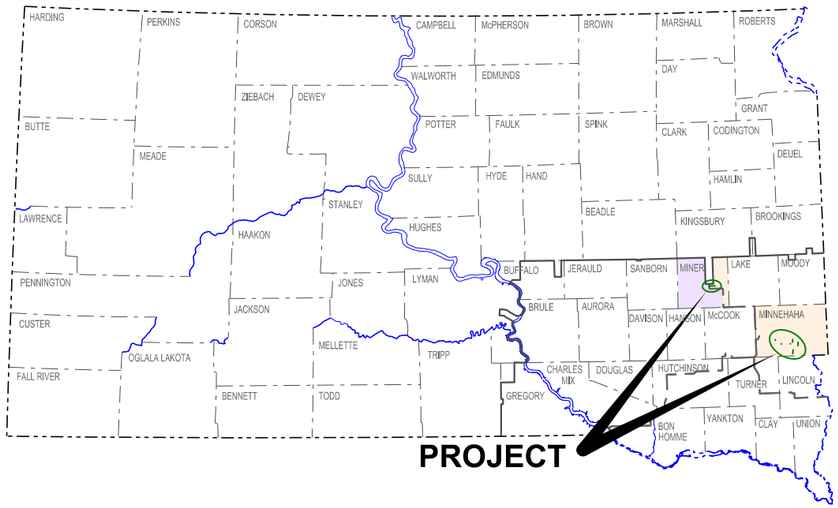


PLOT SCALE - 1:1.70000

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT IM–P 0022(85)
INTERSTATES 29, 90 & 229,
SD HIGHWAYS 34 & 38
MINNEHAHA & MINER COUNTIES
PAVEMENT RESTORATION -
NRC PAVEMENT REPAIR,
SPALL REPAIR, TIE BAR RETROFIT STITCHING,
SEALING RANDOM CRACKS, JOINT SEALING,
PAVEMENT MARKING & ASPHALT REPAIR MASTIC
PCN 089K

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P 0022(85)	1	64

Plotting Date: 03/25/2022

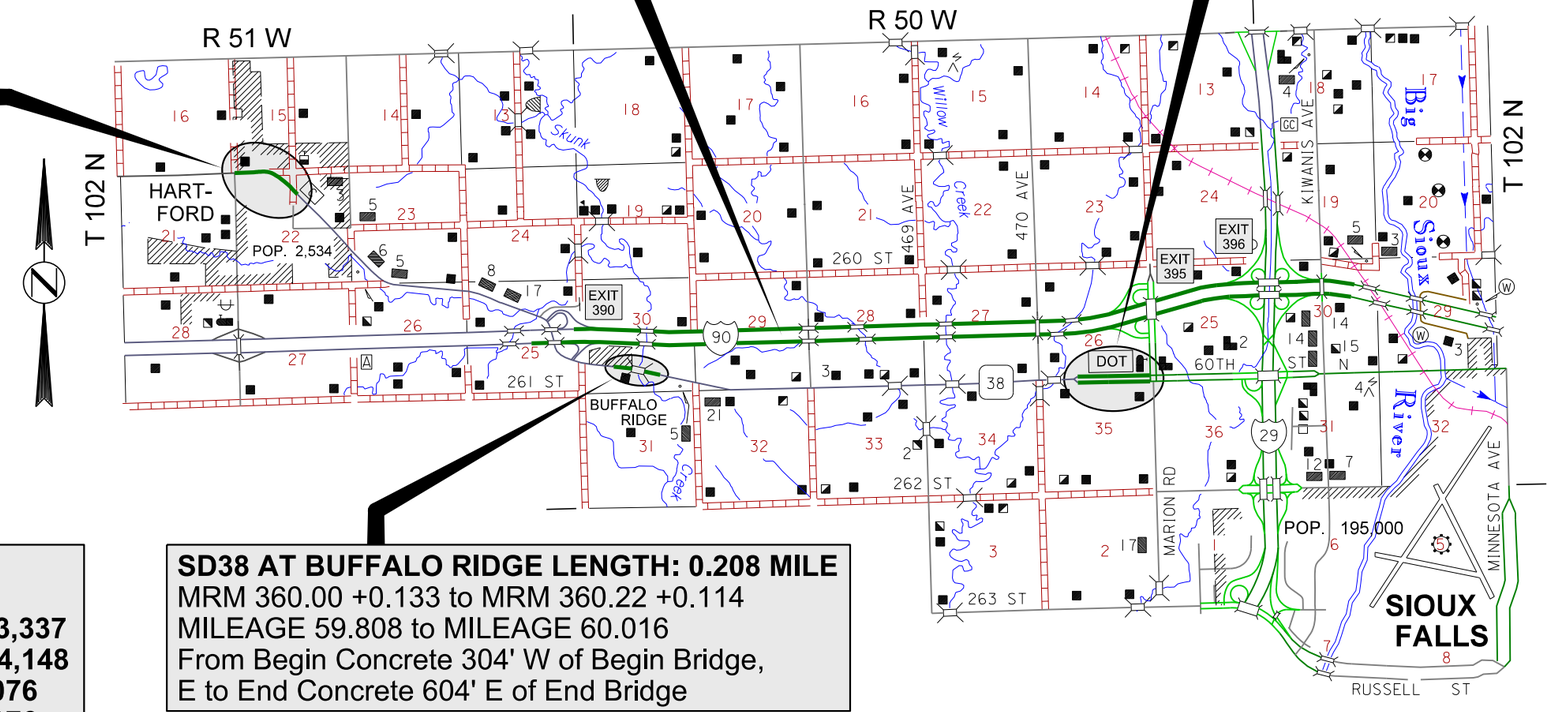
INDEX OF SHEETS

I90 WBL LENGTH: 6.866 MILES
MRM 390.00 +0.402 to MRM 397.00 +0.271
MILEAGE 390.602 to MILEAGE 397.468
From Begin Concrete 830' E of Exit 390
over SD38, E to 1,515' E of Kiwanis Ave

I90 EBL LENGTH: 7.212 MILES
MRM 390.00 +0.046 to MRM 397.00 +0.263
MILEAGE 390.260 to MILEAGE 397.472
From Begin Concrete 1,140' W of Exit 390
over SD38, E to 1,470' E of Kiwanis Ave

SD38 WBL AT SDDOT LENGTH: 0.363 MILE
SD38 EBL AT SDDOT LENGTH: 0.363 MILE
MRM 364.26 +0.119 to MRM 364.74 +0.015
MILEAGE 0.119 to MILEAGE 0.482
From Begin Concrete Divided, E to Jct Marion Rd

SD38 IN HARTFORD
LENGTH: 0.602 MILE
MRM 356.00 +0.121 to
MRM 356.00 +0.723
MILEAGE 55.758 to
MILEAGE 56.360
From Begin Concrete
134' W of Jct Western Ave,
ESE to End Concrete 130'
SE of Vandemark Ave



STORM WATER PERMIT
(None required)

SD38 AT BUFFALO RIDGE LENGTH: 0.208 MILE
MRM 360.00 +0.133 to MRM 360.22 +0.114
MILEAGE 59.808 to MILEAGE 60.016
From Begin Concrete 304' W of Begin Bridge,
E to End Concrete 604' E of End Bridge

I90 WBL ADT(2021) 8,782
I90 EBL ADT(2021) 8,792
SD38 AT HARTFORD ADT(2021) 3,337
SD38 BUFFALO RIDGE ADT(2021) 4,148
SD38W AT SDDOT ADT(2021) 3,076
SD38E AT SDDOT ADT(2021) 3,076

May 18, 2022

PLOTTED FROM - TRSF12114

PLOT NAME - 1

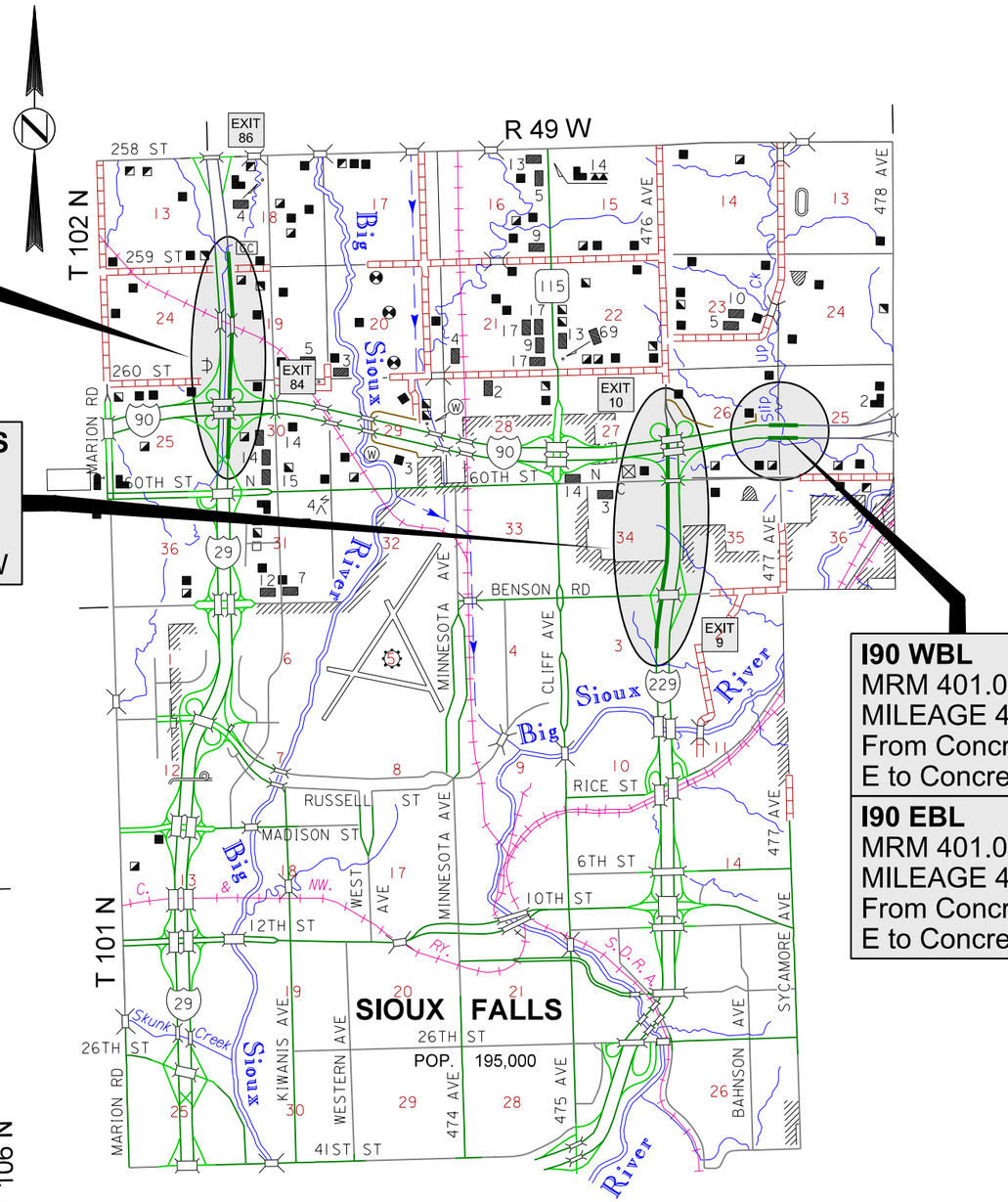
FILE - ...\089K MINNEHAHA\TITL089K.DGN

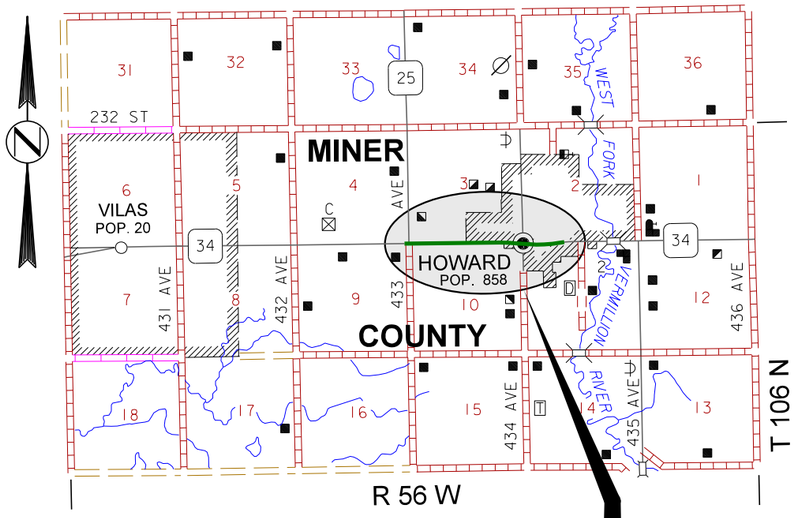
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P 0022(85)	2	64

Plotting Date: 03/25/2022

I29 NBL **LENGTH: 1.689 MILES**
MRM 83.38 +0.400 to MRM 85.00 +0.503
MILEAGE 83.737 to MILEAGE 85.426
From CRC Terminal 2,110' N of 60th St N,
N to End Concrete 480' N of 259th St

I229 SBL **LENGTH: 2.007 MILES**
MRM 8.28 +0.565 to MRM 10.82 +0.041
MILEAGE10.092 to MILEAGE 12.099
From Begin NRC Pavement 3,195' S of
Benson Rd, N to End Concrete 216' N of I90W





I90 WBL **LENGTH: 0.264 MILE**
MRM 401.00 +0.468 to MRM 401.61 +0.142
MILEAGE 401.668 to MILEAGE 401.932
From Concrete Change 625' W of Slip Up Creek,
E to Concrete Change 770' E of Slip Up Creek

I90 EBL **LENGTH: 0.267 MILE**
MRM 401.00 +0.464 to MRM 401.61 +0.143
MILEAGE 401.675 to MILEAGE 401.942
From Concrete Change 630' W of Slip Up Creek,
E to Concrete Change 780' E of Slip Up Creek

SD34 ADT(2021) 1,785
I29 NBL ADT(2021) 11,970
I90 WBL ADT(2021) 16,005
I90 EBL ADT(2021) 16,005
I229 SBL ADT(2021) 12,892

SD34 IN HOWARD **LENGTH: 1.384 MILES**
85' W of MRM 365.00 to MRM 366.00 +0.392
MILEAGE 304.403 to MILEAGE 305.787
From Begin Concrete 135' W of Jct SD25, E
through Howard to End Concrete 60' E of Miner St

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E7700	Remove Drop Inlet Frame and Grate Assembly for Reset	9	Each
320E0402	Asphalt Repair Mastic Type 2	137,794	Lb
320E1200	Asphalt Concrete Composite	300.0	Ton
380E5030	Nonreinforced PCC Pavement Repair	8,496.7	SqYd
380E6000	Dowel Bar	9,556	Each
380E6110	Insert Steel Bar in PCC Pavement	18,623	Each
380E6200	Tie Bar Retrofit, Stitching	335	Each
380E6302	Reseal PCC Pavement Joint - Hot Pour	123,887	Ft
380E6310	Seal Random Cracks in PCC Pavement	1,239	Ft
380E6510	Grinding PCC Pavement	744.4	SqYd
390E0200	Repair Type A Spall	22.0	SqFt
410E2600	Membrane Sealant Expansion Joint	52.0	Ft
460E0700	Joint Nosing Material	10	SqFt
633E0225	Preformed Thermoplastic Pavement Marking, 24"	816	Ft
633E0235	Preformed Thermoplastic Pavement Marking, Arrow	29	Each
633E0240	Preformed Thermoplastic Pavement Marking, Combination Arrow	1	Each
633E1200	High Build Waterborne Pavement Marking Paint, White	155	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	93	Gal
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	816	Ft
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	29	Each
633E5030	Grooving for Cold Applied Plastic Pavement Marking, Combination Arrow	1	Each
634E0010	Flagging	500.0	Hour
634E0020	Pilot Car	250.0	Hour
634E0110	Traffic Control Signs	3,221.8	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	32	Each
634E0330	Temporary Raised Pavement Markers	21,500	Ft
634E0420	Type C Advance Warning Arrow Board	12	Each
634E0600	4" Temporary Pavement Marking Tape Type I	2,544	Ft
634E0900	Portable Temporary Traffic Control Signal	2	Unit
634E1215	Contractor Furnished Portable Changeable Message Sign	6	Each
650E9000	Repair Concrete Curb and/or Gutter	255	Ft
670E7000	Reset Drop Inlet Frame and Grate Assembly	9	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 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 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 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 Agriculture 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 material 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.

Cost 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

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

Action Taken/Required:

All earth disturbing activities not designated within the plans require 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.

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

SCOPE OF WORK

This project consists of full depth replacement of Nonreinforced Concrete Pavement (NRCP) in areas where concrete pavement blowups or major failures have occurred. Joints will be sawed and sealed where sealant has failed.

COORDINATION BETWEEN CONTRACTORS

A separate contract for Project IM 0909(91)394 - PCN 065D has been awarded to another Contractor for bridge repair over I90 located 2.1 miles west of I29.

In addition, another separate contract for Project IM-B 2291(01)10 - PCN 01QA has been awarded to another Contractor for bridge replacement on 60th St. N. over I229.

The Contractor will schedule work so as not to interfere with or hinder the progress of the work performed by other Contractors on the projects listed above.

UTILITIES

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

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

The Contractor will 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, might be relocated or replaced by a new utility facility during the construction of this project, or might not require adjustment and may remain in its current location. The Contractor will 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.

EXISTING NON-REINFORCED CONCRETE (NRC) PAVEMENT

SD38 in Hartford, SD

The existing pavement is 8” NRC PCC Pavement. Existing contraction joints are spaced at approximately 20’. Longitudinal joints are reinforced with No. 5 x 30” deformed tie bars spaced 48” center to center. Transverse joints are reinforced with 1¼” x 18” plain round dowel bars spaced 12” center to center. The aggregate in the existing NRC Pavement is quartzite.

SD38 over Skunk Creek

The existing pavement is 8” NRC PCC Pavement. Existing contraction joints are spaced at approximately 15’. Longitudinal joints are reinforced with No. 5 x 30” deformed tie bars spaced 48” center to center. Transverse joints are reinforced with 1¼” x 18” plain round dowel bars spaced 12” center to center. The aggregate in the existing NRC Pavement is quartzite.

EXISTING NON-REINFORCED CONCRETE (NRC) PAVEMENT (CONTINUED)

SD38E/W at West 60th St N in Sioux Falls, SD

The existing pavement is 9” NRC PCC Pavement. Existing contraction joints are spaced at approximately 20’. Longitudinal joints are reinforced with No. 5 x 30” deformed tie bars spaced 48” center to center. Transverse joints are reinforced with 1¼” x 18” plain round dowel bars spaced 12” center to center. The aggregate in the existing NRC Pavement is quartzite.

I90E/W near Buffalo Ridge

The existing pavement is 11.5” x 20’ NRC PCC Pavement. Existing contraction joints are spaced at approximately 20’. Longitudinal joints are reinforced with No. 5 x 30” deformed tie bars spaced 48” center to center. Transverse joints are reinforced with 1¼” x 18” plain round dowel bars spaced 12” center to center. The aggregate in the existing NRC Pavement is quartzite.

I29N near I90 interchange in Sioux Falls, SD

The existing pavement is 11” NRC PCC Pavement. Existing contraction joints are spaced at approximately 20’. Longitudinal joints are reinforced with No. 5 x 30” deformed tie bars spaced 48” center to center. Transverse joints are reinforced with 1¼” x 18” plain round dowel bars spaced 12” center to center. The aggregate in the existing NRC Pavement is quartzite.

SD34 in Howard, SD

The existing pavement is 8” NRC PCC Pavement. Existing contraction joints are spaced at approximately 20’. Longitudinal joints are reinforced with No. 5 x 30” deformed tie bars spaced 48” center to center. Transverse joints are reinforced with 1¼” x 18” plain round dowel bars spaced 12” center to center. The aggregate in the existing NRC Pavement is quartzite.

I229S near I90 interchange in Sioux Falls, SD

The existing pavement is 12” NRC PCC Pavement. Existing contraction joints are spaced at approximately 20’. Longitudinal joints are reinforced with No. 5 x 30” deformed tie bars spaced 48” center to center. Transverse joints are reinforced with 1¼” x 18” plain round dowel bars spaced 12” center to center. The aggregate in the existing NRC Pavement is quartzite.

I90E/W near I229 interchange in Sioux Falls, SD

The existing pavement is 11.5” NRC PCC Pavement. Existing contraction joints are spaced at approximately 15’. Longitudinal joints are reinforced with No. 5 x 30” deformed tie bars spaced 48” center to center. Transverse joints are reinforced with 1¼” x 18” plain round dowel bars spaced 12” center to center. The aggregate in the existing NRC Pavement is quartzite.

NONREINFORCED PCC PAVEMENT REPAIR – GENERAL

NRC Pavement Repair will be done prior to Grinding PCC Pavement.

New pavement thickness will equal existing pavement thickness ($T_N = T$).

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

Existing concrete pavement will be sawed full depth at the beginning and end of the NRCP repair areas. When either the beginning or end of a NRCP repair area falls close to an existing joint or crack, the NRCP repair area will be extended to eliminate the existing joint or crack. Where possible, new working joints will be adjacent to existing working joints.

Saw cuts that extend beyond the repair area will be minimized and filled with a non-shrinkage mortar mix at the Contractor’s expense.

Existing concrete pavement in the replacement areas will be removed by the lift out method or by means that minimize damage to the base and sides of remaining in place concrete. Removed material will be removed from within the right-of-way by the end of the workday. Damage to adjacent concrete caused by the Contractor’s operations will be removed and replaced at the Contractor’s expense.

If the pavement replacement area is entirely on either side of the existing contraction joint, the location of one of the working joints will be at the original location. Any existing dowel bar assemblies/steel bars will be sawed off and removed.

At full roadway width repairs and when specified, a working joint will be reconstructed at both ends of each pavement replacement area as shown in these plans.

Concrete placed adjacent to gravel and asphalt concrete shoulders will be formed full depth to match the width of existing concrete pavement. Asphalt concrete shoulders adjacent to concrete pavement replacements will be repaired with new hot-mix asphalt concrete.

At repair locations where the new working joint is not opposite the existing working joint, the Contractor will place a ¼” preformed asphalt expansion joint material along the longitudinal joint from the existing working joint to the new working joint. The expansion joint material will meet the requirements of AASHTO M33. Cost for this material will be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

The initial contraction joint sawing will be performed as soon as practical after placement to avoid random cracking.

Joints (longitudinal and transverse) through and around the repair areas will be sawed and sealed in accordance with the details shown in these plans. Refer to Saw and Seal Joints notes.

SAW AND SEAL JOINTS (NRCP)

Longitudinal and transverse joints at concrete repair areas will be sawed and sealed.

Joint sealing will conform to Section 380.3 P.

Longitudinal and transverse joints in urban and rural sections will be sealed with Hot Poured Elastic Joint Sealer.

Hot Poured Elastic Joint Sealer will be based on visual inspection by the Engineer.

Cost for sawing and sealing for both longitudinal construction and transverse joints will be incidental to the contract unit prices per square yard for Nonreinforced PCC Pavement Repair.

NONREINFORCED PCC PAVEMENT REPAIR

Concrete will meet the requirements stated in Section 380 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 between 650 and 800 lbs total cementitious material with a fly ash content of 20%. 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 60ºF or higher throughout the cure period. If the concrete temperature falls below 60ºF, the cure time will be extended, or other measures taken, at no additional cost to the State. A strength of 3,000 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’.

NONREINFORCED PCC PAVEMENT REPAIR (CONTINUED)

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 3,000 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 aforementioned work including sawing and removing concrete, furnishing and placing concrete, sawing and sealing joints, repairing gravel and asphalt concrete shoulders, labor, tools and equipment will be included in the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

STEEL BAR INSERTION (NRCP)

Steel bars will conform to Section 1010.

Locations and quantities of concrete repair are subject to change in the field at the discretion of the Engineer. The Contractor will be responsible for ordering the actual quantity of steel bars necessary to complete the work.

For existing pavement thickness greater than or equal to 10.5” (T >= 10.5”):
The Contractor will insert the steel bars (1½” x 18” epoxy coated plain round dowel bars and No. 11 x 18” epoxy coated deformed tie bars for transverse joints and No. 5 x 24” epoxy coated deformed tie bars for longitudinal joints) into drilled holes in the existing concrete pavement. An epoxy resin adhesive must be used to anchor the steel bar in the drilled hole as per Section 380.3 C.1.

For existing pavement thickness greater than or equal to 8.5” and less than 10.5” (T >= 8.5” and T < 10.5”):
The Contractor will insert the steel bars (1¼” x 18” epoxy coated plain round dowel bars and No. 9 x 18” epoxy coated deformed tie bars for transverse joints and No. 5 x 24” epoxy coated deformed tie bars for longitudinal joints) into drilled holes in the existing concrete pavement. An epoxy resin adhesive must be used to anchor the steel bar in the drilled hole as per Section 380.3 C.1.

For existing pavement thickness less than 8.5” (T < 8.5”):
The Contractor will insert the steel bars (1" x 18" epoxy coated plain round dowel bars and No. 8 x 18" epoxy coated deformed tie bars for transverse

joints and No. 5 x 24” epoxy coated deformed tie bars for longitudinal joints) into drilled holes in the existing concrete pavement. An epoxy resin adhesive must be used to anchor the steel bar in the drilled hole as per Section 380.3 C.1.

Steel bars will be inserted in the transverse joint on 18" centers. The first steel bar in the transverse joint will be placed 9" from the edge of the slab closest to centerline. Steel bars will be inserted in the longitudinal joint on 30" centers and will be a minimum of 15" from either transverse joint. A typical one-lane patch 12' wide and 6’ long will require 18 steel bars (8 in each transverse joint and 2 in the longitudinal joint). It will be necessary to laterally adjust the location of some of the inserted steel bars when the dimensions above interfere with existing steel bar locations.

A rigid frame or mechanical device will be required to guide the drill to ensure proper horizontal and vertical alignment of the steel bars in the drilled holes

TIE BAR RETROFIT, STITCHING

Drilling of holes and epoxy resin adhesive will conform to Section 380. Steel bars will conform to Section 1010.

