

PLOT SCALE - 1:200

PLOTTED FROM - TRBEINT18

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT P 085-471
US HIGHWAY 85
BUTTE COUNTY
Sidewalk Splash Barrier

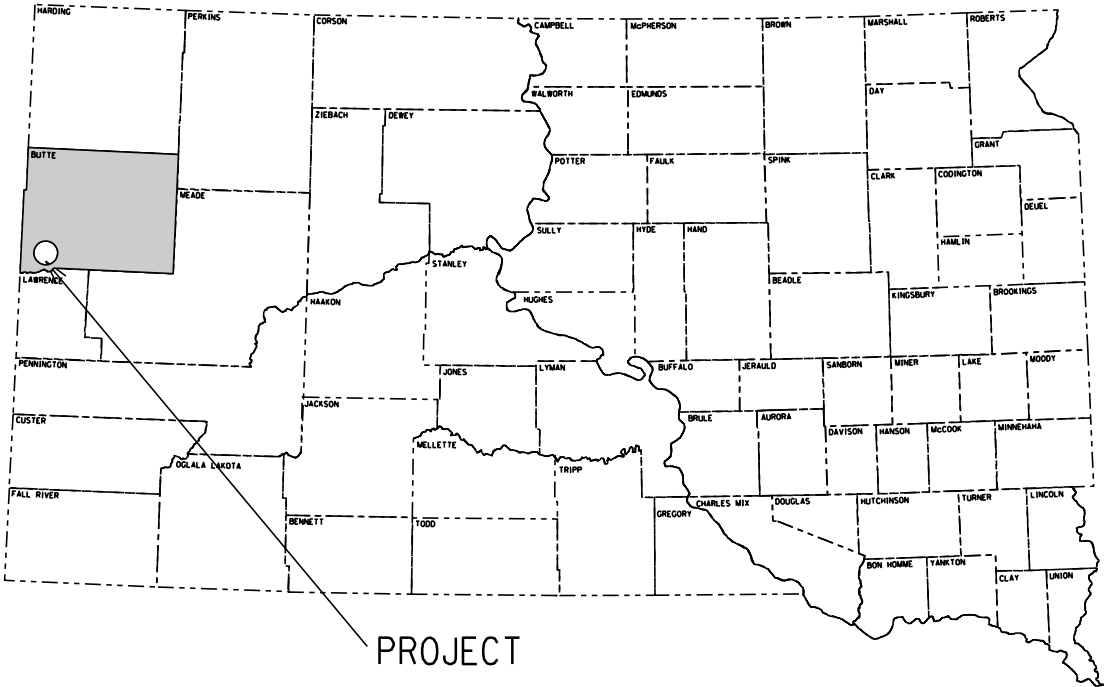
PCN i45j

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	085-471	1	13

Plotting Date: 04/29/2016

INDEX OF SHEETS

- 1 General Layout with Index
- 2 Environmental Commitments
- 3 Estimate of Quantities and Traffic Control Notes
- 4 Pedestrian Access Notes
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- 8 to 10 Standard Plates
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PROJECT

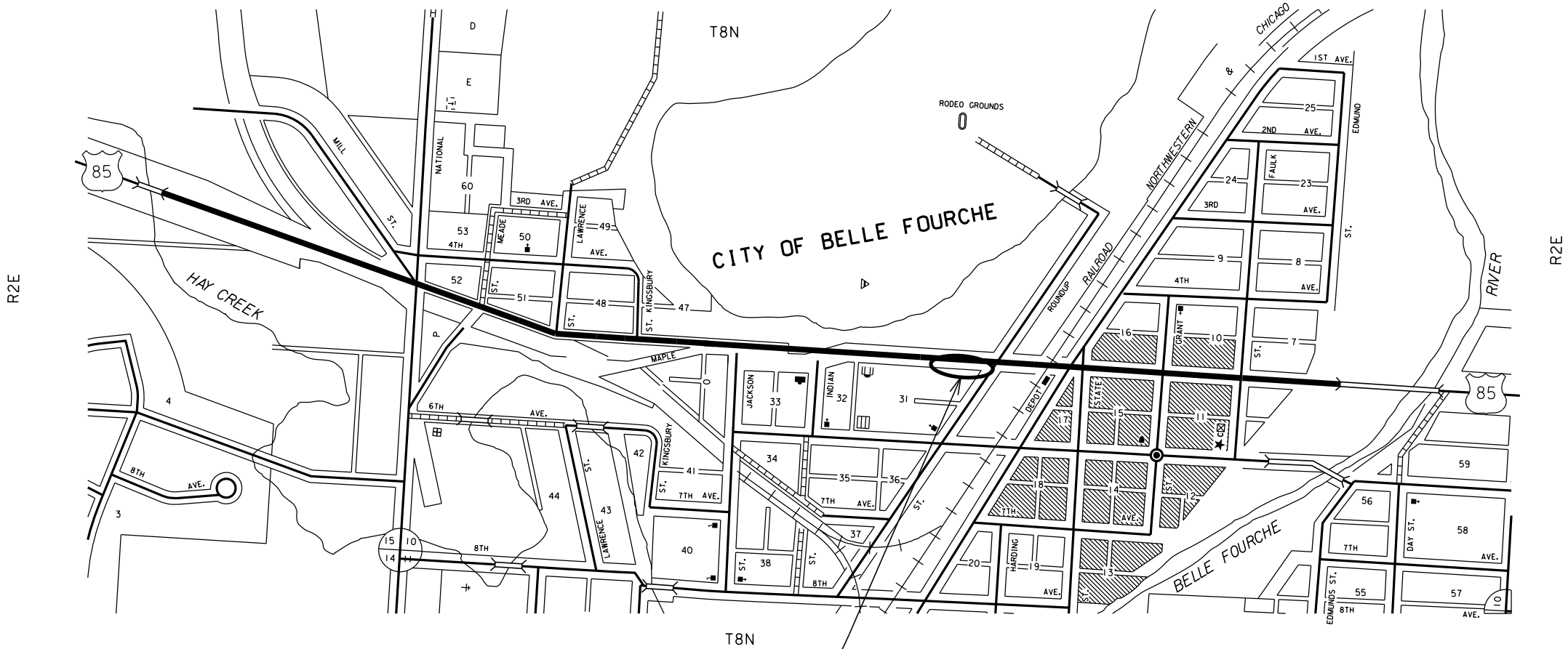


DESIGN DESIGNATION

ADT (2010)	7685
ADT (2030)	8231
DHV	1177
D	51%
T DHV	7.4%
T ADT	16.2
V	30 MPH

STORM WATER PERMIT

(Not Required)



P 085-471
Sidewalk Splash Barrier

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E1140	Remove Concrete Sidewalk	23.0	SqYd
470E0020	Pipe Handrail	50.0	Ft
530E0300	Type C Concrete Retaining Wall	100	SqFt
634E0110	Traffic Control Signs	90.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Board	1	Each
634E2000	Longitudinal Pedestrian Barricade	100	Ft
634E2015	Temporary Pedestrian Access Route	Lump Sum	LS
634E2020	Temporary Curb Ramp	1	Each
734E0845	Sediment Control at Inlet with Frame and Grate	2	Each
900E1080	Orange Plastic Safety Fence	100	Ft

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

ENVIRONMENTAL COMMITMENTS

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor’s primary contact regarding matters associated with these commitments will be the Project Engineer. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor shall furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the Public ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Project Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:

- Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the Public ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating “No Dumping Allowed”.
- Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) shall be incidental to the various contract items.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

Action Taken/Required:

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor shall arrange and pay for a cultural resource survey and/or records search. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor shall provide ARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

SEQUENCE OF OPERATIONS

- 1. Setup temporary traffic control.
- 2. Install sediment control measures at drop inlets.
- 3. Setup and maintain temporary sidewalk access.
- 4. Install orange safety fence along sidewalk to keep pedestrians out of the construction area.
- 5. Remove portion of existing concrete sidewalk for installation of new sidewalk splash barrier.
- 6. Install new sidewalk splash barrier.
- 7. Clean up the work site. Remove sediment control measures and temporary traffic control.

