changing phasing, adding video detection, adding GPS emergency vehicle pre-emption, and installing and connecting the interconnect cable to the existing controllers. Not all controllers require the same items to be revised or added, the plan sheets for each intersection include the items required to be revised.

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## NOTES

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The cost for revise controller shall be included in the items "Revise Traffic Signal System – Site 1, Revise Traffic Signal System – Site 2, Revise Traffic Signal System – Site 3, Revise Traffic Signal System – Site 4, and Revise Traffic Signal System Site 5".

772-P08 ETHERNET SWITCH: RuggedCom RS-900G-HI-P-2LC10 Ethernet Switch shall be installed in controller cabinets at 32<sup>nd</sup> Ave S, 28<sup>th</sup> Ave S, 24<sup>th</sup> Ave S, Campbell Dr, and 17<sup>th</sup> Ave S.

The cost for the RuggedCom Ethernet Switch shall be included in the item "IT System".

772-P09 FIBER SPLICE ENCLOSURE: A 19 inch Rack Fiber Splice Enclosure shall be installed in the controller cabinets 32<sup>nd</sup> Ave S, 28<sup>th</sup> Ave S, 24<sup>th</sup> Ave S, Campbell Dr, 17<sup>th</sup> Ave S, and 13<sup>th</sup> Ave S.

The cost for the 19" inch Rack Fiber Splice Enclosure shall be included in the item "IT System".

772-P10 SIGNAL TIMING AND COORDINATION: The contractor shall revise the existing signal timing and coordination. The contractor shall contact the City of Grand Forks for new signal timing and coordination plans. The cost to revise the signal timing and coordination shall be included in the items "Revise Traffic Signal System - Site 2, Revise Traffic Signal System – Site 3, Revise Traffic Signal System – Site 4, and Revise Traffic Signal System Site 5".

772-P11 SALVAGED SIGNAL EQUIPMENT: All removed vehicular and pedestrian signal heads, signal standards, and the signal controller and cabinet shall be salvaged and delivered to the City of Grand Forks Electrician at 714 South 47th Street, Grand Forks, ND. The Contractor shall coordinate delivery of salvaged equipment with the City Electrician Rick Hanson (701-746-2690). All costs, labor, materials, and equipment necessary for salvaging signal equipment shall be included in the items "Revise Traffic Signal System – Site 2, Revise Traffic Signal System – Site 3, Revise Traffic Signal System – Site 4, and Revise Traffic Signal System Site 5".

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## ENVIRONMENTAL COMMITMENTS

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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**ENVIRONMENTAL COMMITMENTS:** The North Dakota Department of Transportation and the Federal Highway Administration have made several environmental commitments to various agencies and the public to secure approval of this project. The environmental commitments are as follows:

Wetland Number	Cowardin Classification	Wetland Type	Wetland Size (acres)	Wetland Feature	USACE Jurisdictional Wetlands	Impacts to Wetlands	
						Temp.	Perm.
**NO WETLANDS PRESENT**							
<b>TOTALS:</b>			<b>0.00</b>			<b>0.00</b>	<b>0.00</b>

The office wetland delineation for PCN 20102 was conducted on October 7, 2013 by Cory Lawson of the North Dakota Department of Transportation. The wetland delineations were conducted using a combination of NWI maps and aerial photography, assuming a 100 foot buffer around the project area.

**COMMITMENT NO. 1:** There are numerous urban trees within the project right-of-way and easements. Approximately five of these trees will be impacted during construction; coordination with the City of Grand Forks has resulted in a request that impacted trees be mitigated at a 1:1 ratio.

**ACTION TAKEN/REQUIRED:** Five trees will be mitigated at a 1:1 ratio in location(s) shown in these plans, as identified by the municipality in conjunction with the NDDOT.

**COMMITMENT NO. 2:** Closures of sidewalk and crosswalks will be limited to seven days during the construction of ADA curb ramp locations

**ACTION TAKEN/REQUIRED:** ADA curb ramps shall be constructed in accordance with plan note 100-P09.

# ESTIMATE OF QUANTITIES

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<b>ND</b>	S-NHU-6-081(083)941	<b>8</b>	<b>1</b>

SPEC CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
-----	-----	-----	-----	-----
103	0100 CONTRACT BOND	L SUM	1	1
201	0370 REMOVAL OF TREES 10IN	EA	3	3
202	0112 REMOVAL OF CONCRETE	SY	1,789	1,789
202	0119 SAW CONCRETE	LF	7,708	7,708
202	0130 REMOVAL OF CURB & GUTTER	LF	5,280	5,280
203	0113 COMMON EXCAVATION-WASTE	CY	1,799	1,799
203	0126 REMOVE & SALVAGE TOPSOIL	SY	3,994	3,994
302	0100 SALVAGED BASE COURSE	TON	2,543	2,543
550	0300 8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	3,816	3,816
570	0095 SAW CONCRETE	LF	4,090	4,090
570	0210 PCC PAVEMENT GRINDING	SY	42,890	42,890
570	0240 DOWELED CONTRACTION JOINT ASSEMBLY	LF	202	202
570	0424 DOWEL BARS	EA	1,963	1,963
570	0713 8IN CONCRETE PAVEMENT REPAIR-FULL DEPTH-DOWELED	SY	1,282	1,282
570	0966 RANDOM PCC CRACK CLEANING & SEALING	LF	711	711
570	1512 SPALL REPAIR-PARTIAL DEPTH	SF	928	928
570	1600 EPOXY COATED DEFORMED BARS	EA	356	356
702	0100 MOBILIZATION	L SUM	1	1
704	0100 FLAGGING	MHR	1,500	1,500
704	1000 TRAFFIC CONTROL SIGNS	UNIT	5,307	5,307
704	1050 TYPE I BARRICADE	EA	40	40
704	1052 TYPE III BARRICADE	EA	120	120
704	1060 DELINEATOR DRUMS	EA	575	575
704	1067 TUBULAR MARKERS	EA	30	30
704	1080 STACKABLE VERTICAL PANELS	EA	40	40
704	1087 SEQUENCING ARROW PANEL-TYPE C	EA	4	4
704	4011 PORTABLE CHANGEABLE MESSAGE SIGN	EA	4	4
708	1540 INLET PROTECTION-SPECIAL	EA	77	77
708	2900 SEEDING-HYDRO MULCH	SY	2,444	2,444
709	0701 GEOTEXTILE FABRIC-TYPE R1	SY	5,128	5,128
722	3470 CASTING CATCH BASIN-TYPE A	EA	1	1
722	3490 CASTING MOUNTABLE CURB-TYPE B	EA	5	5
722	6240 ADJUST UTILITY APPURTENANCE	EA	7	7

# ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
<b>ND</b>	S-NHU-6-081(083)941	<b>8</b>	<b>2</b>

SPEC CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
-----	-----	-----	-----	-----
748 0140	CURB & GUTTER-TYPE I	LF	5,032	5,032
748 0520	CURB-TYPE I	LF	185	185
748 1000	VALLEY GUTTER 36IN	LF	1,960	1,960
750 0100	SIDEWALK CONCRETE	SY	1,442	1,442
750 2115	DETECTABLE WARNING PANELS	SF	1,431	1,431
754 0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	338	338
754 0592	RESET SIGN PANEL	EA	12	12
762 0131	EPOXY PVMT MK 6IN LINE-GROOVED	LF	4,130	4,130
762 0135	EPOXY PVMT MK 24IN LINE-GROOVED	LF	1,178	1,178
762 0136	EPOXY PVMT MK MESSAGE-GROOVED	SF	1,372	1,372
762 1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	4,683	4,683
762 1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	12,074	12,074
770 4525	REVISE LIGHTING SYSTEM	EA	1	1
772 2906	REVISE TRAFFIC SIGNAL SYSTEM-SITE 1	EA	1	1
772 2907	REVISE TRAFFIC SIGNAL SYSTEM-SITE 2	EA	1	1
772 2908	REVISE TRAFFIC SIGNAL SYSTEM-SITE 3	EA	1	1
772 2909	REVISE TRAFFIC SIGNAL SYSTEM-SITE 4	EA	1	1
772 2911	REVISE TRAFFIC SIGNAL SYSTEM-SITE 5	EA	1	1
772 9010	AUTOMATIC TRAFFIC RECORDER SYSTEM	EA	1	1
772 9200	IT SYSTEM	EA	1	1
970 0008	LANDSCAPE PREPARATION	SY	2,444	2,444
970 1025	REPLANT TREES	EA	2	2
970 2015	EMERALD LUSTRE MAPLE	EA	1	1
970 2330	BUR OAK	EA	1	1
970 2420	AMERICAN LINDEN	EA	1	1

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## BASIS OF ESTIMATE

### 302 Salvaged Base Course

- Salvaged base course quantities for all sidewalk and ADA ramp locations were based on a compacted depth of 4 inches.  
ADA Curb Ramp Salvaged Base Course Total: 283 Tons (See Section No. 80 Sheet No. 24-40 for detailed quantities for each location)
- Salvaged base course quantities for turn lane locations were based on a compacted depth of 8 inches.  
Turn Lane Salvaged Base Course Total: 2,187 Tons (See Section No. 90 Sheet No. 1-5 for detailed quantities for each location)

### 570 PCC Pavement Grinding

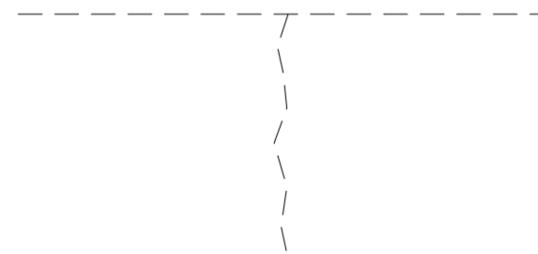
- 4 – 12' lanes from station 98+51 to station 165+18
- Additional grinding at 32nd Ave S intersection  
Full width grind through intersection from station 99+54 to station 100+58  
Refer to Section No. 4 Sheet No. 1 for locations and see Section No. 80 Sheet No. 1 for quantities
- Additional grinding at 28th Ave S intersection  
Full width grind through intersection from station 112+95 to station 113+90  
Refer to Section No. 4 Sheet No. 2 for locations and see Section No. 80 Sheet No. 4 for quantities
- Additional grinding at 24th Ave S intersection  
Full width grind through intersection from station 126+23 to station 127+28  
Refer to Section No. 4 Sheet No. 3 for locations and see Section No. 80 Sheet No. 8 for quantities
- Additional grinding at Campbell Drive intersection  
Full width grind through intersection from station 141+30 to station 142+17  
Refer to Section No. 4 Sheet No. 4 for locations and see Section No. 80 Sheet No. 12 for quantities
- Additional grinding at 17th Ave S intersection  
Full width grind through intersection from station 152+50 to station 153+54  
Refer to Section No. 4 Sheet No. 5 for locations and see Section No. 80 Sheet No. 15 for quantities

Notes: -1' feather pass will be required along all gutter lines, turn lanes, and intersections that are not already being ground.  
-Grinding will not take place on any turn lanes or intersections other than what is listed above.

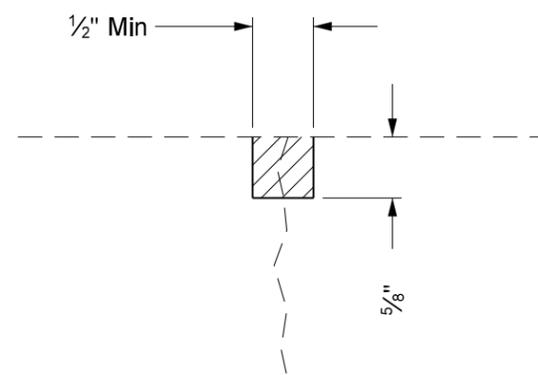
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Basis of Estimate

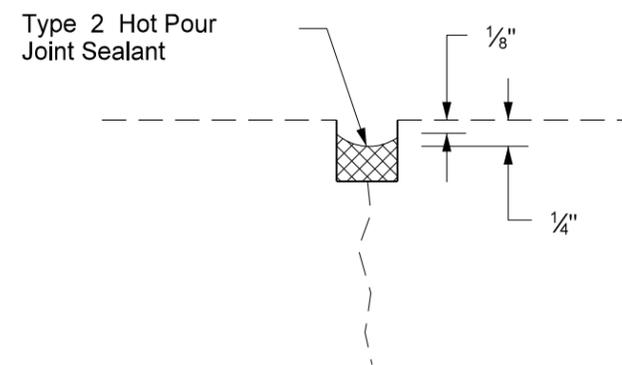
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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Existing Random Crack



Random Crack Sawing



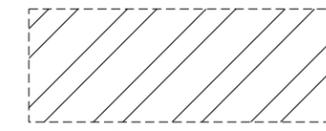
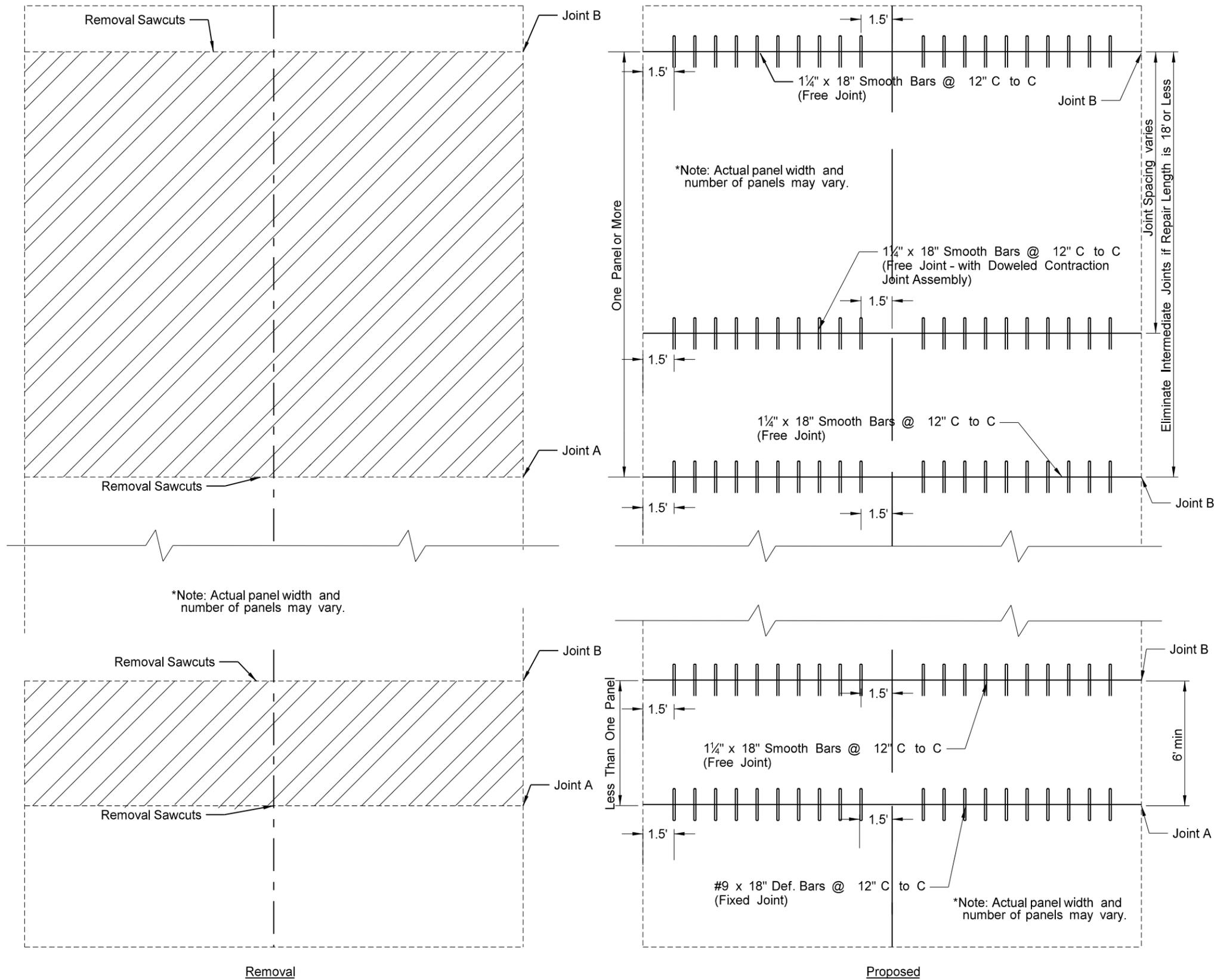
Random Crack Sealing

Note: See Standard Drawing D-550-2 and D-550-3 for Transverse and Longitudinal Joint Details.

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Joint and Random Crack Cleaning and Sealing

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PCC Removal

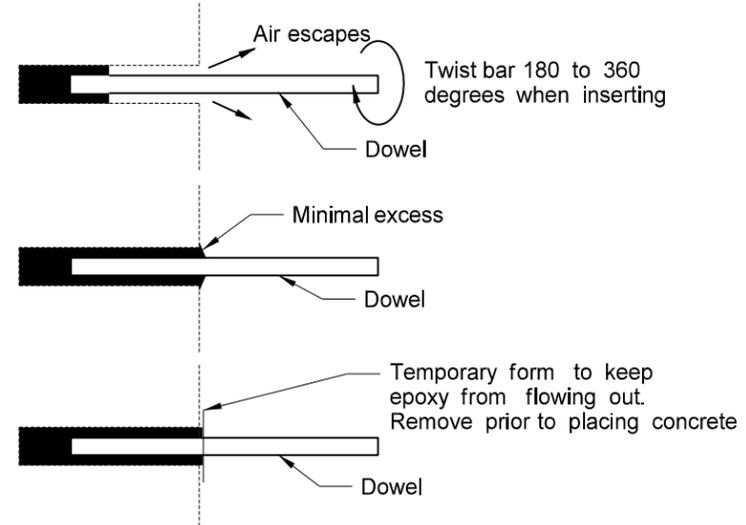
Notes:

1. Joint A (Fixed Joint) shall be the new joint with the shortest distance to the next transverse joint or working random crack. The saw cut will be made at 90° to the centerline. The deformed bars shall be placed perpendicular to the face of the saw cut.
2. Joint B (Free Joint) shall be the new joint with the greatest distance to the next transverse joint or working random crack. The smooth bars shall be installed within the tolerances shown on the "Dowel Bar Placement- Full Depth Repair" detail sheet.
3. When the distance to the next transverse joint or working random crack is equal for both new joints, the free joint (joint B) shall be placed on the approach side of the repair.
4. If greater than one panel in length, a Doweled Contraction Joint Assembly shall be installed at transverse contraction joints.
5. In repair areas which are not the entire roadway width, joints shall be placed to match the existing pavement wherever possible.
6. The joints at the beginning and end of a full depth repair section can be either a Joint B or Joint A depending on the existing joint.

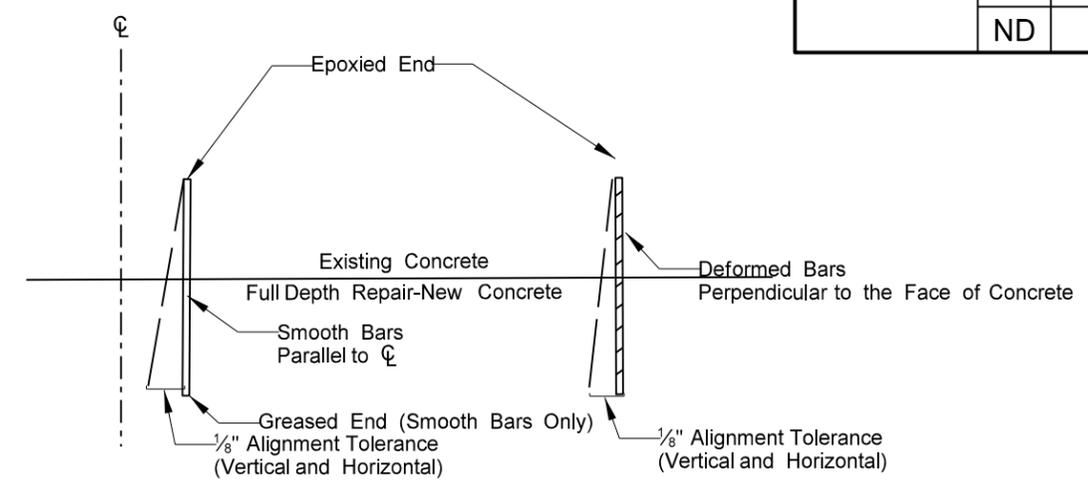
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Removal of Concrete & Dowel Bar  
Placement - Full Depth Repair  
Straight Joint

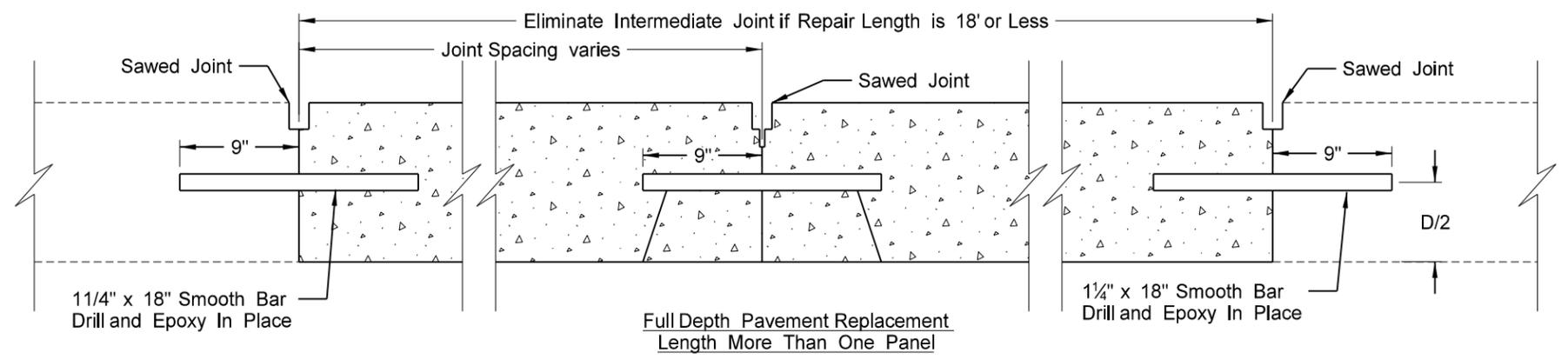
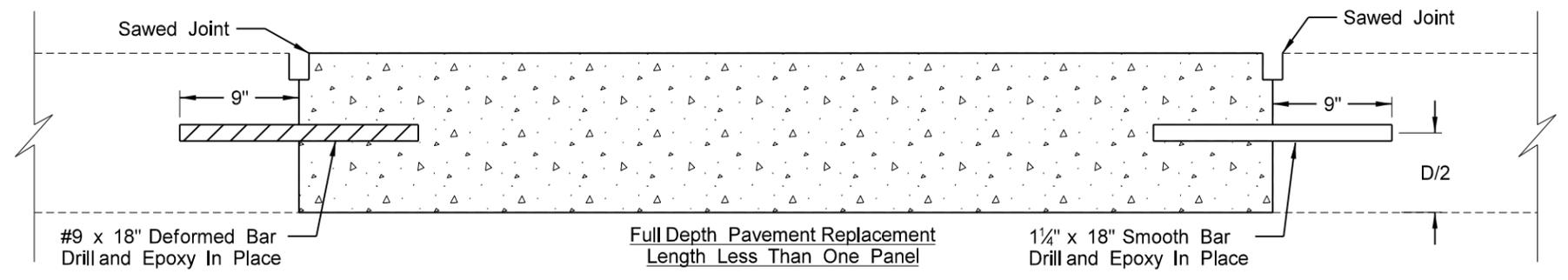
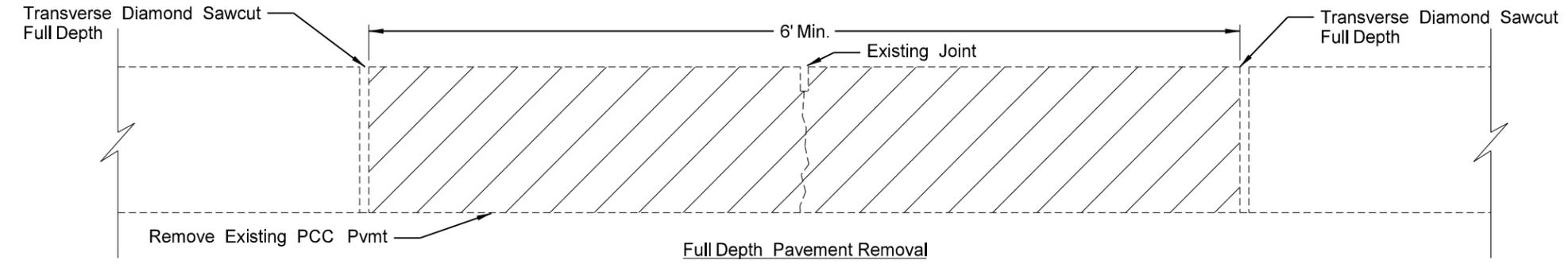
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	20	3



**Dowel & Epoxy Installation**  
(Smooth or Deformed Bars)



**Dowel Alignment Tolerance**



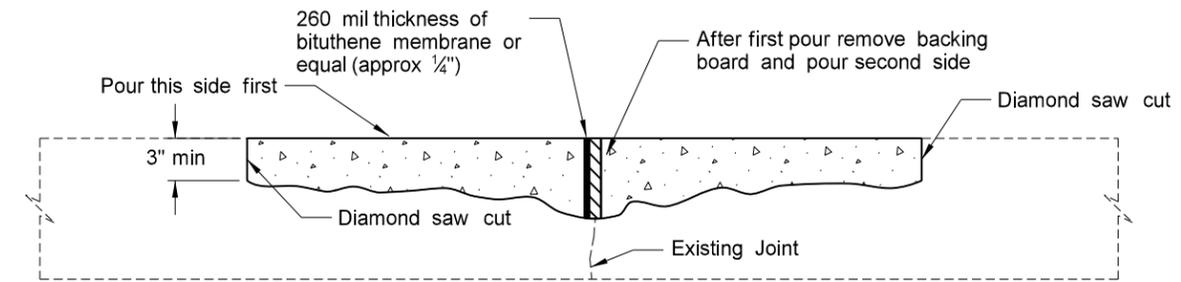
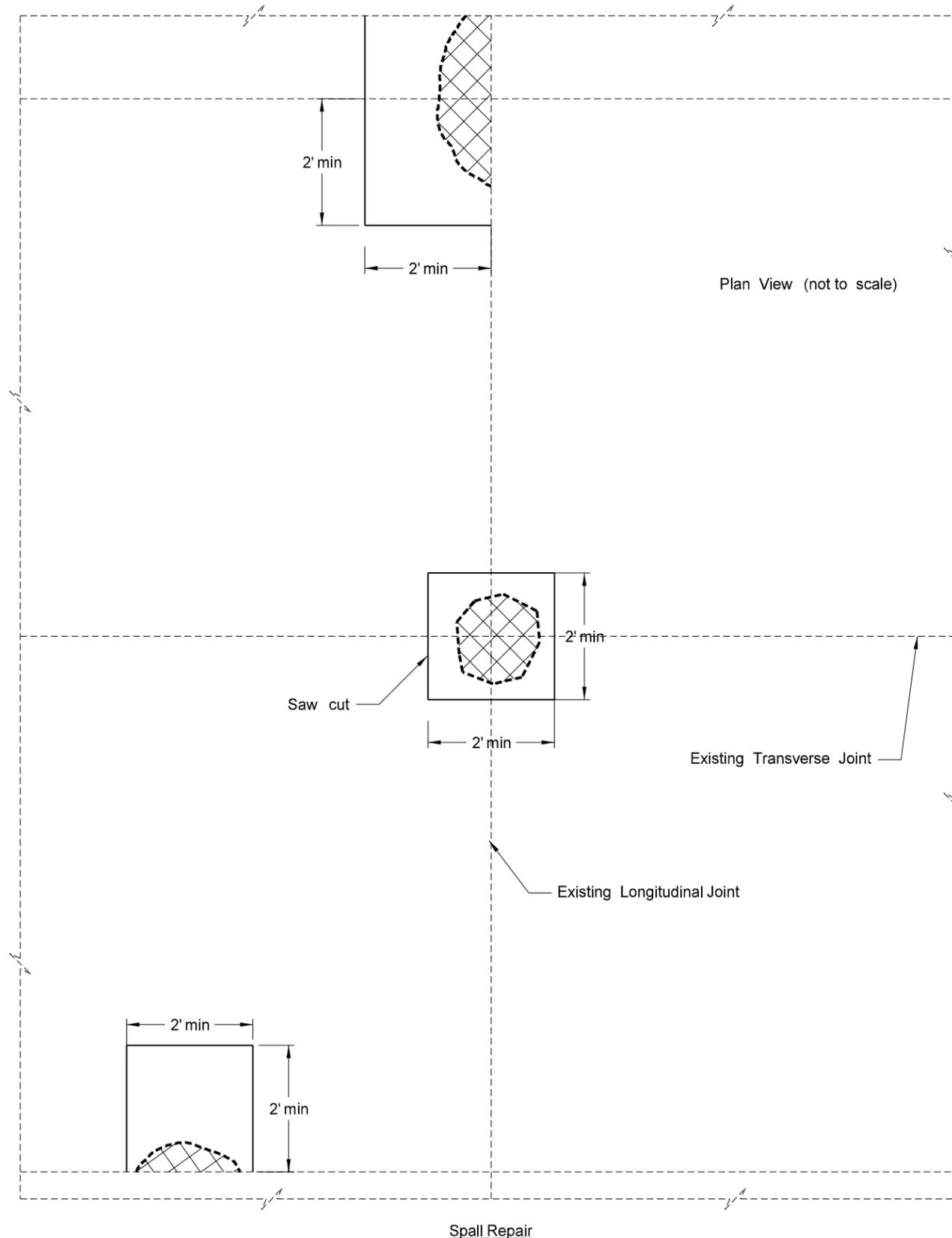
**Notes:**

- Variables:  
D= Depth of Pavement
- Removal and replacement also applies to full depth repairs at cracks.
- Place smooth dowel bars in repair joint which is farthest away from the next transverse joint or working random crack. If distance is equal for both repair joints, place smooth dowels on approach side of patch.

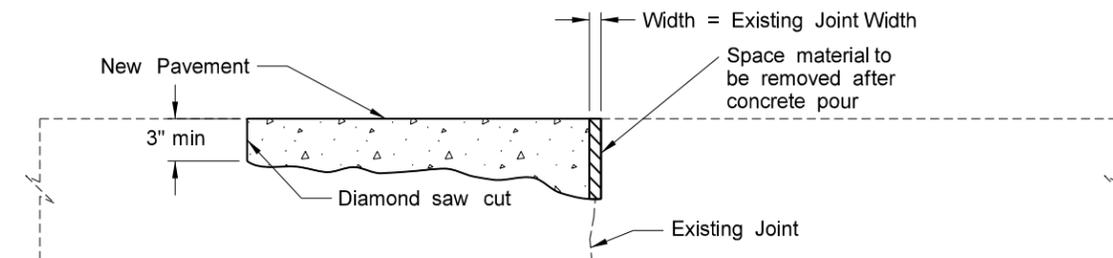
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Concrete Pavement Repair - Full Depth  
Non - Reinforced PCC Pavement

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Cross Section - Repair Area on Both Sides of the Joint



Cross Section - Repair Area on One Side of the Joint

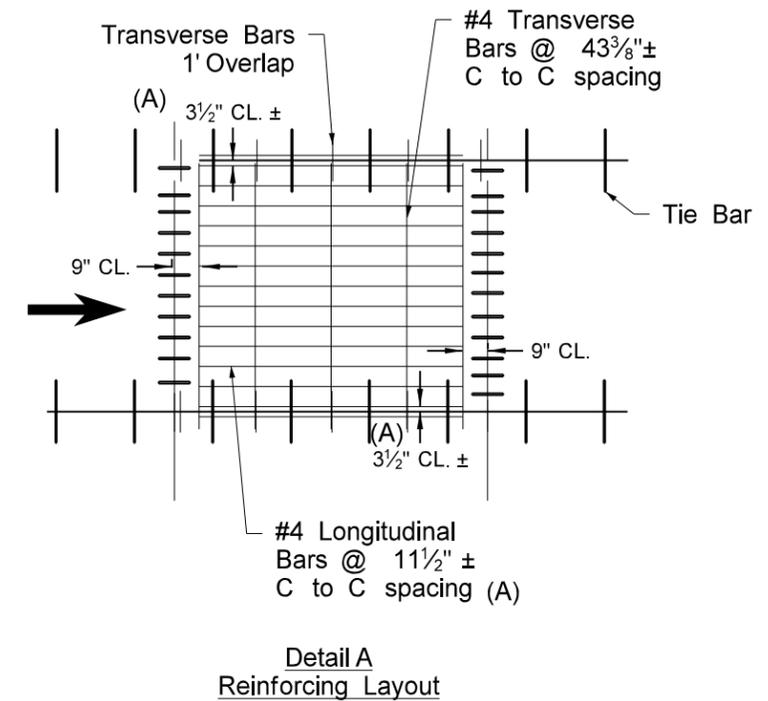
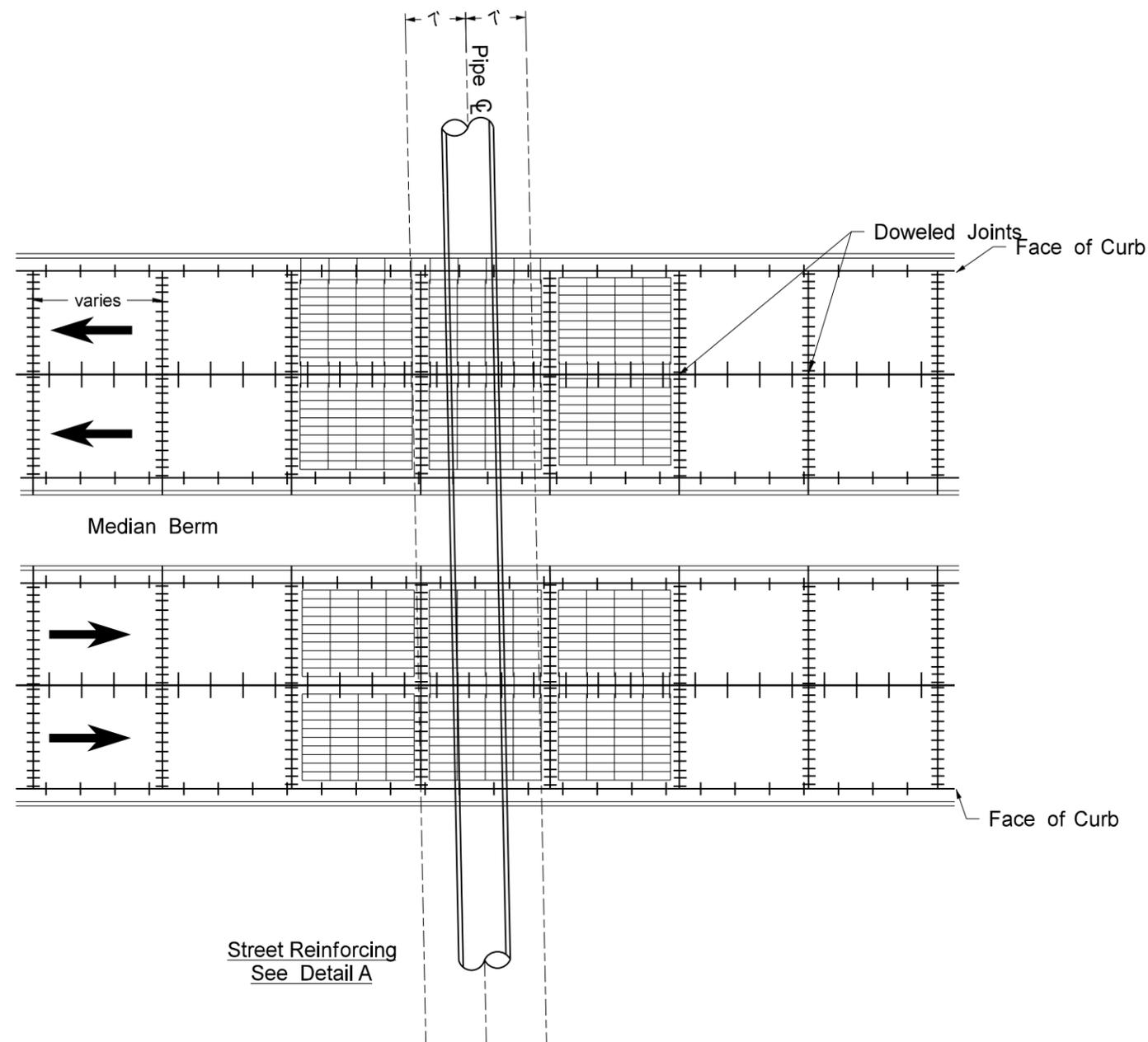
Notes:

- Existing concrete shall be removed with a chipping hammer or other methods as approved by the engineer. A milling machine may be used, as approved by the engineer, but sawing and chipping will still be required to finish the removal.
  - Grout shall be applied to the sides, excluding joint faces, and bottom of the repair area.
  - A spacer material, as approved by the engineer, shall be placed on the joint face to maintain the joint during repair. The material shall have the capability of maintaining a width equal to that of the existing joint, and being easily removed after the pour. In the case of repair on both sides of the transverse joint each side shall be poured separately.
  - In the case of repair on both sides of the joint, if deemed necessary by the engineer, a bituthene waterproofing membrane will be placed on the face of the newly poured joint in lieu of the spacer material prior to the concrete pour. The material shall be a minimum of 260 Mil (approximately 1/4") thick or equal to the width of the existing joint, whichever is larger. The material shall be cut to fit over the entire face of the existing joint. The material shall be placed to provide for expansion and to prevent water from entering the existing joint through the sides or bottom. The material shall be hand pressed into place to conform to the face of the existing joint. In the case of repair on both sides of the joint a backer board material, as approved by the engineer shall be placed over the bituthene material on the side facing the second pour prior to the 2nd pour. The backer board shall be removed after the repair is completed.
- In the case of repair on one side of the joint, if deemed necessary by the engineer, a bituthene waterproofing membrane will be placed on the face of the existing joint in lieu of the spacer material and prior to the concrete pour.
- All joints shall be sealed according to NDDOT specifications.
  - All costs for cleaning and sealing joints and any bituthene installment shall be covered under the bid item " Spall Repair - Partial Depth."

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Spall Repair Detail

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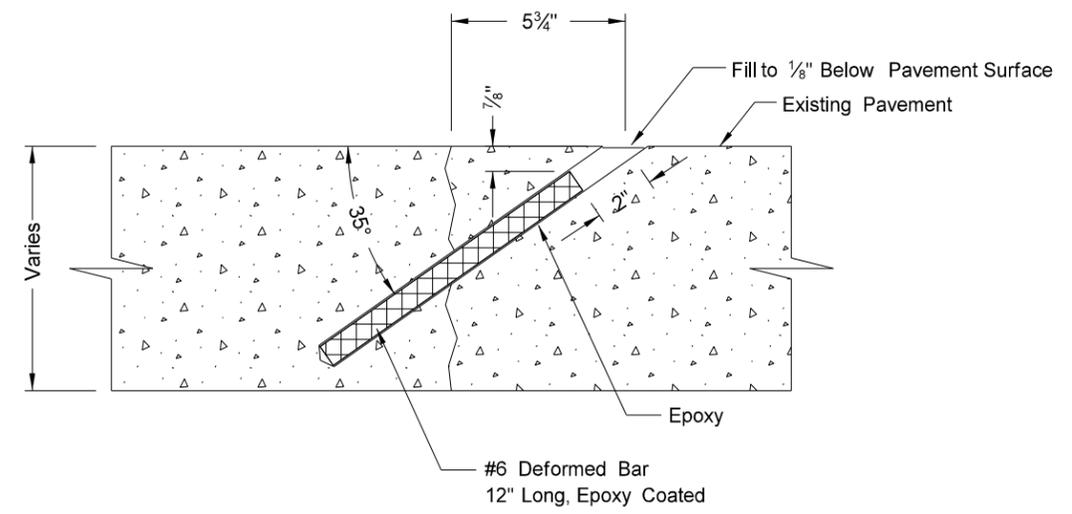
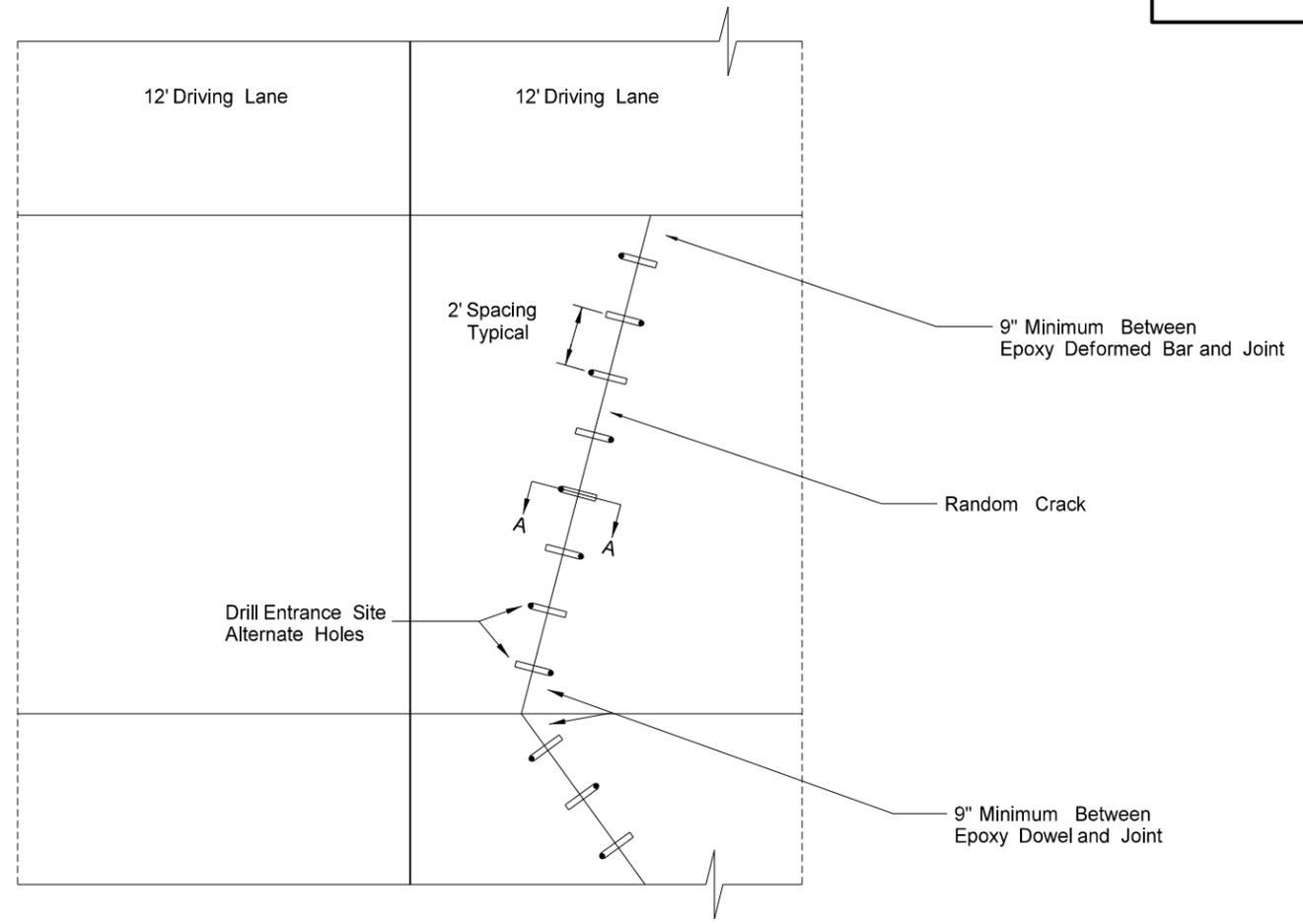
**NOTES:**

1. Place reinforcing steel above dowel bars, above longitudinal centerline tie bars, and under shoulder tie bars.
2. A 1 foot minimum overlap of transverse reinforcing steel across the longitudinal tied joints shall be provided.
3. Transverse reinforcing steel shall be gapped across keyed joints a minimum of 6 inches (3 inches on each side of joint).
4. The complete panel shall be reinforced if any part of the panel lies within 7 feet of the pipe centerline or box culvert.
5. All costs to furnish and install the reinforcing steel as shown shall be included in the price bid for concrete pavement items.

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Pavement Reinforcing Detail  
At Pipe Locations

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ND	S-NHU-6-081(083)941	20	6



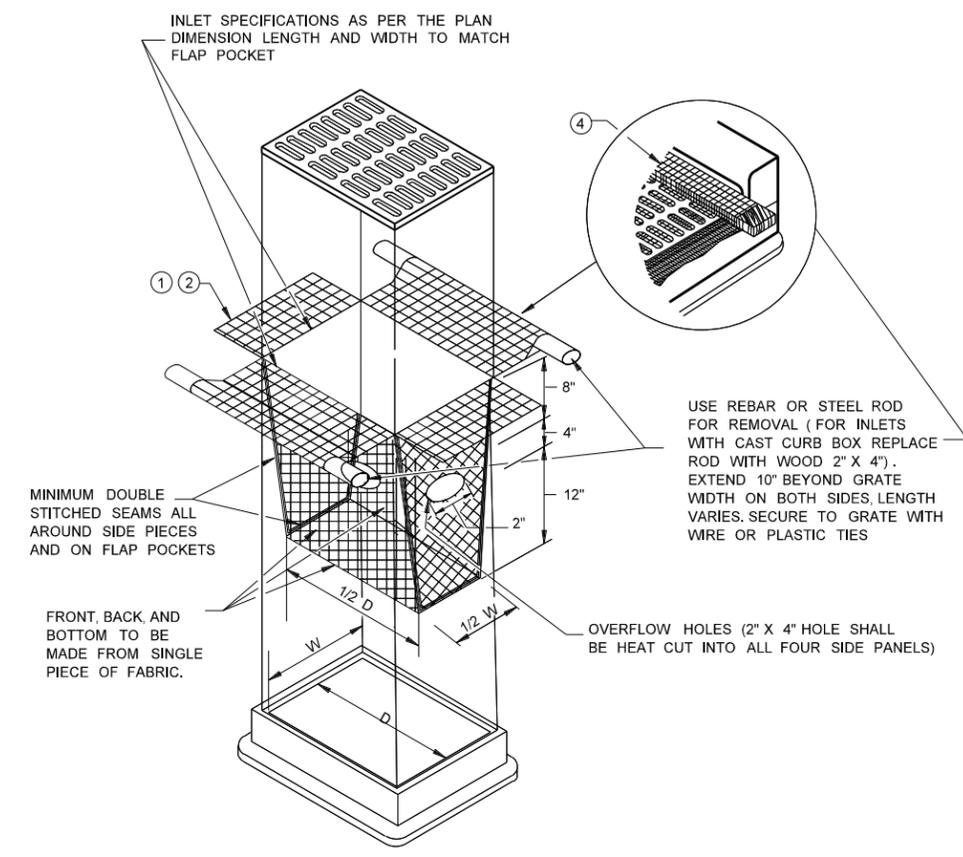
SECTION A-A

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Stitching Detail

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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**INLET PROTECTION - SPECIAL**  
 INLET BASKET INSERT 77 EACH



FILTER BAG INSERT ③  
 (CAN BE INSTALLED IN ANY INLET TYPE  
 WITH OR WITHOUT A CURB BOX)

NOTES:

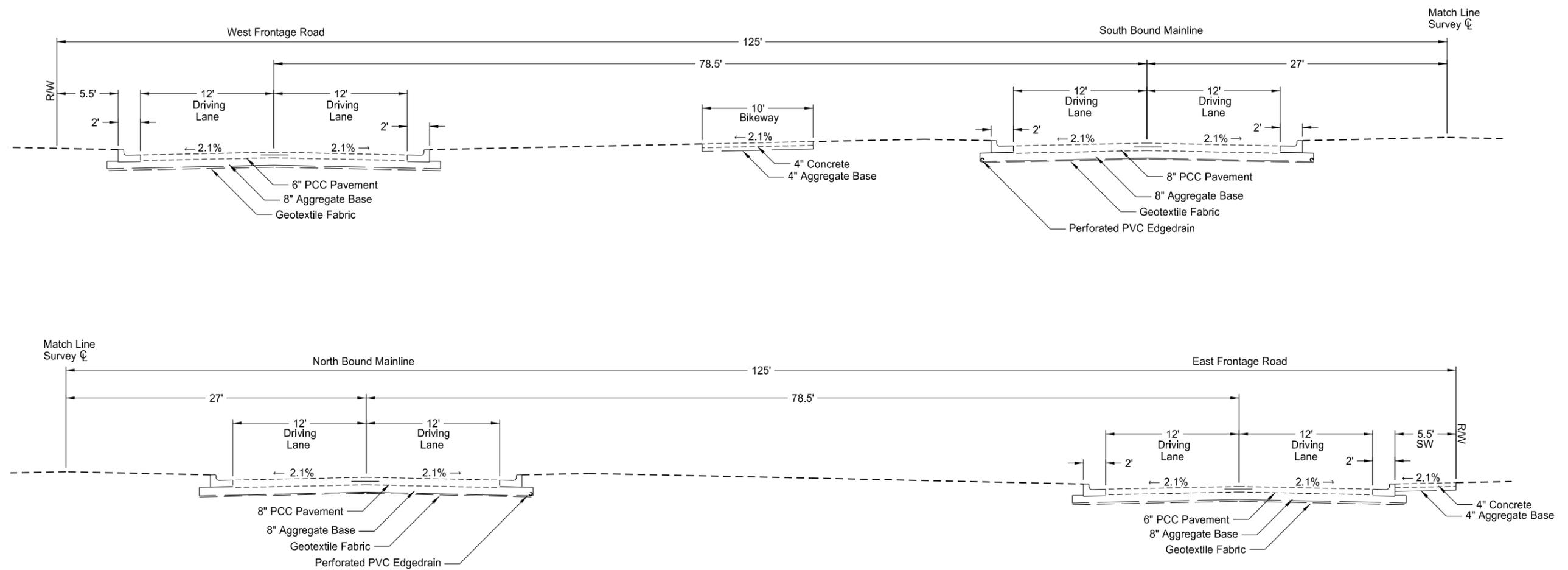
- ① ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL MEET THE REQUIREMENTS OF D1.
- ② FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
- ③ INSTALLATION NOTES:  
 DO NOT INSTALL FILTER BAG INSERT IN INLETS SHALLOWER THAN 30 INCHES, MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE. THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE OF 3 INCHES BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES. WHERE NECESSARY THE CONTRACTOR SHALL CLINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3 INCH SIDE CLEARANCE.
- ④ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2 INCH X 4 INCH OR USE A ROCK SOCK OR SAND BAGS IN PLACE OF THE FLAP POCKETS.

**EROSION PROTECTION AT INLETS**

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Sediment Protection Detail (BMP's)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	30	1

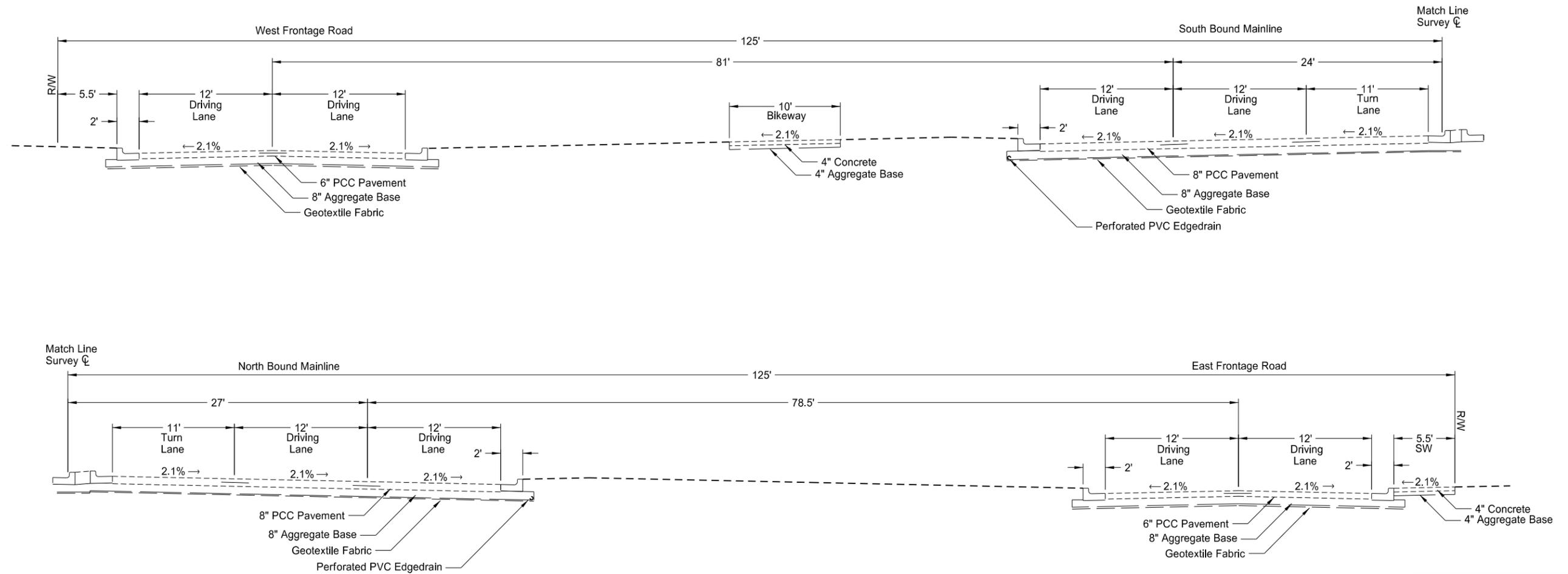


Typical Existing Section 1  
Sta 98+51 to Sta 161+15

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Typical Existing Sections

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	ND	S-NHU-6-081(083)941	30	2

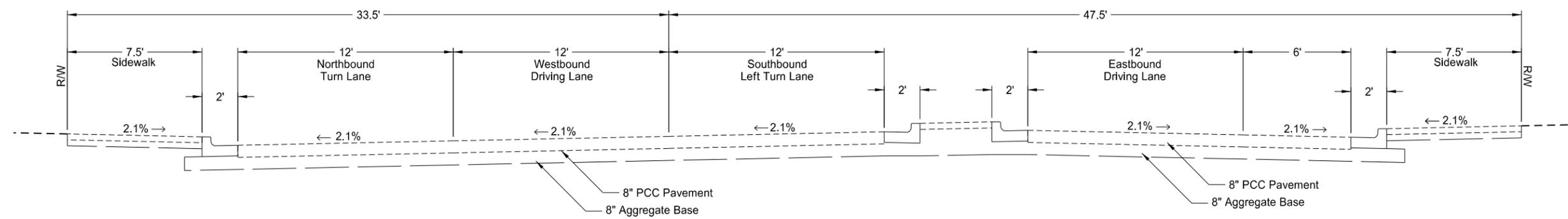


Typical Existing Section 2  
Sta 161+15 to Sta 165+18

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Typical Existing Sections

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	ND	S-NHU-6-081(083)941	30	3

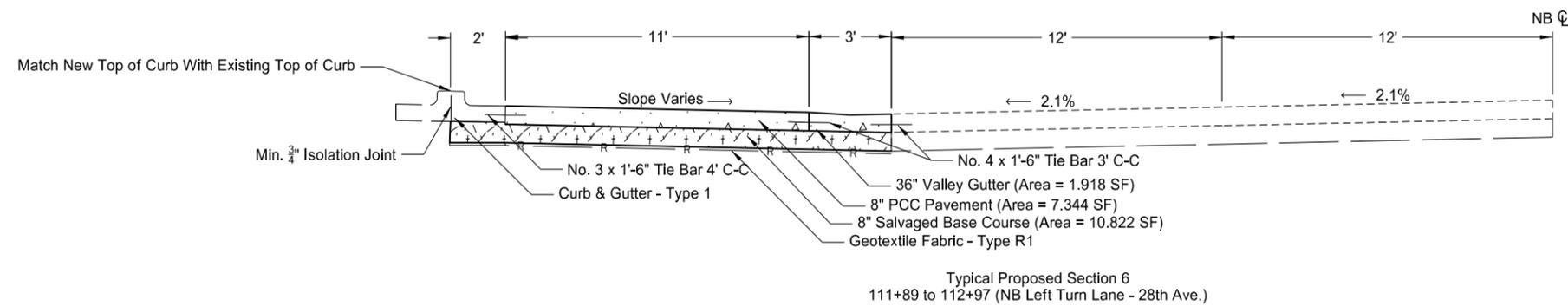
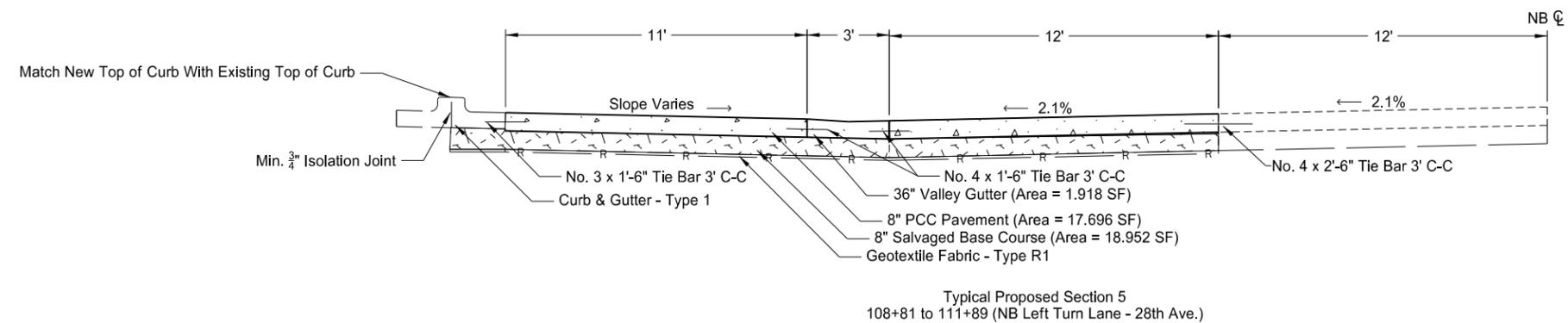
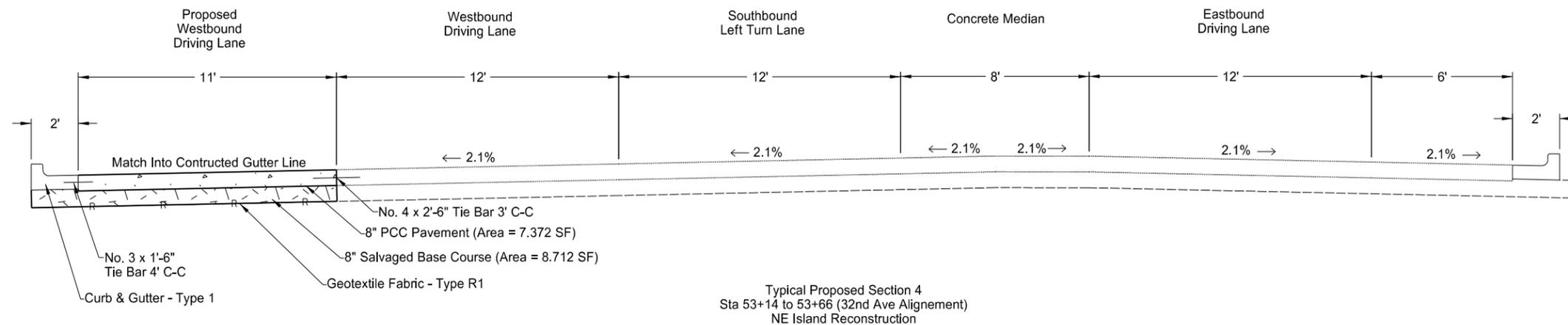


Typical Existing Section 3  
Sta 53+60 to 55+40 (32nd Ave Alignment)

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Typical Existing Section

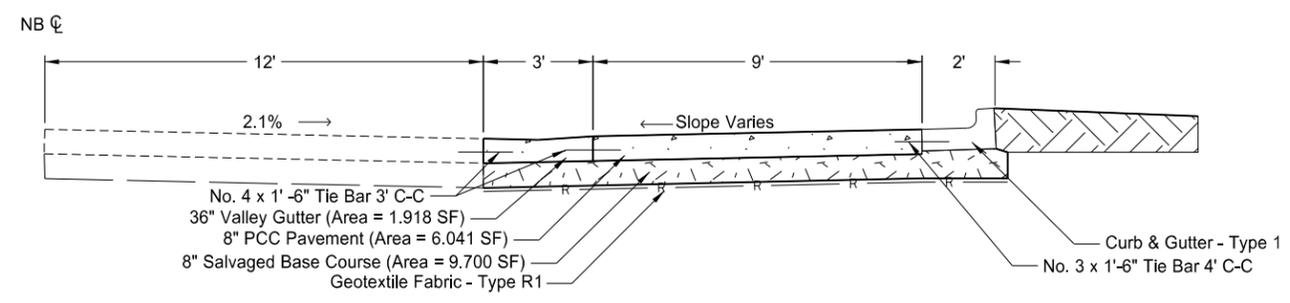
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	30	4



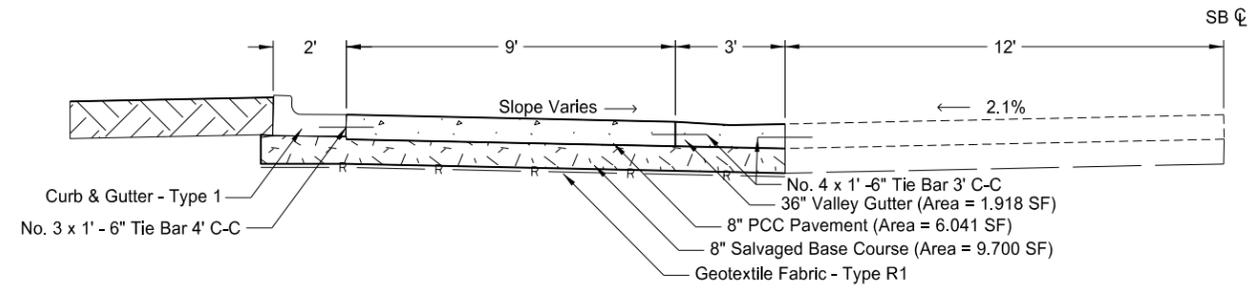
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Typical Proposed Sections

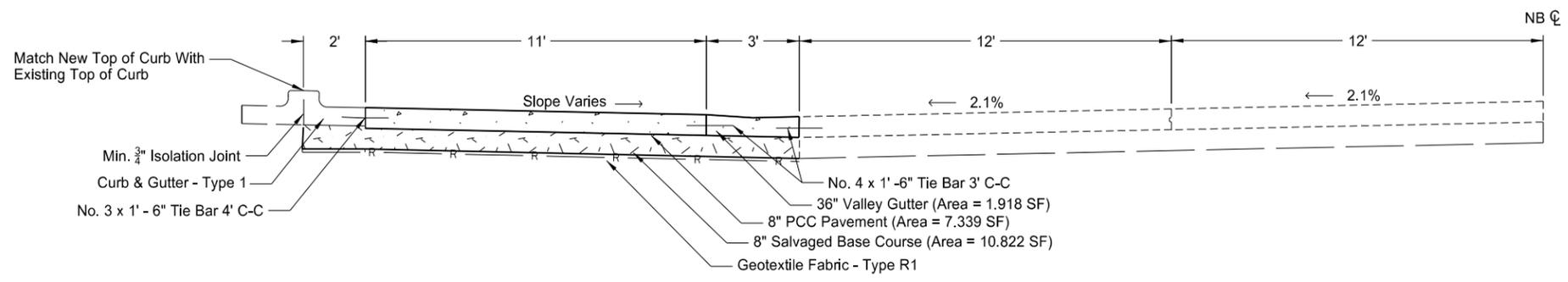
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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Typical Proposed Section 7  
109+19 to 112+20 (NB Right Turn Lane - 28th Ave)



Typical Proposed Section 8  
114+15 to 117+60 (SB Right Turn Lane - 28th Ave.)

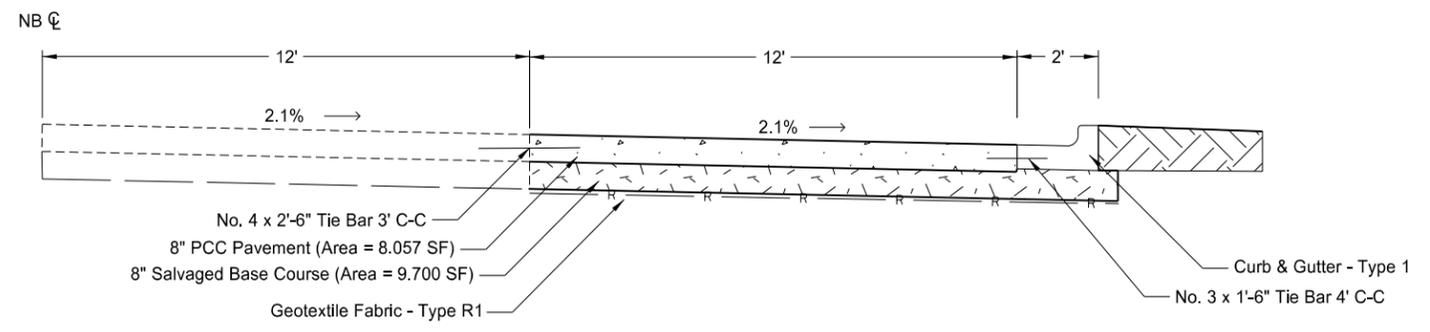


Typical Proposed Section 9  
121+47 to 126+20 (NB Left Turn Lane - 24th Ave.)

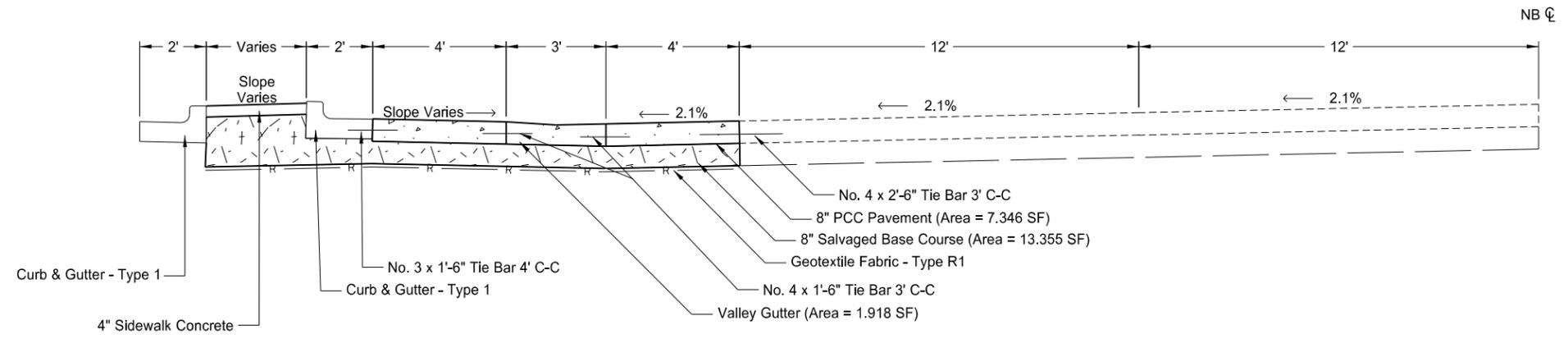
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Typical Proposed Sections

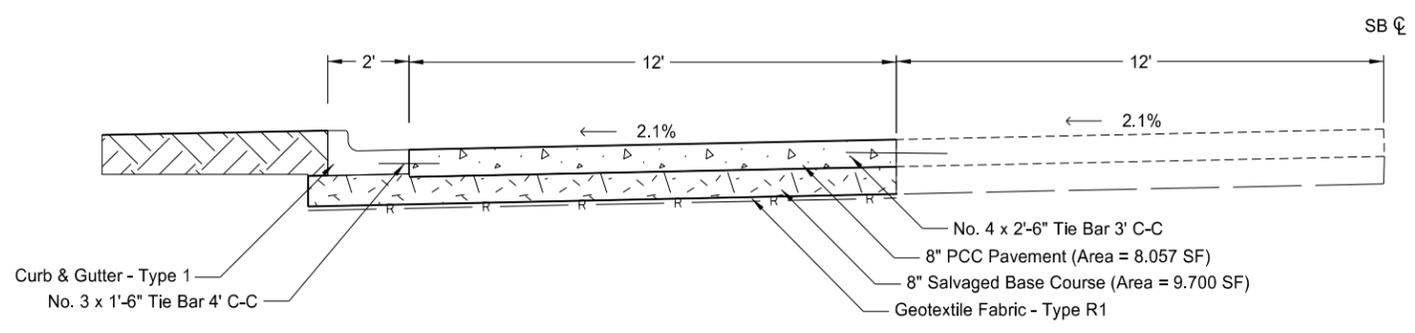
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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Typical Proposed Section 10  
138+31 to 141+63 (NB Right Turn Lane - Campbell Dr.)



Typical Proposed Section 11  
140+00 to 141+37 (NB Left Turn Lane - Campbell Dr.)

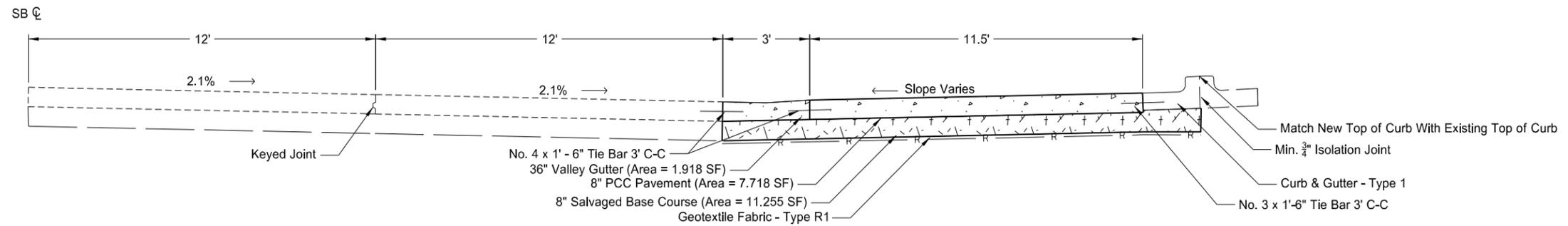


Typical Proposed Section 12  
141+92 to 145+14 (SB Right Turn Lane - Campbell Dr.)

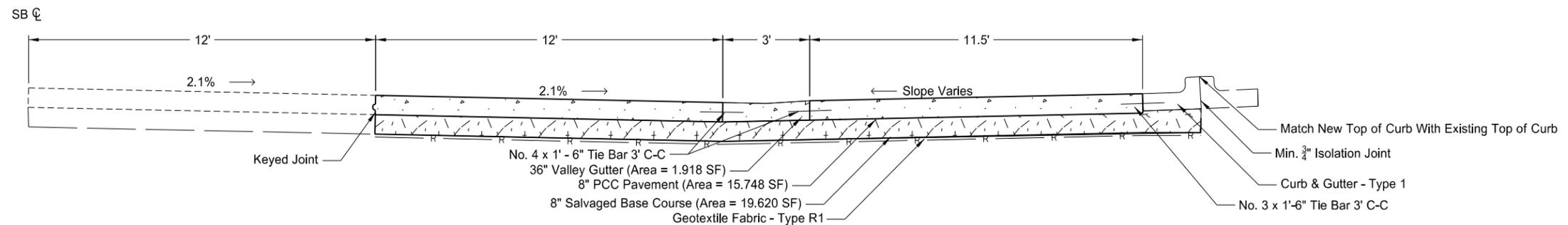
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Typical Proposed Section

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Typical Proposed Section 13  
153+54 to 155+68 (SB Left Turn Lane - 17th Ave)

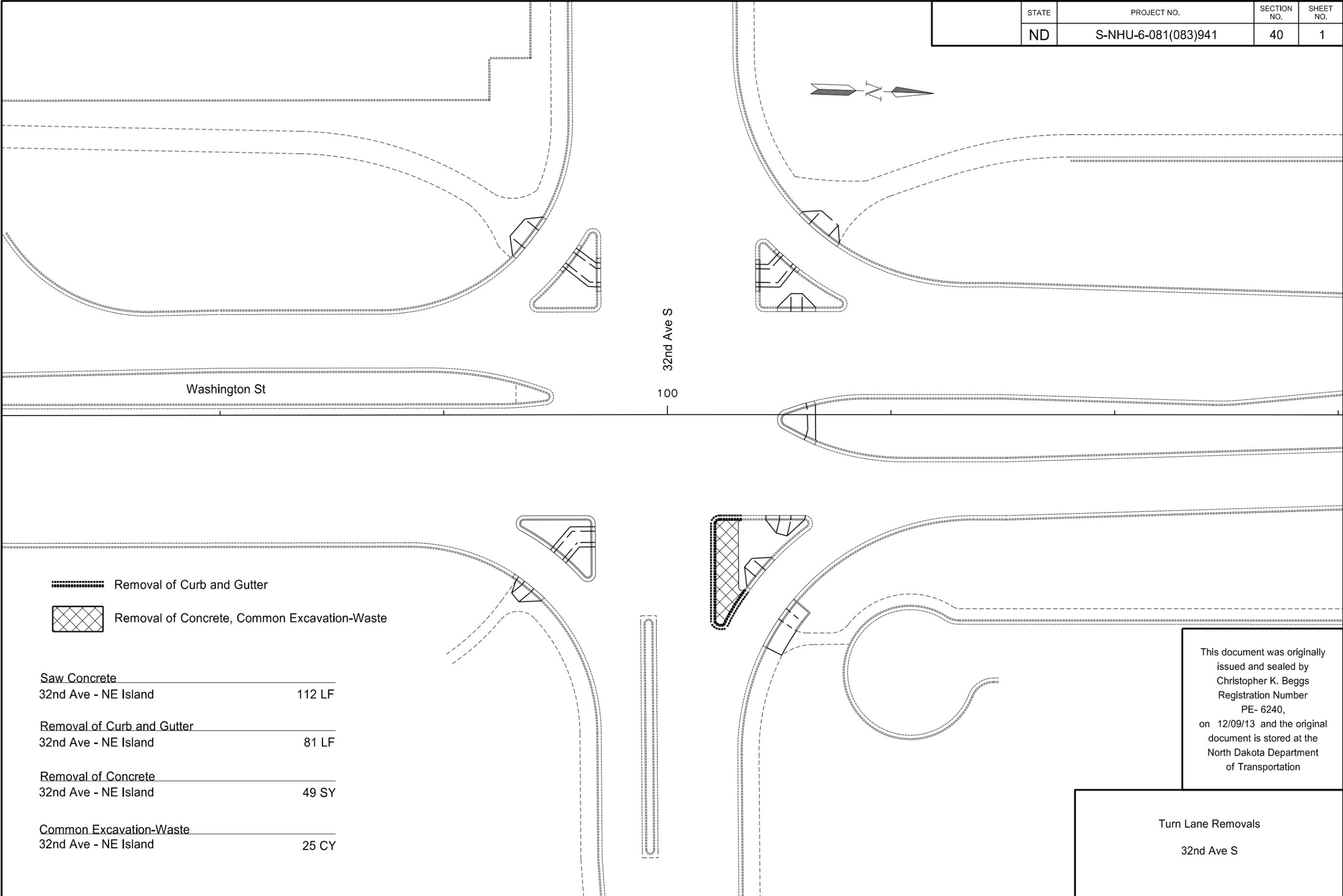


Typical Proposed Section 14  
155+68 to 158+21 (SB Left Turn Lane - 17th Ave)

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Typical Proposed Section

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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Washington St

32nd Ave S  
100

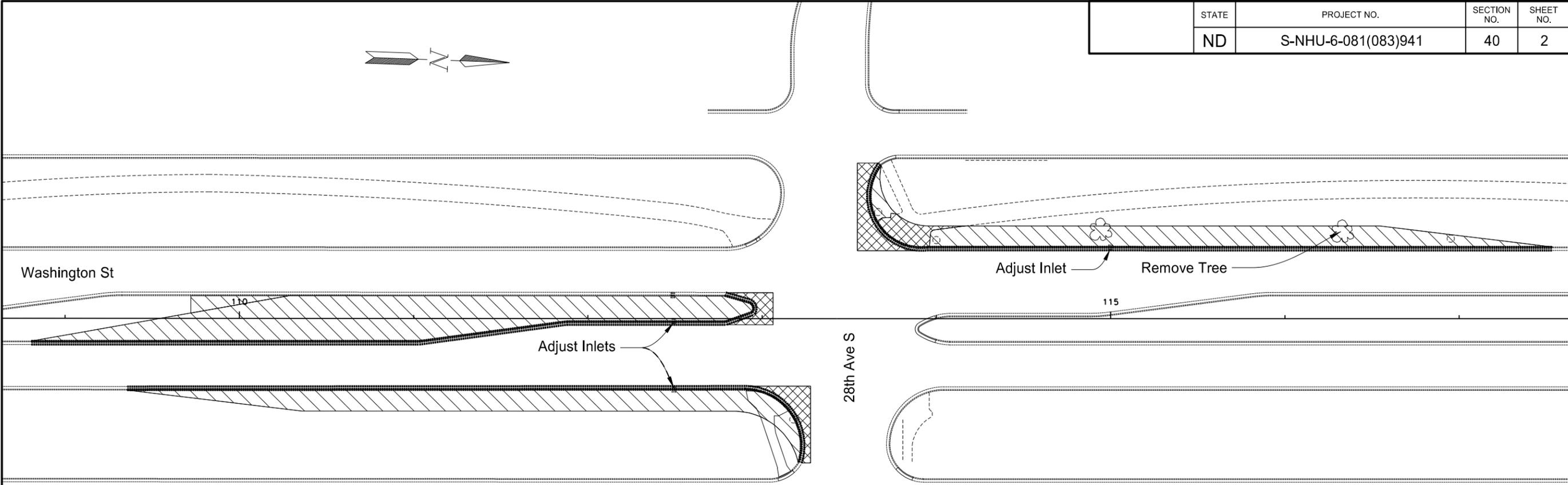
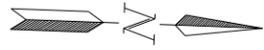
-  Removal of Curb and Gutter
-  Removal of Concrete, Common Excavation-Waste

<b>Saw Concrete</b>	
32nd Ave - NE Island	112 LF
<b>Removal of Curb and Gutter</b>	
32nd Ave - NE Island	81 LF
<b>Removal of Concrete</b>	
32nd Ave - NE Island	49 SY
<b>Common Excavation-Waste</b>	
32nd Ave - NE Island	25 CY

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Turn Lane Removals  
32nd Ave S

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ND	S-NHU-6-081(083)941	40	2



**Saw Concrete**

108+81 to 113+06 - NB Inside	472 LF
109+36 to 113+28 - NB Outside	441 LF
113+55 to 117+53 - SB Outside	461 LF

**Removal of Curb & Gutter**

108+81 to 112+97 - NB Inside	438 LF
109+36 to 113+24 - NB Outside	416 LF
113+61 to 117+53 - SB Outside	428 LF

**Removal of Concrete**

112+79 to 113+06 - NB Inside	31 SY
112+92 to 113+28 - NB Outside	46 SY
113+55 to 113+90 - SB Outside	102 SY

**Remove & Salvage Topsoil**

108+81 to 112+97 - NB Inside	814 SY
109+36 to 113+24 - NB Outside	468 SY
113+61 to 117+53 - SB Outside	407 SY

**Common Excavation-Waste**

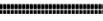
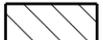
108+81 to 112+97 - NB Inside	348 CY
109+36 to 113+24 - NB Outside	208 CY
113+61 to 117+53 - SB Outside	181 CY

**Removal of Trees**

116+33 50' Lt. - SB Outside	1 EA
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**Adjust Utility Appurtenance**

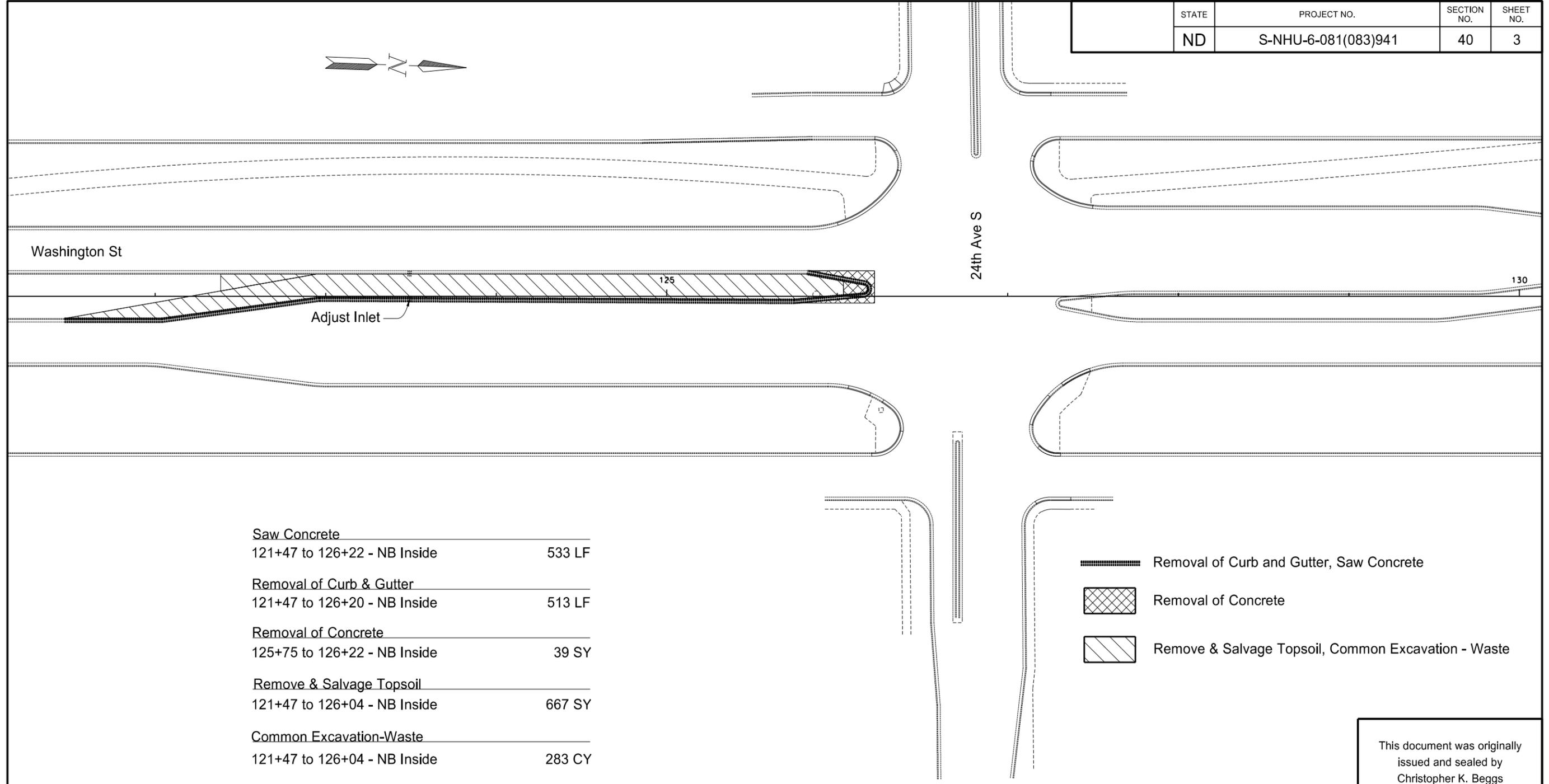
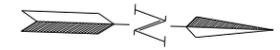
112+49 - NB Inside (Inlet)	1 EA
112+49 - NB Outside (Inlet)	1 EA
115+00 - SB Outside (Inlet)	1 EA

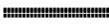
-  Removal of Curb and Gutter, Saw Concrete
-  Removal of Concrete
-  Remove & Salvage Topsoil, Common Excavation - Waste

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Turn Lane Removals  
28th Ave S

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	40	3

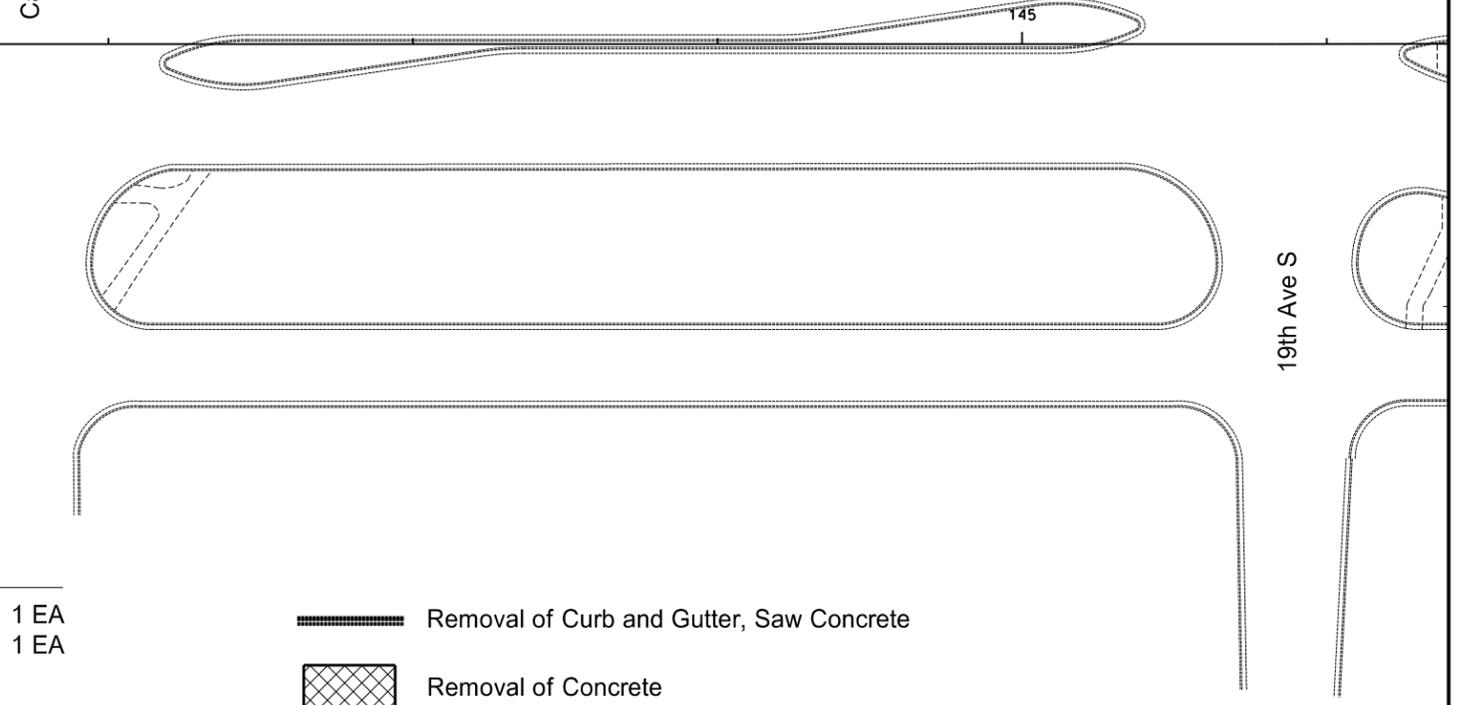
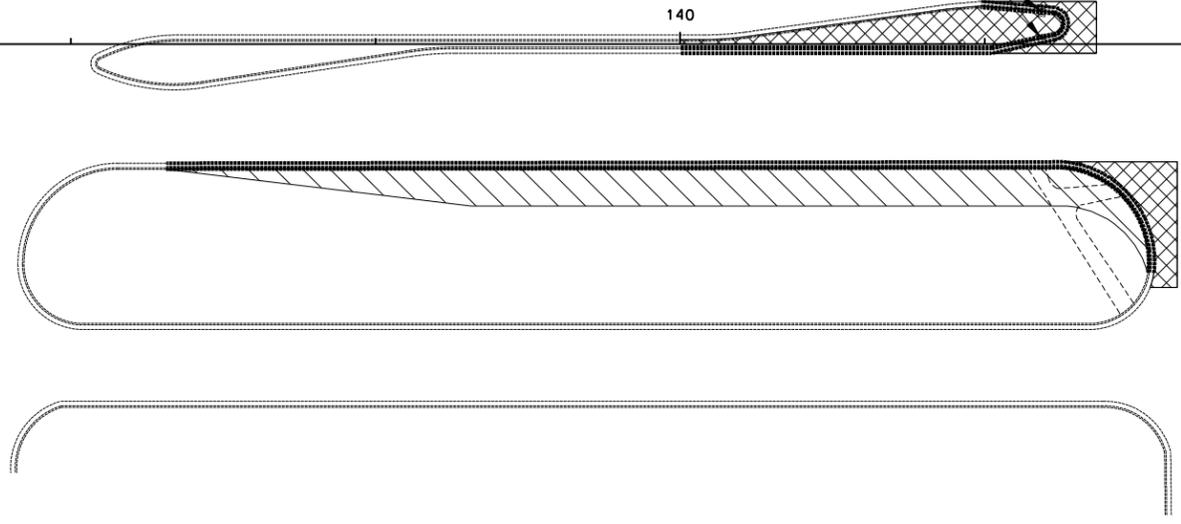
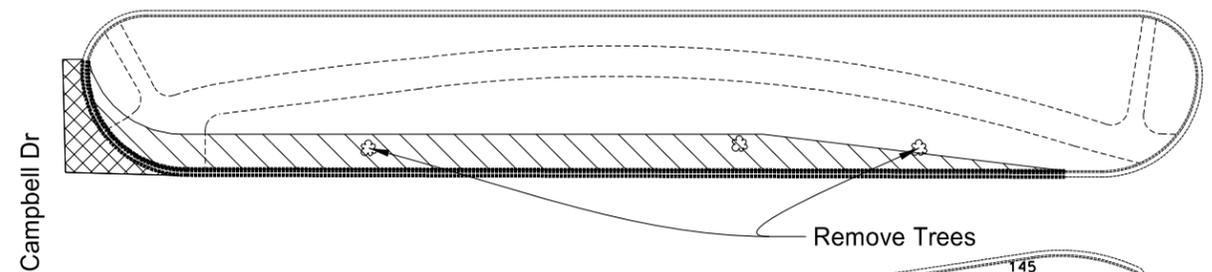
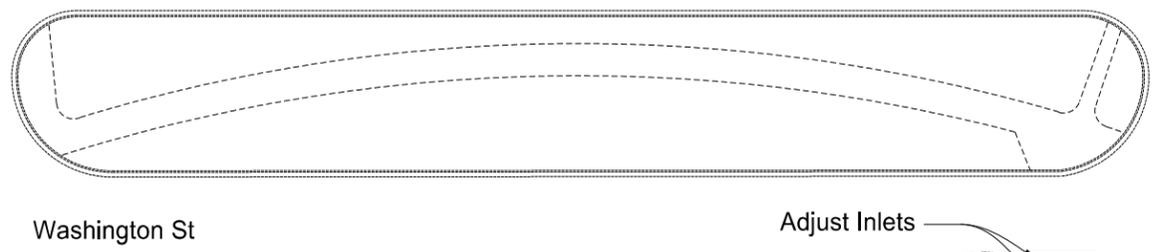
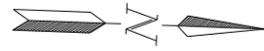


-  Removal of Curb and Gutter, Saw Concrete
-  Removal of Concrete
-  Remove & Salvage Topsoil, Common Excavation - Waste

<u>Saw Concrete</u>		
121+47 to 126+22 - NB Inside		533 LF
<u>Removal of Curb &amp; Gutter</u>		
121+47 to 126+20 - NB Inside		513 LF
<u>Removal of Concrete</u>		
125+75 to 126+22 - NB Inside		39 SY
<u>Remove &amp; Salvage Topsoil</u>		
121+47 to 126+04 - NB Inside		667 SY
<u>Common Excavation-Waste</u>		
121+47 to 126+04 - NB Inside		283 CY
<u>Adjust Utility Appurtenance</u>		
123+49 - NB Inside (Inlet)		1 EA

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Turn Lane Removals  
24th Ave S



<b>Saw Concrete</b>	
140+00 to 141+37 - NB Inside	192 LF
138+31 to 141+63 - NB Outside	382 LF
141+86 to 145+14 - SB Outside	372 LF
<b>Removal of Curb &amp; Gutter</b>	
140+00 to 141+28 - NB Inside	158 LF
138+31 to 141+56 - NB Outside	345 LF
141+92 to 145+14 - SB Outside	343 LF
<b>Removal of Concrete</b>	
140+00 to 141+37 - NB Inside	130 SY
141+26 to 141+63 - NB Outside	60 SY
141+86 to 142+23 - SB Outside	52 SY
<b>Remove &amp; Salvage Topsoil</b>	
138+31 to 141+56 - NB Outside	368 SY
141+92 to 145+14 - SB Outside	345 SY
<b>Common Excavation-Waste</b>	
140+00 to 141+28 - NB Outside	45 CY
138+31 to 141+56 - NB Outside	163 CY
141+92 to 145+14 - SB Outside	153 CY

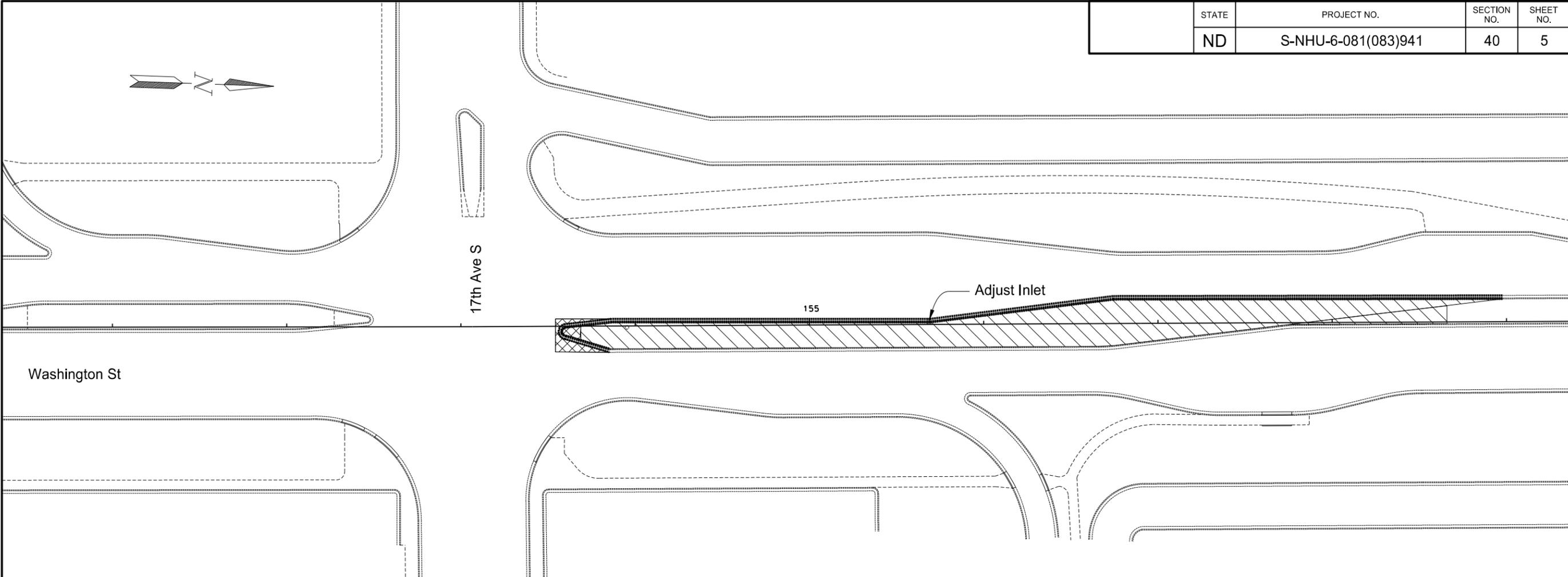
<b>Removal of Trees</b>	
142+85 48' Lt. - SB Outside	1 EA
144+66 49' Lt. - SB Outside	1 EA
<b>Adjust Utility Appurtenance</b>	
141+19 - NB Inside (Inlet)	1 EA
141+19 - SB Inside (Inlet)	1 EA

- Removal of Curb and Gutter, Saw Concrete
- Removal of Concrete
- Remove & Salvage Topsoil, Common Excavation - Waste

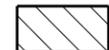
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Turn Lane Removals  
Campbell Drive

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	40	5



<u>Saw Concrete</u>		
153+54 to 158+98 - SB Inside		573 LF
<u>Removal of Curb &amp; Gutter</u>		
153+56 to 158+21 - SB Inside		497 LF
<u>Removal of Concrete</u>		
153+54 to 153+87 - SB Inside		31 SY
<u>Remove &amp; Salvage Topsoil</u>		
153+69 to 158+98 - SB Inside		925 SY
<u>Common Excavation-Waste</u>		
153+69 to 158+98 - SB Inside		393 CY
<u>Adjust Utility Appurtenance</u>		
155+69 - SB Inside (Inlet)		1 EA

-  Removal of Curb and Gutter, Saw Concrete
-  Removal of Concrete
-  Remove & Salvage Topsoil, Common Excavation - Waste

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Turn Lane Removals  
17th Ave S

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	50	1

## Storm Sewer: Drain Castings and Grates

### 28th Ave S

### 24th Ave S

### Campbell Dr.

### 17th Ave S

<p>Intersection: 28th Ave S  Location: NB RTL  Existing Type: Inlet - Type 2  Existing Grate Style: Type D  Proposed Type: Inlet - Mountable Curb  Proposed Grate Style: Type B  Station: 112+50 - 40' Rt</p> <p>Intersection: 28th Ave S  Location: NB LTL  Existing Type: Inlet - Type 2  Existing Grate Style: Type D  Proposed Type: Inlet - Mountable Curb  Proposed Grate Style: Type B  Station: 112+50 - 2' Rt</p> <p>Intersection: 28th Ave S  Location: SB RTL  Existing Type: Inlet - Type 2  Existing Grate Style: Type D  Proposed Type: Inlet - Mountable Curb  Proposed Grate Style: Type B  Station: 115+00 - 40' Lt</p>	<p>Intersection: 24th Ave S  Location: NB LTL  Existing Type: Inlet - Type 2  Existing Grate Style: Type D  Proposed Type: Inlet - Mountable Curb  Proposed Grate Style: Type B  Station: 123+50 - 2' Rt</p>	<p>Intersection: Campbell Dr  Location: NB LTL  Existing Type: Inlet - Type 1  Existing Grate Style: Type D  Proposed Type: Casting Catch Basin - Floating  Proposed Grate Style: Type A  Station: 141+20.3 - 1.2' Rt</p>	<p>Intersection: 17th Ave S  Location: SB LTL  Existing Type: Inlet - Type 2  Existing Grate Style: Type D  Proposed Type: Inlet - Mountable Curb  Proposed Grate Style: Type B  Station: 155 +70 - 2.3' Lt</p>
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Inlet & Manhole Summary

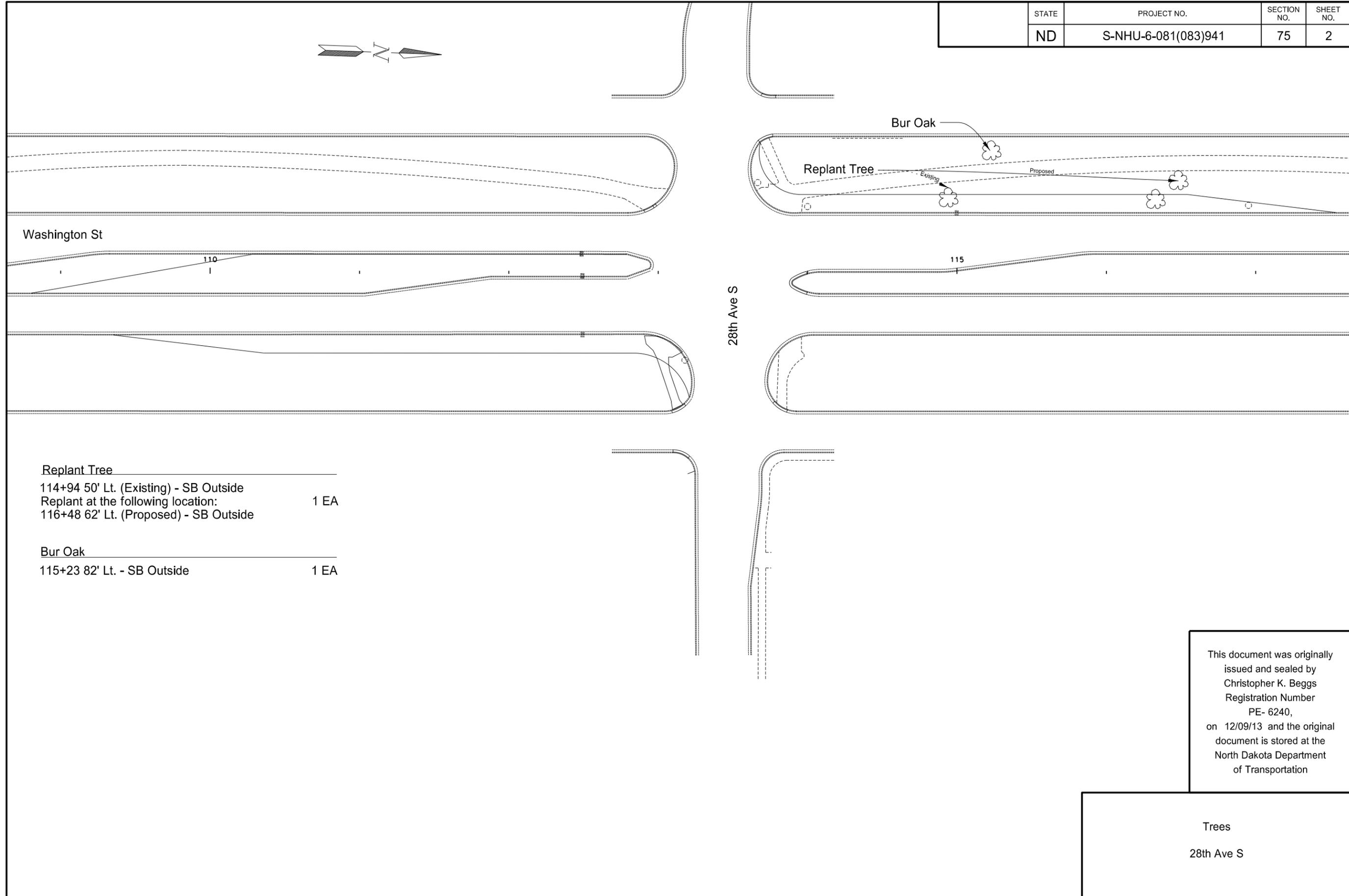
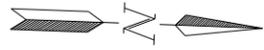
Inlet Location	Type of Inlet Protection	Quantity
99+20 – 66' RT	Inlet Basket	1 EA
99+20 – 4' LT	Inlet Basket	1 EA
99+20 – 18' LT	Inlet Basket	1 EA
99+50 – 96' LT	Inlet Basket	1 EA
100+55 – 92' LT	Inlet Basket	1 EA
100+74 – 15' RT	Inlet Basket	1 EA
100+74 – 7' LT	Inlet Basket	1 EA
100+78 – 74' LT	Inlet Basket	1 EA
100+87 – 58' RT	Inlet Basket	1 EA
106+44 – 13' LT	Inlet Basket	1 EA
106+44 – 2' RT	Inlet Basket	1 EA
106+49 – 40' RT	Inlet Basket	1 EA
107+21 – 82' LT	Inlet Basket	1 EA
107+29 – 49' RT	Inlet Basket	1 EA
107+55 – 2' LT	Inlet Basket	1 EA
107+55 – 13' LT	Inlet Basket	1 EA
112+50 – 40' LT	Inlet Basket	1 EA
112+50 – 14' LT	Inlet Basket	1 EA
112+50 – 2' RT	Inlet Basket	1 EA
112+50 – 40' RT	Inlet Basket	1 EA
115+00 – 40' LT	Inlet Basket	1 EA
115+00 – 3' LT	Inlet Basket	1 EA
115+00 – 40' RT	Inlet Basket	1 EA
119+12 – 40' RT	Inlet Basket	1 EA
119+12 – 14' RT	Inlet Basket	1 EA
119+12 – 14' LT	Inlet Basket	1 EA
119+12 – 40' LT	Inlet Basket	1 EA
123+50 – 40' LT	Inlet Basket	1 EA
123+50 – 14' LT	Inlet Basket	1 EA
123+50 – 2' RT	Inlet Basket	1 EA
123+50 – 52' RT	Inlet Basket	1 EA
127+51 – 22' LT	Inlet Basket	1 EA
127+51 – 10' RT	Inlet Basket	1 EA
127+51 – 43' RT	Inlet Basket	1 EA
134+36 – 14' LT	Inlet Basket	1 EA
134+36 – 10' RT	Inlet Basket	1 EA
134+36 – 10' RT	Inlet Basket	1 EA
137+11 – 11' LT	Inlet Basket	1 EA
137+11 – 2' LT	Inlet Basket	1 EA

Inlet Location	Type of Inlet Protection	Quantity
137+39 – 87' RT	Inlet Basket	1 EA
137+89 – 86' RT	Inlet Basket	1 EA
138+15 – 2' RT	Inlet Basket	1 EA
138+15 – 11' RT	Inlet Basket	1 EA
141+20 – 11' RT	Inlet Basket	1 EA
141+20 – 1' LT	Inlet Basket	1 EA
141+42 – 91' RT	Inlet Basket	1 EA
142+25 – 1' RT	Inlet Basket	1 EA
142+25 – 11' RT	Inlet Basket	1 EA
145+32 – 11' LT	Inlet Basket	1 EA
145+32 – 2' LT	Inlet Basket	1 EA
145+62 – 82' RT	Inlet Basket	1 EA
146+12 – 82' RT	Inlet Basket	1 EA
146+32 – 1' LT	Inlet Basket	1 EA
146+32 – 82' RT	Inlet Basket	1 EA
146+36 – 49' RT	Inlet Basket	1 EA
147+42 -46' RT	Inlet Basket	1 EA
149+80 – 46' LT	Inlet Basket	1 EA
150+00 – 2' RT	Inlet Basket	1 EA
150+00 – 52' RT	Inlet Basket	1 EA
150+00 – 7' LT	Inlet Basket	1 EA
152+63 – 93' LT	Inlet Basket	1 EA
152+51 – 67' LT	Inlet Basket	1 EA
153+38 – 93' LT	Inlet Basket	1 EA
155+70 – 52' LT	Inlet Basket	1 EA
155+70 – 2' LT	Inlet Basket	1 EA
155+70 – 55' RT	Inlet Basket	1 EA
155+70 – 14' RT	Inlet Basket	1 EA
156+00 – 40' RT	Inlet Basket	1 EA
159+51 – 45' LT	Inlet Basket	1 EA
159+75 – 14' LT	Inlet Basket	1 EA
159+75 – 2' RT	Inlet Basket	1 EA
159+75 – 40' RT	Inlet Basket	1 EA
160+51 – 5' LT	Inlet Basket	1 EA
161+23 – 80' RT	Inlet Basket	1 EA
161+71 – 80' RT	Inlet Basket	1 EA
164+11 – 46' LT	Inlet Basket	1 EA
164+55 – 69' RT	Inlet Basket	1 EA

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Inlet Protection Locations  
South Washington Street

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	75	2



Washington St

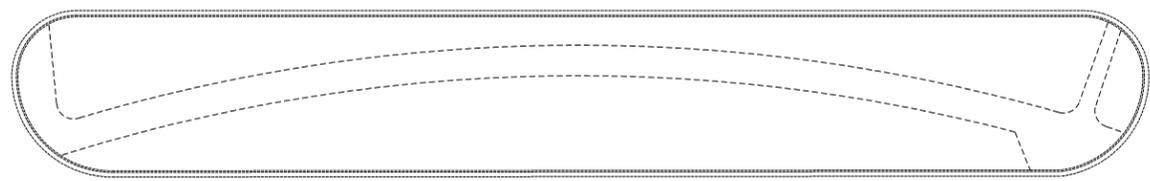
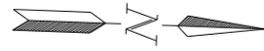
28th Ave S

- Replant Tree
- 114+94 50' Lt. (Existing) - SB Outside
  - Replant at the following location: 1 EA
  - 116+48 62' Lt. (Proposed) - SB Outside
- Bur Oak
- 115+23 82' Lt. - SB Outside 1 EA

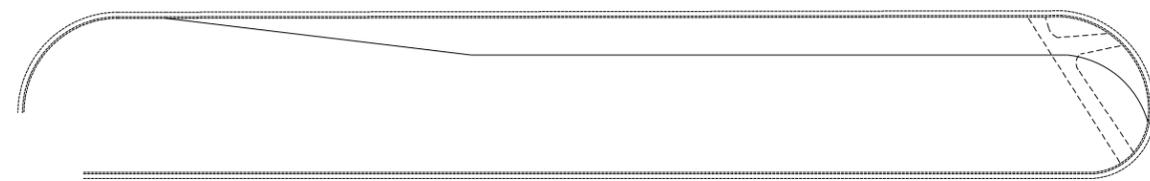
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Trees  
28th Ave S

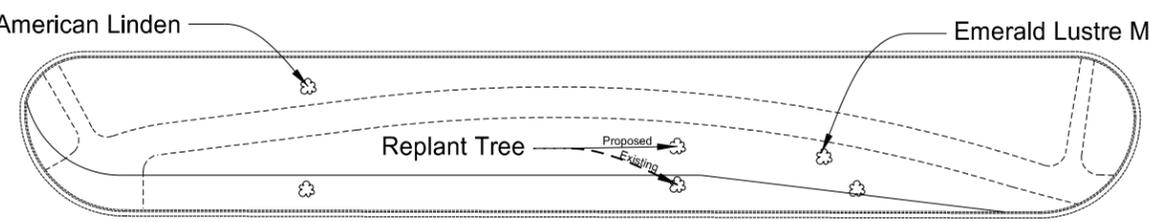
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	75	3



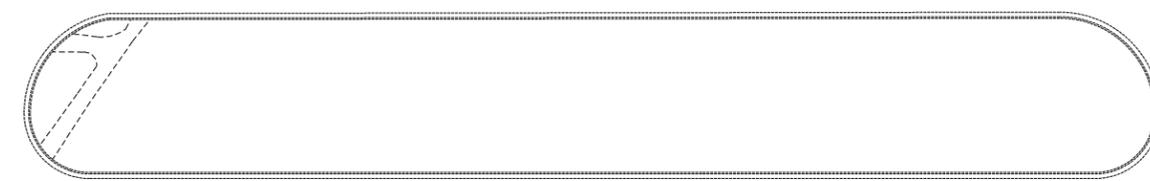
Washington St



Campbell Dr



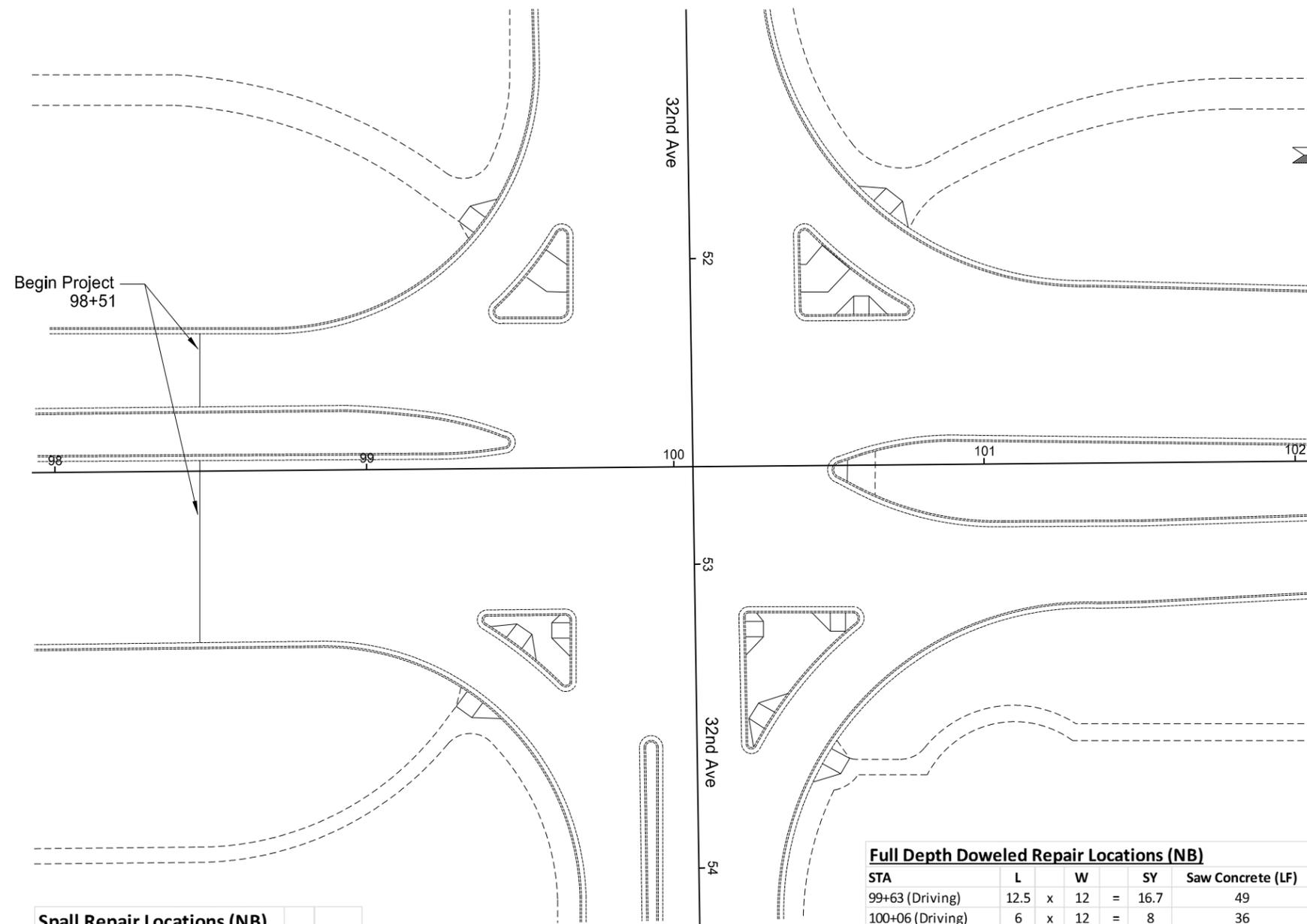
19th Ave S



<u>Replant Tree</u>	
144+07 50' Lt. (Existing) - SB Outside	
Replant at the following location:	1 EA
144+07 62' Lt. (Proposed) - SB Outside	
<u>American Linden</u>	
142+86 82' Lt. - SB Outside	1 EA
<u>Emerald Lustre Maple</u>	
144+54 59' Lt. - SB Outside	1 EA

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Trees  
Campbell Drive



Random Crack (NB)		
STA	LF	Epoxy Coated Deformed Bars (EA)
98+54 (Passing)	27	14
98+84 (Passing)	27	14
98+98 (Turn)	11	6
100+53 (Passing)	7	4
100+84 (Driving)	9	5

Random Crack (SB)		
STA	LF	Epoxy Coated Deformed Bars (EA)
100+48 (Ramp)	16	8
100+60 (Ramp)	9	5
100+75 (Driving)	10	5
101+09 (Driving)	7	4

Grinding Locations					
STA		STA	Length (FT)	Width (FT)	SY
98+51	to	99+54	103	48	550
99+54	to	100+58	104	96	1110
100+58	to	102+00	142	48	758
51+24 (32nd Ave Alignment)	to	52+21 (32nd Ave Alignment)	97	70	755
SB Right Turn Lane			180	14	280
51+38 (32nd Ave Alignment)	to	52+18 (32nd Ave Alignment)	80	Varies (EB Right Turn Lane)	202
53+15 (32nd Ave Alignment)	to	53+95 (32nd Ave Alignment)	80	Varies	878

Spall Repair Locations (NB)				
STA	L	W		SF
98+51 (Passing)	2	x 2	=	4
98+84 (Passing)	2	x 2	=	4
99+15 (Passing)	3	x 2	=	6
99+48 (Passing)	2	x 2	=	4
100+39 (Passing)	2	x 18	=	36
100+53 (Passing)	2	x 2	=	4
100+67 (Driving)	5	x 2	=	10
100+75 (Passing)	3	x 2	=	6
100+84 (Turn)	2	x 2	=	4
100+84 (Driving)	2	x 2	=	4
101+01 (Driving)	2	x 2	=	4
101+80 (Driving)	2	x 2	=	4

Spall Repair Locations (SB)				
STA	L	W		SF
99+66 (Ramp)	2	x 2	=	4
100+20 (Driving)	2	x 2	=	4
100+39 (Driving)	2	x 2	=	4
100+48 (Ramp)	2	x 3	=	6
100+58 (Ramp)	2	x 2	=	4
100+82 (Ramp)	2	x 4	=	8
101+00 (Driving)	2	x 2	=	4
101+51 (Driving)	2	x 2	=	4
101+64 (Driving)	2	x 2	=	4

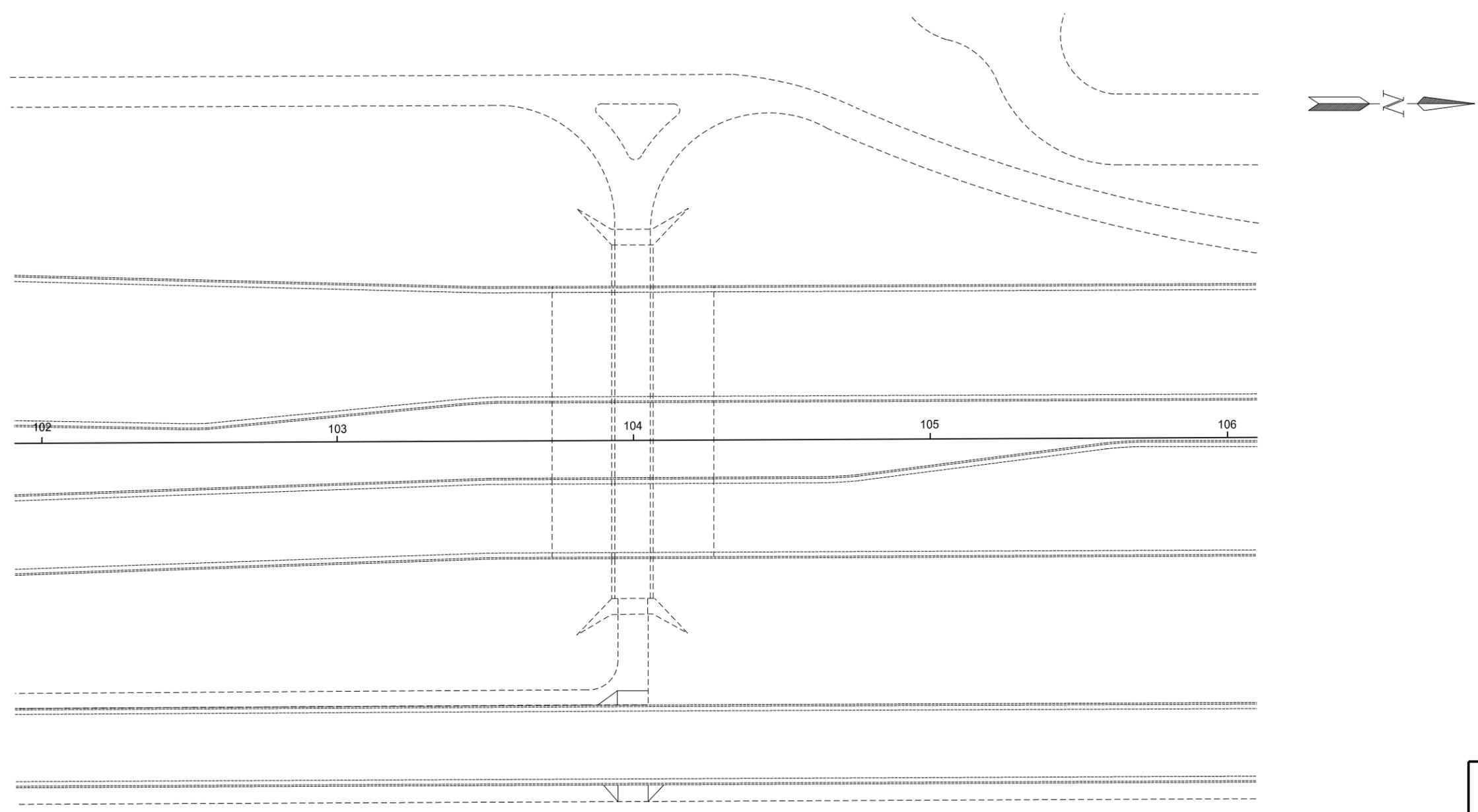
Full Depth Doweled Repair Locations (NB)						
STA	L	W	SY	Saw Concrete (LF)	Dowel Bars (EA)	
99+63 (Driving)	12.5	x 12	=	16.7	49	20
100+06 (Driving)	6	x 12	=	8	36	20
100+18 (Driving)	8	x 12	=	10.7	40	20
100+32 (Driving)	6	x 12	=	8	36	20
100+68 (Passing)	6	x 12	=	8	36	20

Full Depth Doweled Repair Locations (SB)						
STA	L	W	SY	Saw Concrete (LF)	Dowel Bars (EA)	
99+00 (Driving)	6	x 12	=	8	36	20
99+43 (Driving)	7	x 12	=	9.3	38	20
99+56 (Ramp)	6	x 16	=	10.7	44	28
99+73 (Ramp)	12	x 16	=	21.4	56	28
100+20 (Driving)	6	x 12	=	8	36	20
100+81 (Driving)	7	x 12	=	9.4	38	20
100+93 (Driving)	16.5	x 12	=	22.7	58	20
101+00 (Driving)	6	x 12	=	8	36	20
101+17 (Driving)	11	x 12	=	14.7	46	20

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Repair Locations  
98+00 to 102+00  
South Washington St.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	80	2



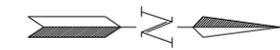
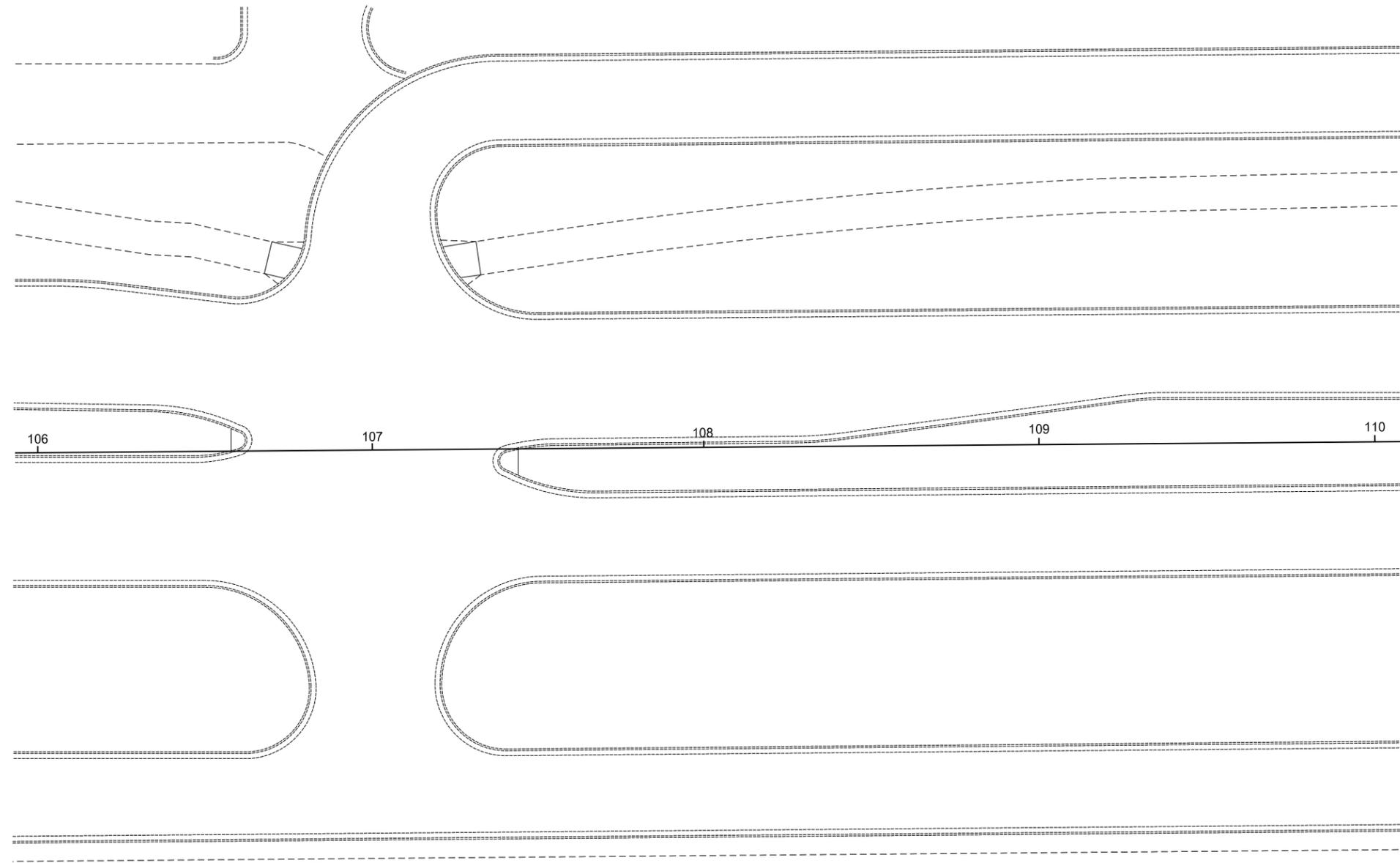
Spall Repair Locations (NB)				
STA	L	W		SF
102+12 (Driving)	2	x	2	= 4
104+27 (Driving)	2	x	2	= 4

Spall Repair Locations (SB)				
STA	L	W		SF
102+76 (Passing)	2	x	2	= 4
103+08 (Passing)	2	x	2	= 4
104+43 (Passing)	2	x	2	= 4
104+90 (Passing)	2	x	2	= 4

Grinding Locations				
STA	STA	Length (FT)	Width (FT)	SY
102+00	to 106+00	400	65	2889

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Repair Locations  
102+00 - 106+00  
South Washington St.



