

S	STATE OF	PROJECT	SHEET	TOTAL SHEETS
SOUTH DAKOTA	085-451	1	30	

Plotting Date:

03-13-2019

INDEX OF SECTIONS

Sheet	1	Title Sheet and Layout Map
Sheet	2	Estimate of Quantities and
		Environmental Commitments
Sheet	3-9	General Notes and Tables
Sheet	10	Typical Sections
Sheet	11-12	Traffic Control
Sheet	13	Erosion and Sediment Control
Sheet	14	Horizontal Alignment and Control Data
Sheet	15	Existing Topography and Legend
Sheet	16	Removals
Sheet	17	Curb and Gutter Layout
Sheet	18	Wall Profiles
Sheet	19	Pavement Marking and Signing
Sheets	20-30	Standard Plates





ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

ESTIMATE OF QUANTITIES

085-451 - PCN I5EM				
Bid Item				
Number	Item	Quantity	Unit	
009E0010	Mobilization	Lump Sum	LS	
110E0300	Remove Concrete Curb and/or Gutter	42	Ft	
110E0600	Remove Fence	25	Ft	
110E1140	Remove Concrete Sidewalk	54.0	SqYd	
110E1300	Remove Concrete Retaining Wall	24	Ft	
250E0020	Incidental Work, Grading	Lump Sum	LS	
260E2010	Gravel Cushion	3.3	Ton	
420E0400	Structure Excavation, Miscellaneous	3.4	CuYd	
462E0100	Class M6 Concrete	1.5	CuYd	
470E0020	Pipe Handrail	28.2	Ft	
470E0120	Steel Pedestrian Railing on Sidewalk	38.2	Ft	
480E0200	Epoxy Coated Reinforcing Steel	128	Lb	
530E0300	Type C Concrete Retaining Wall	14.0	SqFt	
530E0310	Special Type C Concrete Retaining Wall	7.0	SqFt	
632E1320	2.0"x2.0" Perforated Tube Post	55	Ft	
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	3.0	SqFt	
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	16.5	SqFt	
632E3520	Remove, Salvage, Relocate, and Reset Traffic Sign	2	Each	
633E0010	Cold Applied Plastic Pavement Marking, 4"	12	Ft	
633E5000	Grooving for Cold Applied Plastic Pavement Marking, 4"	12	Ft	
634E0110	Traffic Control Signs	60.0	SqFt	
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS	
634E0275	Type 3 Barricade	2	Each	
634E0560	Remove Pavement Marking, 4" or Equivalent	80	Ft	
634E0640	Temporary Pavement Marking	2387	Ft	
634E2000	Longitudinal Pedestrian Barricade	24	Ft	
634E2010	Temporary Pedestrian Facility(s)	Lump Sum	LS	
650E0080	Type B68 Concrete Curb and Gutter	32	Ft	
650E4680	Type P8 Concrete Gutter	10	Ft	
651E0060	6" Concrete Sidewalk	410	SqFt	
651E7000	Type 1 Detectable Warnings	20	SqFt	
734E0840	Sediment Control at Type B Reinforced Concrete Drop Inlet	4	Each	

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Section A Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified 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.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: http://www.sddot.com/resources/Manuals/EnvironProcManual.pdf

For guestions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Office at 605-773-3098 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

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 will 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) will 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) will 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 Environmental Office and the Project Engineer.

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

- 1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".
- 2. 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 contract items.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

State Historical Preservation Office (SHPO or THPO) concurrence has not been obtained for this project.

Action Taken/Required:

All earth disturbing activities require a cultural resource review prior to scheduling the pre-construction meeting. 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 will arrange and pay for a record search and when necessary, a cultural resource survey. 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 if the site was previously surveyed; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view of 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 will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. 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.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office to determine an appropriate course of action.

The Contractor is responsible 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 will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

	STATE OF	PROJECT	SHEET	TOTAL
SOUTH DAKOTA	SOUTH DAKOTA	085-451	2	30

reclamation of the waste disposal site(s) will be incidental to the various



UTILITIES

The Contractor shall be aware that the existing utilities shown in the plans were surveyed prior to the design of this project and might have been relocated or replaced by a new utility facility prior to construction of this project or might not require adjustment and may remain in its current location. The Contractor shall contact each utility owner and confirm the status of all existing and new utility facilities. The utility contact information is provided elsewhere in the plans or bidding documents.

WORK ADJACENT TO BUILDINGS

Sidewalk removal immediately adjacent to building facings will be required. This sidewalk removal may require special methods to minimize disturbance to the facing. The Contractor shall be responsible for any damage to the buildings resulting from construction activities.

CITY OF LEAD RESPONSIBILITIES

City of Lead, City Administrator - Mike Stahl, 605-584-1401

The City will be responsible for the following items:

- 1) Removal of signs on decorative fence
- 2) Installation of pavement markings for crosswalk

TRAFFIC CONTROL NOTES

Traffic control devices listed are minimum requirements and, depending on exact construction sequences, may not be a complete inventory of all signs. barricades and devices required. The exact location of all traffic control devices shall be determined at the site. Any damage to public or private property caused by the Contractor's signing shall be repaired at the Contractor's expense. Failure to adequately follow the traffic control plan will result in the project being shut down until deficiencies are corrected.

In the event additional signs are needed, but not listed in the traffic control sheets, payment to the Contractor will be based on the contract unit price per square foot for Traffic Control Signs.

Signs and barricades are periodically required to be moved due to construction operations. They shall be placed at locations where they give sufficient warning to motorists and pedestrians of the condition ahead and shall be relocated as needed to keep signing current at required locations.

Contractor shall be responsible for protection of work area.

SEQUENCE OF OPERATIONS

The following sequence of operation for construction shall be followed unless an alternate plan is submitted by the Contractor and approved by the Engineer a minimum of one week prior to potential implementation.

- 1. Install south curb ramp traffic control and pedestrian detours.
- 2. Install initial erosion control measures.
- 3. Perform project work within the south ramp phase limits.
- 4. Install north ramp traffic control and pedestrian detours.
- 5. Perform project work within the north ramp phase limits.
- 6. Perform remaining project work within the phase limits.
- 7. Remove construction signing.

GENERAL MAINTENANCE OF TRAFFIC

Removing, relocating, covering, and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Contractor. The Contractor shall coordinate with the Engineer to determine which signs will be reset and to verify reset locations. 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.

All R1-1 STOP, R2-1 SPEED LIMIT, and R5-1 DO NOT ENTER signs shall have a mounting height of seven feet even when mounted on portable supports.

