STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	029S-288	1	7

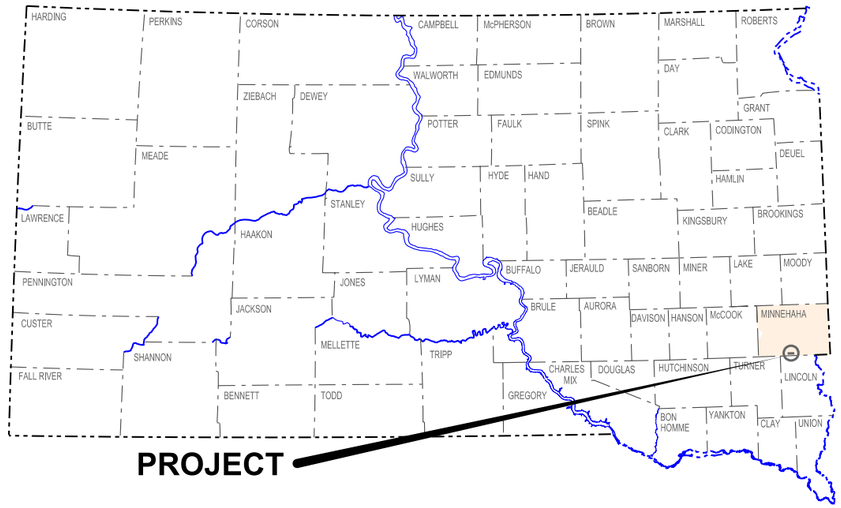
Plotting Date: 07/23/2014

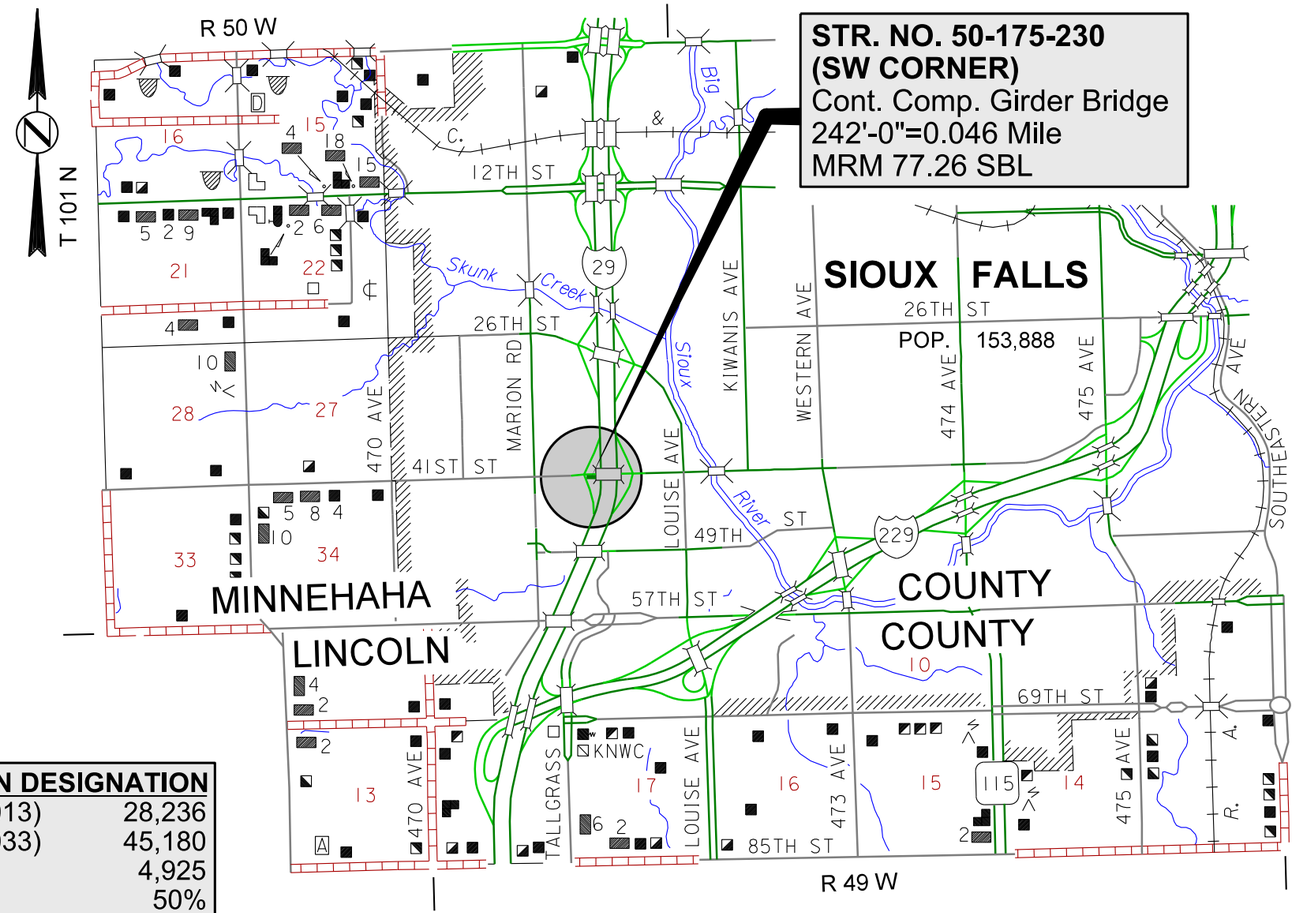
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT 029S–288 (029S–271)
CITY OF SIOUX FALLS
41ST STREET EB OVER
INTERSTATE 29 SB
MINNEHAHA COUNTY