Grinding Locations				
STA	STA	Length (FT)	Width (FT)	SY
106+00	to 110+00	400	52	2312

Random Crack (NB)		
STA	LF	Epoxy Coated Deformed Bars (EA)
106+74 (Driving)	32	16

Random Crack (SB)		
STA	LF	Epoxy Coated Deformed Bars (EA)
107+28 (Driving)	54	27
107+45 (Turn)	14	7

Spall Repair Locations (NB)				
STA	L	W	SF	
106+47 (Driving)	2	x 2	= 4	
106+76 (Passing)	2	x 2	= 4	
106+81 (Driving)	3	x 2	= 6	
106+93 (Driving)	2	x 3	= 6	
107+17 (Driving)	2	x 2	= 4	

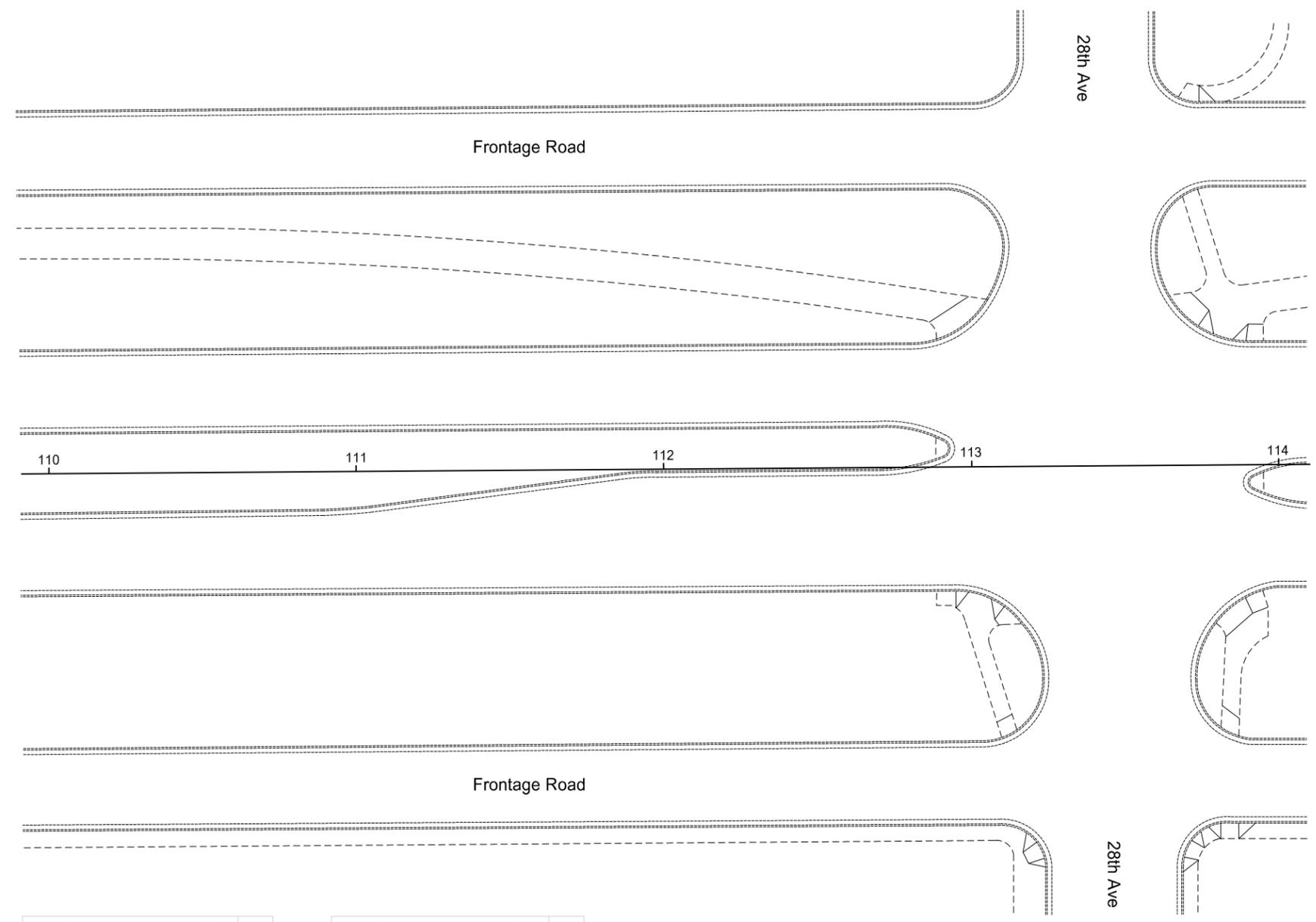
Spall Repair Locations (SB)				
STA	L	W	SF	
106+50 (Passing)	2	x 2	= 4	
106+66 (Driving)	2	x 2	= 4	
107+28 (Passing)	2	x 2	= 4	
107+57 (Turn)	2	x 2	= 4	
109+05 (Passing)	3	x 2	= 6	
109+39 (Driving)	2	x 2	= 4	
109+39 (Passing)	6	x 2	= 12	
109+68 (Passing)	2	x 2	= 4	

Full Depth Doweled Repair Locations (NB)						
STA	L	W	SY	Saw Concrete (LF)	Dowel Bars (EA)	Doweled Contraction Joint Assembly (LF)
104+49 (Passing)	6	x 12	= 8	36	20	
106+49 (Driving)	16	x 12	= 21.3	56	20	
107+91 (Driving)	49	x 12	= 65.3	122	20	36

Full Depth Doweled Repair Locations (SB)					
STA	L	W	SY	Saw Concrete (LF)	Dowel Bars (EA)
106+34 (Driving)	6	x 12	= 8	36	20
107+45 (Turn)	6	x 12	= 8	36	20
107+60 (Driving)	6	x 12	= 8	36	20
107+65 (Turn)	8	x 12	= 10.7	40	20
109+04 (Driving)	6	x 12	= 8	36	20

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Repair Locations  
106+00 to 110+00  
South Washington St.



Grinding Locations					
STA	to	STA	Length (FT)	Width (FT)	SY
110+00	to	112+95	295	52	1705
112+95	to	113+90	95	86	908
113+90	to	114+00	10	52	58

Random Crack (SB)		
STA	LF	Epoxy Coated Deformed Bars (EA)
113+18 (Driving)	10	5
113+25 (Driving)	22	11
113+66 (Driving)	14	7

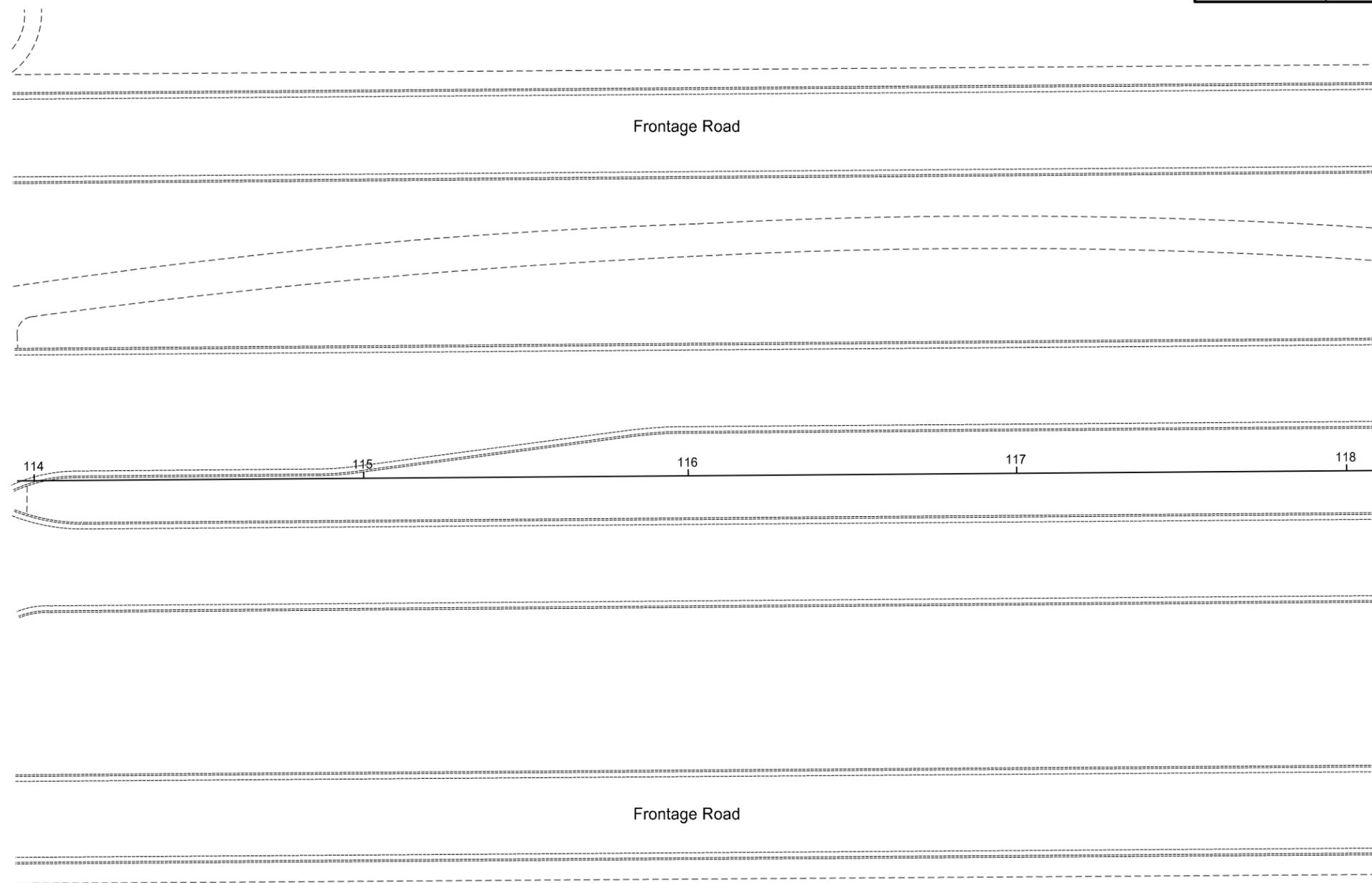
Spall Repair Locations (NB)				
STA	L	W		SF
110+31 (Driving)	2	x	2	= 4
111+11 (Passing)	2	x	2	= 4
113+30 (Driving)	2	x	2	= 4
113+91 (Driving)	2	x	2	= 4

Spall Repair Locations (SB)				
STA	L	W		SF
110+00 (Passing)	2	x	2	= 4
110+16 (Passing)	2	x	2	= 4
110+33 (Passing)	2	x	2	= 4
110+64 (Passing)	2	x	2	= 4
110+81 (Passing)	2	x	2	= 4
111+44 (Passing)	2	x	2	= 4
111+62 (Passing)	4	x	2	= 8
111+93 (Passing)	3	x	2	= 6
112+53 (Passing)	4	x	2	= 8
113+66 (Driving)	2	x	2	= 4
113+92 (Driving)	2	x	2	= 4

Full Depth Doweled Repair Locations (SB)						
STA	L	W	SY	Saw Concrete (LF)	Dowel bars (EA)	
111+60 (Driving)	6	x	12	= 8	36	20
113+08 (Driving)	8	x	12	= 10.7	40	20
113+66 (Passing)	6	x	12	= 8	36	20

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Repair Locations  
110+00 to 114+00  
South Washington St.



Spall Repair Locations (NB)				
STA	L	W		SF
114+96 (Passing)	3	x	2	= 6

Spall Repair Locations (SB)				
STA	L	W		SF
114+88 (Passing)	3	x	2	= 6
116+77 (Passing)	2	x	2	= 4
117+89 (Passing)	3	x	2	= 6

Full Depth Doweled Repair Locations (NB)						
STA	L	W	SY	Saw Concrete (LF)	Dowel bars (EA)	
114+03 (Passing)	6	x	12 = 8	36	20	
114+04 (Driving)	6	x	12 = 8	36	20	
115+00 (Driving)	6	x	12 = 8	36	20	
117+06 (Passing)	6	x	12 = 8	36	20	

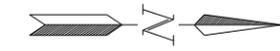
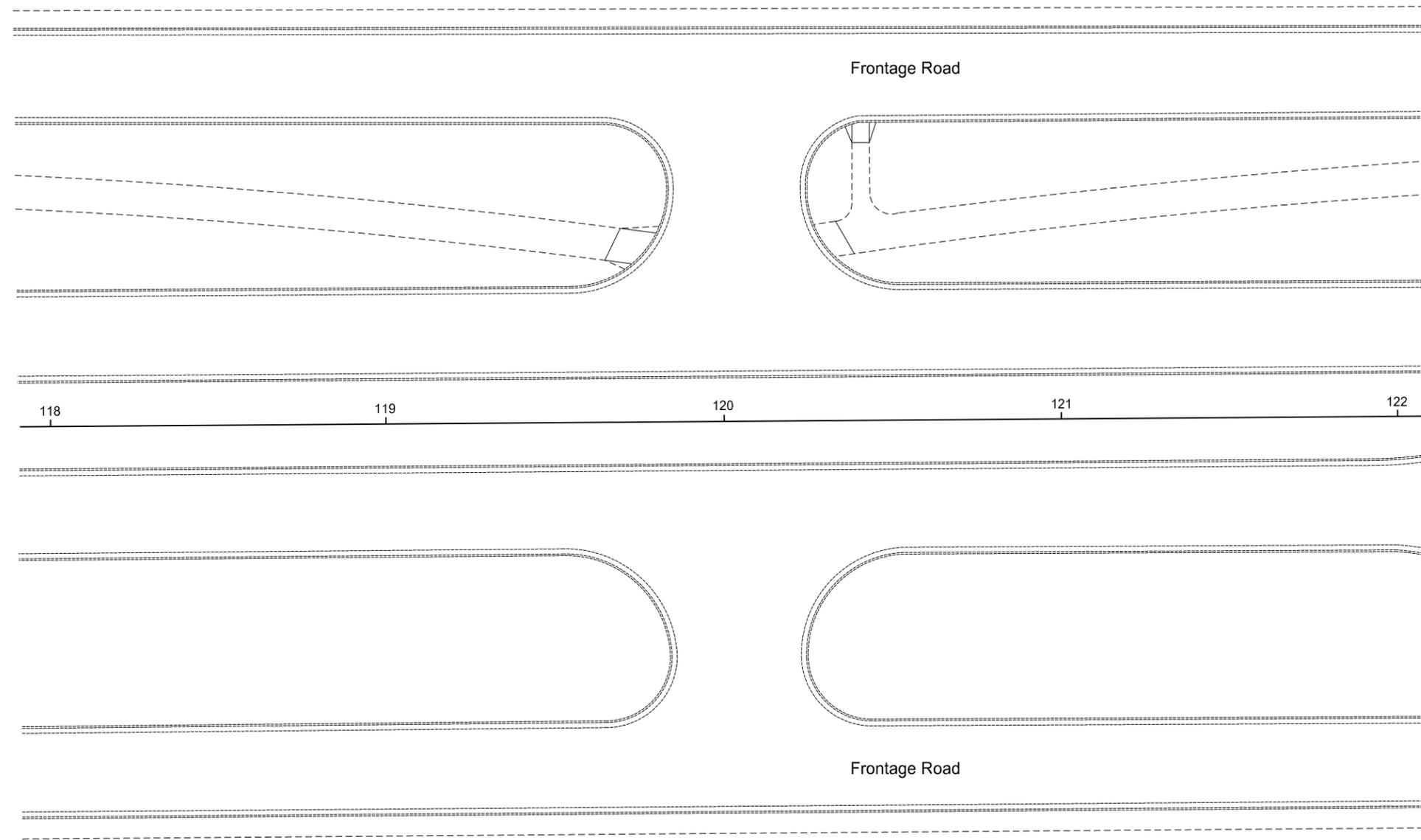
Grinding Locations				
STA	STA	Length (FT)	Width (FT)	SY
114+00	to 118+00	400	52	2312

Random Crack (SB)		
STA	LF	Epoxy Coated Deformed Bars (EA)
114+96 (Passing)	22	11

Full Depth Doweled Repair Locations (SB)						
STA	L	W	SY	Saw Concrete (LF)	Dowel bars (EA)	Doweled Contraction Joint Assembly (LF)
115+16 (Passing)	6	x	12 = 8	36	20	0
115+16 (Passing)	6	x	12 = 8	36	20	0
115+80 (Passing)	6	x	12 = 8	36	20	0
117+44	32	x	24 = 85.4	112	40	24

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Repair Locations  
114+00 to 118+00  
South Washington St.



**Spall Repair Locations (SB)**

STA	L	W	SF
118+92 (Driving)	2	x 2	= 4
120+06 (Driving)	3	x 2	= 6

**Spall Repair Locations (NB)**

STA	L	W	SF
119+25 (Passing)	2	x 2	= 4
120+29 (Passing)	2	x 2	= 4

**Grinding Locations**

STA	STA	Length (FT)	Width (FT)	SY
118+00	to 122+00	400	52	2312

**Random Crack (NB)**

STA	LF	Epoxy Coated Deformed Bars (EA)
119+13 (Passing)	13	7

**Full Depth Doweled Repair Locations (SB)**

STA	L	W	SY	Saw Concrete (LF)	Dowel Bars (EA)	Doweled Contraction Joint Assembly (LF)
118+36 (Passing)	6	x 12	= 8.0	36	20	
119+66 (Driving)	6	x 12	= 8.0	36	20	
120+42 (Driving)	6	x 12	= 8.0	36	20	
120+53 (Driving)	6	x 12	= 8.0	36	20	
120+85 (Driving)	6	x 12	= 8.0	36	20	
120+85 (Passing)	6	x 12	= 8.0	36	20	
*120+96 (Passing)	24	x 12.5	= 33.4	73	20	12
*120+96 (Driving)	24	x 12.5	= 33.4	73	20	12

**Full Depth Doweled Repair Locations (NB)**

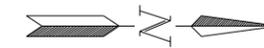
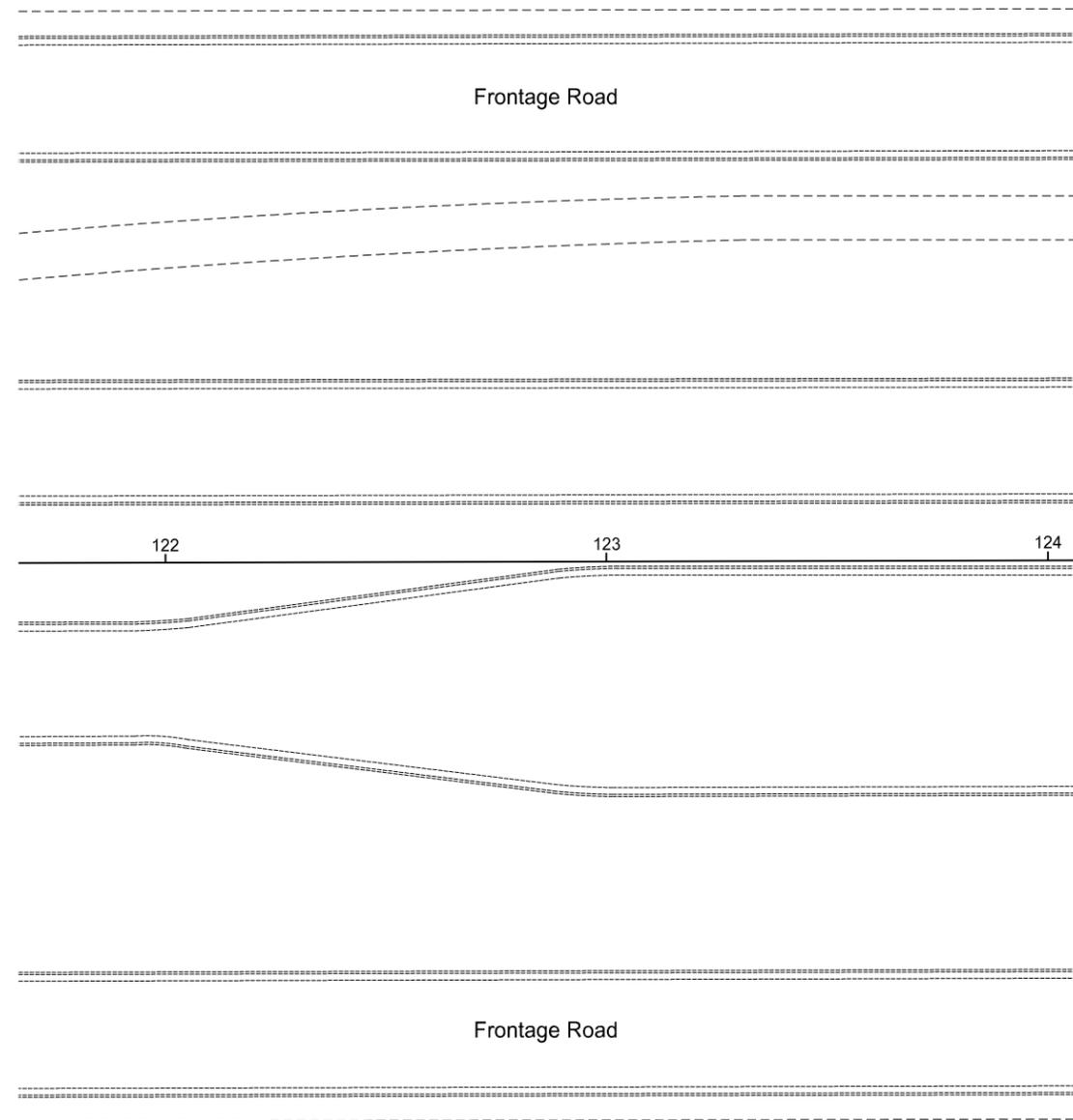
STA	L	W	SY	Saw Concrete (LF)	Dowel Bars (EA)	Doweled Contraction Joint Assembly (LF)
120+41 (Driving)	6	x 12	= 8.0	36	20	
*120+96 (Driving)	24	x 12.5	= 33.4	73	20	12
*120+96 (Passing)	24	x 12.5	= 33.4	73	20	12
121+46 (Passing)	6	x 12	= 8.0	36	20	
121+47 (Driving)	6	x 12	= 8.0	36	20	

\* ATR Site Location

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Repair Locations  
118+00 to 122+00  
South Washington St.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	80	7



Spall Repair Locations (NB)				
STA	L	W		SF
123+41 (Passing)	2	x 2	=	4
123+47 (Passing)	5	x 2	=	10

Spall Repair Locations (SB)				
STA	L	W		SF
123+25 (Driving)	2	x 2	=	4
123+57 (Driving)	2	x 2	=	4

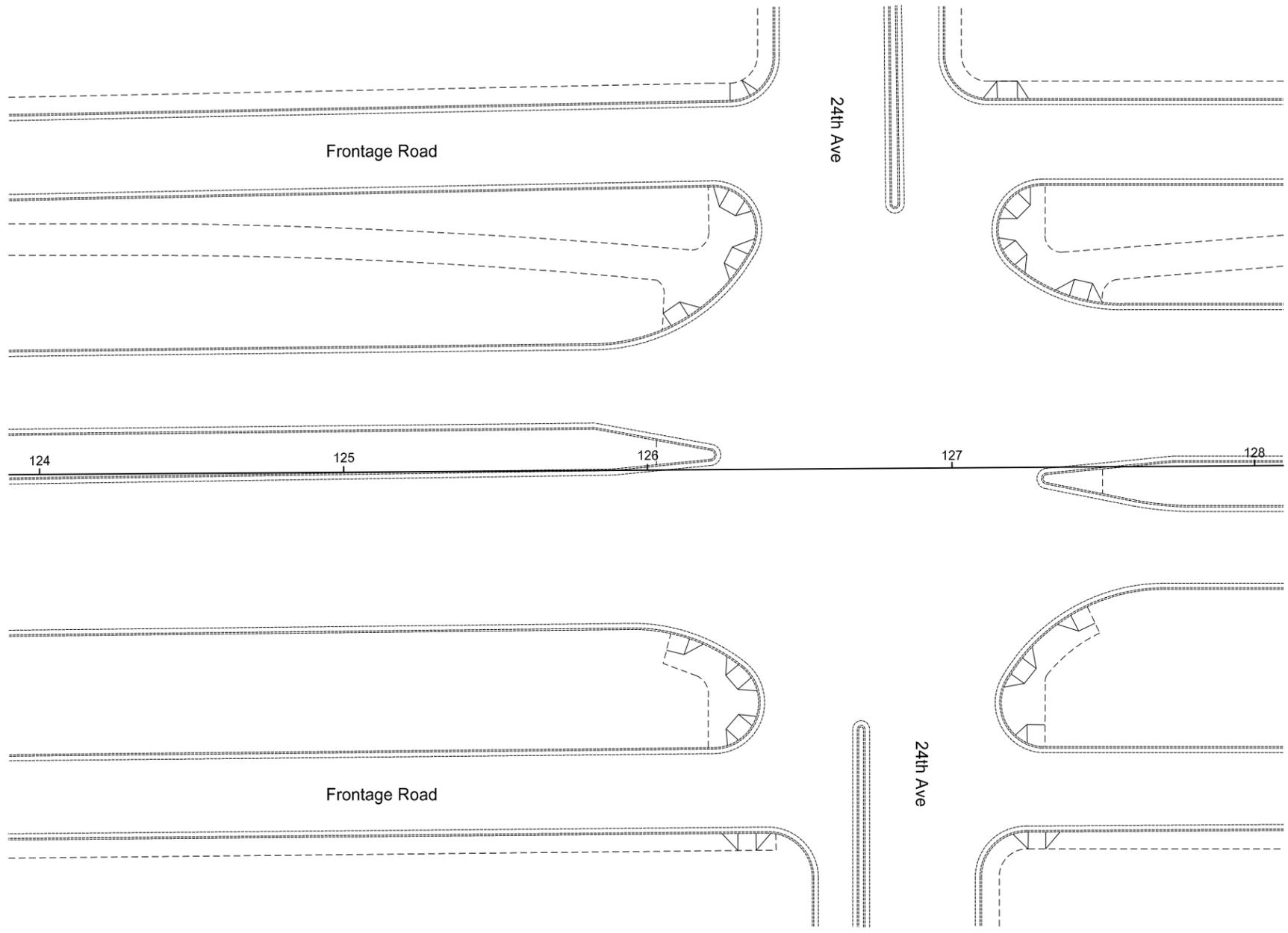
Full Depth Doweled Repair Locations (NB)					
STA	L	W	SY	Saw Concrete (LF)	Dowel Bars (EA)
123+41 (Driving)	16.5	x 12.5	= 22.9	58	20

Grinding Locations				
STA	STA	Length (FT)	Width (FT)	SY
122+00	to 124+00	200	52	1156

Random Crack (NB)		
STA	LF	Epoxy Coated Deformed Bars (EA)
123+29 (Driving)	14	7
123+47 (Turn)	11	6

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Repair Locations  
122+00 to 124+00  
South Washington St.



Spall Repair Locations (NB)				
STA	L	W	SF	
127+40 (Passing)	2	x 2	=	4
127+47 (Passing)	2	x 2	=	4
127+52 (Driving)	2	x 2	=	4

Full Depth Doweled Repair Locations (SB)					
STA	L	W	SY	Saw Concrete (LF)	Dowel bars (EA)
125+94 (Driving)	6	x 12	= 8	36	20
126+22 (Driving)	6	x 12	= 8	36	20

Spall Repair Locations (SB)				
STA	L	W	SF	
126+56 (Driving)	3.5	x 3.5	=	12.3
126+79 (Driving)	35	x 2	=	70
127+18 (Passing)	2	x 2	=	4

Random Crack (NB)		
STA	LF	Epoxy Coated Deformed Bars (EA)
127+47 (Turn)	11	6

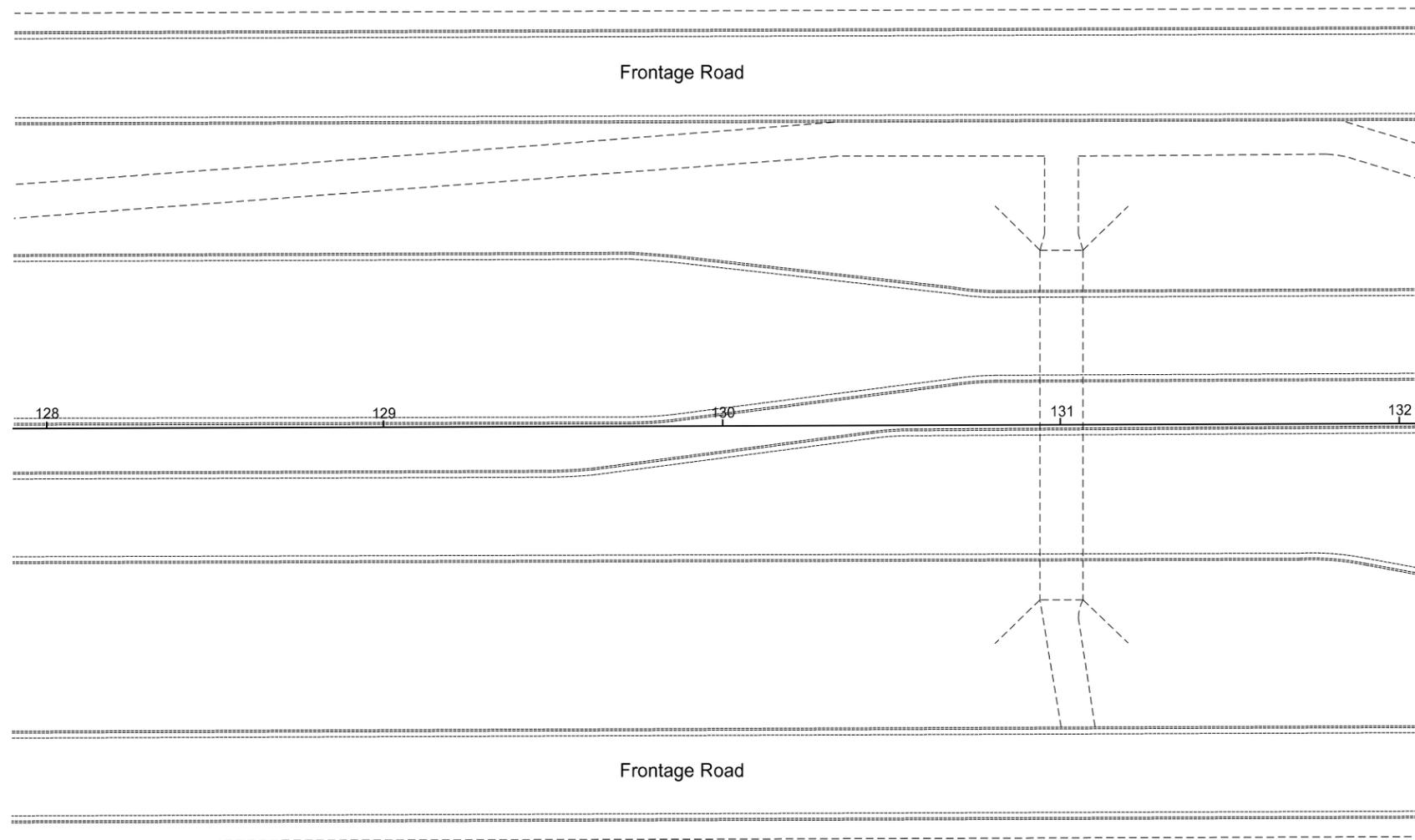
Random Crack (SB)		
STA	LF	Epoxy Coated Deformed Bars (EA)
126+21 (Driving)	13	7

Grinding Locations				
STA	STA	Length (FT)	Width (FT)	SY
124+00	to 126+23	223	52	1289
126+23	to 127+28	105	80	934
127+28	to 128+00	72	52	416

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Repair Locations  
124+00 to 128+00  
South Washington St.

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	S-NHU-6-081(083)941	80	9



Spall Repair Locations (NB)				
STA	L	W	SF	
128+31 (Passing)	2	x	2	= 4

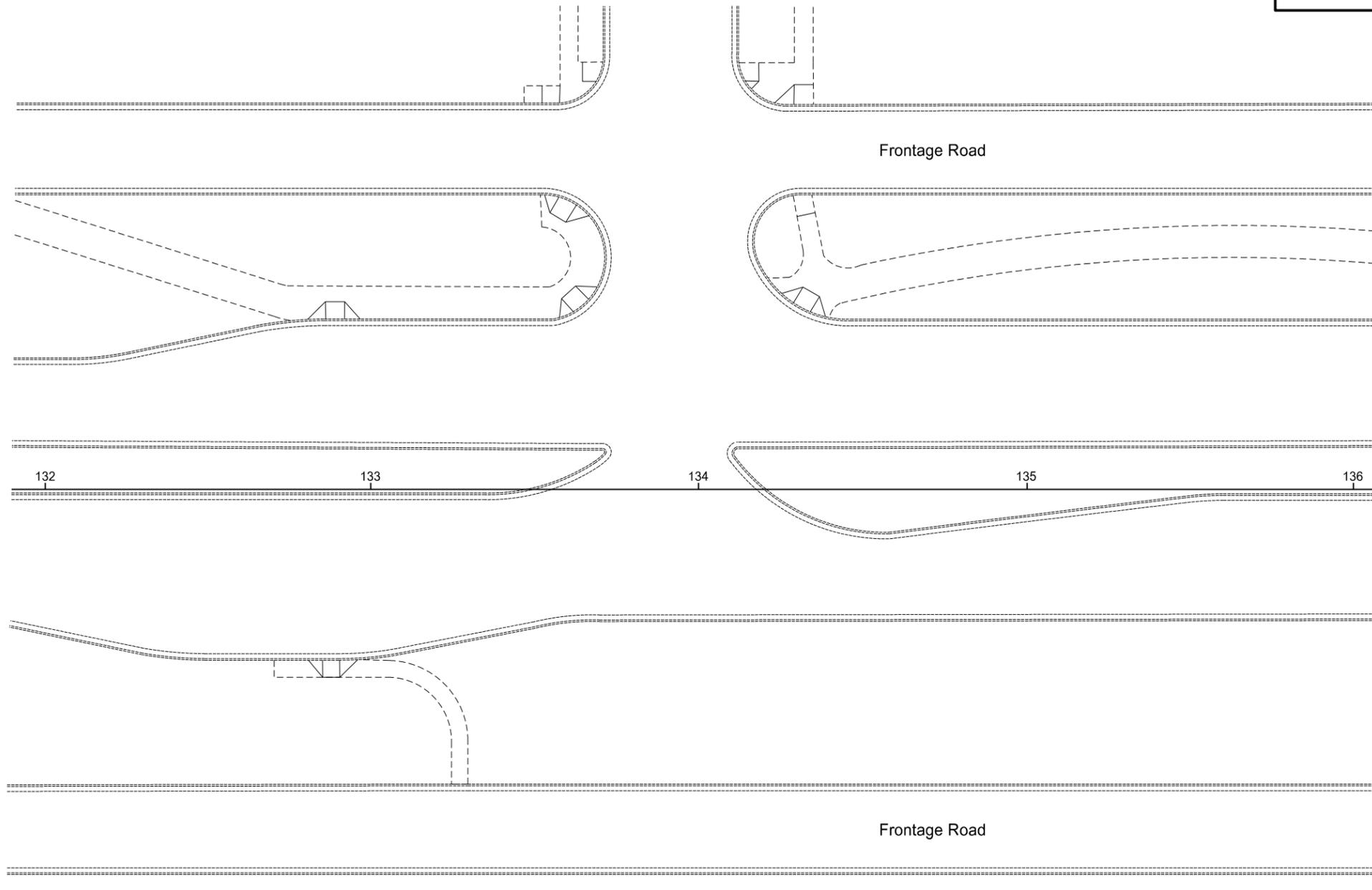
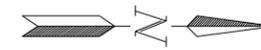
Grinding Locations					
STA	STA	Length (FT)	Width (FT)	SY	
128+00	to 132+00	400	52	2312	

Spall Repair Locations (SB)				
STA	L	W	SF	
128+48 (Driving)	2	x	5	= 10

Random Crack (SB)			
STA	LF	Epoxy Coated Deformed Bars (EA)	
129+71 (Turn)	14	7	

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Repair Locations  
128+00 to 132+00  
South Washington St.



Spall Repair Locations (NB)				
STA	L	W		SF
133+29 (Passing)	2	x	2	= 4
133+39 (Driving)	2	x	2	= 4
133+54 (Passing)	2	x	2	= 4
134+73 (Passing)	2	x	2	= 4

Full Depth Doweled Repair Locations (NB)						
STA	L	W	SY	Saw Concrete (LF)	Dowel bars (EA)	
133+39 (Passing)	6	x	12	= 8	36	20
134+18 (Passing)	6	x	12	= 8	36	20
134+45 (Passing)	6	x	12	= 8	36	20

Grinding Locations					
STA	STA	Length (FT)	Width (FT)	SY	
132+00	to 136+00	400	48	2312	

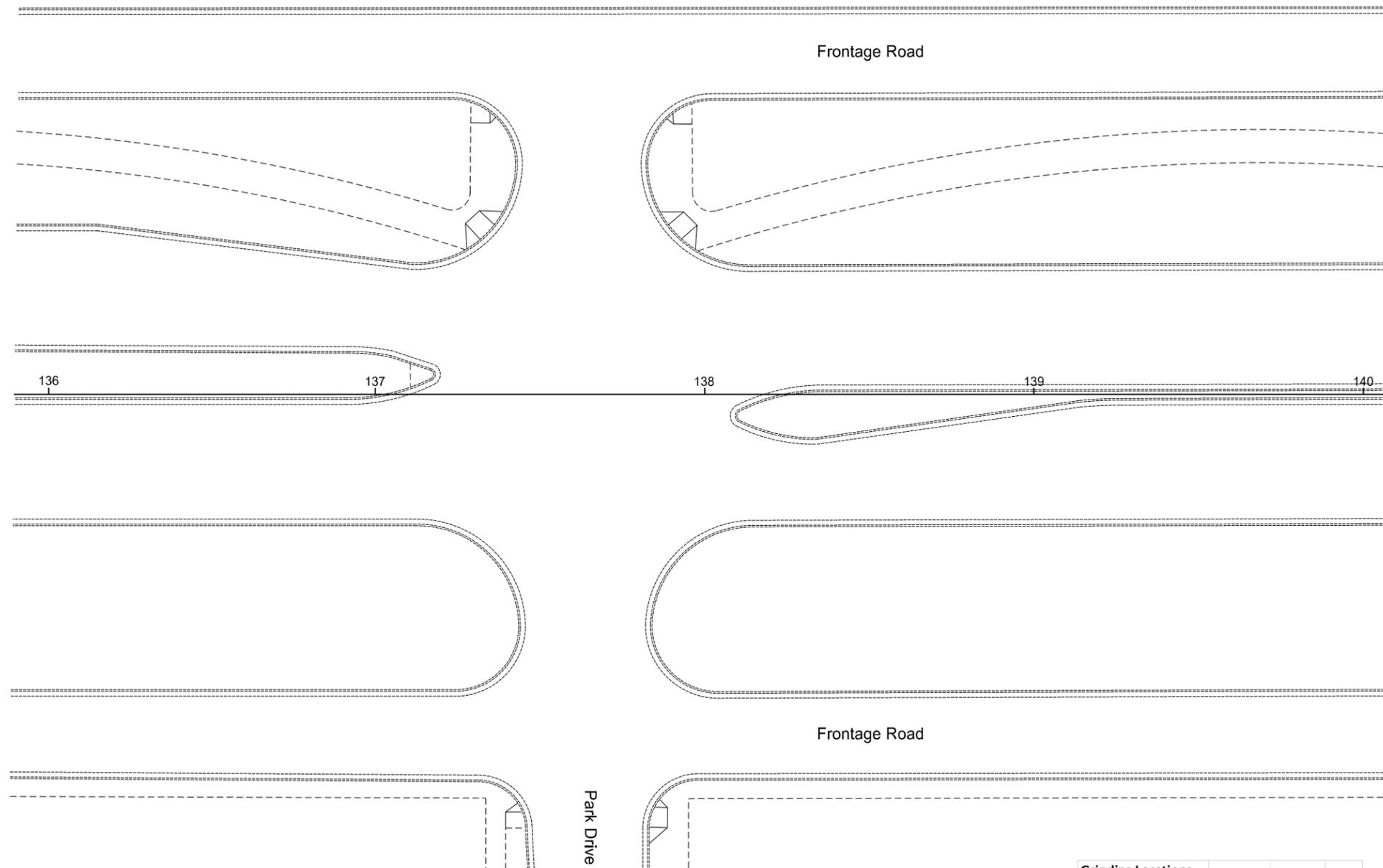
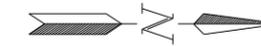
Spall Repair Locations (SB)				
STA	L	W		SF
132+80 (Driving)	2	x	2	= 4
133+12 (Driving)	2	x	2	= 4
133+39 (Driving)	18	x	2	= 36
134+90 (Driving)	2	x	2	= 4

Random Crack (NB)			
STA	LF	Epoxy Coated Deformed Bars (EA)	
132+64 (Turn)	74		37
133+44 (Passing)	9		5
134+36 (Passing)	4		2

Random Crack (SB)			
STA	LF	Epoxy Coated Deformed Bars (EA)	
135+70 (Turn)	16		8

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Repair Locations  
132+00 to 136+00  
South Washington St.



Spall Repair Locations (NB)				
STA	L	W	SF	
136+97 (Driving)	2	2	=	4
136+97 (Passing)	2	2	=	4
137+22 (Driving)	2	2	=	4
138+28 (Passing)	3	3	=	9

Spall Repair Locations (SB)				
STA	L	W	SF	
136+90 (Driving)	3	2	=	6
137+23 (Turn)	4	2	=	8

Full Depth Doweled Repair Locations (SB)						
STA	L	W	SY	Saw Concrete (LF)	Dowel Bars (EA)	Doweled Contraction Joint Assembly (LF)
136+17 (Turn)	48.5	12	=	64.7	121	36
136+33 (Turn)	16	11	=	21.4	56	20
136+97 (Driving)	7	12	=	9.3	38	20
136+97 (Passing)	6	12	=	8	36	20
138+18 (Passing)	18	12	=	24	60	20

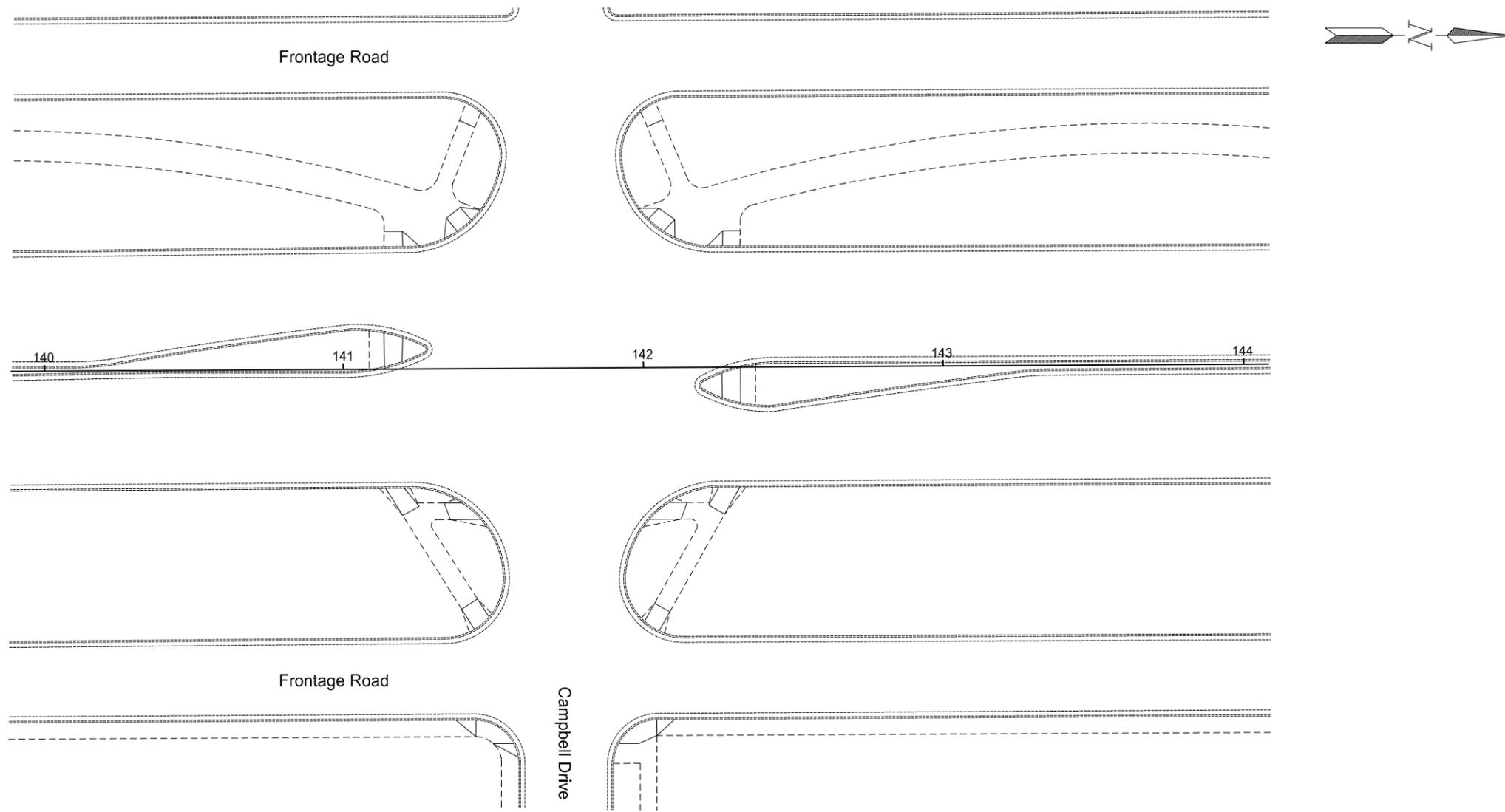
Grinding Locations				
STA	STA	Length (FT)	Width (FT)	SY
136+00	to 140+00	400	52	2312

Random Crack (NB)		
STA	LF	Epoxy Coated Deformed Bars (EA)
137+05 (Passing)	5	3

Random Crack (SB)		
STA	LF	Epoxy Coated Deformed Bars (EA)
136+49 (Turn)	16	8
136+97 (Passing)	16	8
137+09 (Passing)	13	7

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Repair Locations  
136+00 to 140+00  
South Washington St.



Spall Repair Locations (NB)				
STA	L	W	SF	
140+67 (Driving)	2	2	= 4	
140+68 (Passing)	2	3	= 6	
140+68 (Passing)	4	2	= 8	
142+41 (Passing)	2	2	= 4	
143+18 (Passing)	2	2	= 4	

Spall Repair Locations (SB)				
STA	L	W	SF	
142+11 (Passing)	2	2	= 4	
142+42 (Passing)	2	2	= 4	
142+89 (CL)	4	2	= 8	

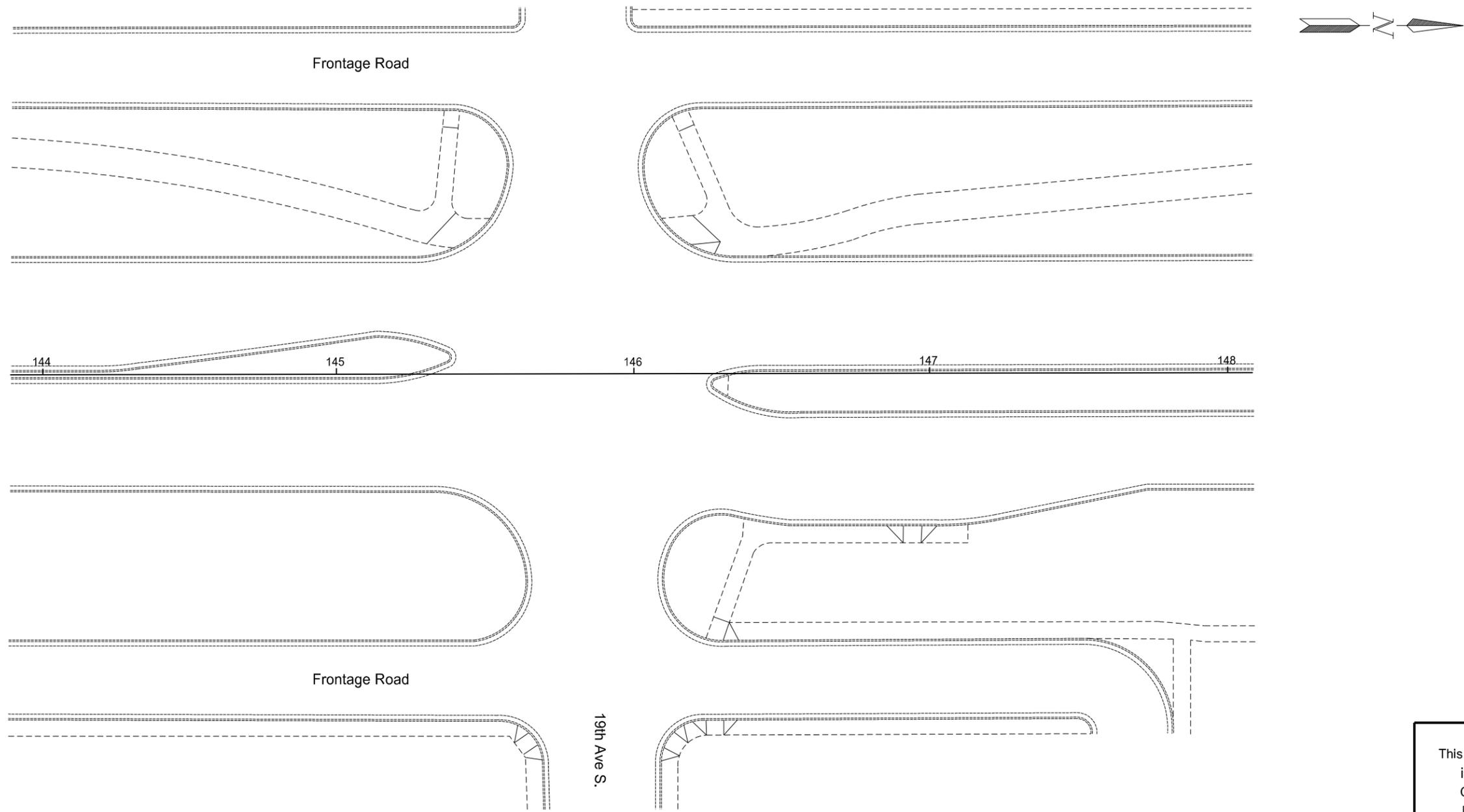
Full Depth Doweled Repair Locations (NB)						
STA	L	W	SY	Saw Concrete (LF)	Dowel bars (EA)	Doweled Contraction Joint Assembly (LF)
140+67 (Driving)	36	12	= 48	96	40	12
142+25 (Passing)	6	12	= 8	36	20	

Full Depth Doweled Repair Locations (SB)						
STA	L	W	SY	Saw Concrete (LF)	Dowel bars (EA)	
142+26 (Passing)	6	12	= 8	36	20	

Grinding Locations					
STA	STA	Length (FT)	Width (FT)	SY	
140+00	to 141+30	130	52	752	
141+30	to 142+17	87	78	754	
142+17	to 144+00	183	52	1058	

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Repair Locations  
140+00 to 144+00  
South Washington St.



**Spall Repair Locations (NB)**

STA	L	W	SF
145+95 (Driving)	2 x 2	= 4	
146+21 (Driving)	2 x 2	= 4	
147+62 (Driving)	2 x 2	= 4	

**Spall Repair Locations (NB)**

STA	L	W	SF
145+34 (Passing)	2 x 2	= 4	
145+37 (Passing)	2 x 2	= 4	
145+57 (Passing)	6 x 2	= 12	
145+70 (Passing)	6 x 2	= 12	

**Full Depth Doweled Repair Locations (SB)**

STA	L	W	SY	Saw Concrete (LF)	Dowel bars (EA)
145+83 (Passing)	6 x 12	= 8		36	20
145+94 (Passing)	6 x 12	= 8		36	20
145+09 (Passing)	6 x 12	= 8		36	20
146+21 (Passing)	6 x 12	= 8		36	20

**Grinding Locations**

STA	STA	Length (FT)	Width (FT)	SY
144+00	to 148+00	400	52	2312

**Random Crack (NB)**

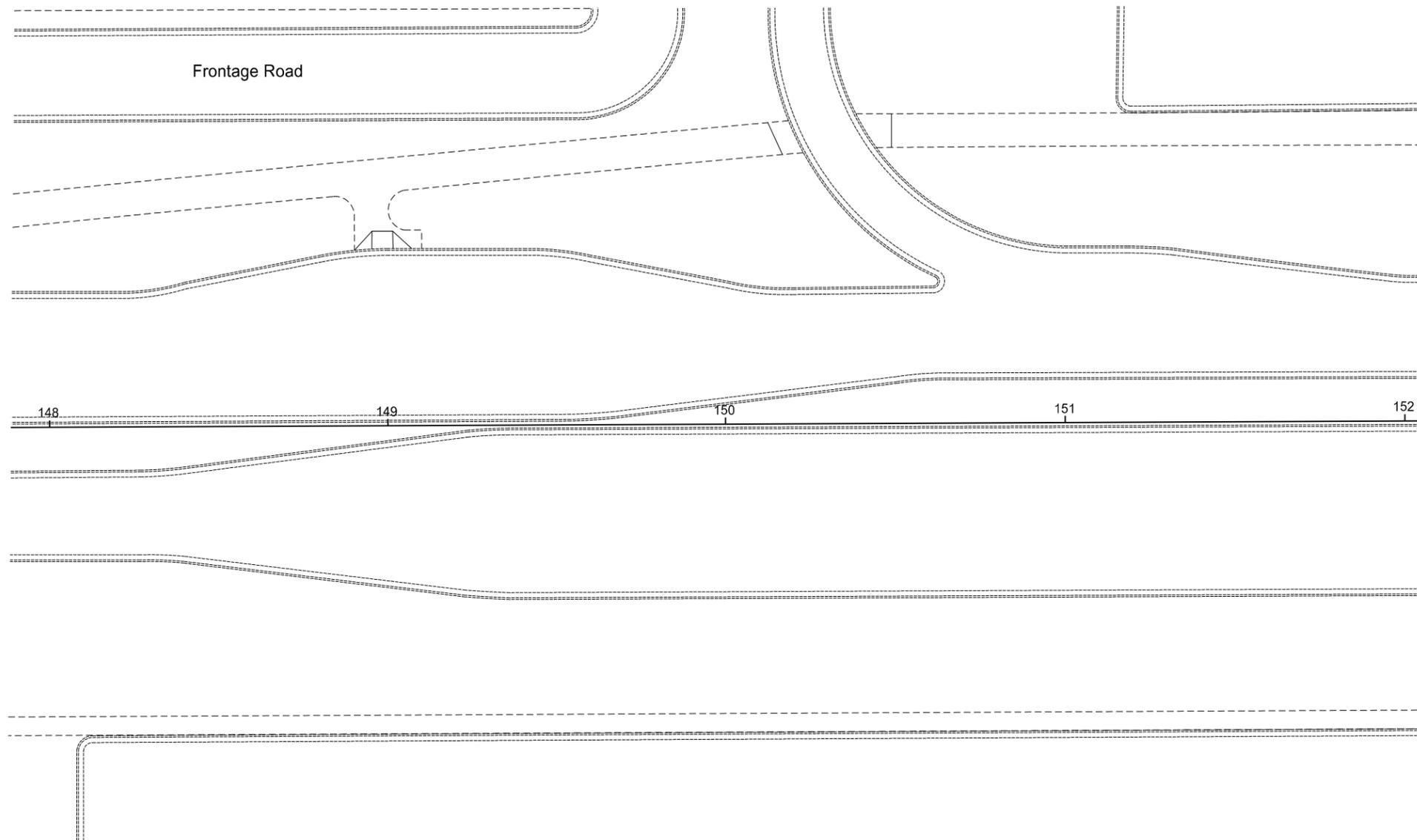
STA	LF	Epoxy Coated Deformed Bars (EA)
146+25 (Passing)	6	3

**Random Crack (SB)**

STA	LF	Epoxy Coated Deformed Bars (EA)
145+34 (Passing)	4	2
145+37 (Turn)	5	3
145+42 (Passing)	5	3

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Repair Locations  
144+00 to 148+00  
South Washington St.



Spall Repair Locations (NB)				
STA	L	W		SF
150+15 (Driving)	4	x	2	= 8
150+62 (Driving)	2	x	2	= 4

Full Depth Doweled Repair Locations (SB)						
STA	L	W	SY	Saw Concrete (LF)	Dowel bars (EA)	
150+66 (Turn)	6.0	x	12.0	= 8.0	36	20

Spall Repair Locations (SB)				
STA	L	W		SF
148+11 (Passing)	2	x	2	= 4
148+42 (Passing)	2	x	2	= 4
149+51 (Passing)	2	x	2	= 4
149+71 (Passing)	2	x	2	= 4
149+97 (Passing)	2	x	2	= 4
150+03 (Passing)	2	x	2	= 4
150+18 (Passing)	2	x	2	= 4
151+16 (Turn)	2	x	2	= 4
151+63 (Turn)	2	x	2	= 4

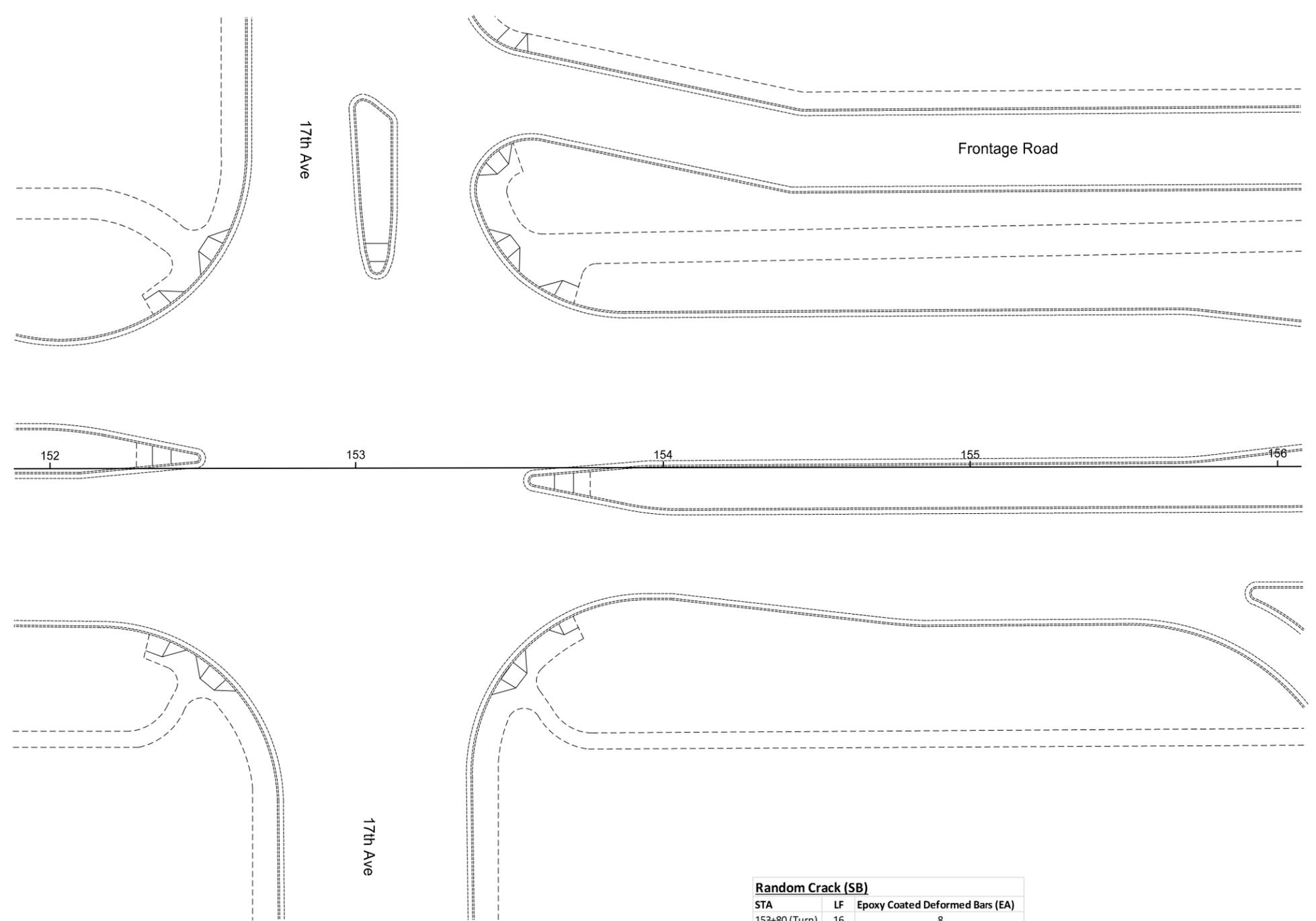
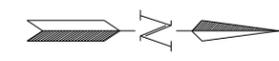
Grinding Locations				
STA	STA	Length (FT)	Width (FT)	SY
148+00	to 152+00	400	52	2312

Random Crack (NB)		
STA	LF	Epoxy Coated Deformed Bars (EA)
149+96 (Turn)	12	6

Random Crack (SB)		
STA	LF	Epoxy Coated Deformed Bars (EA)
149+97 (Turn)	8	4

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Repair Locations  
148+00 to 152+00  
South Washington St.



Random Crack (SB)		
STA	LF	Epoxy Coated Deformed Bars (EA)
153+80 (Turn)	16	8
155+71 (Turn)	11	6

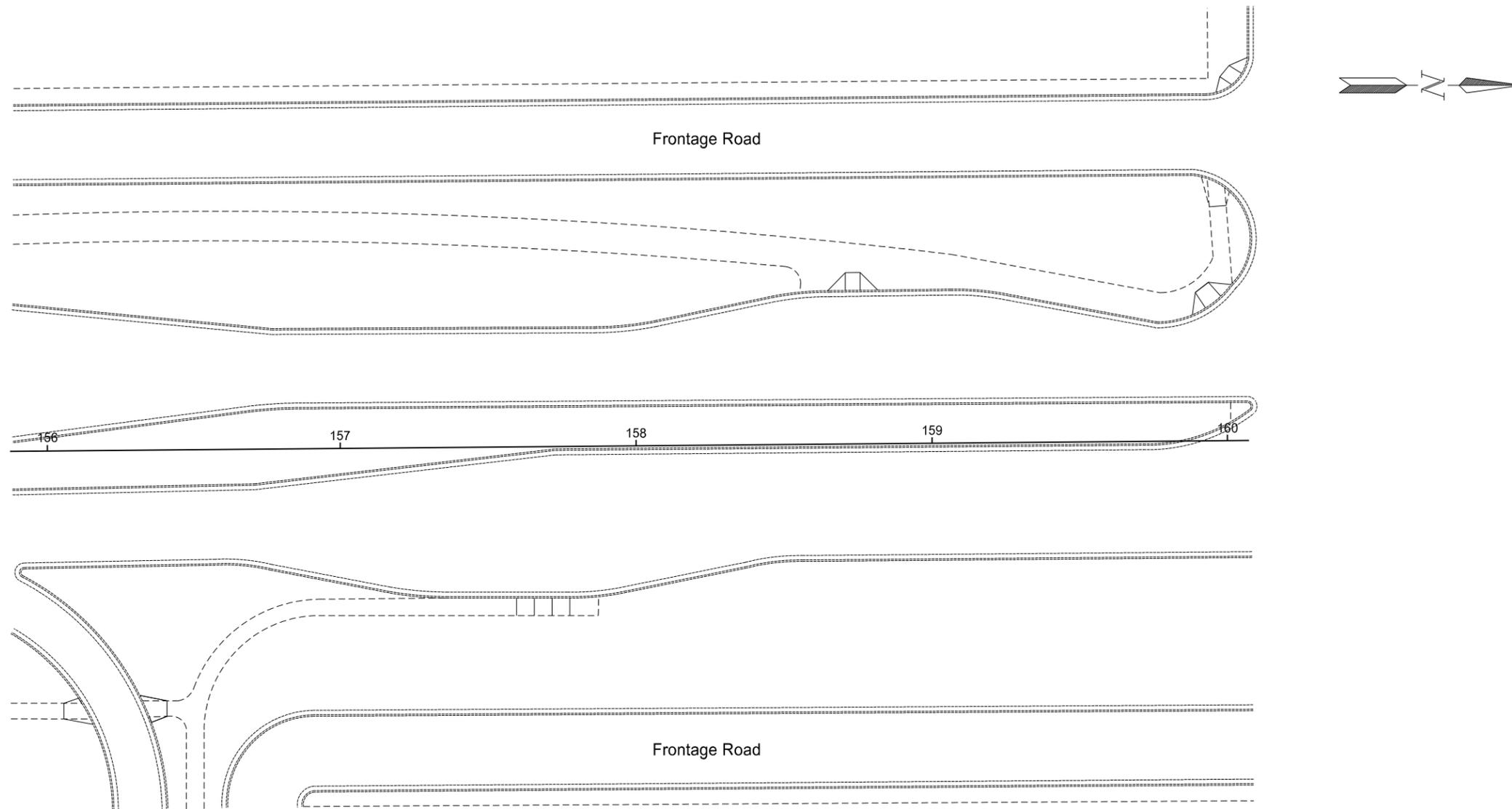
Grinding Locations					
STA	to	STA	Length (FT)	Width (FT)	SY
152+00	to	152+50	50	52	289
152+50	to	153+54	104	80	925
153+54	to	156+00	246	52	1422

Spall Repair Locations (SB)				
STA	L	W		SF
152+29 (Driving)	2	x	2	= 4
153+25 (Passing)	2	x	2	= 4

Full Depth Doweled Repair Locations (SB)						
STA	L	W	SY	Saw Concrete (LF)	Dowel bars (EA)	
152+03 (Driving)	6	x	12	= 8	36	20

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Repair Locations  
152+00 to 156+00  
South Washington St.



Spall Repair Locations (NB)				
STA	L	W	SF	
156+89 (Driving)	2	x 2	=	4
158+33 (Passing)	2	x 2	=	4
159+12 (Passing)	2	x 2	=	4
159+29 (Passing)	2	x 2	=	4

Full Depth Doweled Repair Locations (NB)						
STA	L	W	SY	Saw Concrete (LF)	Dowel bars (EA)	
156+09 (Driving)	6	x 12	= 8	36	20	
156+73 (Passing)	6	x 12	= 8	36	20	
156+88 (Passing)	6	x 12	= 8	36	20	

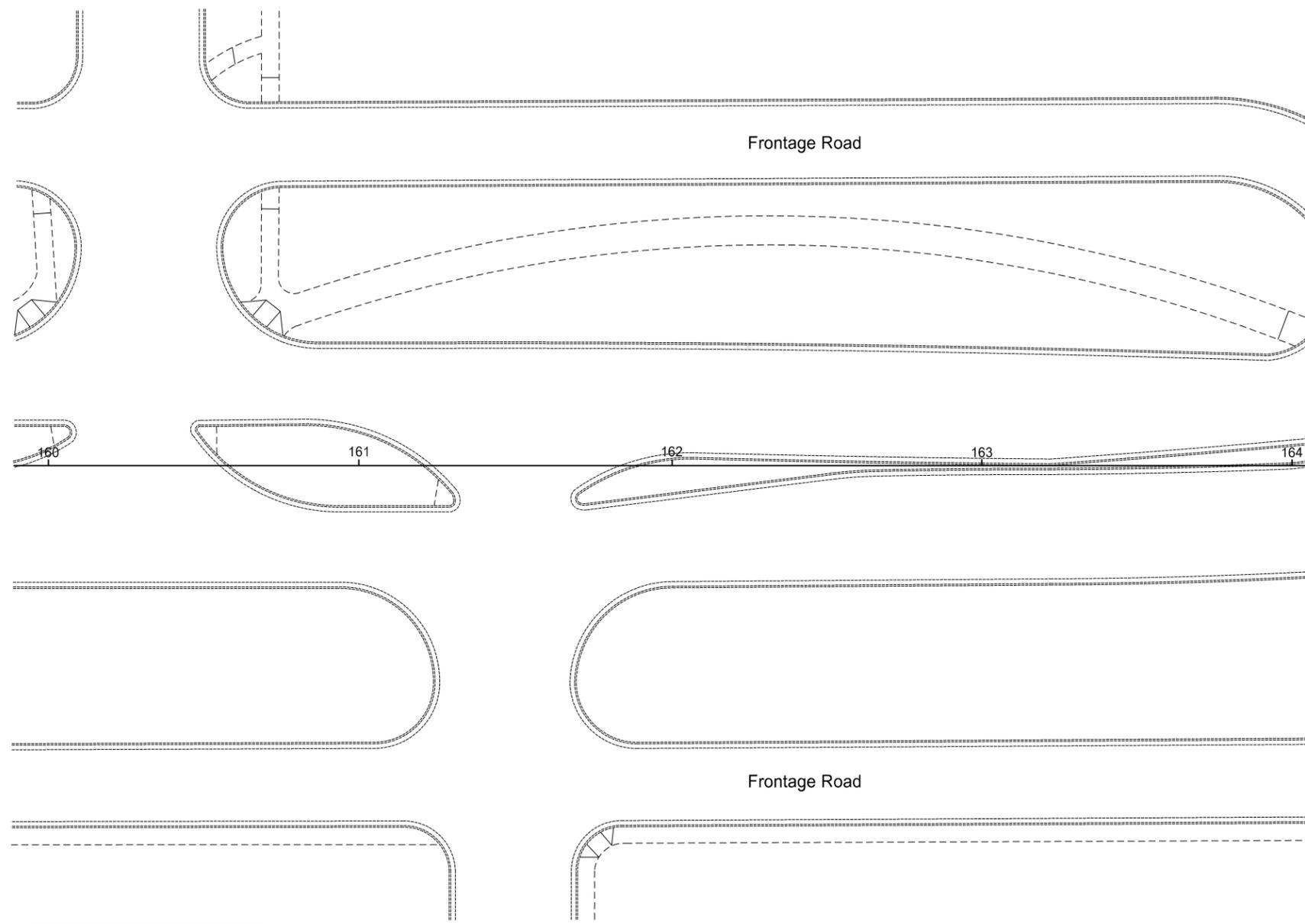
Grinding Locations					
STA		STA	Length (FT)	Width (FT)	SY
156+00	to	160+00	400	52	2312

Spall Repair Locations (SB)				
STA	L	W	SF	
157+05 (Driving)	2	x 2	=	4

Full Depth Doweled Repair Locations (SB)						
STA	L	W	SY	Saw Concrete (LF)	Dowel bars (EA)	
156+56 (Passing)	6	x 12	= 8	36	20	
156+56 (Turn)	6	x 12	= 8	36	20	
157+05 (Driving)	6	x 12	= 8	36	20	

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Repair Locations  
156+00 to 160+00  
South Washington St.



Spall Repair Locations (NB)				
STA	L	W	SF	
160+33 (Passing)	2	x 2	= 4	
160+45 (Passing)	3	x 2	= 6	
160+72 (Passing)	2	x 2	= 4	
161+30 (Driving)	2	x 2	= 4	
163+92 (Passing)	2	x 2	= 4	

Full Depth Doweled Repair Locations (NB)					
STA	L	W	SY	Saw Concrete (LF)	Dowel bars (EA)
160+54 (Passing)	6	x 12	= 8	36	20
163+75 (Passing)	6	x 12	= 8	36	20

Random Crack (NB)		
STA	LF	Epoxy Coated Deformed Bars (EA)
161+67 (Driving)	14	7

Spall Repair Locations (SB)				
STA	L	W	SF	
160+41 (Passing)	2	x 2	= 4	
161+07 (Passing)	2	x 2	= 4	

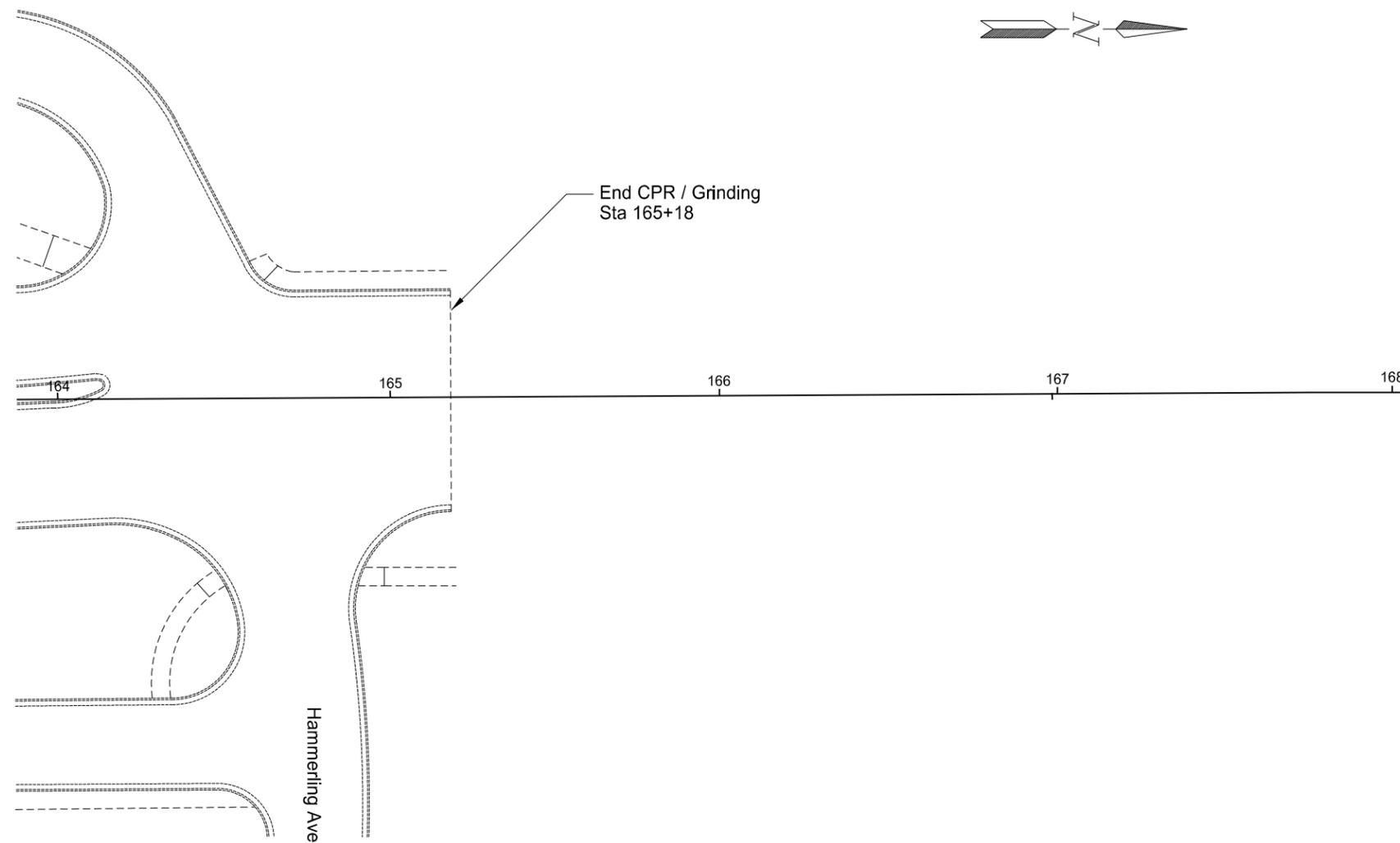
Full Depth Doweled Repair Locations (SB)					
STA	L	W	SY	Saw Concrete (LF)	Dowel bars (EA)
160+58 (Driving)	6	x 12	= 8	36	20

Grinding Locations					
STA	STA	Length (FT)	Width (FT)	SY	
160+00	to 164+00	400	52	2312	

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Repair Locations  
160+00 to 164+00  
South Washington St.

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	S-NHU-6-081(083)941	80	18



<b>Spall Repair Locations (NB)</b>				
STA	L	W		SF
164+41 (Driving)	2	x 2	=	4
164+44 (Driving)	2	x 2	=	4

<b>Spall Repair Locations (SB)</b>				
STA	L	W		SF
164+15 (Driving)	2	x 2	=	4
164+92 (Driving)	2	x 2	=	4

<b>Full Depth Doweled Repair Locations (NB)</b>					
STA	L	W	SY	Saw Concrete (LF)	Dowel bars (EA)
164+88 (Driving)	8	x 12	= 10.7	40	20

<b>Full Depth Doweled Repair Locations (SB)</b>					
STA	L	W	SY	Saw Concrete (LF)	Dowel bars (EA)
165+17 (Driving)	6	x 12	= 8	36	20

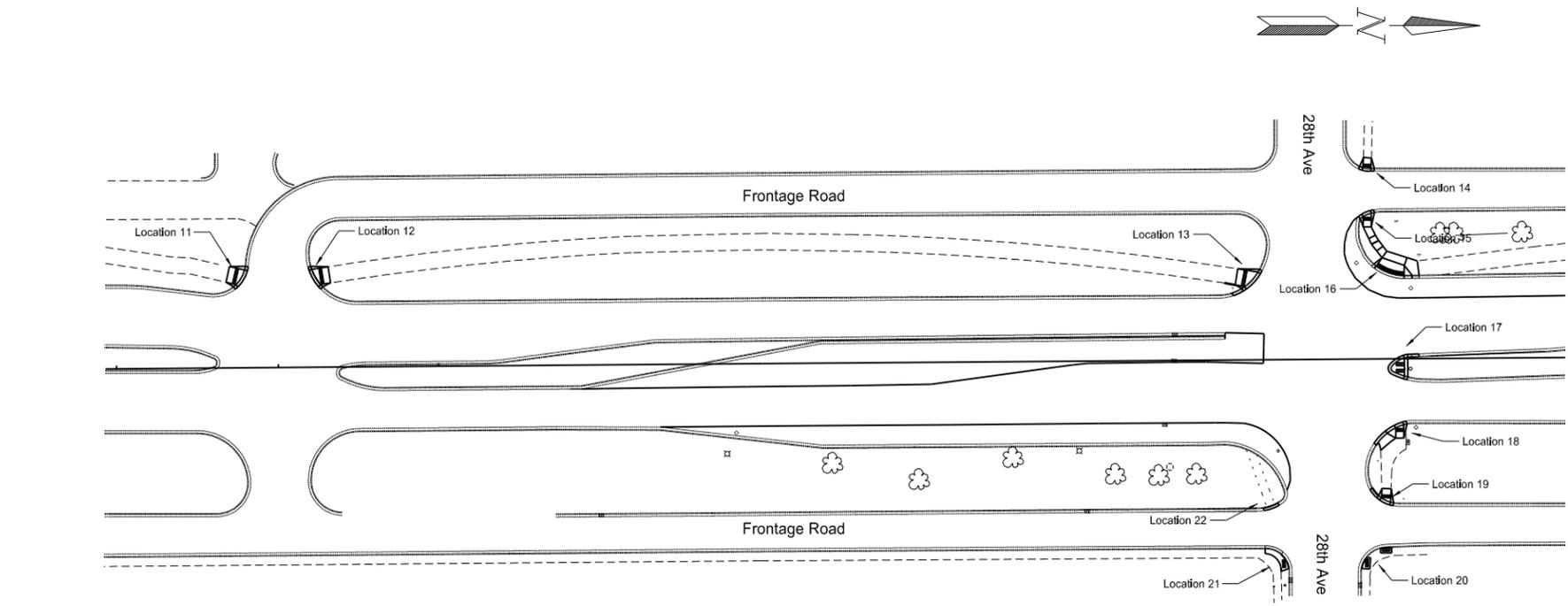
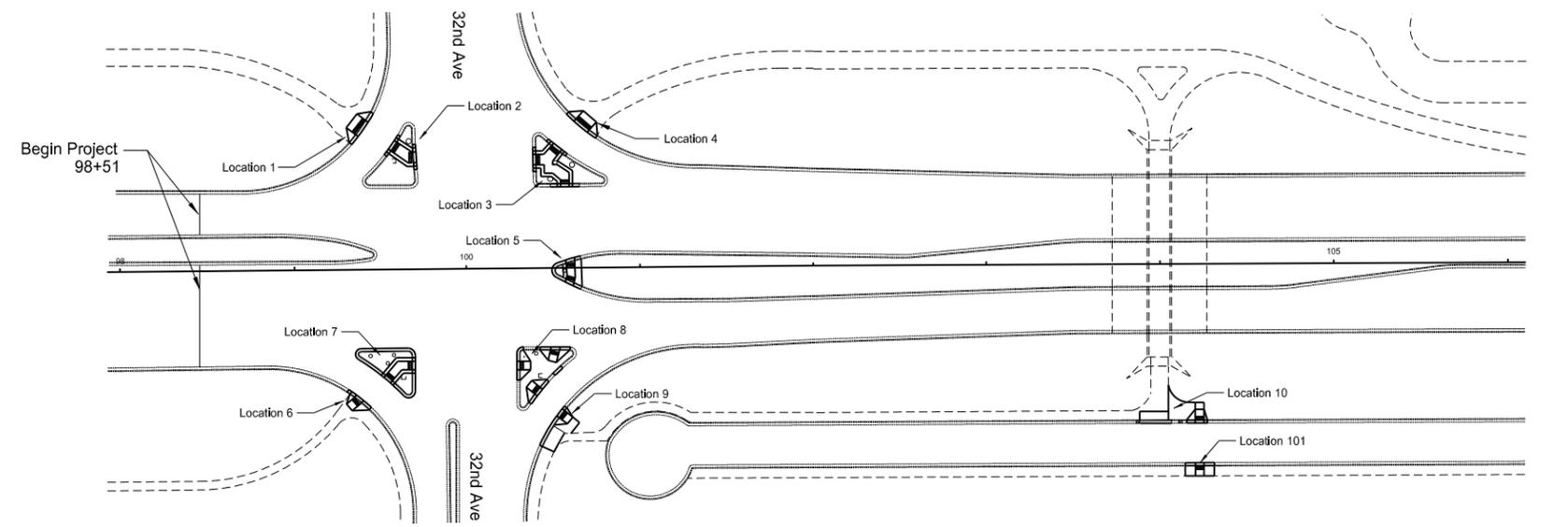
<b>Grinding Locations</b>				
STA	STA	Length (FT)	Width (FT)	SY
164+00	to 165+18	118	52	682

<b>Random Crack (SB)</b>		
STA	LF	Epoxy Coated Deformed Bars (EA)
165+17 (Driving)	16	8

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Repair Locations  
164+00 to 168+00  
South Washington St.

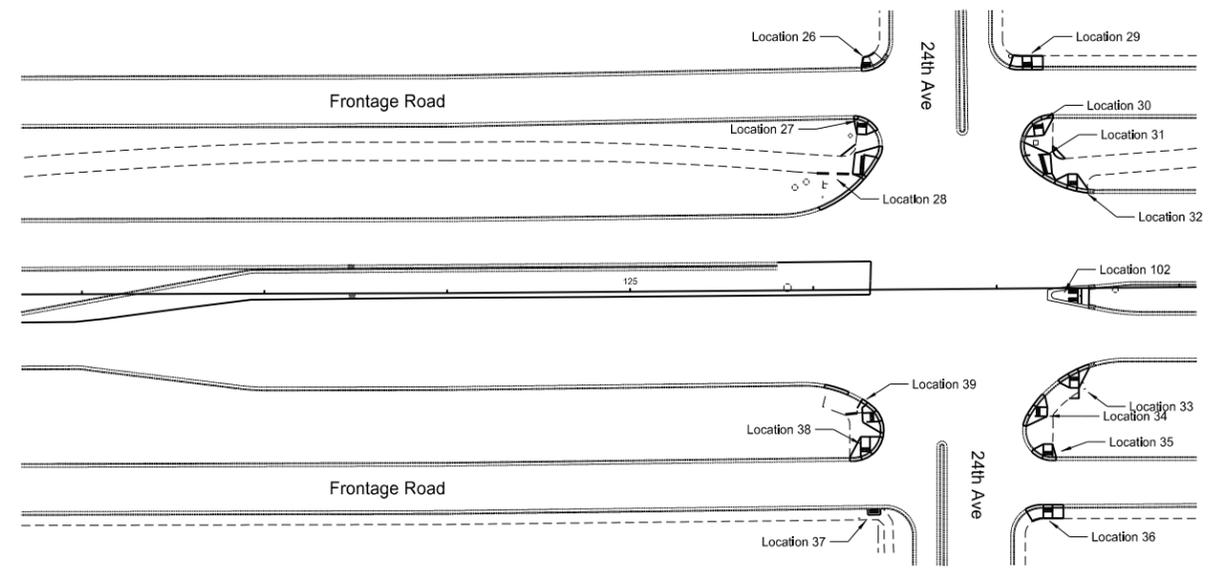
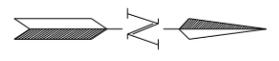
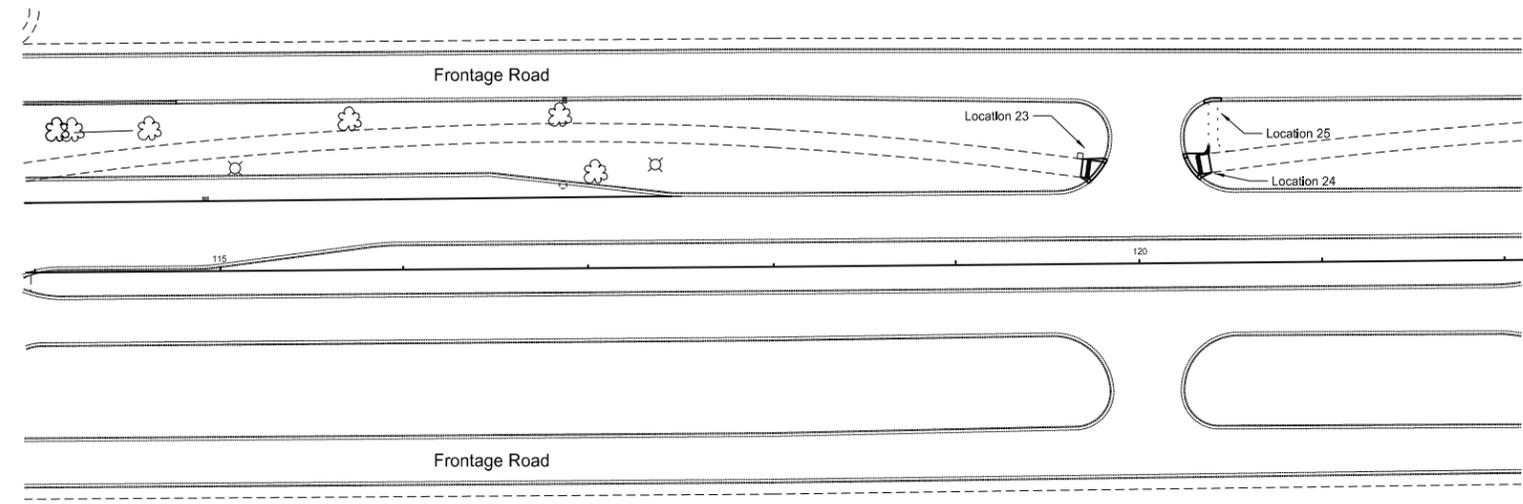
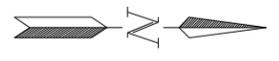
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	80	19



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ADA Ramp Locations  
South Washington St.

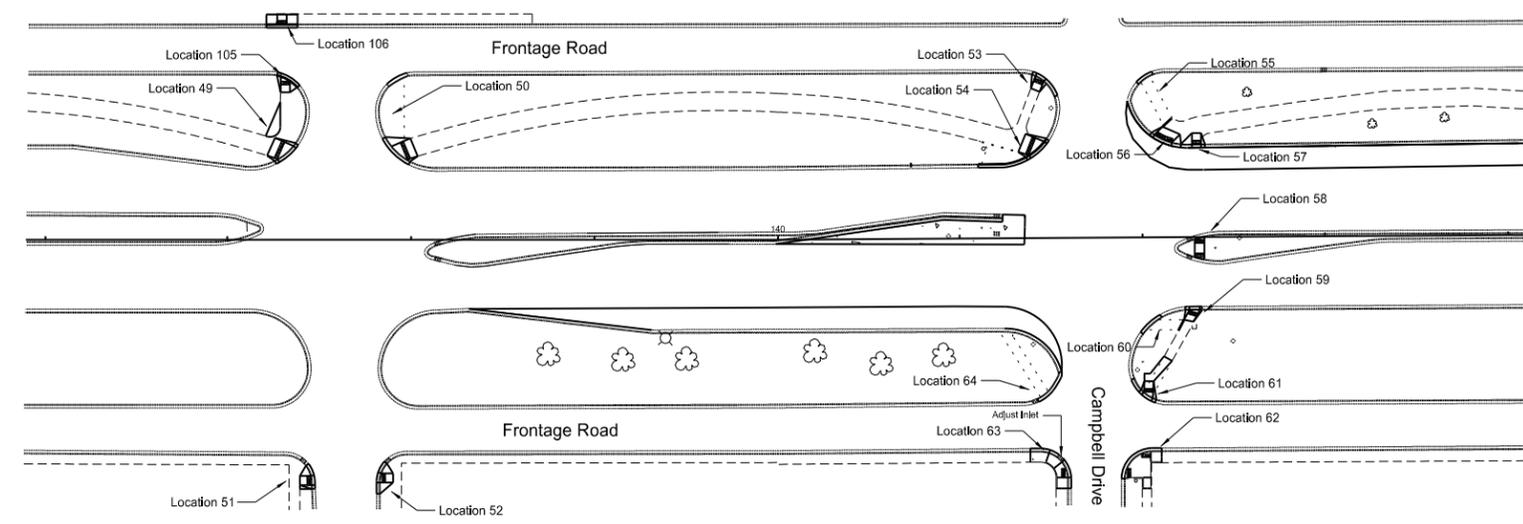
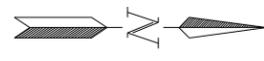
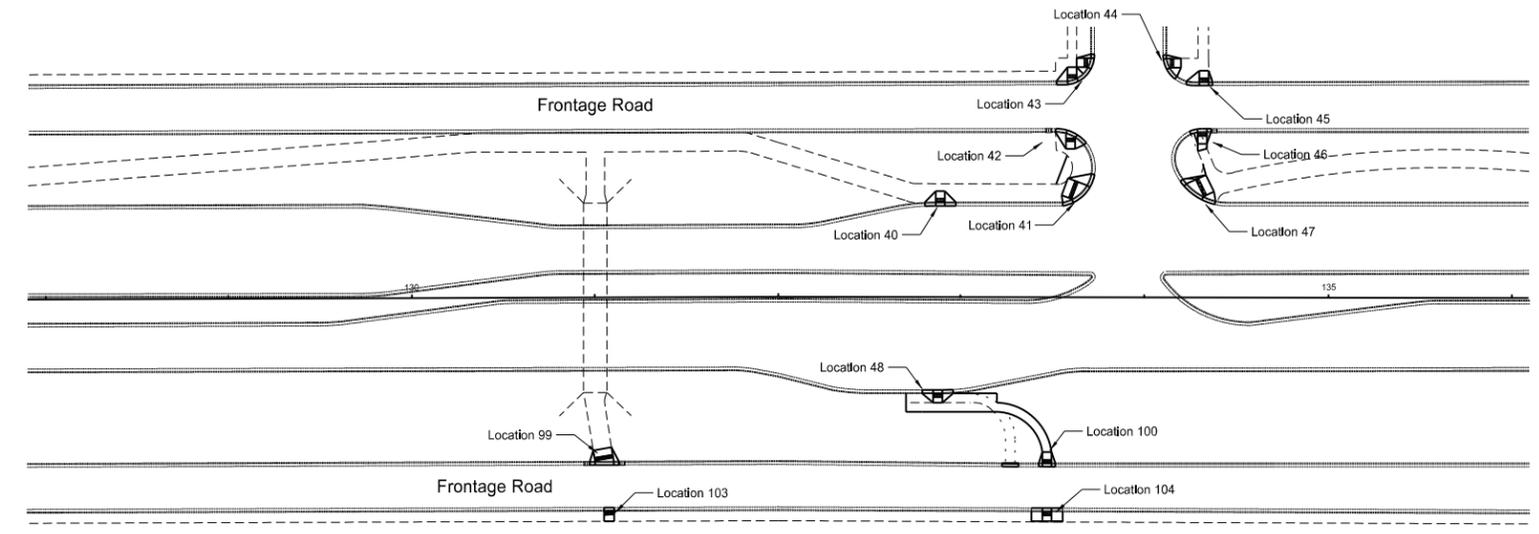
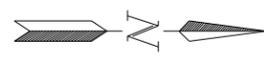
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	80	20



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ADA Locations  
South Washington St.

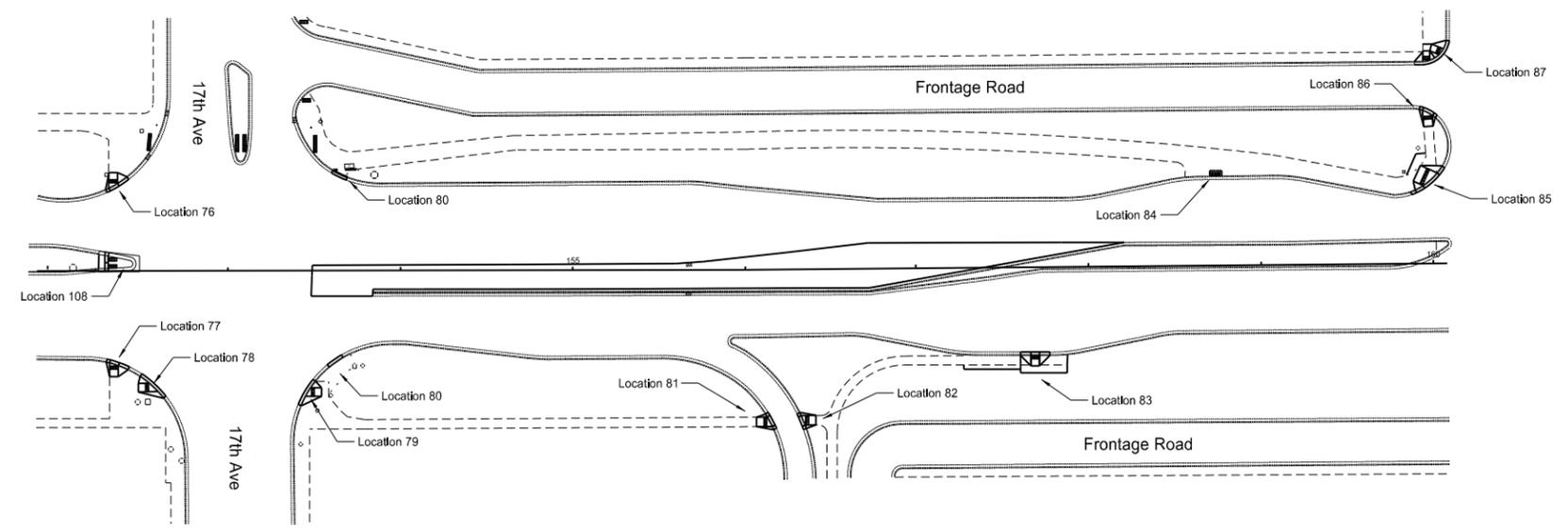
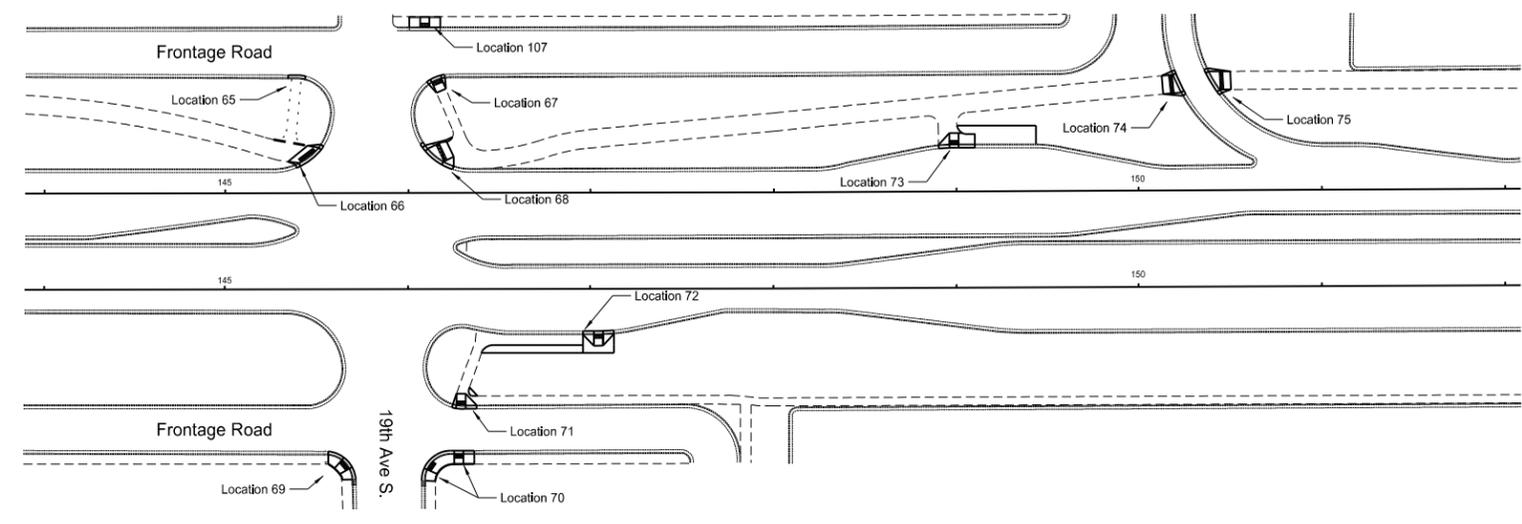
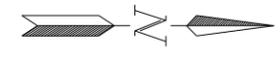
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	80	21



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ADA Locations  
South Washington St.

