

STATE OF NORTH DAKOTA

JOB # 33

NORTH DAKOTA

DEPARTMENT OF TRANSPORTATION

TAC-0051(031)

Ward County

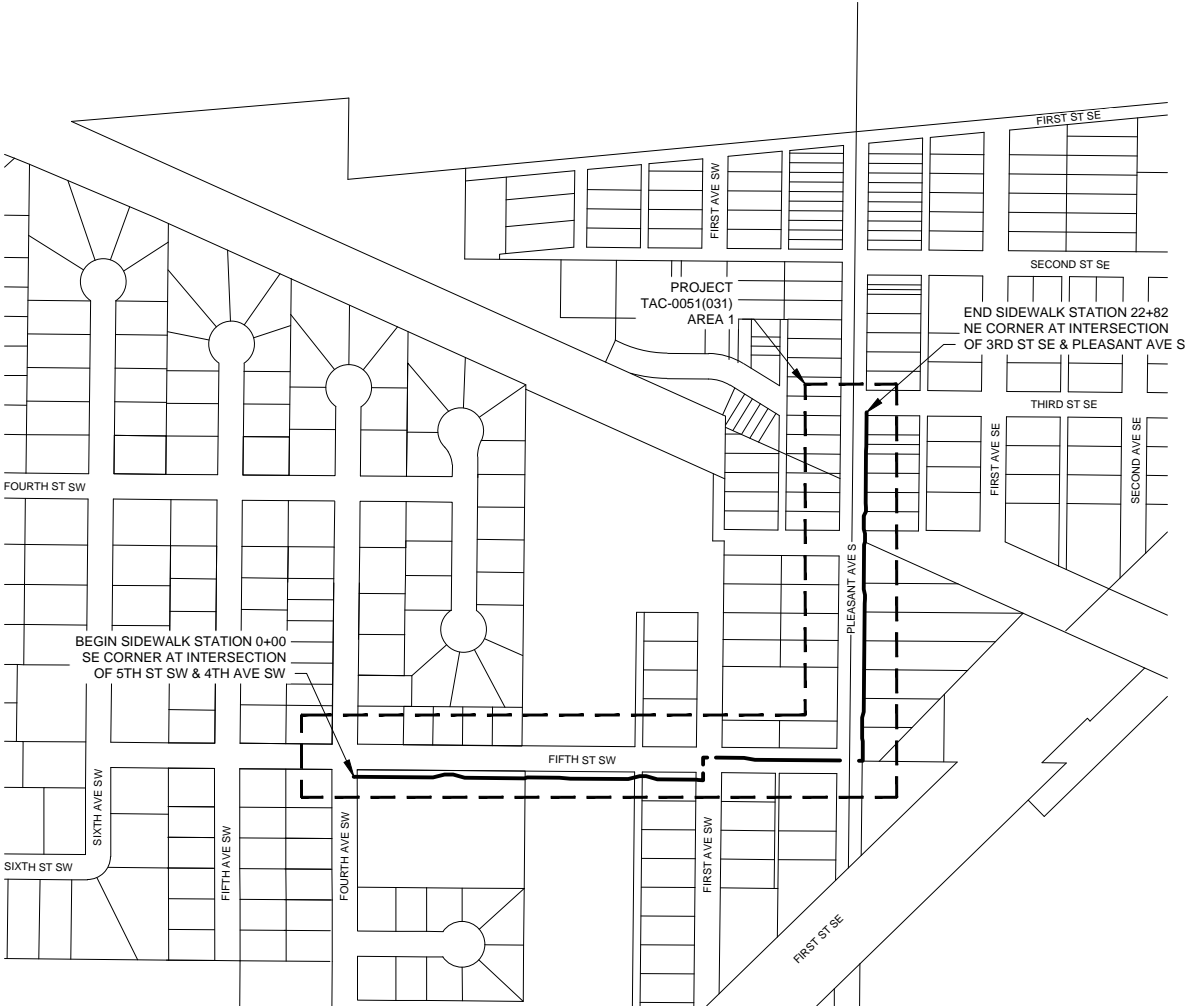
City of Surrey, North Dakota

Sidewalks, Curb & Gutter, and Incidentals

	STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
	ND	TAC-0051(031)	22268	1	1

GOVERNING SPECIFICATIONS:
2020 STANDARD SPECIFICATIONS ADOPTED BY THE NORTH DAKOTA DEPARTMENT OF TRANSPORTATION AND THE SUPPLEMENTAL SPECIFICATIONS EFFECTIVE ON THE DATE THE PROJECT IS ADVERTISED; STANDARD DRAWINGS CURRENTLY IN EFFECT; AND OTHER CONTRACT PROVISIONS SUBMITTED HEREIN.

DESCRIPTION	NET MILES	
	NET MILES	GROSS MILES
AREA 1	0.42	0.43
TOTAL=	0.42	0.43



SECTION 19, TOWNSHIP 155 NORTH, RANGE 81 WEST

DESIGNERS

BRENT ERICKSON, 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 JULY 2020

BRENT ERICKSON, /S/

ADVANCED ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

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							STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
							ND	TAC-0051(031)	22268	2	1

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76	1-2	Temporary Erosion Control
100	1-2	Work Zone Traffic Control
200	1-7	Cross Sections

LIST OF SPECIAL PROVISIONS

PROJECT	SP No.	Description
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LIST OF STANDARD DRAWINGS

Standard No.	Description
D-101-1,2,3	NDDOT Abbreviations
D-101-10	NDDOT Utility Company Abbreviations
D-101-20, 21	Linestyles
D-101-30, 31, 32	Symbols
D-255-2	Erosion And Siltation Control - Erosion Control Blanket Installation
D-261-1	Erosion Control - 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-704-24	Shoulder Closures and Bridge Painting Layouts
D-714-4	Round Corrugated Steel Pipe Culverts and End Sections
D-714-28	Transverse Mainline Pipe Installation Detail for Pipes Installed in New Embankment Areas
D-724-01	Waterworks
D-748-01	Curb & Gutter and Valley Gutter
D-750-02	Sidewalk and Curb Ramps
D-750-03	Curb Ramp Details
D-762-01	Pavement Marking Message Details

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REV'D.

Table of Contents, List of Standard Drawings

Transportation Alternatives Program
Surrey, North Dakota

DRWN. BY
T. Tharaldson

CHK'D BY
B. Erickson

PROJECT NO.
P05519-2018-001

DATE
JULY 2020

File: W:\S\Surrey\05519-2018-001\CAD Dwg\01-Civil\Plan Sheets\2 Front End Sheets.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-0051(031)	22268	4	1



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LEGEND

SIDEWALK CONCRETE



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Scope of Work

Transportation Alternatives Program
Surrey, North Dakota

DRWN. BY T. Tharaldson	CHK'D BY B. Erickson	PROJECT NO. P05519-2018-001	DATE JULY 2020
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File: W:\S\Surrey\05519-2018-001\CAD Drawings\01-Civil\Plan Sheets\4 Scope of Work.dwg

GENERAL NOTES

	STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
	ND	TAC-0051(031)	22268	6	1

100-P02 EXISTING UTILITY LOCATIONS: Contractor shall contact all residents living adjacent to the construction site and inquire about the existence of any private utilities/sprinklers systems in the construction area. All private utilities/sprinklers systems, if disturbed, shall be restored to preconstruction condition at the Contractor's expense.

105-110 PAVEMENT SWEEPING: Sweep paved areas that were used by construction traffic before opening these areas to public traffic. Sweep all newly constructed pavement no more than 24 hours before a scheduled final inspection. Sweep the roadway adjacent to the construction area at the end of each day. Utilize a vacuum or pickup type sweeper.

107-115 RAILROAD PROTECTIVE LIABILITY INSURANCE: This project crosses the BNSF Railway Company at RP 093072. The type of work that will be performed within the railroad right of way is sidewalk construction. Direct inquiries regarding protective liability insurance to:

Rosa Martinez
Marsh USA Inc.
4400 Comerica Bank Tower
1717 Main Street
Dallas, TX 75201-7357, USA
214-303-8519
Rosa.M.Martinez@marsh.com

Obtain information regarding crossing number 093072 from the Federal Railroad Administration website:
<http://safetydata.fra.dot.gov/Officeofsafety/>

202-P01 ABUTTING PAVEMENT: Where new pavement will abut existing pavement, a full depth vertical saw cut shall be made along the entire length of the butt joint. Coulter cuts will not be allowed. The material to be removed shall then be removed without disturbing the material that is designated to remain. Place the new pavement as to match the existing pavement and so as to provide a continuous surface profile. All labor, materials, and equipment required for saw cutting shall be incidental to price bid for adjacent sidewalk.

203-P01 REMOVE & SALVAGE 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 & Salvage Topsoil". Minimum depth of topsoil replacement shall be 4 inches.

203-P02 COMMON EXCAVATION LIMITS: Bid item will be paid at plan quantity unless changes are made by the Engineer.

203-P03 BORROW EXCAVATION: Compaction control for all borrow will be Type C per Section 203.04 E.4 of the Standard Specifications.

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

253-P01 SEEDING AND HYDRAULIC MULCH: Class II seed according to NDDOT Standard Specifications section 251 shall be used on this project in all areas that are disturbed on the construction site. All seeding is to be Hydraulic Mulched as specified in the NDDOT specification 253. 0.10 acres of seeding and hydraulic mulch has been added to Hydraulic Mulch bid quantity for miscellaneous construction staging areas and stockpile areas. This work shall be included in the bid price for "Hydraulic Mulch" and shall be paid as a plan quantity. No payment will be made for areas disturbed by the contractor outside of the limits shown on the drawings.

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General Notes				
		Transportation Alternatives Program Surrey, North Dakota		
		DRWN. BY T. Tharaldson	CHK'D BY B. Erickson	PROJECT NO. P05519-2018-001
		DATE JULY 2020		
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GENERAL NOTES					STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
					ND	TAC-0051(031)	22268	6	2

302-P01

AGGREGATE BASE COURSE:

Bid item shall be paid as plan quantity for the sidewalk base unless changes are made by the Engineer. All costs of furnishing and installing aggregate base course for pipe bedding and haunch shall be included in the bid price for "Pipe Conduit".

430-P01

BITUMINOUS PATCHING:

Bituminous pavement necessary to fill along curb and gutter shall be laid in equal depth lifts, not to exceed 2" per lift. Total depth of bituminous pavement shall be equal to the depth of the adjacent pavement, but not less than 4". Adjoining vertical faces shall be tack coated prior to installation of patching material. All costs associated with bituminous patching including, materials, equipments and labor will not be measured separately but shall be considered incidental to "curb and gutter - type 1".

704-P01

MAINTAINING ACCESS:

The contractor will maintain access to all residential dwellings, parking lots and business establishments adjacent to this project during construction. The contractor will communicate and coordinate with adjacent businesses and residents regarding access control.

704-P02

CONSTRUCTION SIGNING:

Road Work Ahead (W20-1) and Shoulder Work (W20-5) signs have been included to provide advance warning of the work zone to the traveling public. Layout S on Standard Drawing D-704-24 shall be used as guidance for establishing the work zone. Sidewalk shall be closed to the public at all times work is in progress until all work is complete. Plan quantity of traffic control devices is based on two work zones, one for each street. If contractor desires a different work zone, additional traffic control devices shall be provided at the contractor's expense. The contractor shall present a traffic control plan to the engineer prior to the start of construction.

750-P01

SIDEWALK CONCRETE 4 IN:

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.

Type 1A ADA curb ramps shall be used where curb is present.

All excavated areas shall be thoroughly compacted to a depth slightly below subgrade.

Any curb stops, gate valves, or electrical pull boxes within the new sidewalk concrete limits shall be set flush with the top of the new sidewalk. Any signs or mailboxes within the new sidewalk concrete limits shall be relocated outside of the limits and location shall be coordinated with the homeowner or City personnel. All costs required to install the adjustable curb stops, gate valves, or electrical pull boxes to grade and relocate signs or mailboxes shall be included in the price bid for "Sidewalk Concrete 4 In".

750-P02

SIDEWALK CONCRETE 6 IN:

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 6 In". In the event that no excavation is required, any sod or vegetation within the construction area shall be removed.

Sidewalk that crosses driveways will be thickened to 6 inches and paid for as "Sidewalk Concrete 6 In".

All excavated areas shall be thoroughly compacted to a depth slightly below subgrade.

Any curb stops, gate valves, or electrical pull boxes within the new sidewalk concrete limits shall be set flush with the top of the new sidewalk. Any signs or mailboxes within the new sidewalk concrete limits shall be relocated outside of the limits and location shall be coordinated with the homeowner or City personnel. All costs required to install the adjustable curb stops, gate valves, or electrical pull boxes to grade and relocate signs or mailboxes shall be included in the price bid for "Sidewalk Concrete 6 In".

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General Notes

Transportation Alternatives Program
Surrey, North Dakota

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CHK'D BY
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P05519-2018-001

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	STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
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SUMMARY OF QUANTITIES

SPEC	CODE	ITEM DESCRIPTION	UNIT	TOTAL
103	100	CONTRACT BOND	LS	1
107	100	RAILWAY PROTECTION INSURANCE	LS	1
202	130	REMOVAL OF CURB & GUTTER	LF	12
202	132	REMOVAL OF BITUMINOUS SURFACING	SY	50
203	103	COMMON EXCAVATION - TYPE C	CY	189
203	125	REMOVE & SALVAGE TOPSOIL	CY	229
203	140	BORROW - EXCAVATION	CY	15
251	200	SEEDING CLASS II	ACRE	0.50
253	201	HYDRAULIC MULCH	ACRE	0.50
255	103	ECB TYPE 3	SY	285
261	112	FIBER ROLLS 12IN	LF	120
261	113	REMOVE FIBER ROLLS 12IN	LF	120
302	121	AGGREGATE BASE COURSE CL 5	CY	133
702	100	MOBILIZATION	LS	1
704	100	FLAGGING	MH	100
704	1000	TRAFFIC CONTROL SIGNS	UNIT	417
714	4090	PIPE CONDUIT 12IN	LF	37
714	5800	END SECT CORR STEEL .064IN 12IN	EA	4
724	425	RESET HYDRANT	EA	1
748	100	CURB & GUTTER	LF	12
750	115	SIDEWALK CONCRETE 4IN	SY	1,062
750	140	SIDEWALK CONCRETE 6IN	SY	100
750	1016	DRIVEWAY CONCRETE 6IN REINFORCED	SY	22
750	2115	DETECTABLE WARNING PANELS	SF	100
762	1124	PVMT MK PAINTED 24IN LINE	LF	70

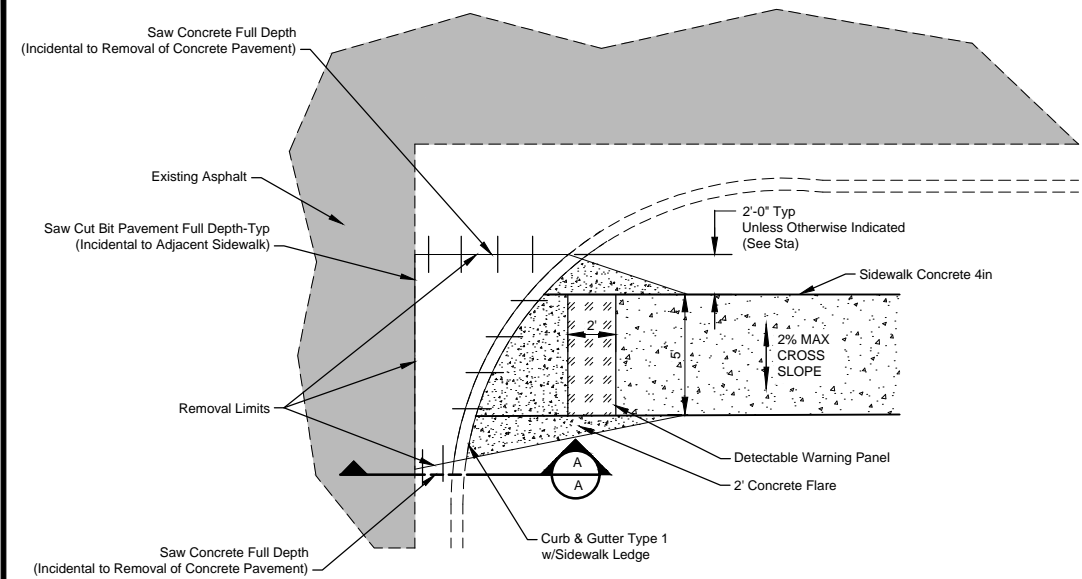
BASIS OF ESTIMATE

HYDRAULIC MULCH: QUANTITY BASED ON SEEDING 2' BEYOND SIDEWALK EDGE PLUS AREAS WHERE FILL IS REQUIRED PLUS 0.10 ACRES FOR STAGING AREAS.

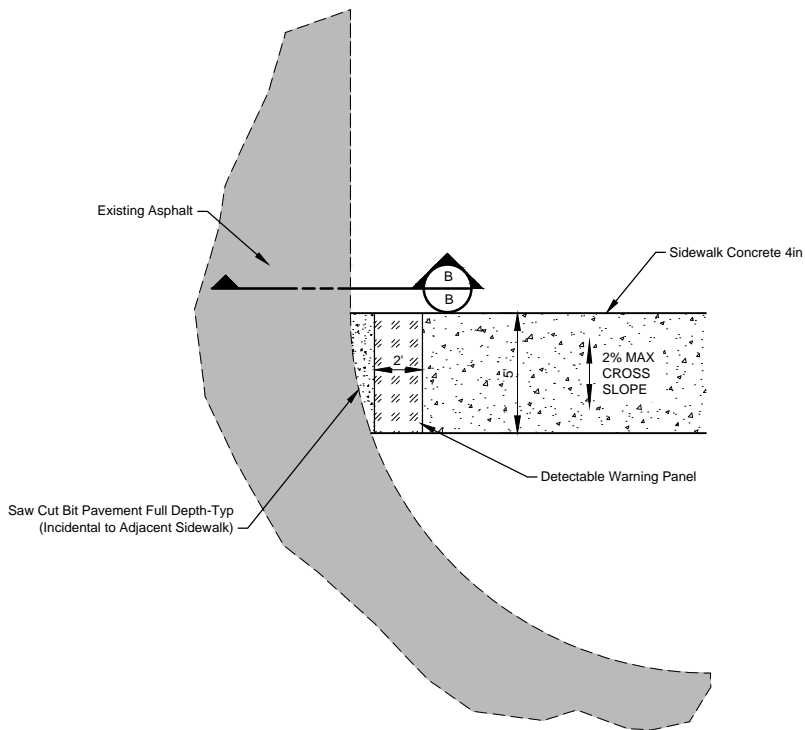
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Summary of Quantities, Basis of Estimate			
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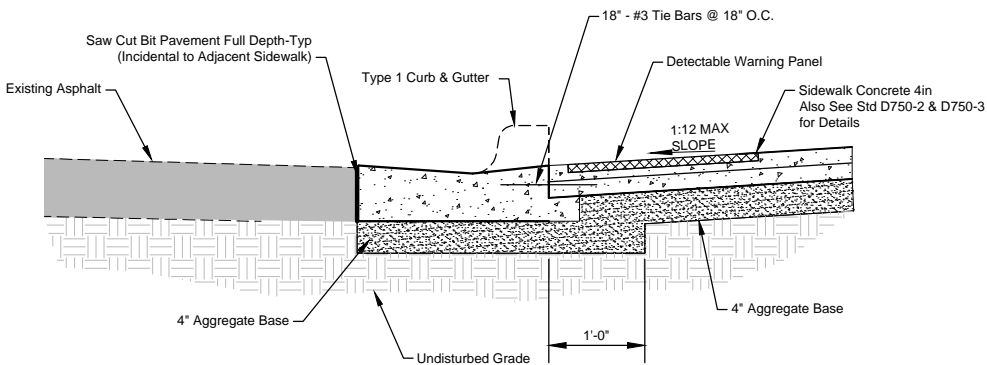
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	ND	TAC-0051(031)	22268	20	1



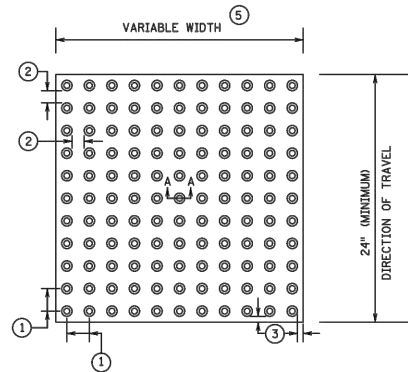
Type A ADA Ramp
Typ Detail at Curb & Gutter to Street



Type B ADA Ramp
Typ Detail at Sidewalk to Street

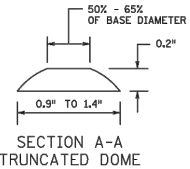


Section A-A



RECTANGULAR PLATES

TYPICAL RADIAL TRUNCATED DOME PLATES			
RADIUS (FEET)	LONG CHORD WIDTH (INCHES)	SQ. FT. PER PLATE	PLATES REQUIRED FOR 90 DEGREE TURN
10	23-1/2	3.53	8
15	18-13/16	2.93	15
15	23-1/2	3.67	12
20	18-13/16	3.00	20
20	18-7/8	2.98	20
25	20-1/2	3.28	23
25	23-9/16	3.77	20
30	22-5/8	3.65	25
35	22	3.56	30



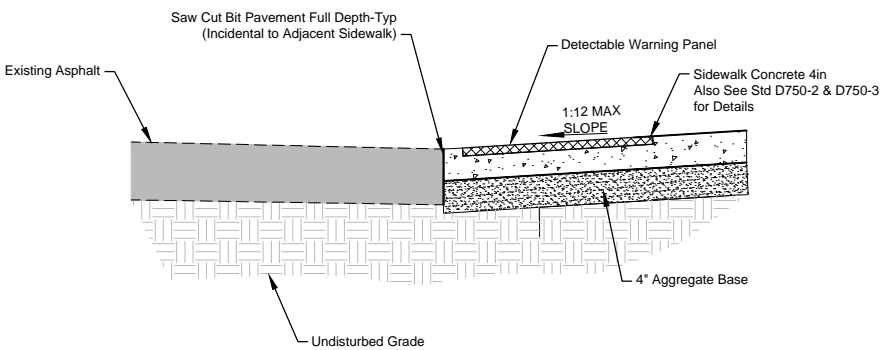
SECTION A-A
TRUNCATED DOME

NOTES:

- DETECTABLE WARNING SURFACES SHALL FOLLOW THE PUBLIC RIGHTS-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG).
DETECTABLE WARNINGS CONSIST OF TRUNCATED DOMES ALIGNED IN A SQUARE OR RADIAL GRID PATTERN.
DETECTABLE WARNINGS ARE REQUIRED:
-WHERE RAMPS, LANDINGS, OR BLENDED TRANSITIONS PROVIDE A FLUSH PEDESTRIAN CONNECTION TO THE ROADWAY.
-WHERE PEDESTRIAN ACCESS ROUTES CROSS COMMERCIAL DRIVEWAYS THAT ARE PROVIDED WITH TRAFFIC CONTROL DEVICES OR OTHERWISE PERMITTED TO OPERATE LIKE A PUBLIC ROADWAY.
-AT PEDESTRIAN RAILWAY CROSSINGS.
-ON RAIL PLATFORMS WHERE BOARDING EDGES ARE NOT PROTECTED.
DETECTABLE WARNINGS SHALL EXTEND:
-A MINIMUM OF 24" IN THE DIRECTION OF TRAVEL.
-THE FULL WIDTH OF THE RAMP, LANDING, OR BLENDED TRANSITION, WITHIN 3" OF FULL WIDTH ON EITHER END.
-THE FULL LENGTH OF THE PUBLIC USE AREA OF A RAIL PLATFORM.
DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT GUTTER, ROADWAY, OR WALKWAY, EITHER A LIGHT-ON-DARK OR DARK-ON-LIGHT. CONTRAST MAY BE PROVIDED ON THE FULL RAMP SURFACE, EXCLUDING THE FLARED SIDES.

- FOR MN/DOT PROJECTS, SEE MN/DOT'S APPROVED/QUALIFIED PRODUCT LISTS.
DETECTABLE WARNING SURFACE SHALL BE PAID FOR AS TRUNCATED DOMES BY THE SQUARE FOOT.
ALL TRUNCATED DOME SYSTEMS SHALL BE PLACED IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER.
① CENTER TO CENTER DOME SPACING: 1.6" MINIMUM, 2.4" MAXIMUM.
② BASE TO BASE DOME SPACING: 0.65" MINIMUM.
③ DOME BASE TO PLATE EDGE SPACING: 0.35" MINIMUM, 0.75" MAXIMUM.
④ SPACING VARIES ON RADIAL PLATES.
⑤ TYPICAL WIDTHS AVAILABLE: 12", 18", 24", 30", 36". CHECK WITH MANUFACTURERS FOR AVAILABLE WIDTHS.
⑥ ON RADIAL PLATE, RADIUS DEFINED AT BACK OF CURB.
⑦ TYPICAL RADII. CHECK WITH MANUFACTURERS FOR AVAILABLE RADII.

Detectable Warning Panel Details



Section B-B

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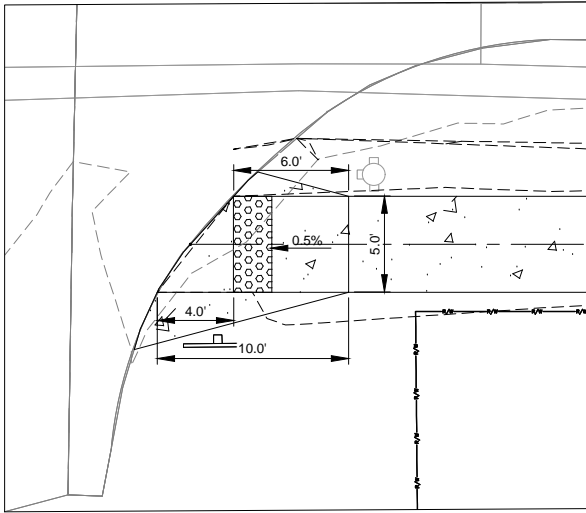
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Details

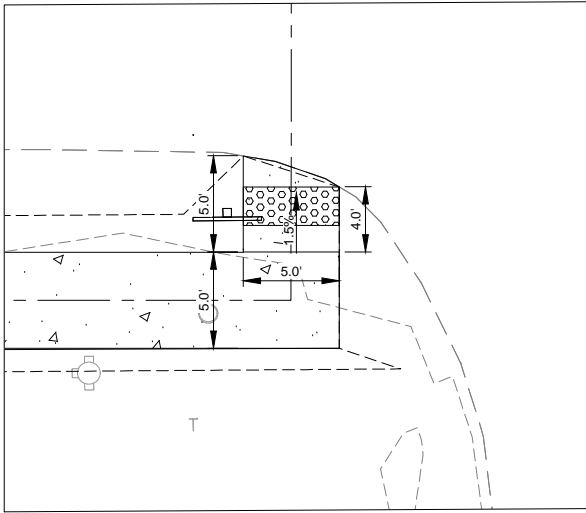
Transportation Alternatives Program
Surrey, North Dakota

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
T. Tharaldson	B. Erickson	P05519-2018-001	JULY 2020

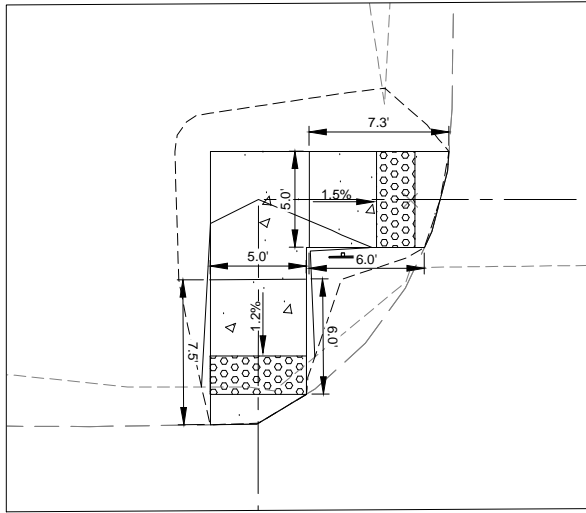
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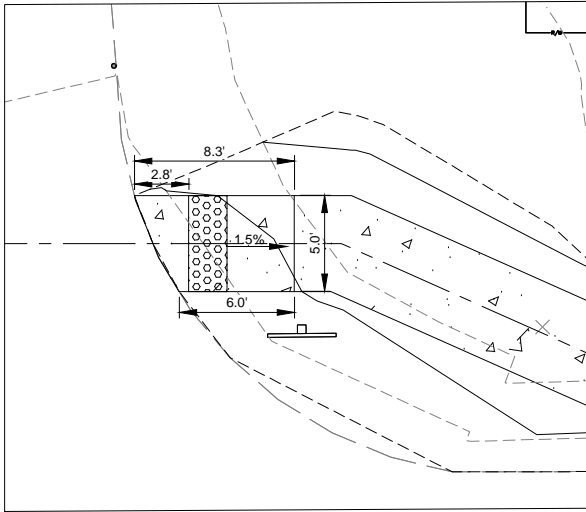
Type A ADA Ramp
SE Corner of 5th St SW & 4th Ave SW



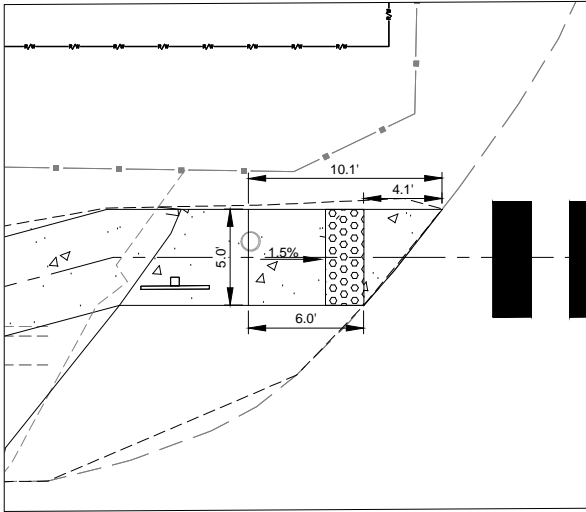
Type B ADA Ramp
SW Corner of 5th St SW & 1st Ave SW



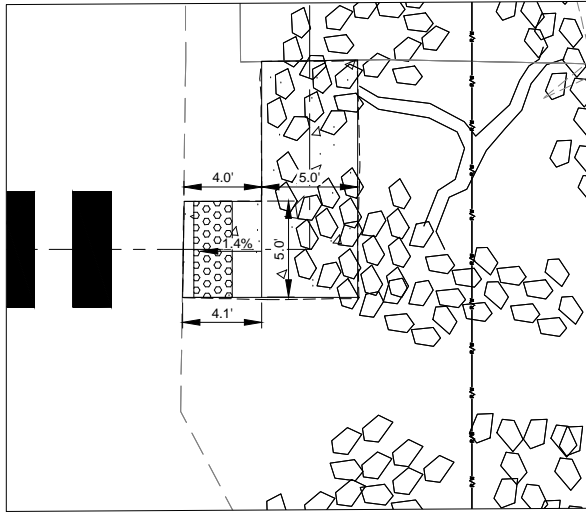
Type B ADA Ramps
NW Corner of 5th St SW & 1st Ave SW



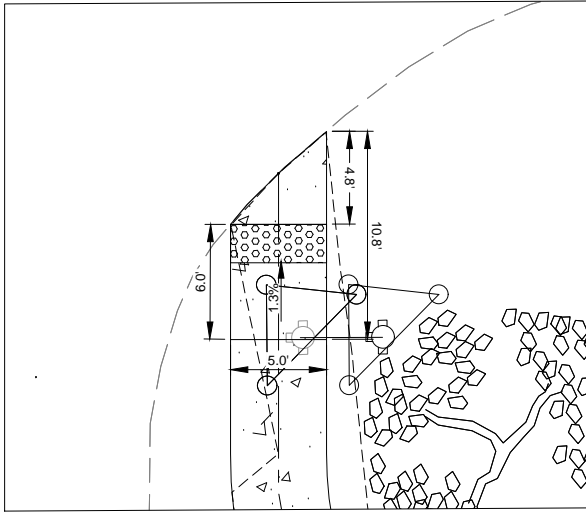
Type B ADA Ramp
NE Corner of 5th St SW & 1st Ave SW



Type B ADA Ramp
NW Corner of 5th St SW & Pleasant Ave S



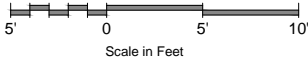
Type B ADA Ramp
NE Corner of 5th St SW & Pleasant Ave S



Type B ADA Ramp
SE Corner of 3rd St SW & Pleasant Ave S

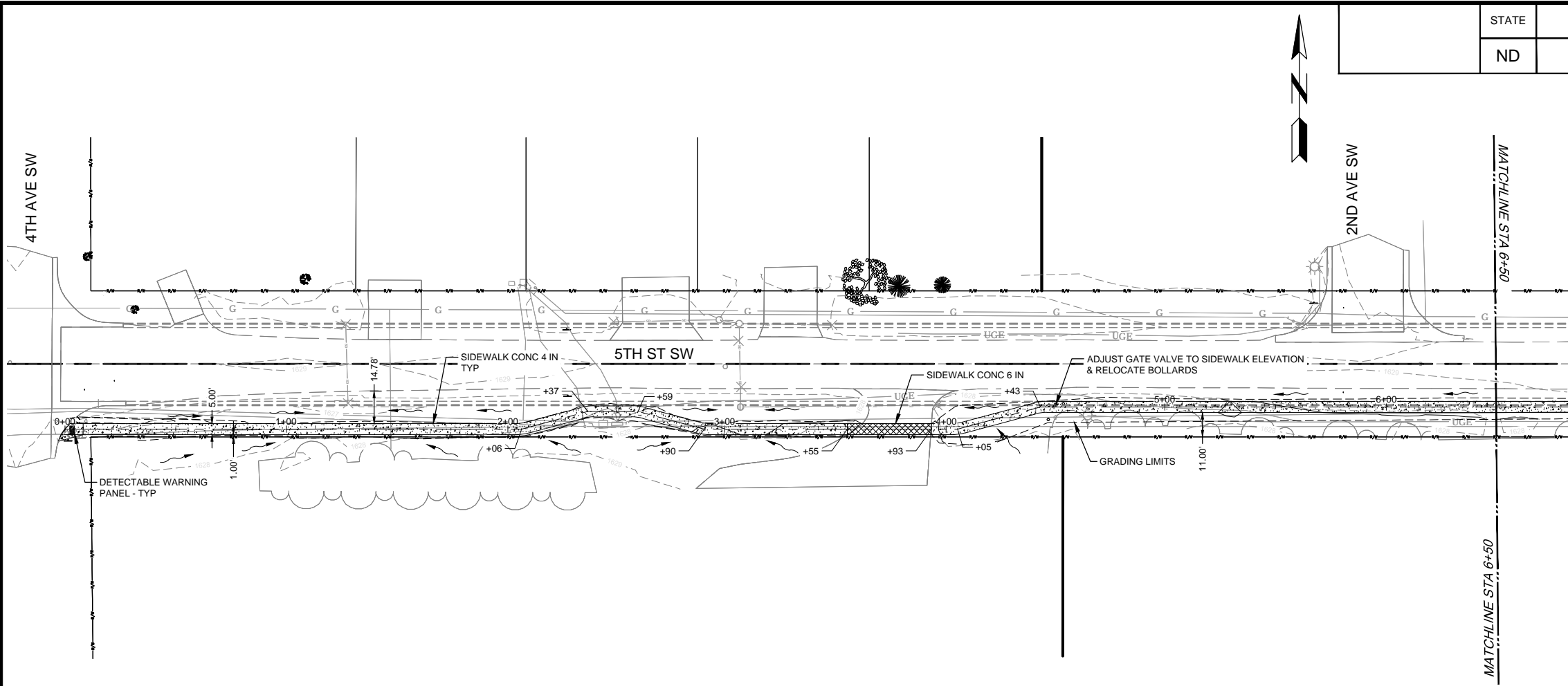
NOTE:
Refer to sheet 20.1 Details for Type A and Type B ADA Ramp Details

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	ND	TAC-0051(031)	22268	20	2

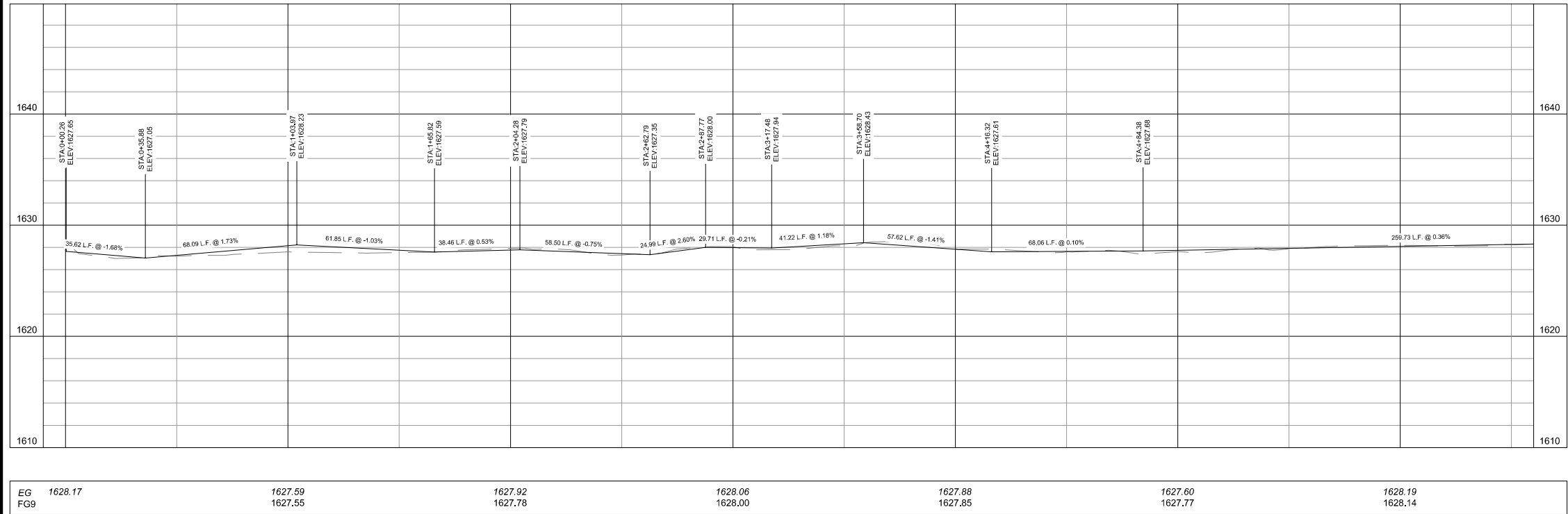


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ADA Ramp Details			
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ND		TAC-0051(031)	22268	60	1
SPEC	CODE	DESCRIPTION	QUANTITY	UNIT	
202	130	REMOVAL OF CURB & GUTTER			
		Sta. 0+00	12	LF	
203	103	COMMON EXCAVATION - TYPE C			
		Sta. 0+00	80.8	CY	
203	125	REMOVE & SALVAGE TOPSOIL			
		Sta. 0+00	65.8	CY	
251	200	SEEDING CLASS II			
		Sta. 0+00	.15	ACRE	
253	201	HYDRAULIC MULCH			
		Sta. 0+00	.15	ACRE	
302	121	AGGREGATE BASE COURSE CL 5			
		Sta. 0+00	40.1	CY	
748	100	CURB & GUTTER			
		Sta. 0+00	12	LF	
750	115	SIDEWALK CONCRETE 4IN			
		Sta. 0+00	196.4	SY	
		Sta. 3+93	142.5	SY	
750	0140	SIDEWALK CONCRETE 6IN			
		Sta. 3+55	21.1	SY	
750	2115	DETECTABLE WARNING PANELS			
		Sta. 0+03	10	SF	



LEGEND

- SIDEWALK CONCRETE - 4IN
- SIDEWALK CONCRETE - 6IN
- PROPOSED STATIONING LABEL
- DETECTABLE WARNING PANEL

30' 0 30' 60'
Scale in Feet

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Sidewalk Layout
5th St SW STA 0+00 to STA 6+50