Unless otherwise stated in these plans, no work will be allowed during hours of darkness.

The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

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.

Additional traffic control setup details are shown in the standard plate section. Upon approval from the Engineer, these plates shall be used as necessary by the Contractor to complete miscellaneous operations throughout the project. Signs installed for these setups shall be paid accordingly per square foot of the sign installed.

SHEETING FOR TRAFFIC CONTROL SIGNS

All fluorescent orange background material on traffic control signs, all temporary delineators, and all temporary STOP (R1-1), YIELD (R1-2), DO NOT ENTER (R5-1), and WRONG WAY (R5-1a) signs shall conform to the requirements of ASTM D4956 Type IX or XI. All other traffic control signs and background colors shall conform to the requirements of ASTM D4956 Type IV.

TEMPORARY PAVEMENT MARKINGS

Temporary Pavement Markings shall be temporary paint, temporary raised pavement markers or temporary pavement marking tape. The Contractor shall determine the best temporary pavement marking type to use on the project.

- The temporary marking type shall be approved by the Engineer prior to installation.
- The temporary markings shall not permanently damage the new pavements.



PEDESTRIAN TRAFFIC CONTROL

Pedestrian access shall be maintained as shown on the plans.

The Contractor shall submit a detailed plan to the Engineer on how pedestrian traffic shall be accommodated during the various phases of the work at the affected locations. This plan shall be in conformance with the details shown on the plans. The plan shall be submitted no later than two weeks prior to the start of work. The plan may be submitted at the Preconstruction Meeting. Items to be detailed in this plan shall include the following:

Quantities for Longitudinal Pedestrian Barricade have been included in the Traffic Control Items table shown on the traffic control details sheet. • The Contractor shall determine the exact locations of where these items are to be installed to meet the pedestrian requirements discussed above. • The items may or may not need to be installed per the Contractor's methods of meeting the requirements discussed above. Construction details of the Longitudinal Pedestrian Barricade are discussed on this sheet and the following sheet.

Quantities for Longitudinal Pedestrian Barricade have been included in the Traffic Control Items table shown on the traffic control details sheet.

If the sidewalk behind the north ramp is opened up to pedestrian traffic prior to the installation of Steel Pedestrian Railing on Sidewalk, temporary railing shall be installed at the top of the most northern Type C wall and longitudinal pedestrian barricades shall be placed at the top of the stairs and ramp. Temporary railing along the north back wall can be made from wood or another material suitable for positively protecting pedestrians from falling into the ramp landing and bolted into the concrete. Temporary railing shall follow all the same requirements as longitudinal pedestrian barricade discussed on the following sheet and shall be round, smooth, and free of splinters. All costs for temporary railing shall be incidental to the contract lump sum price for "Temporary Pedestrian Facilities".

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.

	STATE OF	PROJECT	SHEET	TOTAL
SOUTH DAKOTA	085-451	3	30	

• The use of various approved traffic control devices to maintain the pedestrians through or past the immediate work area. The detour of pedestrians to alternate routes.

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".



Longitudinal Pedestrian Barrier

Longitudinal Pedestrian Barricade

NOTES:

- 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.

GRADING OPERATIONS

Separate payment will not be made for the common excavation required for the installation of the sidewalk, Type C Retaining Wall, or stairs.

Vaults were encountered during the 2014/2015 US 85 Grading Project that were subsequently filled with low strength concrete flowable fill. There is a known filled vault location for the extents of the south curb ramp. Separate payment will not be made for the removal of the flowable fill for the purposes of the installation of the sidewalk and gravel cushion.

Existing underground power lines that feed the street lights are expected to be impacted by grading work and will require relocation.

All costs for common excavation, removal of low strength concrete flowable fill, and relocation of the underground power lines including removal, hauling, equipment, labor, materials and incidentals necessary shall be incidental to the contract lump sum price for "Incidental Work, Grading".

CONCRETE CURB AND/OR GUTTER REMOVAL

Removal of double curb wall at the locations noted will be paid at the contract unit price per foot for "Remove Concrete Curb and Gutter".

TABLE OF CONCRETE CURB AND/OR GUTTER REMOVAL

				Quantity
Station	to	Station	L/R	(Ft)
30+81		31+09	R	28.0
30+96		31+09	L	13.8
			Total:	42

TABLE OF CONCRETE RETAINING WALL REMOVAL

Station	to	Station	L/R	Quantity (Ft)
30+96		31+20	L	24.0*
			Total	24

*Double Curb Wall Location

TABLE OF SIDEWALK REMOVAL

Station	to	Station	L/R	Quantity (SqYd)
30+81		31+09	R	19.6
30+90		31+30	L	34.4
			Total:	54.0

The existing fence is a decorative steel pedestrian railing. An image of the existing fence can be seen on sheet 6. Fence removal shall be completed in a manner that does not damage the existing fence. All costs for removing the existing fence including removal, hauling, labor, and incidentals necessary shall be incidental to the contract unit price per foot for "Remove Fence".

TABLE OF FENCE REMOVAL

Station to 30+95.2

TABLE OF TYPE B68 CONCRETE CURB AND GUTTER

Station to

30+81.38 30+95.64 31+04.38 31+04.39

TABLE OF TYPE P8 CONCRETE GUTTER

S Station to

30+99.38 30+99.39

yard.

STATE OF	PROJECT	SHEET	TOTAL
SOUTH DAKOTA	085-451	4	30

		Quantity
Station	L/R	(Ft)
31+19.7	R	25
	Total:	25

Station	L/R	*Gravel Cushion Quantity (Ton)	Type B68 Concrete Curb and Gutter Quantity (Ft)
30+99.38	R	1.4	18.0
30+99.39	L	0.3	3.8
31+09.38	R	0.4	5.0
31+09.39	L _	0.4	5.0
	Total:	2.5	32

			Type P8
Station	L/R	*Gravel	Concrete
		Cushion	Curb and
		Quantity	Gutter
		(Ton)	Quantity
			(Ft)
31+04.38	R	0.4	5
31+04.39	L _	0.4	5
	Total:	0.8	10

*The unit weight of gravel cushion was estimated at 1.875 tons per cubic



TYPE 1 DETECTABLE WARNINGS

Detectable warnings will be in compliance with the Americans with Disabilities Act regulations.

The detectable warnings will be installed according to the manufacturer's installation instructions.

A concrete thickness equal to the adjacent concrete sidewalk thickness and 2 inches of granular cushion material will be placed below the Type 1 Detectable Warnings. When concrete is placed below the detectable warnings then the concrete thickness will be transitioned at the rate of 1" per foot to match the adjacent concrete sidewalk thickness.

