| DESIGN DATA | | | | |
|---|---|---|---|---|
| Traffic | Average Daily | | | |
| Current 2015 | Pass: 3,399 | Trucks: 1,047 | Total: 4,446 | |
| | | | | |
| Preventive Maintenance | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

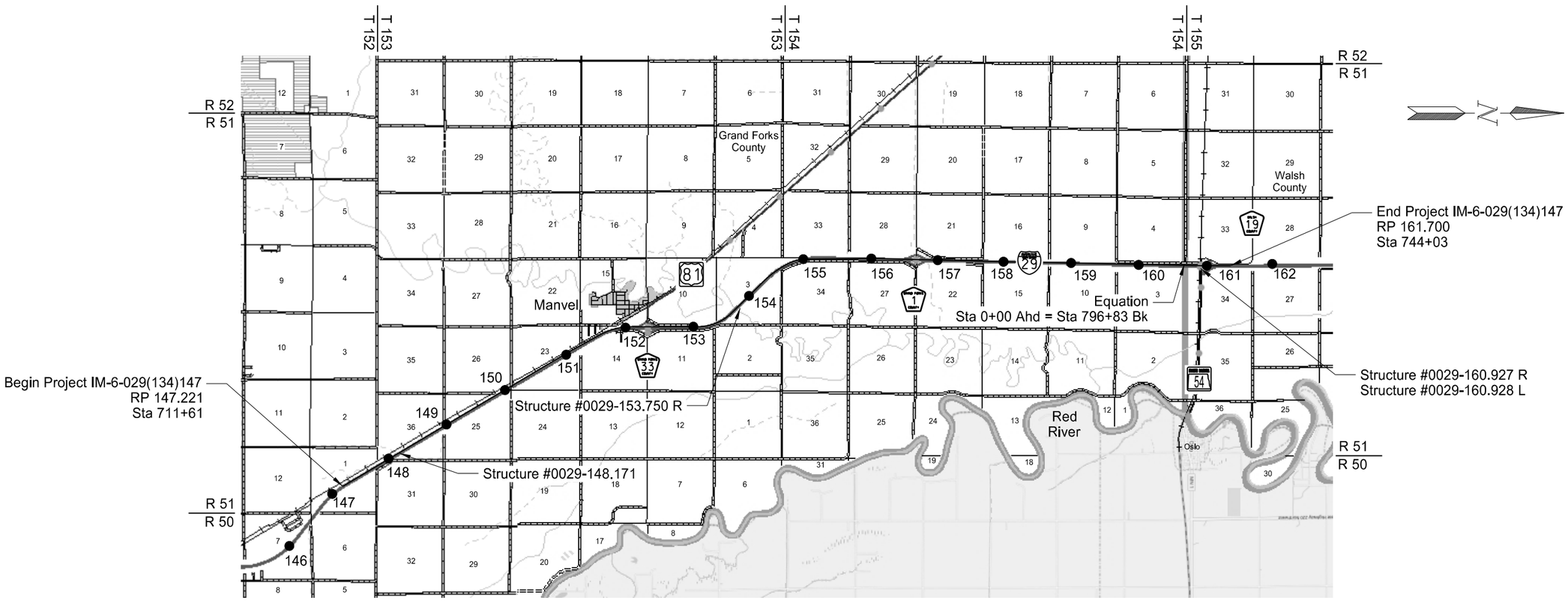
| | STATE | PROJECT NO. | PCN | SECTION NO. | SHEET NO. |
|---|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 21663 | 1 | 1 |

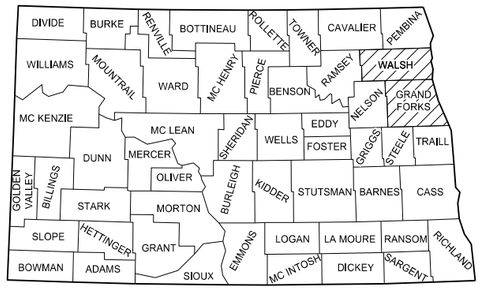
# JOB # 35
# NORTH DAKOTA
# DEPARTMENT OF TRANSPORTATION

IM-6-029(134)147
Grand Forks & Walsh Counties
I-29 NB - N of N GF Intr N to JCT ND 54
Mill, HMA, Grinding, CPR, Guardrail, & Joint Sealing

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

| PROJECT NUMBER \ DESCRIPTION | NET MILES | GROSS MILES |
|---|---|---|
| IM-6-029(134)147 | 14.479 | 14.479 |




STATE COUNTY MAP

DESIGNERS

Andrew Nefstead /s/

Brandon Friezen /s/

Kris Altepeter /s/

APPROVED DATE 08/21/2017

Edward Pavlish /s/
NDDOT Grand Forks District

I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.

APPROVED DATE 08/21/2017

Christopher K. Beggs /s/
NDDOT Grand Forks District

This document was originally issued and sealed by Christopher K. Beggs Registration Number PE- 6240 , on 08/21/2017 and the original document is stored at the North Dakota Department of Transportation

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 2 | 1 |

# TABLE OF CONTENTS

## PLAN SECTIONS



## LIST OF STANDARD DRAWINGS

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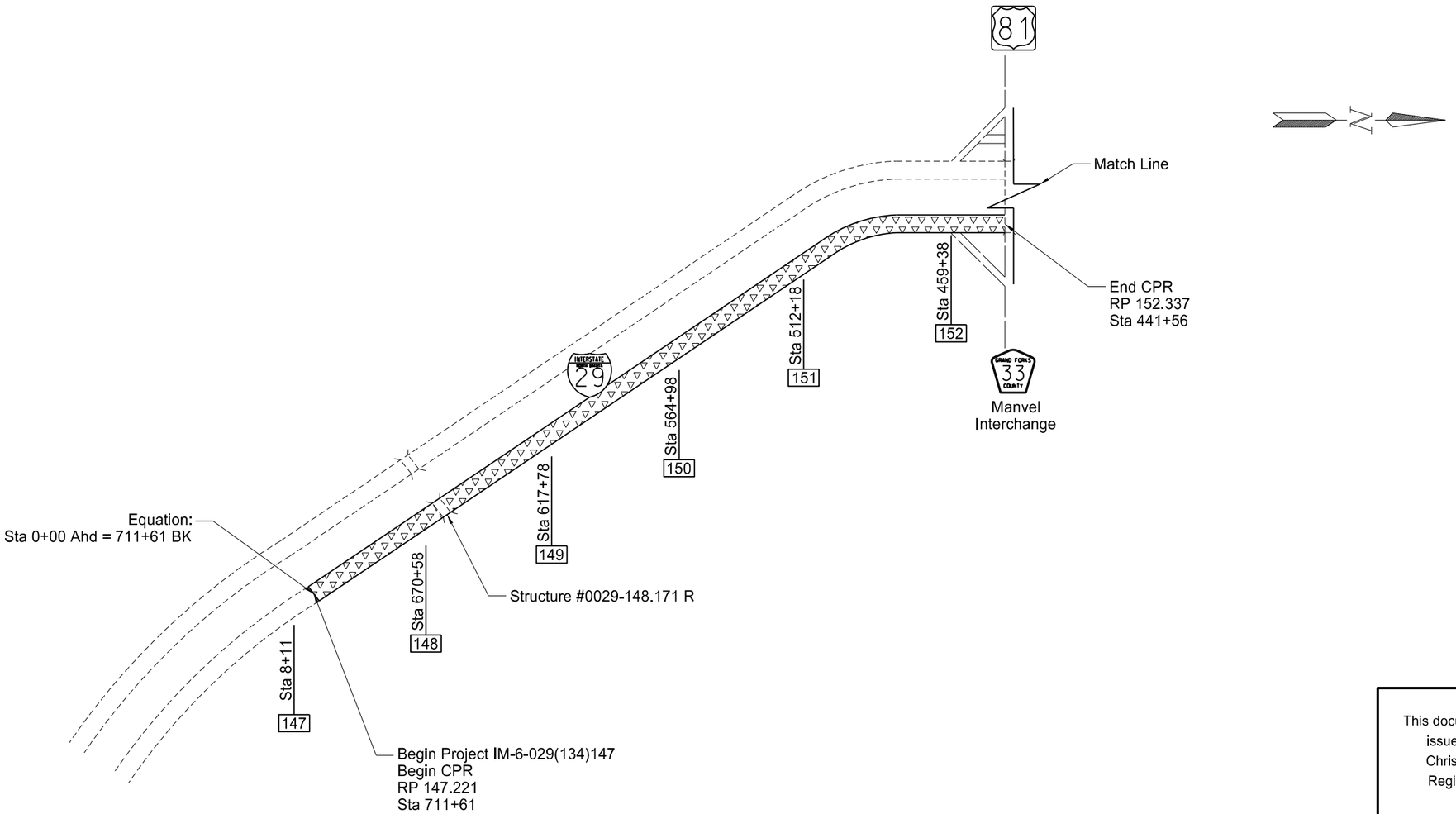
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 4 | 1 |




CPR, Joint Sealing

Note: Drawing Not to Scale

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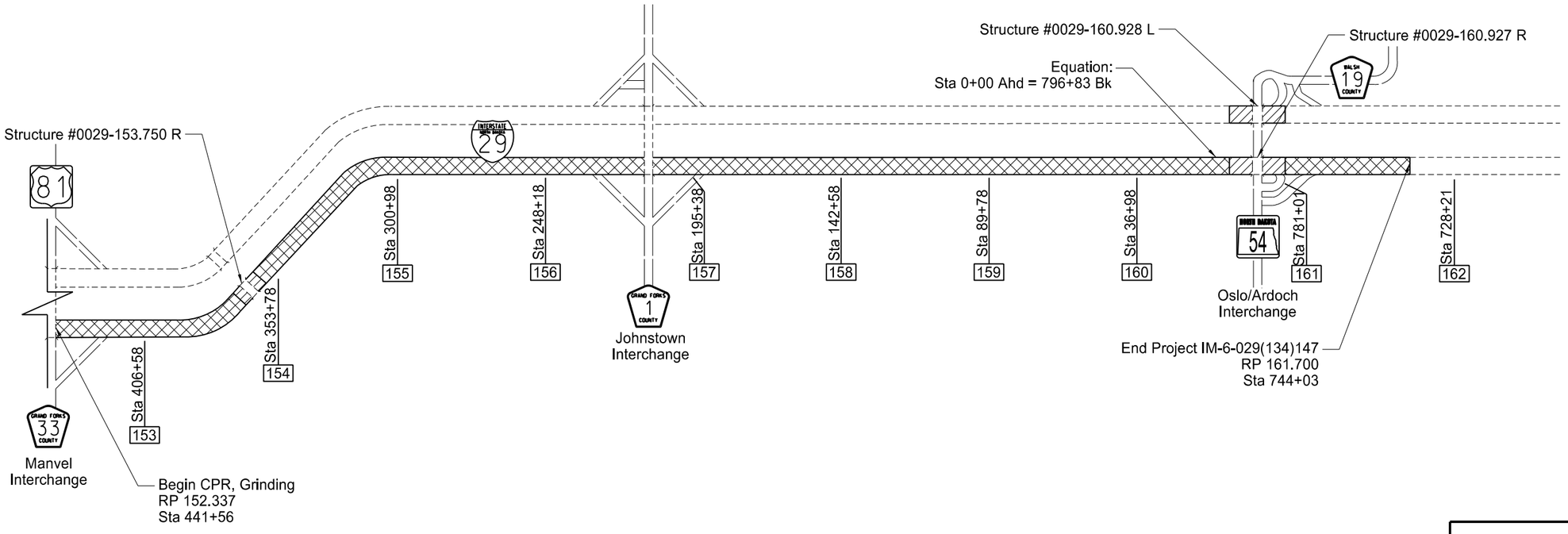
Scope of Work

8/21/2017 5:52:59 AM anefstead R:\project\60029147.134\district\Design Files\004SW_001_ScopeOfWork.dgn

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 4 | 2 |




CPR, CL Joint Repair, Grinding, Joint Sealing

Mill, HMA

Note: Drawing Not to Scale

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Scope of Work

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 6 | 1 |

# NOTES

105-P01 PAVEMENT SWEEPING: Sweep paved areas that were used by construction traffic before opening these areas to public traffic.

107-300 CONSTRUCTION TRAFFIC ACCESS: Access areas within the right of way only at interchanges. The Engineer may allow temporary access at other locations.

To obtain temporary access, provide an access plan containing the following information:

- A traffic control plan;
- A traffic impact analysis;
- A safety analysis; and
- An environmental impact analysis.

If the Engineer determines that the information is adequate, the Engineer will submit the information to FHWA for approval and environmental clearance.

To be considered for approval; the following minimum conditions must be met in the access plan:

- Construction traffic will not be allowed to cross the interstate median or lanes of traffic being used by the public at grade;
- The access plan must show that there will be methods in place, at all times, to prevent public traffic from using the access;
- A plan to restore the area disturbed by the access, including right of way fences, to pre-existing or better condition.

All work necessary to provide the access plan, comply with the plan, and to restore the area to its pre-existing or better condition must be completed at no additional cost to the Department.

108-100 WEEKLY PLANNING/REPORTING MEETING: A weekly planning and reporting meeting is required.

302-P01 AGGREGATE BASE COURSE CL 5: The Engineer will direct the placement of this material in locations where rutting and soft spots occur along the shoulder of the roadway due to traffic shifts. Compact this material in placement areas prior to allowing traffic.

401-P01 FOG SEAL: Fog Seal after final rolling with a minimum mat temperature of 125 degrees F.

411-P01 TEMPORARY ASPHALT WEDGES: Place temporary asphalt wedges where traffic is entering or exiting a milled location to allow smooth passage of vehicles. Place asphalt wedges at these milled areas prior to the traffic being allowed back on the milled roadway section. Include all costs associated with the installation and removal of the asphalt wedges in the contract unit price for “MILLING PCC PAVEMENT”.

411-P02 MILLING PCC PAVEMENT: The milled transitions for paving the approaches at the Oslo Interchange will be milled into concrete, asphalt, or asphalt patched over concrete. Include all costs associated for milling these transitions in the contract unit price for “MILLING PCC PAVEMENT”.

430-P01 PATCHING (BRIDGE ENDS): The PCC pavement approaches at the bridge end of Structure #0029-153.750 R have settled. The PCC pavement will be milled and one lift of HMA Superpave FAA 45 will be placed as shown in Sec. 20, Sheet 17 and Section 30 Sheet 3 to correct the profile and provide a smooth transition onto and off of the bridge. Patching must meet specified density.

430-P02 PATCHING (BRIDGE ENDS): The PCC pavement approaches at the bridge ends of Structures #0029-160.927 R & #0029-160.928 L have settled. The PCC pavement and asphalt pavement will be milled and paved with HMA Superpave FAA 45 as shown in Sec. 20, Sheets 18-22 and Section 30 Sheets 5-6 to correct the profile and provide a smooth transition onto and off of the bridge. Patching must meet specified density.

570-P01 EXISTING PAVEMENT MARKING: Some existing PCC Pavement on the project has grooved in Preformed Patterned Pavement Marking on Centerline from RP 147.221 to RP 152.337. Include all costs associated with Preformed Patterned Pavement Marking removal in the contractor price for “PCC PAVEMENT GRINDING”.

570-P02 CONCRETE PAVEMENT REPAIR: An additional 25% has been added to the quantities for “Doweled Contraction Joint Assembly,” “10IN Conc Pvmt Repair – Full Depth –Doweled,” and “Spall Repair – Partial Depth” to be used as directed by the Engineer in areas outside of the Centerline Joint Repair.

570-P03 CONCRETE PAVEMENT REPAIR: From RP 152.337 to RP 161.700, there is 4” of Recycled Bituminous Base under the concrete pavement. Fill voids in this area deeper than 1” with CL 41 or CL 43 material as specified in Section 816.

570-P04 TRANSVERSE JOINT CLEANING AND SEALING: Provide material that meets NDDOT Standard Supplemental Specification 826.02 B.1.

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

704-P01 TRAFFIC CONTROL FOR CONCRETE PAVEMENT REPAIR: Provide traffic control consisting of a temporary lane closure and flagging.

The maximum work zone length is five miles. The length of the work zone includes the daily construction area plus the longitudinal buffer space and does not include tapers.

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
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# NOTES

Two work zones are allowed but must be separated by a three mile gap. The gap is considered the distance between the sign reestablishing the normal speed limit after the first work zone and the reduced speed ahead sign for second lane closure.

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

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

The traffic control device list is based on two 5 mile lane closures and the following list:

1. Standard D-704-35; and
2. Standard D-704-35A.

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

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

The Department will pay for all necessary deployed devices, regardless of the number within the basis of the two 5 mile lane closures.

704-P02 TRAFFIC CONTROL FOR PCC CENTERLINE JOINT REPAIR: Within the lane closures provided in Plan Note 704-P01, Standard Drawing D-704-35A will be required for all existing spot full depth repairs.

Traffic control device quantities are based on two traffic movements to the outside shoulders at a time within the traffic control phasing listed in Section 100 of the plans.

The extension of the lane closure into the outside shoulder for existing spot full depth repairs is not to exceed one-half mile. Refer to Section 100 phasing for details on the lane closure width extension.

Place vertical panels on the roadway next to the centerline and full depth repairs in the Driving Lane. Place panels every 100 feet.

After placement of concrete, keep vertical panels spaced at 100 feet and place Type I barricades in front of full depth repairs until cure time has been reached.

704-P03 TRAFFIC CONTROL FOR PCC AND HMA MILLING, HMA OVERLAYS, GUARDRAIL, GRINDING, JOINT SEALING & PAVEMENT MARKING: Provide traffic control consisting of a temporary lane closure and flagging.

Traffic control device quantities are based on the phasing of the project and the list below.

1. Standard D-704-22, Layout K & L;
2. Standard D-704-26;
3. Standard D-704-27;
4. Standard D-704-35.
5. Standard D-705-35A.

The Department will pay for all necessary deployed devices, regardless of the number within the basis of the two 5 miles lane closures.

706-P01 BITUMINOUS LABORATORY: Provide cellular internet service with Wi-Fi capabilities. Also provide a cell phone signal booster that boosts 3G and 4G frequencies and allows for the reliable use of cellular voice and data services throughout the lab.

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

762-P01 PERFORMED PATTERNED PAVEMENT MARKING: A total quantity of 1,320 LF of Preformed Patterned Pavement Marking 4IN Line – Grooved has been provided to be installed from RP 147.221 to RP 152.337 at the discretion of the Engineer.

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 6 | 3 |

# NOTES

**SECTION 130**

202-P01 REMOVAL OF BITUMINOUS SURFACING: Include all costs associated with the removal of existing bituminous surfacing and existing base in the bid price for “Removal of Bituminous Surfacing”.

203-P01 GUARDRAIL EMBANKMENT: The embankment material required for guardrail installation is not available within the highway right of way. It will be the contractor’s responsibility to obtain embankment material.

Include all costs to locate the embankment material in the contract unit price bid for “Guardrail Embankment.”

# ESTIMATE OF QUANTITIES

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 8 | 1 |

| SPEC | CODE | ITEM DESCRIPTION | UNIT | MAINLINE | TOTAL |
|---|---|---|---|---|---|
| 103 | 0100 | CONTRACT BOND | L SUM | 1 | 1 |
| 202 | 0132 | REMOVAL OF BITUMINOUS SURFACING | SY | 1,276 | 1,276 |
| 203 | 0119 | TOPSOIL-IMPORTED | CY | 121 | 121 |
| 203 | 0218 | GUARDRAIL EMBANKMENT | EA | 4 | 4 |
| 251 | 0200 | SEEDING CLASS II | ACRE | 0.5 | 0.5 |
| 253 | 0201 | HYDRAULIC MULCH | ACRE | 0.5 | 0.5 |
| 302 | 0320 | AGGREGATE SURFACE COURSE CL 5 | TON | 1,026 | 1,026 |
| 401 | 0050 | TACK COAT | GAL | 947 | 947 |
| 401 | 0060 | PRIME COAT | GAL | 360 | 360 |
| 401 | 0070 | FOG SEAL | GAL | 336 | 336 |
| 411 | 0110 | MILLING PCC PAVEMENT | SY | 3,752 | 3,752 |
| 430 | 0045 | SUPERPAVE FAA 45 | TON | 1,545 | 1,545 |
| 430 | 1000 | CORED SAMPLE | EA | 16 | 16 |
| 430 | 6428 | PG 64-28 ASPHALT CEMENT | TON | 95 | 95 |
| 570 | 0210 | PCC PAVEMENT GRINDING | SY | 69,502 | 69,502 |
| 570 | 0240 | DOWELED CONTRACTION JOINT ASSEMBLY | LF | 14,609 | 14,609 |
| 570 | 0424 | DOWEL BARS | EA | 81,918 | 81,918 |
| 570 | 0710 | 10IN CONCRETE PAVEMENT REPAIR-FULL DEPTH-DOWELED | SY | 24,974 | 24,974 |
| 570 | 0963 | TRANSVERSE PCC JOINT CLEANING & SEALING | LF | 135,121 | 135,121 |
| 570 | 0965 | LONGITUDINAL PCC JOINT CLEANING & SEALING | LF | 225,201 | 225,201 |
| 570 | 1512 | SPALL REPAIR-PARTIAL DEPTH | SF | 8,880 | 8,880 |
| 702 | 0100 | MOBILIZATION | L SUM | 1 | 1 |
| 704 | 0100 | FLAGGING | MHR | 2,760 | 2,760 |
| 704 | 1000 | TRAFFIC CONTROL SIGNS | UNIT | 5,032 | 5,032 |
| 704 | 1050 | TYPE I BARRICADE | EA | 200 | 200 |
| 704 | 1052 | TYPE III BARRICADE | EA | 40 | 40 |
| 704 | 1060 | DELINEATOR DRUMS | EA | 275 | 275 |
| 704 | 1067 | TUBULAR MARKERS | EA | 600 | 600 |
| 704 | 1080 | STACKABLE VERTICAL PANELS | EA | 200 | 200 |
| 704 | 1087 | SEQUENCING ARROW PANEL-TYPE C | EA | 3 | 3 |
| 706 | 0550 | BITUMINOUS LABORATORY | EA | 1 | 1 |
| 706 | 0600 | CONTRACTOR'S LABORATORY | EA | 1 | 1 |
| 760 | 0005 | RUMBLE STRIPS - ASPHALT SHOULDER | MILE | 0.226 | 0.226 |

ESTIMATE NUMBER: 17637  RUN DATE: 08/22/2017 TIME: 18:44:55

# ESTIMATE OF QUANTITIES

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 8 | 2 |

| SPEC | CODE | ITEM DESCRIPTION | UNIT | MAINLINE | TOTAL |
|---|---|---|---|---|---|
| 762 | 0430 | SHORT TERM 4IN LINE-TYPE NR | LF | 19,330 | 19,330 |
| 762 | 1104 | PVMT MK PAINTED 4IN LINE | LF | 170,032 | 170,032 |
| 762 | 1108 | PVMT MK PAINTED 8IN LINE | LF | 4,230 | 4,230 |
| 762 | 1124 | PVMT MK PAINTED 24IN LINE | LF | 278 | 278 |
| 762 | 1305 | PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED | LF | 20,640 | 20,640 |
| 764 | 0150 | REMOVE & RESET GUARDRAIL | LF | 977 | 977 |
| 764 | 1059 | RESET W-BEAM GUARDRAIL END TERMINAL | EA | 4 | 4 |
| 764 | 2081 | REMOVE END TREATMENT & TRANSITION | EA | 4 | 4 |
| 930 | 8644 | SILICONE SEALANT | LF | 228 | 228 |

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 10 | 1 |

# BASIS OF ESTIMATE

SECTION 411 & 430 MILL & HMA

| Estimated Milling and Paving Quantities | | | |
|---|---|---|---|
| Description | Units | Basis | Units |
| **Bridge Approaches - Structure #029-153.750R (NB)** | | | |
| Milling PCC Pavement | SY | Sec. 20, Sheet 17 & Sec. 30, Sheet 4 | 1,056 |
| Superpave FAA 45 @ 2 Ton/CY | Ton | | 126 |
| PG 64-28 Asphalt Cement @ 6.1% | Ton | | 8 |
| Tack @ 0.075 Gal/SY | Gal | | 79 |
| Fog Seal @ 0.05 Gal/SY | Gal | | 33 |

| Estimated Milling and Paving Quantities | | | |
|---|---|---|---|
| Description | Units | Basis | Units |
| **Bridge Approaches - Structures #029-160.927R (NB) & #029-160.928L (SB)** | | | |
| Milling PCC Pavement | SY | Sec. 20, Sheets 18-22 & Sec. 30, Sheets 5-6 | 2,696 |
| Superpave FAA 45 @ 2 Ton/CY | Ton | | 1,268 |
| PG 64-28 Asphalt Cement @ 6.1% | Ton | | 78 |
| Tack @ 0.075 Gal/SY | Gal | | 760 |
| Fog Seal @ 0.05 Gal/SY | Gal | | 303 |

| HMA Cored Samples | | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | | | |
| Specification Section | Distance (Ft) | Lanes | Lifts | Sublots (A × B × C) | Quantity (D × 2) | Quantity (1 per mile) | Unit |
| 430.04 I.2.b(1), "General" Structure #029-153.750 R Approaches | 250 | 2 | 1 | 2 | 4 | N/A | EA |
| 430.04 I.2.b(1), "General" Structures #029-160.927 R & #029-160.928 L Approaches | Varies See Section 20 Sheets 18-22 | 2 | 3 | 6 | 12 | N/A | EA |
| | | | | Total | 16 | | |

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Basis of Estimate

# BASIS OF ESTIMATE

570-210 PCC PAVEMENT GRINDING

RP 152.337 to RP 161.700 = 9.363 Miles x 5,280 LF/Mile = 49,437 LF
Total LF = 49,437 LF – 510 LF (Bridge Exception) – 810 LF (HMA Exception) = 48,117 LF
13’ Width x 48,117 LF /9 SF/SY = 69,502 SY

- 1 – 12’ Pass to I-29 Northbound Driving Lane
- 1’ Feather Pass to Driving Lane Shoulder

570-240 DOWELD CONTRACTION JOINT ASSEMBLY – CL JOINT REPAIR

RP 152.337 to RP 161.700 = 9.363 Miles x 5,280 LF/Mile = 49,437 LF
Total LF = 49,437 LF – 510 LF (Bridge Exception) – 582 LF (HMA Exception) = 48,345 LF
Transverse Joints = 48,345 LF / 15 LF/Panel = 3,223 Transverse Joints + 1 Joint
3,224 Joints x 4 LF / Transverse CL Joint = 12,896 LF
(Refer to Section 11 Sheets 15-42 for Additional Locations and Dowel Bar Quantities)

570-424 DOWEL BARS (DEFORMED) – CL JOINT REPAIR

RP 152.337 to RP 161.700 = 9.363 Miles x 5,280 LF/Mile = 49,437 LF
Total LF = 49,437 LF – 510 LF (Bridge Exception) – 582 LF (HMA Exception) = 48,345 LF
Concrete Panels = 48,345 LF / 15 LF/Panel = 3,223 Panels
3,223 Panels x 12 (#9 x 18’ Deformed Bars) per Construction Joint x 2 Longitudinal Joints = 77,352 EA
(Refer to Section 11 Sheets 15-42 for Additional Locations and Dowel Bar Quantities)

570-963 TRANSVERSE PCC JOINT CLEANING & SEALING

RP 147.221 to RP 161.700 = 14.479 Miles x 5,280 LF/Mile = 76,449 LF
Total LF = 76,449 LF – 510 LF (Bridge Exception) – 872 LF (HMA Exception) = 75,067 LF
Transverse Joints = 75,067 LF / 15 LF/Joint = 5,004 Joints
Total Transverse Joints = 5,004 x 27’ Avg. Width = 135,121 LF

570-965 LONGITUDINAL PCC JOINT CLEANING & SEALING

RP 147.221 to RP 161.700 = 14.479 Miles x 5,280 LF/Mile = 76,449 LF
Total LF = 76,449 LF – 510 LF (Bridge Exception) – 872 LF (HMA Exception) = 75,067 LF
Longitudinal Joints = 75,067 LF x 3 Joints = 225,201 LF
Total Longitudinal Joint Sealing = 225,201 LF

704-1000 FLAGGING

Mainline

- CPR Repairs Phases 1, 2, & 3: 30 Days x 12 Hrs/Day x 2 Flaggers = 720 MHRS
- CPR Centerline Joint Repair Phases 2, & 3: 45 Days x 12 Hrs/Day x 2 Flaggers = 1,080 MHRS
- Grinding Phases 2 & 3: 25 days x 12 Hrs/day x 2 Flaggers = 600 MHRS
- Milling, HMA, Joint Sealing Phases 1-7: 15 Days x 12 Hrs /Day x 2 Flaggers = 360 MHRS



Basis of Estimate

# BASIS OF ESTIMATE

760-0005 RUMBLE STRIPS – ASPHALT SHOULDER

Northbound Interstate 29
- Sta 365+70 to Sta 364+45 = 125’
- 125’ x 2 Shoulders (Driving/Passing) = 250’
- 250’ / 5,280 FT/Mile = 0.047 Miles

- Sta 783+58 to Sta 780+76 = 282’
- 282’ x 1 Shoulder (Passing) = 282’
- 282’ / 5,280 FT/Mile = 0.053 Miles

Southbound Interstate 29
- Sta 786+09 to Sta 789+39 = 330’
- 330’ x 2 Shoulders (Driving/Passing) = 660’
- 660’ / 5,280 FT/Mile = 0.125 Miles

SECTION 762 PAVEMENT MARKING

| **Temporary Pavement Marking** | | |
|---|---|---|
| **Location** | Basis | Quantity |
| **RP 152.337 to RP 161.700 NB I-29** | | |
| Short Term 4IN Line-Type NR White Skip Line – CL Joint Section | 1,320 LF/Mi | 19,110 LF |
| *(10' Line, 30' Skip)* | | |
| **Oslo Interchange – SB I-29 RP 160.841 to RP 161.003** | | |
| Short Term 4IN Line-Type NR White Skip Line | 1,320 LF/Mi | 210 LF |
| *(10' Line, 30' Skip)* | | |
| **Total Short Term 4IN Line – Type NR** | | **19,330 LF** |

| **Permanent Pavement Marking** | | |
|---|---|---|
| Location | Basis | Quantity |
| **RP 147.221 to RP 161.700 – NB I-29** | | |
| Preformed Patterned PVMT MK 4IN Line – CPR Section | 1,320 LF/Mi | 1,320 LF |
| Grooved *(10' Line, 30' Skip* | | |
| Preformed Patterned PVMT MK 4IN Line – CL Joint Section | 1,320 LF/Mi | 19,110 LF |
| Grooved *(10' Line, 30' Skip* | | |
| Pvmt Mk Painted 4IN White Edge Line | 5,280 LF/Mi | 76,449 LF |
| Pvmt Mk Painted 4IN Yellow Edge Line | 5,280 LF/Mi | 76,449 LF |
| **Oslo Interchange – SB I-29 RP 160.841 to RP 161.003** | | |
| Preformed Patterned PVMT MK 4IN Line – CPR Section | 1,320 LF/Mi | 210 LF |
| *(10’ Line, 30’ Skip)* | | |
| Pvmt Mk Painted 4IN White Edge Line | 5,280 LF/Mi | 855 LF |
| Pvmt Mk Painted 4IN Yellow Edge Line | 5,280 LF/Mi | 855 LF |



Basis of Estimate

# BASIS OF ESTIMATE

| Additional Permanent Pavement Marking Quantities - Interchanges | | |
|---|---|---|
| **Manvel Interchange (152) Exit Ramp – NB I-29** | | |
| Pvmt Mk Painted 4IN White Dotted Line | D-762-02 | 124 LF |
| Pvmt Mk Painted 8IN White Channel Line | | 547 LF |
| Pvmt Mk Painted 4IN White Edge Line | | 1,112LF |
| Pvmt Mk Painted 4IN Yellow Edge Line | | 1,110 LF |
| Pvmt Mk Painted 24IN White Stop Bar | | 94 LF |
| **Manvel Interchange (152) Entrance Ramp – NB I-29** | | |
| Pvmt Mk Painted 4IN White Dotted Line | D-762-02 | 60 LF |
| Pvmt Mk Painted 8IN White Channel Line | | 855 LF |
| Pvmt Mk Painted 4IN White Edge Line | | 944 LF |
| Pvmt Mk Painted 4IN Yellow Edge Line | | 951 LF |
| **JohnsTown Interchange (157) Exit Ramp – NB I-29** | | |
| Pvmt Mk Painted 4IN White Dotted Line | D-762-02 | 120 LF |
| Pvmt Mk Painted 8IN White Channel Line | | 644 LF |
| Pvmt Mk Painted 4IN White Edge Line | | 902 LF |
| Pvmt Mk Painted 4IN Yellow Edge Line | | 914 LF |
| Pvmt Mk Painted 24IN White Stop Bar | | 72 LF |
| **JohnsTown Interchange (157) Entrance Ramp – NB I-29** | | |
| Pvmt Mk Painted 4IN White Dotted Line | D-762-02 | 90 LF |
| Pvmt Mk Painted 8IN White Channel Line | | 469 LF |
| Pvmt Mk Painted 4IN White Edge Line | | 927 LF |
| Pvmt Mk Painted 4IN Yellow Edge Line | | 921 LF |
| **Oslo Interchange (161) Exit Ramp – NB I-29** | | |
| Pvmt Mk Painted 4IN White Dotted Line | D-762-02 | 222 LF |
| Pvmt Mk Painted 8IN White Channel Line | | 311 LF |
| Pvmt Mk Painted 4IN White Edge Line | | 801 LF |
| Pvmt Mk Painted 4IN Yellow Edge Line | | 834 LF |
| Pvmt Mk Painted 24IN White Stop Bar | | 52 LF |
| **Oslo Interchange (161) Entrance Ramp – NB I-29** | | |
| Pvmt Mk Painted 4IN White Dotted Line | D-762-02 | 80 LF |
| Pvmt Mk Painted 8IN White Channel Line | | 486 LF |
| Pvmt Mk Painted 4IN White Edge Line | | 1,393 LF |
| Pvmt Mk Painted 4IN Yellow Edge Line | | 1,337 LF |
| **Oslo Interchange (161) Exit Ramp – SB I-29** | | |
| Pvmt Mk Painted 4IN White Dotted Line | D-762-02 | 226 LF |
| Pvmt Mk Painted 8IN White Channel Line | | 558 LF |
| Pvmt Mk Painted 4IN White Edge Line | | 544 LF |
| Pvmt Mk Painted 4IN Yellow Edge Line | | 542 LF |
| Pvmt Mk Painted 24IN White Stop Bar | | 60 LF |
| **Oslo Interchange (161) Entrance Ramp – SB I-29** | | |
| Pvmt Mk Painted 4IN White Dotted Line | D-762-02 | 450 LF |
| Pvmt Mk Painted 8IN White Channel Line | | 360 LF |
| Pvmt Mk Painted 4IN White Edge Line | | 500 LF |
| Pvmt Mk Painted 4IN Yellow Edge Line | | 523 LF |

| Total Permanent Pavement Marking Quantities | | | |
|---|---|---|---|
| **Description** | White | Yellow | Quantity |
| Preformed Patterned PVMT MK 4IN Line – Grooved (*10' Line, 30' Skip)* | 20,640 LF | | **20,640 LF** |
| Pvmt MK Painted 4IN Line | 85,796 LF | 84,236 LF | **170,032 LF** |
| Pvmt MK Painted 8IN Line | 4,230 LF | | **4,230 LF** |
| Pvmt MK Painted 24In Line | 278 LF | | **278 LF** |

This document was originally issued and sealed by Christopher K. Beggs, Registration Number PE-6240, on 08/21/2017 and the original document is stored at the North Dakota Department of Transportation.

Basis of Estimate

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 10 | 5 |

# BASIS OF ESTIMATE

ESTIMATED QUANTITIES - GUARDRAIL EMBANKMENT SURFACING

| ND 54 INTERCHANGE, RP 160.927, I-29 | | | | | | |
|---|---|---|---|---|---|---|
| | | Southbound Bridge | | North Bound Bridge | | |
| | UNIT | RT | RT MDN | LT MDN | LT | Total |
| Removal of Bituminous Surfacing | SY | 287 | 388 | 380 | 221 | 1276 |
| 2" Bituminous with 2" Aggregate Base | | | | | | |
| Aggregate Base Course Cl 5 @ 1.875 Ton/CY | TON | 124.4 | 154 | 151.9 | 95.6 | 526 |
| Tack Coat @ 0.075 Gal/SY | GAL | 24.9 | 32.3 | 31.7 | 19.1 | 108 |
| Prime Coat @ 0.25 Gal/SY | GAL | 82.9 | 107.5 | 105.6 | 63.8 | 360 |
| Superpave FAA 45 @ 2 Ton/CY | TON | 34.4 | 45.5 | 44.6 | 26.5 | 151 |
| PG 64-28 Asphalt Cement @ 6.1% | TON | 2.1 | 2.8 | 2.7 | 1.6 | 9 |

See Section 130 and Standard Drawing D-764-22 for details

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047 , on 8/15/17 and the original document is stored at the North Dakota Department of Transportation

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 1 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA |
| | | L | x | W | | | | | | | L | x | W | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF |
| CONCRETE PAVEMENT REPAIR RP 147.221 to RP 152.337 | | | | | | | | | | | | | | |
| 711+47 | Driving | 6 | x | 12 | 8.0 | 36 | 20 | | 12 | | | x | | |
| 709+16 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 706+63 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 705+74 | Passing | 22 | x | 16 | 39.1 | 76 | 10 | 10 | 12 | 5 | | x | | |
| 699+47 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 698+10 | Driving | 8 | x | 12 | 10.7 | 40 | 10 | 10 | | | | x | | |
| 696+75 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 695+22 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 693+91 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 693+32 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 692+32 | Passing | 32 | x | 6 | 21.3 | 76 | | 8 | 6 | 6 | | x | | |
| 692+27 | Driving | 12 | x | 6 | 8.0 | 36 | | 20 | | | | x | | |
| 686+58 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 686+58 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 686+16 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 685+38 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 684+35 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 682+98 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 682+48 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 682+39 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 681+60 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 677+04 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 676+99 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 676+85 | Driving | 7 | x | 6 | 4.7 | 26 | 8 | 6 | | | | x | | |
| 676+84 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 675+57 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 673+17 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 671+03 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 668+49 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 662+58 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 661+85 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 661+61 | Driving | | x | | | | | | | | 3 | x | 2 | 6 |
| 660+86 | Passing | 6 | x | 6 | 4.0 | 24 | 8 | 6 | | | | x | | |
| 656+81 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 656+80 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 655+77 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 654+72 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 652+47 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 652+47 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 651+26 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 650+08 | Passing | 6 | x | 12 | 8.0 | 36 | 20 | | 12 | | | x | | |
| 649+78 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 648+42 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 647+55 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 645+44 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 644+99 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 644+27 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 643+54 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 642+89 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 642+31 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |

***NOTE: Saw Concrete, and Tie Bars will not be measured and paid for seperately, but included in the Bid Item 570-710**

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 2 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA |
| | | L | x | W | | | | | | | L | x | W | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF |
| 641+28 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 639+77 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 638+90 | Driving | 6 | x | 6 | 4.0 | 24 | 8 | | 6 | | | x | | |
| 638+75 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 632+61 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 634+85 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 634+41 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 627+78 | Centerline | | x | | | | | | | | 2 | x | 3 | 6 |
| 627+78 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 625+28 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 623+29 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 622+57 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 619+72 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 615+08 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 610+90 | Driving | 6 | x | 12 | 8.0 | 36 | 20 | | 12 | | | x | | |
| 608+23 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 606+14 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 604+57 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 603+87 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 603+29 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 602+39 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 601+82 | Passing | 6 | x | 12 | 8.0 | 36 | 20 | | 12 | | | x | | |
| 599+94 | Driving | 6 | x | 12 | 8.0 | 36 | 20 | | 12 | | | x | | |
| 599+88 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 599+63 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 599+63 | Passing | 6 | x | 12 | 8.0 | 36 | 20 | | 12 | | | x | | |
| 599+49 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 599+36 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 599+32 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 599+06 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 598+92 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 598+91 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 598+78 | Driving | 7 | x | 6 | 4.7 | 26 | 8 | | 6 | | | x | | |
| 598+78 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 598+78 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 598+63 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 598+51 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 598+51 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 598+33 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 598+18 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 598+18 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 597+74 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 597+58 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 597+55 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 597+44 | Driving | 6 | x | 6 | 4.0 | 24 | 8 | | 6 | | | x | | |
| 597+16 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 596+98 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 596+84 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 596+56 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 596+49 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 596+13 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 11 | 3 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA |
| | | L | x | W | | | | | | | L | x | W | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF |
| 596+04 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 595+94 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 595+94 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 595+76 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 595+61 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 595+50 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 595+36 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 595+21 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 595+20 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 595+14 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 594+93 | Driving | 32 | x | 12 | 42.7 | 88 | | 20 | 12 | 6 | | x | | |
| 594+93 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 594+80 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 594+59 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 594+32 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 594+30 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 594+14 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 594+05 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 593+84 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 593+77 | Passing | 6 | x | 12 | 8.0 | 36 | 20 | | 12 | | | x | | |
| 593+63 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 593+63 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 593+60 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 593+54 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 593+48 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 593+37 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 592+99 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 592+88 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 592+73 | Driving | | x | | | | | | | | 4 | x | 2 | 8 |
| 592+73 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 592+59 | Passing | 6 | x | 6 | 4.0 | 24 | 8 | | 6 | | | x | | |
| 592+45 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 592+43 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 592+30 | Driving | | x | | | | | | | | 4 | x | 2 | 8 |
| 592+30 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 592+14 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 591+57 | Driving | 6 | x | 12 | 8.0 | 36 | 20 | | 12 | | | x | | |
| 591+57 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 591+55 | Passing | 17 | x | 6 | 11.3 | 46 | | 8 | | 3 | | x | | |
| 591+26 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 591+20 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 591+03 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 591+02 | Passing | | x | | | | | | | | 3 | x | 2 | 6 |
| 590+83 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 590+82 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 590+81 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 590+67 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 590+54 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 590+52 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 590+52 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 4 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | SPALL REPAIR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA |
| | | L | x | W | | | | | | | L | x | W | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF |
| 590+42 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 590+21 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 589+61 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 589+60 | Centerline | | x | | | | | | | | 6 | x | 2 | 12 |
| 589+60 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 589+46 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 589+31 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 588+86 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 588+74 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 588+71 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 588+68 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 588+65 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 588+50 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 588+26 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 588+18 | Passing | | x | | | | | | | | 4 | x | 2 | 8 |
| 588+00 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 587+96 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 587+70 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 587+67 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 587+67 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 587+55 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 587+51 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 587+24 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 587+23 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 587+10 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 587+09 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 587+09 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 586+91 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 586+66 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 586+63 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 586+34 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 586+33 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 586+27 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 586+07 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 586+01 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 585+55 | Centerline | | x | | | | | | | | 8 | x | 2 | 16 |
| 585+44 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 585+35 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 585+16 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 585+15 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 585+01 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 584+55 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 584+43 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 584+41 | Centerline | | x | | | | | | | | 4 | x | 2 | 8 |
| 584+41 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 584+28 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 584+25 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 584+07 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 583+82 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 583+79 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |

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Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 5 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA |
| | | L | x | W | | | | | | | L | x | W | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF |
| 583+66 | Centerline | | x | | | | | | | | 6 | x | 2 | 12 |
| 583+66 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 583+51 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 583+50 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 583+39 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 583+24 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 583+07 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 582+93 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 582+92 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 582+87 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 582+79 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 582+78 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 582+66 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 582+47 | Passing | | x | | | | | | | | 4 | x | 2 | 8 |
| 582+35 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 582+21 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 582+07 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 582+06 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 582+06 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 581+94 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 581+93 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 581+93 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 581+79 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 581+78 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 581+64 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 581+51 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 581+49 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 581+37 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 581+34 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 581+19 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 581+00 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 580+91 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 580+45 | Centerline | | x | | | | | | | | 4 | x | 2 | 8 |
| 580+45 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 580+31 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 580+30 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 580+02 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 579+86 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 579+70 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 579+54 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 579+41 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 579+39 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 579+27 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 579+25 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 578+68 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 578+65 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 578+51 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 578+50 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 578+37 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 578+23 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 11 | 6 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | SPALL REPAIR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA |
| | | L | x | W | | | | | | | L | x | W | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF |
| 577+96 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 577+91 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 577+63 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 577+34 | Passing | | x | | | | | | | | 5 | x | 2 | 10 |
| 577+34 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 576+95 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 576+86 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 576+64 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 576+56 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 576+45 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 576+43 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 576+15 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 575+81 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 575+37 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 574+69 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 574+64 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 574+32 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 574+28 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 574+08 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 573+85 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 573+77 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 573+72 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 573+44 | Centerline | | x | | | | | | | | 6 | x | 2 | 12 |
| 573+27 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 573+27 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 573+15 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 572+73 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 572+66 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 572+53 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 572+20 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 571+90 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 571+47 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 571+47 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 571+34 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 570+41 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 570+30 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 570+11 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 569+98 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 569+96 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 569+84 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 569+67 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 569+53 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 568+93 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 568+77 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 568+49 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 568+34 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 568+32 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 567+86 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 567+66 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 567+43 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 11 | 7 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA |
| | | L | x | W | | | | | | | L | x | W | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF |
| 567+23 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 566+86 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 566+83 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 566+68 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 566+55 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 566+14 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 566+07 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 565+76 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 565+65 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 565+50 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 565+38 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 565+35 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 565+19 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 565+07 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 563+82 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 563+71 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 563+69 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 563+14 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 563+01 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 562+96 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 562+71 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 562+67 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 562+53 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 562+36 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 562+35 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 562+23 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 561+72 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 561+71 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 561+53 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 561+07 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 560+96 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 560+79 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 560+58 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 560+52 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 560+39 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 560+22 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 560+08 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 559+94 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 559+80 | Driving | 6 | x | 6 | 4.0 | 24 | 8 | | 6 | | | x | | |
| 559+70 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 559+66 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 559+31 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 559+21 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 559+02 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 558+74 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 558+74 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 558+56 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 558+40 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 558+31 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 557+55 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 11 | 8 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA |
| | | L | x | W | | | | | | | L | x | W | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF |
| 556+71 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 556+66 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 556+53 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 556+50 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 556+34 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 556+20 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 555+26 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 555+13 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 553+65 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 553+61 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 553+35 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 553+19 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 553+18 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 552+89 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 552+88 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 552+71 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 552+58 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 552+31 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 552+17 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 551+99 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 551+98 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 551+85 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 551+39 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 550+90 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 550+06 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 549+73 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 549+58 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 549+42 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 549+30 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 549+27 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 549+12 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 548+67 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 548+52 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 548+16 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 547+48 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 547+23 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 546+08 | Driving | 17 | x | 12 | 22.7 | 58 | | 20 | | 6 | | x | | |
| 545+71 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 545+29 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 544+76 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 544+39 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 544+25 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 544+13 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 543+94 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 543+52 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 543+50 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 543+37 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 543+19 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 543+05 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 542+98 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 11 | 9 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA |
| | | L | x | W | | | | | | | L | x | W | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF |
| 542+67 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 542+33 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 542+23 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 541+83 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 541+66 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 541+41 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 541+24 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 540+28 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 539+44 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 538+87 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 538+46 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 538+40 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 538+09 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 537+80 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 537+66 | Passing | 6 | x | 6 | 4.0 | 24 | 8 | | 6 | | | x | | |
| 537+21 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 537+20 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 536+91 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 536+81 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 536+59 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 536+42 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 536+16 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 535+26 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 533+39 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 533+16 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 532+66 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 532+62 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 532+54 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 532+25 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 532+02 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 531+70 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 531+51 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 531+35 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 530+43 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 530+28 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 530+00 | Passing | 6 | x | 6 | 4.0 | 24 | 8 | | 6 | | | x | | |
| 529+63 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 529+07 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 528+96 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 528+71 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 527+33 | Driving | 6 | x | 6 | 4.0 | 24 | 6 | 4 | | | | x | | |
| 526+93 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 526+06 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 525+96 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 525+78 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 525+60 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 525+51 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 525+20 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 525+17 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 524+75 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 11 | 10 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | SPALL REPAIR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA |
| | | L | x | W | | | | | | | L | x | W | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF |
| 524+66 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 524+61 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 523+74 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 523+22 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 522+80 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 522+62 | Driving | | x | | | | | | | | 5 | x | 2 | 10 |
| 521+86 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 521+81 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 521+75 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 521+33 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 520+46 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 520+30 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 520+28 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 520+15 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 519+81 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 519+71 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 519+27 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 519+08 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 518+72 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 517+77 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 517+44 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 517+30 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 517+16 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 516+73 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 516+57 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 516+28 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 515+21 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 514+79 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 514+44 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 513+37 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 513+31 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 512+83 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 512+71 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 512+14 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 511+71 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 511+65 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 511+53 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 511+06 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 510+80 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 510+65 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 510+35 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 510+23 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 510+21 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 510+10 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 509+93 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 509+39 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 509+36 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 509+03 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 508+87 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 508+56 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 11 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA |
| | | L | x | W | | | | | | | L | x | W | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF |
| 508+28 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 508+01 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 507+89 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 507+82 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 507+71 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 507+57 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 507+54 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 507+12 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 506+79 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 506+67 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 506+38 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 505+91 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 505+91 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 505+61 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 505+58 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 505+17 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 504+91 | Centerline | | x | | | | | | | | 6 | x | 2 | 12 |
| 504+89 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 504+77 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 504+60 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 504+45 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 504+43 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 504+15 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 504+12 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 503+90 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 503+71 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 503+70 | Driving | 6 | x | 12 | 8.0 | 36 | 20 | | 12 | | | x | | |
| 503+49 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 503+23 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 503+09 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 502+91 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 502+19 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 502+17 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 501+74 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 500+51 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 500+10 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 499+39 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 499+29 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 497+10 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 496+83 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 496+25 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 496+21 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 495+49 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 493+35 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 492+92 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 492+65 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 491+76 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 491+48 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 491+01 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 490+88 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 11 | 12 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA |
| | | L | x | W | | | | | | | L | x | W | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF |
| 490+73 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 490+54 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 490+11 | Centerline | | x | | | | | | | | 8 | x | 2 | 16 |
| 489+48 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 489+04 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 488+77 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 488+46 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 487+87 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 487+58 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 486+80 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 485+93 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 485+28 | Passing | 10 | x | 16 | 17.8 | 52 | 10 | 10 | | 4 | | x | | |
| 485+28 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 484+89 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 484+49 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 483+98 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 482+81 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 482+13 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 481+20 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 480+97 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 480+57 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 480+23 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 479+02 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 478+40 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 478+15 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 477+91 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 477+58 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 476+88 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 476+18 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 475+65 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 474+44 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 473+91 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 473+77 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 473+71 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 472+73 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 471+85 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 471+67 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 471+52 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 471+22 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 471+19 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 471+19 | Centerline | | x | | | | | | | | 6 | x | 2 | 12 |
| 471+10 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 470+55 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 470+41 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 470+06 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 469+88 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 469+74 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 469+64 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 469+30 | Centerline | | x | | | | | | | | 4 | x | 2 | 8 |
| 468+95 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 11 | 13 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | SPALL REPAIR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA |
| | | L | x | W | | | | | | | L | x | W | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF |
| 468+83 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 468+71 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 468+68 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 468+39 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 468+18 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 467+89 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 467+83 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 467+40 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 466+98 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 466+78 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 466+71 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 466+48 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 466+32 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 466+27 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 465+82 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 465+43 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 465+23 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 465+11 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 464+94 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 464+48 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 464+35 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 463+00 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 462+80 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 462+67 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 462+52 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 461+60 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 461+46 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 460+41 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 459+89 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 459+52 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 459+47 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 459+36 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 459+18 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 458+93 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 458+64 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 457+94 | Centerline | | x | | | | | | | | 8 | x | 2 | 16 |
| 457+75 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 457+22 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 456+84 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 456+41 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 455+91 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 455+62 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 455+24 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 454+64 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 454+27 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 453+69 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 453+55 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 453+34 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 453+20 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 453+07 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |

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Data Table
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| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 11 | 14 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA |
| | | L | x | W | | | | | | | L | x | W | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF |
| 452+91 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 452+78 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 452+48 | Driving | 15 | x | 12 | 20.0 | 54 | 20 | | 12 | 6 | | x | | |
| 452+35 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 452+08 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 452+01 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 451+92 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 451+76 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 451+64 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 451+45 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 451+28 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 450+75 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 450+45 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 450+42 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 450+23 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 449+78 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 449+59 | Centerline | | x | | | | | | | | 12 | x | 2 | 24 |
| 449+35 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 449+29 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 449+24 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 449+17 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 448+98 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 448+96 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 448+83 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 448+70 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 448+46 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 448+35 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 448+25 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 447+92 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 447+81 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 447+74 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 447+66 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 447+41 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 447+25 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 447+00 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 446+99 | Driving | 7 | x | 12 | 9.3 | 38 | 20 | | 12 | | | x | | |
| 446+91 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 446+72 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 446+70 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 446+59 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 446+51 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 445+93 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 445+88 | Centerline | | x | | | | | | | | 5 | x | 2 | 10 |
| 445+65 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 445+43 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 445+43 | Centerline | | x | | | | | | | | 7 | x | 2 | 14 |
| 445+25 | Passing | | x | | | | | | | | 2 | x | 2 | 4 |
| 444+45 | Centerline | | x | | | | | | | | 10 | x | 2 | 20 |
| 443+19 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 443+17 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 443+06 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 443+00 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 442+92 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 442+80 | Driving | | x | | | | | | | | 2 | x | 2 | 4 |
| 442+42 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 442+17 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |
| 442+00 | Centerline | | x | | | | | | | | 2 | x | 2 | 4 |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 15 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| CONCRETE PAVEMENT REPAIR & CENTER LINE JOINT REPAIR RP 152.337 to RP 161.700 | | | | | | | | | | | | | | | |
| 441+56 | Centerline | 7206 | x | 4 | 3202.7 | 14420 | 11,434 | 8 | 1,922 | | | x | | | CENTERLINE JOINT REPAIR |
| 441+09 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 440+89 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 440+83 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 440+83 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 440+52 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 440+39 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 440+29 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 439+84 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 439+70 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 439+55 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 439+40 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 439+14 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 438+39 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 438+14 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 438+00 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 435+76 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 435+15 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 434+42 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 434+26 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 434+13 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 434+13 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 433+82 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 433+19 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 432+92 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 432+51 | Driving | 8 | x | 10 | 8.9 | 36 | 18 | | 10 | | | x | | | |
| 432+51 | Passing | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 432+39 | Driving | 8 | x | 10 | 8.9 | 36 | 18 | | 10 | | | x | | | |
| 432+00 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 431+50 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 432+23 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 431+23 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 431+08 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 430+95 | Passing | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 429+20 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 428+13 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 427+07 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 424+30 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 423+89 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 423+27 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 16 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | | |
| | | L | x | W | | | | | | | L | x | W | | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | | |
| 423+27 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 422+86 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 422+40 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 420+78 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 420+63 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 420+00 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 419+59 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | | |
| 418+96 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 418+81 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 418+68 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 418+10 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 417+68 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 417+52 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 417+38 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 416+92 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 416+92 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 416+79 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 416+79 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 414+85 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 414+48 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 413+93 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 413+80 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 413+80 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 413+20 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 413+08 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 413+08 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 412+64 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 412+49 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 412+49 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 412+35 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 412+17 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 412+05 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 411+77 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 411+77 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 411+64 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 411+64 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 410+91 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 410+76 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 410+45 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 410+31 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 17 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | | |
| | | L | x | W | | | | | | | L | x | W | | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | | |
| 410+31 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 409+53 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 409+40 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 409+40 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 409+12 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 408+97 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 408+97 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 408+67 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 408+38 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 408+38 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 408+22 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 408+07 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 407+78 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 407+64 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 407+50 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 407+50 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 407+22 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 407+22 | Driving | | x | | | | | | | | 3 | x | 2 | 6 | | |
| 406+65 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 406+49 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 406+35 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 406+21 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 406+05 | Driving | | x | | | | | | | | 6 | x | 2 | 12 | | |
| 405+76 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 405+76 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 405+62 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 405+49 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 405+49 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 405+34 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 405+34 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 405+21 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 405+07 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | | |
| 404+92 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 404+77 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 404+77 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | | |
| 404+84 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 404+33 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 404+20 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 403+42 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 403+29 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |

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RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 18 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | | |
| | | L | x | W | | | | | | | L | x | W | | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | | |
| 402+99 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 402+84 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 401+21 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 401+06 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 400+91 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 400+46 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 400+46 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 400+04 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 399+89 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 399+74 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 399+15 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 399+01 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 398+86 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 398+86 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 398+56 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 397+52 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 397+39 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 397+22 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 396+93 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 396+79 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 396+64 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 395+91 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 395+76 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 395+62 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 395+62 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 395+02 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 394+88 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 394+73 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 394+16 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 394+01 | Passing | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | | |
| ***390+90*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 390+57 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***389+84*** | ***Driving*** | ***17*** | x | ***3*** | 5.7 | 40 | 12 | 4 | | | | x | | | | |
| 388+43 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| **388+36** | **Driving** | **17** | x | **3** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| ***387+94*** | ***Driving*** | ***6*** | ***x*** | ***10*** | ***6.7*** | ***32*** | ***18*** | | ***10*** | | | x | | | | ***Existing Spot Full Depth Repair*** |
| ***387+94*** | ***Passing*** | ***6*** | ***x*** | ***10*** | ***6.7*** | ***32*** | ***18*** | | ***10*** | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 386+75 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 386+75 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 386+60 | Driving/Passing | 12 | x | 20 | 26.7 | 64 | 36 | | 20 | 2 | | x | | | | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 19 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| ***386+57*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| ***386+57*** | ***Passing*** | ***6*** | x | ***10*** | ***6.7*** | ***32*** | ***18*** | | ***10*** | | | x | | | ***Existing Spot Full Depth Repair*** |
| 386+30 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 385+87 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 385+41 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 385+29 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 384+84 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 381+71 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 381+26 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 380+84 | Passing | | x | | | | | | | | 4 | x | 2 | 8 | |
| 380+36 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 380+23 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 380+10 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| ***379+97*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 379+95 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 379+95 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 378+91 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 377+97 | Passing | | x | | | | | | | | 3 | x | 2 | 6 | |
| ***377+91*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 377+86 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 377+73 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 377+58 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 376+64 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 376+54 | Driving | | x | | | | | | | | 4 | x | 2 | 8 | |
| 376+54 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 376+39 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***376+38*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 376+25 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 376+09 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 375+95 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 375+66 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 375+50 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 375+21 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 375+07 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 374+47 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 374+00 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 373+87 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 373+12 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 373+82 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 373+82 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 20 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| ***372+84*** | ***Passing*** | ***6*** | ***x*** | ***10*** | ***6.7*** | ***32*** | ***18*** | | ***10*** | | | **x** | | | ***Existing Spot Full Depth Repair*** |
| ***372+79*** | ***Driving*** | ***17*** | **x** | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | **x** | | | ***Existing Spot Full Depth Repair*** |
| 372+66 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 372+55 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 372+55 | Driving | 6 | **x** | 10 | 6.7 | 32 | 18 | | 10 | | | **x** | | | |
| 372+40 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 372+25 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 371+80 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 371+66 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 371+51 | Driving | | **x** | | | | | | | | 4 | **x** | 2 | 8 | |
| 371+51 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 371+37 | Driving | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 371+06 | Driving | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 371+06 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 370+93 | Driving | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 370+93 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 370+79 | Driving | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 370+64 | Driving | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 370+64 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 370+49 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 370+20 | Driving | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 370+07 | Passing | | **x** | | | | | | | | 3 | **x** | 2 | 6 | |
| 369+90 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 368+78 | Passing | 17 | **x** | 12 | 22.7 | 58 | | 20 | | 6 | | **x** | | | |
| 368+56 | Driving | 7 | **x** | 12 | 9.3 | 38 | 20 | | 12 | | | **x** | | | |
| 364+45 | Centerline | 36445 | **x** | 4 | 16197.8 | 72898 | 57,124 | 8 | 9720 | | | **x** | | | CENTERLINE JOINT REPAIR |
| 363+02 | Driving | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 361+97 | Passing | | **x** | | | | | | | | 3 | **x** | 2 | 6 | |
| 361+52 | Driving | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 361+37 | Driving | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 361+37 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 361+08 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 360+93 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 360+47 | Driving | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 360+33 | Driving | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 359+94 | Driving | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 359+94 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 359+64 | Driving | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| 359+64 | Passing | | **x** | | | | | | | | 2 | **x** | 2 | 4 | |
| ***359+54*** | ***Driving*** | ***17*** | **x** | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | **x** | | | ***Existing Spot Full Depth Repair*** |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 21 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | | |
| | | L | x | W | | | | | | | L | x | W | | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | | |
| ***359+54*** | ***Passing*** | ***6*** | ***x*** | ***10*** | ***6.7*** | ***32*** | ***18*** | | ***10*** | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 359+20 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 358+54 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 358+44 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 357+58 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 357+32 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 357+27 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 357+27 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 356+98 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 356+83 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 356+83 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 355+50 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 355+35 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 355+21 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 355+06 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 355+06 | Driving | | x | | | | | | | | 3 | x | 2 | 6 | | |
| 354+92 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***359+89*** | ***Driving*** | ***17*** | ***x*** | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| ***359+89*** | ***Passing*** | ***6*** | ***x*** | ***10*** | ***6.7*** | ***32*** | ***18*** | | ***10*** | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 354+76 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 354+62 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 354+62 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 354+62 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 354+03 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 353+89 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 353+75 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 353+45 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 353+29 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 352+71 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 352+56 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 352+56 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 352+41 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 352+25 | Passing | | x | | | | | | | | 3 | x | 2 | 6 | | |
| 352+11 | Passing | | x | | | | | | | | 4 | x | 2 | 8 | | |
| 352+96 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 351+83 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 351+83 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 351+54 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 351+39 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 351+25 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 351+25 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 351+11 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |

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Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 22 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| 350+97 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 350+97 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 350+82 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 350+82 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 350+69 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 350+55 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 350+33 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 350+24 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 350+10 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 350+03 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 349+95 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 349+95 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 349+81 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 349+66 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 349+42 | Driving/Passing | 30 | x | 34 | 113.3 | 128 | 36 | | 20 | 6 | | x | | | |
| 349+23 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 349+23 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 349+10 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 348+95 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 348+81 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 348+66 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 348+66 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 348+51 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 348+51 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 348+43 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 348+22 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 348+07 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 347+92 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 347+77 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 345+70 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 345+70 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 347+63 | Passing | | x | | | | | | | | 3 | x | 2 | 6 | |
| 346+60 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 345+54 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 345+40 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 344+95 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 344+82 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 344+52 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 344+23 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 344+07 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |

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|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 23 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | SPALL REPAIR | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| 344+07 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 343+92 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 343+77 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 343+48 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 343+28 | Driving | | x | | | | | | | | 12 | x | 2 | 24 | |
| 343+20 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 343+18 | Driving | | x | | | | | | | | 3 | x | 2 | 6 | |
| 343+07 | Driving | | x | | | | | | | | 3 | x | 2 | 6 | |
| 343+07 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 342+64 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 342+04 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 341+86 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 341+60 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 341+30 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 341+01 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 340+86 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 340+56 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 340+11 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 340+11 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 340+03 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 339+82 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 339+68 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 339+55 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 339+11 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 338+96 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 338+80 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 338+66 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 338+36 | Driving | | x | | | | | | | | 2 | x | 4 | 8 | |
| 338+21 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 338+21 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 338+07 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 338+07 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 337+77 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 337+31 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 337+20 | Passing | | x | | | | | | | | 4 | x | 2 | 8 | |
| 337+18 | Driving | 16 | x | 10 | 17.8 | 52 | | 9 | 10 | 3 | | x | | | |
| 337+03 | Driving/Passing | 16 | x | 20 | 35.6 | 72 | | | 20 | 6 | | x | | | |
| 336+88 | Driving/Passing | 16 | x | 20 | 35.6 | 72 | | 36 | | 6 | | x | | | |
| 336+81 | Passing | 8 | x | 10 | 8.9 | 36 | 9 | 9 | | | | x | | | |
| ***336+73*** | ***Driving*** | ***32*** | x | ***3*** | ***10.7*** | ***70*** | ***24*** | ***4*** | ***3*** | | | x | | | ***Existing Spot Full Depth Repair*** |