TRAFFIC CONTROL – GENERAL NOTES

- 1. Requests to deviate from the sequence of operations shall be submitted in writing to the Engineer for review. Approval of an alternate sequence of operations will only be allowed when the proposed changes meet with the Department’s intent for traffic control and sequencing of the work. An alternate sequence shall be submitted for review a minimum of one week prior to potential implementation.
- 2. Unless otherwise stated in these plans, no work will be allowed during hours of darkness.
- 3. Existing guide, route, informational logo, regulatory, warning signs and delineation shall be temporarily reset and maintained during construction as directed by the Engineer. Removing, relocating, salvaging and resetting of the above items shall be the responsibility of the Contractor.
- 4. Non-applicable traffic control devices shall be completely covered or removed during periods of inactivity. Periods of inactivity shall be defined as no work taking place for a period of more than 2 calendar days.
- 5. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.
- 6. All construction operations shall be conducted in the general direction of traffic movement.
- 7. If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD – whichever is more stringent shall be used, as determined by the Engineer.
- 8. Temporary Flexible Vertical Markers (Tabs) shall be used for lane closure tapers or lane shift tapers and shall be installed at 5’ spacing. Tabs used for tapers and shifts will not be measured for payment. All costs associated to furnish, install, maintain (including replacement as required by the Engineer at no added cost to the Department), and remove all markers will be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

Reflectorized Sheeting Requirements for Temporary Traffic Control Devices

Delete the first paragraph of Section 984.1 and replace with the following:

Temporary traffic control devices, including signs, drums, cones, tubular markers, barricades, vertical panels, and direction indicator barricades shall be reflectorized with sheeting applied to a satisfactory backing. For all temporary traffic control warning signs, the reflective sheeting shall meet or exceed the standards of Type VII, Type VIII, Type IX, or Type XI as defined by AASHTO M 268 (ASTM D4956). For all other temporary traffic control signs, the reflective sheeting shall meet or exceed the standards of Type IV, Type V, Type VII, Type VIII, Type IX, or Type XI as defined by AASHTO M 268 (ASTM D4956). For barricades, vertical panels, and direction indicator barricades; the reflective sheeting shall meet or exceed the standards of Type III as defined by AASHTO M 268 (ASTM D4956). Round surfaced temporary traffic control devices including, but not limited to; drums, cones, and tubular markers shall be reflectorized with reflectorized sheeting meeting or exceeding the standards of Type IV as defined by AASHTO M 268 (ASTM D4956). All orange colored material shall be fluorescent.

ORANGE PLASTIC SAFETY FENCE

When pedestrian traffic is adjacent to a drop off condition or construction area, the Contractor shall install orange plastic safety fence to keep pedestrians out of the work areas and away from drop off conditions. Posts for the safety fence may need to be temporarily mounted to the existing sidewalk surface. Payment for the orange plastic safety fence will be at the contract unit price per foot for orange plastic safety fence. Payment will be full compensation for furnishing, installing, maintaining, post mounting, removing and replacing as required by the Engineer.

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W4-2	LEFT or RIGHT LANE ENDS (symbol)	1	48" x 48"	16	16
W20-1	ROAD WORK AHEAD	3	48" x 48"	16	48
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	1	48" x 48"	16	16
G20-2	END ROAD WORK	2	36" x 18"	5	10
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			
		90			

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	085-471	3	13

TEMPORARY PEDESTRIAN ACCESS ROUTE

A Temporary Pedestrian Access Route (TPAR) shall be provided when crosswalks, sidewalks, or other pedestrian facilities are blocked, closed, or relocated. A TPAR may consist of a combination of existing and/or temporary pedestrian facilities. The TPAR shall be kept free of any obstructions and hazards, such as holes, debris, mud, snow, construction equipment, traffic control signing, stored materials, etc.

The Contractor shall notify the Engineer at least 72 hours prior to start of any construction operation that will necessitate a change in pedestrian access. Pedestrian traffic signal displays controlling a crosswalk that is closed shall be covered or removed.

TEMPORARY PEDESTRIAN SIDEWALK

Temporary Pedestrian Sidewalk shall be a smooth, continuous, non-slip, hard surface. There should be no curbs or abrupt changes in grade or terrain that could cause tripping or be a barrier to wheelchair use.

Temporary Pedestrian Sidewalk shall have a minimum width of 48", with 60" recommended. The Contractor shall try to provide boulevard sidewalk whenever possible for Temporary Pedestrian Sidewalk that is 48" in width. Temporary Pedestrian Sidewalk less than 60" wide shall provide for a 60"x60" passing space at intervals not to exceed 200 ft. Temporary Pedestrian Sidewalk shall have a maximum cross slope of 2%. The maximum grade shall be 5% where the Temporary Pedestrian Sidewalk does not follow the grade of the road.

All costs associated with installing and maintaining a Temporary Pedestrian Access Route, including Temporary Pedestrian Sidewalk, shall be incidental to the contract lump sum price for TEMPORARY PEDESTRIAN ACCESS ROUTE.

TEMPORARY CURB RAMP

Temporary Curb Ramps should be firm, stable, and have a non-slip surface. They shall not warp or buckle, and should be made of materials strong enough to support a weight of 800 pounds. Temporary Curb Ramps shall also be color contrasting and contain marked edges so they are noticeable by pedestrians who have visual impairments. Lateral joints or gaps between surfaces shall be a maximum of 0.5 inches in width. Temporary Curb Ramps shall include detectable warning panels.

Temporary Curb Ramps shall be the full width of the temporary pedestrian access route, with a recommended width of 60" and a minimum width of 48". Temporary Curb Ramps shall have a maximum slope of 1:12, and have free draining surfaces with a maximum cross slope of 2 percent. Handrails on Temporary Curb Ramps are not required unless the curb ramp has a rise exceeding 6" and a length exceeding 72".

All costs shall be incidental to the contract unit price per each for TEMPORARY CURB RAMP.

LONGITUDINAL PEDESTRIAN BARRICADE

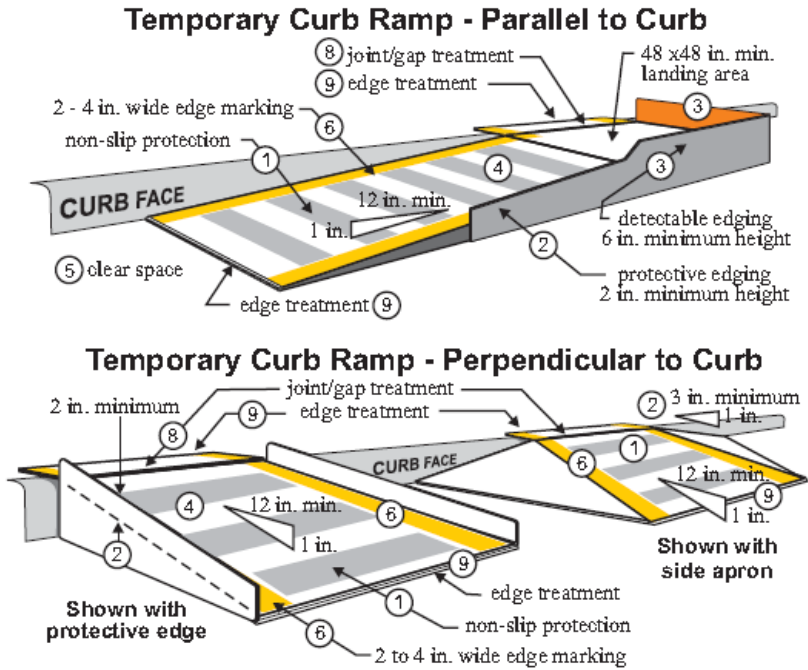
Longitudinal Pedestrian Barricades should not be used to provide positive protection for pedestrians.

Barricade rail supports may not project into pedestrian routes more than 4 inches from the face of the barricade. To prevent any tripping hazard to pedestrians, ballast shall be located behind or internal to the device.

When Longitudinal Pedestrian Barricades are combined in a series, the maximum gap between devices that do not interlock shall be one inch. Joints between devices that do interlock shall be closed and flush to prevent canes or small wheels from being trapped and to facilitate safe hand trailing. When used as a sidewalk closure mechanism, Longitudinal Pedestrian Barricade must run the entire width of the sidewalk. Longitudinal Pedestrian Barricade should provide a color contrasting pattern. Black should not be used to color any base on a device. The devices should comply with the general color and stripe pattern requirements of Section 6F.68 of the MUTCD.