Transportation Alternatives Program
Surrey, North Dakota

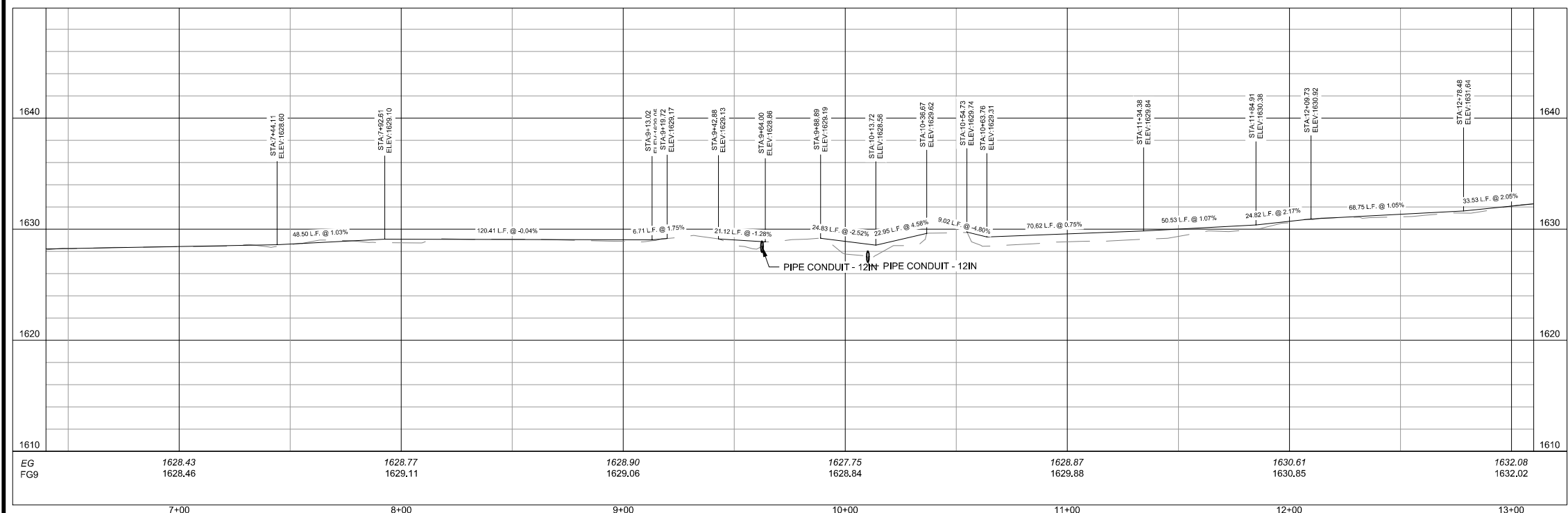
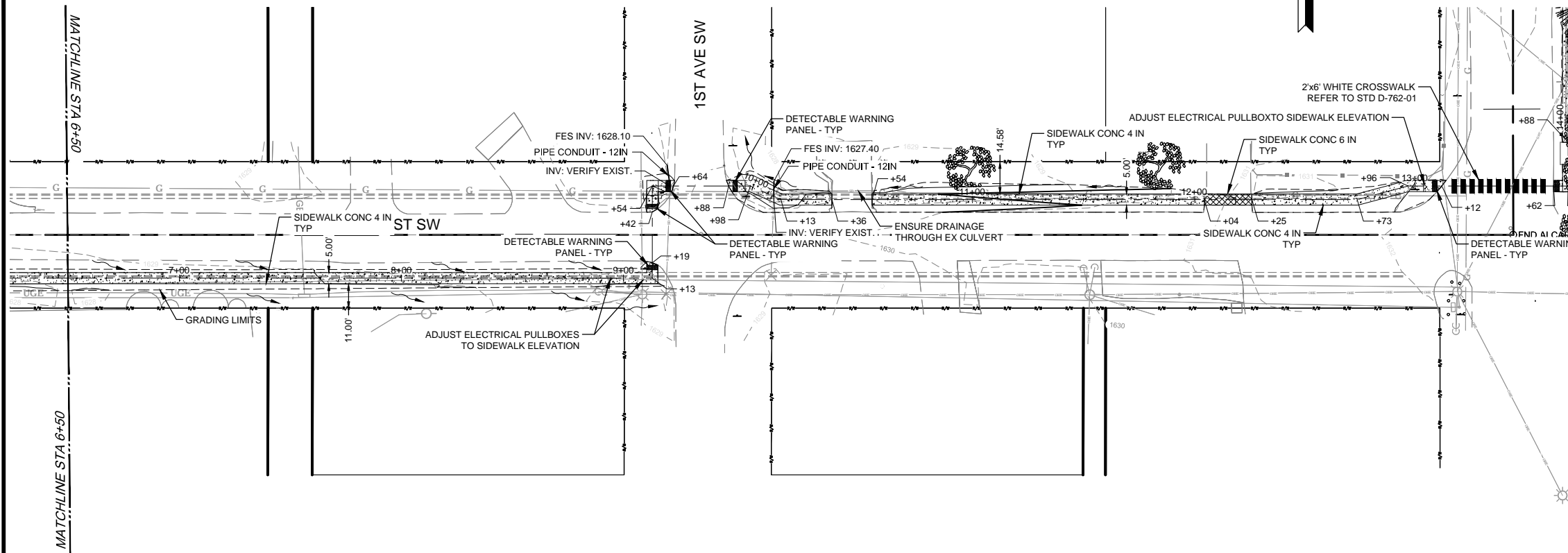
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	STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
	ND	TAC-0051(031)	22268	60	2

SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
202	132	REMOVAL OF BITUMINOUS SURFACING		
		Sta. 12+04	11.9	SY
203	103	COMMON EXCAVATION - TYPE C		
		Sta. 6+50	29.2	CY
203	125	REMOVE & SALVAGE TOPSOIL		
		Sta. 6+50	68.9	CY
251	200	SEEDING CLASS II		
		Sta. 6+50	.15	ACRE
253	201	HYDRAULIC MULCH		
		Sta. 6+50	.15	ACRE
302	121	AGGREGATE BASE COURSE CL 5		
		Sta. 6+50	36.8	CY
714	4090	PIPE CONDUIT 12IN		
		Sta. 9+63	10	LF
		Sta. 10+10	7	LF
714	5800	END SECT CORR STEEL .064IN 12IN		
		Sta. 9+61	1	EA
		Sta. 10+07	1	EA
750	115	SIDEWALK CONCRETE 4IN		
		Sta. 6+50	149.1	SY
		Sta. 9+42	9.7	SY
		Sta. 9+88	25.6	SY
		Sta. 10+54	83.1	SY
		Sta. 12+25	47.0	SY
750	0140	SIDEWALK CONCRETE 6IN		
		Sta. 12+04	11.9	SY
750	2115	DETECTABLE WARNING PANELS		
		Sta. 9+18	10	SF
		Sta. 9+45	10	SF
		Sta. 9+62	10	SF
		Sta. 9+92	10	SF
		Sta. 13+09	10	SF
762	1124	PVMT MK PAINTED 24IN LINE		
		Sta. 13+12	70	LF



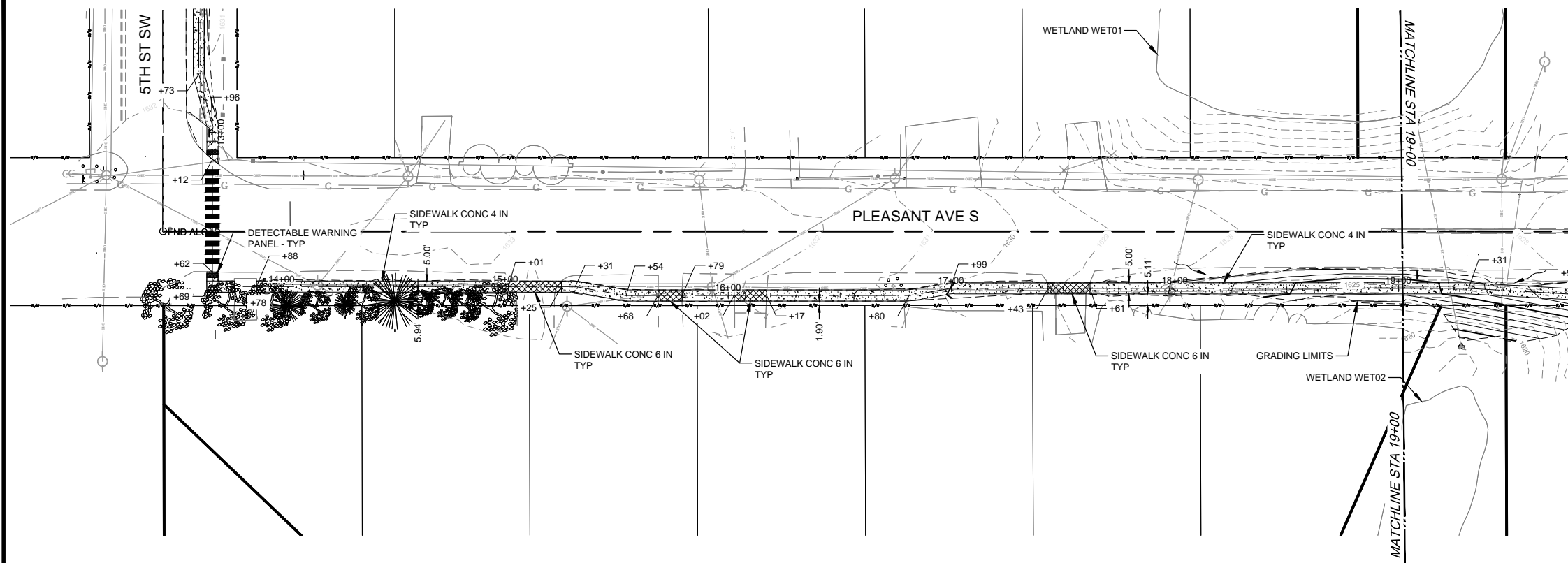
LEGEND

-
-  SIDEWALK CONCRETE - 4IN
 SIDEWALK CONCRETE - 6IN
 +50
 PROPOSED STATIONING LABEL
 DETECTABLE WARNING PANEL
- 30' 0 30' 60'
 Scale in Feet

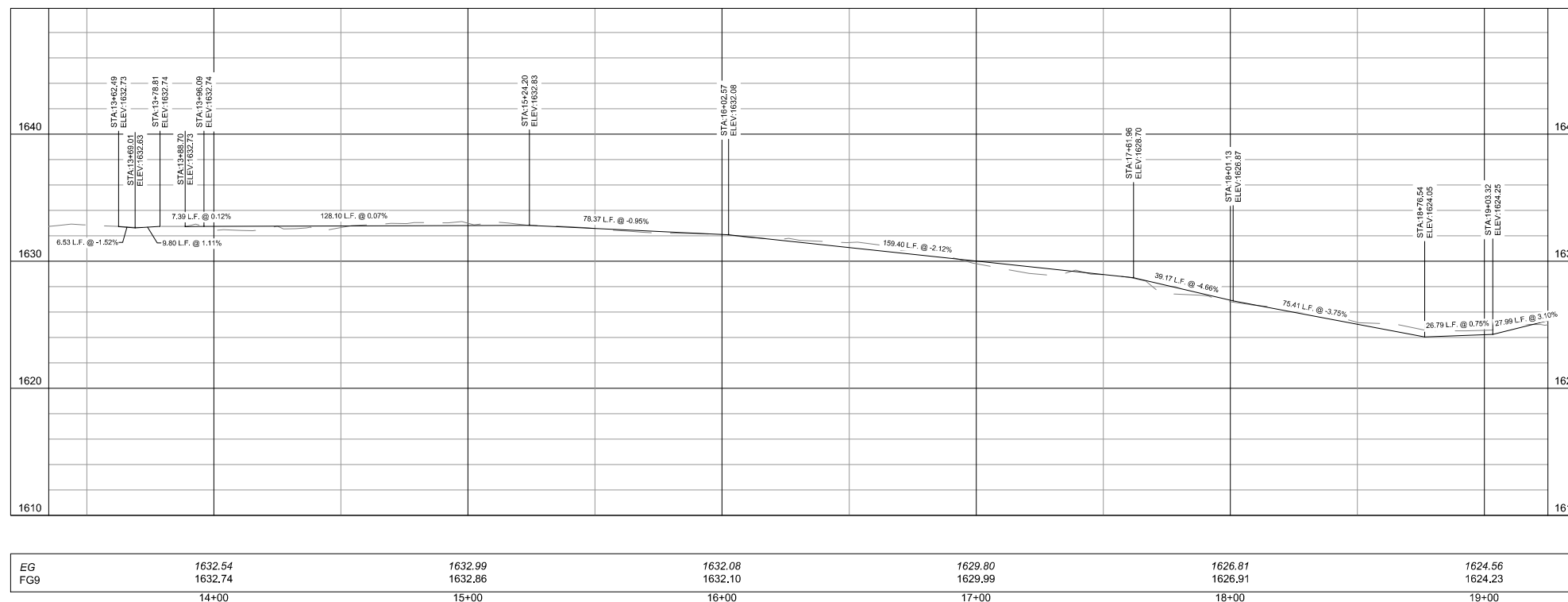
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REV'D.				
Sidewalk Layout 5th St SW STA 6+50 to STA 13+10				
	Transportation Alternatives Program Surrey, North Dakota			
	DRWN. BY T. Tharaldson	CHK'D BY B. Erickson	PROJECT NO. P05519-2018-001	DATE JULY 2020
File: W:\S\Surrey\05519-2018-001\CAD Dwg\01-Civil\Plan Sheets\60 Plan and Profiles.dwg				
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



	STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
	ND	TAC-0051(031)	22268	60	3



SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
202	132	REMOVAL OF BITUMINOUS SURFACING		
		Sta. 15+01	13.1	SY
		Sta. 15+68	6.0	SY
		Sta. 16+02	8.1	SY
		Sta. 17+43	10.4	SY
203	103	COMMON EXCAVATION - TYPE C		
		Sta. 13+62	79.0	CY
203	125	REMOVE & SALVAGE TOPSOIL		
		Sta. 13+62	45.6	CY
251	200	SEEDING CLASS II		
		Sta. 13+62	.10	ACRE
253	201	HYDRAULIC MULCH		
		Sta. 13+62	.10	ACRE
302	121	AGGREGATE BASE COURSE CL 5		
		Sta. 13+62	32.6	CY
750	115	SIDEWALK CONCRETE 4IN		
		Sta. 13+62	8.2	SY
		Sta. 13+88	62.6	SY
		Sta. 15+25	24.2	SY
		Sta. 15+79	12.9	SY
		Sta. 16+17	70.0	SY
		Sta. 17+61	76.7	SY
750	0140	SIDEWALK CONCRETE 6IN		
		Sta. 15+01	13.1	SY
		Sta. 15+68	6.0	SY
		Sta. 16+02	8.1	SY
		Sta. 17+43	10.4	SY
750	2115	DETECTABLE WARNING PANELS		
		Sta. 13+64	10	SF



LEGEND

	SIDEWALK CONCRETE - 4 in.
	SIDEWALK CONCRETE - 6 in.
	PROPOSED STATIONING LABEL
	DETECTABLE WARNING PANEL

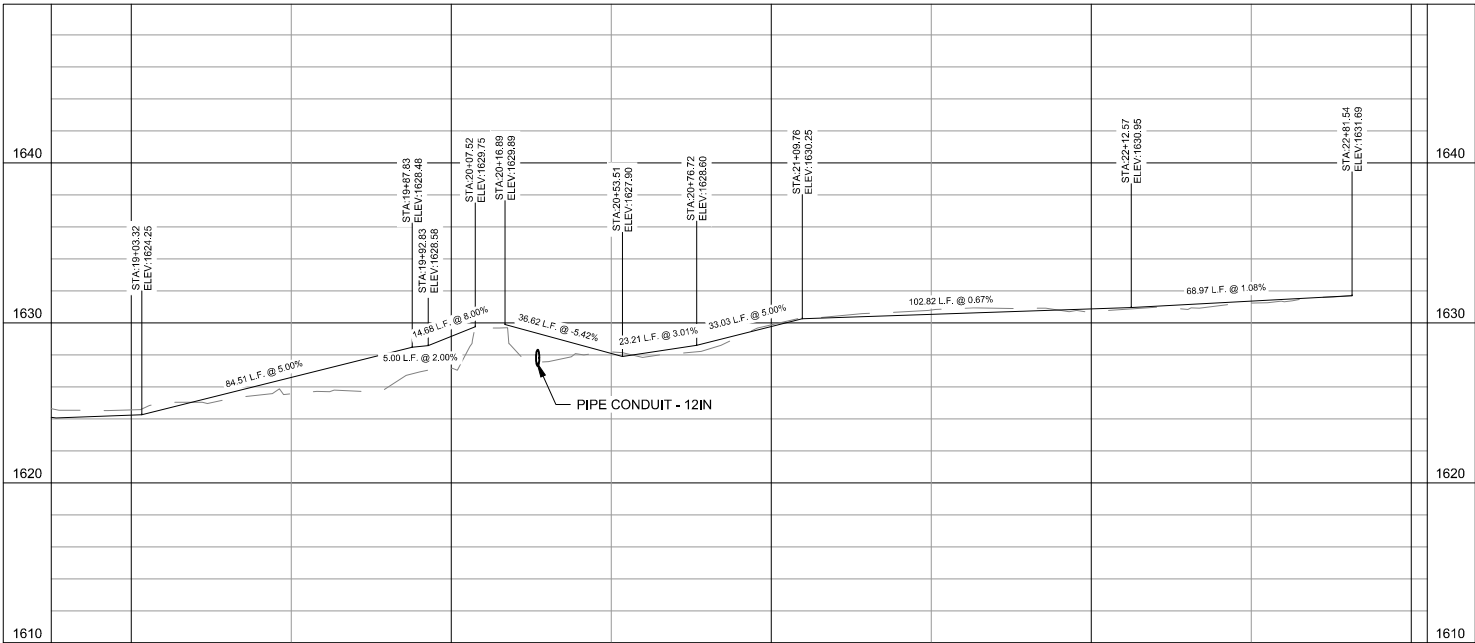
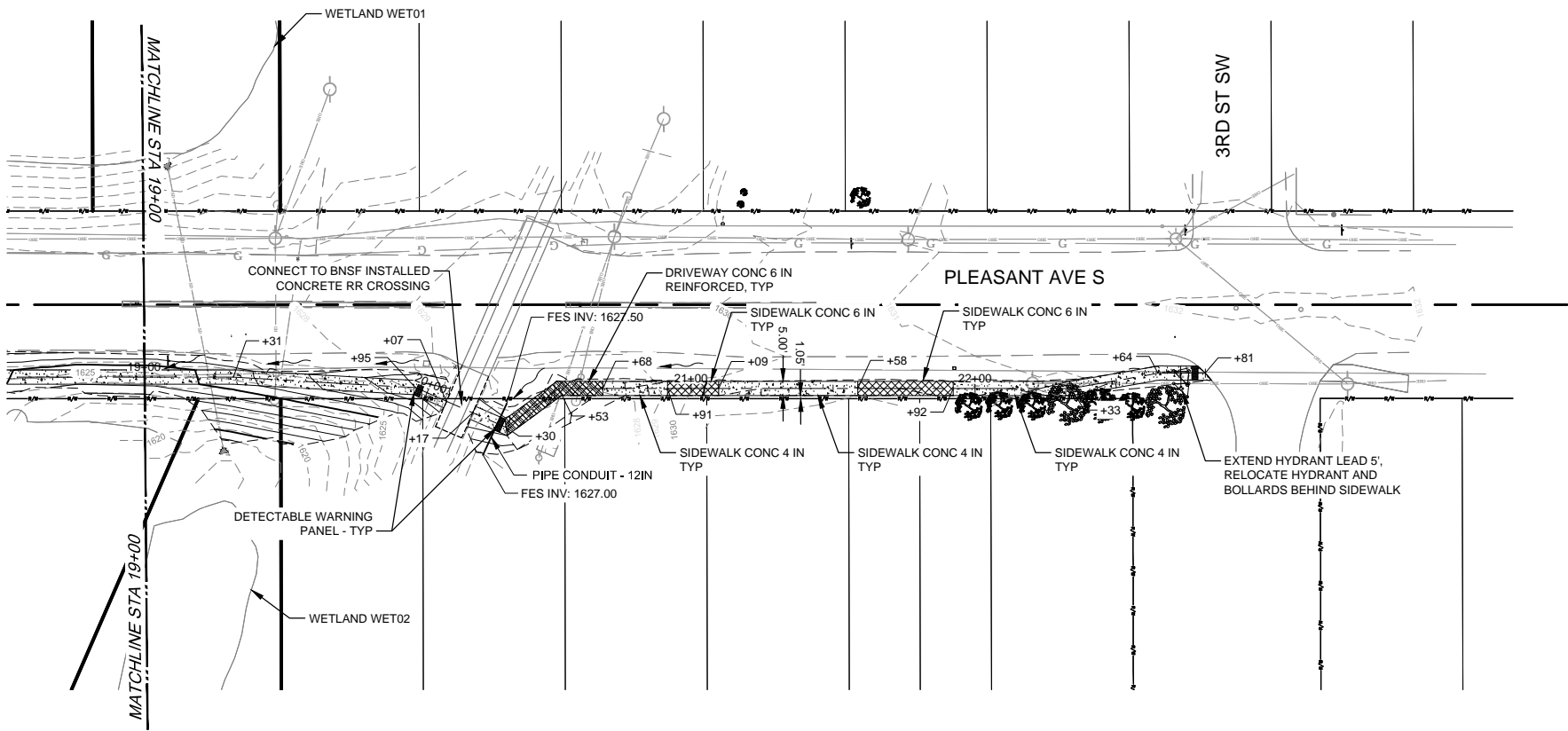
Scale in Feet

30' 0 30' 60'

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REV'D.				
Sidewalk Layout Pleasant Ave S STA 13+60 to STA 19+00				
	Transportation Alternatives Program Surrey, North Dakota			
	DRWN. BY T. Tharaldson	CHK'D BY B. Erickson	PROJECT NO. P05519-2018-001	DATE JULY 2020
File: W:\S\Surrey\05519-2018-001\CAD Dwg\01_CivilPlan Sheets\60 Plan and Profiles.dwg				
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STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	TAC-0051(031)	22268	60	4



EG	1624.56	1627.16	1629.87	1630.65
FG9	1624.23	1629.19	1629.77	1630.89
	19+00	20+00	21+00	22+00

SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
203	125	REMOVE & SALVAGE TOPSOIL		
		Sta. 19+00	48.0	CY
203	140	BORROW EXCAVATION		
		Sta. 19+00	14.4	CY
251	200	SEEDING CLASS II		
		Sta. 19+00	.10	ACRE
253	201	HYDRAULIC MULCH		
		Sta. 19+00	.10	ACRE
302	121	AGGREGATE BASE COURSE CL 5		
		Sta. 19+00	22.9	CY
714	4090	PIPE CONDUIT 12IN		
		Sta. 20+35	20	LF
714	5800	END SECT CORR STEEL .064IN 12IN		
		Sta. 20+27	1	EA
		Sta. 20+35	1	EA
724	425	RESET HYDRANT		
		Sta. 22+73	1	EA
750	115	SIDEWALK CONCRETE 4IN		
		Sta. 19+00	58.8	SY
		Sta. 20+17	6.2	SY
		Sta. 20+68	12.7	SY
		Sta. 21+09	27.2	SY
		Sta. 21+92	48.6	SY
750	0140	SIDEWALK CONCRETE 6IN		
		Sta. 20+91	10.0	SY
		Sta. 21+58	18.7	SY
750	1016	DRIVEWAY CONCRETE 6IN REINFORCED		
		Sta. 20+30	21.4	SY
750	2115	DETECTABLE WARNING PANELS		
		Sta. 19+97	10	SF
		Sta. 20+28	10	SF
		Sta. 22+78	10	SF

LEGEND

- SIDEWALK CONCRETE - 4IN
- SIDEWALK CONCRETE - 6IN
- DRIVEWAY CONCRETE - 6IN REINFORCED
- PROPOSED STATIONING LABEL
- DETECTABLE WARNING PANEL

Scale in Feet

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REV'D.			
Sidewalk Layout Pleasant Ave S STA 19+00 to STA 22+80			
Transportation Alternatives Program Surrey, North Dakota			
DRWN. BY T. Tharaldson	CHK'D BY B. Erickson	PROJECT NO. P05519-2018-001	DATE JULY 2020
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STATE

PROJECT NO.

PCN

SEC. NO.

SHEET NO.

ND

TAC-0051(031)

22268

75

1

Wetland Impact Table

Wetland Number	Location	Cowardin Class.	Wetland Type	Wetland Size Ac.	Wetland Feature	USACE Jurisdictional Wetlands*	Wetland Impacts (acres)		USFWS Easement Impacts		Wetland Mitigation		
							Temp. Ac.	Perm. Ac.	Temp.	Perm.	Mitigation Required		
											EO 11990	USACE	USFWS
WET01	Sec. 19, T1455N, R81W	PEMC	Ditch	0.06	Artificial	Yes	0.00	0.00	0.00	0	N	N	N
WET02	Sec. 19, T1455N, R81W	PEMC	Ditch	0.18	Artifical	Yes	0.00	0.00	0.00	0	N	N	N
			Totals	0.24			0.00	0.00	0.00	0.00			

* A wetland Preliminary Jurisdictional Determination was issued by the USACE on 5/23/2019; NWO-2018-2087-BIS.

**All impacts to natural wetlands (natural/jurisdictional and natural/non-jurisdictional), regardless of size, as well as impacts greater than 0.10 acre to artificial/jurisdictional wetlands require mitigation.

***All artificial/non-jurisdictional, deep water (impacts greater than 6.6 feet), Other Waters less than 300 linear feet (determined by the USACE on a case by case), Preamble Wetlands, and temporary impacts do not require mitigation.

Summary Impact Table			
Total Permanent Impact Summary		Temporary Impacts and Additiona Information	
Wetland Type	Total (Acres)	Wetland Type	Total (Acres/Lf)
Natural/JD		Temporary JD	
Natural/Non-JD		Non-JD Temporary	
Artificial/JD	0.0000	Permanent JD > 0.10	
Artificial/Non-JD		Permanent OW	
Total	0.0000	Temporary OW	

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Wetland Impacts and Environmental

Transportation Alternatives Program
Surrey, North Dakota

DRWN. BY
T. Tharaldson

CHK'D BY
B. Erickson

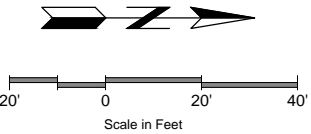
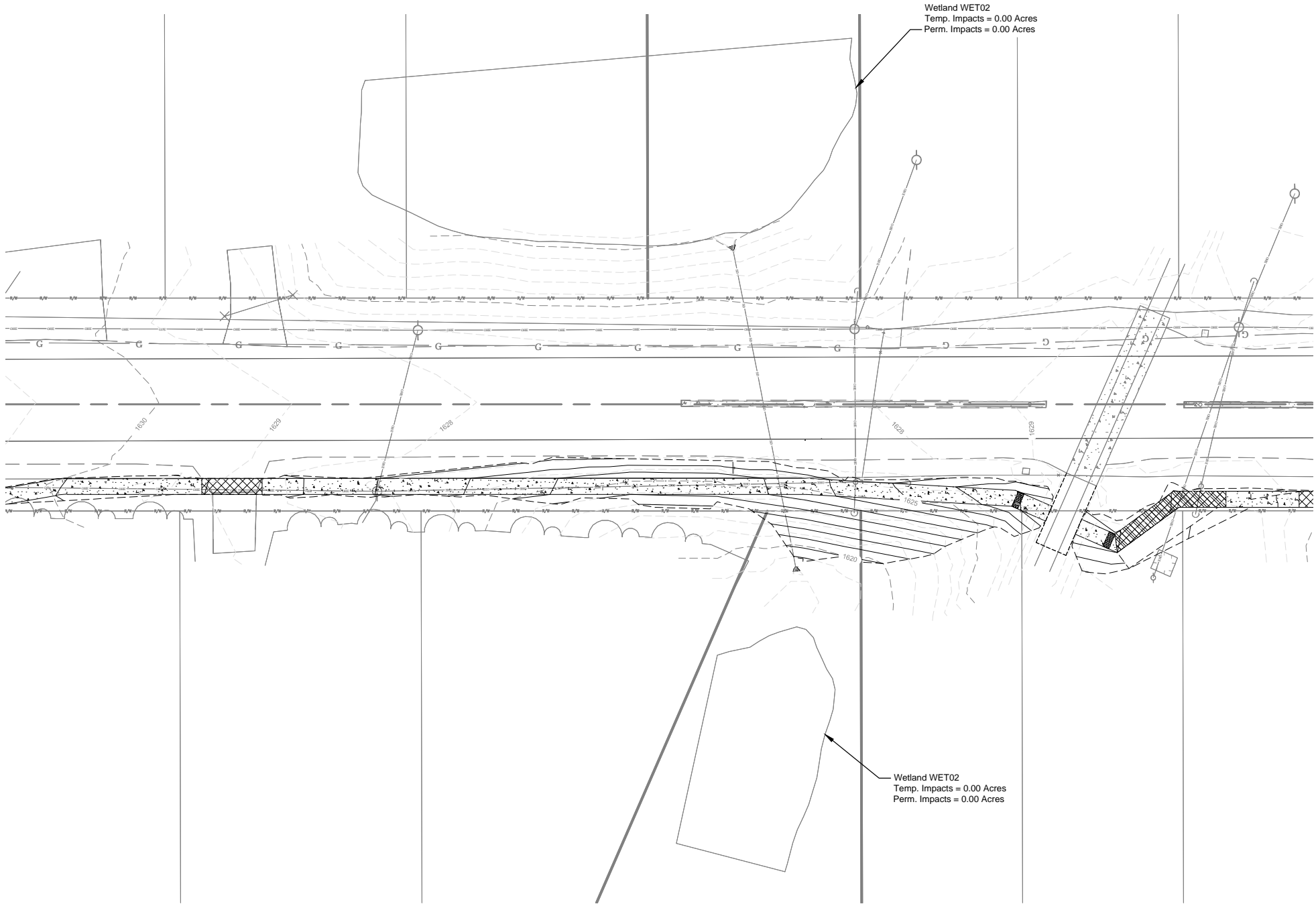
PROJECT NO.
P05519-2018-001

DATE
JULY 2020

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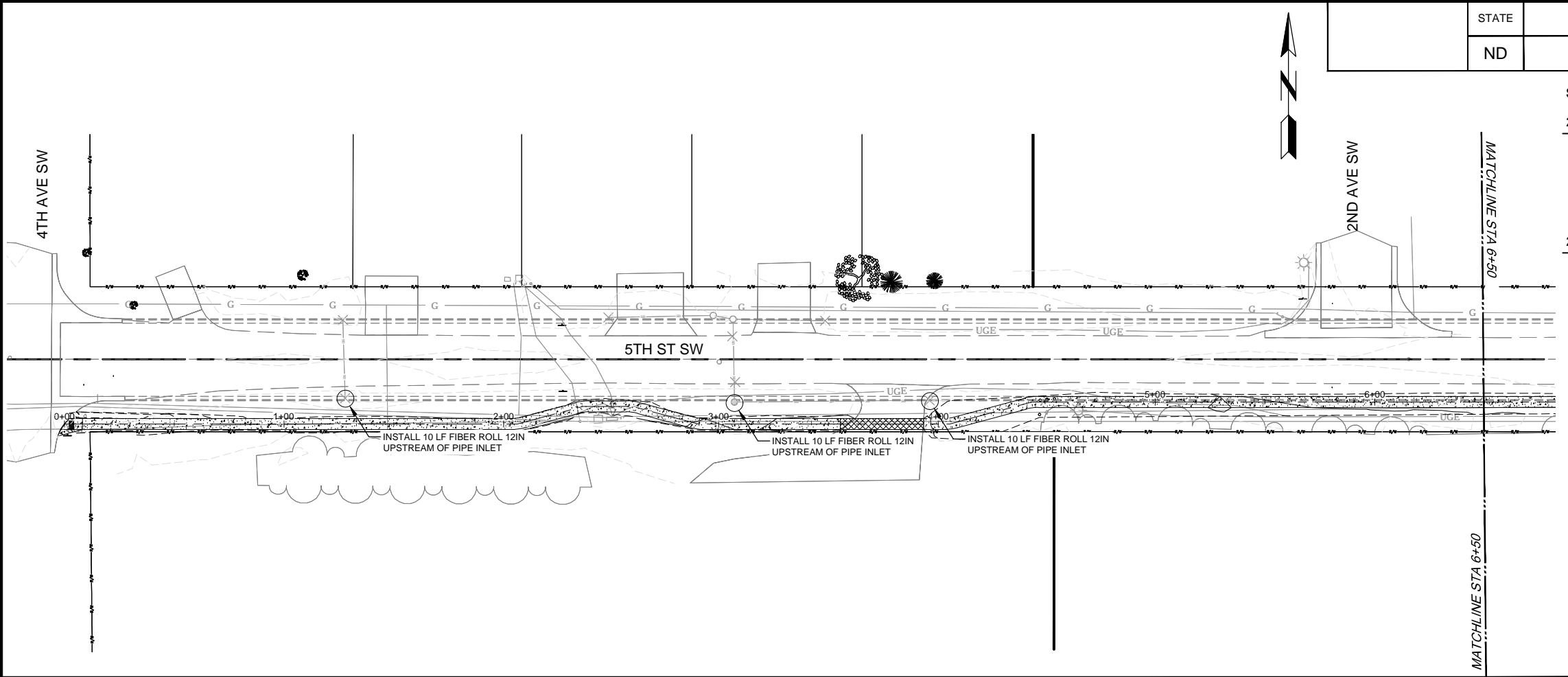
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	STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
	ND	TAC-0051(031)	22268	75	2

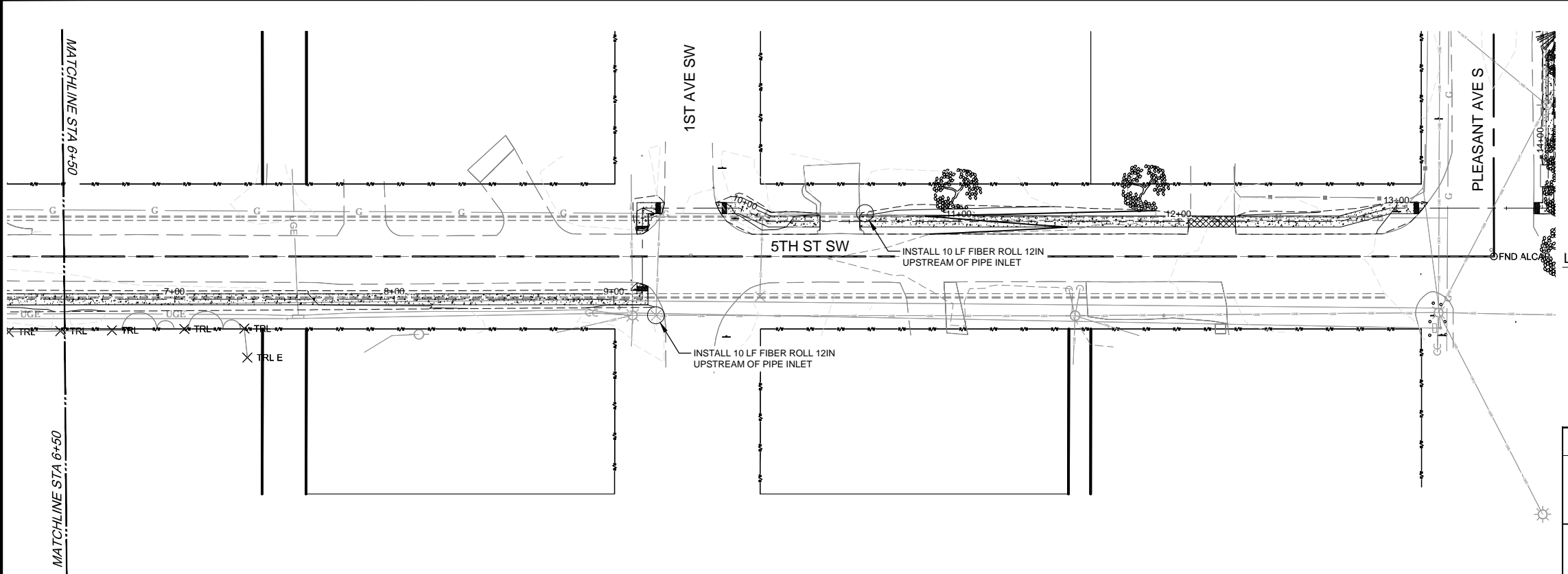


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REV'D.			
Wetland Impact Location			
Transportation Alternatives Program Surrey, North Dakota			
DRWN. BY T. Tharaldson	CHK'D BY B. Erickson	PROJECT NO. P05519-2018-001	DATE JULY 2020
File: W:\S\Surrey\05519-2018-001\CAD Drawings\01-Civil\Plan Sheets\75 Wetland Impacts & Environmental.dwg			
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PROJECT NO.		PCN	SEC. NO.	SHEET NO.
TAC-0051(031)		22268	76	1
SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
261	112	FIBER ROLLS 12IN		
		Sta. 1+28	20	LF
		Sta. 3+07	20	LF
		Sta. 3+96	20	LF
		Sta. 9+61	20	LF
		Sta. 10+56	20	LF
261	113	REMOVE FIBER ROLLS 12IN		
		Sta. 1+28	20	LF
		Sta. 3+07	20	LF
		Sta. 3+96	20	LF
		Sta. 9+61	20	LF
		Sta. 10+56	20	LF



LEGEND

SIDEWALK CONCRETE - 4IN

SIDEWALK CONCRETE - 6IN

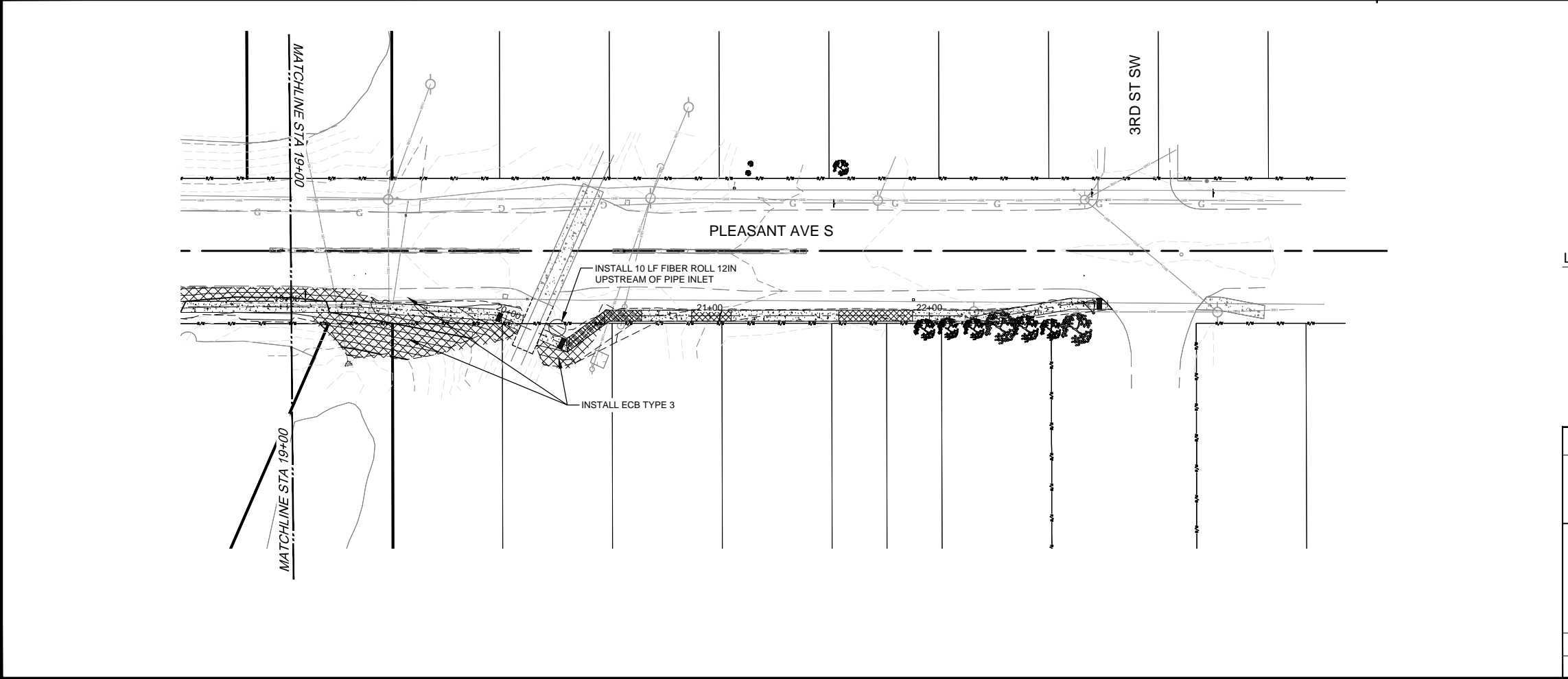
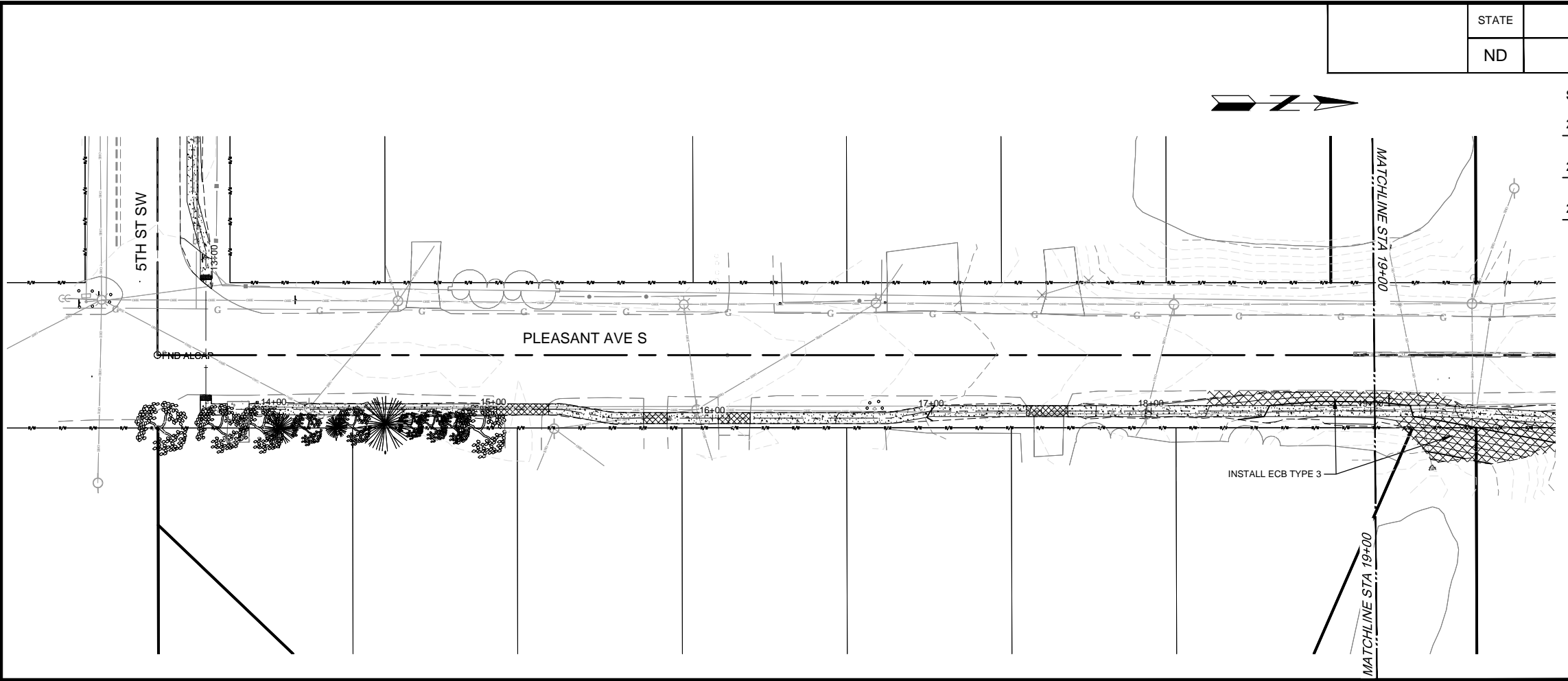
DETECTABLE WARNING PANEL

Scale in Feet

30' 0 30' 60'

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REV'D.			
Temporary Erosion Control Layout			
Transportation Alternatives Program Surrey, North Dakota			
DRWN. BY T. Tharaldson	CHK'D BY B. Erickson	PROJECT NO. P05519-2018-001	DATE JULY 2020
File: W:\S\Surrey\05519-2018-001\CAD Drawings\01-Plan Sheets\76 Temporary Erosion Control Layout.dwg			
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PROJECT NO.			PCN	SEC. NO.	SHEET NO.
TAC-0051(031)			22268	76	2
SPEC	CODE	DESCRIPTION	QUANTITY	UNIT	
255	103	ECB TYPE 3			
		Sta 18+25 to 20+47	285	CY	
261	112	FIBER ROLLS 12IN			
		Sta. 20+35	20	LF	
261	113	REMOVE FIBER ROLLS 12IN			
		Sta. 20+35	20	LF	

LEGEND

SIDEWALK CONCRETE - 4IN

SIDEWALK CONCRETE - 6IN

DETECTABLE WARNING PANEL

30'030'60'

Scale in Feet

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REV'D.