Tie Bar Retrofit, Stitching will be done prior to Grinding PCC Pavement. If this sentence is applicable.

Tie Bar Retrofit, Stitching will be done on longitudinal joints and random cracks as marked out by the Engineer.

The Contractor will insert No. 5 epoxy coated deformed tie bars into drilled holes in the existing concrete pavement. An epoxy resin adhesive must be used to anchor the steel bar in the drilled hole. A rotary drill or other approved drill will be used that will not damage the concrete surface. The diameter of the disturbed surface from drilling will be less than 2 inches. A rigid frame or mechanical device will be required to guide the drill to ensure the proper angle of the steel bars in the drilled holes.

The diameter of the drilled holes in the existing concrete pavement for the steel bars will not be less than 1/8 inch nor more than 3/8 inch greater than the overall diameter of the steel bar. The holes will be drilled at an angle alternating from opposite sides of the joint to produce a cross-stitching pattern.

Fill the drilled holes sufficiently with epoxy prior to the insertion of the tie bar such that the epoxy will be level with the top of the concrete pavement after insertion of the tie bar. Rotate the steel bar during insertion to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping method will not be allowed. The top of the drilled hole will be filled with epoxy or excess epoxy removed such that the epoxy is level with the existing pavement.

No bars will be inserted within 15” of an existing transverse contraction joint. Any bars not functioning or damaged will be repaired or replaced at the Contractor’s expense.

Cost for the epoxy resin adhesive, tie bars, drilling of holes, debris or loose material removal, applying the adhesive, inserting the tie bars into the drilled holes and incidentals necessary for the insertion of the tie bars will be included in the contract unit price per each for Tie Bar Retrofit, Stitching.

GRINDING PCC PAVEMENT

PCC Pavement Repair will be done prior to Grinding PCC Pavement. Grinding PCC Pavement will be done prior to sawing and sealing joints. Approximately 4’ of grinding is expected on either side of the joint line in the tie bar retrofit stitching areas of SD38 over Skunk Creek, I90 near Buffalo Ridge and I229 near I90 interchange in Sioux Falls.

RESEAL PCC PAVEMENT JOINT

Existing transverse and longitudinal joints will be cleaned and resealed for the full width of the joints with Hot Poured Elastic Joint Sealer; except on SD34, where the joints will be cleaned and resealed with Asphalt Repair Mastic Type 2.

Joints will not be sealed unless they are thoroughly clean and dry. Cleaning will be accomplished by sandblasting and other tools as necessary. Sand blasting of both sides of the vessel will be accomplished simultaneously with a mechanical device approved by the Engineer. Just prior to sealing, each joint will be blown out using a jet of compressed air to remove all traces of dust. Final joint width is to be kept as narrow as possible and may only be widened to provide a clean surface. Each joint will not be widened more than 1/8 inch if sawing is utilized to prepare the joint for sealant.

If sawing is used this may require 2 passes with the saw, one pass for each side of the joint.

In certain areas the joint may be wider than the original construction. It may be necessary to provide backer rod in the wide areas. 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.

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.

Cost for cleaning and resealing transverse and longitudinal joints will be included in the contract unit price per foot for Reseal PCC Pavement Joint – Hot Pour.

SEAL RANDOM CRACKS IN PCC PAVEMENT

Random cracks will be repaired 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 material as selected by the Engineer will be prepared and sealed with Hot Poured Elastic Joint Sealer.

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.

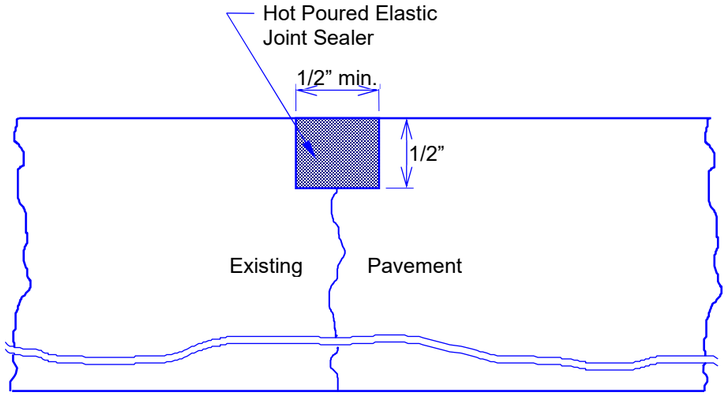
Random cracks narrower than ½ inch will be routed and sealed ½ inch wide by ½ inch deep.

Random cracks wider than ½ inch may require the placement of a backer rod prior to sealing. Use of backer rod should be limited to locations where, once placed, the top of the backer rod will be a minimum of 2¼ inches below the top surface of the pavement. The hot pour in cracks wider than ½" should be placed 2 inch thick with the final surface of the hot pour remaining recessed ¼ inch below the top surface of the pavement.

Sealant will be placed in the routed reservoir with equipment and by methods that insure complete and uniform filling. Hot Poured Elastic Joint Sealer will be placed level with the driving surface of the concrete for cracks ½" or narrower. Any excess or overrun of sealant will be removed by the Contractor at no additional cost to the State.

SEAL RANDOM CRACKS IN PCC PAVEMENT (CONTINUED)

Seal Random Cracks in PCC Pavement will be measured by the foot to the nearest 0.1 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.



SD34 JOINT SEALING WITH ASPHALT REPAIR MASTIC TYPE 2

Pavement joints on SD34 specified for joint sealing will be cleaned and resealed with Asphalt Repair Mastic Type 2.

Pavement joints with be cleaned in accordance with the notes for RESEAL PCC PAVEMENT JOINT.

The Special Provision for Asphalt Concrete Crack Leveling will apply except that use of a compressed air heated lance will not be required for surface preparation, and references to placing mastic material on pavement surfaces (other than in the joint itself) do not apply.

5" SAW CUT OF NRC AT TERMINAL ANCHOR LOCATIONS

A 5" opening saw cut is required in the NRC at these terminal anchor locations and may require a multi-step process if the existing sealant joint is fully compressed. If the existing joint is fully compressed, the Contractor will be required to cut the joint to a 3" opening across the right lane. As soon as possible and on the same day, the Contractor will be required to adjust traffic control to install a lane closure to provide a 3" opening saw cut across the left lane. Traffic will not be permitted across any expansion joint wider than 3". Installation of the 5" joint membrane will not be permitted for 1-week.

Upon completion of the 1-week waiting period, the contractor will be required to set up traffic control in the right lane, resaw the joint to the required 5" and install the new 5" membrane joint sealant in the right lane. As soon as possible and on the same day, the Contractor will be required to adjust traffic control to install a lane closure to resaw the joint in the left lane to the required 5" and install the new 5" membrane joint sealant in the left lane.

See the traffic control details in the plans for lane closure details for this work.

REPAIR TYPE A SPALLS

Spall repair work will be done prior to Grinding PCC Pavement.

Concrete Patch Material will be Type III conforming to Section 390.2 B.3. SF.

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.

It is anticipated that a number of locations scheduled for Type A Spall Repair will have deteriorated to the point of needing full depth repair. Additional Quantities are included in the Table(s) for NRC Pavement Repair for this work. The Engineer will determine these locations on construction.

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.

NOSING MATERIAL FOR CONCRETE REPAIR

A quantity of Nosing Material has been set up for use if spalling occurs, an existing crack is too close to the new saw cut, or a crack intersects the new saw cut for the Membrane Sealant Expansion Joint. The following quantity of 35 square feet is included in the Estimate of Quantities. This is based on a width of 26 feet length and 0.3 feet wide at full 11.5" depth. Actual depth may vary from full 11.5" depth to 2" partial depth spalls. The Engineer will determine if and where this nosing material is to be used.

The nosing material used must be one of types from the approved product list for Nosing Material. The nosing material will be furnished from one source and must be installed in accordance with the manufacturer's recommendations as approved by the Engineer.

The nosing material will be measured to the nearest 0.1 square foot. The Engineer will make measurements on the driving surface to the nearest 0.1 foot. Joint nosing material repairs will be paid for at the contract unit price per nearest square foot installed. Cost for material, removal of concrete, cleaning substrate, labor, equipment, tools and any incidentals necessary to prep, furnish and install the nosing material will be incidental to the contract unit price per square foot for Joint Nosing Material.

REPAIR CONCRETE CURB AND/OR GUTTER

The existing concrete curb and gutter is Type B68 in Hartford, SD. The existing curb and gutter will match in place.

Refer to the repair tables and details for locations of removal and replacement. These locations will be designated by the Engineer during construction.

If the end of any section to be removed does not fall on an existing joint, a sawed joint (4" deep) must be made to provide a vertical face for the new joint.

Existing foundation material will be shaped and compacted to a firm, uniform bearing surface, conforming to the existing section or established grades as set by the Engineer.

Unsuitable foundation material will be removed and replaced as directed. Gravel cushion material will be furnished by the Contractor.

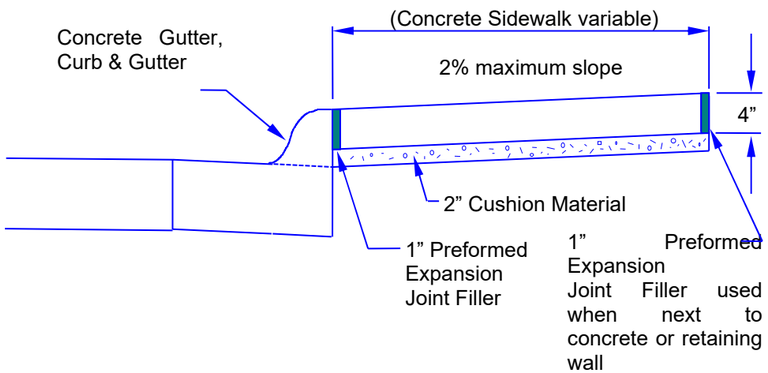
Cost for labor, equipment, material, and incidentals required for excavation and providing cushion material will be incidental to the contract unit prices for the various items.

Curb and Gutter will be tied to existing PCC pavement with drilled in No. 5 x 24" epoxy coated deformed tie bars spaced 30" center to center or by salvaged in place tie bars. Also, two No. 5 x 24" epoxy coated deformed tie bar will be drilled into the existing curb and gutter at each end of the replacement area. Refer to the notes for STEEL BAR INSERTION.

Cost for this work will be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

The Contractor will satisfactorily restore disturbed areas adjacent to the new concrete placement to the satisfaction of the Engineer. Cost for this restoration work will be incidental to the contract unit prices for the various items.

Standard specifications for sawing, removing and replacing concrete curb and/or gutter, and material composition will apply except that the cost for such will be included in the contract unit price per foot for Repair Concrete Curb and/or Gutter.



REMOVE DROP INLET FRAME AND GRATE ASSEMBLY FOR RESET

The Contractor will reset drop inlet frame and grates on drop inlets that are in place on the 60th St N location along SD38. The elevations of the frame and grate will be flush with the adjacent concrete at each location.

Hwy	DMI	L/R	Class M6 Concrete (CuYd)	Quantity
SD38E	364.68	R	0.05	1
SD38E	364.64	R	0.05	1
SD38E	364.55	R	0.05	1
SD38W	364.72	R	0.05	1
SD38W	364.68	R	0.05	1
SD38W	364.64	R	0.05	1
SD38W	364.52	R	0.05	1
SD38W	364.50	R	0.05	1
SD38W	364.48	R	0.05	1
Grand Totals			0.45	9

*The quantity of Class M6 Concrete will be incidental to the contract unit price per each for Reset Drop Inlet Frame and Grate Assembly

ASPHALT CONCRETE COMPOSITE

If damage to the shoulder occurs from driver behavior, not to the fault of the Contractor as determined by the Engineer, the damaged shoulder areas will be repaired with Asphalt Concrete Composite. Removal of damaged asphalt on the shoulders prior to placement will be incidental to the contract unit price for Asphalt Concrete Composite. The Asphalt Concrete Composite item is not intended for repairs/fill adjacent to repair areas due to forms or Contractor operations.

Asphalt concrete composite will be placed at a thickness of 3" and will not require asphalt for flush seal or sand for flush seal.

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	9	64

Revised by CM 03/28/22

TABLE FOR SUMMARY OF PCC REPAIRS

HWY	BEGIN MRM	DISP	END MRM	DISP	EXCEPTION LENGTH	Beg DMI	End DMI	NRCP REPAIR (SqYd)	REPAIR CONCRETE CURB/GUTTER (Ft)	INSERT STEEL BAR IN NRCP (Each)	INSERT DOWEL (Each)	REPAIR TYPE A SPALL IN NRCP (SqFt)	TIE BAR RETROFIT STITCHING (Each)
SD38	356.00	0.135	356.69	0.018	0	356.135	356.708	2017.6	255	4325	2336	22	
SD38	360.00	0.138	360.22	0.114	0	360.138	360.334	170.4		358	190		70
SD38E	364.26	0.116	364.75	0.000	0	364.376	364.750	512.6		1068	614		
SD38W	364.26	0.116	364.75	0.000	0	364.376	364.750	1160.5		2419	1390		
I90E	390.37	0.041	397.00	0.252	0	390.411	397.252	60.4		186	109		77
I90W	390.29	0.136	397.00	0.252	0	390.426	397.252	397.3		1220	717		
I29N	83.70	0.096	85.35	0.116	0	83.796	85.466	129.9		401	194		
SD34	364.00	0.987	366.37	0.012	0	364.987	366.382	2589.8		5191	2846		
I229S	8.28	0.584	10.84	0.000	0	8.864	10.840	732.5		1297	540		188
I90E	401.00	0.464	401.61	0.143	0	401.464	401.753	139.9		170	100		
I90W	401.00	0.468	401.61	0.142	0	401.468	401.752	585.8		1988	520		
						GRAND TOTALS		**8,496.7**	**255**	**18,623**	**9,556**	**22**	**335**

TABLE FOR SUMMARY OF GRINDING PCC PAVEMENT

HWY	BEGIN MRM	DISP	END MRM	DISP	Beg DMI	End DMI	EXCEPTION LENGTH (Ft)	WIDTH OF GRINDING (Ft)	LENGTH OF GRINDING (Ft)	GENERAL AREAS	GRINDING PCC PAVEMENT (SqYd)
SD38	360.00	0.138	360.22	0.114	360.138	360.334	859.9	8	175.0	Tie Bar Retrofit Stitching	155.6
I90E	390.37	0.041	397.00	0.252	390.411	397.252	36,024.2	8	96.3	Tie Bar Retrofit Stitching	85.6
I90W	390.29	0.136	397.00	0.252	390.426	397.252	35,945.0	8	96.3	Tie Bar Retrofit Stitching	85.6
I229S	8.28	0.584	10.84	0.000	8.864	10.840	9,963.3	8	470.0	Tie Bar Retrofit Stitching	417.8
									GRAND TOTALS		**744.4**

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	10	64

TABLE FOR JOINT RESEALING

HWY	BEGIN MRM	DISP	END MRM	DISP	EXCEPTION LENGTH	Beg DMI	End DMI	RESEAL LONGITUDINAL JOINTS (Ft)	RESEAL LONGITUDINAL JOINTS TYPE	RESEAL TRANSVERSE JOINTS (Ft)	RESEAL TRANSVERSE JOINTS TYPE
SD38	356.00	0.135	356.69	0.018	0	356.135	356.708	5,446	Hot Pour	14,704	Hot Pour
SD38	360.00	0.138	360.22	0.114	0	360.138	360.334	310	Hot Pour	621	Hot Pour
SD38E	364.26	0.116	364.75	0.000	0	364.376	364.750	1,580	Hot Pour	3,318	Hot Pour
SD38W	364.26	0.116	364.75	0.000	0	364.376	364.750	1,975	Hot Pour	4,147	Hot Pour
I90E	390.37	0.041	397.00	0.252	0	390.411	397.252	3,612	Hot Pour	4,696	Hot Pour
I90W	390.29	0.136	397.00	0.252	0	390.426	397.252	3,604	Hot Pour	4,685	Hot Pour
I29N	83.70	0.096	85.35	0.116	0	83.796	85.466	882	Hot Pour	1,146	Hot Pour
SD34	364.00	0.987	366.37	0.012	0	364.987	366.382	22,097	Hot Pour	40,879	Hot Pour
I229S	8.28	0.584	10.84	0.000	0	8.864	10.840	3,130	Hot Pour	5,947	Hot Pour
I90E	401.00	0.464	401.61	0.143	0	401.464	401.753	153	Hot Pour	407	Hot Pour
I90W	401.00	0.468	401.61	0.142	0	401.468	401.752	150	Hot Pour	400	Hot Pour
						GRAND TOTALS		**42,938**		**80,949**	

HWY	BEGIN MRM	DISP	END MRM	DISP	EXCEPTION LENGTH	Beg DMI	End DMI	RESEAL LONGITUDINAL JOINTS (lb)	RESEAL LONGITUDINAL JOINTS TYPE	DESCRIPTION
SD34	364.00	0.987	366.37	0.012	0	364.987	366.382	137,794	Type II Mastic	Centerline Joint
						GRAND TOTAL		**137,794**		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	11	64

SD38 IN HARTFORD

DMI	WB DRIVING LANE L Ft	WB DRIVING LANE W Ft	CENTER TURN LANE L Ft	CENTER TURN LANE W Ft	EB DRIVING LANE L Ft	EB DRIVING LANE W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	* REMOVE CONCRETE CURB &/OR GUTTER Ft	* TYPE CONCRETE C&G BY WB DRIVING LANE Ft	* TYPE CONCRETE C&G BY EB DRIVING LANE Ft	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) 1" x 18" PLAIN ROUND DOWEL BARS Each	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 8 x 18" DEFORMED TIE BARS Each	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each	REPAIR TYPE A SPALL SqFt
356.124	10	12	6	12	6	14	30.7	W				48		4	52		
356.127	6	4	6	12	6	20	24.0	R					36	6	42	28	
356.133	8	12	4	4	4	4	14.2	R					24	8	32	20	
356.134					6	14	9.3	R					16	4	20	12	
356.139					60	4	26.7	R					4	48	52	12	
356.140	20	12			6	14	36.0	R					32	12	44	24	
356.144					4	4	1.8	R					4	4	8	4	
356.146			8	12			10.7	R	101	58	43		16	6	22	12	
356.155	6	12	8	12	8	14	31.1	W				48		3	51		
356.156					6	12	8.0	R					16	2	18	12	
356.157					4	4	1.8	R					4	4	8	4	
356.158					6	12	8.0	R					16	2	18	12	
356.159	8	8			6	12	15.1	R	21	21			26	5	31	20	
356.162	6	12			6	14	17.3	R					32	6	38	24	
356.164					6	12	8.0	R					16	2	18	12	
356.165	6	14	6	12	4	4	19.1	R					36	6	42	28	
356.166					4	4	1.8	R					4	4	8	4	
356.169	4	4	4	4	4	4	5.3	R					12	10	22	12	
356.173	6	14	6	12	6	12	25.3	W				48		4	52		
356.176	6	14	6	12	6	12	25.3	W				48		4	52		
356.177	6	14	6	12	6	8	22.7	R					42	6	48	32	
356.179	6	14	6	12			17.3	R					32	6	38	24	
356.183	6	14					9.3	R					16	2	18	12	
356.187	6	14	6	12			17.3	R					32	6	38	24	
356.190	6	14					9.3	R					16	2	18	12	1.00
356.194	4	4	4	4	6	8	8.9	R					18	10	28	16	
356.198	4	4	4	4			3.6	R					8	6	14	8	
356.201	4	4	4	4	6	8	8.9	R					18	10	28	16	
356.205	4	4	4	4	4	6	6.2	R					16	10	26	14	
356.208	4	4	4	4			3.6	R					8	6	14	8	
356.212	4	4	4	4	6	12	11.6	R					24	8	32	20	
356.215	6	14					9.3	R					16	2	18	12	1.00
356.219	4	4	4	4			3.6	R					8	6	14	8	
356.223	4	4	4	4			3.6	R	4	4			8	6	14	8	1.00
356.227	4	4			6	8	7.1	R					14	6	20	12	
356.230	6	20			6	12	21.3	R					32	4	36	24	
356.233	6	20					13.3	R					16	2	18	12	
356.237			6	14			9.3	R	4		4		16	4	20	12	
356.241			6	14			9.3	R					16	4	20	12	
356.244			4	6	4	4	4.4	R					12	8	20	10	
356.248			4	4	4	4	3.6	R					8	8	16	8	
356.252			6	12			8.0	R					16	4	20	12	
356.256			6	12			8.0	R					16	4	20	12	
356.259			6	12			8.0	R					16	4	20	12	
356.262	6	12			4	20	16.9	R					32	6	38	24	
356.266	6	20					13.3	R	6	6			16	2	18	12	
356.273	6	12					8.0	R					16	2	18	12	
356.277	4	4					1.8	R					4	2	6	4	
356.281	4	4	4	4	6	12	11.6	R					24	8	32	20	
356.286	4	4					1.8	R					4	2	6	4	
356.295	4	4	4	4	4	4	5.3	R					12	10	22	12	
356.298	4	4			4	4	3.6	R					8	6	14	8	
356.302								R									1.00
356.306					6	10	6.7	R					12	4	16	10	
356.310	4	4	4	4	6	8	8.9	R					18	10	28	16	
356.313	6	12	6	10			14.7	R					28	2	30	22	
356.317	4	4	4	4			3.6	R					8	6	14	8	
356.321	6	18					12.0	R					16	2	18	12	
356.324	6	18					12.0	R					16	2	18	12	
356.328			4	4			1.8	R					4	4	8	4	
356.332			4	4			1.8	R					4	4	8	4	
356.335	4	4	4	4			3.6	R					8	6	14	8	

* Cost for this work will be included in the contract unit price per foot for Repair Concrete Curb and/or Gutter

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	12	64

SD38 IN HARTFORD

DMI	WB DRIVING LANE L Ft	WB DRIVING LANE W Ft	CENTER TURN LANE L Ft	CENTER TURN LANE W Ft	EB DRIVING LANE L Ft	EB DRIVING LANE W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	* REMOVE CONCRETE CURB &/OR GUTTER Ft	* TYPE CONCRETE C&G BY WB DRIVING LANE Ft	* TYPE CONCRETE C&G BY EB DRIVING LANE Ft	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) 1" x 18" PLAIN ROUND DOWEL BARS Each	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 8 x 18" DEFORMED TIE BARS Each	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each	REPAIR TYPE A SPALL SqFt
356.339	4	4	4	4			3.6	R					8	6	14	8	
356.342	4	4	4	4			3.6	R					8	6	14	8	
356.346	80	4	4	4			37.3	R	4	4			8	36	44	20	
356.349	6	16					10.7	R					16	2	18	12	
356.353	6	16					10.7	R					16	2	18	12	
356.357			4	4			1.8	R					4	4	8	4	
356.360			4	4			1.8	R					4	4	8	4	1.00
356.375	4	4					1.8	R					4	2	6	4	
356.379	4	4	4	4	4	4	5.3	R					12	10	22	12	
356.383			4	4			1.8	R					4	4	8	4	
356.386			4	4			1.8	R					4	4	8	4	
356.389					6	8	5.3	R					10	4	14	8	
356.393			4	4	4	4	3.6	R					8	8	16	8	
356.401					6	14	9.3	R					16	4	20	12	1.00
356.404					6	8	5.3	R					10	4	14	8	
356.407					6	12	8.0	R					16	2	18	12	
356.411					6	12	8.0	R					16	2	18	12	
356.414			4	4	4	4	3.6	R					8	8	16	8	
356.418			4	4			1.8	R					4	4	8	4	
356.421			4	4			1.8	R					4	4	8	4	
356.425			4	4			1.8	R					4	4	8	4	
356.433	4	6	6	6	6	18	18.7	R	4		4		32	10	42	24	
356.438	4	4			6	16	12.4	R					20	6	26	16	
356.440			4	4	6	8	7.1	R					14	8	22	12	1.00
356.446			6	12	6	16	18.7	R					32	4	36	24	
356.448			4	4			1.8	R	12	12			4	4	8	4	
356.451			4	4			1.8	R					4	4	8	4	1.00
356.454					4	4	1.8	R					4	4	8	4	1.00
356.458					4	4	1.8	R	4		4		4	4	8	4	1.00
356.461					6	10	6.7	R					12	4	16	10	
356.465	6	6	4	4	4	4	7.6	R					16	10	26	14	
356.473	4	4	4	4	4	4	5.3	R					12	10	22	12	
356.476			4	4	4	4	3.6	R	4	4			8	8	16	8	
356.479			4	4			1.8	R					4	4	8	4	
356.483			4	4	4	4	3.6	R					8	8	16	8	1.00
356.490			4	4			1.8	R					4	4	8	4	
356.494			4	4	4	4	3.6	R					8	8	16	8	
356.498					4	4	1.8	R					4	4	8	4	
356.501					4	4	1.8	R					4	4	8	4	1.00
356.505			4	4	4	4	3.6	R					8	8	16	8	
356.508			4	4	4	4	3.6	R					8	8	16	8	
356.512			4	4			1.8	R					4	4	8	4	
356.516			4	4			1.8	R					4	4	8	4	
356.519					4	4	1.8	R					4	4	8	4	
356.523			4	4			1.8	R					4	4	8	4	
356.526					4	6	2.7	R					8	4	12	6	
356.530			4	4	4	4	3.6	R					8	8	16	8	1.00
356.533			4	4			1.8	R					4	4	8	4	
356.540			4	4	4	4	3.6	R	15		15		8	8	16	8	1.00
356.544	6	10	6	8	4	4	13.8	R					26	10	36	22	1.00

* Cost for this work will be included in the contract unit price per foot for Repair Concrete Curb and/or Gutter