Longitudinal Pedestrian Barricade shall have continuous bottom and top surfaces. A gap height or opening from the walkway surface up to a maximum of 2 inches is allowed for drainage purposes. The top edge of the bottom portion shall be a minimum of 8 inches above the walkway. The top of the top portion shall be between 34 and 38 inches above the walkway. The top surface shall be smooth to allow safe hand trailing. Both upper and lower surfaces shall share a common vertical plane.

All costs shall be incidental to the contract unit price per foot for LONGITUDINAL PEDESTRIAN BARRICADE.



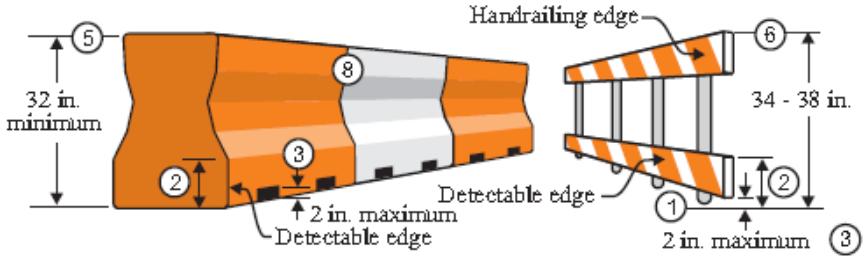
NOTES:

1. Curb ramps shall be 48 inch minimum width with a firm, stable, and non-slip surface.
2. Protective edging with a 2 inch minimum height shall be installed when the curb ramp or landing platform has a vertical drop of 6 inches or greater or has a side apron slope steeper than 1:33 (33%).

TEMPORARY CURB RAMP NOTES (CONTINUED)

3. Protective edging should be considered when curb ramps or landing platforms have a vertical drop of 3 inches or more.
4. Detectable edging with 6 inches minimum height and contrasting color shall be installed on all curb ramp landings where the walkway changes direction (turns).
5. Curb ramps and landings should have a 1:50 (2%) maximum cross slope.
6. A minimum clear space of 48 inch x 48 inch minimum shall be provided above and below the curb ramp, with a 60 inch x 60 inch clear space preferred.
7. 6. The curb ramp walkway edge shall be marked with a contrasting color 2 to 4 inch wide marking. The marking is optional where color contrasting edging is used.
8. Water flow in the gutter system shall have minimal restriction.
9. Lateral joints or gaps between surfaces shall be less than 0.5 inches in width.
10. Changes between surface heights should not exceed 0.5 inches. Lateral edges should be vertical up to 0.25 inches in height, and beveled at 1:2 between 0.25 inches and 0.5 inches in height.

LONGITUDINAL PEDESTRIAN BARRIER



1. Barricade rail supports may not extend into the pedestrian walkway more than 4 inches from the face of the barricade.
2. The top edge of the bottom portion shall be a minimum of 8 inches above the walkway.
3. Devices shall not block water drainage from the walkway. A gap height or opening from the walkway surface up to a maximum of 2 inches in height is allowed for drainage purposes.
4. The top edge of the Longitudinal Pedestrian Barricade is to be used as a guiderail to provide visual and tactile guidance to pedestrians along a designated route. The top surface should have a minimum width of 0.5 inches to allow the hand to feel the surface. The surface should be smooth and free of any sharp or abrasive elements to allow safe hand trailing.
5. Longitudinal Pedestrian Barrier used to provide positive protection from traffic to pedestrians should be crashworthy.
6. When either device is combined in a series, the maximum gap between devices that do not interlock shall be 1 inch. Joints between devices that do interlock should be closed and flush to prevent canes or small wheels from being trapped and to facilitate safe hand trailing.

SEDIMENT CONTROL AT INLETS WITH FRAMES AND GRATES

This type of sediment control device should be used where there is pavement in the vicinity of the drop inlets and storm water or sediment could possibly enter the frame and grate. Sediment Control at Inlet with Frame and Grate shall be installed prior to working in the vicinity of the drop inlets.

The Contractor shall be responsible for maintaining and repairing the sediment control devices for the duration of the project for which sediment control measures are required. Maintenance shall be scheduled to prevent storm water from backing up into the driving lane.

“Sediment Control at Inlet with Frame and Grate” will be paid for one time at each location, regardless of the number of times the sediment control devices are installed, inspected, cleaned, removed, repaired, or replaced. All costs associated with furnishing, installing, inspecting, maintaining, cleaning, sediment removal, and repairing Sediment Control at Inlet with Frame and Grate shall be incidental to the contract unit price per each for “Sediment Control at Inlet with Frame and Grate”.

Sediment collection devices shall be:

A commercial made sediment collection device from the “Sediment Control at Inlet with Frame and Grate” list or an approved equal. The device shall be installed in reinforced concrete drop inlets according to the manufacturer’s recommendations.

Sediment Control at Inlet with Frame and Grate Approved List:

Product	Manufacturer
InfraSafe Debris Collection Device with filter sock	Royal Environmental Systems, Inc. Stacy, MN Phone: 1-800-817-3240 www.royalenterprises.net
Dandy Curb Sack	Dandy Products Inc. Dublin, OH Phone: 1-800-591-2284 www.dandyproducts.com
Silt Trapper	Storm Water Solutions Lakeville, MN Phone: 1-952-461-4376 www.silttrapper.com
DIP Basket	Skyview Construction Co., LLC Waubay, SD Phone: 1-605-520-0555 www.skyviewconst.com
FLEXSTORM Inlet Filters	Inlet and Pipe Protection, Inc. Naperville, IL Phone: 1-866-287-8655 www.inletfilters.com
GR-8 Guard or Combo Guard	ERTEC Environmental Systems LLC Alameda, CA Phone: 1-866-521-0724 www.ertecsystems.com
Sediment Catchers	Shaun Jensen Brookings, SD Phone: 1-605-690-4950
Grate FX, Slammer, or VertPro	Enviroscape ECM, Ltd. Oakwood, OH Phone: 1-419-594-3210 www.strawblanket.com
BX Inlet Sediment Boxes	BX Civil and Construction Dell Rapids, SD Phone: 1-605-428-5483 bx-cc.com

TABLE OF SEDIMENT CONTROL AT INLETS WITH FRAMES AND GRATES

Station	L/R	Quantity (Each)
51+62	R	1
51+70	R	1
Total:		2

CONTROL DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	085-471		613

HORIZONTAL AND VERTICAL CONTROL POINTS						
Point	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP5	46+92.86	-31.61		328438.590	966299.470	3039.42
CP6	51+07.25	33.08		328849.451	966383.712	3024.87
CP7	54+63.11	-41.09		329208.423	966326.465	3024.04
CP8	66+47.59	41.51		330388.143	966458.012	3016.30