The detectable warnings will be a brick red color for application in concrete curb ramps.

When Type 1 Detectable Warnings are specified, the Contractor will furnish and install only one of the products listed in the Type 1 Detectable Warnings table.

Type 1 Detectable Warnings

Product

Alertcast Composite **Replaceable Cast in Place**

Detectable Warning Tile Composite Replaceable Wet-Set

Access Tile Composite **Replaceable Cast in Place**

Armorcast Detectable Warning Tile Composite **Replaceable Wet-Set**



Cape Fear Systems, III, LLC 215 South Water Street, Suite 103 Wilmington, NC 28401 877-232-6287 http://www.alerttile.com/

Manufacturer

ADA Solutions, Inc. North Billerica, MA 01862 800-372-0519 http://www.adatile.com

Access Products Inc. 241 Main Street, Suite 100 Buffalo, NY 14203 888-679-4022 http://www.accesstile.com/

Armorcast Products Company 13230 Saticov Street North Hollywood, CA 91605 818-982-3600 http://www.armorcastprod.com/

TABLE OF TYPE 1 DETECTABLE WARNINGS

Station	L /D	Quantity
Station	L/R	(SYFI)
31+01.88	19.61' R	10
31+01.89	15.41' L	10
	Total:	20

TABLE OF 6" CONCRETE SIDEWALK

Station to	Station	L/R	Quantity (SqFt)
30+81, 19.5'	31+09, 26.3'	R	176.3
30+90, 15.4'	31+30, 23.2'	L	224.8
30+99, 13.8'	31+04, 15.1'	L	8.3
		Total:	410

SLIP RESISTANT COATING FOR CONCRETE STAIRWAY

Curing compounds will not be utilized on concrete stairway treads during the concrete curing process. Curing will be accomplished with a double layer of burlap mats and polyethylene sheeting. Burlap needs to remain wet at all times.

The Contractor will apply a 2" wide slip resistant coating at the front of each stairway tread for the full width of the tread.

The slip resistant coating will be a brick red color. The coating will be a single component epoxy and have a minimum coefficient of friction value of 0.9 for dry and 0.9 for wet as determined by ASTM F 609.

The slip resistant coating will be applied in accordance with the manufacturer's recommendations.

All cost for furnishing and applying the slip resistant epoxy coating including equipment, labor, and materials will be incidental to various contract items.

STEEL PEDESTRIAN RAILING ON SIDEWALK AND HANDRAIL

Decorative railing and handrail shall be placed on the north curb ramp and stairway. Decorative railing should be fabricated to match the existing railing that was installed as part of the 2014/2015 US 85 Grading Project in terms of design, color, materials, etc. Pictures of the railing have been provided below. The new railing shall connect to the existing railing leaving no gaps.

Fabricator shall submit shop drawings for the railing and handrail in accordance to the specifications. Post spacing shall be a max of 10'.

Handrail is required on both the north and south sides of the stairs and ramp. A clear width of five feet (measured parallel to the direction of the ramp) should be provided at the bottom landing between the stair's and ramp's handrail returns. The handrail materials and color shall match the existing decorative railing. Handrail shall be mounted on the side of the decorative railing posts at a height of 34 inches by bolting or welding. Refer to the following modified handrail detail for the stairway handrail layout, and refer to standard plate 470.01 for additional handrail details.

All cost for furnishing and installing the handrail including equipment, labor, and materials shall be included in the contract unit price per foot for "Pipe Handrail."





All cost for furnishing and installing the decorative railing including equipment, labor, and materials shall be included in the contract unit price per foot for "Steel Pedestrian Railing on Sidewalk."

STEEL PEDESTRIAN RAILING ON SIDEWALK AND HANDRAIL CONT'D



TABLE OF STEEL PEDESTRIAN RAILING ON SIDEWALK

Station, Offset to	Station, Offset	L/R	Steel Pedestrian Railing (Ft)
30+95.64, 19.7'	31+14.71, 19.6'	L	19.1
30+95.64, 15.2'	30+99.39, 15.2'	L	3.8
31+04.39, 15.2'	31+19.71, 15.2'	L	15.3
		Total:	38.2

TABLE OF PIPE HANDRAIL

Station, Offset to	Station, Offset	L/R	Pipe Handrail (Ft)
30+95.56, 15.4'	30+99.39, 15.4'	L	3.8
30+95.57, 19.4'	30+99.40, 19.4'	L	3.8
31+04.39, 15.4'	31+14.71, 15.4'	L	10.3
31+04.40, 19.4'	31+14.71, 19.4'	L	10.3

Total: 28.2

TABLE OF CONCRETE STAIRWAYS IN TYPE C RETAINING WALLS

Station	Station	I /R	Top Landing Elev	Bottom Landing Elev	No. of Steps	Class M6 Concrete (CuYd)	Epoxy Coated Reinf. Steel (I b)	Structure Excavation, Miscellaneous (CuYd)
30+96	30+99	L	5231.25	5229.63	2	1.44	128	3.36
					Totals:	1.5	128	3.4

CONSTRUCTION STAKING

Grading staking, miscellaneous staking, slope staking, and structure staking will not be measured for payment, but are incidental to the contract lump sum price of "Construction Staking".

TYPE C CONCRETE RETAINING WALL

- 1. All concrete shall be Class M6 and conforming to Section 462.
- 2. All reinforcing steel shall be epoxy coated and conform to ASTM A615, Grade 60.
- 3. All exposed edges shall be chamfered ³/₄ inch.
- 4. Use 1 inch clear cover on all reinforcing steel except as shown.
- 5. All costs for excavation, furnishing and placing backfill and cushion material, labor, equipment, preformed expansion joint filler, all reinforcing steel, and all concrete, shall be incidental to the contract unit price per square foot for "Type C Concrete Retaining Wall."

TABLE OF TYPE C CONCRETE RETAINING WALL

Station	to	Station	L/R	Type C Quantity (SaFt)
30+99.40		31+14.71	L _	13.96
			Total:	14.0

TABLE OF SPECIAL TYPE C CONCRETE RETAINING WALL

Station	n to Station L/R		L/R	Special Type C
				Quantity
				(SqFt)
31+04.3	9	31+19.71	L	6.98
			Total:	7.0

- epoxy injection.
- not be allowed.
- resin manufacturer.
- Grade 60.

STATE OF	PROJECT	SHEET	TOTAL
SOUTH DAKOTA	085-451	6	30

INSTALLING b10 BARS 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. Grade 3 (Equivalent to ASTM C881 Type IV, Grade 3).