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	13	64

SD38 IN HARTFORD

DMI	WB DRIVING LANE L Ft	WB DRIVING LANE W Ft	CENTER TURN LANE L Ft	CENTER TURN LANE W Ft	EB DRIVING LANE L Ft	EB DRIVING LANE W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	* REMOVE CONCRETE CURB &/OR GUTTER Ft	* TYPE CONCRETE C&G BY WB DRIVING LANE Ft	* TYPE CONCRETE C&G BY EB DRIVING LANE Ft	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) 1" x 18" PLAIN ROUND DOWEL BARS Each	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 8 x 18" DEFORMED TIE BARS Each	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each	REPAIR TYPE A SPALL SqFt
356.551			4	4	4	4	3.6	R					8	8	16	8	
356.555					6	16	10.7	R					16	4	20	12	1.00
356.558			4	4			1.8	R					4	4	8	4	
356.562			4	4	4	4	3.6	R					8	8	16	8	
356.566	4	4	4	4	4	4	5.3	R					12	10	22	12	
356.569			4	4	4	4	3.6	R					8	8	16	8	
356.573					4	4	1.8	R					4	4	8	4	
356.576			4	4	4	4	3.6	R					8	8	16	8	
356.579					6	18	12.0	R					16	4	20	12	
356.583					6	8	5.3	R					10	4	14	8	
356.587	4	4	4	4	4	4	5.3	R					12	10	22	12	
356.591					4	4	1.8	R					4	4	8	4	
356.594					6	18	12.0	R					16	4	20	12	1.00
356.601					6	16	10.7	R	4	4			16	4	20	12	
356.605			6	12			8.0	R					16	4	20	12	1.00
356.608			6	12			8.0	R					16	4	20	12	
356.612			4	4	4	4	3.6	R					8	8	16	8	
356.616			4	4	4	4	3.6	R					8	8	16	8	
356.620	6	12			6	18	20.0	R					32	6	38	24	
356.627					6	16	10.7	R					16	4	20	12	
356.630			6	8	6	12	13.3	R					26	6	32	20	
356.634					6	14	9.3	R					16	4	20	12	
356.638			4	4			1.8	R					4	4	8	4	
356.641	6	12			6	18	20.0	R					32	6	38	24	
356.645					4	6	2.7	R					8	4	12	6	1.00
356.648					6	12	8.0	R					16	2	18	12	1.00
356.652	6	6			6	12	12.0	R					24	4	28	18	
356.656	20	12	8	8			33.8	R					26	7	33	20	
356.657	6	12			6	18	20.0	R					32	6	38	24	
356.659			4	4	4	4	3.6	R					8	8	16	8	
356.663					6	12	8.0	R					16	2	18	12	
356.665			6	8			5.3	R					10	4	14	8	
356.667					8	12	10.7	R					16	3	19	12	
356.668			4	4			1.8	R					4	4	8	4	
356.670					6	12	8.0	R					16	2	18	12	
356.673					6	14	9.3	R					16	4	20	12	1.00
356.674					6	20	13.3	R	20	20			16	4	20	12	1.00
356.676					6	20	13.3	R					16	4	20	12	
356.679					6	16	10.7	R	6		6		16	4	20	12	
356.682	38	6	4	4			27.1	R					12	19	31	10	
356.684	10	12			30	4	26.7	R					20	28	48	16	
356.686			4	4			1.8	R					4	4	8	4	
356.688					6	16	10.7	R					16	4	20	12	
356.688					14	4	6.2	R					4	10	14	4	
356.690	9	12					12.0	R	6	6			16	3	19	12	
TOTALS:							**1369.1**		**215**	**139**	**76**	**192**	**2040**	**922**	**3154**	**1694**	**22.0**
ADDITIONAL QUANTITIES:							**270.0**		**40**	**30**	**20**	**40**	**410**	**180**	**630**	**340**	**-**
GRAND TOTALS:							**1639.1**		**255**	**169**	**96**	**232**	**2450**	**1102**	**3784**	**2034**	**22.0**

NRC PAVEMENT REPAIR AREA TYPES

W = Two Working Joints (Use only if repair is full roadway width and uniform length (across all lanes))
T = Two Tied Joints
B = One Working & One Tied Joint
R = Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

* Cost for this work will be included in the contract unit price per foot for Repair Concrete Curb and/or Gutter

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	14	64

SD38 IN HARTFORD

DMI	WB DRIVING LANE L Ft	WB DRIVING LANE W Ft	EB DRIVING LANE L Ft	EB DRIVING LANE W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 8 x 18" DEFORMED TIE BARS Each	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each
356.000	4	4			1.8	R	4	2	6	4
356.004	6	12			8.0	R	16	2	18	12
356.008	4	4			1.8	R	4	2	6	4
356.019	6	6			4.0	R	8	2	10	6
356.023	4	4			1.8	R	4	2	6	4
356.027	4	4			1.8	R	4	2	6	4
356.030	4	6			2.7	R	8	2	10	6
356.034	10	12			13.3	R	16	4	20	12
356.057	4	4			1.8	R	4	2	6	4
356.061	4	4			1.8	R	4	2	6	4
356.064	20	20			44.4	R	16	8	24	12
356.068	4	4			1.8	R	4	2	6	4
356.072	10	4			4.4	R	4	4	8	4
356.083			15	30	50.0	R	16	12	28	12
356.087			4	6	2.7	R	8	4	12	6
356.091			10	10	11.1	R	12	8	20	10
356.102	10	12			13.3	R	16	4	20	12
356.106	6	10			6.7	R	12	2	14	10
356.110	6	8			5.3	R	10	2	12	8
356.121			6	10	6.7	R	12	4	16	10
356.125			4	4	1.8	R	4	4	8	4
356.129			4	4	1.8	R	4	4	8	4
356.133			6	12	8.0	R	16	2	18	12
356.144	8	20			17.8	R	16	3	19	12
356.148	4	4			1.8	R	4	2	6	4
356.152	8	20			17.8	R	16	3	19	12
356.155	6	8			5.3	R	10	2	12	8
356.167			12	6	8.0	R	8	8	16	6
356.170			12	4	5.3	R	4	8	12	4
356.174			8	6	5.3	R	8	6	14	6
356.178			20	20	44.4	R	16	16	32	12
356.182			8	12	10.7	R	16	3	19	12
356.186			6	8	5.3	R	10	4	14	8
TOTALS:					**318.5**		**314**	**137**	**451**	**252**
ADDITIONAL QUANTITIES:					**60.0**		**60**	**30**	**90**	**50**
GRAND TOTALS:					**378.5**		**374**	**167**	**541**	**302**

NRC PAVEMENT REPAIR AREA TYPES

W = Two Working Joints (Use only if repair is full roadway width and uniform length (across all lanes))
T = Two Tied Joints
B = One Working & One Tied Joint
R = Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

SD38 OVER SKUNK CREEK

MRM	DISP	DMI	WB DRIVING LANE L Ft	WB DRIVING LANE W Ft	EB DRIVING LANE L Ft	EB DRIVING LANE W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) 1" x 18" PLAIN ROUND DOWEL BARS Each	No. 8 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each	TIE BAR RETROFIT STITCHING Each
360.00	0.140	360.140	6	12	4	4	9.8	R		20	2	22	16	
360.00	0.143	360.143	6	12			8.0	R		16	2	18	12	
360.00	0.146	360.146	6	12			8.0	R		16	2	18	12	
360.00	0.149	360.149	6	12	4	4	9.8	R		20	2	22	16	
360.00	0.152	360.152	6	12	6	12	16.0	R		32		32	24	
360.00	0.160	360.160	6	6			4.0	R		8	2	10	6	
360.00	0.163	360.163	6	12			8.0	R		16	2	18	12	
360.00	0.166	360.166												40
360.00	0.129	360.129												20
360.00	0.310	360.310	8	12	4	4	12.4	R		20	4	24	16	
360.00	0.320	360.320	8	12	4	4	12.4	R		20	4	24	16	
360.00	0.323	360.323	6	6			4.0	R		8	2	10	6	
360.00	0.330	360.330			6	12	8.0	R		16	2	18	12	
360.00	0.333	360.333	6	12	6	12	16.0	W	32			32		
360.00	0.336	360.336	6	12	6	12	16.0	W	32			32		
360.00	0.339	360.339	6	12			8.0	R		16	2	18	12	
TOTALS:							**140.4**		**64**	**208**	**26**	**298**	**160**	**60**
ADDITIONAL QUANTITIES:							**30.0**		**10**	**40**	**10**	**60**	**30**	**10**
GRAND TOTALS							**170.4**		**74**	**248**	**36**	**358**	**190**	**70**

NRC PAVEMENT REPAIR AREA TYPES

W = Two Working Joints (Use only if repair is full roadway width and uniform length (across all lanes))
T = Two Tied Joints
B = One Working & One Tied Joint
R = Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	16	64

SD38 AT W 60TH ST N IN SIOUX FALLS

JOINT NO.	WB DRIVING LANE L Ft	WB DRIVING LANE W Ft	WB PASSING LANE L Ft	WB PASSING LANE W Ft	LEFT TURN LANE L Ft	LEFT TURN LANE W Ft	EB PASSING LANE L Ft	EB PASSING LANE W Ft	EB DRIVING LANE L Ft	EB DRIVING LANE W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 9 x 18" DEFORMED TIE BARS Each	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each
1	6	14			4	4	4	4	4	4	14.7	R	28	14	42	24
2	6	24			4	4	4	4	4	4	21.3	R	28	14	42	24
3	4	4	4	4	4	4	4	4	4	4	8.9	R	20	18	38	20
4	4	4	4	4	4	4	4	4	4	4	8.9	R	20	18	38	20
5	4	4	4	4	4	4	4	4	4	4	8.9	R	20	18	38	20
6	4	4	4	4					6	12	11.6	R	24	10	34	20
7	4	4	4	4					6	12	11.6	R	24	10	34	20
8									6	28	18.7	R	16	4	20	12
9	4	4	4	4					6	28	22.2	R	24	10	34	20
10	4	4	4	4					6	28	22.2	R	24	10	34	20
11	4	4	4	4					6	28	22.2	R	24	10	34	20
12	4	4	4	4					6	14	12.9	R	24	8	32	20
13	4	4	4	4			4	4	4	4	7.1	R	16	14	30	16
14	4	4	4	4							3.6	R	8	6	14	8
15	4	4	4	4			4	4	4	4	7.1	R	16	14	30	16
16	4	4	4	4					4	4	5.3	R	12	10	22	12
17	4	4	6	8					4	4	8.9	R	18	10	28	16
18	6	28			4	4	4	4	4	4	24.0	R	28	14	42	24
19	6	14	4	4					4	4	12.9	R	24	6	30	20
20	4	4	4	4	4	4	4	4	4	4	8.9	R	20	18	38	20
21	6	16					4	4			12.4	R	20	6	26	16
22	4	4	4	4			4	4			5.3	R	12	10	22	12
23	4	4	4	4			4	4			5.3	R	12	10	22	12
24	4	6	4	4	4	4			6	16	16.9	R	32	14	46	26
25	6	18					4	4	4	4	15.6	R	24	10	34	20
26	4	4	4	4					4	4	5.3	R	12	10	22	12
27	4	4	6	12							9.8	R	20	6	26	16
28	4	4	4	4							3.6	R	8	6	14	8
29	6	28									18.7	R	16	2	18	12
30	6	28			6	28	6	28			56.0	R	48	10	58	36
31	6	14									9.3	R	16	2	18	12
32	4	4	6	8					4	4	8.9	R	18	10	28	16
33	4	4	4	4							3.6	R	8	6	14	8
34	6	28									18.7	R	16	2	18	12
35	6	28					6	14			28.0	R	32	6	38	24
36	6	28			4	4	4	4	4	4	24.0	R	28	14	42	24
37	6	28					4	4			20.4	R	20	6	26	16
38	4	4	6	12					4	4	11.6	R	24	10	34	20
39	6	28					4	4	4	4	22.2	R	24	10	34	20
40	6	28			4	4	4	4	4	4	24.0	R	28	14	42	24
41	6	28			4	4	4	4	4	4	24.0	R	28	14	42	24
42	6	16			4	4	4	4			14.2	R	24	10	34	20
43	6	28					4	4			20.4	R	20	6	26	16
43	40	4					4	4			19.6	R	8	20	28	12
44	4	4					4	4	4	4	5.3	R	12	10	22	12
45	4	4					4	4	4	4	5.3	R	12	10	22	12
46	4	6	6	12			4	4			12.4	R	28	10	38	22
47	6	18					4	4			13.8	R	20	6	26	16
48	4	4	6	14			4	4			12.9	R	24	10	34	20
49	4	4	4	4			4	4			5.3	R	12	10	22	12
50	6	28					4	4	4	4	22.2	R	24	10	34	20
51	6	28					4	4			20.4	R	20	6	26	16
52	6	18									12.0	R	16	2	18	12
53	6	28									18.7	R	16	2	18	12
54	6	28									18.7	R	16	2	18	12
55	4	4	4	4							3.6	R	8	6	14	8

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	17	64

SD38 AT W 60TH ST N IN SIOUX FALLS

JOINT NO.	WB DRIVING LANE L Ft	WB DRIVING LANE W Ft	WB PASSING LANE L Ft	WB PASSING LANE W Ft	LEFT TURN LANE L Ft	LEFT TURN LANE W Ft	EB PASSING LANE L Ft	EB PASSING LANE W Ft	EB DRIVING LANE L Ft	EB DRIVING LANE W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 9 x 18" DEFORMED TIE BARS Each	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each
56	6	28					4	4	4	4	22.2	R	24	10	34	20
57	6	18									12.0	R	16	2	18	12
58			4	4							1.8	R	4	4	8	4
59									4	4	1.8	R	4	4	8	4
60	6	40							4	4	28.4	R	20	6	26	16
61									6	28	18.7	R	16	4	20	12
62			4	4							1.8	R	4	4	8	4
63	4	4									1.8	R	4	2	6	4
64	4	4	4	4			4	4			5.3	R	12	10	22	12
65	4	4	4	4							3.6	R	8	6	14	8
66			4	4							1.8	R	4	4	8	4
68							4	4			1.8	R	4	4	8	4
69			4	4							1.8	R	4	4	8	4
70	4	4	4	4							3.6	R	8	6	14	8
71	4	4	4	4							3.6	R	8	6	14	8
72	4	4	4	4			4	4	4	4	7.1	R	16	14	30	16
73	6	16							4	4	12.4	R	20	6	26	16
74	6	18							12	14	30.7	R	32	6	38	24
75	6	18					4	4	4	4	15.6	R	24	10	34	20
76	6	18					4	4	4	4	15.6	R	24	10	34	20
76	140	4									62.2	R	4	56	60	28
77	4	4	4	4			4	4	4	4	7.1	R	16	14	30	16
78	4	4	4	6			4	4	4	4	8.0	R	20	14	34	18
79	6	16					4	4	4	4	14.2	R	24	10	34	20
80	6	16					4	4	4	4	14.2	R	24	10	34	20
81	4	4	4	4			4	4	4	4	7.1	R	16	14	30	16
82	6	16					4	4	4	4	14.2	R	24	10	34	20
83	6	14	4	4			4	4	4	4	14.7	R	28	10	38	24
84	4	4	4	4			4	4	4	4	7.1	R	16	14	30	16
85	4	4	4	4			4	4	4	4	7.1	R	16	14	30	16
86	4	4	4	4			4	4			5.3	R	12	10	22	12
87	4	4	4	4			4	4	4	4	7.1	R	16	14	30	16
88	4	4	4	4			4	4	4	4	7.1	R	16	14	30	16
89	4	4	4	4					4	4	5.3	R	12	10	22	12
90	4	4	4	4			4	4	4	4	7.1	R	16	14	30	16
91	4	4	4	4					4	4	5.3	R	12	10	22	12
92	4	4	4	4			4	4	4	4	7.1	R	16	14	30	16
93	4	4	4	4					4	4	5.3	R	12	10	22	12
94	4	4	4	4							3.6	R	8	6	14	8
95	4	4	4	4							3.6	R	8	6	14	8
96	4	4	6	8							7.1	R	14	6	20	12
97	4	4	4	4			4	4			5.3	R	12	10	22	12
98	6	28									18.7	R	16	2	18	12
99	4	4							6	28	20.4	R	20	6	26	16
100	4	4									1.8	R	4	2	6	4
103							4	4			1.8	R	4	4	8	4
105			4	4							1.8	R	4	4	8	4
106	4	4	4	4							3.6	R	8	6	14	8
107	4	4									1.8	R	4	2	6	4
108	4	4	4	4							3.6	R	8	6	14	8
109	6	28							6	28	37.3	R	32	6	38	24
109	6	28					4	4	4	4	22.2	R	24	10	34	20
110	6	28							6	28	37.3	R	32	6	38	24
110	18	4									8.0	R	4	7	11	4
110	6	12									8.0	R	16	2	18	12

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	18	64

SD38 AT W 60TH ST N IN SIOUX FALLS

JOINT NO.	WB DRIVING LANE L Ft	WB DRIVING LANE W Ft	WB PASSING LANE L Ft	WB PASSING LANE W Ft	LEFT TURN LANE L Ft	LEFT TURN LANE W Ft	EB PASSING LANE L Ft	EB PASSING LANE W Ft	EB DRIVING LANE L Ft	EB DRIVING LANE W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 9 x 18" DEFORMED TIE BARS Each	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each
TOTALS:											1393.1		1898	1009	2907	1674
ADDITIONAL QUANTITIES:											280.0		380	200	580	330
GRAND TOTALS											1673.1		2278	1209	3487	2004

NRC PAVEMENT REPAIR AREA TYPES

W = Two Working Joints (Use only if repair is full roadway width and uniform length (across all lanes))
T = Two Tied Joints
B = One Working & One Tied Joint
R = Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	19	64

I90 NEAR BUFFALO RIDGE

DMI	WB DRIVING LANE L Ft	WB DRIVING LANE W Ft	WB PASSING LANE L Ft	WB PASSING LANE W Ft	EB PASSING LANE L Ft	EB PASSING LANE W Ft	EB DRIVING LANE L Ft	EB DRIVING LANE W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 11 x 18" DEFORMED TIE BARS Each	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each	TIE BAR RETROFIT STITCHING Each
390.225							4	4	1.8	R	4	4	8	4	
390.227					4	4			1.8	R	4	2	6	4	
390.324					4	4			1.8	R	4	2	6	4	
390.471					4	4			1.8	R	4	2	6	4	
390.630							4	4	1.8	R	4	4	8	4	
390.717							4	4	1.8	R	4	4	8	4	
390.721							4	4	1.8	R	4	4	8	4	
391.012			4	4					1.8	R	4	4	8	4	
391.064			4	4					1.8	R	4	4	8	4	
391.102			4	4					1.8	R	4	4	8	4	
391.135							4	4	1.8	R	4	4	8	4	
391.273							4	4	1.8	R	4	4	8	4	
391.405							4	4	1.8	R	4	4	8	4	
391.503							4	4	1.8	R	4	4	8	4	
391.536			4	4					1.8	R	4	4	8	4	
391.571	4	4							1.8	R	4	2	6	4	
391.936			4	4					1.8	R	4	4	8	4	
392.087	4	4							1.8	R	4	2	6	4	
392.099			4	4					1.8	R	4	4	8	4	
392.129			4	4					1.8	R	4	4	8	4	
392.140			4	4					1.8	R	4	4	8	4	
392.166	4	4							1.8	R	4	2	6	4	
392.181			4	4					1.8	R	4	4	8	4	
392.282			4	4					1.8	R	4	4	8	4	
392.436	4	4							1.8	R	4	2	6	4	
392.752					6	12	6	14	17.3	R	32		32	24	
392.800	4	4							1.8	R	4	2	6	4	
392.901	4	6	4	4					4.4	R	12	6	18	10	
392.994			4	4					1.8	R	4	4	8	4	
393.153	4	4							1.8	R	4	2	6	4	
393.160			4	4					1.8	R	4	4	8	4	
393.198			4	4					1.8	R	4	4	8	4	
393.266			4	4					1.8	R	4	4	8	4	
393.273			4	4					1.8	R	4	4	8	4	
393.288			4	4					1.8	R	4	4	8	4	
393.434			4	4					1.8	R	4	4	8	4	
393.479			4	4					1.8	R	4	4	8	4	
393.495			4	4					1.8	R	4	4	8	4	
393.518			4	4					1.8	R	4	4	8	4	
393.603	4	4							1.8	R	4	2	6	4	
393.618	12	8							10.7	R	10	4	14	8	
393.650	4	4							1.8	R	4	2	6	4	
393.653	4	4							1.8	R	4	2	6	4	
393.664			4	4					1.8	R	4	4	8	4	
393.724	4	4							1.8	R	4	2	6	4	
393.799			4	4					1.8	R	4	4	8	4	
393.924			4	4					1.8	R	4	4	8	4	
393.977	4	4							1.8	R	4	2	6	4	
394.087			4	4					1.8	R	4	4	8	4	
394.249	4	4							1.8	R	4	2	6	4	
394.272			4	4					1.8	R	4	4	8	4	
394.282	4	4							1.8	R	4	2	6	4	
394.294			4	4					1.8	R	4	4	8	4	
394.443			4	4					1.8	R	4	4	8	4	
394.568			4	4					1.8	R	4	4	8	4	
394.584			4	4					1.8	R	4	4	8	4	

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	20	64

I90 NEAR BUFFALO RIDGE

	WB DRIVING LANE		WB PASSING LANE		EB PASSING LANE		EB DRIVING LANE				INSERT STEEL BAR IN PCC PAVEMENT (NRCP)				
DMI	L Ft	W Ft	L Ft	W Ft	L Ft	W Ft	L Ft	W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	No. 11 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each	TIE BAR RETROFIT STITCHING Each
394.659	4	4							1.8	R	4	2	6	4	
394.711	20	8	20	4					26.7	R	14	24	38	12	
394.740	20	8							17.8	R	10	8	18	8	
394.747			10	12					13.3	R	16	4	20	12	
394.770	4	4							1.8	R	4	2	6	4	
394.819			4	4					1.8	R	4	4	8	4	
394.827	4	4							1.8	R	4	2	6	4	
394.860			4	4					1.8	R	4	4	8	4	
394.915			4	4					1.8	R	4	4	8	4	
394.917															12
394.930	6	8							5.3	R	10	2	12	8	
394.952	4	4							1.8	R	4	2	6	4	
394.960	4	4							1.8	R	4	2	6	4	
394.967	4	4							1.8	R	4	2	6	4	
394.986	4	4							1.8	R	4	2	6	4	
394.994							4	4	1.8	R	4	4	8	4	
395.000			4	4					1.8	R	4	4	8	4	
395.002					4	4			1.8	R	4	2	6	4	
395.049	4	4							1.8	R	4	2	6	4	
395.063	4	4							1.8	R	4	2	6	4	
395.078	4	4							1.8	R	4	2	6	4	
395.086							4	4	1.8	R	4	4	8	4	
395.116					4	4			1.8	R	4	2	6	4	
395.131			4	4					1.8	R	4	4	8	4	
395.172	4	4							1.8	R	4	2	6	4	
395.198			4	4					1.8	R	4	4	8	4	
395.309	4	4							1.8	R	4	2	6	4	
395.336	4	4							1.8	R	4	2	6	4	
395.348	4	4							1.8	R	4	2	6	4	
395.407	4	4	4	4					3.6	R	8	6	14	8	
395.410			4	4					1.8	R	4	4	8	4	
395.419	4	4							1.8	R	4	2	6	4	
395.517	4	4	4	4					3.6	R	8	6	14	8	
395.532	4	4							1.8	R	4	2	6	4	
395.539	4	4							1.8	R	4	2	6	4	
395.565	4	4							1.8	R	4	2	6	4	
395.573	4	4							1.8	R	4	2	6	4	
395.588	4	4							1.8	R	4	2	6	4	
395.602	4	4							1.8	R	4	2	6	4	
395.621	4	4							1.8	R	4	2	6	4	
395.632	4	4							1.8	R	4	2	6	4	
395.643	4	4							1.8	R	4	2	6	4	
395.655	4	4							1.8	R	4	2	6	4	
395.674	4	4	4	4					3.6	R	8	6	14	8	
395.681	4	4	4	4					3.6	R	8	6	14	8	
395.704	4	4							1.8	R	4	2	6	4	
395.708			4	4					1.8	R	4	4	8	4	
395.722	4	4							1.8	R	4	2	6	4	
395.745	4	4							1.8	R	4	2	6	4	
395.764	4	4							1.8	R	4	2	6	4	
395.782	4	4							1.8	R	4	2	6	4	
395.786	4	4							1.8	R	4	2	6	4	
395.801	4	4							1.8	R	4	2	6	4	
395.802							4	6	2.7	R	8	4	12	6	
395.808	4	4	4	4					3.6	R	8	6	14	8	
395.816	4	4							1.8	R	4	2	6	4	

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	21	64

I90 NEAR BUFFALO RIDGE

	WB DRIVING LANE		WB PASSING LANE		EB PASSING LANE		EB DRIVING LANE			NEW JOINT CON-FIG. (NRCP)	INSERT STEEL BAR IN PCC PAVEMENT (NRCP)				
DMI	L Ft	W Ft	L Ft	W Ft	L Ft	W Ft	L Ft	W Ft	NRCP REPAIR SqYds		No. 11 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each	TIE BAR RETROFIT STITCHING Each
395.822	4	4							1.8	R	4	2	6	4	
395.849	4	4							1.8	R	4	2	6	4	
395.860	4	4							1.8	R	4	2	6	4	
395.876	6	8							5.3	R	10	2	12	8	
395.879	4	4							1.8	R	4	2	6	4	
395.901	4	4							1.8	R	4	2	6	4	
395.940			4	4					1.8	R	4	4	8	4	
395.943			4	4					1.8	R	4	4	8	4	
395.985	6	4							2.7	R	4	2	6	4	
396.034	4	4							1.8	R	4	2	6	4	
396.040	6	14	6	12					17.3	R	32		32	24	
396.049	4	4	6	6					5.8	R	12	6	18	10	
396.064	4	4							1.8	R	4	2	6	4	
396.075			4	4					1.8	R	4	4	8	4	
396.113	4	4							1.8	R	4	2	6	4	
396.158	4	4							1.8	R	4	2	6	4	
396.173			4	4					1.8	R	4	4	8	4	
396.183															15
396.191	4	4							1.8	R	4	2	6	4	
396.218	4	4							1.8	R	4	2	6	4	
396.251															20
396.294	4	4							1.8	R	4	2	6	4	
396.309	4	4							1.8	R	4	2	6	4	
396.320	4	4							1.8	R	4	2	6	4	
396.327	4	4							1.8	R	4	2	6	4	
396.335	4	4							1.8	R	4	2	6	4	
396.346	4	4							1.8	R	4	2	6	4	
396.368	4	4							1.8	R	4	2	6	4	
396.387	4	4							1.8	R	4	2	6	4	
396.398	4	4							1.8	R	4	2	6	4	
396.436	4	4							1.8	R	4	2	6	4	
396.510	4	4							1.8	R	4	2	6	4	
396.630					4	4			1.8	R	4	4	8	4	
396.641	4	4							1.8	R	4	2	6	4	
396.667															20
396.850					4	4			1.8	R	4	4	8	4	
396.899	4	4							1.8	R	4	2	6	4	
TOTALS:									**377.7**		**722**	**454**	**1176**	**686**	**67**
ADDITIONAL QUANTITIES:									**80.0**		**140**	**90**	**230**	**140**	**10**
GRAND TOTALS:									**457.7**		**862**	**544**	**1406**	**826**	**77**