HORIZONTAL ALIGNMENT DATA

MAINLINE

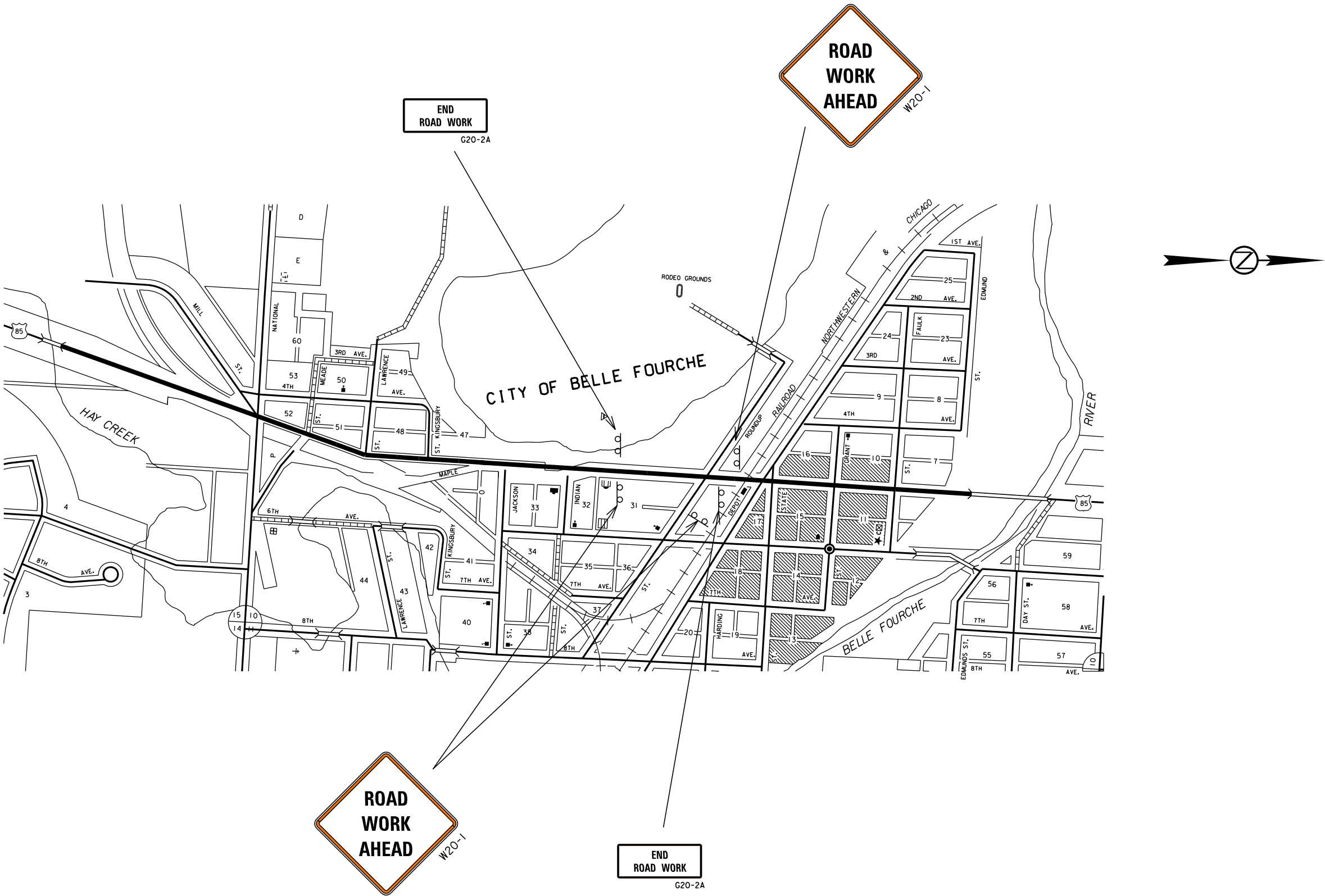
TYPE	Station		Northing (Y)		Easting (X)	
POB	0+00.00		323912.0869		965243.3932	
	TL= 1000.0021		N 18^50'58" E			
PI	10+00.00		324858.4592		965566.4777	
	TL= 149.9851		N 18^52'27" E			
PI	11+49.99		325000.3799		965614.9966	
	TL= 580.7413		N 18^31'57" E			
PI	17+30.73		325551.0061		965799.5805	
	TL= 694.2067		N 19^23'40" E			
PI	24+24.94		326205.8203		966030.1045	
	TL= 328.7285		N 19^00'52" E			
PI	27+53.66		326516.6120		966137.2070	
	TL= 203.5144		N 18^24'19" E			
PC	29+57.18		326709.7161		966201.4635	
PI	31+25.63		326869.5513		966254.6497	
PT	32+91.89		327037.8525		966261.7731	
	TL= 207.7841		N 2^25'25" E			
PI	34+99.68		327245.4507		966270.5599	
	TL= 600.3304		N 3^05'43" E			
PI	41+00.01		327844.9053		966302.9760	
	TL= 1386.2942		N 2^42'49" E			
PI	54+86.30		329229.6449		966368.6111	
	TL= 221.8113		N 1^53'59" E			
PI	57+08.11		329451.3343		966375.9637	
	TL= 712.1752		N 2^28'35" E			
PI	64+20.29		330162.8444		966406.7353	
	TL= 1046.7072		N 2^28'17" E			
POE	74+67.00		331208.5781		966451.8679	

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System.
North Zone (NAD 83/96) SF = 0.999814171

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	085-471	7	13

Plotting Date: 04/29/2016

FIXED LOCATION SIGNS





Only the traffic control devices controlling pedestrian flows are shown. Other devices may be needed to control traffic on the streets. Use lane closure signing or ROAD NARROWS signs, as needed.

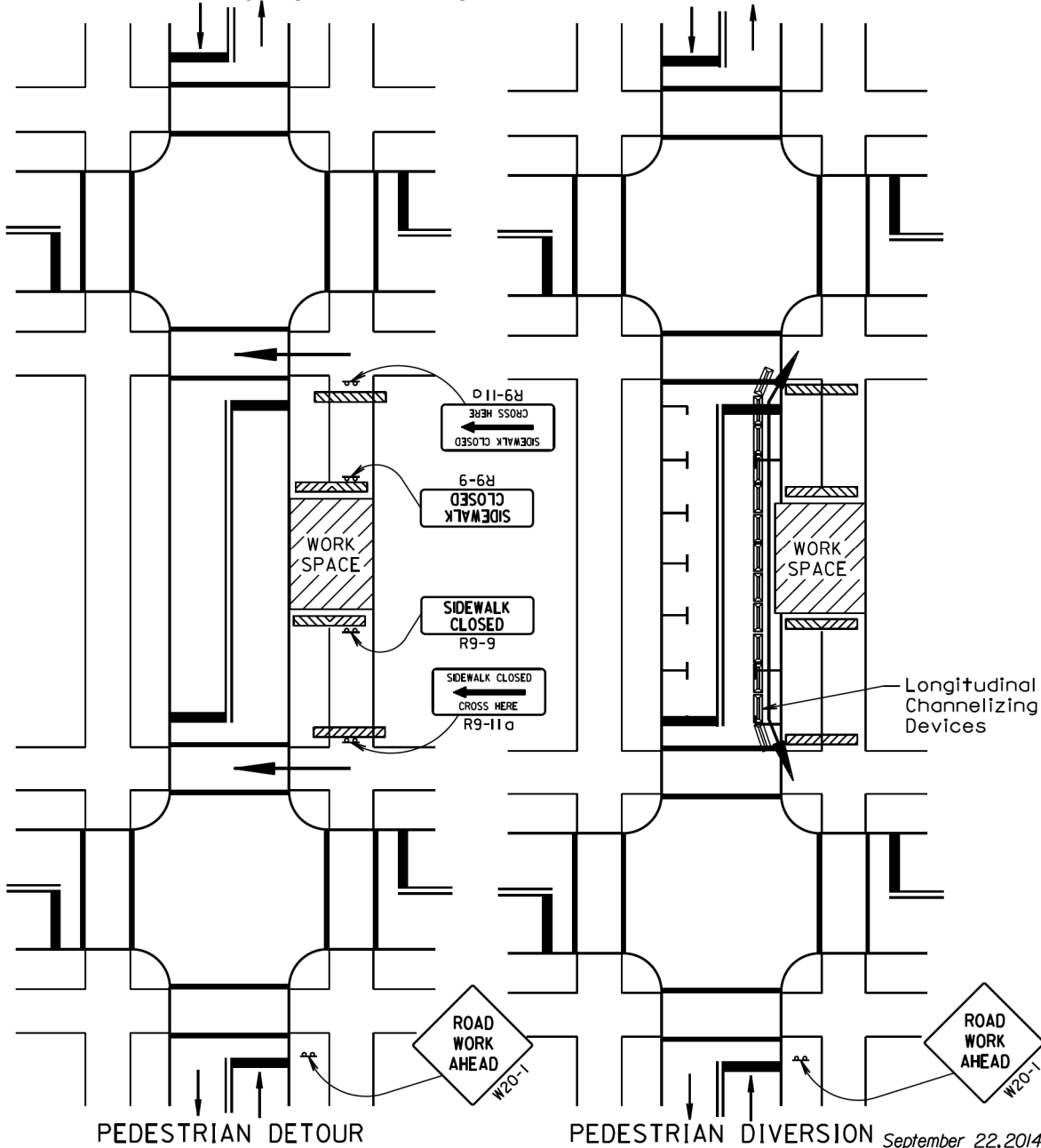
Signs may be placed along a temporary diversion to guide or direct pedestrians. Examples include KEEP RIGHT and KEEP LEFT signs.

Additional advance warning may be necessary.

