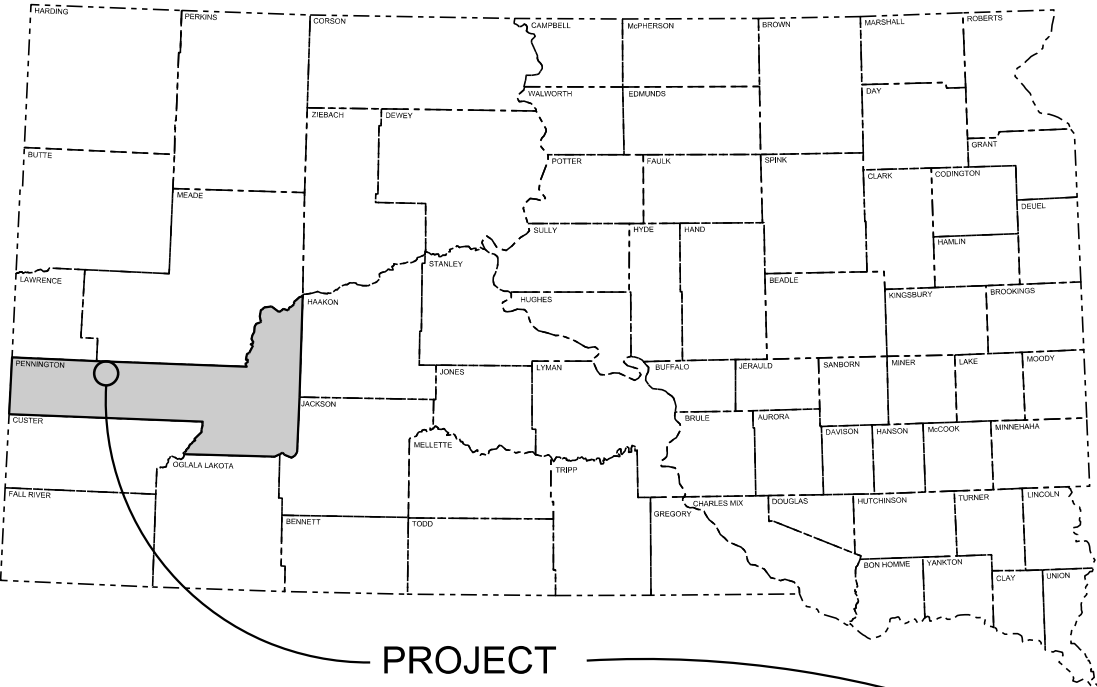


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Plotted From - TRRC12608

Plotted From -



STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT 410D404
RAPID CITY REGION COMPLEX
PENNINGTON COUNTY

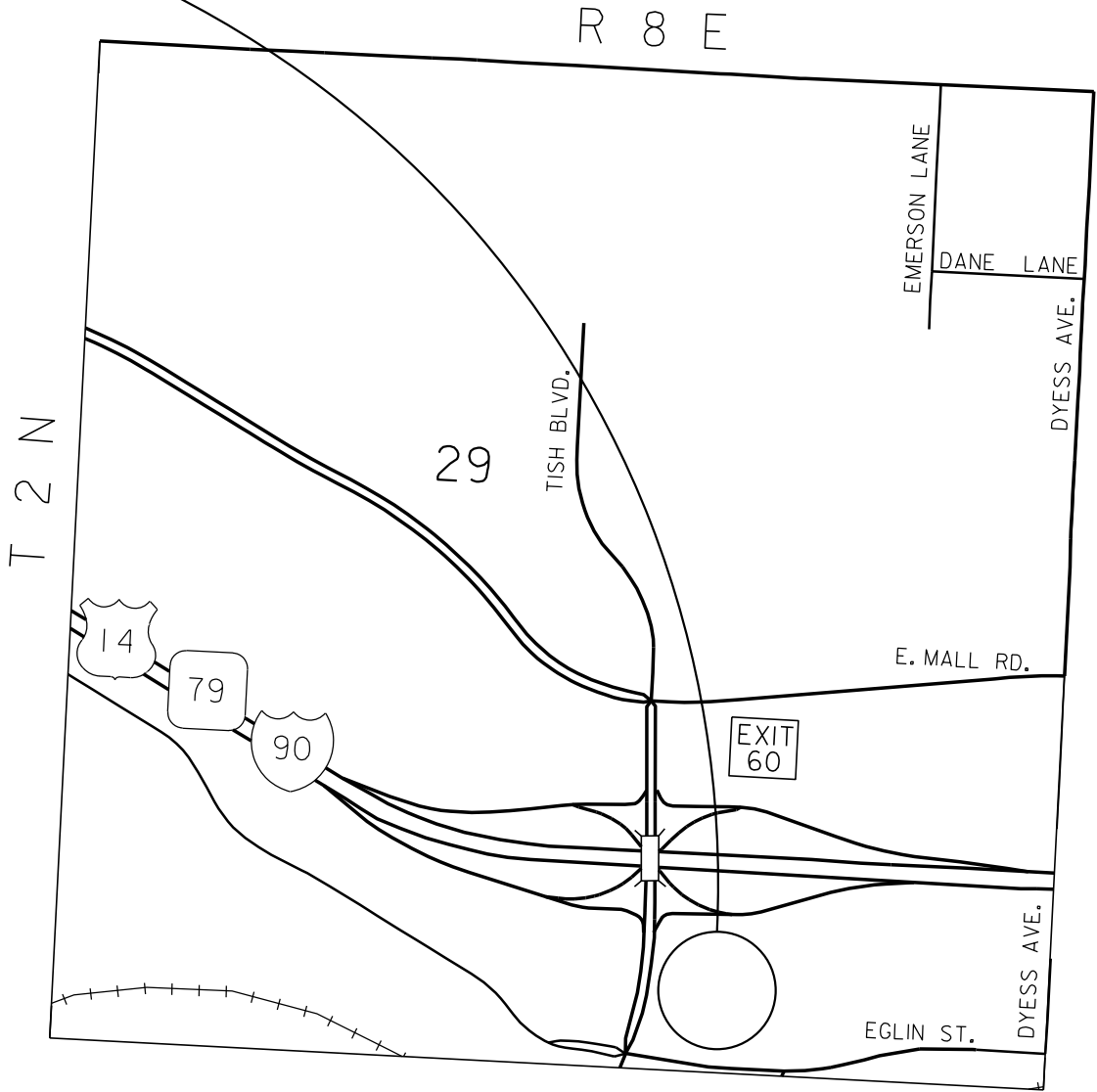
CONCRETE REPAIR
PCN i6L0

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	1	34

Plotting Date: 02/15/2022

INDEX OF SHEETS

1	General Layout with Index
2-7	Estimate with General Notes & Tables
8-22	Special Details
23-34	Standard Plates



STORM WATER PERMIT
None Required

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0300	Remove Concrete Curb and/or Gutter	146	Ft
110E1010	Remove Asphalt Concrete Pavement	47.2	SqYd
110E7800	Remove Chain Link Fence for Reset	20	Ft
260E1010	Base Course	27.0	Ton
320E1200	Asphalt Concrete Composite	16.0	Ton
380E4050	8" PCC Fillet Section	2.3	SqYd
380E5030	Nonreinforced PCC Pavement Repair	664.9	SqYd
380E6000	Dowel Bar	218	Each
380E6110	Insert Steel Bar in PCC Pavement	800	Each
380E6302	Reseal PCC Pavement Joint - Hot Pour	32,610	Ft
380E6310	Seal Random Cracks in PCC Pavement	350	Ft
390E0200	Repair Type A Spall	144.0	SqFt
450E4758	18" CMP 14 Gauge, Furnish	86	Ft
450E4760	18" CMP, Install	86	Ft
450E5010	18" CMP Elbow, Furnish	1	Each
450E5011	18" CMP Elbow, Install	1	Each
450E6128	18" Slotted CMP 14 Gauge, Furnish	96	Ft
450E6130	18" Slotted CMP, Install	96	Ft
462E0100	Class M6 Concrete	1.3	CuYd
480E0100	Reinforcing Steel	223	Lb
621E0520	Reset Chain Link Fence	20	Ft
633E1220	High Build Waterborne Pavement Marking Paint, 4" White	48	Ft
633E1250	High Build Waterborne Pavement Marking Paint, 12" White	105	Ft
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
650E0080	Type B68 Concrete Curb and Gutter	70	Ft
651E0040	4" Concrete Sidewalk	55	SqFt
670E2200	Type C Frame and Grate	1	Each
733E0150	Salvage, Store, and Replant Sod	30	SqYd
900E5410	Modify Sprinkler System	Lump Sum	LS

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 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. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. 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: <<https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf> >

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

COMMITMENT C: WATER SOURCE

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of invasive species into the project vicinity, all equipment will be power washed with hot water (≥140 °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

Action Taken/Required:

The Contractor will obtain the necessary permits from the regulatory agencies such as the South Dakota Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at: < <http://sdleastwanted.com/maps/default.aspx> >

< [South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species: https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04](https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04) >

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.

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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 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 not to exceed the duration of the project. Prior to project completion, the waste will 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) will be incidental to the various contract items.

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

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

Action Taken/Required:

All earth disturbing activities not designated within the plans 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 in 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 within 100 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery 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.

COMMITMENT K: RAPID CITY AREA AIR QUALITY CONTROL ZONE

Administrative Rule of South Dakota (ARSD) 74:36:18:03 states that "no state facility or state contractor may engage in any construction activity or continuous operation activity within the Rapid City air quality control zone which may cause fugitive emissions of particulate to be released into the ambient air without first obtaining a permit issued by the board or the secretary."

Construction activity is defined as any temporary activity which involves the removal or alteration of the natural or pre-existing cover of one acre or more of land. One acre of surface area is based on a cumulative area of disturbance to be completed for the entire project. Construction activity will include, but not be limited to, stripping of topsoil, drilling, blasting, excavation, dredging, ditching, grading, street maintenance and repair, or earth moving. It also includes stockpiles, access roads, and disposal areas. An off-site disposal area of excess material will require an additional permit.

Action Taken/Required:

To be considered eligible for authorization to conduct a construction activity under the terms and conditions of this permit, the owner operator must submit a Notice of Intent (NOI) form. The form must be submitted to the address below at least seven business days prior to the anticipated date of beginning the construction activity.

South Dakota Department of Environment and Natural Resources Air Quality Program, 523 East Capitol, Joe Foss Building, Pierre, SD 57501-3181, Phone: 605-773-3151.

The permit requires the Contractor to use reasonably available technology to control fugitive dust emissions. The Contractor is required to use control measures for track out, paved areas, unpaved roads, unpaved parking lots, disturbed areas, and for material handling and storage. The control measures that the Contractor is required to use are listed in the permit.

The Rapid City Air Quality Permit will need to be renewed annually by the Contractor until construction activities are completed.

The online form can be found at:<<http://denr.sd.gov/des/aq/airpermits.aspx>>

EXISTING PCC PAVEMENT

The existing pavement for the Rapid City Region Complex is 8" Nonreinforced PCC Pavement with limestone aggregate. Longitudinal joints are reinforced with No. 5x30" deformed tie bars spaced 30" to 48" center to center. The transverse joints are spaced at 20' apart. Transverse joints are reinforced with 1 ¼" plain round dowel bars and with No. 9 deformed tie bars spaced 12" center to center.

RESTORATION OF GRAVEL CUSHION

An inspection of the gravel cushion subgrade will be made after removing concrete from each pavement replacement area. Areas of excess moisture will be dried to the satisfaction of the Engineer. Loose and excess material will be removed. Each replacement area will be leveled and compacted to the satisfaction of the Engineer.

If needed all additional Gravel Cushion will meet the requirements for Gravel Cushion in section 882.2 of the Standard Specifications. All cost for additional Gravel Cushion will be incidental to the contract unit price per square yard for PCC Pavement Repair.

All costs associated with this work will be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

TRANSVERSE CONTRACTION JOINTS

Joint spacing will match existing.

See Standard Plate 380.01 for placement of Dowel Bars. The transverse construction joints will be installed in accordance with Standard Plate 380.08.

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RESEAL PCC PAVEMENT JOINT

Sealing joints will be performed in accordance with Section 380.3 P.

It is not essential that all of the sealant be removed. Remaining sealant adhering to the sides may remain in place if the Engineer determines that it is not detrimental to the joint.

Joint widths are to be kept as narrow as possible and will not be widened more than 1/8". In certain areas the joint may be wider than the original construction. It may be necessary to provide backer rod in the wide area. Any additional cost to perform this work will be at no additional cost to the State. The Contractor will be responsible to verify joint widths prior to establishing the contract unit price.

All silicone joints will be resealed with the exception of newer areas of pavement. If the silicone is in good condition for the newer pavement, resealing will not be required. The Engineer will identify the areas to reseal on the project.

Cost for removing, cleaning, and resealing the transverse joints will be incidental to the contract unit price per foot for Reseal PCC Pavement Joint-Hot Pour.

REPAIR TYPE A SPALL

Locations and size (length or width) of concrete spall repair areas are subject to change in the field, at the discretion of the Engineer, at no additional cost to the state. The minimum dimension of the repair area will be 6". Payment will be based on actual area replaced.

Concrete Patch Material will be Type III conforming to Section 390.2 B.3 or an approved contractor furnished Ready Mix. The water/cementious ratio will not exceed 0.42. The slump of the material will be 1" to 4" max. and the air content will be 4.5% to 7.5%. The minimum 28 day compressive strength will be 5000 psi.

If shrinkage cracking is occurring, the Contractor will stop work and adjust the patching mix as needed to ensure the water/cementious ratio eliminates any shrinkage cracking.

As an alternative, the Contractor may remove concrete by milling, provided it produces results similar to the sawing and chipping process described in the Specifications. Milling is typically the preferred method for longer spall repair locations.

Spalls which are repaired according to plans and specifications and exhibit partial respalling or cracking, will be repaired to the satisfaction of the Engineer at no additional cost to the State.

SEAL RANDOM CRACKS IN PCC PAVEMENT

Random cracks that exhibit minor spalling will be routed, sealed and in accordance with the detail for Sealing Random Cracks. Reservoir dimensions may vary slightly from the details, due to the nature of this operation. However, any variance due to Contractor negligence will be repaired at the Contractor's expense.

Only those random cracks in the existing concrete pavement that are open and accept water and incompressible materials as selected by the Engineer will be prepared and sealed with Hot Poured Elastic Joint Sealer. Typically, patterned cracks associated with the underlying steel reinforcement should not be routed and sealed.

Prior to sealing, each random crack will be routed and thoroughly cleaned with compressed air or by other methods satisfactory to the Engineer. Routing will be performed with a saw designed for that purpose.

Sealer will be placed in the routed reservoir with equipment and by methods that insure complete and uniform filling.

Acceptance of the sealer will be based on visual inspection by the Engineer.

Seal Random Cracks in PCC Pavement will be measured by the foot of random cracks sealed and accepted and will be paid for at the contract unit price per foot measured for payment. Payment will be full compensation for labor, equipment, material and incidentals required for crack routing, cleaning, furnishing and installing backer rod when necessary, furnishing and placing sealant and removing routed and foreign material from the roadway.

NONREINFORCED PCC PAVEMENT REPAIR

Concrete will meet the requirements stated in Section 380 or Section 462 (Class M6 Concrete) of the Specifications, except as modified by the following notes:

The fine aggregate will be screened over a one-inch square-opening screen just prior to introduction into the concrete paving mix if required by the Engineer.

The slump requirement will be limited to 3" maximum after water reducer is added and the concrete will contain 4.5% to 7.0% entrained air. The concrete will contain a minimum of 50% coarse aggregate by weight. Coarse aggregate will be crushed ledge rock, Size No. 1 unless an alternative gradation is approved by the Concrete Engineer as part of the mix design submittal. The mix design will contain at least 650 lbs of Type I or II cement or 600 lbs of Type III cement per cubic yard. The minimum 28-day compressive strength will be 4,000 psi. The Contractor is responsible for the mix design used. The Contractor will submit a mix design and supporting documentation for approval at least 2 weeks prior to use.

The use of a water reducer at manufacturer's recommended dosage will be required.