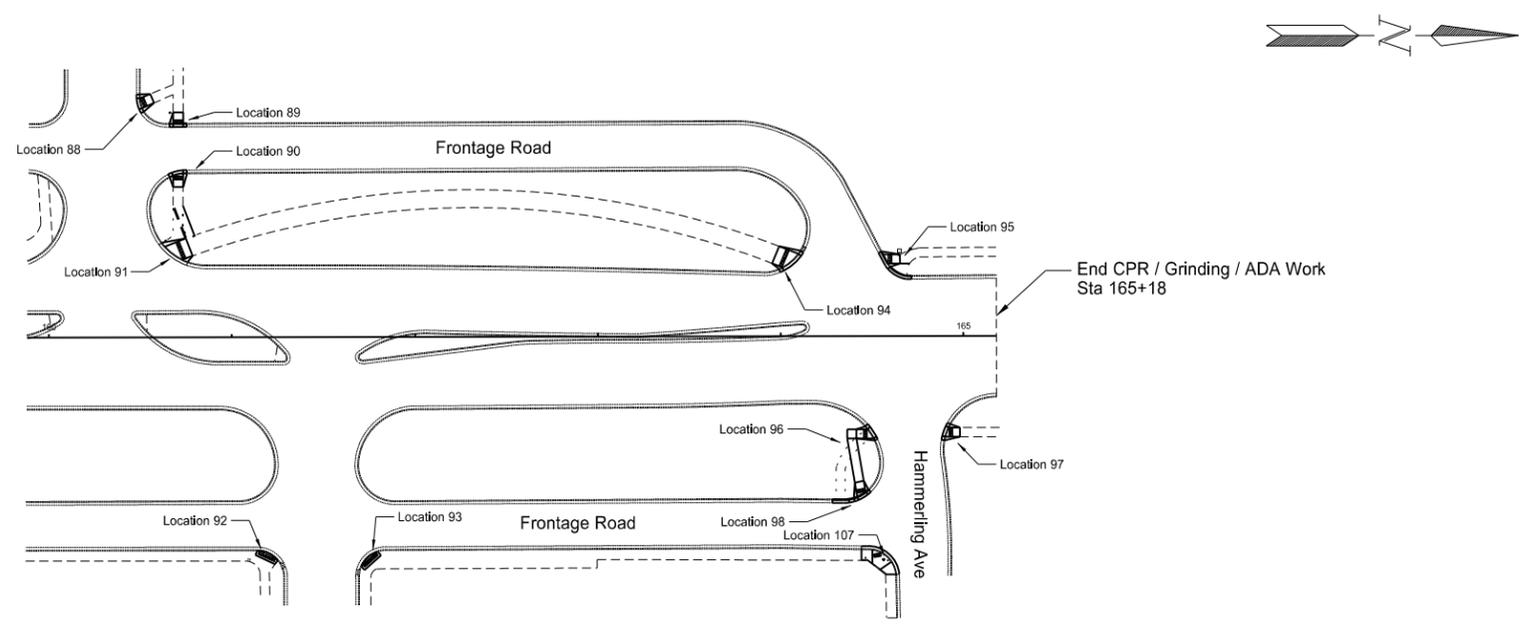
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	80	22



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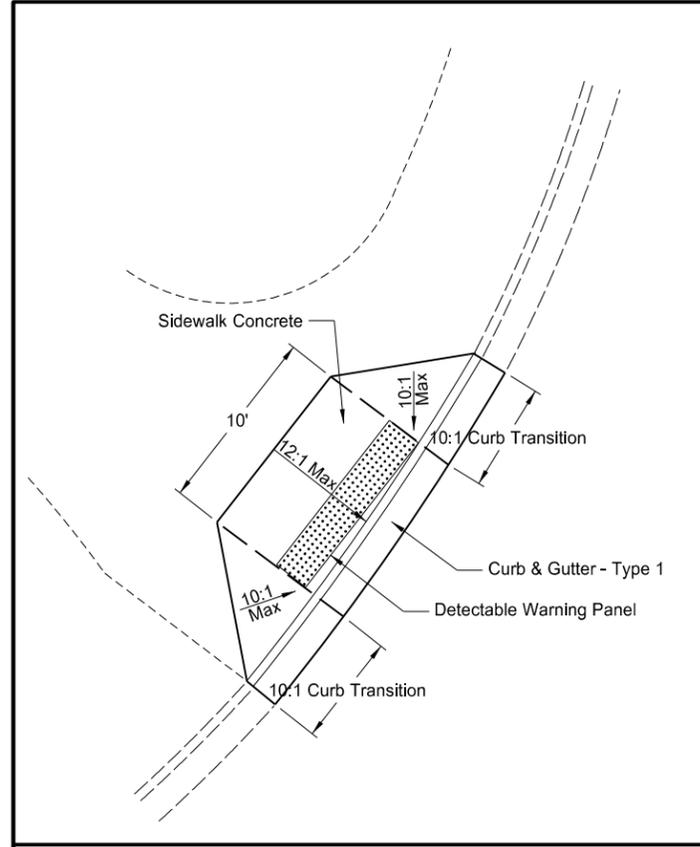
ADA Locations  
South Washington St.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	80	23

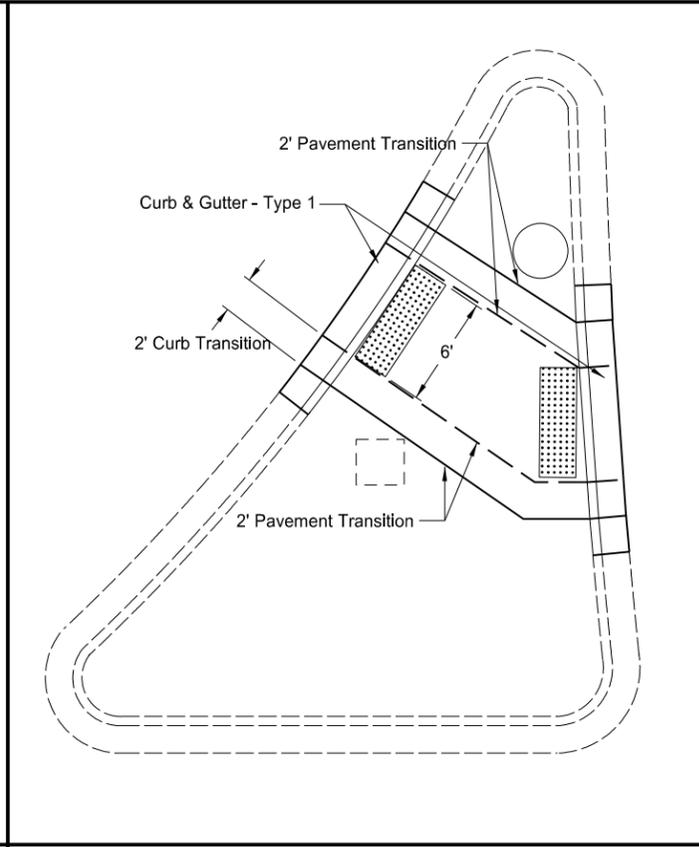


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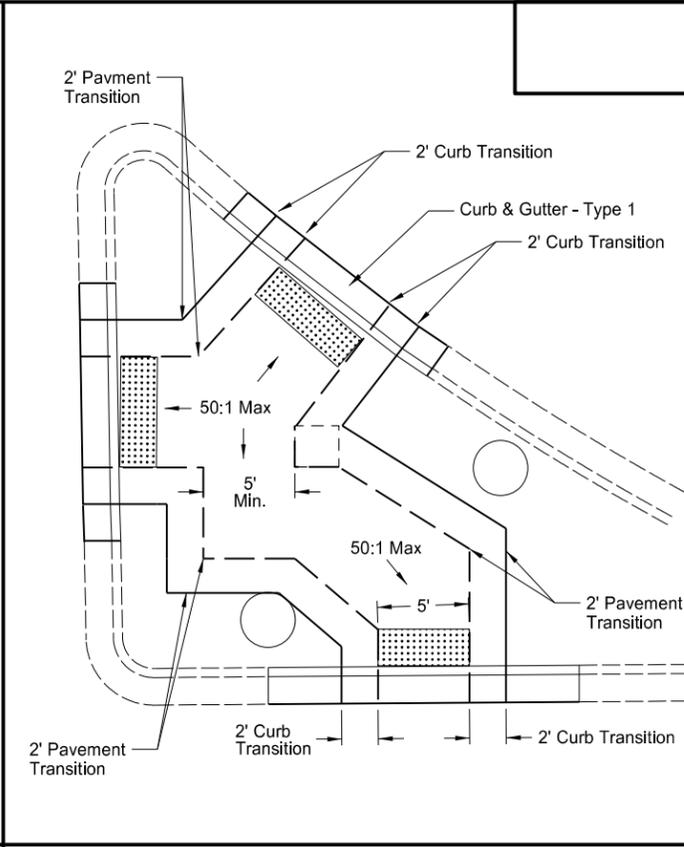
ADA Locations  
South Washington St.



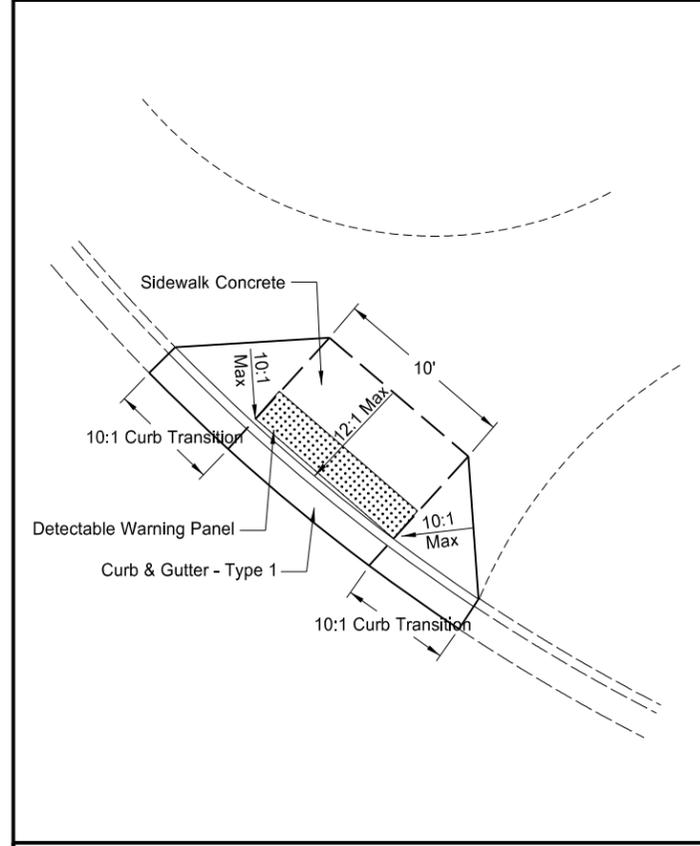
Location 1  
Washington St. & 32nd Ave SW Quadrant



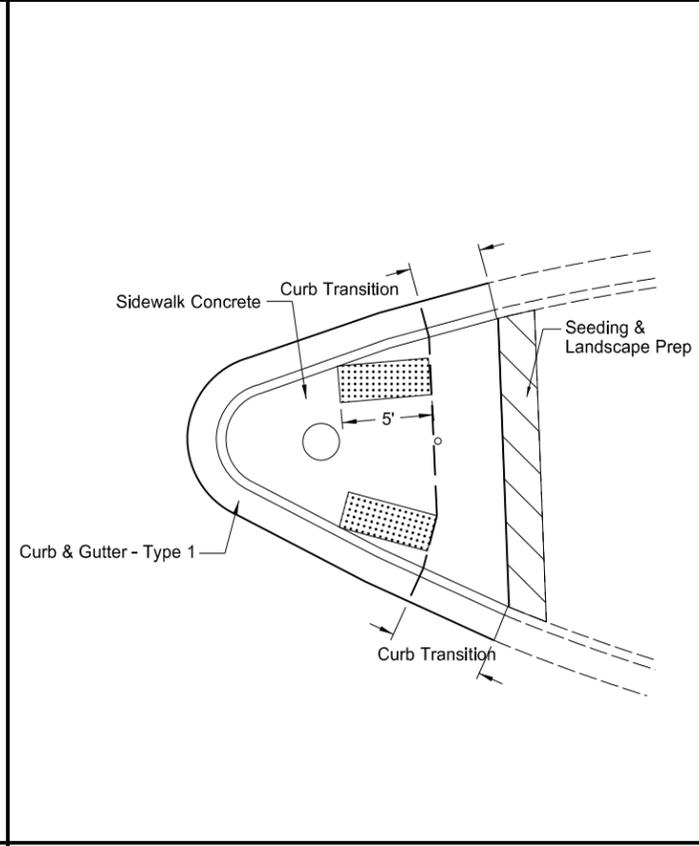
Location 2  
Washington St. & 32nd Ave SW Island



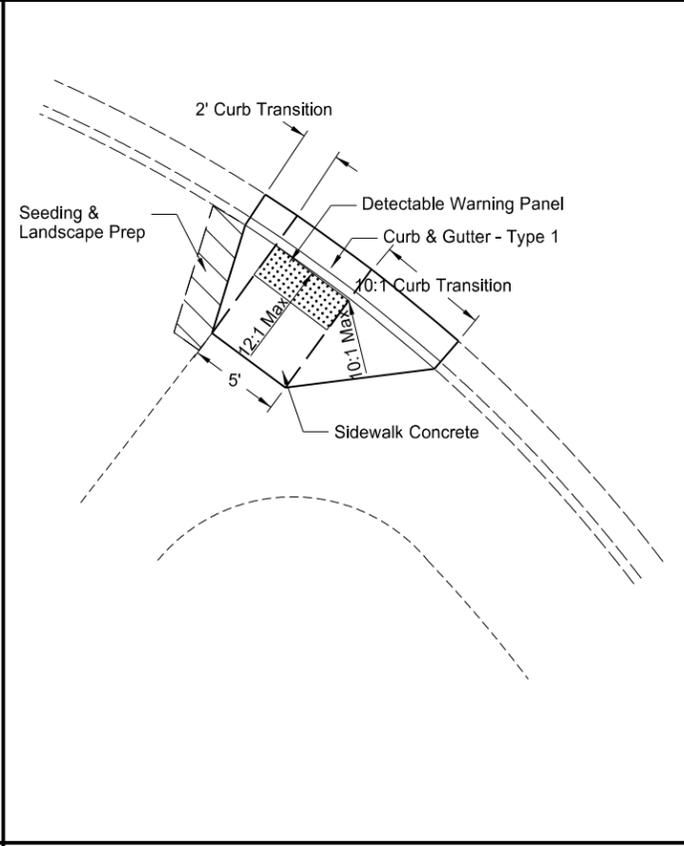
Location 3  
Washington St. & 32nd Ave NW Island



Location 4  
Washington St. & 32nd Ave NW Quadrant



Location 5  
Washington St. & 32nd Ave N Island



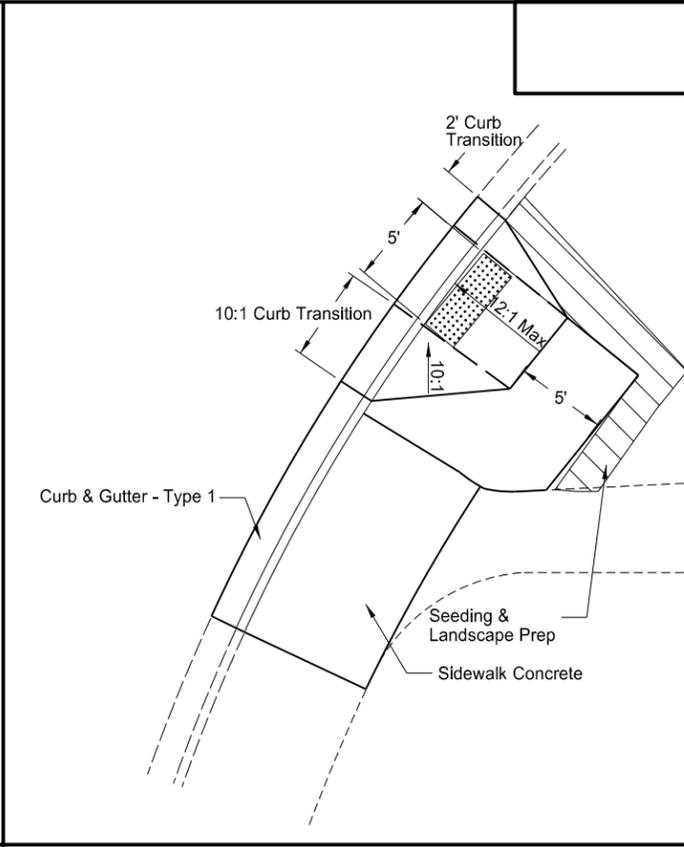
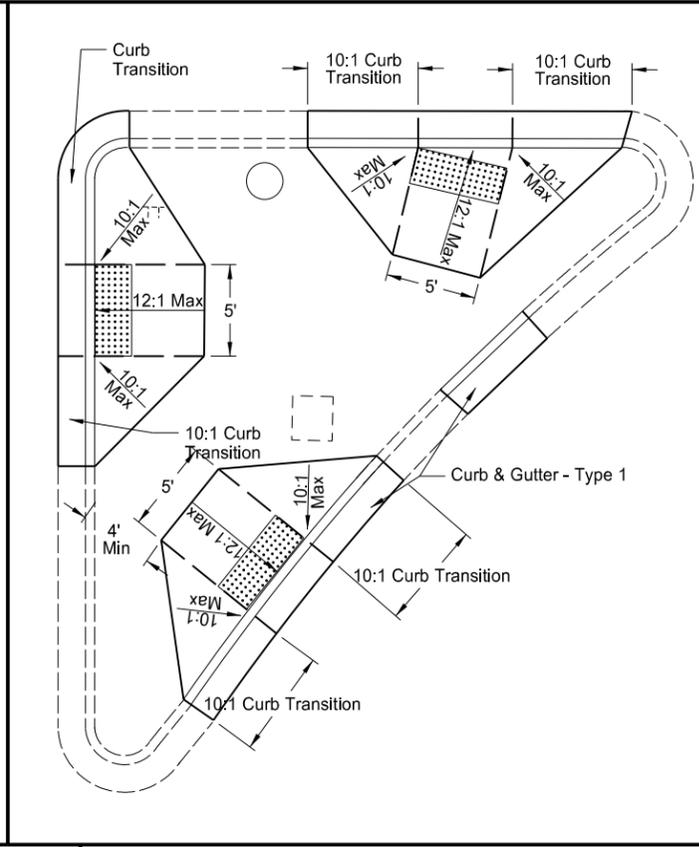
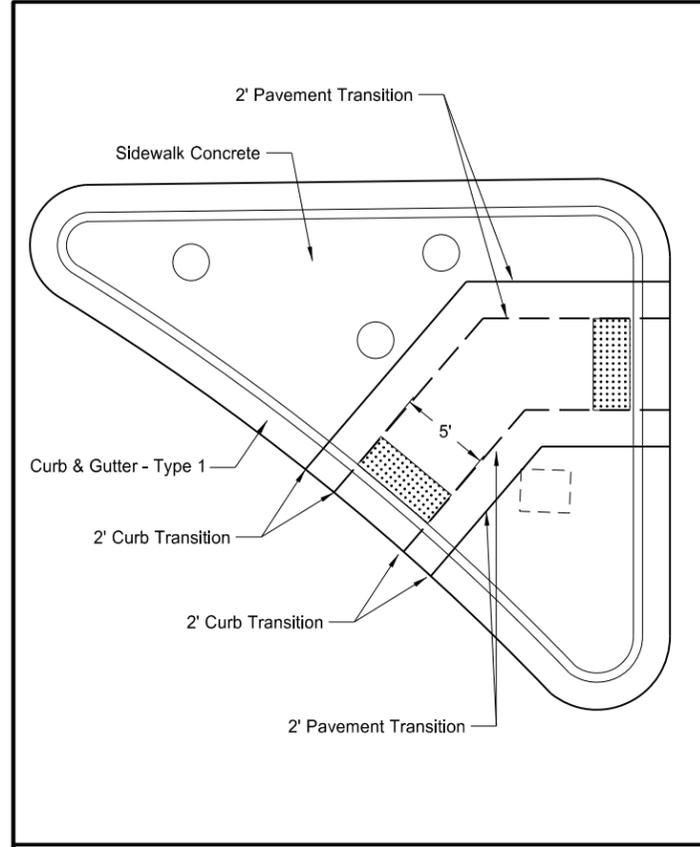
Location 6  
Washington St. & 32nd Ave SE Quadrant

SPEC CODE	BID ITEM	QUANTITY	UNIT
202 112	REMOVAL OF CONCRETE		
	Location 1	12	SY
	Location 2	15	SY
	Location 3	31	SY
	Location 4	11	SY
	Location 5	17	SY
	Location 6	6	SY
202 119	SAW CONCRETE		
	Location 1	53	LF
	Location 2	63	LF
	Location 3	109	LF
	Location 4	53	LF
	Location 5	44	LF
	Location 6	36	LF
202 130	REMOVAL OF CURB & GUTTER		
	Location 1	22	LF
	Location 2	28	LF
	Location 3	45	LF
	Location 4	22	LF
	Location 5	44	LF
	Location 6	14	LF
302 100	SALVAGED BASE COURSE		
	Location 1	3.6	TON
	Location 2	4.4	TON
	Location 3	8.6	TON
	Location 4	3.3	TON
	Location 5	5.6	TON
	Location 6	1.9	TON
708 2900	SEEDING - HYDRO MULCH		
	Location 5	4	SY
	Location 6	2	SY
748 140	CURB & GUTTER - TYPE 1		
	Location 1	22	LF
	Location 2	28	LF
	Location 3	45	LF
	Location 4	22	LF
	Location 5	44	LF
	Location 6	14	LF
750 100	SIDEWALK CONCRETE		
	Location 1	12	SY
	Location 2	15	SY
	Location 3	31	SY
	Location 4	11	SY
	Location 5	17	SY
	Location 6	6	SY
750 2115	DETECTABLE WARNING PANELS		
	Location 1	20	SF
	Location 2	24	SF
	Location 3	34	SF
	Location 4	20	SF
	Location 5	20	SF
	Location 6	10	SF
970 0008	LANDSCAPE PREPARATION		
	Location 5	4	SY
	Location 6	2	SY



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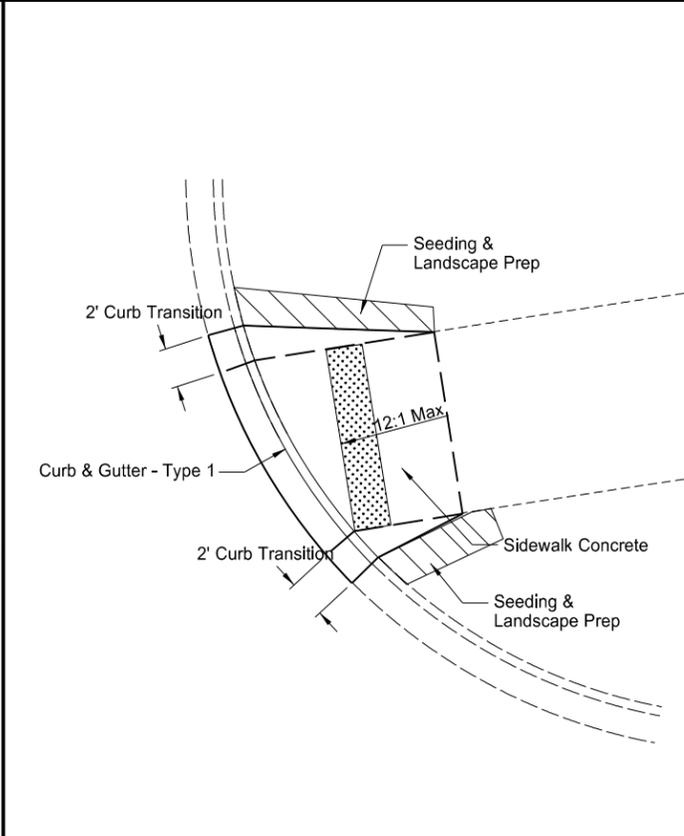
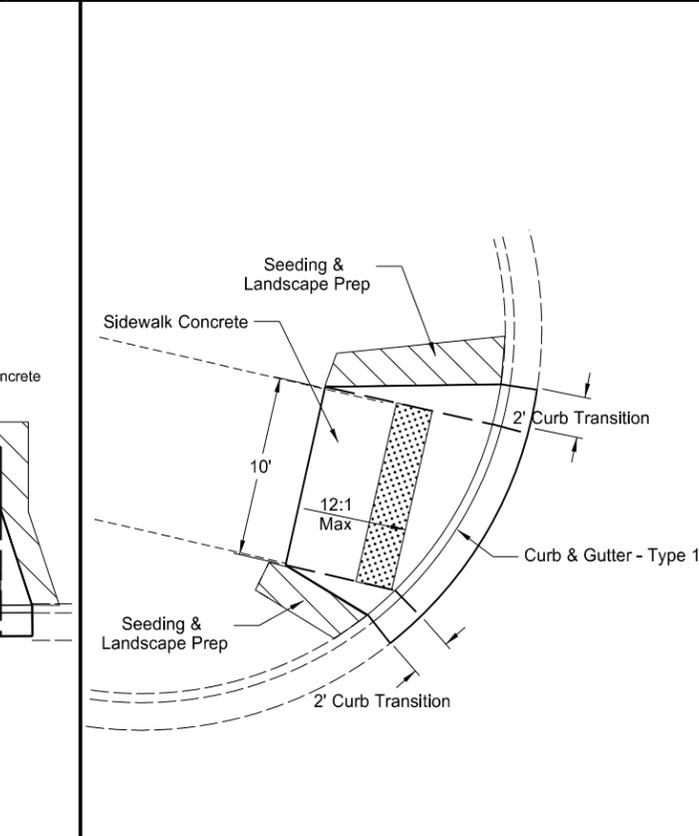
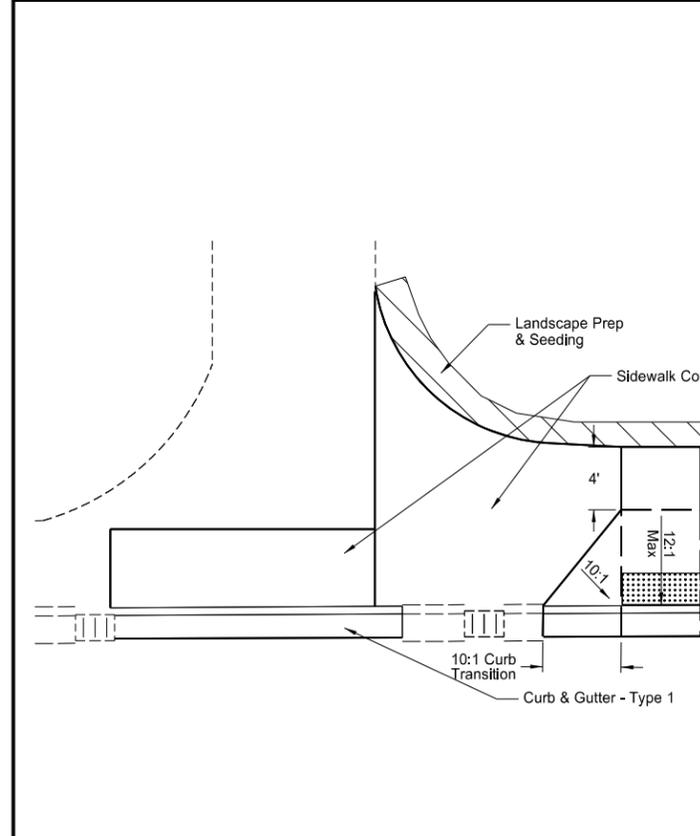
ADA Ramp Details  
South Washington St.



Location 7  
Washington St. & 32nd Ave SE Island

Location 8  
Washington St. & 32nd Ave NE Island

Location 9  
Washington St. & 32nd Ave NE Quad

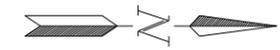


Location 10  
East Frontage Road, STA 104+20

Location 11  
Frontage Road South Side

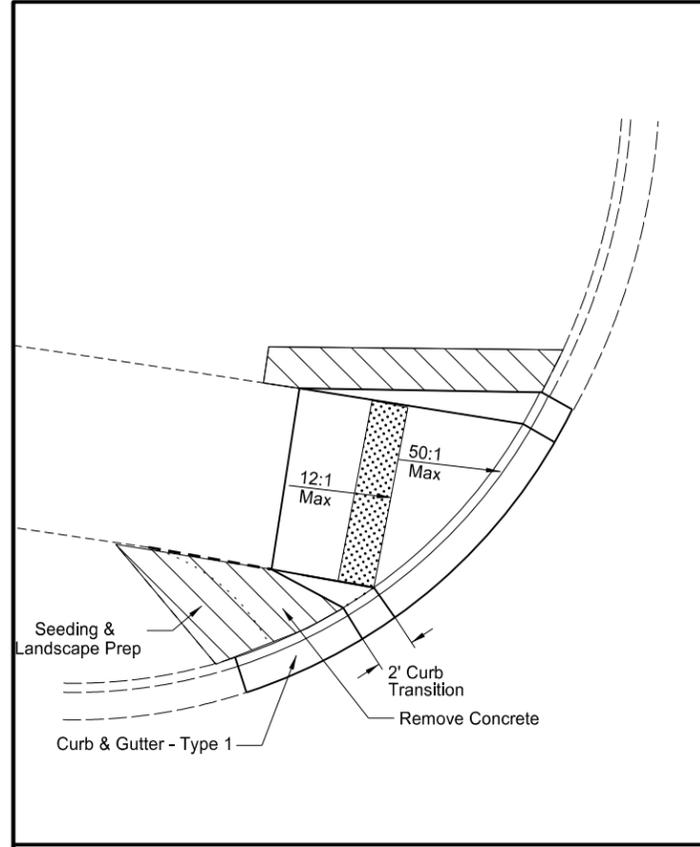
Location 12  
Frontage Road North Side

SPEC CODE	BID ITEM	QUANTITY	UNIT
202 112	REMOVAL OF CONCRETE		
	Location 7	47	SY
	Location 8	25	SY
	Location 9	11	SY
	Location 10	10	SY
	Location 11	8	SY
	Location 12	8	SY
202 119	SAW CONCRETE		
	Location 7	107	LF
	Location 8	142	LF
	Location 9	49	LF
	Location 10	60	LF
	Location 11	30	LF
	Location 12	30	LF
202 130	REMOVAL OF CURB & GUTTER		
	Location 7	107	LF
	Location 8	63	LF
	Location 9	27	LF
	Location 10	31	LF
	Location 11	16	LF
	Location 12	16	LF
302 100	SALVAGED BASE COURSE		
	Location 7	12.3	TON
	Location 8	8.2	TON
	Location 9	6.3	TON
	Location 10	9.4	TON
	Location 11	3.3	TON
	Location 12	3.3	TON
708 2900	SEEDING - HYDRO MULCH		
	Location 9	5	SY
	Location 10	8	SY
	Location 11	4	SY
	Location 12	4	SY
748 140	CURB & GUTTER - TYPE 1		
	Location 7	107	LF
	Location 8	63	LF
	Location 9	27	LF
	Location 10	31	LF
	Location 11	16	LF
	Location 12	16	LF
750 100	SIDEWALK CONCRETE		
	Location 7	47	SY
	Location 8	25	SY
	Location 9	24	SY
	Location 10	38	SY
	Location 11	12	SY
	Location 12	12	SY
750 2115	DETECTABLE WARNING PANELS		
	Location 7	20	SF
	Location 8	30	SF
	Location 9	10	SF
	Location 10	10	SF
	Location 11	20	SF
	Location 12	20	SF
970 0008	LANDSCAPE PREPARATION		
	Location 9	5	SY
	Location 10	8	SY
	Location 11	4	SY
	Location 12	4	SY

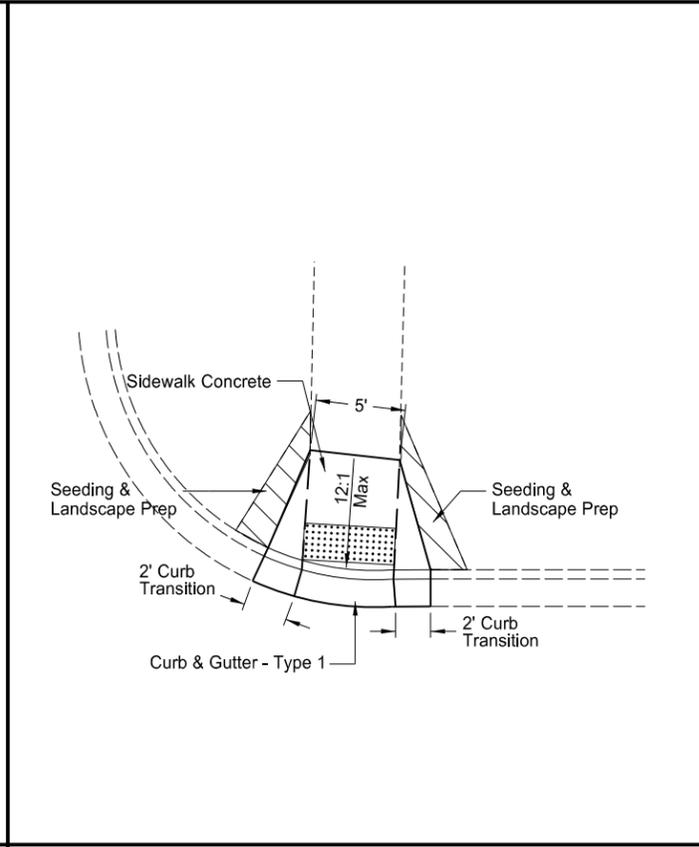


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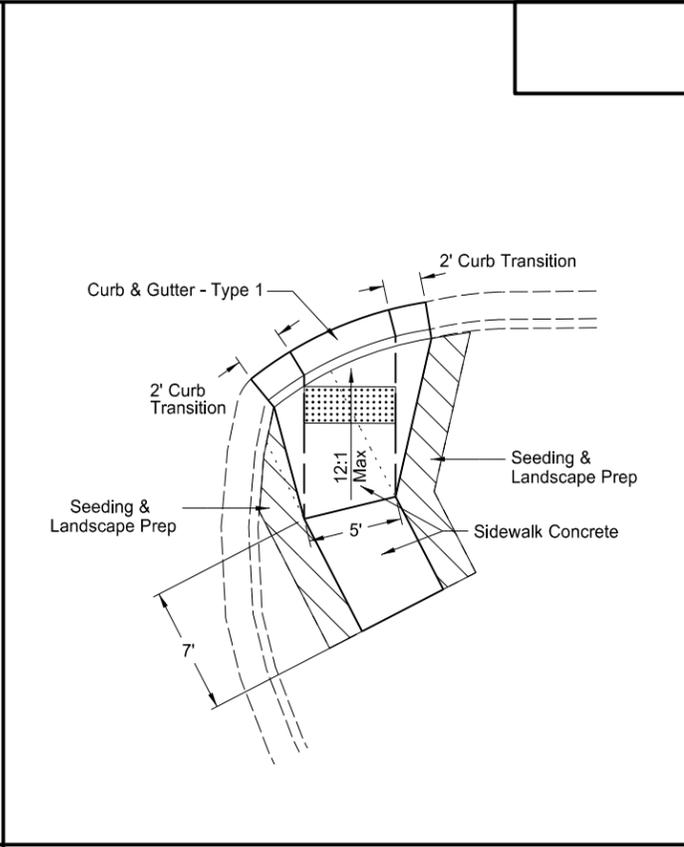
ADA Ramp Details  
South Washington St.



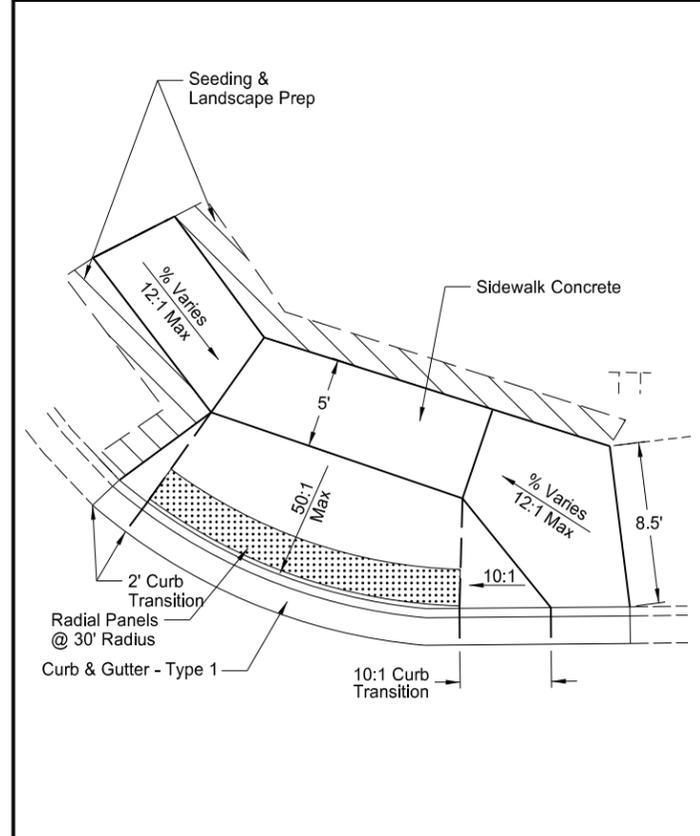
Location 13  
Washington St. & 28th Ave SW Quadrant



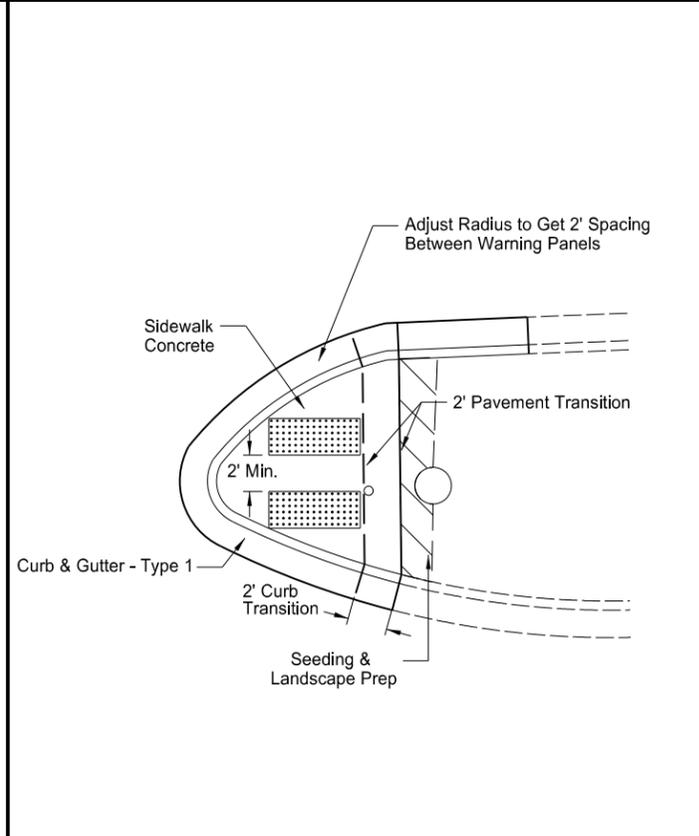
Location 14  
West Frontage Road West Side



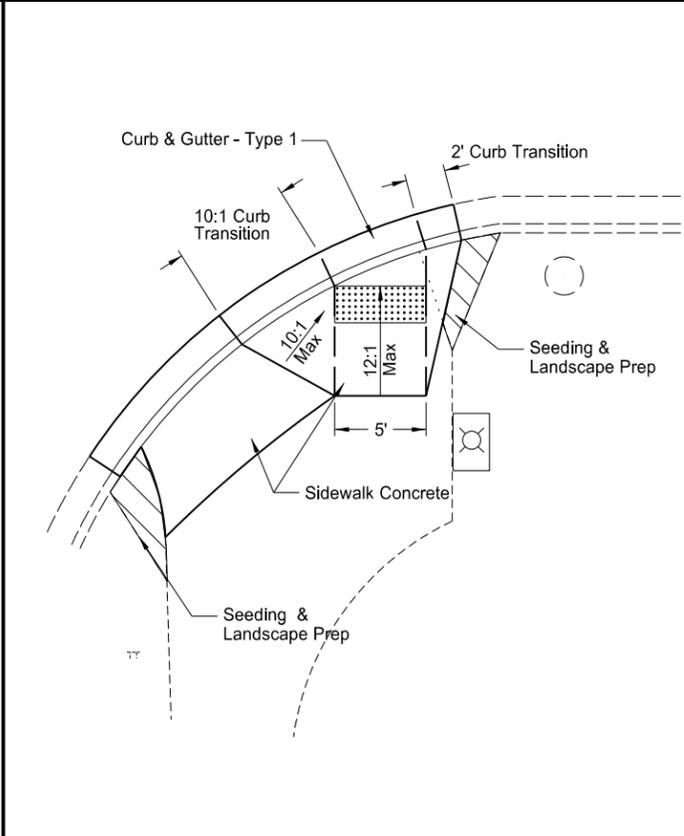
Location 15  
West Frontage Road East Side



Location 16  
Washington St. & 28th Ave NW Quad

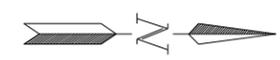


Location 17  
Washington St. & 28th Ave North Median Island



Location 18  
Washington St. & 28th Ave NE Quadrant

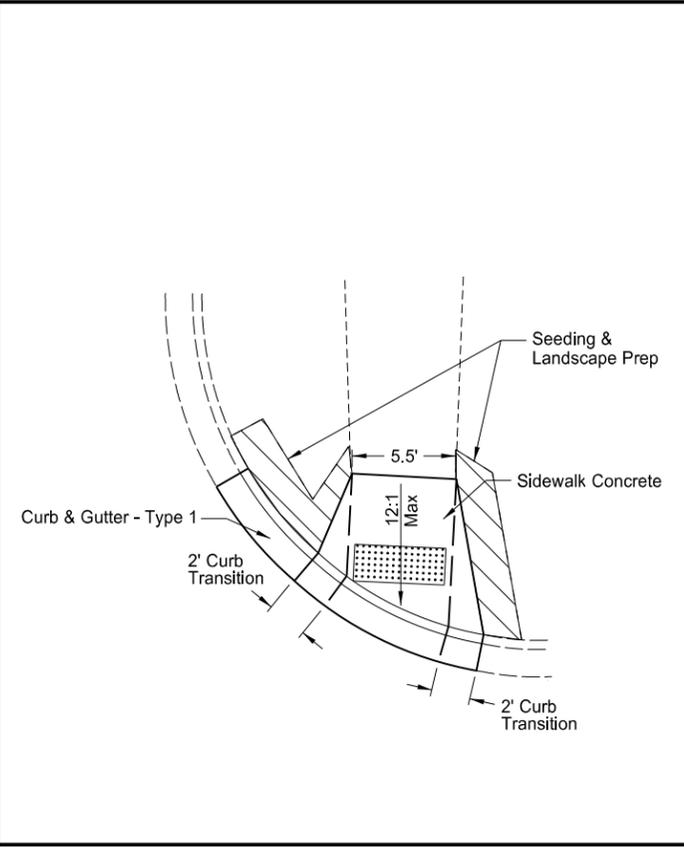
SPEC CODE	BID ITEM	QUANTITY	UNIT
202 112	REMOVAL OF CONCRETE		
	Location 13	11	SY
	Location 14	5	SY
	Location 15	7	SY
	Location 16	28	SY
	Location 17	9	SY
	Location 18	12	SY
202 119	SAW CONCRETE		
	Location 13	48	LF
	Location 14	19	LF
	Location 15	19	LF
	Location 16	43	LF
	Location 17	33	LF
	Location 18	46	LF
202 130	REMOVAL OF CURB & GUTTER		
	Location 13	24	LF
	Location 14	10	LF
	Location 15	10	LF
	Location 16	16	LF
	Location 17	36	LF
	Location 18	24	LF
302 100	SALVAGED BASE COURSE		
	Location 13	1.7	TON
	Location 14	1.5	TON
	Location 15	2.6	TON
	Location 16	8.6	TON
	Location 17	3.5	TON
	Location 18	3.6	TON
708 2900	SEEDING - HYDRO MULCH		
	Location 13	7	SY
	Location 14	4	SY
	Location 15	6	SY
	Location 16	11	SY
	Location 17	3	SY
	Location 18	4	SY
748 140	CURB & GUTTER - TYPE 1		
	Location 13	24	LF
	Location 14	10	LF
	Location 15	10	LF
	Location 16	16	LF
	Location 17	36	LF
	Location 18	12	LF
750 100	SIDEWALK CONCRETE		
	Location 13	6	SY
	Location 14	5	SY
	Location 15	10	SY
	Location 16	33	SY
	Location 17	9	SY
	Location 18	12	SY
750 2115	DETECTABLE WARNING PANELS		
	Location 13	20	SF
	Location 14	10	SF
	Location 15	10	SF
	Location 16	36	SF
	Location 17	20	SF
	Location 18	10	SF
970 0008	LANDSCAPE PREPARATION		
	Location 13	7	SY
	Location 14	4	SY
	Location 15	6	SY
	Location 16	11	SY
	Location 17	3	SY
	Location 18	4	SY



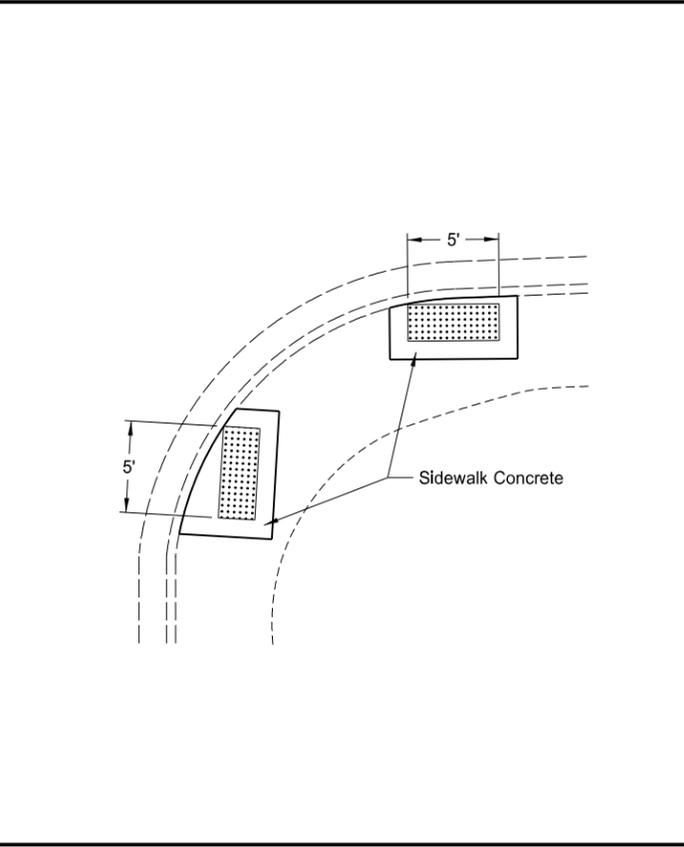
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ADA Ramp Details  
South Washington St.

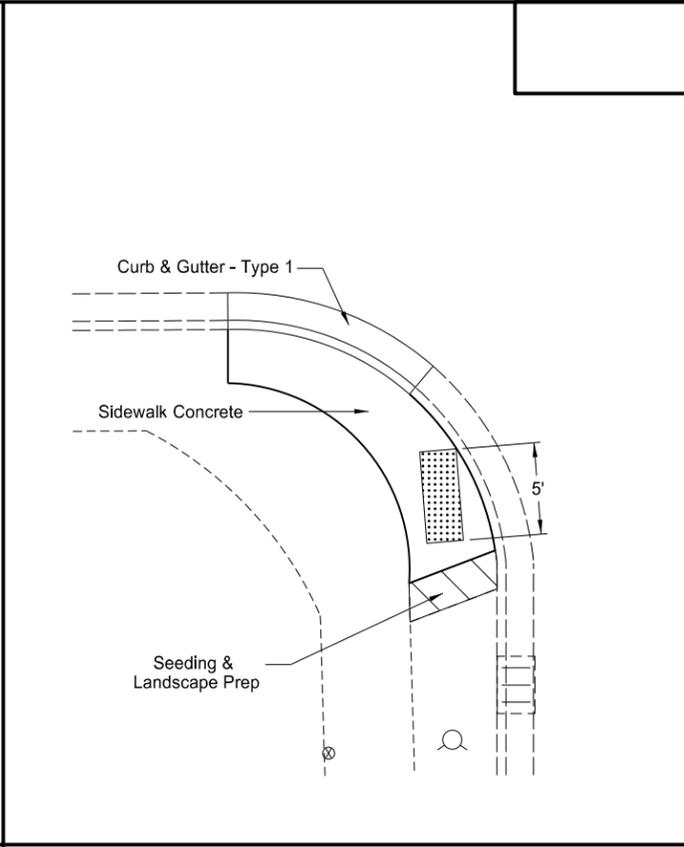
SPEC CODE	BID ITEM	QUANTITY	UNIT
202 112	REMOVAL OF CONCRETE		
	Location 19	5	SY
	Location 20	6	SY
	Location 21	8	SY
	Location 22	21	SY
	Location 23	9	SY
	Location 24	12	SY
202 119	SAW CONCRETE		
	Location 19	28	LF
	Location 20	44	LF
	Location 21	51	LF
	Location 22	14	LF
	Location 23	31	LF
	Location 24	31	LF
202 130	REMOVAL OF CURB & GUTTER		
	Location 19	18	LF
	Location 20	0	LF
	Location 21	12	LF
	Location 22	10	LF
	Location 23	17	LF
	Location 24	17	LF
302 100	SALVAGED BASE COURSE		
	Location 19	2.0	TON
	Location 20	1.3	TON
	Location 21	2.2	TON
	Location 22	0.5	TON
	Location 23	2.9	TON
	Location 24	3.7	TON
708 2900	SEEDING - HYDRO MULCH		
	Location 19	4	SY
	Location 21	1	SY
	Location 22	42	SY
	Location 23	3	SY
	Location 24	5	SY
748 140	CURB & GUTTER - TYPE 1		
	Location 19	18	LF
	Location 20	0	LF
	Location 21	12	LF
	Location 22	10	LF
	Location 23	17	LF
	Location 24	17	LF
750 100	SIDEWALK CONCRETE		
	Location 19	6	SY
	Location 20	6	SY
	Location 21	8	SY
	Location 22	0	SY
	Location 23	11	SY
	Location 24	14	SY
750 2115	DETECTABLE WARNING PANELS		
	Location 19	10	SF
	Location 20	20	SF
	Location 21	10	SF
	Location 22	0	SF
	Location 23	20	SF
	Location 24	20	SF
970 0008	LANDSCAPE PREPARATION		
	Location 19	4	SY
	Location 21	1	SY
	Location 22	42	SY
	Location 23	3	SY
	Location 24	5	SY



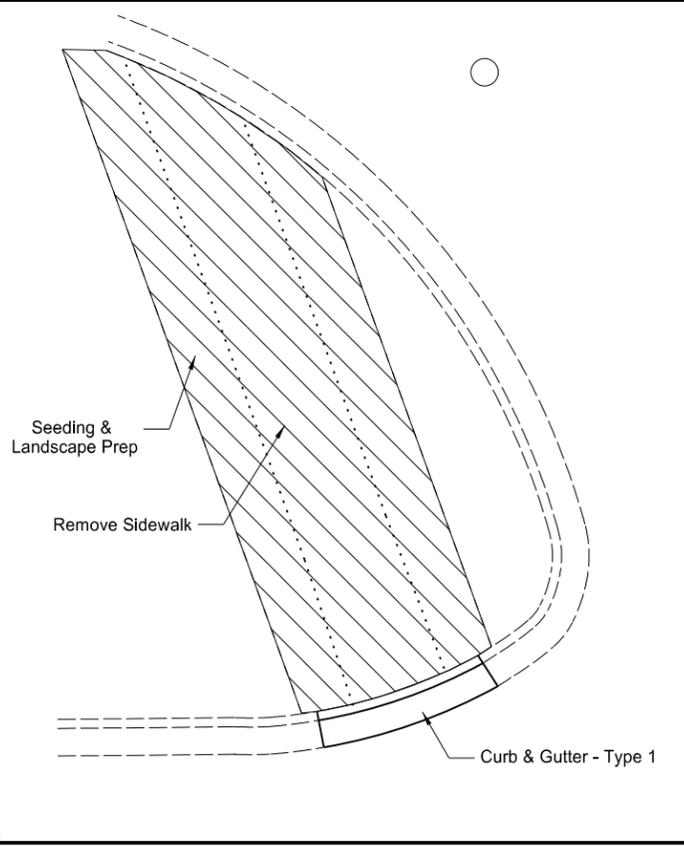
Location 19  
28th Ave & East Frontage Road NW Quadrant



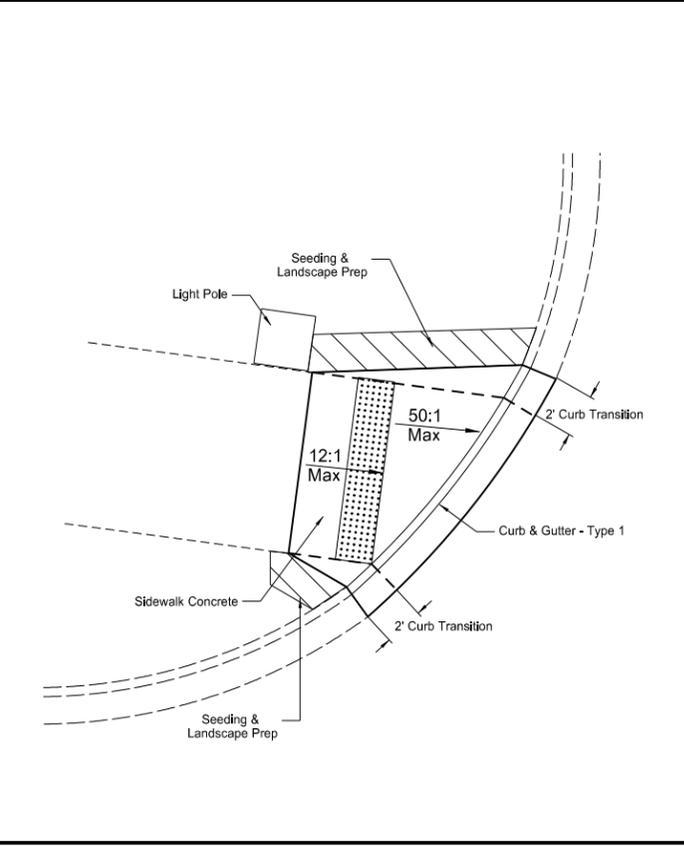
Location 20  
28th Ave & East Frontage Road NE Quadrant



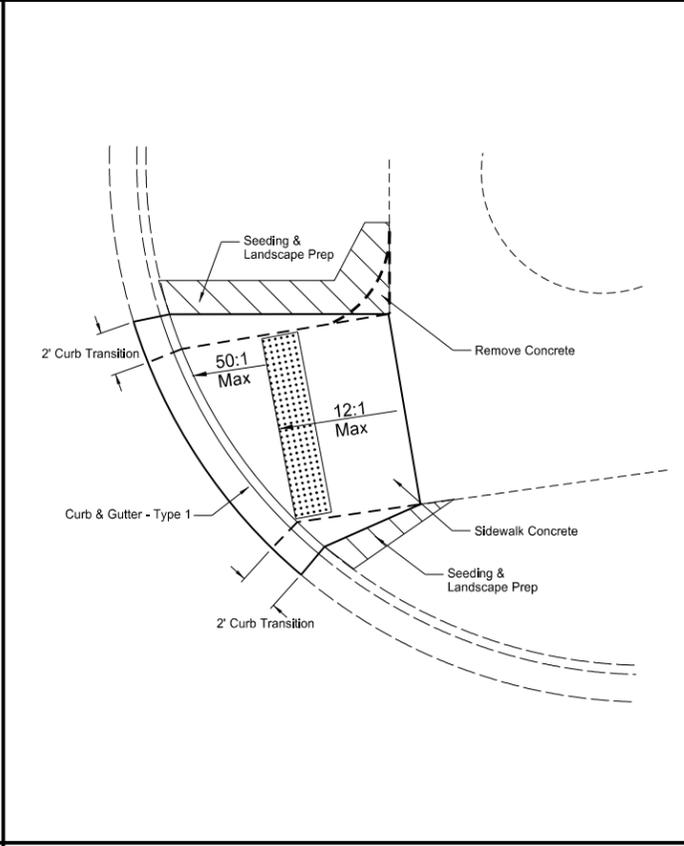
Location 21  
28th Ave & East Frontage Road SE Quadrant



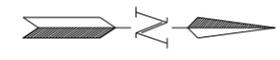
Location 22  
Washington St. & 28th Ave SE Quadrant



Location 23  
Shared Use Path South Side



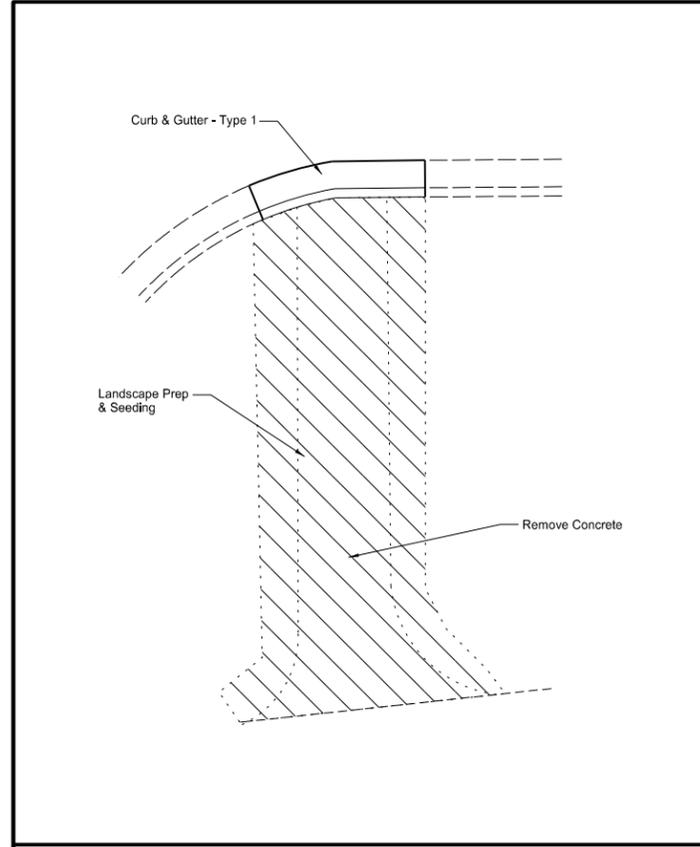
Location 24  
Shared Use Path North Side



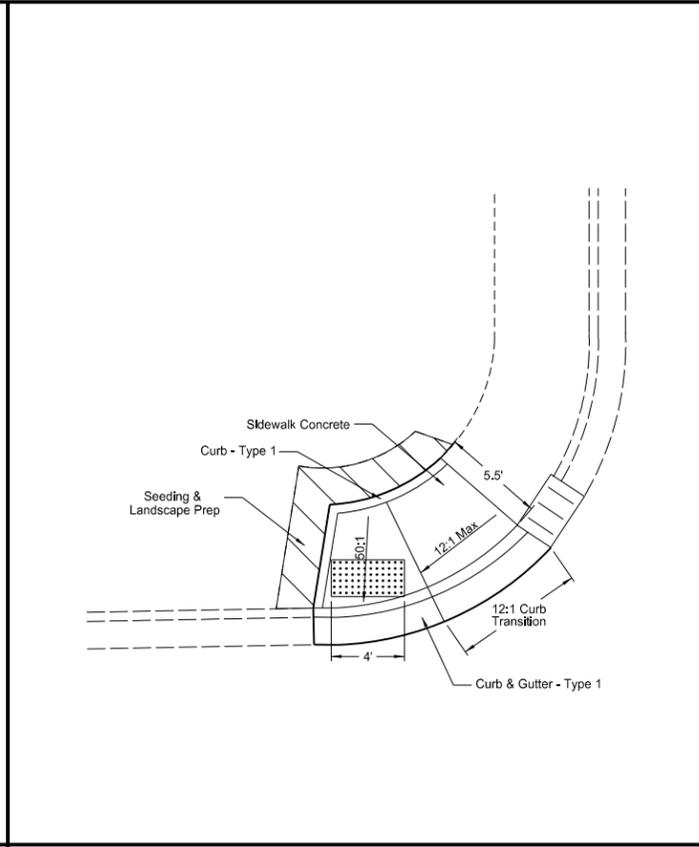
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ADA Ramp Details  
South Washington St.

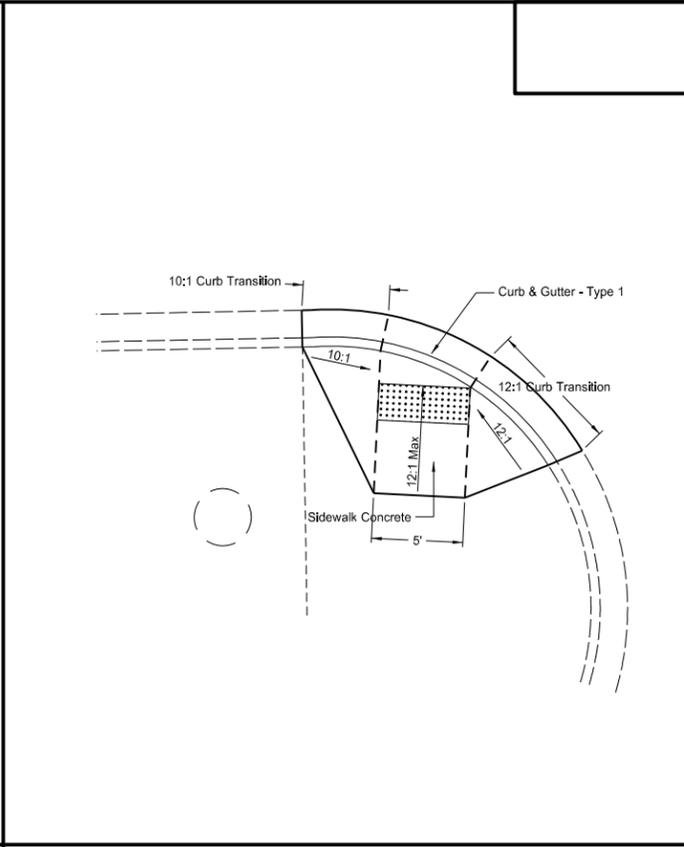
SPEC CODE	BID ITEM	QUANTITY	UNIT
<b>202 112</b>	<b>REMOVAL OF CONCRETE</b>		
	Location 25	18	SY
	Location 26	6	SY
	Location 27	8	SY
	Location 28	34	SY
	Location 29	11	SY
	Location 30	9	SY
<b>202 119</b>	<b>SAW CONCRETE</b>		
	Location 25	27	LF
	Location 26	28	LF
	Location 27	40	LF
	Location 28	118	LF
	Location 29	35	LF
	Location 30	42	LF
<b>202 130</b>	<b>REMOVAL OF CURB &amp; GUTTER</b>		
	Location 25	10	LF
	Location 26	14	LF
	Location 27	17	LF
	Location 28	48	LF
	Location 29	19	LF
	Location 30	19	LF
<b>302 100</b>	<b>SALVAGED BASE COURSE</b>		
	Location 25	0.5	TON
	Location 26	1.9	TON
	Location 27	2.4	TON
	Location 28	7.2	TON
	Location 29	3.1	TON
	Location 30	2.7	TON
<b>708 2900</b>	<b>SEEDING - HYDRO MULCH</b>		
	Location 25	20	SY
	Location 26	3	SY
	Location 28	35	SY
	Location 29	4	SY
<b>748 140</b>	<b>CURB &amp; GUTTER - TYPE 1</b>		
	Location 25	10	LF
	Location 26	14	LF
	Location 27	17	LF
	Location 28	48	LF
	Location 29	19	LF
	Location 30	19	LF
<b>748 520</b>	<b>Curb - Type 1</b>		
	Location 26	13	LF
	Location 29	16	LF
<b>750 100</b>	<b>SIDEWALK CONCRETE</b>		
	Location 26	6	SY
	Location 27	8	SY
	Location 28	18	SY
	Location 29	11	SY
	Location 30	9	SY
<b>750 2115</b>	<b>DETECTABLE WARNING PANELS</b>		
	Location 26	8	SF
	Location 27	10	SF
	Location 28	20	SF
	Location 29	10	SF
	Location 30	10	SF
<b>970 0008</b>	<b>LANDSCAPE PREPARATION</b>		
	Location 25	30	SY
	Location 26	3	SY
	Location 28	35	SY
	Location 29	4	SY



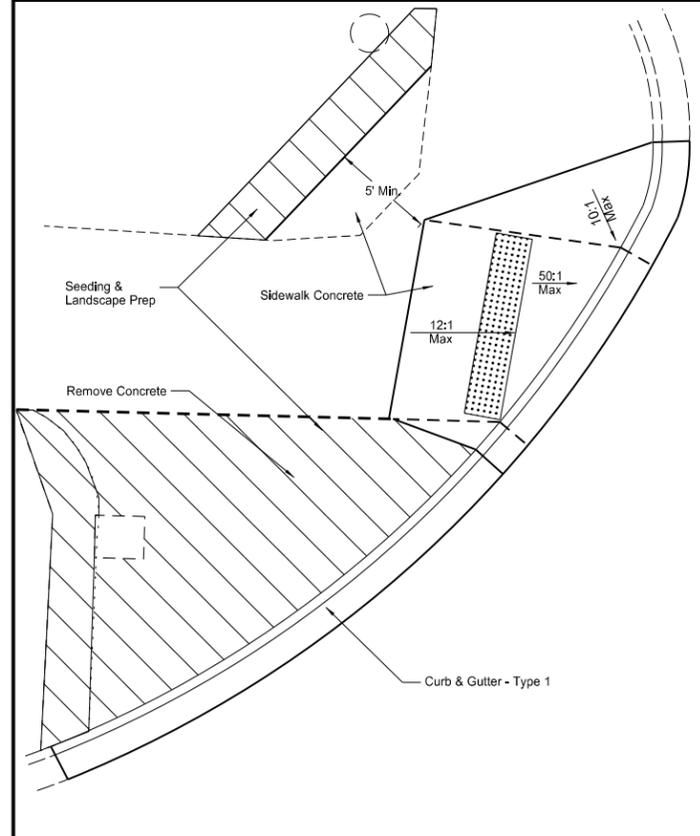
Location 25  
East Frontage Road & NE Quadrant



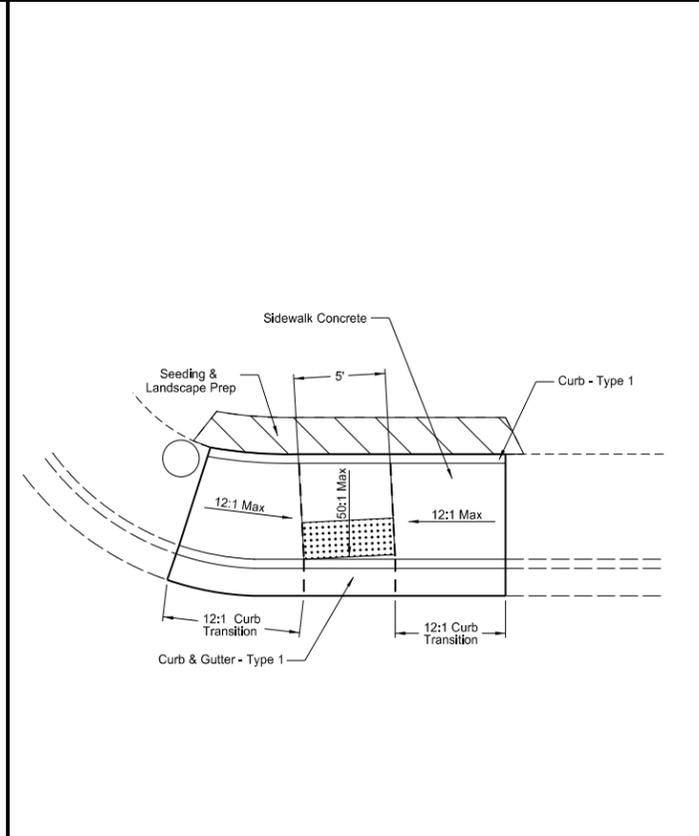
Location 26  
East Frontage Road & 24th Ave SW Quadrant



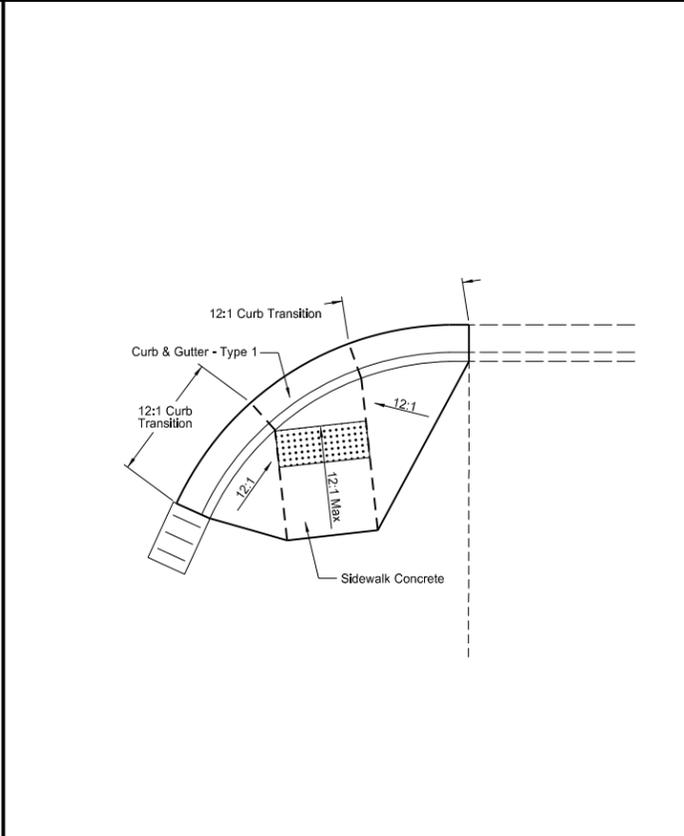
Location 27  
East Frontage Road & 24th Ave SE Quadrant



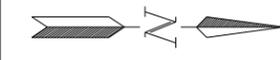
Location 28  
Washington St. & 24th Ave SW Quadrant



Location 29  
East Frontage Road & 24th Ave NW Quadrant



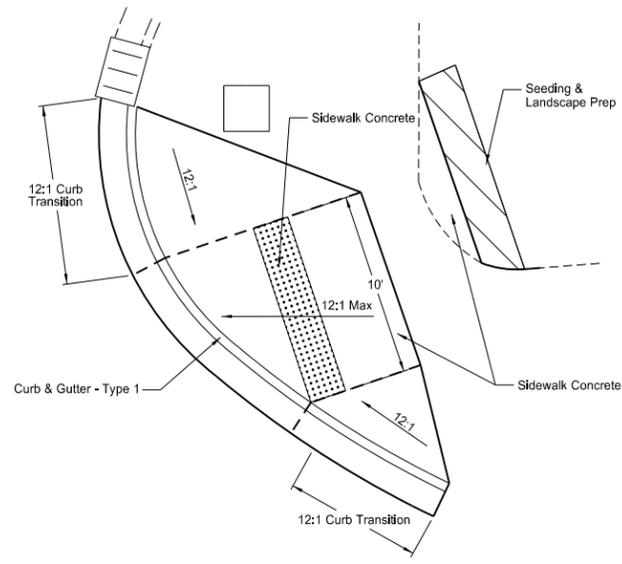
Location 30  
Washington St. & 24th Ave NE Quadrant



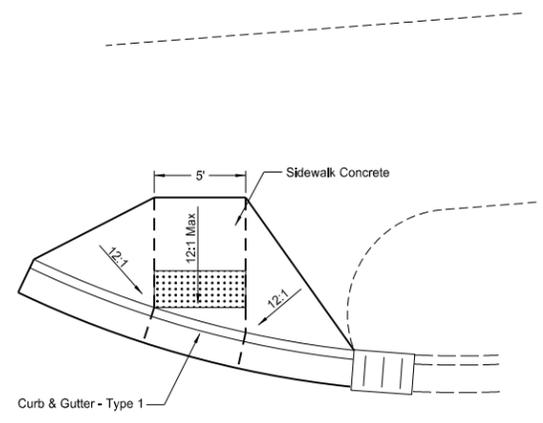
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ADA Ramp Details  
South Washington St.

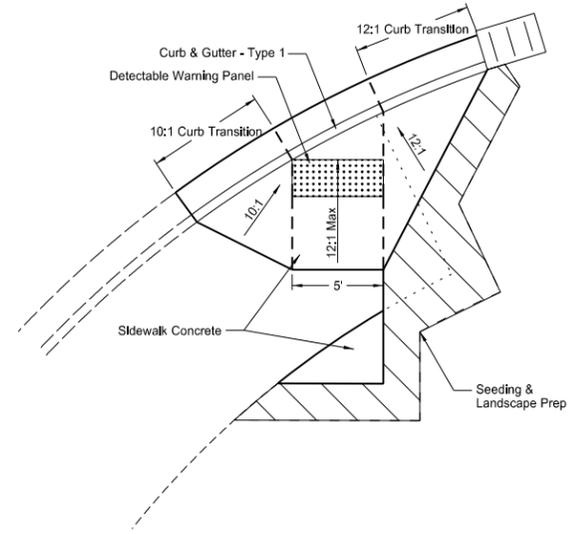
SPEC CODE	BID ITEM	QUANTITY	UNIT
<b>202 112</b>	<b>REMOVAL OF CONCRETE</b>		
	Location 31	18	SY
	Location 32	9	SY
	Location 33	8	SY
	Location 34	12	SY
	Location 35	6	SY
	Location 36	12	SY
<b>202 119</b>	<b>SAW CONCRETE</b>		
	Location 31	62	LF
	Location 32	46	LF
	Location 33	40	LF
	Location 34	48	LF
	Location 35	29	LF
	Location 36	37	LF
<b>202 130</b>	<b>REMOVAL OF CURB &amp; GUTTER</b>		
	Location 31	29	LF
	Location 32	19	LF
	Location 33	19	LF
	Location 34	21	LF
	Location 35	14	LF
	Location 36	21	LF
<b>302 100</b>	<b>SALVAGED BASE COURSE</b>		
	Location 31	5.5	TON
	Location 32	2.6	TON
	Location 33	2.9	TON
	Location 34	2.8	TON
	Location 35	2.0	TON
	Location 36	3.4	TON
<b>708 2900</b>	<b>SEEDING - HYDRO MULCH</b>		
	Location 31	2	SY
	Location 33	8	SY
	Location 35	2	SY
	Location 36	4	SY
<b>748 140</b>	<b>CURB &amp; GUTTER - TYPE 1</b>		
	Location 31	29	LF
	Location 32	19	LF
	Location 33	19	LF
	Location 34	21	LF
	Location 35	14	LF
	Location 36	21	LF
<b>748 520</b>	<b>Curb - Type 1</b>		
	Location 36	17	LF
<b>750 100</b>	<b>SIDEWALK CONCRETE</b>		
	Location 31	20	SY
	Location 32	9	SY
	Location 33	10	SY
	Location 34	13	SY
	Location 35	7	SY
	Location 36	12	SY
<b>750 2115</b>	<b>DETECTABLE WARNING PANELS</b>		
	Location 31	20	SF
	Location 32	10	SF
	Location 33	10	SF
	Location 34	10	SF
	Location 35	10	SF
	Location 36	10	SF
<b>970 0008</b>	<b>LANDSCAPE PREPARATION</b>		
	Location 31	2	SY
	Location 33	8	SY
	Location 35	2	SY
	Location 36	4	SY



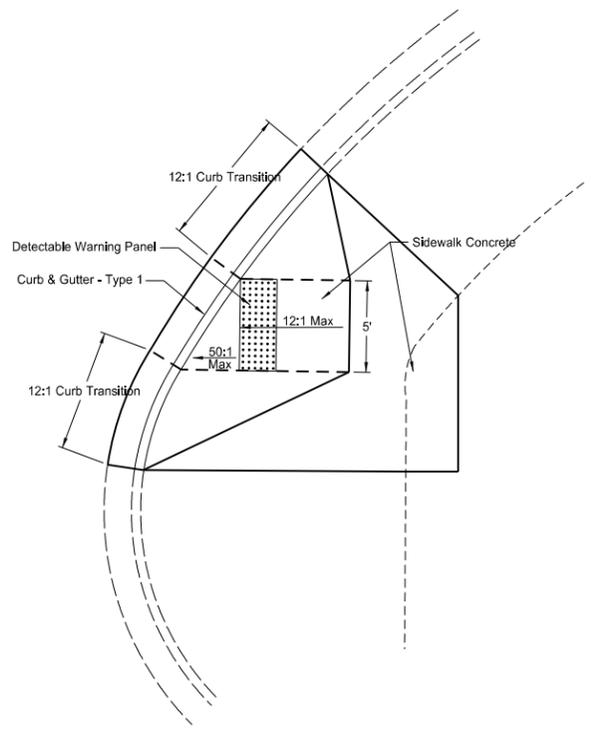
Location 31  
Washington St. & 24th Ave NW Quadrant



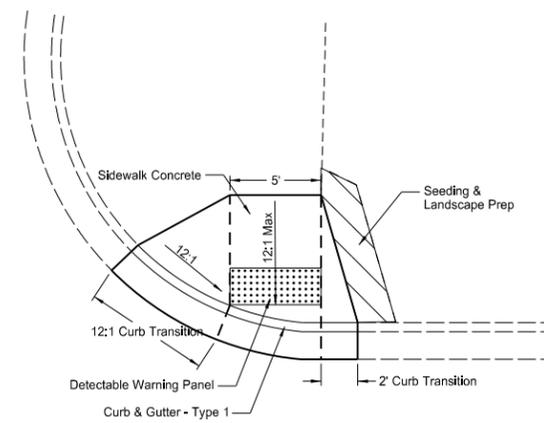
Location 32  
Washington St. & 24th Ave NW Quadrant



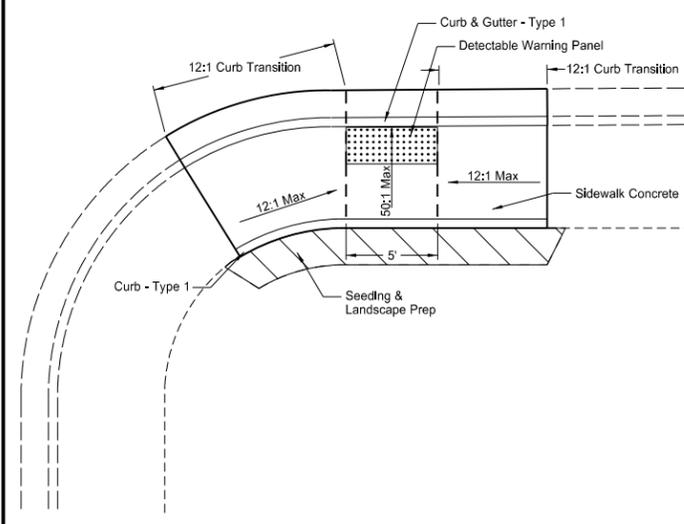
Location 33  
Washington St. & 24th Ave NE Quadrant



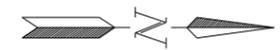
Location 34  
Washington St. & 24th Ave NE Quadrant



Location 35  
Washington St. & 24th Ave NE Quadrant



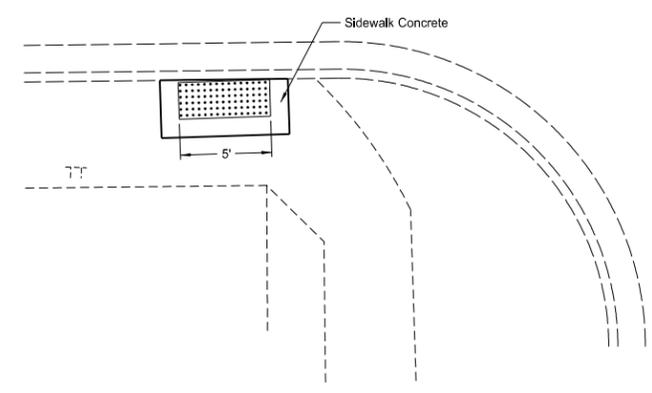
Location 36  
East Frontage Road & 24th Ave NE Quadrant



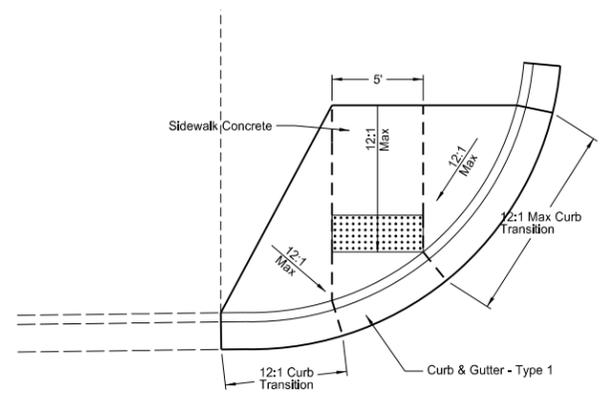
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ADA Ramp Details  
South Washington St.

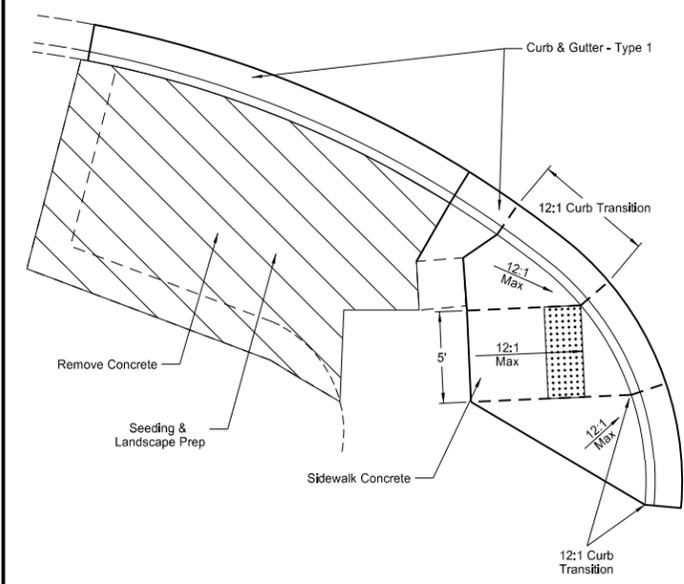
SPEC CODE	BID ITEM	QUANTITY	UNIT
<b>202 112</b>	<b>REMOVAL OF CONCRETE</b>		
	Location 37	3	SY
	Location 38	12	SY
	Location 39	28	SY
	Location 40	8	SY
	Location 41	16	SY
	Location 42	9	SY
<b>202 119</b>	<b>SAW CONCRETE</b>		
	Location 37	20	LF
	Location 38	56	LF
	Location 39	75	LF
	Location 40	31	LF
	Location 41	48	LF
	Location 42	45	LF
<b>202 130</b>	<b>REMOVAL OF CURB &amp; GUTTER</b>		
	Location 37	0	LF
	Location 38	24	LF
	Location 39	45	LF
	Location 40	17	LF
	Location 41	24	LF
	Location 42	20	LF
<b>302 100</b>	<b>SALVAGED BASE COURSE</b>		
	Location 37	0.6	TON
	Location 38	3.6	TON
	Location 39	3.7	TON
	Location 40	2.4	TON
	Location 41	6.9	TON
	Location 42	2.8	TON
<b>708 2900</b>	<b>SEEDING - HYDRO MULCH</b>		
	Location 39	27	SY
	Location 41	4	SY
<b>748 140</b>	<b>CURB &amp; GUTTER - TYPE 1</b>		
	Location 37	0	LF
	Location 38	24	LF
	Location 39	45	LF
	Location 40	17	LF
	Location 41	24	LF
	Location 42	19	LF
<b>750 100</b>	<b>SIDEWALK CONCRETE</b>		
	Location 37	3	SY
	Location 38	12	SY
	Location 39	10	SY
	Location 40	8	SY
	Location 41	24	SY
	Location 42	9	SY
<b>750 2115</b>	<b>DETECTABLE WARNING PANELS</b>		
	Location 37	10	SF
	Location 38	10	SF
	Location 39	10	SF
	Location 40	10	SF
	Location 41	20	SF
	Location 42	10	SF
<b>970 0008</b>	<b>LANDSCAPE PREPARATION</b>		
	Location 39	27	SY
	Location 41	4	SY



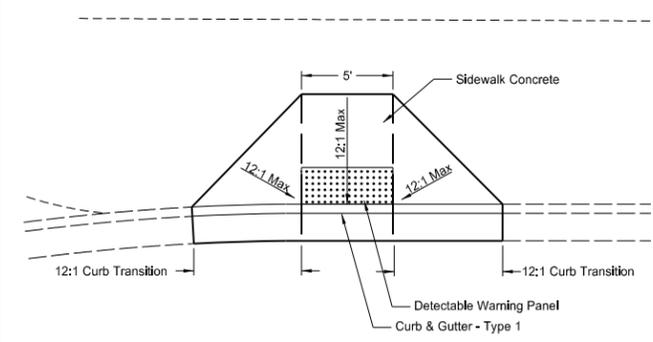
Location 37  
East Frontage Road & 24th Ave SE Quadrant



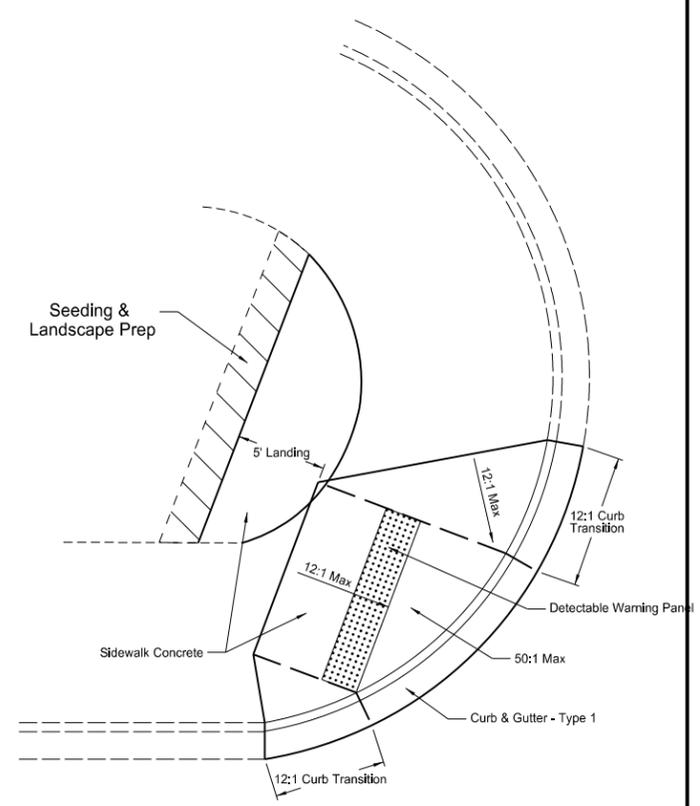
Location 38  
East Frontage Road & 24th Ave SW Quadrant



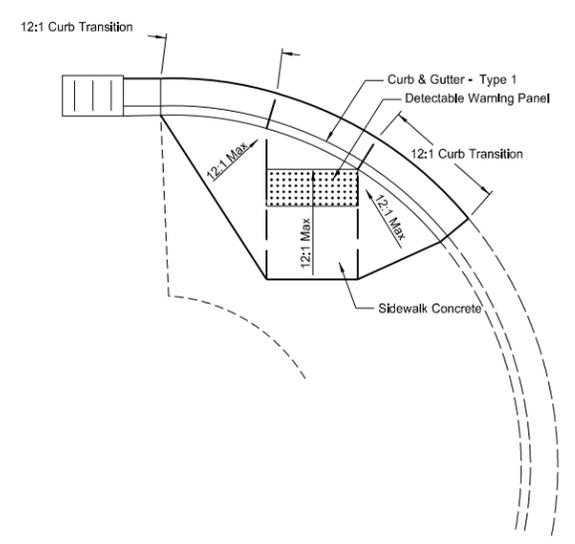
Location 39  
Washington St. & 24th Ave SE Quadrant



Location 40  
Bus Stop



Location 41  
Washington St. & Library Circle SE Quadrant



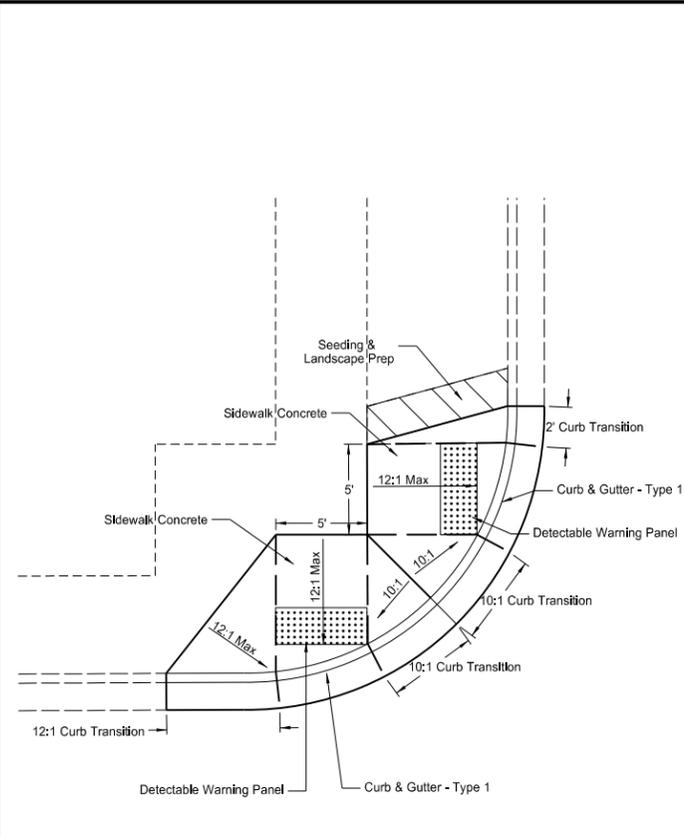
Location 42  
Washington St. & Library Circle SE Quadrant



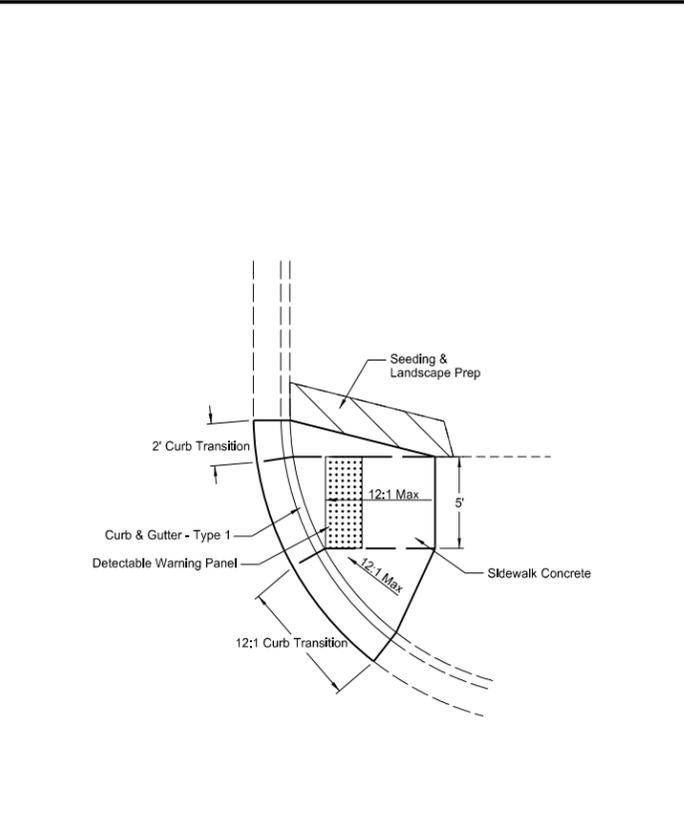
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ADA Ramp Details  
South Washington St.

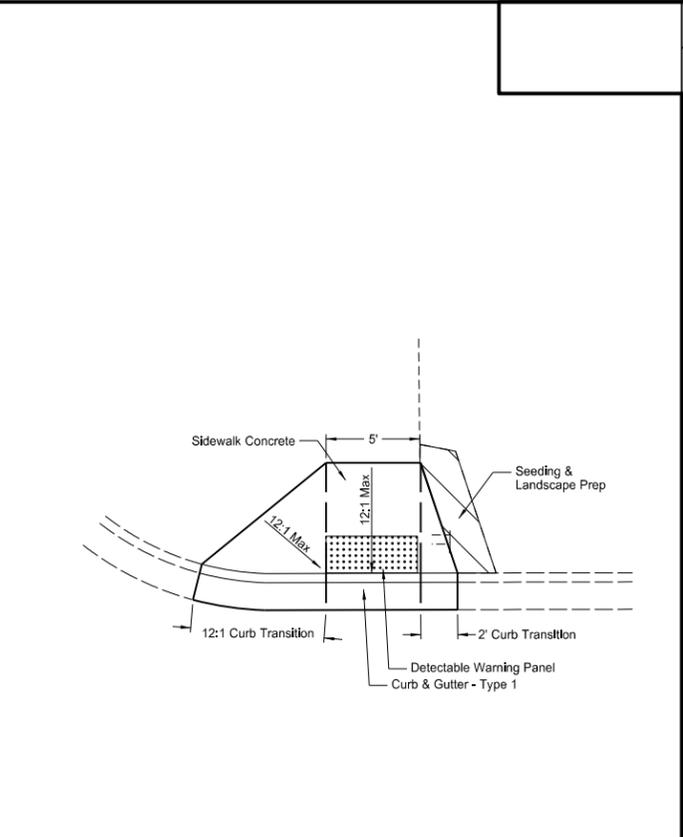
SPEC CODE BID ITEM	QUANTITY	UNIT
<b>202 112 REMOVAL OF CONCRETE</b>		
Location 43	13	SY
Location 44	7	SY
Location 45	6	SY
Location 46	6	SY
Location 47	15	SY
Location 48	30	SY
<b>202 119 SAW CONCRETE</b>		
Location 43	50	LF
Location 44	37	LF
Location 45	32	LF
Location 46	21	LF
Location 47	48	LF
Location 48	26	LF
<b>202 130 REMOVAL OF CURB &amp; GUTTER</b>		
Location 43	26	LF
Location 44	15	LF
Location 45	14	LF
Location 46	12	LF
Location 47	23	LF
Location 48	17	LF
<b>302 100 SALVAGED BASE COURSE</b>		
Location 43	4.2	TON
Location 44	2.0	TON
Location 45	2.0	TON
Location 46	2.0	TON
Location 47	3.0	TON
Location 48	6.2	TON
<b>708 2900 SEEDING - HYDRO MULCH</b>		
Location 43	2	SY
Location 44	2	SY
Location 45	2	SY
Location 46	6	SY
Location 47	4	SY
Location 48	11	SY
<b>748 140 CURB &amp; GUTTER - TYPE 1</b>		
Location 43	17	LF
Location 44	15	LF
Location 45	14	LF
Location 46	12	LF
Location 47	23	LF
Location 48	17	LF
<b>750 100 SIDEWALK CONCRETE</b>		
Location 43	14	SY
Location 44	7	SY
Location 45	7	SY
Location 46	7	SY
Location 47	15	SY
Location 48	54	SY
<b>750 2115 DETECTABLE WARNING PANELS</b>		
Location 43	20	SF
Location 44	10	SF
Location 45	10	SF
Location 46	10	SF
Location 47	20	SF
Location 48	10	SF
<b>970 0008 LANDSCAPE PREPARATION</b>		
Location 43	2	SY
Location 44	2	SY
Location 45	2	SY
Location 46	6	SY
Location 47	4	SY
Location 48	11	SY



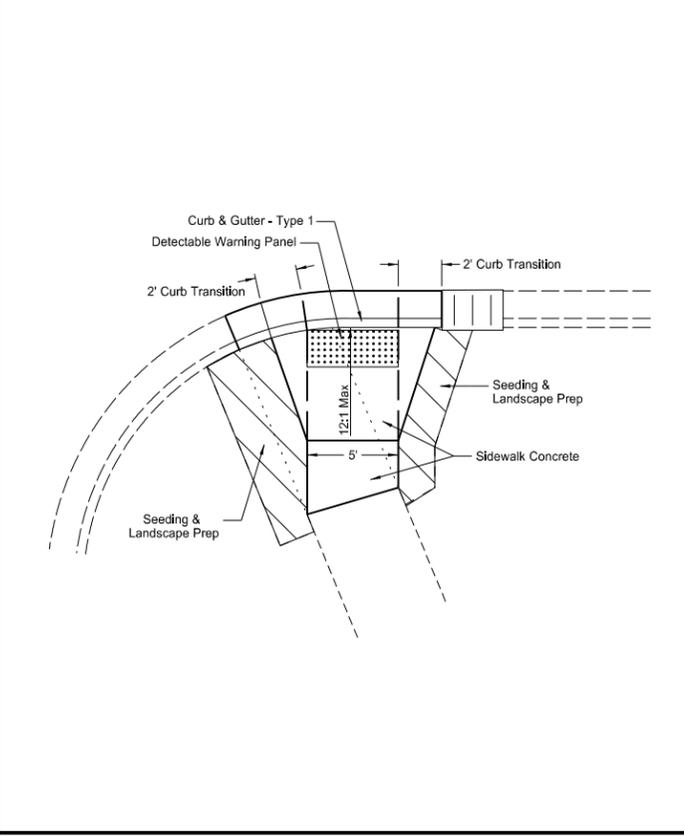
Location 43  
West Frontage Road & Library Circle SW Quadrant



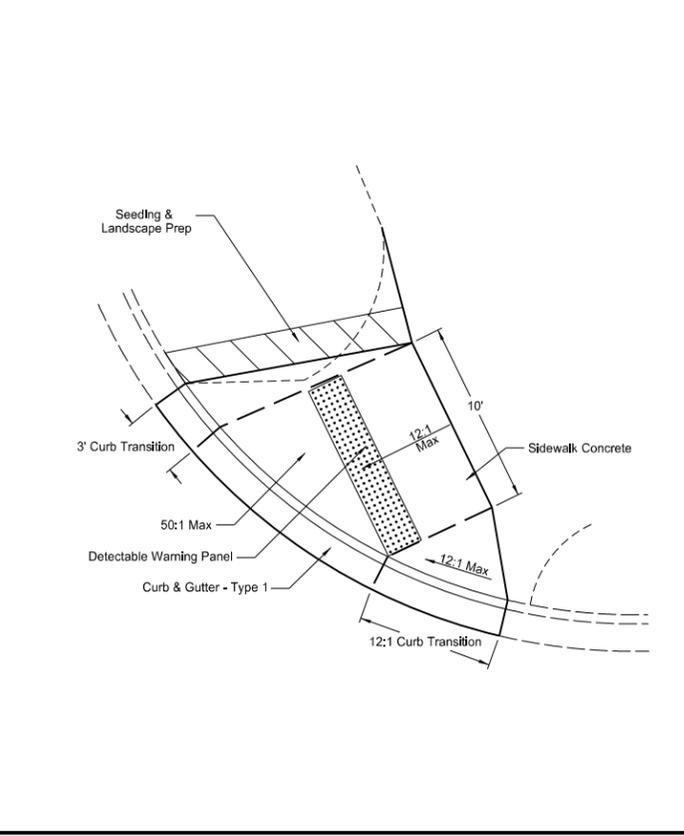
Location 44  
West Frontage Road & Library Circle NW Quadrant



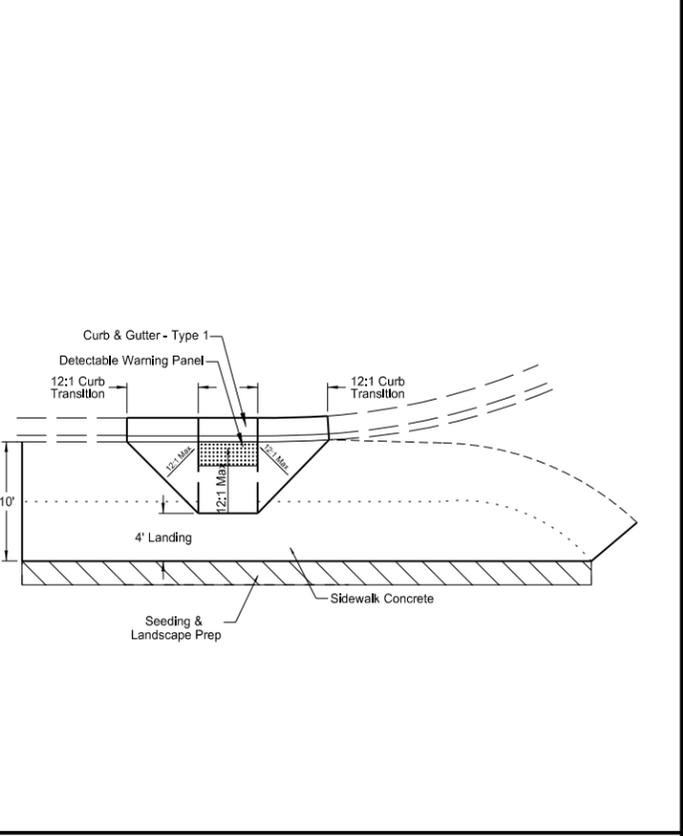
Location 45  
West Frontage Road & Library Circle NW Quadrant



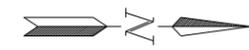
Location 46  
West Frontage Road & Library Circle NE Quadrant



Location 47  
Washington St. & Library Circle NE Quadrant

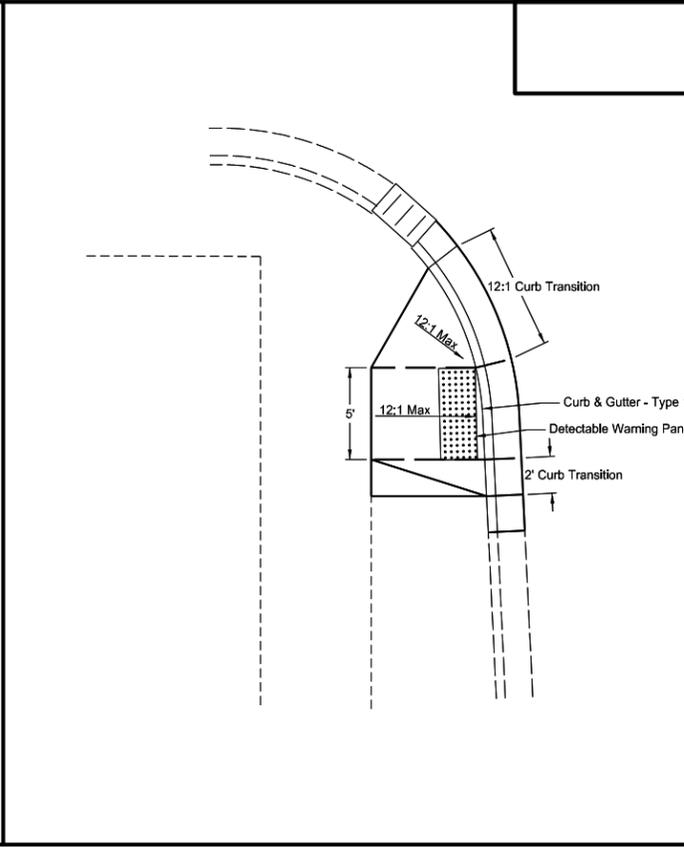
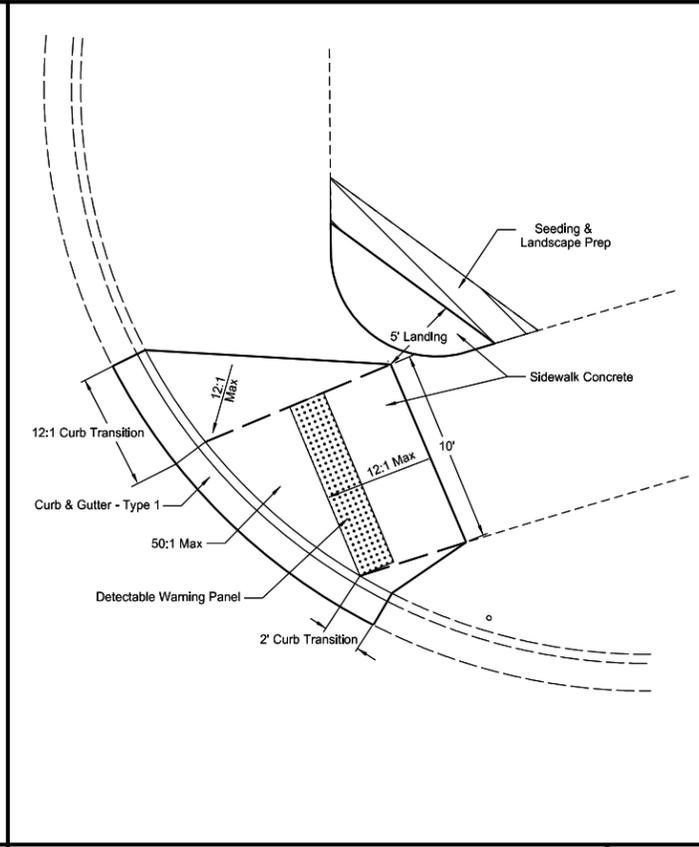
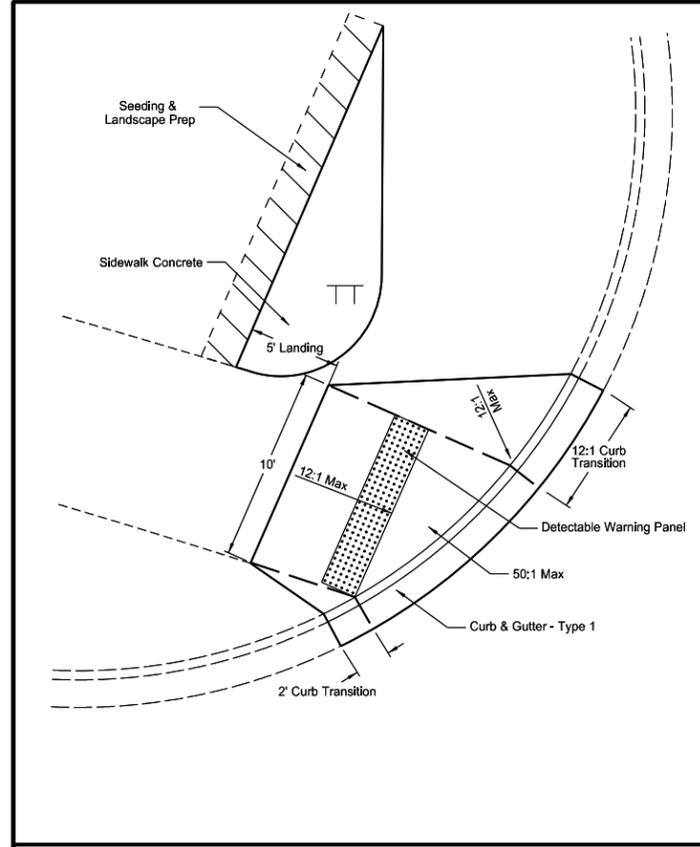


Location 48  
Washington St. NB Bus Stop



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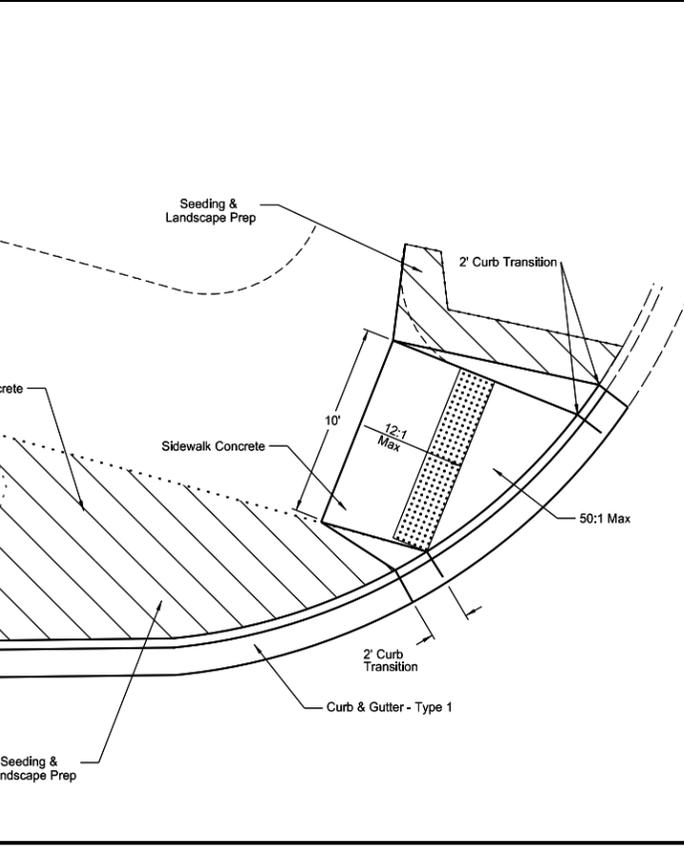
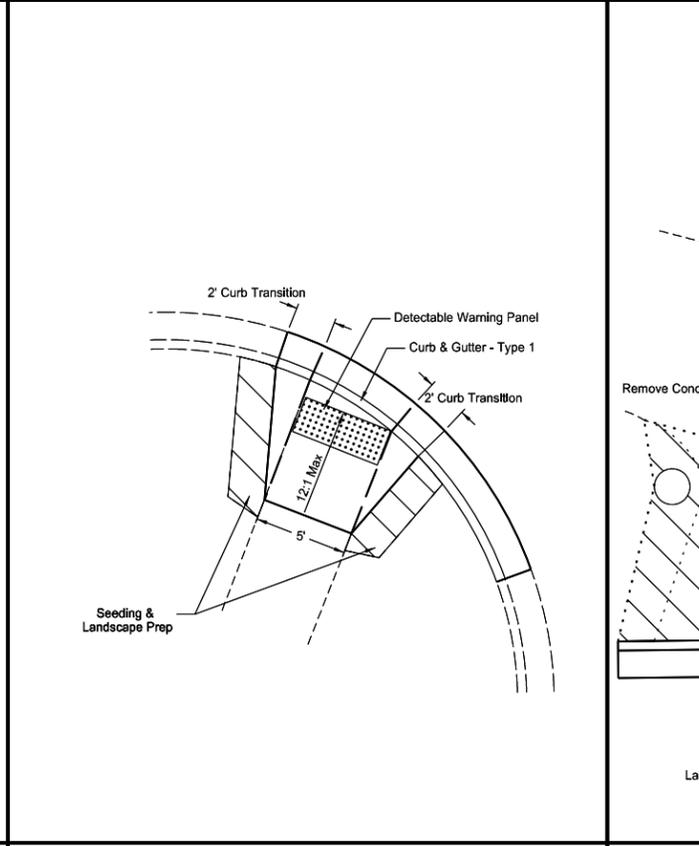
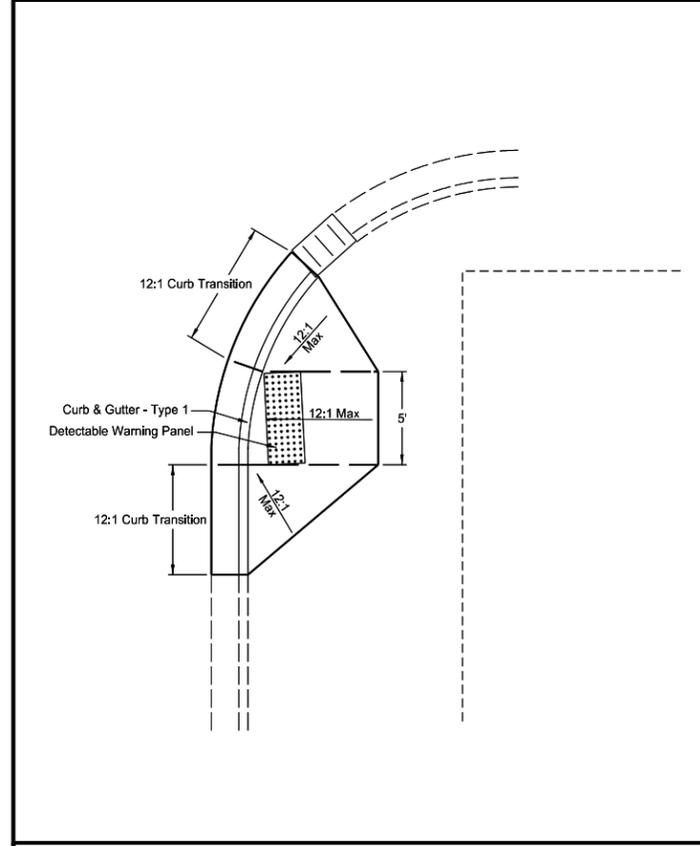
ADA Ramp Details  
South Washington St.



Location 49  
Washington St. & Park Dr. SW Quadrant

Location 50  
Washington St. & Park Dr. NW Quadrant

Location 51  
East Frontage Road & Park Dr. SE Quadrant

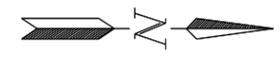


Location 52  
East Frontage Road & Park Dr. NE Quadrant

Location 53  
West Frontage Road & Campbell Dr. SE Quadrant

Location 54  
Washington St. & Campbell Dr. SW Quadrant

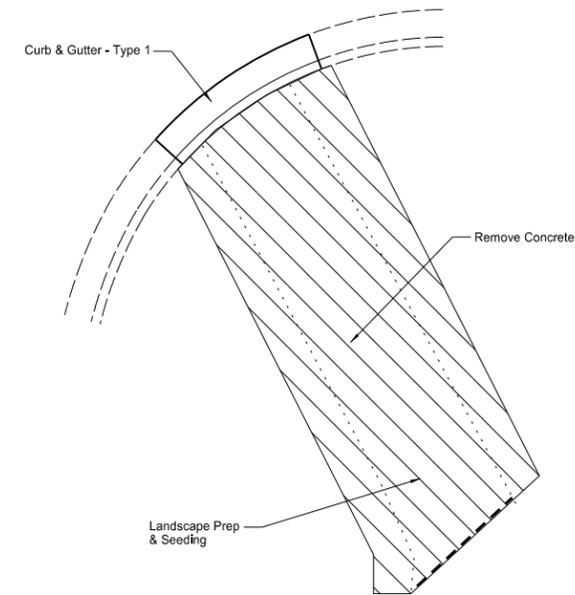
SPEC CODE	BID ITEM	QUANTITY	UNIT
202	112 REMOVAL OF CONCRETE		
	Location 49	17	SY
	Location 50	18	SY
	Location 51	7	SY
	Location 52	9	SY
	Location 53	4	SY
	Location 54	30	SY
202	119 SAW CONCRETE		
	Location 49	50	LF
	Location 50	48	LF
	Location 51	40	LF
	Location 52	38	LF
	Location 53	28	LF
	Location 54	80	LF
202	130 REMOVAL OF CURB & GUTTER		
	Location 49	20	LF
	Location 50	19	LF
	Location 51	16	LF
	Location 52	19	LF
	Location 53	19	LF
	Location 54	44	LF
302	100 SALVAGED BASE COURSE		
	Location 49	4.0	TON
	Location 50	4.5	TON
	Location 51	2.2	TON
	Location 52	2.5	TON
	Location 53	2.0	TON
	Location 54	3.8	TON
708	2900 SEEDING - HYDRO MULCH		
	Location 49	4.5	SY
	Location 50	3	SY
	Location 53	3	SY
	Location 54	24	SY
748	140 CURB & GUTTER - TYPE 1		
	Location 49	20	LF
	Location 50	19	LF
	Location 51	16	LF
	Location 52	19	LF
	Location 53	19	LF
	Location 54	44	LF
750	100 SIDEWALK CONCRETE		
	Location 49	26	SY
	Location 50	21	SY
	Location 51	7	SY
	Location 52	9	SY
	Location 53	6	SY
	Location 54	12	SY
750	2115 DETECTABLE WARNING PANELS		
	Location 49	20	SF
	Location 50	20	SF
	Location 51	10	SF
	Location 52	10	SF
	Location 53	10	SF
	Location 54	20	SF
970	0008 LANDSCAPE PREPARATION		
	Location 49	4.5	SY
	Location 50	3	SY
	Location 53	3	SY
	Location 54	24	SY



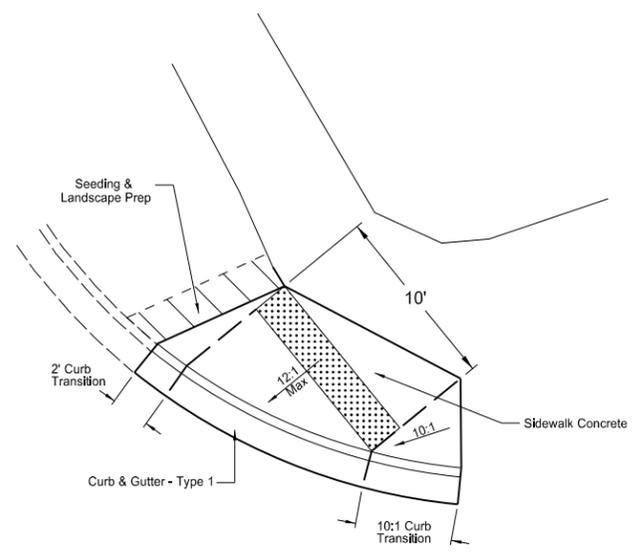
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ADA Ramp Details  
South Washington St.