NRC PAVEMENT REPAIR AREA TYPES

W = Two Working Joints (Use only if repair is full roadway width and uniform length (across all lanes))
T = Two Tied Joints
B = One Working & One Tied Joint
R = Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	22	64

I29N NEAR I90 INTERCHANGE IN SIOUX FALLS

DMI	NB PASSING LANE L Ft	NB PASSING LANE W Ft	NB DRIVING LANE L Ft	NB DRIVING LANE W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 11 x 18" DEFORMED TIE BARS Each	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each
83.780			4	4	1.8	R	4	4	8	4
83.784	4	4	4	4	3.6	R	8	6	14	8
83.801	4	4			1.8	R	4	2	6	4
83.890			60	4	26.7	R	4	48	52	12
83.925			6	6	4.0	R	8	4	12	6
83.941			4	4	1.8	R	4	4	8	4
83.944			4	4	1.8	R	4	4	8	4
83.947			6	6	4.0	R	8	4	12	6
83.951			4	4	1.8	R	4	4	8	4
83.954	4	4	8	14	14.2	R	20	5	25	16
83.959			4	4	1.8	R	4	4	8	4
83.969			4	4	1.8	R	4	4	8	4
83.974			4	4	1.8	R	4	4	8	4
83.996			4	4	1.8	R	4	4	8	4
84.061	4	4	4	4	3.6	R	8	6	14	8
84.067			4	4	1.8	R	4	4	8	4
84.092			4	4	1.8	R	4	4	8	4
84.270			4	4	1.8	R	4	4	8	4
84.280	4	4	6	6	5.8	R	12	6	18	10
84.325			4	4	1.8	R	4	4	8	4
84.336			4	4	1.8	R	4	4	8	4
84.390			4	4	1.8	R	4	4	8	4
84.399			4	4	1.8	R	4	4	8	4
84.406			4	4	1.8	R	4	4	8	4
84.416			4	4	1.8	R	4	4	8	4
84.477			4	4	1.8	R	4	4	8	4
84.504			4	4	1.8	R	4	4	8	4
84.542			6	6	4.0	R	8	4	12	6
84.553			6	6	4.0	R	8	4	12	6
84.582			6	6	4.0	R	8	4	12	6
TOTALS:					**109.9**		**172**	**169**	**341**	**164**
ADDITIONAL QUANTITIES:					**20.0**		**30**	**30**	**60**	**30**
GRAND TOTALS:					**129.9**		**202**	**199**	**401**	**194**

NRC PAVEMENT REPAIR AREA TYPES

W = Two Working Joints (Use only if repair is full roadway width and uniform length (across all lanes))
T = Two Tied Joints
B = One Working & One Tied Joint
R = Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	23	64

SD34 IN HOWARD

MRM	DISP	DMI	WB DRIVING LANE L Ft	WB DRIVING LANE W Ft	WB PASSING LANE L Ft	WB PASSING LANE W Ft	EB PASSING LANE L Ft	EB PASSING LANE W Ft	EB DRIVING LANE L Ft	EB DRIVING LANE W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) 1" x 18" PLAIN ROUND DOWEL BARS Each	No. 8 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each
366.00	0.370	366.370	6	12	6	12			4	4	17.8	R		36	6	42	28
366.00	0.367	366.367			4	4					1.8	R		4	4	8	4
366.00	0.353	366.353					4	4			1.8	R		4	4	8	4
366.00	0.351	366.351	6	12	6	12					16.0	R		32	2	34	24
366.00	0.348	366.348	6	12							8.0	R		16	2	18	12
366.00	0.342	366.342			4	4					1.8	R		4	4	8	4
366.00	0.338	366.338					40	4	4	4	19.6	R		8	36	44	12
366.00	0.334	366.334	4	4							1.8	R		4	2	6	4
366.00	0.331	366.331	4	4							1.8	R		4	2	6	4
366.00	0.327	366.327					4	4	4	4	3.6	R		8	8	16	8
366.00	0.324	366.324					4	4			1.8	R		4	4	8	4
366.00	0.323	366.323	6	6							4.0	R		8	2	10	6
366.00	0.319	366.319	4	4							1.8	R		4	2	6	4
366.00	0.316	366.316	4	4							1.8	R		4	2	6	4
366.00	0.313	366.313					4	4			1.8	R		4	4	8	4
366.00	0.310	366.310	6	12							8.0	R		16	2	18	12
366.00	0.294	366.294							4	4	1.8	R		4	4	8	4
366.00	0.287	366.287	42	4							18.7	R		4	16	20	8
366.00	0.285	366.285	4	4							1.8	R		4	2	6	4
366.00	0.278	366.278	4	4							1.8	R		4	2	6	4
366.00	0.267	366.267			4	4			4	4	3.6	R		8	8	16	8
366.00	0.263	366.263			6	6					4.0	R		8	4	12	6
366.00	0.260	366.260							4	4	1.8	R		4	4	8	4
366.00	0.259	366.259			4	4					1.8	R		4	4	8	4
366.00	0.255	366.255	4	4							1.8	R		4	2	6	4
366.00	0.253	366.253							4	4	1.8	R		4	4	8	4
366.00	0.249	366.249							4	4	1.8	R		4	4	8	4
366.00	0.244	366.244	6	14							9.3	R		16	2	18	12
366.00	0.240	366.240	4	4							1.8	R		4	2	6	4
366.00	0.237	366.237	4	4	4	4					3.6	R		8	6	14	8
366.00	0.233	366.233					4	4	4	4	3.6	R		8	8	16	8
366.00	0.228	366.228	6	12	6	12					16.0	R		32	2	34	24
366.00	0.226	366.226							4	4	1.8	R		4	4	8	4
366.00	0.222	366.222	4	4	4	4	4	4	4	4	7.1	R		16	14	30	16
366.00	0.215	366.215							6	12	8.0	R		16	2	18	12
366.00	0.207	366.207			6	12	4	4	4	4	11.6	R		24	8	32	20
366.00	0.203	366.203	4	4			12	4	4	4	8.9	R		12	14	26	12
366.00	0.200	366.200					4	4			1.8	R		4	4	8	4
366.00	0.197	366.197					20	4	4	4	10.7	R		8	20	28	8
366.00	0.196	366.196			6	6	14	6			13.3	R		16	14	30	12
366.00	0.189	366.189					4	4	4	4	3.6	R		8	8	16	8
366.00	0.188	366.188	6	14							9.3	R		16	2	18	12
366.00	0.183	366.183					8	28			24.9	W	16		6	22	
366.00	0.181	366.181	4	4							1.8	R		4	2	6	4
366.00	0.177	366.177	6	14	6	14					18.7	R		32	6	38	24
366.00	0.176	366.176					8	8			7.1	R		10	6	16	8
366.00	0.174	366.174	4	4							1.8	R		4	2	6	4
366.00	0.172	366.172					20	4	8	8	16.0	R		14	22	36	12
366.00	0.169	366.169					6	28			18.7	W	16		4	20	
366.00	0.165	366.165					4	4	4	4	3.6	R		8	8	16	8
366.00	0.162	366.162	4	4			4	4	4	4	5.3	R		12	10	22	12
366.00	0.158	366.158					4	4	4	4	3.6	R		8	8	16	8
366.00	0.155	366.155					4	4			1.8	R		4	4	8	4
366.00	0.151	366.151					6	14	4	4	11.1	R		20	8	28	16
366.00	0.149	366.149	14	12	14	12					37.3	R		32	5	37	24
366.00	0.136	366.136					6	16	6	8	16.0	R		26	8	34	20

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	24	64

SD34 IN HOWARD

			WB DRIVING LANE		WB PASSING LANE		EB PASSING LANE		EB DRIVING LANE				INSERT STEEL BAR IN PCC PAVEMENT (NRCP)			
MRM	DISP	DMI	L Ft	W Ft	L Ft	W Ft	L Ft	W Ft	L Ft	W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	1" x 18" PLAIN ROUND DOWEL BARS Each	No. 8 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each
366.00	0.132	366.132					4	4	4	4	3.6	R		8	8	16	8
366.00	0.125	366.125			6	6	4	4			5.8	R		12	8	20	10
366.00	0.121	366.121							6	14	9.3	R		16	4	20	12
366.00	0.118	366.118					4	4			1.8	R		4	4	8	4
366.00	0.109	366.109	10	12	6	12					21.3	R		32	4	36	24
366.00	0.104	366.104					4	4			1.8	R		4	4	8	4
366.00	0.102	366.102	4	4							1.8	R		4	2	6	4
366.00	0.098	366.098	4	4							1.8	R		4	2	6	4
366.00	0.094	366.094			6	14					9.3	R		16	4	20	12
366.00	0.091	366.091							6	14	9.3	R		16	4	20	12
366.00	0.090	366.090	4	4							1.8	R		4	2	6	4
366.00	0.087	366.087	4	4							1.8	R		4	2	6	4
366.00	0.083	366.083			4	4					1.8	R		4	4	8	4
366.00	0.079	366.079			4	4					1.8	R		4	4	8	4
366.00	0.072	366.072	6	6							4.0	R		8	2	10	6
366.00	0.069	366.069					4	4			1.8	R		4	4	8	4
366.00	0.068	366.068	4	4							1.8	R		4	2	6	4
366.00	0.064	366.064	4	4							1.8	R		4	2	6	4
366.00	0.062	366.062					4	4			1.8	R		4	4	8	4
366.00	0.061	366.061	4	4	4	4					3.6	R		8	6	14	8
366.00	0.059	366.059					4	4			1.8	R		4	4	8	4
366.00	0.057	366.057			6	12					8.0	R		16	4	20	12
366.00	0.055	366.055					4	4			1.8	R		4	4	8	4
366.00	0.053	366.053	4	4							1.8	R		4	2	6	4
366.00	0.051	366.051					4	6			2.7	R		8	4	12	6
366.00	0.050	366.050			6	14					9.3	R		16	4	20	12
366.00	0.047	366.047					4	4			1.8	R		4	4	8	4
366.00	0.043	366.043	4	4							1.8	R		4	2	6	4
366.00	0.041	366.041					4	4	4	4	3.6	R		8	8	16	8
366.00	0.039	366.039			12	12					16.0	R		16	8	24	12
366.00	0.035	366.035			6	14					9.3	R		16	4	20	12
366.00	0.031	366.031	4	4							1.8	R		4	2	6	4
366.00	0.028	366.028	4	4			80	4	28	4	49.8	R		12	88	100	24
366.00	0.021	366.021					4	4			1.8	R		4	4	8	4
366.00	0.020	366.020	6	14							9.3	R		16	2	18	12
366.00	0.016	366.016	6	14							9.3	R		16	2	18	12
366.00	0.014	366.014					4	4			1.8	R		4	4	8	4
366.00	0.013	366.013	6	14	6	14					18.7	R		32	6	38	24
366.00	0.011	366.011							6	14	9.3	R		16	4	20	12
366.00	0.007	366.007					60	4	6	16	37.3	R		20	52	72	24
366.00	0.001	366.001	4	4							1.8	R		4	2	6	4
366.00	0.000	366.000							6	14	9.3	R		16	4	20	12
366.00	0.000	366.000					4	4	4	4	3.6	R		8	8	16	8
365.00	0.999	365.999	6	6							4.0	R		8	2	10	6
365.00	0.998	365.998	4	4							1.8	R		4	2	6	4
365.00	0.994	365.994	4	4			4	4	4	4	5.3	R		12	10	22	12
364.00	1.991	366.991	4	4							1.8	R		4	2	6	4
364.00	1.987	366.987	6	4							2.7	R		4	2	6	4
365.00	0.983	365.983	4	4							1.8	R		4	2	6	4
365.00	0.980	365.980	4	4							1.8	R		4	2	6	4
365.00	0.976	365.976	6	12							8.0	R		16	2	18	12
365.00	0.972	365.972	4	4							1.8	R		4	2	6	4
365.00	0.968	365.968	4	4							1.8	R		4	2	6	4
365.00	0.964	365.964			6	12					8.0	R		16	4	20	12
365.00	0.961	365.961			6	12					8.0	R		16	4	20	12
365.00	0.957	365.957	4	4							1.8	R		4	2	6	4

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	25	64

SD34 IN HOWARD

			WB DRIVING LANE		WB PASSING LANE		EB PASSING LANE		EB DRIVING LANE				INSERT STEEL BAR IN PCC PAVEMENT (NRCP)			
MRM	DISP	DMI	L Ft	W Ft	L Ft	W Ft	L Ft	W Ft	L Ft	W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	1" x 18" PLAIN ROUND DOWEL BARS Each	No. 8 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each
365.00	0.954	365.954	4	4							1.8	R		4	2	6	4
365.00	0.950	365.950	4	4							1.8	R		4	2	6	4
365.00	0.947	365.947	4	4							1.8	R		4	2	6	4
365.00	0.943	365.943	4	4	4	4					3.6	R		8	6	14	8
365.00	0.940	365.940	12	12	12	12	4	4	4	4	35.6	R		40	9	49	32
365.00	0.937	365.937					4	4	4	4	3.6	R		8	8	16	8
365.00	0.936	365.936	6	14	6	14					18.7	R		32	6	38	24
365.00	0.933	365.933							4	4	1.8	R		4	4	8	4
365.00	0.932	365.932	4	4							1.8	R		4	2	6	4
365.00	0.928	365.928	4	4							1.8	R		4	2	6	4
365.00	0.927	365.927	12	6							8.0	R		8	4	12	6
365.00	0.925	365.925	4	4							1.8	R		4	2	6	4
365.00	0.920	365.920	14	12							18.7	R		16	5	21	12
365.00	0.918	365.918					4	4			1.8	R		4	4	8	4
365.00	0.916	365.916	12	12	12	12	6	14			41.3	R		48	4	52	36
365.00	0.911	365.911					4	4	4	4	3.6	R		8	8	16	8
365.00	0.907	365.907					4	4	4	4	3.6	R		8	8	16	8
365.00	0.904	365.904					4	4			1.8	R		4	4	8	4
365.00	0.903	365.903	4	4							1.8	R		4	2	6	4
365.00	0.901	365.901					4	4			1.8	R		4	4	8	4
365.00	0.899	365.899	4	4							1.8	R		4	2	6	4
365.00	0.898	365.898					6	28			18.7	R		16	4	20	12
365.00	0.897	365.897					4	4			1.8	R		4	4	8	4
365.00	0.896	365.896	4	4							1.8	R		4	2	6	4
365.00	0.893	365.893							4	4	1.8	R		4	4	8	4
365.00	0.892	365.892	6	12	6	12					16.0	R		32	2	34	24
365.00	0.890	365.890					4	4	4	4	3.6	R		8	8	16	8
365.00	0.886	365.886					4	4			1.8	R		4	4	8	4
365.00	0.882	365.882					4	4			1.8	R		4	4	8	4
365.00	0.882	365.882							4	4	1.8	R		4	4	8	4
365.00	0.879	365.879					4	4			1.8	R		4	4	8	4
365.00	0.877	365.877	4	4							1.8	R		4	2	6	4
365.00	0.875	365.875							4	4	1.8	R		4	4	8	4
365.00	0.873	365.873	4	4							1.8	R		4	2	6	4
365.00	0.871	365.871					84	4			37.3	R		4	66	70	16
365.00	0.860	365.860							4	4	1.8	R		4	4	8	4
365.00	0.850	365.850							4	4	1.8	R		4	4	8	4
365.00	0.842	365.842							4	4	1.8	R		4	4	8	4
365.00	0.839	365.839							4	4	1.8	R		4	4	8	4
365.00	0.835	365.835	4	4							1.8	R		4	2	6	4
365.00	0.833	365.833	12	14							18.7	R		16	4	20	12
365.00	0.831	365.831							4	4	1.8	R		4	4	8	4
365.00	0.824	365.824	4	4							1.8	R		4	2	6	4
365.00	0.813	365.813			4	4					1.8	R		4	4	8	4
365.00	0.811	365.811	6	6							4.0	R		8	2	10	6
365.00	0.808	365.808	38	4	4	4					18.7	R		8	19	27	8
365.00	0.793	365.793							4	4	1.8	R		4	4	8	4
365.00	0.791	365.791	4	4							1.8	R		4	2	6	4
365.00	0.780	365.780					6	14			9.3	R		16	4	20	12
365.00	0.779	365.779							4	4	1.8	R		4	4	8	4
365.00	0.772	365.772	4	4							1.8	R		4	2	6	4
365.00	0.768	365.768	4	4							1.8	R		4	2	6	4
365.00	0.765	365.765					4	4			1.8	R		4	4	8	4
365.00	0.750	365.750							4	4	1.8	R		4	4	8	4
365.00	0.746	365.746							4	4	1.8	R		4	4	8	4
365.00	0.742	365.742							6	12	8.0	R		16	2	18	12

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	26	64

SD34 IN HOWARD

			WB DRIVING LANE		WB PASSING LANE		EB PASSING LANE		EB DRIVING LANE				INSERT STEEL BAR IN PCC PAVEMENT (NRCP)			
MRM	DISP	DMI	L Ft	W Ft	L Ft	W Ft	L Ft	W Ft	L Ft	W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	1" x 18" PLAIN ROUND DOWEL BARS Each	No. 8 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each
365.00	0.735	365.735							4	4	1.8	R		4	4	8	4
365.00	0.734	365.734	4	4							1.8	R		4	2	6	4
365.00	0.732	365.732							4	4	1.8	R		4	4	8	4
365.00	0.728	365.728							4	4	1.8	R		4	4	8	4
365.00	0.727	365.727	4	4							1.8	R		4	2	6	4
365.00	0.721	365.721							4	4	1.8	R		4	4	8	4
365.00	0.716	365.716	4	4							1.8	R		4	2	6	4
365.00	0.704	365.704	6	6							4.0	R		8	2	10	6
365.00	0.685	365.685	4	4							1.8	R		4	2	6	4
365.00	0.670	365.670	4	4							1.8	R		4	2	6	4
365.00	0.658	365.658	6	6							4.0	R		8	2	10	6
365.00	0.655	365.655	6	8							5.3	R		10	2	12	8
365.00	0.653	365.653							4	4	1.8	R		4	4	8	4
365.00	0.652	365.652	4	4							1.8	R		4	2	6	4
365.00	0.648	365.648	4	4							1.8	R		4	2	6	4
365.00	0.644	365.644	4	4							1.8	R		4	2	6	4
365.00	0.642	365.642							4	4	1.8	R		4	4	8	4
365.00	0.640	365.640	6	8							5.3	R		10	2	12	8
365.00	0.633	365.633	4	4							1.8	R		4	2	6	4
365.00	0.630	365.630	4	4							1.8	R		4	2	6	4
365.00	0.626	365.626	4	4							1.8	R		4	2	6	4
365.00	0.619	365.619	4	4							1.8	R		4	2	6	4
365.00	0.613	365.613							4	4	1.8	R		4	4	8	4
365.00	0.612	365.612	6	28							18.7	W	16		2	18	
365.00	0.600	365.600	4	4							1.8	R		4	2	6	4
365.00	0.598	365.598							4	4	1.8	R		4	4	8	4
365.00	0.594	365.594							4	4	1.8	R		4	4	8	4
365.00	0.593	365.593	6	6							4.0	R		8	2	10	6
365.00	0.578	365.578	6	6							4.0	R		8	2	10	6
365.00	0.576	365.576							4	4	1.8	R		4	4	8	4
365.00	0.572	365.572							4	4	1.8	R		4	4	8	4
365.00	0.563	365.563	6	28							18.7	w	16		2	18	
365.00	0.555	365.555	6	10							6.7	R		12	2	14	10
365.00	0.548	365.548	6	6							4.0	R		8	2	10	6
365.00	0.541	365.541	4	4							1.8	R		4	2	6	4
365.00	0.539	365.539							4	4	1.8	R		4	4	8	4
365.00	0.527	365.527							6	8	5.3	R		10	4	14	8
365.00	0.525	365.525	4	4							1.8	R		4	2	6	4
365.00	0.518	365.518	4	4							1.8	R		4	2	6	4
365.00	0.506	365.506	4	4							1.8	R		4	2	6	4
365.00	0.495	365.495	4	4							1.8	R		4	2	6	4
365.00	0.494	365.494							4	4	1.8	R		4	4	8	4
365.00	0.487	365.487							4	4	1.8	R		4	4	8	4
365.00	0.479	365.479							4	4	1.8	R		4	4	8	4
365.00	0.476	365.476							4	4	1.8	R		4	4	8	4
365.00	0.473	365.473	4	4							1.8	R		4	2	6	4
365.00	0.469	365.469							4	4	1.8	R		4	4	8	4
365.00	0.465	365.465	6	14					4	4	11.1	R		20	6	26	16
365.00	0.462	365.462	4	4							1.8	R		4	2	6	4
365.00	0.454	365.454							4	4	1.8	R		4	4	8	4
365.00	0.447	365.447	6	6							4.0	R		8	2	10	6
365.00	0.443	365.443							4	4	1.8	R		4	4	8	4
365.00	0.439	365.439	6	16							10.7	R		16	2	18	12
365.00	0.432	365.432							6	14	9.3	R		16	4	20	12
365.00	0.421	365.421							4	4	1.8	R		4	4	8	4
365.00	0.417	365.417	6	10							6.7	R		12	2	14	10

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	27	64

SD34 IN HOWARD

			WB DRIVING LANE		WB PASSING LANE		EB PASSING LANE		EB DRIVING LANE				INSERT STEEL BAR IN PCC PAVEMENT (NRCP)			
MRM	DISP	DMI	L Ft	W Ft	L Ft	W Ft	L Ft	W Ft	L Ft	W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	1" x 18" PLAIN ROUND DOWEL BARS Each	No. 8 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each
365.00	0.398	365.398	6	14							9.3	R		16	2	18	12
365.00	0.383	365.383	6	6					4	6	6.7	R		16	6	22	12
365.00	0.380	365.380							4	4	1.8	R		4	4	8	4
365.00	0.369	365.369							4	4	1.8	R		4	4	8	4
365.00	0.364	365.364	6	14							9.3	R		16	2	18	12
365.00	0.352	365.352	6	14							9.3	R		16	2	18	12
365.00	0.341	365.341	4	4							1.8	R		4	2	6	4
365.00	0.332	365.332							6	14	9.3	R		16	4	20	12
365.00	0.326	365.326	4	4							1.8	R		4	2	6	4
365.00	0.320	365.320							6	8	5.3	R		10	4	14	8
365.00	0.307	365.307	6	14							9.3	R		16	2	18	12
365.00	0.294	365.294							4	4	1.8	R		4	4	8	4
365.00	0.291	365.291							4	4	1.8	R		4	4	8	4
365.00	0.285	365.285	6	14							9.3	R		16	2	18	12
365.00	0.276	365.276							4	6	2.7	R		8	4	12	6
365.00	0.274	365.274	4	4							1.8	R		4	2	6	4
365.00	0.268	365.268							4	4	1.8	R		4	4	8	4
365.00	0.261	365.261							4	4	1.8	R		4	4	8	4
365.00	0.253	365.253							4	6	2.7	R		8	4	12	6
365.00	0.247	365.247	6	14							9.3	R		16	2	18	12
365.00	0.231	365.231							4	4	1.8	R		4	4	8	4
365.00	0.228	365.228	4	4							1.8	R		4	2	6	4
365.00	0.227	365.227							4	4	1.8	R		4	4	8	4
365.00	0.225	365.225	4	4							1.8	R		4	2	6	4
365.00	0.217	365.217	4	4							1.8	R		4	2	6	4
365.00	0.216	365.216							6	8	5.3	R		10	4	14	8
365.00	0.202	365.202	4	4							1.8	R		4	2	6	4
365.00	0.198	365.198	6	4							2.7	R		4	2	6	4
365.00	0.187	365.187	4	4							1.8	R		4	2	6	4
365.00	0.177	365.177	48	24							128.0	W	16		19	35	24
365.00	0.172	365.172							4	4	1.8	R		4	4	8	4
365.00	0.157	365.157							4	4	1.8	R		4	4	8	4
365.00	0.142	365.142	4	4							1.8	R		4	2	6	4
365.00	0.115	365.115	4	4							1.8	R		4	2	6	4
365.00	0.111	365.111	4	4							1.8	R		4	2	6	4
365.00	0.108	365.108	4	4					4	4	3.6	R		8	6	14	8
365.00	0.104	365.104	4	4							1.8	R		4	2	6	4
365.00	0.097	365.097							4	4	1.8	R		4	4	8	4
365.00	0.089	365.089	4	4							1.8	R		4	2	6	4
365.00	0.078	365.078	6	6							4.0	R		8	2	10	6
365.00	0.074	365.074	6	6							4.0	R		8	2	10	6
365.00	0.070	365.070	4	4							1.8	R		4	2	6	4
365.00	0.059	365.059	6	6							4.0	R		8	2	10	6
365.00	0.052	365.052	6	10							6.7	R		12	2	14	10
365.00	0.044	365.044	6	6							4.0	R		8	2	10	6
365.00	0.041	365.041	6	14							9.3	R		16	2	18	12
365.00	0.037	365.037	6	14							9.3	R		16	2	18	12
365.00	0.033	365.033	4	4							1.8	R		4	2	6	4
365.00	0.029	365.029	6	18							12.0	R		16	2	18	12
365.00	0.027	365.027	6	18					4	4	13.8	R		20	6	26	16
365.00	0.022	365.022	4	4					6	8	7.1	R		14	6	20	12
365.00	0.019	365.019	4	4							1.8	R		4	2	6	4
365.00	0.018	365.018							6	14	9.3	R		16	4	20	12
365.00	0.011	365.011							6	6	4.0	R		8	4	12	6
365.00	0.000	365.000					4	4			1.8	R		4	4	8	4

