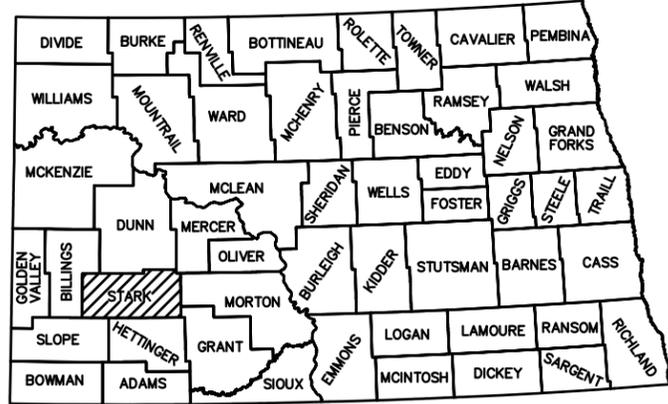


STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	20588	1	1

# JOB #26

## CITY OF DICKINSON, STARK COUNTY NORTH DAKOTA



STATE COUNTY MAP

**NDDOT PROJECT NO. SU-5-983(055)055**  
**MUSEUM DRIVE RECONSTRUCTION**  
**ND HIGHWAY 22 TO SIMS STREET**  
 Grading, Aggregate Base Course, PCC Pavement, Curb & Gutter,  
 Sidewalks, Driveways, Signing, Pavement Marking, Lighting,  
 Landscaping, and Incidentals

PROJECT	MILES-NET	MILES-GROSS
SU-5-983(055)055	0.236	0.236

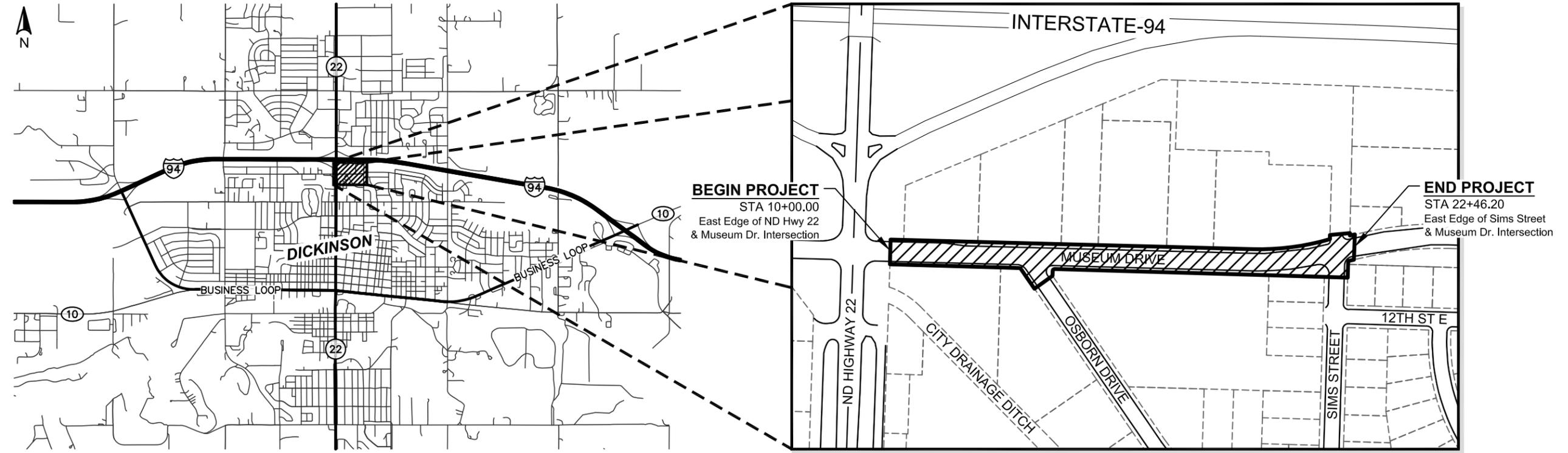
**GOVERNING SPECIFICATIONS**

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

**DESIGN DATA**

	Average Daily Traffic (ADT)		
	Pass.	Truck	Total
Current Traffic (2016)	5593	114	5707
Forecasted Traffic (2036)	6825	139	6964

Design Rigid ESAL's (30yr. Design Life): 1,404,649  
 Design Speed: 30 MPH  
 Speed Limit: 25 MPH  
 Min. Stopping Sight Distance: 200 feet



DESIGNERS: HIGHLANDS ENGINEERING  
 Andrew Schrank, PE  
 KC Homiston, PE/LS  
 Michael Njos, PE  
 Andrew Albrecht, EIT  
 DESIGNERS: PRAIRIE ENGINEERING, P.C.  
 Jeremy J. Butman, PE

CITY OF DICKINSON REVIEW  
 Craig Kubas /S/ Date: 3-4-16  
 Craig Kubas, City Engineer  
 City of Dickinson, ND

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 3-4-16  
 Andrew Schrank, /S/  
 Andrew Schrank, PE-9814  
 Highlands Engineering & Surveying, PLLC

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TABLE OF CONTENTS

<u>Section No.</u>	<u>Sheet No.</u>	<u>Description</u>
1	1	Title Sheet
2	1	Table of Contents
4	1	Scope of Work
6	1-4	Notes
8	1-2	Quantities
10	1	Basis of Estimate
20	1-13	General Details
30	1-6	Typical Sections
40	1-12	Removals
60	1-3	Plan & Profile
76	1-6	Temporary Sediment and Erosion Control
81	1	Survey Coordinate and Curve Data
82	1-3	Survey Data Layouts
85	1-3	Landscaping
90	1-12	Paving Layouts
100	1-22	Work Zone Traffic Control
110	1-9	Signing
120	1-3	Pavement Marking
140	1-5	Lighting
175	1-2	Boring Logs
190	1	Haul Road Restrictions

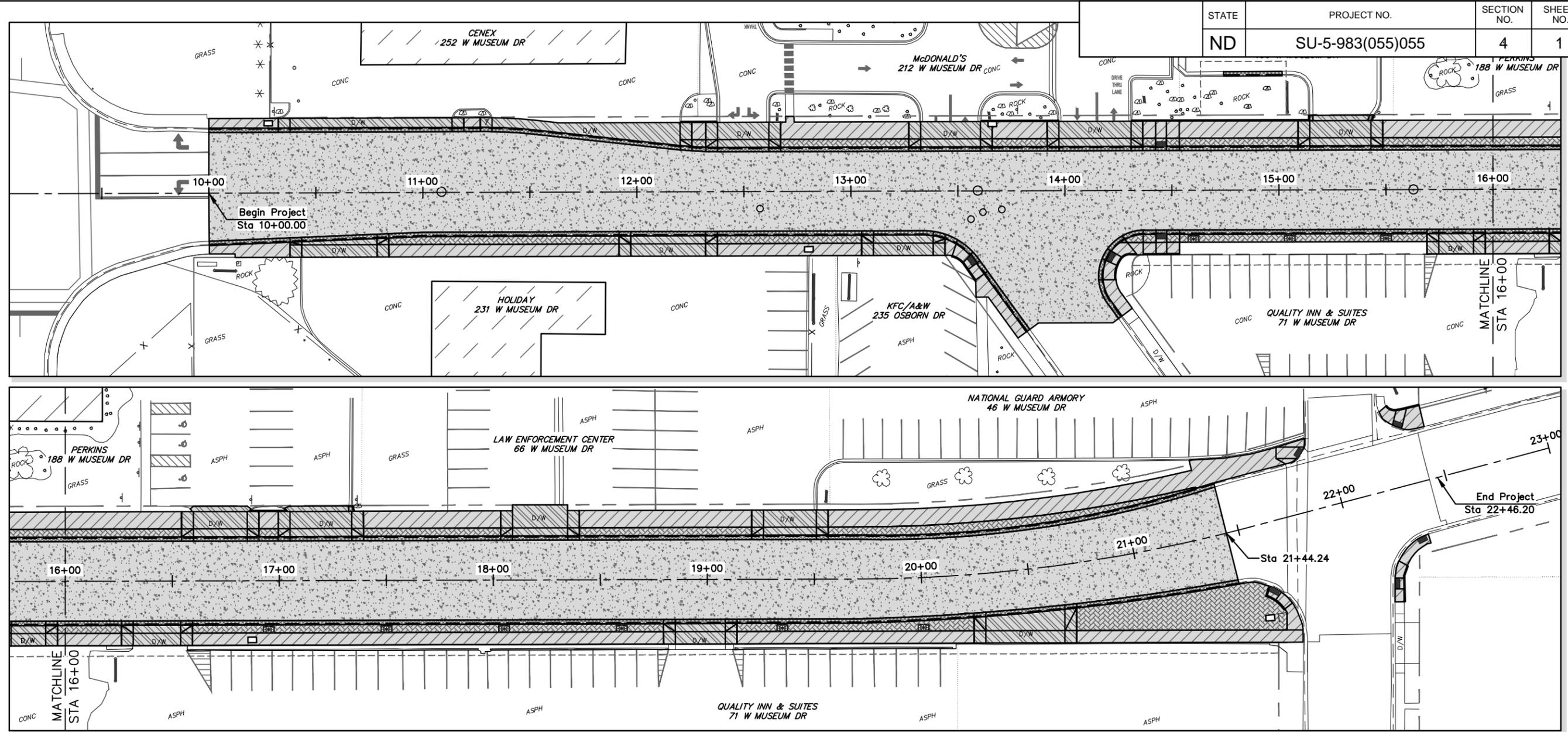
LIST OF SPECIAL PROVISIONS (SP)

<u>SP #</u>	<u>Description</u>
SP 0003(14)	Temporary Erosion and Sediment Best Management Practices
SP 0301(14)	Street Lighting

LIST OF STANDARD DRAWINGS

<u>Standard No.</u>	<u>Description</u>
D-101-1,-2,-3	NDDOT Abbreviations
D-101-10	NDDOT Utility Company and Organization Abbreviations
D-101-20,-21	Line Styles
D-101-30,-31,-32	Symbols
D-550-5	Transverse Construction Joint
D-704-7	Breakaway Systems for Construction Zone Signs - Perforated Tube
D-704-8	Breakaway Systems for Construction Zone Signs – U-Channel Post
D-704-9	Construction Sign Details Terminal and Guide Signs
D-704-10	Construction Sign Details Regulatory Signs
D-704-11	Construction Sign Details Warning Signs
D-704-13	Barricade and Channelizing Device Details
D-704-14	Construction Sign Punching and Mounting Details
D-704-15	Road Closure Layouts
D-704-20	Terminal and Seal Coat Sign Layouts
D-704-21	Detour and Roadway Diversion Sign Layouts
D-704-22	Construction Truck and Temporary Detour Layouts
D-701-25	Lane Closures on Urban Streets Layouts
D-704-26	Miscellaneous Sign Layouts
D-704-50	Portable Sign Support Assembly
D-750-3	Curb Ramp Details
D-754-23	Perforated Tube Assembly Details
D-754-24	Mounting Details Perforated Tube
D-754-24A	Breakaway Coupler System for Perforated Tubes
D-754-25	Mounting Details Perforated Tube
D-754-26,-27,-28,-35	Sign Punching, Stringer and Support Location Details Regulatory, Warning, and Guide Signs
D-754-86	911 Support Information and Sign Details
D-754-87	Sign Punching, Stringer and Support Location Details for Street Name Signs and 911 Signs
D-762-1	Pavement Marking Message Details
D-762-4	Pavement Marking
D-770-2	Feed Points (Roadway Lighting)
D-770-3	Pull Box Details

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	4	1



**LOCAL UTILITY CONTACTS**

**Water/Sewer**

Craig Kubas  
City of Dickinson Engineer  
99 2nd Street East  
Dickinson, ND 58601  
Phone: 701.456.7022

**SWWPL**

Andy Erickson  
Southwest Water Authority  
4665 2nd Street SW  
Dickinson, ND 58601  
Phone: 701.225.0241

**Phone/Cable**

Steve Mohr  
Midcontinent Communications  
3901 North Louise Avenue  
Sioux Falls, SD 57101  
Phone: 605.274.2988

**Cable**

Doug Rummel  
Consolidated Communications Coop.  
507 South Main  
PO Box 1408  
Dickinson, ND 58601  
Phone: 701.483.7469

**Phone**

Forrest Mikkelson  
Consolidated Communications Coop.  
507 South Main  
PO Box 1408  
Dickinson, ND 58601  
Phone: 701.483.7355

**Phone/Cable**

Connie Kassian  
CenturyLink (QWest)  
1101 16th St NE  
Mandan, ND 58554  
Phone: 701.222.6889

**Gas**

Adam Ballesteros  
Montana Dakota Utilities  
1133 West Broadway Street  
PO Box 1407  
Dickinson, ND 58602  
Phone: 701.690.0333

**Electric**

Jacob Zettel  
Montana Dakota Utilities  
1133 West Broadway Street  
PO Box 1407  
Dickinson, ND 5860  
Phone: 701.456.7110

**Electric**

Gerry Krebs  
Roughrider Electric Coop.  
2156 4th Ave East  
PO Box 1038  
Dickinson, ND 58602  
Phone: 701.483.5111

**EMERGENCY CONTACTS**

**Dickinson Police Dept.**

2475 State Avenue North  
Dickinson, ND 58601  
Phone: 701.456.7759

**Dickinson Fire Dept.**

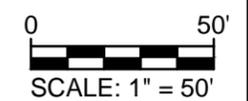
2475 State Avenue North  
Dickinson, ND 58601  
Phone: 701.456.7625

**Dickinson Ambulance**

42 B Avenue East  
Dickinson, ND 58601  
Phone: 701.225.1555

**LEGEND**

- 8 IN NON-REINFORCED CONCRETE
- PVMT CL AE-DOWELED
- CURB AND GUTTER
- SIDEWALK CONCRETE
- DRIVEWAY CONCRETE
- PIGMENTED IMPRINTED CONCRETE



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**INFORMATIONAL CONTACTS**

**ND Dept. of Transportation**

1700 3rd Avenue West  
Dickinson, ND 58601  
Phone: 701.227.6500

**ND One Call**

Phone: 811 or 800.795.0555  
www.ndonecall.com  
IT'S THE LAW!

**SCOPE OF WORK**

**MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET**

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	6	1

**NOTES**

100-P01 WEEKLY PLANNING/REPORTING MEETING: Organize a weekly meeting to coordinate efforts between subcontractors, utilities, local authorities, and others.

Send a knowledgeable representative to conduct the weekly reporting/planning meeting. Prepare minutes for each meeting and make the appropriate distribution of the minutes. Have the minutes approved by the Engineer before distribution.

Provide a written schedule of the next week's work and a tentative schedule of the following week. Include a discussion of problems encountered during the current week; also include information of interest to local authorities, subcontractors, and utilities.

Invite interested agencies to the meeting. Include the following agencies and any other agencies that are necessary:

- a. North Dakota Department of Transportation
- b. City of Dickinson
- c. Utility Companies
- d. Police Department
- e. Fire Department
- f. Ambulance Service
- g. Subcontractors

100-P02 COORDINATION OF PROJECTS: Another project in the vicinity of this project is under contract during the 2017 construction season. This project number is SIM-5-094(088)061 and involves turn lane improvements on the north and south side of Exit 61.

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

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

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

105-200 UTILITY COORDINATION: A utility coordination meeting is required.

107-P01 TRAFFIC CONTROL – AGGREGATE WEDGE: Leave the work area free of hazards during non-working hours by constructing an aggregate wedge per the Plan details. Hazards include drop-offs greater than 2-inches or embankment areas steeper than 4:1 adjacent to traffic lanes. If a hazard exists after working hours, provide required flagging and traffic control devices at the Contractor's expense until the wedge is constructed.

202-P01 REMOVAL OF CURB: Where "Removal of Curb" is indicated by the Plans, grind the existing curb to match the applicable curb cut, curb ramp, or bull nose curb detail. Include in the contract unit price for "Removal of Curb".

202-P02 REMOVAL OF PAVEMENT: Haul removed material to the City Bailer Building at 3389 Energy Drive and stockpiled in designated location. Removed material shall become the property of the City once stockpiled at the Bailer Building. Contact Aaron Praus during normal business hours at 701-456-7776 a minimum of one week prior to delivery to coordinate stockpiling. Include removal, loading, hauling, and stockpiling in the contract unit price for "Removal of Pavement".

202-P03 REMOVAL OF OBSTRUCTIONS: Remove existing landscaping stone mulch, landscaping fabric, irrigation system, grasses, plants and shrubs, tree, and block retaining walls as noted by Section 40 of the Plans. Relocate landscaping boulders as noted by Section 40 of the Plans. Salvage existing landscaping stone mulch, landscaping boulders, and irrigation system where "traffic service aggregate" is to be placed for temporary access into Maverick's Saloon. Include in the contract unit price for "Removal of Obstructions".

203-P01 COMMON EXCAVATION-WASTE: Remove existing soils from the bottom of removed pavements or existing grade to the proposed subgrade. Removed material may be stockpiled at the City Bailer Building. Contact Aaron Praus during normal business hours at 701-456-7776 a minimum of one week prior to delivery to coordinate stockpiling. If this method of disposal is chosen, removed material shall become the property of the City once stockpiled at the Bailer Building. Include removal, loading, hauling, and stockpiling in the contract unit price for "Common Excavation-Waste".

203-P02 COMMON EXCAVATION-SUBCUT: Subcut areas shall be delineated by the Engineer in the field after pavement and existing subgrade is removed. Replace subcut areas with suitable on-site or imported material to the proposed subgrade elevation. Include removal, loading, hauling, replacing soil, and compacting soil for subcut areas in the contract unit price for "Common Excavation-Subcut".

216-P01 WATER: If City water is used, the City of Dickinson will install a meter on an existing hydrant for the Contractor's water supply. The City will charge a \$25.00 meter fee and \$29.00 per MGal for water.

230-P01 SUBGRADE PREPARATION: Instead of scarifying existing subgrade, subgrade soils may be removed to a depth of 12-inches and replaced with suitable material per the requirements of Section 203.04 E.2. Include in the contract unit price for "Subgrade Preparation-Type A-12IN".

261-P01 WEIGHTED FIBER ROLLS: Weighted Fiber Rolls shall meet the following specifications:

- Non-degradable, extruded netting tube filled with wood curled excelsior and weighted inner core
- 8-inch roll diameter
- 6-foot roll length
- 8.33 lb/ft roll weight

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## NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	6	2

Place weighted fiber rolls for Phases I and II prior to any disturbance on-site, and after Phase I lane closures are installed. Remove these fiber rolls after completion of Phase I and II paving operations and prior to Phase III.

Place weighted fiber rolls for Phases III and IV prior to any disturbance for Phases III or IV. Remove these fiber rolls after completion of Phase III and IV paving operations and prior to removing the Phase IV lane closures.

Obtain approval from Engineer prior to removing any weighted fiber rolls. Include cost for placement, relocation as needed due to Contractor operations, and removal within the contract unit price for "Weighted Fiber Rolls".

302-P01 TRAFFIC SERVICE AGGREGATE: Use crushed concrete obtained from the City of Dickinson Bailer Building located at 3389 Energy Drive for "Traffic Service Aggregate". Crushed concrete is available for use at no material cost. Place crushed concrete to a depth of 8-inches. Contact Aaron Praus during normal business hours at 701-456-7776 a minimum of one week prior to obtaining crushed concrete.

704-P01 TRAFFIC CONTROL: The traffic control devices list has been developed using the following layouts on the Standard Drawing for traffic control:

- Construction Sign Layouts in Plans
- D-704-22, Type K for trucks hauling material to and from site
- D-704-22, Type N for one way traffic, as allowed
- D-704-25 for flagging as needed and for work occurring when lane closures are not installed

Other than the following work items, complete all work within the lane closures shown in Section 100 of the Plans unless noted otherwise. Obtain approval from Engineer of traffic control plans prior to starting work outside the indicated lane closures. These items may also be completed within these lane closures, if desired:

- Sign and Sign Support Installation
- Painted Pavement Markings Installation
- Preformed Patterned Pavement Marking Installation
- Landscaping Appurtenances and Landscape Plantings

One-way traffic will only be allowed from Station 10+00 to Sta 14+00 between the hours of 9:00 pm MT to 5:00 am MT for concrete pours for "8IN Non-Reinf Concrete PVMT CI AE-Doweled" as approved by the Engineer.

704-P02 TRAFFIC CONTROL – PHASING: Work of Phase II may be started prior to completion of all Phase I work if it does not further limit access to adjacent lots, does not affect public traffic other than as allowed by the Plans, space is sufficient for proper completion of Work, and Engineer approval is obtained. All Work of Phases I and II must be completed prior to starting work of Phases III or IV. Work of Phase IV may be started prior to completion of all Phase III work if it does not further limit access to adjacent lots, does not affect public traffic other than as allowed by the Plans, space is sufficient for proper completion of Contractor's Work, and Engineer approval is obtained.

Make provisions to accommodate delivery truck access to adjacent businesses at all times. Coordinate with businesses during each phase of the project to determine an acceptable delivery truck route. Designated delivery truck routes shall be agreed upon by the Business Managers prior to commencing work on the applicable Phase. Notify business managers a minimum of 48 hours prior to changes that will affect the delivery truck route.

Prior to lane adjustments at the Highway 22 intersection, the traffic signal camera at this intersection will need to be adjusted. Only the City shall make adjustments to this camera. Give the City a minimum notice of one week to make signal adjustments before starting Phase I or Phase III, and prior to removing traffic control devices upon the completion of the Work. Contact the City Engineer during normal business hours at 701-456-7715 to coordinate camera adjustments.

Use flaggers to safely direct construction and public traffic through the site. It is expected that flagging will be required when setting up and removing traffic control devices for each phase, to direct construction trucks into and out of construction work zones, and to install pavement markings.

704-P03 TRAFFIC CONTROL – PHASE I: Obliterate existing pavement markings as noted by Section 100 of the Plans immediately prior to installing Phase I lane closures. Use a flagger to direct traffic during removal of these pavement markings until lane closures are installed.

Remove the KFC/A&W driveway from Sta 13+04.0 to Sta 13+14.1 and place traffic service aggregate in this area prior to removing this driveway from Sta 13+22 to Sta 13+42.4.

704-P04 TRAFFIC CONTROL – PHASE II: Install Traffic Service Aggregate to bridge gap between existing pavement and pavement constructed in Phase I prior to switching to the Phase II traffic control plan.

704-P05 TRAFFIC CONTROL – PHASE III: Install Traffic Service Aggregate to bridge gaps between existing pavement and pavement constructed in Phases I and II prior to switching to the Phase III traffic control plan.

Install Traffic Service Aggregate for temporary access to Maverick's Saloon prior to switching to the Phase III traffic control plan, or prior to closing the existing Maverick's Saloon driveway.

Install Short Term Messages-Type R immediately prior to installing Phase III lane closures. Use a flagger to direct traffic until short term messages and lane closures are installed.

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	6	3

## NOTES

704-P06 TRAFFIC CONTROL – PHASE IV: Install short term pavement markings on newly constructed pavement as noted by Section 100 of the plans prior to removing Phase IV lane closures.

Remove Short Term Messages-Type R in the eastbound lane of 12<sup>th</sup> Street West, west of Highway 22 immediately prior to removing traffic control items. Use a flagger to direct east-bound traffic on the west side of Highway 22 while messages and traffic control items are being removed.

748-P01 CURB-TYPE I: Construct a curb behind the sidewalk per Section A-A of Standard Drawing D-750-3 in locations shown by the Plans. The top of this curb be a maximum of 12-inches above the adjacent sidewalk. All work for installing this curb shall be paid for as “Curb-Type I”.

750-P01 PIGMENTED IMPRINTED CONCRETE: Develop a mix design using any size coarse aggregate specified in Section 802.01 C.2, “Coarse Aggregate” and with a 60-40 fine aggregate-coarse aggregate ratio.

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

- Marigold, produced by Solomon Colors, Inc., <http://www.solomoncolors.com/>
- Harvest Gold, produced by Davis Colors, <http://www.daviscolors.com/>
- R/M – St. Simon’s Tan, produced by Southern Color Company, <http://southerncolor.com>

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

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

Form a pattern in concrete using the Flagstone Pattern by Quick Imprint Systems, telephone number 1-800-746-8820, the Chateau Ashlar pattern by Brickform (a division of Solomon Colors, Inc.), or an approved equal.

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

885-001 CAST IRON DETECTABLE WARNING PANELS: If cast iron detectable warning panels are used, provide cast iron panels with a minimum thickness of 0.2-inches.

970-P01 LANDSCAPE APPURTENANCES: Include placement of new landscaping fabric, replacement of salvaged landscaping stone mulch, replacement of irrigation system, and replacement of salvaged landscaping boulders that were removed for placement of Traffic Service Aggregate at the temporary access into Maverick’s Saloon in contract unit price for “Landscape Appurtenances”.

970-P02 LANDSCAPE PLANTINGS: Include plantings required by Section 85 of the Plans in the contract unit price for “Landscape Plantings”.

970-P03 TREE GRATES: Tree grates shall be Neenah Foundry R-8810, East Jordan 8686 NOVA, or Engineer approved equal. Equal grates shall be cast iron meeting the requirements of ASTM A48 with a total grate weight similar to the products listed. The grate shall have outside dimensions of 36”x60” with a 16”-18” diameter tree opening. Grates shall consist of two (2) equally sized pieces to form one grate. Slot openings in the grate shall be 1/4” to 1/2” wide and shall have a design similar to the grates listed. Install grates per the manufacturer’s recommendations. Include in the contract unit price for “Tree Grates”.

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## ENVIRONMENTAL COMMITMENTS

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	6	4

**ENVIRONMENTAL COMMITMENTS (EC):** The City of Dickinson, the North Dakota Department of Transportation, and the Federal Highway Administration have made environmental commitments to secure approval of this project. The environmental commitments are as follows:

Based on the NEPA documentation, no additional permits or environmental commitments have been identified beyond what is covered by the NDDOT's Standard Specification of Road and Bridge Construction.

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

**QUANTITIES**

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	8	1

<u>SPEC</u>	<u>CODE</u>	<u>ITEM DESCRIPTION</u>	<u>UNITS</u>	<u>QTY</u>
103	0100	CONTRACT BOND	L SUM	1
202	0129	REMOVAL OF CURB	LF	50
202	0136	REMOVAL OF PAVEMENT	TON	2,966.9
202	295	REMOVAL OF OBSTRUCTIONS	L SUM	1
203	0114	COMMON EXCAVATION-WASTE	TON	4,368
203	0138	COMMON EXCAVATION-SUBCUT	CY	500
216	0100	WATER	MGAL	93.0
230	0165	SUBGRADE PREPARATION-TYPE A-12IN	STA	11.4
261	0200	WEIGHTED FIBER ROLLS	LF	144
302	0050	TRAFFIC SERVICE AGGREGATE	TON	97.7
302	0120	AGGREGATE BASE COURSE CL 5	TON	4,340.4
550	0300	8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	5,205
702	0100	MOBILIZATION	L SUM	1
704	0100	FLAGGING	MHR	800
704	1000	TRAFFIC CONTROL SIGNS	UNIT	1,751
704	1052	TYPE III BARRICADE	EA	39
704	1060	DELINEATOR DRUMS	EA	152
704	1067	TUBULAR MARKERS	EA	208
704	1080	STACKABLE VERTICAL PANELS	EA	80
704	1500	OBLITERATION OF PAVEMENT MARKING	SF	350
708	1540	INLET PROTECTION-SPECIAL	EA	2
708	1541	REMOVE INLET PROTECTION-SPECIAL	EA	2
722	6140	ADJUST GAVE VALVE BOX	EA	5
722	6200	ADJUST MANHOLE	EA	3
748	0100	CURB & GUTTER	LF	2,347
748	0520	CURB-TYPE I	LF	250
750	0030	PIGMENTED IMPRINTED CONCRETE	SY	686
750	0100	SIDEWALK CONCRETE	SY	1,162
750	1000	DRIVEWAY CONCRETE	SY	853
750	2115	DETECTABLE WARNING PANELS	SF	72
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	118.0
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	46.0
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	449.1
754	0592	RESET SIGN PANEL	EA	3
754	0593	RESET SIGN SUPPORT	EA	2
762	0103	PVMT MK PAINTED-MESSAGE	SF	14
762	0122	PREFORMED PATTERNED PVMT MK-MESSAGE(GROOVED)	SF	128
762	0420	SHORT TERM 4IN LINE-TYPE R	LF	880
762	0440	SHORT TERM MESSAGE-TYPE R	SF	193
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	1,550
762	1307	PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED	LF	310

Quantities

Museum Drive Reconstruction  
ND Highway 22 to Sims Street

**QUANTITIES**

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	8	2

762.....	1309.....	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED .....	LF.....	578
762.....	1325.....	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED .....	LF.....	188
770.....	0020.....	CONCRETE FOUNDATION-HIGHWAY LIGHTING .....	EA.....	6
770.....	0110.....	JUNCTION BOX .....	EA.....	1
770.....	0330.....	2IN DIAMETER RIGID CONDUIT .....	LF.....	1,288
770.....	0604.....	UNDERGROUND CONDUCTOR N04-TYPE THW .....	LF.....	2,712
770.....	0605.....	UNDERGROUND CONDUCTOR N06-TYPE THW .....	LF.....	1,356
770.....	1718.....	LT STD 8FT MA 32 FT POLE BREAKAWAY .....	EA.....	6
770.....	4210.....	LED LUMINAIRE.....	EA.....	6
770.....	4523.....	REVISE HIGHWAY LIGHTING FEED POINT .....	EA.....	1
970.....	0001.....	LANDSCAPING APPURTENANCES .....	L SUM .....	1
970.....	0601.....	TREE GRATE .....	EA.....	9
970.....	1011.....	LANDSCAPE PLANTINGS.....	L SUM .....	1

Quantities

Museum Drive Reconstruction  
ND Highway 22 to Sims Street

## BASIS OF ESTIMATE

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	10	1

### Removal of Pavement

<b>Material</b>	Mainline Concrete	Sidewalk Concrete	Driveway Concrete	Curb and Gutter	Bituminous Surfacing
<b>Unit Weight</b>	2.025 Ton/CY	2.025 Ton/CY	2.025 Ton/CY	2.025 Ton/CY	1.9575 Ton/CY
<b>Basis</b>	7" depth	4" depth	6" Depth	1.3 sf cross-section	7" depth

### Common Excavation-Waste

Unit Weight: 1.755 Ton/CY

### Common Excavation-Subcut

In Place Quantity (no allowance made for compaction)

### Aggregate Base Course CI 5

Depth: Below 8IN Non-Reinf Concrete Pavement CL AE-Doweled = 12"  
 Below Curb and Gutter = 13"  
 Back of Curb and Gutter to 1' Behind Curb and Gutter, and Below Sidewalk or Boulevard Aggregate Base = 15"  
 Back of Curb and Gutter to 1' Behind Curb and Gutter, and Below Driveway Aggregate Base = 9"  
 Below Sidewalk Concrete = 4"  
 Below Pigmented Imprinted Concrete = 4"  
 Below Driveway Concrete = 4"

Unit Weight: 1.875 Ton/CY

### Traffic Service Aggregate

Depth: 8"

Unit Weight: 1.875 Ton/CY

### Water

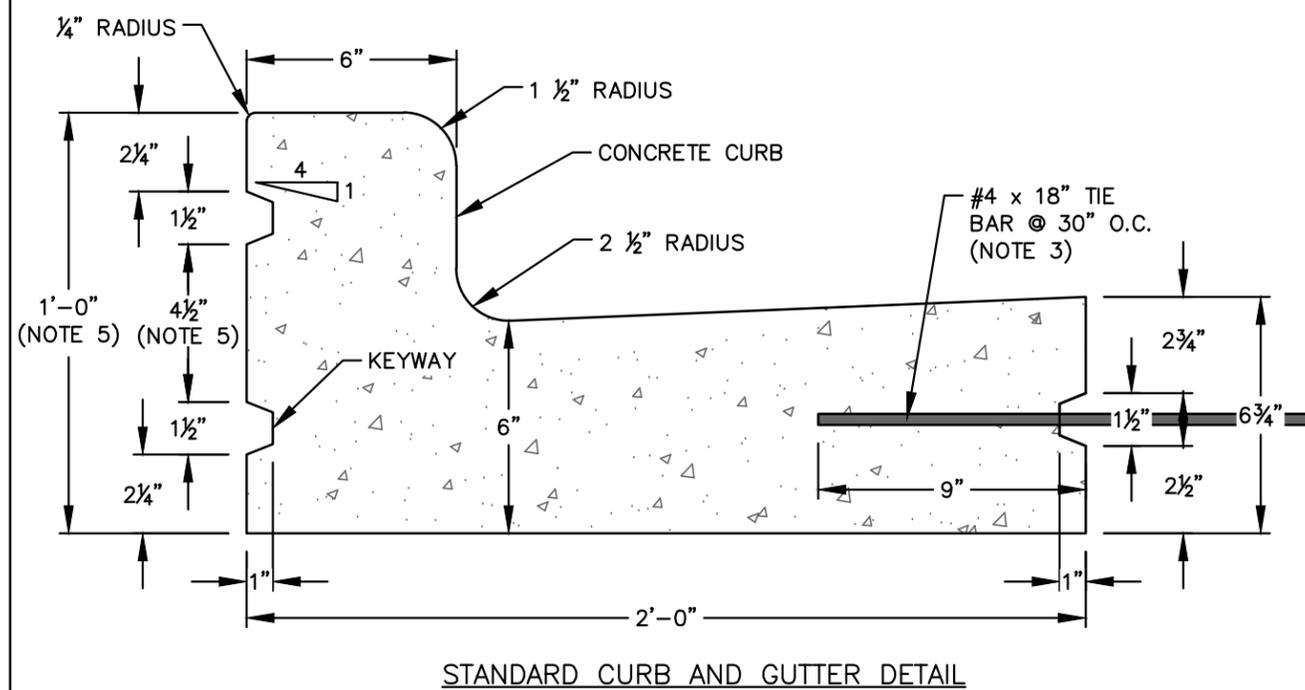
25 MGal/Mile for Dust Palliative

20 Gal/Ton for Aggregates

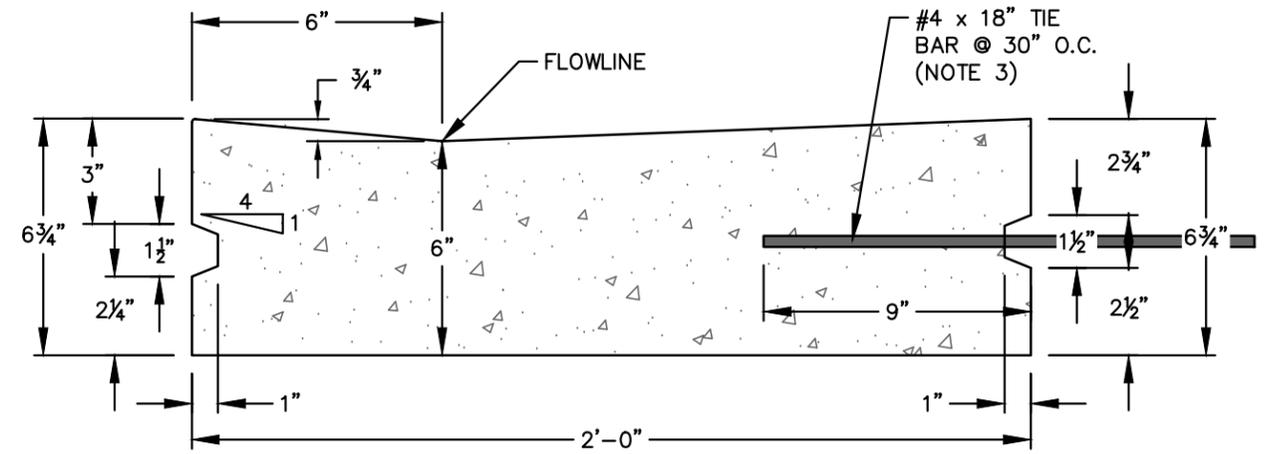
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# CURB AND GUTTER DETAILS

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	20	1



STANDARD CURB AND GUTTER DETAIL



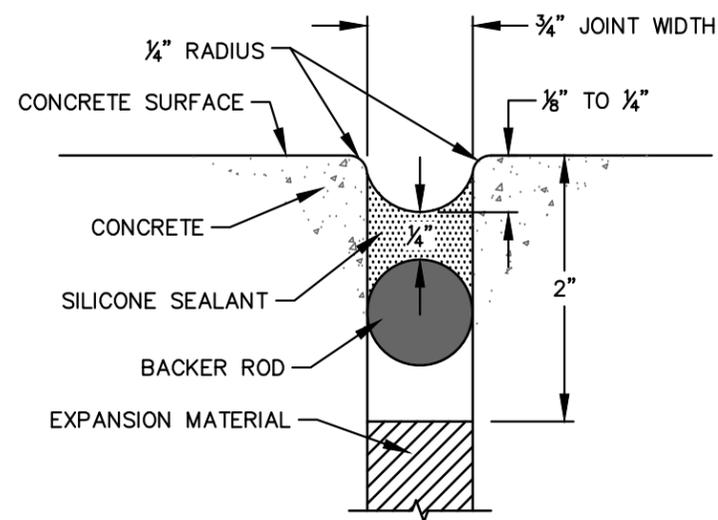
DRIVEWAY/CURB RAMP CURB AND GUTTER DETAIL

### NOTES

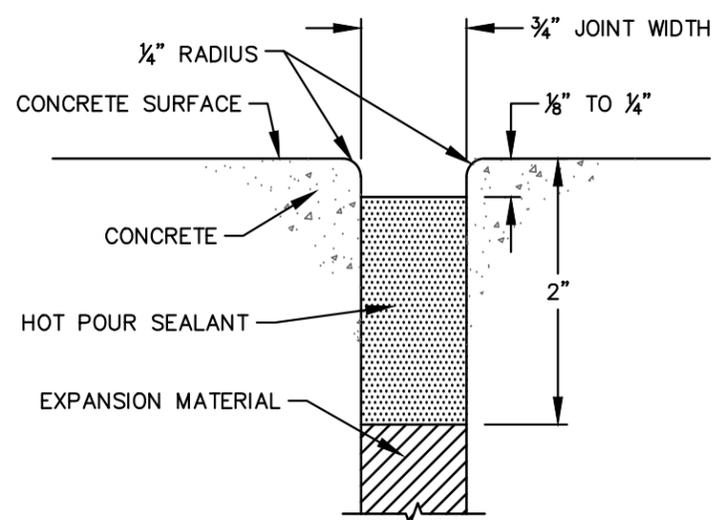
1. CURB AND GUTTER CONTRACTION JOINT SPACING SHALL MATCH THE ADJACENT PAVEMENT JOINTS.
2. ISOLATION JOINTS EVERY 150 LF MAXIMUM, AT EVERY PROPERTY LINE, AT DRIVEWAYS, AND AT ALL CURB RETURNS ON RADIUS.
3. CURB AND GUTTER SHALL BE TIED TO PCC PAVEMENT WITH #4 DEFORMED TIE BARS 18" IN LENGTH SPACED AT 30" CENTER TO CENTER. BARS SHALL NOT BE PLACED WITHIN 12" OF JOINTS IN THE CURB AND GUTTER.
4. CONTRACTOR HAS THE OPTION TO INCREASE THE DEPTH OF THE CURB AND GUTTER TO MATCH THE DEPTH OF THE ADJACENT PCC PAVEMENT OR TO CONSTRUCT TO THE DEPTH SHOWN.
5. CURB HEIGHT WILL VARY FROM STA 12+75 TO STA 13+05 RT AND FROM STA 19+50 TO STA 21+65 RT. REDUCE DIMENSIONS INDICATED AS THE CURB HEIGHT IS LOWERED. IF THE DISTANCE BETWEEN KEYWAYS BECOMES LESS THAN 1", DO NOT USE THE TOP KEYWAY.

## CURB AND GUTTER

NOT TO SCALE



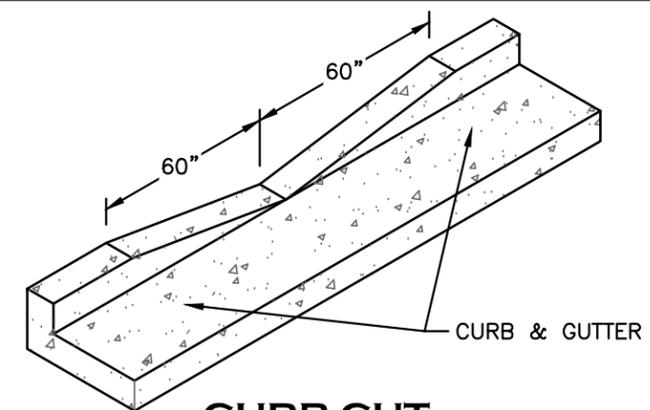
SILICONE SEALANT



HOT POURED SEALANT

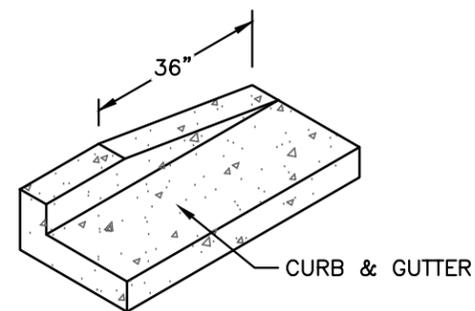
### ISOLATION JOINT SEAL PLAN

NOT TO SCALE



### CURB CUT

NOT TO SCALE



### BULLNOSE CURB

NOT TO SCALE

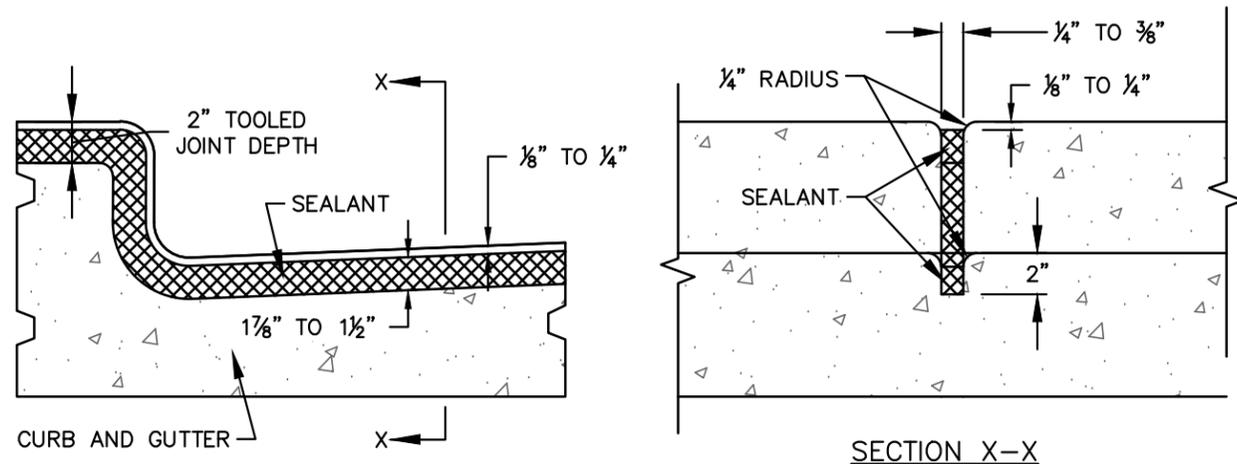
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GENERAL DETAILS  
Curb and Gutter

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

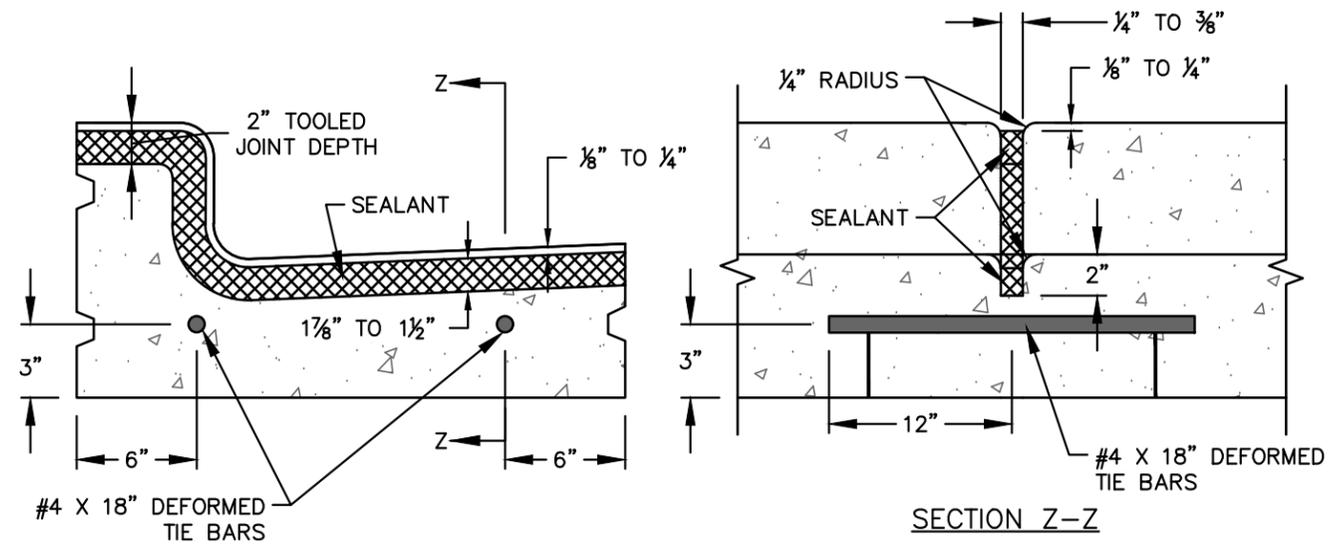
# CURB AND GUTTER DETAILS

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	20	2



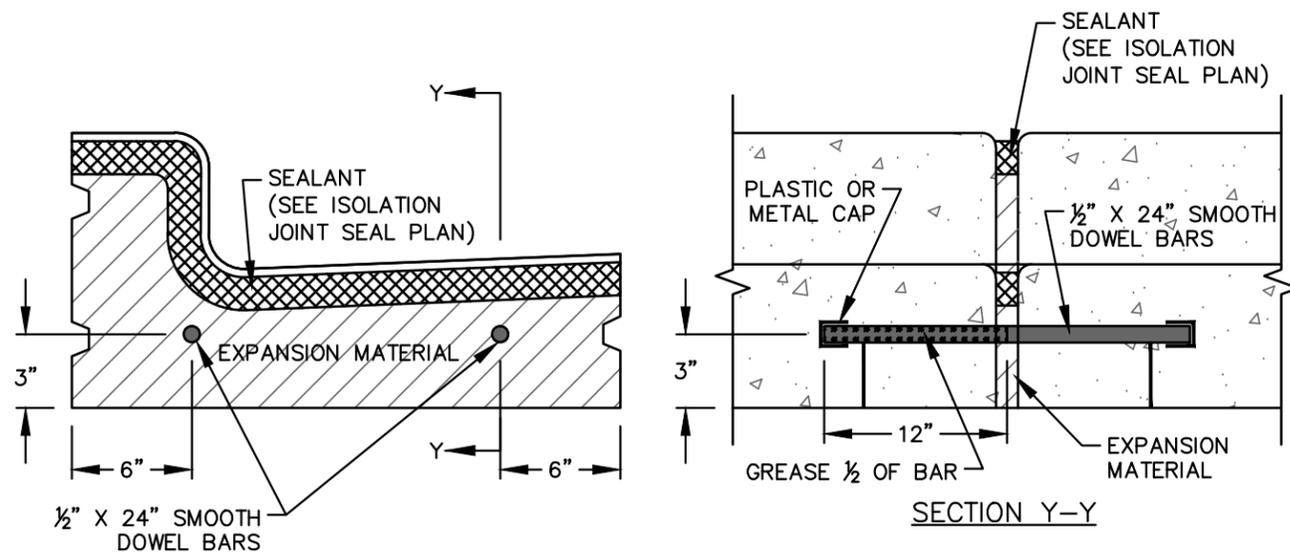
**CONTRACTION JOINT**

NOT TO SCALE



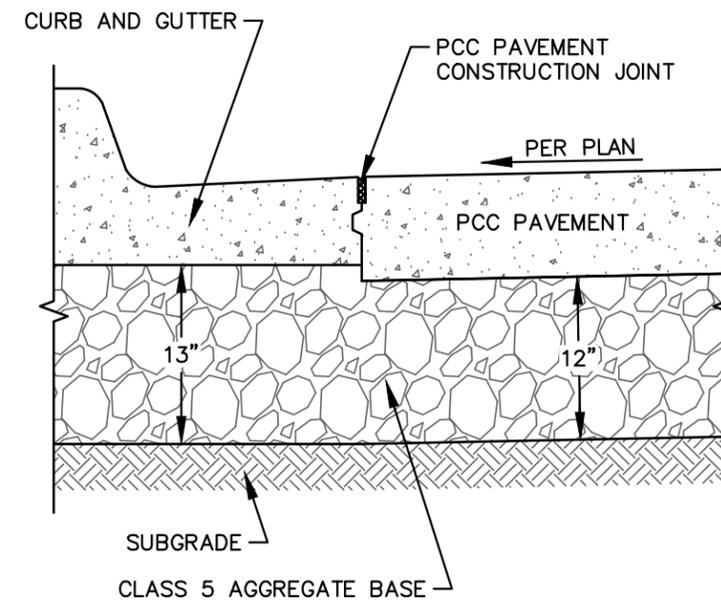
**CONSTRUCTION JOINT**

NOT TO SCALE



**ISOLATION JOINT**

NOT TO SCALE



**CURB & GUTTER  
ADJOINING PCC PAVEMENT**

NOT TO SCALE

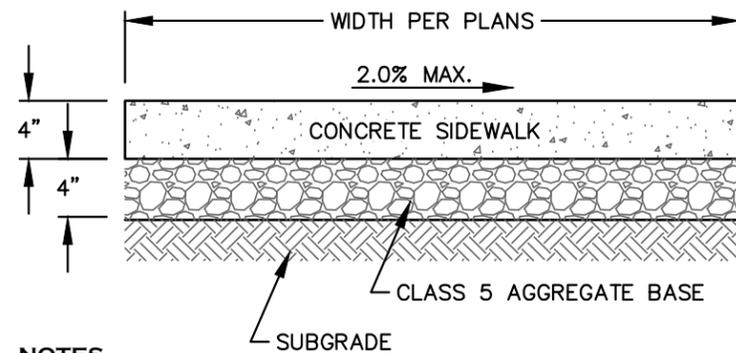
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GENERAL DETAILS  
Curb and Gutter

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

# CONCRETE BOULEVARD AND SIDEWALK DETAILS

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	20	3

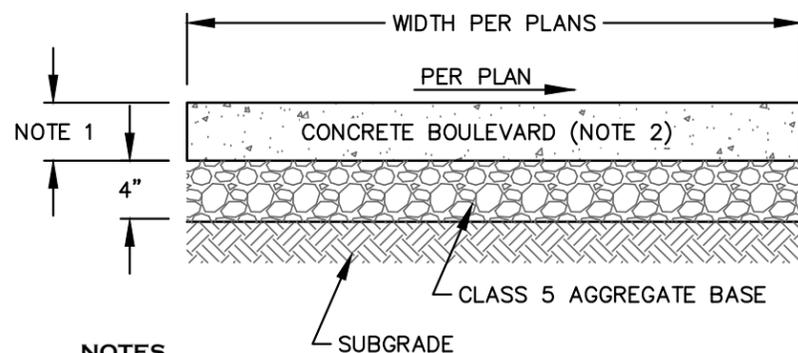


**NOTES**

1. CONTRACTION JOINTS SPACED 5' MINIMUM AND 8' MAXIMUM TO CREATE APPROXIMATELY SQUARE PANELS.
2. WHEN ABUTTING CURB AND GUTTER OR CONCRETE BOULEVARD, JOINT SPACING SHALL BE VARIED SO SIDEWALK JOINTS MATCH UP WITH CURB AND GUTTER OR BOULEVARD JOINTS.
3. ISOLATION JOINTS EVERY 150 LF MAXIMUM, AT EVERY PROPERTY LINE, AT DRIVEWAYS, AND AT ALL CURB RETURNS ON RADII.
4. CONCRETE KEYWAYS SHALL BE USED FOR TRANSVERSE CONSTRUCTION JOINTS IN SIDEWALKS THAT DO NOT FALL AT AN ISOLATION JOINT.
5. STAMP THE SIDEWALK EVERY 100 LF FOR CONTINUOUS POURS, STAMP EACH SIDEWALK PATCH AND STAMP AT EACH PROPERTY LINE PER LOT.
6. AGGREGATE BASE SHALL BE PAID FOR AS "AGGREGATE BASE COURSE CL 5".

## CONCRETE SIDEWALK

NOT TO SCALE

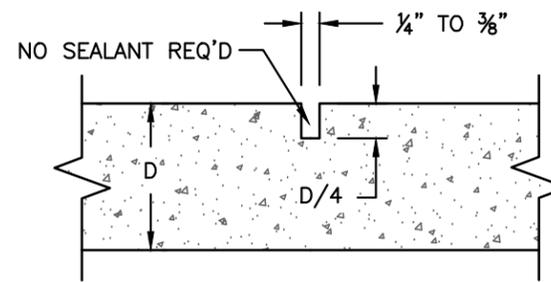


**NOTES**

1. THICKNESS SHALL BE 6" WHEN WIDTH IS 10' FEET OR LESS. THICKNESS MAY BE REDUCED TO 4" WHEN WIDTH IS GREATER THAN 10'.
2. CONCRETE SHALL BE PIGMENTED AND IMPRINTED PER THE PLANS. BOULEVARD CONCRETE SHALL BE PAID FOR AS "PIGMENTED IMPRINTED CONCRETE".
3. CONTRACTION JOINTS SPACED 5' MINIMUM AND 8' MAXIMUM TO CREATE APPROXIMATELY SQUARE PANELS.
4. WHEN ABUTTING CURB AND GUTTER, JOINT SPACING SHALL BE VARIED SO SIDEWALK JOINTS MATCH UP WITH CURB AND GUTTER JOINTS.
5. ISOLATION JOINTS EVERY 150 LF MAXIMUM, AT EVERY PROPERTY LINE, AT DRIVEWAYS, AND AT ALL CURB RETURNS ON RADII.
6. CONCRETE KEYWAYS SHALL BE USED FOR TRANSVERSE CONSTRUCTION JOINTS IN BOULEVARDS THAT DO NOT FALL AT AN ISOLATION JOINT.
7. AGGREGATE BASE SHALL BE PAID FOR AS "AGGREGATE BASE COURSE CL 5".

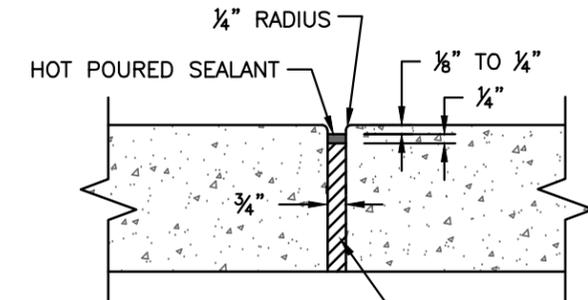
## CONCRETE BOULEVARD

NOT TO SCALE



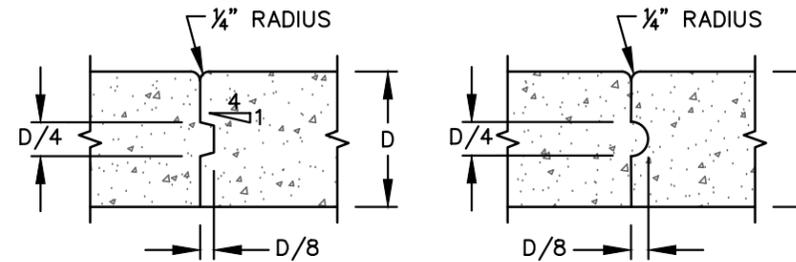
## CONTRACTION JOINT

NOT TO SCALE



## ISOLATION JOINT

NOT TO SCALE



## TRAPEZOIDAL

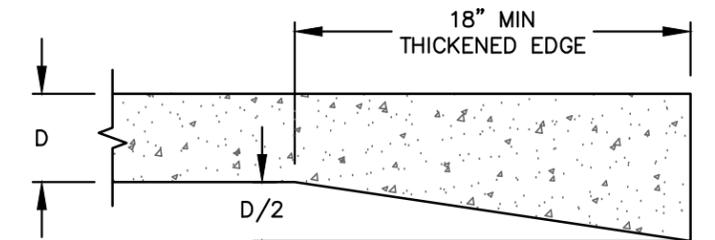
## HALF-ROUND

**NOTES**

1. FOR SLABS LESS THAN D=5", A HALF-ROUND KEYWAY SHALL BE USED.

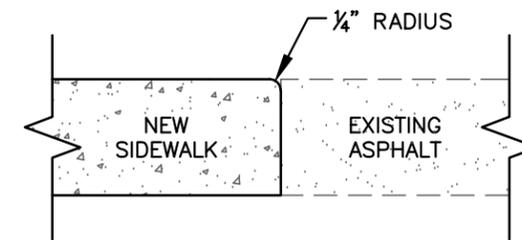
## CONCRETE KEYWAY

NOT TO SCALE



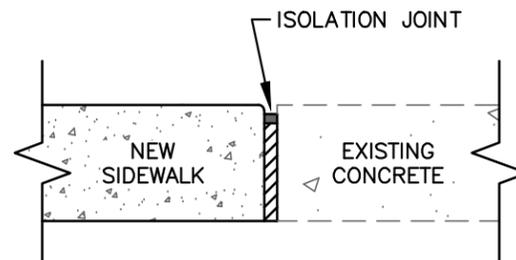
## THICKENED EDGE

NOT TO SCALE



## NEW SIDEWALK ABUTTING EXISTING ASPHALT

NOT TO SCALE



## NEW SIDEWALK ABUTTING EXISTING CONCRETE

NOT TO SCALE

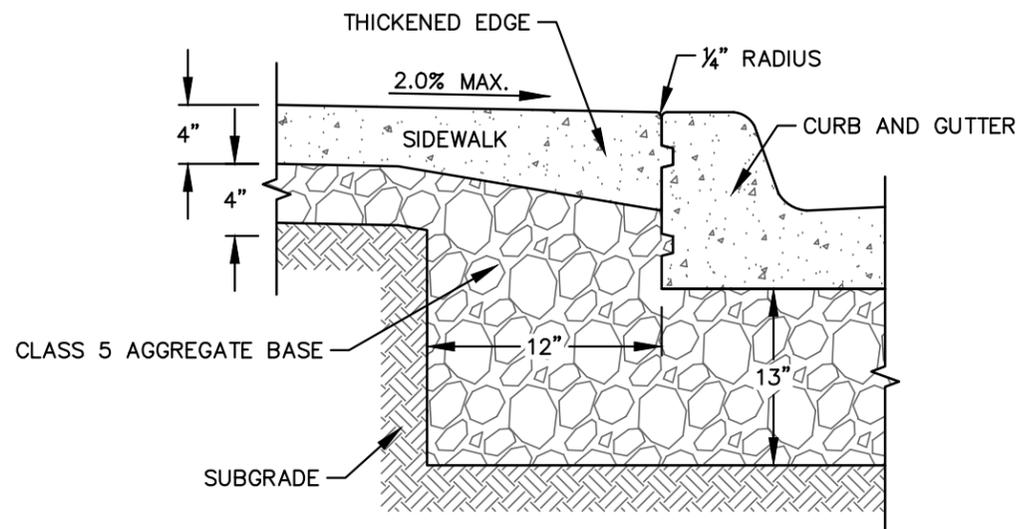
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GENERAL DETAILS  
Concrete Boulevard and Sidewalk

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

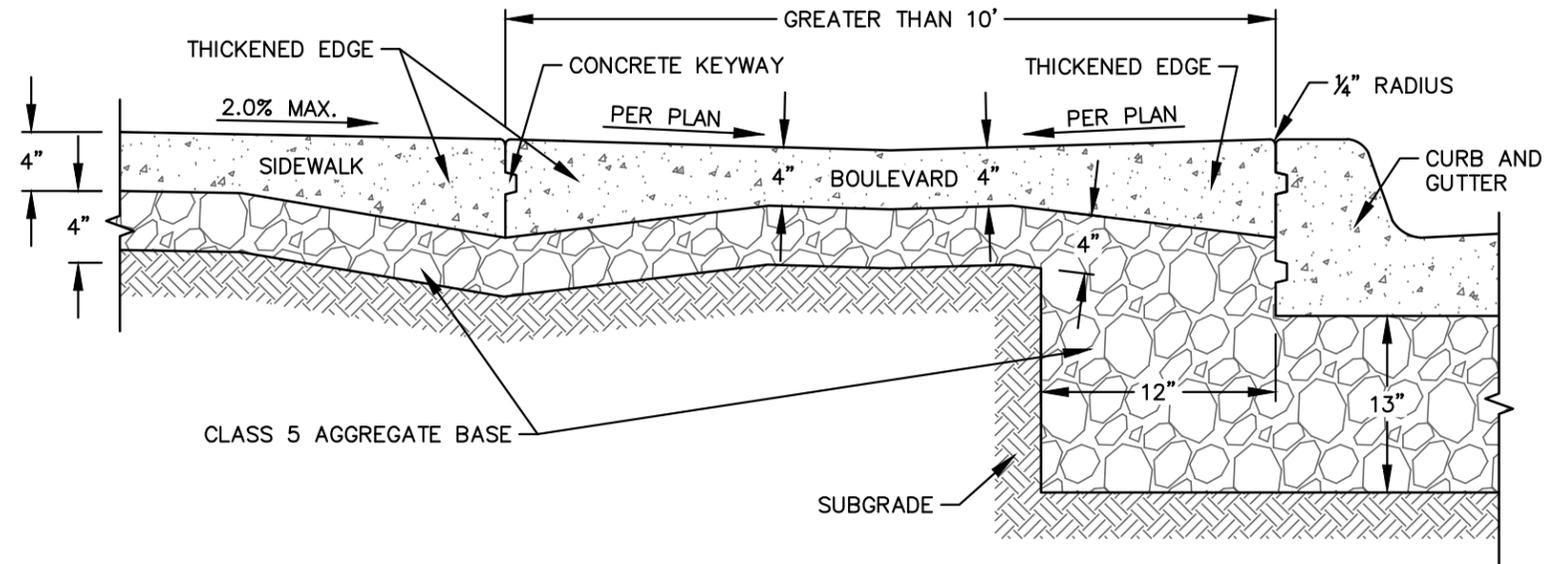
# CONCRETE BOULEVARD AND SIDEWALK DETAILS

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	20	4



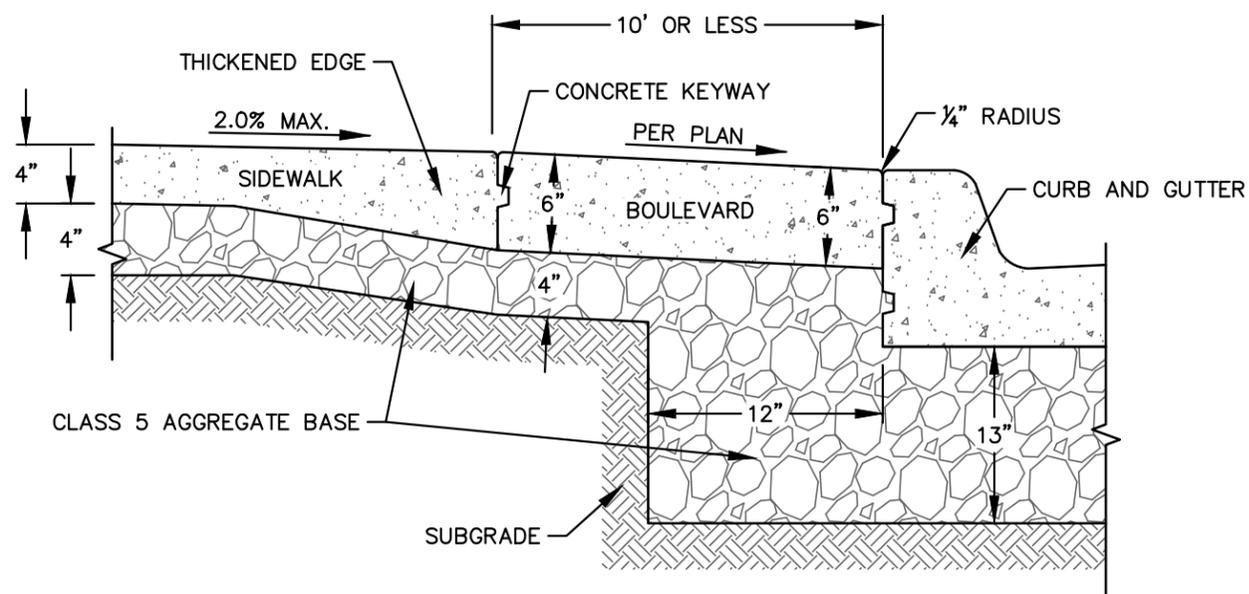
**SIDEWALK ABUTTING CURB & GUTTER**

NOT TO SCALE



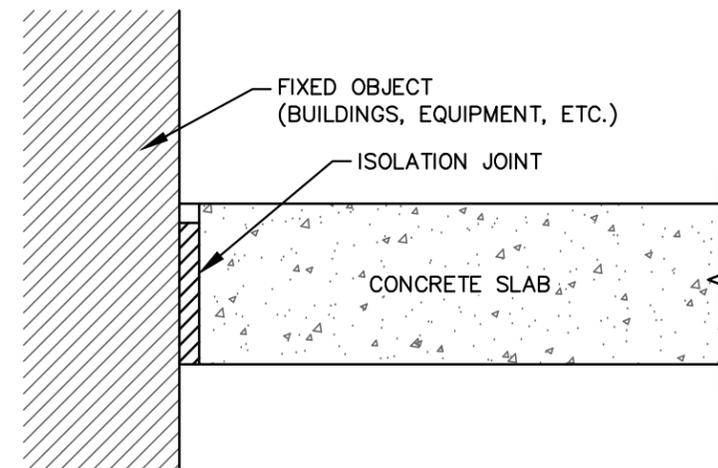
**SIDEWALK ABUTTING BOULEVARD HAVING WIDTH > 10'**

NOT TO SCALE



**SIDEWALK ABUTTING BOULEVARD HAVING WIDTH ≤ 10'**

NOT TO SCALE



**CONCRETE ABUTTING FIXED OBJECT**

NOT TO SCALE

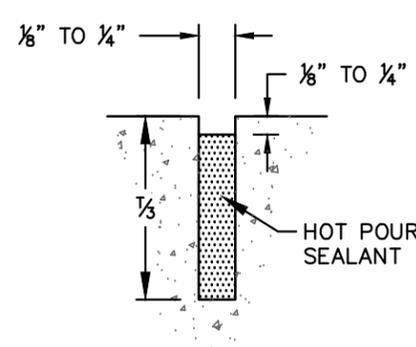
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GENERAL DETAILS  
Concrete Boulevard and Sidewalk

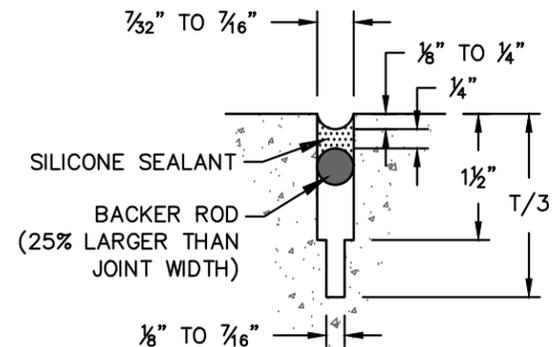
MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

# PCC PAVEMENT JOINT DETAILS

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	20	5



HOT POUR SEALING

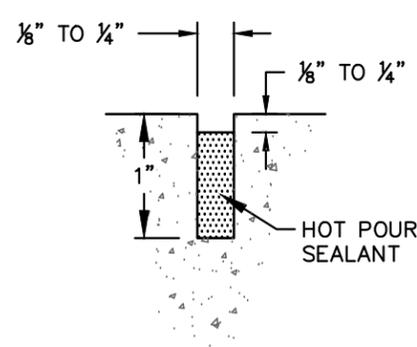


SILICONE SEALING

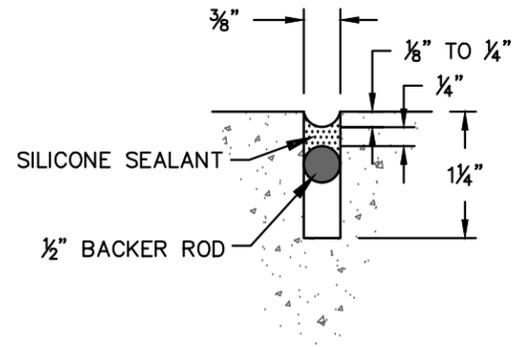
NOTE: T = PAVEMENT THICKNESS

## CONTRACTION JOINT SAWING AND SEALING

NOT TO SCALE



HOT POUR SEALING

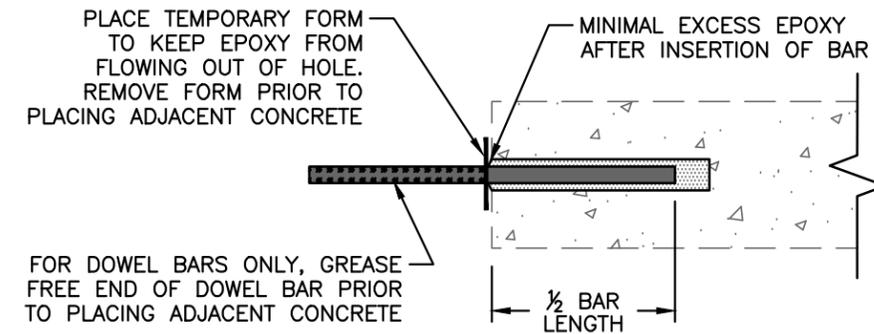
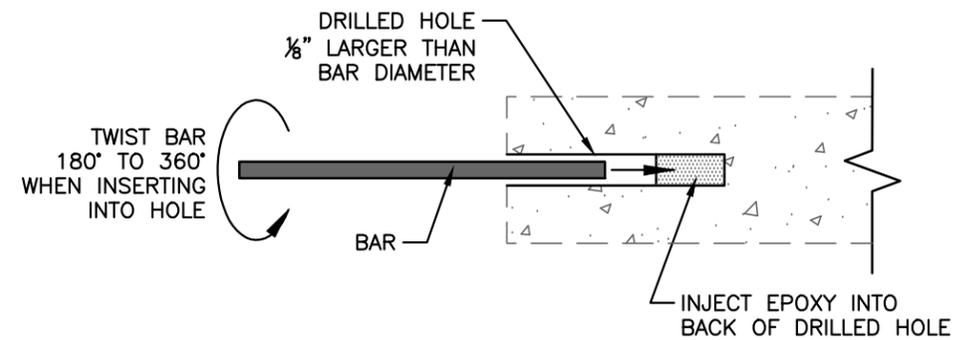


SILICONE SEALING

NOTES: T = PAVEMENT THICKNESS  
TIED JOINTS SHALL BE SEALED WITH HOT POUR SEALANT ONLY

## CONSTRUCTION JOINT SAWING AND SEALING

NOT TO SCALE



## DRILL AND EPOXY DOWEL AND TIE BAR INSTALLATION

NOT TO SCALE

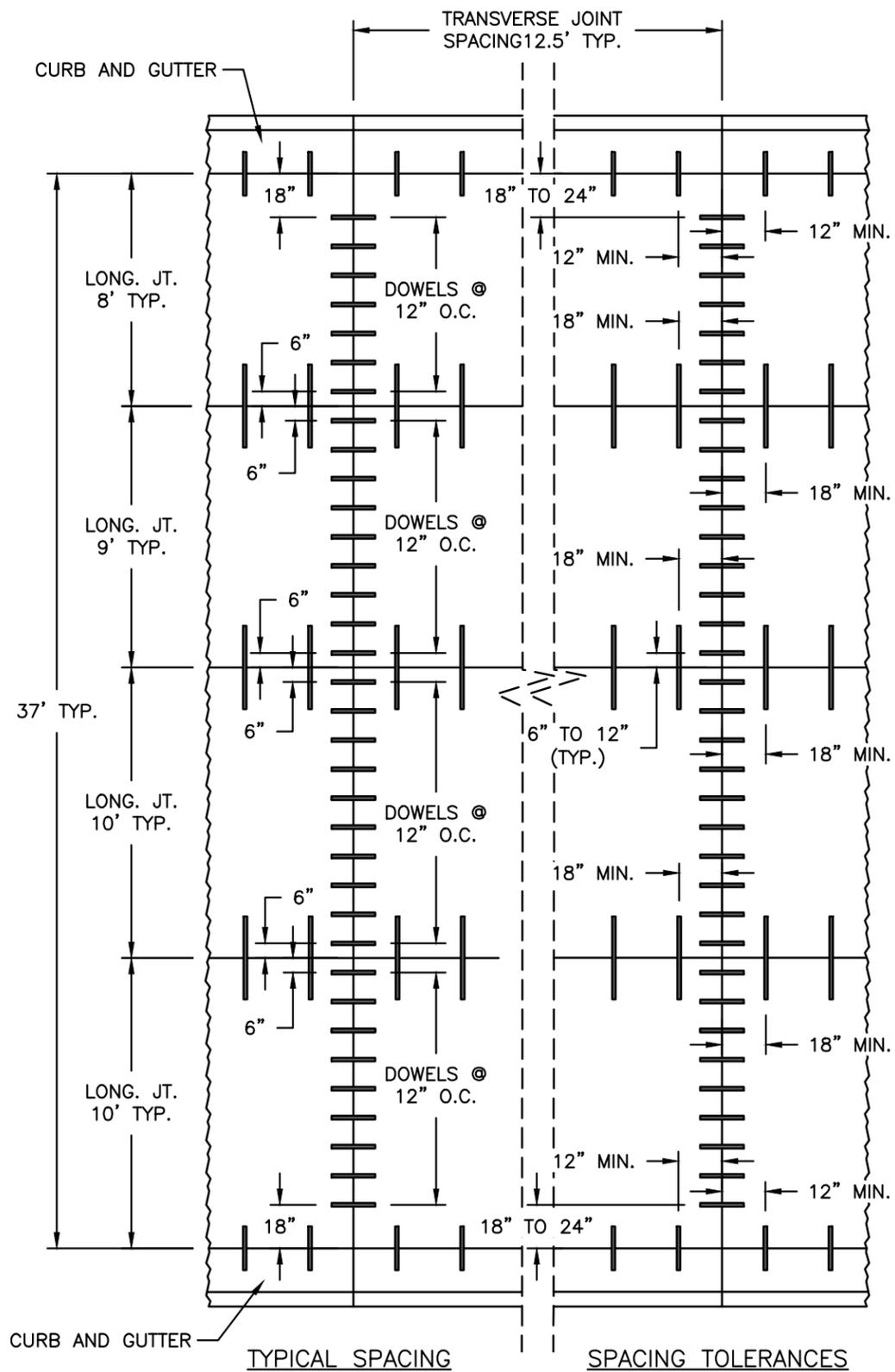
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GENERAL DETAILS  
PCC Pavement Joints

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

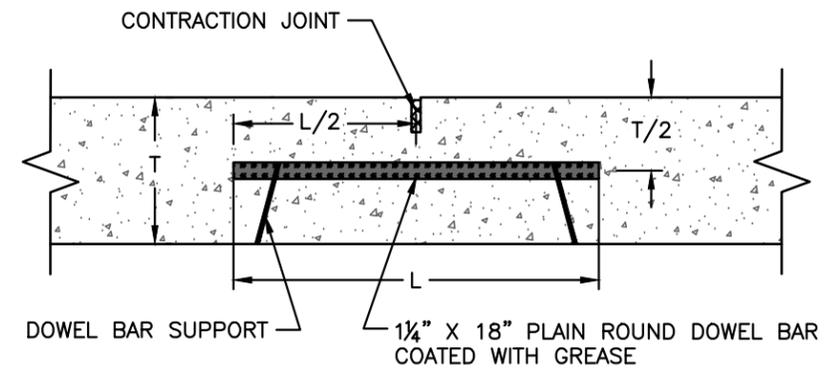
# PCC PAVEMENT TRANSVERSE JOINT DETAILS

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	20	6



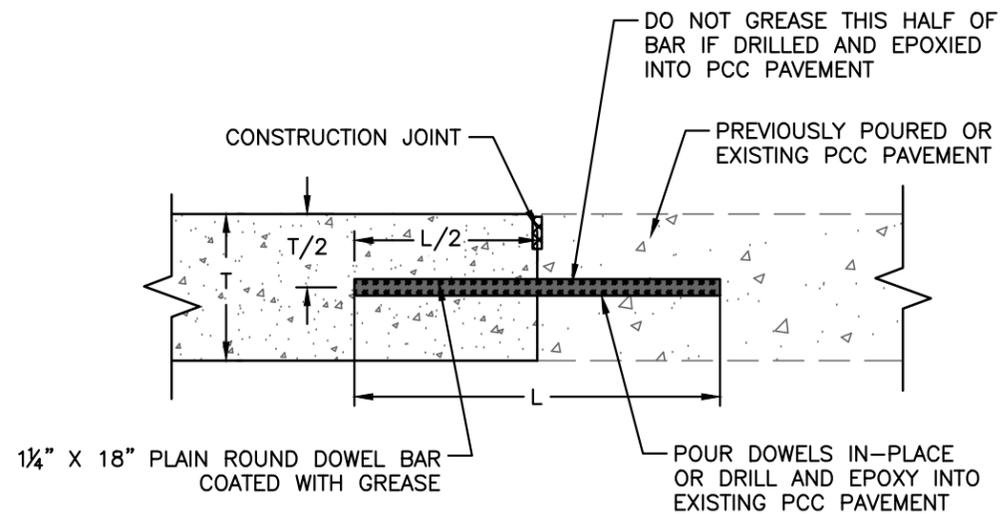
## TRANSVERSE DOWEL BAR SPACING

NOT TO SCALE



## DOWELED CONTRACTION JOINT

NOT TO SCALE



## DOWELED CONSTRUCTION JOINT

NOT TO SCALE

**NOTE:** FOR CONSTRUCTION JOINTS AT UN-PLANNED LOCATIONS, USE STANDARD DRAWING D-550-05

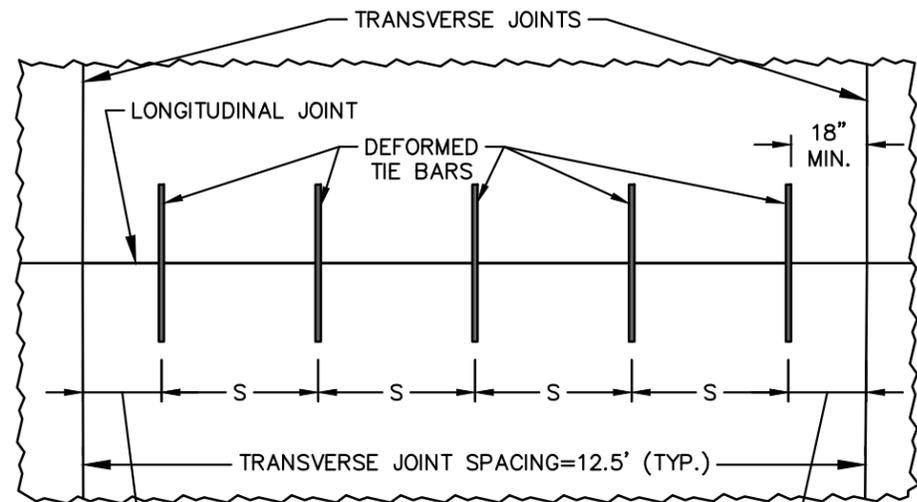
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GENERAL DETAILS  
PCC Pavement Transverse Joints

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

# PCC PAVEMENT LONGITUDINAL JOINT DETAILS

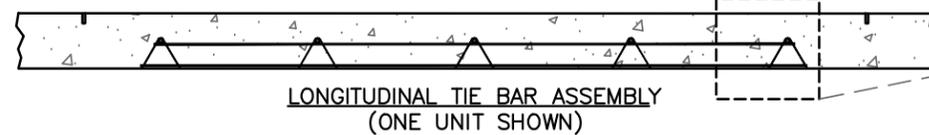
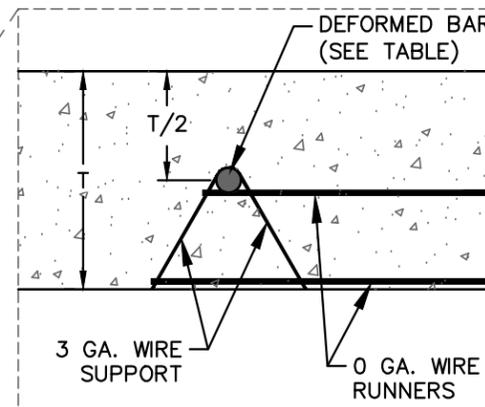
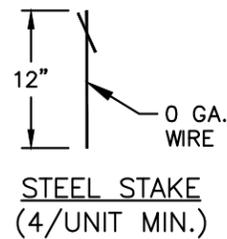
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	20	7



**NOTE:** WIRE SUPPORT AND RUNNERS NOT REQUIRED FOR LONGITUDINAL CONSTRUCTION JOINTS. BARS MAY BE POURED IN PLACE OR DRILLED AND EPOXIED INTO EXISTING CONCRETE AT LONGITUDINAL CONSTRUCTION JOINTS.

21" TYP.  
18" MIN.  
36" MAX.

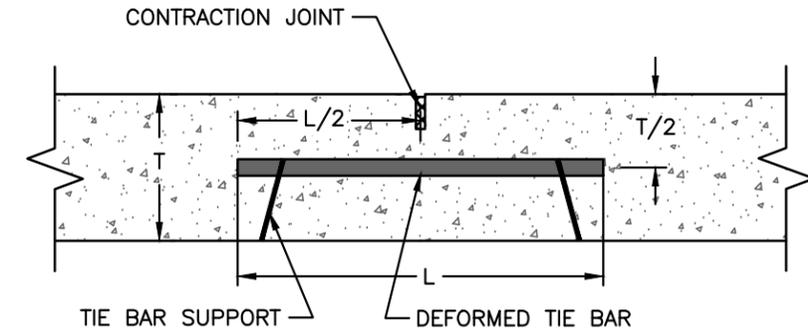
21" TYP.  
18" MIN.  
36" MAX.



LONGITUDINAL JOINT TIE BAR SIZE, LENGTH AND SPACING			
PVMT THICKNESS 'T'	STEEL GRADE	BAR SIZE & LENGTH	SPACING 'S'
8"	40	#6 BAR X 36"	27"

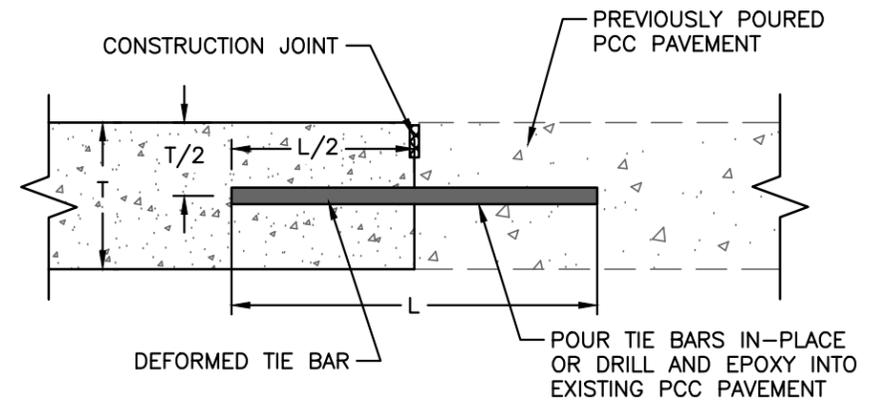
## LONGITUDINAL TIE BAR ASSEMBLY

NOT TO SCALE



## TIED CONTRACTION JOINT

NOT TO SCALE



## TIED CONSTRUCTION JOINT

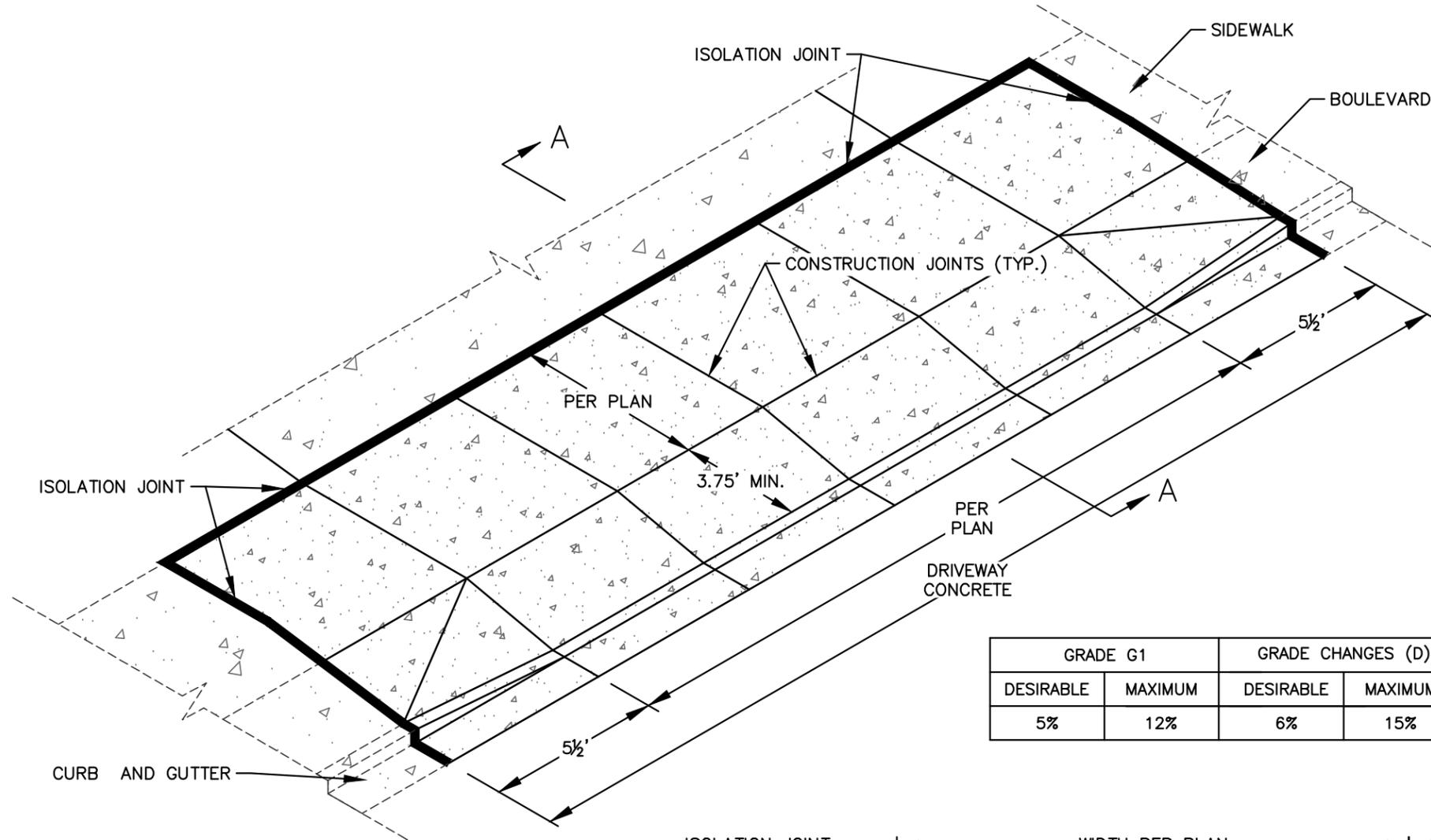
NOT TO SCALE

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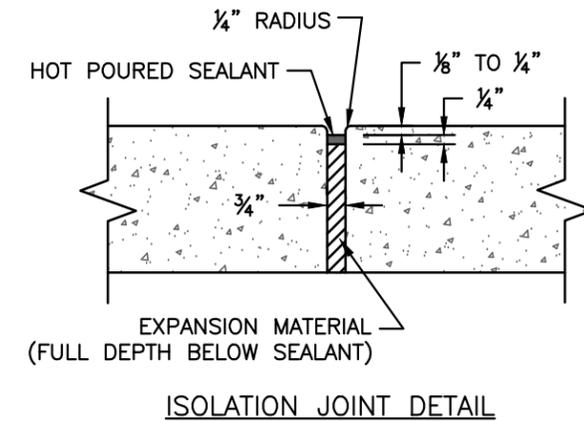
GENERAL DETAILS  
PCC Pavement Longitudinal Joints

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	20	8

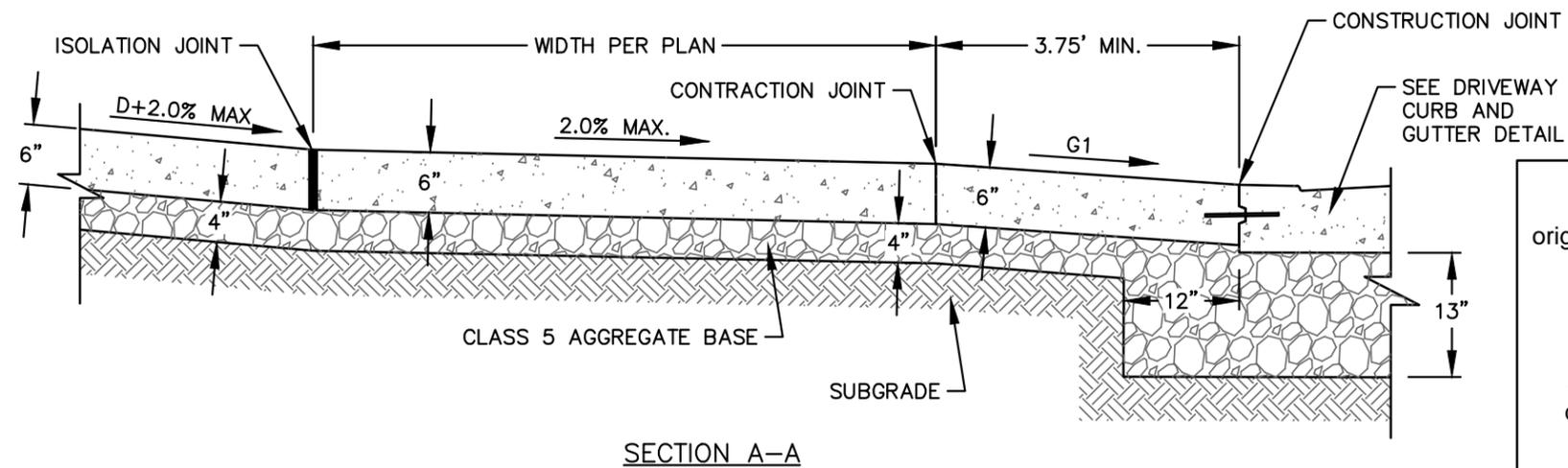


GRADE G1		GRADE CHANGES (D)	
DESIRABLE	MAXIMUM	DESIRABLE	MAXIMUM
5%	12%	6%	15%



**NOTES**

1. MATCH CURB AND GUTTER JOINTS TO THOSE OF THE PCC PAVEMENT AS MUCH AS PRACTICAL.
2. CONTRACTION JOINTS IN THE DRIVEWAY SHALL BE PER THE PCC PAVEMENT CONTRACTION JOINT DETAIL.
3. CURB AND GUTTER ADJACENT TO DRIVEWAY SHALL BE PAID FOR AS "CURB AND GUTTER".
4. SIDEWALK OR OTHER PAVEMENT THAT FALLS BEHIND A DRIVEWAY SHALL BE CONSTRUCTED TO THE SAME THICKNESS AS THE DRIVEWAY AND SHALL BE PAID FOR AS "DRIVEWAY CONCRETE".
5. AGGREGATE BASE SHALL BE PAID FOR AS "AGGREGATE BASE COURSE CL 5".



**CONCRETE DRIVEWAY**  
NOT TO SCALE

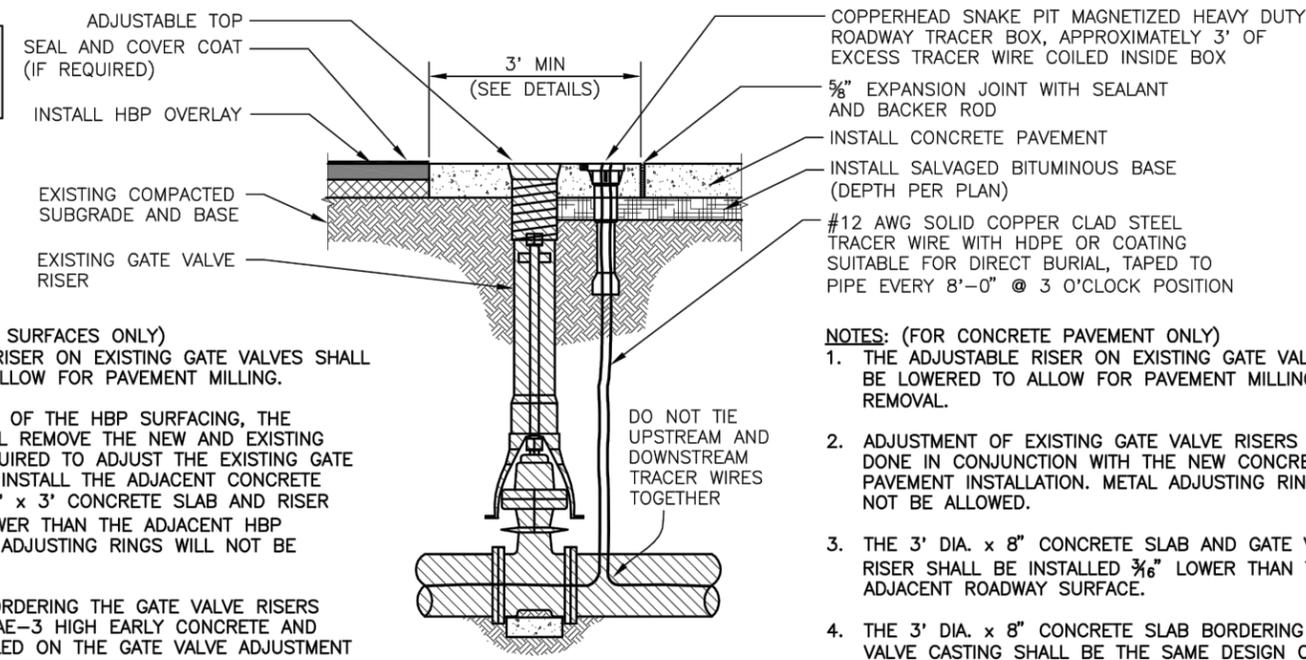
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GENERAL DETAILS  
Concrete Driveway

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-5-983(055)055	20	9

**GENERAL NOTE:**  
TRACER BOX AND TRACER WIRE FOR NEW CONSTRUCTION ONLY.

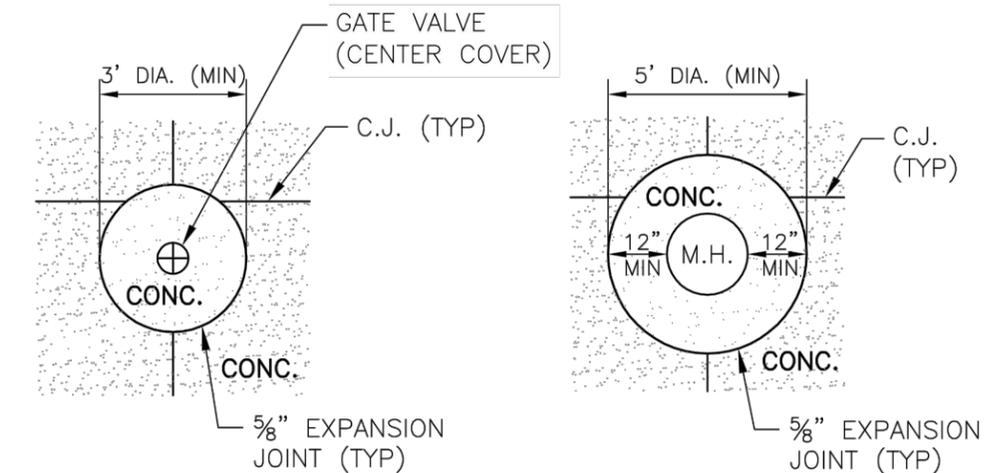


- NOTES: (FOR ASPHALT SURFACES ONLY)**
1. THE ADJUSTABLE RISER ON EXISTING GATE VALVES SHALL BE LOWERED TO ALLOW FOR PAVEMENT MILLING.
  2. UPON COMPLETION OF THE HBP SURFACING, THE CONTRACTOR SHALL REMOVE THE NEW AND EXISTING PAVEMENT AS REQUIRED TO ADJUST THE EXISTING GATE VALVE RISER AND INSTALL THE ADJACENT CONCRETE SLAB. THE 8" x 3' x 3' CONCRETE SLAB AND RISER SHALL BE 3/16" LOWER THAN THE ADJACENT HBP SURFACE. METAL ADJUSTING RINGS WILL NOT BE ALLOWED.
  3. THE CONCRETE BORDERING THE GATE VALVE RISERS SHALL BE CLASS AE-3 HIGH EARLY CONCRETE AND JOINTED AS DETAILED ON THE GATE VALVE ADJUSTMENT PLAN DETAIL.
  4. THE CONCRETE BORDERING THE GATE VALVE SHALL BE CUT DIAMOND SHAPED WITH THE DIRECTION OF TRAFFIC FLOW.