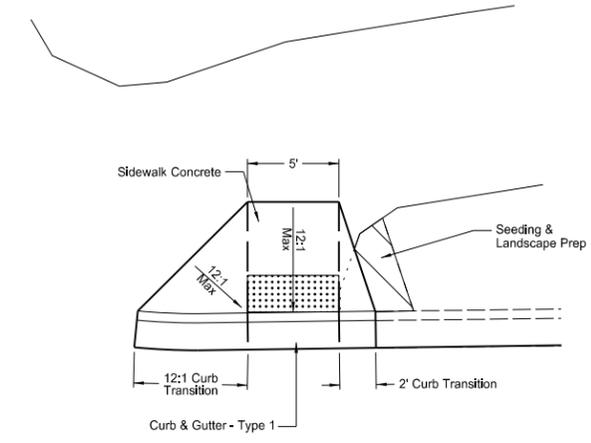
SPEC CODE BID ITEM	QUANTITY	UNIT
<b>202 112 REMOVAL OF CONCRETE</b>		
Location 55	18	SY
Location 56	8	SY
Location 57	6	SY
Location 58	7	SY
Location 59	4	SY
Location 60	10	SY
<b>202 119 SAW CONCRETE</b>		
Location 55	22	LF
Location 56	32	LF
Location 57	25	LF
Location 58	35	LF
Location 59	20	LF
Location 60	28	LF
<b>202 130 REMOVAL OF CURB &amp; GUTTER</b>		
Location 55	10	LF
Location 56	19	LF
Location 57	13	LF
Location 58	0	LF
Location 59	10	LF
Location 60	14	LF
<b>302 100 SALVAGED BASE COURSE</b>		
Location 55	0.5	TON
Location 56	2.9	TON
Location 57	2.0	TON
Location 58	1.4	TON
Location 59	1.6	TON
Location 60	0.6	TON
<b>708 2900 SEEDING - HYDRO MULCH</b>		
Location 55	30	SY
Location 56	2	SY
Location 57	1	SY
Location 59	4	SY
Location 60	17	SY
<b>748 140 CURB &amp; GUTTER - TYPE 1</b>		
Location 55	10	LF
Location 56	19	LF
Location 57	13	LF
Location 58	0	LF
Location 59	10	LF
Location 60	14	LF
<b>750 100 SIDEWALK CONCRETE</b>		
Location 56	10	SY
Location 57	7	SY
Location 58	7	SY
Location 59	6	SY
Location 60	0	SY
<b>750 2115 DETECTABLE WARNING PANELS</b>		
Location 56	20	SF
Location 57	10	SF
Location 58	20	SF
Location 59	10	SF
Location 60	0	SF
<b>970 0008 LANDSCAPE PREPARATION</b>		
Location 55	30	SY
Location 56	2	SY
Location 57	1	SY
Location 59	4	SY
Location 60	17	SY



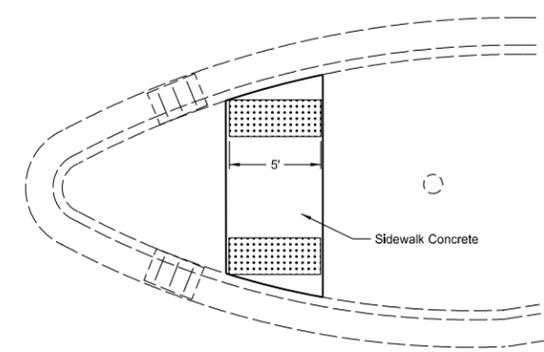
Location 55  
West Frontage Road & Campbell Dr. NE Quadrant



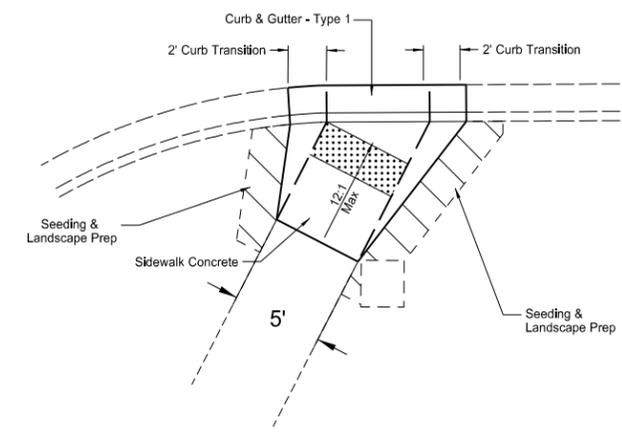
Location 56  
Washington St. & Campbell Dr. NW Quadrant



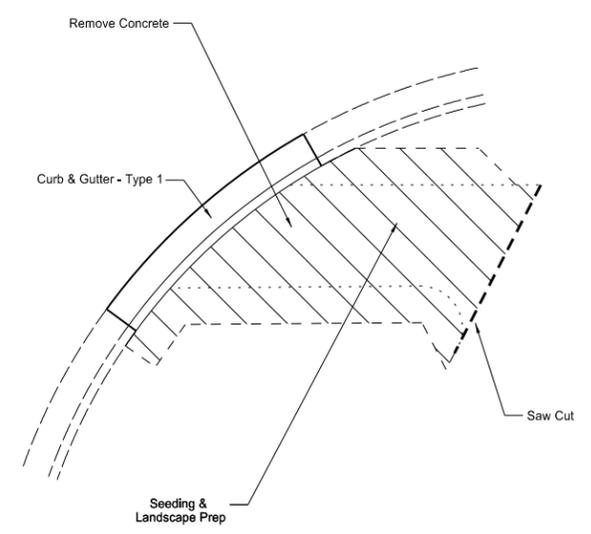
Location 57  
Washington St. & Campbell Dr. NW Quadrant



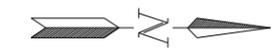
Location 58  
Washington St. & Campbell Dr. North Median Island



Location 59  
Washington St. & Campbell Dr. NE Quadrant

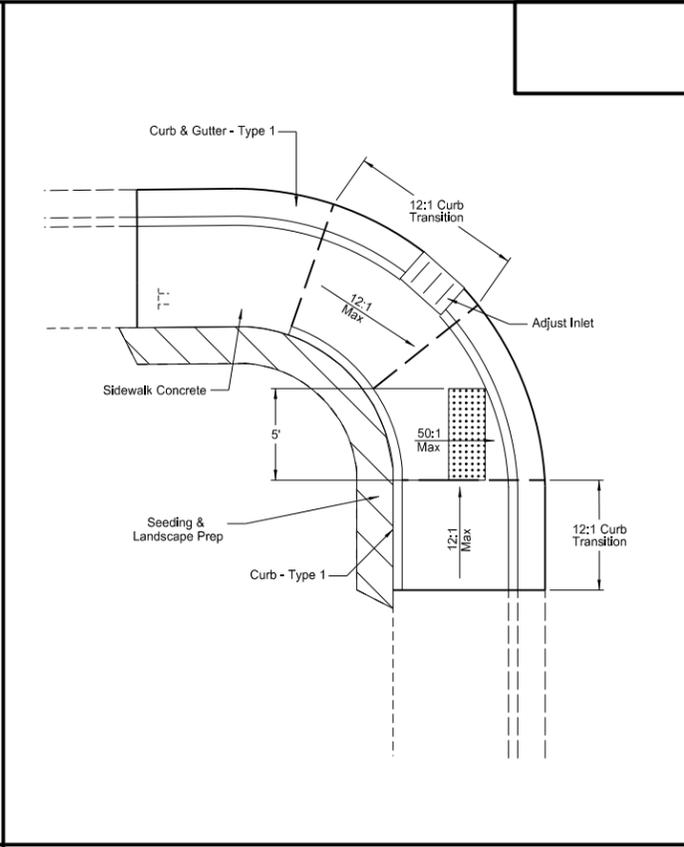
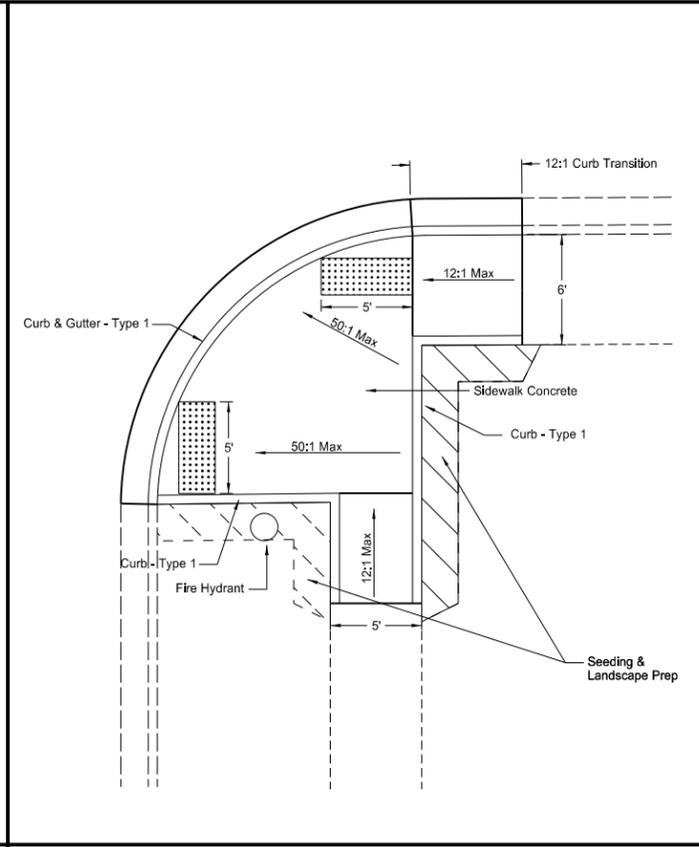
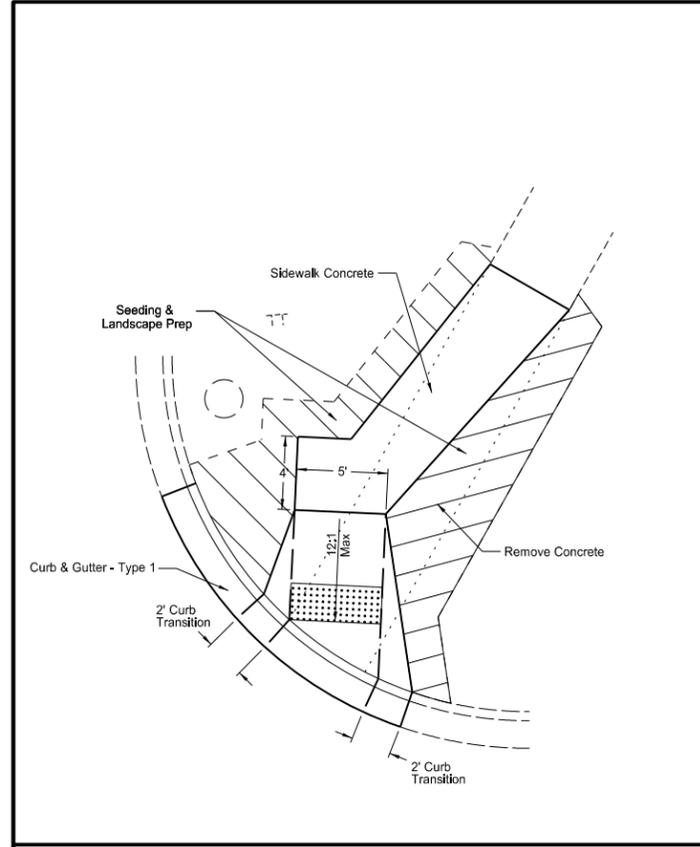


Location 60  
Washington St. & Campbell Dr. NE Quadrant



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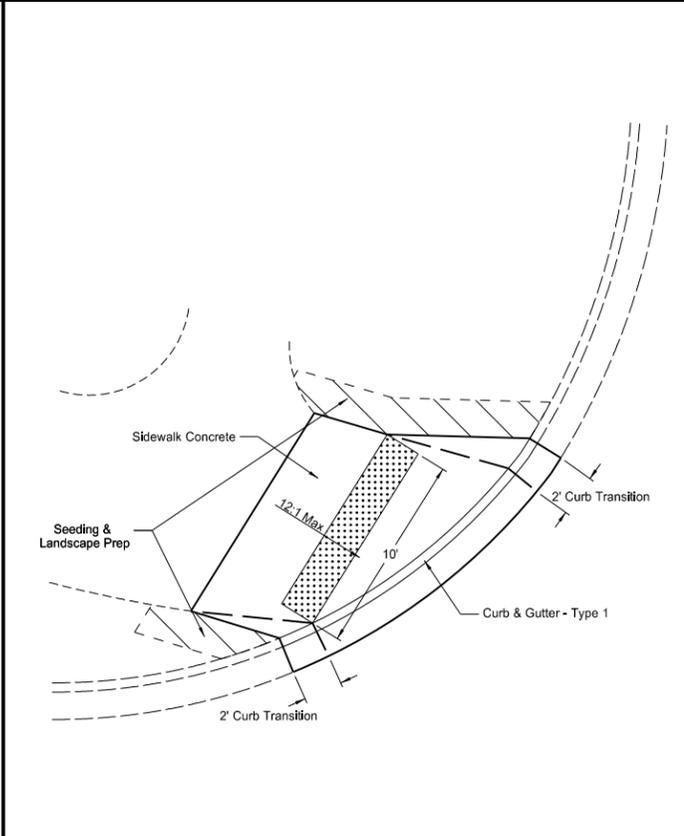
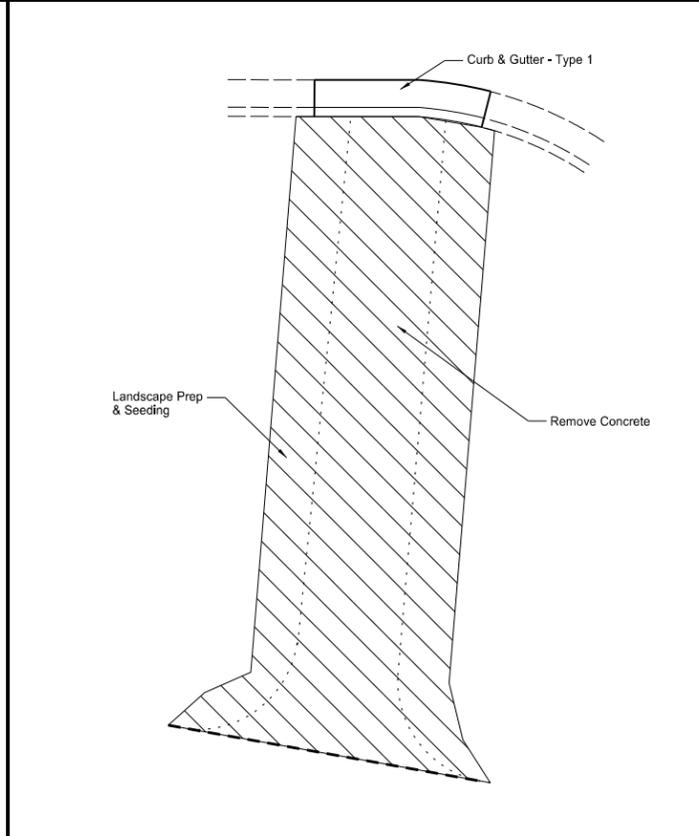
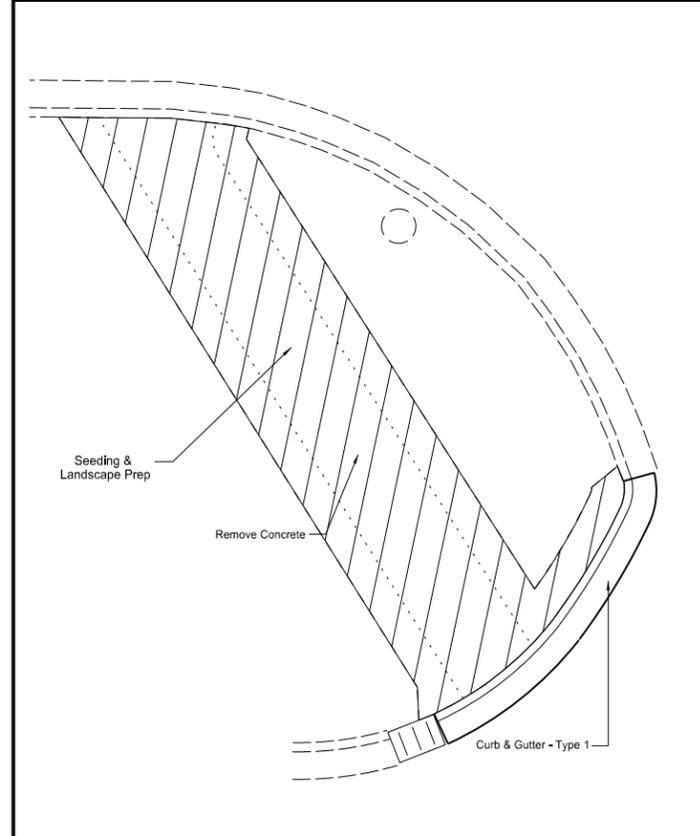
ADA Ramp Details  
South Washington St.



Location 61  
East Frontage Road & Campbell Dr. NW Quadrant

Location 62  
East Frontage Road & Campbell Dr. NE Quadrant

Location 63  
East Frontage Road & Campbell Dr. SE Quadrant

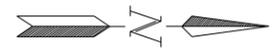


Location 64  
East Frontage Road & Campbell Dr. SW Quadrant

Location 65  
West Frontage Road & 19th Ave SE Quadrant

Location 66  
Washington St. & 19th Ave SW Quadrant

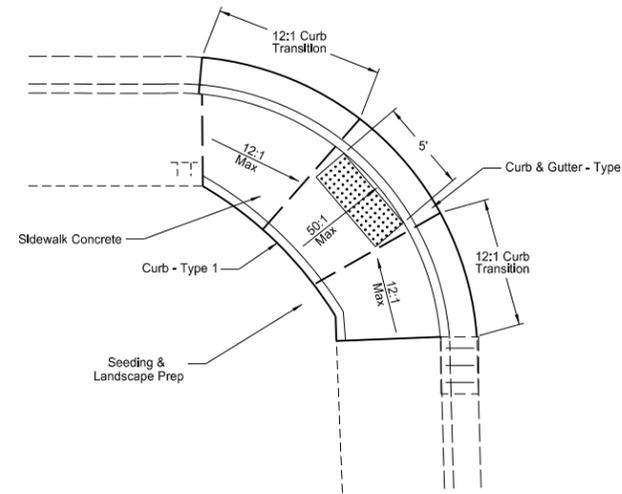
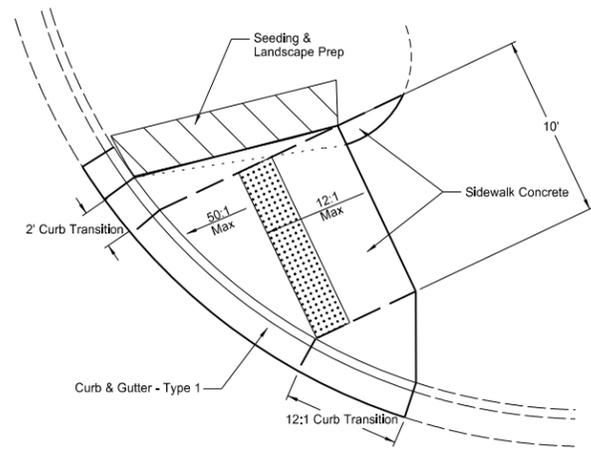
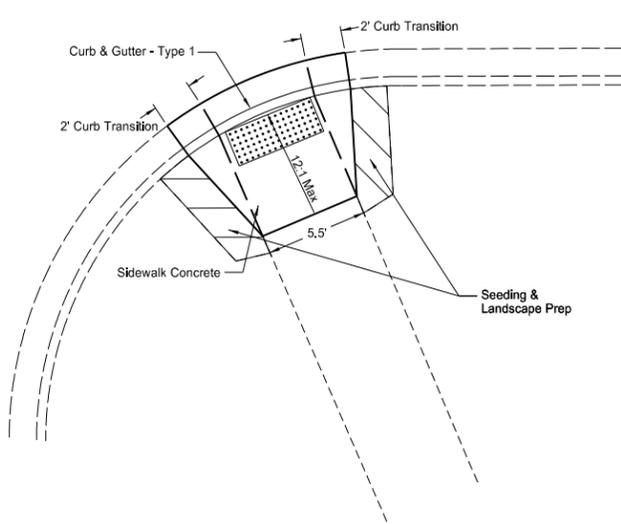
SPEC CODE	BID ITEM	QUANTITY	UNIT
202 112	REMOVAL OF CONCRETE		
	Location 61	13	SY
	Location 62	25	SY
	Location 63	19	SY
	Location 64	22	SY
	Location 65	23	SY
	Location 66	11	SY
202 119	SAW CONCRETE		
	Location 61	27	LF
	Location 62	45	LF
	Location 63	46	LF
	Location 64	24	LF
	Location 65	29	LF
	Location 66	37	LF
202 130	REMOVAL OF CURB & GUTTER		
	Location 61	18	LF
	Location 62	30	LF
	Location 63	32	LF
	Location 64	20	LF
	Location 65	10	LF
	Location 66	19	LF
302 100	SALVAGED BASE COURSE		
	Location 61	3.7	TON
	Location 62	6.5	TON
	Location 63	4.8	TON
	Location 64	0.9	TON
	Location 65	0.5	TON
	Location 66	3.5	TON
708 2900	SEEDING - HYDRO MULCH		
	Location 61	15	SY
	Location 62	7	SY
	Location 63	5	SY
	Location 64	34	SY
	Location 65	44	SY
	Location 66	4	SY
748 140	CURB & GUTTER - TYPE 1		
	Location 61	18	LF
	Location 62	30	LF
	Location 63	32	LF
	Location 64	20	LF
	Location 65	10	LF
	Location 66	19	LF
748 520	CURB - TYPE 1		
	Location 62	36	LF
	Location 63	15	LF
750 100	SIDEWALK CONCRETE		
	Location 61	14	SY
	Location 62	25	SY
	Location 63	19	SY
	Location 64	0	SY
	Location 65	0	SY
	Location 66	13	SY
750 2115	DETECTABLE WARNING PANELS		
	Location 61	10	SF
	Location 62	20	SF
	Location 63	10	SF
	Location 64	0	SF
	Location 65	0	SF
	Location 66	20	SF
970 0008	LANDSCAPE PREPARATION		
	Location 61	15	SY
	Location 62	7	SY
	Location 63	5	SY
	Location 64	34	SY
	Location 65	44	SY
	Location 66	4	SY



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ADA Ramp Details  
South Washington St.

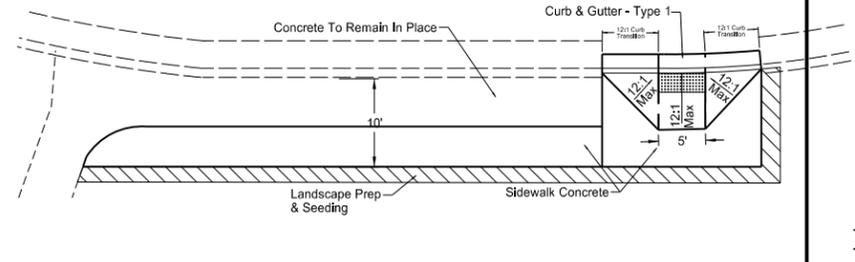
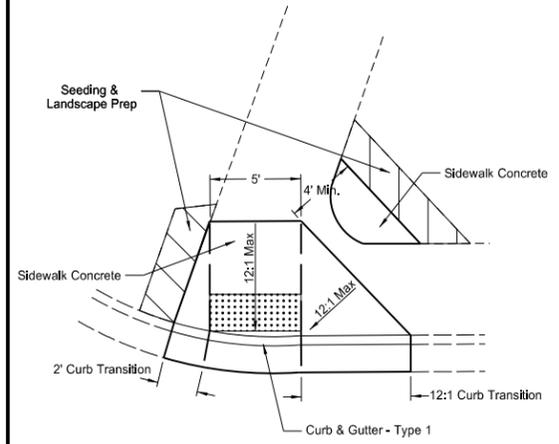
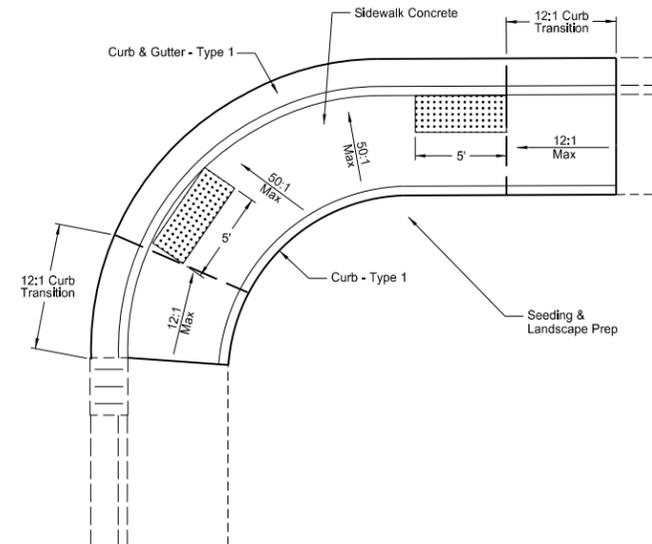
SPECCODE BID ITEM	QUANTITY	UNIT
<b>202 112 REMOVAL OF CONCRETE</b>		
Location 67	6	SY
Location 68	12	SY
Location 69	10	SY
Location 70	20	SY
Location 71	7	SY
Location 72	11	SY
<b>202 119 SAW CONCRETE</b>		
Location 67	21	LF
Location 68	38	LF
Location 69	35	LF
Location 70	50	LF
Location 71	32	LF
Location 72	23	LF
<b>202 130 REMOVAL OF CURB &amp; GUTTER</b>		
Location 67	11	LF
Location 68	22	LF
Location 69	21	LF
Location 70	35	LF
Location 71	14	LF
Location 72	17	LF
<b>302 100 SALVAGED BASE COURSE</b>		
Location 67	1.5	TON
Location 68	3.7	TON
Location 69	3.0	TON
Location 70	5.7	TON
Location 71	2.2	TON
Location 72	10.4	TON
<b>708 2900 SEEDING - HYDRO MULCH</b>		
Location 67	3	SY
Location 68	2	SY
Location 71	3	SY
Location 72	17	SY
<b>748 140 CURB &amp; GUTTER - TYPE 1</b>		
Location 67	11	LF
Location 68	22	LF
Location 69	21	LF
Location 70	35	LF
Location 71	14	LF
Location 72	17	LF
<b>748 520 CURB - TYPE 1</b>		
Location 69	12	LF
Location 70	25	LF
<b>750 100 SIDEWALK CONCRETE</b>		
Location 67	8	SY
Location 68	10	SY
Location 69	13	SY
Location 70	20	SY
Location 71	8	SY
Location 72	46	SY
<b>750 2115 DETECTABLE WARNING PANELS</b>		
Location 67	10	SF
Location 68	20	SF
Location 69	10	SF
Location 70	20	SF
Location 71	10	SF
Location 72	10	SF
<b>970 0008 LANDSCAPE PREPARATION</b>		
Location 67	3	SY
Location 68	2	SY
Location 71	3	SY
Location 72	17	SY



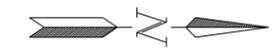
Location 67  
West Frontage Road & 19th Ave NE Quadrant

Location 68  
Washington St. & 19th Ave NW Quadrant

Location 69  
East Frontage Road & 19th Ave SE Quadrant



\*Note : Note To Scale



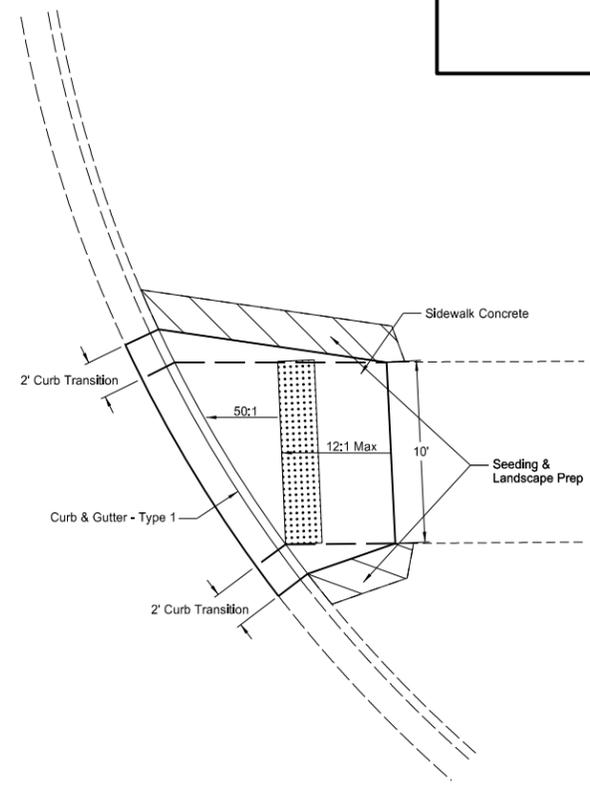
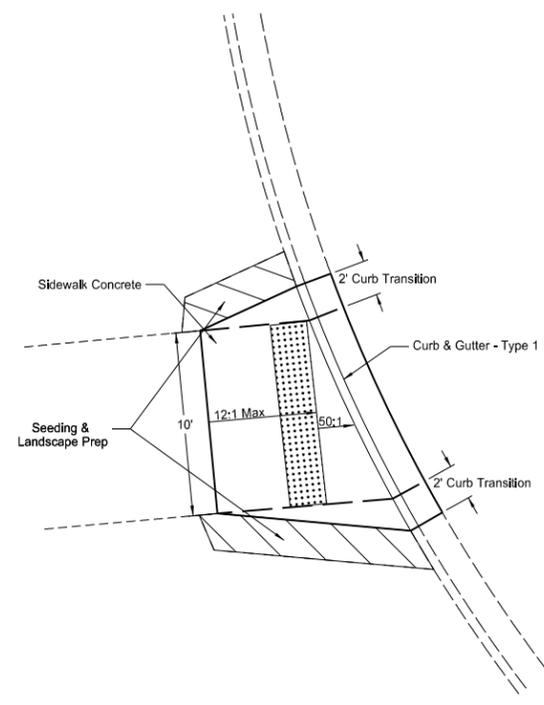
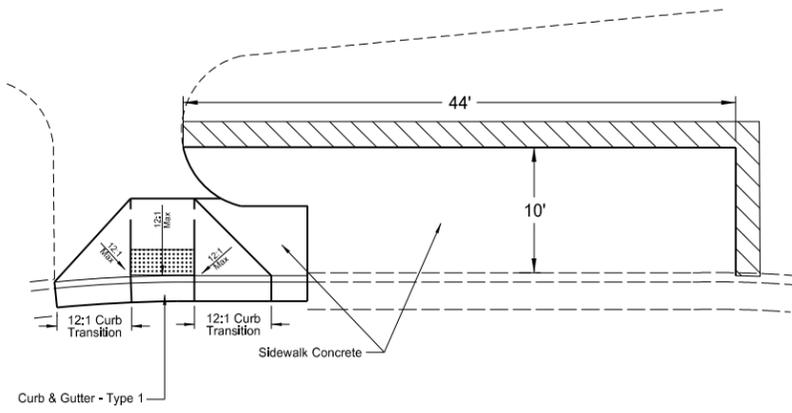
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ADA Ramp Details  
South Washington St.

Location 70  
East Frontage Road & 19th Ave NE Quadrant

Location 71  
East Frontage Road & 19th Ave NW Quadrant

Location 72  
Washington St. NB Bus Stop

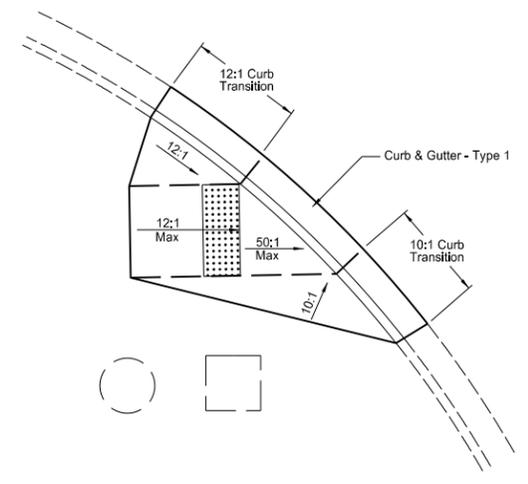
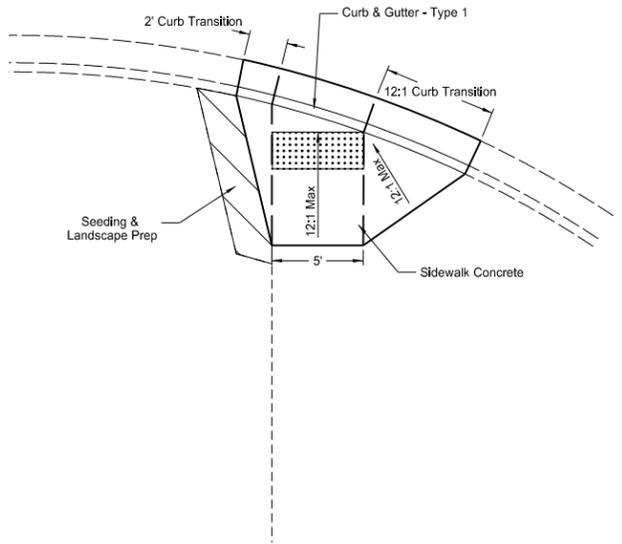
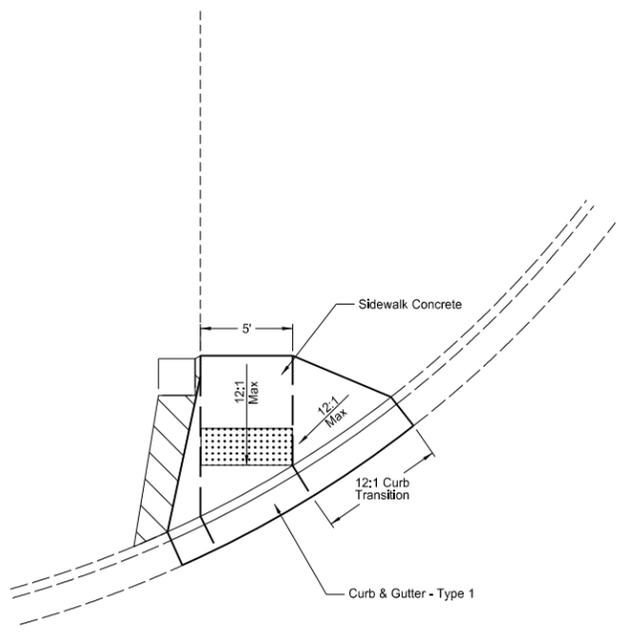


SPEC CODE	BID ITEM	QUANTITY	UNIT
202 112	REMOVAL OF CONCRETE		
	Location 73	11	SY
	Location 74	9	SY
	Location 75	10	SY
	Location 76	7	SY
	Location 77	6	SY
	Location 78	9	SY
202 119	SAW CONCRETE		
	Location 73	40	LF
	Location 74	27	LF
	Location 75	28	LF
	Location 76	30	LF
	Location 77	32	LF
	Location 78	47	LF
202 130	REMOVAL OF CURB & GUTTER		
	Location 73	20	LF
	Location 74	13	LF
	Location 75	14	LF
	Location 76	13	LF
	Location 77	14	LF
	Location 78	18	LF
302 100	SALVAGED BASE COURSE		
	Location 73	12.0	TON
	Location 74	2.9	TON
	Location 75	3.2	TON
	Location 76	2.3	TON
	Location 77	2.2	TON
	Location 78	2.9	TON
708 2900	SEEDING - HYDRO MULCH		
	Location 73	13	SY
	Location 74	4	SY
	Location 75	4	SY
	Location 76	2	SY
	Location 77	2	SY
748 140	CURB & GUTTER - TYPE 1		
	Location 73	20	LF
	Location 74	13	LF
	Location 75	14	LF
	Location 76	13	LF
	Location 77	14	LF
	Location 78	18	LF
750 100	SIDEWALK CONCRETE		
	Location 73	53	SY
	Location 74	9	SY
	Location 75	11	SY
	Location 76	8	SY
	Location 77	8	SY
	Location 78	9	SY
750 2115	DETECTABLE WARNING PANELS		
	Location 73	10	SF
	Location 74	20	SF
	Location 75	20	SF
	Location 76	10	SF
	Location 77	10	SF
	Location 78	10	SF
970 0008	LANDSCAPE PREPARATION		
	Location 73	13	SY
	Location 74	4	SY
	Location 75	4	SY
	Location 76	2	SY
	Location 77	2	SY

Location 73  
Washington St. SB Bus Stop

Location 74  
Shared Use Path South Side of Exit Ramp

Location 75  
Shared Use Path North Side of Exit Ramp



Location 76  
Washington St. & 17th Ave SW Quadrant

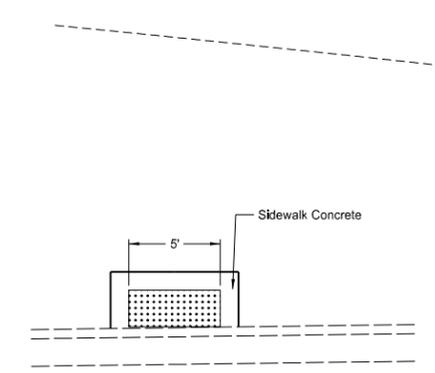
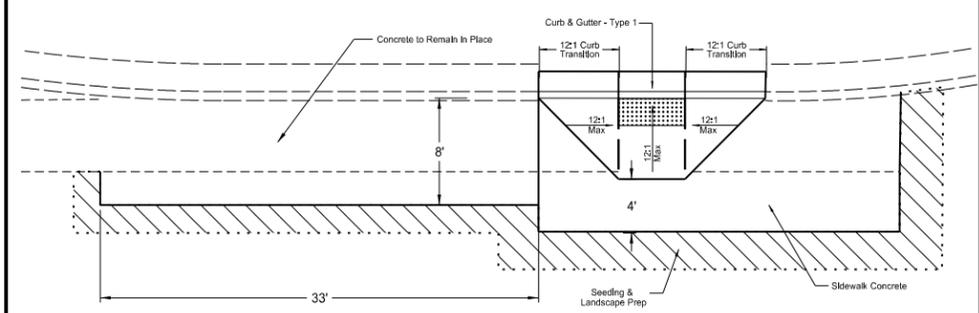
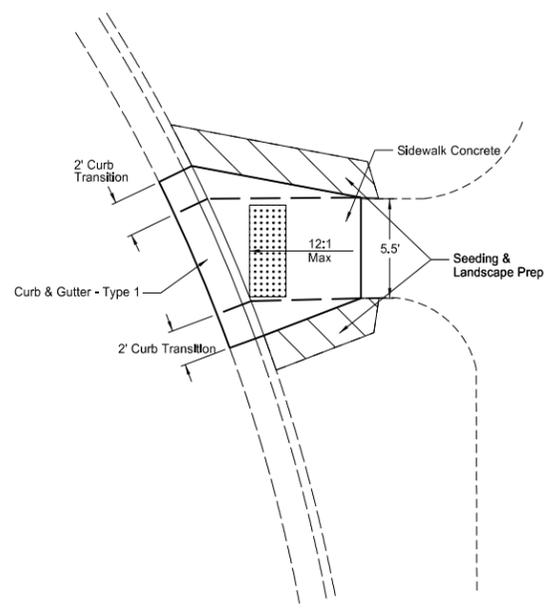
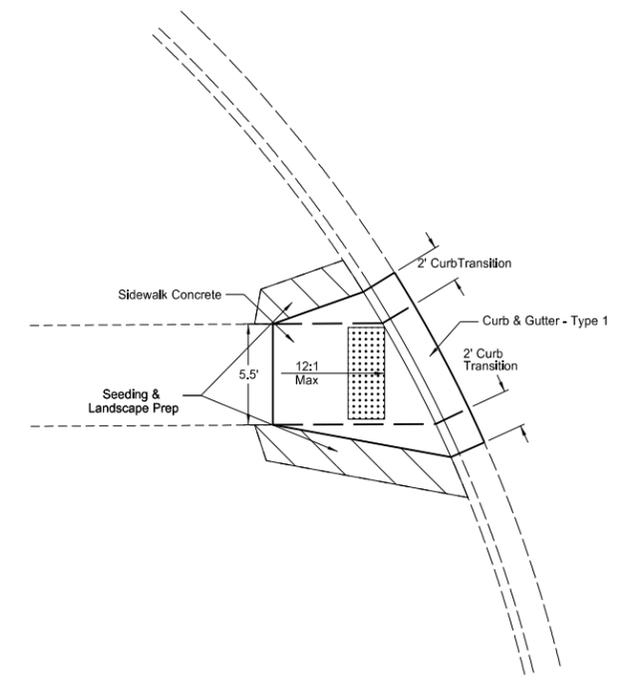
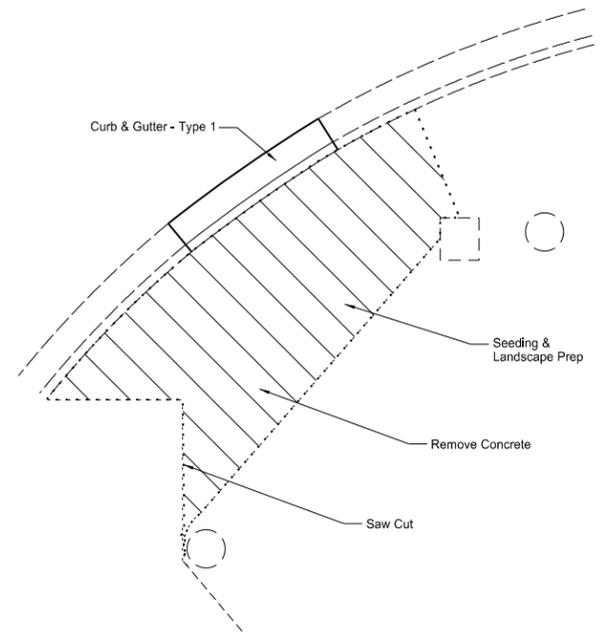
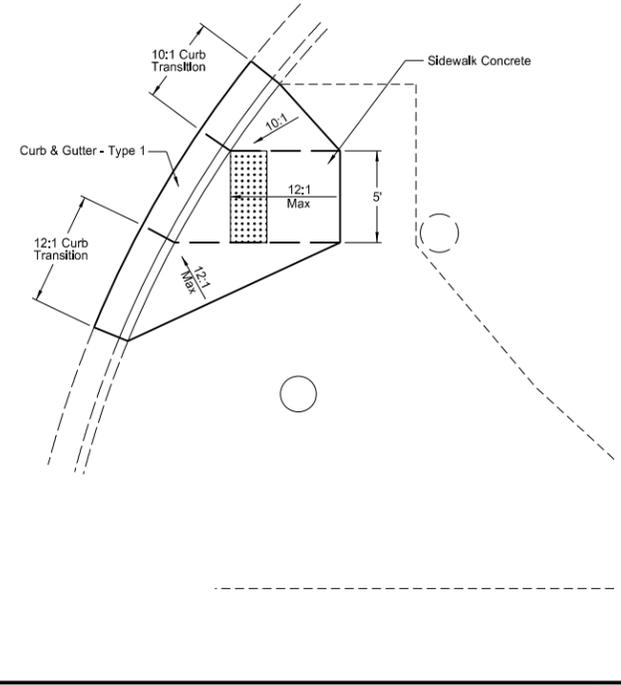
Location 77  
Washington St. & 17th Ave SE Qaudrant

Location 78  
Washington St. & 17th Ave SE Quadrant



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ADA Ramp Details  
South Washington St.



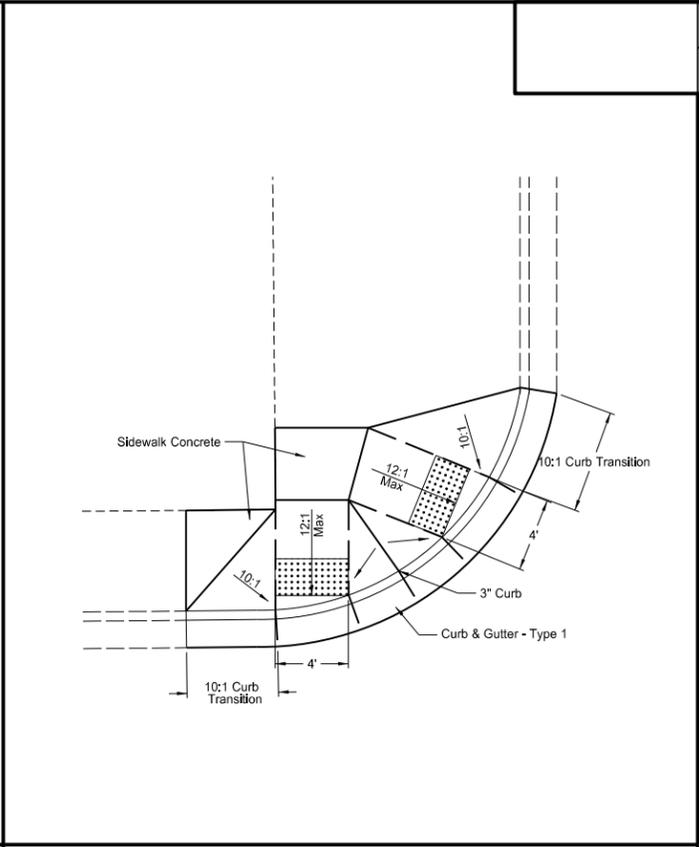
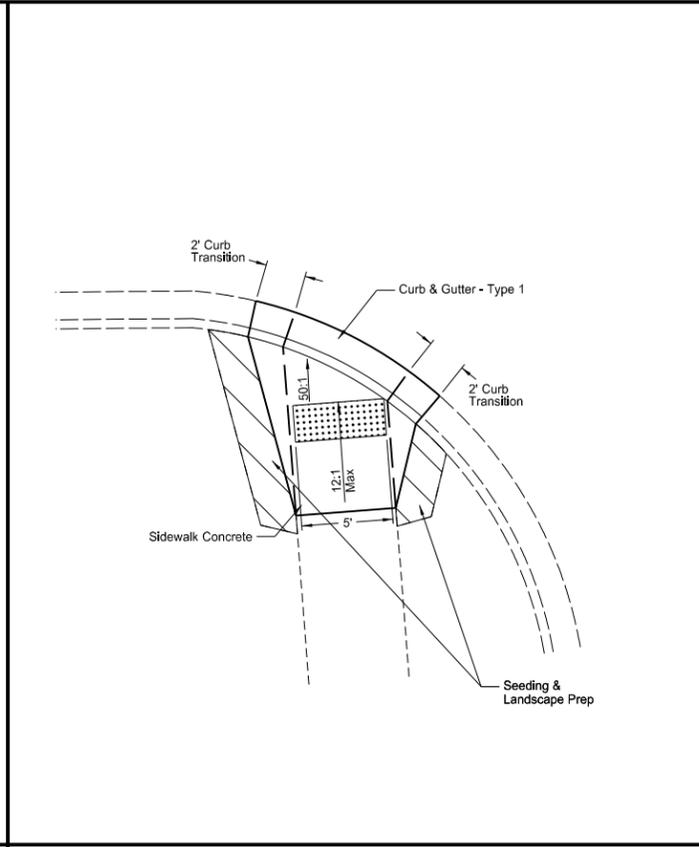
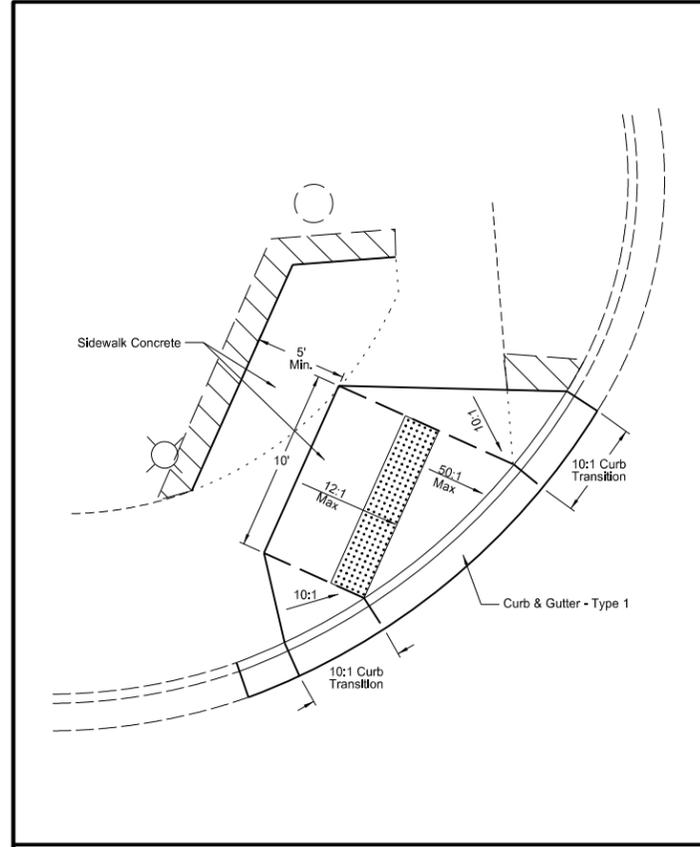
SPEC CODE	BID ITEM	QUANTITY	UNIT
<b>202 112</b>	<b>REMOVAL OF CONCRETE</b>		
	Location 79	8	SY
	Location 80	21	SY
	Location 81	5	SY
	Location 82	5	SY
	Location 83	10	SY
	Location 84	3	SY
<b>202 119</b>	<b>SAW CONCRETE</b>		
	Location 79	39	LF
	Location 80	30	LF
	Location 81	20	LF
	Location 82	20	LF
	Location 83	32	LF
	Location 84	20	LF
<b>202 130</b>	<b>REMOVAL OF CURB &amp; GUTTER</b>		
	Location 79	17	LF
	Location 80	10	LF
	Location 81	10	LF
	Location 82	10	LF
	Location 83	17	LF
	Location 84	0	LF
<b>302 100</b>	<b>SALVAGED BASE COURSE</b>		
	Location 79	2.4	TON
	Location 80	0.4	TON
	Location 81	1.5	TON
	Location 82	1.5	TON
	Location 83	7.7	TON
	Location 84	0.1	TON
<b>708 2900</b>	<b>SEEDING - HYDRO MULCH</b>		
	Location 80	22	SY
	Location 81	4	SY
	Location 82	4	SY
	Location 83	18	SY
<b>748 140</b>	<b>CURB &amp; GUTTER - TYPE 1</b>		
	Location 79	17	LF
	Location 80	10	LF
	Location 81	10	LF
	Location 82	10	LF
	Location 83	17	LF
	Location 84	0	LF
<b>750 100</b>	<b>SIDEWALK CONCRETE</b>		
	Location 79	8	SY
	Location 80	0	SY
	Location 81	6	SY
	Location 82	6	SY
	Location 83	33	SY
	Location 84	3	SY
<b>750 2115</b>	<b>DETECTABLE WARNING PANELS</b>		
	Location 79	10	SF
	Location 80	0	SF
	Location 81	10	SF
	Location 82	10	SF
	Location 83	10	SF
	Location 84	10	SF
<b>970 0008</b>	<b>LANDSCAPE PREPARATIONS</b>		
	Location 80	22	SY
	Location 81	4	SY
	Location 82	4	SY
	Location 83	18	SY



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ADA Ramp Details  
South Washington St.

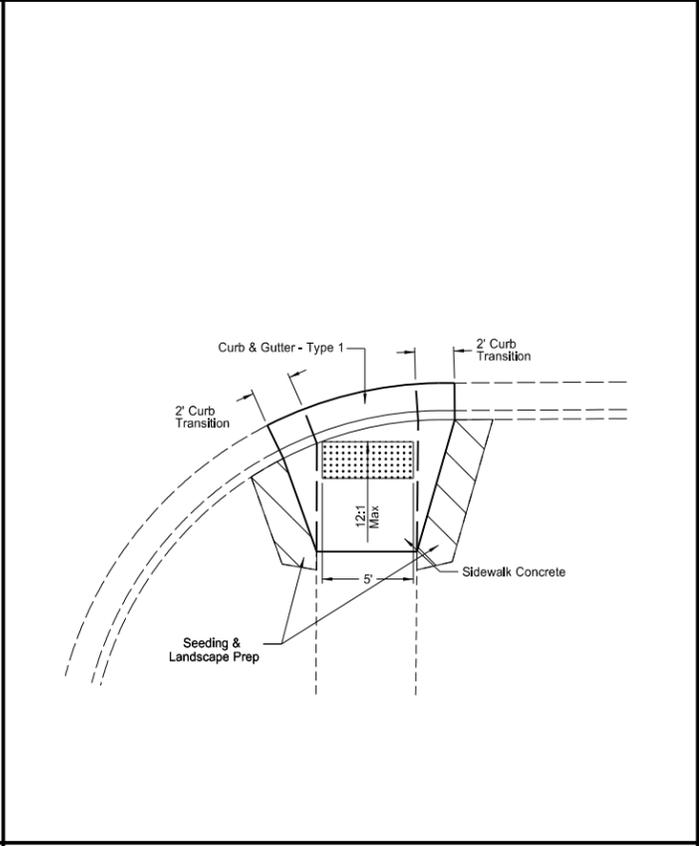
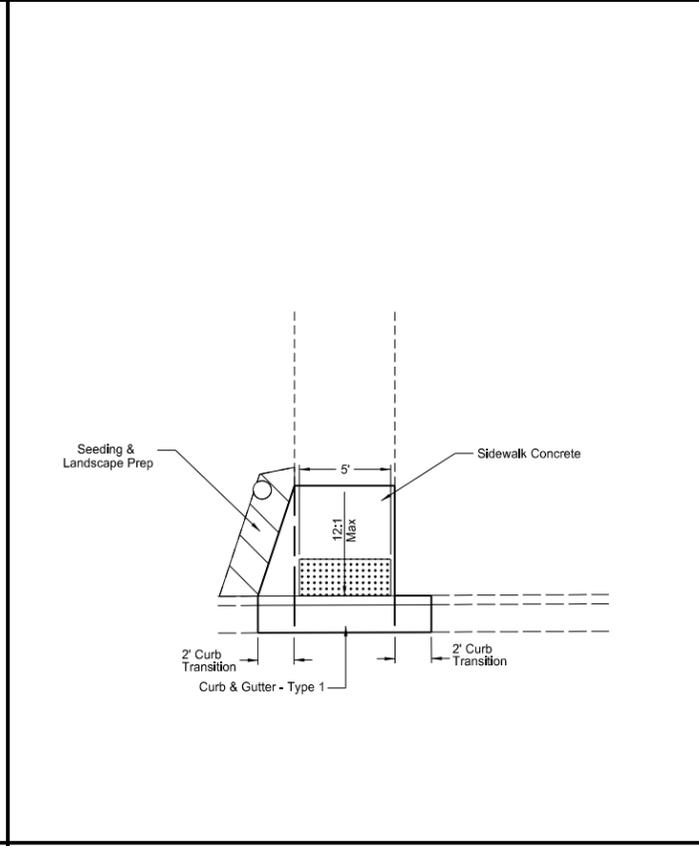
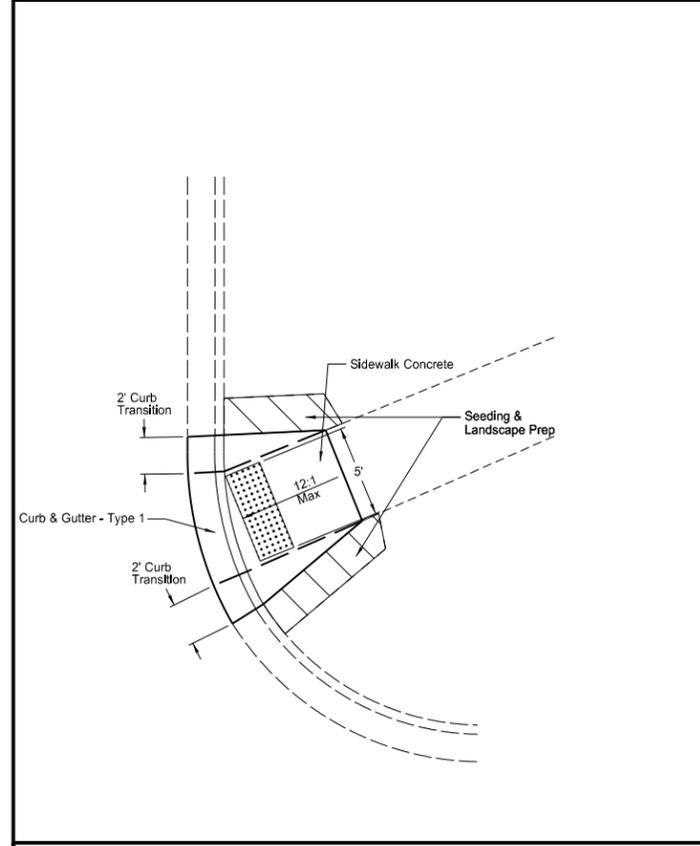
SPEC CODE	BID ITEM	QUANTITY	UNIT
<b>202 112</b>	<b>REMOVAL OF CONCRETE</b>		
	Location 85	13	SY
	Location 86	5	SY
	Location 87	15	SY
	Location 88	4	SY
	Location 89	4	SY
	Location 90	4	SY
<b>202 119</b>	<b>SAW CONCRETE</b>		
	Location 85	54	LF
	Location 86	20	LF
	Location 87	49	LF
	Location 88	20	LF
	Location 89	19	LF
	Location 90	20	LF
<b>202 130</b>	<b>REMOVAL OF CURB &amp; GUTTER</b>		
	Location 85	25	LF
	Location 86	11	LF
	Location 87	25	LF
	Location 88	11	LF
	Location 89	10	LF
	Location 90	11	LF
<b>302 100</b>	<b>SALVAGED BASE COURSE</b>		
	Location 85	5.4	TON
	Location 86	1.7	TON
	Location 87	4.3	TON
	Location 88	1.7	TON
	Location 89	1.5	TON
	Location 90	1.7	TON
<b>708 2900</b>	<b>SEEDING - HYDRO MULCH</b>		
	Location 86	3	SY
	Location 88	3	SY
	Location 89	2	SY
	Location 90	3	SY
<b>748 140</b>	<b>CURB &amp; GUTTER - TYPE 1</b>		
	Location 85	25	LF
	Location 86	11	LF
	Location 87	25	LF
	Location 88	11	LF
	Location 89	10	LF
	Location 90	11	LF
<b>750 100</b>	<b>SIDEWALK CONCRETE</b>		
	Location 85	20	SY
	Location 86	6	SY
	Location 87	15	SY
	Location 88	6	SY
	Location 89	5	SY
	Location 90	6	SY
<b>750 2115</b>	<b>DETECTABLE WARNING PANELS</b>		
	Location 85	10	SF
	Location 86	10	SF
	Location 87	16	SF
	Location 88	10	SF
	Location 89	10	SF
	Location 90	10	SF
<b>970 0008</b>	<b>LANDSCAPE PREPARATIONS</b>		
	Location 86	3	SY
	Location 88	3	SY
	Location 89	2	SY
	Location 90	3	SY



Location 85  
Washington St. & 15th Ave SW Quadrant

Location 86  
West Frontage Road & 15th Ave SE Quadrant

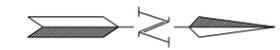
Location 87  
West Frontage Road & 15th Ave SW Quadrant



Location 88  
West Frontage Road & 15th Ave NW Quadrant

Location 89  
West Frontage Road & 15th Ave NW Quadrant

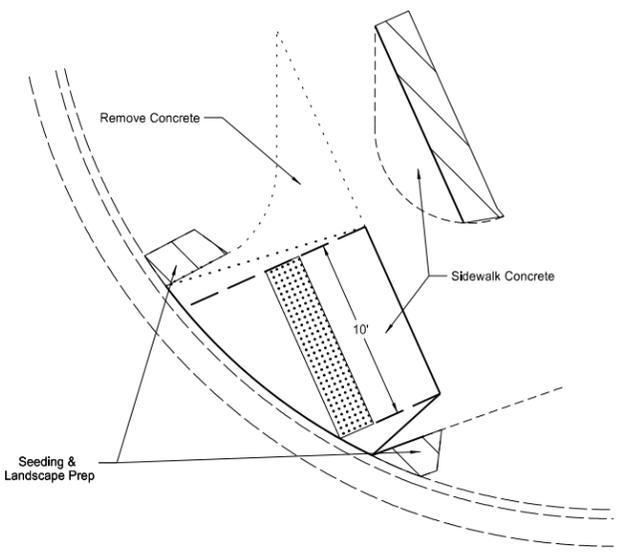
Location 90  
West Frontage Road & 15th Ave NE Quadrant



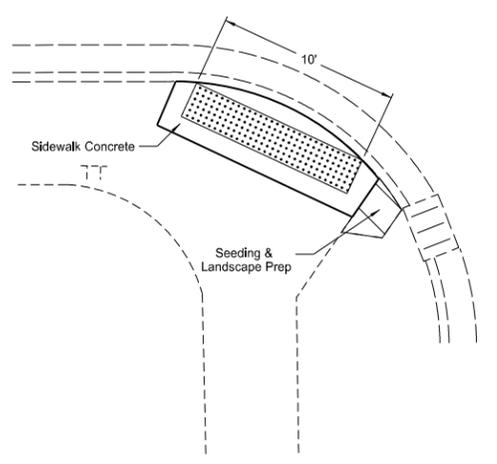
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ADA Ramp Details  
South Washington St.

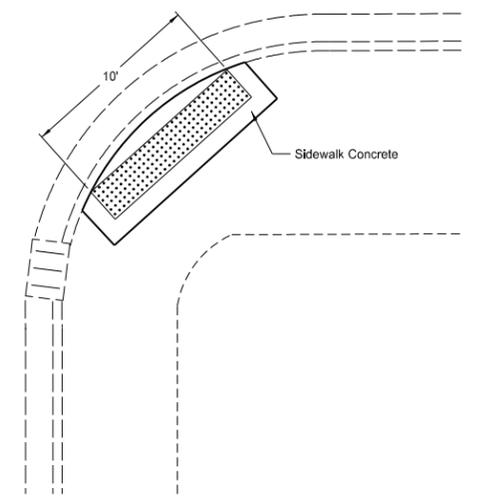
SPEC CODE	BID ITEM	QUANTITY	UNIT
<b>202 112</b>	<b>REMOVAL OF CONCRETE</b>		
	Location 91	15	SY
	Location 92	5	SY
	Location 93	5	SY
	Location 94	10	SY
	Location 95	8	SY
	Location 96	8	SY
<b>202 119</b>	<b>SAW CONCRETE</b>		
	Location 91	42	LF
	Location 92	35	LF
	Location 93	35	LF
	Location 94	30	LF
	Location 95	48	LF
	Location 96	15	LF
<b>202 130</b>	<b>REMOVAL OF CURB &amp; GUTTER</b>		
	Location 91	0	LF
	Location 92	0	LF
	Location 93	0	LF
	Location 94	16	LF
	Location 95	25	LF
	Location 96	11	LF
<b>302 100</b>	<b>SALVAGED BASE COURSE</b>		
	Location 91	3.5	TON
	Location 92	1.0	TON
	Location 93	1.0	TON
	Location 94	2.9	TON
	Location 95	1.7	TON
	Location 96	3.8	TON
<b>708 2900</b>	<b>SEEDING - HYDRO MULCH</b>		
	Location 91	4	SY
	Location 92	1	SY
	Location 94	4	SY
	Location 95	8	SY
	Location 96	11	SY
<b>748 140</b>	<b>CURB &amp; GUTTER - TYPE 1</b>		
	Location 91	0	LF
	Location 92	0	LF
	Location 93	0	LF
	Location 94	16	LF
	Location 95	25	LF
	Location 96	11	LF
<b>750 100</b>	<b>SIDEWALK CONCRETE</b>		
	Location 91	17	SY
	Location 92	5	SY
	Location 93	5	SY
	Location 94	11	SY
	Location 95	8	SY
	Location 96	18	SY
<b>750 2115</b>	<b>DETECTABLE WARNING PANELS</b>		
	Location 91	20	SF
	Location 92	20	SF
	Location 93	20	SF
	Location 94	20	SF
	Location 95	20	SF
	Location 96	10	SF
<b>970 0008</b>	<b>LANDSCAPE PREPARATION</b>		
	Location 91	4	SY
	Location 92	1	SY
	Location 94	4	SY
	Location 95	8	SY
	Location 96	11	SY



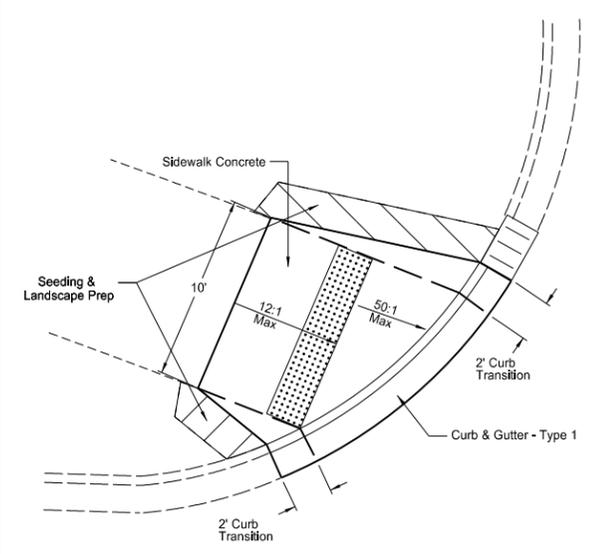
Location 91  
Washington St. & 15th Ave NW Quadrant



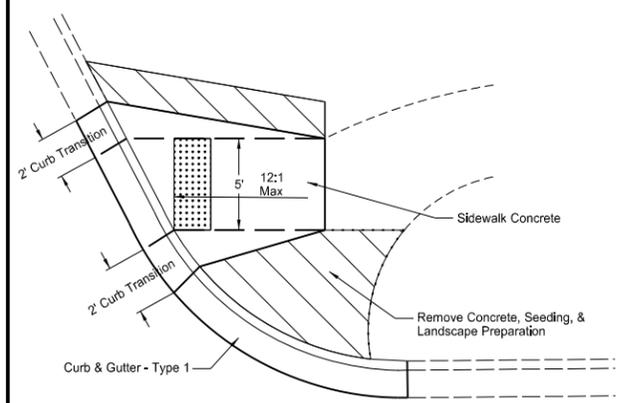
Location 92  
East Frontage Road & 15th Ave SE Quadrant



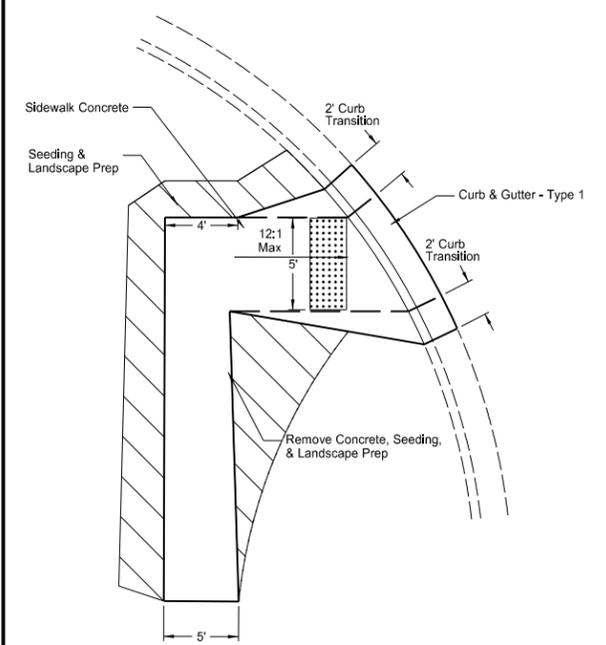
Location 93  
East Frontage Road & 15th Ave NE Quadrant



Location 94  
Washington St. & West Frontage Road South Side



Location 95  
Washington St. & West Frontage Road North Side

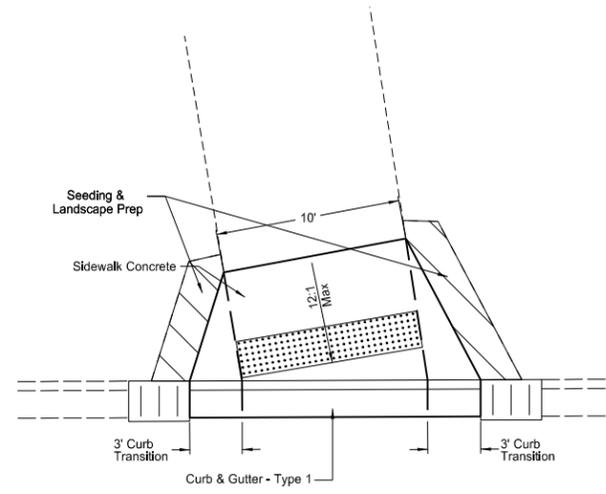
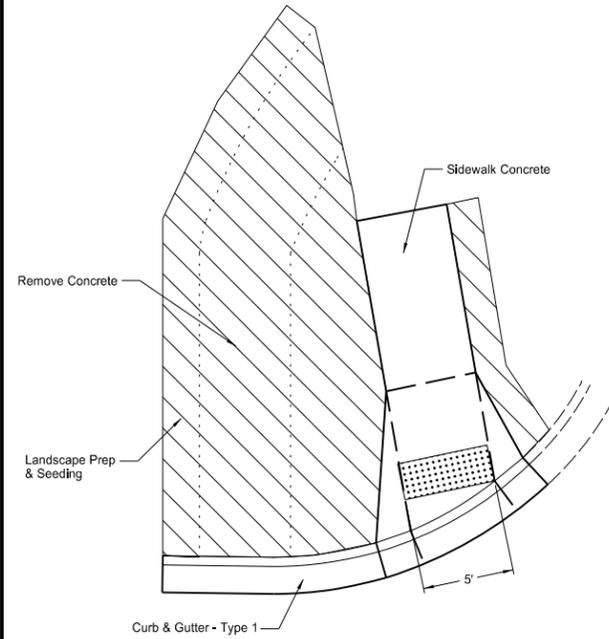
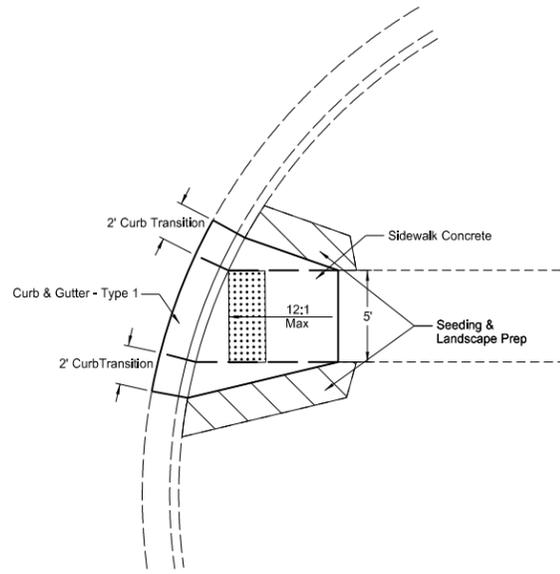


Location 96  
Washington St. & Hammerling Ave South Side



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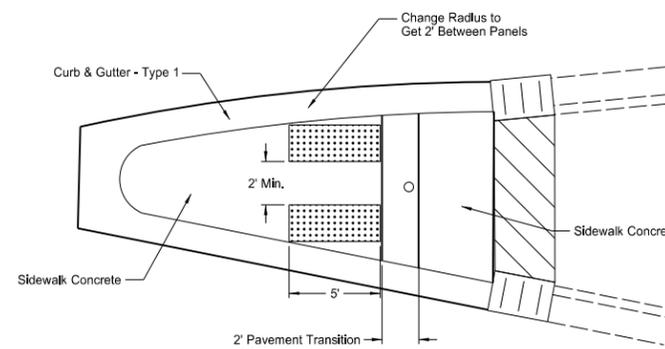
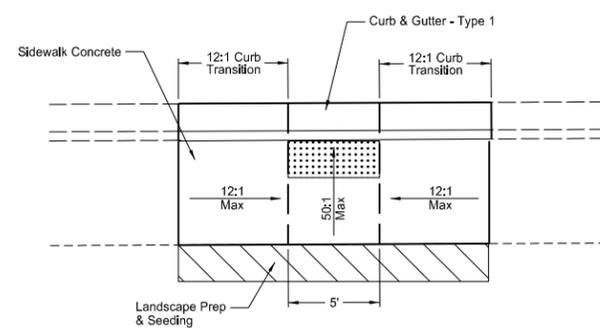
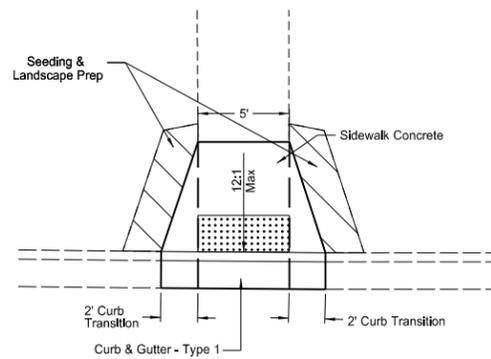
ADA Ramp Details  
South Washington St.



Location 97  
Washington St. & Hammerling Ave. North Side

Location 98  
East Frontage Road & Hammerling Ave SW Quadrant

Location 99  
Shared Use Path & East Frontage Road

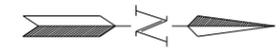


Location 100  
East Frontage Road Path To Bus Stop

Location 101  
East Frontage Road , STA 104+20

Location 102  
Washington St. & 24th Ave North Median Island

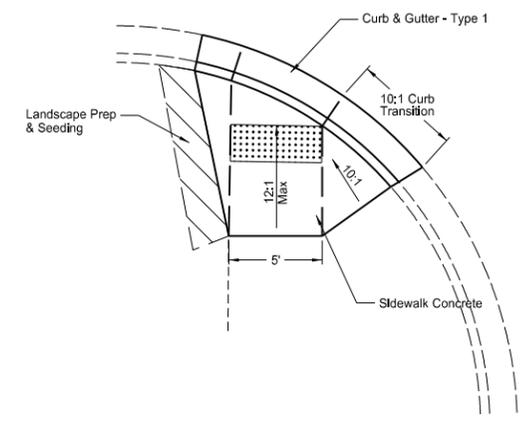
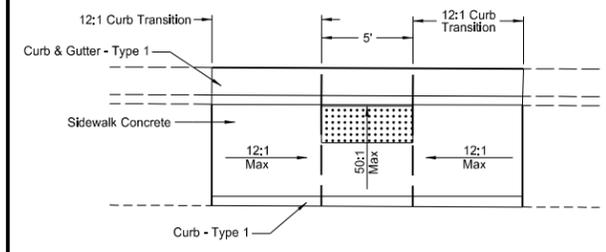
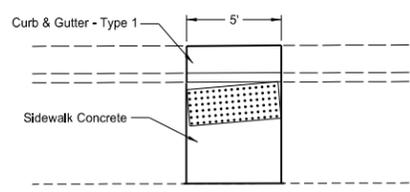
SPEC CODE BID ITEM	QUANTITY	UNIT
<b>202 112 REMOVAL OF CONCRETE</b>		
Location 97	4	SY
Location 98	15	SY
Location 99	8	SY
Location 100	4	SY
Location 101	11	SY
Location 102	15	SY
<b>202 119 SAW CONCRETE</b>		
Location 97	19	LF
Location 98	33	LF
Location 99	30	LF
Location 100	19	LF
Location 101	32	LF
Location 102	50	LF
<b>202 130 REMOVAL OF CURB &amp; GUTTER</b>		
Location 97	10	LF
Location 98	22	LF
Location 99	14	LF
Location 100	10	LF
Location 101	17	LF
Location 102	50	LF
<b>302 100 SALVAGED BASE COURSE</b>		
Location 97	1.7	TON
Location 98	3.4	TON
Location 99	2.7	TON
Location 100	1.7	TON
Location 101	3.1	TON
Location 102	5.5	TON
<b>708 2900 SEEDING - HYDRO MULCH</b>		
Location 97	3	SY
Location 98	35	SY
Location 99	4	SY
Location 100	3	SY
Location 101	4	SY
Location 102	4	SY
<b>748 140 CURB &amp; GUTTER - TYPE 1</b>		
Location 97	10	LF
Location 98	22	LF
Location 99	14	LF
Location 100	10	LF
Location 101	17	LF
Location 102	50	LF
<b>750 100 SIDEWALK CONCRETE</b>		
Location 97	6	SY
Location 98	11	SY
Location 99	10	SY
Location 100	6	SY
Location 101	11	SY
Location 102	15	SY
<b>750 2115 DETECTABLE WARNING PANELS</b>		
Location 97	10	SF
Location 98	10	SF
Location 99	20	SF
Location 100	10	SF
Location 101	10	SF
Location 102	20	SF
<b>970 0008 LANDSCAPE PREPARATION</b>		
Location 97	3	SY
Location 98	35	SY
Location 99	4	SY
Location 100	3	SY
Location 101	4	SY
Location 102	4	SY



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ADA Ramp Details  
South Washington St.

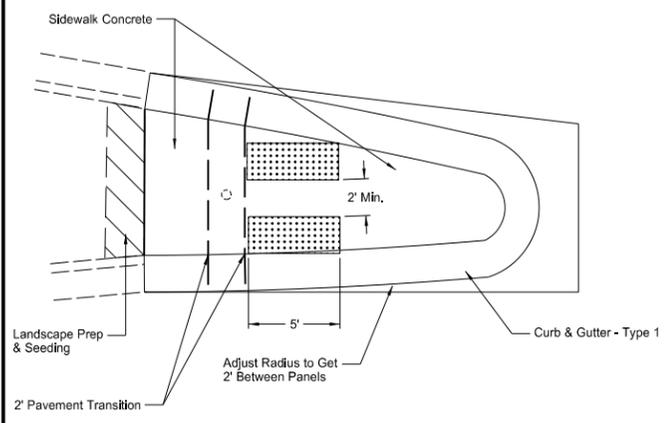
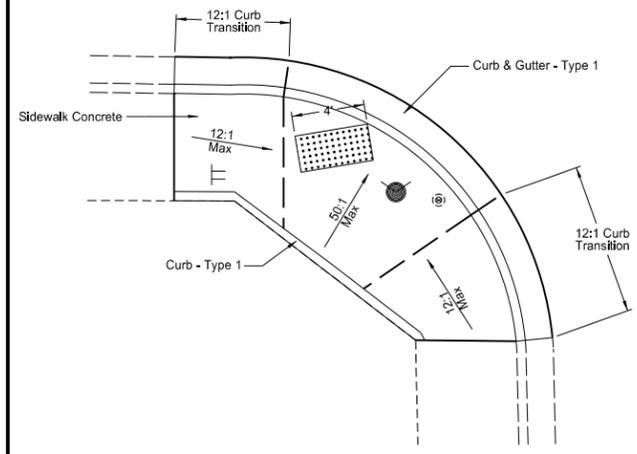
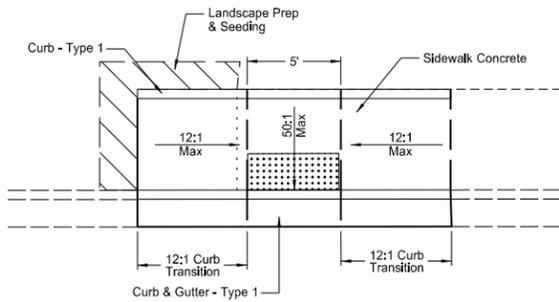
SPEC CODE	BID ITEM	QUANTITY	UNIT
202	112 REMOVAL OF CONCRETE		
	Location 103	4	SY
	Location 104	10	SY
	Location 105	5	SY
	Location 106	8	SY
	Location 107	15	SY
	Location 108	13	SY
202	119 SAW CONCRETE		
	Location 103	19	LF
	Location 104	32	LF
	Location 105	28	LF
	Location 106	27	LF
	Location 107	42	LF
	Location 108	58	LF
202	130 REMOVAL OF CURB & GUTTER		
	Location 103	5	LF
	Location 104	17	LF
	Location 105	14	LF
	Location 106	17	LF
	Location 107	26	LF
	Location 108	40	LF
302	100 SALVAGED BASE COURSE		
	Location 103	1.1	TON
	Location 104	2.9	TON
	Location 105	2.0	TON
	Location 106	2.9	TON
	Location 107	4.4	TON
	Location 108	4.6	TON
708	2900 SEEDING - HYDRO MULCH		
	Location 105	3	SY
	Location 106	3	SY
	Location 108	3	SY
748	140 CURB & GUTTER - TYPE 1		
	Location 103	5	LF
	Location 104	17	LF
	Location 105	14	LF
	Location 106	17	LF
	Location 107	26	LF
	Location 108	40	LF
748	520 CURB - TYPE 1		
	Location 104	17	LF
	Location 106	17	LF
	Location 107	17	LF
750	100 SIDEWALK CONCRETE		
	Location 103	4	SY
	Location 104	10	SY
	Location 105	6	SY
	Location 106	10	SY
	Location 107	15	SY
	Location 108	13	SY
750	2115 DETECTABLE WARNING PANELS		
	Location 103	10	SF
	Location 104	10	SF
	Location 105	10	SF
	Location 106	10	SF
	Location 107	8	SF
	Location 108	20	SF
970	0008 LANDSCAPE PREPARATION		
	Location 105	3	SY
	Location 106	3	SY
	Location 108	3	SY



Location 103  
East Frontage Road, STA 131+05

Location 104  
East Frontage Road, STA 133+40

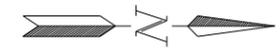
Location 105  
Park Dr. & West Frontage Rd. SE Quadrant



Location 106  
Park Dr. & West Frontage Rd SW Quadrant

Location 107  
Hammerling Ave. & East Frontage Road SE Quadrant

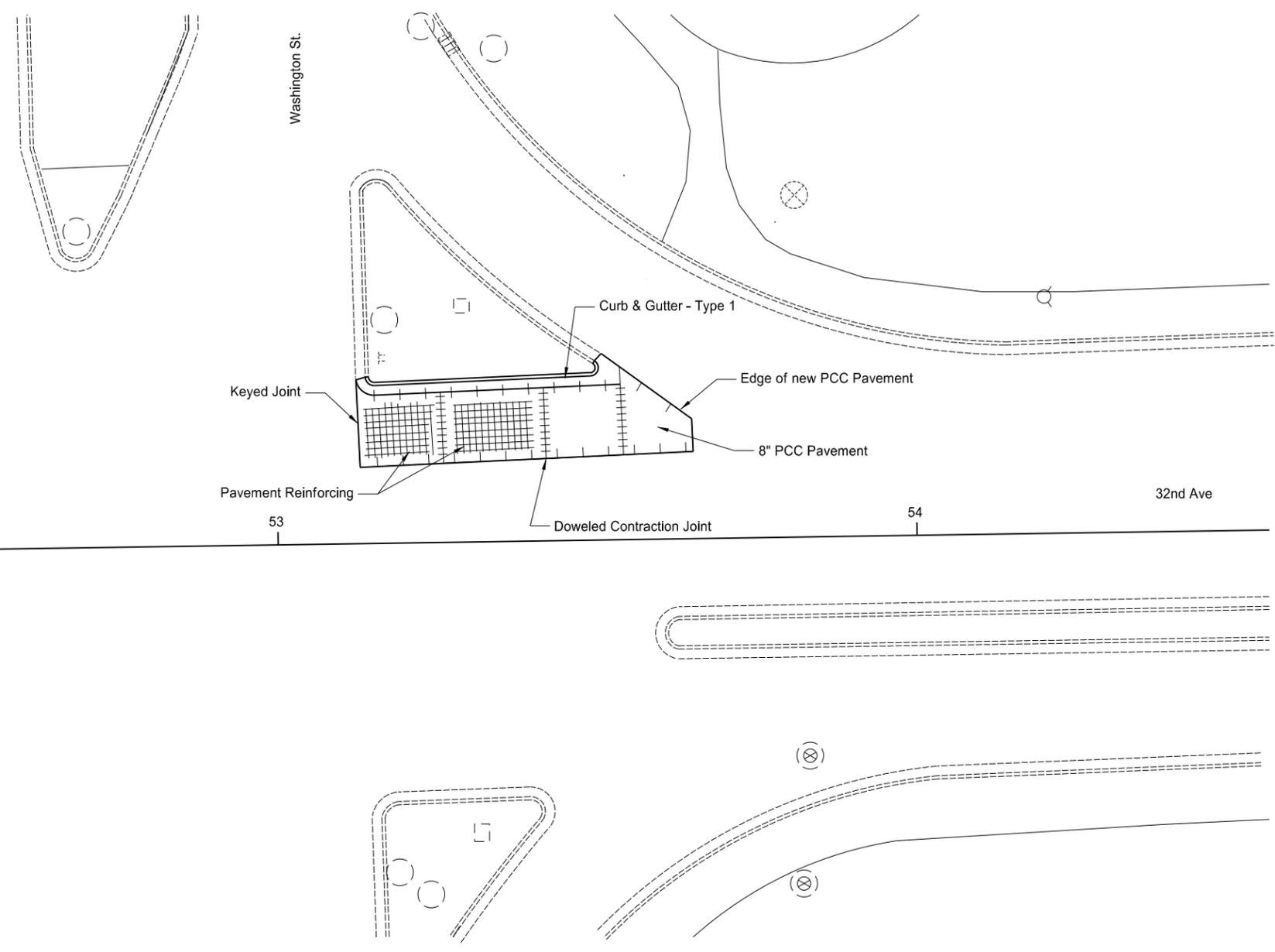
Location 108  
Washington St. & 17th Ave. South Median Island



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ADA Ramp Details  
South Washington St.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	90	1



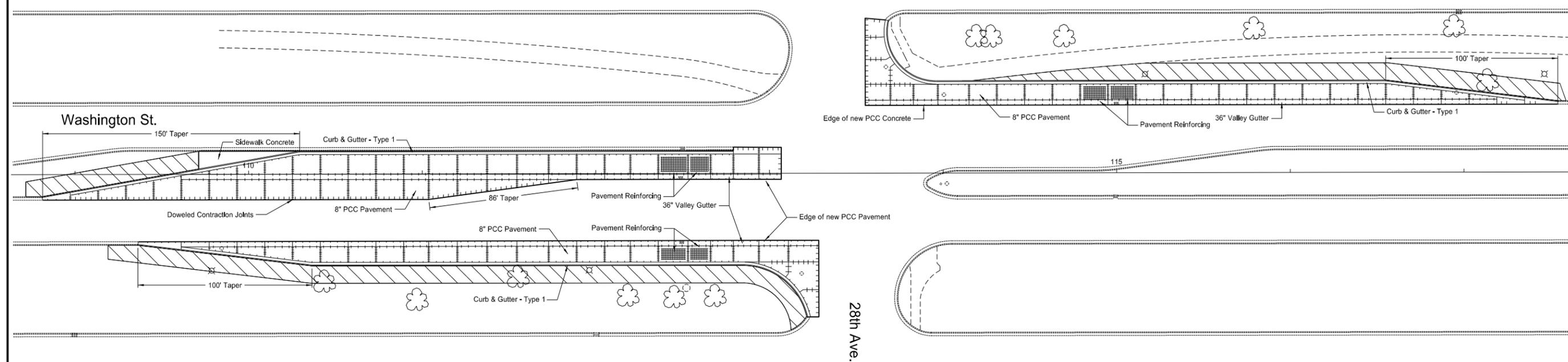
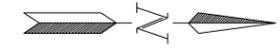
<u>Salvaged Base Course</u>	
Sta 53+14 to 53+66	32 TON
<u>8 IN Non - Reinforced Concrete Pavement CL AE - Doweled</u>	
Sta 53+14 to 53+66	64 SY
<u>Doweled Contraction Joint Assembly</u> ④	
Sta 53+14 to 53+66	30 LF
<u>Geotextile Fabric - Type R1</u>	
Sta 53+14 to 53+66	30 SY
<u>Curb &amp; Gutter - Type 1</u>	
Sta 53+14 to 53+66	40 LF

- Notes:
- ① Match into existing joints of adjoining concrete of Westbound thru driving lane.
  - ② The proposed cross slope of the new concrete is dependent on the elevation of the new curb & gutter installed.
  - ③ Refer to Section 30 , Sheet 4 for Proposed Typical Section.
  - ④ "Doweled Contraction Joint Assembly" is not a pay item. It is incidental to pay item " 8 IN Non - Reinforced Concrete Pavement CL AE - Doweled"

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32nd Ave Intersection  
Island Modification

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	90	2



 Landscape Preparation & Seeding

Salvaged Base Course

108+81 to 113+07 - NB Inside	381 TON
109+36 to 113+24 - NB Outside	254 TON
113+61 to 117+53 - SB Outside	263 TON
109+81 to 110+29 - NB Inside	7 TON

8 IN Non - Reinforced Concrete Pavement CL AE -Doweled

108+81 to 113+07 - NB Inside	697 SY
109+36 to 113+24 - NB Outside	392 SY
113+61 to 117+53 - SB Outside	408 SY

Curb & Gutter - Type 1

108+81 to 112+80 - NB Inside	399 LF
109+36 to 113+24 - NB Outside	400 LF
113+61 to 117+53 - SB Outside	410 LF

Doweled Contraction Joint Assembly ②

108+81 to 112+97 - NB Inside	384 LF
109+36 to 113+24 - NB Outside	180 LF
113+61 to 117+53 - SB Outside	186 LF

Geotextile Fabric - Type R1

108+81 to 113+07 - NB Inside	911 SY
109+36 to 113+24 - NB Outside	606 SY
113+61 to 117+53 - SB Outside	628 SY

Casting Mountable Curb - Type B

112+49 - NB Inside	1 EA
112+49 - NB Outside	1 EA
115+00 - SB Outside	1 EA

Landscape Preparation

108+75 to 109+71 - NB Inside	114 SY
109+19 to 113+20 - NB Outside	457 SY
114+15 to 117+60 - SB Outside	322 SY

Seeding - Hydro Mulch

108+75 to 109+71 - NB Inside	114 SY
109+19 to 113+20 - NB Outside	457 SY
114+15 to 117+60 - SB Outside	322 SY

Sidewalk Concrete

109+81 to 110+29 - NB Inside	33 SY
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Valley Gutter 36 IN

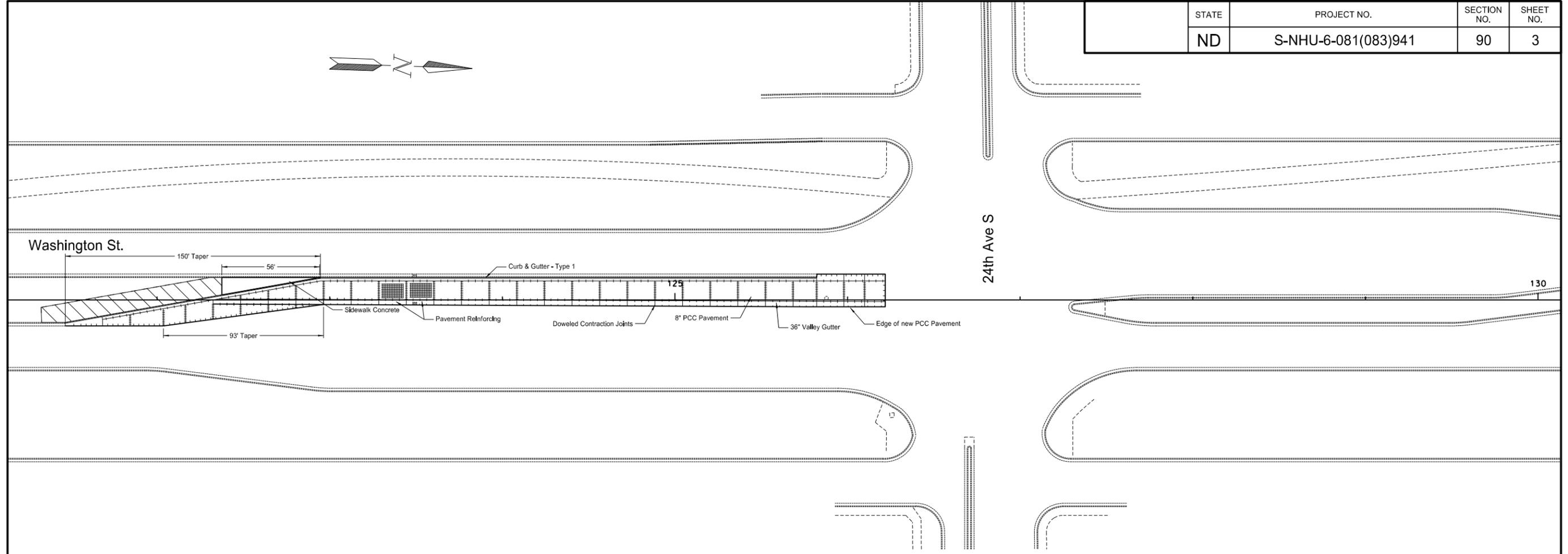
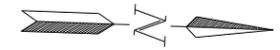
109+71 to 113+07 - NB Inside	336 LF
109+71 to 113+24 - NB Outside	353 LF
113+61 to 117+36 - SB Outside	375 LF

- Notes**
- ① Refer to Section 30, Sheets 4 and 5 for Typical Proposed Sections.
  - ② "Doweled Contraction Joint Assembly" is not a pay item. It is incidental to pay item "8 IN Non- Reinforced Concrete Pavement CL AE - Doweled"
  - ③ Match into existing joints of adjoining concrete where new Turn Lanes are constructed.

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Paving Layouts  
28th Ave Turn Lanes

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	90	3



<b>Salvaged Base Course</b>	
121+47 to 126+22 - NB Inside	327 TON
122+37 to 122+94 - NB Inside	7 TON
<b>8 IN Non - Reinforced Concrete Pavement CL AE - Doweled</b>	
121+47 to 126+20 - NB Inside	560 SY
<b>Curb &amp; Gutter - Type 1</b>	
121+47 to 125+82 - NB Inside	438 LF
<b>Doweled Contraction Joint Assembly<sup>②</sup></b>	
121+47 to 126+04 - NB Inside	297 LF
<b>Sidewalk Concrete</b>	
122+37 to 122+94 - NB Inside	32 SY
<b>Geotextile Fabric - Type R1</b>	
121+47 to 126+22 - NB Inside	788 SY

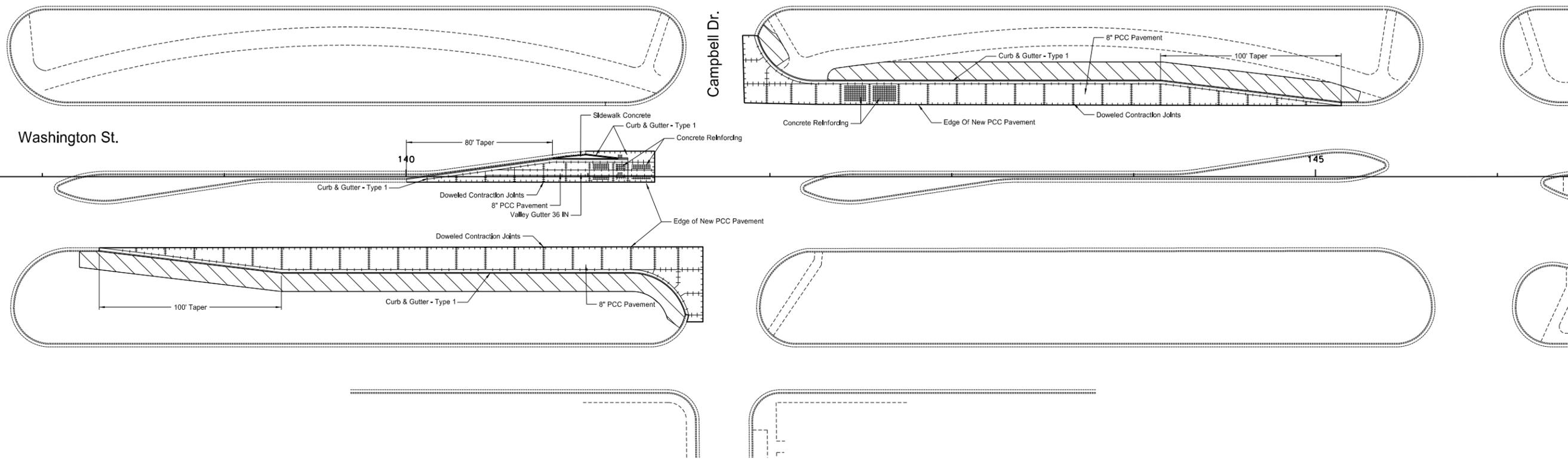
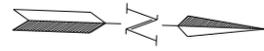
<b>Casting Mountable Curb - Type B</b>	
123+49 - NB Inside (Inlet)	1 EA
<b>Landscape Preparation</b>	
121+33 to 122+38 - NB Inside	129 SY
<b>Seeding - Hydro Mulch</b>	
121+33 to 122+38 - NB Inside	129 SY
<b>Valley Gutter 36 IN</b>	
122+32 to 126+20 - NB Inside	388 LF

 Landscape Preparation & Seeding

- Notes**
- ① Refer to Section 30, Sheet 5 for Typical Proposed Section.
  - ② "Doweled Contraction Joint Assembly" is not a pay item. It is incidental to pay item "8 IN Non - Reinforced Concrete Pavement CL AE - Doweled"
  - ③ Match into existing joints of adjoining concrete where new turn lanes are constructed.

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Paving Layout  
24th Ave Left Turn Lane



**Salvaged Base Course**

140+00 to 141+37 - NB Inside	68 TON
138+31 to 141+63 - NB Outside	212 TON
141+86 to 145+14 - SB Outside	199 TON

**8 IN Non - Reinforced Concrete Pavement CL AE - Doweled**

140+00 to 141+37 - NB Inside	102 SY
138+31 to 141+63 - NB Outside	432 SY
141+92 to 145+14 - SB Outside	387 SY

**Curb & Gutter - Type 1**

140+00 to 141+16 - NB Inside	135 LF
138+31 to 141+55 - NB Outside	334 LF
141+92 to 142+23 - SB Outside	334 LF

**Doweled Contraction Joint Assembly ②**

140+00 to 141+37 - NB Inside	52 LF
138+31 to 141+56 - NB Outside	212 LF
141+92 to 145+14 - SB Outside	206 LF

**Sidewalk Concrete**

140+80 to 141+16 - NB Inside	5 SY
------------------------------	------

**Geotextile Fabric - Type R1**

140+00 to 141+37 - NB Inside	163 SY
138+31 to 141+63 - NB Outside	506 SY
141+86 to 145+14 - SB Outside	473 SY

**Casting Catch Basin - Type A**

141+19 - NB Inside (Inlet)	1 EA
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**Landscape Preparation**

138+20 to 141+50 - NB Outside	378 SY
141+92 to 142+35 - SB Outside	335 SY

**Seeding - Hydro Mulch**

138+20 to 141+50 - NB Outside	378 SY
141+92 to 142+35 - SB Outside	335 SY

**Valley Gutter 36 IN**

140+44 to 141+37 - NB Inside	93 LF
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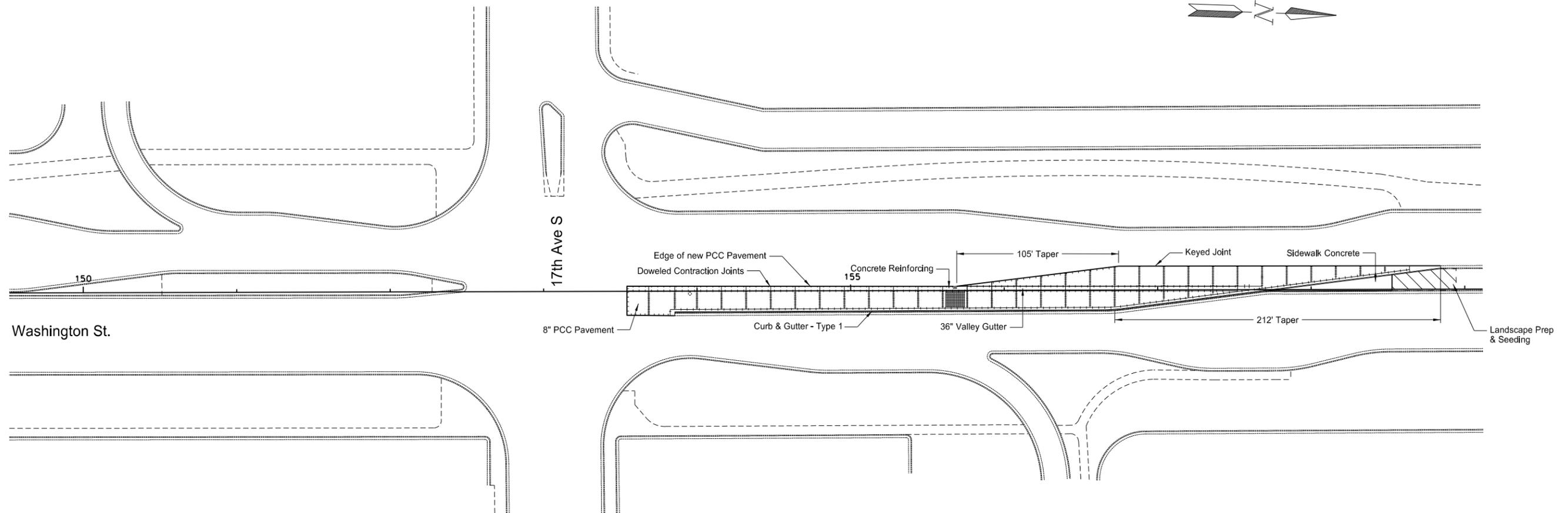


Landscape Preparation & Seeding

- ① Refer to Section 30, Sheet 6 for Typical Proposed Sections
- ② "Doweled Contraction Joint Assembly" is not a pay item. It is incidental to pay item "8 IN Non - Reinforced Concrete Pavement CL AE - Doweled"
- ③ Match into existing joints of adjoining concrete where new turn lanes are constructed.

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Paving Layouts  
Campbell Drive Turn Lanes



**Salvaged Base Course**

153+54 to 158+65 - SB Inside	427 TON
157+70 to 158+53 - SB Inside	10 TON

<b>8 IN Non - Reinforced Concrete Pavement CL AE - Doweled</b>	
153+54 to 158+65 - SB Inside	774 SY

**Curb & Gutter - Type 1**

153+82 to 158+85 - SB Inside	503 LF
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**Doweled Contraction Joint Assembly ②**

153+54 to 158+55 - SB Inside	411 LF
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**Sidewalk Concrete**

157+70 to 158+53 - SB Inside	47 SY
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**Geotextile Fabric - Type R1**

153+54 to 158+21 - SB Inside	1023 SY
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**Landscape Preparation**

156+21 to 156+31 - SB Inside	55 SY
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**Seeding - Hydro Mulch**

156+21 to 156+31 - SB Inside	55 SY
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**Casting Mountable Curb - Type B**

155+69 - SB Inside	1 EA
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**Valley Gutter 36 IN**

153+56 to 157+71 - SB Inside	415 LF
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 Landscape Preparation & Seeding

**Notes**

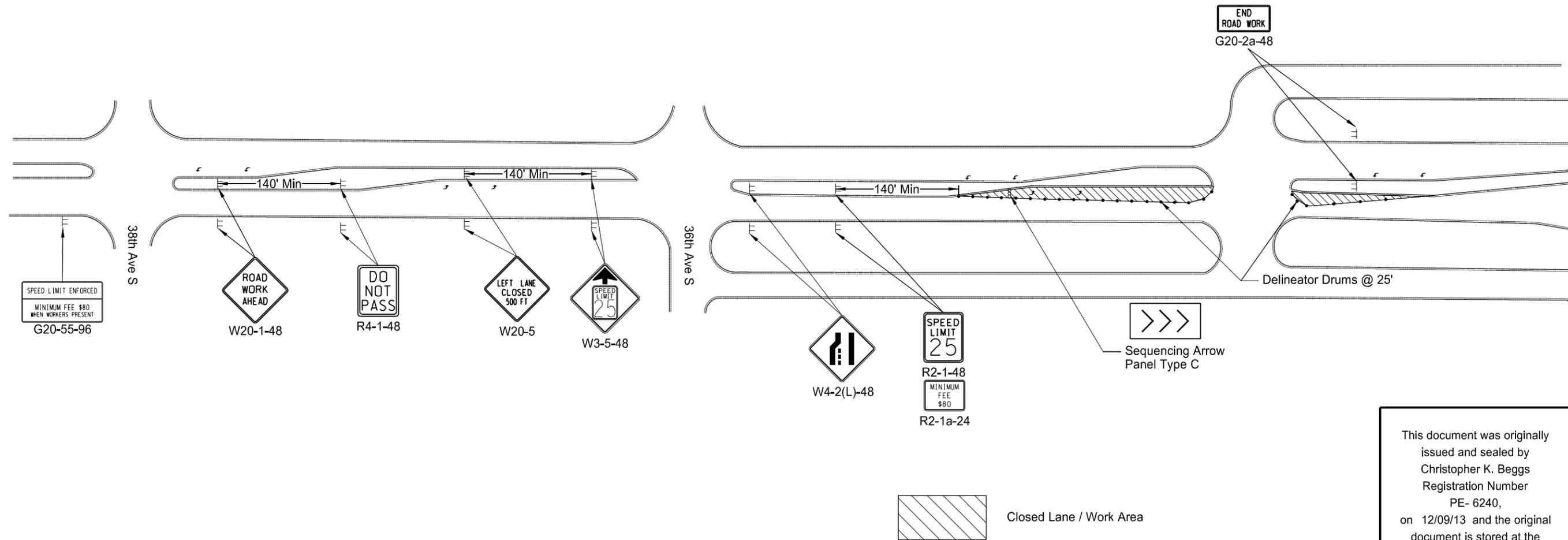
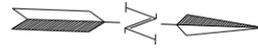
- ① Refer to Section 30, Sheet 7 for Typical Proposed Sections.
- ② "Doweled Contraction Joint Assembly" is not a pay item. It is incidental to pay item "8 IN Non - Reinforced Concrete Pavement CL AE - Doweled"
- ③ Match into existing joints of adjoining concrete where new turn lanes are constructed.