STRUCTURE REPAIR - BRIDGE RAILING & SIDEWALK
PCN I39Q

INDEX OF SHEETS





STR. NO. 50-175-230
(SW CORNER)
Cont. Comp. Girder Bridge
242'-0"=0.046 Mile
MRM 77.26 SBL

ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E1140	Remove Concrete Sidewalk	13.3	SqYd
410E2600	Membrane Sealant Expansion Joint	5.8	Ft
460E0380	Install Dowel in Concrete	4	Each
470E0120	Steel Pedestrian Railing on Sidewalk	19.7	Ft
634E0100	Traffic Control	158	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
651E0160	6" Reinforced Concrete Sidewalk	120	SqFt

DESIGN DESIGNATION	
ADT(2013)	28,236
ADT(2033)	45,180
DHV	4,925
D	50%
T DHV	2.7%
T ADT	6.0%
V	35 MPH

STORM WATER PERMIT
(None required)

PLOT SCALE - 1:5600
PLOTTED FROM - TRMINI15
PLOT NAME - 1
FILE - ...\MINNI39O\TITLI39O.DGN

MAINTENANCE OF TRAFFIC

Removing, relocating, covering, salvaging and resetting of permanent traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Storage of vehicles and equipment shall be outside the clear zone and as near as possible to the right-of-way line. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work.

Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP 350 or MASH crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

Sufficient traffic control devices have been included in these plans to sign one workspace.

The eastbound outside lane of 41ST Street shall not be closed between 6:30 A.M. and 9:30 A.M.; and 3:30 P.M. and 6:00 P.M.

ITEMIZED LIST FOR TRAFFIC CONTROL

		CONVENTIONAL ROAD			
SIGN CODE	DESCRIPTION	NUMBER	SIGN SIZE	UNITS PER SIGN	UNITS
R1-1	STOP		30" x 30"	21	
R1-2	YIELD		36" x 36"	27	
R2-1	SPEED LIMIT __		24" x 30"	18	
R2-6aP	FINES DOUBLE (plaque)		24" x 18"	15	
R4-7	KEEP RIGHT (symbol)		24" x 30"	18	
R5-1	DO NOT ENTER		30" x 30"	21	
R5-1a	WRONG WAY		36" x 24"	20	
R10-6	STOP HERE ON RED		24" x 36"	20	
R11-2	ROAD CLOSED		48" x 30"	27	
R11-3a	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY		60" x 30"	30	
R11-4	ROAD CLOSED TO THRU TRAFFIC		60" x 30"	30	
W1-1	LEFT or RIGHT TURN ARROW		48" x 48"	34	
W1-2	LEFT or RIGHT CURVE ARROW		48" x 48"	34	
W1-3	REVERSE TURN (L or R)		48" x 48"	34	
W1-4	REVERSE CURVE (L or R)		48" x 48"	34	
W3-1	STOP AHEAD (symbol)		48" x 48"	34	
W3-2	YIELD AHEAD (symbol)		48" x 48"	34	
W3-3	SIGNAL AHEAD (symbol)		48" x 48"	34	
W3-4	BE PREPARED TO STOP		48" x 48"	34	
W3-5	SPEED REDUCTION AHEAD (__ MPH)		48" x 48"	34	
W4-1	MERGE (symbol)		48" x 48"	34	
W4-2	LEFT or RIGHT LANE ENDS (symbol)		48" x 48"	34	
W4-3	ADDED LANE (symbol)		48" x 48"	34	
W5-3	ONE LANE BRIDGE		48" x 48"	34	
W7-3aP	NEXT __ MILES (plaque)		36" x 30"	23	
W8-1	BUMP		48" x 48"	34	
W8-6	TRUCK CROSSING		48" x 48"	34	
W8-7	LOOSE GRAVEL		48" x 48"	34	
W8-11	UNEVEN LANES		48" x 48"	34	
W8-17	SHOULDER DROP-OFF (symbol)		48" x 48"	34	
W8-17P	SHOULDER DROP-OFF (plaque)		30" x 24"	18	
W13-1P	ADVISORY SPEED (plaque)		30" x 30"	21	
W20-1	ROAD WORK AHEAD	2	48" x 48"	34	68
W20-2	DETOUR AHEAD		48" x 48"	34	
W20-3	ROAD CLOSED AHEAD		48" x 48"	34	
W20-4	ONE LANE ROAD AHEAD		48" x 48"	34	
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	1	48" x 48"	34	34
W20-7	FLAGGER (symbol)		48" x 48"	34	
W21-1	WORKERS (symbol)		48" x 48"	34	
W21-2	FRESH OIL		48" x 48"	34	
W21-3	ROAD MACHINERY AHEAD		48" x 48"	34	
W21-5	SHOULDER WORK		48" x 48"	34	
W21-5a	LEFT or RIGHT SHOULDER CLOSED		48" x 48"	34	
W21-5b	LEFT or RIGHT SHOULDER CLOSED AHEAD		48" x 48"	34	
G20-1	ROAD WORK NEXT __ MILES		36" x 18"	17	
G20-2	END ROAD WORK		36" x 18"	17	
G20-5aP	WORK ZONE (plaque)		24" x 18"	15	
-	TYPE III OBJECT MARKER		12" x 36"	15	
-	TYPE 3 BARRICADE - 8' single sided			40	
-	TYPE 3 BARRICADE - 8' double sided	1		56	56
				TOTAL UNITS	**158**