Temporary Erosion Control Layout

Transportation Alternatives Program
Surrey, North Dakota

DRWN. BY
T. Tharaldson

CHK'D BY
B. Erickson

PROJECT NO.
P05519-2018-001

DATE
JULY 2020

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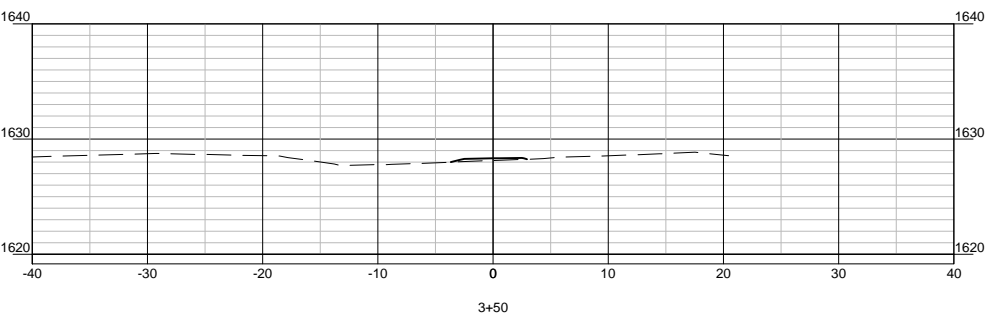
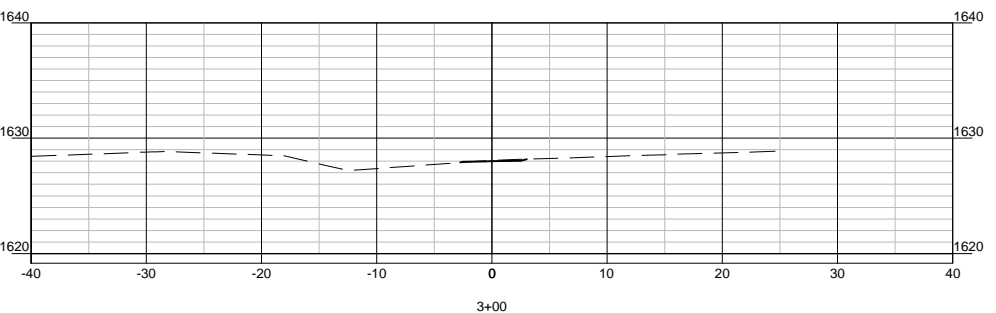
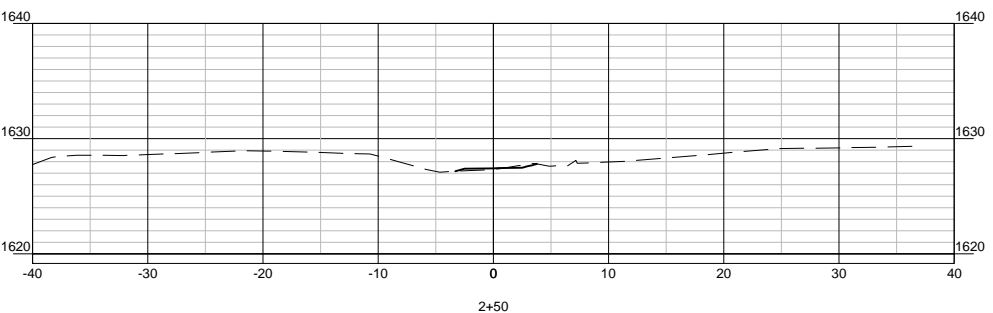
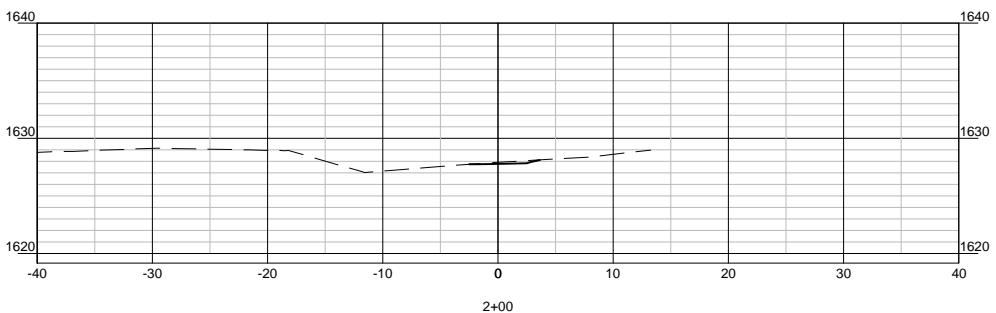
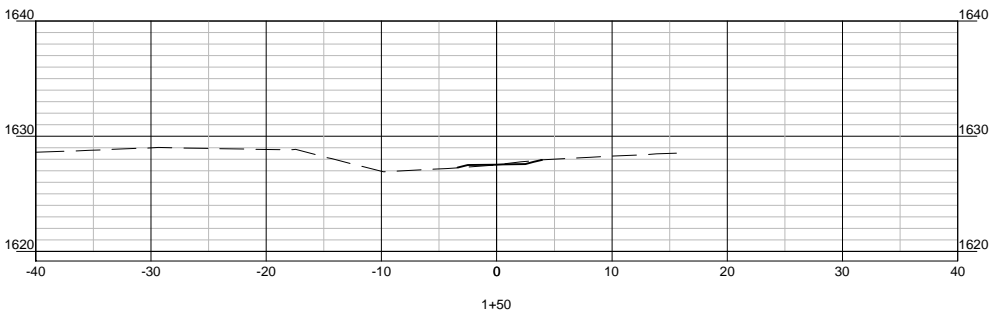
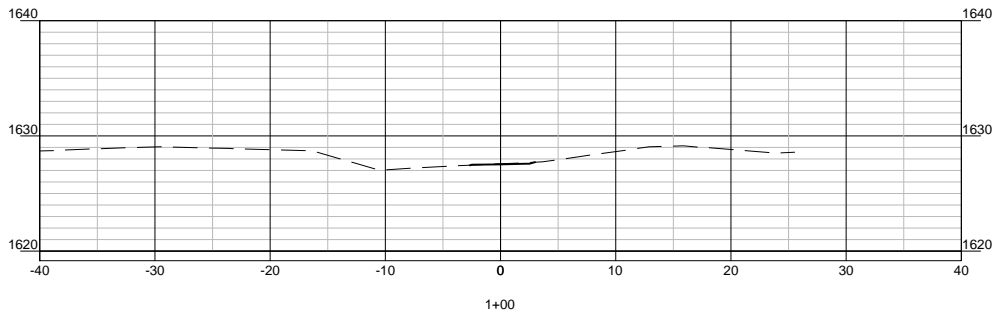
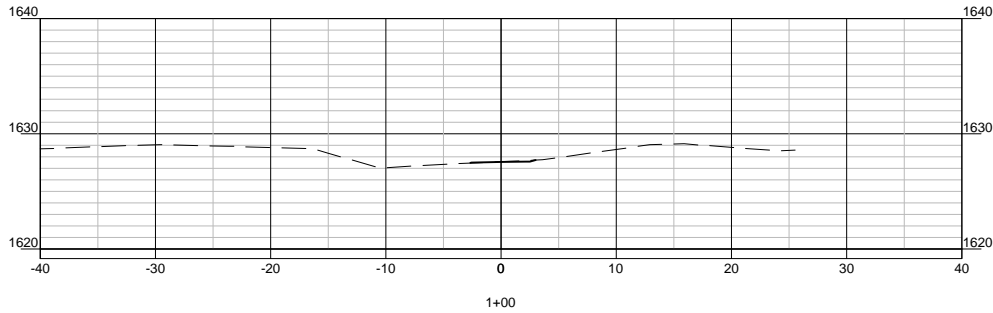
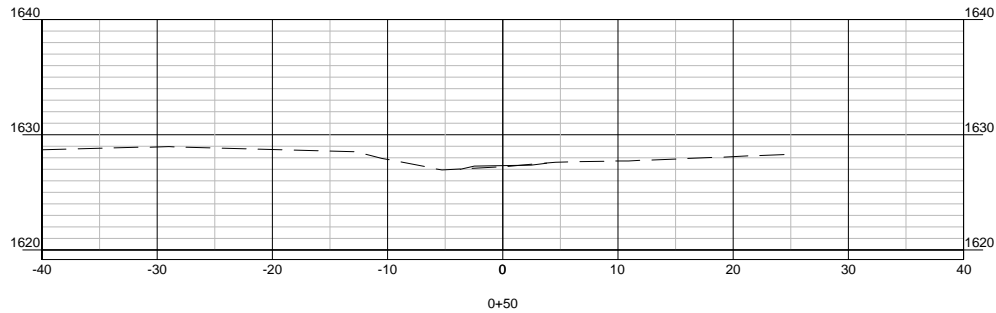
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	ND	TAC-0051(031)	22268	100	2



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REV'D.			
Construction Sign Layout			
Transportation Alternatives Program Surrey, North Dakota			
DRWN. BY T. Tharaldson	CHK'D BY B. Erickson	PROJECT NO. P05519-2018-001	DATE JULY 2020

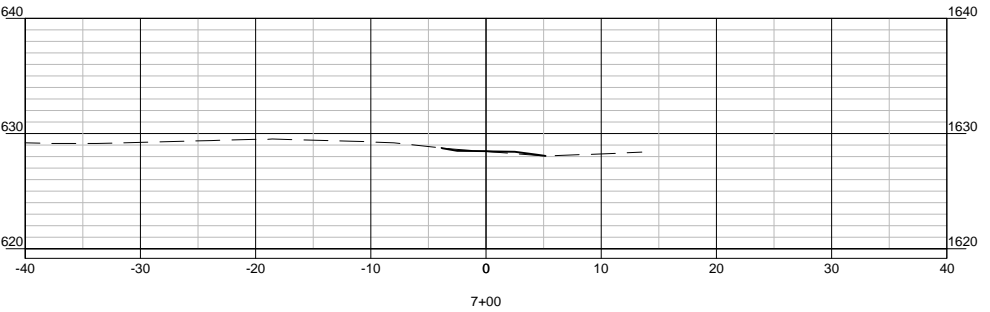
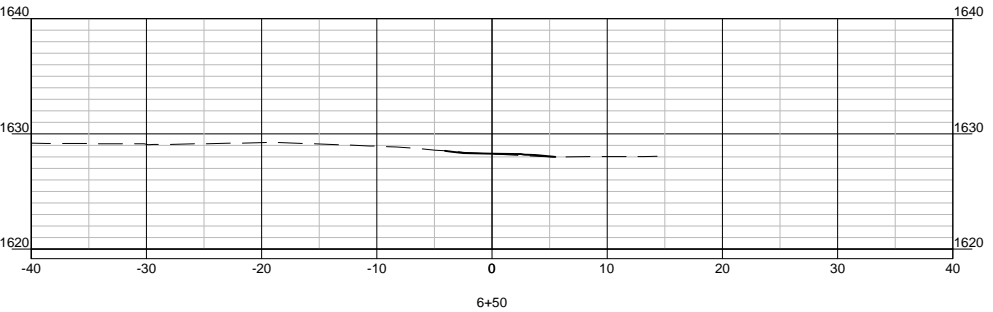
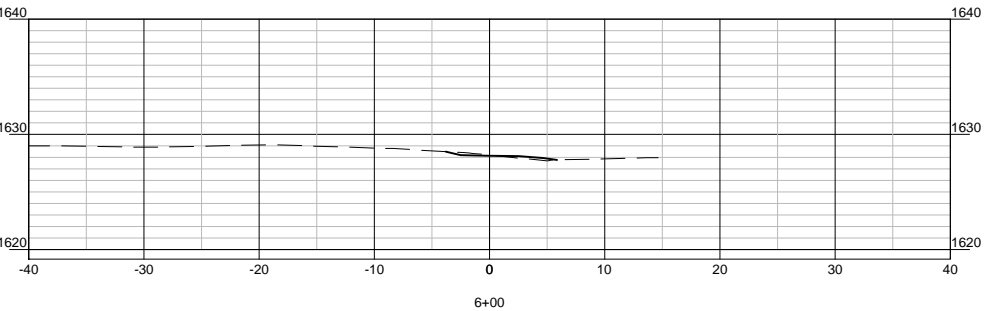
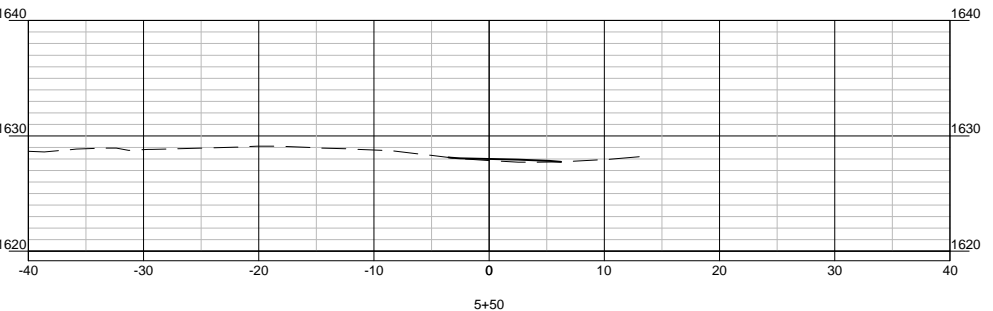
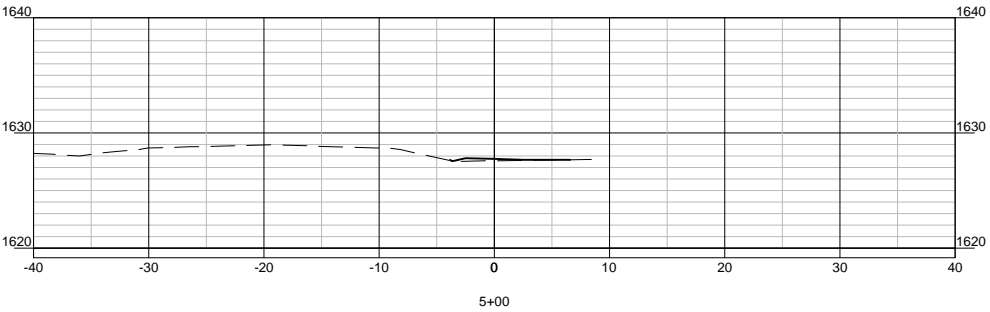
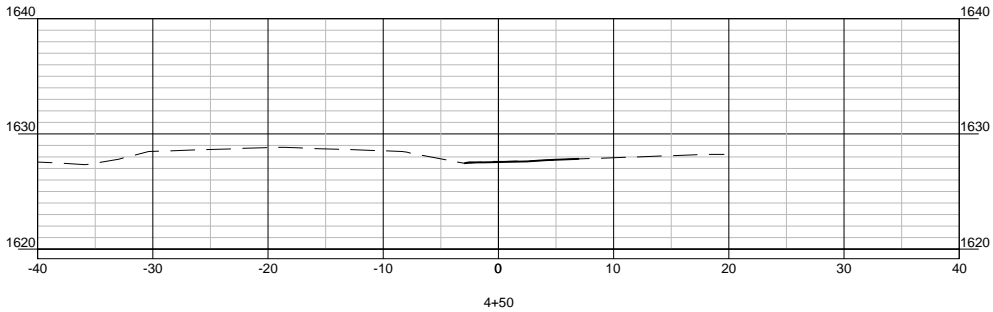
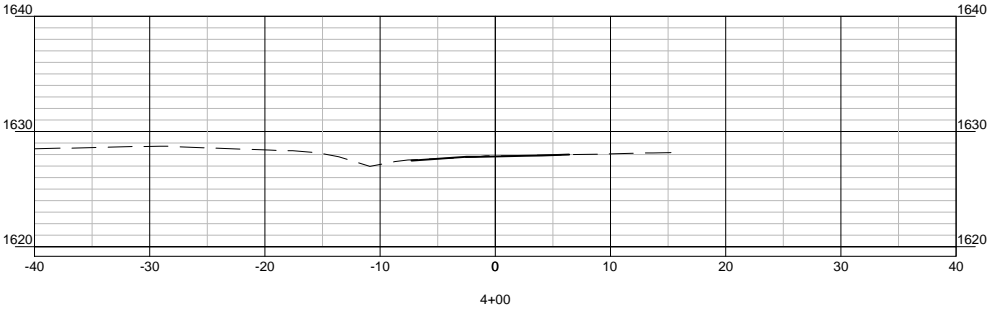
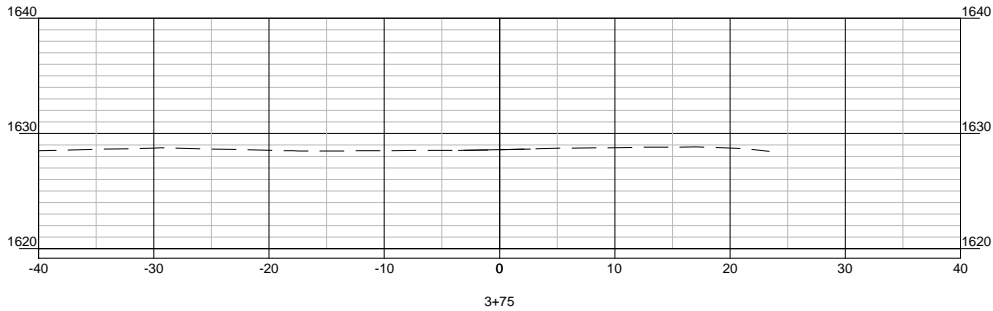
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	ND	TAC-0051(031)	22268	200	1



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Cross Sections			
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		DRWN. BY T. Tharaldson	CHK'D BY B. Erickson
		PROJECT NO. P05519-2018-001	DATE JULY 2020
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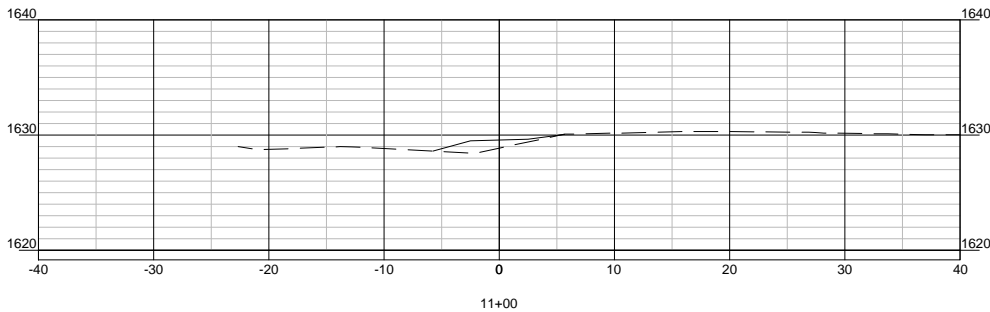
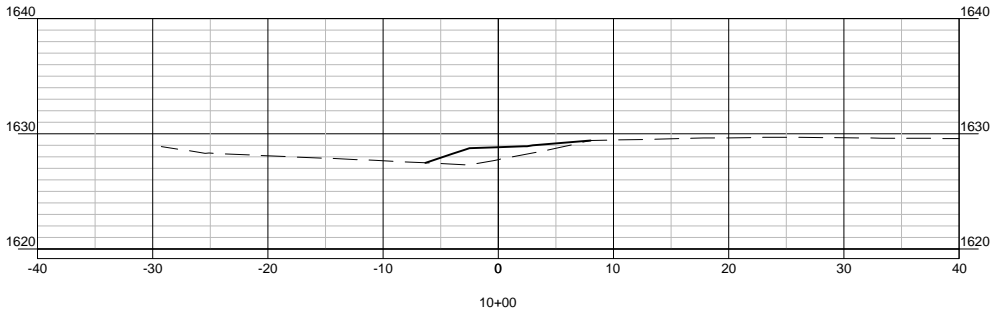
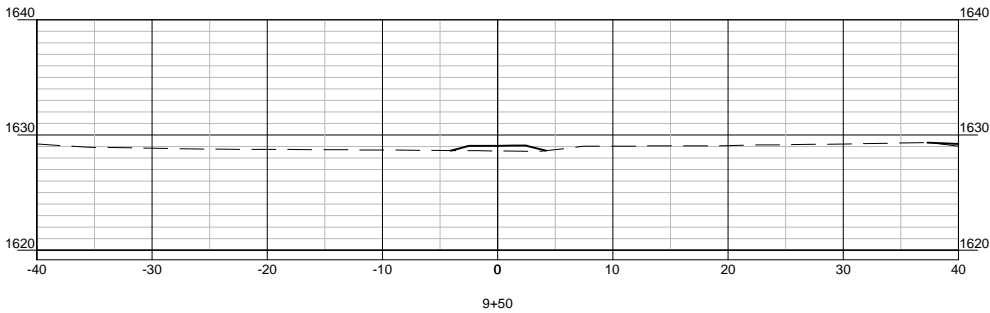
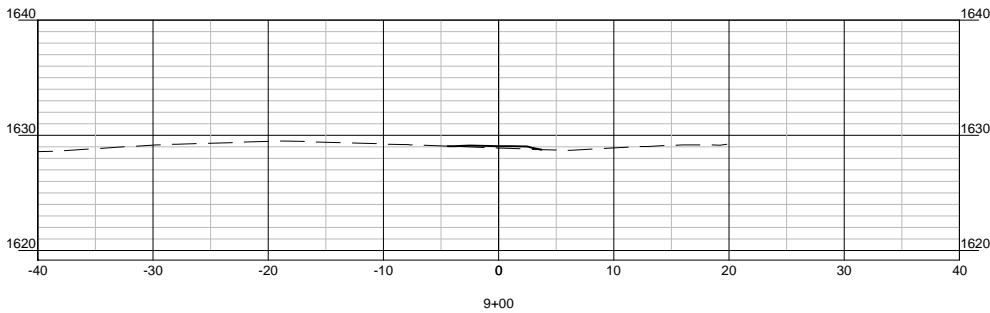
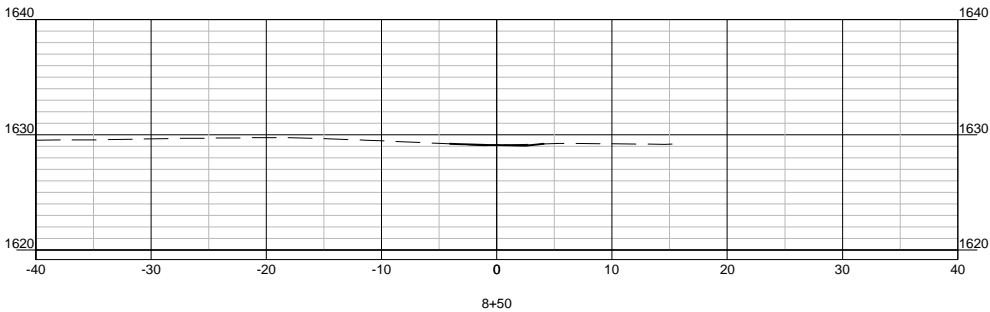
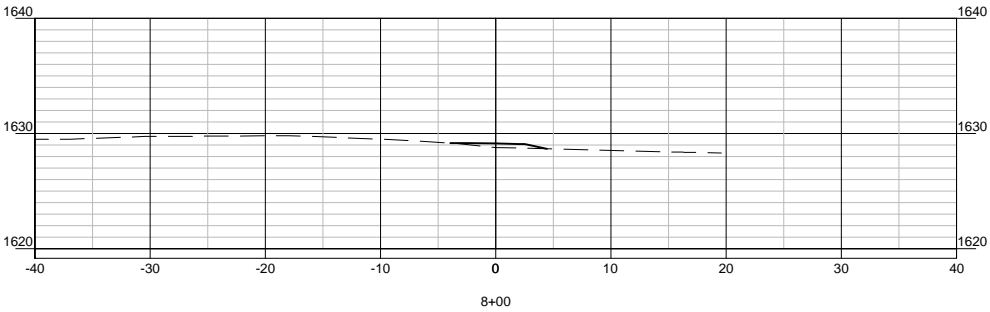
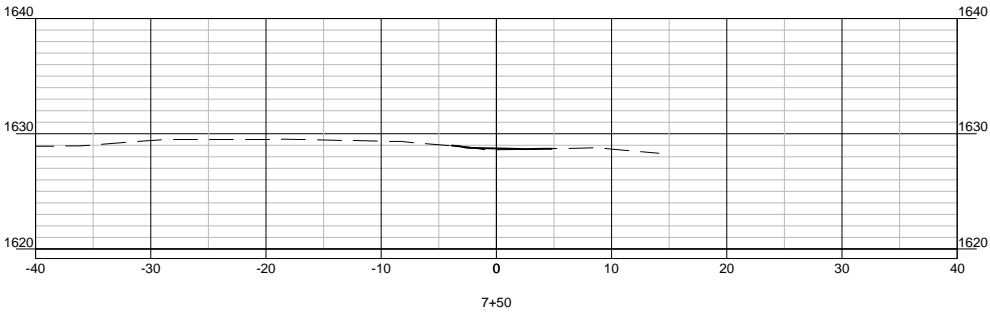
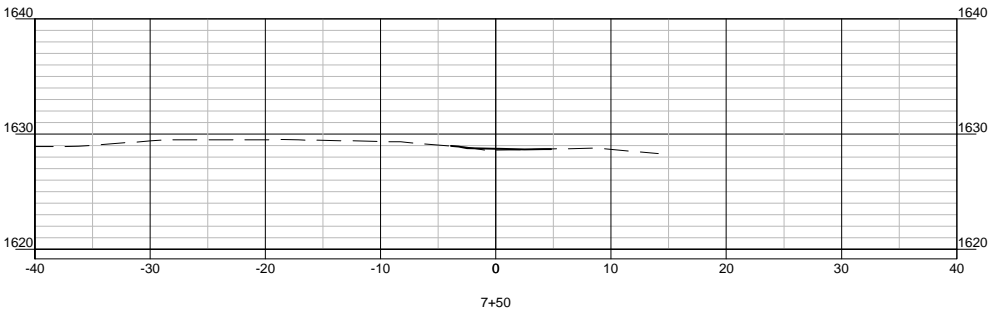
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	ND	TAC-0051(031)	22268	200	2



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REV'D.			
Cross Sections			
		Transportation Alternatives Program Surrey, North Dakota	
		DRWN. BY T. Tharaldson	CHK'D BY B. Erickson
		PROJECT NO. P05519-2018-001	DATE JULY 2020
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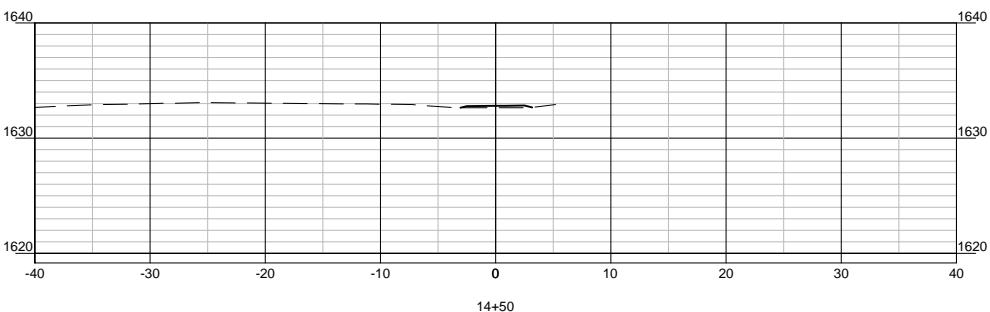
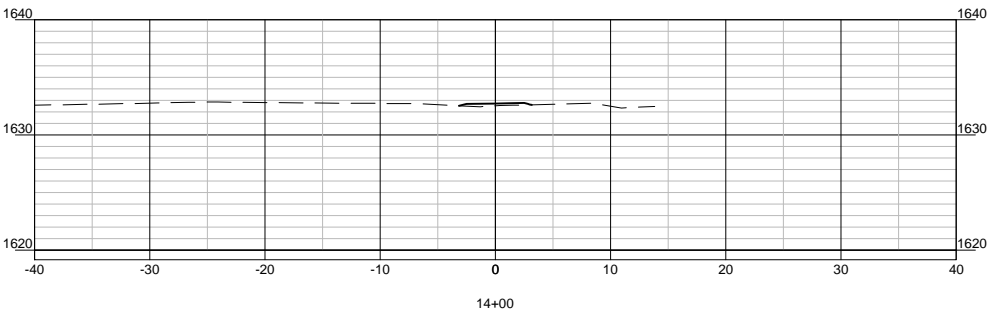
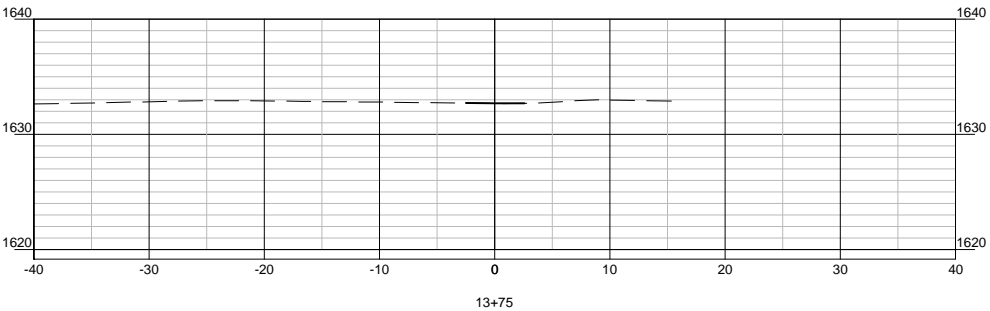
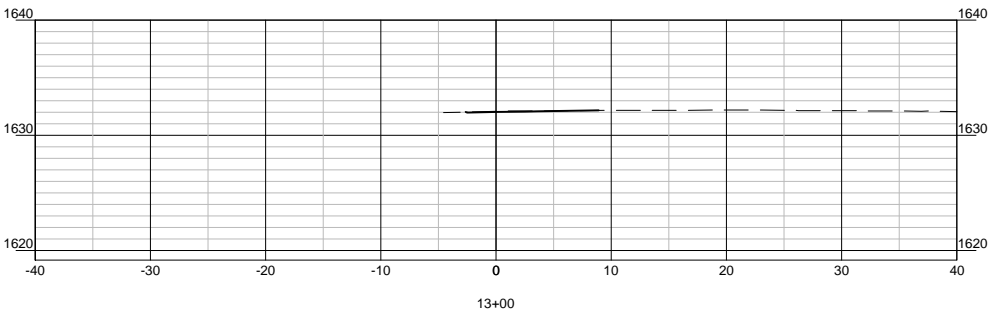
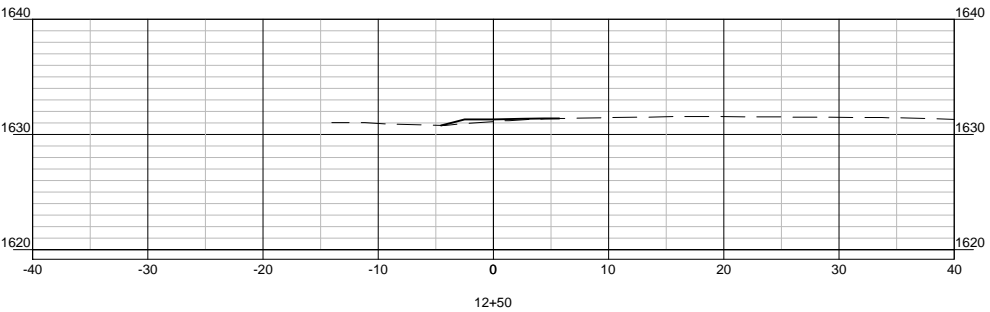
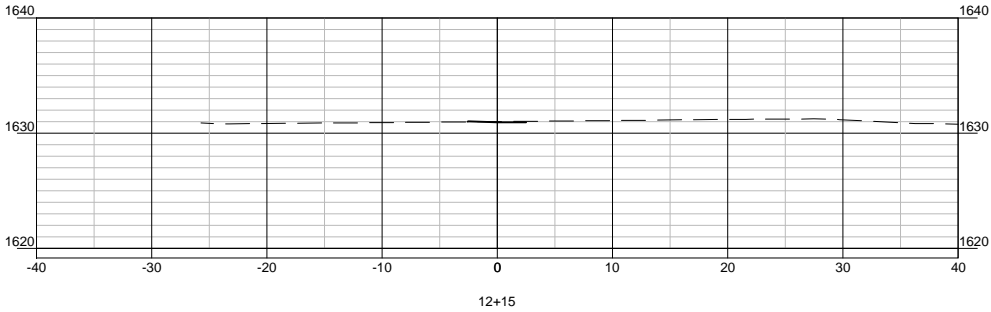
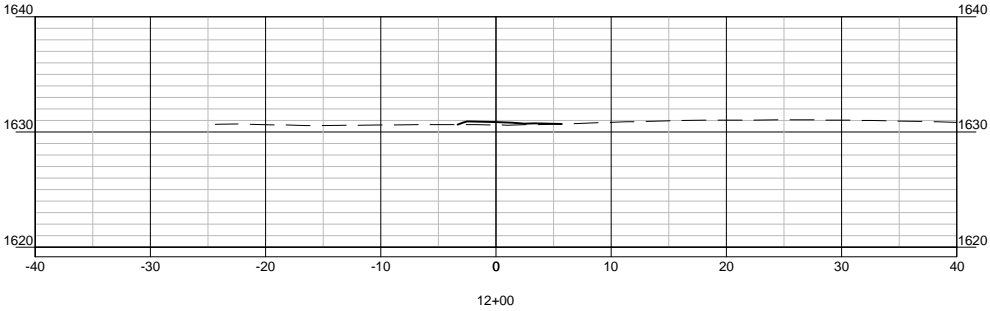
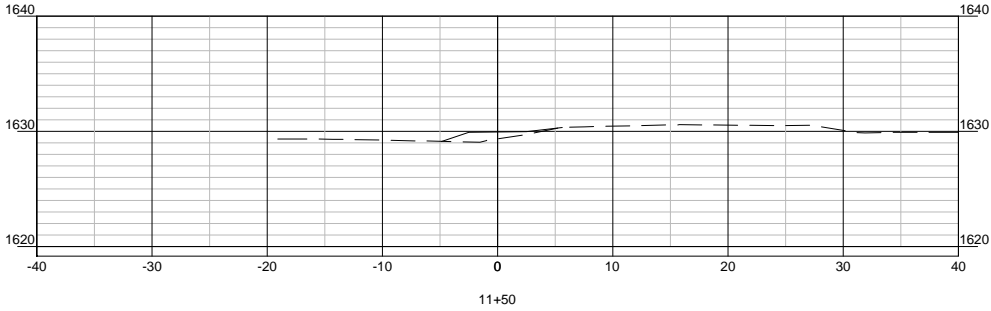
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	ND	TAC-0051(031)	22268	200	3



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REV'D.			
Cross Sections			
		Transportation Alternatives Program Surrey, North Dakota	
		DRWN. BY T. Tharaldson	CHK'D BY B. Erickson
		PROJECT NO. P05519-2018-001	DATE JULY 2020
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AE2S • 1115 16th St SW Ste 2 Minot, ND 58701 • (t) 701-852-4048 (f) 701-852-4054			