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Paving Layout  
17th Ave Left Turn Lane



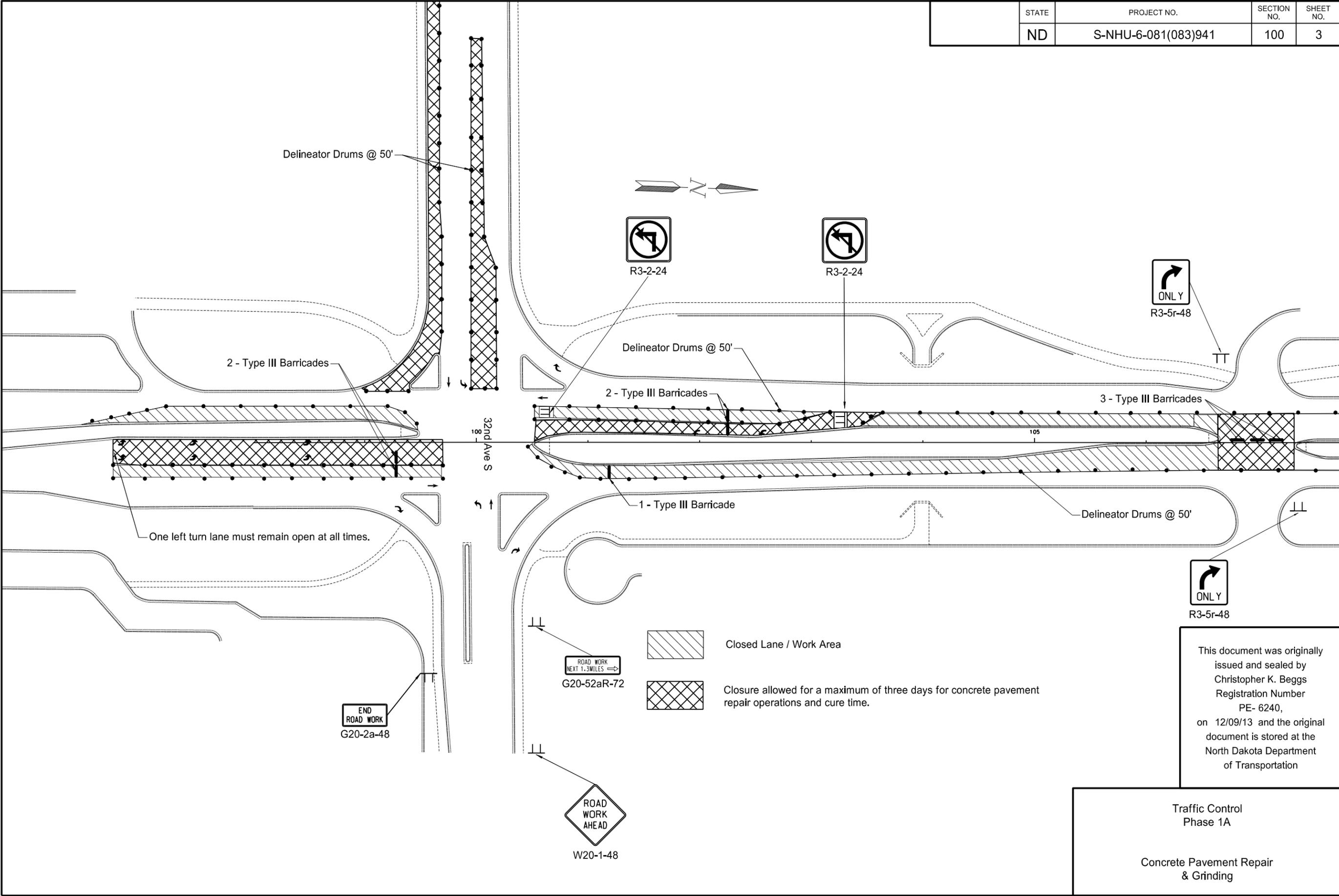
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	ND	S-NHU-6-081(083)941	100	2



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Traffic Control Phase 1A  
Concrete Pavement Repair & Grinding

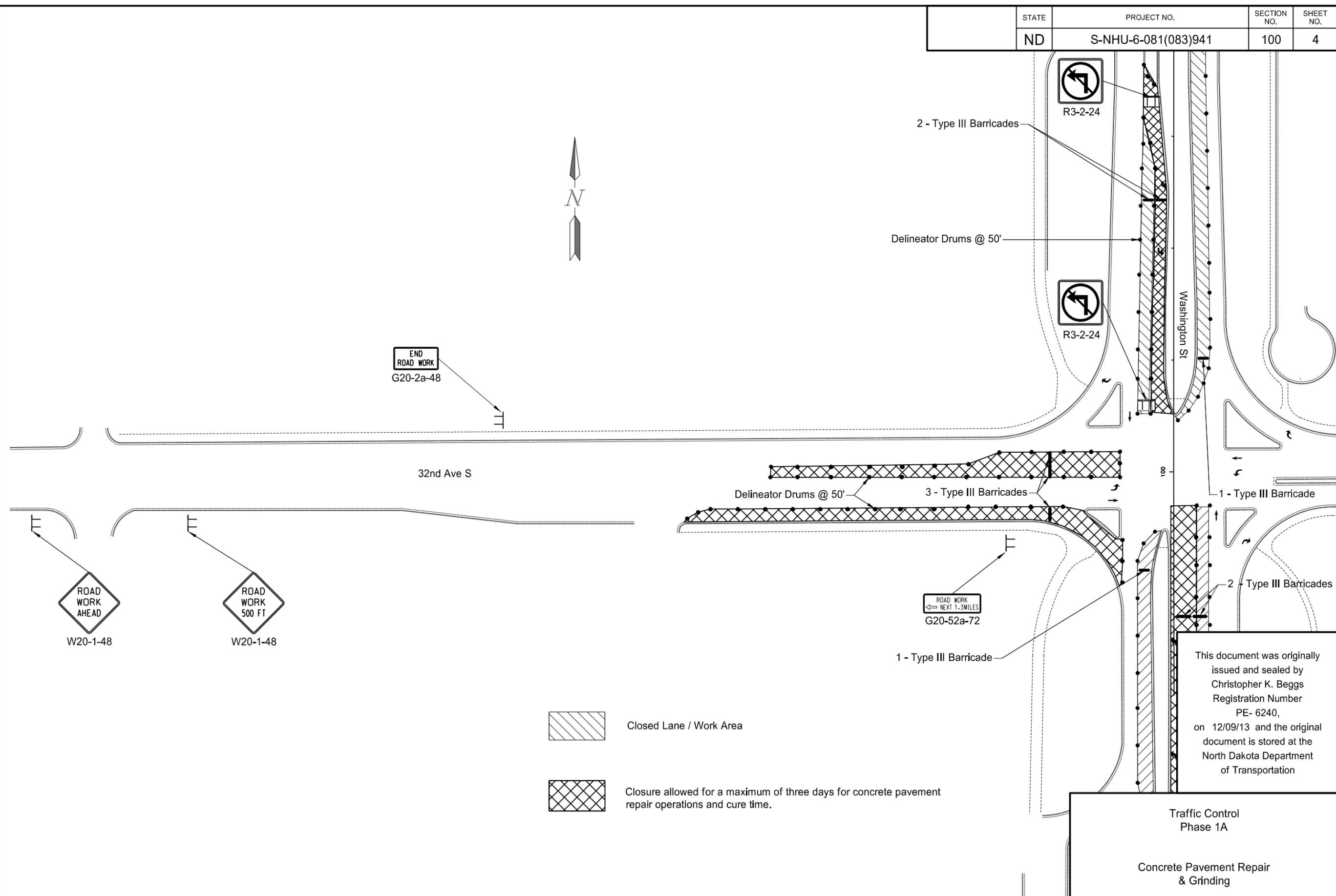
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ND	S-NHU-6-081(083)941	100	3



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Traffic Control Phase 1A  
Concrete Pavement Repair & Grinding

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	4



END  
ROAD WORK  
G20-2a-48

32nd Ave S

Washington St

ROAD  
WORK  
AHEAD  
W20-1-48

ROAD  
WORK  
500 FT  
W20-1-48

ROAD WORK  
NEXT 1.3 MILES  
G20-52a-72



Closed Lane / Work Area



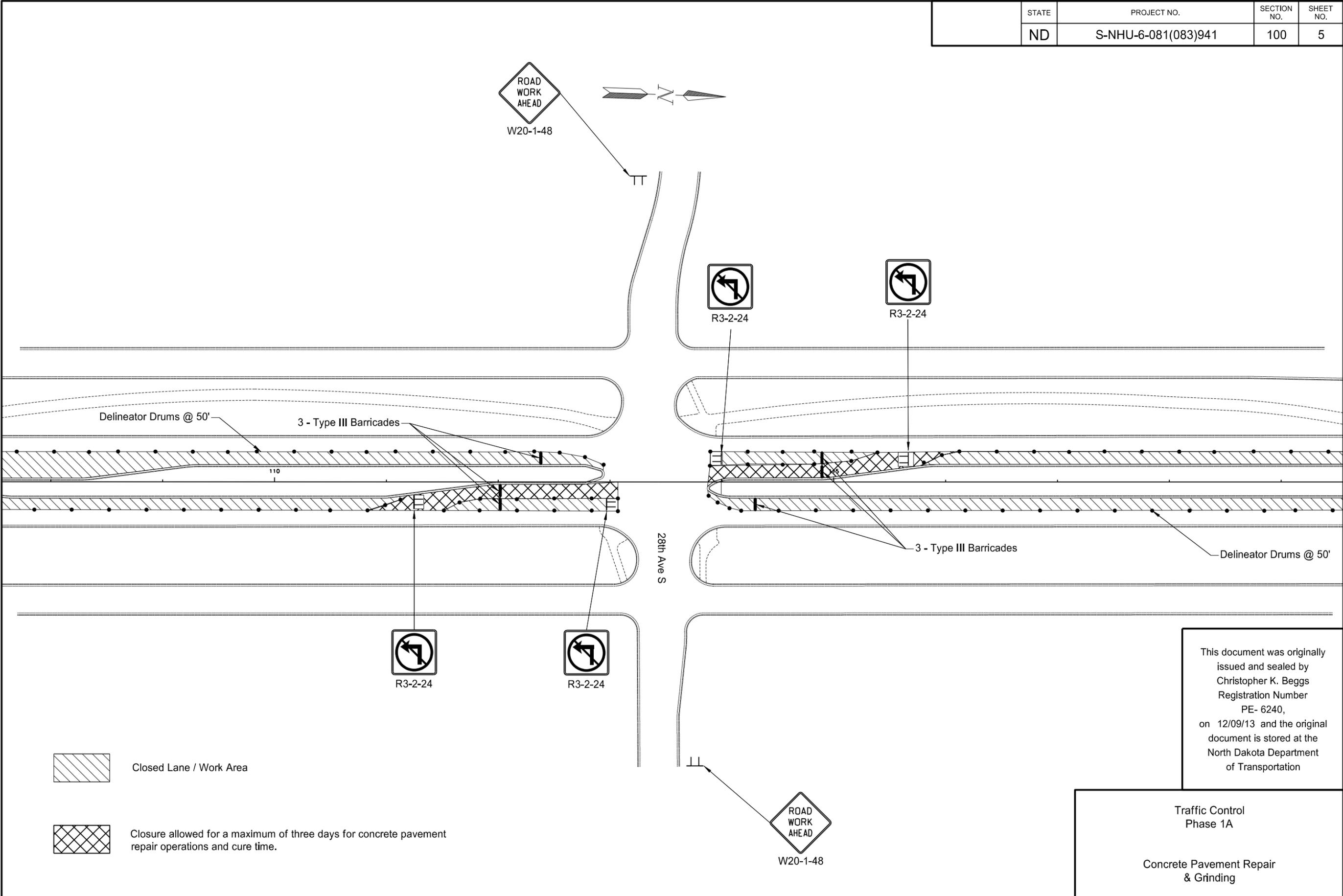
Closure allowed for a maximum of three days for concrete pavement repair operations and cure time.

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Traffic Control  
Phase 1A

Concrete Pavement Repair  
& Grinding

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ND	S-NHU-6-081(083)941	100	5



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Traffic Control Phase 1A  
Concrete Pavement Repair & Grinding

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	6

ROAD WORK AHEAD  
W20-1-48



R3-2-24

R3-2-24

2 - Type III Barricades

Delineator Drums @ 50'

1 - Type III Barricade

120

125

250

Delineator Drums @ 50'

24th Ave S

3 - Type III Barricades

R3-2-24

R3-2-24

ROAD WORK AHEAD  
W20-1-48

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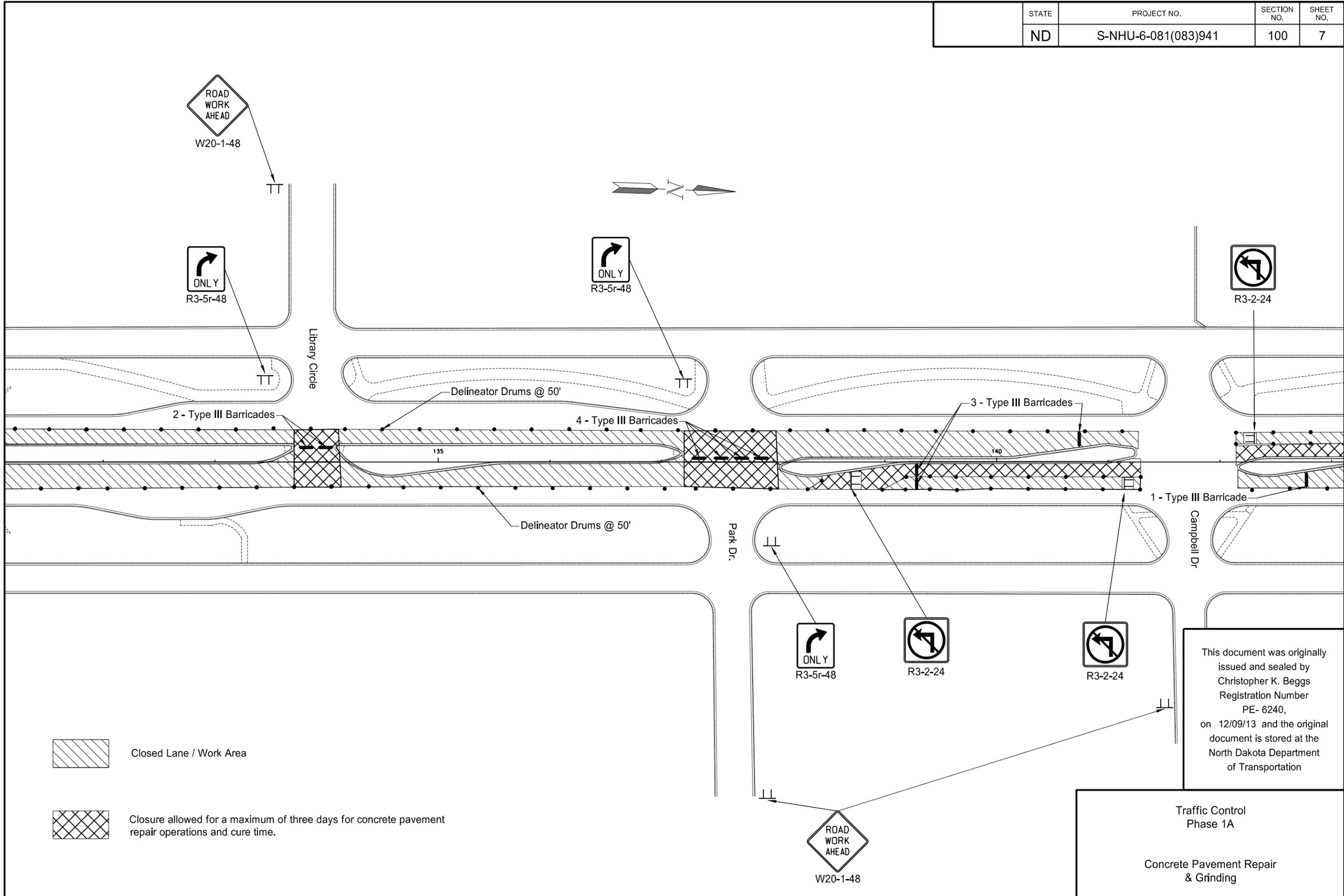
Traffic Control Phase 1A

Concrete Pavement Repair & Grinding

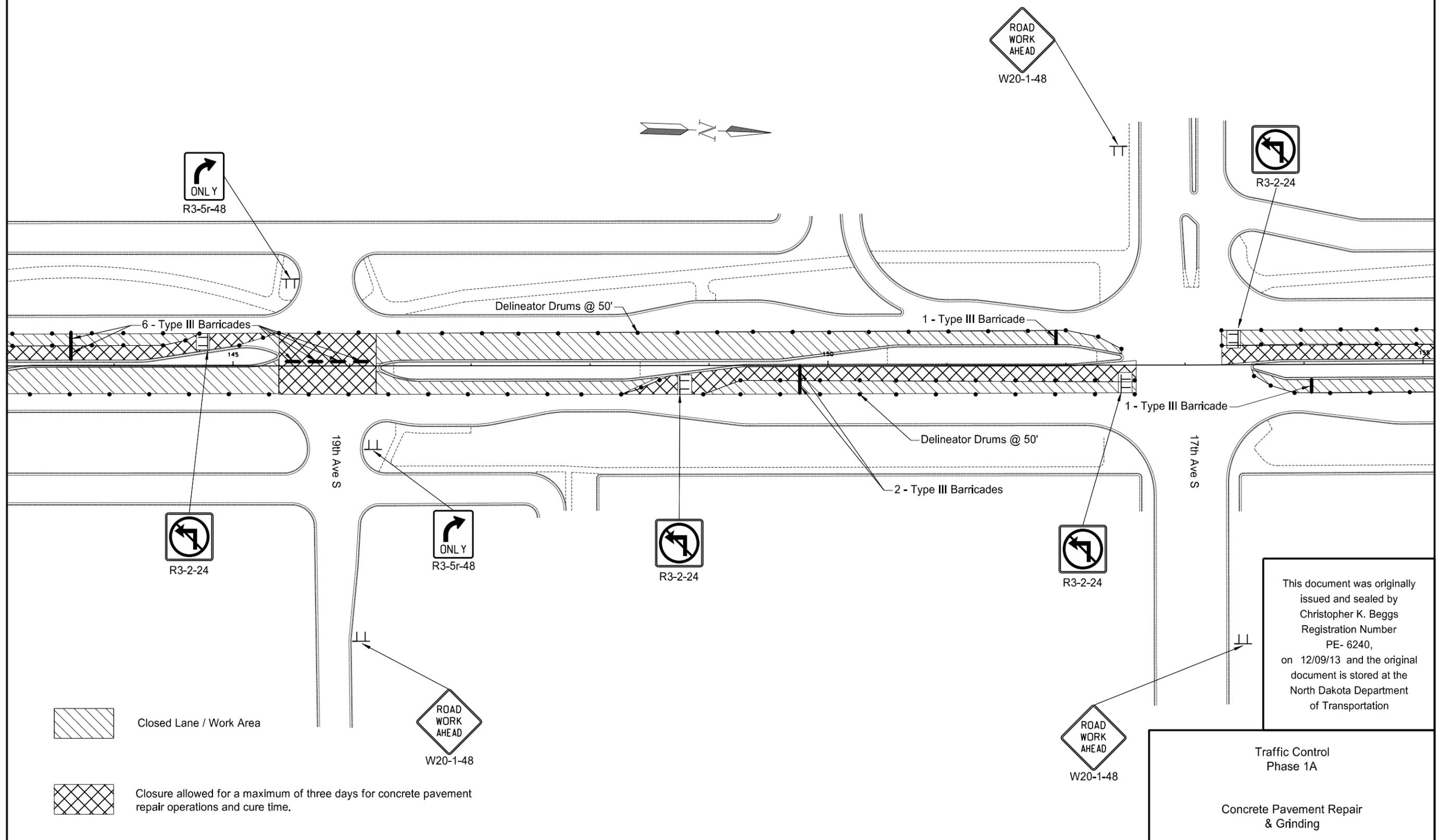
 Closed Lane / Work Area

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	7



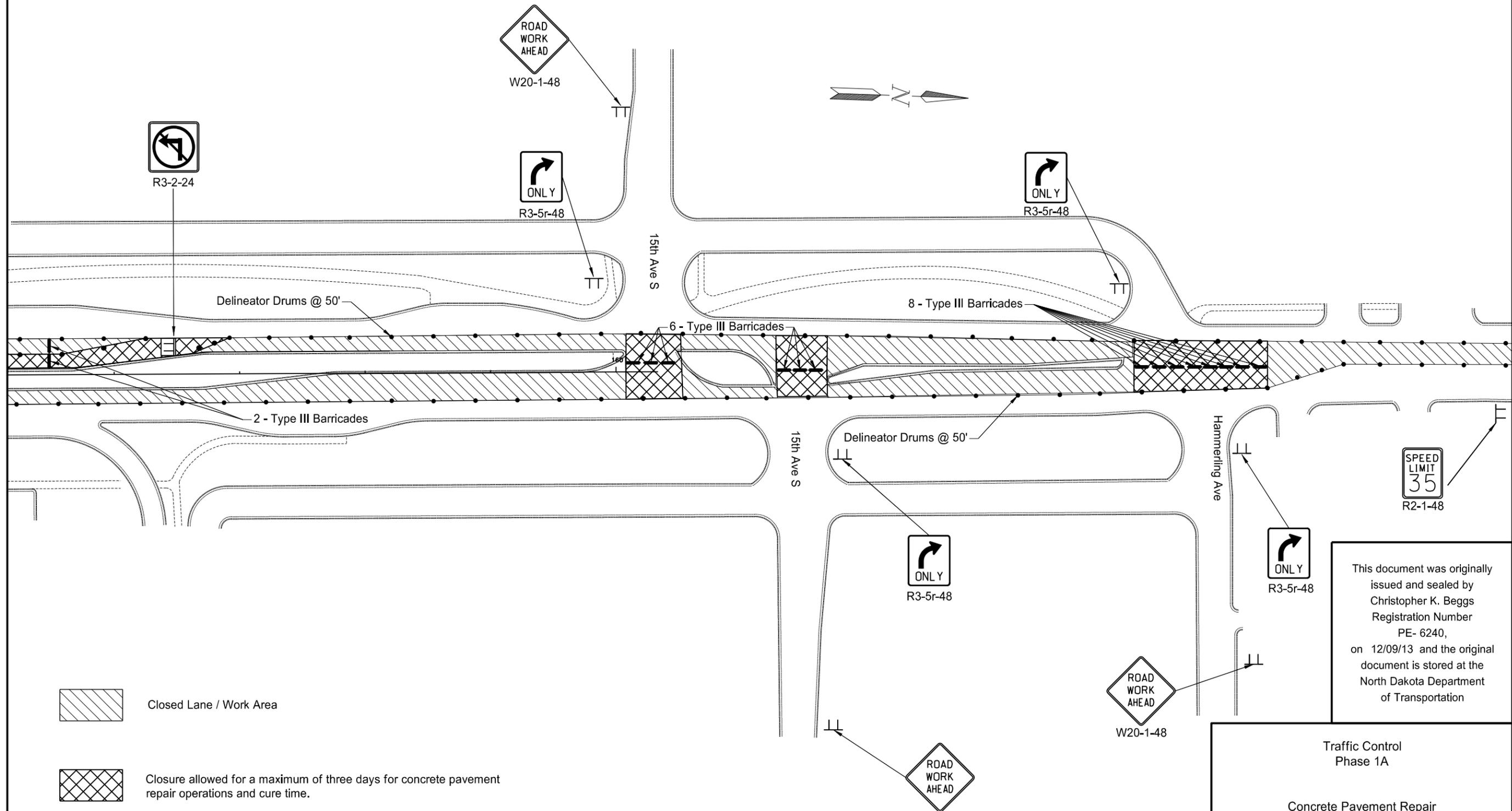
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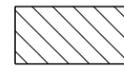


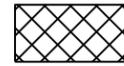
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Traffic Control Phase 1A  
Concrete Pavement Repair & Grinding

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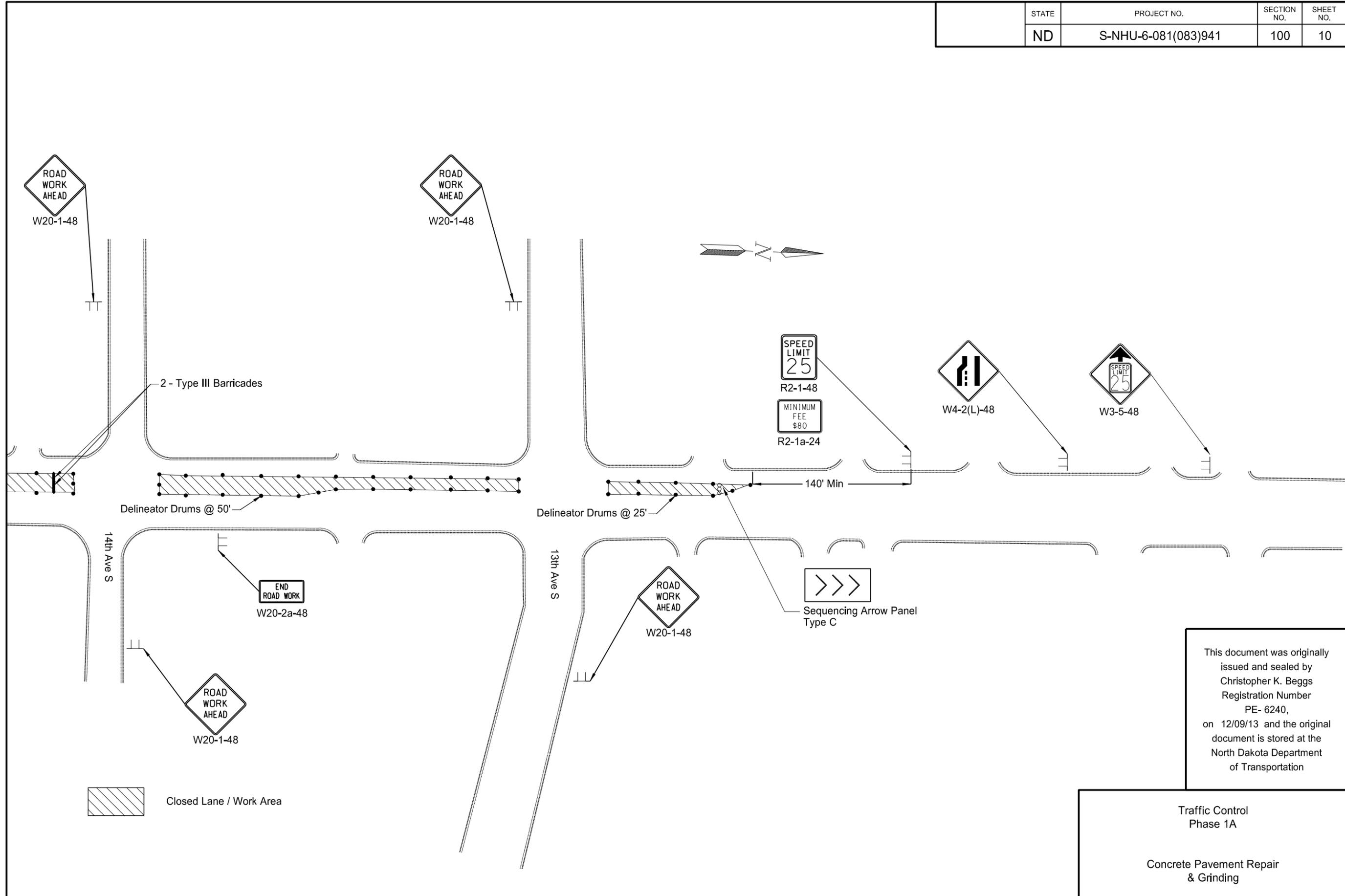
 Closed Lane / Work Area

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Traffic Control Phase 1A  
Concrete Pavement Repair & Grinding

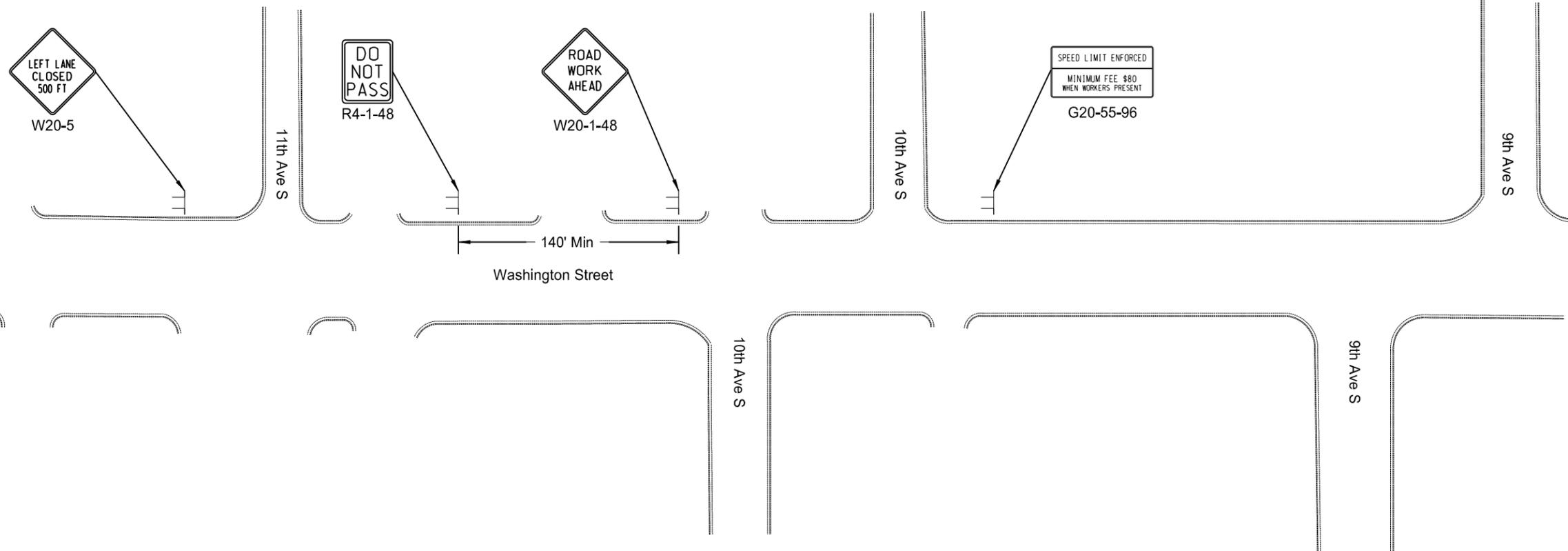
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Traffic Control Phase 1A  
Concrete Pavement Repair & Grinding

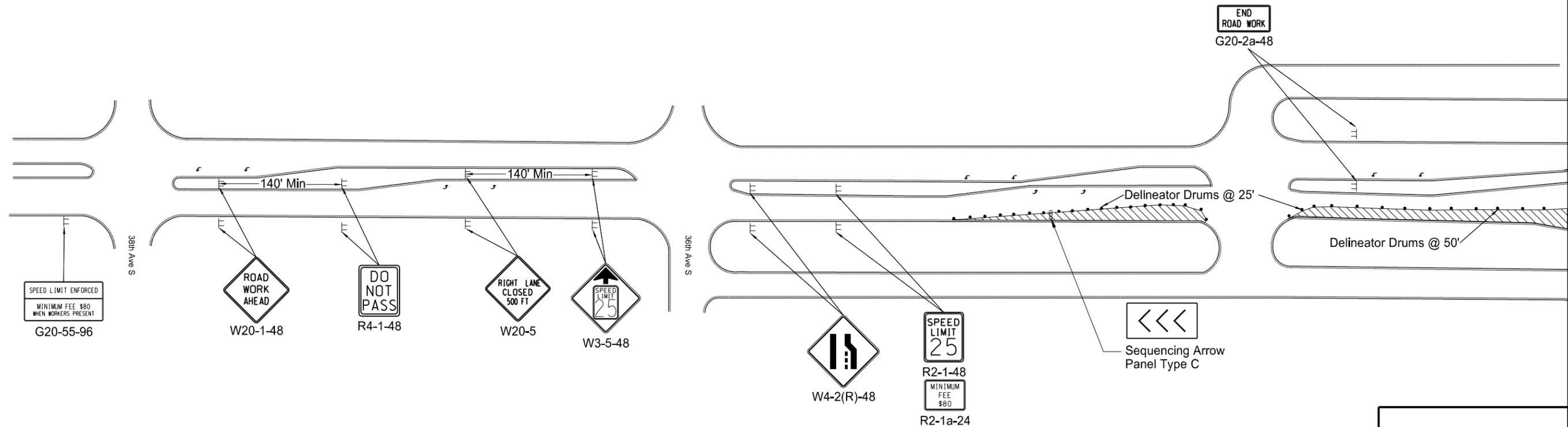
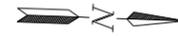
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	ND	S-NHU-6-081(083)941	100	11



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Traffic Control  
Phase 1A  
  
Concrete Pavement Repair  
& Grinding

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	S-NHU-6-081(083)941	100	12

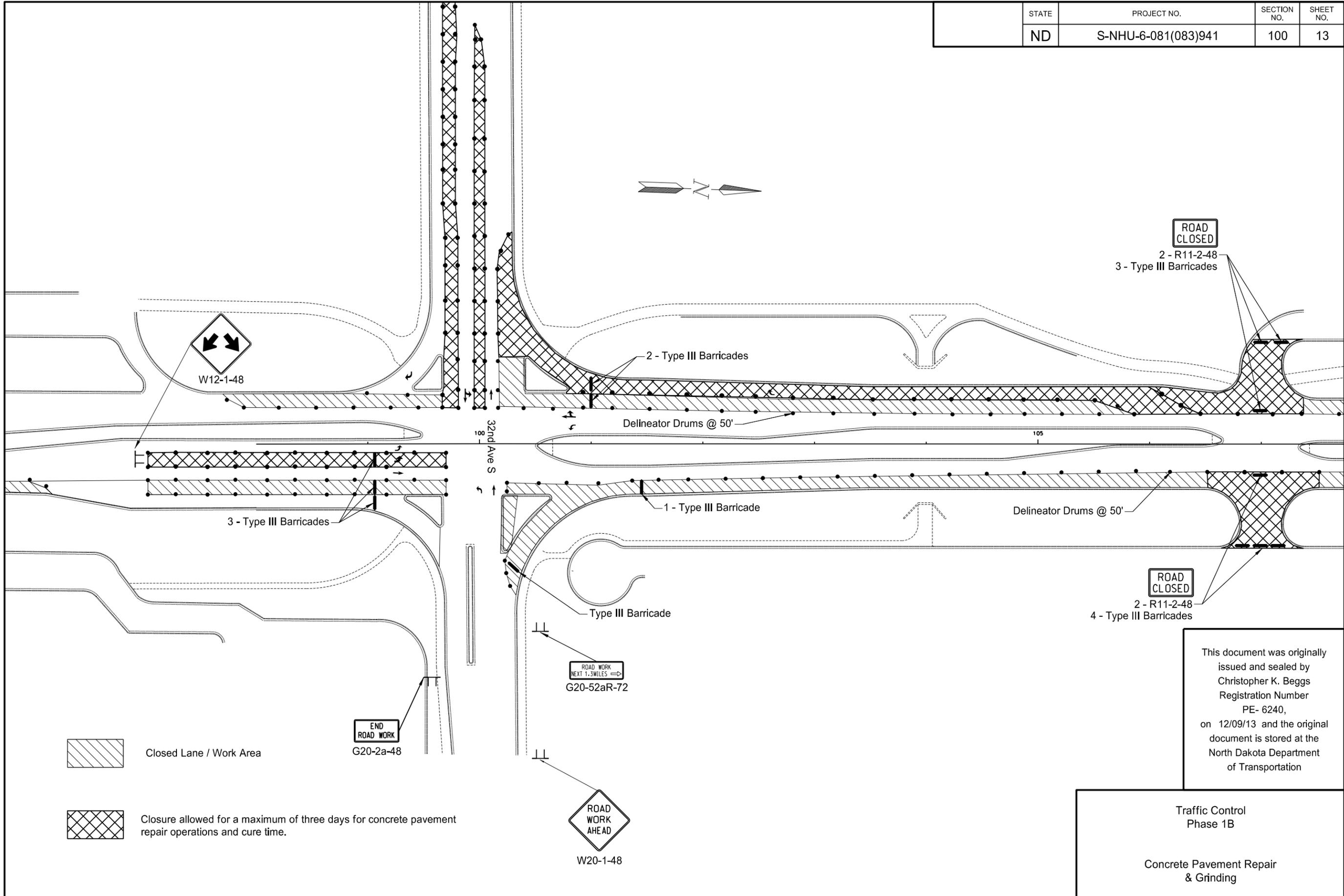


 Closed Area / Work Area

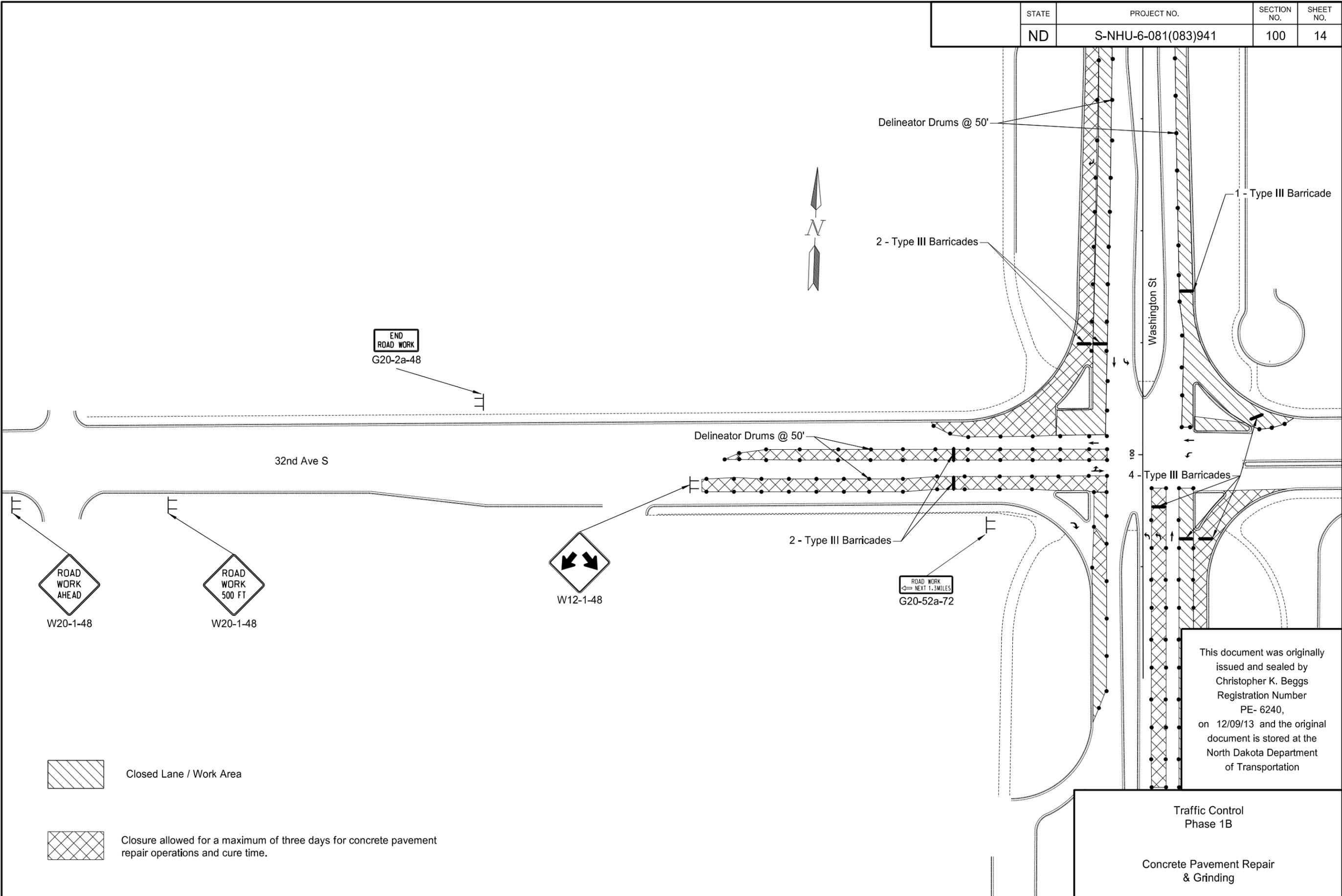
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Traffic Control Phase 1B  
38th Ave S to 36th Ave S

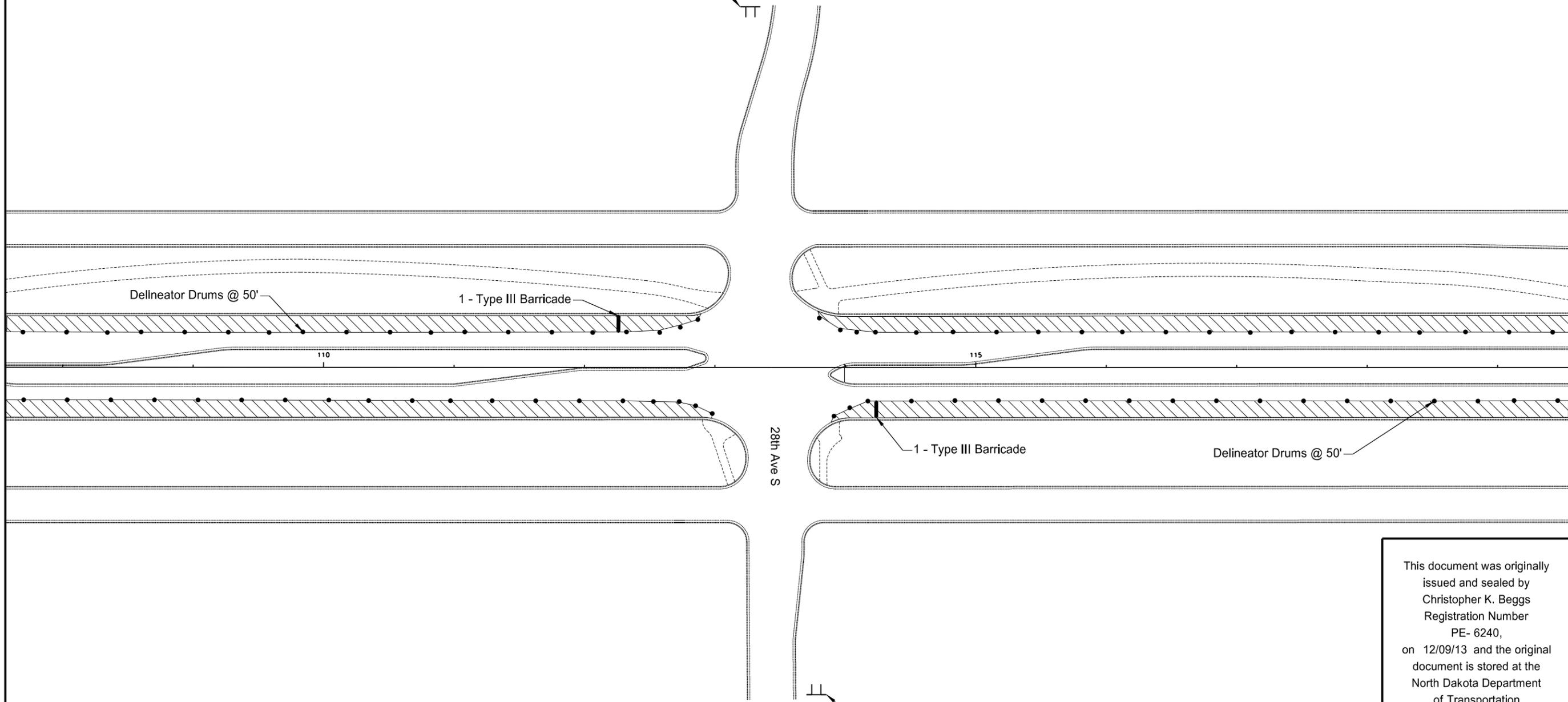
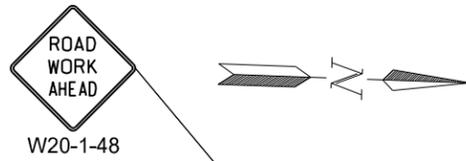
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	13



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	14



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	15



 Closed Lane / Work Area



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Traffic Control Phase 1B  
Concrete Pavement Repair & Grinding

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	16

ROAD WORK AHEAD  
W20-1-48

ROAD CLOSED  
2 - R11-2-48  
4 - Type III Barricades

Delineator Drums @ 50'

1 - Type III Barricade

2 - Type III Barricades

2 - Type III Barricades

1 - Type III Barricade

Delineator Drums @ 50'

ROAD CLOSED  
2 - R11-2-48  
4 - Type III Barricades

 Closed Lane / Work Area

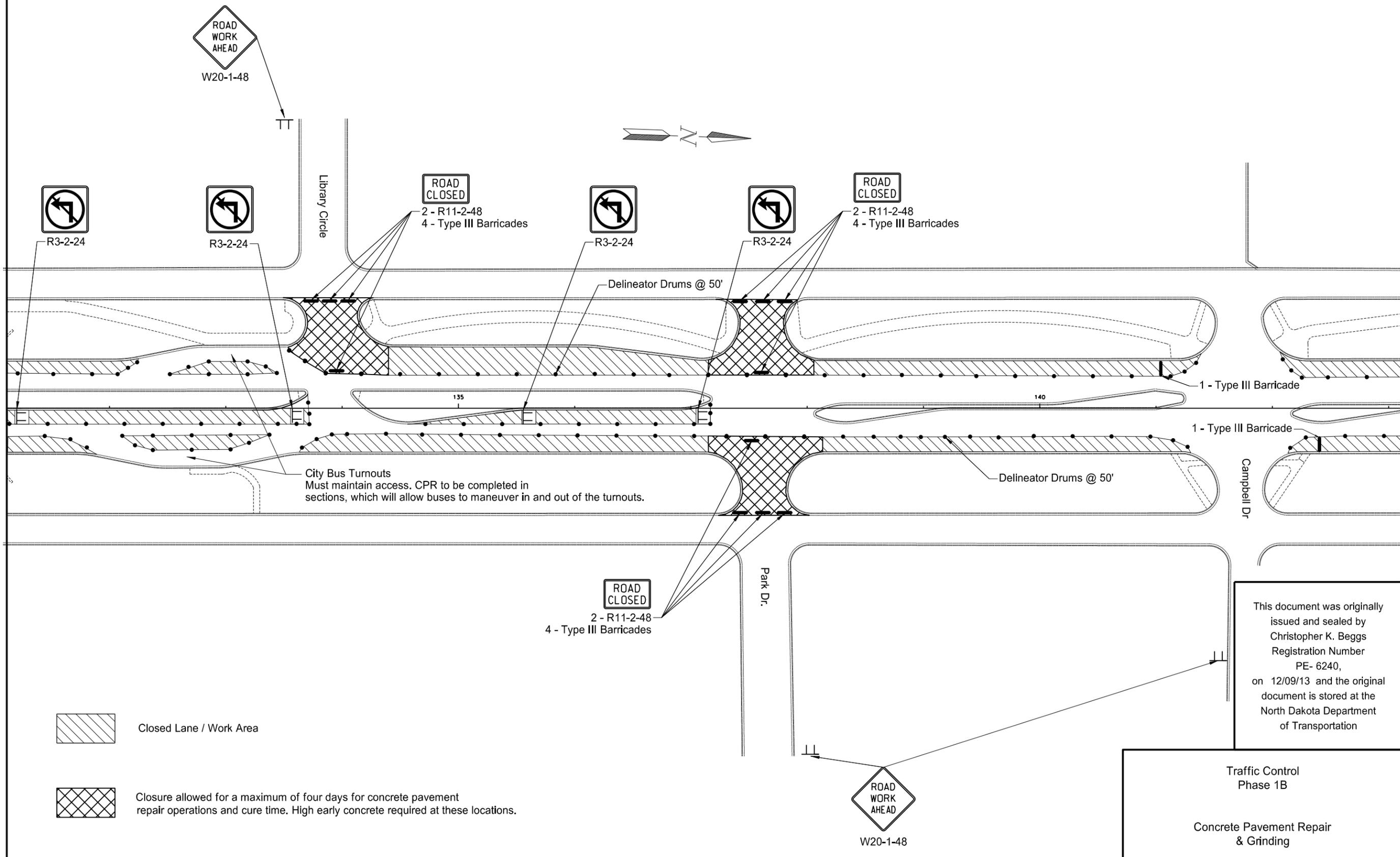
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ROAD WORK AHEAD  
W20-1-48

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Traffic Control Phase 1B  
Concrete Pavement Repair & Grinding

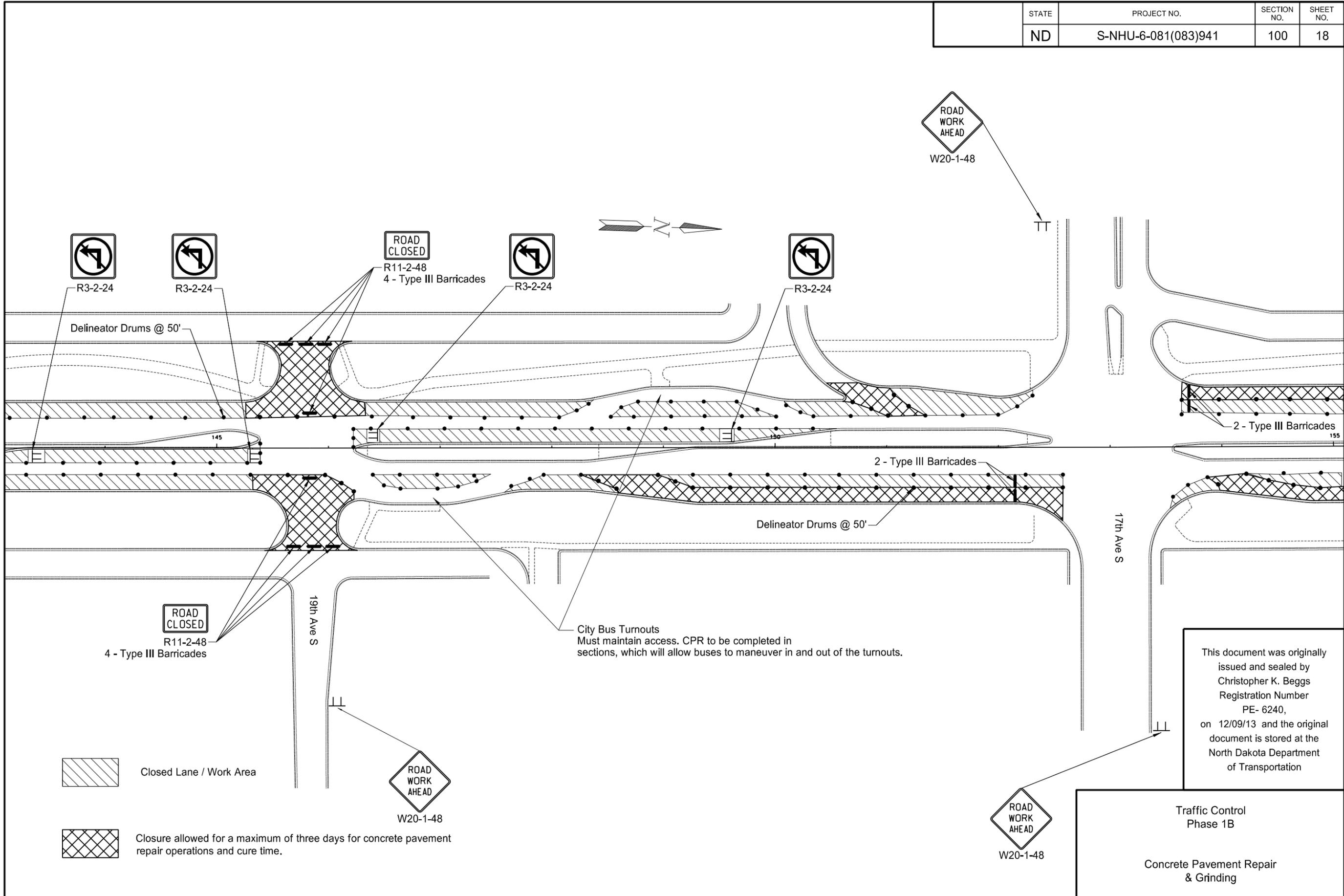
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	17



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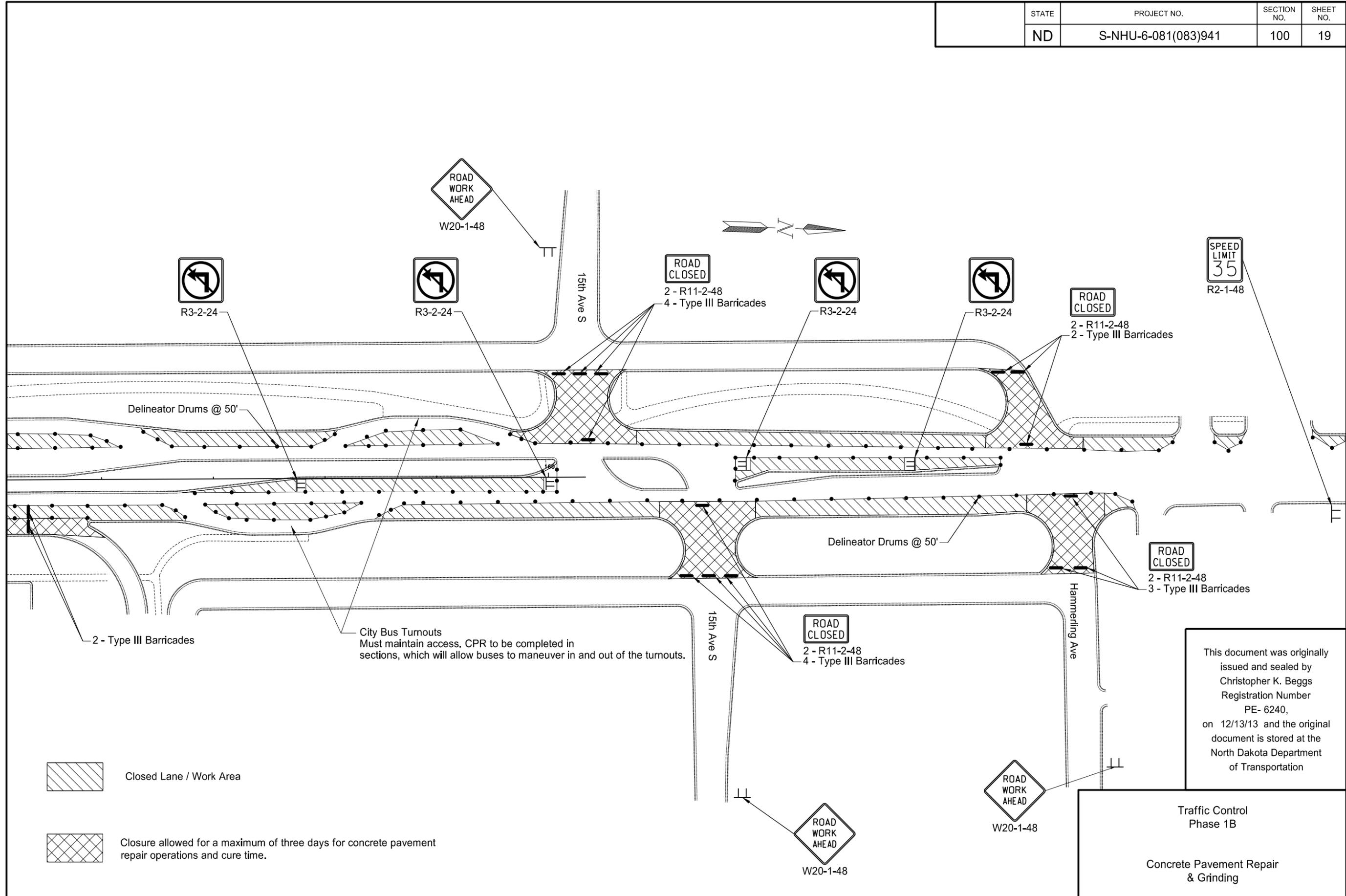
Traffic Control Phase 1B  
Concrete Pavement Repair & Grinding

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	18



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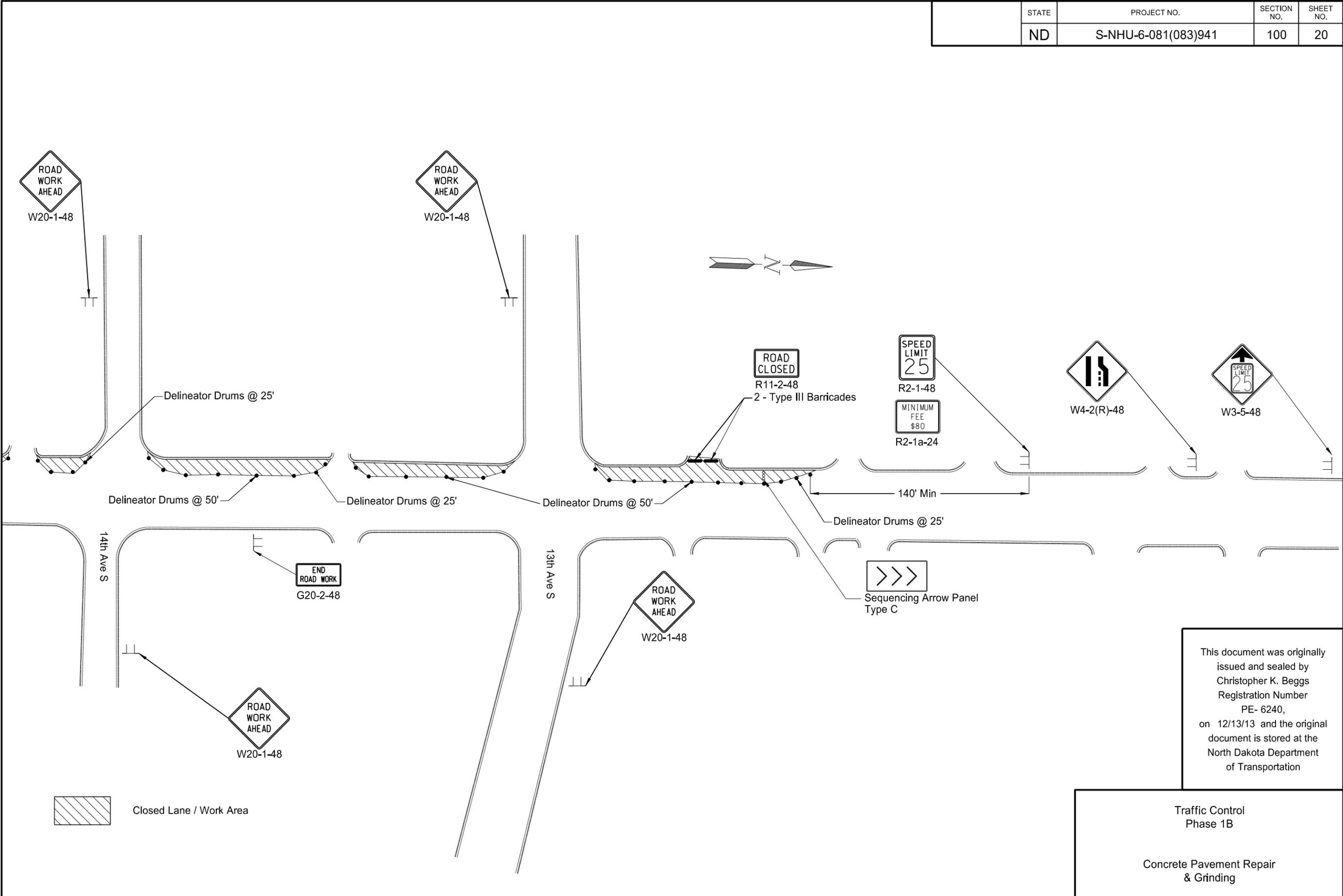
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	19



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Traffic Control Phase 1B  
Concrete Pavement Repair & Grinding

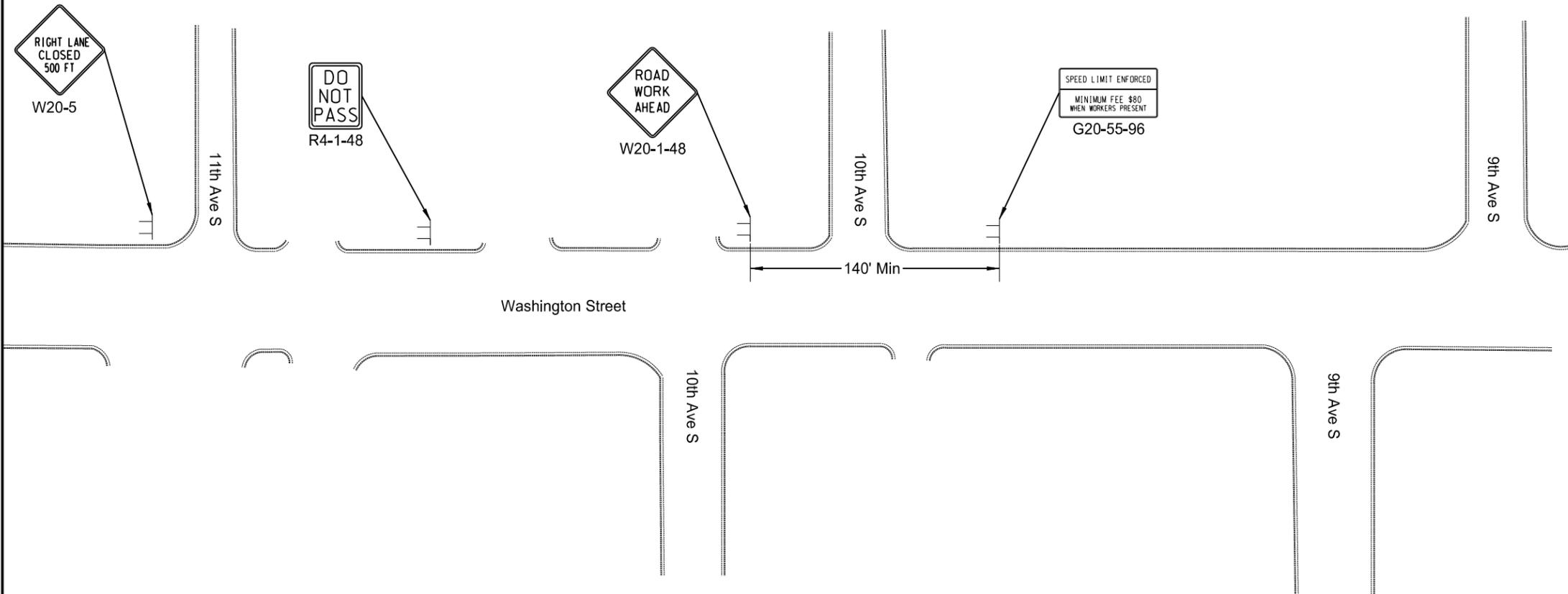
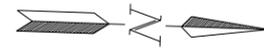
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	20



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Traffic Control Phase 1B  
Concrete Pavement Repair & Grinding

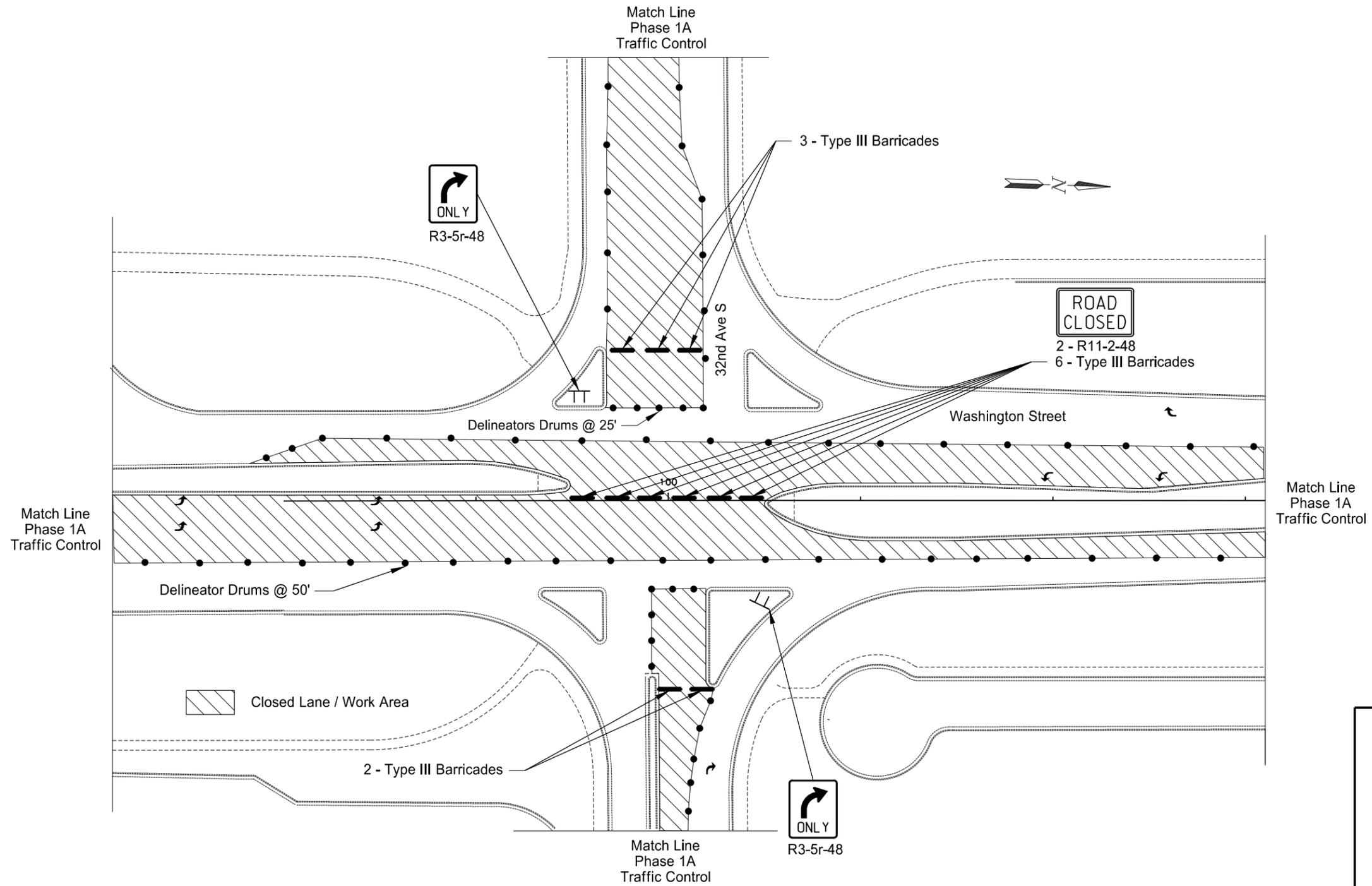
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	21



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Traffic Control  
Phase 1B  
  
Concrete Pavement Repair  
& Grinding

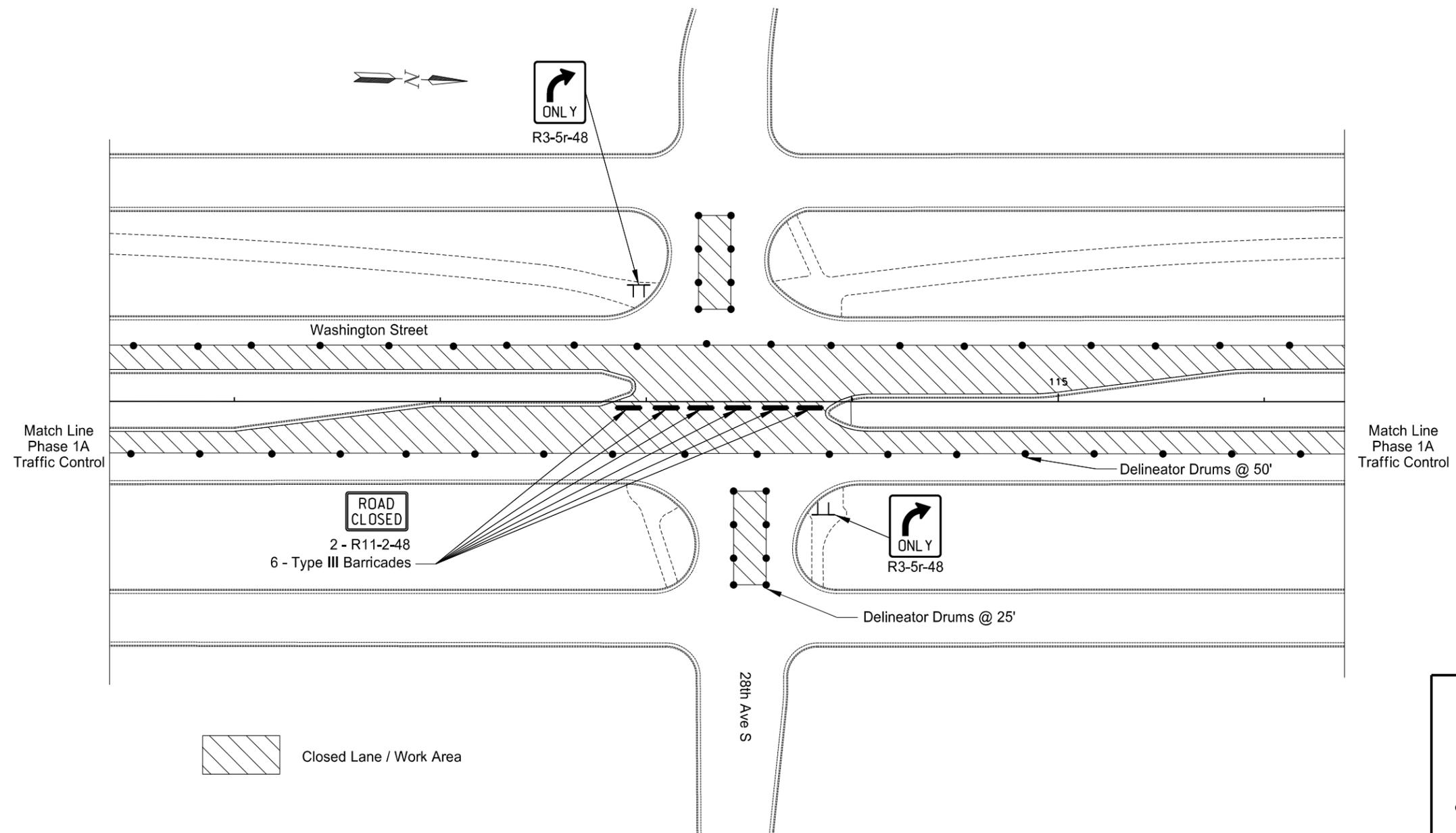
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	22



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Traffic Control Phase 1C  
 Concrete Pavement Repair & Grinding  
 32nd Ave S Intersection

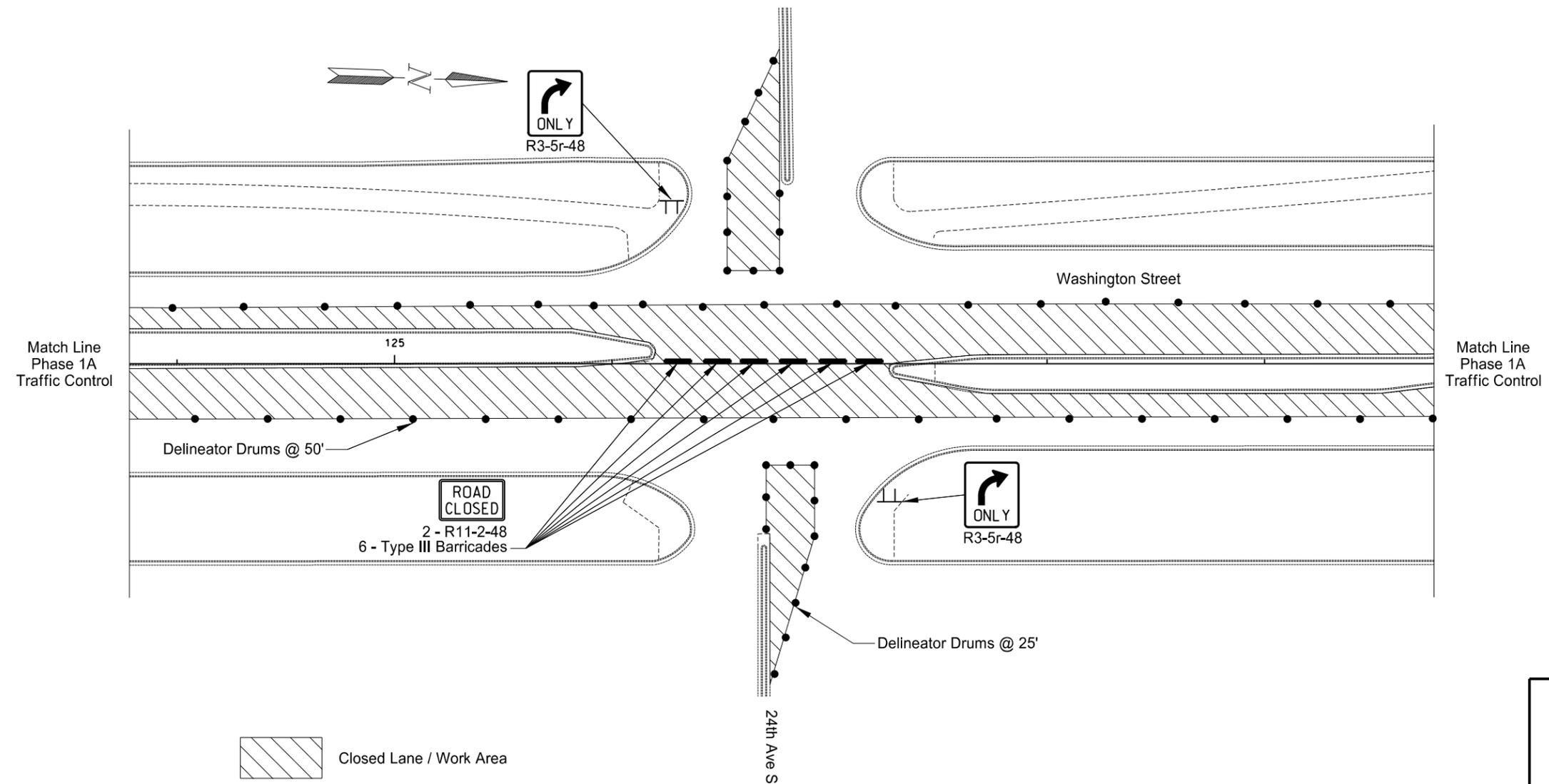
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	S-NHU-6-081(083)941	100	23



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Traffic Control Phase 1C  
Concrete Pavement Repair & Grinding  
28th Ave S Intersection

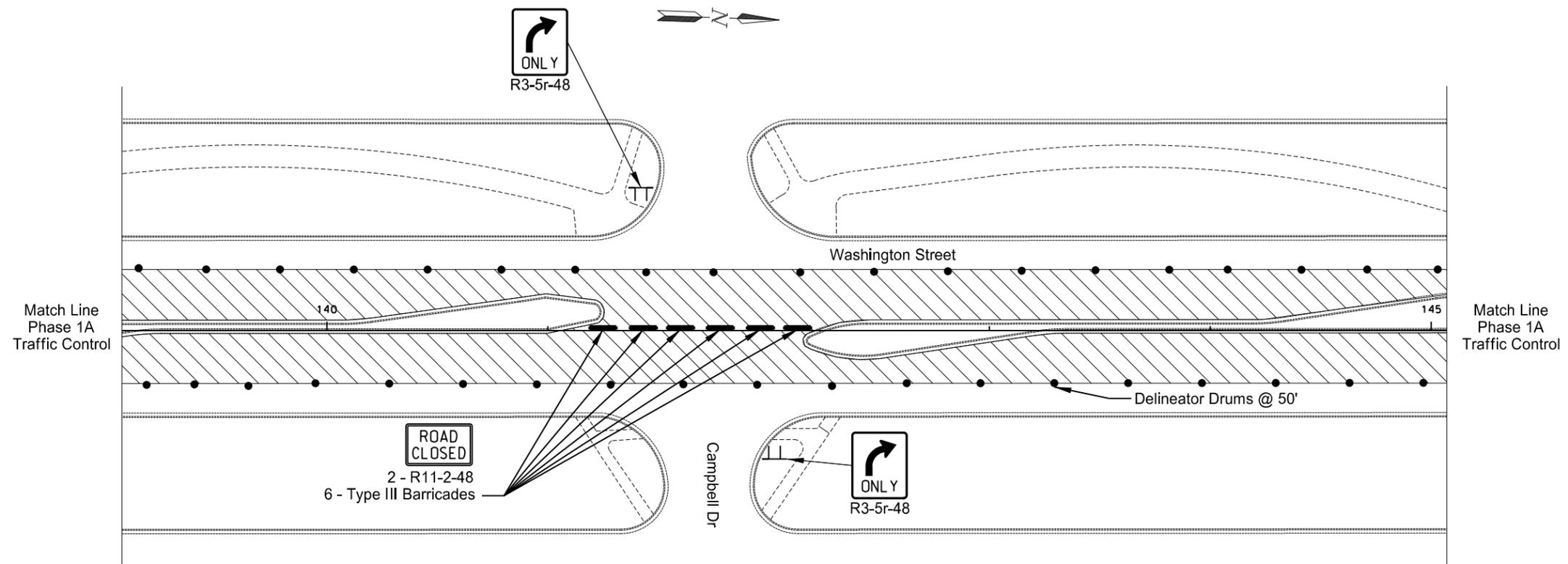
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	24



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Traffic Control Phase 1C  
Concrete Pavement Repair & Grinding  
24th Ave S Intersection

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	S-NHU-6-081(083)941	100	25

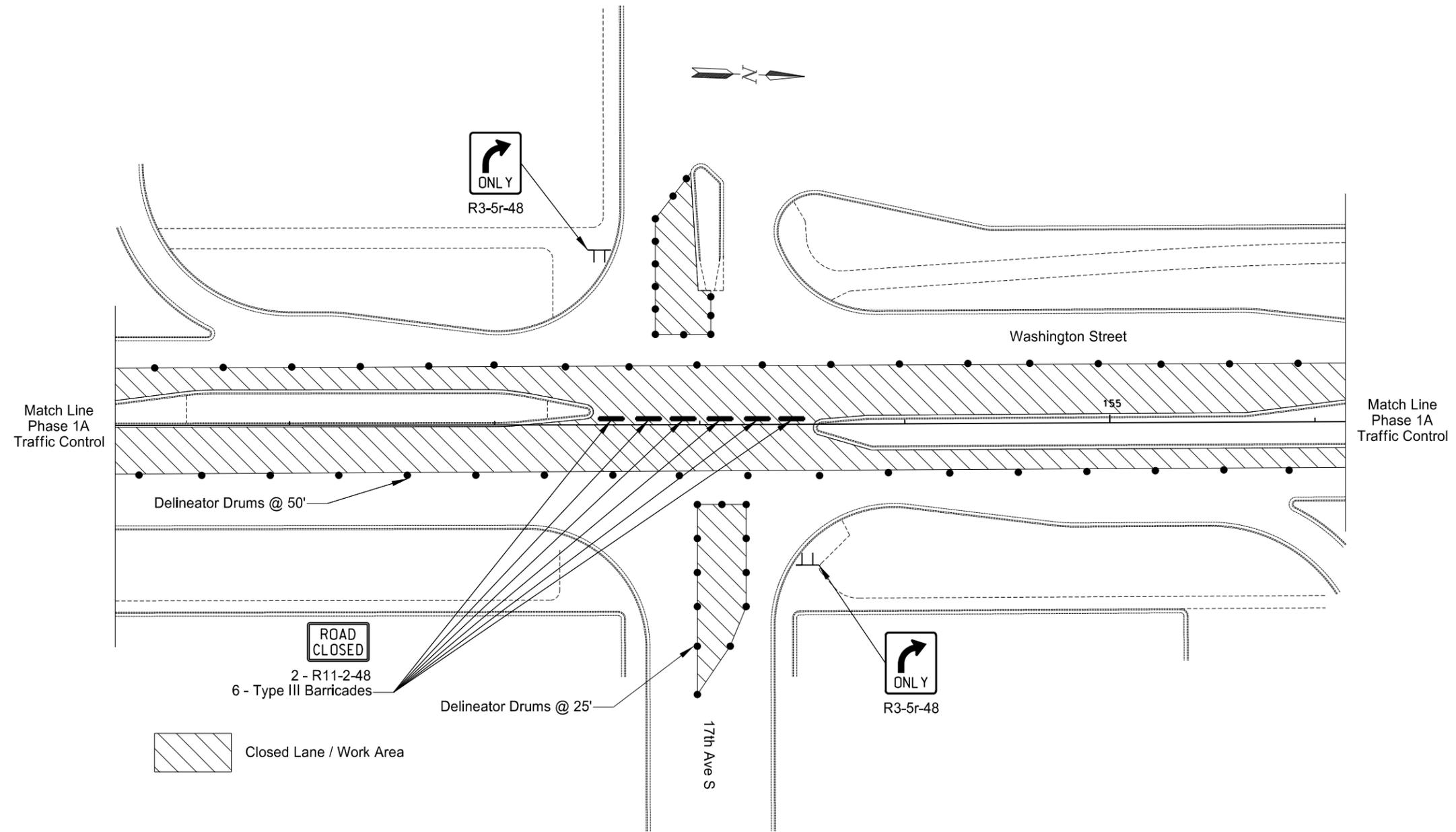


 Closed Lane / Work Area

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Traffic Control Phase 1C  
Concrete Pavement Repair & Grinding  
Campbell Drive Intersection

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	26

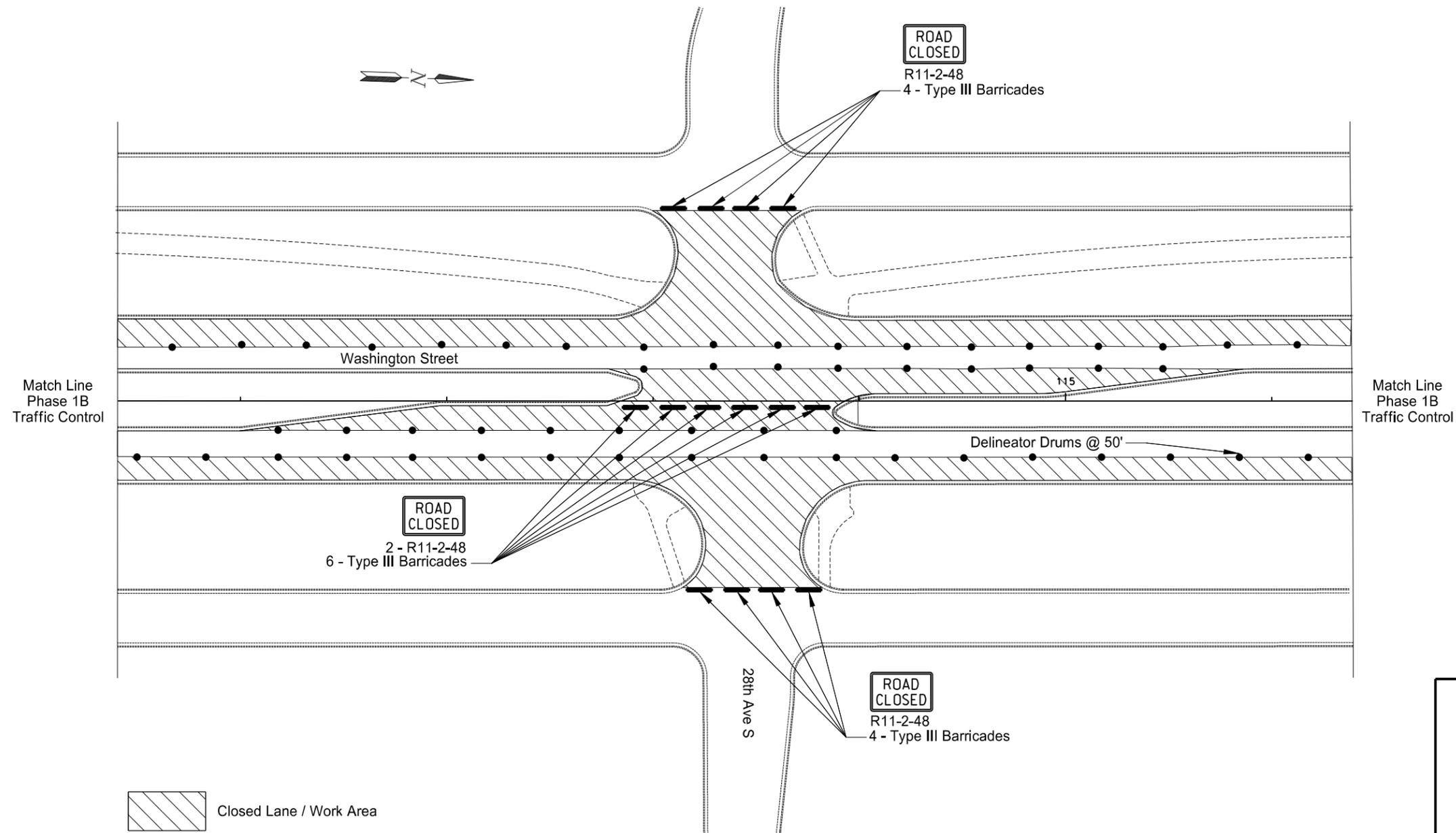


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Traffic Control Phase 1C  
Concrete Pavement Repair & Grinding  
17th Ave S Intersection



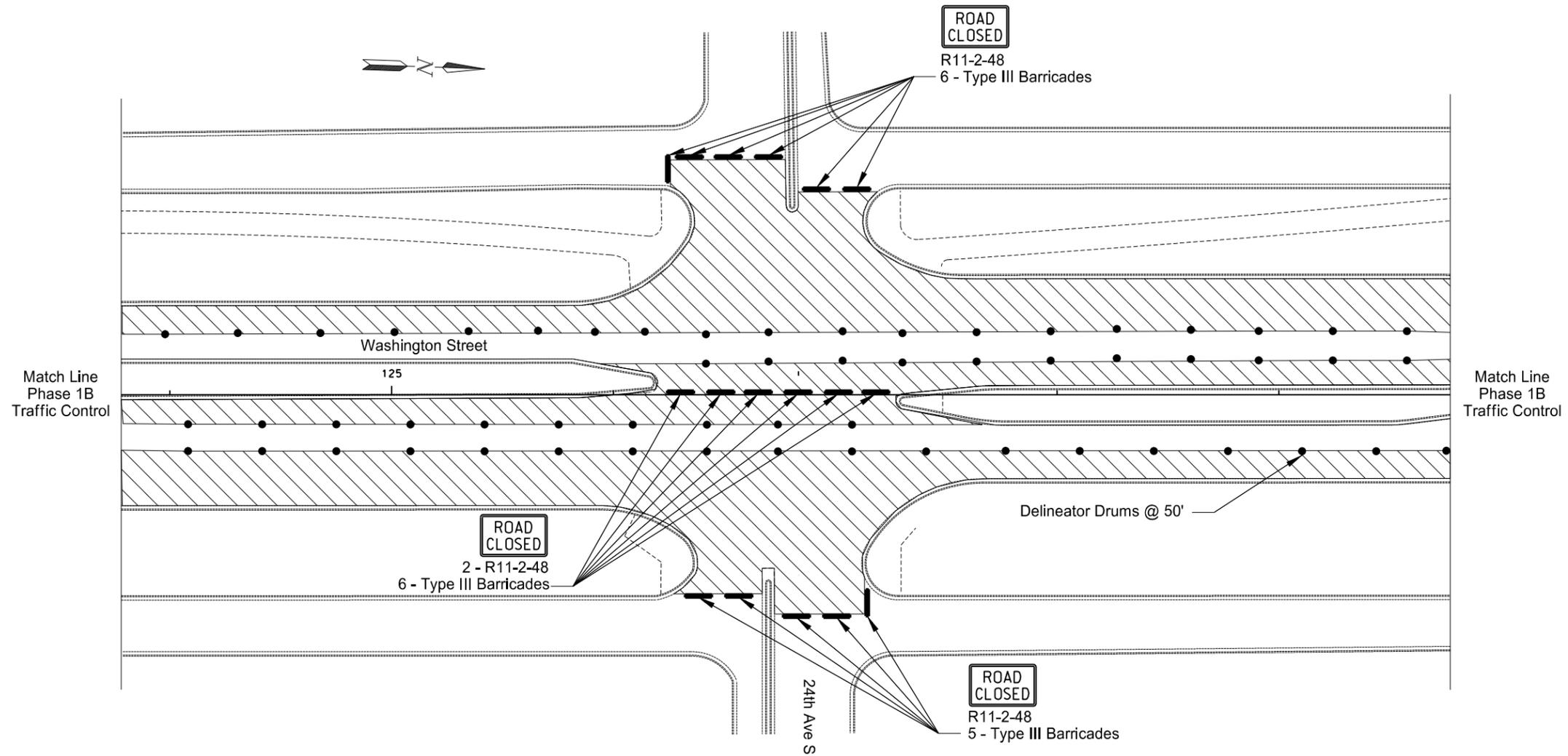
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	28

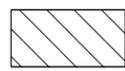


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Traffic Control Phase 1D  
Concrete Pavement Repair & Grinding  
28th Ave S Intersection

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	29

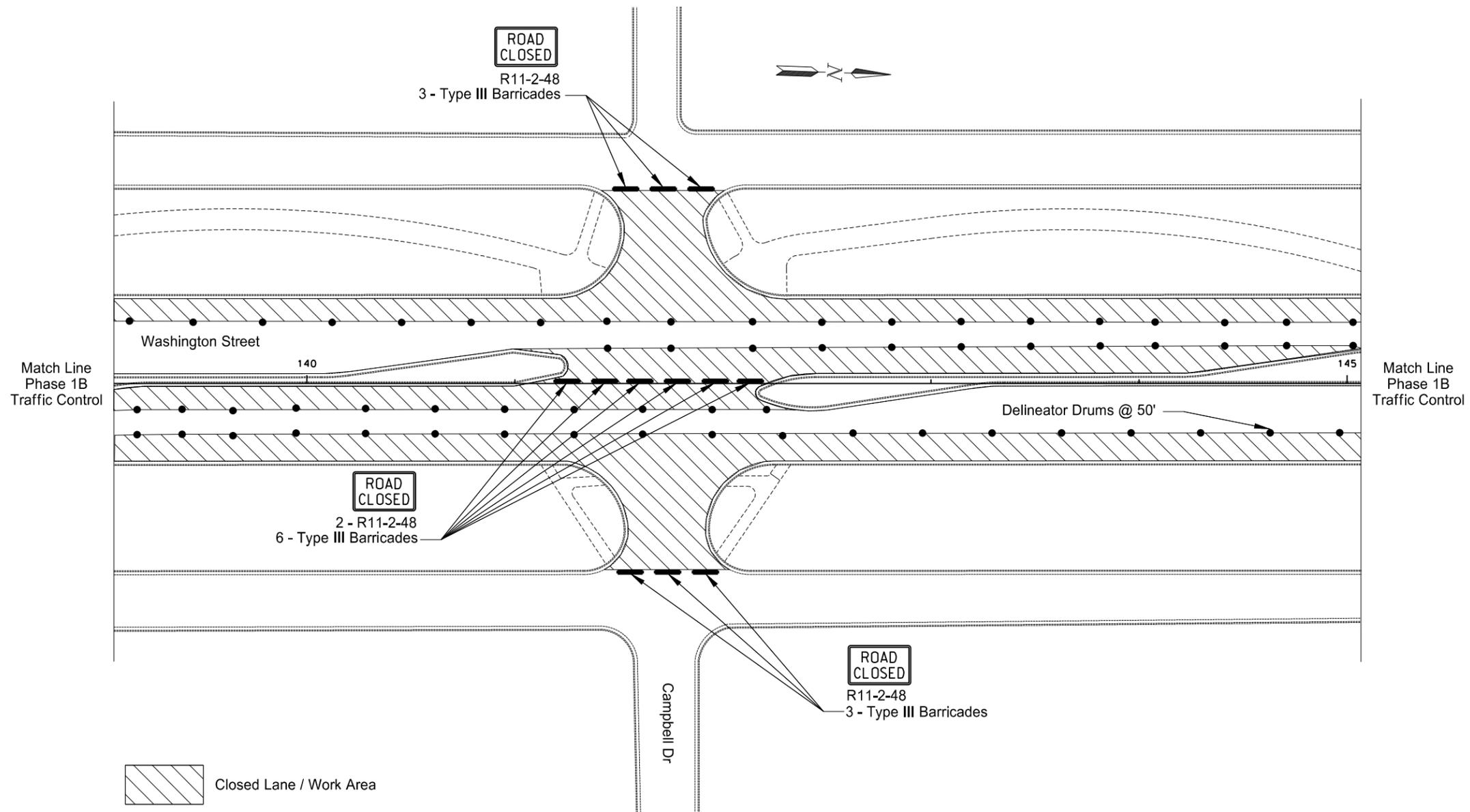


 Closed Lane / Work Area

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Traffic Control Phase 1D  
Concrete Pavement Repair & Grinding  
24th Ave S Intersection

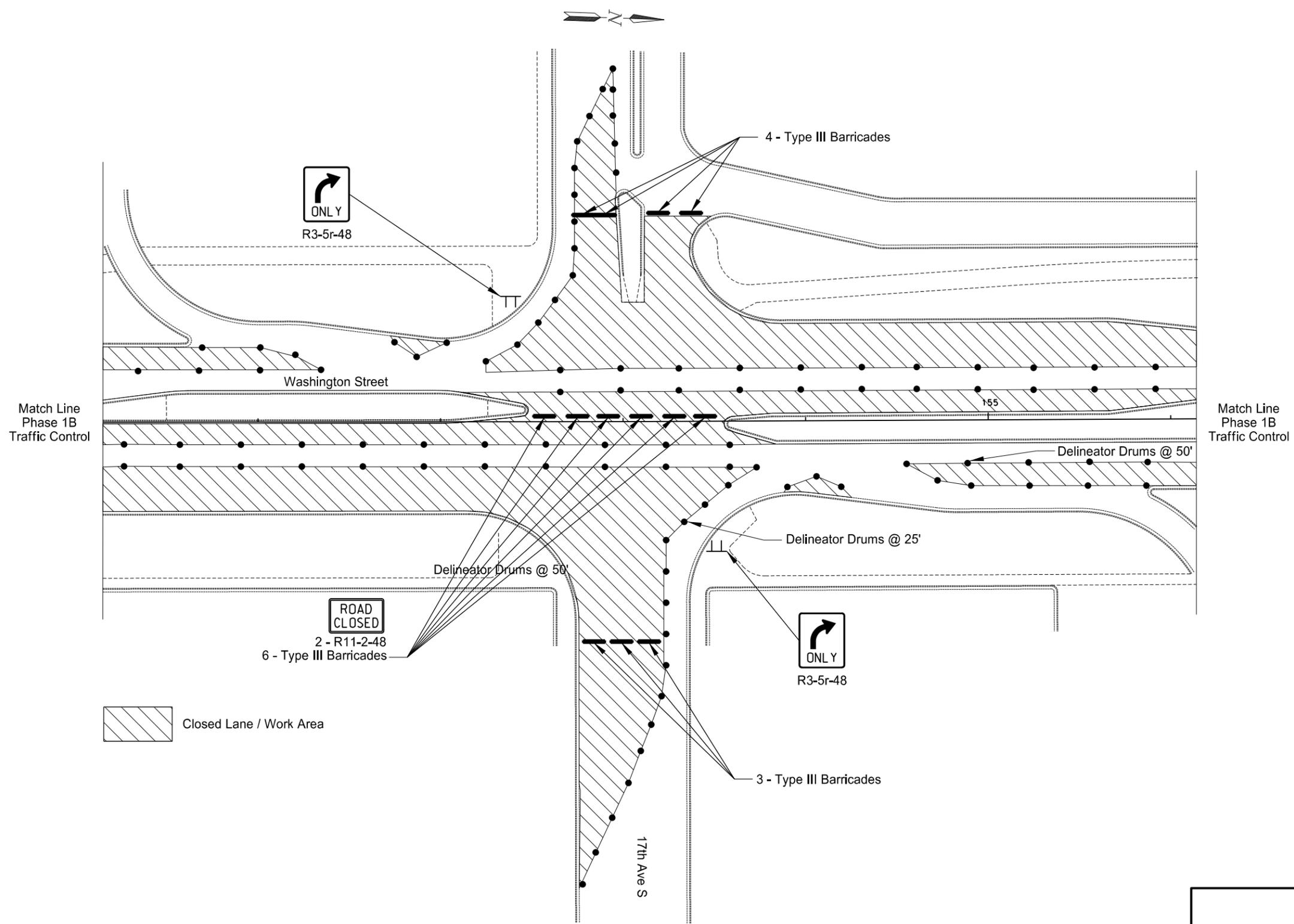
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	30



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Traffic Control Phase 1D  
Concrete Pavement Repair & Grinding  
Campbell Drive Intersection

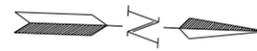
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	31



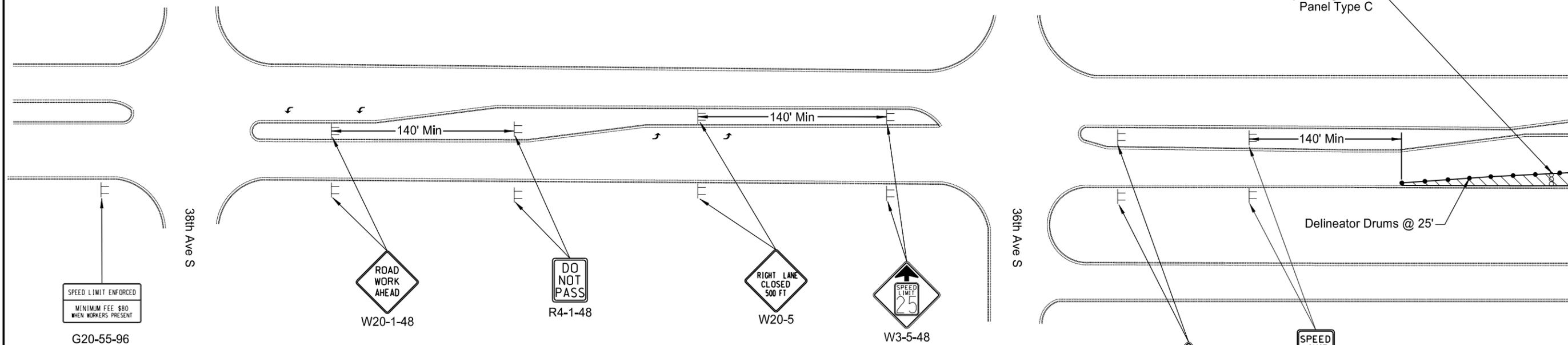
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Traffic Control Phase 1D  
 Concrete Pavement Repair & Grinding  
 17th Ave S Intersection

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	32



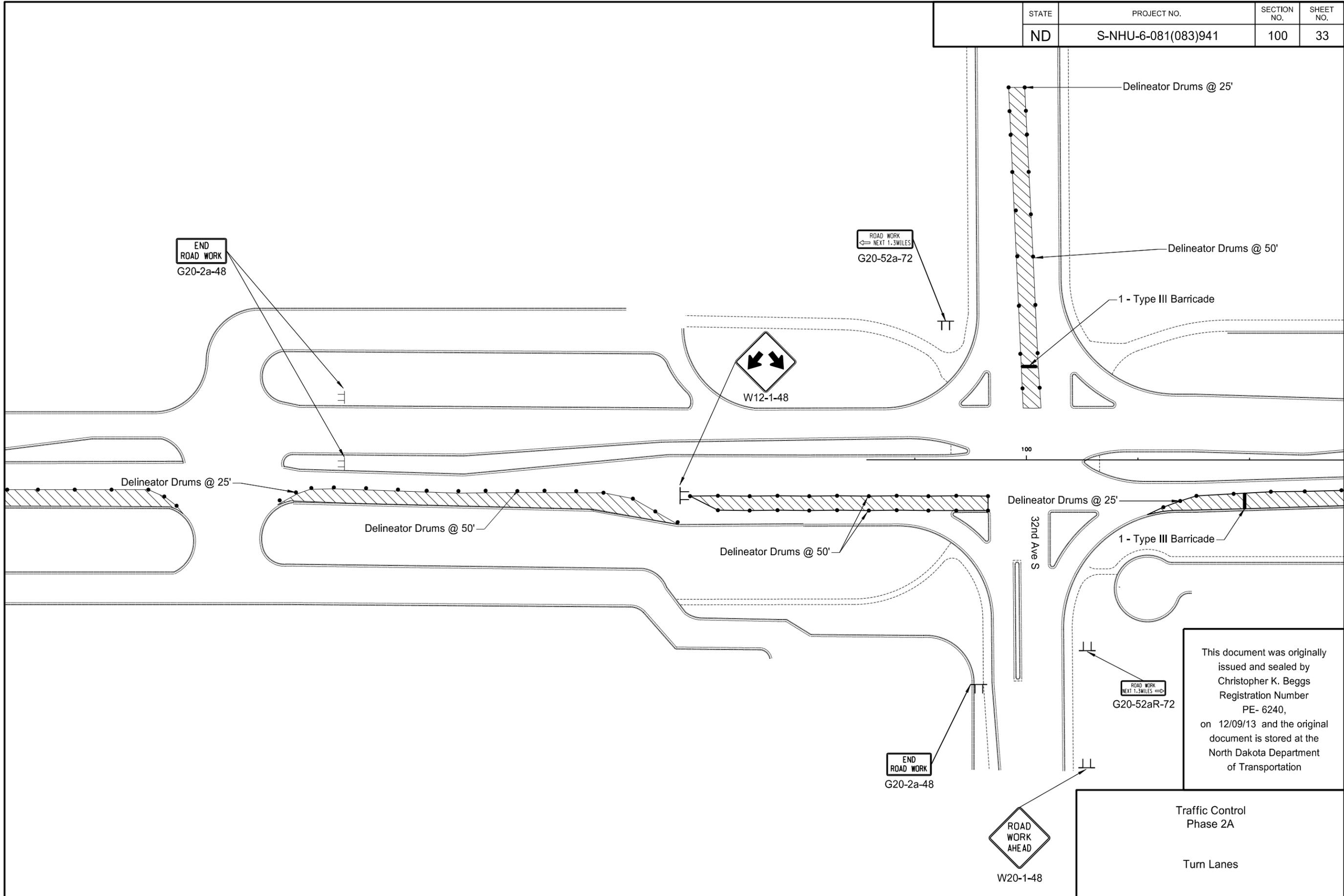
Sequencing Arrow  
Panel Type C



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Traffic Control  
Phase 2A  
  
Turn Lanes

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	33



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Traffic Control Phase 2A  
Turn Lanes

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	34



END  
ROAD WORK  
G20-2a-48

1 - Type III Barricade

1 - Type III Barricade

Delineator Drums @ 25'

Delineator Drums @ 50'

32nd Ave S

100



W20-1-48



W20-1-48

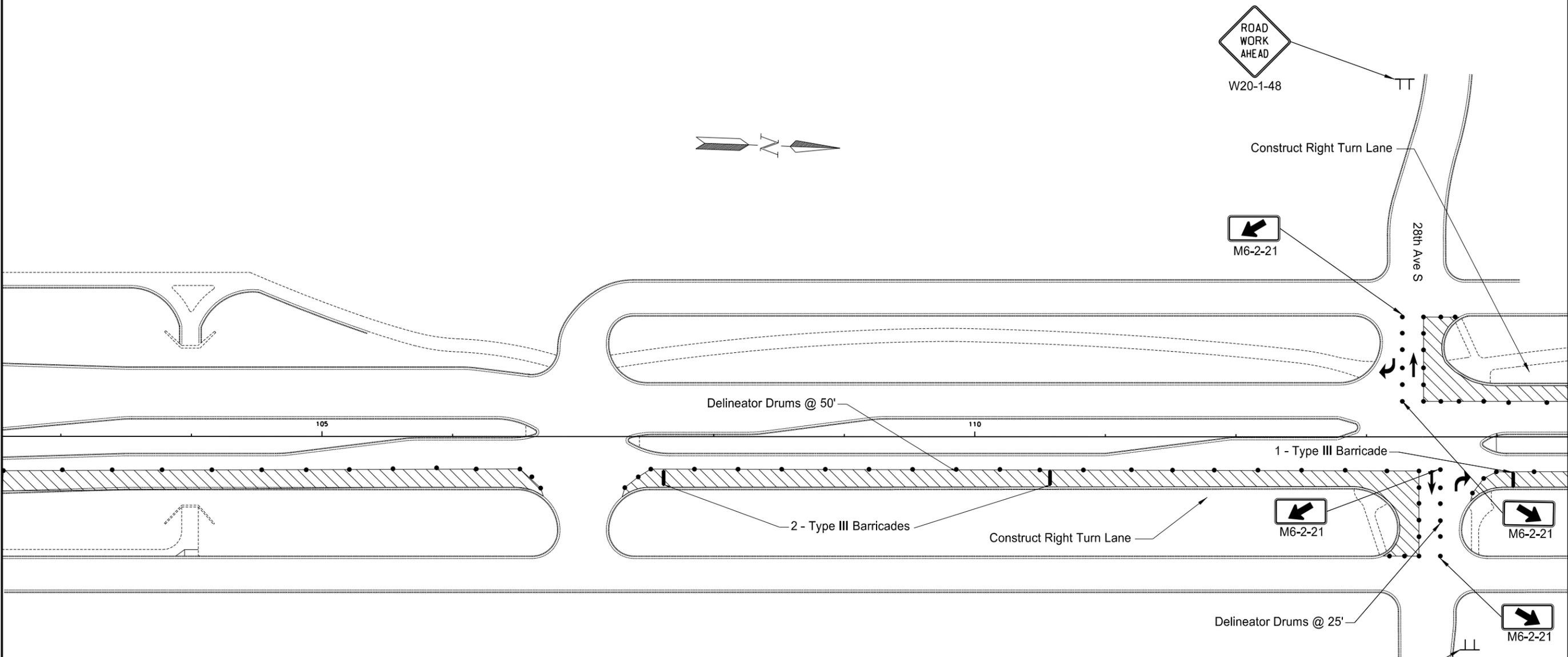
ROAD WORK  
NEXT 1.3 MILES  
G20-52a-72

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Traffic Control  
Phase 2A

Turn Lanes

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	35



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Traffic Control Phase 2A  
Turn Lanes

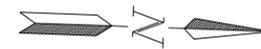
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	36



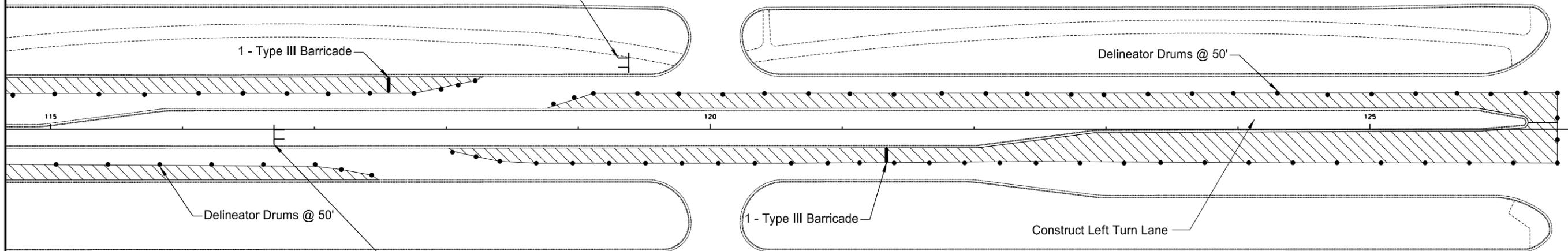
W20-1-48



W1-4-48



24th Ave S



Closed Lane / Work Area

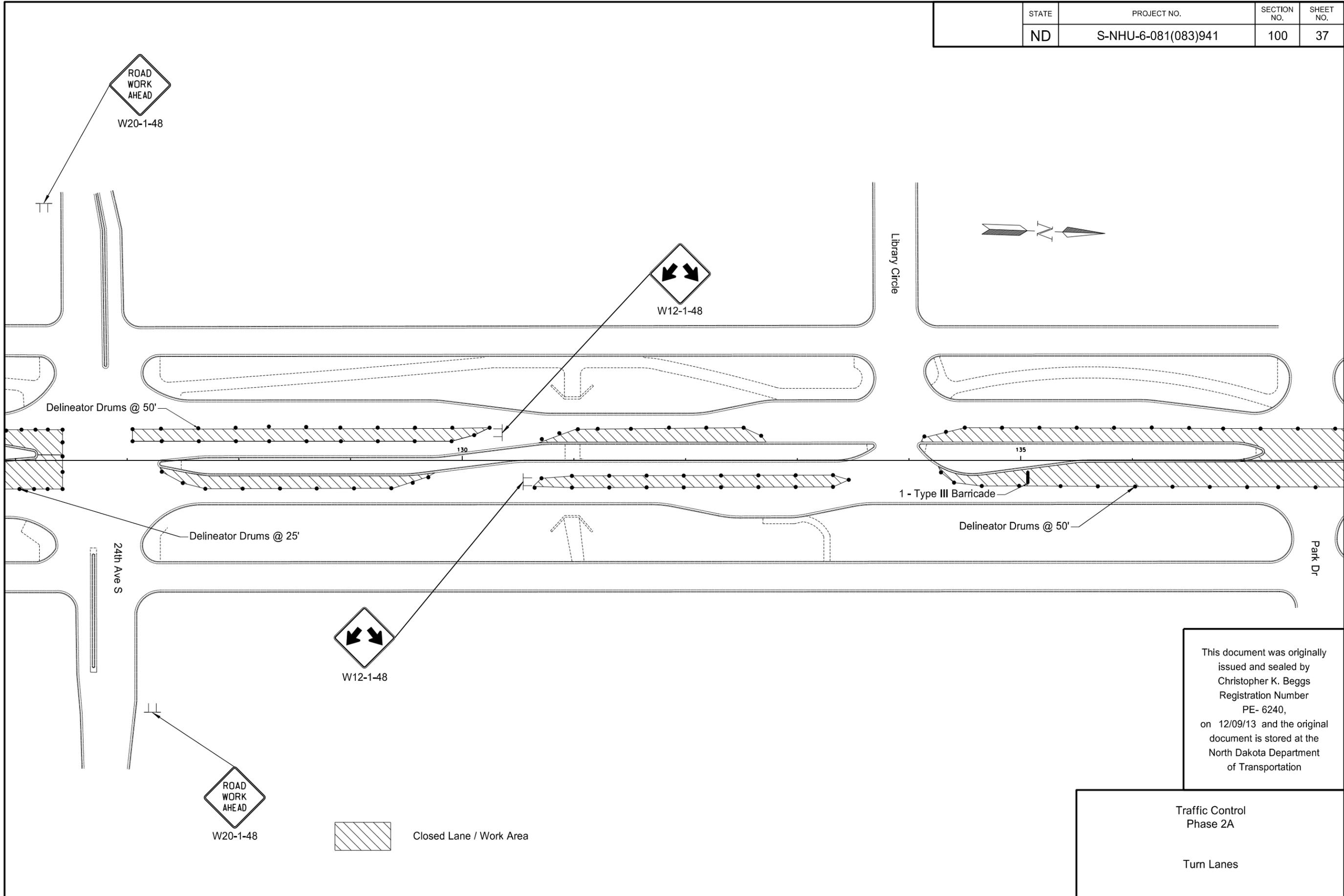


W1-4-48

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Traffic Control Phase 2A  
Turn Lanes

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	37

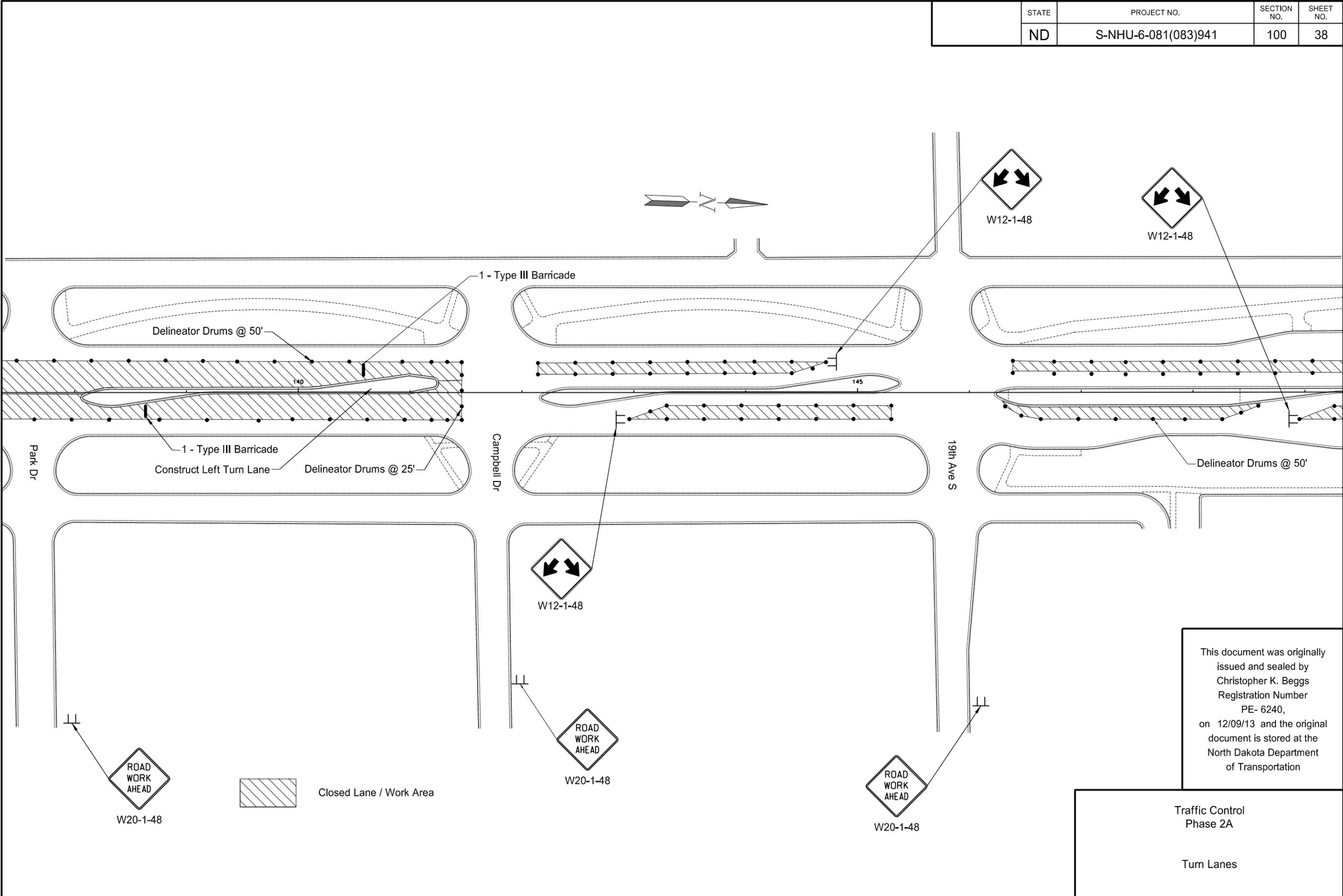


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Traffic Control Phase 2A

Turn Lanes

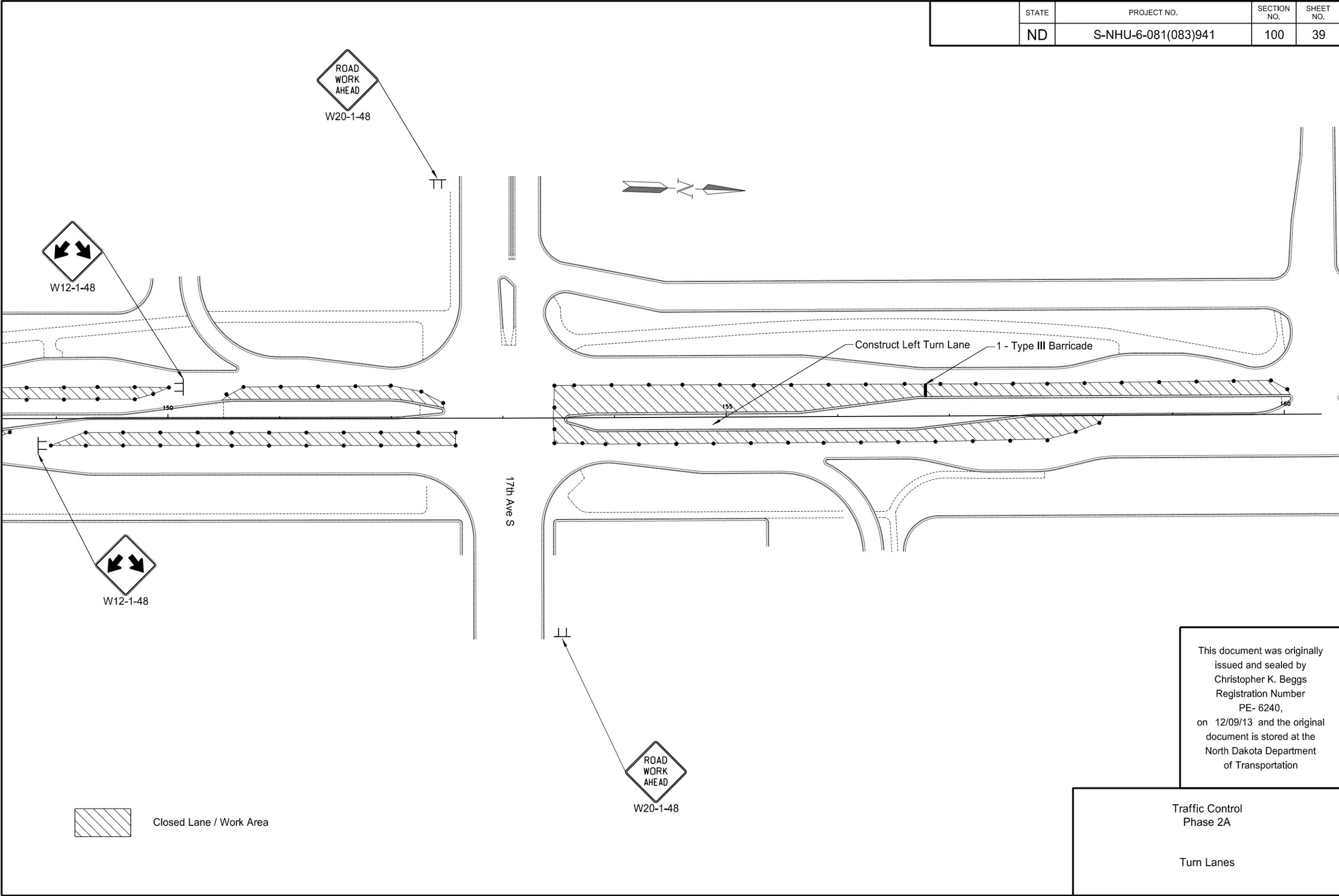
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	38