***NOTE: Saw Concrete, and Tie Bars will not be measured and paid for seperately, but included in the Bid Item 570-710**

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 24 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | | |
| | | L | x | W | | | | | | | L | x | W | | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | | |
| 336+66 | Passing | 8 | x | 10 | 8.9 | 36 | 18 | | 10 | | | x | | | | |
| 336+51 | Passing | | x | | | | | | | | 4 | x | 2 | 8 | | |
| 336+45 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 336+16 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 336+16 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 335+72 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***335+56*** | ***Passing*** | ***6*** | ***x*** | ***10*** | ***6.7*** | ***32*** | ***18*** | | ***10*** | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 335+55 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 335+11 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 334+96 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 334+81 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 334+81 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***334+03*** | ***Driving*** | ***17*** | ***x*** | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 333+92 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 333+92 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***333+77*** | ***Driving*** | ***17*** | ***x*** | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| ***333+77*** | ***Passing*** | ***6*** | ***x*** | ***10*** | ***6.7*** | ***32*** | ***18*** | | ***10*** | | | x | | | | ***Existing Spot Full Depth Repair*** |
| ***333+50*** | ***Driving*** | ***17*** | ***x*** | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 333+69 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 333+62 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 333+47 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***333+35*** | ***Driving*** | ***17*** | ***x*** | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 333+32 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 333+15 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 333+03 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 332+87 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 332+58 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 331+32 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 330+59 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 330+41 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 330+27 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 330+27 | Passing | | x | | | | | | | | 3 | x | 2 | 6 | | |
| 329+59 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 329+55 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 329+48 | DL & PL | 13 | x | 34 | 49.1 | 94 | | 36 | 20 | 6 | | x | | | | |
| ***329+39*** | ***Driving*** | ***17*** | ***x*** | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| ***329+33*** | ***Passing*** | ***10*** | ***x*** | ***10*** | ***11.1*** | ***40*** | ***18*** | | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| ***328+70*** | ***Driving*** | ***17*** | ***x*** | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 328+66 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 328+21 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 25 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| 328+21 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 328+06 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 327+92 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 327+78 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 327+16 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 327+16 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 326+88 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 326+71 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 326+57 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***326+48*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| ***326+48*** | ***Passing*** | ***6*** | ***x*** | ***10*** | ***6.7*** | ***32*** | ***18*** | | ***10*** | | | x | | | ***Existing Spot Full Depth Repair*** |
| 326+42 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***325+11*** | ***Driving*** | ***33*** | x | ***3*** | ***11.0*** | ***72*** | ***24*** | ***5*** | ***3*** | | | x | | | ***Existing Spot Full Depth Repair*** |
| 325+04 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 324+89 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 324+63 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 324+63 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 324+50 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 323+90 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 323+75 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 323+44 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 322+85 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 322+71 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 322+27 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 321+96 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 321+81 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 321+64 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 321+32 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 320+60 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 320+16 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 320+00 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 319+83 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 318+96 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 318+96 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 318+65 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 318+65 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 318+33 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***317+98*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 317+77 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 317+77 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 26 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | SPALL REPAIR | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| 317+61 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 317+48 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***317+35*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 317+33 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 317+19 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***317+08*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| ***316+77*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 316+59 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***316+40*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 316+13 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***315+98*** | ***Driving*** | ***136*** | x | ***3*** | ***45.3*** | ***278*** | ***108*** | ***4*** | ***21*** | | | x | | | ***Existing Spot Full Depth Repair*** |
| ***315+92*** | ***Passing*** | ***6*** | ***x*** | ***10*** | ***6.7*** | ***32*** | ***18*** | | ***10*** | | | x | | | ***Existing Spot Full Depth Repair*** |
| 315+54 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 315+38 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 315+22 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***315+13*** | ***Passing*** | ***17*** | ***x*** | ***10*** | ***18.9*** | ***54*** | ***18*** | | | ***3*** | | x | | | ***Existing Spot Full Depth Repair*** |
| 314+98 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***314+71*** | ***Passing*** | ***7*** | ***x*** | ***10*** | ***7.8*** | ***34*** | ***18*** | | ***10*** | | | x | | | ***Existing Spot Full Depth Repair*** |
| ***314+60*** | ***Passing*** | ***7*** | ***x*** | ***10*** | ***7.8*** | ***34*** | ***18*** | | ***10*** | | | x | | | ***Existing Spot Full Depth Repair*** |
| 314+48 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 314+11 | DL & PL | 17 | x | 34 | 64.2 | 102 | | 36 | 20 | 6 | | x | | | |
| ***313+70*** | ***Passing*** | ***7*** | ***x*** | ***10*** | ***7.8*** | ***34*** | | | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 313+61 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 312+87 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***312+44*** | ***Driving*** | ***17*** | x | ***3*** | 5.7 | 40 | 12 | 4 | | | | x | | | |
| ***312+33*** | ***Passing*** | ***6*** | ***x*** | ***10*** | ***6.7*** | ***32*** | ***18*** | | ***10*** | | | x | | | ***Existing Spot Full Depth Repair*** |
| 312+24 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***312+07*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 311+81 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 311+81 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***311+80*** | ***Driving*** | ***11*** | x | ***3*** | ***3.7*** | ***28*** | ***7*** | ***2*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 311+69 | Driving/Passing | 17 | x | 10 | 18.9 | 54 | 18 | | | | | x | | | |
| 311+39 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 311+23 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***310+48*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| ***310+22*** | ***Passing*** | ***6*** | ***x*** | ***10*** | ***6.7*** | ***32*** | ***18*** | | ***10*** | | | x | | | ***Existing Spot Full Depth Repair*** |
| ***308+90*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 308+40 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 308+23 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 308+10 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 27 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | | |
| | | L | x | W | | | | | | | L | x | W | | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | | |
| 308+10 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 307+73 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | | |
| 307+67 | Driving | 7 | x | 10 | 7.8 | 34 | 18 | | | | | x | | | | |
| 307+33 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 307+21 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***306+47*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 306+26 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 306+07 | Driving | 8 | x | 10 | 8.9 | 36 | 18 | | 10 | | | x | | | | |
| 305+88 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 305+73 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 305+52 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 305+28 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***305+05*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | |
| 304+98 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | ***Existing Spot Full Depth Repair*** |
| 304+98 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***304+89*** | ***Passing*** | ***8*** | ***x*** | ***10*** | ***8.9*** | ***36*** | ***18*** | | ***10*** | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 304+63 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 304+26 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 303+83 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***303+25*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| ***303+25*** | ***Passing*** | ***6*** | ***x*** | ***10*** | ***6.7*** | ***32*** | ***18*** | | ***10*** | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 303+14 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***302+51*** | ***Passing*** | ***6*** | ***x*** | ***10*** | ***6.7*** | ***32*** | ***18*** | | ***10*** | | | x | | | | ***Existing Spot Full Depth Repair*** |
| ***302+35*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 301+74 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | | |
| ***300+61*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 300+55 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 300+00 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***299+98*** | ***Passing*** | ***17*** | ***x*** | ***10*** | ***18.9*** | ***54*** | | ***18*** | | ***3*** | | x | | | | ***Existing Spot Full Depth Repair*** |
| 299+48 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 299+22 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 298+88 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 298+60 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 298+44 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 298+00 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 296+52 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 293+95 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 293+81 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 293+49 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 293+38 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |

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Data Table
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| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 28 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | | |
| | | L | x | W | | | | | | | L | x | W | | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | | |
| 292+33 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***292+37*** | ***Driving*** | ***17*** | ***x*** | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | ***x*** | | | | ***Existing Spot Full Depth Repair*** |
| ***292+27*** | ***Passing*** | ***17.5*** | ***x*** | ***10*** | ***19.4*** | ***55*** | | ***18*** | | ***3*** | | ***x*** | | | | ***Existing Spot Full Depth Repair*** |
| 292+03 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 291+87 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***291+79*** | ***Driving*** | ***17*** | ***x*** | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | ***x*** | | | | ***Existing Spot Full Depth Repair*** |
| 291+73 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***291+53*** | ***Driving*** | ***37*** | ***x*** | ***3*** | ***12.3*** | ***80*** | ***26*** | ***4*** | ***3*** | | | ***x*** | | | | ***Existing Spot Full Depth Repair*** |
| 291+52 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 291+42 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 291+25 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 291+25 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 291+08 | Passing | 8 | x | 10 | 8.9 | 36 | 9 | 9 | | | | x | | | | |
| ***291+05*** | ***Driving*** | ***17*** | ***x*** | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | ***x*** | | | | ***Existing Spot Full Depth Repair*** |
| ***290+90*** | ***Driving*** | ***17*** | ***x*** | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | ***x*** | | | | ***Existing Spot Full Depth Repair*** |
| 290+63 | Driving | 17 | x | 10 | 18.9 | 54 | | 18 | | 3 | | x | | | | |
| 290+60 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 290+56 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 290+52 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 290+00 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 289+78 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 289+66 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 289+49 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 289+36 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***289+15*** | ***Driving*** | ***17*** | ***x*** | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | ***x*** | | | | ***Existing Spot Full Depth Repair*** |
| 289+08 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 288+78 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 288+48 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 288+04 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 287+88 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 287+69 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 287+50 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 287+30 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 287+02 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 286+86 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 286+64 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 286+27 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 286+12 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 285+94 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 285+81 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 11 | 29 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| 285+67 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 285+51 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 285+36 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***284+93*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 284+61 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 284+40 | DL & PL | 8 | x | 20 | 17.8 | 56 | 36 | | 20 | | | x | | | |
| 284+04 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 283+59 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 283+29 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 283+16 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 283+02 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 282+84 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 282+27 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 281+94 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 281+80 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 281+80 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 281+48 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 280+95 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 280+78 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 280+61 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***280+12*** | ***Driving*** | ***32*** | x | ***3*** | ***10.7*** | ***70*** | ***24*** | ***4*** | ***3*** | | | x | | | ***Existing Spot Full Depth Repair*** |
| 280+02 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 279+82 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 279+41 | Driving | 6 | x | 10 | 6.7 | 32 | 9 | 9 | | | | x | | | |
| ***279+28*** | ***Driving*** | ***13*** | x | ***3*** | ***4.3*** | ***32*** | ***14*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 279+38 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 278+70 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 278+54 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| ***278+49*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 278+41 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***278+22*** | ***Driving*** | ***32*** | x | ***3*** | ***10.7*** | ***70*** | ***24*** | ***4*** | ***3*** | | | x | | | ***Existing Spot Full Depth Repair*** |
| 278+07 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***277+96*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 277+82 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 277+66 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 277+34 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 277+09 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***276+32*** | ***Driving*** | ***32*** | x | ***3*** | ***10.7*** | ***70*** | ***24*** | ***4*** | ***3*** | | | x | | | ***Existing Spot Full Depth Repair*** |
| 275+37 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***275+00*** | ***Driving*** | ***32*** | x | ***3*** | ***10.7*** | ***70*** | ***24*** | ***4*** | ***3*** | | | x | | | ***Existing Spot Full Depth Repair*** |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 11 | 30 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| 274+94 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 274+84 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 274+22 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 273+77 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 273+17 | Driving | | x | | | | | | | | 2 | x | 3 | 6 | |
| 271+99 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 271+85 | Passing | 18 | x | 10 | 20.0 | 56 | 18 | | 10 | | | x | | | |
| 271+76 | Passing | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 271+58 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 271+12 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 270+83 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 270+81 | Driving | 17 | x | 10 | 18.9 | 54 | | 18 | | 3 | | x | | | |
| ***270+51*** | ***Driving*** | ***6*** | x | ***10*** | ***6.7*** | ***32*** | ***9*** | ***9*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| ***270+46*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 270+40 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 269+72 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 269+01 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 268+26 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 267+94 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 267+49 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 267+07 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 265+83 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 265+59 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 265+28 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 264+25 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 264+00 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 261+28 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 260+62 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 259+82 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 259+67 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 259+67 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 259+52 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 258+32 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 258+26 | Driving | 8 | x | 10 | 8.9 | 36 | 18 | | 10 | | | x | | | |
| 258+18 | Passing | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 257+34 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 257+16 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 257+16 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 256+71 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 256+40 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 31 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | SPALL REPAIR | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| 256+24 | Driving | | x | | | | | | | | 15 | x | 2 | 30 | |
| 255+81 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***253+67*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 253+57 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 253+39 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 253+28 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 253+27 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 252+98 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 252+82 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 251+91 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 250+57 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 250+52 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 250+52 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 249+82 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 248+17 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 247+91 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 247+45 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 246+66 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 246+26 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 246+10 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 246+10 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 245+86 | Passing | 8 | x | 10 | 8.9 | 36 | 9 | 9 | | | | x | | | |
| 245+03 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 244+48 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 244+31 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 244+17 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 244+01 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 243+12 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***243+80*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 241+65 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 241+37 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***240+63*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 240+44 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 240+41 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 240+18 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 240+00 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 239+69 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 236+89 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 236+86 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 236+73 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 11 | 32 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| 236+57 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 235+69 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 234+80 | Passing | 17 | x | 10 | 18.9 | 54 | 18 | | 10 | 3 | | x | | | |
| 234+14 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 232+80 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***232+50*** | ***Driving*** | ***32*** | x | ***3*** | ***10.7*** | ***70*** | ***24*** | ***4*** | ***3*** | | | x | | | ***Existing Spot Full Depth Repair*** |
| ***230+23*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 229+78 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 228+04 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 225+46 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 225+45 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 225+45 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 225+01 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 222+94 | Driving | 7 | x | 10 | 7.8 | 34 | 18 | | 10 | | | x | | | |
| 221+12 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 218+91 | Driving/Passing | 8 | x | 20 | 17.8 | 56 | 36 | | 20 | | | x | | | |
| 217+70 | Passing | 17 | x | 10 | 18.9 | 54 | 18 | 18 | | 3 | | x | | | |
| 217+58 | Driving | 7 | x | 10 | 7.8 | 34 | 18 | | 10 | | | x | | | |
| 217+53 | Passing | | x | | | | | | | | 2 | x | 4 | 8 | |
| 217+27 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 216+67 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 216+19 | Passing | 17 | x | 10 | 18.9 | 54 | | 18 | | 3 | | x | | | |
| 215+96 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 215+93 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***214+34*** | ***Passing*** | ***9*** | ***x*** | ***10*** | ***10.0*** | ***38*** | ***18*** | | ***10*** | | | x | | | ***Existing Spot Full Depth Repair*** |
| 212+81 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 211+19 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 211+06 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 210+02 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 209+42 | Driving | 17 | x | 10 | 18.9 | 54 | | 18 | | 3 | | x | | | |
| 209+34 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 209+30 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 209+15 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 209+01 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 208+72 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 208+58 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 208+39 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 208+28 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 208+09 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 207+88 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 33 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| 207+59 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 205+94 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 205+60 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 205+48 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 205+00 | Driving/Passing | 17 | x | 20 | 37.8 | 74 | | 36 | | 6 | | x | | | |
| 204+61 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 204+47 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 204+31 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 203+42 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 201+74 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 201+47 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 201+33 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 201+01 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 200+73 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 200+59 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 200+59 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 199+98 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***199+29*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 199+09 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 198+21 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 197+99 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 197+89 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 197+74 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 197+59 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 197+27 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 197+15 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 197+04 | Passing | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 197+00 | Driving | 17 | x | 10 | 18.9 | 54 | | 18 | | 3 | | x | | | |
| 196+39 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 196+03 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 195+83 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 195+65 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 195+45 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 195+21 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 195+03 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 194+75 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 194+60 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 194+45 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 193+65 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 193+20 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 34 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| 191+59 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 191+38 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 191+25 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 190+94 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 190+81 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 190+65 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 190+34 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 190+02 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 189+87 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***189+57*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 189+45 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 188+58 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 187+77 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 184+58 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 183+58 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 183+41 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 183+23 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 182+87 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 182+55 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 182+41 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 178+79 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 178+19 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 177+76 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 176+23 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 176+22 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 175+51 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 175+07 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 175+05 | Driving | 17 | x | 10 | 18.9 | 54 | | 18 | | 3 | | x | | | |
| 174+95 | Passing | 7 | x | 10 | 7.8 | 34 | 18 | | 10 | | | x | | | |
| ***174+84*** | ***Driving*** | ***32*** | x | ***3*** | ***10.7*** | ***70*** | ***24*** | ***4*** | ***3*** | | | x | | | ***Existing Spot Full Depth Repair*** |
| 174+35 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***174+26*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 173+74 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 173+00 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 172+50 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 171+94 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 171+78 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 171+65 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 171+48 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 171+21 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 11 | 35 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | | |
| | | L | x | W | | | | | | | L | x | W | | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | | |
| 170+77 | Driving/Passing | 6 | x | 20 | 13.3 | 52 | 36 | | 20 | | | x | | | | |
| 170+28 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 169+45 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 169+27 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 168+51 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 168+51 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 168+03 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 167+46 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 167+33 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 166+89 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 166+56 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 166+41 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***166+23*** | ***Driving*** | ***32*** | x | ***3*** | ***10.7*** | ***70*** | ***24*** | ***4*** | ***3*** | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 165+82 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 163+92 | Driving | 16 | x | 10 | 17.8 | 52 | | 9 | 10 | 3 | | x | | | | |
| 163+76 | Driving | 15 | x | 10 | 16.7 | 50 | | | 10 | 3 | | x | | | | |
| 163+61 | Driving | 15 | x | 10 | 16.7 | 50 | | | 10 | 3 | | x | | | | |
| 163+46 | Driving | 15 | x | 10 | 16.7 | 50 | | | 10 | 3 | | x | | | | |
| 163+31 | Driving | 15 | x | 10 | 16.7 | 50 | | | 10 | 3 | | x | | | | |
| 163+15 | Driving | 16 | x | 10 | 17.8 | 52 | | 9 | | 3 | | x | | | | |
| 163+77 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 163+62 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 163+49 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 163+35 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 163+20 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 162+89 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 162+73 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 162+61 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 162+46 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 161+89 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 161+58 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 160+40 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 160+40 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 160+91 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 160+79 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 160+79 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 160+67 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 160+67 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 160+33 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 160+09 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 36 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| 159+30 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 159+20 | Passing | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 158+48 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 158+10 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 157+83 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 157+35 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***156+31*** | ***Driving*** | ***32*** | x | ***3*** | ***10.7*** | ***70*** | ***24*** | ***4*** | ***3*** | | | x | | | ***Existing Spot Full Depth Repair*** |
| ***154+30*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 155+10 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 152+91 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 152+86 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 152+42 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***152+30*** | ***Driving*** | ***18*** | x | ***3*** | ***6.0*** | ***42*** | ***13*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 152+07 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 151+37 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 150+92 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 148+53 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 148+03 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***147+86*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 147+63 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 147+48 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 147+01 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 146+88 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***146+80*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 146+14 | Driving | 17 | x | 10 | 18.9 | 54 | | 18 | | 3 | | x | | | |
| 146+06 | Passing | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 146+00 | Passing | | x | | | | | | | | 3 | x | 2 | 6 | |
| 145+38 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 145+24 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 145+06 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 144+96 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 144+03 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 143+15 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 142+70 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 142+35 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 142+10 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 140+65 | Driving/Passing | 10 | x | 20 | 22.2 | 60 | 36 | | 20 | 2 | | x | | | |
| ***138+41*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 138+00 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***137+25*** | ***Driving*** | ***17*** | x | ***3*** | 5.7 | 40 | 12 | 4 | | | | x | | | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 37 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | | |
| | | L | x | W | | | | | | | L | x | W | | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | | |
| 135+01 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 134+77 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***133+66*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 129+40 | Driving | 17 | x | 10 | 18.9 | 54 | 18 | | | 3 | | x | | | | |
| 129+05 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 128+47 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***123+62*** | ***Driving*** | ***17*** | x | ***3*** | 5.7 | 40 | 12 | 4 | | | | x | | | | |
| 122+25 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***121+09*** | ***Driving*** | ***32*** | x | ***3*** | ***10.7*** | ***70*** | ***24*** | ***4*** | ***3*** | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 120+77 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | | |
| ***120+67*** | ***Passing*** | ***17*** | ***x*** | ***10*** | ***18.9*** | ***54*** | | ***18*** | | ***3*** | | x | | | | ***Existing Spot Full Depth Repair*** |
| ***120+09*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 119+26 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 118+23 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 117+34 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 116+20 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***116+29*** | ***Driving*** | ***32*** | x | ***3*** | 10.7 | 70 | 28 | | 3 | | | x | | | | |
| ***114+97*** | ***Driving*** | ***17*** | x | ***3*** | 5.7 | 40 | 12 | 4 | | | | x | | | | |
| 113+34 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 112+01 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***110+95*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 109+91 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 109+28 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 108+26 | Passing | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | | |
| 108+14 | Driving/Passing | 6 | x | 20 | 13.3 | 52 | 36 | | 20 | | | x | | | | |
| 106+23 | Driving | 6 | x | 10 | 6.7 | 32 | | 9 | 10 | | | x | | | | |
| 106+17 | Driving/Passing | 17 | x | 24 | 45.3 | 82 | | 18 | | 6 | | x | | | | |
| 104+03 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 103+87 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***103+46*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 102+81 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 101+78 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 101+73 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 100+31 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 99+66 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 98+70 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 98+54 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 94+49 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 94+45 | Passing | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | | |
| 93+79 | Driving/Passing | 7 | x | 20 | 15.6 | 54 | 36 | | 20 | | | x | | | | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 38 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | | |
| | | L | x | W | | | | | | | L | x | W | | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | | |
| 92+66 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 88+07 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 87+52 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 84+34 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 84+06 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 80+44 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 79+69 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 79+69 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 77+28 | Passing | | x | | | | | | | | 15 | x | 2 | 30 | | |
| 77+15 | Passing | 17 | x | 10 | 18.9 | 54 | | 18 | | 3 | | x | | | | |
| 73+44 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 68+47 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 67+52 | DL & PL | 17 | x | 24 | 45.3 | 82 | | 18 | | 6 | | x | | | | |
| 65+20 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 63+84 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***63+17*** | ***Driving*** | ***32*** | x | ***3*** | ***10.7*** | ***70*** | ***24*** | ***4*** | ***3*** | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 63+84 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 60+21 | Driving | 17 | x | 10 | 18.9 | 54 | 18 | | | 3 | | x | | | | |
| ***59+53*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| ***59+21*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| ***57+57*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 55+78 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 53+86 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 52+02 | Driving | 10 | x | 10 | 11.1 | 40 | 18 | | 10 | 2 | | x | | | | |
| 52+02 | Passing | 13 | x | 14 | 20.2 | 54 | 22 | | 10 | 3 | | x | | | | |
| 49+56 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 49+42 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 47+98 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 47+88 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 47+84 | Driving | 17 | x | 10 | 18.9 | 54 | | 18 | | 3 | | x | | | | |
| 47+72 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***46+01*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 45+92 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 45+77 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 41+94 | Driving/Passing | 8 | x | 20 | 17.8 | 56 | 36 | | 20 | | | x | | | | |
| ***35+08*** | ***Passing*** | ***34*** | x | ***10*** | ***37.8*** | ***88*** | ***18*** | | ***10*** | ***6*** | | x | | | | ***Existing Spot Full Depth Repair*** |
| 33+48 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 32+00 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 31+95 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 31+84 | Driving/Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 11 | 39 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | | |
| | | L | x | W | | | | | | | L | x | W | | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | | |
| 25+22 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 24+62 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| ***22+99*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| ***22+35*** | ***Driving*** | ***32*** | x | ***3*** | ***10.7*** | ***70*** | ***24*** | ***4*** | ***3*** | | | x | | | | ***Existing Spot Full Depth Repair*** |
| ***17+13*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 19+22 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 18+73 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 18+01 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 17+12 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 16+97 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 16+67 | Driving | 10 | x | 10 | 11.1 | 40 | 18 | | 10 | 2 | | x | | | | |
| 16+57 | Driving/Passing | 10 | x | 24 | 26.7 | 68 | 36 | | 20 | 2 | | x | | | | |
| 13+01 | Driving/Passing | 6 | x | 20 | 13.3 | 52 | 36 | | 20 | | | x | | | | |
| 12+02 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 11+37 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 11+06 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 10+25 | Passing | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | | |
| 10+05 | Ramp | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | | |
| ***10+00*** | ***Driving*** | ***18*** | x | ***3*** | ***6.0*** | ***42*** | ***13*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 07+87 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | | |
| ***05+09*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***13*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 02+45 | Driving/Passing | 6 | x | 20 | 13.3 | 52 | 36 | | 20 | | | x | | | | |
| ***02+34*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***13*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 01+66 | Driving/Passing | 7 | x | 20 | 15.6 | 54 | 36 | | 20 | | | x | | | | |
| 00+68 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | | |
| **EQUATION STATION 0+00 AHD = STATION 796+83 BK** | | | | | | | | | | | | | | | | |
| 796+83 | Centerline | 913 | x | 4 | 405.8 | 1834 | 1,449 | 8 | 244 | | | x | | | | CENTERLINE JOINT REPAIR |
| ***795+77*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | | ***Existing Spot Full Depth Repair*** |
| 795+72 | Driving | 8 | x | 10 | 8.9 | 36 | 18 | | 10 | | | x | | | | |
| 795+31 | Driving | 17 | x | 10 | 18.9 | 54 | | 18 | | 3 | | x | | | | |
| 794+88 | Driving | 17 | x | 10 | 18.9 | 54 | | 18 | | 3 | | x | | | | |
| 794+80 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 794+44 | Driving | 17 | x | 10 | 18.9 | 54 | | 18 | | 3 | | x | | | | |
| 791+51 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 791+19 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 791+09 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 790+59 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 790+16 | Ramp | | x | | | | | | | | 2 | x | 2 | 4 | | |
| 788+27 | Ramp | | x | | | | | | | | 3 | x | 2 | 6 | | |
| 788+27 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | | |
| 788+27 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 11 | 40 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| 787+85 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 782+26 | Ramp | 17 | x | 12 | 22.7 | 58 | | 20 | | 3 | | x | | | |
| 782+11 | Gore | | x | | | | | | | | 4 | x | 2 | 8 | |
| 781+83 | Centerline | 3780 | x | 4 | 1680.0 | 7568 | 6,024 | 8 | 1008 | | | x | | | CENTERLINE JOINT REPAIR |
| 781+83 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 781+45 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 780+89 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 780+81 | Driving | 6 | x | 10 | 6.7 | 32 | 18 | | 10 | | | x | | | |
| 780+61 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 780+47 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 780+45 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 779+87 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 778+94 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 778+69 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| ***778+37*** | ***Driving*** | ***19*** | x | ***3*** | ***6.3*** | ***44*** | ***14*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 778+07 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 776+52 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 775+54 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 773+07 | Driving | 6 | x | 10 | 6.7 | | 18 | | 10 | | | x | | | |
| 772+71 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 772+54 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 772+54 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 772+41 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 770+76 | Ramp | | x | | | | | | | | 15 | x | 2 | 30 | |
| 770+51 | Ramp | | x | | | | | | | | 5 | x | 2 | 10 | |
| 770+43 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 770+06 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 769+99 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 769+75 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 769+69 | Ramp | | x | | | | | | | | 12 | x | 2 | 24 | |
| 769+37 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 769+29 | Ramp | | x | | | | | | | | 12 | x | 2 | 24 | |
| 769+05 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 768+71 | Ramp | | x | | | | | | | | 4 | x | 2 | 8 | |
| 768+51 | Ramp | | x | | | | | | | | 12 | x | 2 | 24 | |
| 768+41 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 768+41 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 768+19 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 767+88 | Ramp | | x | | | | | | | | 8 | x | 2 | 16 | |
| 767+75 | Ramp | | x | | | | | | | | 4 | x | 2 | 8 | |

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Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 11 | 41 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| 767+49 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 767+41 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 767+31 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 767+17 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 767+01 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 766+91 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 766+82 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 766+82 | Ramp | | x | | | | | | | | 8 | x | 2 | 16 | |
| 766+67 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 766+47 | Ramp | | x | | | | | | | | 15 | x | 2 | 30 | |
| 766+28 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 766+12 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 766+02 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 765+60 | Ramp | | x | | | | | | | | 2 | x | 2 | 4 | |
| 765+49 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 765+41 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 765+22 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 765+14 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 765+05 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 764+94 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 764+83 | Driving | 17 | x | 10 | 18.9 | 54 | | 18 | | 3 | | x | | | |
| 764+83 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 764+66 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 764+60 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 764+40 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 764+17 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 764+10 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 764+05 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 763+98 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 763+83 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 763+75 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 763+60 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 763+31 | Ramp | | x | | | | | | | | 10 | x | 2 | 20 | |
| 763+31 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 763+31 | Ramp | | x | | | | | | | | 174 | x | 2 | 348 | |
| 762+53 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 762+15 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 760+81 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 760+05 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 759+45 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |

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Data Table
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| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 11 | 42 |

| STATION | LANE | CONCRETE PAVEMENT REPAIR IM-6-029(134)147 - NORTHBOUND 10 IN CONCRETE | | | | | | | | | SPALL REPAIR | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIMENSIONS | | | CONCRETE PAVEMENT REPAIR - 10" FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | DIMENSIONS | | | AREA | |
| | | L | x | W | | | | | | | L | x | W | | |
| | | FT | x | FT | SY | LF | EA | EA | LF | EA | FT | x | FT | SF | |
| 756+43 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 756+26 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 755+89 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 754+09 | Passing | | x | | | | | | | | 2 | x | 2 | 4 | |
| 752+77 | Driving | | x | | | | | | | | 18 | x | 2 | 36 | |
| ***752+29*** | ***Driving*** | ***17*** | x | ***3*** | ***5.7*** | ***40*** | ***12*** | ***4*** | | | | x | | | ***Existing Spot Full Depth Repair*** |
| 751+26 | Driving | | x | | | | | | | | 15 | x | 2 | 30 | |
| 750+53 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 750+20 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 750+10 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 749+61 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 749+37 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 749+21 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 749+17 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 748+97 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 748+75 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 748+48 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |
| 747+89 | Driving | | x | | | | | | | | 2 | x | 2 | 4 | |

| CONCRETE PAVEMENT REPAIR TOTALS | | | | | | SPALL REPAIR TOTALS |
|---|---|---|---|---|---|---|
| CONCRETE PAVEMENT REPAIR - FULL DEPTH - DOWELED | *SAW CONCRETE | DEFORMED DOWEL BARS | SMOOTH DOWEL BARS | DOWELED JOINT CONTRACTION ASSEMBLY | *TIE BARS | AREA |
| SY | LF | EA | EA | LF | EA | SF |
| 24276 | 107791 | 79635 | 1112 | 14266 | 196 | 7104 |

***NOTE: Saw Concrete, and Tie Bars will not be measured and paid for seperately, but included in the Bid Item 570-710**

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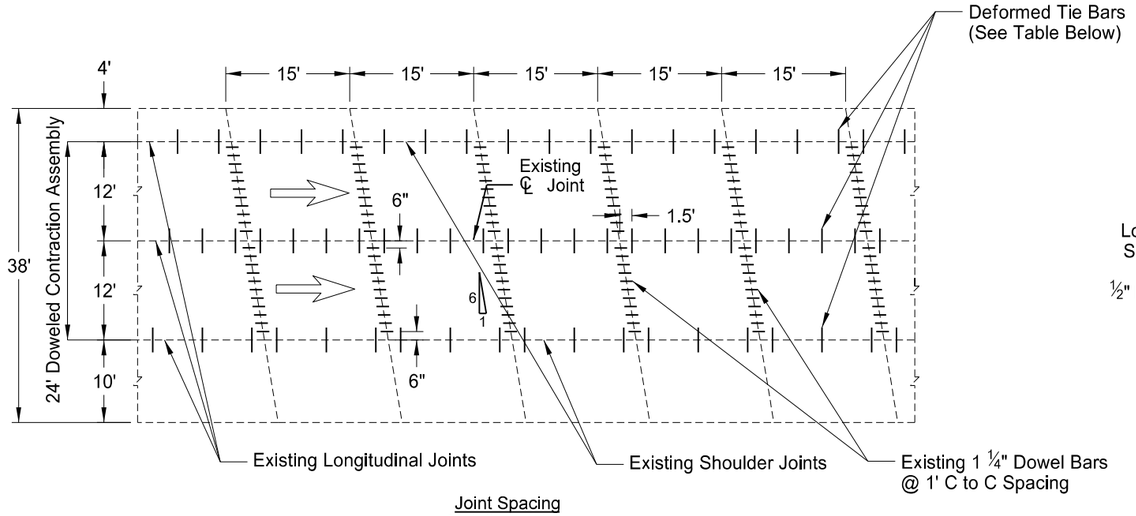
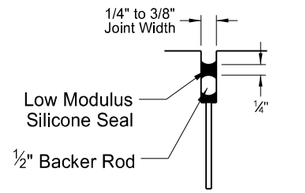
Concrete Pavement Repair
Data Table
RP 147.221 to RP 161.700

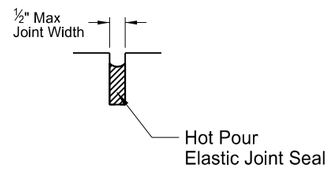
| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 20 | 1 |




Joint Spacing
Mainline Joints
Uniform Joint spacing 15'

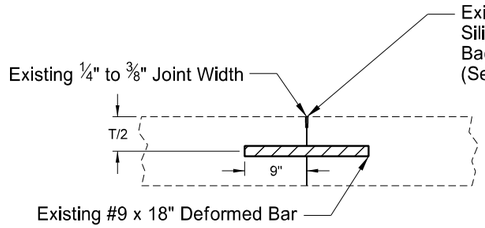



Existing
Transverse Joint Detail

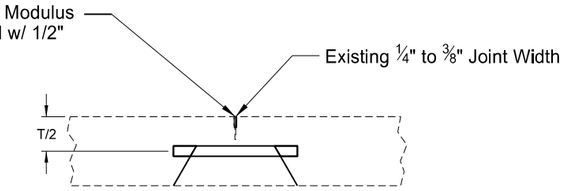



Existing Longitudinal
Joint Detail

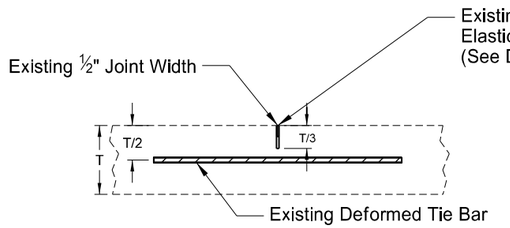
| Longitudinal Joint Tie Bar Size and Length | | Spacing |
|---|---|---|
| Pavement Depth | 10" | 10" |
| ℄ ML & Ramps | #6 x 3' - 0" | 4' - 0" C-C |
| 10' SHLDR | #5 x 2' - 6" | 6' - 0" C-C |
| 4' SHLDR | #5 x 2' - 6" | 5' - 0" C-C |



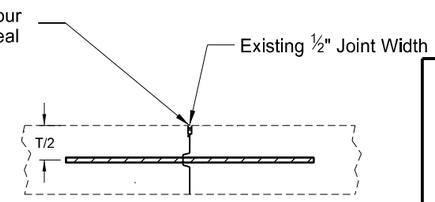

Existing Deformed Bar (1'-0" C-C)




Existing Doweled Tranverse Joint




Existing Longitudinal Joint Seal
(All Sawed and Tied Joints)

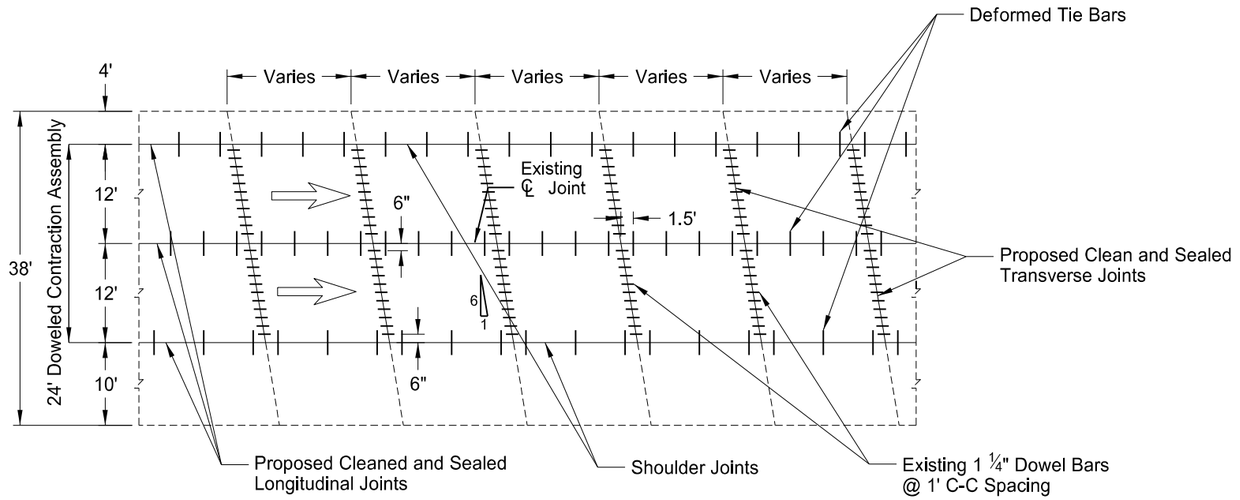



Existing Longitudinal Joint Silicone Seal
(At Ramps - Non Keyed Joints)

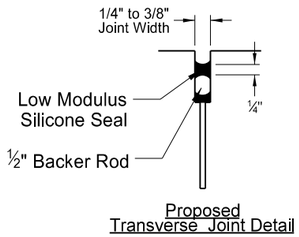


Existing PCC Pavement Joint Details
Skewed with Uniform Joint Spacing
RP 147.221 to RP 161.700

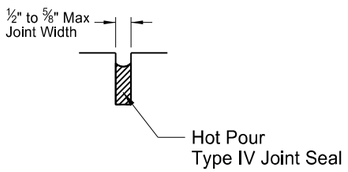
| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 20 | 2 |



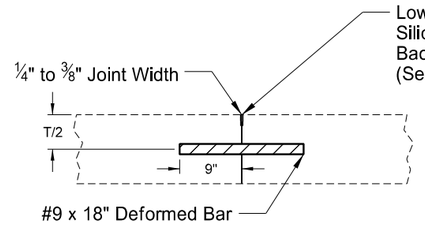

Joint Cleaning and Sealing
Mainline Joints
Joint Spacing Varies from CPR Repairs
Joint Layout for RP 147.221 to RP 152.337



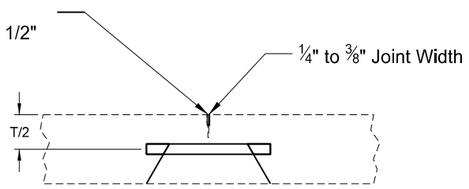

Proposed Transverse Joint Detail



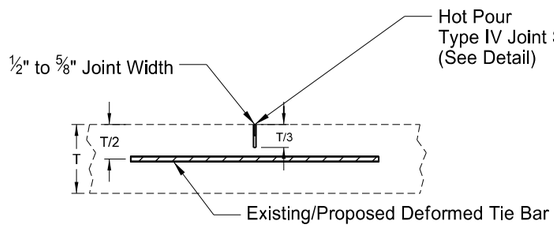

Proposed Longitudinal Joint Detail



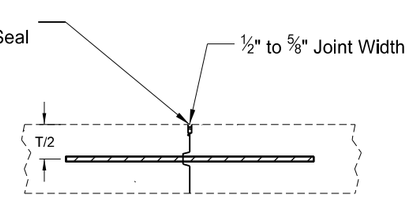

Existing Deformed Bar (1'-0" C to C)




Doweled Tranverse Joint




Proposed Longitudinal Joint Seal
(All Sawed and Tied Joints)




Proposed Longitudinal Joint Silicone Seal
(At Ramps - Non Keyed Joints)

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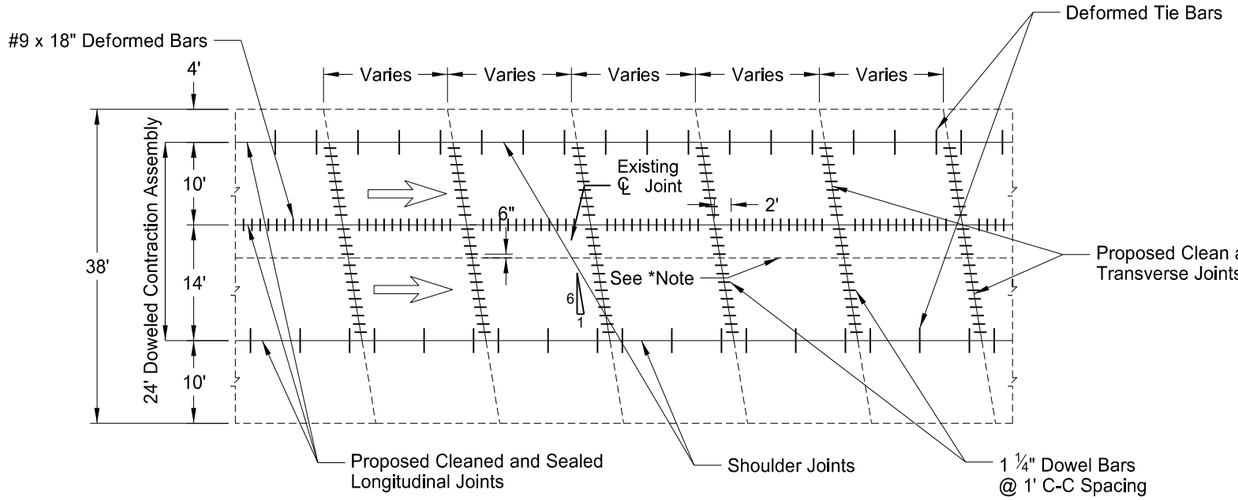
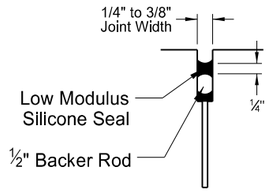
Proposed PCC Pavement Joint Details
Skewed with Varied Joint Spacing
RP 147.221 to RP 152.337

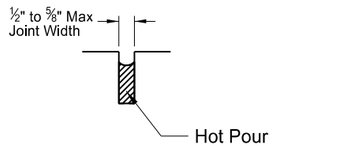
| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 20 | 3 |



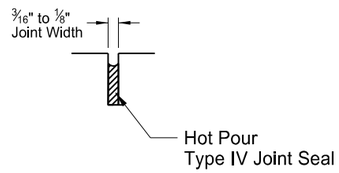

Joint Cleaning and Sealing
Mainline Joints
Joint Spacing Varies from CPR and ℄ Joint Repair
Joint Layout for RP 152.337 to RP 161.700



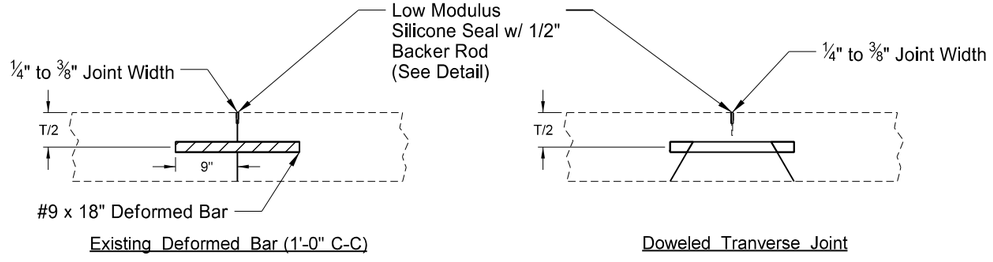

Proposed
Transverse Joint Detail




Proposed Longitudinal
Joint Detail
4' and 10' Shoulder Joints

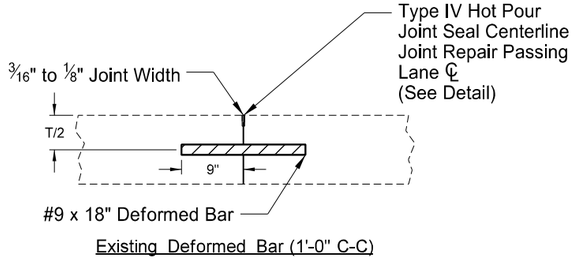



Proposed Longitudinal
Joint Detail
Passing Lane ℄ Joint

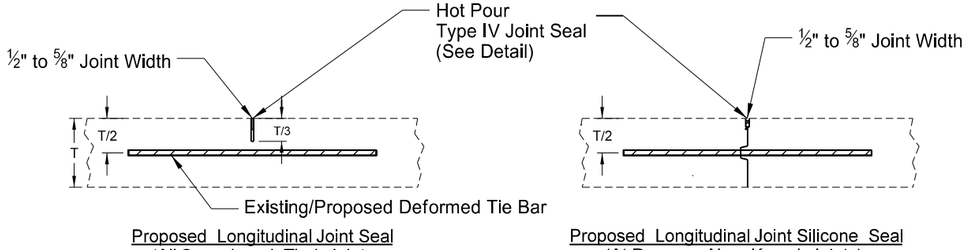



Existing Deformed Bar (1'-0" C-C)

Doweled Tranverse Joint




Existing Deformed Bar (1'-0" C-C)




Proposed Longitudinal Joint Seal
(All Sawed and Tied Joints
4' Shoulder and 10' Shoulder)




Proposed Longitudinal Joint Silicone Seal
(At Ramps - Non Keyed Joints)

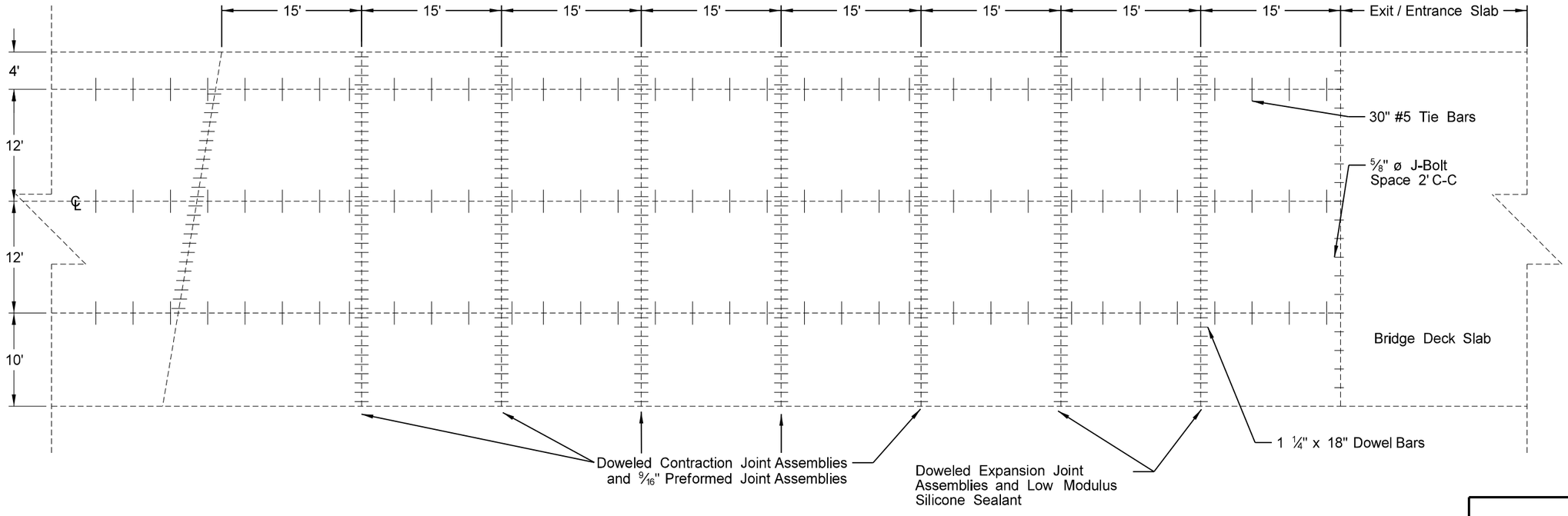
*Note: All reinforcement not shown for clarity.
Refer to Section 20 Sheets 7-11



Proposed PCC Pavement Joint Details
Skewed with Varied Joint Spacing
RP 152.337 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 20 | 4 |

J Bolt and Doweled Expansion and Contraction Joint Locations at Structures
#029-148.171 R
#029-152.750 R
#029-160.927 R
#029-160.928 L




Skewed Transverse Joints & Rumble Strip Detail

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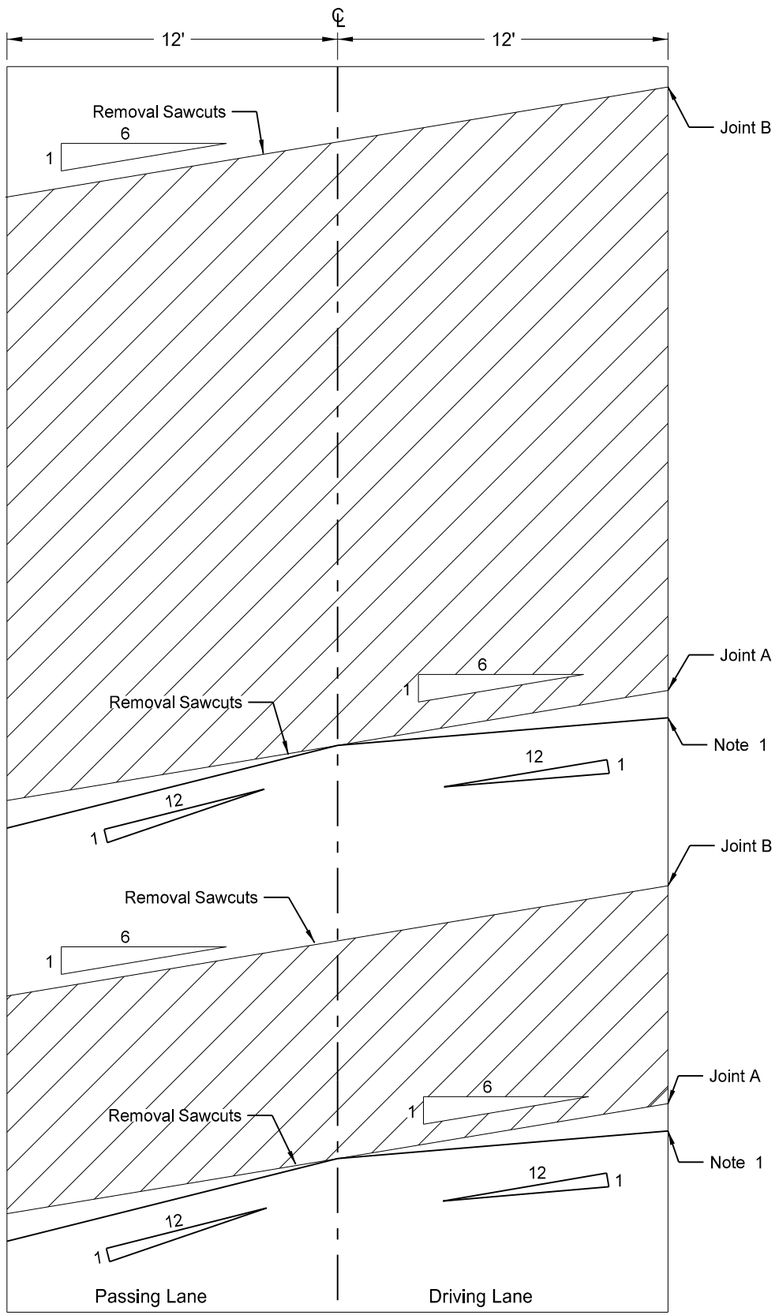
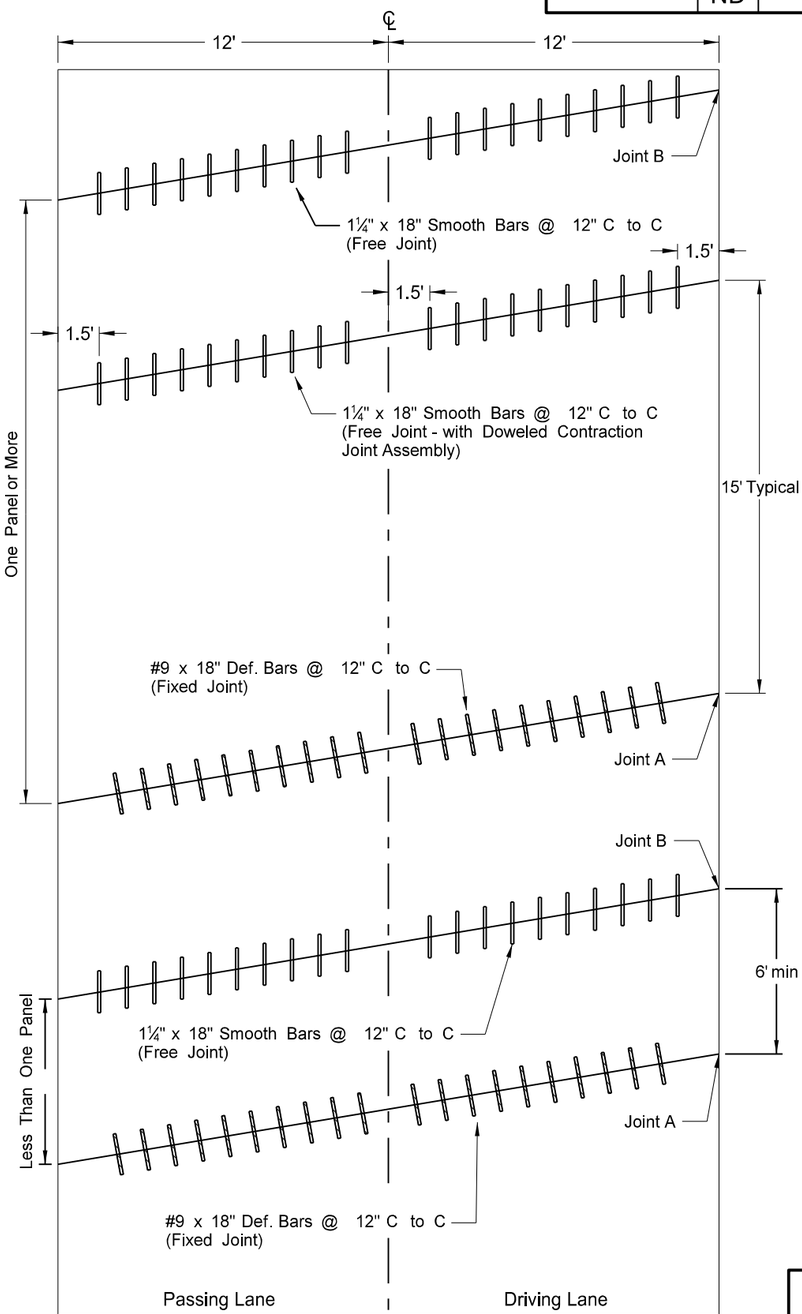
Existing Pavement Joints
At Structure Ends

RP 147.221 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 20 | 5 |




Removal




Proposed

PCC Removal

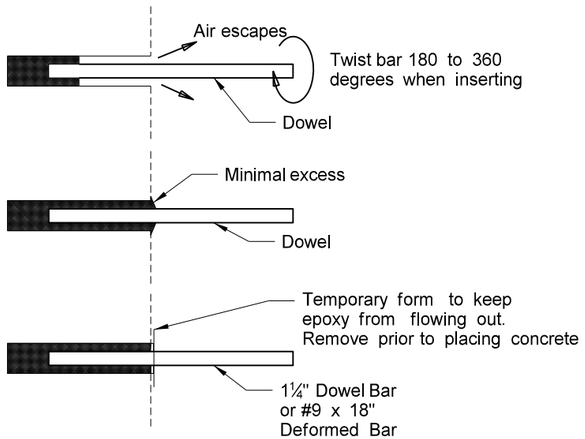
Notes:

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

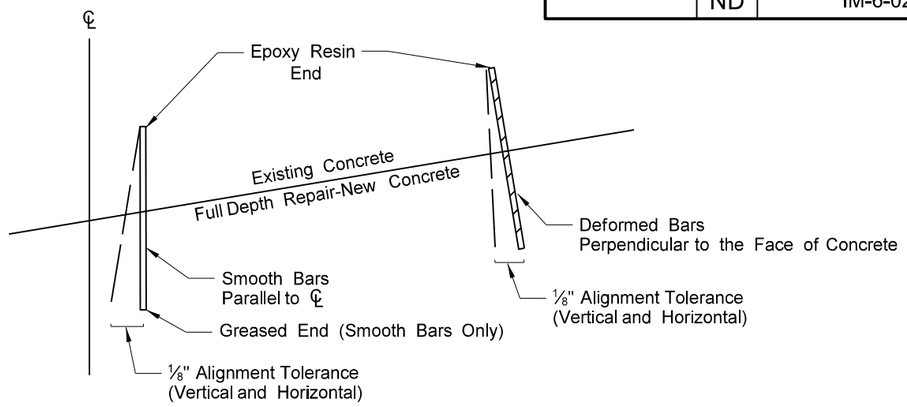


Removal of Concrete & Dowel Bar Placement - Full Depth Repair
Skewed Joint
RP 147.221 to RP 152.337

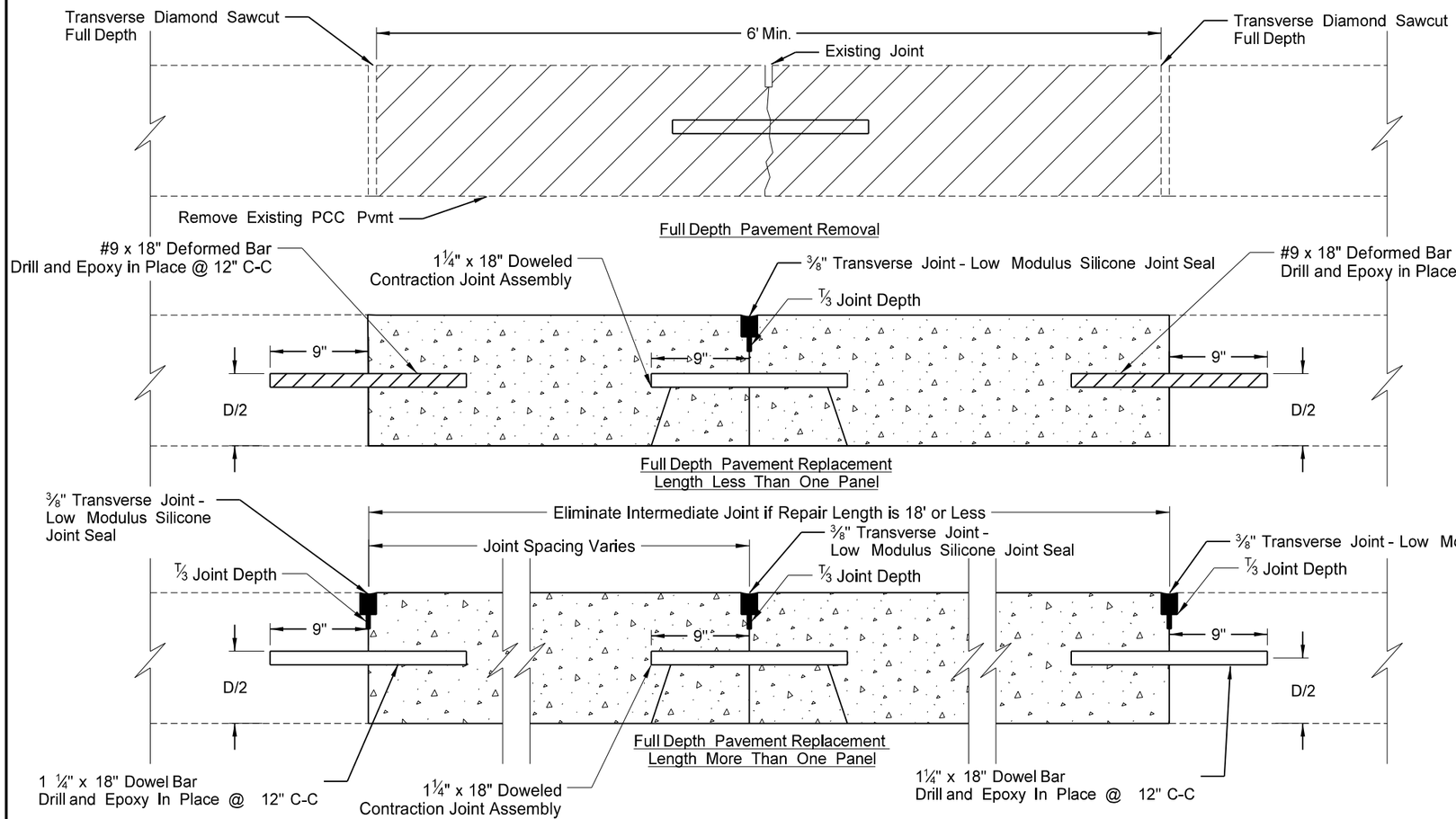
| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 20 | 6 |




Dowel & Epoxy Installation
(Smooth or Deformed Bars)




Dowel Alignment Tolerance




Notes:

1. Variables:
   D = Depth of Pavement
2. Removal and replacement also applies to full depth repairs at cracks.
3. Place smooth dowel bars in repair joint which is farthest away from the next transverse joint or working random crack. If distance is equal for both repair joints, place smooth dowels on approach side of patch.
4. Space Dowel / Deformed Bars, or Baskets @ 12" C-C and 18" from longitudinal joints; total of 10 bars per 12' lane.
5. Grease the exposed end of 1¼" x 18" smooth bar.

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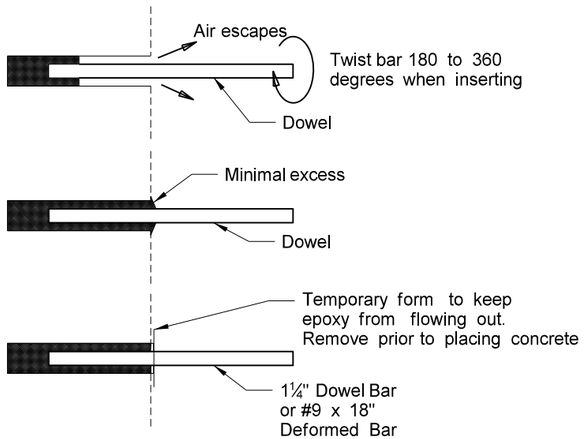
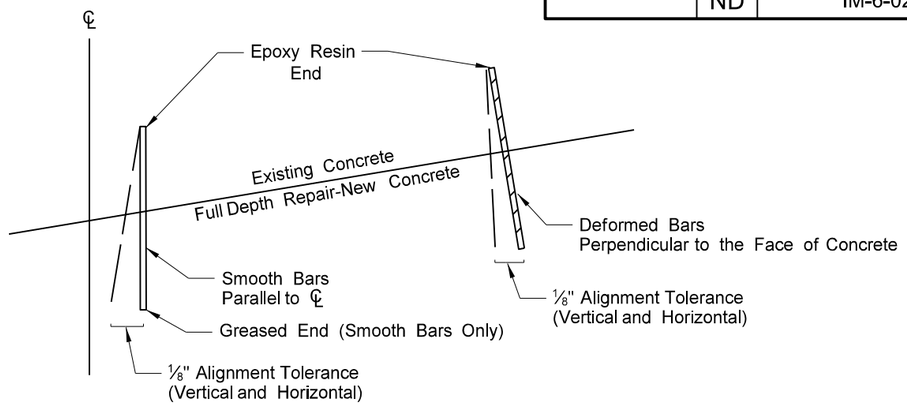
Concrete Pavement Repair - Full Depth
Non-Reinforced PCC Pavement - Doweled
RP 147.221 to RP 152.337

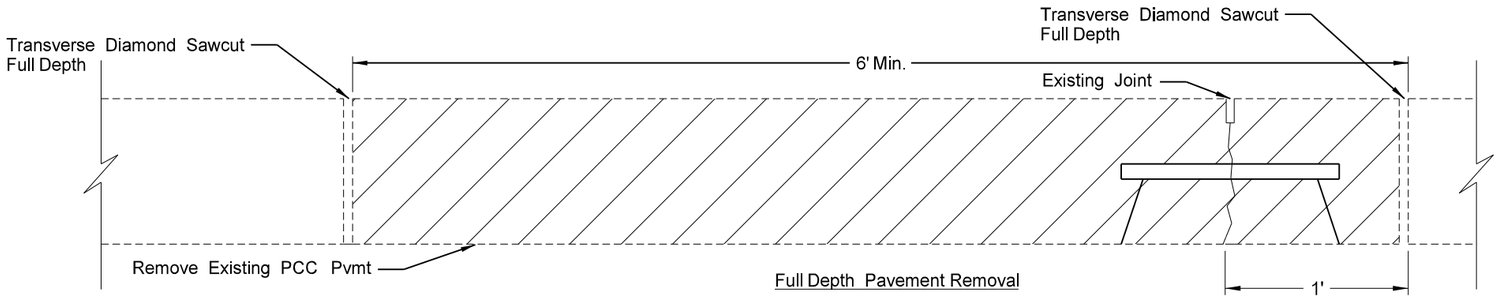
| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 20 | 7 |



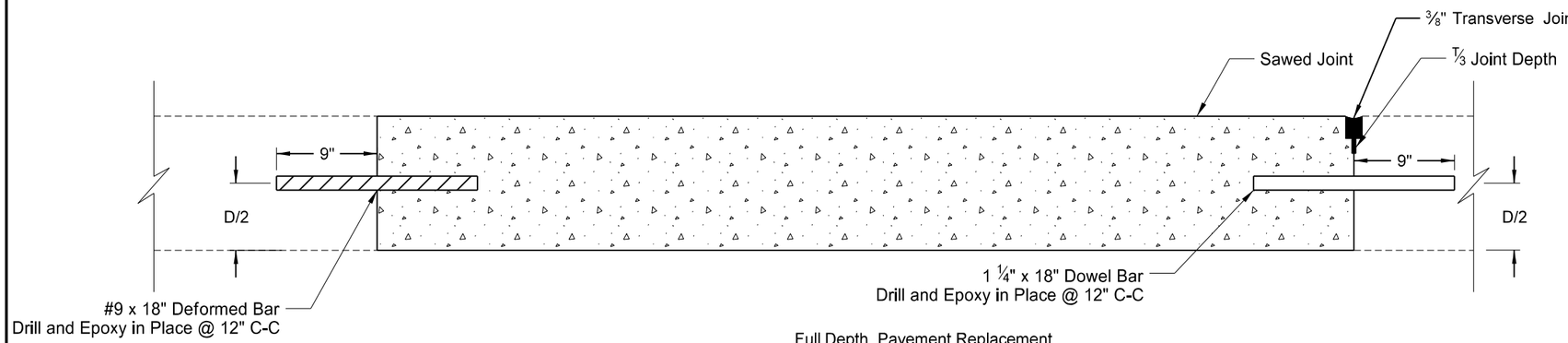

Dowel & Epoxy Installation
(Smooth or Deformed Bars)




Dowel Alignment Tolerance




Full Depth Pavement Removal




Full Depth Pavement Replacement
Length Less Than One Panel

Notes:

1. Variables:
   D = Depth of Pavement
2. Removal and replacement also applies to full depth repairs at cracks.
3. Place smooth dowel bars in repair joint which is farthest away from the next transverse joint or working random crack. If distance is equal for both repair joints, place smooth dowels on approach side of patch.
4. Space Dowel / Deformed Bars, or Baskets @ 12" C-C and 18" from longitudinal joints; total of 10 bars per 12' lane.
5. Grease the exposed end of 1¼" x 18" smooth bar.