The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

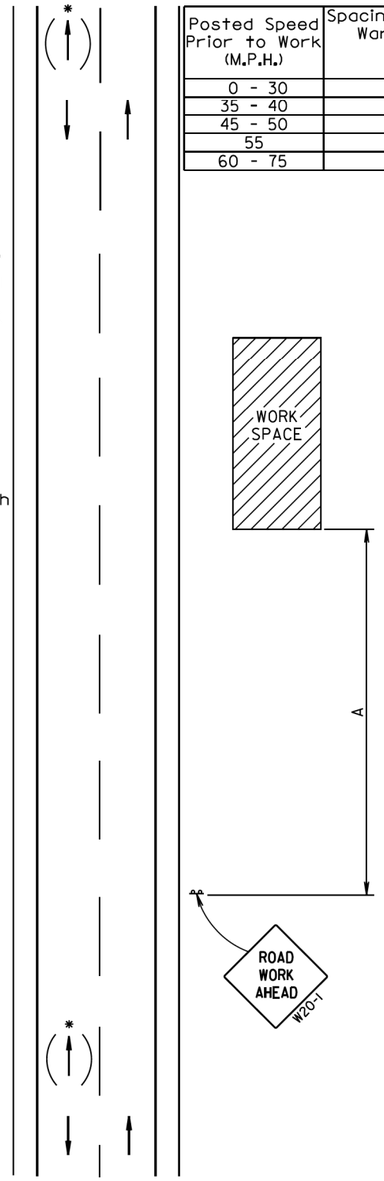
The signs illustrated shall be used where there are distracting situations; such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 75	1000

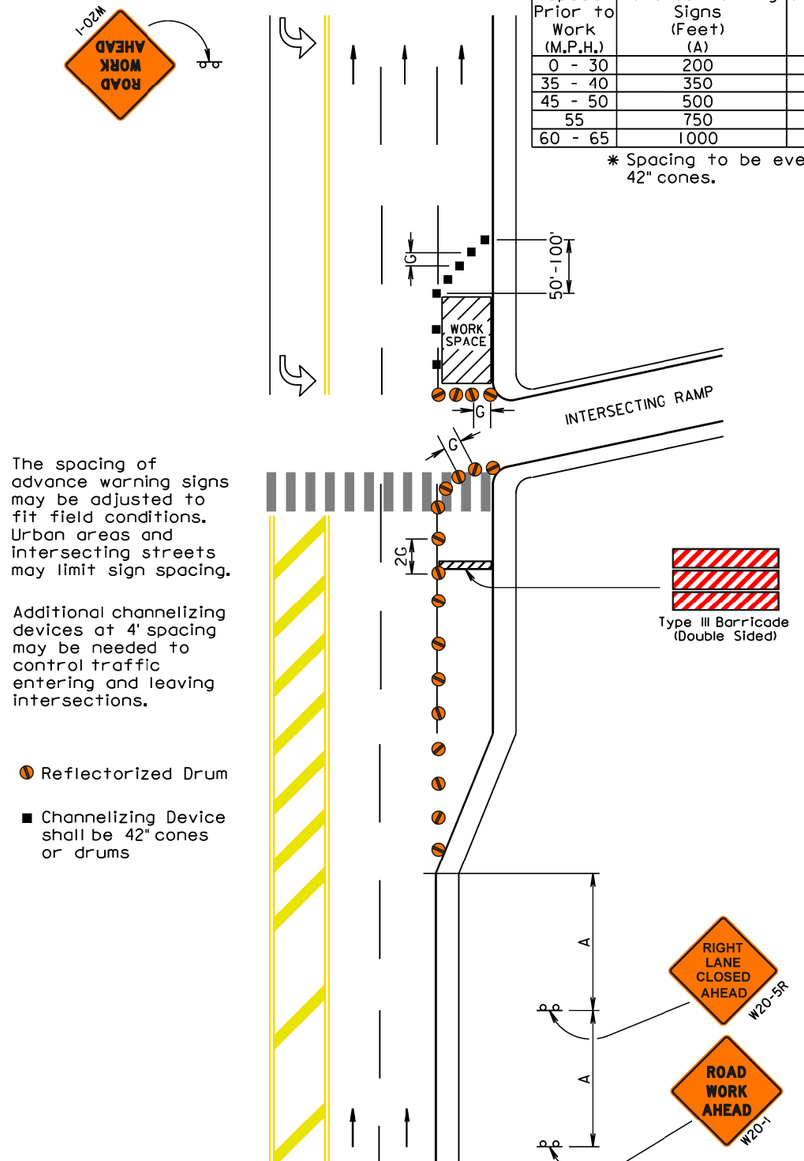


July 1, 2005

Published Date: 2nd Qtr. 2014	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES WORK BEYOND THE SHOULDER	PLATE NUMBER 634.01
			Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45 - 50	500	50 *
55	750	50 *
60 - 65	1000	50 *

* Spacing to be every 40' for 42" cones.