- NOTES: (FOR CONCRETE PAVEMENT ONLY)**
1. THE ADJUSTABLE RISER ON EXISTING GATE VALVES SHALL BE LOWERED TO ALLOW FOR PAVEMENT MILLING AND/OR REMOVAL.
  2. ADJUSTMENT OF EXISTING GATE VALVE RISERS SHALL BE DONE IN CONJUNCTION WITH THE NEW CONCRETE PAVEMENT INSTALLATION. METAL ADJUSTING RINGS WILL NOT BE ALLOWED.
  3. THE 3' DIA. x 8" CONCRETE SLAB AND GATE VALVE RISER SHALL BE INSTALLED 3/16" LOWER THAN THE ADJACENT ROADWAY SURFACE.
  4. THE 3' DIA. x 8" CONCRETE SLAB BORDERING THE GATE VALVE CASTING SHALL BE THE SAME DESIGN CLASS AS THE ADJACENT CONCRETE PAVEMENT AND JOINTED AS DETAILED ON THE GATE VALVE ADJUSTMENT PLAN DETAIL.

**GATE VALVE ADJUSTMENT PLAN**

NOT TO SCALE

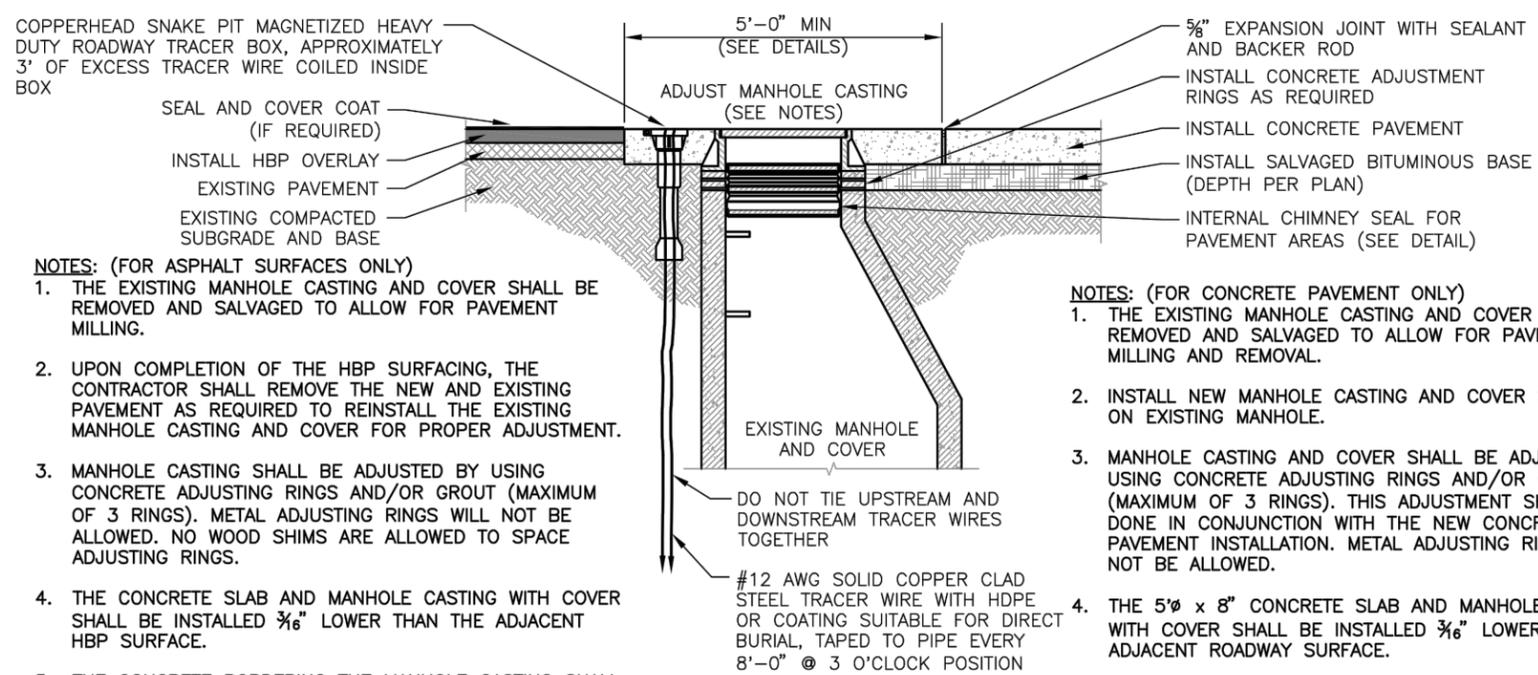


**GATE VALVES AND CLEANOUTS**

**MANHOLES**

**UTILITY ADJUSTMENT CONCRETE COLLARS**

NOT TO SCALE



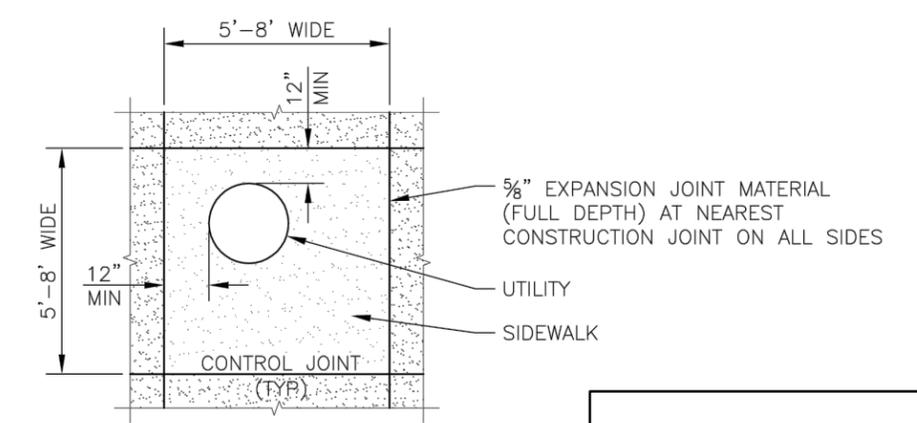
- NOTES: (FOR ASPHALT SURFACES ONLY)**
1. THE EXISTING MANHOLE CASTING AND COVER SHALL BE REMOVED AND SALVAGED TO ALLOW FOR PAVEMENT MILLING.
  2. UPON COMPLETION OF THE HBP SURFACING, THE CONTRACTOR SHALL REMOVE THE NEW AND EXISTING PAVEMENT AS REQUIRED TO REINSTALL THE EXISTING MANHOLE CASTING AND COVER FOR PROPER ADJUSTMENT.
  3. MANHOLE CASTING SHALL BE ADJUSTED BY USING CONCRETE ADJUSTING RINGS AND/OR GROUT (MAXIMUM OF 3 RINGS). METAL ADJUSTING RINGS WILL NOT BE ALLOWED. NO WOOD SHIMS ARE ALLOWED TO SPACE ADJUSTING RINGS.
  4. THE CONCRETE SLAB AND MANHOLE CASTING WITH COVER SHALL BE INSTALLED 3/16" LOWER THAN THE ADJACENT HBP SURFACE.
  5. THE CONCRETE BORDERING THE MANHOLE CASTING SHALL BE CLASS AE-3 HIGH EARLY CONCRETE AND JOINTED AS DETAILED ON THE MANHOLE ADJUSTMENT PLAN DETAIL.
  6. THE CONCRETE BORDERING THE MANHOLE SHALL BE CUT DIAMOND SHAPED WITH THE DIRECTION OF TRAFFIC FLOW.

- NOTES: (FOR CONCRETE PAVEMENT ONLY)**
1. THE EXISTING MANHOLE CASTING AND COVER SHALL BE REMOVED AND SALVAGED TO ALLOW FOR PAVEMENT MILLING AND REMOVAL.
  2. INSTALL NEW MANHOLE CASTING AND COVER SPECIFIED ON EXISTING MANHOLE.
  3. MANHOLE CASTING AND COVER SHALL BE ADJUSTED BY USING CONCRETE ADJUSTING RINGS AND/OR GROUT (MAXIMUM OF 3 RINGS). THIS ADJUSTMENT SHALL BE DONE IN CONJUNCTION WITH THE NEW CONCRETE PAVEMENT INSTALLATION. METAL ADJUSTING RINGS WILL NOT BE ALLOWED.
  4. THE 5' x 8" CONCRETE SLAB AND MANHOLE CASTING WITH COVER SHALL BE INSTALLED 3/16" LOWER THAN THE ADJACENT ROADWAY SURFACE.
  5. THE 5' x 8" CONCRETE SLAB BORDERING THE MANHOLE CASTING SHALL BE THE SAME DESIGN CLASS AS THE ADJACENT CONCRETE PAVEMENT AND JOINTED AS DETAILED ON THE MANHOLE ADJUSTMENT PLAN DETAIL.

**GENERAL NOTE:**  
TRACER BOX AND TRACER WIRE FOR NEW CONSTRUCTION ONLY.

**MANHOLE ADJUSTMENT PLAN**

NOT TO SCALE



**UTILITY BLOCKOUT IN SIDEWALK**

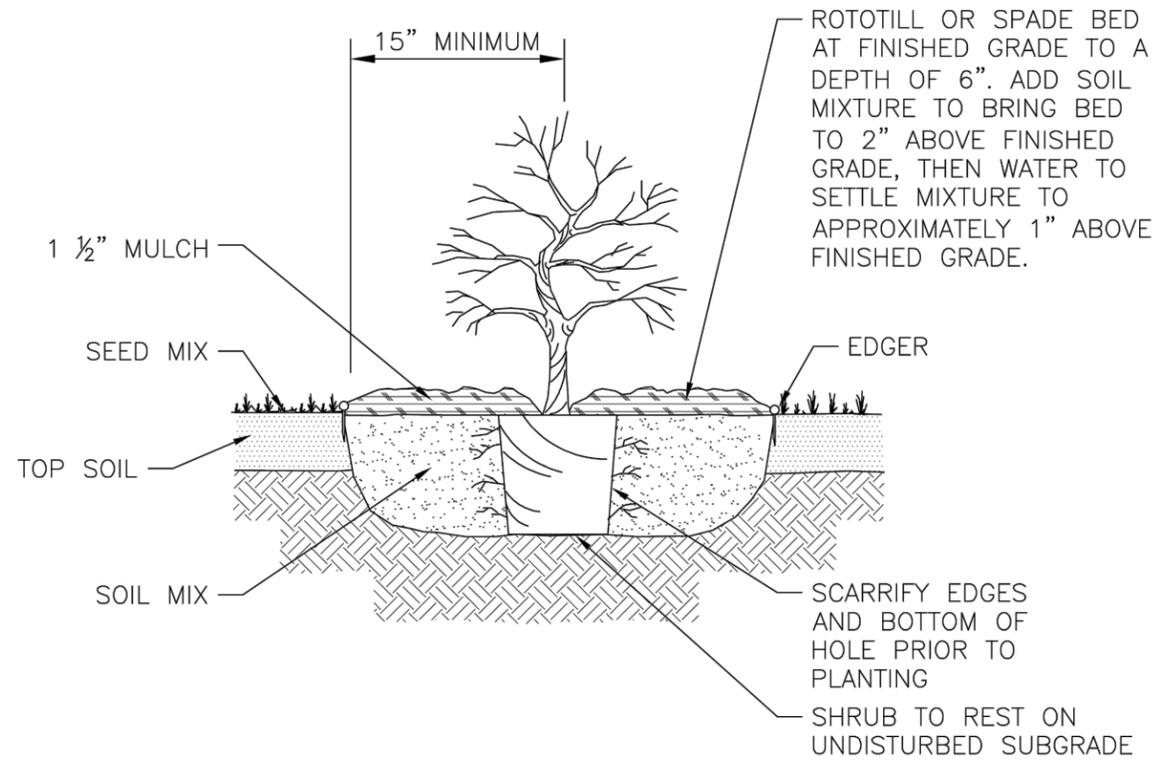
NOT TO SCALE

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**GENERAL DETAILS**  
Utility Adjustments

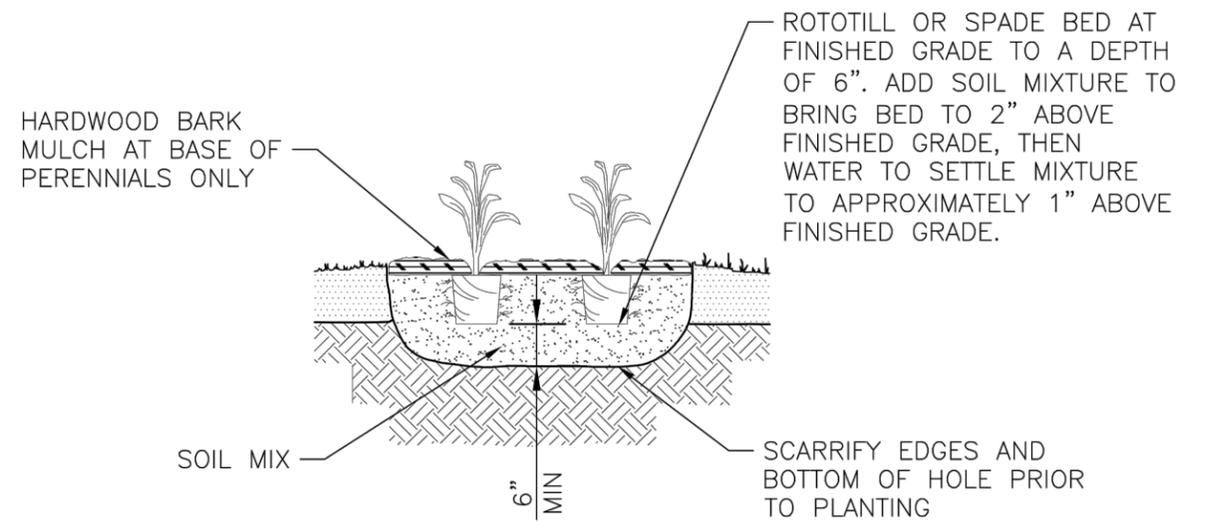
MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	20	10



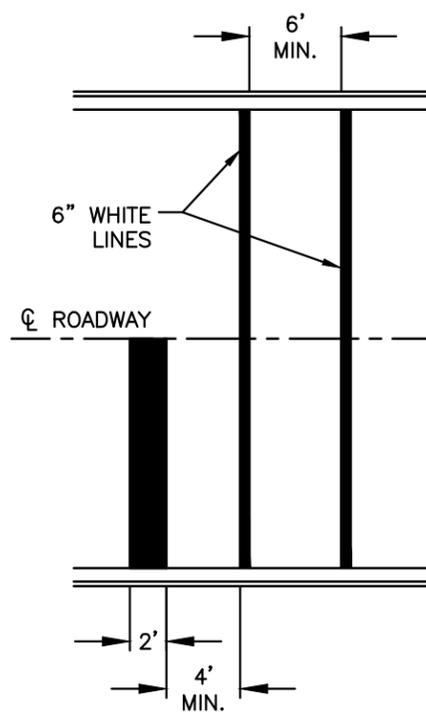
### SHRUB PLANTING

NOT TO SCALE



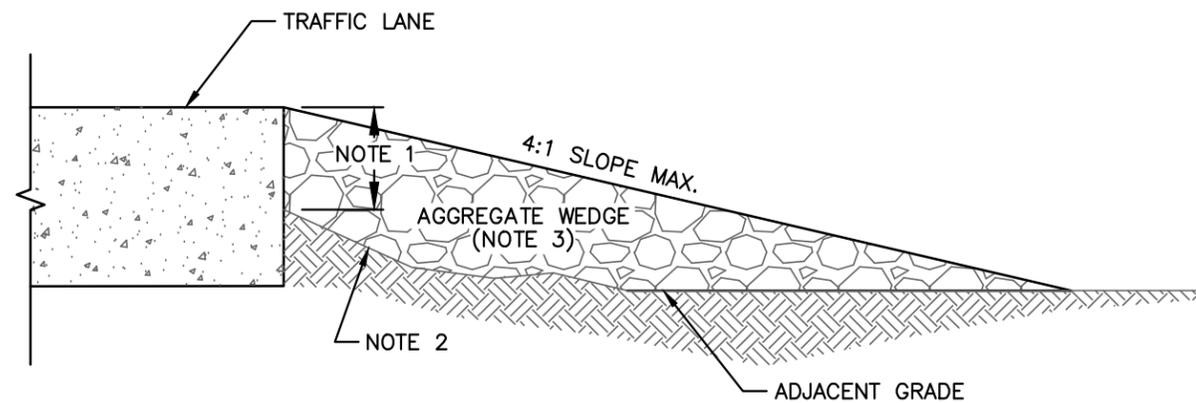
### PERENIAL GRASS PLANTING

NOT TO SCALE



### STANDARD CROSSWALK

NOT TO SCALE



### NOTES

1. USE AGGREGATE WEDGE IF VERTICAL DROP IS GREATER THAN 2" ADJACENT TO TRAFFIC LANE DURING NON-WORKING HOURS.
2. USE AGGREGATE WEDGE IF SLOPE IS GREATER THEN 4:1 ADJACENT TO TRAFFIC LANE DURING NON-WORKING HOURS.
3. AGGREGATE WEDGE SHALL CONSIST OF COMPACTED CLASS 5 AGGREGATE.

### AGGREGATE WEDGE

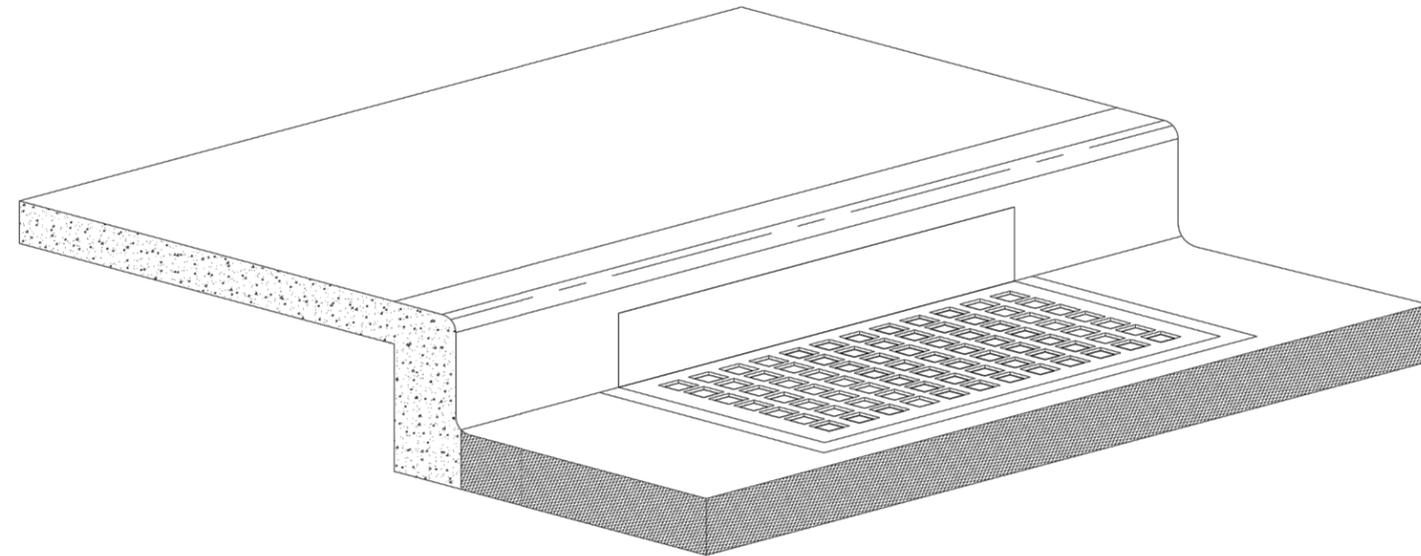
NOT TO SCALE

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GENERAL DETAILS

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-5-983(055)055	20	11



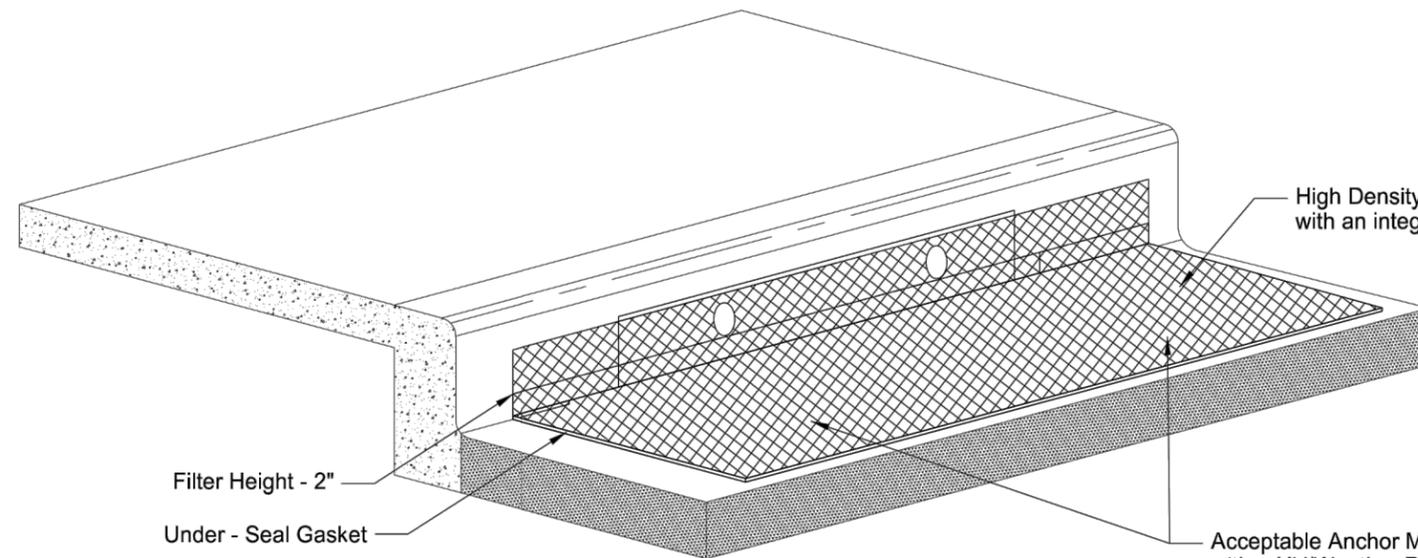
Inlet Protection Device

Installation Notes:

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

General Notes:

1. Inlet Protection shall be maintained or replaced at the direction of the engineer.
2. Manufactured alternatives may be substituted at the direction of the engineer.
3. When removing or maintaining inlet protection, care shall be taken so that fabric does not fall into the inlet. Any material falling into the inlet shall be removed immediately.
4. Inlet protection is to be used (and reused) as needed to prevent material from entering inlets as the work progresses through the project.



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

Filter Height - 2"

Under - Seal Gasket

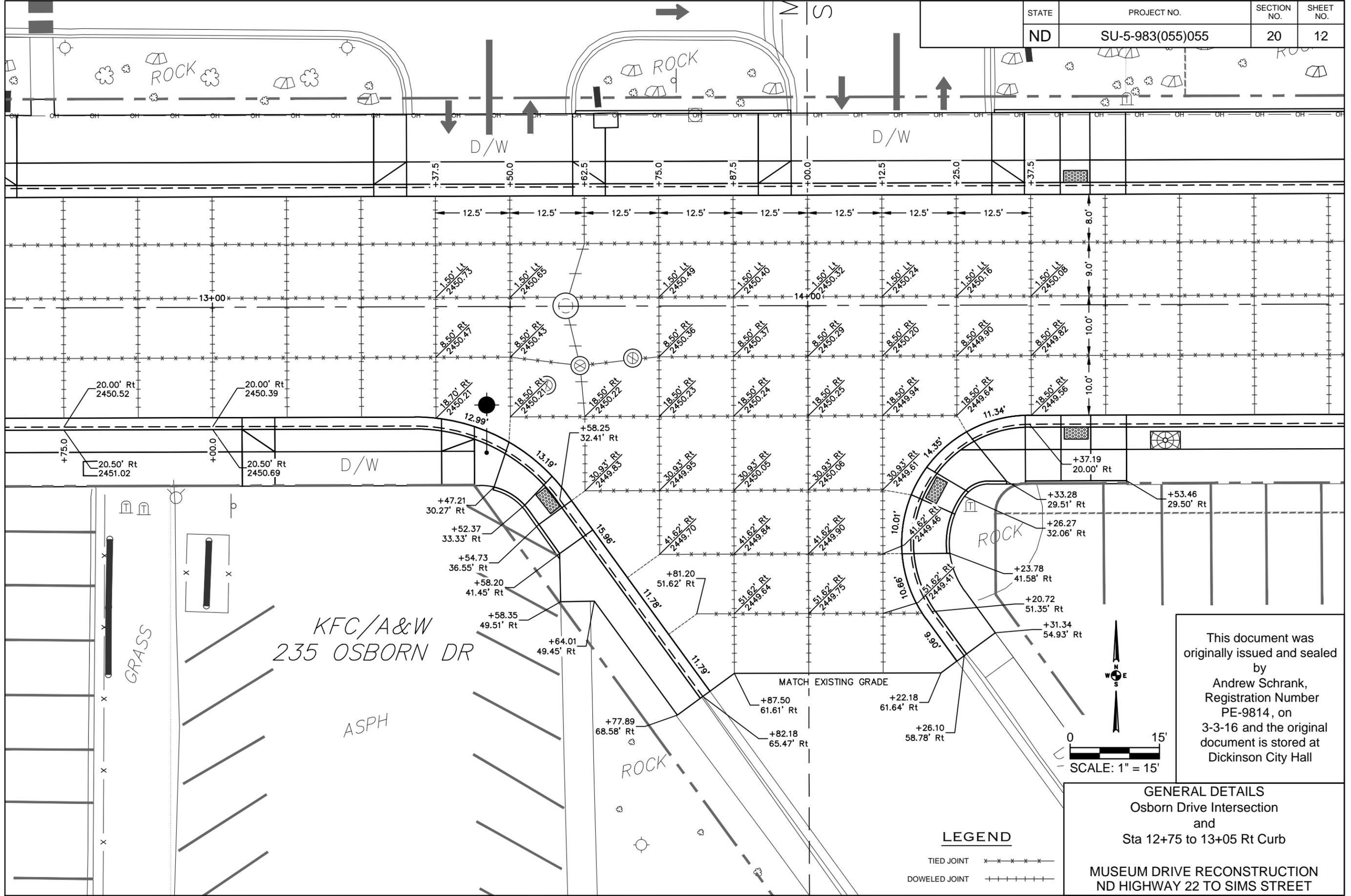
Acceptable Anchor Method: Fasten to inlet casting grate with a UV/Weather Resistant Plastic Cable Zip Ties - 16 to 24 in. Install zip ties at each corner of the inlet near the perimeter and two additional zip ties near the middle of the casting. Punch hole through filter and run cable tie downward around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

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GENERAL DETAILS  
Inlet Protection

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	20	12

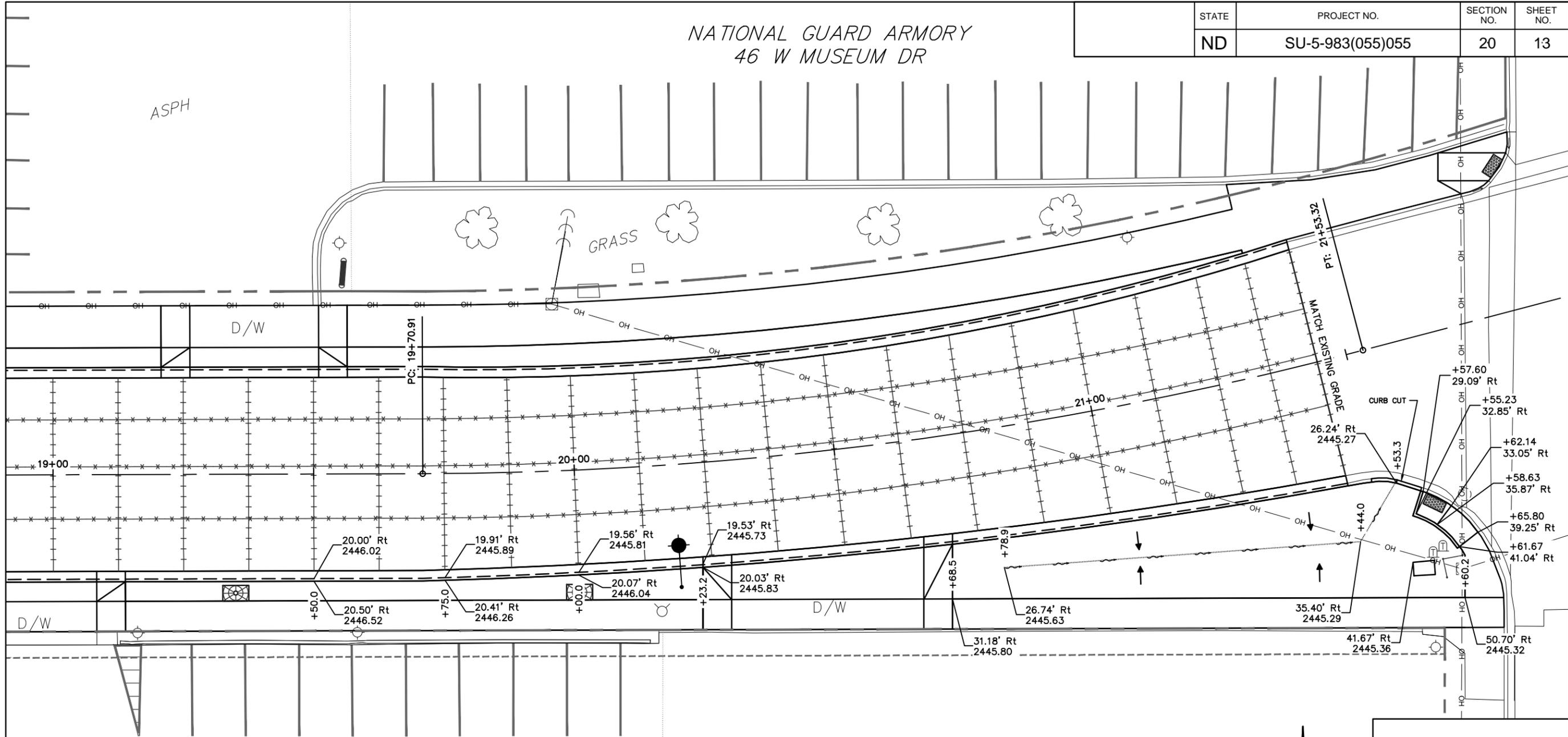


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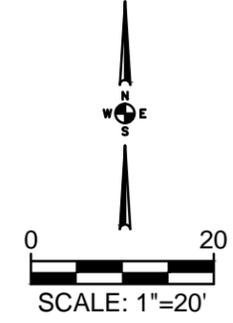
**GENERAL DETAILS**  
 Osborn Drive Intersection and  
 Sta 12+75 to 13+05 Rt Curb  
**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

NATIONAL GUARD ARMORY  
46 W MUSEUM DR

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	20	13



QUALITY INN & SUITES  
71 W MUSEUM DR



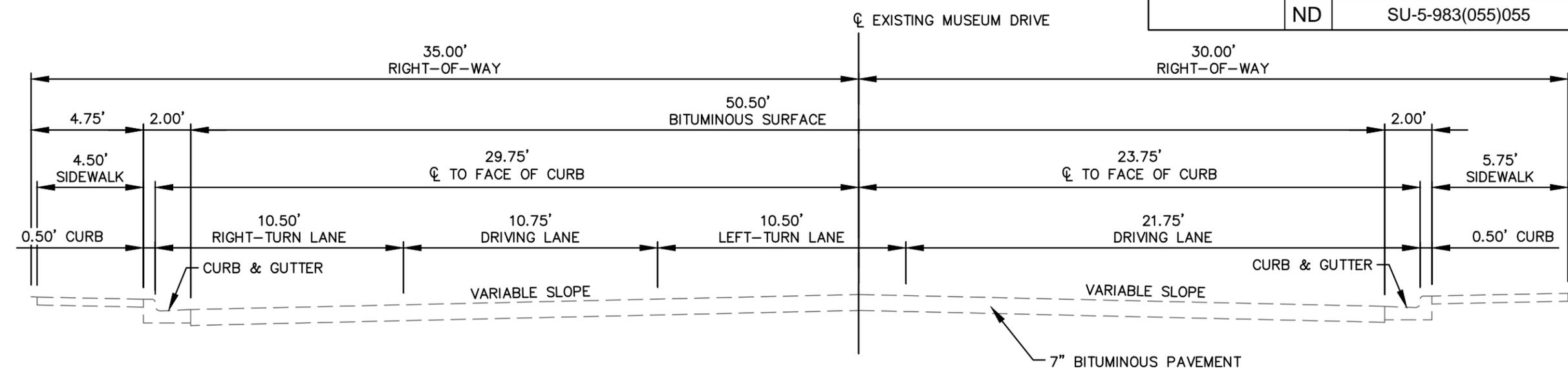
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**LEGEND**

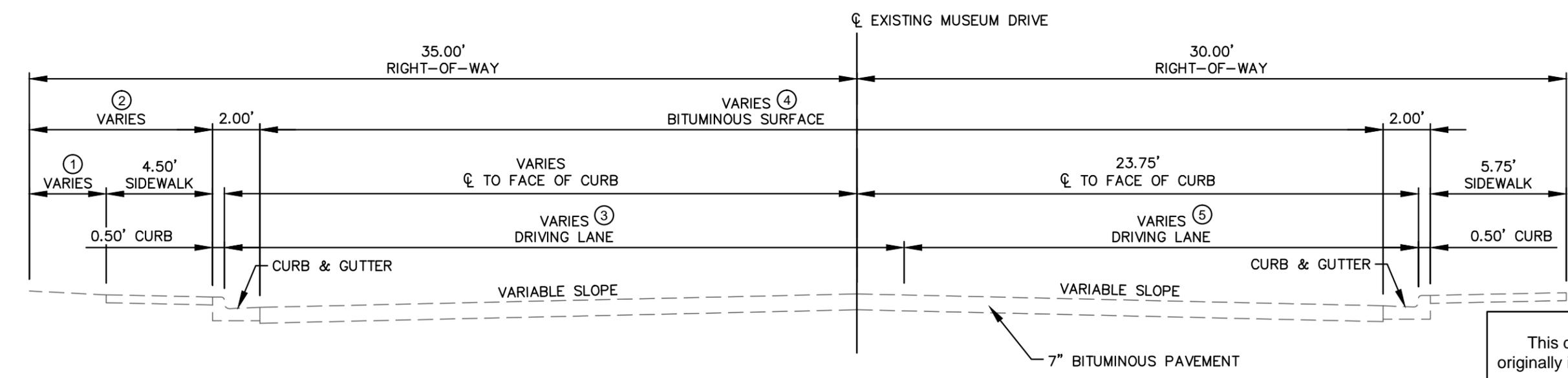
- TIED JOINT    x x x x x
- DOWELED JOINT    + + + + +
- FLOW PATH    ~ ~ ~ ~ ~

**GENERAL DETAILS**  
Sta 19+50 to 20+23 Rt Curb  
and  
Sta 20+69 to 21+65 Rt Boulevard  
**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	30	1



(STA. 10+00 TO 11+40)



(STA. 11+40 TO 12+08)

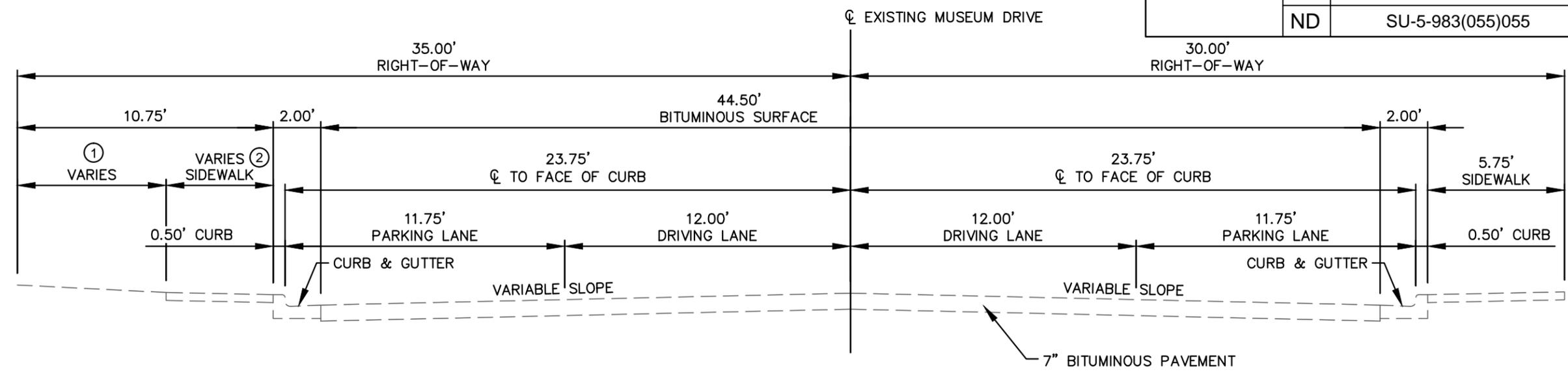
NOTES: WIDTHS AND SLOPES SHOWN ARE APPROXIMATE. MINOR VARIANCES MAY BE FOUND IN THE FIELD.

- ① WIDTH VARIES FROM 0.25' @ STA 11+40 TO 6.25' @ STA 12+08.
- ② WIDTH VARIES FROM 4.75' @ STA 11+40 TO 10.75' @ STA 12+08.
- ③ WIDTH VARIES FROM 31.75' @ STA 11+40 TO 23.75' @ STA 12+08.
- ④ WIDTH VARIES FROM 50.50' @ STA 11+40 TO 44.50' @ STA 12+08.
- ⑤ WIDTH VARIES FROM 21.75' @ STA 11+40 TO 23.75' @ STA 12+08.

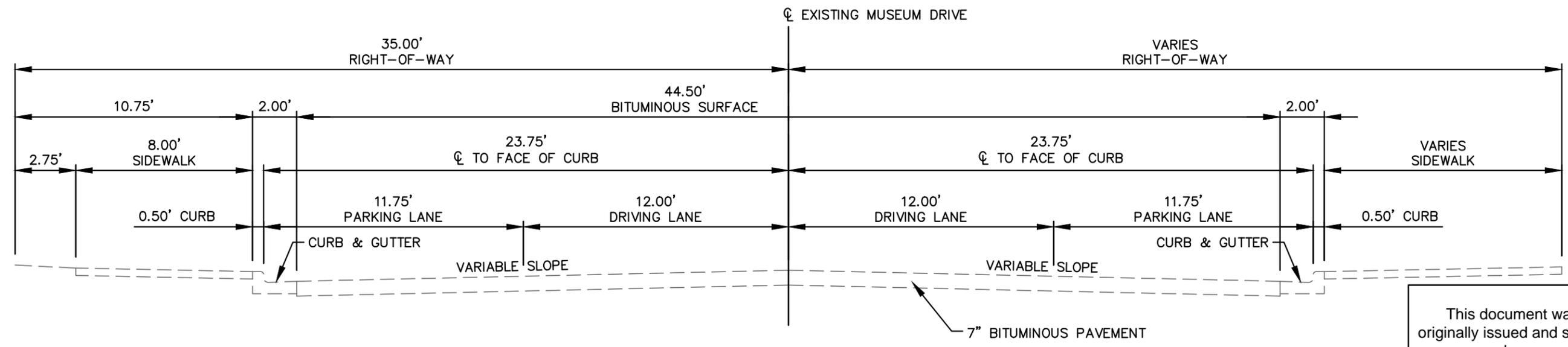
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TYPICAL SECTIONS Existing  
MUSEUM DRIVE RECONSTRUCTION ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	30	2



(STA. 12+08 TO 19+71)



(STA. 19+71 TO 20+68)

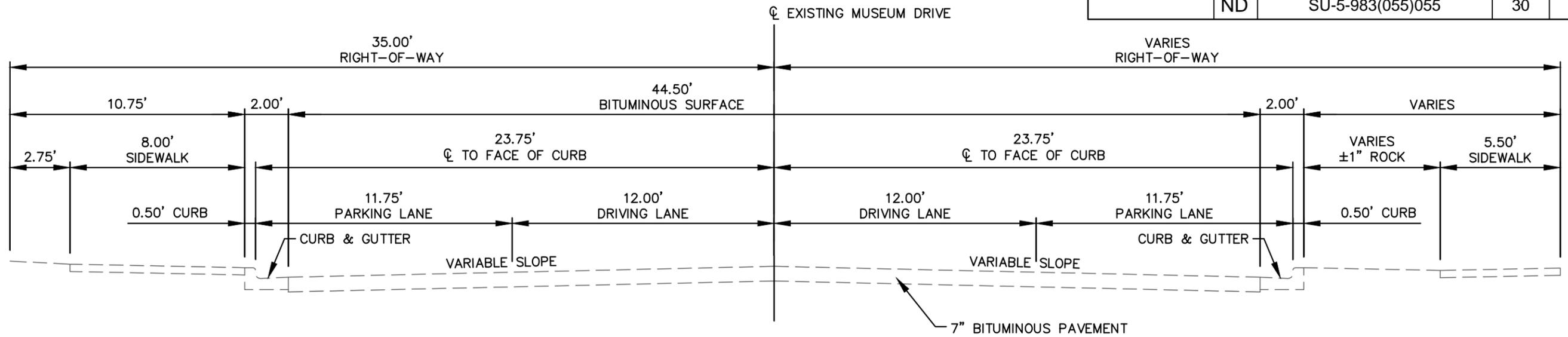
NOTES: WIDTHS AND SLOPES SHOWN ARE APPROXIMATE. MINOR VARIANCES MAY BE FOUND IN THE FIELD.

- ① 6.25' FROM STA 12+08 TO STA 17+84 AND 2.75' FROM STA 17+84 TO STA 19+71.
- ② 4.50' FROM STA 12+08 TO STA 17+84 AND 8.00' FROM STA 17+84 TO STA 19+71.

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TYPICAL SECTIONS Existing  
MUSEUM DRIVE RECONSTRUCTION ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	30	3



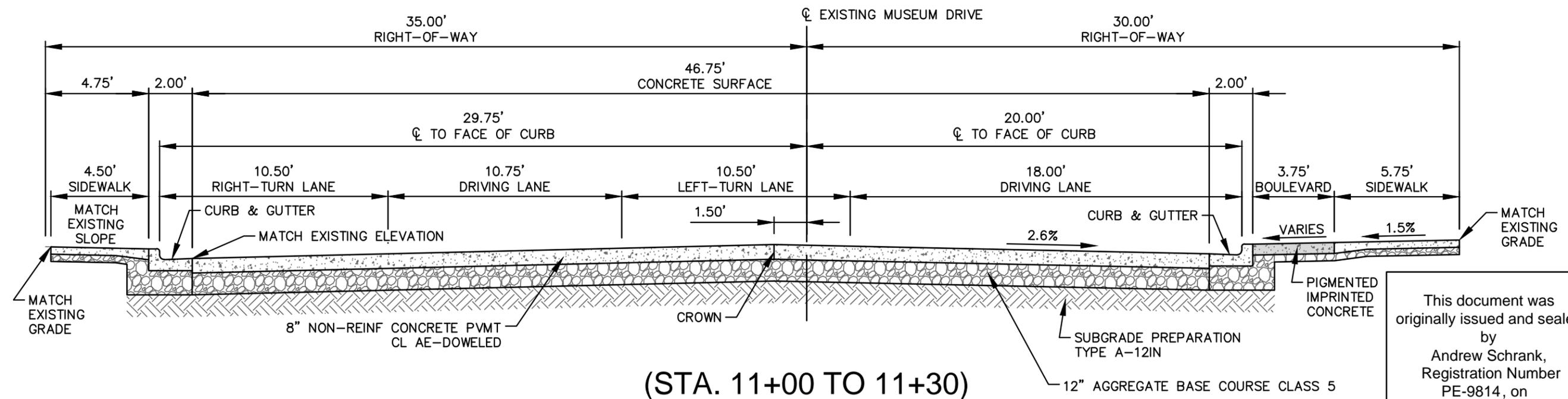
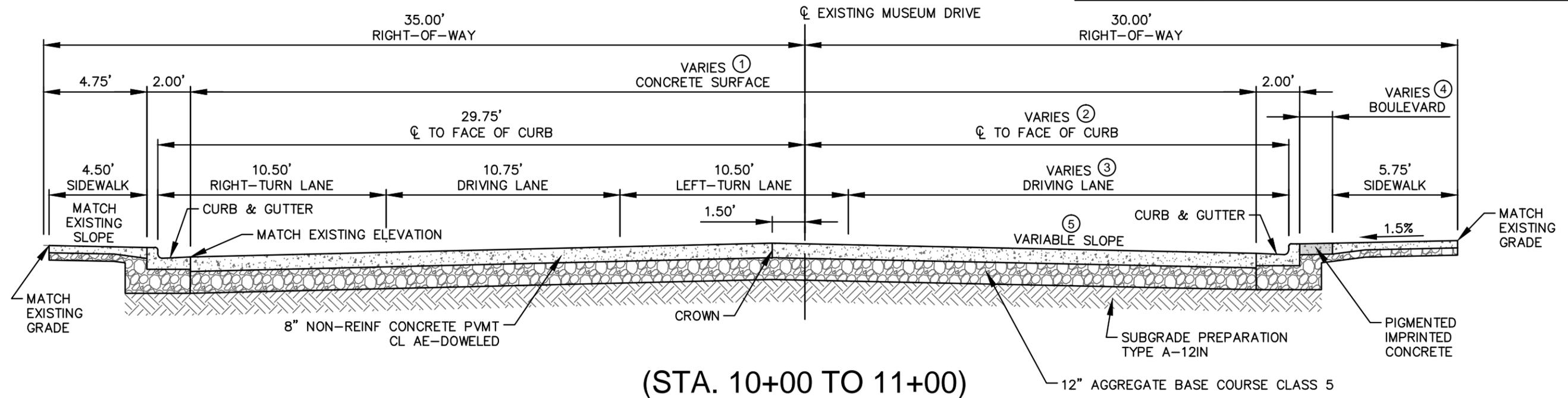
(STA. 20+68 TO 21+44)

NOTES: WIDTHS AND SLOPES SHOWN ARE APPROXIMATE. MINOR VARIANCES MAY BE FOUND IN THE FIELD.

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TYPICAL SECTIONS Existing  
MUSEUM DRIVE RECONSTRUCTION ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	30	4



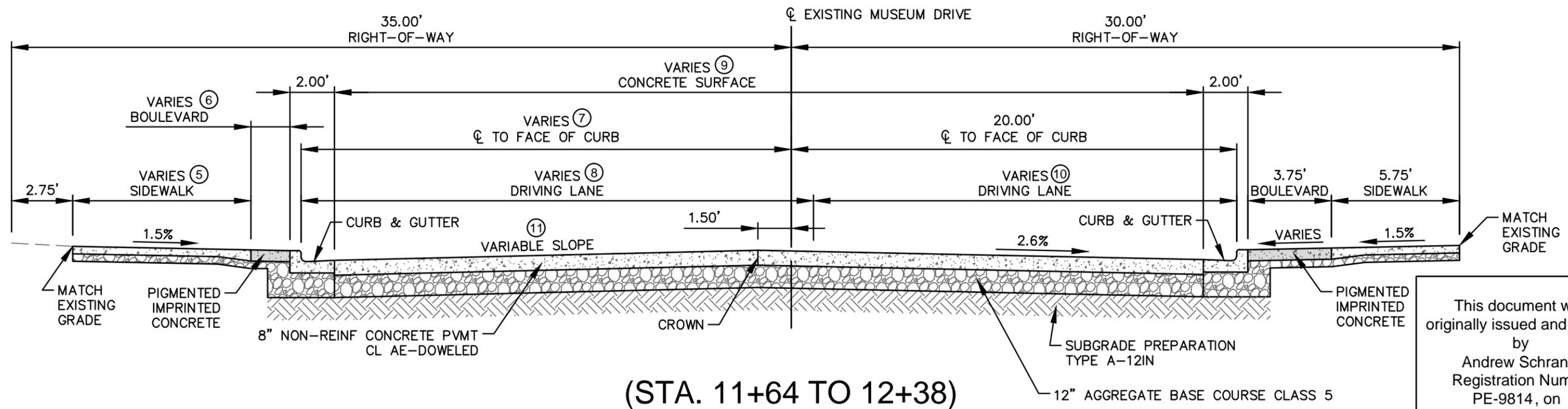
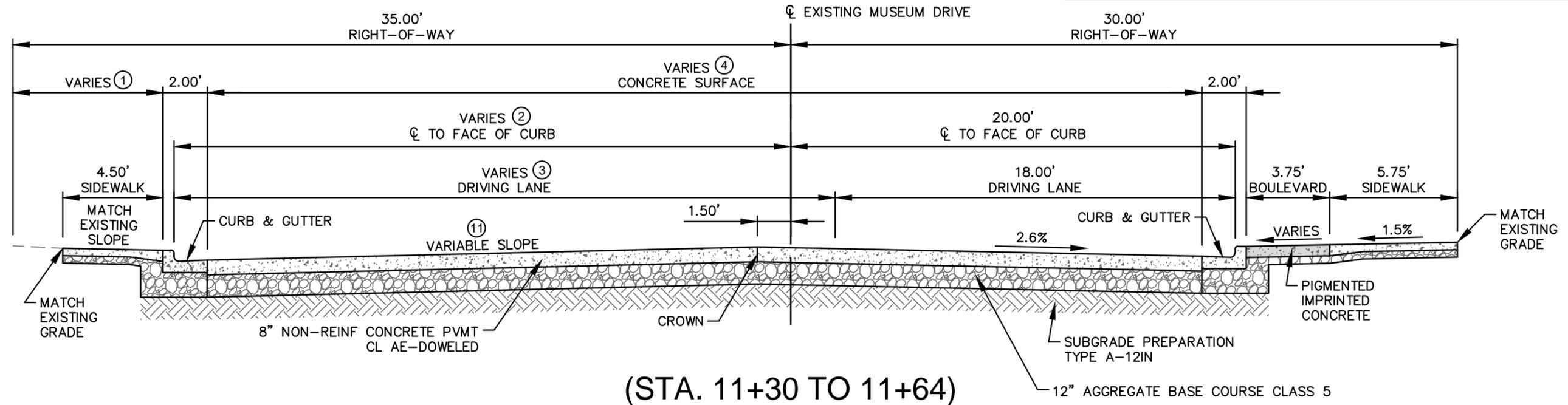
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TYPICAL SECTIONS Proposed

MUSEUM DRIVE RECONSTRUCTION ND HIGHWAY 22 TO SIMS STREET

- NOTES: WIDTHS AND SLOPES SHOWN ARE APPROXIMATE. MINOR VARIANCES MAY BE FOUND IN THE FIELD.
- ① WIDTH VARIES FROM 50.50' @ STA 10+00 TO 46.75' @ STA 11+00.
  - ② WIDTH VARIES FROM 23.75' @ STA 10+00 TO 20.00' @ STA 11+00.
  - ③ WIDTH VARIES FROM 21.75' @ STA 10+00 TO 18.00' @ STA 11+00.
  - ④ WIDTH VARIES FROM 0.00' @ STA 10+00 TO 3.75' @ STA 11+00.
  - ⑤ PROVIDE A SMOOTH TRANSITION FROM EXISTING TO PROPOSED GRADE.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	30	5



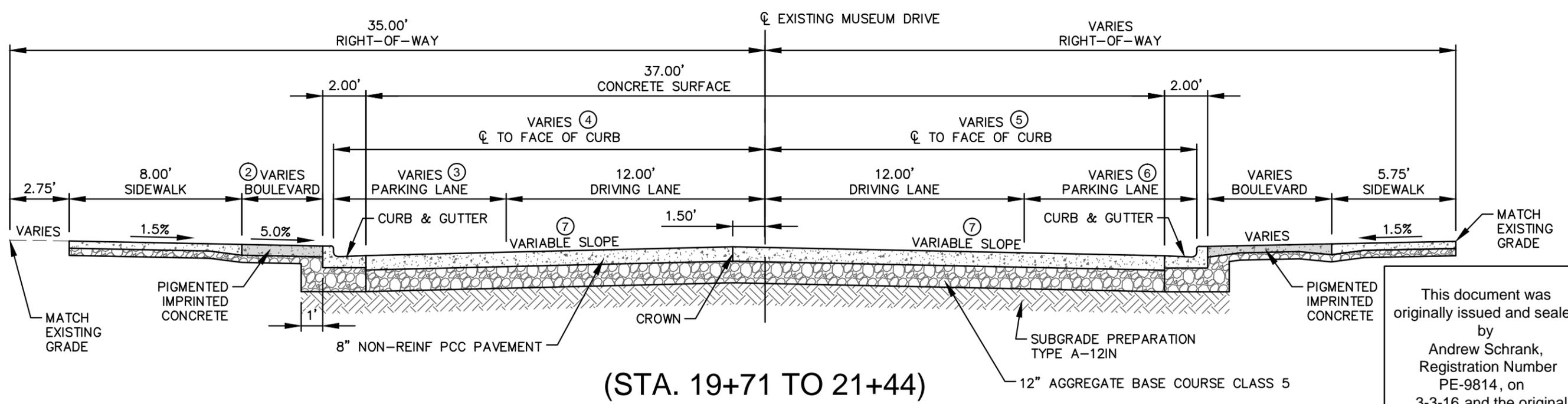
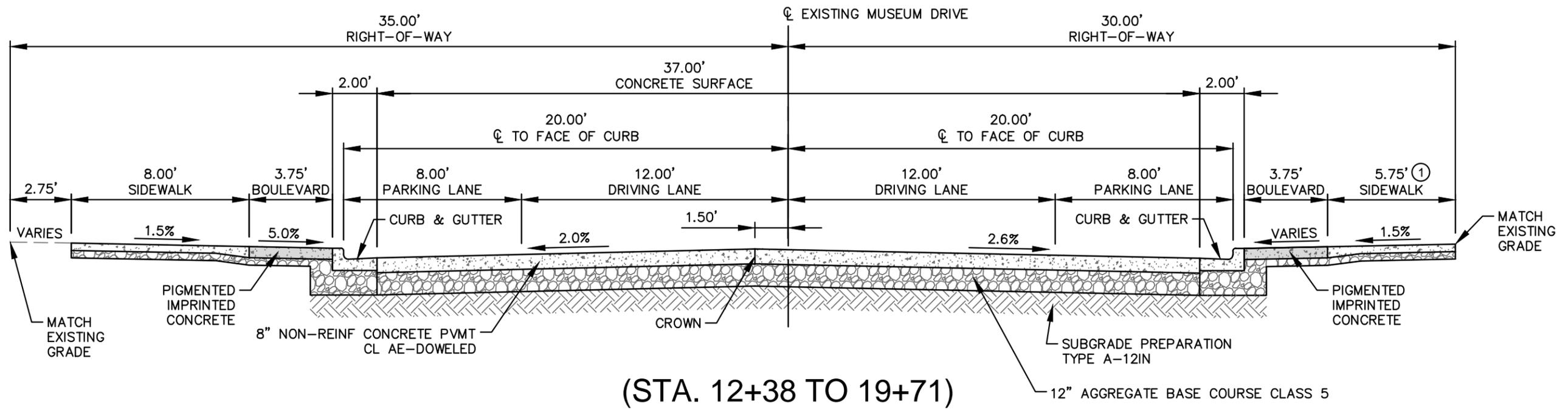
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TYPICAL SECTIONS Proposed

MUSEUM DRIVE RECONSTRUCTION ND HIGHWAY 22 TO SIMS STREET

NOTES: WIDTHS AND SLOPES SHOWN ARE APPROXIMATE. MINOR VARIANCES MAY BE FOUND IN THE FIELD.

- ① WIDTH VARIES FROM 4.75' @ STA 11+30 TO 7.25' @ STA 11+64.
- ② WIDTH VARIES FROM 29.75' @ STA 11+30 TO 27.25' @ STA 11+64.
- ③ WIDTH VARIES FROM 31.75' @ STA 11+30 TO 29.25' @ STA 11+64.
- ④ WIDTH VARIES FROM 46.75' @ STA 11+30 TO 44.25' @ STA 11+64.
- ⑤ WIDTH VARIES FROM 4.50' @ STA 11+64 TO 8.00' AFTER STA 11+95.
- ⑥ WIDTH VARIES FROM 0.00' UP TO STA 11+95 TO 3.75' @ STA 12+38.
- ⑦ WIDTH VARIES FROM 27.25' @ STA 11+64 TO 20.00' @ STA 12+38.
- ⑧ WIDTH VARIES FROM 29.25' @ STA 11+64 TO 20.00' @ STA 12+38.
- ⑨ WIDTH VARIES FROM 44.25' @ STA 11+64 TO 37.00' @ STA 12+38.
- ⑩ WIDTH VARIES FROM 18.00' @ STA 11+64 TO 20.00' @ STA 12+38.
- ⑪ PROVIDE A SMOOTH TRANSITION FROM EXISTING TO PROPOSED GRADE.



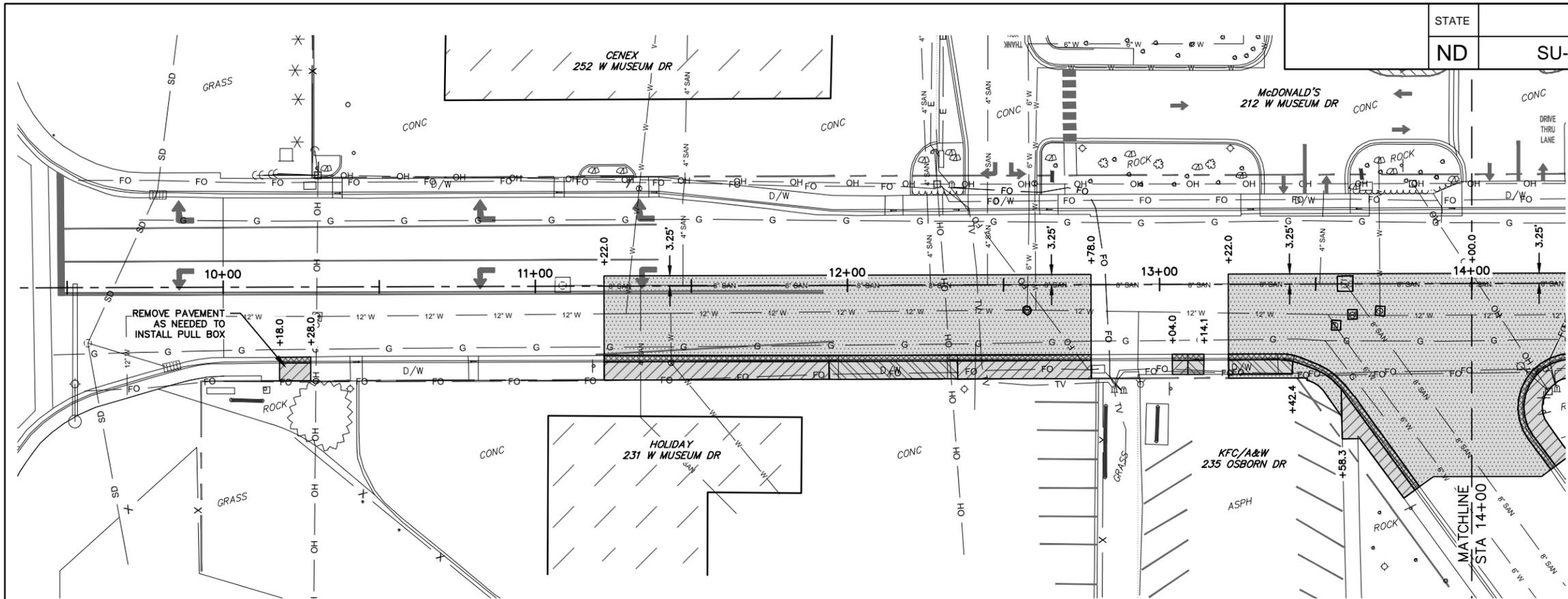
NOTES: WIDTHS AND SLOPES SHOWN ARE APPROXIMATE. MINOR VARIANCES MAY BE FOUND IN THE FIELD.

- ① EXISTING SIDEWALK TO REMAIN FROM STA 14+53.5 TO STA 15+69.1.
- ② WIDTH VARIES FROM 3.75' @ STA 19+71 TO 0.00' @ STA 21+44.
- ③ WIDTH VARIES FROM 8.00' @ STA 19+71 TO 11.75' @ STA 21+44.
- ④ WIDTH VARIES FROM 20.00' @ STA 19+71 TO 23.75' @ STA 21+44.
- ⑤ WIDTH VARIES FROM 20.00' @ STA 19+71 TO 23.75' @ STA 21+44.
- ⑥ WIDTH VARIES FROM 8.00' @ STA 19+71 TO 11.75' @ STA 21+44.
- ⑦ PROVIDE A SMOOTH TRANSITION FROM EXISTING TO PROPOSED GRADE.

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TYPICAL SECTIONS  
Proposed

**MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET**

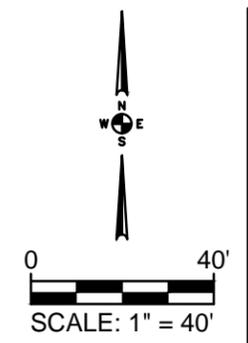


**REMOVAL OF PAVEMENT**

Sta 10+18 to 10+28 Rt	
Sidewalk Concrete	1.4 TON
Curb and Gutter	1.0 TON
	2.4 TON
Sta 11+22 to 12+78 Rt	
Bituminous Surfacing	168.4 TON
Mainline Concrete	0.2 TON
Sidewalk Concrete	16.6 TON
Driveway Concrete	8.8 TON
Curb and Gutter	15.2 TON
	209.2 TON
Sta 13+04 to 13+14 Rt	
Sidewalk Concrete	0.6 TON
Driveway Concrete	0.9 TON
Curb and Gutter	1.0 TON
	2.5 TON
Sta 13+22 to 14+00 Rt	
Bituminous Surfacing	144.2 TON
Mainline Concrete	2.2 TON
Sidewalk Concrete	4.8 TON
Driveway Concrete	3.5 TON
Curb and Gutter	7.7 TON
	162.4 TON

**LEGEND**

REMOVAL OF OBSTRUCTIONS	
REMOVAL OF MAINLINE CONCRETE	
REMOVAL OF SIDEWALK CONCRETE	
REMOVAL OF DRIVEWAY CONCRETE	
REMOVAL OF CURB & GUTTER	
REMOVAL OF BITUMINOUS SURFACING	

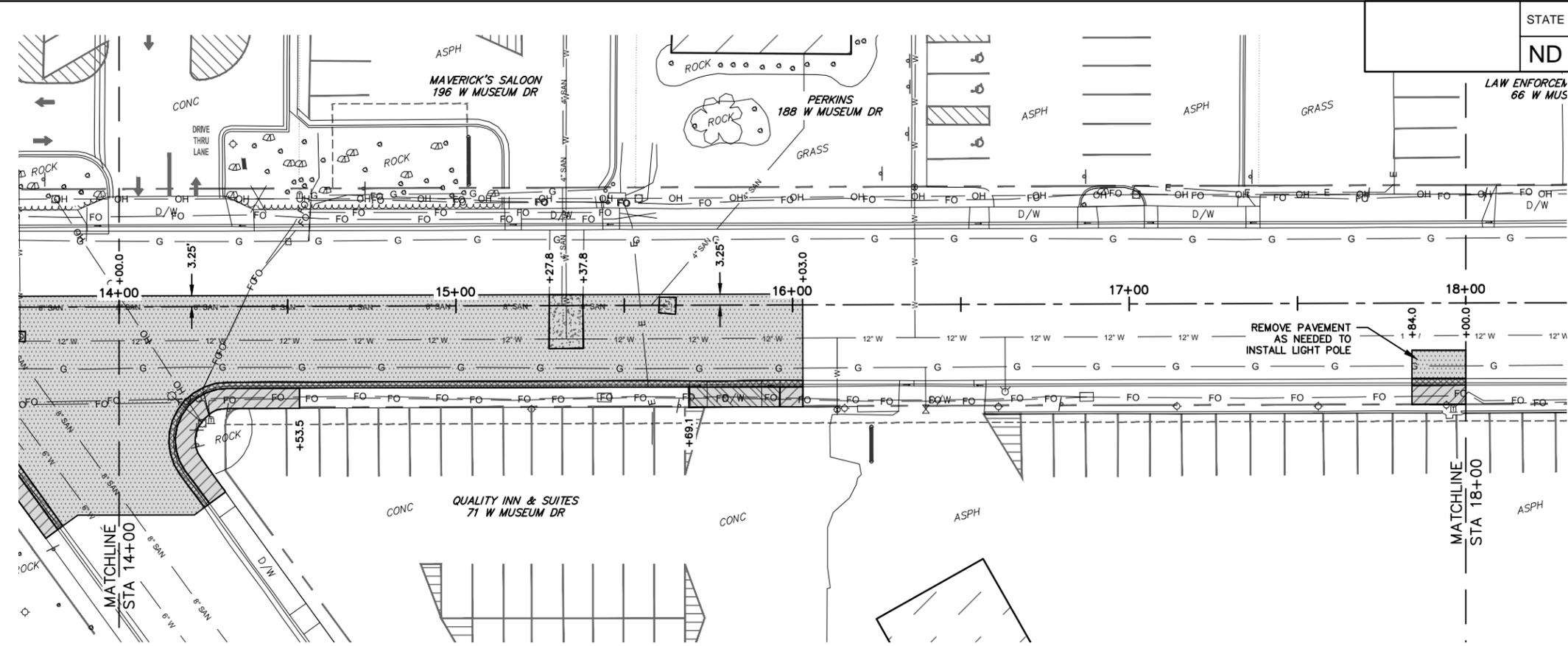


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**REMOVALS**  
Phase I  
Sta 10+00 to Sta 14+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	40	2

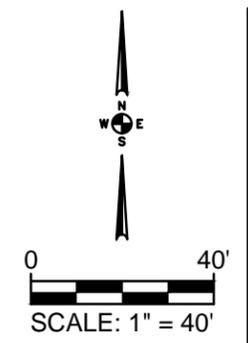


**REMOVAL OF PAVEMENT**

Sta 14+00 to 16+03 Rt	
Bituminous Surfacing	243.5 TON
Mainline Concrete	8.1 TON
Sidewalk Concrete	10.1 TON
Driveway Concrete	6.0 TON
Curb and Gutter	21.3 TON
	289.0 TON
Sta 17+84 to 18+00 Rt	
Bituminous Surfacing	5.7 TON
Sidewalk Concrete	2.3 TON
Curb and Gutter	1.6 TON
	9.6 TON

**LEGEND**

REMOVAL OF OBSTRUCTIONS	
REMOVAL OF MAINLINE CONCRETE	
REMOVAL OF SIDEWALK CONCRETE	
REMOVAL OF DRIVEWAY CONCRETE	
REMOVAL OF CURB & GUTTER	
REMOVAL OF BITUMINOUS SURFACING	

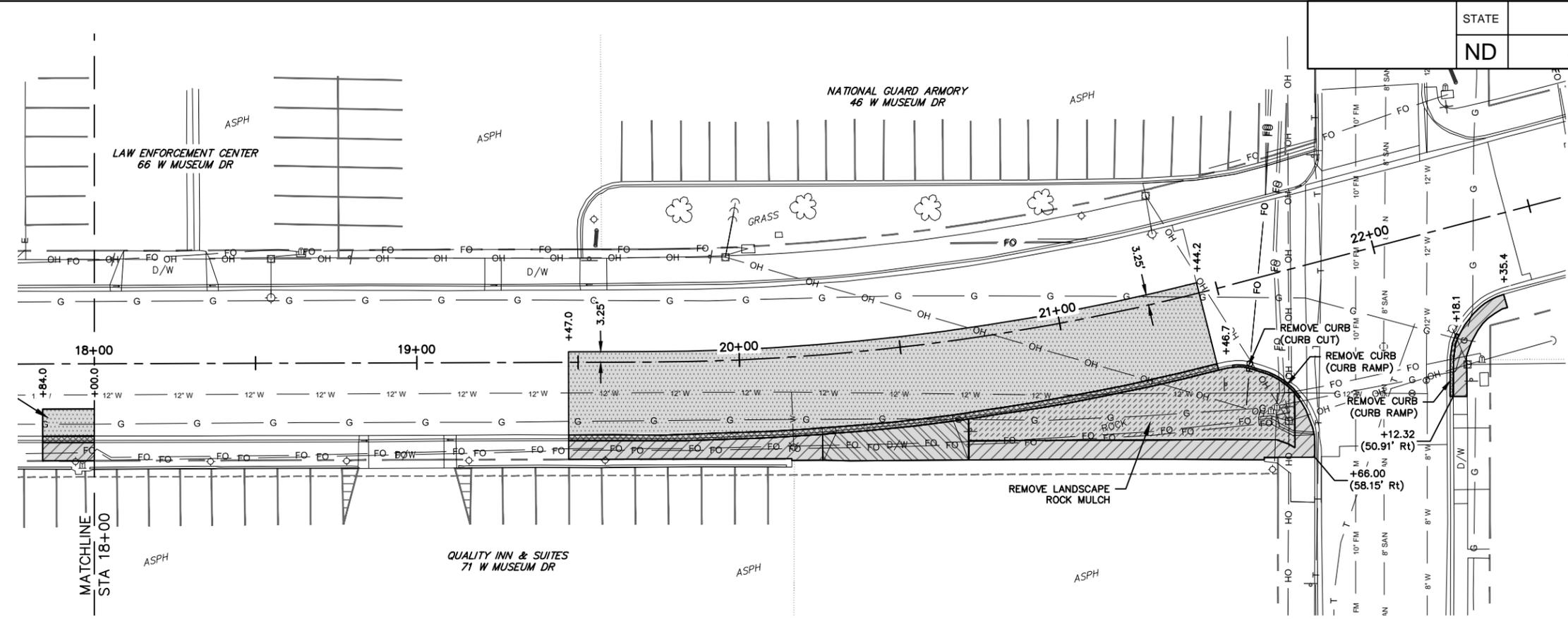


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**REMOVALS**  
Phase I  
Sta 14+00 to Sta 18+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

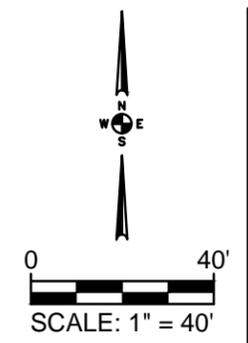
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	40	3



<b>REMOVAL OF PAVEMENT</b>	
Sta 19+47 to 21+66 Rt	218.2 TON
Bituminous Surfacing	29.3 TON
Sidewalk Concrete	17.3 TON
Driveway Concrete	19.8 TON
Curb and Gutter	284.6 TON
Sta 22+12 to 22+35 Rt	3.8 TON
Sidewalk Concrete	3.8 TON
<b>REMOVE CURB</b>	
Sta 21+46 to 21+66 Rt	24 LF
Sta 22+12 to 22+18 Rt	20 LF
	44 LF

**LEGEND**

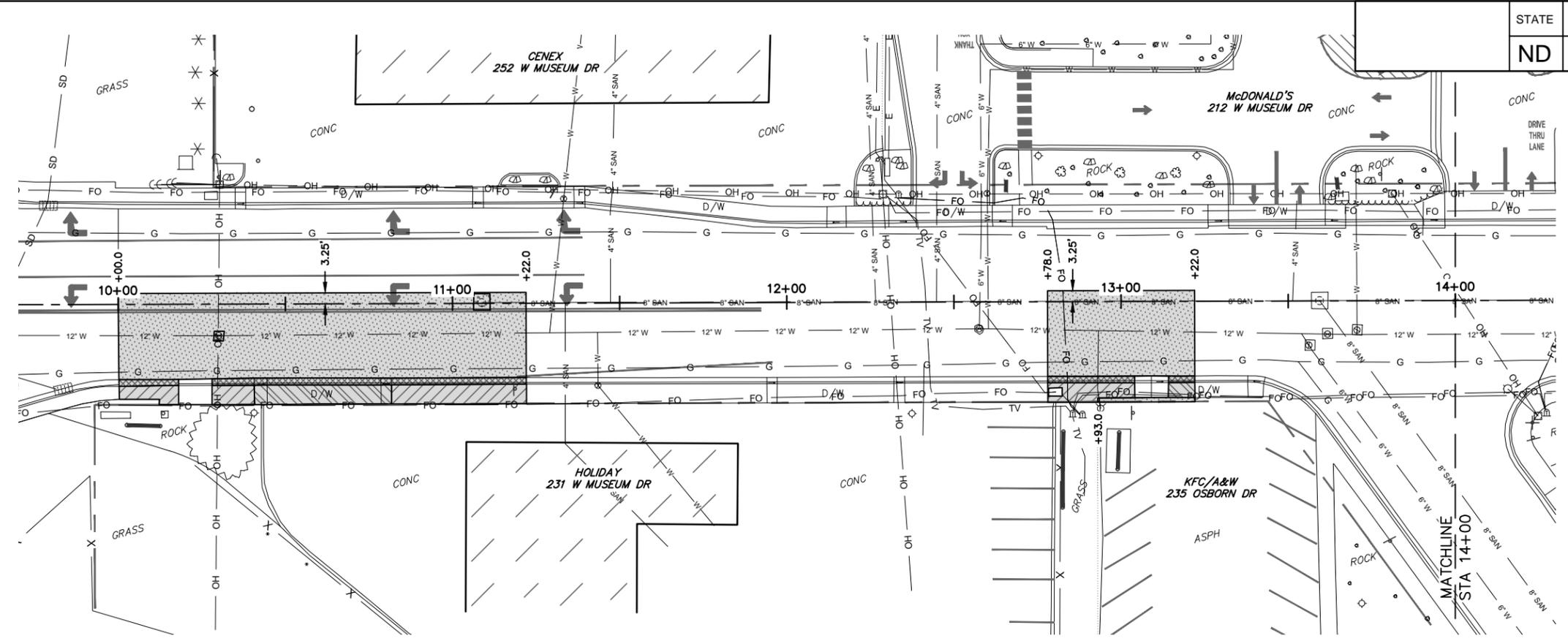
REMOVAL OF OBSTRUCTIONS	
REMOVAL OF MAINLINE CONCRETE	
REMOVAL OF SIDEWALK CONCRETE	
REMOVAL OF DRIVEWAY CONCRETE	
REMOVAL OF CURB & GUTTER	
REMOVAL OF BITUMINOUS SURFACING	



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**REMOVALS**  
Phase I  
Sta 18+00 to Sta 22+42

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

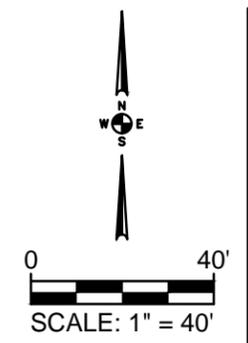


**REMOVAL OF PAVEMENT**

Sta 10+00 to 11+22 Rt	
Bituminous Surfacing	130.1 TON
Mainline Concrete	1.4 TON
Sidewalk Concrete	9.7 TON
Driveway Concrete	8.8 TON
Curb and Gutter	10.9 TON
	<b>160.9 TON</b>
Sta 12+78 to 13+22 Rt	
Bituminous Surfacing	49.1 TON
Sidewalk Concrete	3.2 TON
Driveway Concrete	1.3 TON
Curb and Gutter	3.3 TON
	<b>56.9 TON</b>

**LEGEND**

REMOVAL OF OBSTRUCTIONS	
REMOVAL OF MAINLINE CONCRETE	
REMOVAL OF SIDEWALK CONCRETE	
REMOVAL OF DRIVEWAY CONCRETE	
REMOVAL OF CURB & GUTTER	
REMOVAL OF BITUMINOUS SURFACING	

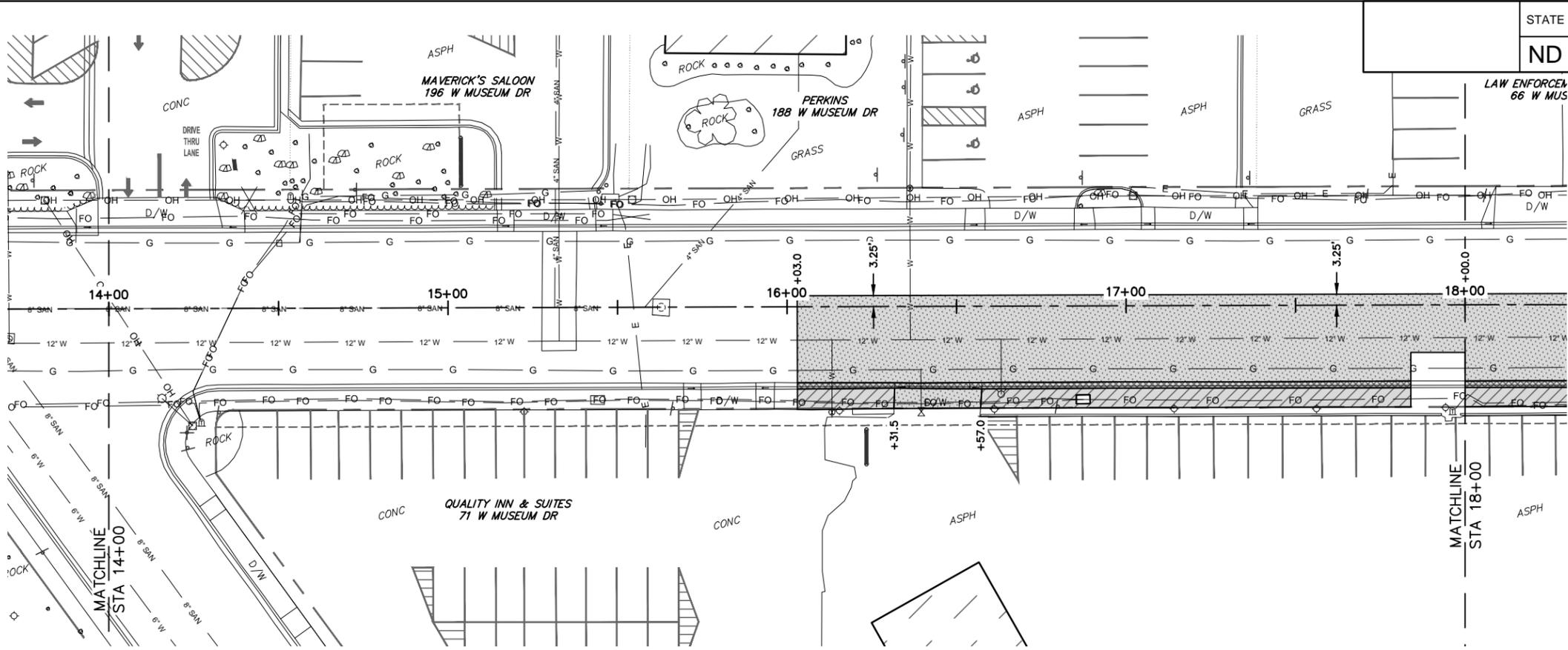


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**REMOVALS**  
Phase II  
Sta 10+00 to Sta 14+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

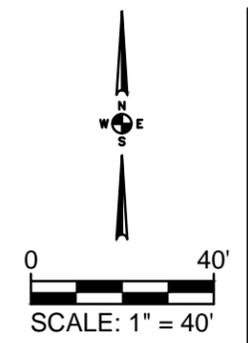
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	40	5



<b>REMOVAL OF PAVEMENT</b> Sta 16+03 to 18+00 Rt	
Bituminous Surfacing	214.4 TON
Sidewalk Concrete	22.2 TON
Curb and Gutter	17.6 TON
	254.2 TON

**LEGEND**

- REMOVAL OF OBSTRUCTIONS
- REMOVAL OF MAINLINE CONCRETE
- REMOVAL OF SIDEWALK CONCRETE
- REMOVAL OF DRIVEWAY CONCRETE
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING

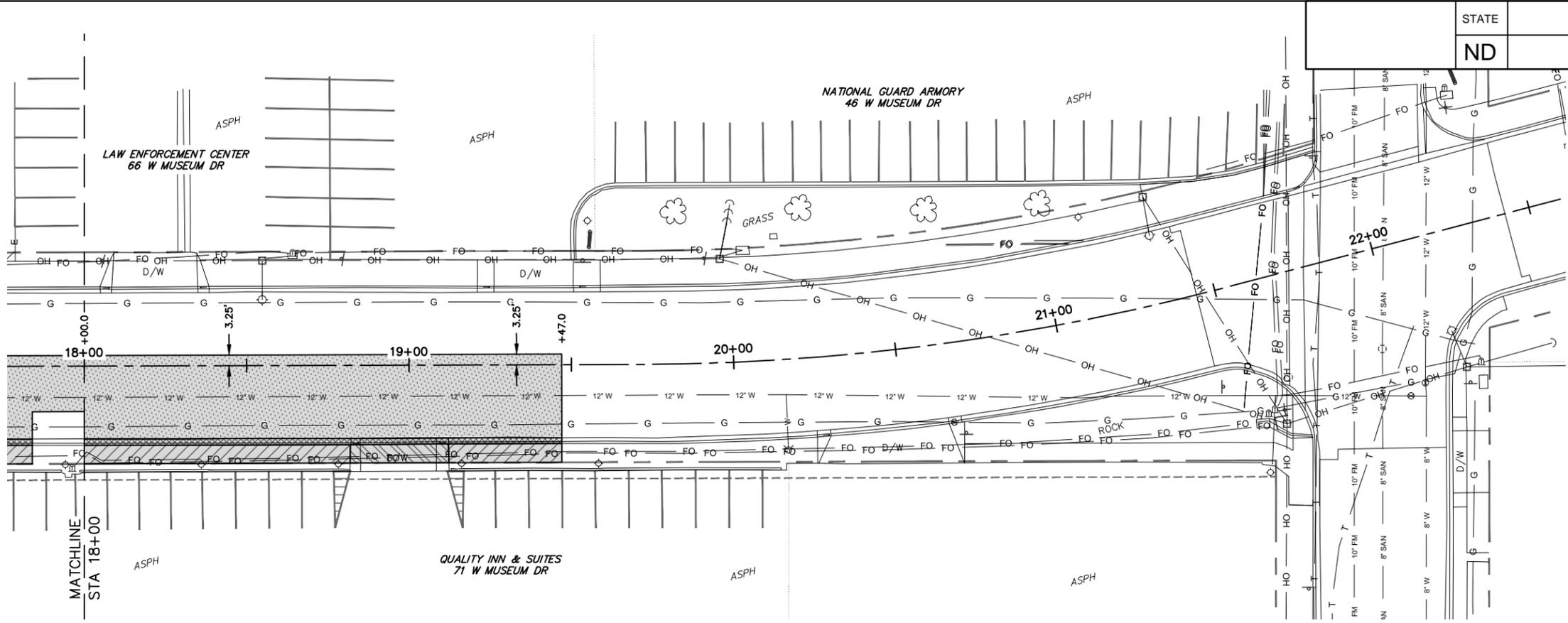


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**REMOVALS**  
Phase II  
Sta 14+00 to Sta 18+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	40	6

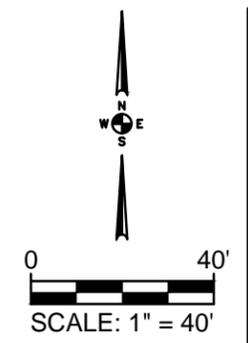


**REMOVAL OF PAVEMENT**  
Sta 18+00 to 19+47 Rt

Bituminous Surfacing	159.6 TON
Sidewalk Concrete	16.6 TON
Driveway Concrete	6.5 TON
Curb and Gutter	14.3 TON
<b>Total</b>	<b>197.0 TON</b>

**LEGEND**

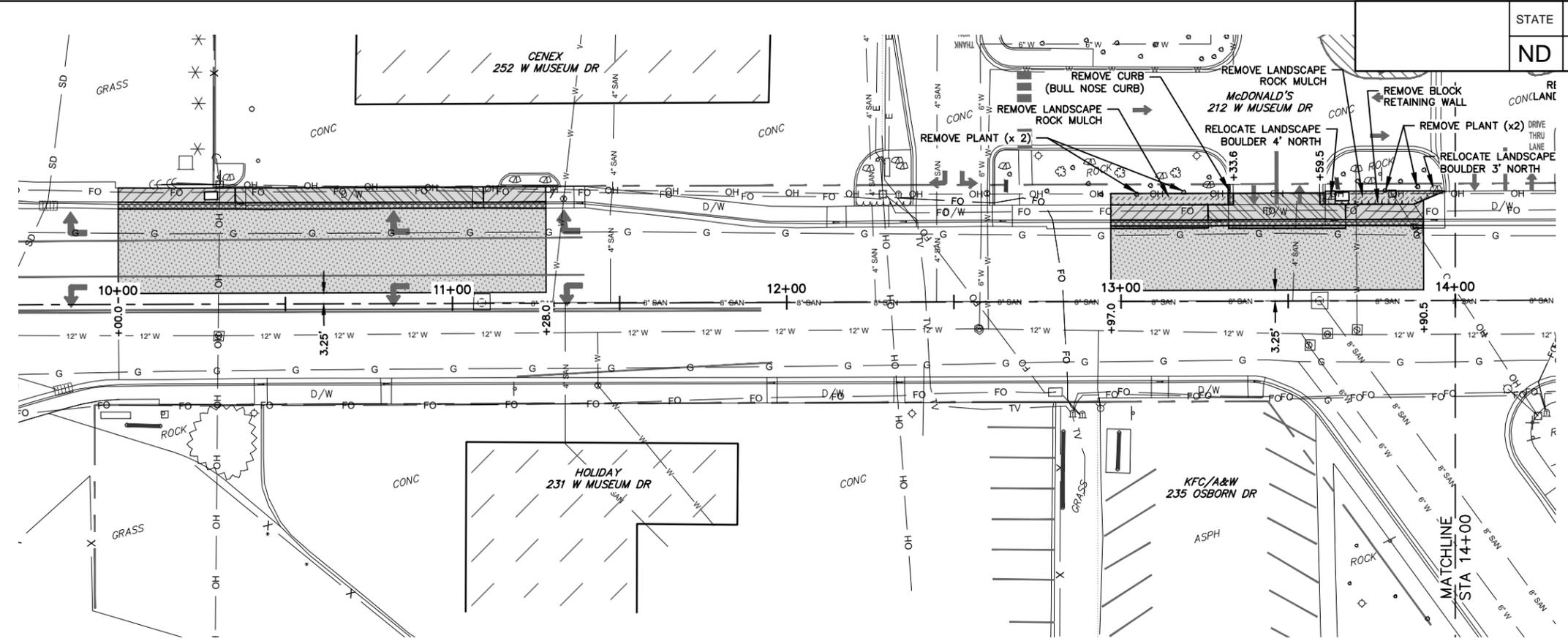
- REMOVAL OF OBSTRUCTIONS
- REMOVAL OF MAINLINE CONCRETE
- REMOVAL OF SIDEWALK CONCRETE
- REMOVAL OF DRIVEWAY CONCRETE
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING



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**REMOVALS**  
Phase II  
Sta 18+00 to Sta 22+42

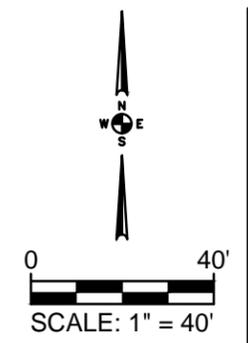
**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET



REMOVAL OF PAVEMENT		
Sta 10+00 to 11+28 Lt	Bituminous Surfacing	136.2 TON
	Sidewalk Concrete	5.6 TON
	Driveway Concrete	12.4 TON
	Curb and Gutter	12.5 TON
		166.7 TON
Sta 12+97 to 13+91 Lt	Bituminous Surfacing	74.0 TON
	Mainline Concrete	2.2 TON
	Sidewalk Concrete	6.0 TON
	Driveway Concrete	10.3 TON
	Curb and Gutter	9.8 TON
		102.3 TON
REMOVAL CURB		
Sta 13+34 Lt		3 LF
		3 LF

**LEGEND**

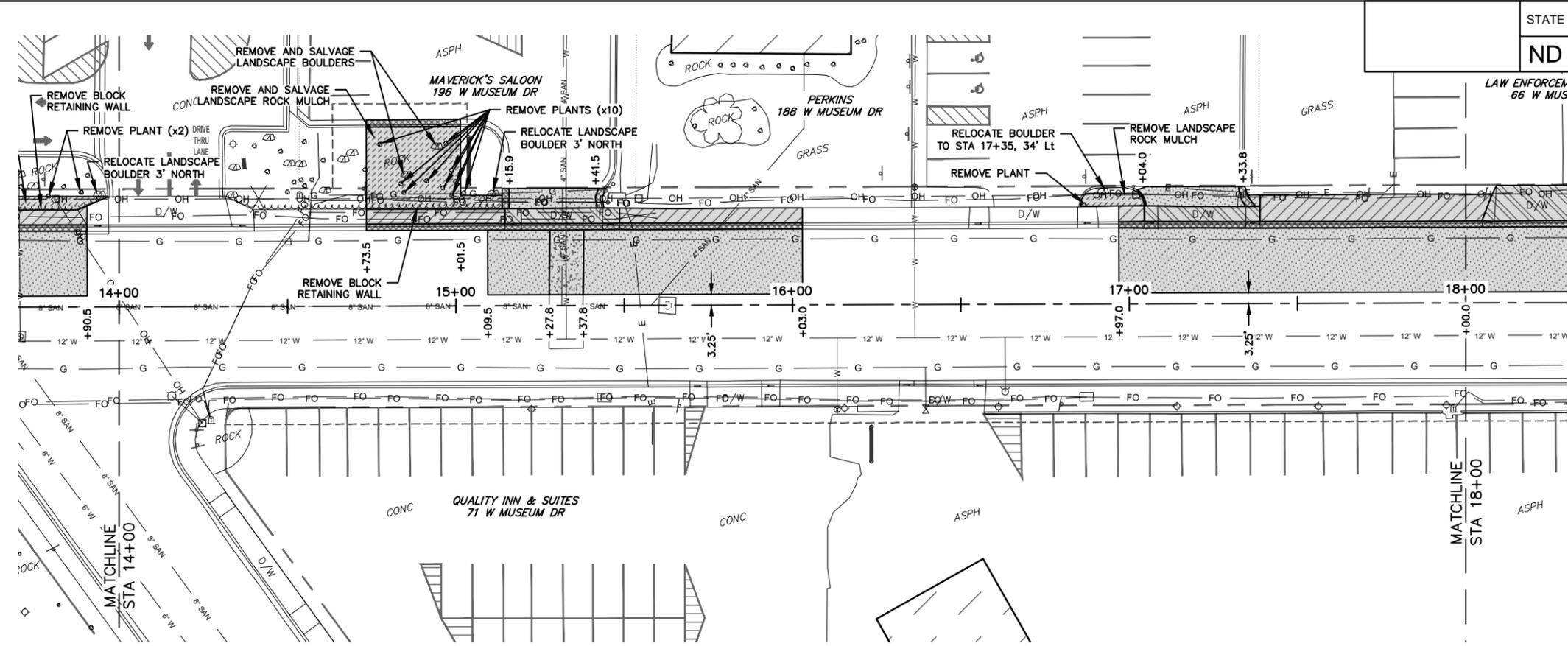
REMOVAL OF OBSTRUCTIONS	
REMOVAL OF MAINLINE CONCRETE	
REMOVAL OF SIDEWALK CONCRETE	
REMOVAL OF DRIVEWAY CONCRETE	
REMOVAL OF CURB & GUTTER	
REMOVAL OF BITUMINOUS SURFACING	



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**REMOVALS**  
Phase III  
Sta 10+00 to Sta 14+00

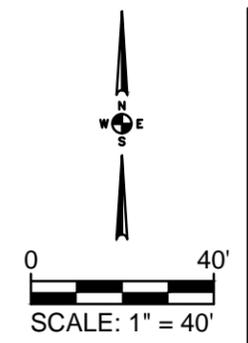
**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET



REMOVAL OF PAVEMENT	
Sta 14+74 to 16+03 Lt	
Bituminous Surfacing	74.3 TON
Mainline Concrete	8.5 TON
Sidewalk Concrete	10.5 TON
Driveway Concrete	5.7 TON
Curb and Gutter	16.5 TON
	<u>115.5 TON</u>
Sta 16+97 to 18+00 Lt	
Bituminous Surfacing	90.8 TON
Sidewalk Concrete	13.0 TON
Driveway Concrete	5.8 TON
Curb and Gutter	11.0 TON
	<u>120.6 TON</u>

**LEGEND**

REMOVAL OF OBSTRUCTIONS	
REMOVAL OF MAINLINE CONCRETE	
REMOVAL OF SIDEWALK CONCRETE	
REMOVAL OF DRIVEWAY CONCRETE	
REMOVAL OF CURB & GUTTER	
REMOVAL OF BITUMINOUS SURFACING	

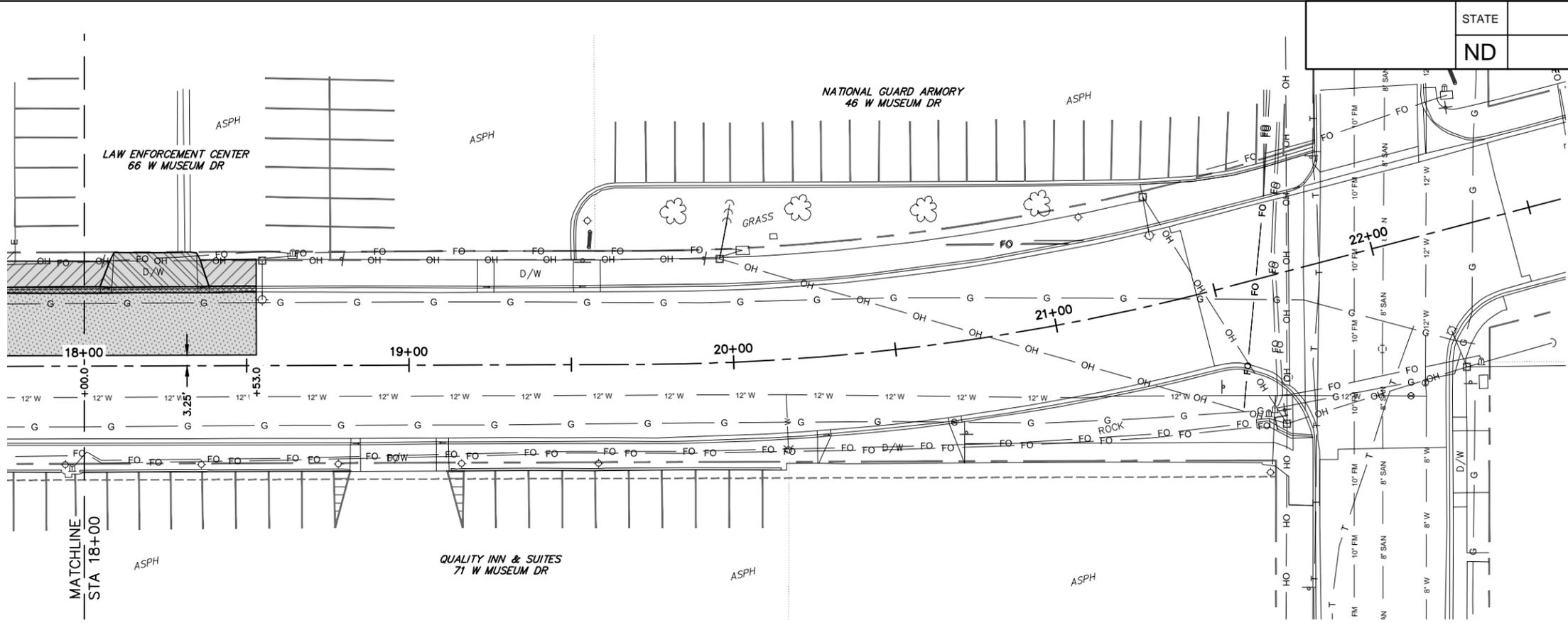


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**REMOVALS**  
Phase III  
Sta 14+00 to Sta 18+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	40	9

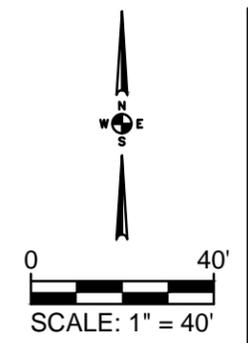


**REMOVAL OF PAVEMENT**  
Sta 18+00 to 18+53 Rt

Bituminous Surfacing	43.1 TON
Sidewalk Concrete	4.5 TON
Driveway Concrete	11.7 TON
Curb and Gutter	5.2 TON
<b>Total</b>	<b>64.5 TON</b>