Concrete will be cured with white pigmented curing compound (AASHTO M148, Type 2) applied as soon as practical at a rate of 125 square feet per gallon. Concrete will be cured for a minimum of 48 hours before opening to traffic. The 48 hours is based upon a concrete surface temperature of 60°F or higher throughout the cure period. If the concrete surface temperature falls below 60°F, the cure time will be extended, or other measures taken, at no additional cost to the State. A strength of 3,500 psi must be attained prior to opening to traffic.

Upon placement of the concrete, repair areas will be straight edged to ensure a smooth riding surface and will be textured longitudinally with the pavement by finishing with a stiff broom. Repair areas will then be checked with a 10' foot straight edge. The permissible longitudinal and transverse surface deviation will be 1/8" in 10'.

Concrete will be covered with suitable insulation blanket consisting of a layer of closed cell polystyrene foam protected by at least one layer of plastic. Insulation blanket will have an R-value of at least 0.5, as rated by the manufacturer. Insulation blanket will be left in place, except for joint sawing operations, until the 3,500 psi is attained. Insulation blanket will be overlapped on to the existing concrete by 4'. This requirement for covering repair areas with insulation blankets may be waived during periods of hot weather upon approval of the Engineer.

Cost for performing the work including sawing and removing concrete, furnishing, and placing concrete, sawing, and sealing joints, repairing gravel cushion, labor, tools, and equipment will be included in the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

STEEL BAR INSERTION

The Contractor will insert the Steel Bars (No. 5 x 30 inch epoxy coated deformed tie bars) into drilled holes in the existing concrete curb and gutter.. An epoxy resin adhesive must be used to anchor the steel bar in the drilled hole.

The steel bars will be cut to the specified length by sawing or shearing and will be free from burring or other deformations.

Epoxy coated plain round steel bars will be inserted on 12-inch centers in the transverse joint. The first steel bar will be placed a minimum of 3 inches and a maximum of 6 inches from the outside edge of the slab.

Epoxy coated deformed steel bars will be inserted on 48-inch centers in the longitudinal joint and will be placed a minimum of 15 inches from the existing transverse contraction joint.

SLOTTED CMP DRAIN

A slotted 18" CMP Drain and Type C Drop Inlet will be installed at the location shown in these plans. All pavement removed will be sawcut to a vertical surface before removal. For areas that currently have asphalt surfacing the asphalt will be replaced with Asphalt Concrete Composite.

Fence will be removed for installation of the pipe culvert. The Contractor will secure the fence at the end of each working day.

All costs for installation of the 18" CMP into the existing drop inlet will be incidental to the contract unit price per foot for 18" CMP, Install.

PAVEMENT MARKING PAINT

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

The Contractor will note the locations and dimensions of pavement marking prior to pavement repair. The Contractor will replace the markings at the existing locations as directed by the Engineer.

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SEQUENCE OF OPERATIONS

The Contractor will submit a proposed schedule at least 2 weeks prior to starting work in order to facilitate coordination within the DOT Yard. The Engineer will notify the Region Complex of the Contractor's proposed schedule. All work areas will be clearly marked as closed to traffic.

Non-reinforced PCC Pavement Repairs, Spall Repairs, and Resealing Random Cracks:

- The Contractor may work on Figures 1, 2, 3, 5, and 17 simultaneously.
- The Contractor may work on Figures 4 and 6 simultaneously, but not at the same time as 1, 2, 3, 5, and 17. The Contractor will begin work on Figure 6 on a Monday afternoon and will have all work complete with full strength on the new pavement by 8AM the following Monday. The Engineer will coordinate with the Region Business Manager to move the garbage dumpster the week prior to the Contractor beginning work on Figure 6.
- The Contractor may work on Figure 16 at any time.
- The Contractor may work on Figures 9, 12, 13, 14, and 15 simultaneously, but must maintain access to one side of the gas pumps at all times.
- The Contractor may work on Figure 10 at any time except during normal plowing season.
- The Contractor may work on Figures 7, 8, and 11 simultaneously. The Engineer will notify the Region Equipment Specialist when egress to the door in Figure 8 is to be altered.

Resealing PCC Pavement Joints:

- The Contractor will work on no more than ½ of any given ingress/egress, normal driving lanes/alleyways/driveways, parking area, gas pump access, or group of overhead door bays at any given time during normal business hours without written permission from the Engineer.
- The Contractor may reseal concrete joints outside of normal business hours, including weekends. The Contractor will coordinate with the Engineer to gain access to secured areas after normal business hours.

GENERAL TRAFFIC CONTROL

Each concrete repair location, from which the in-place concrete has been removed, will be marked with a minimum of two reflectorized drums. This work will be paid for at the contract lump sum price for Traffic Control, Miscellaneous.

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

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

All materials will be applied as per manufacturer's recommendations. High build waterborne pavement marking paint will conform to the supplemental specifications for Section 980.1 B.

Solid 4" line = 27.8 Gals/Mile
Glass Beads = 8 Lbs/Gal.

The Contractor will note the locations and dimensions of pavement marking prior to pavement repair. The Contractor will replace the markings at the existing locations as directed by the Engineer.

SALVAGE, STORE, AND REPLANT SOD

Sod will be removed and replanted in a swath 5 feet wide behind the curb and gutter sections,

Eighteen (18) Gallons of water will be required per square yard of sod. All costs involved for watering the sod will be incidental to the contract unit price per SqYd for Salvage, Store, and Replant Sod.

MODIFY SPRINKLER SYSTEM

One sprinkler head will require relocation behind the new sidewalk for the location at Figure 1.

REMOVAL OF LANDSCAPE ROCK

Landscaping rock removed at the location of Figure 1 will be placed at a location designated by the Engineer. All costs for this work will be incidental to the various contract items.

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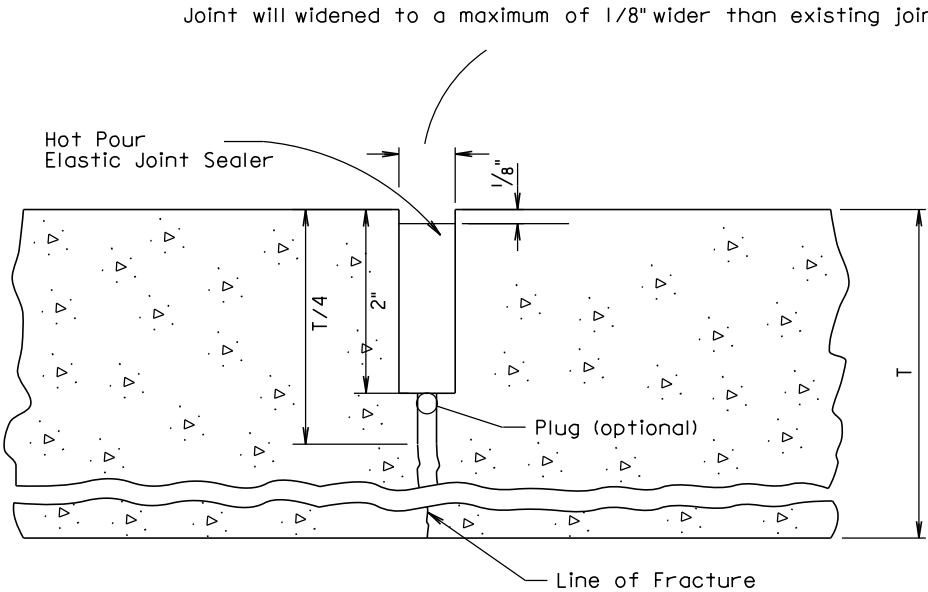
Table of PCC Pavement Repair																		
	Length	Width	Area	Remove Concrete Curb and/or Gutter	Remove Asphalt Concrete Pavement	18" CMP 14 Gauge, Furnish	18" CMP, Install	18" CMP Elbow, Furnish	18" CMP Elbow, Install	18" Slotted CMP 14 Gauge, Furnish	18" Slotted CMP, Install	Type C Frame and Grate	Class M6 Concrete	Reinforcinhg Steel	Remove Chain Link Fence for Reset	Reset Chain Link Fence	Asphalt Concrete Composite	Base Course
Location	(Ft)	(Ft)	(SqYd)	(Ft)	(SqYd)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Each)	(CuYd)	(Lb)	(Ft)	(Ft)	(Ton)	(Ton)
Figure 1	22	11	26.9	43														
Figure 2	10	10	11.1															
Figure 3	9.5	9.5	10															
Figure 4				12.3														
Figure 5	24	18	48	24														
Figure 6	Irregular		11.7															
Figure 7 A				5														
Figure 7 B				10														
Figure 8	6	5	3.3															
Figure 9	Irregular		15															
Figure 10 & Plan Sheet	103	32	366.2							96	96	1	1.3	223.0				
Figure 10 & Plan Sheet	20	26	57.8		47.2	85	85	1	1						20	20	16	27
Figure 11	18	15	30															
Figure 12	58	1	6.4															
Figure 13	52	1	5.8															
Figure 14	34	1	3.8															
Figure 15	52	12	69.3															
Figure 16				10														
Figure 17	20	7		42														
Project Wide																		
			Total	146.3	47.2	85	85	1	1	96	96	1	1.3	223.0	20	20	16	27

Table of PCC Pavement Repair (Continued)																		
								Salvage, Store, and Replant Sod	Modify Sprinkler System						High Build Waterborne Pavement Marking Paint, 4" White	High Build Waterborne Pavement Marking Paint, 12" White	Reseal PCC Pavement Joint - Hot Pour	Seal Random Cracks in PCC Pavement
	Length	Width	Area	Repair Type A Spall	4" Concrete Sidewalk	Type B68 Concrete Curb and Gutter	8" PCC Fillet Section			Nonreinforced PCC Pavement Repair	No. 5 Deformed Tie Bar	1 1/4" Smooth Steel Bar	Insert Steel Bar in PCC Pavement	Dowel Bar				
Location	(Ft)	(Ft)	(SqYd)	(SqFt)	(SqFt)	(Ft)	(SqYd)	(SqYd)	(LS)	(SqYd)	(Each)	(Each)	(Each)	(Each)	(Ft)	(Ft)	(Ft)	(Ft)
Figure 1	22	11	26.9		55	11			X	26.9	4	36	40		24			
Figure 2	10	10	11.1							11.1		36	36					
Figure 3	9.5	9.5	10							10		32	32			105		
Figure 4						5	2.3	2.8			5		5					
Figure 5	24	18	48			24		13.3		48	6	56	62	17	24			
Figure 6	Irregular		11.7							11.7		36	36	24				
Figure 7 A						5		2.8			2		2					
Figure 7 B						10		5.6			4		4					
Figure 8	6	5	3.3							3.3								
Figure 9	Irregular		15							15		32	32					
Figure 10 & Plan Sheet	103	32	366.2							366.2		266	266	128				
Figure 10 & Plan Sheet	20	26	57.8							57.8	10	44	54	25				
Figure 11	18	15	30							30		62	62					
Figure 12	58	1	6.4	58														
Figure 13	52	1	5.8	52														
Figure 14	34	1	3.8	34														
Figure 15	52	12	69.3							69.3		124	124	24				
Figure 16						10		5.6			3		3					
Figure 17						5				15.6	2	40	42					
Project Wide																	32610	350
			Total	144	55	70	2.3	30.1		664.9			800	218	48	105	32610	350

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RESEAL PCC PAVEMENT JOINT



T/4 when saw cutting to control cracking.

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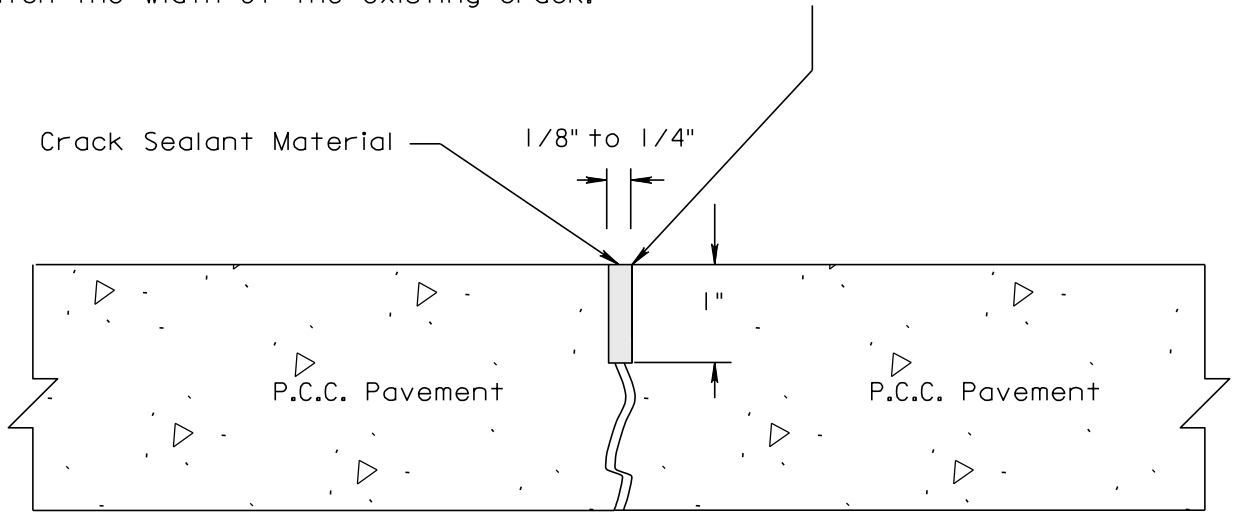
Plotting Date: 02/15/2022

SEAL RANDOM CRACKS IN PCC PAVEMENT

Routing will be required to widen and cleanout the crack. Section 350 of the Standard Specifications will be used for installation requirements. The use of a squeegee will not be required and the sealant will be left flush with the top of the pavement.

If excessive spalling of the PCC Pavement occurs, the Contractor will switch to sawing.

If the crack is greater than 1/4" in width, routing will not be required.
Match the width of the existing crack.