The spacing of advance warning signs may be adjusted to fit field conditions. Urban areas and intersecting streets may limit sign spacing.

Additional channelizing devices at 4' spacing may be needed to control traffic entering and leaving intersections.

● Reflectorized Drum

■ Channelizing Device shall be 42" cones or drums

GUIDES FOR TRAFFIC CONTROL DEVICES
7-LANE, OUTSIDE LANE CLOSED
{TYPICAL}

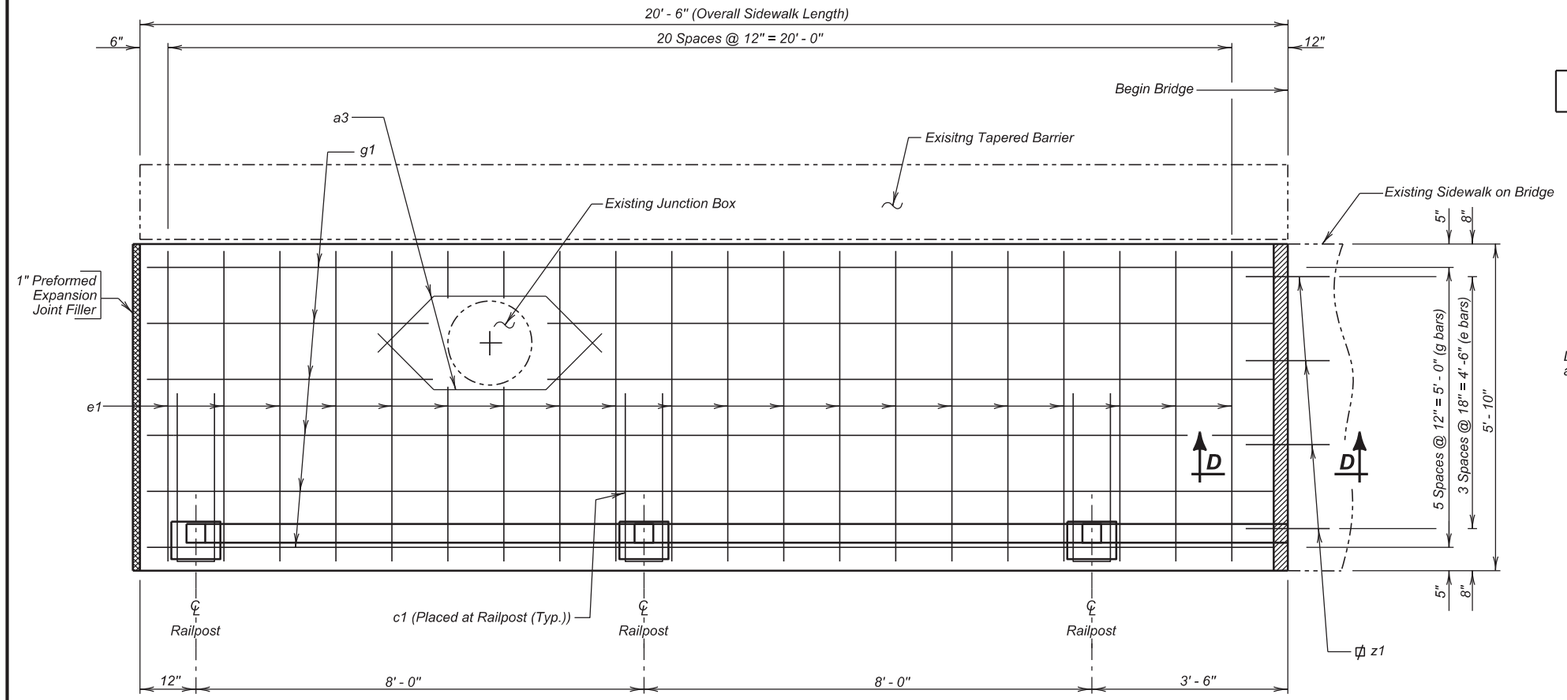
