

JOB # 20 NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

TAC-7-005(022)034

Divide County
City of Crosby, North Dakota
North Side of ND 5 from 2nd St SE to 8th Ave SW and
South Side of 8th Ave SW from ND 5 to 1st St SW
Sidewalk, Grading, Storm Sewer, and Incidentals

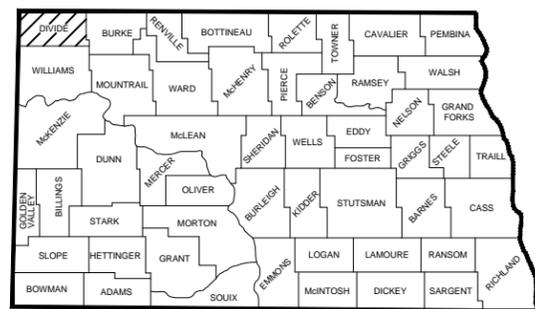
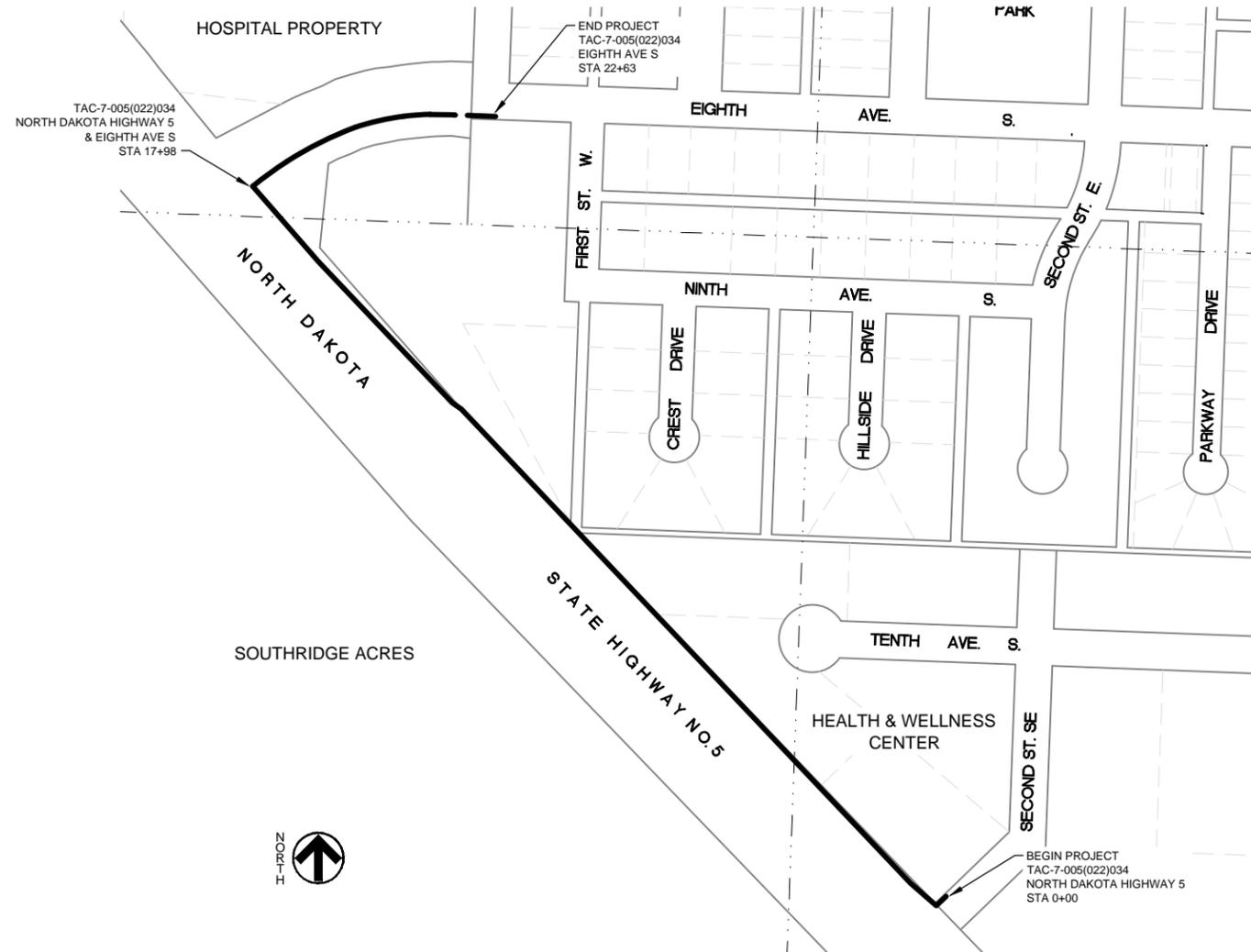
STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	1	1

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
TAC-7-005(022)034	0.43	0.43

LEGAL DESCRIPTION:
SEC 32 T 163N R 97W



STATE COUNTY MAP

DESIGNERS

Antonio Conti, PE

Trevor Tharaldson, EIT

I HEREBY CERTIFY THAT THE ATTACHED PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF ND.

APPROVED DATE 12/23/2014

ANTONIO CONTI, PE /S/
ADVANCED ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

APPROVED DATE 01/23/2015

Robert Fode /S/
OFFICE OF PROJECT DEVELOPMENT
ND DEPARTMENT OF TRANSPORTATION

This document was originally issued and sealed by Antonio Conti Registration Number PE- 7641 on 12/23/2014 and the original document is stored at the North Dakota Department of Transportation

STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	2	1

TABLE OF CONTENTS

<u>Section No.</u>	<u>Sheet No.</u>	<u>Description</u>
1	1	Title Sheet
2	1	Table of Contents & List of Standard Drawings
4	1	Scope of Work
6	1 - 3	General Notes, Environmental Comments
8	1	Quantities and Basis of Estimate
20	1	Details
51	1	Allowable Pipe List
76	1	Temporary Sediment and Erosion Control Layout
77	1	Permanent Sediment and Erosion Control Layout
80	1 - 6	Project Layout
100	1 - 2	Traffic Control Devices List, Construction Sign Layout

LIST OF SPECIAL PROVISIONS

<u>Project No.</u>	<u>SP No.</u>	<u>Description</u>
TAC-7-005(022)034	SP 0003(14)	Temporary Erosion and Sediment Best Management Practices

LIST OF STANDARD DRAWINGS

<u>Standard No.</u>	<u>Description</u>
D-101-1, 2, 3	NDDOT Abbreviations
D-101-10	NDDOT Utility Company and Organization Abbreviations
D-101-20, 21	Line Styles
D-101-30, 31, 32	Symbols
D-203-08	Standard Rural Approaches
D-255-2	Erosion and Siltation Control - Erosion Control Blanket Installation
D-256-1	Erosion and Siltation Controls
D-261-1	Erosion and Siltation Controls - Fiber Roll Placement Details
D-704-7	Breakaway Systems For Construction Zone Signs - Perforated Tube
D-704-8	Breakaway Systems For Construction Zone Signs
D-704-9, 10, 11	Construction Sign Details
D-704-13	Barricade and Channelizing Device Details
D-704-14	Construction Sign Punching and Mounting Details
D-704-19	Road Closure and Lane Closure on a Two Way Road Layouts
D-704-25	Lane Closures on Urban Streets Layouts
D-708-6	Erosion and Siltation Controls - Median or Ditch Inlet Protection
D-714-4	Round Corrugated Steel Pipe Culverts and End Sections
D-714-28	Transverse Mainland Pipe Excavation and Installation Detail for Pipes installed in New Embankment Areas
D-750-2	Sidewalk
D-750-3	Curb Ramp Details

This document was originally issued and sealed by
Antonio Conti
Registration Number
PE- 7641
on 12/23/2014 and the original document is stored at the
North Dakota Department
of Transportation

REV'D.

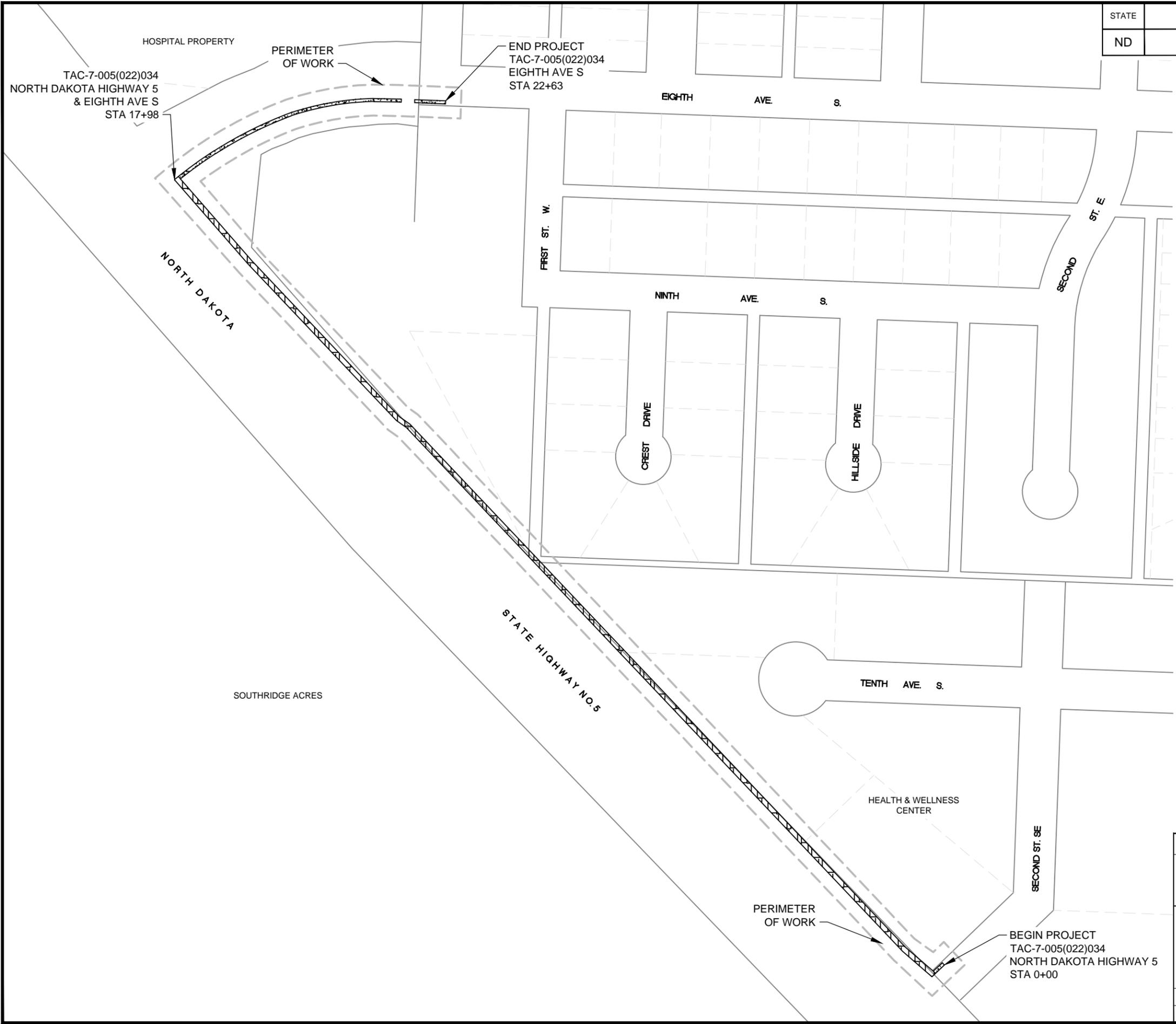
Table of Contents & List of Standard Drawings

Transportation Alternatives Program Crosby, North Dakota

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
T. Tharaldson	A. Conti	P00512-2014-005	12/23/2014

File: L:\City of Crosby\P00512-2014-005 Crosby TAP 2015\040 Final Design\Drawings\01-Civil\Sheet2 TOC.dwg

STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	4	1



LEGEND

CONCRETE SIDEWALK 4 IN REINFORCED	
CONCRETE SIDEWALK 5 IN REINFORCED	
PROPERTY LINE	
LOT LINE	
PERIMETER OF WORK	



SCALE: NONE

This document was originally issued and sealed by Antonio Conti Registration Number PE- 7641 on 12/23/2014 and the original document is stored at the North Dakota Department of Transportation

REV'D.			
Scope of Work			
Transportation Alternatives Program Crosby, North Dakota			
DRWN. BY T. Tharaldson	CHK'D BY A. Conti	PROJECT NO. P00512-2014-005	DATE 12/23/2014
File: L:\City of Crosby\P00512-2014-005 Crosby TAP 2015040 Final Design\Drawings\01-Civil\Sheet14 Scope.dwg			
AE2S • 1115 16th St SW Ste 2 Minot, ND 58701 • (t) 701-852-4048 (f) 701-852-4054			

GENERAL NOTES

STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	6	1

100-P01 PLAN SCALE: Plan sheets indicate a specific scale. Be aware that during reproduction operation, the plan sheets may have been distorted (reduced or increased) and may no longer scale properly at the indicated scale.

105-P01 PAVEMENT SWEEPING: Sweep paved areas that were used by construction traffic before opening these areas to public traffic. Sweep all newly constructed pavement no more than 24 hours before a scheduled final inspection. Use a vacuum or pick-up type sweeper to perform this work.

107-P01 HAUL ROADS: Before submitting a proposal, contact the appropriate State, County, Township, or City officials to determine if there are any roadways that will be designated as "no haul routes".

202-P01 REMOVE ASPHALT: Where new sidewalk will abut existing pavement, a full depth vertical saw cut shall be made as shown in the details. Coulter cuts will not be allowed. The area removed shall then be patched with 4in concrete as to match the existing pavement and so as to provide a satisfactory surface profile. All labor, equipment, and materials required for saw cutting shall be incidental to the price bid for "Remove Asphalt". All labor, equipment, and materials required for concrete patching shall be incidental to the price bid for "Sidewalk Concrete 4In".

203-P02 TOPSOIL: The cost for removing, stockpiling, and respreading existing topsoil from excavation areas for the sidewalk shall be included in the unit price bid for "Remove and Salvage Topsoil". Minimum depth of topsoil replacement shall be 4 inches.

203-P03 COMPACTION AND DENSITY CONTROL: Compact material as specified in Section 203.04 E.2.a, "ND T 180".

203-P04 BORROW EXCAVATION: All borrow needed for construction of the sidewalk embankment shall be obtained by the Contractor and in accordance with Standard Specification 107.04.

216-P01 WATER: The cost for water needed for compaction and dust control shall be included in the price bid for "Borrow Excavation".

251-P01 SEEDING-HYDRO MULCH: Class III seed shall be used on this project in all areas that are disturbed on the construction site. All seeding is to be Hydro mulch as specified in the NDDOT specification 253.04B. The contractor shall use 100lbs/acre of a permanent seed mixture of 20% Bluegrass, 30% Perennial Rye grass, 25% Fairway Crested Wheat grass, and 25% Ephraim Crested Wheat grass. After application, the mulch shall permit percolation of water to the underlying soil. 0.10 acres of seeding has been added to seeding quantity of miscellaneous construction staging areas and stockpile areas. This works shall be included in the price bid for "Hydraulic Mulch."

550-P01 JOINT SEALANTS: All labor, equipment and materials required to seal joints shall be included in the price bid for the concrete pavements.

704-P01 MAINTAINING ACCESS: The contractor is responsible for providing access to all residential dwellings, parking lots and business establishments adjacent to this project at all times.

Traffic is to be maintained at all times. When work is taking place on the sidewalks, traffic will be maintained in the driving lanes and the parking lane closed to traffic.

704-P02 CONSTRUCTION SIGNING: The contractor will be responsible for traffic control during construction. Tubular Markers and Type III Barricades (as specified in Standard Drawing D-704-13) have been included for the contractor's use to delineate their work zone and close the sidewalk as needed. Equipment Working (W20-51-48) signs have been included to provide advance warning of the work zone to the traveling public, and Sidewalk Closed (R9-9-48) signs have been provided for sidewalk closures as needed. Layout W on Standard Drawing D-704-25 shall be used as guidance for establishing the work zone. Sidewalk shall be closed to the public at all times work is in progress. Plan quantity of traffic control devices is based on a work zone of one city block. If contractor desires a larger work zone, additional traffic control devices shall be provided at the contractor's expense, without additional compensation. The contractor shall present a traffic control plan to the engineer prior to the start of construction.

This document was originally issued and sealed by
Antonio Conti
Registration Number
PE- 7641
on 12/23/2014 and the original document is stored at the
North Dakota Department
of Transportation

REV'D.			
General Notes			
Transportation Alternatives Program Crosby, North Dakota			
DRWN. BY T. Tharaldson	CHKD BY A. Conti	PROJECT NO. P00512-2014-005	DATE 12/23/2014
File: L:\City of Crosby\P00512-2014-005 Crosby TAP 2015040 Final Design\Drawings\01-Civil\Sheet\6 Gen Notes & Environ Comments.dwg			
AE2S • 1115 16th St SW Ste 2 Minot, ND 58701 • (t) 701-852-4048 (f) 701-852-4054			

STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	6	2

GENERAL NOTES

750-P01 SIDEWALK CONCRETE: All excavation necessary to construct the sidewalk to the grade established by the engineer shall be included in the contractor's bid price for "Sidewalk Concrete 4 In". In the event that no excavation is required, any sod or vegetation within the construction area shall be removed. The excavated material shall be removed by the contractor and disposed of in a location approved by the engineer. The contractor shall also blend the aggregate at alleys and driveways into the new concrete edge. Payment for this bid item shall include reinforcement of the concrete as shown in the details.

All excavated areas shall be thoroughly compacted to a depth slightly below subgrade and on this compacted surface shall be placed with a layer of Class 3 aggregate (leveling sand) a minimum of two inches (2") in depth to bring the grade to proper elevation. Cost of said material shall be considered incidental to the price bid for "Sidewalk Concrete 4In". The grade shall be dampened ahead of the placing of concrete.

Type 1A or 3 ADA curb ramps shall be used unless noted on the plan sheets. All cost to install Type 1A or 3 ADA curb ramps shall be included in the "Sidewalk Concrete 4In" bid item. Any concrete patching needed for the existing street after curb ramp construction shall be included in the price bid for "Curb and Gutter - Type I".

There shall be a minimum 2 foot clearance between existing fire hydrants and sidewalk installed. This can be achieved by either moving the sidewalk in that area or by decreasing the sidewalk width a maximum of 1 foot to accommodate the required clearance.

Sidewalk as noted will be thickened to 5 inches and paid for as "Sidewalk Concrete 5In Reinf".

Any curb stops, gate valves, or manholes within the new sidewalk concrete limits shall be set flush with the top of the new sidewalk. Adjustable tops and housing for the curb stops will be furnished by the City Water Department (701-570-9400) and installed by the contractor. All costs required to install the adjustable curb stops or gate valves to grade shall be included in the price bid for "Sidewalk Concrete 4In". All costs required to adjust utility appurtenances to grade shall be included in the price bid for "Adjust Utility Appurtenance".

Sidewalk control joints shall be at 5 feet off center.

This document was originally
issued and sealed by
Antonio Conti
Registration Number
PE- 7641
on 12/23/2014 and the original
document is stored at the
North Dakota Department
of Transportation

REV'D.			
General Notes			
Transportation Alternatives Program Crosby, North Dakota			
DRWN. BY T. Tharaldson	CHKD BY A. Conti	PROJECT NO. P00512-2014-005	DATE 12/23/2014
<small>File: L:\City of Crosby\00512-2014-005 Crosby TAP 2015040 Final Design\Drawings\01-Civil\Sheet6 Gen Notes & Environ Comments.dwg</small>			
<small>AE2S • 1115 16th St SW Ste 2 Minot, ND 58701 • (t) 701-852-4048 (f) 701-852-4054</small>			

ENVIRONMENTAL COMMITMENTS

STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	6	3

The City of Crosby, the North Dakota Department of Transportation, and the Federal Highway Administration have made several environmental commitments to various agencies and the public to secure approval of this project. The environmental commitments are as follows:

Commitment No. 1: All disturbed vegetation will be replaced to match existing vegetation to the extent possible.

Action taken/required: The contractor will seed disturbed areas as needed.

Commitment No. 2: Noise levels created during construction will be minimized per Crosby city ordinances.

Action taken/required: When and where excess noise levels are anticipated to be a problem, the contractor shall take measures to reduce noise impacts. Regulating the hours of construction and equipping machinery with noise reduction devices can control construction noise. Staging areas shall be located as far from noise sensitive areas as practicable.

Commitment No. 3: Unavoidable impacts to wetlands will be mitigated onsite, adjacent to the project, or at a NDDOT approved mitigation site or bank. No wetlands will be impacted permanently, and 0.00 acres will be impacted temporarily.

Action take/required: 0.00 acres of permanent impacts to wetlands will require mitigation.

Wetland Number	Cowardin Classification	Wetland Type	Wetland Size (Acres)	Wetland Feature	USACE Jurisdictional Wetlands	Impacts to Wetlands	
						Temp.	Perm.
NO WETLANDS PRESENT							
TOTALS:			0.00			0.00	0.00

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

This document was originally issued and sealed by Antonio Conti
Registration Number PE- 7641
on 12/23/2014 and the original document is stored at the North Dakota Department of Transportation

REVD.			
Environmental Commitments			
Transportation Alternatives Program Crosby, North Dakota			
DRWN. BY T. Tharaldson	CHKD BY A. Conti	PROJECT NO. P00512-2014-005	DATE 12/23/2014
File: L:\City of Crosby\P00512-2014-005 Crosby TAP 2015\040 Final Design\Drawings\01-Civil\Sheet\6 Gen Notes & Environ Comments.dwg			
AE2S • 1115 16th St SW Ste 2 Minot, ND 58701 • (t) 701-852-4048 (f) 701-852-4054			

STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	8	1

SUMMARY OF QUANTITIES

SPEC	CODE	ITEM DESCRIPTION	UNIT	TOTAL
103	100	CONTRACT BOND	LS	1
202	142	REMOVE ASPHALT	CY	1
203	126	REMOVE AND SALVAGE TOPSOIL	SY	5650
203	140	BORROW EXCAVATION	CY	2025
253	200	HYDRAULIC MULCH	SY	5400
255	104	ECB TYPE 4	SY	100
261	112	FIBER ROLLS 12IN	LF	6170
261	113	REMOVE FIBER ROLLS 12IN	LF	3085
302	120	AGGREGATE BASE COURSE CL 5	TON	370
702	100	MOBILIZATION	LS	1
704	100	FLAGGING	MHR	100
704	1000	TRAFFIC CONTROL SIGNS	UNIT	756
704	1052	TYPE III BARRICADE	EA	6
704	1060	DELINEATOR DRUM	EA	10
704	1067	TUBULAR MARKER	EA	50
714	4090	PIPE CONDUIT 12IN	LF	61
714	4105	PIPE CONDUIT 24IN	LF	30
722	6240	ADJUST UTILITY APPURTENANCE	EA	1
750	115	SIDEWALK CONCRETE 4IN	SY	257
750	120	SIDEWALK CONCRETE 5IN REINF	SY	1584
750	2115	DETECTABLE WARNING PANELS	SF	20

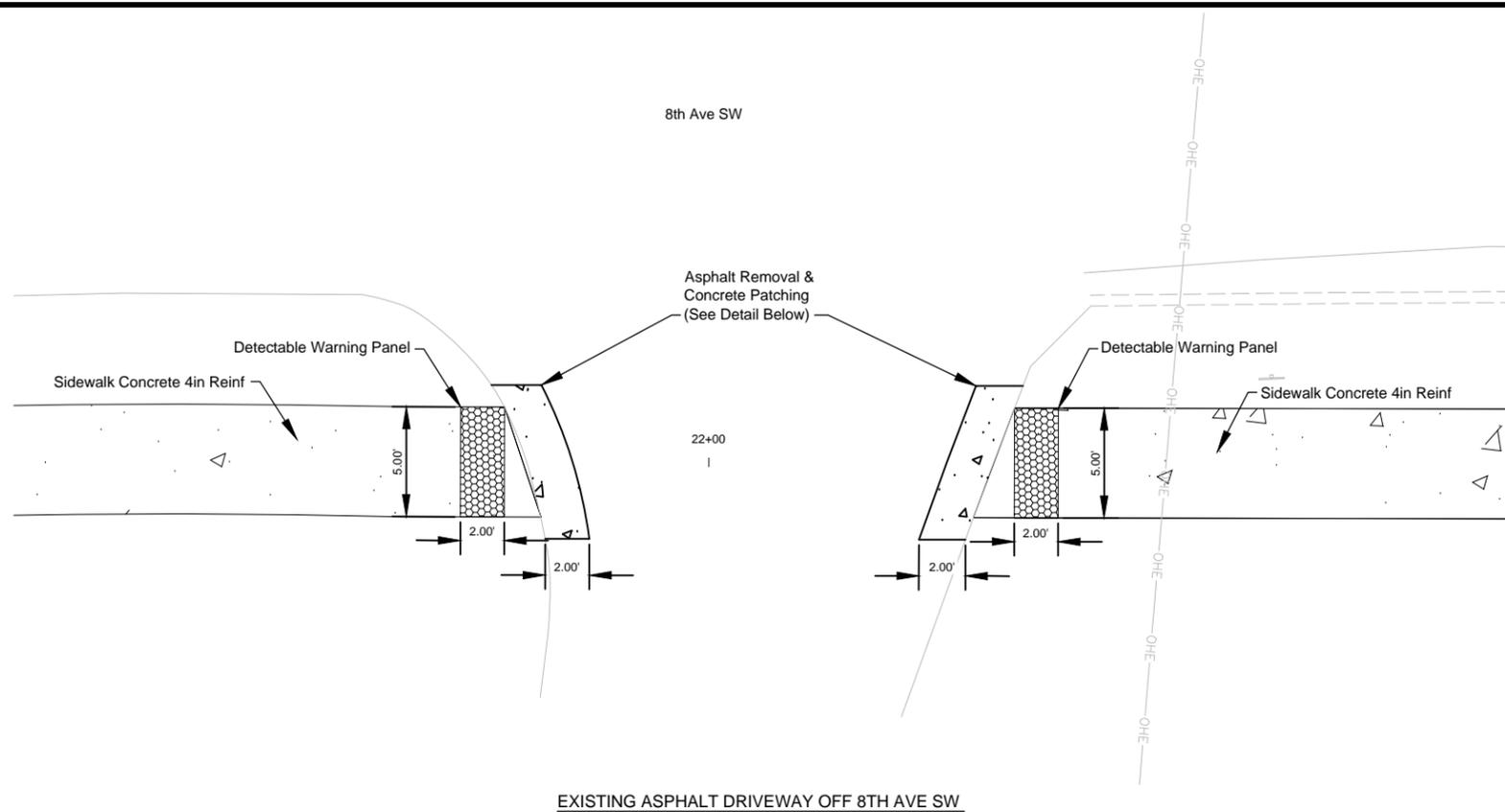
BASIS OF ESTIMATE

AGGREGATE BASE COURSE CL 5	1.8 TON / CY
HYDRAULIC MULCH	3 foot width both sides of new sidewalk plus borrow excavation extending past 3 foot width

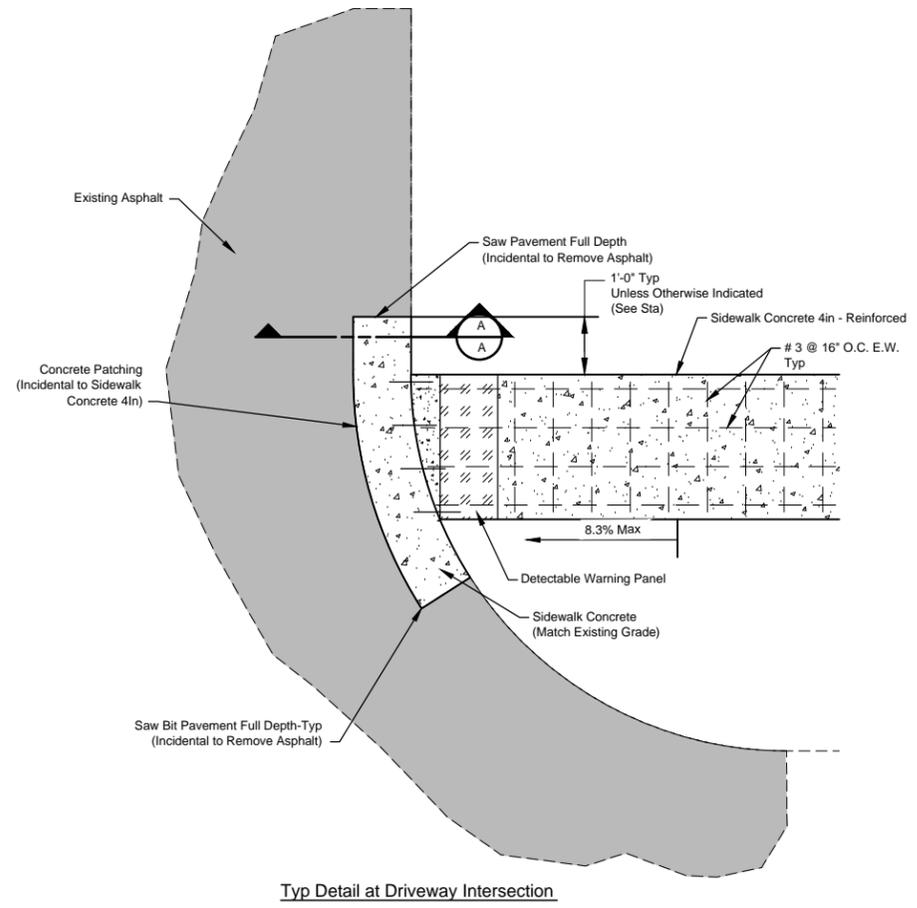
This document was originally issued and sealed by Antonio Conti
Registration Number PE- 7641
on 12/23/2014 and the original document is stored at the North Dakota Department of Transportation

REVD.			
Summary of Quantities & Basis of Estimate			
Transportation Alternatives Program Crosby, North Dakota			
DRWN. BY T. Tharaldson	CHKD BY A. Conti	PROJECT NO. P00512-2014-005	DATE 12/23/2014

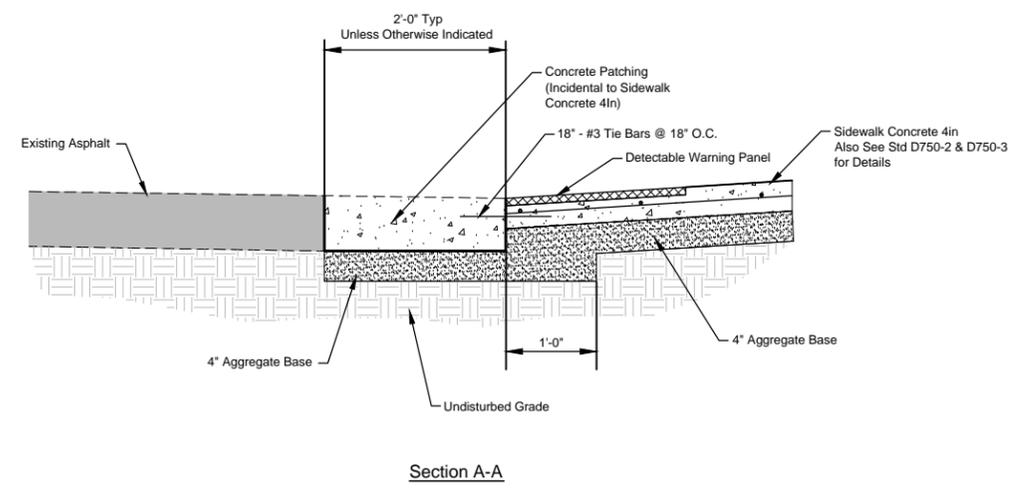
STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	20	1