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	28	64

SD34 IN HOWARD

MRM	DISP	DMI	WB DRIVING LANE L Ft	WB DRIVING LANE W Ft	WB PASSING LANE L Ft	WB PASSING LANE W Ft	EB PASSING LANE L Ft	EB PASSING LANE W Ft	EB DRIVING LANE L Ft	EB DRIVING LANE W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) 1" x 18" PLAIN ROUND DOWEL BARS Each	No. 8 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each
TOTALS:											1653.3		80	2298	1319	3697	2024
ADDITIONAL QUANTITIES:											330.0		20	460	260	740	400
GRAND TOTALS											1983.3		100	2758	1579	4437	2424

NRC PAVEMENT REPAIR AREA TYPES

W = Two Working Joints (Use only if repair is full roadway width and uniform length (across all lanes))
T = Two Tied Joints
B = One Working & One Tied Joint
R = Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	29	64

SD34 IN HOWARD

WB DRIVING LANE L Ft	WB DRIVING LANE W Ft	EB DRIVING LANE L Ft	EB DRIVING LANE W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) 1" x 18" PLAIN ROUND DOWEL BARS Each	No. 8 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each
6	20			13.3	R		16	2	18	12
6	20			13.3	R		16	2	18	12
6	20			13.3	R		16	2	18	12
6	6			4.0	R		8	2	10	6
6	40			26.7	R		16	2	18	12
6	50			33.3	R		16	2	18	12
6	20			13.3	R		16	2	18	12
6	40			26.7	R		16	2	18	12
6	40			26.7	R		16	2	18	12
6	20			13.3	R		16	2	18	12
6	20			13.3	R		16	2	18	12
6	20			13.3	R		16	2	18	12
6	6			4.0	R		8	2	10	6
6	40			26.7		16	16	2	34	
6	10			6.7		12	12	2	26	
4	6			2.7	R		8	2	10	6
6	20			13.3	R		16	2	18	12
8	14			12.4	R		16	3	19	12
6	6			4.0	R		8	2	10	6
20	12			26.7	R		16	8	24	12
		6	18	12.0	R		16	4	20	12
		4	4	1.8	R		4	4	8	4
		8	8	7.1	R		10	6	16	8
4	4			1.8	R		4	2	6	4
6	10			6.7	R		12	2	14	10
6	12			8.0	R		16	2	18	12
6	50			33.3	R		16	2	18	12
6	6			4.0	R		8	2	10	6
6	20			13.3	R		16	2	18	12
6	20			13.3	R		16	2	18	12
6	12			8.0	R		16	2	18	12
		6	14	9.3	R		16	4	20	12
		6	20	13.3	R		16	4	20	12
		6	40	26.7	R		16	4	20	12
		6	40	26.7	R		16	4	20	12
4	4			1.8	R		4	2	6	4
28	4			12.4	R		4	11	15	4
				506.5		**28**	**490**	**106**	**624**	**352**
				100.0		**10**	**100**	**20**	**130**	**70**
				606.5		**38**	**590**	**126**	**754**	**422**

NRC PAVEMENT REPAIR AREA TYPES

W = Two Working Joints (Use only if repair is full roadway width and uniform length (across all lanes))
T = Two Tied Joints
B = One Working & One Tied Joint
R = Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	30	64

I229S NEAR I90 INTERCHANGE IN SIOUX FALLS

		SB MEDIAN SHOULDER		SB PASSING LANE 2		SB PASSING LANE 1		SB DRIVING LANE		SB OUTSIDE SHOULDER				INSERT STEEL BAR IN PCC PAVEMENT (NRCP)				
MRM	DISP	L Ft	W Ft	L Ft	W Ft	L Ft	W Ft	L Ft	W Ft	L Ft	W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	1½" x 18" PLAIN ROUND DOWEL BARS Each	No. 11 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each	TIE BAR RETROFIT STITCHING Each
10.00	0.530			4	4							1.8	R		4	2	6	4	
10.00	0.010					10	4					4.4	R		4	8	12	4	
9.00	0.988	40	6			4	4					28.4	R		4	20	24	4	
9.00	0.985					4	4					1.8	R		4	4	8	4	
9.00	0.981					4	4					1.8	R		4	4	8	4	
9.00	0.978			6	4							2.7	R		4	2	6	4	
9.00	0.976	25	6									16.7	R			10	10		
9.00	0.972			4	4							1.8	R		4	2	6	4	
9.00	0.970			4	4	4	4					3.6	R		8	6	14	8	
9.00	0.967	80	6			6	12					61.3	R		16	36	52	12	
9.00	0.963			4	4							1.8	R		4	2	6	4	
9.00	0.959			4	4							1.8	R		4	2	6	4	
9.00	0.955			4	4							1.8	R		4	2	6	4	
9.00	0.948					6	12					8.0	R		16	4	20	12	
9.00	0.945					4	4					1.8	R		4	4	8	4	
9.00	0.942					6	12					8.0	R		16	4	20	12	
9.00	0.934			4	4							1.8	R		4	2	6	4	
9.00	0.931			4	4							1.8	R		4	2	6	4	
9.00	0.927			4	4							1.8	R		4	2	6	4	
9.00	0.923			4	4							1.8	R		4	2	6	4	
9.00	0.909			4	4							1.8	R		4	2	6	4	
9.00	0.906					6	12					8.0	R		16	4	20	12	
9.00	0.902			4	4							1.8	R		4	2	6	4	
9.00	0.898			4	4	4	4					3.6	R		8	6	14	8	
9.00	0.891			4	4							1.8	R		4	2	6	4	
9.00	0.888					4	4					1.8	R		4	4	8	4	
9.00	0.884	20	6	4	4	4	4					16.9	R		8	14	22	8	
9.00	0.865			4	4	4	4					3.6	R		8	6	14	8	
9.00	0.862					4	4					1.8	R		4	4	8	4	
9.00	0.858					4	4					1.8	R		4	4	8	4	
9.00	0.857	15	6									10.0	R			6	6		
9.00	0.836					4	4					1.8	R		4	4	8	4	
9.00	0.830					6	12					8.0	R		16	4	20	12	
9.00	0.825					8	4					3.6	R		4	6	10	4	
9.00	0.809			4	4							1.8	R		4	2	6	4	
9.00	0.790			4	4							1.8	R		4	2	6	4	
9.00	0.752					4	4					1.8	R		4	4	8	4	
9.00	0.739			8	4	4	4					5.3	R		8	7	15	8	
9.00	0.737			20	4							8.9	R		4	8	12	4	
9.00	0.735			4	4	4	4					3.6	R		8	6	14	8	
9.00	0.731					4	4					1.8	R		4	4	8	4	
9.00	0.727					4	4					1.8	R		4	4	8	4	
9.00	0.690					4	4					1.8	R		4	4	8	4	
9.00	0.675			4	4							1.8	R		4	2	6	4	
9.00	0.671			6	12							8.0	R		16	2	18	12	
9.00	0.664			4	4							1.8	R		4	2	6	4	
9.00	0.660			4	4							1.8	R		4	2	6	4	
9.00	0.658			4	4							1.8	R		4	2	6	4	
9.00	0.573					4	4					1.8	R		4	4	8	4	
9.00	0.570					4	4					1.8	R		4	4	8	4	
9.00	0.562			4	4							1.8	R		4	2	6	4	
9.00	0.418																		8
9.00	0.390			6	12	4	4					9.8	R		20	2	22	16	
9.00	0.375					4	4					1.8	R		4	4	8	4	
9.00	0.371			4	4							1.8	R		4	2	6	4	
9.00	0.356			6	12							8.0	R		16	2	18	12	

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	31	64

I229S NEAR I90 INTERCHANGE IN SIOUX FALLS

		SB MEDIAN SHOULDER		SB PASSING LANE 2		SB PASSING LANE 1		SB DRIVING LANE		SB OUTSIDE SHOULDER				INSERT STEEL BAR IN PCC PAVEMENT (NRCP)				
		L	W	L	W	L	W	L	W	L	W			1½" x 18" PLAIN ROUND DOWEL BARS	No. 11 x 18" DEFORMED TIE BARS	No. 5 x 24" DEFORMED TIE BARS	INSERT STEEL BAR IN NRCP TOTAL	DOWEL BAR	TIE BAR RETROFIT STITCHING
MRM	DISP	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	Each	Each	Each	Each	Each	Each
9.00	0.353	120	6	6	12							88.0	R		16	50	66	12	
9.00	0.326			6	12							8.0	R		16	2	18	12	
9.00	0.324					6	12					8.0	R		16	4	20	12	
9.00	0.323					4	4					1.8	R		4	4	8	4	
9.00	0.319					6	12					8.0	R		16	4	20	12	
9.00	0.273			4	4							1.8	R		4	2	6	4	
9.00	0.239									4	4	1.8	R			4	4		
9.00	0.236									4	4	1.8	R			4	4		
9.00	0.232									4	4	1.8	R			4	4		20
9.00	0.224					20	6					13.3	R		8	16	24	6	
9.00	0.221			4	4							1.8	R		4	2	6	4	
9.00	0.214			20	6							13.3	R		8	8	16	6	
9.00	0.141			4	4			20	6			15.1	R		12	18	30	10	
9.00	0.132							20	6			13.3	R		8	16	24	6	
9.00	0.119					20	12					26.7	R		16	16	32	12	20
9.00	0.112					6	12					8.0	R		16	4	20	12	
9.00	0.105	10	6					6	12			14.7	R		16	8	24	12	
9.00	0.104					4	4					1.8	T		4	4	8		
9.00	0.103					4	4					1.8	R		4	4	8	4	
9.00	0.098																		20
9.00	0.095					20	6					13.3	R		8	16	24	6	
9.00	0.088					4	4					1.8	R		4	4	8	4	
9.00	0.080			4	4							1.8	R		4	2	6	4	
9.00	0.076																		20
9.00	0.064																		20
9.00	0.050																		40
8.00	0.999			4	4							1.8	R		4	2	6	4	
8.00	0.993					4	4					1.8	T		4	4	8		
8.00	0.950	65	6					4	4			45.1		4	4	30	38		10
8.00	0.940	20	6									13.3				8	8		
8.00	0.938			4	4							1.8		4	4	2	10		
8.00	0.937	4	4									1.8				2	2		
8.00	0.924			6	6							4.0		8	8	2	18		
8.00	0.891					4	4					1.8		4	4	4	12		
8.00	0.883			4	4							1.8		4	4	2	10		
TOTALS:												**612.5**		**24**	**552**	**511**	**1087**	**450**	**158**
ADDITIONAL QUANTITIES:												**120.0**		**-**	**110**	**100**	**210**	**90**	**30**
GRAND TOTALS												**732.5**		**24**	**662**	**611**	**1297**	**540**	**188**

NRC PAVEMENT REPAIR AREA TYPES

W = Two Working Joints (Use only if repair is full roadway width and uniform length (across all lanes))
T = Two Tied Joints
B = One Working & One Tied Joint
R = Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	32	64

I90E NEAR I229 INTERCHANGE

DMI	EB PASSING LANE L Ft	EB PASSING LANE W Ft	EB DRIVING LANE L Ft	EB DRIVING LANE W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	COMMENTS	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 11 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each
401.465							Begin Concrete				
401.675			4	4	1.8	R		4	4	8	4
401.683			6	6	4.0	R		8	4	12	6
401.702			6	14	9.3	R		16	2	18	12
401.732			6	14	9.3	R		16	2	18	12
401.755			6	14	9.3	R		16	2	18	12
401.773			10	6	6.7	T		8	8	16	
401.789	26	12	26	14	75.1	R		32		32	24
401.796	4	4	4	6	4.4	R		12	6	18	10
401.800							Replace Expansion Joint				
401.811							End Concrete				
TOTALS:					**119.9**			**112**	**28**	**140**	**80**
ADDITIONAL QUANTITIES:					**20.0**			**20**	**10**	**30**	**20**
GRAND TOTALS:					**139.9**			**132**	**38**	**170**	**100**

NRC PAVEMENT REPAIR AREA TYPES

W = Two Working Joints (Use only if repair is full roadway width and uniform length (across all lanes))
T = Two Tied Joints
B = One Working & One Tied Joint
R = Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	33	64

I90W NEAR I229 INTERCHANGE

DMI	WB DRIVING LANE L Ft	WB DRIVING LANE W Ft	WB PASSING LANE L Ft	WB PASSING LANE W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	COMMENTS	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 11 x 18" DEFORMED TIE BARS Each	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each
401.803							Expansion Joint				
401.799	8	14	6	12	20.4	R		32		32	24
401.773	12	14			18.7	R		16	4	20	12
401.769			6	12	8.0	R		16	2	18	12
401.758			4	4	1.8	R		4	4	8	4
401.739	6	14	6	12	17.3	R		32		32	24
401.731			18	2	4.0	R		2	14	16	2
401.727			6	2	1.3	R		2	4	6	2
401.723			20	2	4.4	R		2	16	18	2
401.720			20	2	4.4	R		2	16	18	2
401.719			6	2	1.3	R		2	4	6	2
401.717			6	2	1.3	R		2	4	6	2
401.715			20	2	4.4	R		2	16	18	2
401.713			20	2	4.4	R		2	16	18	2
401.710			20	2	4.4	R		2	16	18	2
401.708			18	2	4.0	R		2	14	16	2
401.707			2	3	0.7	R		4	4	8	3
401.705			20	2	4.4	R		2	16	18	2
401.702			20	2	4.4	R		2	16	18	2
401.700			20	2	4.4	R		2	16	18	2
401.696			6	2	1.3	R		2	4	6	2
401.694			12	2	2.7	R		2	8	10	2
401.692			8	2	1.8	R		2	6	8	2
401.690			4	2	0.9	R		2	4	6	2
401.687			6	2	1.3	R		2	4	6	2
401.684			20	2	4.4	R		2	16	18	2
401.681			10	2	2.2	R		2	8	10	2
401.679			8	2	1.8	R		2	6	8	2
401.677			10	2	2.2	R		2	8	10	2
401.673			6	2	1.3	R		2	4	6	2
401.669			14	2	3.1	R		2	10	12	2
401.667			20	2	4.4	R		2	16	18	2
401.665			20	2	4.4	R		2	16	18	2
401.662			20	2	4.4	R		2	16	18	2
401.659			20	2	4.4	R		2	16	18	2
401.657			20	2	4.4	R		2	16	18	2
401.654			20	2	4.4	R		2	16	18	2
401.651			20	6	13.3	R	Remove Shoulder Panel	8	16	24	6
401.649			12	2	2.7	R		2	8	10	2
401.646			20	2	4.4	R		2	16	18	2
401.644			20	2	4.4	R		2	16	18	2
401.642			6	2	1.3	R		2	4	6	2
401.642			6	2	1.3	R		2	4	6	2
401.640			20	2	4.4	R		2	16	18	2
401.637			20	2	4.4	R		2	16	18	2
401.634			20	2	4.4	R		2	16	18	2
401.632			20	2	4.4	R		2	16	18	2
401.629			2	2	0.4	R		2	4	6	2
401.629			2	2	0.4	R		2	4	6	2
401.623			20	3	6.7	R		4	16	20	3
401.621			12	2	2.7	R		2	8	10	2
401.619			12	2	2.7	R		2	8	10	2
401.617			4	2	0.9	R		2	4	6	2
401.617			4	2	0.9	R		2	4	6	2
401.614			6	2	1.3	R		2	4	6	2
401.611			4	2	0.9	R		2	4	6	2

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	34	64

I90W NEAR I229 INTERCHANGE

	WB DRIVING LANE		WB PASSING LANE					INSERT STEEL BAR IN PCC PAVEMENT (NRCP)			
DMI	L Ft	W Ft	L Ft	W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	COMMENTS	No. 11 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each
401.611			4	2	0.9	R		2	4	6	2
401.608			20	6	13.3	R	Remove Shoulder Panel	8	16	24	6
401.608			4	4	1.8	R		4	4	8	4
401.606			4	4	1.8	R		4	4	8	4
401.606			20	6	13.3	R	Remove Shoulder Panel	8	16	24	6
401.603			18	2	4.0	R		2	14	16	2
401.603			2	4	0.9	R		4	4	8	4
401.599			20	2	4.4	R		2	16	18	2
401.597			20	6	13.3	R	Remove Shoulder Panel	8	16	24	6
401.595			20	2	4.4	R		2	16	18	2
401.593			20	2	4.4	R		2	16	18	2
401.591			7	12	9.3	R		16	2	18	12
401.590			20	2	4.4	R		2	16	18	2
401.588	7	4	7	12	12.4	R		20	4	24	16
401.587			4	2	0.9	R		2	4	6	2
401.587			10	2	2.2	R		2	8	10	2
401.584			10	2	2.2	R		2	8	10	2
401.582			10	2	2.2	R		2	8	10	2
401.579			6	2	1.3	R		2	4	6	2
401.579			4	2	0.9	R		2	4	6	2
401.579			2	2	0.4	R		2	4	6	2
401.576			20	2	4.4	R		2	16	18	2
401.574			20	2	4.4	R		2	16	18	2
401.574			4	2	0.9	R		2	4	6	2
401.572			14	2	3.1	R		2	10	12	2
401.572			4	2	0.9	R		2	4	6	2
401.569			4	2	0.9	R		2	4	6	2
401.567			10	2	2.2	R		2	8	10	2
401.566			4	6	2.7	R		8	4	12	6
401.564			20	6	13.3	R	Remove Shoulder panel	8	16	24	6
401.562			12	2	2.7	R		2	8	10	2
401.562			4	2	0.9	R		2	4	6	2
401.560			20	2	4.4	R		2	16	18	2
401.557			20	2	4.4	R		2	16	18	2
401.554			14	2	3.1	R		2	10	12	2
401.554			2	2	0.4	R		2	4	6	2
401.552			2	2	0.4	R		2	4	6	2
401.552			2	2	0.4	R		2	4	6	2
401.549			4	2	0.9	R		2	4	6	2
401.549			4	2	0.9	R		2	4	6	2
401.547			2	2	0.4	R		2	4	6	2
401.547			4	2	0.9	R		2	4	6	2
401.547			6	2	1.3	R		2	4	6	2
401.544			8	2	1.8	R		2	6	8	2
401.544			4	4	1.8	R		4	4	8	4
401.542			18	2	4.0	R		2	14	16	2
401.542			4	4	1.8	R		4	4	8	4
401.539			4	2	0.9	R		2	4	6	2
401.539			4	2	0.9	R		2	4	6	2
401.536			2	2	0.4	R		2	4	6	2
401.536			4	2	0.9	R		2	4	6	2
401.534			4	2	0.9	R		2	4	6	2
401.534			2	2	0.4	R		2	4	6	2
401.532			2	2	0.4	R		2	4	6	2
401.532			4	2	0.9	R		2	4	6	2
401.529			20	2	4.4	R		2	16	18	2

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	35	64

I90W NEAR I229 INTERCHANGE

DMI	WB DRIVING LANE L Ft	WB DRIVING LANE W Ft	WB PASSING LANE L Ft	WB PASSING LANE W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	COMMENTS	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) No. 11 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each
401.529			7	12	9.3	R		16	2	18	12
401.527			2	2	0.4	R		2	4	6	2
401.527			6	2	1.3	R		2	4	6	2
401.524			6	2	1.3	R		2	4	6	2
401.524			2	2	0.4	R		2	4	6	2
401.521			2	2	0.4	R		2	4	6	2
401.521			2	2	0.4	R		2	4	6	2
401.519			8	2	1.8	R		2	6	8	2
401.519			2	2	0.4	R		2	4	6	2
401.514			8	2	1.8	R		2	6	8	2
401.514			2	2	0.4	R		2	4	6	2
401.511			20	6	13.3	R	Remove Shoulder Panel	8	16	24	6
401.507			20	6	13.3	R	Remove Shoulder Panel	8	16	24	6
401.505			14	2	3.1	R		2	10	12	2
401.505			2	2	0.4	R		2	4	6	2
401.504			4	4	1.8	R		4	4	8	4
401.503			20	2	4.4	R		2	16	18	2
401.501			20	6	13.3	R	Remove Shoulder Panel	8	16	24	6
401.501			2	4	0.9	R		4	4	8	4
401.497			18	2	4.0	R		2	14	16	2
401.497			2	4	0.9	R		4	4	8	4
401.495			20	2	4.4	R		2	16	18	2
401.493			16	2	3.6	R		2	12	14	2
401.490			20	2	4.4	R		2	16	18	2
401.481			4	6	2.7	R	End Project	8	4	12	6
TOTALS:					**485.8**			**488**	**1170**	**1658**	**430**
ADDITIONAL QUANTITIES:					**100.0**			**100**	**230**	**330**	**90**
GRAND TOTALS:					**585.8**			**588**	**1400**	**1988**	**520**

NRC PAVEMENT REPAIR AREA TYPES

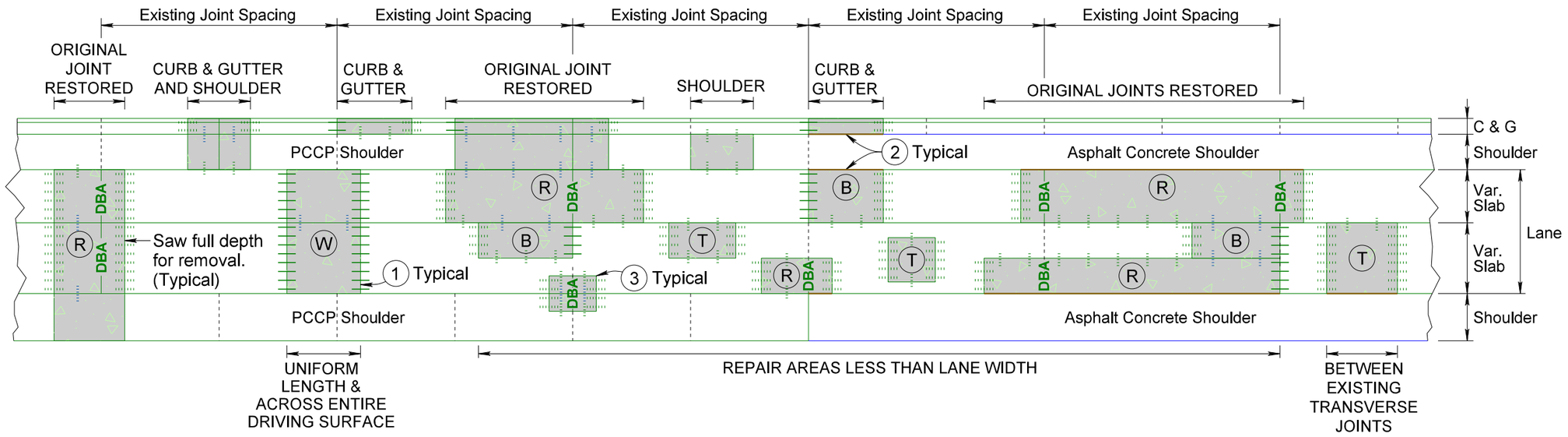
W = Two Working Joints (Use only if repair is full roadway width and uniform length (across all lanes))
T = Two Tied Joints
B = One Working & One Tied Joint
R = Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P 0022(85)	36	64

Plotting Date: 02/28/2022

NONREINFORCED PCC PAVEMENT REPAIR

ANY SINGLE LANE ROADWAY (RAMPS, ETC.)
TYPICAL REPAIR AREAS



KEY:

PCC Pavement Repair Area

PCC PAVEMENT REPAIR AREA TYPES:

(W) Two Working Joints (Use only if repair is full roadway width and uniform length (across entire driving surface))

(T) Two Tied Joints

(B) One Working & One Tied Joint

(R) Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

Steel Bars for Transverse Joints

Pavement Thickness >= 10.5"

— Drilled in 1½" x 18" epoxy coated plain round dowel bars spaced 18" center to center.

..... Drilled in No. 11 x 18" epoxy coated deformed tie bars spaced 18" center to center.

Pavement Thickness >= 8.5" and < 10.5"

— Drilled in 1¼" x 18" epoxy coated plain round dowel bars spaced 18" center to center.

..... Drilled in No. 9 x 18" epoxy coated deformed tie bars spaced 18" center to center.

Pavement Thickness < 8.5"

— Drilled in 1" x 18" epoxy coated plain round dowel bars spaced 18" center to center.

..... Drilled in No. 8 x 18" epoxy coated deformed tie bars spaced 18" center to center.

DBA Dowel Bar Assembly

Steel Bars for Longitudinal Joints

No. 5 x 30" epoxy coated deformed tie bars.
Sawed Joint - spaced 48" center to center.
Construction Joint - spaced 48" center to center.

No. 5 x 24" epoxy coated deformed tie bars.
Drilled In - spaced 30" center to center.

NOTES: Saw around repair areas full depth for removal.