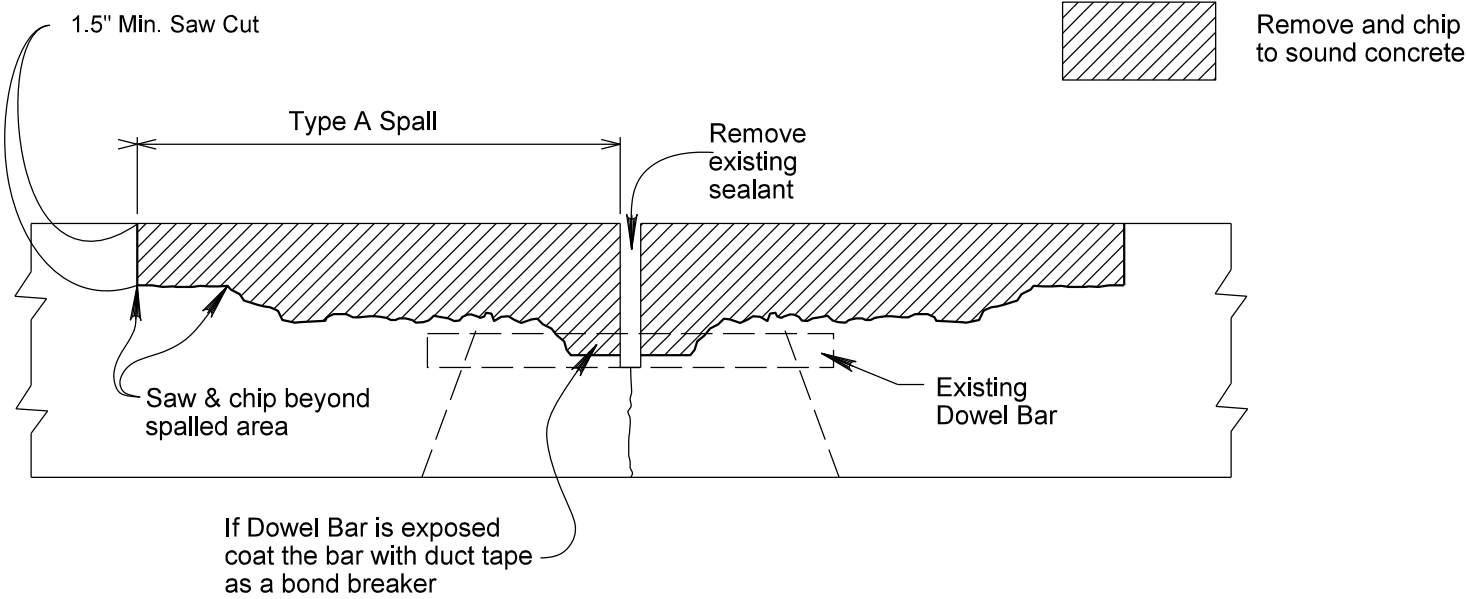


STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	410D404	10	34

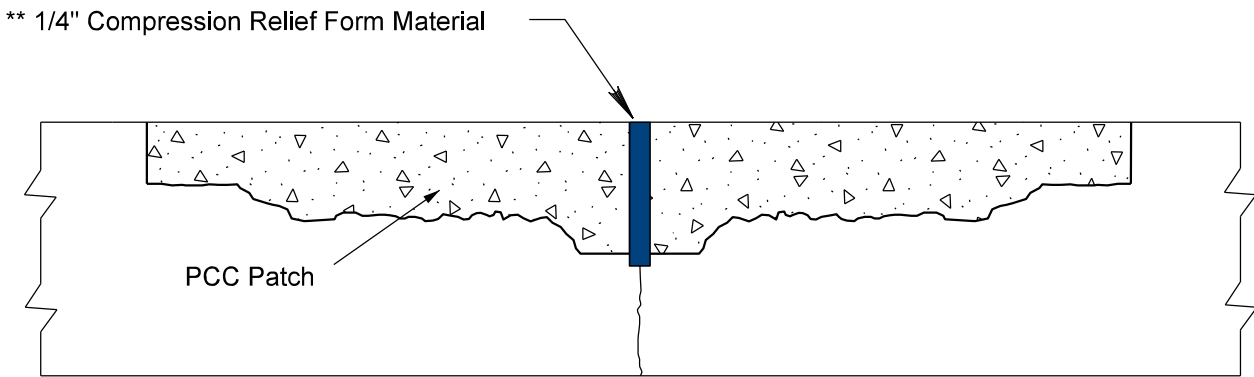
Plotting Date: 02/15/2022

REPAIR OF TYPE A SPALLS

SPALL REMOVAL

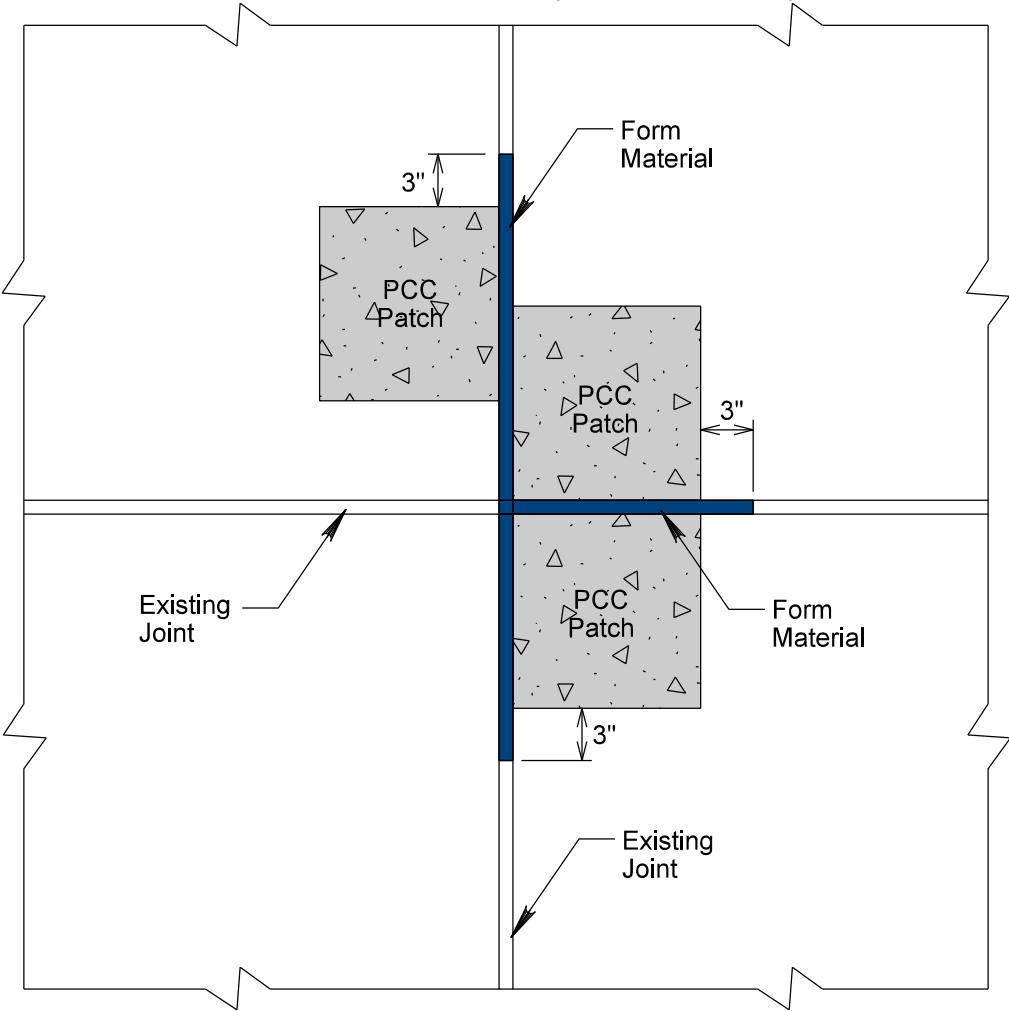


SPALL PATCH



** Compression Relief Form Material will be removed by sawing or other means approved by the Engineer.
Spall repaired joints will be sealed with Hot Poured Elastic Joint Sealer.

SPALL PATCHES (PLAN VIEW)