For nighttime closures, Type A flashing warning lights may be used on barricades supporting signs and closing sidewalks. Type C steady-burn lights may be used on channelizing devices separating the temporary pedestrian diversion from vehicular traffic.

Street lighting should be considered.

 Type I Barricade
and




SDOT	GUIDES FOR TRAFFIC CONTROL DEVICES PEDESTRIAN DETOUR AND PEDESTRIAN DIVERSION	PLATE NUMBER 634.34
		Published Date: 2nd Qtr. 2016
		Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45 - 50	500	600	50 *
55	750	660	50 *
60 - 65	1000	780	50 *

* Spacing is 40' for 42" cones.

⊙ Reflectorized Drum

■ Channelizing Device

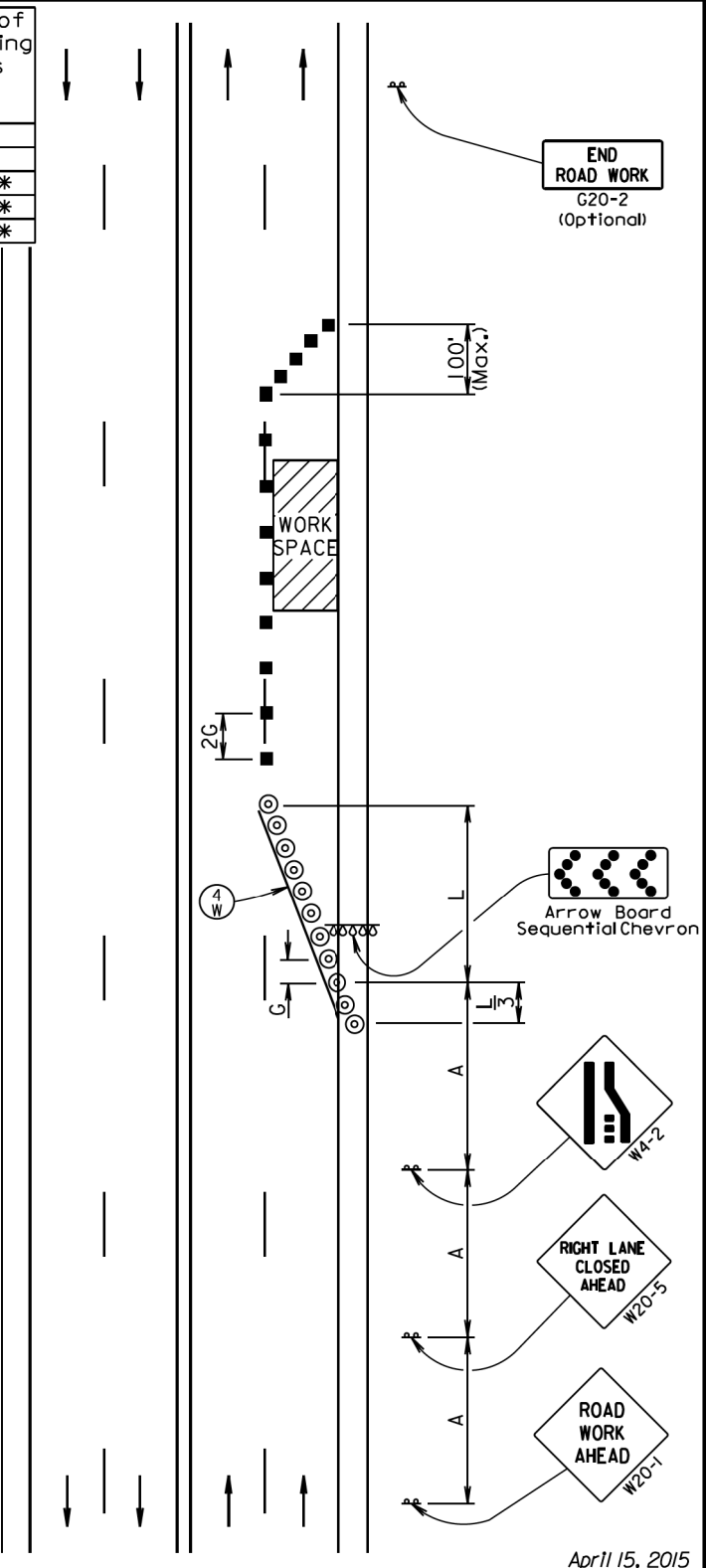
④ 4" White Temporary Pavement Marking

The channelizing devices shall be 42" cones or drums.

42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

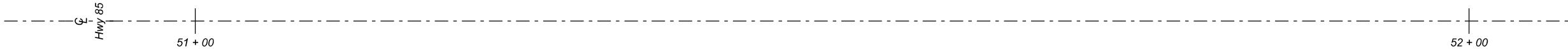
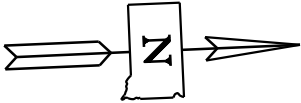
Temporary pavement markings shall be used if traffic control must remain overnight.

The length of A and L may be adjusted to fit field conditions.



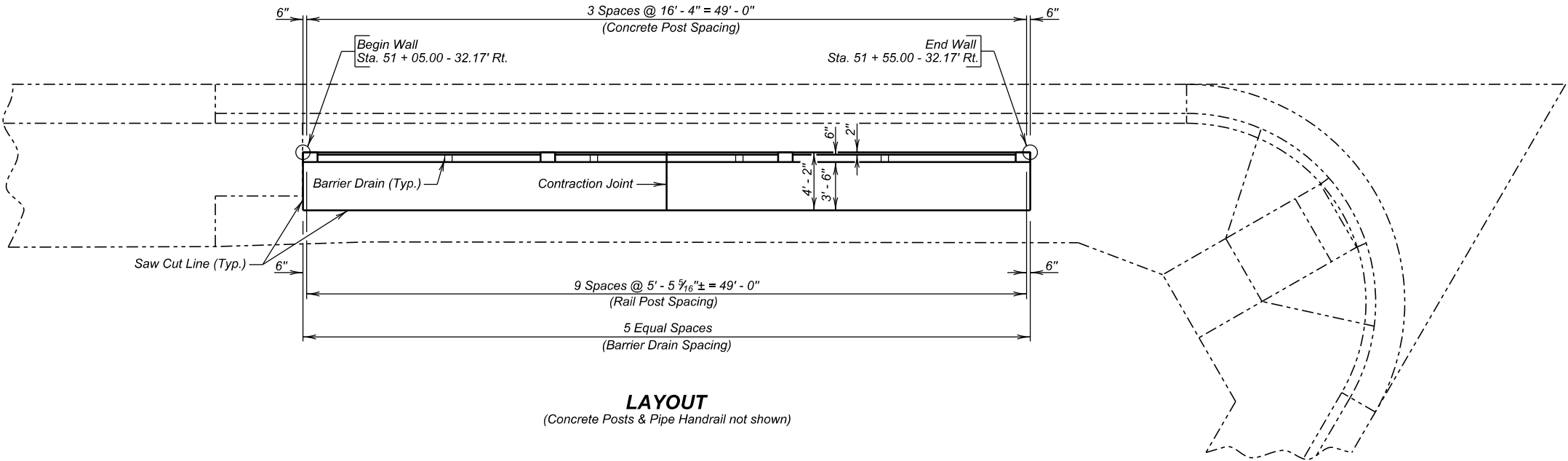
SDOT	GUIDES FOR TRAFFIC CONTROL DEVICES 4-LANE UNDIVIDED, RIGHT LANE CLOSED	PLATE NUMBER 634.47
		Published Date: 2nd Qtr. 2016
		Sheet 1 of 1

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	085-471	11	13



INDEX OF BARRIER SHEETS-

- Sheet No. 1 - Layout and Quantities
Sheet No. 2 - Barrier and Rail Details
Sheet No. 3 - Barrier, Drain Details and Notes



LAYOUT

(Concrete Posts & Pipe Handrail not shown)

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Type C Concrete Retaining Wall	Sq. Ft.	100
Pipe Handrail	Ft.	50
Remove Concrete Sidewalk	Sq. Yd.	23

For informational purposes only, the surface area of Thin Veneer Brick is 28 sq. ft.