EXISTING ASPHALT DRIVEWAY OFF 8TH AVE SW



Typ Detail at Driveway Intersection



Section A-A

This document was originally issued and sealed by Antonio Conti Registration Number PE- 7641 on 12/23/2014 and the original document is stored at the North Dakota Department of Transportation

REV'D.			
Details			
Transportation Alternatives Program Crosby, North Dakota			
DRWN. BY T. Tharaldson	CHK'D BY A. Conti	PROJECT NO. P00512-2014-005	DATE 12/23/2014

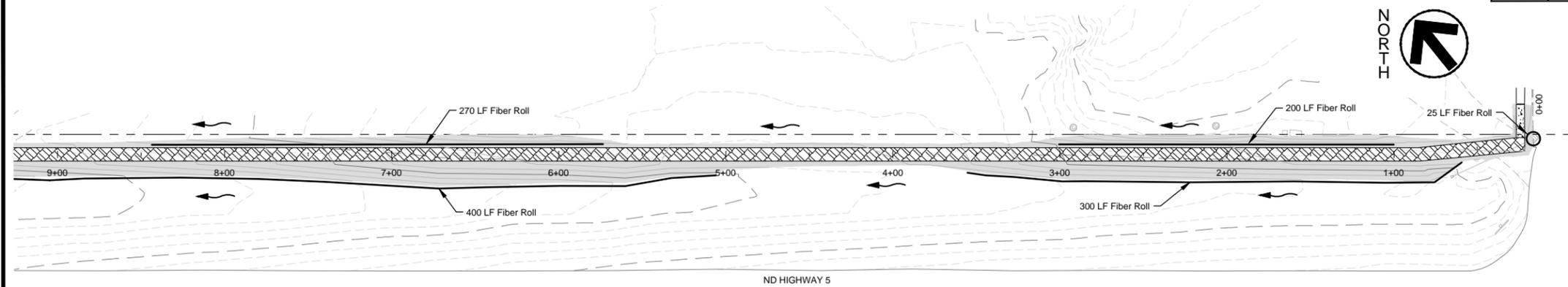
STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	51	1

Begin Station / Location	Begin Offset	End Station / Location	End Offset	Length (LF)	Pipe Conduit Pay Size (IN)	Allowable Material	Required Diameter (IN)	Minimum Thickness (IN)	R1 Fabric (Pay Item) (SY)	End Sections (A) (B)		Applicable Backfill Detail
										Begin	End	
11+81.07	11.91' Right	11+91.40	13.03' Left	27	12	Polymeric Coated Steel (over zinc or aluminum coated steel)	12	0.0640	No	Y	Y	D-714-28
						Reinforced Concrete Pipe - Class III						
15+68.14	14.90' Right	15+68.14	15.10' Left	30	24	Polymeric Coated Steel (over zinc or aluminum coated steel)	24	0.0640	No	Y	Y	D-714-28
						Reinforced Concrete Pipe - Class III						
17+45.63	15.89' Right	17+45.63	18.11' Left	34	12	Polymeric Coated Steel (over zinc or aluminum coated steel)	12	0.0640	No	Y	Y	D-714-28
						Reinforced Concrete Pipe - Class III						

This document was originally issued and sealed by Antonio Conti Registration Number PE- 7641 on 12/23/2014 and the original document is stored at the North Dakota Department of Transportation

REV'D.			
Allowable Pipe List			
Transportation Alternatives Program Crosby, North Dakota			
DRWN. BY T. Tharaldson	CHK'D BY A. Conti	PROJECT NO. P00512-2014-005	DATE 12/23/2014
<small>File: L:\City of Crosby\P00512-2014-005 Crosby TAP 2015\040 Final Design\Drawings\01-Civil\Sheet51 Pipe List.dwg</small>			
<small>AE2S • 1115 16th St SW Ste 2 Minot, ND 58701 • (t) 701-852-4048 (f) 701-852-4054</small>			

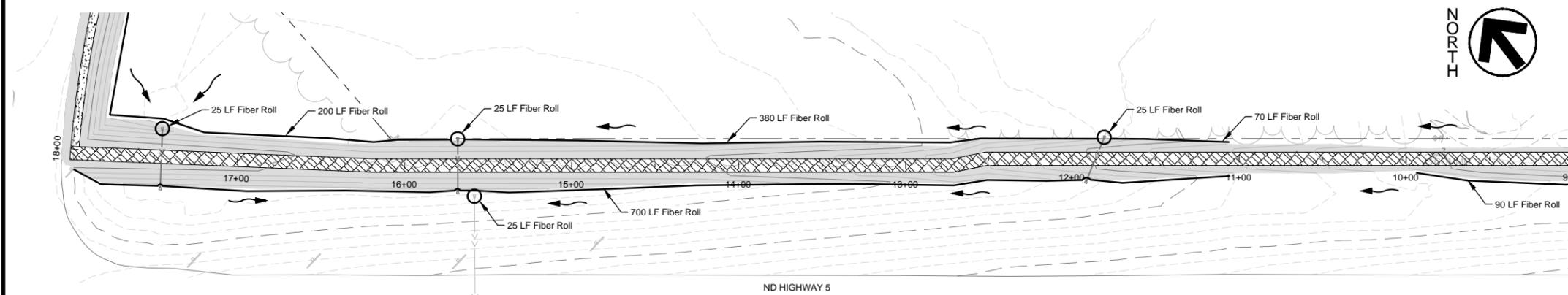
STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	76	1



ND HIGHWAY 5 STA 0+00 TO STA 9+00

12IN FIBER ROLL

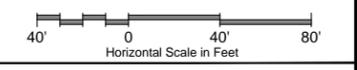
ND HIGHWAY 5 STA 0+00 TO STA 9+00	1195 LF
ND HIGHWAY 5 STA 9+00 TO STA 18+00	1540 LF
8TH AVENUE SW STA 18+00 TO STA 22+60	350 LF



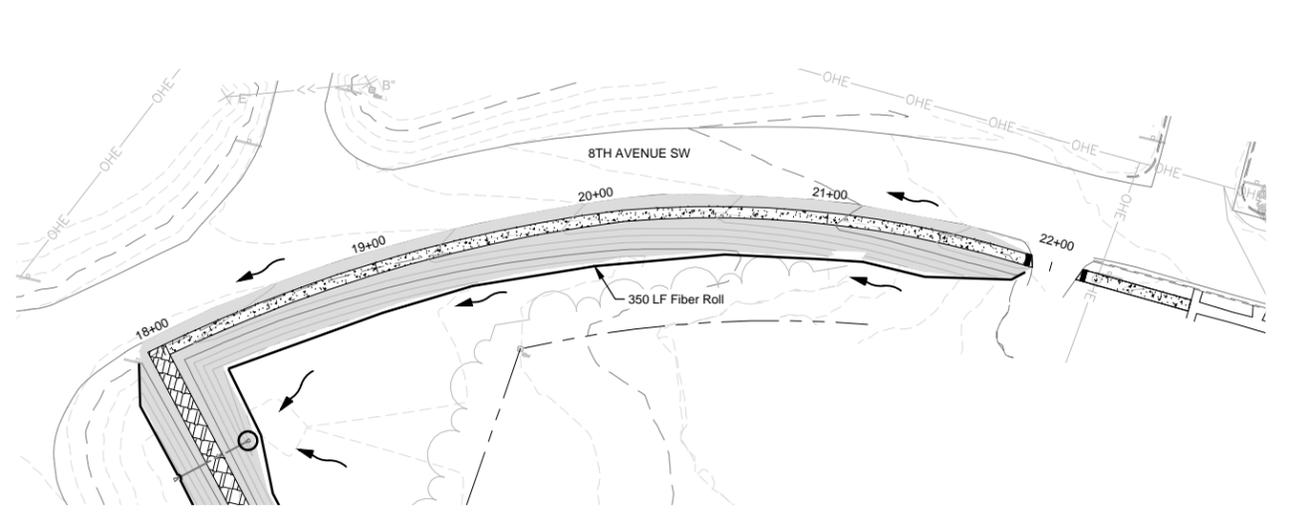
ND HIGHWAY 5 STA 9+00 TO STA 18+00

LEGEND

	SIDEWALK CONCRETE 4IN REINFORCED
	SIDEWALK CONCRETE 5IN REINFORCED
	GRADING
	FIBER ROLL
	FLOW LINE
	CULVERT
	FLARED END SECTION
	CURB INLET



This document was originally issued and sealed by Antonio Conti, Registration Number PE- 7641, on 12/23/2014 and the original document is stored at the North Dakota Department of Transportation.



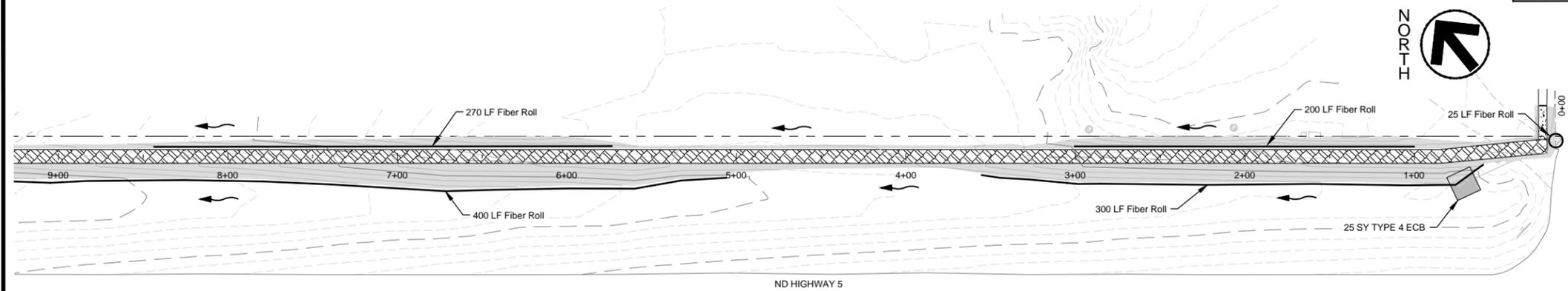
8TH AVENUE SW STA 18+00 TO STA 22+60

REVD. Temporary Sediment and Erosion Control Layout

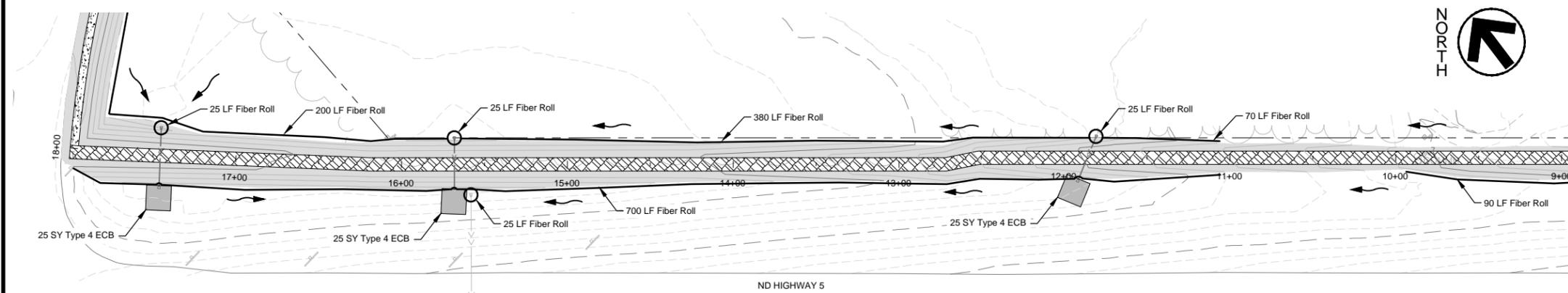
Transportation Alternatives Program Crosby, North Dakota

DRWN. BY T. Tharaldson	CHK'D BY A. Conti	PROJECT NO. P00512-2014-005	DATE 12/23/2014
---------------------------	----------------------	--------------------------------	--------------------

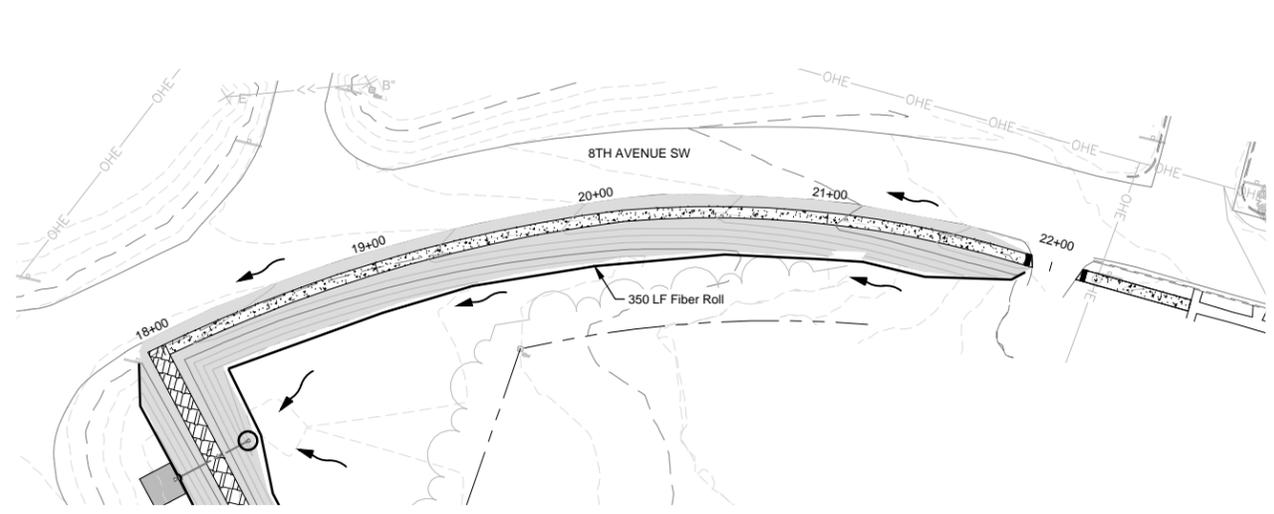
STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	77	1



ND HIGHWAY 5 STA 0+00 TO STA 9+00



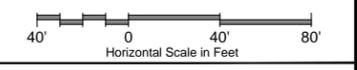
ND HIGHWAY 5 STA 9+00 TO STA 18+00



8TH AVENUE SW STA 18+00 TO STA 22+60

TYPE 4 ECB	
ND HIGHWAY 5 STA 0+00 TO STA 9+00	25 SY
ND HIGHWAY 5 STA 9+00 TO STA 18+00	75 SY
12IN FIBER ROLL	
ND HIGHWAY 5 STA 0+00 TO STA 9+00	1195 LF
ND HIGHWAY 5 STA 9+00 TO STA 18+00	1540 LF
8TH AVENUE SW STA 18+00 TO STA 22+60	350 LF

LEGEND	
	SIDEWALK CONCRETE 4IN REINFORCED
	SIDEWALK CONCRETE 5IN REINFORCED
	GRADING
	TYPE 4 EROSION CONTROL BLANKET
	FIBER ROLL
	FLOW LINE
	CULVERT
	FLARED END SECTION
	CURB INLET

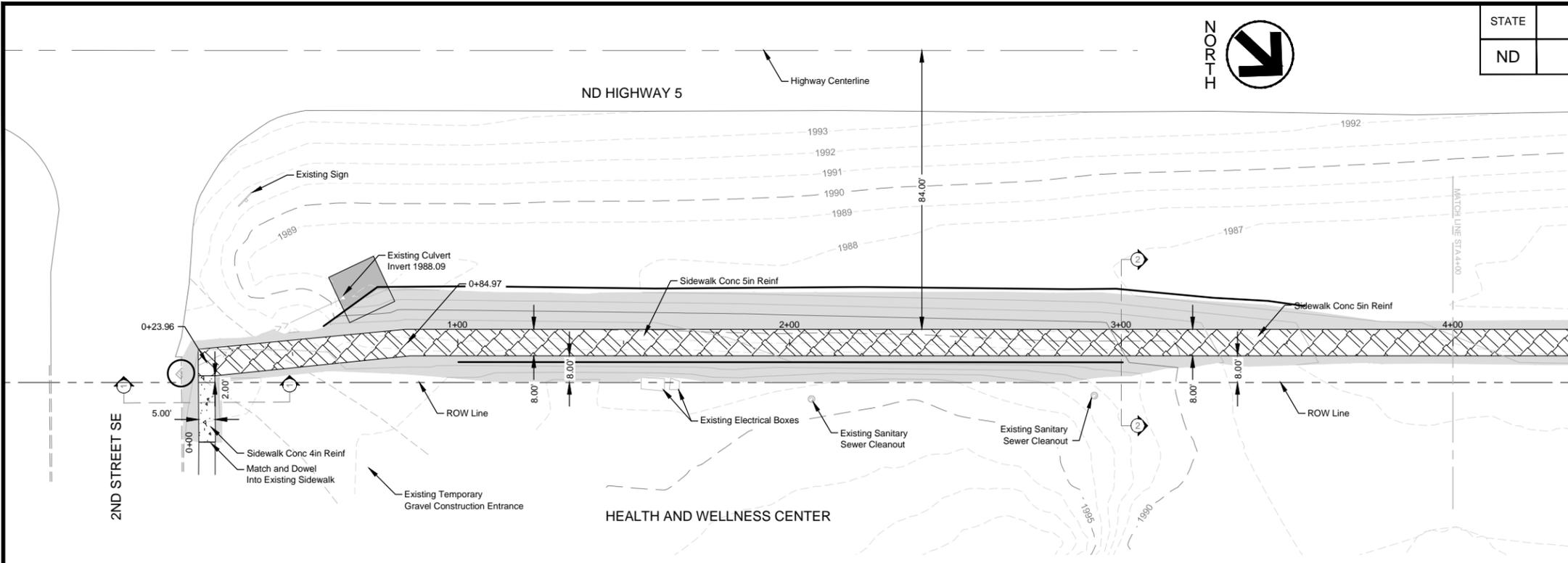


This document was originally issued and sealed by Antonio Conti, Registration Number PE- 7641, on 12/23/2014 and the original document is stored at the North Dakota Department of Transportation.

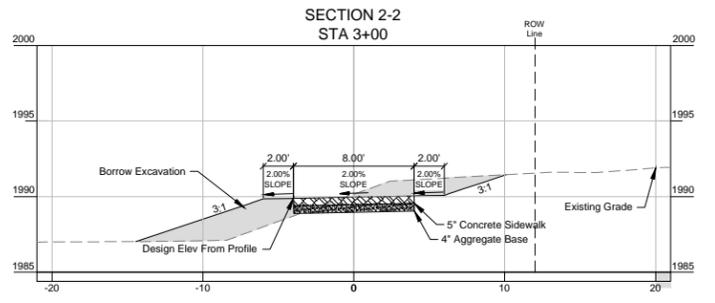
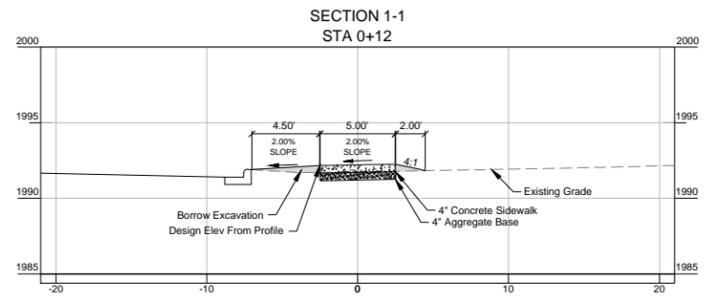
REV'D.	Permanent Sediment and Erosion Control Layout		
--------	---	--	--

Transportation Alternatives Program Crosby, North Dakota			
DRWN. BY T. Tharaldson	CHK'D BY A. Conti	PROJECT NO. P00512-2014-005	DATE 12/23/2014

STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	80	1



BORROW EXCAVATION	
STA 0+00 to 4+00	400 CY
SIDEWALK CONCRETE 4IN	
STA 0+00 to 0+20	11 SY
SIDEWALK CONCRETE 5IN	
STA 0+20 to 4+00	338 SY



LEGEND

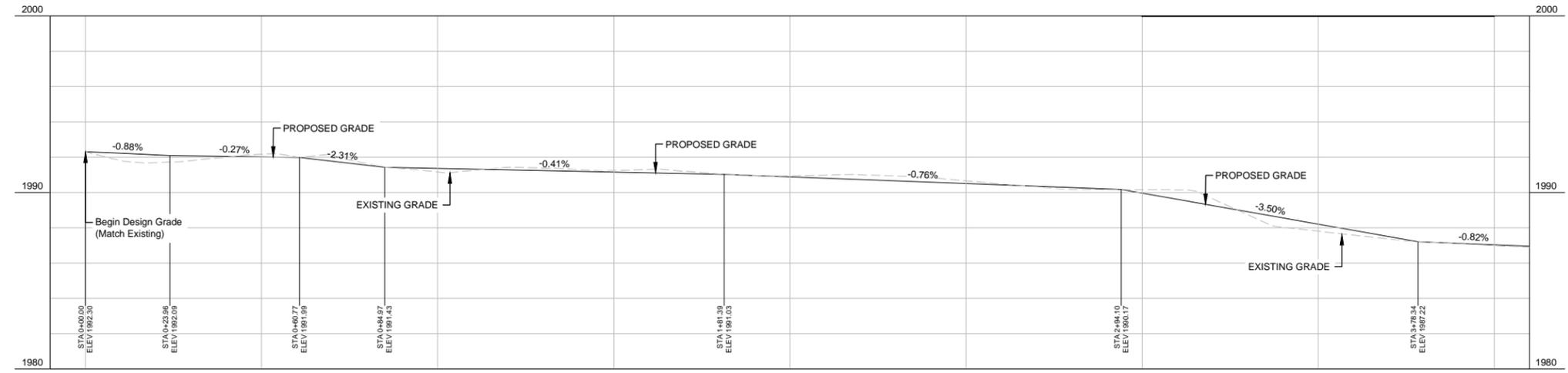
SIDEWALK CONCRETE 4IN REINFORCED

SIDEWALK CONCRETE 5IN REINFORCED

Horizontal Scale in Feet: 0, 20, 40

Vertical Scale in Feet: 0, 4, 8

This document was originally issued and sealed by
 Antonio Conti
 Registration Number
 PE- 7641
 on 12/23/2014 and the original document is stored at the
 North Dakota Department
 of Transportation



EG	1992.30	1991.16	1990.94	1990.16	1987.00
FG	1992.30	1991.37	1990.89	1989.96	1987.04
	0+00	1+00	2+00	3+00	4+00

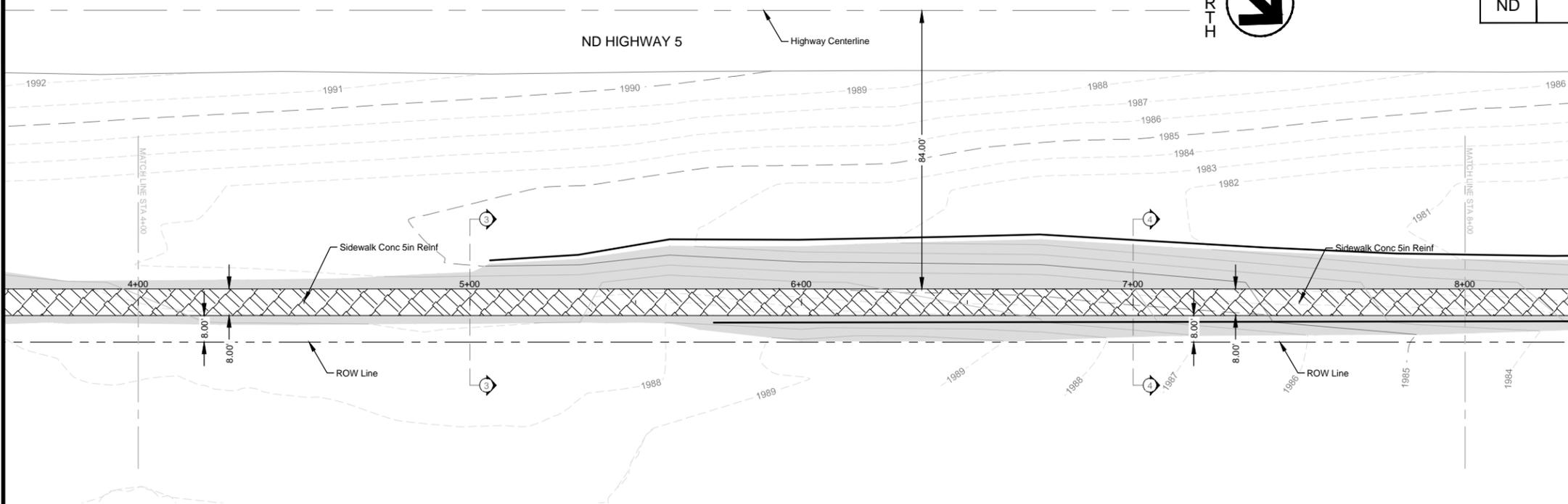
REV'D.

Sidewalk Layout
 ND Highway 5 from Sta 0+00 to Sta 4+00

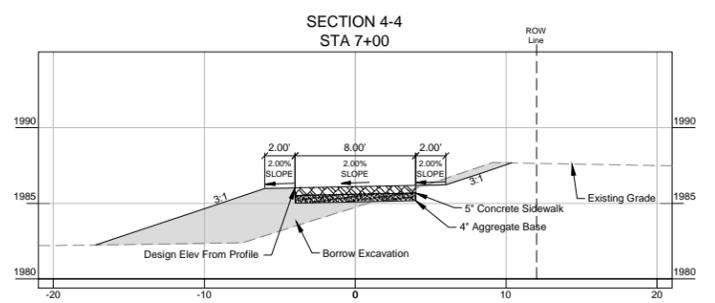
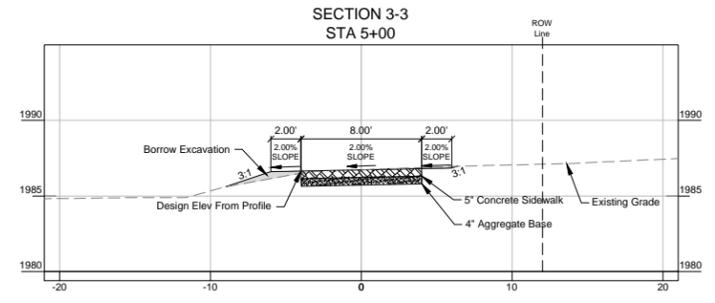
Transportation Alternatives Program
 Crosby, North Dakota

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
T. Tharaldson	A. Conti	P00512-2014-005	12/23/2014

STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	80	2



BORROW EXCAVATION	
STA 4+00 to 8+00	250 CY
SIDEWALK CONCRETE 5IN	
STA 4+00 to 8+00	356 SY

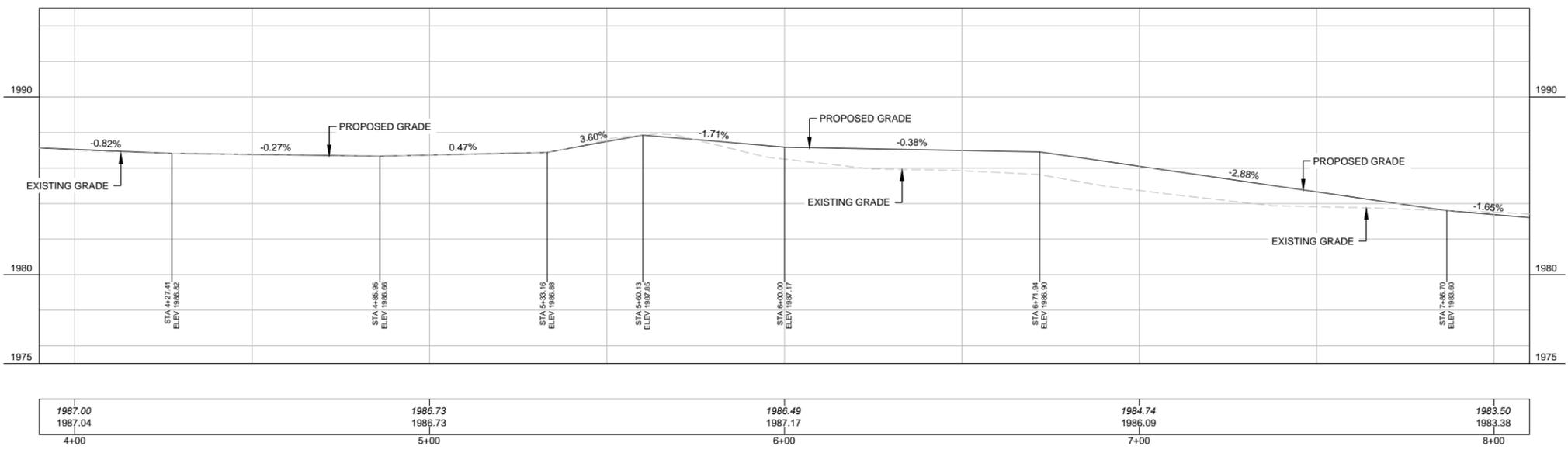


LEGEND

SIDEWALK CONCRETE 5IN REINFORCED

Horizontal Scale in Feet: 20' 0 20' 40'

Vertical Scale in Feet: 4' 0 4' 8'



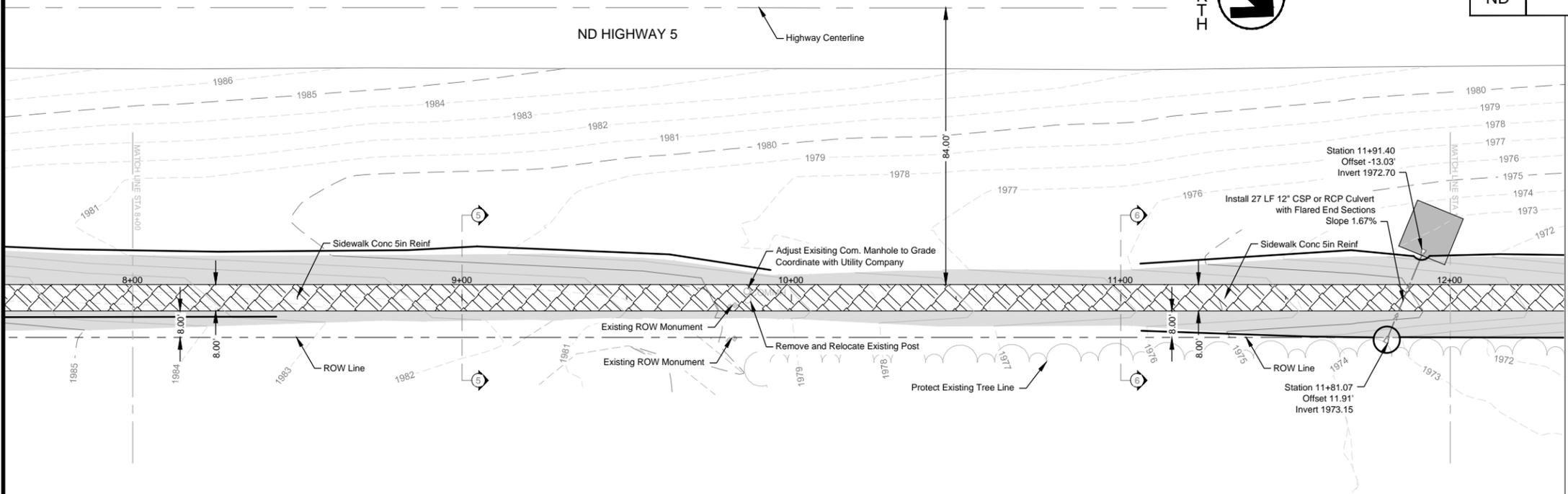
This document was originally issued and sealed by Antonio Conti Registration Number PE- 7641 on 12/23/2014 and the original document is stored at the North Dakota Department of Transportation