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	11	34

Plotting Date: 02/15/2022



Location Map for Figures

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	12	34

Plotting Date: 02/15/2022



Location Map for Figures

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	13	34

Plotting Date: 02/15/2022



Figure 1

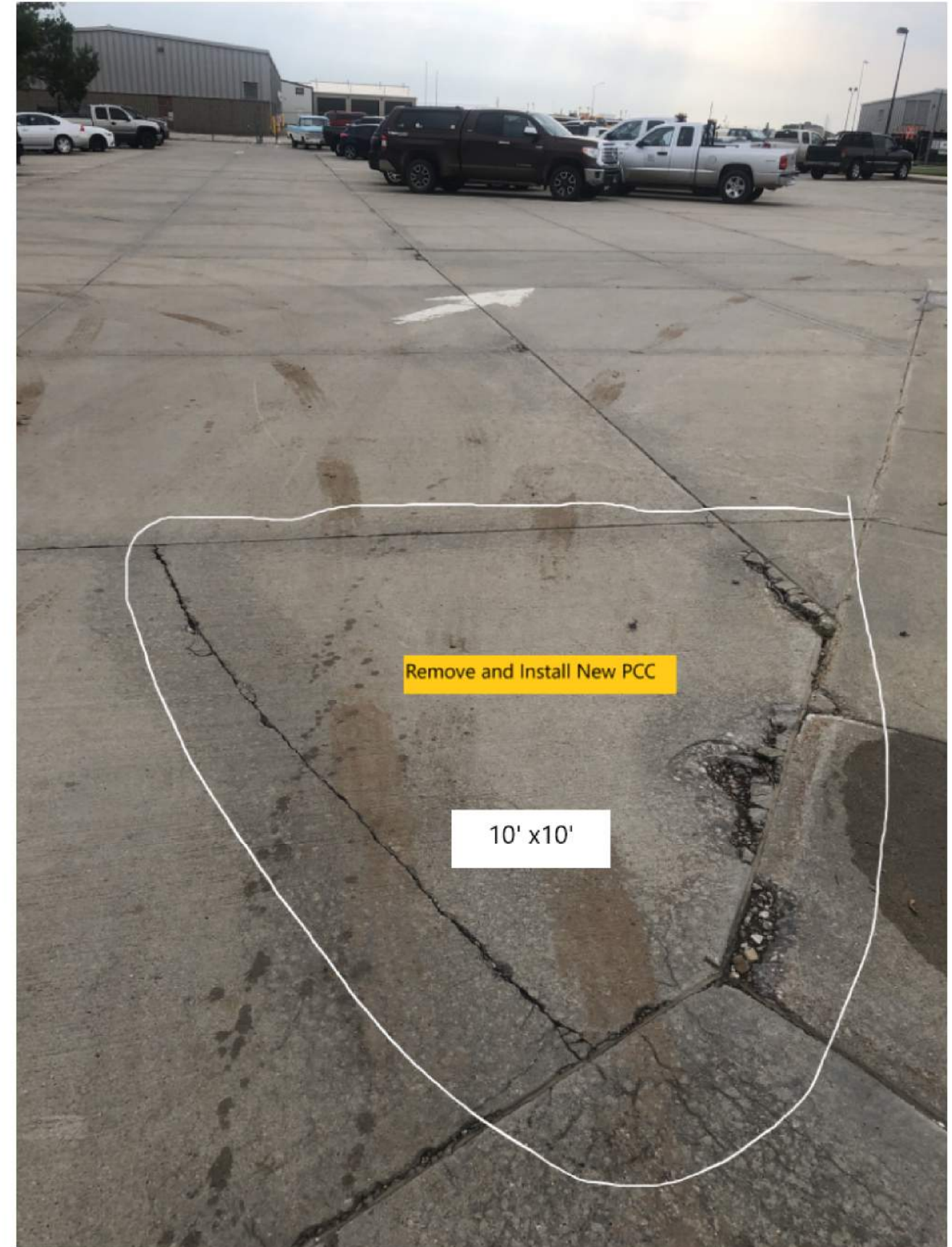


Figure 2

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	14	34

Plotting Date: 02/15/2022



Figure 3

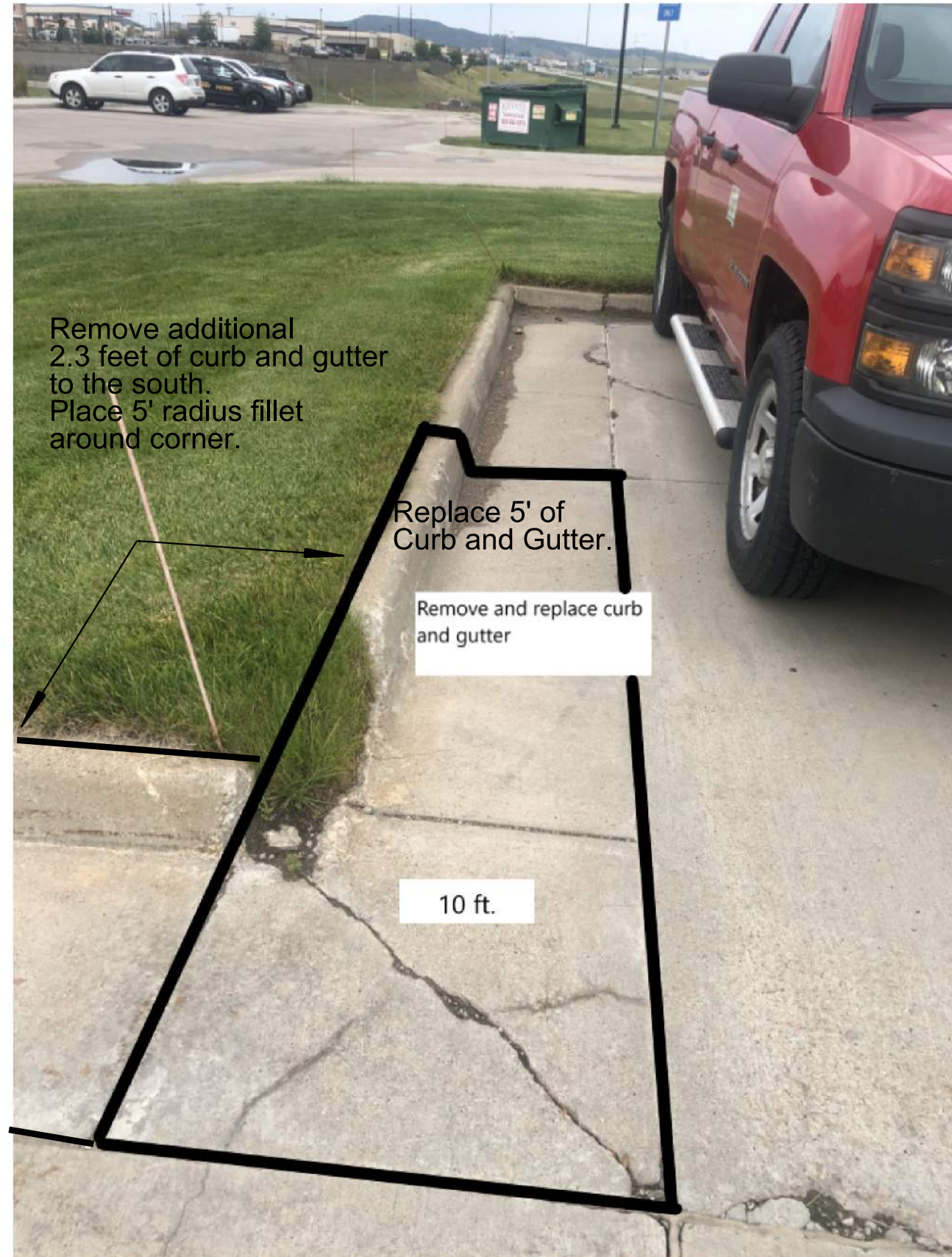


Figure 4

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404		

Plotting Date: 02/15/2022

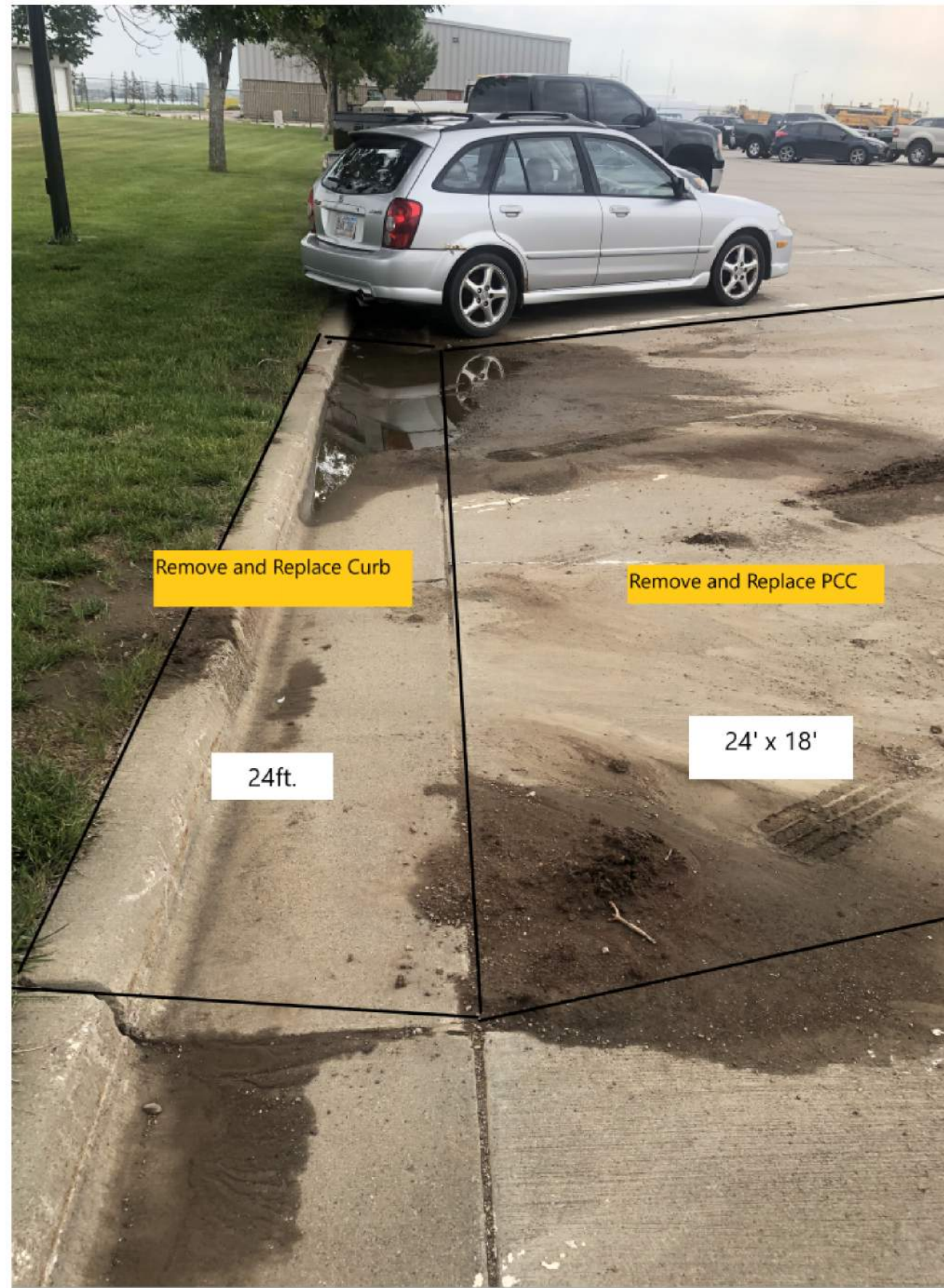


Figure 5



Figure 6

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	16	34

Plotting Date: 02/15/2022



Figure 7



Figure 8

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	17	34

Plotting Date: 02/15/2022

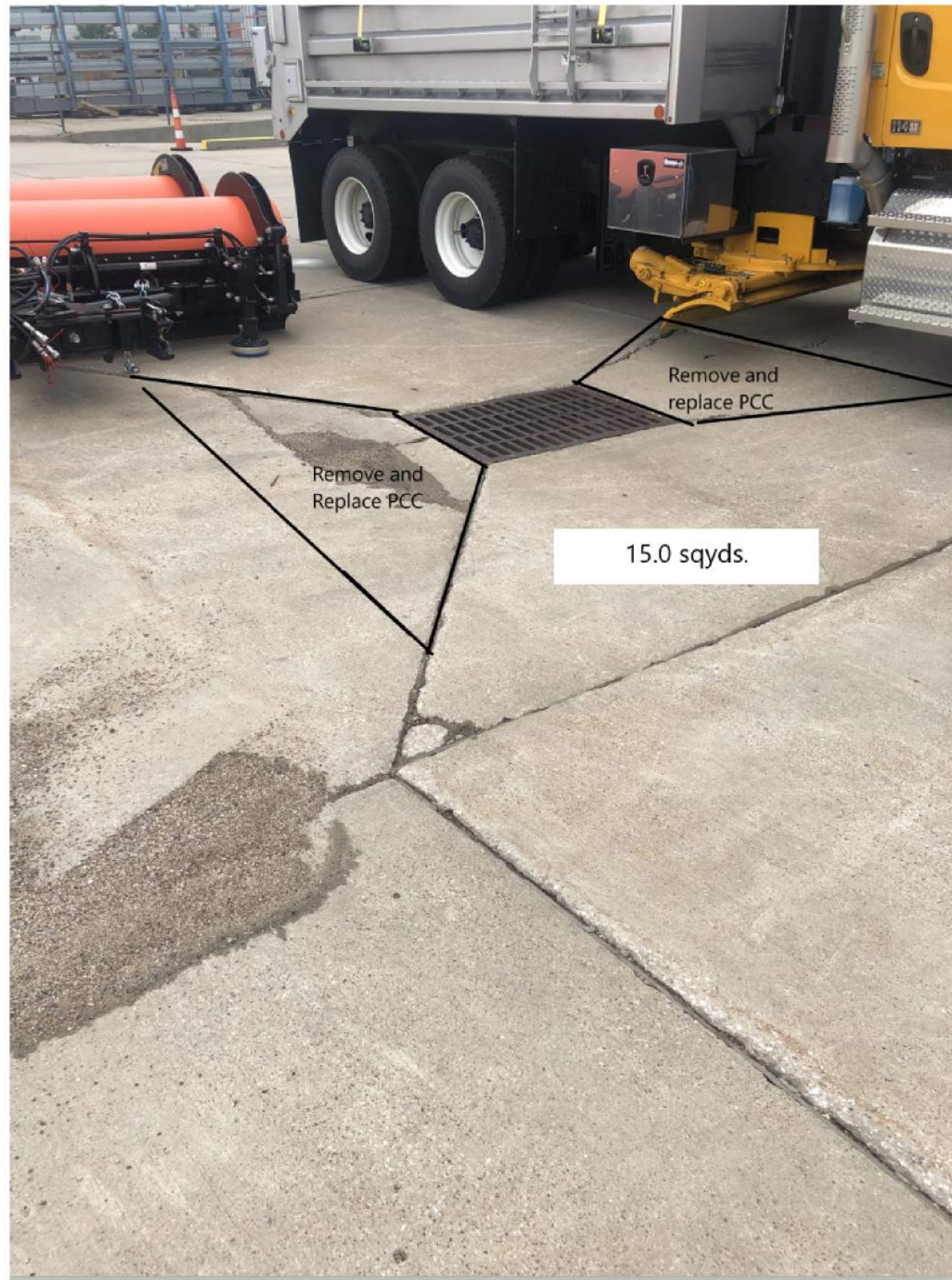


Figure 9



Figure 10

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	18	34

Plotting Date: 02/15/2022



Figure 11



Figure 12

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	19	34

Plotting Date: 02/15/2022



Figure 13



Figure 14

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	20	34

Plotting Date: 02/15/2022

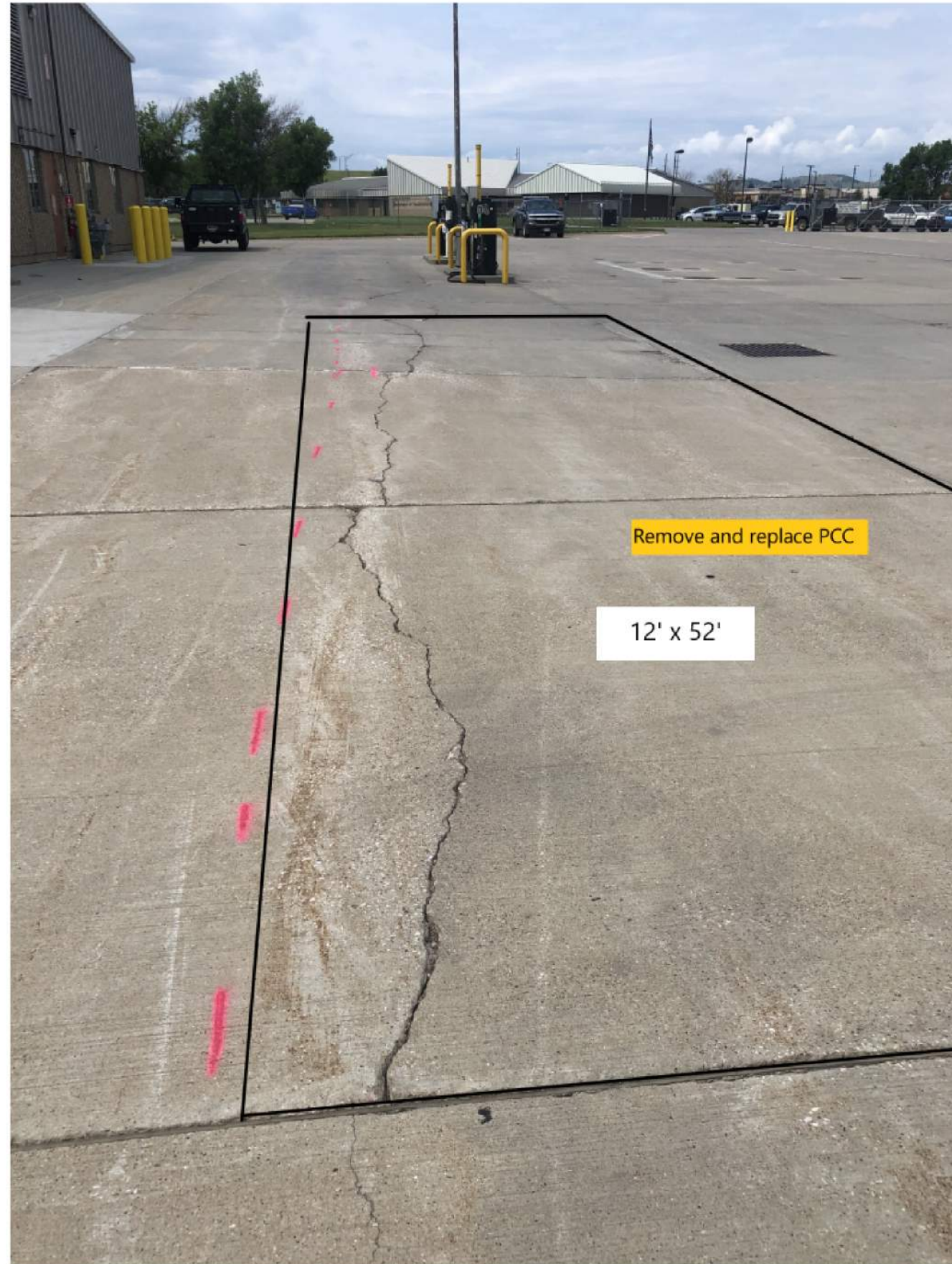


Figure 15



Figure 16

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	21	34

Plotting Date: 02/28/2022



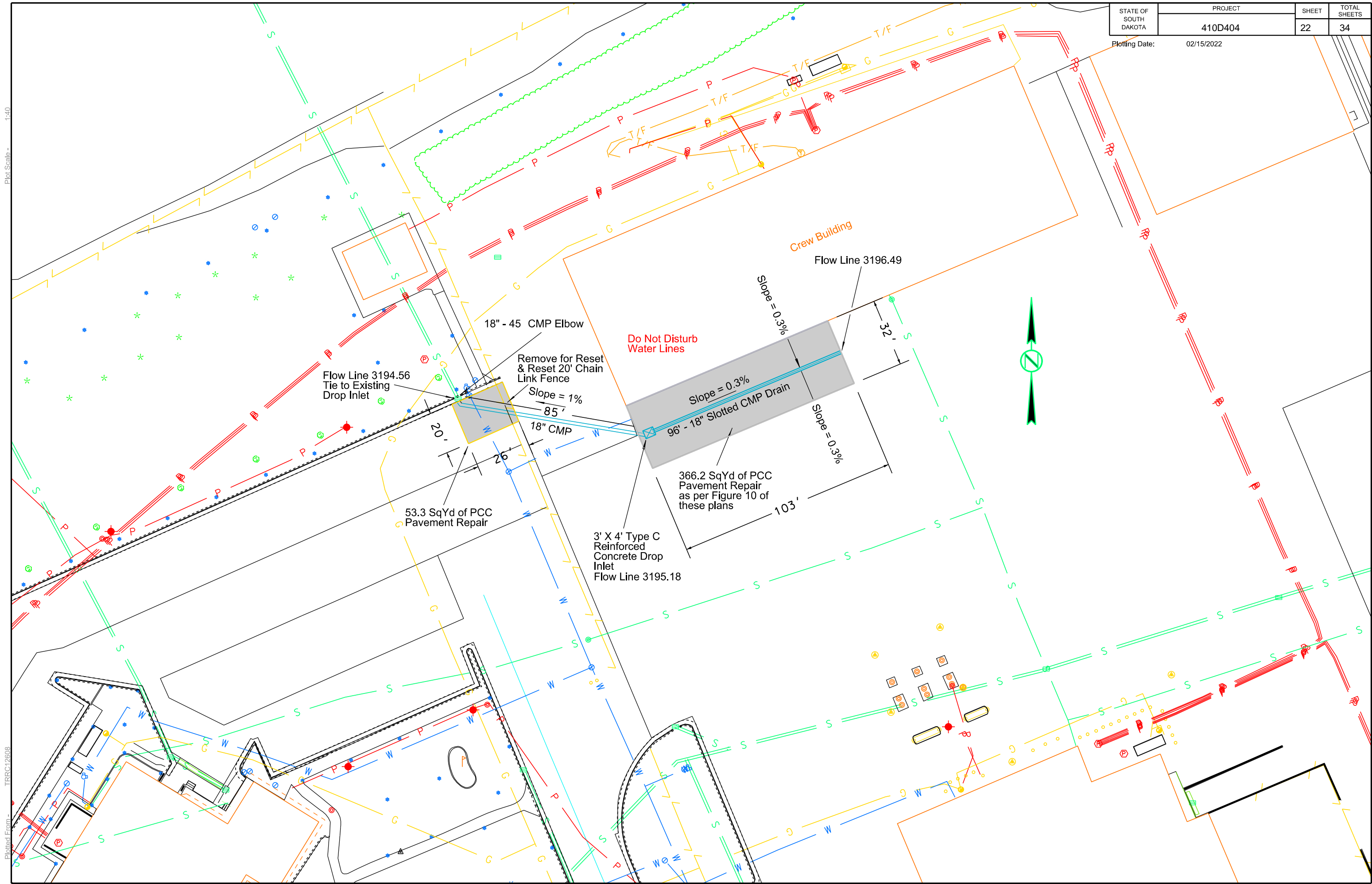
Figure 17

Plot Scale - 1:40

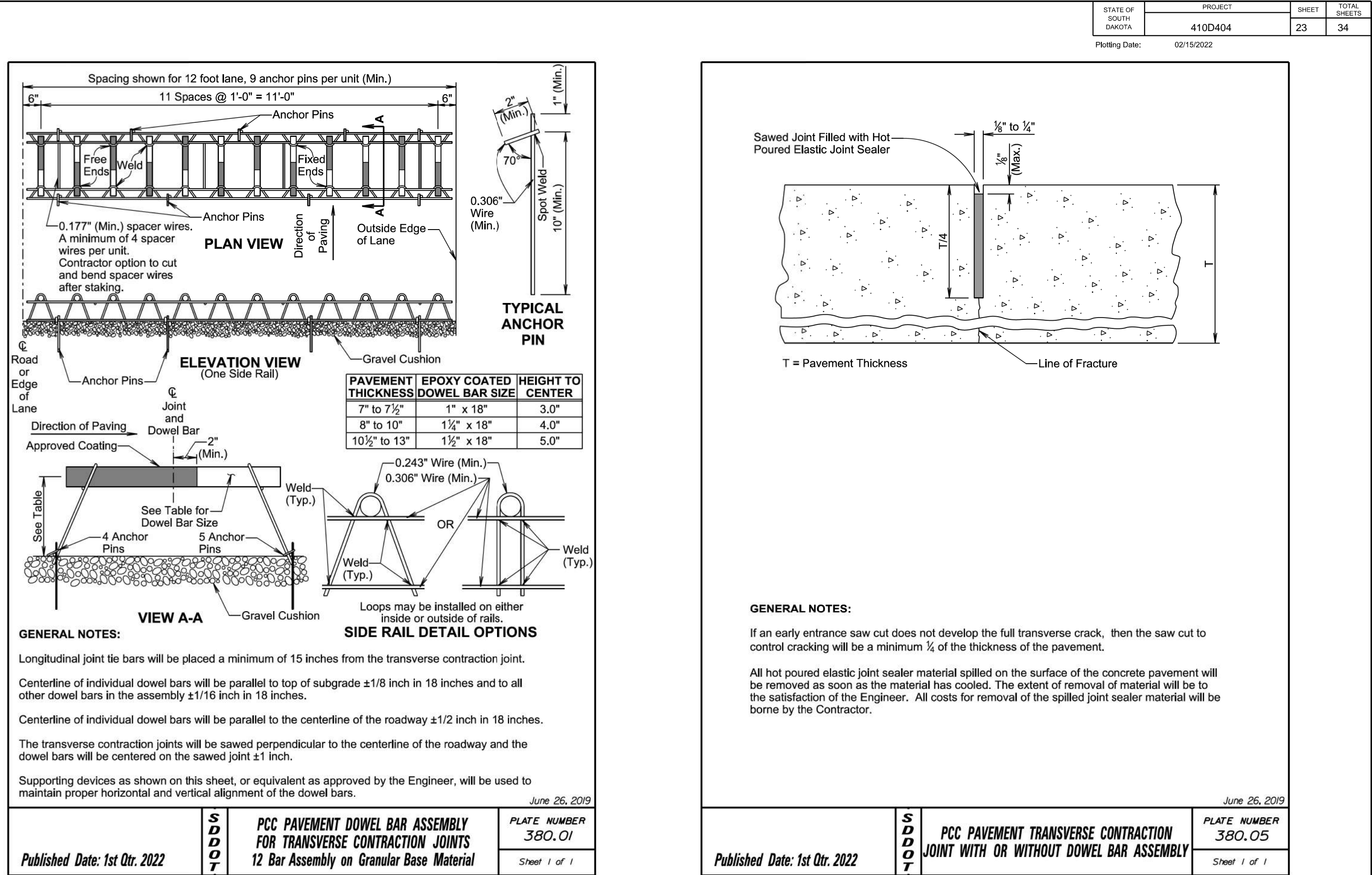
Plotted From: TRRC12608

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	22	34

Plotting Date: 02/15/2022



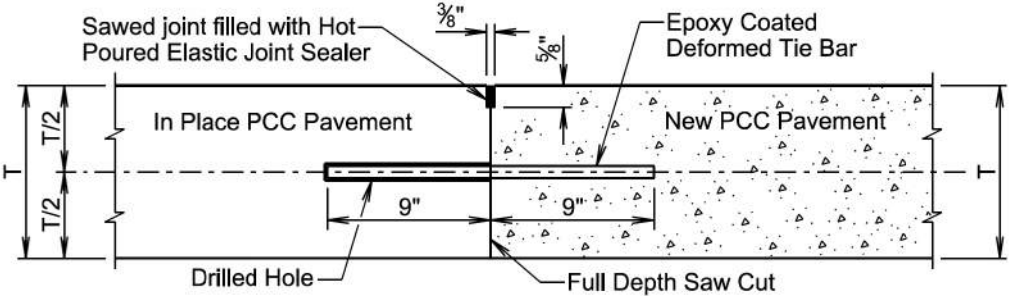
File - ...DesignPlanSheet.dgn



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	24	34

Plotting Date: 02/15/2022

DETAIL A
TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS



T = In Place PCC Pavement and New PCC Pavement Thickness

GENERAL NOTES:

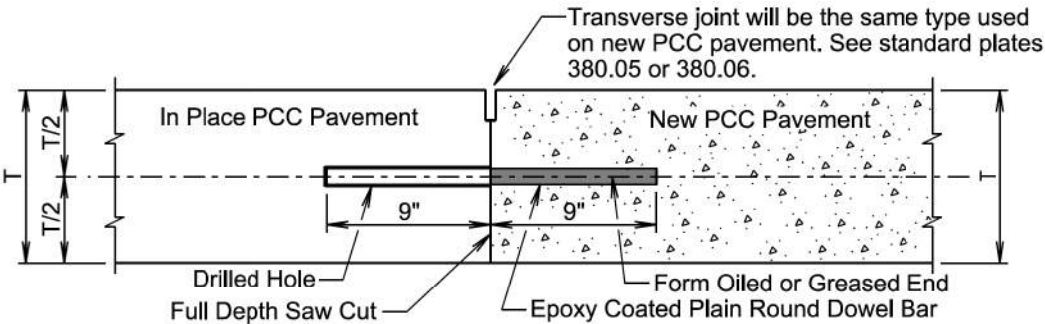
The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

See sheet 2 of 2 of this standard plate to determine if Detail A will be used.

The tie bars will be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

No. 9 epoxy coated deformed tie bars will be used in 10 inch thickness and less PCC Pavement and No. 11 epoxy coated deformed tie bars will be used in 10.5 inch thickness and greater PCC Pavement. The tie bar spacing will be 18 inches center to center and will be a minimum of 3 inches and a maximum of 9 inches from the pavement edges.

DETAIL B
TRANSVERSE CONSTRUCTION JOINT WITH DOWEL BARS



T = In Place PCC Pavement and New PCC Pavement Thickness

GENERAL NOTES:

The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project or current project.

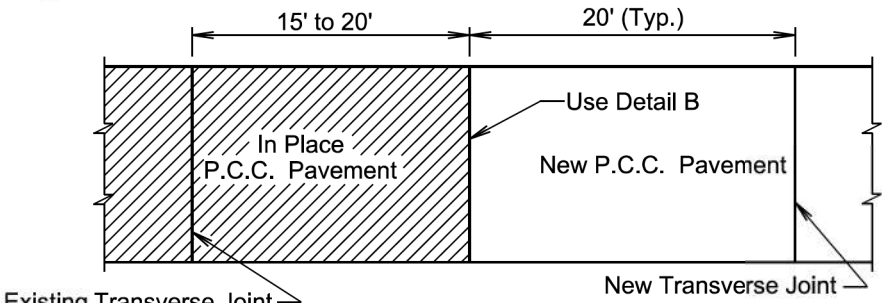
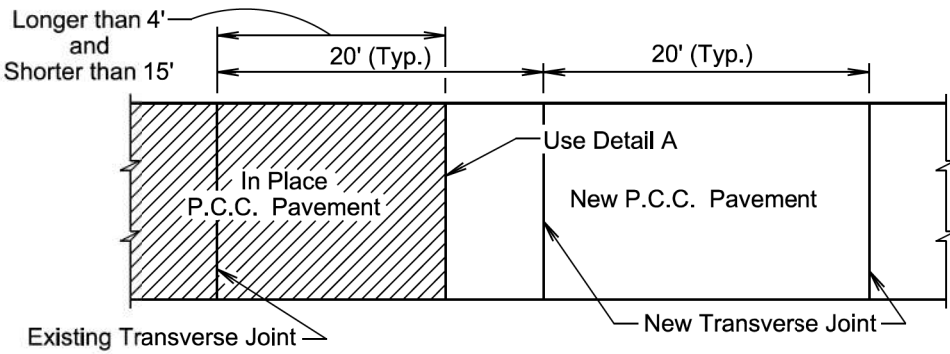
See sheet 2 of 2 of this standard plate to determine if Detail B will be used.

The plain round dowel bars will be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

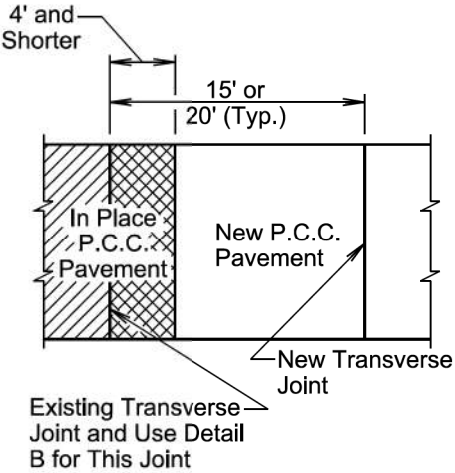
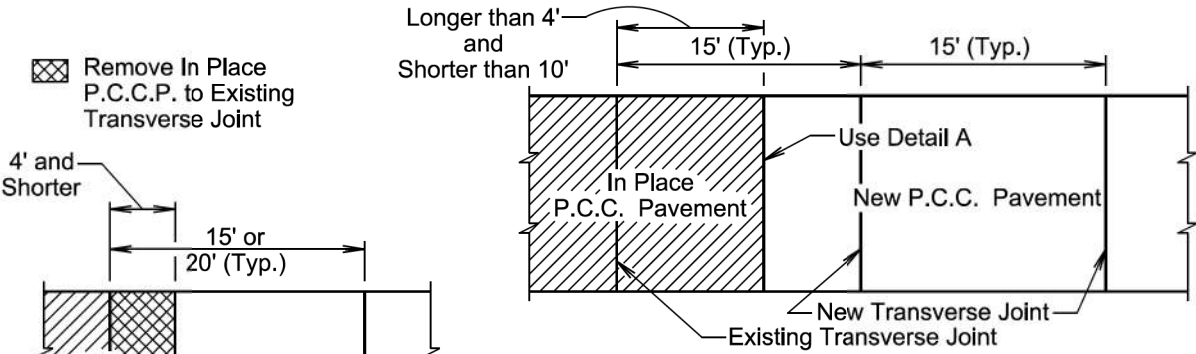
