JOB # 26
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

NH-4-002(125)905
Ward County
City of Minot
Burdick Expy / US 2B - 16th St SW to S Broadway / US 83; 16th St SE to 27th St SE
ADA Curb Ramp Improvements

DESIGN DATA
Traffic
Current 2020
Average Daily - 16th St SW to 6th St SW
Pass: 7320
Trucks: 140
Total: 7460
Forecast 2040
Pass: 8930
Trucks: 195
Total: 9130

Average Daily - 6th St SW to South Broadway / US 83
Current 2020
Pass: 12995
Trucks: 320
Total: 13315
Forecast 2040
Pass: 18845
Trucks: 435
Total: 19280

Average Daily - 16th St SE to 27th St SE
Current 2020
Pass: 7915
Trucks: 280
Total: 8195
Forecast 2040
Pass: 9560
Trucks: 365
Total: 10015

Clear Zone Distance: N/A
Design Speed: N/A
Minimum Sight Dist. for Stopping: N/A
Bridges: N/A
Sight Dist. for No Passing Zone: N/A
Pavement Design Life: N/A

Design Accumulated One-way flexible ESALs: N/A

GOVERNING SPECIFICATIONS:
2020 Standard Specifications adopted by the North Dakota Department of Transportation and the Supplemental Specifications effective on the date the project is advertised.

PROJECT NUMBER | DESCRIPTION
NH-4-002(125)905
PROJECT NO.
ND
PCN NO.
ND
SHEET NO.
SECTION NO.
BULLET NO.
STATE
PROJECT NO.
ND
NH-4-002(125)905
22216
1
1

DESIGNER
Alex Aasen, PE
Dalton Dryburgh, EI
Jacob Gunderson

STATE COUNTY MAP

Apex Engineering Group, Inc.
This document was originally issued and sealed by Matthew T. Kinsella, Registration Number PE-5692 on 8/11/2020 and the original document is stored at the North Dakota Department of Transportation.

Approval Name: Chad M. Grn./w
Date Signed: 8/31/2020

Dawn Michel
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Scope of Work

16th St SW to S Broadway
Burdick Expresway
Scope of Work
16th St SE to 27th St SE
Burdick Expressway
NOTES

100-P01 TIED PROJECT: This project is tied to project NHU-4-002[131]906 PCN 22446 – Burdick Expy from 1st St SW to Valley St. Coordinate traffic control between the two projects where appropriate.

100-P02 TRINITY HOSPITAL EMERGENCY TRAUMA CENTER: Trinity Hospital Emergency / Trauma Center parking is located in close vicinity to this project. Burdick Expressway is a main corridor that is used by the hospital for emergency response. Trinity Hospital will need to be notified of construction phasing due to the impact of emergency response for the duration of this project.

100-P03 CONTRACTOR PARKING/STAGING AREA RESTRICTIONS: Parking of personal vehicles, construction equipment, storage of construction materials, or work area on private property is prohibited without written permission by the property owner. Staging of construction materials, storing of personal vehicles or construction equipment in the City’s right of way outside of the construction work zone is prohibited.

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

107-500 PAVEMENT SWEEPING: Sweep the roadway adjacent to the construction area at the end of each day. Utilize a vacuum or pickup type sweeper.

107-501 ACCESS FOR BUSINESSES: Provide an access plan that maintains access to all businesses for review by the Engineer and the City of Minot at least one week prior to the preconstruction meeting. This plan is subject to approval by the Engineer and the City.

107-502 UTILITIES: Notify all utility owners of the project schedule as specified in Section 105.03, “Cooperation with Utility Owners”.

107-503 SPECIAL EVENTS – STATE FAIR: The North Dakota State Fair is scheduled for July 23-31, 2021. All work including concrete, patching, stripping & landscaping at the 20th St SE, 8th Ave SE, Souris Dr, East Fairgrounds Entrance, and 27th St SE locations shall be completed by July 16, 2021. The work area is to be free of debris, equipment, stockpiled materials and unnecessary traffic control devices. Sweep pavement with vacuum or pick-up style sweeper prior to July 22nd.

107-504 SPECIAL EVENTS – STATE FAIR PARADE: Burdick Expressway is the designated parade route for the North Dakota State Fair Parade on Saturday, July 24th. No work is to take place on the project on this date. Work area is to be free of debris, equipment, stockpiled materials and unnecessary traffic control devices. Remove all traffic control devices along Burdick Expressway prior to the start of the parade and reinstall the devices immediately after the completion of the parade. Sweep pavement with vacuum or pick-up style sweeper prior to Saturday morning.

107-P05 SPRINKLER SYSTEM: The property at 1738 Burdick Expy E (Oakwood Court Apartments) has an underground sprinkler system. Notify the property owner (Tom Alexander, Minot Housing Authority, 701-852-0485 x103) prior to starting work adjacent to this property. Any damage to the sprinkler system shall be repaired at the Contractor’s expense.

108-P01 WEEKLY PLANNING & REPORTING MEETING: A weekly planning and reporting meeting is required. Provide a suitable meeting facility. Have a room approved by the Engineer.

Organize a biweekly meeting with the business owners and residents along Burdick Expressway corridor including side streets. The meeting will follow the same requirements of the weekly planning meeting.

202-P01 REMOVAL OF CONCRETE: Concrete roadway, concrete sidewalk, curb, and curb and gutter designated for removal may vary in thickness. There will be no additional compensation for the removal of extra thickness. Include the removal of aggregate or embankment beneath the roadway, sidewalk, curb and curb and gutter in the costs of “Removal of Concrete Pavement” or “Removal of Curb & Gutter” bid items.

202-P02 REMOVAL OF BITUMINOUS SURFACING: Bituminous surfaced designated for full depth removal may vary in thickness. There will be no additional compensation for the removal of extra thickness. Include any costs for the removal of aggregate or embankment beneath the pavement in the “Removal of Bituminous Surfacing” bid item.

202-P03 REMOVE AND RESET CONCRETE PARKING BLOCKS: Remove and reset existing concrete parking blocks to their original position. Include all labor and equipment to remove and reset concrete parking blocks in the costs of “Removal of Concrete Pavement”.

430-P01 PATCHING: Submit a mix design that meets FAA 43 for approval. The Hot Mix Asphalt used for patching will be accepted by one random aggregate and mix sample representing the plan quantity for the project.

624-P01 REMOVE PEDESTRIAN RAILING: Remove pedestrian railing in such a way to leave the remaining railing with smooth edges and in safe and operable condition, as approved by the Engineer.

704-100 TRAFFIC CONTROL SUPERVISOR: Provide a Traffic Control Supervisor.
704-P01 TRAFFIC CONTROL PHASING: The traffic control details, as indicated on the plans, have been developed on the basis that this project will be constructed in phases as described below. The work zone traffic control summary lists include the required number of devices for each phase of work. Devices will be moved as required for each phase. The following traffic control phasing for the construction of pedestrian ramps, new curb and gutter, and other items has been developed for this project:

Phase 1: Construct proposed ADA Ramps at 16th St SW, MHS Entrance, Maple St SW, and 8th St SW. Construct proposed valley gutter at Maple St SW and 8th St SW.

- Work area is restricted to a maximum of two quadrants of an intersection at one time. Multiple intersections can be worked on concurrently.
- Start work on the MHS entrance after May 28, 2021.
- (1) Lane closure adjacent to the curb and gutter.
- Maintain two lanes of traffic at all times.
- Provide temporary curb ramps, pedestrian channelization, and temporary pedestrian surfacing.
- Construct proposed pedestrian ADA ramps at all intersections, including new curb and gutter, ramps, landings (upper and lower landings), signal foundations (where applicable), and full depth pavement replacement (where applicable).
- Provide temporary pedestrian surfacing to transition proposed sidewalk into existing sidewalk. If the cross slope of the existing sidewalk exceeds 2%, transition the temporary pedestrian surfacing at a maximum rate of 0.5% per 1 linear foot of surfacing.
- Construct valley gutter at Maple St SW and 8th St SW one-half at a time, so that vehicles can still pass through the other half of the intersection.

Phase 2a: Construct proposed ADA Ramps on north side of Burdick Expressway at 6th St SW, 5th St SW, Park St SW, 4th St SW, and 3rd St SW, using same requirements as Phase 1. Construct proposed pedestrian pushbutton poles on north side at 6th St SW.

Phase 2b: Construct proposed ADA Ramps on south side of Burdick Expressway at 6th St SW, 5th St SW, Park St SW, 4th St SW, and 3rd St SW, using same requirements as Phase 1. Construct proposed pedestrian pushbutton poles on south side at 6th St SW.

Phase 3: Construct proposed ADA Ramps, pigmented imprinted concrete, and flexible delineators at the South Broadway (US 83) intersection, in the following subphases and as shown in Section 100:

- 3a: NE Quad, SW Quad, SE Quad
- 3b: NW Quad, NE Island, E Median
- 3c: SE Island, SW Island
- 3d: W Median

Lane closures are as shown in Section 100. Each subphase shall be completed before the next subphase begins. Provide temporary curb ramps, pedestrian channelization, and temporary pedestrian surfacing. Provide temporary pedestrian surfacing to transition proposed sidewalk into existing sidewalk. If the cross slope of the existing sidewalk exceeds 2%, transition the temporary pedestrian surfacing at a maximum rate of 0.5% per 1 linear foot of surfacing.