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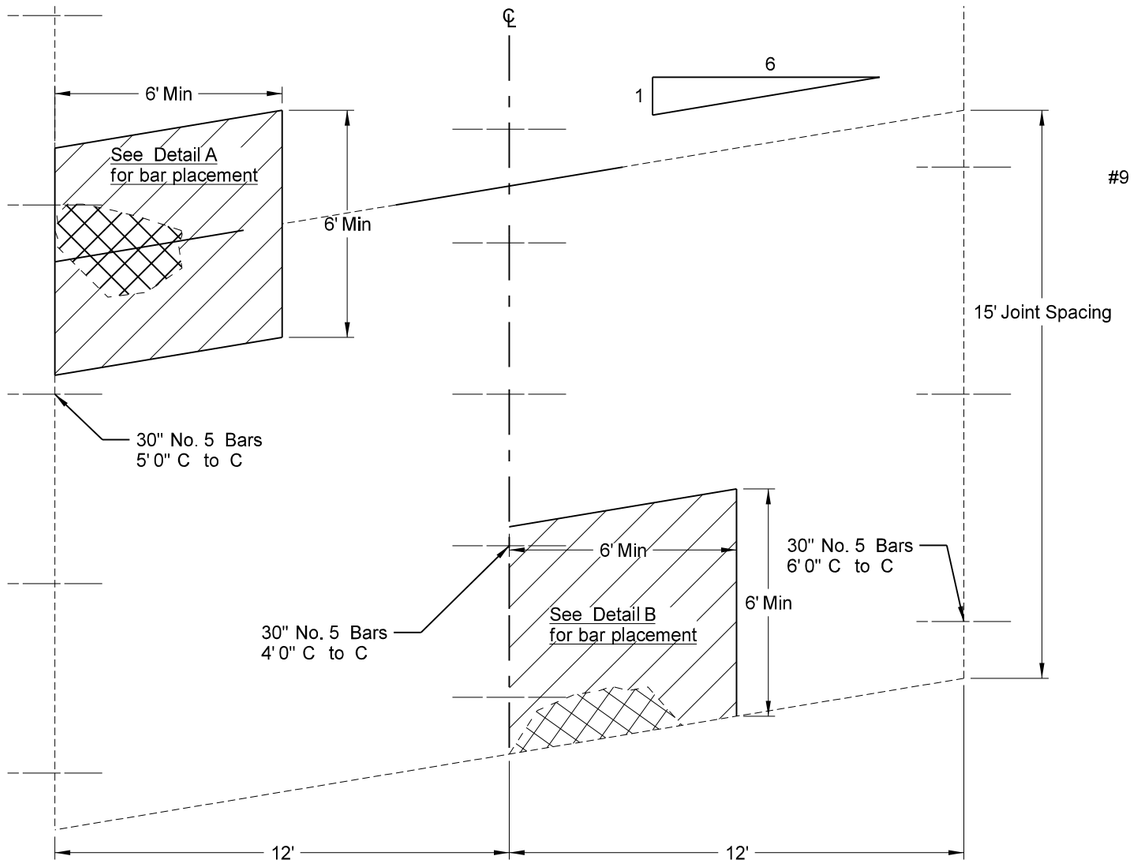
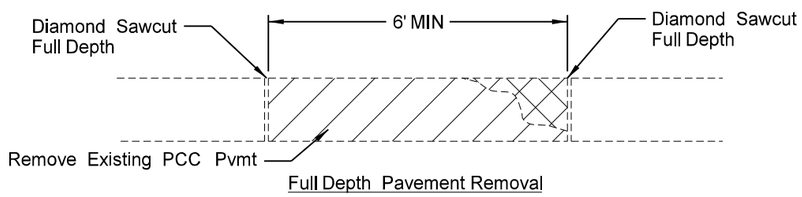
Concrete Pavement Repair - Full Depth
Non-Reinforced PCC Pavement - Doweled
RP 147.221 to RP 152.337

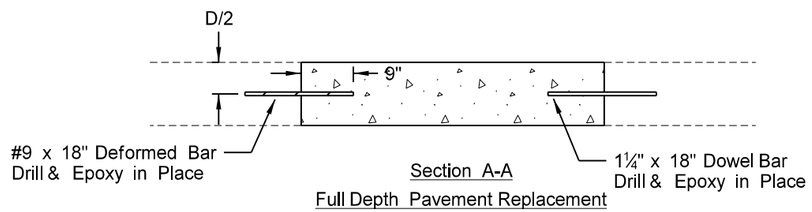
| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 20 | 8 |



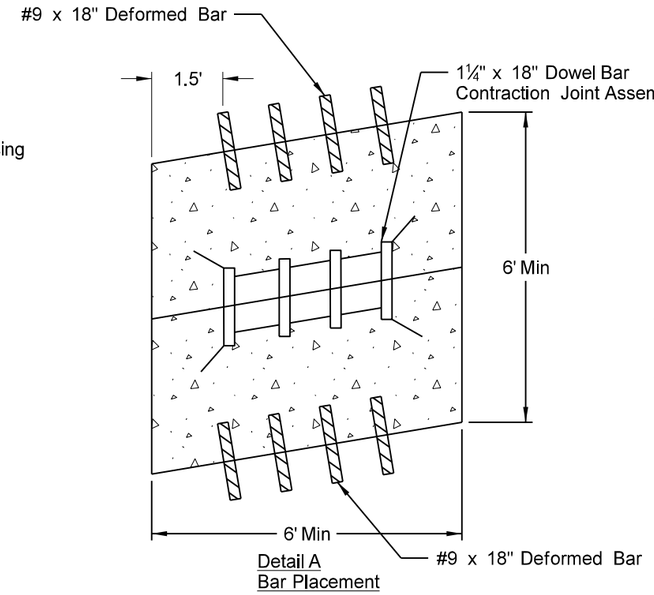

Full Depth Repairs
Removal Areas



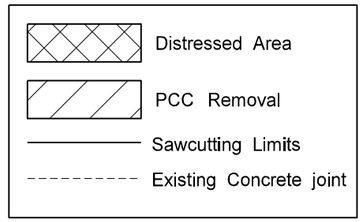

Full Depth Pavement Removal




Full Depth Pavement Replacement

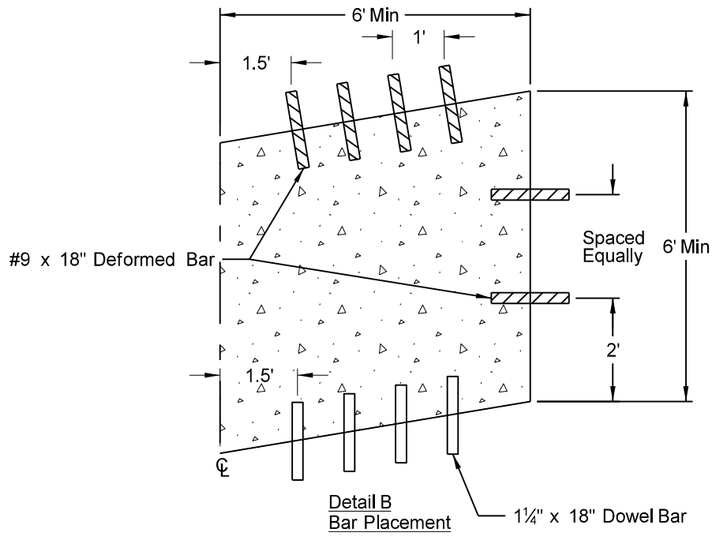



Detail A
Bar Placement




Notes

1. Variables
   D = Depth of Pavement
2. Space Dowel/Deformed Bars, or Baskets @ 12" C-C and 18" from longitudinal joints.
3. Space Deformed Bars along construction joint 2' from transverse joint and 2' C-C.




Detail B
Bar Placement

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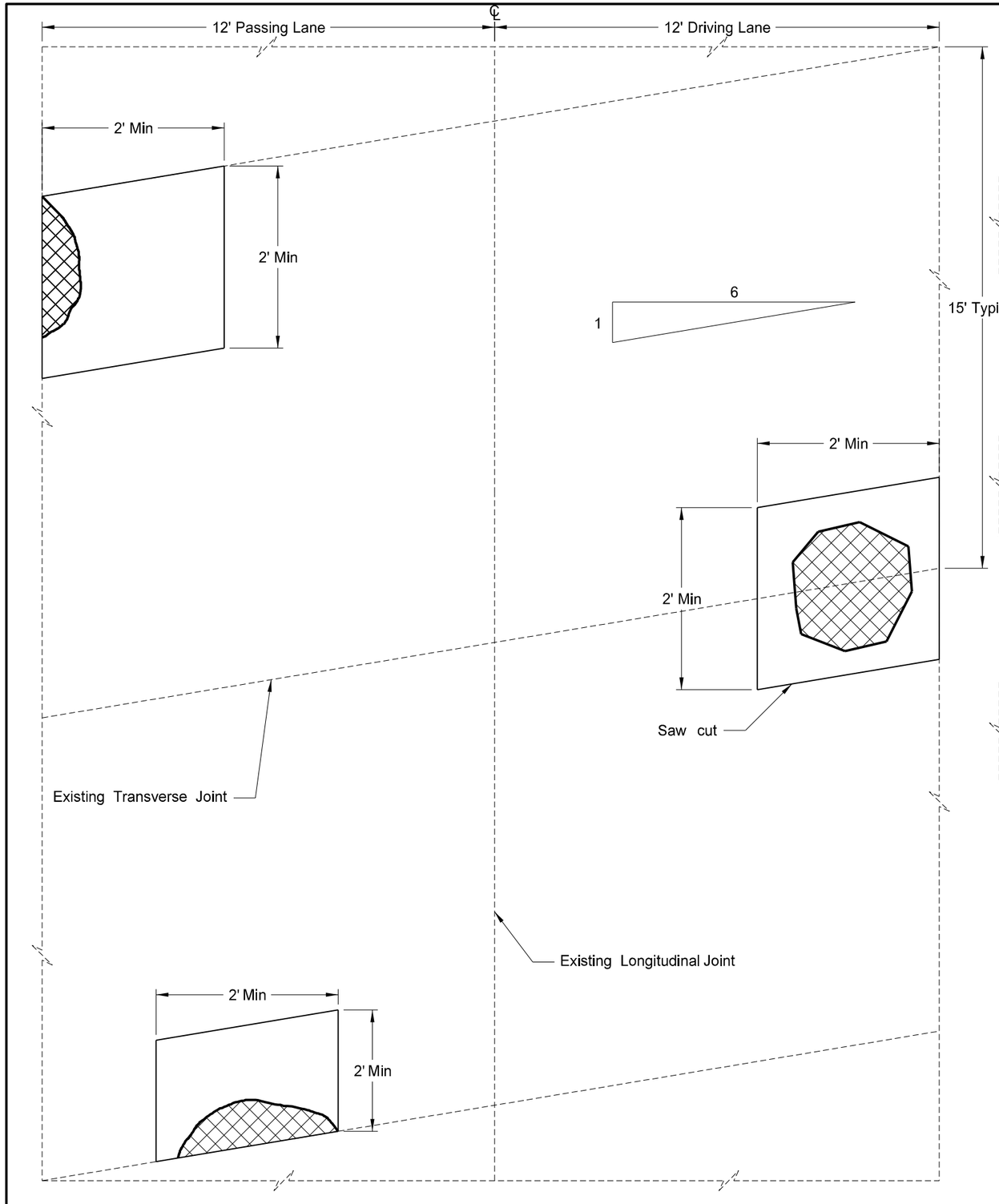
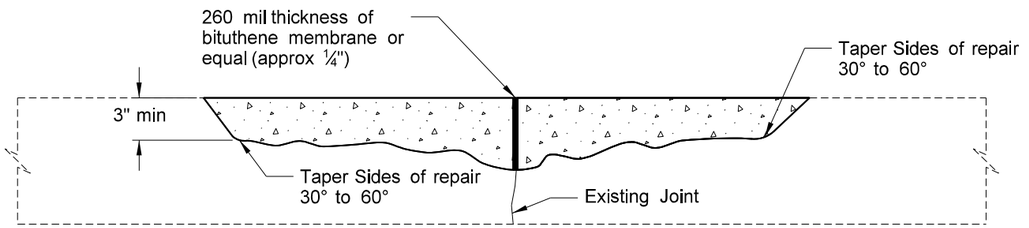
Full Depth Repair Details
Skewed Joint
RP 147.221 to RP 152.337

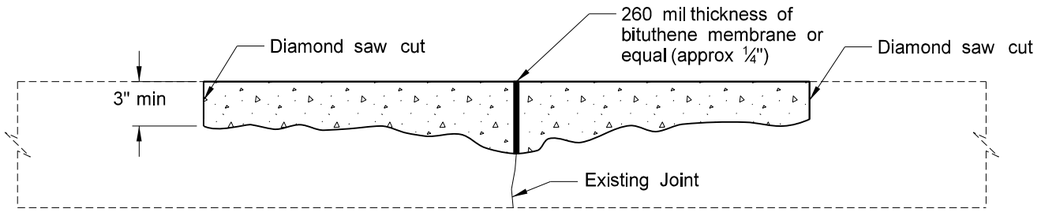
| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 20 | 9 |



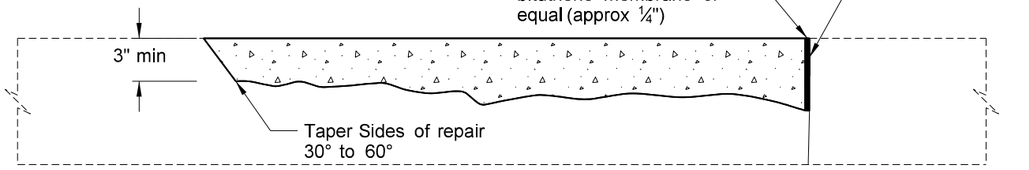

Cross Section - Repair Area

Milling



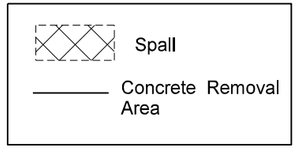

Cross Section - Repair Area

Chipping




Cross Section - Repair Area

Milling




Plan View (not to scale)

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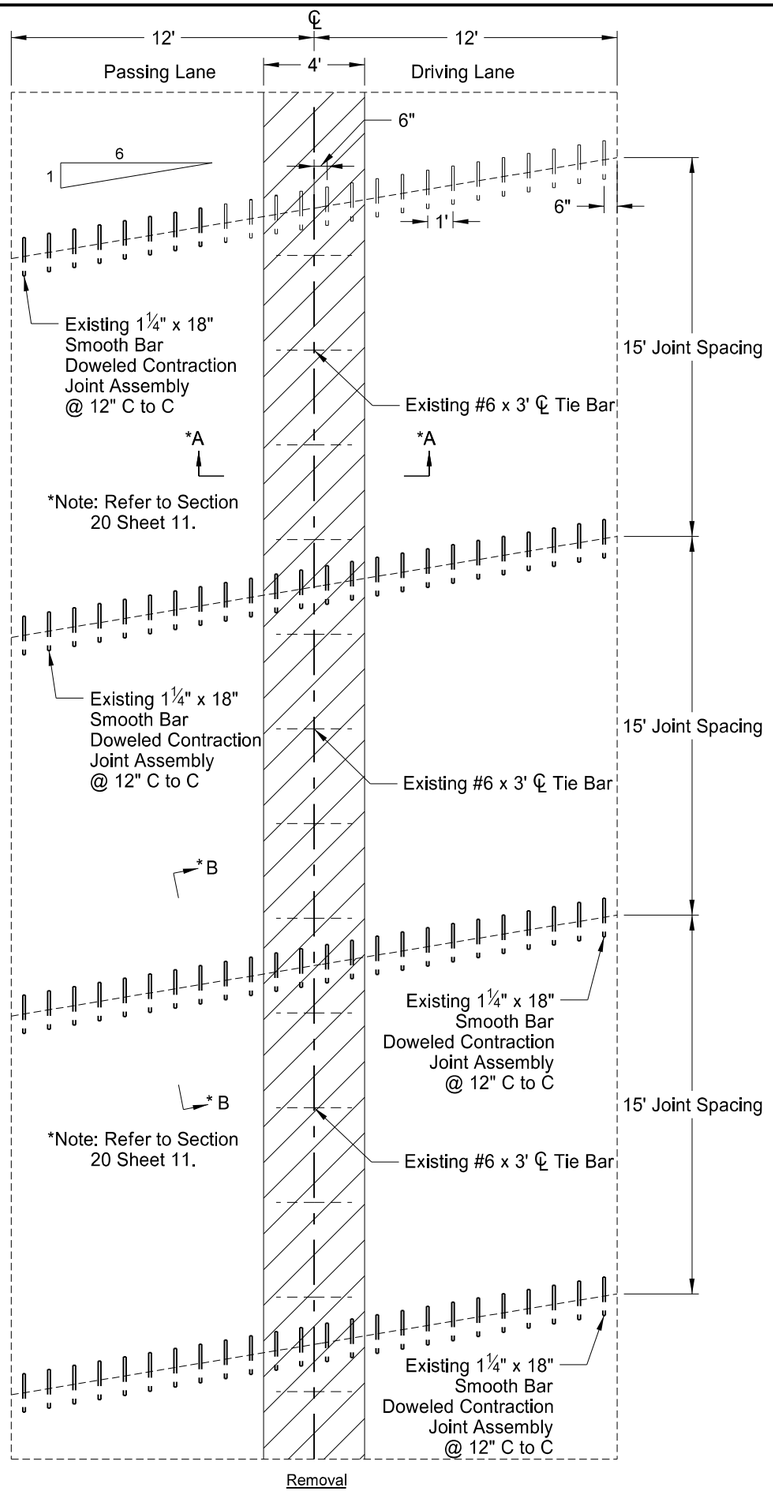
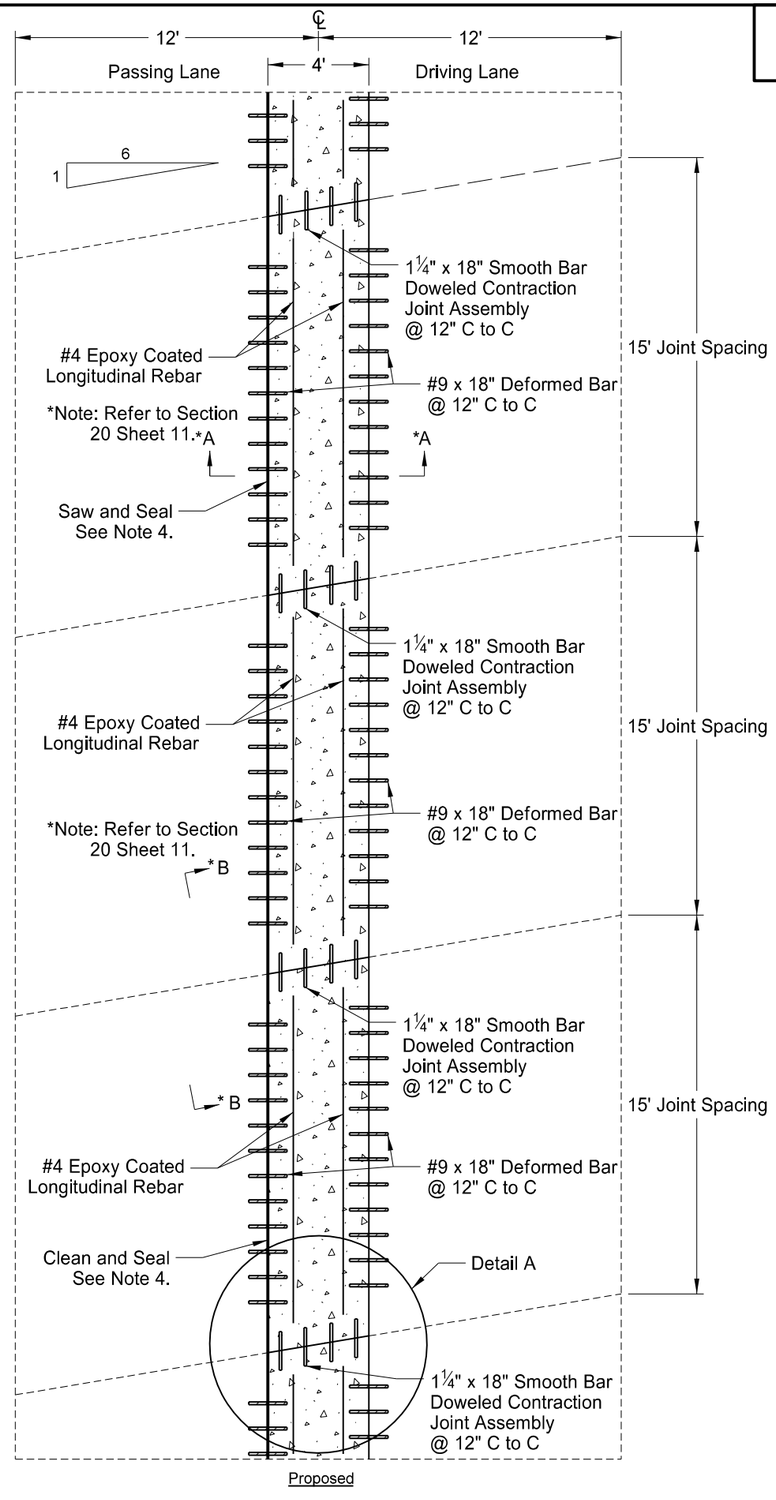
Spall Repair Detail
Skewed Joint
RP 147.221 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 20 | 10 |



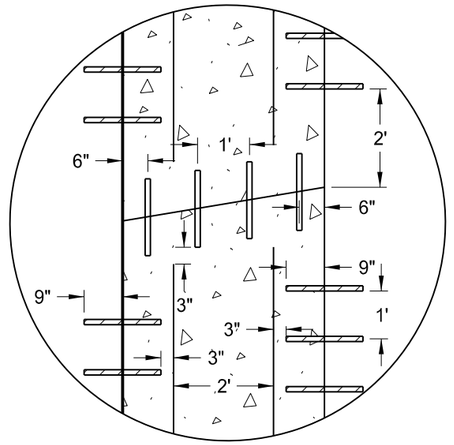

Removal




Proposed

PCC Removal

PCC Placement




Detail A

Notes:

1. Provide a vertical saw to full depth on 2' each side of the existing ℄ joint.
2. Drill in existing concrete pavement for deformed #9 x 18" bars 2' from the existing transverse joint and 1' C to C.
3. Install a Doweled Contraction Joint Assembly at the transverse contraction joint to match the existing transverse joint and match the bar layout that was removed.
4. Widen, Clean, & Seal the Passing lane longitudinal construction joint to ⅛" to 3⁄16" and seal with approved Hot Pour Type IV joint sealer. Include all costs associated with the work in the contract unit price for "LONGITUDINAL JOINT CLEANING AND SEALING".
5. Include all costs associated with the #4 Longitudinal Epoxy Coated Reinforcing Steel in the contractor unit price for "10 IN CONCRETE PAVEMENT REPAIR FULL DEPTH - DOWELED".

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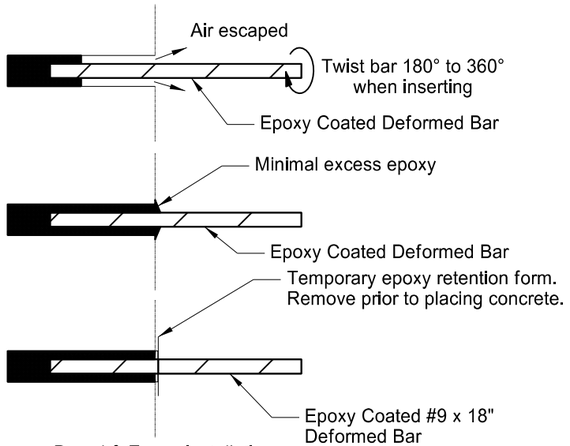
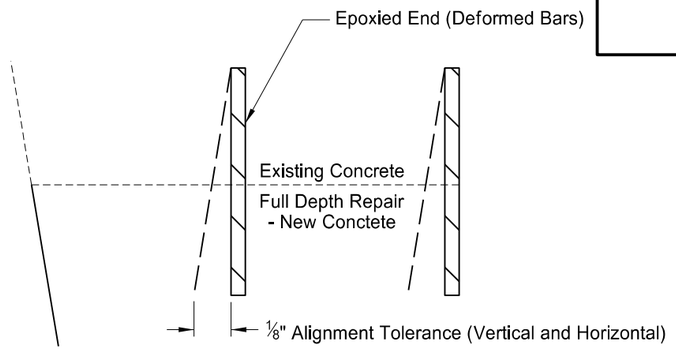
Removal of Concrete & Dowel Bar Placement - Full Depth Centerline Repair Skewed Joint
RP 152.337 to RP 161.700

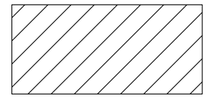
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 20 | 11 |




Dowel & Epoxy Installation
(Deformed Bars)




Dowel Alignemt Tolerance



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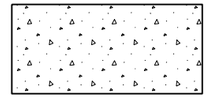
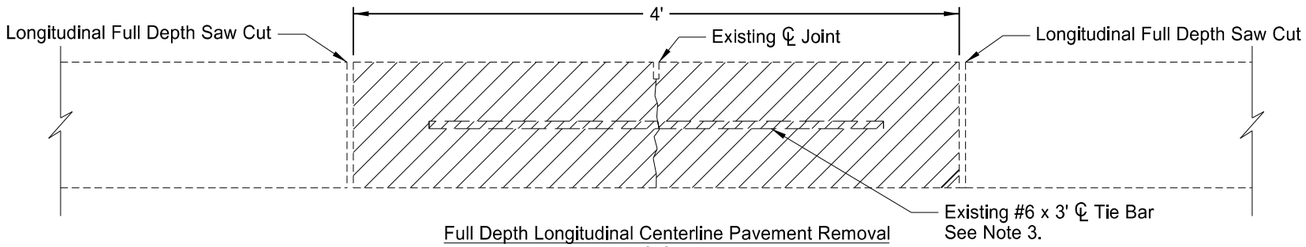
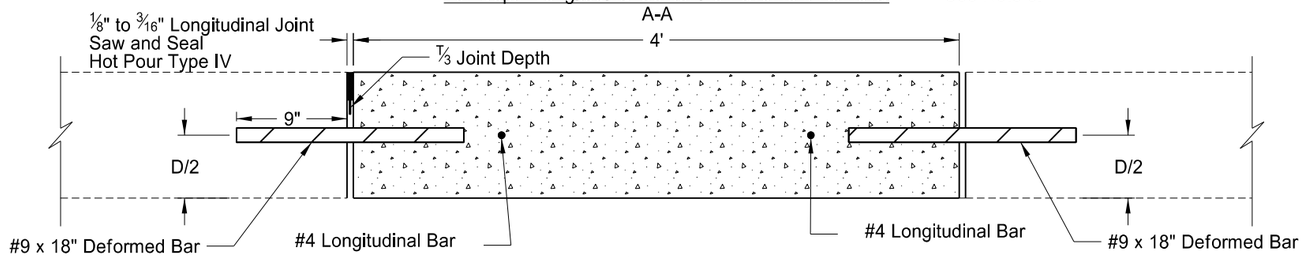


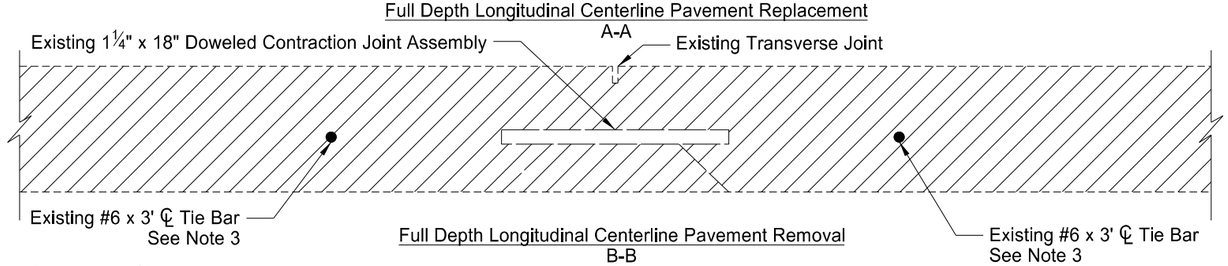
PCC Placement



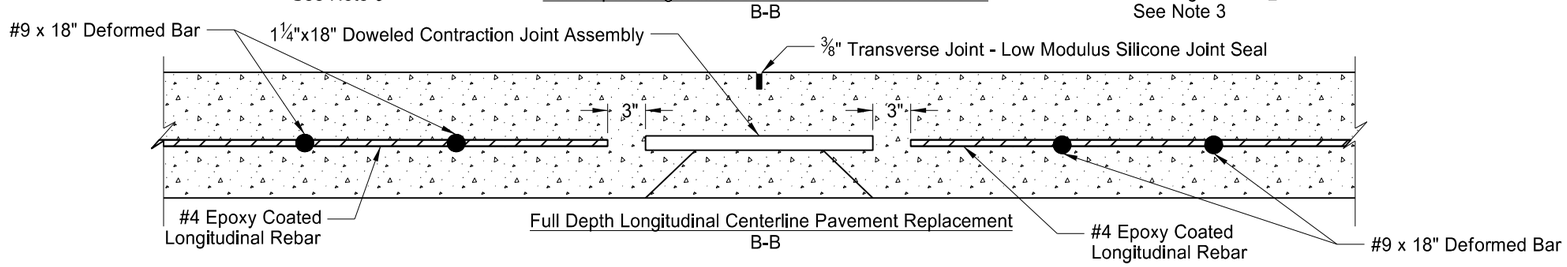

Full Depth Longitudinal Centerline Pavement Removal
A-A




Full Depth Longitudinal Centerline Pavement Replacement
A-A




Full Depth Longitudinal Centerline Pavement Removal
B-B




Full Depth Longitudinal Centerline Pavement Replacement
B-B

Notes

1. Variables
   D = Depth of Pavement
2. Place #9 x 18" Deformed bars 2' from existing transverse joint then 1' C-C
3. Space 1¼" x 18" Dowel Bars or Baskets @ 12" C-C and 6" from the construction joints.
4. The existing tie bars shown are not replicating of the roadway. The plan shows the bar size and length. Acutal tie bar alignment varies in the field.

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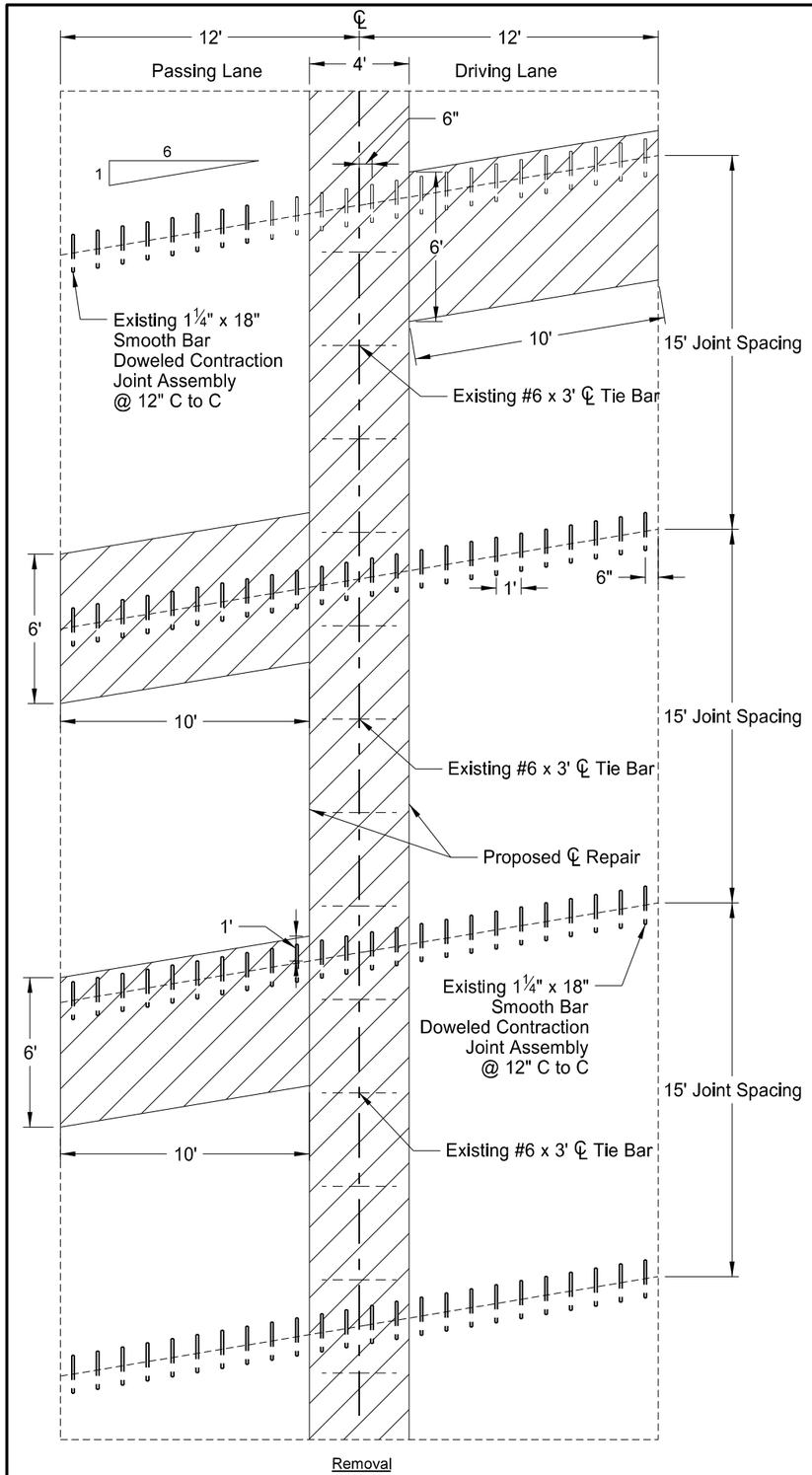
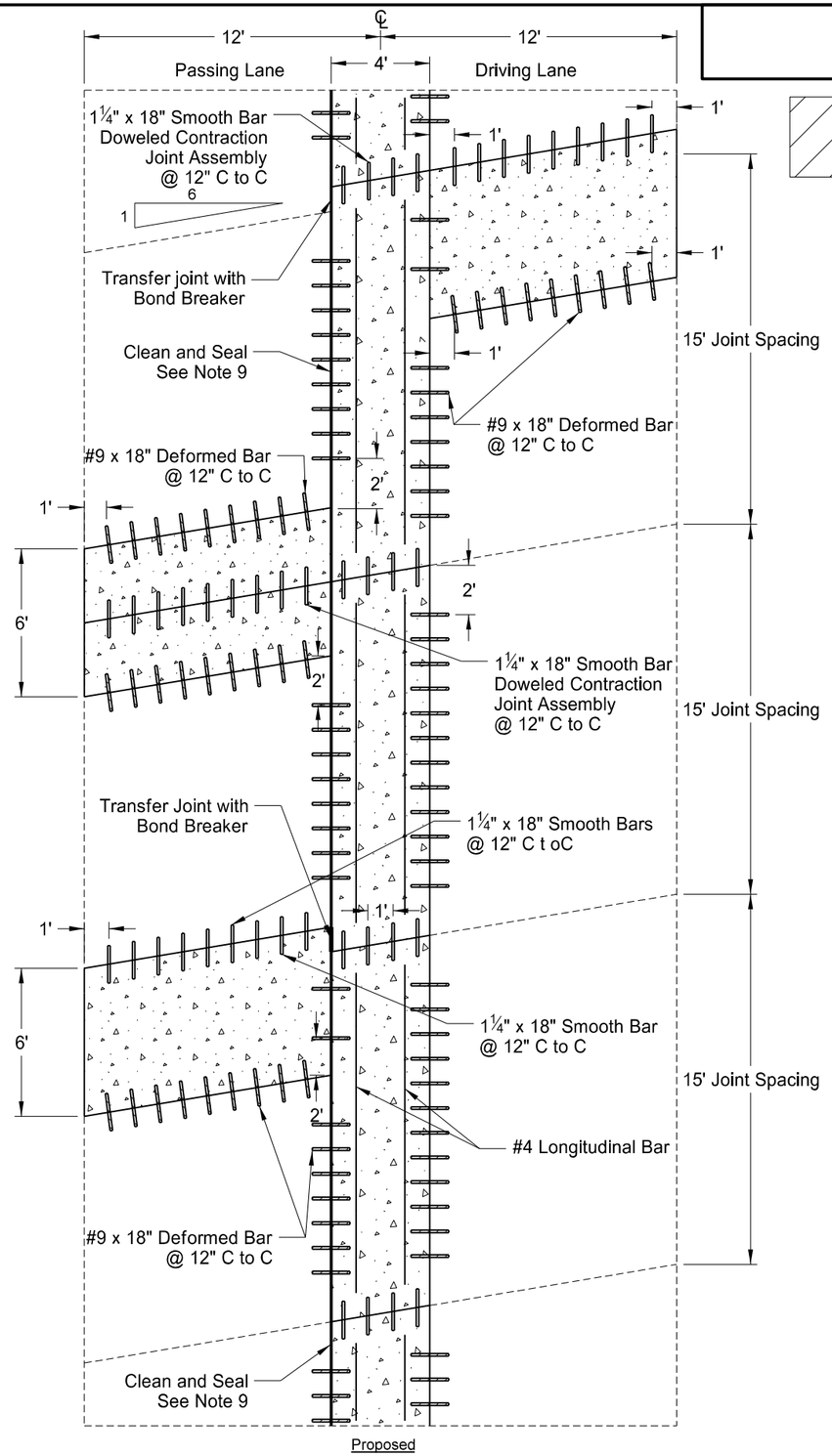
Concrete Pavement Repair - Full Depth
Non-Reinforced PCC Pavement - Doweled
RP 152.337 to RP 161.700

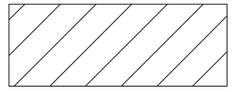
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 20 | 12 |



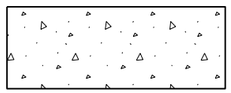

Removal




Proposed



PCC Removal



PCC Placement

Notes:

1. Perform Concrete Pavement Repair to the driving and passing lanes prior to beginning the ℄ repair. Refer to Section 6 Plan Note 704-P02 and Section 100 for traffic control phasing.
2. Porvide a Fixed Joint when the new joint is the shortest distance to the next transverse joint or working random crack. Saw cut at 6:1 skew to the centerline. Place deformed bars perpendicular to the face of the saw cut.
3. Provide a Free Joint when the new joint is the greatest distance to the next transverse joint of working random crack. Install smooth bars within the tolerances shown on the "Dowel Bar Placement - Full Depth Repair" Section 20 Sheet 11.
4. When the distance to the next transverse joint or working random crack is equal for both new joints, place the free joint on the approach side of the repair.
5. Install a Doweled Contraction Joint Assembly at the transvers contraction joint If the distance is greater than one panel in length.
6. Install a Doweled Contraction Joint Assembly at the transverse contraction joint to match the existing joint layout for repairs in the passing lane. Transfer the transverse joint with the use of bond breaker when repairs are in the driving lane. Provide a fixed joint at each end of the repair.
7. Place joints to match the existing pavement in repair areas which are not the entire roadway width.
8. The joints at the beginning and end of a full depth repair section can be either a Free Joint or Fixed Joint depending on the existing joint.
9. Widen, clean, and seal the Passing lane longitudinal construction joint to ⅛" to ³⁄₁₆" and seal with approved Hot Pour Type IV joint sealer.

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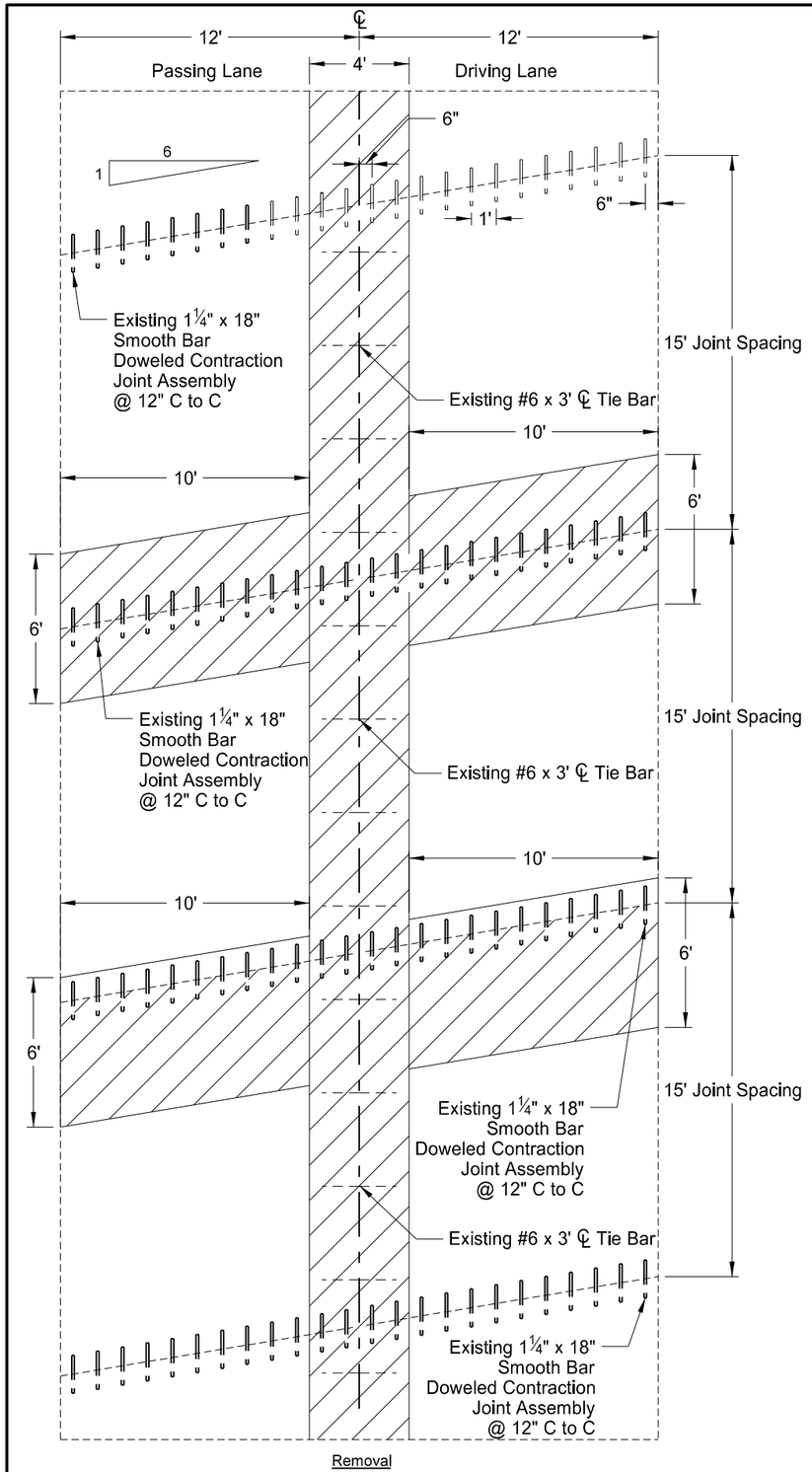
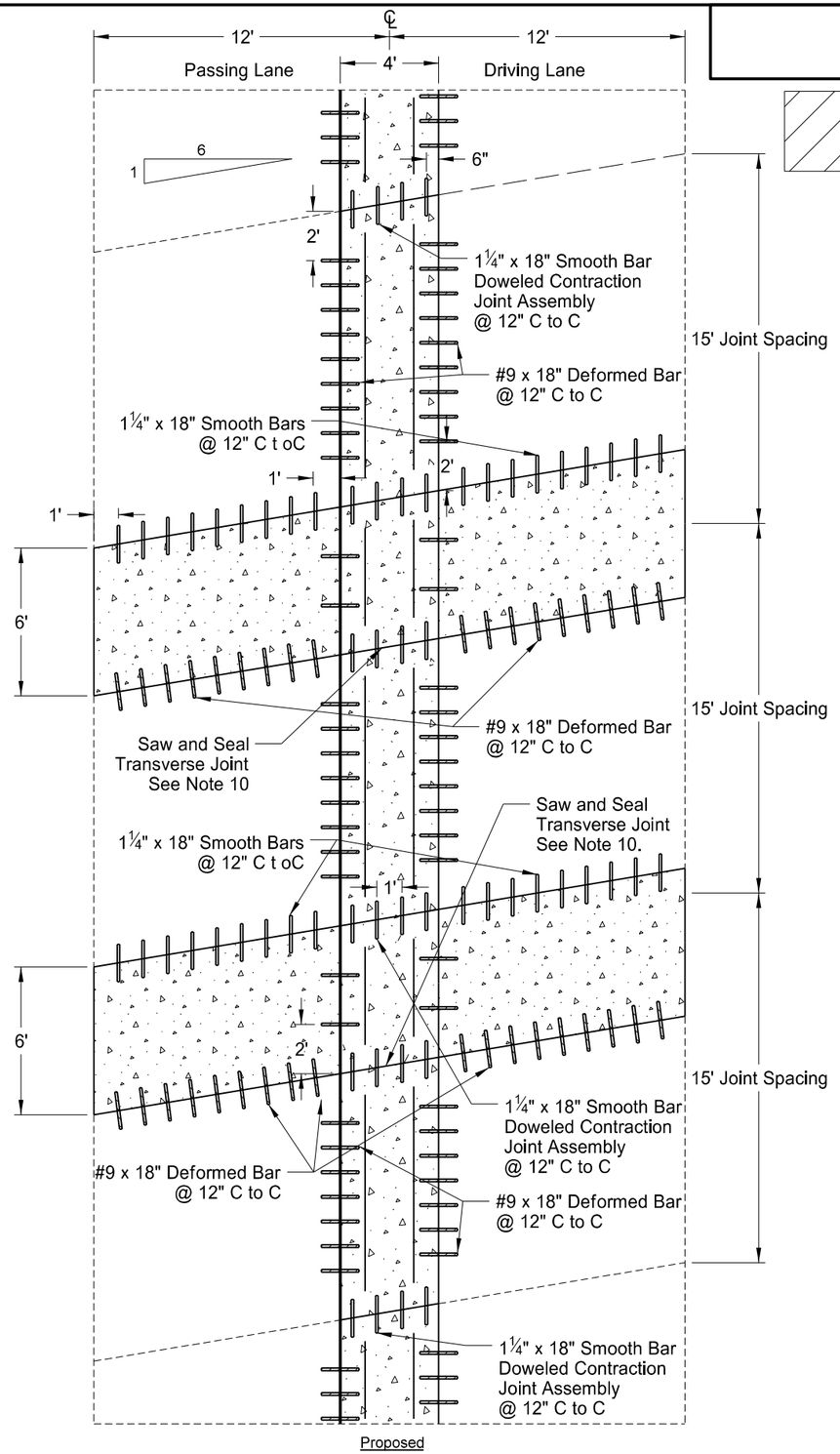
Removal of Concrete & Dowel Bar Placement - Full Depth Centerline Repair Skewed Joint
RP 152.337 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 20 | 13 |




Removal




Proposed

PCC Removal

PCC Placement

Notes:

1. Perform Concrete Pavement Repair to the driving and passing lanes prior to beginning the ℄ repair. Refer to Section 6 Plan Note 704-P02 and Section 100 for traffic control phasing.
2. Porvide a Fixed Joint when the new joint is the shortest distance to the next transverse joint or working random crack. Saw cut at 6:1 skew to the centerline. Place deformed bars perpendicular to the face of the saw cut.
3. Provide a Free Joint when the new joint is the greatest distance to the next transverse joint of working random crack. Install smooth bars within the tolerances shown on the "Dowel Bar Placement - Full Depth Repair" Section 20 Sheet 14 detail sheet.
4. When the distance to the next transverse joint or working random crack is equal for both new joints, place the free joint on the approach side of the repair.
5. Install a Doweled Contraction Joint Assembly at the transvers contraction joint If the distance is greater than one panel in length.
6. Install a Doweled Contraction Joint Assembly at the transverse contraction joint to match the existing joint layout for repairs in the passing lane. Transfer the transverse joint with the use of bond breaker when repairs are in the driving lane. Provide a fixed joint at each end of the repair.
7. Place joints to match the existing pavement in repair areas which are not the entire roadway width.
8. The joints at the beginning and end of a full depth repair section can be either a Free Joint or Fixed Joint depending on the existing joint.
9. Widen the Passing lane longitudinal construction joint to ⅛" to 3/16" and seal with approved Hot Pour Type IV Joint Sealer.
10. Widen, Clean, and Seal transverse joint to ⅜" and seal with Hot Pour Type IV Joint Sealer.

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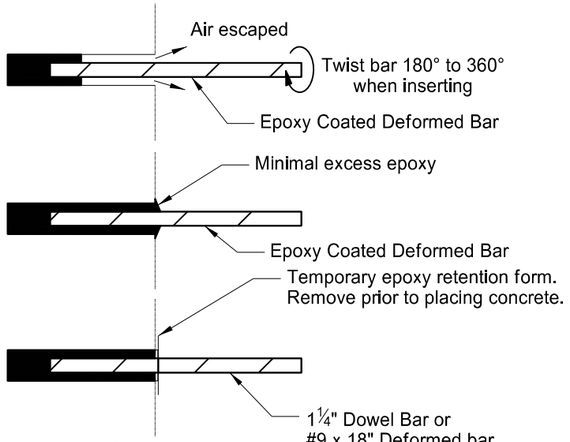
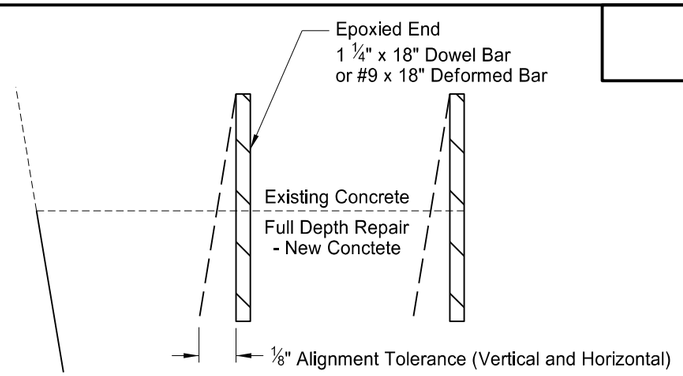
Removal of Concrete & Dowel Bar Placement - Full Depth Centerline Repair Skewed Joint
RP 152.337 to RP 161.700

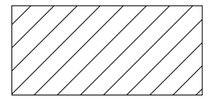
| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 20 | 14 |



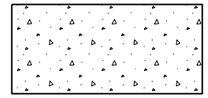

Dowel & Epoxy Installation
(Deformed Bars)



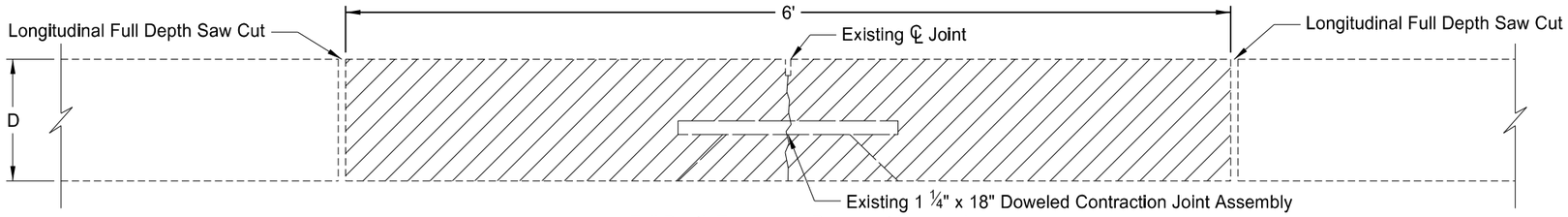

Dowel Alignemt Tolerance



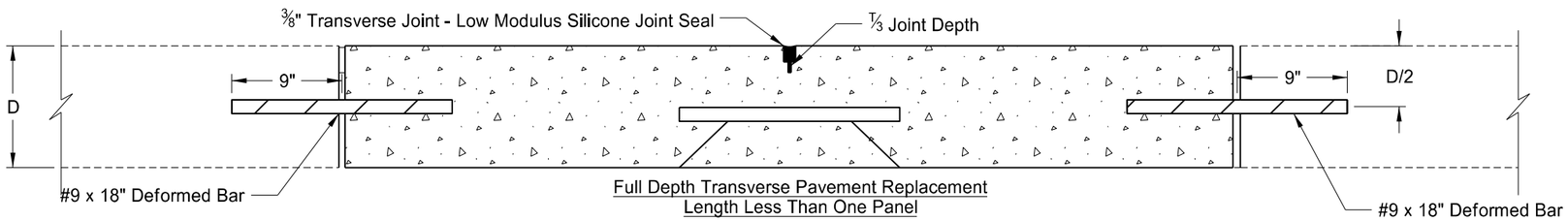
PCC Removal



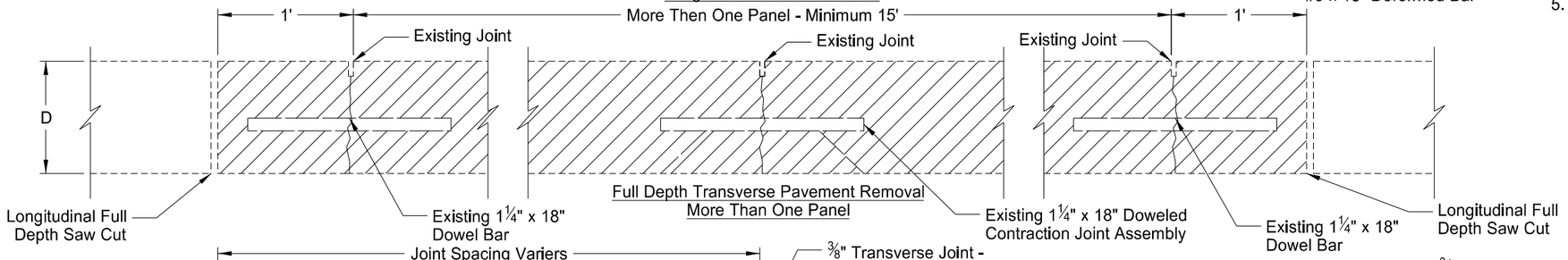
PCC Placement



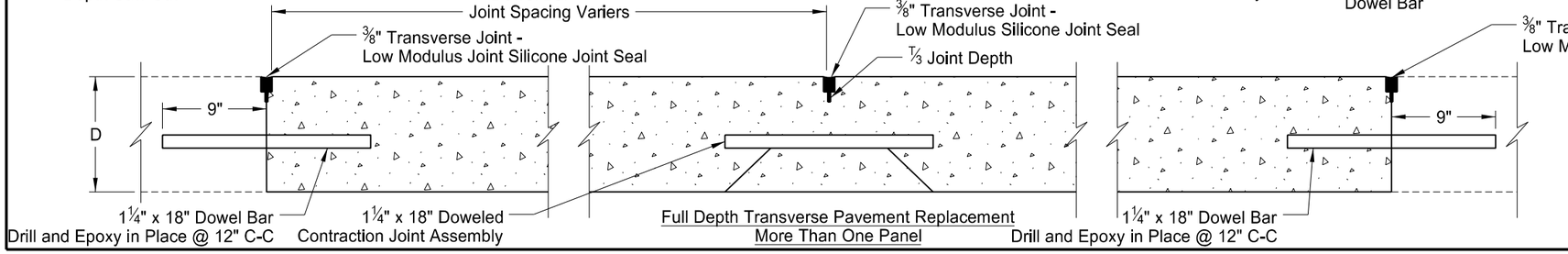

Full Depth Transverse Pavement Removal




Full Depth Transverse Pavement Replacement
Length Less Than One Panel




Full Depth Transverse Pavement Removal
More Than One Panel




Full Depth Transverse Pavement Replacement
More Than One Panel

Notes:

1. Variables
   D = Depth of Pavement
2. Place Deformed #9 x 18" bars 2' off from existing transverse joint then place 12" C to C
3. Place 1¼"x18" Doweled Contraction Joint Assembly 6" from construdtion and plan 12" C to C
4. Place Smooth Dowel Bars in repair joint Joint which is farthest away from the next transverse joint. If the distance is equal for both repair joints, place smooth dowels on approach side of patch.
5. Eliminate intermediate joints if repair is less than 20'

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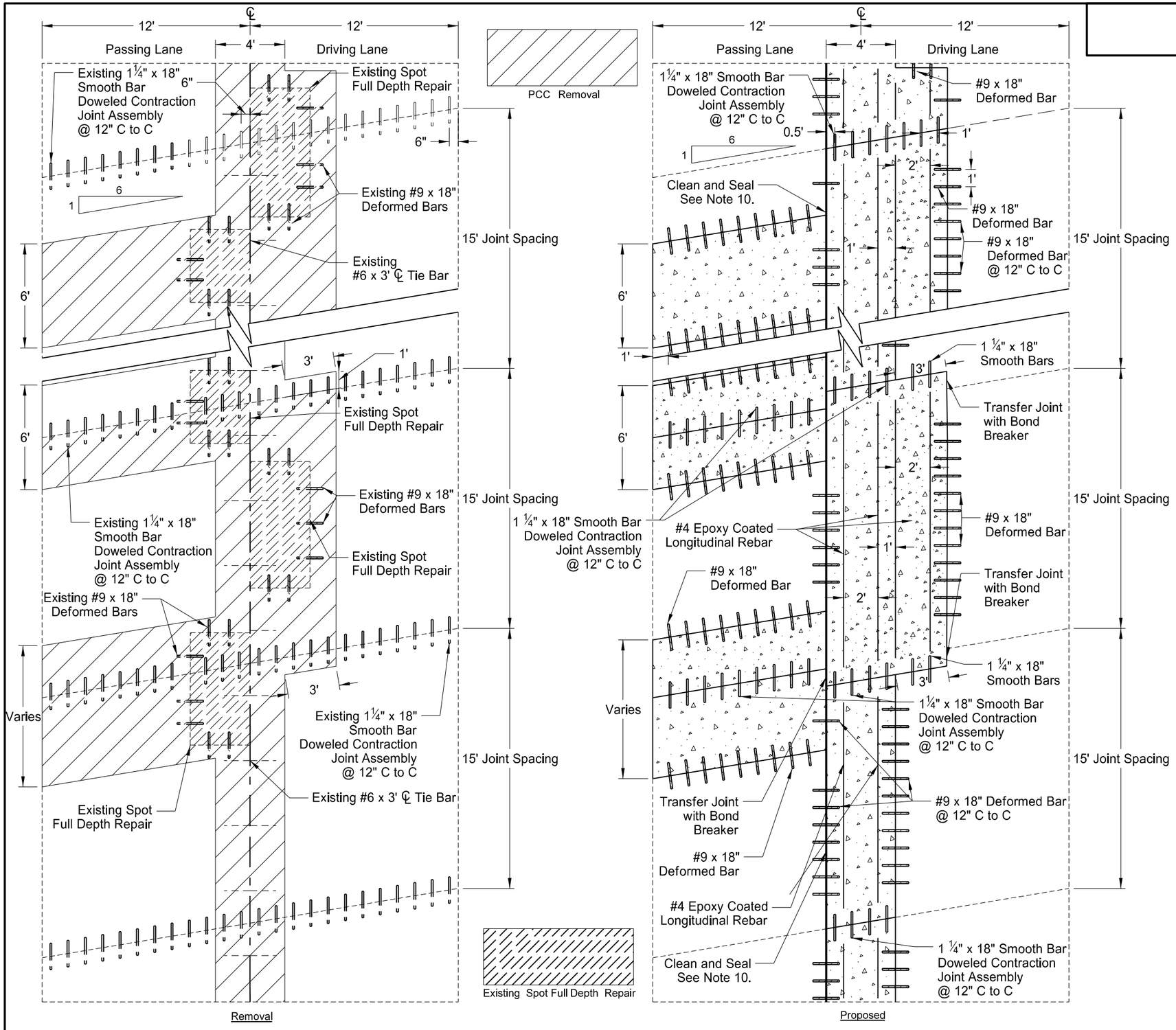
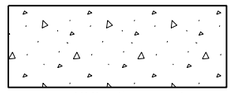
Concrete Pavement Repair - Full Depth
Non-Reinforced PCC Pavement - Doweled
RP 152.337 to RP 161.700

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 20 | 15 |




Notes:

1. Perform Concrete Pavement Repair to the driving and passing lanes prior to beginning the ℄ repair. Refer to Section 6 Plan Note 704-P02 and Section 100 for traffic control phasing.
2. Create a Minimum of a 6' x 10' Full Depth Repair when the Existing Spot Full Repair is located in the Passing Lane.
3. Provide a full depth vertical saw cut of concrete pavement 1' around the perimeter on any existing spot full depth repair located in the driving lane and not over a transverse joint.
4. Provide a full depth vertical saw cut of cocnrete pavement 1.5' around the perimeter on any existing spot full depthrepair located in the drving lane and over a transverse joint.
5. Perform work on existing Spot Full Depth Repairs that are located in the Passing with the Passing Lane CPR repair phasing.
6. Perform work on the existing Sport Full Depth Repairs that are located in the Driving Lane with the Longirudinal Centerline Joint Repair phasing.
7. Drill in existing concrete pavement for Deformed #9 x 18" bars. Space Deformed Bars 2' from the transverse saw cut and space 12" C to C.
8. Equally space longitudinal #9 x 18" Deformed Bar on transverse fixed joint.
9. Install a Doweled Contraction Joint Assembly at the transverse contraction joint to match the existing transverse joint and match the bar layout that was removed.
10. Widen, Clean, and seal the Passing lane longitudinal construction joint to ⅛" to 3/16" and seal with approved Hot Pour Type IV joint sealer.

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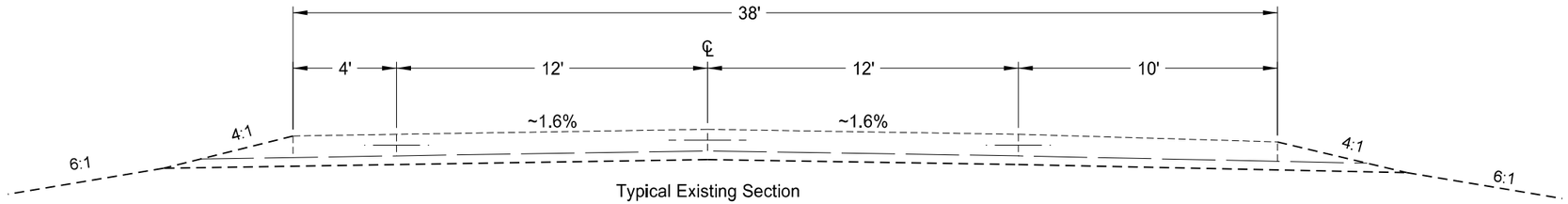
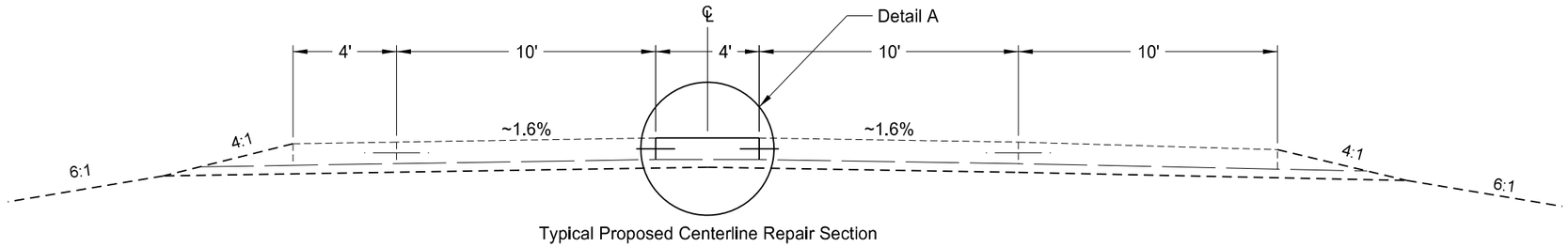
Removal of Concrete & Dowel Bar
Placement to Existing Spot Full Depth Repairs
Skewed Joint
RP 152.337 to RP 161.700

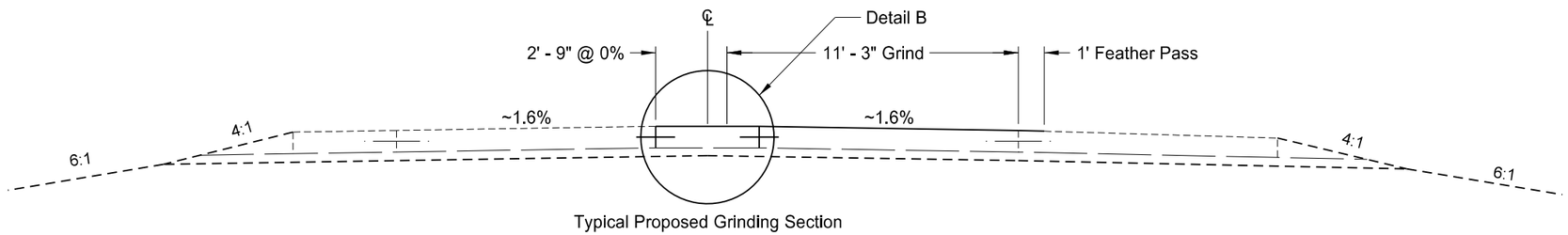
| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 20 | 16 |



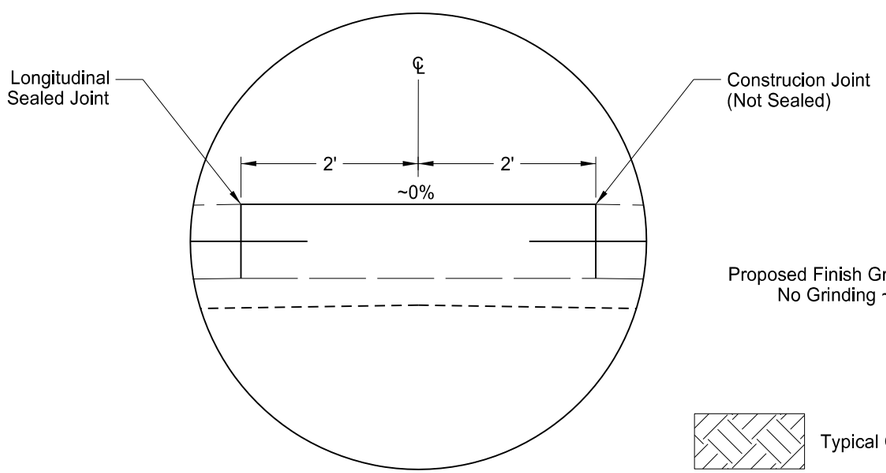

Typical Existing Section



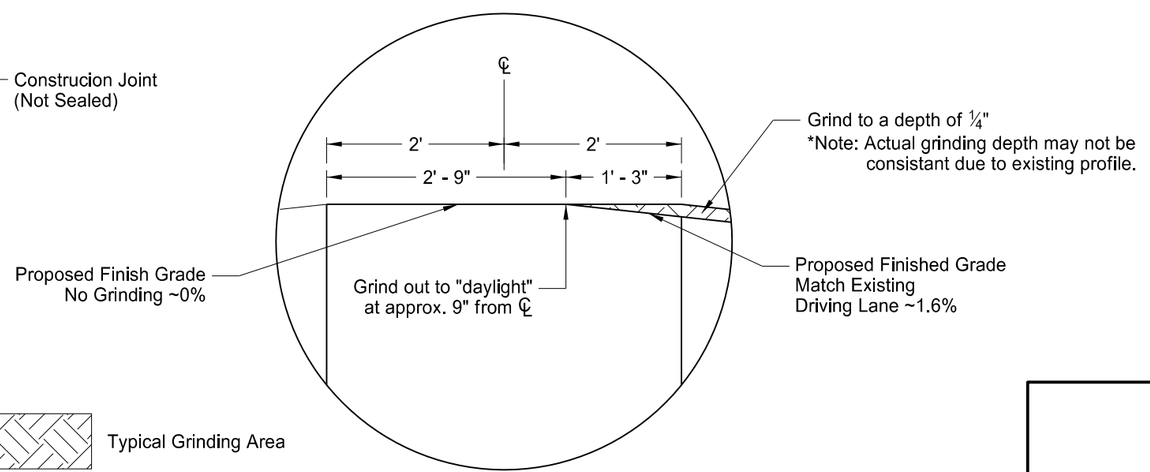

Typical Proposed Centerline Repair Section




Typical Proposed Grinding Section




Detail A




Typical Grinding Area

Detail B

Note: Drawing not to scale

Notes:

1. Details shown are for tangent sections of roadway. Grind Driving Lane to match existing cross-slope, and this will "daylight" out near centerline of roadway. Grind 1' feather pass out to the shoulder.
2. For curved sections of roadway: Grind Driving Lane to match existing cross-slope. Grind final pass to "daylight" out at centerline, leaving no faulting. Grind 1' feather pass out to the shoulder.