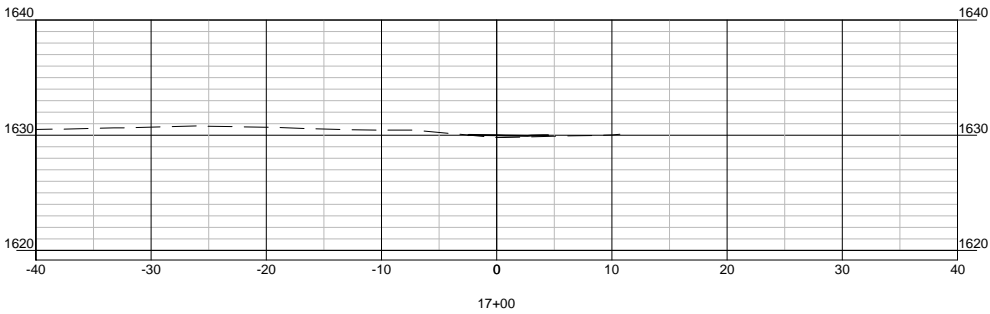
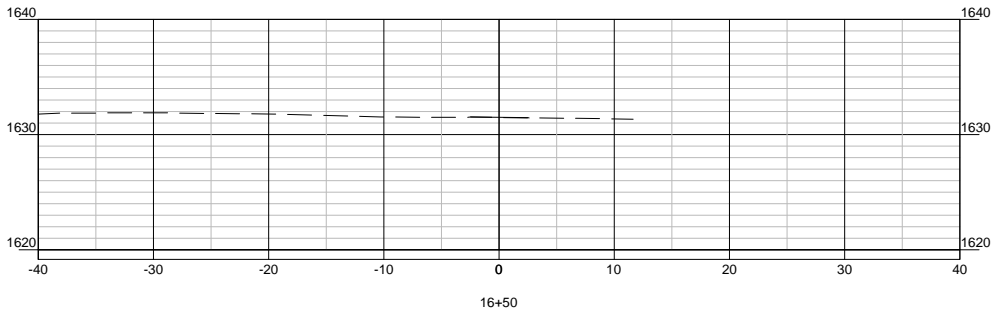
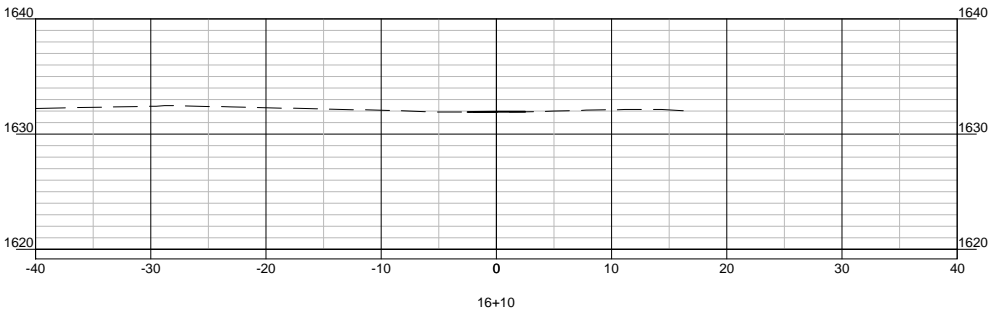
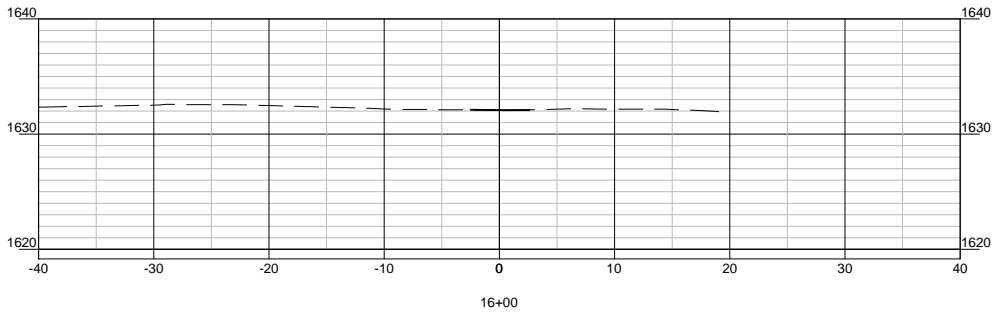
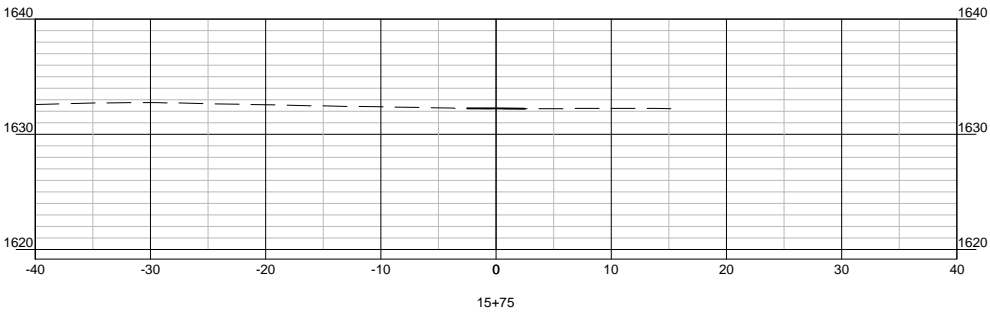
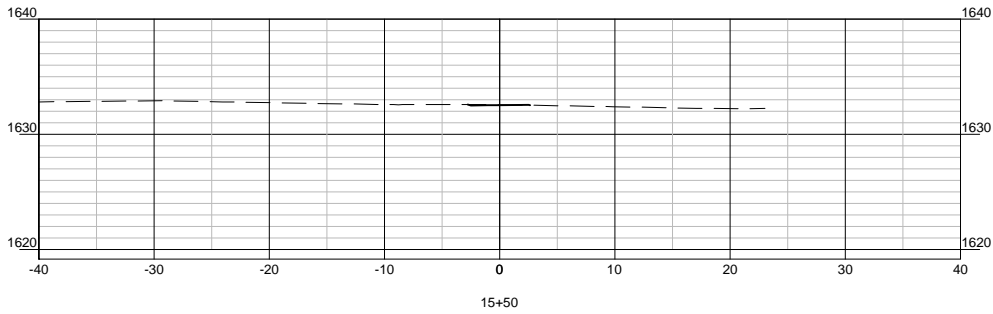
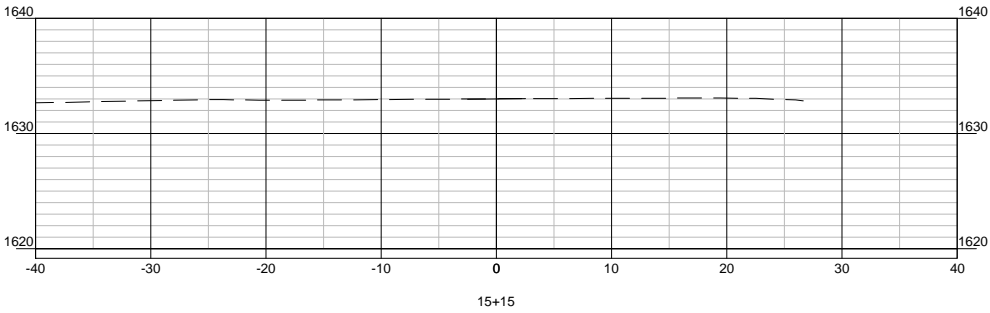
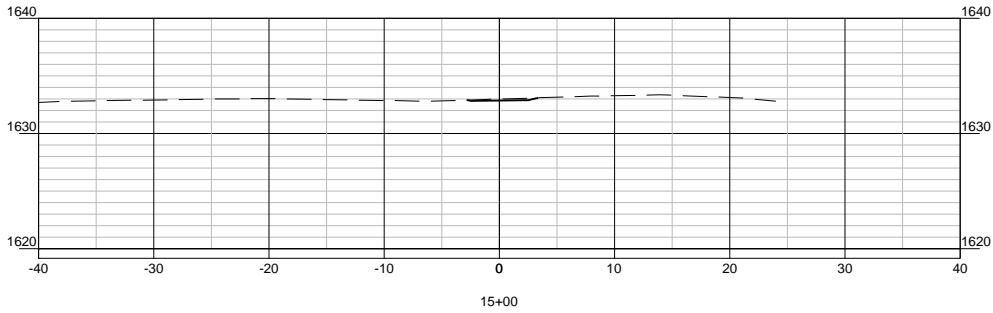
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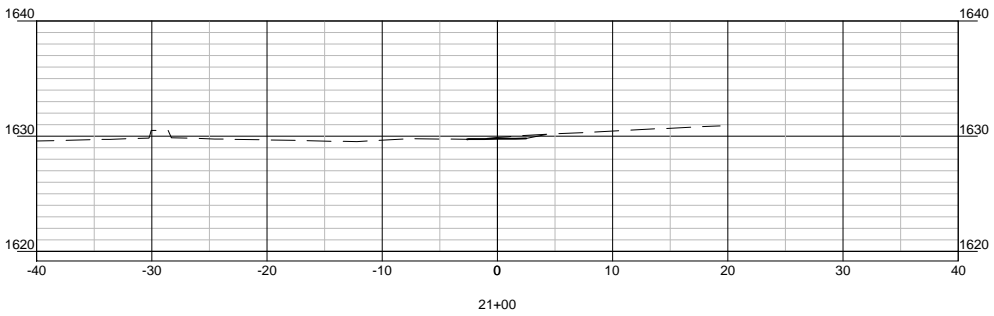
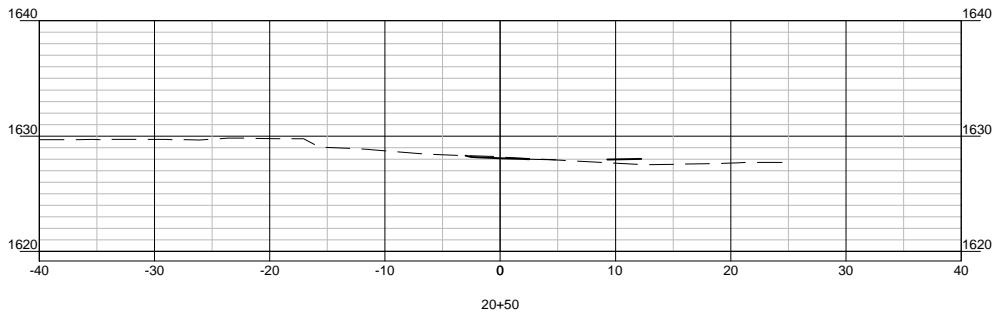
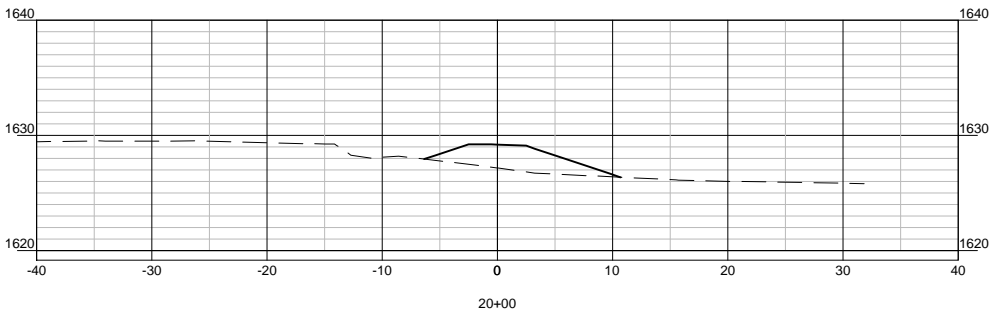
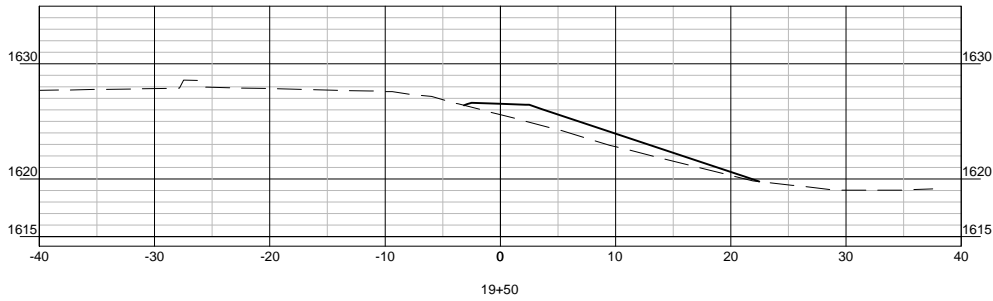
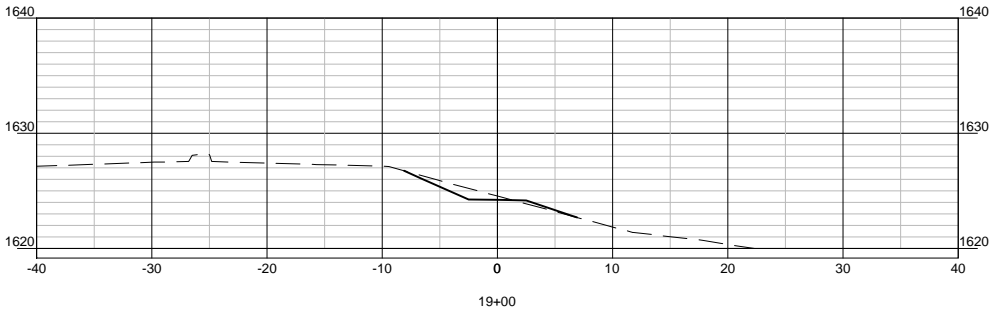
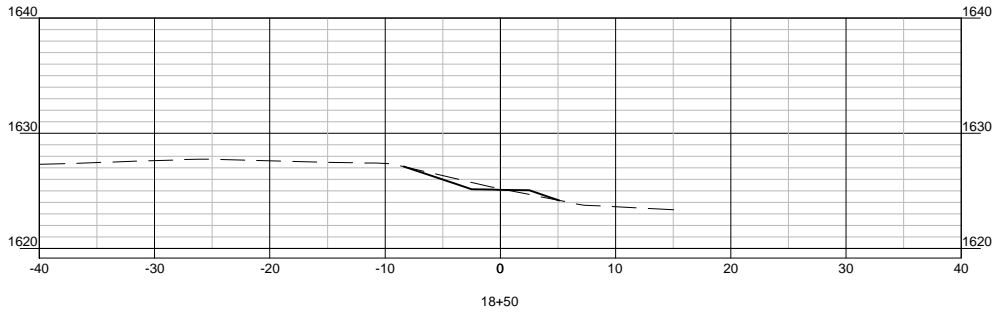
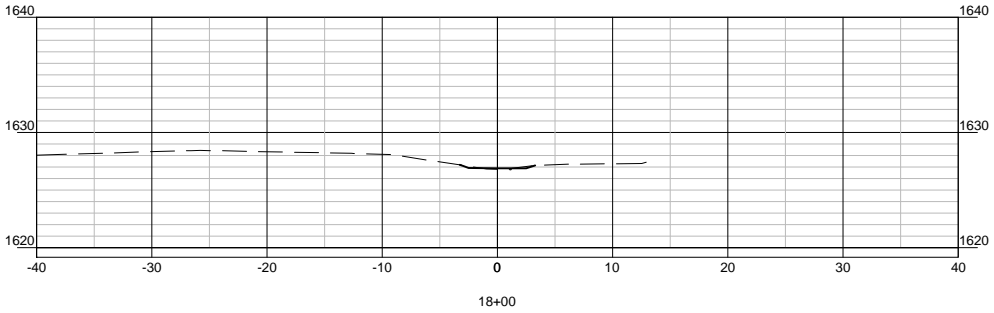
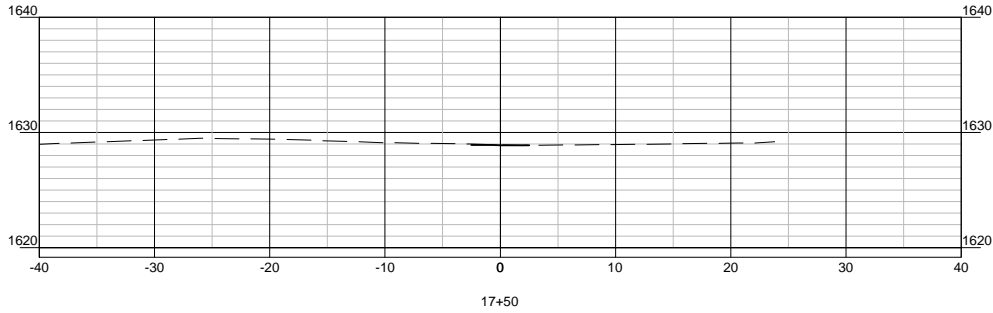
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Transportation Alternatives Program Surrey, North Dakota			
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File: W:\S\Surrey\05519-2018-001\CAD Dwg\01-Civil\Plan Sheets\200 Cross Sections.dwg			
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?

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
BG below grade
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
CInt clean-out
Clr clear
Cl&gr clearing & grubbing
Co S coal slack
C Gr coarse gravel
CS coarse sand
Comb. combination
Coml commercial
Compr compression
CADD computer aided drafting & design
Conc concrete
CECB concrete erosion control blanket
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
CSFES corrugated steel flared end section

CSP corrugated steel pipe
CSTES corrugated steel traversable end section
C coulomb
Co County
Crse course
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 or \varnothing 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
DSDS dynamic speed display sign
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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE
04-23-18 09-20-18	General Revisions General Revisions

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NDDOT ABBREVIATIONS

D-101-2

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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
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NDDOT ABBREVIATIONS

D-101-3

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

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NDDOT UTILITY COMPANY AND ORGANIZATION ABBREVIATIONS

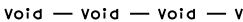


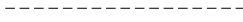
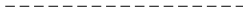

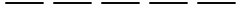
















D-101-10

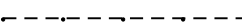
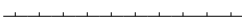


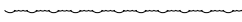
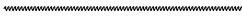
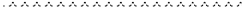

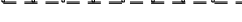



702COM	702 Communications	GT PLNS NAT GAS	Great Plains Natural Gas Company	RED RIV TEL	Red River Rural Telephone
ACCENT	Accent Communications	HALS TEL	Halstad Telephone Company	RESVTN TEL	Reservation Telephone
AGASSIZ WU	Agassiz Water Users Incorporated	IDEA1	Idea1	ROBRTS TEL	Roberts Company Telephone
AGC	Associated General Contractors of America	INT-COMM TEL	Inter-Community Telephone Company	R-RIDER ELEC	Roughrider Electric Cooperative
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	S CENT REG WD	South Central Regional Water District
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 HGH PLNS PL	Tesoro High Plains Pipeline
CABLE SERV	Cable Services	MISS VALL COMM	Missouri Valley Communications	TRI-CNTY WU	Tri-County Water Users Incorporated
CAP ELEC	Capital Electric Cooperative Incorporat	MISS W W S	Missouri West Water System	TRL CO RWU	Traill County Rural Water Users
CASS CO ELEC	Cass County Electric Cooperative	MNKOTA PWR	Minnkota Power	UNTD TEL	United Telephone
CASS RWU	Cass Rural Water Users Incorporated	MOR-GRAN-SOU ELEC	Mor-gran-sou Electric Cooperative	UPPR SOUR WUA	Upper Souris Water Users Association
CAV ELEC	Cavalier Rural Electric Cooperative	MOUNT-WILLI ELEC	Mountrail-williams Electric Cooperative	US SPRINT	U.S. Sprint
CBLCOM	Cablecom Of Fargo	MRE LBTY TEL	Moore & Liberty Telephone	USAF MSL CABLE	U.S.A.F. Missile Cable
CENEX PL	Cenex Pipeline	MUNICIPAL	City Water And Sewer	USFWS	US Fish and Wildlife Service
CENT PL WATER DIST	Central Pipe Line Water District	MUNICIPAL	City Of '.....'	USW COMM	U.S. West Communications
CENT PWR ELEC	Central Power Electric Cooperative	N CENT ELEC	North Central Electric Cooperative	VRNDRY ELEC	Verendrye Electric Cooperative
COE	Corps of Engineers	N VALL W DIST	North Valley Water District	W RIV TEL	West River Telephone Incorporated
CONS TEL	Consolidated Telephone	ND PKS & REC	North Dakota Parks And Recreation	WEB	W. E. B. Water Development Association
CONT RES	Continental Resource Inc	ND TEL	North Dakota Telephone Company	WILLI RWA	Williams Rural Water Association
CPR	Canadian Pacific Railway	NDDOT	North Dakota Department of Transportation	WILSTN BAS PL	Williston Basin Interstate Pipeline Company
D O E	Department Of Energy	NDSU SOIL SCI DEPT	NDSU Soil Science Department	WLSH RWD	Walsh Water Rural Water District
DAK CARR	Dakota Carrier Network	NEMONT TEL	Nemont Telephone	WOLVRTN TEL	Wolverton Telephone
DAK CENT TEL	Dakota Central Telephone	NODAK R ELEC	Nodak Rural Electric Cooperative	XLENER	Xcel Energy
DAK RWD	Dakota Rural Water District	NOON FRMS TEL	Noonan Farmers Telephone Company	YSVR	Yellowstone Valley Railroad
DGC	Dakota Gasification Company	NPR	Northern Plains Railroad		
DICKEY R NET	Dickey Rural Networks	NSP	Northern States Power		
DICKEY RWU	Dickey Rural Water Users Association	NTH PRAIR RW	Northern Prairie Rural Water Association		
DICKEY TEL	Dickey Telephone	NTHN BRDR PL	Northern Border Pipeline		
DNRR	Dakota Northern Railroad	NTHN PLNS ELEC	Northern Plains Electric Cooperative Incorporated		
DOME PL	Dome Pipeline Company	NTHWSTRN REF	Northwestern Refinery Company		
DVELEC	Dakota Valley Electric Cooperative	NW COMM	Northwest Communication Cooperation		
DVMW	Dakota, Missouri Valley & Western	NWRWD	Northwest Rural Water District		
ENBRDG	Enbridge Pipelines Incorporated	ONEOK	Oneok gas		
ENVENTIS	Enventis Telephone	OSHA	Occupational Safety and Health Administration		
FALK MNG	Falkirk Mining Company	OTTR TL PWR	Otter Tail Power Company		
FHWA	Federal Highway Administration	P L E M	Prairielands Energy Marketing		
G FKS-TRL WD	Grand Forks-trail Water District	POLAR COM	Polar Communications		
GETTY TRD & TRAN	Getty Trading & Transportation	PVT ELEC	Private Electric		
GLDN W ELEC	Golden West Electric Cooperative	QWEST	Qwest Communications		
GRGS CO TEL	Griggs County Telephone	R&T W SUPPLY	R & T Water Supply Association		
GTR RAMSEY WD	Greater Ramsey Water District				

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE
04-23-18 09-20-18	General Revisions General Revisions

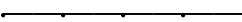

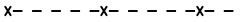

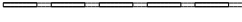


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Existing Topography









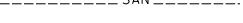
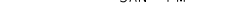












	Existing Ground Void
	Existing Cemetary Boundary
	Existing Box Culvert Bridge
	Existing Concrete Surface
	Existing Drainage Structure
	Existing Gravel Surface
	Existing Riprap
	Existing Dirt Surface
	Existing Asphalt Surface
	Existing Tie Point Line
	Existing Railroad Centerline
	Existing Guardrail Cable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

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

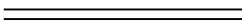


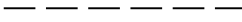
Proposed Topography

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

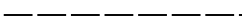
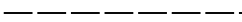







Existing Utilities

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




Proposed Utilities

	24 Inch Pipe
	Reinforced Concrete Pipe
	Under Drain
	Edge Drain

Traffic Utilities

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

Sign Structures

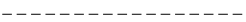
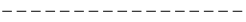




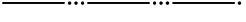






	Existing Overhead Sign Structure
	Existing Overhead Sign Structure Cantilever
	Overhead Sign Structure Cantilever

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE
09-23-16	Added and Revised Items, Organized by Functional Groups

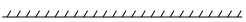








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Line Styles

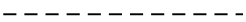
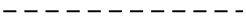
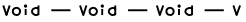
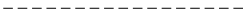




Right Of Way

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


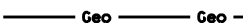




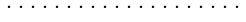

Boundary Control

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


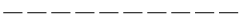
Cross Sections and Typicals

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

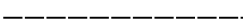
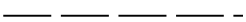
Geotechnical

	Geotextile Fabric Type D
	Geogrid
	Geotextile Fabric Type R
	Geotextile Fabric Type R1
	Geotextile Fabric Type RR
	Geotextile Fabric Type S
	Subgrade Reinforcement
	Failure Line


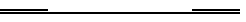

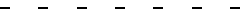


Countours

	Depression Contours
	Supplemental Contour



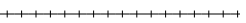
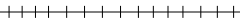
Profile

	Subgrade, Subcut or Ditch Grade
	Topsoil Profile



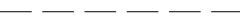


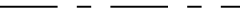
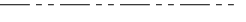
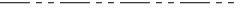

Striping

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

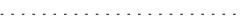



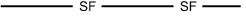

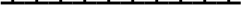
Pavement Joints

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



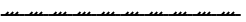
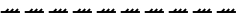
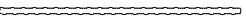
Bridge Details

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

Erosion Control

	Limits of Const Transition Line
	Bale Check
	Rock Check
	Floating Silt Curtain
	Silt Fence
	Excavation Limits
	Fiber Rolls

Environmental

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

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















































































Symbols

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

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07-01-14		
REVISIONS		
DATE	CHANGE	

Symbols

D-101-31

	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	<table><tr><th colspan="2">NORTH DAKOTA DEPARTMENT OF TRANSPORTATION</th></tr><tr><th colspan="2">07-01-14</th></tr><tr><th colspan="2">REVISIONS</th></tr><tr><th>DATE</th><th>CHANGE</th></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table>		NORTH DAKOTA DEPARTMENT OF TRANSPORTATION		07-01-14		REVISIONS		DATE	CHANGE				
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION																			
07-01-14																			
REVISIONS																			
DATE	CHANGE																		
	Existing Storm Drain Manhole		Existing Power Pole		Existing Large Tree														
	Existing Force Main Storm Drain Manhole		Existing Power Pole with Transformer		Existing Small Tree														
	Existing Force Main Storm Drain Manhole with Valve				Existing Tree Trunk														
	Existing Telephone Manhole				Existing Pad Mounted Traffic Signal Control Box														

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Symbols



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 Grate Type 2



Junction Box



High Mast Light Standard 10 Luminaire



High Mast Light Standard 3 Luminaire



High Mast Light Standard 4 Luminaire



High Mast Light Standard 5 Luminaire



High Mast Light Standard 6 Luminaire



High Mast Light Standard 7 Luminaire



High Mast Light Standard 8 Luminaire



High Mast Light Standard 9 Luminaire



Relocate Light Standard



Overhead Sign Structure Load Center



Light Standard 100 Watt High Pressure Sodium Vapor Luminaire



Light Standard 1000 Watt High Pressure Sodium Vapor Luminaire



Light Standard 150 Watt High Pressure Sodium Vapor Luminaire



Light Standard 175 Watt High Pressure Sodium Vapor Luminaire



Light Standard 200 Watt High Pressure Sodium Vapor Luminaire



Light Standard 250 Watt High Pressure Sodium Vapor Luminaire



Light Standard 310 Watt High Pressure Sodium Vapor Luminaire



Light Standard 35 Watt High Pressure Sodium Vapor Luminaire



Light Standard 400 Watt High Pressure Sodium Vapor Luminaire



Light Standard 50 Watt High Pressure Sodium Vapor Luminaire



Light Standard 70 Watt High Pressure Sodium Vapor Luminaire



Light Standard 700 Watt High Pressure Sodium Vapor Luminaire



Manhole



Manhole 48 Inch



Sanitary Force Main Manhole



Sanitary Sewer Manhole



Storm Drain Manhole



Storm Drain Manhole with Inlet



Reset Mile Post



Mile Post Type A



Mile Post Type B



Mile Post Type C



Right of Way Marker



Tubular Marker



Alignment Monument



Iron Pin Reference Monument



Object Marker Type I



Object Marker Type II



Object Marker Type III



Caution Mode Arrow Panel



Back to Back Vertical Panel Sign



Double Direction Arrow Panel



Left Directional Arrow Panel



Right Directional Arrow Panel



Sequencing Arrow Panel



Truck Mounted Arrow Panel



Power Pole



Wood Pole



Pedestrian Push Button Post



Property Corner



Pull Box



Intelligent Transportation Pull Box



Sanitary Pump



Storm Drain Pump



Reinforced Pavement



Reinforced Concrete End Section 15 Inch



Reinforced Concrete End Section 18 Inch



Reinforced Concrete End Section 24 Inch



Reinforced Concrete End Section 30 Inch



Reinforced Concrete End Section 36 Inch



Reinforced Concrete End Section 42 Inch



Reinforced Concrete End Section 48 Inch



Reinforced Concrete End Section 54 Inch



Reset Right of Way Marker



Reset USGS Marker



Right of Way Markers



Riser 30 Inch



Continuous Split Barrel Sample



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

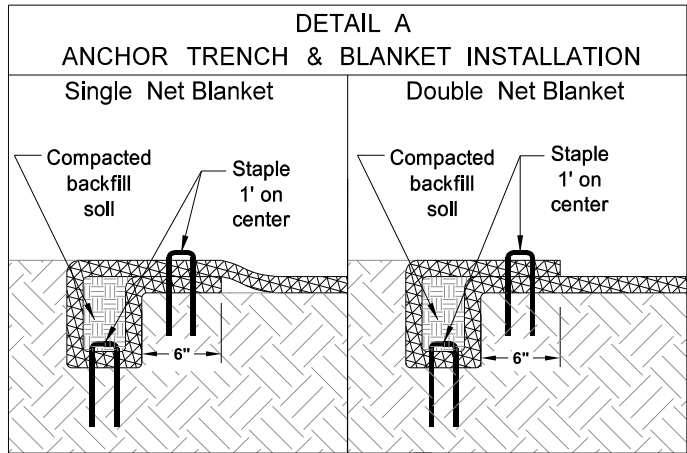


Water Valve

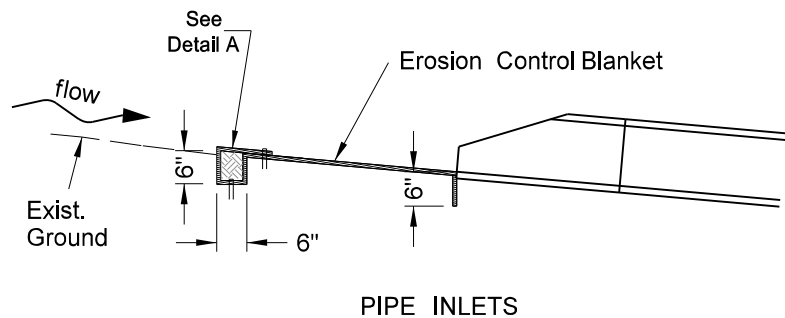
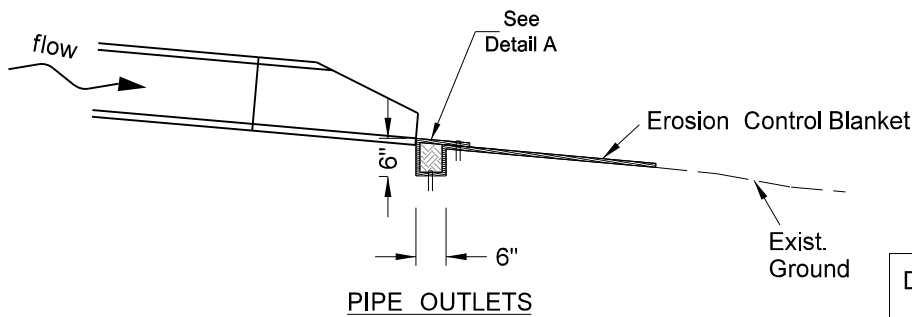
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE

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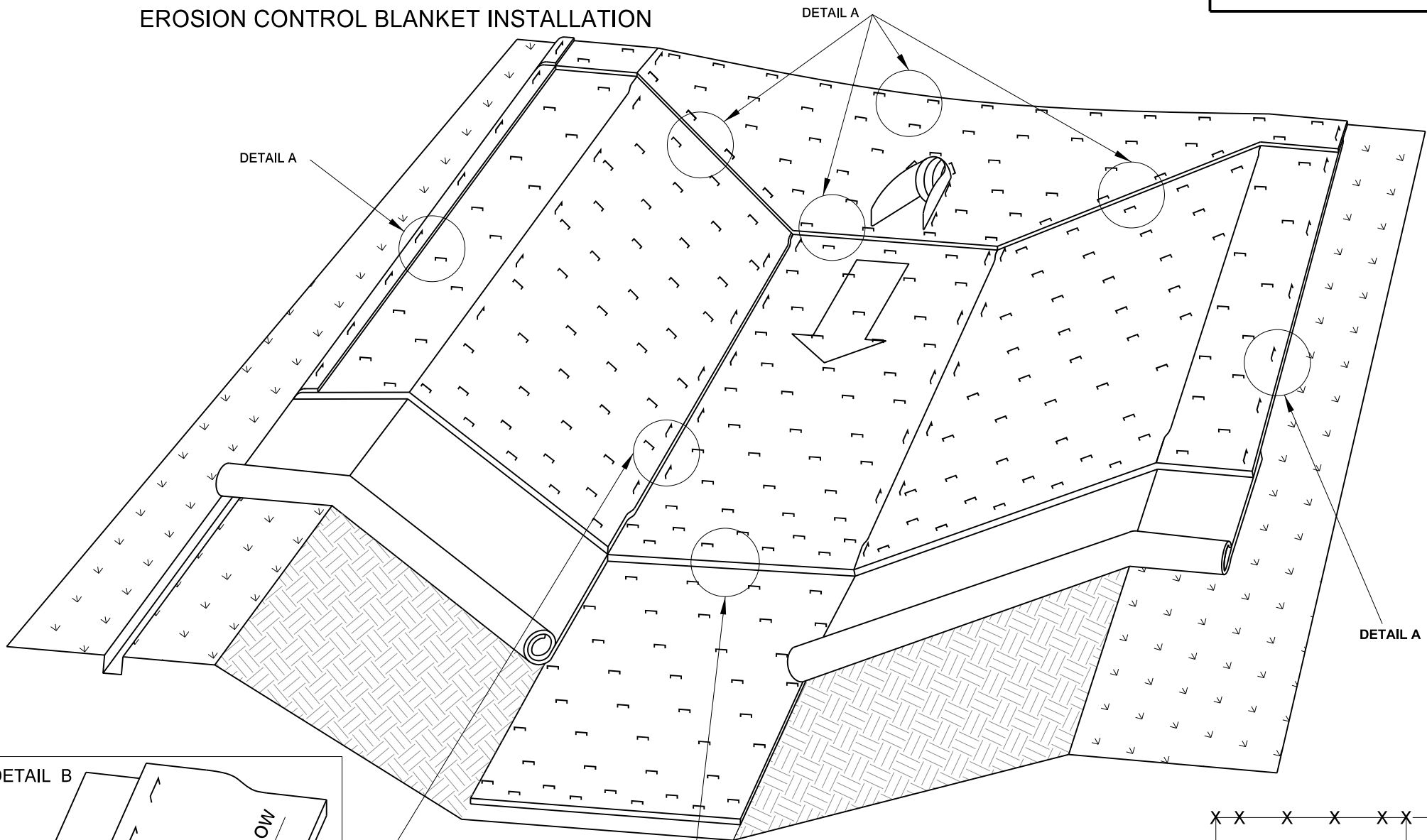
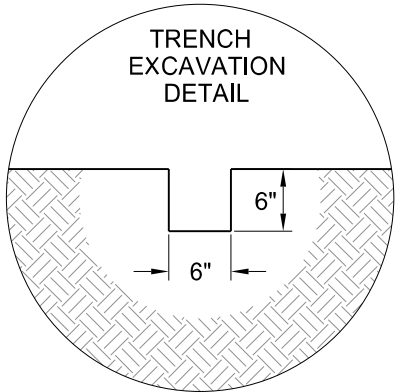
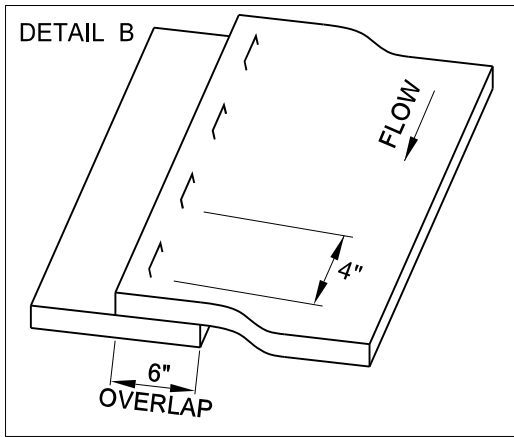
EROSION AND SILTATION CONTROL
EROSION CONTROL BLANKET INSTALLATION



NOTE:
If a Single Net Blanket is used the side with the netting should be on the top once the blanket is installed.

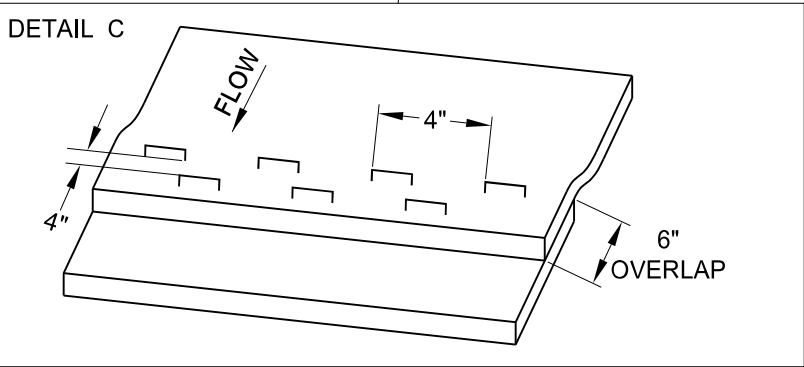
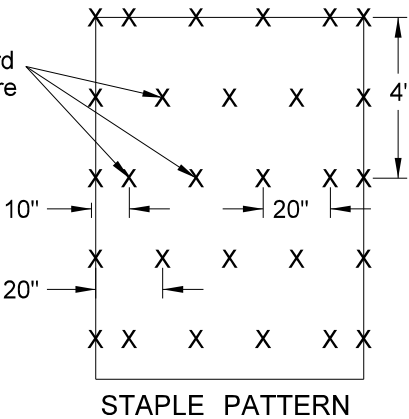


INSTALLATION AT PIPE ENDS



BLANKET LAYOUT
CHANNEL OR SLOPE INSTALLATION

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

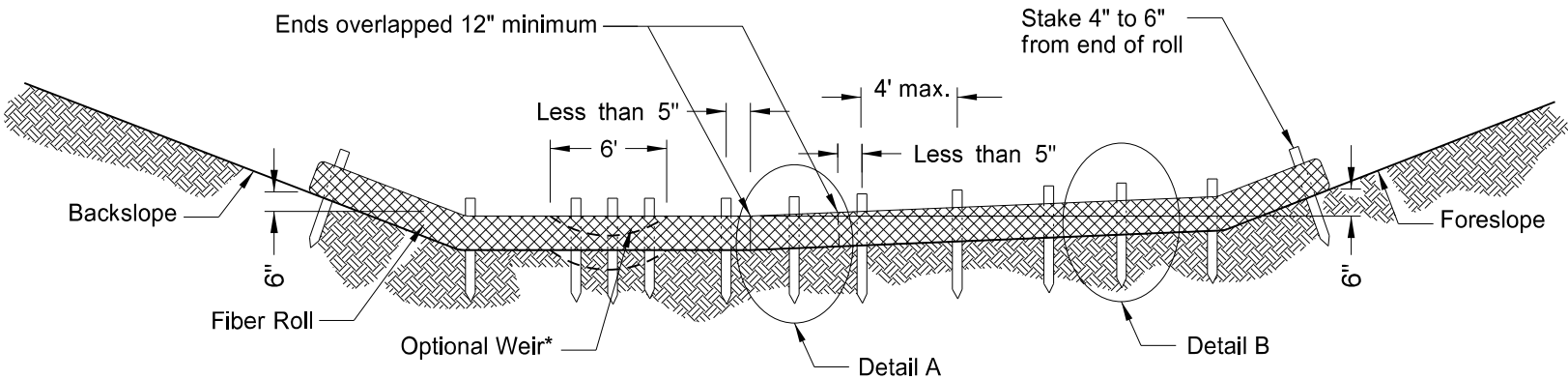


NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-03-13	
REVISIONS	
DATE	CHANGE
06-26-14	Changed standard drawing number from D-708-S to D-255-2.
07-27-15	Changed installation details such as trench depth and overlap dimensions.
08-27-19	New Design Engineer PE Stamp.