Phase 4a: Construct proposed ADA Ramps on north side of Burdick Expressway at 16th St SE, 19th St SE, 20th St SE, 8th Ave SE, and Fairgrounds Entrance, using same requirements as Phase 1. Close north crossing at Fairgrounds Entrance and 20th St SE during construction.

Phase 4b: Construct proposed ADA Ramps on south side of Burdick Expressway at 18th St SE, 19th St SE, 20th St SE, 8th Ave SE, Souris Dr, Fairgrounds Entrance, and 27th St SE using same requirements as Phase 1.

704-P02 TRAFFIC CONTROL DEVICES: The traffic control devices list has been developed using the layouts shown in the plans and the following layouts shown on the Standard Drawings:

- D-704-23 Type P
- D-704-34 Lane closure

704-P03 TRAFFIC CONTROL DEVICES: Traffic control devices have been provided for a single full lane closure of multiple sites simultaneously, as listed in the phase descriptions in Note 704-P02. Closure of the outside driving lane will be permitted during daylight hours while construction within the intersection is active. Remove temporary lane closures at the end of each working day if possible. Lane closures must remain at all times if there are drop offs within the work zone. If ordinary operation is not restored, provide 24-hour flagger operations until normal traffic operation can be restored. No additional payments will be made for flagging if ordinary traffic operation is not restored at the end of each working day.

The following devices remain in place for the duration a construction site is active:

1. W20-1-48 – Road Work Ahead
2. G20-2-48 – End Road Work
3. All pedestrian signing devices – See Section 100
4. All lane narrowing devices
5. Temporary safety fence and devices adjacent to active work zones
6. Pedestrian channelization and curb ramps – See Section 100

Supply and maintain temporary ramps and pedestrian rail system as shown in the plans. Include all costs associated with supplying and maintaining devices in the price bid for “Traffic Control Signs”.

This document was originally issued and sealed by Matthew T. Kinsella, Registration Number PE-5692, on 8/11/2020 and the original document is stored at the North Dakota Department of Transportation.
NOTES

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

Provide Wimco, Lange IPD, Flexstorm, Danady Curbsack, or an approved equal.

Keep filter in place until after the gradient surfaces are stabilized and the surrounding street is clean of debris. Include all costs related to the material, installation, maintenance, replacement and removal in the price bid for "Inlet Protection-Special".

748-P01 CURB & GUTTER: The standard curb and gutter will be 6 inches; however, the height may need to be adjusted to match the height of the existing curb and gutter.

The height adjustment and all other costs when matching the existing curb height will be included in the costs of “Curb & Gutter”.

748-P02 CURB-TYPE 1: The height of the "Curb-Type 1" will vary depending on the existing locations and will need to match the existing elevations at tie in locations.

750-P01 DETECTABLE WARNING PANELS: Panels may need to be cut or modified in the field to fit the proposed design.

750-P02 DETECTABLE WARNING PANELS: Install unpainted, cast iron plates manufactured by East Jordan Iron Works, Neenah Foundry, or approved equal.

750-P03 PIGMENTED IMPRINTED CONCRETE: The concrete will be a colored and stamped 4" sidewalk with a herringbone stamp pattern and colored release agent/color hardener. Include an integral concrete color mix, either dry or liquid and include a colored stamp release agent to be selected upon approved color choice below.

Develop a mix design using any size coarse aggregate specified in Section 802.01 C.2, "Coarse Aggregate" and with a 60-40 fine aggregate-coarse aggregate ratio. Provide a pigment from the list below or provide an approved equal. To be considered an approved equal, pigments must meet the requirements of ASTM C 979.

1. Butterfield Uni-Mix (U10 Sonoran Tan or U24 Georgia Clay)
2. Scofield Standard (C-21 Adobe Tan or 1017 Barcelona Brown)
3. Davis Colors (Omaha Tan or Sequoia Tan)

Use the same supplier for all colored concrete placed under the contract. The color shall be uniform throughout the entire project. As part of the approval process, contractor shall provide a 2'x2' mockup depicting the two color options specified above (from only one manufacturer or equal to be chosen by contractor) for Engineer and Owner to evaluate prior to final selection. The approved mockup and final color choice will be the standard of which to compare project area concrete for color, texture, and finish appearance. Cure and seal concrete using curing compound that meets the requirements of ASTM C 309, Type 1 and include slip resistant additive.

Include all costs in the price bid for "PIGMENTED IMPRINTED CONCRETE".

750-P04 SIDEWALK AGGREGATE: Provide aggregate needed to grade sidewalk meeting specifications of "Aggregate Base Course CL 5". Include all costs associated with aggregate in the price bid for "Sidewalk Concrete 4in."

750-P05 ADA RAMPS AND LANDINGS: Dimensions shown in Section 80 are approximate. Adjustments may be required so maximum grades are not exceeded. Flatter grades or slopes may be used as directed by the Engineer.

The designated ADA turning spaces as designated in Section 80 per the legend as "Landing Area" are to be placed separately and installed prior to adjacent ADA ramps and/or sidewalks allowing for a minimum of 24 hours of cure time.

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

970-P01 LANDSCAPE PREPARATION: Minimal grading will be required adjacent to the locations designated for sidewalk and curb & gutter replacement. Blend the existing topsoil adjacent to the sidewalk and or curb & gutter to eliminate any steep slopes or vertical edges. Any excess topsoil will become property of the Contractor and must be removed from the project site. Any needed topsoil must be imported to the project if necessary. Include all costs associated with topsoil in the contract price for “Landscape Preparation”.

Include all costs associated with removing and resetting paver blocks in the SE quadrant of the 8th Ave SE intersection in the price bid for “Landscape Preparation”.

Use sod as specified in Section 252 of the NDDOT Standard Specifications.

Areas sodded after September 15 will not be accepted until they show evidence of established growth after May 15 of the following year. Water sodded areas a minimum of 4 weeks after placement in order to provide sufficient moisture for growth. Prevent runoff or puddling. Do not drive water trucks over turf areas.

Perform maintenance on sodded areas for 4 weeks after completion of sodding over the entire disturbed area. Maintenance of the sodded areas includes eradicating weeds, maintaining erosion control devices, protecting installed areas from traffic, mowing, watering & post fertilization. Repair and re-establish areas that are rutted, damaged or destroyed at the Contractor’s expense. Mow sodded areas 24 hours prior to final inspection. Sodded areas will be rejected if they contain weeds or bald spots larger than 3" in diameter.

Include the cost for materials, equipment, labor, maintenance and incidentals in the contract price for “Landscape Preparation”.

8/11/2020 10:15:05 AM T:\Projects\201818.101.0083 NDDOT - Minot Burdock Expy ADA\40002905.125\Design\006\006NT_001-003_notes.docx
ENVIRONMENTAL NOTES

ENVIRONMENTAL NOTES (EN): There were no environmental commitments required to secure approval of this project.
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MATERIALS

Patching @ 2.0 Ton/CY
  *PG 563-24 Asphalt Cement @ 6.0%
  *Tack Coat @ 0.05 Gal/SY

*Included in the price bid for Patching

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**Weighted Fiber Roll Detail**

Notes:

1. Provide materials that meet the following specifications:
   - Netting tube filled with wood curled excelsior and weighted inner core.
   - Roll Diameter: 6 inches
   - Weight: 8.33 Pounds per Linear Foot

2. Place weighted fiber rolls down slope from unprotected downstream areas, tight against and along the curb and gutters, to provide complete protection.

3. Remove and properly dispose of accumulated silt and debris to allow for proper function of device after every rain event, or as necessary for proper function.

4. Price includes weighted fiber roll, placement, and maintenance after each rain event. All cost related to this work shall be included in the price bid for "Weighted Fiber Rolls".

5. Removal of weighted fiber rolls shall be done after the up gradient surfaces are stabilized and surrounding streets and gutters are clean of debris.

6. Fiber Roll should be placed to avoid being in driving lane.

---

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Weighted Fiber Rolls Detail
Burdick Expy
16th St SW to 27th St SE
Pavement Patching Areas (Parking Lots)
(Locations Vary)

- Depth Varies
- Maximum of 3" Lifts
- Existing Pavement
- Existing Base
- Vertical Edge
- Patching (Assume 8" Depth)

Pavement Patching Areas (Roadway)
(Locations Vary)

- Depth Varies
- Maximum of 3" Lifts
- Existing Pavement
- Existing Base
- Vertical Edge
- Patching (Assume 8" Depth)
Existing Walk
Curb-Type I Adjacent to Landscape

Curb-Type I Intersection

Notes:
All Curb-Type I contraction joints to match concrete walk joints.
End tapers at transition section to match inplace sidewalk grades.
All Curb-Type I to match bottom of adjacent walk.
See curb ramp details of Curb-Type I.
Notes:
1. Existing cross-slope greater than 2%.
2. When PAR width is greater than 6' or the running slope is greater than 5% double the calculated transition length.

LEGEND
1. Transition panel(s) - To be used for transitioning the cross-slope of a ramp to the existing walk cross-slope. Rate of transition should be 0.5% per 1 linear foot of walk.
Notes:
1. Rate of cross-slope transition varies. See sections 80 & 82 for more information.
2. Landing should not exceed 2% slope in all directions.

Curb Transition

Curb transition length and rate of change varies. See section 4 & 82 for more information.