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 b10 bars 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

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 bar. Care shall be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping or painting methods will

4. No loads shall be applied to the epoxy grouted b10 bars until the epoxy resin has had sufficient time to cure as specified by the epoxy

5. Embed b10 bars 8" into existing concrete.

6. b10 bars shall be #4 deformed bars conforming to ASTM A615

7. The cost of drilling holes, epoxy resin, b10 bars, installation and other incidental items shall be included in the contract unit price per square foot for Special Type C Concrete Retaining Wall.



SEDIMENT CONTROL AT INLETS	WITH FRAMES AND GRATES	Sedim	nent Catchers	Shaun Jensen Brookings, SD	
This type of sediment control device	e should be used where there is				Phone: 1-605-690-4950
possibly enter the frame and grate. Grate will be installed prior to working	Sediment Control at Inlet with Frame and ng in the vicinity of the drop inlets.	Grate FX, S	lammer, or Ve	rtiPro	Enviroscape ECM, Ltd. Oakwood, OH Phone: 1-419-594-3210
The Contractor will be responsible f	or maintaining and repairing the				www.strawblanket.com
sediment control devices for the du	ration of the project for which sediment		_		
control measures are required. Main storm water from backing up into th	ntenance will be scheduled to prevent e driving lane.	BX Inlet	Sediment Box	es	BX Civil and Construction Dell Rapids, SD Phone: 1-605-428-5483
"Sediment Control at Inlet with Fran each location, regardless of the nur	ne and Grate" will be paid for one time at new of times the sediment control				bx-cc.com
devices are installed, inspected, cle costs associated with furnishing, ins sediment removal, and repairing Se Grate will be incidental to the contra	EZ-Flo and EZ-Catch			Flo-Water, LLC West Des Moines, IA Phone: 1-515-577-6763 www.flo-water.net	
Control at Inlet with Frame and Gra	le.	Basin Bag			Pro Drain Systems Inc
Sediment collection devices will be:		_			Highland, MI Phone: 1-248-329-7001
A commercial made sediment co Control at Inlet with Frame and G device will be installed in reinford	llection device from the "Sediment Grate" list or an approved equal. The red concrete drop inlets in accordance				www.prodrainsystems.com
		GRATES	SEDIWIENT CO		TINLETS WITH FRAMES AND
Sediment Control at Inlet wi	th Frame and Grate Approved List:			Quantity	/
Product	<u>Manufacturer</u>	Station	L/R	(Each)	
InfraSafe Debris Collection	Roval Environmental Systems Inc	31+19	L	2	
Device with filter sock	Stacy, MN	31+19	R	2	
	Phone: 1-800-817-3240 www.royalenterprises.net		Total:	4	
Dandy Curb Sack and Dandy	Dandy Products Inc.				
Curb Bag for curb inlets.	Dublin, OH				
Dandy Bag, Dandy Sack, and	Phone: 1-800-591-2284				
Dandy Pop for median drains.	www.dandyproducts.com				
Silt Trapper	Storm Water Solutions				

Lakeville, MN

DIP Basket

FLEXSTORM Inlet Filters

GR-8 Guard or Combo Guard Phone: 1-952-461-4376 www.silttrapper.com

Skyview Construction Co., LLC Waubay, SD Phone: 1-605-520-0555 www.skyviewconst.com

Inlet and Pipe Protection, Inc. Naperville, IL

ERTEC Environmental Systems LLC Alameda, CA

Phone: 1-866-287-8655 www.inletfilters.com

Phone: 1-866-521-0724 www.ertecsystems.com

STATE OF	PROJECT	SHEET	TOTAL SHEETS
SOUTH DAKOTA	085-451	7	30
	WHILL ROFESSION	11111	
	HINE PROVIDENCE	My "	
	REG. NO.	· Z	
		EZ	
	SLOWER		
	To the second	0	Ē
	H DAKO	219	
	MARCH 13 2	111	
	"Hummun	<i>.</i>	

COLD APPLIED PLASTIC PAVEMENT MARKING

All materials will be applied as per the manufacturer's recommendations.

Cold Applied Plastic Pavement Markings will be 3M Series 380 AW or an approved equal.

GROOVING FOR COLD APPLIED PLASTIC PAVEMENT MARKING

The Contractor will establish a positive means for the removal of the grinding and/or grooving residue. Residue from dry grooving will be vacuumed. Solid residue will be removed from the pavement surfaces before being blown by traffic action or wind. The Contractor will conduct this work to control and minimize airborne dust and similar debris that may become a hazard to motor vehicle operation or nuisance to property owners. Residue from wet grooving will not be permitted to flow across lanes being used by public traffic or into gutter or drainage facilities. Residue, whether in solid or slurry form, will be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state. All costs for removal of grinding and/or grooving residue will be included in the contract unit price per foot for "Grooving for Cold Applied Plastic Pavement Marking".

REMOVE PAVEMENT MARKING, 4" OR EQUIVALENT

Markings that fall outside of the new groove will be obliterated using additional methods approved by the Engineer. Removal of the existing markings will be accomplished without causing damage to the pavement, pavement joints, or joint sealant. The Contractor will repair any damage to the pavement, pavement joints, or joint sealant for no additional payment and at no cost to the State. All costs for materials, labor, and equipment necessary to remove the existing and temporary markings will be incidental to the contract unit price per foot for "Remove Pavement Marking, 4" or Equivalent".

PERMANENT SIGNING

Signs shall be installed in the vertical order shown on the plans.

The Contractor shall furnish all signs, posts, stiffeners, bases, hardware, and labor for installation of permanent signs in size, type, and quantity as shown in these plans and/or as required by the Engineer.

All existing signs, posts, and hardware removed as per these plans remain property of the City and shall be transported to a local location as directed by the local contact by the Contractor. The Contractor shall notify the local contact two days prior to time of delivery so correct placement for storage and inventory of materials can be made upon receipt. The City contact is Mike Stahl at 605-584-1401.

The Contractor shall provide all labor and equipment necessary to install permanent signing and reset existing signs as detailed in these plans and/or as required by the Engineer. Payment for furnishing and installing permanent signs will be paid for at the contract unit price for each type of sign based on sheeting requirements per square foot of sign. All signs with the exception of warning signs shall have ASTM D4956 Type IV (High Intensity) sheeting. All warning signs shall have ASTM D4956 Type XI (Super/Very High Intensity) sheeting.