The epoxy coated plain round dowel bar size, number, and spacing will be the same as detailed on the corresponding dowel bar assembly standard plate (380.01, 380.02, 380.03, or 380.04). The epoxy coated plain round dowel bars will be a minimum of 3 inches and a maximum of 6 inches from the pavement edges.

June 26, 2019

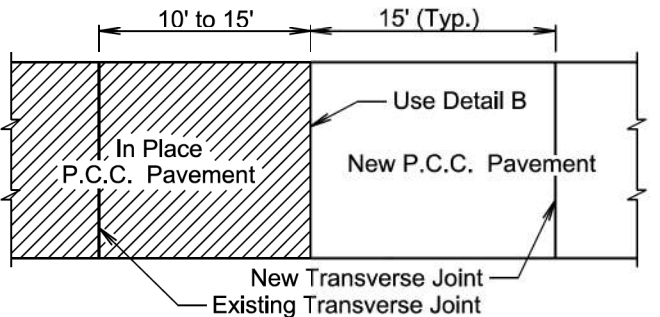
SDOT <i>Published Date: 1st Qtr. 2022</i>	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.08
		Sheet 1 of 2



PLAN VIEW
(For typical transverse joint spacing of 20' on the current project)



PLAN VIEW
(For typical transverse joint spacing of 15' or 20' on the current project)

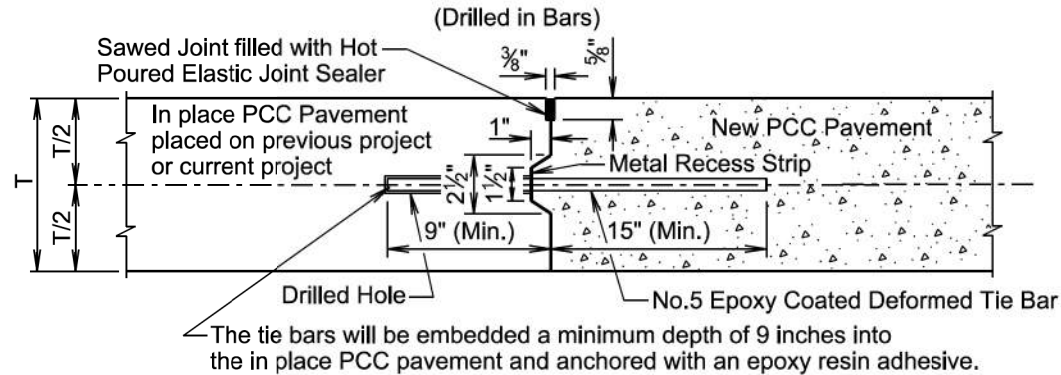


PLAN VIEW
(For typical transverse joint spacing of 15' on the current project)

June 26, 2019

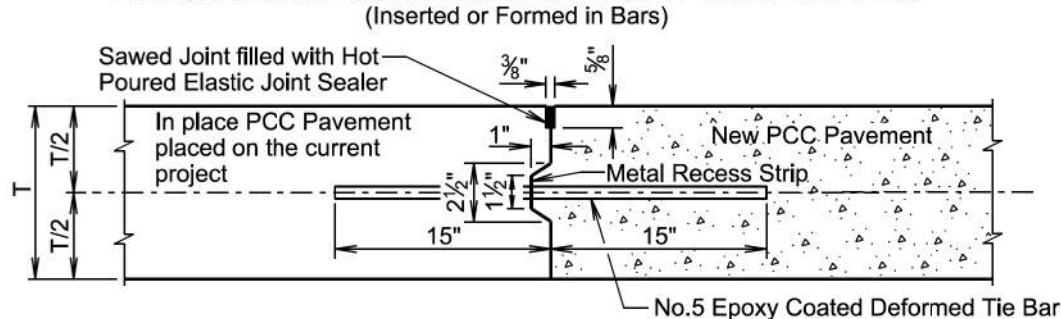
SDOT <i>Published Date: 1st Qtr. 2022</i>	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.08
		Sheet 2 of 2

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS



T = Pavement Thickness

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS



No.5 Epoxy Coated Deformed Tie Bar

GENERAL NOTES (For the details above):

The epoxy coated deformed tie bars will be spaced in accordance with the following tables:

TIE BAR SPACING 48" MAXIMUM	
Transverse Contraction Joint Spacing	Number of Tie Bars
6.5' to 10'	2
10.5' to 14'	3
14.5' to 18'	4
18.5' to 22'	5

TIE BAR SPACING 30" MAXIMUM	
Transverse Contraction Joint Spacing	Number of Tie Bars
5' to 7'	2
7.5' to 9.5'	3
10' to 12'	4
12.5' to 14.5'	5
15' to 17'	6
17.5' to 19.5'	7
20' to 22'	8

The tie bars will be placed a minimum of 15 inches from transverse contraction joints.

The required number of tie bars as shown in the table will be uniformly spaced within each panel. The uniformly spaced tie bars will be spaced a maximum of 48 inches center to center for a female keyway and will be spaced a maximum of 30 inches center to center for a vertical face and male keyway. The maximum tie bar spacing will apply to tie bars within each panel.

The keyway illustrated in the above details depict a female keyway.

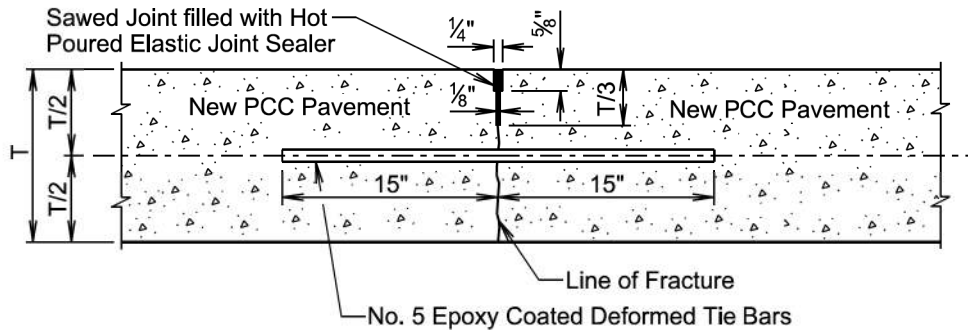
The keyway is optional and is not required. When concrete pavement is formed and a keyway is provided, a metal recess strip will be used. When concrete pavement is slip formed, a metal recess strip is not required.

June 26, 2019

Published Date: 1st Qtr. 2022	S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.10
			Sheet 1 of 2

SAWED LONGITUDINAL JOINT WITH TIE BARS

(Poured Monolithically)



T = Pavement Thickness

GENERAL NOTES (For the detail above):

The epoxy coated deformed tie bars will be spaced in accordance with the following table:

TIE BAR SPACING 48" MAXIMUM	
Transverse Contraction Joint Spacing	Number of Tie Bars
6.5' to 10'	2
10.5' to 14'	3
14.5' to 18'	4
18.5' to 22'	5

The tie bars will be placed a minimum of 15 inches from the transverse contraction joints.

The required number of tie bars as shown in the table will be uniformly spaced within each panel with a maximum space of 48 inches center to center. The maximum tie bar spacing will apply to tie bars within each panel.

The first saw cut to control cracking will be a minimum of 1/3 the thickness of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the hot poured elastic joint sealer is necessary.