**LEGEND**

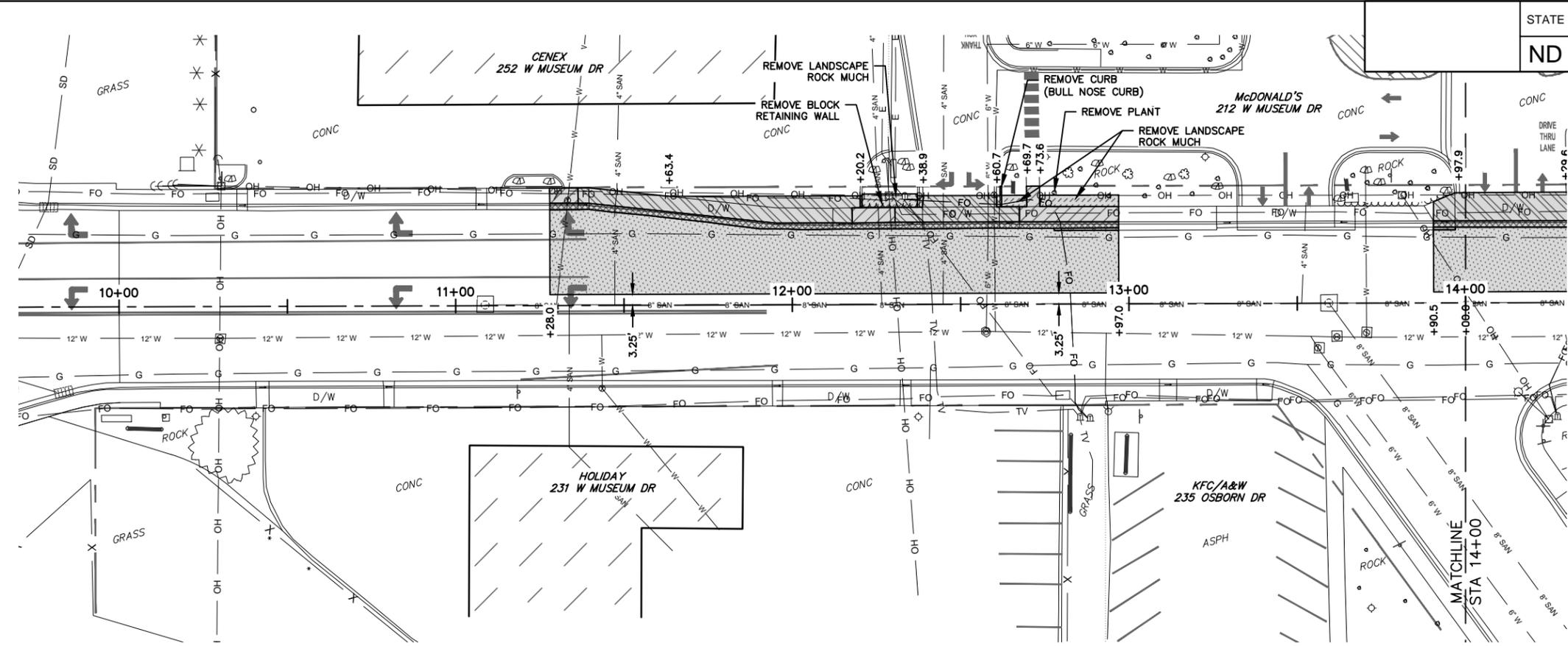
- REMOVAL OF OBSTRUCTIONS
- REMOVAL OF MAINLINE CONCRETE
- REMOVAL OF SIDEWALK CONCRETE
- REMOVAL OF DRIVEWAY CONCRETE
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING



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**REMOVALS**  
Phase III  
Sta 14+00 to Sta 22+42

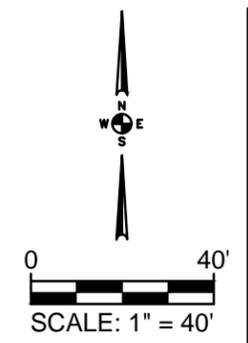
**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET



REMOVAL OF PAVEMENT		
Sta 11+28 to 12+97 Lt		
Bituminous Surfacing		146.4 TON
Mainline Concrete		0.6 TON
Sidewalk Concrete		6.3 TON
Driveway Concrete		28.2 TON
Curb and Gutter		17.5 TON
		<u>199.0 TON</u>
Sta 13+91 to 14+00 Lt		
Bituminous Surfacing		7.5 TON
Mainline Concrete		0.2 TON
Driveway Concrete		2.7 TON
Curb and Gutter		0.9 TON
		<u>11.3 TON</u>
REMOVAL CURB		
Sta 12+61 Lt		3 LF
		<u>3 LF</u>

**LEGEND**

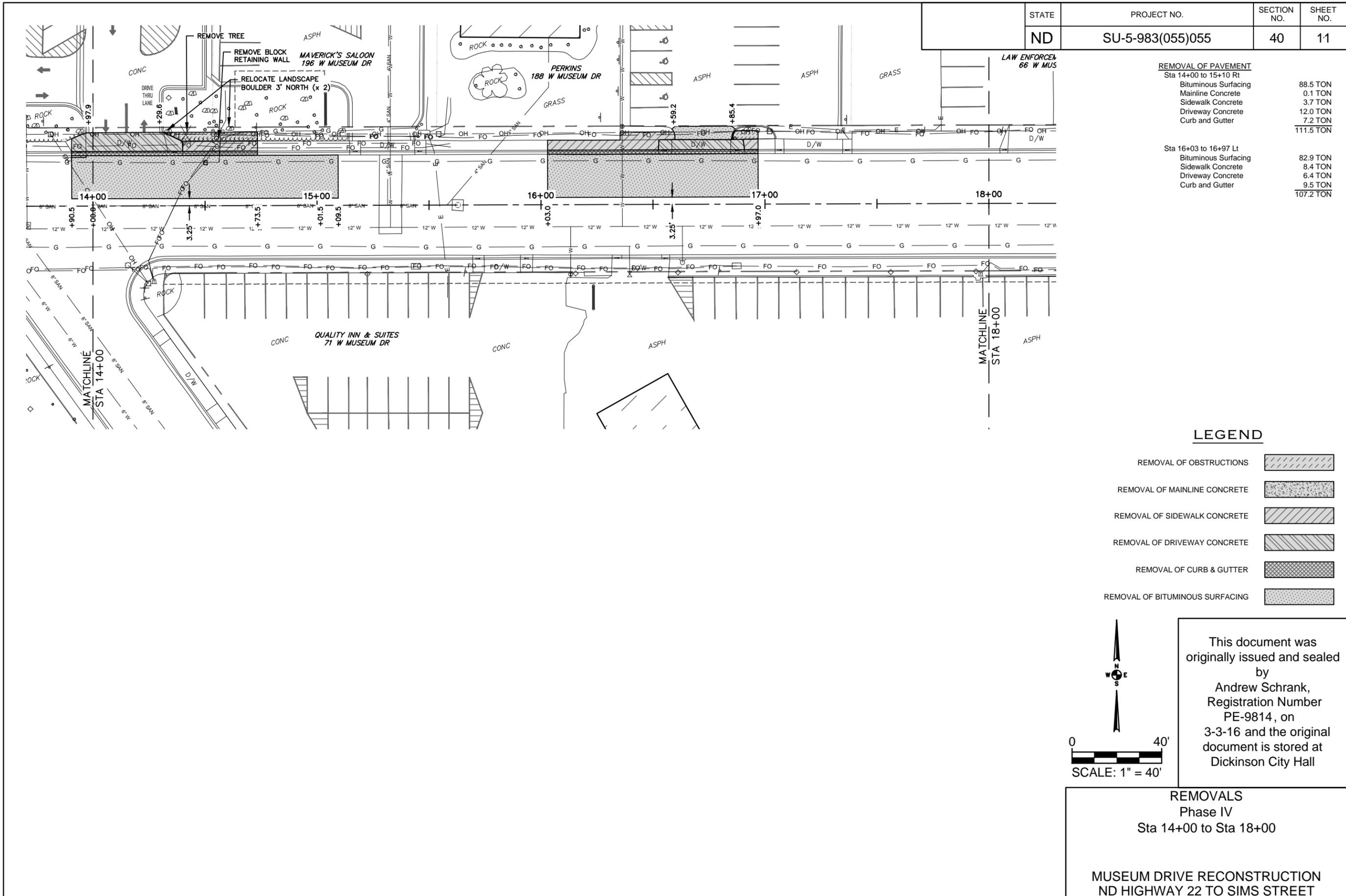
REMOVAL OF OBSTRUCTIONS	
REMOVAL OF MAINLINE CONCRETE	
REMOVAL OF SIDEWALK CONCRETE	
REMOVAL OF DRIVEWAY CONCRETE	
REMOVAL OF CURB & GUTTER	
REMOVAL OF BITUMINOUS SURFACING	



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**REMOVALS**  
Phase IV  
Sta 10+00 to Sta 14+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET



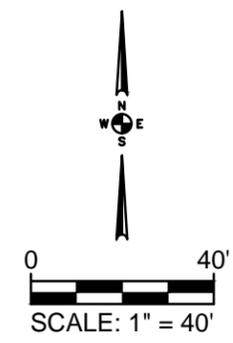
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	40	11

**REMOVAL OF PAVEMENT**

Sta 14+00 to 15+10 Rt	
Bituminous Surfacing	88.5 TON
Mainline Concrete	0.1 TON
Sidewalk Concrete	3.7 TON
Driveway Concrete	12.0 TON
Curb and Gutter	7.2 TON
	<b>111.5 TON</b>
Sta 16+03 to 16+97 Lt	
Bituminous Surfacing	82.9 TON
Sidewalk Concrete	8.4 TON
Driveway Concrete	6.4 TON
Curb and Gutter	9.5 TON
	<b>107.2 TON</b>

**LEGEND**

REMOVAL OF OBSTRUCTIONS	
REMOVAL OF MAINLINE CONCRETE	
REMOVAL OF SIDEWALK CONCRETE	
REMOVAL OF DRIVEWAY CONCRETE	
REMOVAL OF CURB & GUTTER	
REMOVAL OF BITUMINOUS SURFACING	

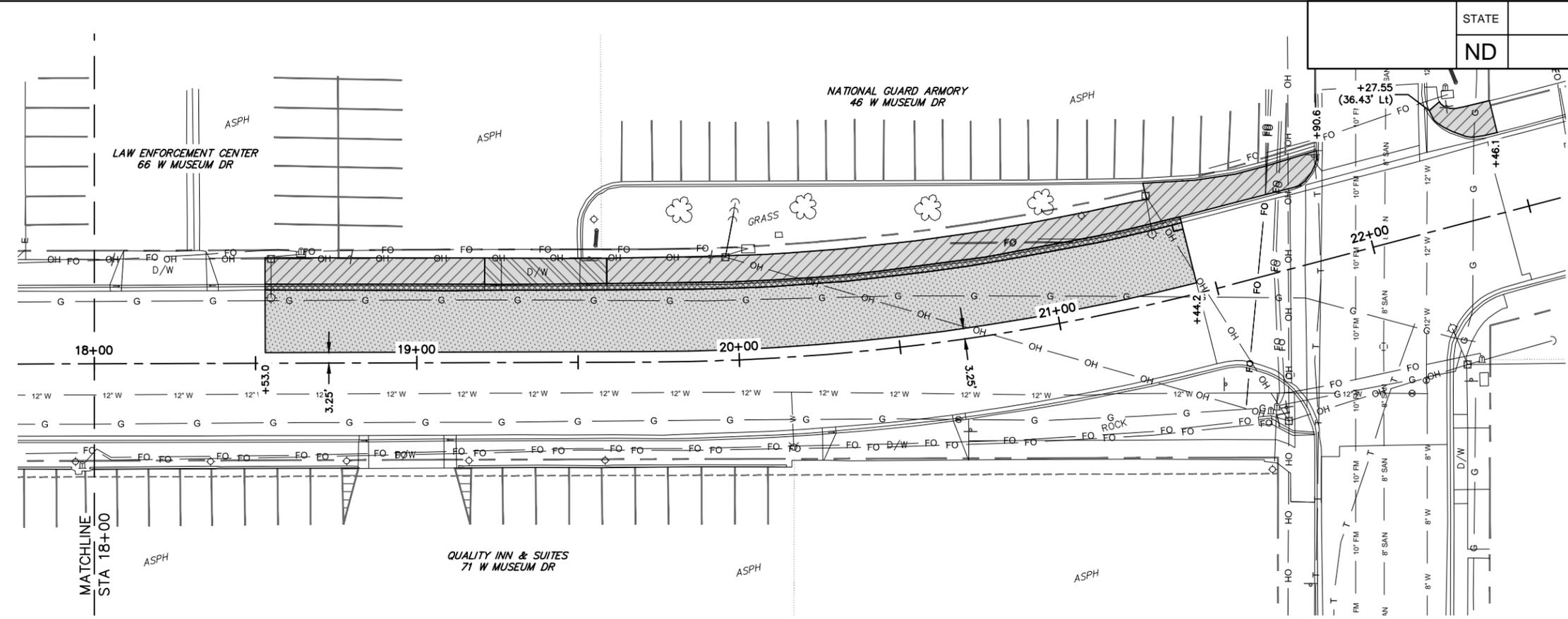


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**REMOVALS**  
Phase IV  
Sta 14+00 to Sta 18+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	40	12

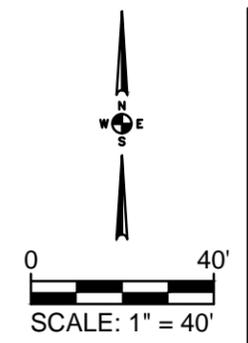


**REMOVAL OF PAVEMENT**

Sta 18+53 to 21+91 Lt	
Bituminous Surfacing	232.0 TON
Mainline Concrete	0.3 TON
Sidewalk Concrete	60.3 TON
Driveway Concrete	11.4 TON
Curb and Gutter	27.8 TON
	331.8 TON
Sta 22+28 to 22+46 Lt	
Sidewalk Concrete	4.0 TON
	4.0 TON

**LEGEND**

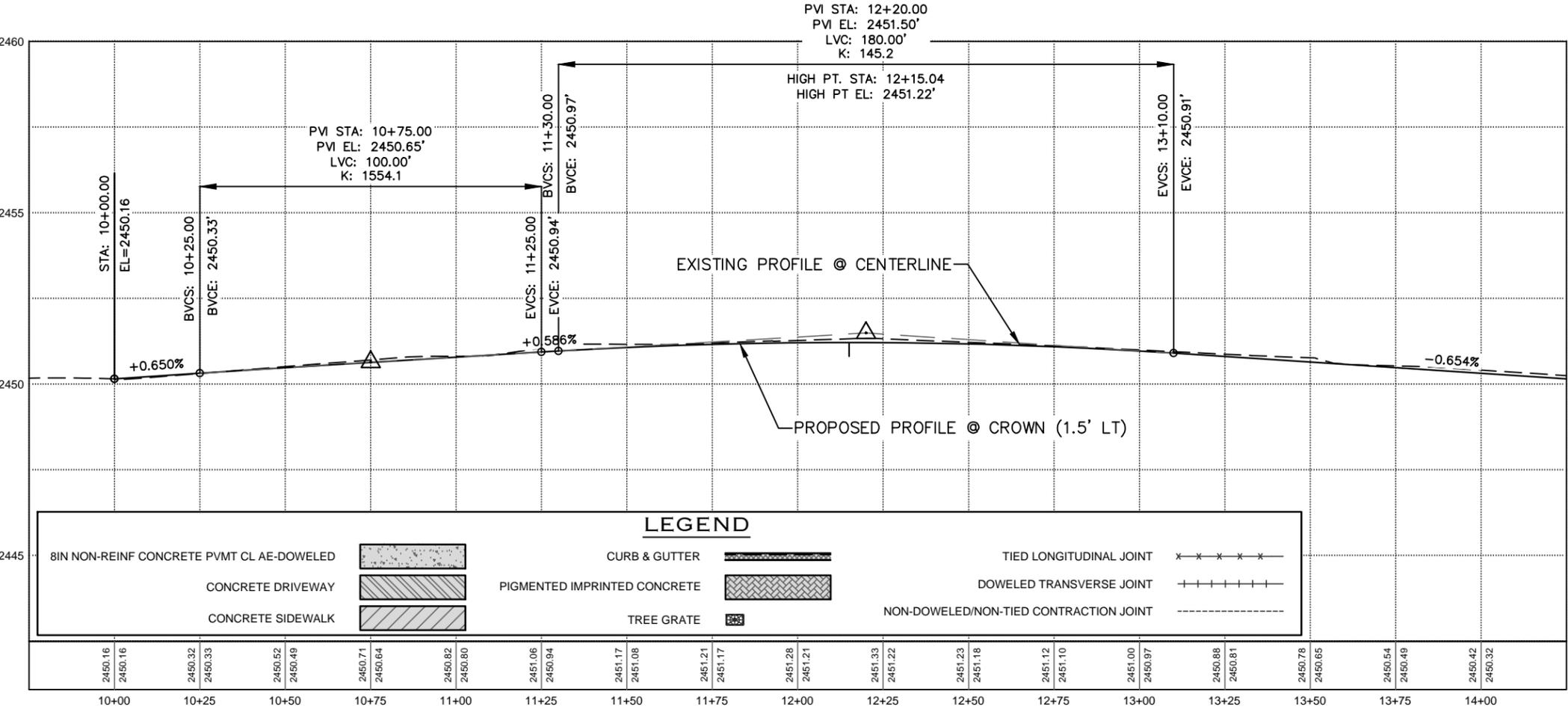
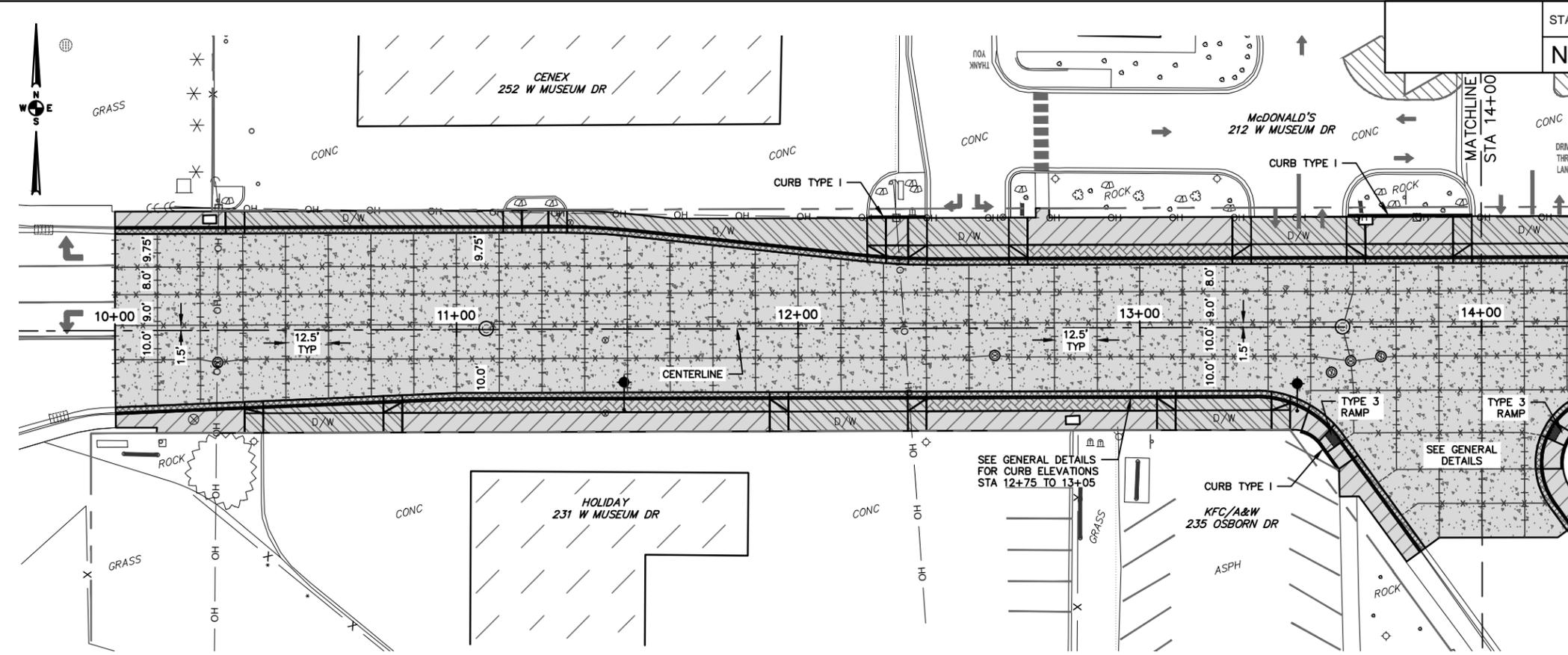
REMOVAL OF OBSTRUCTIONS	
REMOVAL OF MAINLINE CONCRETE	
REMOVAL OF SIDEWALK CONCRETE	
REMOVAL OF DRIVEWAY CONCRETE	
REMOVAL OF CURB & GUTTER	
REMOVAL OF BITUMINOUS SURFACING	



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**REMOVALS**  
Phase IV  
Sta 18+00 to Sta 22+42

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET



<b>COMMON EXCAVATION-WASTE</b>	1,653 TON
Sta 10+00 to 14+00	
<b>SUBGRADE PREPARATION - TYPE A-12IN</b>	4.0 STA
Sta 10+00 to 14+00	
<b>AGGREGATE BASE COURSE CLASS 5</b>	1,598.8 TON
Sta 10+00 to 14+00	
<b>8IN NON-REINF PCC PVMT CL AE-DOWELED</b>	2,030 SY
Sta 10+00 to 14+00	
<b>ADJUST GATE VALVE BOX</b>	
Sta 10+30 Rt	1 EA
Sta 12+58 Rt	1 EA
Sta 13+56 Rt	1 EA
Sta 13+62 Rt	1 EA
Sta 13+71 Rt	1 EA
	5 EA
<b>ADJUST MANHOLE</b>	
Sta 11+09	1 EA
Sta 13+59	1 EA
	2 EA
<b>CURB &amp; GUTTER</b>	
Sta 10+00 to 14+00 Lt	402 LF
Sta 10+00 to 14+00 Rt	403 LF
	805 LF
<b>CURB-TYPE I</b>	
Sta 12+21 to 12+37 Lt	17 LF
Sta 13+61 to 13+97 Lt	36 LF
Sta 13+47 to 13+58 Rt	16 LF
	69 LF
<b>PIGMENTED IMPRINTED CONCRETE</b>	
Sta 12+26 to 12+32 Lt	3 SY
Sta 12+67 to 13+27 Lt	25 SY
Sta 13+66 to 13+92 Lt	11 SY
Sta 10+84 to 11+92 Rt	45 SY
Sta 12+38 to 13+05 Rt	29 SY
	113 SY
<b>SIDEWALK CONCRETE</b>	
Sta 10+00 to 10+33 Lt	15 SY
Sta 11+19 to 11+27 Lt	4 SY
Sta 12+26 to 12+32 Lt	6 SY
Sta 12+67 to 13+27 Lt	54 SY
Sta 13+66 to 13+92 Lt	23 SY
Sta 10+00 to 10+38 Rt	24 SY
Sta 10+84 to 11+92 Rt	69 SY
Sta 12+38 to 13+05 Rt	42 SY
Sta 13+44 to 13+82 Rt	33 SY
	270 SY
<b>DRIVEWAY CONCRETE</b>	
Sta 10+33 to 11+19 Lt	43 SY
Sta 11+27 to 12+26 Lt	73 SY
Sta 12+32 to 12+67 Lt	46 SY
Sta 13+27 to 13+66 Lt	50 SY
Sta 13+92 to 14+00 Lt	11 SY
Sta 10+38 to 10+84 Rt	41 SY
Sta 11+92 to 12+38 Rt	49 SY
Sta 13+05 to 13+44 Rt	40 SY
	353 SY
<b>DETECTABLE WARNING PANELS</b>	
Sta 13+57 Rt	8 SF

LEGEND	
8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	CURB & GUTTER
CONCRETE DRIVEWAY	PIGMENTED IMPRINTED CONCRETE
CONCRETE SIDEWALK	TREE GRATE
	TIED LONGITUDINAL JOINT
	DOWELED TRANSVERSE JOINT
	NON-DOWELED/NON-TIED CONTRACTION JOINT

2450.16	2450.16	2450.32	2450.33	2450.52	2450.49	2450.71	2450.64	2450.82	2450.80	2451.06	2450.94	2451.17	2451.08	2451.21	2451.17	2451.28	2451.21	2451.33	2451.22	2451.23	2451.18	2451.12	2451.10	2451.00	2450.97	2450.88	2450.81	2450.78	2450.65	2450.54	2450.49	2450.42	2450.32																																															
10+00	10+05	10+10	10+15	10+20	10+25	10+30	10+35	10+40	10+45	10+50	10+55	10+60	10+65	10+70	10+75	10+80	10+85	10+90	10+95	11+00	11+05	11+10	11+15	11+20	11+25	11+30	11+35	11+40	11+45	11+50	11+55	11+60	11+65	11+70	11+75	11+80	11+85	11+90	11+95	12+00	12+05	12+10	12+15	12+20	12+25	12+30	12+35	12+40	12+45	12+50	12+55	12+60	12+65	12+70	12+75	12+80	12+85	12+90	12+95	13+00	13+05	13+10	13+15	13+20	13+25	13+30	13+35	13+40	13+45	13+50	13+55	13+60	13+65	13+70	13+75	13+80	13+85	13+90	13+95	14+00

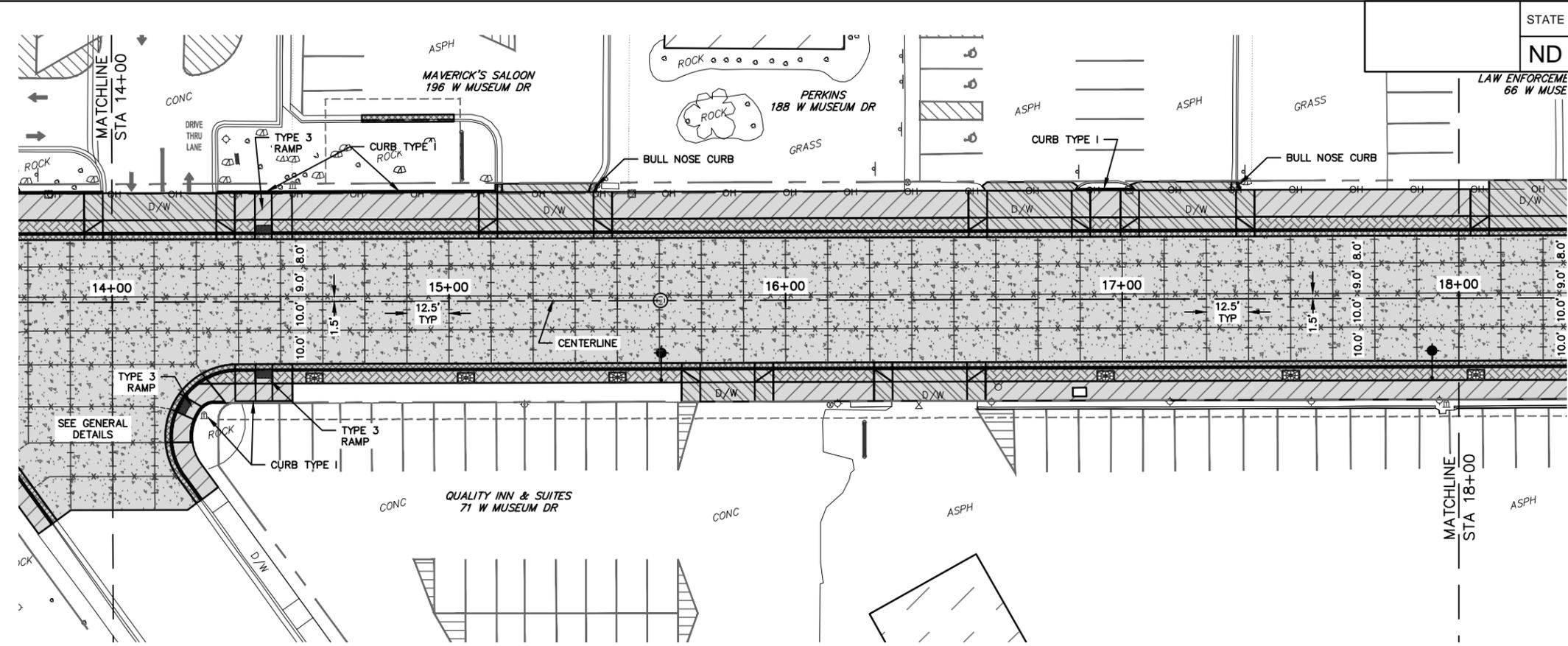
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HORIZONTAL: 1"=40'  
VERTICAL: 1"=4'

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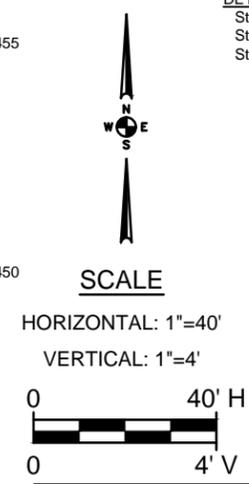
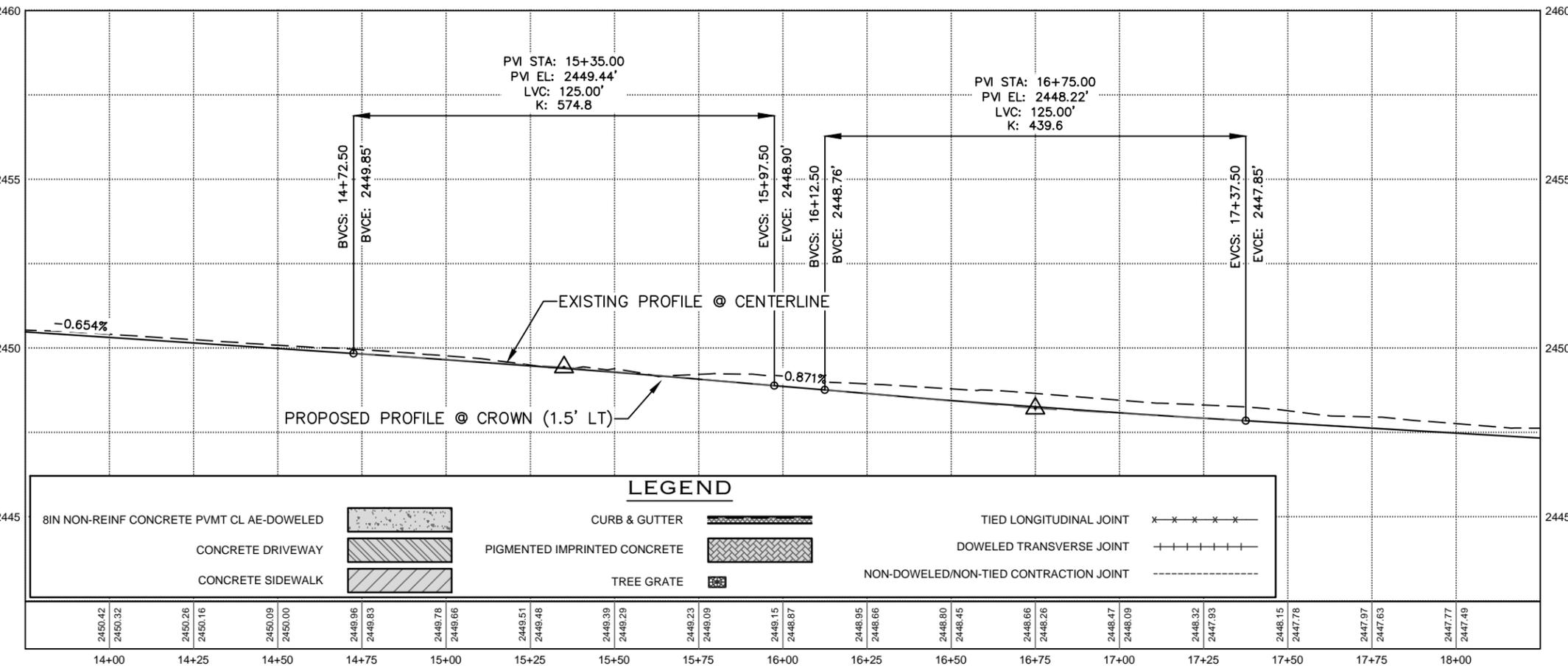
**PLAN & PROFILE**  
Sta 10+00 to Sta 14+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	60	2



<b>COMMON EXCAVATION-WASTE</b>	1,458 TON
Sta 14+00 to 18+00	
<b>SUBGRADE PREPARATION - TYPE A-12IN</b>	4.0 STA
Sta 14+00 to 18+00	
<b>AGGREGATE BASE COURSE CLASS 5</b>	1,459.7 TON
Sta 14+00 to 18+00	
<b>8IN NON-REINF PCC PVMT CL AE-DOWELED</b>	1,738 SY
Sta 14+00 to 18+00	
<b>ADJUST MANHOLE</b>	1 EA
Sta 16+63	
<b>CURB &amp; GUTTER</b>	
Sta 14+00 to 18+00 Lt	401 LF
Sta 14+74 to 15+02 Lt	28 LF
Sta 15+14 Lt	3 LF
Sta 15+43 Lt	3 LF
Sta 17+34 Lt	3 LF
Sta 14+00 to 18+00 Rt	416 LF
	854 LF
<b>CURB-TYPE I</b>	
Sta 14+31 to 15+14 Lt	82 LF
Sta 16+87 to 17+03 Lt	17 LF
Sta 14+27 to 14+54 Rt	34 LF
	133 LF
<b>PIGMENTED IMPRINTED CONCRETE</b>	
Sta 14+37 to 14+43 Lt	3 SY
Sta 14+48 to 15+09 Lt	26 SY
Sta 15+49 to 16+54 Lt	44 SY
Sta 16+91 to 17+00 Lt	4 SY
Sta 17+39 to 18+00 Lt	25 SY
Sta 14+26 to 14+43 Rt	5 SY
Sta 14+48 to 15+69 Rt	46 SY
Sta 15+96 to 16+26 Rt	13 SY
Sta 16+59 to 18+00 Rt	55 SY
	221 SY
<b>SIDEWALK CONCRETE</b>	
Sta 14+37 to 15+09 Lt	67 SY
Sta 15+49 to 16+54 Lt	94 SY
Sta 16+91 to 17+00 Lt	8 SY
Sta 17+39 to 18+00 Lt	54 SY
Sta 14+27 to 14+54 Rt	40 SY
Sta 15+96 to 16+26 Rt	19 SY
Sta 16+59 to 18+00 Rt	89 SY
	371 SY
<b>DRIVEWAY CONCRETE</b>	
Sta 14+00 to 14+37 Lt	49 SY
Sta 15+09 to 15+49 Lt	59 SY
Sta 16+54 to 16+91 Lt	55 SY
Sta 17+00 to 17+39 Lt	60 SY
Sta 15+69 to 15+96 Rt	29 SY
Sta 16+26 to 16+59 Rt	35 SY
	287 SY
<b>DETECTABLE WARNING PANELS</b>	
Sta 14+24 Rt	8 SF
Sta 14+45 Lt	8 SF
Sta 14+45 Rt	8 SF
	24 SF



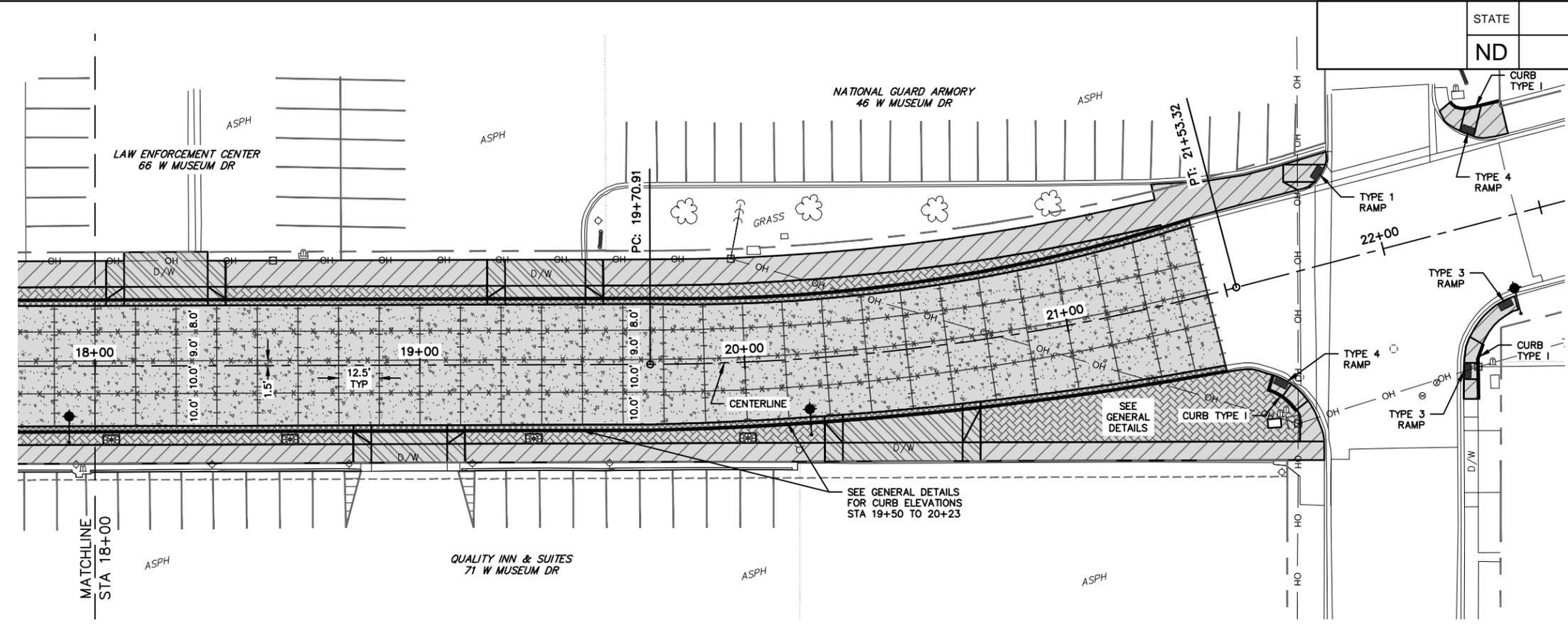
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LEGEND	
8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	CURB & GUTTER
CONCRETE DRIVEWAY	PIGMENTED IMPRINTED CONCRETE
CONCRETE SIDEWALK	TREE GRATE
	TIED LONGITUDINAL JOINT
	DOWELED TRANSVERSE JOINT
	NON-DOWELED/NON-TIED CONTRACTION JOINT

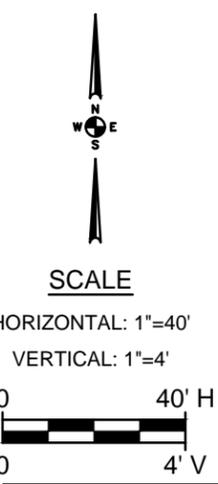
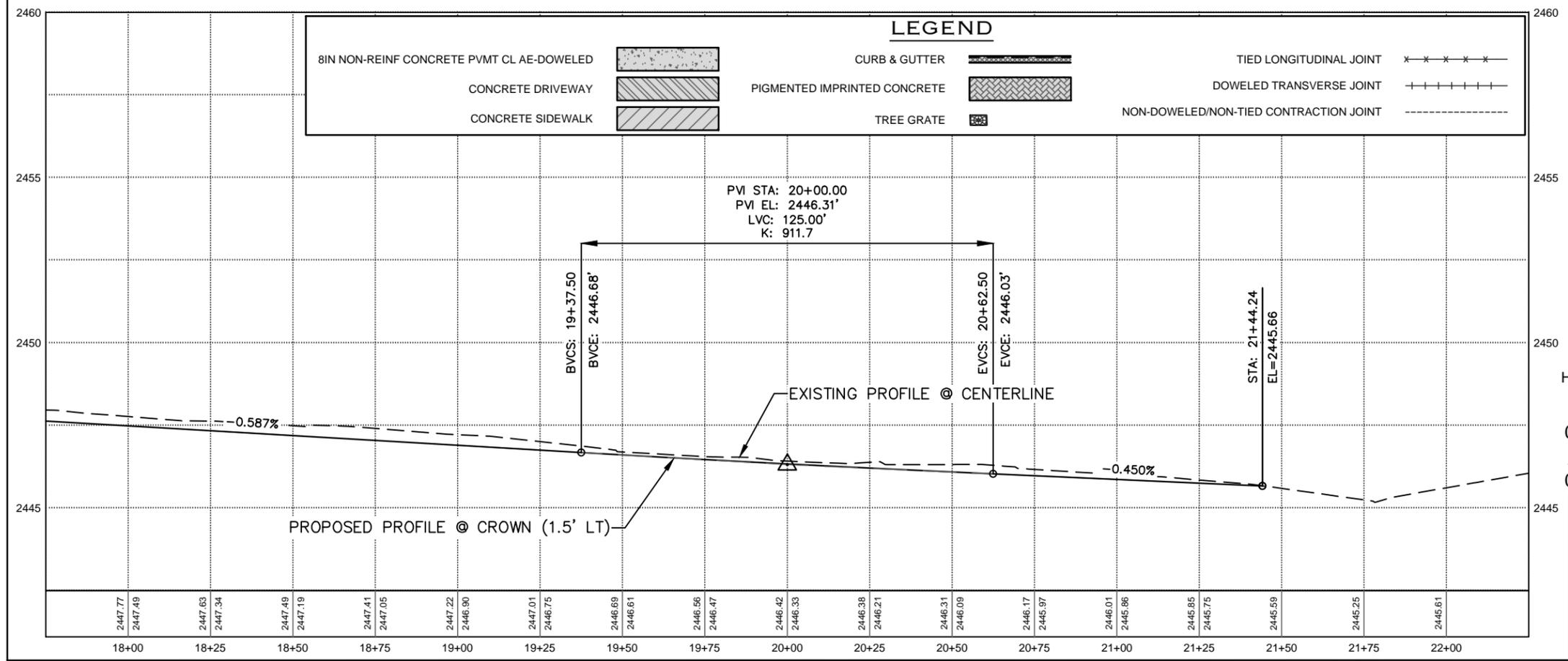
**PLAN & PROFILE**  
Sta 14+00 to Sta 18+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	60	3



<b>COMMON EXCAVATION-WASTE</b>	
Sta 18+00 to 22+42	1,257 TON
<b>SUBGRADE PREPARATION - TYPE A-12IN</b>	
Sta 18+00 to 22+42	3.4 STA
<b>AGGREGATE BASE COURSE CLASS 5</b>	
Sta 18+00 to 22+42	1,281.9 TON
<b>8IN NON-REINF PCC PVMT CL AE-DOWELED</b>	
Sta 18+00 to 21+44	1,437 SY
<b>CURB &amp; GUTTER</b>	
Sta 18+00 to 21+44 Lt	339 LF
Sta 18+00 to 21+44 Rt	349 LF
	688 LF
<b>CURB-TYPE I</b>	
Sta 22+31 to 22+46 Lt	16 LF
Sta 21+58 to 21+62 Rt	15 LF
Sta 22+17 to 22+22 Rt	17 LF
	48 LF
<b>PIGMENTED IMPRINTED CONCRETE</b>	
Sta 18+00 to 18+04 Lt	2 SY
Sta 18+40 to 19+21 Lt	34 SY
Sta 19+57 to 21+35 Lt	64 SY
Sta 18+00 to 18+80 Rt	30 SY
Sta 19+14 to 20+23 Rt	48 SY
Sta 20+70 to 21+62 Rt	174 SY
	352 SY
<b>SIDEWALK CONCRETE</b>	
Sta 18+00 to 18+04 Lt	3 SY
Sta 18+40 to 19+21 Lt	72 SY
Sta 19+57 to 21+91 Lt	208 SY
Sta 22+28 to 22+46 Lt	18 SY
Sta 18+00 to 18+80 Rt	51 SY
Sta 19+14 to 20+23 Rt	71 SY
Sta 20+70 to 21+67 Rt	81 SY
Sta 22+12 to 22+36 Rt	17 SY
	521 SY
<b>DRIVEWAY CONCRETE</b>	
Sta 18+04 to 18+40 Lt	56 SY
Sta 19+21 to 19+57 Lt	47 SY
Sta 18+80 to 19+14 Rt	36 SY
Sta 20+23 to 20+70 Rt	74 SY
	213 SY
<b>DETECTABLE WARNING PANELS</b>	
Sta 21+87 Lt	8 SF
Sta 22+34 Lt	8 SF
Sta 21+60 Rt	8 SF
Sta 22+15 Rt	8 SF
Sta 22+32 Rt	8 SF
	40 SF

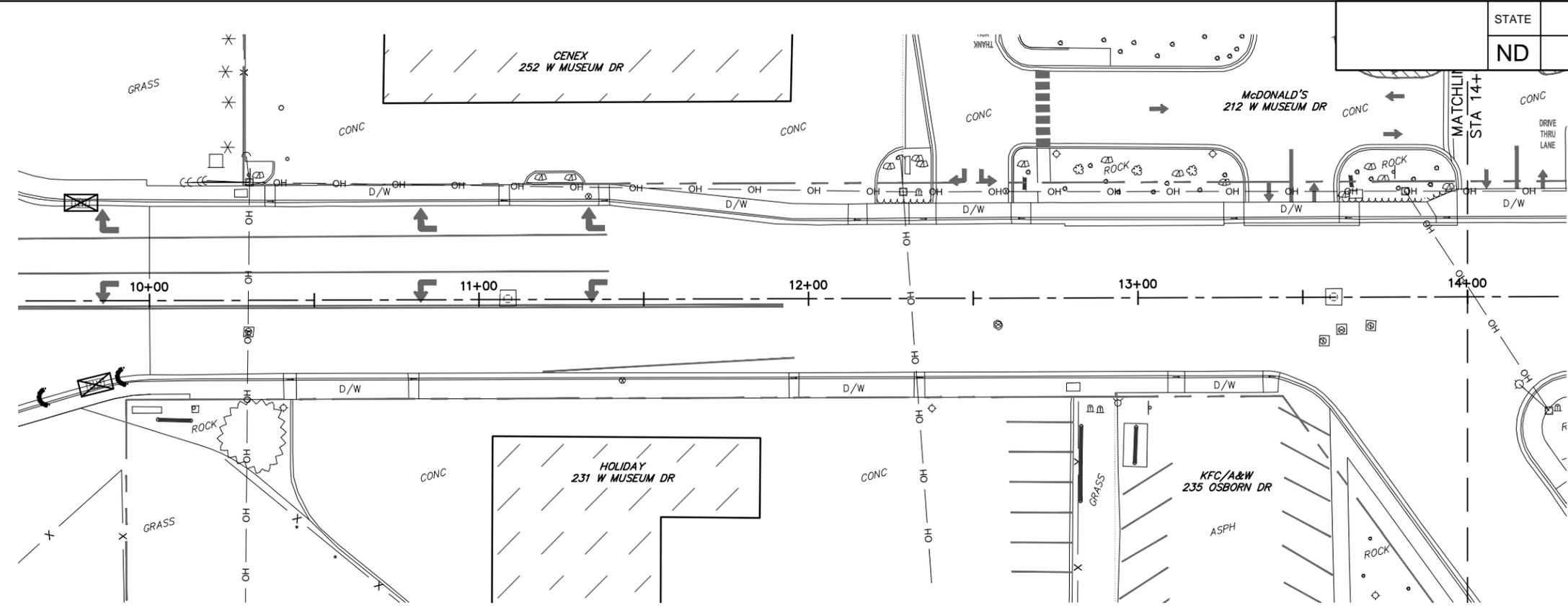


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**PLAN & PROFILE**  
Sta 14+00 to Sta 22+42

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

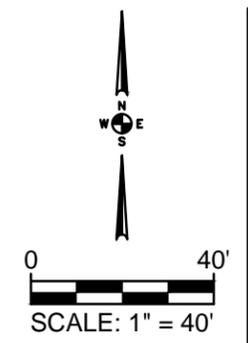
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	76	1



<b>INLET PROTECTION-SPECIAL</b>	
Sta 9+79 Lt	1 EA
Sta 9+84 Rt	1 EA
	2 EA
<b>WEIGHTED FIBER ROLLS</b>	
Sta 9+66 Rt	8 LF
Sta 9+90 Rt	8 LF
	16 LF

**LEGEND**

WEIGHTED FIBER ROLL	
INLET PROTECTION-SPECIAL	



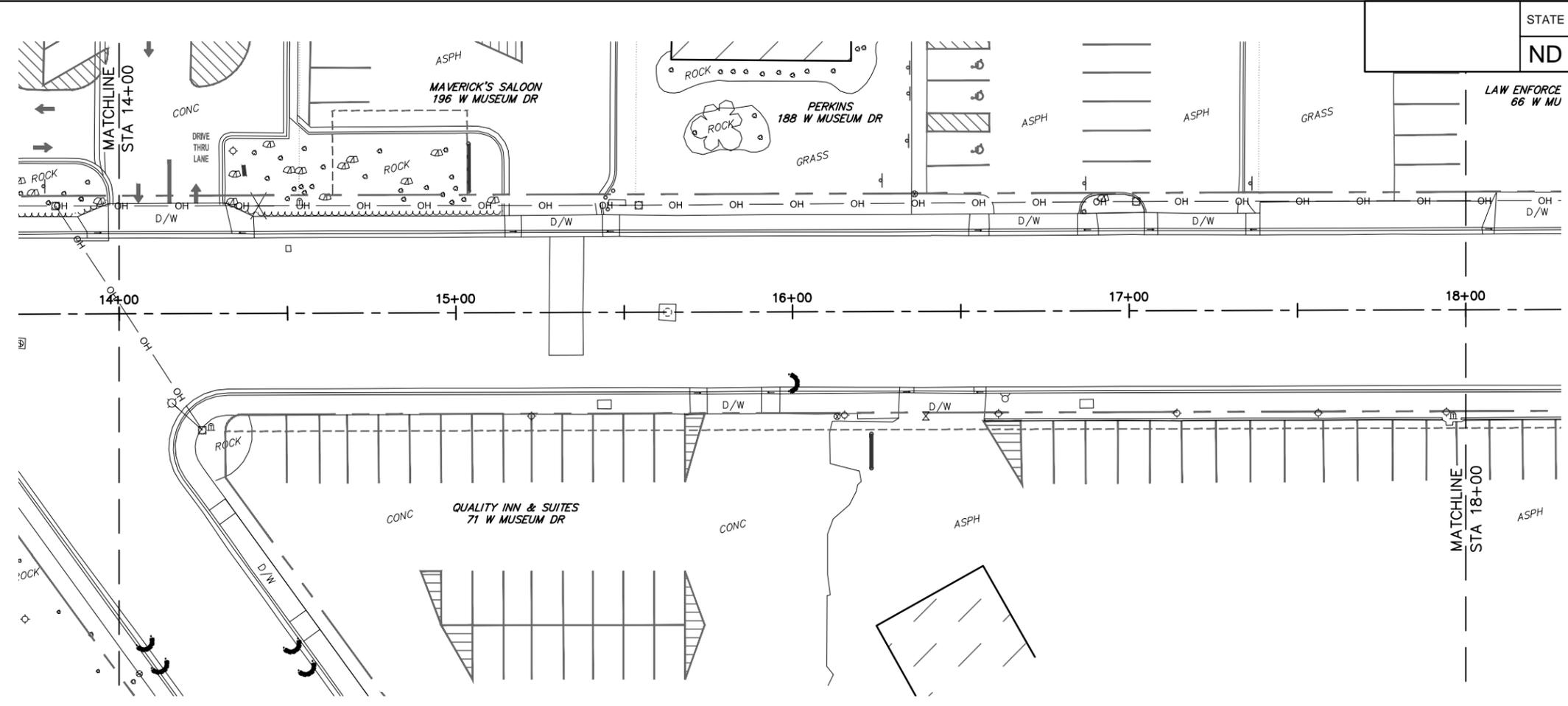
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**TEMPORARY EROSION CONTROL**  
 Phases I and II  
 Sta 10+00 to Sta 14+00

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

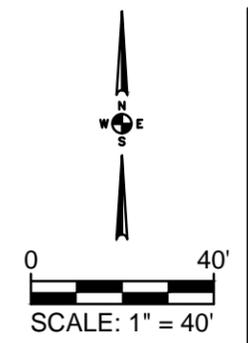
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	76	2

<b>WEIGHTED FIBER ROLLS</b>	
Sta 14+10 Rt	16 LF
Sta 14+55 Rt	16 LF
Sta 16+00 Rt	8 LF
	40 LF



**LEGEND**

- WEIGHTED FIBER ROLL
- INLET PROTECTION-SPECIAL

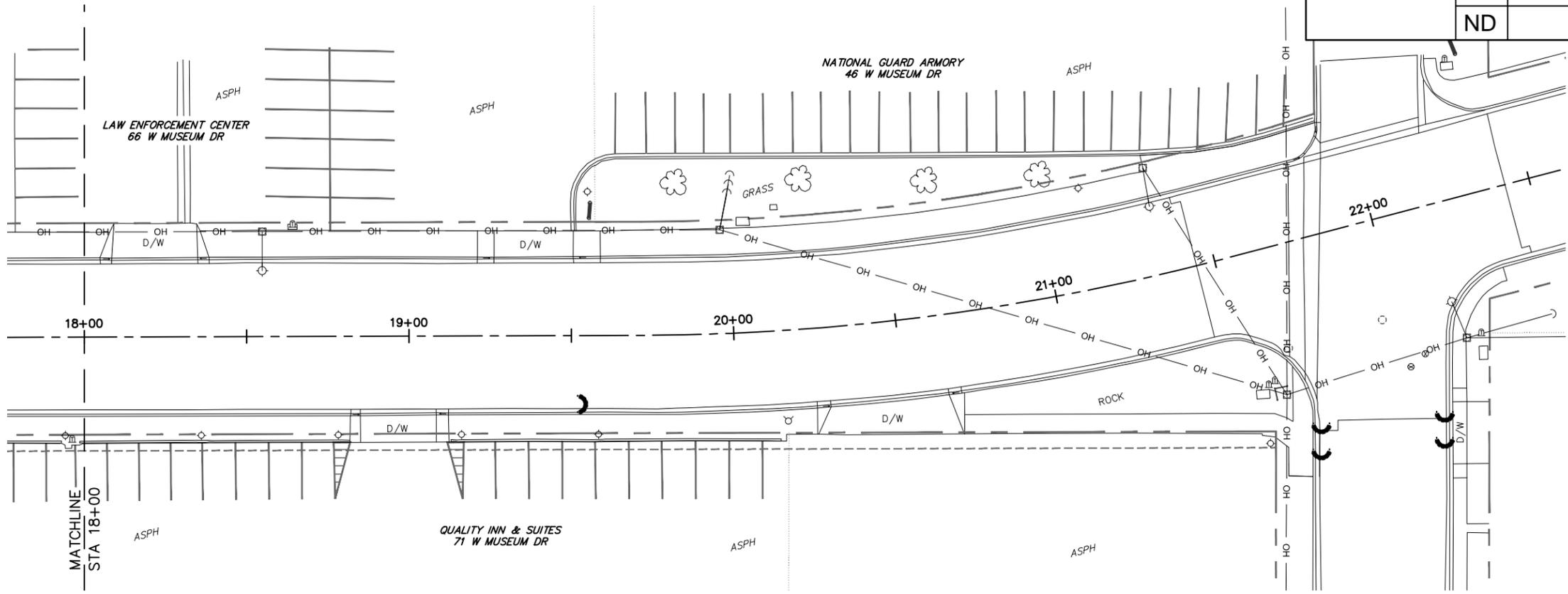


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**TEMPORARY EROSION CONTROL**  
 Phases I and II  
 Sta 14+00 to Sta 18+00

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

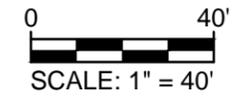
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	76	3



WEIGHTED FIBER ROLLS	
Sta 19+50 Rt	8 LF
Sta 21+68 Rt	16 LF
Sta 22+06 Rt	16 LF
	40 LF

**LEGEND**

- WEIGHTED FIBER ROLL
- INLET PROTECTION-SPECIAL



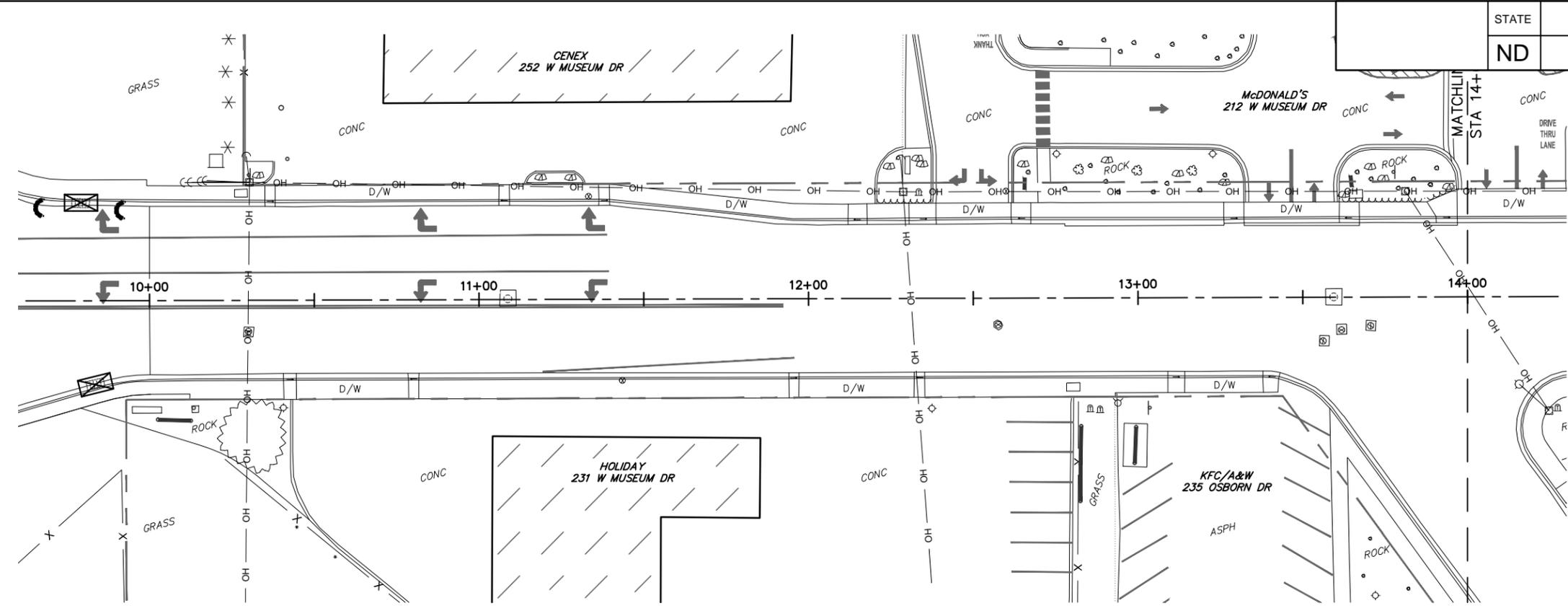
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**TEMPORARY EROSION CONTROL**  
 Phases I and II  
 Sta 18+00 to Sta 22+42

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

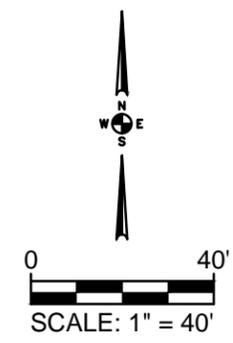
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	76	4

WEIGHTED FIBER ROLLS	
Sta 9+66 Lt	8 LF
Sta 9+90 Lt	8 LF
	16 LF



**LEGEND**

WEIGHTED FIBER ROLL	
INLET PROTECTION-SPECIAL	

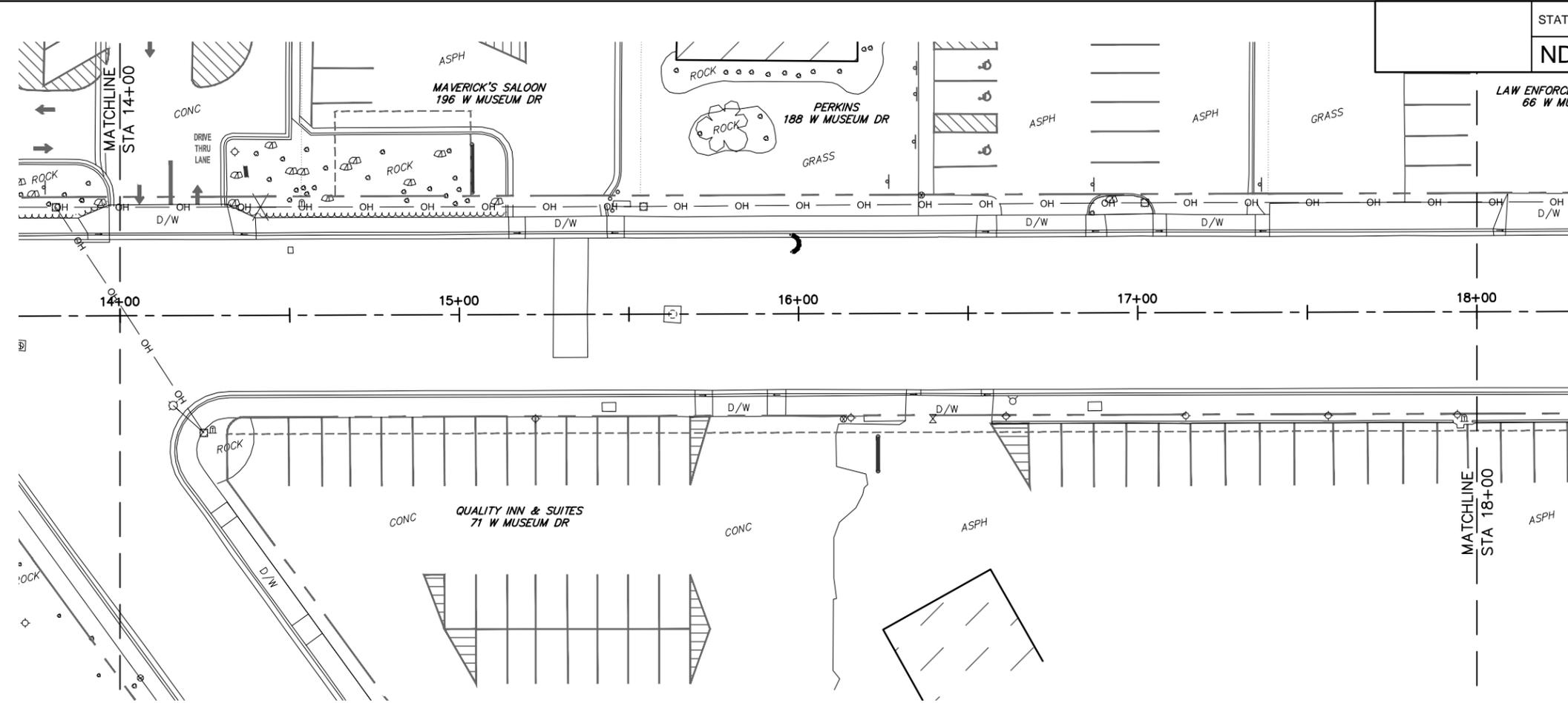


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**TEMPORARY EROSION CONTROL**  
 Phases III and IV  
 Sta 10+00 to Sta 14+00

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	76	5

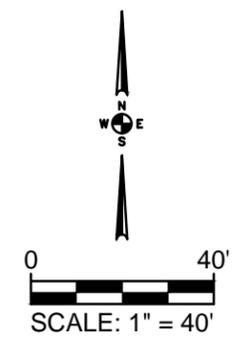


WEIGHTED FIBER ROLLS  
Sta 16+00 Lt

8 LF  
8 LF

**LEGEND**

- WEIGHTED FIBER ROLL
- INLET PROTECTION-SPECIAL



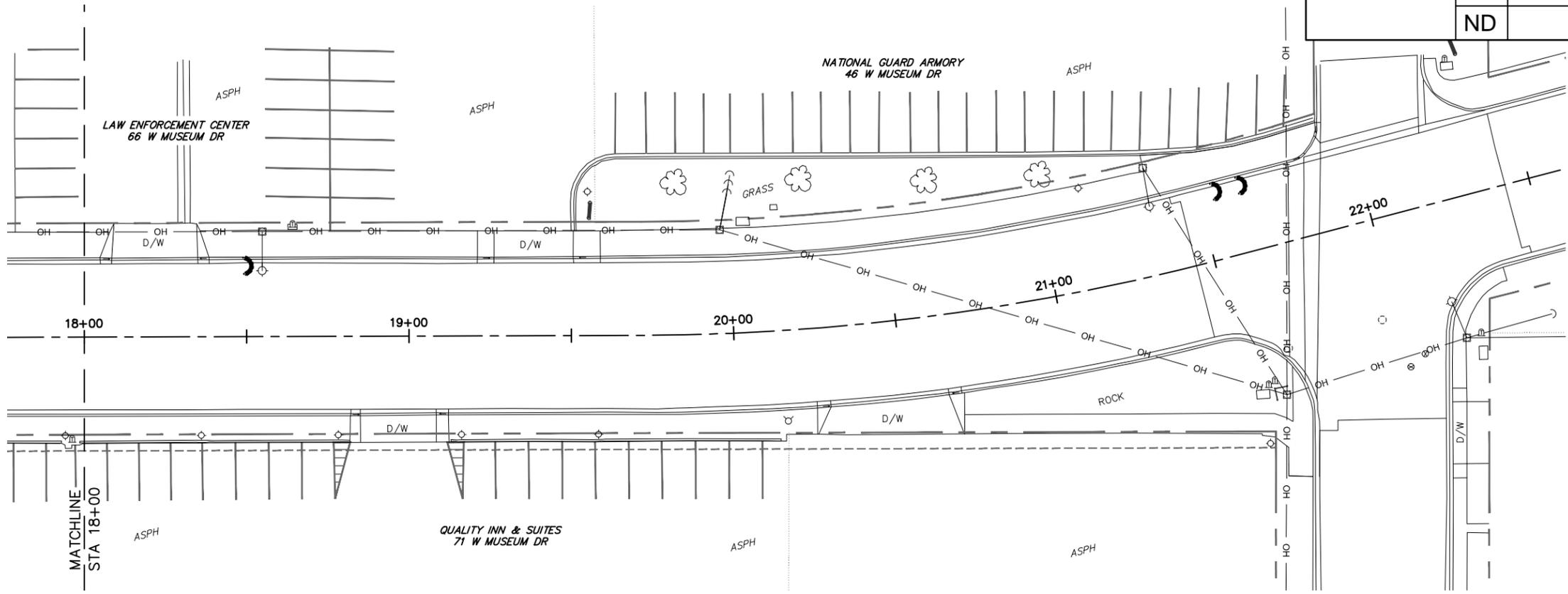
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TEMPORARY EROSION CONTROL  
Phases III and IV

Sta 14+00 to Sta 18+00

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

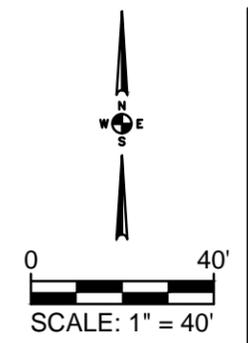
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	76	6



WEIGHTED FIBER ROLLS	
Sta 18+50 Lt	8 LF
Sta 21+55 Lt	8 LF
Sta 21+65 Lt	8 LF
	24 LF

**LEGEND**

- WEIGHTED FIBER ROLL
- INLET PROTECTION-SPECIAL



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TEMPORARY EROSION CONTROL  
 Phases III and IV  
 Sta 18+00 to Sta 22+42

MUSEUM DRIVE RECONSTRUCTION  
 ND HIGHWAY 22 TO SIMS STREET

**SURVEY COORDINATE DATA**

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	81	1

HORIZONTAL ALIGNMENT				CURVE DATA
Point	Station	Northing	Easting	Arc Definition
POT-1	9+00.00	111,816.912'	100,079.692'	Curve 1
PC-1	19+70.91	111,820.058'	101,150.592'	PI = 20+62.11, 5.84' RT
PI-1	20+62.11	111,820.327'	101,242.295'	Delta = 14°34'50.64" (LT)
PT-1	21+53.32	111,843.674'	101,330.976'	Da = 07°59'35.38"
POT-2	23+00.00	111,881.016'	101,472.823'	T = 91.703'
				L = 182.415'

SURVEY CONTROL POINTS					
Point	Northing	Easting	Elevation	Station	Offset
CP-1	111,770.360'	100,015.635'	2448.34'	N/A	N/A
CP-2	111,758.689'	100,550.777'	2450.02'	13+70.91	59.61' RT
CP-3	111,861.229'	100,938.922'	2448.49'	17+59.36	41.79 LT
CP-4	111,803.789'	101,312.391'	2445.61'	21+26.47	34.37' RT
CP-5	111,831.998'	101,422.354'	2446.56'	22+38.71	34.55' RT

**Notes:**

Horizontal Datum: All coordinates are assumed coordinates derived from a local coordinate system. All coordinates and measurements are ground distances, international foot definition.

Vertical datum: NAVD-88, GEOID03 (CONUS)

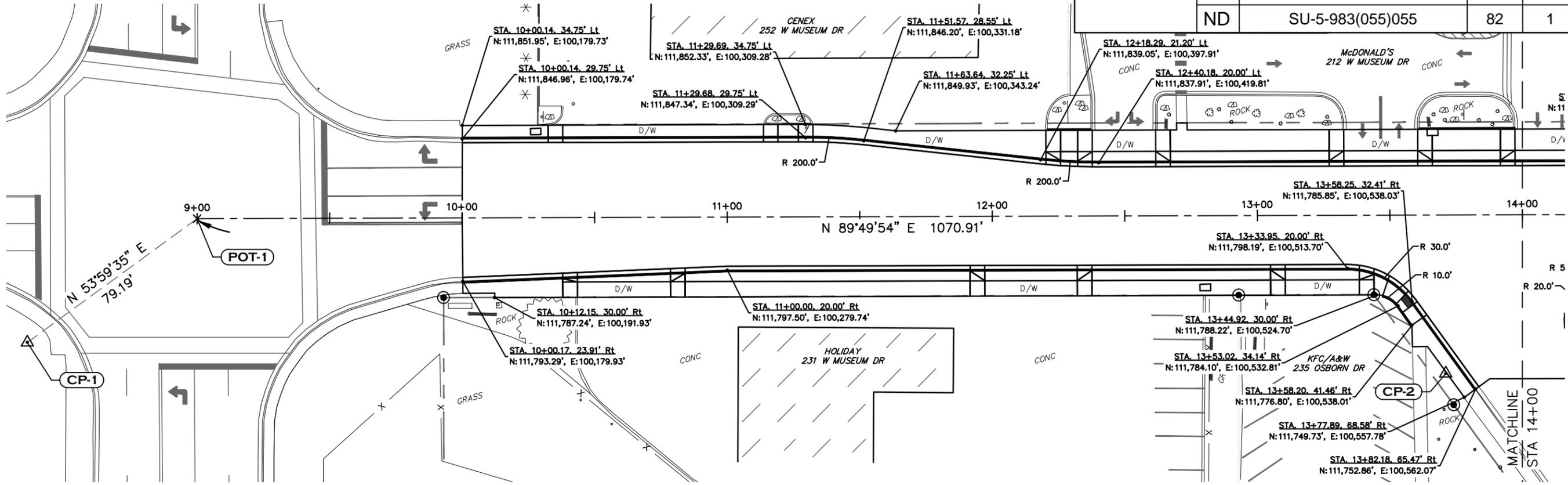
Date Survey Completed: September 23, 2015

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Survey Coordinate Data

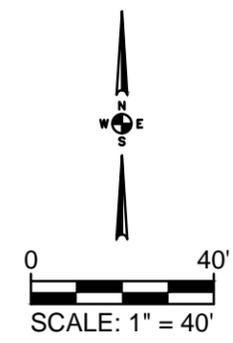
Museum Drive Reconstruction  
ND Highway 22 to Sims Street

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	82	1



**LEGEND**

- CONTROL POINT
- PROPERTY CORNER MONUMENT
- RIGHT-OF-WAY LINE
- TEMPORARY CONSTRUCTION EASEMENT
- PROPERTY LINE

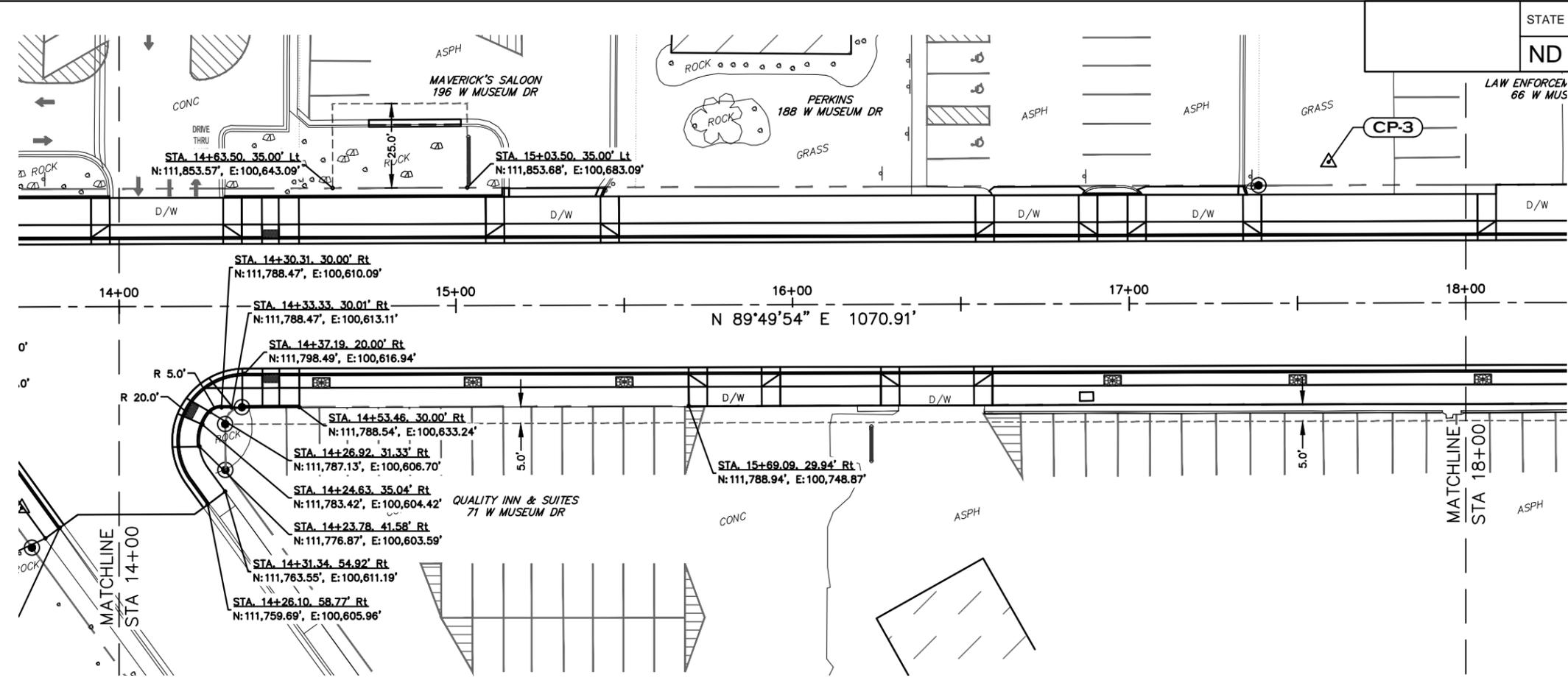


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**SURVEY DATA LAYOUT**  
 Sta 10+00 to Sta 14+00  
 Sta 14+00 to Sta 18+00

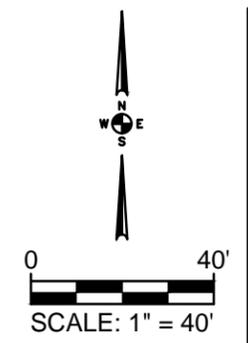
**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	82	2



**LEGEND**

- CONTROL POINT
- PROPERTY CORNER MONUMENT
- RIGHT-OF-WAY LINE
- TEMPORARY CONSTRUCTION EASEMENT
- PROPERTY LINE

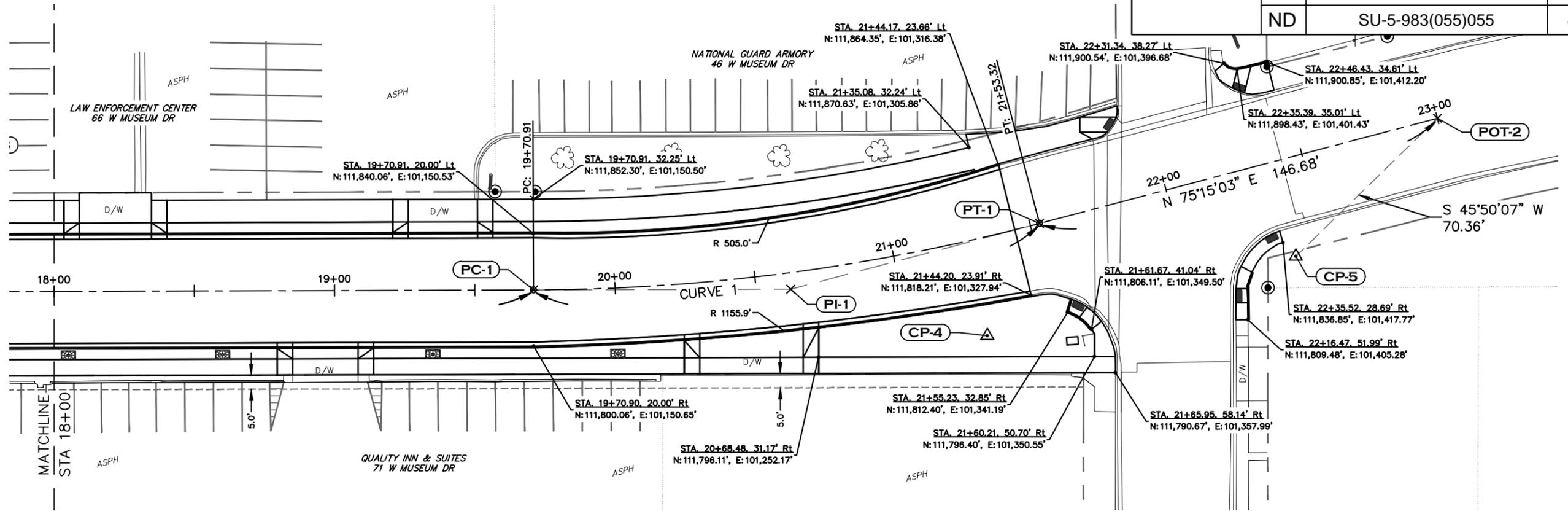


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**SURVEY DATA LAYOUT**  
 Sta 10+00 to Sta 14+00  
 Sta 14+00 to Sta 18+00

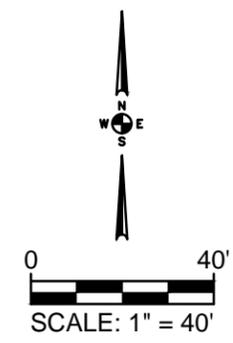
**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	82	3



**LEGEND**

- CONTROL POINT
- PROPERTY CORNER MONUMENT
- RIGHT-OF-WAY LINE
- TEMPORARY CONSTRUCTION EASEMENT
- PROPERTY LINE



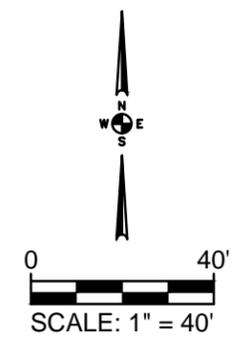
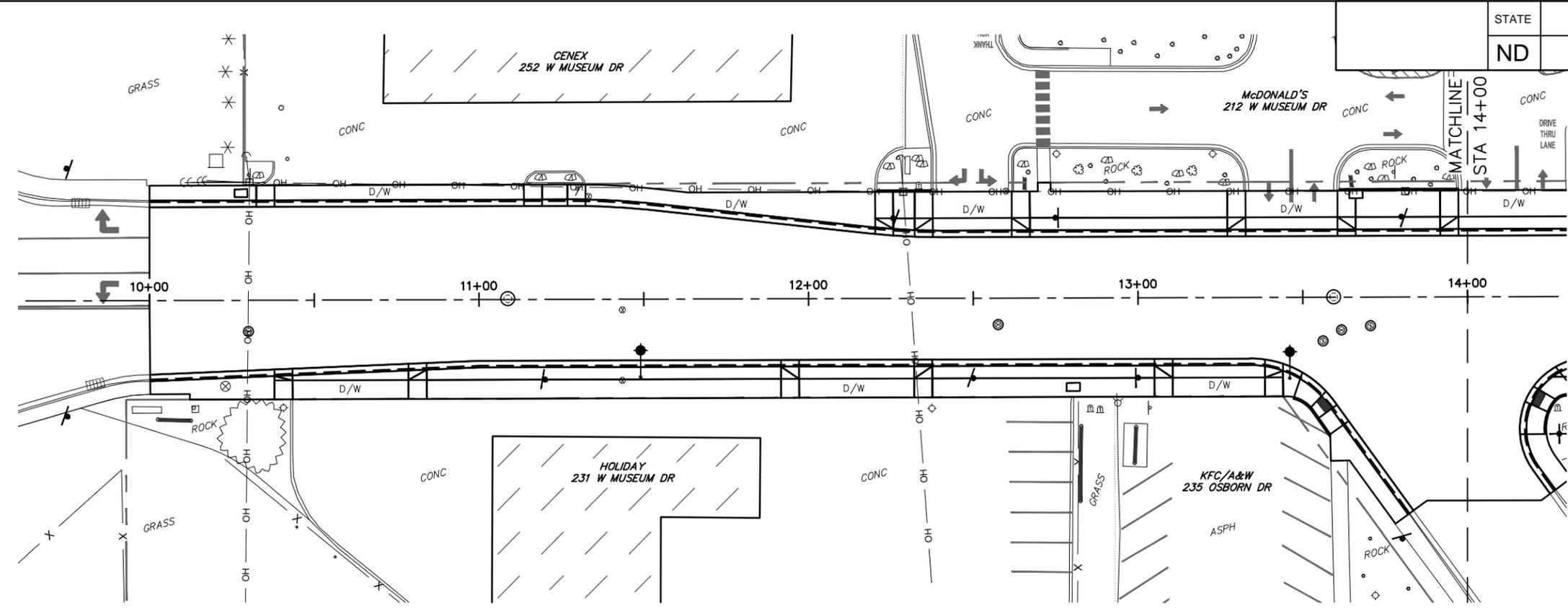
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**SURVEY DATA LAYOUT**  
Sta 18+00 to Sta 22+42

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	85	1

NO QUANTITIES THIS SHEET

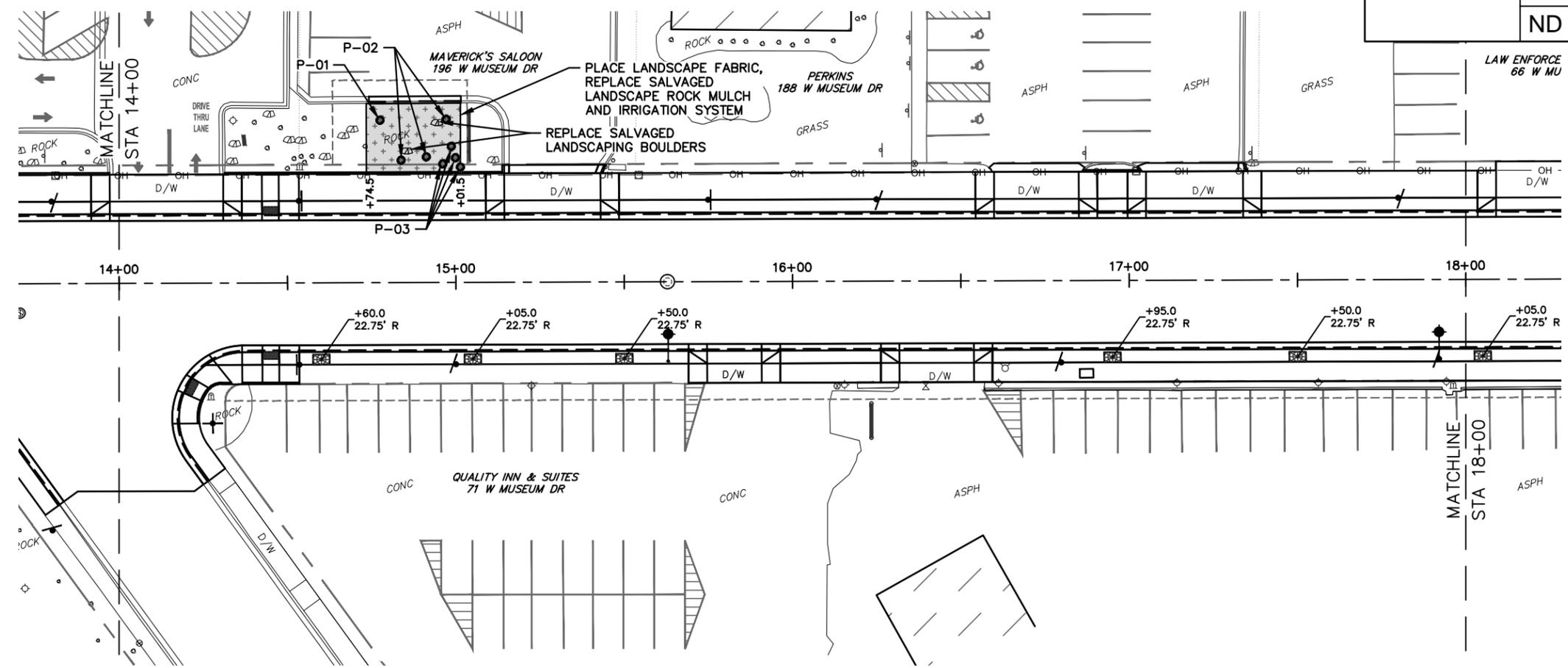


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LANDSCAPING  
Sta 10+00 to Sta 14+00

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	85	2

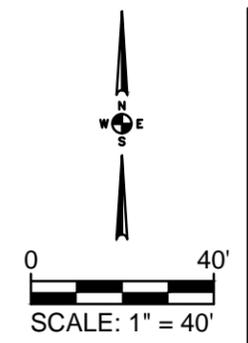


TREE GRATE		
Sta 14+60, 22.75 Rt		1 EA
Sta 15+05, 22.75 Rt		1 EA
Sta 15+50, 22.75 Rt		1 EA
Sta 16+95, 22.75 Rt		1 EA
Sta 17+50, 22.75 Rt		5 EA

Plant	Common Name	Botanical Name	Size	Quantity
P-01	Holmstrup	Thuja Occidentalis 'Holmstrup'	5 Gallon Container	1
P-02	Arctic Fire Dogwood	Cornus Stolonifera 'Farrow'	5 Gallon Container	3
P-03	Bellflower	Blue Clips (Campanula Carpatica 'Blue Clips')	4" Diameter	4

**LEGEND**

TREE GRATE	
LANDSCAPING APPURTENANCES	
PLANTING	

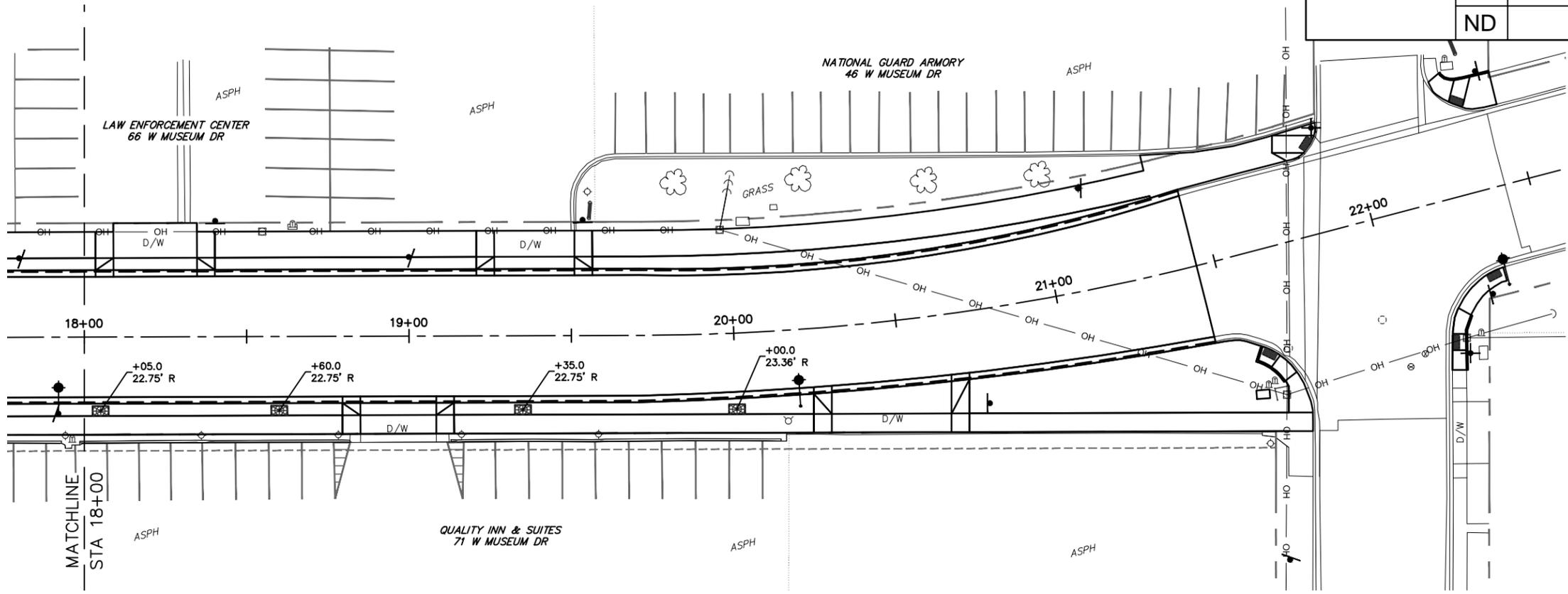


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**LANDSCAPING**  
Sta 14+00 to Sta 18+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	85	3

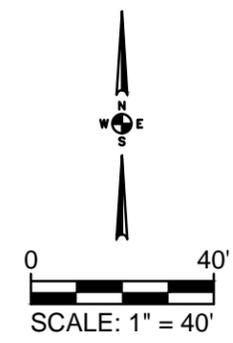


**TREE GRATES**

Sta 18+05, 22.75 Rt	1 EA
Sta 18+60, 22.75 Rt	1 EA
Sta 19+35, 22.75 Rt	1 EA
Sta 20+00, 23.36 Rt	1 EA
	4 EA

**LEGEND**

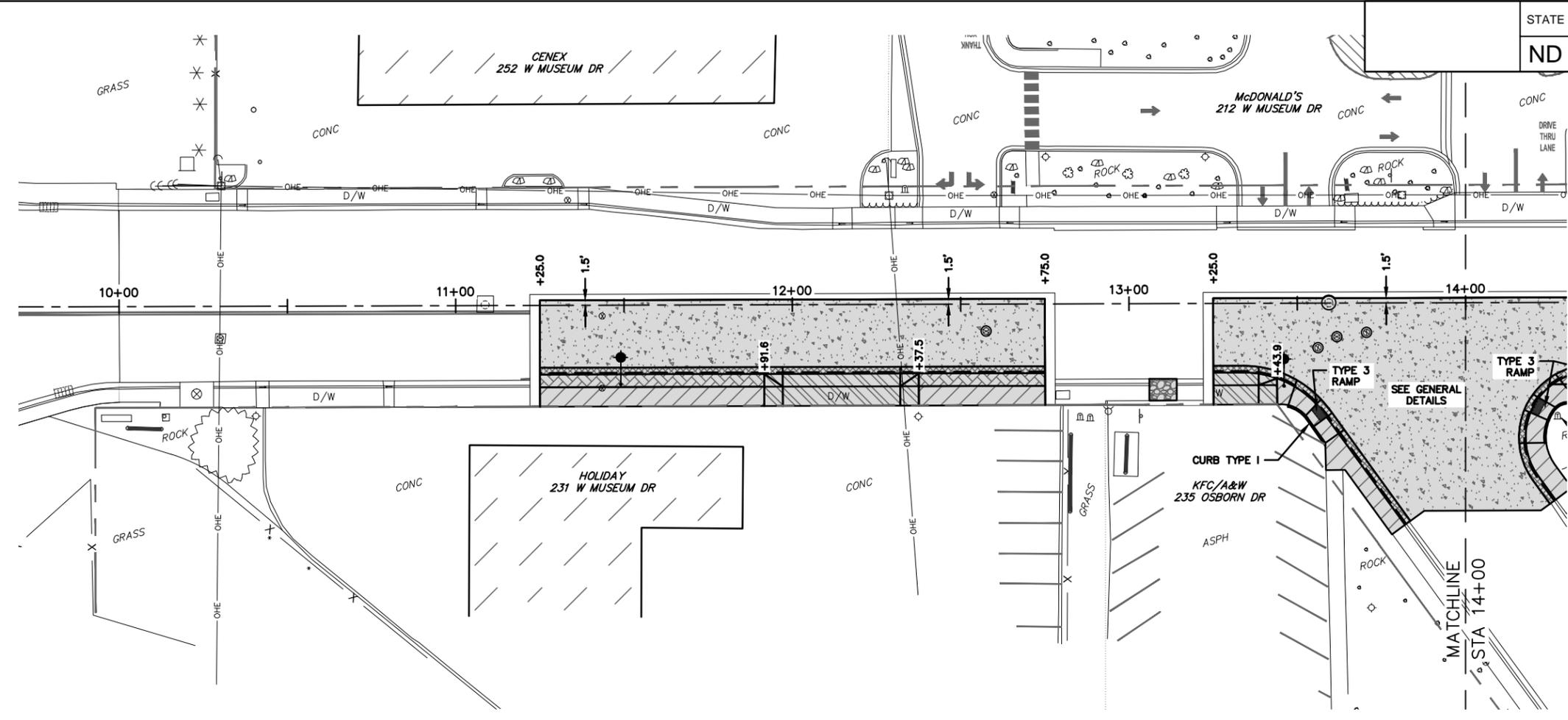
TREE GRATE



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**LANDSCAPING**  
Sta 18+00 to Sta 22+42

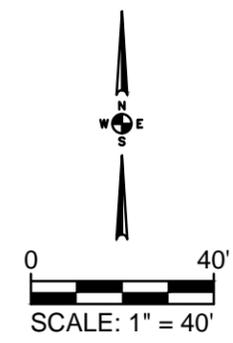
**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET



<b>AGGREGATE BASE COURSE CLASS 5</b>	
Sta 11+25 to 12+75 Rt	275.5 TON
Sta 13+25 to 14+00 Rt	236.2 TON
	511.7 TON
<b>TRAFFIC SERVICE AGGREGATE</b>	
Sta 10+00 to 11+25 Lt	2.4 TON
	2.4 TON
<b>8IN NON-REINF PCC PVMT CL AE-DOWELED</b>	
Sta 11+25 to 12+75 Rt	333 SY
Sta 13+25 to 14+00 Rt	332 SY
	665 SY
<b>ADJUST GATE VALVE BOX</b>	
Sta 12+58 Rt	1 EA
Sta 13+56 Rt	1 EA
Sta 13+62 Rt	1 EA
Sta 13+71 Rt	1 EA
	4 EA
<b>ADJUST MANHOLE</b>	
Sta 13+59 Rt	1 EA
	1 EA
<b>CURB &amp; GUTTER</b>	
Sta 11+25 to 12+75 Rt	150 LF
Sta 13+25 to 13+82 Rt	78 LF
	228 LF
<b>CURB-TYPE I</b>	
Sta 13+47 to 13+58 Rt	16 LF
	16 LF
<b>PIGMENTED IMPRINTED CONCRETE</b>	
Sta 11+25 to 11+92 Rt	28 SY
Sta 12+38 to 12+75 Rt	16 SY
	44 SY
<b>SIDEWALK CONCRETE</b>	
Sta 11+25 to 11+92 Rt	43 SY
Sta 12+38 to 12+75 Rt	24 SY
Sta 13+44 to 13+82 Rt	33 SY
	100 SY
<b>DRIVEWAY CONCRETE</b>	
Sta 11+92 to 12+38 Rt	49 SY
Sta 13+25 to 13+44 Rt	19 SY
	68 SY
<b>DETECTABLE WARNING PANELS</b>	
Sta 13+57 Rt	8 SF
	8 SF

**LEGEND**

8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	
CONCRETE DRIVEWAY	
CONCRETE SIDEWALK	
CURB & GUTTER	
PIGMENTED IMPRINTED CONCRETE	
TRAFFIC SERVICE AGGREGATE	