REV'D.	Sidewalk Layout ND Highway 5 from Sta 4+00 to Sta 8+00		
--------	---	--	--

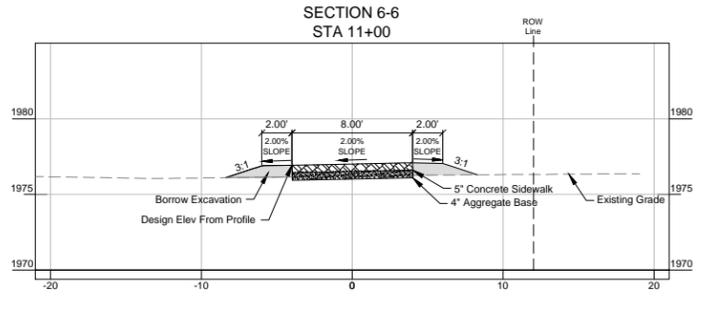
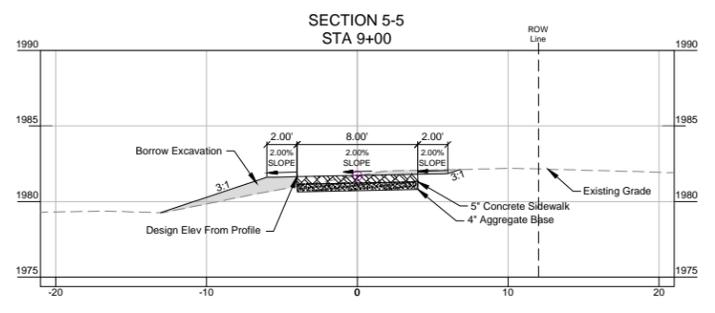
Transportation Alternatives Program Crosby, North Dakota			
DRWN. BY T. Tharaldson	CHK'D BY A. Conti	PROJECT NO. P00512-2014-005	DATE 12/23/2014



STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	80	3



BORROW EXCAVATION	
STA 8+00 to 12+00	225 CY
SIDEWALK CONCRETE 5IN	
STA 8+00 to 12+00	356 SY
12" CSP OR RCP CULVERT WITH FLARED END SECTIONS	
STA 11+86	27 LF

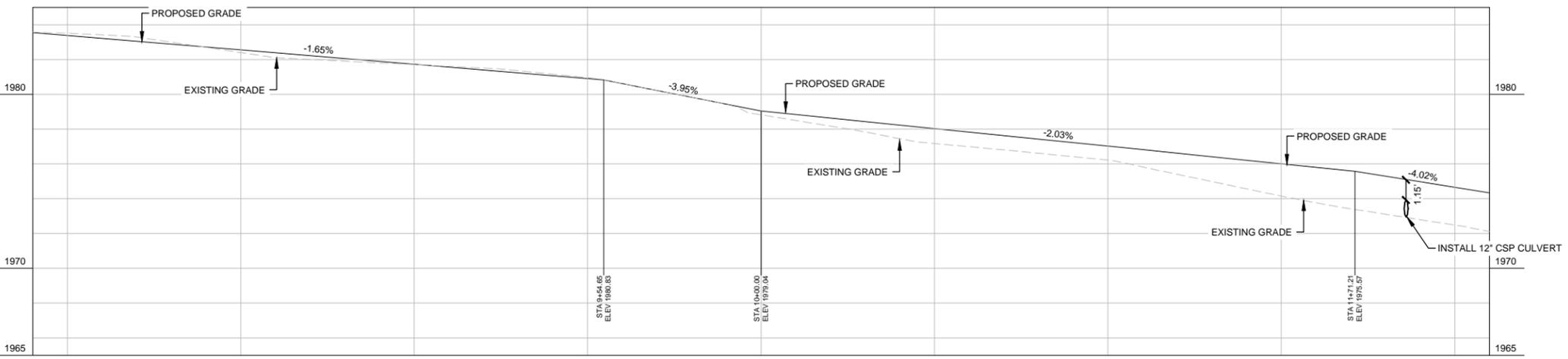


LEGEND

SIDEWALK CONCRETE 5IN REINFORCED

20' 0 20' 40'
Horizontal Scale in Feet

4' 0 4' 8'
Vertical Scale in Feet



EG	1983.50	1981.70	1978.82	1976.22	1972.48
FG	1983.38	1981.73	1979.04	1976.19	1974.65
	8+00	9+00	10+00	11+00	12+00

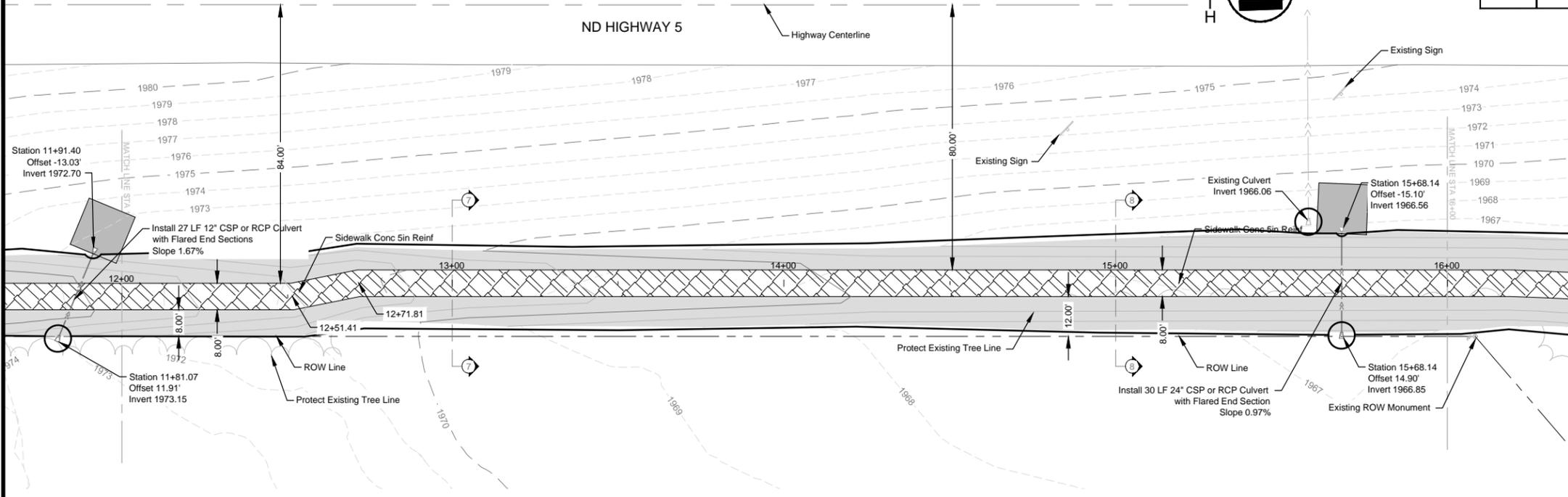
This document was originally issued and sealed by
 Antonio Conti
 Registration Number
 PE- 7641
 on 12/23/2014 and the original document is stored at the
 North Dakota Department
 of Transportation

REV'D.

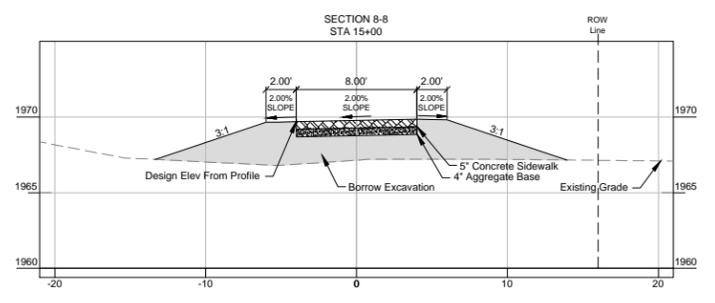
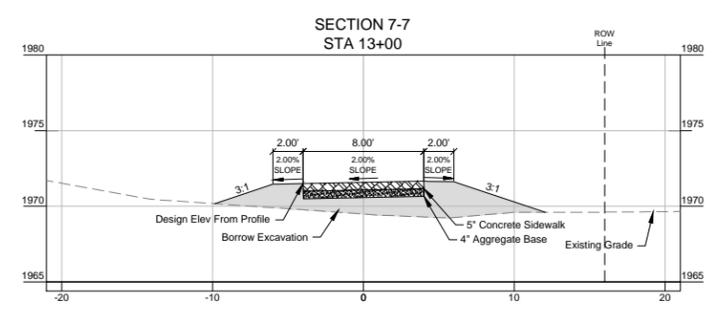
Sidewalk Layout
 ND Highway 5 from Sta 8+00 to Sta 12+00

Transportation Alternatives Program Crosby, North Dakota			
DRWN. BY	CHK'D BY	PROJECT NO.	DATE
T. Tharaldson	A. Conti	P00512-2014-005	12/23/2014

STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	80	4



BORROW EXCAVATION	500 CY
STA 12+00 to 16+00	
SIDEWALK CONCRETE 5IN	356 SY
STA 12+00 to 16+00	
24" CSP OR RCP CULVERT WITH FLARED END SECTIONS	30 LF
STA 15+68.14	



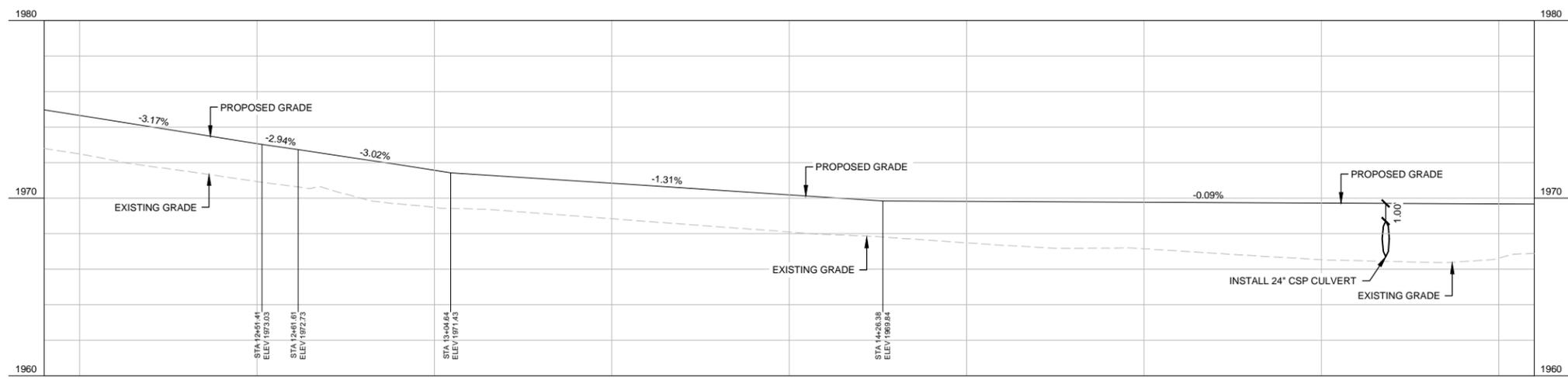
LEGEND

SIDEWALK CONCRETE 5IN REINFORCED

Horizontal Scale in Feet: 0, 20, 40

Vertical Scale in Feet: 0, 4, 8

This document was originally issued and sealed by Antonio Conti, Registration Number PE- 7641, on 12/23/2014 and the original document is stored at the North Dakota Department of Transportation.



EG	1972.48	1969.48	1968.10	1967.15	1966.63
FG	1974.65	1971.57	1970.18	1969.77	1969.68
	12+00	13+00	14+00	15+00	16+00

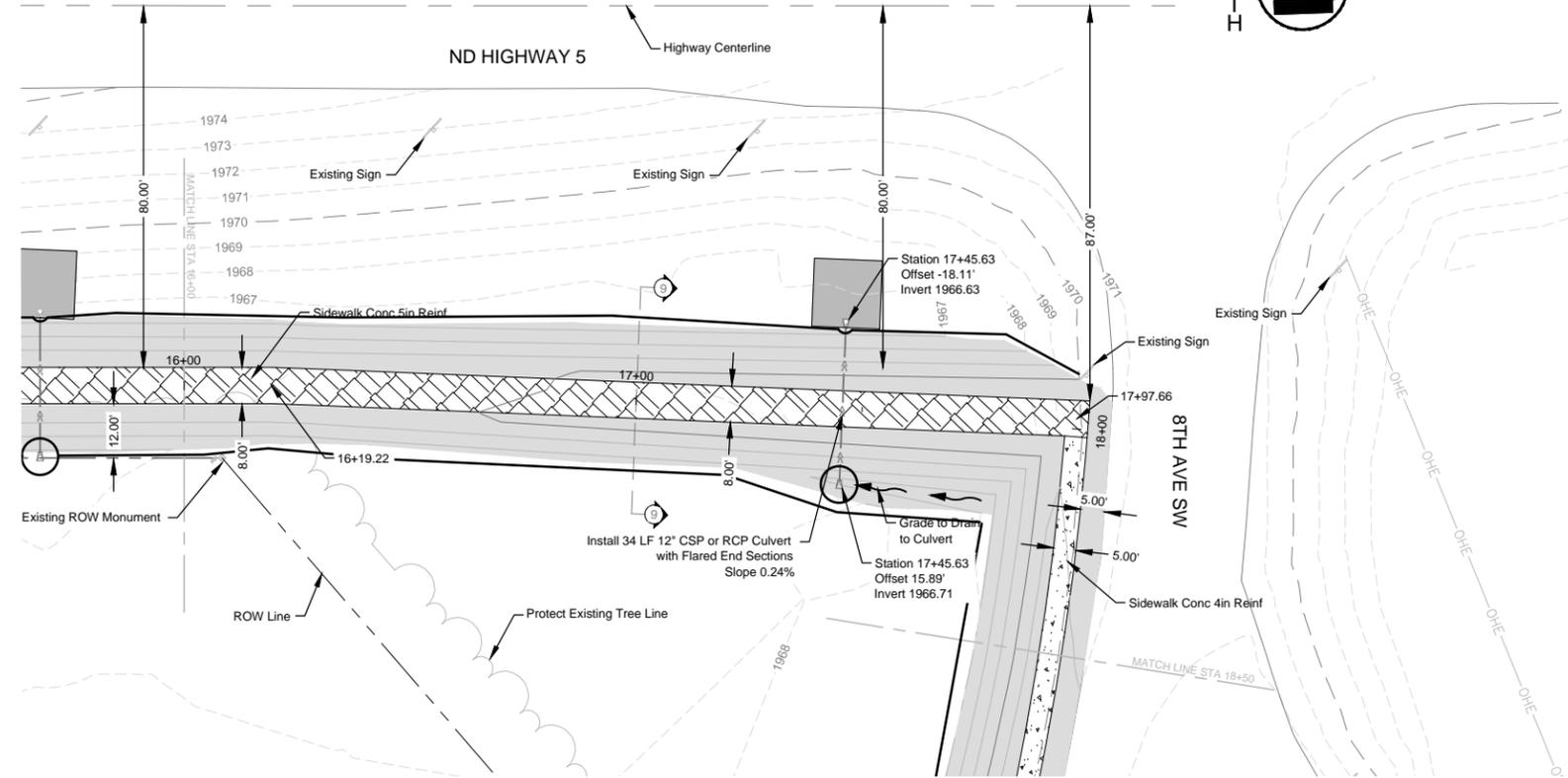
REV'D.

Sidewalk Layout
ND Highway 5 from Sta 12+00 to Sta 16+00

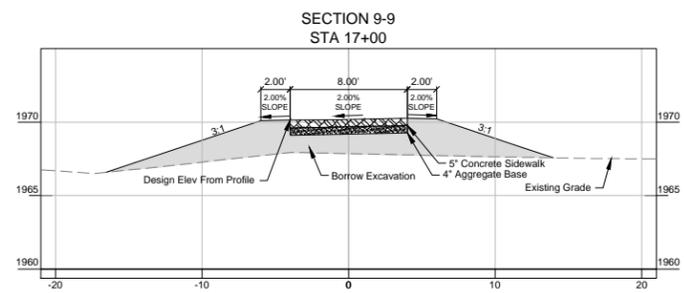
Transportation Alternatives Program
Crosby, North Dakota

DRWN. BY T. Tharaldson	CHK'D BY A. Conti	PROJECT NO. P00512-2014-005	DATE 12/23/2014
---------------------------	----------------------	--------------------------------	--------------------

STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	80	5



BORROW EXCAVATION	
STA 0+00 to 4+00	350 CY
SIDEWALK CONCRETE 5IN	
STA 16+00 to 18+02	178 SY
SIDEWALK CONCRETE 4IN	
STA 18+02 to 18+50	27 SY
12" CSP OR RCP CULVERT WITH FLARED END SECTIONS	
STA 17+45.63	34 LF



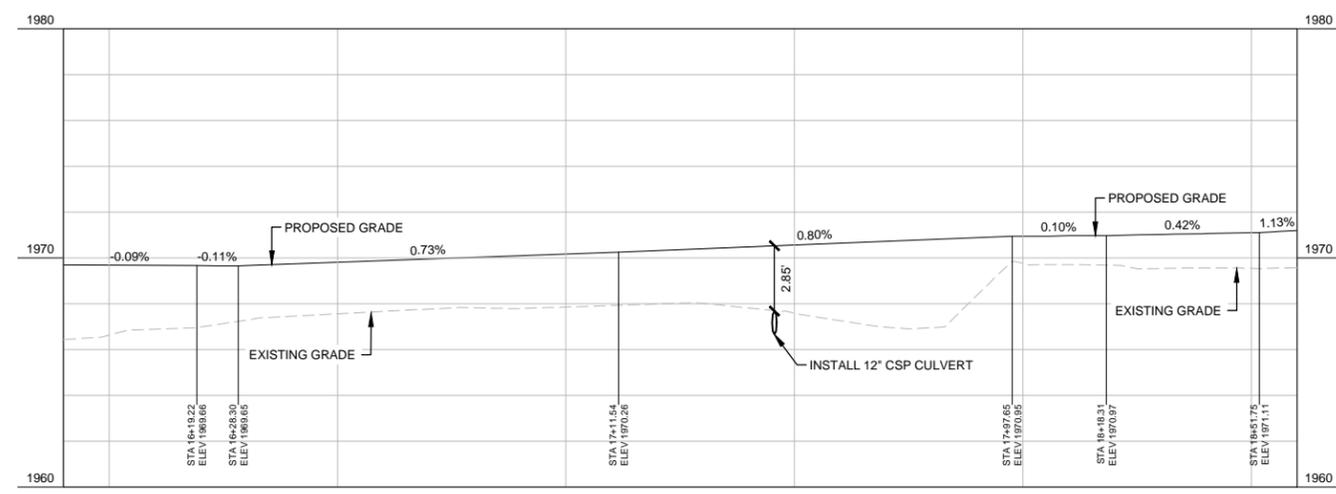
LEGEND

- SIDEWALK CONCRETE 4IN REINFORCED
- SIDEWALK CONCRETE 5IN REINFORCED

Horizontal Scale in Feet: 0, 20, 40

Vertical Scale in Feet: 0, 4, 8

This document was originally issued and sealed by
 Antonio Conti
 Registration Number
 PE- 7641
 on 12/23/2014 and the original document is stored at the
 North Dakota Department
 of Transportation



EG	1966.63	1967.85	1969.76
FG	1969.68	1970.18	1970.95
	16+00	17+00	18+00

REV'D.

**Sidewalk Layout
 ND Highway 5 from Sta 16+00 to Sta 18+50**

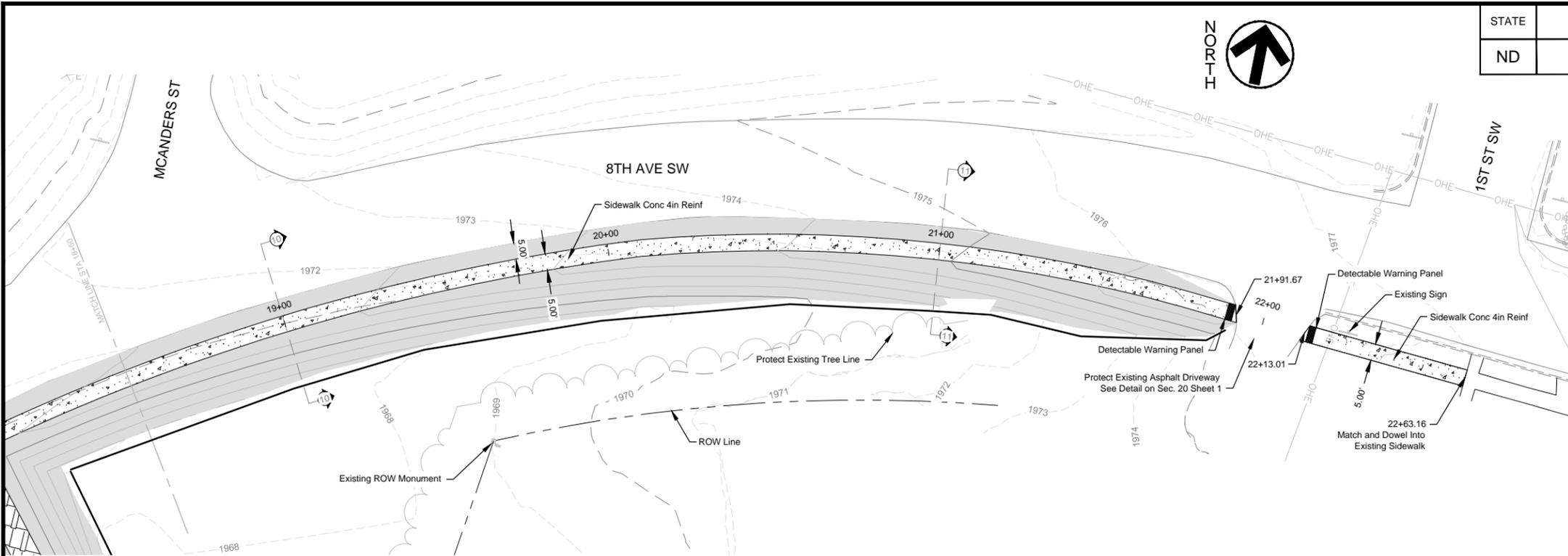
**Transportation Alternatives Program
 Crosby, North Dakota**

DRWN. BY T. Tharaldson	CHK'D BY A. Conti	PROJECT NO. P00512-2014-005	DATE 12/23/2014
---------------------------	----------------------	--------------------------------	--------------------

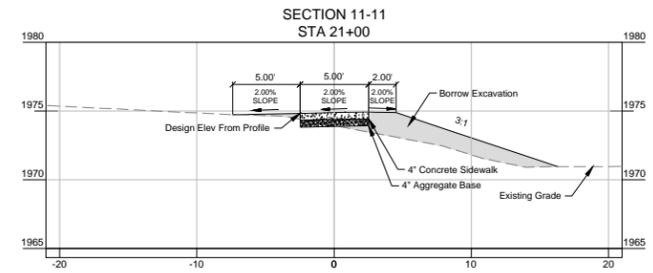
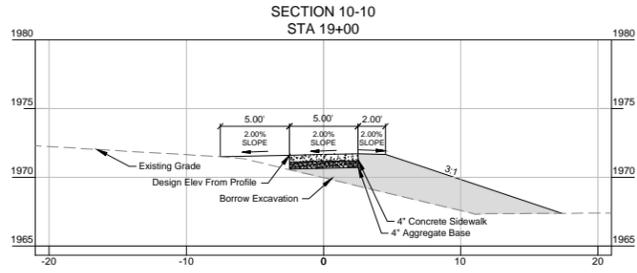
File: L:\City of Crosby\P00512-2014-005 Crosby TAP 2015040 Final Design\Drawings\01-Civil\Sheet80 Project (2) - Copy.dwg

AE2S • 1115 16th St SW Ste 2 Minot, ND 58701 • (t) 701-852-4048 (f) 701-852-4054

STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	80	6



BORROW EXCAVATION	
STA 0+00 to 4+00	300 CY
SIDEWALK CONCRETE 4IN	
STA 18+50 to 21+91.67	191 SY
STA 22+13.01 to 22+63.16	28 SY
DETECTABLE WARNING PANELS	
STA 21+89 to 21+91	10 SF
STA 22+14 to 22+16	10 SF



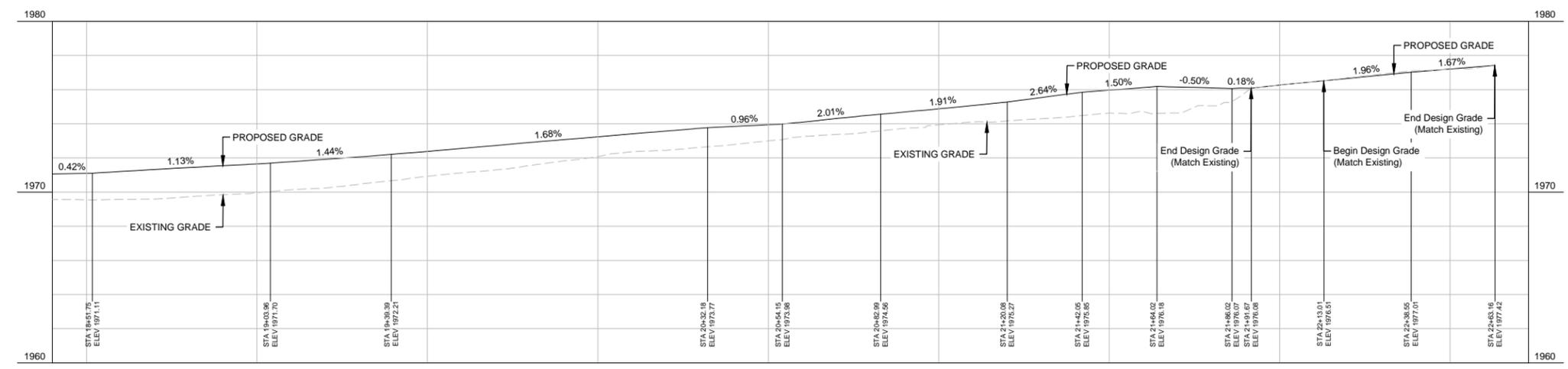
LEGEND

SIDEWALK CONCRETE 4IN REINFORCED

20' 0 20' 40'
Horizontal Scale in Feet

4' 0 4' 8'
Vertical Scale in Feet

This document was originally issued and sealed by
 Antonio Conti
 Registration Number
 PE- 7641
 on 12/23/2014 and the original document is stored at the
 North Dakota Department
 of Transportation



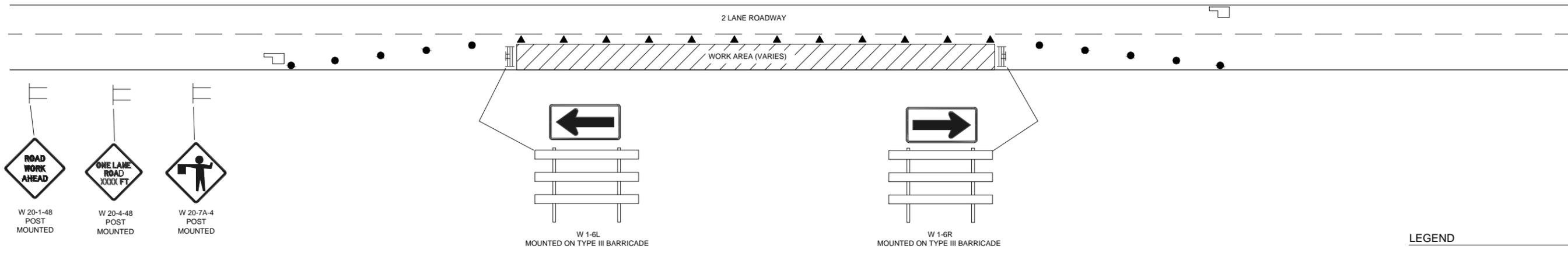
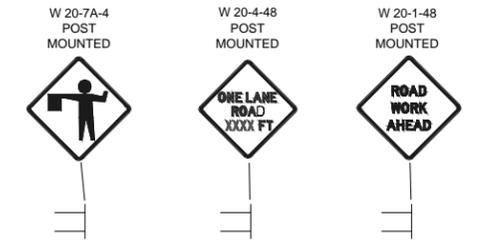
EG	1969.96	1972.08	1973.94	1976.26
FG	1971.65	1973.24	1974.88	
	19+00	20+00	21+00	22+00

REV'D.