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Traffic Control Phase 2A  
Turn Lanes

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	39

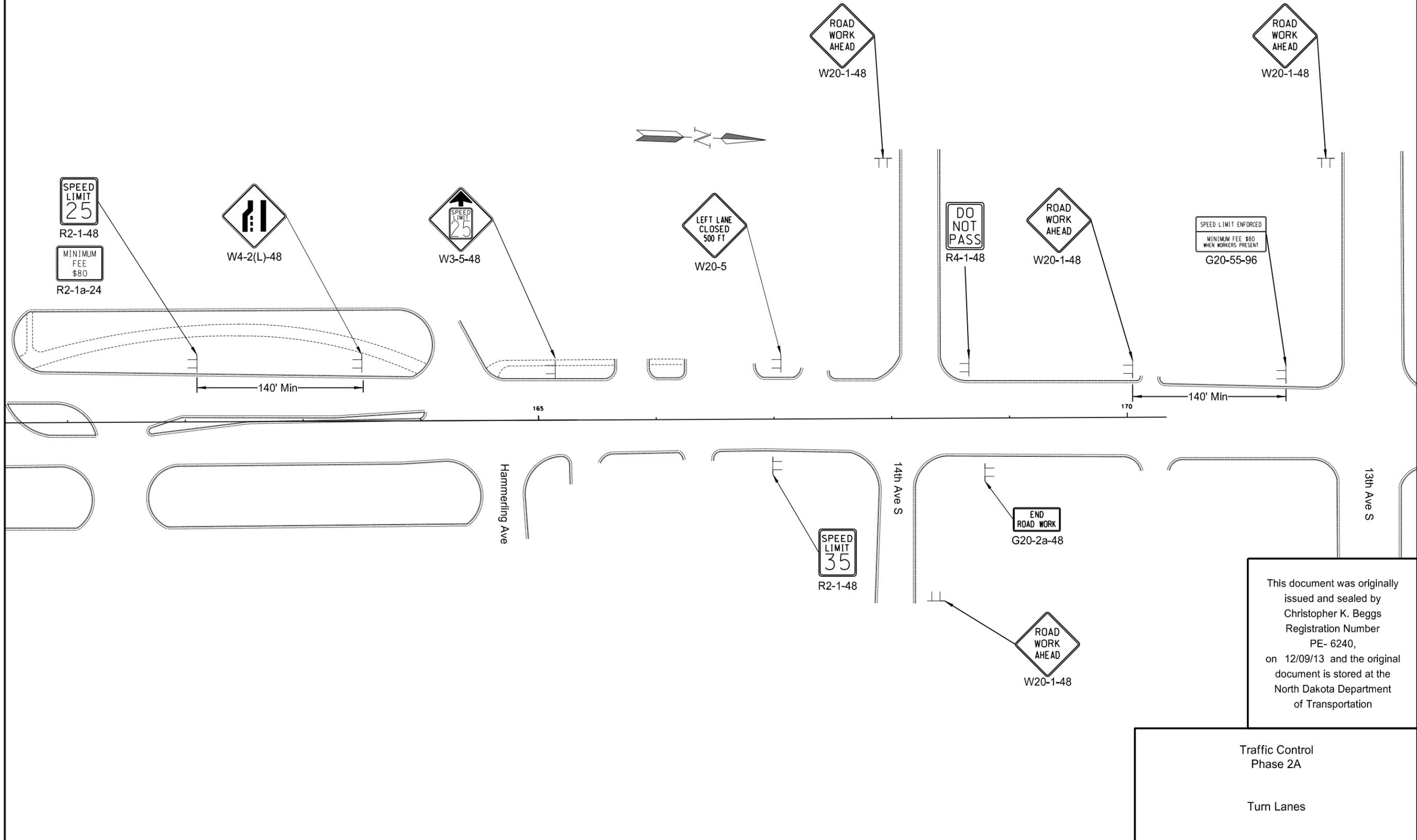


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Traffic Control Phase 2A  
Turn Lanes

 Closed Lane / Work Area

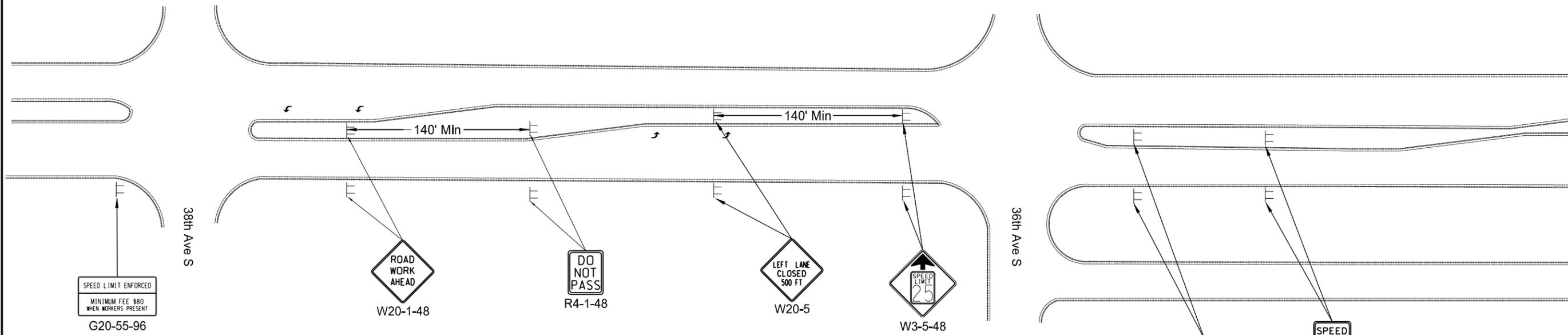
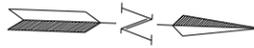
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	40



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Traffic Control Phase 2A  
Turn Lanes

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	S-NHU-6-081(083)941	100	41



SPEED LIMIT ENFORCED  
MINIMUM FEE \$80  
WHEN WORKERS PRESENT

G20-55-96

ROAD WORK AHEAD

W20-1-48

DO NOT PASS

R4-1-48

LEFT LANE CLOSED 500 FT

W20-5

SPEED LIMIT 25

W3-5-48

W4-2(L)-48

SPEED LIMIT 25

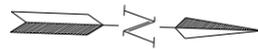
R2-1-48

MINIMUM FEE \$80  
R2-1a-24

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Traffic Control Phase 2B  
Turn Lanes

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	S-NHU-6-081(083)941	100	42



ROAD WORK  
 ← NEXT 1.3 MILES  
 G20-52a-72

ROAD WORK  
 500 FT  
 W20-1-48

100

32nd Ave S

ROAD WORK  
 NEXT 1.3 MILES →  
 G20-52aR-72

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ROAD WORK AHEAD  
 W20-1-48

Traffic Control Phase 2B  
 Turn Lanes

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	S-NHU-6-081(083)941	100	43



LEFT LANE  
CLOSED  
AHEAD  
W20-5-48

ROAD  
WORK  
500 FT  
W20-1-48

END  
ROAD WORK  
G20-2a-48

ROAD WORK  
NEXT 1.3 MILES  
G20-52a-72

ROAD  
WORK  
AHEAD  
W20-1-48

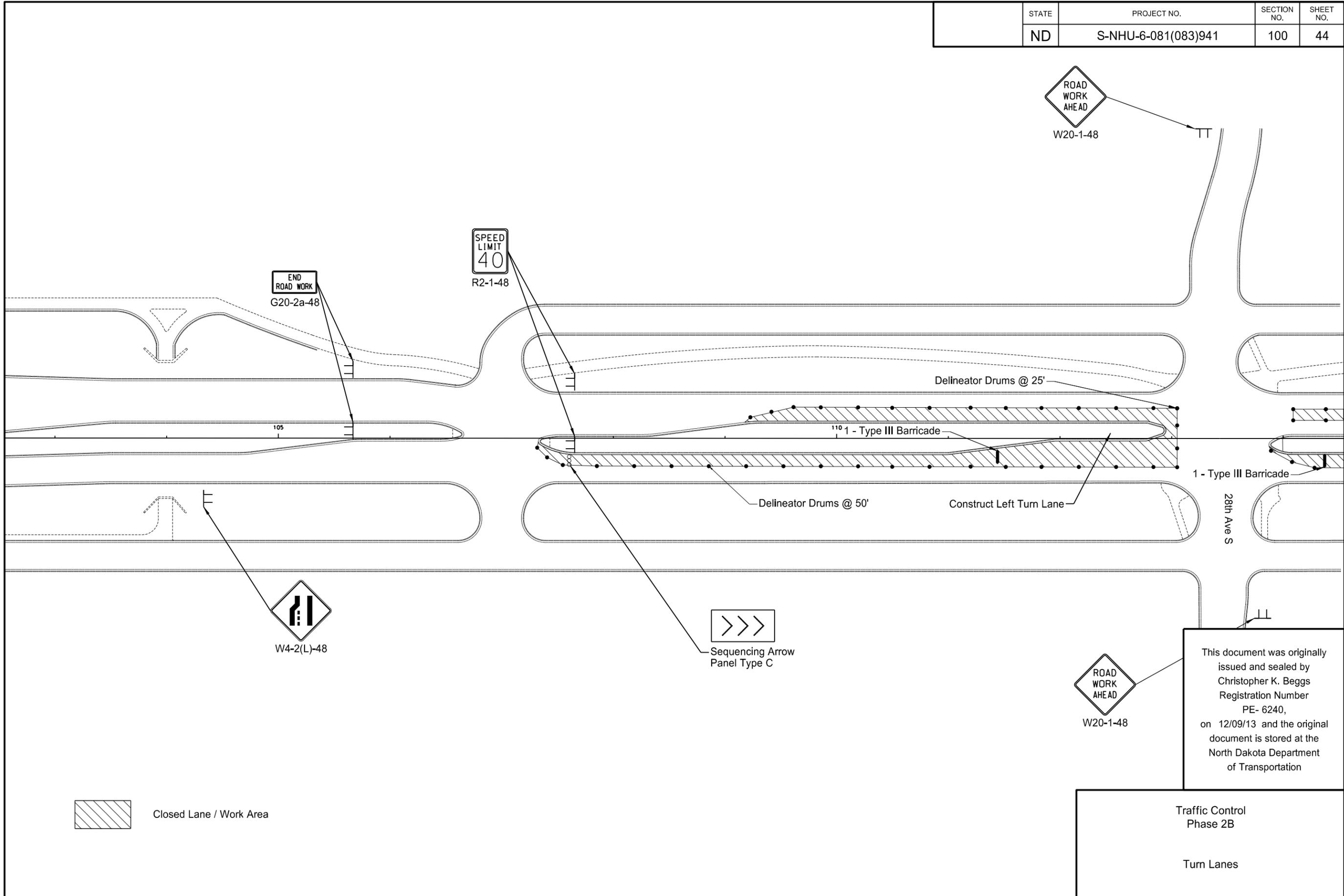
32nd Ave S

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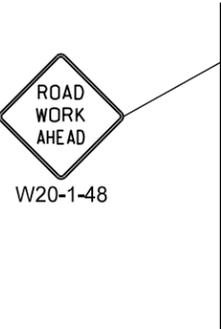
Traffic Control  
Phase 2B

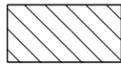
Turn Lanes

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	44



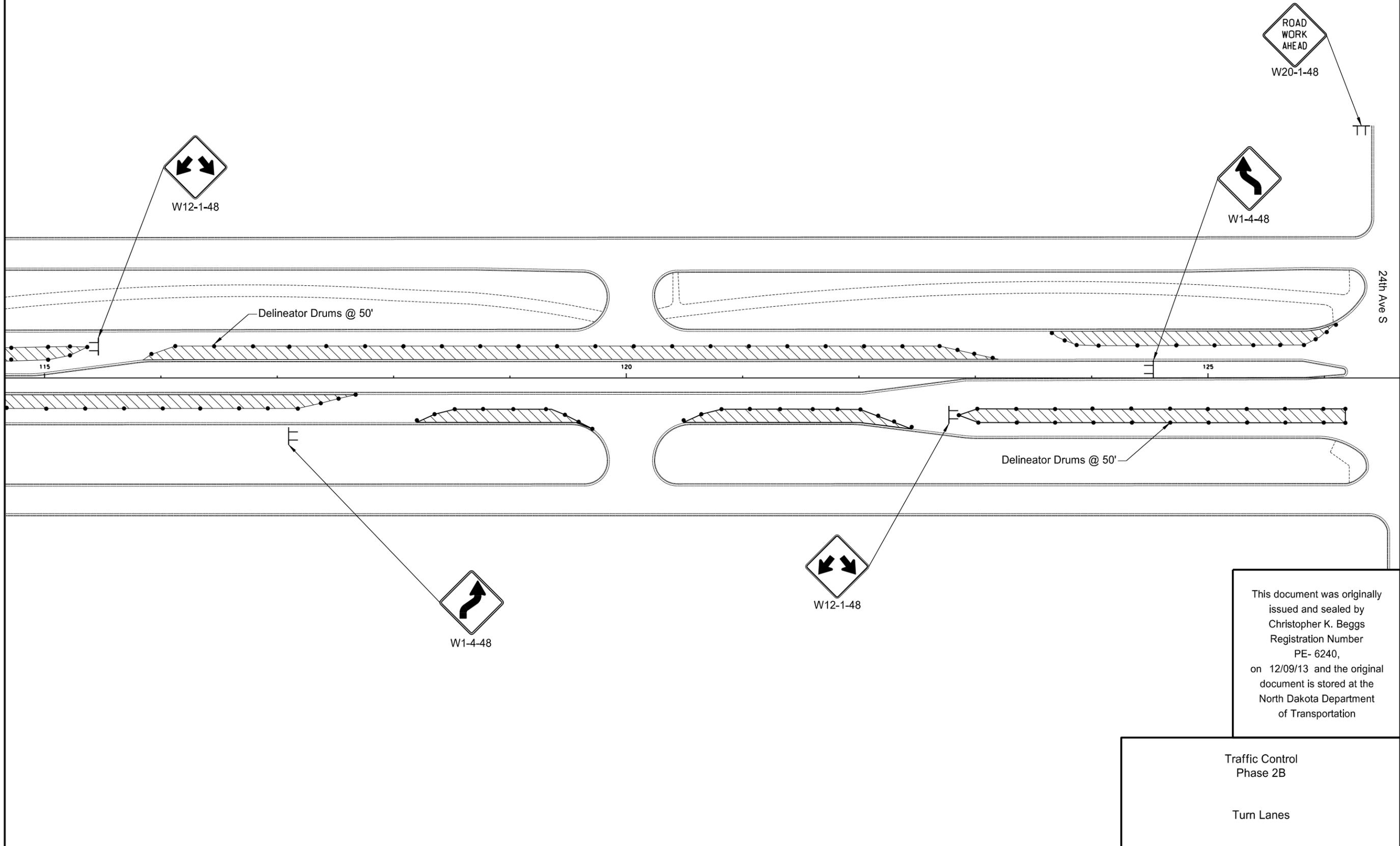
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 Closed Lane / Work Area

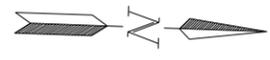
Traffic Control Phase 2B  
Turn Lanes

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	45

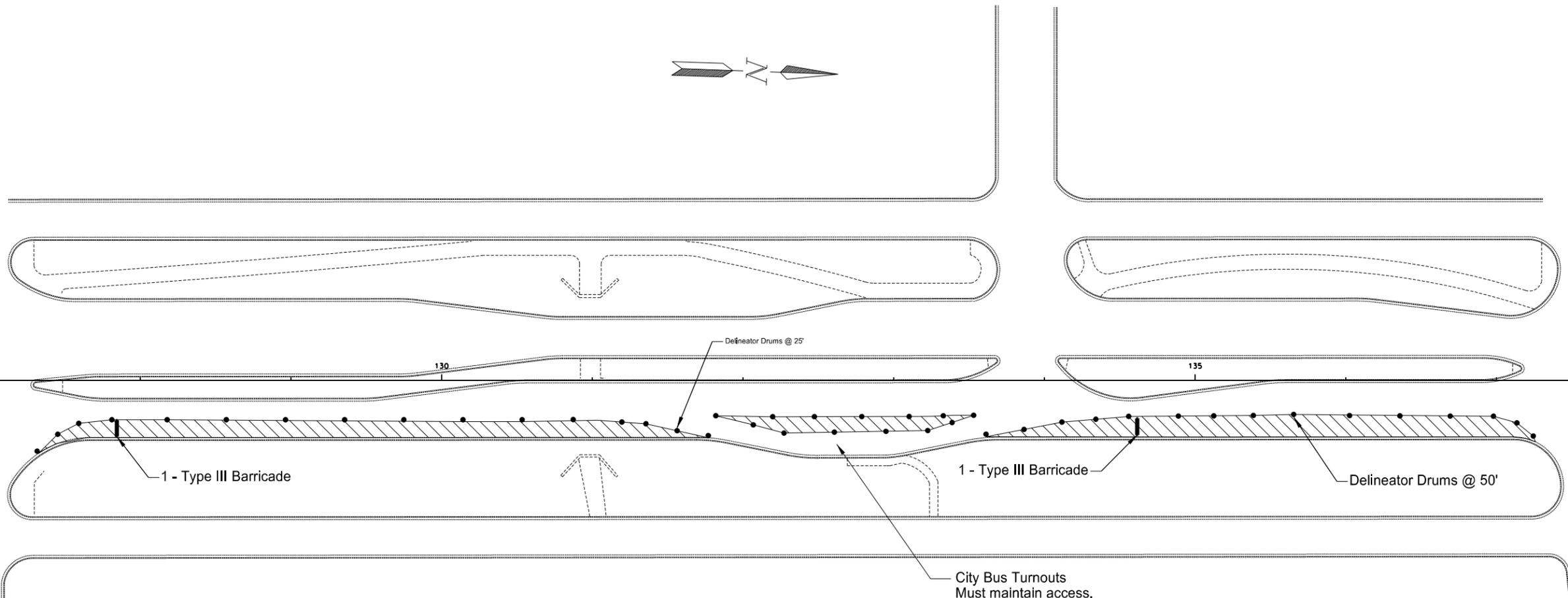


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	46

ROAD WORK AHEAD  
W20-1-48



24th Ave S



1 - Type III Barricade

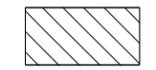
1 - Type III Barricade

Delineator Drums @ 50'

City Bus Turnouts  
Must maintain access.

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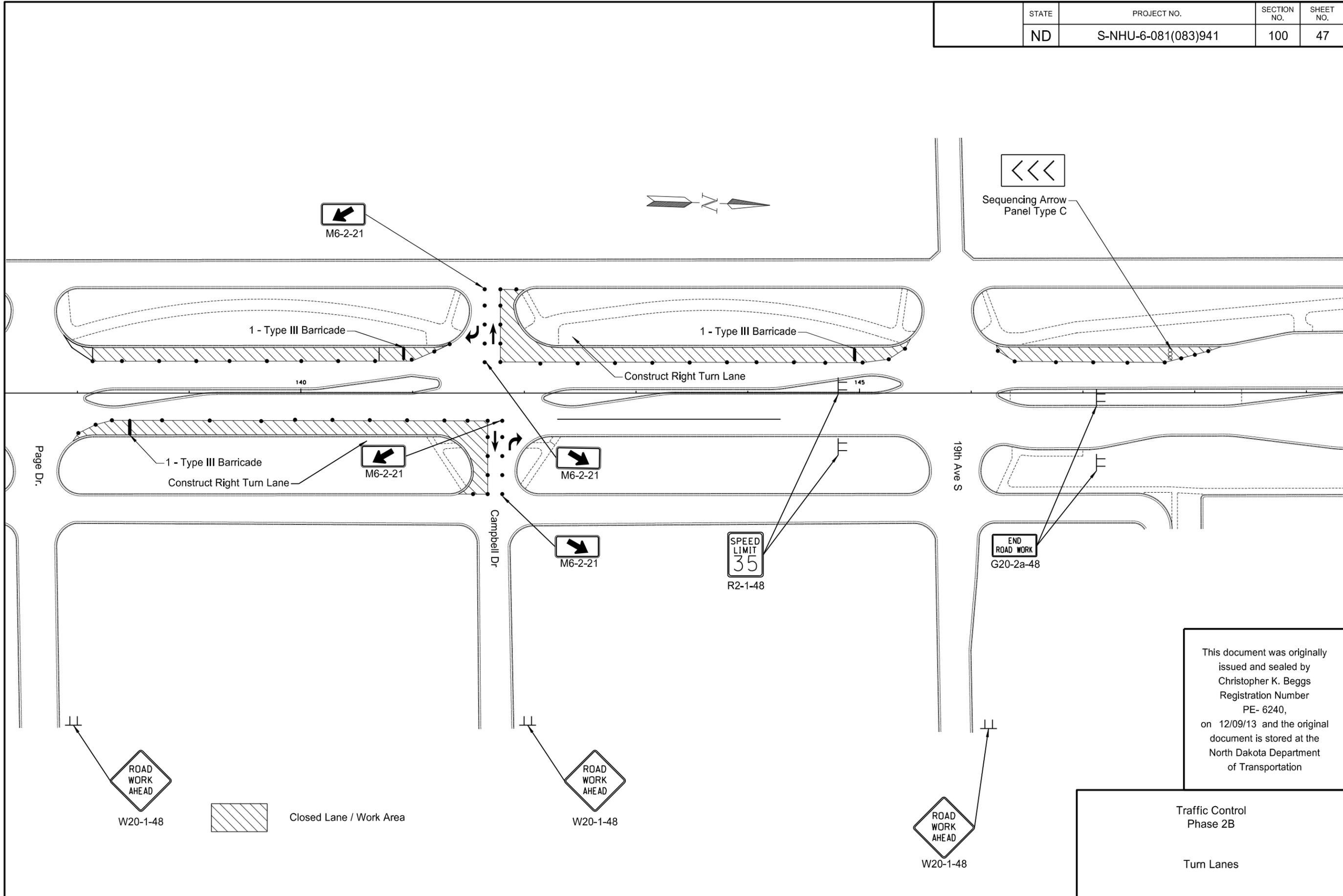
ROAD WORK AHEAD  
W20-1-48



Closed Lane / Work Area

Traffic Control Phase 2B  
Turn Lanes

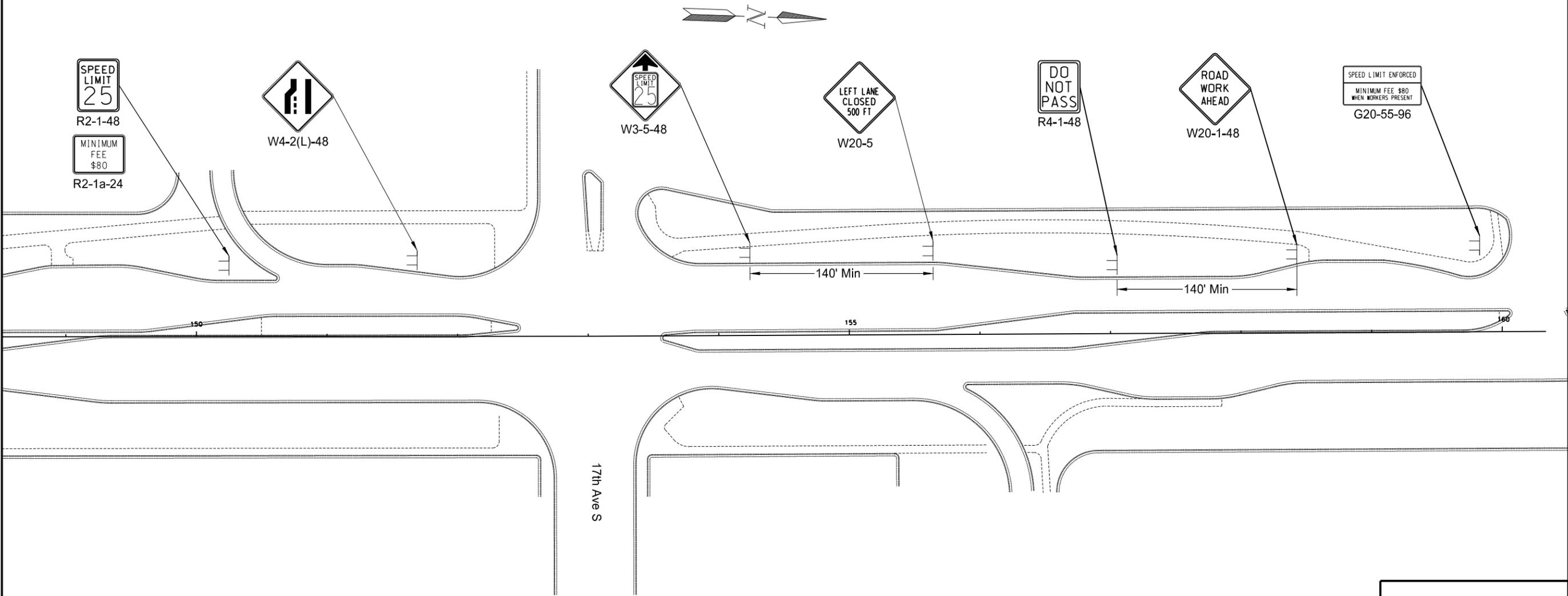
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	47



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Traffic Control Phase 2B  
Turn Lanes

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	100	48



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Traffic Control Phase 2B  
Turn Lanes

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	S-NHU-6-081(083)941	110	1

Sta/RP	Sign No.	Assembly No.	Flat Sheet For Signs		Sign Support Length				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		
			IV SF	XI SF	1st LF	2nd LF	3rd LF	4th LF		LF	1st LF	2nd LF	3rd LF	4th LF										
<b>S Wash. St</b>																								
	112+92-59' Lt			38.5															1		Mount on Mast Arm			
	113+01-70' Rt			15.0															1		Mount on Mast Arm			
	113+85-70' Lt			15.0															1		Mount on Mast Arm			
	114+06-56' Rt			38.5															1		Mount on Mast Arm			
	125+96-56' Lt			38.5															1		Mount on Mast Arm			
	127+58-56' Rt			38.5															1		Mount on Mast Arm			
	141+04-50' Lt			38.5															1		Mount on Mast Arm			
	141+33-64' Rt																		1		Mount on Mast Arm			
	142+17-69' Lt																		1		Mount on Mast Arm			
	142+40-56' Rt			38.5															1		Mount on Mast Arm			
	152+19-56' Lt			38.5															1		Mount on Mast Arm			
	153+86-56' Rt			38.5															1		Mount on Mast Arm			
<b>Sub Total</b>			0.0	338.0	<b>Total</b>				0.0										<b>Total</b>	0	12	0	0	
<b>Grand Total</b>			0.0	338.0	<b>Total</b>				0.0											<b>Total</b>	0	12	0	0

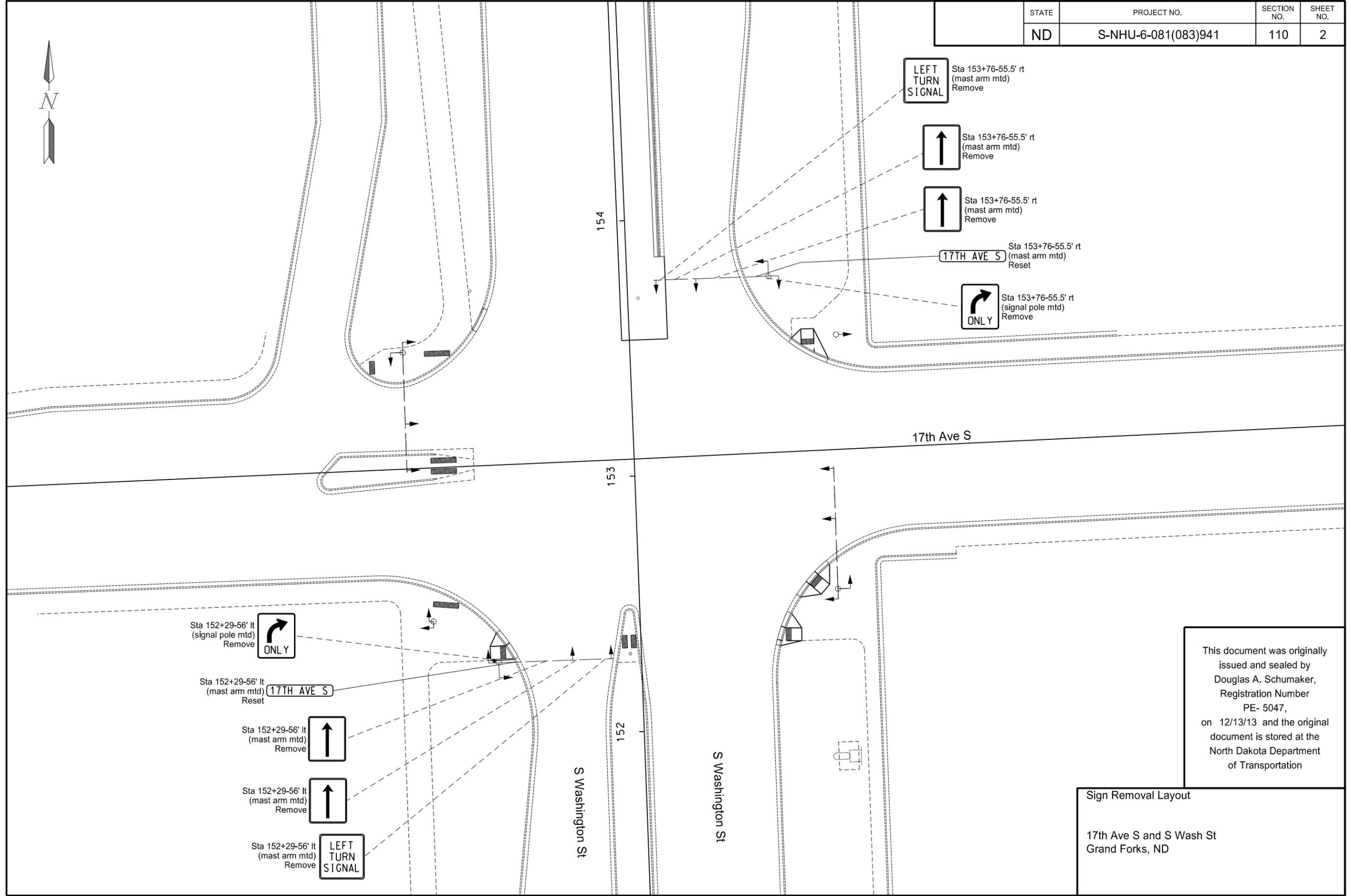
Basis of Estimate  
Sign Support Lengths

The sign support lengths have been calculated using the following vertical clearances:

Refer to mounting details on std dwg D-754-80 and the signal sheets.

<p>This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE-5047, on 12/13/2013 and the original document is stored at the North Dakota Department of Transportation</p>	<p>Sign Summary Perforated Tube</p> <p>South Washington St Grand Forks, ND</p>
--	--

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	110	2



-  Sta 153+76-55.5' rt (mast arm mtd) Remove
-  Sta 153+76-55.5' rt (mast arm mtd) Remove
-  Sta 153+76-55.5' rt (mast arm mtd) Remove
-  Sta 153+76-55.5' rt (mast arm mtd) Reset
-  Sta 153+76-55.5' rt (signal pole mtd) Remove

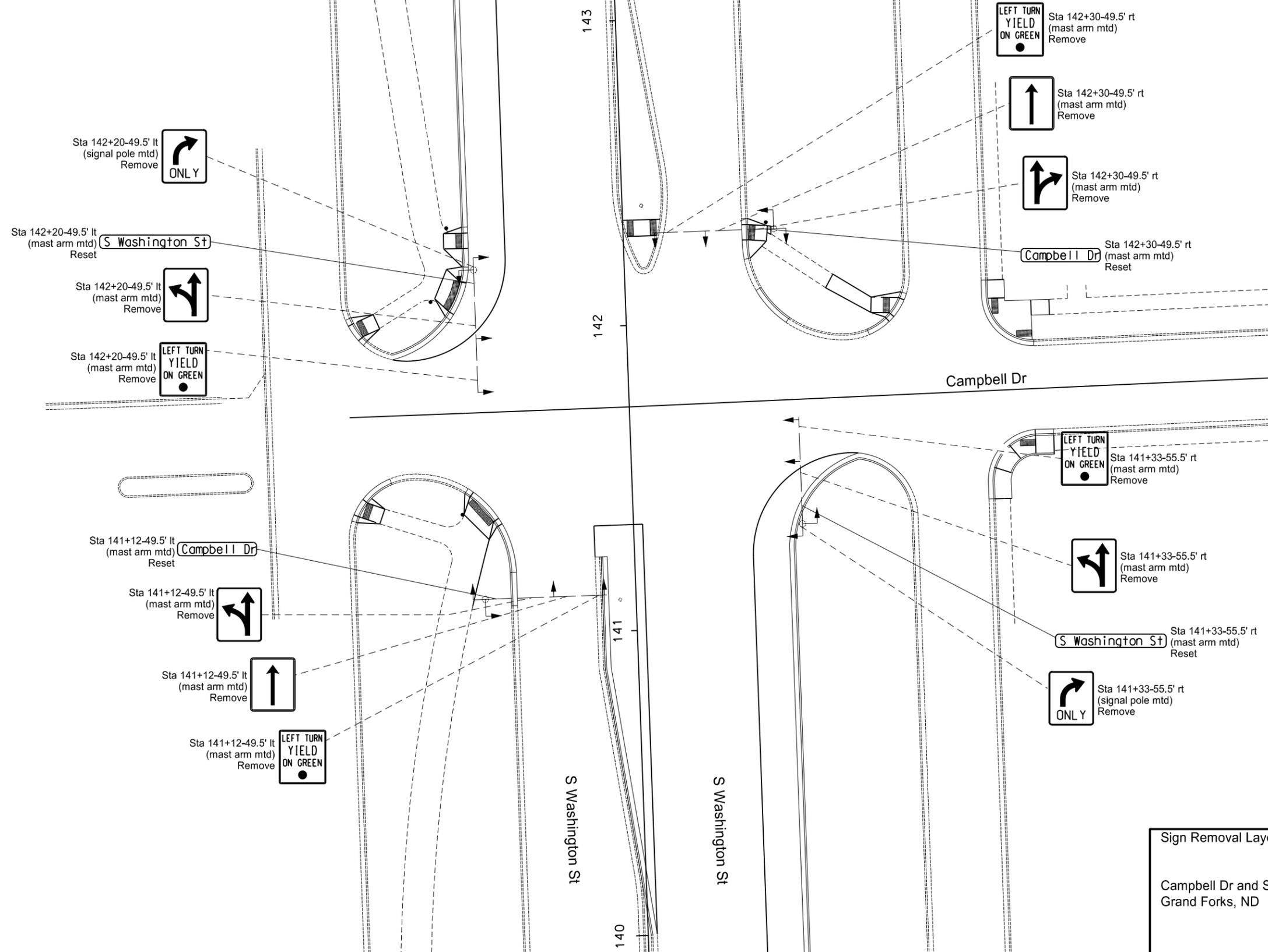
-  Sta 152+29-56' lt (signal pole mtd) Remove
-  Sta 152+29-56' lt (mast arm mtd) Reset
-  Sta 152+29-56' lt (mast arm mtd) Remove
-  Sta 152+29-56' lt (mast arm mtd) Remove
-  Sta 152+29-56' lt (mast arm mtd) Remove

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Sign Removal Layout  
17th Ave S and S Wash St  
Grand Forks, ND



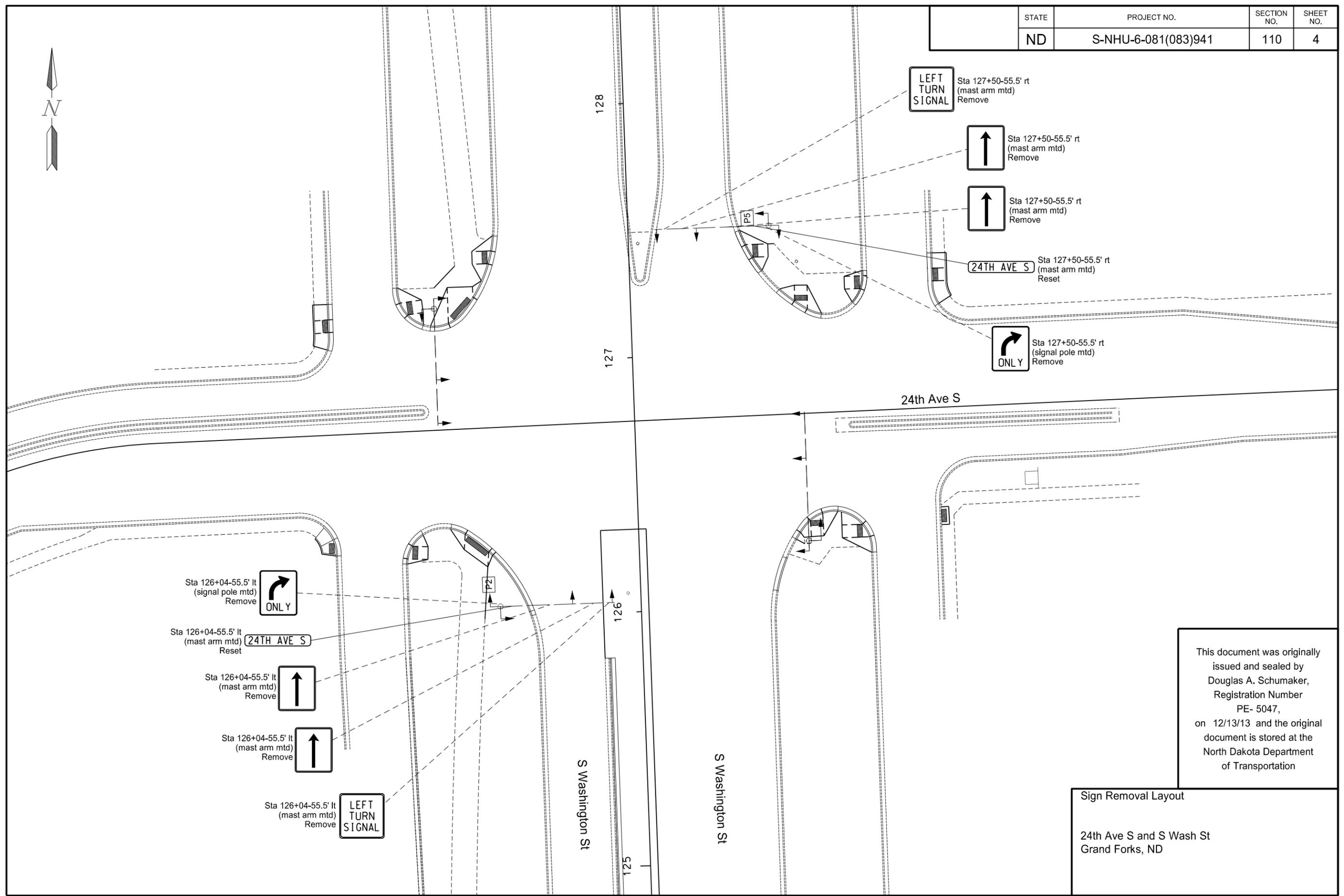
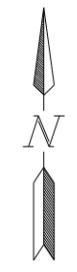
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	110	3



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Sign Removal Layout  
Campbell Dr and S Wash St  
Grand Forks, ND

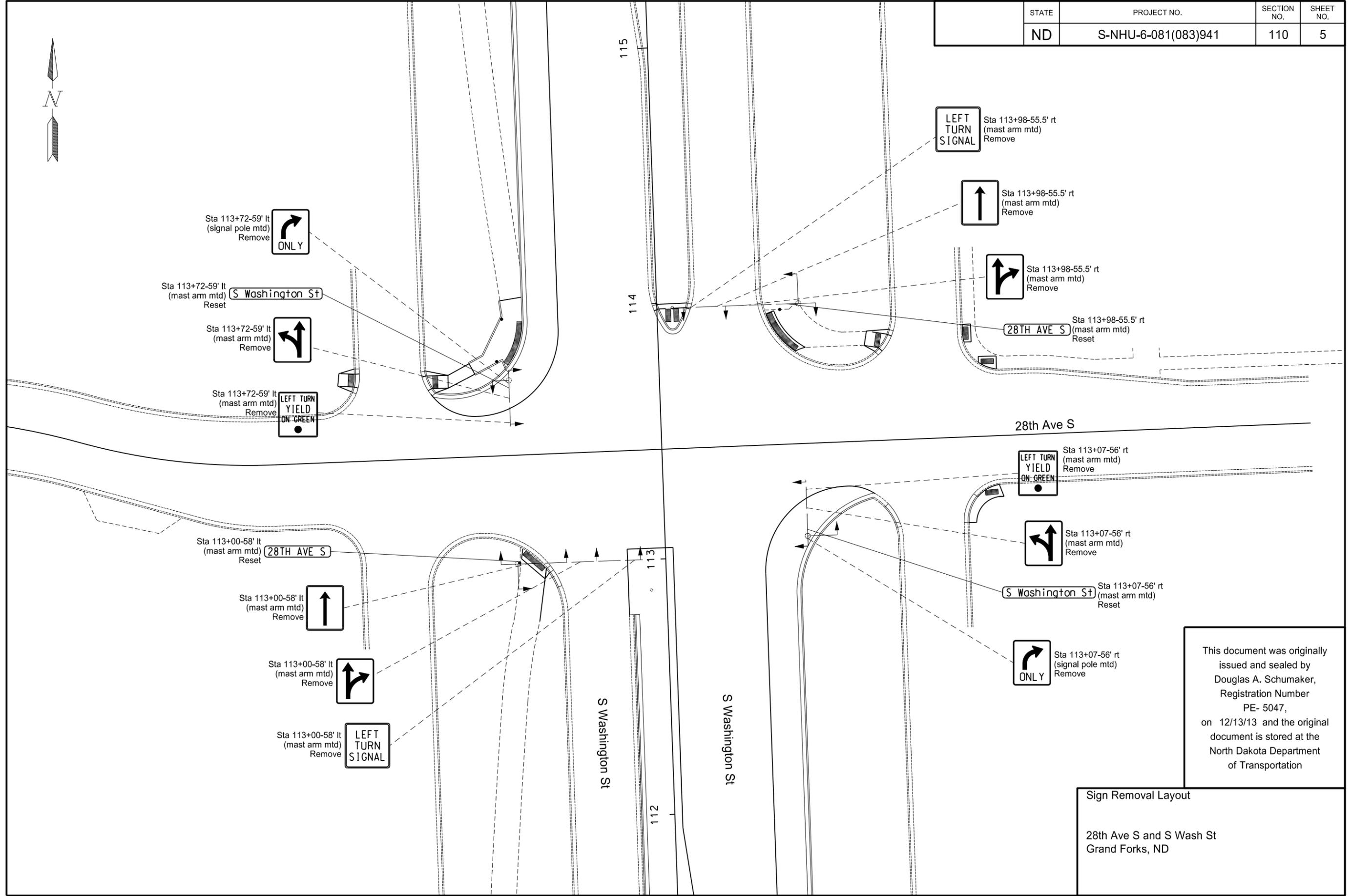
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	110	4



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Sign Removal Layout  
 24th Ave S and S Wash St  
 Grand Forks, ND

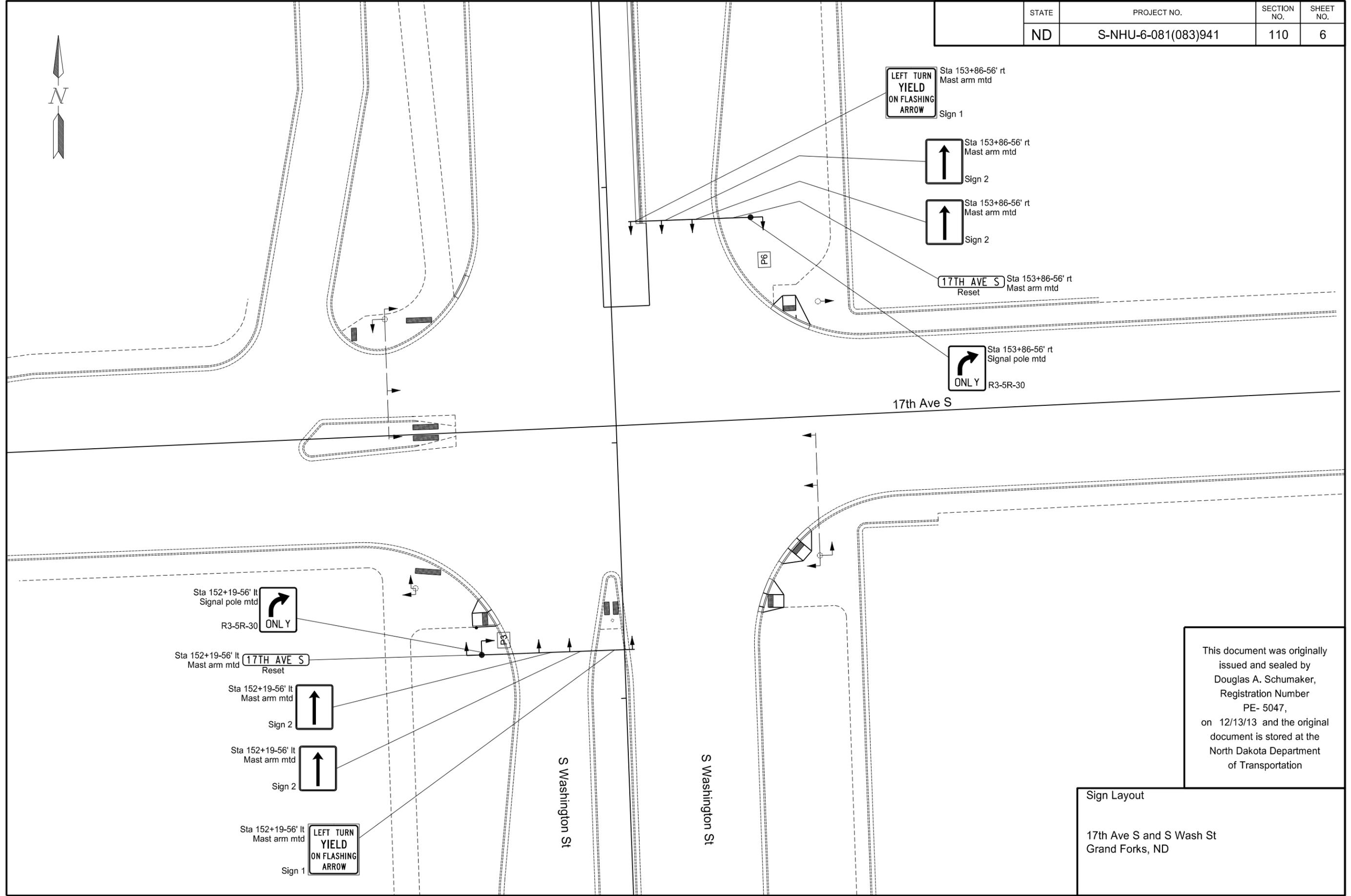
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	110	5



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Sign Removal Layout  
 28th Ave S and S Wash St  
 Grand Forks, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	110	6



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Sign Layout  
17th Ave S and S Wash St  
Grand Forks, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	110	7



Sta 142+17-69' lt  
Mast arm mtd  
**S Washington St**  
Reset

**LEFT TURN  
YIELD  
ON FLASHING  
ARROW**  
Sign 1  
Sta 142+40-56' rt  
Mast arm mtd

**↑**  
Sign 2  
Sta 142+40-56' rt  
Mast arm mtd

**↑**  
Sign 2  
Sta 142+40-56' rt  
Mast arm mtd

**Campbell Dr**  
Reset  
Sta 142+40-56' rt  
Mast arm mtd

**ONLY**  
R3-5R-30  
Sta 142+40-56' rt  
Signal pole mtd

Campbell Dr

Sta 141+04-50' lt  
Signal pole mtd  
R3-5R-30  
**ONLY**

Sta 141+04-50' lt  
Mast arm mtd  
**Campbell Dr**  
Reset

Sta 141+04-50' lt  
Mast arm mtd  
**↑**  
Sign 2

Sta 141+04-50' lt  
Mast arm mtd  
**↑**  
Sign 2

Sta 141+04-50' lt  
Mast arm mtd  
**LEFT TURN  
YIELD  
ON FLASHING  
ARROW**  
Sign 1

**S Washington St**  
Reset  
Sta 141+33-64' rt  
Mast arm mtd

S Washington St

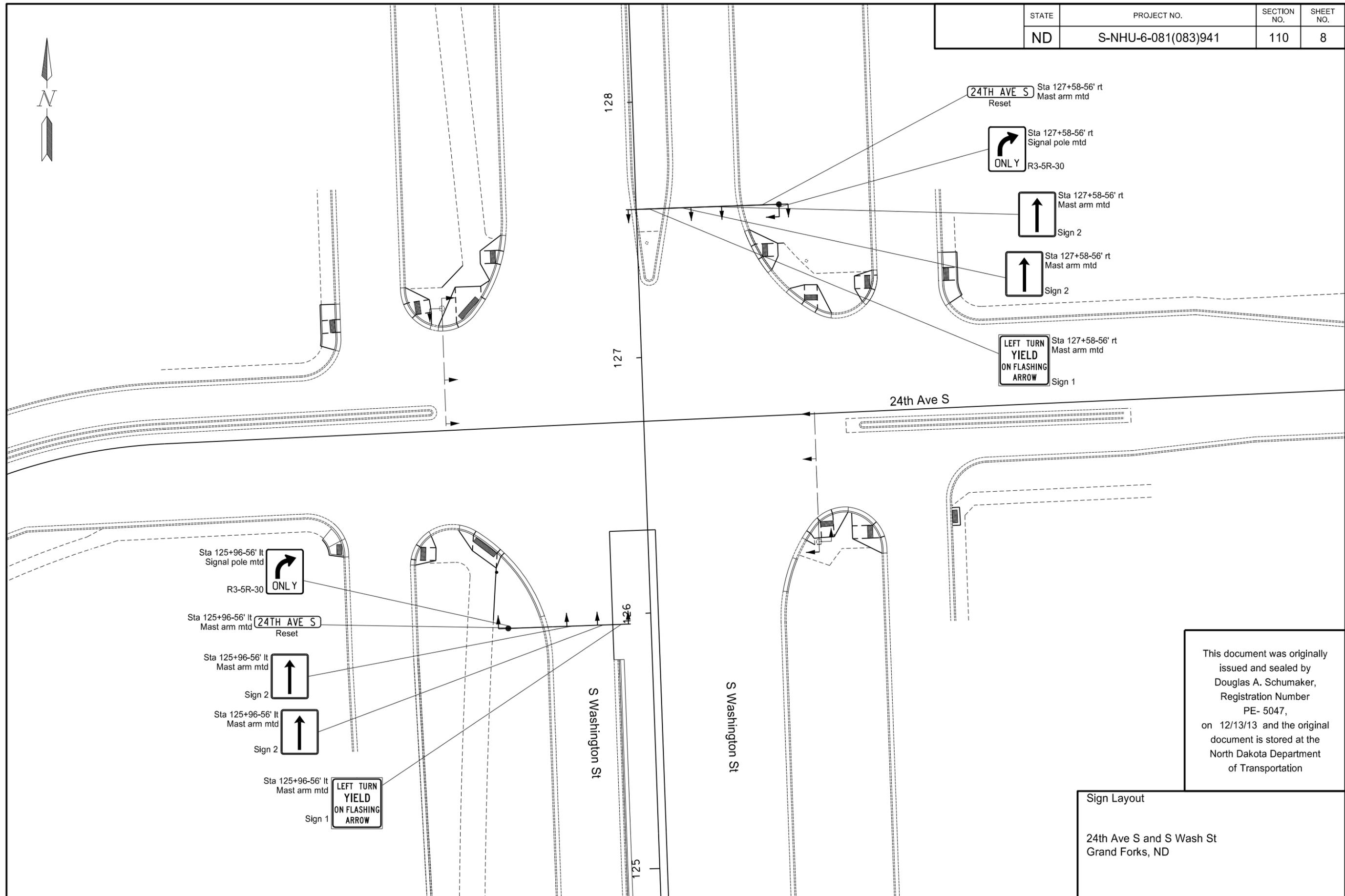
S Washington St

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Sign Layout  
Campbell Dr and S Wash St  
Grand Forks, ND



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	110	8



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Sign Layout

24th Ave S and S Wash St  
Grand Forks, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	110	9



Sta 113+85-70' Lt  
Mast arm mtd  
**S Washington St**  
Reset

Sta 113+85-70' Lt  
Signal pole mtd  
R3-5R-30  
**ONLY**

Sta 113+85-70' Lt  
Mast arm mtd  
R3-6L-30

**LEFT TURN  
YIELD  
ON FLASHING  
ARROW**  
Sign 1

Sta 114+06-56' rt  
Mast arm mtd  
Sign 2

Sta 114+06-56' rt  
Mast arm mtd  
Sign 2

**28TH AVE S**  
Reset

Sta 114+06-56' rt  
Signal pole mtd  
**ONLY**  
R3-5R-30

28th Ave S

Sta 112+92-59' Lt  
Signal pole mtd  
R3-5R-30  
**ONLY**

Sta 112+92-59' Lt  
Mast arm mtd  
**28TH AVE S**  
Reset

Sta 112+92-59' Lt  
Mast arm mtd  
Sign 2

Sta 112+92-59' Lt  
Mast arm mtd  
Sign 2

Sta 112+92-59' Lt  
Mast arm mtd  
**LEFT TURN  
YIELD  
ON FLASHING  
ARROW**  
Sign 1

S Washington St

S Washington St

Sta 113+01-70' rt  
Mast arm mtd  
R3-6L-30

Sta 113+01-70' rt  
Mast arm mtd  
**ONLY**  
R3-5R-30

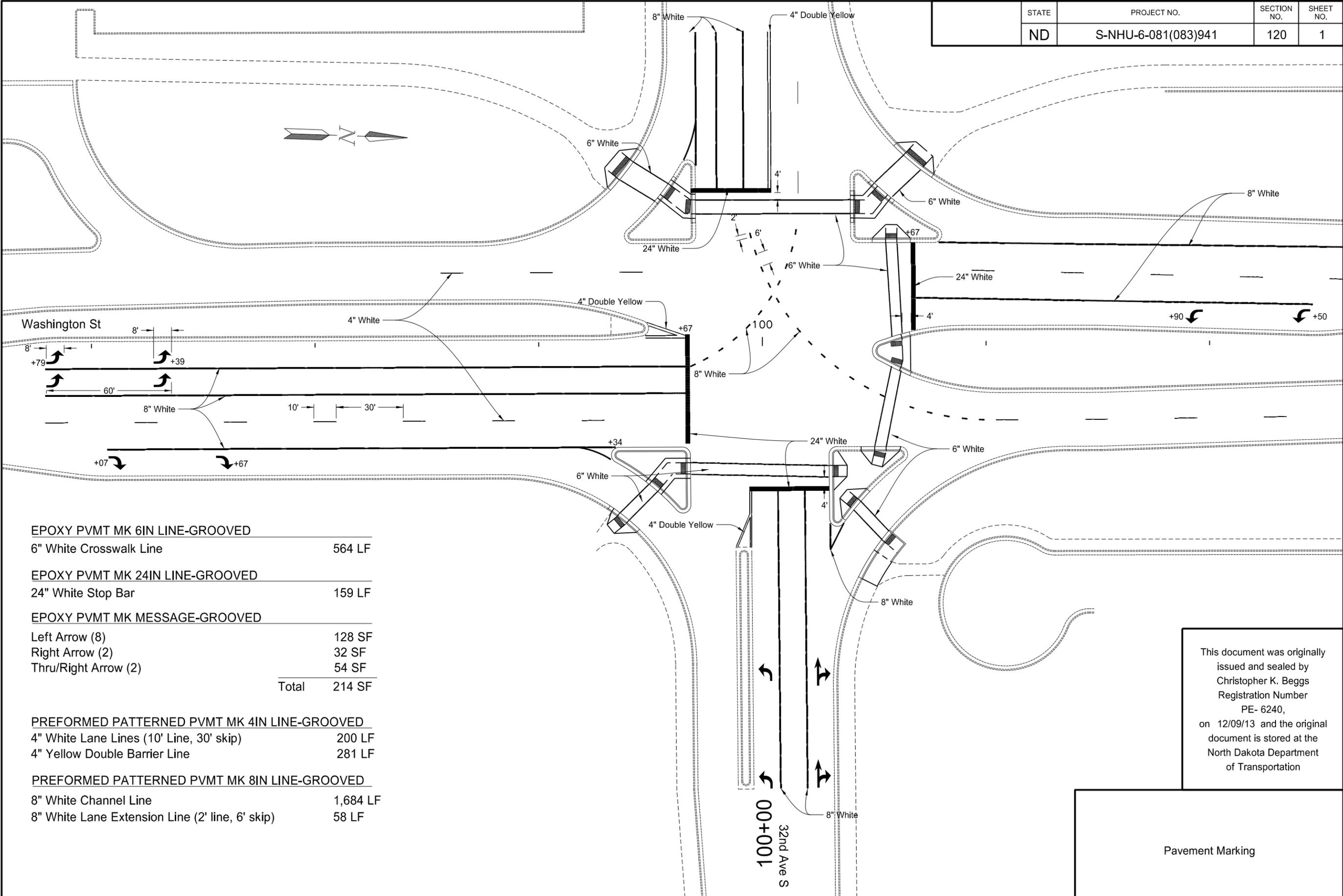
**S Washington St**  
Reset

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Sign Layout  
  
28th Ave S and S Wash St  
Grand Forks, ND



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	120	1

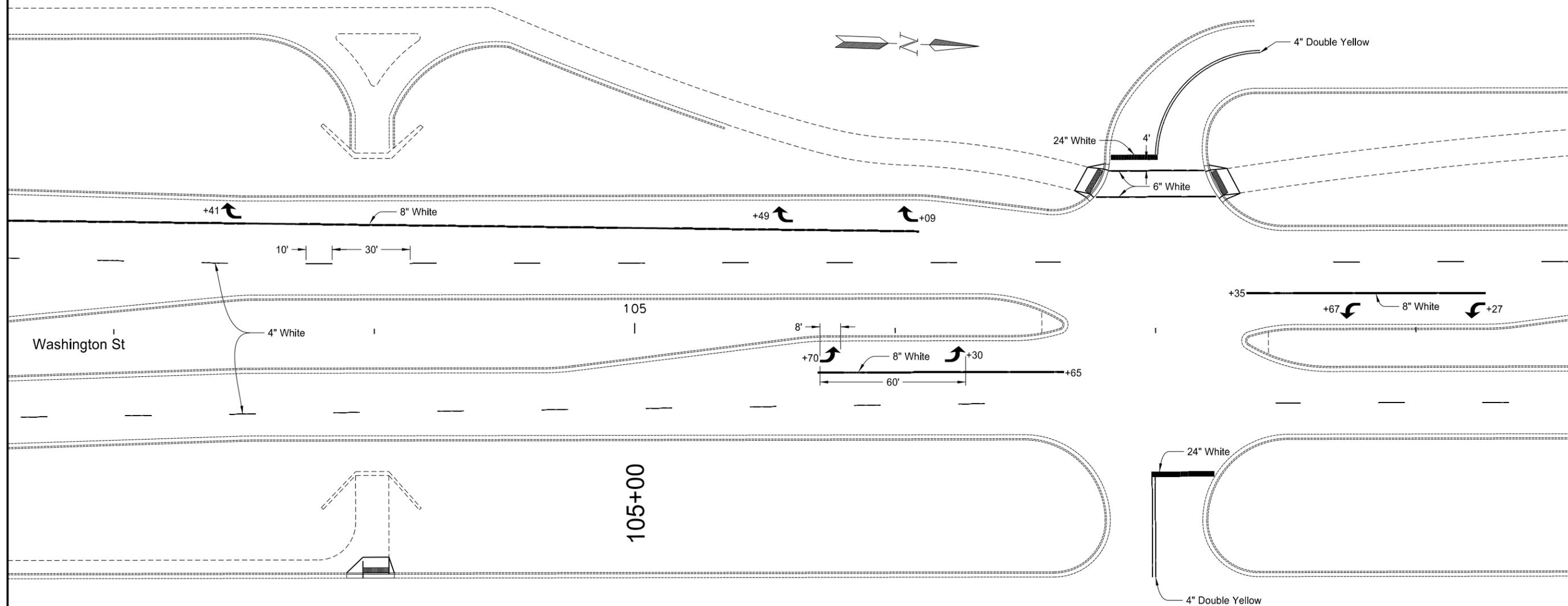


<u>EPOXY PVMT MK 6IN LINE-GROOVED</u>	
6" White Crosswalk Line	564 LF
<u>EPOXY PVMT MK 24IN LINE-GROOVED</u>	
24" White Stop Bar	159 LF
<u>EPOXY PVMT MK MESSAGE-GROOVED</u>	
Left Arrow (8)	128 SF
Right Arrow (2)	32 SF
Thru/Right Arrow (2)	54 SF
Total	214 SF
<u>PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED</u>	
4" White Lane Lines (10' Line, 30' skip)	200 LF
4" Yellow Double Barrier Line	281 LF
<u>PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED</u>	
8" White Channel Line	1,684 LF
8" White Lane Extension Line (2' line, 6' skip)	58 LF

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Pavement Marking

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	120	2

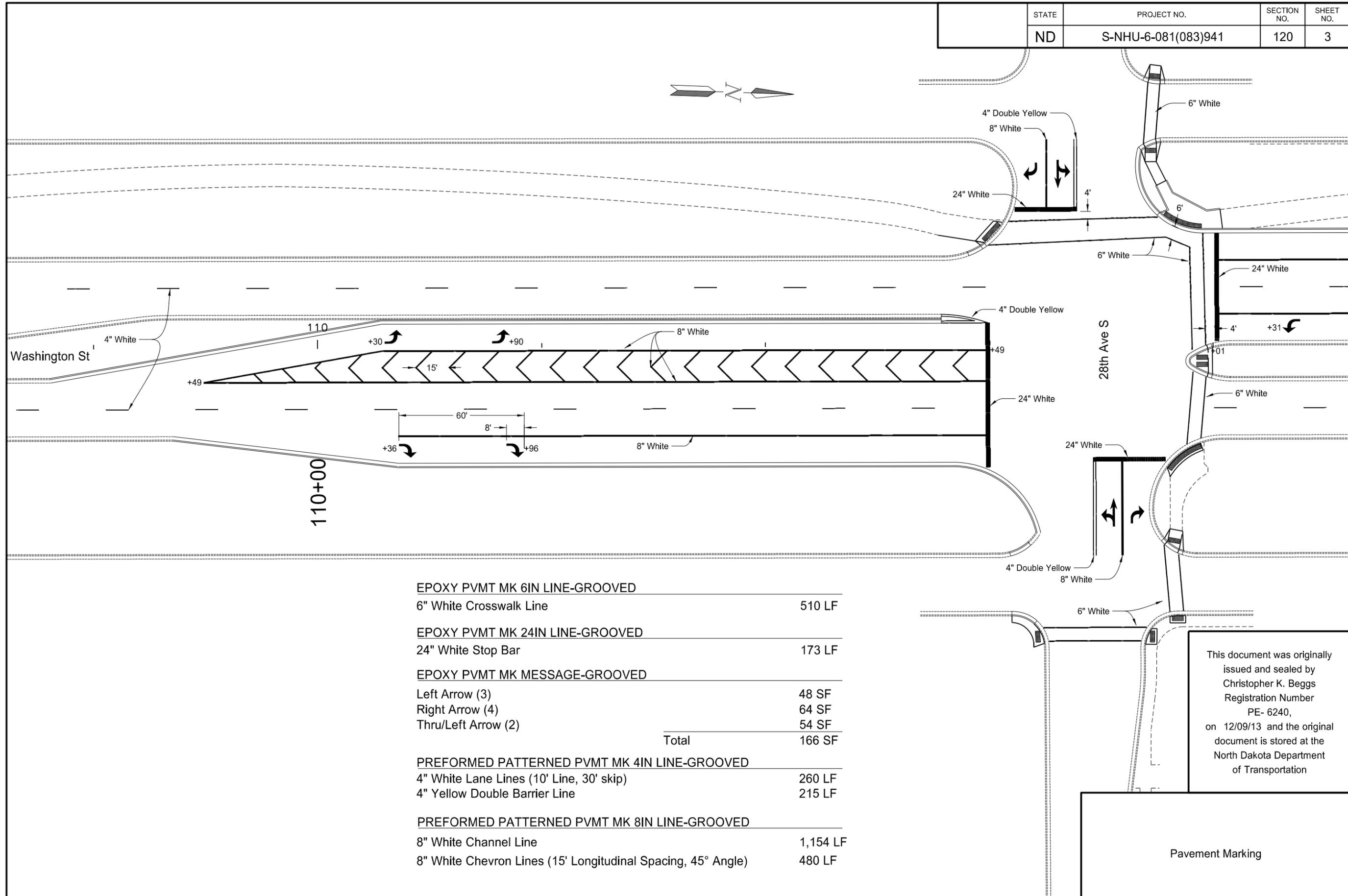


<u>EPOXY PVMT MK 6IN LINE-GROOVED</u>	
6" White Crosswalk Line	83 LF
<u>EPOXY PVMT MK 24IN LINE-GROOVED</u>	
24" White Stop Bar	40 LF
<u>EPOXY PVMT MK MESSAGE-GROOVED</u>	
Left Arrow (4)	64 SF
Right Arrow (3)	48 SF
Total	112 SF
<u>PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED</u>	
4" White Lane Lines (10' Line, 30' skip)	270 LF
4" Yellow Double Barrier Line	201 LF
<u>PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED</u>	
8" White Channel Line	537 LF

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Pavement Marking

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	120	3



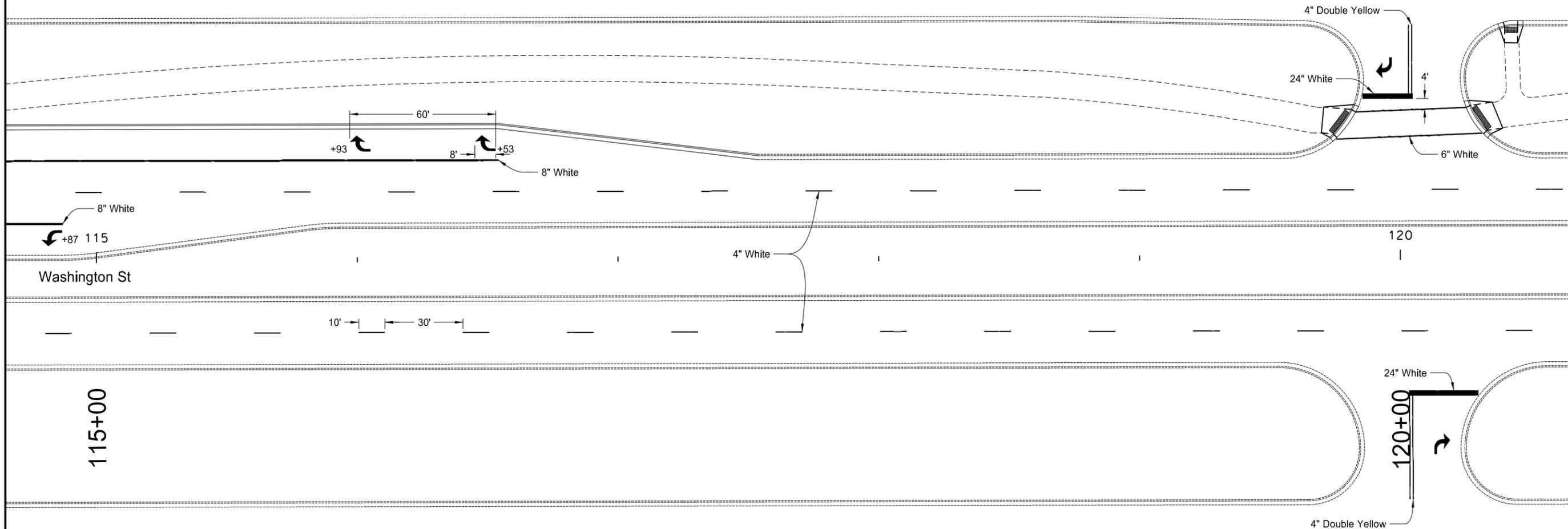
<b>EPOXY PVMT MK 6IN LINE-GROOVED</b>	
6" White Crosswalk Line	510 LF
<b>EPOXY PVMT MK 24IN LINE-GROOVED</b>	
24" White Stop Bar	173 LF
<b>EPOXY PVMT MK MESSAGE-GROOVED</b>	
Left Arrow (3)	48 SF
Right Arrow (4)	64 SF
Thru/Left Arrow (2)	54 SF
Total	166 SF
<b>PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED</b>	
4" White Lane Lines (10' Line, 30' skip)	260 LF
4" Yellow Double Barrier Line	215 LF
<b>PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED</b>	
8" White Channel Line	1,154 LF
8" White Chevron Lines (15' Longitudinal Spacing, 45° Angle)	480 LF

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	120	4

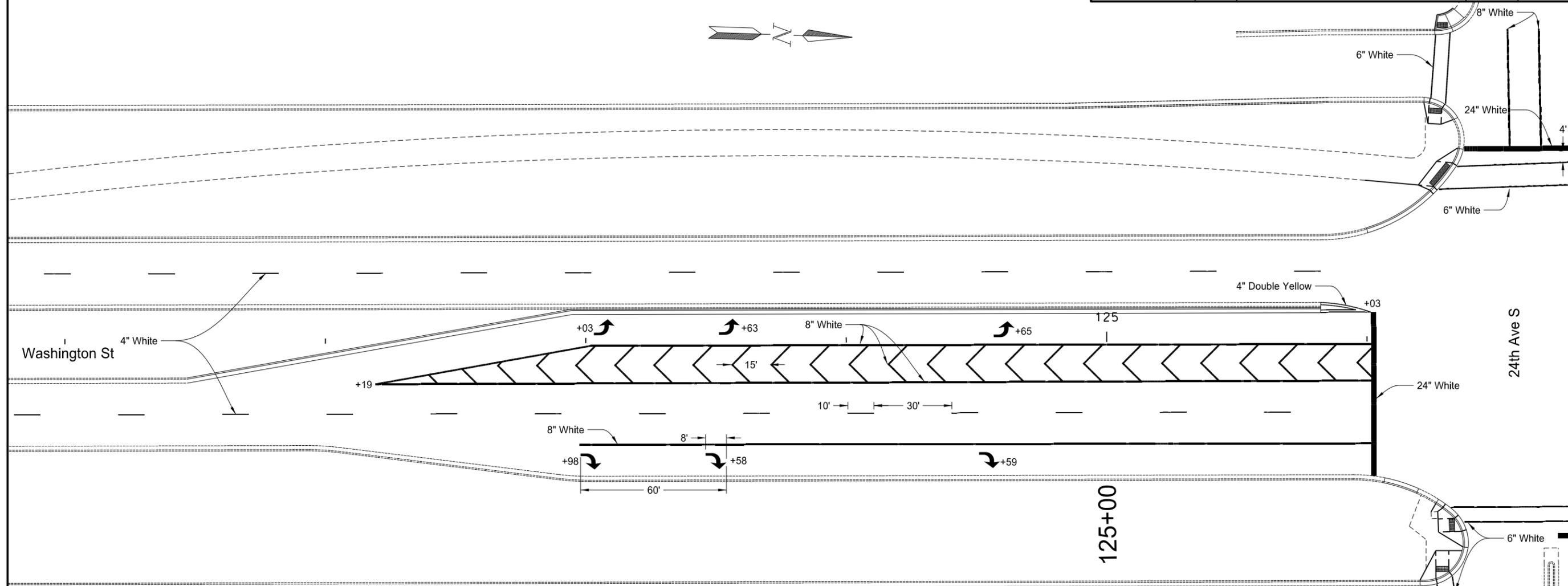
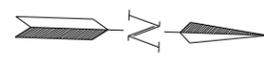


<b>EPOXY PVMT MK 6IN LINE-GROOVED</b>		
6" White Crosswalk Line		98 LF
<b>EPOXY PVMT MK 24IN LINE-GROOVED</b>		
24" White Stop Bar		46 LF
<b>EPOXY PVMT MK MESSAGE-GROOVED</b>		
Left Arrow (1)		16 SF
Right Arrow (4)		64 SF
	Total	80 SF
<b>PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED</b>		
4" White Lane Lines (10' Line, 30' skip)		300 LF
4" Yellow Double Barrier Line		132 LF
<b>PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED</b>		
8" White Channel Line		211 LF

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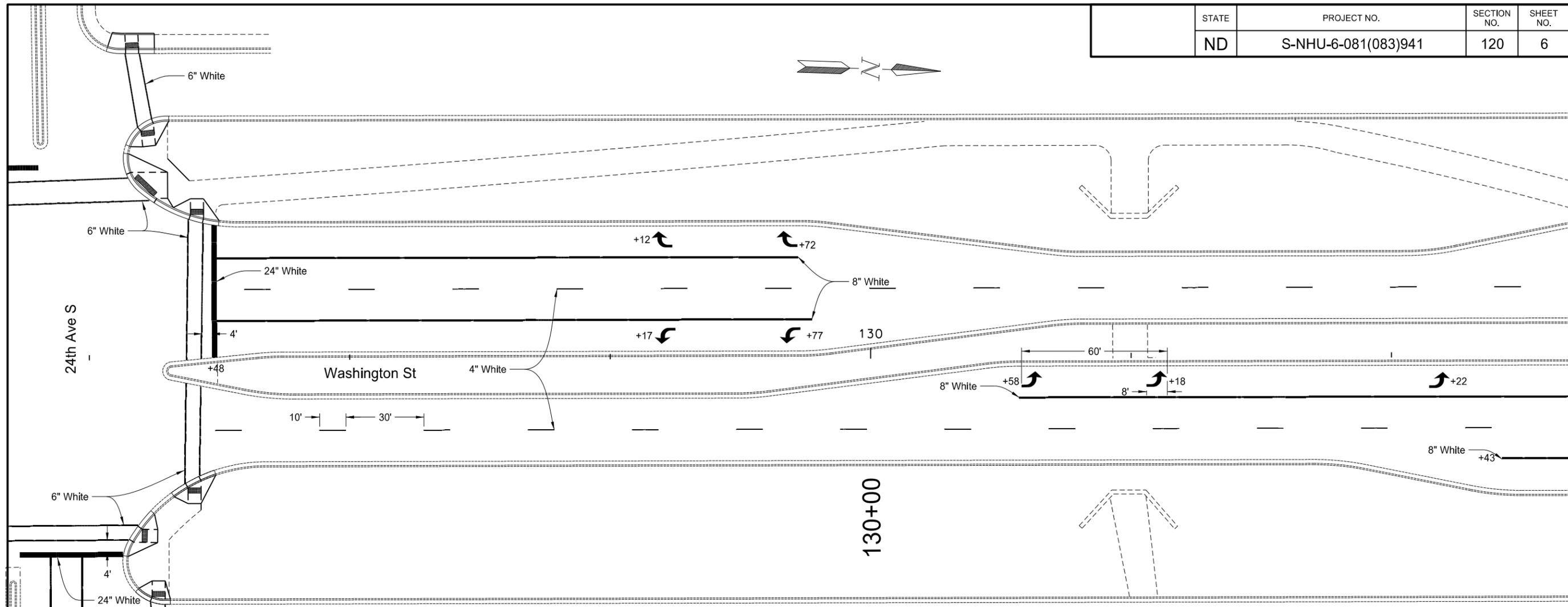
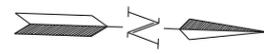
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	120	5



<b>EPOXY PVMT MK 6IN LINE-GROOVED</b>		
6" White Crosswalk Line		284 LF
<b>EPOXY PVMT MK 24IN LINE-GROOVED</b>		
24" White Stop Bar		103 LF
<b>EPOXY PVMT MK MESSAGE-GROOVED</b>		
Left Arrow (3)		48 SF
Right Arrow (3)		48 SF
	Total	96 SF
<b>PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED</b>		
4" White Lane Lines (10' Line, 30' skip)		260 LF
4" Yellow Double Barrier Line		66 LF
<b>PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED</b>		
8" White Channel Line		1,160 LF
8" White Chevron Lines (15' Longitudinal Spacing, 45° Angle)		552 LF

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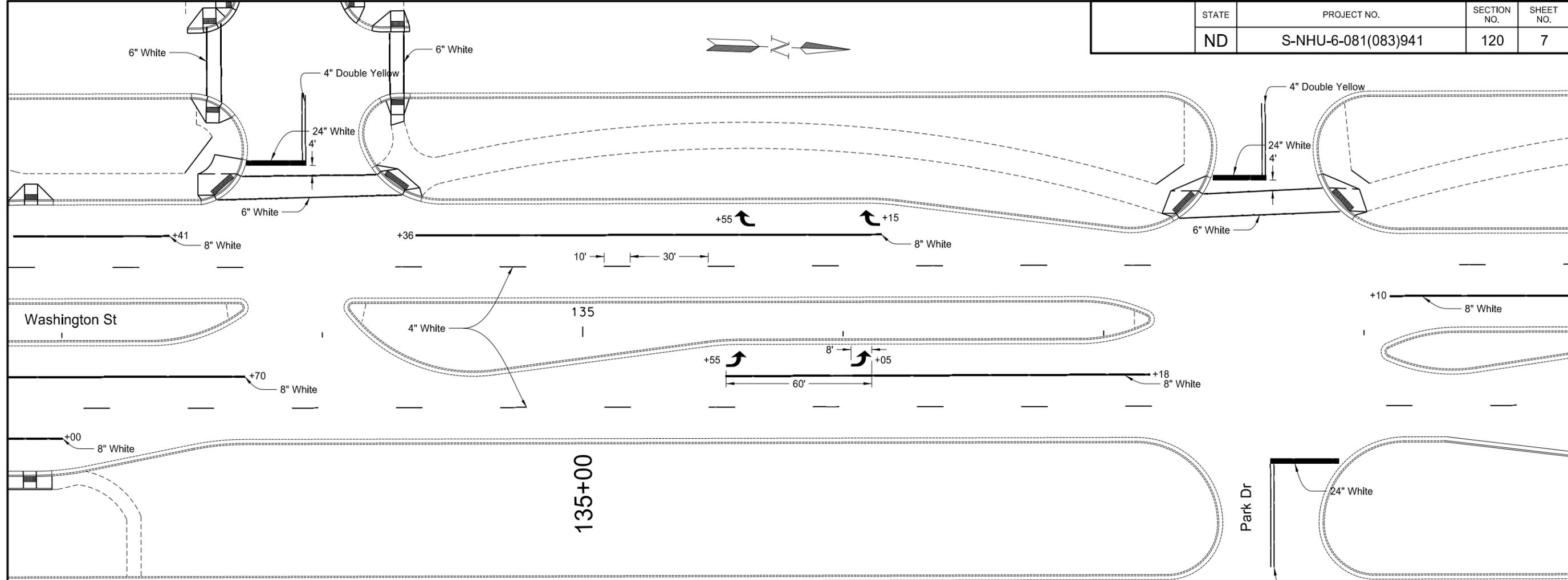


<b>EPOXY PVMT MK 6IN LINE-GROOVED</b>	
6" White Crosswalk Line	477 LF
<b>EPOXY PVMT MK 24IN LINE-GROOVED</b>	
24" White Stop Bar	91 LF
<b>EPOXY PVMT MK MESSAGE-GROOVED</b>	
Left Arrow (5)	80 SF
Right Arrow (2)	32 SF
Total	112 SF
<b>PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED</b>	
4" White Lane Lines (10' Line, 30' skip)	260 LF
<b>PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED</b>	
8" White Channel Line	775 LF

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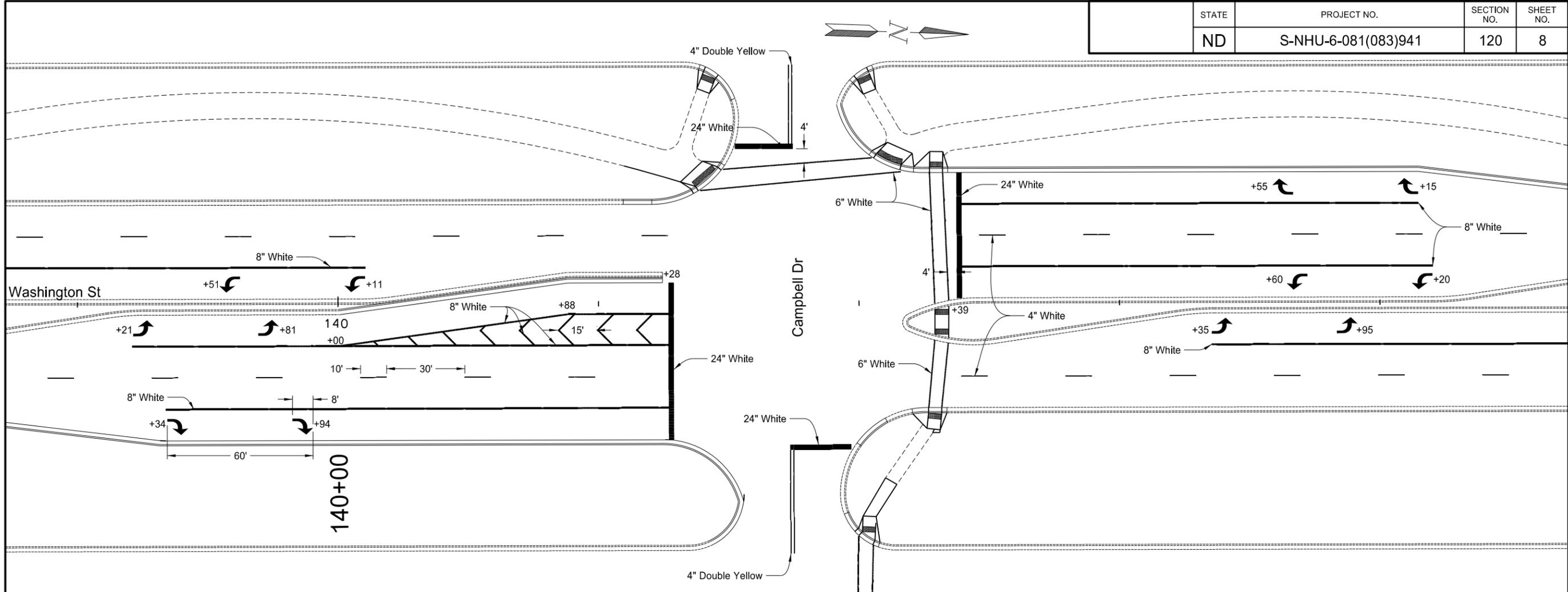
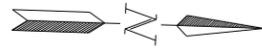


<b>EPOXY PVMT MK 6IN LINE-GROOVED</b>	
6" White Crosswalk Line	334 LF
<b>EPOXY PVMT MK 24IN LINE-GROOVED</b>	
24" White Stop Bar	70 LF
<b>EPOXY PVMT MK MESSAGE-GROOVED</b>	
Left Arrow (2)	32 SF
Right Arrow (2)	32 SF
Total	64 SF
<b>PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED</b>	
4" White Lane Lines (10' Line, 30' skip)	250 LF
4" Yellow Double Barrier Line	184 LF
<b>PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED</b>	
8" White Channel Line	560 LF

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ND	S-NHU-6-081(083)941	120	8

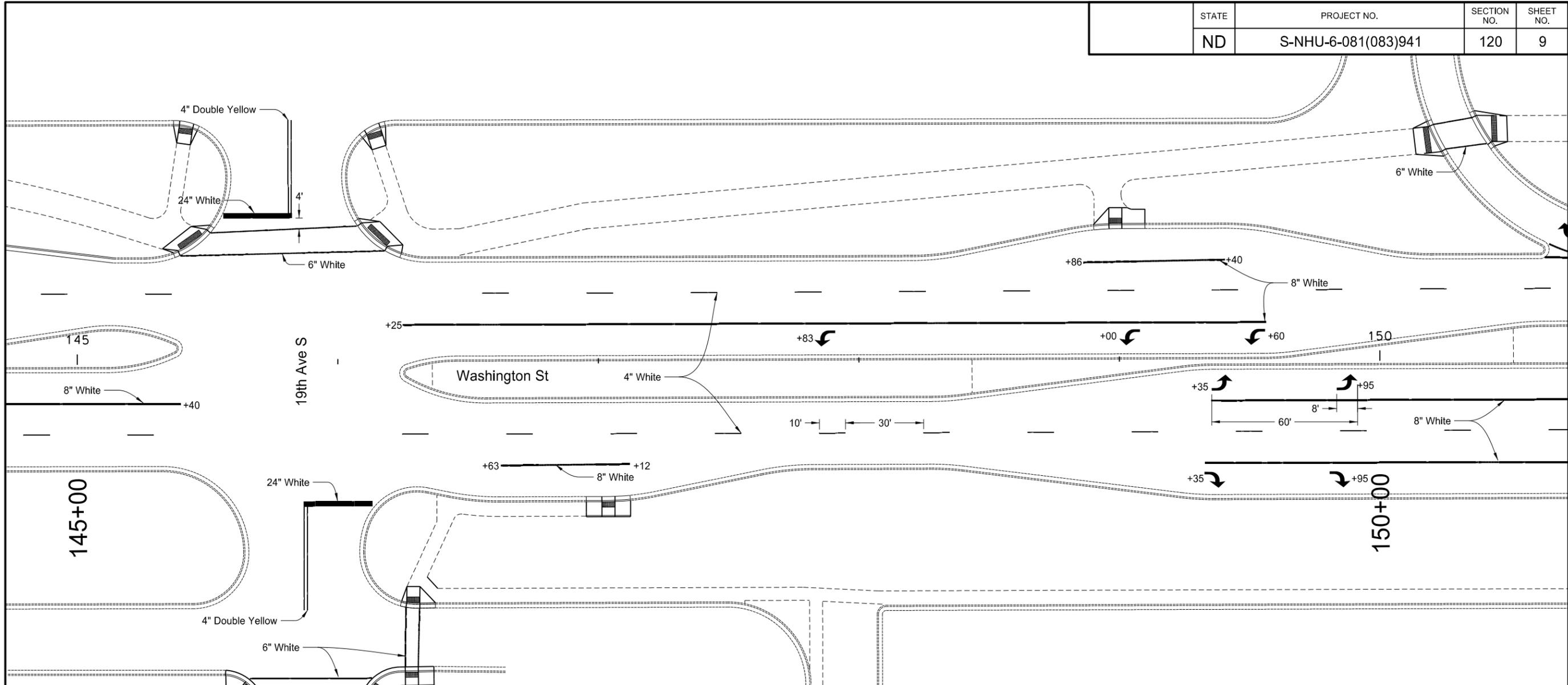


<b>EPOXY PVMT MK 6IN LINE-GROOVED</b>		
6" White Crosswalk Line		394 LF
<b>EPOXY PVMT MK 24IN LINE-GROOVED</b>		
24" White Stop Bar		154 LF
<b>EPOXY PVMT MK MESSAGE-GROOVED</b>		
Left Arrow (8)		128 SF
Right Arrow (4)		64 SF
Total		192 SF
<b>PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED</b>		
4" White Lane Lines (10' Line, 30' skip)		250 LF
4" Yellow Double Barrier Line		140 LF
<b>PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED</b>		
8" White Channel Line		1,159 LF
8" White Chevron Lines (15' Longitudinal Spacing, 45° Angle)		116 LF

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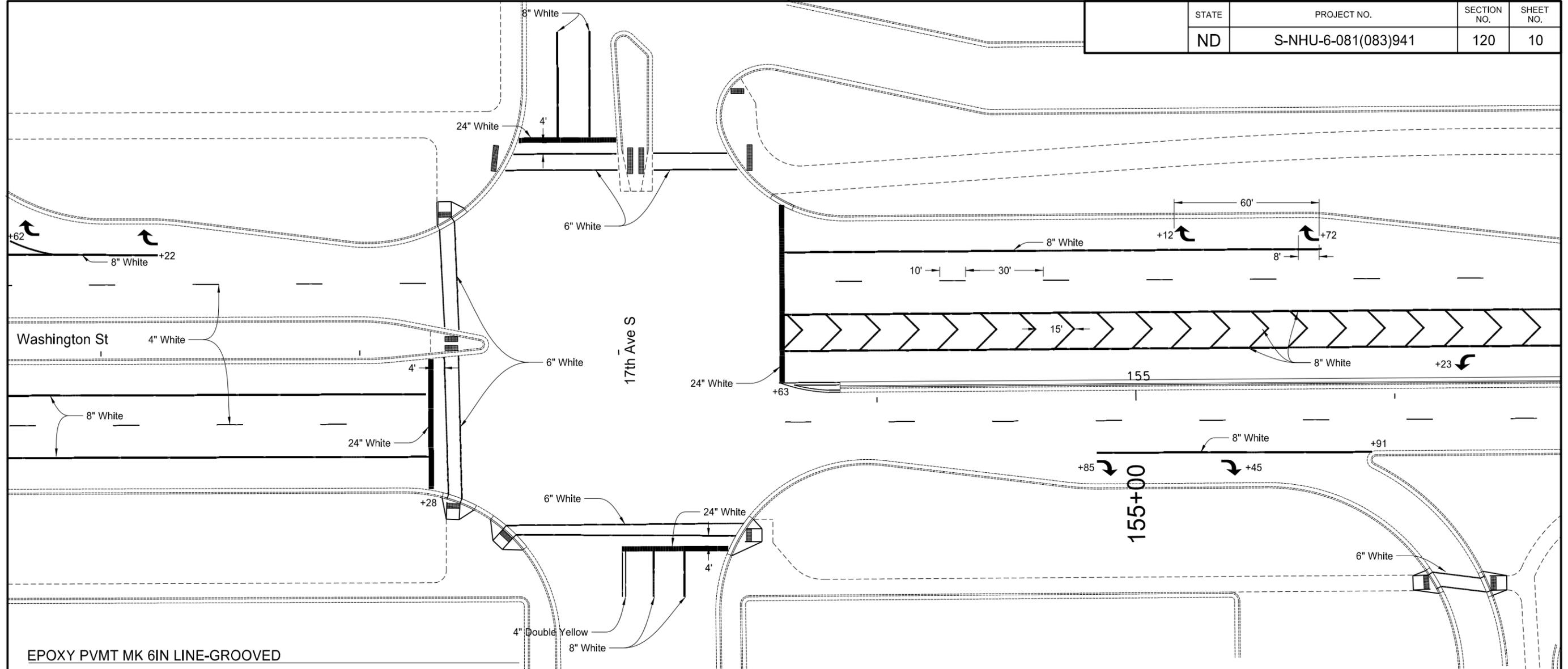
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	120	9



<b>EPOXY PVMT MK 6IN LINE-GROOVED</b>	
6" White Crosswalk Line	297 LF
<b>EPOXY PVMT MK 24IN LINE-GROOVED</b>	
24" White Stop Bar	53 LF
<b>EPOXY PVMT MK MESSAGE-GROOVED</b>	
Left Arrow (5)	80 SF
Right Arrow (2)	32 SF
Total	112 SF
<b>PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED</b>	
4" White Lane Lines (10' Line, 30' skip)	270 LF
4" Yellow Double Barrier Line	150 LF
<b>PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED</b>	
8" White Channel Line	777 LF

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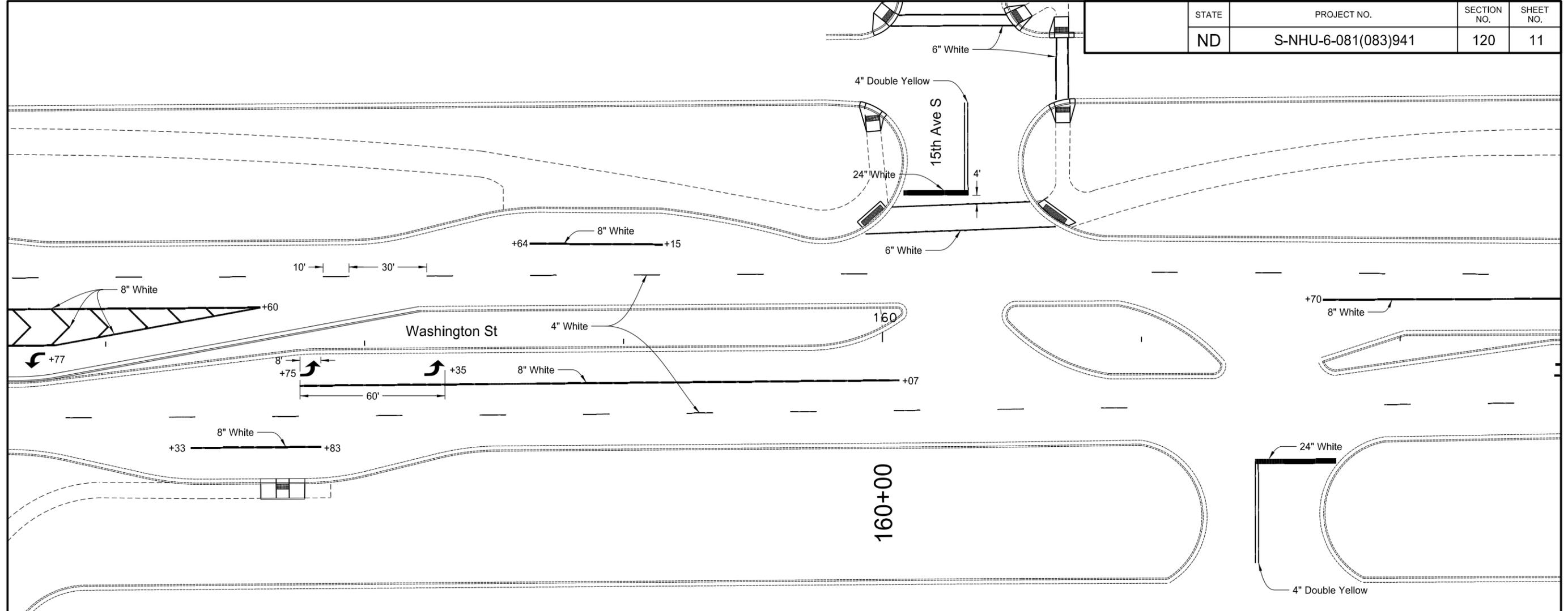


<b>EPOXY PVMT MK 6IN LINE-GROOVED</b>	
6" White Crosswalk Line	543 LF
<b>EPOXY PVMT MK 24IN LINE-GROOVED</b>	
24" White Stop Bar	197 LF
<b>EPOXY PVMT MK MESSAGE-GROOVED</b>	
Left Arrow (1)	16 SF
Right Arrow (6)	96 SF
Total	112 SF
<b>PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED</b>	
4" White Lane Lines (10' Line, 30' skip)	230 LF
4" Yellow Double Barrier Line	117 LF
<b>PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED</b>	
8" White Channel Line	1,424 LF
8" White Chevron Lines (15' Longitudinal Spacing, 45° Angle)	483 LF

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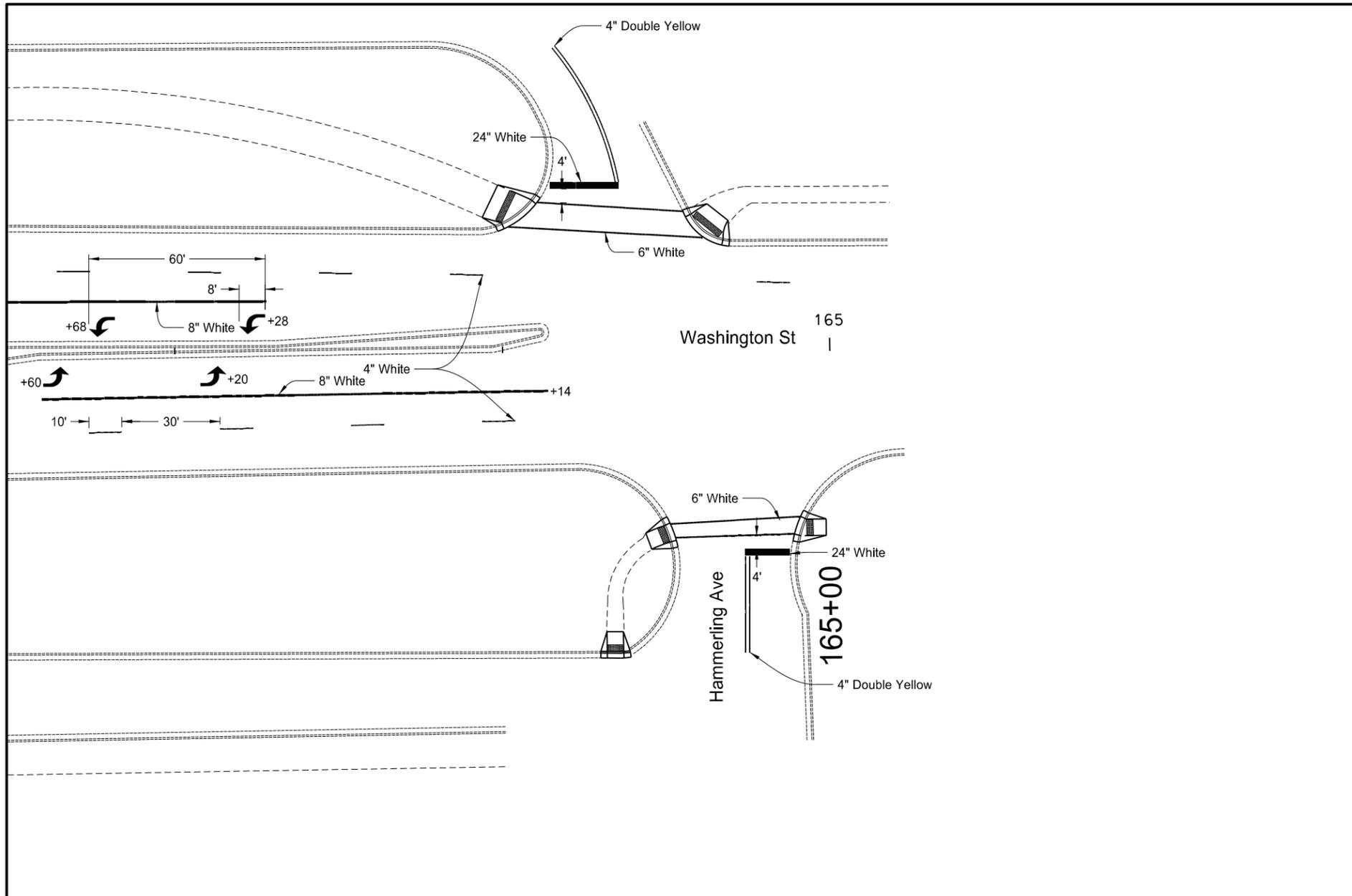


<b>EPOXY PVMT MK 6IN LINE-GROOVED</b>		
6" White Crosswalk Line		366 LF
<b>EPOXY PVMT MK 24IN LINE-GROOVED</b>		
24" White Stop Bar		57 LF
<b>EPOXY PVMT MK MESSAGE-GROOVED</b>		
Left Arrow (3)		48 SF
<b>PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED</b>		
4" White Lane Lines (10' Line, 30' skip)		260 LF
4" Yellow Double Barrier Line		146 LF
<b>PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED</b>		
8" White Channel Line		621 LF
8" White Chevron Lines (15' Longitudinal Spacing, 45° Angle)		90 LF

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Pavement Marking

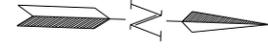
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	120	12



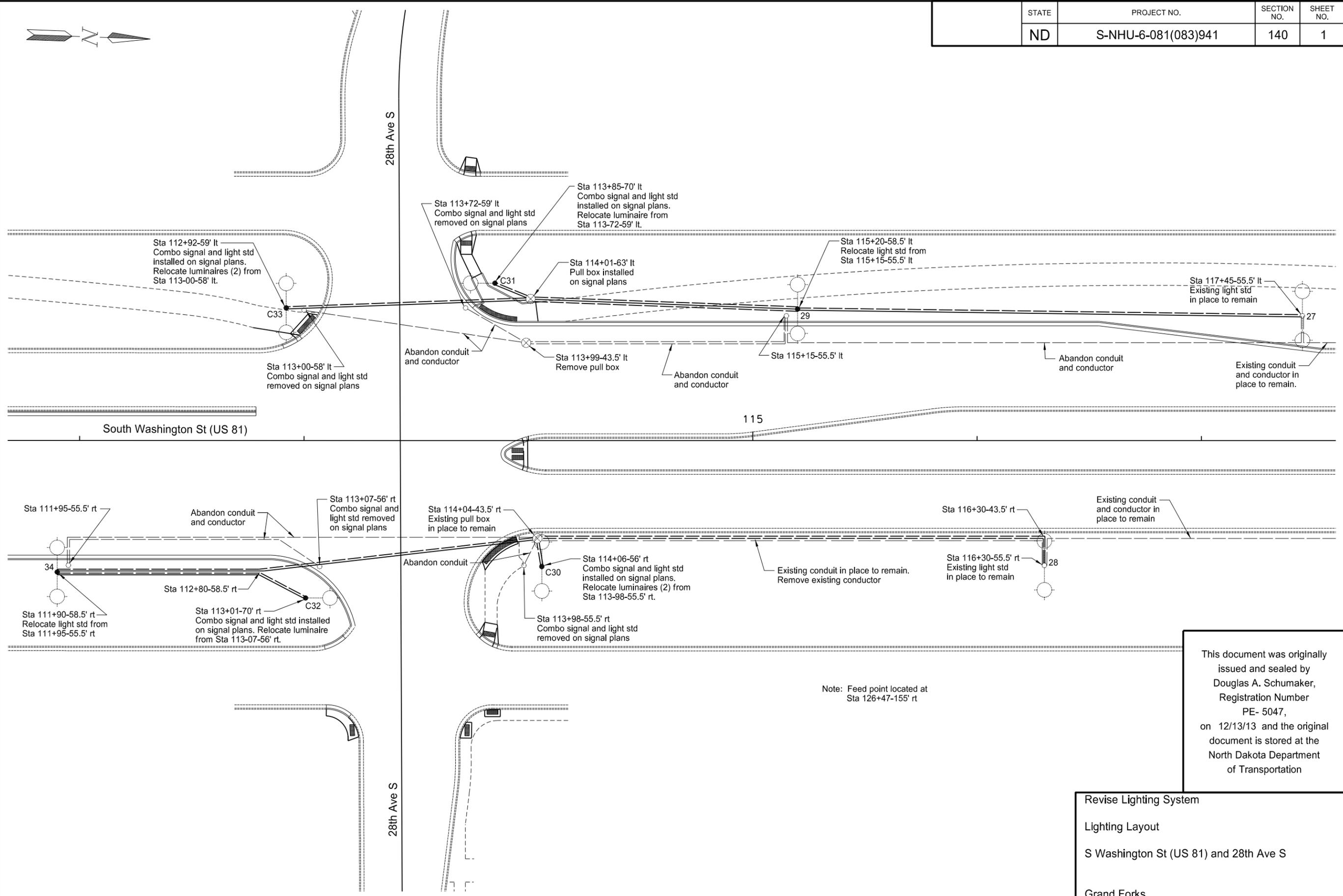
<b>EPOXY PVMT MK 6IN LINE-GROOVED</b>	
6" White Crosswalk Line	180 LF
<b>EPOXY PVMT MK 24IN LINE-GROOVED</b>	
24" White Stop Bar	35 LF
<b>EPOXY PVMT MK MESSAGE-GROOVED</b>	
Left Arrow (4)	64 SF
<b>PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED</b>	
4" White Lane Lines (10' Line, 30' skip)	90 LF
4" Yellow Double Barrier Line	151 LF
<b>PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED</b>	
8" White Channel Line	233 LF

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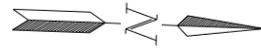


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	140	1



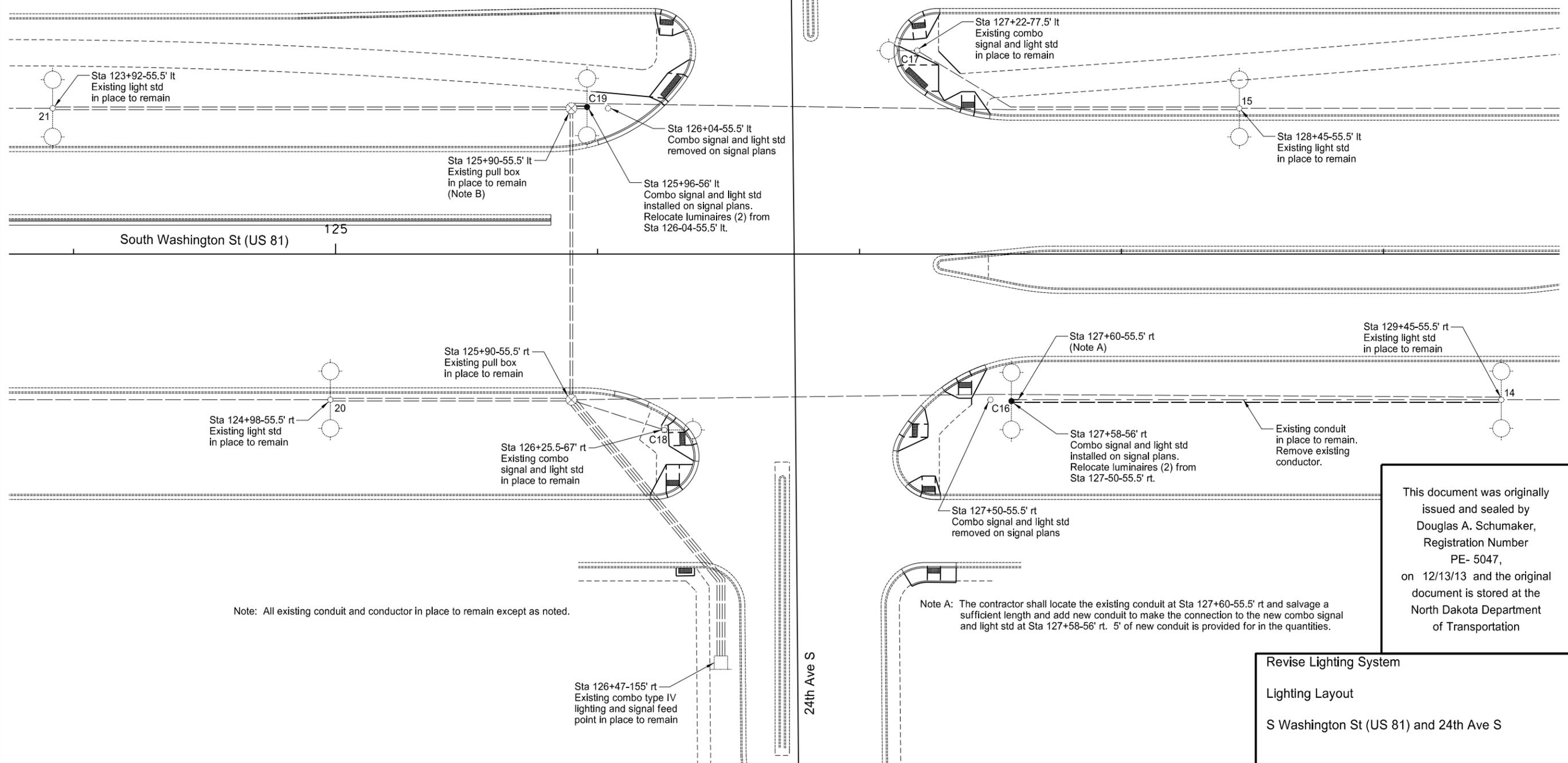
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Revise Lighting System  
 Lighting Layout  
 S Washington St (US 81) and 28th Ave S  
 Grand Forks



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	140	2

Note B: The contractor shall locate the existing lighting conductor going to the existing combo signal and light std at Sta 126+04-55.5' It in the existing pull box and pull back the lighting conductor to the pull box. Install new conduit from the existing pull box to the new combo signal and light std at Sta 125+96-56' It. The existing lighting conductors shall be installed in the new conduit and connected to the new combo signal and light std.



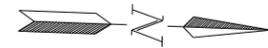
Note: All existing conduit and conductor in place to remain except as noted.

Note A: The contractor shall locate the existing conduit at Sta 127+60-55.5' rt and salvage a sufficient length and add new conduit to make the connection to the new combo signal and light std at Sta 127+58-56' rt. 5' of new conduit is provided for in the quantities.

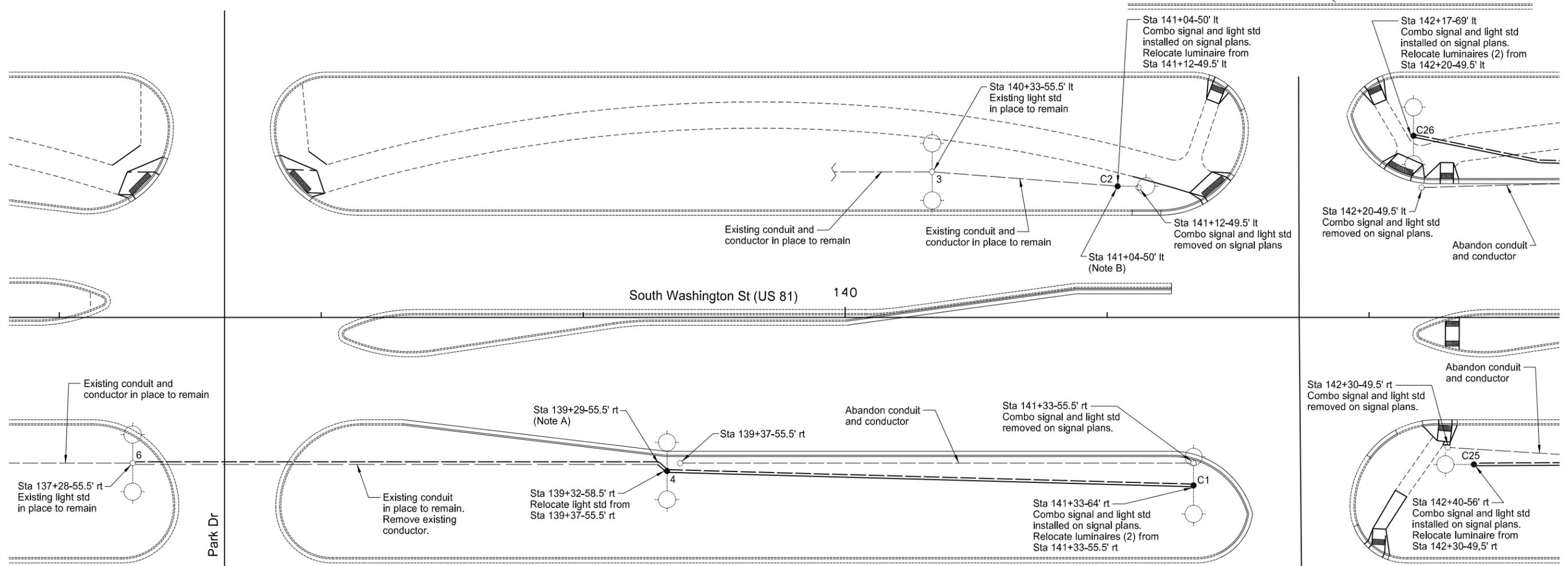
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Revise Lighting System  
 Lighting Layout  
 S Washington St (US 81) and 24th Ave S  
 Grand Forks

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	140	3



Note B: The contractor shall locate the existing conduit and conductor at Sta 141+04-50' It and salvage a sufficient length of conduit and conductor to make the connection to the new combo signal and light std. 5' of new conduit is provided for in the quantities.



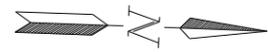
Note A: The contractor shall locate the existing conduit at Sta 139+29-55.5' rt and salvage a sufficient length and add new conduit to make the connection to the relocated light std at Sta 139+32-58.5' rt. 7' of new conduit is provided for in the quantities.