Payment for new signposts, hardware, bases, and labor will be made at the contract unit price per foot for **2.0**" **x 2.0**" **PERFORATED TUBE POST**. Measurement of post lengths for payment will be for above ground post

lengths as field measured. The sign post contract items shall include post bases and all hardware. The lengths of the posts in the sign tables are approximate lengths only. The post height value shown on the plans is the post height needed above the ground plus an additional 3" for connecting to the stiffener sleeve and anchor. The post lengths shall be verified by the Contractor. The Contractor is urged to cut posts to length on job site after site by site verification of post length. The installation height of the signs shall not exceed the minimum by more than one (1) foot.

The Contractor shall use Telespar brand (or equals) posts and bases on all new standard highway signs as approved by the Engineer. All post materials shall conform to Section 982 of the Specifications, and be in accordance with ASTM specifications. The height of the post shall not exceed the minimum height needed by more than 0.5 feet. Any portion that extends above the sign shall be cut off. No separate payment will be made for cutting the post or for that length cut off. All posts and bases shall by accompanied by Certificates of Compliance and shall meet all safety standards as set forth in the current edition of the Manual on Uniform Traffic Control Devices (MUTCD).

The Contractor shall stake the signs and the Engineer will verify the location prior to installation. If a reference location is provided, the Contractor shall reset their measuring device to the reported reference distance provide prior to continuing to stake sign locations. The lateral distance from the roadway and the height of the sign shall be established by the Contractor according to the Standard Plates in the plans and the MUTCD or as determined by the Engineer.

When signs are vertically mounted in succession, they shall be 1-2 inches apart.

Contractor shall coordinate work such that traffic cannot see both an existing sign and a new sign without work actually in progress at that location. If removal of existing signs cannot be completed at the same time as the installation of new signs, the Contractor shall adequately cover the existing sign prior to leaving that specific work site.

PERFORATED TUBE POST

The Contractor shall use Telespar® brand (or approved equal) posts and bases on all new standard highway signs as approved by the Engineer.

Sign posts and bases shall be constructed in accordance with Special Detail L21.

Post quantities for perforated tube posts will be determined by measurement of each type.

Each type of perforated tube posts will be paid for at the contract unit price per Each. Payment will be full compensation for furnishing and installing materials, including post anchors, anchor sleeves, mounting hardware, telescoped inner post sections, and anchor plates.

HARDWARE

Aluminum U-Channel stiffeners shall be used on all standard highway signs 36 inches and greater in width and shall conform to the requirements of ASTM B221 Alloy 6063-T6 or 6061-T6. The U-Channel shall be 2 inches in width and free of holes. The U-Channel stiffeners shall also be used to connect various signs and perforated tube posts together so that an entire sign can be erected as a single installation. Stiffeners may be fastened to signs by use of 1/4" drive rivets with a minimum of one on each end and one centered between each post. Installation of the stiffeners shall be incidental to other contract items.

All perforated tube signpost base material shall be fastened with 5/16" diameter corner bolts (Grade 2).

The Contractor shall use 3/8" rust proof machine sign bolts, flat metal washers, neoprene washers (against the sign sheeting), lock washers and nuts to fasten the sign to the post and to the support. A minimum of two bolts shall extend through the support.

During installation of sign posts, Contractor shall take caution to not damage any existing or proposed underground utilities.

For posts that are to be installed in concrete, a 6" diameter Schedule 40 PVC pipe shall be used to create a hole in the concrete where the post will be installed. Post shall be centered in the opening. PVC pipe length shall be adequate according to proposed concrete depth and shall be considered incidental to the post item. The PVC pipe shall permanently remain in the concrete. The top of the PVC pipe shall be recessed 1/2" into the concrete. The Contractor shall place/trowel concrete over the top of the PVC pipe edges to "hide" the PVC pipe edges from view.

All costs, labor and materials for furnish and install the hardware required for all other signs shown on the plans shall be incidental to the various signing contract items.

FLAT ALUMINUM SIGNS / NON-REMOVABLE COPY HIGH INTENSITY & SUPER/VERY HIGH INTENSITY

The payment for new signs in the Table of Permanent Signing shall include all labor (including installing date decals), equipment, and materials to complete the work, and shall be paid for at the contract unit price per square foot for "Flat Aluminum Sign, Nonremovable Copy High Intensity" or "Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity".

STATE OF	PROJECT	SHEET	TOTAL
SOUTH DAKOTA	085-451	8	30



				Permanent Sign	Installati	on Table					
Alie	gnment		Sign I	Data					Sign Salvage/Install Data	Pos	t Data
Station	Offset	Sign Description	Furnished (F), Salvaged and Reset (S&R) or Salvaged (S)	Sign Code	Sign Width (in)	Sign Height (in)	Sign Area HI (SqFt)	Sign Area VHI (SqFt)	Remove, Salvage, Relocate, and Reset Traffic Sign (Each)	Use Street Light (SL), use 1 Post (1P), Existing Post (EP)	2.0"x2.0" Perforated Tube Post Height (Ft)
30+38.04	21.5' R	2 hour parking 8 am to 5 pm Mon-Fri Left Arrow	S&R						1	1P	12.5
		Commercial Loading Zone Only 7 am to 5 pm Right Arrow	S&R						1		
30+76.31	20.3' R	No Parking Any Time Arrow Left	F	R7-1	12	18	1.5			EP	
30+96.88	20.7' R	Pedestrian	F	W11-2	30	30		6.25		1P	15
		Downward Diagonal Arrow	F	W16-7pL	24	12		2			
31+06.89	14.7' L	Pedestrian	F	W11-2	30	30		6.25		1P	15
		Downward Diagonal Arrow	F	W16-7pL	24	12		2			
31+24.81	21.0' R	No Parking Any Time Arrow Left	F	R7-1	12	18	1.5			1P	12.5
						Total	3	16.5	2		55

STATE OF	PROJECT	SHEET	TOTAL SHEETS
SOUTH DAKOTA	085-451	9	30



TYPICAL SECTIONS



	STATE OF	PROJECT	SHEET	TOTAL SHEETS
SOUTH DAKOTA	085-451	10 3	30	

TRAFFIC CONTROL SIGNING DETAILS





SIDEWALK CLOSED AHEAD CROSS HERE

R9**-**11L 24"X18"