PLOT SCALE - 1:206.452

PLOT NAME - 1

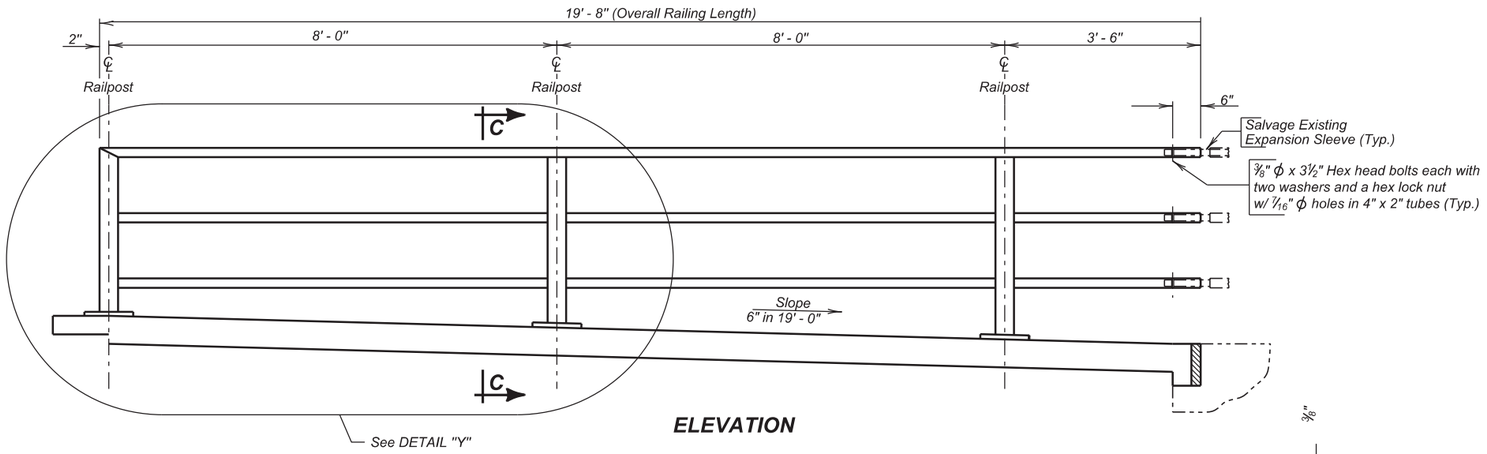
FILE - ...\MINN1390\1390 CONTAINER.DGN

- PLOTTED FROM - TRMINT17

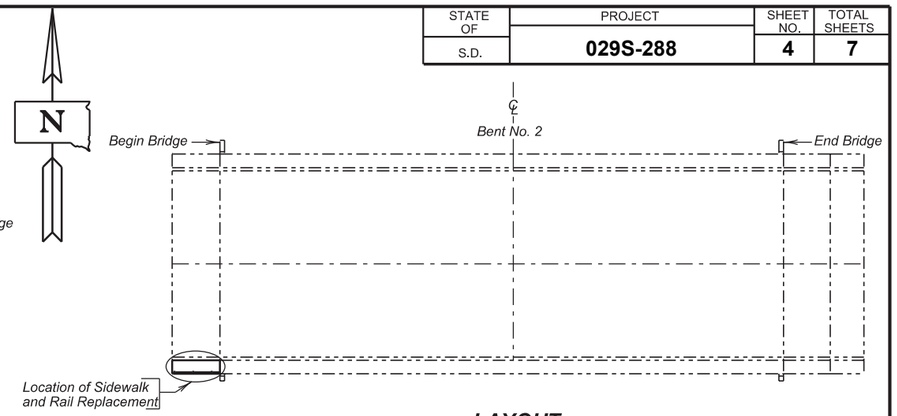
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	029S-288	4	7



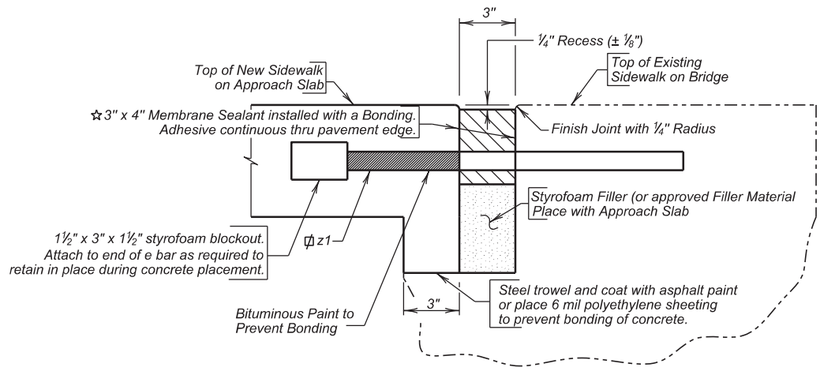
PLAN



ELEVATION



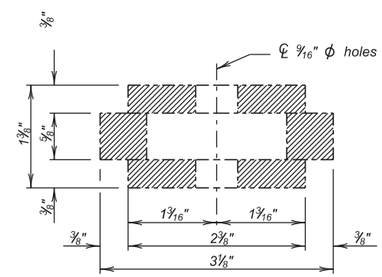
LAYOUT



SEC. D - D

ϕ Dowel Bars

☆ Notch Membrane Sealant at bar locations.