Inflow Curb & Gutter

Curb transition length to be determined in field by Engineer.
DOMINANT DIRECTION OF PEDESTRIAN TRAVEL.

Notes:
- Grate casting is ADA compliant.
- Place grate perpendicular to the dominant direction of pedestrian travel.
- Use an ADA safe grate casting with a new frame casting due to the non-standard grate size.

Grate casting due to the non-standard grate size.
Use an ADA safe grate casting with a new frame casting due to the non-standard grate size.
Removals
MHS Entrance & 16th St SW
N & S ADA Quadrants of Each
No Work In This Quadrant
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**Notes:**
- See section 6 notes for concrete parking block information.
- Removal of Concrete Pavement
- Removal of Curb & Gutter
- Removal of Bituminous Surfacing

**Removals**
South Broadway & Burdick Expy NW, SW ADA Quadrants & SW Median
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Removals
16th St SE & Burdick Expy
NW & NE ADA Quadrants
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Removals
8th Ave SE & Burdick Expy
SW, NE & SE ADA Quadrants
Removals
Fairground Entrance & Burdick Expwy
NW & SW ADA Quadrants
### Temporary Sediment and Erosion Control

5th St SW & Burdick Expy

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**Burdick Expressway W**

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**LEGEND**

- Wet Protection - Special
- Weighted Fiber Rolls

**SCHEDULE**

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**STATE PROJECT NO. SHEET SECTION NO.**

8/10/2020

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**Wet Protection - Special**

**Weighted Fiber Rolls**

**Temporary Sediment and Erosion Control**

Park St SW & Burdick Expy

4th St SW & Burdick Expy
Notes:
Adjust fiber roll placement as needed to coordinate with phases of work at this intersection. Refer to Section 100 for phasing.

LEGEND

Weighted Fiber Rolls
Inlet Protection - Special

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### Temporary Sediment and Erosion Control

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**BID ITEM:**
- NW. Quad 16th SE
- NE. Quad 16th SE
- SW. Quad 18th SE
- SE. Quad 18th SE

**SPEC CODE:**
- 261
- 0200
- 261
- 0201
- 708
- 1540
- 708
- 1541

**Remove Weighted Fiber Rolls Inlet Protection - Special**

**Legend:**
- Wet Protection - Special
- Weighted Fiber Rolls

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**Matthew T. Kinella**

Registration Number PE-5692
**LEGEND**

- Wet Protection - Special
- Weighted Fiber Rolls

**UNIT QTY UNIT**

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Temporary Sediment and Erosion Control
19th St SE & Burdick Expy
20th St SE & Burdick Expy
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**Permanent Sediment and Erosion Control**

5th St SW & Burdick Expy

6th St SW & Burdick Expy

---

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Permanent Sediment and Erosion Control

Park St SW & Burdick Expy
4th St SW & Burdick Expy
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**LANDSCAPE PREPARATION**

- 16th St SE
- 18th St SE

**PERMANENT SEDIMENT AND EROSION CONTROL**

- 16th St SE & Burdick Expy
- 18th St SE & Burdick Expy
LEGEND

Permanent Sediment and Erosion Control

19th St SE & Burdick Expy
20th St SE & Burdick Expy
ADA Curb Ramp Improvements
6th St SW & Burdick Expy
NW, SE, SW ADA Quadrants
Notes:
1. Any ramp found to be in noncompliance will be removed and replaced by the contractor at their own expense.
4. See Curb - Type I detail in section 20.

LEGEND

ADA Curb Ramp Improvements
Park St SW & Burdick Expy
NE, SE, SW, NW ADA Quadrants

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Intersection Key Map

NO WORK REQUIRED ON THIS SHEET

ADA Curb Ramp Improvements

South Broadway & Burdick Expwy

Intersection Layout

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Registration Number PE-5692,
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8/10/2020 9:14:20 AM Jacob Gunderson
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8/10/2020 9:14:20 AM Jacob Gunderson
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Notes:
1. Any ramp found to be in noncompliance will be removed and replaced by the contractor at their own expense.
4. See Curb - Type I detail in section 20.

---

Flare Slope Maximum of 10:1
Steep Ramp
-Running Slope Between 5.0% & 8.3% Max / 7.7% Preferred
-Cross Slope Maximum of 2.0% / 1.5% Preferred
Flat Ramp
-Running Slope Less Than 5.0%
-Cross Slope Maximum of 2.0% / 1.5% Preferred
Tilting Ramp at Maximum Rate of 0.5% / ft, See Detail
Transition Panel Slope, PAR width, and Cross Slope Will Vary

Pigmented Imprinted Concrete
Landing Area
-Slope Maximum of 2.0% / 1.5% Preferred
All Directions
Detectable Warning Panel
Patching

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Flare Slope Maximum of 10:1

Notes
1. Any ramp found to be in noncompliance will be removed and replaced by the contractor at their own expense.
4. See Curb - Type I detail in section 20.

South Broadway & Burdick Expwy ADA Curb Ramp Improvements
NE, SE ADA Quadrants, E Median, & NE & SE Islands
Notes:
1. Any ramp found to be in noncompliance will be removed and replaced by the contractor at their own expense.
4. See Curb - Type I detail in section 20.

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Burdick Expressway E
Street Grade 0.1%

Burdick Expressway E
Street Grade 0.8%

LEGEND

- Street Ramp
  - Ramp Slope Between 4.5% & 6.5% Max; 7.7% Preferred
  - Cross Slope Maximum of 2.0% / 1.5% Preferred

- Flat Ramp
  - Ramp Slope Less Than 0.8%
  - Cross Slope Maximum of 2.0% / 1.5% Preferred

- Tilt Ramp at Maximum Rate of 0.5% / ft,
  - Cross Slope Maximum of 2.0% / 1.5% Preferred
  - Running Slope Between 5.0% & 8.3% Max / 7.7% Preferred
  - Landing Area
    - Slope Maximum of 2.0% / 1.5% Preferred
  - All Directions

- Pigmented Imprinted Concrete

- Detectable Warning Panels

Notes:
1. Any ramp found to be in noncompliance will be removed and replaced by the contractor at their own expense.
4. See Curb - Type I detail in section 20.

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ADA Curb Ramp Improvements
18th St SE & Burdick Expy
SW & SE ADA Quadrants

Matthew T. Kinsella, Registration Number PE-5692
8/11/2020
Notes:
1. Any ramp found to be in noncompliance will be removed and replaced by the contractor at their own expense.
3. See Curb - "Type I" detail in section 20.
4. See Utility Adapter - "Type I" detail in section 20.

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Legend:
- Steep Ramp
  - Running Slope Less Than 5.0%
  - Cross Slope Maximum of 5.0% / 7.7% Preferred
- Flat Ramp
  - Running Slope Less Than 5.0%
  - Cross Slope Maximum of 2.0% / 3.2% Preferred
- Flare Ramp
  - Maximum Rate of 8.0% / 10.0% Preferred
- Flare Ramp at Maximum Rate of 8.0% / 10.0% Preferred
- Threading Panel Seals, PAR widths, and Cross Slope All Vary
- Hair Step Maximum of 4 1
- Flare Step Maximum of 10 1

Fluorescent Pigmented Imprinted Concrete

Leading Area
- Color Match of 2.1% Preferred

Detectable Warning Panels

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LEGEND
-Flare Slope Maximum of 4:1
-Flare Slope Maximum of 10:1
-Tilting Ramp at Maximum Rate of 0.5% / ft,
-All Directions
-Running Slope Between 5.0% & 8.3% Max / 7.7% Preferred
-Flat Ramp
-Landing Area
-See Detail
-Patching

Notes:
1. Any ramp found to be in noncompliance will be removed and replaced by the contractor at their own expense.
4. See Curb - Type I detail in section 20.
1. Any ramp found to be in noncompliance will be removed and replaced by the contractor at their own expense.


4. See Curb - Type I detail in section 20.

T: Projects\2018\18.101.0083 NDDOT - Minot Burdick Expwy ADA\40002905.125\Design\080\080LS_015.dgn

9:14:30 AM Jacob.Gunderson

This document was originally issued and sealed by Matthew T. Kinsella, Registration Number PE-5692, on 8/1/2020 and the original document is stored at the North Dakota Department of Transportation.

Notes:
1. Any ramp found to be in noncompliance will be removed and replaced by the contractor at their own expense.
2. See Curb - Type I detail in section 20.

This document was originally issued and sealed by Matthew T. Kinsella, Registration Number PE-5692, on 8/11/2020 and the original document is stored at the North Dakota Department of Transportation.
A Sph C onc Street Grade 0.4%

Burdick Expressway E Street Grade 0.4%

5.9'
5'
6'
4
6"
6"
0"
0"
0"

R = 34'
Patching

5.9'
10.2'
6'
9.2'
5.9'

Slope Will Vary
Transition Panel Slope, PAR width, and Cross Flare Slope Maximum of 4:1
Flare Slope Maximum of 10:1
Cross Slope Maximum of 2.0% / 1.5% Preferred
Running Slope Less Than 5.0%
Flat Ramp
- All Directions
- Slope Maximum of 2.0% / 1.5% Preferred
- Running Slope Between 5.0% & 8.3% Max / 7.7% Preferred
Steep Ramp
Pigmented Imprinted Concrete
Detectable Warning Panels
Notes:
1. Any ramp found to be in noncompliance will be removed and replaced by the contractor at their own expense.
4. See Curb - Type I detail in section 20.