Note: For lighting south of Campbell Dr feed point located at Sta 126+47-155' rt

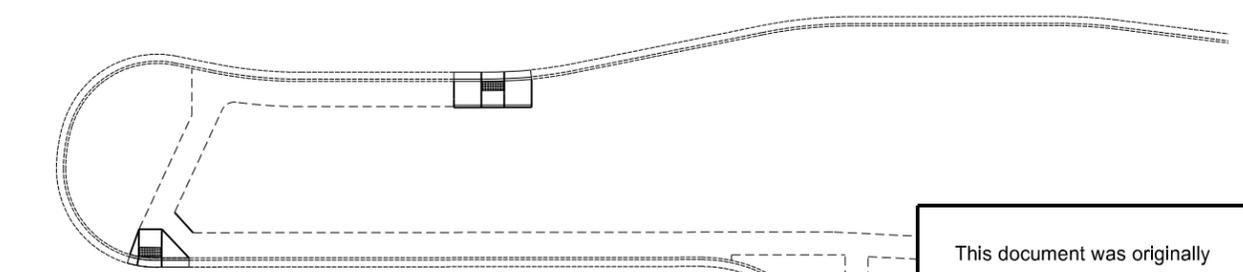
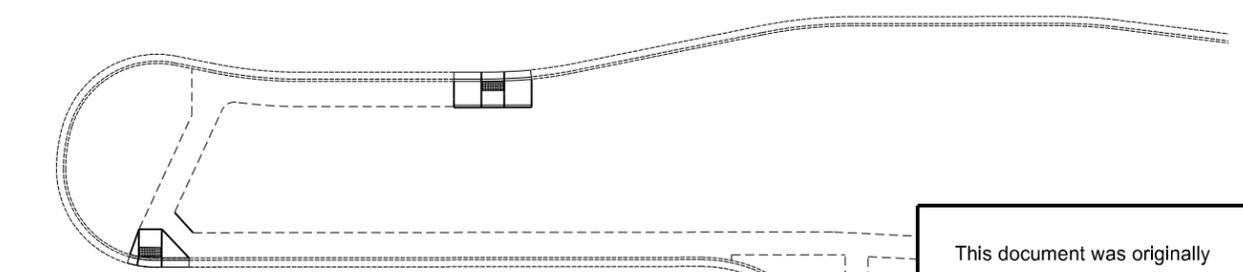
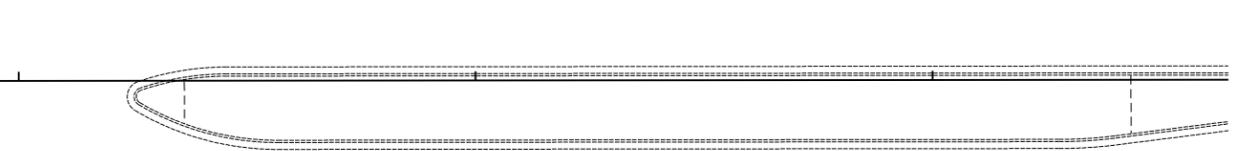
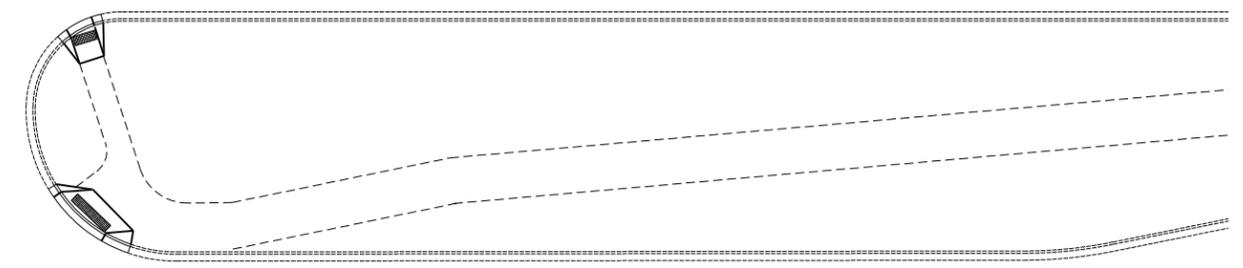
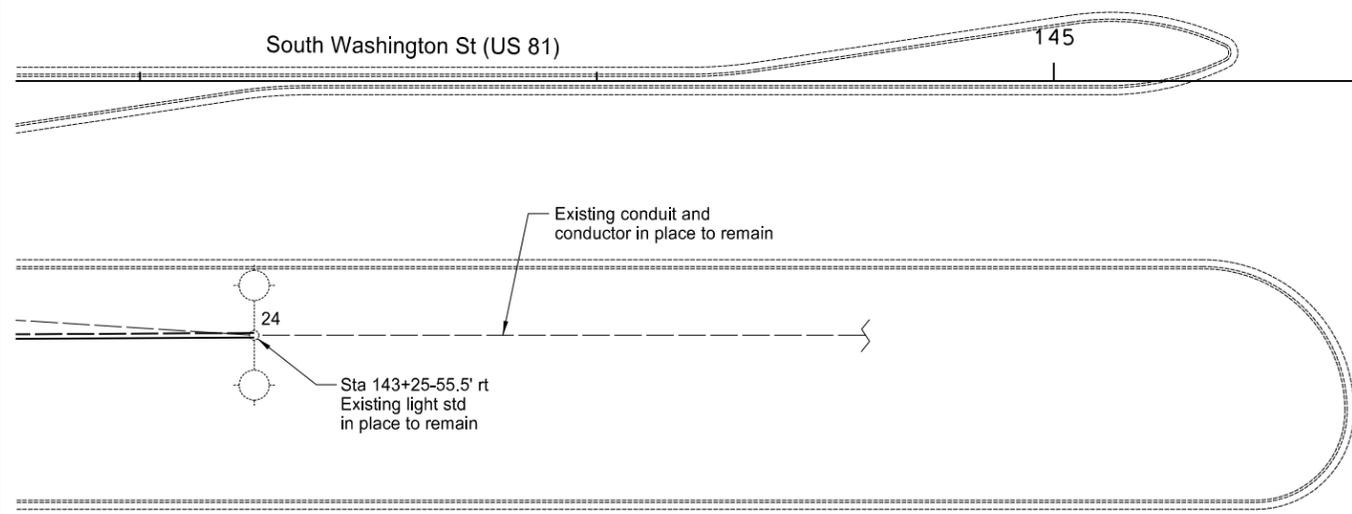
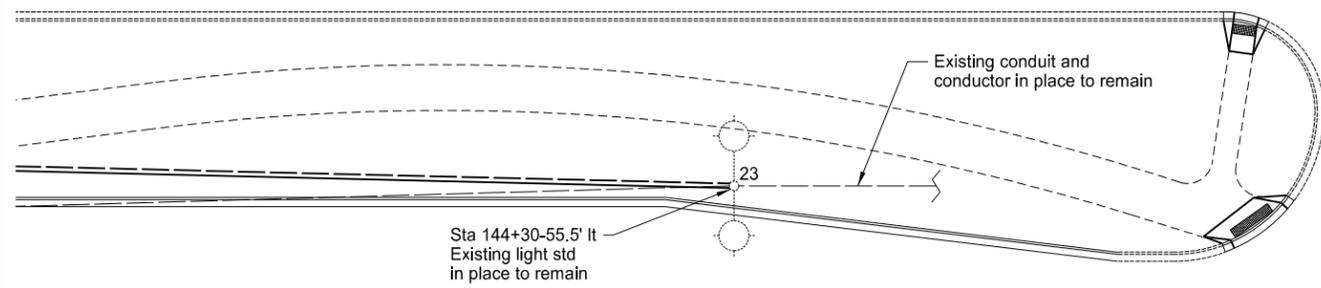
Note: For lighting north of Campbell Dr feed point located at Sta 151+88-82' rt

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Revise Lighting System  
 Lighting Layout  
 S Washington St (US 81) and Campbell Dr  
 Grand Forks



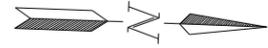
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	S-NHU-6-081(083)941	140	4



Note: For lighting north of Campbell Dr  
feed point located at Sta 151+88-82' rt

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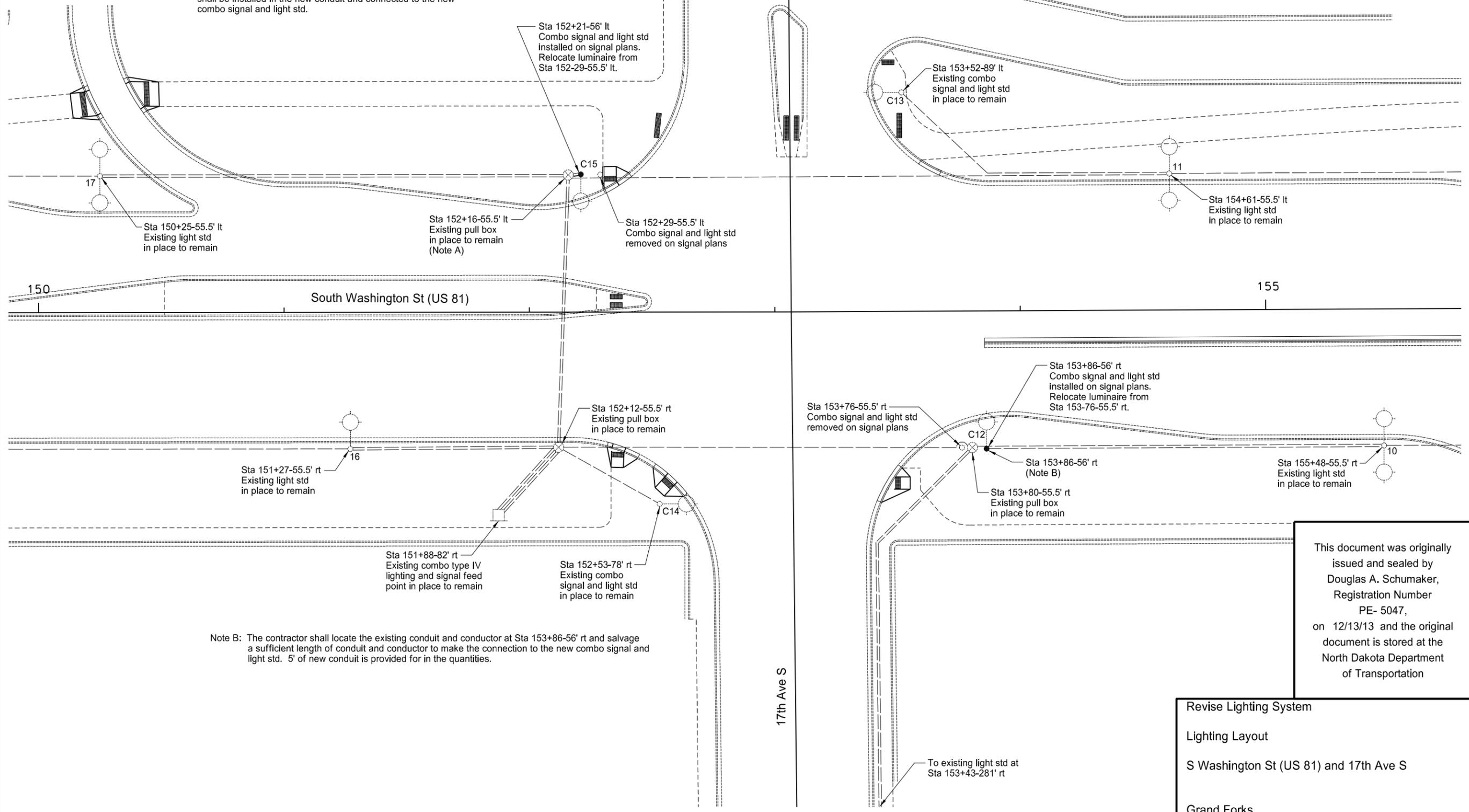
Revise Lighting System  
Lighting Layout  
S Washington St (US 81) and Campbell Dr  
Grand Forks



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	140	5

Note A: The contractor shall locate the existing lighting conductor going to the existing combo signal and light std at Sta 152+29-55.5' It in the existing pull box and pull back the lighting conductor to the pull box. Install new conduit from the existing pull box to the new combo signal and light std at Sta 152+21-56' It. The existing lighting conductors shall be installed in the new conduit and connected to the new combo signal and light std.

Note: All existing conduit and conductor in place to remain except as noted.



Note B: The contractor shall locate the existing conduit and conductor at Sta 153+86-56' rt and salvage a sufficient length of conduit and conductor to make the connection to the new combo signal and light std. 5' of new conduit is provided for in the quantities.

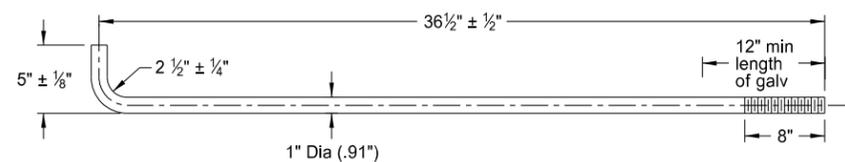
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Revise Lighting System  
 Lighting Layout  
 S Washington St (US 81) and 17th Ave S  
 Grand Forks

Light Std Number	Station	Conduit Runs		Cable Runs	
		LF	Dia	LF	Type
34 C32	111+90-58.5' rt to 112+80-58.5' rt to 113+01-70' rt	89 23	2" 2"	244 122	(2) No 6 RHW (1) No 6 THW
34 28	111+90-58.5' rt to 112+80-58.5' rt to 114+04-43.5' rt to 116+30-43.5' rt to 116+30-55.5' rt	89 125 226 (D) 11 (D)	2" 2" 2" (D) 2" (D)	1383 461	(3) No 6 RHW (1) No 6 THW
C30 28	114+06-56' rt to 114+04-43.5' rt to 116+30-43.5' rt to 116+30-55.5' rt	12 226 (D) 11 (D)	2" 2" (D) 2" (D)	518 259	(2) No 6 RHW (1) No 6 THW
C33 29	112+92-59' lt to 114+01-63' lt to 115+20-58.5' lt	108 118	2" 2"	472 236	(2) No 6 RHW (1) No 6 THW
C31 29	113+85-70' lt to 114+01-63' lt to 115+20-58.5' lt	16	2"	290 145	(2) No 6 RHW (1) No 6 THW
29 27	115+20-58.5' lt to 117+45-55.5' lt	223	2"	699 233	(3) No 6 RHW (1) No 6 THW
21 C19	123+92-55.5' lt to 125+90-55.5' lt to 125+96-56' lt	196 (D) 6	2" (D) 2"	Existing	Existing
C16 14	127+58-56' rt to 127+60-55.5' rt to 129+45-55.5' rt	5 186 (D)	2" 2" (D)	390 195	(2) No 6 RHW (1) No 6 THW
6 4	137+28-55.5' rt to 139+29-55.5' rt to 139+32-58.5' rt	200 (D) 7	2" (D) 2"	645 215	(3) No 4 RHW (1) No 6 THW
4 C1	139+32-58.5' rt to 141+33-64' rt	199	2"	418 209	(2) No 4 RHW (1) No 6 THW
C2	141+04-50' lt	5	2"	Existing	Existing
C25 24	142+40-56' rt to 143+25-55.5' rt	83	2"	186 93	(2) No 6 RHW (1) No 6 THW
C26 23	142+17-69' lt to 144+30-55.5' lt	163	2"	346 173	(2) No 6 RHW (1) No 6 THW
17 C15	150+25-55.5' lt to 152+16-55.5' lt to 152+21-56' lt	190 (D) 4	2" (D) 2"	Existing	Existing
C12	153+86-56' rt	5	2"		

(D) Existing conduit

Relocated Light Standard  
Anchor Bolt Detail



Cut length before bending = 40"  
Bolt circle (4 bolts) = 12"  
The contractor shall verify the bolt circle

Lighting Quantities (A)							
Concrete Foundation - Highway Lighting	2in Diameter Rigid Conduit	Underground Conductor No 4 - Type RHW	Underground Conductor No 6 - Type RHW	Underground Conductor No 6 - Type THW	Relocate Light Standard	Relocate Luminaire	Revise Lighting System
EA	LF	LF	LF	LF	EA	EA	EA
3	1280	1063	4528	2341	3	18	1

(A) These items shall not be bid seperately but shall be included in the item "Revise Lighting System".

Light Standards						
No.	Station	Wattage	Circuit	IES-Type	Mt. Ht.	Mast Arm
C33	112+92-59' lt	250 (B)	A1	MSC III (B)	Combo 40'	12'
		250 (B) (C)	A1	MSC IV (B) (C)	Combo 40'	12'
C32	113+00-67' rt	250 (B)	A2	MSC III (B)	Combo 40'	6'
C31	113+84.5-70' lt	250 (B)	A1	MSC III (B)	Combo 40'	6'
C30	114+06-56' rt	250 (B)	A2	MSC III (B)	Combo 40'	12'
		250 (B) (C)	A2	MSC IV (B) (C)	Combo 40'	12'
C19	125+96-56' lt	250 (B)	A1	MSC III (B)	Combo 40'	12'
		250 (B) (C)	A1	MSC IV (B) (C)	Combo 40'	12'
C16	127+58-56' rt	250 (B)	A4	MSC III (B)	Combo 40'	12'
		250 (B) (C)	A4	MSC IV (B) (C)	Combo 40'	12'
C2	141+04-56' lt	250 (B)	A3	MSC III (B)	Combo 40'	6'
C1	141+33-64' rt	250 (B)	A4	MSC III (B)	Combo 40'	12'
		250 (B) (C)	A4	MSC IV (B) (C)	Combo 40'	12'
C26	142+17-69' lt	250 (B)	B1	MSC III (B)	Combo 40'	6'
		250 (B) (C)	B1	MSC IV (B) (C)	Combo 40'	12'
C25	142+40-56' rt	250 (B)	B2	MSC III (B)	Combo 40'	6'
C15	152+21-56' lt	250 (B)	B1	MSC III (B)	Combo 40'	6'
C12	153+86-56' rt	250 (B)	B4	MSC III (B)	Combo 40'	6'

(B) Relocated luminaire  
(C) Service road side

LIGHTING FOUNDATION TABLE		
Description	Footing Depth "D"	Footing Depth "D"
	24" and 30" Dia	36" and 42" Dia
Light Standard 42' Pole	6'	5'

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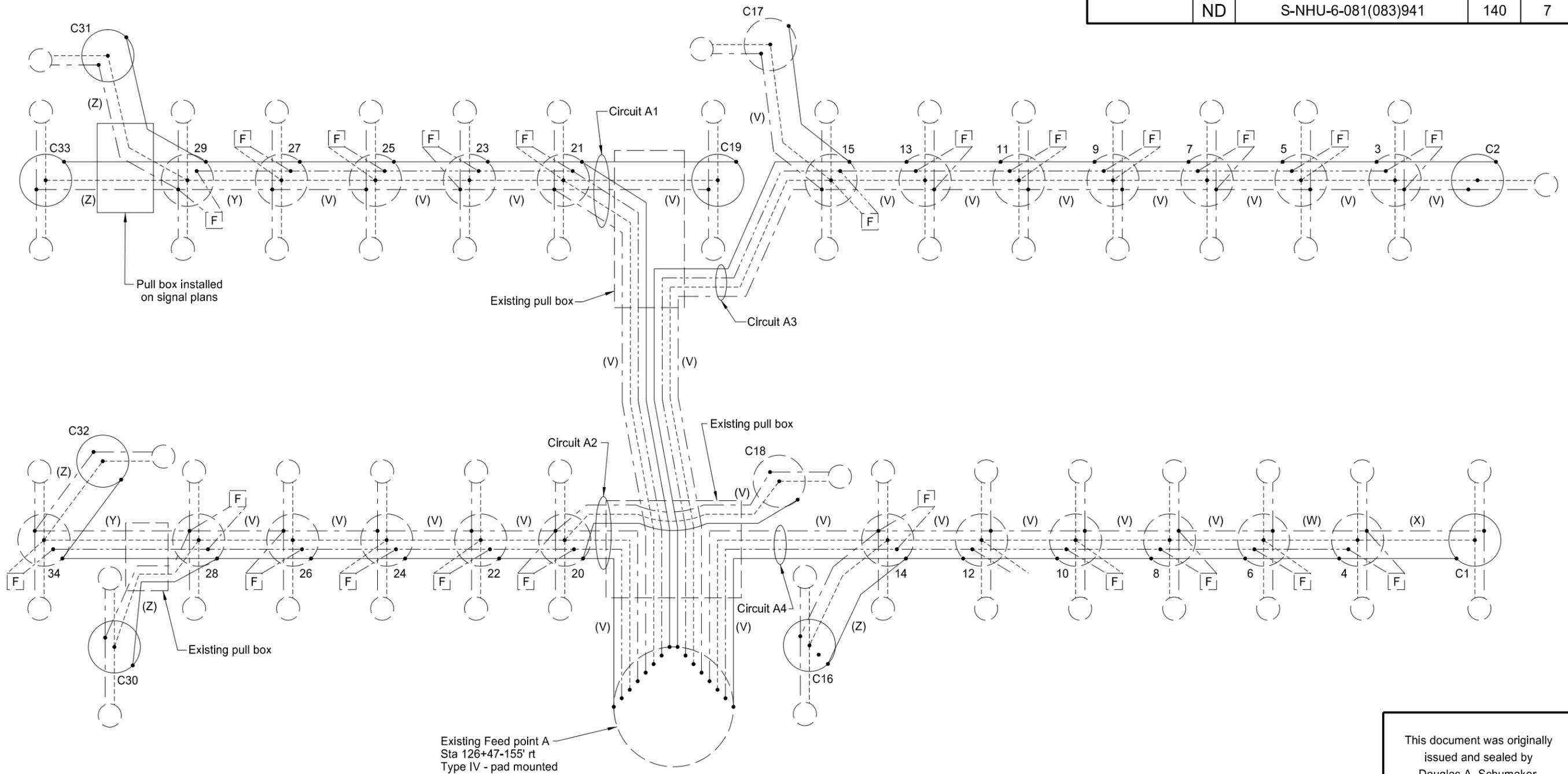
Revise Lighting System

Lighting Runs and Quantities

S Washington St (US 81) from  
32nd Ave S to 17th Ave S

Grand Forks

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	140	7



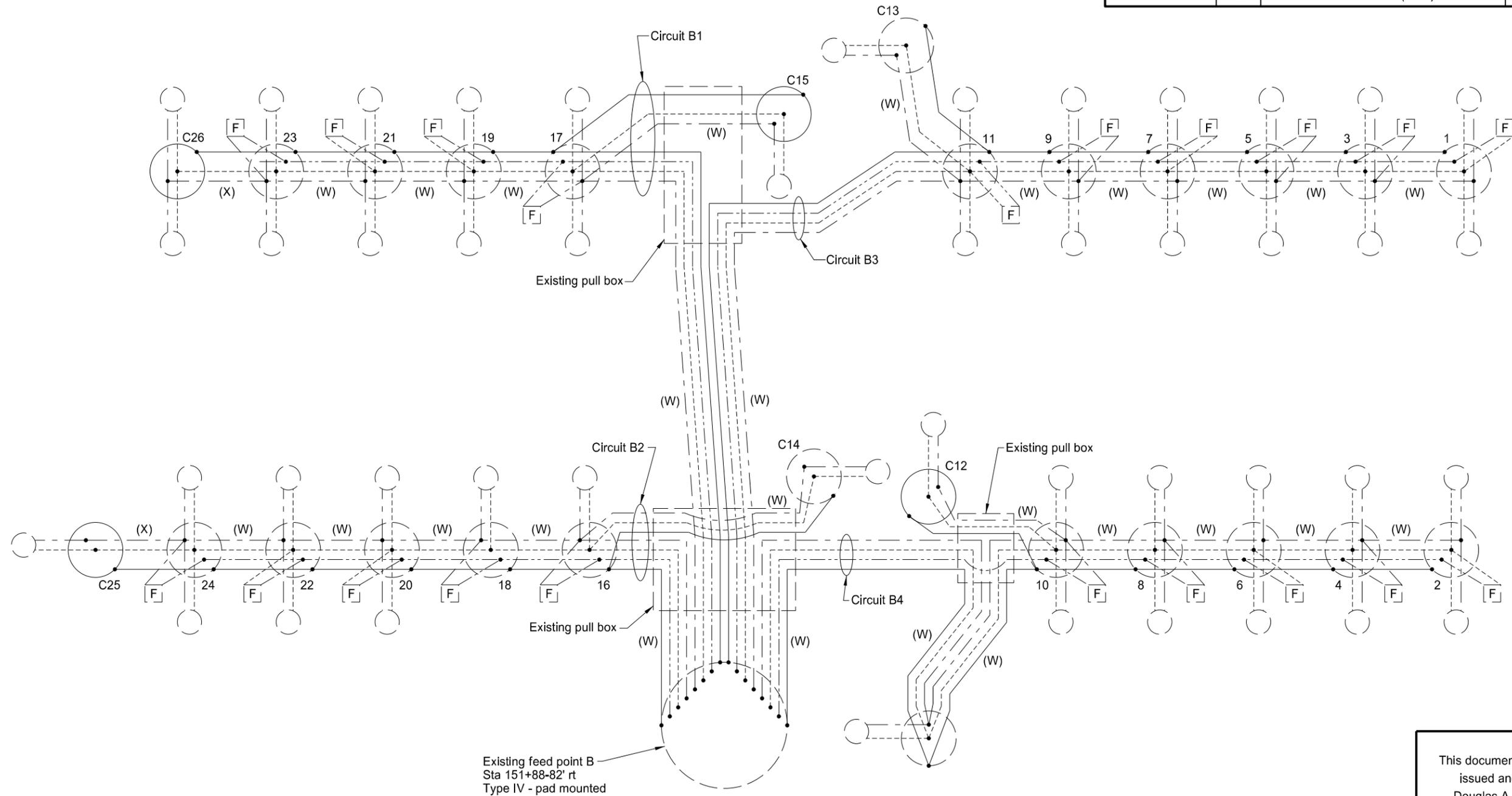
**LEGEND**

- |       |                              |    |   |
|-------|------------------------------|----|---|
| ----- | Neutral conductor            |    | Existing or relocated luminaire<br>120v x 240v operated on 240v                           |
| ----- | Phase conductor              |    | Existing festoon  |
| ----- | Phase conductor              |    | New combo signal and light standard   |
| ----- | Ground conductor             |    | Light standard number   |
| (V)   | Existing conductors          | 20 | Existing light standard or combo signal and light standard<br>or relocated light standard |
| (W)   | (3) No. 4 RHW, (1) No. 6 THW |    |   |
| (X)   | (2) No. 4 RHW, (1) No. 6 THW |    |   |
| (Y)   | (3) No. 6 RHW, (1) No. 6 THW |    |   |
| (Z)   | (2) No. 6 RHW, (1) No. 6 THW |    |   |

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Revise Lighting System  
 Lighting Schematic - Feed Point A  
 S Washington St (US 81) from 32nd Ave S to 17th Ave S  
 Grand Forks

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	S-NHU-6-081(083)941	140	8



Existing feed point B  
Sta 151+88-82' rt  
Type IV - pad mounted

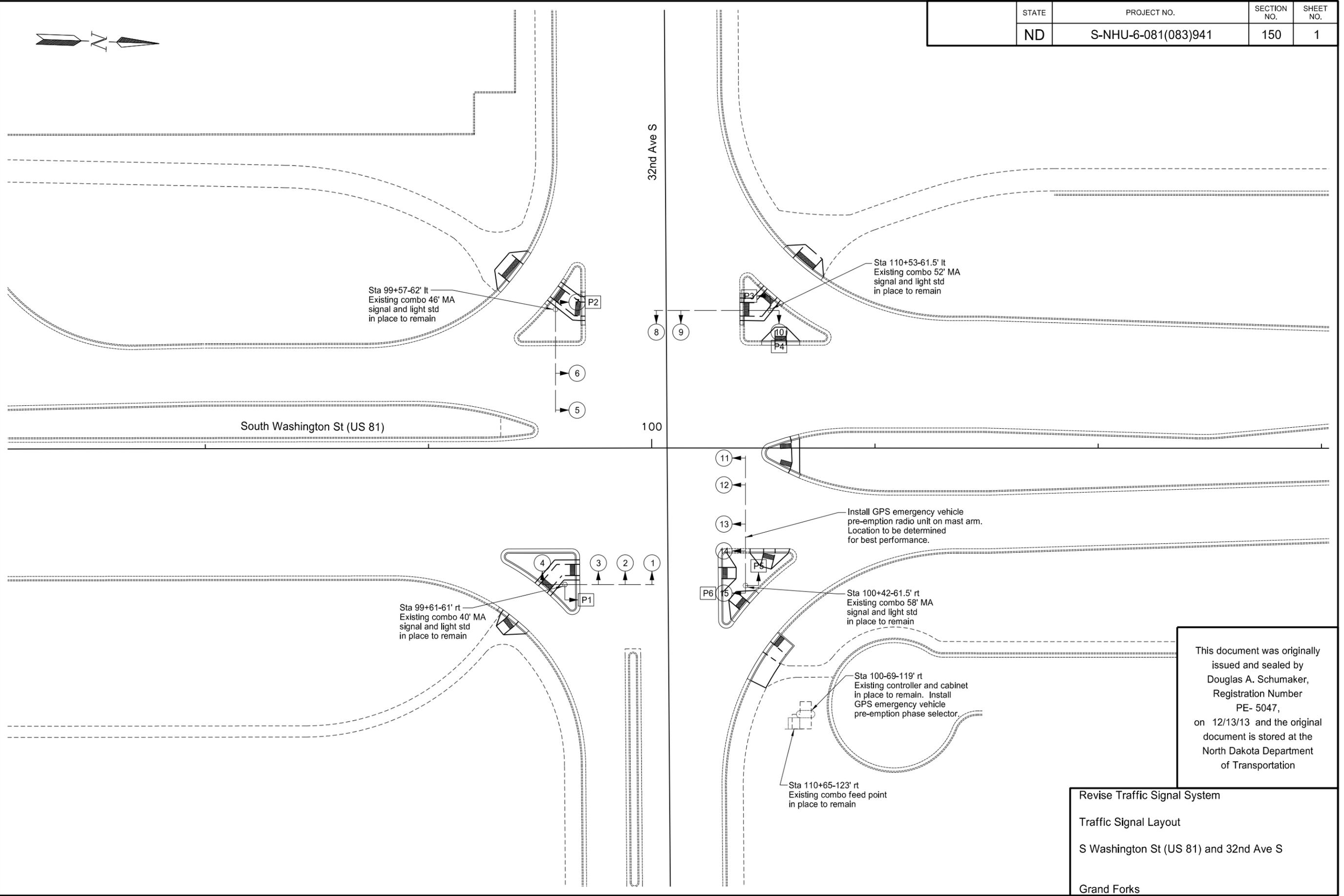
**LEGEND**

- |           |                              |    |   |
|-----------|------------------------------|----|---|
| -----     | Neutral conductor            |    | Existing or relocated luminaire<br>120v x 240v operated on 240v |
| - - - - - | Phase conductor              |    | Existing festoon  |
| -----     | Phase conductor              |    | New combo signal and light standard                             |
| -----     | Ground conductor             | 20 | Light standard number   |
| (W)       | Existing conductors          |    | Existing light standard or combo signal and light standard      |
| (X)       | (2) No. 6 RHW, (1) No. 6 THW |    |   |

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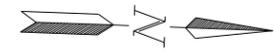
Revise Lighting System  
Lighting Schematic - Feed Point B  
S Washington St (US 81) from 32nd Ave S to 17th Ave S  
Grand Forks

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	1

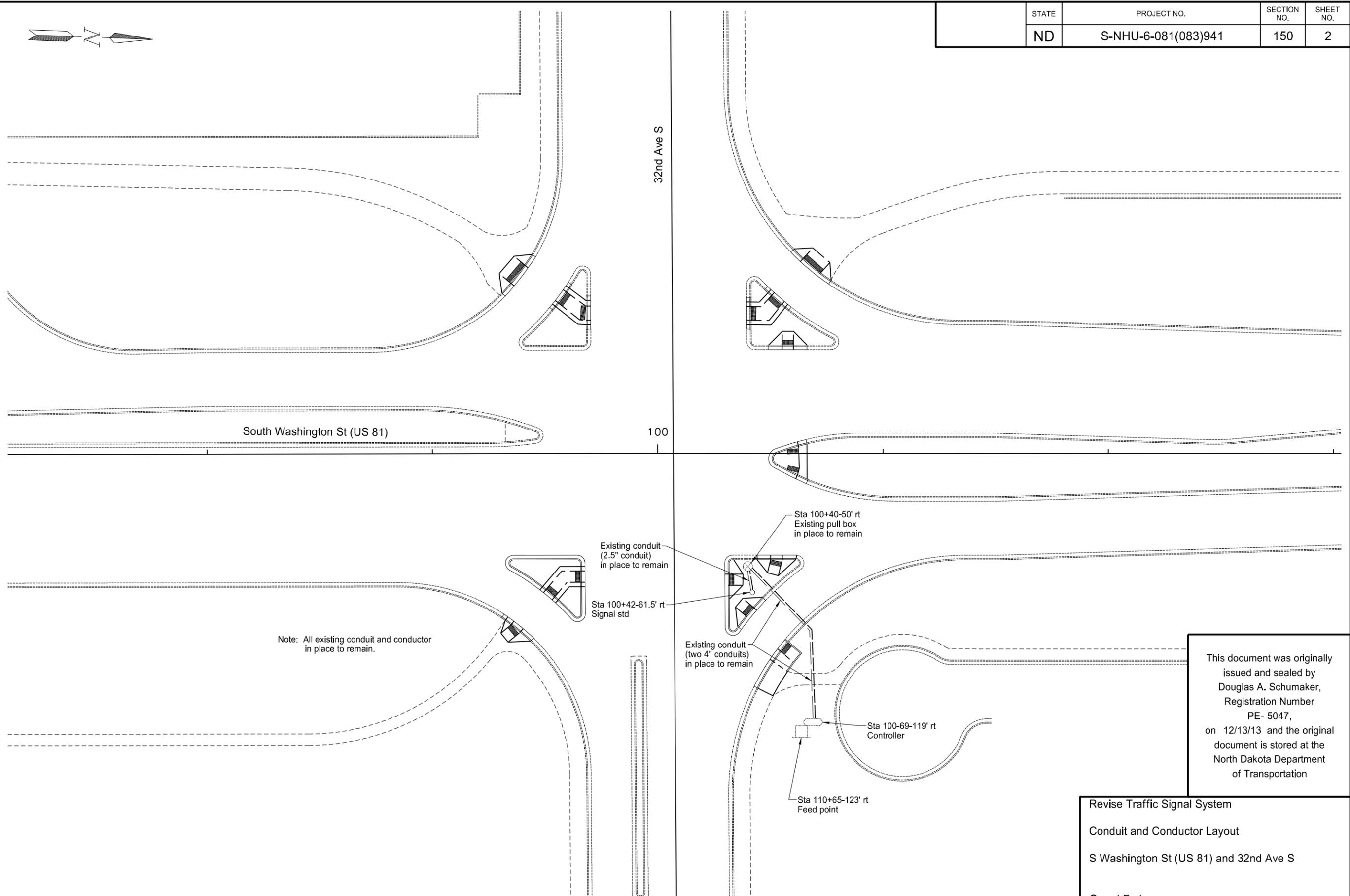


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Revise Traffic Signal System  
 Traffic Signal Layout  
 S Washington St (US 81) and 32nd Ave S  
 Grand Forks



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	2



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Revise Traffic Signal System  
 Conduit and Conductor Layout  
 S Washington St (US 81) and 32nd Ave S  
 Grand Forks

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	S-NHU-6-081(083)941	150	3

STATION	CONDUIT RUNS		CABLE RUNS	
	LF	DIA	LF	Type
100+42-61.5' rt to 100+40-50' rt to 100+69-119' rt	11 (C) 80 (C)	2.5" (C) 4" (C)	150	GPS EVP Cable (B)

(B) GPS Emergency Vehicle Pre-emption Cable (As required by manufacturer)

(C) Existing conduit

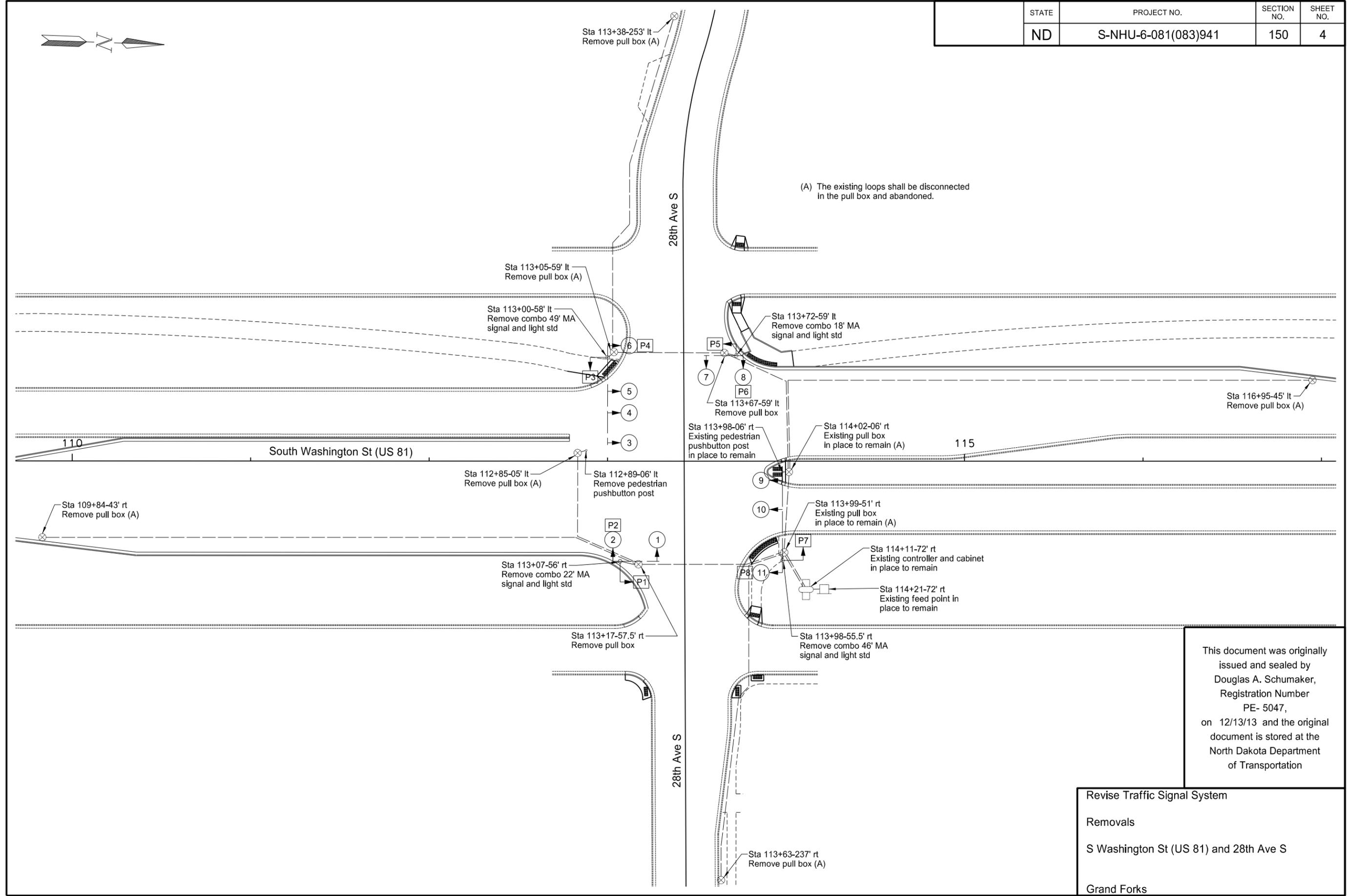
	QUANTITIES (A)				
	LF	EA	EA		EA
GPS Emergency Vehicle Pre-emption Cable					
GPS Emergency Vehicle Pre-emption System					
Revise Controller					
Revise Traffic Signal System - Site 1					
TOTAL	150	1	1		1

(A) These items shall not be bid separately but shall be included in the item "Revise Traffic Signal System - Site 1".

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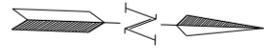
Revise Traffic Signal System  
Cable Runs and Quantities  
S Washington St (US 81) and 32nd Ave S  
Grand Forks

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	4



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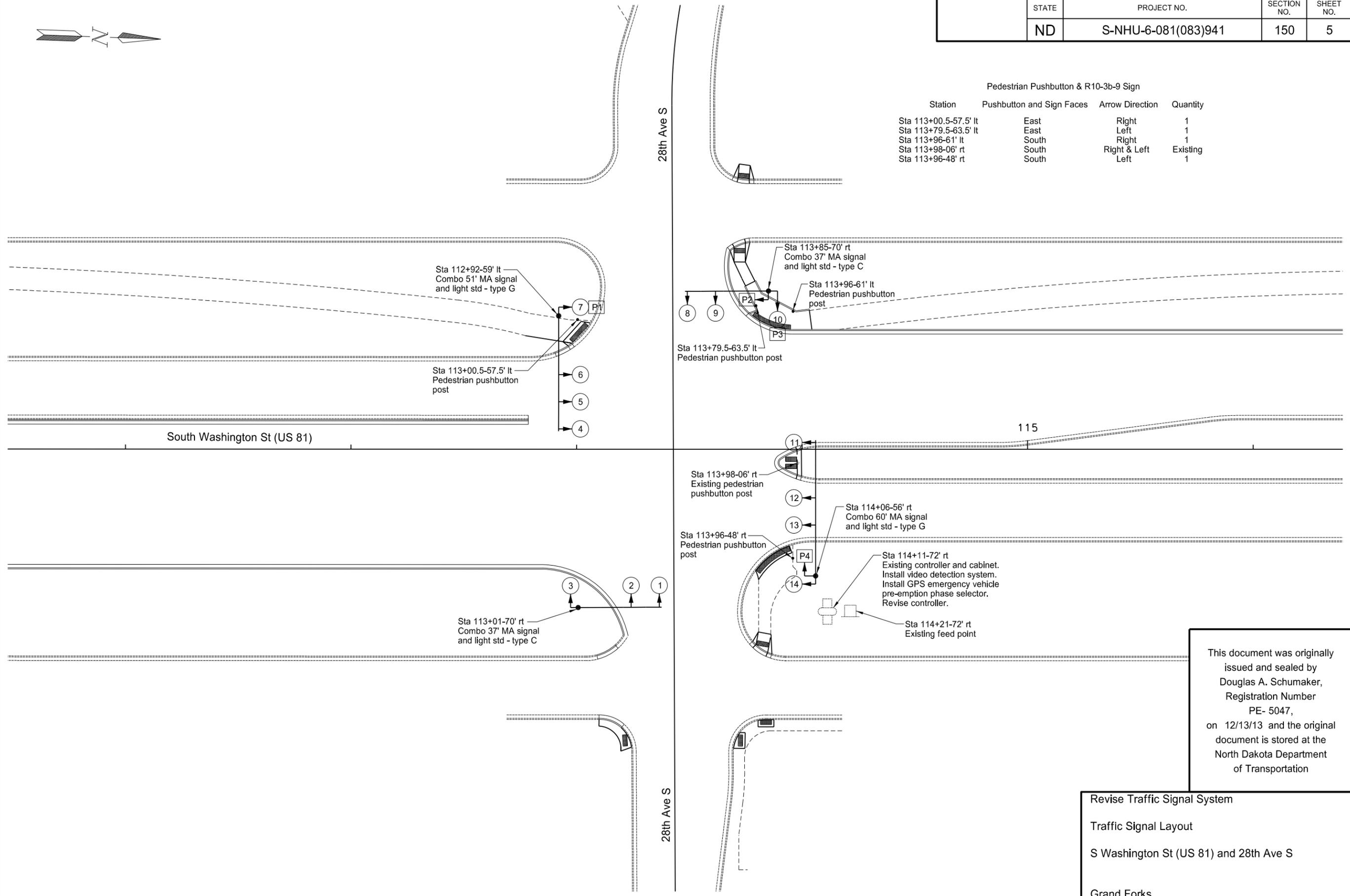
Revise Traffic Signal System  
 Removals  
 S Washington St (US 81) and 28th Ave S  
 Grand Forks



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	5

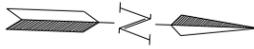
Pedestrian Pushbutton & R10-3b-9 Sign

Station	Pushbutton and Sign Faces	Arrow Direction	Quantity
Sta 113+00.5-57.5' lt	East	Right	1
Sta 113+79.5-63.5' lt	East	Left	1
Sta 113+96-61' lt	South	Right	1
Sta 113+98-06' rt	South	Right & Left	Existing
Sta 113+96-48' rt	South	Left	1

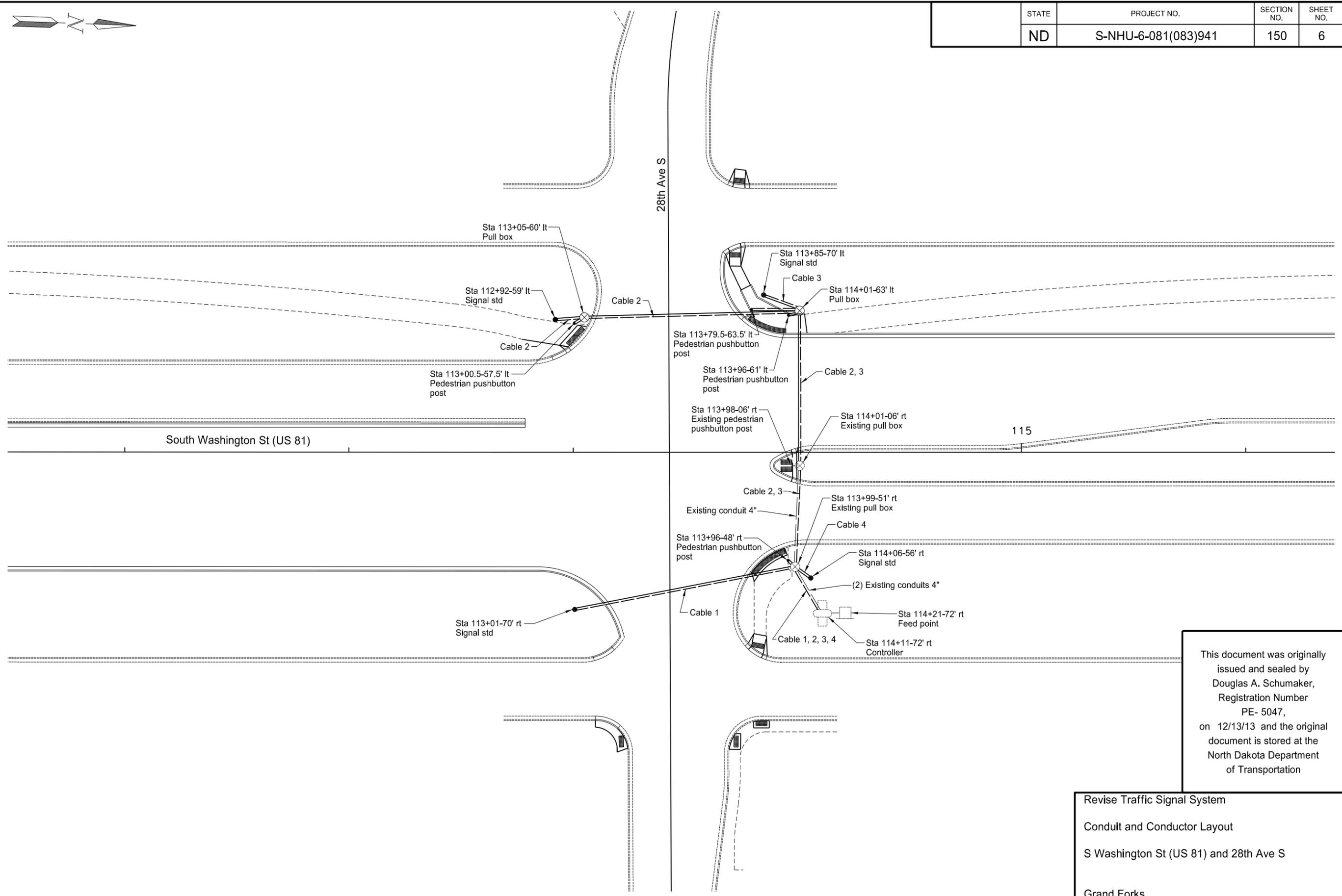


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Revise Traffic Signal System  
 Traffic Signal Layout  
 S Washington St (US 81) and 28th Ave S  
 Grand Forks

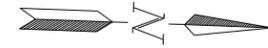


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	6



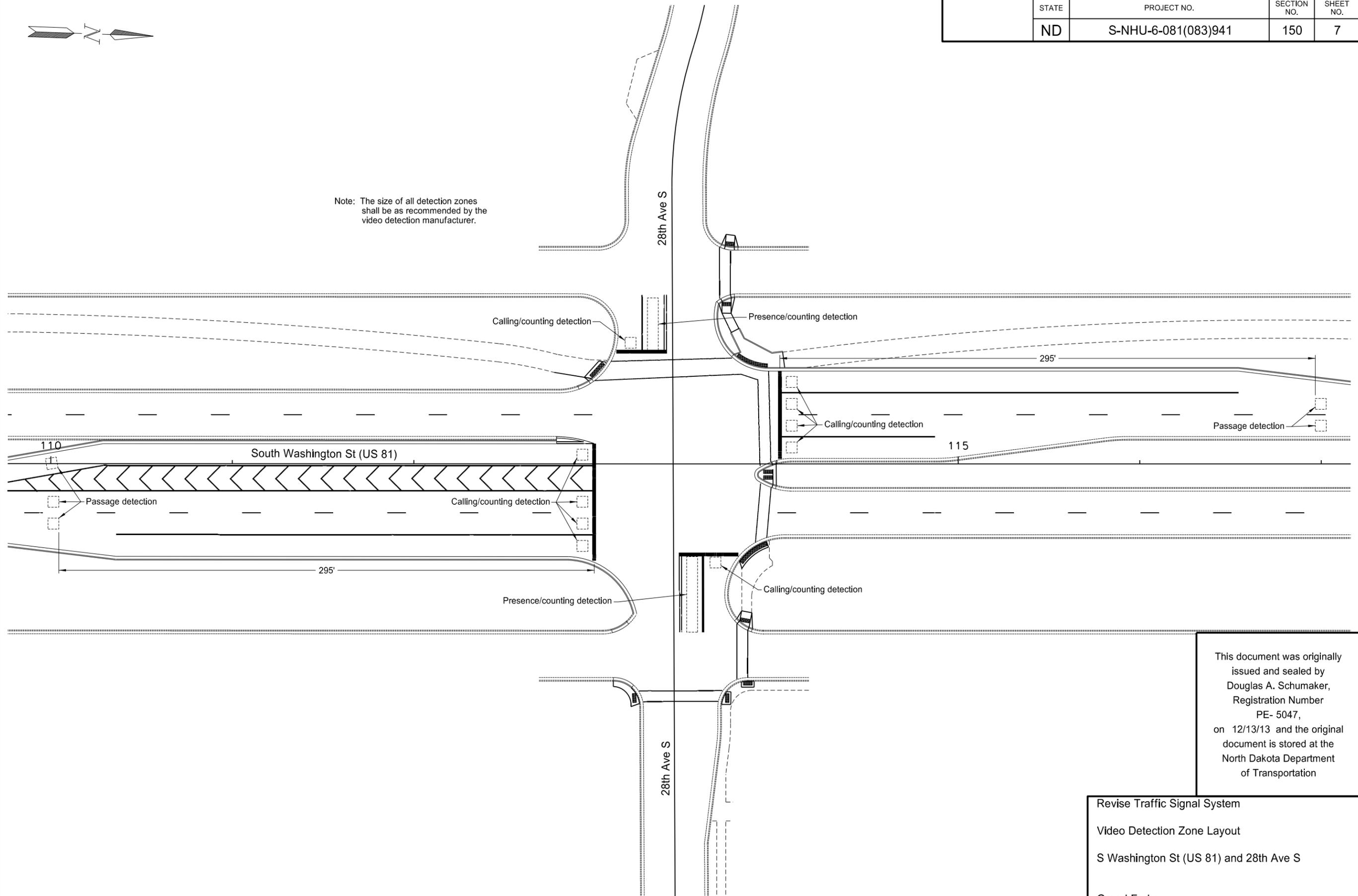
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Revise Traffic Signal System  
 Conduit and Conductor Layout  
 S Washington St (US 81) and 28th Ave S  
 Grand Forks



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	7

Note: The size of all detection zones shall be as recommended by the video detection manufacturer.



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Revise Traffic Signal System  
 Video Detection Zone Layout  
 S Washington St (US 81) and 28th Ave S  
 Grand Forks

STATION	CONDUIT RUNS		CABLE RUNS	
	LF	DIA	LF	Type
112+92-59' lt to 113+05-60' lt	12	2"	18 70 63	Cable 2 No. 16 AWG 3 (D) No. 12 AWG 2 (E)
113+00.5-57.5' lt to 113+05-60' lt	5	1"	17	No. 16 AWG 2 (C)
113+05-60' lt to 114+01-63' lt	96	2"	96 96 96	Cable 2 No. 16 AWG 2 (C) No. 16 AWG 3 (D) No. 12 AWG 2 (E)
113+79.5-63.5' lt to 114+01-63' lt	21	1"	30	No. 16 AWG 2 (C)
113+85-70' lt 114+01-63' lt	16	2"	23 74 71	Cable 3 No. 16 AWG 3 (D) No. 12 AWG 2 (E)
113+96-61' lt to 114+01-63' lt	5	1"	14	No. 16 AWG 2 (C)
114+01-63' lt to 114+01-06' rt	68	2.5"	69 69 207 138 138	Cable 2 Cable 3 (3) No. 16 AWG 2 (C) (2) No. 16 AWG 3 (D) (2) No. 12 AWG 2 (E)
113+98-06' rt to 114+01-06' rt	3 (G)	1" (G)	Existing	Existing Ped PB Conductor
114+01-06' rt to 113+99-51' rt	45 (G)	4" (G)	45 45 Existing 135 90 90	Cable 2 Cable 3 Existing Ped PB Conductor (3) No. 16 AWG 2 (C) (2) No. 16 AWG 3 (D) (2) No. 12 AWG 2 (E)
113+01-70' rt to 113+99-51' rt	99	2"	105 155 153	Cable 1 No. 16 AWG 3 (D) No. 12 AWG 2 (E)
113+96-48' rt to 113+99-51' rt	4	1"	12	No. 16 AWG 2 (C)
114+06-56' rt to 113+99-51' rt	8	2"	14 66 59 59	Cable 4 No. 16 AWG 3 (D) No. 12 AWG 2 (E) GPS EVP Cable (F)
113+99-51' rt to 114+11-72' rt	23 (G) 23 (G)	4" (G) 4" (G)	33 33 33 33 Existing 132 132 132 33	Cable 1 Cable 2 Cable 3 Cable 4 Existing Ped PB Conductor (4) No. 16 AWG 2 (C) (4) No. 16 AWG 3 (D) (4) No. 12 AWG 2 (E) GPS EVP Cable (F)

- (C) Pedestrian Pushbutton Conductor
- (D) Video Detection Power Cable - (As Required by Manufacturer)
- (E) Indicator Light Conductor
- (F) GPS Emergency Vehicle Pre-emption Cable
- (G) Existing Conduit

STATION	QUANTITIES (A)																												
	Concrete Foundation - Traffic Signals	1" Dia Rigid Conduit	2" Dia Rigid Conduit	2.5" Dia Rigid Conduit	Pull Box	GPS Emergency Vehicle Pre-emption Cable	No. 12 AWG 2 Conductor Cable	No. 12 AWG 3 Conductor Cable	No. 12 AWG 5 Conductor Cable	No. 12 AWG 7 Conductor Cable	No. 12 AWG 12 Conductor Cable	No. 16 AWG 2 Conductor Cable	No. 16 AWG 3 Conductor Cable	Combo 37' MA Signal & Light Std - Type C	Combo 51' MA Signal & Light Std - Type G	Combo 60' MA Signal & Light Std - Type G	1-Way 3 Section Head W/12" Lens - Mast Arm Mounted	1-Way 3 Section Head W/12" Lens - Post Mounted	1-Way 2 Section Ped Head Signal - Post Mounted	Pedestrian Pushbutton Post	Video Detection System	GPS Emergency Vehicle Pre-emption System with Indicator Lights	Revise Controller	Remove Combo Signal and Light Standard	Remove Pull Box	Remove Pedestrian Pushbutton Post	Revise Traffic Signal System - Site 2		
113+01-70' rt	1										121 (B)			1			2	1											
113+85-70' lt	1							24 (B)	121 (B)					1			2	1	2										
114+06-56' rt	1							12 (B)	201 (B)							1	3	1	1										
112+92-59' lt	1							12 (B)	198 (B)					1			3	1	1										
114+11-72' rt																							1						
Various Locations		35	231	68	2	92	802			138	478	643	821								4	1	1		4	8	1		
TOTAL	4	35	231	68	2	92	802	48	641	138	478	643	821	2	1	1	10	4	4	4	1	1	1	4	8	1		1	

(A) These items shall not be bid separately but shall be included in the item "Revise Traffic Signal System - Site 2".

(B) Conductor used for internal wiring

Description	Footings	
	24" and 30" Dia	36" and 42" Dia
Combination Signal and Light Stds 40' Mounting Height		
Single 37' Mast Arm	14', 14'	14', 14'
Single 51' Mast Arm	18', 17'	16', 16'
Single 60' Mast Arm	19', 18'	17', 17'

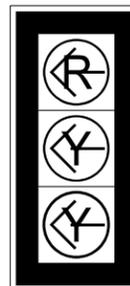
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Revise Traffic Signal System  
Cable Runs and Quantities  
S Washington St (US 81) and 28th Ave S  
Grand Forks

CONDUCTORS		CABLE 1 (NO.12 AWG 7)		CONDUCTORS		CABLE 2 (NO.12 AWG 12)		CONDUCTORS		CABLE 3 (NO.12 AWG 12)			
BASE	TRACER	HEAD	INDICATION	BASE	TRACER	HEAD	INDICATION	BASE	TRACER	HEAD	INDICATION		
1	Black		Spare	1	Black	P1	Walk	1	Black	P2	Walk		
2	White		Neutral	2	White		Neutral	2	White		Neutral		
3	Red	1, 2, 3	Red	3	Red	4, 5, 6, 7	Red and Red Arrow	3	Red	8, 9, 10	Red		
4	Green		Ground	4	Green		Ground	4	Green		Ground		
5	Orange	1, 2, 3	Yellow	5	Orange	4, 5, 6, 7	Yellow and Yellow Arrow	5	Orange	8, 9, 10	Yellow		
6	Blue	1, 2, 3	Green	6	Blue	5, 6, 7	Green	6	Blue	8, 9, 10	Green		
7	White	Black	Spare	7	White	Black	P1	Don't Walk	7	White	Black	P2	Don't Walk
				8	Red	Black		Spare	8	Red	Black		Spare
				9	Green	Black		Spare	9	Green	Black	P3	Walk
				10	Orange	Black	4	Flashing Yellow Arrow	10	Orange	Black		Spare
				11	Blue	Black		Spare	11	Blue	Black		Spare
				12	Black	White		Spare	12	Black	White	P3	Don't Walk

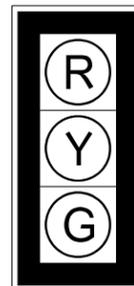
CONDUCTORS		CABLE 4 (NO.12 AWG 12)		
BASE	TRACER	HEAD	INDICATION	
1	Black		Spare	
2	White		Neutral	
3	Red	11, 12, 13, 14	Red and Red Arrow	
4	Green		Ground	
5	Orange	11, 12, 13, 14	Yellow and Yellow Arrow	
6	Blue	12, 13, 14	Green	
7	White	Black	Spare	
8	Red	Black	Spare	
9	Green	Black	P4	Walk
10	Orange	Black	11	Flashing Yellow Arrow
11	Blue	Black		Spare
12	Black	White	P4	Don't Walk

Heads 4, 11



Flashing

Heads 1, 2, 3, 5, 6, 7, 8, 9, 10, 12, 13, 14



Heads P1, P2, P3, P4

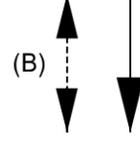
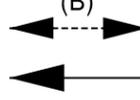


Pedestrian signal heads shall have 12" LED modules

Traffic signal heads shall have 12" LED modules with 5" louvered backplates

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Revise Traffic Signal System  
Signal Heads and Conductors  
S Washington St (US 81) and 28th Ave S  
Grand Forks

	Remove Phase 1. Phase 1 becomes future phase.																Future																Future																Future																
	Phase 1								Phase 2								Phase 3								Phase 4								Phase 5								Phase 6								Phase 7								Phase 8								
	Head #	R/W	Clear To 0						R/W	Clear To 0						R/W	Clear To 0						R/W	Clear To 0						R/W	Clear To 0						R/W	Clear To 0						R/W	Clear To 0																				
		2	3	4	5	6	7	8		3	4	5	6	7	8	1	2		4	5	6	7	8	1	2		5	6	7	8	1	2	3		6	7	8	1	2	3	4		7	8	1	2	3	4	5		8	1	2	3	4	5	6		1	2	3	4	5	6	7
1																										G	Y	(A)	Y																																				
2																										G	Y	(A)	Y																																				
3																										G	Y	(A)	Y																																				
4										$\overleftarrow{FY}$	$\overleftarrow{Y}$	(A)	$\overleftarrow{Y}$																																																				
5										G	Y	(A)	Y																																																				
6										G	Y	(A)	Y																																																				
7										G	Y	(A)	Y																																																				
8																																																																	
9																																																																	
10																																																																	
11																																																																	
12																																																																	
13																																																																	
14																																																																	

Blank Squares Denote a Red Indication.

- (A) When one phase is on alone, any nonconflicting phase may start timing concurrently without a clearance interval. (See Chart A)
- (B) Upon pedestrian actuation only.

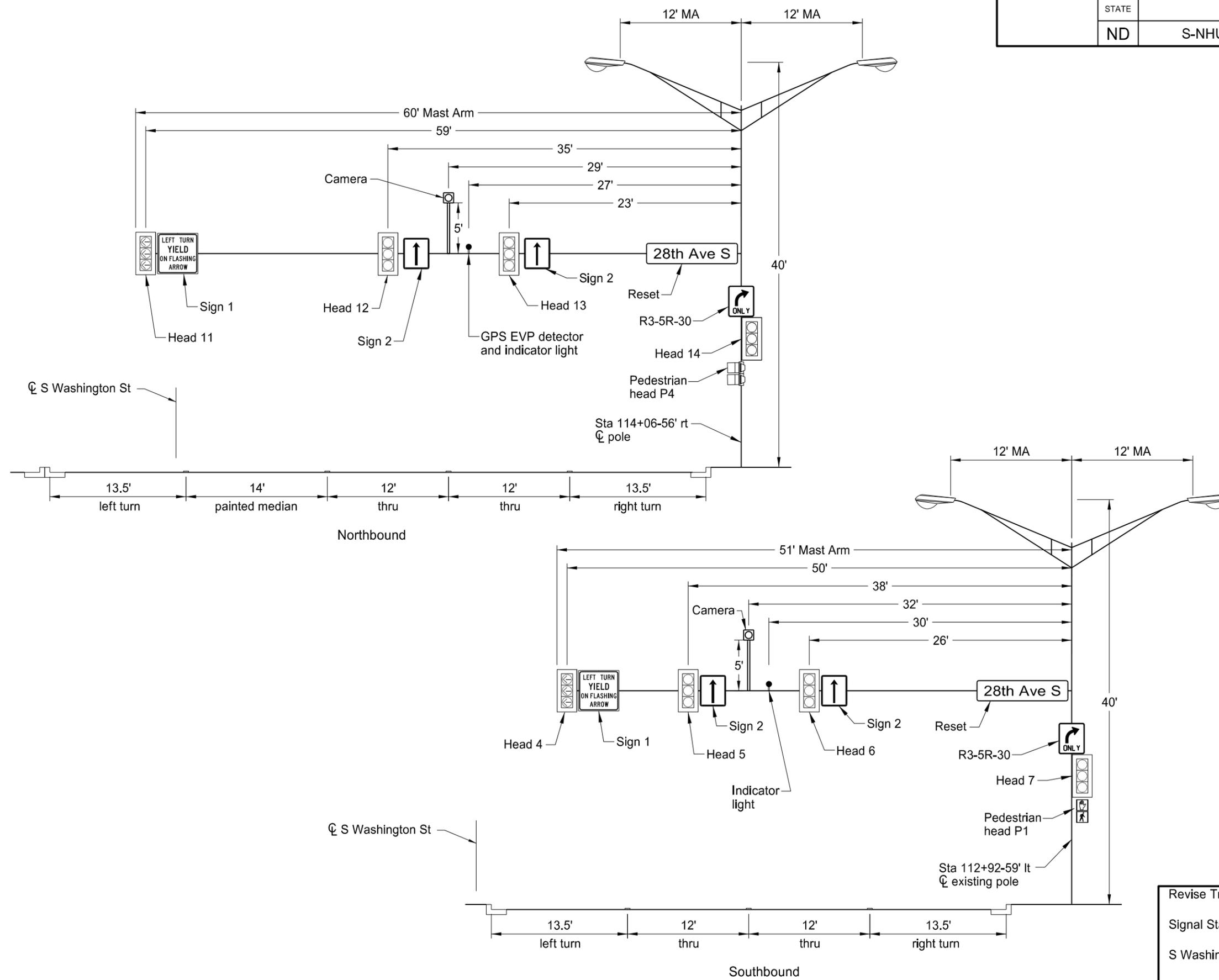
CHART A

On Phase	Non-Conflicting Phase Allowed to Time Concurrently
1	Future
2	6
3	Future
4	8
5	Future
6	2
7	Future
8	4

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Revise Traffic Signal System  
 Controller Phasing  
 S Washington St (US 81) and 28th Ave S  
 Grand Forks

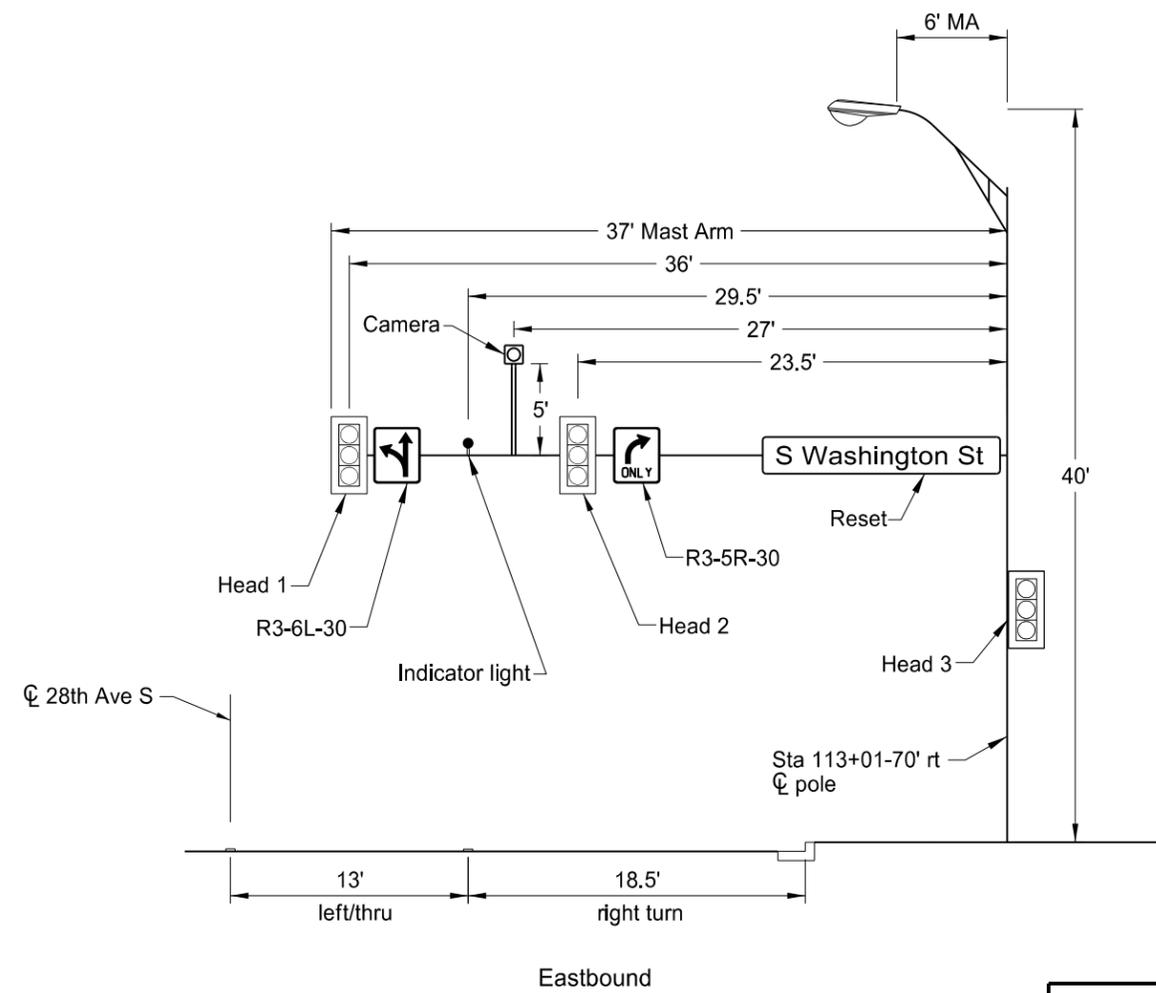
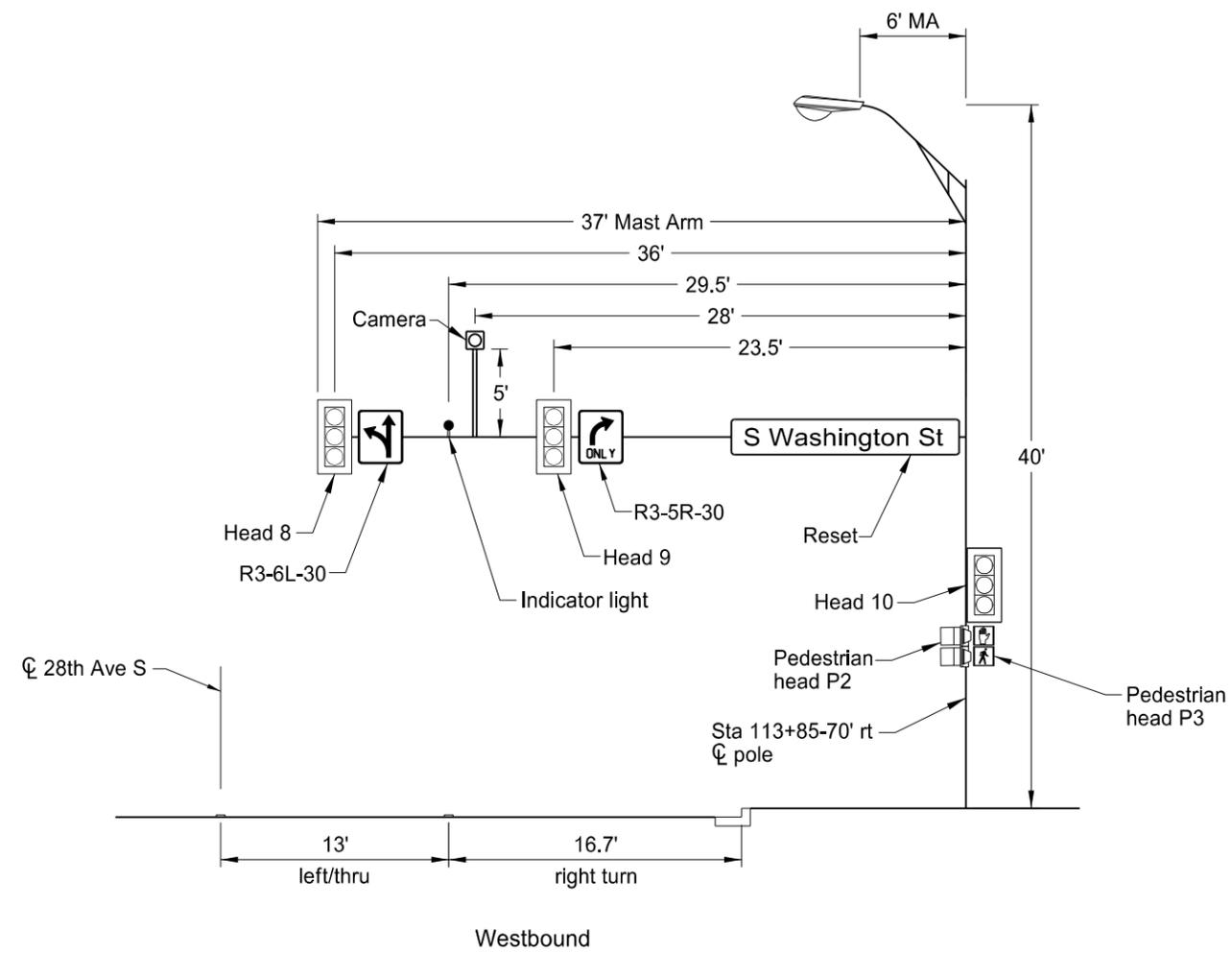
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	11



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Revise Traffic Signal System  
 Signal Standards and Head Locations  
 S Washington St (US 81) and 28th Ave S  
 Grand Forks

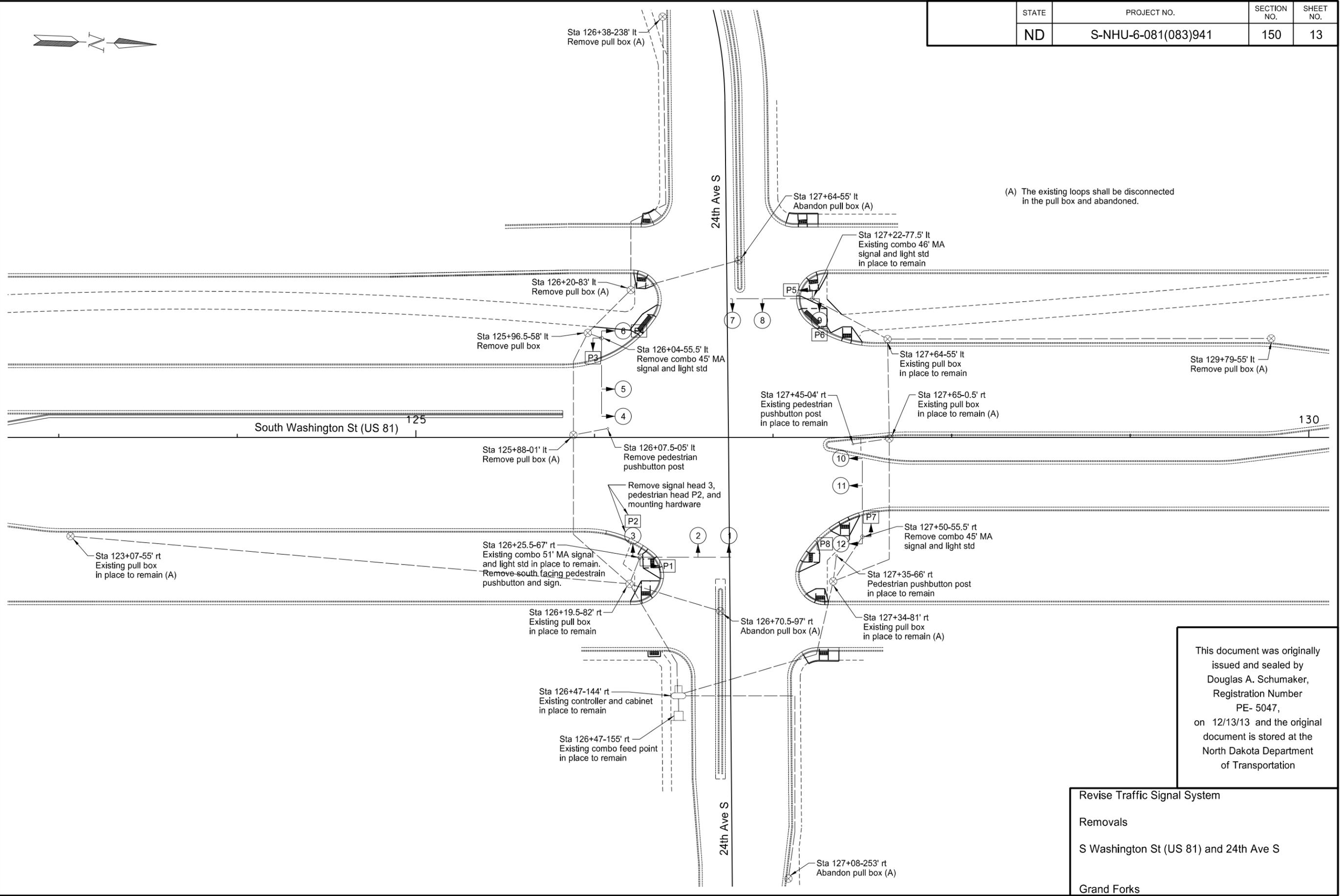
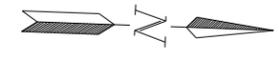
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	12



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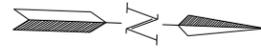
Revise Traffic Signal System  
Signal Standards and Head Locations  
S Washington St (US 81) and 28th Ave S  
Grand Forks

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	13



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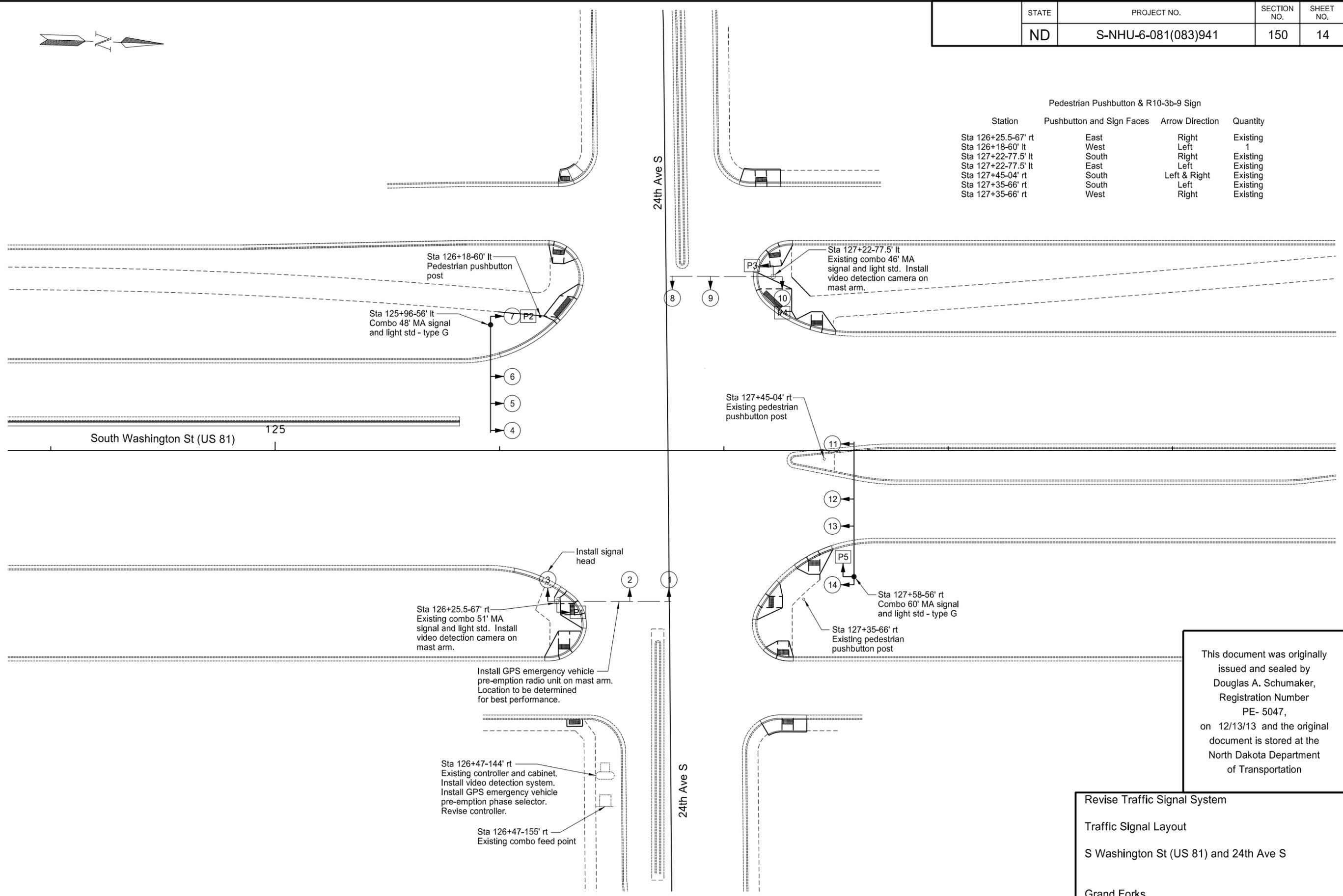
Revise Traffic Signal System  
 Removals  
 S Washington St (US 81) and 24th Ave S  
 Grand Forks



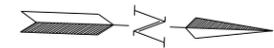
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	14

Pedestrian Pushbutton & R10-3b-9 Sign

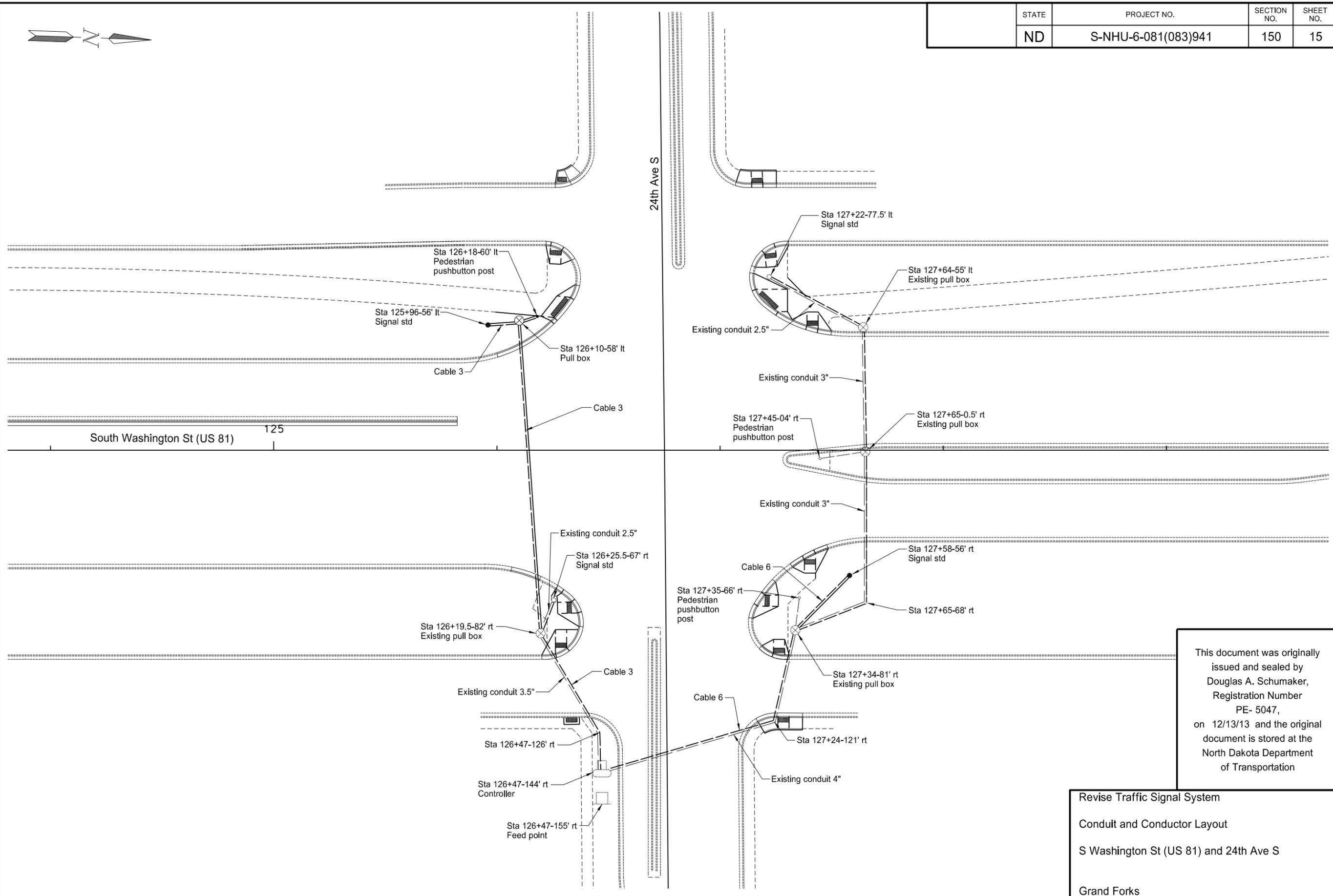
Station	Pushbutton and Sign Faces	Arrow Direction	Quantity
Sta 126+25.5-67' rt	East	Right	Existing
Sta 126+18-60' lt	West	Left	1
Sta 127+22-77.5' lt	South	Right	Existing
Sta 127+22-77.5' lt	East	Left	Existing
Sta 127+45-04' rt	South	Left & Right	Existing
Sta 127+35-66' rt	South	Left	Existing
Sta 127+35-66' rt	West	Right	Existing



Revise Traffic Signal System  
 Traffic Signal Layout  
 S Washington St (US 81) and 24th Ave S  
 Grand Forks

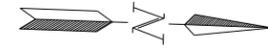


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	15

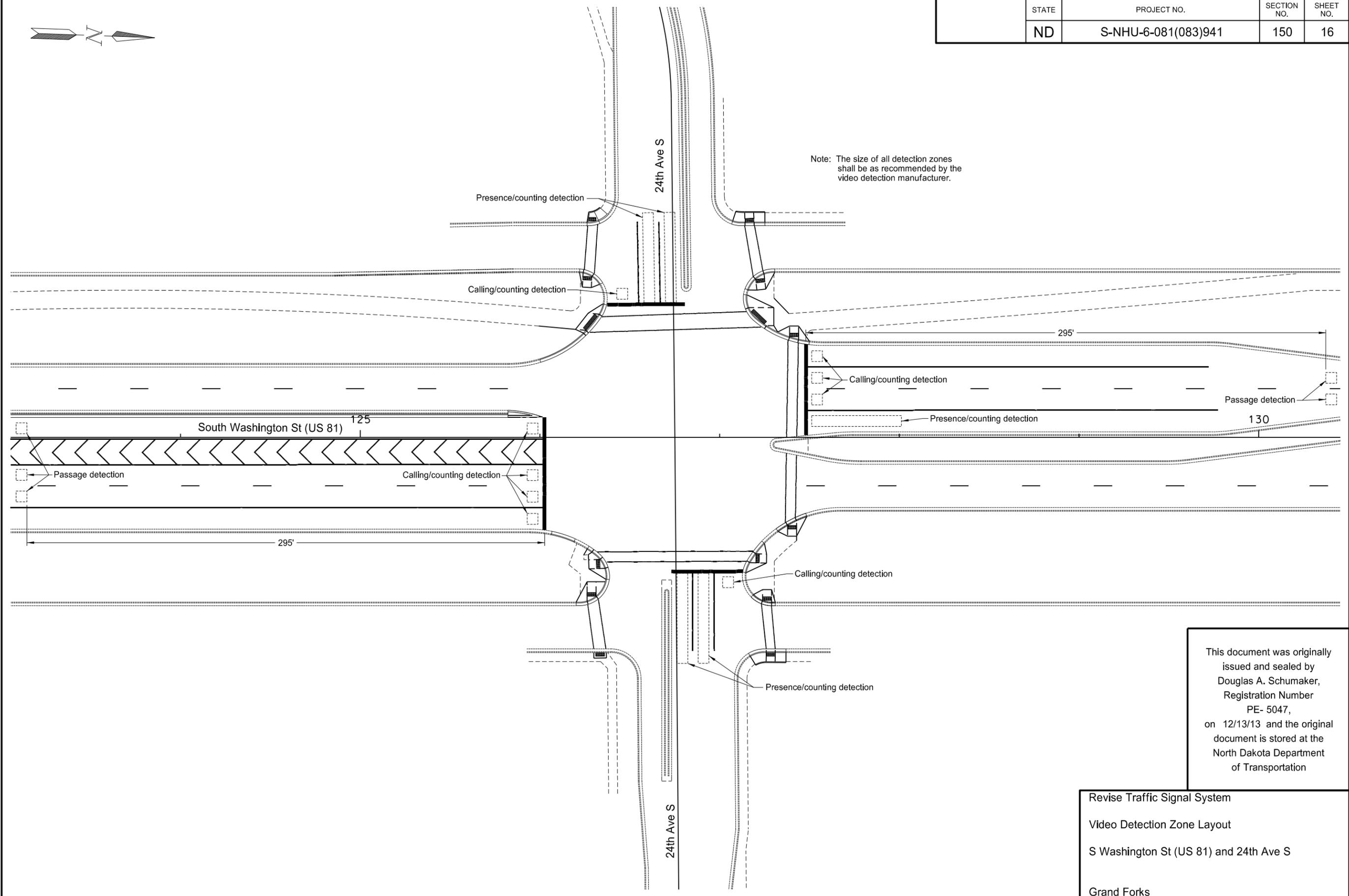


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Revise Traffic Signal System  
 Conduit and Conductor Layout  
 S Washington St (US 81) and 24th Ave S  
 Grand Forks



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	16



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Revise Traffic Signal System  
 Video Detection Zone Layout  
 S Washington St (US 81) and 24th Ave S  
 Grand Forks

STATION	CONDUIT RUNS		CABLE RUNS	
	LF	DIA	LF	Type
127+22-77.5' lt to 127+64-55' lt to 127+65-00.5' rt to 127+34-81' rt	47 (G) 55 (G) 67 (G) 34 (G)	2.5" (G) 3" (G) 3" (G) 3" (G)	264	No. 16 AWG 3 (D)
127+58-56' rt to 127+34-81' rt	34	2"	40 92 86	Cable 6 No. 16 AWG 3 (D) No. 12 AWG 2 (E)
127+34-81' rt to 127+24-121' rt to 126+47-144' rt	41 (G) 80 (G)	4" (G) 4" (G)	130 260 130	Cable 6 (2) No. 16 AWG 3 (D) No. 12 AWG 2 (E)
126+18-60' lt to 126+10-58' lt	8	1"	17	No. 16 AWG 2 (C)
125+96-56' lt to 126+10-58' lt	13	2"	19 71 64	Cable 3 No. 16 AWG 3 (D) No. 12 AWG 2 (E)
126+10-58' lt to 126+19.5-82' rt	139	2"	140 140 140 140	Cable 3 No. 16 AWG 2 (C) No. 16 AWG 3 (D) No. 12 AWG 2 (E)
126+25.5-67' rt to 126+19.5-82' rt	15 (G)	2.5" (G)	78 76	No. 16 AWG 3 (D) GPS EVP Cable (F)
126+19.5-82' rt to 126+47-126' rt to 126+47-144' rt	52 (G) 17 (G)	3.5" (G) 3.5" (G)	79 79 158 79 79	Cable 3 No. 16 AWG 2 (C) (2) No. 16 AWG 3 (D) No. 12 AWG 2 (E) GPS EVP Cable (F)

- (C) Pedestrian Pushbutton Conductor
- (D) Video Detection Power Cable - (As Required by Manufacturer)
- (E) Indicator Light Conductor
- (F) GPS Emergency Vehicle Pre-emption Cable
- (G) Existing Conduit

STATION	QUANTITIES (A)																											
	Concrete Foundation - Traffic Signals	1" Dia Rigid Conduit	2" Dia Rigid Conduit	Pull Box	GPS Emergency Vehicle Pre-emption Cable	No. 12 AWG 2 Conductor Cable	No. 12 AWG 3 Conductor Cable	No. 12 AWG 5 Conductor Cable	No. 12 AWG 7 Conductor Cable	No. 12 AWG 12 Conductor Cable	No. 16 AWG 3 Conductor Cable	Combo 48" MA Signal & Light Std - Type G	Combo 60" MA Signal & Light Std - Type G	1-Way 4 Section Head W/12" Lens - Mast Arm Mounted	1-Way 3 Section Head W/12" Lens - Mast Arm Mounted	1-Way 3 Section Head W/12" Lens - Post Mounted	1-Way 5 Section Head W/12" Lens - Post Mounted	1-Way 2 Section Ped Head Signal - Post Mounted	Video Detection System	GPS Emergency Vehicle Pre-emption System with Indicator Lights	Revise Controller	Remove Pedestrian Signal Head and Mounting Hardware	Remove Vehicular Heads	Remove Combo Signal & Light Standard	Remove Pedestrian Pushbutton Post	Remove Pedestrian Pushbutton and Sign	Remove Pull Box	Revise Traffic Signal System - Site 3
EA	LF	LF	EA	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
127+58-56' rt	1						12(B)	186 (B)	15 (B)				1		3		1	1										
126+25.5-67' rt																							1	1			1	
125+96-56' lt	1						12(B)	174 (B)	15 (B)			1		1	2		1	1										
126+47-144' rt																					1							
Various Locations		8	186	1	155	499				408	1063									1	1				2	1		5
TOTAL	2	8	186	1	155	499	24	360	30	408	1063	1	1	1	5	1	2	2	1	1	1	1	1	2	1	1	5	1

(A) These items shall not be bid separately but shall be included in the item "Revise Traffic Signal System - Site 3".

(B) Conductor used for internal wiring

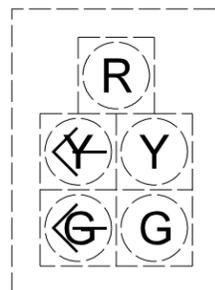
Description	Footings	
	Footings "D" 24" and 30" Dia	Footings "D" 36" and 42" Dia
Combination Signal and Light Stds 40' Mounting Height		
Single 48' Mast Arm	17', 16'	16', 16'
Single 60' Mast Arm	19', 18'	17', 17'

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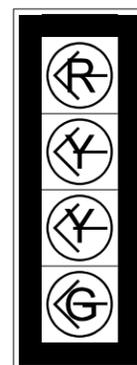
Revise Traffic Signal System  
Cable Runs and Quantities  
S Washington St (US 81) and 24th Ave S  
Grand Forks

CONDUCTORS		CABLE 3 (NO.12 AWG 12)		CONDUCTORS		CABLE 6 (NO.12 AWG 12)	
BASE	TRACER	HEAD	INDICATION	BASE	TRACER	HEAD	INDICATION
1	Black		Walk	1	Black		Spare
2	White		Neutral	2	White		Neutral
3	Red		Red and Red Arrow	3	Red	11, 12, 13, 14	Red and Red Arrow
4	Green		Ground	4	Green		Ground
5	Orange		Yellow and Yellow Arrow	5	Orange	11, 12, 13, 14	Yellow and Yellow Arrow
6	Blue		Green	6	Blue	12, 13, 14	Green
7	White	Black	Don't Walk	7	White	Black	14
8	Red	Black	Yellow Arrow	8	Red	Black	14
9	Green	Black	Green Arrow	9	Green	Black	P5
10	Orange	Black	Flashing Yellow Arrow	10	Orange	Black	11
11	Blue	Black	Green Arrow	11	Blue	Black	
12	Black	White	Spare	12	Black	White	P5

Existing Heads 1, 8



Head 4



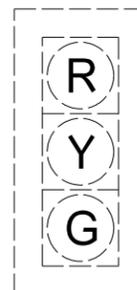
Flashing

Head 11

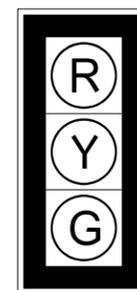


Flashing

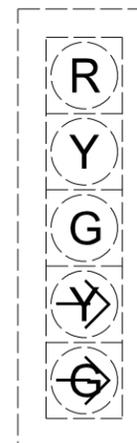
Existing Heads 2, 9



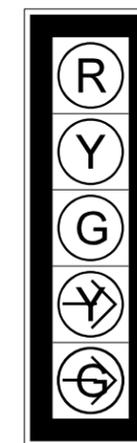
Heads 3, 5, 6, 12, 13



Existing Head 10



Head 7, 14



Existing Heads P1, P3, P4



Heads P2, P5



New pedestrian signal heads shall have 12" LED modules

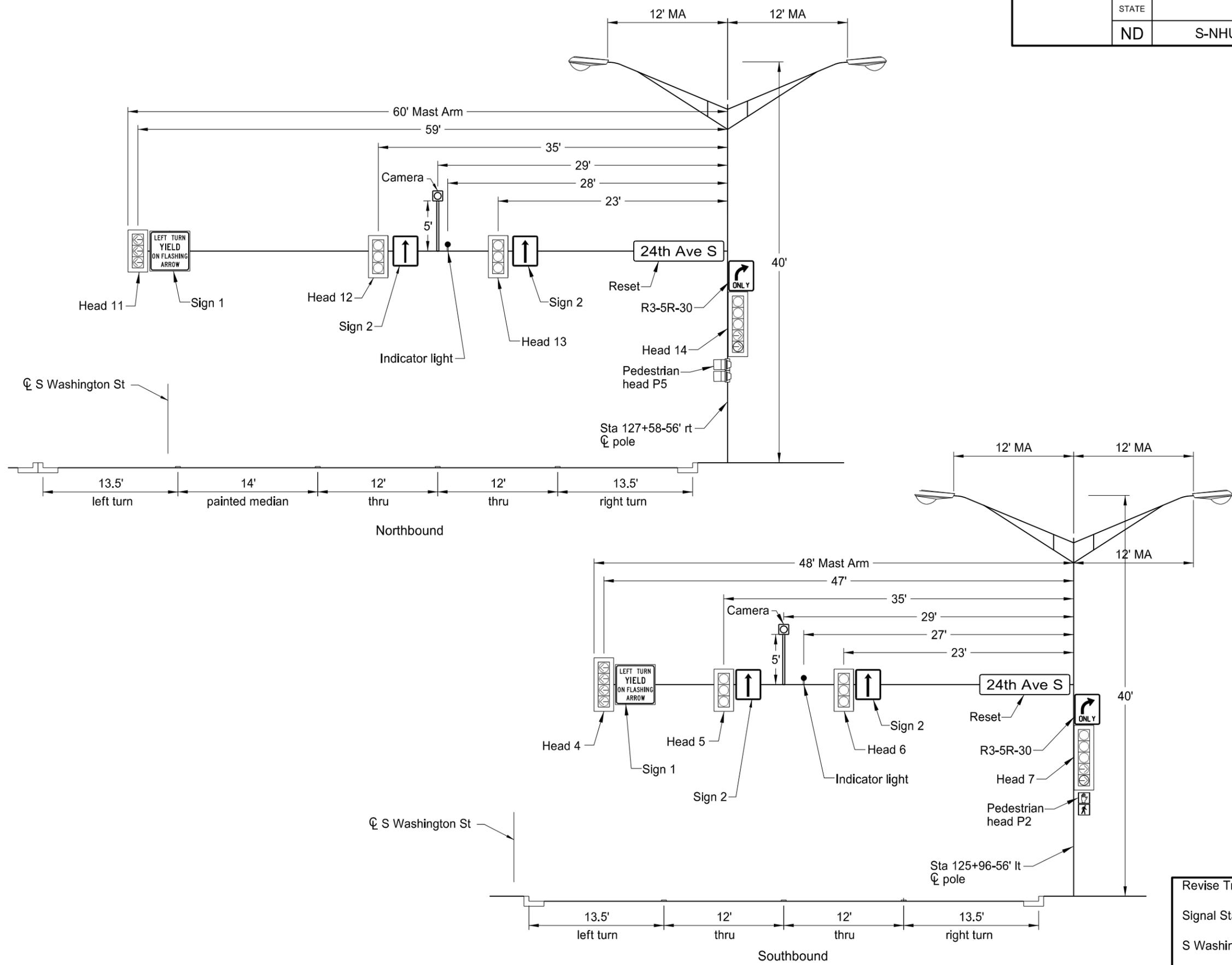
New traffic signal heads shall have 12" LED modules with 5" louvered backplates

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Revise Traffic Signal System  
Signal Heads and Conductors  
S Washington St (US 81) and 24th Ave S  
Grand Forks



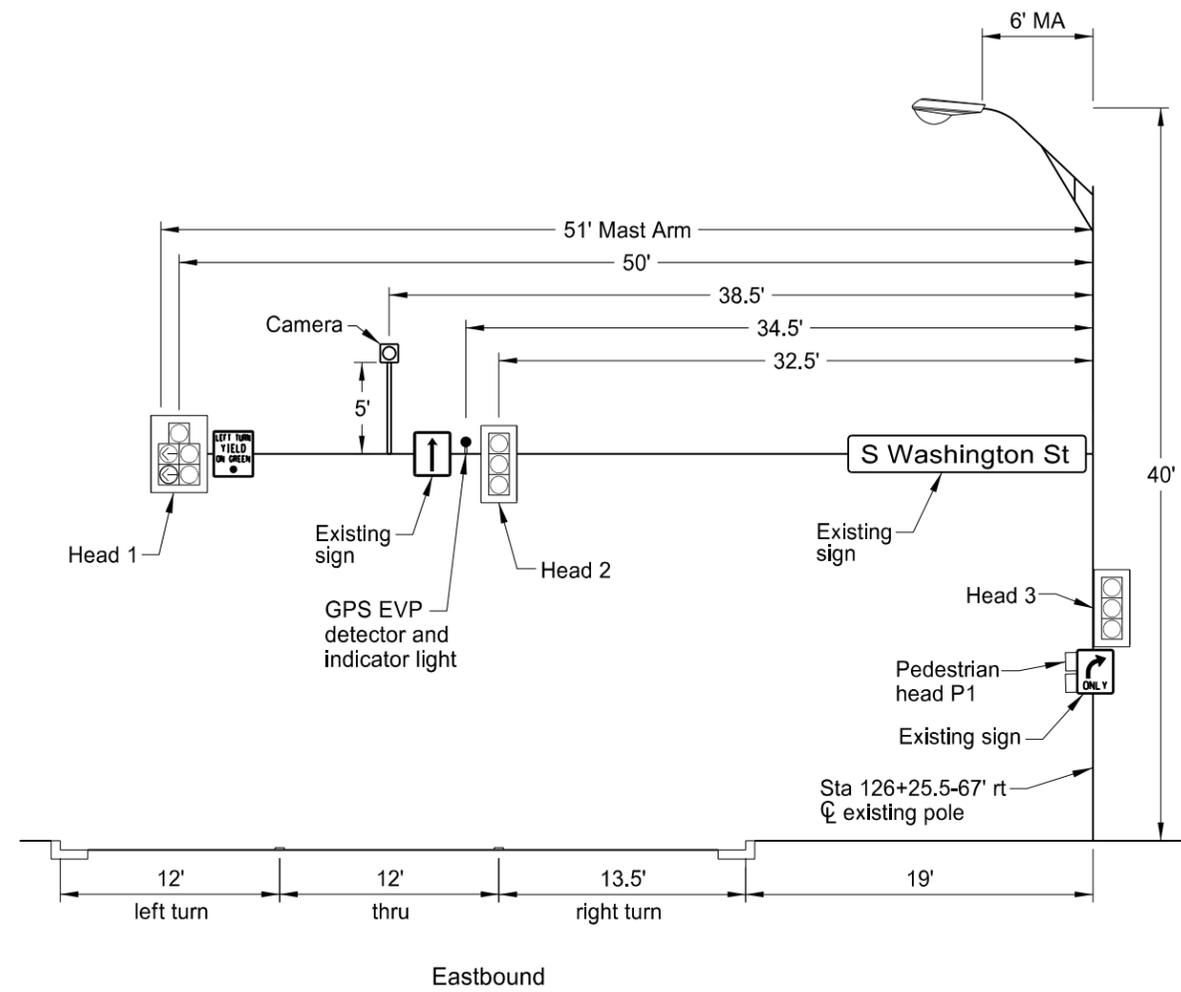
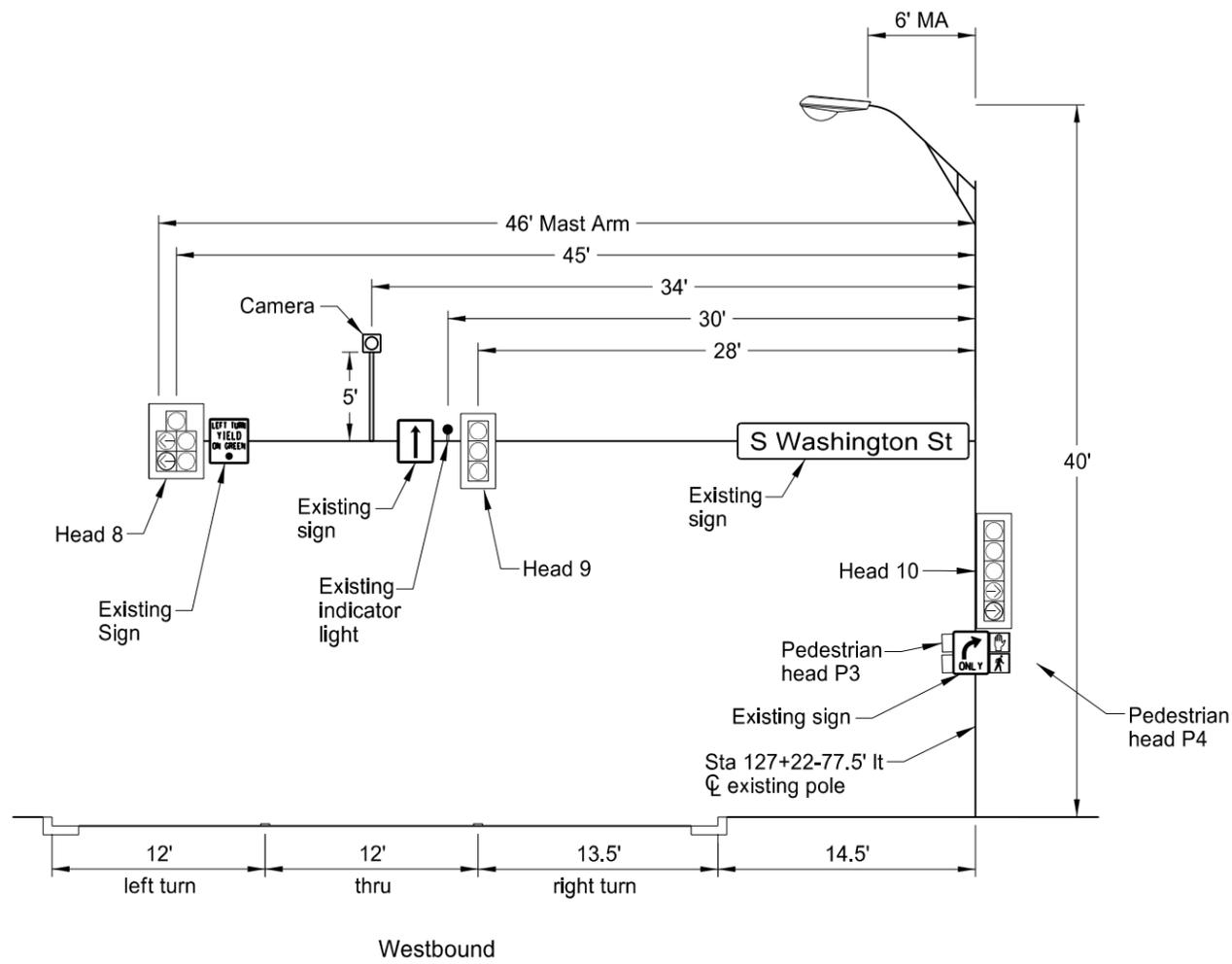
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	20



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Revise Traffic Signal System  
 Signal Standards and Head Locations  
 S Washington St (US 81) and 24th Ave S  
 Grand Forks

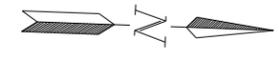
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	21



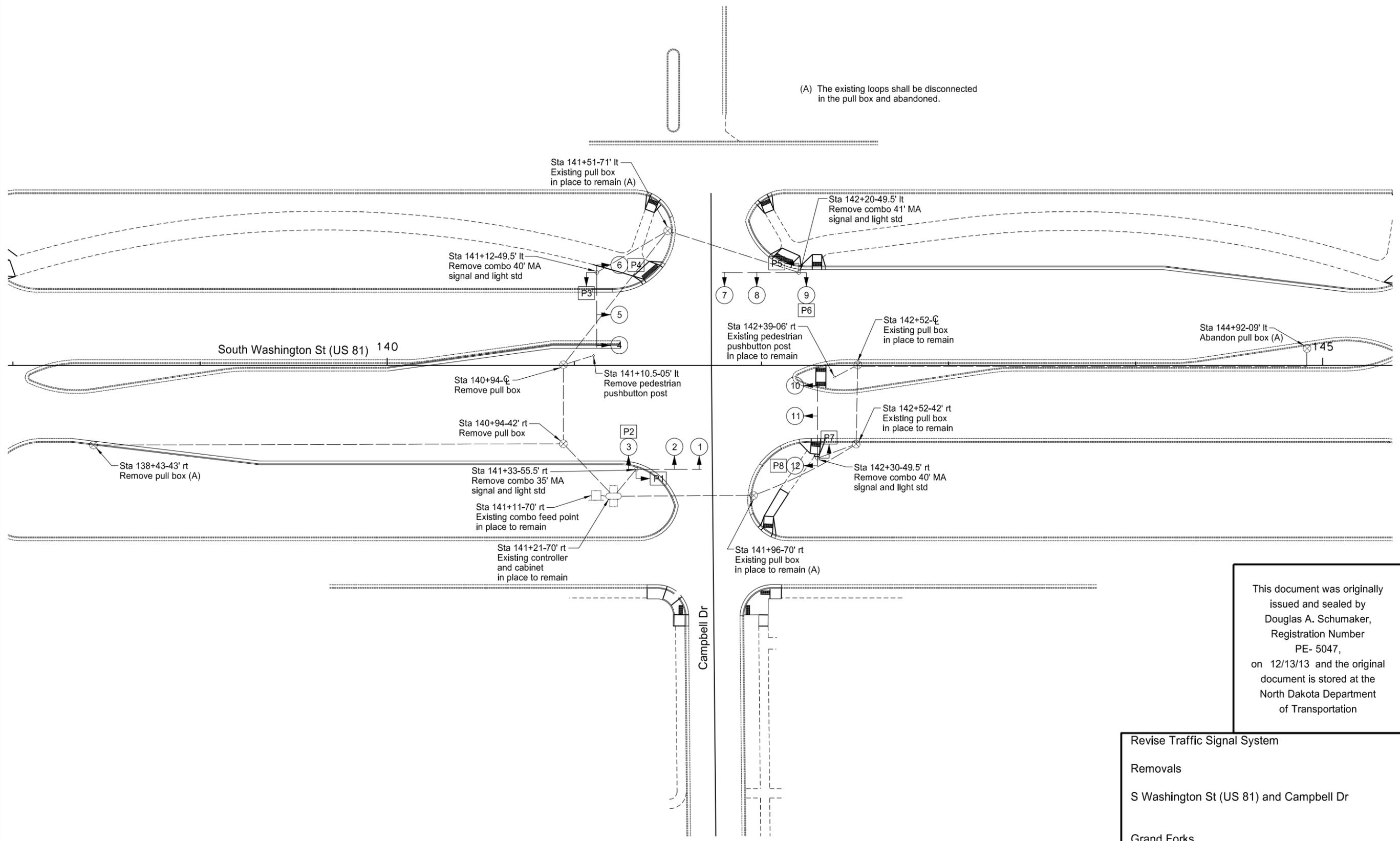
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Revise Traffic Signal System  
 Signal Standards and Head Locations  
 S Washington St (US 81) and 24th Ave S  
 Grand Forks

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	22

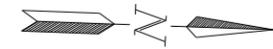


(A) The existing loops shall be disconnected in the pull box and abandoned.