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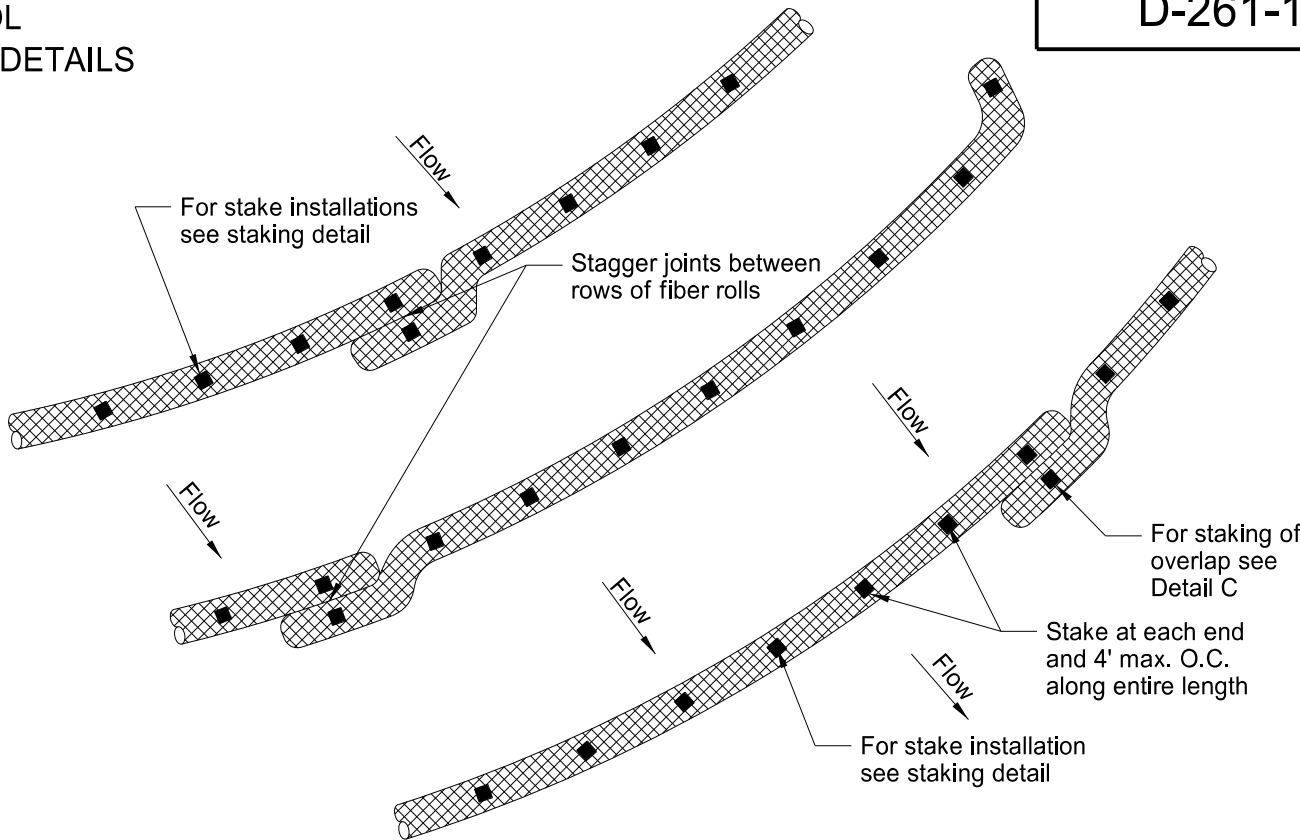
EROSION CONTROL
FIBER ROLL PLACEMENT DETAILS

D-261-1

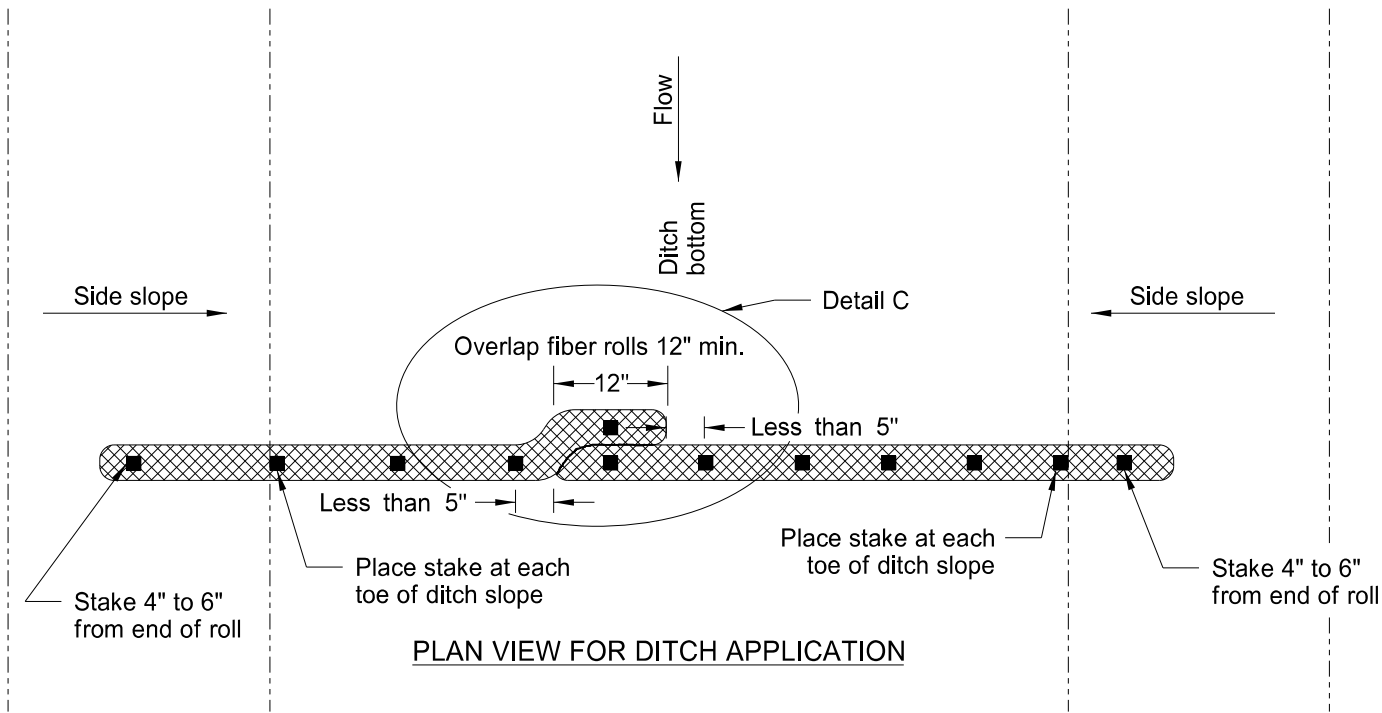


*Optional Weir. Use in flat areas, such as the Red River Valley, where there is potential for water to back up on adjacent property. Lower fiber roll enough to prevent water from backing up on adjacent property. Do not use 20-inch fiber rolls in flat areas where there is potential for water to back up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

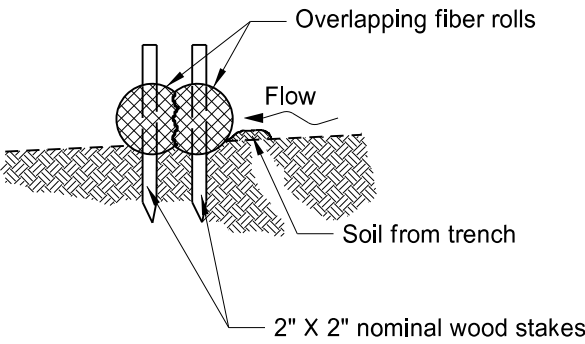
12 OR 20 INCH FIBER ROLL - DITCH BOTTOM



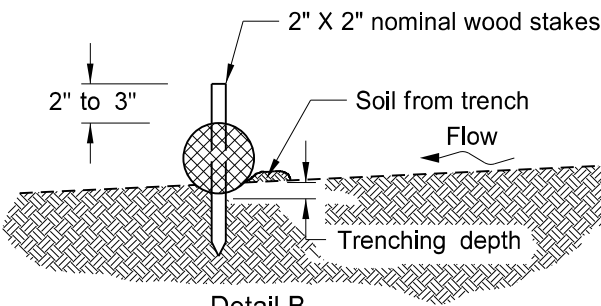
PLAN VIEW FOR SLOPE APPLICATION



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"

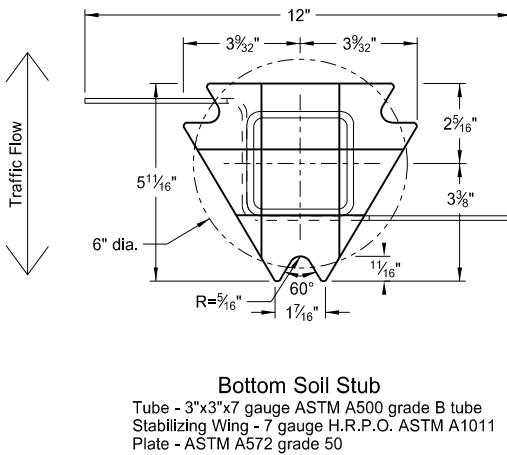
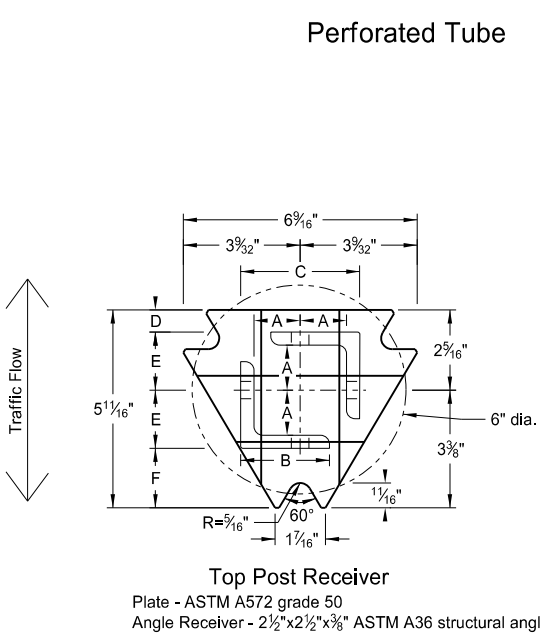
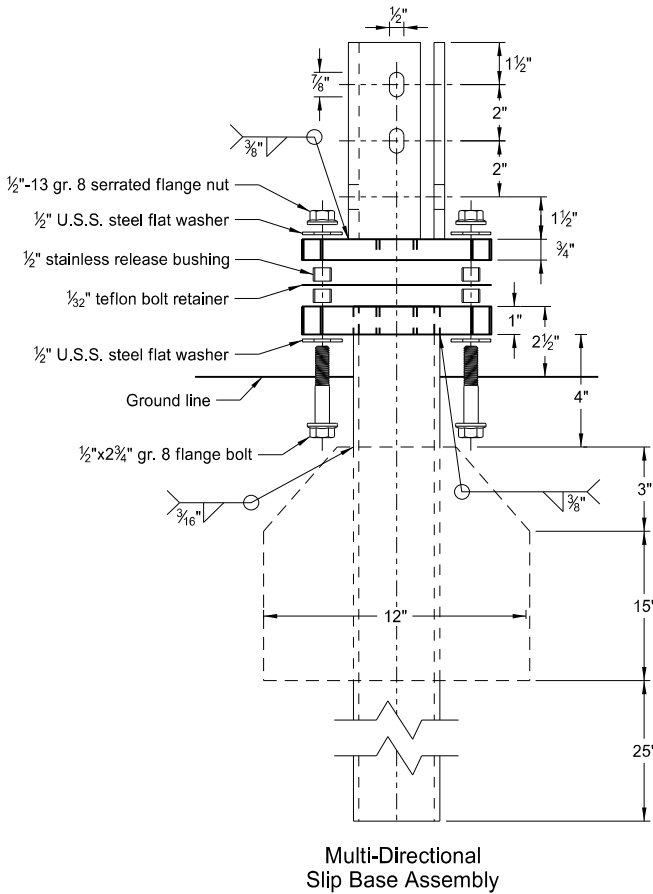
NOTE: Runoff must not be allowed to run under or around roll.

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.
08-27-19	New Design Engineer PE Stamp

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Perforated Tube

- Notes:
1. Torque slip base bolts as specified by manufacturer.
 2. Use anchor with 43.9 KSI yield strength and 59.3 KSI tensile strength.
 3. Provide 4" vertical clearance for anchor or breakaway base. Measure the 4"x60" measurement above and below post location and back and ahead of post.
 4. In concrete sidewalk, use same anchor without wings.
 5. Provide more than 7' between the first and fourth posts of a four post sign.

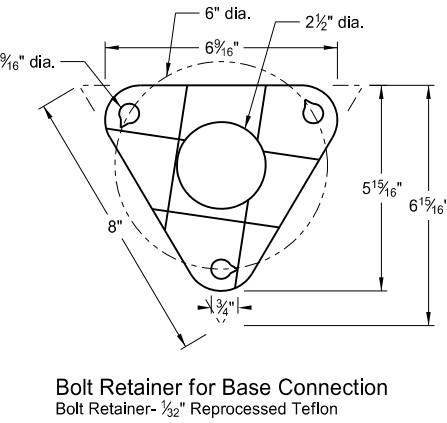
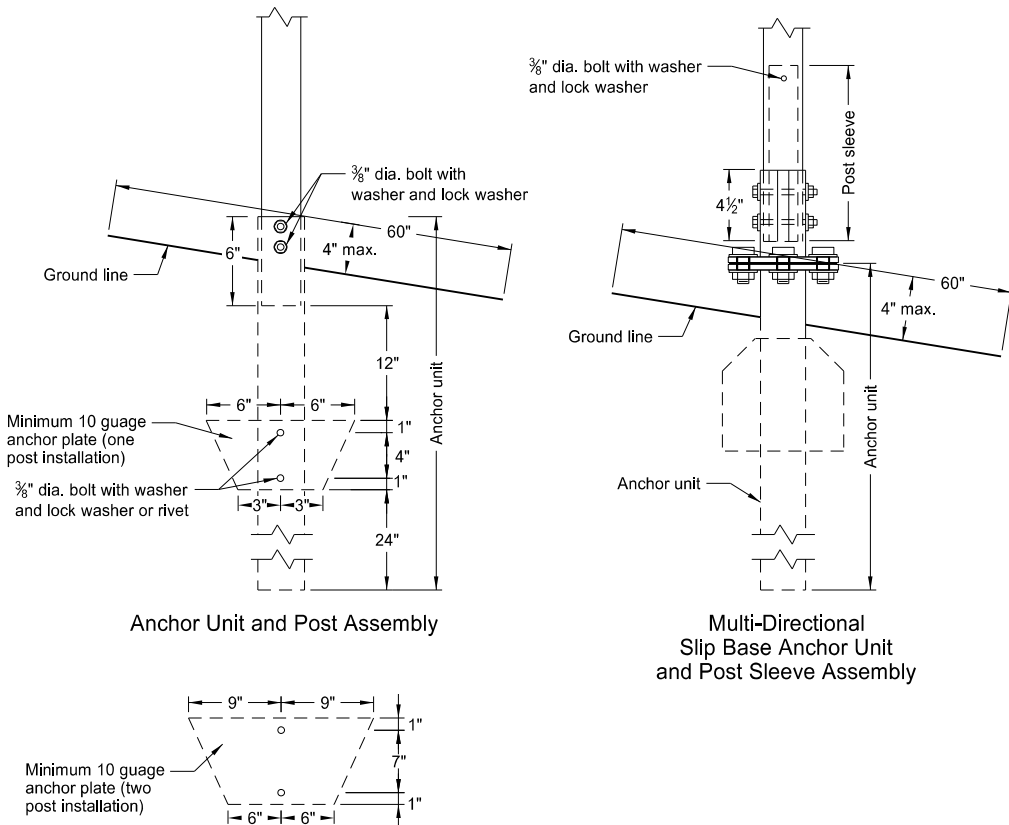


Telescoping Perforated Tube						
Number of Posts	Post Size in.	Wall Thick-ness Gauge	Sleeve Size in.	Wall Thick-ness Gauge	Slip Base	Anchor Size without Slip Base in.
1	2	12			No	2 1/4
1	2 1/4	12			No	2 1/2
1	2 1/2	12			(A)	3
1	2 1/2	10			Yes	
1	2 1/4	12	2	12	Yes	
1	2 1/2	12	2 1/4	12	Yes	
2	2	12			No	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 3/8 x 2 3/8	0.135	10	3.432	0.605	0.841	0.590
2 1/2 x 2 1/2	0.105	12	3.141	0.804	0.803	0.643
2 1/2 x 2 1/2	0.135	10	4.006	0.979	1.010	0.785

Top Post Receiver Data Table						
Square Post Sizes (B)	A	B	C	D	E	F
2 3/16"x10 ga.	1 5/16"	2 1/2"	3 1/2"	2 5/32"	1 33/64"	1 7/8"
2 1/2"x10 ga.	1 3/32"	2 1/2"	3 5/16"	5/8"	1 21/32"	1 3/4"

- (A) Use breakaway base when support is placed in weak soils. Engineer determines if soils are weak.
- (B) For additional wind load, insert the 2 3/8"x10 ga. into 2 1/2"x10 ga.



NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
2-28-14	
REVISIONS	
DATE	CHANGE
9-27-17 10-03-19	Updated to active voice New Design Engr PE Stamp

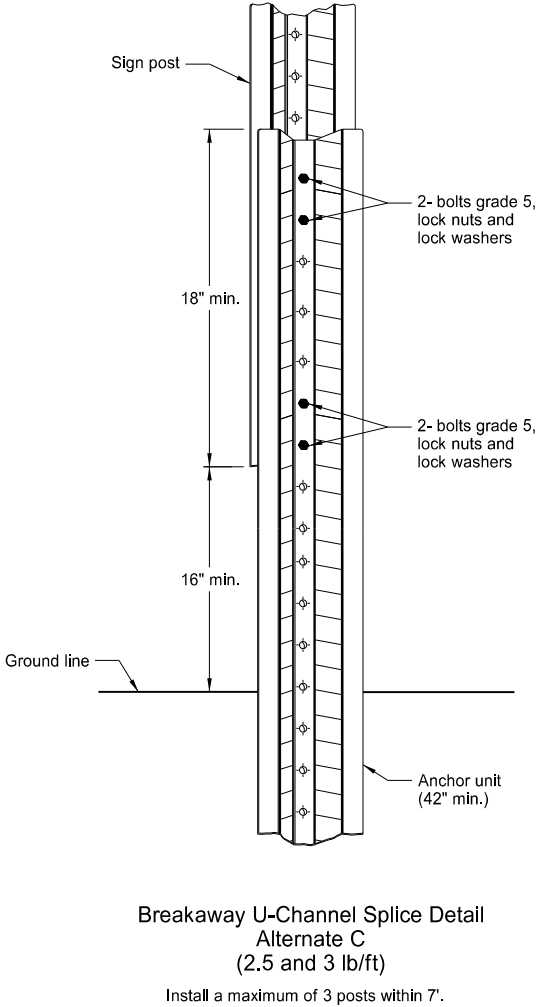
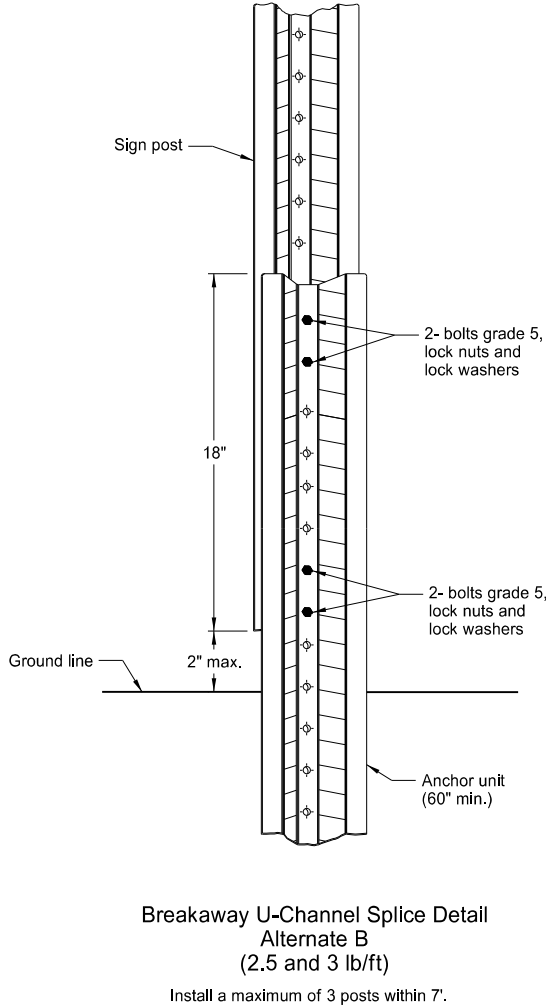
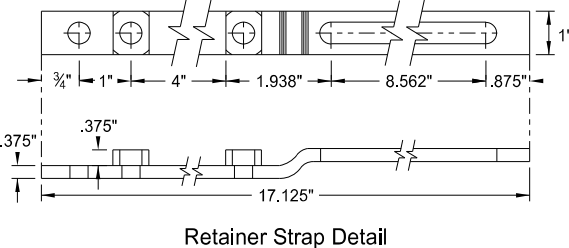
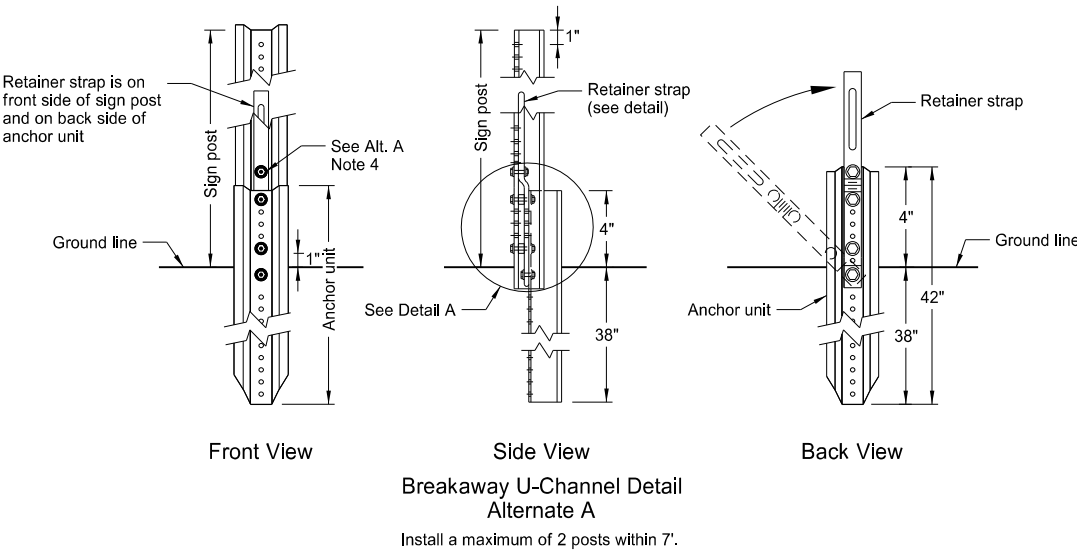
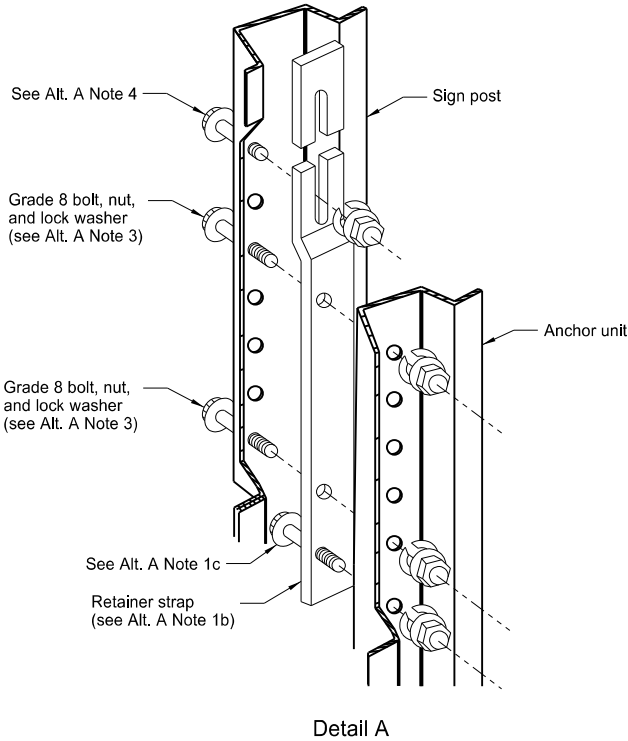
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U-Channel Post



Alternate A Steps of Installation:

- a) Drive anchor unit to within 12" of ground level.
b) Establish proper assembly by lining up bottom hole of retainer strap with 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.
- a) Drive anchor unit to 4" above ground.
b) Rotate strap to vertical position.
- 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.
- Complete assembly by tightening 5/16"x2" bolt (this fastens sign post to retainer strap).
- Properly nest base post, strap, and sign post. 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.

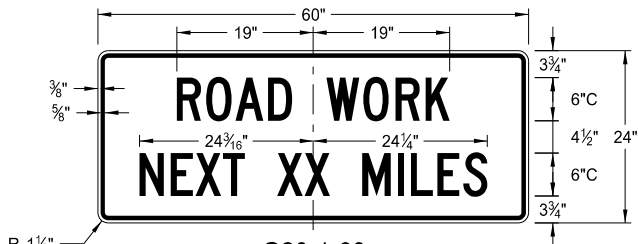
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
2-28-14	
REVISIONS	
DATE	CHANGE
9-27-17 10-03-19	Updated to active voice New Design Engr PE Stamp

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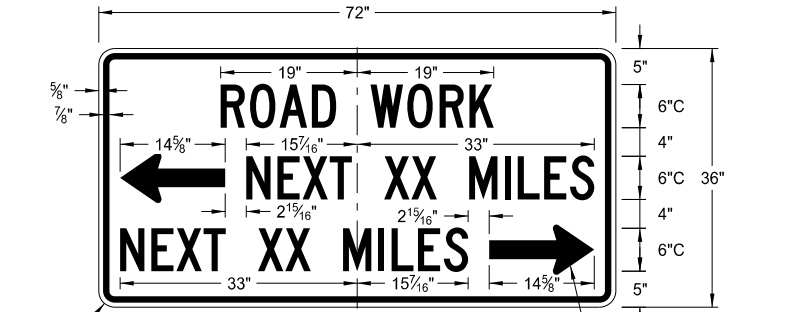
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CONSTRUCTION SIGN DETAILS
TERMINAL AND GUIDE SIGNS

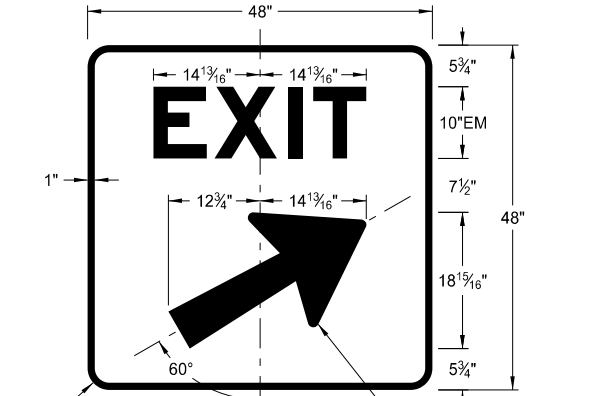
D-704-9



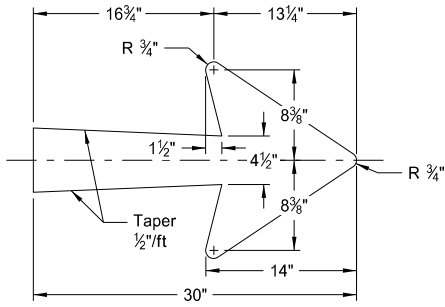
G20-1-60
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Background: orange



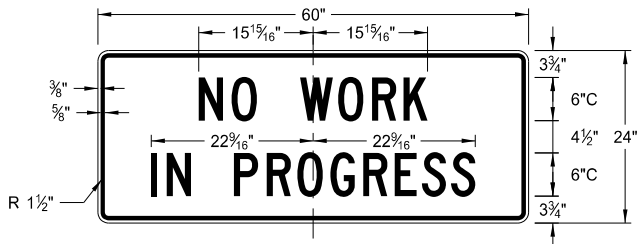
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Background: orange



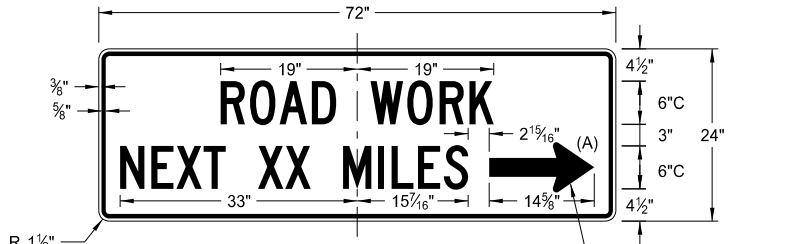
E5-1(L or R)-48
Legend: white
Background: green (orange optional)



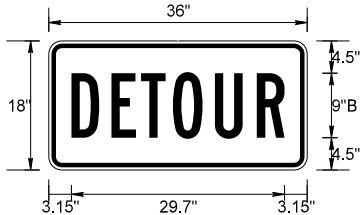
E5-1-48



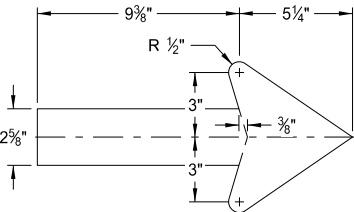
G20-1b-60
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Background: orange



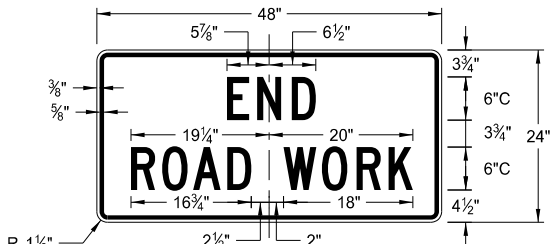
G20-52a-72
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Background: orange



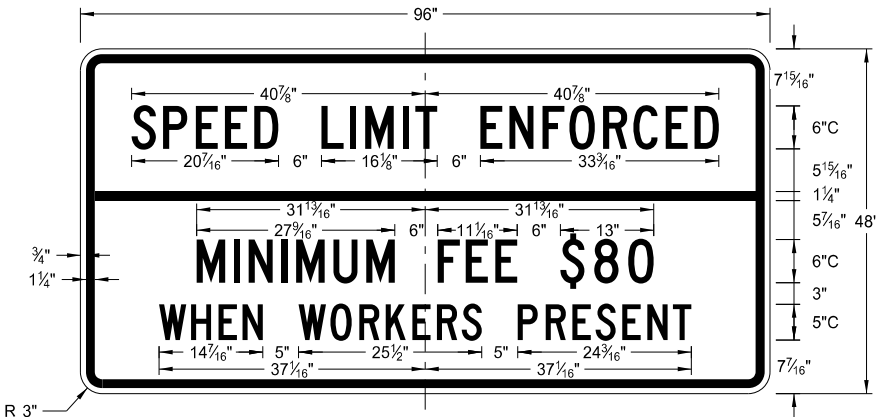
M4-8-36
Legend: black (non-refl)
Background: orange



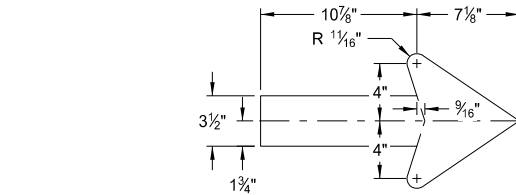
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G20-52a-72



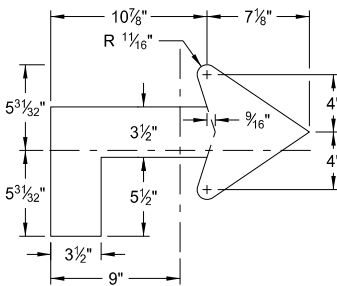
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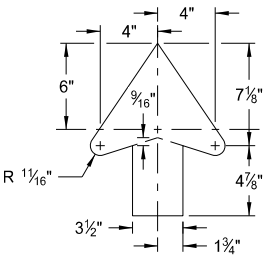
G20-55-96
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Background: orange



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



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



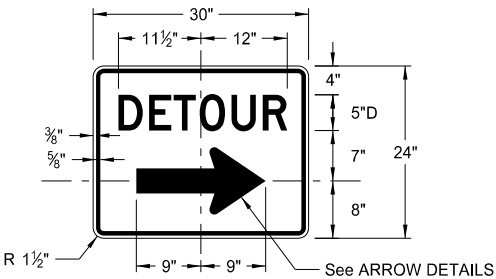
M4-9-30
Straight

ARROW DETAILS

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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
REVISIONS	
DATE	CHANGE
8-17-17 10-03-19	Added sign & background color New Design Engineer PE Stamp

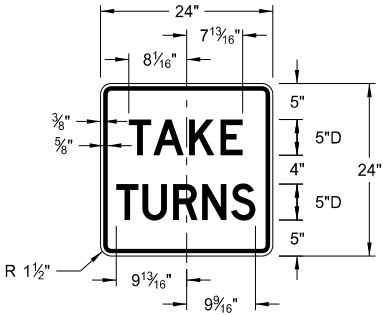
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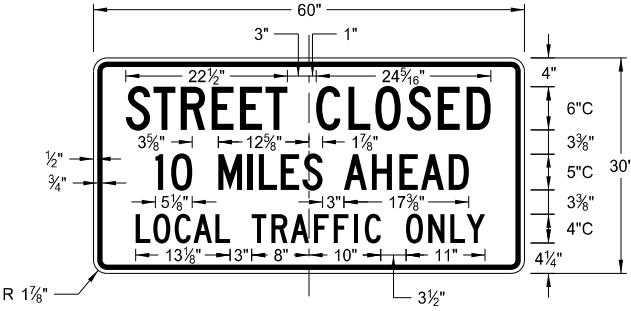
M4-9(L or R)-30 &
M4-9-30
Legend: black (non-refl)
Background: orange

CONSTRUCTION SIGN DETAILS
REGULATORY SIGNS

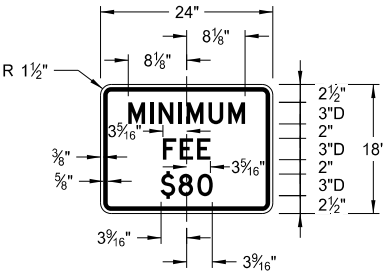
D-704-10



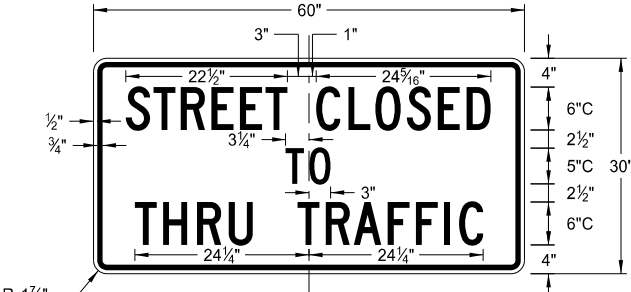
R1-50P-24
Legend: black (non-refl)
Background: white



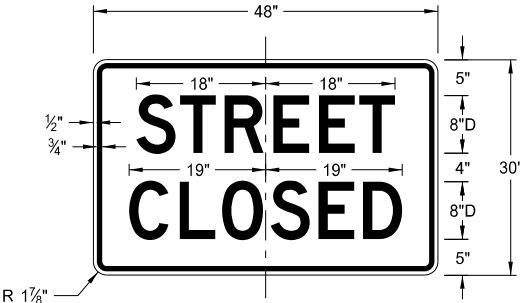
R11-3c-60
Legend: black (non-refl)
Background: white



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



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

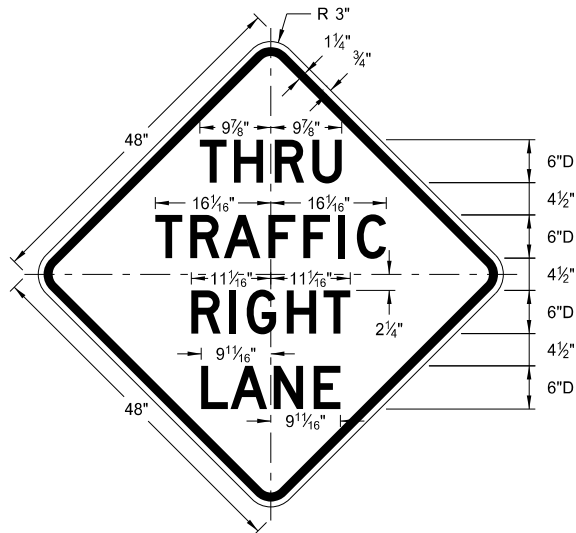


R11-2a-48
Legend: black (non-refl)
Background: white

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION		This document was originally issued and sealed by Kirk J Hoff, Registration Number PE- 4683, on 10/03/19 and the original document is stored at the North Dakota Department of Transportation
8-13-13		
REVISIONS		
DATE	CHANGE	
8-17-17 10-03-19	Revised sign number New Design Engineer PE Stamp	