Sidewalk Layout
 8th Avenue SW from Sta 18+50 to Sta 22+63

Transportation Alternatives Program Crosby, North Dakota			
DRWN. BY T. Tharaldson	CHK'D BY A. Conti	PROJECT NO. P00512-2014-005	DATE 12/23/2014

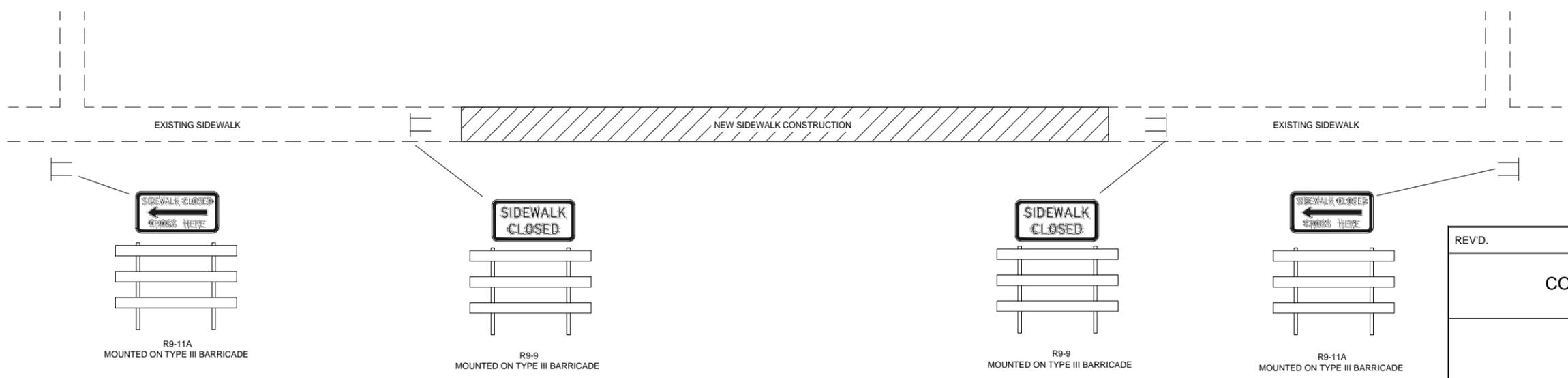
STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-7-005(022)034	20768	100	2



LEGEND

- DELINEATOR DRUMS (10 EACH)
- ▲ TUBULAR MARKERS (50 EACH)
- FLAGGER (2 EACH)
- ▤ TYPE III BARRICADE (2 EACH)

This document was originally issued and sealed by Antonio Conti Registration Number PE- 7641 on 12/23/2014 and the original document is stored at the North Dakota Department of Transportation



REV'D.			
CONSTRUCTION SIGN LAYOUT			
Transportation Alternatives Program Crosby, North Dakota			
DRWN. BY T. Tharaldson	CHK'D BY A. Conti	PROJECT NO. P00512-2014-005	DATE 12/23/2014

File: L:\City of Crosby\P00512-2014-005 Crosby TAP 2015040 Final Desgn\Drawings\01-Civil\Sheet\100 Construction Sign Layout.dwg

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 C centerline
 Cm centimeter
 Ch chain
 Chnlk chain-link
 Ch Blk channel block
 Ch Ch channel change
 Chk check
 Chsld chiseled
 Cir circle
 Cl class
 Cl clay
 Cl F clay fill
 Cl Hvy clay heavy
 Cl Lm clay loam
 Clnt clean-out
 Clr clear
 Cl&gr clearing & grubbing
 Co S coal slack
 Comb. combination
 Coml commercial
 Compr compression
 CADD computer aided drafting & design
 Conc concrete
 Cond conductor
 Const construction
 Cont continuous
 CSB continuous split barrel sample
 Contr contraction
 Contr contractor
 CP control point
 Coord coordinate
 Cor corner
 Corr corrected
 CAES corrugated aluminum end section
 CAP corrugated aluminum pipe
 CMES corrugated metal end section
 CMP corrugated metal pipe
 CPVCP corrugated poly-vinyl chloride pipe
 CSES corrugated steel end section
 CSP corrugated steel pipe
 C coulomb
 Co County
 Crse course
 C Gr course gravel
 CS course sand

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

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

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

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 07/01/14 and the original document is stored at the North Dakota Department of Transportation

NDDOT ABBREVIATIONS

D-101-2

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

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

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 07/01/14 and the original document is stored at the North Dakota Department of Transportation

NDDOT ABBREVIATIONS

D-101-3

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

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

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 07/01/14 and the original document is stored at the North Dakota Department of Transportation

NDDOT UTILITY COMPANY AND ORGANIZATION ABBREVIATIONS

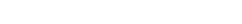
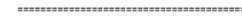
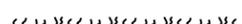
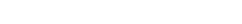
D-101-10

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

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

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 07/01/14 and the original document is stored at the North Dakota Department of Transportation

Line Styles

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

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

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 07/01/14 and the original document is stored at the North Dakota Department of Transportation

Symbols

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

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

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 07/01/14 and the original document is stored at the North Dakota Department of Transportation

Symbols

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

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

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 07/01/14 and the original document is stored at the North Dakota Department of Transportation

Symbols

D-101-32

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

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

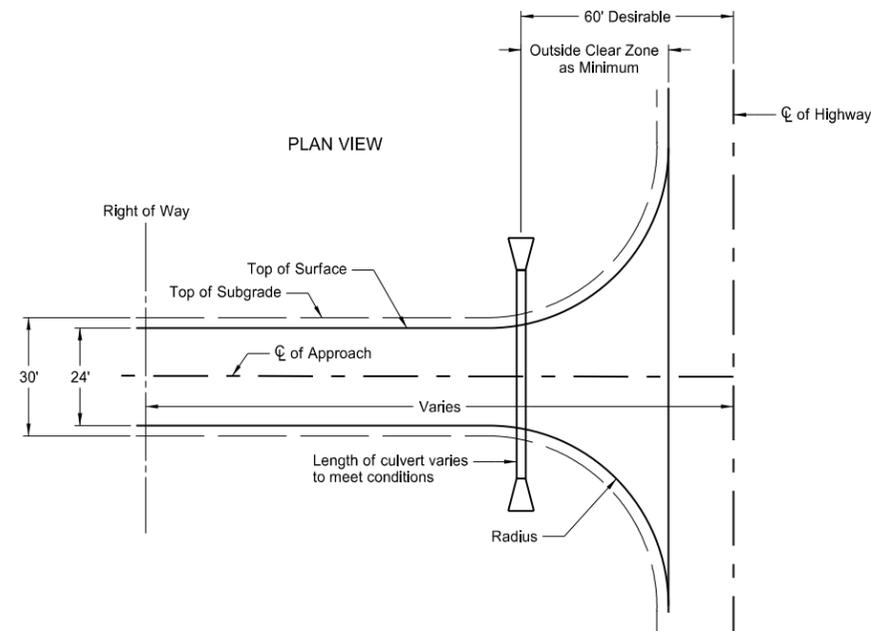
This document was originally issued and sealed by
Roger Weigel,
 Registration Number
PE-2930,
 on 07/01/14 and the original document is stored at the
 North Dakota Department
 of Transportation

STANDARD RURAL APPROACHES

D-203-8

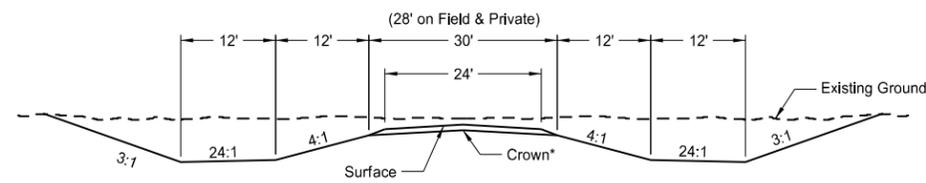
NOTES:

1. Max breakover between approach storage platform and highway shall not exceed 5%.
2. The approach slope shall be measured outside the area of mainline inslope influence.



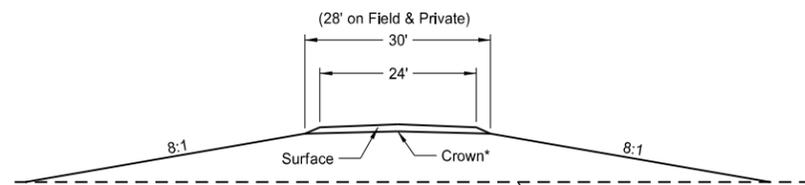
CRITERIA FOR RURAL APPROACH TYPES

	Field Drives	Private Drives	Low Volume Public Roads
Radius	R=24 ft	R=30 ft	R=40 ft
Maximum Grade	10%	7%	7%
Storage Platform	20 ft	24 ft	30 ft
Vertical Curve Length	10 ft	10 ft	Varies (Min. 20 mph)

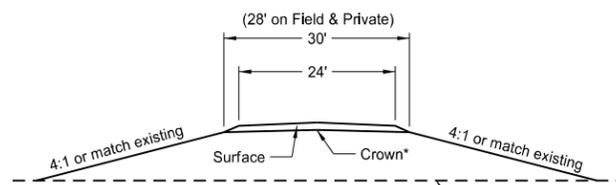


SECTION A-A

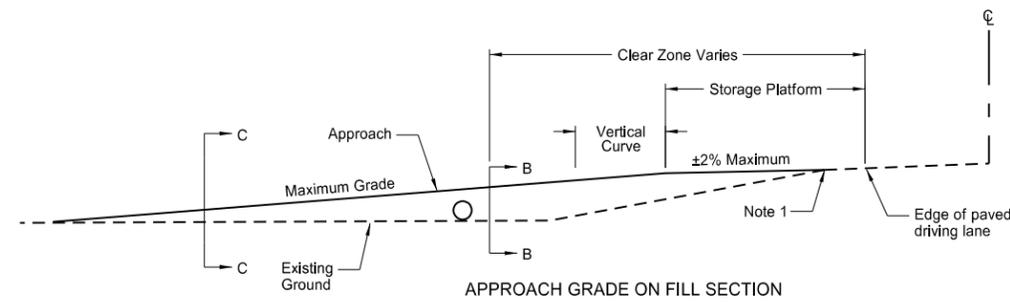
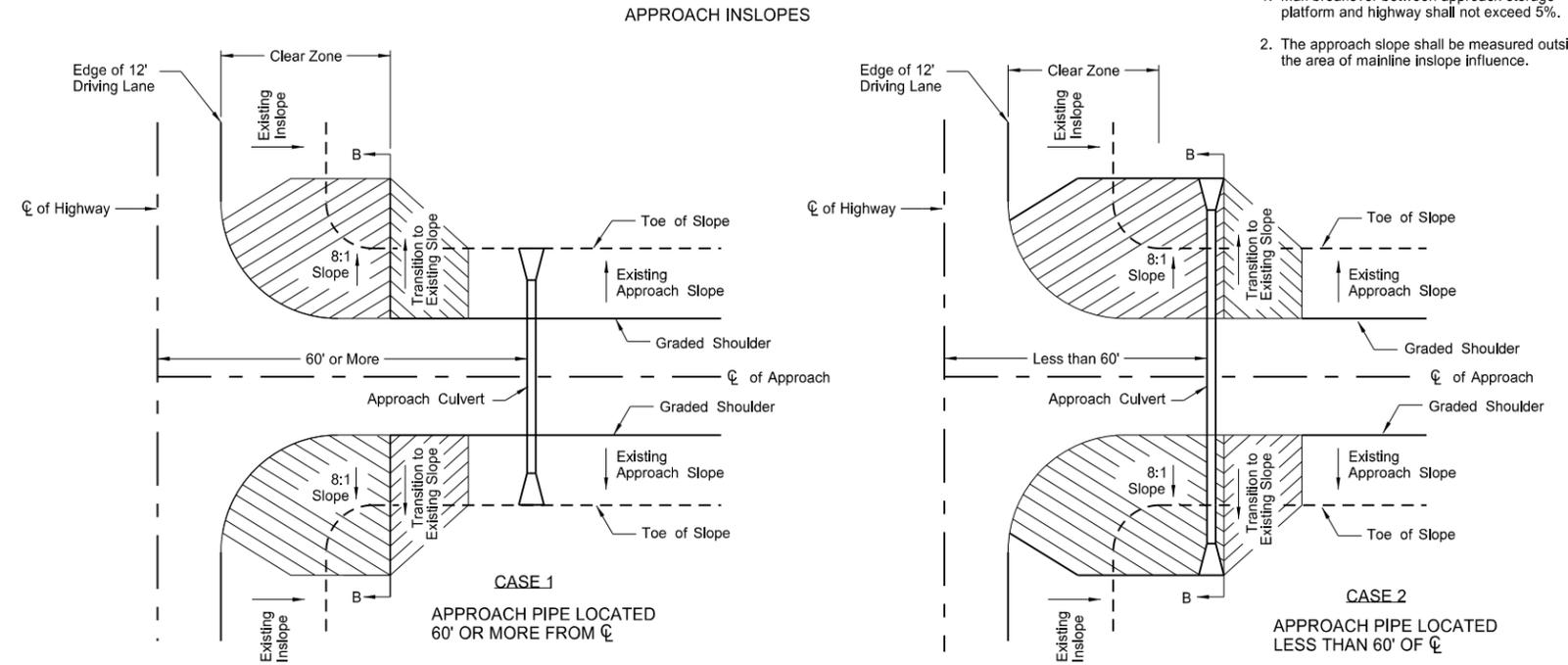
*2.1% crown for paved surface
*3.0% crown for gravel surface



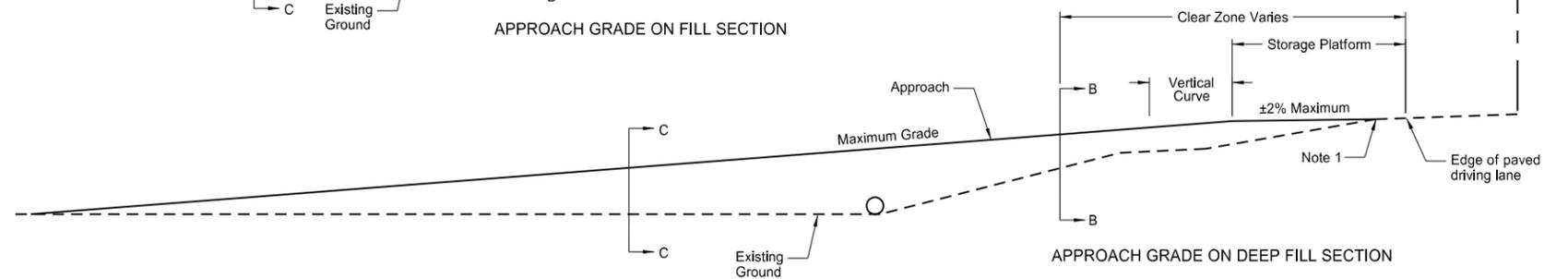
SECTION B-B



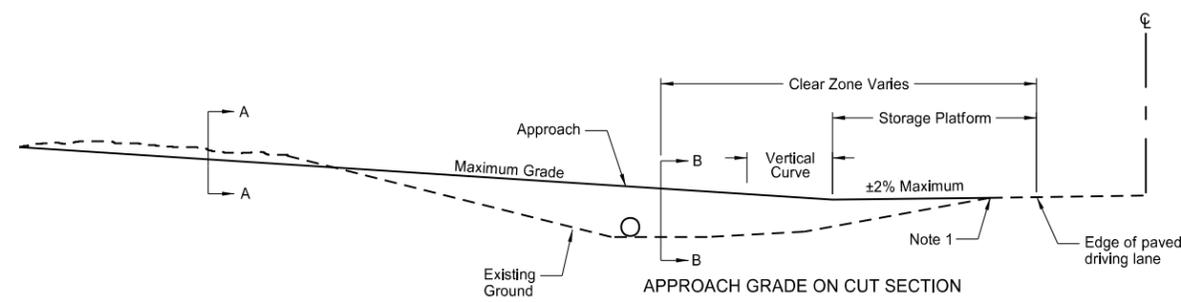
SECTION C-C



APPROACH GRADE ON FILL SECTION



APPROACH GRADE ON DEEP FILL SECTION

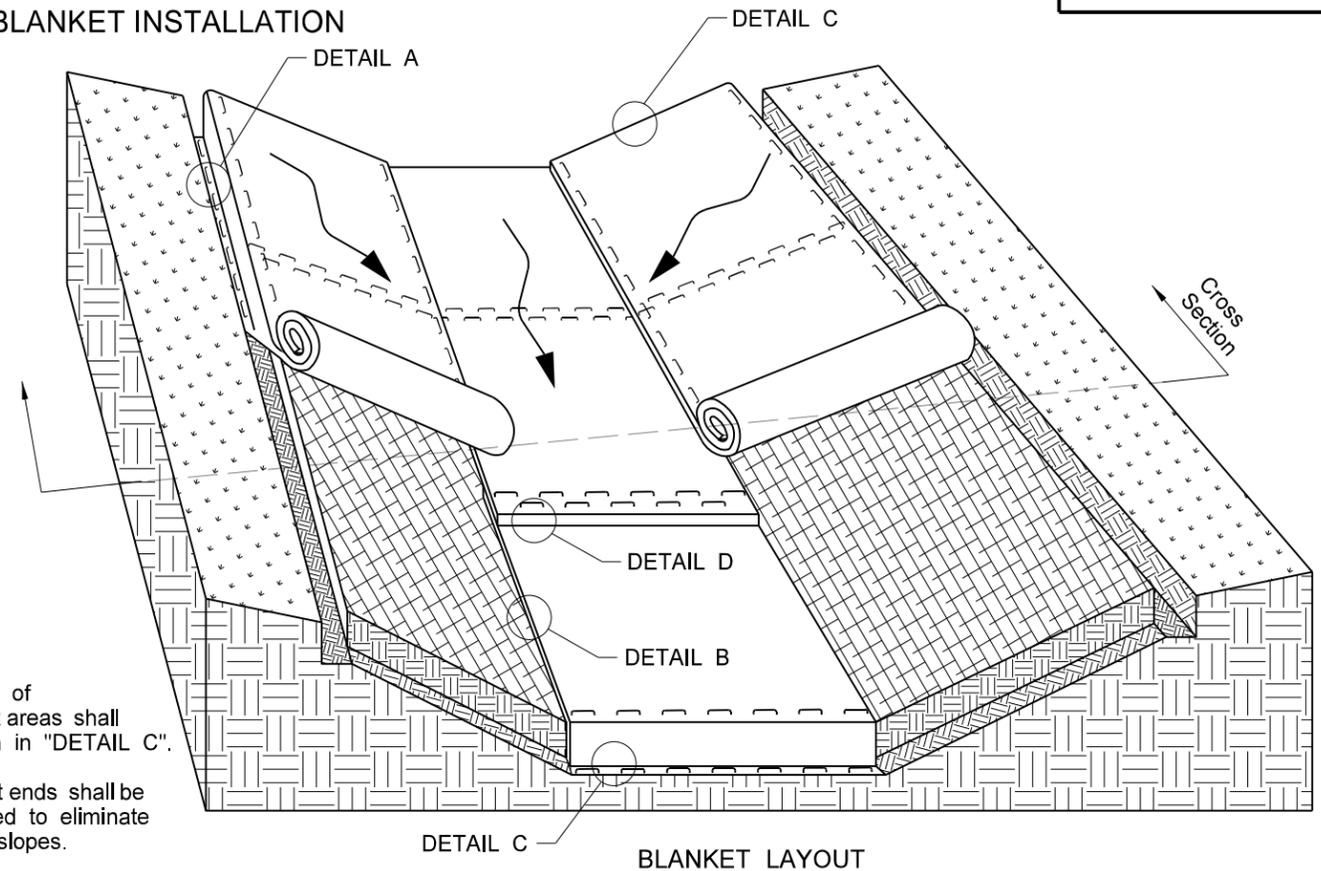
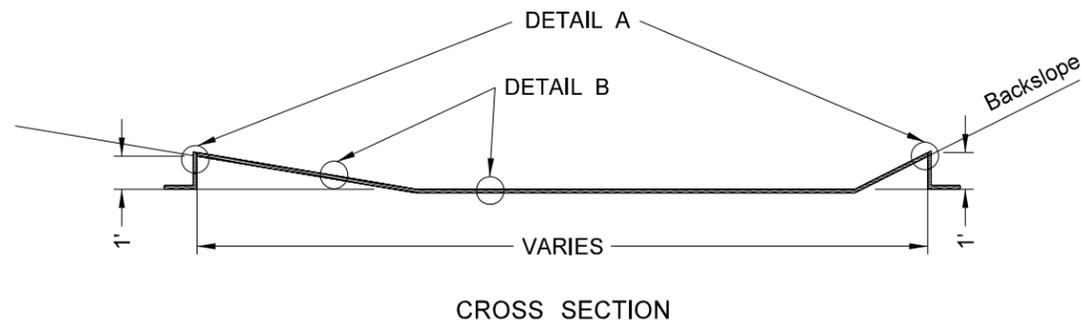


APPROACH GRADE ON CUT SECTION

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
2-25-14	
REVISIONS	
DATE	CHANGE

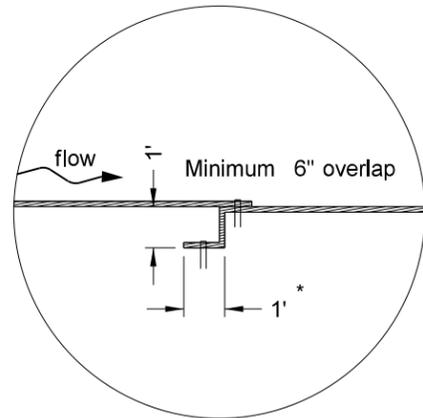
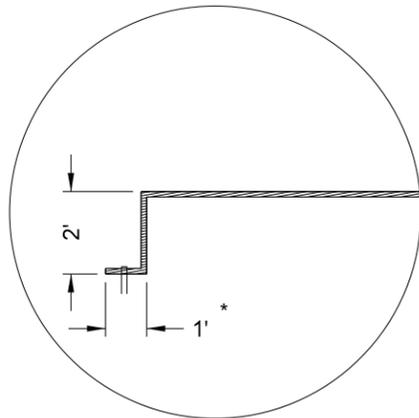
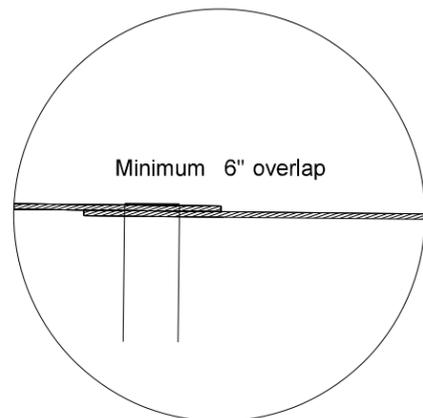
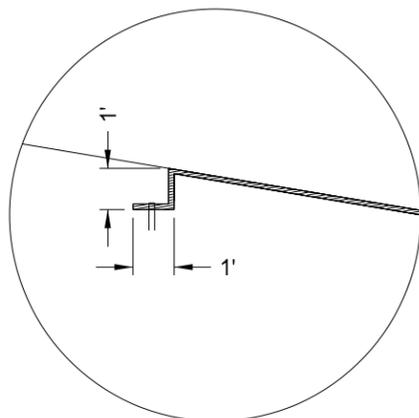
This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 02/25/14 and the original document is stored at the North Dakota Department of Transportation.

EROSION AND SILTATION CONTROL
EROSION CONTROL BLANKET INSTALLATION



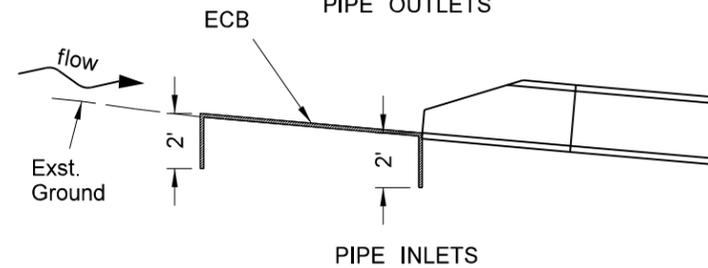
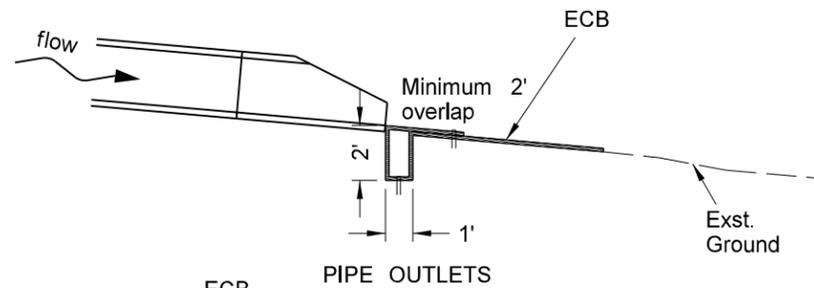
Notes:
Beginning and ending of erosion control blanket areas shall be installed as shown in "DETAIL C".
Erosion control blanket ends shall be entrenched and stapled to eliminate undermining on side slopes.

CHANNEL OR SLOPE INSTALLATION



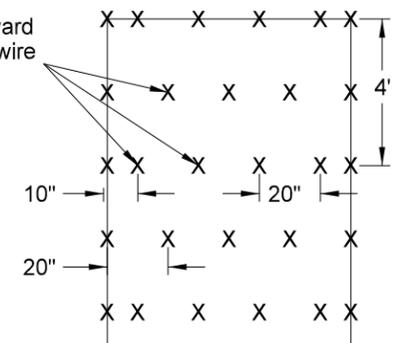
* This tie may be placed ahead or back.

DETAILS
CHANNEL OR SLOPE INSTALLATION



INSTALLATION AT PIPE ENDS

3.8 staples per square yard using 8-inch 11 gauge wire "u" staples.

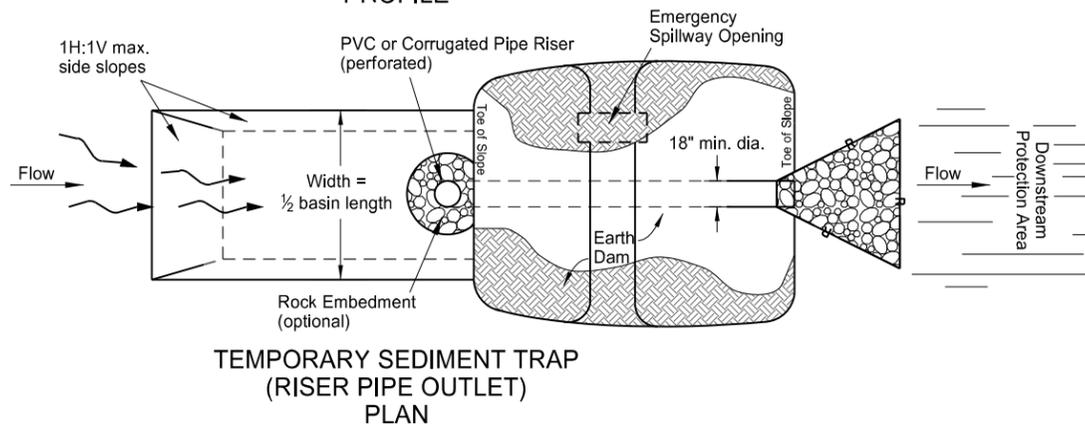
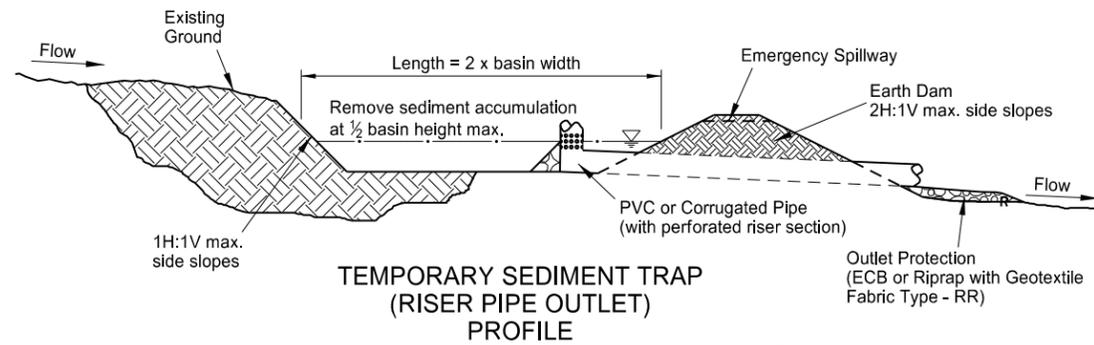
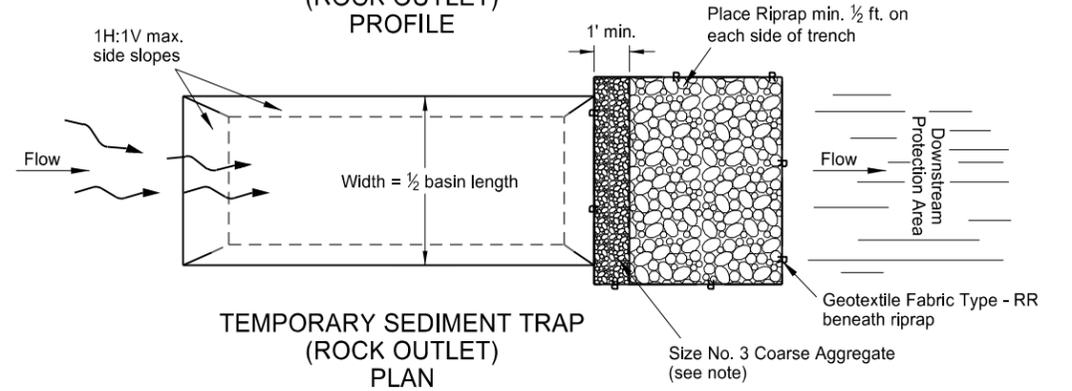
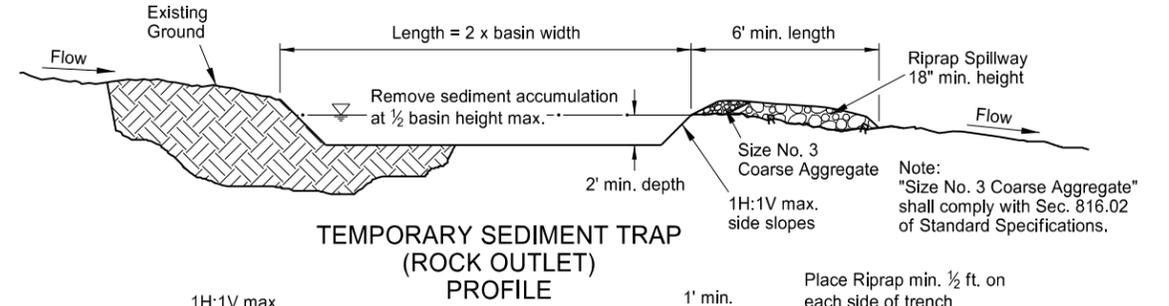
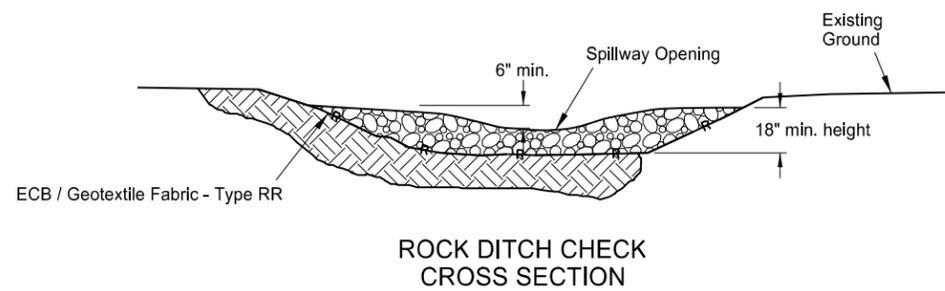
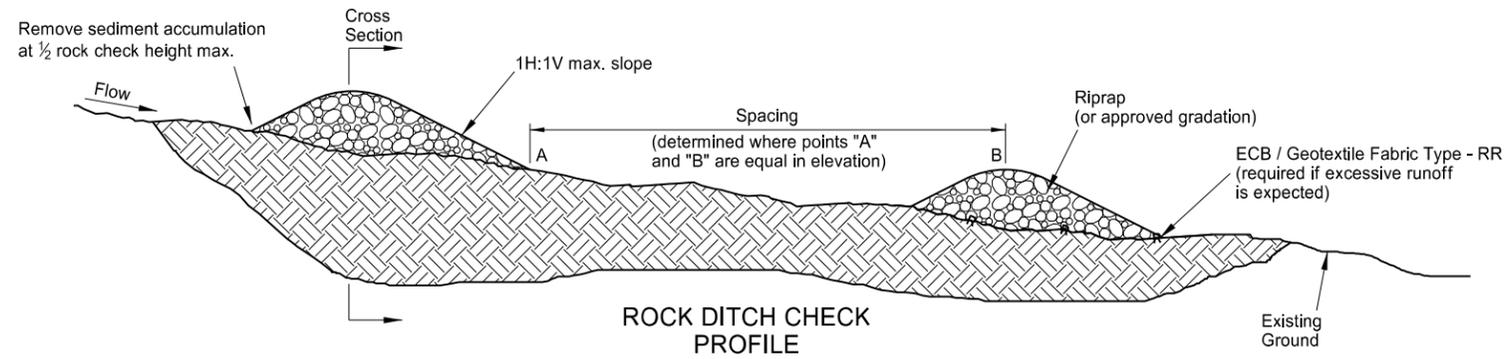


NORTH DAKOTA DEPARTMENT OF TRANSPORTATION 10-03-13	
REVISIONS	
DATE	CHANGE
06-26-14	Changed standard drawing number from D-708-5 to D-255-2.