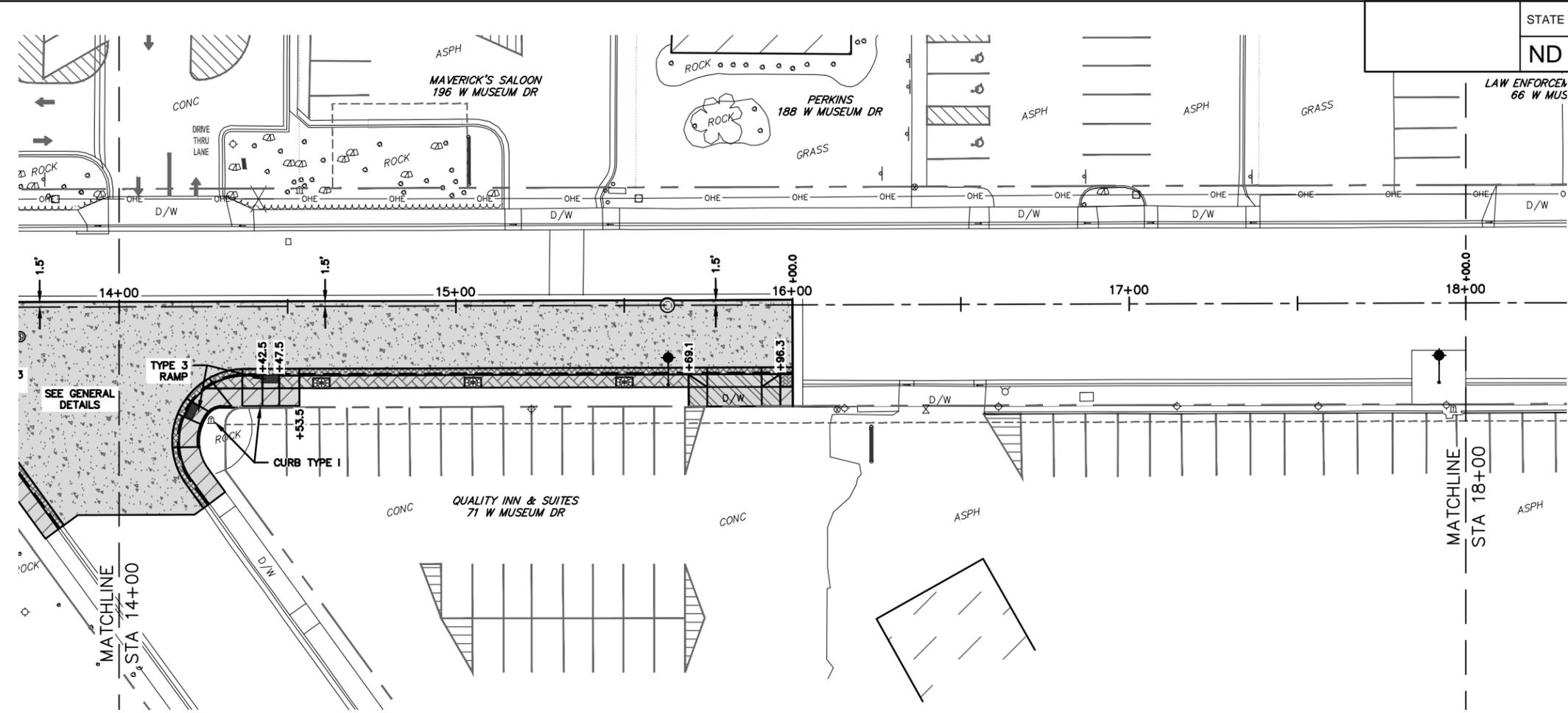


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**PAVING LAYOUT**  
Phase I  
Sta 10+00 to Sta 14+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

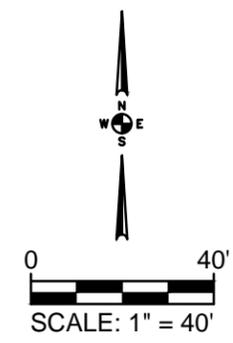
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	90	2



<b>AGGREGATE BASE COURSE CLASS 5</b>	
Sta 14+00 to 16+00 Rt	412.9 TON
Sta 14+00 to 16+00 Rt	412.9 TON
<b>8IN NON-REINF PCC PVMT CL AE-DOWELED</b>	
Sta 14+00 to 16+00 Rt	539 SY
Sta 14+00 to 16+00 Rt	539 SY
<b>ADJUST MANHOLE</b>	
Sta 15+63	1 EA
	1 EA
<b>CURB &amp; GUTTER</b>	
Sta 14+26 to 16+00 Rt	216 LF
	216 LF
<b>CURB-TYPE I</b>	
Sta 14+27 to 14+54 Rt	34 LF
	34 LF
<b>PIGMENTED IMPRINTED CONCRETE</b>	
Sta 14+26 to 14+43 Rt	5 SY
Sta 14+48 to 15+69 Rt	46 SY
Sta 15+96 to 16+00 Rt	2 SY
	53 SY
<b>SIDEWALK CONCRETE</b>	
Sta 14+27 to 14+54 Rt	40 SY
Sta 15+96 to 16+00 Rt	2 SY
	42 SY
<b>DRIVEWAY CONCRETE</b>	
Sta 15+69 to 15+96 Rt	29 SY
	29 SY
<b>DETECTABLE WARNING PANELS</b>	
Sta 14+21 Rt	8 SF
Sta 14+45 Rt	8 SF
	16 SF

**LEGEND**

8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	
CONCRETE DRIVEWAY	
CONCRETE SIDEWALK	
CURB & GUTTER	
PIGMENTED IMPRINTED CONCRETE	
TRAFFIC SERVICE AGGREGATE	

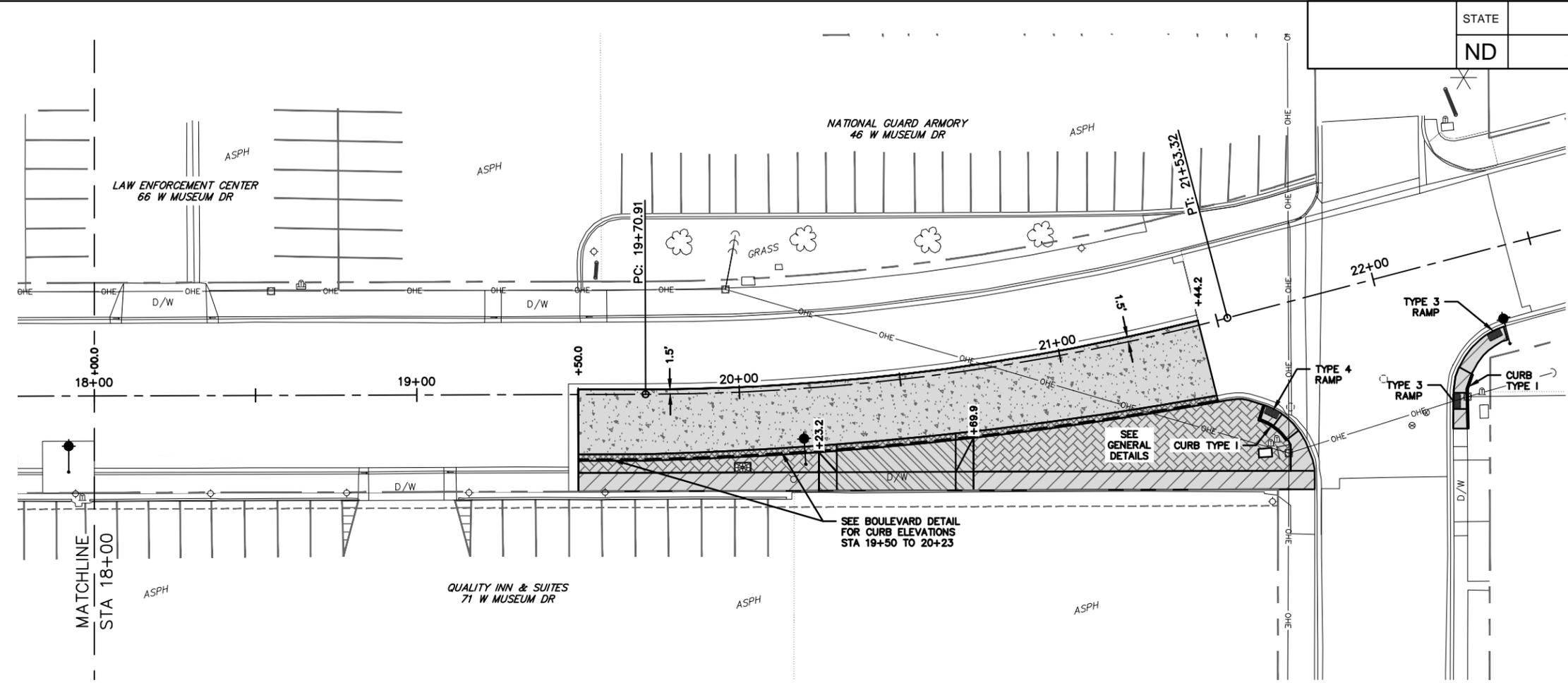


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**PAVING LAYOUT**  
Phase I  
Sta 14+00 to Sta 18+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	90	3



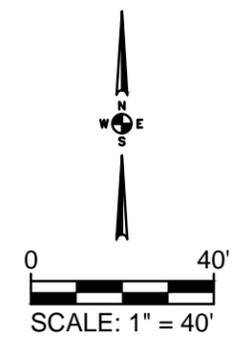
<b>AGGREGATE BASE COURSE CLASS 5</b>	
Sta 19+50 to 22+36 Rt	415.4 TON
	415.4 TON
<b>8IN NON-REINF PCC PVMT CL AE-DOWELED</b>	
Sta 19+50 to 21+44 Rt	449 SY
	449 SY
<b>CURB &amp; GUTTER</b>	
Sta 19+50 to 21+57 Rt	199 LF
	199 LF
<b>CURB-TYPE I</b>	
Sta 21+58 to 21+62 Rt	15 LF
Sta 22+17 to 22+22 Rt	17 LF
	32 LF
<b>PIGMENTED IMPRINTED CONCRETE</b>	
Sta 19+50 to 20+23 Rt	35 SY
Sta 20+70 to 21+60 Rt	174 SY
	209 SY
<b>SIDEWALK CONCRETE</b>	
Sta 19+50 to 20+23 Rt	48 SY
Sta 20+70 to 21+67 Rt	81 SY
Sta 22+12 to 22+36 Rt	17 SY
	146 SY
<b>DRIVEWAY CONCRETE</b>	
Sta 20+23 to 20+70 Rt	74 SY
	74 SY
<b>DETECTABLE WARNING PANELS</b>	
Sta 21+60 Rt	8 SF
Sta 22+15 Rt	8 SF
Sta 22+32 Rt	8 SF
	24 SF

SEE BOULEVARD DETAIL FOR CURB ELEVATIONS STA 19+50 TO 20+23

SEE GENERAL DETAILS

**LEGEND**

8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	
CONCRETE DRIVEWAY	
CONCRETE SIDEWALK	
CURB & GUTTER	
PIGMENTED IMPRINTED CONCRETE	
TRAFFIC SERVICE AGGREGATE	

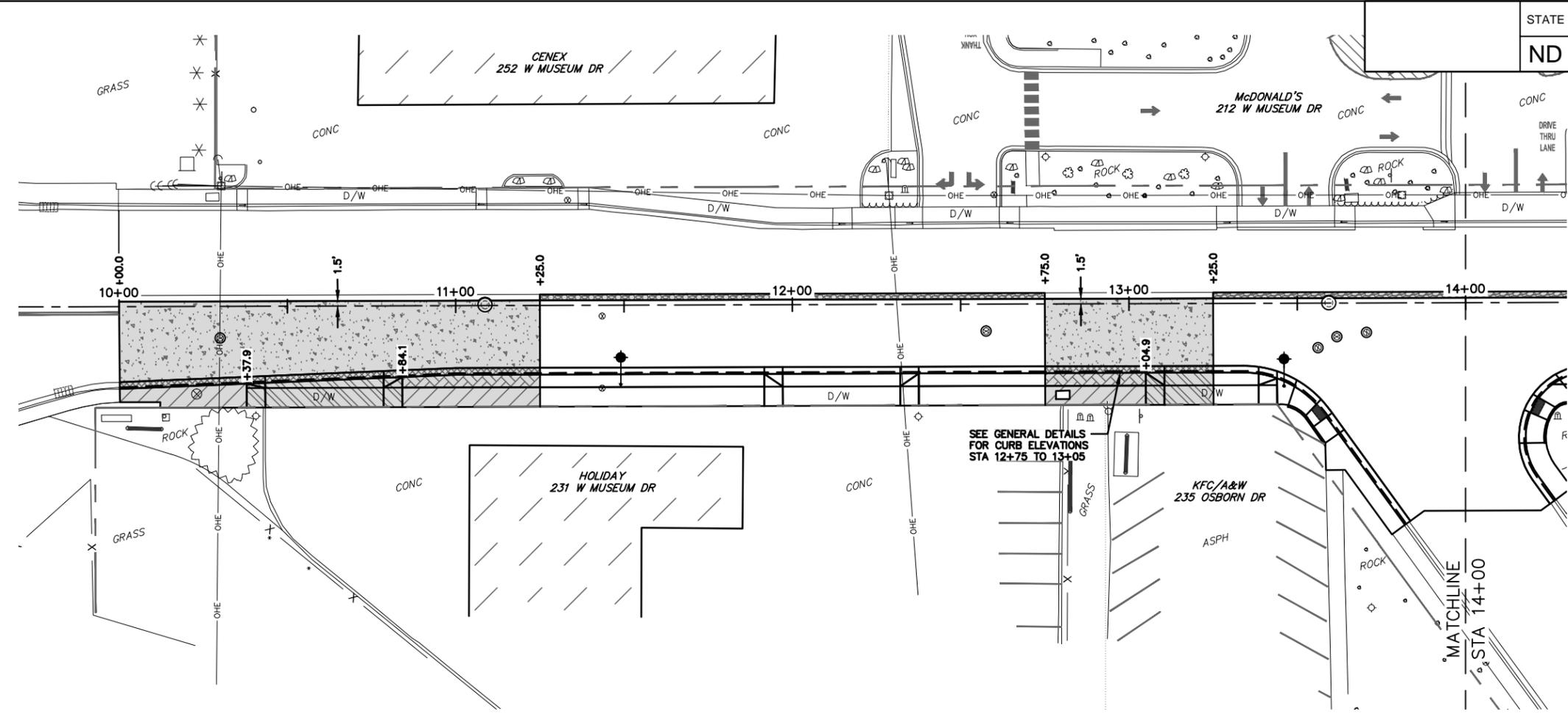


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**PAVING LAYOUT**  
Phase I  
Sta 18+00 to Sta 22+42

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	90	4



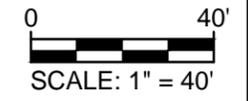
<b>AGGREGATE BASE COURSE CLASS 5</b>	
Sta 10+00 to 11+25 Rt	236.0 TON
Sta 12+75 to 13+25 Rt	91.3 TON
<b>TRAFFIC SERVICE AGGREGATE</b>	
Sta 11+25 to 12+75 Lt	12.2 TON
Sta 13+25 to 14+00 Lt	6.1 TON
<b>8IN NON-REINF PCC PVMT CL AE-DOWELED</b>	
Sta 10+00 to 11+25 Rt	297 SY
Sta 12+75 to 13+25 Rt	111 SY
<b>ADJUST GATE VALVE BOX</b>	
Sta 10+30 Rt	1 EA
<b>ADJUST MANHOLE</b>	
Sta 11+09	1 EA
<b>CURB &amp; GUTTER</b>	
Sta 10+00 to 11+25 Rt	125 LF
Sta 12+75 to 13+25 Rt	50 LF
<b>PIGMENTED IMPRINTED CONCRETE</b>	
Sta 10+84 to 11+25 Rt	17 SY
Sta 12+75 to 13+05 Rt	30 SY
<b>SIDEWALK CONCRETE</b>	
Sta 10+00 to 10+38 Rt	24 SY
Sta 10+84 to 11+25 Rt	26 SY
Sta 12+75 to 13+05 Rt	18 SY
<b>DRIVEWAY CONCRETE</b>	
Sta 10+38 to 10+84 Rt	41 SY
Sta 13+05 to 13+25 Rt	21 SY
<b>62 SY</b>	

SEE GENERAL DETAILS FOR CURB ELEVATIONS STA 12+75 TO 13+05

MATCHLINE STA 14+00

**LEGEND**

8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	
CONCRETE DRIVEWAY	
CONCRETE SIDEWALK	
CURB & GUTTER	
PIGMENTED IMPRINTED CONCRETE	
TRAFFIC SERVICE AGGREGATE	

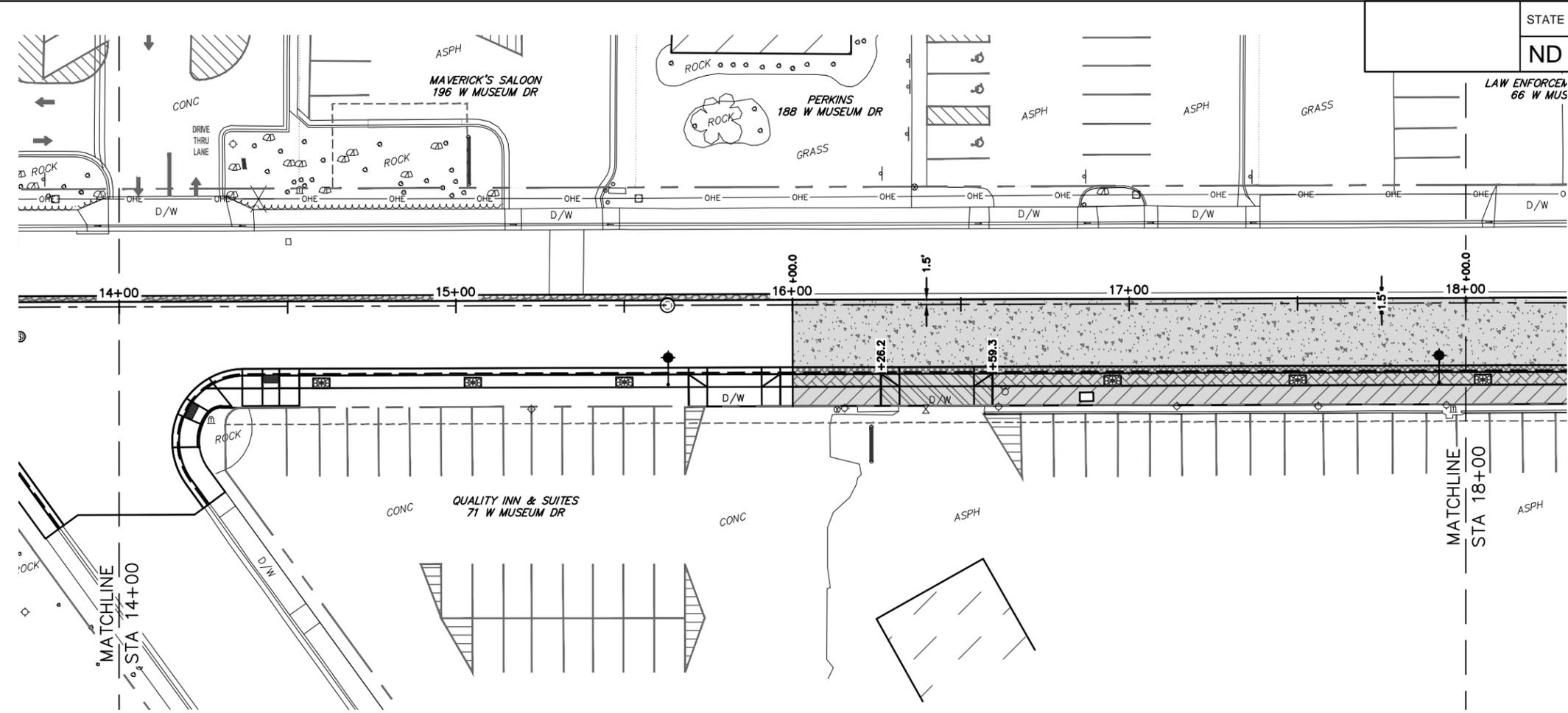


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**PAVING LAYOUT**  
Phase II  
Sta 10+00 to Sta 14+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

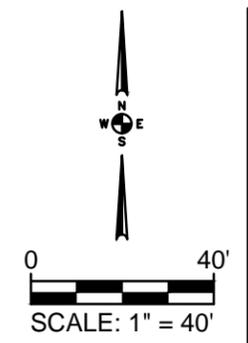
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	90	5



<b>AGGREGATE BASE COURSE CLASS 5</b>	
Sta 16+00 to 18+00 Rt	366.9 TON
	366.9 TON
<b>TRAFFIC SERVICE AGGREGATE</b>	
Sta 14+00 to 16+00 Lt	16.2 TON
	16.2 TON
<b>8IN NON-REINF PCC PVMT CL AE-DOWELED</b>	
Sta 16+00 to 18+00 Rt	444 SY
	444 SY
<b>CURB &amp; GUTTER</b>	
Sta 16+00 to 18+00 Rt	200 LF
	200 LF
<b>PIGMENTED IMPRINTED CONCRETE</b>	
Sta 16+00 to 16+26 Rt	11 SY
Sta 16+59 to 18+00 Rt	55 SY
	66 SY
<b>SIDEWALK CONCRETE</b>	
Sta 16+00 to 16+26 Rt	17 SY
Sta 16+59 to 18+00 Rt	89 SY
	106 SY
<b>DRIVEWAY CONCRETE</b>	
Sta 16+26 to 16+59 Rt	35 SY
	35 SY

**LEGEND**

8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	
CONCRETE DRIVEWAY	
CONCRETE SIDEWALK	
CURB & GUTTER	
PIGMENTED IMPRINTED CONCRETE	
TRAFFIC SERVICE AGGREGATE	

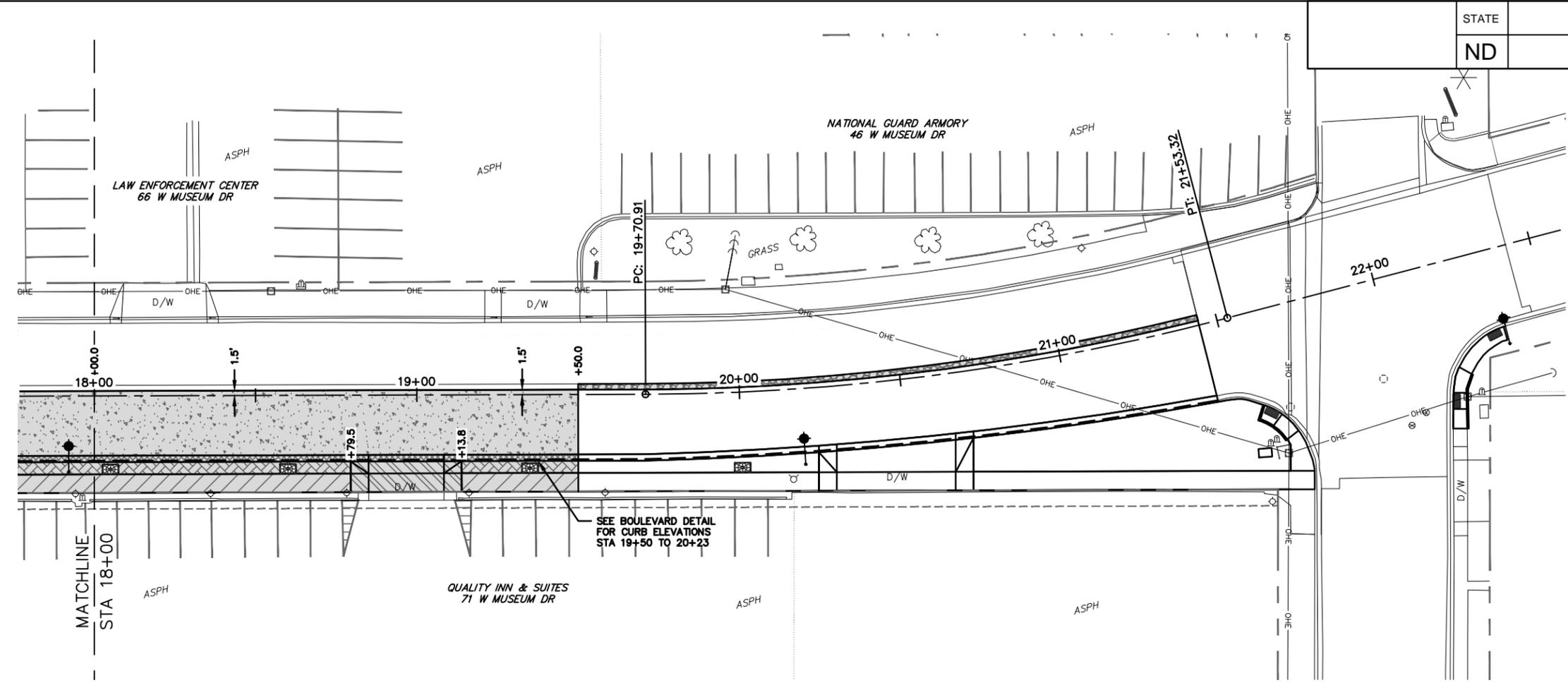


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**PAVING LAYOUT**  
Phase II  
Sta 14+00 to Sta 18+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

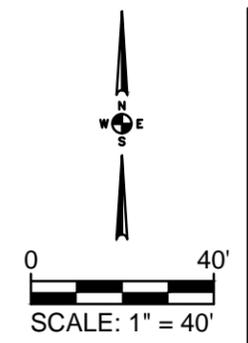
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	90	6



<u>AGGREGATE BASE COURSE CLASS 5</u>	
Sta 18+00 to 19+50 Rt	274.4 TON
	274.4 TON
<u>TRAFFIC SERVICE AGGREGATE</u>	
Sta 19+50 to 21+44 Lt	15.7 TON
	15.7 TON
<u>8IN NON-REINF PCC PVMT CL AE-DOWELED</u>	
Sta 18+00 to 19+50 Rt	333 SY
	333 SY
<u>CURB &amp; GUTTER</u>	
Sta 18+00 to 19+50 Rt	150 LF
	150 LF
<u>PIGMENTED IMPRINTED CONCRETE</u>	
Sta 18+00 to 18+80 Rt	30 SY
Sta 19+14 to 19+50 Rt	13 SY
	43 SY
<u>SIDEWALK CONCRETE</u>	
Sta 18+00 to 18+80 Rt	51 SY
Sta 19+14 to 19+50 Rt	23 SY
	74 SY
<u>DRIVEWAY CONCRETE</u>	
Sta 18+80 to 19+14 Rt	36 SY
	36 SY

**LEGEND**

8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	
CONCRETE DRIVEWAY	
CONCRETE SIDEWALK	
CURB & GUTTER	
PIGMENTED IMPRINTED CONCRETE	
TRAFFIC SERVICE AGGREGATE	

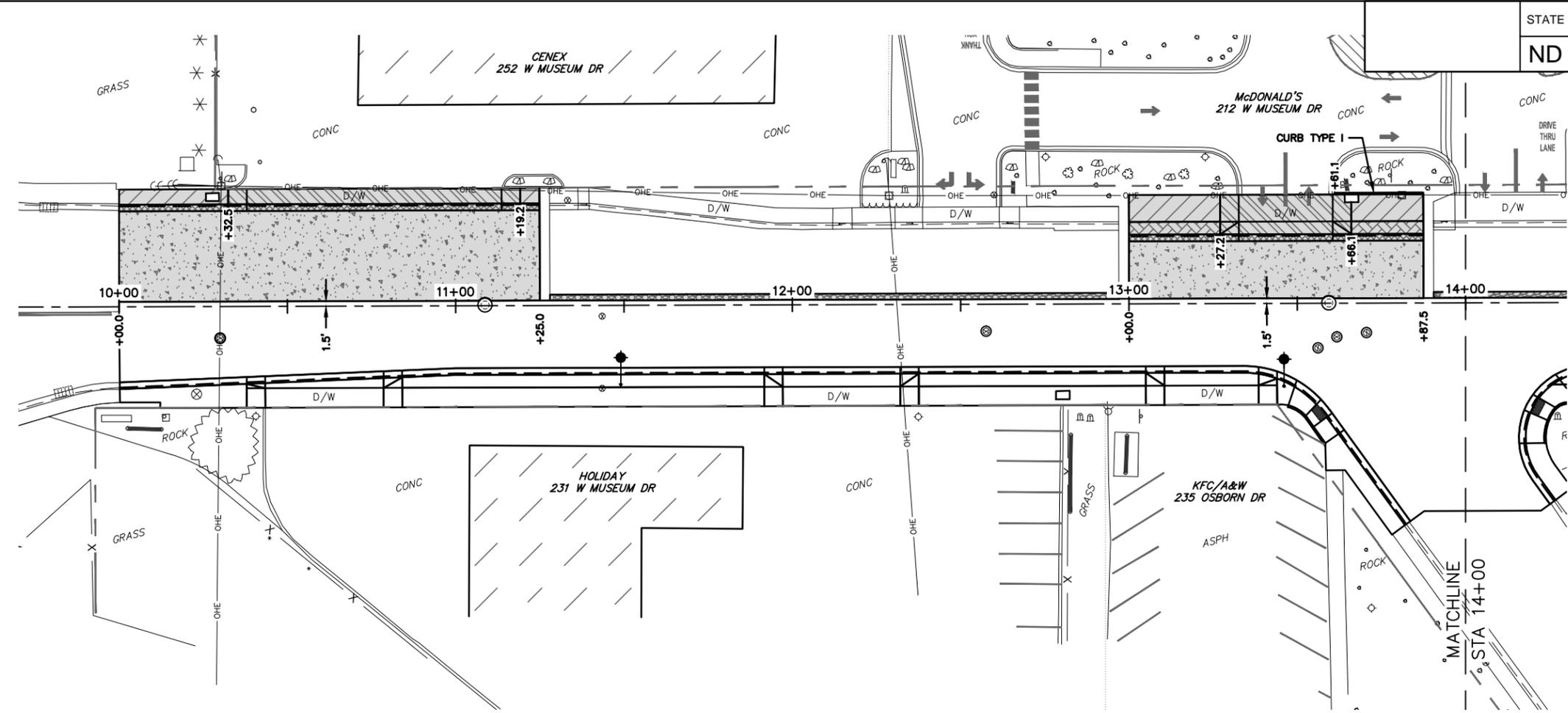


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**PAVING LAYOUT**  
Phase II  
Sta 18+00 to Sta 22+42

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

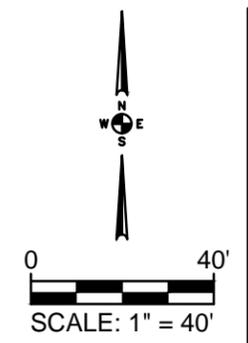
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	90	7



<b>AGGREGATE BASE COURSE CLASS 5</b>	
Sta 10+00 to 11+25 Lt	271.8 TON
Sta 11+25 to 13+88 Lt	146.2 TON
<b>TRAFFIC SERVICE AGGREGATE</b>	
Sta 11+28 to 12+97 Lt	13.8 TON
Sta 13+91 to 14+00 Lt	0.8 TON
<b>8IN NON-REINF PCC PVMT CL AE-DOWELED</b>	
Sta 10+00 to 11+25 Lt	372 SY
Sta 13+00 to 13+88 Lt	165 SY
<b>CURB &amp; GUTTER</b>	
Sta 10+00 to 11+25 Lt	125 LF
Sta 13+00 to 13+88 Lt	88 LF
<b>CURB-TYPE I</b>	
Sta 13+61 to 13+88 Lt	26 LF
<b>PIGMENTED IMPRINTED CONCRETE</b>	
Sta 13+00 to 13+27 Lt	11 SY
Sta 13+66 to 13+88 Lt	9 SY
<b>SIDEWALK CONCRETE</b>	
Sta 10+00 to 10+33 Lt	15 SY
Sta 11+19 to 11+25 Lt	3 SY
Sta 13+00 to 13+27 Lt	24 SY
Sta 13+66 to 13+88 Lt	19 SY
<b>DRIVEWAY CONCRETE</b>	
Sta 10+33 to 11+19 Lt	43 SY
Sta 13+27 to 13+66 Lt	50 SY
	93 SY

**LEGEND**

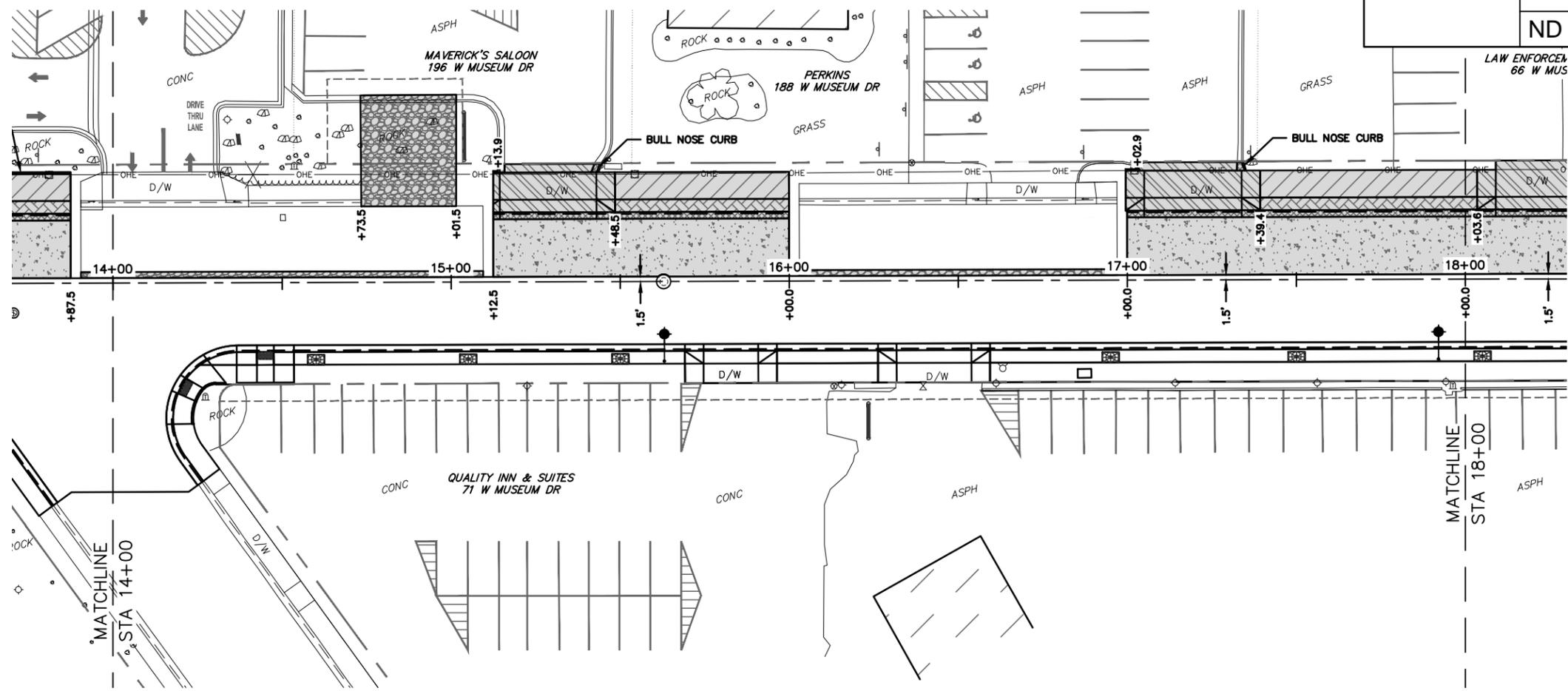
8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	
CONCRETE DRIVEWAY	
CONCRETE SIDEWALK	
CURB & GUTTER	
PIGMENTED IMPRINTED CONCRETE	
TRAFFIC SERVICE AGGREGATE	



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**PAVING LAYOUT**  
Phase III  
Sta 10+00 to Sta 14+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET



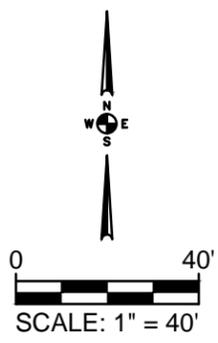
<b>AGGREGATE BASE COURSE CLASS 5</b>	
Sta 15+13 to 16+00 Lt	149.1 TON
Sta 17+00 to 18+00 Lt	170.1 TON
<b>TRAFFIC SERVICE AGGREGATE</b>	
Sta 14+00 to 15+10 Lt	9.7 TON
Sta 14+74 to 15+02 Lt	43.0 TON
Sta 16+03 to 16+97 Lt	7.7 TON
<b>8IN NON-REINF PCC PVMT CL AE-DOWELED</b>	
Sta 15+13 to 16+00 Lt	165 SY
Sta 17+00 to 18+00 Lt	189 SY
<b>CURB &amp; GUTTER</b>	
Sta 15+13 to 16+00 Lt	88 LF
Sta 15+14 Lt	3 LF
Sta 15+43 Lt	3 LF
Sta 17+00 to 18+00 Lt	100 LF
Sta 17+34 Lt	3 LF
<b>CURB-TYPE I</b>	
Sta 15+13 to 15+14 Lt	1 LF
Sta 17+00 to 17+03 Lt	4 LF
<b>PIGMENTED IMPRINTED CONCRETE</b>	
Sta 15+49 to 16+00 Lt	21 SY
Sta 17+39 to 18+00 Lt	25 SY
<b>SIDEWALK CONCRETE</b>	
Sta 15+49 to 16+00 Lt	46 SY
Sta 17+39 to 18+00 Lt	54 SY
<b>DRIVEWAY CONCRETE</b>	
Sta 15+13 to 15+49 Lt	54 SY
Sta 17+00 to 17+39 Lt	60 SY
<b>TOTAL</b>	
	114 SY

MATCHLINE  
STA 14+00

MATCHLINE  
STA 18+00

**LEGEND**

- 8IN NON-REINF CONCRETE PVMT CL AE-DOWELED
- CONCRETE DRIVEWAY
- CONCRETE SIDEWALK
- CURB & GUTTER
- PIGMENTED IMPRINTED CONCRETE
- TRAFFIC SERVICE AGGREGATE

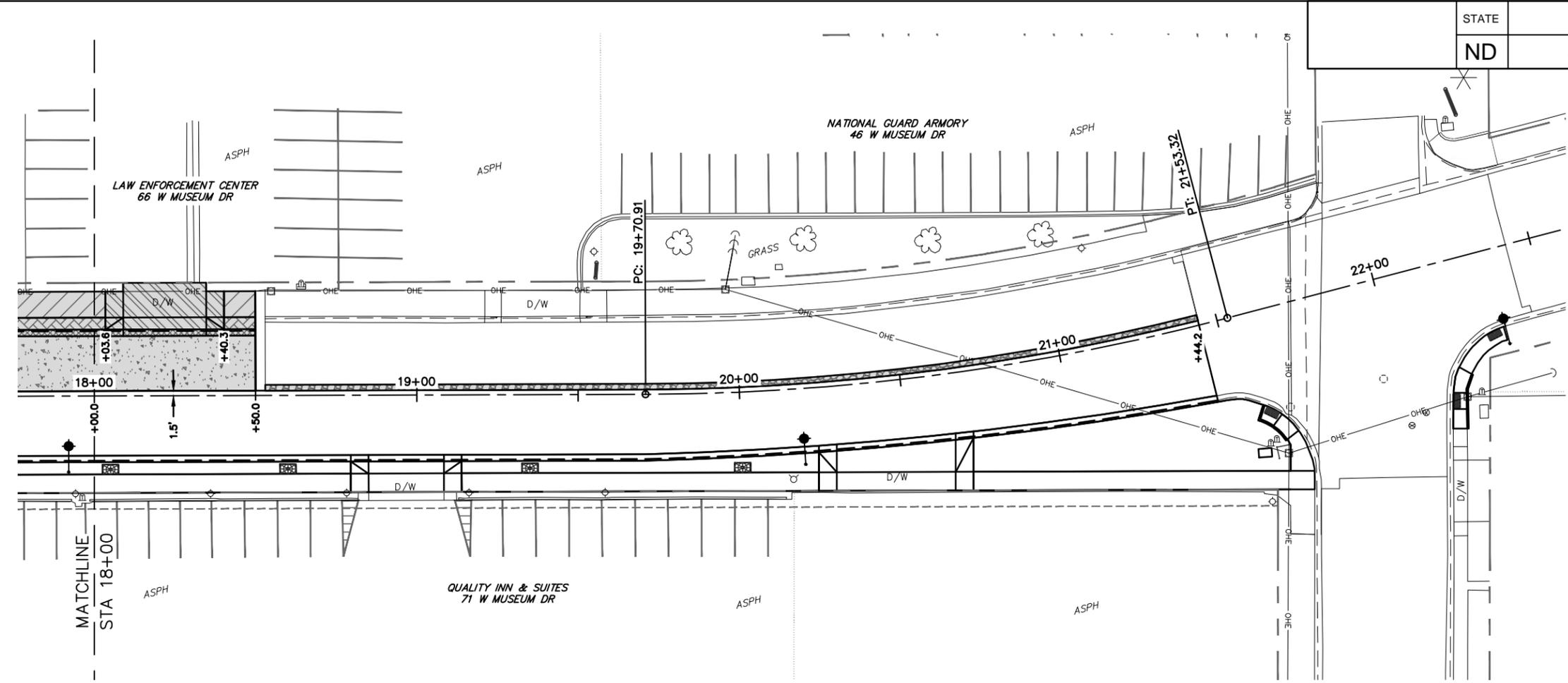


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**PAVING LAYOUT**  
Phase III  
Sta 14+00 to Sta 18+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

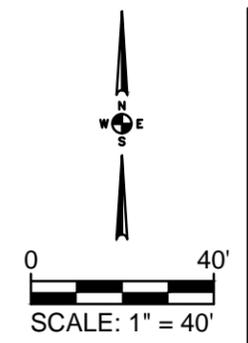
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	90	9



<u>AGGREGATE BASE COURSE CLASS 5</u>	
Sta 18+00 to 18+50 Lt	84.5 TON
<u>TRAFFIC SERVICE AGGREGATE</u>	
Sta 18+53 to 21+44 Lt	23.7 TON
<u>8IN NON-REINF PCC PVMT CL AE-DOWELED</u>	
Sta 18+00 to 18+50 Lt	94 SY
<u>CURB &amp; GUTTER</u>	
Sta 18+00 to 18+50 Lt	50 LF
<u>PIGMENTED IMPRINTED CONCRETE</u>	
Sta 18+00 to 18+04 Lt	2 SY
Sta 18+40 to 18+50 Lt	4 SY
<u>SIDEWALK CONCRETE</u>	
Sta 18+00 to 18+04 Lt	3 SY
Sta 18+40 to 18+50 Lt	9 SY
<u>DRIVEWAY CONCRETE</u>	
Sta 18+04 to 18+40 Lt	56 SY
	56 SY

**LEGEND**

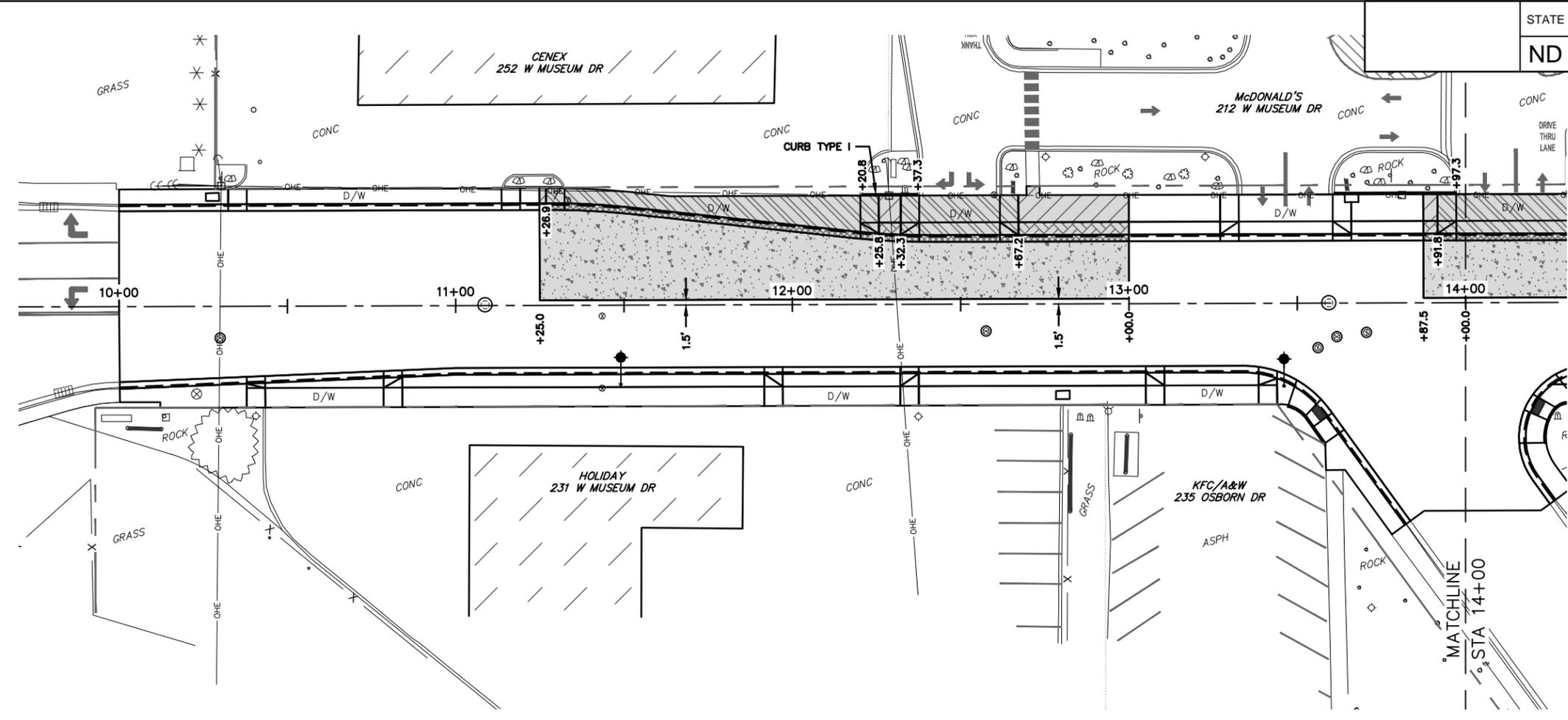
8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	
CONCRETE DRIVEWAY	
CONCRETE SIDEWALK	
CURB & GUTTER	
PIGMENTED IMPRINTED CONCRETE	
TRAFFIC SERVICE AGGREGATE	



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**PAVING LAYOUT**  
Phase III  
Sta 18+00 to Sta 22+42

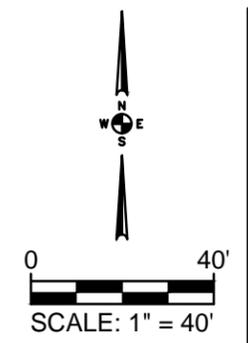
**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET



<b>AGGREGATE BASE COURSE CLASS 5</b>	
Sta 11+25 to 13+00 Lt	320.7 TON
Sta 13+88 to 14+00 Lt	21.1 TON
	341.8 TON
<b>8IN NON-REINF PCC PVMT CL AE-DOWELED</b>	
Sta 11+25 to 13+00 Lt	396 SY
Sta 13+88 to 14+00 Lt	24 SY
	420 SY
<b>CURB &amp; GUTTER</b>	
Sta 11+25 to 13+00 Lt	176 LF
Sta 13+88 to 14+00 Lt	13 LF
	189 LF
<b>CURB-TYPE I</b>	
Sta 12+21 to 12+37 Lt	17 LF
Sta 13+88 to 13+97 Lt	10 LF
	27 LF
<b>PIGMENTED IMPRINTED CONCRETE</b>	
Sta 12+26 to 12+32 Lt	3 SY
Sta 12+67 to 13+00 Lt	14 SY
Sta 13+88 to 13+92 Lt	2 SY
	19 SY
<b>SIDEWALK CONCRETE</b>	
Sta 11+25 to 11+27 Lt	1 SY
Sta 12+26 to 12+32 Lt	6 SY
Sta 12+67 to 13+00 Lt	30 SY
Sta 13+88 to 13+92 Lt	4 SY
	41 SY
<b>DRIVEWAY CONCRETE</b>	
Sta 11+27 to 12+26 Lt	73 SY
Sta 12+32 to 12+67 Lt	46 SY
Sta 13+92 to 14+00 Lt	11 SY
	130 SY

**LEGEND**

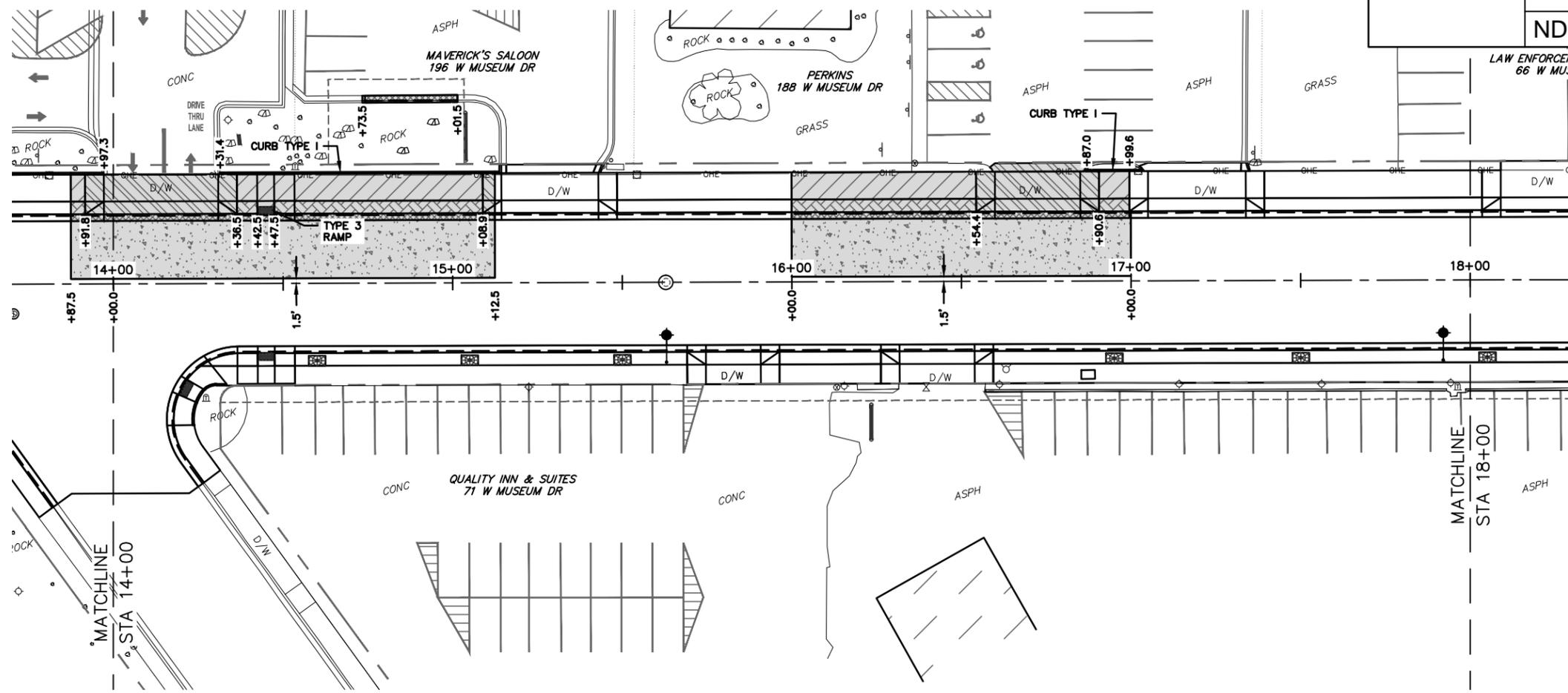
8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	
CONCRETE DRIVEWAY	
CONCRETE SIDEWALK	
CURB & GUTTER	
PIGMENTED IMPRINTED CONCRETE	
TRAFFIC SERVICE AGGREGATE	



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**PAVING LAYOUT**  
Phase IV  
Sta 10+00 to Sta 14+00

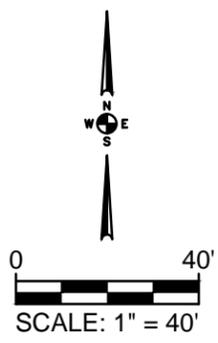
**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET



<b>AGGREGATE BASE COURSE CLASS 5</b>	
Sta 14+00 to 15+13 Lt	189.1 TON
Sta 16+00 to 17+00 Lt	171.6 TON
	360.7 TON
<b>8IN NON-REINF PCC PVMT CL AE-DOWELED</b>	
Sta 14+00 to 15+13 Lt	212 SY
Sta 16+00 to 17+00 Lt	189 SY
	401 SY
<b>CURB &amp; GUTTER</b>	
Sta 14+00 to 15+13 Lt	113 LF
Sta 14+74 to 15+02 Lt	28 LF
Sta 16+00 to 17+00 Lt	100 LF
	241 LF
<b>CURB-TYPE I</b>	
Sta 14+31 to 15+13 Lt	81 LF
Sta 16+87 to 17+00 Lt	13 LF
	94 LF
<b>PIGMENTED IMPRINTED CONCRETE</b>	
Sta 14+37 to 14+43 Lt	3 SY
Sta 14+48 to 15+09 Lt	26 SY
Sta 16+00 to 16+54 Lt	23 SY
Sta 16+91 to 17+00 Lt	4 SY
	56 SY
<b>SIDEWALK CONCRETE</b>	
Sta 14+37 to 15+09 Lt	67 SY
Sta 16+00 to 16+54 Lt	48 SY
Sta 16+91 to 17+00 Lt	8 SY
	123 SY
<b>DRIVEWAY CONCRETE</b>	
Sta 14+00 to 14+37 Lt	49 SY
Sta 15+09 to 15+13 Lt	5 SY
Sta 16+54 to 16+91 Lt	55 SY
	109 SY
<b>DETECTABLE WARNING PANELS</b>	
Sta 14+45 Lt	8 SF
	8 SF

**LEGEND**

- 8IN NON-REINF CONCRETE PVMT CL AE-DOWELED
- CONCRETE DRIVEWAY
- CONCRETE SIDEWALK
- CURB & GUTTER
- PIGMENTED IMPRINTED CONCRETE
- TRAFFIC SERVICE AGGREGATE

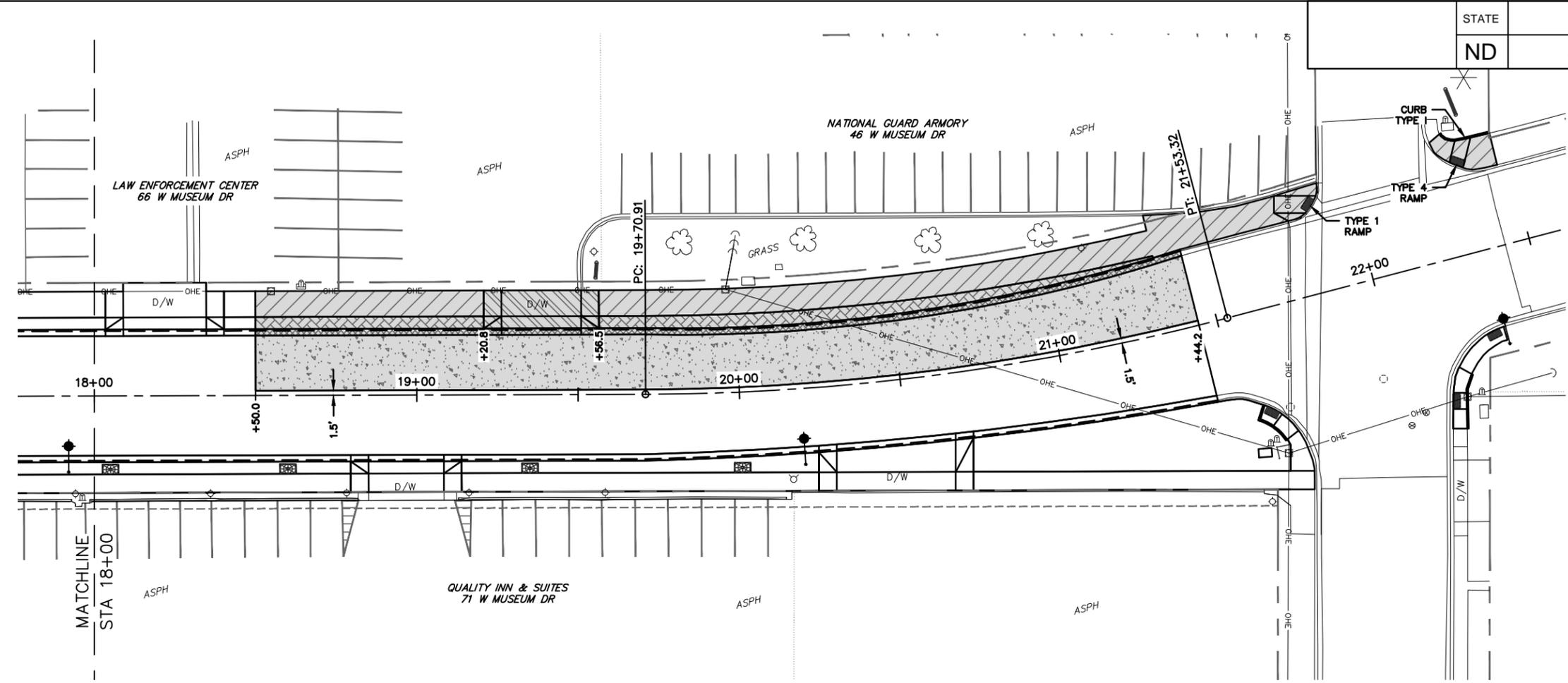


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**PAVING LAYOUT  
Phase IV  
Sta 14+00 to Sta 18+00**

**MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET**

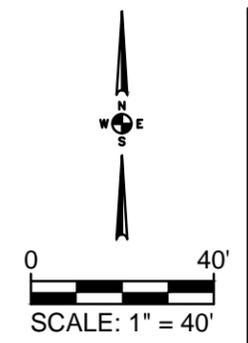
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	90	12



<b>AGGREGATE BASE COURSE CLASS 5</b>	
Sta 18+50 to 22+43 Lt	507.6 TON
507.6 TON	
<b>8IN NON-REINF PCC PVMT CL AE-DOWELED</b>	
Sta 18+50 to 21+44 Lt	561 SY
561 SY	
<b>CURB &amp; GUTTER</b>	
Sta 18+50 to 21+44 Lt	289 LF
289 LF	
<b>CURB-TYPE I</b>	
Sta 22+31 to 22+46 Lt	16 LF
16 LF	
<b>PIGMENTED IMPRINTED CONCRETE</b>	
Sta 18+50 to 19+21 Lt	30 SY
Sta 19+57 to 21+35 Lt	64 SY
94 SY	
<b>SIDEWALK CONCRETE</b>	
Sta 18+50 to 19+21 Lt	63 SY
Sta 19+57 to 21+91 Lt	208 SY
Sta 22+28 to 22+46 Lt	18 SY
289 SY	
<b>DRIVEWAY CONCRETE</b>	
Sta 19+21 to 19+57 Lt	47 SY
47 SY	
<b>DETECTABLE WARNING PANELS</b>	
Sta 21+87 Lt	8 SF
Sta 22+34 Lt	8 SF
16 SF	

**LEGEND**

8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	
CONCRETE DRIVEWAY	
CONCRETE SIDEWALK	
CURB & GUTTER	
PIGMENTED IMPRINTED CONCRETE	
TRAFFIC SERVICE AGGREGATE	



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**PAVING LAYOUT**  
Phase IV  
Sta 18+00 to Sta 22+42

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED				TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
			1	2	3	4			
D3-36	36"x6"	STREET NAME SIGN (Sign and installation only)						6	
G20-1-60	60"x24"	ROAD WORK NEXT ___ MILES						34	
G20-1b-60	60"x24"	WORK IN PROGRESS/ NO WORK IN PROGRESS (Sign and installation only)						26	
<b>G20-2-48</b>	<b>48"x24"</b>	<b>END ROAD WORK</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>		<b>19</b>	<b>76</b>
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)						18	
G20-10-108	108"x48"	CONTRACTOR SIGN						64	
<b>G20-50a-72</b>	<b>72"x36"</b>	<b>ROAD WORK NEXT ___ MILES RT &amp; LT ARROWS</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>		<b>37</b>	<b>148</b>
G20-52a-72	72"x24"	ROAD WORK NEXT ___ MILES RT or LT ARROW						30	
G20-55-96	96"x48"	SPEED LIMIT ENFORCED - MINIMUM FEE \$80 WHEN WORKERS PRESENT						59	
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)						10	
M1-4-24	24"x24"	U.S. ROUTE MARKER (Post and installation only)						10	
M1-5-24	24"x24"	STATE ROUTE MARKER (Post and installation only)						10	
M3-1-24	24"x12"	NORTH (Mounted on route marker post)						7	
M3-2-24	24"x12"	EAST (Mounted on route marker post)						7	
M3-3-24	24"x12"	SOUTH (Mounted on route marker post)						7	
M3-4-24	24"x12"	WEST (Mounted on route marker post)						7	
M4-8-24	24"x12"	DETOUR (Mounted on route marker post)						7	
M4-9-30	30"x24"	DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT						15	
M4-10-48	48"x18"	DETOUR ARROW RIGHT or LEFT						23	
M5-1-21	21"x15"	ARROW AHD AND RT or LT (Mounted on route marker post)						7	
M5-2-21	21"x15"	ARROW AHD UP & RT or LT (Mounted on route marker post)						7	
M6-1-21	21"x15"	ARROW RT or LT (Mounted on route marker post)						7	
M6-2-21	21"x15"	ARROW UP & RT or LT (Mounted on route marker post)						7	
M6-3-21	21"x15"	ARROW AHD (Mounted on route marker post)						7	
<b>R1-1-48</b>	<b>48"x48"</b>	<b>STOP</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>6</b>		<b>7</b>	<b>32</b>
<b>R1-1a-18</b>	<b>18"x18"</b>	<b>STOP and SLOW PADDLE Back to Back</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>		<b>4</b>	<b>5</b>
R1-2-60	60"x60"	YIELD						29	
R2-1-48	48"x60"	SPEED LIMIT ___						39	
R2-1a-24	24"x18"	MINIMUM FEE \$80 (Mounted on Speed Limit post)						10	
R3-7-48	48"x48"	LEFT or RIGHT LANE MUST TURN LEFT or RIGHT						35	
R4-1-48	48"x60"	DO NOT PASS						39	
R4-7-48	48"x60"	KEEP RIGHT SYMBOL						39	
R5-1-48	48"x48"	DO NOT ENTER						35	
R6-1-36	36"x12"	ONE WAY RIGHT or LEFT						13	
R7-1-12	12"x18"	NO PARKING						11	
R10-6-24	24"x36"	STOP HERE ON RED						16	
R11-2-48	48"x30"	ROAD CLOSED						28	
<b>R11-2-48</b>	<b>48"x30"</b>	<b>ROAD CLOSED (Barricade Mounted)</b>	<b>12</b>	<b>12</b>	<b>14</b>	<b>13</b>		<b>14</b>	<b>16</b>
R11-2a-48	48"x30"	STREET CLOSED						28	
R11-3a-60	60"x30"	ROAD CLOSED ___ MILES AHEAD LOCAL TRAFFIC ONLY						31	
R11-3c-60	60"x30"	STREET CLOSED ___ MILES AHEAD LOCAL TRAFFIC ONLY						31	
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC						31	
<b>R11-4a-60</b>	<b>60"x30"</b>	<b>STREET CLOSED TO THRU TRAFFIC (Barricade Mounted)</b>	<b>1</b>					<b>1</b>	<b>19</b>
W1-3-48	48"x48"	RIGHT or LEFT SHARP REVERSE CURVE ARROW						35	
<b>W1-4-48</b>	<b>48"x48"</b>	<b>RIGHT or LEFT REVERSE CURVE ARROW</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>2</b>		<b>4</b>	<b>35</b>
W1-4b-48	48"x48"	DOUBLE RIGHT or LEFT REVERSE CURVE ARROW						35	
W1-6-48	48"x24"	LARGE ARROW						26	
<b>W1-6-48</b>	<b>48"x24"</b>	<b>LARGE ARROW (Barricade Mounted)</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>		<b>3</b>	<b>14</b>
W3-1-48	48"x48"	STOP AHEAD SYMBOL						35	
W3-3-48	48"x48"	SIGNAL AHEAD SYMBOL						35	
W3-4-48	48"x48"	BE PREPARED TO STOP						35	
W3-5-48	48"x48"	SPEED REDUCTION AHEAD						35	
W4-2-48	48"x48"	RIGHT or LEFT LANE TRANSITION SYMBOL						35	
<b>W5-1-48</b>	<b>48"x48"</b>	<b>ROAD NARROWS</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>		<b>4</b>	<b>35</b>
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE						35	
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW						35	
W6-3-48	48"x48"	TWO WAY TRAFFIC SYMBOL						35	
W8-1-48	48"x48"	BUMP						35	
W8-3-48	48"x48"	PAVEMENT ENDS						35	
W8-7-48	48"x48"	LOOSE GRAVEL						35	
W8-9a-48	48"x48"	SHOULDER DROP-OFF						35	
W8-11-48	48"x48"	UNEVEN LANES						35	
W8-12-48	48"x48"	NO CENTER STRIPE						35	
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY						35	
<b>W8-54-48</b>	<b>48"x48"</b>	<b>TRUCKS ENTERING AHEAD or ___ FT.</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>		<b>2</b>	<b>35</b>
W8-55-48	48"x48"	TRUCKS CROSSING AHEAD or ___ FT.						35	
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY						35	
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL						35	
W12-2-48	48"x48"	LOW CLEARANCE SYMBOL						35	
W13-1-24	24"x24"	___ MPH ADVISORY SPEED PLATE (Mounted on warning sign post)						11	
W13-4-48	48"x60"	RAMP ARROW						39	
W14-3-48	48"x36"	NO PASSING ZONE						23	
<b>W20-1-48</b>	<b>48"x48"</b>	<b>ROAD WORK AHEAD or ___ FT or ___ MILE</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>		<b>2</b>	<b>35</b>
W20-2-48	48"x48"	DETOUR AHEAD or ___ FT						35	
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or ___ FT.						35	
W20-4-48	48"x48"	ONE LANE ROAD AHEAD or ___ FT.						35	
W20-5-48	48"x48"	RIGHT or LEFT LANE CLOSED AHEAD or ___ FT.						35	
<b>W20-7a-48</b>	<b>48"x48"</b>	<b>FLAGGING SYMBOL</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>		<b>4</b>	<b>35</b>
<b>W20-7k-24</b>	<b>24"x18"</b>	<b>___ FEET (Mounted on warning sign post)</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>		<b>2</b>	<b>10</b>
W20-8-48	48"x48"	STREET CLOSED						35	
W20-51-48	48"x48"	EQUIPMENT WORKING						35	
W20-52-54	54"x12"	NEXT ___ MILES (Mounted on warning sign post)						12	

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED				TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
			1	2	3	4			
<b>W21-1a-48</b>	<b>48"x48"</b>	<b>WORKERS SYMBOL</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>		<b>2</b>	<b>35</b>
W21-2-48	48"x48"	FRESH OIL						35	
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or ___ FT						35	
W21-5-48	48"x48"	SHOULDER WORK						35	
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED						35	
W21-5b-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or ___ FT.						35	
W21-6a-48	48"x48"	SURVEY CREW AHEAD						35	
W21-50-48	48"x48"	BRIDGE PAINTING AHEAD or ___ FT.						35	
W21-51-48	48"x48"	MATERIAL ON ROADWAY						35	
W22-8-48	48"x48"	FRESH OIL LOOSE ROCK						35	
	24"x24"	TAKE TURNS (6" D letters) (Mounted on stop sign post)						11	

**SPECIAL SIGNS**

<b>R9-9-30</b>	<b>30"x18"</b>	<b>SIDEWALK CLOSED (Barricade Mounted)</b>	<b>13</b>	<b>5</b>	<b>7</b>	<b>8</b>		<b>13</b>	<b>9</b>	<b>117</b>
<b>R9-11R-24</b>	<b>24"x18"</b>	<b>SIDEWALK CLOSED AHEAD CROSS HERE RIGHT (Barricade Mounted)</b>	<b>1</b>	<b>1</b>				<b>1</b>	<b>8</b>	<b>8</b>
<b>R9-11L-24</b>	<b>24"x18"</b>	<b>SIDEWALK CLOSED AHEAD CROSS HERE LEFT (Barricade Mounted)</b>	<b>1</b>	<b>1</b>				<b>1</b>	<b>8</b>	<b>8</b>
<b>R9-11aR-24</b>	<b>24"x12"</b>	<b>SIDEWALK CLOSED CROSS HERE RIGHT (Barricade Mounted)</b>			<b>1</b>	<b>1</b>		<b>1</b>	<b>7</b>	<b>7</b>
<b>R9-11aL-24</b>	<b>24"x12"</b>	<b>SIDEWALK CLOSED CROSS HERE LEFT (Barricade Mounted)</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>		<b>2</b>	<b>7</b>	<b>14</b>
<b>W11-2-48</b>	<b>48"x48"</b>	<b>PEDESTRIAN CROSSING</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>		<b>4</b>	<b>35</b>	<b>140</b>
<b>W16-7P-12</b>	<b>12"x6"</b>	<b>DIAGONAL ARROW (Drum Mounted)</b>	<b>4</b>	<b>6</b>	<b>10</b>	<b>10</b>		<b>10</b>	<b>1</b>	<b>10</b>
<b>W16-7P-30</b>	<b>30"x18"</b>	<b>DIAGONAL ARROW (Mounted on Warning Sign)</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>		<b>2</b>	<b>11</b>	<b>22</b>
<b>W16-9P-30</b>	<b>30"x18"</b>	<b>AHEAD (Mounted on Warning Sign)</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>		<b>2</b>	<b>11</b>	<b>22</b>

**SPEC & CODE**

<b>704-1000</b>	<b>TRAFFIC CONTROL SIGNS</b>	<b>TOTAL UNITS</b>	<b>1751</b>
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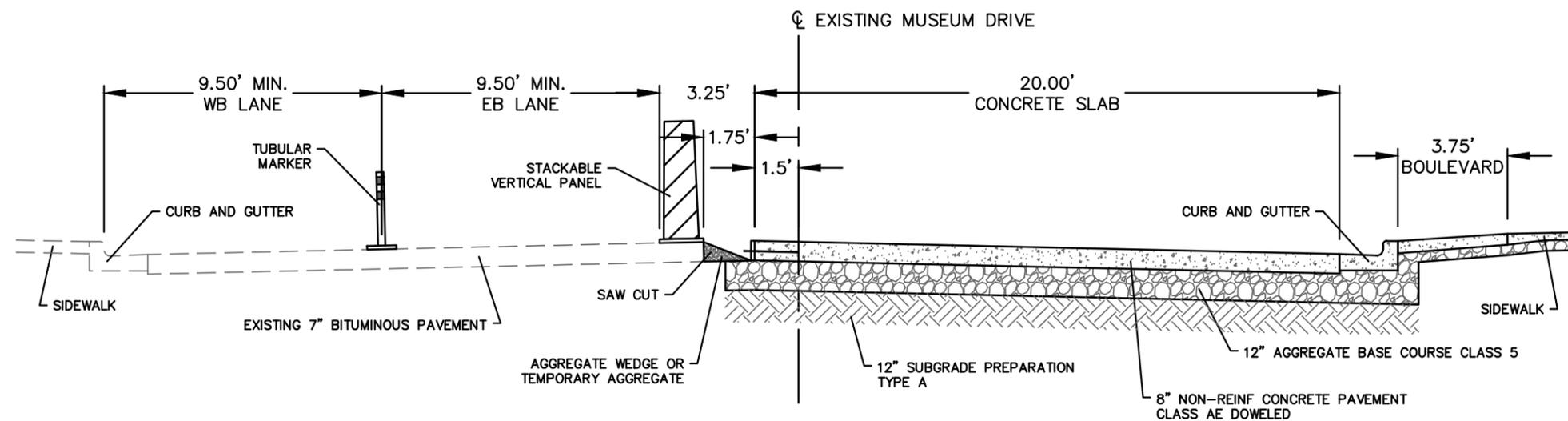
SPEC & CODE	DESCRIPTION	UNIT	QUANTITY BY PHASE NO.				TOTAL QUANTITY
			1	2	3	4	
<b>704-0100</b>	<b>FLAGGING</b>	MHR	<b>200</b>	<b>200</b>	<b>200</b>	<b>200</b>	<b>800</b>
704-1041	ATTENUATION DEVICE-TYPE B-55	EACH					
704-1043	ATTENUATION DEVICE-TYPE B-65	EACH					
704-1044	ATTENUATION DEVICE-TYPE B-70	EACH					
704-1050	TYPE I BARRICADES	EACH					
704-1051	TYPE II BARRICADES	EACH					
<b>704-1052</b>	<b>TYPE III BARRICADES</b>	EACH	<b>39</b>	<b>25</b>	<b>32</b>	<b>32</b>	<b>39</b>
<b>704-1060</b>	<b>DELINEATOR DRUMS</b>	EACH	<b>95</b>	<b>111</b>	<b>152</b>	<b>138</b>	<b>152</b>
704-1065	TRAFFIC CONES	EACH					
<b>704-1067</b>	<b>TUBULAR MARKERS</b>	EACH	<b>208</b>	<b>134</b>	<b>157</b>	<b>165</b>	<b>208</b>
704-1070	DELINEATOR	EACH					
704-1072	FLEXIBLE DELINEATORS	EACH					
<b>704-1081</b>	<b>VERTICAL PANELS - BACK TO BACK</b>	EACH	<b>80</b>	<b>73</b>	<b>72</b>	<b>77</b>	<b>80</b>
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH					
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH					
704-1087	SEQUENCING ARROW PANEL - TYPE C	EACH					
704-1088	SEQUENCING ARROW PANEL - TYPE C - CROSSOVER	EACH					
704-1095	TYPE B FLASHERS	EACH					
<b>704-1500</b>	<b>OBLITERATION OF PVMT MK</b>	SF	<b>350</b>				<b>350</b>
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF					
704-3510	PRECAST CONCRETE MED BARRIER - STATE FURNISHED	EACH					
762-0200	RAISED PAVEMENT MARKERS	EACH					
<b>762-0420</b>	<b>SHORT TERM 4IN LINE - TYPE R</b>	LF	<b>94</b>			<b>786</b>	<b>880</b>
762-0430	SHORT TERM 4IN LINE - TYPE NR	LF					
<b>762-0440</b>	<b>SHORT TERM MESSAGE-TYPE R</b>	SF			<b>129</b>	<b>64</b>	<b>193</b>
772-2110	FLASHING BEACON - POST MOUNTED	EACH					

NOTE:  
If additional signs are required, units will be calculated using the formula from Section III-19.06 of the Design Manual.  
<http://www.dot.nd.gov/>

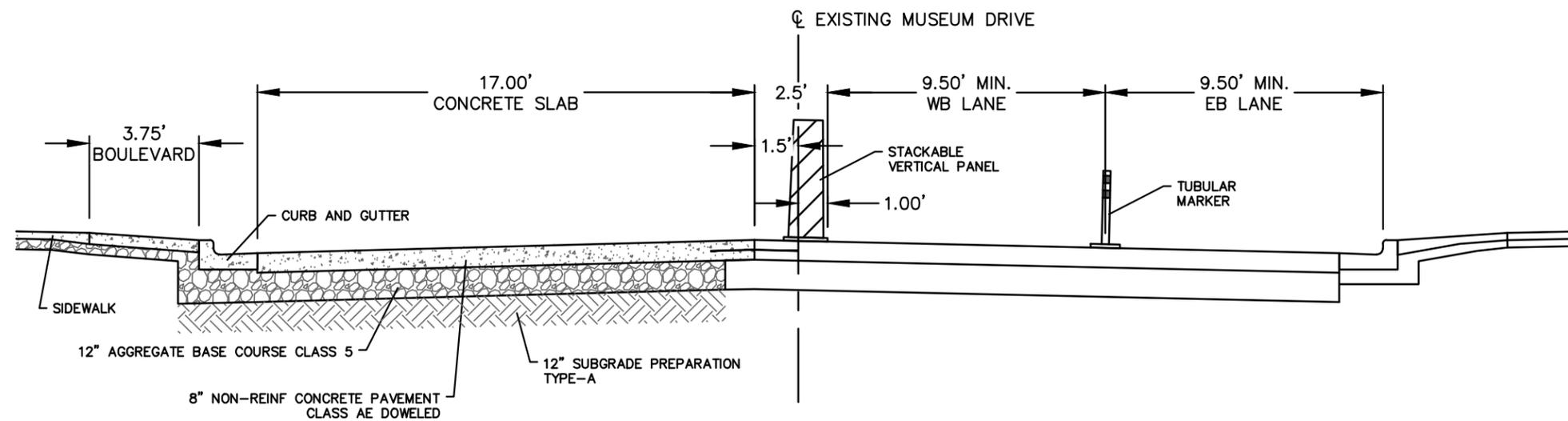
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Traffic Control Devices List

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	2



**PHASES I AND II  
(STA. 12+08 TO 19+71)**



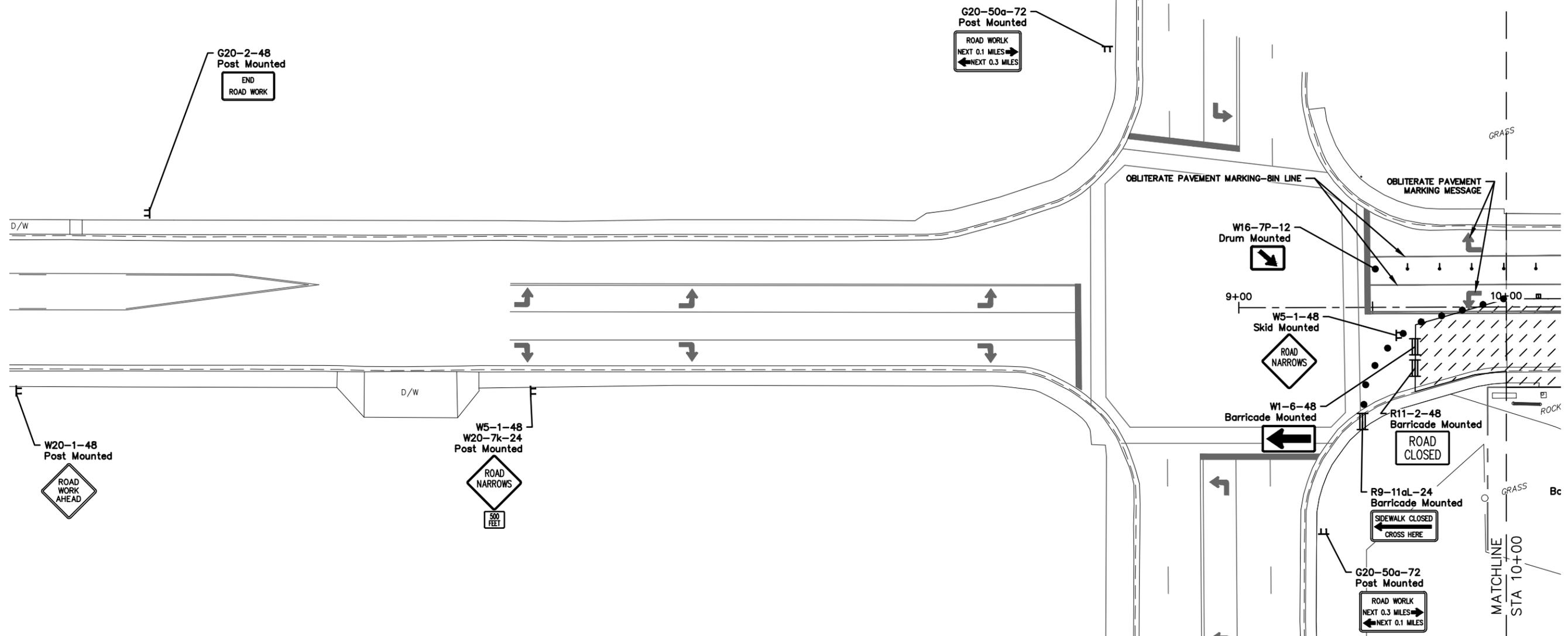
**PHASES III AND IV  
(STA. 12+08 TO 19+71)**

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WORK ZONE TRAFFIC CONTROL  
Typical Sections

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	3



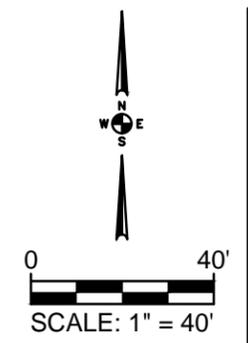
**OBLITERATION OF PAVEMENT MARKING**

Sta 9+49 to 10+00, 19.5' Lt - 8IN Line	34 SF
Sta 9+49 to 10+00, 10.75' Lt - 8IN Line	34 SF
Sta 9+88, 3.5' Lt - Arrow	16 SF
Sta 9+88, 23.5' Lt - Arrow	16 SF
	100 SF

**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

**LEGEND**

TYPE III BARRICADE	III
DELINEATOR DRUM	●
STACKABLE VERTICAL PANEL	■
TUBULAR MARKER	↓
PHASE RECONSTRUCTION AREA	[Hatched Box]
WORK AREA	[Diagonal Hatched Box]

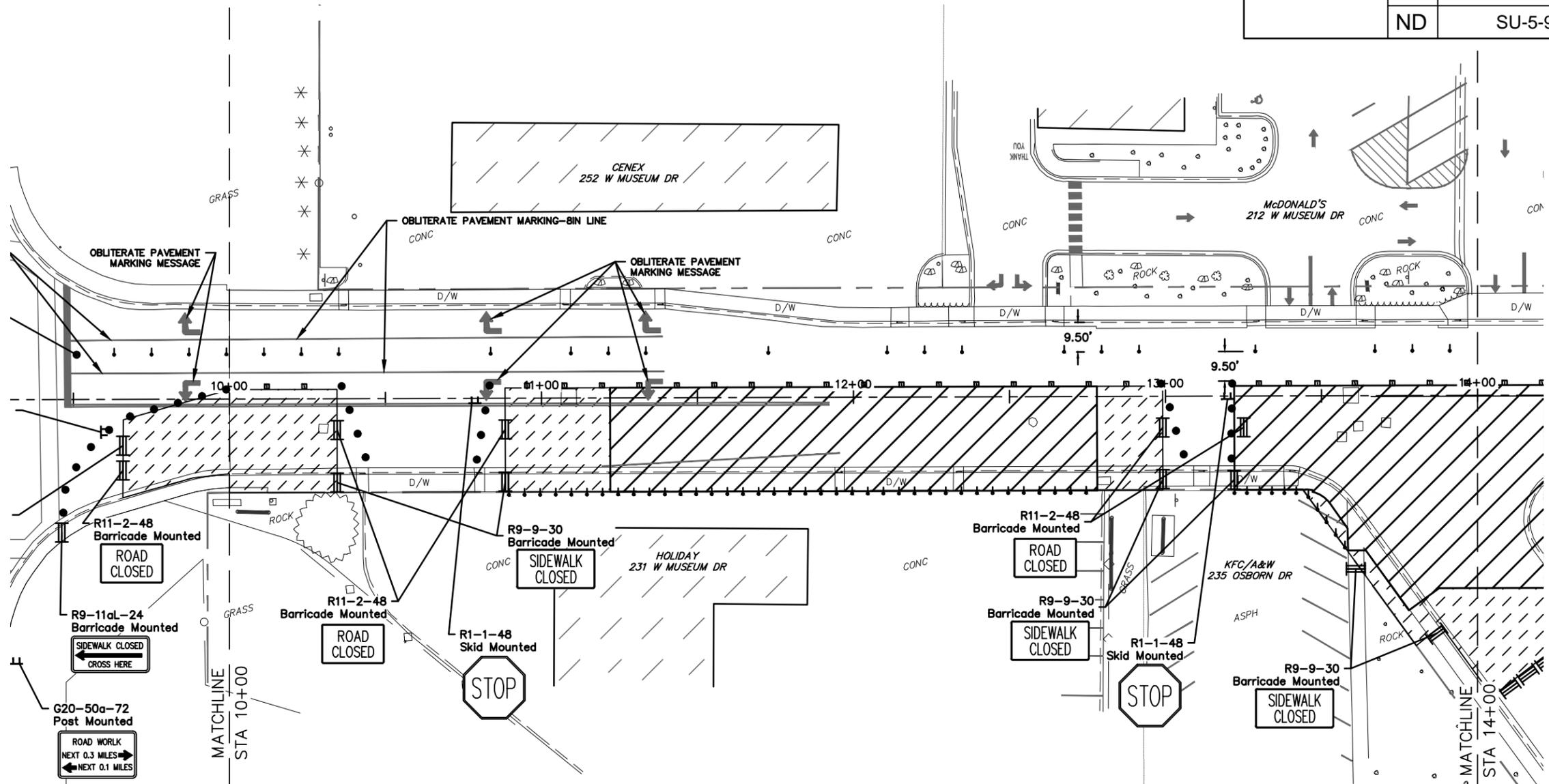


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**WORK ZONE TRAFFIC CONTROL**  
 Phase I  
 < Sta 10+00

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	4



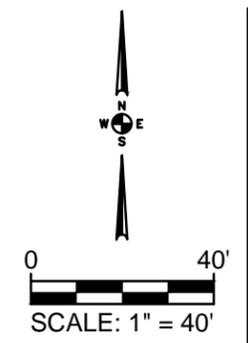
**OBLITERATION OF PAVEMENT MARKING**

Sta 10+00 to 11+39, 19.5' Lt - 8IN Line	93 SF
Sta 10+00 to 11+39, 10.75' Lt - 8IN Line	93 SF
Sta 10+85 3.5' Lt - Arrow	16 SF
Sta 10+85, 23.5' Lt - Arrow	16 SF
Sta 11+36, 3.5' Lt - Arrow	16 SF
Sta 11+36, 23.5' Lt - Arrow	16 SF
	250 SF

**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

**LEGEND**

TYPE III BARRICADE	III
DELINEATOR DRUM	●
STACKABLE VERTICAL PANEL	■
TUBULAR MARKER	↓
PHASE RECONSTRUCTION AREA	[Diagonal Hatching]
WORK AREA	[Diagonal Hatching]

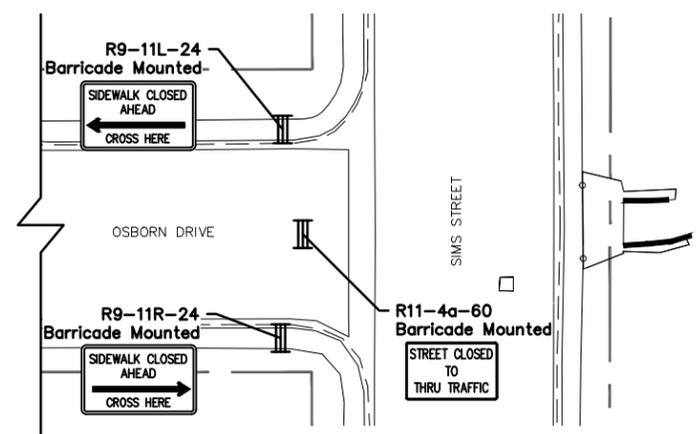
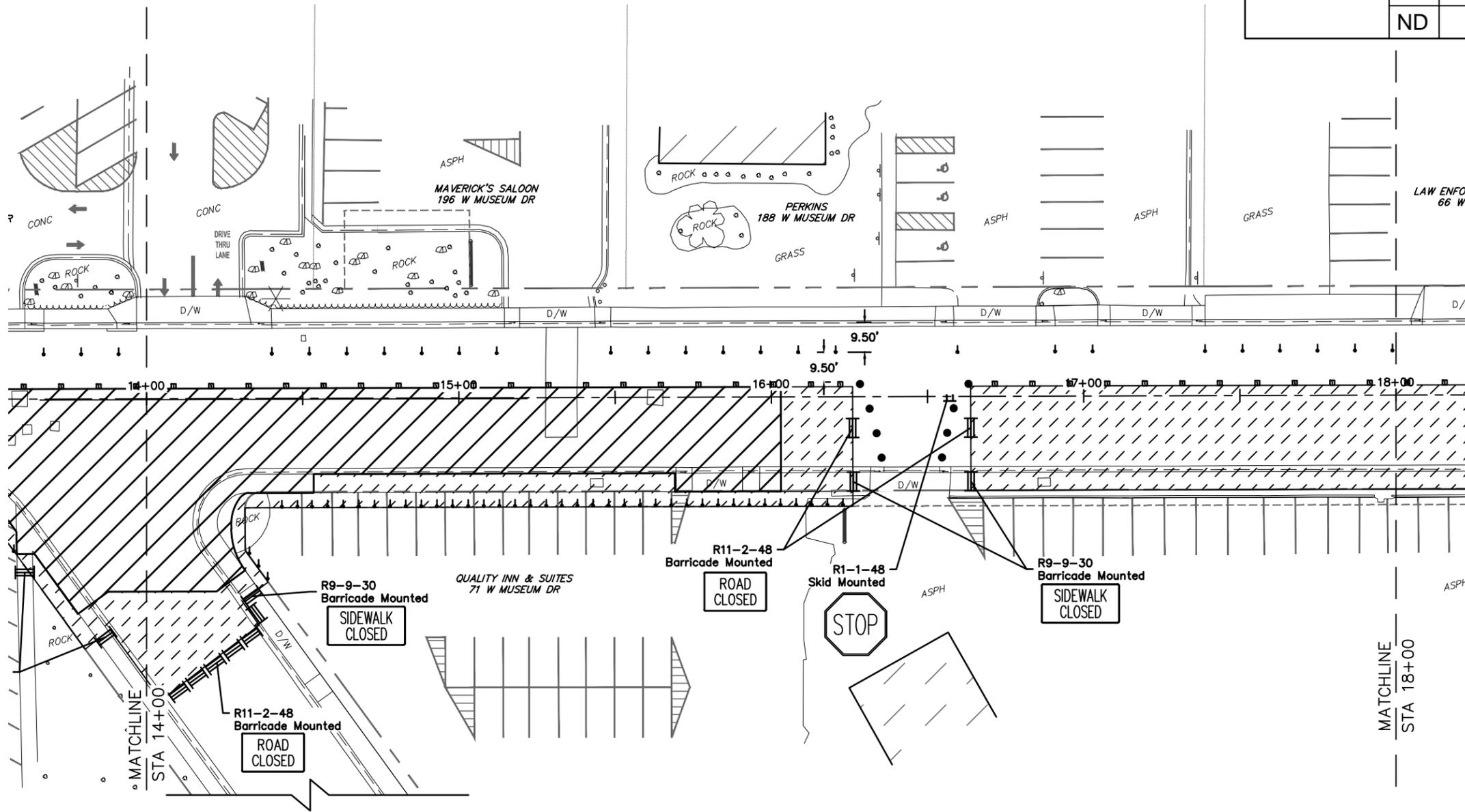


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**WORK ZONE TRAFFIC CONTROL**  
 Phase I  
 Sta 10+00 to Sta 14+00

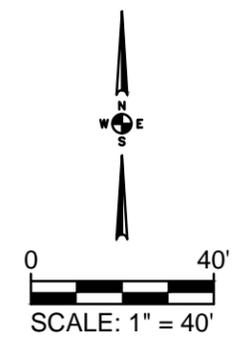
**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	5



**LEGEND**

TYPE III BARRICADE	III
DELINEATOR DRUM	●
STACKABLE VERTICAL PANEL	■
TUBULAR MARKER	↓
PHASE RECONSTRUCTION AREA	
WORK AREA	



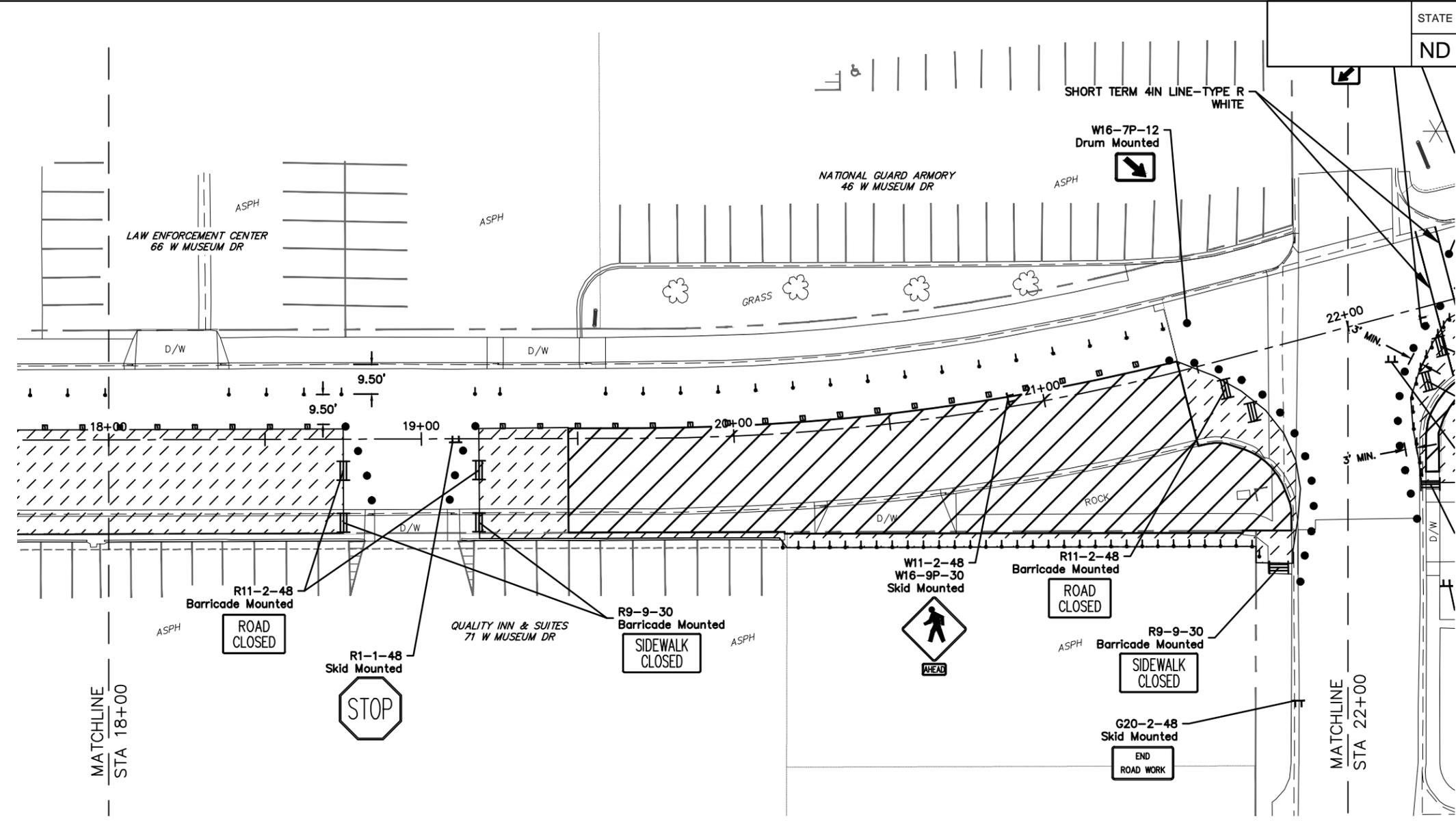
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**WORK ZONE TRAFFIC CONTROL**  
Phase I  
Sta 14+00 to Sta 18+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

**NOTES:**  
DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
TUBULAR MARKERS SPACED AT 12' MAX O.C.

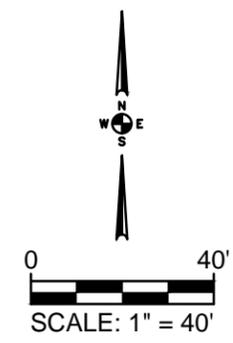
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	6



**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

**LEGEND**

TYPE III BARRICADE	III
DELINEATOR DRUM	●
STACKABLE VERTICAL PANEL	■
TUBULAR MARKER	↓
PHASE RECONSTRUCTION AREA	
WORK AREA	