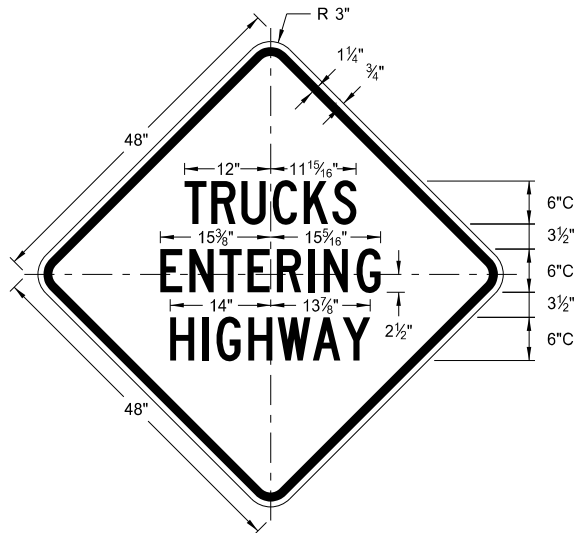
CONSTRUCTION SIGN DETAILS
WARNING SIGNS

D-704-11



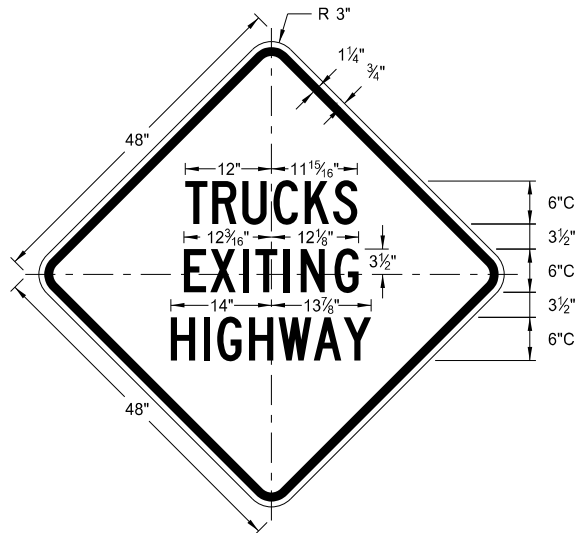
W5-8-48

Legend: black (non-refl)
Background: orange



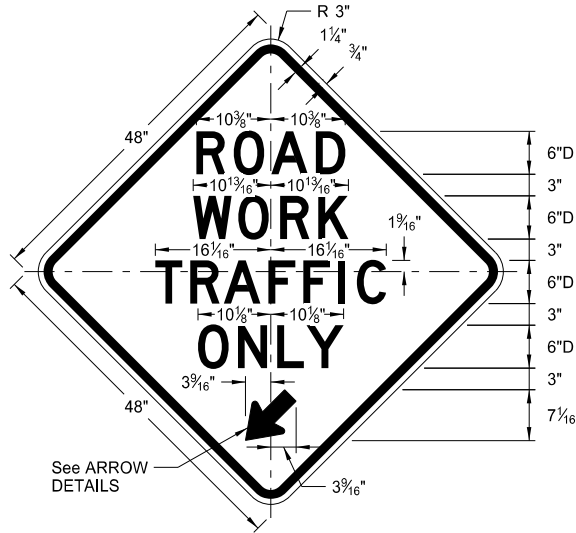
W8-53-48

Legend: black (non-refl)
Background: orange



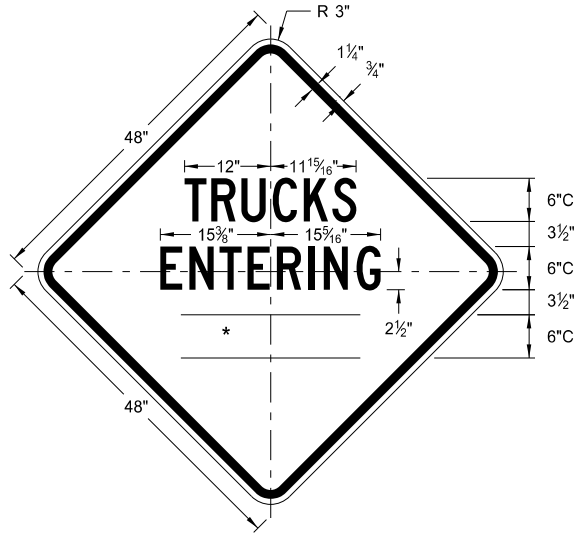
W8-56-48

Legend: black (non-refl)
Background: orange



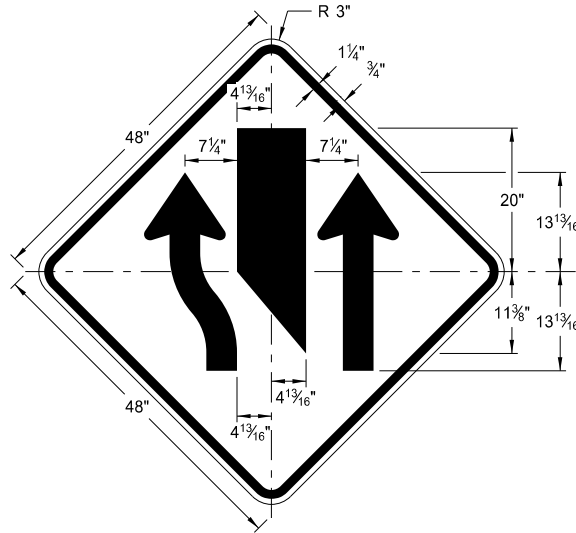
W5-9-48

Legend: black (non-refl)
Background: orange



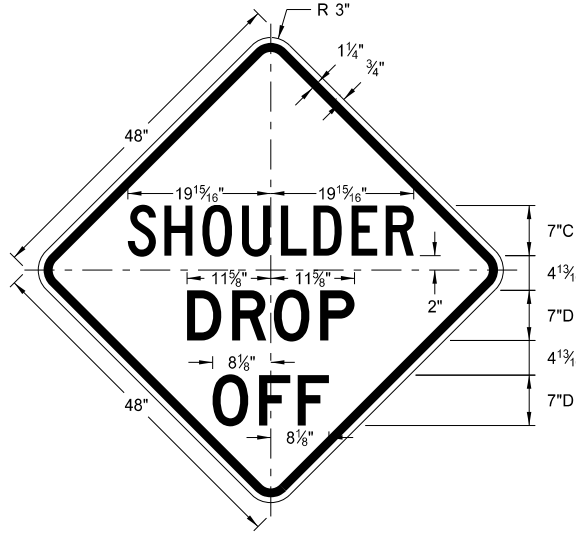
W8-54-48

Legend: black (non-refl)
Background: orange



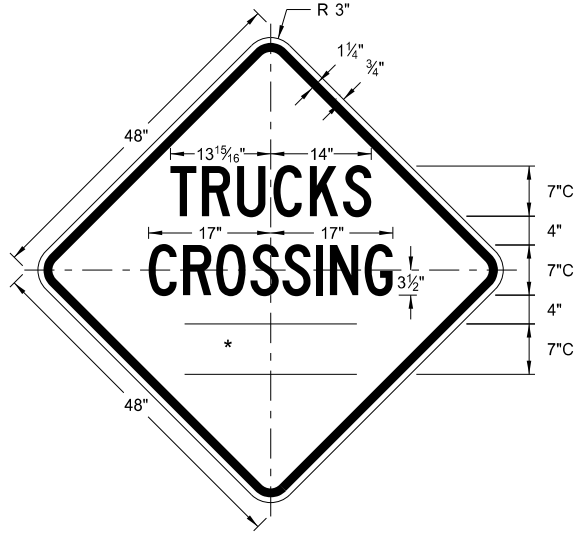
W9-3a-48

Legend: black (non-refl)
Background: orange



W8-9a-48

Legend: black (non-refl)
Background: orange

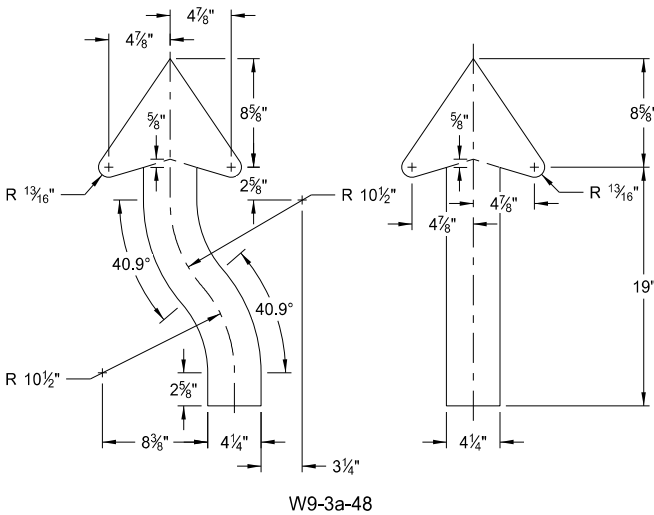
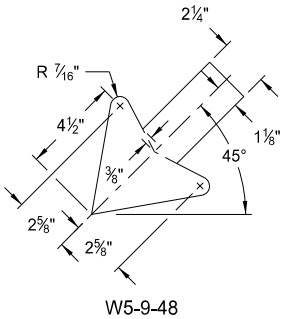


W8-55-48

Legend: black (non-refl)
Background: orange

WORD	LETTER SPACING
AHEAD	Standard
200 FT	Standard
350 FT	Standard
500 FT	Standard
1000 FT	Reduce 40%
1500 FT	Reduce 40%
1/2 MILE	Reduce 50%
1 MILE	Standard

* DISTANCE MESSAGES

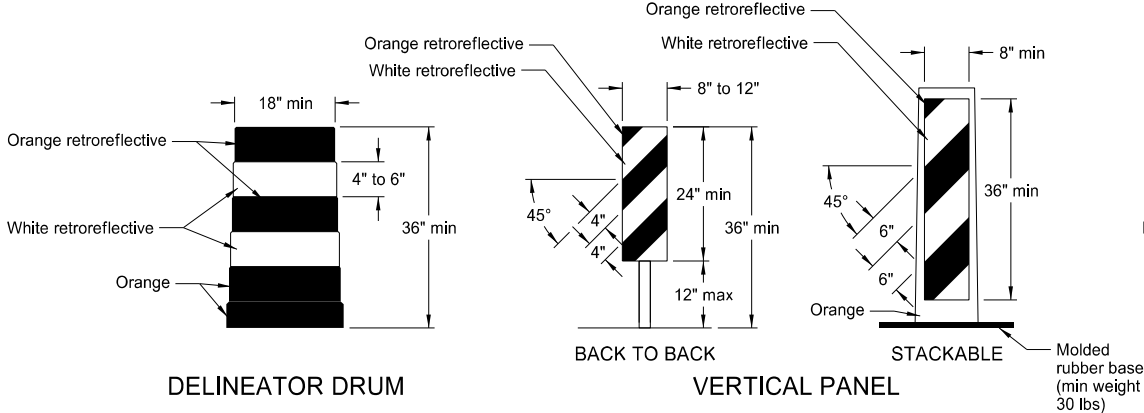


ARROW DETAILS

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
REVISIONS	
DATE	CHANGE
8-17-17	Updated sign number
5-31-18	Revised sign and arrow details
10-03-19	New Design Engineer PE Stamp

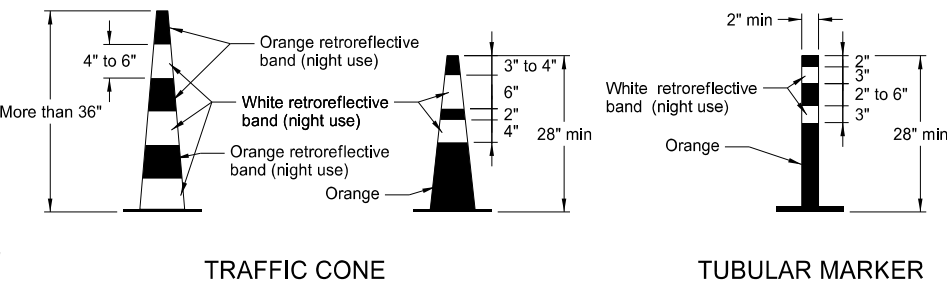
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BARRICADE AND CHANNELIZING DEVICE DETAILS



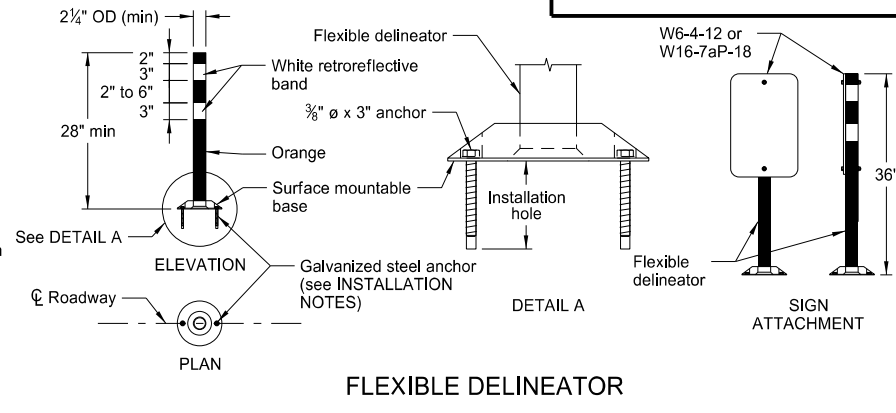
Provide horizontal, circumferential, alternating orange and white retroreflective stripes 4" to 6" wide for drum markings. Use a minimum of two orange and two white stripes with the top stripe being orange for each drum. Do not exceed 3" nonretroreflectORIZED spaces between the horizontal orange and white stripes. Avoid placement of stripes on drum ribs or indentations. Use closed top drums that will not allow collection of debris. Do not place ballast on the top of drum.

Provide alternating orange and white retroreflective stripes, sloping downward in direction vehicular traffic is to pass. Place retroreflective sheeting on both sides of panel with 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, use a stripe width of 6 inches.



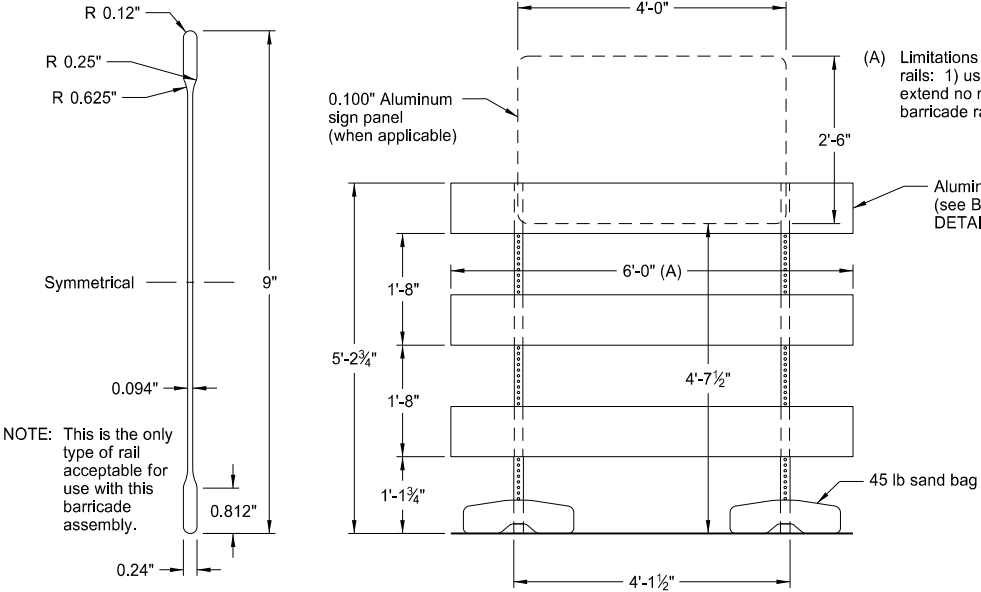
Provide retroreflectORIZATION of cones more than 36" in height by alternating orange and white retroreflective stripes. Use a minimum of two orange and two white stripes for each cone with the top stripe being orange. Use maximum 3" nonretroreflectORIZED space between the orange and white stripes.

Provide retroreflectORIZATION of tubular markers more than 42" in height 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 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, use an 8" x 8" butyl pad or hot melt butyl. Remove butyl as close as possible to pavement surface.

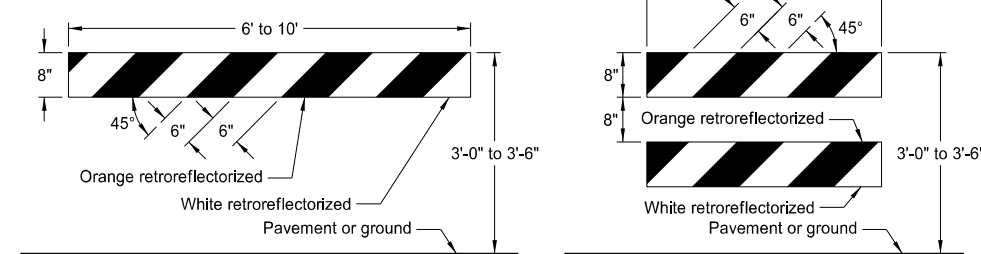


BARRICADE BLADE DETAIL

ELEVATION VIEW

BARRICADE ASSEMBLY DETAIL (Aluminum Barricade Rails)

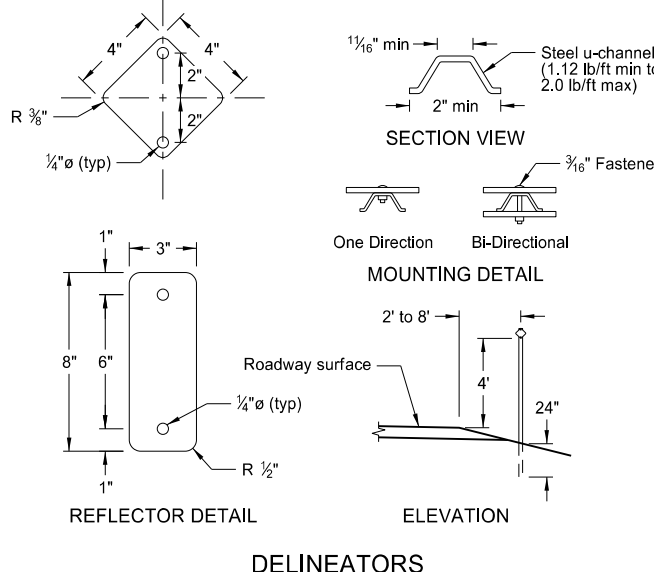
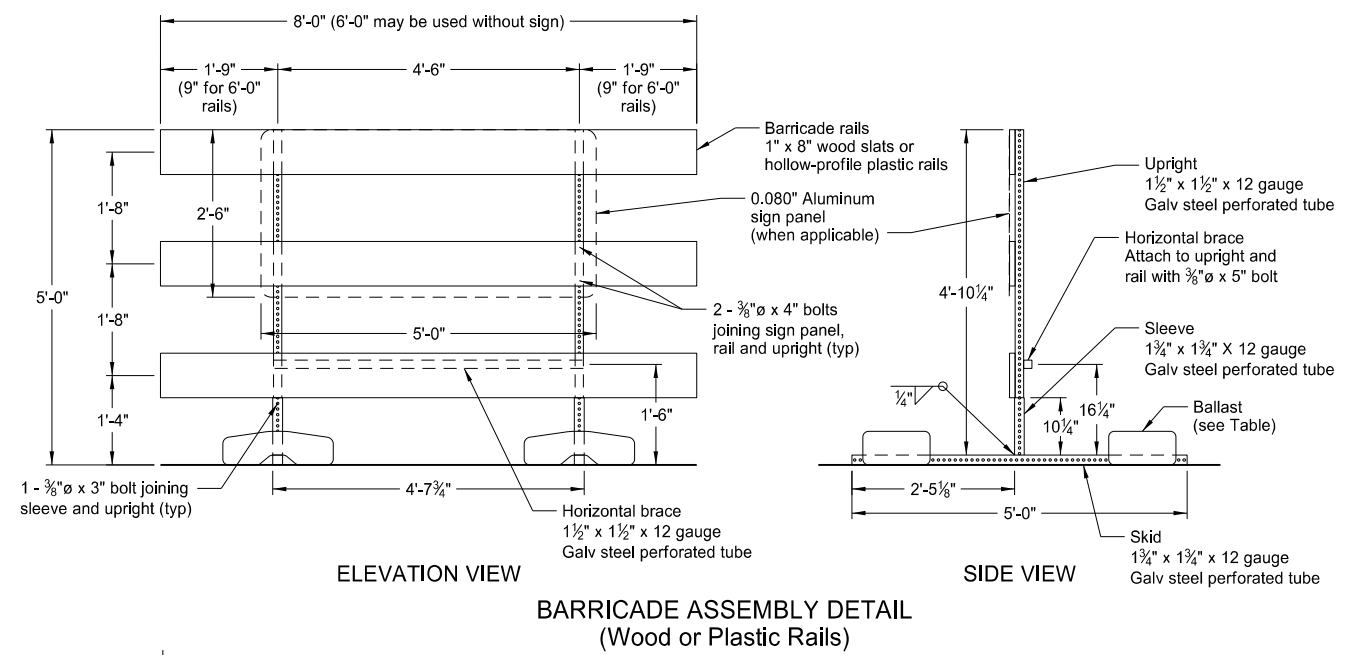
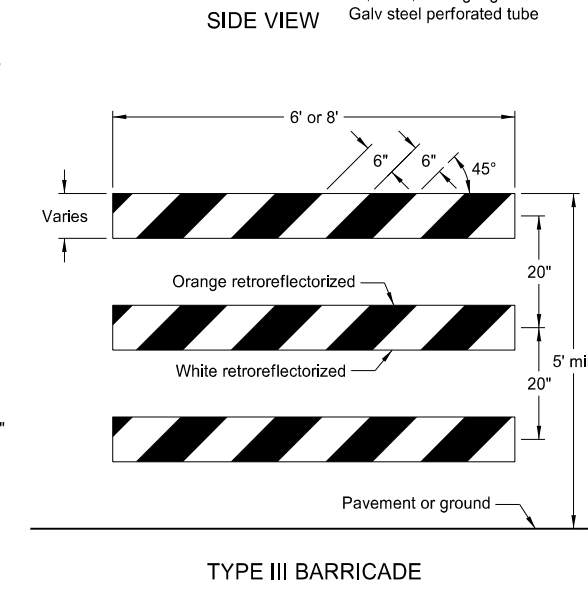
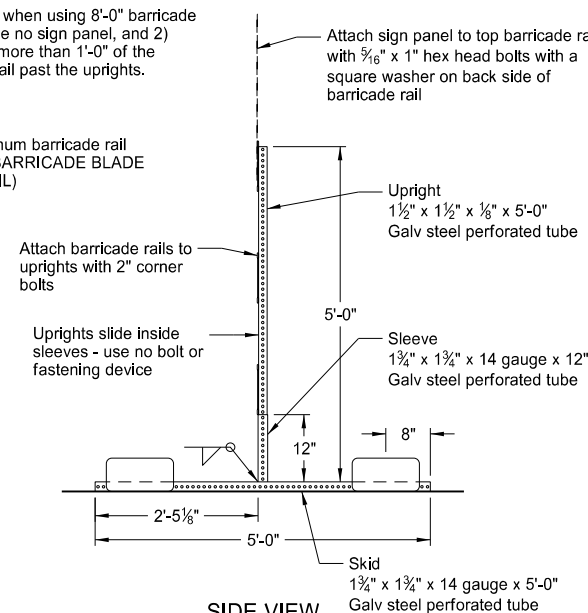
NOTE: For barricade markings use alternating orange and white retroreflective stripes, sloping downward in the direction traffic is to pass. Place retroreflective sheeting on both sides of the rails with a minimum of 270 square inches of visible retroreflective area facing vehicular traffic. When the barricade length is less than 36", use a rail stripe width of 4".



TYPE I BARRICADE

TYPE II BARRICADE

BARRICADE RAIL DETAILS



MINIMUM BALLAST (For each side of barricade support)

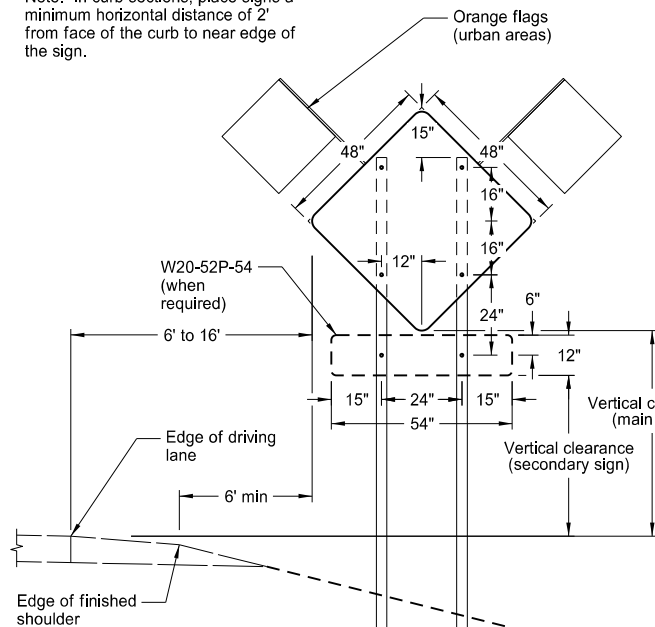
Without Sign	4 - 25 lb sandbags
With Sign	6 - 25 lb sandbags

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

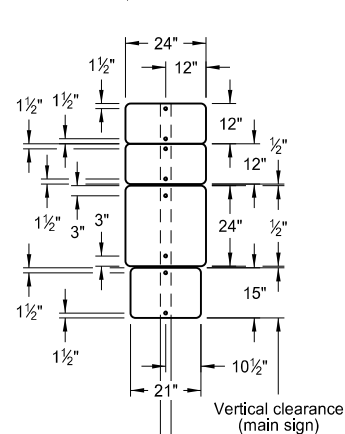
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION 10-3-13		This document was originally issued and sealed by Kirk J Hoff, Registration Number PE- 4683, on 11/1/19 and the original document is stored at the North Dakota Department of Transportation
REVISIONS		
DATE	CHANGE	
9-27-17 11-01-19	Updated to active voice Revised details for Flexible Delineator	

CONSTRUCTION SIGN PUNCHING AND MOUNTING DETAILS

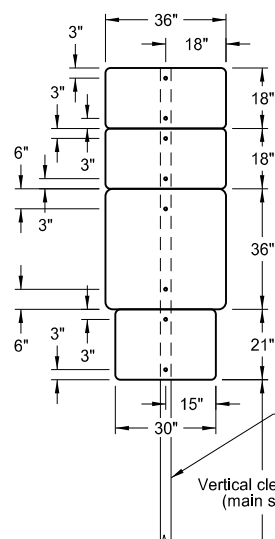
Note: In curb sections, place signs a minimum horizontal distance of 2' from face of the curb to near edge of the sign.



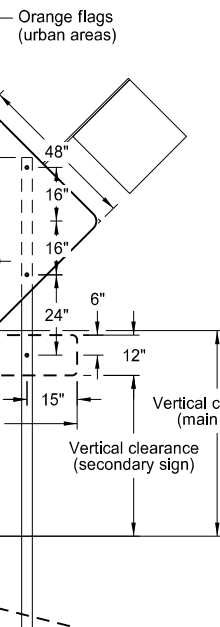
TYPICAL SECTION
(48" x 48" diamond warning sign shown)



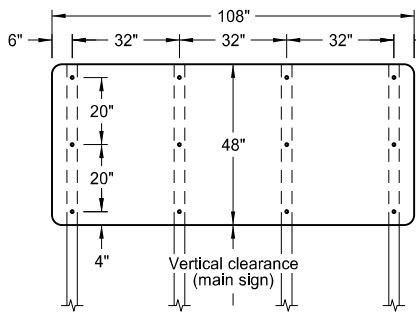
24" x 24"
ROUTE MARKER
ASSEMBLY



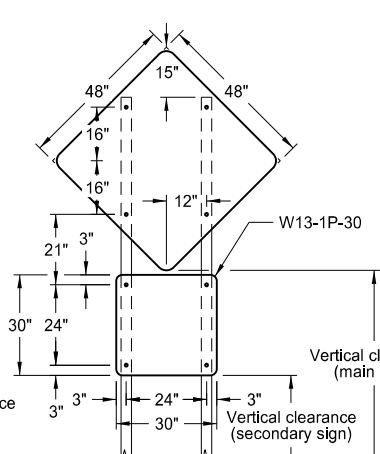
36" x 36"
ROUTE MARKER
ASSEMBLY



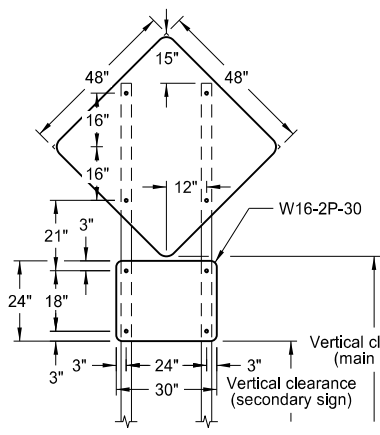
18" x 18"
DIAMOND SIGN



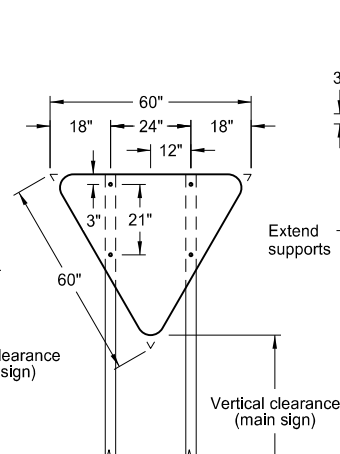
108" x 48" SIGN



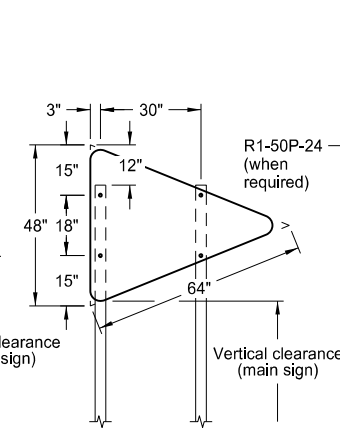
48" x 48" DIAMOND SIGN
(with 30" x 30" secondary sign)



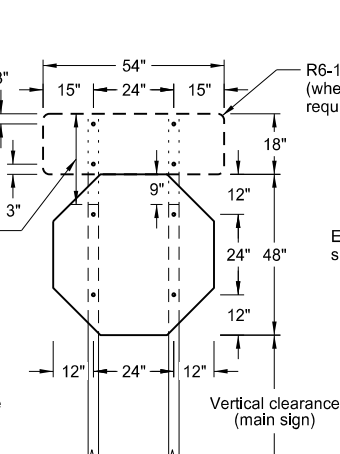
48" x 48" DIAMOND SIGN
(with 30" x 24" secondary sign)



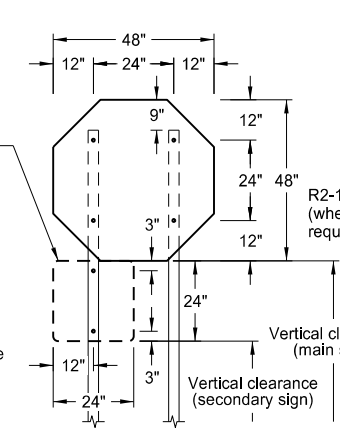
R1-2-60 - YIELD SIGN



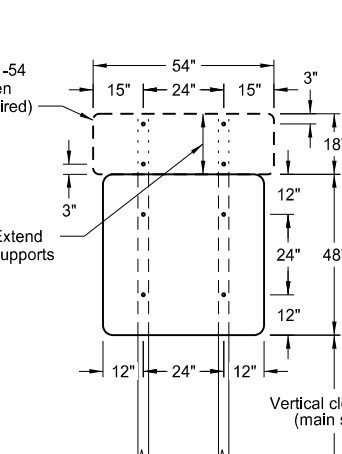
W14-3-64 - PENNANT SIGN



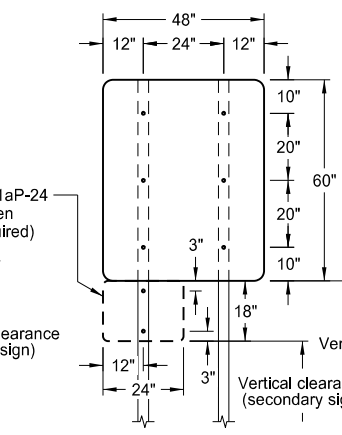
R1-1-48 - STOP SIGN
(with R6-1-54 sign as required)



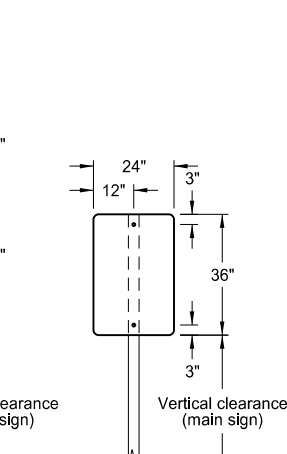
R1-1-48 - STOP SIGN
(with R1-50P-24 sign as required)



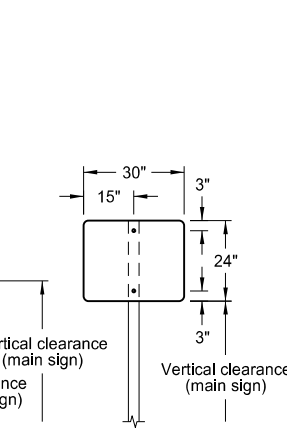
48" x 48" SIGN
(with R6-1-54 sign as required)



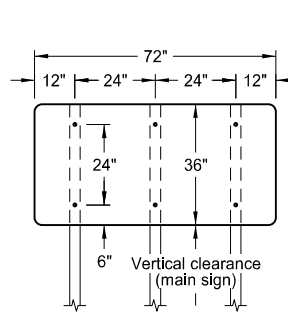
48" x 48" SIGN
(with R2-1aP-24 sign as required)



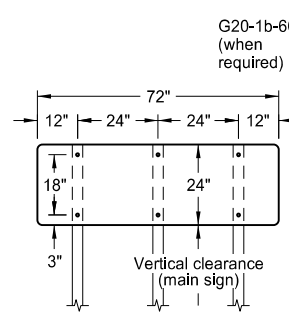
24" x 36" SIGN



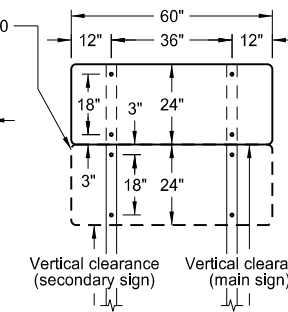
30" x 24" SIGN



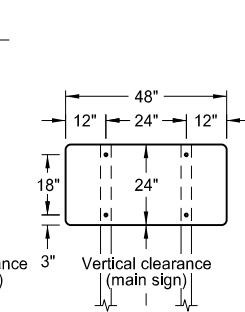
72" x 36" SIGN



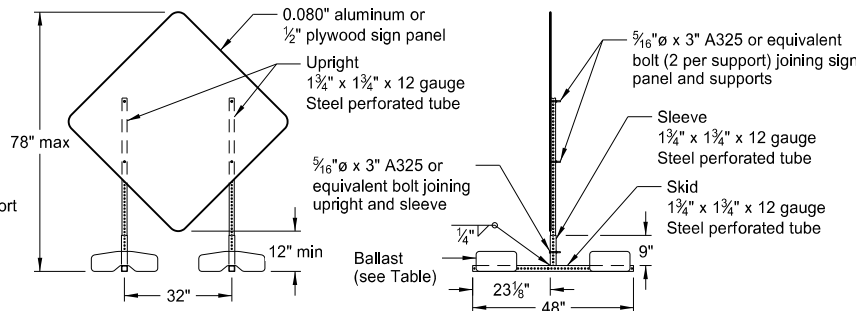
72" x 24" SIGN



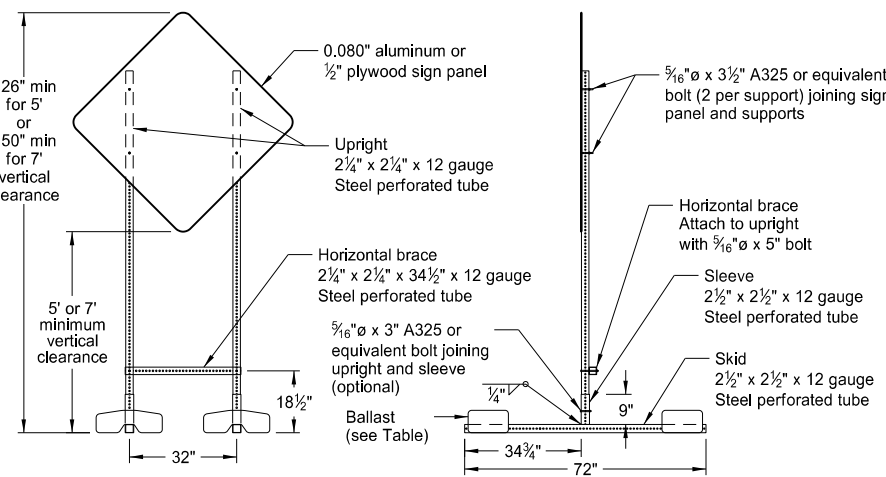
60" x 24" SIGN



48" x 24" SIGN



PORTABLE SIGN SUPPORT
LOW-MOUNTING HEIGHT



PORTABLE SIGN SUPPORT
HIGH-MOUNTING HEIGHT

NOTES:

1. Sign Supports: Galvanize or paint supports. 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, minimum post size for assemblies containing a secondary sign is 3.0 lb/ft. Post sizes based on a wind speed of 55 MPH.

Place signs over 50 square feet on 2½" x 2½" perforated tube supports as a minimum.

Do not attach guy wires to sign supports. Attach wind beams behind sign panels when used with u-posts.
2. Sign Panels: Provide sign panels made of 0.100" aluminum, ½" plywood, or other approved material, except where noted. Punch all holes round for ⅝" bolts.
3. Alternate Messages: Install and remove alternate message signs on reflectorized plate (without borders) as required. (i.e. "Left" and "Right" message on 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 stated above.

Provide a minimum clearance of 7'-0" from the ground at the post for signs with an area exceeding 50 square feet.

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

Use of low-mounting height (minimum 12" vertical clearance) portable signs for 5 days or less, is allowed 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. Use of R9-8 through R9-11a series, W1-6 through W1-8 series, M4-10, and E5-1 is allowed for longer than 5 days.

Restrict signs mounted on portable sign supports shown in the LOW-MOUNTING HEIGHT and HIGH-MOUNTING HEIGHT details to 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. Place sandbags at or near the ends of skids.