**LAYOUT AND QUANTITIES
FOR
SPLASH BARRIER**

CITY OF BELLE FOURCHE M 085 471
PCN I45J

BUTTE COUNTY
S. D. DEPT. OF TRANSPORTATION

MARCH 2016

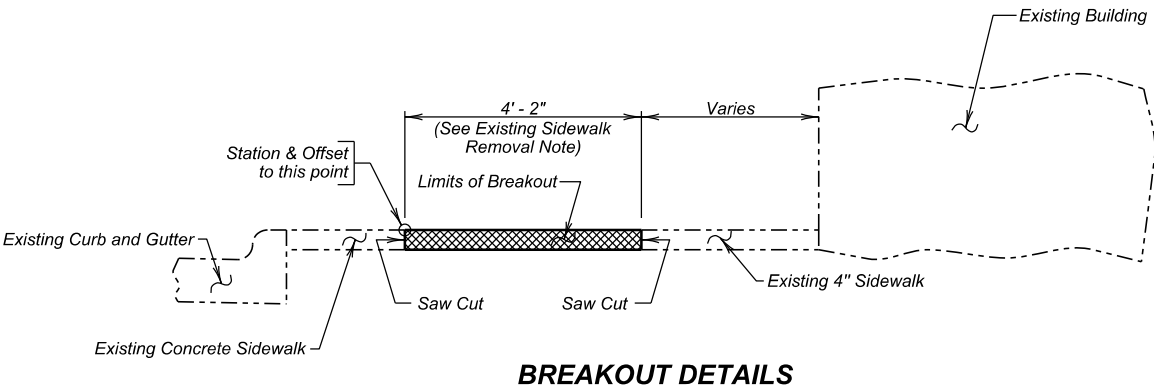
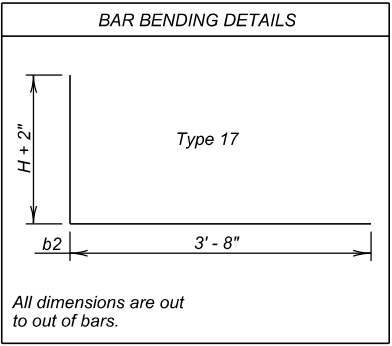
1 OF 3

PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

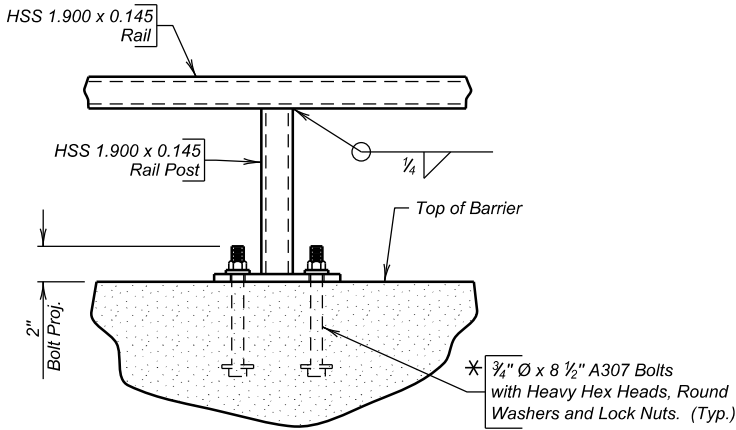
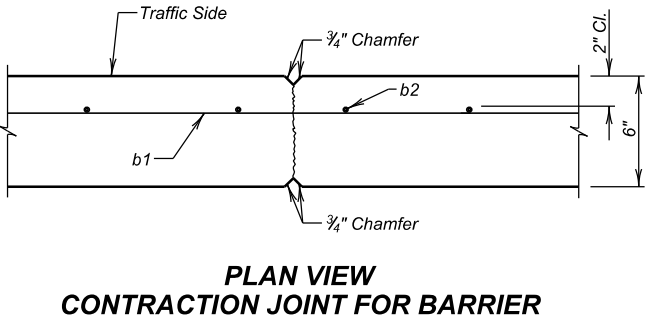
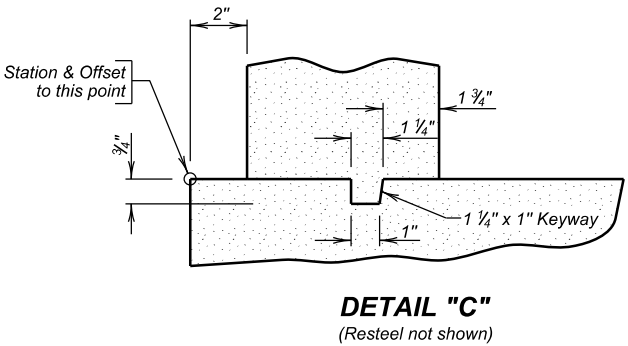
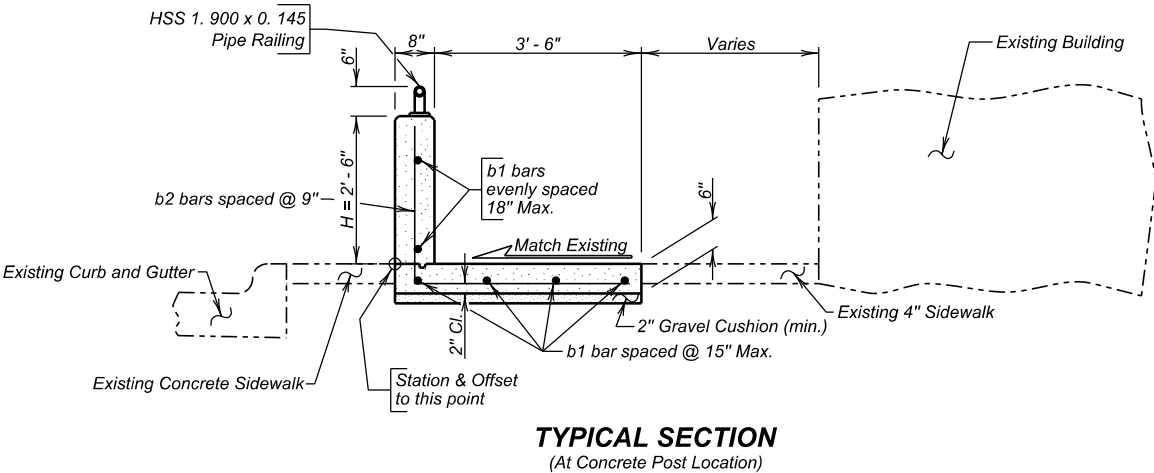
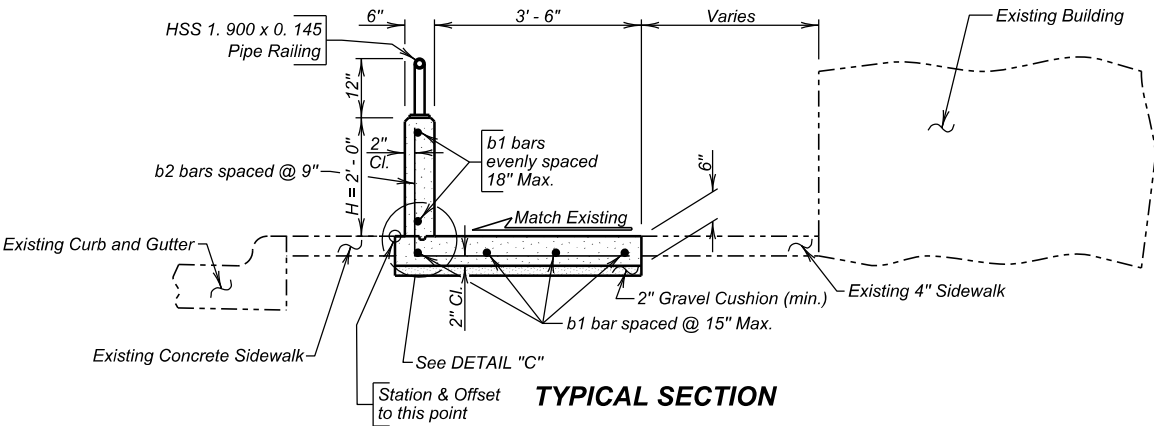
DESIGNED BY PW BUTEI45J	DRAWN BY MDG I45JGA01	CHECKED BY BB Kevin N. Goeden BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	085-471	12	13

Use No. 4 bars for all reinforcing.