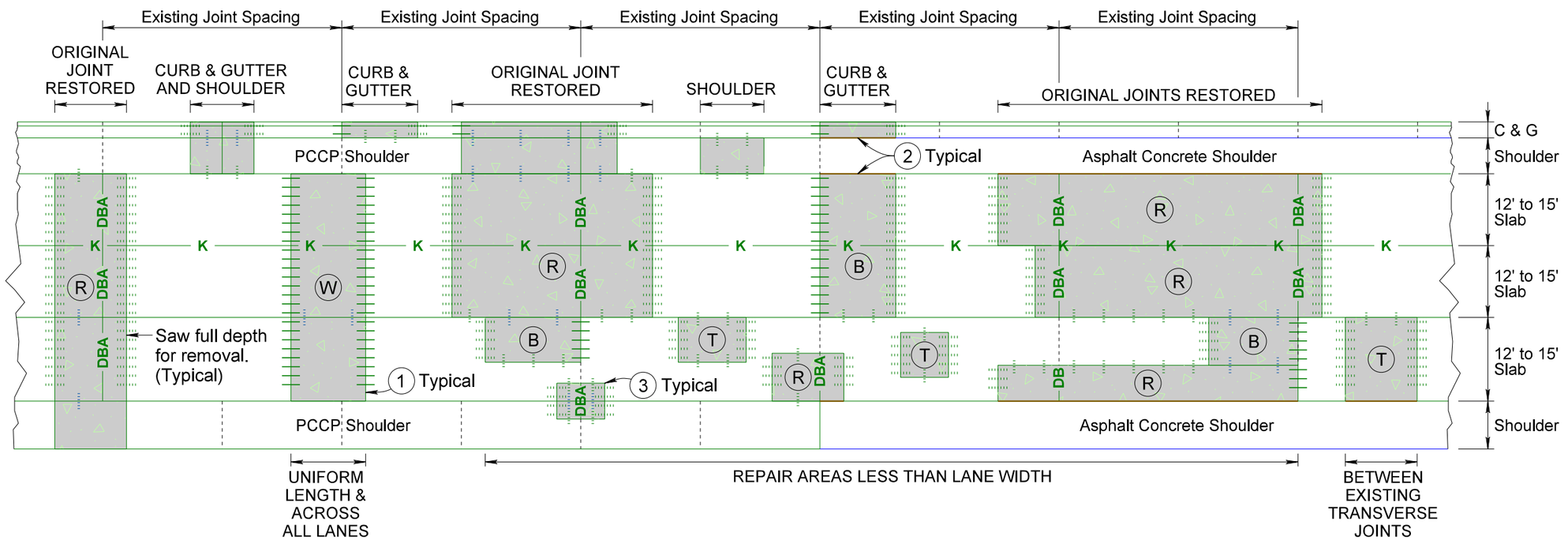
(1) Where possible, transverse joints will be constructed/maintained full roadway width.

(2) Edges of repair areas will be formed to match the width of the existing concrete pavement.

(3) Need for bars in small repair areas on/near the shoulder to be determined on a case-by-case basis, on construction by the Engineer.

NONREINFORCED PCC PAVEMENT REPAIR

UP TO TWO LANE ROADWAY WITH CENTER LANE OR UP TO SIX LANE DIVIDED ROADWAY
TYPICAL REPAIR AREAS



KEY:

PCC Pavement Repair Area

PCC PAVEMENT REPAIR AREA TYPES:

(W) Two Working Joints (Use only if repair is full roadway width and uniform length (across all lanes))

(T) Two Tied Joints

(B) One Working & One Tied Joint

(R) Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

Longitudinal Keyway Joints Without Bars

— K — Where a repair area intersects an existing longitudinal keyway joint without tie bars, the newly constructed joint should also be a keyway without tie bars.

Steel Bars for Transverse Joints

Pavement Thickness >= 10.5"

— Drilled in 1½" x 18" epoxy coated plain round dowel bars spaced 18" center to center.

..... Drilled in No. 11 x 18" epoxy coated deformed tie bars spaced 18" center to center.

Pavement Thickness >= 8.5" and < 10.5"

— Drilled in 1¼" x 18" epoxy coated plain round dowel bars spaced 18" center to center.

..... Drilled in No. 9 x 18" epoxy coated deformed tie bars spaced 18" center to center.

Pavement Thickness < 8.5"

— Drilled in 1" x 18" epoxy coated plain round dowel bars spaced 18" center to center.

..... Drilled in No. 8 x 18" epoxy coated deformed tie bars spaced 18" center to center.

DBA Dowel Bar Assembly

Steel Bars for Longitudinal Joints

No. 5 x 30" epoxy coated deformed tie bars.
Sawed Joint - spaced 48" center to center.
Construction Joint - spaced 48" center to center.

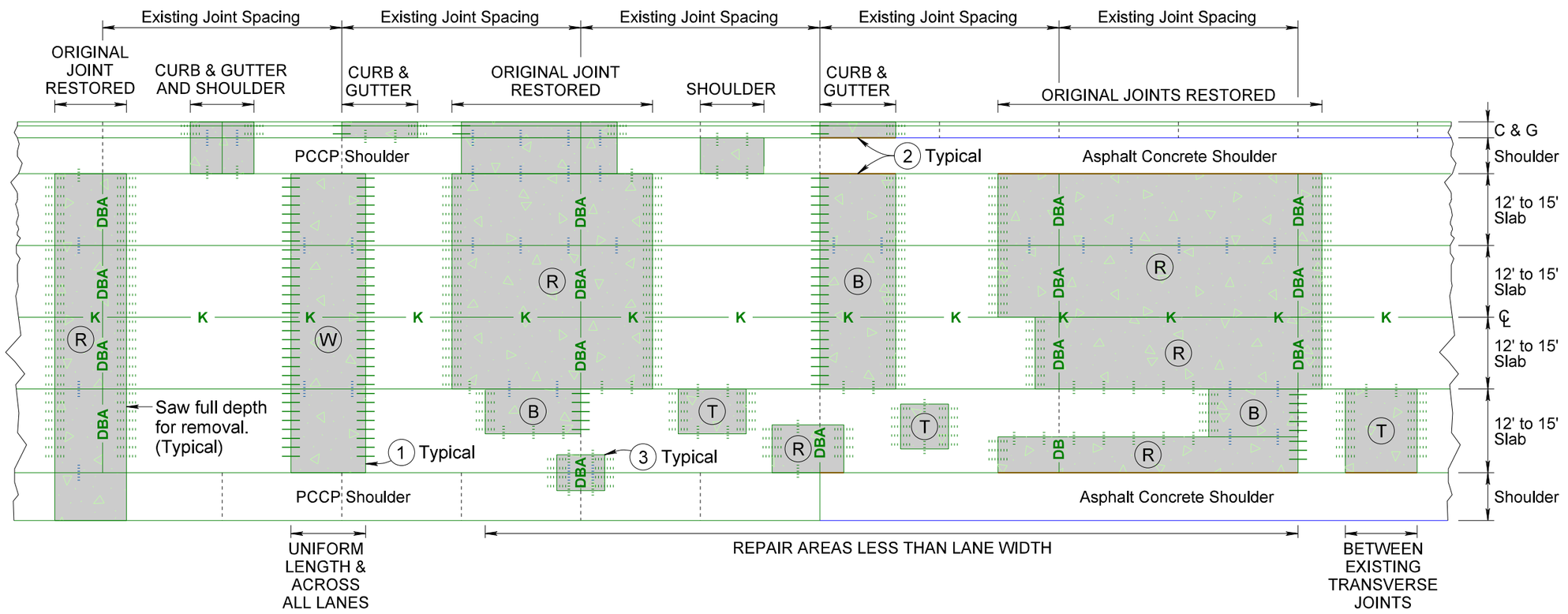
No. 5 x 24" epoxy coated deformed tie bars.
Drilled In - spaced 30" center to center.

NOTES: Saw around repair areas full depth for removal.

1. Where possible, transverse joints will be constructed/maintained full roadway width.
2. Edges of repair areas will be formed to match the width of the existing concrete pavement.
3. Need for bars in small repair areas on/near the shoulder to be determined on a case-by-case basis, on construction by the Engineer.

NONREINFORCED PCC PAVEMENT REPAIR

UP TO FOUR LANE ROADWAY OR UP TO EIGHT LANE DIVIDED ROADWAY
TYPICAL REPAIR AREAS



KEY:

PCC Pavement Repair Area

PCC PAVEMENT REPAIR AREA TYPES:

(W) Two Working Joints (Use only if repair is full roadway width and uniform length (across all lanes))

(T) Two Tied Joints

(B) One Working & One Tied Joint

(R) Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

Longitudinal Keyway Joints Without Bars

— K — Where a repair area intersects an existing longitudinal keyway joint without tie bars, the newly constructed joint should also be a keyway without tie bars.

Steel Bars for Transverse Joints

Pavement Thickness >= 10.5"

— Drilled in 1½" x 18" epoxy coated plain round dowel bars spaced 18" center to center.

..... Drilled in No. 11 x 18" epoxy coated deformed tie bars spaced 18" center to center.

Pavement Thickness >= 8.5" and < 10.5"

— Drilled in 1¼" x 18" epoxy coated plain round dowel bars spaced 18" center to center.

..... Drilled in No. 9 x 18" epoxy coated deformed tie bars spaced 18" center to center.

Pavement Thickness < 8.5"

— Drilled in 1" x 18" epoxy coated plain round dowel bars spaced 18" center to center.

..... Drilled in No. 8 x 18" epoxy coated deformed tie bars spaced 18" center to center.

DBA Dowel Bar Assembly

Steel Bars for Longitudinal Joints

No. 5 x 30" epoxy coated deformed tie bars.
Sawed Joint - spaced 48" center to center.
Construction Joint - spaced 48" center to center.

No. 5 x 24" epoxy coated deformed tie bars.
Drilled In - spaced 30" center to center.

NOTES: Saw around repair areas full depth for removal.

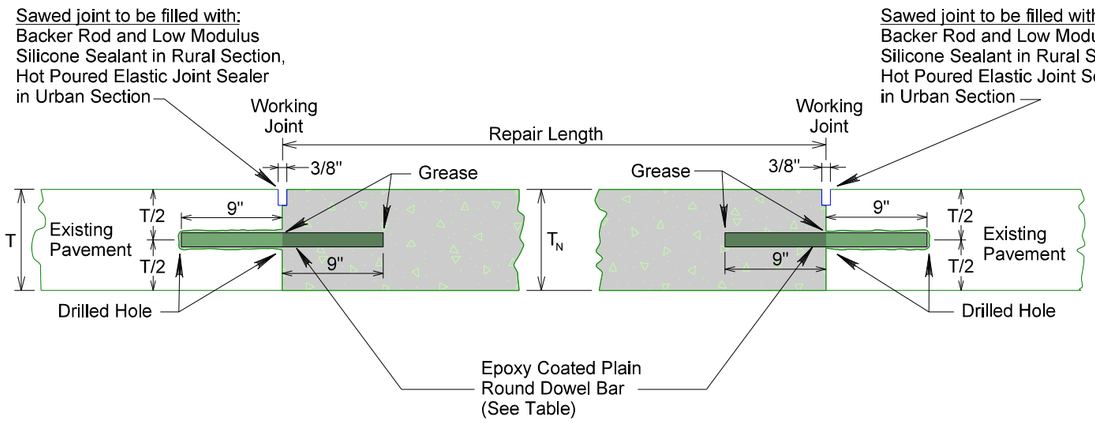
1. Where possible, transverse joints will be constructed/maintained full roadway width.
2. Edges of repair areas will be formed to match the width of the existing concrete pavement.
3. Need for bars in small repair areas on/near the shoulder to be determined on a case-by-case basis, on construction by the Engineer.

NONREINFORCED PCC PAVEMENT REPAIR

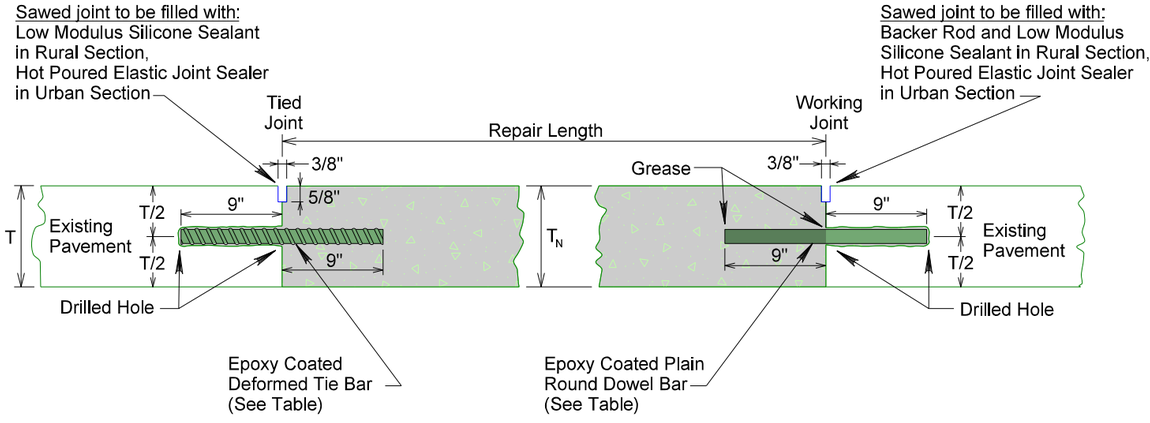
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P 0022(85)	39	64

Plotting Date: 02/28/2022

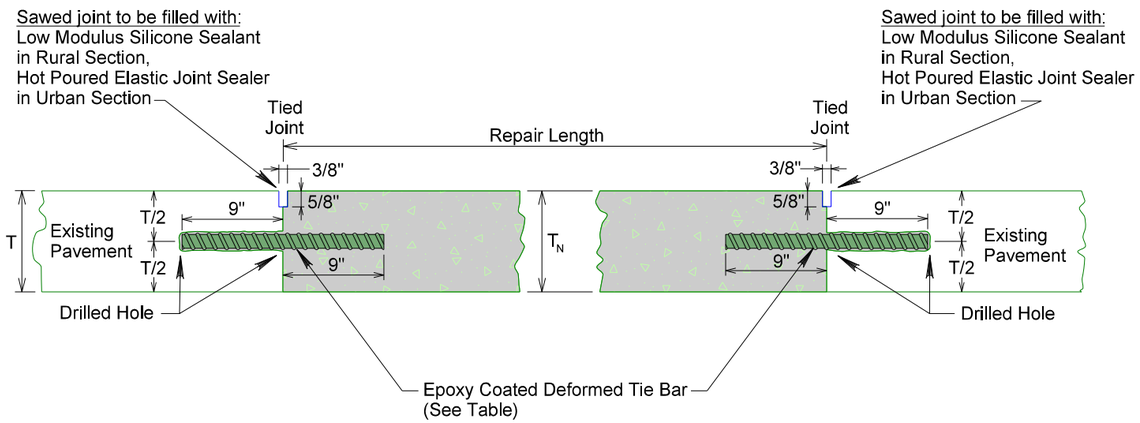
PLAIN ROUND DOWEL BAR INSERTION
TYPE W - (TWO WORKING JOINTS)



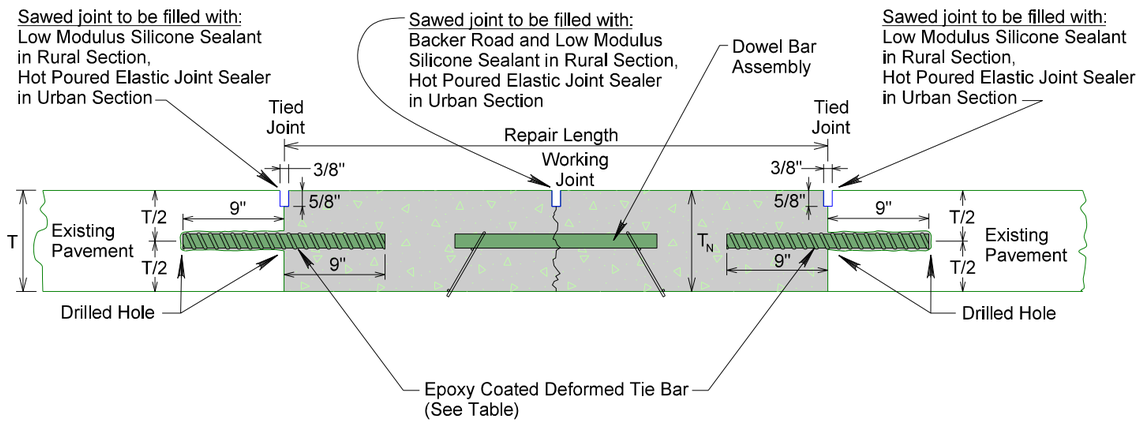
DEFORMED TIE BAR AND PLAIN ROUND DOWEL BAR INSERTION
TYPE B - (ONE TIED JOINT AND ONE WORKING JOINT)



DEFORMED TIE BAR INSERTION
TYPE T - (TWO TIED JOINTS)



DEFORMED TIE BAR INSERTION WITH DOWEL BAR ASSEMBLY
TYPE R - (TWO TIED JOINTS AND ONE WORKING JOINT - ORIGINAL JOINT RESTORED)



Existing Pavement Thickness	Epoxy Coated Deformed Tie Bar Size	Epoxy Coated Plain Round Dowel Bar Size
T >= 10.5"	No. 11 x 18"	1½" x 18"
T >= 8.5" & T < 10.5"	No. 9 x 18"	1¼" x 18"
T < 8.5"	No. 8 x 18"	1" x 18"

T = Existing pavement thickness.
T_N = New pavement thickness.

Bar embedded to a minimum depth of 9 inches into the existing pavement by utilizing an epoxy resin adhesive.

Cost for furnishing and inserting steel bars (deformed tie and plain round dowel) will be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

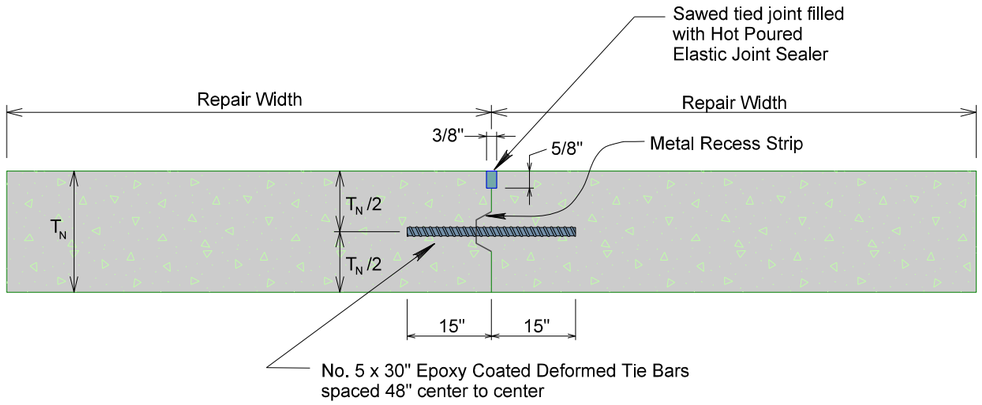
Cost for furnishing and installing dowel bar assembly will be included in the contract unit price per each for Dowel Bar.

T_N = T

(top of new pavement will be flush with top of existing pavement)

NONREINFORCED PCC PAVEMENT REPAIR

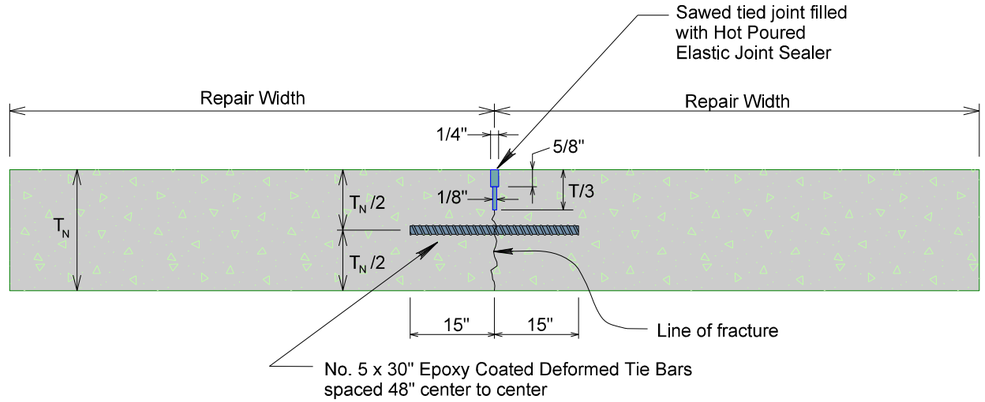
LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS & KEYWAY



T_N = New pavement thickness.

Cost for furnishing and inserting tie bars will be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

SAWED LONGITUDINAL JOINT

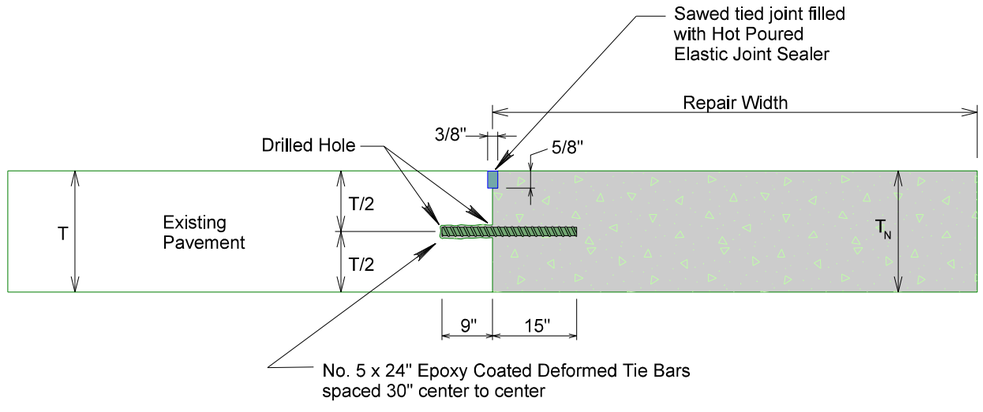


T_N = New pavement thickness.

The first saw cut to control cracking will be a minimum of 1/3 the depth of the pavement. Additional sawing for widening the saw cut will be necessary.

Cost for furnishing and inserting tie bars will be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

LONGITUDINAL CONSTRUCTION JOINT WITH DRILLED IN TIE BARS



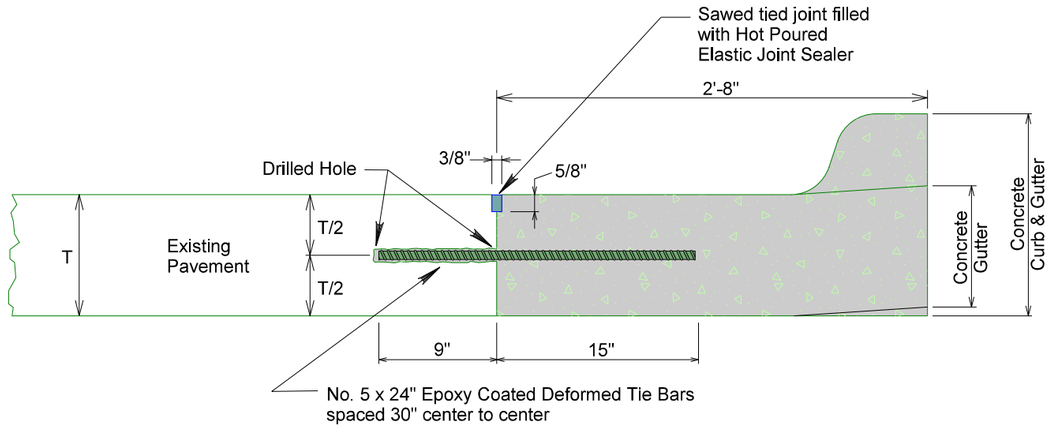
T = Existing pavement thickness.
T_N = New pavement thickness.

Bar embedded a minimum depth of 9 inches into the existing pavement by utilizing an epoxy resin adhesive.

Bars will be placed a minimum of 15 inches from existing transverse contraction joints.

Cost for furnishing and inserting drilled in tie bars will be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

LONGITUDINAL CONSTRUCTION JOINT WITH DRILLED IN TIE BARS



T = Existing pavement thickness.

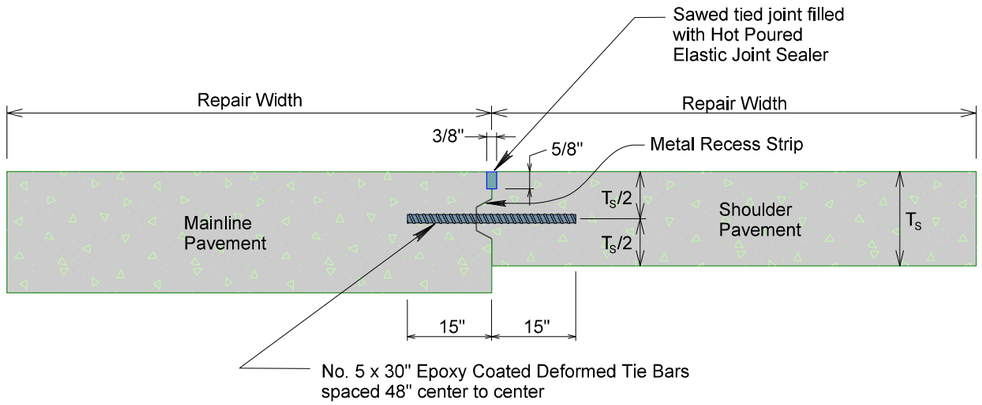
Bar embedded a minimum depth of 9 inches into the existing pavement by utilizing an epoxy resin adhesive.

Bars will be placed a minimum of 15 inches from existing transverse contraction joints.

Cost for furnishing and inserting drilled in tie bars will be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

NONREINFORCED PCC PAVEMENT REPAIR

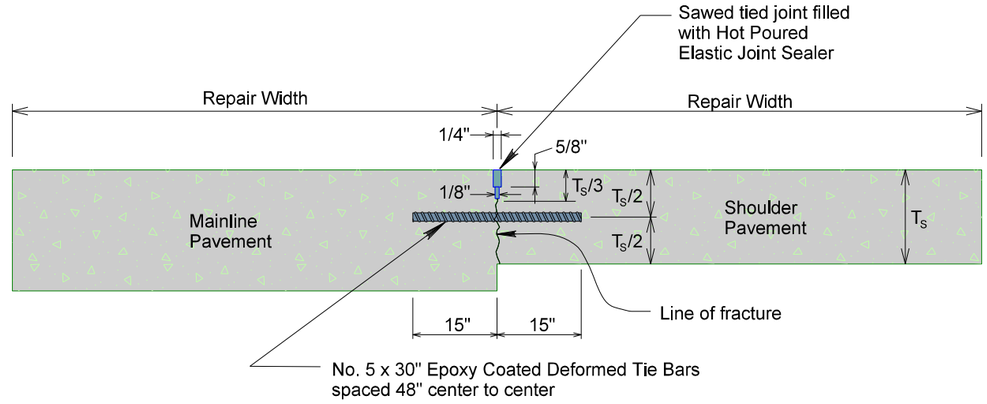
LONGITUDINAL SHOULDER CONSTRUCTION JOINT WITH TIE BARS & KEYWAY



T_S = New shoulder pavement thickness.