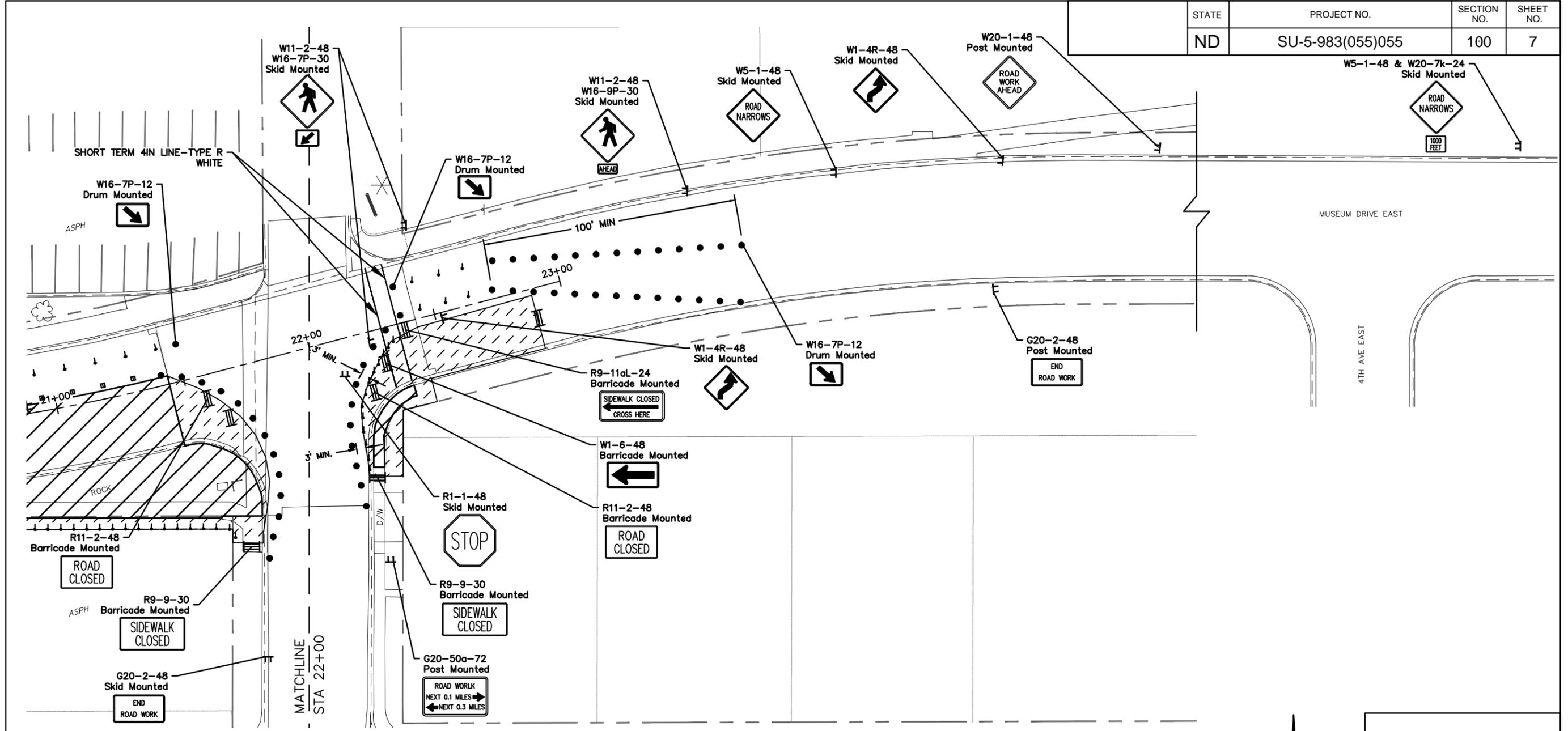


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**WORK ZONE TRAFFIC CONTROL**  
 Phase I  
 Sta 18+00 to Sta 22+00

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	7



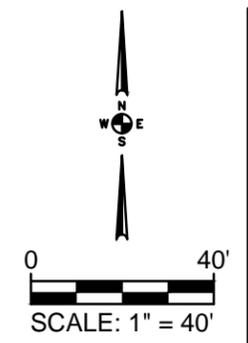
SHORT TERM 4IN LINE - TYPE R

Sta 22+28	48 LF
Sta 22+35	46 LF
	94 LF

**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

**LEGEND**

TYPE III BARRICADE	III
DELINEATOR DRUM	●
STACKABLE VERTICAL PANEL	■
TUBULAR MARKER	↓
PHASE RECONSTRUCTION AREA	
WORK AREA	

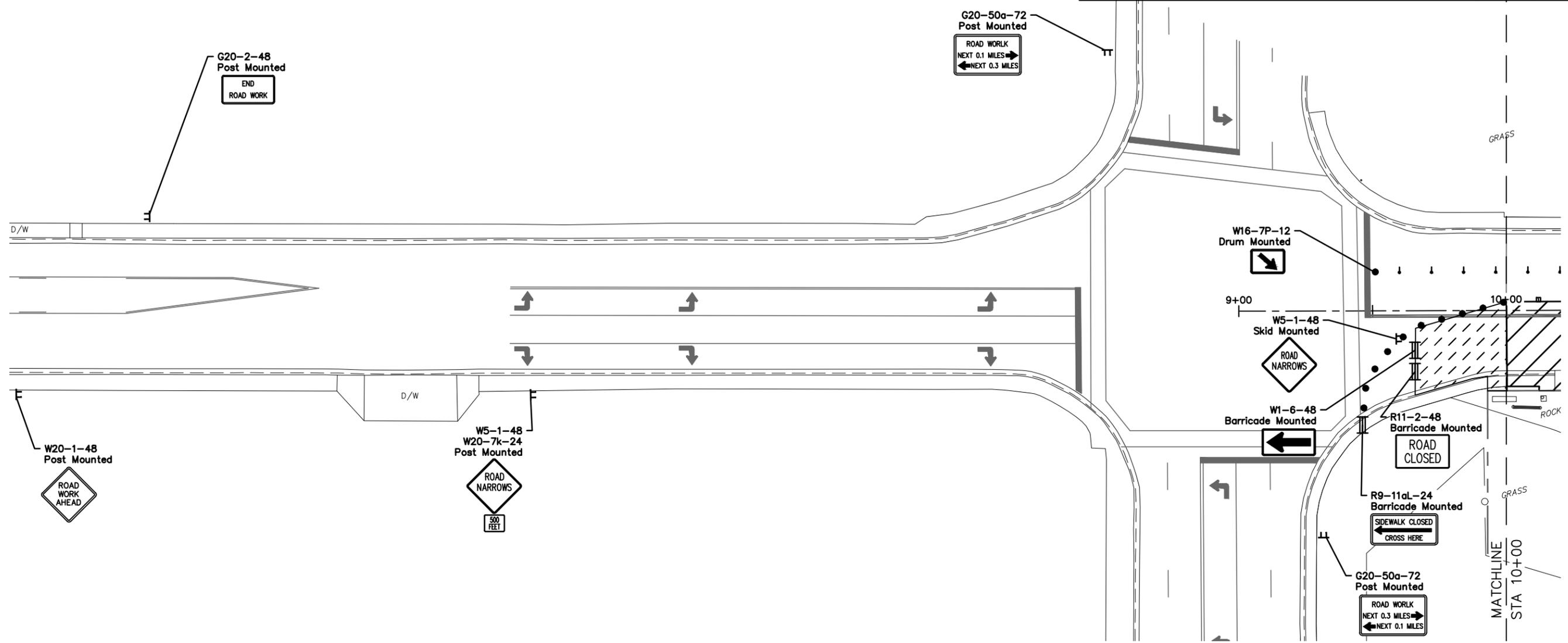


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**WORK ZONE TRAFFIC CONTROL**  
 Phase I  
 > Sta 22+00

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

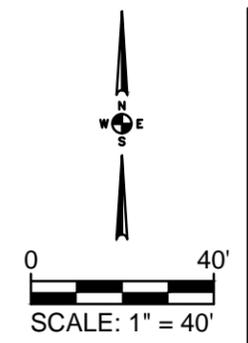
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	8



**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

**LEGEND**

TYPE III BARRICADE	III
DELINEATOR DRUM	●
STACKABLE VERTICAL PANEL	■
TUBULAR MARKER	↓
PHASE RECONSTRUCTION AREA	
WORK AREA	

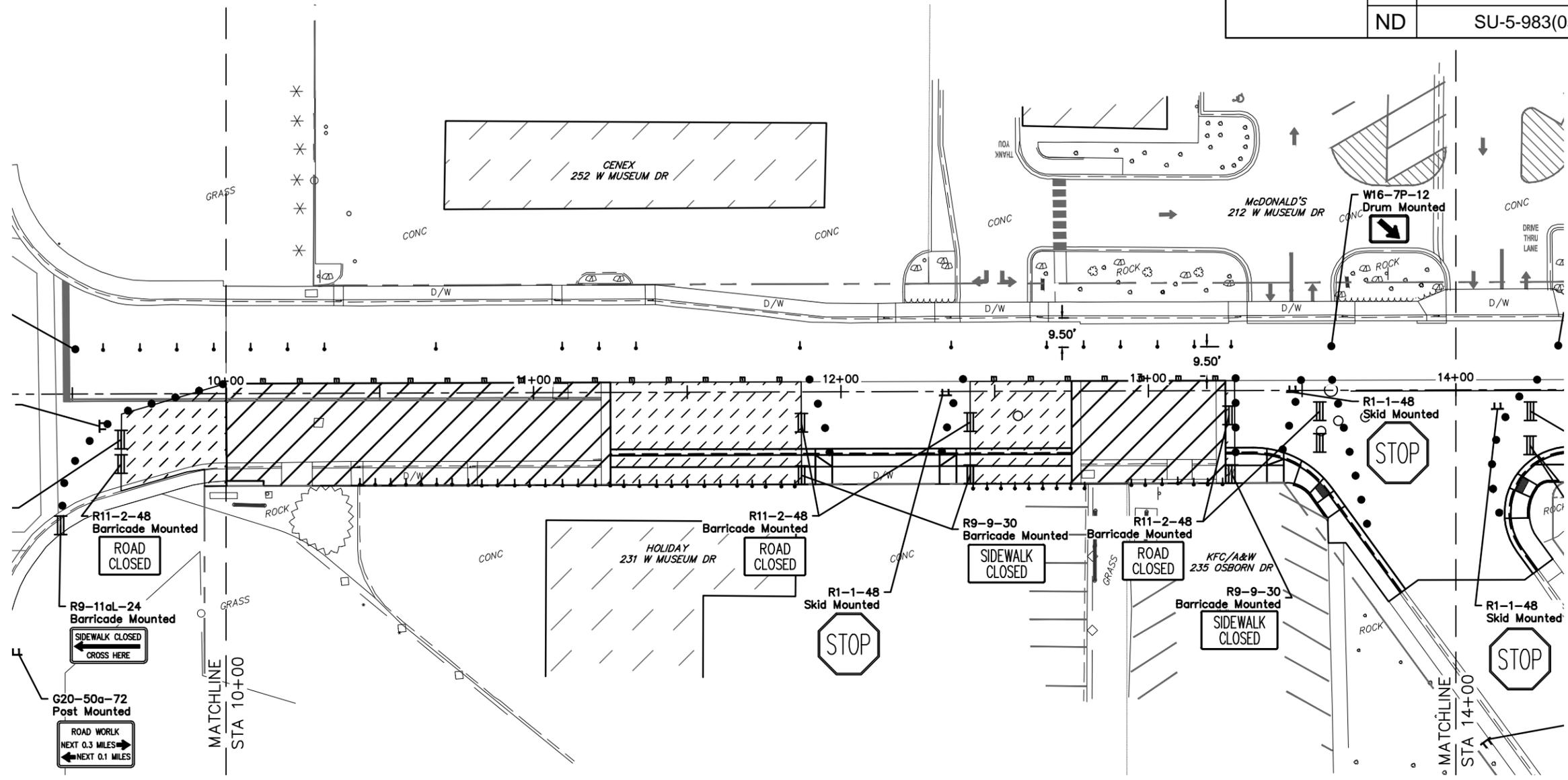


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**WORK ZONE TRAFFIC CONTROL**  
 Phase II  
 < Sta 10+00

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

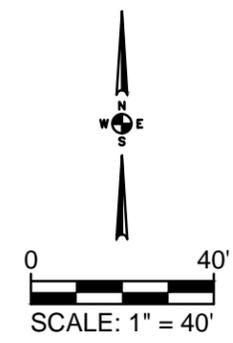
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	9



**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

**LEGEND**

TYPE III BARRICADE	III
DELINEATOR DRUM	●
STACKABLE VERTICAL PANEL	■
TUBULAR MARKER	↓
PHASE RECONSTRUCTION AREA	
WORK AREA	

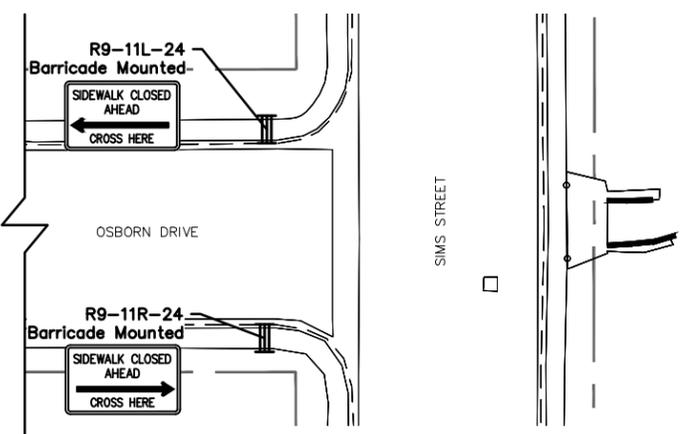
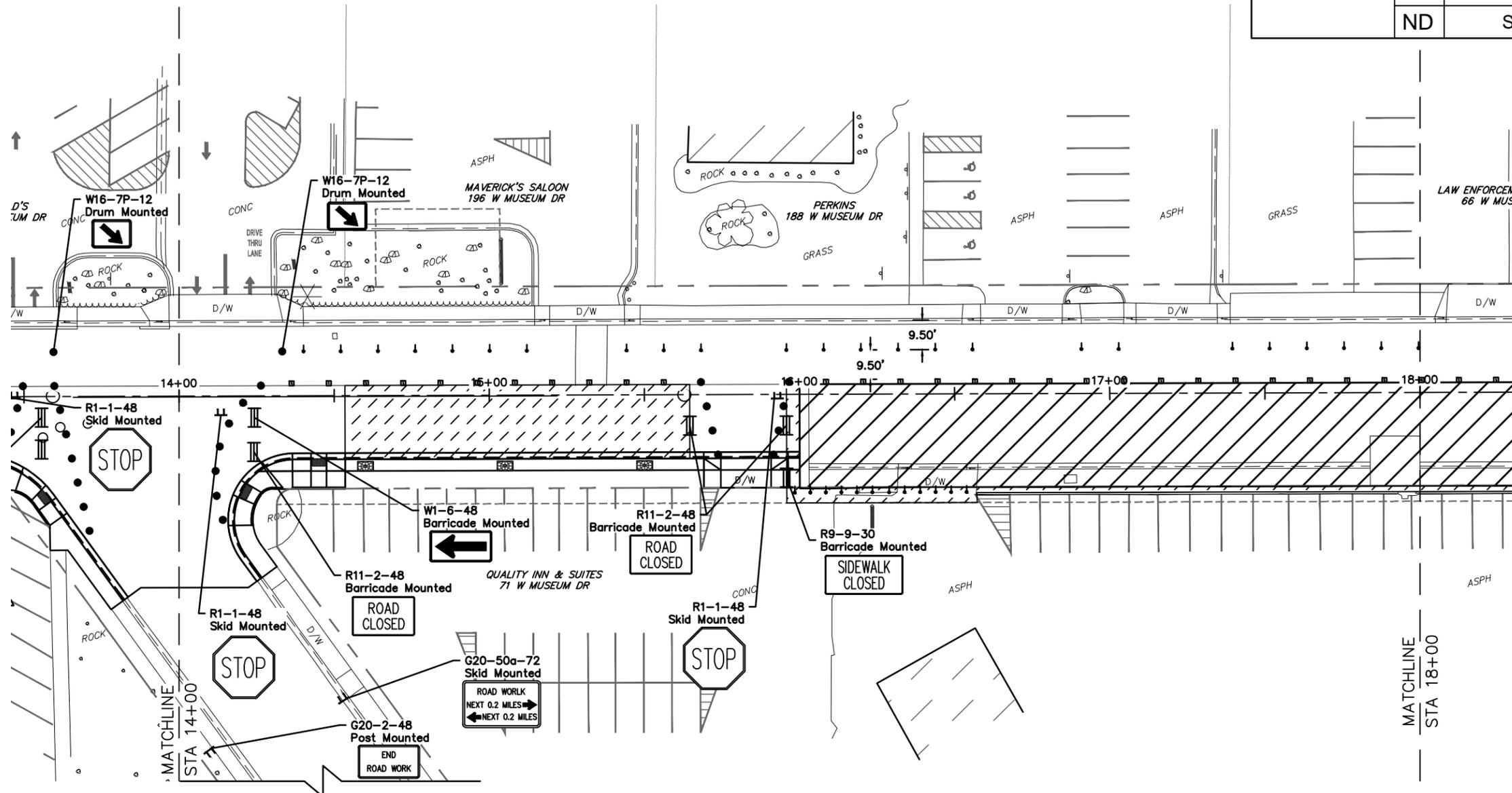


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**WORK ZONE TRAFFIC CONTROL**  
 Phase II  
 Sta 10+00 to Sta 14+00

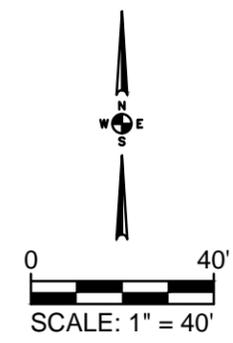
**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	10



**LEGEND**

TYPE III BARRICADE	III
DELINEATOR DRUM	●
STACKABLE VERTICAL PANEL	■
TUBULAR MARKER	↓
PHASE RECONSTRUCTION AREA	
WORK AREA	

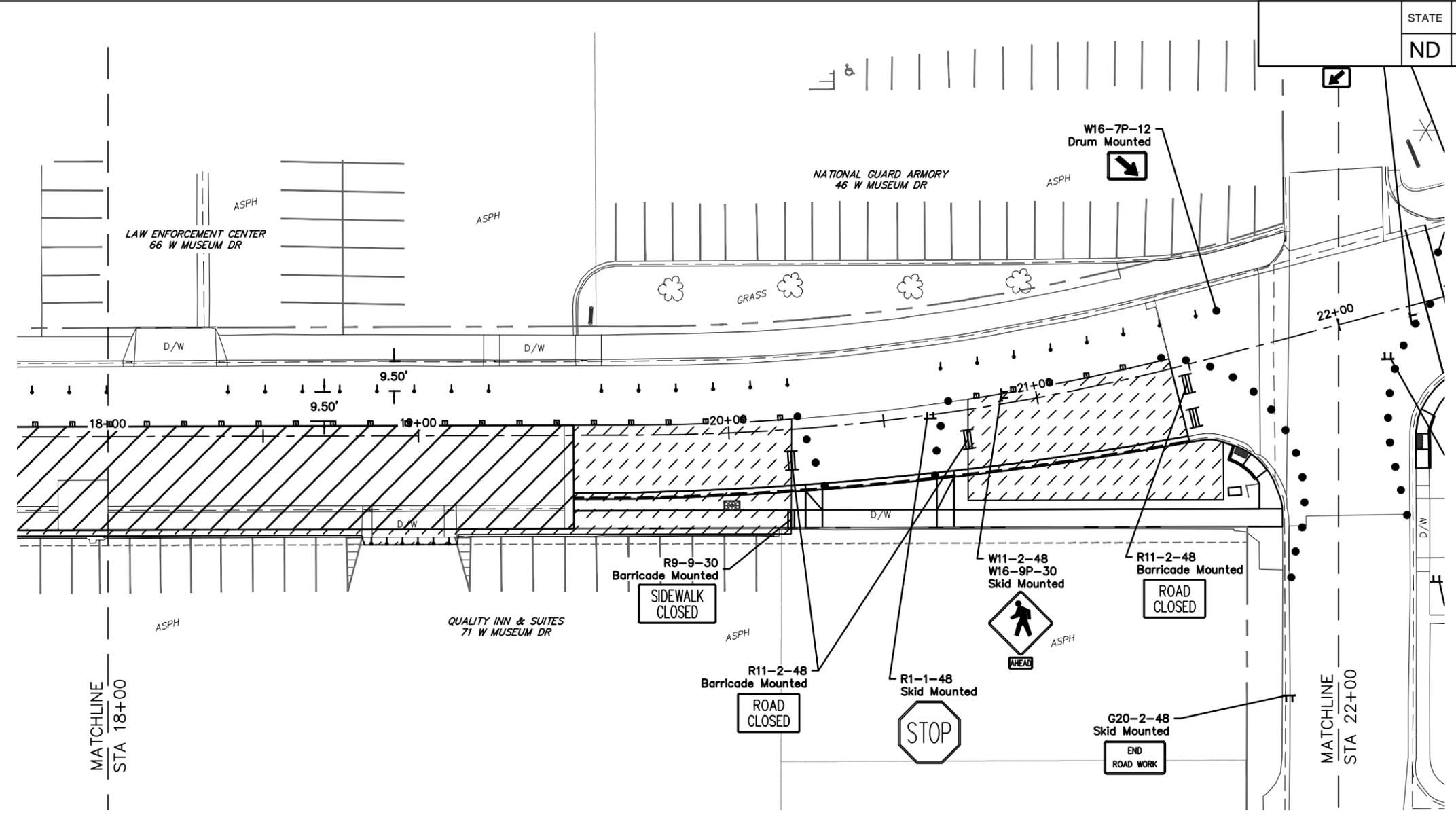


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**WORK ZONE TRAFFIC CONTROL**  
Phase II  
Sta 14+00 to Sta 18+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

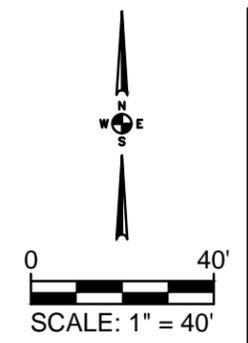
**NOTES:**  
DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
TUBULAR MARKERS SPACED AT 12' MAX O.C.



**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

**LEGEND**

TYPE III BARRICADE	III
DELINEATOR DRUM	●
STACKABLE VERTICAL PANEL	■
TUBULAR MARKER	↓
PHASE RECONSTRUCTION AREA	
WORK AREA	



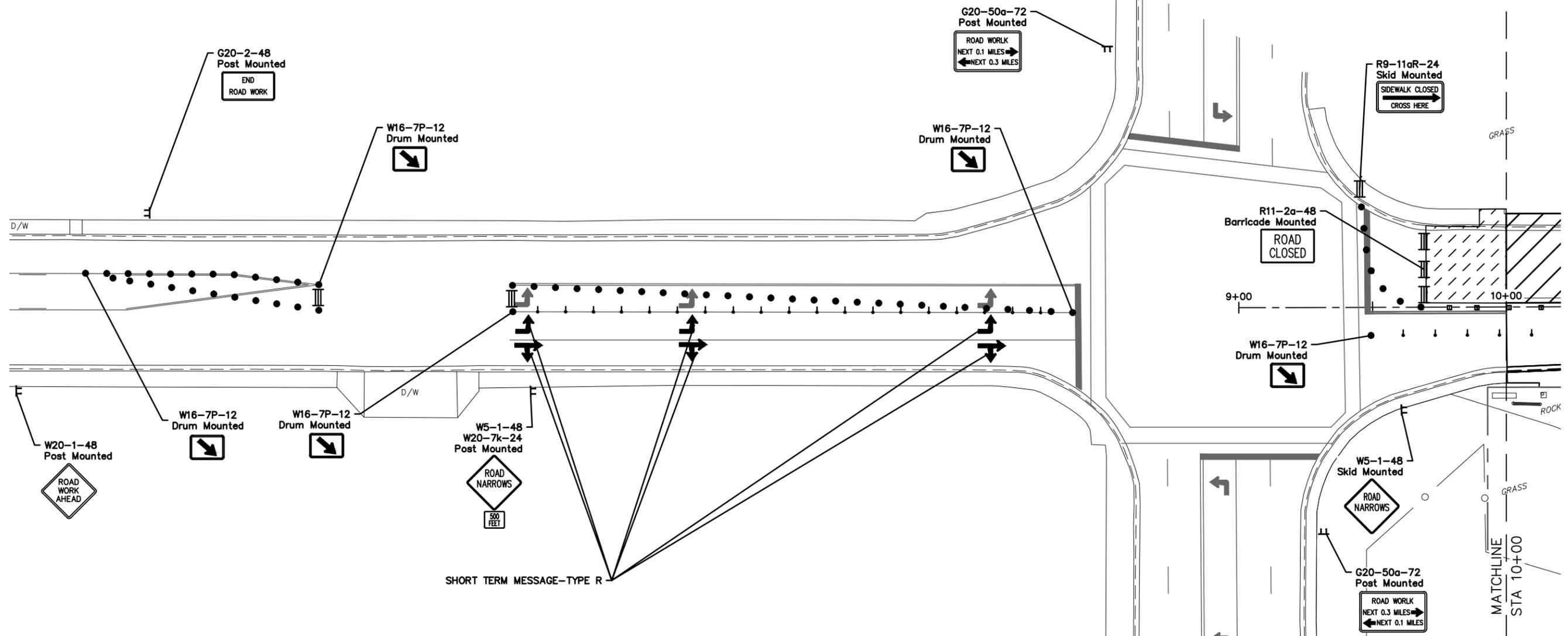
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**WORK ZONE TRAFFIC CONTROL**  
 Phase II  
 Sta 18+00 to Sta 22+00

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	13



SHORT TERM MESSAGE--TYPE R

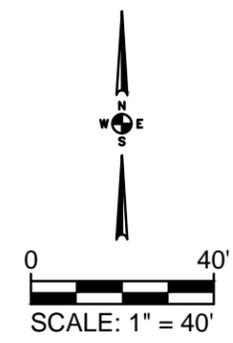
SHORT TERM MESSAGE - TYPE R

LEFT ARROW - WHITE (x3)	48 SF
THROUGH AND RIGHT ARROW - WHITE (x3)	81 SF
	129 SF

**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

**LEGEND**

TYPE III BARRICADE	III
DELINEATOR DRUM	●
STACKABLE VERTICAL PANEL	■
TUBULAR MARKER	↓
PHASE RECONSTRUCTION AREA	▨
WORK AREA	▩

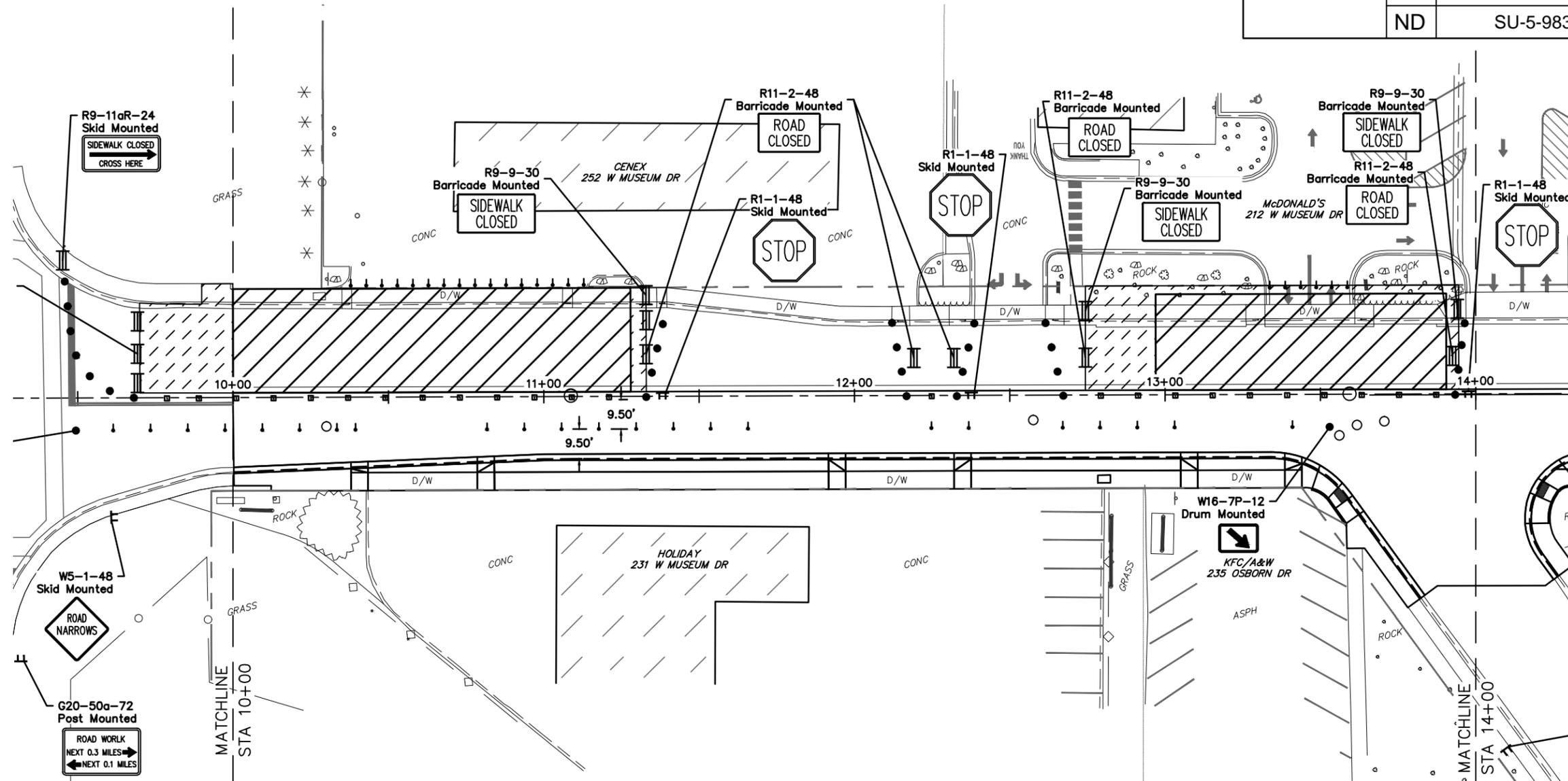


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**WORK ZONE TRAFFIC CONTROL**  
 Phase III  
 < Sta 10+00

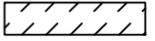
**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

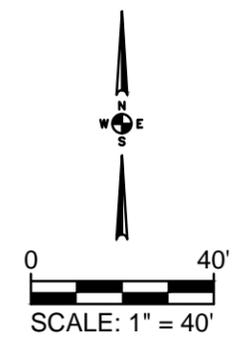
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	14



**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

**LEGEND**

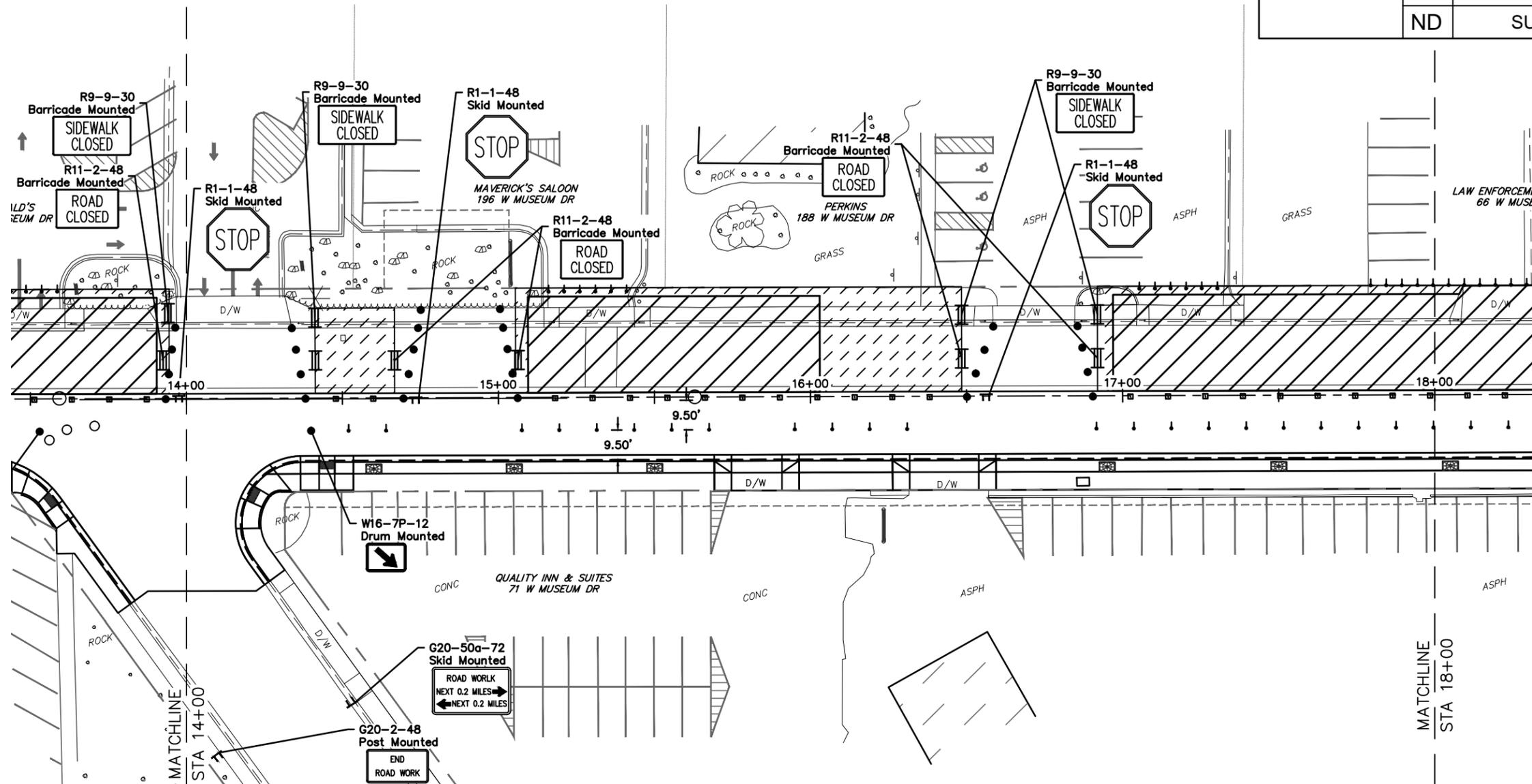
- TYPE III BARRICADE 
- DELINEATOR DRUM 
- STACKABLE VERTICAL PANEL 
- TUBULAR MARKER 
- PHASE RECONSTRUCTION AREA 
- WORK AREA 



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**WORK ZONE TRAFFIC CONTROL**  
 Phase III  
 Sta 10+00 to Sta 14+00  
**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

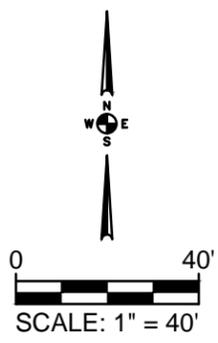
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	15



**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

**LEGEND**

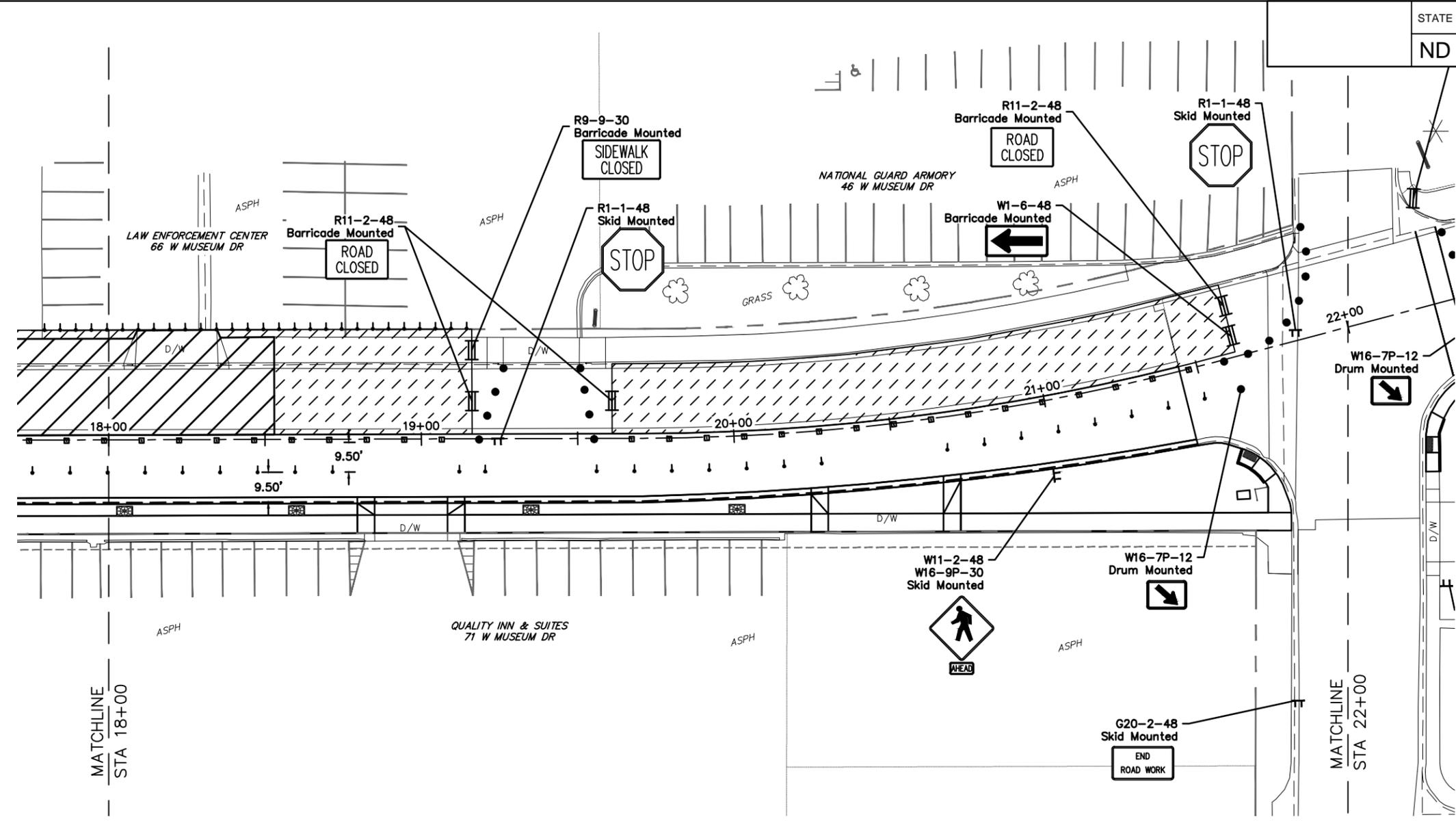
TYPE III BARRICADE	III
DELINEATOR DRUM	●
STACKABLE VERTICAL PANEL	■
TUBULAR MARKER	↓
PHASE RECONSTRUCTION AREA	
WORK AREA	



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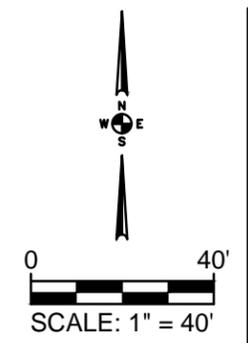
**WORK ZONE TRAFFIC CONTROL**  
 Phase III  
 Sta 14+00 to Sta 18+00

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET



**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

- LEGEND**
- TYPE III BARRICADE
  - DELINEATOR DRUM
  - STACKABLE VERTICAL PANEL
  - TUBULAR MARKER
  - PHASE RECONSTRUCTION AREA
  - WORK AREA

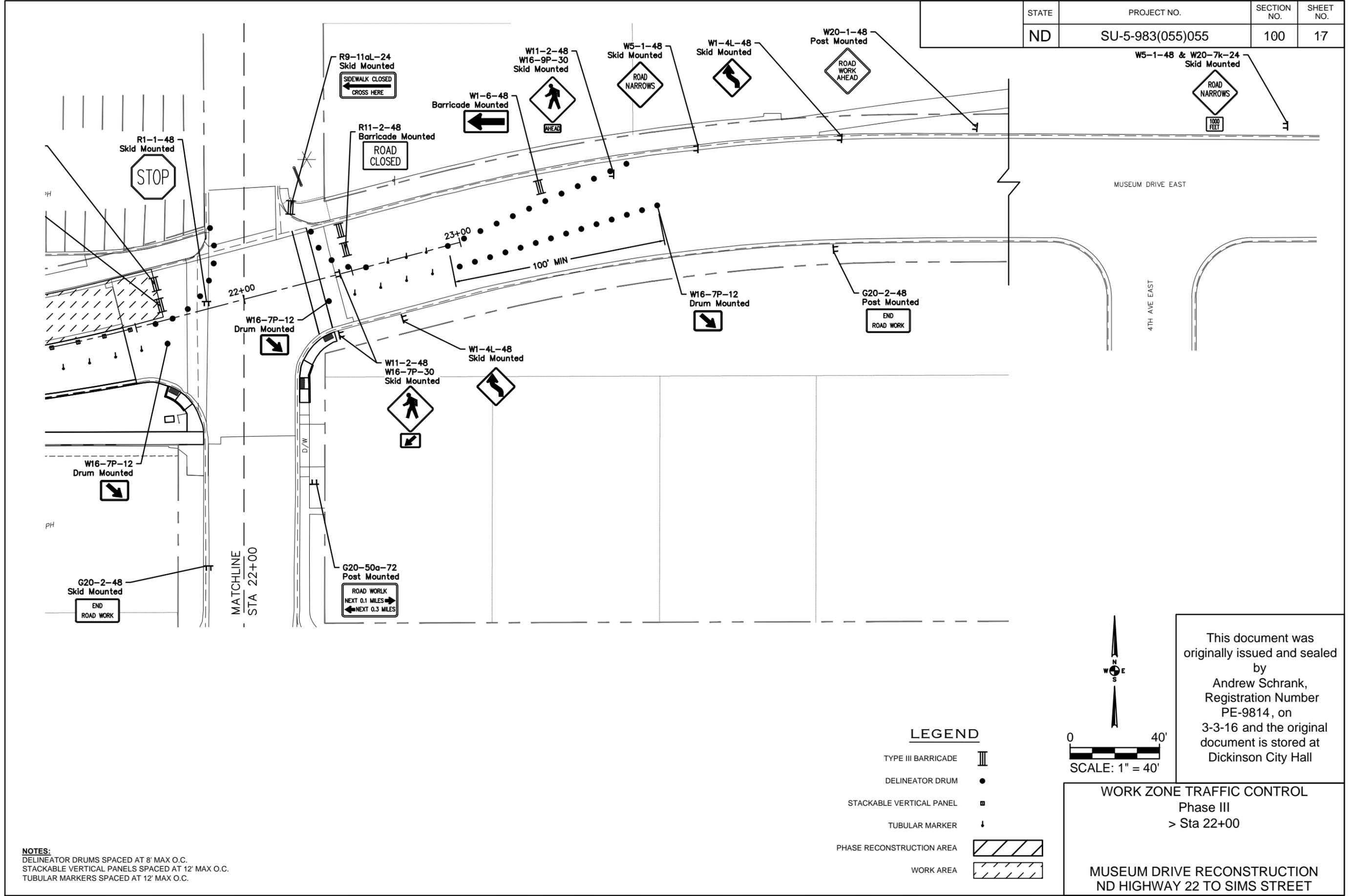


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**WORK ZONE TRAFFIC CONTROL**  
 Phase III  
 Sta 18+00 to Sta 22+00

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

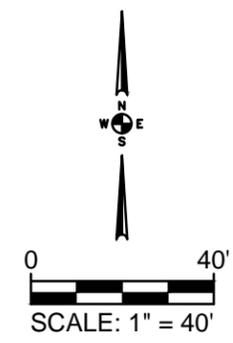
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	17



**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

**LEGEND**

TYPE III BARRICADE	III
DELINEATOR DRUM	●
STACKABLE VERTICAL PANEL	■
TUBULAR MARKER	↓
PHASE RECONSTRUCTION AREA	
WORK AREA	

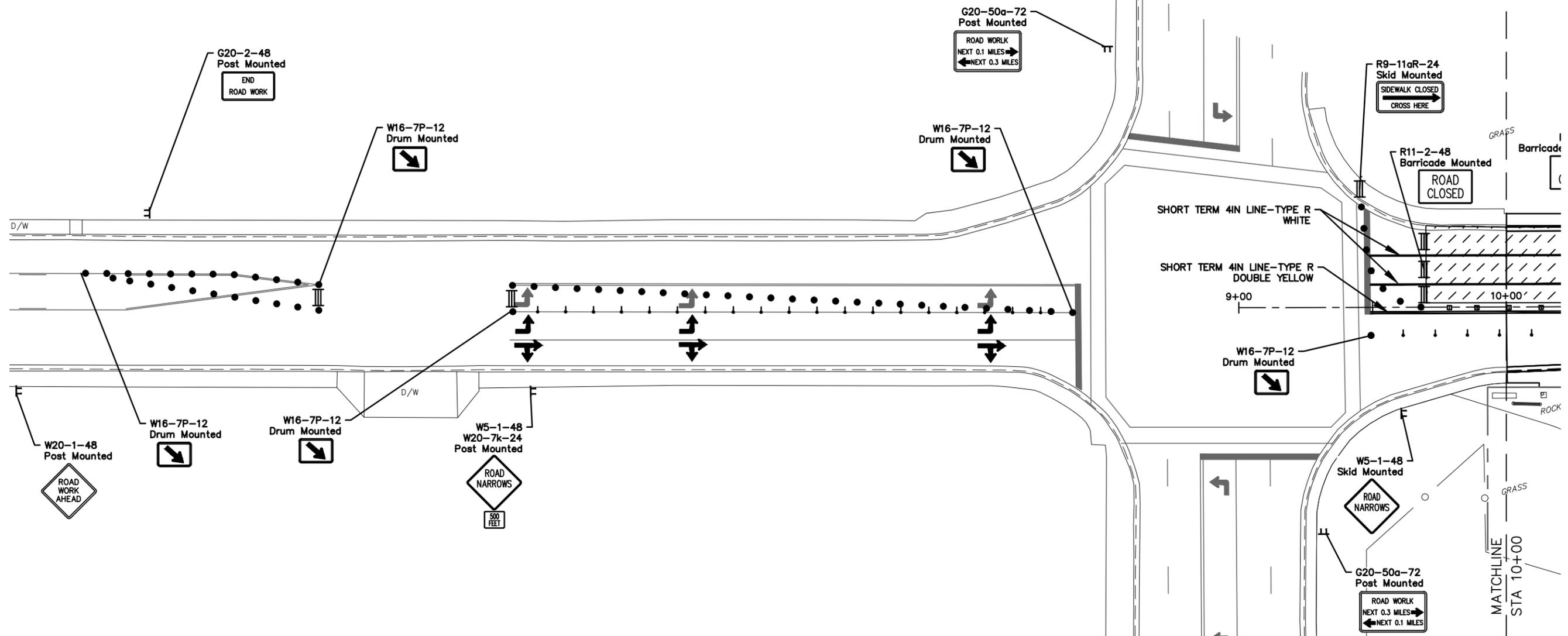


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**WORK ZONE TRAFFIC CONTROL**  
 Phase III  
 > Sta 22+00

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	18

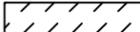


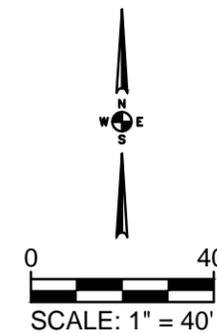
SHORT TERM 4IN LINE - TYPE R  
 Sta 9+49 to 10+00, White 62 LF  
 Sta 9+49 to 10+00, Double Yellow 62 LF  
 124 LF

**NOTE:**  
 PLACE SHORT TERM - TYPE R PAVEMENT MARKINGS IN  
 SAME LOCATION AS PERMANENT MARKINGS SHOWN  
 BY SECTION 120 OF THE PLANS.

**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

**LEGEND**

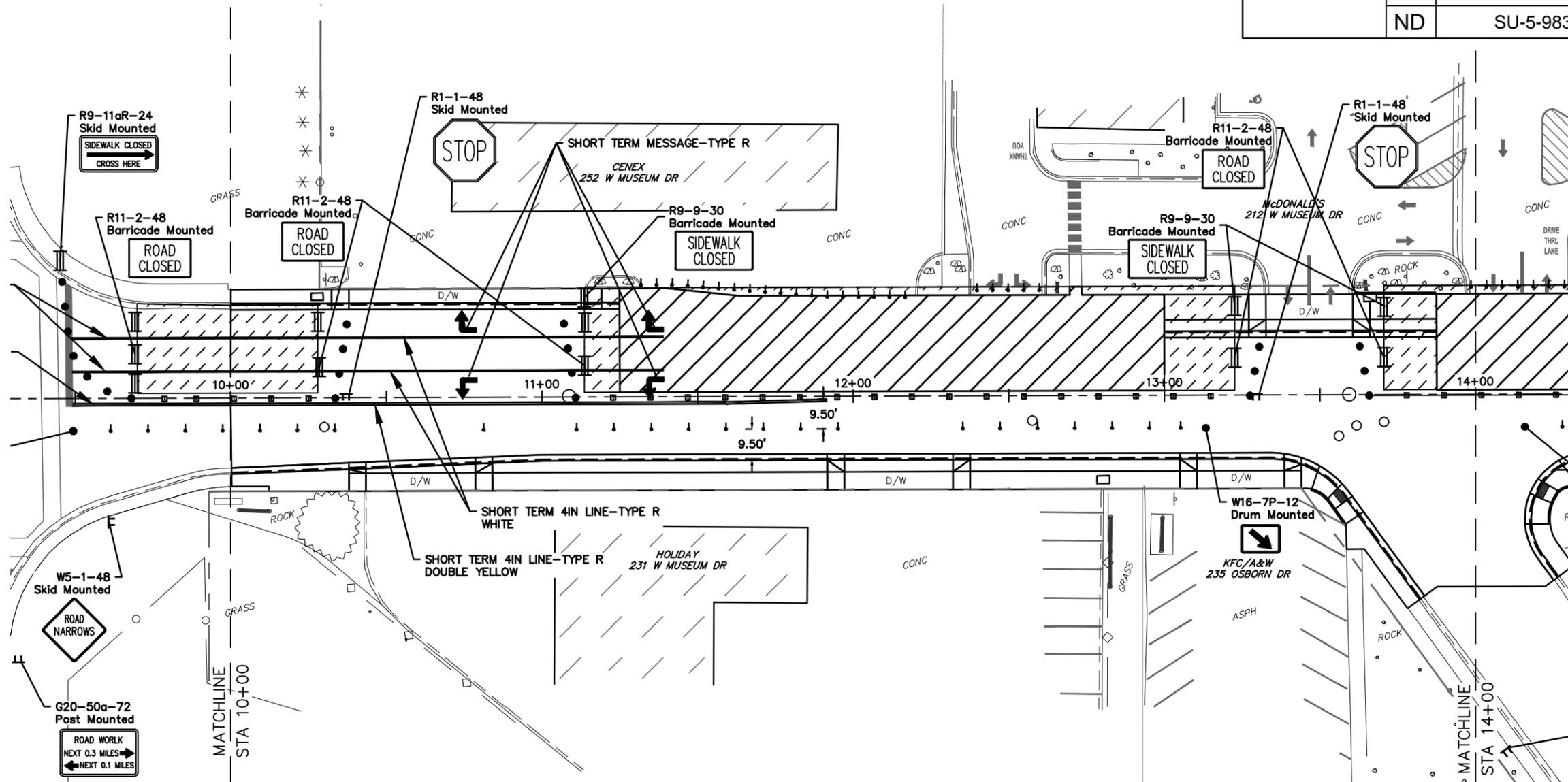
- TYPE III BARRICADE 
- DELINEATOR DRUM 
- STACKABLE VERTICAL PANEL 
- TUBULAR MARKER 
- PHASE RECONSTRUCTION AREA 
- WORK AREA 



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**WORK ZONE TRAFFIC CONTROL**  
 Phase IV  
 < Sta 10+00

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET



SHORT TERM 4IN LINE - TYPE R  
 Sta 10+00 to 11+39, White 278 LF  
 Sta 10+00 to 11+92, Double Yellow 384 LF  
 662 SF

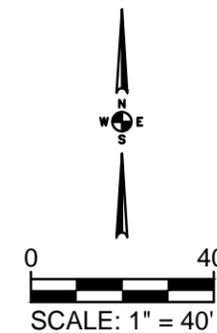
SHORT TERM MESSAGE - TYPE R  
 Left Arrow - White (2) 32 SF  
 Right Arrow - White (2) 32 SF  
 64 SF

**NOTE:**  
 PLACE SHORT TERM - TYPE R PAVEMENT MARKINGS IN  
 SAME LOCATION AS PERMANENT MARKINGS SHOWN  
 BY SECTION 120 OF THE PLANS.

**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

**LEGEND**

- TYPE III BARRICADE
- DELINEATOR DRUM
- STACKABLE VERTICAL PANEL
- TUBULAR MARKER
- PHASE RECONSTRUCTION AREA
- WORK AREA

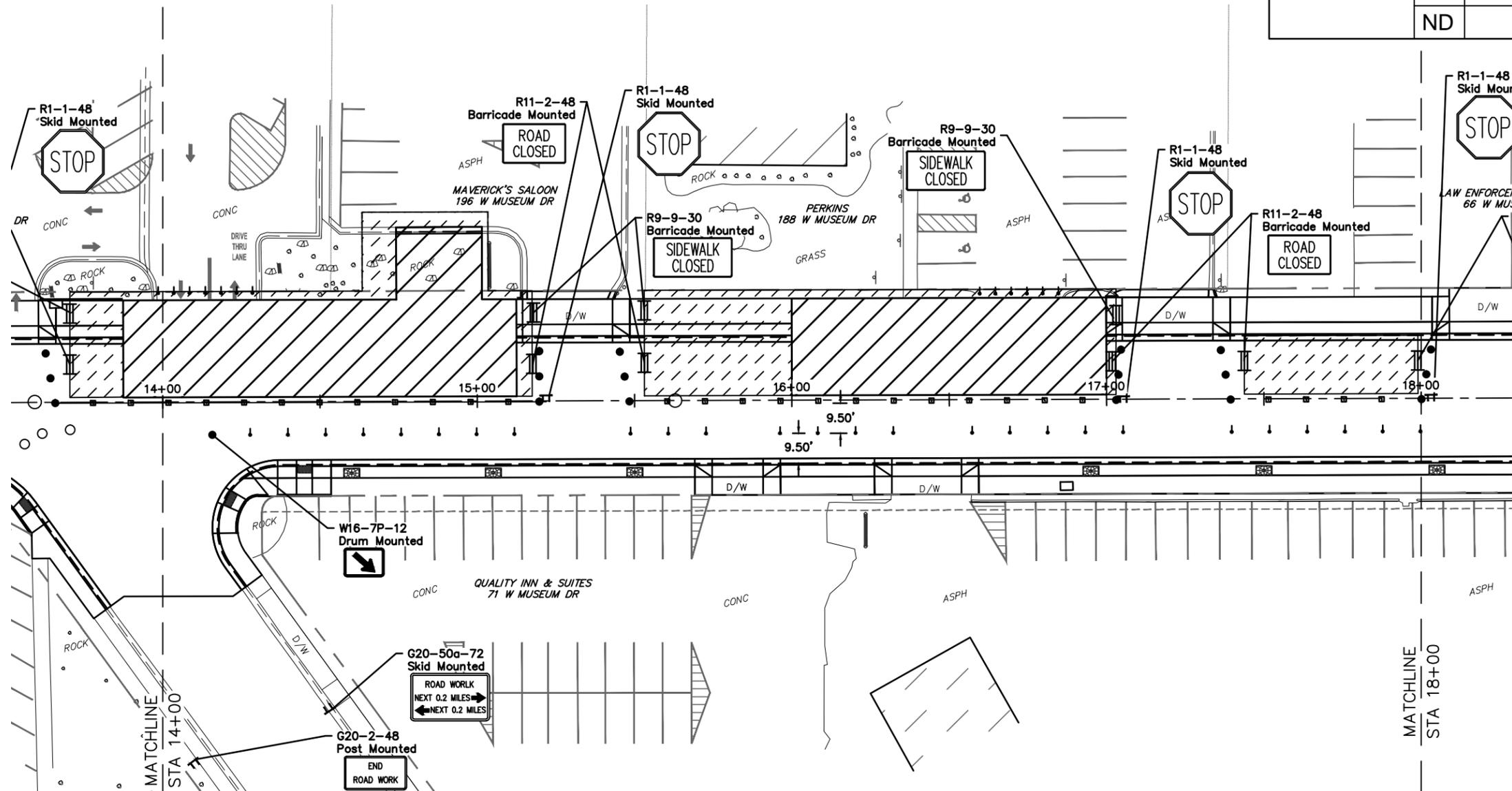


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**WORK ZONE TRAFFIC CONTROL**  
 Phase IV  
 Sta 10+00 to Sta 14+00

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

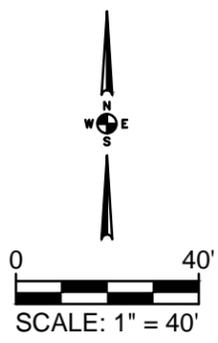
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	20



**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

**LEGEND**

TYPE III BARRICADE	III
DELINEATOR DRUM	●
STACKABLE VERTICAL PANEL	■
TUBULAR MARKER	↓
PHASE RECONSTRUCTION AREA	
WORK AREA	

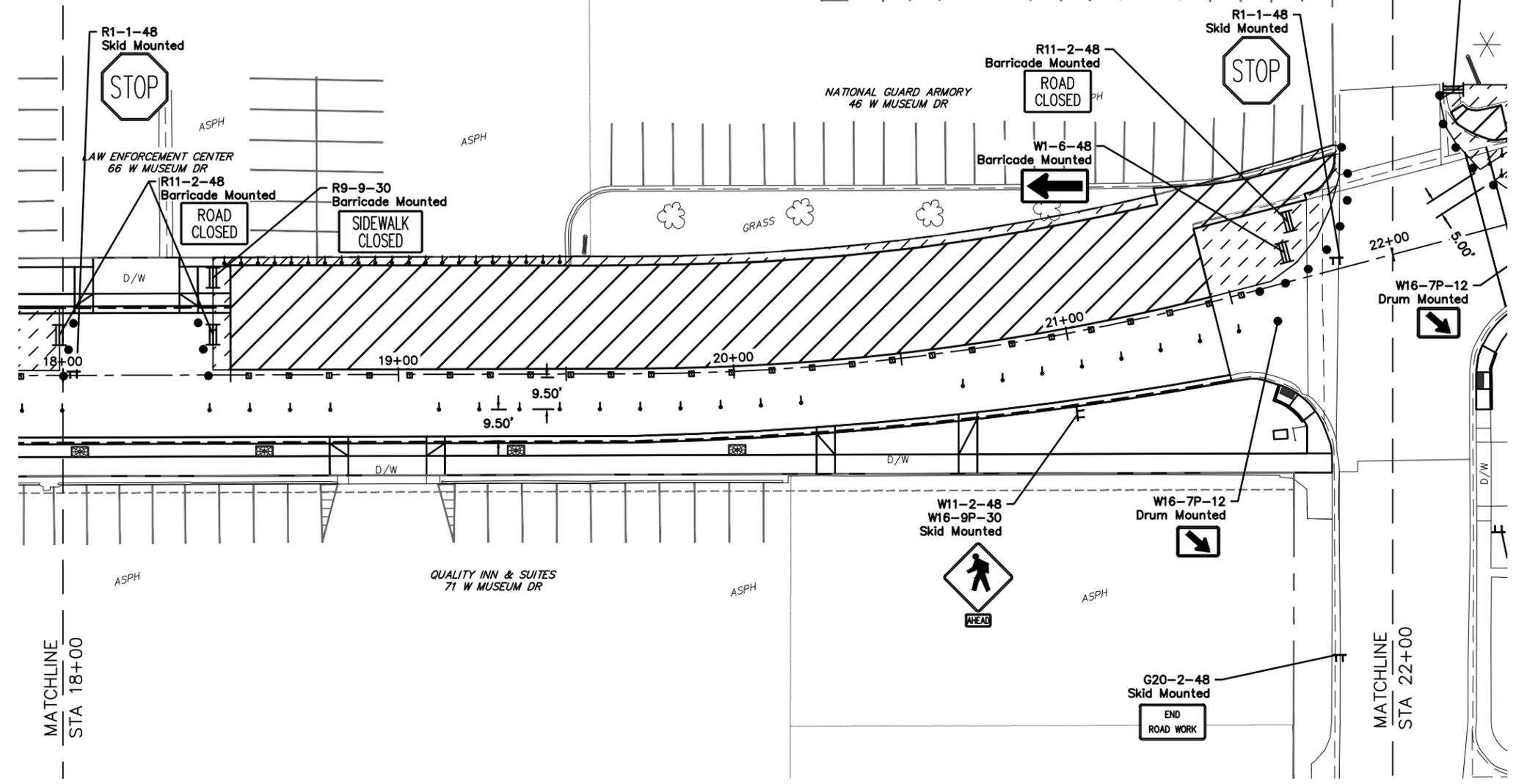


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**WORK ZONE TRAFFIC CONTROL**  
 Phase IV  
 Sta 14+00 to Sta 18+00

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

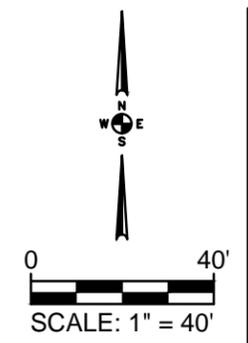
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	21



**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

**LEGEND**

TYPE III BARRICADE	III
DELINEATOR DRUM	●
STACKABLE VERTICAL PANEL	■
TUBULAR MARKER	↓
PHASE RECONSTRUCTION AREA	
WORK AREA	

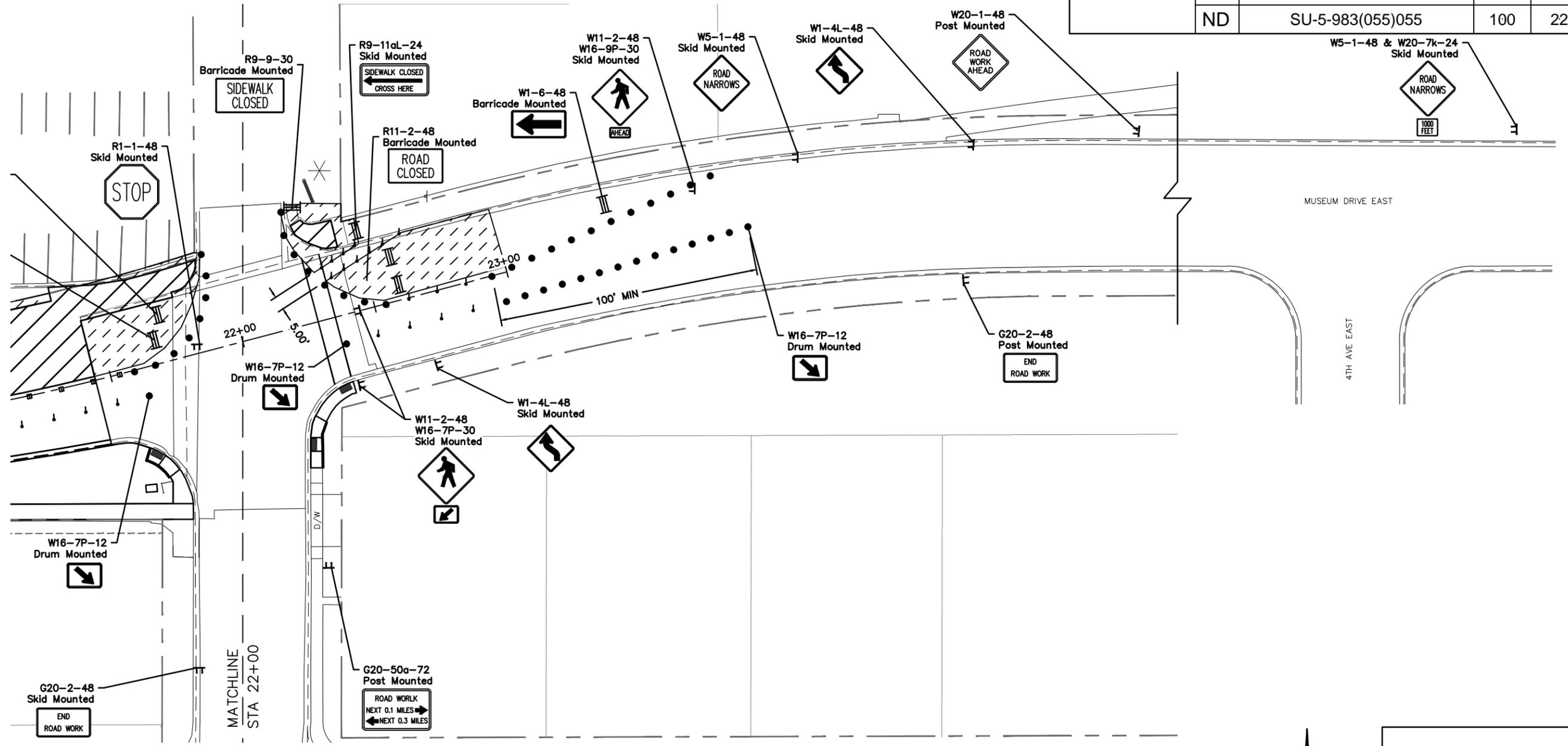


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**WORK ZONE TRAFFIC CONTROL**  
 Phase IV  
 Sta 18+00 to Sta 22+00

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

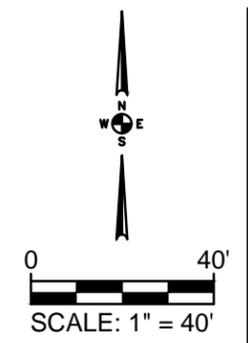
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	100	22



**NOTES:**  
 DELINEATOR DRUMS SPACED AT 8' MAX O.C.  
 STACKABLE VERTICAL PANELS SPACED AT 12' MAX O.C.  
 TUBULAR MARKERS SPACED AT 12' MAX O.C.

**LEGEND**

TYPE III BARRICADE	III
DELINEATOR DRUM	●
STACKABLE VERTICAL PANEL	■
TUBULAR MARKER	↓
PHASE RECONSTRUCTION AREA	
WORK AREA	



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**WORK ZONE TRAFFIC CONTROL**  
 Phase IV  
 > Sta 22+00

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	SU-5-983(055)055	110	1

Sta/RP	Sign No.	Assembly No.	Flat Sheet For Signs		Sign Support Length				Support Size	Max Post Len LF	Sleeve Length				Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments
			IV SF	XI SF	1st LF	2nd LF	3rd LF	4th LF			1st LF	2nd LF	3rd LF	4th LF								
09+75 Lt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
09+75 Rt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
11+00 Rt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
12+26 Lt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
12+50 Rt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
12+75 Lt		46				11.2			2.5 x 2.5 12 ga	13.1					1	4	3 x 3 7 ga	1				
13+00 Rt	SA A			8.3		11.3			2.5 x 2.5 12 ga	12.4					1	4	3 x 3 7 ga				Use fluorescent yellow green signs.	
13+80 Lt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
13+80 Rt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
14+28 Rt	SA 2E		16.0	5.2		11.2			2.5 x 2.5 10 ga	13.2					1	4	3 x 3 7 ga			1		
14+50 Rt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
14+53 Lt	SA A			8.3		11.3			2.5 x 2.5 12 ga	12.4					1	4	3 x 3 7 ga				Use fluorescent yellow green signs.	
14+53 Rt	SA A			8.3		11.3			2.5 x 2.5 12 ga	12.4					1	4	3 x 3 7 ga				Use fluorescent yellow green signs.	
15+00 Rt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
15+05 Rt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
15+75 Lt	SA A			8.3		11.3			2.5 x 2.5 12 ga	12.4					1	4	3 x 3 7 ga				Use fluorescent yellow green signs.	
16+25 Lt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
16+80 Rt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
17+80 Lt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
17+92 Rt		7		1.5																	Mount on Light Standard	
18+40 Lt		14							2 x 2 12 ga									1	1			
19+00 Lt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
19+54 Lt		14							2 x 2 12 ga									1	1			
20+19 Rt		7		1.5																	Mount on Light Standard	
20+75 Rt	SA A			8.3		11.3			2.5 x 2.5 12 ga	12.4					1	4	3 x 3 7 ga				Use fluorescent yellow green signs.	
21+13 Lt		7		1.5																	Mount on Light Standard	
21+19 Rt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
21+50 Rt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
21+60 Rt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
21+89 Lt	SA 2E		15.0	5.2		11.2			2.5 x 2.5 10 ga	13.2					1	4	3 x 3 7 ga			1		
21+99 Rt		7		1.5		8.7			2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
22+19 Rt	SA 2E		15.0	5.2		11.2			2.5 x 2.5 10 ga	13.2					1	4	3 x 3 7 ga			1		
22+30 Rt	SA A			8.3		11.3			2.5 x 2.5 12 ga	12.4					1	4	3 x 3 7 ga				Use fluorescent yellow green signs.	
22+42 Lt	SA A			8.3		11.3			2.5 x 2.5 12 ga	12.4					1	4	3 x 3 7 ga				Use fluorescent yellow green signs.	

Basis of Estimate  
Sign Support Lengths

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

Areas where parking and/or pedestrian movement will occur - 84"

<p>This document was originally signed and sealed by Andrew Schrank, Registration Number PE-9814, on 3-3-16 and the original document is stored at Dickinson City Hall</p>	<p>Sign Summary Perforated Tube</p>
	<p>MUSEUM DRIVE RECONSTRUCTION</p>

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	SU-5-983(055)055	110	2

Sta/RP	Sign No.	Assembly No.	Flat Sheet For Signs		Sign Support Length				Support Size	Max Post Len LF	Sleeve Length				Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments
			IV SF	XI SF	1st LF	2nd LF	3rd LF	4th LF			1st LF	2nd LF	3rd LF	4th LF								
22+80 Rt		7	1.5	8.7					2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
23+00 Lt		7	1.5	8.7					2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
23+92 Lt	SA A		8.3	11.3					2.5 x 2.5 12 ga	12.4					1	4	3 x 3 7 ga				Use fluorescent yellow green signs.	
24+45 Rt		7	1.5	8.7					2 x 2 12 ga	25.5					1	4	2.25 x 2.25 12 ga					
<b>Sub Total</b>			46.0	118.0						<b>Total 317.1</b>					<b>Total 132</b>			3	2	3		
<b>Grand Total</b>			46.0	118.0						<b>Total 317.1</b>					<b>Total 132</b>			3	2	3		

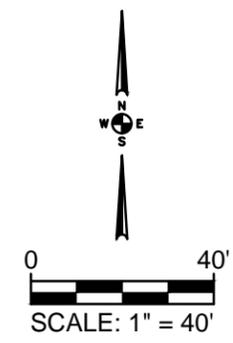
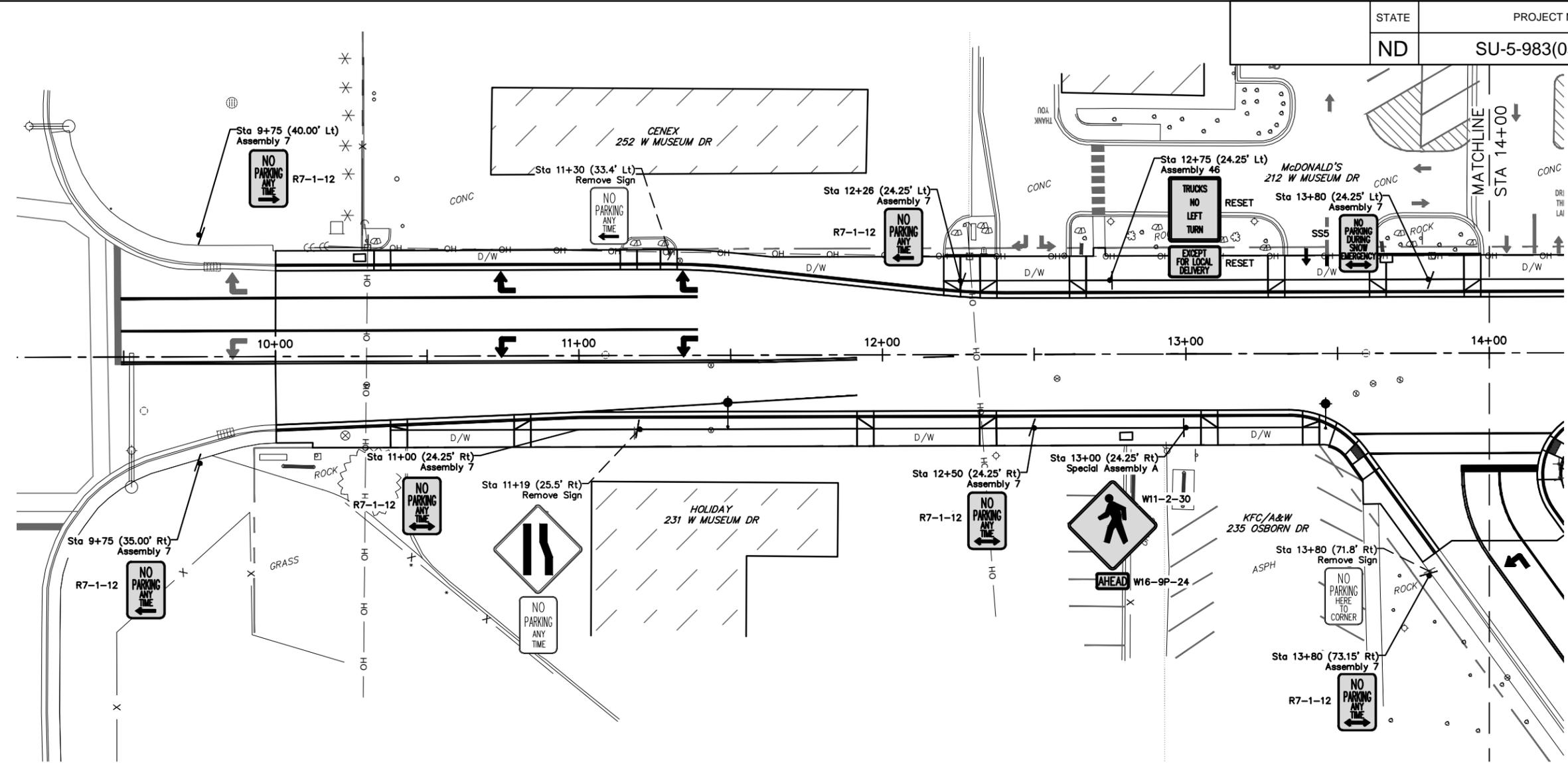
Basis of Estimate  
Sign Support Lengths

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

Areas where parking and/or pedestrian movement will occur - 84"

<p>This document was originally signed and sealed by Andrew Schrank, Registration Number PE-9814, on 3-3-16 and the original document is stored at Dickinson City Hall</p>	<p>Sign Summary Perforated Tube MUSEUM DRIVE RECONSTRUCTION</p>
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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	110	3

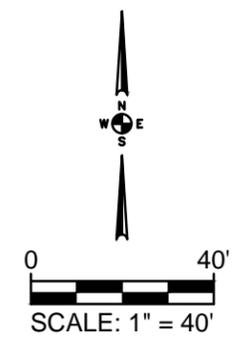
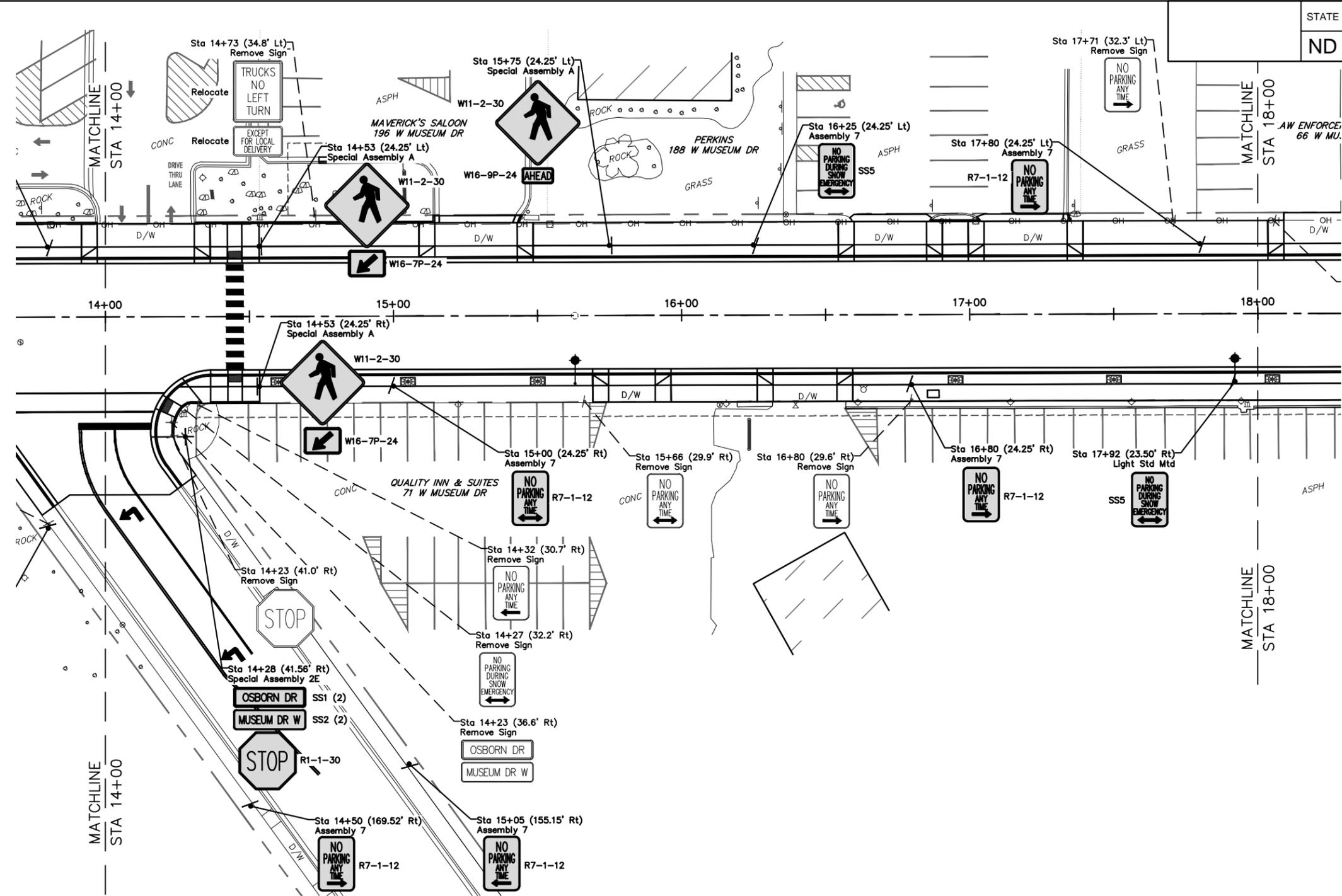


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**SIGNING**  
Sta 10+00 to Sta 14+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	110	4

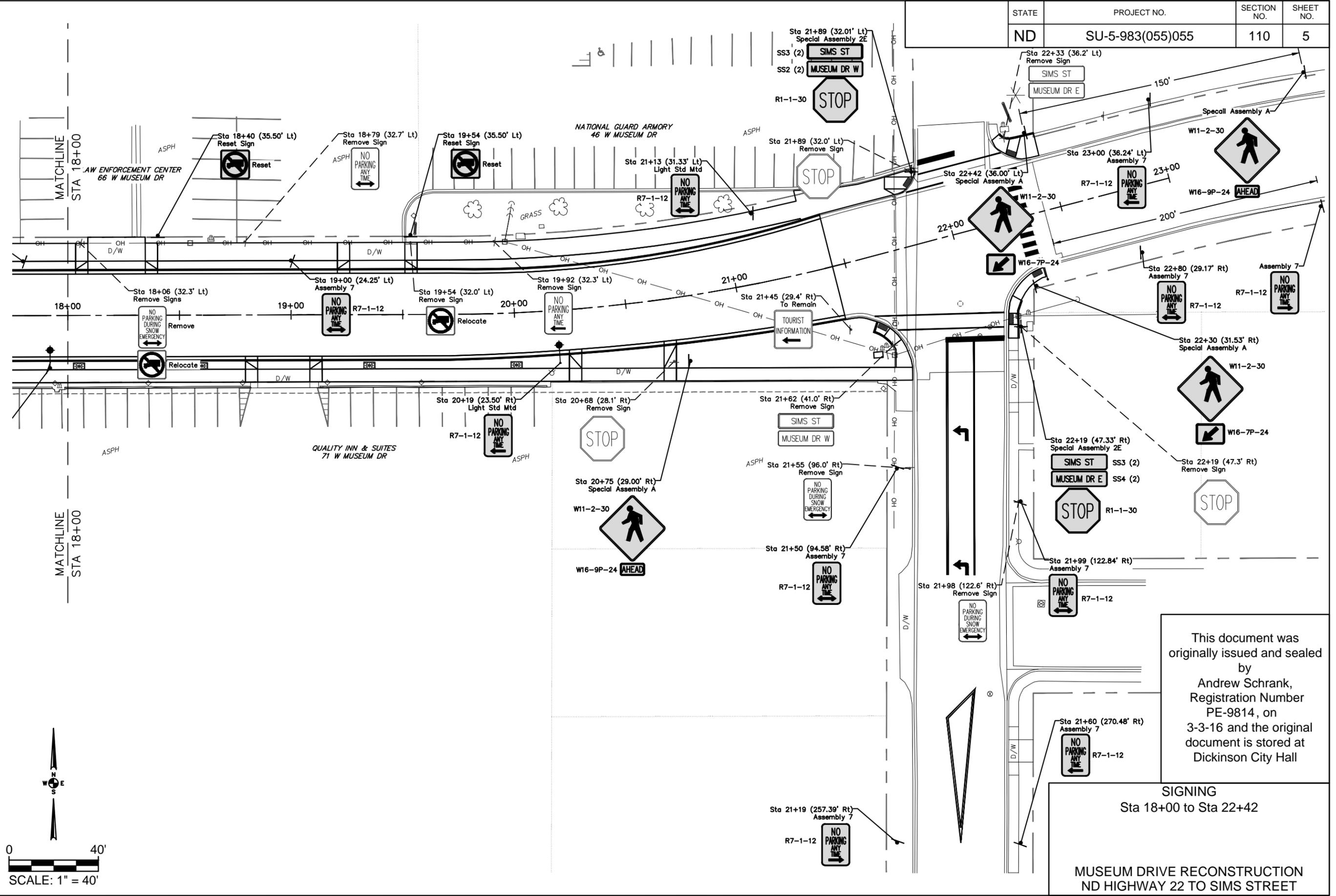


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**SIGNING**  
Sta 14+00 to Sta 18+00

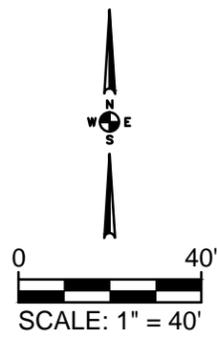
**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	110	5

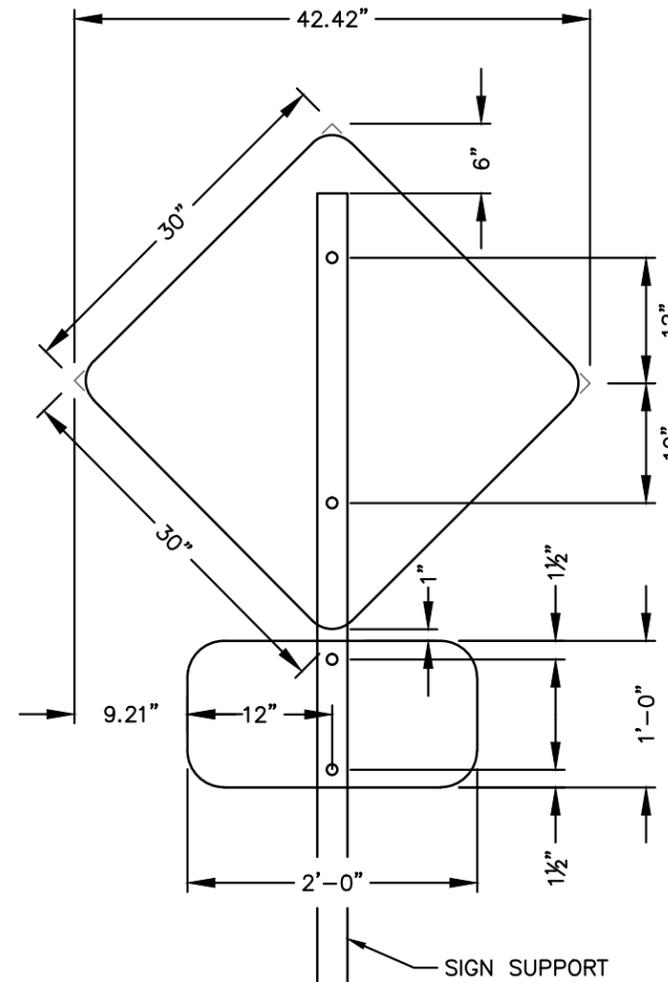


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**SIGNING**  
Sta 18+00 to Sta 22+42  
**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-5-983(055)055	110	6



**SPECIAL ASSEMBLY A (SA A)**

SCALE: NOT TO SCALE  
(PERFORATED STEEL TUBE)  
Area: 8.3 SF

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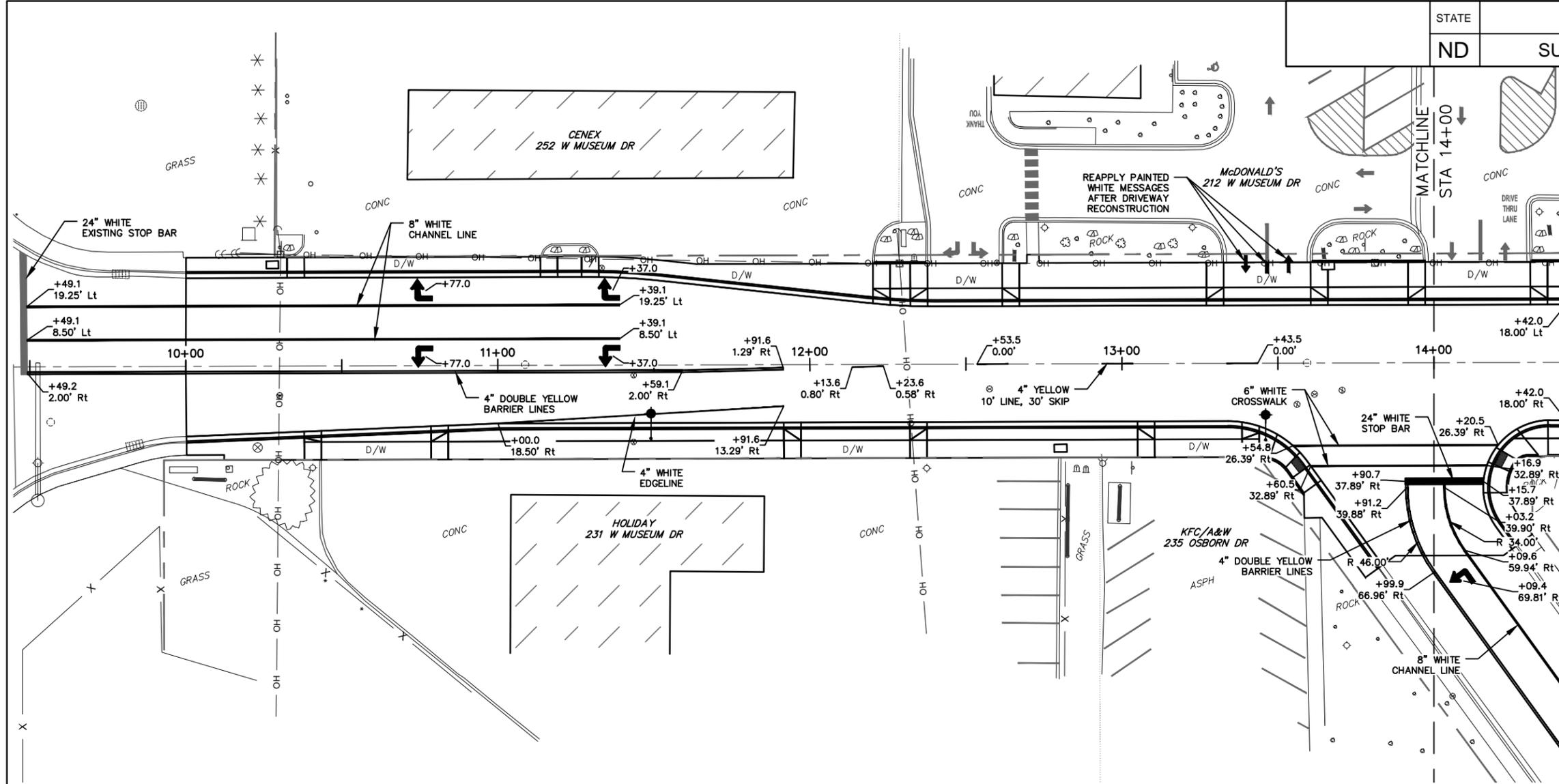
SIGNING  
Special Assembly A (SA A)  
MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET



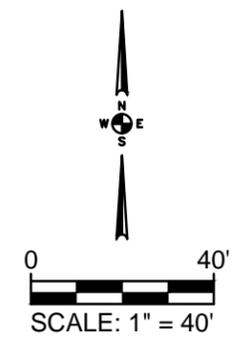




STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	120	1



<b>PREFORMED PVMT MK MESSAGE-GOOVED</b>	
Left Arrow - White (2)	32 SF
Right Arrow - White (2)	32 SF
	64 SF
<b>PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED</b>	
Solid Lines - Yellow	545 LF
Skip Marks - Yellow	40 LF
Edge Line - White	92 LF
	656 LF
<b>PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED</b>	
Solid Lines - White	84 LF
	84 LF
<b>PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED</b>	
Solid Lines - White	380 LF
	380 LF
<b>PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED</b>	
Solid Lines - White	9 LF
	9 LF
<b>PVMT MK PAINTED-MESSAGE</b>	
WHITE MESSAGES - McDONALD'S DRIVEWAY	14 SF
	14 SF

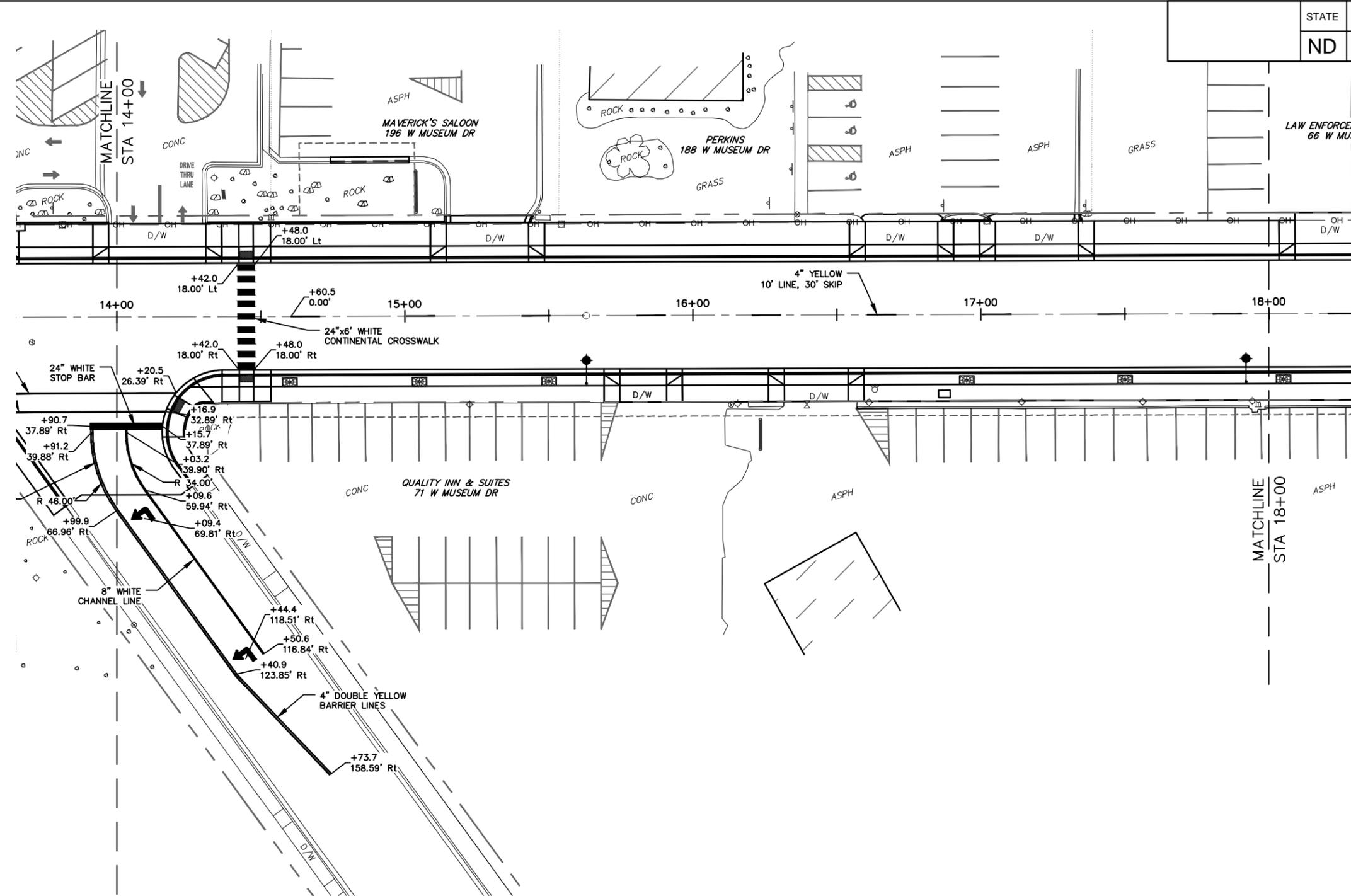


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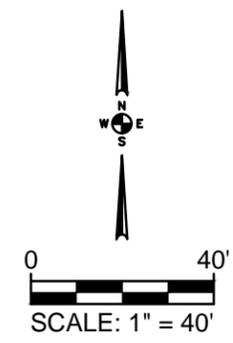
**PAVEMENT MARKING**  
Sta 10+00 to Sta 14+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	120	2



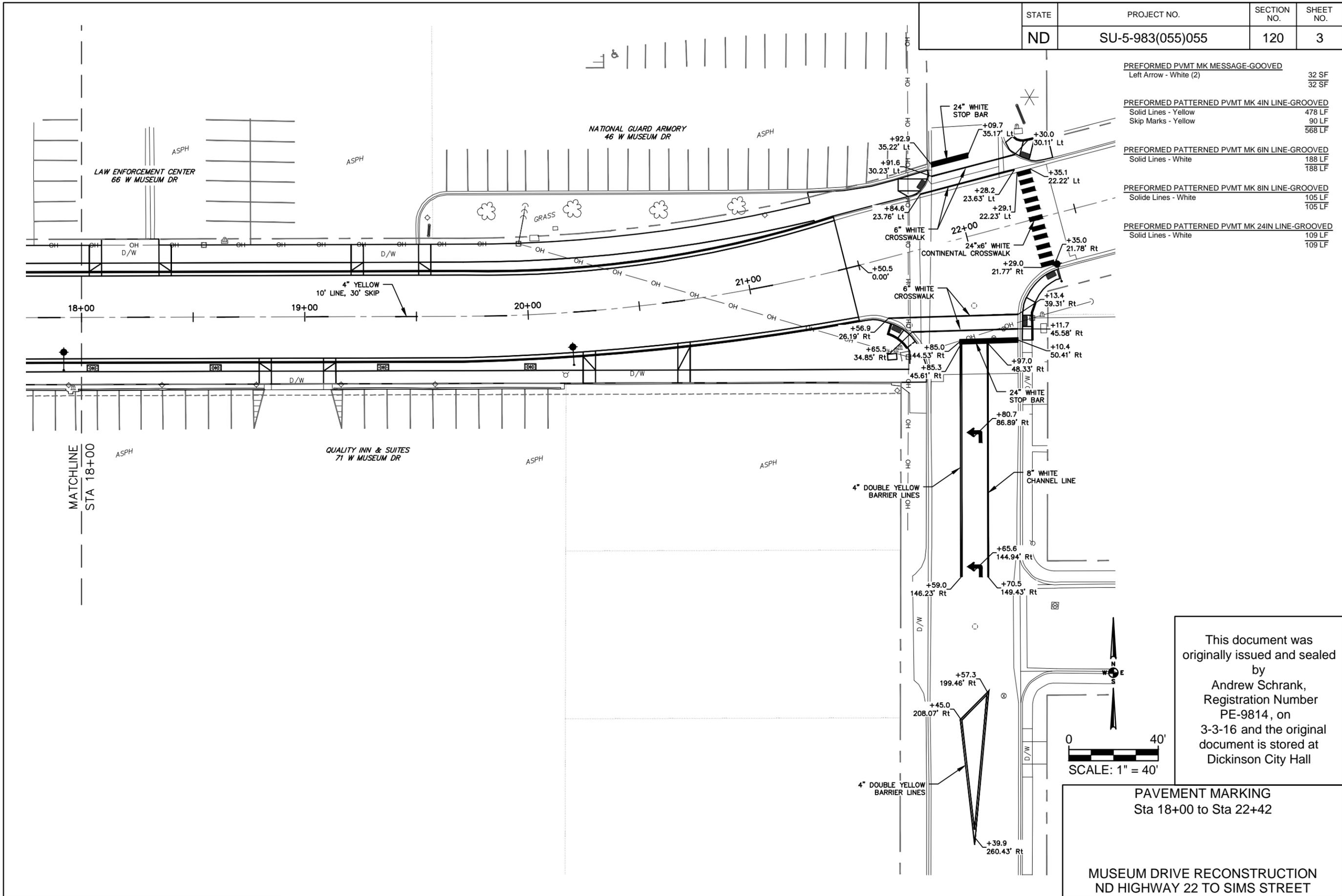
PREFORMED PVMT MK MESSAGE-GOOVED Left Arrow - White (2)	32 SF 32 SF
PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED Solid Lines - Yellow Skip Marks - Yellow	236 LF 90 LF 326 LF
PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED Solid Lines - White	38 LF 38 LF
PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED Solid Lines - White	93 LF 93 LF
PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED Solid Lines - White	70 LF 70 LF



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PAVEMENT MARKING  
Sta 14+00 to Sta 18+00

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	120	3

PREFORMED PVMT MK MESSAGE-GOOVED Left Arrow - White (2)	32 SF 32 SF
PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED Solid Lines - Yellow Skip Marks - Yellow	478 LF 90 LF 568 LF
PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED Solid Lines - White	188 LF 188 LF
PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED Solid Lines - White	105 LF 105 LF
PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED Solid Lines - White	109 LF 109 LF

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PAVEMENT MARKING  
Sta 18+00 to Sta 22+42

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

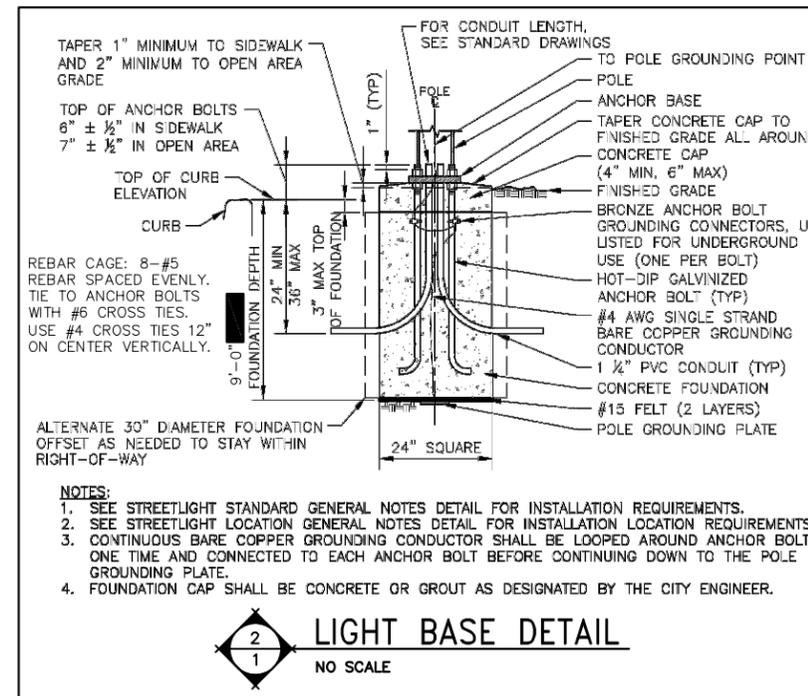
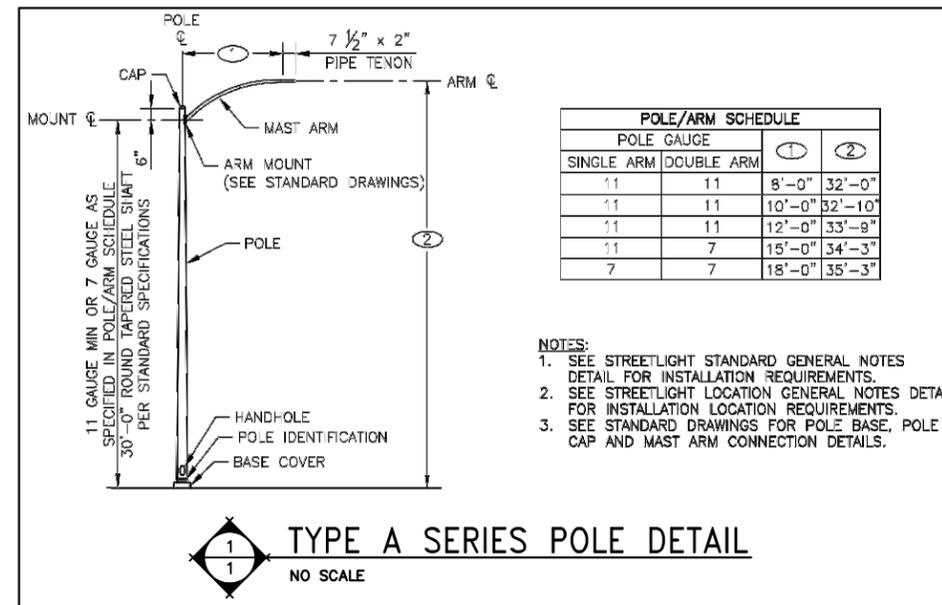
**GENERAL NOTES**

- COORDINATE ROUTING OF UNDERGROUND CIRCUITRY FEEDERS WITH TREE PLACEMENT TO AVOID CONFLICT WITH TREE ROOT SYSTEMS.
- LIGHT STANDARDS SHALL BE DESIGNED AND CONSTRUCTED AS SPECIFIED IN THE SPECIAL PROVISIONS. ALL THE NECESSARY CALCULATIONS AND DRAWINGS USED IN THE DESIGN OF THESE POLES SHALL BE FURNISHED WITH THE SHOP DRAWING SUBMITTAL. CALCULATIONS AND WORK DRAWINGS USED IN THE DESIGN OF THE LIGHT STANDARDS SHALL BE SIGNED, SEALED, AND DATED BY A PROFESSIONAL ENGINEER DULY REGISTERED IN THE STATE OF NORTH DAKOTA.