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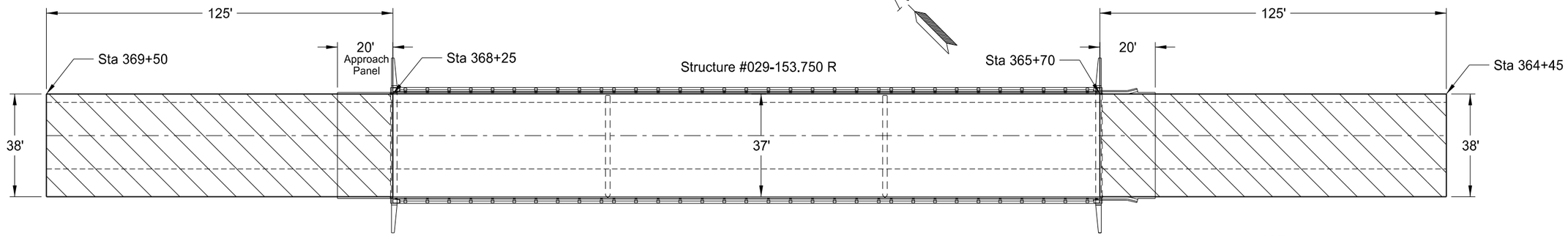
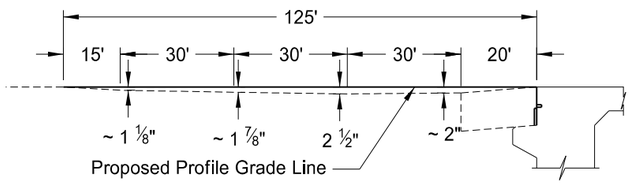
Centerline Repair
& Grinding Details

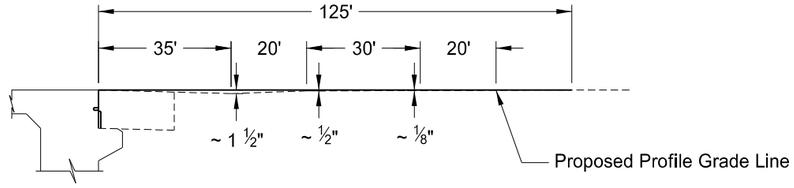
RP 152.337 to RP 161.700

8/21/2017 5:56:53 AM anefstead R:\project\60029147.134\district\Design Files\020GD_016_CLGrinding.dgn

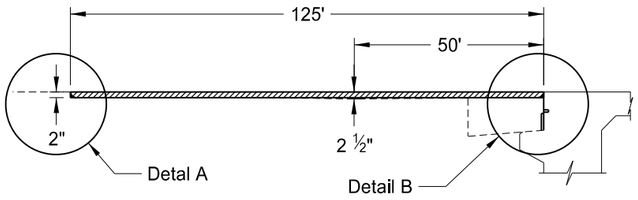
| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 20 | 17 |

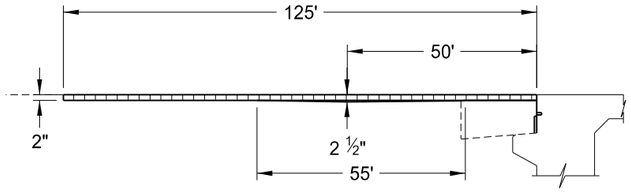


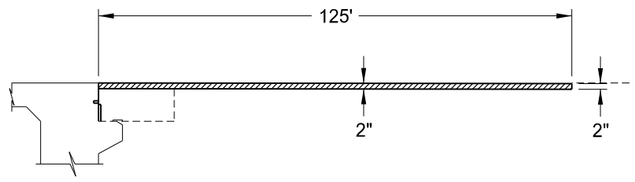



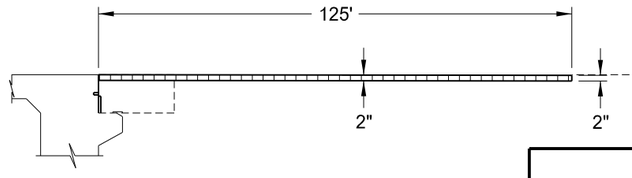




| BASIS OF ESTIMATE BOTH BRIDGE ENDS | | | | | |
|---|---|---|---|---|---|
| SPEC | CODE | DESCRIPTION | UNIT | WIDTH | QUANTITY |
| 401 | 0050 | Tack Coat Application = 0.075 Gal/SY | GAL | 38' | 79 |
| 401 | 0070 | Fog Coat Application = 0.050 Gal/SY | GAL | 24' | 33 |
| 411 | 0110 | Milling PCC Pavement | SY | 38' | 1,056 |
| 430 | 0045 | Superpave FAA 45 | TON | 38' | 126 |
| 430 | 1000 | Cored Sample | EA | - | 4 |
| 430 | 6428 | PG 64-28 Asphalt Cement | TON | 38' | 8 |
| 930 | 8644 | Silicone Sealant | LF | 38' | 76 |



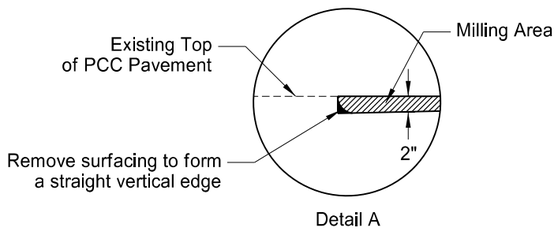



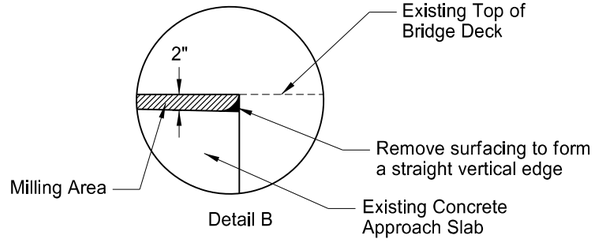




PCC Mill & HMA Overlay Work Area

PCC Milling

HMA Overlay




Refer to Section 30 Sheet 4 for Typical Cross Sections of the Stucture Approaches
Note: Drawing Not to Scale

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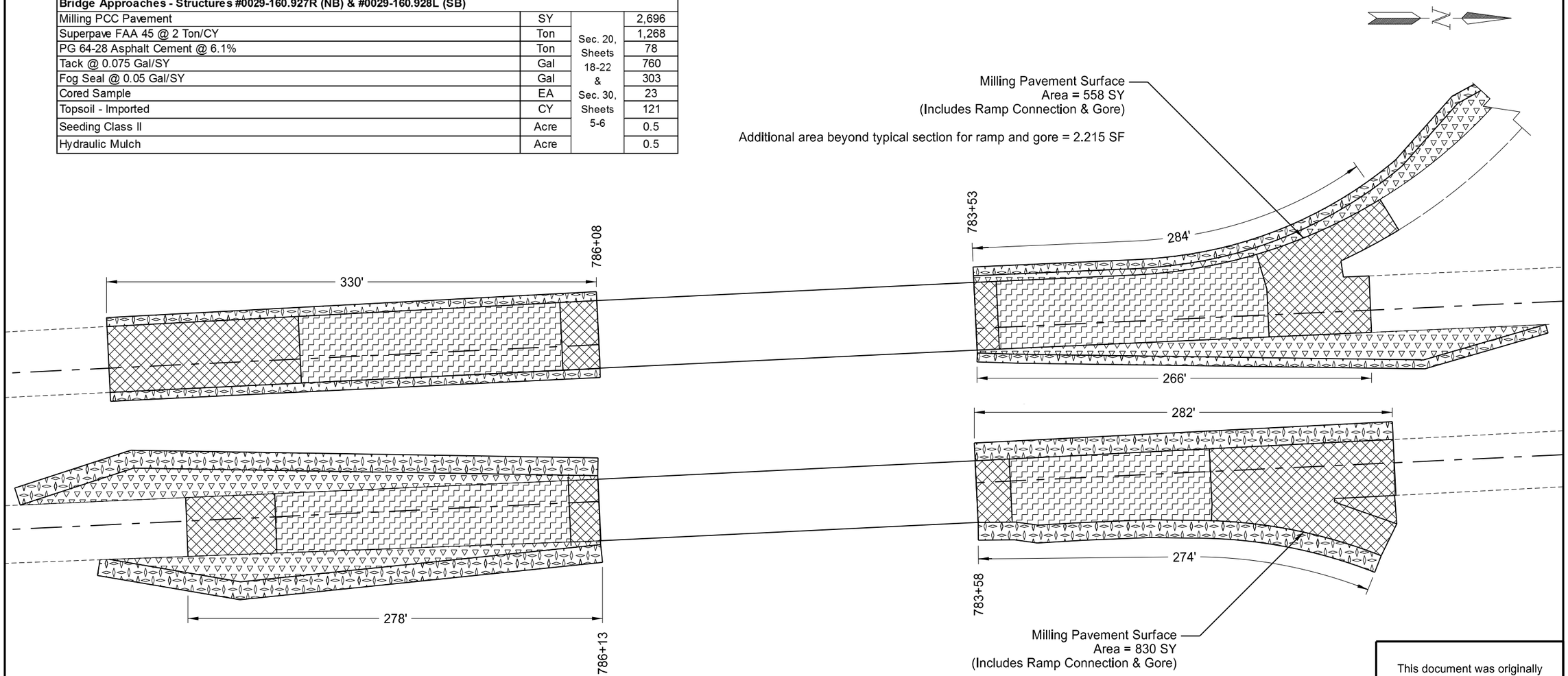
Turtle River Bridge
Structure #029-153.750R (NB)

Approach Milling & Paving Details

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 20 | 18 |

| Estimated Quantities | | | |
|---|---|---|---|
| Description | Units | Basis | Units |
| **Bridge Approaches - Structures #0029-160.927R (NB) & #0029-160.928L (SB)** | | | |
| Milling PCC Pavement | SY | Sec. 20, Sheets 18-22 & Sec. 30, Sheets 5-6 | 2,696 |
| Superpave FAA 45 @ 2 Ton/CY | Ton | | 1,268 |
| PG 64-28 Asphalt Cement @ 6.1% | Ton | | 78 |
| Tack @ 0.075 Gal/SY | Gal | | 760 |
| Fog Seal @ 0.05 Gal/SY | Gal | | 303 |
| Cored Sample | EA | | 23 |
| Topsoil - Imported | CY | | 121 |
| Seeding Class II | Acre | | 0.5 |
| Hydraulic Mulch | Acre | | 0.5 |




Milling Pavement Surface & HMA Overlay

HMA Overlay

Topsoil, Seeding, Mulching

Guardrail Widenings (See Sec. 130)

Note: Drawing not to scale

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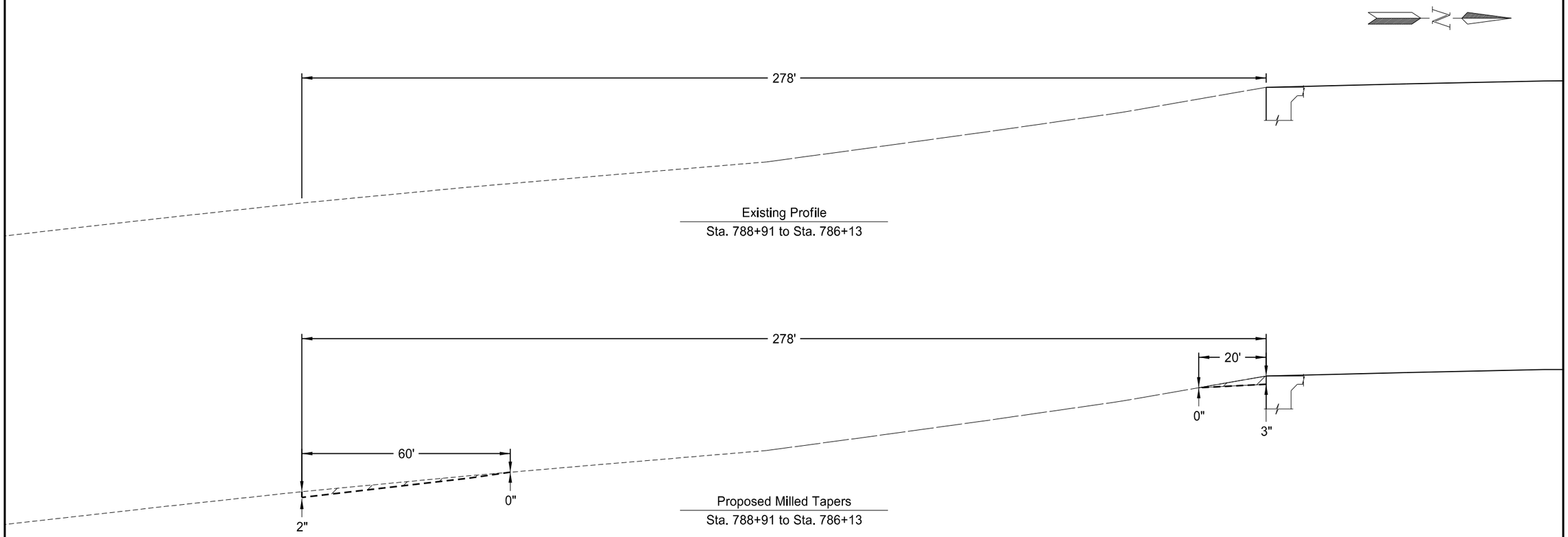
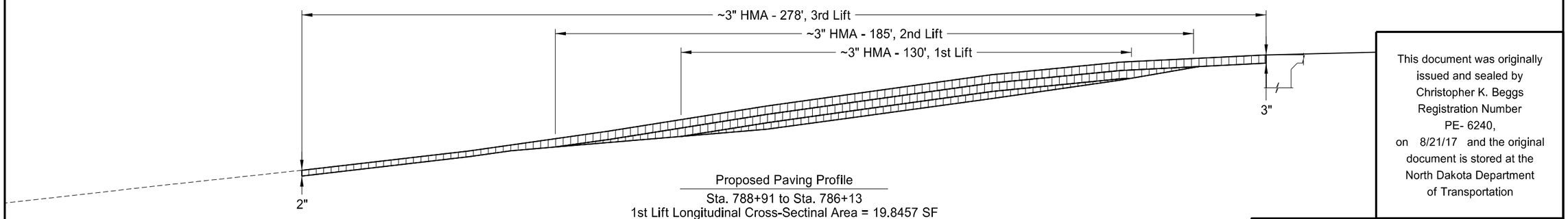
Oslo Interchange
Structure #029-160.927R (NB) &
Structure #029-160.928L (SB)
Approach Milling & Paving Details

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 20 | 19 |




Note: Vertical scale exaggerated 10:1 to show detail

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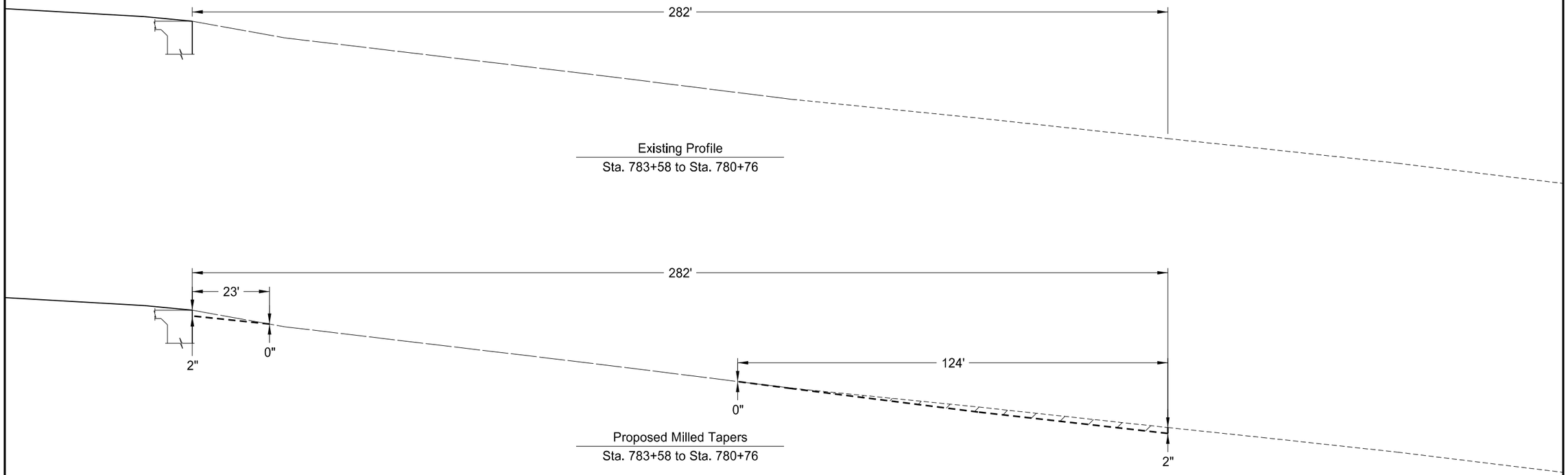
Oslo Interchange
Structure #029-160.927R (NB)
South Approach
Existing & Proposed Profiles

8/22/2017 2:57:51 PM kmittlieder R:\project\60029147.134\district\Design Files\020GD_019_Profile.dgn

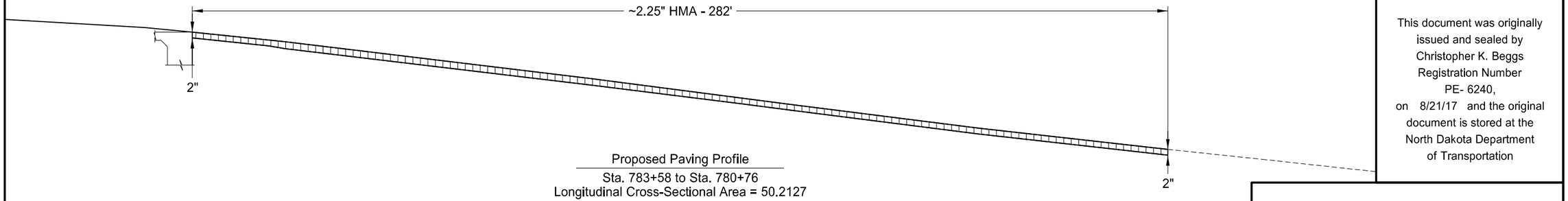
| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 20 | 20 |




Existing Profile
Sta. 783+58 to Sta. 780+76




Proposed Milled Tapers
Sta. 783+58 to Sta. 780+76




Proposed Paving Profile
Sta. 783+58 to Sta. 780+76
Longitudinal Cross-Sectional Area = 50.2127

Note: Vertical scale exaggerated 10:1 to show detail

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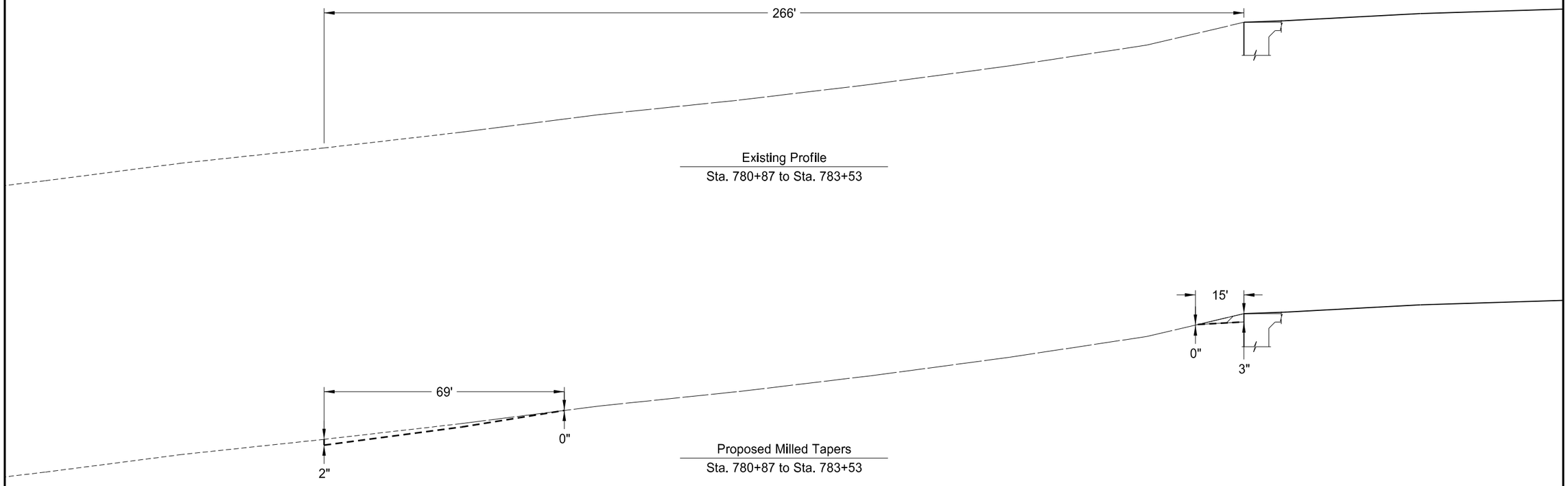
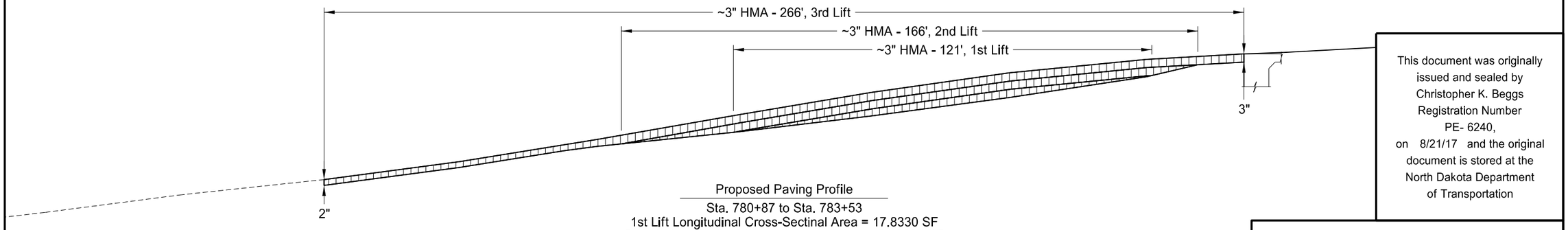
Oslo Interchange
Structure #029-160.927R (NB)
North Approach
Existing & Proposed Profiles

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 20 | 21 |




Existing Profile
Sta. 780+87 to Sta. 783+53

Proposed Milled Tapers
Sta. 780+87 to Sta. 783+53




Proposed Paving Profile
Sta. 780+87 to Sta. 783+53
1st Lift Longitudinal Cross-Sectinal Area = 17.8330 SF
2nd Lift Longitudinal Cross-Sectional Area = 34.2684 SF
3rd Lift Longitudianal Cross-Sectional Area = 58.0863 SF
Total Longitudinal Cross-Sectional Area = 110.1877 SF

Note: Vertical scale exaggerated 10:1 to show detail

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Oslo Interchange
Structure #029-160.928L (SB)
North Approach
Existing & Proposed Profiles

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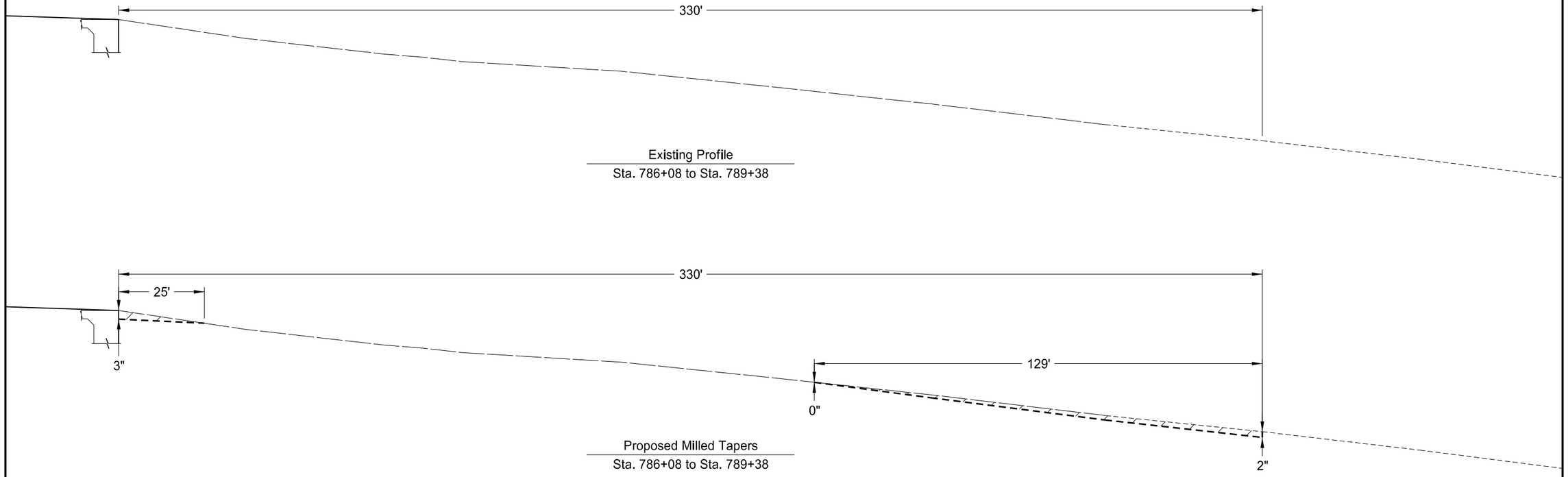
| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 20 | 22 |




Note: Vertical scale exaggerated 10:1 to show detail

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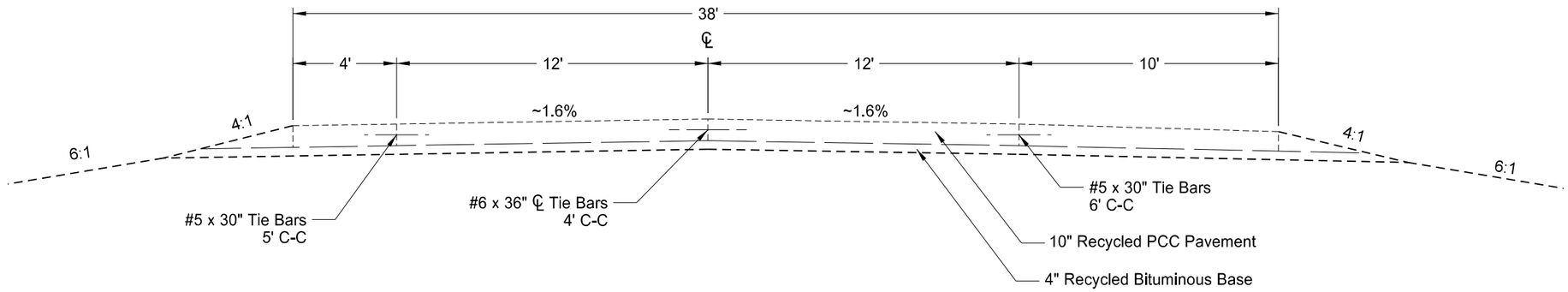
Oslo Interchange
Structure #029-160.928L (SB)
South Approach
Existing & Proposed Profiles

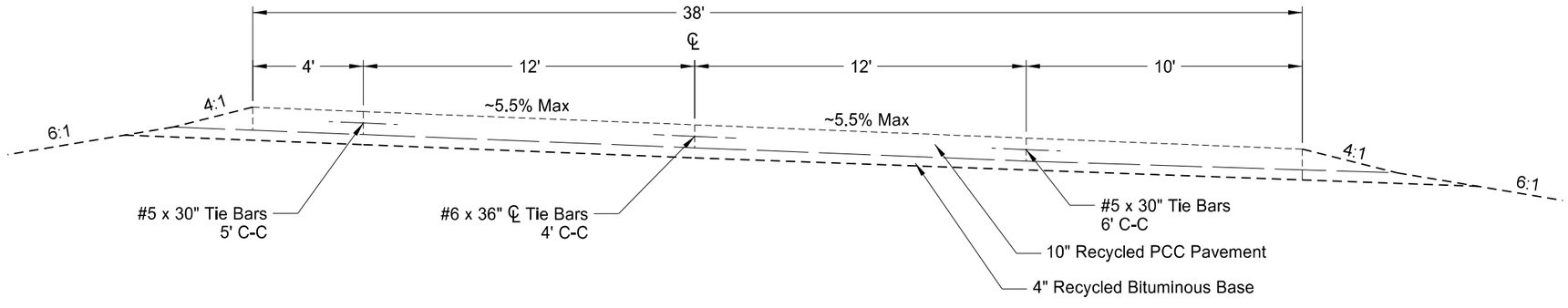
8/22/2017 2:57:53 PM kmittlieder R:\project\60029147.134\district\Design Files\020GD_019_Profile.dgn

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 30 | 1 |




Typical Existing Section Tangent

Sta 711+61 to sta 485+42
Sta 453+85 to Sta 441+56




Typical Existing Section Curve

Sta 453+85 to Sta 485+42

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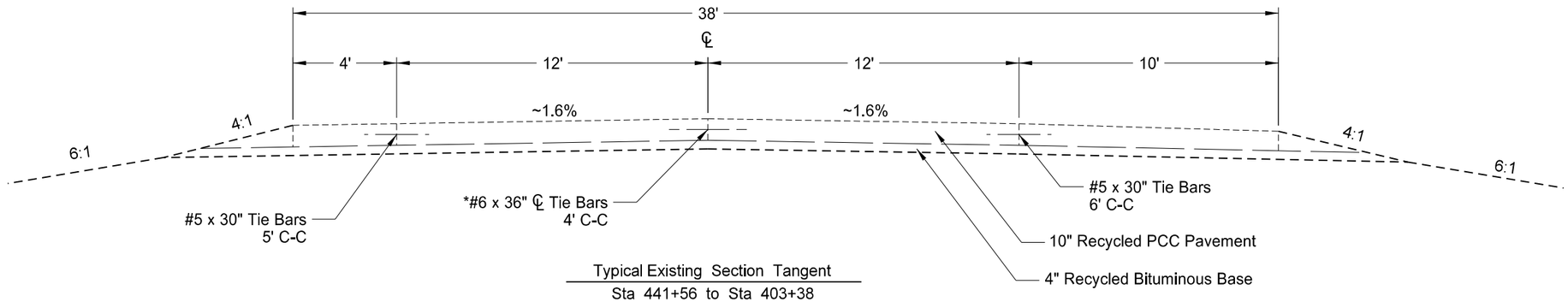
Typical Existing Sections

RP 147.221 to RP 152.337

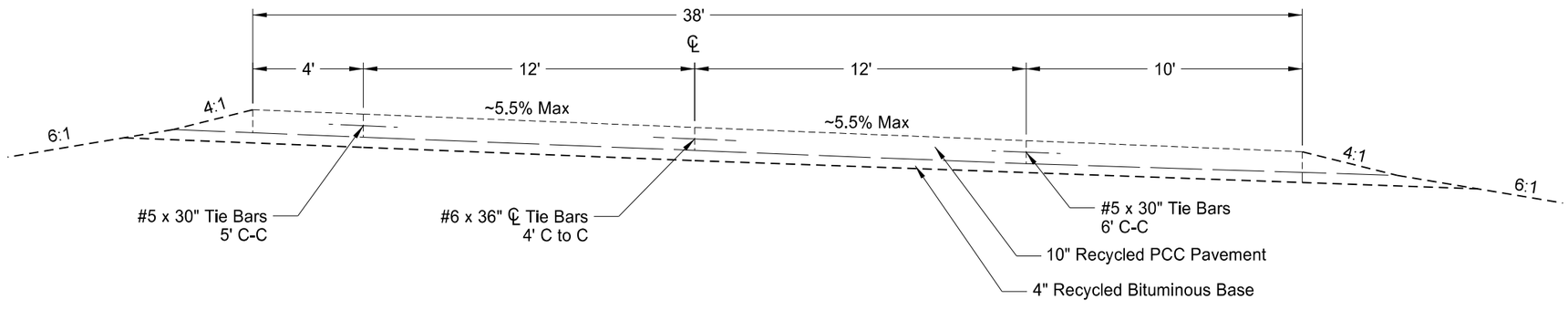
| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 30 | 2 |




Typical Existing Section Tangent

Sta 441+56 to Sta 403+38
Sta 374+18 to Sta 369+50
**Sta 369+50 to Sta 364+45
Sta 364+45 to Sta 332+95
Sta 287+94 to Sta 0+00
Equation Sta 0+00 Ahd = Sta 796+83 Bk
Sta 796+83 to Sta 744+03

Note: The existing tie bars shown are not replicating of the roadway. The plan shows the bar size and length. Acutal tie bar alignment varies in the field.




Typical Existing Section Curve

Sta 403+38 to Sta 374+18
Sta 332+95 to Sta 287+94

** Refer to Section 30 Sheet 3 for Typical Milling and HBP Sections

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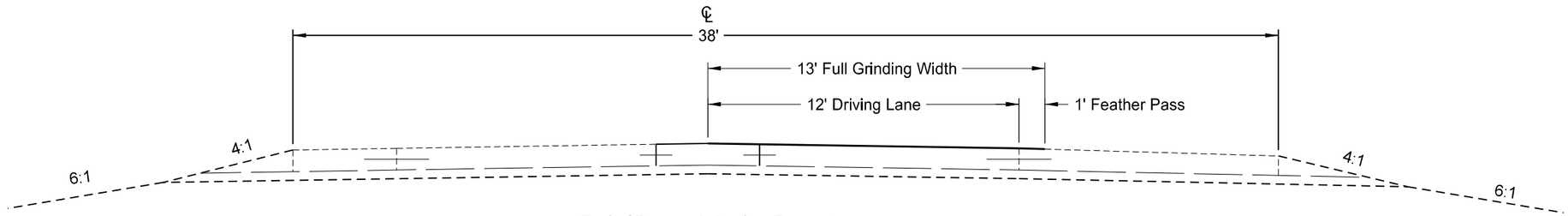
Typical Existing Sections

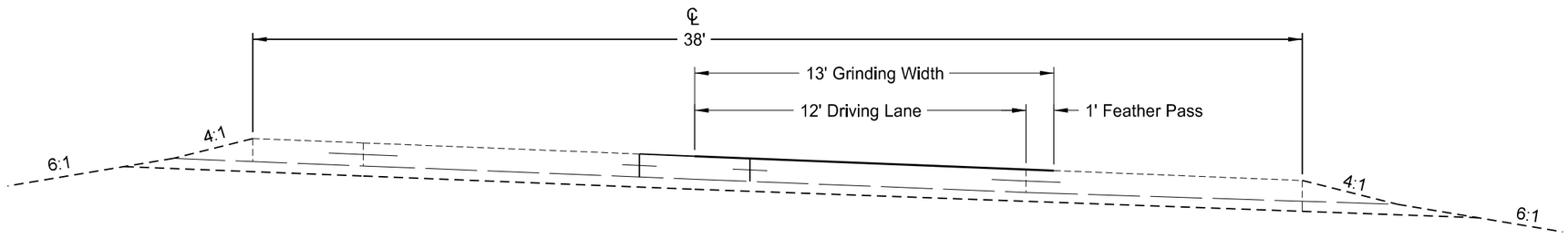
RP 152.337 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 30 | 3 |




Typical Proposed Section Tangent

Sta 441+56 to Sta 403+38
Sta 374+18 to Sta 332+95
Sta 287+94 to Sta 0+00
Equation Sta 0+00 Ahd = Sta 796+83 Bk
Sta 796+83 to Sta 791+31
Sta 777+55 to Sta 744+03




Typical Proposed Section Curve

Sta 403+38 to Sta 374+18
Sta 332+95 to Sta 287+94

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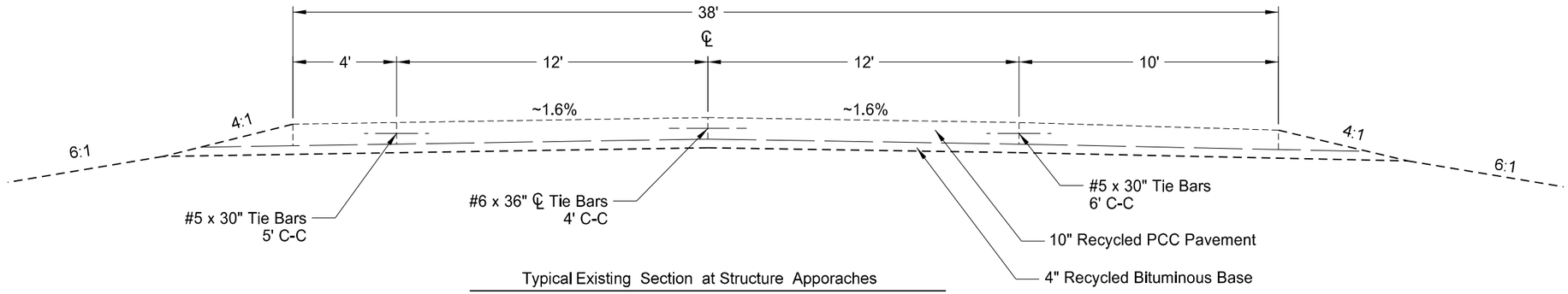
Typical Proposed Sections

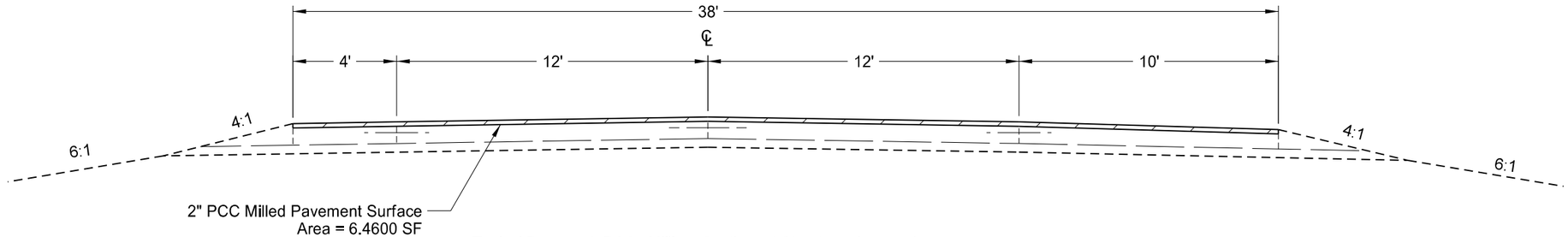
RP 152.337 to RP 161.700

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 30 | 4 |



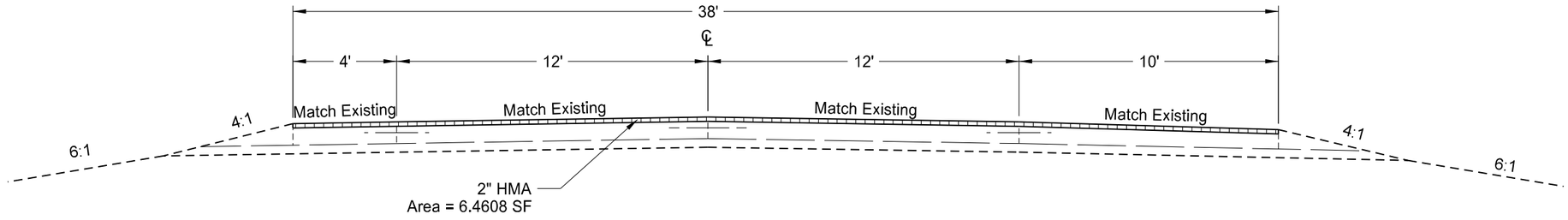

Typical Existing Section at Structure Apporaches

Sta 369+50 to Sta 368+25
Sta 365+70 to Sta 364+45




Typical Proposed PCC Milling Section at Structure Apporaches

Sta 369+50 to Sta 368+25
Sta 365+70 to Sta 364+45




Typical Proposed HMA Paving Section at Structure Approaches

Sta 369+50 to Sta 368+25
Sta 365+70 to Sta 364+45

Sta 368+25 to Sta 365+70 is Structure # 029-153.750R

*Note = Additional Paving Refer to Section 20 Sheet 17.

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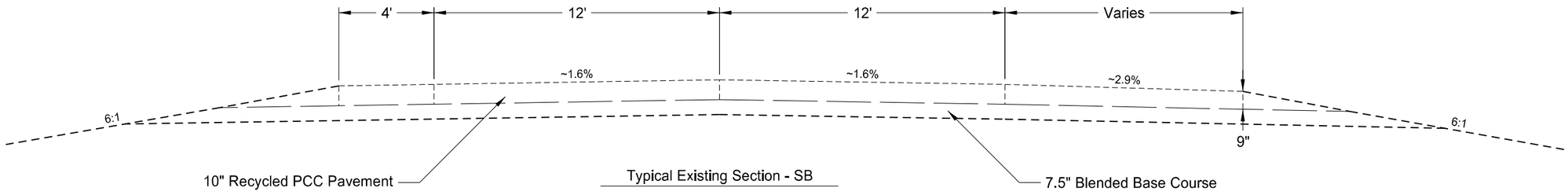
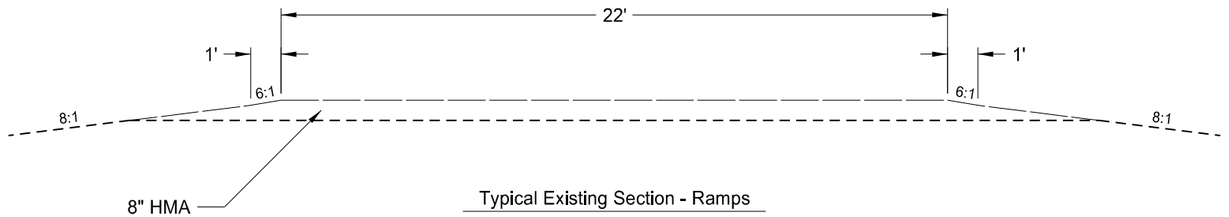
Typical Sections
Approach Milling & Paving

Structure #029-153.750R (NB)

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 30 | 5 |




Typical Existing Section - SB




Typical Existing Section - Ramps

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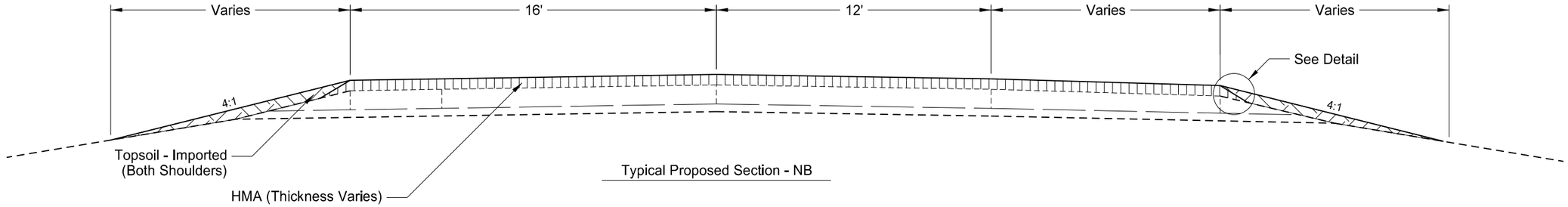
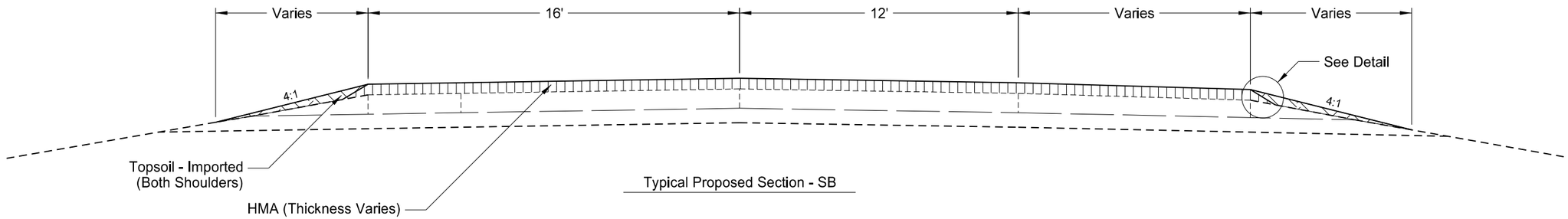
Typical Existing Sections

Structure #029-160.927R (NB) &
Structure #029-160.928L (SB)

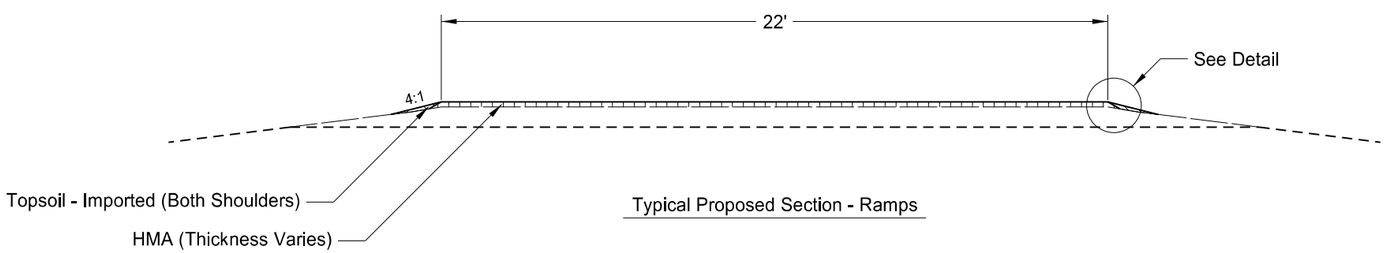
| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 30 | 6 |



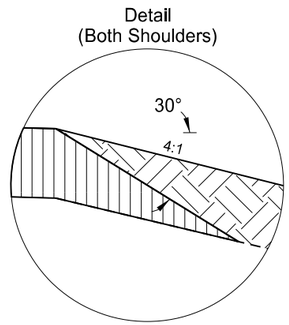

Typical Proposed Section - NB




Typical Proposed Section - SB




Typical Proposed Section - Ramps

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Typical Proposed Sections
Approach Milling & Paving

Structure #029-160.927R (NB) &
Structure #029-160.928L (SB)

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|
| ND | IM-6-029(134)147 | 100 | 1 |

| SIGN NUMBER | SIGN SIZE | DESCRIPTION | AMOUNT REQUIRED | UNITS PER AMOUNT | UNITS SUB TOTAL |
|---|---|---|---|---|---|
| D3-36 | 36"x6" | STREET NAME SIGN (Sign and installation only) | | 6 | |
| **G20-1-60** | **60"x24"** | **ROAD WORK NEXT __ MILES** | **2** | **34** | **68** |
| G20-1b-60 | 60"x24" | WORK IN PROGRESS/ NO WORK IN PROGRESS (Sign and installation only) | | 26 | |
| **G20-2-48** | **48"x24"** | **END ROAD WORK** | **6** | **19** | **114** |
| G20-4-36 | 36"x18" | PILOT CAR FOLLOW ME (Mounted to back of pilot car) | | 18 | |
| **G20-10-108** | **108"x48"** | **CONTRACTOR SIGN** | **1** | **64** | **64** |
| G20-50a-72 | 72"x36" | ROAD WORK NEXT __ MILES RT & LT ARROWS | | 37 | |
| **G20-52a-72** | **72"x24"** | **ROAD WORK NEXT __ MILES RT or LT ARROW** | **8** | **30** | **240** |
| **G20-55-96** | **96"x48"** | **SPEED LIMIT ENFORCED - MINIMUM FEE $80 WHEN WORKERS PRESENT** | **6** | **59** | **354** |
| 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 | |
| R1-1-48 | 48"x48" | STOP | | 32 | |
| **R1-1a-18** | **18"x18"** | **STOP and SLOW PADDLE Back to Back** | **4** | **5** | **20** |
| **R1-2-60** | **60"x60"** | **YIELD** | **4** | **29** | **116** |
| **R2-1-48** | **48"x60"** | **SPEED LIMIT __** | **12** | **39** | **468** |
| **R2-1a-24** | **24"x18"** | **MINIMUM FEE $80 (Mounted on Speed Limit post)** | **14** | **10** | **140** |
| 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 | |
| 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 | |
| W1-3-48 | 48"x48" | RIGHT or LEFT SHARP REVERSE CURVE ARROW | | 35 | |
| **W1-4-48** | **48"x48"** | **RIGHT or LEFT REVERSE CURVE ARROW** | **8** | **35** | **280** |
| W1-4b-48 | 48"x48" | DOUBLE RIGHT or LEFT REVERSE CURVE ARROW | | 35 | |
| **W1-6-48** | **48"x24"** | **LARGE ARROW** | **8** | **26** | **208** |
| 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** | **8** | **35** | **280** |
| **W4-2-48** | **48"x48"** | **RIGHT or LEFT LANE TRANSITION SYMBOL** | **6** | **35** | **210** |
| W5-1-48 | 48"x48" | ROAD NARROWS | | 35 | |
| W5-8-48 | 48"x48" | THRU TRAFFIC RIGHT LANE | | 35 | |
| W5-9-48 | 48"x48" | ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW | | 35 | |
| W6-3-48 | 48"x48" | TWO WAY TRAFFIC SYMBOL | | 35 | |
| **W8-1-48** | **48"x48"** | **BUMP** | **6** | **35** | **210** |
| 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** | **2** | **35** | **70** |
| W8-12-48 | 48"x48" | NO CENTER STRIPE | | 35 | |
| **W8-53-48** | **48"x48"** | **TRUCKS ENTERING HIGHWAY** | **4** | **35** | **140** |
| **W8-54-48** | **48"x48"** | **TRUCKS ENTERING AHEAD or __ FT.** | **4** | **35** | **140** |
| 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 | |
| **W20-1-48** | **48"x48"** | **ROAD WORK AHEAD or _FT or _ MILE** | **10** | **35** | **350** |
| 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.** | **6** | **35** | **210** |
| **W20-7a-48** | **48"x48"** | **FLAGGING SYMBOL** | **12** | **35** | **420** |
| W20-7k-24 | 24"x18" | __ FEET (Mounted on warning sign post) | | 10 | |
| 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 | |
| W21-1a-48 | 48"x48" | WORKERS SYMBOL | | 35 | |
| W21-2-48 | 48"x48" | FRESH OIL | | 35 | |
| W21-3-48 | 48"x48" | ROAD MACHINERY AHEAD or __ FT | | 35 | |

| SIGN NUMBER | SIGN SIZE | DESCRIPTION | AMOUNT REQUIRED | UNITS PER AMOUNT | UNITS SUB TOTAL |
|---|---|---|---|---|---|
| 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**

| | | | | | |
|---|---|---|---|---|---|
| **E1-5-48** | **48"x48"** | **EXIT** | **4** | **35** | **140** |
| **W24-1-48** | **48"x48"** | **DOUBLE REVERSE CURVE** | **2** | **35** | **70** |
| **R2-1-36** | **36"x48"** | **SPEED LIMIT __** | **24** | **30** | **720** |

**SPEC & CODE**

| | | | |
|---|---|---|---|
| **704-1000** | **TRAFFIC CONTROL SIGNS** | **TOTAL UNITS** | **5032** |

| SPEC & CODE | DESCRIPTION | UNIT | QUANTITY |
|---|---|---|---|
| **704-0100** | **FLAGGING** | **MHR** | **2760** |
| 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** | **200** |
| 704-1051 | TYPE II BARRICADES | EACH | |
| **704-1052** | **TYPE III BARRICADES** | **EACH** | **40** |
| **704-1060** | **DELINEATOR DRUMS** | **EACH** | **200** |
| 704-1065 | TRAFFIC CONES | EACH | |
| **704-1067** | **TUBULAR MARKERS** | **EACH** | **600** |
| 704-1070 | DELINEATOR | EACH | |
| **704-1072** | **FLEXIBLE DELINEATORS** | **EACH** | **275** |
| 704-1081 | VERTICAL PANELS - BACK TO BACK | EACH | |
| 704-1085 | SEQUENCING ARROW PANEL - TYPE A | EACH | |
| 704-1086 | SEQUENCING ARROW PANEL - TYPE B | EACH | |
| **704-1087** | **SEQUENCING ARROW PANEL - TYPE C** | **EACH** | **3** |
| 704-1088 | SEQUENCING ARROW PANEL - TYPE C - CROSSOVER | EACH | |
| 704-1095 | TYPE B FLASHERS | EACH | |
| 704-1500 | OBLITERATION OF PVMT MK | SF | |
| 704-3501 | PORTABLE PRECAST CONCRETE MED BARRIER | LF | |
| 704-3510 | PRECAST CONCRETE MED BARRIER - STATE FURNISHED | EACH | |
| 762-0200 | RAISED PAVEMENT MARKERS | EACH | |
| 762-0420 | SHORT TERM 4IN LINE - TYPE R | LF | |
| **762-0430** | **SHORT TERM 4IN LINE - TYPE NR** | **LF** | **19330** |
| 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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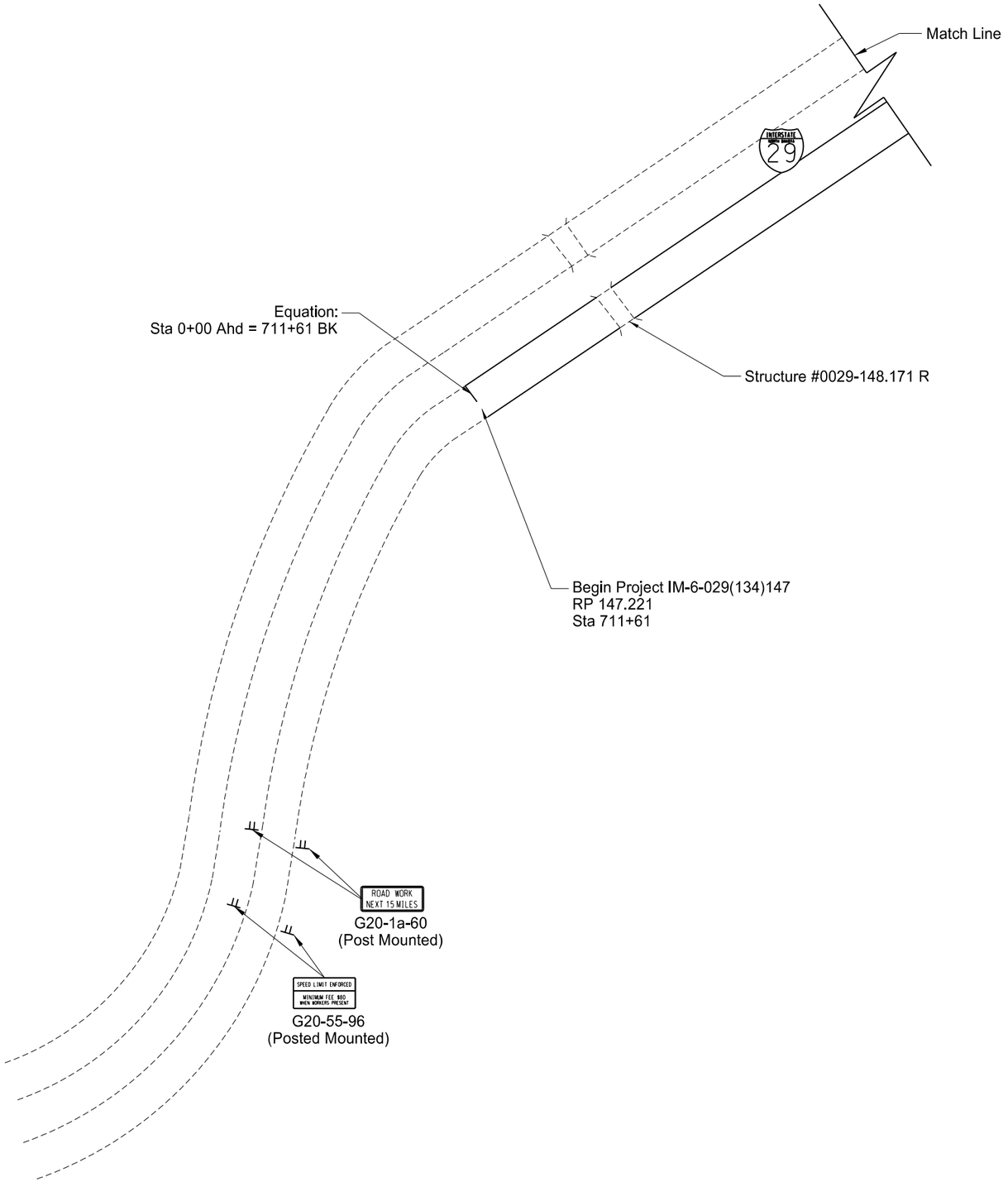
Traffic Control Devices List

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 100 | 2 |

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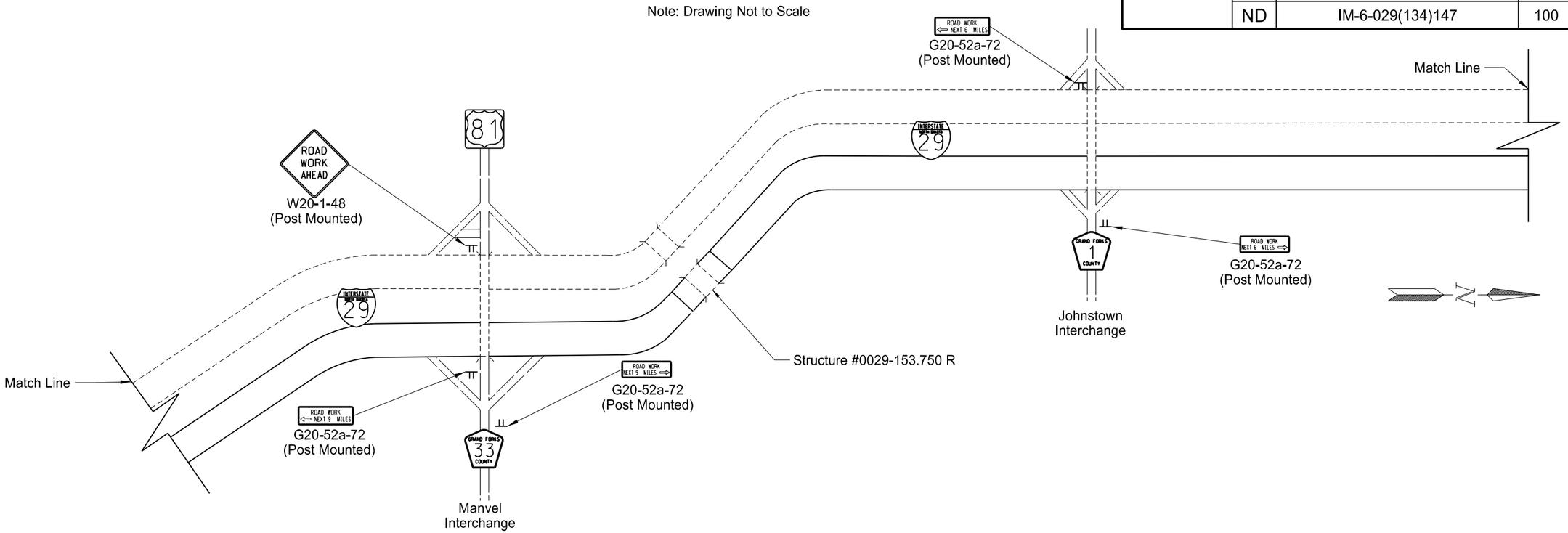
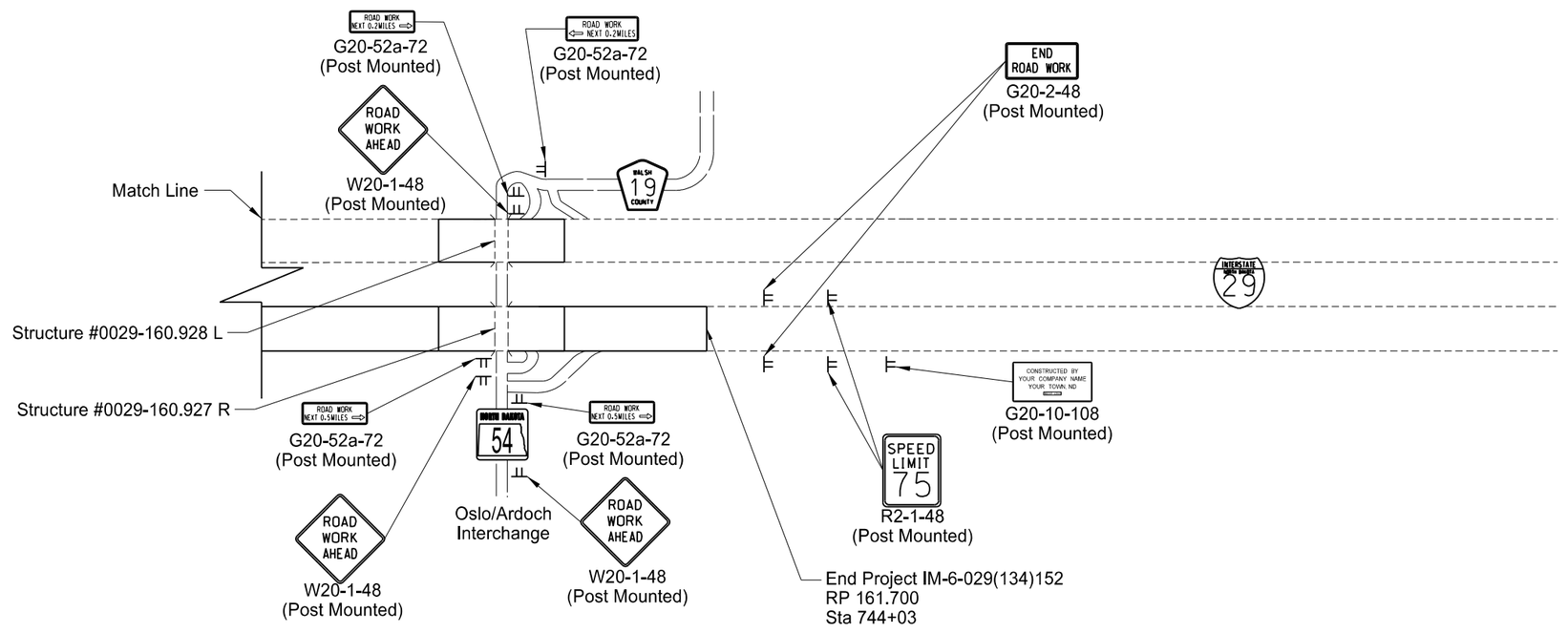
Work Zone Traffic Control

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 100 | 3 |

Note: Drawing Not to Scale

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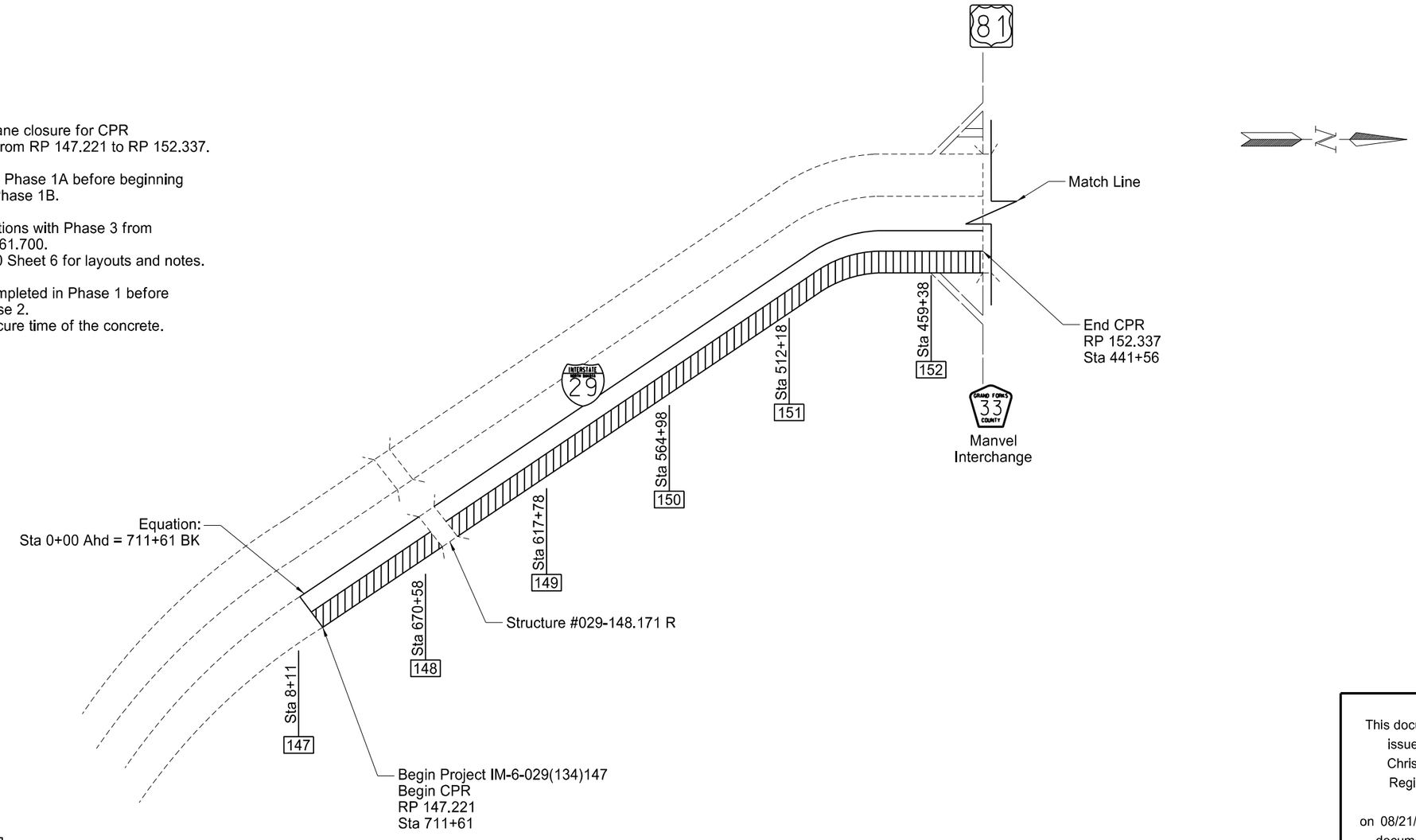
Work Zone Traffic Control

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 100 | 4 |

Phase 1A

- Phase 1A is a one lane closure for CPR in the Driving Lane from RP 147.221 to RP 152.337.
- Complete all CPR in Phase 1A before beginning CPR operations in Phase 1B.
- Perform CPR operations with Phase 3 from RP 156.700 to RP 161.700.
  Refer to Section 100 Sheet 6 for layouts and notes.
- All work must be completed in Phase 1 before starting work in Phase 2.
  Work items include cure time of the concrete.