Cost for furnishing and inserting tie bars will be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

SAWED LONGITUDINAL SHOULDER JOINT

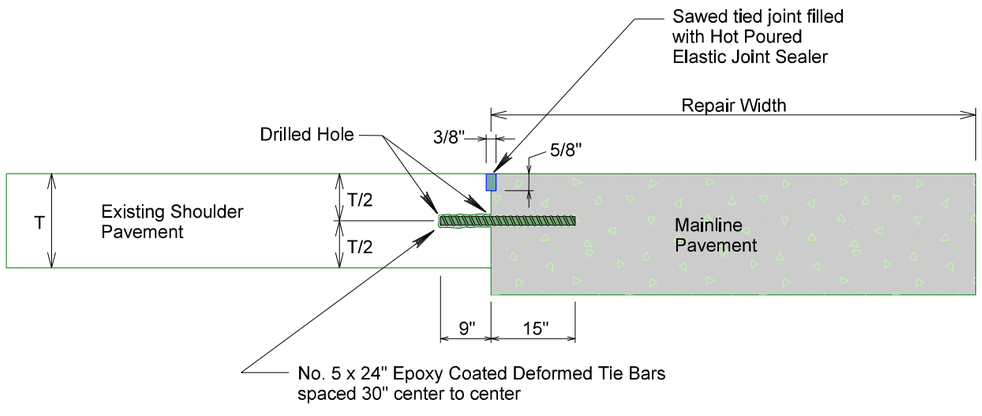


T_S= New shoulder pavement thickness.

The first saw cut to control cracking will be a minimum of 1/3 the depth of the pavement. Additional sawing for widening the saw cut will be necessary.

Cost for furnishing and inserting tie bars will be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

LONGITUDINAL SHOULDER JOINT WITH DRILLED IN TIE BARS



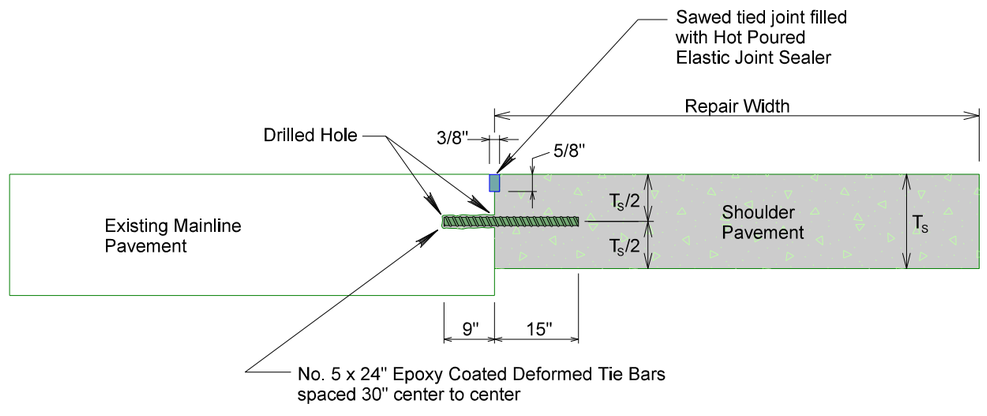
T = Existing shoulder pavement thickness.

Bar embedded a minimum depth of 9 inches into the existing pavement by utilizing an epoxy resin adhesive.

Bars will be placed a minimum of 15 inches from existing transverse contraction joints.

Cost for furnishing and inserting drilled in tie bars will be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

LONGITUDINAL SHOULDER JOINT WITH DRILLED IN TIE BARS



T_S = New shoulder pavement thickness.

Bar embedded a minimum depth of 9 inches into the existing pavement by utilizing an epoxy resin adhesive.

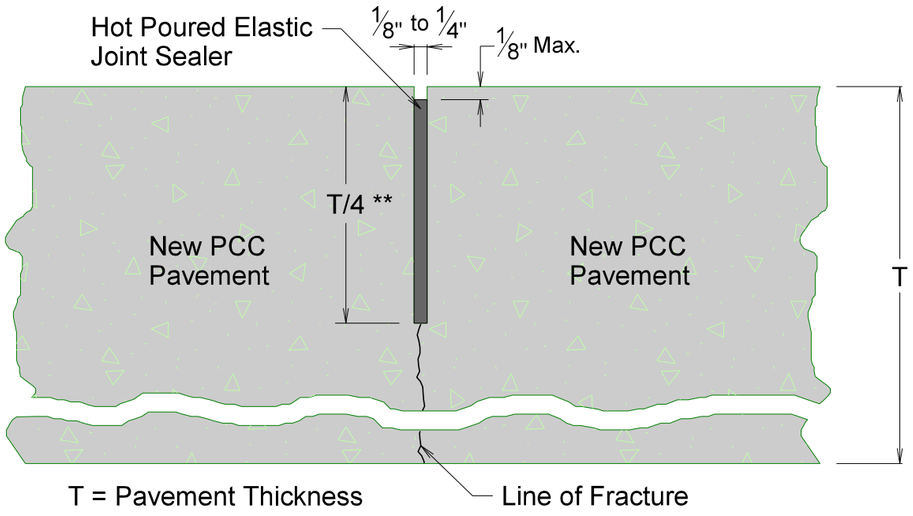
Bars will be placed a minimum of 15 inches from existing transverse contraction joints.

Cost for furnishing and inserting drilled in tie bars will be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

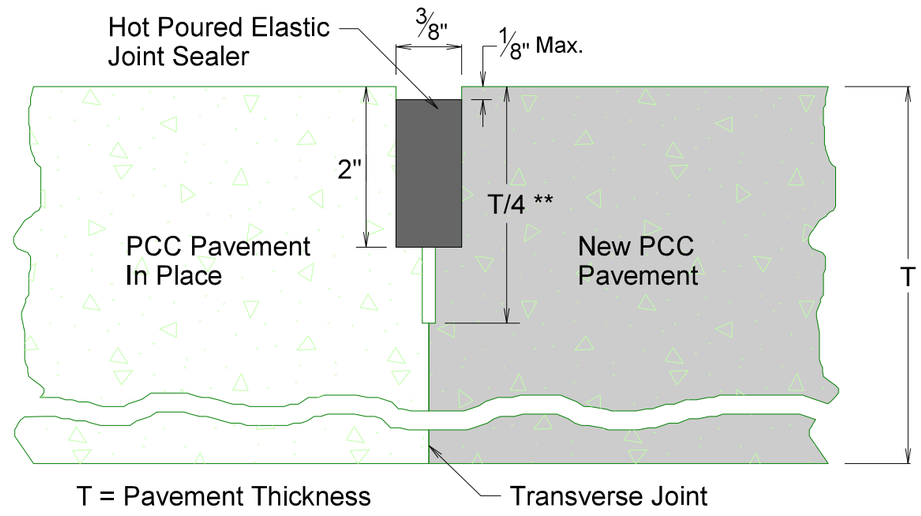
Plotting Date: 02/28/2022

NONREINFORCED PCC PAVEMENT REPAIR
SAW & SEAL TRANSVERSE JOINTS

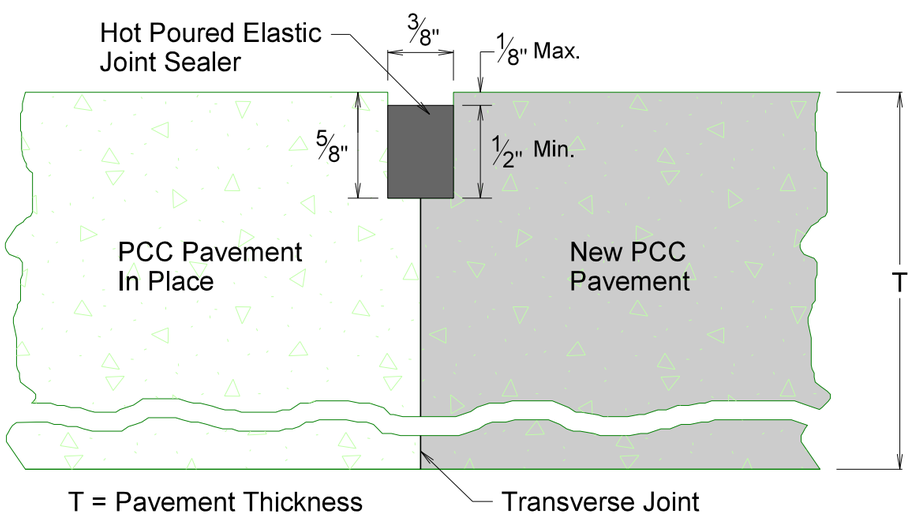
WITH HOT POURED ELASTIC JOINT SEALER AT WORKING JOINTS ENTIRELY WITHIN REPAIR AREAS



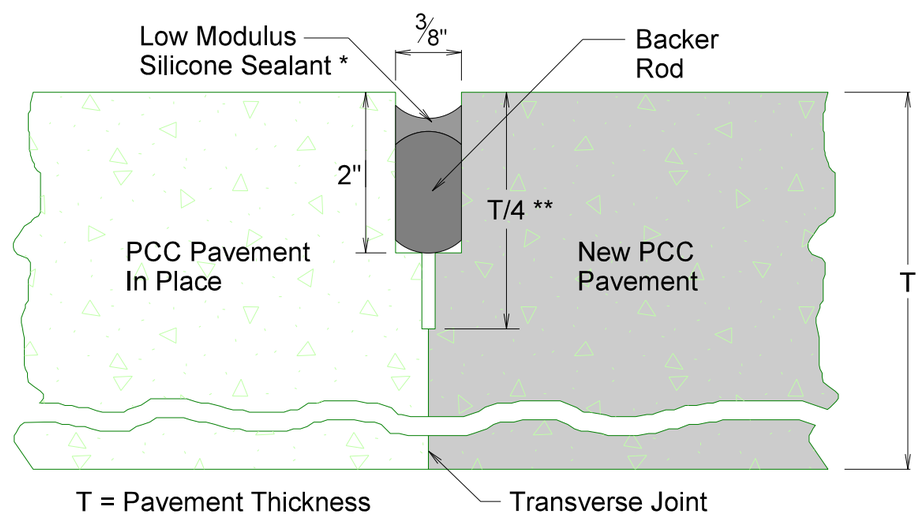
WITH HOT POURED ELASTIC JOINT SEALER AT WORKING JOINTS (TYPICALLY URBAN)



WITH HOT POURED ELASTIC JOINT SEALER AT TIED JOINTS



WITH LOW MODULUS SILICONE SEALANT AT WORKING JOINTS (TYPICALLY RURAL)

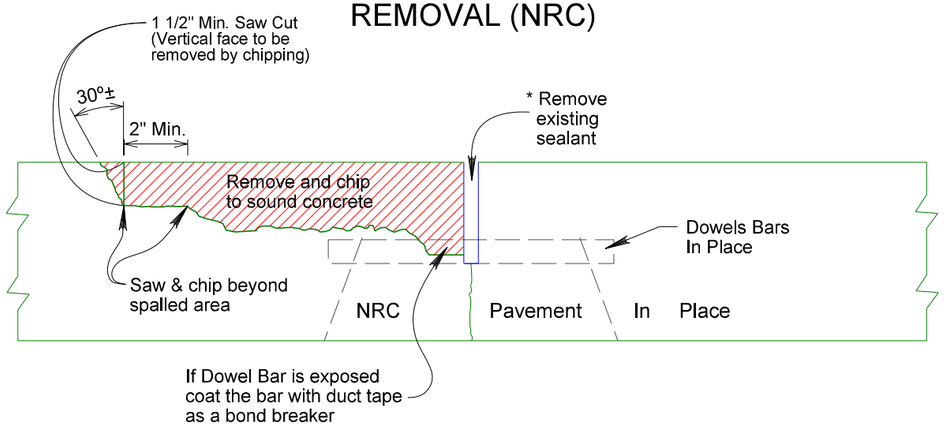


* Refer to Standard Plate 380.13 for installation details using Joint Width J=3/8".

** The saw cut to control cracking will be a minimum of 1/4 the thickness of the pavement.

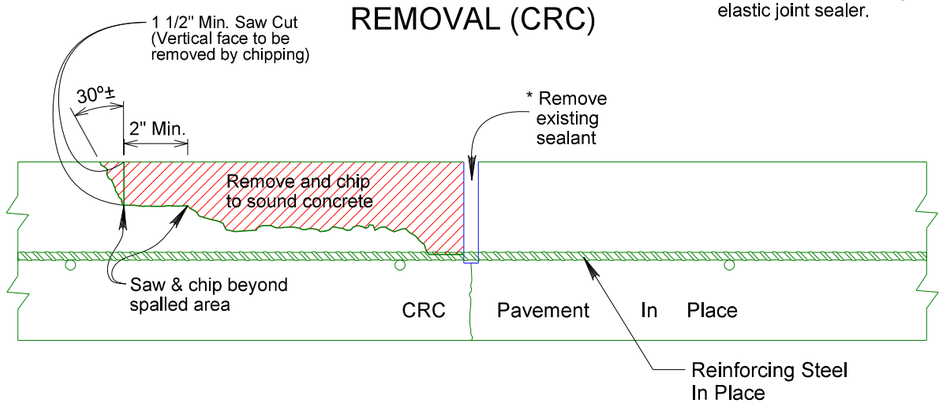
REPAIR OF TYPE A SPALLS

REMOVAL (NRC)

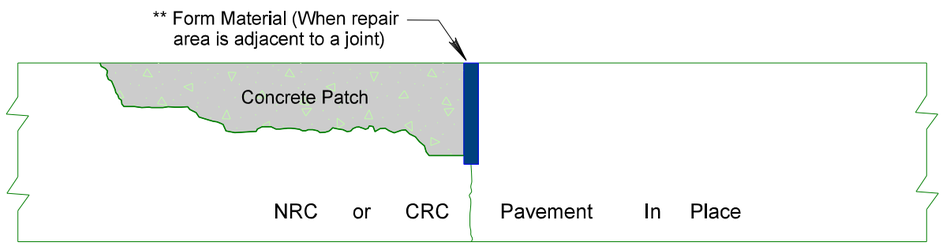


* Existing Sealant to be removed is low modulus silicone sealant with backer rod or hot poured elastic joint sealer.

REMOVAL (CRC)



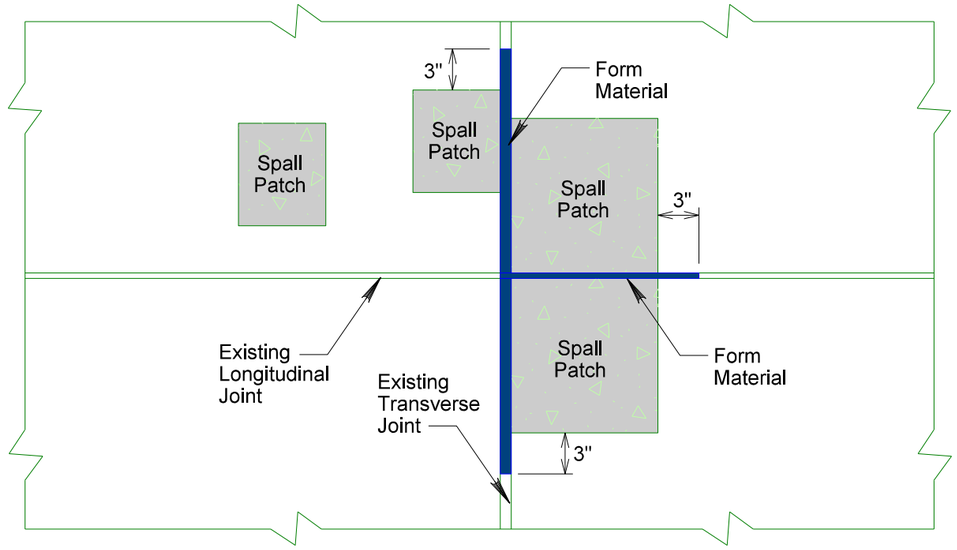
PATCHING



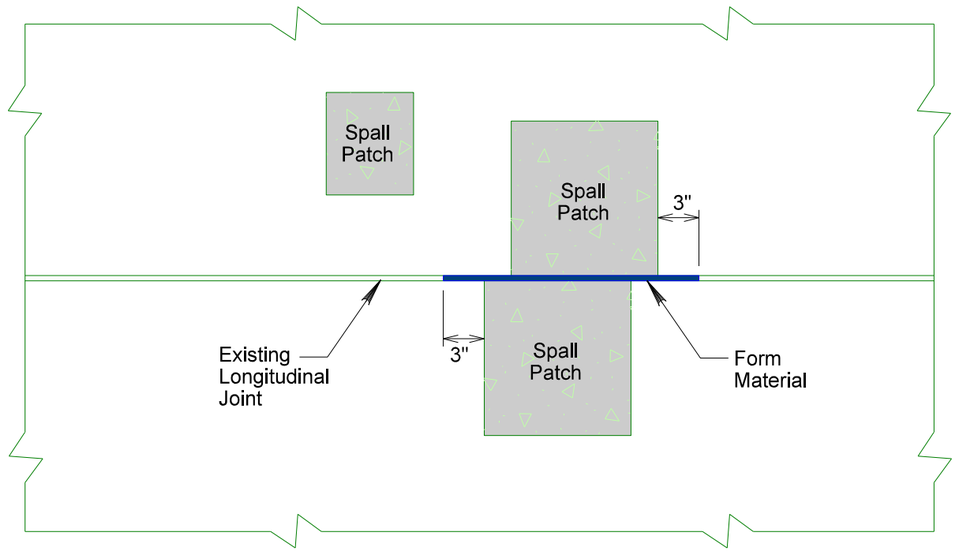
** Form Material will be removed by sawing or other means approved by the Engineer. Spall repaired joints will then be sealed with Backer Rod and Low Modulus Silicone Sealant.

REPAIR OF TYPE A SPALLS

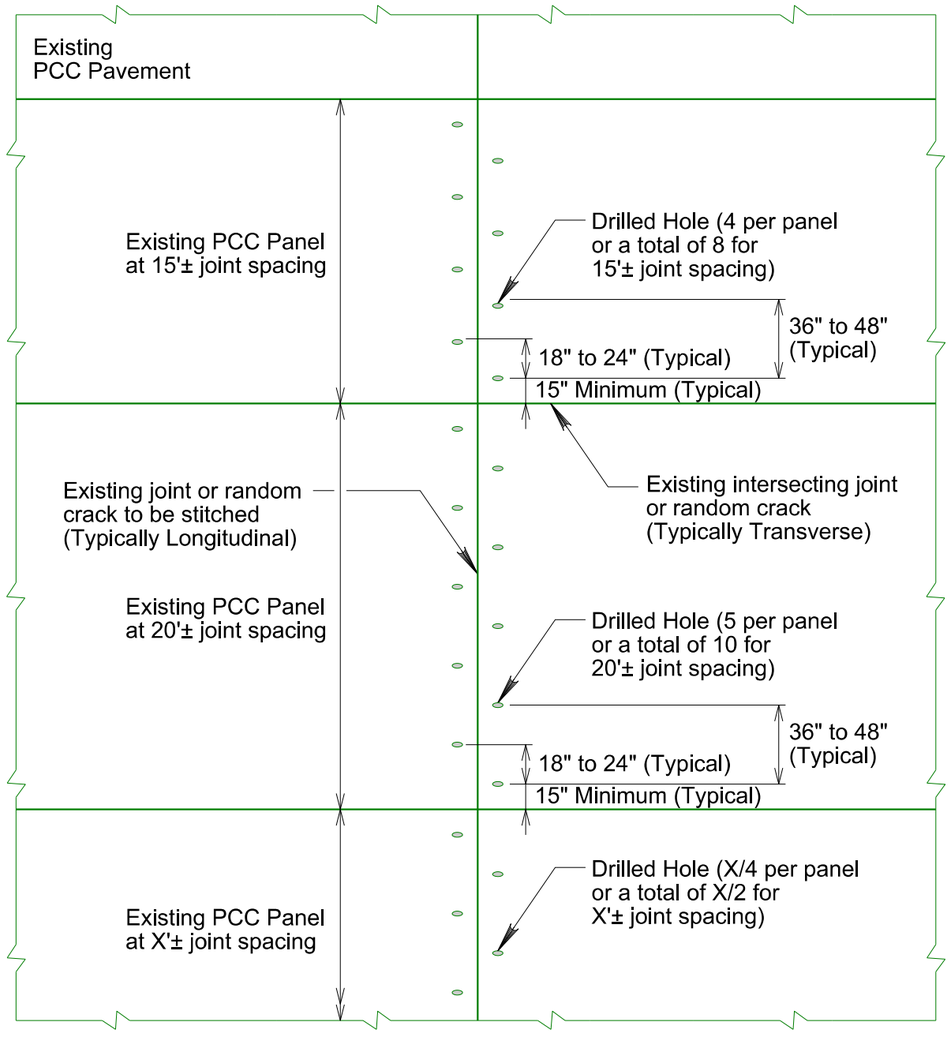
NRC SPALL PATCHES (PLAN VIEW)



CRC SPALL PATCHES (PLAN VIEW)

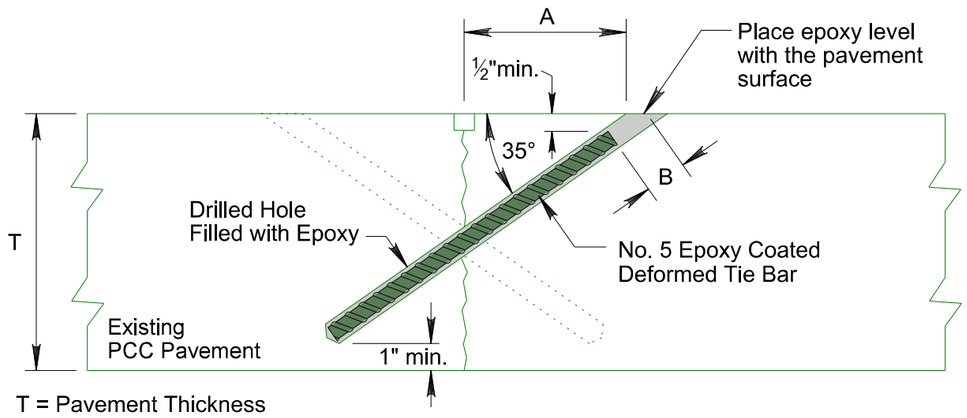


TIE BAR RETROFIT (STITCHING)



PLAN VIEW

TIE BAR RETROFIT (STITCHING)



T = Pavement Thickness

ELEVATION VIEW

TABLE OF STITCHING DIMENSIONS

T	A	B	Length of Tie Bar
8"	5"	1½"±	10"
8½"	5¼"	1⅜"±	11"
9"	5⅝"	1¼"±	12"
9½"	6"	1⅝"±	12½"
10"	6⅜"	1½"±	13½"
10½"	6¾"	1⅜"±	14½"
11"	7"	1¼"±	15½"
11½"	7⅜"	1⅜"±	16"
12"	7¾"	1⅜"±	16½"
12½"	8⅛"	1¼"±	17½"

Stitch Bar Spacing 24" Max.

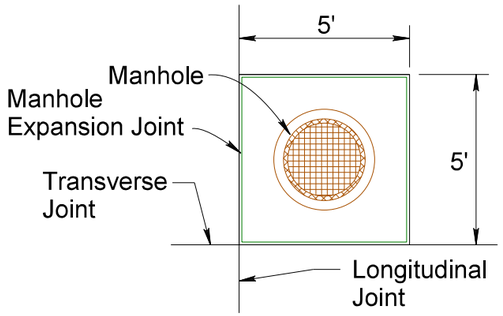
Joint Spacing	Number of Bars
3' to 4.5'	2
5' to 6.5'	3
7' to 8.5'	4
9' to 10.5'	5
11' to 12.5'	6
13' to 14.5'	7
15' to 16.5'	8
17' to 18.5'	9
19' to 20.5'	10
21 to 22.5'	11
23' to 24.5'	12
25' to 26.5'	13
27' to 28.5'	14
29' to 30.5'	15

TYPICAL PCC PAVEMENT REPAIR AROUND MANHOLES

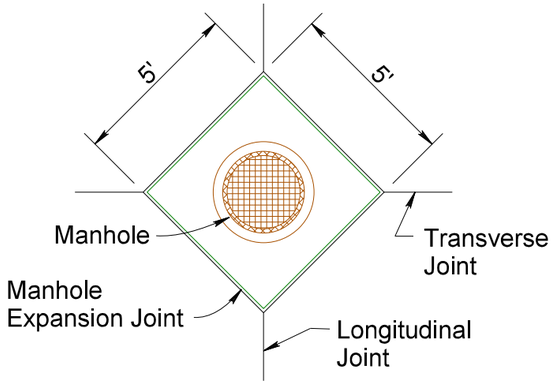
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P 0022(85)	45	64

Plotting Date: 02/28/2022

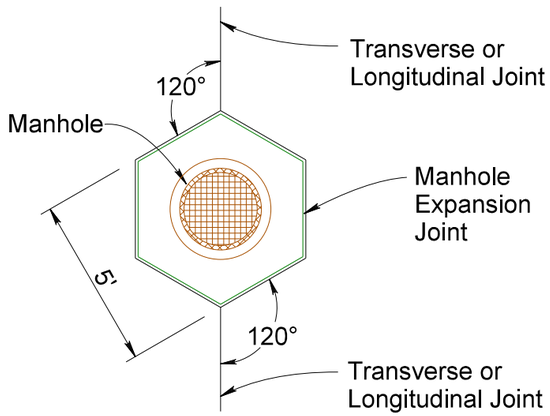
BOX-OUT DETAIL IN PCC PAVEMENT



Where the utility access is offset from the longitudinal and transverse joints

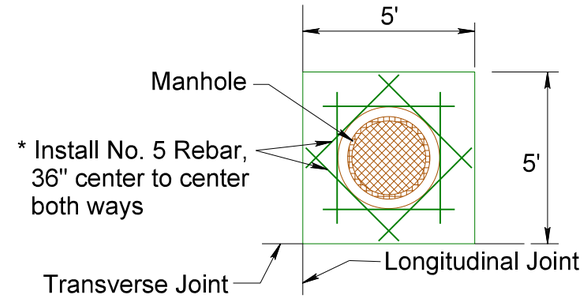


Where the utility access is intersected by the longitudinal and transverse joints

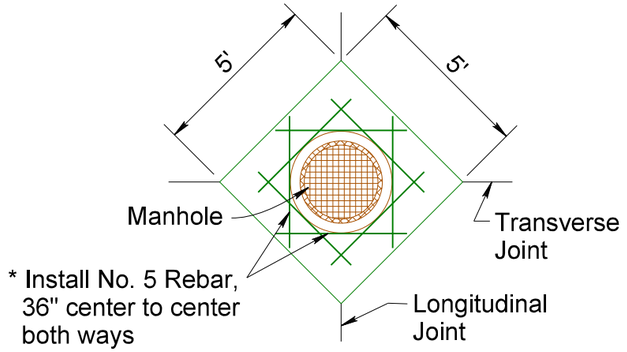


Where no Longitudinal or Transverse joints are present or at Longitudinal or Transverse joint.