EXISTING SLEEVE DETAIL

SIDEWALK AND PEDESTRIAN RAIL LAYOUT

FOR

242' - 0" CONT. COMP. GIRDER BRIDGE

80' - 0" ROADWAY
OVER I-29
STR. NO. 50-175-230
PCN I39Q

0° SKEW
SEC. 25/36-T101N-R50W
029N-288

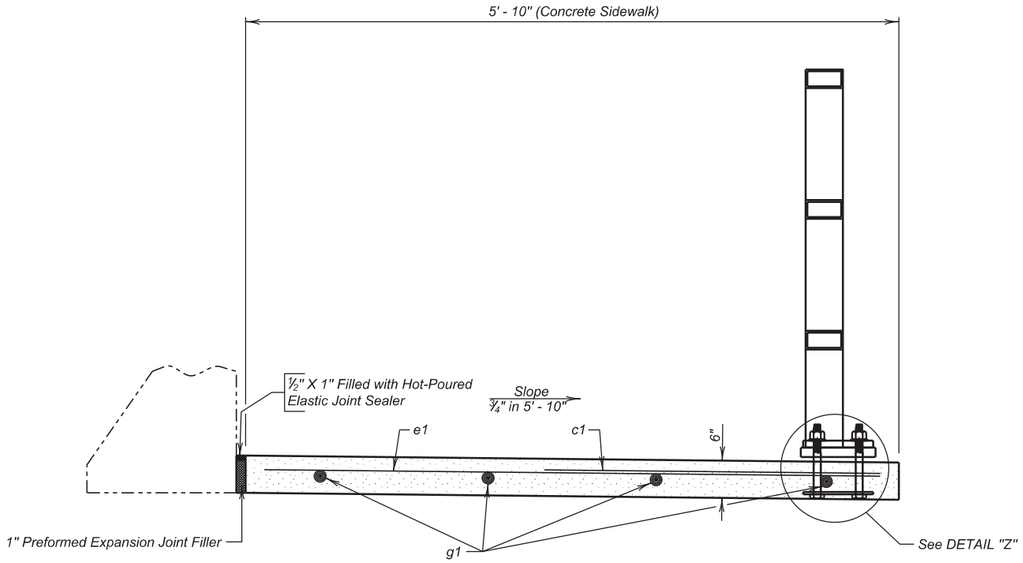
MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

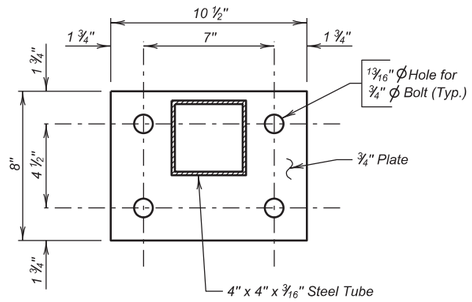
JUNE 2014

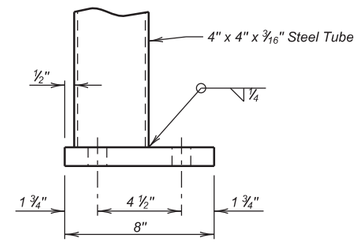
DESIGNED BY	CK. DES. BY	DRAFTED BY	
KSK	KH	MG	Kevin N. Goeden BRIDGE ENGINEER
MINNI39Q	I39QGA01		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	029S-288	5	7



SEC. C - C

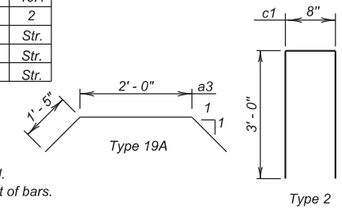




BASE PLATE DETAILS

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
a3	2	4	4' - 10"	19A	
c1	3	4	6' - 8"	2	
e1	14	4	5' - 6"	Str.	
g1	4	4	19' - 11"	Str.	
⏍ △ z1	3	8	1' - 6"	Str.	



NOTES:
All Bars to be Epoxy Coated.
All dimensions are out to out of bars.
△ Bars shall be smooth
⏍ Dowel Bars

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Remove Concrete Sidewalk	Sq. Yd.	13.3
6" Reinforced Concrete Sidewalk	Sq. Ft.	119.6
Steel Pedestrian Railing on Sidewalk	Ft.	19.7
Membrane Sealant Expansion Joint	Ft.	5.8
★ Install Dowel Bars in Concrete	Each	4

Items 1 and 2 are approximate quantities contained in the above bid items and are for information only.

1. Concrete in Sidewalk. 2.2 Cu. Yd.
2. Epoxy Coated Re-Steel in Sidewalk. 174 Lb.

★ *Does not include the following quantity for z1bars as these are paid for in the Bid Item "Install Dowel in Concrete".* 16 Lb.

DETAIL "Y"

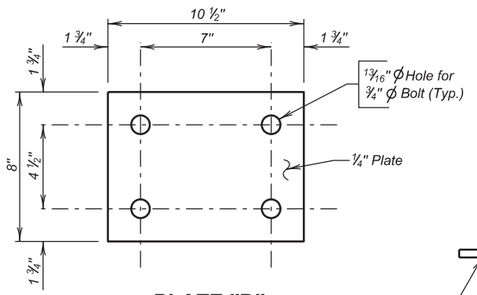
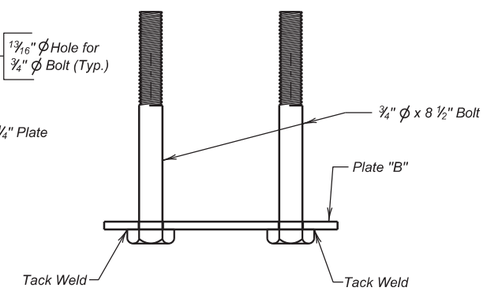


PLATE "B"



DETAIL "Z"