TYPE 3 BARRICADE

ITEMIZED LIST FOR TRAFFIC CONTROL SIG

SIGN CODE	SIGN DESCRIPTION	NORTH RAMP	SOUTH RAMP	TOTAL	SIGN SIZE	SQFT PER SIGN	TOTAL SQFT
W20-1	ROAD WORK AHEAD	2	2	2	36"X36"	9.0	18.0
W24-1L	DOUBLE REVERSE CURVE (LEFT)	1	1	1	36"X36"	9.0	9.0
W24-1R	DOUBLE REVERSE CURVE (RIGHT)	1	1	1	36"X36"	9.0	9.0
R8-3	NO PARKING	2	3	3	24"X24"	4.0	12.0
R9-11L	SIDEWALK CLOSED AHEAD CROSS HERE (LEFT)		1	1	24"X18"	3.0	3.0
R9-11R	SIDEWALK CLOSED AHEAD CROSS HERE (RIGHT)	1	1	1	24"X18"	3.0	3.0
R9-9	SIDEWALK CLOSED	3	2	3	24"X12"	2.0	6.0
				CONVENTIONAL	- ROAD TRAFF	IC CONTROL	60.0

OTHER TRAFFIC CONTROL ITEMS				
ITEM DESCRIPTION	QUANTITY			
Traffic Control, Miscellaneous	Lump Sum			
Type 3 Barricade	2 Each			
Temporary Pavement Marking	2387 Ft			
Longitudinal Pedestrian Barricade	24 Ft			

	STATE OF		PROJECT	SHEET	TOTAL SHEETS
	SOUTH DAKOTA		085-451	11	30
	Plotting Date:	03-1	13-2019	•	
				_	
SIDE	WALK CLOS	SED	SIDEWA	<u> </u>	
	AHEAD	▶∥	CLOSE	D	
	ROSS HERE				
			R9-9		
	R9-11R 24"X18"		24"X12	"	
				14	
		, III	PROFESSION	1111	
		Ĩ	REG. NO		۲
		ST/	13631.0	5	
		E C	STACIA BURKE	E A	







HORIZONTAL ALIGNMENT DATA

MAINLINE

Туре	Station			<u>Northing</u>	<u>Easting</u>
POB	30+00.00			212000.757	983347.183
		TL= 66.06	S 89°12'13" E		
PI	30+66.06			211999.839	983413.235
		TL= 183.94	N 88°42'29" E		
POE	32+50.00			212003.986	983597.129

CONTROL DATA

HORIZONTAL AND VERTICAL CONTROL POINTS						
POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP7A	-	-	REFMRK - PK IN BRICK NE COR POST OFFICE PARK LOT	211970.6661	983327.7383	5235.0015
KE925	-	-	PROP CORN	211978.2493	983659.0231	5219.8860
KE926	-	-	PROP CORN	211986.8241	983753.3089	5215.4274
KE927	-	-	PROP CORN	211992.9918	983803.4352	5213.4625

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone (NAD 83/2011); epoch 2010.00 Geoid 03; SF = 0.99976274

The elevations shown on this sheet are based on NAVD 88.

STATE OF	PROJECT	SHEET	TOTAL SHEETS
DAKOTA	085-451	14	30
DAKOTA	085-451	14	30
	AS DE ROFESSION REG. NO. 13631 STACIA BURK TH DAKOF	ENCINEER THI	

LEGEND

Anchor Antenna Approach Assumed Corner Azimuth Marker BBQ Grill/ Fireplace Bearing Tree Bench Mark Box Culvert Bridge Brush Buildings Bulk Tank Cattle Guard Cemetery Centerline Cistern Clothes Line Commercial Sign Double Face Commercial Sign One Post Commercial Sign Overhead Commercial Sign Two Post Concrete Symbol Creek Edge Curb/Gutter Curb Dam Grade/Dike/Levee Deck Edge Ditch Block Doorway Threshold Drainage Profile Drop Inlet Edge Of Asphalt Edge Of Concrete Edge Of Gravel Edge Of Other Edge Of Shoulder Elec. Trans./Power Jct. Box Fence Barbwire Fence Chainlink Fence Electric Fence Misc. Fence Rock Fence Snow Fence Wood Fence Woven Fire Hydrant Flag Pole Flower Bed Gas Valve Or Meter Gas Pump Island Grain Bin Guardrail Guide Sign One Post Guide Sign Two Post Gutter Guy Pole Haystack Hedge

 \leftarrow

<u></u>

3

▲

▲ **6**7

▲

622533

 \blacksquare

÷

C

þ

المحصا

þ

_ _ _ _

.....

.....

_ - _ -

P

ති

Ρ

7777

0

()

þ

B

22222

₽ ≫

<u>675</u>23

Highway R.O.W. Marker	•
Interstate Close Gate	1
Iron Pin	•
Irrigation Ditch	
Lake Edge	
Lawn Sprinkler	٠
Mailbox	۵
Manhole Electric	0
Manhole Gas	O
Manhole Misc	Ø
Manhole Sanitary Sewer	Ø
Manhole Storm Sewer	Ø
Manhole Telephone	Ø
Manhole Water	0
Merry-Go-Round	*
Microwave Radio Tower	夲
Misc. Line	
Misc. Property Corner	L
Misc. Post	o
Overhang Or Encroachment	
Overhead Utility Line	— OH —
Parking Meter	Ŷ
Pedestrian Push Button Pole	0
Pipe With End Section	→ — →
Pipe With Headwall	H
Pipe Without End Section	
Playground Slide	
Playground Swing	ж—⊢-к
Power And Light Pole	
Power And Telephone Pole	🖕 🤘
Power Meter	•
Power Pole	Ø
Power Pole And Transformer	-\$-
Power Tower Structure	Å
Propane Tank	
Property Pipe	\odot
Property Pipe With Cap	۲
Property Stone	PS
Public Telephone	d
Railroad Crossing Signal	-🖓
Railroad Milepost Marker	
Railroad Profile	
Railroad R.O.W. Marker	•
Railroad Signs	þ
Railroad Switch	
Railroad Track	
Railroad Trestle	
Rebar	Æ
Rebar With Cap	\triangle
Reference Mark	æ
Regulatory Sign One Post	þ
Regulatory Sign Two Post	þ þ
Retaining Wall	
Riprap	2000000
River Edge	
Rock And Wire Baskets	
Rockpiles	<i>4</i> 93
Satellite Dish	4
Septic Tank	4