This document was originally issued and sealed by Matthew T. Kinsella, Registration Number PE- 5692, on 8/11/2020 and the original document is stored at the North Dakota Department of Transportation.

ADA Curb Ramp Improvements
Fairground Entrance & Burdick Expwy NW & SW ADA Quadrants
Burdick Expressway E
Sheet Grids 0.7%

SW Quad

SE Quad

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Notes:
1. Any ramp found to be in noncompliance will be removed and replaced by the contractor at their own expense.
4. See Curb - Type I detail in section 20.

ADA Curb Ramp Improvements
27th St SE & Burdick Expy
SW & SE ADA Quadrants
## Horizontal Alignment

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### Survey Control Points

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**NOTES: Sheet 1 of 1**

**Date Survey Completed 09/12/2019**

**This document was originally issued and sealed by Dain K Erickson, Registration Number LS-5592 on 09/25/19 and the original document is stored at the North Dakota Department of Transportation.**

**All coordinates and measurements on this document derived from the International Foot definition.**

**Assumed Coordinates:**

- All coordinates on this sheet are Ward County ground coordinates.
- They are derived from the NAD(83) reference frame; North Dakota North Zone Coordinate Factor (z) = 5.999853 slowdown.

**INITIALIZING BENCHMARK MARK:**

- NAVO-85
- GEOID 12A
- GEOID 12B

**MONUMENT DESCRIPTION:**

- Assumed Coordinates.
- All coordinates on this sheet are Ward County ground coordinates.
- They are derived from the NAD83(2011) reference frame; North Dakota North Zone Coordinate Factor (z) = 5.999853 slowdown.
Burddick Expressway E
Street Grade: 0.4%

Burddick Expressway E
Street Grade: 0.7%

Burddick Expressway E
Street Grade: 0.6%

LEGEND

X" CURB
Curb Height

Landing Area

Detectable Warning Panels

Note: Unless otherwise noted, all elevations are to top of sidewalk or top back of curb.

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Survey Data Layouts
19th St SE & Burddick Expy
NE, SE, SW, NW ADA Quadrants
Temporary Pedestrian Curb Ramp Details
US 2 Business / Burdick Expy

Edge Treatment
Maximum Surface Height Change Detail

Joint/Gap Treatment
Maximum Width Lateral Joints or Gaps
Notes:
1. Close North crossing at Fairgrounds Entrance at 20th St SE during construction

Traffic Control Devices (Quantities per Quadrant)
- 704-2108 Temporary Curb Ramps: 2 EA
- 704-1060 Delineator Drums: 20 EA
- 704-1058 Pedestrian Walkway*: 75 LF
*Includes Pedestrian Channelization (Both Sides)

Pertinent Intersections & Quadrants
- 16th St SW: N, E
- MHS Entrance: S, E
- Maple St SW: S, N
- 8th St SW: W, E
- 5th St SW: NW, NE, SW, SE
- Park St SW: NW, NE, SW, SE
- 4th St SW: NW, NE, SW, SE
- 3rd St SW: NW, NE, SW, SE
- 16th St SE: NW, NE
- 19th St SE: SW, SE
- 20th St SE: NE, SE, W
- Souris Dr: SW, SE
- Fairgrounds Entrance: NW, SW
- 27th St SE: SW, SE (Signalized)
TEMP PED RAMP DETAIL:\n
1. Close crossing at Fairgrounds Entrance during construction

Traffic Control Devices (Quantities per Quadrant):

- 704-2108 Temporary Curb Ramps: 2 EA
- 704-1066 Delineator Drums: 16 EA
- 704-1058 Pedestrian Walkway*: 75 LF

*Includes Pedestrian Channelization (Both Sides)

Pertinent Intersections & Quadrants

Fairgrounds Entrance: N, S

Notes:

- TEMP PED RAMP DETAIL

Existing Curb & Gutter
Existing Sidewalk
Existing Boulevard

Temporary Walkway surface covering

Temporary curb ramp

Ramp landing area

Temporary Pedestrian Access Route

Pedestrian Channelization

Delmarva Drums

Existing Curb & Gutter

Existing Boulevard

Temporary walkway surface covering

Pedestrian Walkway

Work Area

Pedestrian Channelization

Existing Sidewalk

Pedestrian Walkway

Mid-Block Crossing

Temporary Pedestrian Access Route

Burdick Expressway

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Matthew T. Kirwals, PE
Registration Number PE-5692,
on 8/11/2020 and the original document is stored at the
North Dakota Department of Transportation.
Pertinent Intersections & Quadrants

S Broadway: NW, NE, SW, SE

Designated on phasing sheets

1. Number of crossing areas will be designated

Notes:

Temporary Pedestrian Access Route

Traffic Control Devices (Quantities per Quadrant)

- 704-2108 Temporary Curb Ramps: 2 EA
- 704-1066 Delineator Drums: 15 EA
- 704-1058 Pedestrian Walkway*: 57.5 LF
*Includes Pedestrian Channelization (Both Sides)

Temporary Pedestrian Access Route

Single-Direction Crossing

Burdick Expressway

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Phase 1 - All Pertinent Ramps
16th St SW, MHS Entrance, Maple St SW, 6th St SW

TEMP PED RAMP DETAIL (2):
Burdick Expressway W

Burdick Expressway W

TEMP PED RAMP DETAIL (2):
Burdick Expressway W

Burdick Expressway W

Traffic Control Phasing
Phase 1
TEMP PED RAMP DETAIL (2) : 1
6th St SW
Burdick Expressway W

TEMP PED RAMP DETAIL (2) : 2

TEMP PED RAMP DETAIL (2) : 3

TEMP PED RAMP DETAIL (2) : 4

Phase 2a - North Side Ramps
6th St SW, 5th St SW, Park St SW, 4th St SW, 3rd St SW

Phase 2b - South Side Ramps
6th St SW, 5th St SW, Park St SW, 4th St SW, 3rd St SW

Phase 3 - All Pertinent Ramps
SEE DETAILED BREAKDOWN OF PHASE 3 ON SHEET 7

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Traffic Control Phasing
Phase 2
Burdick Expressway
Phase 4a - North Side Ramps
16th St SE, 19th St SE, 20th St SE, 8th Ave SE, Fairgrounds Entrance

Phase 4b - South Side Ramps
18th St SE, 19th St SE, 20th St SE, 8th Ave SE, Souris Dr, Fairgrounds Entrance, 27th St SE

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1. See Temp Ped Ramp Details for further information.
2. Use Standard D704-23 Type P for lane closures.
Notes:
1. See Temp Ped Ramp Details for further information
2. Use Standard D704-23 Type P for lane closures
3. Must have all Phase 3b work complete before Phase 3c work begins

Traffic Control Phasing
South Broadway Phase 3c

Burdick Expressway

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Notes:
1. See Temp Ped Ramp Details for further information.
2. Use Standard D704-23 Type P for lane closures.
3. Must have all Phase 3c work complete before Phase 3d work begins.
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Grand Total: 0.0 0.0 Total: 181.7 Total: 72 0 18 0 0

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Special Assembly A  
(Perforated Tube)  
Area = 8.25 SF

Special Assembly B  
(Perforated Tube)  
Area = 3.75 SF

SINGLE OR BACK TO BACK

TOP SIGNS

0.5" Bolt punch

Sinker

Bottom Signs (Punched same as top sign)

See Sign Arrangements

See Sign Arrangements (Not to Scale)

North Dakota Department of Transportation

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Obliteration of Pavement Marking
6" White Crosswalk

16th St SW & Burdick Expy

Minot High School Entrance

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PE-5892,
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Pavement Marking
16th St SW & Burdick Expy
MHS Entrance & Burdick Expy
Pavement Marking
8th St SW & Burdick Expy

Maple St SW & Burdick Expy

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Maple St SW & Burdick Expy
8th St SW & Burdick Expy
6th St SW
5th St SW

PREFORMED PATTERNED PVMT MK 6IN LINE - GROOVED
PREFORMED PATTERNED PVMT MK 24IN LINE - GROOVED

OBLITERATION OF PAVEMENT MARKING

UNIT | QTY | BID ITEM | SPEC CODE | UNIT
--- | --- | --- | --- | ---
LF | 605 | 762 | 1307 | PREFORMED PATTERNED PVMT MARK 6IN LINE - GROOVED
LF | 117 | 762 | 1325 | PREFORMED PATTERNED PVMT MARK 24IN LINE - GROOVED

24" White Stop Bar

6" White Crosswalk

Obliteration of Pavement Marking

Burdick Expressway W

Matthew T. Kinsella,
Registration Number PE-5692,
on 8/11/2020 and the original document is stored at the North Dakota Department of Transportation

Pavement Marking
6th St SW & Burdick Expy
5th St SW & Burdick Expy
**Pavement Marking**

Park St SW & Burdick Expy
4th St SW & Burdick Expy

**STATE:** ND
**PROJECT NO.:** NH-4-002(125)905
**SECTION NO.:** 120
**SHEET NO.:** 4

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24" White Crosswalk 10' Width

24" White Crosswalk 10' Width

Obliteration of Pavement Marking

Obliteration of Pavement Marking

20th St SE

19th St SE
8th Ave SE & Burdick Expwy
Souris Dr & Burdick Expwy

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Pavement Marking
Pedestrian Pushbutton Schedule

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<th>Pushbutton &amp; Sign Location on Pole</th>
<th>Direction of Arrow on Sign</th>
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Note: Pushbutton Post locations are to be field marked by engineer.