SIDEWALK AND PEDESTRIAN RAIL DETAILS

FOR

242' - 0" CONT. COMP. GIRDER BRIDGE

80' - 0" ROADWAY
OVER I-29
STR. NO. 50-175-230
PCN I39Q

0° SKEW
SEC. 25/36-T101N-R50W
029N-288

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

JUNE 2014

1 OF 4

DESIGNED BY	CK. DES. BY	DRAFTED BY	
KSK	KH	MG	Kevin N. Goeden BRIDGE ENGINEER
MINNI39Q	I39QGA02		

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
110E1140	Remove Concrete Sidewalk	13.3	SqYd
410E2600	Membrane Sealant Expansion Joint	5.8	Ft
460E0380	Install Dowel in Concrete	4	Each
470E0120	Steel Pedestrian Railing on Sidewalk	19.7	Ft
651E0160	6" Reinforced Concrete Sidewalk	119.6	SqFt

SPECIFICATIONS

1. Design Specifications: AASHTO Standard Specifications for Highway Bridges 2002 17th Edition using Working Stress Design.
2. Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.
3. All Welding and Welding Inspection shall be in conformance with the AASHTO/AWS Bridge Welding Code D1.5M/D1.5:2010 unless otherwise noted in this plan set.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing bridge contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure shall be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the pre-construction meeting.

1. Remove the existing sidewalk and pedestrian rail as shown in the plans.
2. Place new reinforced concrete sidewalk and new pedestrian rail.

GENERAL CONSTRUCTION – BRIDGE

1. All mild reinforcing steel shall conform to ASTM A615, Grade 60.
2. Use 2" clear cover on all reinforcing steel except as shown otherwise.
3. All exposed concrete corners and edges shall be chamfered ¾" unless noted otherwise in the plans.
4. Request for construction joints or resteel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.
5. Surfaces of the fresh concrete at construction joints shall be rough floated sufficiently to consolidate the surface. All construction joints shall be cleaned of surface laitance, curing compounds and other foreign materials prior to placing fresh concrete against the joint.
6. The type of vibratory screed shall be approved by the Engineer.

REMOVAL OF CONCRETE SIDEWALK

1. The existing concrete sidewalk and existing pipe rail within the limits shown in the plans shall be completely removed by the Contractor.
2. All broken out concrete shall be disposed of by the Contractor at an approved site. An appropriate site will be as described in the Waste Disposal Site notes in this set of plans.
3. All labor, tools, equipment and any incidentals necessary for removal and disposal of the existing concrete sidewalk and pipe rail shall be incidental to the contract unit price per square yard for "Remove Concrete Sidewalk".

REINFORCED CONCRETE SIDEWALKS

1. The new reinforced concrete sidewalks shall be constructed in accordance with section 460 of the construction specifications. The sidewalks shall have a broomed or carpet drag finish with no tining.
2. All costs involved in furnishing and placing reinforced concrete sidewalks including concrete, epoxy coated reinforcing steel, preformed expansion joint material, hot-poured elastic joint sealer and all labor, tools and equipment shall be included in the contract unit price per square foot for 6" Reinforced Concrete Sidewalk.

STEEL PEDESTRIAN RAILING ON SIDEWALK

1. All rail posts shall be built vertical.
2. All structural steel parts for railing shall conform to ASTM A500, Grade B. Material less than 1/4" thick may be ASTM A570, Grade 36 and rail post base plates may be ASTM A709, Grade 36.
3. All anchor bolts and nuts for railing shall conform to ASTM F1554, Grade 55. Washers shall conform to ASTM F436 and all components shall be galvanized in accordance with ASTM A153. The bolts shall be hex head "structural" type with heavy hex nuts and round washers.
4. All anchor bolts shall be tightened to a torque of 120 ft.-lbs. (approximated without the use of a calibrated torque wrench).
5. The non-shrink grout used to fill the recess beneath the rail post base plates shall be a commercially available non-shrink grout containing no metallic particles and capable of attaining a 28 day compressive strength of 3000 psi. The non-shrink grout pad shall be mixed according to the manufacturer's recommendations. The cost of furnishing and placing the non-shrink grout shall be incidental to the contract unit price per foot for "Steel Pedestrian Railing".
6. All steel railing shall be painted in accordance with Section 411 of the South Dakota Standard Specifications and the color shall be an approved green (Federal Standard 595B Color 24108).
7. The cost of structural steel, painting and galvanizing shall be incidental to the contract unit price per foot for Steel Pedestrian Railing.

MEMBRANE SEALANT EXPANSION JOINT

1. Install the membrane sealant expansion joints at the plan shown location in conformance to the following notes.
2. The Membrane Sealant shall be one of the membrane sealant types from the approved product list for Membrane Sealant Expansion Joints.
3. The manufacturer shall supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension shall be as recommended by the sealant manufacturer to provide a water tight seal throughout a joint movement range of +25% (minimum) from the specified joint opening dimension. In no case shall the precompressed dimension exceed 75% of the joint opening width. The foam sealant shall be slowly self expanding to permit workers ample time to install the membrane sealant before the membrane sealant exceeds the joint opening width.
4. The membrane sealant shall be supplied in pieces 5 feet in length or longer. The foam sealant shall be ultra-violet and ozone resistant.
5. The bonding adhesive used to attach the membrane sealant to the adjacent concrete shall be approved by the membrane sealant manufacturer.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

242' - 0" CONT. COMP. GIRDER BRIDGE

STR. NO. 50-175-230

JUNE 2014

3 OF 4

DESIGNED BY	CK. DES. BY	DRAFTED BY	
KSK	KH	KSK	Kevin N. Goeden
MINNI39Q	I39QNOTE		BRIDGE ENGINEER

MEMBRANE SEALANT EXPANSION JOINT (CONTINUED)

6. Adhesive used to join adjacent pieces of the membrane sealant shall be as recommended by the manufacturer.

7. If Styrofoam filler material is used in construction, it shall be closed cell and water-tight as approved by the Engineer.