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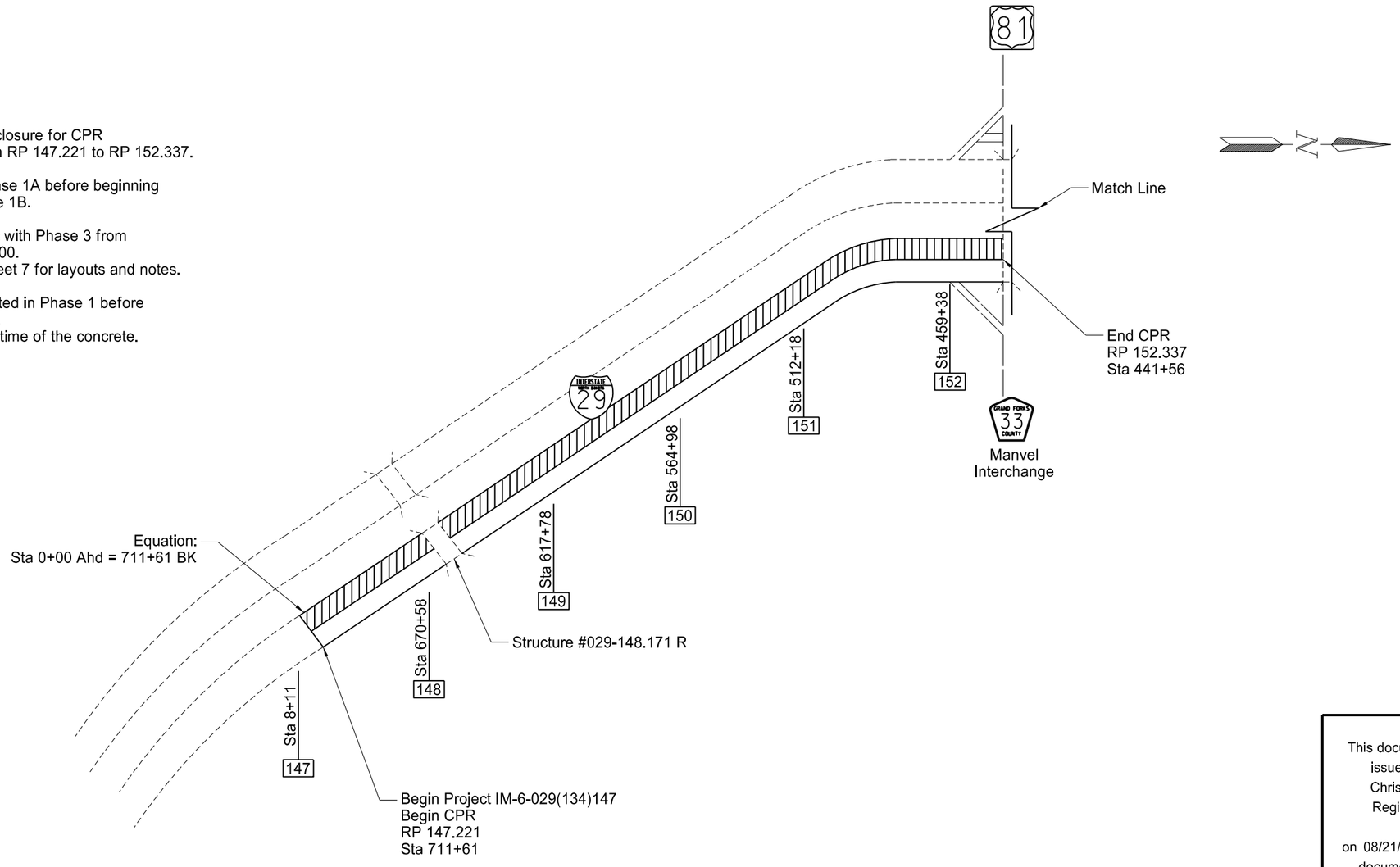
Traffic Control Phasing

CPR
Phase 1A

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 100 | 5 |

Phase 1B

- Phase 1B is a one lane closure for CPR in the Passing Lane from RP 147.221 to RP 152.337.
- Complete all CPR in Phase 1A before beginning CPR operations in Phase 1B.
- Perform CPR operations with Phase 3 from RP 156.700 to RP 161.700.
  Refer to Section 100 Sheet 7 for layouts and notes.
- All work must be completed in Phase 1 before starting work in Phase 2.
  Work items include cure time of the concrete.

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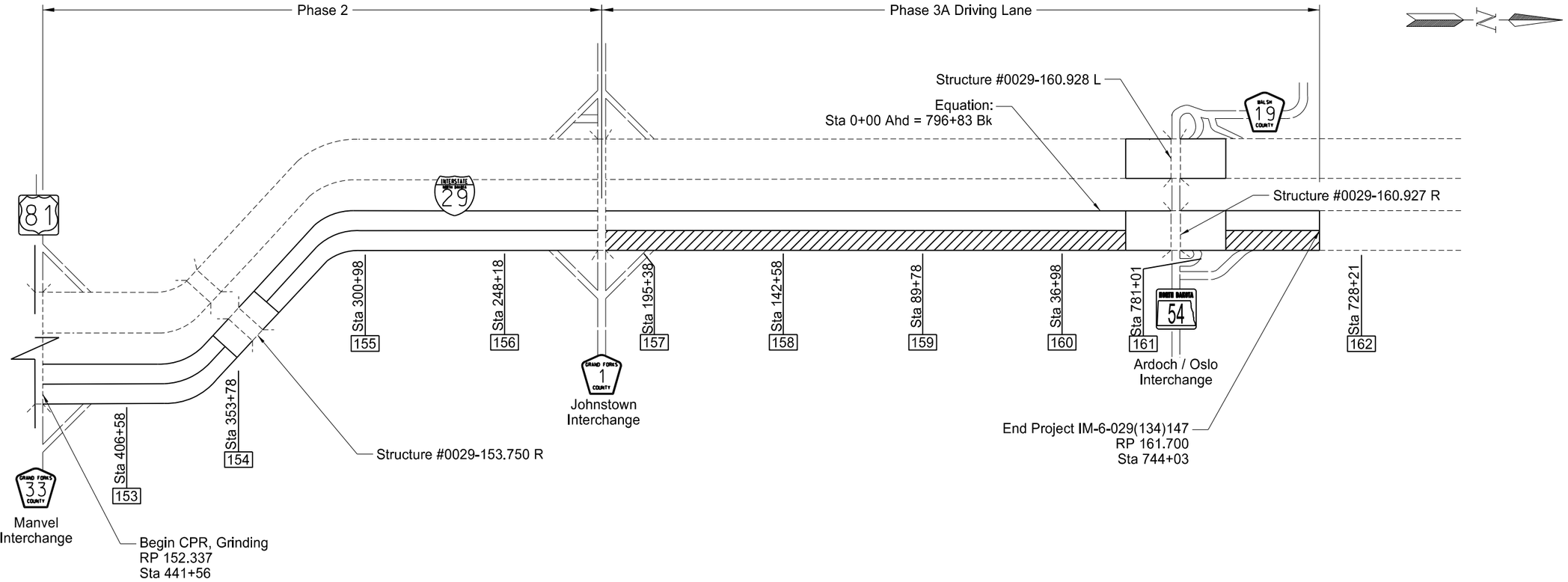
Traffic Control Phasing

CPR
Phase 1B

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 100 | 6 |




Phase 3A

- Phase 3A is a one lane closure for CPR in the Driving Lane from RP 156.700 to RP 161.700.
- Complete all CPR in Phase 3A before beginning CPR operations in Phase 3B
- Perform CPR operations with Phase 1 from RP 147.221 to RP 153.337.
  Refer to Section 100 Sheet 4 for layouts and notes.
- All work must be completed in Phase 3 before starting work in Phase 2.

Phase 3A Driving Lane

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Traffic Control Phasing

CPR
Phae 3A

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
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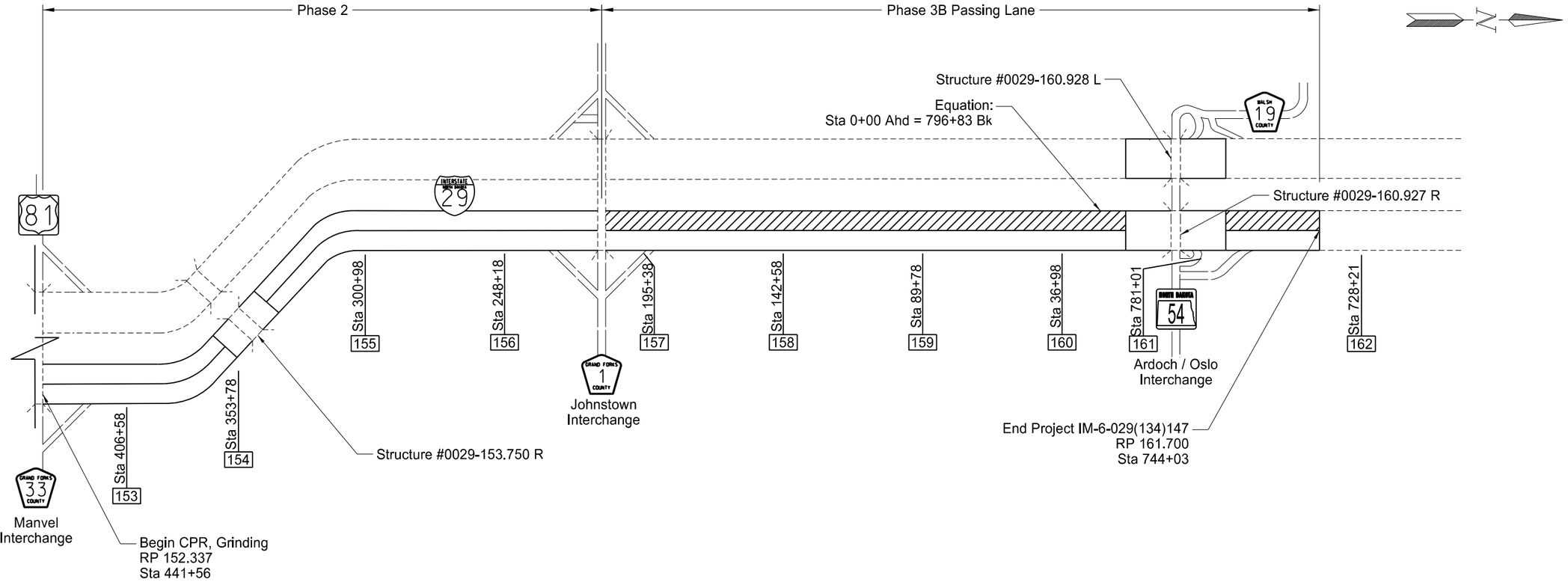


Phase 3B

- Phase 3B is a one lane closure for CPR in the Passing Lane from RP 156.700 to RP 161.700.
- Before Phase 3C will be allowed, completion of all CPR in Phase 3B must be near completion. Work items include cure time of the concrete.
- Perform CPR operations with Phase 1 from RP 147.221 to RP 153.337. Refer to Section 100 Sheet 5 for layouts and notes.
- All work must be completed in Phase 3 before starting work in Phase 2.

Phase 3B Passing Lane

Note: Drawing Not to Scale

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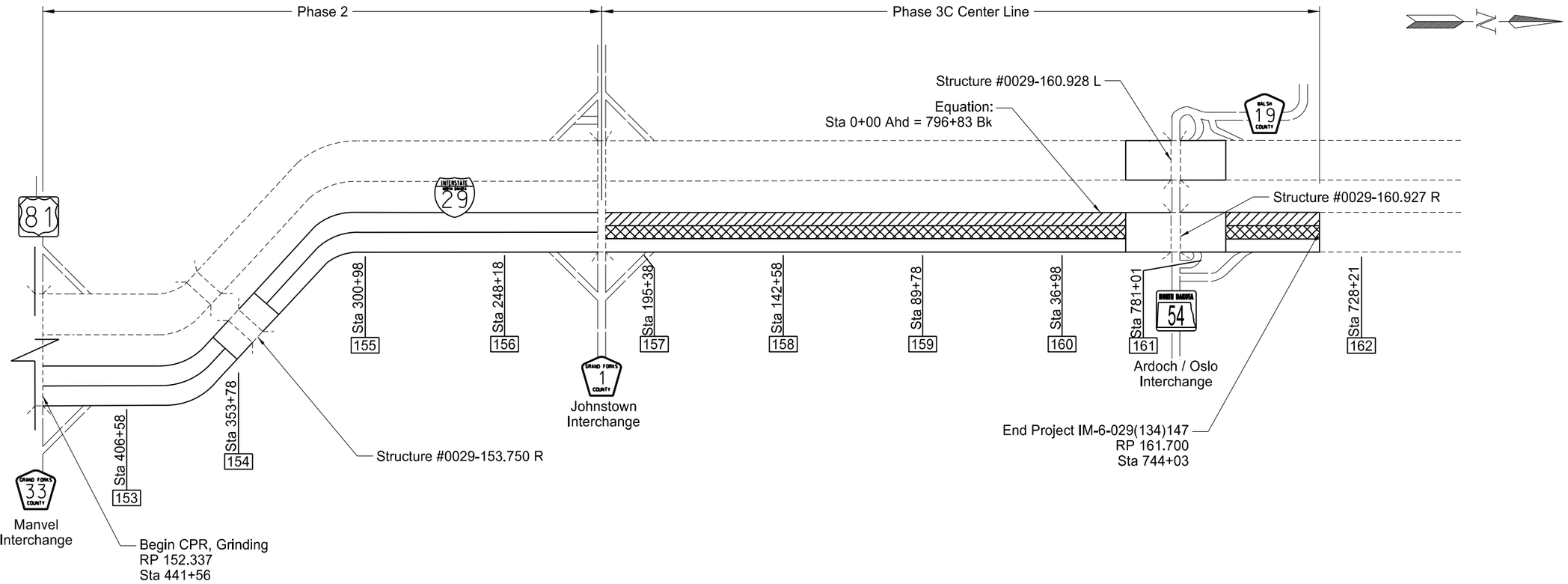
Traffic Control Phasing

CPR
Phae 3B

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 100 | 8 |




Phase 3C

- Phase 3C is a one lane closure for ℄ Joint Repair in the Passing Lane from RP 156.700 to RP 161.700.
- Before Phase 2 will be allowed, completion of all ℄ Joint Repair in Phase 3C must near completion only if a 3 mile seperation is obtained between lane closures as per plan note 704-P01.
- Perform work on Existing Spot Full Deoth Repairs simultaneously with ℄ Joint Repair. Widen the Passing Lane Closure to a max of 7' from ℄ on NB I-29 to perform work.
  **ONLY WIDEN TO THE 7' MAX EXTENSION AT EXISTING SPOT FULL DEPTH LOCATIONS
- Before Phase 5 will be allowed, completion of the ℄ Joint Repair in Phase 3C must be near completion only if a 3 mile seperation is obtained between lane closures as per plan note 704-P01.

Phase 3C Passing Lane

Phase 3C Center Line

Note: Drawing Not to Scale

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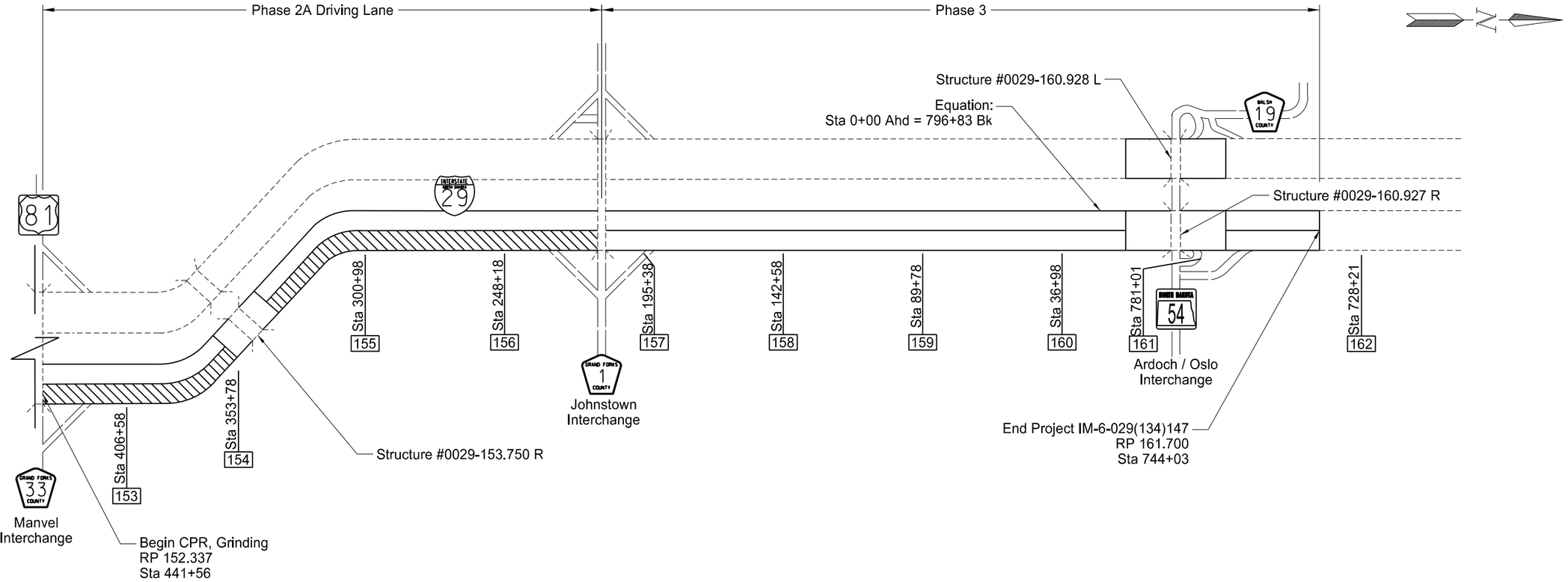
Traffic Control Phasing

CL Joint Repair
Phae 3C

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 100 | 9 |




Phase 2A

- Phase 2A is a lane closure for CPR in the Driving Lane from RP 152.337 to RP 156.700.
- Do not begin any work in Phase 2A until Phase 1 is complete. Provide a minimum of 3 miles of seperation between Phase 2 and Phase 3 lane closures as per plan note 704-P01.
- Complete all work in Phase 2A before beginning work in Phase 2B.
  Work items include cure time of the concrete.

Phase 2A Driving Lane

Note: Drawing Not to Scale

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Traffic Control Phasing

CPR
Phase 2A

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| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
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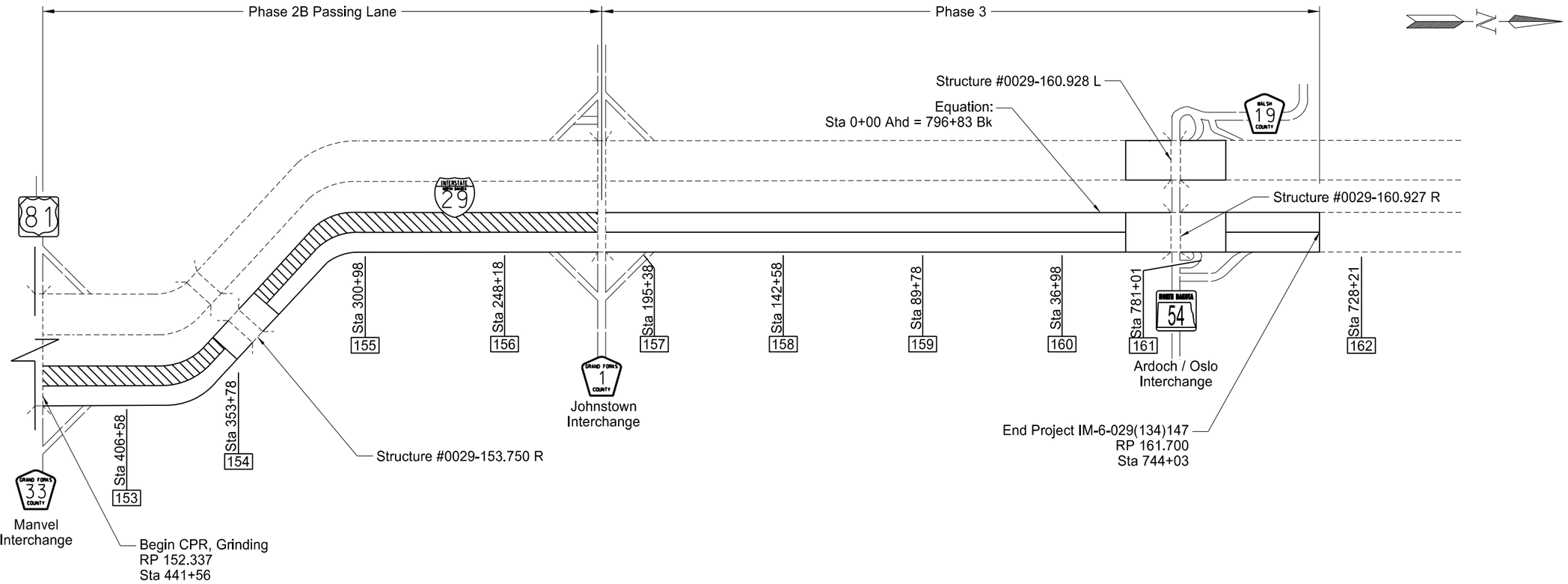


Phase 2B

- Phase 2B is a one lane closure for CPR in the Passing Lane from RP 152.337 to RP 156.700.
- Before Phase 2C will be allowed, completion of CPR in Phase 2B must be near completion. Work items include cure time of the concrete.

Phase 2B Passing Lane

Note: Drawing Not to Scale

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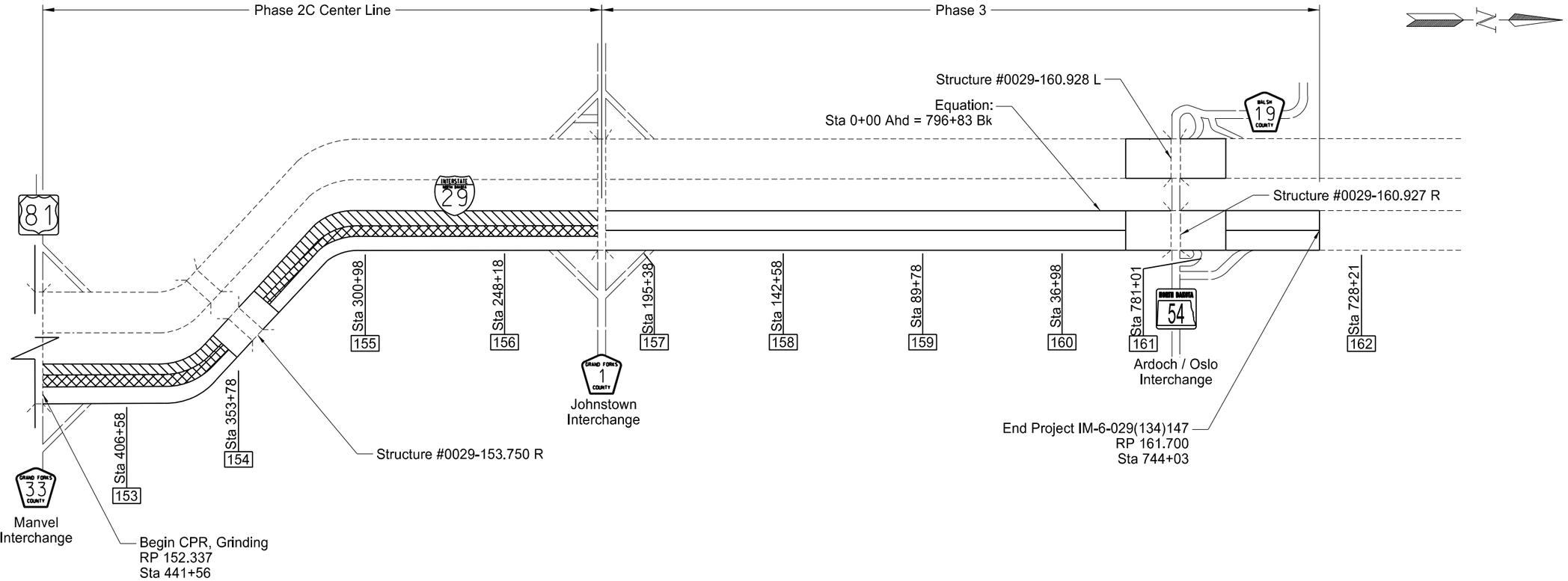
Traffic Control Phasing

CPR
Phase 2B

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 100 | 11 |




Phase 2C

- Phase 2C is a lane closure for ℄ Joint Repair in the Passing Lane from RP 152.337 to RP 156.700.
- Before Phase 2C will be allowed, completion of all work in Phase 3 must be completed. Work items include sure time of the concrete.
- Perform work on Existing Spot Full Depth Repairs simultaneously with ℄ Joint Repair. Widen the Passing Lane Closure to a max of 7' from ℄ on NB I-29 to perform work.
  ** ONLY WIDEN TO THE 7' MAX EXTENSION AT EXISTING SPOT FULL DEPTH LOCATIONS

Phase 4

- Phase 2C will become Phase 4B and will be allowed to be left in place while work is being performed during Phase 5 at Oslo Interchange

Phase 2B Passing Lane

Phase 2C Center Line

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Traffic Control Phasing

CL Joint Repair
Phase 2C

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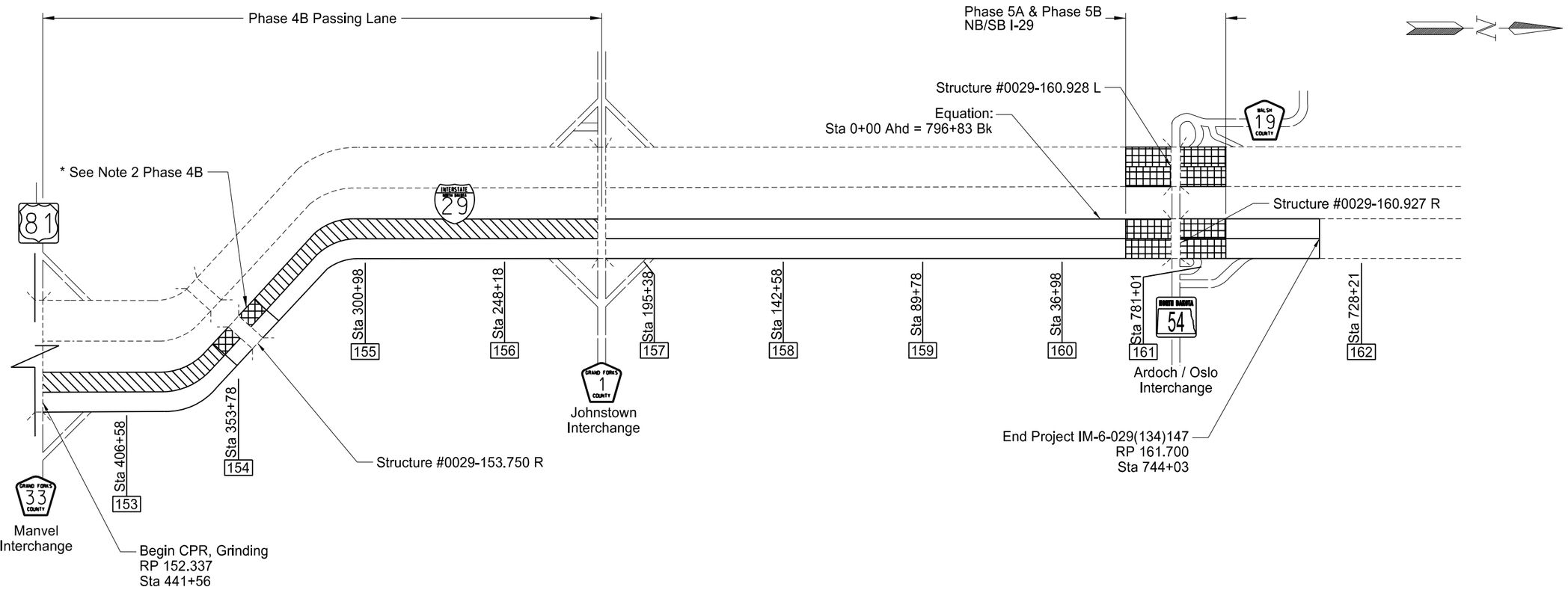


Phase 4B

- Phase 4B is a one lane closure for PCC Milling, HMA, and Transverse and Longitudinal Joint Sealing in the Passing Lane from RP 152.337 to RP 156.700.
- *PCC Milling and HMA are to be completed prior to Conventional Grinding operation arriving at Structure #0029-153.750 R.
- Before Phase 6 and Phase 7 will be allowed, Phase 4 must be completed.

Phase 5A & 5B

- Phase 5 consists of two one lane closures at Ardoch / Oslo Interchange for PCC & Pavement Milling, HMA, Guardrail Embankment, Base Course, and Remove / Reset W-Beam Guardrail in the NB and SB Driving and Passing Lanes.
- Offset the ℄ HMA joints 6" before each lift is paved. Pave one lift at each lane closure phase until final elevation is obtained as per discretion of the Engineer. This will require multiple lane switches for NB and SB Driving and Passing Lanes.

Phase 4B Passing Lane

Phase 5A & 5B Driving/Passing Lane

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Traffic Control Phasing
Conventional Grinding & Joint Sealing
PCC Mill, HMA Mill, & HMA Overlay
Phase 4B & Phase 5A & 5B

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
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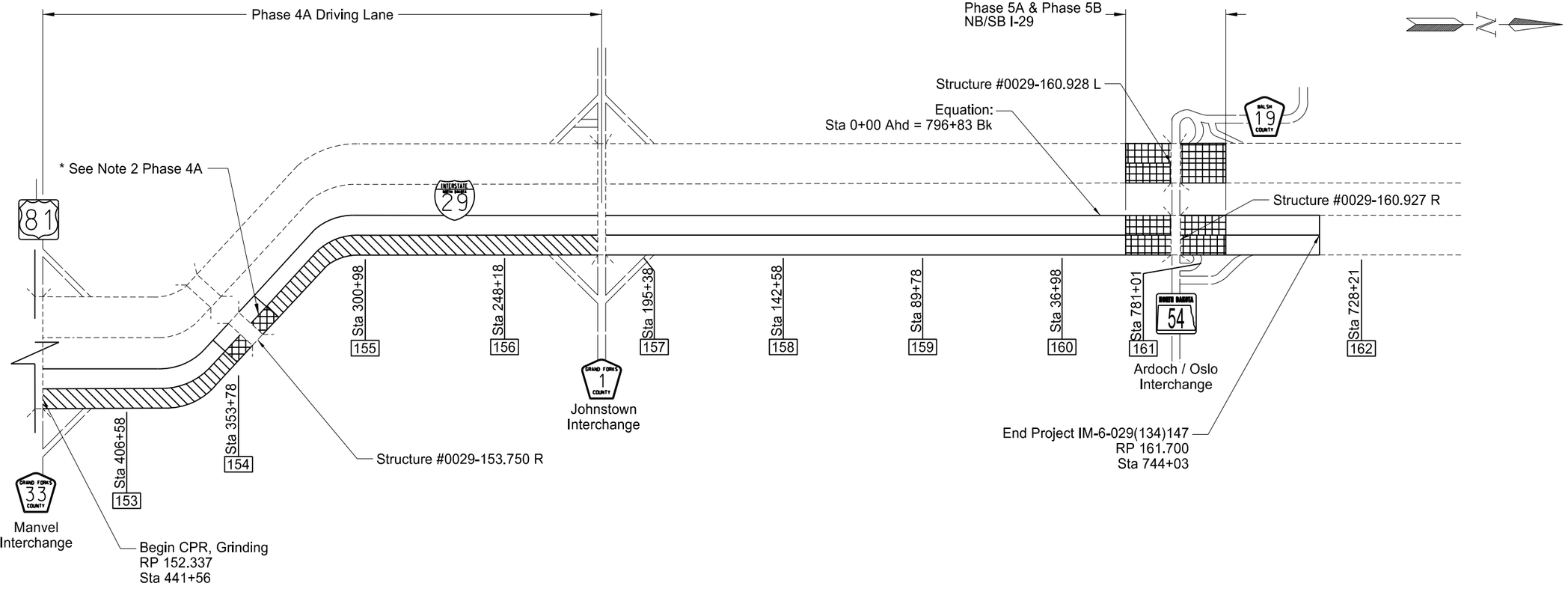


Phase 4A

- Phase 4A is a one lane closure for PCC Milling, HMA, and Transverse and Longitudinal Joint Sealing in the Driving Lane from RP 152.337 to RP 156.700.
- *PCC Milling and HMA are to be completed prior to Conventional Grinding operation arriving at Structure #0029-153.750 R.
- Before Phase 6 and Phase 7 will be allowed, Phase 4 must be completed.

Phase 5A & 5B

- Phase 5 consists of two one lane closures at Ardoch / Oslo Interchange for PCC & Pavement Milling, HMA, Guardrail Embankment, Base Course, and Remove / Reset W-Beam Guardrail in the NB and SB Driving and Passing Lanes.
- Offset the ℄ HMA joints 6" before each lift is paved. Pave one lift at each lane closure phase until final elevation is obtained as per discretion of the Engineer. This will require multiple lane switches for NB and SB Driving and Passing Lanes.

Phase 4A Driving Lane

Phase 5A & 5B Driving/Passing Lane

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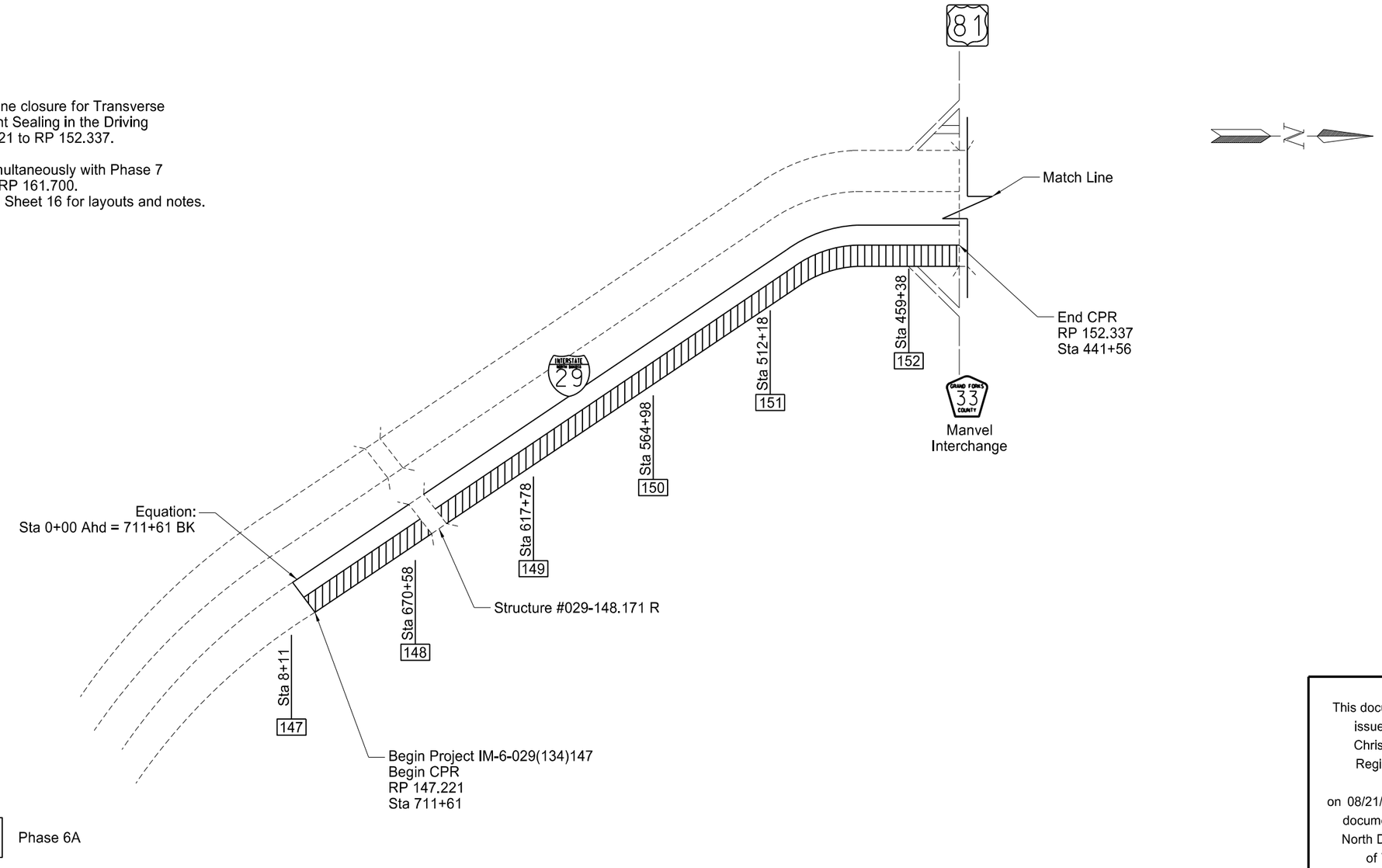
Traffic Control Phasing
Conventional Grinding & Joint Sealing
PCC Mill, HMA Mill, & HMA Overlay
Phase 4A & Phase 5A & 5B

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 100 | 14 |

Phase 6A

- Phase 6A is a one lane closure for Transverse and Longitudinal Joint Sealing in the Driving Lane from RP 147.221 to RP 152.337.
- Perform Phase 6 simultaneously with Phase 7 from RP 156.700 to RP 161.700.
  Refer to Section 100 Sheet 16 for layouts and notes.

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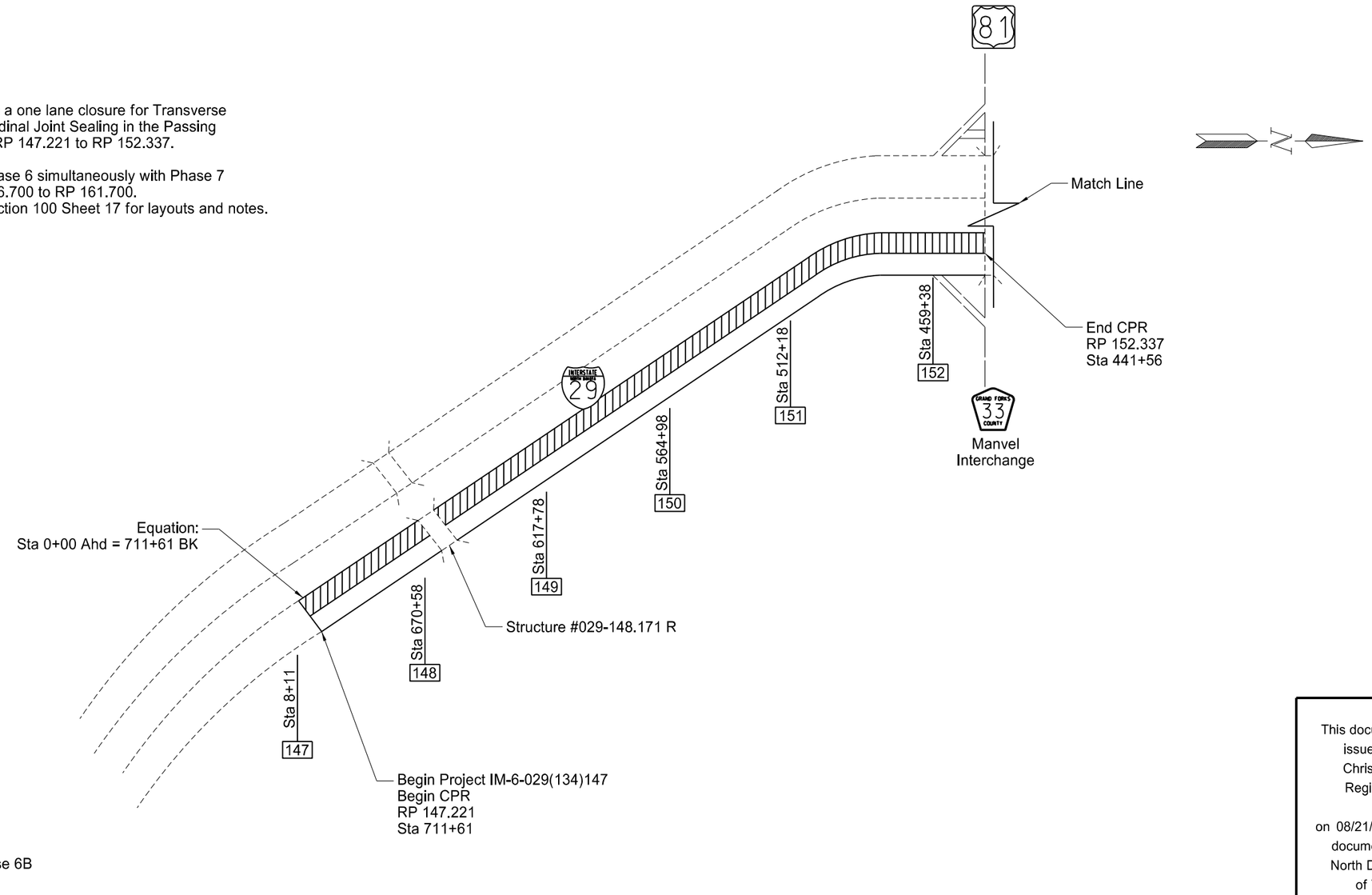
Traffic Control Phasing

Joint Sealing
Phase 6A

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 100 | 15 |

Phase 6B

- Phase 6B is a one lane closure for Transverse and Longitudinal Joint Sealing in the Passing Lane from RP 147.221 to RP 152.337.
- Perform Phase 6 simultaneously with Phase 7 from RP 156.700 to RP 161.700.
  Refer to Section 100 Sheet 17 for layouts and notes.




Note: Drawing Not to Scale

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Traffic Control Phasing

Joint Sealing
Phase 6B

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
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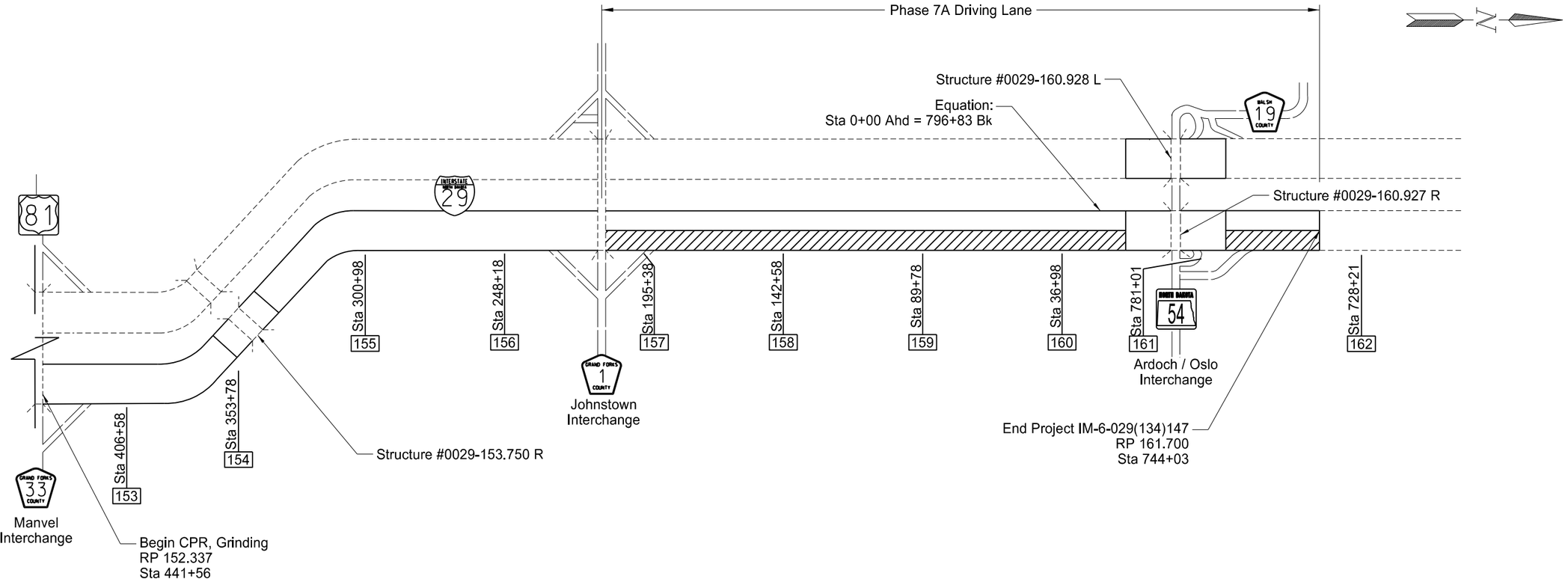


Phase 7A

- Phase 7A is a one lane closure for Conventional Grinding and Transverse and Longitudinal Joint Sealing in the Driving Lane from RP 156.700 to RP 161.700.
- Complete all work in Phase 7A before beginning work in Phase 7B.
- Perform Phase 7 simultaneously with Phase 6 from RP 147.221 to RP 152.337.
  Refer to Section 100 Sheet 14 for layouts and notes.

Phase 7A

Note: Drawing Not to Scale

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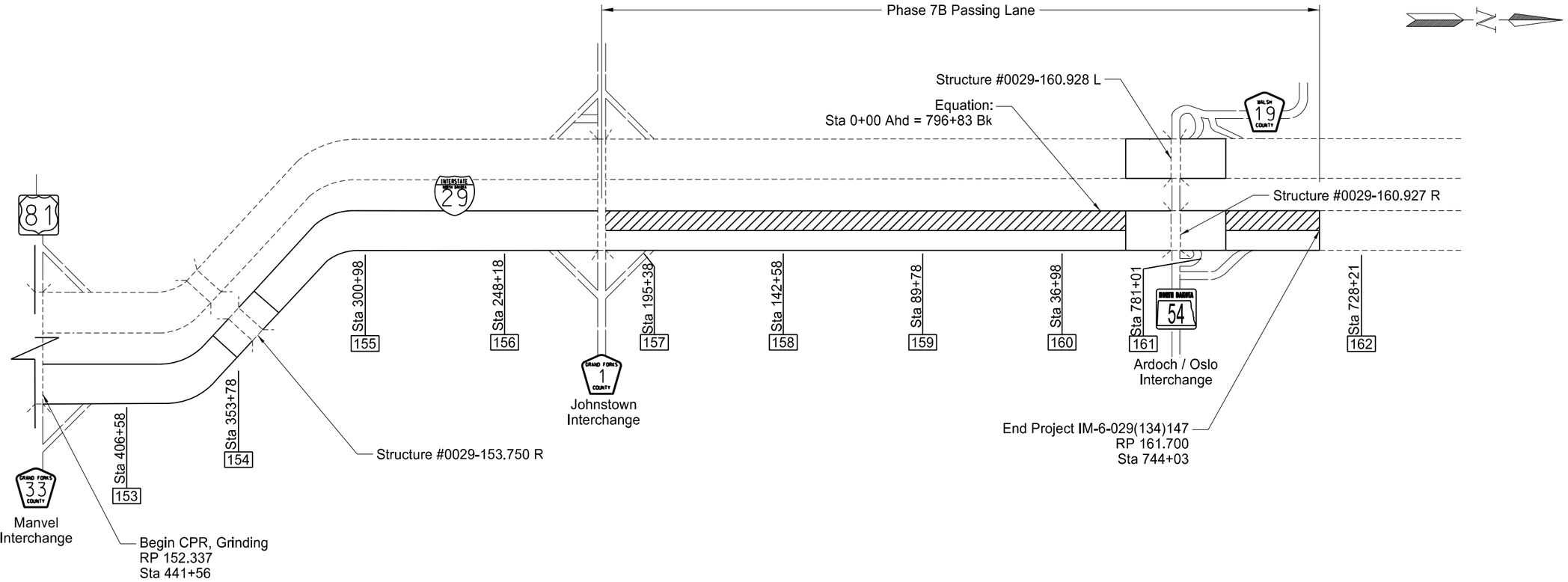
Traffic Control Phasing

Conventional Grinding & Joint Sealing
Phase 7A

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 100 | 17 |




Phase 7B

- Phase 7B is a one lane closure for Conventional Grinding and Transverse and Longitudinal Joint Sealing in the Driving Lane from RP 156.700 to RP 161.700.
- Perform Phase 7 simultaneously with Phase 6 from RP 147.221 to RP 152.337.
  Refer to Section 100 Sheet 15 for layouts and notes.

Phase 7B

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Note: Drawing Not to Scale

Traffic Control Phasing

Conventional Grinding & Joint Sealing
Phase 7B

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 130 | 1 |

(A) Thrie Beam rail section (Double Thickness)

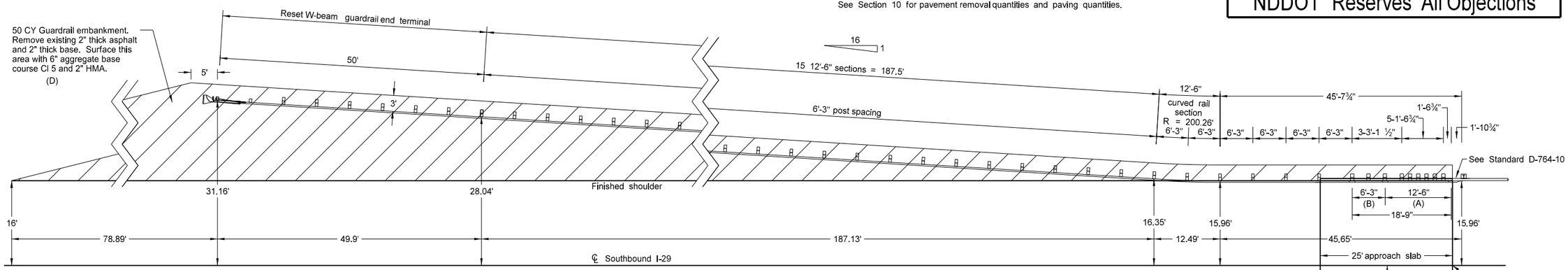
(B) W-Thrie Beam Transition section (Double Thickness)

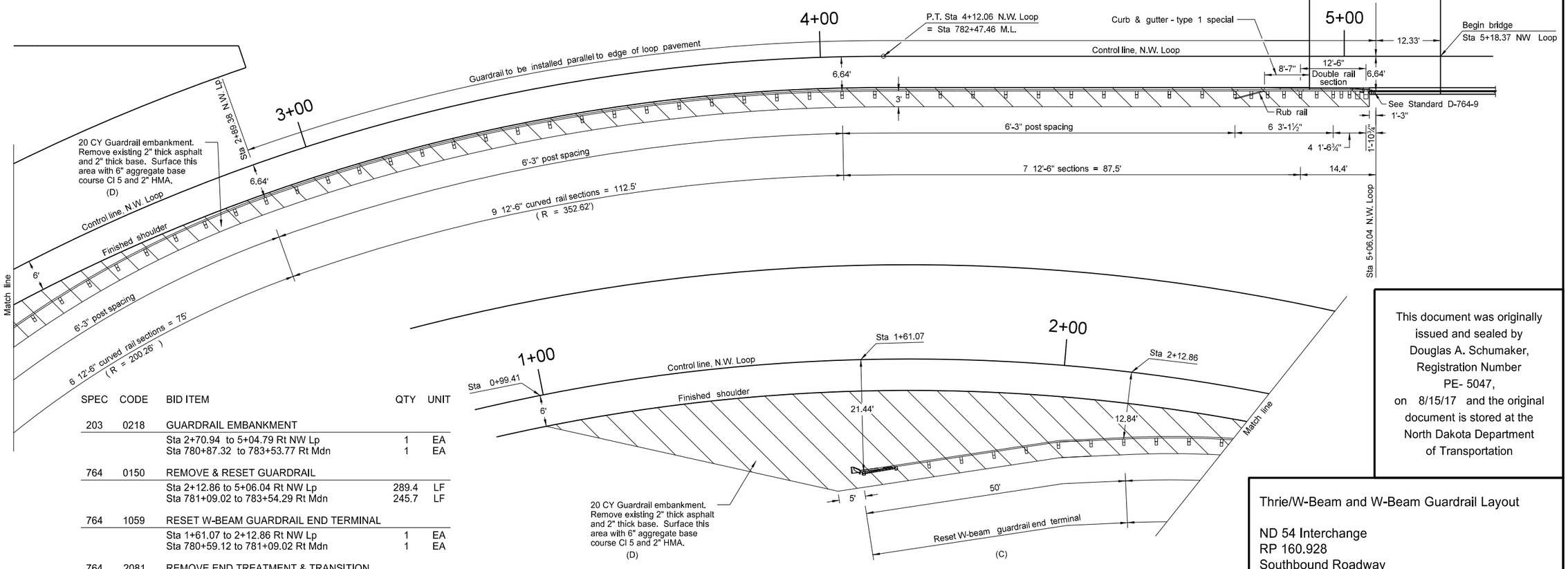
(C) Reset a FLEAT end terminal at this location

(D) The estimated in-place volume of embankment was calculated using a 4:1 foreslope to tie into the existing embankment. The volume listed is for informational purposes only.

See Section 10 for pavement removal quantities and paving quantities.

**23 USC § 409 Documents**
**NDDOT Reserves All Objections**




| SPEC | CODE | BID ITEM | QTY | UNIT |
|---|---|---|---|---|
| 203 | 0218 | GUARDRAIL EMBANKMENT | | |
| | | Sta 2+70.94 to 5+04.79 Rt NW Lp | 1 | EA |
| | | Sta 780+87.32 to 783+53.77 Rt Mdn | 1 | EA |
| 764 | 0150 | REMOVE & RESET GUARDRAIL | | |
| | | Sta 2+12.86 to 5+06.04 Rt NW Lp | 289.4 | LF |
| | | Sta 781+09.02 to 783+54.29 Rt Mdn | 245.7 | LF |
| 764 | 1059 | RESET W-BEAM GUARDRAIL END TERMINAL | | |
| | | Sta 1+61.07 to 2+12.86 Rt NW Lp | 1 | EA |
| | | Sta 780+59.12 to 781+09.02 Rt Mdn | 1 | EA |
| 764 | 2081 | REMOVE END TREATMENT & TRANSITION | | |
| | | Sta 1+61.07 to 2+12.86 Rt NW Lp | 1 | EA |
| | | Sta 780+59.12 to 781+09.02 Rt Mdn | 1 | EA |

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Thrie/W-Beam and W-Beam Guardrail Layout

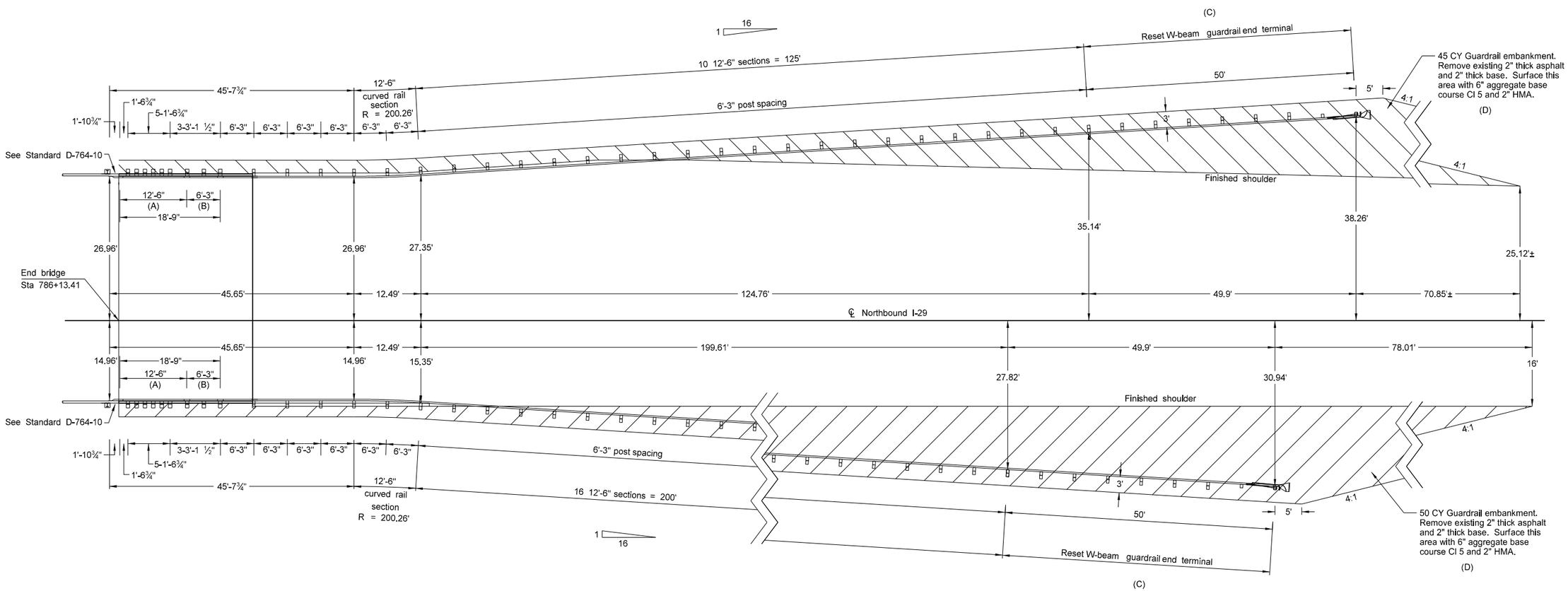
ND 54 Interchange
RP 160.928
Southbound Roadway

I-29

8/15/2017 2:58:13 PM kaltepeter R:\project\60029147.134\traffic\130GR_001_lgdrl 029_160.927L.dgn

| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|---|---|---|---|---|
| | ND | IM-6-029(134)147 | 130 | 2 |

23 USC § 409 Documents
NDDOT Reserves All Objections




| SPEC | CODE | BID ITEM | QTY | UNIT |
|---|---|---|---|---|
| 203 | 0218 | GUARDRAIL EMBANKMENT | | |
| | | Sta 786+13.41 to 788+91.83 Lt Mdn | 1 | EA |
| | | Sta 786+13.41 to 788+91.83 Lt | 1 | EA |
| 764 | 0150 | REMOVE & RESET GUARDRAIL | | |
| | | Sta 786+12.89 to 788+70.64 Lt Mdn | 258.2 | LF |
| | | Sta 786+12.89 to 787+95.79 Lt | 183.2 | LF |
| 764 | 1059 | RESET W-BEAM GUARDRAIL END TERMINAL | | |
| | | Sta 788+70.64 to 789+20.54 Lt Mdn | 1 | EA |
| | | Sta 787+95.79 to 788+45.69 Lt | 1 | EA |
| 764 | 2081 | REMOVE END TREATMENT & TRANSITION | | |
| | | Sta 788+70.64 to 789+20.54 Lt Mdn | 1 | EA |
| | | Sta 787+95.79 to 788+45.69 Lt | 1 | EA |

(A) Thrie Beam rail section (Double Thickness)

(B) W-Thrie Beam Transition section (Double Thickness)

(C) Reset a FLEAT end terminal at this location

(D) The estimated in-place volume of embankment was calculated using a 4:1 foreslope to tie into the existing embankment. The volume listed is for informational purposes only.

See Section 10 for pavement removal quantities and paving quantities.