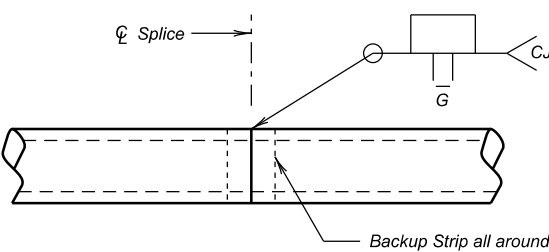


NOTE:
Sidewalk subgrade shall be recompact to the satisfaction of the Engineer.

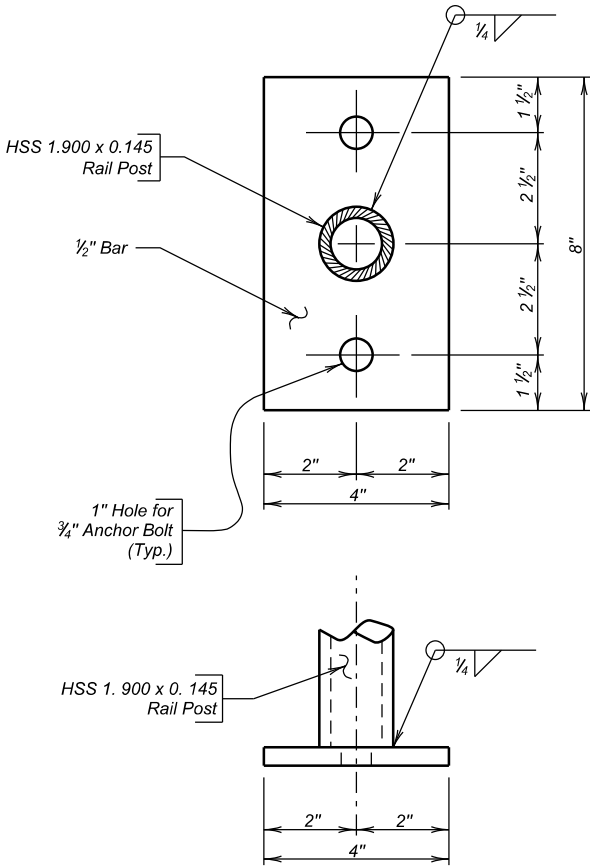
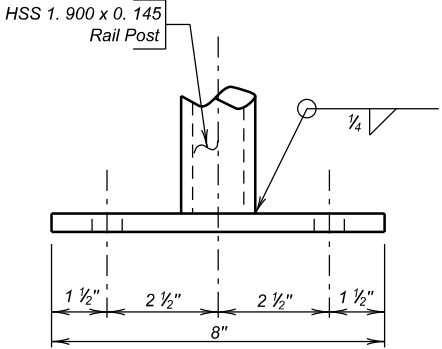


ANCHOR BOLT DETAIL

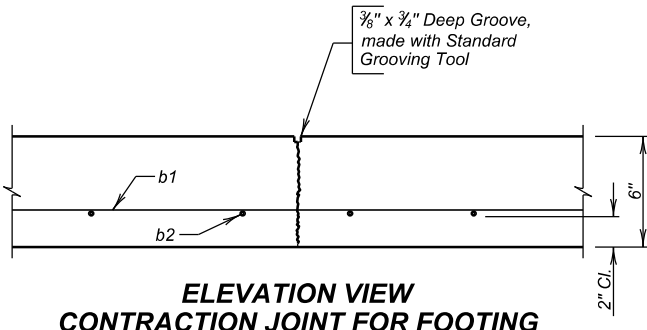
* The contractor may choose to drill and epoxy anchors in place.
See INSTALLING THREADED RODS IN CONCRETE notes.



RAIL SPLICE DETAILS



BASE PLATE DETAILS



BARRIER AND RAIL DETAILS
FOR
SPLASH BARRIER
CITY OF BELLE FOURCHE M 085 471
BUTTE COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2016

DESIGNED BY PW BUTE145J	DRAWN BY MDG I45JGA02	CHECKED BY BB	Kevin N. Boeden BRIDGE ENGINEER
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SPECIFICATIONS

South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.

GENERAL NOTES:

1. A 2 inch thickness of cushion material shall be placed and compacted under the splash barrier. The cushion material shall conform to Section 651.2 C. of the Specifications.
2. All concrete shall be Class M6 and conform to Section 462 of the Specifications.
3. All reinforcing steel shall be epoxy coated and shall conform to ASTM A615, Grade 60.
4. The b1 bars shall be lapped a minimum of 12 inches.
5. A 3/4 inch chamfer shall be provided on all exposed barrier edges.
6. The maximum contraction joint spacing shall be 30 feet. The contraction joints shall be placed to match pavement or curb joints where possible.
7. The barrier surfaces shall receive a finish in accordance with 460.3 L. of the Specifications and the color shall match the existing splash barrier wall. The exposed surface of the retaining wall footing, when used as a sidewalk, shall receive a broom finish.
8. The splash barrier retaining wall is measured to the nearest square foot of front face area for payment.
9. All costs for labor, equipment, preformed expansion joint filler, cushion material, all reinforcing steel and all concrete for splash barrier shall be incidental to the contract unit price per square foot for Type C Concrete Retaining Wall.

SHOP PLANS

Shop plans shall be required as specified by the specifications.

EXISTING SIDEWALK REMOVAL NOTES

1. The existing sidewalk will be removed as shown in BREAKOUT DETAILS. Define breakout limits with 3/4" deep saw cuts.
2. All cost associated with removing the existing sidewalk including labor, equipment and disposal of the removed sidewalk will be paid for at the contract unit price per Sq. Yd. for Remove Concrete Sidewalk.

PIPE HANDRAIL

1. All rail posts shall be built vertical.
2. Steel pipe for railing and posts shall conform to ASTM A500, Grade B. Railpost base plates shall conform to ASTM A709, Grade 36.
3. Anchor Bolts and nuts shall conform to ASTM A307. Washers shall be in accordance with ASTM F436. Hardware shall be galvanized in accordance with ASTM A153. Bolts shall be hex head "Structural" type with heavy hex lock 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. Painting of steel railing shall be done in accordance with Section 411 of the Specifications. The finish color shall be Federal Standard 595B, color 27038 (semi-gloss black).
6. Welding and weld inspection shall be done in accordance with AWS D1.1-(Current Year) Structural Welding Code - Steel.
7. The cost of structural steel, anchor bolts, painting, welding, weld inspection and that which is incidental to the fabrication and installation of the Pipe Handrail shall be incidental to the contract unit price per foot for Pipe Handrail.
8. Alternate rail designs, including aluminum rail, may be submitted through proper channels to the Office of Bridge Design for approval.