June 26, 2019

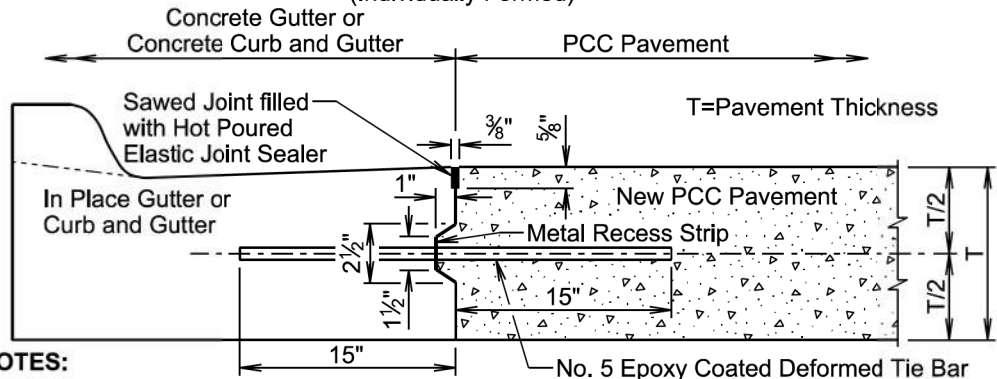
Published Date: 1st Qtr. 2022	S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.10
			Sheet 2 of 2

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	26	34

Plotting Date: 02/15/2022

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS

(Individually Formed)



GENERAL NOTES:

No. 5 epoxy coated deformed tie bars will be spaced 48 inches center to center. The keyway shown above is a female keyway.

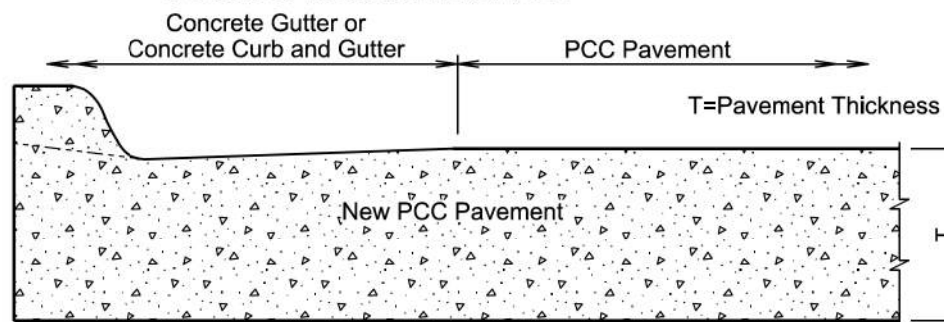
The tie bars will be placed a minimum of 15 inches from existing transverse contraction joints.

The keyway is optional and is not required. When concrete pavement is formed and a keyway is provided, a metal recess strip will be used. When concrete pavement is slip formed, a metal recess strip is not required.

The transverse contraction joints in the concrete gutter or concrete curb and gutter will be placed at each mainline PCC pavement transverse contraction joint. The transverse contraction joints in the concrete gutter or the concrete curb and gutter will be 1 1/2 inches deep if formed in fresh concrete using a suitable grooving tool. If a saw is used to cut the transverse contraction joints, then the depth of the joint will be at least 1/4 the thickness of the concrete gutter or concrete curb and gutter.

The term "In Place Gutter or Curb and Gutter" in the above drawing indicates that the in place concrete gutter and concrete curb and gutter was placed on the current project.

POURED MONOLITHICALLY



GENERAL NOTES:

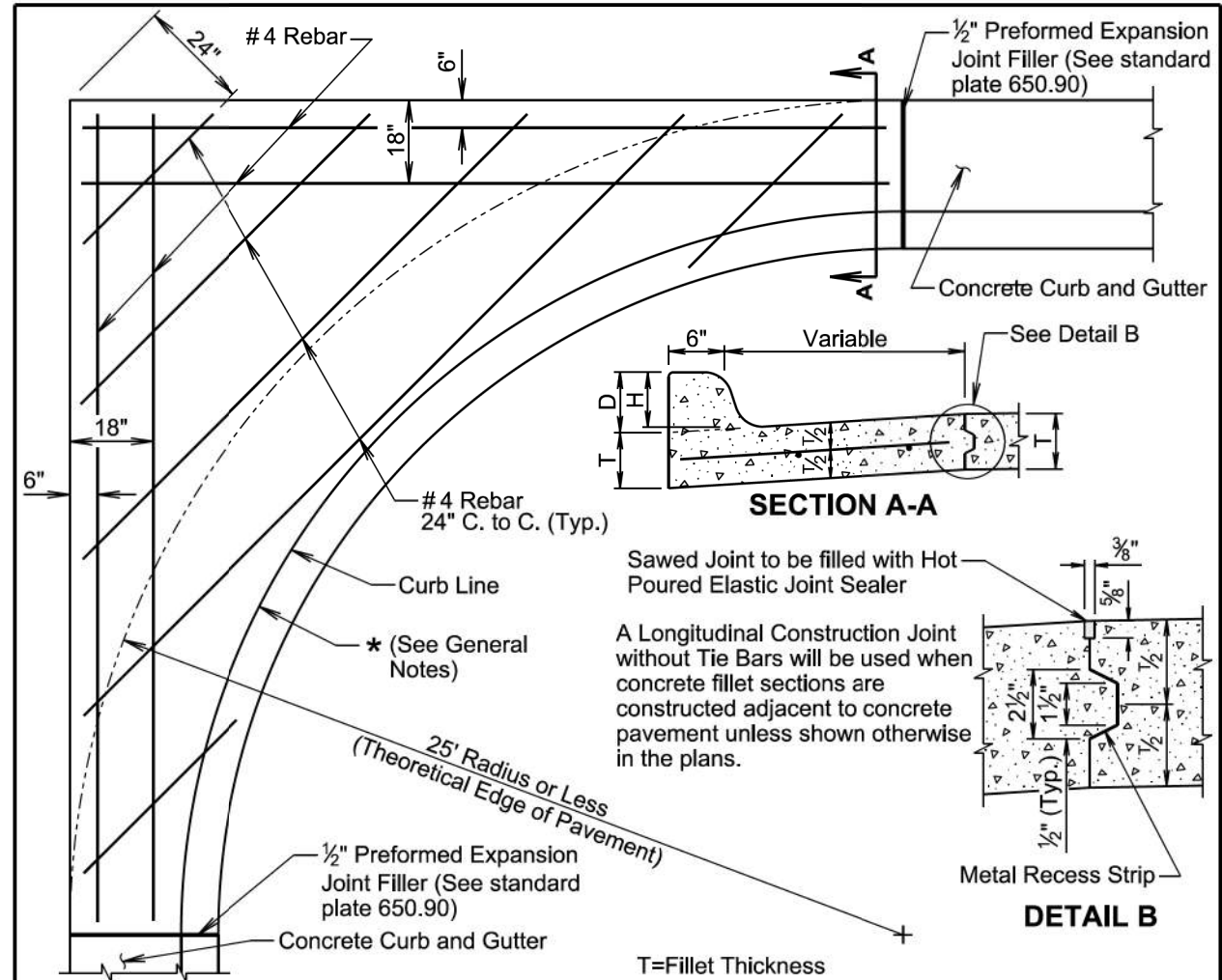
The mainline curb and gutter may be placed monolithically with the PCC pavement if the mainline lane width is less than or equal to 12 feet. If this method of construction is used, the tie bars and the sawed joint between the curb and gutter and the PCC pavement will be eliminated.

The gutter or curb and gutter will be sawed transversely at each mainline transverse contraction joint. The transverse contraction joints in the gutter or curb and gutter will be sawed and sealed same as the transverse contraction joints in the PCC pavement.

The slope of the gutter will be the slope designated for the type of gutter or curb and gutter to be constructed. The bottom slope of the gutter or curb and gutter will be constructed at the same slope as the mainline concrete pavement.

June 26, 2019

Published Date: 1st Qtr. 2022	S D D O T	PCC PAVEMENT LONGITUDINAL CONSTRUCTION JOINTS WITH CONCRETE GUTTER OR CONCRETE CURB AND GUTTER	PLATE NUMBER
			380.11
			Sheet 1 of 1



GENERAL NOTES:

* If a curb ramp is constructed adjacent to a PCC fillet section, the curb will need to be modified. Refer to the corresponding curb ramp standard plate or other special details in the plans for modification of the PCC fillet section.

Dimensions D, H, and T will conform to those shown on the appropriate curb and gutter standard plate.

All rebar will be in conformance with Sections 480 and 1010 of the Specifications. All rebar will have a minimum of 3 inches of clear cover.

Class M6 Concrete will be used in construction of the fillets.

The concrete curb will be monolithic with the concrete fillet. No separate payment for this curb will be made as the curb is considered a part of the fillet.

Joints will be constructed at 10-foot intervals except when fillets are constructed adjacent to PCC Pavement. If there is adjacent PCC Pavement the joints will be extended from edge of pavement through the fillet section as directed by the Engineer.

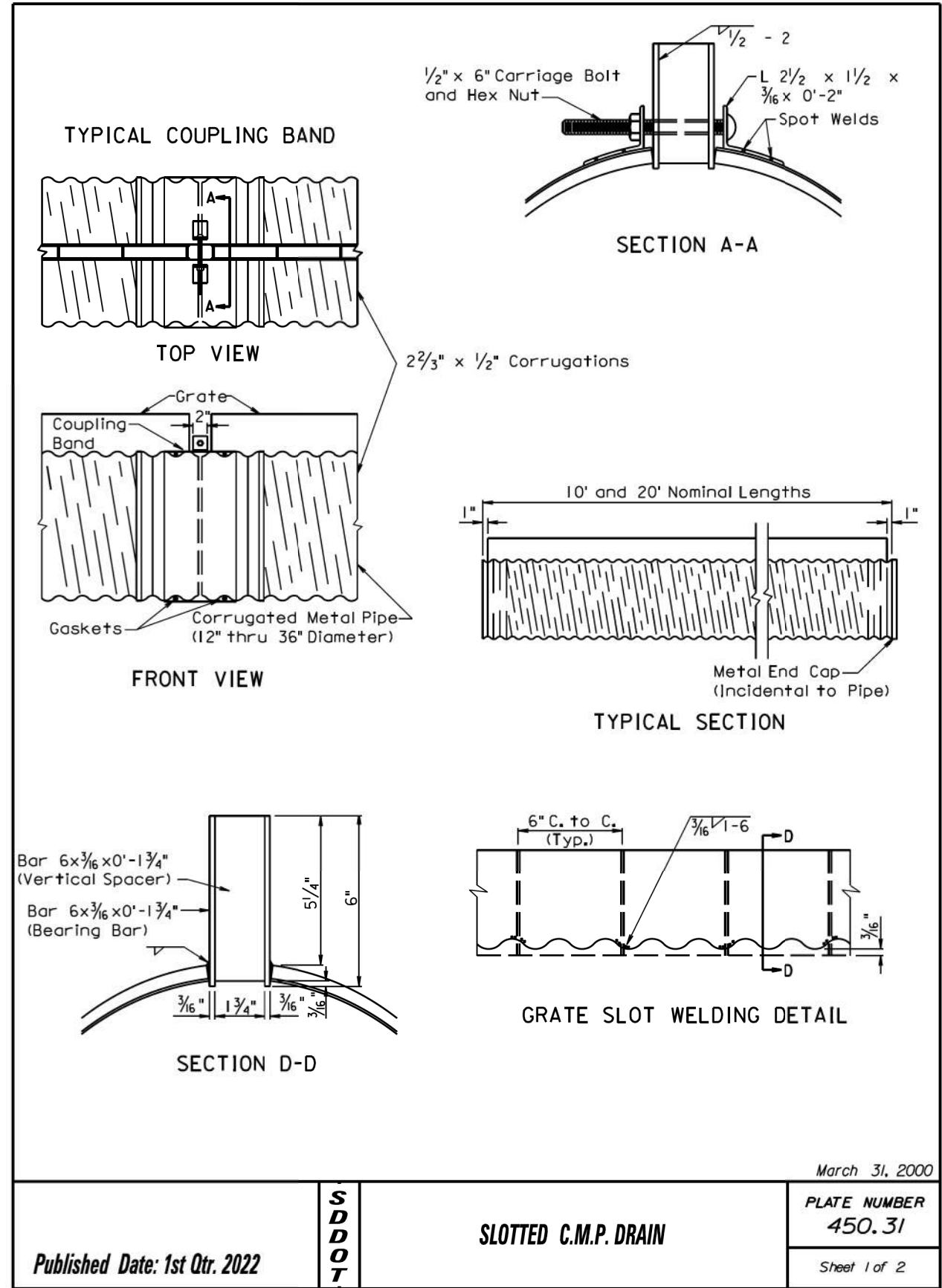
The cost for all materials, labor, and incidentals necessary to construct the PCC fillet section with curb and gutter will be incidental to the contract unit price per square yard for the corresponding PCC fillet section contract item.

June 26, 2019

Published Date: 1st Qtr. 2022	S D D O T	PCC FILLET SECTION WITH TYPE B CURB AND GUTTER	PLATE NUMBER
			380.16
			Sheet 1 of 1

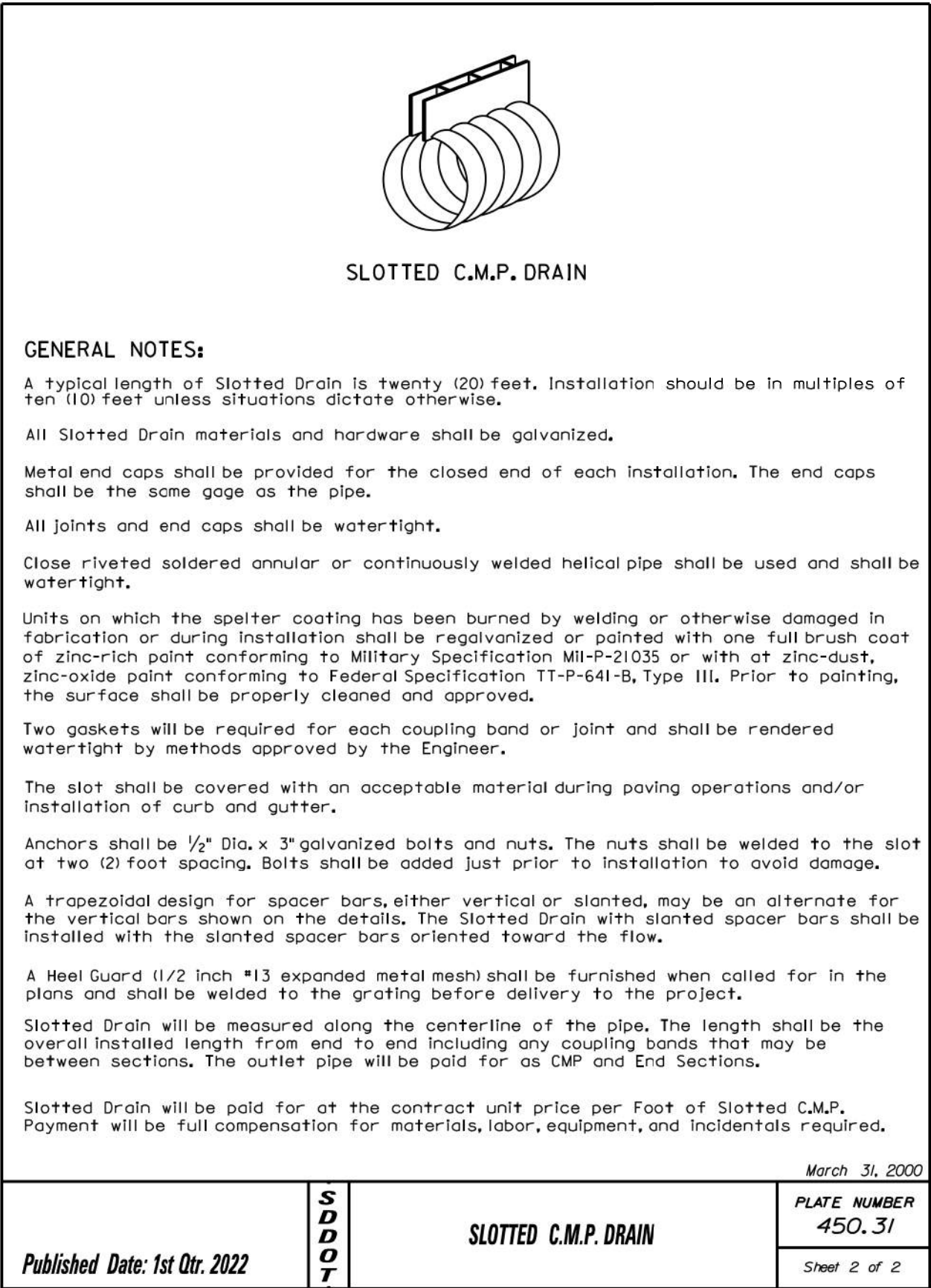
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Plotted From - TRRC12608