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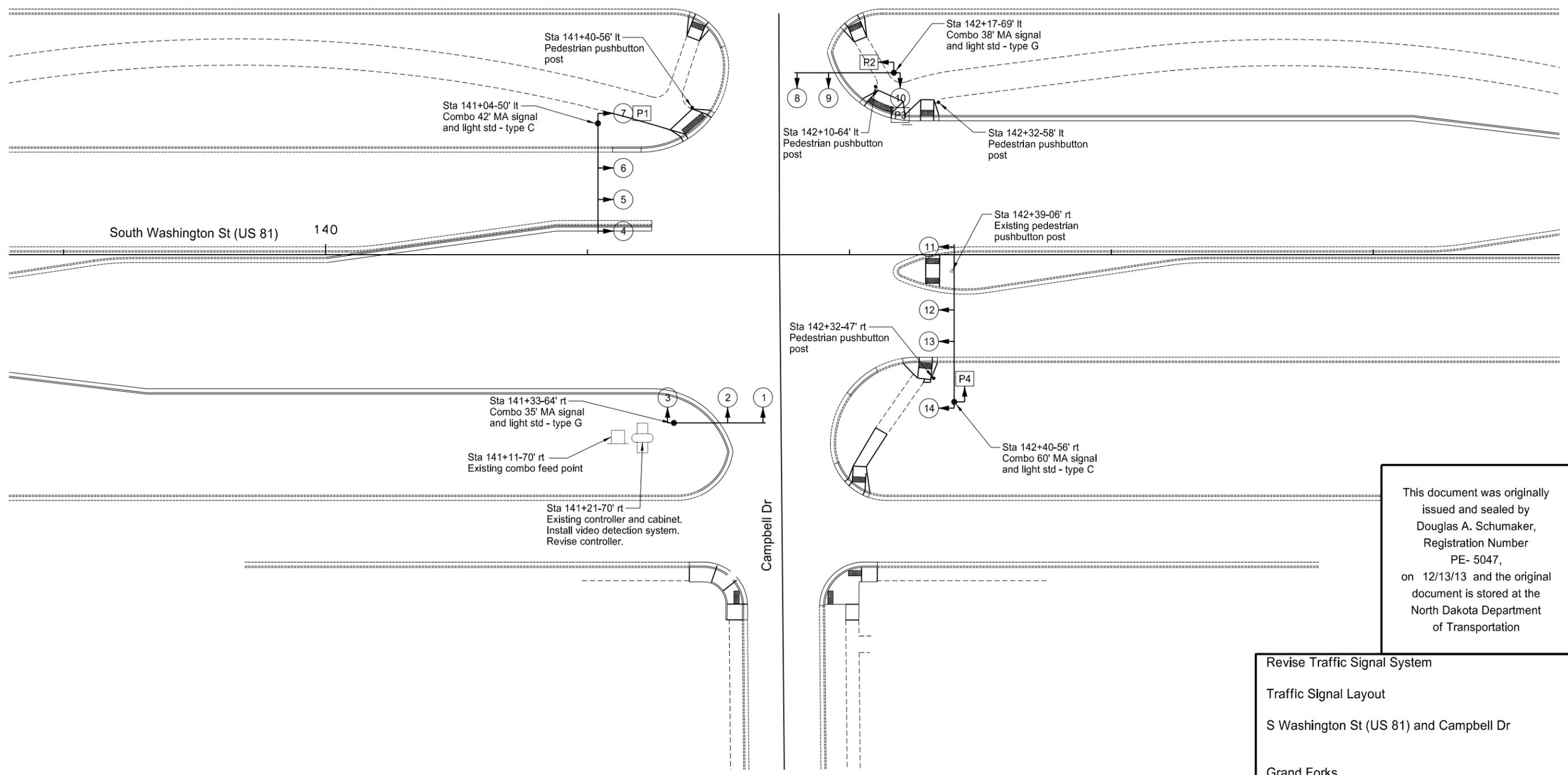
Revise Traffic Signal System  
 Removals  
 S Washington St (US 81) and Campbell Dr  
 Grand Forks



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	23

Pedestrian Pushbutton & R10-3b-9 Sign

Station	Pushbutton and Sign Faces	Arrow Direction	Quantity
Sta 141+40-56' lt	East	Right	1
Sta 142+10-64' lt	East	Left	1
Sta 142+32-58' lt	South	Right	1
Sta 142+39-06' rt	South	Right & Left	Existing
Sta 142+32-47' rt	South	Left	1

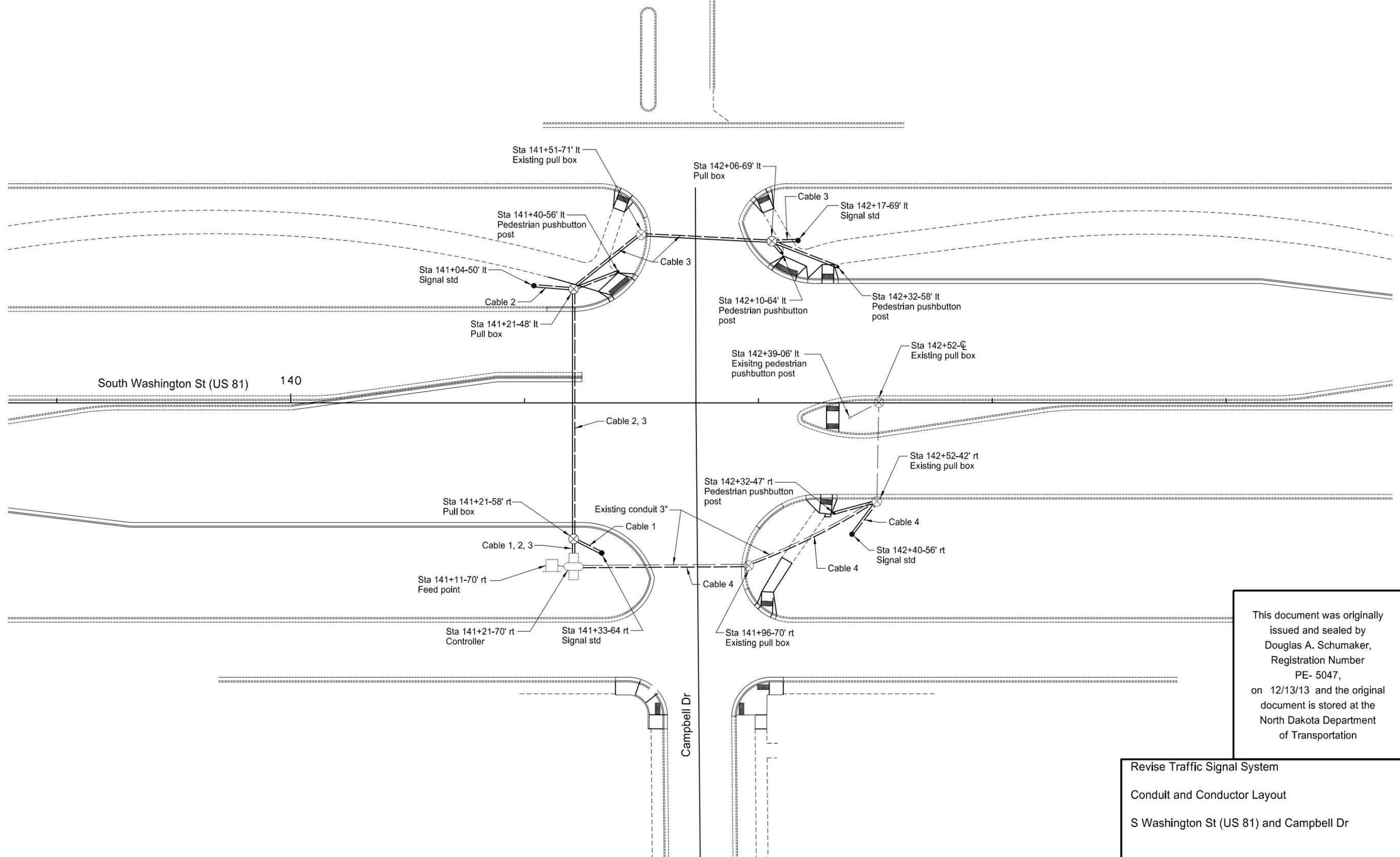


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Revise Traffic Signal System  
 Traffic Signal Layout  
 S Washington St (US 81) and Campbell Dr  
 Grand Forks

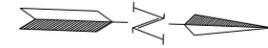


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	24



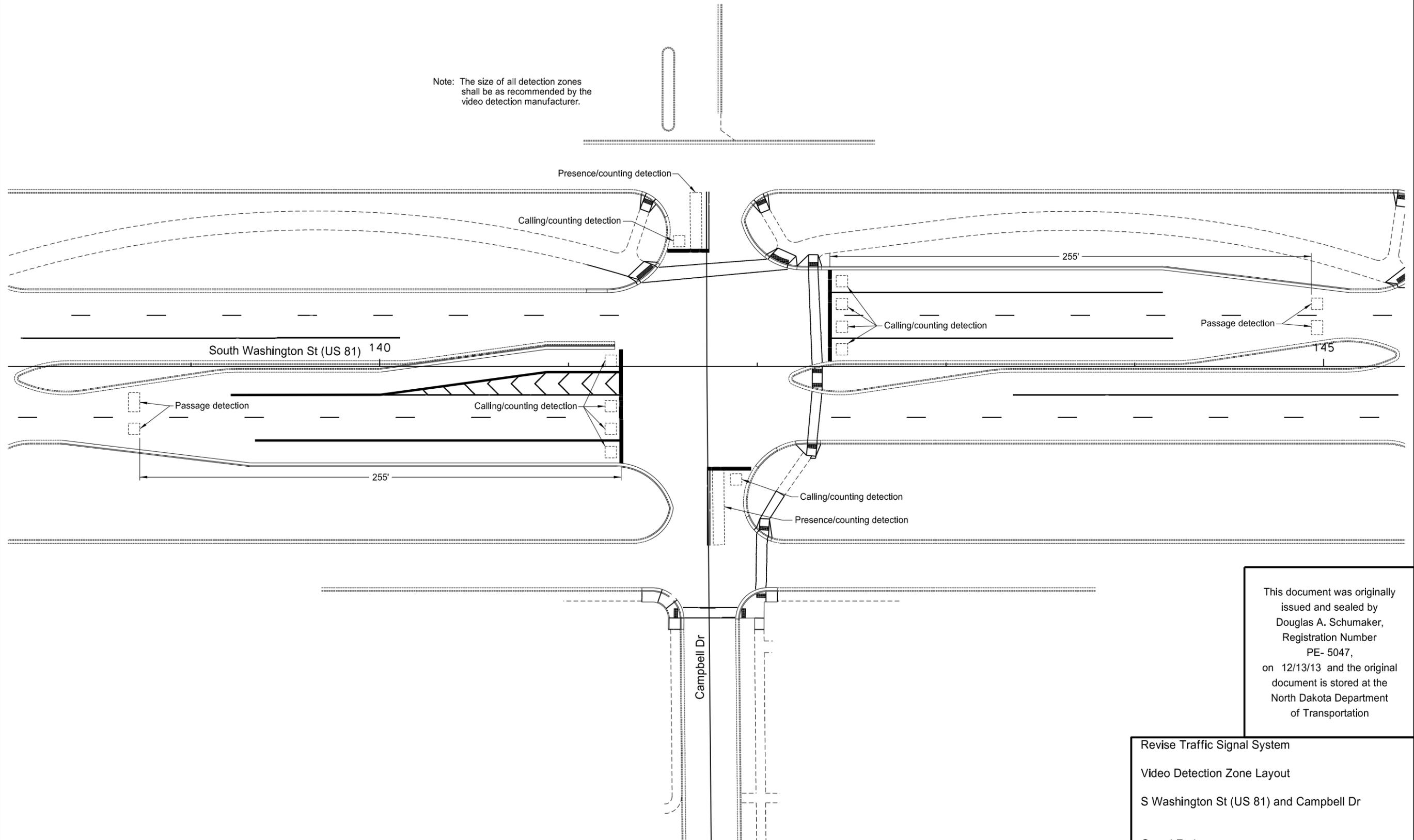
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Revise Traffic Signal System  
 Conduit and Conductor Layout  
 S Washington St (US 81) and Campbell Dr  
 Grand Forks



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	25

Note: The size of all detection zones shall be as recommended by the video detection manufacturer.



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Revise Traffic Signal System  
 Video Detection Zone Layout  
 S Washington St (US 81) and Campbell Dr  
 Grand Forks

STATION	CONDUIT RUNS		CABLE RUNS	
	LF	DIA	LF	Type
142+10-64' lt to 142+06-69' lt	7	1"	15	No. 16 AWG 2 (C)
142+17-69' lt to 142+06-69' lt	10	2"	16 73 65	Cable 3 No. 16 AWG 3 (D) No. 12 AWG 2 (E)
142+32-58' lt to 142+06-69' lt	30	1"	39	No. 16 AWG 2 (C)
142+06-69' lt to 141+51-71' lt	55	2"	56 112 56 56	Cable 3 (2) No. 16 AWG 2 (C) No. 16 AWG 3 (D) No. 12 AWG 2 (E)
141+51-71' lt to 141+21-48' lt	37	2"	38 76 38 38	Cable 3 (2) No. 16 AWG 2 (C) No. 16 AWG 3 (D) No. 12 AWG 2 (E)
141+40-56' lt to 141+21-48' lt	20	1"	29	No. 16 AWG 2 (C)
141+04-50' lt to 141+21-48' lt	16	2"	22 68 61	Cable 2 No. 16 AWG 3 (D) No. 12 AWG 2 (E)
141+21-48' lt to 141+21-58' rt	105	2.5"	106 106 318 212 212	Cable 2 Cable 3 (3) No. 16 AWG 2 (C) (2) No. 16 AWG 3 (D) (2) No. 12 AWG 2 (E)
141+33-64' rt to 141+21-58' rt	13	2"	19 73	Cable 1 No. 16 AWG 3 (D)
141+21-58' rt to 141+21-70' rt	11	3.5"	21 21 21 63 63 42	Cable 1 Cable 2 Cable 3 (3) No. 16 AWG 2 (C) (3) No. 16 AWG 3 (D) (2) No. 12 AWG 2 (E)
142+32-47' rt to 142+52-42' rt	19	1"	27	No. 16 AWG 2 (C)
142+40-56' rt to 142+52-42' rt	17	2"	23 83 70 70	Cable 4 No. 16 AWG 3 (D) No. 12 AWG 2 (E) EVP Cable (F)
142+52-42' rt to 141+96-70' rt to 141+21-70' rt	62 (G) 74 (G)	3" (G) 3" (G)	147 147 147 147	Cable 4 No. 16 AWG 2 (C) No. 16 AWG 3 (D) No. 12 AWG 2 (E) EVP Cable (F)

- (C) Pedestrian Pushbutton Conductor
- (D) Video Detection Power Cable - (As Required by Manufacturer)
- (E) Indicator Light Conductor
- (F) GPS Emergency Vehicle Pre-emption Cable - (As Required by Manufacturer)
- (G) Existing Conduit

STATION	QUANTITIES (A)																												
	EA	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	
141+33-64' rt	1													117 (B)															
142+17-69' lt	1												24 (B)	123 (B)															
142+40-56' rt	1												12 (B)	201 (B)															
141+04-50' lt	1												12 (B)	171 (B)															
141+21-70' rt																													
Various Locations		76	148	105	11	3	217	691				40	556	826	813											4	1		
TOTAL	4	76	148	105	11	3	217	691	48	612	40	556	826	813	1	1	1	1	10	4	4	4	1	1	4	1	4	3	1

(A) These items shall not be bid separately but shall be included in the item "Revise Traffic Signal System - Site 4".

(B) Conductor used for internal wiring

Description	Footings	
	Footing Depth "D" 24" and 30" Dia	Footing Depth "D" 36" and 42" Dia
Combination Signal and Light Stds 40' Mounting Height		
Single 35' Mast Arm	13', 13'	13', 13'
Single 38' Mast Arm	14', 14'	14', 14'
Single 42' Mast Arm	16', 16'	15', 15'
Single 60' Mast Arm	19', 18'	17', 17'

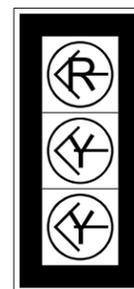
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Revise Traffic Signal System  
Cable Runs and Quantities  
S Washington St (US 81) and Campbell Dr  
Grand Forks

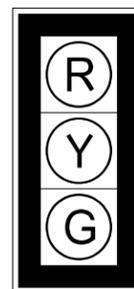
CONDUCTORS		CABLE 1 (NO.12 AWG 7)		CONDUCTORS		CABLE 2 (NO.12 AWG 12)		CONDUCTORS		CABLE 3 (NO.12 AWG 12)			
BASE	TRACER	HEAD	INDICATION	BASE	TRACER	HEAD	INDICATION	BASE	TRACER	HEAD	INDICATION		
1	Black		Spare	1	Black	P1	Walk	1	Black	P2	Walk		
2	White		Neutral	2	White		Neutral	2	White		Neutral		
3	Red	1, 2, 3	Red	3	Red	4, 5, 6, 7	Red and Red Arrow	3	Red	8, 9, 10	Red		
4	Green		Ground	4	Green		Ground	4	Green		Ground		
5	Orange	1, 2, 3	Yellow	5	Orange	4, 5, 6, 7	Yellow and Yellow Arrow	5	Orange	8, 9, 10	Yellow		
6	Blue	1, 2, 3	Green	6	Blue	5, 6, 7	Green	6	Blue	8, 9, 10	Green		
7	White	Black	Spare	7	White	Black	P1	Don't Walk	7	White	Black	P2	Don't Walk
				8	Red	Black		Spare	8	Red	Black		Spare
				9	Green	Black		Spare	9	Green	Black	P3	Walk
				10	Orange	Black	4	Flashing Yellow Arrow	10	Orange	Black		Spare
				11	Blue	Black		Spare	11	Blue	Black		Spare
				12	Black	White		Spare	12	Black	White	P3	Don't Walk

CONDUCTORS		CABLE 4 (NO.12 AWG 12)		
BASE	TRACER	HEAD	INDICATION	
1	Black		Spare	
2	White		Neutral	
3	Red	11, 12, 13, 14	Red and Red Arrow	
4	Green		Ground	
5	Orange	11, 12, 13, 14	Yellow and Yellow Arrow	
6	Blue	12, 13, 14	Green	
7	White	Black	Spare	
8	Red	Black	Spare	
9	Green	Black	P4	Walk
10	Orange	Black	11	Flashing Yellow Arrow
11	Blue	Black		Spare
12	Black	White	P4	Don't Walk

Heads 4, 11



Heads 1, 2, 3, 5, 6, 7, 8, 9, 10, 12, 13, 14



Heads P1, P2, P3, P4



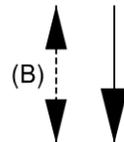
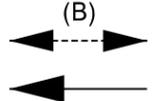
Pedestrian signal heads shall have 12" LED modules

Flashing

Traffic signal heads shall have 12" LED modules with 5" louvered backplates

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Revise Traffic Signal System  
Signal Heads and Conductors  
S Washington St (US 81) and Campbell Dr  
Grand Forks

	Future						Future		 Remove Pedestrian Phase 4			Future		 Remove Pedestrian Phase 6					Future																																														
	Phase 1		Phase 2				Phase 3		Phase 4			Phase 5		Phase 6					Phase 7		Phase 8																																												
	Head #	R/W	Clear To ∅						R/W	Clear To ∅						R/W	Clear To ∅						R/W	Clear To ∅						R/W	Clear To ∅						R/W	Clear To ∅																											
		2	3	4	5	6	7	8		3	4	5	6	7	8	1	2		4	5	6	7	8	1	2		5	6	7	8	1	2	3		6	7	8	1	2	3	4		7	8	1	2	3	4	5		8	1	2	3	4	5	6		1	2	3	4	5	6	7
1																	G								Y	(A)	Y																																						
2																	G								Y	(A)	Y																																						
3																	G								Y	(A)	Y																																						
4									$\overleftarrow{FY}$	$\overleftarrow{Y}$	(A)	$\overleftarrow{Y}$																																																					
5									G	Y	(A)	Y																																																					
6									G	Y	(A)	Y																																																					
7									G	Y	(A)	Y																																																					
8																																																G	Y	(A)	Y														
9																																																G	Y	(A)	Y														
10																																																G	Y	(A)	Y														
11																																								$\overleftarrow{FY}$	$\overleftarrow{Y}$	(A)	$\overleftarrow{Y}$																						
12																																								G	Y	(A)	Y																						
13																																								G	Y	(A)	Y																						
14																																								G	Y	(A)	Y																						

Blank Squares Denote a Red Indication.

(A) When one phase is on alone, any nonconflicting phase may start timing concurrently without a clearance interval. (See Chart A)

(B) Upon pedestrian actuation only.

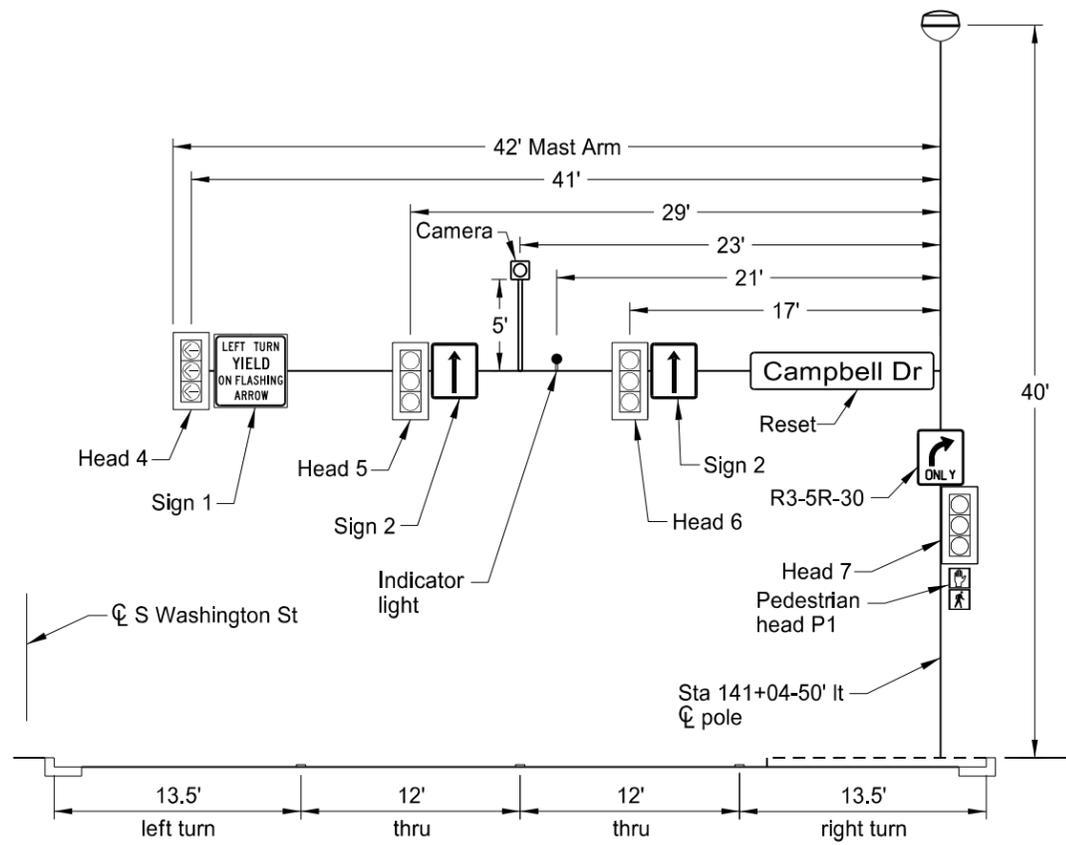
CHART A

On Phase	Non-Conflicting Phase Allowed to Time Concurrently
1	Future
2	6
3	Future
4	8
5	Future
6	2
7	Future
8	4

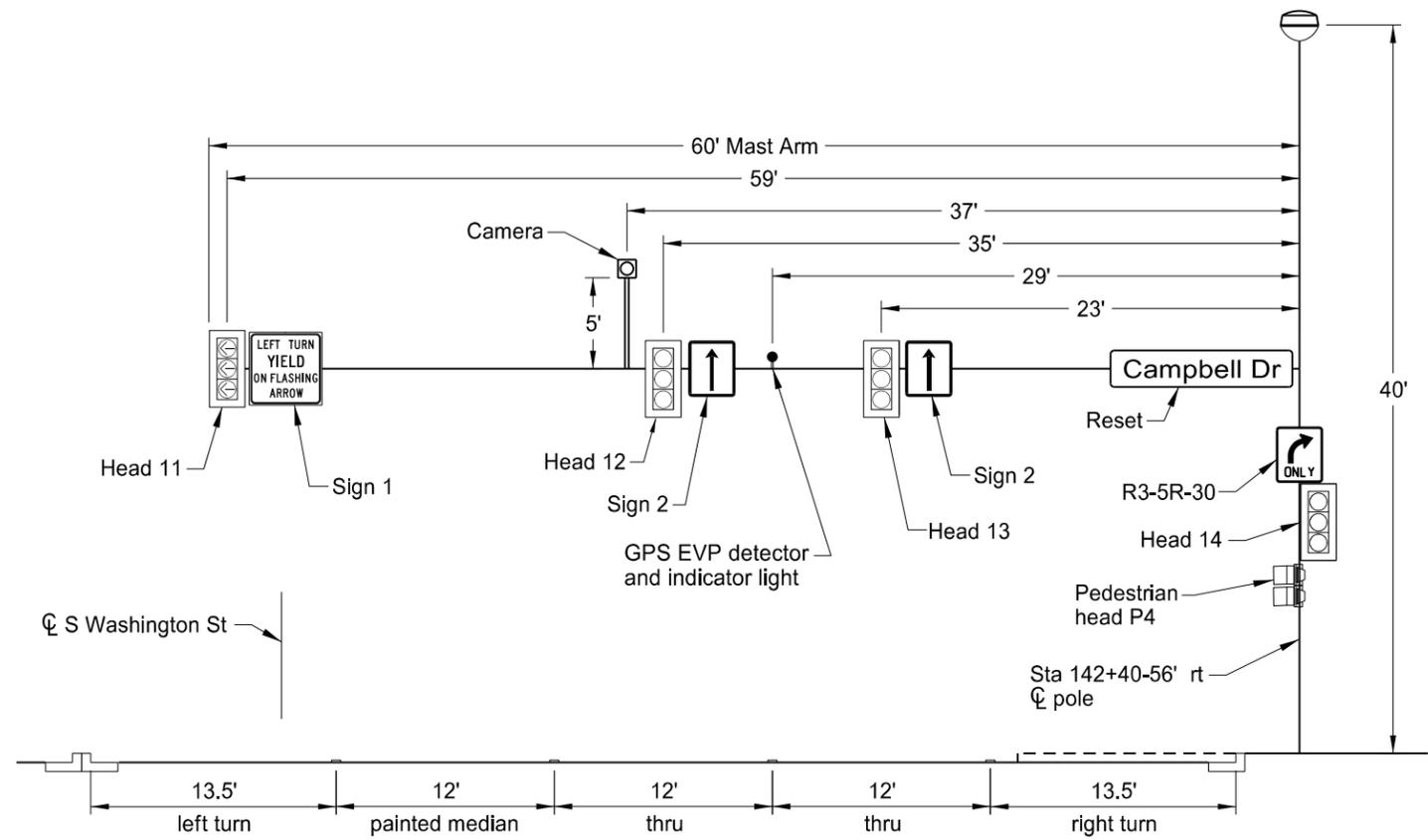
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Revise Traffic Signal System  
 Controller Phasing  
 S Washington St (US 81) and Campbell Dr  
 Grand Forks

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	29



Southbound

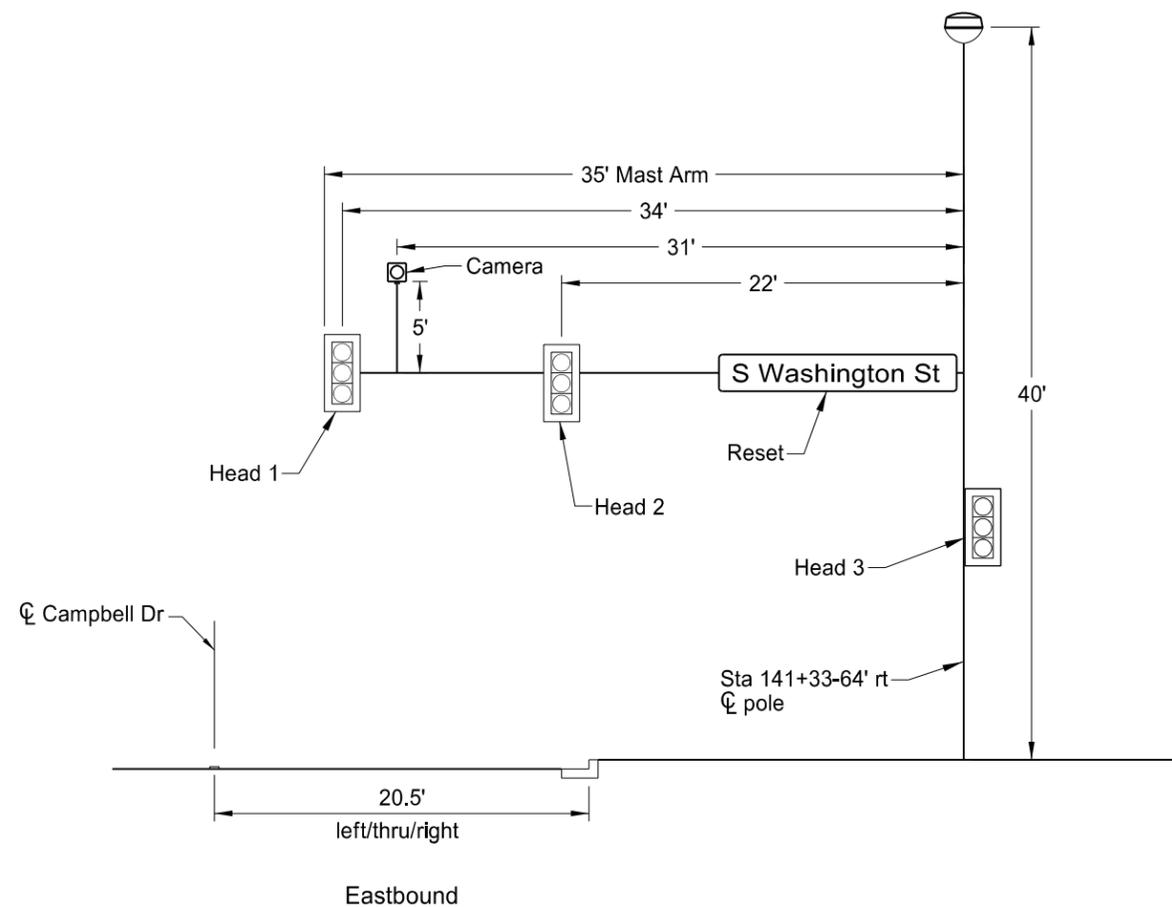
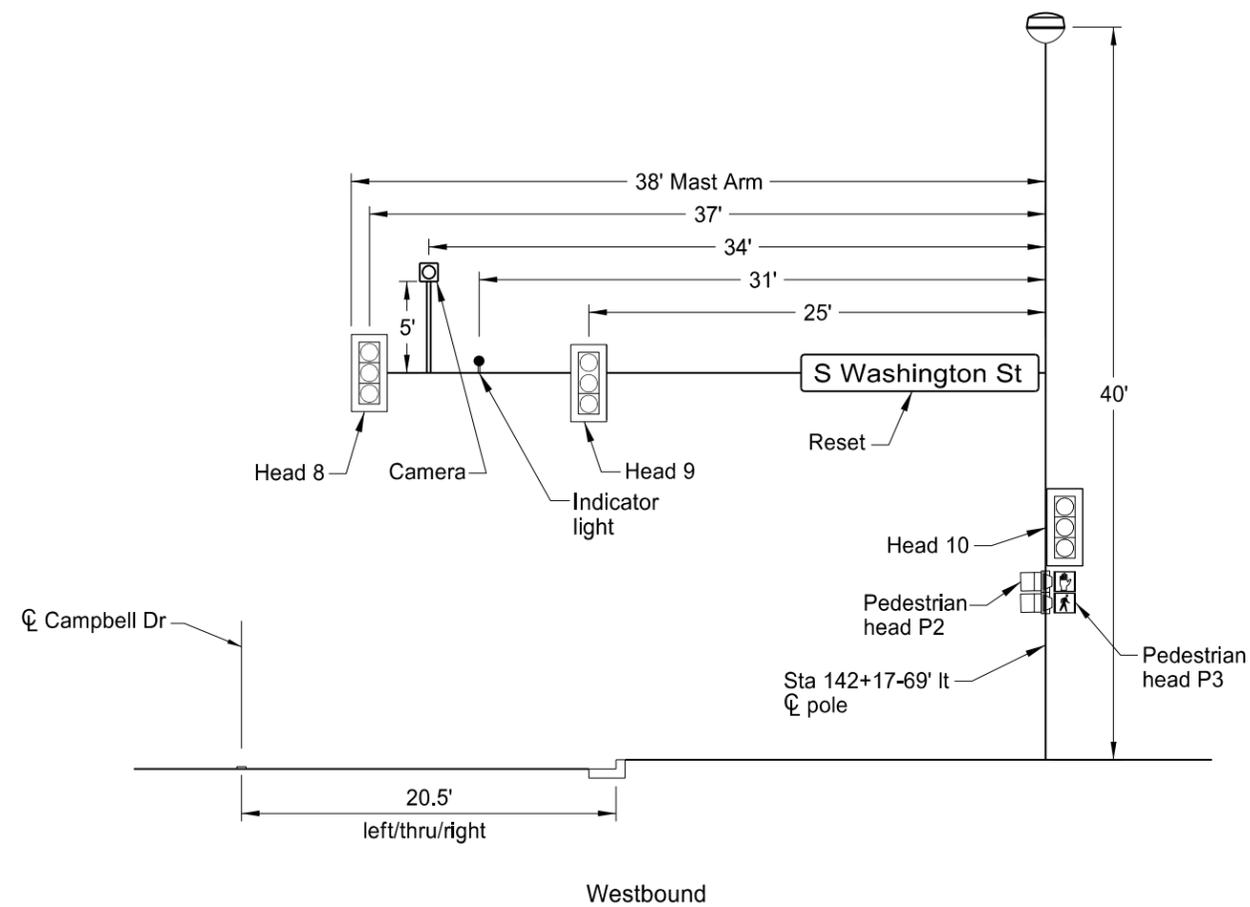


Northbound

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Revise Traffic Signal System  
Signal Standards and Head Locations  
S Washington St (US 81) and Campbell Dr  
Grand Forks

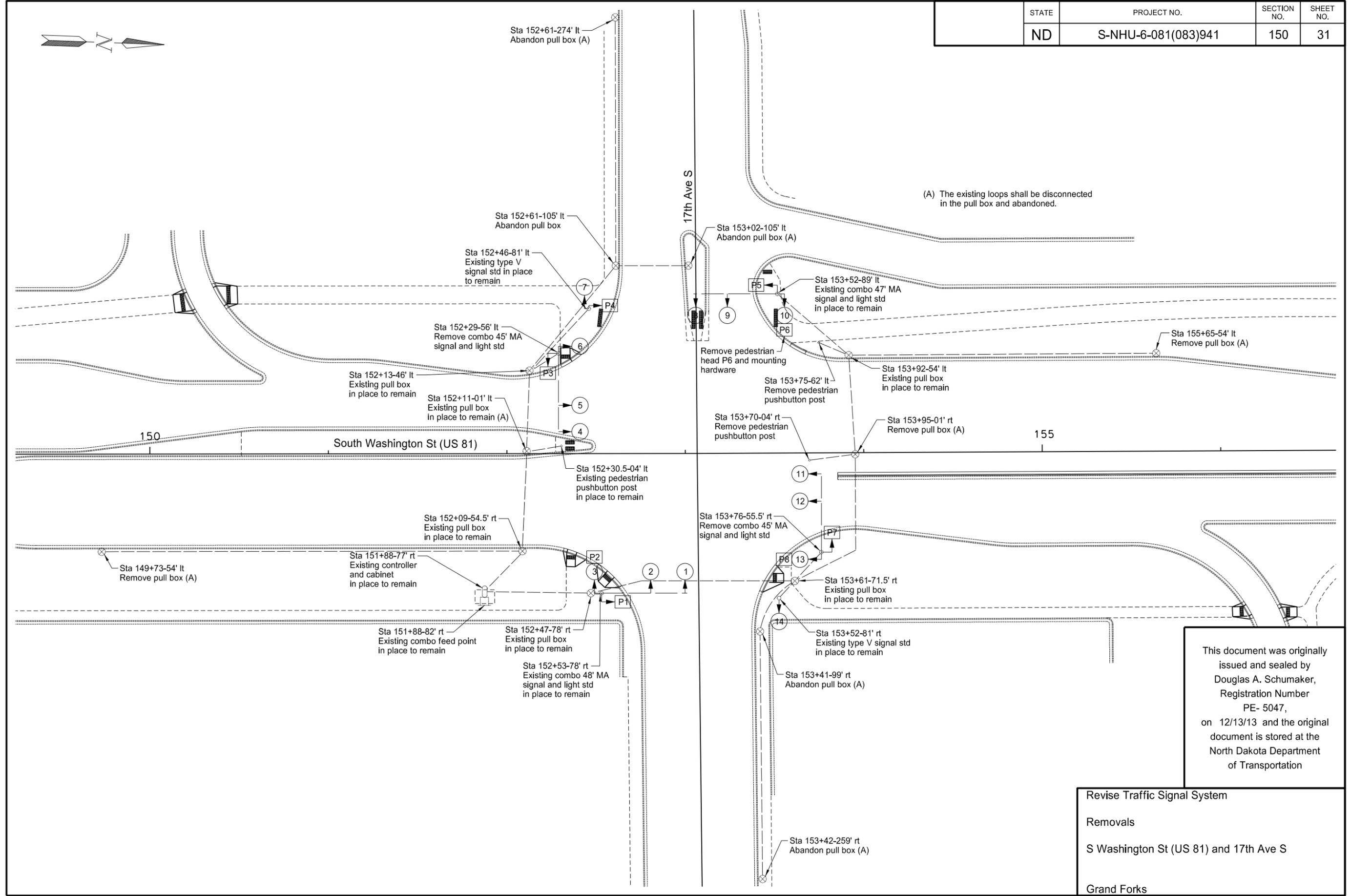
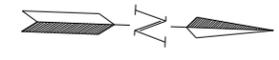
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	30



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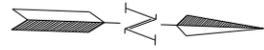
Revise Traffic Signal System  
 Signal Standards and Head Locations  
 S Washington St (US 81) and Campbell Dr  
 Grand Forks

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	31



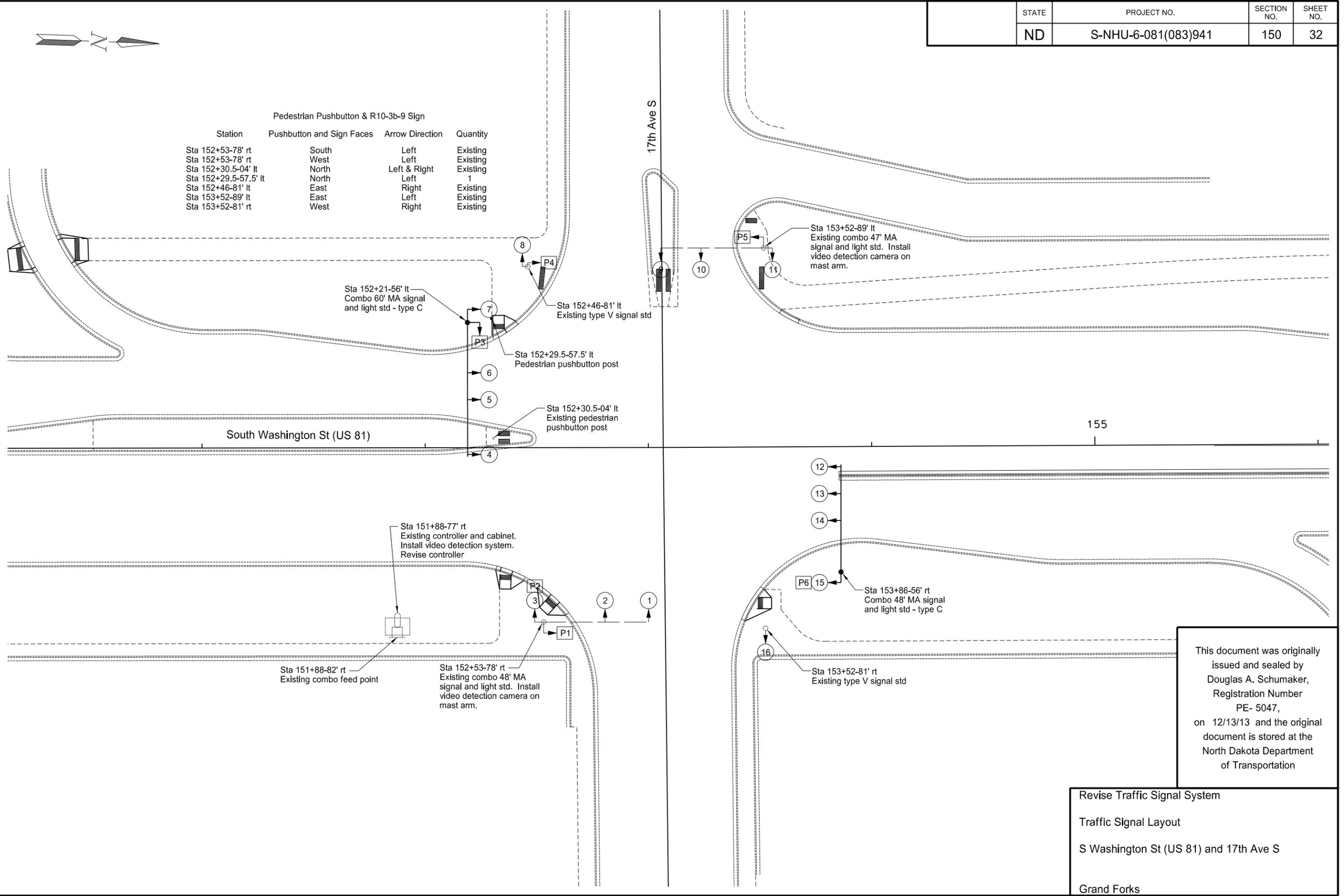
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Revise Traffic Signal System  
 Removals  
 S Washington St (US 81) and 17th Ave S  
 Grand Forks



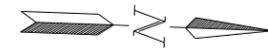
Pedestrian Pushbutton & R10-3b-9 Sign

Station	Pushbutton and Sign Faces	Arrow Direction	Quantity
Sta 152+53-78' rt	South	Left	Existing
Sta 152+53-78' rt	West	Left	Existing
Sta 152+30.5-04' lt	North	Left & Right	Existing
Sta 152+29.5-57.5' lt	North	Left	1
Sta 152+46-81' lt	East	Right	Existing
Sta 153+52-89' lt	East	Left	Existing
Sta 153+52-81' rt	West	Right	Existing

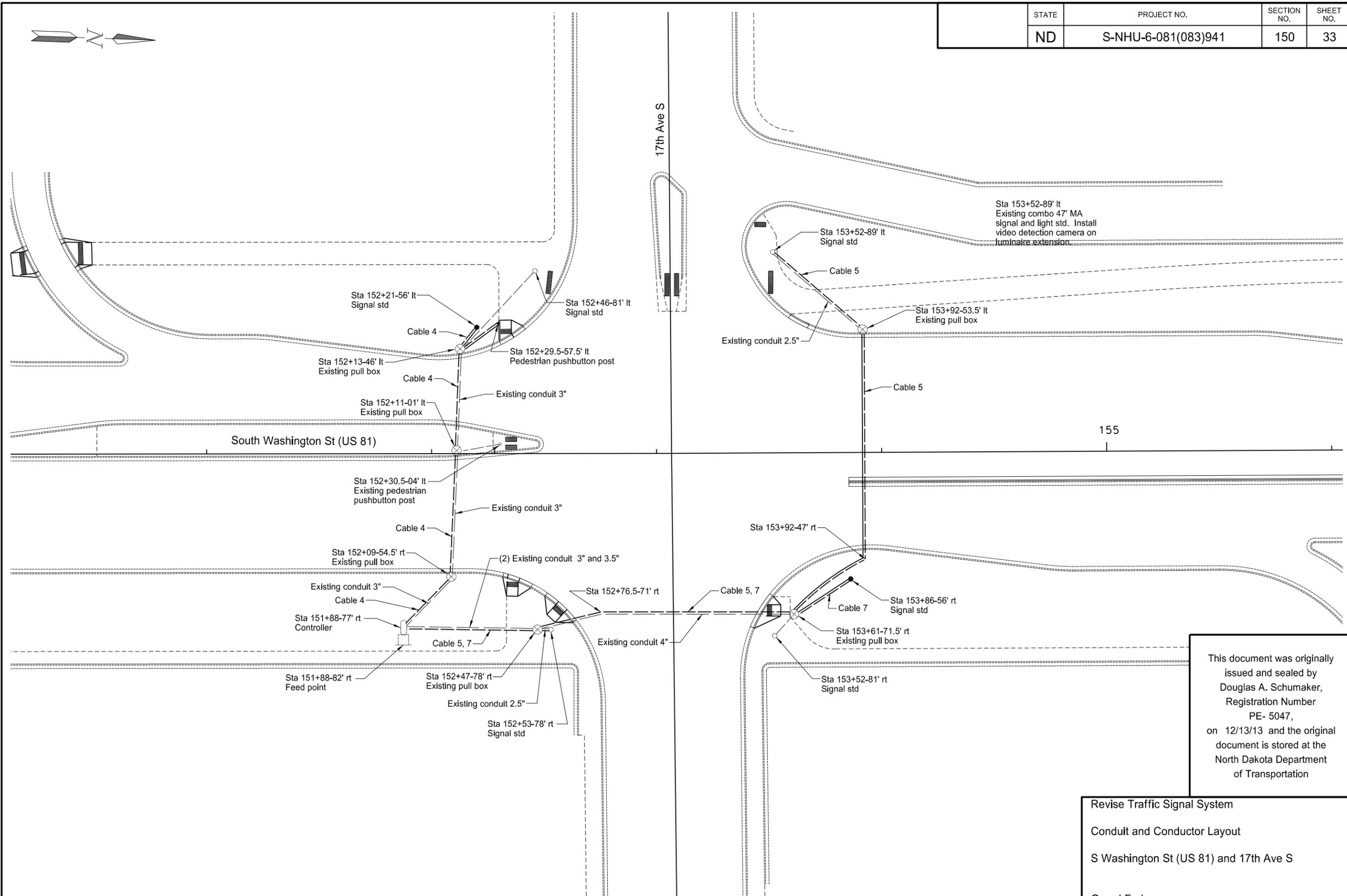


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Revise Traffic Signal System  
 Traffic Signal Layout  
 S Washington St (US 81) and 17th Ave S  
 Grand Forks

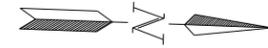


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	33



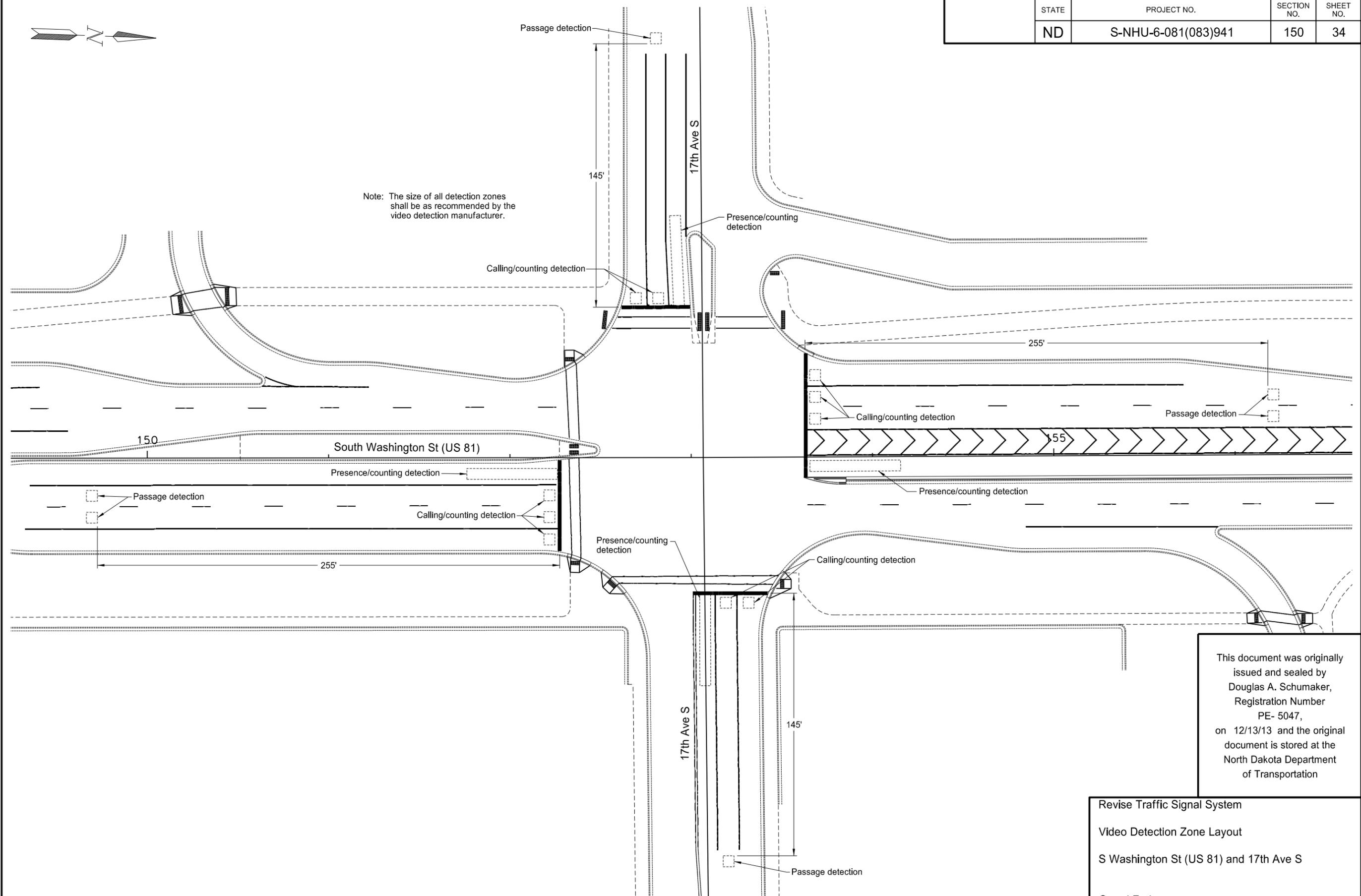
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Revise Traffic Signal System  
 Conduit and Conductor Layout  
 S Washington St (US 81) and 17th Ave S  
 Grand Forks



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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Note: The size of all detection zones shall be as recommended by the video detection manufacturer.



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Revise Traffic Signal System  
 Video Detection Zone Layout  
 S Washington St (US 81) and 17th Ave S  
 Grand Forks

STATION	CONDUIT RUNS		CABLE RUNS	
	LF	DIA	LF	Type
153+52-89' lt to 153+92-53.5' lt	52 (F)	2.5" (F)	59 62 118 110	Cable 5 No. 16 AWG 2 (C) No. 16 AWG 3 (D) No. 12 AWG 2 (E)
153+92-53.5' lt to 153+92-47' rt to 153+61-71.5' rt	100 40	2" 2"	141 141 141	Cable 5 No. 16 AWG 2 (C) No. 16 AWG 3 (D) No. 12 AWG 2 (E)
153+86-56' rt to 153+61-71.5' rt	28	2"	35 87 80	Cable 7 No. 16 AWG 3 (D) No. 12 AWG 2 (E)
153+61-71.5' rt to 153+76.5-71' rt to 152+47-78' rt	84 (F) 30 (F)	4" (F) 4" (F)	115 115 230 230	Cable 5 Cable 7 No. 16 AWG 2 (C) (2) No. 16 AWG 3 (D) (2) No. 12 AWG 2 (E)
152+53-78' rt to 152+47-78' rt	5 (F)	2.5" (F)	64	No. 16 AWG 3 (D)
152+47-78' rt to 151+88-77' rt	58 (F) 58 (F)	3.5" (F) 4" (F)	68 68 204 136	Cable 5 Cable 7 No. 16 AWG 2 (C) (3) No. 16 AWG 3 (D) (2) No. 12 AWG 2 (E)
152+29.5-57.5' lt to 152+13-46' lt	20	1"	28	No. 16 AWG 2 (C)
152+21-56' lt to 152+13-46' lt	11'	2"	17 64 62	Cable 4 No. 16 AWG 3 (D) No. 12 AWG 2 (E)
152+13-46' lt to 152+11-01' lt to 152+09-54.5' rt to 151+88-77' rt	44 (F) 55 (F) 30 (F)	3" (F) 3" (F) 3" (F)	141 141 141 141	Cable 4 No. 16 AWG 2 (C) No. 16 AWG 3 (D) No. 12 AWG 2 (E)

- (C) Pedestrian Pushbutton Conductor
- (D) Video Detection Power Cable - (As Required by Manufacturer)
- (E) Indicator Light Conductor
- (F) Existing Conduit

STATION	QUANTITIES (A)																							
	EA	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA													
152+21-56 lt	1				12(B)	104 (B)	97 (B)					1	1	1	2	1		1						
153+86-56' rt	1				12(B)	104 (B)	85 (B)				1		1	1	2	1		1						
153+52-89' lt																							1	
151+88-77' rt																							1	
Various Locations		20	179	900				759	555	1049								1			2		2	3
TOTAL	2	20	179	900	24	208	182	759	555	1049	1	1	2	2	4	2	1	2	1	2	1	2	3	1

- (A) These items shall not be bid separately but shall be included in the item "Revise Traffic Signal System - Site 5".
- (B) Conductor used for internal wiring

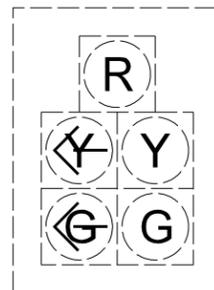
Description	Footing Depth "D" 24" and 30" Dia	Footing Depth "D" 36" and 42" Dia
Combination Signal and Light Stds 40' Mounting Height		
Single 48' Mast Arm	17', 16'	16', 16'
Single 60' Mast Arm	19', 18'	17', 17'

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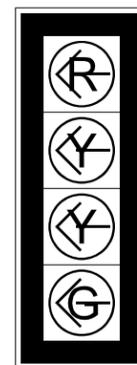
Revise Traffic Signal System  
Cable Runs and Quantities  
S Washington St (US 81) and 17th Ave S  
Grand Forks

CONDUCTORS		CABLE 4 (NO.12 AWG 12)		CONDUCTORS		CABLE 5 (NO.12 AWG 12)		CONDUCTORS		CABLE 7 (NO.12 AWG 12)		
BASE	TRACER	HEAD	INDICATION	BASE	TRACER	HEAD	INDICATION	BASE	TRACER	HEAD	INDICATION	
1	Black	5, 6, 7	Green	1	Black	9, 10, 11	Green	1	Black	13, 14, 15	Green	
2	White		Neutral	2	White		Neutral	2	White		Neutral	
3	Red	4, 5, 6, 7	Red and Red Arrow	3	Red	9, 10, 11	Red	3	Red	12, 13, 14, 15	Red and Red Arrow	
4	Green		Ground	4	Green		Ground	4	Green		Ground	
5	Orange	4, 5, 6, 7	Yellow and Yellow Arrow	5	Orange	9, 10, 11	Yellow	5	Orange	12, 13, 14, 15	Yellow and Yellow Arrow	
6	Blue	7	Yellow Arrow	6	Blue	11	Yellow Arrow	6	Blue	15	Yellow Arrow	
7	White	Black	Green Arrow	7	White	Black	Green Arrow	7	White	Black	Green Arrow	
8	Red	Black	Spare	8	Red	Black	Spare	8	Red	Black	Spare	
9	Green	Black	P3	9	Green	Black	P5	9	Green	Black	Spare	
10	Orange	Black	4	10	Orange	Black	9	10	Orange	Black	12	Flashing Yellow Arrow
11	Blue	Black	4	11	Blue	Black	9	11	Blue	Black	12	Green Arrow
12	Black	Black	P3	12	Black	White	P5	12	Black	White	Spare	

Existing Heads 1, 9

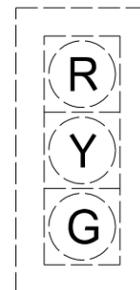


Heads 4, 12

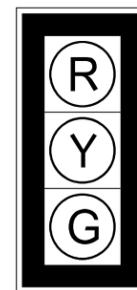


Flashing

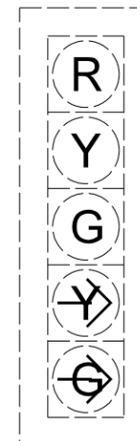
Existing Heads 2, 8, 10, 16



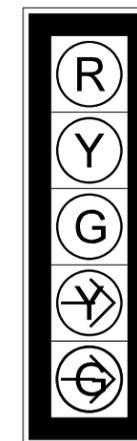
Heads 5, 6, 13, 14



Existing Heads 3, 11



Head 7, 15



Existing Heads P1, P2, P4, P5, P6



Head P3



New pedestrian signal heads shall have 12" LED modules

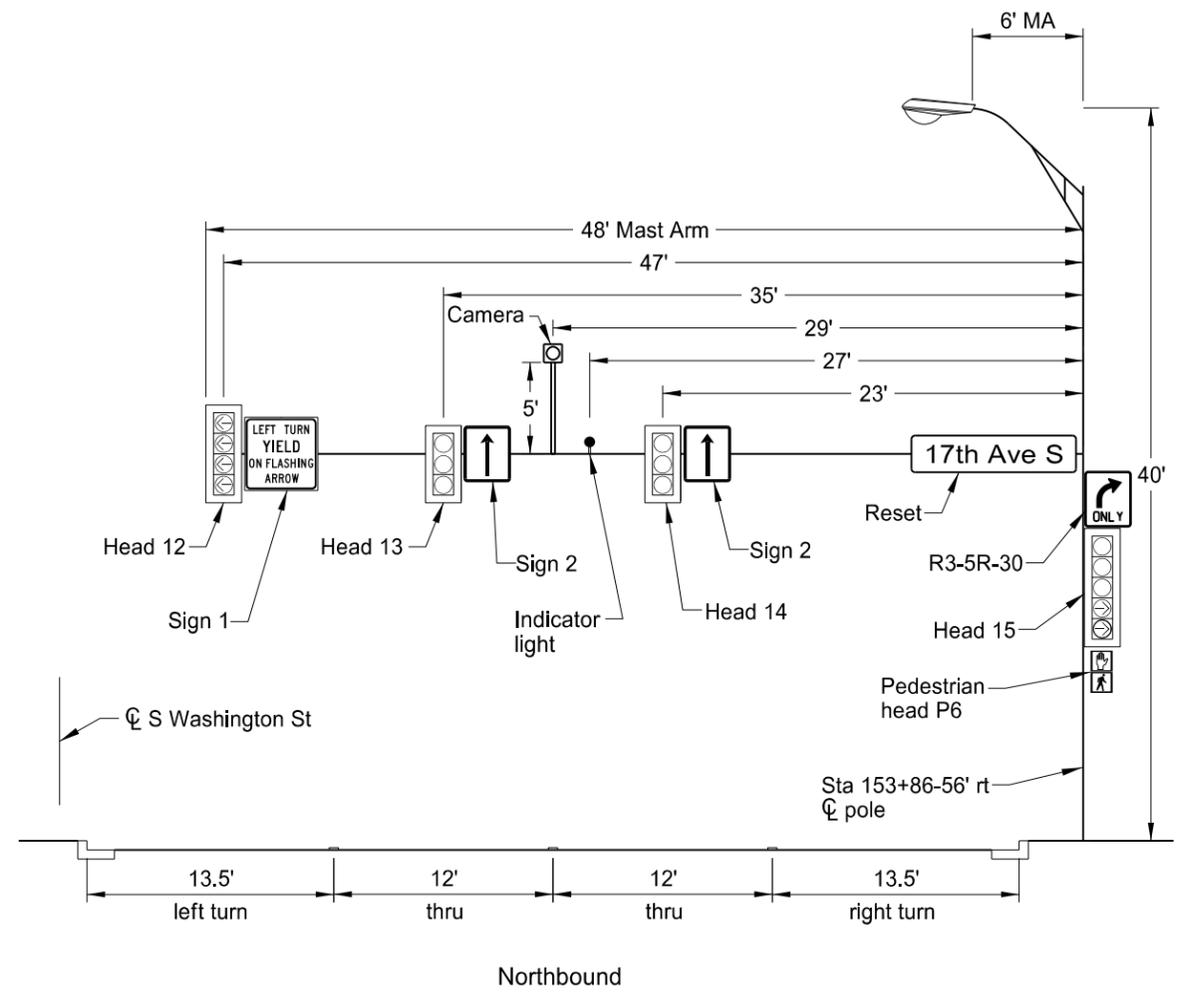
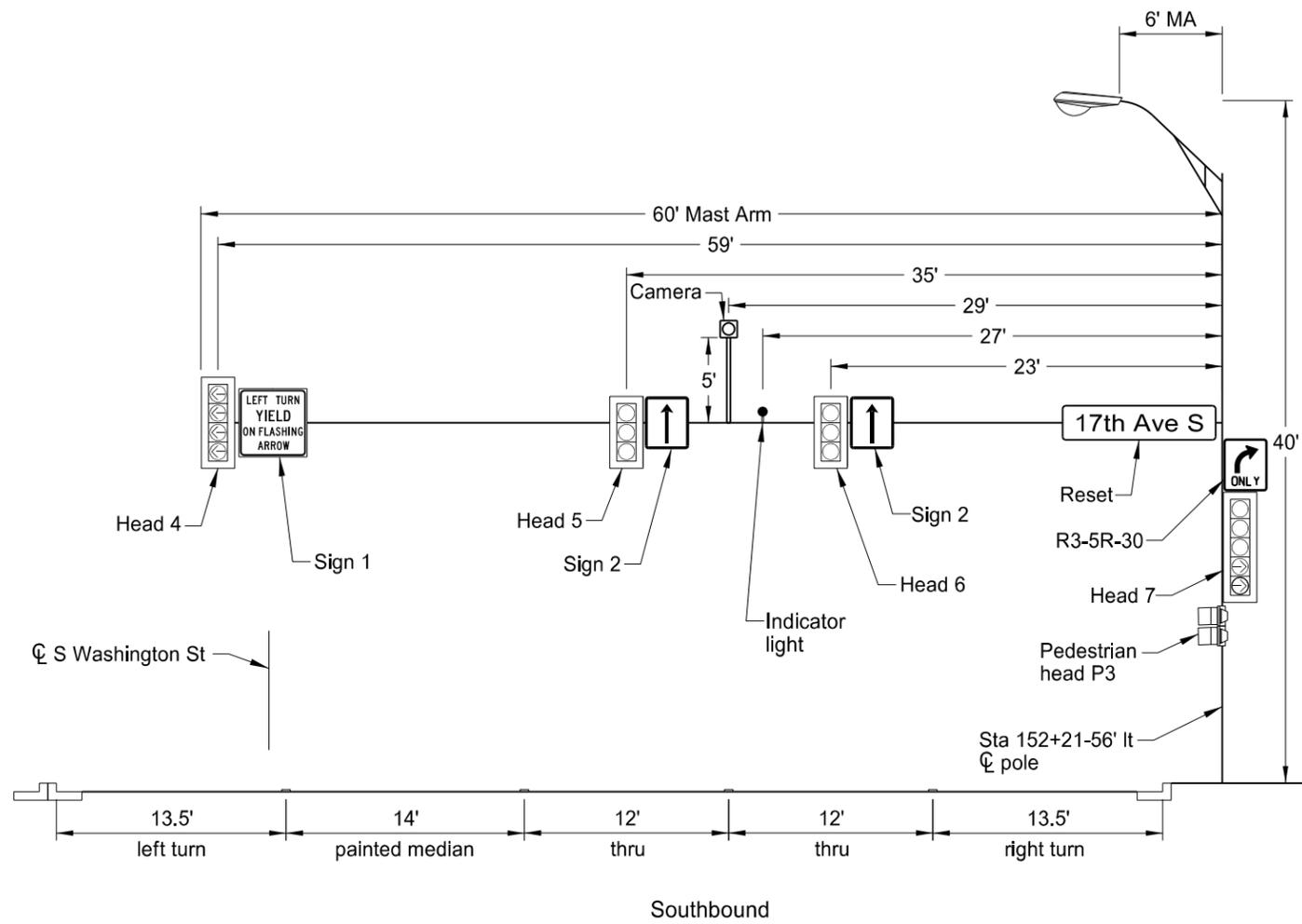
New traffic signal heads shall have 12" LED modules with 5" louvered backplates

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Revise Traffic Signal System  
Signal Heads and Conductors  
S Washington St (US 81) and 17th Ave S  
Grand Forks



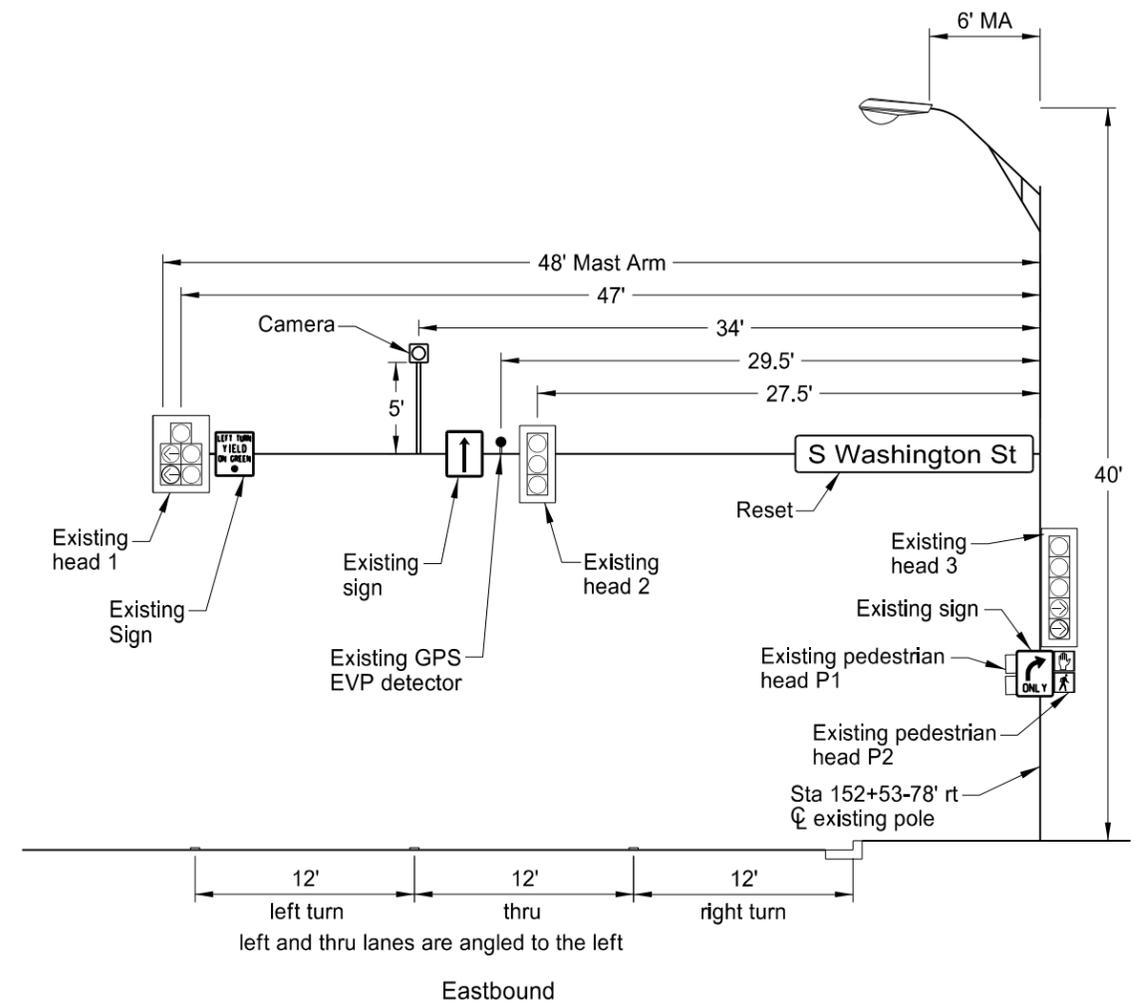
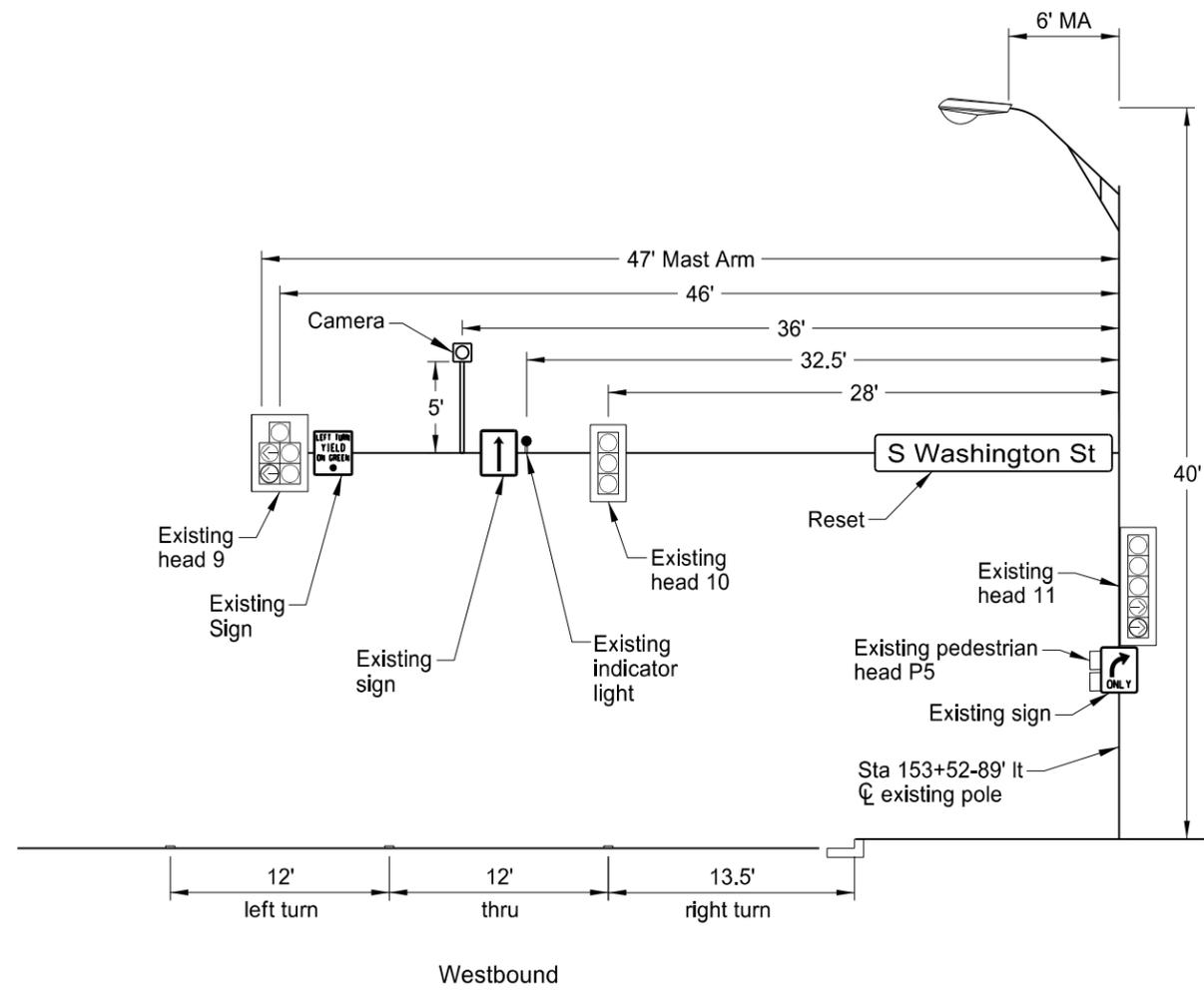
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	38



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Revise Traffic Signal System  
 Signal Standards and Head Locations  
 S Washington St (US 81) and 17th Ave S  
 Grand Forks

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	39



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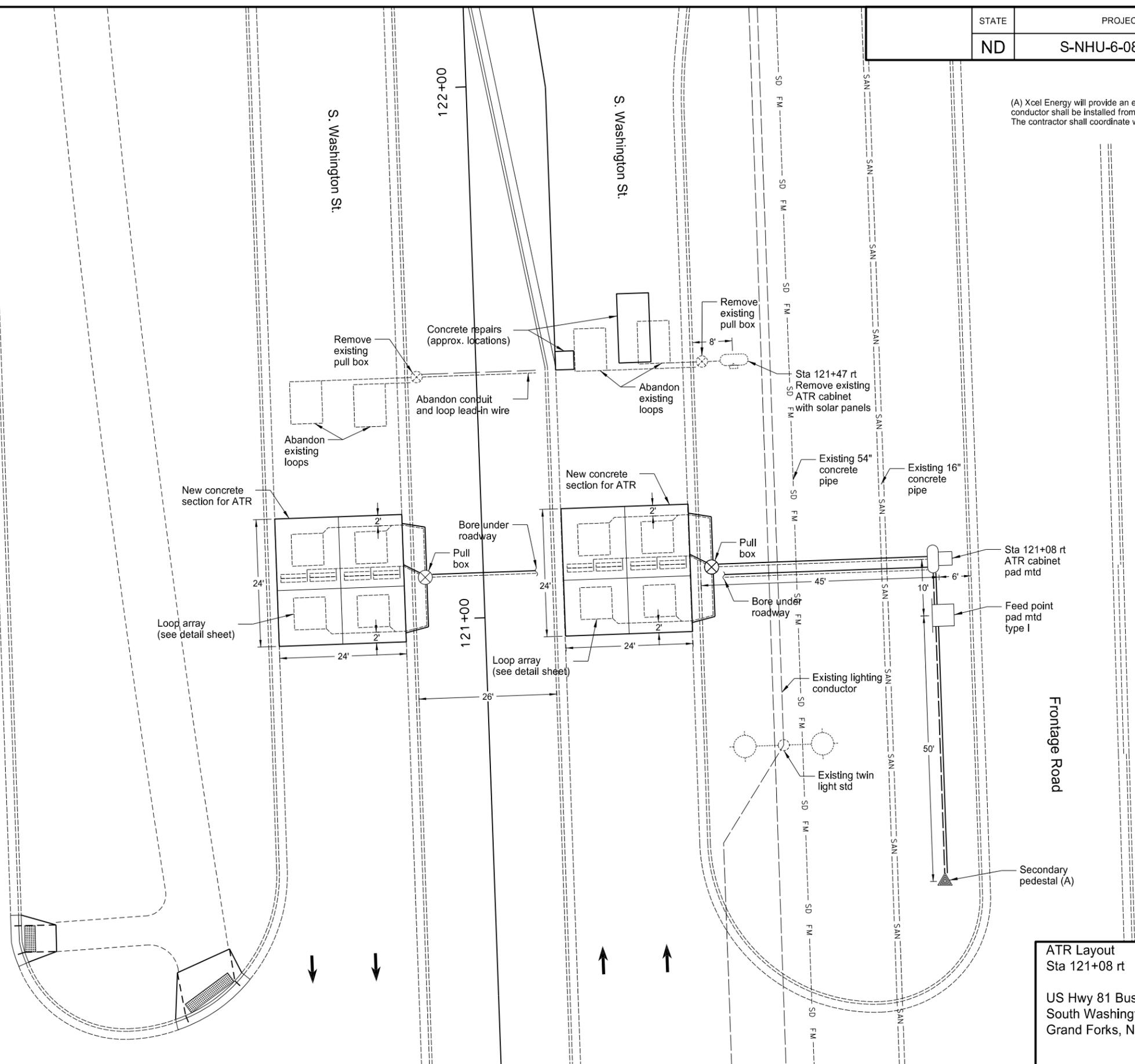
Revise Traffic Signal System  
Signal Standards and Head Locations  
S Washington St (US 81) and 17th Ave S  
Grand Forks

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	40

(A) Xcel Energy will provide an electrical service connection. Conduit and conductor shall be installed from the feed point to the secondary pedestal. The contractor shall coordinate with Xcel Energy for the exact location.



Frontage Road

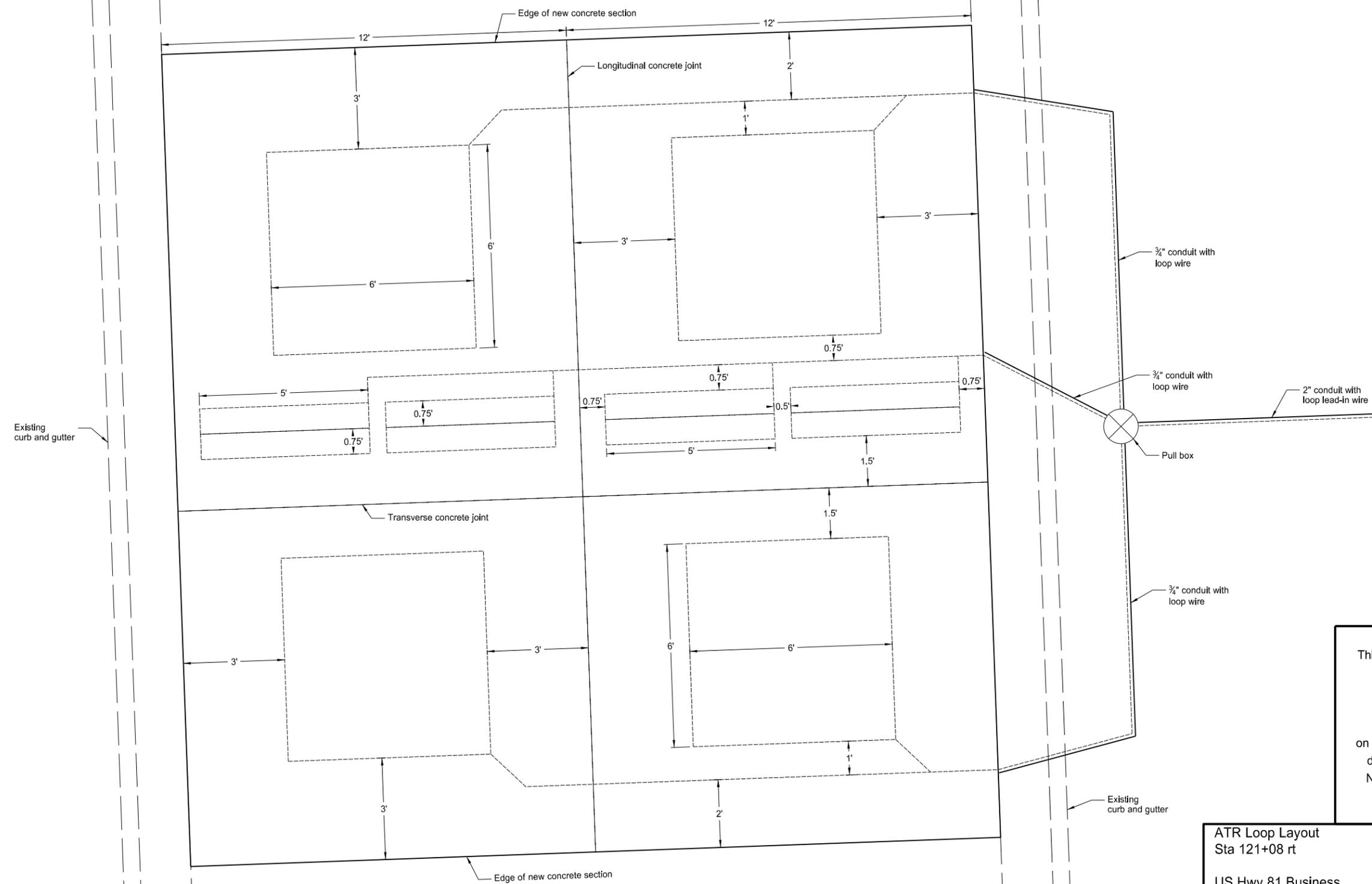


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ATR Layout  
Sta 121+08 rt  
  
US Hwy 81 Business  
South Washington St  
Grand Forks, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	150	41

Note: This loop detail shall be used for both northbound and southbound roadways.



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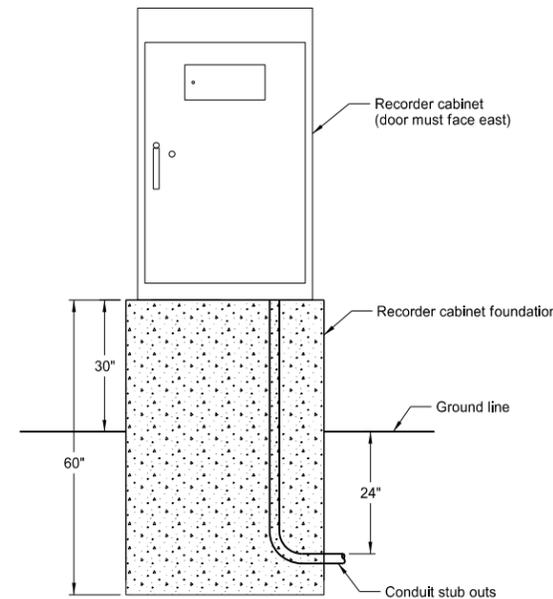
ATR Loop Layout  
Sta 121+08 rt  
  
US Hwy 81 Business  
South Washington St  
Grand Forks, ND

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	S-NHU-6-081(083)941	150	42

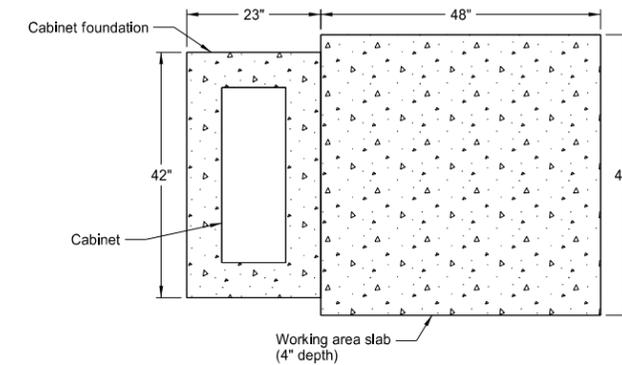
Quantities (A)		
Pull Box (Polymer Concrete)	LF	2
Underground Conductor No 4 Type RHW (B)	LF	200
Underground Conductor No 6 Type THW (B)	LF	100
Shielded Twisted Pair Loop Lead-In Wire 14 AWG XHHW	LF	1352
Conductor Loop Wire 14 AWG XHHW (C)	LF	2010
Saw Slot and Sealant for Loops	LF	226
3/4 Inch Diameter Rigid HDPE Conduit	LF	82
2 Inch Diameter Rigid HDPE Conduit (D)	LF	283
NEMA Type 3R Cabinet	EA	1
Concrete ATR Cabinet Foundation with working slab	EA	1
4G Cellular Modem with all necessary cabling including ethernet and power	EA	1
PEEK Traffic Recorder ADR 6000 with all necessary cabling	EA	1
6 Unit Power Strip	EA	1
Surge Protector	EA	1
Feed Point-pad mounted including switch box, meter trim, cabinet, perf. tube, and concrete slab (E)	EA	1
Vehicle Classification and Testing	EA	1
PEEK Representative	EA	1

Revise Automatic Traffic Recorder System	EA	1
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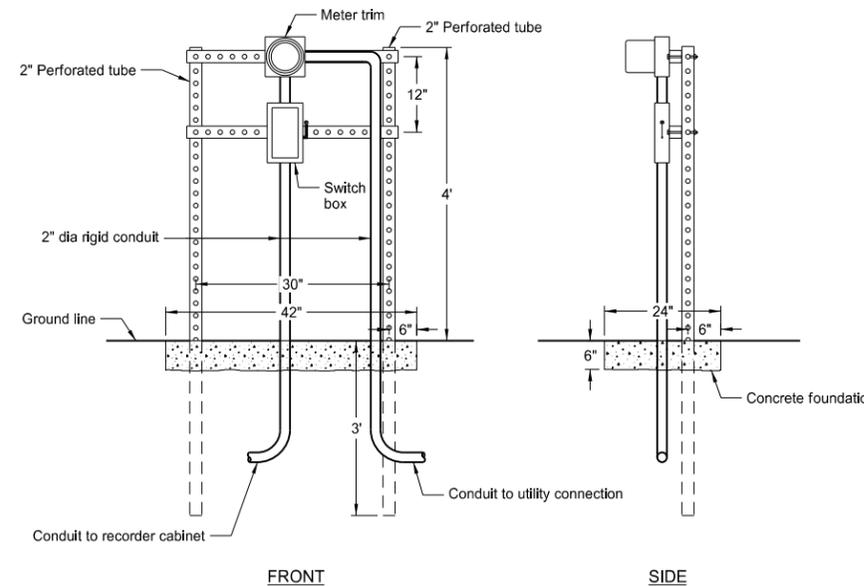
- (A) These quantities shall be included in the price bid for the item "Revise Automatic Traffic Recorder System".
- (B) 2 No 4 and 1 No 6 conductors are provided to extend from the ATR cabinet to the feed point and from the feed point to the utility connection.
- (C) The Entrance and Exit loops shall be 6"x6" with 4 turns of conductor per loop. The Inner Axle loops shall be 1.5"x5" Quadrapol with 3 turns of conductor.
- (D) An extra 20 ft of conduit stub out is provided for future use. Both ends shall be capped.
- (E) The meter trim shall be for a 200 Amp meter.



ATR Recorder Cabinet with Concrete Foundation



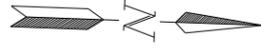
Cabinet Foundation and Working Slab



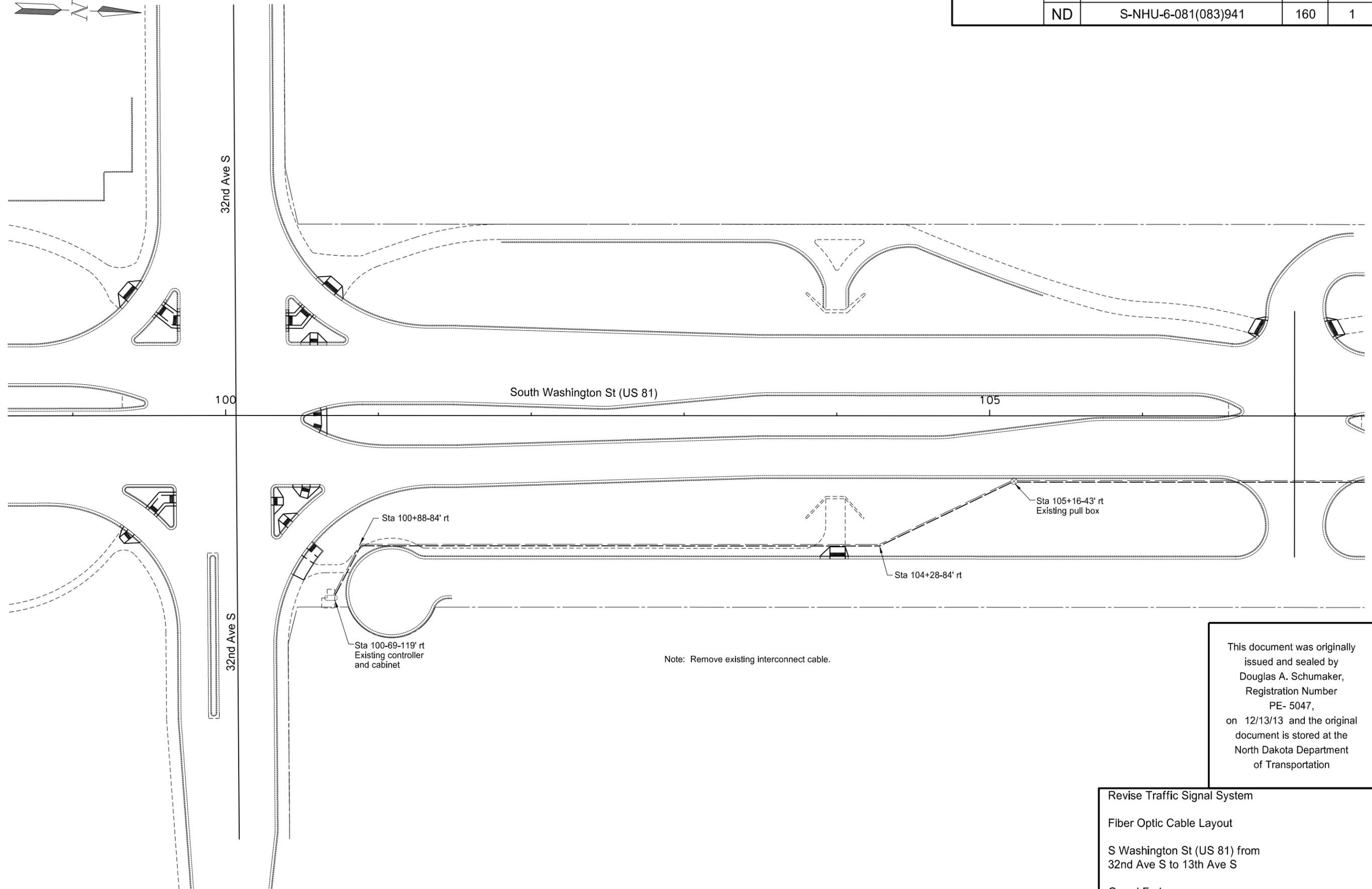
Feed Point Detail with Concrete Foundation

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ATR Details  
Sta 121+08 rt  
  
US Hwy 81 Business  
South Washington St  
Grand Forks, ND

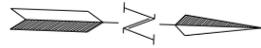


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	S-NHU-6-081(083)941	160	1

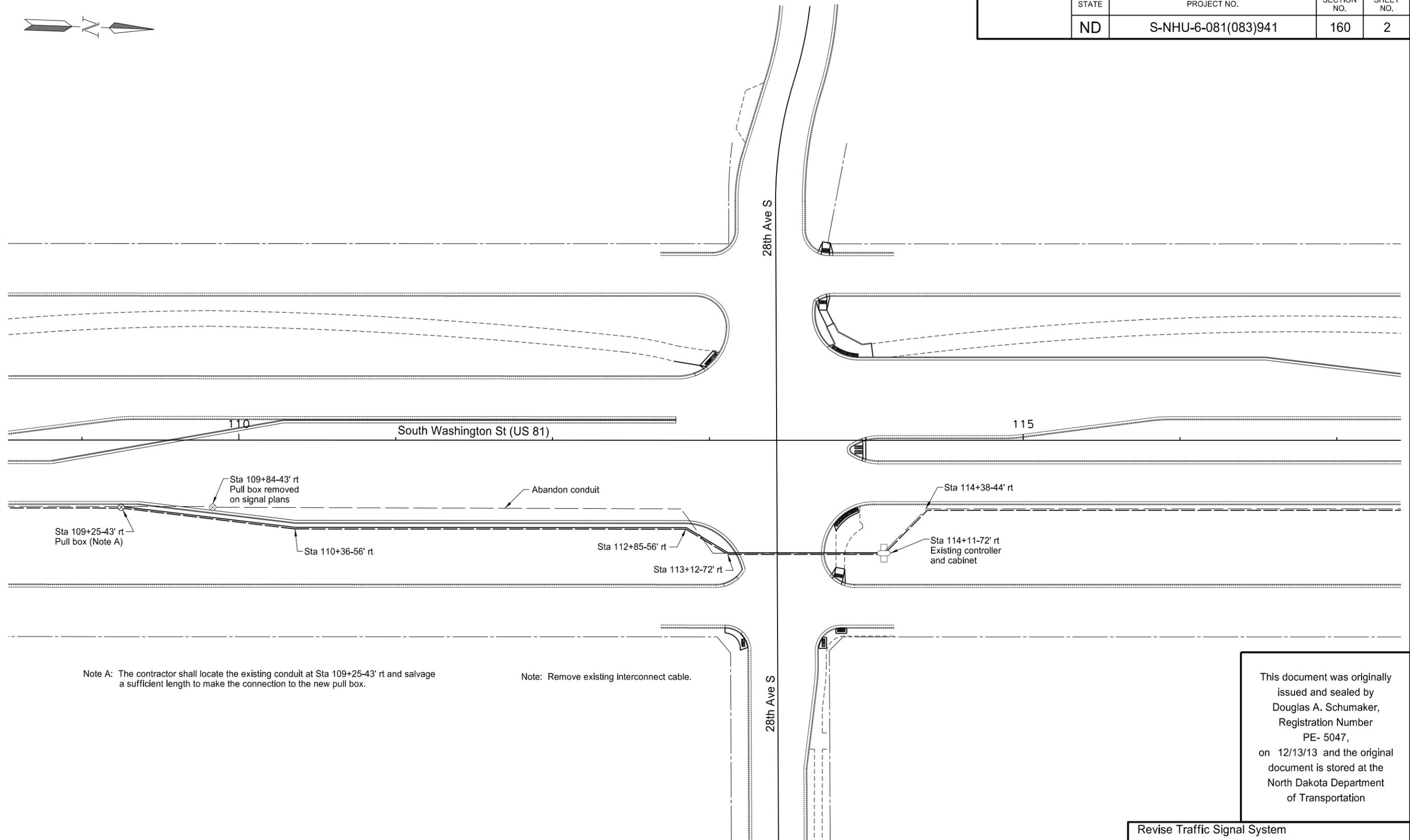


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Revise Traffic Signal System  
 Fiber Optic Cable Layout  
 S Washington St (US 81) from 32nd Ave S to 13th Ave S  
 Grand Forks



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	160	2

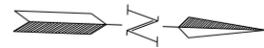


Note A: The contractor shall locate the existing conduit at Sta 109+25-43' rt and salvage a sufficient length to make the connection to the new pull box.

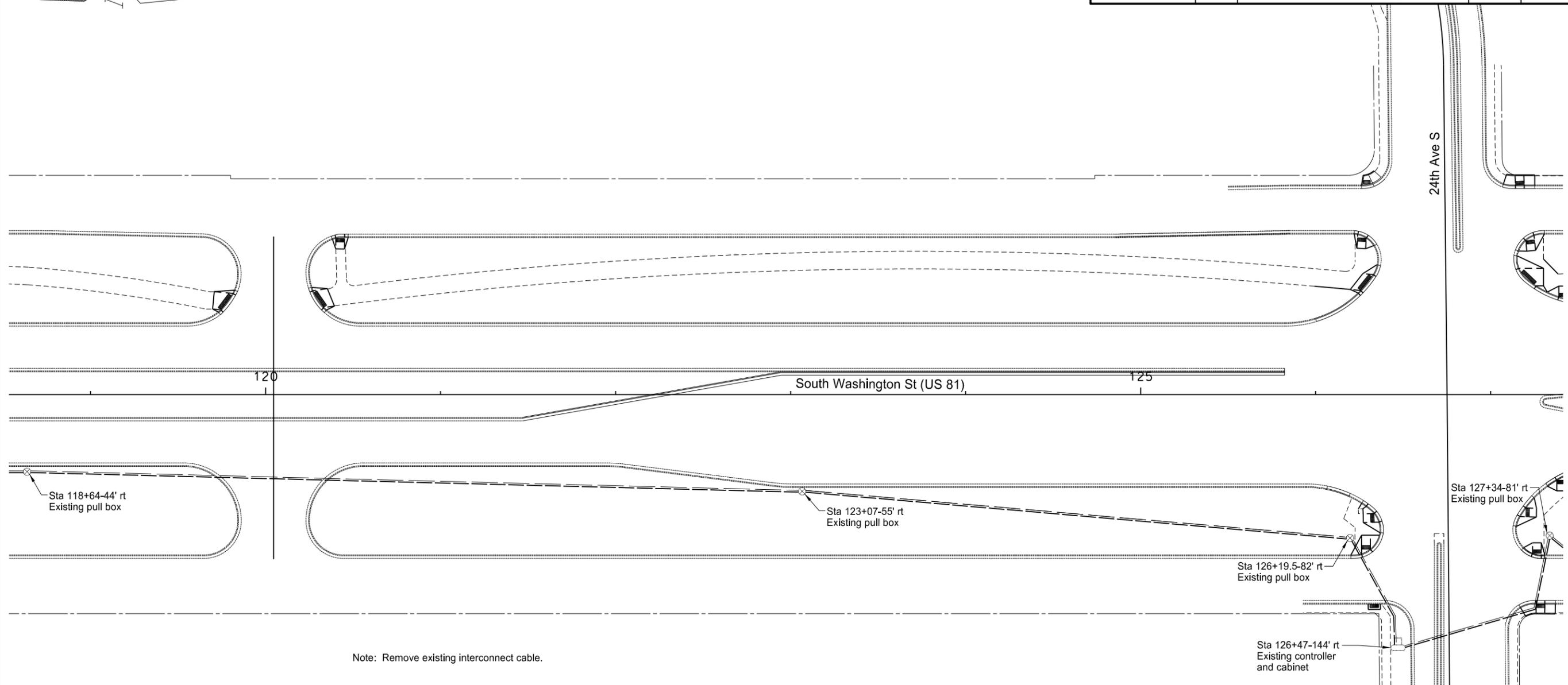
Note: Remove existing interconnect cable.

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Revise Traffic Signal System  
 Fiber Optic Cable Layout  
 S Washington St (US 81) from 32nd Ave S to 13th Ave S  
 Grand Forks



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	S-NHU-6-081(083)941	160	3



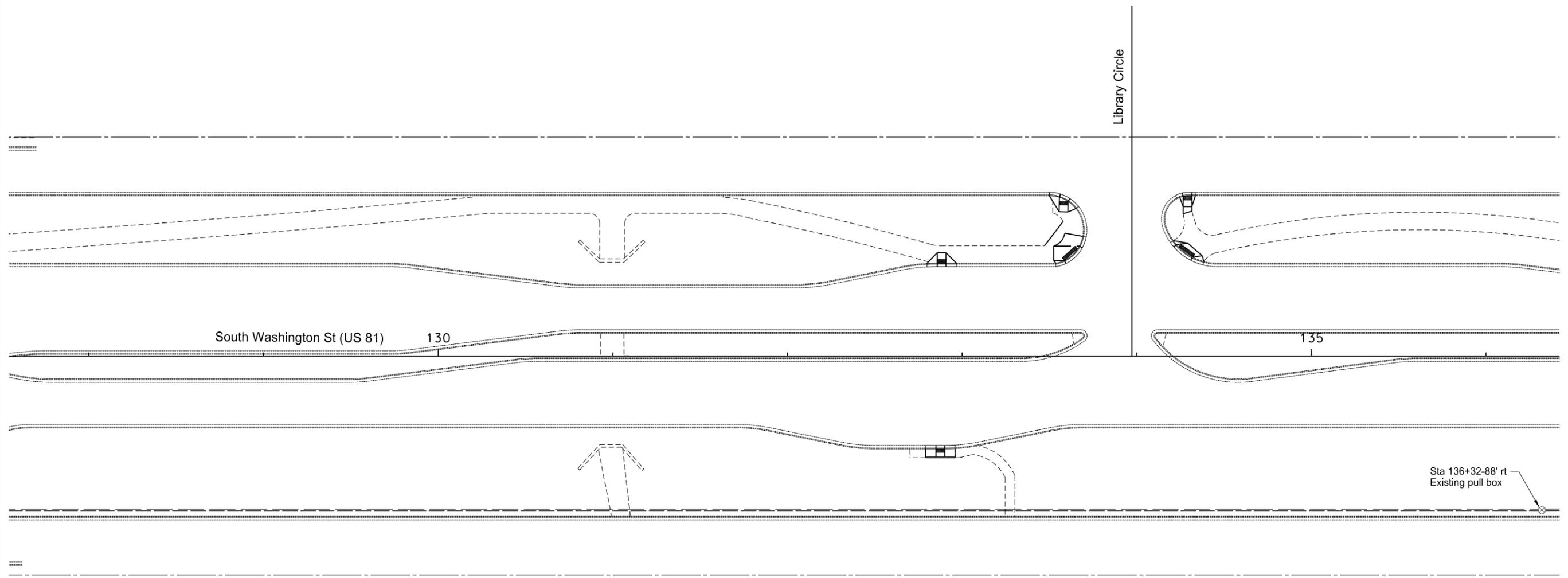
Note: Remove existing interconnect cable.

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Revise Traffic Signal System  
Fiber Optic Cable Layout  
S Washington St (US 81) from 32nd Ave S to 13th Ave S  
Grand Forks



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	S-NHU-6-081(083)941	160	4



South Washington St (US 81) 130

135

Library Circle

Sta 136+32-88' rt  
Existing pull box

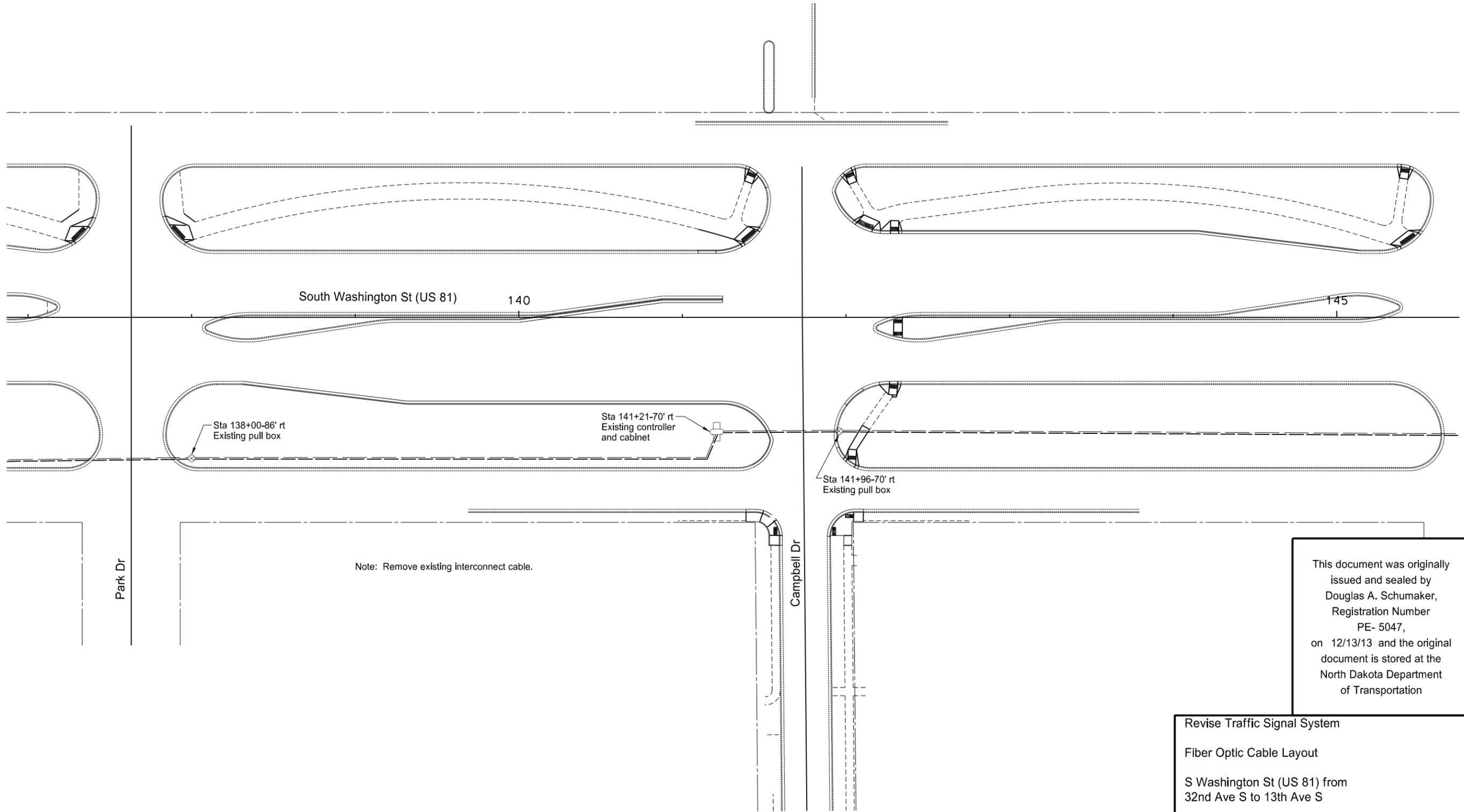
Note: Remove existing interconnect cable.

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Revise Traffic Signal System  
Fiber Optic Cable Layout  
S Washington St (US 81) from 32nd Ave S to 13th Ave S  
Grand Forks



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	160	5



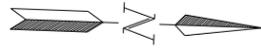
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Revise Traffic Signal System

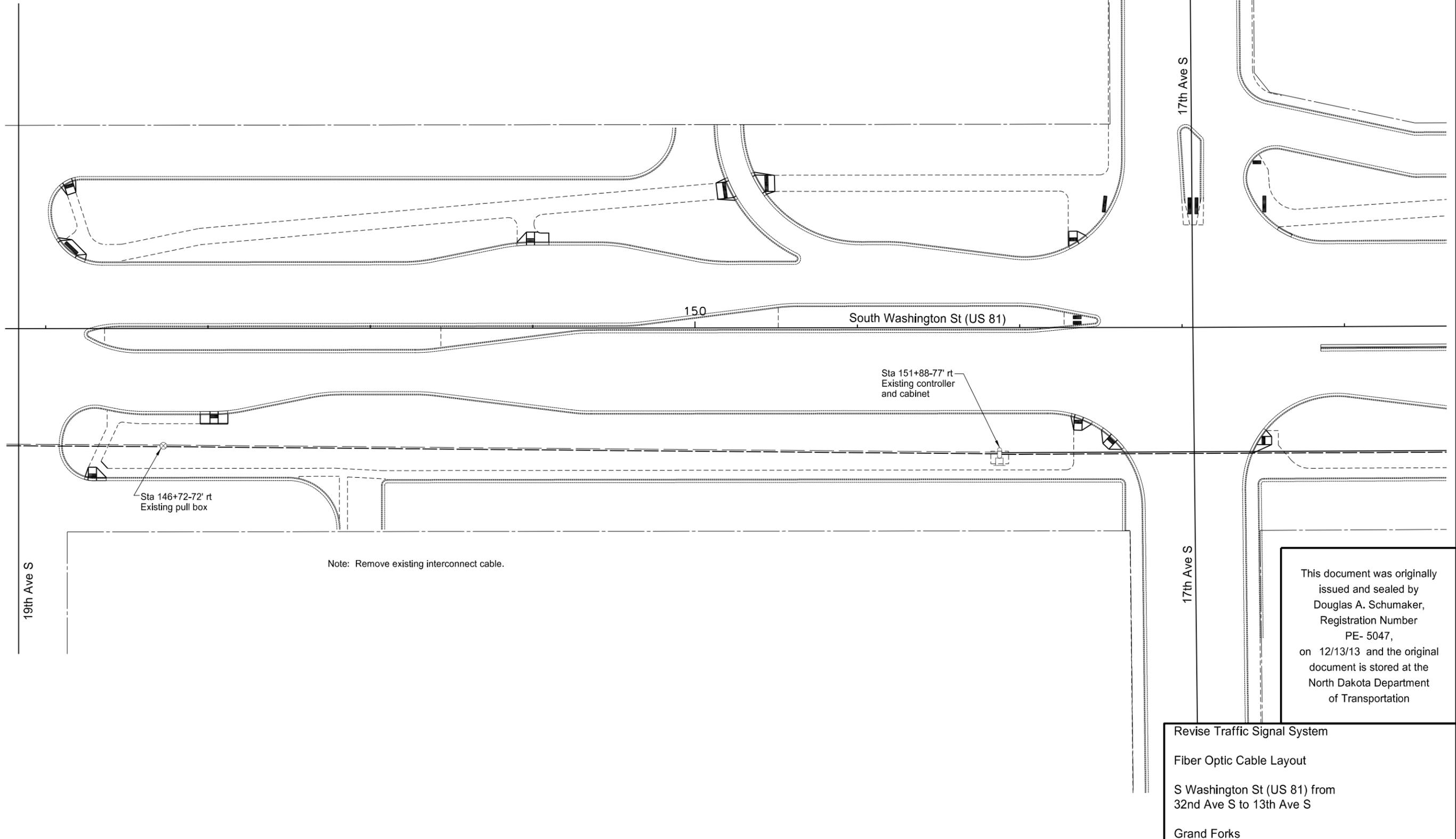
Fiber Optic Cable Layout

S Washington St (US 81) from 32nd Ave S to 13th Ave S

Grand Forks



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	160	6





STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	160	7

15th Ave S

15th Ave S

155

South Washington St (US 81)

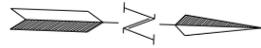
160

Sta 158+51-45' rt

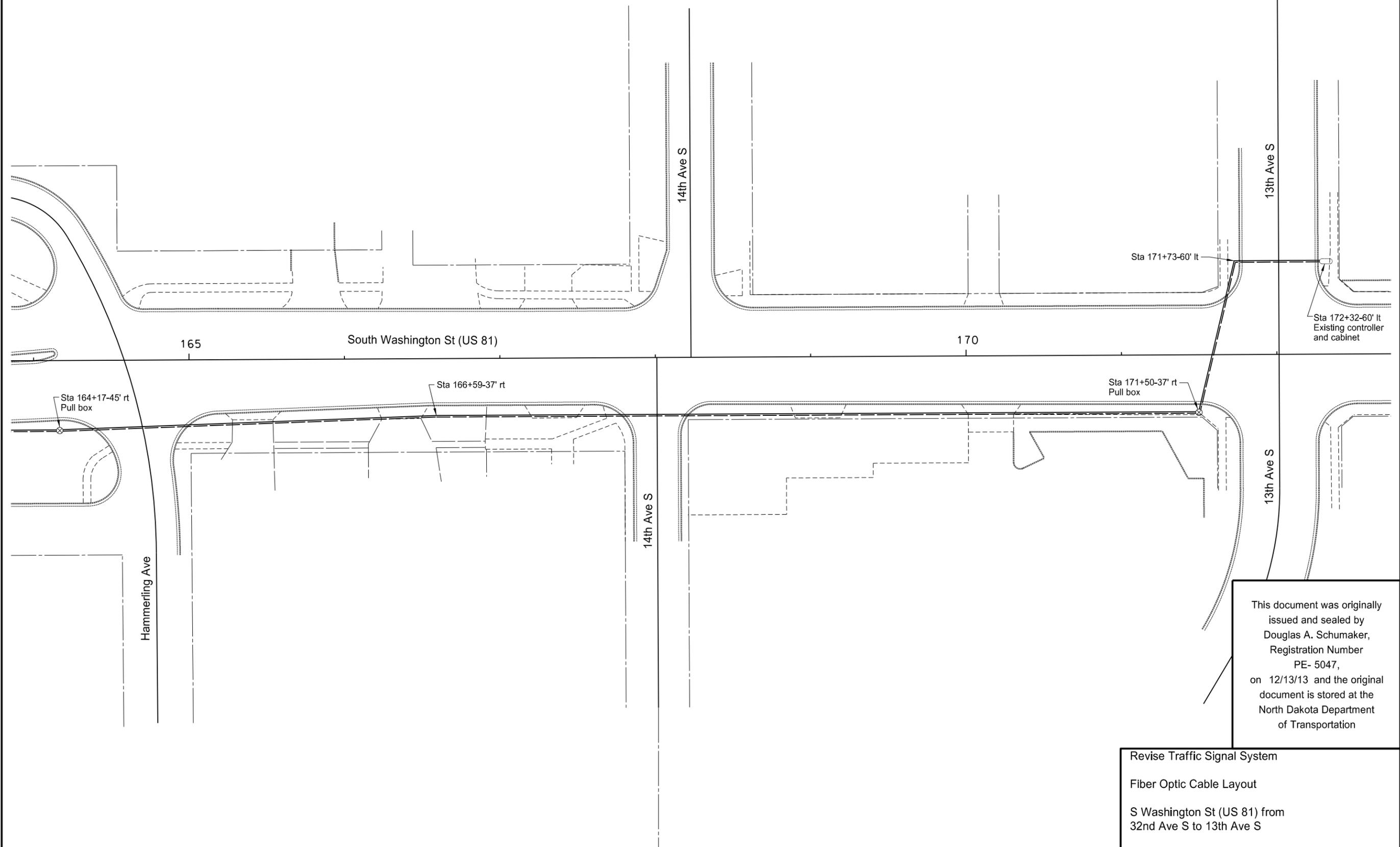
Sta 158+00-77' rt  
Pull box

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Revise Traffic Signal System  
Fiber Optic Cable Layout  
S Washington St (US 81) from 32nd Ave S to 13th Ave S  
Grand Forks



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	S-NHU-6-081(083)941	160	8



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Revise Traffic Signal System  
Fiber Optic Cable Layout  
S Washington St (US 81) from 32nd Ave S to 13th Ave S  
Grand Forks

Station	Conduit Runs		Cable Runs	
	LF	Dia	LF	Type
100+69-119' rt (C) to 100+88-84' rt to 104+28-84' rt to 105+16-43' rt (D) to 109+25-43' rt (D) to 110+36-56' rt to 112+85-56' rt to 113+12-72' rt to 114+11-72' rt (C)	39 (B) 340 (B) 97 (B) 409 (B) 112 249 32 98	2" (B) 2" (B) 2" (B) 2" (B) 2" 2" 2" 2"	1578	Fiber Optic Interconnect Cable
114+11-72' rt (C) to 114+38-44' rt to 118+64-44' rt (D) to 123+07-55' rt (D) to 126+19.5-82' rt to 126+47-144' rt (C)	38 (B) 426 (B) 443 (B) 314 (B) 68 (B)	2" (B) 2" (B) 2" (B) 2" (B) 2" (B)	1491	Fiber Optic Interconnect Cable
126+47-144' rt (C) to 127+34-81' rt to 136+32-88' rt (D) to 138+00-86' rt (D) to 141+21-70' rt (C)	123 (B) 901 (B) 168 (B) 331 (B)	2" (B) 2" (B) 2" (B) 2" (B)	1725	Fiber Optic Interconnect Cable
141+21-70' rt (C) to 141+96-70' rt to 146+72-72' rt (D) to 151+88-77' rt (C)	74 (B) 476 (B) 515 (B)	2" (B) 2" (B) 2" (B)	1217	Fiber Optic Interconnect Cable
151+88-77' rt (C) to 158+00-77' rt (D) to 158+51-45' rt to 164+17-45' rt (D) to 166+59-37' rt to 171+50-37' rt (D) to 171+73-60' lt to 172+32-60' lt (C)	611 60 566 242 491 100 56	2" 2" 2" 2" 2" 2" 2"	2378	Fiber Optic Interconnect Cable

- (B) Existing conduit
- (C) Coil 50' of interconnect cable in controller cabinet.
- (D) Coil 50' of interconnect cable in pull box.

Quantities (A)					
Pull Box	2in Diameter Rigid Conduit	Fiber Optic Interconnect Cable			IT System
EA	LF	LF			EA
4	2617	8389			1

(A) These items shall not be bid seperately but shall be included in the item "IT System".

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Revise Traffic Signal System  
Fiber Optic Cable Runs and Quantities  
S Washington St (US 81) from 32nd Ave S to 13th Ave S  
Grand Forks