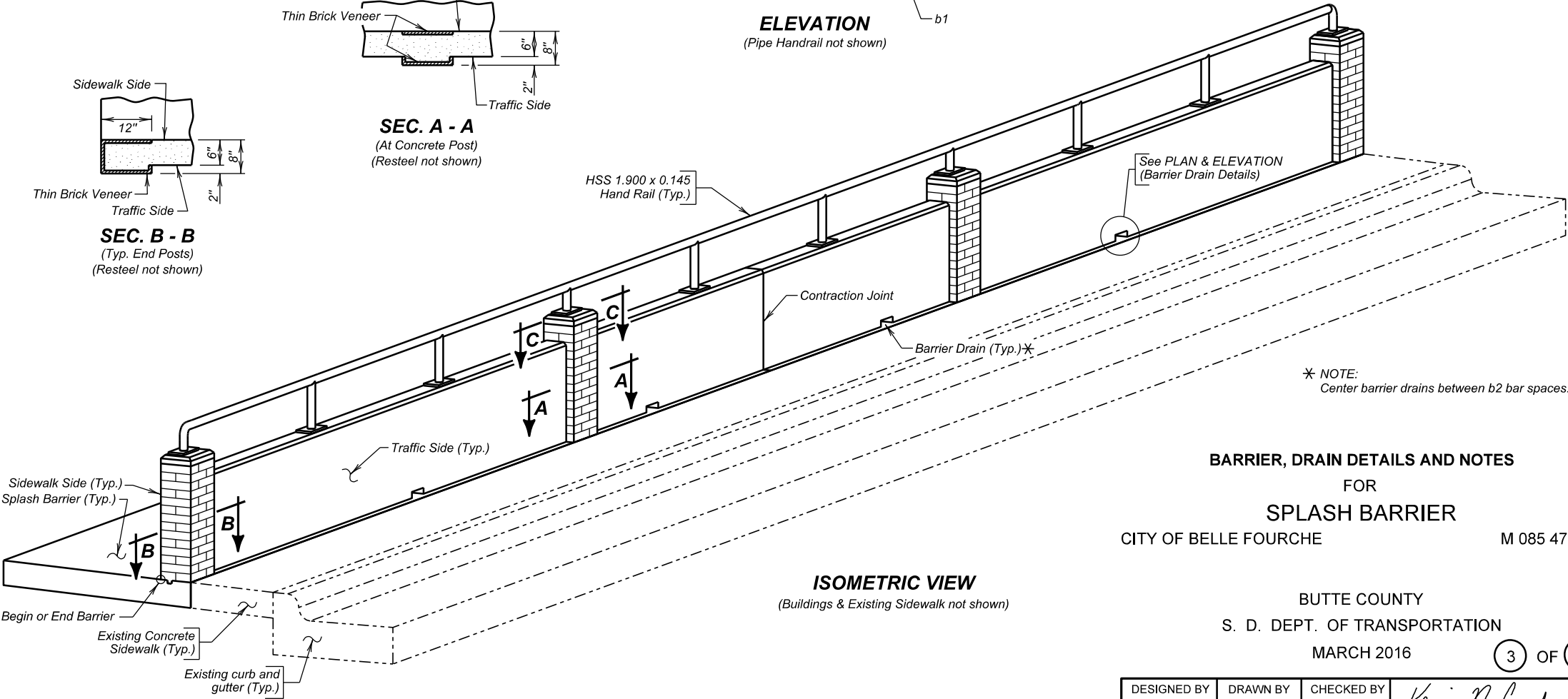
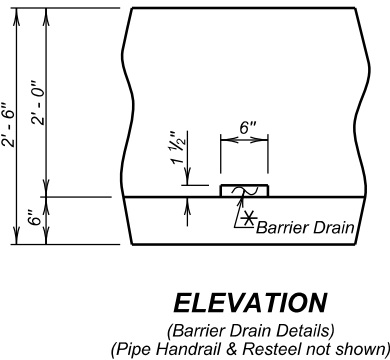
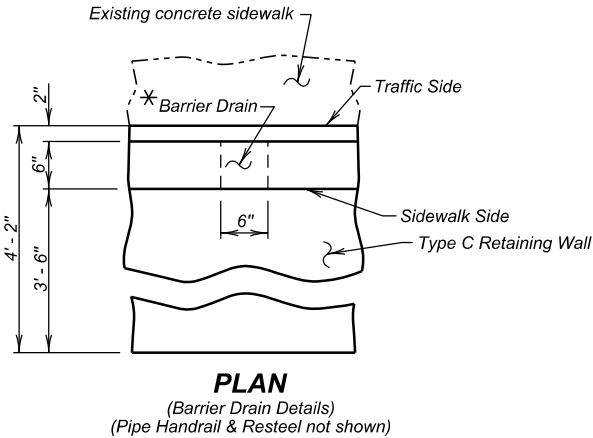
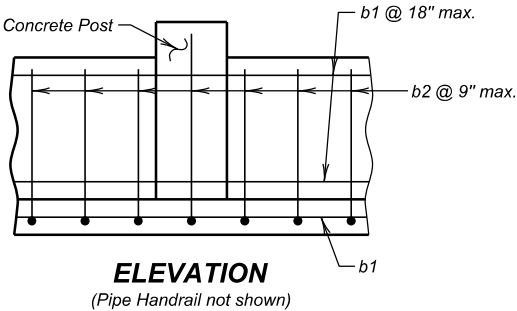
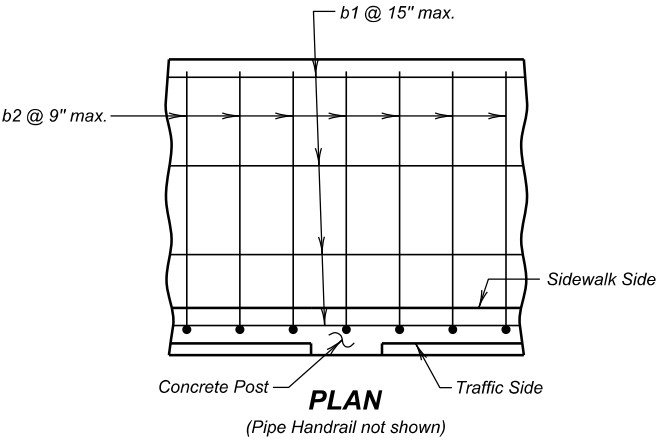
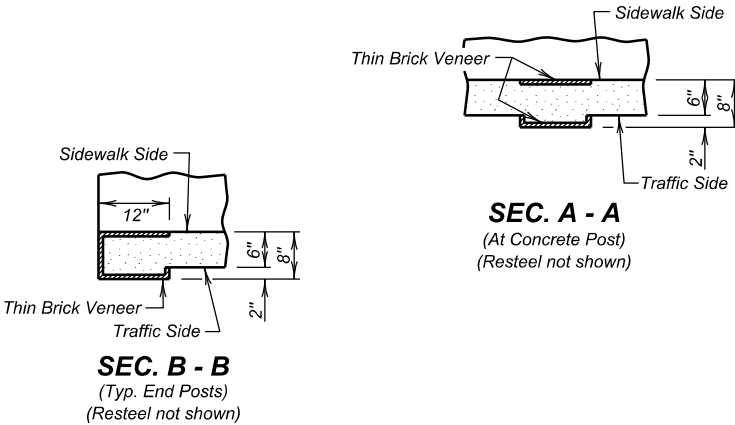
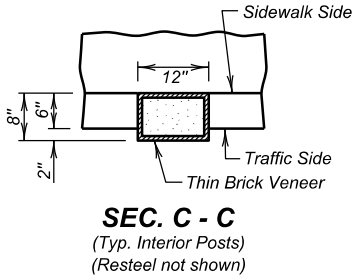
INSTALLING THREADED RODS IN CONCRETE

1. The epoxy resin mixture shall be of a type for bonding steel to hardened concrete and shall conform to AASHTO M235 Type IV (Equivalent to ASTM C881, Type IV).
2. 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 threaded rods or as per the Manufacturer's recommendations. Holes shall not be drilled using core bits. 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.
3. 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 rod. Rotate the steel rod during installation to eliminate voids and ensure complete bonding of the rod. Insertion of the rods by the dipping or painting methods will not be allowed.
4. No loads shall be applied to the epoxy grouted threaded rods until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.
5. Embed threaded rods 8" into existing concrete.
6. Threaded rods shall be 3/4" diameter and conform to ASTM F1554 Grade 55.
7. The cost of drilling holes, epoxy resin, threaded rods, installation and other incidental items shall be included in the contract unit price per foot for Pipe Handrail.

INTEGRAL THIN BRICK VENEER

1. The thin brick veneer shall be placed using a vertical cast in place form liner method. The form liner and brick veneer shall be a compatible system as available from the following manufacturer, or an approved equal.

Rim Snaps TM
Scott System
10777 E. 45th Ave.
Denver, CO 80239
303-373-2500
www.scottsystem.com
2. The brick veneer size shall be 2 1/4" H by 7 5/8" L by 3/16" to 3/4" T and conform to ASTM C1088. The color of the thin brick veneer shall be #10 Summitville Red. A color sample shall be sent to Tammy Williams, Belle Fourche Area Engineer, for approval by the city of Belle Fourche prior to construction of the test section.
3. A test section of wall shall be constructed. The test section shall incorporate a segment of wall and one veneered concrete post. The test section shall have a minimum of 1 foot of wall on each side of the post.
4. All costs associated with furnishing and installing the thin brick veneer including equipment, labor, materials, test section and incidentals shall be incidental to the contract unit price per square foot for Type C Retaining Wall.



* NOTE:
Center barrier drains between b2 bar spaces.

BARRIER, DRAIN DETAILS AND NOTES
FOR
SPLASH BARRIER
CITY OF BELLE FOURCHE M 085 471
BUTTE COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2016

DESIGNED BY PW BUTE145J	DRAWN BY MDG I45JGA03	CHECKED BY BB	Kevin N. Goeden BRIDGE ENGINEER
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