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Thrie/W-Beam Guardrail Layout

ND 54 Interchange
RP 160.927
Northbound Roadway

I-29

# NDDOT ABBREVIATIONS

D-101-1

| | |
|---|---|
| ? | 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 ℄ | 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 |
| Dlnt | delineate |
| Dlntr | 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 |

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# NDDOT ABBREVIATIONS

D-101-2

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

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# NDDOT ABBREVIATIONS

D-101-3

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

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# NDDOT UTILITY COMPANY AND ORGANIZATION ABBREVIATIONS

D-101-10

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

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# Line Styles

D-101-20

## Existing Topography

- Existing Ground Void
- Existing Cemetary Boundary
- Existing Box Culvert Bridge
- Existing Concrete Surface
- Existing Drainage Structure
- Existing Gravel Surface
- Existing Riprap
- Existing Dirt Surface
- Existing Asphalt Surface
- Existing Tie Point Line
- Existing Railroad Centerline
- Existing Guardrail Cable
- Existing Guardrail Metal
- Existing Edge of Water
- Existing Fence
- Existing Railroad
- Existing Field Line
- Exst Flow
- Existing Curb
- Existing Valley Gutter
- Existing Driveway Gutter
- Existing Curb and Gutter
- Existing Mountable Curb and Gutter

- Existing 3-Cable w Posts
- Site Boundary
- Existing Berm, Dike, Pit, or Earth Dam
- Existing Ditch Block
- Existing Tree Boundary
- Existing Brush or Shrub Boundary
- Existing Retaining Wall
- Existing Planter or Wall
- Existing W-Beam Guardrail with Posts
- Existing Railroad Switch
- Gravel Pit - Borrow Area
- Existing Wet Area-Vegetation Break

## Proposed Topography

- 3-Cable w Posts
- Flow
- Fence
- Remove Line
- Wall
- Retaining Wall (Plan View)
- W-Beam w Posts

## Existing Utilities

- Existing Electrical
- Existing Fiber Optic Line
- Existing TV Fiber Optic
- Existing Gas Pipe
- Existing Overhead Utility Line
- Existing Power
- Existing Fuel Pipeline
- Existing Undefined Above Ground Pipe Line
- Existing Sanitary Sewer
- Existing Sanitary Force Main
- Existing Storm Drain
- Existing Storm Drain Force Main
- Existing Culvert
- Existing Telephone Line
- Existing TV Line
- Existing Water or Steam Line
- Existing Under Drain
- Existing Slotted Drain
- Existing Conduit
- Existing Conductor
- Existing Down Guy Wire Down Guy
- Existing Underground Vault or Lift Station

## Proposed Utilities

- 24 Inch Pipe
- Reinforced Concrete Pipe
- Under Drain
- Edge Drain

## Traffic Utilities

- Conductor
- Fiber Optic
- Existing Loop Detector
- Existing Double Micro Loop Detector
- Micro Loop Detector Double
- Existing Micro Loop Detector
- Micro Loop Detector
- Signal Head with Mast Arm
- Existing Signal Head with Mast Arm

## Sign Structures

- Existing Overhead Sign Structure
- Existing Overhead Sign Structure Cantilever
- Overhead Sign Structure Cantilever

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| 09-23-16 | Added and Revised Items, Organized by Functional Groups |

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# Line Styles

D-101-21

## Right Of Way

- Easement
- Existing Easement
- Right of Way
- Existing Right of Way
- Existing Right of Way Railroad
- Existing Right of Way Not State Owned
- Existing Government Lot Line
- Existing Adjacent Block Lines
- Existing Adjacent Lot Lines
- Existing Adjacent Property Line
- Existing Adjacent Subdivision Lines
- Sight Distance Triangle Line
- Dimension Leader

## Boundary Control

- Existing City Corporate Limits or Reservation Boundary
- Existing State or International Line
- Existing Township
- Existing County
- Existing Section Line
- Existing Quarter Section Line
- Existing Sixteenth Section Line
- Existing Centerline
- Tangent Line

## Cross Sections and Typicals

- Existing Ground
- Existing Topsoil (Cross Section View)
- Existing Ground Void (Not Surveyed) (void — void — void — v)
- Existing Concrete
- Existing Aggregate (Cross Section View)
- Existing Curb and Gutter (Cross Section View)
- Existing Asphalt (Cross Section View)
- Existing Reinforcement Rebar

## Geotechnical

- Geotextile Fabric Type D (D — D)
- Geogrid (Geo — Geo)
- Geotextile Fabric Type R (R — R)
- Geotextile Fabric Type R1 (R — R)
- Geotextile Fabric Type RR (RR — RR)
- Geotextile Fabric Type S (S — S)
- Subgrade Reinforcement
- Failure Line

## Countours

- Depression Contours
- Supplemental Contour

## Profile

- Subgrade, Subcut or Ditch Grade
- Topsoil Profile

## Striping

- Centerline Pavement Marking
- Barrier with Centerline Pavement Marking
- Barrier Pavement Marking
- Stripe 4 IN Dotted Extension White
- Stripe 8 IN Dotted Extension White
- Stripe 8 IN Lane Drop

## Pavement Joints

- Doweled Joint
- Tie Bar 30 Inch 4 Foot Center to Center
- Tie Bar 18 Inch 3 Foot Center to Center
- Tie Bar at Random Spacing

## Bridge Details

- Hidden Object
- Small Hidden Object
- Large Hidden Object
- Phantom Object
- Centerline Main
- Centerline
- Existing Ground (Details)
- Existing Conditions
- Sheet Piling

## Erosion Control

- Limits of Const Transition Line
- Bale Check
- Rock Check
- Floating Silt Curtain (S — S)
- Silt Fence (SF — SF)
- Excavation Limits
- Fiber Rolls

## Environmental

- Wetland Mitigation
- Existing Wetland Easement USFWS
- Existing Wetland Jurisdictional
- Existing Wetland
- Tree Row

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# Symbols

D-101-30

North Arrow (Half Scale)

Truck Mounted Attenuator

Type I Barricade

Type II Barricade

Type III Barricade

Catch Basin

Cairn or Stone Circle

Video Detection Camera

Storm Drain Cap or Stub

Corrugated Metal End Section 18 Inch

Corrugated Metal End Section 24 Inch

Corrugated Metal End Section 30 Inch

Corrugated Metal End Section 36 Inch

Corrugated Metal End Section 42 Inch

Corrugated Metal End Section 48 Inch

Concrete Foundation

Ground Connection Conductor

Neutral Connection Conductor

Phase 1 Connection Conductor

Phase 2 Connection Conductor

Traffic Cone

Signal Controller

Pad Mounted Signal Controller

Alignment Data Point

Emergency Vehicle Detector

Attenuation Device

Diamond Grade Delineator Type A

Diamond Grade Delineator Type B

Diamond Grade Delineator Type C

Diamond Grade Delineator Type D

Diamond Grade Delineator Type E

Flexible Delineator

Flexible Delineator Type A

Flexible Delineator Type B

Flexible Delineator Type C

Flexible Delineator Type D

Flexible Delineator Type E

Delineator Type A

Delineator Type A Reset

Delineator Type B

Delineator Type B Reset

Delineator Type C

Delineator Type D

Delineator Type E

Delineator Drums

Spot Elevation

Existing Access Control Arrow

Existing Artifact

Existing Flashing Beacon

Existing Benchmark

Existing Railroad Battery Box

Existing Bush or Shrub

Existing Gas Cap or Stub

Existing Sanitary Cap or Stub

Existing Storm Drain Cap or Stub

Existing Water Cap or Stub

Existing Sanitary Cleanout

Existing Concrete Foundation

Existing Traffic Signal Controller

Existing Pad Mounted Signal Controller

Existing Sixteenth Section Corner

Existing Quarter Section Corner

Existing Section Corner

Existing Railroad Crossbuck

Existing Satellite Dish

Existing Fuel Dispensers

Existing Flexible Delineator Type A

Existing Flexible Delineator Type B

Existing Flexible Delineator Type C

Existing Flexible Delineator Type D

Existing Flexible Delineator Type E

Existing Delineator Type A

Existing Delineator Type B

Existing Delineator Type C

Existing Delineator Type D

Existing Delineator Type E

Existing EFB Misc

Existing Flashing Beacon

Existing Pipe Mounted Flasher

Existing Pad Mounted Feed Point

Existing Pipe Mounted Feed Point with Pad

Existing Pole Mounted Feed Point

Existing Railroad Frog

Existing Snow Gate 18

Existing Snow Gate 28

Existing Snow Gate 40

Existing Headwall

Existing Pedestrian Head with Number

Existing Signal Head

Existing Sprinkler Head

Existing Fire Hydrant

Existing Catch Basin Drop Inlet

Existing Curb Inlet

Existing Manhole Inlet

Existing Junction Box

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# Symbols

D-101-31

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

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# Symbols

D-101-32

- Pad Mounted Feed Point
- Pipe Mounted Feed Point with Pad
- Pole Mounted Feed Point
- Headwall
- Double Headwall with Vegitation Barrier
- Single Headwall with Vegitation Barrier
- Pole Mounted Head
- Sprinkler Head
- Fire Hydrant
- Inlet Type 1
- Inlet Type 2
- Double Inlet Type 2
- Inlet Grate 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 (CSB)
- Flight Auger Sample (FA)
- Split Barrel Sample (SB)
- Thinwall Tube Sample
- Highway Sign
- SNOW GATE 18 FT
- SNOW GATE 28 FT
- SNOW GATE 40 FT
- Standard Penetration Test (N)
- Transformer
- Inclinometer Tube (Incl)
- Underdrain Cleanout
- Excavation Unit
- Water Valve

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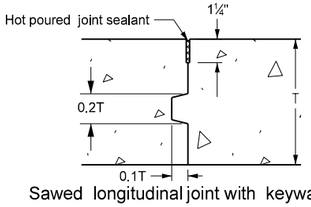
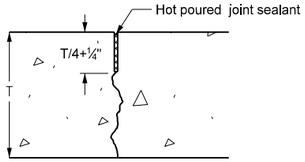
# LONGITUDINAL JOINT DETAILS

D-550-2

## UNTIED JOINTS

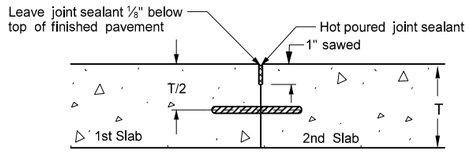



Sawed longitudinal joint with keyway




Sawed longitudinal joint without keyway

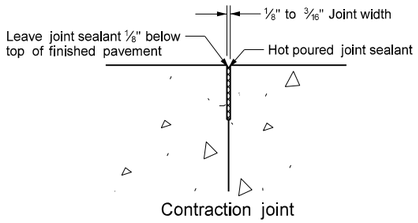
## TIED JOINTS



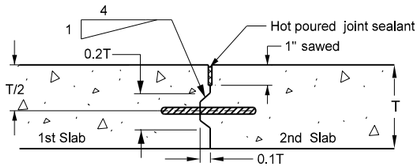

Longitudinal construction joint (tied butt joint)

Notes:

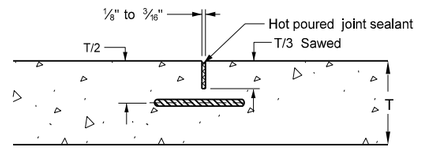
1. Provide hot poured joint sealant meeting the requirements of Section 826.02A.2 of the Standard Specifications.
2. Include all costs of the longitudinal joint and seal in the price bid for the PCC pavement.
3. Do not be place tie bars within 18 inches of a transverse skewed joint.
4. Use Grade 40 steel for tie bars installed bent and later straightened.
5. Increase the tie bar spacing up to 10%, when necessary to facilitate construction.
6. Place tie Bars at a 48 inch maximum spacing.
7. A "Warp" joint is a sawed joint or a construction joint with a keyway.
8. A "Butt joint" is a construction joint with no keyway.




Contraction joint



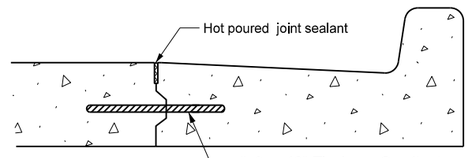

Longitudinal construction joint (tied keyed joint)




Sawed longitudinal joint

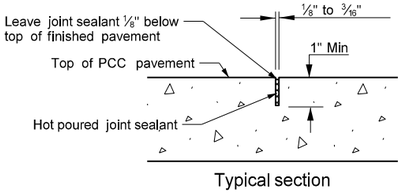
## TIEBAR SPACINGS (In)

| BAR SIZE / GRADE STEEL / BAR LENGTH / DIST TO FREE EDGE (FT) / JOINT TYPE / PVMT THICKNESS | | # 3 BAR | | | | | | | | | | # 4 BAR | | | | | | | | | | | | # 5 BAR | | | | | | | | | | | | # 6 BAR | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GRADE 40 | | | | GRADE 60 | | | | | | GRADE 40 | | | | | GRADE 60 | | | | | | | GRADE 40 | | | | | GRADE 60 | | | | | | | GRADE 40 | | | | | | GRADE 60 | | | | | |
| | | 24" | | | | 30" | | | | | | 24" | | | | | 36" | | | | | | | 30" | | | | | 42" | | | | | | | 36" | | | | | | 48" | | | | | |
| | | 4 | 6 | 8 | 10 | 4 | 6 | 8 | 10 | 12 | 14 | 8 | 10 | 12 | 14 | 16 | 8 | 10 | 12 | 14 | 16 | 22 | 24 | 10 | 12 | 14 | 16 | 22 | 24 | 10 | 12 | 14 | 16 | 22 | 24 | 10 | 12 | 14 | 16 | 19 | 22 | 24 | 10 | 12 | 14 | 16 | 19 | 22 | 24 |
| 6" | WARP | | 48 | 39 | | | 48 | 48 | | | | 48 | | | | | 48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | BUTT | | 37 | 27 | | | 48 | 42 | | | | 48 | | | | | 48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8" | WARP | 48 | 39 | 29 | 24 | 48 | 48 | 44 | 35 | 29 | 25 | 48 | 42 | 35 | 30 | 26 | 48 | 48 | 48 | 45 | 39 | 28 | 26 | 48 | 48 | 47 | 41 | 30 | 27 | 48 | 48 | 48 | 48 | 45 | 41 | 48 | 48 | 48 | 48 | 48 | 43 | 39 | 48 | 48 | 48 | 48 | 48 | 48 | 48 |
| | BUTT | 42 | 27 | | | 48 | 42 | 31 | 25 | | | 37 | 29 | 24 | | | 48 | 44 | 37 | 32 | 27 | | | 46 | 39 | 33 | 29 | | | 48 | 48 | 48 | 43 | 32 | 29 | 48 | 48 | 48 | 48 | 35 | 30 | 27 | 48 | 48 | 48 | 48 | 48 | 45 | 41 |
| 8½" | WARP | 48 | 37 | 28 | | 48 | 48 | 42 | 33 | 28 | 24 | 48 | 39 | 33 | 28 | 24 | 48 | 48 | 48 | 42 | 37 | 27 | 24 | 48 | 48 | 44 | 38 | 28 | 25 | 48 | 48 | 48 | 48 | 42 | 38 | 48 | 48 | 48 | 48 | 47 | 40 | 37 | 48 | 48 | 48 | 48 | 48 | 48 | 48 |
| | BUTT | 39 | 26 | | | 44 | 39 | 29 | | | | 35 | 27 | | | | 48 | 42 | 35 | 29 | 26 | | | 44 | 36 | 31 | 27 | | | 48 | 48 | 47 | 41 | 30 | 27 | 48 | 48 | 48 | 45 | 39 | 33 | 28 | 26 | 48 | 48 | 48 | 48 | 48 | 42 | 39 |
| 9" | WARP | 48 | 35 | 26 | | 48 | 48 | 39 | 31 | 26 | | 47 | 37 | 31 | 26 | | 48 | 48 | 47 | 40 | 35 | 25 | | 48 | 48 | 42 | 36 | 26 | 24 | 48 | 48 | 48 | 48 | 40 | 36 | 48 | 48 | 48 | 48 | 44 | 38 | 35 | 48 | 48 | 48 | 48 | 48 | 48 | 48 |
| | BUTT | 37 | 24 | | | 48 | 37 | 27 | | | | 33 | 26 | | | | 48 | 40 | 33 | 28 | 25 | | | 41 | 34 | 29 | 25 | | | 48 | 48 | 44 | 39 | 28 | 25 | 48 | 48 | 42 | 37 | 31 | 26 | 24 | 48 | 48 | 48 | 48 | 47 | 40 | 37 |
| 9½" | WARP | 48 | 33 | 25 | | 48 | 48 | 37 | 30 | 25 | | 44 | 35 | 29 | 25 | | 48 | 48 | 44 | 38 | 33 | 24 | | 48 | 46 | 39 | 34 | 25 | | 48 | 48 | 48 | 48 | 38 | 34 | 48 | 48 | 48 | 48 | 42 | 36 | 33 | 48 | 48 | 48 | 48 | 48 | 48 | 48 |
| | BUTT | 35 | | | | 48 | 35 | 26 | | | | 31 | 25 | | | | 47 | 37 | 31 | 27 | | | | 39 | 32 | 27 | 25 | | | 48 | 48 | 42 | 37 | 27 | 24 | 48 | 47 | 40 | 35 | 29 | 25 | | 48 | 48 | 48 | 48 | 44 | 38 | 35 |
| 10" | WARP | 47 | 31 | | | 48 | 47 | 35 | 28 | | | 42 | 34 | 28 | 24 | | 48 | 48 | 42 | 36 | 31 | | | 48 | 44 | 37 | 33 | 24 | | 48 | 48 | 48 | 48 | 36 | 33 | 48 | 48 | 48 | 48 | 40 | 34 | 31 | 48 | 48 | 48 | 48 | 48 | 48 | 47 |
| | BUTT | 33 | | | | 48 | 33 | 25 | | | | 29 | 24 | | | | 45 | 36 | 29 | 25 | | | | 37 | 31 | 26 | 24 | | | 48 | 46 | 40 | 35 | 25 | | 48 | 45 | 38 | 33 | 28 | 24 | | 48 | 48 | 48 | 48 | 42 | 36 | 33 |
| 10½" | WARP | 45 | 30 | | | 48 | 45 | 34 | 27 | | | 40 | 32 | 26 | | | 48 | 48 | 40 | 34 | 30 | | | 48 | 42 | 36 | 31 | | | 48 | 48 | 48 | 47 | 34 | 31 | 48 | 48 | 48 | 45 | 38 | 33 | 30 | 48 | 48 | 48 | 48 | 48 | 48 | 45 |
| | BUTT | 32 | | | | 48 | 32 | 24 | | | | 28 | | | | | 42 | 34 | 28 | 24 | | | | 35 | 29 | 25 | | | | 48 | 44 | 38 | 33 | 24 | | 48 | 42 | 36 | 32 | 27 | | | 48 | 48 | 48 | 48 | 40 | 34 | 31 |
| 11" | WARP | 43 | 28 | | | 48 | 43 | 32 | 26 | | | 38 | 31 | 25 | | | 48 | 46 | 38 | 33 | 28 | | | 48 | 40 | 34 | 30 | | | 48 | 48 | 48 | 45 | 32 | 30 | 48 | 48 | 48 | 43 | 36 | 31 | 28 | 48 | 48 | 48 | 48 | 48 | 47 | 43 |
| | BUTT | 30 | | | | 46 | 30 | | | | | 27 | | | | | 40 | 32 | 27 | | | | | 34 | 28 | 24 | | | | 48 | 42 | 36 | 32 | | | 48 | 40 | 35 | 30 | 25 | | | 48 | 48 | 48 | 46 | 38 | 33 | 30 |
| 11½" | WARP | 41 | 27 | | | 48 | 41 | 31 | 24 | | | 36 | 29 | 24 | | | 48 | 44 | 36 | 31 | 27 | | | 46 | 38 | 32 | 28 | | | 48 | 48 | 48 | 43 | 31 | 28 | 48 | 48 | 47 | 41 | 34 | 30 | 27 | 48 | 48 | 48 | 48 | 48 | 45 | 41 |
| | BUTT | 29 | | | | 44 | 29 | | | | | 25 | | | | | 39 | 31 | 25 | | | | | 32 | 27 | | | | | 48 | 40 | 35 | 30 | | | 46 | 39 | 33 | 29 | 24 | | | 48 | 48 | 48 | 44 | 37 | 31 | 29 |
| 12" | WARP | 39 | 26 | | | 48 | 39 | 29 | | | | 35 | 28 | | | | 48 | 42 | 35 | 30 | 26 | | | 44 | 36 | 31 | 28 | | | 48 | 48 | 47 | 41 | 30 | 27 | 48 | 48 | 45 | 40 | 33 | 28 | 26 | 48 | 48 | 48 | 48 | 48 | 43 | 39 |
| | BUTT | 27 | | | | 42 | 27 | | | | | 25 | | | | | 37 | 30 | 25 | | | | | 31 | 25 | | | | | 46 | 39 | 33 | 29 | | | 45 | 37 | 32 | 28 | | | | 48 | 48 | 48 | 42 | 35 | 30 | 27 |
| 12½" | WARP | 38 | 25 | | | 48 | 38 | 28 | | | | 33 | 27 | | | | 48 | 40 | 33 | 29 | 25 | | | 42 | 35 | 30 | 26 | | | 48 | 48 | 45 | 39 | 28 | 26 | 48 | 48 | 43 | 38 | 32 | 27 | 25 | 48 | 48 | 48 | 48 | 48 | 41 | 38 |
| | BUTT | 27 | | | | 40 | 27 | | | | | 25 | | | | | 35 | 28 | | | | | | 29 | 25 | | | | | 44 | 37 | 32 | 27 | | | 42 | 35 | 30 | 27 | | | | 48 | 48 | 45 | 40 | 34 | 29 | 26 |
| 13" | WARP | 36 | 24 | | | 48 | 36 | 27 | | | | 32 | 26 | | | | 48 | 39 | 32 | 27 | 24 | | | 40 | 33 | 29 | 25 | | | 48 | 48 | 43 | 38 | 27 | 25 | 48 | 48 | 41 | 36 | 30 | 26 | 24 | 48 | 48 | 48 | 48 | 48 | 46 | 40 | 36 |
| | BUTT | 25 | | | | 38 | 25 | | | | | 25 | | | | | 34 | 27 | | | | | | 28 | | | | | | 42 | 35 | 30 | 27 | | | 41 | 34 | 29 | 25 | | | | 48 | 48 | 44 | 38 | 32 | 28 | 25 |
| 13½" | WARP | 35 | | | | 48 | 35 | 26 | | | | 31 | 25 | | | | 47 | 37 | 31 | 26 | | | | 39 | 32 | 28 | 24 | | | 48 | 48 | 42 | 36 | 26 | 24 | 48 | 47 | 40 | 35 | 29 | 25 | | 48 | 48 | 48 | 48 | 44 | 38 | 35 |
| | BUTT | 25 | | | | 37 | 25 | | | | | 25 | | | | | 33 | 26 | | | | | | 27 | | | | | | 41 | 34 | 29 | 25 | | | 39 | 33 | 28 | 25 | | | | 48 | 48 | 42 | 37 | 31 | 27 | 24 |
| 14" | WARP | 34 | | | | 48 | 34 | 25 | | | | 30 | 24 | | | | 45 | 36 | 30 | 25 | | | | 37 | 31 | 27 | | | | 48 | 47 | 40 | 35 | 25 | | 48 | 45 | 38 | 34 | 28 | 24 | | 48 | 48 | 48 | 48 | 43 | 37 | 34 |
| | BUTT | 24 | | | | 35 | 24 | | | | | 25 | | | | | 32 | 25 | | | | | | 26 | | | | | | 39 | 33 | 28 | 25 | | | 38 | 32 | 27 | 24 | | | | 48 | 47 | 40 | 35 | 30 | 26 | |
| 14½" | WARP | 32 | | | | 48 | 32 | 24 | | | | 29 | | | | | 43 | 35 | 29 | 25 | | | | 36 | 30 | 26 | | | | 48 | 45 | 39 | 34 | 24 | | 48 | 43 | 37 | 32 | 27 | | | 48 | 48 | 48 | 48 | 41 | 35 | 32 |
| | BUTT | | | | | 34 | | | | | | 30 | 25 | | | | 38 | 32 | 27 | 24 | | | | 30 | 26 | | | | | 36 | 30 | 26 | | | | 48 | 46 | 39 | 34 | 29 | 25 | | | | | | | | |
| 15" | WARP | 31 | | | | 47 | 31 | | | | | 28 | | | | | 42 | 33 | 28 | 24 | | | | 35 | 29 | 25 | | | | 48 | 44 | 37 | 33 | 24 | | 48 | 42 | 36 | 31 | 26 | | | 48 | 48 | 48 | 47 | 40 | 34 | 31 |
| | BUTT | | | | | 33 | | | | | | 29 | | | | | 37 | 31 | 26 | | | | | 25 | | | | | | 35 | 29 | 25 | | | | 48 | 44 | 38 | 33 | 28 | 24 | | | | | | | | |




Curb and gutter sections

## JOINT SEALER DETAILS




Typical section

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

9-15-2010

REVISIONS

| DATE | CHANGE |
|---|---|
| 10/23/2012 | Expanded Tie Bar Table |
| 03/16/2016 | Updated Jt Details & notes |

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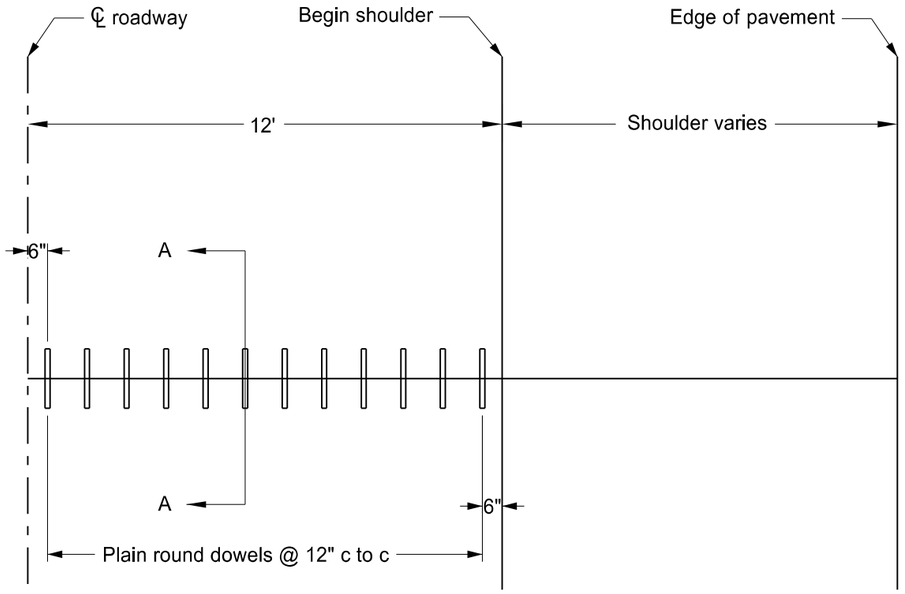
# TRANSVERSE CONTRACTION JOINT DETAILS

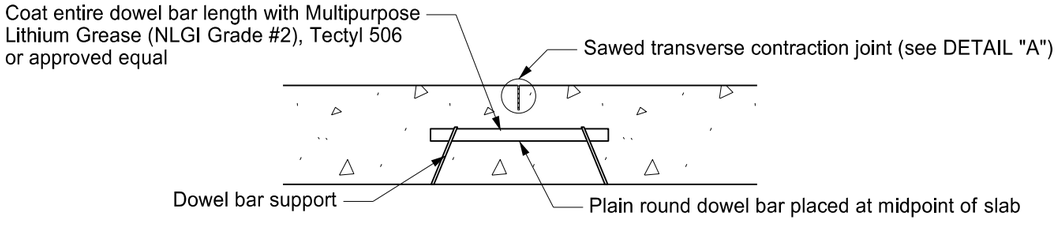
D-550-3



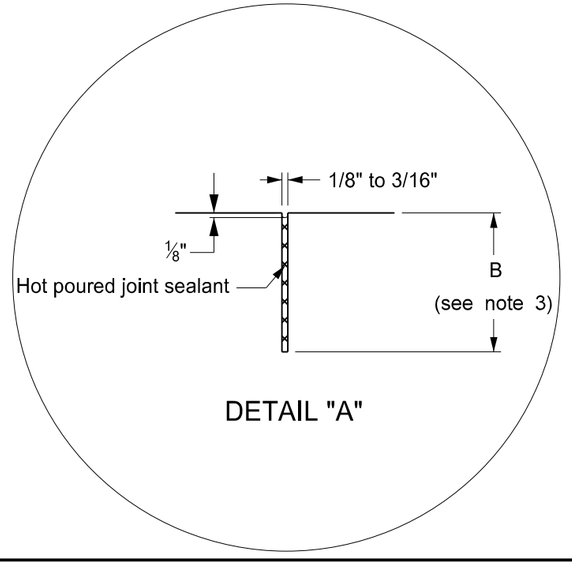

CONTRACTION JOINT DOWEL ASSEMBLY
(1/2 roadway shown)

Notes

1. The joint seal details apply to both doweled and non-doweled (plain) transverse joints.
2. T = Thickness of pavement.
3. B = T/4 + ¼" for AE or YE for non-dowelled concrete pavement or
   B = T/3 for high early or dowelled concrete pavement




SECTION A-A




DETAIL "A"

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 9-15-2010 | |
| REVISIONS | |
| DATE | CHANGE |
| 6/23/2014 | Removed dowel size reference |
| 3/16/2016 | Revised Joint Details and notes |

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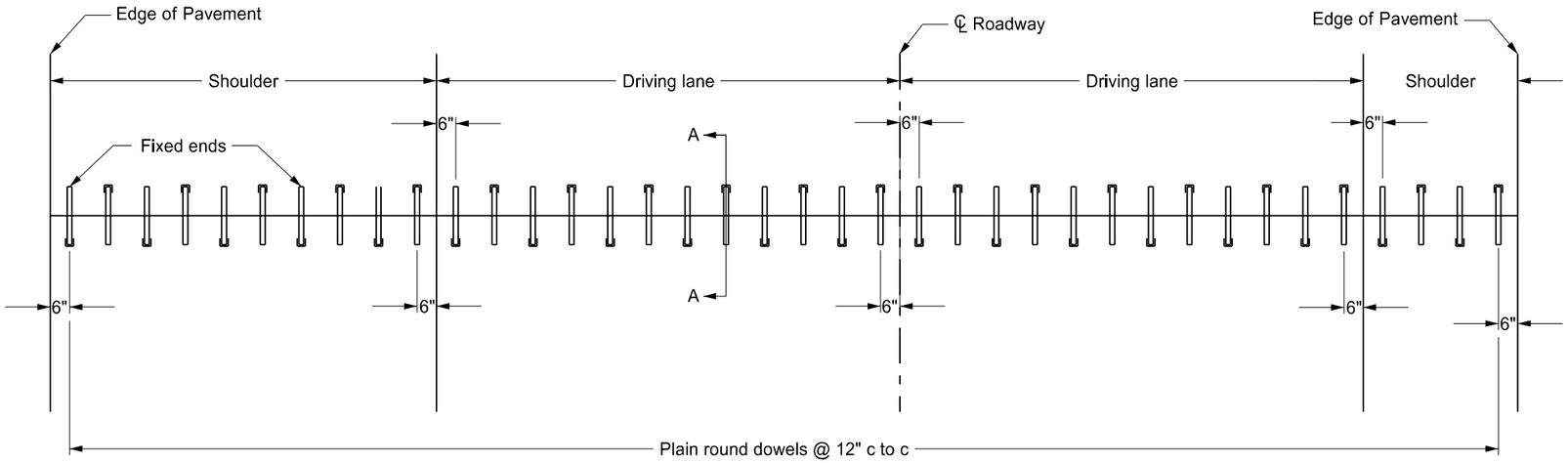
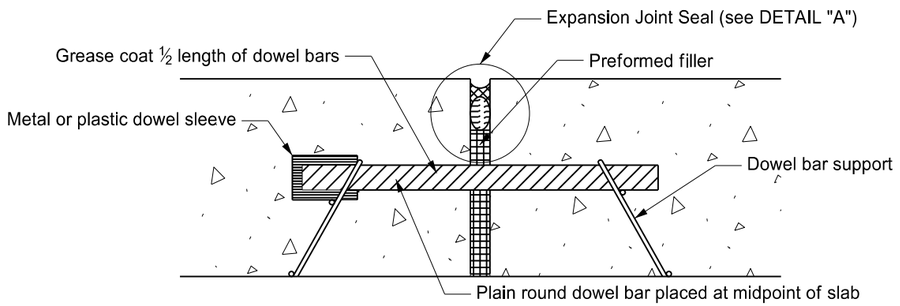
# TRANSVERSE EXPANSION JOINT DETAIL

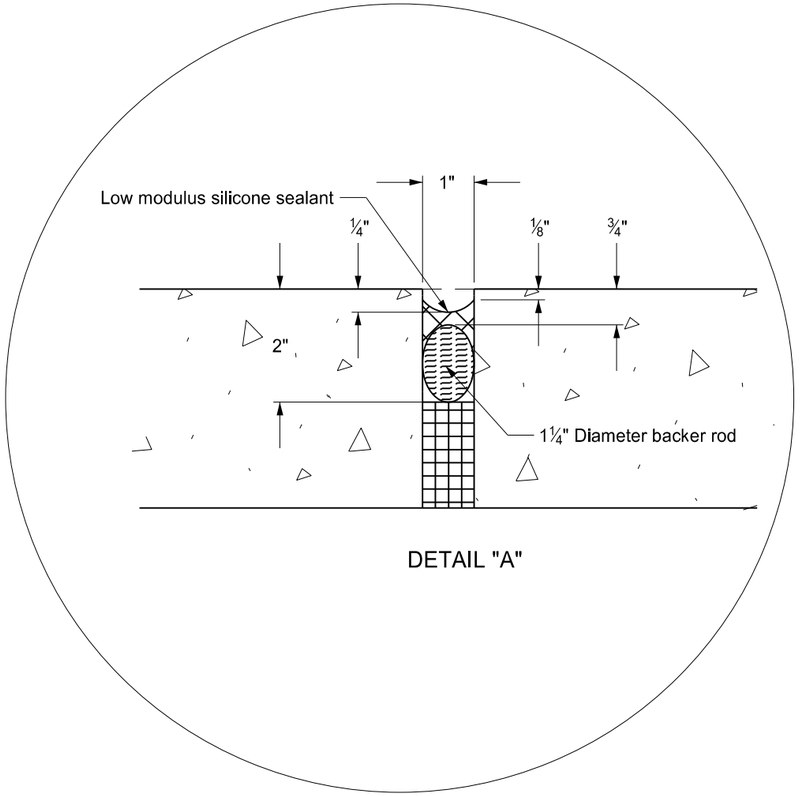
D-550-4




DOWELED EXPANSION JOINT ASSEMBLY




SECTION A-A




DETAIL "A"

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 9-15-2010 | |
| REVISIONS | |
| DATE | CHANGE |
| 6/23/2014 | Removed dowel bar sizes |

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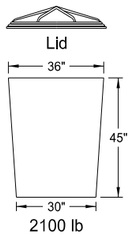
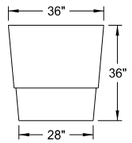
# ATTENUATION DEVICE

D-704-1

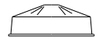



2100 lb




200, 400, 700 and 1400 lb

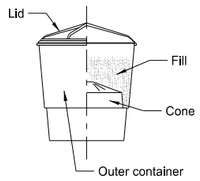
Outer Containers



200 lb
400 lb

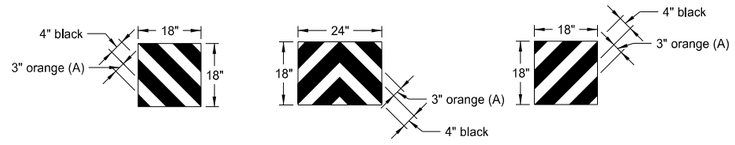
700 lb

Cones




Typical Assembly

Typical Module Construction Detail




Left Side Traffic

Both Sides Traffic

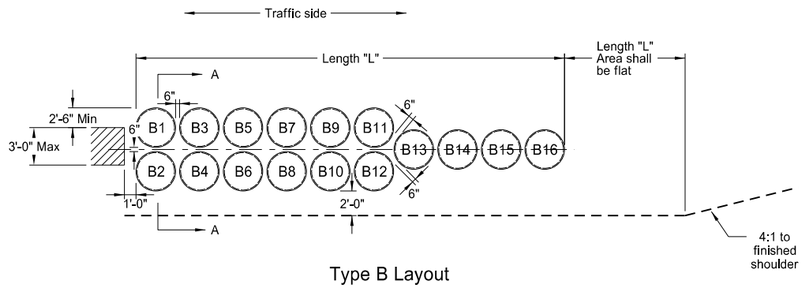
Right Side Traffic

Reflective Sheet Detail

Note:
The last attenuation device facing traffic shall have a reflective sheet, following the details above, directly applied to the outer container. The sheet may also be applied to a metallic sheet and attached to the container with approved fasteners. The reflective sheeting shall be Type IV as specified in NDDOT Standard Specifications.

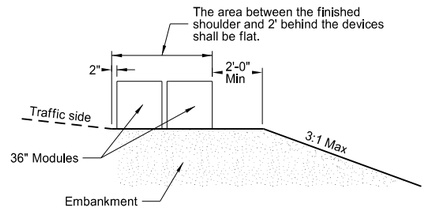
(A) 3" orange sheeting shall be used for temporary installations, and 3" yellow sheeting shall be used for permanent installations.

| Fill Chart | | | | | |
|---|---|---|---|---|---|
| | Module Weights (LBS) | | | | |
| | 200 | 400 | 700 | 1400 | 2100 |
| Distance from top edge | 8½" | 5" | 4" | 3" | 0" |




Type B Layout

Note:
When attenuation devices are placed at piers offset from roadway, they shall be angled 10 degrees towards traffic.




Section A-A
(Type B Layout)

| Type B Attenuation Device | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Module Number | Dash Number | | | | | | | | | | |
| | 75 | 70 | 65 | 60 | 55 | 50 | 45 | 40 | 35 | 30 | 25 |
| | Module Weights (LBS) | | | | | | | | | | |
| B1 | 2100 | | | | | | | | | | |
| B2 | 2100 | | | | | | | | | | |
| B3 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | | |
| B4 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 | | |
| B5 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 |
| B6 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 |
| B7 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 |
| B8 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 |
| B9 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 |
| B10 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 |
| B11 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 |
| B12 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 |
| B13 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 |
| B14 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| B15 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| B16 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Length (L) | 34.2' | 30.7' | 30.7' | 30.7' | 30.7' | 30.7' | 30.7' | 30.7' | 30.7' | 27.2' | 27.2' |
| Module Weights (LBS) | Replacement Module | | | | | | | | | | |
| 2100 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| 1400 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 700 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 400 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 200 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Notes:

1. Materials
   A) Modules shall be manufactured from a frangible polyethylene material which will shatter upon impact.
   B) Modules shall be filled with class 43 aggregate meeting the requirements for aggregate according to NDDOT Standard Specifications. The fill unit weight shall be at least 100 pounds per cubic foot. Fill left over winter shall have a moisture content of 2% or less.

2. Modules
   The modules shall be provided in two sizes to contain volumes of either 2, 4, 7, 14, or 21 cubic feet as a minimum.
   A) The module for the 2, 4 or 7 cubic foot container shall consist of three components:
      1) A 14 C.F., yellow outer container.
      2) A black lid which locks securely over the top lip of the container.
      3) A cone-shaped supporting insert. The insert shall be varied to allow for the three sizes of modules and capable of supporting 200, 400, or 700 pounds of sand mass. The cone inserts shall be placed inside the 14 cubic foot container.
   B) The module for the 21 cubic foot container shall consist of two components:
      1) A 36" height X 36" width yellow outer container.
      2) A black lid which locks securely over the top of the container.

3. For temporary use: The modules shall be Energite or Fitch attenuation barrels manufactured by Energy Absorption Systems of Chicago, IL, TrafFix barrels manufactured by TrafFix Devices, Inc. of San Clemente, CA, or an approved equal. The attenuation devices may be placed on pallets to facilitate maintenance. Pallets shall have a maximum thickness of 3½".

4. For permanent use: Barrel Attenuation Device installations, the outer sand container portion of the modules shall consist of a one-piece container with separate detachable lid. The modules which meet these requirements are Energite attenuation barrels manufactured by Energy Absorption Systems of Chicago, IL, TrafFix barrels manufactured by TrafFix Devices, Inc. of San Clemente, CA, or an approved equal. Modules having outer sand containers assembled from multiple pieces shall not be accepted for permanent installations.

5. The Typical Module Construction Detail and Type B Layout are based on the Energite Crash Cushion manufactured by Energy Absorption. The manufacturer of other sand filled attenuation modules shall provide any necessary layouts and details required which differ from those shown here.

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 9-25-12 | |
| REVISIONS | |
| DATE | CHANGE |
| 7-18-14 | Revised sheeting in reflective sheet detail |

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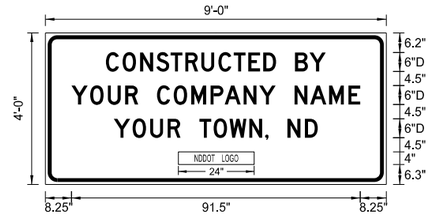
# CONSTRUCTION SIGN DETAIL

D-704-5

| | |
|---|---|
| SIGN NUMBER | G20-10-108 |
| WIDTH x HEIGHT | 9'-0" x 4'-0" |
| BORDER WIDTH | 1.25" (inset 0.75") |
| CORNER RADIUS | 3" |
| MOUNTING | Ground |
| BACKGROUND | TYPE: IV Reflective |
| | COLOR: Fluorescent Orange |
| LEGEND/BORDER | TYPE: Non-Refl |
| | COLOR: Black |

| SYMBOL | X | Y | WID | HT | ANGLE |
|---|---|---|---|---|---|
| | 42.1 | 6.2 | 24 | 4 | 0 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

STATION(S): AREA: 36.0 Sq.Ft.




Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

| LETTER POSITION (X) | | | | | | | | | | | | | | | | | | | LENGTH | SIZE | SERIES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C | O | N | S | T | R | U | C | T | E | D | | B | Y | | | | | | 69.7 | 6 | D 2000 |
| 19.2 | 24.5 | 30 | 35.1 | 39.7 | 44.3 | 49.4 | 54.8 | 59.7 | 64.3 | 69 | 73.1 | 79.1 | 83.7 | | | | | | | | |
| Y | O | U | R | | C | O | M | P | A | N | Y | | N | A | M | E | | | 91.5 | 6 | D 2000 |
| 8.3 | 14.2 | 19.8 | 25.3 | 29.4 | 35.4 | 40.7 | 46.2 | 52.4 | 56.8 | 62.8 | 67.8 | 72.9 | 78.9 | 83.9 | 89.9 | 96 | | | | | |
| Y | O | U | R | | T | O | W | N | , | | N | D | | | | | | | 64.6 | 6 | D 2000 |
| 21.7 | 27.6 | 33.2 | 38.7 | 42.8 | 48.8 | 53.3 | 58.4 | 64.6 | 69.6 | 70.7 | 76.7 | 82.2 | | | | | | | | | |

Notes:

1. Sign shall be placed a distance of ½A following the End Road Work (G20-2a-48) sign. There shall be a maximum of 2 signs per project.
2. Sign shall be post mounted.
3. Sign required on rural projects with a 30 day or longer duration and it is not required on seal coat projects or other short duration projects.
4. Sign shall not be placed in urban areas or within city limits.

| Advance Warning Sign Spacing (A) | | | |
|---|---|---|---|
| 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 |

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 8-22-12 | |
| REVISIONS | |
| DATE | CHANGE |
| 7-18-14 | Revise sheeting to type IV |

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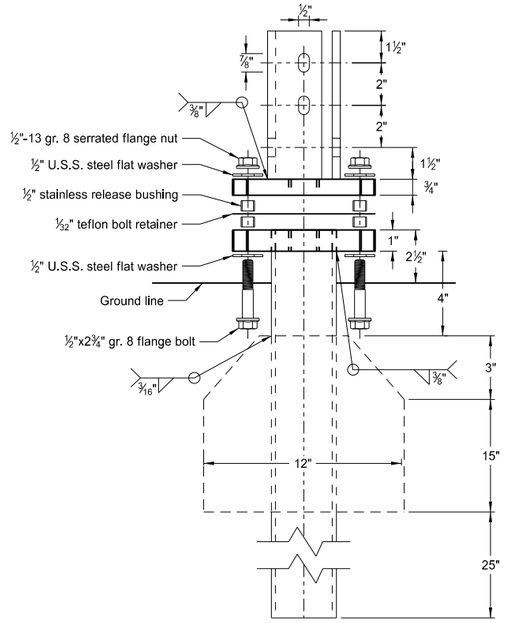
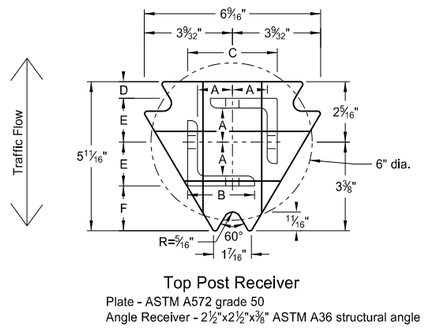
# BREAKAWAY SYSTEMS FOR CONSTRUCTION ZONE SIGNS

D-704-7

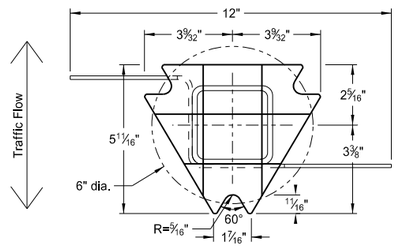



Multi-Directional
Slip Base Assembly

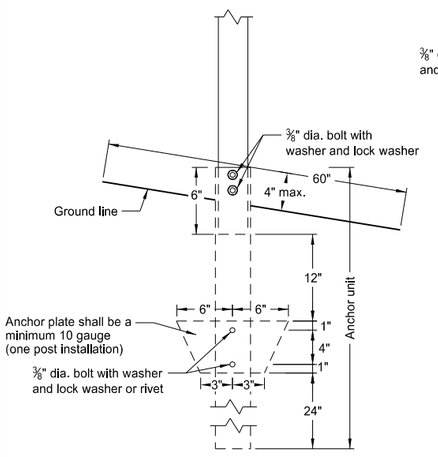
## Perforated Tube



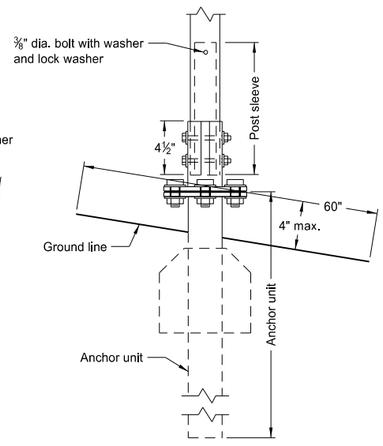

Top Post Receiver
Plate - ASTM A572 grade 50
Angle Receiver - 2½"x2½"x⅜" ASTM A36 structural angle



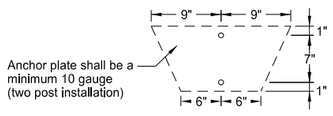

Bottom Soil Stub
Tube - 3"x3"x7 gauge ASTM A500 grade B tube
Stabilizing Wing - 7 gauge H.R.P.O. ASTM A1011
Plate - ASTM A572 grade 50

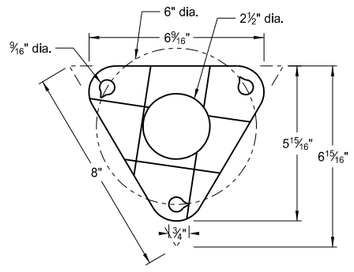



Anchor Unit and Post Assembly




Multi-Directional
Slip Base Anchor Unit
and Post Sleeve Assembly




Bolt Retainer for Base Connection
Bolt Retainer- 1/32" Reprocessed Teflon

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 Thick-ness Gauge | Sleeve Size in. | Wall Thick-ness Gauge | Slip Base | Anchor Size without Slip Base in. |
| 1 | 2 | 12 | | | No | 2¼ |
| 1 | 2¼ | 12 | | | No | 2½ |
| 1 | 2½ | 12 | | | (A) | 3 |
| 1 | 2½ | 10 | | | Yes | |
| 1 | 2¼ | 12 | 2 | 12 | Yes | |
| 1 | 2½ | 12 | 2¼ | 12 | Yes | |
| 2 | 2 | 12 | | | No | 2¼ |
| 2 | 2¼ | 12 | | | No | 2½ |
| 2 | 2½ | 12 | | | Yes | |
| 2 | 2½ | 12 | | | Yes | |
| 2 | 2¼ | 10 | 2 | 12 | Yes | |
| 2 | 2½ | 12 | 2¼ | 12 | Yes | |
| 3 & 4 | 2½ | 12 | | | Yes | |
| 3 & 4 | 2½ | 10 | | | Yes | |
| 3 & 4 | 2½ | 12 | 2¼ | 12 | Yes | |
| 3 & 4 | 2¼ | 12 | 2 | 12 | Yes | |
| 3 & 4 | 2½ | 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 $in.^4$ | Cross Sec. Area $in.^2$ | Section Modulus $in.^3$ |
| 1½ x 1½ | 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 |
| 2¼ x 2¼ | 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 |
| 2½ x 2½ | 0.105 | 12 | 3.141 | 0.804 | 0.803 | 0.643 |
| 2½ x 2½ | 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"x10 ga. | 1 9/64" | 2½" | 3 1/32" | 25/32" | 1 33/64" | 1⅞" |
| 2½"x10 ga. | 1 9/32" | 2½" | 3 5/16" | ⅝" | 1 21/32" | 1¾" |

(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"x10 ga. may be inserted into 2½"x10 ga. for additional wind load.

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| DATE | CHANGE |
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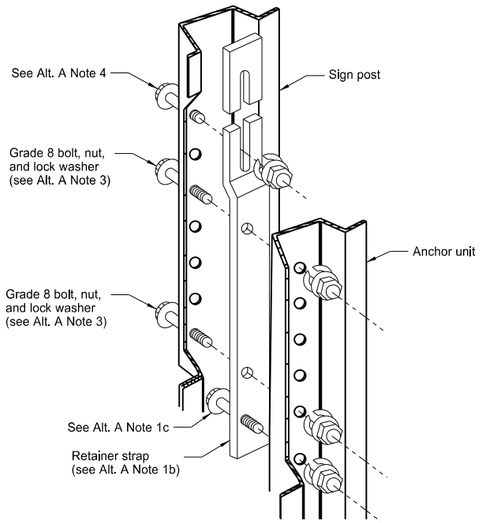
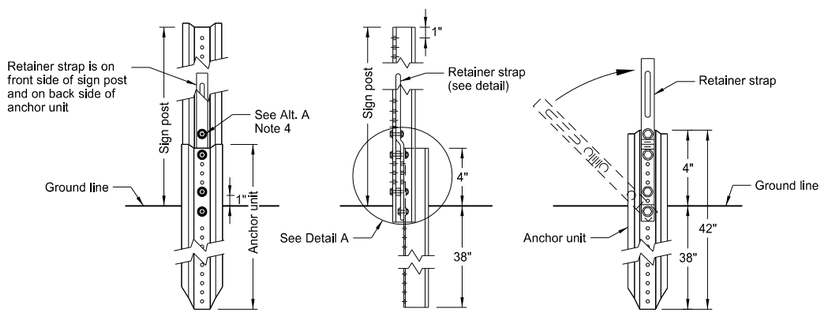
# BREAKAWAY SYSTEMS FOR CONSTRUCTION ZONE SIGNS

D-704-8

## U-Channel Post



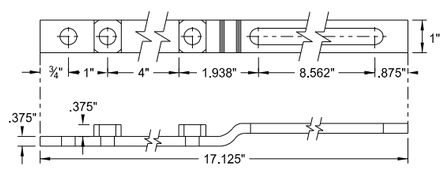

Detail A



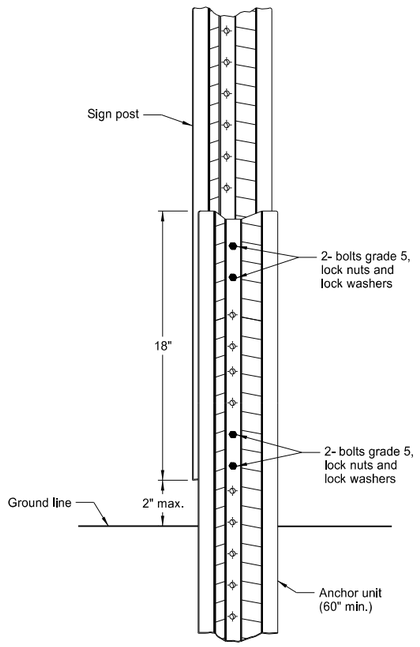

Front View Side View Back View

Breakaway U-Channel Detail
Alternate A

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

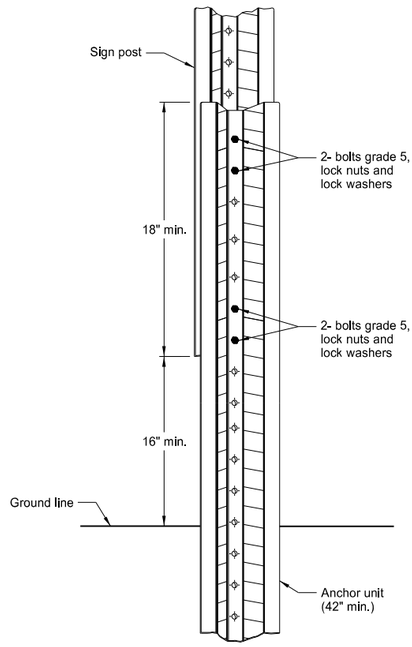



Retainer Strap Detail




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.

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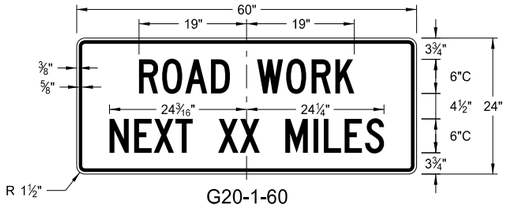
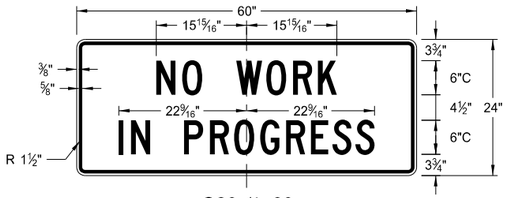
# CONSTRUCTION SIGN DETAILS
# TERMINAL AND GUIDE SIGNS




G20-1-60
Legend: black (non-refl)
Background: orange




G20-1b-60
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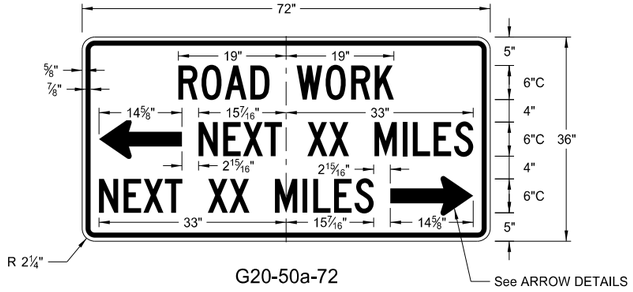
Background: orange

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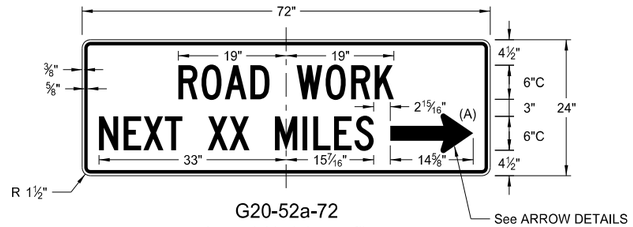


G20-52a-72
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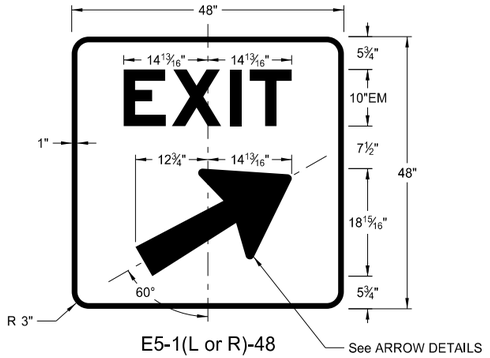
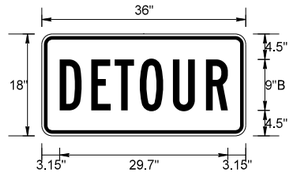
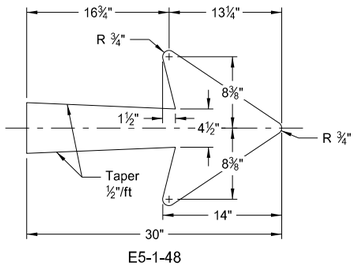
Background: orange



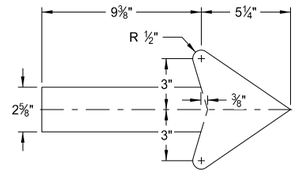

E5-1(L or R)-48
Legend: white
Background: green (orange optional)



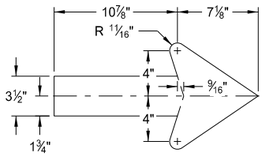

M4-8-36
Legend: black (non-refl)
Background: orange



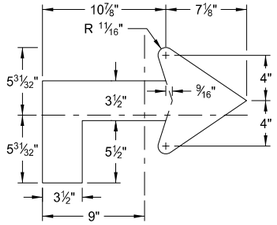
E5-1-48



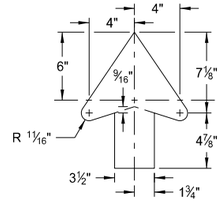
G20-50a-72
G20-52a-72



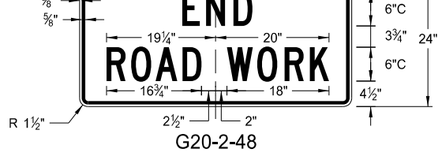
M4-9(L or R)-30
Right or Left



M4-9(L or R)-30
Advanced Right or Left



M4-9-30
Straight




G20-2-48
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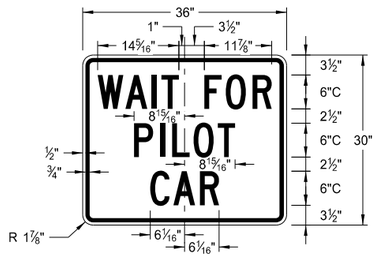
Background: orange

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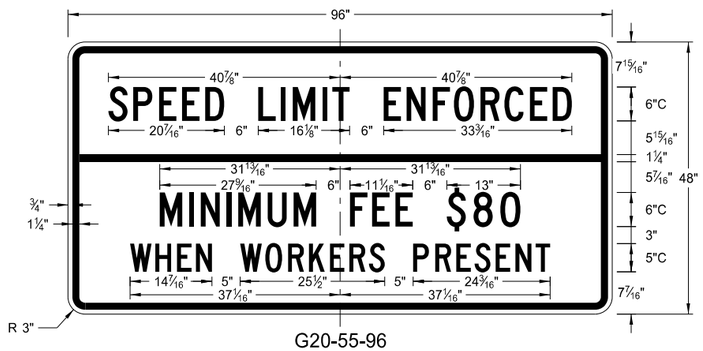


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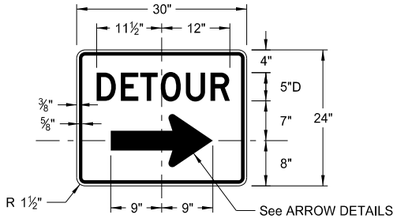


M4-9(L or R)-30 &
M4-9-30
Legend: black (non-refl)
Background: orange

## ARROW DETAILS

NOTES:

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

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 8-13-13 | |
| REVISIONS | |
| DATE | CHANGE |
| 8-17-17 | Added sign & background color |

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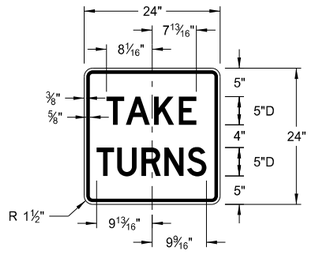
# CONSTRUCTION SIGN DETAILS
## REGULATORY SIGNS




R1-50P-24
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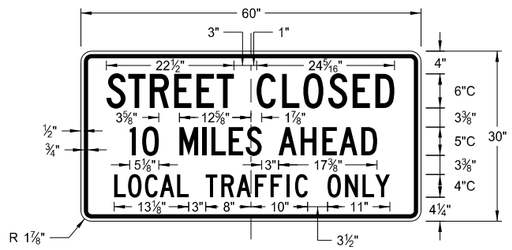
Background: white




R11-3c-60
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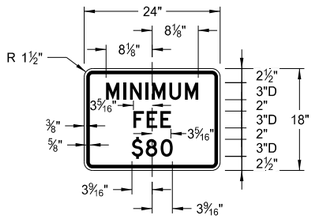
Background: white

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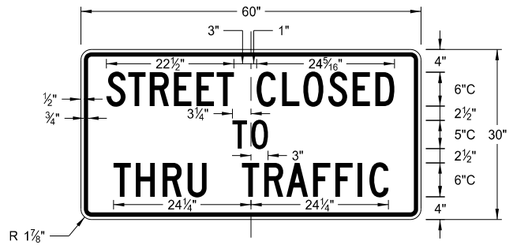


R11-4a-60
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Background: white


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

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 8-13-13 | |
| REVISIONS | |
| DATE | CHANGE |
| 8-17-17 | Revised sign number |

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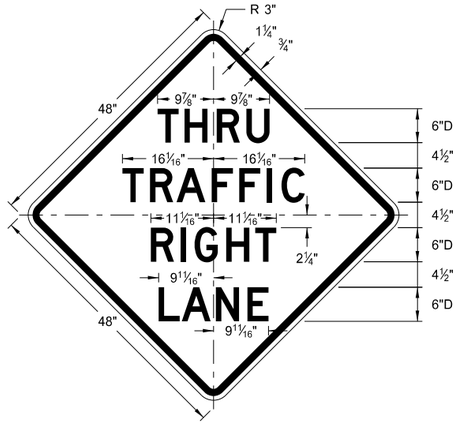
# CONSTRUCTION SIGN DETAILS
## WARNING SIGNS




W5-8-48
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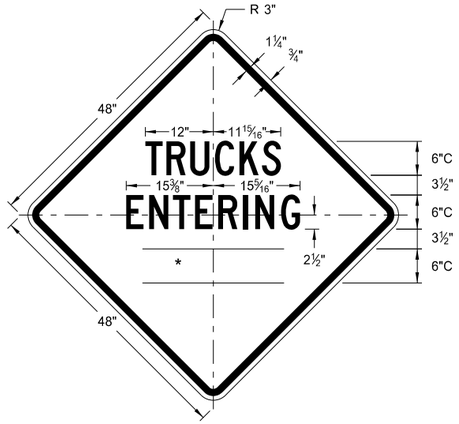
Background: orange

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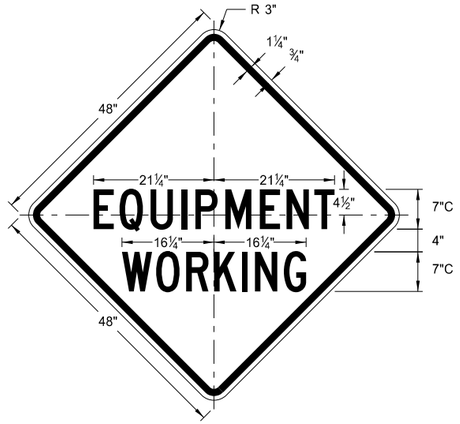
Background: orange

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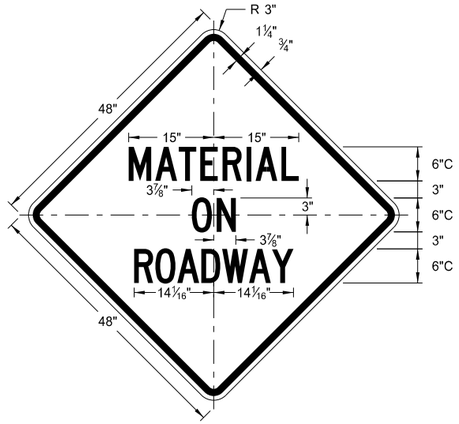
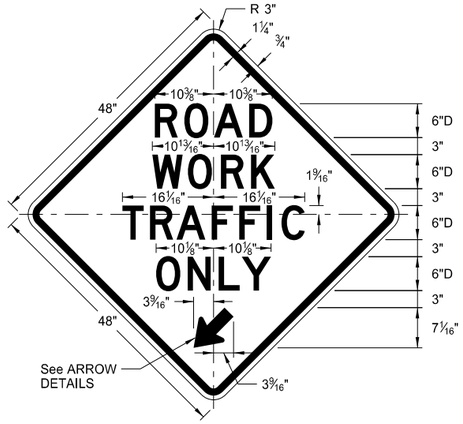



W21-51-48
Legend: black (non-refl)
Background: orange

| 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




W5-9-48
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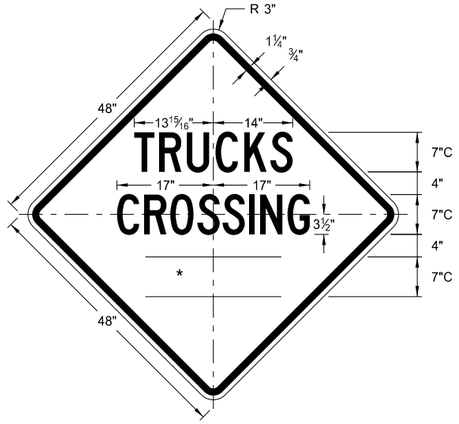


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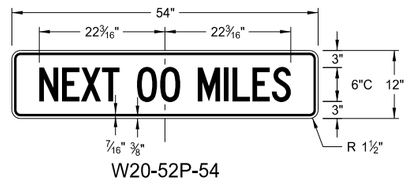


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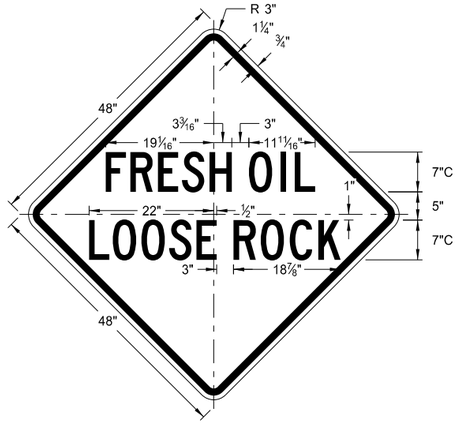


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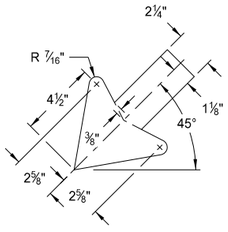
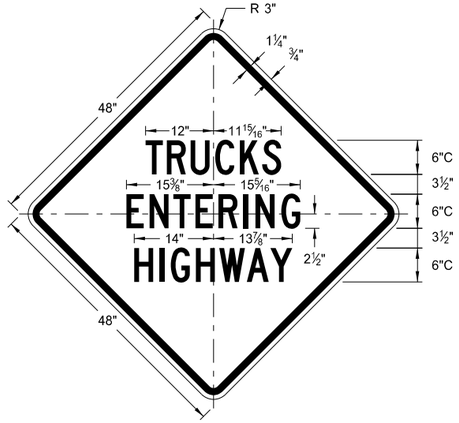
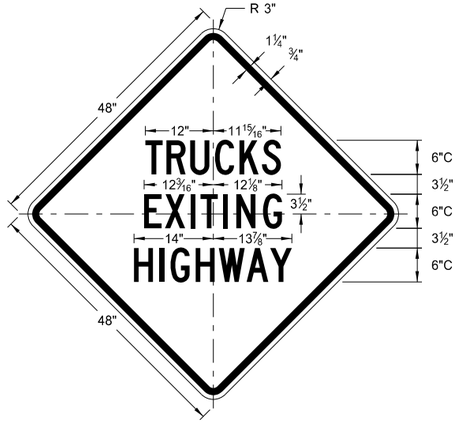



W5-9-48

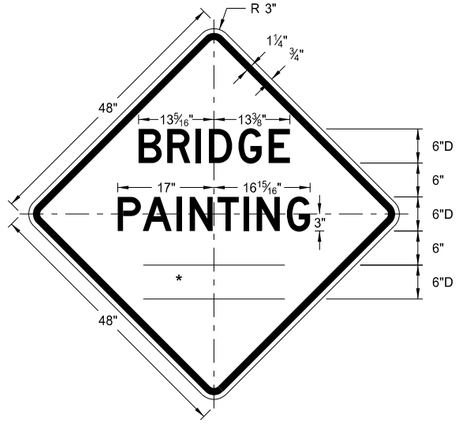
ARROW DETAILS




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




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



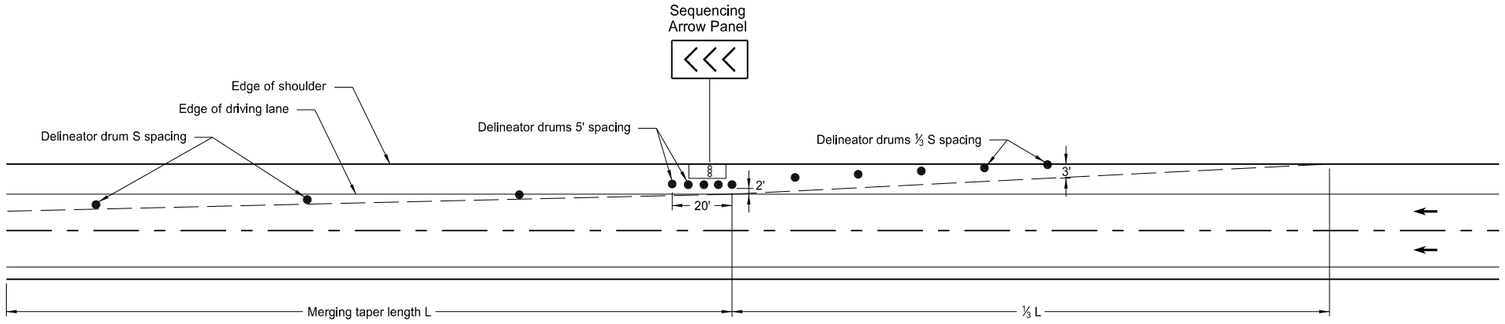

W21-50-48
Legend: black (non-refl)
Background: orange

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 8-13-13 | |
| REVISIONS | |
| DATE | CHANGE |
| 8-17-17 | Updated sign number |

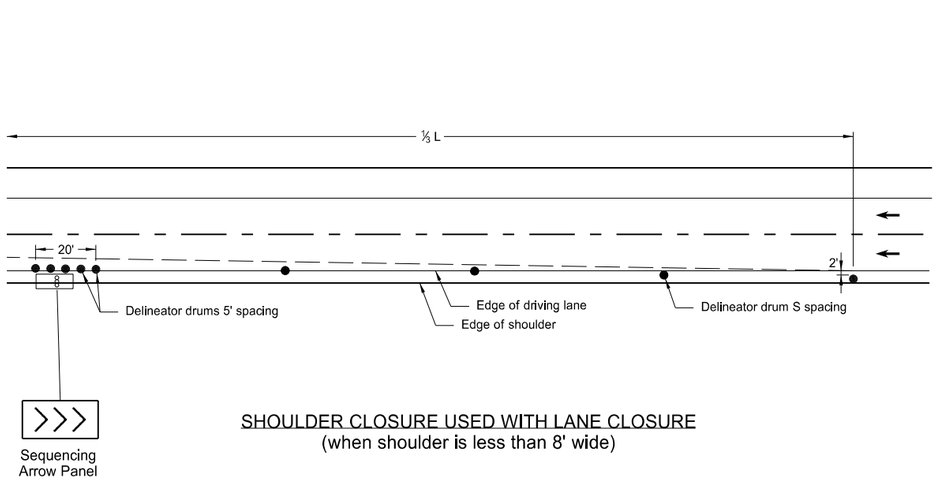
This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 8/17/17 and the original document is stored at the North Dakota Department of Transportation

# SHOULDER CLOSURE TAPERS

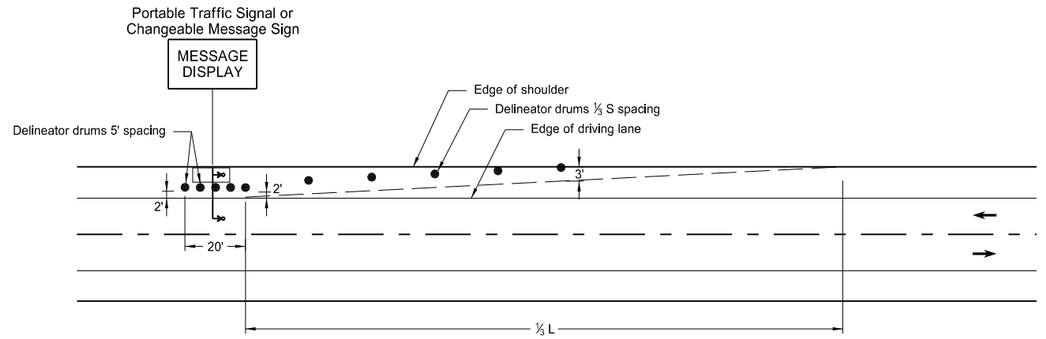
D-704-12




SHOULDER CLOSURE WITH LANE CLOSURE
(when shoulder is 8' or wider)




SHOULDER CLOSURE USED WITH LANE CLOSURE
(when shoulder is less than 8' wide)




PORTABLE TRAFFIC SIGNAL OR CHANGEABLE MESSAGE SIGN ON SHOULDER

| KEY | |
|---|---|
| ● Delineator Drum | ∞ Sequencing Arrow Panel |
| ° Message Display | Portable Traffic Signal |

Notes:

1. S = Posted Speed Limit in mph
   W = Width of offset in feet
   L = Taper length in feet
   L = $WS^2/60$ (40mph or less)
   L = WS (45mph or more)
2. If a shoulder taper is used, it should have a length of approximately ⅓L. If a shoulder is used as a travel lane, a normal merging or shifting taper should be used.
3. When paved shoulders of 8 foot width or more are closed, channelizing devices shall be used to close the shoulder in advance to delineate the beginning of the work space and direct vehicular traffic to remain within the traveled way.