8. Use plywood or other material to protect concrete adjacent to the joint from spalling before any equipment is moved across the joint. Any spall areas will be repaired at the Contractor's expense by breaking out and replacing adjacent concrete, as approved by the Engineer.

9. The minimum ambient air temperature at the time of joint installation and adhesive curing shall be 40°F.

10. The joint opening shall be constant width and shall have smooth vertical sides. Surfaces of material adjacent to the joint shall be at the correct grade and crown as approved by the Engineer.

11. Concrete surfaces that will be in contact with the membrane sealant shall be thoroughly cleaned by abrasive blasting to remove all laitance, and contaminants (such as oil, curing compounds, etc.) from the concrete surface. At a minimum two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the concrete surface will be required. Cleaning of the concrete surfaces with solvents, wire brushing, or grinding shall not be permitted.

12. After abrasive blasting, but immediately prior to membrane joint installation, the entire joint contact surface shall be air blasted. The air compressor used for joint cleaning shall be equipped with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. To obtain complete bonding with the adhesive, the adjacent concrete surfaces must be dry and clean. The contact surfaces for the joint shall be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.

13. Individual spliced sections shall be installed as per the manufacturers' recommendations. The membrane joint sealant manufacturer shall submit a detailed installation procedure to the Engineer at least 5 days prior to joint installation for his review.

14. Forms for the joint shall be left in place for a minimum of 7 days. No construction equipment or traffic shall be allowed on the joint until the concrete has reached design strength. The joint edges shall be protected from damage by equipment and traffic.

15. The Membrane Sealant Expansion Joint will be measured in feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Membrane Sealant Expansion Joint will be paid for at the contract unit price per foot complete in place. Payment for this item shall be full compensation for furnishing all the required materials in place, inclusive of labor, equipment and incidentals necessary to complete the work in accordance with the plans and foregoing specifications.

INSTALL DOWEL IN CONCRETE

1. Holes drilled in the existing concrete shall be true and normal as shown in the plans. Drilling holes using a core drill shall not be allowed. Care shall be taken not to damage the existing reinforcing steel. It is possible that some of the existing reinforcing steel shown in the original construction plans may have been placed out of position during original construction. Therefore, prior to the start of drilling any holes in the concrete, an effort will be made by Department forces to mark on the concrete surface where practical any locations of the inplace reinforcing steel. In spite of this precaution, the Contractor can still expect to encounter and have to drill through reinforcing steel or shift the dowel spacing as approved by the Engineer to miss the existing reinforcing steel. If the Contractor shifts the dowel spacing, the unused drill holes shall be completely filled with the epoxy resin specified in note number 2 under "Installing Dowels in Concrete" as approved by the Engineer.

2. The epoxy resin mixture shall be of a type for bonding steel to hardened concrete and shall conform to AASHTO M235 Type IV, Grade 3 (Equivalent to ASTM C881, Type IV, Grade 3).

3. The diameter of the drilled holes shall not be less than 1/8 inch greater, nor more than 3/8 inch greater than the diameter of the dowels or as per the Manufacturer's recommendations. The drilled holes shall be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.

4. Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel bar. Care shall be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by dipping or painting method will not be allowed.

5. No loads shall be applied to the epoxy grouted dowel bars until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.

6. Dowel bars shall conform to ASTM A615 Grade 60. Dowel bars shall have an epoxy coating. The coating shall conform to AASHTO M254 Type B. Dowel bars shall be plain round bars, free from burring or other deformation restricting slippage in concrete.

7. The cost of epoxy resin, dowels, installation and other incidental items shall be incidental to the contract unit price per each for "Install Dowel in Concrete".

EROSION CONTROL

The Contractor will be required to repair any damage done to the project area as a result of the Contractor's operations. Damaged/disturbed areas shall be bladed/restored to condition prior to work and reseeded with regular lawn grass seed. Cost for this work shall be incidental to the contract unit prices for the various items.

UTILITIES

The Contractor shall contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It shall be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

A utility access exists within the concrete sidewalk to be removed. The utility access will be retained and reset in the newly placed concrete. Cost for this work shall be incidental to contract unit prices for the various items.

Other utilities are not planned to be affected on this project. If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the Contractor shall contact the Project Engineer to determine modifications that will be necessary to avoid utility impacts.

NOTES (CONTINUED)

FOR

242' - 0" CONT. COMP. GIRDER BRIDGE

STR. NO. 50-175-230

JUNE 2014

DESIGNED BY	CK. DES. BY	DRAFTED BY	
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