LEGEND
- Signal Pole/Foundation
- Signal Controller
- Signal Head
- Pedestrian Signal Head
- Pedestrian Pushbuttons and Posts

City of Minot
Engineering Dept

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SIGNAL COMPONENT COLOR: Paint all traffic signal system components black.

CABLE QUANTITY: Excess cable has been left in the pull boxes, from the City of Minot Project 4429, that the contractor will use to connect each pushbutton as well as the northwest pedestrian signal.

CONDUIT: Install one spare 2" conduit sweep in the northwest Type II pedestrian signal. Cap the spare conduit with an oil-tight plug with wing nut and label as to which direct it faces. Duct seal all conduit openings.

ACCESSIBLE PEDESTRIAN SIGNALS (APS) PUSHBUTTON AND SIGN: Shall include the features, installation procedures, and be compliant with the following:

A. Features:
1. Rapid tick WALK indication, no more than 2-5dBA above ambient sound
2. Vibrotactile WALK indication
3. Speaker and vibrotactile indication located at pushbutton
4. Pushbutton locator tone
5. Tactile arrow on each device aligned in direction of travel on the crosswalk

B. Installation Procedures
1. APS should be reachable from the level landing of the curb ramp for the crossing or from a level surface with an accessible path to the ramp (MUTCD Section 4E.08 and Proposed and Draft PROWAG).
2. APS should be within 5 feet of the crosswalk line furthest from the center of the intersection and within 10 feet of the curb (MUTCD Section 4E.08).
3. Tactile arrow shall be aligned with parallel to the direction of travel on the crosswalk (MUTCD Section 4E.12, P1).
4. Pushbutton required to be located within reach range for wheelchair users (Proposed PROWAG, R406).

C. Code Compliance:
1. Functionality: MUTCD 2009 - 4E
2. Temperature and Humidity: NEMA TS 2
3. Transient Voltage Protection: NEMA TS 2
4. Transient Suppression: IEC 61000-4-4, IEC 61000-4-5
5. Electronic Noise: FCC Title 47, Part 15, Class A
6. Mechanical Shock and Vibration: NEMA TS 2
7. EN4 PBS Enclosure: NEMA 250 - Type 4X
8. Electrical Reliability: NEMA TS 4

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

Items shall be included in the corresponding price bid "TRAFFIC SIGNAL SYSTEM - SITE 4".

### SIGNAL CABLE & CONDUIT SCHEDULE

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- Existing Ground Void
- Existing Cemetery Boundary
- Existing Box Culvert Bridge
- Existing Concrete Surface
- Existing Drainage Structure
- Existing Gravel Surface
- Existing Ramps
- 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
- Exit Flow
- Existing Curb
- Existing Valley Gutter
- Existing Driveway Gutter
- Existing Curb and Gutter
- Existing Drainage Structure

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 Underside Above Ground Pipe Line
- Existing Sanitary Sewer
- Existing Sanitary Force Main
- Existing Storm Drain
- Existing Storm Drain Force Main
- Existing Cemetary Boundary
- Existing Box Culvert Bridge
- Existing Concrete Surface
- Existing Driveway Gutter
- Existing Ground Void
- Existing Guardrail Cable
- Existing Guardrail Metal
- Existing Dirt Surface
- Existing Railroad Centerline
- Existing Railroad
- Existing Ditch Block
- Existing Tree Boundary
- Existing Overhead Sign Structure
- Existing Overhead Sign Structure Cantilever
- Existing Sanitary Sewer
- Existing Wet Area-Vegetation Break
- Existing Ground Void
- Existing Berm, Dike, Pit, or Earth Dam
- Existing Cemetary Boundary
- Existing Box Culvert Bridge
- Existing Concrete Surface
- Existing Drainage Structure
- Existing Gravel Surface
- Existing Ramps
- 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
- Exit Flow
- Existing Curb
- Existing Valley Gutter
- Existing Driveway Gutter
- Existing Curb and Gutter

Proposed Topography

- Proposed Electrical
- Proposed Fiber Optic Line
- Proposed TV Fiber Optic
- Proposed Gas Pipe
- Proposed Overhead Utility Line
- Proposed Power
- Proposed Fuel Pipeline
- Proposed Underside Above Ground Pipe Line
- Proposed Sanitary Sewer
- Proposed Sanitary Force Main
- Proposed Storm Drain
- Proposed Storm Drain Force Main
- Proposed Cemetary Boundary
- Proposed Box Culvert Bridge
- Proposed Concrete Surface
- Proposed Driveway Gutter
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- Proposed Curb
- Proposed Valley Gutter
- Proposed Driveway Gutter
- Proposed Curb and Gutter

Traffic Utilities

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

Sign Structures

- Existing Overhead Sign Structure
- Existing Overhead Sign Structure Cantilever
- Existing Cemetary Boundary
- Existing Box Culvert Bridge
- Existing Concrete Surface
- Existing Driveway Gutter
- Existing Ground Void
- Existing Berm, Dike, Pit, or Earth Dam
- Existing Cemetary Boundary
- Existing Box Culvert Bridge
- Existing Concrete Surface
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- Existing Fence
- Existing Railroad
- Existing Field Line
- Exit Flow
- Existing Curb
- Existing Valley Gutter
- Existing Driveway Gutter
- Existing Curb and Gutter

Site Boundary

- Site Boundary

Existing 3-Cable w Posts

- Existing 3-Cable w Posts

- Site Boundary

24 Inch Pipe

- 24 Inch Pipe

Reinforced Concrete Pipe

- Reinforced Concrete Pipe

Under Drain

- Under Drain

Edge Drain

- Edge Drain

Existing Telephne Line

- Existing Telephone Line

Existing TV Line

- Existing TV Line

Existing Water or Steam Line

- Existing Water or Steam Line

Existing Under Drain

- Existing Under Drain

Existing Slotted Drain

- Existing Slotted Drain

Existing Condut

- Existing Condut

Existing Conductor

- Existing Conductor

Existing Down Guy Wire Down Guy

- Existing Down Guy Wire Down Guy

Existing Underground Vault or Lift Station

- Existing Underground Vault or Lift Station

Fiber Optic

- Fiber Optic
**Line Styles**

<table>
<thead>
<tr>
<th>Right Of Way</th>
<th>Cross Sections and Typicals</th>
<th>Striping</th>
<th>Erosion Control</th>
</tr>
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<tbody>
<tr>
<td>Easement</td>
<td>---------------------------</td>
<td>---</td>
<td>Limits of Coastal Transition Line</td>
</tr>
<tr>
<td>Existing Easement</td>
<td>---------------------------</td>
<td>---</td>
<td>Bale Check</td>
</tr>
<tr>
<td>Right of Way</td>
<td>---------------------------</td>
<td>---</td>
<td>Rock Check</td>
</tr>
<tr>
<td>Existing Right of Way</td>
<td>---------------------------</td>
<td>---</td>
<td>Floating Silt Curtain</td>
</tr>
<tr>
<td>Existing Right of Way</td>
<td>---------------------------</td>
<td>---</td>
<td>Silt Fence</td>
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<tr>
<td>Existing Right of Way</td>
<td>---------------------------</td>
<td>---</td>
<td>Excavation Limits</td>
</tr>
<tr>
<td>Existing Government Lot Line</td>
<td>---------------------------</td>
<td>---</td>
<td>Fiber Rolls</td>
</tr>
<tr>
<td>Existing Adjacent Block Lines</td>
<td>---------------------------</td>
<td>---</td>
<td></td>
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<tr>
<td>Existing Adjacent Lot Lines</td>
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<tr>
<td>Existing Adjacent Property Line</td>
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<tr>
<td>Existing Adjacent Subdivision Lines</td>
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<tr>
<td>Sight Distance Triangle Line</td>
<td>---------------------------</td>
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<tr>
<td>Dimension Leader</td>
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<tr>
<td>Boundary Control</td>
<td>---------------------------</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Existing City Corporate Limits or Reservation Boundary</td>
<td>---------------------------</td>
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<td></td>
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<tr>
<td>Existing State or International Line</td>
<td>---------------------------</td>
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<tr>
<td>Existing Township</td>
<td>---------------------------</td>
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<tr>
<td>Existing County</td>
<td>---------------------------</td>
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<tr>
<td>Existing Section Line</td>
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<tr>
<td>Existing Quarter Section Line</td>
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<tr>
<td>Existing Sixteenth Section Line</td>
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<tr>
<td>Existing Centerline</td>
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</tr>
<tr>
<td>Tangent Line</td>
<td>---------------------------</td>
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</tbody>
</table>

**Geotechnical**

- Geotextile Fabric Type D
- Geotextile Fabric Type R
- Geotextile Fabric Type RR
- Geotextile Fabric Type S
- Geotextile Fabric Type R1
- Geotextile Fabric Type RR1

**Pavement Joints**

- Downward joint
- Tie Bar 30 Inch 4 Foot Center to Center
- Tie Bar 18 Inch 3 Foot Center to Center
- Tie Bar at Random Spacing

**Environmental**

- Wetland Mitigation
- Existing Wetland Easement USFWS
- Existing Wetland Jurisdictional
- Existing Wetland

**Bridge Details**

- Hidden Object
- Small Hidden Object
- Large Hidden Object
- Phantom Object
- Centerline

**Countours**

- Depression Contours
- Supplemental Contour

**Profile**

- Existing Ground (Debole)
- Existing Conditions
- Sheet Piling
**Fiber Roll Placement Details**

- **6' to 2'** to **3'**
- **Optional Weir**: Use in flat areas, such as the Red River Valley, where there is potential for water to back up on adjacent property. Lower fiber rolls enough to prevent water from backing up on adjacent property.