Shrub Tree	\$
Sidewalk	
Sign Face	
Sign Post	0
Slough Or Marsh	$\frac{10000}{00000} =$
Spring	Æ
Stream Gauge	ø
Street Marker	6
Subsurface Utility Exploration Test Hole	S
Telephone Fiber Optics	— T/F —
Telephone Junction Box	
Telephone Pole	Ø
Television Cable Jct Box	0
Television Tower	夲
Test Wells/Bore Holes	۸
Traffic Signal	*
Trash Barrel	0
Tree Belt	~~~~
Tree Coniferous	*
Tree Deciduous	0
Tree Stumps	A
Triangulation Station	⚠
Underground Electric Line	— P —
Underground Gas Line	— G —
Underground High Pressure Gas Line	— HG —
Underground Sanitary Sewer	— s —
Underground Storm Sewer	= s =
Underground Tank	_
Underground Telephone Line	— т —
Underground Television Cable	— TV —
Underground Water Line	— w —
Warning Sign One Post	þ
Warning Sign Two Post	ĕ
Water Fountain	1
Water Hydrant	CP CP
	⊗ ∧
Vvater Iower	<u>///</u>
vvater valve	0
vvater vvell	\odot
vvinamili Minerusell	۲
witness Corner	WO

	STATE OF	PROJEC	Т	SHEET	TOTAL SHEETS
	SOUTH DAKOTA	085-45	51	15	30
	Plotting Date:	03-13-2019			
State and Natio	onal Line	_			
County Line					
Section Line					
Quarter Line					
Sixteenth Line					
Property Line	•				
	ine				
	Lino				
Cut and Fill Lin	nits				
Control of Acce	255	•		 	
New Control of	f Access			- 	
Proposed ROV	V				
(After Property	Disposal)				
			_		
Drainage Arrow	N				
Remove Conci	rete Paven	nent			
Remove Conci	rete Drivev	vay Pavement			
Remove Aspha	alt Concret	e Pavement			
			<u> </u>		
Remove Conci	rete Sidew	alk			
Remove Conci	rete Media	n Pavement			
Remove Conc	rete Curb a	and/or Gutter	_		
Detectable Wa	arning				
Pedestrian Pu	sh Button	Pole	٢٩٦		
and 30" x 48"	Clear Space	ce			
with 1.5% Slop	be		Φ		

PROJECT

SHEET TOTAL









_

GENERAL NOTES:

1. All concrete shall be Class M6 in accordance with Section 462.

- 2. All reinforcing steel shall be epoxy coated and shall conform to ASTM A615, Grade 60. Epoxy coating shall conform to ASTM A775.
- Use 2 inch clear cover on all reinforcing steel except as shown.
- 4. All concrete shall be thoroughly tamped and spaded against forms to leave a smooth surface without honeycomb. Finish of step treads to be steel troweled and then brush finished with brush strokes on treads at right angles to width. All exposed edges shall be chamfered 3/4 inch except as shown.
- Place concrete on undisturbed soil. If backfilling is necessary, compact with mechanical tampers to the satisfaction of the Engineer.
- 6. The concrete sidewalk shall be constructed in accordance with Section 651.
- Cost of the double thickness of ½ inch Preformed Expansion Joint Filler shall be incidental to the contract unit price per cubic yard for "Class M6 Concrete".

SPECIAL NOTE:

Details for construction of the concrete stairway and handrails shown on sheet 2 of 2 are typical only, and are not intended to depict specific installations. Adjust the length of the stairway as required to fit specific site requirements. Use the formulas given on this sheet to adjust the unit price bid quantities to the required length of the stairway. Refer to project plans for requirements of individual locations. Alternate design details may be submitted through proper channels to the Office of Bridge Design for approval, including aluminum handrail installation.



ESTIMATED QUANTITIES				
ITEM	UNIT	△ QUANTITY		
Class M6 Concrete	Cu. Yd.	$0.87 + 0.23w + 0.04h^2$		
Structure Excavation, Miscellaneous	Cu. Yd.	1.79 + 0.59w + 0.15h ²		
Epoxy Coated Reinforcing Steel	Lb.	ø		
Pipe Handrail	Ft.	6.22 + 2.24w		
Sidewalk	Sq. Ft.	33		

 \triangle w = Number of steps NOT including landings (i. e. w = 9 in Sec. A - A).

August 8, 2014

460.20

Sheet I of 2



CONCRETE STAIRWAY FOR TYPE C CONCRETE RETAINING WALL



		-	
STATE OF SOUTH	PROJECT	SHEET	TOTAL SHEETS
DAKOTA	085-451		30
$\frac{2^{"} Cl}{b2 \text{ or } b3}$	g_2 g_2 g_1 g_2 g_1 g_1 g_2 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_1 g_2 g_1 g_1 g_2 g_1 g_1 g_2 g_1 g_2 g_1 g_2 g_2 g_1 g_2 g_2 g_1 g_2 g_2 g_1 g_2 g_2 g_1 g_2 g_2 g_2 g_1 g_2 g_2 g_2 g_2 g_2 g_2 g_2 g_2 g_2 g_2 g_2 g_2 g_3 g_1 g_2 g_2 g_3 g_2 g_3 g_2 g_3 g_3 g_1 g_2 g_2 g_3 g_2 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3 g_3		
6'-0" Post 6'-0" Post Max.) (Max.) 6" of 6 all 6" of 7" of 6 g2 of 7" of 7" of 6 g2 of 7" of 7" of 6 g2 of 7" of 7" of 7" of 6 g2 of 7" of	" " " " " " " " " " " " " "		
STAIRWAY FOR TE RETAINING WALL	PLATE NUMBER 460.20 Steet 2 of 2		
	analizesses Addigotes Codi		



STATE OF	PROJECT	SHEET	TOTAL SHEETS
DAKOTA	085-451	21	30





	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		085-451	22	30









GENERAL NOTES:

When concrete curb and gutter longitudinally adjoins of attachment shall be by one of the methods shown

See Standard Plate 650.90 for expansion and contrac



STATE OF	PROJECT	SHEET	TOTAL SHEETS
SOUTH DAKOTA	085-451	24	30

	The stated radii on the plans and cross sections refer to this line and it shall also be the basis for horizontal
	and payment.
	A.
÷ ۲	
<u> </u>	¥.
_	

1.00	
Cu.Yd. Per .in.Ft.	Lin.Ft. Per Cu.Yd.
0.057	17.7
0.065	15.4
0.073	13.7
0.077	13.0
0.081	12.3
0.085	11.7
0.090	11.2
0.094	10.7
0.098	10.2
0.102	9.8
0.106	9.4

E CURB AND GUTTER	September 6, 2008 PLATE NUMBER 650.01
	September 6, 2008
tion joints in the cu	rb and gutter.
new concrete pavem on Standard Plate 3	ent,the method 380.11.