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 10-3-13 | |
| REVISIONS | |
| DATE | CHANGE |
| | |

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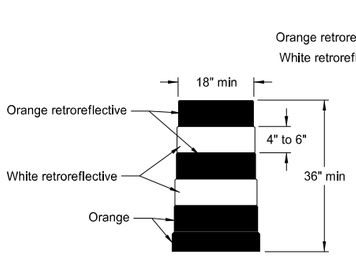
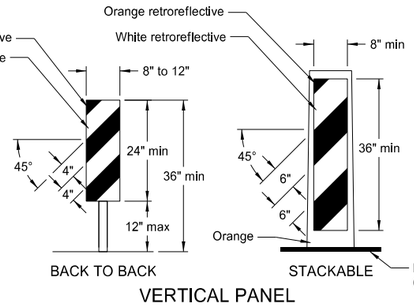
# BARRICADE AND CHANNELIZING DEVICE DETAILS

D-704-13



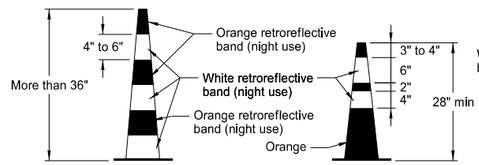

DELINEATOR DRUM

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 nonretroreflectorized 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.



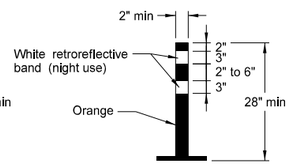

VERTICAL PANEL

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.



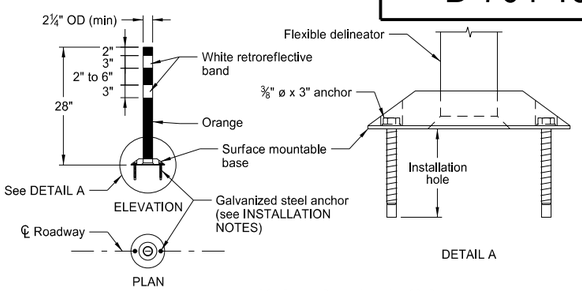

TRAFFIC CONE

Retroreflectorization 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 nonretroreflectorized space between the orange and white stripes shall not exceed 3" wide.




TUBULAR MARKER

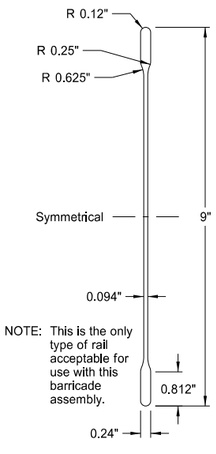
Retroreflectorization of tubular markers more than 42" in height shall be provided by alternating four 4" to 6" wide orange and white stripes with the top stripe being orange.



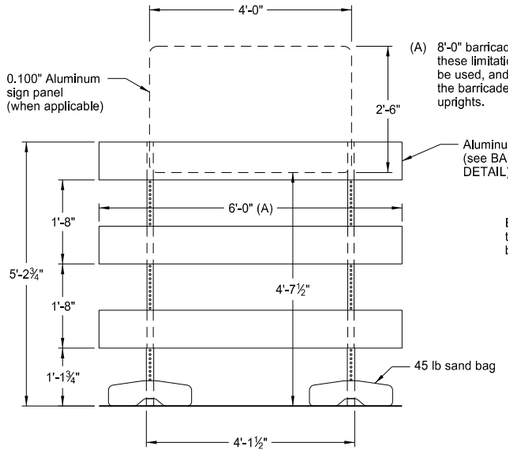

FLEXIBLE DELINEATOR

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.

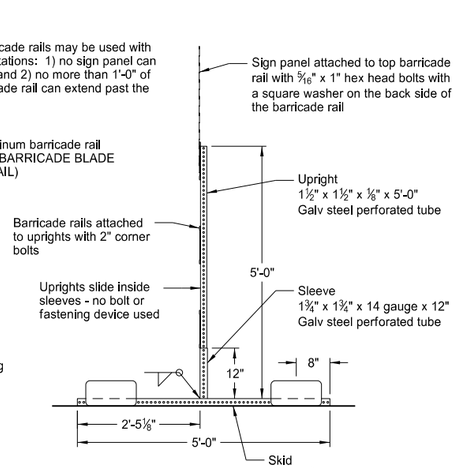



BARRICADE BLADE DETAIL



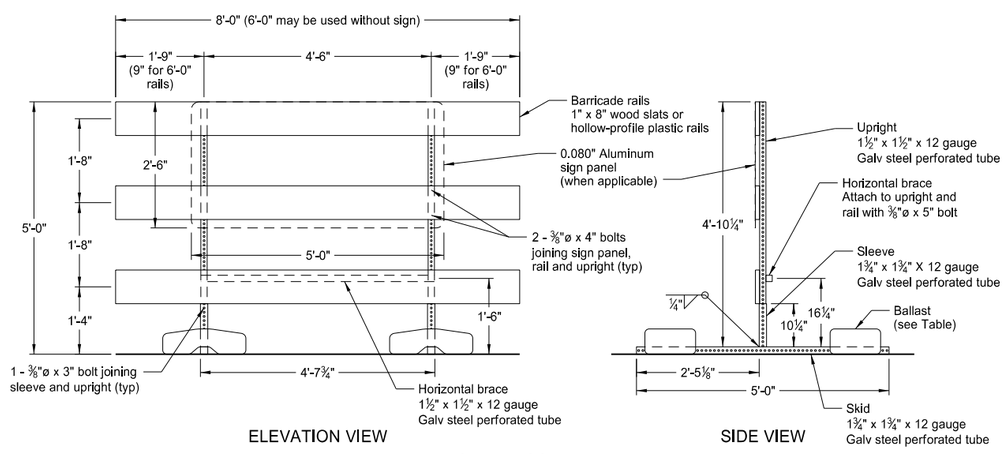

ELEVATION VIEW

(A) 8'-0" barricade rails may be used with these limitations: 1) no sign panel can be used, and 2) no more than 1'-0" of the barricade rail can extend past the uprights.



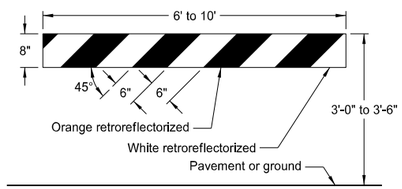

SIDE VIEW

BARRICADE ASSEMBLY DETAIL
(Aluminum Barricade Rails)

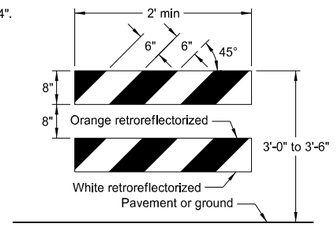



BARRICADE ASSEMBLY DETAIL
(Wood or Plastic Rails)

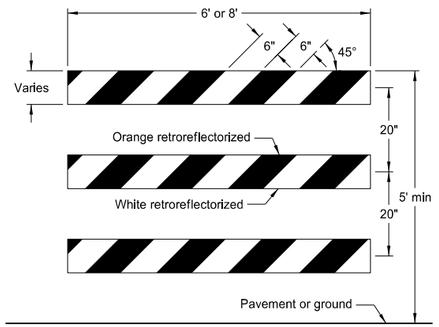
NOTE: Markings for barricades shall be alternating orange and white retroreflective stripes, sloping downward in the direction traffic is to pass. Retroreflective sheeting shall be placed on both sides of the rails and shall have a minimum of 270 square inches of visible retroreflective area facing vehicular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




TYPE I BARRICADE

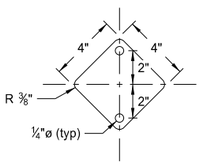


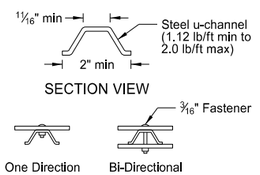

TYPE II BARRICADE

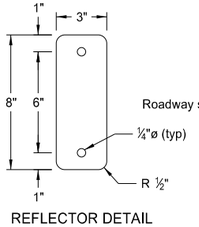



TYPE III BARRICADE

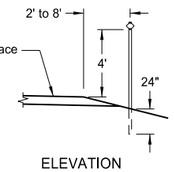
BARRICADE RAIL DETAILS




REFLECTOR DETAIL




ELEVATION

DELINEATORS

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.

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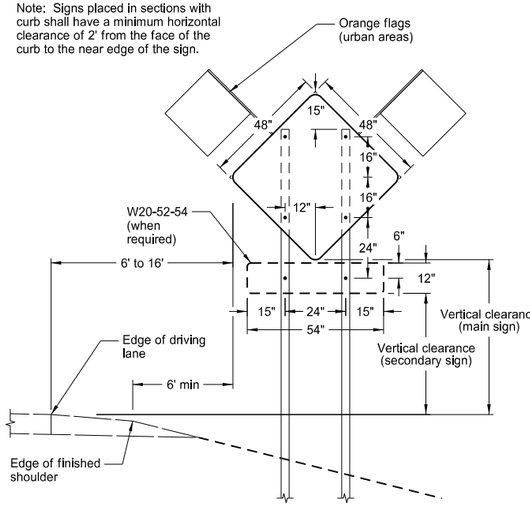
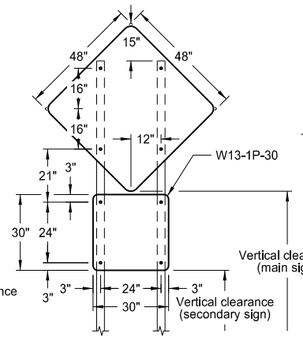
# CONSTRUCTION SIGN PUNCHING AND MOUNTING DETAILS

D-704-14

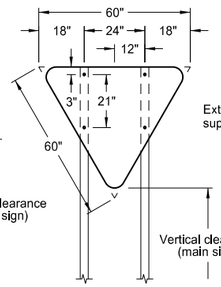
Note: Signs placed in sections with curb shall have a minimum horizontal clearance of 2' from the face of the curb to the near edge of the sign.



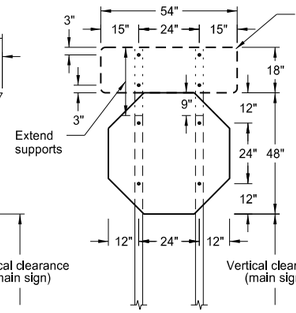

TYPICAL SECTION
(48" x 48" diamond warning sign shown)



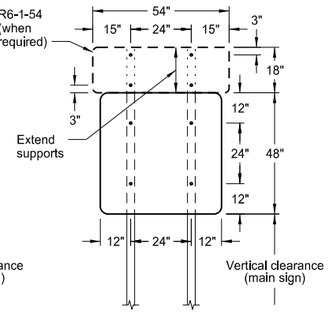

48" x 48" DIAMOND SIGN
(with 30" x 30" secondary sign)



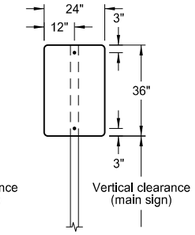

R1-2-60 - YIELD SIGN



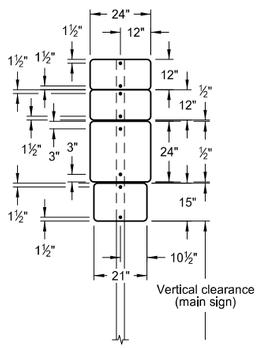

R1-1-48 - STOP SIGN
(with R6-1-54 sign as required)



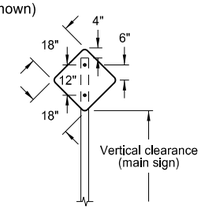

48" x 48" SIGN
(with R6-1-54 sign as required)



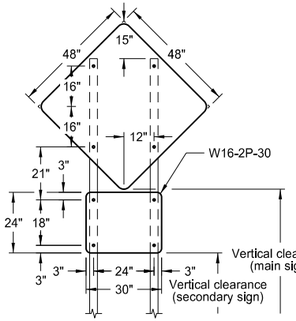

24" x 36" SIGN



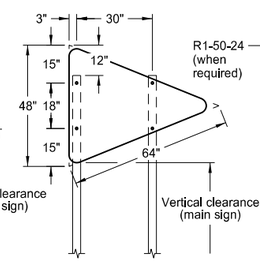

24" x 24"
ROUTE MARKER
ASSEMBLY



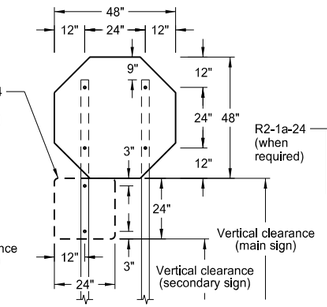

18" x 18"
DIAMOND SIGN



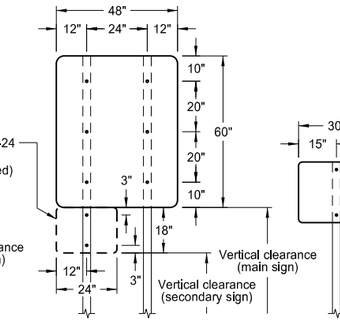

48" x 48" DIAMOND SIGN
(with 30" x 24" secondary sign)



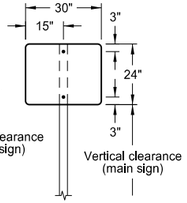

W14-3-64 - PENNANT SIGN



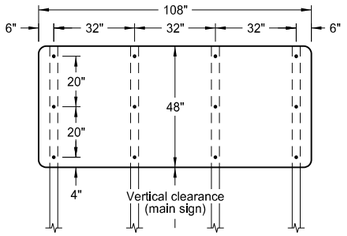

R1-1-48 - STOP SIGN
(with R1-50-24 sign as required)



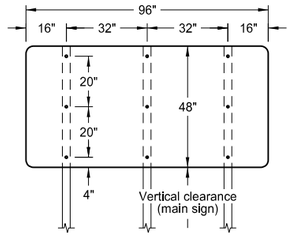

48" x 48" SIGN
(with R2-1a-24 sign as required)



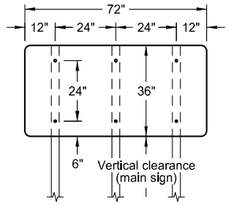

30" x 24" SIGN



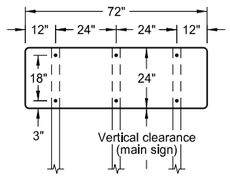

108" x 48" SIGN



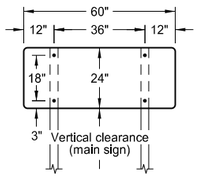

96" x 48" SIGN



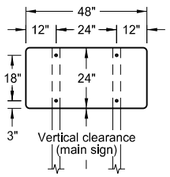

72" x 36" SIGN



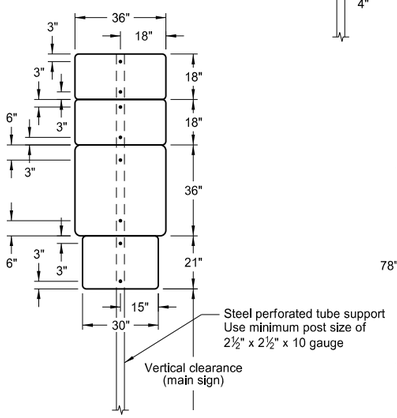

72" x 24" SIGN



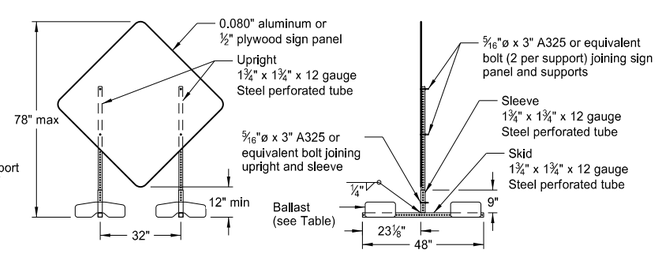

60" x 24" SIGN



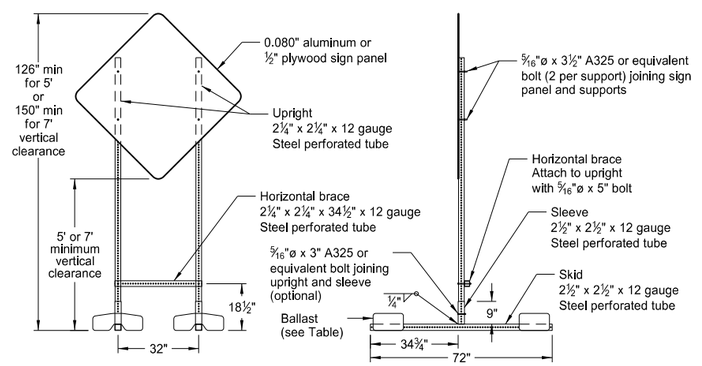

48" x 24" SIGN




36" x 36"
ROUTE MARKER
ASSEMBLY




PORTABLE SIGN SUPPORT
LOW-MOUNTING HEIGHT




PORTABLE SIGN SUPPORT
HIGH-MOUNTING HEIGHT

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 2½" x 2½" 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, ½" plywood, or other approved material, except where noted. All holes to be punched round for ⅜" 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 unforseen circumstances, such as equipment breakdown, rain, subgrade failures, etc., will not accrue towards the 5 day period. The R9-8 through R9-11a series, W1-6 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.

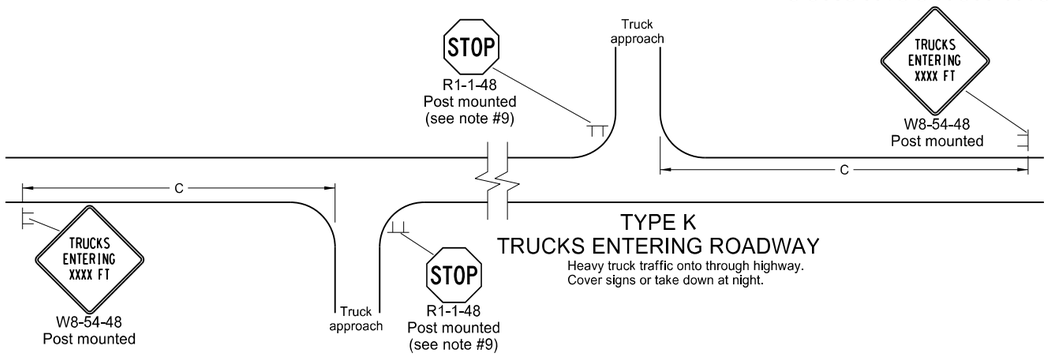
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 10-4-13 | |
| REVISIONS | |
| DATE | CHANGE |
| 11-14-13 | Revised Note 6. |

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 11/14/13 and the original document is stored at the North Dakota Department of Transportation

# CONSTRUCTION TRUCK AND TEMPORARY DETOUR LAYOUTS

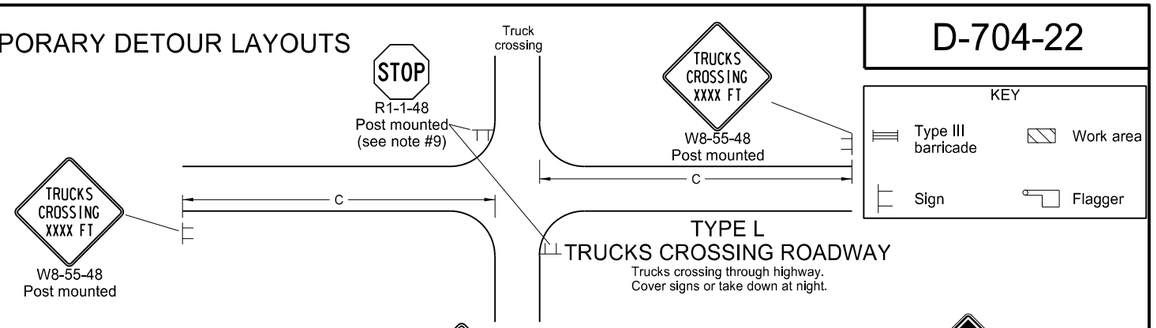
D-704-22

KEY
- Type III barricade
- Work area
- Sign
- Flagger



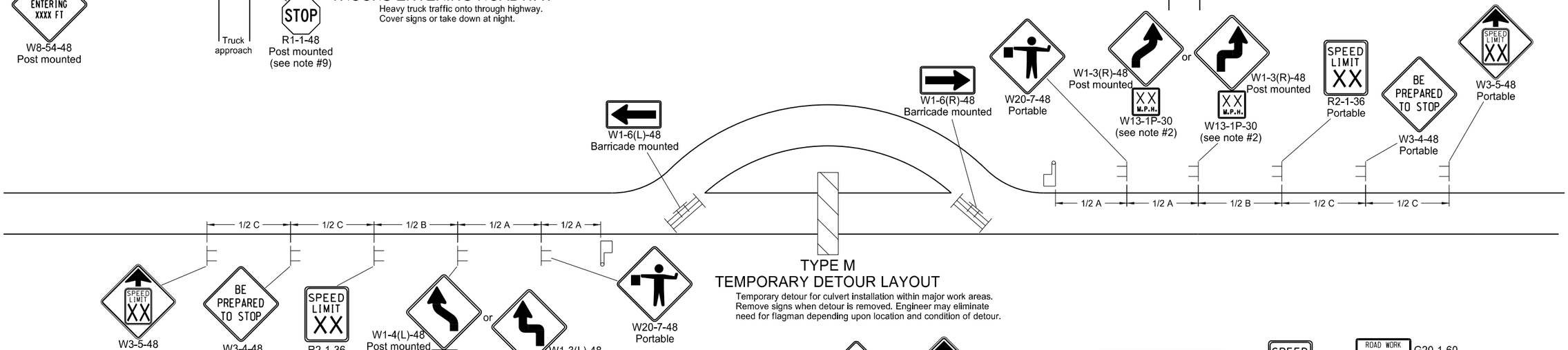

## TYPE K
## TRUCKS ENTERING ROADWAY

Heavy truck traffic onto through highway.
Cover signs or take down at night.



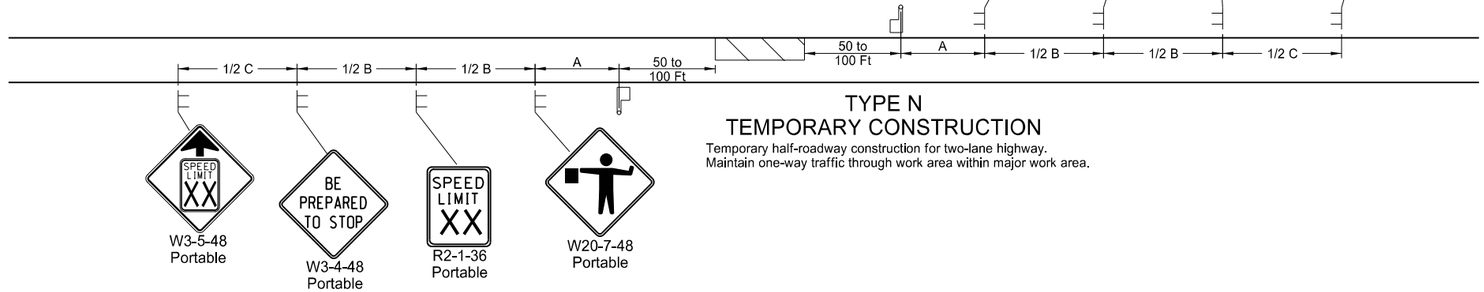

## TYPE L
## TRUCKS CROSSING ROADWAY

Trucks crossing through highway.
Cover signs or take down at night.



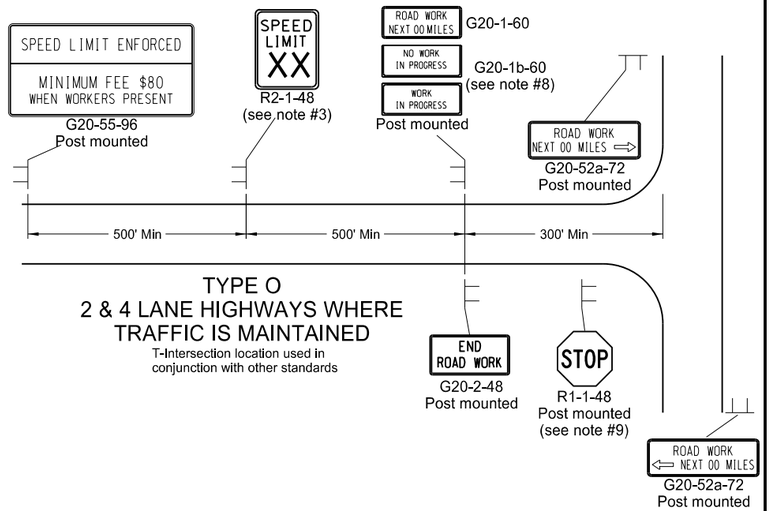

## TYPE M
## TEMPORARY DETOUR LAYOUT

Temporary detour for culvert installation within major work areas.
Remove signs when detour is removed. Engineer may eliminate need for flagman depending upon location and condition of detour.




## TYPE N
## TEMPORARY CONSTRUCTION

Temporary half-roadway construction for two-lane highway.
Maintain one-way traffic through work area within major work area.




## TYPE O
## 2 & 4 LANE HIGHWAYS WHERE TRAFFIC IS MAINTAINED

T-Intersection location used in conjunction with other standards

Notes
1. Place barricades on a moveable assemblies and signs on portable assemblies when located on roadway.
2. Where necessary, safe speed to be determined by the Engineer.
3. Determine the reduced speed limit based on the in-place speed limit before construction. Where speed reductions exceed 30 mph, install a second speed limit sign with the desired speed reduction (not to exceed 30 mph.) Place the second speed limit sign at ½ B.
4. Install flags on warning signs in urban areas when signs are not portable. Mount 24 inch square flags perpendicular to the edges of the sign, and at such a distance above the edge that the flag does not touch the sign when limp.
5. Cover existing speed limit signs within a reduced speed zone.
6. Covered (when approved by engineer) or obliterated pavement marking measured as Obliteration of Pavement Marking.
7. As an option, use portable sign supports in lieu of post mounted signs in accordance with NDDOT Standard Specifications.
8. Install sign G20-1b-60 when work is suspended for winter.
9. If existing stop sign is in place, a 48" stop sign is not required.
10. Sign G20-55-96 is not required if layout is part of other traffic control or if work is less than 15 days.
11. Recommend using 40 mph speed limit in vicinity of workers, unless location and conditions dictate otherwise.

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 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 |

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

9-27-13

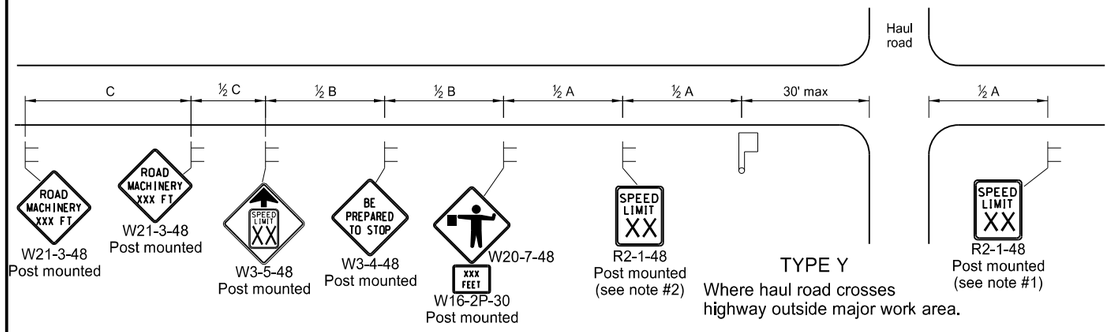
REVISIONS

| DATE | CHANGE |
|---|---|
| 8-17-17 | Update notes & sign numbers |

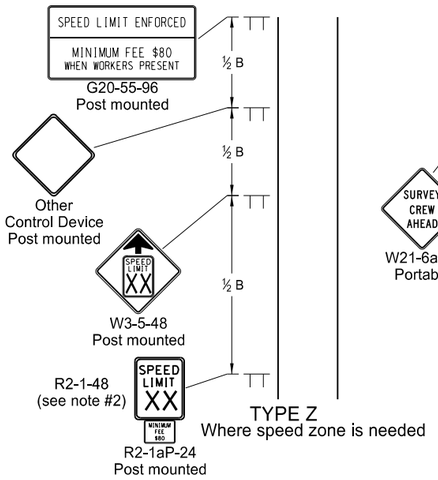
This document was originally issued and sealed by Roger Weigel Registration Number PE-2930, on 08/17/17 and the original document is stored at the North Dakota Department of Transportation

# MISCELLANEOUS SIGN LAYOUTS

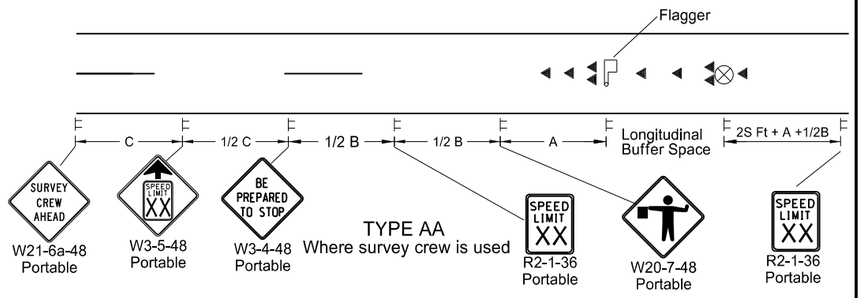
D-704-26



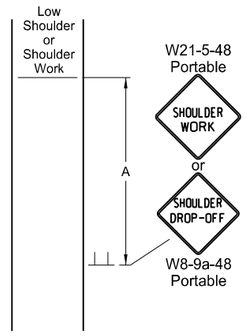

TYPE Y
Where haul road crosses highway outside major work area.



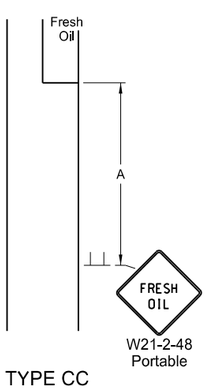

TYPE Z
Where speed zone is needed



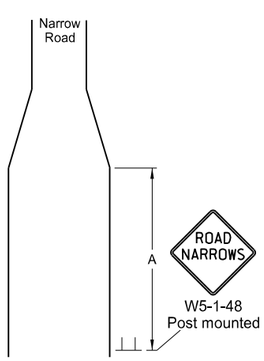

TYPE AA
Where survey crew is used



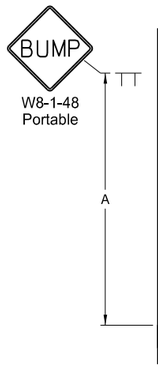

TYPE BB
Within major work area where sign conditions exist



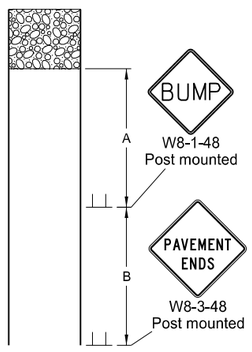

TYPE CC
Where sign conditions exist



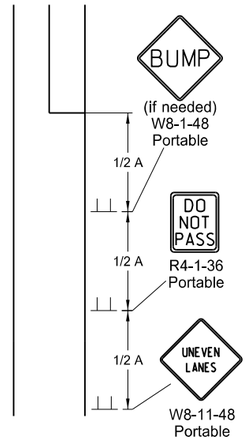

TYPE DD
Where sign conditions exist



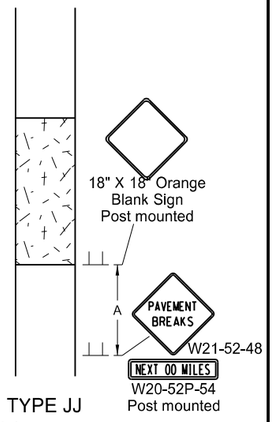

TYPE EE
Where sign conditions exist



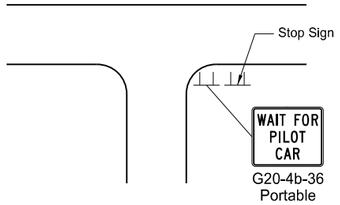

TYPE FF
Where sign conditions exist




TYPE GG
Where elevation difference exists between lanes




TYPE JJ
For break in pavement.
Install signs when conditions exist and remove when not applicable.




TYPE KK
At major intersections within pilot car control area

Notes
1. Re-establish speed limit. Determine exact speed limit in the field, dependent on location and conditions.
2. Determine reduced speed limit based on in-place speed limit before construction. Where speed reductions exceed 30 mph, install a second speed limit sign with the desired speed reduction (not to exceed 30 mph.) Place the second speed limit sign at ½B.
3. Install flags on warning signs in urban areas when signs are not portable. Mount 24 inch square flags perpendicular to the edges of the sign, and at such a distance above the edge that the flag does not touch the sign when limp.
4. Cover existing speed limit signs within reduced speed zones.
5. As an option, use portable sign supports in lieu of post mounted signs in accordance with NDDOT Standard Specifications.
6. Sign G20-55-96 is not required if this standard is part of other traffic control layouts, or work is less than 15 days.
7. When pilot car operation is used, place sign G20-4b-36 "Wait For Pilot Car" at major intersections within pilot car control area.
8. Recommend 40 mph speed limit in vicinity of workers, unless location and conditions dictate otherwise.

| 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 |

| 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.

KEY

Sign  Flagger  Cones

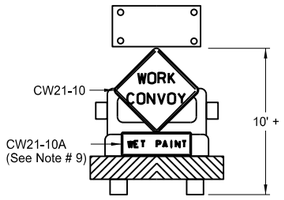
S = Numerical value of speed limit or 85th percentile.

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 9-27-13 | |
| REVISIONS | |
| DATE | CHANGE |
| 8-17-17 | Added speed limit signs. Updated notes & sign numbers |

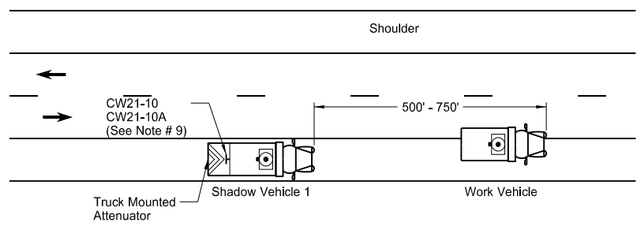
This document was originally issued and sealed by Roger Weigel Registration Number PE-2930, on 08/17/17 and the original document is stored at the North Dakota Department of Transportation

# TRAFFIC CONTROL PLAN FOR MOVING OPERATIONS

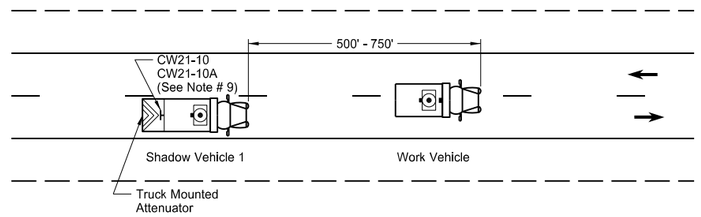
D-704-27




Typical Shadow Vehicle 1
Two-Way Roaday

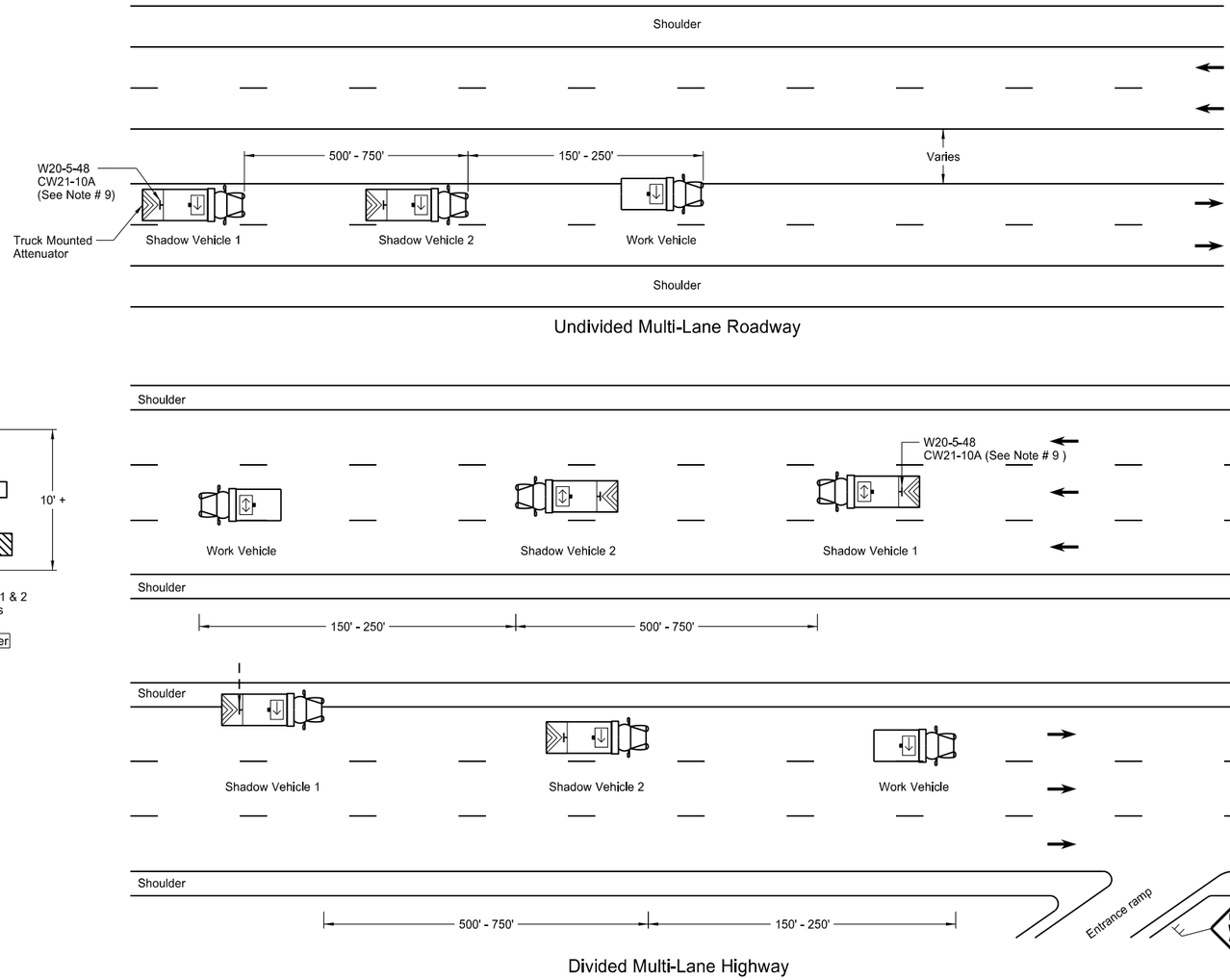



Two-Way Roadway with Paved Shoulders



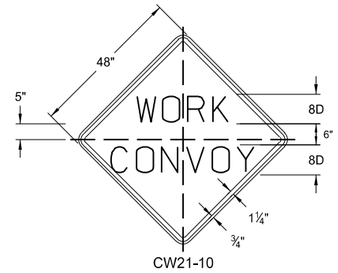

Two-Way Roadway without Paved Shoulders

Notes
1. If the contractor chooses to place more vehicles in the convoy than are shown, these vehicles shall have the truck mounted attenuator and shall be at the contractor's expense.
2. Shadow and work vehicles shall display yellow rotating beacons or strobe lights unless otherwise stated elsewhere in the plans.
3. Flashing arrow panels shall be Type B or Type C. The panel operation shall be controlled from inside the vehicle.
4. Each vehicle shall have two-way electronic communication capability.
5. When work convoys must change lanes, shadow vehicle 1 should change lanes first to shadow other convoy vehicles.
6. Vehicle spacing between the shadow vehicle 1 and shadow vehicle 2 will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the trail vehicle in time to slow down and/or change lanes as they approach the shadow vehicle.
7. Sign Colors
   Letters = Black
   Border = Black
   Background = Orange
8. Shadow vehicle 2 may be used as the paint tender vehicle.
9. Sign CW21-10A shall only be used during a painting operation.
10. On two lane - two way roadways, the work and shadow vehicles should pull over periodically to allow motor vehicle traffic to pass.

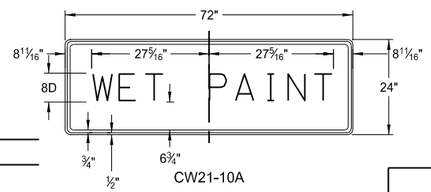



Undivided Multi-Lane Roadway

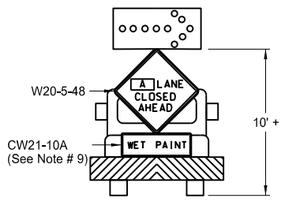
Sign Details




CW21-10




CW21-10A




Typical Shadow Vehicle 1 & 2
Multi-Lane Highways

A = Left Right Center




Divided Multi-Lane Highway

KEY

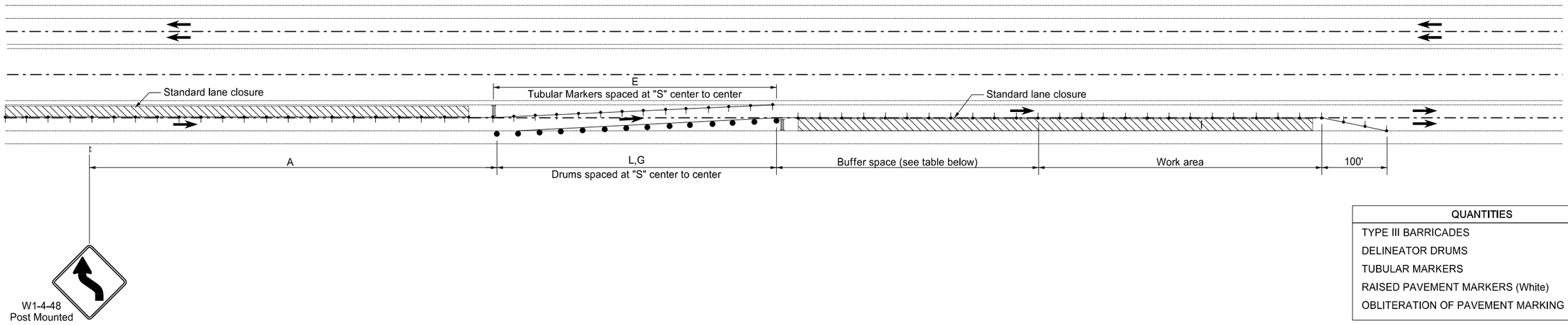
- Sign
- Truck mounted attenuator
- Flashing arrow panels:
  - Right directional
  - Left directional
  - Double arrow directional
  - Caution Mode

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 9-27-13 | |
| REVISIONS | |
| DATE | CHANGE |
| 6-18-14 | Removed shadow vehicle 2 on two lane roadways |

This document was originally issued and sealed by Roger Weigel Registration Number PE-2930, on 06/18/14 and the original document is stored at the North Dakota Department of Transportation

# TRAFFIC CONTROL SYSTEM
# LANE SHIFT BETWEEN A LANE CLOSURE AND AN OPPOSITE LANE CLOSURE

D-704-34A




| QUANTITIES | |
|---|---|
| TYPE III BARRICADES | 2 Each |
| DELINEATOR DRUMS | 14 Each |
| TUBULAR MARKERS | 14 Each |
| RAISED PAVEMENT MARKERS (White) | Varies |
| OBLITERATION OF PAVEMENT MARKING | Varies |

KEY

| | |
|---|---|
| Work area | Delineator drum |
| Type III barricade | Tublar markers |
| Traffic Direction | Sign |

LEGEND

E Obliteration of pavement marking (10' line, 30' skip centerline)
G Raised pavement markers (white) 5' ctrs.

| 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.

Notes
1. Variables
   S = Numerical value of posted speed limit, off-peak 85th percentile speed prior to work starting, or the anticipated operating speed in mph.
   W = Width of offset in feet.
   L = Taper length in feet. Speeds 40 mph or less $L=WS^2/60$. Speeds 45 mph or greater $L= WS$.
2. Signs and barricade shown to be placed on roadway shall be placed on moveable assemblies.
3. Existing speed limit signs within a reduced speed zone shall be covered.
4. 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 sign as shown on the standard drawings in accordance with NDDOT Standard Specifications.
6. When placing traffic control devices, speed reductions will be necessary. The "Minimum Fee $80" sign shall be placed below these speed limit signs.
7. Obliteration of pavement marking (10' line, 30' skip, centerline) and raised pavement markers are not necessary when the work is 14 days or less.

| 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 |

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

10-26-2012

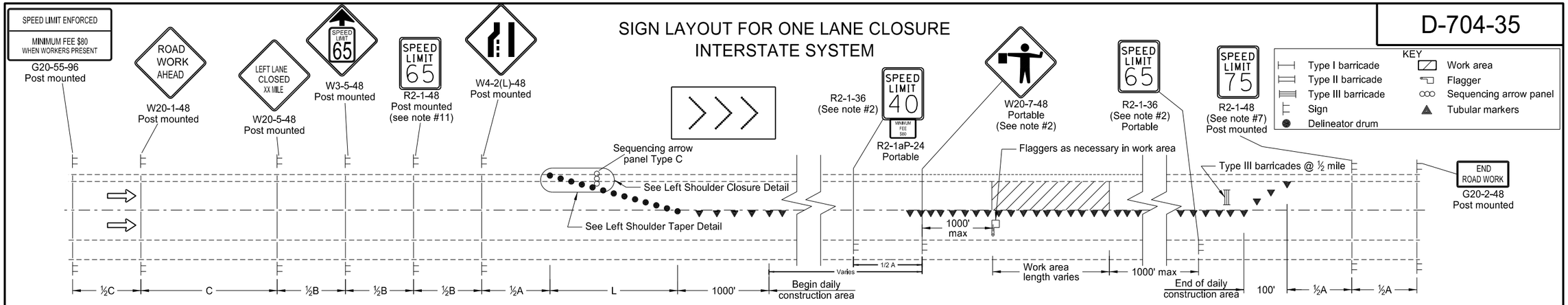
REVISIONS

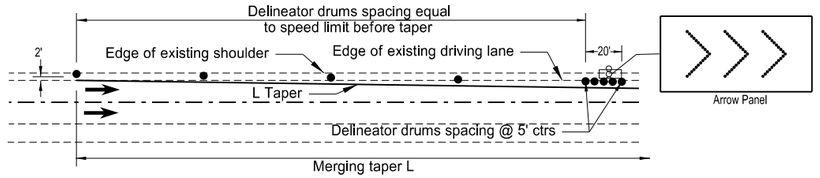
| DATE | CHANGE |
|---|---|
| | |

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 10/26/12 and the original document is stored at the North Dakota Department of Transportation

# D-704-35

## SIGN LAYOUT FOR ONE LANE CLOSURE
## INTERSTATE SYSTEM




LEFT SHOULDER TAPER DETAIL

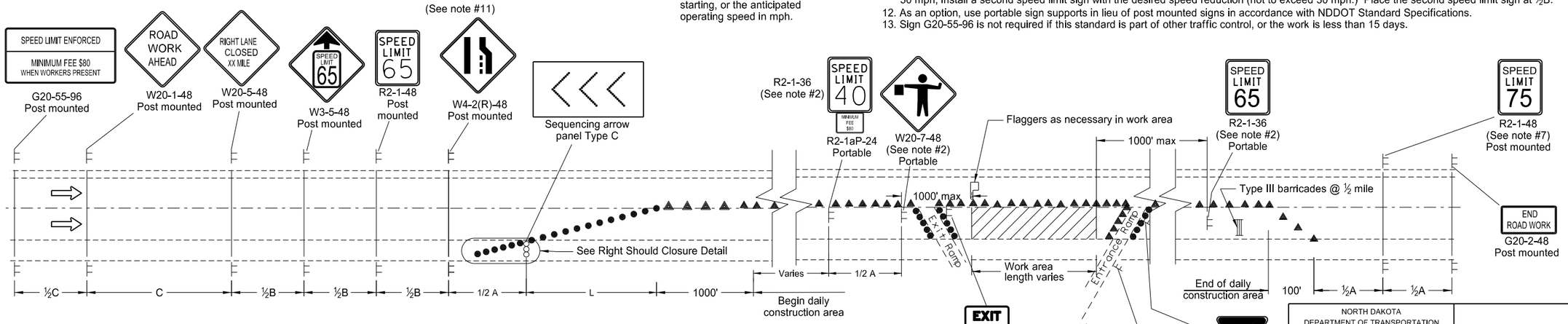
| ADVANCE WARNING SIGN SPACING | | | |
|---|---|---|---|
| Road Type | Distance Between Signs Min (ft) | | |
| | A | B | C |
| Rural - High Speed (over 50 mph to 65 mph) | 720 | 720 | 720 |
| Urban Expressway and Freeway (55 mph to 60 mph) | 850 | 1350 | 2200 |
| Rural Expressway and Freeway (70 mph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

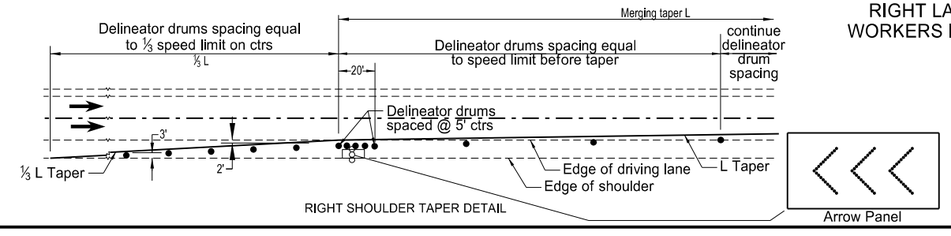
## LEFT LANE CLOSED
## WORKERS IN WORK AREA

| 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.

Notes:
1. Install advance signs for flagging when flaggers are flagging.
2. Move the advanced flagger sign and the speed limit signs as the work area moves through the construction zone. When the work area is not visible from the flagger, move the flagger station so the work area is visible. Space the 40 mph speed limit sign at ½A in advance of the flagger sign and move the 65 mph speed limit sign. Cover or remove the 40 mph speed limit and Minimum Fee $80 signs and the 65 mph speed limit sign upon completion of the work day or when workers are not present.
3. RAMPS: When the work area encompasses an entrance ramp, install a 40 mph speed limit sign on the ramp and cover any existing yield sign. Install new yield sign as necessary. Remove the ramp speed limit sign when the main line 40 mph speed zone is moved past the ramp.
4. Variables:
   S=Numerical value of speed limit or 85th percentile
   W=The width of taper.
   L=Minimum length of taper, or SxW for freeways, expressways, and all other roads with speeds of 45 mph or greater, or
   WxSxS/60 for urban, residential, and other streets with speeds of 40 mph or less.
5. Space delineator drums for tapering traffic at the dimension "S". Space tubular markers used for tangents at 2 times dimension "S".
6. Place sequencing arrow panels at the beginning of the taper when possible. Where shoulder width does not provide sufficient room, move the panel closer to the work area and place on the roadway surface.
   Use Type C on roadways with high traffic speeds and volumes (over 40 mph or 5000 ADT or greater).
7. Re-establish the speed limit. Determine the exact speed limit in the field, dependent on location and conditions.
8. Cover existing speed limit signs within a reduced speed zone.
9. Upon approval, the Engineer will measure obliterated or covered pavement marking as Obliteration of Pavement Marking.
10. Install flags on warning signs in urban areas when signs are not portable. Mount 24 inch square flags perpendicular to the edges of the diamond sign, and at such a distance above the edge that the flag does not touch the sign when limp.
11. Determine the reduced speed limit dependent on the in place speed limit before construction. When speed limits are to be reduced more than 30 mph, install a second speed limit sign with the desired speed reduction (not to exceed 30 mph.) Place the second speed limit sign at ½B.
12. As an option, use portable sign supports in lieu of post mounted signs in accordance with NDDOT Standard Specifications.
13. Sign G20-55-96 is not required if this standard is part of other traffic control, or the work is less than 15 days.




RIGHT SHOULDER TAPER DETAIL

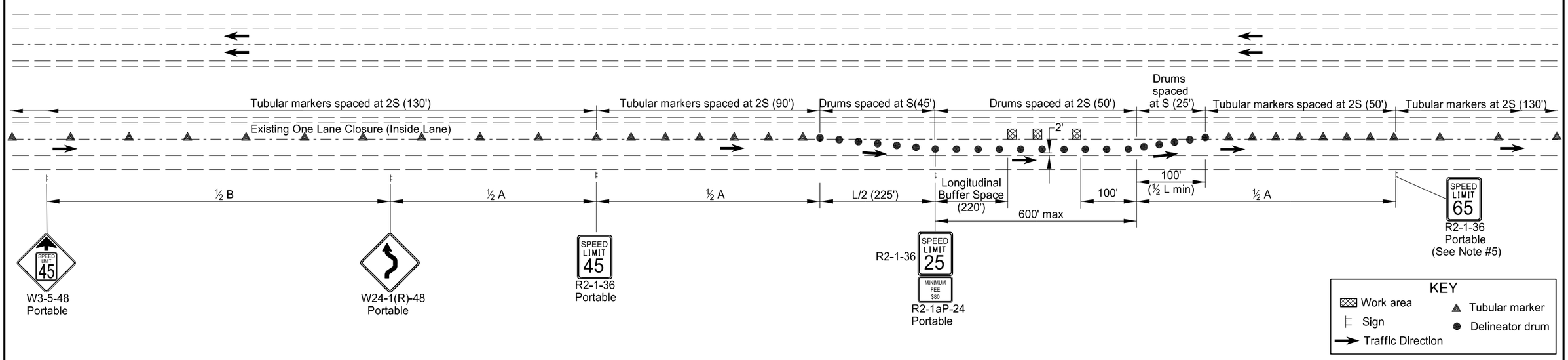
## RIGHT LANE CLOSED
## WORKERS IN WORK AREA

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 9-7-2012 | |
| REVISIONS | |
| DATE | CHANGE |
| 6/23/2014 | Revised Note 12 |
| 3/15/2016 | Removed Do Not Pass signs and updated notes |
| 8/17/2017 | Moved speed signs. Added note |

This document was originally issued and sealed by Roger Weigel, Registration Number PE- 2930, on 08/17/17 and the original document is stored at the North Dakota Department of Transportation

# SIGN LAYOUT TO MOVE TRAFFIC TO OUTSIDE SHOULDER ON FOUR LANE DIVIDED HIGHWAY

D-704-35A




| ADVANCE WARNING SIGN SPACING | | | |
|---|---|---|---|
| | Distance Between Signs Min (ft) | | |
| Road Type | A | B | C |
| 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 |

Notes
1. Install advance signs for flagging when flaggers are flagging.
2. Return traffic to the driving lane during non working hours (change this layout back to a one lane closure and cover or remove the signs.)
3. Variables:
   S = Numerical value of speed limit or 85th percentile.
   W = Width of taper.
   L = Minimum length of taper, (S x W for freeways, expressways, and roads with speeds of 45 mph or greater, or W x $S^2$ /60 for streets with speeds of 40 mph or less.)
4. Space delineator drums, and tubular markers for tapering traffic at dimension "S". Space tubular markers for tangents at 2 times dimension "S".
5. Re-establish the speed limit. Determine the exact speed limit in the field, dependent on location and conditions.
6. Cover existing speed limit signs within a reduced speed zone.
7. Install flags on warning signs in urban areas where signs are not portable. Mount 24 inch square flags perpendicular to the edges of the sign, and at such a distance above the edge that the flag does not touch the sign when limp.

| LONGITUDINAL BUFFER SPACE | |
|---|---|
| *Speed (mph) | Length (ft) |
| 20 | 35 |
| 25 | 55 |
| 30 | 85 |
| 35 | 120 |
| 40 | 170 |
| 45 | 220 |
| 50 | 280 |
| 55 | 335 |
| 60 | 415 |
| 65 | 485 |
| 70 | 585 |

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

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 10-26-12 | |
| REVISIONS | |
| DATE | CHANGE |
| 8-17-17 | Updated notes & sign size & nos. |

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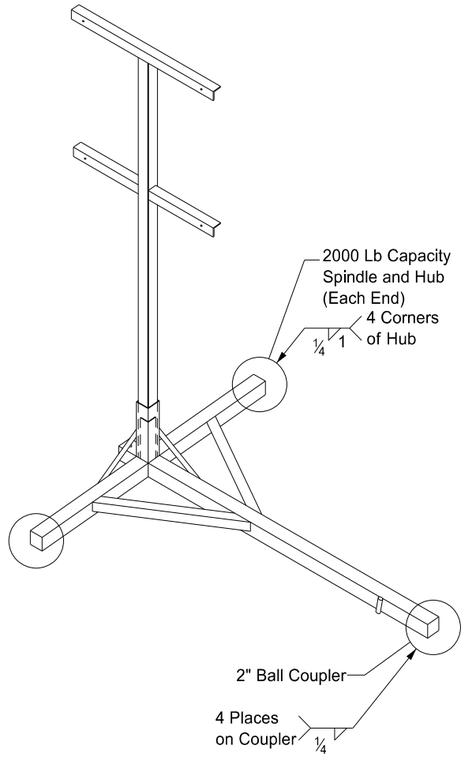
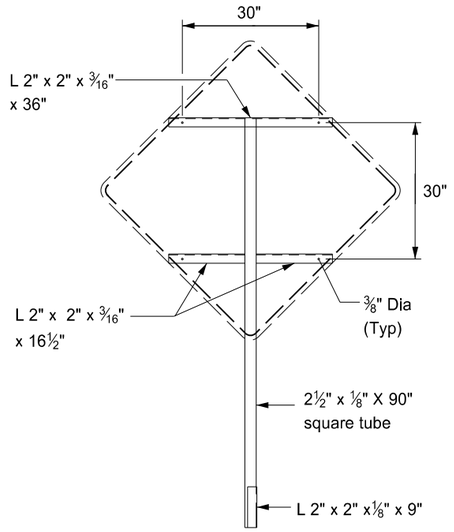
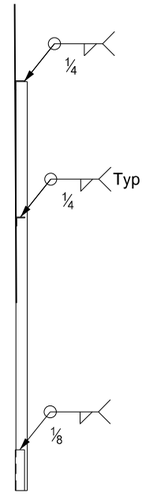
# PORTABLE SIGN SUPPORT ASSEMBLY

D-704-50



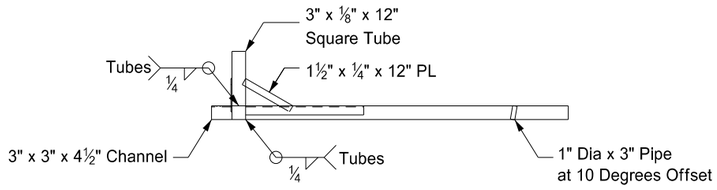




FRONT

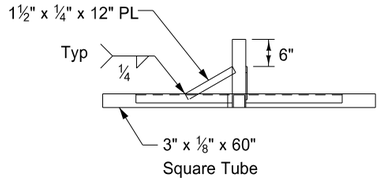



RIGHT

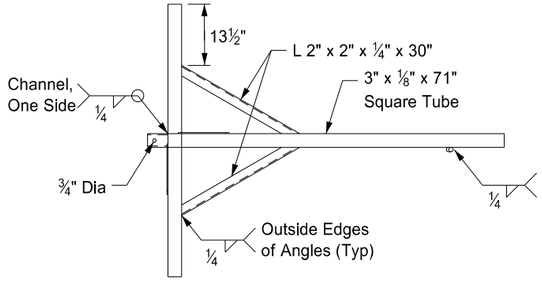
SIGN SUPPORT




FRONT




RIGHT




TOP

TRAILER

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.