**Plan View for Ditch Application**

- Side slope: Stake 4" to 6" from end of roll.
- Ends overlapped 12" minimum
- Overlap fiber rolls 12" min.
- Place stake at each toe of ditch slope

**Plan View for Slope Application**

- Side slope: Stake at each toe of ditch slope
- Place stake at each toe of ditch slope

**Table: Trenching Details**

<table>
<thead>
<tr>
<th>Fiber Roll Diameter</th>
<th>Nominal Stake Size</th>
<th>Minimum Stake Length</th>
<th>Minimum Trench Depth</th>
<th>Maximum Trench Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot;</td>
<td>2&quot; x 2'</td>
<td>18&quot;</td>
<td>2&quot;</td>
<td>2&quot;</td>
</tr>
<tr>
<td>12&quot;</td>
<td>2&quot; x 2'</td>
<td>24&quot;</td>
<td>2&quot;</td>
<td>3&quot;</td>
</tr>
<tr>
<td>20&quot;</td>
<td>2&quot; x 2'</td>
<td>36&quot;</td>
<td>3&quot;</td>
<td>5&quot;</td>
</tr>
</tbody>
</table>

**Note:** Runoff must not be allowed to run under or around roll.
Notes:
1. Torque slip base bolts as specified by manufacturer.
2. Use anchor with 65.9 KSI yield strength and 88.8 KSI tensile strength.
3. Provide 4" vertical clearance for anchor or breakaway base. Measure from base plate and end of post.
4. In concrete sidewalk, use same anchor without wings.
5. Provide more than 7' between the first and fourth posts of a four post sign.

Multi-Directional Slip Base Anchor Unit and Post Sleeve Assembly

Minimum 10 gauge anchor plates (two post installation)

Minimum 10 gauge anchor plates (two post installation)

Minimum 10 gauge anchor plates (two post installation)

Multi-Directional Slip Base Anchor Unit and Post Sleeve Assembly

Breakaway systems for construction zone signs

Perforated Tube

Top Post Receiver
Plate - ASTM A53 grade B
Angled Receiver - 25/16" x 6/8" ASTM A36 structural angle

Telescoping Perforated Tube

Properties of Telescoping Perforated Tube

Top Post Receiver Data Table

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BREAKAWAY SYSTEMS FOR CONSTRUCTION ZONE SIGNS

U-Channel Post

Alternate A Steps of Installation

1. a) Drive anchor unit to within 12" of ground level.
   b) Establish proper assembly by lining up bottom hole of retainer strap with fifth hole from the top of the anchor unit.
   c) Assemble strap to back of anchor unit using 5/8" x 2" 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) Pass 3/4" x 2" bolt, lock washer and nut in bottom of sign post to facilitate alignment of sign post with proper hole in anchor unit.
   b) Alternate tightens two connector bolts.
4. Complete assembly by tightening 5/8" x 2" bolt (this fastens sign post to retainer strap).

5. Properly nest base post, strap, and sign post. Proper nesting occurs when all flat surfaces of the base post, strap, and sign post all the bolts have full contact across the entire width.

Alternate A Notes:

- See Alt. A Note 3 for proper nesting of base post, strap, and sign post.
- See Alt. A Note 1b for proper nesting.
- See Alt. A Note 1c for proper nesting.
- See Alt. A Note 4 for proper nesting.

Install a maximum of 2 posts within 7'.

Install a maximum of 3 posts within 7'.

Install a maximum of 3 posts within 7'.

Breakaway U-Channel Splice Detail Alternate B (2.5 and 3 lb/ft)
Install a maximum of 3 posts within 7'.

Breakaway U-Channel Splice Detail Alternate C (2.5 and 3 lb/ft)
Install a maximum of 3 posts within 7'.

This document was originally issued and sealed by Kirk J Hoff, PE, 4683, on 10/03/19 and the original document is stored at the North Dakota Department of Transportation.
CONSTRUCTION SIGN DETAILS
TERMINAL AND GUIDE SIGNS

**ROAD WORK NEXT XX MILES**
- G20-1-60
- Legend: black (non-refl)
- Background: orange

**NO WORK IN PROGRESS**
- G20-1b-60
- Legend: black (non-refl)
- Background: orange

**END ROAD WORK**
- G20-2-48
- Legend: black (non-refl)
- Background: orange

**SPEED LIMIT ENFORCED**
- G20-65-96
- Legend: black (non-refl)
- Background: orange

**WAIT FOR PILOT CAR**
- G20-4b-36
- Legend: black (non-refl)
- Background: orange

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

**DETUR**
- M4-6-36
- Legend: black (non-refl)
- Background: orange

**DETUR**
- M4-9-L or R)-39 & M4-9-30
- Legend: black (non-refl)
- Background: orange

**ARROW DETAILS**
- See ARROW DETAILS

**NOTES:**
- Arrow may be right or left of the legend to indicate construction to the right or left.

---

This document was originally issued and sealed by Kirk J Hoff, Registration Number PE-4693, on 10/03/19 and the original document is stored at the North Dakota Department of Transportation.
SHOULDER CLOSURE TAPERS

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

PORTABLE TRAFFIC SIGNAL OR CHANGEABLE MESSAGE SIGN ON SHOULDER

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

Notes:
1. $S = \text{Posted Speed Limit in mph}$
   
2. If a shoulder taper is used, use a length of approximately $L$. If a shoulder is used as a travel lane, use a normal merging or shifting taper.

3. When paved shoulders of 8 feet wide or more are closed, use channelizing devices to close shoulder in advance, to delineate beginning of work space, and to direct vehicular traffic to remain within the traveled way.

KEY
- Delineator Drum
- Message Display
- Sequencing Arrow Panel
- Portable Traffic Signal or Changeable Message Sign
- Shoulder Closure Used with Lane Closure
- Shoulder Closure with Shoulder Closed
- Portable Traffic Signal

Notes:
1. $L = \frac{W S}{45}$ (mph or less)
   
2. $L = \frac{W S (45 \text{mph or less})}{60} (\text{mph or less})$
   
L = Taper length in feet
W = Width of offset in feet
S = Posted Speed Limit in mph
SHORT TERM URBAN DETOUR AND LANE CLOSURE ON A DIVIDED HIGHWAY LAYOUTS

Notes:
1. Variables:
   - $S =$ Numerical value of speed limit or 85th percentile.
   - $W =$ Width of lane or lane.
   - $V =$ Minimum length of taper.  $S$ is 0.4 for freeways, expressways, and all other roads with speeds of 40 mph or greater; or $V = 0.5$ to 0.75 for other, residential, and other streets with speeds of 25 mph or less.
   - $L =$ Minimum length of taper.  $S$ is 0.4 for freeways, expressways, and all other roads with speeds of 40 mph or greater; or $V = 0.5$ to 0.75 for other, residential, and other streets with speeds of 25 mph or less.
   - $S =$ Speed limit or 85th percentile.
   - $R =$ Space delineator drums to be used in taper or junctions.  When parking is present, place signs so they are entirely visible above parked vehicles or at the edge of the parking area on any adjacent street(s).
   - $T =$ Buffer Space.
   - $N =$ Numerical value of speed limit or 85th percentile.
   - $W =$ Width of lane or lane.
2. Post mounted signs are used where permanent pavement markings are not necessary, such as on rural roadways.  Portable signs are used to supplement permanent pavement markings.  Portable signs are to be installed on roadway surface.
3. Space delineator drums to be used in taper or junctions.  When parking is present, place signs so they are entirely visible above parked vehicles or at the edge of the parking area on any adjacent street(s).

4. Place Sequencing Arrow Panels at the beginning of taper.  Where shoulder width does not provide sufficient room, move panel closer to the work area and place on roadway surface.
5. Use Type Q on roadways with slow moving traffic speeds and low volumes ($25$ mph or less and $750$ ADT or less).
6. Use Type Q on roadways with signs to be used in taper or junctions.  When parking is present, place signs so they are entirely visible above parked vehicles or at the edge of the parking area on any adjacent street(s).
7. 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 sign that the flag does not touch the sign when limp.
8. 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 reduced speed reduction limit of the previous speed limit sign at $.6$.
9. 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 sign that the flag does not touch the sign when limp.
10. As an option, use portable sign supports in lieu of post mounted signs in accordance with NDDOT Standard Drawing D-704-14.
11. Engineer to determine safe speed where necessary.  When parking is present, place signs so they are entirely visible above parked vehicles or at the edge of the parking area on any adjacent street(s).
12. The reduced speed limit may be posted on temporary (no more than 60 days) and permanent pavement markings.