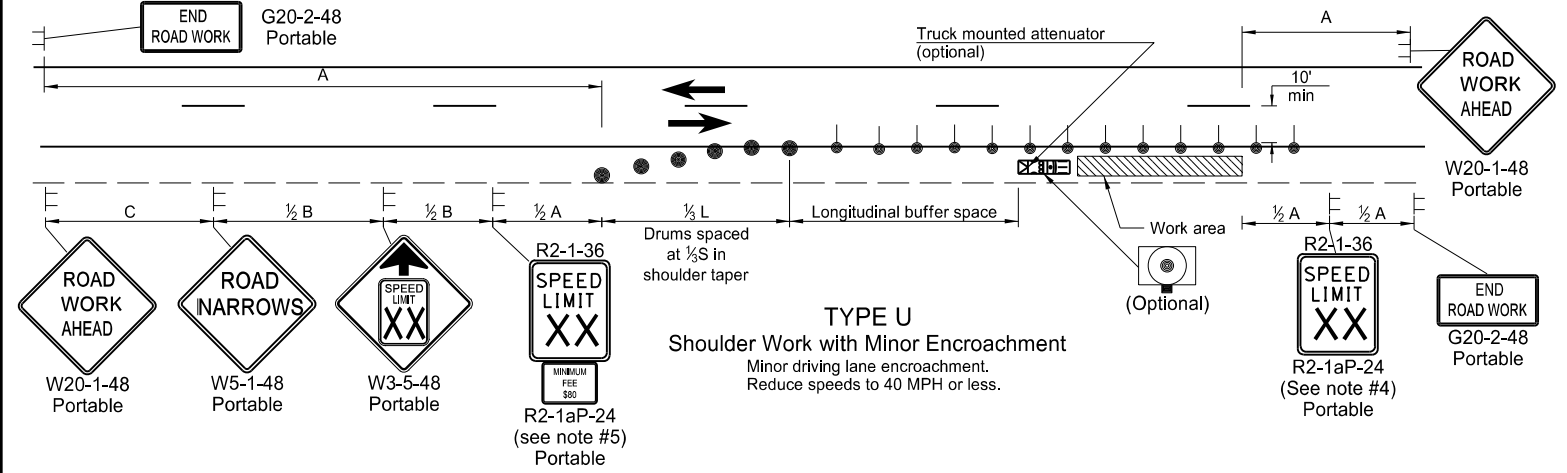
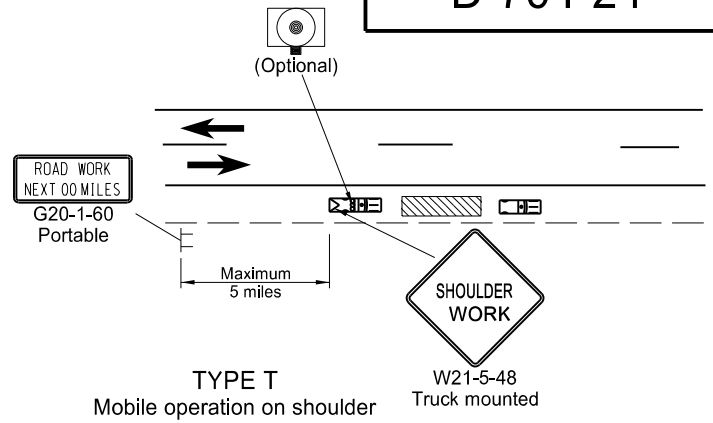
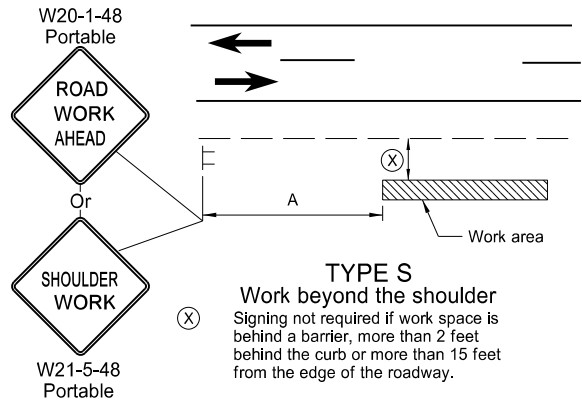
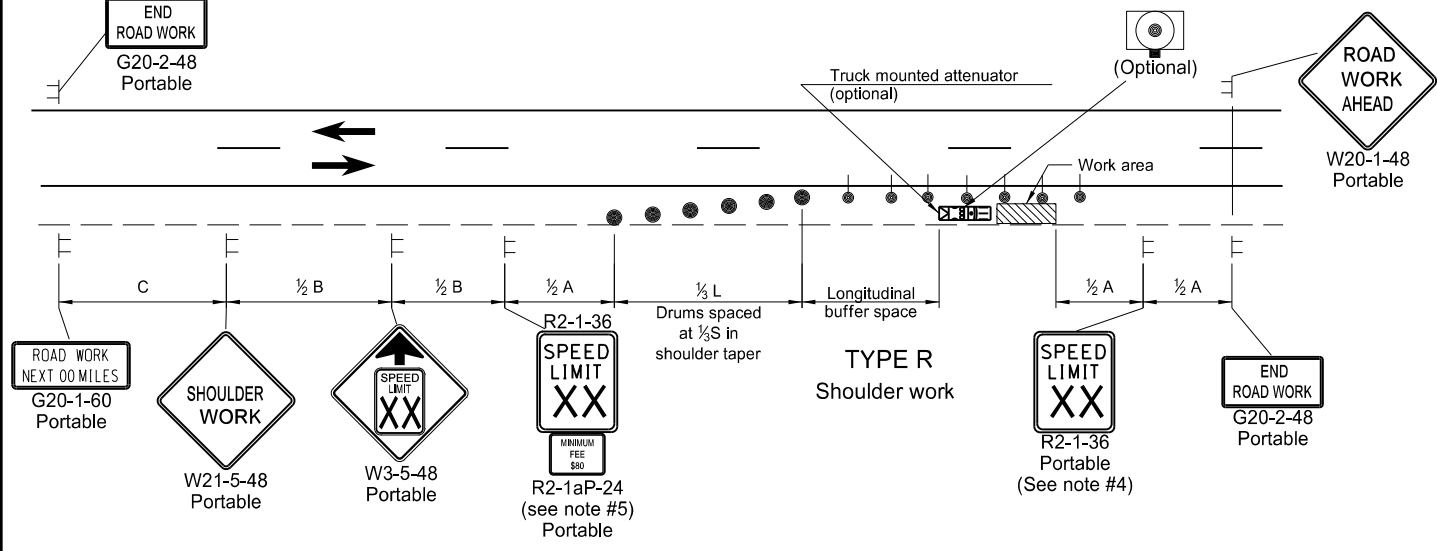
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-4-13	
REVISIONS	
DATE	CHANGE
11-14-13	Revised Note 6
9-27-17	Updated to active voice
11-01-19	Revised 60"x24" sign detail

This document was originally issued and sealed by

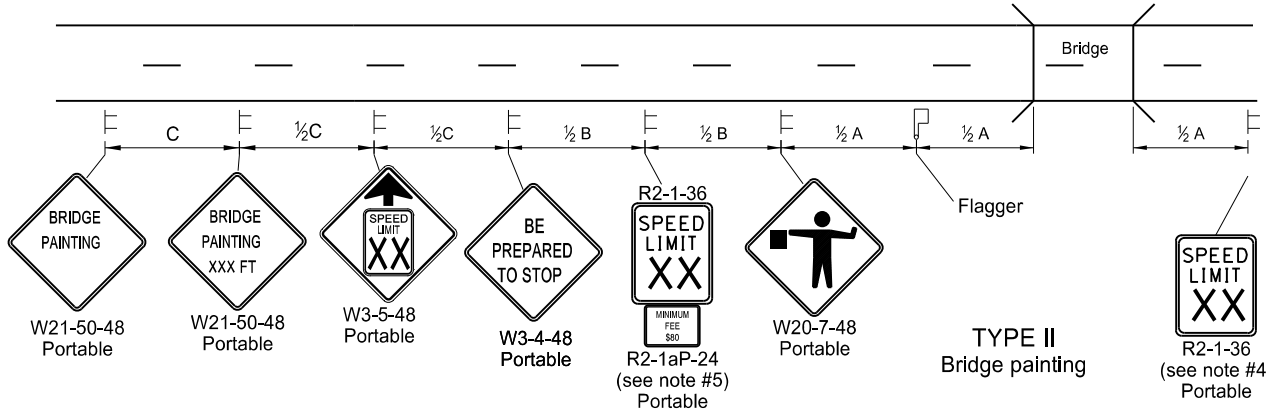
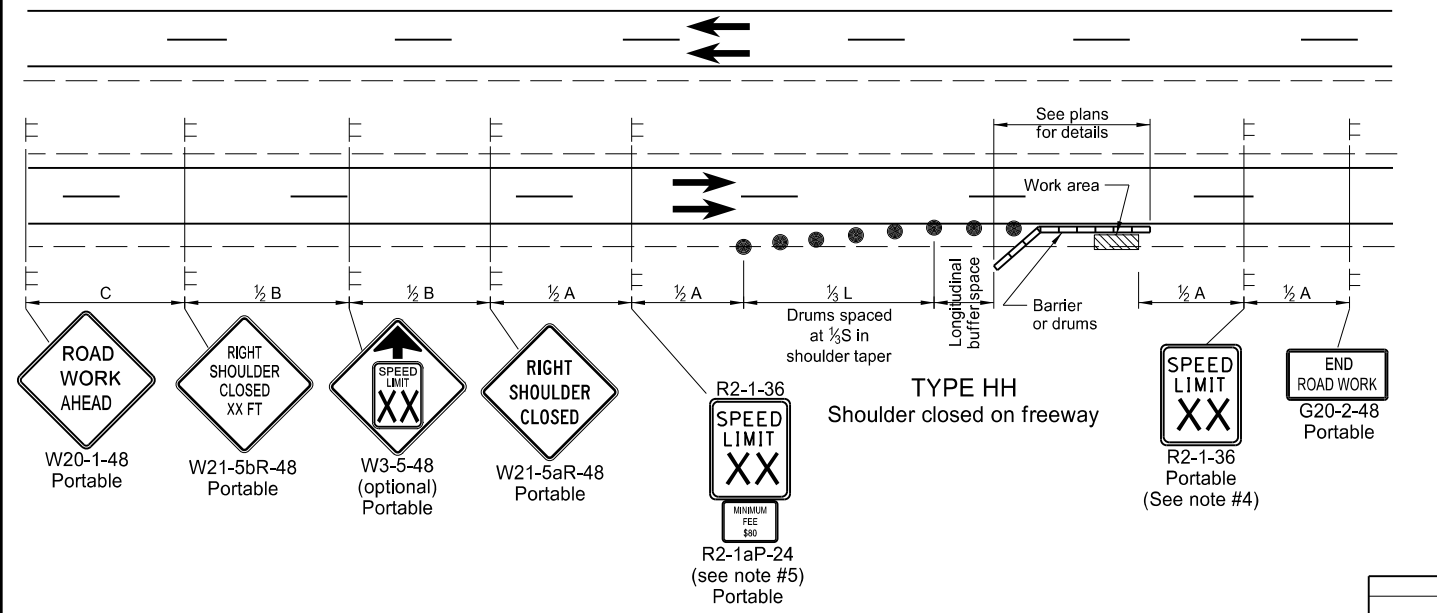
Kirk J Hoff,
Registration Number
PE-4683,
on 11/1/19 and the original document is stored at the North Dakota Department of Transportation

SHOULDER CLOSURES AND BRIDGE PAINTING LAYOUTS

D-704-24



- Notes
- Variables
 - S = Numerical value of speed limit or 85th percentile.
 - W = The width of the taper in feet.
 - L = Minimum length of taper, $S \times W$ for freeways, expressways, and all other roads with speeds of 45 mph or greater, or $W \times S^2 / 60$ for urban, residential, and other streets with speeds of 40 mph or less.
 - Space delineator drums for tapering traffic at dimension "S". Space delineator drums or tubular markers for tangents at 2 times "S".
 - Sequencing Arrow Panels
 - Use Type A on roadways with slow moving traffic speeds and low volume (25 mph or less and 750 ADT or less).
 - Use Type B on roadways with moderate traffic speeds and volumes (40 mph or less and 5000 ADT or less).
 - Use Type C on roadways with high traffic speeds and volumes (over 40 mph or over 5000 ADT).
 - Re-establish speed limit. Determine exact speed limit in the field, dependent on location and conditions.
 - Determine the reduced speed limit based on the in-place speed limit before construction. Where speed reductions exceed 30 MPH, install a second speed limit sign with the desired speed reduction (not to exceed 30 mph.) Place the second speed limit sign at 1/2 B.
 - Install flags on warning signs in urban areas when signs are not portable. Mount 24 inch square flags perpendicular to the edges of the sign, and at such a distance above the edge that the flag does not touch the sign when limp.
 - Cover existing speed limit signs within a reduced speed zone.
 - As an option, use portable sign supports in lieu of post mounted signs in accordance with NDDOT Standard Drawing D-704-14.
 - Recommend 40 mph speed limit in vicinity of workers, unless location and conditions dictate otherwise.



KEY

- Sign
- Delineator Drum
- Sequencing Arrow Panel (Caution Mode)
- Work area
- Tubular Marker

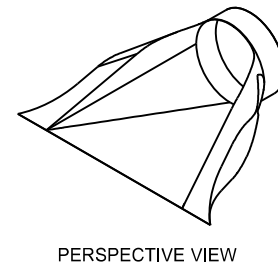
ADVANCE WARNING SIGN SPACING				
Road Type	Distance Between Signs			
	A	B	C	
Urban - Low Speed (30 mph or less)	150	150	150	
Urban - Low Speed (over 30 to 40 mph)	280	280	280	
Urban - High Speed (over 40 mph to 50 mph)	360	360	360	
Rural - High Speed (over 50 mph to 65 mph)	720	720	720	
Urban Expressway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

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

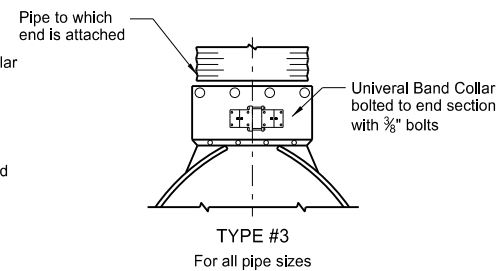
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
9-27-13	
REVISIONS	
DATE	CHANGE
8-17-17 11-01-19	Updated notes & revised signs Revised drum spacing & signs nos.

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Registration Number
PE- 4683,
on 11/1/19 and the original document is stored at the
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D-714-4



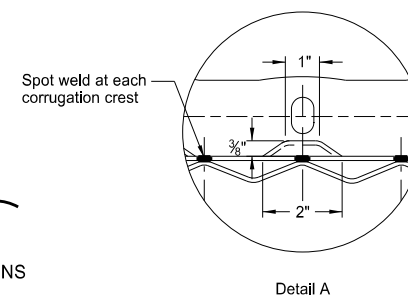
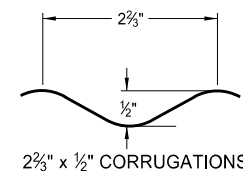
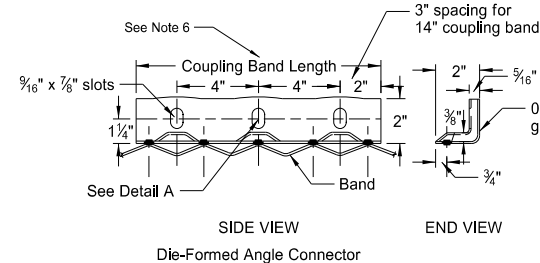
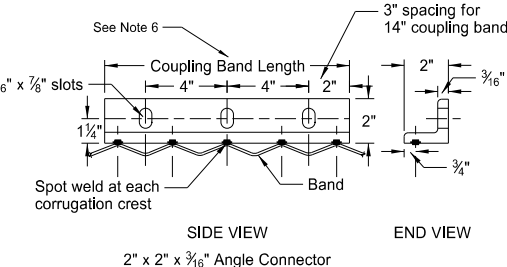
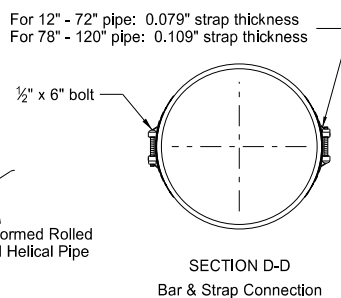
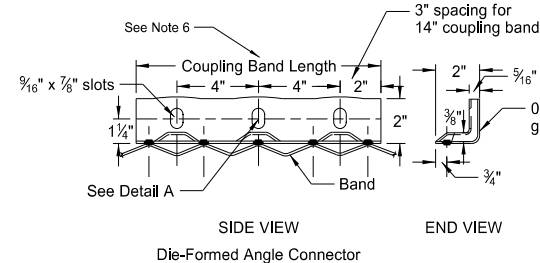
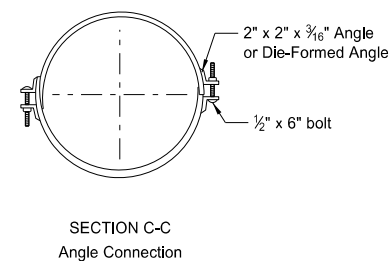
PIPE DIA.	GALV. THICK.	END SECTION DIMENSIONS					APPROX. SLOPE RATE	BODY PIECE
		A IN	B IN	H IN	L IN	W IN		
15	0.064	7	8	6	26	30	2½:1	1
18	0.064	8	10	6	31	36	2½:1	1
24	0.064	10	13	6	41	48	2½:1	1
30	0.079	12	16	8	51	60	2½:1	1 or 2
36	0.079	14	19	9	60	72	2½:1	2
42	0.109	16	22	11	69	84	2½:1	2
48	0.109	18	27	12	78	90	2½:1	2
54	0.109	18	30	12	84	102	2:1	2
* 60	0.109	18	33	12	87	114	1½:1	3
* 66	0.109	18	36	12	87	120	1½:1	3
* 72	0.109	18	39	12	87	126	1 1/3 :1	3
* 78	0.109	18	42	12	87	132	1½:1	3
* 84	0.109	18	45	12	87	138	1 1/6 :1	3



COUPLING BAND DIMENSIONS				
COUPLING TYPE	CORRUGATION PITCH x DEPTH	PIPE SIZE	COUPLING BAND LENGTH	MIN. BAND THICKNESS
Hat Band	2½" x ½"	12" - 48"	2¾"	.064"
Annular Band	2½" x ½"	12" - 72"	12"	.052"
		78" - 84"	12"	.079"
	3" x 1"	48" - 120"	14"	.052"
Hugger Band	2½" x ½" Rerolled End	12" - 72"	10½"	.052"
		78" - 84"	10½"	.079"
	3" x 1" Rerolled End	48" - 120"	10½"	.052"
	5" x 1" Rerolled End	48" - 120"	12"	.064"

NOTES:

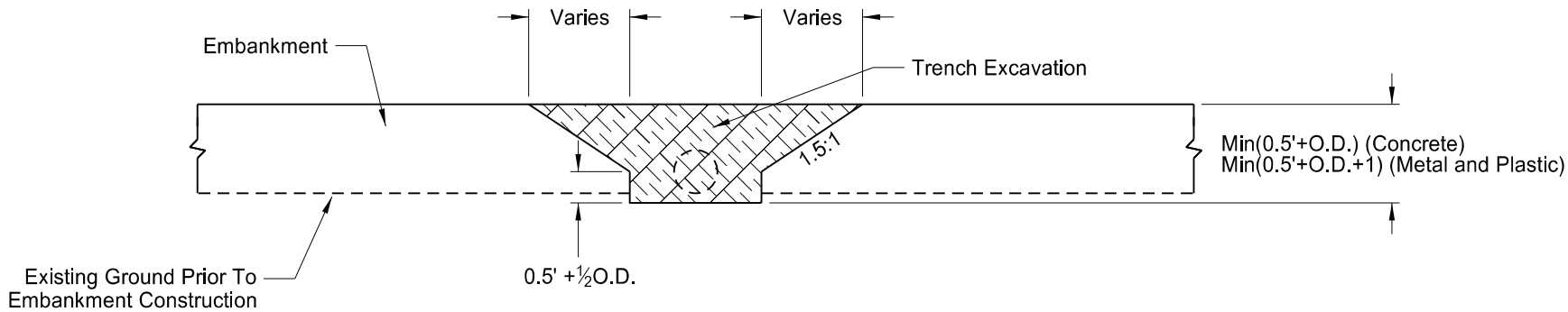
1. Pipes and connecting bands shall conform to applicable sections of MDDOT Standard Specifications and to AASHTO M-36.
2. Top edge of all end sections to have rolled edges for reinforcement (see Section A-A). The reinforced edges are to be supplemented with 2" x 2" x 1/4" galv. angle for 60" through 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".



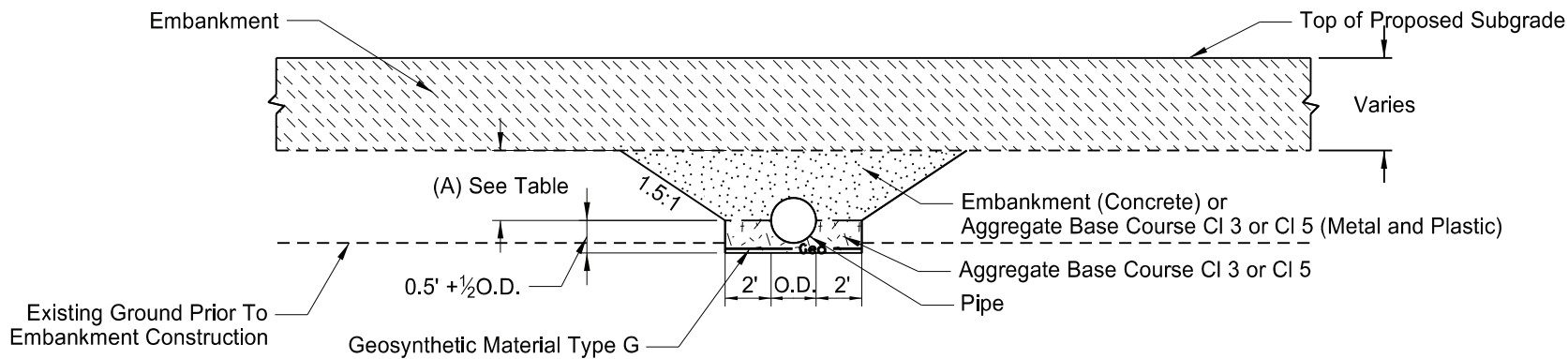
NORTH DAKOTA	
DEPARTMENT OF TRANSPORTATION	
08-16-13	
REVISIONS	
DATE	CHANGE
01-07-14	End Section Plan View
02-27-14	3" x 1" Corrugation Detail
09-18-19	Added Perspective View Detail

This document was originally
issued and sealed by
Jon Ketterling
Registration Number
PE-4684,
on 9/18/19 and the original
document is stored at the
North Dakota Department
of Transportation

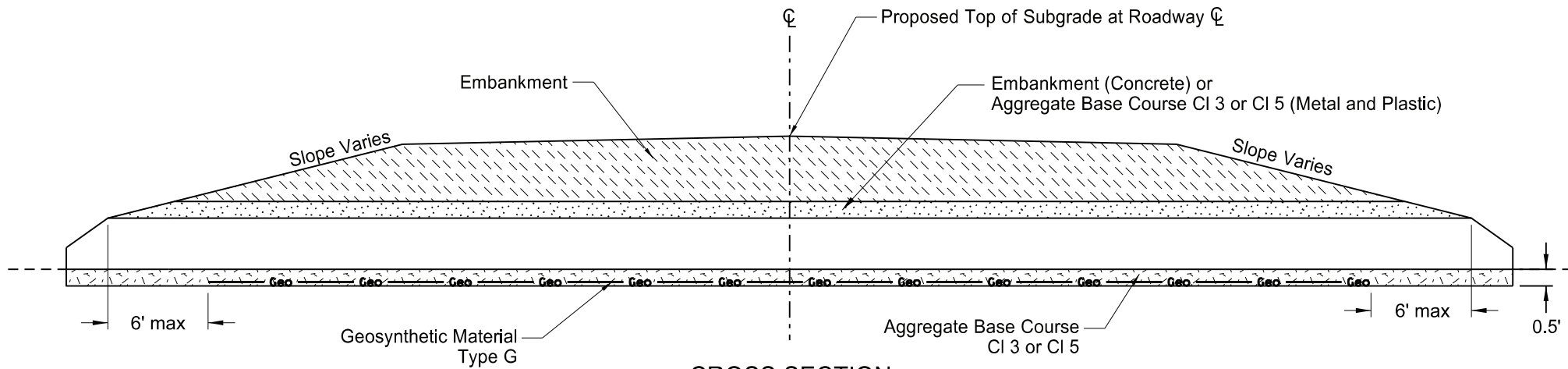
TRANSVERSE MAINLINE PIPE INSTALLATION DETAIL FOR PIPES INSTALLED IN NEW EMBANKMENT AREAS



EXCAVATION DETAIL



INSTALLATION DETAIL



CROSS SECTION

Pay Items
1) Pipe*
2) Geosynthetic Material Type G

*Included in Pipe Pay Item
1) Pipe
2) Trench excavation
3) Aggregate base course CI 3 or CI 5
4) Embankment

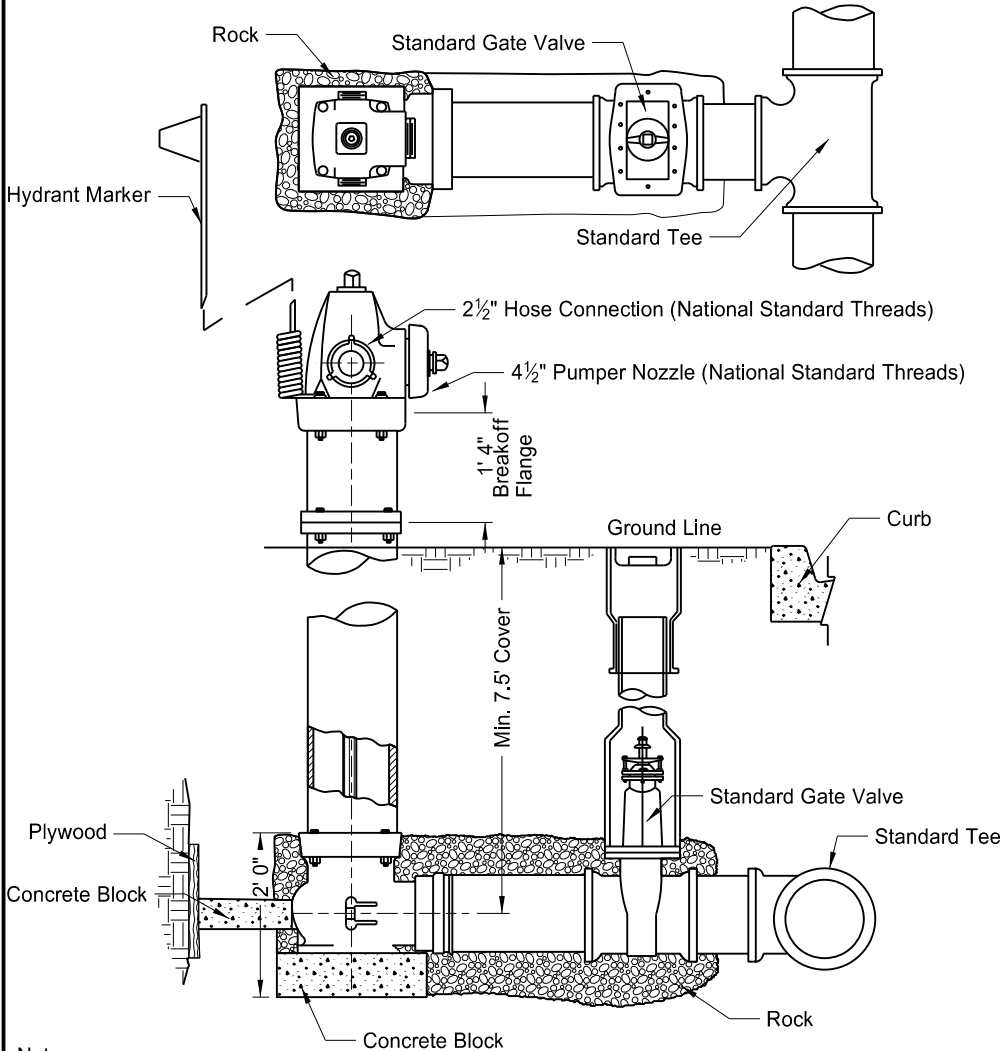
- NOTES:
- 1) This drawing applies to new/extended mainline and paved intersection roadway pipes only (including ramps). It does not include pipes in approaches
 - 2) Embankment may be either Borrow Excavation or Common Excavation - Type A

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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
7-26-13	
REVISIONS	
DATE	CHANGE
10-15-13	Label Formatting
1-21-15	Nomenclature
12-10-15	Added Plastic Pipe
5-27-20	Replaced R1 fabric with Geogrid Changed bedding depth

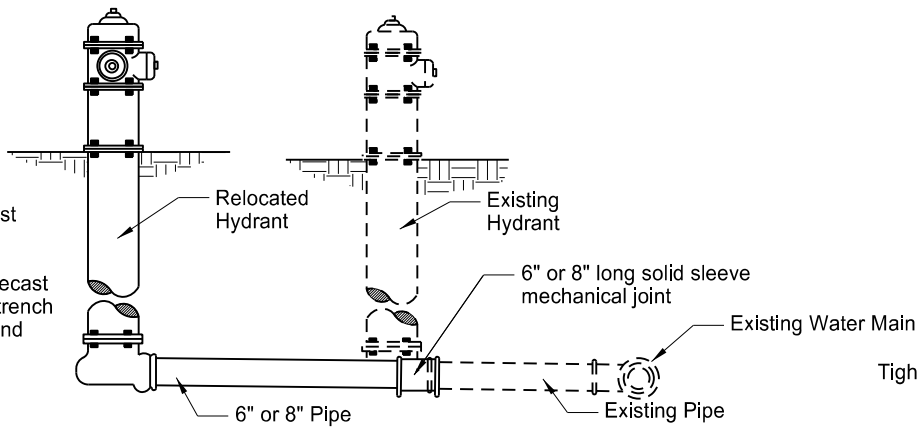


WATERWORKS



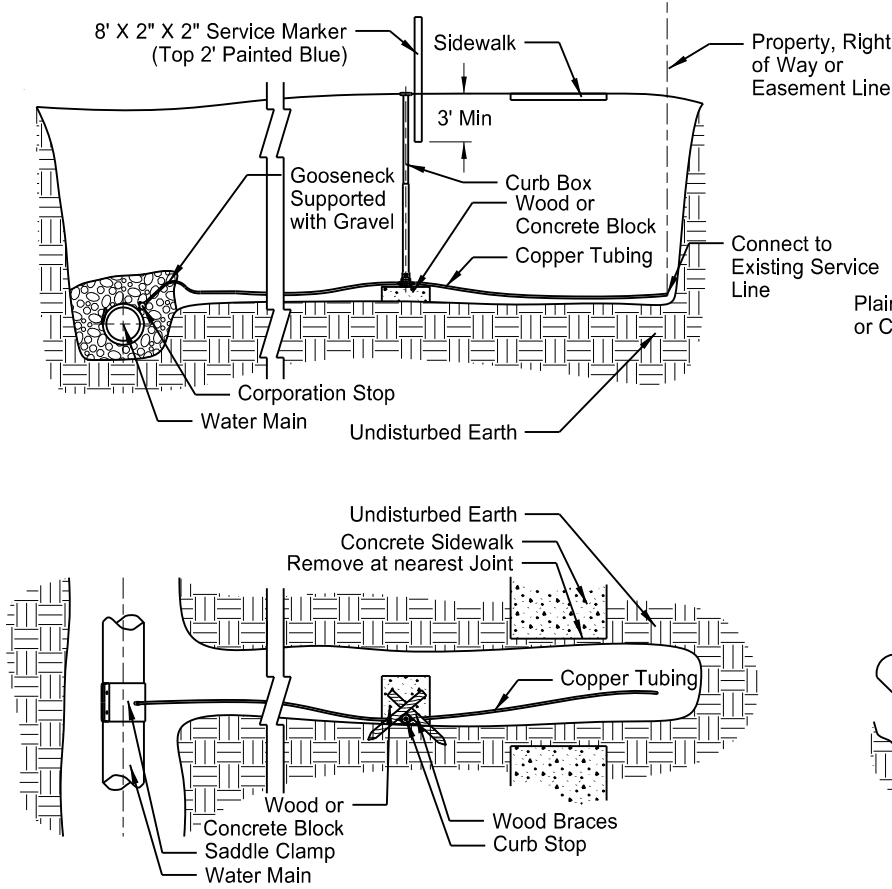
- Notes:
1. Use City Standards for Operating & Cap Nuts.
 2. Supply, furnish, and install hydrant marker. Include costs in the unit bid price for the hydrant. Place hydrant marker current with city standards or as approved by the Engineer.

STANDARD FIRE HYDRANT & CONNECTION



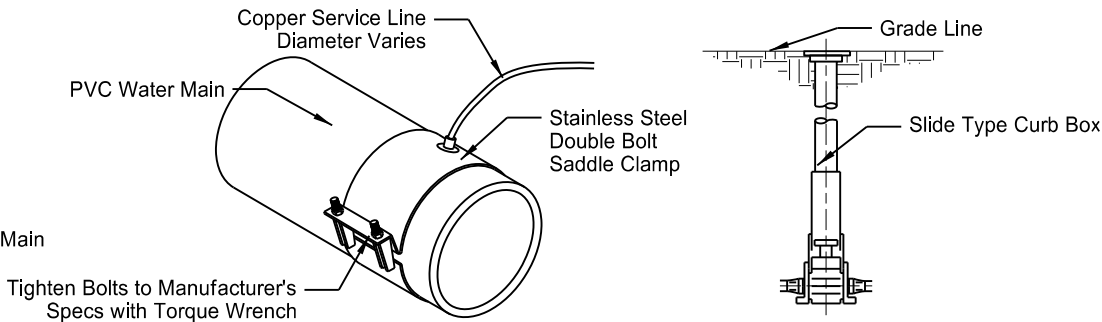
- Notes:
1. Place concrete thrust blocking as directed.
 2. Set hydrant on a precast concrete pad. Follow trench backfill detail to surround hydrant with gravel.

LAYOUT FOR RELOCATION OF HYDRANTS



- Notes:
1. Service clamp not required where small size service line connects to large cast iron or ductile iron pipe and three threads of the corporation stop make contact with the wall.
 2. Gravel backfill trench from water main to back of curb line and under sidewalk areas or earth backfill with standard compaction where specified.

WATER CURB CONNECTION



TYPICAL CORPORATION STOP AND CURB STOP

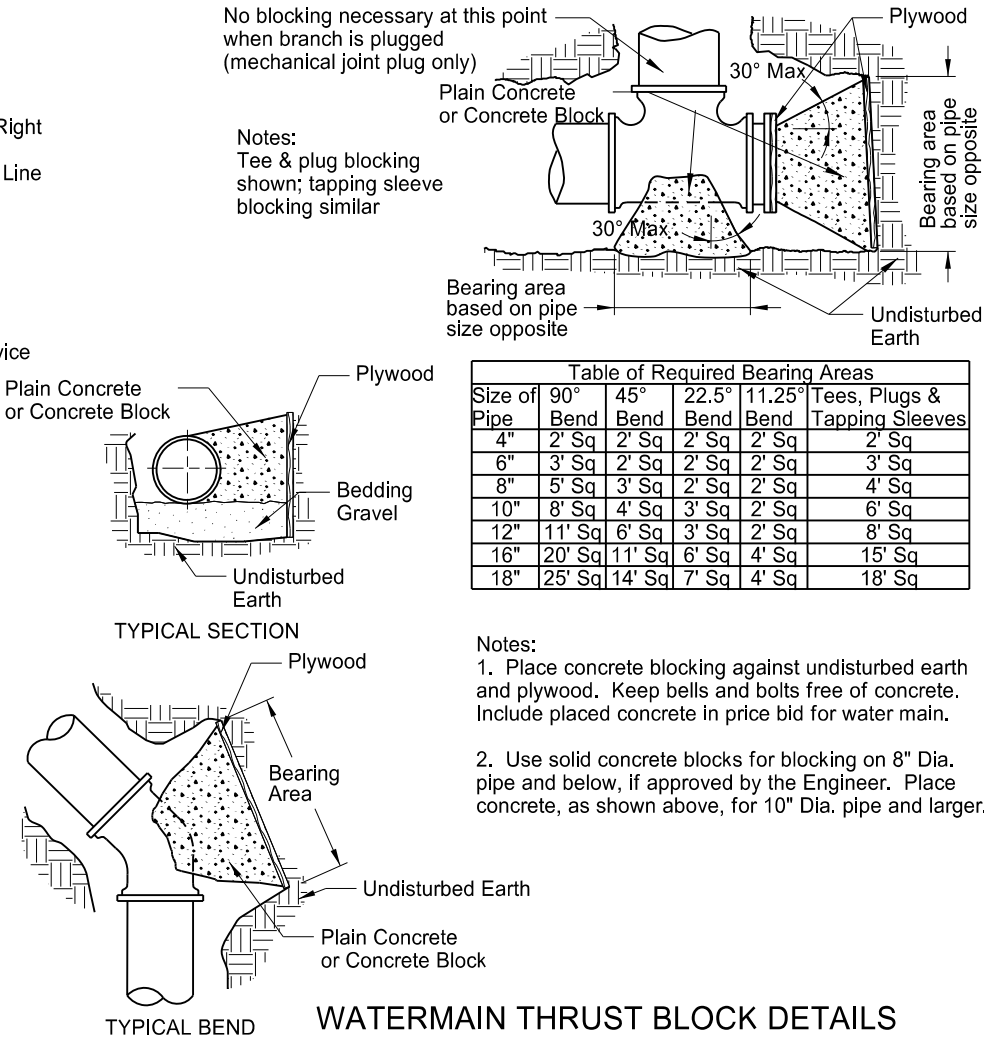
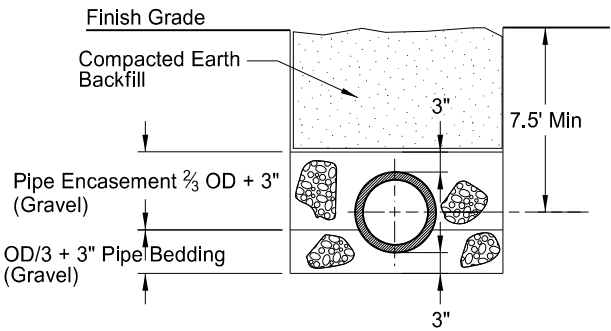


Table of Required Bearing Areas						
Size of Pipe	90° Bend	45° Bend	22.5° Bend	11.25° Bend	Tees, Plugs & Tapping Sleeves	
4"	2' Sq	2' Sq	2' Sq	2' Sq	2' Sq	
6"	3' Sq	2' Sq	2' Sq	2' Sq	3' Sq	
8"	5' Sq	3' Sq	2' Sq	2' Sq	4' Sq	
10"	8' Sq	4' Sq	3' Sq	2' Sq	6' Sq	
12"	11' Sq	6' Sq	3' Sq	2' Sq	8' Sq	
16"	20' Sq	11' Sq	6' Sq	4' Sq	15' Sq	
18"	25' Sq	14' Sq	7' Sq	4' Sq	18' Sq	

- Notes:
1. Place concrete blocking against undisturbed earth and plywood. Keep bells and bolts free of concrete. Include placed concrete in price bid for water main.
 2. Use solid concrete blocks for blocking on 8" Dia. pipe and below, if approved by the Engineer. Place concrete, as shown above, for 10" Dia. pipe and larger.

WATERMAIN THRUST BLOCK DETAILS

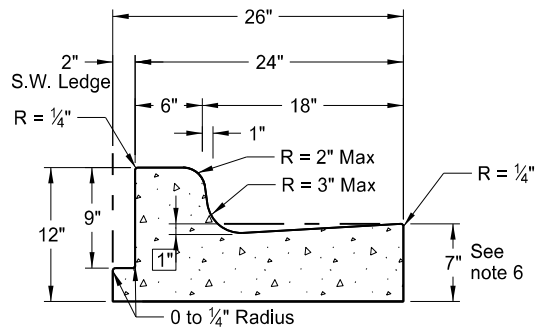


TRENCH BACKFILL

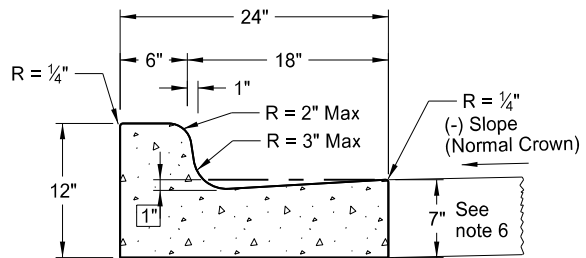
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
9-22-10	
REVISIONS	
DATE	CHANGE
10-17-17	Updated to active voice.
11-01-19	New Design Engineer PE Stamp.

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Registration Number
PE-4683,
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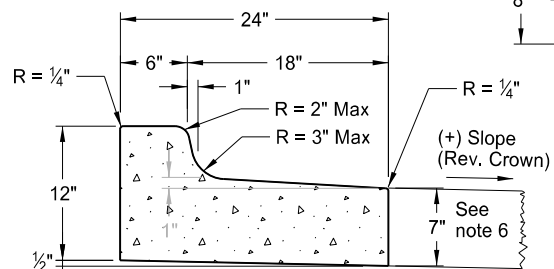
Curb & Gutter and Valley Gutter



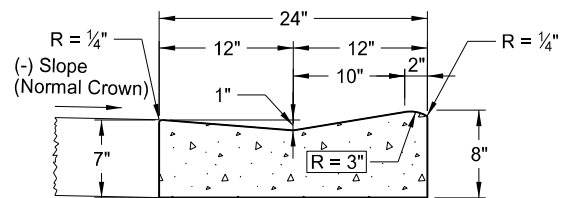
Curb & Gutter Type 1 (Sec. A & B)
Adjacent to Concrete Sidewalk,
Median, or Parking Lot.
(Sec. A shown. See Sec B for
additional details.)