**STREETLIGHT STANDARD AND LOCATION GENERAL NOTES**

- ALL STREETLIGHT STANDARDS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SPECIAL PROVISION AND AS INDICATED ON THESE DRAWINGS..
- ALL COMPONENTS OF THE STREETLIGHT STANDARD, INCLUDING THE POLE, ARM, HANDHOLE COVER, BASE COVER AND THE POLE CAP, SHALL BE FERROUS METAL AND HOT-DIP GALVANIZED AFTER CONSTRUCTION IN ACCORDANCE WITH ASTM A123. ALUMINUM OR ALUMINUM ALLOY IS NOT ACCEPTABLE. FLAWS IN THE APPEARANCE OF THESE GALVANIZED COMPONENTS (i.e. "TIGER STRIPED", "ZEBRA STRIPED"), SHALL BE CAUSE FOR REJECTION. NON-METALLIC TYPE BASE COVERS MAY BE ACCEPTABLE AND SHALL BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL. CONCRETE POLES SHALL BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.
- ALL FASTENING HARDWARE SHALL BE NON-CORROSIVE, CADMIUM PLATED OR EQUAL, APPROVED BY THE CITY ENGINEER. FASTENERS SHALL BE OF THE SIZE AND CONFIGURATION NOTED ON THE DRAWINGS.
- CONCRETE POLE FOUNDATIONS SHOULD BE POURED AGAINST UNDISTURBED, NATURAL SOIL, OR IF FORMING MATERIAL IS USED, SHALL BE STRIPPED AWAY FROM THE FOUNDATION AT LEAST ONE (1) FOOT BELOW FINISHED GRADE.
- POLES SHALL BE INSTALLED ON THE CONCRETE FOUNDATIONS WITH ANCHOR BOLTS. EACH BOLT SHALL BE INSTALLED WITH TWO (2) HEX NUTS AND TWO (2) FLAT WASHERS. THE ANCHOR BOLTS SHALL BE 1-1/8" X 40" X 4". THE ANCHOR BOLTS, NUTS AND WASHERS SHALL BE HOT-DIP GALVANIZED. THE POLE SHALL BE PLUMBED PRIOR TO PLACING THE GROUT OR CONCRETE CAP. CONCRETE FOR CAP SHALL BE DESIGNATED BY CITY ENGINEER. SHIMS OR WEDGES OF ANY KIND ARE NOT ACCEPTABLE TO PLUMB THE POLE AFTER THE CAP HAS BEEN PLACED.
- ALL UNDERGROUND CONDUIT INSTALLED SHALL HAVE RED, CONTINUOUS MARKING TAPE INSTALLED IN THE TRENCH 12" BELOW FINISHED GRADE.
- WHERE SIGNALS AND STANDARDS ARE INSTALLED UNDER OVERHEAD POWER LINES, CLEARANCES SHALL BE PER NATIONAL ELECTRICAL SAFETY CODE SECTION 234 REQUIREMENTS. INSTALL STRAIGHT ARM STREETLIGHT ASSEMBLIES WHERE ADDITIONAL CLEARANCE IS REQUIRED AND APPROVED BY THE CITY ENGINEER.
- ALL STREETLIGHTS SHALL BE 240 VOLT SINGLE PHASE MULTIPLE CIRCUIT, EXCEPT STREETLIGHTS ON TRAFFIC SIGNALS WHICH SHALL BE 120 VOLT.

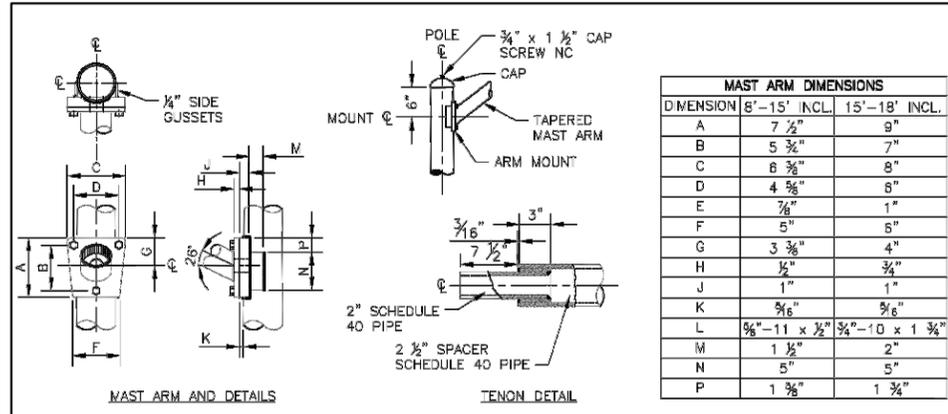
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-5-983(055)055	140	1



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NOTES AND DETAILS

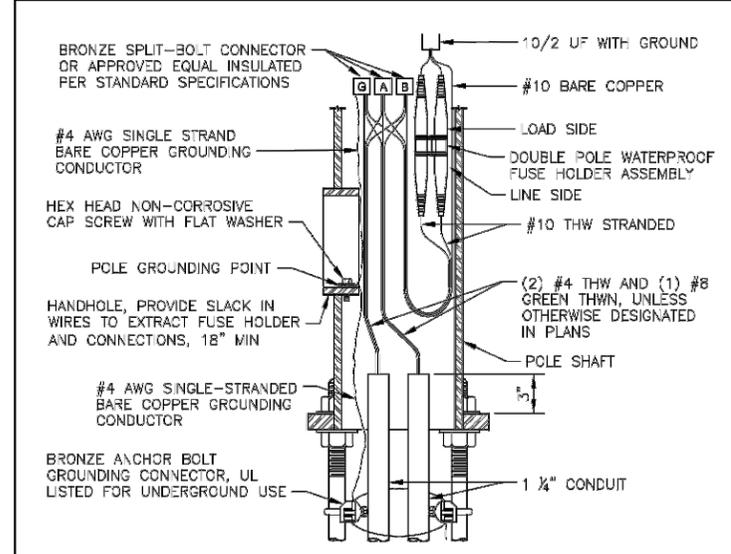
MUSEUM DRIVE RECONSTRUCTION  
 ND HIGHWAY 22 TO SIMS STREET



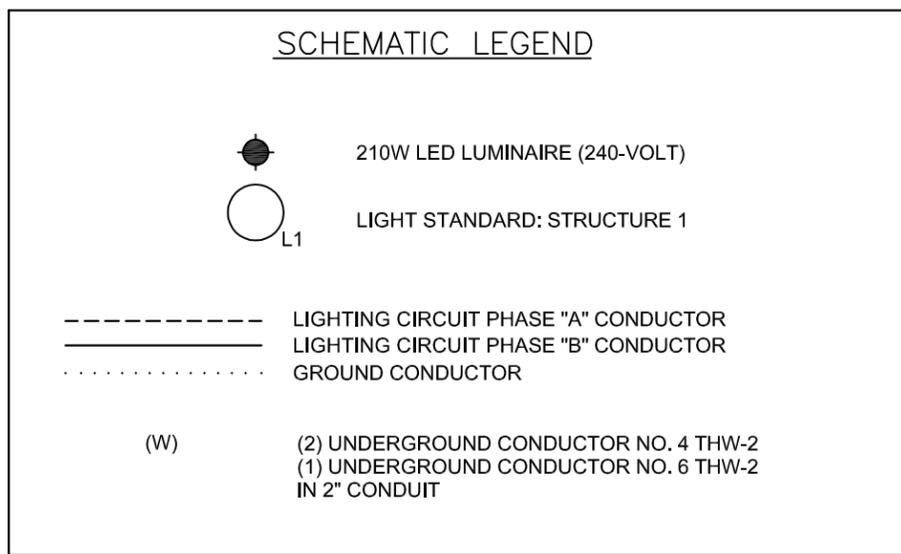
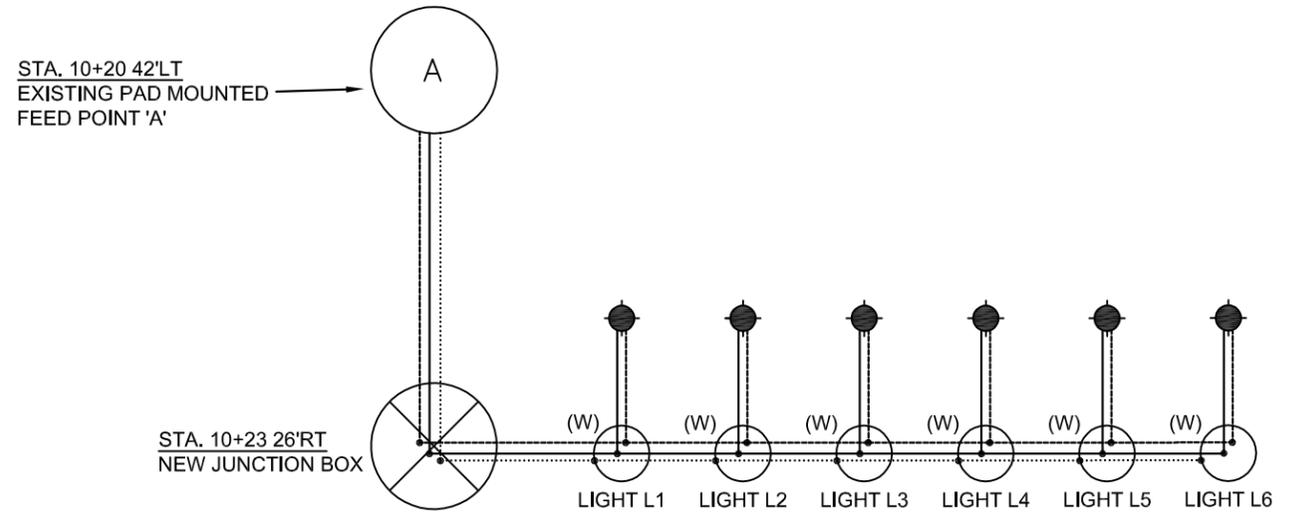
MAST ARM DIMENSIONS		
DIMENSION	8'-15' INCL.	15'-18' INCL.
A	7 7/8"	9"
B	5 3/8"	7"
C	6 3/8"	8"
D	4 5/8"	5"
E	7/8"	1"
F	5"	5"
G	3 3/8"	4"
H	1/2"	3/4"
J	1"	1"
K	5/8"	5/8"
L	5/8"-11 x 1/2"	3/4"-10 x 1 3/4"
M	1 1/2"	2"
N	5"	5"
P	1 3/8"	1 3/4"

- NOTES:
- SEE STREETLIGHT STANDARD GENERAL NOTES DETAIL FOR INSTALLATION REQUIREMENTS.
  - SEE STREETLIGHT LOCATION GENERAL NOTES DETAIL FOR INSTALLATION LOCATION REQUIREMENTS.

**POLE TOP AND ARM MOUNTING DETAILS**  
NO SCALE



**LIGHTING STANDARD WIRING DIAGRAM**  
NO SCALE



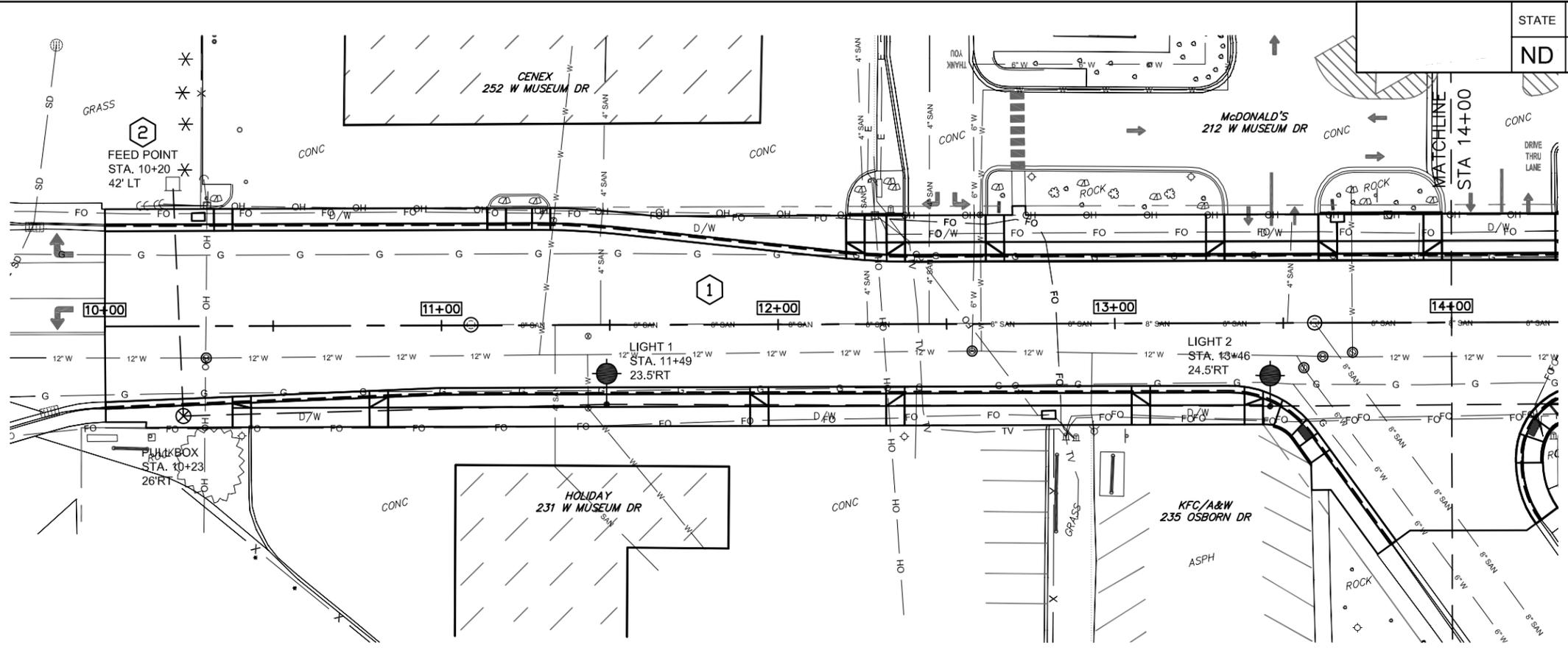
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ELECTRICAL SCHEMATIC

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

LIGHT  
Sta 11+49 23.5'RT  
Sta. 13+46 24.5'RT

1 EA  
1 EA  
2 EA



**NOTES**

- ALL HIGHWAY CIRCUITRY SHALL BE DIRECTIONAL BORED INTO PLACE.
- MODIFY EXISTING FEED POINT TO PROVIDE ONE NEW 50/2 BREAKER AND NEW 2-POLE LIGHTING CONTACTOR TO SERVE NEW LIGHTING CIRCUIT. EXTEND EXISTING PHOTOCELL CONTROL CIRCUITRY FROM EXISTING CONTACTOR TO NEW CONTACTOR.

FIXTURE NUMBER	STATION & OFFSET	LUMINAIRE WATTAGE	LUMINAIRE DISTRIBUTION	POLE HT.	MAST ARM
L1	11+49 23.5'RT	210 (LED)	M-S-II	32'	8'
L2	13+46 24.5'RT	210 (LED)	M-S-II	32'	8'

FIXTURE NOMENCLATURE: A1-1 IS FEEDPOINT A, CIRCUIT 1, STRUCTURE 1. ALL LUMINAIRES OPERATE AT 240-VOLTS.

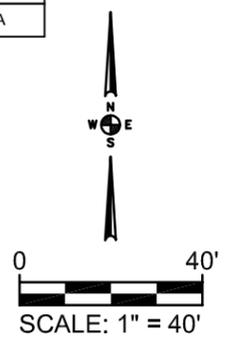
ALL STREET LIGHT STATIONING BASED ON MUSEUM DRIVE CENTER LINE.

ITEM	STATION & OFFSET	2" DIAMETER RIGID CONDUIT	(2) UNDERGROUND CONDUCTOR NO. 4 THW-2	UNDERGROUND CONDUCTOR NO. 6 THW-2
FEED POINT TO PULL BOX	10+20 42'LT TO 10+23 26'RT	68 LF	172 LF	86 LF
PULL BOX TO LIGHT L1	10+23 26'RT TO 11+49 23.5'RT	126 LF	272 LF	136 LF
LIGHT L1 TO LIGHT L2	11+49 23.5'RT TO 13+46 24.5'RT	197 LF	410 LF	205 LF

QUANTITIES-THE SHEET			
770	0020	CONCRETE FOUNDATION-HIGHWAY LIGHTING	2 EA
770	0330	2" DIAMETER RIGID CONDUIT	391 LF
770	0604	(2) UNDERGROUND CONDUCTOR NO. 4 THW-2	854 LF
770	0605	UNDERGROUND CONDUCTOR NO. 6 THW-2	427 LF
770	0110	JUNCTION BOX	1 EA
770	1718	LT STD 8FT MA 32FT POLE BREAKAWAY	2 EA
770	4210	LED LUMINAIRE	2 EA
770	4523	REVISE HIGHWAY LIGHTING FEED POINT	1 EA

**LEGEND**

LED LUMINAIRE, 250W EQUIVALENT 



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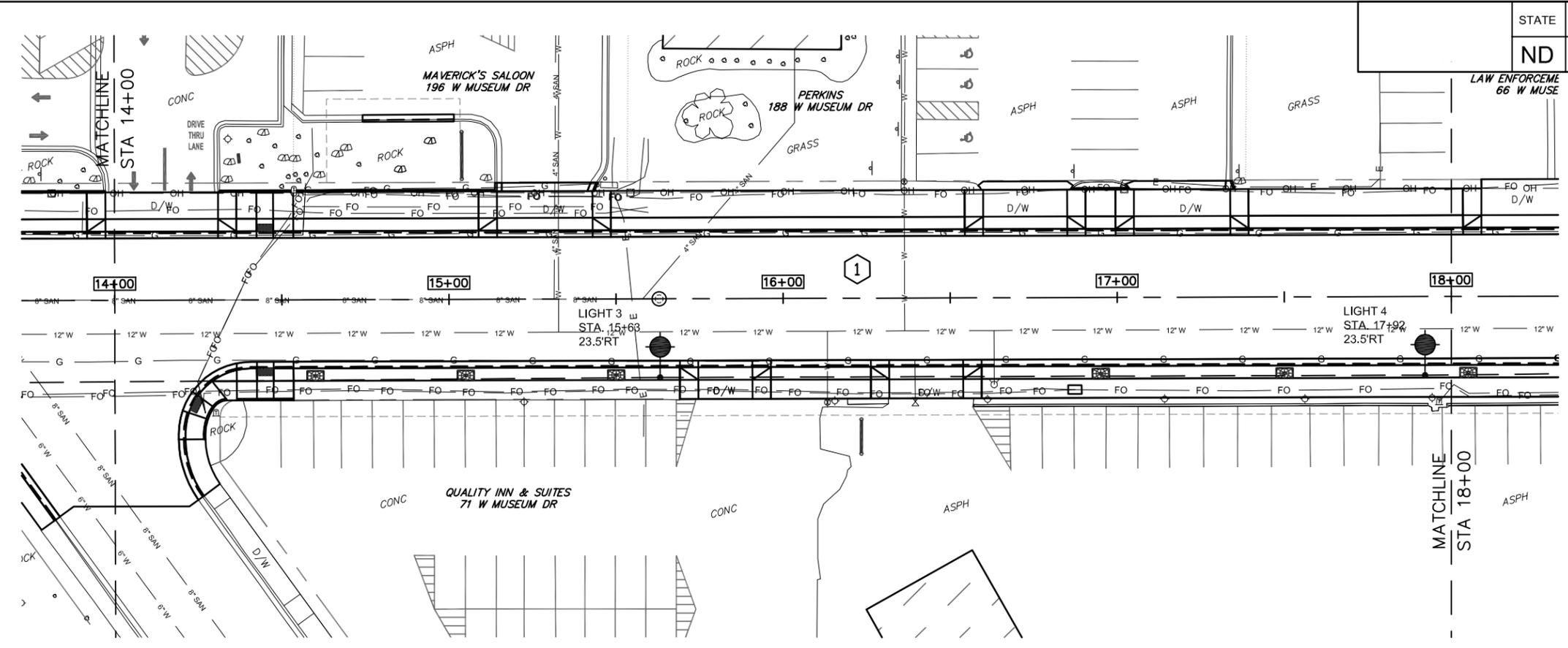
**LIGHTING PLAN**  
Sta 10+00 to Sta 14+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	140	4

LIGHT  
Sta 15+63 23.5'RT  
Sta. 17+92 23.5'RT

1 EA  
1 EA  
2 EA



**NOTES**

1. ALL HIGHWAY CIRCUITRY SHALL BE DIRECTIONAL BORED INTO PLACE.

FIXTURE NUMBER	STATION & OFFSET	LUMINAIRE WATTAGE	LUMINAIRE DISTRIBUTION	POLE HT.	MAST ARM
L3	15+63 23.5'RT	210 (LED)	M-S-II	32'	8'
L4	17+92 23.5'RT	210 (LED)	M-S-II	32'	8'

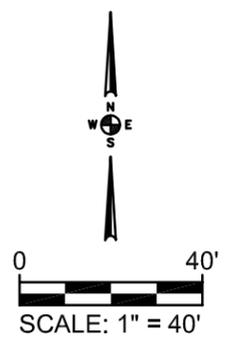
**QUANTITIES-TTHIS SHEET**

770	0020	CONCRETE FOUNDATION-HIGHWAY LIGHTING	2 EA
770	0330	2" DIAMETER RIGID CONDUIT	446 LF
770	0604	(2) UNDERGROUND CONDUCTOR NO. 4 THW-2	924 LF
770	0605	UNDERGROUND CONDUCTOR NO. 6 THW-2	462 LF
770	0110	JUNCTION BOX	0 EA
770	1718	LT STD 8FT MA 32FT POLE BREAKAWAY	2 EA
770	4210	LED LUMINAIRE	2 EA

ITEM	STATION & OFFSET	2" DIAMETER RIGID CONDUIT	(2) UNDERGROUND CONDUCTOR NO. 4 THW-2	UNDERGROUND CONDUCTOR NO. 6 THW-2
LIGHT L2 TO LIGHT L3	13+46 24.5'RT TO 15+63 23.5'RT	217 LF	450 LF	225 LF
LIGHT L3 TO LIGHT L4	15+63 23.5'RT TO 17+92 23.5'RT	229 LF	474 LF	237 LF

**LEGEND**

LED LUMINAIRE, 250W EQUIVALENT

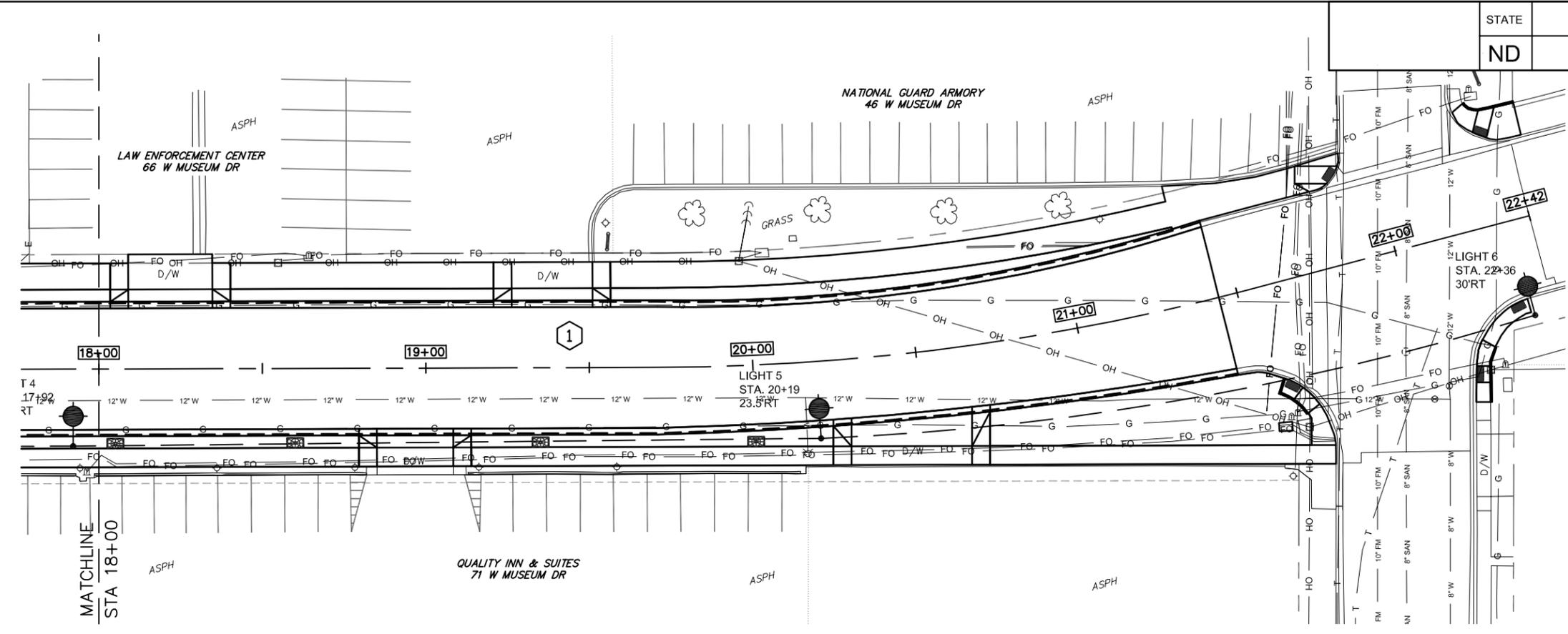


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**LIGHTING PLAN**  
Sta 14+00 to Sta 18+00

**MUSEUM DRIVE RECONSTRUCTION**  
ND HIGHWAY 22 TO SIMS STREET

LIGHT  
 Sta 20+19 23.5'RT  
 Sta. 22+36 30'RT  
 1 EA  
 1 EA  
 2 EA



**NOTES**

1. ALL HIGHWAY CIRCUITRY SHALL BE DIRECTIONAL BORED INTO PLACE.

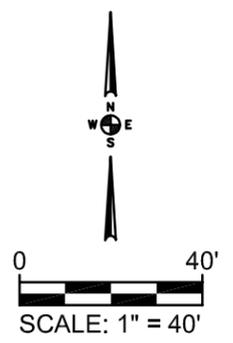
FIXTURE NUMBER	STATION & OFFSET	LUMINAIRE WATTAGE	LUMINAIRE DISTRIBUTION	POLE HT.	MAST ARM
L5	20+19 23.5'RT	210 (LED)	M-S-II	32'	8'
L6	22+36 30'RT	210 (LED)	M-S-II	32'	8'

ITEM	STATION & OFFSET	2" DIAMETER RIGID CONDUIT	(2) UNDERGROUND CONDUCTOR NO. 4 THW-2	UNDERGROUND CONDUCTOR NO. 6 THW-2
LIGHT L4 TO LIGHT L5	17+92 23.5'RT TO 20+19 23.5'RT	229 LF	474 LF	237 LF
LIGHT L5 TO LIGHT L6	20+19 23.5'RT TO 22+36 30'RT	222 LF	460 LF	230 LF

QUANTITIES-THIS SHEET			
770	0020	CONCRETE FOUNDATION-HIGHWAY LIGHTING	2 EA
770	0330	2" DIAMETER RIGID CONDUIT	451 LF
770	0604	(2) UNDERGROUND CONDUCTOR NO. 4 THW-2	934 LF
770	0605	UNDERGROUND CONDUCTOR NO. 6 THW-2	467 LF
770	0110	JUNCTION BOX	0 EA
770	1718	LT STD 8FT MA 32FT POLE BREAKAWAY	2 EA
770	4210	LED LUMINAIRE	2 EA
770	4523	REVISE HIGHWAY LIGHTING FEED POINT	0 EA

**LEGEND**

LED LUMINAIRE, 250W EQUIVALENT



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**LIGHTING PLAN**  
 Sta 18+00 to Sta 22+42

**MUSEUM DRIVE RECONSTRUCTION**  
 ND HIGHWAY 22 TO SIMS STREET

Braun Project B1508345 Geotechnical Evaluation Museum Drive Reconstruction Highway 22 and Sims Street Dickinson, North Dakota		BORING: <b>ST-01</b> LOCATION: See sketch					
DRILLER: M. Barrett	METHOD: 3 1/4" HSA, Autohammer	DATE: 10/7/15	SCALE: 1" = 4'				
Elev. feet	Depth feet	Symbol	Description of Materials (Soil-ASTM D2488 or D2487, Rock-USACE EM1110-1-2908)	BPF	WL	MC %	Tests or Notes
152.7	0.0	BIT	7 inches of bituminous surfacing.				
152.1	0.6	SS	SENTINEL BUTTE FORMATION, SANDSTONE, brown, wet to moist, decomposed, very soft, sample retrieved as non-cemented "Silty Sand (SM)".	11		23	P200=44%
150.7	2.0	CLST	SENTINEL BUTTE FORMATION, CLAYSTONE, with Silt lenses, brown and gray, moist to wet, decomposed, very soft, hand deformed sample classified as "Fat Clay (CH)".		TW	21	WD=125 pcf, DD=103 pcf
				16		26	
146.7	6.0		END OF BORING.  Water not observed to cave-in depth of 4 feet immediately after withdrawal of auger.  Boring then backfilled with auger cuttings. Surface repaired with bituminous patch.				Bag sample collected from 0.6 to 6 feet. Proctor Test CBR Test Benchmark: Surface elevations at the boring locations were referenced to the floor level of the McDonald's restaurant, with assumed elevation of 150 feet.

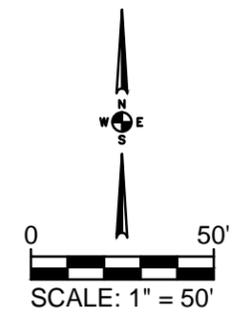
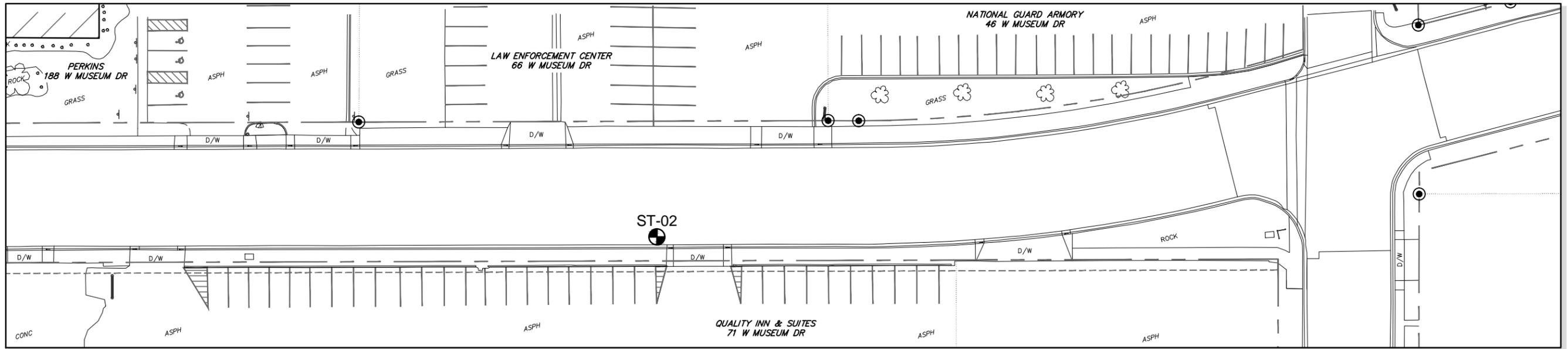
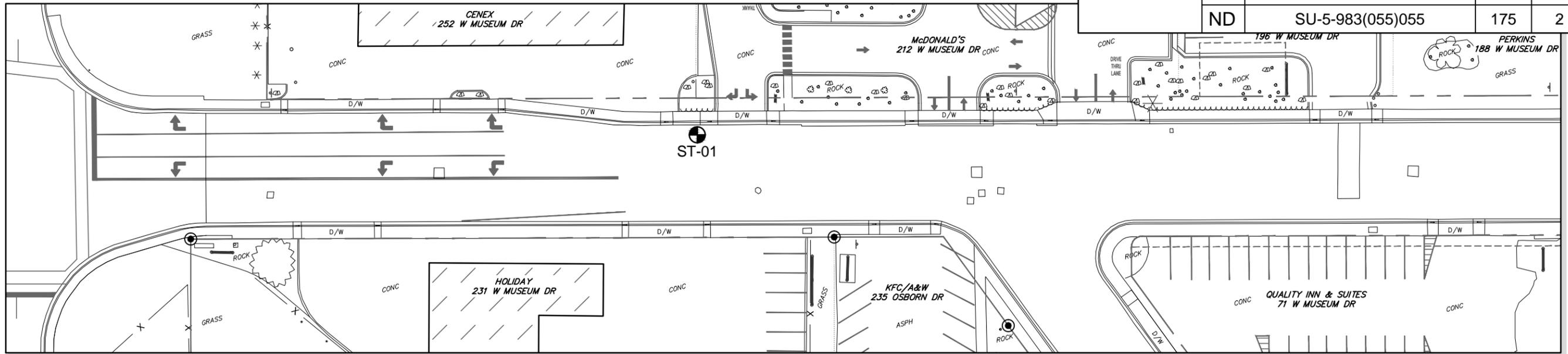
Braun Project B1508345 Geotechnical Evaluation Museum Drive Reconstruction Highway 22 and Sims Street Dickinson, North Dakota		BORING: <b>ST-02</b> LOCATION: See sketch					
DRILLER: M. Barrett	METHOD: 3 1/4" HSA, Autohammer	DATE: 10/7/15	SCALE: 1" = 4'				
Elev. feet	Depth feet	Symbol	Description of Materials (Soil-ASTM D2488 or D2487, Rock-USACE EM1110-1-2908)	BPF	WL	MC %	Tests or Notes
155.5	0.5	BIT	6 inches bituminous surfacing.				
		FILL	FILL: Fat Clay with Sand, brown and gray, moist to wet.	9		24	LL=52, PL=18, PI=34
					TW	27	WD=127 pcf, DD=100 pcf
152.0	4.0	FILL	FILL: Fat Clay with Sand, brown and gray, wet.	7		25	
150.0	6.0		END OF BORING.  Water not observed to cave-in depth of 4 feet immediately after withdrawal of auger.  Boring then backfilled with auger cuttings. Surface repaired bituminous patch.				Bag Sample collected from 0.5 to 6 feet. Proctor Test CBR Test

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**SOIL BORING LOGS**

**MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET**

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	175	2

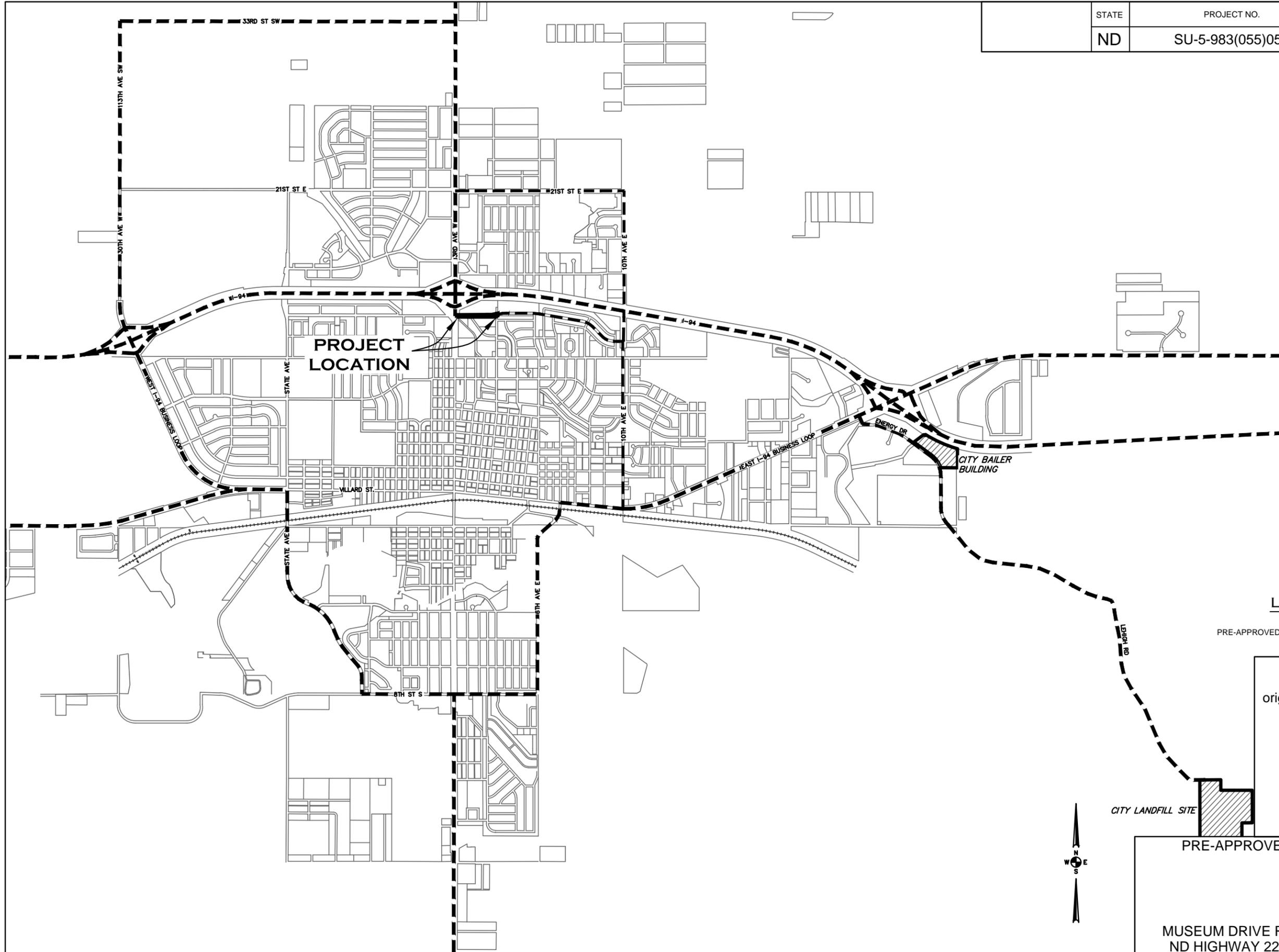


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SOIL BORING LOGS

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-5-983(055)055	190	1



**LEGEND**

PRE-APPROVED HAUL ROAD - - - - -

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PRE-APPROVED HAUL ROADS

MUSEUM DRIVE RECONSTRUCTION  
ND HIGHWAY 22 TO SIMS STREET

NDDOT ABBREVIATIONS

? This is a special text character used in the labeling of existing features. It indicates a feature that has an unknown characteristic, potentially based on: lack of description, location accuracy or purpose.

Abn abandoned  
 Abut abutment  
 Ac acres  
 Adj adjusted  
 Aggr aggregate  
 Ahd ahead  
 ARV air release valve  
 Align alignment  
 Al alley  
 Alt alternate  
 Alum aluminum  
 ADA Americans with Disabilities Act  
 A ampere  
 & and  
 Appr approach  
 Approx approximate  
 ACP asbestos cement pipe  
 Asph asphalt  
 AC asphalt cement  
 Assmd assumed  
 @ at  
 Atten attenuation  
 ATR automatic traffic recorder  
 Ave Avenue  
 Avg average  
 ADT average daily traffic  
 Az azimuth  
 Bk back  
 BF back face  
 Bs backsight  
 Balc balcony  
 B Wire barbed wire  
 Barr barricade  
 Btry battery  
 Brg bearing  
 BI beehive inlet  
 Beg begin  
 BM bench mark  
 Bkwy bikeway  
 Bit bituminous  
 Blk block  
 Bd Ft board feet  
 BH bore hole  
 BS both sides  
 Bot bottom  
 Blvd Boulevard  
 Bndry boundary  
 BC brass cap  
 Brkwy breakaway  
 Br bridge  
 Bldg building

BV butterfly valve  
 Byp bypass  
 C Gdrl cable guardrail  
 Calc calculate  
 Cd candela  
 CIP cast iron pipe  
 CB catch basin  
 CRS cationic rapid setting  
 C Gd cattle guard  
 C To C center to center  
 Cl or C centerline  
 Cm centimeter  
 Ch chain  
 Chnlk chain-link  
 Ch Blk channel block  
 Ch Ch channel change  
 Chk check  
 Chsld chiseled  
 Cir circle  
 Cl class  
 Cl clay  
 Cl F clay fill  
 Cl Hvy clay heavy  
 Cl Lm clay loam  
 Clnt clean-out  
 Clr clear  
 Cl&gr clearing & grubbing  
 Co S coal slack  
 Comb. combination  
 Coml commercial  
 Compr compression  
 CADD computer aided drafting & design  
 Conc concrete  
 Cond conductor  
 Const construction  
 Cont continuous  
 CSB continuous split barrel sample  
 Contr contraction  
 Contr contractor  
 CP control point  
 Coord coordinate  
 Cor corner  
 Corr corrected  
 CAES corrugated aluminum end section  
 CAP corrugated aluminum pipe  
 CMES corrugated metal end section  
 CMP corrugated metal pipe  
 CPVCP corrugated poly-vinyl chloride pipe  
 CSES corrugated steel end section  
 CSP corrugated steel pipe  
 C coulomb  
 Co County  
 Crse course  
 C Gr course gravel  
 CS course sand

Ct Court  
 Xarm cross arm  
 Xbuck cross buck  
 Xsec cross sections  
 Xing crossing  
 Xrd Crossroad  
 Crn crown  
 CF cubic feet  
 M3 cubic meter  
 M3/s cubic meters per second  
 CY cubic yard  
 Cy/mi cubic yards per mile  
 Culv culvert  
 C&G curb & gutter  
 CI curb inlet  
 CR curb ramp  
 CS curve to spiral  
 C cut  
 Dd Ld dead load  
 Defl deflection  
 Defm deformed  
 Deg or D degree  
 DInt delineate  
 DIntr delineator  
 Depr depression  
 Desc description  
 Det detail  
 DWP detectable warning panel  
 Dtr detour  
 Dia diameter  
 Dir direction  
 Dist distance  
 DM disturbed material  
 DB ditch block  
 DG ditch grade  
 Dbl double  
 Dn down  
 Dwg drawing  
 Dr drive  
 Drwy driveway  
 DI drop inlet  
 D dry density  
 Ea each  
 Esmt easement  
 E East  
 EB Eastbound  
 Elast elastomeric  
 EL electric locker  
 E Mtr electric meter  
 Elec electric/al  
 EDM electronic distance meter  
 Elev or El elevation  
 Ellipt elliptical  
 Emb embankment  
 Emuls emulsion/emulsified

ES end section  
 Engr engineer  
 ESS environmental sensor station  
 Eq equal  
 Eq equation  
 Evgr evergreen  
 Exc excavation  
 Exst existing  
 Exp expansion  
 Expy Expressway  
 E external of curve  
 Extru extruded  
 FOS factor of safety  
 F Fahrenheit  
 FS far side  
 F farad  
 Fed Federal  
 FP feed point  
 Ft feet/foot  
 Fn fence  
 Fn P fence post  
 FO fiber optic  
 FB field book  
 FD field drive  
 F fill  
 FAA fine aggregate angularity  
 FS fine sand  
 FH fire hydrant  
 Fl flange  
 Flrd flared  
 FES flared end section  
 F Bcn flashing beacon  
 FA flight auger sample  
 FL flow line  
 Ftg footing  
 FM force main  
 Fs foresight  
 Fnd found  
 Fdn foundation  
 Frac fractional  
 Frwy freeway  
 Frt front  
 FF front face  
 F Disp fuel dispenser

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE

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NDDOT ABBREVIATIONS

D-101-2

FFP	fuel filler pipes	IPn	Iron Pin	MC	medium curing	Ped	pedestal
FLS	fuel leak sensor	IP	iron Pipe	M	mega	Ped	pedestrian
Furn	furnish/ed	Jt	joint	Mer	meridian	PPP	pedestrian pushbutton post
Gal	gallon	J	joule	M	meter	Pen.	penetration
Galv	galvanized	Jct	junction	M/s	meters per second	Perf	perforated
Gar	garage	K	kelvin	M	mid ordinate of curve	Per.	perimeter
Gs L	gas line	Kn	kilo newton	Mi	mile	PL	pipeline
G Reg	gas line regulator	Kpa	kilo pascal	MM	mile marker	PI	place
GMV	gas main valve	Kg	kilogram	MP	mile post	P&P	plan & profile
G Mtr	gas meter	Kg/m3	kilogram per cubic meter	MI	milliliter	PL	plastic limit
GSV	gas service valve	Km	kilometer	Mm	millimeter	PI	plate
GVP	gas vent pipe	K	Kip(s)	Mm/hr	millimeters per hour	Pt	point
GV	gate valve	LS	Land Surveyor (licensed)	Min	minimum	PCC	point of compound curve
Ga	gauge	LSIT	Land Surveyor In Training	Misc	miscellaneous	PC	point of curve
Geod	geodetic	Ln	lane	Mon	monument	PI	point of intersection
GIS	Geographical Information System	Lg	large	Mnd	mound	PRC	point of reverse curvature
G	giga	Lat	latitude	Mtbl	mountable	PT	point of tangent
GPS	Global Positioning System	Lt	left	Mtd	mounted	POC	point on curve
Gov	government	L	length of curve	Mtg	mounting	POT	point on tangent
Grd	graded/grade	Lens	lenses	Mk	muck	PE	polyethylene
Gr	gravel	Lvl	level	Mun	municipal	PVC	polyvinyl chloride
Grnd	ground	LB	level book	N	nano	PCC	Portland Cement concrete
GWM	ground water monitor	Lvng	leveling	NGS	National Geodetic Survey	Lb or #	pounds
Gdrl	guardrail	Lht	light	NS	near side	PP	power pole
Gtr	gutter	LP	light pole	Neop	neoprene	Preempt	preemption
H Plg	H piling	Ltg	lighting	Ntwk	network	Prefab	prefabricated
Hdwl	headwall	Lig Co	lignite coal	N	newton	Prfmd	performed
Ha	hectare	Lig Sl	lignite slack	N	North	Prep	preparation
Ht	height	LF	linear foot	NE	North East	Press.	pressure
HI	height of instrument	Liq	liquid	NW	North West	PRV	pressure relief valve
Hel	helical	LL	liquid limit	NB	Northbound	Prestr	prestressed
H	henry	L	litre	No. or #	number	Pvt	private
HZ	hertz	Lm	loam	Obsc	obscure(d)	PD	private drive
HDPE	high density polyethylene	Loc	location	Obsn	observation	Prod.	production/produce
HM	high mast	LC	long chord	Ocpd	occupied	Prog	programmed
HP	high pressure	Long.	longitude	Ocpy	occupy	Prop.	property
HPS	high pressure sodium	Lp	loop	Off Loc	office location	Prop Ln	property line
Hwy	highway	LD	loop detector	O/s	offset	Ppsd	proposed
Hor	horizontal	Lm	lumen	OC	on center	PB	pull box
HBP	hot bituminous pavement	Lum	luminaire	C	one dimensional consolidation		
HMA	hot mix asphalt	L Sum	lump sum	OC	organic content		
Hr	hour(s)	Lx	lux	Orig	original		
Hyd	hydrant	ML	main line	O To O	out to out		
Ph	hydrogen ion content	M Hr	man hour	OD	outside diameter		
Id	identification	MH	manhole	OH	overhead		
In or "	inch	Mkd	marked	PMT	pad mounted transformer		
Incl	inclinometer tube	Mkr	marker	Pg	pages		
IMH	inlet manhole	Mkg	marking	Pntd	painted		
ID	inside diameter	MA	mast arm	Pr	pair		
Inst	instrument	Matl	material	Pnl	panel		
Intchg	interchange	Max	maximum	Pk	park		
Intmdt	intermediate	MC	meander corner	PK	Parker-Kalon nail		
Intscn	intersection	Meas	measure	Pa	pascal		
Inv	invert	Mdn	median	PSD	passing sight distance		
IM	iron monument	MD	median drain	Pvmt	pavement		

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE
08-03-15	General Revisions

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NDDOT ABBREVIATIONS

D-101-3

Qty	quantity	SN	sign number	Tan	tangent	Wb	weber
Qtr	quarter	Sig	signal	T	tangent (semi)	WIM	weigh in motion
Rad or R	radius	Si Cl	silt clay	TS	tangent to spiral	W	west
RR	railroad	Si Cl Lm	silty clay loam	Tel	telephone	WB	westbound
Rlwy	railway	Si Lm	silty loam	Tel B	Telephone Booth	Wrng	wiring
Rsd	raised	Sgl	single	Tel P	telephone pole	W/	with
RTP	random traverse point	SC	slow curing	Tv	television	W/o	without
Rge or R	range	SS	slow setting	Temp	temperature	WC	witness corner
RC	rapid curing	Sm	small	Temp	temporary	WGS	world geodetic system
Rec	record	S	South	TBM	temporary bench mark	Z	zenith
Rcy	recycle	SE	South East	T	tesla		
RAP	recycled asphalt pavement	SW	South West	T	thinwall tube sample		
RPCC	recycled portland cement concrete	SB	Southbound	T/mi	tons per mile		
Ref	reference	Sp	spaces	Ts	topsoil		
R Mkr	reference marker	Spcl	special	Twp or T	township		
RM	reference monument	SA	special assembly	Traf	traffic		
Refl	reflectorized	SP	special provisions	TSCB	traffic signal control box		
RCB	reinforced concrete box	G	specific gravity	Tr	trail		
RCES	reinforced concrete end section	Spk	spike	Transf	transformer		
RCP	reinforced concrete pipe	SC	spiral to curve	TB	transit book		
RCPS	reinforced concrete pipe sewer	ST	spiral to tangent	Trans	transition		
Reinf	reinforcement	SB	split barrel sample	TT	transmission tower		
Res	reservation	SH	sprinkler head	Trans	transverse		
Ret	retaining	SV	sprinkler valve	Trav	traverse		
Rev	reverse	Sq	square	TP	traverse point		
Rt	right	SF	square feet	Trtd	treated		
R/W	right of way	Km2	square kilometer	Trmt	treatment		
Riv	river	M2	square meter	Qc	triaxial compression		
Rd	road	SY	square yard	TERO	tribal employment rights ordinance		
Rdbd	road bed	Stk	stake	Tpl	triple		
Rdwy	roadway	Std	standard	TP	turning point		
RWIS	roadway weather information system	N	standard penetration test	Typ	typical		
Rk	rock	Std Specs	standard specifications	Qu	unconfined compressive strength		
Rt	route	Sta	station	Ugrnd	underground		
Salv	salvage(d)	Sta Yd	station yards	USC&G	US Coast & Geodetic Survey		
Sd	sand	Stm L	steam line	USGS	US Geologic Survey		
Sdy Cl	sandy clay	SEC	steel encased concrete	Util	utility		
Sdy Cl Lm	sandy clay loam	SMA	stone matrix asphalt	VG	valley gutter		
Sdy Fl	sandy fill	SSD	stopping sight distance	Vap	vapor		
Sdy Lm	sandy loam	SD	storm drain	Vert	vertical		
San	sanitary sewer line	St	street	VC	vertical curve		
Sc	scoria	SPP	structural plate pipe	VCP	vitrified clay pipe		
Sec	seconds	SPPA	structural plate pipe arch	V	volt		
Sec	section	Str	structure	Vol	volume		
SL	section line	Subd	subdivision	Wkwy	walkway		
Sep	separation	Sub	subgrade	W	water content		
Seq	sequence	Sub Prep	subgrade preperation	WGV	water gate valve		
Serv	service	Ss	subsoil	WL	water line		
Sh	shale	SE	superelevation	WM	water main		
Sht	sheet	SS	supplement specification	WMV	water main valve		
Shtng	sheeting	Supp	supplemental	W Mtr	water meter		
Shldr	shoulder	Surf	surfacing	WSV	water service valve		
Sw	sidewalk	Surv	survey	WW	water well		
S	siemens	Sym	symmetrical	W	watt		
SD	sight distance	SI	systems international	Wrng	wearing		

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07-01-14	
REVISIONS	
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NDDOT UTILITY COMPANY AND ORGANIZATION ABBREVIATIONS

D-101-10

702COM	702 Communications	GT PLNS NAT GAS	Great Plains Natural Gas Company	RED RIV TEL	Red River Rural Telephone
ACCENT	Accent Communications	HALS TEL	Halstad Telephone Company	RESVTN TEL	Reservation Telephone
AGASSIZ WU	Agassiz Water Users Incorporated	IDEA1	Idea1	ROBRTS TEL	Roberts Company Telephone
AGC	Associated General Contractors of America	INT-COMM TEL	Inter-Community Telephone Company	R-RIDER ELEC	Roughrider Electric Coop
All PI	Alliance Pipeline	KANEB PL	Kaneb Pipeline Company	RRVW	Red River Valley & Western Railroad
ALL SEAS WU	All Seasons Water Users Association	KEM ELEC	Kem Electric Cooperative Incorporated	RSR ELEC	R.S.R. Electric Cooperative
AMOCO PI	Amoco Pipeline Company	KOCH GATH SYS	Koch Gathering Systems Incorporated	S E W U	South East Water Users Incorporated
AMRDA HESS	Amerada Hess Corporation	LKHD PL	Lakehead Pipeline Company	SCOTT CABLE	Scott Cable Television Dickinson
AT&T	AT&T Corporation	LNGDN RWU	Langdon Rural Water Users Incorporated	SHERDN ELEC	Sheridan Electric Cooperative
B PAW	Bear Paw Energy Incorporated	LWR YELL R ELEC	Lower Yellowstone Rural Electric	SHEYN VLY ELEC	Sheyenne Valley Electric Cooperative
BAKER ELEC	Baker Electric	MCKNZ CON	McKenzie Consolidated Telcom	SKYTECH	Skyland Technologies Incorporated
BASIN ELEC	Basin Electric Cooperative Incorporated	MCKNZ ELEC	McKenzie Electric Cooperative	SLOPE ELEC	Slope Electric Cooperative Incorporated
BEK TEL	Bek Communications Cooperative	MCKNZ WRD	McKenzie County Water Resource District	SOURIS RIV TELCOM	Souris River Telecommunications
BELLE PL	Belle Fourche Pipeline Company	MCLEOD	McLeod USA	ST WAT COMM	State Water Commission
BLM	Bureau of Land Management	MCLN ELEC	McLean Electric Cooperative	STATE LN WATER	State Line Water Cooperative
BNSF	Burlington Northern Santa Fe Railway	MCLN-SHRDN R WAT	McLean-Sheridan Rural Water	STER ENG	Sterling Energy
BOEING	Boeing	MDU	Montana-dakota Utilities	STUT RWU	Stutsman Rural Water Users
BRNS RWD	Barnes Rural Water District	MID-CONT CABLE	Mid-Continent Cable	SW PL PRJ	Southwest Pipeline Project
BURK-DIV ELEC	Burke-Divide Electric Cooperative	MIDSTATE TEL	Midstate Telephone Company	T M C	Turtle Mountain Communications
BURL WU	Burleigh Water Users	MINOT CABLE	Minot Cable Television	TCI	TCI of North Dakota
Cable One	Cable One	MINOT TEL	Minot Telephone Company	TESORO GHG PLNS PL	Tesoro High Plains Pipeline
CABLE SERV	Cable Services	MISS W W S	Missouri West Water System	TRI-CNTY WU	Tri-County Water Users Incorporated
CAP ELEC	Capital Electric Cooperative Incorporat	MNKOTA PWR	Minnkota Power	TRL CO RWU	Traill County Rural Water Users
CASS CO ELEC	Cass County Electric Cooperative	MOR-GRAN-SOU ELEC	Mor-gran-sou Electric Cooperative	UNTD TEL	United Telephone
CASS RWU	Cass Rural Water Users Incorporated	MOUNT-WILLI ELEC	Mountrail-williams Electric Cooperative	UPPR SOUR WUA	Upper Souris Water Users Association
CAV ELEC	Cavalier Rural Electric Cooperative	MRE LBTY TEL	Moore & Liberty Telephone	US SPRINT	U.S. Sprint
CBLCOM	Cablecom Of Fargo	MUNICIPAL	City Water And Sewer	USAF MSL CABLE	U.S.A.F. Missile Cable
CENEX PL	Cenex Pipeline	MUNICIPAL	City Of '.....'	USFWS	US Fish and Wildlife Service
CENT PL WATER DIST	Central Pipe Line Water District	N CENT ELEC	North Central Electric Cooperative	USW COMM	U.S. West Communications
CENT PWR ELEC	Central Power Electric Cooperative	N VALL W DIST	North Valley Water District	VRNDRY ELEC	Verendrye Electric Cooperative
COE	Corps of Engineers	ND PKS & REC	North Dakota Parks And Recreation	W RIV TEL	West River Telephone Incorporated
CONS TEL	Consolidated Telephone	ND TEL	North Dakota Telephone Company	WEB	W. E. B. Water Development Association
CONT RES	Continental Resource Inc	NDDOT	North Dakota Department of Transportation	WILLI RWA	Williams Rural Water Association
CPR	Canadian Pacific Railway	NDSU SOIL SCI DEPT	NDSU Soil Science Department	WILSTN BAS PL	Williston Basin Interstate Pipeline Company
D O E	Department Of Energy	NEMONT TEL	Nemont Telephone	WLSH RWD	Walsh Water Rural Water District
DAK CARR	Dakota Carrier Network	NODAK R ELEC	Nodak Rural Electric Cooperative	WOLVRTN TEL	Wolverton Telephone
DAK CENT TEL	Dakota Central Telephone	NOON FRMS TEL	Noonan Farmers Telephone Company	XLENER	Xcel Energy
DAK RWD	Dakota Rural Water District	NPR	Northern Plains Railroad	YSVR	Yellowstone Valley Railroad
DGC	Dakota Gasification Company	NSP	Northern States Power		
DICKEY R NET	Dickey Rural Networks	NTH PRAIR RW	Northern Prairie Rural Water Association		
DICKEY RWU	Dickey Rural Water Users Association	NTHN BRDR PL	Northern Border Pipeline		
DICKEY TEL	Dickey Telephone	NTHN PLNS ELEC	Northern Plains Electric Cooperative Incorporated		
DNRR	Dakota Northern Railroad	NTHWSTRN REF	Northwestern Refinery Company		
DO ME PL	Dome Pipeline Company	NW COMM	Northwest Communication Cooperation		
DVELEC	Dakota Valley Electric Cooperative	ONEOK	Oneok gas		
DVMW	Dakota, Missouri Valley & Western	OSHA	Occupational Safety and Health Administration		
ENBRDG	Enbridge Pipelines Incorporated	OTTR TL PWR	Otter Tail Power Company		
ENVENTIS	Enventis Telephone	P L E M	Prairielands Energy Marketing		
FALK MNG	Falkirk Mining Company	POLAR COM	Polar Communications		
FHWA	Federal Highway Administration	PVT ELEC	Private Electric		
G FKS-TRL WD	Grand Forks-traill Water District	QWEST	Qwest Communications		
GETTY TRD & TRAN	Getty Trading & Transportation	R&T W SUPPLY	R & T Water Supply Association		
GLDN W ELEC	Golden West Electric Cooperative	RAMSEY R SEW	Ramsey Rural Sewer Association		
GRGS CO TEL	Griggs County Telephone	RAMSEY RW	Ramsey Rural Water Association		
		RAMSEY UTIL	Ramsey County Rural Utilities		

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07-01-14	
REVISIONS	
DATE	CHANGE

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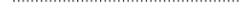
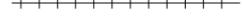
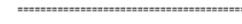
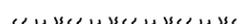
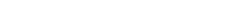
Line Styles

.....	Limits of Const Transition Line	—— s —— s ——	Floating Silt Curtain	—— ——— ———	Existing Aggregate (Cross Section View)	- - - - -	Existing Centerline
.....	Bale Check	—— ——— T ——	Existing Telephone Line	—— ——— ———	Existing Curb and Gutter (Cross Section View)	- - - - -	Supplemental Contour
.....	Rock Check	—— ——— TV ——	Existing TV Line	—— ——— ———	Existing Riprap	—— - - - - -	Right of Way
.....	Sight Distance Triangle Line	Void — void — void — v	Existing Assumed Ground (Not Surveyed)	—— ——— ———	Existing Underground Vault or Lift Station	—— - - - - -	Existing Right of Way
- - - - -	Small Hidden Object	Void — void — void — v	Tentative Ground Line	—— ——— ———	Tangent Line	—— - - - - -	Existing Right of Way Railroad
- - - - -	Dimension Leader	—— ——— w ——	Existing Water or Steam Line	- - - - -	Hidden Object	- - - - -	Failure Line
- - - - -	Existing Ground	=====	Existing Under Drain	—— - - - - -	Existing Dirt Surface	- - - - -	Existing Conditions
- - - - -	Existing Topsoil (Cross Section View)	=====	Under Drain	—— ——— ———	Existing Conduit	- - - - -	Existing Ground (Details)
—— ——— ———	Large Hidden Object	=====	Wall	—— ——— ———	Topsoil Profile	—— - - - - -	Existing Sixteenth Section Line
—— ——— ———	Edge Drain	=====	Existing Slotted Drain	- - - - -	Existing Conductor	- - - - -	Existing Right of Way Not State Owned
—— D —— D ——	Geotextile Fabric Type D	—— + —— + ——	Existing Cemetary Boundary	- - - - -	Conductor	- - - - -	Phantom Object
—— ——— E ——	Existing Electrical	—— ——— ———	Centerline Pavement Marking	- - - - -	Fiber Optic	- - - - -	Centerline Main
—— ——— FO ——	Existing Fiber Optic Line	=====	Barrier with Centerline Pavement Marking	- - - - -	Existing Loop Detector	- . . . .	Existing Guardrail Cable
—— ——— FO ——	Existing TV Fiber Optic	=====	Barrier Pavement Marking	- - - - -	Subgrade, Subcut or Ditch Grade	— • — • — • — •	Existing Guardrail Metal
—— ——— G ——	Existing Gas Pipe	- - - - -	Stripe 4 IN Dotted Extension White	—— ——— ———	Existing Asphalt Surface	—— . ——— . ——— . ——— .	Existing Edge of Water
—— <b>Geo</b> —— <b>Geo</b> ——	Geogrid	- - - - -	Stripe 8 IN Dotted Extension White	—— ——— ———	Existing Asphalt (Cross Section View)	- - - - -	Excavation Limits
—— ——— OH ——	Existing Overhead Utility Line	- - - - -	Stripe 8 IN Lane Drop	—— ——— ———	Existing Reinforcement Rebar	—— . . . . .	Existing Government Lot Line
—— ——— P ——	Existing Power	—— v v v v ——	Wetland Mitigation	—— ——— ———	Existing Tie Point Line	.....	Existing Adjacent Block Lines
—— ——— PL ——	Existing Fuel Pipeline	- - - - -	Existing Box Culvert Bridge	—— ——— ———	Existing State or International Line	.....	Existing Adjacent Lot Lines
—— ——— <b>PL</b> ——	Existing Undefined Above Ground Pipe Line	- - - - -	Existing Concrete Surface	—— ——— ———	Existing Quarter Section Line	.....	Existing Adjacent Property Line
—— ——— R —— R ——	Geotextile Fabric Type R	- - - - -	Existing Drainage Structure	—— ——— ———	Existing County	.....	Existing Adjacent Subdivision Lines
—— ——— R —— R ——	Geotextile Fabric Type R1	- - - - -	Easement	—— ——— ———	Existing Section Line	.....	
—— REMOVE —— REMOVE ——	Remove Line	- - - - -	Existing Concrete	—— - - - - -	Existing Township	.....	
—— RR —— RR ——	Geotextile Fabric Type RR	- - - - -	Existing Easement	—— ——— ———	Existing Railroad Centerline	.....	
—— S —— S ——	Geotextile Fabric Type S	—— ——— ———	Existing Gravel Surface	—— - - - - -	Centerline	.....	

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE

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Line Styles

	Subgrade Reinforcement		Existing Railroad Switch		Sheet Piling
	Existing Down Guy Wire Down Guy		Overhead Sign Structure Cantilever		W-Beam w Posts
	Existing Fence		24 Inch Pipe		Existing W-Beam Guardrail with Posts
	Existing Railroad		Reinforced Concrete Pipe		Exst Wet Area-Vegetation Break
	Existing Sanitary Sewer		Signal Head with Mast Arm		Existing Wetland Delineated
	Existing Sanitary Force Main		Existing Signal Head with Mast Arm		
	Existing Storm Drain		Tie Bar at Random Spacing		
	Existing Storm Drain Force Main		3-Cable w Posts		
	Fence		Existing 3-Cable w Posts		
	Silt Fence		Site Boundary		
	Existing Field Line		Fiber Rolls		
	Exst Flow		Doweled Joint		
	Flow		Tie Bar 30 Inch 4 Foot Center to Center		
	Existing Culvert		Tie Bar 18 Inch 3 Foot Center to Center		
	Existing Curb		Existing Berm, Dike, Pit, or Earth Dam		
	Existing Valley Gutter		Existing Ditch Block		
	Existing Driveway Gutter		Depression Contours		
	Existing Curb and Gutter		Existing City Corporate Limits or Reservation Boundary		
	Existing Mountable Curb and Gutter		Gravel Pit - Borrow Area		
	Existing Double Micro Loop Detector		Existing Tree Boundary		
	Micro Loop Detector Double		Tree Row		
	Existing Overhead Sign Structure		Existing Brush or Shrub Boundary		
	Existing Micro Loop Detector		Existing Retaining Wall		
	Micro Loop Detector		Existing Planter or Wall		
	Existing Overhead Sign Structure Cantilever		Retaining Wall (Plan View)		

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Symbols

	North Arrow (Half Scale)		Attenuation Device		Existing Railroad Battery Box		Existing Delineator Type E
	Truck Mounted Attenuator		Diamond Grade Delineator Type A		Existing Bush or Shrub		Existing EFB Misc
	Type I Barricade		Diamond Grade Delineator Type B		Existing Gas Cap or Stub		Existing Flashing Beacon
	Type II Barricade		Diamond Grade Delineator Type C		Existing Sanitary Cap or Stub		Existing Pipe Mounted Flasher
	Type III Barricade		Diamond Grade Delineator Type D		Existing Storm Drain Cap or Stub		Existing Pad Mounted Feed Point
	Catch Basin		Diamond Grade Delineator Type E		Existing Water Cap or Stub		Existing Pipe Mounted Feed Point with Pad
	Cairn or Stone Circle		Flexible Delineator		Existing Sanitary Cleanout		Existing Pole Mounted Feed Point
	Video Detection Camera		Flexible Delineator Type A		Existing Concrete Foundation		Existing Railroad Frog
	Storm Drain Cap or Stub		Flexible Delineator Type B		Existing Traffic Signal Controller		Existing Snow Gate 18
	Corrugated Metal End Section 18 Inch		Flexible Delineator Type C		Existing Pad Mounted Signal Controller		Existing Snow Gate 28
	Corrugated Metal End Section 24 Inch		Flexible Delineator Type D		Existing Sixteenth Section Corner		Existing Snow Gate 40
	Corrugated Metal End Section 30 Inch		Flexible Delineator Type E		Existing Quarter Section Corner		Existing Headwall
	Corrugated Metal End Section 36 Inch		Delineator Type A		Existing Section Corner		Existing Pedestrian Head with Number
	Corrugated Metal End Section 42 Inch		Delineator Type A Reset		Existing Railroad Crossbuck		Existing Signal Head
	Corrugated Metal End Section 48 Inch		Delineator Type B		Existing Satellite Dish		Existing Sprinkler Head
	Concrete Foundation		Delineator Type B Reset		Existing Fuel Dispensers		Existing Fire Hydrant
	Ground Connection Conductor		Delineator Type C		Existing Flexible Delineator Type A		Existing Catch Basin Drop Inlet
	Neutral Connection Conductor		Delineator Type D		Existing Flexible Delineator Type B		Existing Curb Inlet
	Phase 1 Connection Conductor		Delineator Type E		Existing Flexible Delineator Type C		Existing Manhole Inlet
	Phase 2 Connection Conductor		Delineator Drums		Existing Flexible Delineator Type D		Existing Junction Box
	Traffic Cone		Spot Elevation		Existing Flexible Delineator Type E		
	Signal Controller		Existing Access Control Arrow		Existing Delineator Type A		
	Pad Mounted Signal Controller		Existing Artifact		Existing Delineator Type B		
	Alignment Data Point		Existing Flashing Beacon		Existing Delineator Type C		
	Emergency Vehicle Detector		Existing Benchmark		Existing Delineator Type D		

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Symbols

	Existing Light Standard		Existing Manhole with Valve Water		Existing Telephone Pole		Existing Undefined Manhole
	Existing High Mast Light Standard 10 Luminaire		Existing Water Manhole		Existing Wood Pole		Existing Undefined Pull Box
	Existing High Mast Light Standard 3 Luminaire		Existing Mile Post Type A		Existing Post		Existing Undefined Pedestal
	Existing High Mast Light Standard 4 Luminaire		Existing Mile Post Type B		Existing Pedestrian Push Button Post		Existing Undefined Valve
	Existing High Mast Light Standard 5 Luminaire		Existing Mile Post Type C		Existing Control Point CP		Existing Undefined Pipe Vent
	Existing High Mast Light Standard 6 Luminaire		Existing Reference Marker		Existing Control Point GPS-RTK		Existing Gas Valve
	Existing High Mast Light Standard 7 Luminaire		Existing RW Marker		Existing Control Point TRI		Existing Water Valve
	Existing High Mast Light Standard 8 Luminaire		Existing Utility Marker		Existing Reference Marker Point NGS		Existing Fuel Pipe Vent
	Existing High Mast Light Standard 9 Luminaire		Iron Monument Found		Existing Pull Box		Existing Gas Pipe Vent
	Existing Overhead Sign Structure Load Center		Iron Pin R/W Monument		Existing Intelligent Transportation Pull Box		Existing Sanitary Pipe Vent
	Existing Luminaire		Existing Object Marker Type I		Existing Water Pump		Existing Storm Drain Pipe Vent
	Existing Light Standard Luminaire		Existing Object Marker Type II		Existing Slotted Reinforced Concrete Pipe		Existing Water Pipe Vent
	Existing Federal Mailbox		Existing Object Marker Type III		Existing RR Profile Spot		Existing Weather Station
	Existing Private Mailbox		Existing Electrical Pedestal		Existing Fuel Leak Sensors		Existing Ground Water Well Bore Hole
	Existing Meander Section Corner		Existing Telephone Pedestal		Existing Highway Sign		Existing Windmill or Tower
	Existing Meter		Existing Fiber Optic Telephone Pedestal		Existing Miscellaneous Spot		Existing Witness Corner
	Existing Electrical Manhole		Existing TV Pedestal		Existing Lighting Standard Pole		Flashing Beacon
	Existing Gas Manhole		Existing Fiber Optic TV Pedestal		Existing Traffic Signal Standard		Flagger
	Existing Sanitary Manhole		Existing Fuel Filler Pipes		Existing Transformer		Pipe Mounted Flasher
	Existing Sanitary Force Main Manhole		Existing Traverse PI Aerial Panel		Existing Large Evergreen Tree		Sanitary Force Main with Valve
	Existing Sanitary Manhole with Valve		Existing Pole		Existing Small Evergreen Tree		
	Existing Storm Drain Manhole		Existing Power Pole		Existing Large Tree		
	Existing Force Main Storm Drain Manhole		Existing Power Pole with Transformer		Existing Small Tree		
	Existing Force Main Storm Drain Manhole with Valve				Existing Tree Trunk		
	Existing Telephone Manhole				Existing Pad Mounted Traffic Signal Control Box		

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07-01-14	
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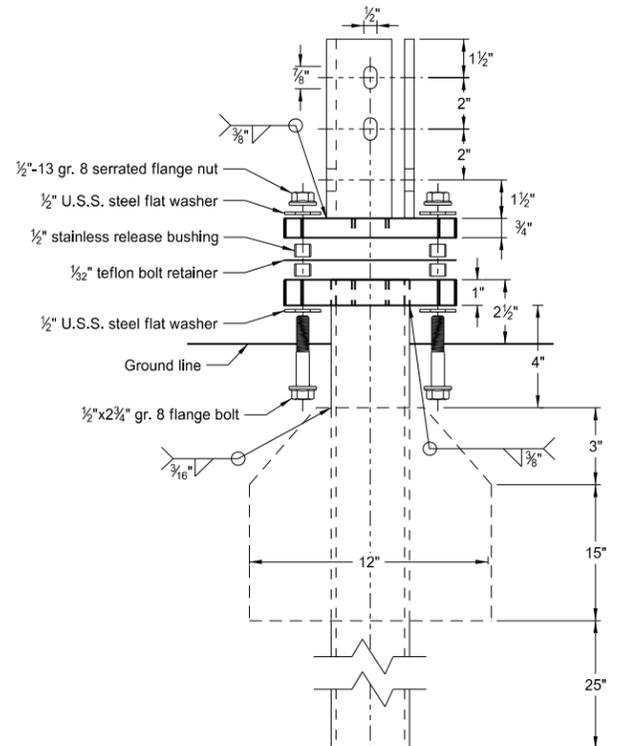
D-101-32

 Pad Mounted Feed Point  Pipe Mounted Feed Point with Pad  Pole Mounted Feed Point  Headwall  Double Headwall with Vegetation Barrier  Single Headwall with Vegetation Barrier  Pole Mounted Head  Sprinkler Head  Fire Hydrant  Inlet Type 1  Inlet Type 2  Double Inlet Type 2  Inlet Gate Type 2  Junction Box  High Mast Light Standard 10 Luminaire  High Mast Light Standard 3 Luminaire  High Mast Light Standard 4 Luminaire  High Mast Light Standard 5 Luminaire  High Mast Light Standard 6 Luminaire  High Mast Light Standard 7 Luminaire  High Mast Light Standard 8 Luminaire  High Mast Light Standard 9 Luminaire  Relocate Light Standard  Overhead Sign Structure Load Center  Light Standard 100 Watt High Pressure Sodium Vapor Luminaire	 Light Standard 1000 Watt High Pressure Sodium Vapor Luminaire  Light Standard 150 Watt High Pressure Sodium Vapor Luminaire  Light Standard 175 Watt High Pressure Sodium Vapor Luminaire  Light Standard 200 Watt High Pressure Sodium Vapor Luminaire  Light Standard 250 Watt High Pressure Sodium Vapor Luminaire  Light Standard 310 Watt High Pressure Sodium Vapor Luminaire  Light Standard 35 Watt High Pressure Sodium Vapor Luminaire  Light Standard 400 Watt High Pressure Sodium Vapor Luminaire  Light Standard 50 Watt High Pressure Sodium Vapor Luminaire  Light Standard 70 Watt High Pressure Sodium Vapor Luminaire  Light Standard 700 Watt High Pressure Sodium Vapor Luminaire  Manhole  Manhole 48 Inch  Sanitary Force Main Manhole  Sanitary Sewer Manhole  Storm Drain Manhole  Storm Drain Manhole with Inlet  Reset Mile Post  Mile Post Type A  Mile Post Type B  Mile Post Type C  Right of Way Marker  Tubular Marker  Alignment Monument  Iron Pin Reference Monument	 Object Marker Type I  Object Marker Type II  Object Marker Type III  Caution Mode Arrow Panel  Back to Back Vertical Panel Sign  Double Direction Arrow Panel  Left Directional Arrow Panel  Right Directional Arrow Panel  Sequencing Arrow Panel  Truck Mounted Arrow Panel  Power Pole  Wood Pole  Pedestrian Push Button Post  Property Corner  Pull Box  Intelligent Transportation Pull Box  Sanitary Pump  Storm Drain Pump  Reinforced Pavement  Reinforced Concrete End Section 15 Inch  Reinforced Concrete End Section 18 Inch  Reinforced Concrete End Section 24 Inch  Reinforced Concrete End Section 30 Inch  Reinforced Concrete End Section 36 Inch  Reinforced Concrete End Section 42 Inch	 Reinforced Concrete End Section 48 Inch  Reinforced Concrete End Section 54 Inch  Reset Right of Way Marker  Reset USGS Marker  Right of Way Markers  Riser 30 Inch  Continuous Split Barrel Sample  Flight Auger Sample  Split Barrel Sample  Thinwall Tube Sample  Highway Sign  SNOW GATE 18 FT  SNOW GATE 28 FT  SNOW GATE 40 FT  Standard Penetration Test  Transformer  Inclinometer Tube  Underdrain Cleanout  Excavation Unit  Water Valve
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07-01-14	
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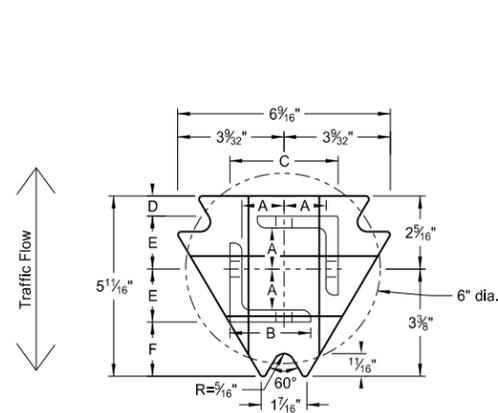
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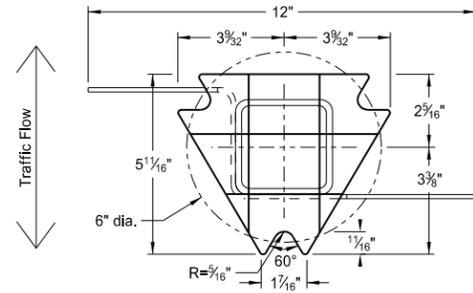


Multi-Directional Slip Base Assembly

Perforated Tube



Top Post Receiver  
Plate - ASTM A572 grade 50  
Angle Receiver - 2 1/2" x 2 1/2" x 3/8" ASTM A36 structural angle



Bottom Soil Stub  
Tube - 3"x3"x7 gauge ASTM A500 grade B tube  
Stabilizing Wing - 7 gauge H.R.P.O. ASTM A1011  
Plate - ASTM A572 grade 50

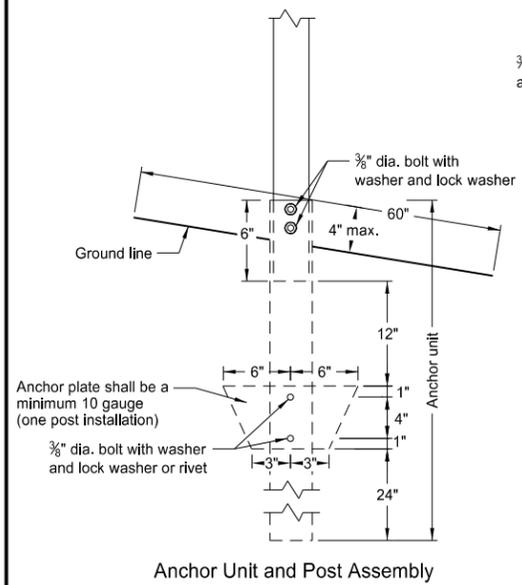
Notes:

1. Slip base bolts shall be torqued as specified by the manufacturer.
2. Anchor shall have a yield strength of 43.9 KSI and tensile strength of 59.3 KSI.
3. The 4" vertical clearance is required for the anchor or breakaway base. The 4"x60" measurement shall be made above and below post location and also back and ahead of the post.
4. When used in concrete sidewalk, anchor shall be same except without the wings.
5. Four post signs shall have over 7' between the first and the fourth posts.

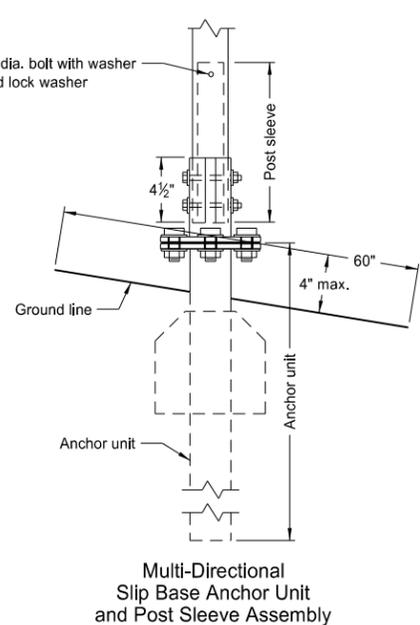
Telescoping Perforated Tube						
Number of Posts	Post Size in.	Wall Thickness Gauge	Sleeve Size in.	Wall Thickness Gauge	Slip Base	Anchor Size without Slip Base in.
1	2	12			No	2 1/4
1	2 1/4	12			No	2 1/2
1	2 1/2	12			(A)	3
1	2 1/2	10			Yes	
1	2 1/4	12	2	12	Yes	
1	2 1/2	12	2 1/4	12	Yes	
2	2	12			No	2 1/4
2	2 1/4	12			No	2 1/2
2	2 1/2	12			Yes	
2	2 1/2	12			Yes	
2	2 1/4	10	2	12	Yes	
2	2 1/2	12	2 1/4	12	Yes	
3 & 4	2 1/2	12			Yes	
3 & 4	2 1/2	10			Yes	
3 & 4	2 1/2	12	2 1/4	12	Yes	
3 & 4	2 1/4	12	2	12	Yes	
3 & 4	2 1/2	10	2 3/16	10	Yes	

Properties of Telescoping Perforated Tube						
Tube Size in.	Wall Thickness in.	U.S. Standard Gauge	Weight per Foot lbs.	Moment of Inertia in. <sup>4</sup>	Cross Sec. Area in. <sup>2</sup>	Section Modulus in. <sup>3</sup>
1 1/2 x 1 1/2	0.105	12	1.702	0.129	0.380	0.172
2 x 2	0.105	12	2.416	0.372	0.590	0.372
2 1/4 x 2 1/4	0.105	12	2.773	0.561	0.695	0.499
2 3/16 x 2 3/16	0.135	10	3.432	0.605	0.841	0.590
2 1/2 x 2 1/2	0.105	12	3.141	0.804	0.803	0.643
2 1/2 x 2 1/2	0.135	10	4.006	0.979	1.010	0.785

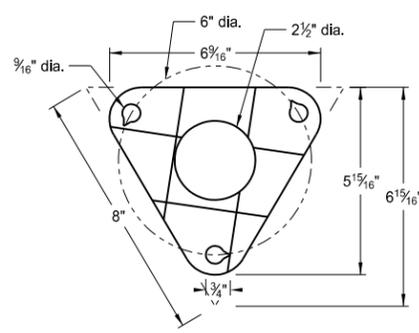
Top Post Receiver Data Table						
Square Post Sizes (B)	A	B	C	D	E	F
2 3/16" x 10 ga.	1 9/64"	2 1/2"	3 1/32"	2 5/32"	1 33/64"	1 1/8"
2 1/2" x 10 ga.	1 9/32"	2 1/2"	3 5/16"	5/8"	1 21/32"	1 3/4"



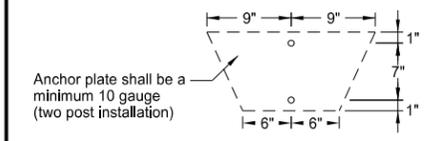
Anchor Unit and Post Assembly



Multi-Directional Slip Base Anchor Unit and Post Sleeve Assembly



Bolt Retainer for Base Connection  
Bolt Retainer - 1/2" Reprocessed Teflon



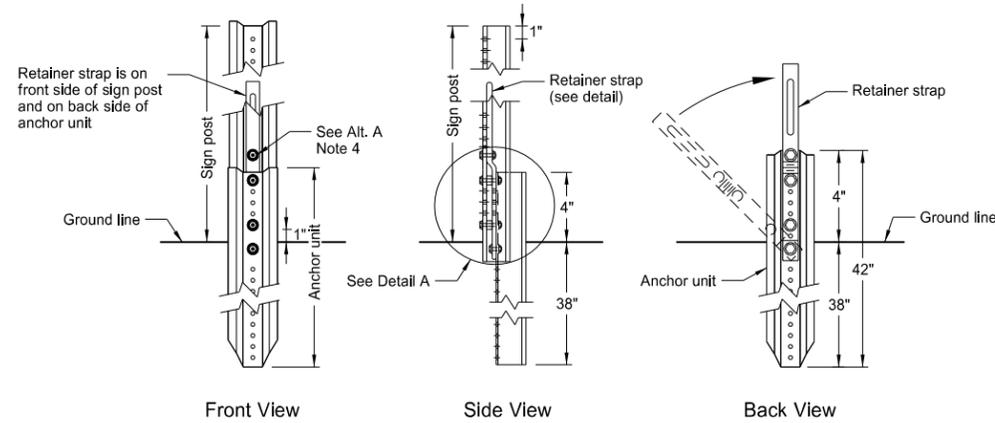
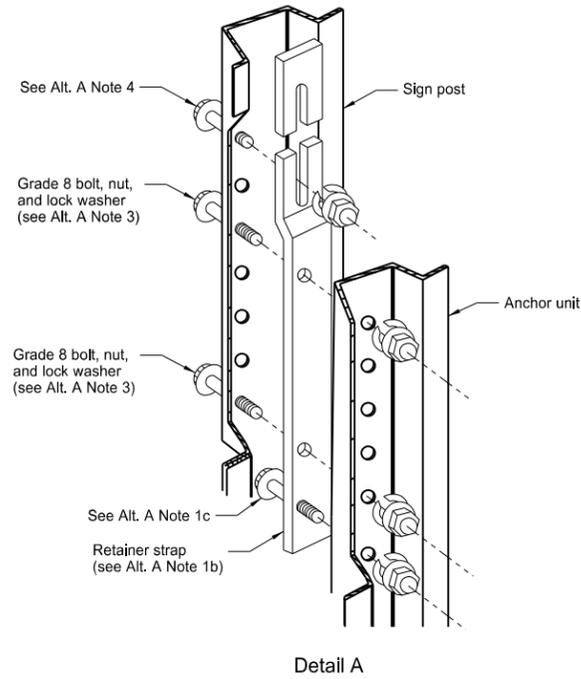
Anchor plate shall be a minimum 10 gauge (two post installation)

- (A) The breakaway base is required when the support is placed in weak soils. The Engineer shall determine if the soils are weak.  
 (B) The 2 3/16" x 10 ga. may be inserted into 2 1/2" x 10 ga. for additional wind load.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
2-28-14	
REVISIONS	
DATE	CHANGE

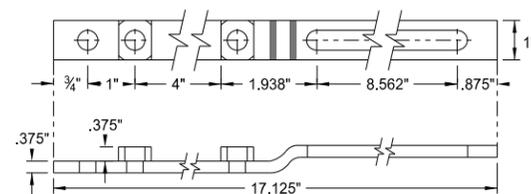
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U-Channel Post

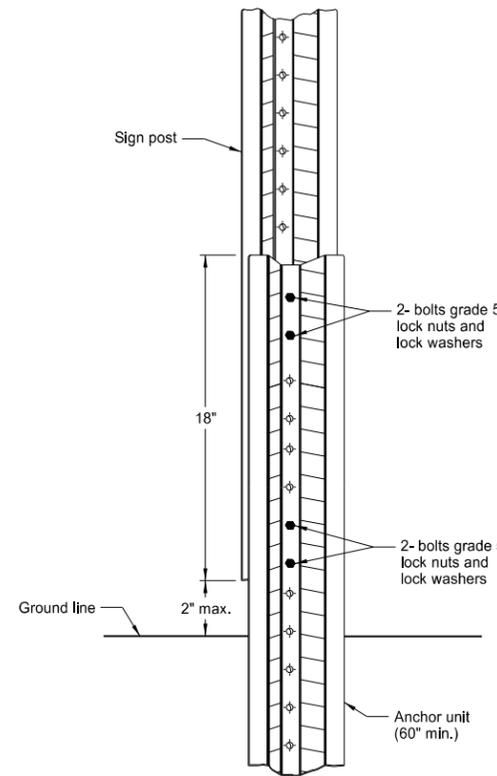


Breakaway U-Channel Detail Alternate A

A maximum of 2 posts shall be installed within 7'.

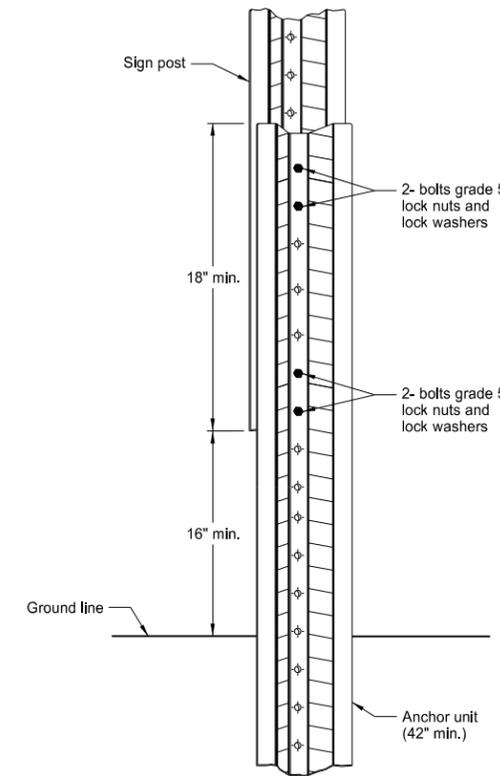


Retainer Strap Detail



Breakaway U-Channel Splice Detail Alternate B (2.5 and 3 lb/ft)

A maximum of 3 posts shall be installed within 7'.



Breakaway U-Channel Splice Detail Alternate C (2.5 and 3 lb/ft)

A maximum of 3 posts shall be installed within 7'.