13. This document was originally issued and sealed by Kirk J. Hoff, Registration Number PE-4683, on 11/1/19 and the original document is stored at the North Dakota Department of Transportation.
1. Install advance signs for flagging when flaggers are flagging

2. Move the advanced flagger sign and 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 sign so the work area is visible. Place the 40 mph speed limit sign at 1/4 in advance of the flagger sign and move the 60 mph speed limit sign. Cover or remove the 40 mph speed limit and the Minimum Fee $80 signs upon completion of the work day or when workers are not present. Determine the exact speed limit in the field, dependent on location and conditions.

3. Approaches: When the work area encompasses an approach, install a 40 mph speed limit sign to control the approach. Cover the existing stop sign and install a new portable stop sign when the approach is on the side of the lane closure. Remove the approach speed limit sign once the main line 40 mph speed zone is moved past the approach.

4. Variables:
   a. Numerical value of speed limit or 85th percentile
   b. Width of taper
   c. 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.
   d. Speed
   e. 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.
   f. Speed
   g. 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.
   h. Speed
   i. 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.
   j. Speed
   k. 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.
   l. Speed

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

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. Install flag signs 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.

10. Determine the reduced speed limit dependent on the in-place speed limit before construction. Where speed limits are to be reduced more than

11. As an option use portable sign supports in lieu of post mounted signs in accordance with NDDOT Standard Drawing D-706-14.

12. Sign G20-55-96 is not required if this standard is part of other traffic control layouts or the work is less than 15 days.
PORTABLE SIGN SUPPORT ASSEMBLY

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.

2000 Lb Capacity Spindle and Hub (Each End)
4 Corners
2" Ball Coupler

2" Ball Coupler
4 Places on Coupler

3" x 3/8" x 12" Square Tube
1 1/2" x 1 1/2" x 12" PL
3" x 3" x 4 1/2" Channel

1" Dia x 3" Pipe at 10 Degrees Offset

1 1/2" x 1 1/2" x 90° square tube

1 1/2" x 1 1/2" x 3' PL

3" x 1/4" x 60" Square Tube

1/4" Dia of Angles (Typ)

3/4" Dia (Typ)

L 2" x 2" x 7/8" x 36"
L 2" x 2" x 7/8" x 16 1/2"
L 2" x 2" x 7/8" x 30"
L 2" x 2" x 7/8" x 5"
INLET - CATCH BASIN

NOTES:

1. Use of other castings, similar in dimension, is allowed if the casting conforms to the riser section and has a grate style specified in the plans, meeting or exceeding the waterway area listed. Modifications to the inlet to facilitate similar castings are only allowed with written approval from the Engineer.

2. Use castings manufactured in accordance with AASHTO M306-09. Use metal conforming to AASHTO M105 Class 35B in the manufacture of castings.

3. Use cast concrete precast or cast-in-place bases constructed in accordance with NODOT Standard Specifications. Use aggregate sizes approved by the Engineer.

4. Construct precast concrete risers in accordance with AASHTO M199.

5. On projects with PCC pavement, construct inlet risers 4 to 5 inches below final elevation and adjust to final grade with adjusting rings, masonry or cast-in-place concrete after paving. Include all costs for this adjustment in the price bid for the inlet.

6. Use Grade 60 reinforcing steel.

---

GRADE ELEVATION

Frame Section

Frame Section

ELEVATION

SECTION A-A

TOP

TOPE

(Grate Section)

(Top - A Grate)

(Grate Section)

(Grate Section)

Beehive Grate

Beehive Grate

Precast Riser

Precast Riser

Precast Riser

4 in Beehive

6 in Beehive

Waterway Area = 2.0 SF

Waterway Area = 1.4 SF

Waterway Area = 1.1 SF

Type - A Grate

Type - A Grate

Type - A Grate

(See Inlet & Manhole Summary Sheets)

Use Grade 60 reinforcing steel.

6.24-14 Revised Note 3.

10-17-17 Updated to active voice.

This document was originally issued and sealed by Roger Wulgel, Registration Number PE-2930, on 10-17-2017 and the original document is stored at the North Dakota Department of Transportation.
**NOTES:**

1. For inlet casting details, see Standard Drawings D-722-1, D-722-21A, D-722-2, and D-722-3. Other castings, similarly described, may be used provided the casting meets the requirements set forth in the referenced Standard Drawings. The grate style shall is as specified on the plans and included in the price bid for "Inlet - Special - (casting type & riser size)."

2. Metal used in the manufacture of castings shall conform to AASHTO M-105, Class 505.

3. The Class of concrete, aggregate size, and methods of construction for the manhole lid, cover, and base shall be as detailed in Standard Drawing D-722-5.


5. The distance between the edge of the cover opening and the edge of the storm drain shall be noted on the Plan & Profile sheets.

6. Manhole steps, if noted on the Plan and Profile sheets, shall be constructed per Standard Drawing D-722-6.

7. On projects with P.C.C. pavement, all risers shall be constructed 4 to 5 inches below final elevation and adjusted to final elevation after paving. Adjustments may be made with adjusting rings or cast-in-place concrete. All costs for the adjustment shall be included in the price bid for "Inlet - Special - (casting type & riser size)."

---

**PAY ITEMS:**

- **48 in. Riser**
  - Special - Type 1 - 48 in.
  - Special - Type 2 - 48 in.
  - Special - Mountable - Type A - 48 in.
  - Special - Mountable - Type B - 48 in.
  - Special - Catch basin - Type A - 48 in.
  - Special - Catch basin - Type B - 48 in.
  - Special - Catch basin - Type C - 48 in.

- **60 in. Riser**
  - Special - Type 1 - 60 in.
  - Special - Type 2 - 60 in.
  - Special - Mountable - Type A - 60 in.
  - Special - Mountable - Type B - 60 in.
  - Special - Catch basin - Type A - 60 in.
  - Special - Catch basin - Type B - 60 in.
  - Special - Catch basin - Type C - 60 in.

- **72 in. Riser**
  - Special - Type 1 - 72 in.
  - Special - Type 2 - 72 in.
  - Special - Mountable - Type A - 72 in.
  - Special - Mountable - Type B - 72 in.
  - Special - Catch basin - Type A - 72 in.
  - Special - Catch basin - Type B - 72 in.
  - Special - Catch basin - Type C - 72 in.
1. Use Curb and Gutter Type 1 (Sec. A & B). Use section "A" with (-) pavement slopes and section "B" with (+) pavement slopes.

2. Contraction Joints: Tool the Curb & Gutter 2" as shown on the contraction joint details.

3. Isolation Joints: Use 1/2" expansion joint filler for isolation joint material. Form the backer rod and joint sealant opening with a pre-cut piece of wood or other material approved by the engineer. Dowel supports are not required on the second pour at a cold joint. Install plastic or metal caps and greased dowels in the cold joint for the second pour.

4. Joint Spacing: For hot bituminous pavements use a 10' max joint spacing for the curb and gutter with panels on each side of the inlets. For concrete pavements match the joint spacing for the curb and gutter to the pavement joint on PCC Pavements (approximately 15' spacing.)

5. Joint sealing: Seal contraction and isolation joints as shown in the details. Use joint sealant for contraction joints that conforms to section 826.02B. Use sealant for expansion joints specified in note 3 above. Tool and install sealant in accordance with the manufacturer's recommendations.

6. Face of Gutter Depth: For hot bituminous pavement use 7" gutter depth as shown. For SCC pavements, match the gutter depth to the depth of adjacent SCC pavement or to construct a 7" depth as shown.

7. Tie curb and gutter to abutting SCC pavement with No. 3 bars, 1'-6" in length, spaced at 4 centers.

8. On street returns and other locations where new curb and gutter ends and does not about existing curb and gutter, taper the last two (2) feet of the curb from 6" in height to 0". Install a 1/2" premolded full depth isolation joint, the same shape as the curb and gutter just ahead of the taper. Install an 18" tie bar across the joint.

9. Valley Gutter Joints: Form, saw, or score 1/2" min. to 1/2" max. width contraction joints (a minimum 7" depth) at approx 10' intervals. Seal the joints with hot poured elastic expansion joint filler for isolation joint sealer (Section 826.02A.2 of the Standard Specifications.) Include all costs for the joint and sealant in the price bid for Valley Gutter.
SIDEWALK

- Utility isolation joint
- Sidewalk
- Building facade
- Contraction joints
- Utility diameter plus 8"
- Maximum spacing.
- Intersections, and at 150' side of driveways, at street
- Isolation joint on each
- Min. 1/4" isolation joint
- Concrete Median
- 2" Ledge
- 4" Base
- Earth Fill
- Sidewalk to be replaced
- Sidewalk
- 4" Base
- Min. 1/4" isolation joint at 4' spacing
- #3 "L" bar
- Abutting concrete or asphalt
- Min. 1/4" isolation joint when
- Contraction and isolation joints in the price bid for sidewalk concrete.
- Use isolation joints between separate concrete pours, or between old and new concrete.
- Include all costs for labor, equipment, and material necessary to construct contraction and isolation joints in the price bid for sidewalk concrete.
- Use 4" sidewalk thickness unless otherwise specified.
- Use 4" base material thickness unless otherwise specified. Include all costs for labor and materials necessary to place the base material in the price bid for "Salvage Base Course" or "Aggregate Base Course CL 5." Modify existing ground slope with landscaping as needed. If not possible, such as adjacent buildings, use a vertical curb as shown in the detail below. The Engineer will measure curb at the unit price bid for "Curb - Type P" and field total.
- Sidewalk Width & Grade: Provide a continuous 4' min clear width for "Curb - Type I" per lineal foot.
- The width of the curb cannot be counted as part of the pedestrian access route.
- When clear width of pedestrian access routes is less than 5.0', provide passing spaces at a maximum of 200' with a minimum size of 5.0' by 5.0'.