		PROJECT	QUEET	TOTAL
	STATE OF SOUTH DAKOTA	085-451	25	SHEETS
			2	
]		
—1/2" Prefor (See Specit Plate 651.7	med Expar fications 5)	nsion Joint Filler and Standard		
The edge of concrete adj detectable w but may be c 2 detectable	the curb acent to arnings s curved wh warnings.	and gutter the type I hall be straight, en using type		
ference point mp as shown	t for loc in the pl	ation of curb ans.		
~~	\searrow	Turning Space Concrete		
the second to	6" F			
		<u>1'-6" 1'-6"</u> (Тур.) (Тур.)		
Length ad and ted (Typ.)	-Rebar F of Cond	Placed at Center crete Slab (Typ.)		
ISOM f Turning Sp ionolithic with hen this det	ETRIC V ace conci n surrour ail is not	IEW rete is placed nding concrete, necessary,)		
— ½" Prefor (See Speci Plate 651.7	med Expar fications '5)	nsion Joint Filler and Standard		
The edge of concrete ad detectable w but may be 2 detectable	the curt jacent to varnings s curved wi warnings	o and gutter the type I shall be straight, hen using type 5.		
ference poin imp as shown	t for loc in the p	cation of curb lans.		
		September 6, 2015		
CURB RAMP	ומ	PLATE NUMBER 651.01		
AK LUKB KAM	r)			



STATE OF	PROJECT	SHEET	TOTAL SHEETS
SOUTH DAKOTA	085-451	26	30

	Sheet 3 of 3			
CURB RAMP LAR CURB RAMP)	PLATE NUMBER 651.01			
	September 6, 2015			
varnings including labor, r grout, and necessary of foot for "Type 2 Detecto	or. All costs equipment, grinding shall able Warnings".			
the person according for				
the nearest square for varnings including labor, e	ot. All costs equipment,			
gutter bid item when curb and g shall be measured and paid for corresponding PCC fillet section bid				
ured and paid for at the contract				
in DETAIL E, the cost of shall be incidental to th				
he curb ramp shall be m t for the corresponding ctable warnings shall be				
o fit the plan specified tectable warnings shall b				
the detectable warnings	are clean			
ljacent to the detectabl	e warnings			
ough the area of the r	amp opening.			
by coarse brooming tra	nsverse to			
ne curb ramp, free of so	ags and			
mp flares when a 2'curt	o transition			
is shown at the center t the location stated in	of the plans.			
shown in the drawings.T ith a PCC fillet section	he curb or curb			
ings are shown in the dr	rawings.			





SOUTH DAKOTA 085-451 27 30		STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL
			085-451	27	30

* The curb transition slope shall match the curb ramp slope. Curb ramp slo designed at 7.5% unless stated otherwise in the plans. The curb ramp may maximum slope of 8.3% at any location of the curb ramp and shall not ex in length unless stated otherwise in the plans. The curb transitions and lengths shall be adjusted as necessary to meet all slope and length requi based on field geometrics.	pes are / have a ceed 15' curb ramp rements	
* The cross slope of the ramp shall not be steeper than 2% and the ramp unless stated otherwise in the plans. Plans are designed using a 1.5% cro for the ramp unless stated otherwise in the plans.	width is 5' ss slope	
* The slope in the turning space shall not be steeper than 2% in any direc pedestrian travel. Plans are designed using a 1.5% slope unless stated ot in the plans.	tion of herwise	
* The turning space is 5' x 5' unless stated otherwise in the plans.		
The curb height shall be 6" unless stated otherwise in the plans.		
See Detail D See Detail C See Detail C See Detail C See Detail C See Detail C See Detail C Supe shall	lbe % and 8.3% nt Filler Indard	
SECTION A-A		
DETAIL D	Thickness	
bar spaced at -3" C. to C. No. 4 Rebar (Typ.) DETAIL D (Use this detail when the curb height is greater them 5" or lass them 12")	b Transition	
	September 6, 2015	
ublished Date: 1st Otr. 2019	PLATE NUMBER 651.03	

GENERAL NOTES:

For illustrative purpose only, type I detectable warnings are shown in the drawings.

For illustrative purpose only, a PCC fillet section is shown in one of the drawings. The curb ramp depicted on this standard plate may be used with a PCC fillet section or with curb and gutter.

The curb ramp shall be placed at the location stated in the plans.

Sidewalk adjacent to the curb ramp shall be as shown in the plans.

Care shall be taken to ensure a uniform grade on the curb ramp, free of sags and short grade changes.

Surface texture of the curb ramp shall be obtained by coarse brooming transverse to the slope of the curb ramp.

The normal gutter line profile shall be maintained through the area of the ramp opening.

Joints shall be sawed or tooled into the concrete adjacent to the detectable warnings to alleviate possible corner cracking (see plan view for joint location).

Care shall be taken to ensure that the surface of the detectable warnings are clean and maintains a uniform color.

The detectable warnings shall be cut as necessary to fit the plan specified limits of the detectable warnings. Cost for cutting the detectable warnings shall be incidental to the corresponding detectable warning bid item.

When curb height is greater than 6" and less than 12", reinforcing steel is required in accordance with the detail on sheet 2 of 3. The reinforcing steel shall conform to ASTM A615, Grade 60. Cost for furnishing and installing the reinforcing steel shall be incidental to the contract unit price per square foot for the corresponding concrete sidewalk bid item.

There will be no separate payment for curb ramps. The curb ramp shall be measured and paid for at the contract unit price per square foot for the corresponding concrete sidewalk bid item. The square foot area of the detectable warnings and the curb along the short radius shall be included in the measured and paid for quantity of sidewalk.

The curb transitions and ramp opening shall be measured and paid for at the contract unit price per foot for the corresponding curb and gutter bid item when curb and gutter is used. The curb transitions and ramp opening shall be measured and paid for at the contract unit price per square yard for the corresponding PCC fillet section bid item when a PCC fillet section is used.

The type I detectable warnings shall be measured to the nearest square foot. All costs for furnishing and installing the type I detectable warnings including labor, equipment, materials, and incidentals shall be paid for at the contract unit price per square foot for "Type I Detectable Warnings".

The type 2 detectable warnings shall be measured to the nearest square foot. All costs for furnishing and installing the type 2 detectable warnings including labor, equipment, and materials, including adhesive, necessary sealant or grout, and necessary grinding shall be paid for at the contract unit price per square foot for "Type 2 Detectable Warnings".

			September 6, 2015
	S D D	TYPE 3 CURB RAMP	PLATE NUMBER 651.03
Published Date: 1st Qtr. 2019		(PARALLEL CURB RAMP)	Sheet 3 of 3

0111201	SHEETS
SOUTH DAKOTA 085-451 28	30





	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		085-451	29	30