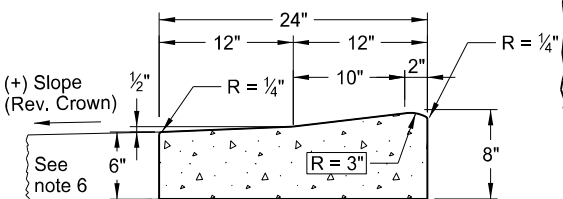
Curb & Gutter Type 1 (Sec. A)



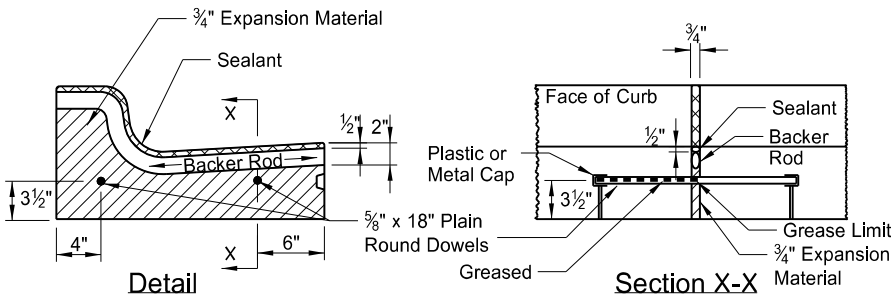
Curb & Gutter Type 1 (Sec. B)



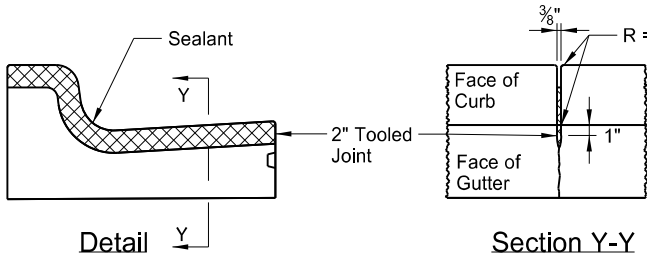
Mountable Curb & Gutter Type 1 (Sec. A)



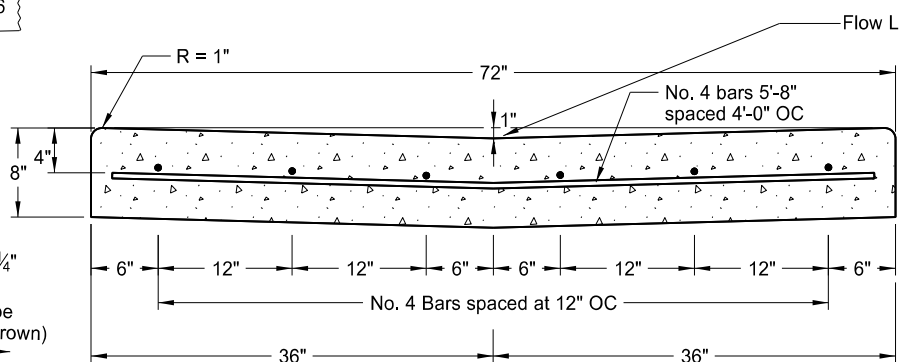
Mountable Curb & Gutter Type 1 (Sec. B)



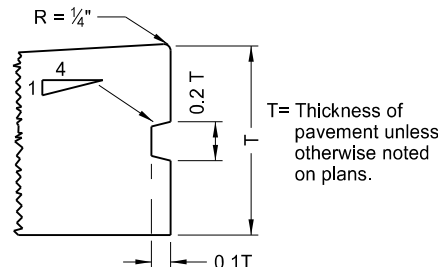
Isolation Joint



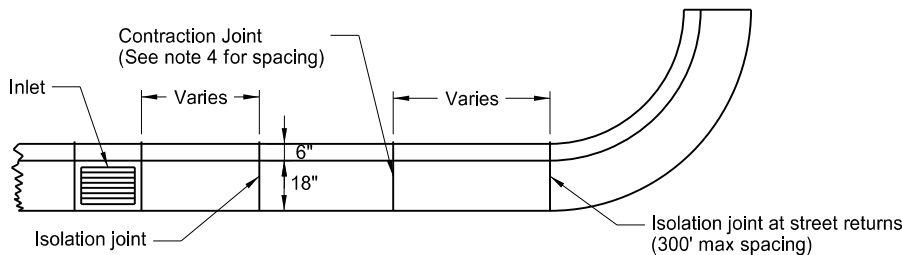
Contraction Joint
(10' Max Spacing)



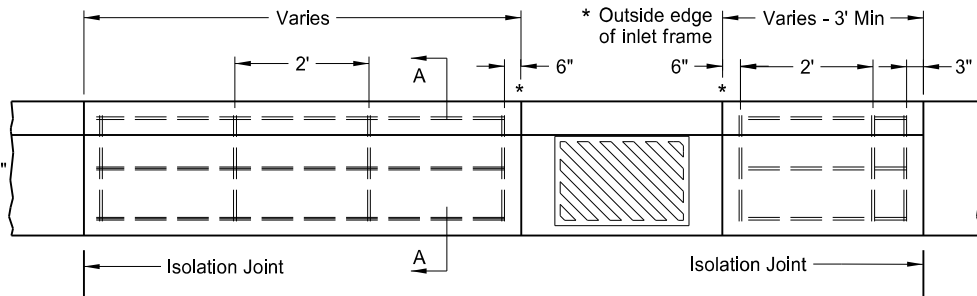
72" Concrete Valley Gutter Detail



Keyway Detail for Curb & Gutter
(To be used with PCC Pavement and Drives)

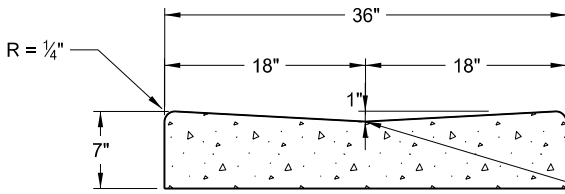


Joint Location Detail

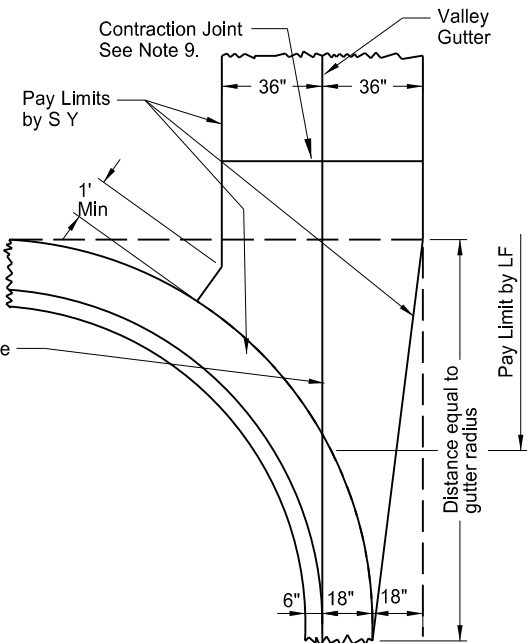


Curb & Gutter Reinforcing at Inlets

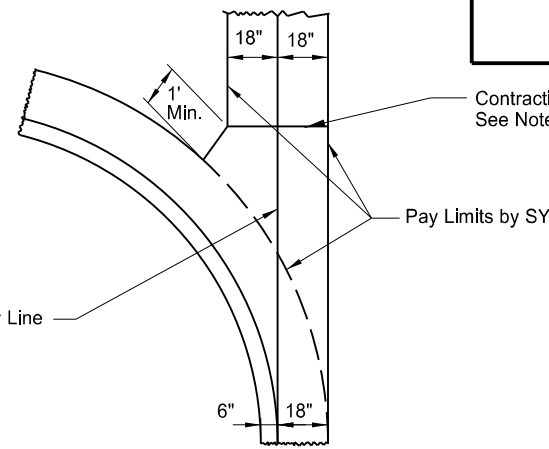
NOTE: Use #4 deformed reinforcing bars without splices. Include all costs for reinforcing bars at inlet locations (even inlets located on radii) in the price bid for "Curb and Gutter - Type 1." Extend reinforcement to the second joint (rebar placed through the first joint) in cases where the 3' min. panel length cannot be obtained.



36" Concrete Valley Gutter Detail



72" Concrete Valley Gutter Plan



36" Concrete Valley Gutter Plan

NOTES:

1. Use Curb and Gutter Type 1 (Sec. A & B). Use section "A" with (-) pavement slopes and section "B" with (+) pavement slopes.
2. Contraction Joints: Tool the Curb & Gutter 2" as shown on the contraction joint details.
3. Isolation Joints: Use 3/4" expansion joint filler for isolation joint material. Form the backer rod and joint sealant opening with a pre-cut piece of wood or other material approved by the engineer. Dowel supports are not required on the second pour at a cold joint. Install plastic or metal caps and greased dowels in the cold joint for the second pour.
4. Joint Spacing: For hot bituminous pavements use a 10' max joint spacing for the curb and gutter with panels on each side of the inlets. For concrete pavements match the joint spacing for the curb and gutter to the pavement joint on PCC Pavements (approximately 15' spacing.)
5. Joint sealing: Seal contraction and isolation joints as shown in the details. Use joint sealant for contraction joints that conforms to section 826.02B. Use sealant for expansion joints specified in note 3 above. Tool and install sealant in accordance with the manufacturer's recommendations.
6. Face of Gutter Depth: For hot bituminous pavement use 7" gutter depth as shown. For PCC pavements, match the gutter depth to the depth of adjacent PCC pavement or to construct a 7" depth as shown.
7. Tie curb and gutter to abutting PCC pavement with No. 3 bars, 1'-6" in length, spaced at 4' centers.
8. On street returns and other locations where new curb and gutter ends and does not abut existing curb and gutter, taper the last two (2) feet of the curb from 6" in height to 0". Install a 1/2" premolded full depth isolation joint, the same shape as the curb and gutter just ahead of the taper. Install an 18" tie bar across the joint.
9. Valley Gutter Joints: Form, saw, or score 1/8" min. to 3/8" max. width contraction joints (a minimum 2" depth) at approx 10' intervals. Seal the joints with hot poured elastic type joint sealer (Section 826.02A.2 of the Standard Specifications.) Include all costs for the joint and sealant in the price bid for Valley Gutter.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-7-2013	
REVISIONS	
DATE	CHANGE
10-17-17	Updated to active voice.
08-27-19	New Design Engr PE Stamp.

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Kirk J Hoff,
Registration Number
PE- 4683,
on 8-27-19 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 for informational purposes only. See Standard Drawing D-750-3 for curb ramp and detectable warning panel details.
2. Joint Spacing: Vary transverse contraction joint spacing from 4' to 6' to create approximate square panels.

Use longitudinal contraction joints when sidewalk width is 8' or greater, and space at half the sidewalk width.

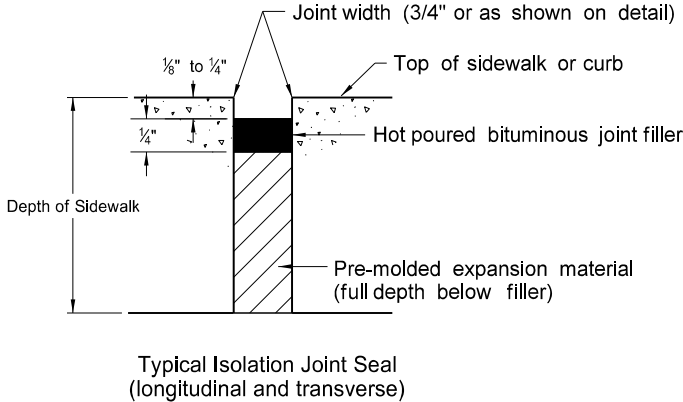
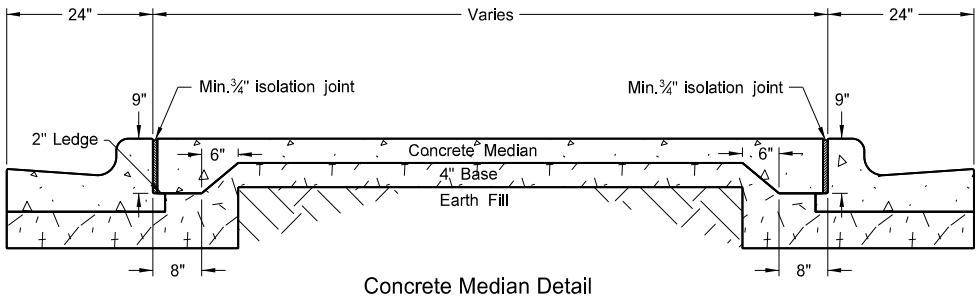
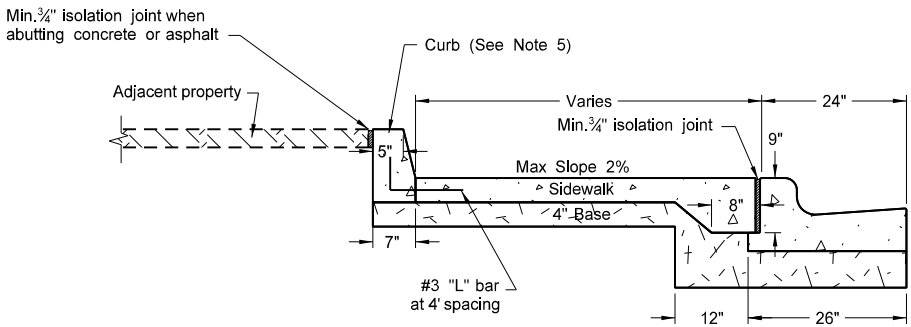
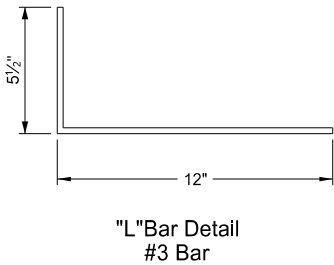
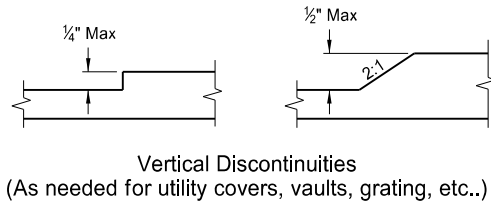
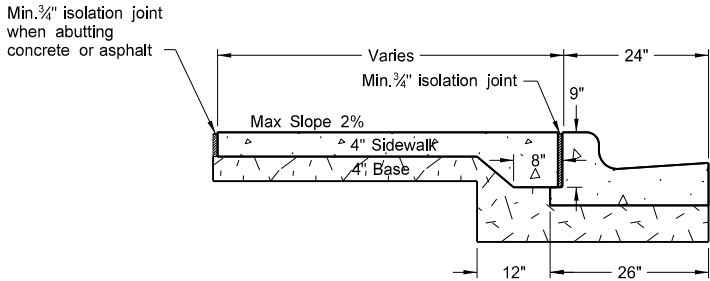
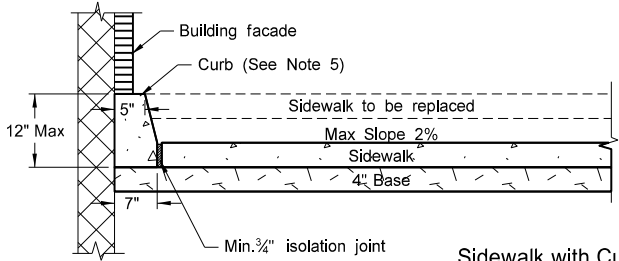
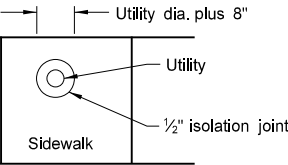
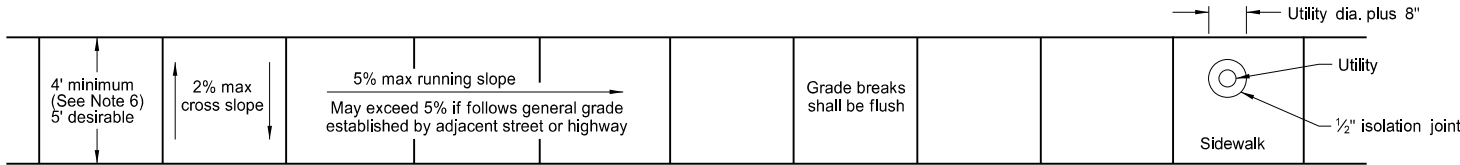
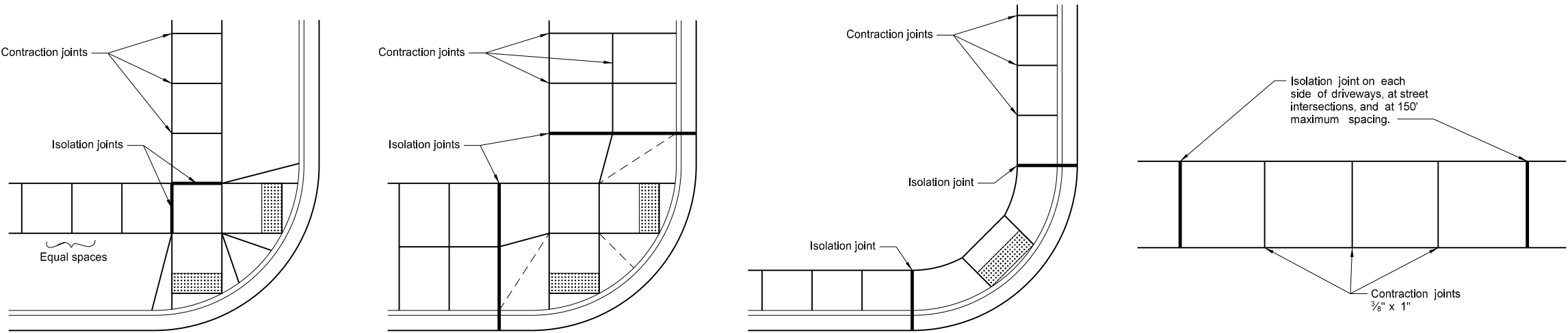
Saw or groove contraction joints to a minimum depth of 1/3 the depth of the concrete.

When sidewalk is adjacent to curb & gutter, vary the sidewalk joint spacing to match curb & gutter joints.

Use isolation joints between separate concrete pours, or between old and new concrete.
3. Include all costs for labor, equipment, and material necessary to construct contraction and isolation joints in the price bid for sidewalk concrete.
4. Use 4" sidewalk concrete thickness unless otherwise specified.
5. Use 4" base material thickness unless otherwise specified. Include all costs for labor and materials necessary to place the base material in the price bid for "Salvage Base Course" or "Aggregate Base Course CL 5."

Modify existing ground slope with landscaping as needed. If not possible, such as adjacent buildings, use a vertical curb as shown in the detail below. The Engineer will measure curb at the unit price bid for "Curb - Type I" per lineal foot.
6. Sidewalk Width & Grade: Provide a continuous 4' min clear width pedestrian access route with max 2% concrete cross slope, excluding flares. The width of the curb cannot be counted as part of the pedestrian access route.

When clear width of pedestrian access routes is less than 5.0', provide passing spaces at a maximum of 200' with a minimum size of 5.0' by 5.0'.



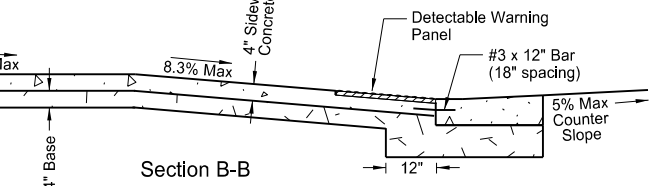
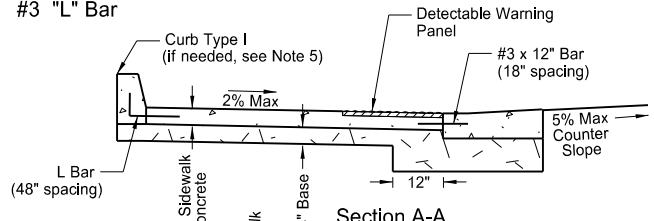
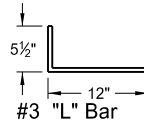
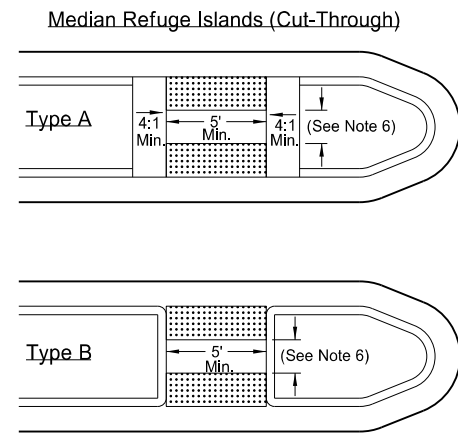
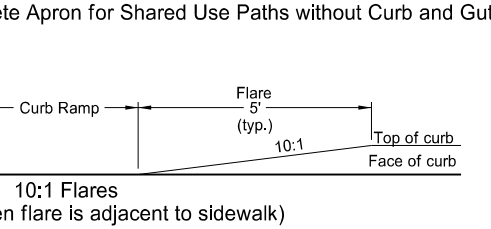
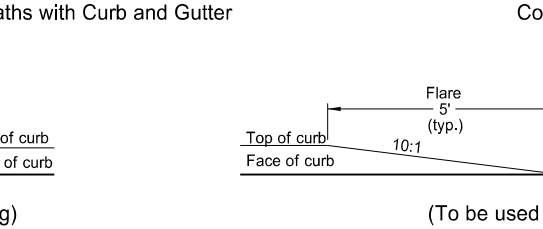
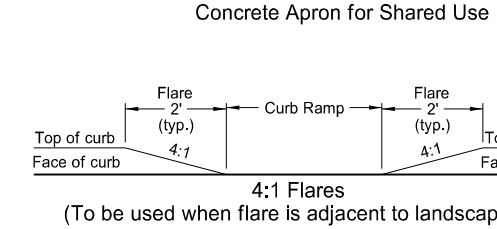
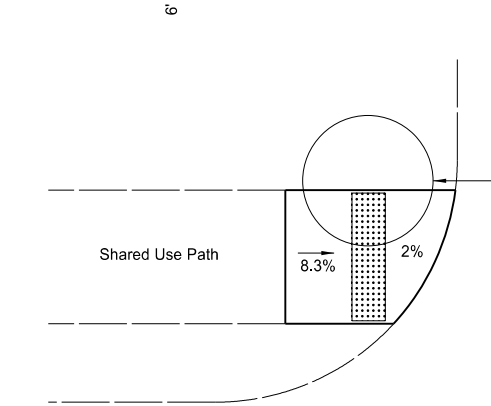
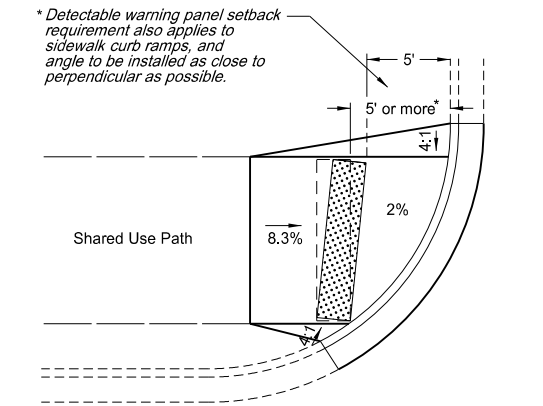
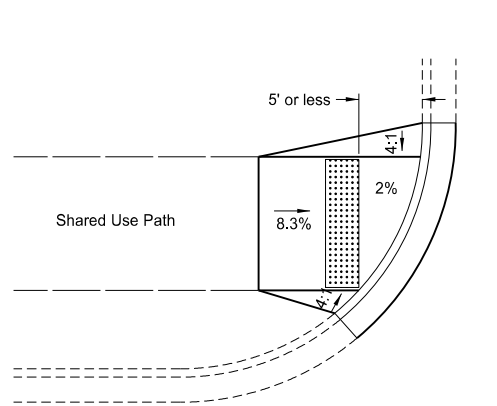
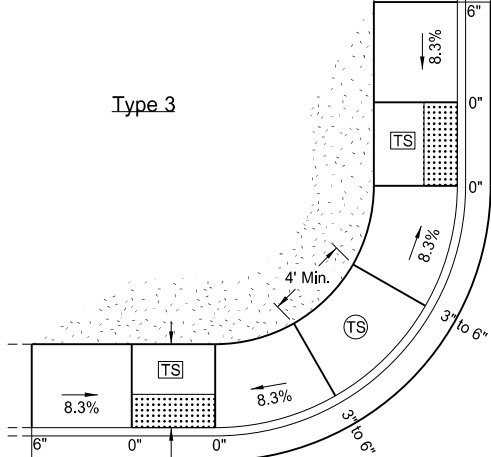
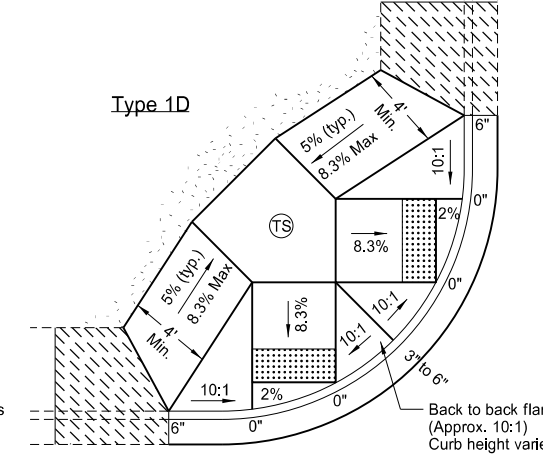
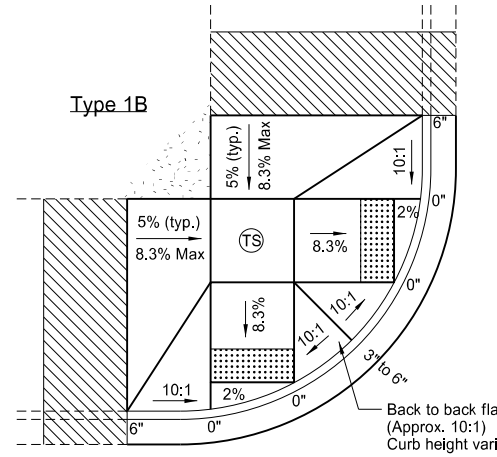
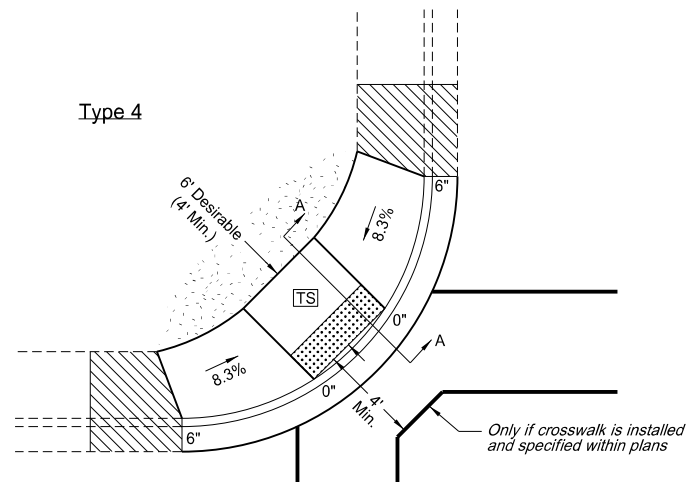
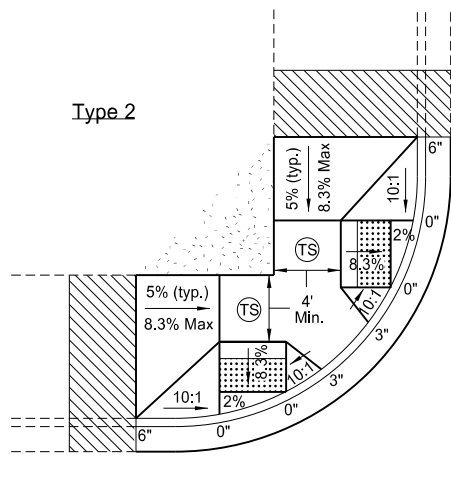
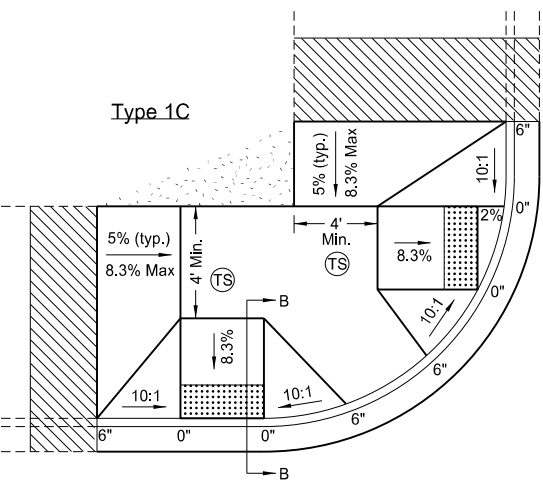
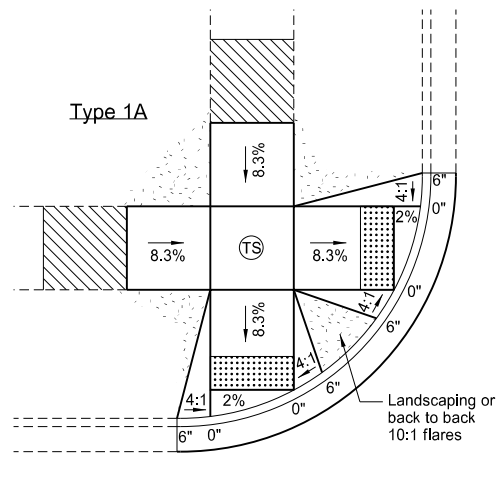
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
11-26-13	
REVISIONS	
DATE	CHANGE
10-17-17	Updated to active voice.
09-05-18	Added sidewalk details for width and grade and passing lane requirements.
08-27-19	New Design Engineer PE Stamp.

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

CURB RAMP DETAILS

D-750-3

+More Right of Way Less Right of Way-



NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
11-26-13	
REVISIONS	
DATE	CHANGE
10-17-17	Updated to active voice.
09-05-18	Revised Notes, Revision for Turning Space, Added Passing Space Requirements, Turned Detectable Warning Panel

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 09-05-2018 and the original document is stored at the North Dakota Department of Transportation

NOTES:

1. Ramp width is the useable portion of the ramp, excluding flares. Match curb ramp width to existing sidewalk width (4' minimum or 5' for island ramps.) Match ramp width to existing shared use path width. Maximum ramp length is 15'.
2. Desirable turning space size is 5' x 5' or larger with a minimum size of 4' x 4'. The maximum slope for turning spaces is 2% in any direction.
3. Match detectable warning panel width to ramp width. Radial panels are allowed. Place detectable warning panel within the lower turning space.
4. Provide a continuous 4' minimum width pedestrian access route with max 2% concrete cross slope, excluding flares.
5. Modify existing ground slope with landscaping, as needed. If not possible, such as adjacent buildings, use a vertical curb as shown in the detail below. The Engineer will measure curb at the unit price bid for "Curb - Type 1" per lineal foot.
6. Islands: If the grade of the island curb ramp is less than 2%, provide a minimum distance of 2' between warning panels. If the grade of the island curb ramp is steeper than 2%, provide a turning space between the ramps.

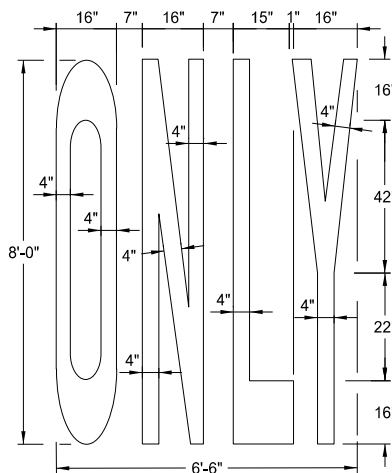
LEGEND:

Legend symbols and descriptions:

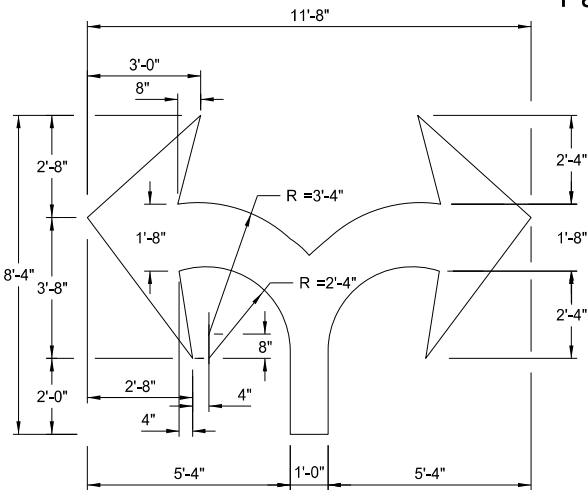
- ◻ (Dotted): Detectable Warning Panel
- ◻ (Stippled): Landscaping
- ◻ (Hatched): Transitional tie-in segment if needed for retrofits. Max grade slope 8.3%.
- ⊙ (Upper): Upper Turning Space
- ⊙ (Lower): Lower Turning Space
- 0", 3", or 6": Curb Height
- 8.3%: All slopes shown are max grades. Flatter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

Pavement Marking Message Details

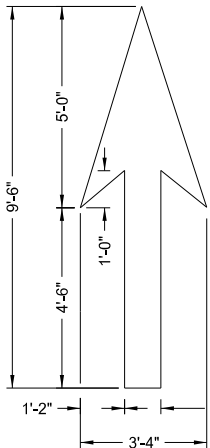
D-762-1



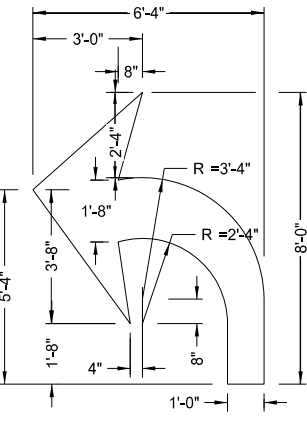
22 S. F.



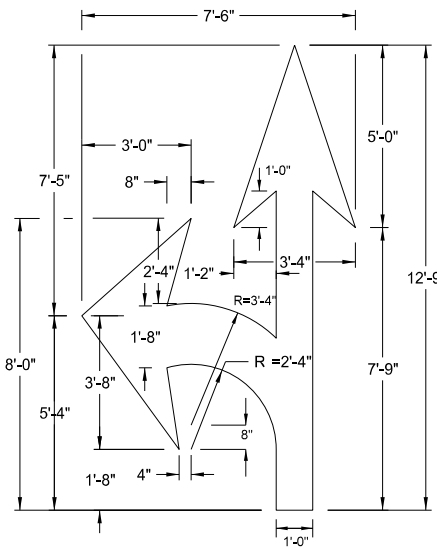
29 S. F.



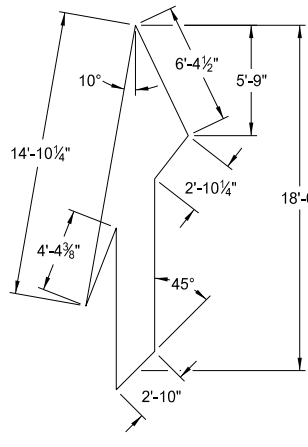
12 S. F.



16 S. F.

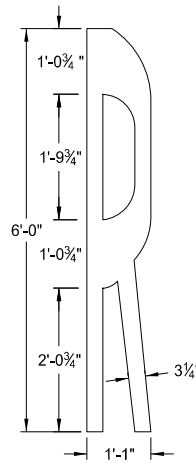


27 S. F.

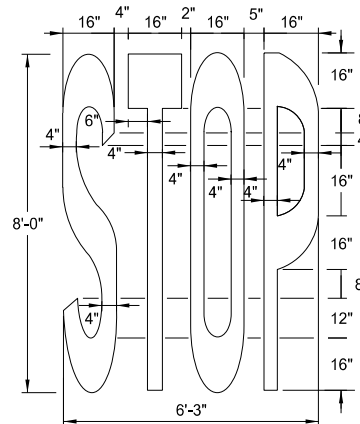


41 S. F.

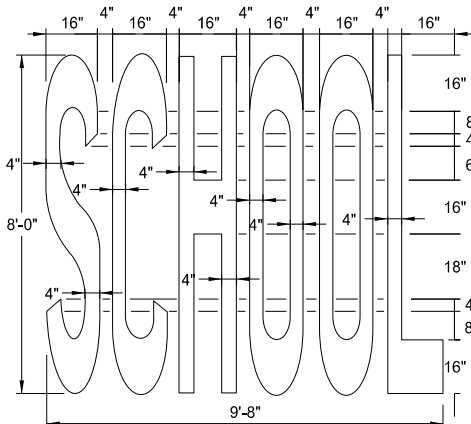
Note: Rotate merge arrow 20° from edge of roadway.



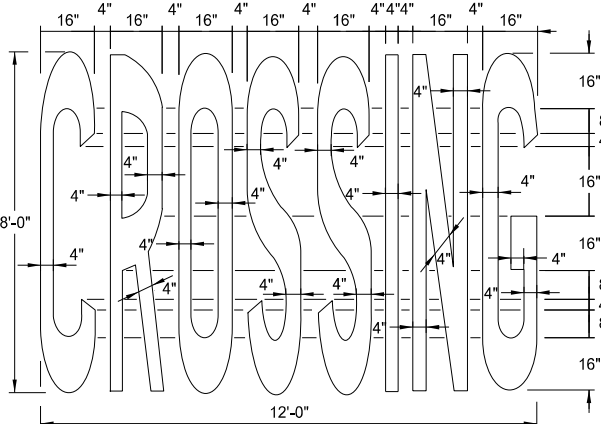
4 S. F.



22 S. F.



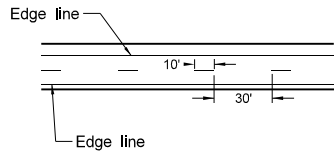
34.5 S. F.



46 S. F.

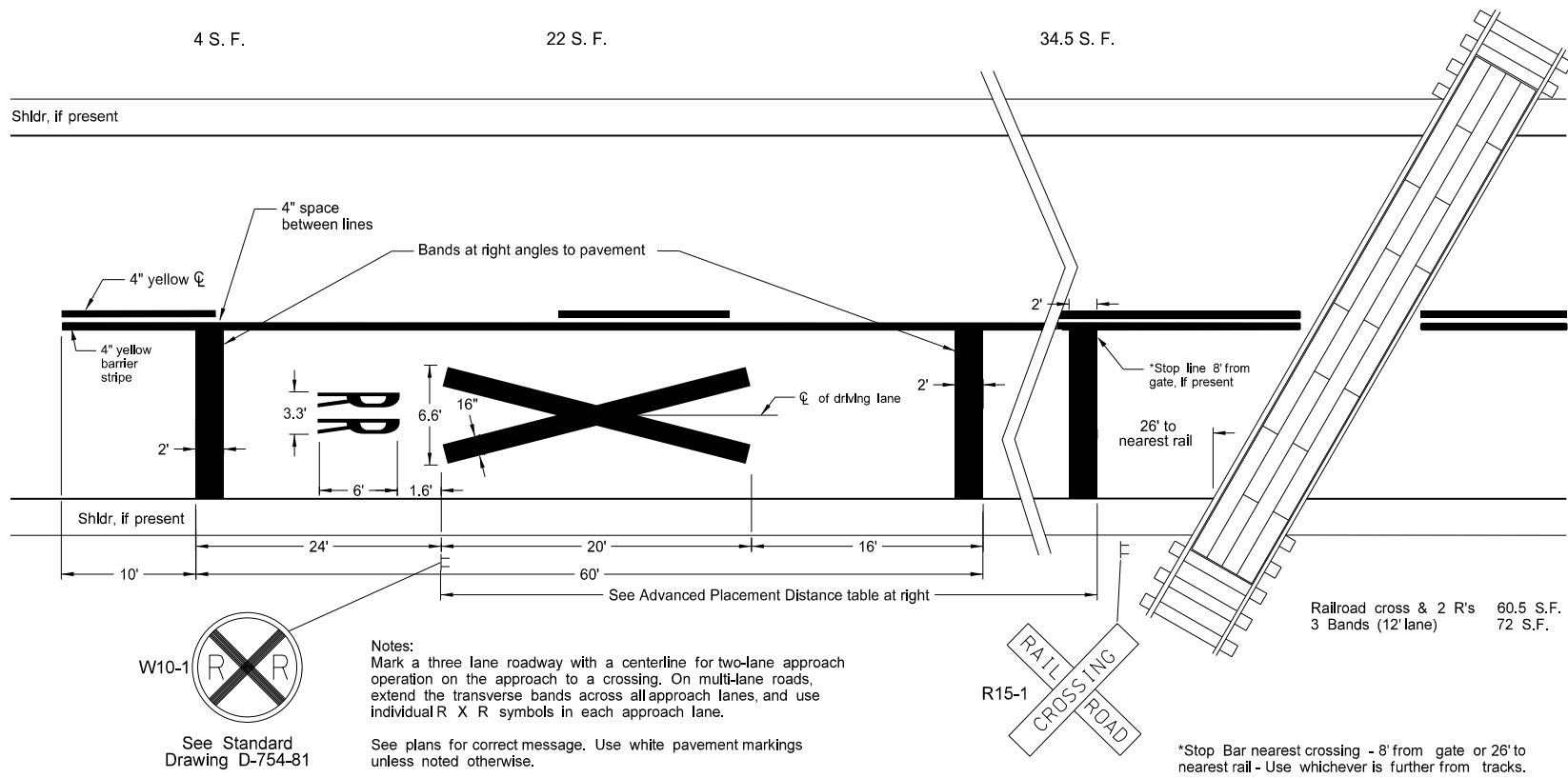
Speed Limit	Chevron Width	Chevron Spacing 45° to Traffic
0-25 mph	8"	5'
30-40 mph	8"	15'
45 mph and above	12"	25'

Chevron Crosshatching Table



Centerline Pavement Marking Skip Spacing Detail

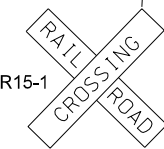
Advance Placement Distance for Railroad Warning Signs	
Posted or 85th Percentile Speed	Advance Distance
20 mph	min. 100 ft
25 mph	min. 100 ft
30 mph	min. 100 ft
35 mph	min. 100 ft
40 mph	125 ft
45 mph	175 ft
50 mph	250 ft
55 mph	325 ft
60 mph	400 ft
65 mph	475 ft
70 mph	550 ft



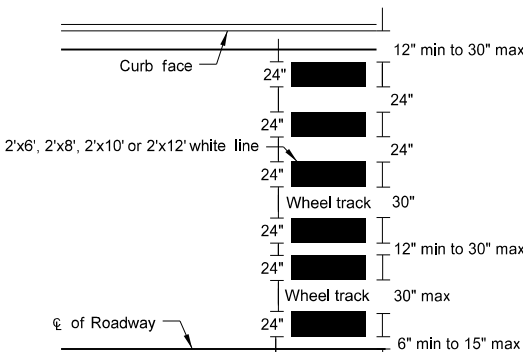
See Standard Drawing D-754-81

Notes:
Mark a three lane roadway with a centerline for two-lane approach operation on the approach to a crossing. On multi-lane roads, extend the transverse bands across all approach lanes, and use individual R X R symbols in each approach lane.

See plans for correct message. Use white pavement markings unless noted otherwise.



*Stop Bar nearest crossing - 8' from gate or 26' to nearest rail - Use whichever is further from tracks.



Continental Crosswalk Detail

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-6-11	
REVISIONS	
DATE	CHANGE
10-17-17 08-27-19 01-28-2020	Updated to active voice, New Design Engineer PE Stamp, Revised min Stop Bar distance to rail.

This document was originally issued and sealed by
Kirk J Hoff,
Registration Number
PE-4683,
on 1/28/2020 and the original document is stored at the
North Dakota Department
of Transportation