This document was originally issued and sealed by
Roger Weigel
Registration Number
PE-2930,
on 06/26/14 and the original document is stored at the North Dakota Department of Transportation

EROSION AND SILTATION CONTROLS

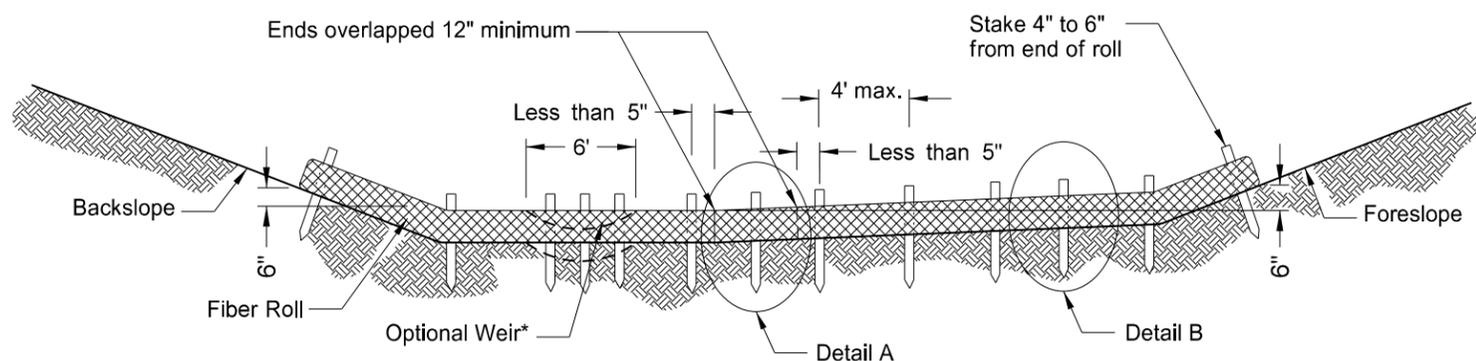
D-256-1



NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-03-13	
REVISIONS	
DATE	CHANGE
06-26-14	Changed standard drawing number from D-708-2 to D-256-1. Deleted silt fence details.

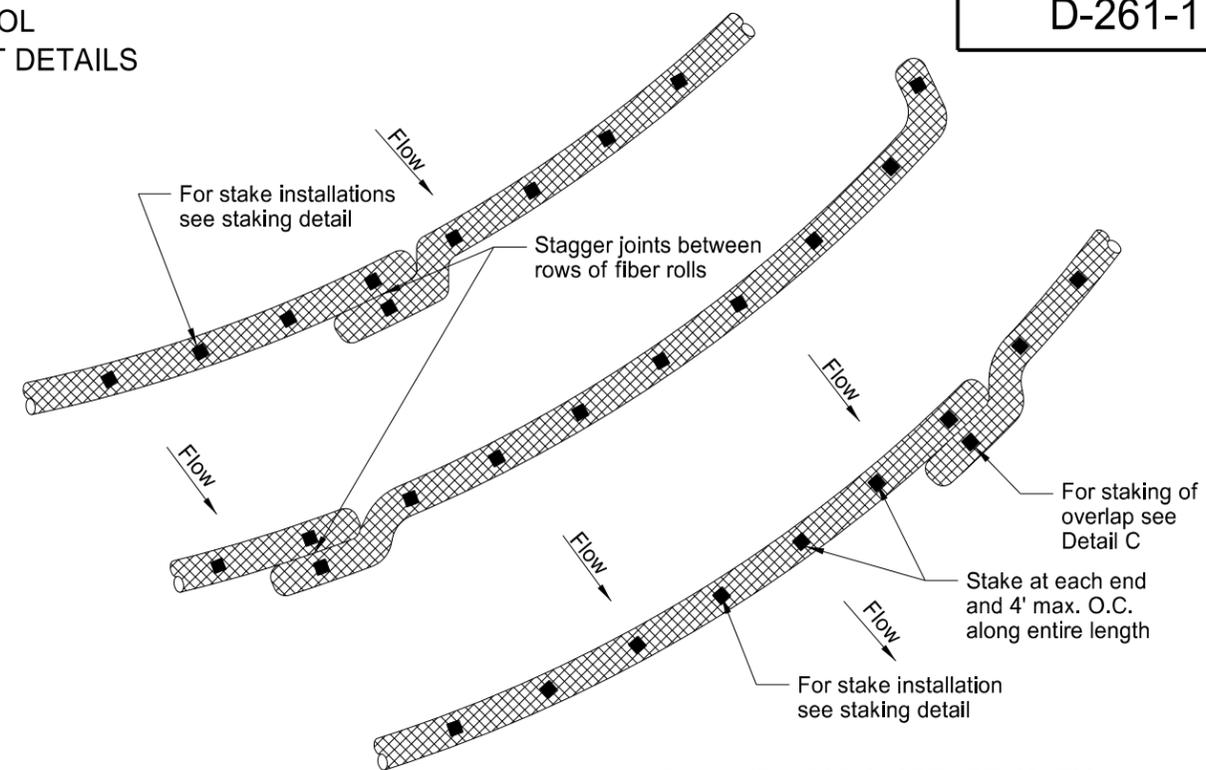
This document was originally issued and sealed by Roger Weigel Registration Number PE-2930, on 06/26/14 and the original document is stored at the North Dakota Department of Transportation

EROSION CONTROL
FIBER ROLL PLACEMENT DETAILS

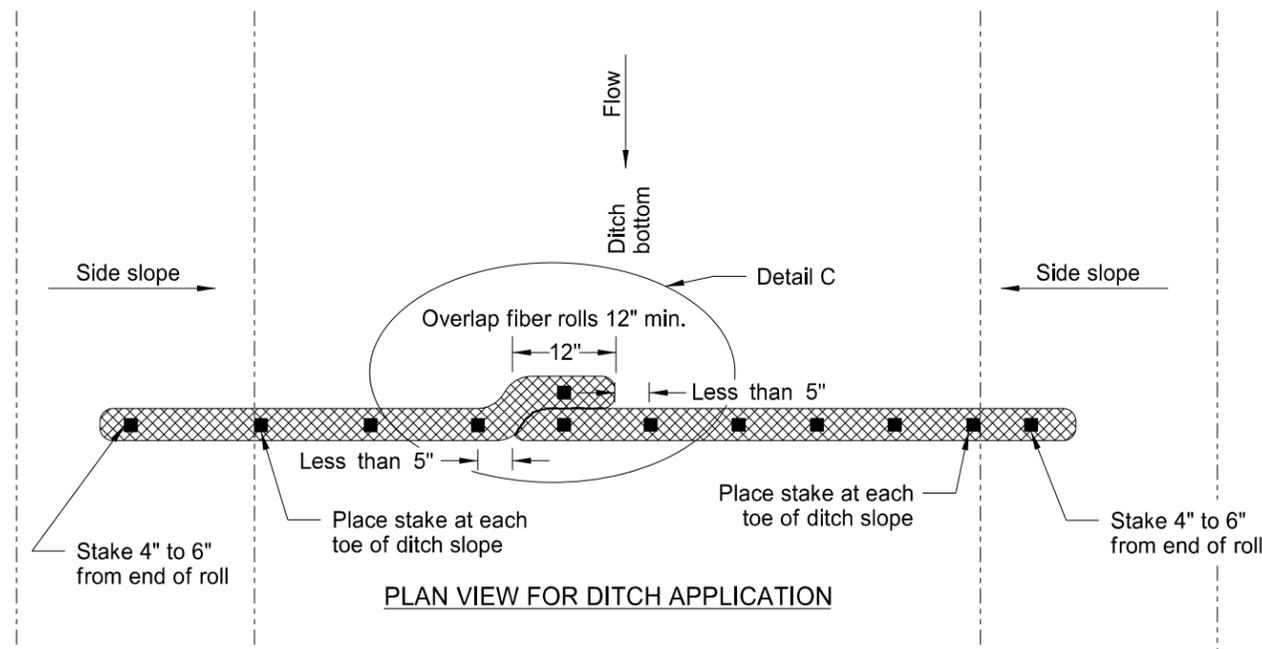


*Optional Weir. Use in flat areas, such as the Red River Valley, where there is potential for water to back up on adjacent property. Lower fiber roll enough to prevent water from backing up on adjacent property. Do not use 20-inch fiber rolls in flat areas where there is potential for water to back up on adjacent property.

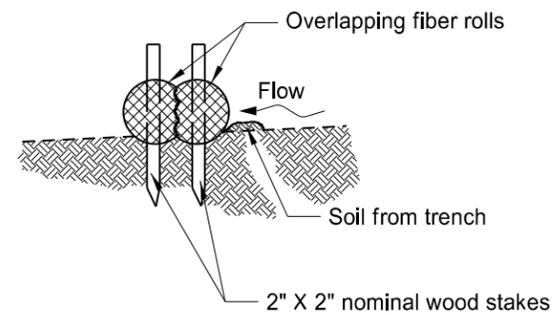
12 OR 20 INCH FIBER ROLL - DITCH BOTTOM



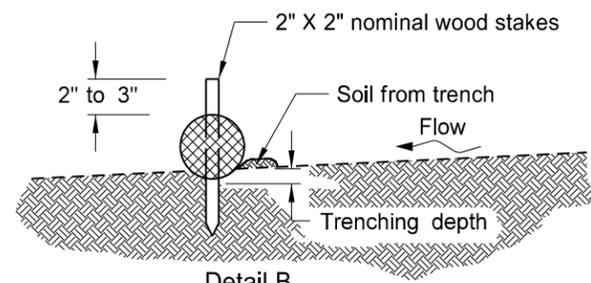
PLAN VIEW FOR SLOPE APPLICATION



PLAN VIEW FOR DITCH APPLICATION



Detail A
Fiber Roll Overlapping Staking Detail



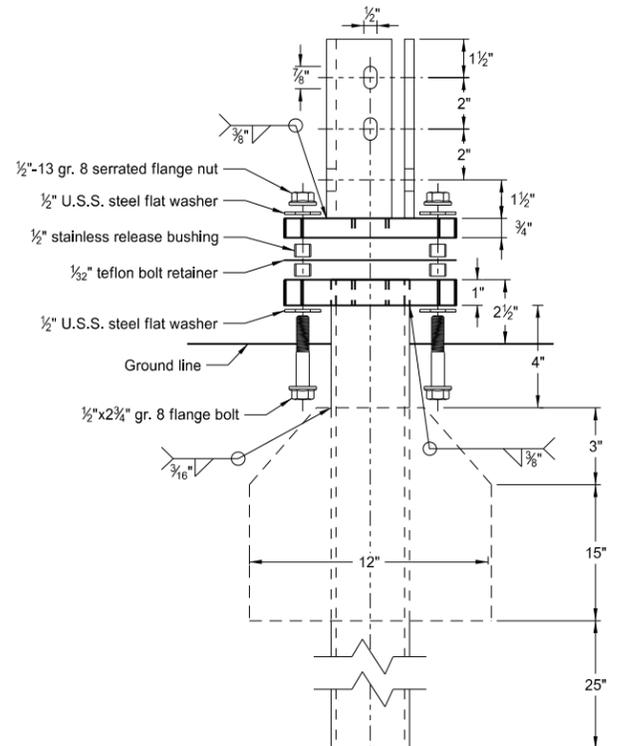
Detail B
Fiber Roll Staking Detail

FIBER ROLL DIAMETER	NOMINAL STAKE SIZE	MINIMUM STAKE LENGTH	MINIMUM TRENCH DEPTH	MAXIMUM TRENCH DEPTH
6"	2" x 2"	18"	2"	2"
12"	2" x 2"	24"	2"	3"
20"	2" x 2"	36"	3"	5"

NOTE: Runoff must not be allowed to run under or around roll.

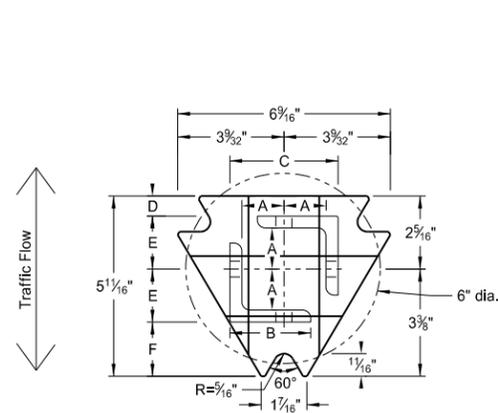
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
11-18-10	
REVISIONS	
DATE	CHANGE
06-10-13	Added plan view for ditch and slope application, Added table with values for stake and trench dimensions.
10-04-13	Revised fiber roll overlap detail.
06-26-14	Changed standard drawing number from D-708-7 to D-261-1

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 06/26/14 and the original document is stored at the North Dakota Department of Transportation

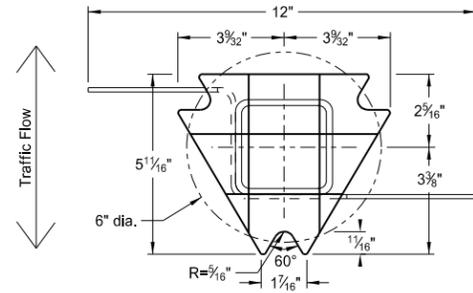


Multi-Directional Slip Base Assembly

Perforated Tube



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



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

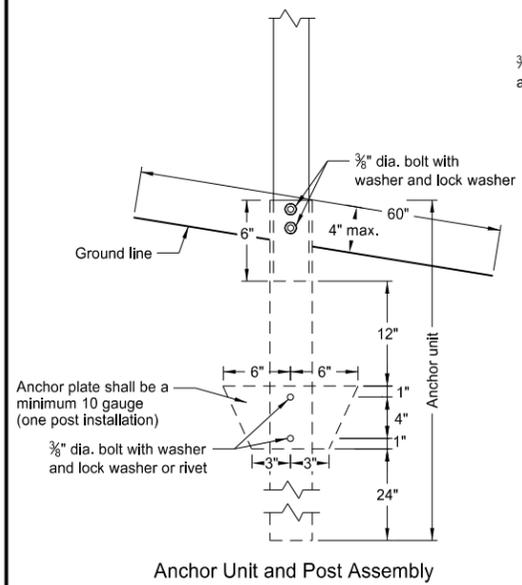
Notes:

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

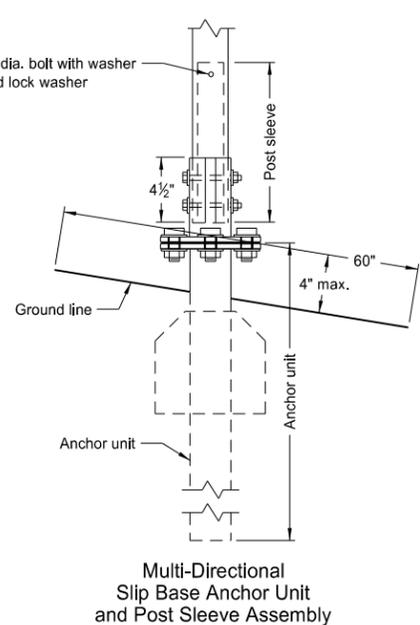
Telescoping Perforated Tube						
Number of Posts	Post Size in.	Wall Thickness Gauge	Sleeve Size in.	Wall Thickness Gauge	Slip Base	Anchor Size without Slip Base in.
1	2	12			No	2 1/4
1	2 1/4	12			No	2 1/2
1	2 1/2	12			(A)	3
1	2 1/2	10			Yes	
1	2 1/4	12	2	12	Yes	
1	2 1/2	12	2 1/4	12	Yes	
2	2	12			No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

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

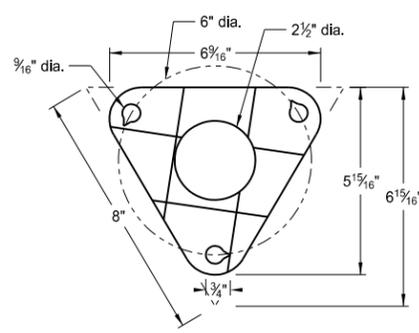
Top Post Receiver Data Table						
Square Post Sizes (B)	A	B	C	D	E	F
2 3/16" x 10 ga.	1 9/64"	2 1/2"	3 1/32"	2 5/32"	1 33/64"	1 1/8"
2 1/2" x 10 ga.	1 9/32"	2 1/2"	3 5/16"	5/8"	1 21/32"	1 3/4"



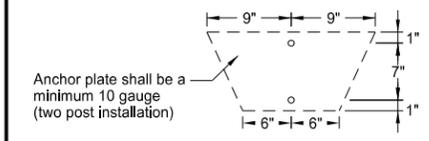
Anchor Unit and Post Assembly



Multi-Directional Slip Base Anchor Unit and Post Sleeve Assembly



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



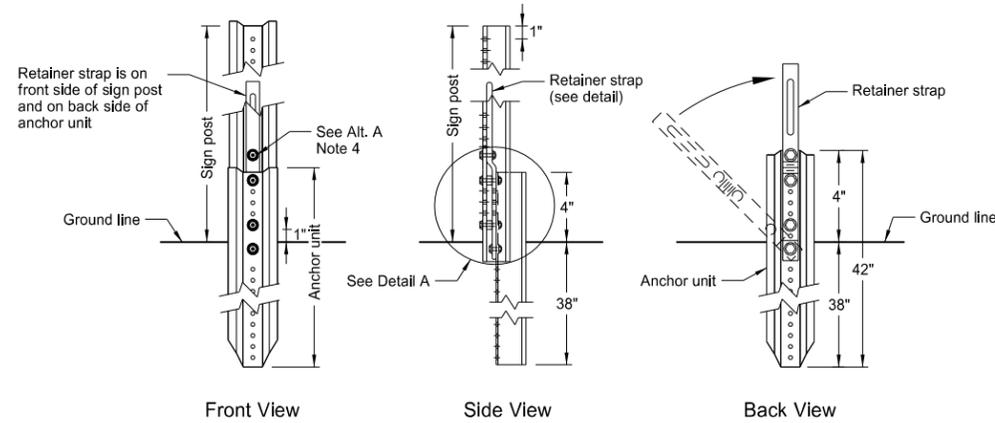
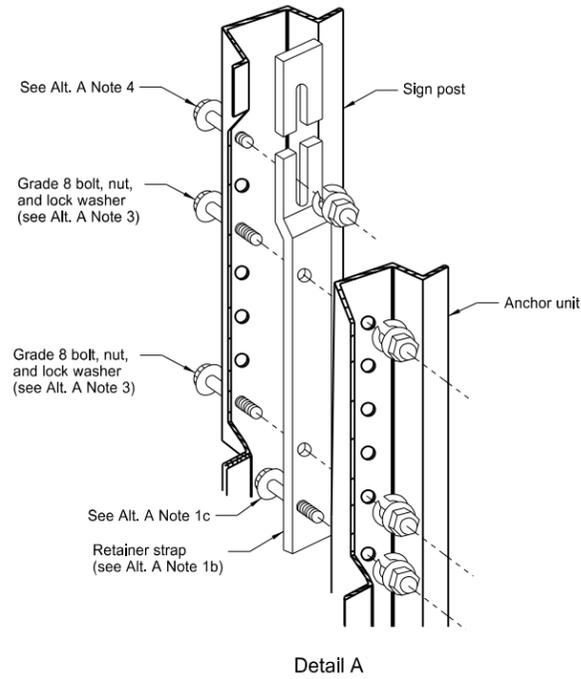
Anchor plate shall be a minimum 10 gauge (two post installation)

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

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

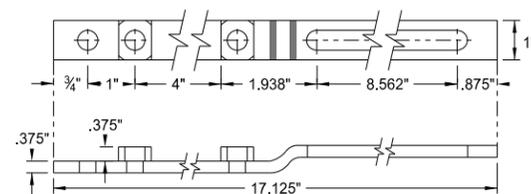
This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 2/28/14 and the original document is stored at the North Dakota Department of Transportation

U-Channel Post

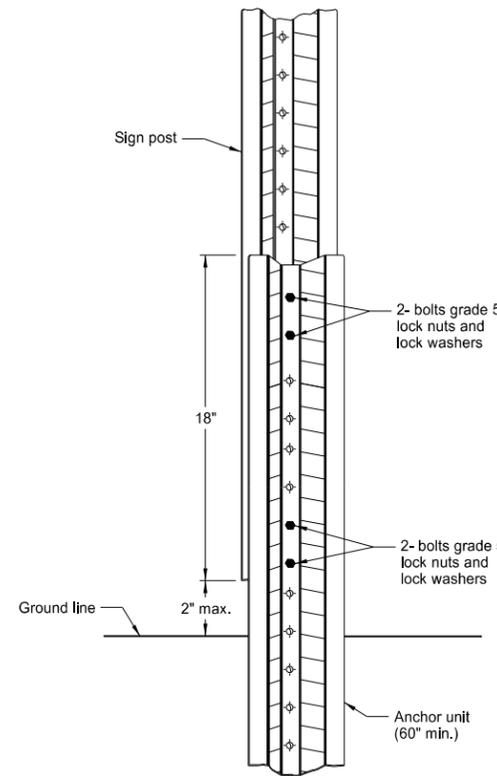


Breakaway U-Channel Detail Alternate A

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

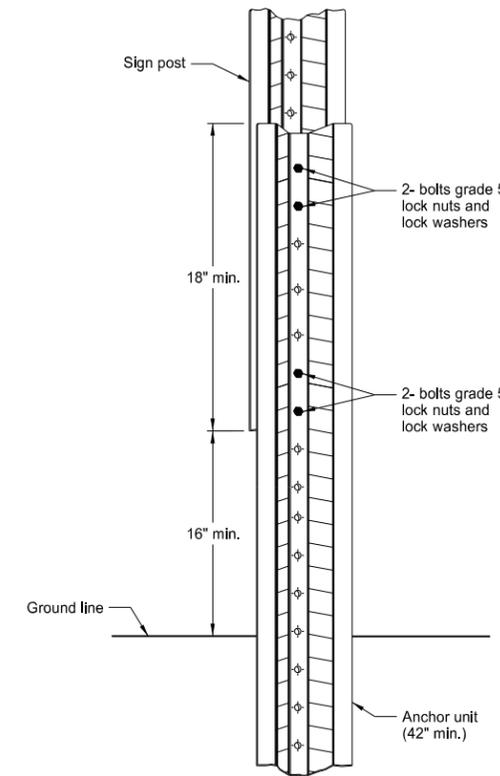


Retainer Strap Detail



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

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



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

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

Alternate A Steps of Installation:

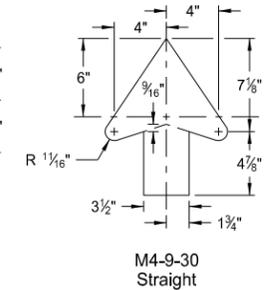
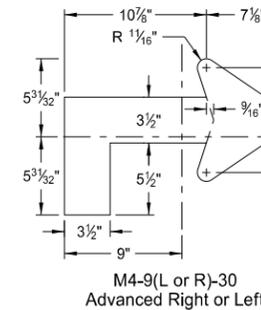
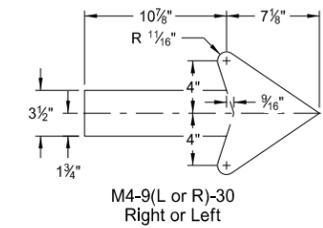
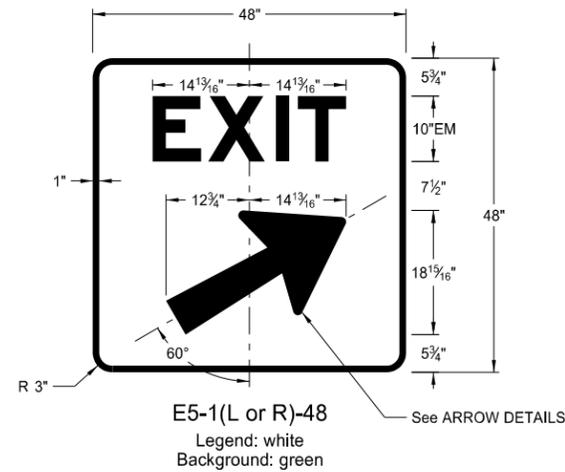
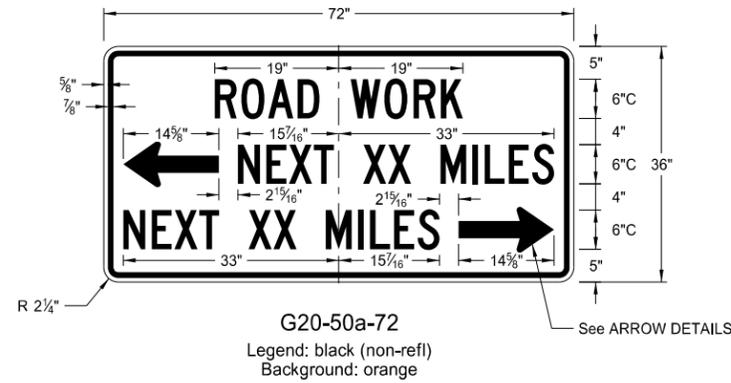
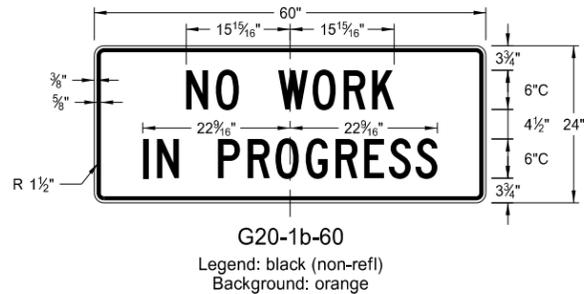
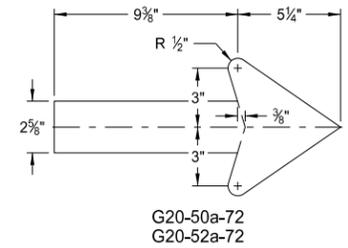
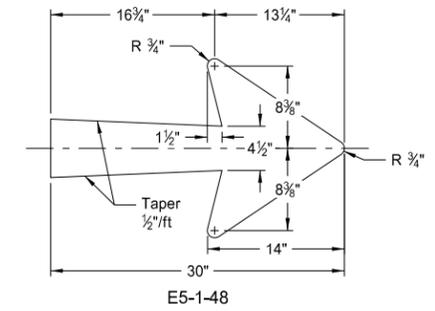
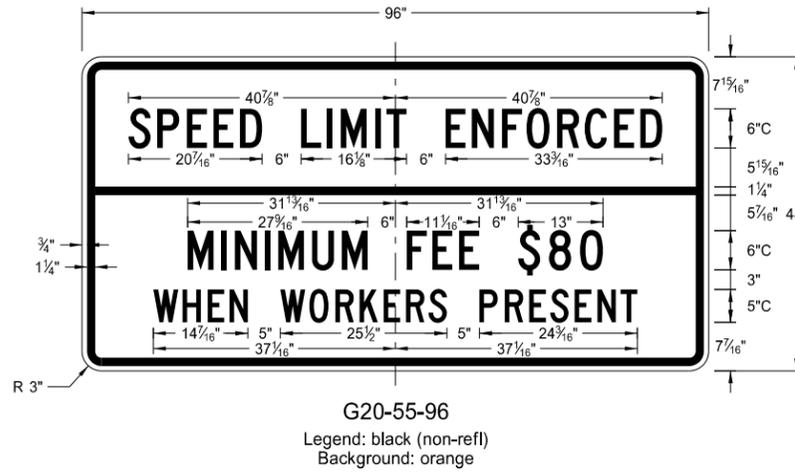
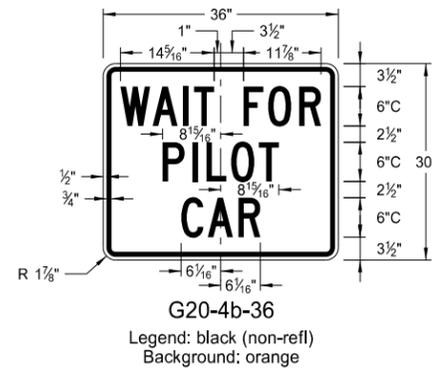
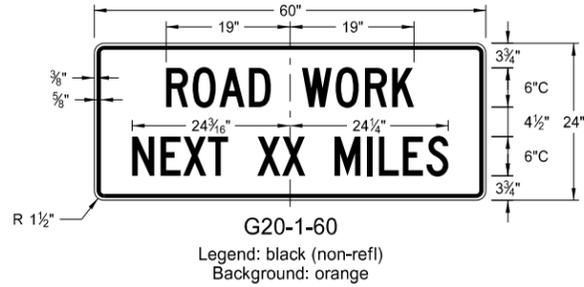
1. a) Drive anchor unit to within 12" of ground level.
b) Proper assembly established by lining up the bottom hole of retainer strap with the 6th hole from the top of the anchor unit.
c) Assemble strap to back of anchor unit using 5/16"x2" bolt, lock washer and nut.
d) Rotate strap 90° to left.
2. a)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

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

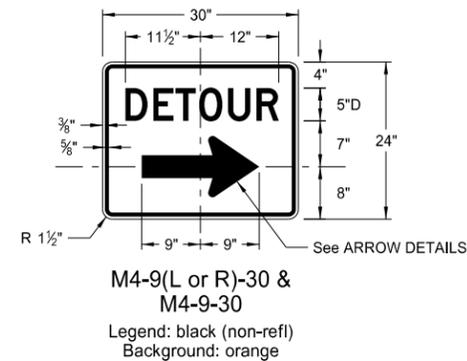
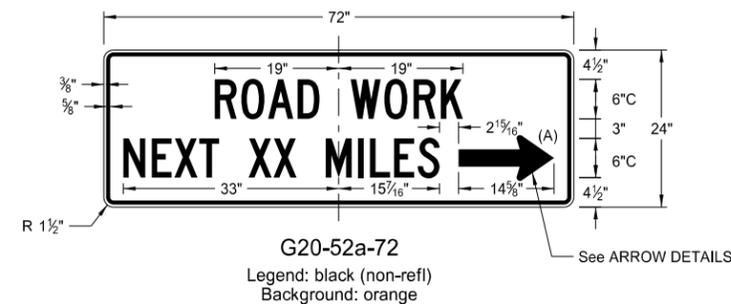
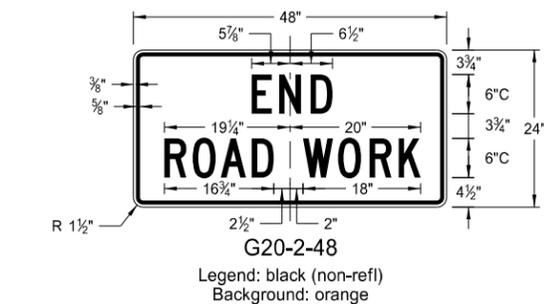
This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 2/28/14 and the original document is stored at the North Dakota Department of Transportation