STATE OF SOUTH DAKOTA	PROJECT 410D404	SHEET 27	TOTAL SHEETS 34
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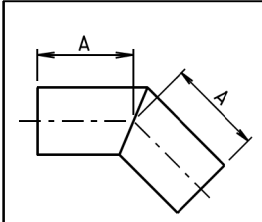
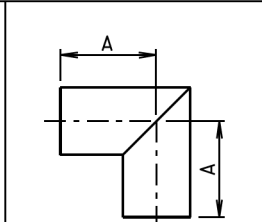
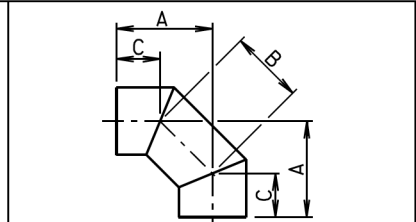
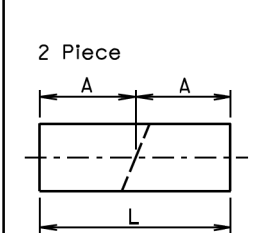
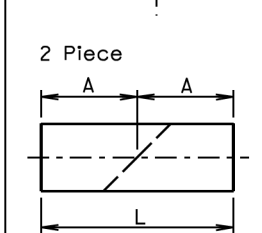
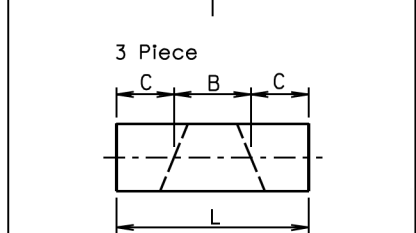
Plotting Date: 02/15/2022



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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	28	34

Plotting Date: 02/15/2022

										
2 Piece			2 Piece			3 Piece				
										
5° to 45° Elbow			50° to 90° Elbow			90° Elbow				
Diameter	A	L	Diameter	A	L	Diameter	A	B	C	L
Inches	Feet	Feet	Inches	Feet	Feet	Inches	Inches			Feet
12	1	2	12	2	4	12	25½	11	18½	4
15	1	2	15	2	4	15	26½	12	18	4
18	1	2	18	2	4	18	27	14	17	4
21	2	4	21	2	4	21	27	15	16½	4
24	2	4	24	2	4	24	27½	16	16	4
27	2	4	27	2	4	27	27½	17	15½	4
30	2	4	30	3	6	30	40	19	26½	6
33	2	4	33	3	6	33	40	20	26	6
36	2	4	36	3	6	36	40½	21	25½	6
42	2	4	42	3	6	42	41	23	24½	6
48	2	4	48	4	8	48	53½	26	35	8
54	3	6	54	4	8	54	54	28	34	8
60	3	6	60	4	8	60	54½	31	32½	8
66	3	6	66	4	8	66	54	33	31½	8
72	3	6	72	5	10	72	67½	36	42	10
78	3	6	78	5	10	78	68	39	40½	10
84	3	6	84	5	10	84	68½	41	39½	10
90	3	6	90	6	12	90	70	46	37	10
96	3	6	96	6	12	96	82	46	49	12

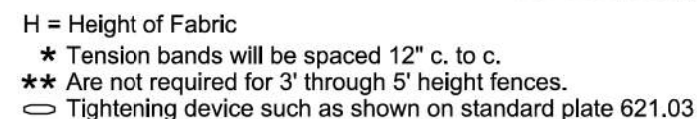
FABRICATED ELBOW LENGTHS FOR ALL CORRUGATIONS

GENERAL NOTES:

All dimensions shown are nominal.
L = Linear Feet of C.M.P. required to fabricate fitting.

June 26, 2001

<i>Published Date: 1st Qtr. 2022</i>	S D D O T	C.M.P. FABRICATED LENGTHS FOR ELBOWS	PLATE NUMBER 450.32
			Sheet 1 of 1

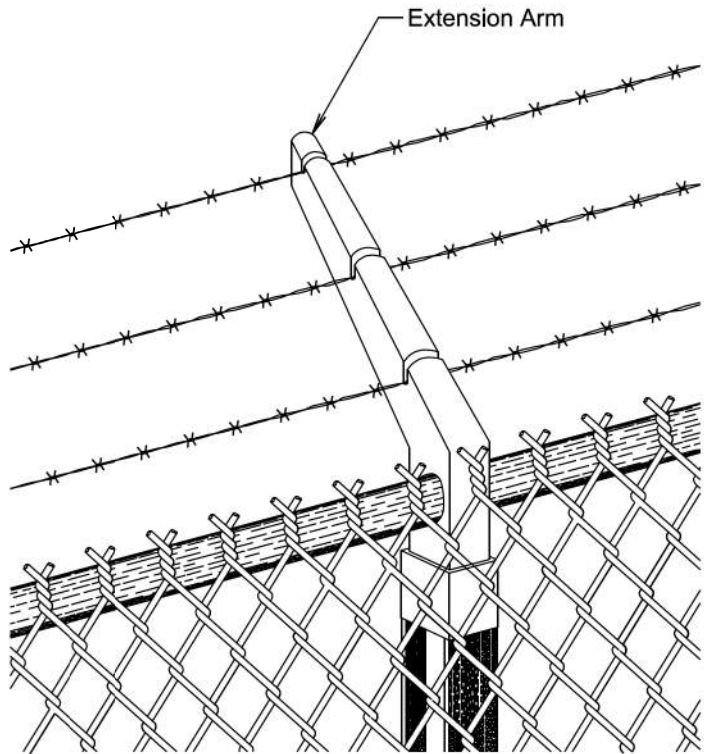


COMPONENT	END, CORNER, and PULL POST		LINE POST			TOP and BRACE RAIL	
Type of Fabrication	Round Pipe Nominal	Roll Formed Steel	Round Pipe Nominal	"C" Section	H Beam Steel	Round Pipe Nominal	Roll Formed Steel
Size	3.00" O. D.	3.5"x3.5"	2.50" O. D.	1.875"x1.625"	2.25"x1.70"	1.625" O. D.	1.625"x1.25"
Weight (lb. / Ft.)	5.79 or 4.64	5.14	3.65 or 3.12	2.34	3.43	2.27 or 1.84	1.35

Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	30	34

Plotting Date: 02/15/2022



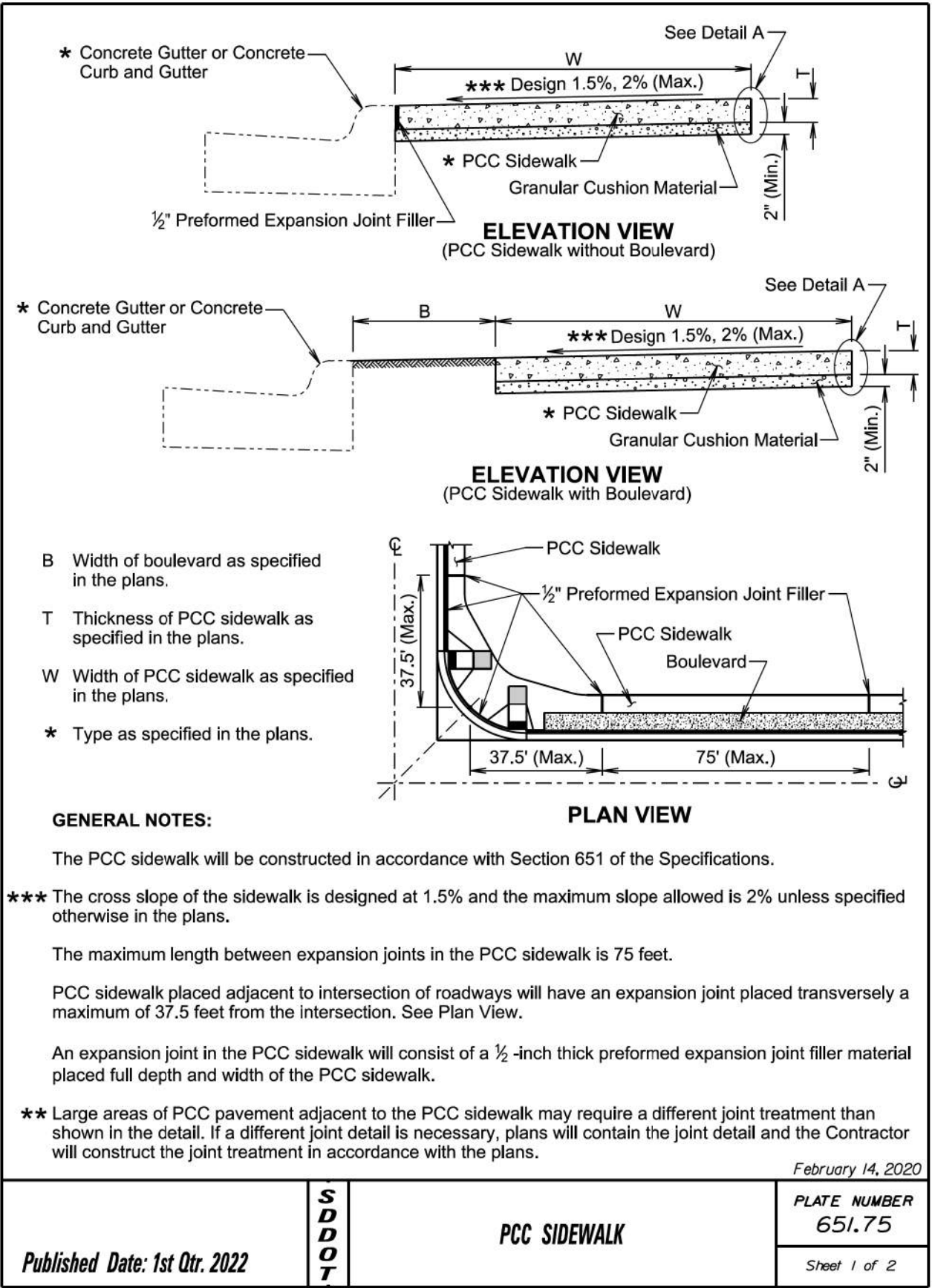
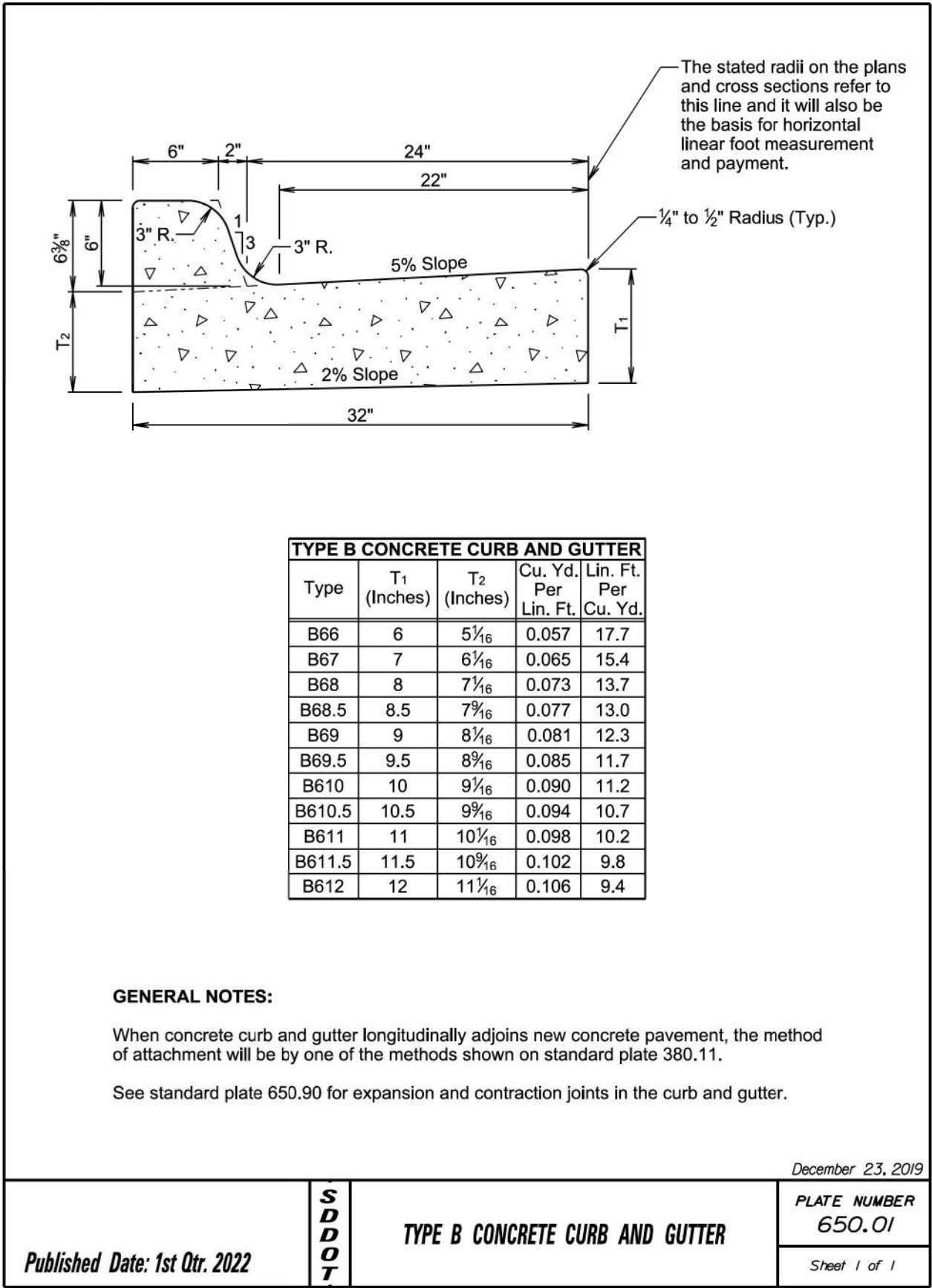
GENERAL NOTES:

Extension arms will be hot dipped galvanized. End and corner arms will be malleable iron. Intermediate arms may be pressed steel. Arms will have sealed caps and three slots to accommodate the barbed wires. The top wire will be 12 inches above the fabric and 12 inches out from the fence line at an angle of approximately 45°. Adjustable arms may be used. Barbed wire will be two strand 12½ gauge wire with four point round barbs spaced on 5 inch centers.

Extra payment will not be made for extension arms with barbed wire. Extension arms with barbed wire will be incidental to the respective "Chain Link Fence" contract item. When extension arms with barbed wire are attached to gates, the payment for the extension arms with barbed wire will be incidental to the respective "Gate" contract item.