NOTES:
- Utility Blockout
- Typical Isolation Joint Seal
- Typical Joint Layouts
- Sidewalk Width and Grade
- Vertical Discontinuities
- Sidewalk Detail
- (Installed adjacent to curb and gutter)
- Concrete Median Detail
- Depth of Sidewalk
- Typical Isolation Joint Seal (longitudinal and transverse)

REVISIONS
- DATE
- CHANGE
- DEPARTMENT OF TRANSPORTATION
- North Dakota Department of Transportation
- Kirk J Hoff,

This document was originally issued and sealed by Kirk J Hoff,
Registration Number PE-4683,
on 08/27/19 and the original document is stored at the North Dakota Department of Transportation.
Perforated Tube Assembly Details

Notes:
1. Curbed Roadways: Use a 3' clearance from face of the curb except where right of way or sidewalk is limited. Use a minimum 2' clearance. Increase the horizontal clearance if required to maintain a minimum sidewalk clear width of 5' from the sign support, not including any attached curbs.

2. Minimum horizontal clearance: Provide at least 6' measured from the bottom of the sign to the edge of the driving lane or auxiliary lane at the side of the road in rural districts. Provide at least 7' clearance in the bottom of the sign, where parking or pedestrian movements occur.

Install signs on expressways a minimum of 7'.

Install stop or highway signs on Freeways at least 7' above the edge of the driving lane.

Maximum vertical clearance is 6' greater than the minimum vertical clearance.

3. Offset signs: Use a vertical clearance of 5' above the edge of the driving lane for signs placed 30 feet or more from the edge of the traveled way.

4. Provide a horizontal clearance from edge of shared use path to edge of sign of 3', except where width is limited. Provide a minimum clearance of 2'.

Stop Sign Location
Wide Throat Intersection

Use layout for the placement of "Stop" signs.

Notes:
- Use layout for the placement of "Stop" signs.
- Provide at least 6' minimum horizontal clearance from the bottom of the sign to the edge of the driving lane or auxiliary lane at the side of the road in rural districts.
- Provide at least 7' clearance in the bottom of the sign, where parking or pedestrian movements occur.
- Maximum vertical clearance is 6' greater than the minimum vertical clearance.
- Use a vertical clearance of 5' above the edge of the driving lane for signs placed 30 feet or more from the edge of the traveled way.
- Provide a horizontal clearance from edge of shared use path to edge of sign of 3', except where width is limited. Provide a minimum clearance of 2'.

Horizontal Clearance Table

<table>
<thead>
<tr>
<th>Shoulder Width ft</th>
<th>Offset ft</th>
<th>0 to 2 ft</th>
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<th>&gt;4 to 6 ft</th>
<th>&gt;6 to 8 ft</th>
<th>&gt;8 to 10 ft</th>
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Radius = Y-max ft

Radius = Y-min ft

Typical Section (without Curb)

Typical Section (with Curb)

Residential or Business District

Radius = Y-max ft

Radius = Y-min ft

Stop sign Location
Wide Throat Intersection

Use layout for the placement of "Stop" signs.

Notes:
- Use layout for the placement of "Stop" signs.
- Provide at least 6' minimum horizontal clearance from the bottom of the sign to the edge of the driving lane or auxiliary lane at the side of the road in rural districts.
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Radius = Y-max ft

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Stop sign Location
Wide Throat Intersection

Use layout for the placement of "Stop" signs.

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- Provide a horizontal clearance from edge of shared use path to edge of sign of 3', except where width is limited. Provide a minimum clearance of 2'.
Mounting Details Perforated Tube

- Horizontal stringers - use perforated tubes or 1/4" x 1/4" thick, 1.08 lbs/ft aluminum or 3/16 lbs/ft steel bars. Strings same size as post.
- Use minimum outside diameter 3/8" and 10 gauge thick metal washers on sign face.
- Place No Parking signs with directional arrows at a 30 to 45 degree angle with the line of traffic flow. Turning the support to the correct angle for No Parking signs requiring the above angles is allowed. If the No Parking sign is placed with another sign that requires placement at a 90 degree angle with the line of traffic flow, use the detailed angle strap to mount the No Parking sign. Use flat washers and lock washers with all nylon washers.
- Punching the sign backing and placing the bolt through the sign, the stringer, and the post is allowed in lieu of using the bent bolt to attach the post to the stringer.
- 4" vertical clearance of anchor or breakaway base. The 4" x 80" measurement is above and below post location and also back and ahead of post.

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<th>Number of Posts</th>
<th>Post Size</th>
<th>Tube Size</th>
<th>Sleeve Size</th>
<th>Base Plate Size</th>
<th>Anchor Material</th>
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4. Punching the sign backing and placing the bolt through the sign, the stringer, and the post is allowed in lieu of using the bent bolt to attach the post to the stringer.
5. 4" vertical clearance of anchor or breakaway base. The 4" x 80" measurement is above and below post location and also back and ahead of post.
### 911 Sign Support Information and Sign Details

#### Post Information for Various Sign Configurations

<table>
<thead>
<tr>
<th>Assembly</th>
<th>STREET NAME SIZE</th>
<th>STREET NAME VERTICAL SIZE</th>
<th>SUPPORT SLEEVE SIZE</th>
<th>SUPPORT SLEEVE LENGTH (A)</th>
<th>SUPPORT SLEEVE LENGTH (B)</th>
<th>SUPPORT SLEEVE LENGTH (C)</th>
<th>SUPPORT SLEEVE LENGTH (D)</th>
<th>SLEEVE SIZE</th>
<th>ANCHOR</th>
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</tbody>
</table>

#### Notes

- Low 6-inch legend except on multi-lane divided roads with speed of 45 mph or greater. On divided multi-lane highways, do not place 911 signs on top of street sign.
- On divided multi-lane roadways, do not place 911 signs on top of street sign.
- When installing signs on existing supports, check support and sleeve size to ensure that the required sleeve length is longer than the maximum post length shown on the diagram. If calculated support length is greater than maximum post length shown, relocate support to make sure sleeve length is longer than maximum post length shown.

#### Sketches

- Sketches of 11th St W sign configuration with dimensions and anchor details.

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This document was originally issued and sealed by Kirk J. Hoff, Registration Number PE-4669, on 9/05/19. The original document is stored at the North Dakota Department of Transportation.
SIGN PUNCHING, STRINGER AND SUPPORT LOCATION DETAILS
FOR STREET NAME SIGNS AND 911 SIGNS

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

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

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

Special Assembly 3 (A, B, C, D or E)
1 Post
2 Posts

Special Assembly 4 (A, B, C, D or E)
1 Post
2 Posts
3 Posts

Special Assembly 5 (A, B, C, D or E)
1 Post
2 Posts
3 Posts

Note: See Standard Drawing D-754-84 for 911 support information and sign layout details.

Note: Only use splice method with approval of engineer.

Attachment bracket

Back to back

Face of curb or edge of stringer area

Front View

Sleeve Splice Detail

Attachment bracket

Punch round hole through stringer and post hole.

Top sign

Bottom sign (punched same as top sign)

Notice: Only use splice method with approval of engineer.

Stop sign

Sleeve Splice Detail

Note: See Standard Drawing D-754-84 for 911 support information and sign layout details.

Note: Only use splice method with approval of engineer.

Attachment bracket

Punch round hole through stringer and post hole.

Top sign

Bottom sign (punched same as top sign)

Edge of finished structure

Intersection Layout

Note: Use for street name signs or 911 signs with Special Assembly 1.

Sign Arrangements

Note: Only use splice method with approval of engineer.

Attachment bracket

Punch round hole through stringer and post hole.

Top sign

Bottom sign (punched same as top sign)

Notice: Only use splice method with approval of engineer.

Attachment bracket

Punch round hole through stringer and post hole.

Top sign

Bottom sign (punched same as top sign)

Notice: Only use splice method with approval of engineer.

Attachment bracket

Punch round hole through stringer and post hole.

Top sign

Bottom sign (punched same as top sign)
NOTES:
1. Continue edge lines through private drives and field drives. Break edge lines for intersections.

Two Lane Two Way RURAL ROADWAY

Two Lane Divided RURAL ROADWAY PRIMARY HIGHWAY

Asphalt Section

Two Lane Roadway PRIMARY HIGHWAY

Asphalt Section

Two Lane Roadway INTERSTATE HIGHWAY

Concrete Section

Two Lane Roadway INTERSTATE HIGHWAY

Asphalt Section

RURAL FIVE LANE ROADWAY

Asphalt Section

URBAN FIVE LANE SECTION

Asphalt Section

RURAL FIVE LANE ROADWAY

Concrete Section

URBAN FIVE LANE SECTION

Concrete Section

RURAL FIVE LANE ROADWAY

Asphalt Section

URBAN FIVE LANE SECTION

Asphalt Section

RURAL FOUR LANE ROADWAY

Concrete Section

URBAN FIVE LANE SECTION

Concrete Section

RURAL FOUR LANE ROADWAY

Concrete Section

URBAN FOUR LANE SECTION

Concrete Section

CENTERLINE PAVEMENT MARKING SKIP SPACING DETAIL

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