CONSTRUCTION SIGN DETAILS
 TERMINAL AND GUIDE SIGNS

D-704-9



ARROW DETAILS



NOTES:

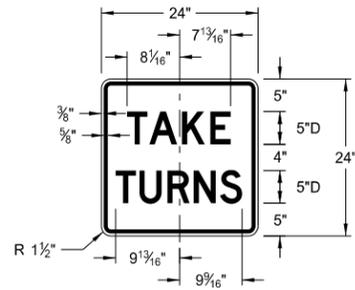
(A) Arrow may be right or left of the legend to indicate construction to the right or left.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
REVISIONS	
DATE	CHANGE

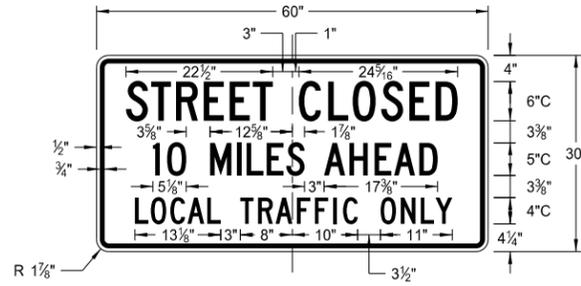
This document was originally issued and sealed by
 Roger Weigel,
 Registration Number
 PE-2930,
 on 8/13/13 and the original document is stored at the
 North Dakota Department
 of Transportation

CONSTRUCTION SIGN DETAILS
REGULATORY SIGNS

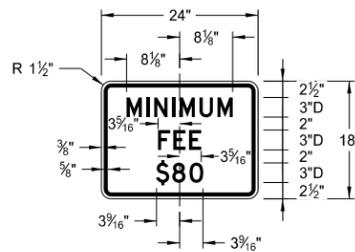
D-704-10



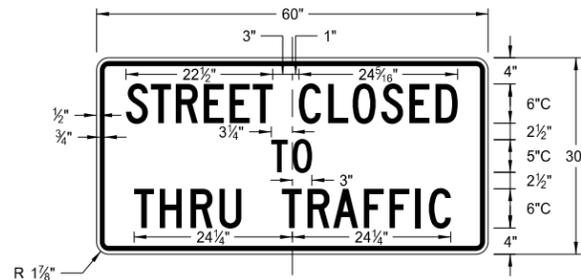
R1-50-24
Legend: black (non-refl)
Background: white



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



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



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



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

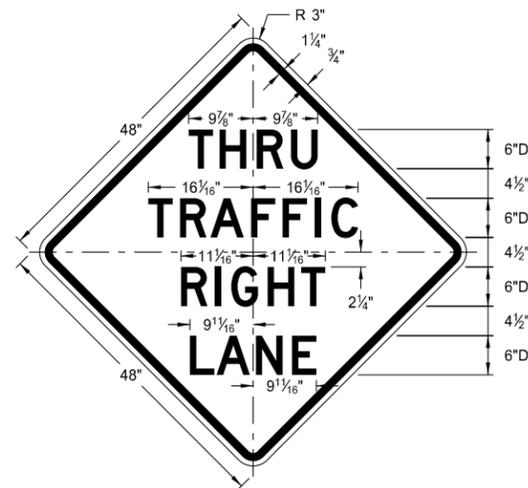
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
REVISIONS	
DATE	CHANGE

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 8/13/13 and the original document is stored at the North Dakota Department of Transportation

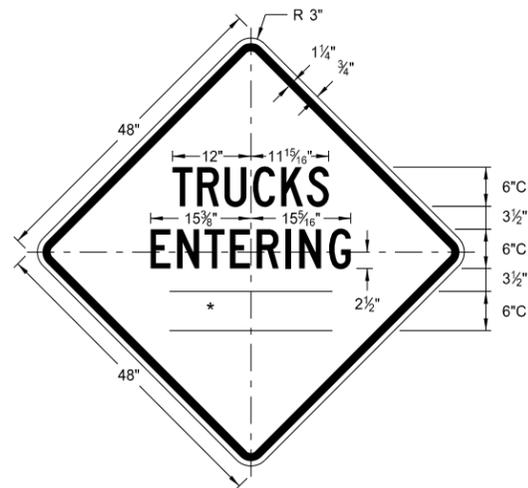
CONSTRUCTION SIGN DETAILS
WARNING SIGNS

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

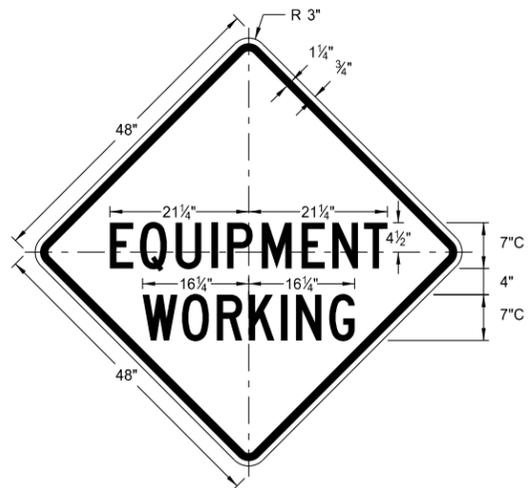
* DISTANCE MESSAGES



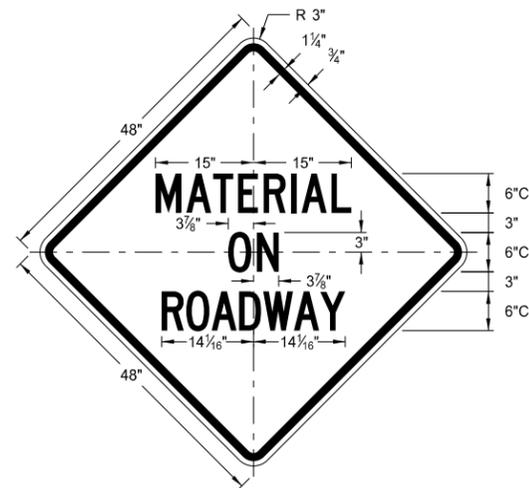
W5-8-48
Legend: black (non-refl)
Background: orange



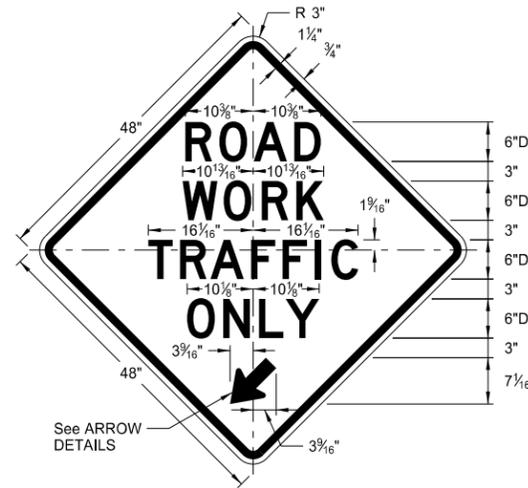
W8-54-48
Legend: black (non-refl)
Background: orange



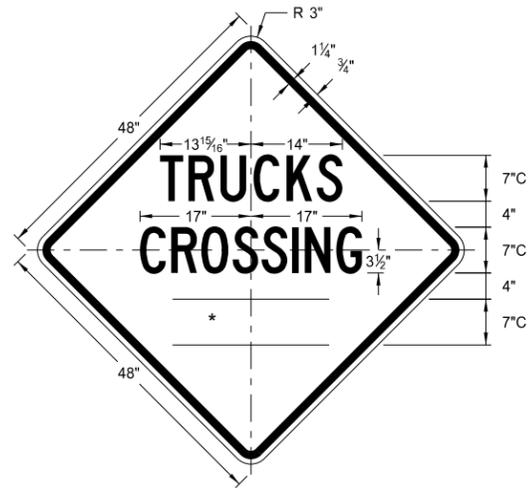
W20-51-48
Legend: black (non-refl)
Background: orange



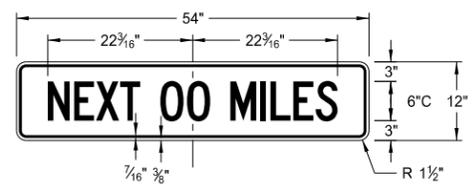
W21-51-48
Legend: black (non-refl)
Background: orange



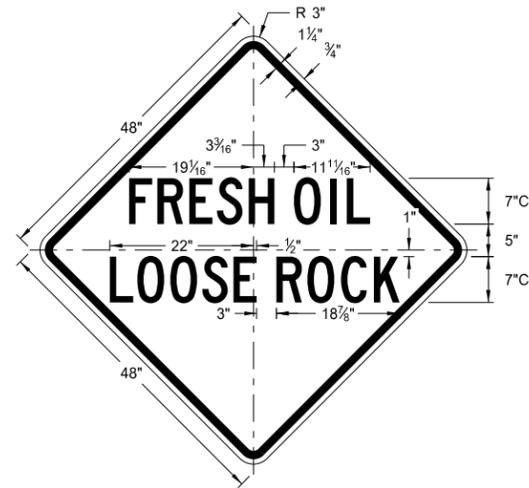
W5-9-48
Legend: black (non-refl)
Background: orange



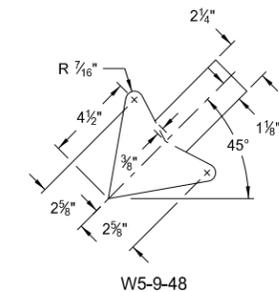
W8-55-48
Legend: black (non-refl)
Background: orange



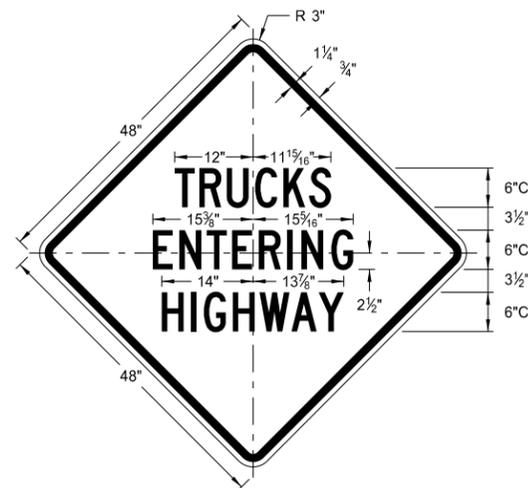
W20-52-54
Legend: black (non-refl)
Background: orange



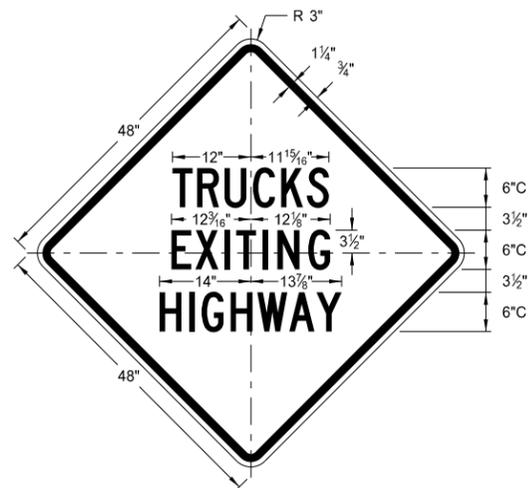
W22-8-48
Legend: black (non-refl)
Background: orange



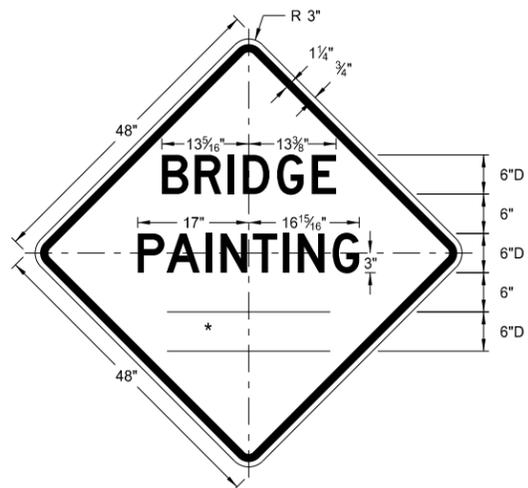
W5-9-48
ARROW DETAILS



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



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

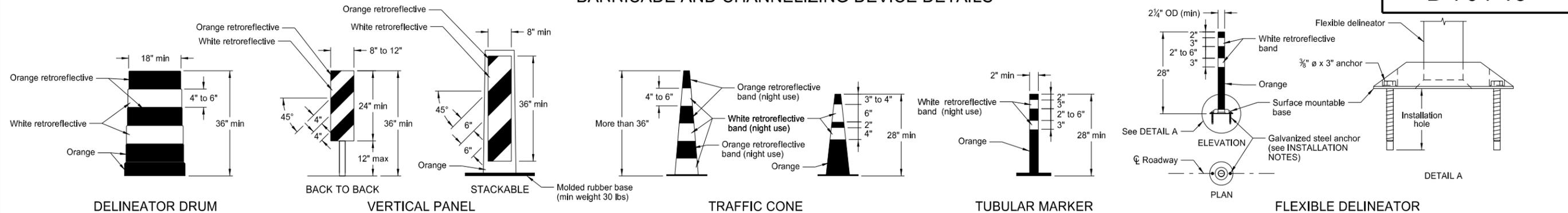


W21-50-48
Legend: black (non-refl)
Background: orange

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
REVISIONS	
DATE	CHANGE

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 8/13/13 and the original document is stored at the North Dakota Department of Transportation

BARRICADE AND CHANNELIZING DEVICE DETAILS



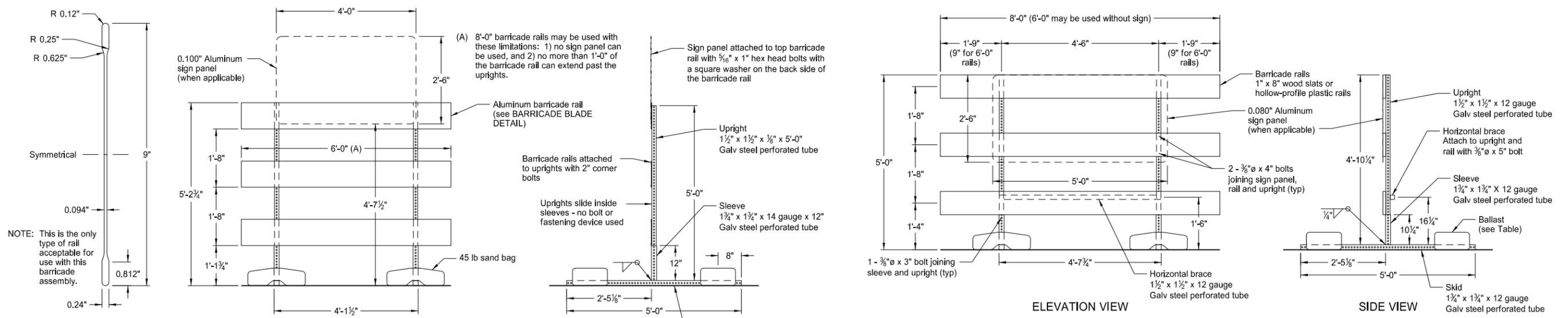
The markings on drums shall be horizontal, circumferential, alternating orange and white retroreflective stripes 4" to 6" wide. Each drum shall have a minimum of two orange and two white stripes with the top stripe being orange. Any nonretroreflective spaces between the horizontal orange and white stripes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

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

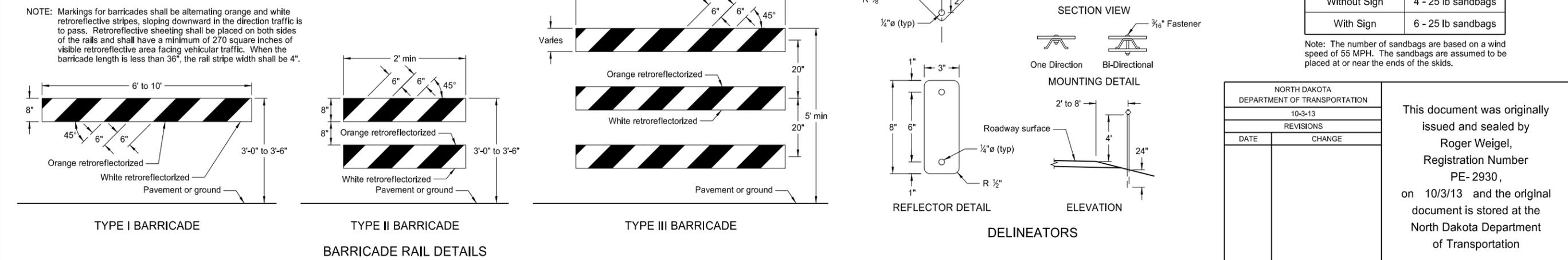
Retroreflectization of cones more than 36" in height shall be provided by alternating orange and white retroreflective stripes. Each cone shall have a minimum of two orange and two white stripes with the top stripe being orange. Any nonretroreflective space between the orange and white stripes shall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

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

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



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

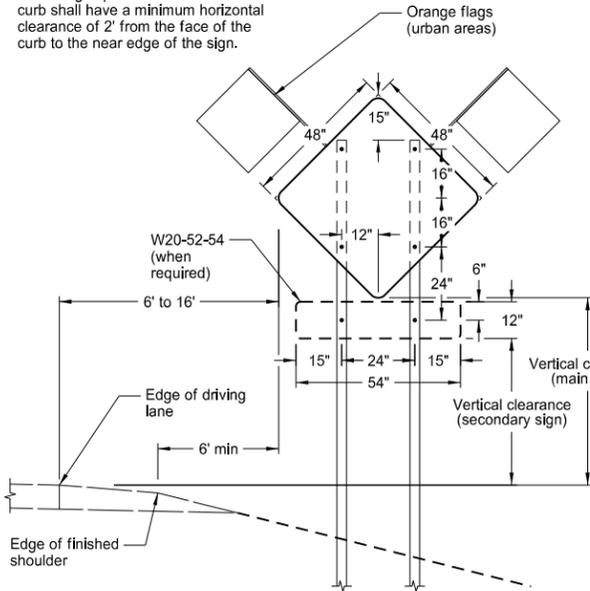


NORTH DAKOTA
 DEPARTMENT OF TRANSPORTATION
 10-3-13
 REVISIONS
 DATE CHANGE

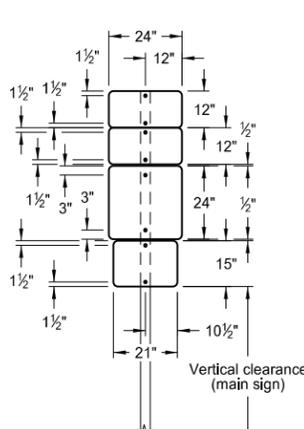
This document was originally issued and sealed by
 Roger Weigel,
 Registration Number
 PE-2930,
 on 10/3/13 and the original document is stored at the
 North Dakota Department
 of Transportation

CONSTRUCTION SIGN PUNCHING AND MOUNTING DETAILS

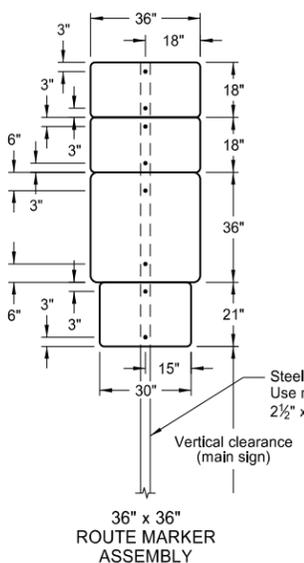
Note: Signs placed in sections with curb shall have a minimum horizontal clearance of 2' from the face of the curb to the near edge of the sign.



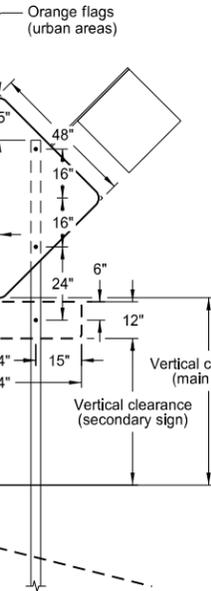
TYPICAL SECTION (48" x 48" diamond warning sign shown)



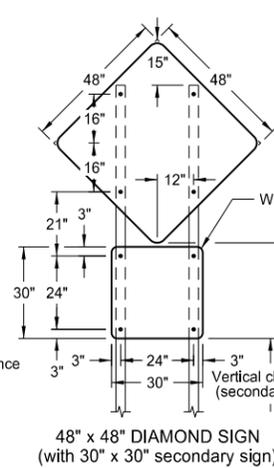
24" x 24" ROUTE MARKER ASSEMBLY



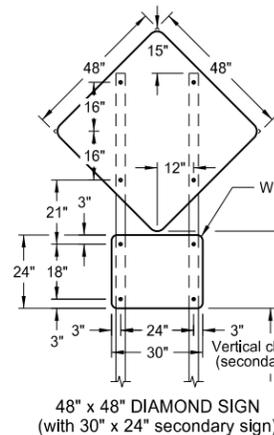
36" x 36" ROUTE MARKER ASSEMBLY



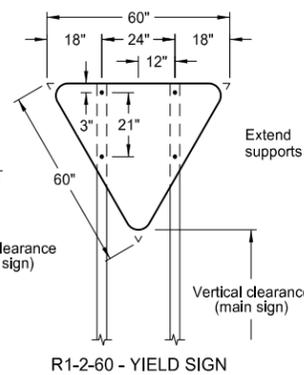
18" x 18" DIAMOND SIGN



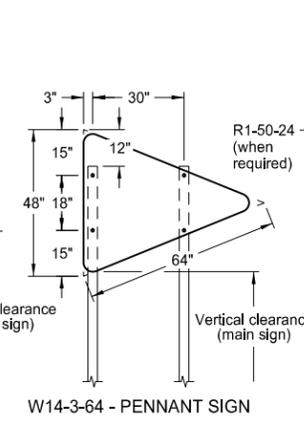
48" x 48" DIAMOND SIGN (with 30" x 30" secondary sign)



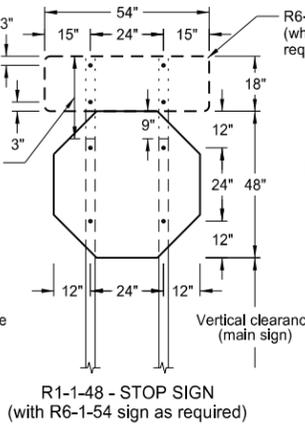
48" x 48" DIAMOND SIGN (with 30" x 24" secondary sign)



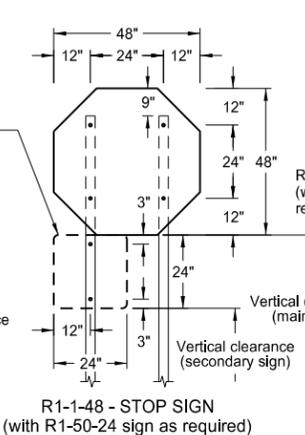
R1-2-60 - YIELD SIGN



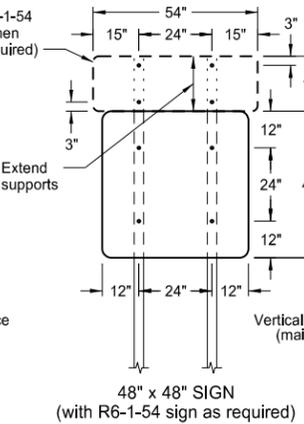
W14-3-64 - PENNANT SIGN



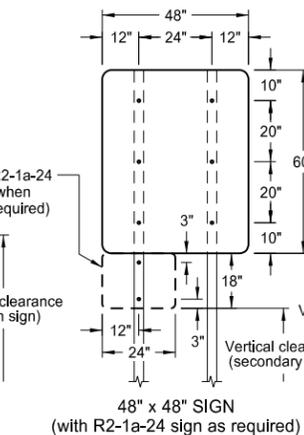
R1-1-48 - STOP SIGN (with R6-1-54 sign as required)



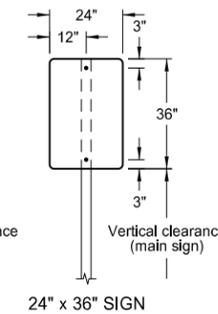
R1-1-48 - STOP SIGN (with R1-50-24 sign as required)



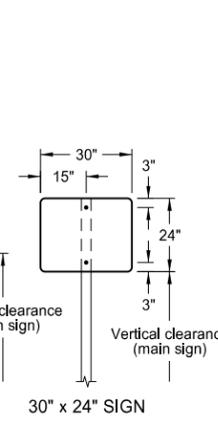
48" x 48" SIGN (with R6-1-54 sign as required)



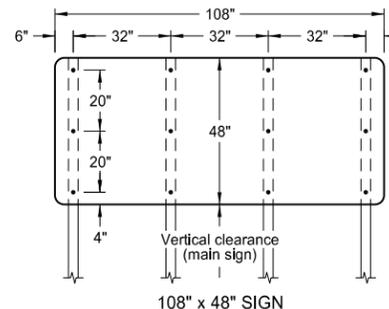
48" x 48" SIGN (with R2-1a-24 sign as required)



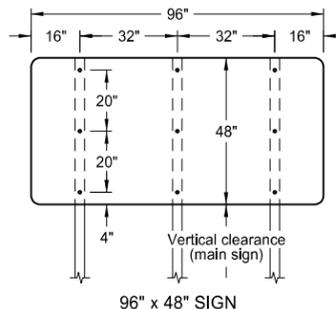
24" x 36" SIGN



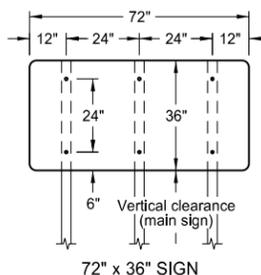
30" x 24" SIGN



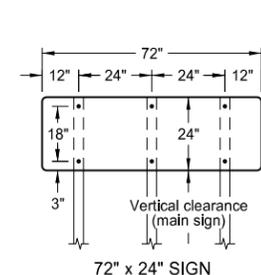
108" x 48" SIGN



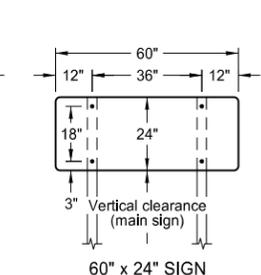
96" x 48" SIGN



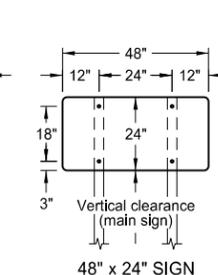
72" x 36" SIGN



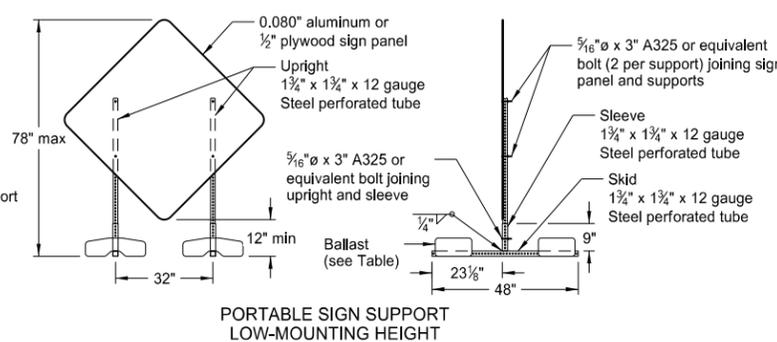
72" x 24" SIGN



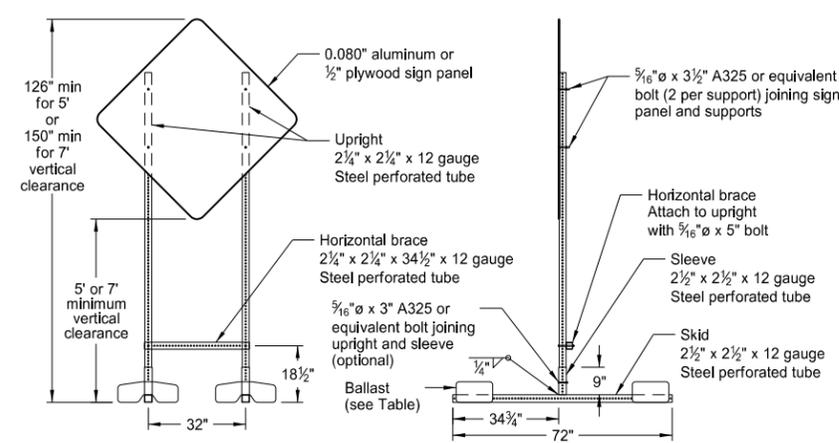
60" x 24" SIGN



48" x 24" SIGN



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 2 1/2" x 2 1/2" perforated tube supports as a minimum.