Alternate A Steps of Installation:

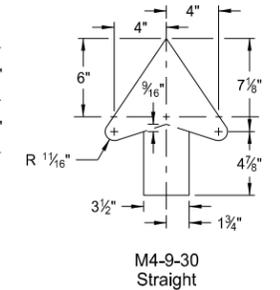
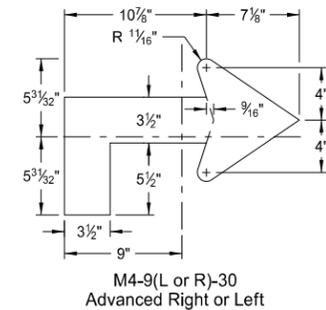
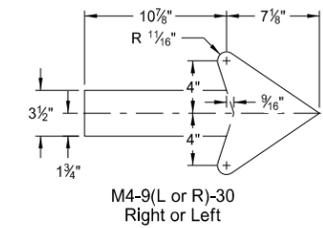
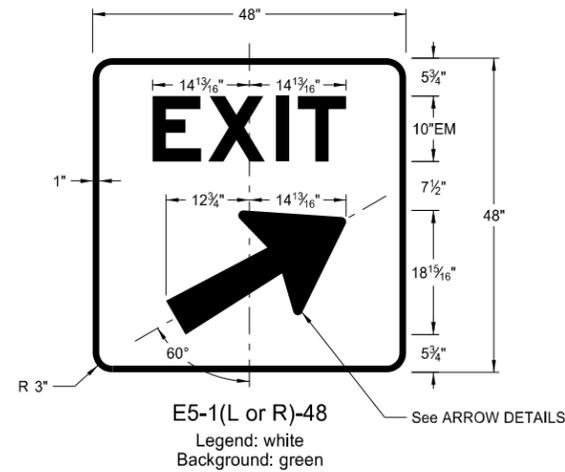
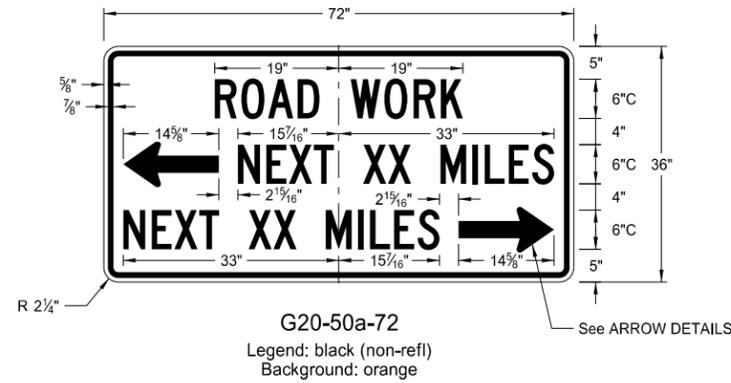
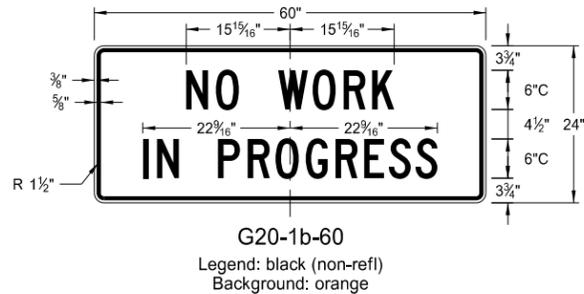
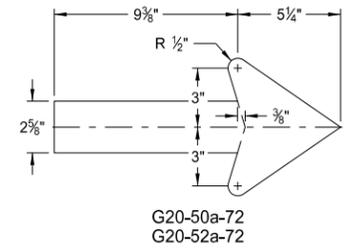
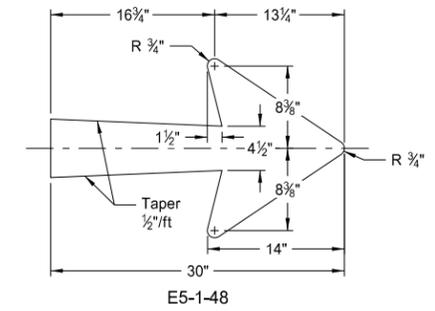
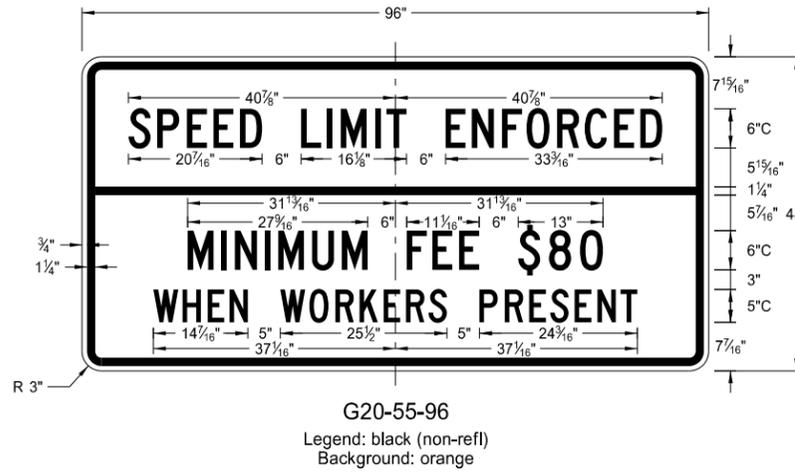
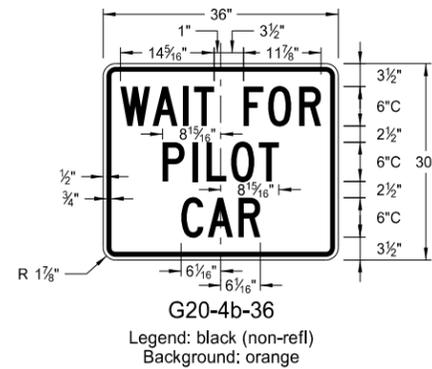
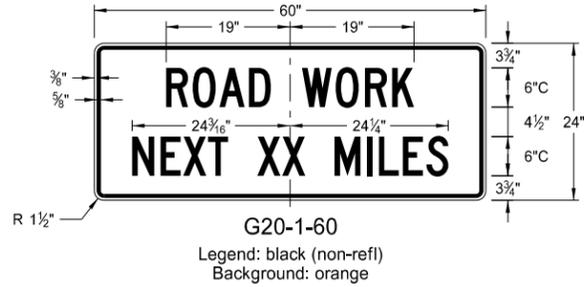
1. a) Drive anchor unit to within 12" of ground level.  
b) Proper assembly established by lining up the bottom hole of retainer strap with the 6th hole from the top of the anchor unit.  
c) Assemble strap to back of anchor unit using 5/16"x2" bolt, lock washer and nut.  
d) Rotate strap 90° to left.
2. a) Drive anchor unit to 4" above ground.  
b) Rotate strap to vertical position.
3. a) Place 5/16"x2" bolt, lock washer and nut in bottom of sign post to facilitate alignment of sign post with proper hole in anchor unit.  
b) Alternately tighten two connector bolts.
4. Complete assembly by tightening 5/16"x2" bolt (this fastens sign post to retainer strap).
5. The base post, strap and sign post shall be properly nested. Proper nesting occurs when all flat surfaces of the base post, strap, and sign post at the bolts have full contact across the entire width.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
2-28-14	
REVISIONS	
DATE	CHANGE

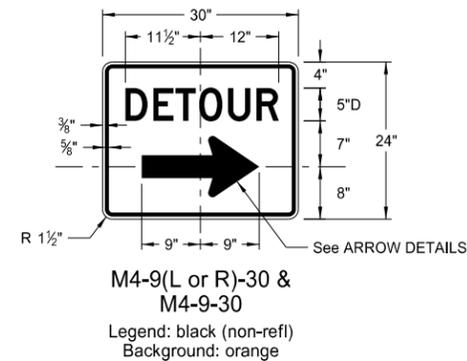
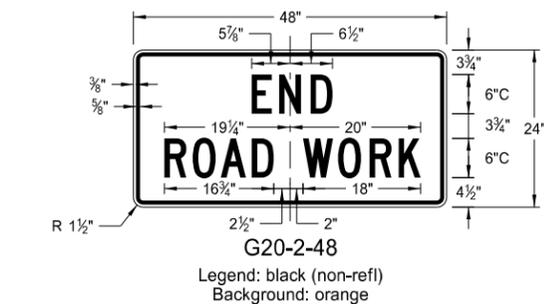
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CONSTRUCTION SIGN DETAILS  
TERMINAL AND GUIDE SIGNS

D-704-9



ARROW DETAILS



NOTES:

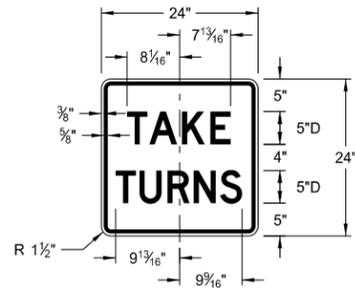
(A) Arrow may be right or left of the legend to indicate construction to the right or left.

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8-13-13	
REVISIONS	
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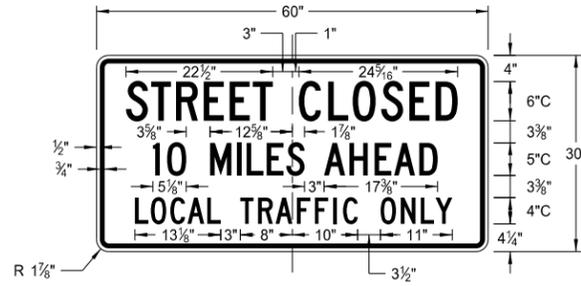
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CONSTRUCTION SIGN DETAILS  
REGULATORY SIGNS

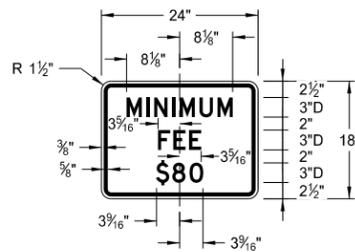
D-704-10



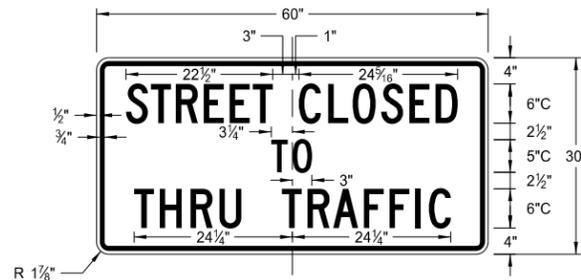
R1-50-24  
Legend: black (non-refl)  
Background: white



R11-3c-60  
Legend: black (non-refl)  
Background: white



R2-1a-24  
Legend: black (non-refl)  
Background: white



R11-4a-60  
Legend: black (non-refl)  
Background: white



R11-2a-48  
Legend: black (non-refl)  
Background: white

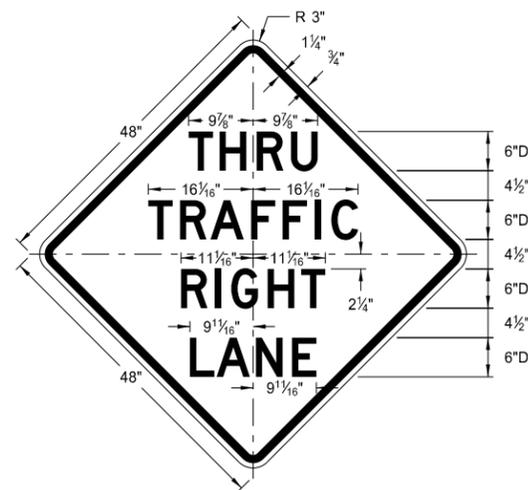
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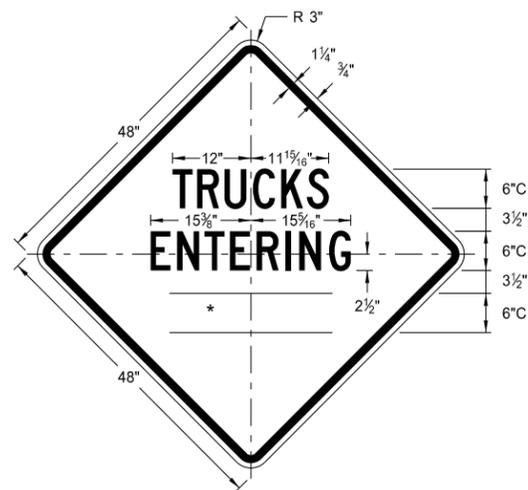
CONSTRUCTION SIGN DETAILS  
WARNING SIGNS

WORD	LETTER SPACING
AHEAD	Standard
200 FT	Standard
350 FT	Standard
500 FT	Standard
1000 FT	Reduce 40%
1500 FT	Reduce 40%
½ MILE	Reduce 50%
1 MILE	Standard

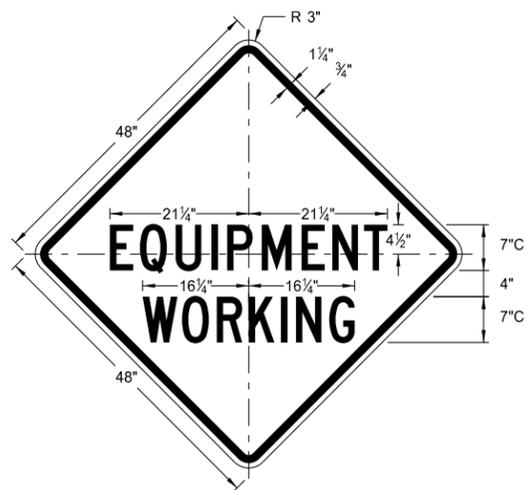
\* DISTANCE MESSAGES



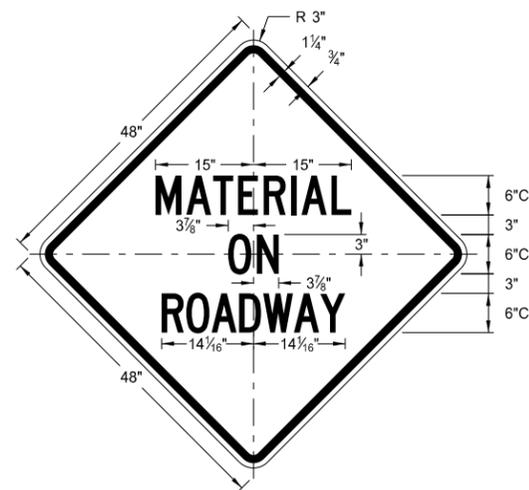
W5-8-48  
Legend: black (non-refl)  
Background: orange



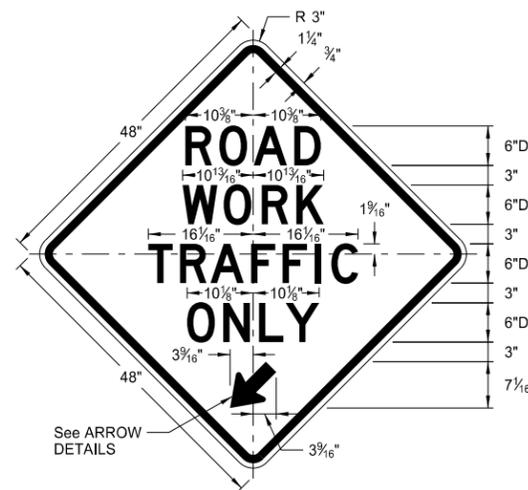
W8-54-48  
Legend: black (non-refl)  
Background: orange



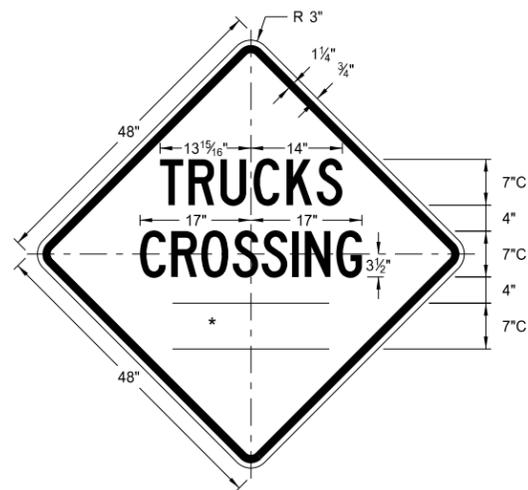
W20-51-48  
Legend: black (non-refl)  
Background: orange



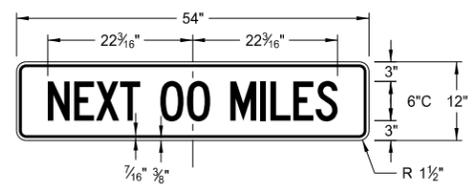
W21-51-48  
Legend: black (non-refl)  
Background: orange



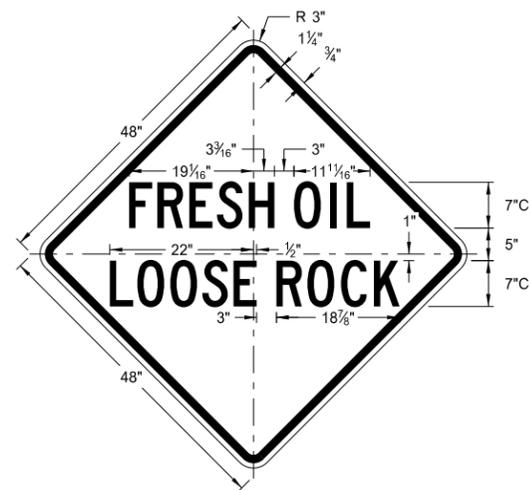
W5-9-48  
Legend: black (non-refl)  
Background: orange



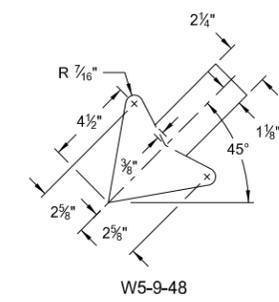
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Background: orange



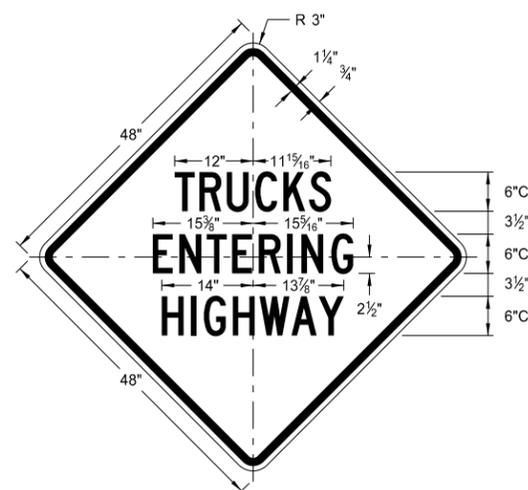
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Background: orange



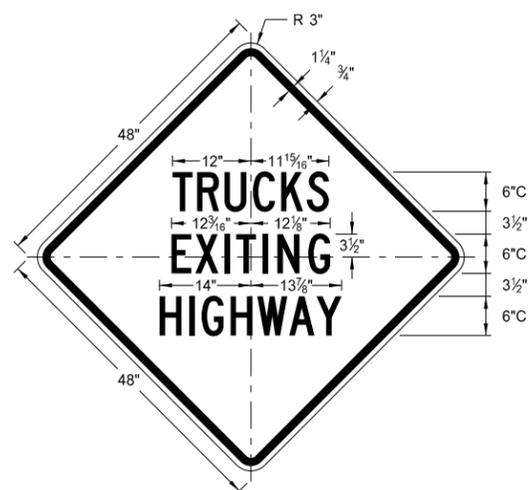
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Background: orange



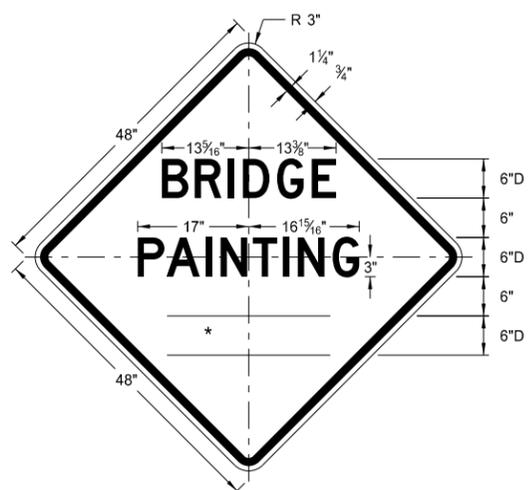
W5-9-48  
ARROW DETAILS



W8-53-48  
Legend: black (non-refl)  
Background: orange



W8-56-48  
Legend: black (non-refl)  
Background: orange

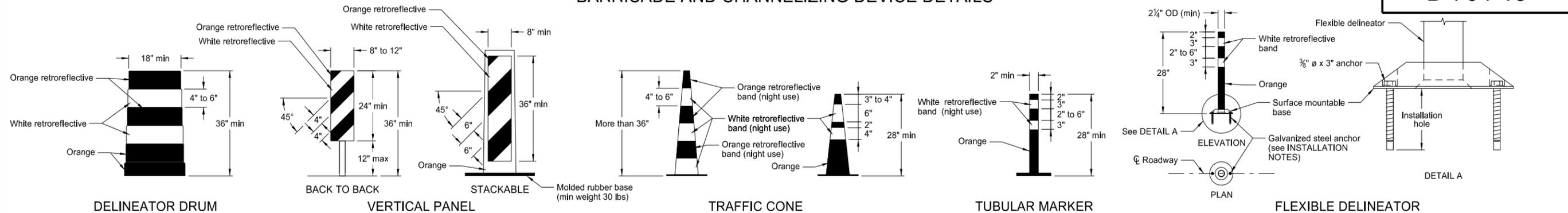


W21-50-48  
Legend: black (non-refl)  
Background: orange

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8-13-13	
REVISIONS	
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BARRICADE AND CHANNELIZING DEVICE DETAILS



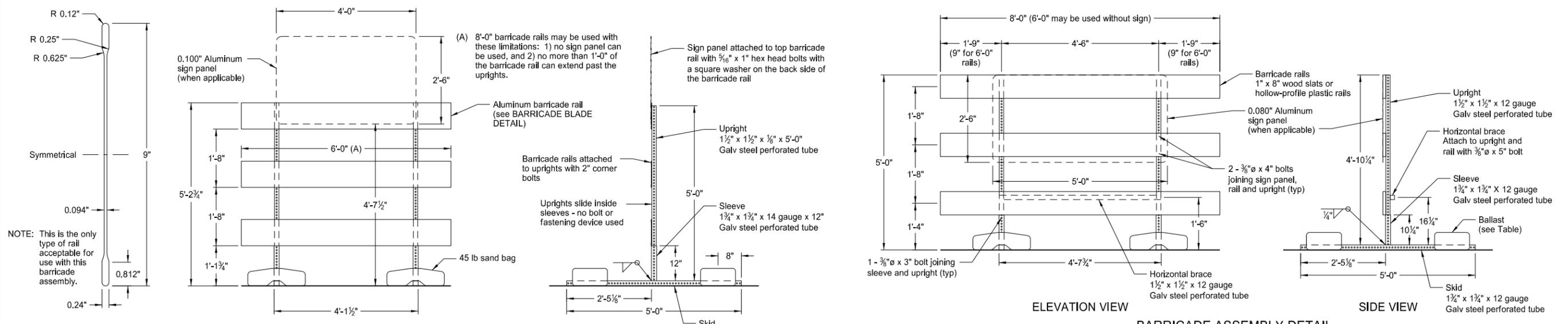
The markings on drums shall be horizontal, circumferential, alternating orange and white retroreflective stripes 4" to 6" wide. Each drum shall have a minimum of two orange and two white stripes with the top stripe being orange. Any nonretroreflective spaces between the horizontal orange and white stripes shall not exceed 3" wide. Stripes shall not be placed on ribs or indentations in the drum. Drums shall have closed tops that will not allow collection of construction debris or other debris. Ballast shall not be placed on the top of a drum.

Markings for vertical panels shall be alternating orange and white retroreflective stripes, sloping downward in the direction vehicular traffic is to pass. Retroreflective sheeting shall be placed on both sides of panel and shall have a minimum of 270 square inches of retroreflective area facing vehicular traffic. Where the height of the retroreflective material on the vertical panel is 36 inches or more, a stripe width of 6 inches shall be used.

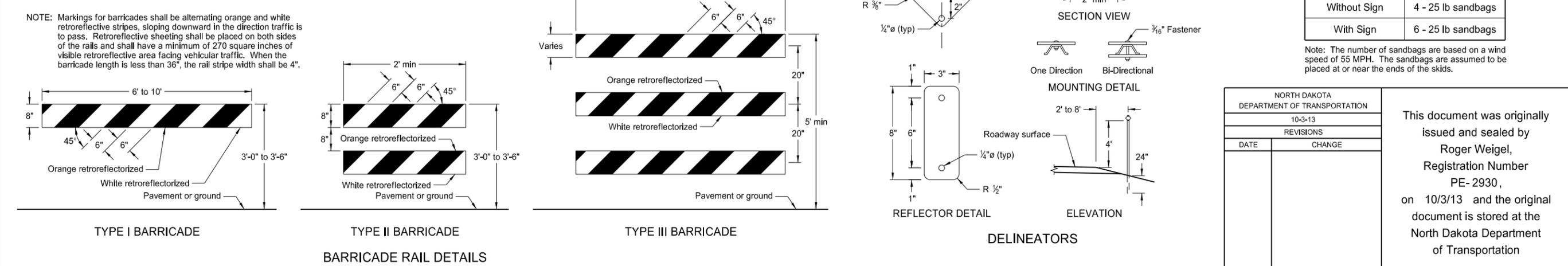
Retroreflectization of cones more than 36" in height shall be provided by alternating orange and white retroreflective stripes. Each cone shall have a minimum of two orange and two white stripes with the top stripe being orange. Any nonretroreflective space between the orange and white stripes shall not exceed 3" wide.

Retroreflectization of tubular markers more than 42" in height shall be provided by alternating four 4" to 6" wide orange and white stripes with the top stripe being orange.

- INSTALLATION NOTES:**
1. Drill installation holes to diameter and depth as required by manufacturer's specifications.
  2. For removal, remove anchors and fill installation hole with an epoxy designed to bond to pavement surface.
  3. In lieu of bolted down base, the contractor may use an 8" x 8" butyl pad or hot melt butyl. Butyl shall be removed as close as possible to pavement surface.



NOTE: Markings for barricades shall be alternating orange and white retroreflective stripes, sloping downward in the direction traffic is to pass. Retroreflective sheeting shall be placed on both sides of the rails and shall have a minimum of 270 square inches of visible retroreflective area facing vehicular traffic. When the barricade length is less than 36", the rail stripe width shall be 4".



**MINIMUM BALLAST**  
(For each side of barricade support)

Without Sign	4 - 25 lb sandbags
With Sign	6 - 25 lb sandbags

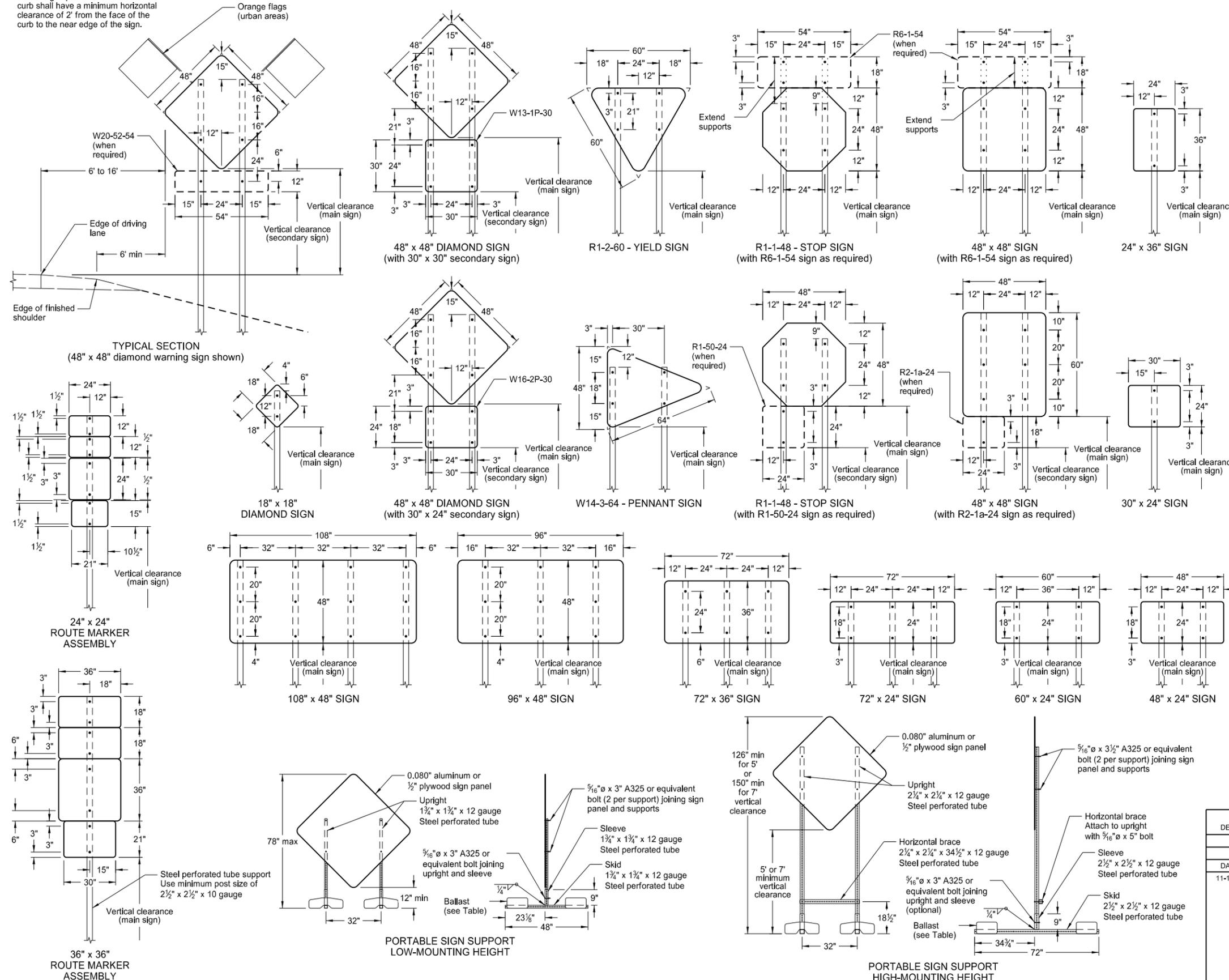
Note: The number of sandbags are based on a wind speed of 55 MPH. The sandbags are assumed to be placed at or near the ends of the skids.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
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CONSTRUCTION SIGN PUNCHING AND MOUNTING DETAILS

Note: Signs placed in sections with curb shall have a minimum horizontal clearance of 2' from the face of the curb to the near edge of the sign.



- NOTES:
1. Sign Supports: Supports shall be galvanized or painted. Minimum post sizes are 2.5 lb/ft u-channel or 2" x 2" x 12 gauge steel perforated tube, except where noted. When installing signs on u-channel, the minimum post size for assemblies containing a secondary sign is 3.0 lb/ft. Post sizes are based on a wind speed of 55 MPH.

Signs over 50 square feet should be installed on 2 1/2" x 2 1/2" perforated tube supports as a minimum.

Guy wires shall not be attached to sign supports. Wind beams may be attached to u-posts behind the sign panels.

2. Sign Panels: Provide sign panels made of 0.100" aluminum, 1/2" plywood, or other approved material, except where noted. All holes to be punched round for 3/8" bolts.

3. Alternate Messages: The signs that have alternate messages may have these alternate messages placed on a reflectorized plate (without a border) and installed and removed as required. (i.e. "Left" and "Right" message on a lane closure sign)

4. Route Marker Auxiliary Signs: Provide route marker auxiliary signs, such as the cardinal direction and directional arrows, with a background and legend that match the route marker they are used with:

Interstate - white legend on blue background  
 Interstate Business Loop - white legend on green background  
 US and State - black legend on white background  
 County - yellow legend on blue background

5. Vertical Clearance: Install signs with a vertical clearance of 5'-0" (see TYPICAL SECTION.) In areas where parking or pedestrian movements are likely or the view of the sign may be obstructed, install signs with a vertical clearance of 7'-0" from the top of the curb or from the near edge of the driving lane in absence of a curb.

The vertical clearance to secondary signs is 1'-0" less than the vertical clearance as stated above.

Large signs having an area exceeding 50 square feet shall have a minimum clearance of 7'-0" from the ground at the post.

6. Portable Signs: Provide portable signs that meet the vertical clearance as stated above. Use portable signs when it is necessary to place signs within the pavement surface.

When portable signs are used for 5 days or less, low-mounting height (minimum 12" vertical clearance) sign supports may be used as long as the view of the sign is not obstructed. Time delays caused by unforeseen circumstances, such as equipment breakdown, rain, subgrade failures, etc., will not accrue towards the 5 day period. The R9-8 through R9-11a series, W1-5 through W1-8 series, M4-10, and E5-1 may be used for longer than 5 days.

Signs mounted to the portable sign supports shown in the LOW-MOUNTING HEIGHT and HIGH-MOUNTING HEIGHT Details shall have a maximum surface area of 16 square feet.

MINIMUM BALLAST  
 (For each side of sign support base)

Sign Panel Mounting Height (ft)	Number of 25 lb sandbags for 4' x 4' sign panel
1'	6
5'	8
7'	10

Note: The number of sandbags are based on a wind speed of 55 MPH. The sandbags are assumed to be placed at or near the ends of the skids.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-4-13	
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11-14-13	Revised Note 6.

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ROAD CLOSURE LAYOUTS

Notes

- Variables  
 S = Numerical value of speed limit or 85th percentile.  
 W = The width of taper.  
 L = Minimum length of taper, or  $S \times W$  for freeways, expressways, and all other roads with speeds of 45 mph or greater, or  $W \times S^2/60$  for urban, residential, and other streets with speeds of 40 mph or less.
- Barricades placed on roadway shall be on a moveable assembly. Signs placed on roadway shall be placed on skid mounted assemblies.
- Delineator drums, barricades or cones used for tapering traffic shall be spaced at the dimension "S". Delineator drums or cones used for tangents shall be spaced at 2 times dimension "S".
- Sequencing Arrow Panels  
 Panels should normally be placed at the beginning of the taper. Where shoulder width does not provide sufficient room, the panel should be moved closer to the work area so that it can be placed on the roadway surface. See Shoulder Closure Standard Drawing.  
 Type A shall be used on roadways with slow moving traffic speeds and low volume (25 mph or less and 750 ADT or less).  
 Type B shall be used on roadways with moderate traffic speeds and volumes (40 mph or less and 5000 ADT or less).  
 Type C shall be used on roadways with high traffic speeds and volumes (over 40 mph or over 5000 ADT).
- The speed limit shall be re-established. The exact speed limit shall be determined in the field, dependent on location and conditions.
- The reduced speed limit shall be determined dependent on the in place speed limit before construction. The speed limit reduction should not exceed 10 mph below the existing speed limit, unless the design speed of the work zone feature has been reduced below the 10 mph. In this case, the speed limit reduction shall not exceed 30 MPH. Where speed limits are to be reduced more than 30 MPH, a second speed limit sign shall be installed with the desired speed reduction but shall not exceed 30 MPH. The second speed limit sign shall be placed at  $\frac{1}{2}$  B.
- Use when work area is 1 mile or longer.
- When warning signs are used in urban areas and the signs are not portable, flags shall be installed. The flags shall be 24 inches square, mounted perpendicular to the edges of the diamond sign, and at such a distance above the edge so that when the flag is limp it will not touch the sign. Rural areas will not require flags.
- Existing speed limit signs within a reduced speed zone shall be covered.
- Where necessary, safe speed to be determined by the Engineer.
- The contractor has the option of using portable sign supports in lieu of post mounted signs in accordance with the NDDOT Standard Specifications.
- G20-55-96 sign is not required if this standard is part of other traffic control layouts, or the work is less than 15 days.

Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

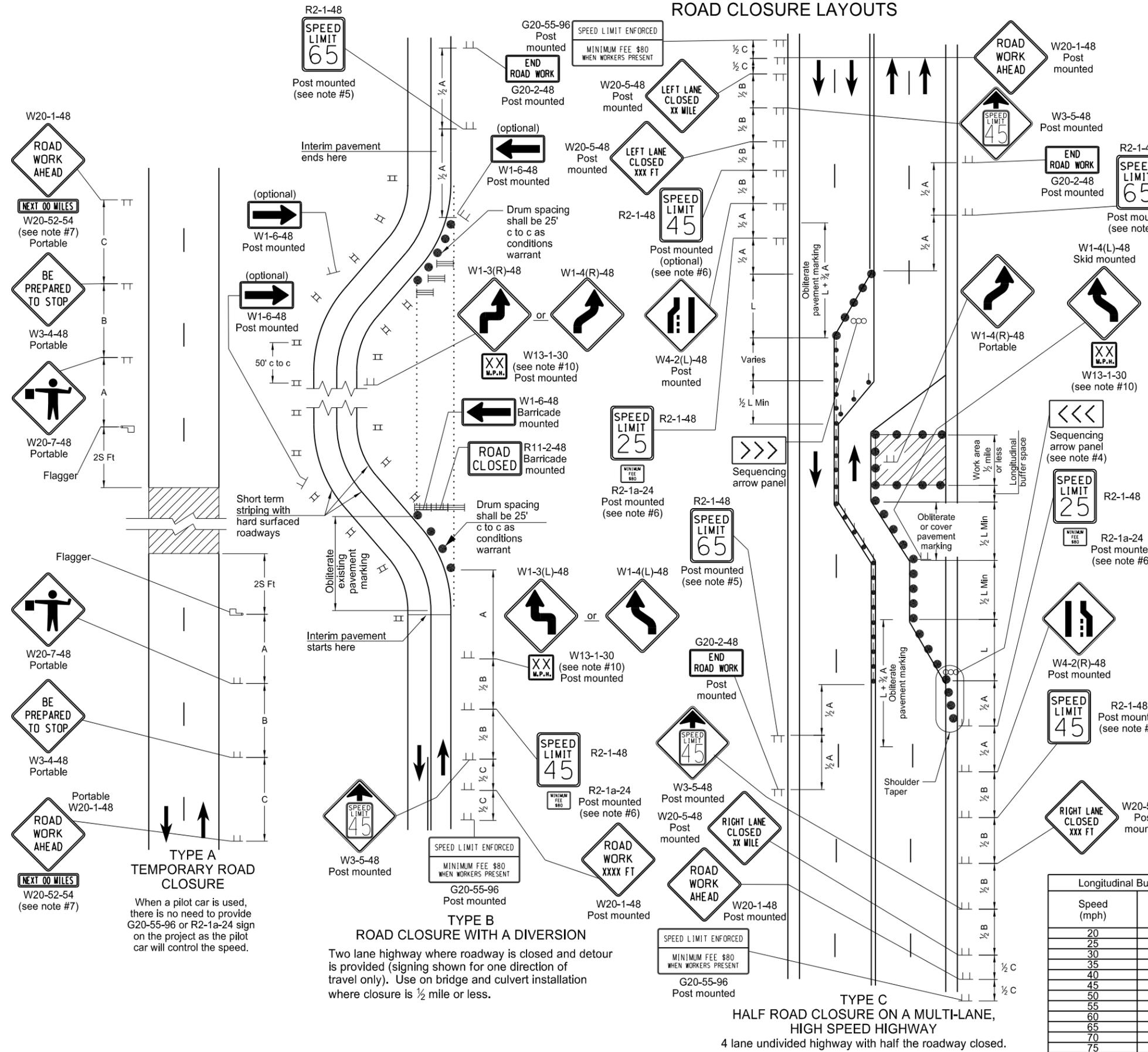
KEY

	Type III barricade		Work area
	Sign		Flagger
	Delineator drum		Sequencing arrow panel
	Tubular markers		Vertical panels back to back

Speed (mph)	Length Min (feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820

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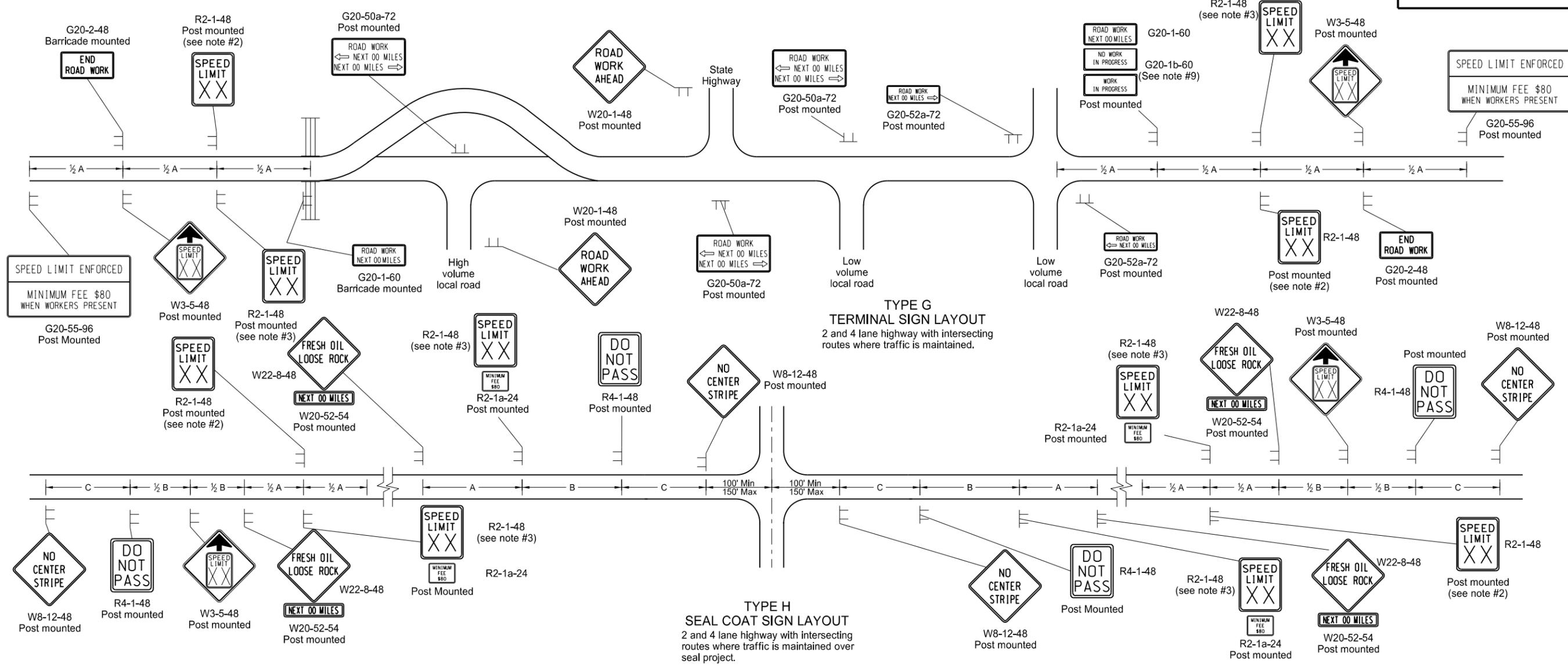
**TYPE A TEMPORARY ROAD CLOSURE**  
 When a pilot car is used, there is no need to provide G20-55-96 or R2-1a-24 sign on the project as the pilot car will control the speed.

**TYPE B ROAD CLOSURE WITH A DIVERSION**  
 Two lane highway where roadway is closed and detour is provided (signing shown for one direction of travel only). Use on bridge and culvert installation where closure is  $\frac{1}{2}$  mile or less.

**TYPE C HALF ROAD CLOSURE ON A MULTI-LANE, HIGH SPEED HIGHWAY**  
 4 lane undivided highway with half the roadway closed.

# TERMINAL AND SEAL COAT SIGN LAYOUTS

D-704-20



- Barricades placed on roadway shall be on a moveable assembly. Signs placed on the roadway shall be placed on skid mounted assemblies.
- The speed limit shall be re-established. The exact speed limit shall be determined in the field, dependent on location and conditions.
- The reduced speed limit shall be determined dependent on the in place speed limit before construction. The speed limit reduction should not exceed 10 MPH below the existing speed limit, unless the design speed of the work zone feature has been reduced below the 10 MPH. In this case, the speed limit reduction shall not exceed 30 MPH. Where speed limits are to be reduced more than 30 MPH, a second speed limit sign shall be installed with the desired speed reduction but shall not exceed 30 MPH. The second speed limit sign shall be placed at 1/2 B.
- When warning signs are used in urban areas and the signs are not portable, flags shall be installed. The flags shall be 24 inches square, mounted perpendicular to the edges of the diamond sign, and at such a distance above the edge so that when the flag is limp it will not touch the sign. Rural areas will not require flags.
- Existing speed limit signs within a reduced speed zone shall be covered.
- On seal projects, signs R2-1-48, R2-1a-24, R4-1-48, W22-8-48 and W20-52-54 shall be placed just after all important intersections and at five mile intervals thereafter. Sign W8-12-48 shall be placed just after all important intersections and at 2 mile intervals thereafter until the short term center line pavement marking is in place. No short term pavement markings are placed when traffic volumes are 750 ADT or less.

- The contractor has the option of using portable sign supports in lieu of post mounted signs in accordance with the NDDOT Standard Specifications.
- Type H construction sign traffic control shall have the speed limit signs covered or removed once the loose aggregate has been removed.
- The contractor shall install the G20-1b-60 sign when work is suspended for winter.
- Other traffic control layouts will be required in the immediate work areas. If the speed limit is reduced in the work area, speed limit signs shall have the R2-1a-24 sign placed below.
- G20-55-96 sign is not required if work is less than 15 days.

**KEY**

≡ Type III barricade

┌ Sign

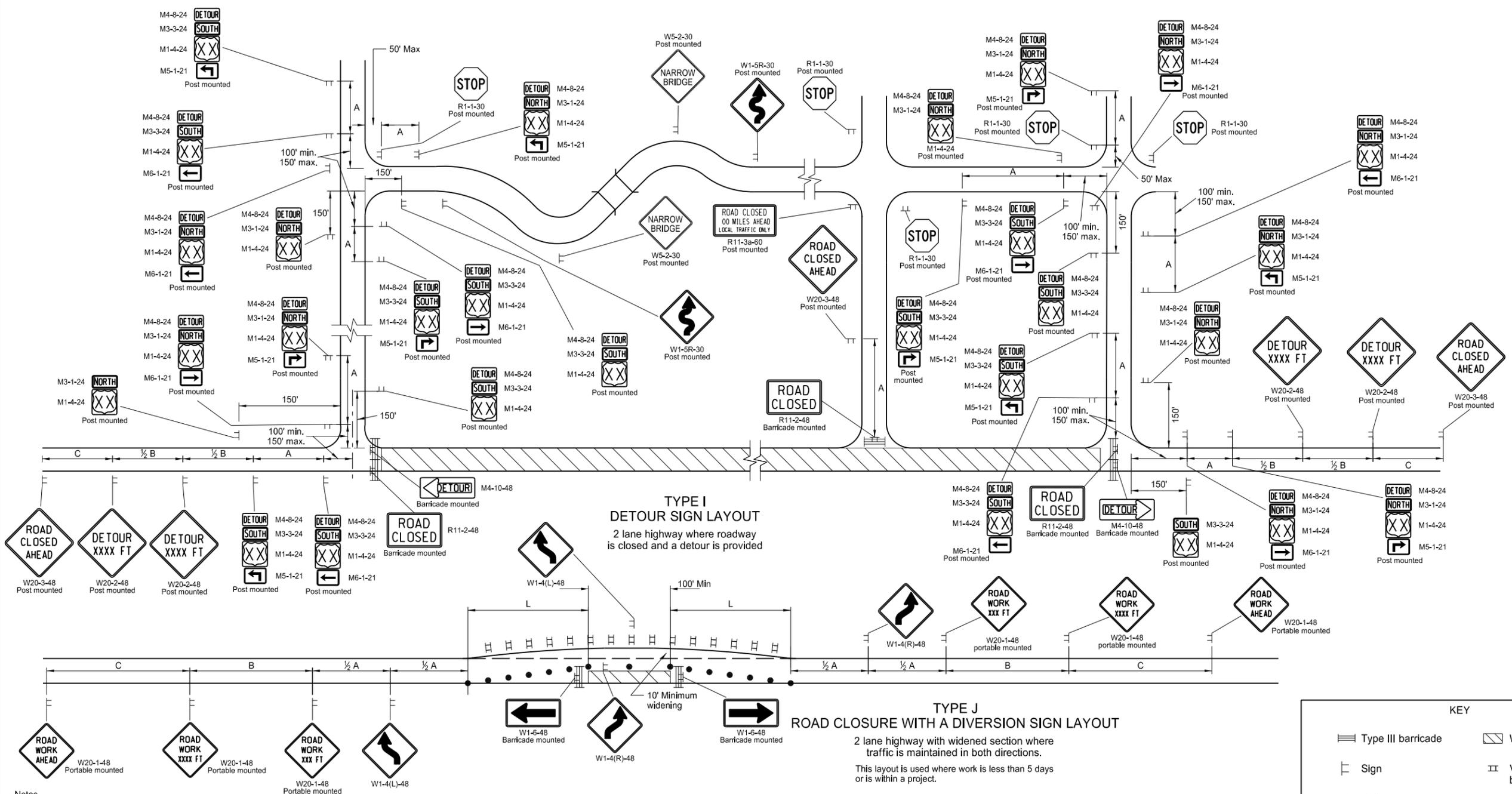
ADVANCE WARNING SIGN SPACING			
Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

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# DETOUR AND ROADWAY DIVERSION SIGN LAYOUTS

D-704-21



- Notes**
- Variables  
S=Numerical value of speed limit or 85th percentile. W=The width of taper.  
L=Minimum length of taper, or  $S \times W$  for freeways, expressways, and all other roads with speeds of 45 mph or greater, or  $W \times S^2 / 60$  for urban, residential, and other streets with speeds of 40 mph or less.
  - Barricades placed on roadway shall be on a moveable assembly. Signs placed on roadway shall be placed on skid mounted assemblies.
  - Delineator drums and vertical panels used for tapering traffic shall be spaced at dimension "S".  
Delineator drums, tubular markers and vertical panels used for tangents shall be spaced at 2 times "S".  
The reduced speed limit shall be determined dependent on the in place speed limit before construction. The speed limit reduction should not exceed 10 mph below the existing speed limit, unless the design speed of the work zone feature has been reduced below the 10 MPH. In this case, the speed limit reduction shall not exceed 30 MPH. Where speed limits are to be reduced more than 30 MPH, a second speed limit sign shall be installed with the desired speed reduction but shall not exceed 30 MPH. The second speed limit sign shall be placed at  $\frac{1}{2}$  B.
  - When warning signs are used in urban areas and the signs are not portable, flags shall be installed. The flags shall be 24 inches square, mounted perpendicular to the edges of the diamond sign, and at such a distance above the edge so that when the flag is limp it will not touch the sign. Rural areas will not require flags.
  - Existing speed limit signs within a reduced speed zone shall be covered.
  - Obliterated or covered pavement marking shall be paid for as Obliteration of Pavement Marking. The covering shall be approved by the engineer.
  - The contractor has the option of using portable sign supports in lieu of post mounted signs in accordance with the NDDOT Standard Specifications.

- A W24-1-48 sign may be used in place of the double reverse curve signs if the tangent between tapers is less than 60'.

**KEY**

	Type III barricade		Work area
	Sign		Vertical panels back to back
	Delineator drum		

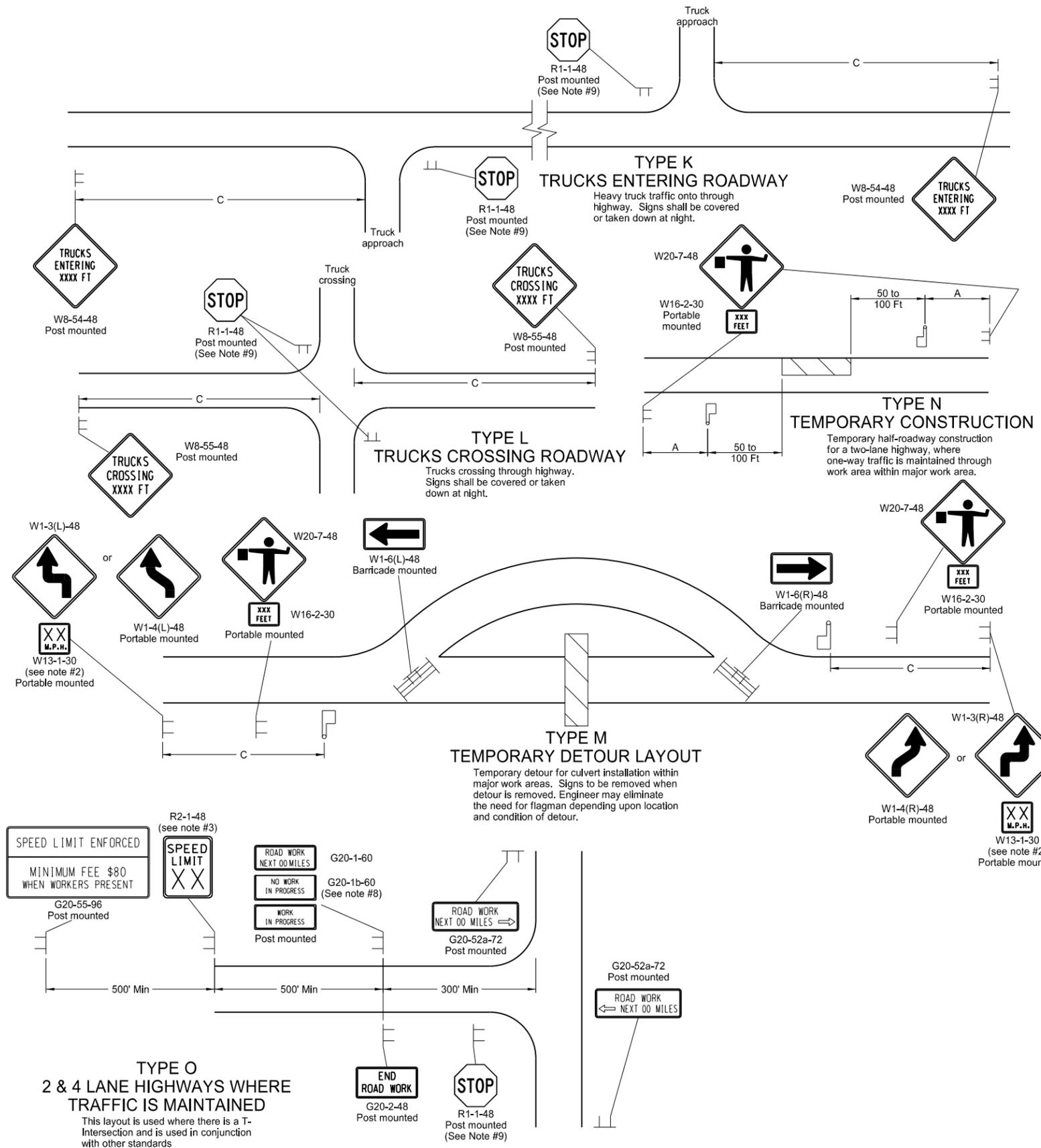
ADVANCE WARNING SIGN SPACING			
Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

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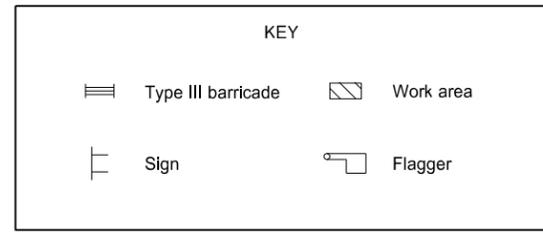
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# CONSTRUCTION TRUCK AND TEMPORARY DETOUR LAYOUTS

D-704-22



- Notes
1. Barricades placed on roadway shall be on a moveable assembly. Signs placed on the roadway shall be placed on skid mounted assemblies. Where necessary, safe speed to be determined by the Engineer.
  2. The reduced speed limit shall be determined dependent on the in place speed limit before construction. The speed limit reduction should not exceed 10 mph below the existing speed limit, unless the design speed of the work zone feature has been reduced below the 10 mph. In this case, the speed limit reduction shall not exceed 30 MPH. Where speed limits are to be reduced more than 30 MPH, a second speed limit sign shall be installed with the desired speed reduction but shall not exceed 30 MPH. The second speed limit sign shall be placed at 1/2 B.
  3. When warning signs are used in urban areas and the signs are not portable, flags shall be installed. The flags shall be 24 inches square, mounted perpendicular to the edges of the diamond sign, and at such a distance above the edge so that when the flag is limp it will not touch the sign. Rural areas will not require flags.
  4. Existing speed limit signs within a reduced speed zone shall be covered. Obliterated or covered pavement marking shall be paid for as Obliteration of Pavement Marking. The covering shall be approved by the engineer.
  5. The contractor has the option of using portable sign supports in lieu of post mounted signs in accordance with the NDDOT Standard Specifications.
  6. The contractor shall install the G20-1b-60 sign when work is suspended for winter.
  7. If existing stop sign is in place, a 48" stop sign is not required.
  8. G20-55-96 sign is not required if this standard is part of other traffic control layouts with this sign or the work is less than 15 days.



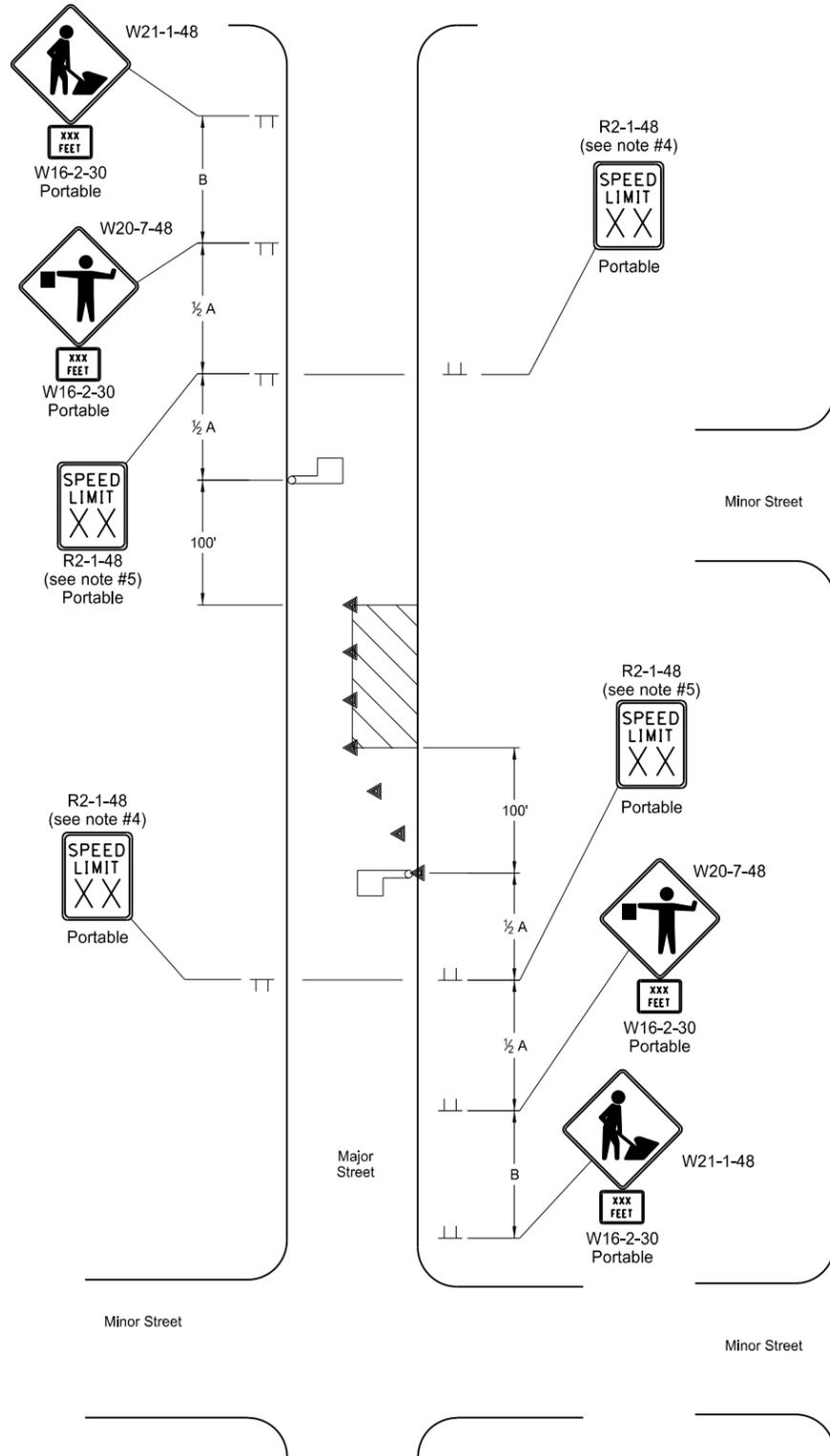
Road Type	ADVANCE WARNING SIGN SPACING		
	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

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# LANE CLOSURES ON URBAN STREETS LAYOUTS

D-704-25

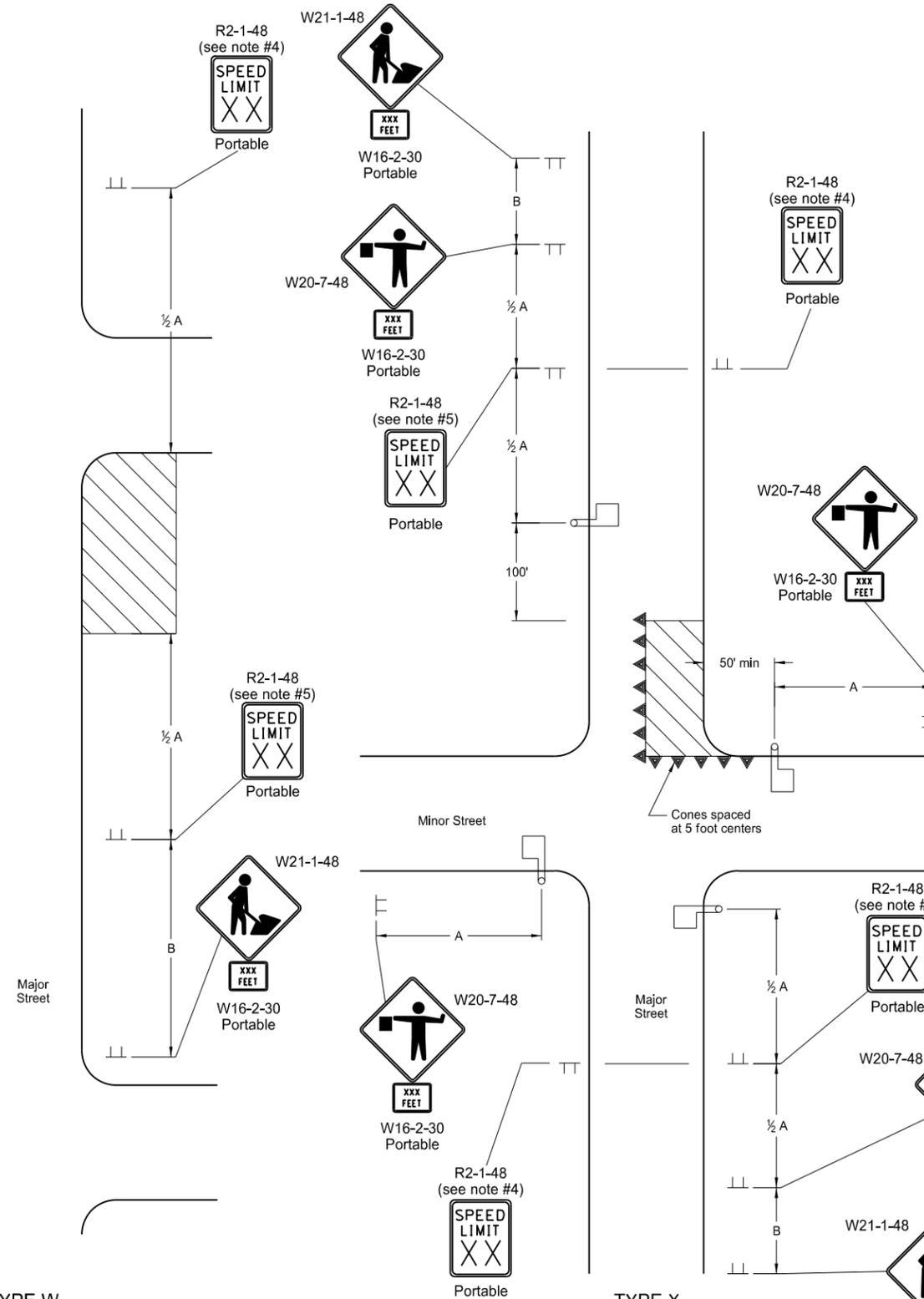


**TYPE V**  
LANE CLOSURE ON URBAN STREET

When portion of roadway is closed to traffic only during daylight hours (mid block location).

**TYPE W**  
WORK BEYOND CURB ON URBAN STREET

When work area is outside of driving lane and no closure is necessary

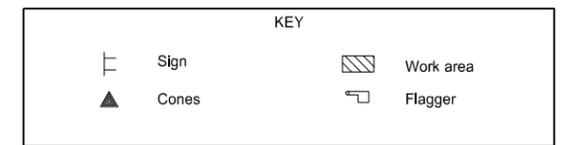


**TYPE X**  
LANE CLOSURE NEAR INTERSECTION ON URBAN STREET

When portion of roadway is closed to traffic only during daylight hours (end block location).

- Notes
- For Type V: The contractor will be allowed to work only on one side of the roadway at a time so as not to block off any more than one lane of traffic.
  - When parking is present, the signs shall be placed so they are entirely visible above the parked vehicles or placed at the edge of the parking area so they are visible to oncoming traffic. These signs may be skid mounted when placed on the roadway surface.
  - Delineator cones used for tapering traffic shall be placed at 3 equal spaces. Delineator cones for tangents shall be spaced at dimension "S". "S" = the numerical value of speed limit.
  - The speed limit shall be re-established. The exact speed limit shall be determined in the field, dependent on location and conditions.
  - The reduced speed limit shall be determined dependent on the in place speed limit before construction. The speed limit reduction should not exceed 10 mph below the existing speed limit, unless the design speed of the work zone feature has been reduced below the 10 mph. In this case, the speed limit reduction shall not exceed 30 MPH. Where speed limits are to be reduced more than 30 MPH, a second speed limit sign shall be installed with the desired speed reduction but shall not exceed 30 MPH. The second speed limit sign shall be placed at 1/2 B.
  - When warning signs are used in urban areas and the signs are not portable, flags shall be installed. The flags shall be 24 inches square, mounted perpendicular to the edges of the diamond sign, and at such a distance above the edge so that when the flag is limp it will not touch the sign. Rural areas will not require flags.
  - Existing speed limit signs within a reduced speed zone shall be covered.
  - Where necessary, safe speed to be determined by the Engineer.
  - The contractor has the option of using portable sign supports in lieu of post mounted signs in accordance with the NDDOT Standard Specifications.
  - Urban projects do not need the G20-55-96 and R2-1a-24 signs.

Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

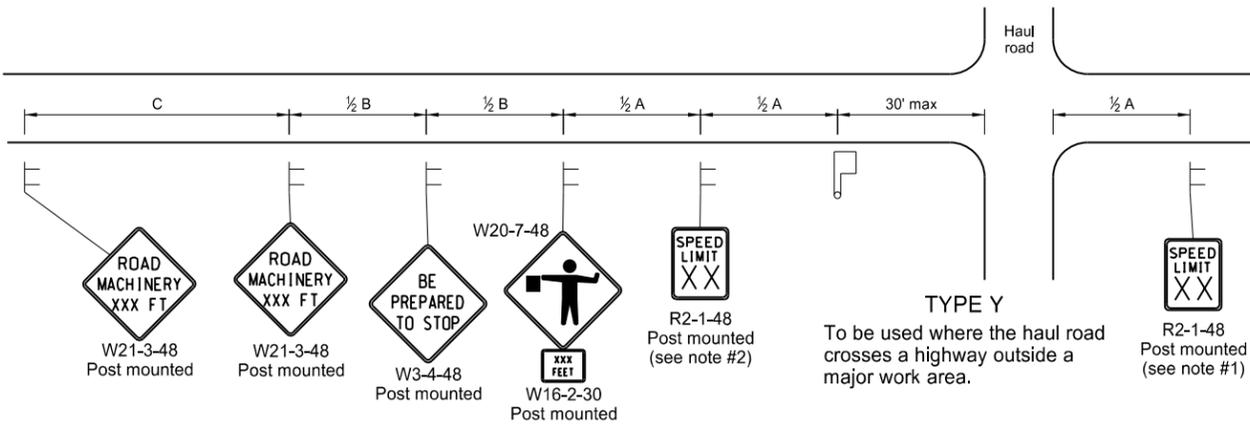


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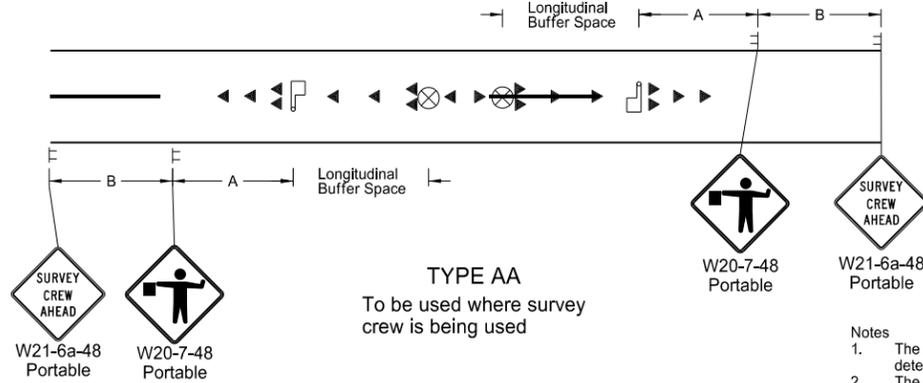
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MISCELLANEOUS SIGN LAYOUTS

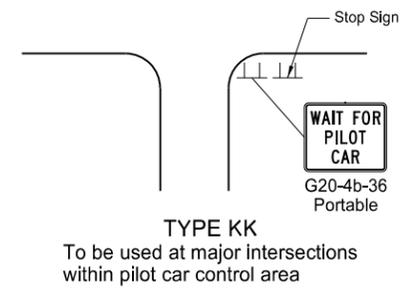
D-704-26



**TYPE Y**  
To be used where the haul road crosses a highway outside a major work area.

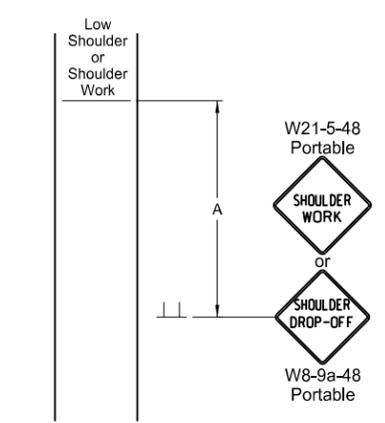


**TYPE AA**  
To be used where survey crew is being used

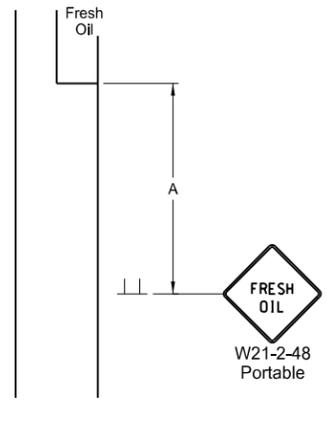


**TYPE KK**  
To be used at major intersections within pilot car control area

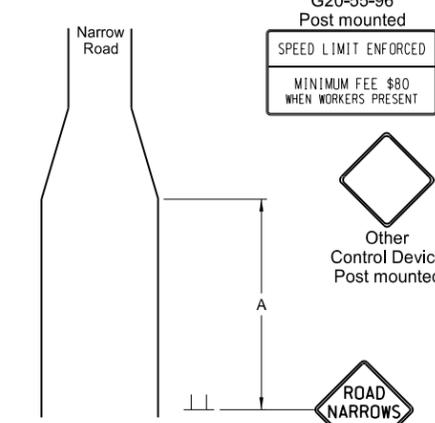
- Notes
1. The speed limit shall be re-established. The exact speed limit shall be determined in the field, dependent on location and conditions.
  2. The reduced speed limit shall be determined dependent on the in place speed limit before construction. The speed limit reduction should not exceed 10 mph below the existing speed limit, unless the design speed of the work zone feature has been reduced below the 10 mph. In this case, the speed limit reduction shall not exceed 30 MPH. Where speed limits are to be reduced more than 30 MPH, a second speed limit sign shall be installed with the desired speed reduction but shall not exceed 30 MPH. The second speed limit sign shall be placed at 1/2 B.
  3. When warning signs are used in urban areas and the signs are not portable, flags shall be installed. The flags shall be 24 inches square, mounted perpendicular to the edges of the diamond sign, and at such a distance above the edge so that when the flag is limp it will not touch the sign. Rural areas will not require flags.
  4. Existing speed limit signs within a reduced speed zone shall be covered.
  5. The contractor has the option of using portable sign supports in lieu of post mounted signs in accordance with the NDDOT Standard Specifications.
  6. G20-55-96 signs are not required if this standard is part of other traffic control layouts, or the work is less than 15 days.
  7. When a pilot car operation is used, place a G20-4b-36 "Wait For Pilot Car" sign at major intersections within pilot car control area.



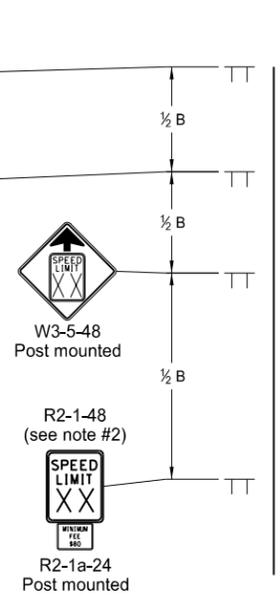
**TYPE BB**  
To be used within a major work area where the sign conditions exist



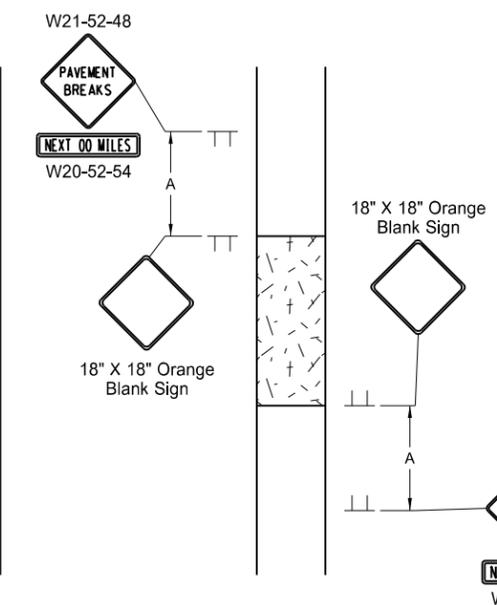
**TYPE CC**  
To be used where the sign conditions exist



**TYPE DD**  
To be used where the sign conditions exist



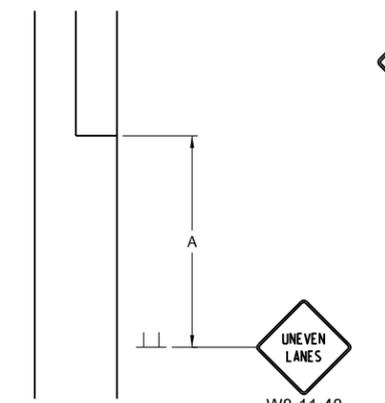
**TYPE Z**  
To be used where speed zone is needed



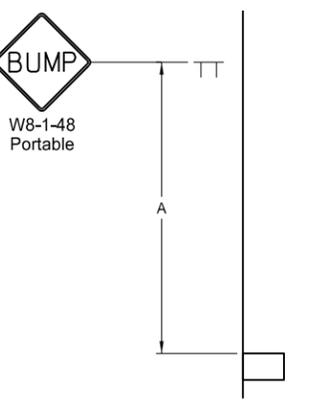
**TYPE JJ**  
To be used where there is a break in the pavement. These signs may be skid mounted or post mounted and shall be installed when conditions exist and removed when not applicable.

Longitudinal Buffer Space	
*Speed (mph)	Length Min (feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820

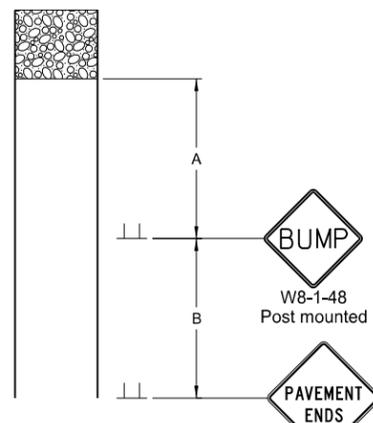
\* Posted speed, off-peak 85th percentile speed prior to work starting, or the anticipated operating speed in mph.



**TYPE GG**  
To be used where a difference of elevation between lanes exist



**TYPE EE**  
To be used where the sign conditions exist



**TYPE FF**  
To be used where the sign conditions exist

ADVANCE WARNING SIGN SPACING			
Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

**KEY**

Sign (represented by a vertical line with a horizontal bar)

Flagger (represented by a square with a diagonal line)

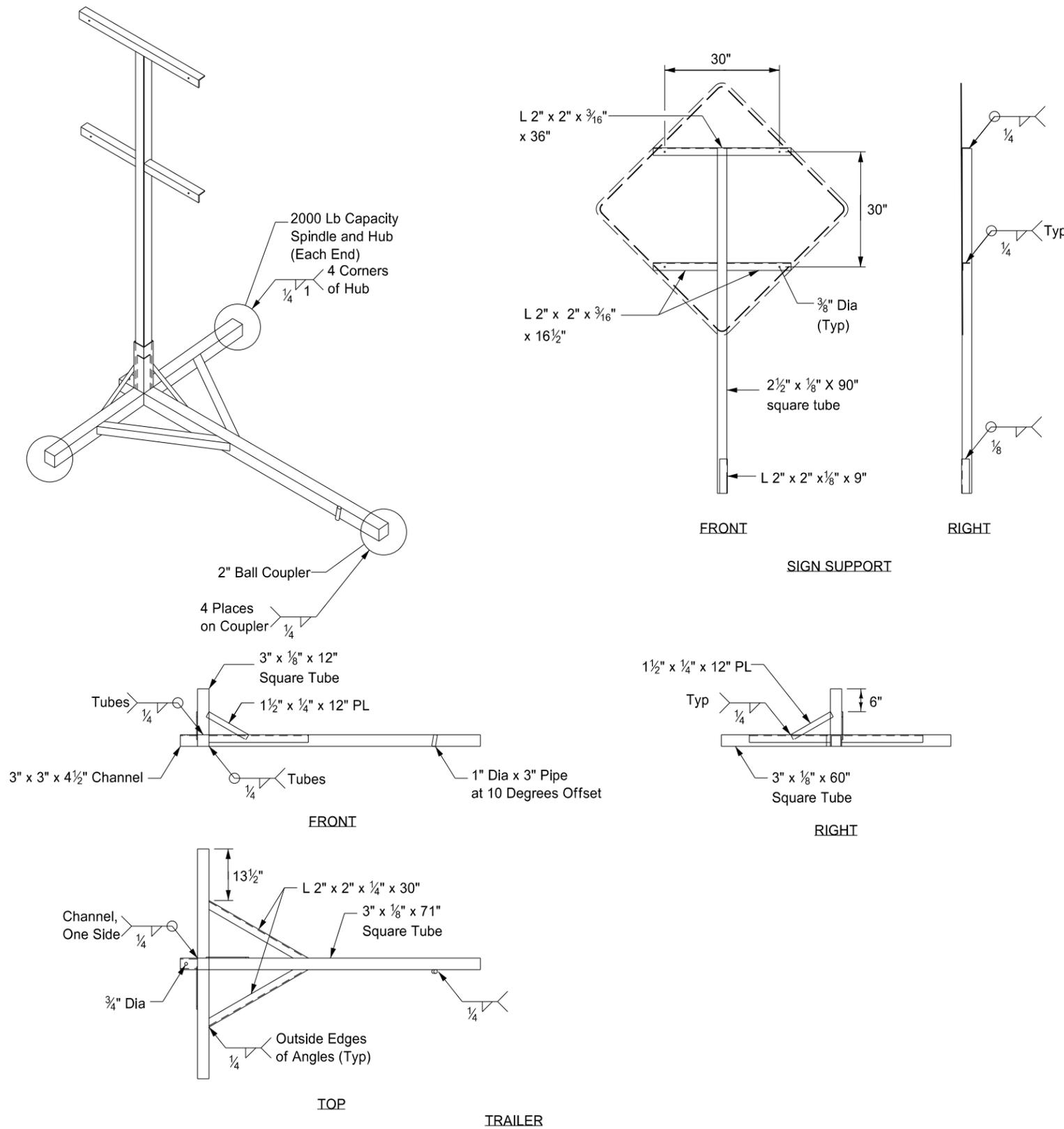
Cones (represented by a triangle)

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PORTABLE SIGN SUPPORT ASSEMBLY

D-704-50



Notes:

- ① The maximum weight of the assembly is 250 pounds.
- ② Use a 14" wheel and tire.
- ③ Automotive and equipment axle assemblies may not be used for trailer-mounted sign supports.
- ④ Other NCHRP 350 crash tested assemblies are acceptable.

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# CURB RAMP DETAILS

D-750-3

+More Right of Way

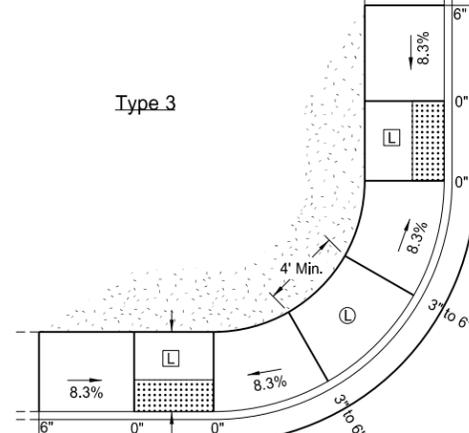
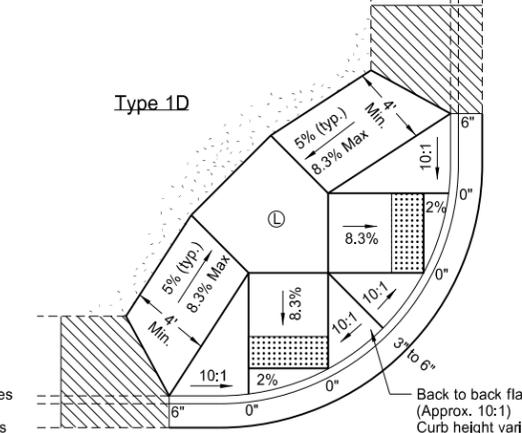
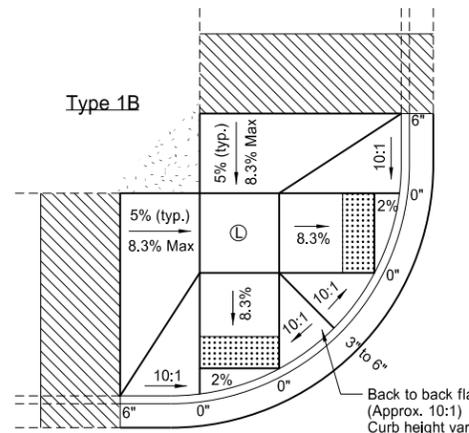
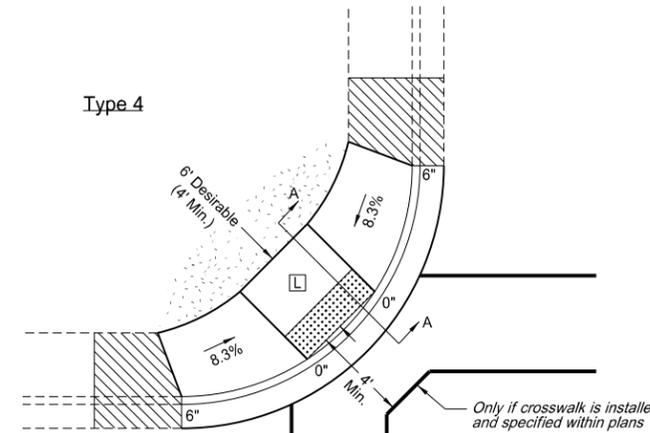
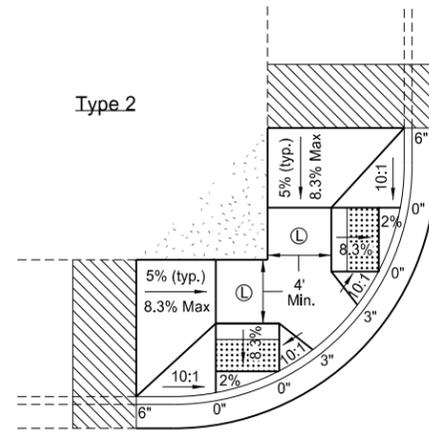
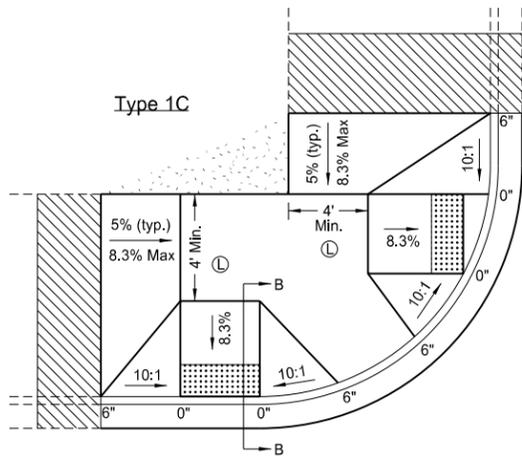
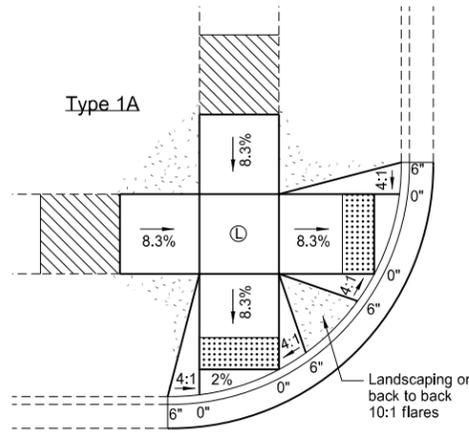
Less Right of Way

**NOTES:**

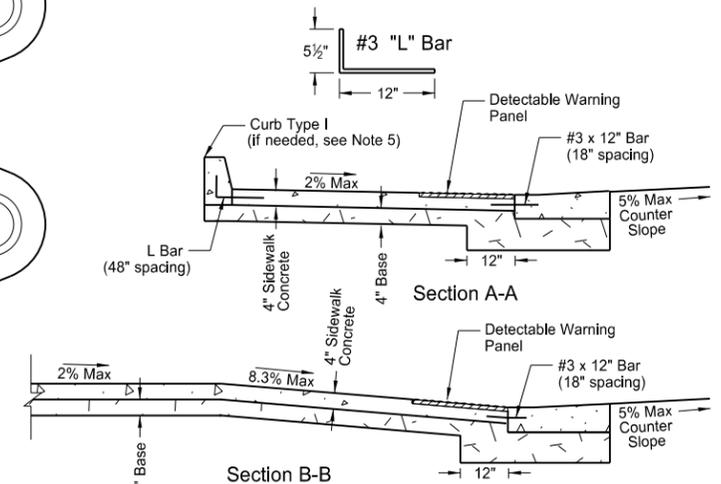
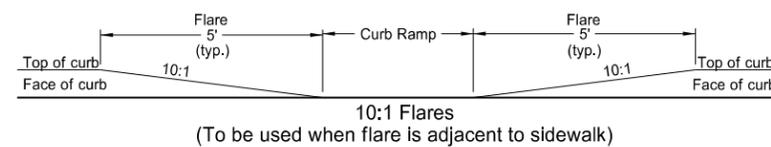
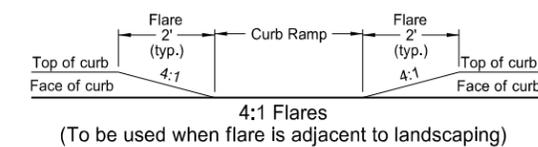
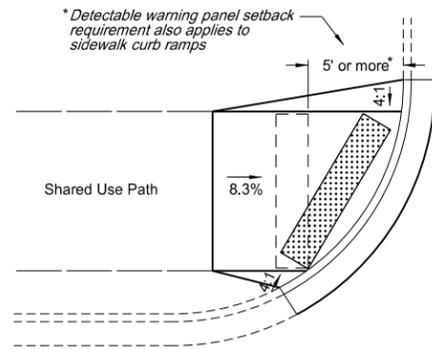
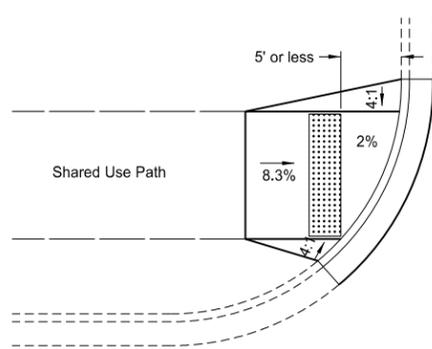
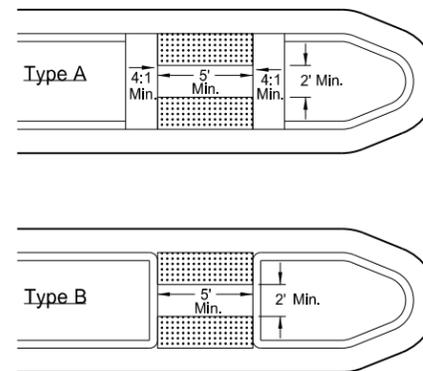
- Ramp width is defined as the useable portion of the ramp, excluding flares if used.  
Curb ramp width should match the existing sidewalk width. 4' width minimum.  
Ramp width for shared-use paths should match the existing shared use path width.  
Ramp length shall be maximum of 15'.
- Landings shall be a minimum of 4' x 4' and shall have a max 2% slope in any direction. Landings are desirably 5' x 5' or larger.
- Detectable warning panels shall match the ramp width. Radial panels may also be used. The detectable warning panel may be located within the lower landing.
- The pedestrian access route shall be continuous 4' min. width. Max 2% cross slope applies to all concrete, excluding flares.
- Landscaping is preferred to modify existing ground slope changes as needed. If not possible, such as adjacent buildings, a vertical curb may be used as shown in the detail below. The curb will be paid for at the unit price bid for the item "Curb - Type I" per lineal foot.

**LEGEND:**

- : Detectable Warning Panel
- : Landscaping
- : Transitional tie-in segment if needed for retrofits. Max grade slope 8.3%.
- : Upper Landing
- : Lower Landing
- 0", 3", or 6" : Curb Height
- 8.3% : All slopes shown are max grades. Flatter slopes may be used.



**Median Refuge Islands (Cut-Through)**



NORTH DAKOTA	
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11-26-13	
REVISIONS	
DATE	CHANGE

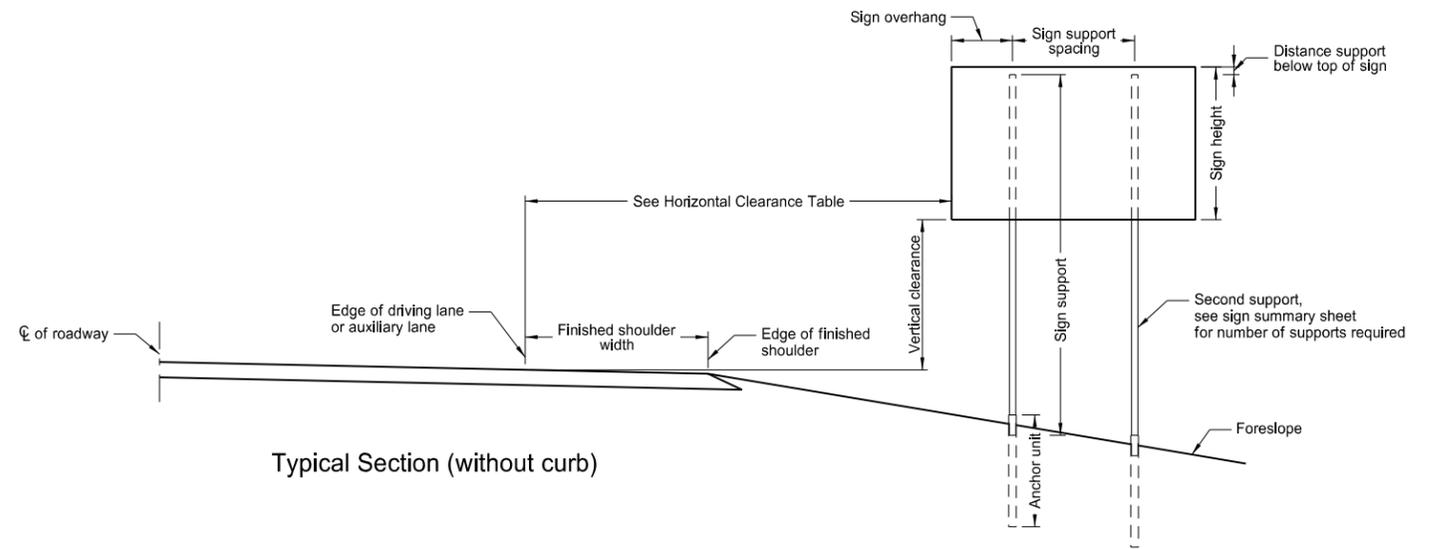
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# PERFORATED TUBE ASSEMBLY DETAILS

D-754-23

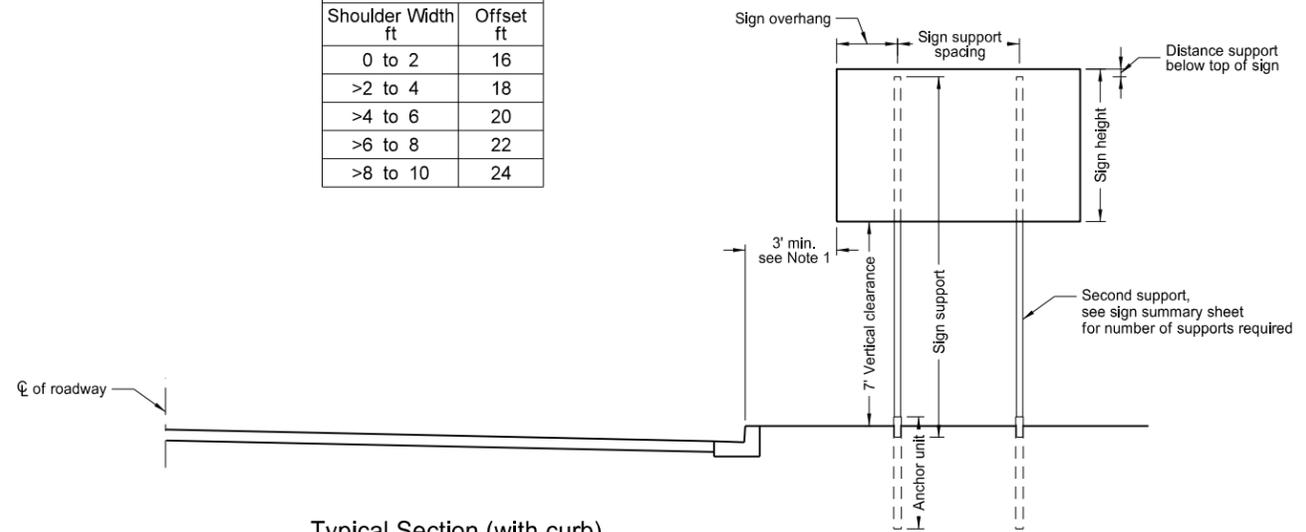
**Notes:**

1. Curbed Roadways: The clearance from the face of the curb should be 3' except where right of way or sidewalk width is limited, a minimum clearance of 2' shall be provided. The horizontal clearance may need to be increased to maintain a minimum sidewalk clear width of 4' from the sign support, not including any attached curb.
2. Minimum vertical clearance: Signs installed at the side of the road in rural districts shall be at least 5' measured from the bottom of the sign to the edge of the driving lane or auxiliary lane. Where parking or pedestrian movements occur, the clearance to the bottom of the sign shall be at least 7'.
- Signs on expressways shall be installed with a minimum height of 7'.
- Adopt-a-highway signs installed on Freeways shall be at least 7' above the edge of the driving lane.
- The vertical clearance shall have a maximum height of 6" above the vertical clearance specified above.
3. Offset signs: Where signs are placed at least 30 feet or more from the edge of the traveled way, the height to the bottom of such sign shall be 5' above the edge of the driving lane.
4. The clearance from edge of shared use path to edge of sign should be 3' except where width is limited, a minimum clearance of 2' shall be provided.

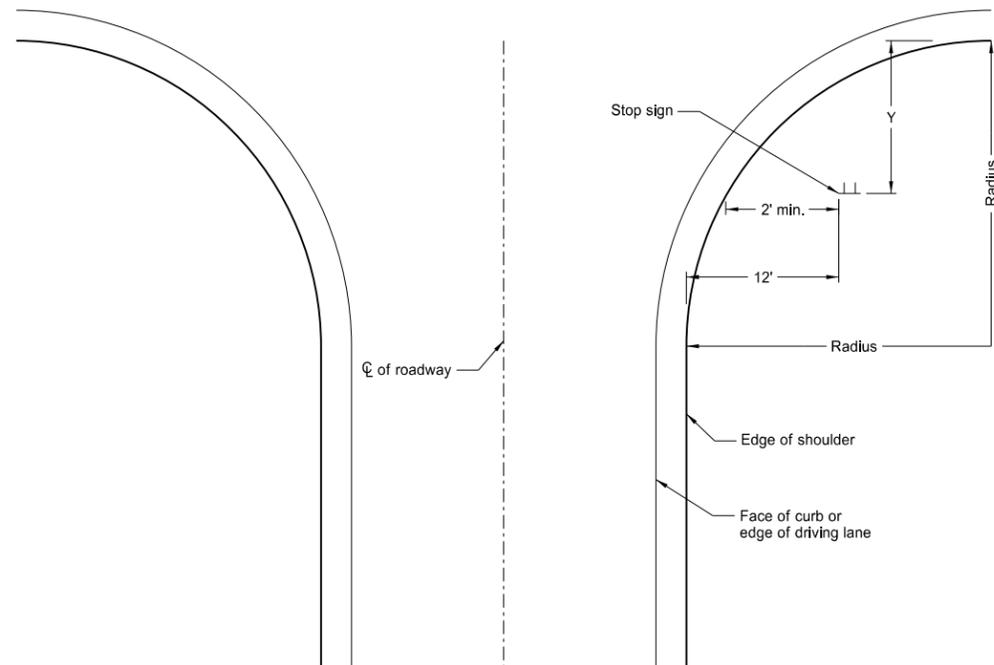


Typical Section (without curb)

Horizontal Clearance Table	
Shoulder Width ft	Offset ft
0 to 2	16
>2 to 4	18
>4 to 6	20
>6 to 8	22
>8 to 10	24



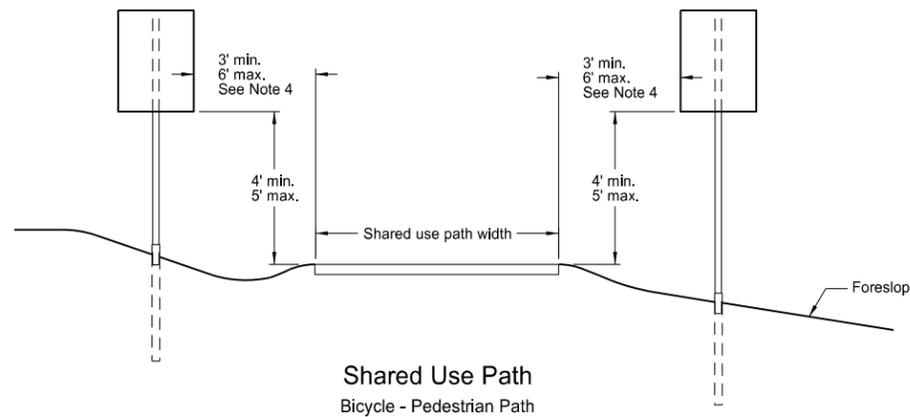
Typical Section (with curb)  
Residential or Business District



Stop Sign Location  
Wide Throat Intersection

This layout is to be used for the placement of "Stop" signs.