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 11-23-10 | |
| REVISIONS | |
| DATE | CHANGE |
| | |

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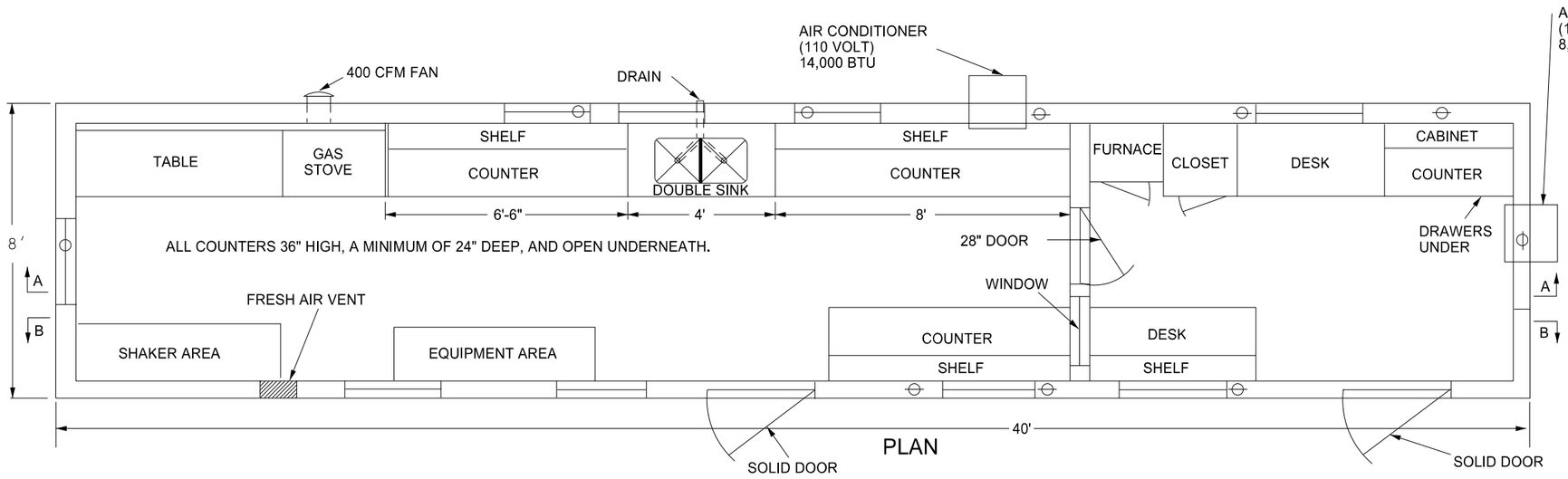
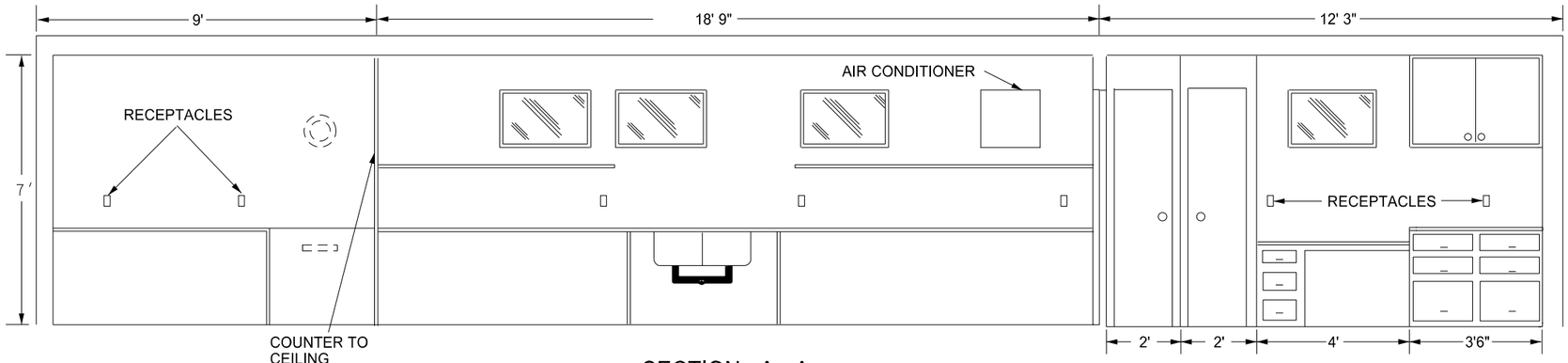
# BITUMINOUS LABORATORY

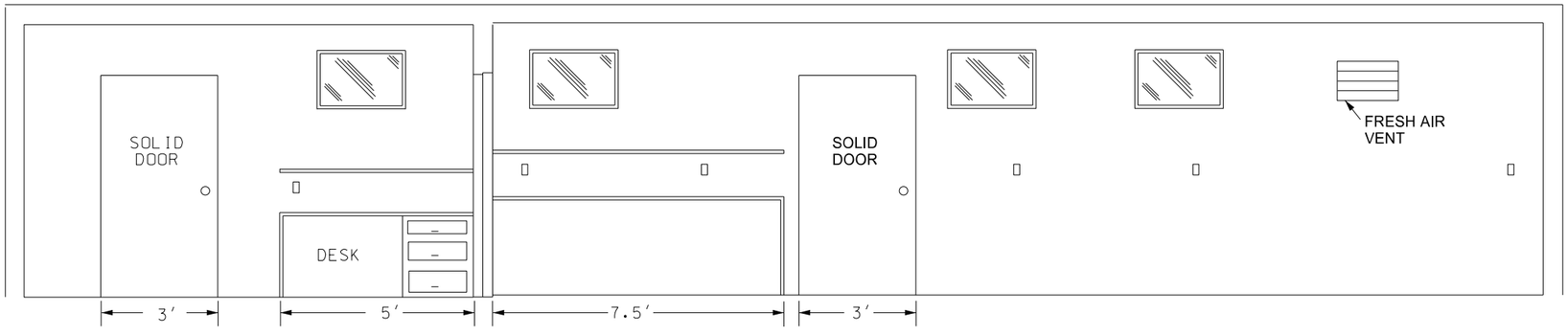
D-706-1




PLAN




SECTION A - A




SECTION B - B

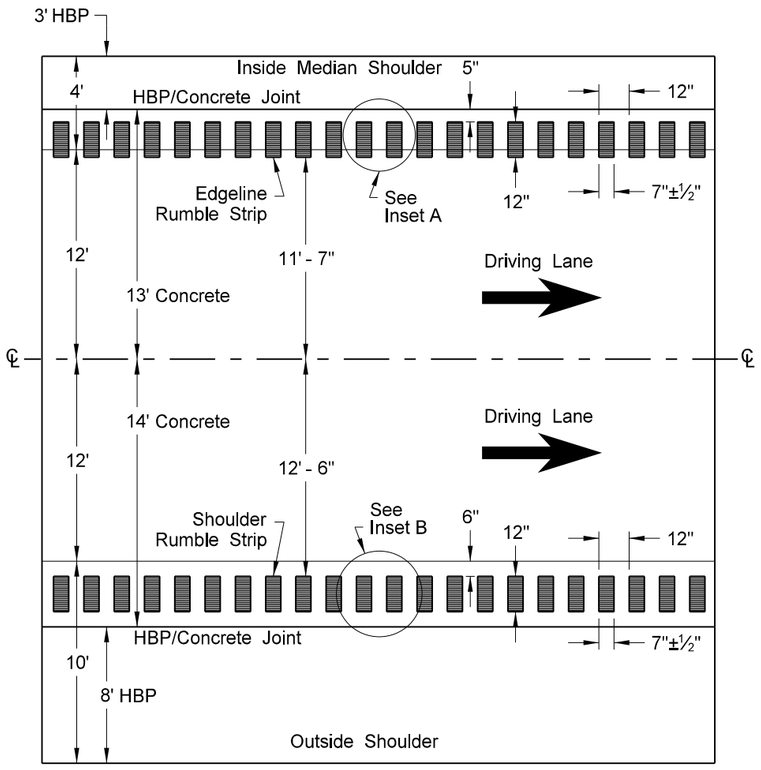
Provide a laboratory with the following:

1. A 1'x1' shelf at 36" above the regular countertop.
2. Double compartment stainless steel sink, with each compartment a minimum of 16"x14"x10" deep. Provide water service lines made of copper or plastic and a diameter of ½ inch.
3. An exhaust fan capable of removing inside air at a rate of 400 CFM.
4. Fresh air vent hinged to open or close manually.
5. 24" x 48" table capable of holding a 200 lb masonry saw with a minimum clearance of 36" above the table.
6. A water supply tank with a capacity of 500 gallons and a 20 gallon capacity pressure tank on the pump.
7. Heavy duty type locks, latches, and hinges for doors made to withstand the intense use in service.
8. A wall between the office and the work area properly insulated to prevent the transmission of heat and noise.
9. The steel cable tie downs and ground anchors at each corner of the lab.
10. Electrical service entrance wired for 100 amps and separate circuits for air conditioners. Space convenience outlets in counter areas a minimum of four feet apart.

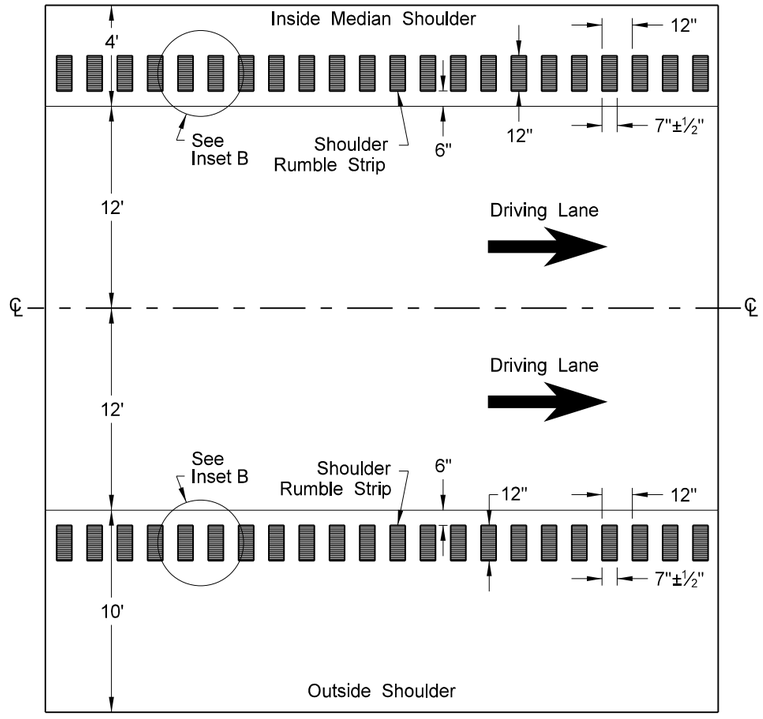
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 10-03-13 | |
| REVISIONS | |
| DATE | CHANGE |
| 07-30-14 | Changed standard's title and revised notes. |
| 01-11-16 | Revised notes. |

This document was originally issued and sealed by Roger Weigel Registration Number PE-2930, on 01/11/16 and the original document is stored at the North Dakota Department of Transportation

# RUMBLE STRIPS
# INTERSTATE HIGHWAYS



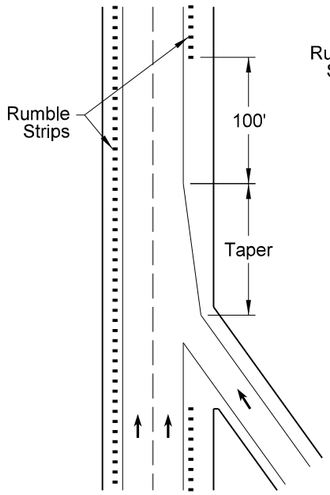

**Interstate - 13' and 14' Concrete Width Mainline with Asphalt Shoulders**



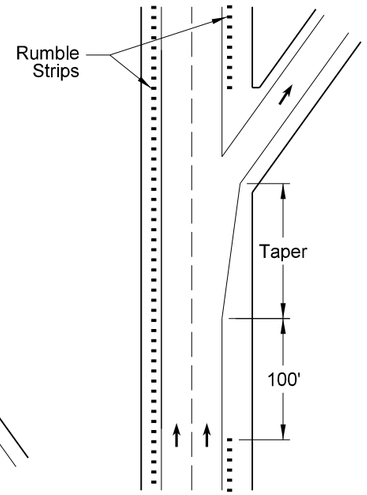

**Interstate**

NOTES:

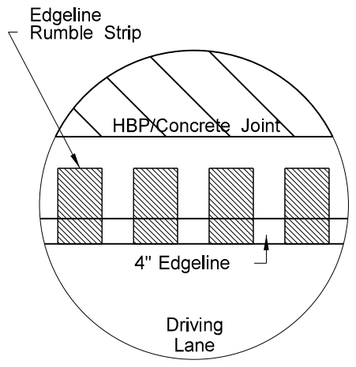
1) Discontinue rumble strips through ramps and 100' before and after ramp tapers as shown below.



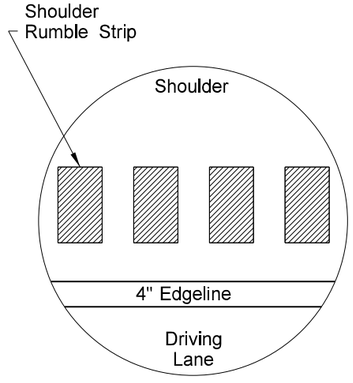

**Entrance Ramp**



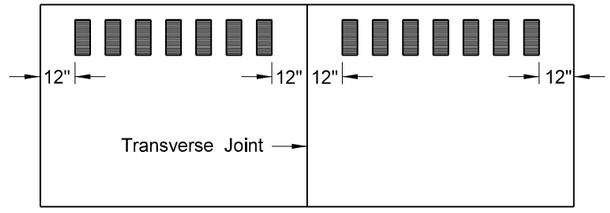

**Exit Ramp**



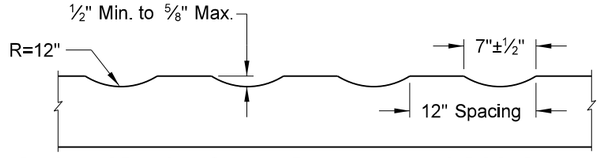

**Inset A - Edgeline Rumble Strip**




**Inset B - Shoulder Rumble Strip**




**Discontinue rumble strip approx. 12" on both sides of PCC transverse joint**




**Profile of Rumble Strips - Bituminous and PCC Pavements**

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 12-29-09 | |
| REVISIONS | |
| DATE | CHANGE |
| 2-25-10 | Note 4 was added. |
| 9-8-11 | Revised Notes and D-760-1 |

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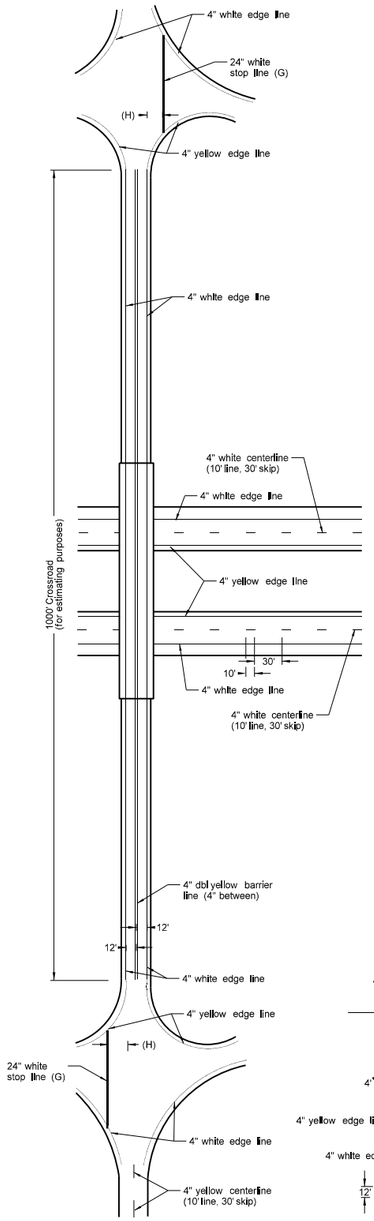
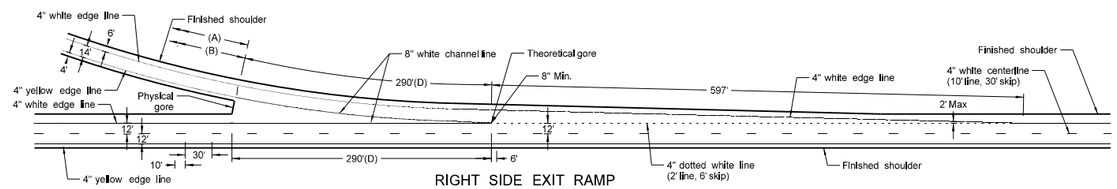
# INTERSTATE PAVEMENT MARKING
# 4 LANE DIVIDED HIGHWAY

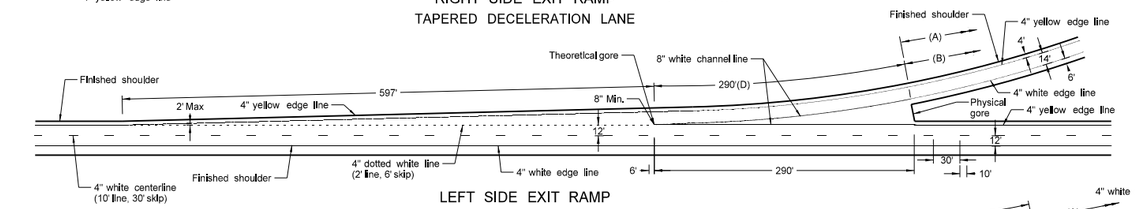
D-762-2



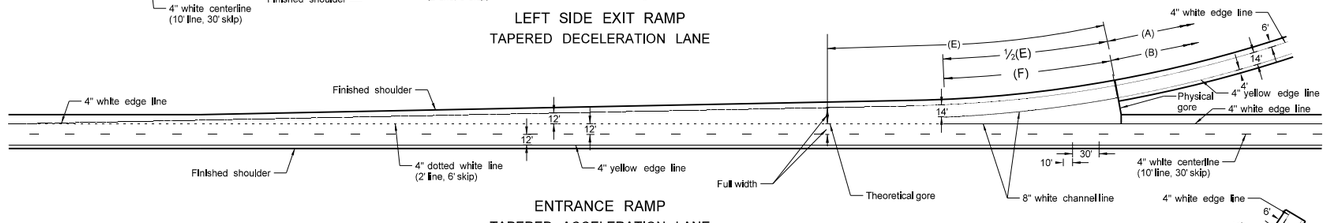

CROSS-ROAD & STRUCTURE
The engineer in the field shall determine the length to be striped.



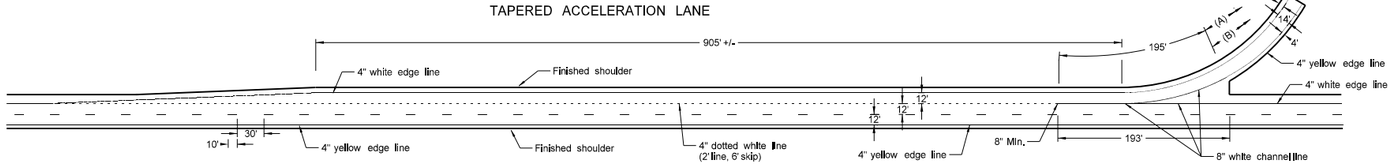

RIGHT SIDE EXIT RAMP
TAPERED DECELERATION LANE



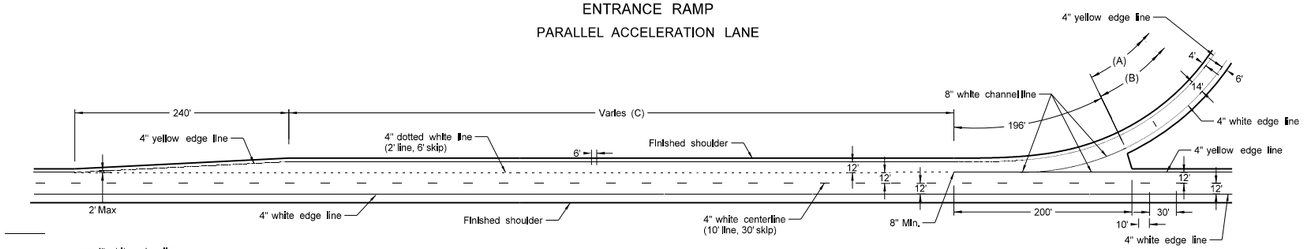

LEFT SIDE EXIT RAMP
TAPERED DECELERATION LANE



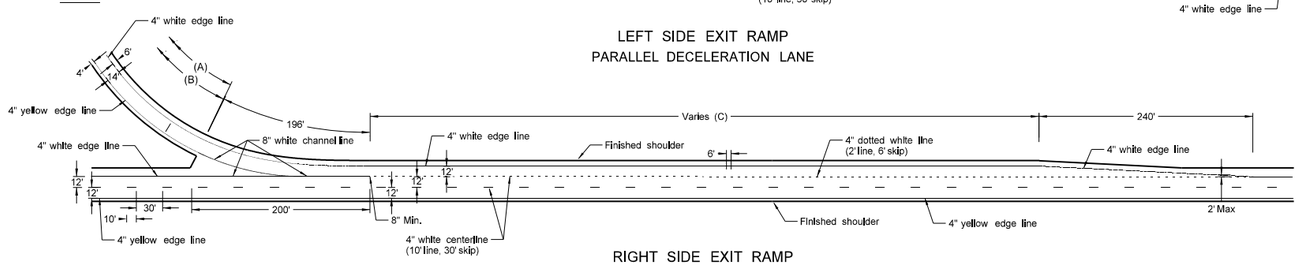

ENTRANCE RAMP
TAPERED ACCELERATION LANE




ENTRANCE RAMP
PARALLEL ACCELERATION LANE




LEFT SIDE EXIT RAMP
PARALLEL DECELERATION LANE




RIGHT SIDE EXIT RAMP
PARALLEL DECELERATION LANE

NOTE:

(A) 4" White edge line
(B) 4" Yellow edge line
(C) Assume "varies" to equal 790' for purpose of estimate. The pavement marking shall begin at the beginning of the taper and end at the 8" line.
(D) Beginning of physical gore to theoretical gore.
(E) If the dlstace Is less than 350' then extend the 8" channel line to the theoretical gore, otherwise use 195'.
(F) 195' was used for estimating purposes.
(G) Not required when crossroad approaches have gravel surface.
(H) 4' minimum, 15' maximum from the nearest edge of the Intersection traveled way.

| BASIS OF ESTIMATE | | |
|---|---|---|
| LOCATION | ITEM | |
| Right or Left Side Exit Ramp TAPERED | 8" White channel line | 580 LF |
| | 24" White stop line | 60 LF |
| | 4" White dotted line | 148 LF |
| | 4" White edge line | 1115 LF |
| | 4" Yellow edge line | 1075 LF |
| Entrance Ramp TAPERED | 8" White channel line | 390 LF |
| | 4" White dotted line | 258 LF |
| | 4" White edge line | 1270 LF |
| | 4" Yellow edge line | 1075 LF |
| Right or Left Side Exit Ramp PARALLEL | 8" White channel line | 396 LF |
| | 24" White stop line | 60 LF |
| | 4" White dotted line (C) | 258 LF |
| | 4" White edge line | 1115 LF |
| | 4" Yellow edge line | 1075 LF |
| Entrance Ramp PARALLEL | 8" White channel line | 388 LF |
| | 4" White dotted line | 283 LF |
| | 4" White edge line | 1275 LF |
| | 4" Yellow edge line | 1075 LF |
| Main Line (Both Roadways) | 4" White lane line, 10' line, 30' skip | 2640 LF/MI |
| | 4" White edge line | 10,560 LF/MI |
| | 4" Yellow edge line | 10,560 LF/MI |
| Cross Road | 4" White edge line | 2000 LF |
| | 4" Dbl yellow barrier line (4" between) | 2000 LF |

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 8-3-11 | |
| REVISIONS | |
| DATE | CHANGE |
| | |

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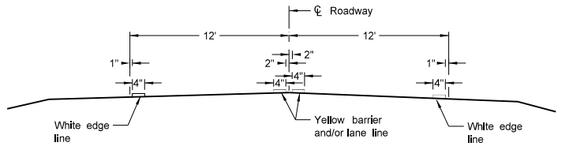
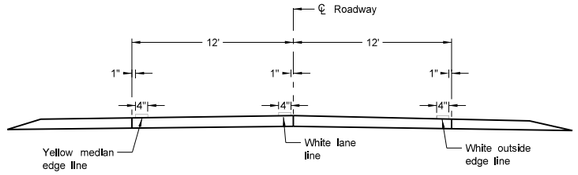
# PAVEMENT MARKING

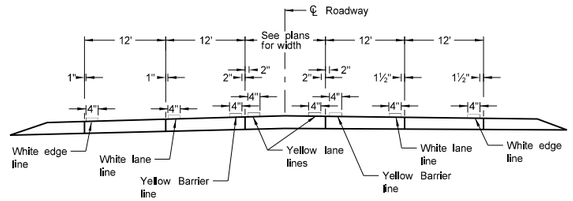
D-762-4




Two Lane Two Way
RURAL ROADWAY



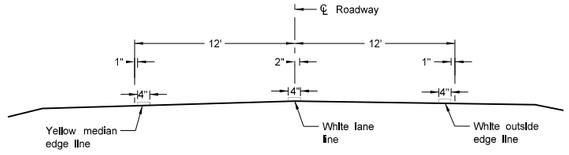

Two Lane Roadway
INTERSTATE HIGHWAY
Concrete Section



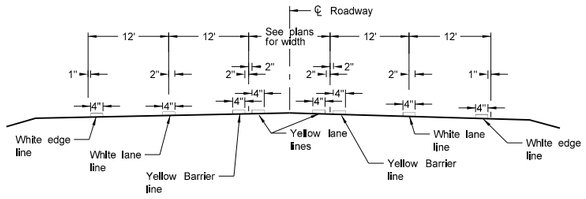

RURAL FIVE LANE ROADWAY
Concrete Section

NOTES:

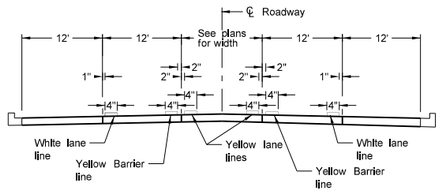
1. Edge lines shall be continued through private drives and field drives and broken for intersections.



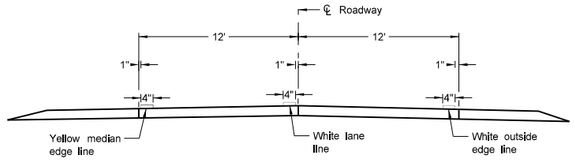

Two Lane Divided
Rural Roadway
PRIMARY HIGHWAY
Asphalt Section



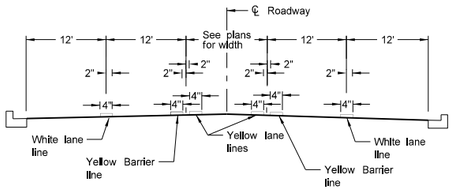

RURAL FIVE LANE ROADWAY
Asphalt Section



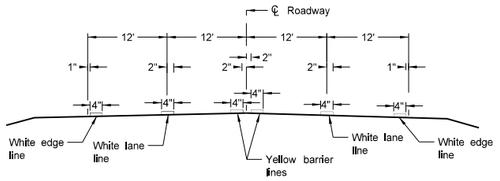

URBAN FIVE LANE SECTION
Concrete Section



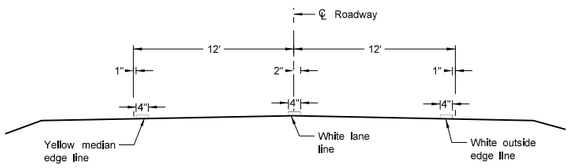

Two Lane Roadway
PRIMARY HIGHWAY
Concrete Section



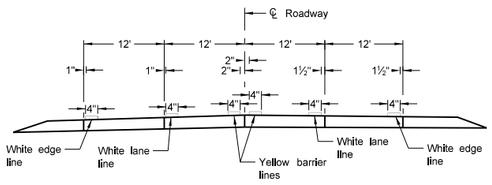

URBAN FIVE LANE SECTION
Asphalt Section



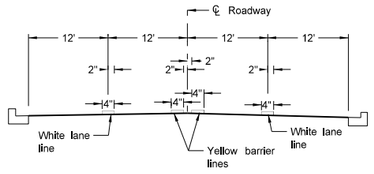

RURAL FOUR LANE ROADWAY
Asphalt Section



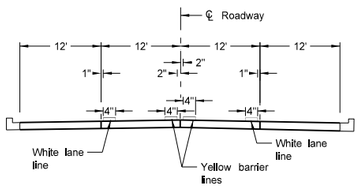

Two Lane Roadway
INTERSTATE HIGHWAY
Asphalt Section



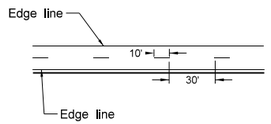

RURAL FOUR LANE ROADWAY
Concrete Section




URBAN FOUR LANE SECTION
Asphalt Section




URBAN FOUR LANE SECTION
Concrete Section




CENTERLINE PAVEMENT MARKING SKIP SPACING DETAIL

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

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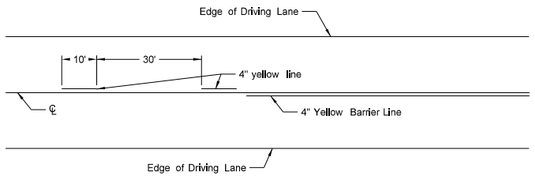
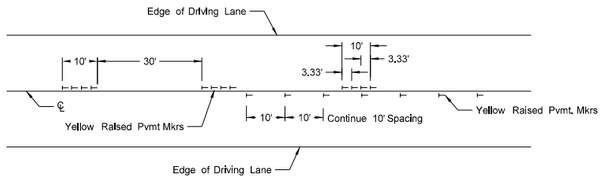
# SHORT-TERM PAVEMENT MARKING

D-762-11

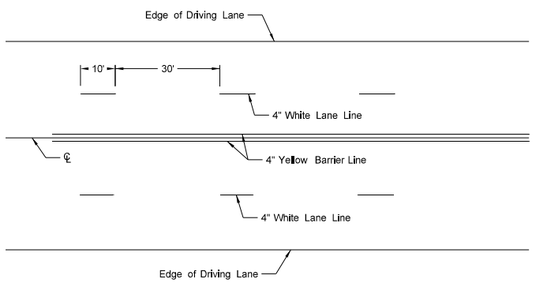



Painted or Tape Lines

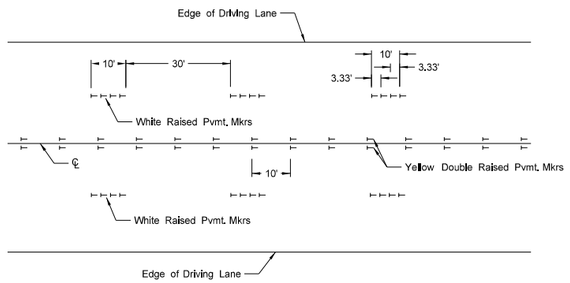



Raised Pavement Markers

TWO-LANE TWO-WAY ROADWAY

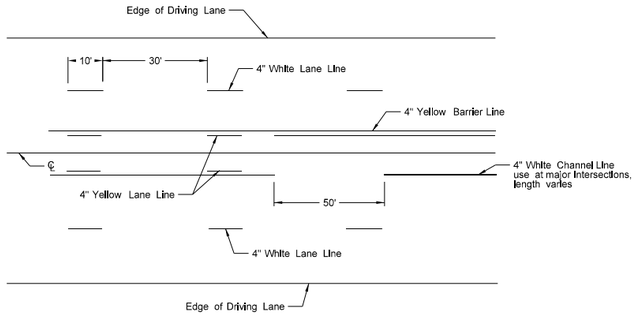



Painted or Tape Lines

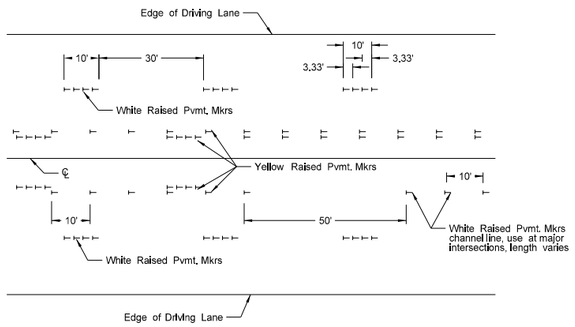



Raised Pavement Markers

FOUR LANE ROADWAY

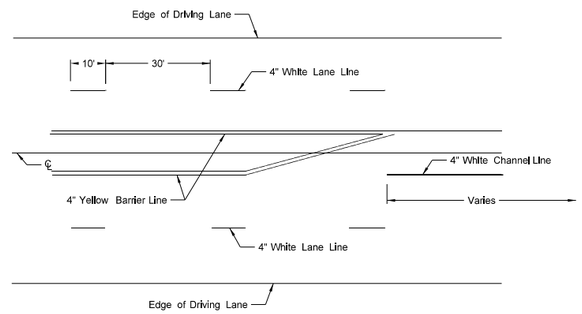



Painted or Tape Lines

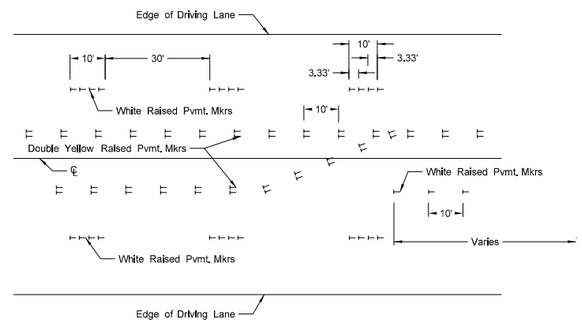



Raised Pavement Markers

FIVE LANE ROADWAY TWO WAY LEFT TURN




Painted or Tape Lines




Raised Pavement Markers

FIVE LANE ROADWAY WITH MARKED ISLANDS

NOTES:

1. Two-lane two-way roadways shall have no passing zones placed as shown. No passing zone signs may be placed in lieu of short term no passing zone pavement markings. These signs will be allowed to remain in place for three days, at which time the short term no passing zone pavement marking shall be placed.

2. Short term center line stripe (paint) on top lift shall be carefully placed with exact spacing so that the permanent stripe will match when applied.

3. Raised markers and tape markings shall be removed after permanent pavement marking has been installed. Removed markings shall become the property of the contractor.

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 12-1-10 | |
| REVISIONS | |
| DATE | CHANGE |
| 3-29-16 | Re-numbered to be D-762-11 (previously was D-762-6) |

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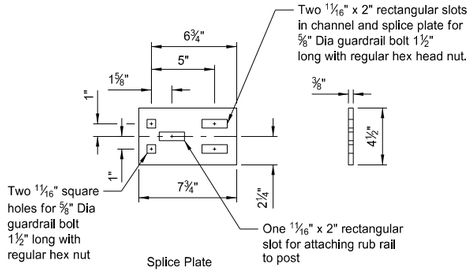
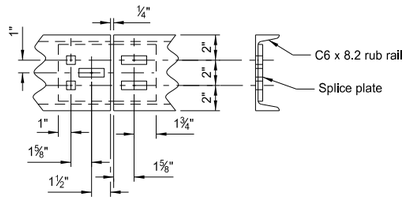
# W-BEAM GUARDRAIL GENERAL DETAILS

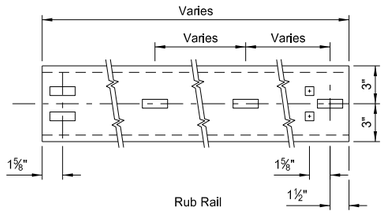
D-764-1




Splice Plate

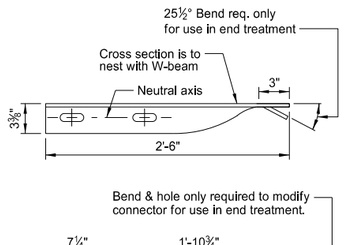



Splice Detail

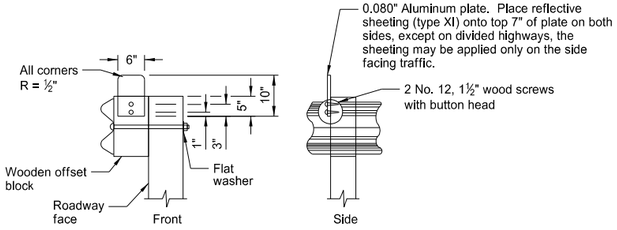



Rub Rail

## C6x8 RUB RAIL AND SPLICE PLATE

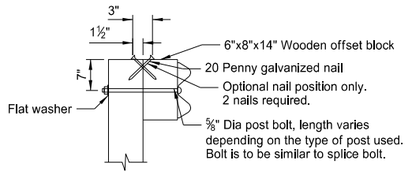



## W BEAM TERMINAL CONNECTOR

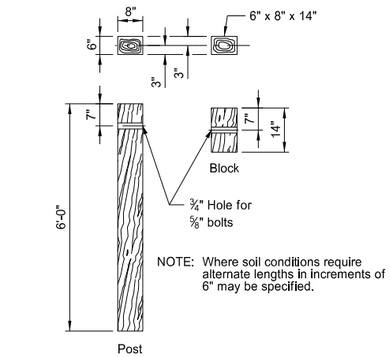



## REFLECTORIZED PLATE DETAIL

Additional reflectors are added to the W-beam guardrail quantities for placement on end treatment.

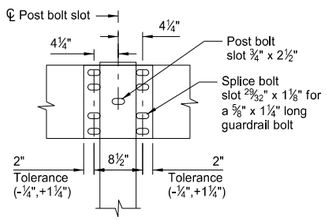



## TYPICAL POST ATTACHMENT DETAIL

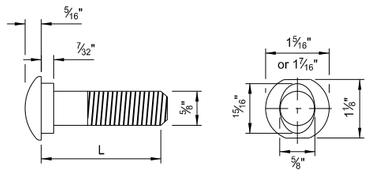



NOTE: Where soil conditions require alternate lengths in increments of 6" may be specified.

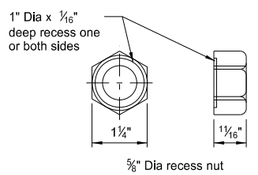
## 6"x8" TIMBER POST & BLOCK




## SPLICE DETAIL

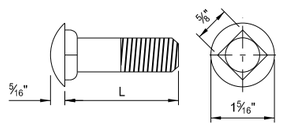



| 5/8" Diameter Guardrail Bolt | |
|---|---|
| L | Thread Length |
| 1 1/4" | Full length thread |
| 2" | 1 3/4" Min thread length |
| 9 1/2" | 4" Min thread length |
| 18" | 4" Min thread length |
| 20" | 4" Min thread length |
| 22" | 4" Min thread length |
| 25" | 4" Min thread length |




5/8" Dia recess nut

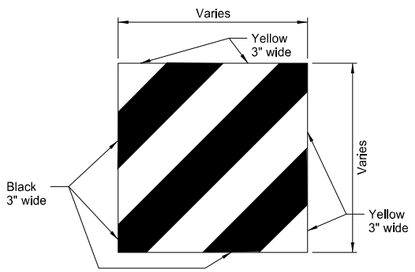
## 5/8" GUARDRAIL BOLT & RECESS NUT



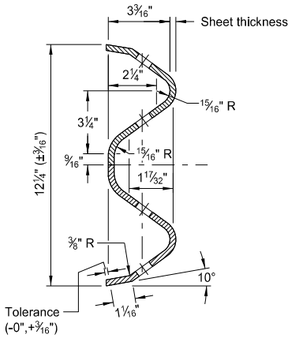

| 5/8" Diameter Carriage Bolt | |
|---|---|
| L | Thread Length |
| 1 1/2" | Full length thread |
| 3" | 1 1/2" Min thread length |
| 11" | 1 3/4" Min thread length |
| 13" | 1 3/4" Min thread length |

5/8" Hex nut

## 5/8" CARRIAGE BOLT & NUT




## IMPACT HEAD OBJECT MARKER




## W-BEAM CROSS SECTION

NOTES:

1. Reflectorized plates: Reflector plates shall begin at the first post and be spaced at 25' centers on guardrail less than 250' in length and at 50' centers for guardrail over 250' in length. The reflector shall be the same color as the pavement marking adjacent to that reflector unless noted otherwise on the plans.
2. Manner of replacing bituminous material at guardrail post: All excess earth from excavations for guard posts shall be disposed of as directed by the engineer. Replace bituminous material wherever guardrail is installed after mat has been laid. Cost of excavation and replacing of bituminous material to be included in the price bid for other items.
3. The Object Marker shall fit within the vertical edges of the Impact Plate. The retroreflective sheeting shall be type XI sheeting meeting the requirements of Section 894.02.B of the standard specifications. The sheeting shall be applied to 0.100 Aluminum sheeting meeting the requirements Section 894.01.A. The Object Marker shall attach to the Impact Head Plate with rivets or some other attachment device. The rivets or attachment device shall be non-rust. The stripes shall slope downward toward the roadway side.
4. Guardrail installation height tolerance = - 1/4" , + 1".

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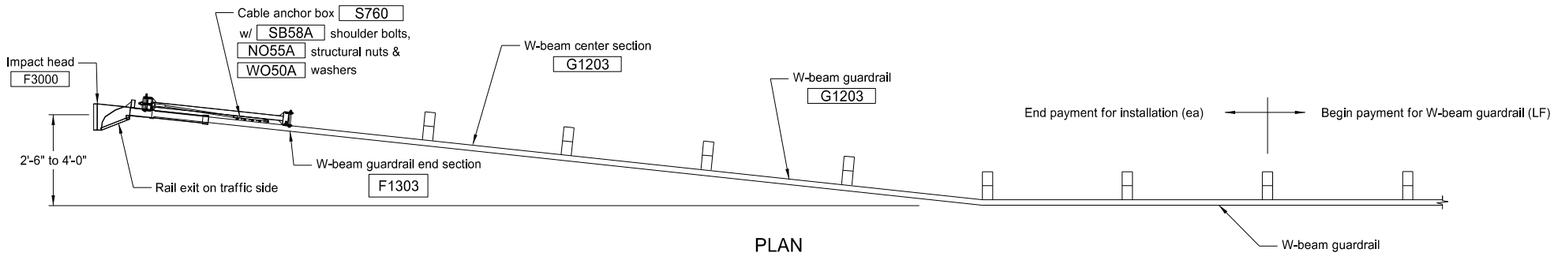
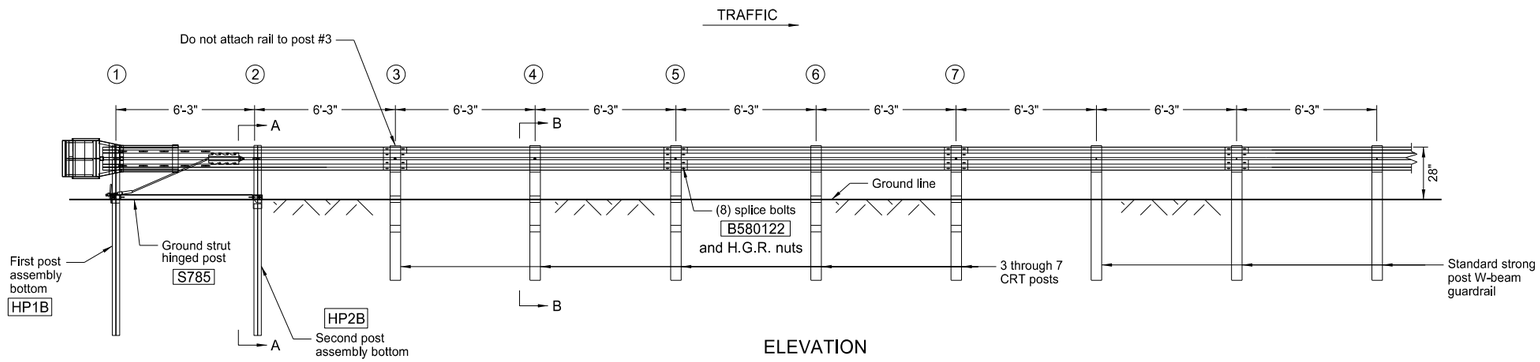
# FLARED ENERGY ABSORBING TERMINAL

D-764-6




PLAN

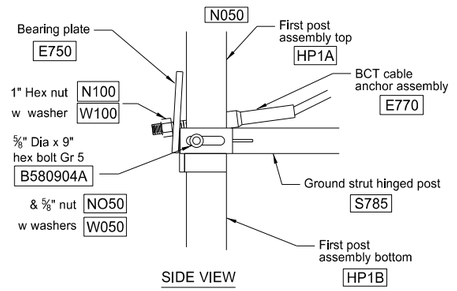



ELEVATION

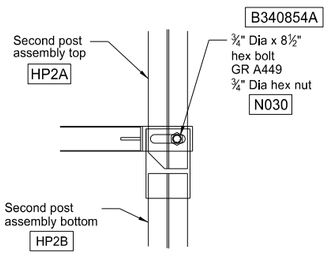
| ITEM # | QTY | BILL OF MATERIALS |
|---|---|---|
| F3000 | 1 | IMPACT HEAD |
| F1303 | 1 | W-BEAM GUARDRAIL END SECTION, 12 GA |
| G1203 | 2 | W-BEAM GUARDRAIL, 12 GA |
| HP1A | 1 | FIRST POST ASSEMBLY TOP |
| HP1B | 1 | FIRST POST ASSEMBLY BOTTOM |
| HP2A | 1 | SECOND POST ASSEMBLY TOP |
| HP2B | 1 | SECOND POST ASSEMBLY BOTTOM |
| P671 | 5 | WOOD CRT POST |
| P675 | 5 | TIMBER BLOCKOUT OR RECYCLED EQUIVALENT |
| E750 | 1 | BEARING PLATE |
| S760 | 1 | CABLE ANCHOR BOX |
| E770 | 1 | BCT CABLE ANCHOR ASSEMBLY |
| S785 | 1 | GROUND STRUT HINGED POST |
| | | HARDWARE (ALL DIMENSIONS IN INCHES) |
| B140404 | 2 | ¼ Dia x 4 HEX BOLT |
| WO14 | 4 | ¼ WASHER |
| N014 | 2 | ¼ HEX NUT |
| B580122 | 17 | ⅝ Dia x 1¼ SPLICE BOLT |
| B581802 | 4 | ⅝ Dia x 10 H.G.R. BOLT (POSTS 3 THRU 6) |
| B580904A | 1 | ⅝ Dia x 9 HEX BOLT GR 5 |
| W050 | 5 | ⅝ WASHER |
| N050 | 22 | ⅝ Dia H.G.R. NUT |
| B340854A | 1 | ¾ Dia x 8½ HEX BOLT GR A449 |
| NO30 | 1 | ¾ Dia HEX NUT |
| N100 | 2 | 1 ANCHOR CABLE HEX NUT |
| W100 | 2 | 1 ANCHOR CABLE WASHER |
| SB58A | 8 | CABLE ANCHOR BOX SHOULDER BOLT |
| N055A | 8 | ½ A325 STRUCTURAL NUT |
| W050A | 16 | 1 1/16 OD x 9/16 ID A325 STR. WASHER |

GENERAL NOTES

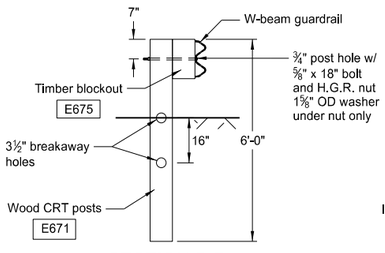
1. Wood posts are required with the Flared Energy Absorbing Terminal except posts #1 and #2.
2. All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
3. The lower sections of the posts shall not protrude more than 4 inches above the ground (measured along a 60 inch cord). Site grading may be necessary to meet this requirement.
4. Lower post sections shall not be driven with the upper post attached. If the the post is placed in a drilled hole, the backfill material must be satisfactory compacted to prevent settlement.
5. When rock is encountered during excavation, a 12" diameter post hole 20" deep may be used if approved by the Engineer. Granular material will be placed in the bottom of the hole approximately 2½" deep to provide drainage. The soil tubes shall be field cut to length, placed in the hole and back filled with adequately compacted material excavated from the hole.
6. The breakaway cable assembly shall be taut. A locking device (vice grips or channel lock pliers) should be used to prevent cable from twisting when tightening nuts.
7. The wood blockouts shall be "toe nailed" to the rectangular wood posts to prevent them from turning when wood shrinks. The nail shall be 20 penny and galvanized.
8. The Flared Energy Absorbing Terminal shall be flared only when the approach guardrail is parallel with the roadway. When the approach guardrail is flared at 16:1 to 10:1, the Flared Energy Absorbing Terminal shall have only the flare rate of the guardrail. When the guardrail flare is between 10:1 and 7:1, the Flared Energy Absorbing Terminal shall be turned parallel to the roadway.



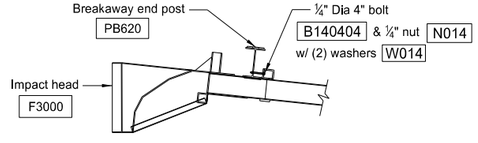

SIDE VIEW



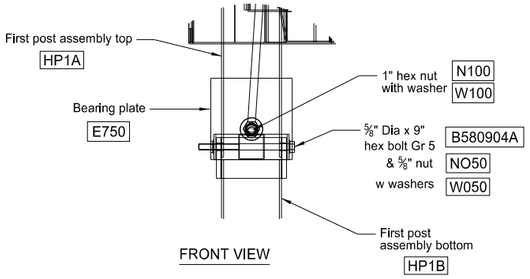

SIDE VIEW DETAIL OF POST #2




SECTION B-B
POST 3 THRU 7

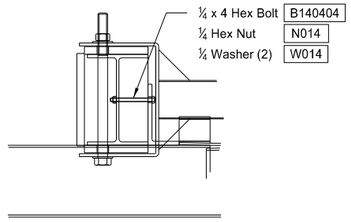



IMPACT HEAD CONNECTING DETAIL

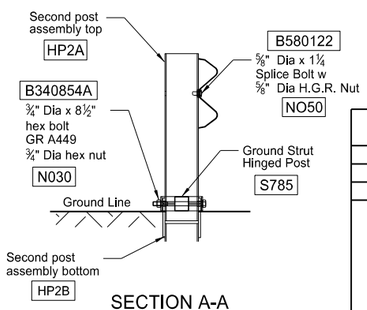



FRONT VIEW

POST #1 CONNECTION DETAILS




IMPACT HEAD CONNECTION DETAIL




SECTION A-A
at Post #2

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|---|---|
| 10-11-13 | |
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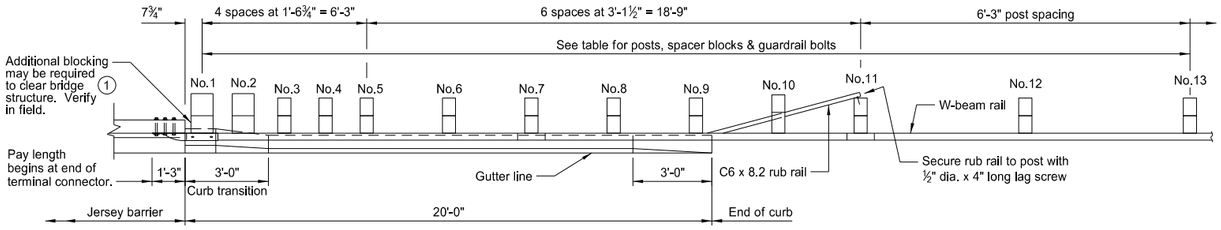
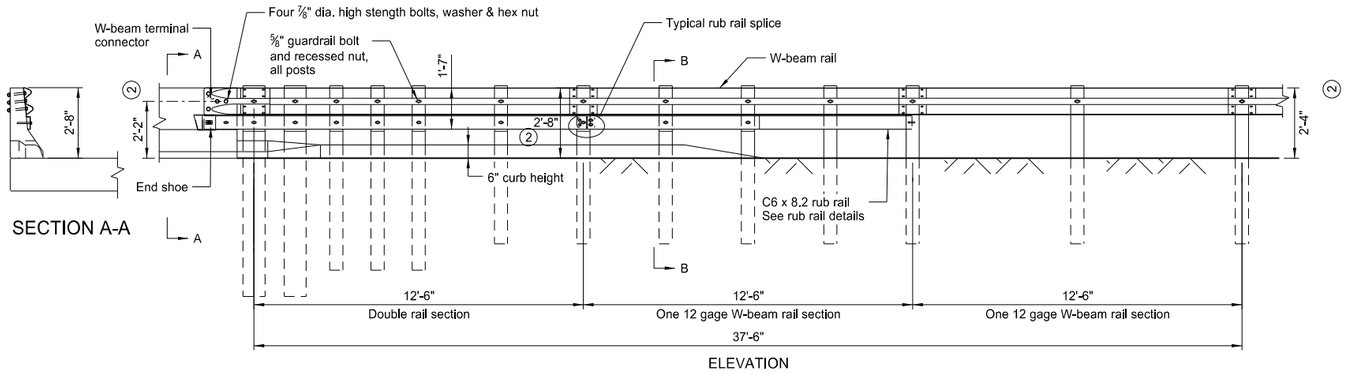
# W-BEAM TRANSITION TO CONCRETE JERSEY BARRIER WITH APPROACH CURB

D-764-9



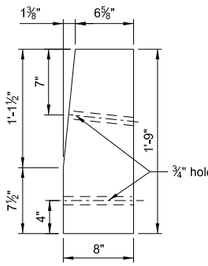

PLAN




SECTION A-A

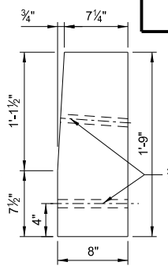
ELEVATION

## GENERAL ASSEMBLY DETAILS



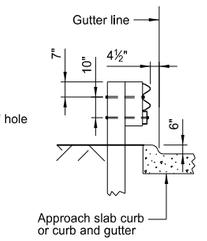

END VIEW

Block No. 1 (width = 10")




END VIEW

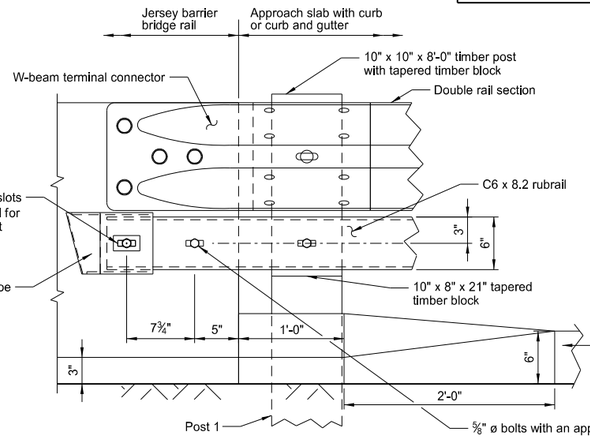
Block No. 2 (Width = 10")



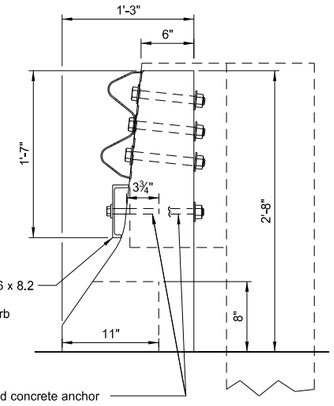

SECTION B-B

## TAPERED TIMBER BLOCK DETAILS

| POST, TIMBER BLOCK & BOLT TABLE | | |
|---|---|---|
| DESCRIPTION | POST NO. | SIZE |
| Post | 1 & 2 | 10" X 10" X 8'-0" min long |
| | 3-5 | 6" X 8"X 7'-0" min long |
| | 6-13 | 6" X 8"X 6'-0" min long |
| Spacer block | 1-2 | 10" X 8" X 21" tapered block |
| | 3-9 | 6" X 8" X 21" |
| | 10 | 6" X 9 3/4" X 14" |
| | 11-13 | 6" X 8" X 14" |
| Guardrail bolt & recessed nut | 1 & 2 & 10 | 5/8" Dia X 20" - guardrail |
| | 3-9,11-13 | 5/8" Dia X 18" - guardrail |
| | 1-2 | 5/8" Dia X 22"- rub rail |
| | 3-9 | 5/8" Dia X 20"- rub rail |




TRAFFIC SIDE ELEVATION

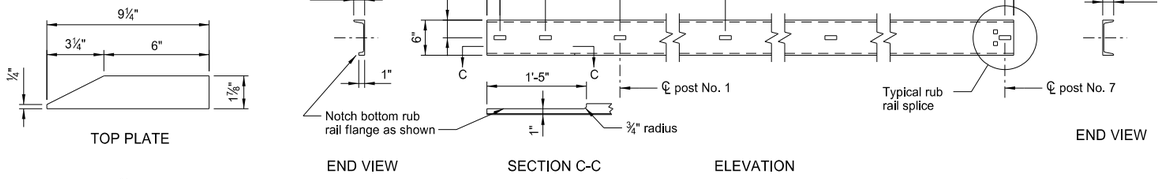



END VIEW

## RAIL ATTACHMENT AND CURB DETAIL

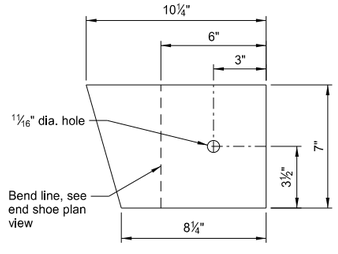
(1) Additional blocking may be required at post No.1.

(2) Height is 2'-8" from 0' to 12'-6" from bridge. Height tapers from 2'-8" to 2'-4" between 12'-6" to 37'-6" from bridge.




END VIEW SECTION C-C ELEVATION END VIEW

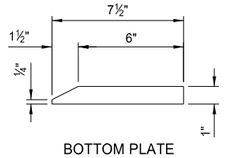
## RUB RAIL STRAIGHT SECTION




TOP PLATE



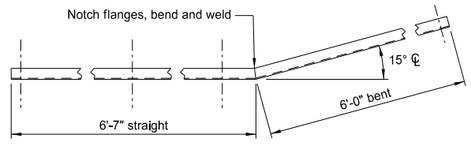

FRONT PLATE



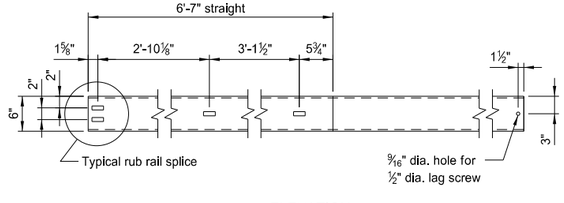

BOTTOM PLATE

## END SHOE PLATE DETAILS

( ¼" plate )

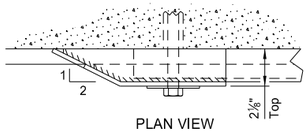



PLAN VIEW

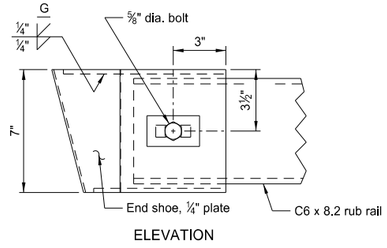



ELEVATION

## RUB RAIL BENT SECTION




PLAN VIEW




ELEVATION

## RUB RAIL END SHOE ASSEMBLY

NOTES:

C6 x 8.2 rub rail and structural steel shall be AASHTO 270M Grade 250, and shall be galvanized after fabrication in accordance with AASHTO M111.

All slotted holes are ¹¹⁄₁₆" x 2".

All square holes are ¹¹⁄₁₆".

Galvanize all hardware in accordance with AASHTO M232.

All posts and blocks for the W-beam guardrail shall be timber.

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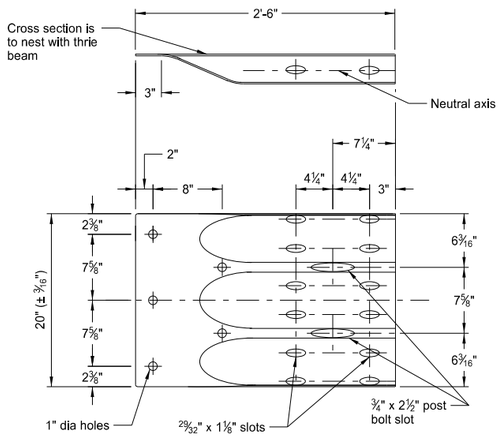
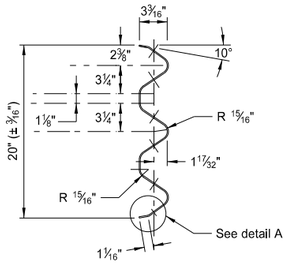
# THRIE BEAM TRANSITION TO DOUBLE BOX BEAM RETROFIT

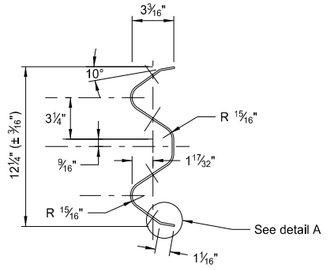
D-764-10



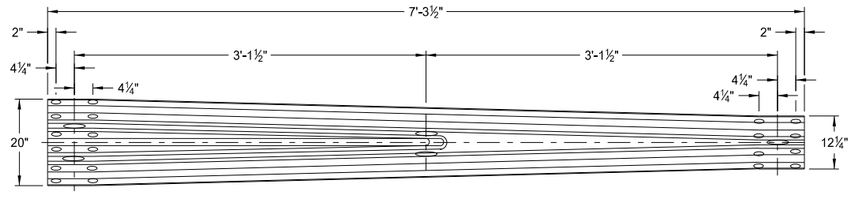

THRIE BEAM TERMINAL CONNECTOR



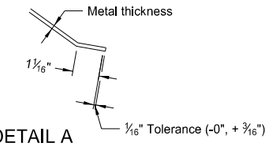

THRIE BEAM END VIEW



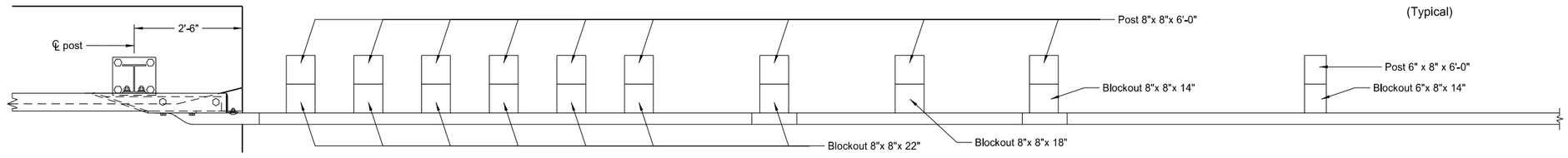

W-BEAM END VIEW



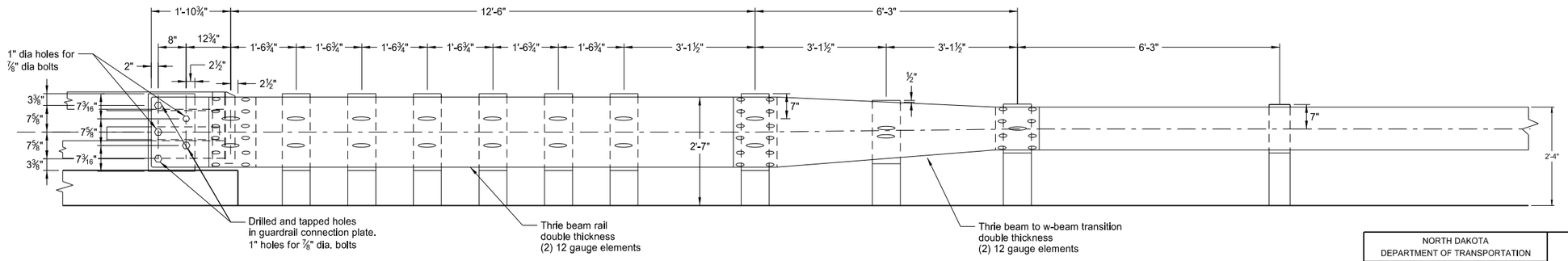

THRIE BEAM TO W-BEAM TRANSITION SECTION




DETAIL A
(Typical)




PLAN




ELEVATION

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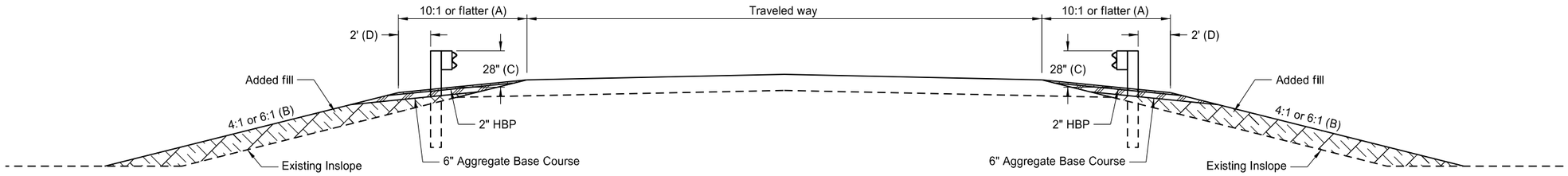
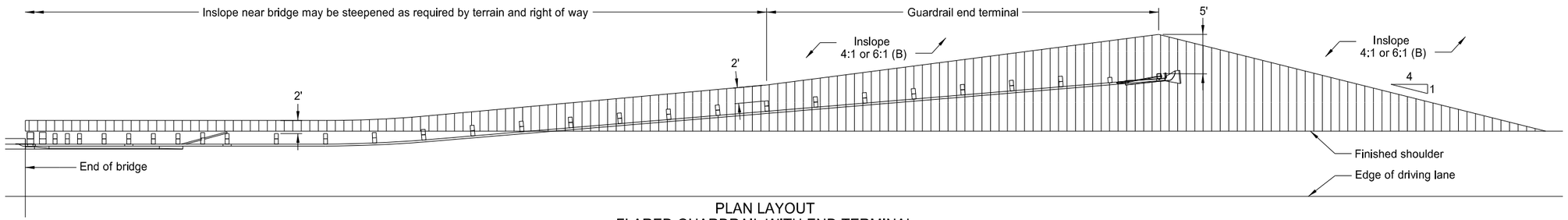
D-764-22

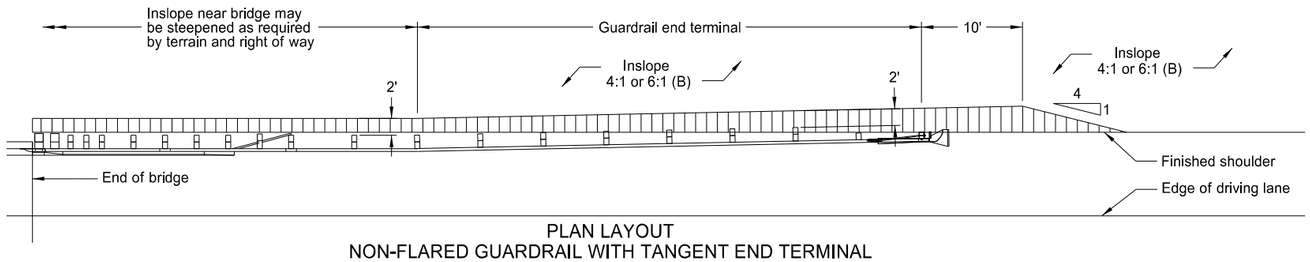
# TYPICAL GRADING AT BRIDGE ENDS WITH W-BEAM GUARDRAIL



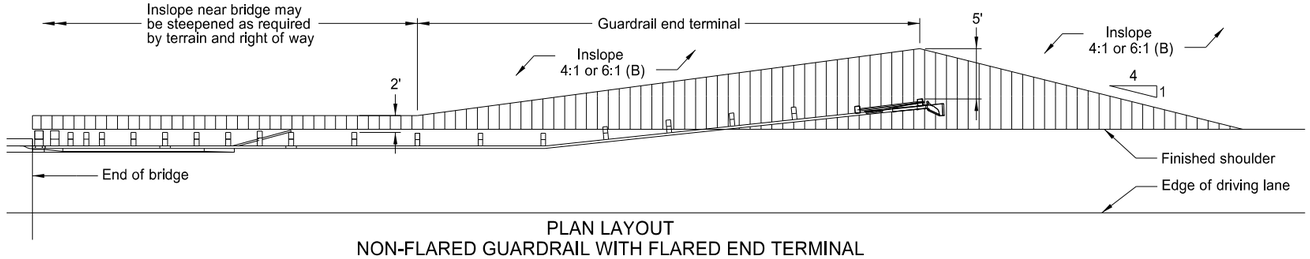

TYPICAL SECTION




PLAN LAYOUT
FLARED GUARDRAIL WITH END TERMINAL




PLAN LAYOUT
NON-FLARED GUARDRAIL WITH TANGENT END TERMINAL




PLAN LAYOUT
NON-FLARED GUARDRAIL WITH FLARED END TERMINAL

NOTES:

(A) Slope flatter than 10:1 may be required to provide proper guardrail height.

(B) Where normal inslope is 4:1 the added fill shall be 4:1. Where normal inslope is 6:1 the added fill shall be 6:1.

(C) Measured from top of guardrail to top of surfacing at front face of guardrail.

(D) Dimension at end terminals may vary per Plan Layouts shown on this sheet.

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