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

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

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

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

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

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

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

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

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

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

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

MINIMUM BALLAST (For each side of sign support base)

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

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

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

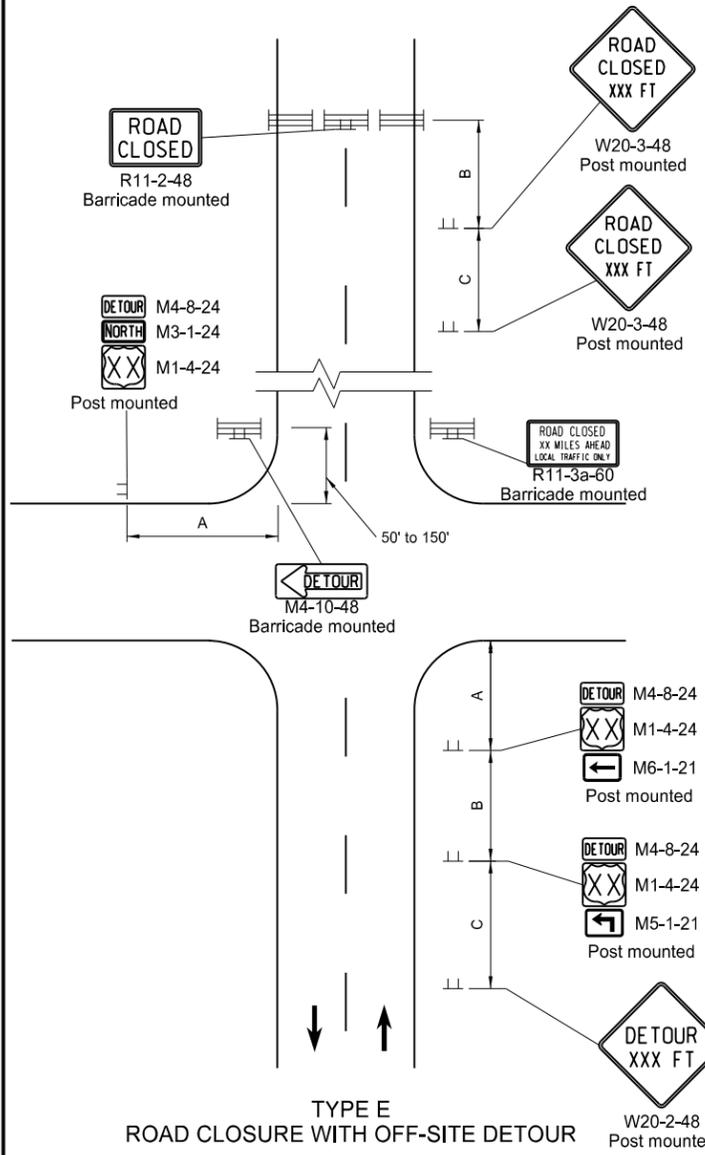
This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 11/14/13 and the original document is stored at the North Dakota Department of Transportation

ROAD CLOSURE AND LANE CLOSURE ON A TWO WAY ROAD LAYOUTS

D-704-19

Notes

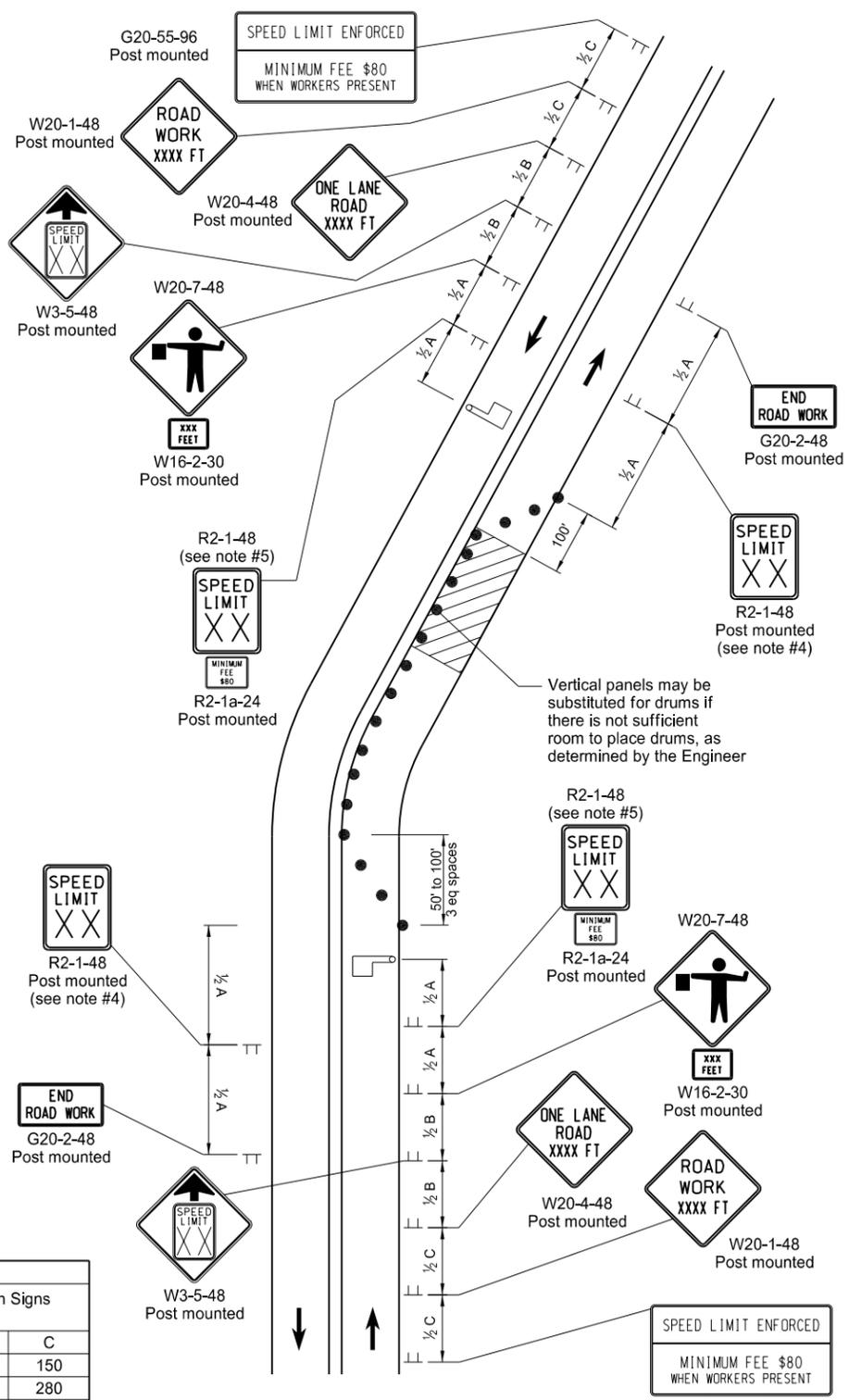
- Variables
 S = Numerical value of speed limit or 85th percentile.
 W = The width of taper
 L = Minimum length of taper, or S x W for freeways, expressways, and all other roads with speeds of 45 mph or greater, or W x S²/60 for urban, residential, and other streets with speeds of 40 mph or less.
- Barricades placed on roadway shall be on a moveable assembly. Signs placed on the roadway shall be placed on skid mounted assemblies.
- Delineator drums used for tapering traffic shall be placed at 3 equal spaces. Delineator drums for tangents shall be spaced at 2 times dimension "S".
- The speed limit shall be re-established. The exact speed limit shall be determined in the field, dependent on location and conditions.
- The reduced speed limit shall be determined dependent on the in place speed limit before construction. The speed limit reduction should not exceed 10 mph below the existing speed limit, unless the design speed of the work zone feature has been reduced below the 10 mph. In this case, the speed limit reduction shall not exceed 30 MPH. Where speed limits are to be reduced more than 30 MPH, a second speed limit sign shall be installed with the desired speed reduction but shall not exceed 30 MPH. The second speed limit sign shall be placed at 1/2 B.
- When warning signs are used in urban areas and the signs are not portable, flags shall be installed. The flags shall be 24 inches square, mounted perpendicular to the edges of the diamond sign, and at such a distance above the edge so that when the flag is limp it will not touch the sign. Rural areas will not require flags.
- Existing speed limit signs within a reduced speed zone shall be covered.
- Where necessary, safe speed to be determined by the Engineer.
- The contractor has the option of using portable sign supports in lieu of post mounted signs in accordance with the NDDOT Standard Specifications.
- G20-55-96 or R2-1a-24 sign are not required when a pilot car operation is used, if this standard is part of other traffic control layouts, or the work is less than 15 days.
- When highway-rail grade crossings exist either within or in the vicinity of the roadway work activities:
 - Extra care shall be taken to minimize the probability of conditions being created, either by lane restrictions, flagging or other operations, where vehicles might be stopped within the highway-rail grade crossing (considered as being 15 feet on either side of the closest and farthest rail.)
 - A "Do Not Stop on Tracks" sign (R8-8-24) should be placed near the cross buck in each direction while the lane closure is in the vicinity of the tracks.
 - A buffer space between the work zone and the lane closure transition should be extended upstream of the highway-rail grade crossing so a queue created by the flagging operation will not extend across the highway-rail grade crossing.
 - If the queuing of vehicles across active rail tracks cannot be avoided, a flagger shall be provided at the highway-rail grade crossing to prevent vehicles from stopping within the highway-rail grade crossing, even if automatic warning devices are in place.



**TYPE E
ROAD CLOSURE WITH OFF-SITE DETOUR**

Used where a road is closed beyond a detour point. Signing shown for one direction only. Sign not shown on detour shall be shown in plans and installed and maintained by the contractor.

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



**TYPE F
LANE CLOSURE ON A TWO WAY ROAD USING FLAGGERS**

Two lane highway with one lane closed. Flagger is at a point where it is visible to approaching traffic.

KEY

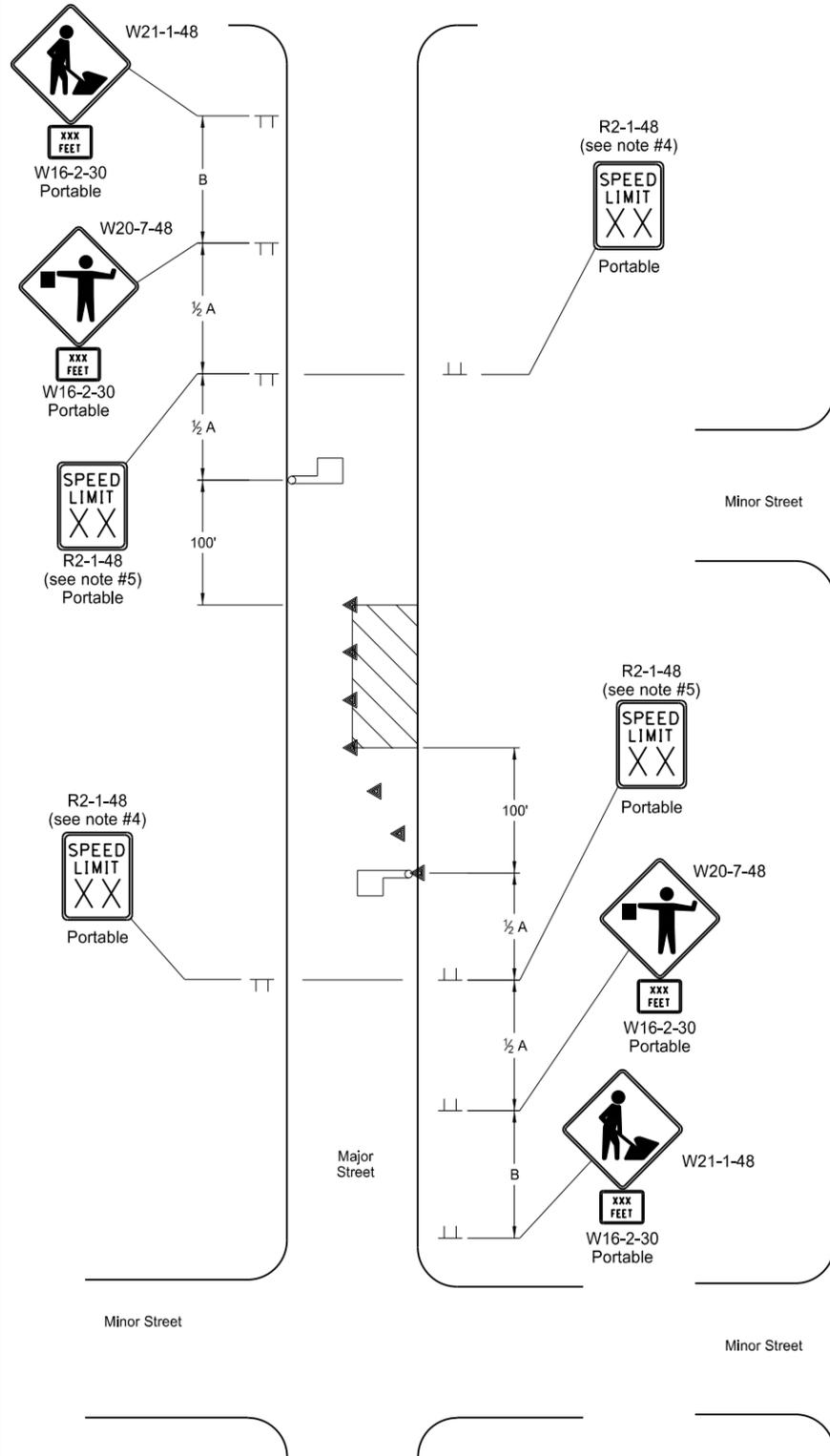
- Delineator Drum
- ▬ Sign
- ▬ Type III Barricade
- ▨ Work/Hazard Area
- ☞ Flagger

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
9-27-13	
REVISIONS	
DATE	CHANGE
3-13-14	Revised Sign Cell "ROAD WORK XXX FT"

This document was originally issued and sealed by
Roger Weigel
 Registration Number
 PE-2930,
 on 03/13/14 and the original document is stored at the
 North Dakota Department
 of Transportation

LANE CLOSURES ON URBAN STREETS LAYOUTS

D-704-25

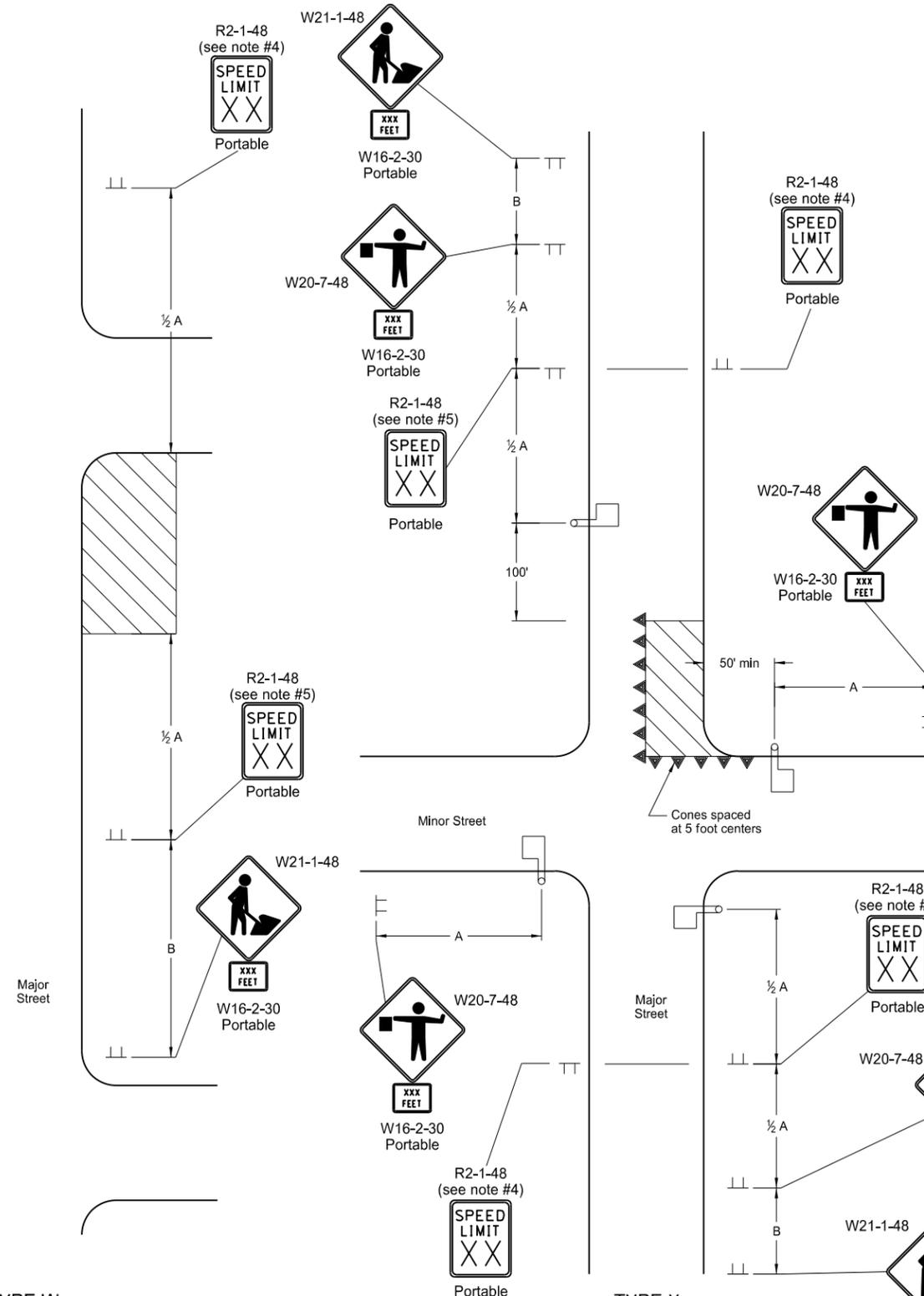


TYPE V
LANE CLOSURE ON URBAN STREET

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

TYPE W
WORK BEYOND CURB ON URBAN STREET

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



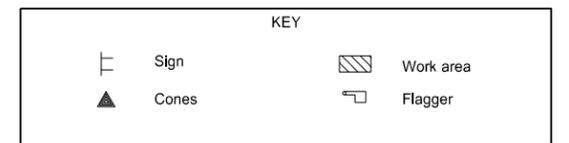
TYPE X
LANE CLOSURE NEAR INTERSECTION ON URBAN STREET

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

Notes

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

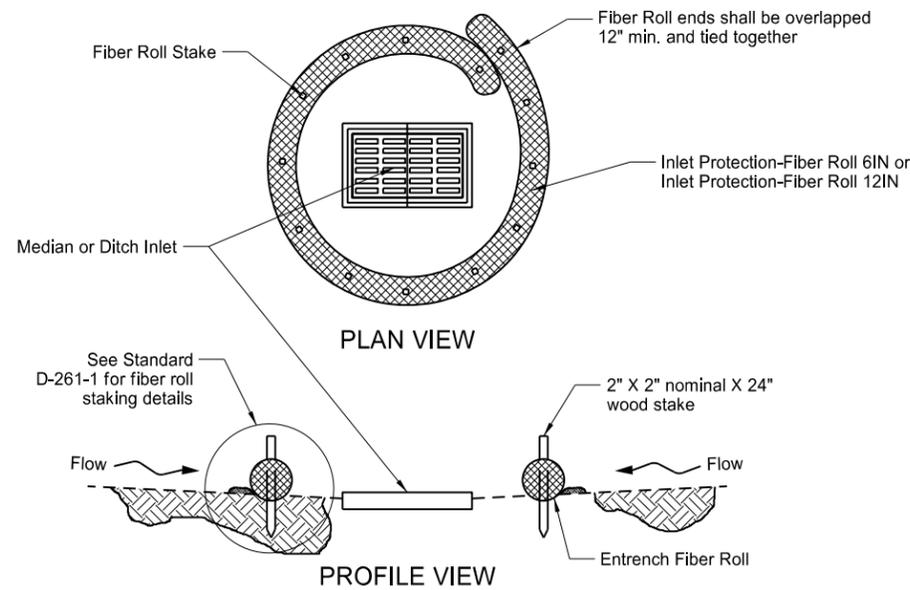
Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60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



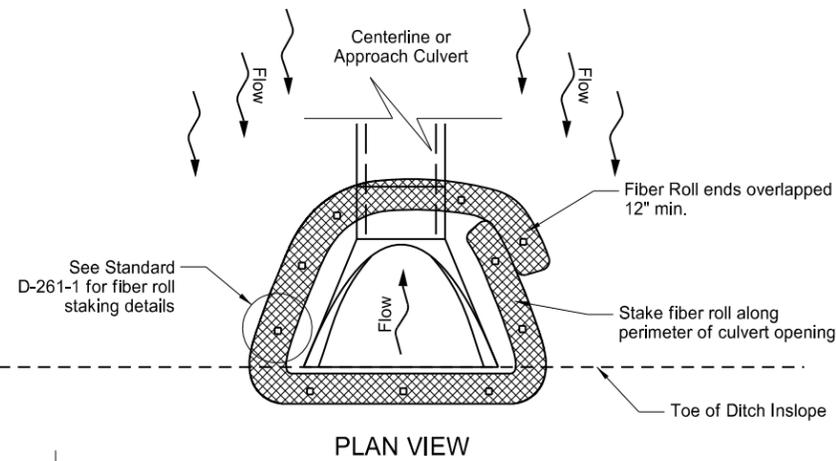
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
9-27-13	
REVISIONS	
DATE	CHANGE

This document was originally issued and sealed by
 Roger Weigel
 Registration Number
 PE-2930,
 on 09/27/13 and the original document is stored at the
 North Dakota Department
 of Transportation

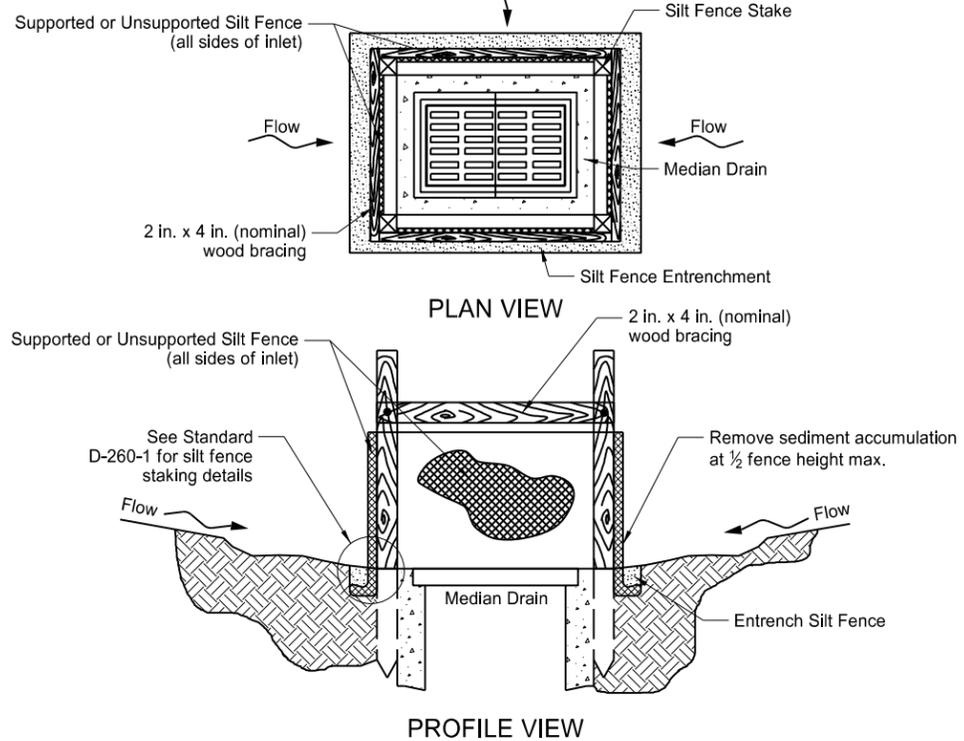
EROSION AND SILTATION CONTROLS
MEDIAN OR DITCH INLET PROTECTION



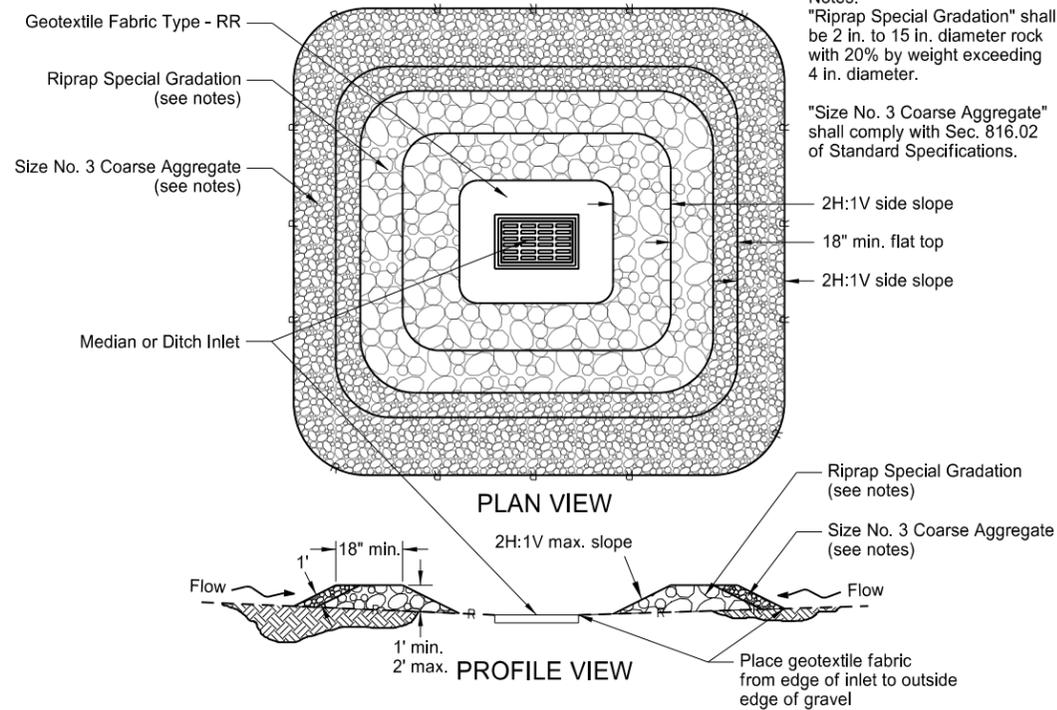
FIBER ROLL PROTECTION (MEDIAN OR DITCH INLET)



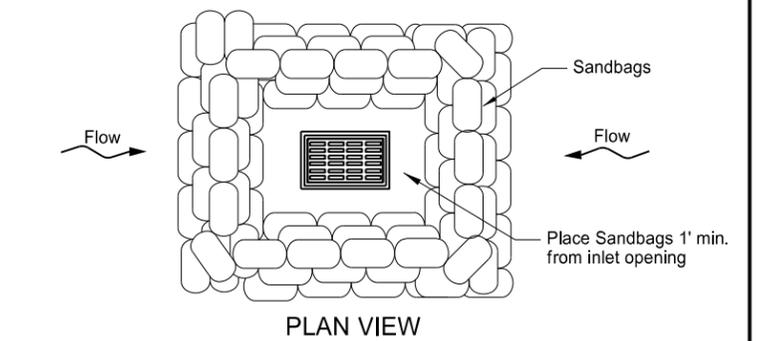
FIBER ROLL PROTECTION (INLET OF CULVERT)



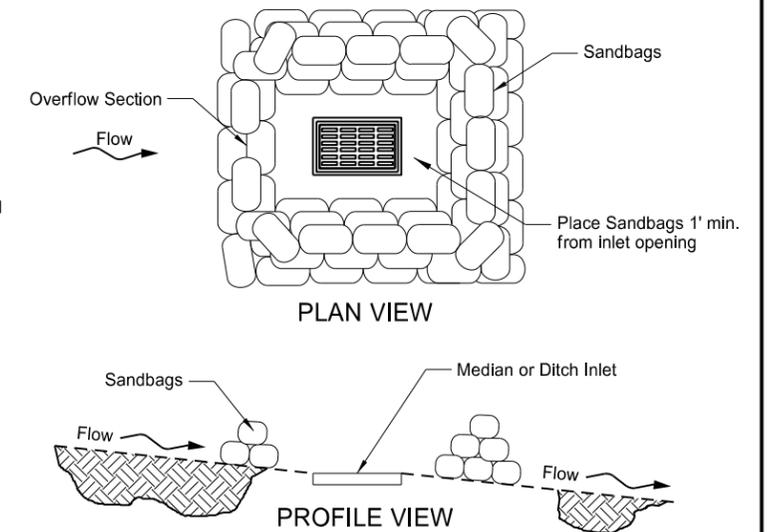
SILT FENCE PROTECTION (MEDIAN OR DITCH INLET)



GRAVEL INLET PROTECTION (MEDIAN OR DITCH INLET)



SANDBAG PROTECTION (LOW POINT)



SANDBAG PROTECTION (ON SLOPE)

Notes:
"Riprap Special Gradation" shall be 2 in. to 15 in. diameter rock with 20% by weight exceeding 4 in. diameter.
"Size No. 3 Coarse Aggregate" shall comply with Sec. 816.02 of Standard Specifications.

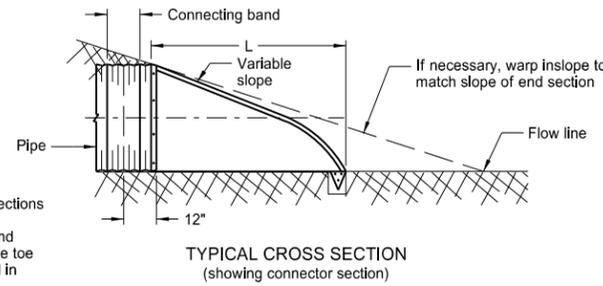
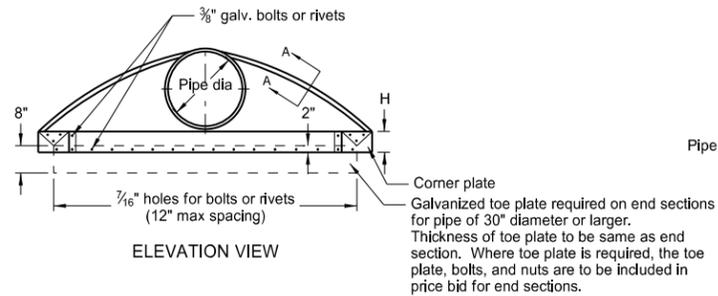
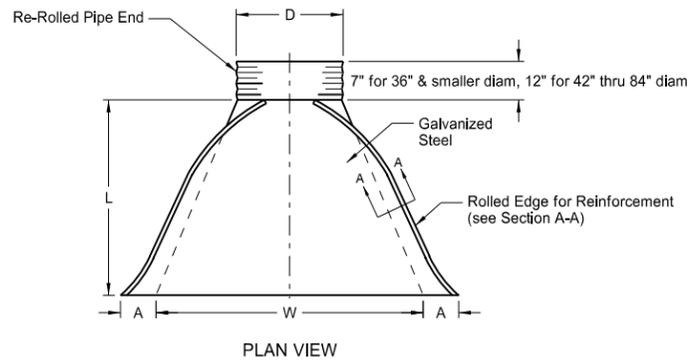
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-03-13	
REVISIONS	
DATE	CHANGE

06-26-14	Updated reference to standard drawing number for fiber roll staking details.
10-01-14	Updated reference to standard drawing number for silt fence.