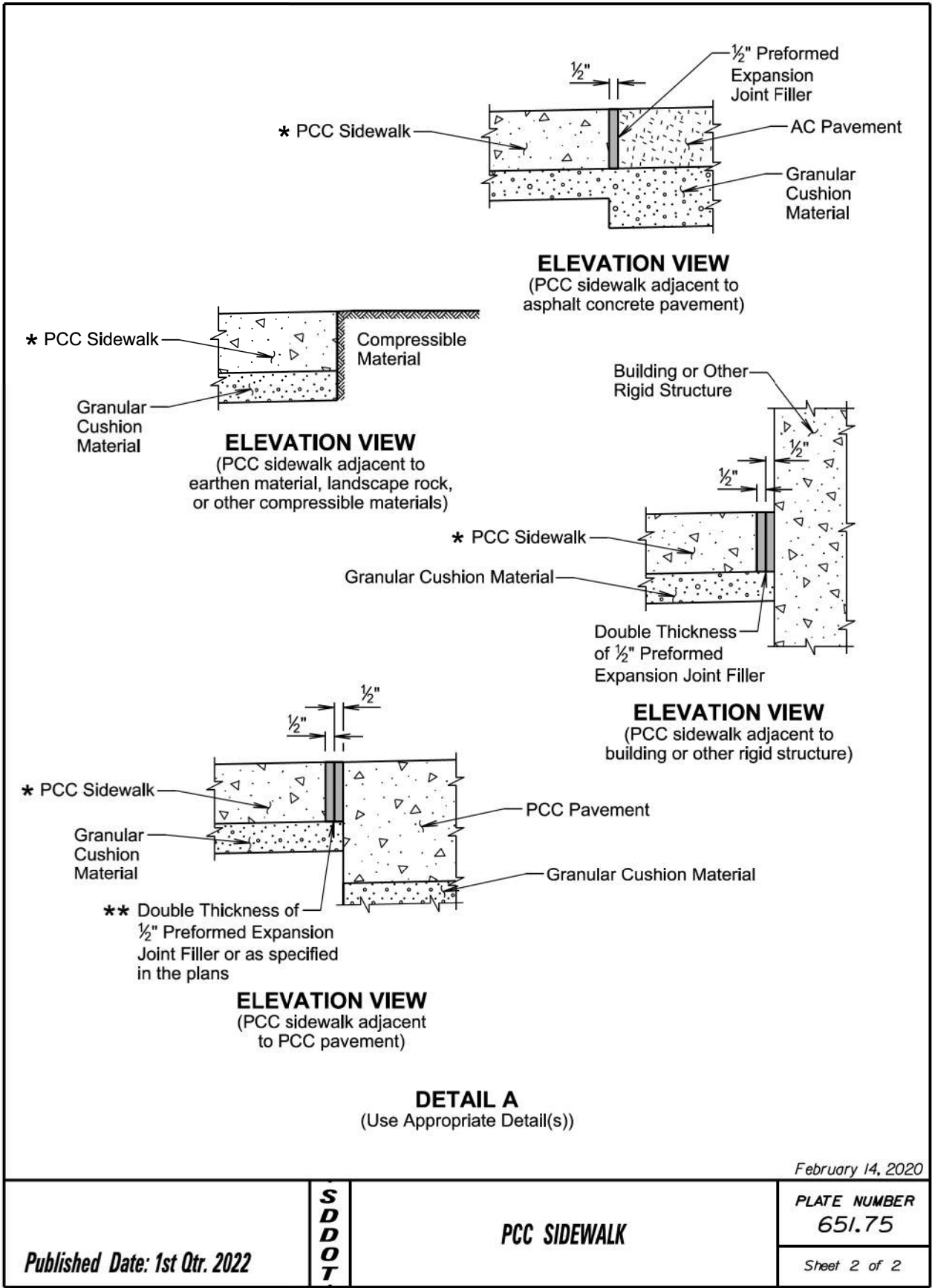
June 26, 2019

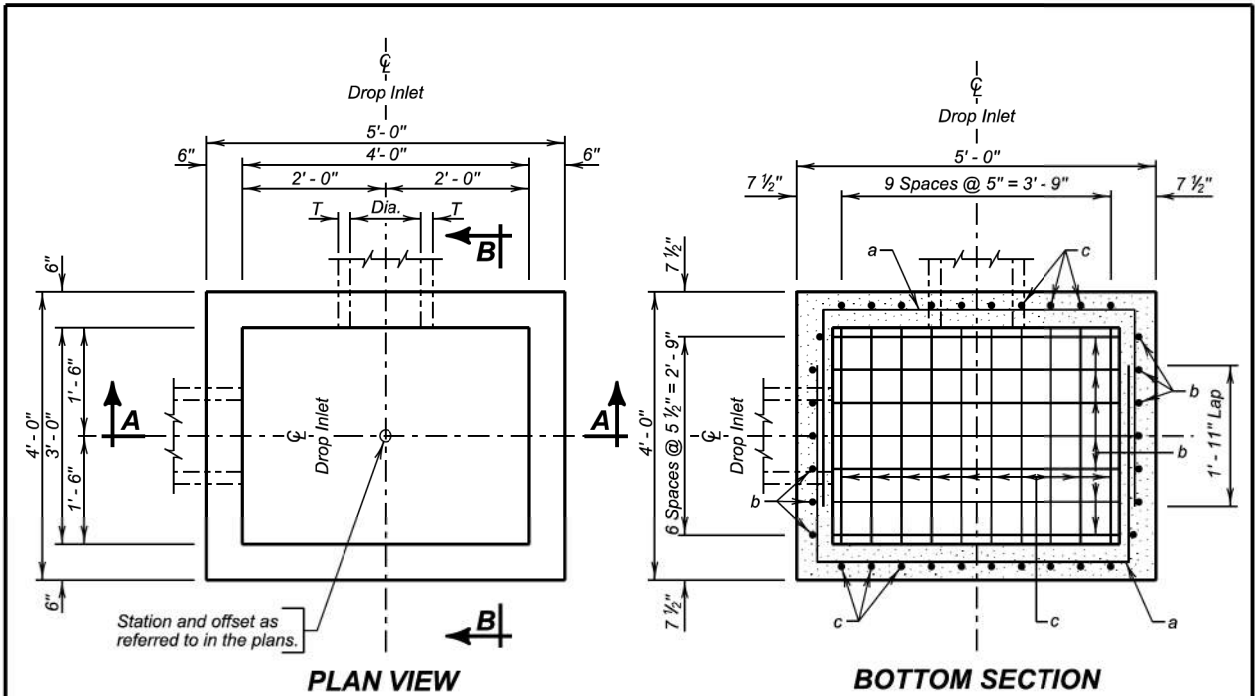
<i>Published Date: 1st Qtr. 2022</i>	S D D O T	BARBED WIRE TOP FOR CHAIN LINK FENCE	PLATE NUMBER 621.04
			Sheet 1 of 1



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	32	34

Plotting Date: 02/15/2022





ESTIMATED QUANTITIES			
ITEM	UNIT	CONSTANT QUANTITY	VARIABLE QUANTITY
* Class M6 Concrete	Cu. Yd.	0.43	0.30H
Reinforcing Steel	Lb.	90.90	40.53H
Frame and Grate Assembly	Each	1	

DROP INLETS FOR 12" TO 36" DIAMETER PIPE

SPECIFICATIONS

Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition.
Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, Current Edition and required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

GENERAL NOTES:

Design Live Load: HL-93. No construction loading in excess of legal load was considered.

Reinforcing steel shall conform to ASTM A615 grade 60. The d bars shall be lapped 12 inches with the b and c bars. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.

Drop inlet may be precast. If precast drop inlet details differ from this standard plate, submit a checked design done by a SD registered P.E. and shop plans to the Office of Bridge Design for approval.

* Reduce total quantities of concrete by the amount of concrete displaced by the pipe(s). The total quantity of concrete shall be computed to the nearest hundredth of a cubic yard. The total quantity of reinforcing steel shall be computed to the nearest pound.

Drop inlet shown may be modified by the addition or omission of connecting pipes as noted elsewhere in the plans. All pipes entering drop inlet must fit between the inside face of walls and shall not enter through the corners.

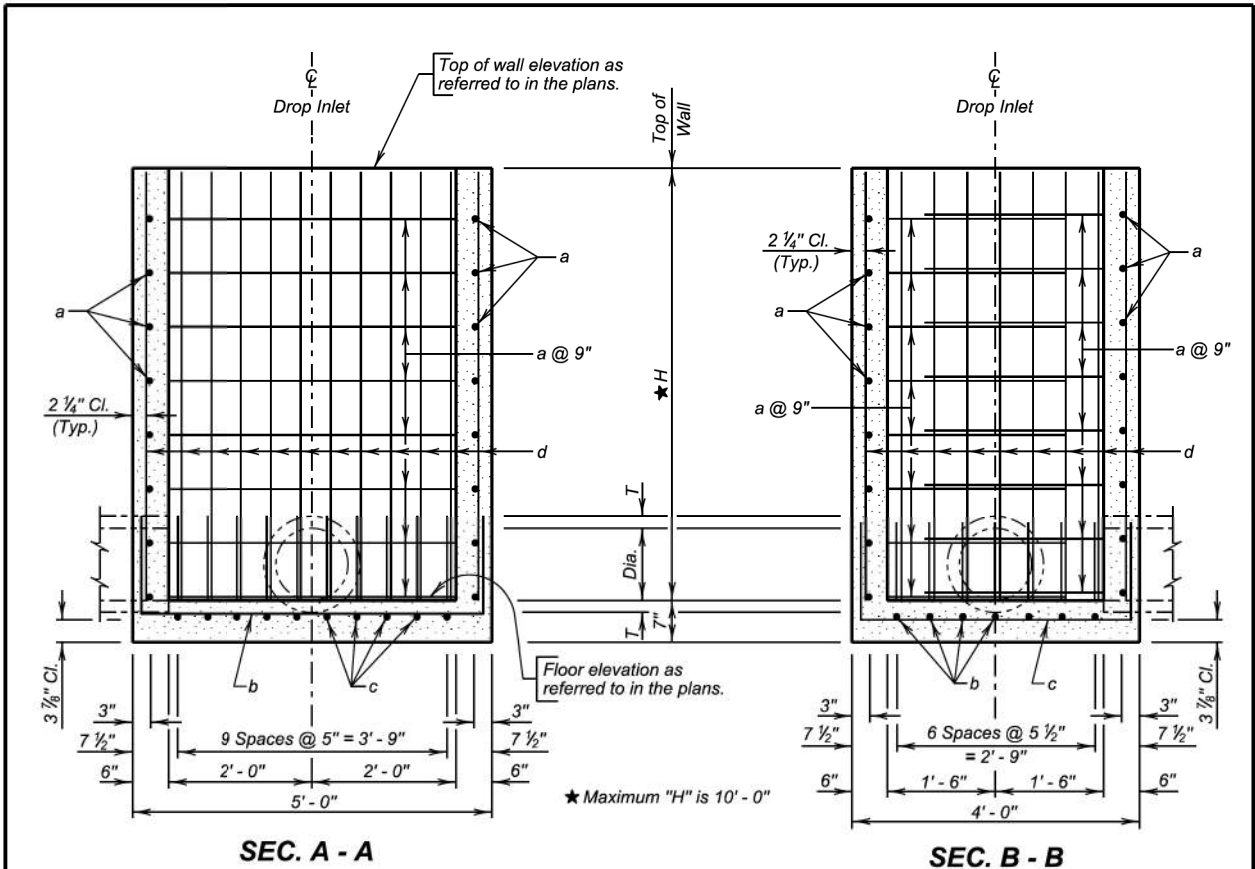
Maximum R.C.P. diameter shall not exceed 24 inches (24 inches for R. C. arch) on the 3-foot wide side and shall not exceed 36 inches (30 inches for R. C. arch) on the 4-foot wide side of the drop inlet.

The dimension of H is in feet. Maximum H is 10 feet.

PIPE DISPLACEMENT REDUCTIONS			
Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)	
12	2	0.03	
15	2 1/4	0.04	
18	2 1/2	0.05	
24	3	0.09	
30	3 1/2	0.14	
36	4	0.20	
18	2 1/2	0.05	
24	3 1/2	0.09	
30	4	0.14	

December 16, 2015

Published Date: 1st Qtr. 2022	S D D O T	3' X 4' TYPE C REINFORCED CONCRETE DROP INLET	PLATE NUMBER 670.10
			Sheet 1 of 2



REINFORCING SCHEDULE											
Mk.	No.	Size	Length	Type	Bending Details						
a	2.67H	4	10' - 0"	17	<table><tr><td>a</td><td>2' - 8 3/4"</td></tr><tr><td>b</td><td>1' - 4 1/4"</td></tr><tr><td>c</td><td>1' - 4 1/4"</td></tr></table> <p>Type 17</p>	a	2' - 8 3/4"	b	1' - 4 1/4"	c	1' - 4 1/4"
a	2' - 8 3/4"										
b	1' - 4 1/4"										
c	1' - 4 1/4"										
b	7	5	7' - 3"	17							
c	10	4	6' - 3"	17							
d	34	4	H - 2"	Str.							

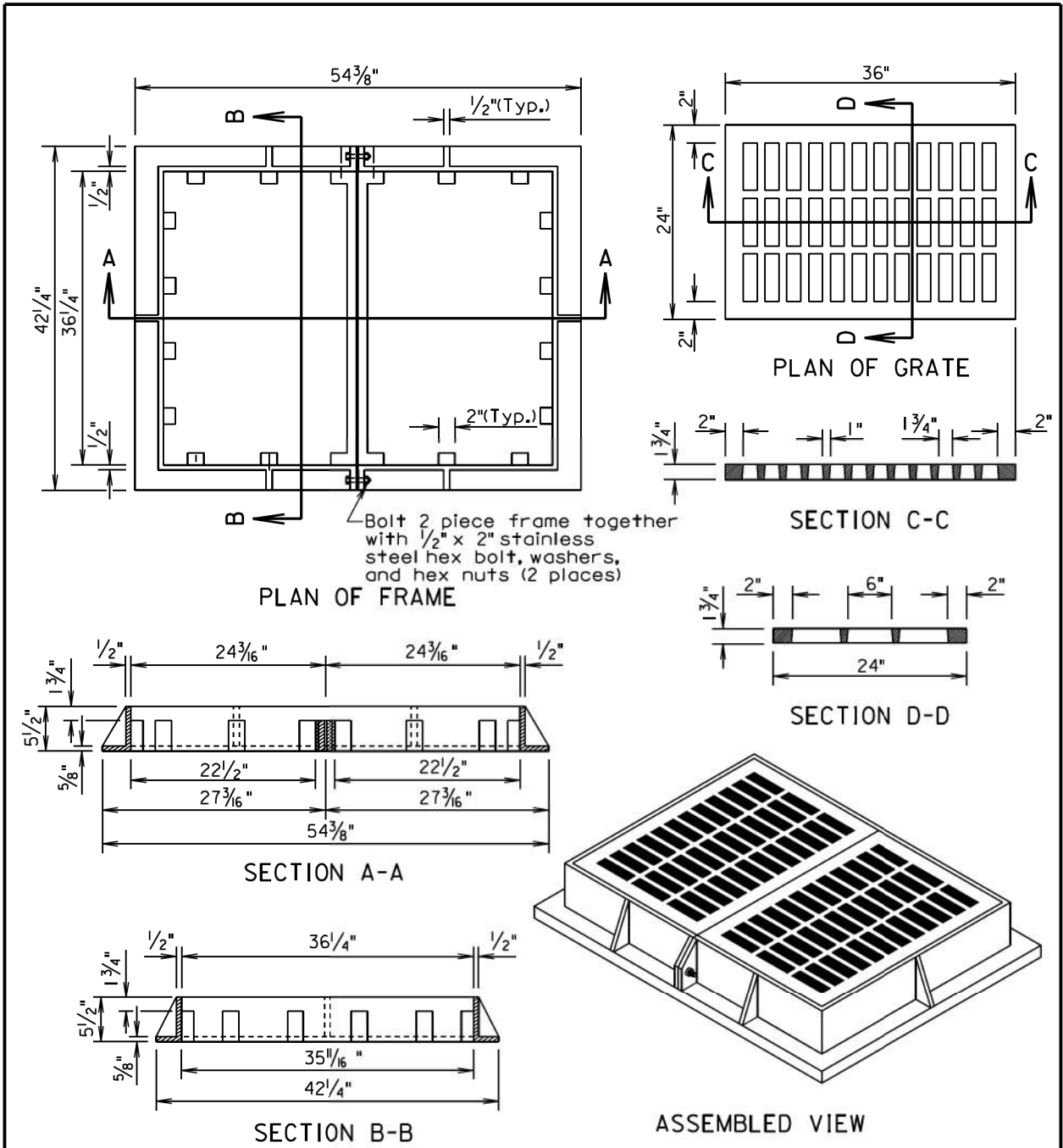
NOTE:
All dimensions are out to out of bars.

December 16, 2015

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			Sheet 2 of 2

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	410D404	34	34

Plotting Date: 02/15/2022



GENERAL NOTE:

The total weight of the frame and grate shall be 850 pounds minimum.

March 31, 2000

Published Date: 1st Qtr. 2022	S D D O T	TYPE C FRAME AND GRATE	PLATE NUMBER 670.82
			Sheet 1 of 1