Radius ft.	Y-max. ft.	Y-min. ft.
40	50	15
45	50	18
50	50	21
55	50	25
60	50	28
65	50	32
70	50	35
75	50	39
80	50	43



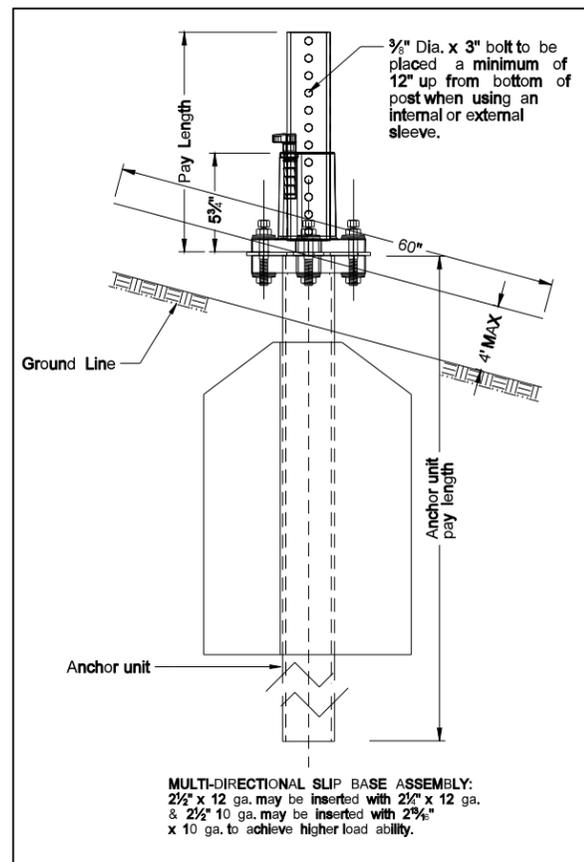
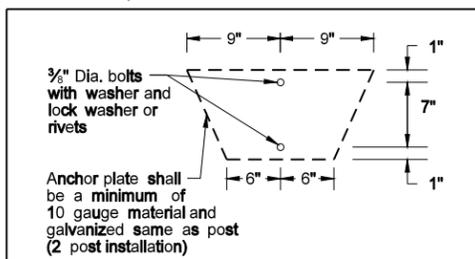
Shared Use Path  
Bicycle - Pedestrian Path

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-3-13	
REVISIONS	
DATE	CHANGE
7-8-14	Revised note 2, added note 4.

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**Roger Weigel**  
 Registration Number  
 PE-2930,  
 on 7/8/14 and the original document is stored at the  
 North Dakota Department  
 of Transportation

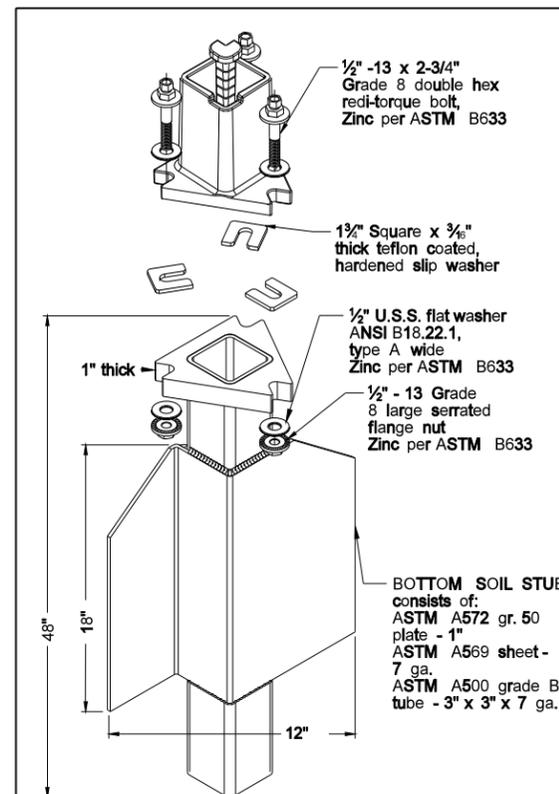
Number of Posts	Telescoping Perforated Tube						
	Post Size In.	Wall Thickness Gauge	Sleeve Size In.	Wall Thickness Gauge	Slip Base	Anchor Size Without Slip Base In.	Anchor Wall Thickness Gauge
1	2	12			No	2 1/2	12
1	2 1/2	12			No	2 1/2	12
1	2 1/2	12			(B)	3(C)	7
1	2 1/2	10			Yes		7
1	2 1/2	12	2 1/2(D)	12	Yes		7
1	2 1/2	12	2 1/2	12	Yes		7
2	2 1/2	10			Yes		7
2	2 1/2	12	2 1/2(D)	12	Yes		7
2	2 1/2	12	2 1/2	12	Yes		7
3 & 4	2 1/2	12			Yes		7
3 & 4	2 1/2	10			Yes		7
3 & 4	2 1/2	12	2 1/2	12	Yes		7
3 & 4	2 1/2	12	2 1/2(D)	12	Yes		7
3 & 4	2 1/2	10	2 1/2	10	Yes		7

(B) - The 2 1/2", 12 gauge posts do not need breakaway bases when placed in standard soils, but require a shim as specified by the manufacturer. The breakaway base is required when the support is placed in weak soils. The Engineer shall determine if the soils are weak. Weak soils are classified as boggy, wet, or loose soil areas.  
 (C) - 3" anchor unit  
 (D) - 2 1/2" x 12 ga. x 18" minimum length external sleeve required.

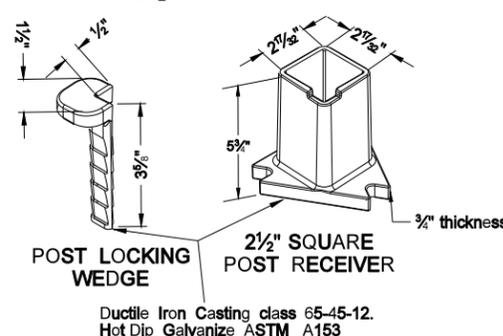


MULTI-DIRECTIONAL SLIP BASE ASSEMBLY:  
 2 1/2" x 12 ga. may be inserted with 2 1/2" x 12 ga. & 2 1/2" 10 ga. may be inserted with 2 3/8" x 10 ga. to achieve higher load ability.

Mounting Details Perforated Tube

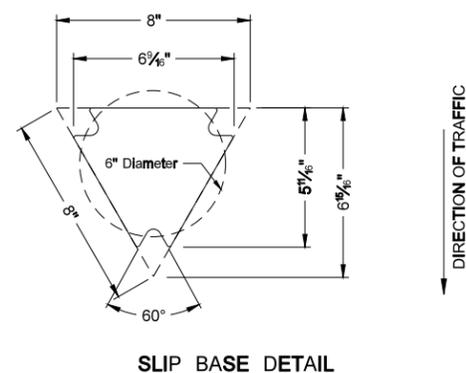


SLIP BASE FOR 2 1/2" POST



2 1/2" SQUARE POST RECEIVER

Ductile Iron Casting class 65-45-12. Hot Dip Galvanize ASTM A153



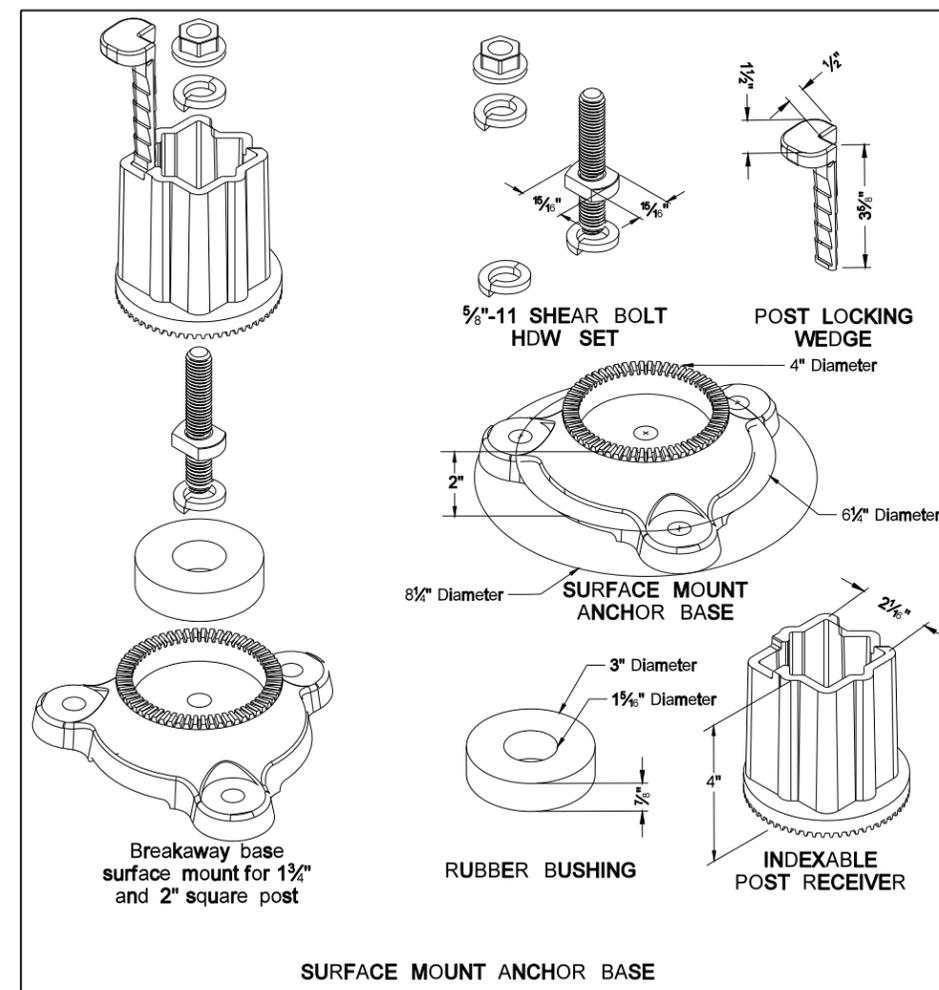
SLIP BASE DETAIL

Properties of Telescoping Perforated Tubes						
Tube Size In.	Wall Thickness in.	U.S. Standard Gauge	Weight Per Foot Lbs.	Moment of Inertia In. <sup>4</sup>	Cross Sect. Area In. <sup>2</sup>	Section Modulus In. <sup>3</sup>
1 1/2 x 1 1/2	0.105	12	1.702	0.129	0.380	0.172
2 x 2	0.105	12	2.416	0.372	0.590	0.372
2 1/2 x 2 1/2	0.105	12	2.773	0.561	0.695	0.499
2 3/8 x 2 3/8	0.135	10	3.432	0.605	0.841	0.590
2 1/2 x 2 1/2	0.105	12	3.141	0.804	0.803	0.643
2 1/2 x 2 1/2	0.135	10	4.006	0.979	1.010	0.783

The 2 3/8" size 10 gauge is shown as 2.19" size on the plans; The 2 1/2" size is shown as 2.51" size on the plans.

NOTE:

- 4" Vertical clearance of anchor or breakaway base. The 4" x 60" measurement shall be made above and below post location and also back and ahead of post.
- Anchor material shall be 7 gauge H.R.P.O. Commercial quality ASTM A569 and 3" x 3" x 7" gauge ASTM A500 grade B. Anchor shall have a yield strength 43.9 KSI and tensile strength of 59.3 KSI. Anchor shall be hot dipped galvanized per ASTM A123/153. All tolerances on anchor unit and slip base bottom assembly are +/- 0.005" unless otherwise noted.
- When used in concrete sidewalk, anchor shall be the same concept without the wings.
- Four post signs shall have over 8" between the first and fourth posts.
- Installation procedures as per manufacturers recommendation.
- Concrete fasteners for surface mount breakaway base shall be a minimum 1/2" diameter x 4" grade 8.



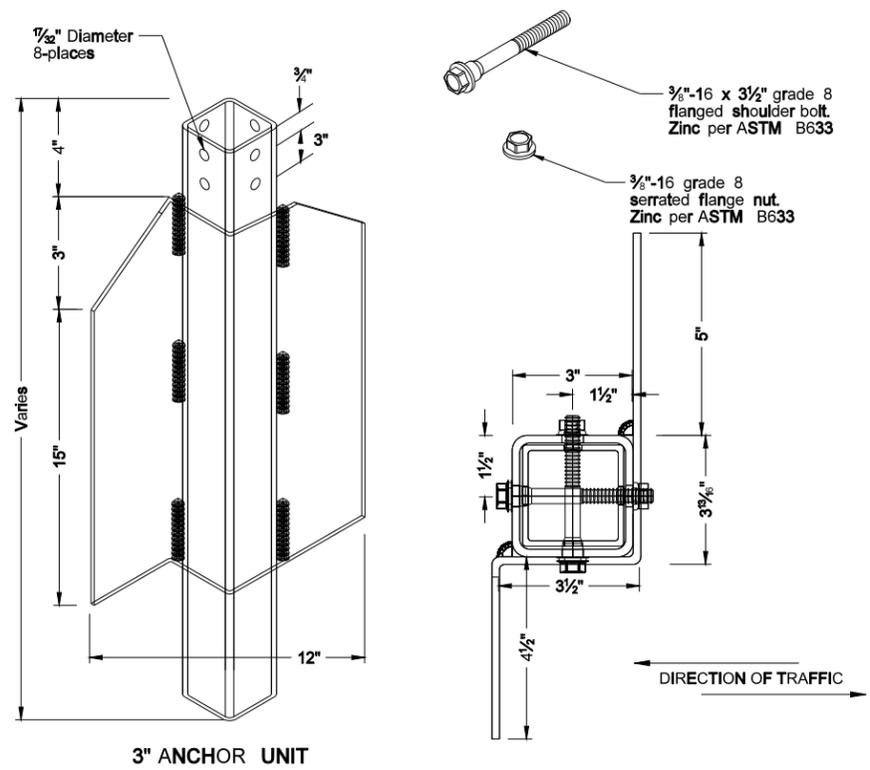
SURFACE MOUNT ANCHOR BASE

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-6-09	
REVISIONS	
DATE	CHANGE

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SHOULDER BOLT

Shimming agent to reduce tolerance between 3" anchor unit and 2 1/2" post. (standard 3/8" diameter grade 8 bolt may be used with proper shim)



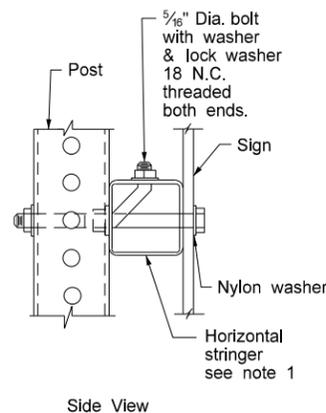
3" ANCHOR UNIT



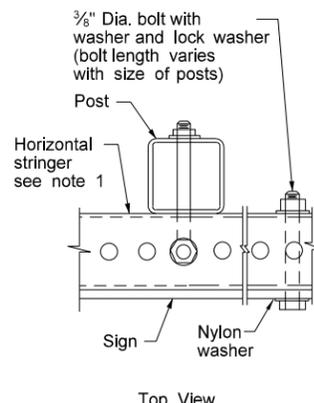
Mounting Details Perforated Tube

Note:

- Horizontal stringers - In lieu of perforated tubes, the contractor may substitute z bar stringers. The z bar stringers shall be 1 1/2" x 3/16" thick, 1.08 lbs./ft aluminum or 3.16 lbs./ft steel.
- Metal washers used on sign face shall have a minimum outside diameter of 5/16" ± 1/65" and 10 gauge thickness.
- No Parking Signs: All no parking signs with directional arrows shall be placed at a 30 to 45 degree angle with the line of traffic flow. No parking signs required at the above angles may have the support turned to the correct angle. If the no parking sign is placed with another sign that has to be placed at a 90 degree angle with the line of traffic flow, the detailed angle strap should be used to mount the no parking sign. Flat washers and lock washers shall be used with all nylon washers.
- In lieu of using the bent bolt to attach the post to the stringer, the contractor may choose to punch the sign backing and place the bolt through the sign, the stringer and the post.
- 4" vertical clearance of anchor or breakaway base. The 4" x 60" measurement shall be made above and below post location and also back and ahead of post.

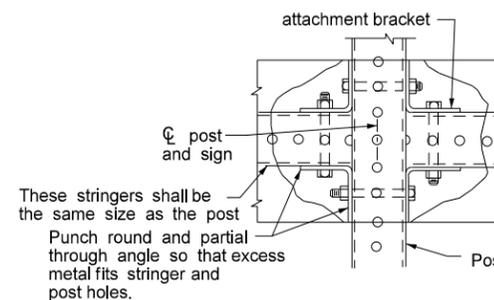


Side View



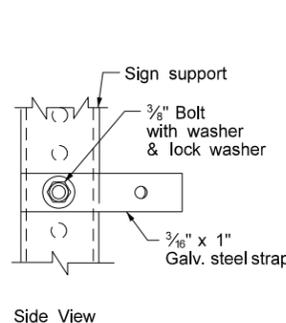
Top View

STRINGER MOUNTING  
(WITH STRINGER IN FRONT OF POST)

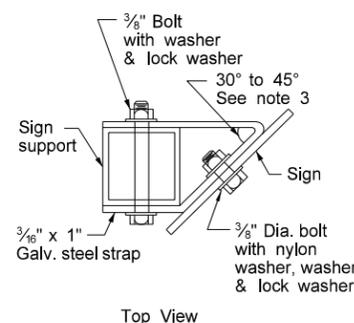


These stringers shall be the same size as the post. Punch round and partial through angle so that excess metal fits stringer and post holes.

STREET NAME SIGNS  
AND ONE WAY SIGNS  
SINGLE POST ASSEMBLY  
ONE STRINGER OR  
BACK TO BACK MOUNTING

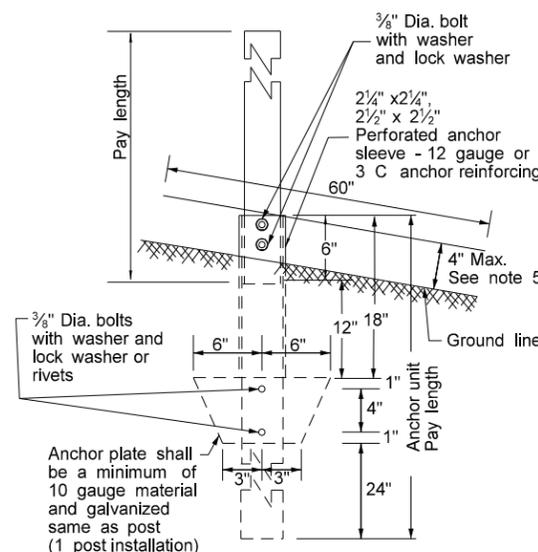


Side View

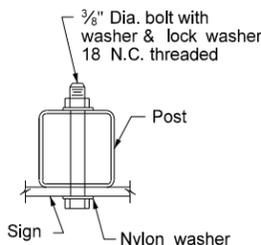
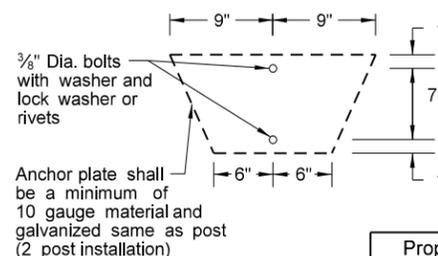


Top View

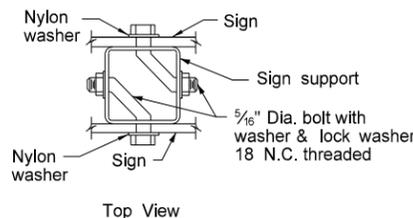
STRAP DETAIL



ANCHOR UNIT AND  
POST ASSEMBLY



BOLT MOUNTING



Top View

BACK TO BACK  
MOUNTING

Properties of Telescoping Perforated Tubes						
Tube Size In.	Wall Thickness In.	U.S. Standard Gauge	Weight Per Foot Lbs.	Moment of Inertia In. <sup>4</sup>	Cross Sect. area In. <sup>2</sup>	Section Modulus In. <sup>3</sup>
1 1/2 x 1 1/2	0.105	12	1.702	0.129	0.380	0.172
2 x 2	0.105	12	2.416	0.372	0.590	0.372
2 1/4 x 2 1/4	0.105	12	2.773	0.561	0.695	0.499
2 3/8 x 2 3/8	0.135	10	3.432	0.605	0.841	0.590
2 1/2 x 2 1/2	0.105	12	3.141	0.804	0.803	0.643
2 1/2 x 2 1/2	0.135	10	4.006	0.979	1.010	0.783

The 2 3/8" size 10 gauge is shown as 2.19" size on the plans. The 2 1/2" size is shown as 2.51" size on the plans.

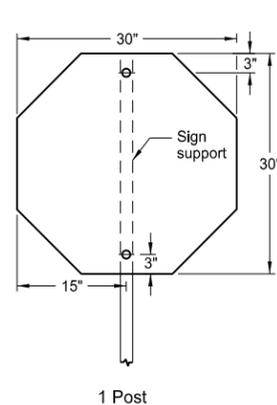
Number of Posts	Telescoping Perforated Tube						
	Post Size In.	Wall Thickness Gauge	Sleeve Size In.	Wall Thickness Gauge	Slip Base	Anchor Size Without Slip Base In.	Anchor Wall Thickness Gauge
1	2	12			No	2 1/4	12
1	2 1/4	12			No	2 1/2	12
1	2 1/2	12			(B)	3(C)	7
1	2 1/2	10			Yes		7
1	2 1/4	12	2 1/2(D)	12	Yes		7
1	2 1/2	12	2 1/4	12	Yes		7
2	2 1/2	10			Yes		7
2	2 1/4	12	2 1/2(D)	12	Yes		7
2	2 1/2	12	2 1/4	12	Yes		7
3 & 4	2 1/2	12			Yes		7
3 & 4	2 1/2	10			Yes		7
3 & 4	2 1/2	12	2 1/4	12	Yes		7
3 & 4	2 1/4	12	2 1/2(D)	12	Yes		7
3 & 4	2 1/2	10	2 3/8	10	Yes		7

(B) - The 2 1/2", 12 gauge posts do not need breakaway bases when placed in standard soils, but require a shim as specified by the manufacturer. The breakaway base is required when the support is placed in weak soils. The Engineer shall determine if the soils are weak. Weak soils are classified as boggy, wet, or loose soil areas.  
(C) - 3" anchor unit  
(D) - 2 1/2" x 12 ga. x 18" minimum length external sleeve required.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-6-09	
REVISIONS	
DATE	CHANGE
7-8-14	Revised Note 3

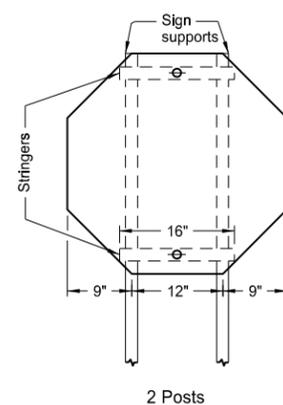
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SIGN PUNCHING, STRINGER AND SUPPORT LOCATION DETAILS REGULATORY, WARNING AND GUIDE SIGNS

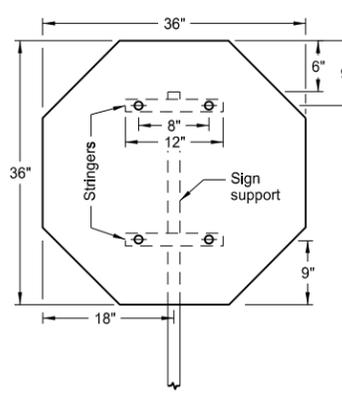


1 Post

Assembly No. 1

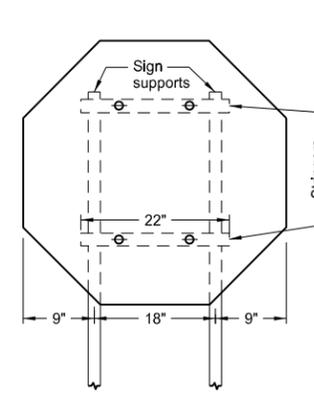


2 Posts

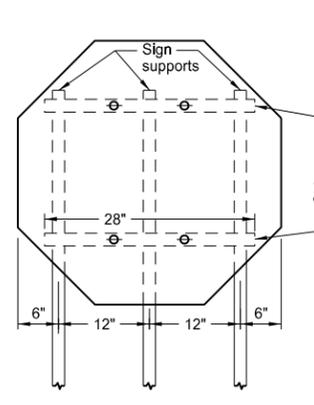


1 Post

Assembly No. 2



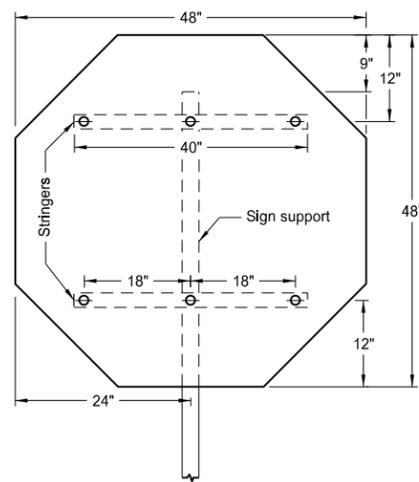
2 Posts



3 Posts

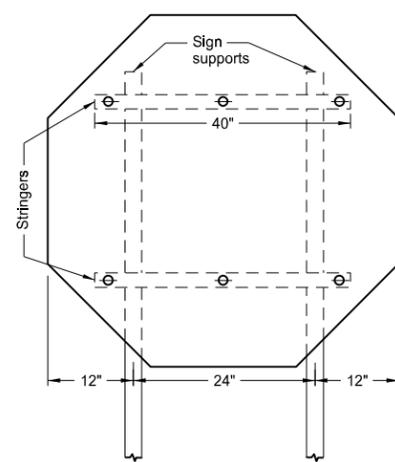
Notes:

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

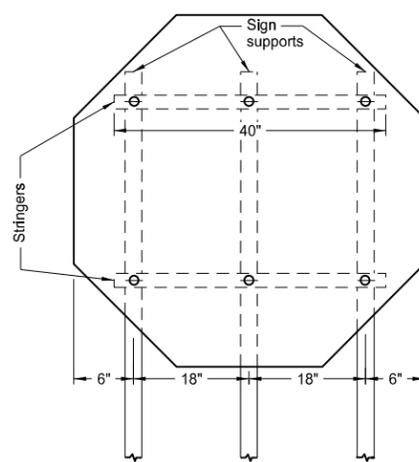


1 Post

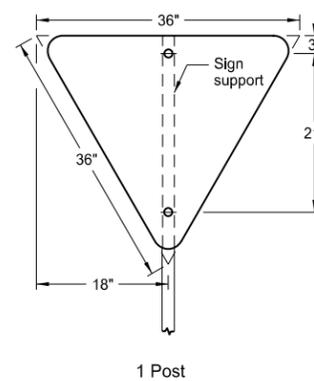
Assembly No. 3



2 Posts

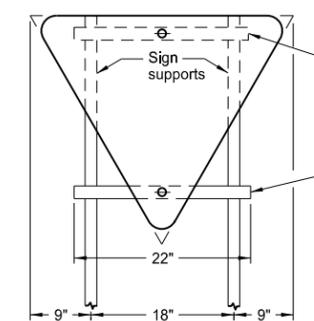


3 Posts

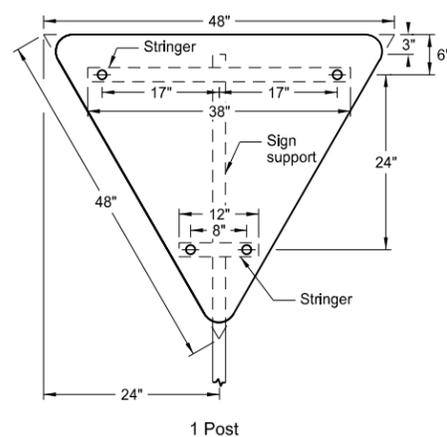


1 Post

Assembly No. 4

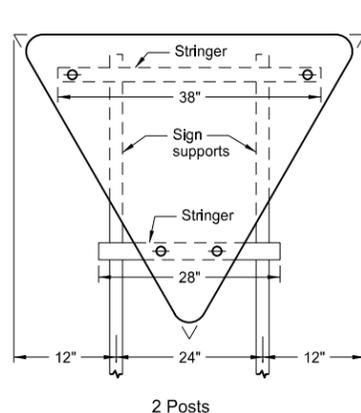


2 Posts

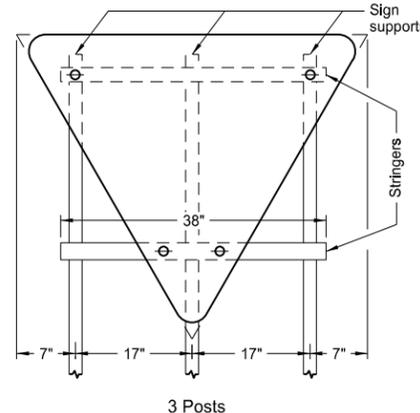


1 Post

Assembly No. 5



2 Posts

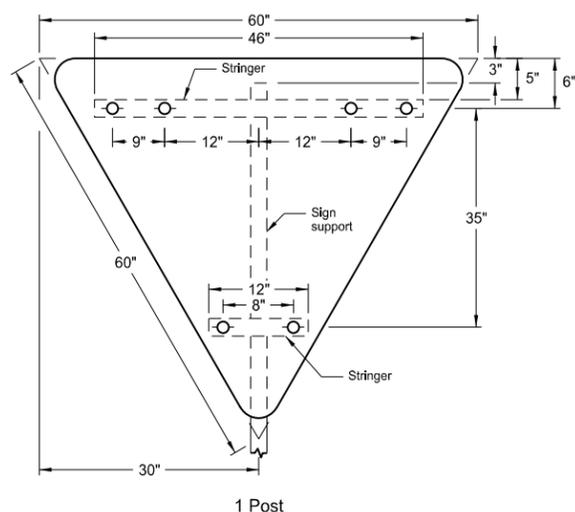


3 Posts

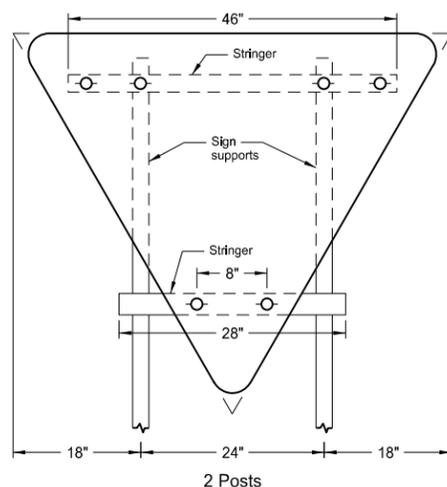
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-1-10	
REVISIONS	
DATE	CHANGE

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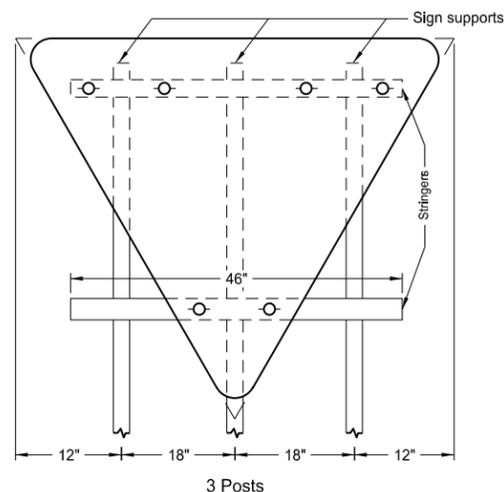
SIGN PUNCHING, STRINGER AND SUPPORT LOCATION  
DETAILS REGULATORY, WARNING AND GUIDE SIGNS



1 Post



2 Posts

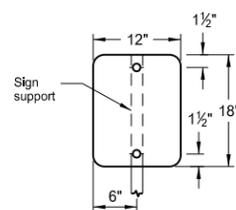


3 Posts

Assembly No. 6

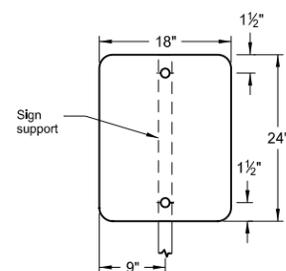
Notes:

1. See Standard D-754-25 for mounting details.
2. The minimum sign backing material thickness shall be 0.100 inch.
3. Perforated square tube stringer shall be 1 1/2" x 1 1/2".
4. All holes shall be punched round for 3/8" bolt.



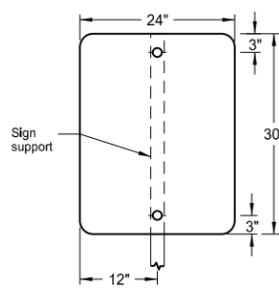
1 Post

Assembly No. 7



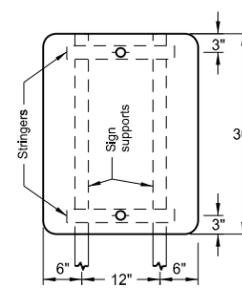
1 Post

Assembly No. 8

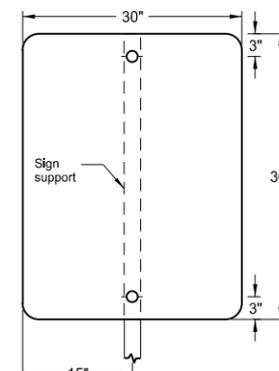


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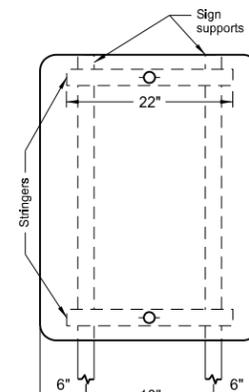
Assembly No. 9



2 Posts

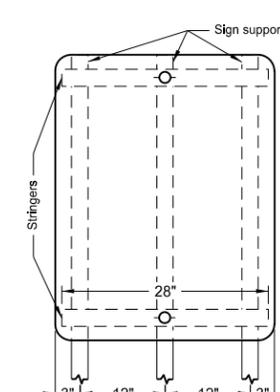


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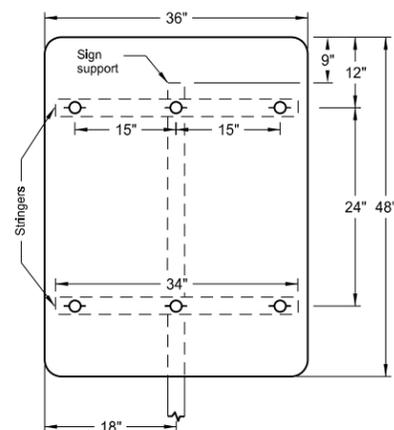


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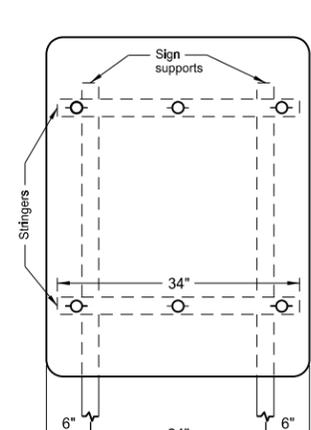
Assembly No. 10



3 Posts

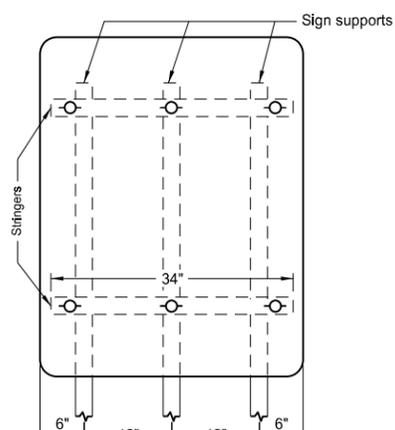


1 Post



2 Posts

Assembly No. 11

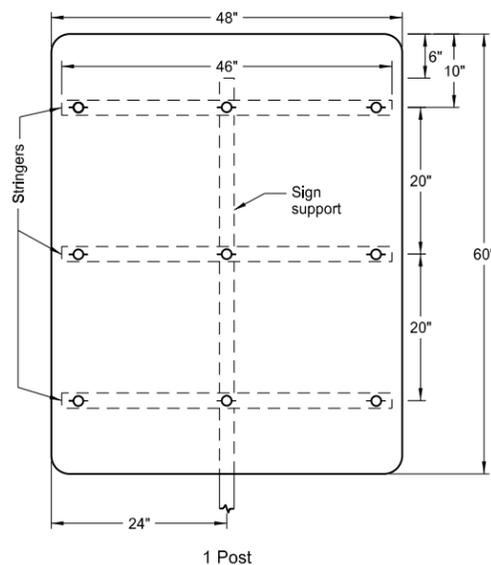


3 Posts

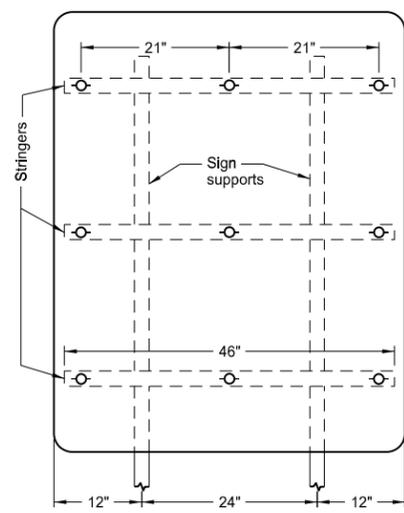
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-1-10	
REVISIONS	
DATE	CHANGE

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SIGN PUNCHING, STRINGER AND SUPPORT LOCATION  
DETAILS REGULATORY, WARNING AND GUIDE SIGNS

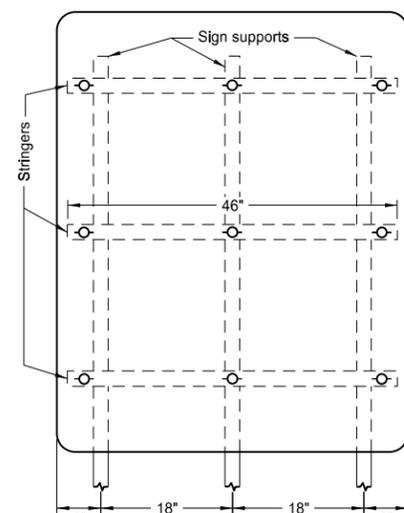


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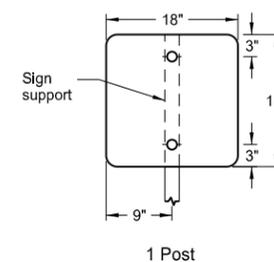


2 Posts

Assembly No. 12

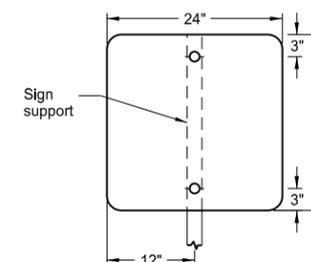


3 Posts



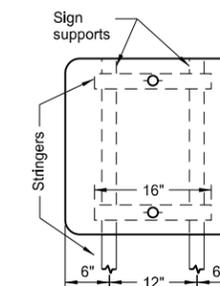
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Assembly No. 13

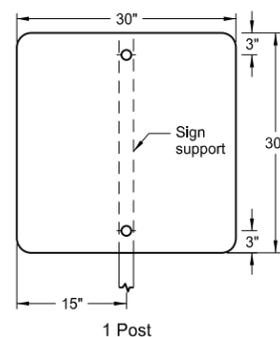


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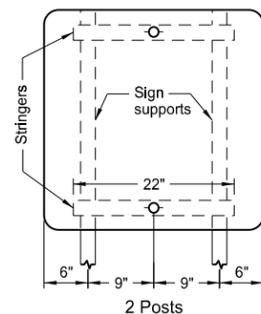


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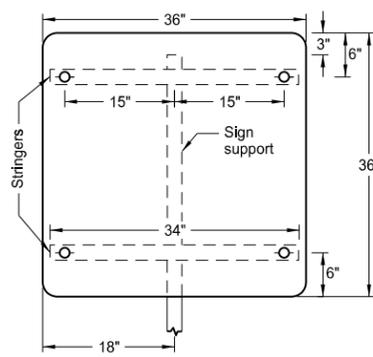


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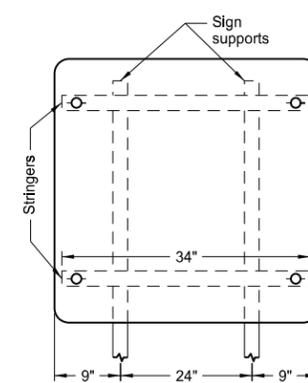
Assembly No. 15



2 Posts

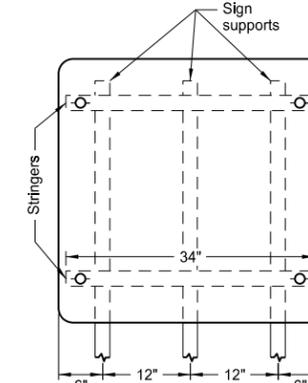


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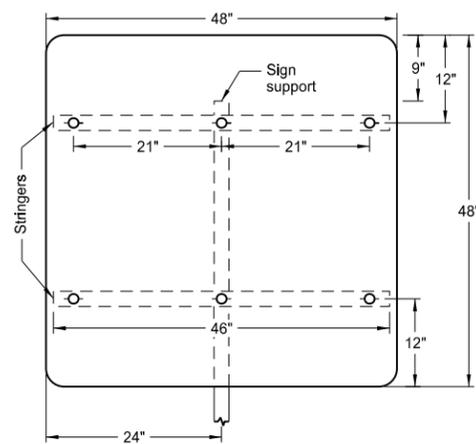


2 Posts

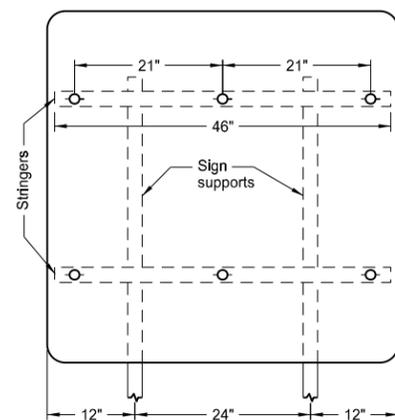
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3 Posts

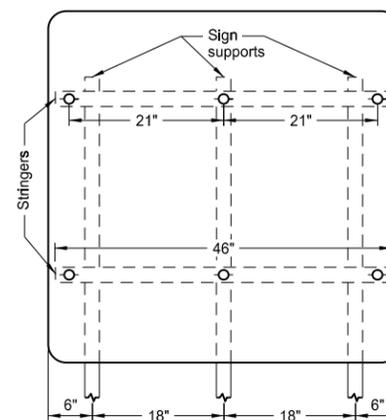


1 Post



2 Posts

Assembly No. 17



3 Posts

Notes:

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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-1-10	
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DATE	CHANGE

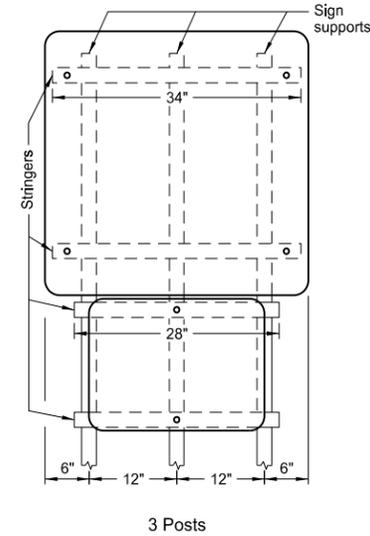
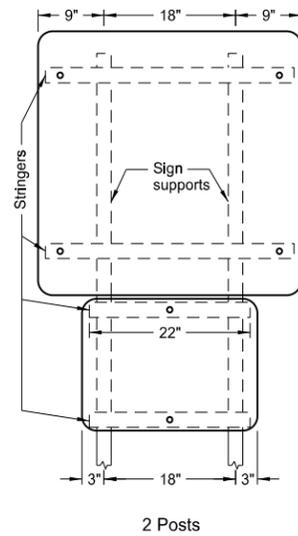
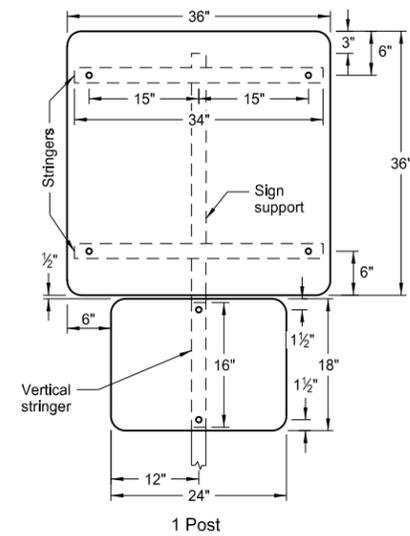
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**SIGN PUNCHING, STRINGER AND SUPPORT LOCATION DETAILS  
REGULATORY, WARNING AND GUIDE SIGNS**

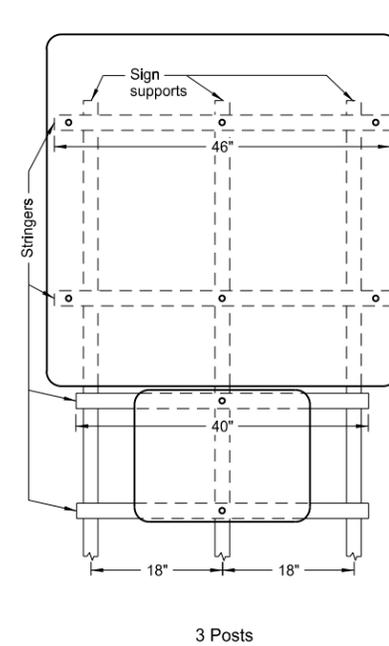
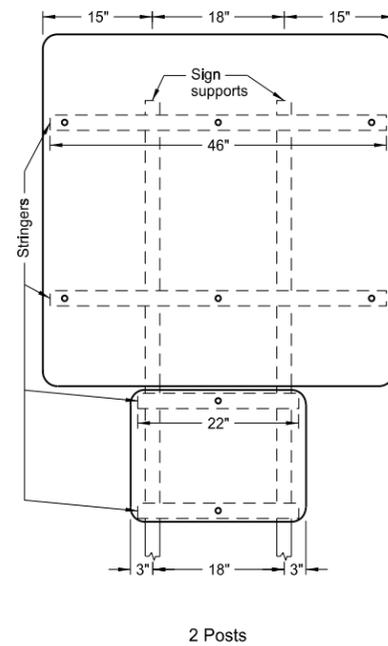
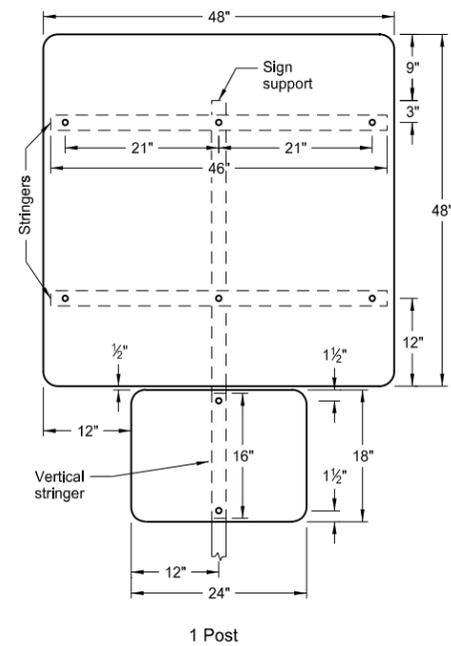
**D-754-35**

**Notes:**

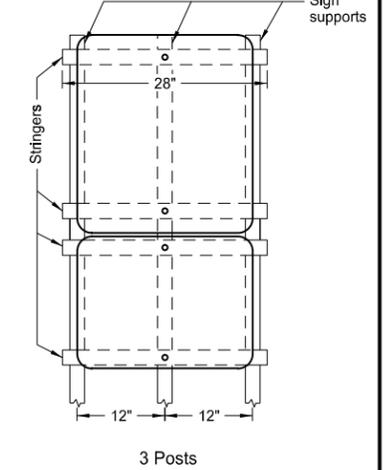
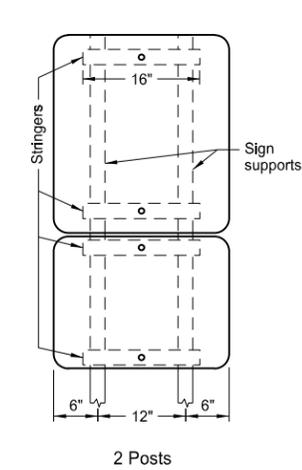
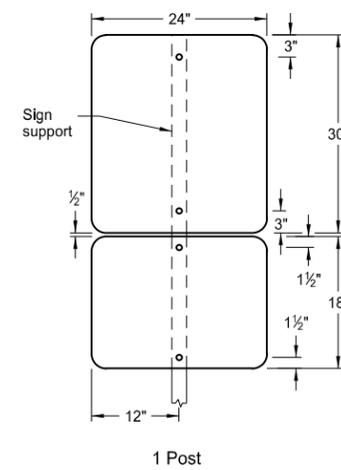
1. The minimum sign backing material thickness shall be 0.100 inch.
2. Perforated square tube stringer shall be 1½"x1½".
3. All holes shall be punched round for ⅜" bolt.



**Assembly No. 44**



**Assembly No. 45**



**Assembly No. 46**

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-22-12	
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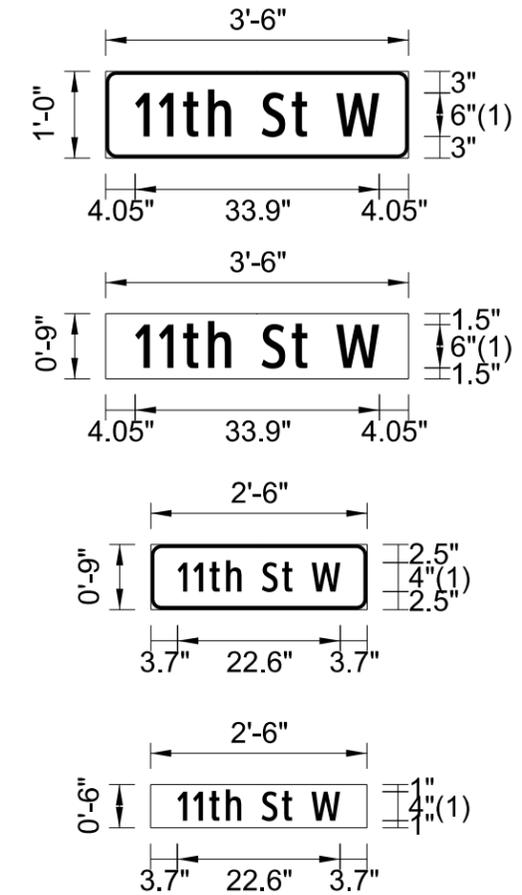
911 SIGN SUPPORT INFORMATION AND SIGN DETAILS

D-754-86

THE POST INFORMATION FOR VARIOUS SIGN CONFIGURATIONS (60 INCH VERTICAL CLEARANCE)													
ASSEMBLY NUMBER	STREET NAME SIGN SIZE	TOTAL SIGN AREA	MAXIMUM POST LENGTH	NUMBER OF POSTS	SUPPORT SIZE	SLEEVE LENGTH (A)			SLEEVE SIZE	ANCHOR		BREAK-AWAY	
						1st LF	2nd LF	3rd LF		NUMBER	LENGTH		SIZE
						Inches	SF	LF					
SA 1	24"x12"	8.00	20.2	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	30"x12"	10.00	16.4	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	36"x12"	12.00	13.8	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	42"x12"	14.00	14.7	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	48"x12"	16.00	12.9	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	54"x12"	18.00	15.2	1	2.25x2.25 12 ga					1	4.0	2.5x2.5 12ga	
	60"x12"	20.00	13.7	1	2.25x2.25 12 ga					1	4.0	2.5x2.5 12ga	
	24"x9"	6.00	24.1	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	30"x9"	7.50	21.2	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	36"x9"	9.00	17.7	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	42"x9"	10.50	15.3	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	48"x9"	12.00	13.5	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	54"x9"	13.50	14.8	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	60"x9"	15.00	13.4	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	24"x6"	4.00	35.2	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	30"x6"	5.00	28.3	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	36"x6"	6.00	23.6	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	42"x6"	7.00	22.3	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	48"x6"	8.00	19.6	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
	54"x6"	9.00	17.5	1	2x2 12 ga					1	4.0	2.25x2.25 12ga	
60"x6"	10.00	15.4	1	2x2 12 ga					1	4.0	2.25x2.25 12ga		
SA 2	24"x12"	13.2	14.6	1	2.5x2.5 12 ga					1	4.0	3x3 7 ga	
	30"x12"	15.2	16.3	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	36"x12"	17.2	15.4	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	42"x12"	19.2	14.7	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	48"x12"	21.2	15.3	1	2.25x2.25 12 ga	4.5			2x2 12 ga	1	4.0	3x3 7 ga	1
	54"x12"	23.2	20.6	1	2.5x2.5 10 ga	1.5			2.19x2.19 10ga	1	4.0	3x3 7 ga	1
	60"x12"	25.2	16.7	1	2.5x2.5 12 ga	3.9			2.25x2.25 12ga	1	4.0	3x3 7 ga	1
	24"x9"	11.2	15.2	1	2.5x2.5 12 ga					1	4.0	3x3 7 ga	
	30"x9"	12.7	14.5	1	2.5x2.5 12 ga					1	4.0	3x3 7 ga	
	36"x9"	14.2	16.5	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	42"x9"	15.7	15.8	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	48"x9"	17.2	14.4	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	54"x9"	18.7	15.1	1	2.25x2.25 12 ga	4.2			2x2 12ga	1	4.0	3x3 7 ga	1
	60"x9"	20.2	14.6	1	2.25x2.25 12 ga	4.6			2x2 12 ga	1	4.0	3x3 7 ga	1
	24"x6"	9.2	16.0	1	2.5x2.5 12 ga					1	4.0	3x3 7 ga	
	30"x6"	10.2	15.5	1	2.5x2.5 12 ga					1	4.0	3x3 7 ga	
	36"x6"	11.2	15.0	1	2.5x2.5 12 ga					1	4.0	3x3 7 ga	
	42"x6"	12.2	13.7	1	2.5x2.5 12 ga					1	4.0	3x3 7 ga	
	48"x6"	13.2	15.9	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	54"x6"	14.2	15.4	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
60"x6"	15.2	14.9	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1	
SA 3	24"x12"	13.9	16.1	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	30"x12"	15.9	15.3	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	36"x12"	17.9	15.9	1	2.25x2.25 12 ga	4.4			2x2 12 ga	1	4.0	3x3 7 ga	1
	42"x12"	19.9	15.2	1	2.25x2.25 12 ga	4.8			2x2 12 ga	1	4.0	3x3 7 ga	1
	48"x12"	21.9	15.1	1	2.5x2.5 12 ga	5.1			2.25x2.25 12ga	1	4.0	3x3 7 ga	1
	54"x12"	23.9	20.6	1	2.5x2.5 10 ga	1.9			2.19x2.19 10ga	1	4.0	3x3 7 ga	1
	60"x12"	25.9	16.0	1	2.5x2.5 12 ga	4.7			2.25x2.25 12ga	1	4.0	3x3 7 ga	1
	24"x9"	11.9	16.8	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	30"x9"	13.4	16.1	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	36"x9"	14.9	15.4	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	42"x9"	16.4	14.8	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	48"x9"	17.9	15.6	1	2.25x2.25 12 ga	4.3			2x2 12 ga	1	4.0	3x3 7 ga	1
	54"x9"	19.4	14.9	1	2.5x2.5 12 ga	4.8			2.25x2.25 12ga	1	4.0	3x3 7 ga	1
	60"x9"	20.9	20.6	1	2.5x2.5 10 ga	1.6			2.19x2.19 10ga	1	4.0	3x3 7 ga	1
	24"x6"	9.9	14.7	1	2.5x2.5 12 ga					1	4.0	3x3 7 ga	
	30"x6"	10.9	14.3	1	2.5x2.5 12 ga					1	4.0	3x3 7 ga	
	36"x6"	11.9	16.5	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	42"x6"	12.9	16.0	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	48"x6"	13.9	14.8	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	54"x6"	14.9	14.4	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
60"x6"	15.9	15.3	1	2.25x2.25 12 ga	4.2			2x2 12 ga	1	4.0	3x3 7 ga	1	

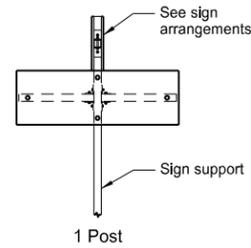
THE POST INFORMATION FOR VARIOUS SIGN CONFIGURATIONS (60 INCH VERTICAL CLEARANCE)													
ASSEMBLY NUMBER	STREET NAME SIGN SIZE	TOTAL SIGN AREA	MAXIMUM POST LENGTH	NUMBER OF POSTS	SUPPORT SIZE	SLEEVE LENGTH (A)			SLEEVE SIZE	ANCHOR		BREAK-AWAY	
						1st LF	2nd LF	3rd LF		NUMBER	LENGTH		SIZE
						Inches	SF	LF					
SA 4	24"x12"	15.5	15.1	1	2.25x2.25 12 ga	4.7			2x2 12 ga	1	4.0	3x3 7 ga	1
	30"x12"	17.5	15.1	1	2.5x2.5 12 ga	4.9			2.25x2.25 12ga	1	4.0	3x3 7 ga	1
	36"x12"	19.5	17.5	1	2.5x2.5 12 ga	3.6			2.25x2.25 12ga	1	4.0	3x3 7 ga	1
	42"x12"	21.5	16.8	1	2.5x2.5 12 ga	4.1			2.25x2.25 12ga	1	4.0	3x3 7 ga	1
	48"x12"	23.5	16.2	1	2.5x2.5 12 ga	4.5			2.25x2.25 12ga	1	4.0	3x3 7 ga	1
	54"x12"	25.5	15.6	1	2.5x2.5 12 ga	4.9			2.25x2.25 12ga	1	4.0	3x3 7 ga	1
	60"x12"	27.5	16.7	1	2.5x2.5 10 ga	4.2			2.19x2.19 10ga	1	4.0	3x3 7 ga	1
	24"x9"	13.5	14.3	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	30"x9"	15.0	15.1	1	2.25x2.25 12 ga	4.4			2x2 12 ga	1	4.0	3x3 7 ga	1
	36"x9"	16.5	14.6	1	2.25x2.25 12 ga	4.7			2x2 12 ga	1	4.0	3x3 7 ga	1
	42"x9"	18.0	14.7	1	2.5x2.5 12 ga	4.9			2.25x2.25 12 ga	1	4.0	3x3 7 ga	1
	48"x9"	19.5	17.2	1	2.5x2.5 12 ga	3.5			2.25x2.25 12ga	1	4.0	3x3 7 ga	1
	54"x9"	21.0	15.8	1	2.5x2.5 12 ga	4.3			2.25x2.25 12ga	1	4.0	3x3 7 ga	1
	60"x9"	22.5	15.4	1	2.5x2.5 12 ga	4.6			2.25x2.25 12ga	1	4.0	3x3 7 ga	1
	24"x6"	11.5	14.7	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	30"x6"	12.5	14.4	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	36"x6"	13.5	14.0	1	2.5x2.5 10 ga					1	4.0	3x3 7 ga	1
	42"x6"	14.5	15.0	1	2.25x2.25 12 ga	4.2			2x2 12 ga	1	4.0	3x3 7 ga	1
	48"x6"	15.5	14.5	1	2.5x2.5 12 ga	4.6			2.25x2.25 12 ga	1	4.0	3x3 7 ga	1
	54"x6"	16.5	14.1	1	2.5x2.5 12 ga	4.9			2.25x2.25 12ga	1	4.0	3x3 7 ga	1
60"x6"	17.5	16.8	1	2.5x2.5 12 ga	3.5			2.25x2.25 12ga	1	4.0	3x3 7 ga	1	
SA 5	24"x12"	21.3	17.2	2	2.5x2.5 10 ga					2	4.0	3x3 7 ga	2
	30"x12"	23.3	16.7	2	2.5x2.5 10 ga					2	4.0	3x3 7 ga	2
	36"x12"	25.3	16.3	2	2.5x2.5 10 ga					2	4.0	3x3 7 ga	2
	42"x12"	27.3	17.3	2	2.25x2.25 12 ga	4.2	4.6		2x2 12ga	2	4.0	3x3 7 ga	2
	48"x12"	29.3	16.9	2	2.25x2.25 12 ga	4.5	5.0		2x2 12 ga	2	4.0	3x3 7 ga	2
	54"x12"	31.3	16.5	2	2.25x2.25 12 ga	4.7	5.3		2x2 12 ga	2	4.0	3x3 7 ga	2
	60"x12"	33.3	17.5	3	2.5x2.5 12 ga					3	4.0	3x3 7 ga	3
	24"x9"	19.3	15.6	1	2.5x2.5 10 ga	4.9			2.19x2.19 10ga	1	4.0	3x3 7 ga	1
	30"x9"	20.8	17.0	2	2.5x2.5 10 ga					2	4.0	3x3 7 ga	2
	36"x9"	22.3	16.7	2	2.5x2.5 10 ga					2	4.0	3x3 7 ga	2
	42"x9"	23.8	16.3	2	2.5x2.5 10 ga					2	4.0	3x3 7 ga	2
	48"x9"	25.3	16.0	2	2.5x2.5 10 ga					2	4.0	3x3 7 ga	2
	54"x9"	26.8	17.2	2	2.25x2.25 12 ga	3.9	4.5		2x2 12 ga	2	4.0	3x3 7 ga	2
	60"x9"	28.3	16.8	2	2.25x2.25 12 ga	4.2	4.8		2x2 12 ga	2	4.0	3x3 7 ga	2
	24"x6"	17.3	15.8	1	2.5x2.5 10 ga	4.4			2.19x2.19 10ga	1	4.0	3x3 7 ga	1
	30"x6"	18.3	15.5	1	2.5x2.5 10 ga	4.5			2.19x2.19 10ga	1	4.0	3x3 7 ga	1
	36"x6"	19.3	15.3	1	2.5x2.5 10 ga	4.7			2.19x2.19 10ga	1	4.0	3x3 7 ga	1
	42"x6"	20.3	15.1	1	2.5x2.5 10 ga	4.9			2.19x2.19 10ga	1	4.0	3x3 7 ga	1
	48"x6"	21.3	16.7	2	2.5x2.5 10 ga					2	4.0	3x3 7 ga	2
	54"x6"	22.3	16.4	2	2.5x2.5 10 ga					2	4.0	3x3 7 ga	2
60"x6"	23.3	16.8	2	2.25x2.25 12 ga	3.8	4.4		2x2 12 ga	2	4.0	3x3 7 ga	2	

(A) The sleeve length shown is for the maximum post length. The required sleeve length is the "sleeve length" minus the difference between the "maximum post length" and the post length required in the field.

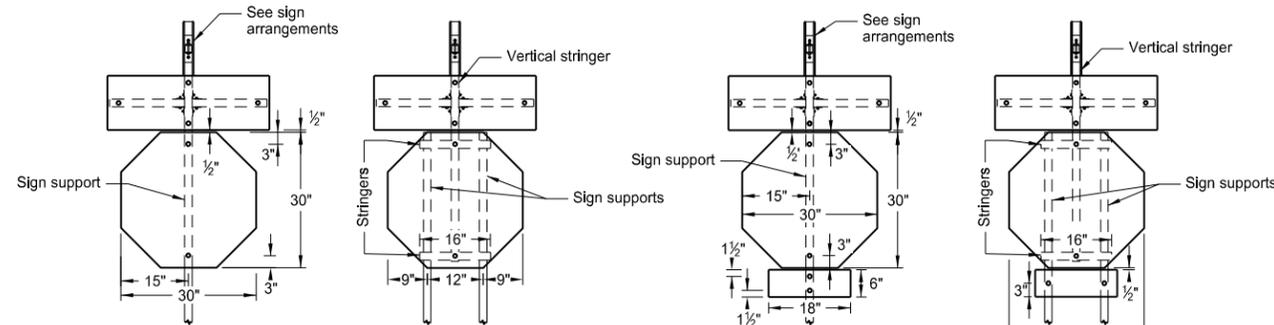


SIGN PUNCHING, STRINGER AND SUPPORT LOCATION DETAILS FOR STREET NAME SIGNS AND 911 SIGNS

- A - Single sign
- B - Single sign back to back
- C - Single sign each direction
- D - Single sign one direction, back to back other direction
- E - Back to back both directions

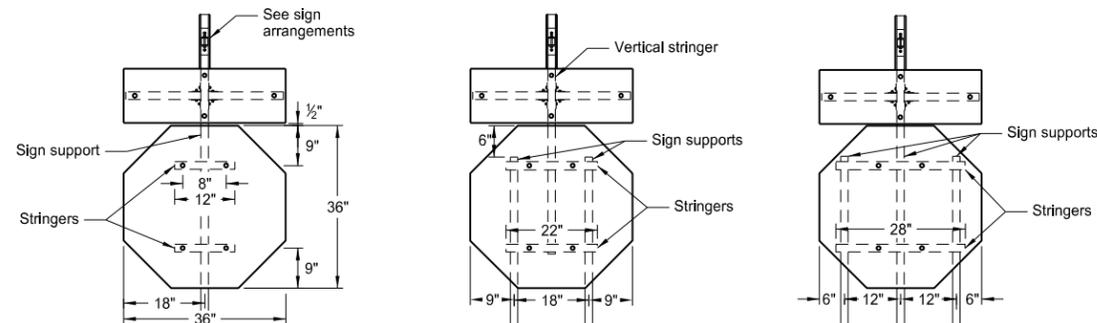


Special Assembly 1 (A, B, C, D or E)

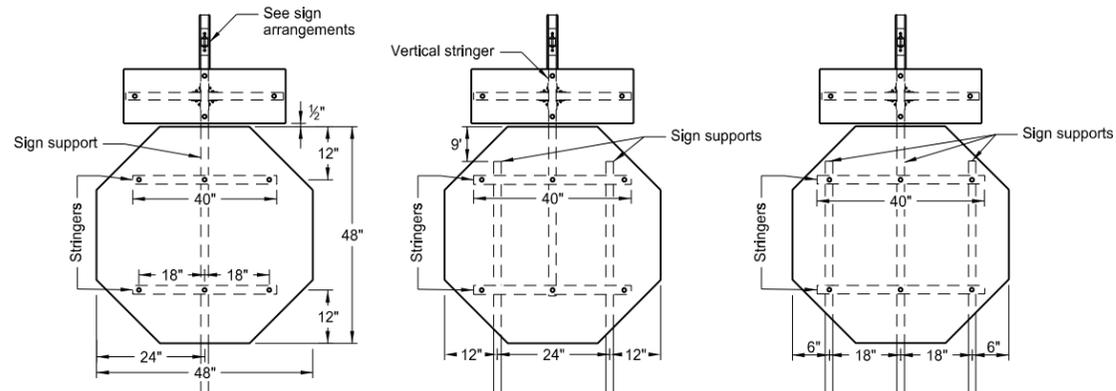


Special Assembly 2 (A, B, C, D or E)

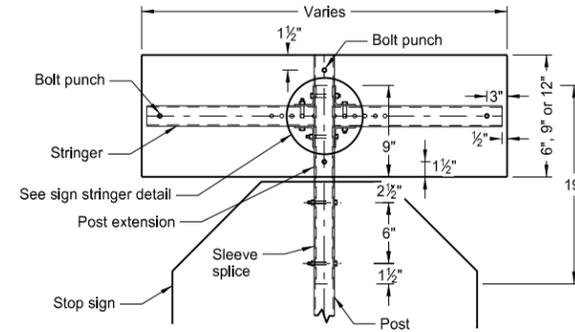
Special Assembly 3 (A, B, C, D or E)



Special Assembly 4 (A, B, C, D or E)

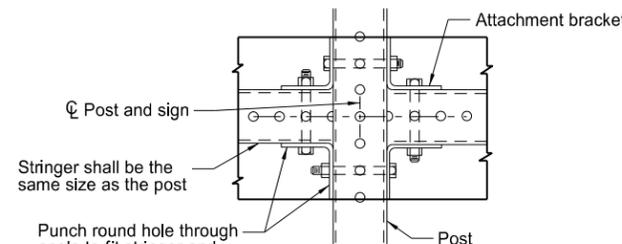


Special Assembly 5 (A, B, C, D or E)



Sleeve Splice Detail

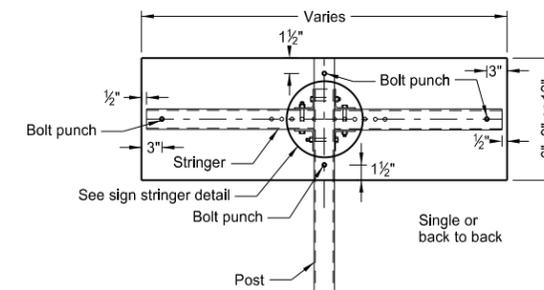
Note: The splice method may be used upon approval of the engineer.



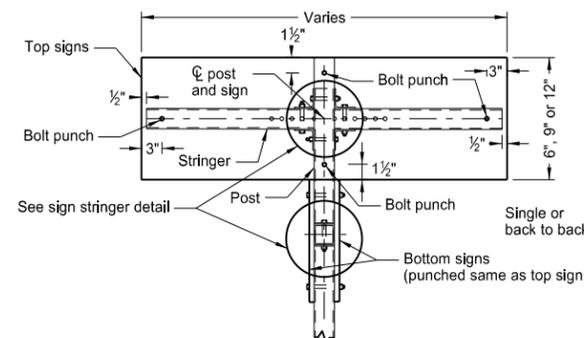
Sign Stringer Detail

Stringer shall be the same size as the post

Punch round hole through angle to fit stringer and post holes.

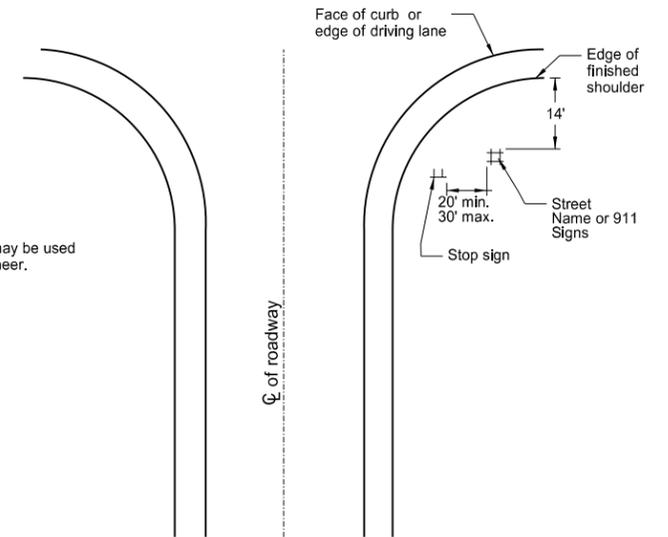


Detail A or B



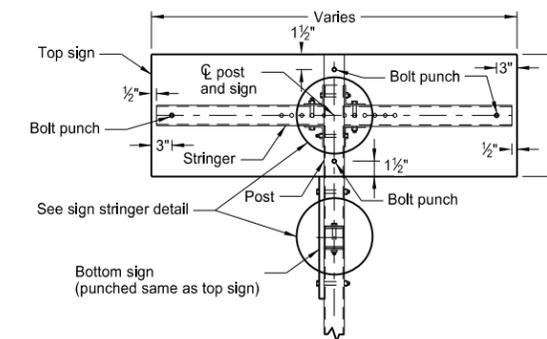
Detail D or E

Note: See Standard Drawing D-754-86 for 911 support information and sign layout details.



Intersection Layout

Note: This layout is to be used for street name signs or 911 signs that are used with Special Assembly 1.



Detail C

Sign Arrangements

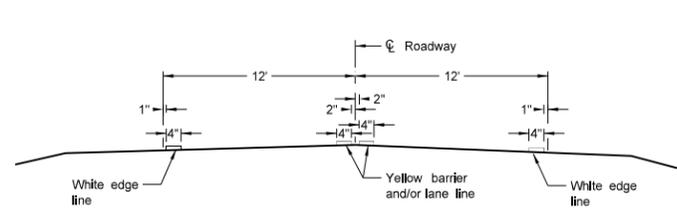
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DATE	CHANGE

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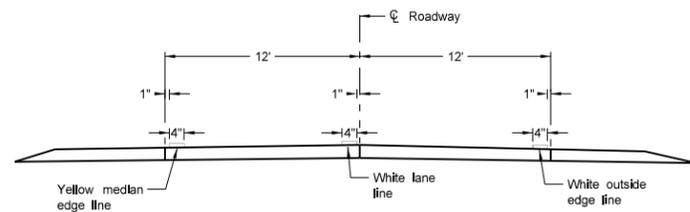


# PAVEMENT MARKING

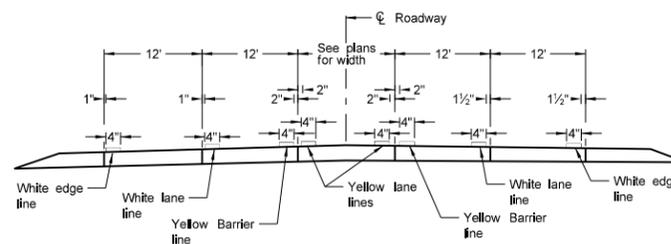
D-762-4



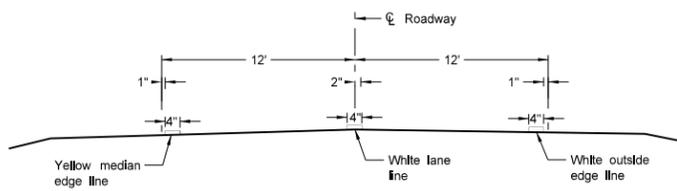
Two Lane Two Way  
RURAL ROADWAY



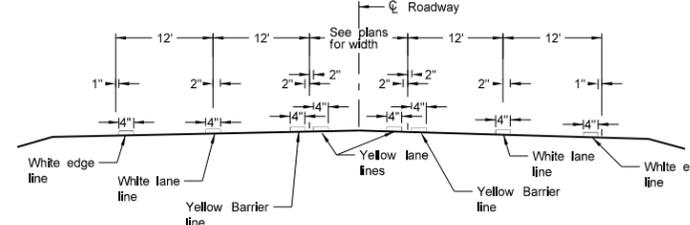
Two Lane Roadway  
INTERSTATE HIGHWAY  
Concrete Section



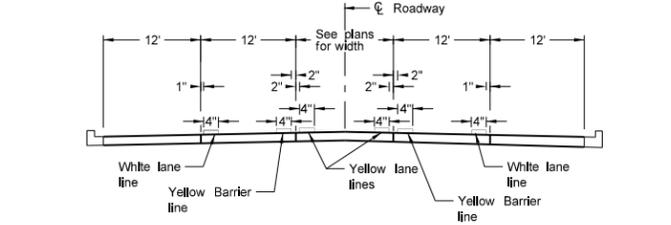
RURAL FIVE LANE ROADWAY  
Concrete Section



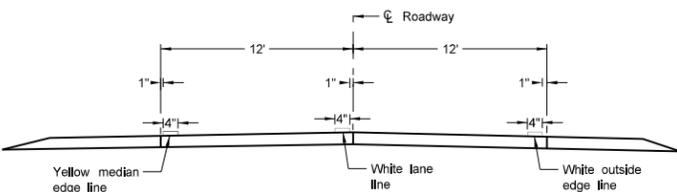
Two Lane Divided  
Rural Roadway  
PRIMARY HIGHWAY  
Asphalt Section



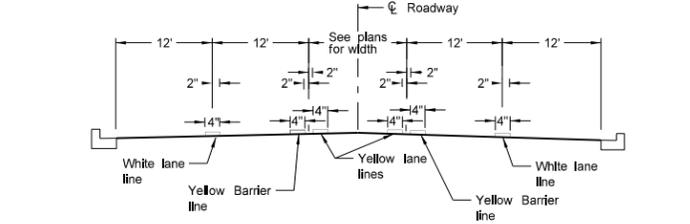
RURAL FIVE LANE ROADWAY  
Asphalt Section



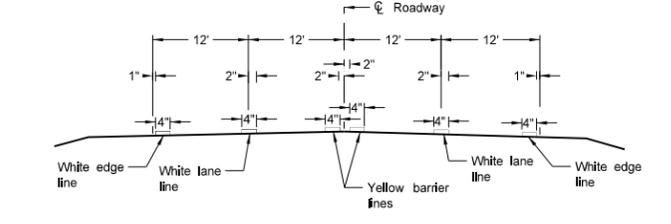
URBAN FIVE LANE SECTION  
Concrete Section



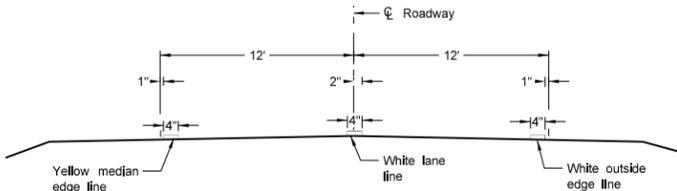
Two Lane Roadway  
PRIMARY HIGHWAY  
Concrete Section



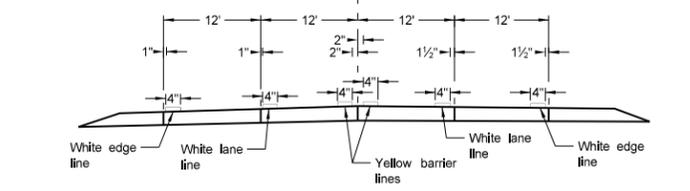
URBAN FIVE LANE SECTION  
Asphalt Section



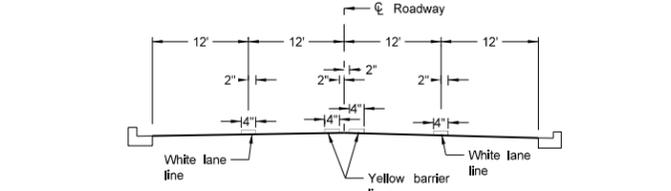
RURAL FOUR LANE ROADWAY  
Asphalt Section



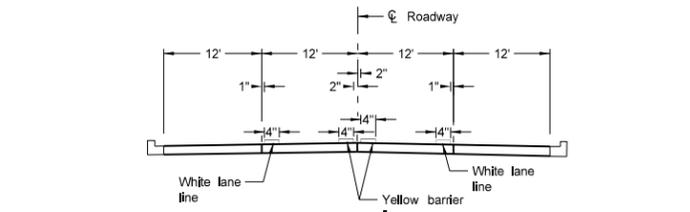
Two Lane Roadway  
INTERSTATE HIGHWAY  
Asphalt Section



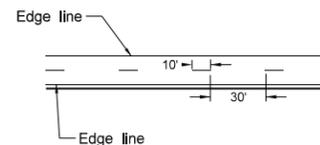
RURAL FOUR LANE ROADWAY  
Concrete Section



URBAN FOUR LANE SECTION  
Asphalt Section



URBAN FOUR LANE SECTION  
Concrete Section



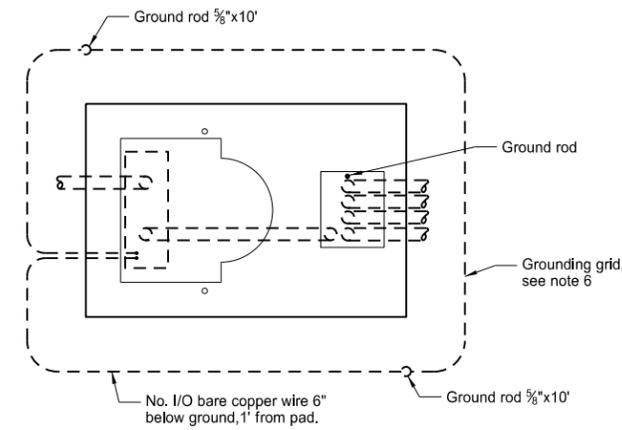
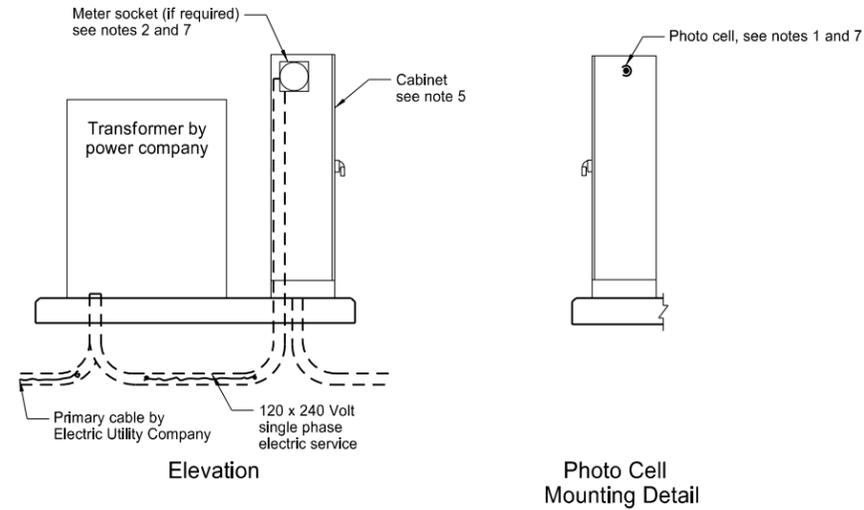
CENTERLINE PAVEMENT MARKING SKIP SPACING DETAIL

NOTES:  
1. Edge lines shall be continued through private drives and field drives and broken for intersections.

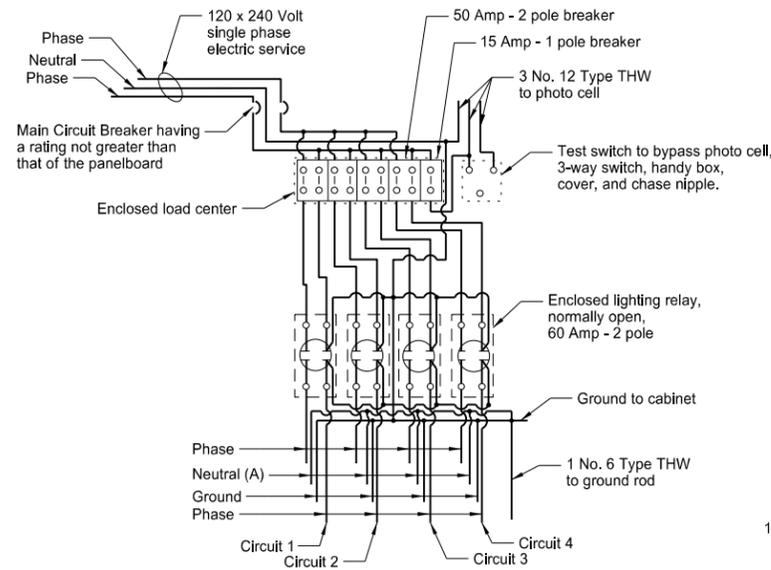
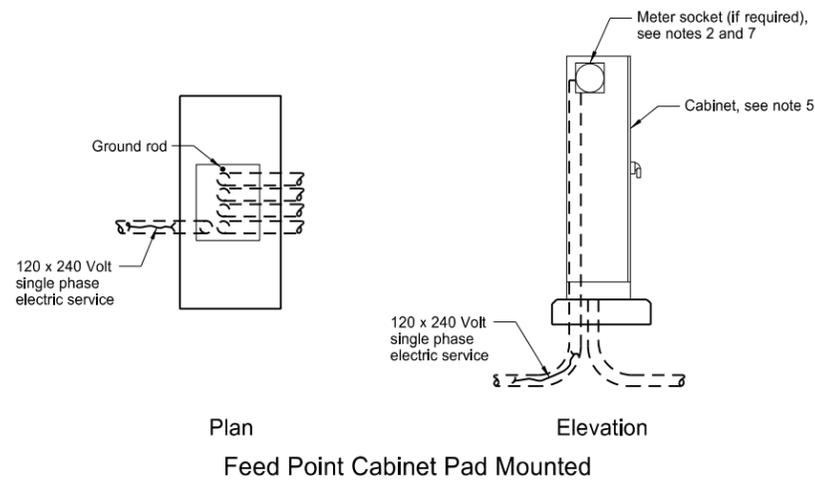
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FEED POINTS  
(ROADWAY LIGHTING)



Plan  
Transformer and Feed Point Cabinet Pad Mounted



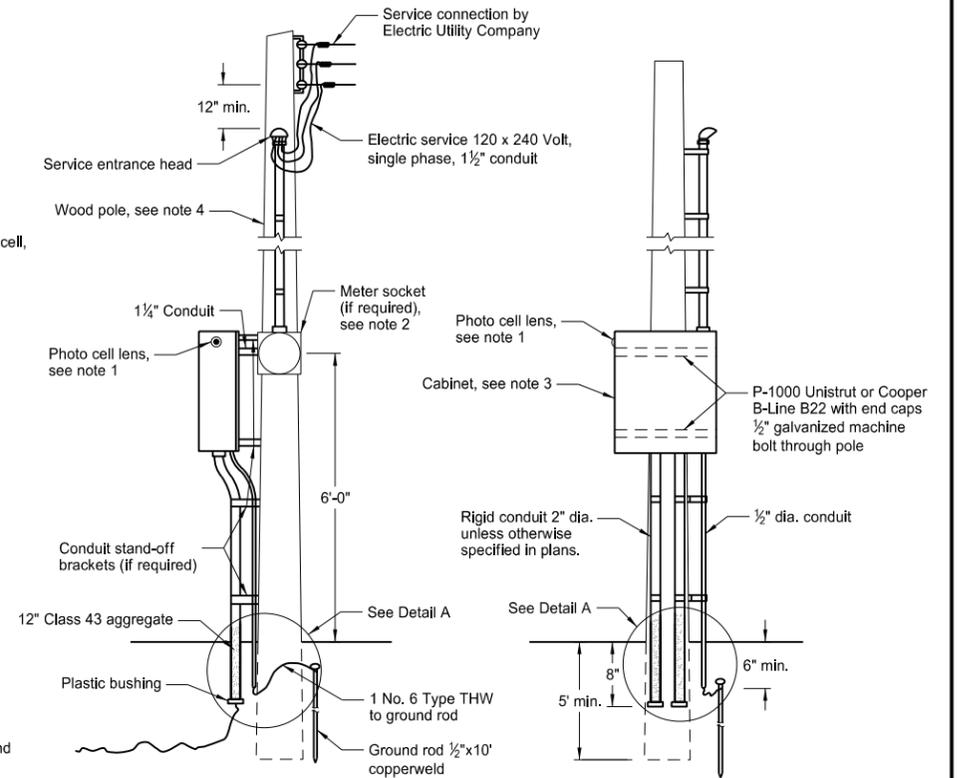
Feed Point Type IV

Type I feed point is similar to Type IV except only one electrical circuit, one 50 Amp - 2 pole breakers and one lighting relay, normally open, shall be installed.

Type II feed point is similar to Type IV except only two electrical circuit, two 50 Amp - 2 pole breakers and two lighting relays, normally open, shall be installed.

Type III feed point is similar to Type IV except only three electrical circuits, three 50 Amp - 2 pole breakers and three lighting relays, normally open, shall be installed.

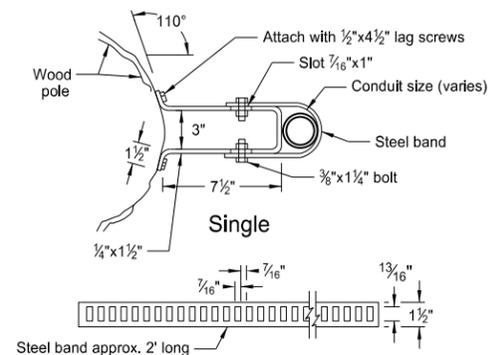
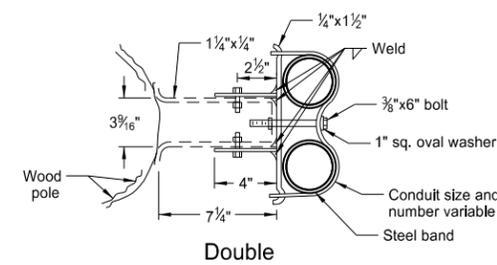
(A) Install when festoon circuit is required.



Feed Point Pole Mounted

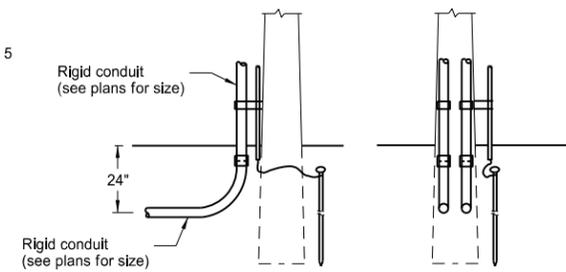
Notes:

1. Photo Cell: The electrical contractor shall furnish and install the photoelectric cell. The photo lens shall face north.
2. Meter Socket: The contractor shall install the meter socket and trim if the meter is required by local Utility Company. Meter to be furnished and installed by Utility Company.
3. Pole Mounted Cabinet: Cabinet shall have lock drip shield, factory installed steel backing, stainless steel hardware, and side hinge door. Cabinet shall be shop coated with one coat of primer and have two coats of exterior gray enamel.  
Type I and II feed point shall be 30" high x 24" wide x 8" deep, Type III and IV feed point shall be 30" high x 42" wide x 10" deep or 36" high x 36" wide x 10" deep.
4. Wood Pole: Minimum 20' Class VII full length penta pressure treated wood pole. (if required, see layout sheets)
5. Pad Mounted Cabinet: Cabinet shall be 56" high x 26" wide x 14" deep. Minimum 12 gauge steel or aluminum with provisions for padlock. Cabinet shall be weatherproof. A steel cabinet shall have one coat of primer and two coats of exterior dark green enamel.
6. Grounding Grid: The grounding grid shall have a ground resistance not to exceed 25 ohms. This shall be obtained by one or more 3/8" x 10' copperweld ground rods in parallel or series at two corners. Minimum distance between ground unit assemblies shall be 6'0".
7. Meter Location: The meter (if required) shall not be mounted on the same side of the cabinet as the photo cell.



Conduit Standoff Bracket

The conduit standoff brackets may be omitted if not required by the local utility company.

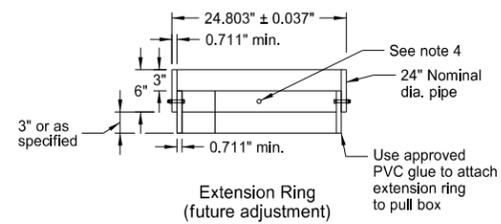


Use this detail if there is a continuous run of conduit from the feed point to the first light standard.

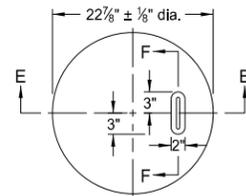
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10-8-13	
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7-8-14	Revised note 3

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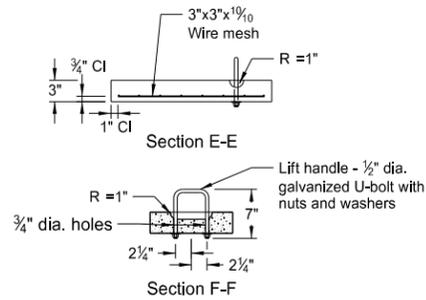
PULL BOX DETAILS



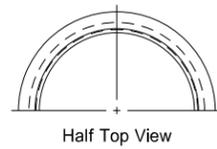
Extension Ring (future adjustment)



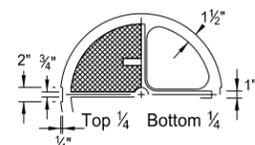
Concrete Cover



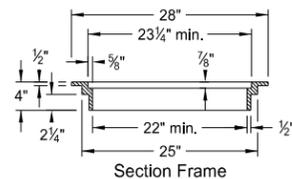
Section F-F



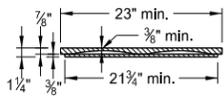
Half Top View



Top 1/4 Bottom 1/4

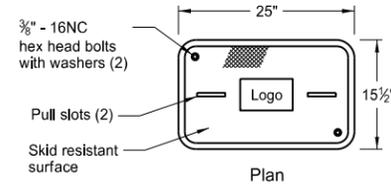


Section Frame

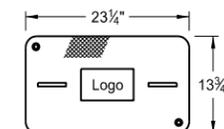


Section Cover

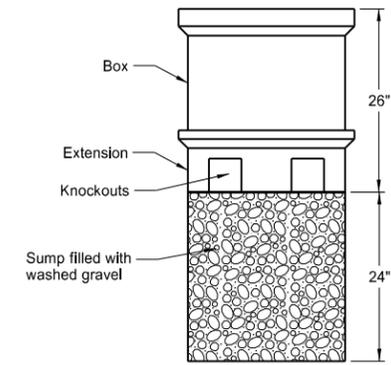
Cast Iron Frame and Cover



Plan



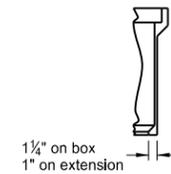
Cover



Elevation

Polymer Concrete Pull Box

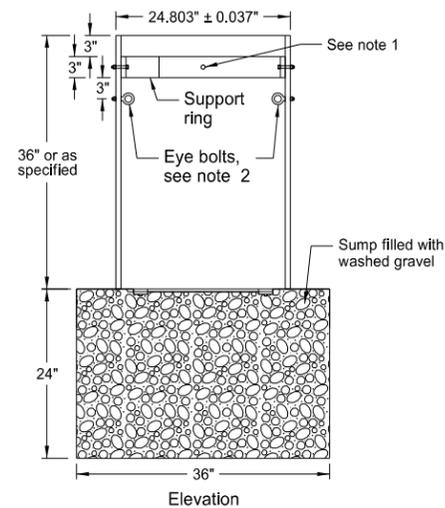
Note: Polymer concrete reinforced by a heavy weave fiberglass



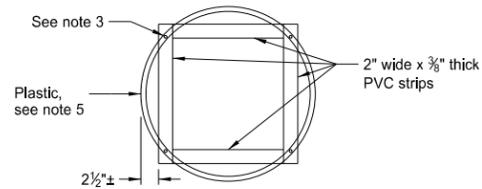
1 1/4" on box  
1" on extension

Notes:

1. Place top of pull box flush with surfaced area and approximately one inch above earth or sodded areas on level surfaces.
2. Pull box shall have at least one knockout per side.
3. Polymer Concrete pull box shall be Tier 22 as per ANSI / SCTE 77.

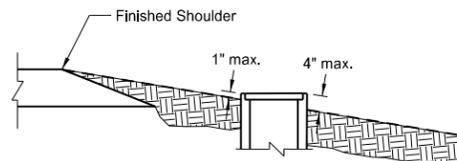


Elevation



Bottom View

PVC Pull Box



Typical Pull Box in Rural Section

PVC Pull Box Notes:

1. Attach split 24" nominal diameter PVC cover support ring with four 3/8" dia. x 2" long stainless steel hex head bolts with nuts at 90 degrees apart.
2. Two type 2 shoulder eye bolts, 3/8" dia. x 1 1/4" shank length with hex nuts 180 degrees apart (for lifting pull box and supporting electric cable).
3. Four 1/4" x 1 1/4" long galvanized lag screws. Screw assembly together.
4. Attach split 24" nominal diameter PVC cover support extension ring with four 3/8" dia. x 2" long stainless steel hex head bolts with nuts at 90 degrees apart.
5. Bolt assembly together.
6. Conduit holes located in barrel section shall be sized no more than 1" larger than size of conduit being used.
7. After pull box and conduit installation all inside walls and cover shall be made water tight to the satisfaction of the Engineer.
8. PVC pipe to meet requirements of ASTM F679T-1 or equal.
9. Hex head bolts and nuts shall be austenitic stainless steel. Other fasteners to be galvanized as per AASHTO M-232.
10. Concrete cover shall be coated on top and sides with an approved epoxy coating. The epoxy protective coating shall be light gray, clear, or neutral in color and shall be applied as recommended by the manufacturer. The surfaces of the concrete to which the epoxy protective coating is applied, shall be cleaned by wire brush and shall be dry before application.
11. Cast Iron Cover castings shall be gray iron as per AASHTO M 105, Class 35B.

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7-8-14	Added Note 3

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