This document was originally issued and sealed by
Roger Weigel
Registration Number
PE-2930,
on 10/01/14 and the original document is stored at the North Dakota Department of Transportation

ROUND CORRUGATED STEEL PIPE CULVERTS AND END SECTIONS

D-714-4



PIPE DIA. IN	GALV. THICK.	END SECTION DIMENSIONS					APPROX. SLOPE	BODY PIECE
		A IN	B IN	H IN	L IN	W IN		
15	0.064	7	8	6	26	30	2 1/2:1	1
18	0.064	8	10	6	31	36	2 1/2:1	1
24	0.064	10	13	6	41	48	2 1/2:1	1
30	0.079	12	16	8	51	60	2 1/2:1	1 or 2
36	0.079	14	19	9	60	72	2 1/2:1	2
42	0.109	16	22	11	69	84	2 1/2:1	2
48	0.109	18	27	12	78	90	2 1/2:1	2
54	0.109	18	30	12	84	102	2:1	2
* 60	0.109	18	33	12	87	114	1 1/2:1	3
* 66	0.109	18	36	12	87	120	1 1/2:1	3
* 72	0.109	18	39	12	87	126	1 1/3 :1	3
* 78	0.109	18	42	12	87	132	1 1/2:1	3
* 84	0.109	18	45	12	87	138	1 1/6 :1	3

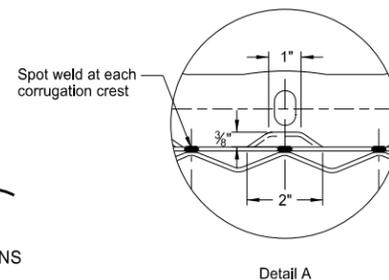
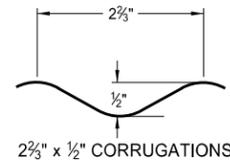
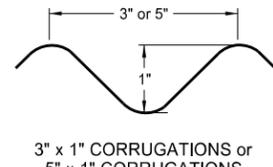
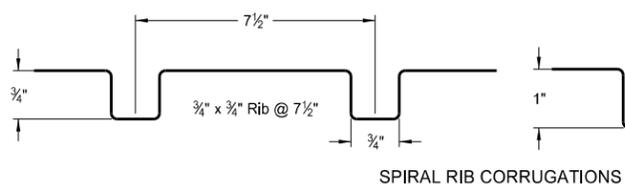
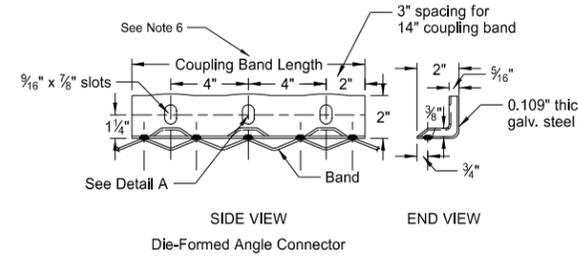
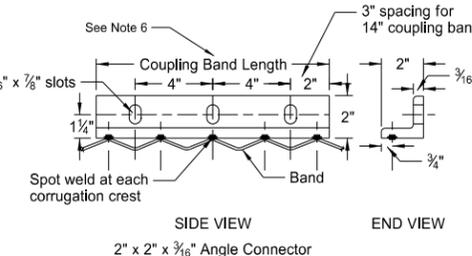
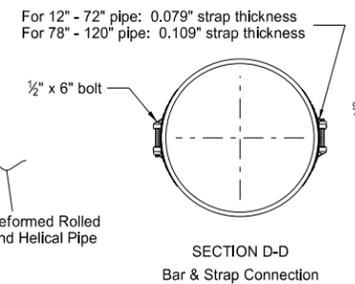
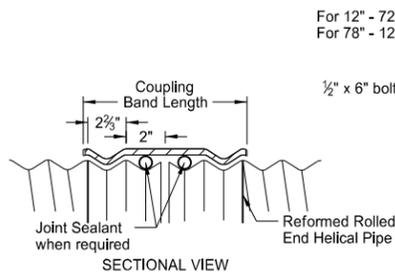
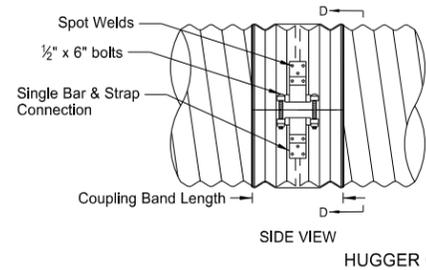
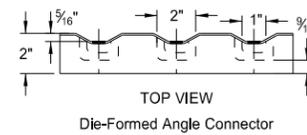
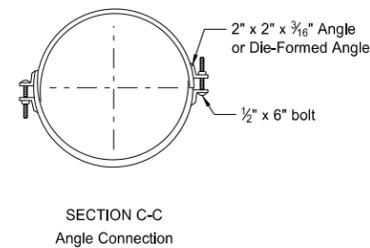
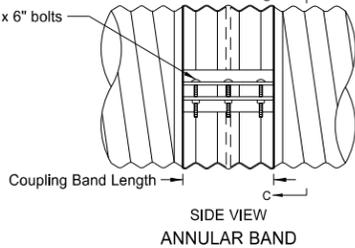
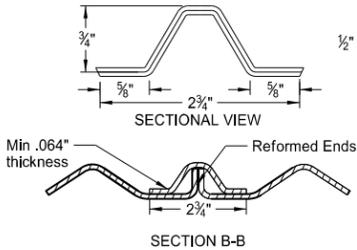
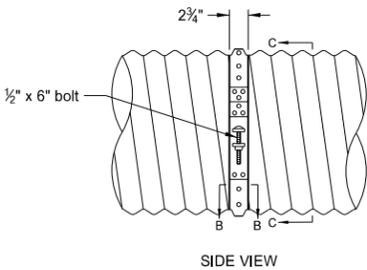
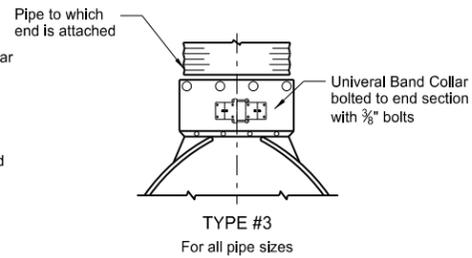
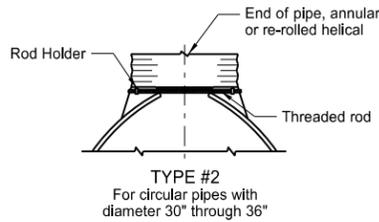
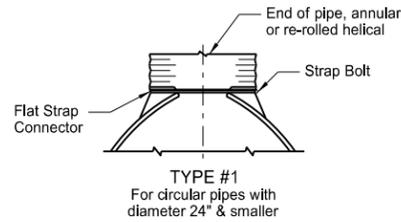
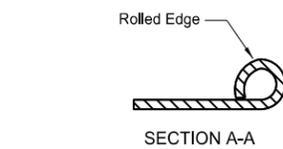
- These sizes have 0.109" sides and 0.138" center panels.
 - Pipe diameter is equal to dimension "D" of end section.
- Manufacturers tolerances of above dimensions will be allowed.
- Splices to be the lap riveted type.

Multiple panel bodies shall have lap seams which are to be tightly joined with 3/8" dia. galv. bolts or rivets. Nuts to be torqued to 25 foot-lbs ±.

NOTES:

1. Pipes and connecting bands shall conform to applicable sections of NDDOT Standard Specifications and to AASHTO M-36.
2. Top edge of all end sections to have rolled edges for reinforcement (see Section A-A). The reinforced edges are to be supplemented with 2" x 2" x 1/4" galv. angle for 60" through 72" dia. and 2 1/2" x 2 1/2" x 1/4" galv. angle for 78" and 84" dia.. Angles to be attached by galv. 3/8" dia. bolts and nuts. Angles are to extend from pipe to the corner wing bend.
3. Elongated pipes shall be factory preformed so that the vertical diameter shall be 5% greater and the horizontal diameter 5% less than a circular pipe.
4. Coupling bands shall be two-piece for pipes larger than 36" as shown in Section C-C & D-D details. For pipes 36" and smaller, a one-piece band is acceptable.
5. 1/2" x 8" bolts may be used as a substitute for the 1/2" x 6" bolts shown in the details.
6. Coupling bands wider than 14" may be used if a minimum of four 1/2" bolts with maximum spacing of 5 1/2" are used for the connection.
7. Length of spot welds shall be minimum 1/2".

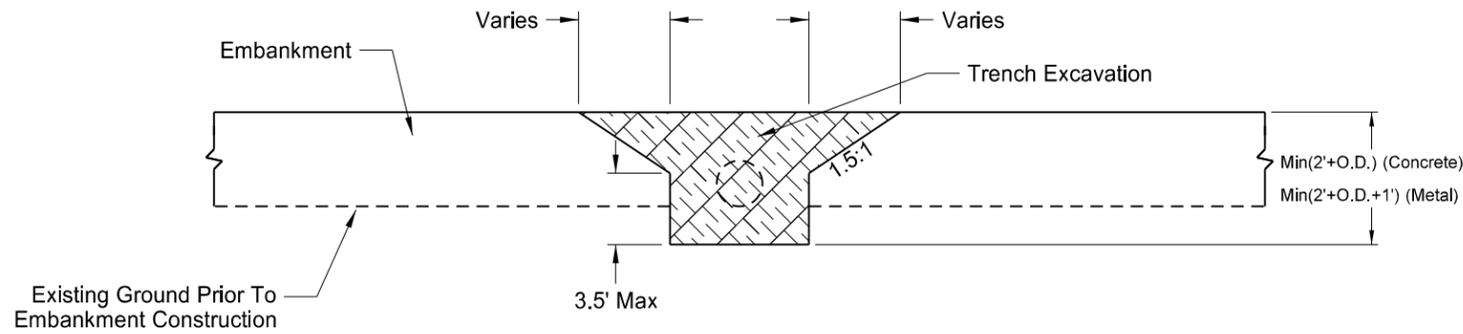
COUPLING BAND DIMENSIONS				
COUPLING TYPE	CORRUGATION PITCH x DEPTH	PIPE SIZE	COUPLING BAND LENGTH	MIN. BAND THICKNESS
Hat Band	2 3/8" x 1/2"	12" - 48"	2 3/4"	.064"
Annular Band	2 3/8" x 1/2"	12" - 72"	12"	.052"
		78" - 84"	12"	.079"
Hugger Band	2 5/8" x 1/2" Rerolled End	12" - 72"	10 1/2"	.052"
		78" - 84"	10 1/2"	.079"
	3" x 1" Rerolled End	48" - 120"	10 1/2"	.052"
	5" x 1" Rerolled End	48" - 120"	12"	.064"



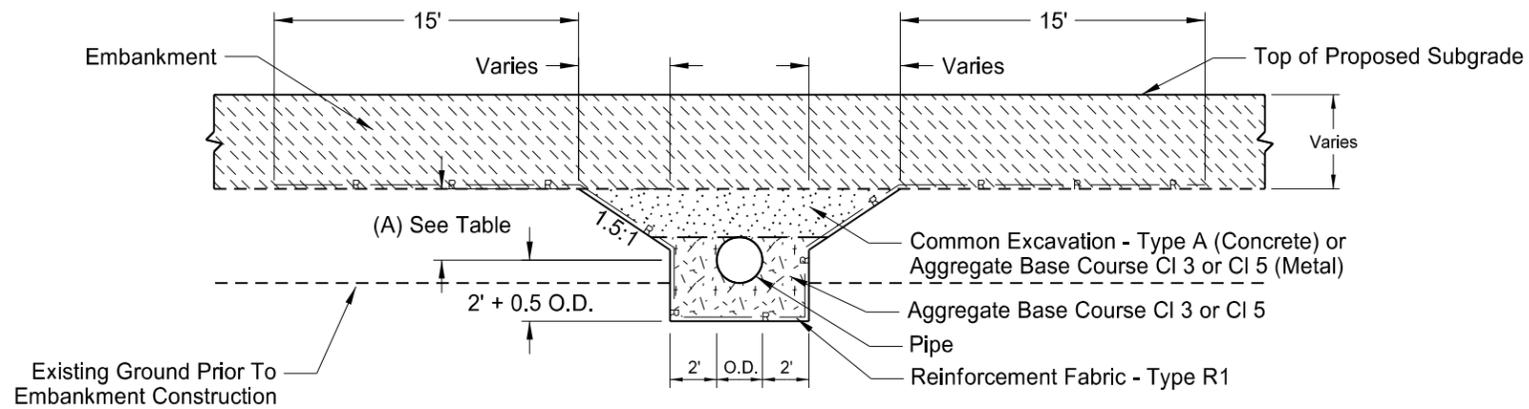
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
08-06-13	
REVISIONS	
DATE	CHANGE
01-07-14	End Section Plan View
02-27-14	3" x 1" Corrugation Detail

This document was originally issued and sealed by Terrence R. Udland, Registration Number PE- 2674 , on 02/27/2014 and the original document is stored at the North Dakota Department of Transportation

TRANSVERSE MAINLINE PIPE EXCAVATION AND INSTALLATION DETAIL FOR PIPES INSTALLED IN NEW EMBANKMENT AREAS



EXCAVATION DETAIL



INSTALLATION DETAIL

Pay Items

- 1) Pipe*
- 2) Reinforcement Fabric - Type R1

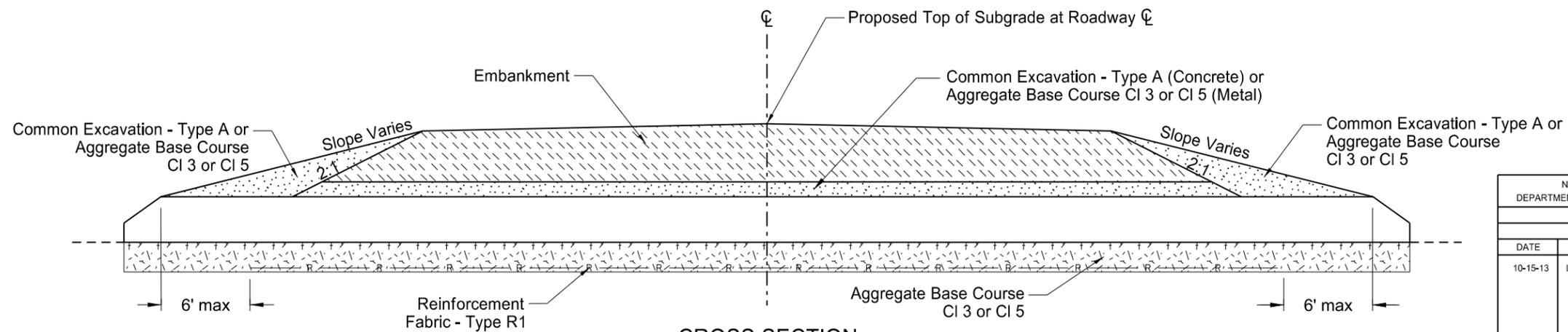
*Included in Pipe Pay Item

- 1) Pipe
- 2) Trench excavation
- 3) Aggregate base course CI 3 or CI 5
- 4) Common Excavation - Type A

NOTES:

- 1) This drawing applies to new/extended mainline and paved intersection roadway pipes only (including ramps). It does not include pipes in approaches

Backfill Dimensions	
Pipe Materials	Dimension (A)
Concrete	0.5 O.D.
Metal	0.5 O.D. + 1 foot



CROSS SECTION

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
7-26-13	
REVISIONS	
DATE	CHANGE
10-15-13	Label Formatting

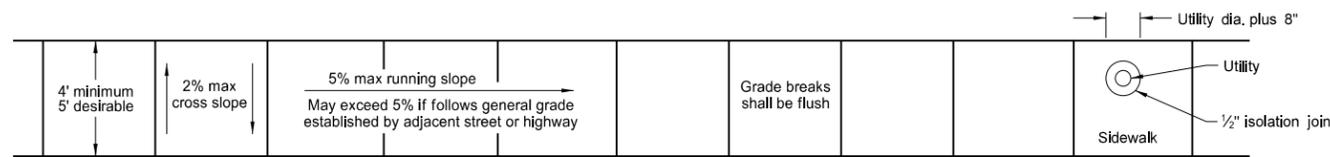
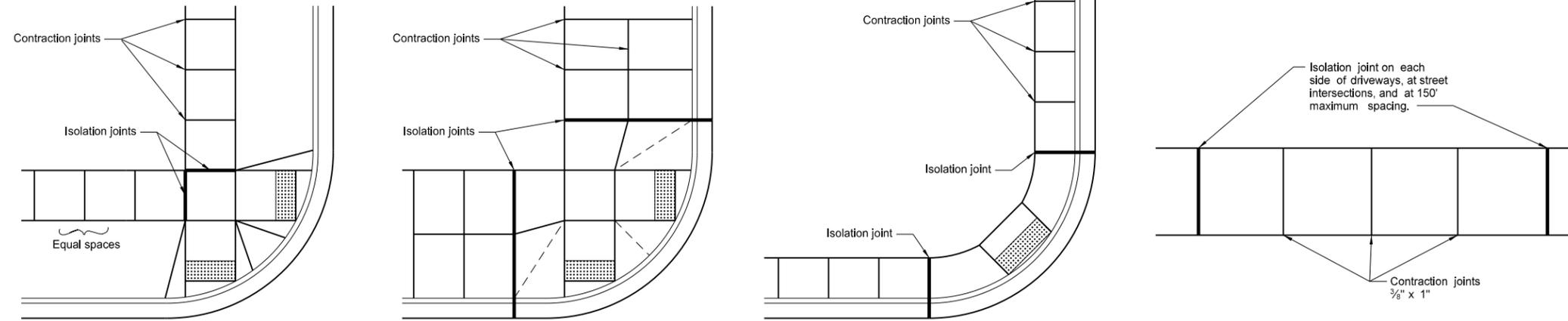
This document was originally issued and sealed by
 Ron Horner,
 Registration Number
 PE-2087,
 on 10/15/13 and the original document is stored at the
 North Dakota Department
 of Transportation

SIDEWALK

D-750-2

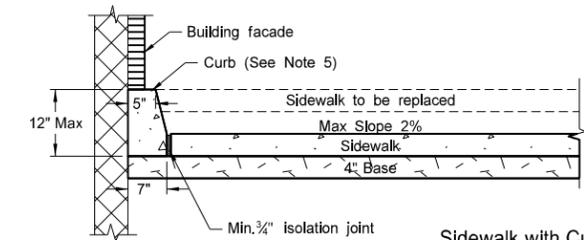
NOTES:

1. Curb ramp and detectable warning panel layouts are for informational purposes only. See Standard Drawing D-750-3 for curb ramp and detectable warning panel details.
2. Joint Spacing: Transverse contraction joint spacing shall vary from 4' to 6' to create approximate square panels. Longitudinal contraction joints shall be used where the sidewalk width is 8' or greater, and shall be spaced at half the sidewalk width. The contraction joints may be sawed or a grooved joint, and shall be a minimum of 1/3 the depth of the concrete. When the sidewalk is adjacent to the curb & gutter, the sidewalk joint spacing shall be varied to match up with the curb & gutter joints. Isolation joints should also be used between separately poured concretes, or between old and new concrete. The cost for all labor, equipment, and material necessary to construct contraction and isolation joints shall be included in the price bid for sidewalk concrete.
3. 4" sidewalk concrete thickness to be used unless otherwise specified in the plans.
4. 4" base material thickness to be used unless otherwise specified in the plans. All labor and materials necessary to place the base material shall be included in the price bid for "Salvage Base Course" or "Aggregate Base Course CL 5."
5. Landscaping is preferred to modify existing ground slope changes as needed. If not possible, such as adjacent buildings, a vertical curb may be used as shown in the detail below. The curb will be paid for at the unit price bid for the item "Curb - Type I" per lineal foot.

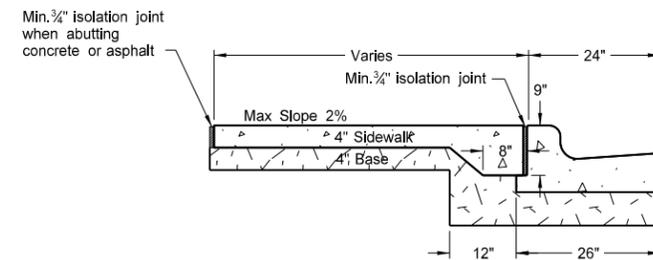


Sidewalk Width and Grade

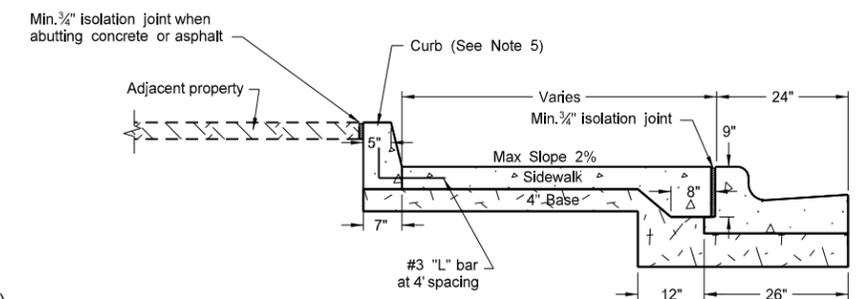
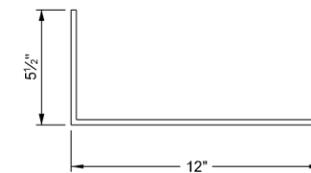
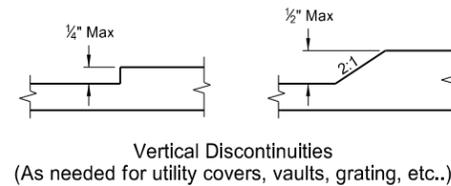
Utility Blockout



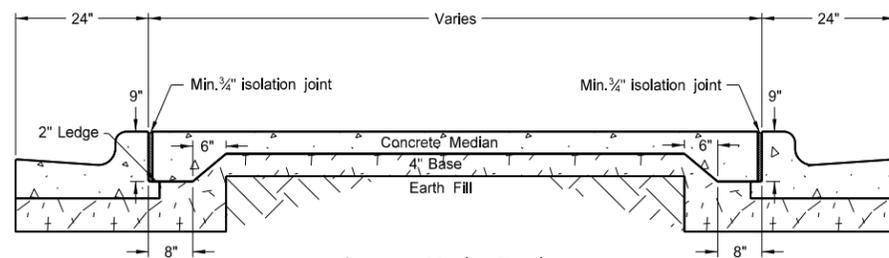
Sidewalk with Curb Detail (Building face application)



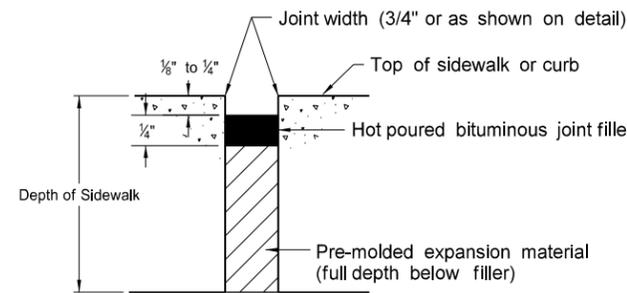
Sidewalk Detail (Installed adjacent to curb and gutter)



Sidewalk with Curb Detail (Adjacent property application)



Concrete Median Detail



Typical Isolation Joint Seal (longitudinal and transverse)

NORTH DAKOTA	
DEPARTMENT OF TRANSPORTATION	
11-26-13	
REVISIONS	
DATE	CHANGE

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 11/26/13 and the original document is stored at the North Dakota Department of Transportation

CURB RAMP DETAILS

D-750-3

+More Right of Way

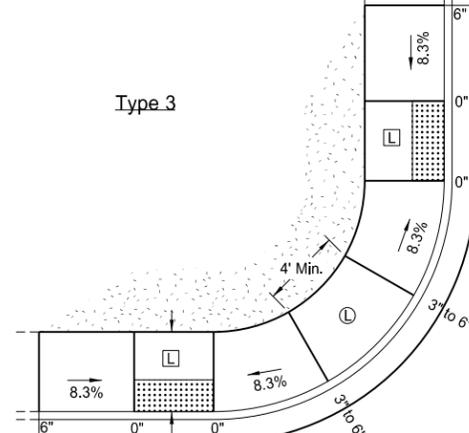
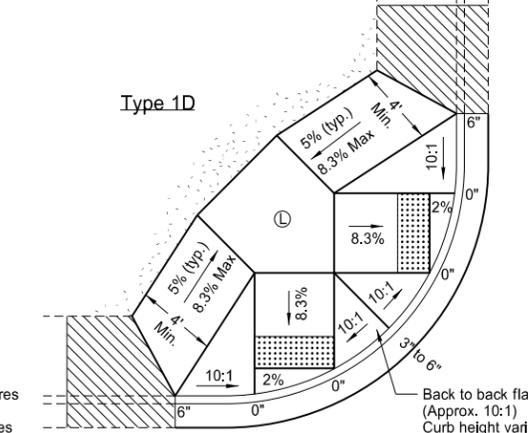
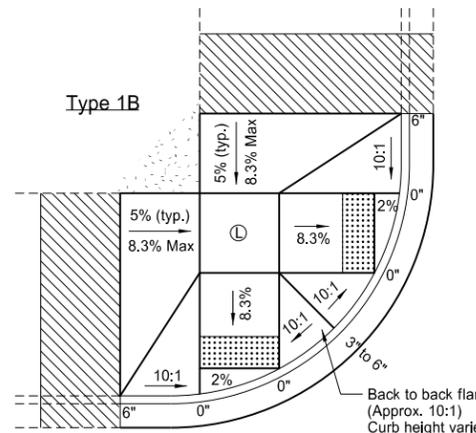
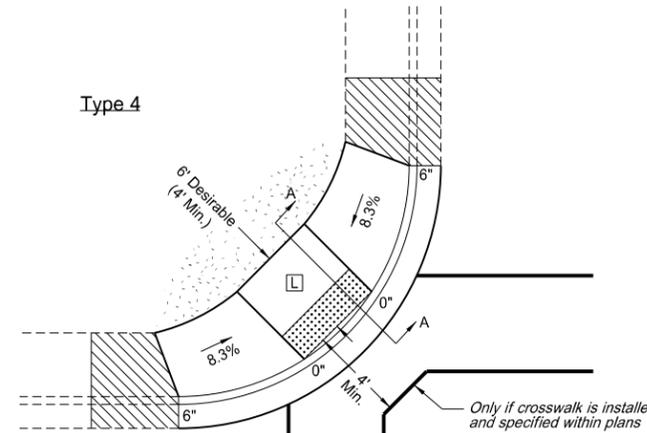
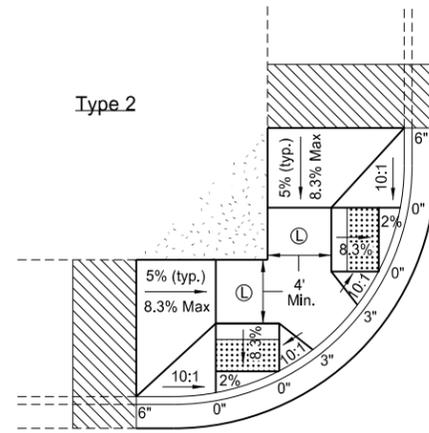
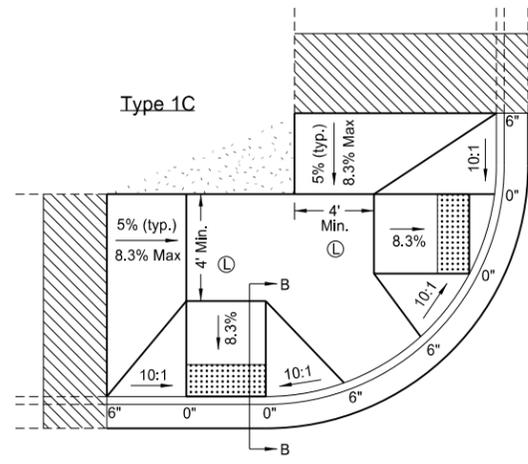
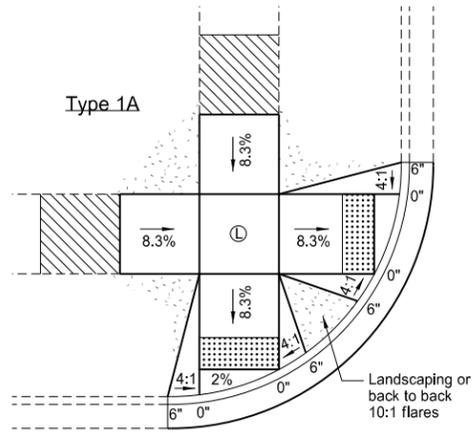
Less Right of Way

NOTES:

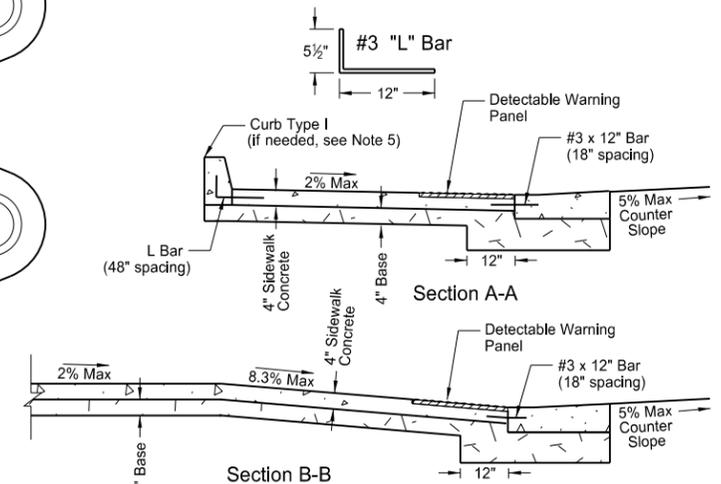
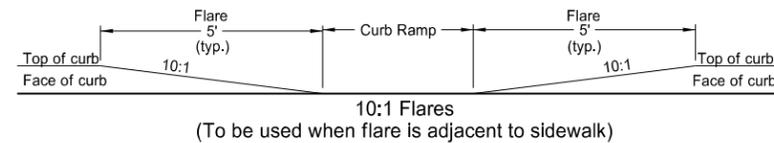
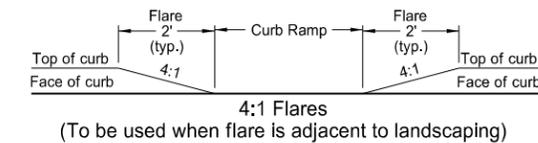
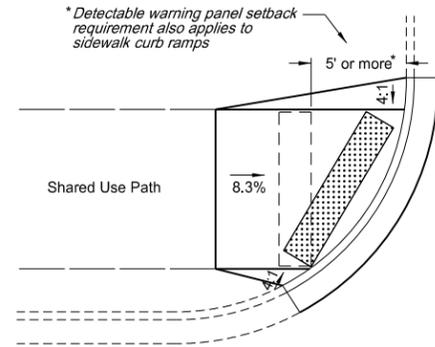
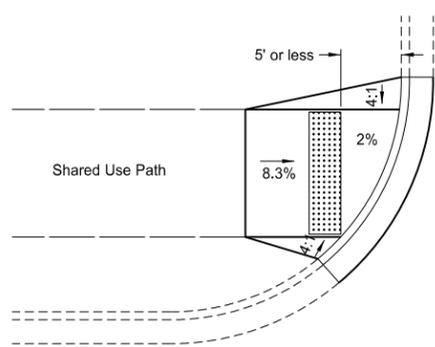
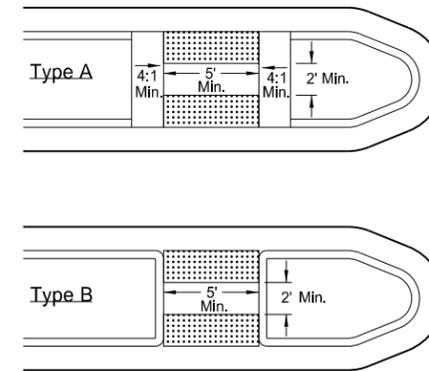
- Ramp width is defined as the useable portion of the ramp, excluding flares if used.
Curb ramp width should match the existing sidewalk width. 4' width minimum.
Ramp width for shared-use paths should match the existing shared use path width.
Ramp length shall be maximum of 15'.
- Landings shall be a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

LEGEND:

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



Median Refuge Islands (Cut-Through)



NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
11-26-13	
REVISIONS	
DATE	CHANGE

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 11/26/13 and the original document is stored at the North Dakota Department of Transportation