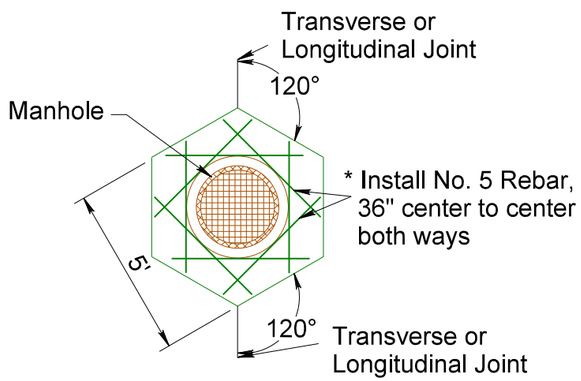
REBAR LAYOUTS IN PCC PAVEMENT WITH BOX-OUT



Where the utility access is offset from the longitudinal and transverse joints

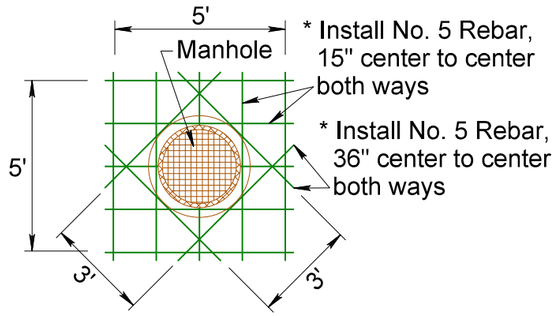


Where the utility access is intersected by the longitudinal and transverse joints



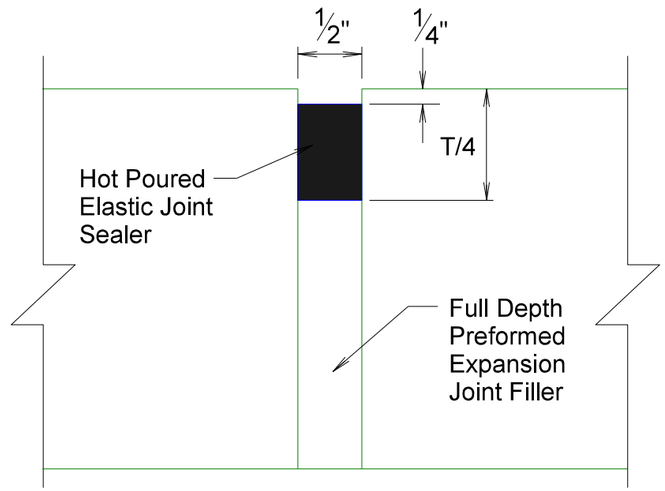
Where no Longitudinal or Transverse joints are present or at Longitudinal or Transverse joint.

REBAR LAYOUT IN PCC PAVEMENT WITHOUT BOX-OUT



The rebar will not cross any joint in the concrete pavement. If manhole is next to a joint in the concrete pavement the Engineer will approve a revised layout of the rebar.

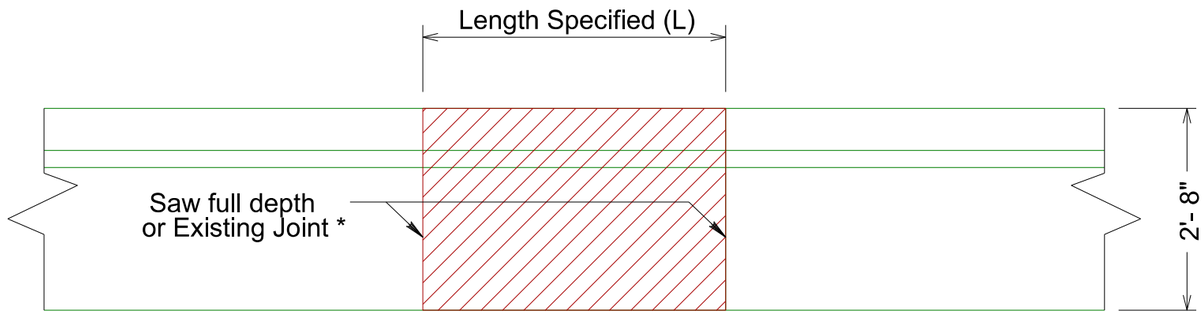
MANHOLE EXPANSION JOINT DETAIL



* Rebar will be placed at the midpoint depth of the PCC Pavement. Cost for furnishing & installing rebar and constructing box-outs will be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair and/or Fast Track Concrete for PCC Pavement Repair.

REPAIR CONCRETE CURB AND/OR GUTTER

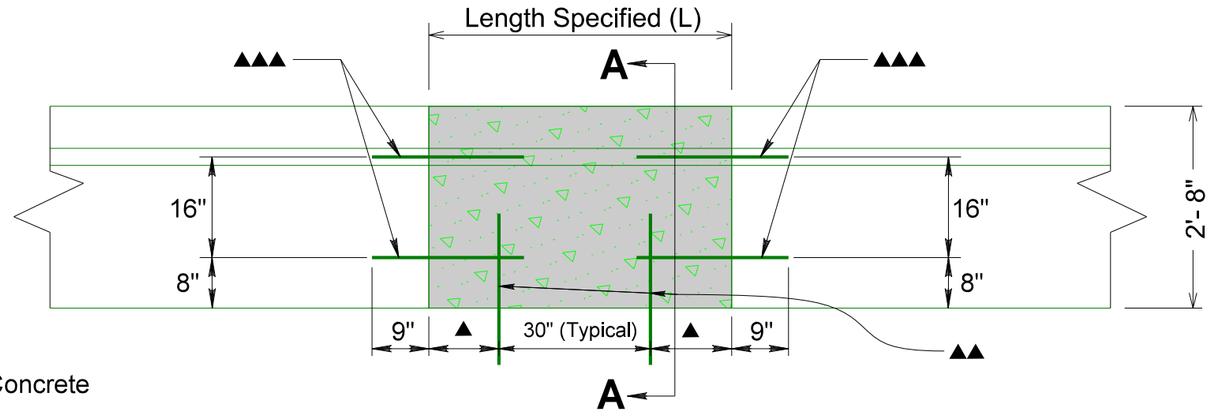
REMOVAL



Remove Concrete Curb and/or Gutter

* If sawing is required, the cost will be incidental to the contract unit price per foot for Repair Concrete Curb and/or Gutter.

INSTALLATION



Class M6 Concrete

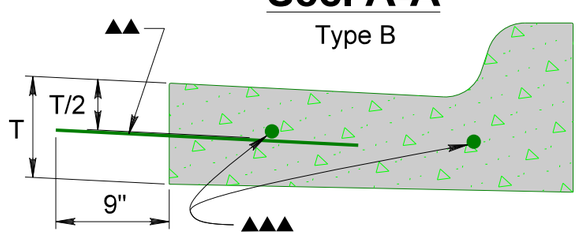
▲ 9" Minimum
23" Maximum

▲▲ No. 5 x 24" Epoxy Coated Deformed Tie Bar Drilled 9" into in place pavement **

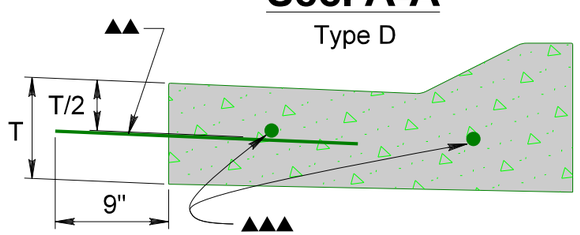
▲▲▲ No. 5 x 24" Epoxy Coated Deformed Tie Bar Drilled 9" into in place curb & gutter **

See standard plate(s) for Type B, D and F Concrete Curb and Gutter and Type P Concrete Gutter for construction and forming details.

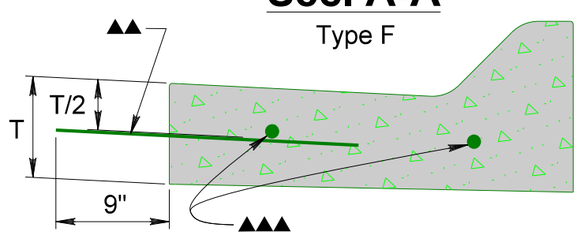
Sec. A-A
Type B



Sec. A-A
Type D



Sec. A-A
Type F

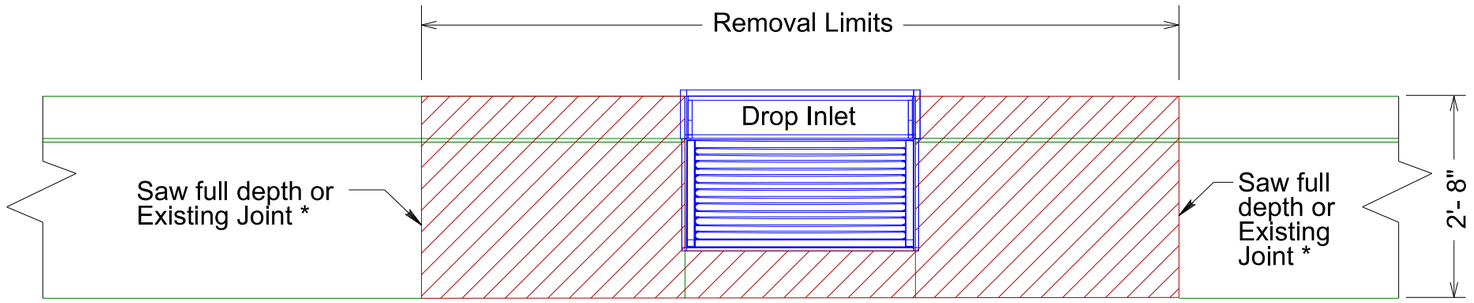


** Cost for this work will be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

Maintain 2" clear cover on all rebar.

LAYOUT FOR REPAIR CONCRETE CURB AND/OR GUTTER ADJACENT TO DROP INLET

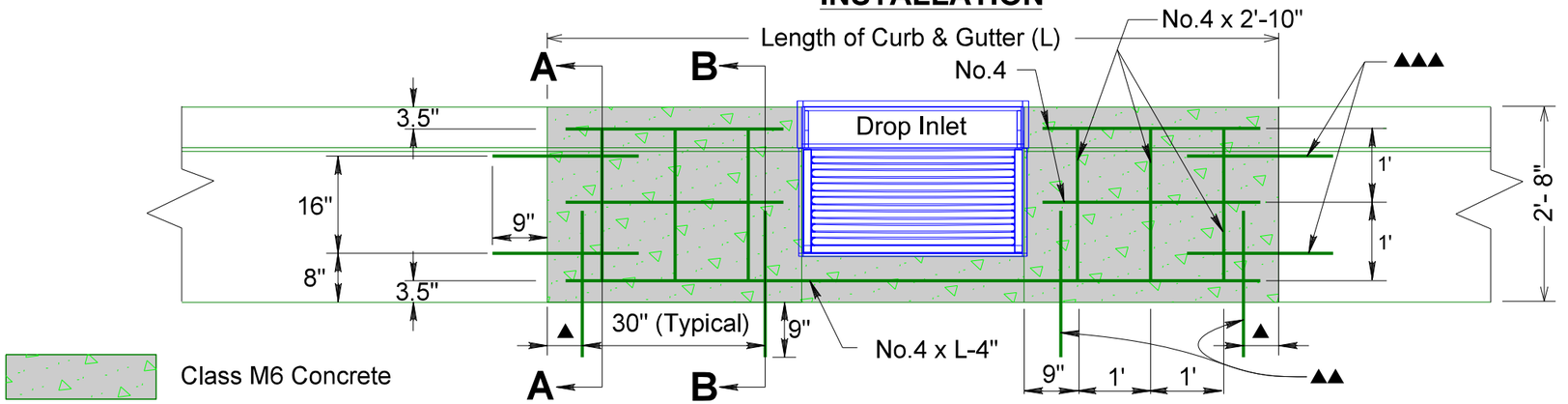
REMOVAL



Remove Concrete Curb and/or Gutter

* If sawing is required, the cost will be incidental to the contract unit price per foot for Repair Concrete Curb and/or Gutter.

INSTALLATION



Class M6 Concrete

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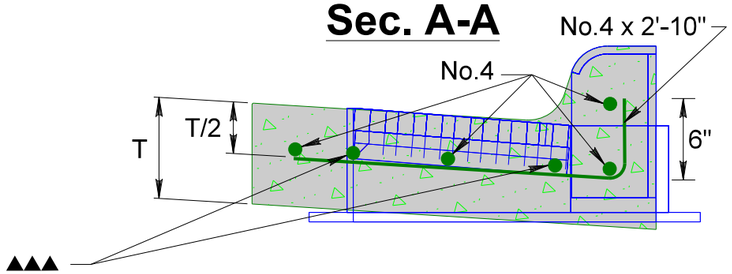
23" Maximum

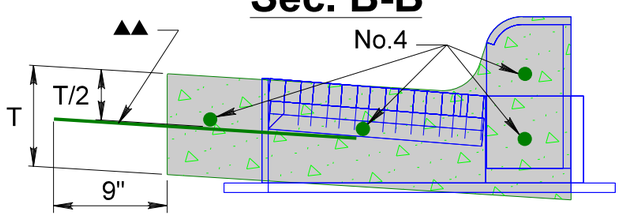
▲▲ No. 5 x 24" Epoxy Coated Deformed Tie Bar Drilled 9" into in place pavement **

▲▲▲ No. 5 x 24" Epoxy Coated Deformed Tie Bar Drilled 9" into in place curb & gutter **

Sec. A-A



Sec. B-B



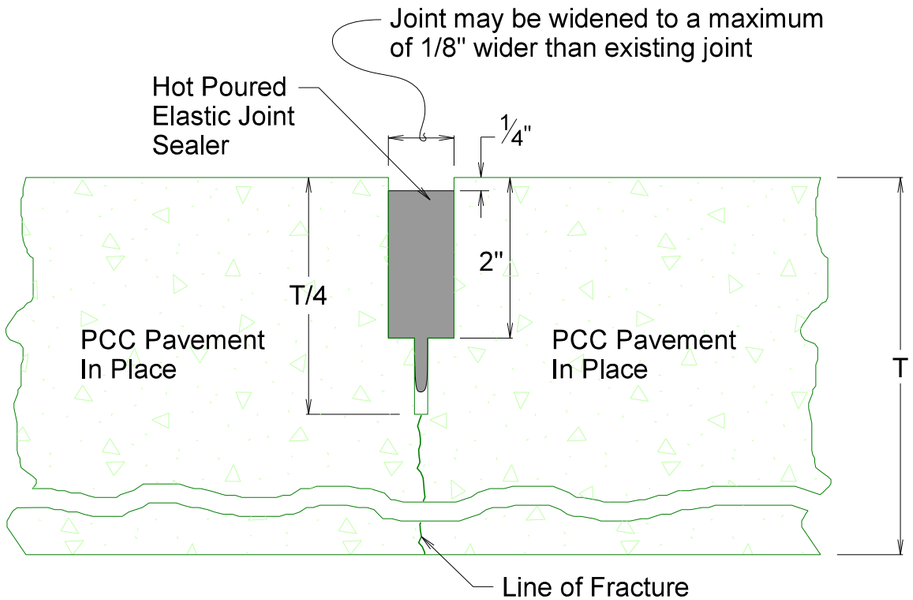
Maintain 2" clear cover on all rebar.

See standard plate for Type B Concrete Curb and Gutter for forming details.

** Cost for this work will be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

RESEAL PCC PAVEMENT JOINTS

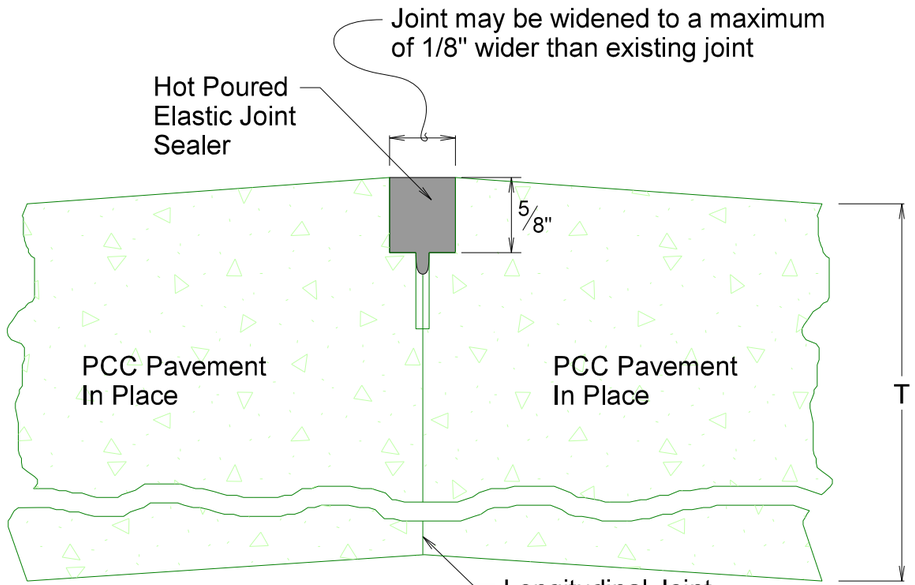
RESEAL TRANSVERSE JOINT WITH HOT POURED ELASTIC JOINT SEALER



T = Pavement Thickness

The first saw cut to control cracking will be a minimum of 1/4 the depth of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the Hot Poured Elastic Joint Sealer will be necessary.

RESEAL LONGITUDINAL JOINT WITH HOT POURED ELASTIC JOINT SEALER



T = Pavement Thickness

Additional sawing for widening the saw cut to provide the width for the installation of the Hot Poured Elastic Joint Sealer will be necessary.

SEQUENCE OF OPERATIONS

1. Install Traffic Control devices per the details in these plans
2. Complete all concrete repair work
3. Grind areas listed in the plans
4. Reseal joints
5. Install permanent pavement marking

If the Contractor requests to deviate from the sequence of operations will be submitted in writing to the Engineer for review. Approval of an alternate sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work. An alternate sequence will be submitted for review a minimum of one week prior to potential implementation.

GENERAL TRAFFIC CONTROL

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. Cost for this work will be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

All temporary traffic control sign locations will be set in the field by the Contractor and verified by the Engineer prior to installation.

All temporary speed limit signs will have a minimum mounting height of 5 feet in rural locations, even when mounted on portable supports.

Portable sign supports will not be located on sidewalks, bicycle facilities, or other areas designated for pedestrian or bicycle traffic.

All construction operations will be conducted in the general direction of traffic movement.

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of material, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following pavement marking.

All haul trucks will be equipped with an additional flashing amber light that is visible from the backside of the haul truck. Cost for flashing amber lights will be incidental to the contract unit prices for the various related items.

GENERAL TRAFFIC CONTROL (CONTINUED)

Traffic will be maintained on the driving lanes only. Use of the shoulder as a driving lane will not be permitted. Any damage to the shoulder due to rerouted traffic or Contractor's equipment will be repaired at no expense to the Department.

A Type 3 Barricade will be installed at the end of a lane closure taper as detailed in these plans. Additional Type 3 Barricades will be installed facing traffic within the closed lane at a spacing of ¼ mile.

Lane closures will be limited to 5 miles in length. The distance between the closest points of any two-lane closures will be at least 3 miles, excluding tapers.

Construction vehicles will exit or enter the construction work zone at locations identified by the Engineer. At no time will construction vehicles utilize the maintenance crossovers or the Interstate median to exit or enter Interstate traffic.

On Interstate projects with more than one construction site, slow moving equipment that operates at a speed less than 40 MPH may mobilize between sites if the equipment travels on the shoulder. The slow-moving equipment will also display a flashing amber light and a slow-moving sign.

LANE CLOSURES

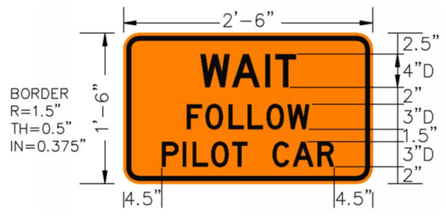
Interstate lane closures shorter than 5 miles will be used if 5 miles is greater than the length of work that can be accomplished in one day's production. More than one lane closure may be permitted; however, there will be a minimum of a three-mile section between lane closures, excluding the tapers.

Interstate lane closures will be removed when work will not be occurring for a period of 3 or more calendar days. Activities that do not involve workers being present, such as curing time for concrete, constitute work. Lane closures will not be set up on a Friday if no work will be occurring on Saturday or Sunday. In these cases, the lane closure will be installed on Monday.

FLAGGING

Operations will be conducted so that the traveling public will not have to wait longer than 15 minutes at the flagger station.

Additional flagger warning signs and flagger hours have been included in the Estimate of Quantities for use on intersecting roads. These flaggers will be used as directed by the Engineer and will be used primarily during daytime hours. Also included in the Estimate of Quantities are WAIT FOLLOW PILOT CAR signs for use on low volume intersecting roads as determined by the Engineer. WAIT FOLLOW PILOT CAR signs will not block the view of the stop sign.



FLAGGING (CONTINUED)

It is required that the flaggers and pilot car operators be able to communicate with one another. If an emergency vehicle needs to pass through the project, the Contractor will be required to expedite traffic movement. Cost associated with this will be incidental to the contract unit price per hour for Flagging.

WORK ZONE SPEED REDUCTION

The Department is required to obtain a speed reduction resolution prior to the installation of any SPEED LIMIT (R2-1) signs shown on standard plate 634.63 or as shown in the plans. To provide adequate time for the resolution to be enacted, the Contractor will inform the Engineer a minimum of 3 weeks prior to the scheduled installation of any work zone speed reduction signs on the project. The information provided by the Contractor will include the anticipated date of sign installation, the newly reduced speed limit, the location of the work zone, and the anticipated completion date of work requiring the speed reduction.

TEMPORARY PAVEMENT MARKING

Temporary flexible vertical markers (tabs) will be used to mark dashed centerline, No Passing Zones, and applicable lane lines. Paint will not be allowed for temporary pavement marking on the asphalt concrete wear course.

Temporary flexible vertical markers (tabs) may be used as detailed in the specifications.

Covers on the tabs will be sufficiently secured to prevent traffic from dislodging the cover and when removed, the covers will be properly disposed of. The Contractor will remove and properly dispose of the tabs after permanent pavement marking is applied. Method of removal will be nondestructive to the road surface and will be accomplished within one week of completion of the permanent pavement marking.

Full reflectivity of all temporary flexible vertical markers (tabs) is required at all times. The Contractor will be required to replace any missing or non-reflective tabs at no additional cost to the State.

Prior to nightfall, tabs will be required to mark centerline on segments of roadway where existing centerline marking has been removed and new marking has not been installed.

PERMANENT PAVEMENT MARKING

The Contractor will be required to repaint all existing pavement marking including centerline, edge line, lane lines, turn arrows, stop bars, and pedestrian crossings. This list is approximate. The Contractor will be required to document and be able to relocate for replacement of the existing, turn arrows, stop bars, pedestrian crossings, etc. before such marking is obliterated. Additional quantities are included in the estimate of quantities to paint the additional pavement marking. Cost to duplicate the existing marking locations will be incidental to the contract unit prices for the various contract items.

TRAFFIC CONTROL FOR PCCP REPAIR

Each mainline concrete repair location, from which the in-place concrete has been removed, will be marked with a minimum of two reflectorized drums. In areas containing numerous concrete repair locations, two reflectorized drums should be installed at a spacing of 660 feet alternating with the Type 3 Barricades.

Construction workspaces on undivided roadways will be limited to 1000 feet in length. The distance between the closest points of any two construction workspaces, including channeling devices, will not be less than 3 miles. Drivers in two-way traffic workspaces must be able to see approaching traffic through and beyond the work zone. Flagger controlled workspaces will be limited to 1 miles in length.

Construction workspaces in urban areas will be limited to 3 blocks in length. The minimum distance between workspaces will be 3 blocks.

When work is in progress within an intersection, Flaggers will be required to direct traffic.

The Contractor will use Flaggers during peak traffic hours and at times specified by the Engineer to supplement the stop conditions. Peak traffic hours are assumed to be 6:30 am to 8:30 am, 11:30 am to 1:00 pm and 4:30 pm to 6:00 pm. It is possible that Flagging will be required during all daytime hours. Advance warning Flagger signs will be required when Flaggers are present and removed when no Flaggers are present.

Holes adjacent to centerline in the lane open to traffic created during removal and replacement of PCC pavement repair areas will be filled with gravel cushion material and cold-mix asphalt concrete prior to opening the lane to traffic. Gravel cushion material and cold-mix asphalt concrete will be furnished by the Contractor.

Holes in the gravel and asphalt concrete shoulders created during removal and replacement of PCC pavement repair areas will be filled with gravel cushion material and hot-mix asphalt concrete (to match the shoulder surfacing) prior to opening the lane to traffic. Gravel cushion material and hot-mix asphalt concrete will be furnished and installed by the Contractor at no additional cost to the State.

Cost for furnishing, hauling, and placing gravel cushion material and asphalt concrete will be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

Routing traffic onto the mainline shoulders during any phase of the construction will not be allowed.

Extra care will be taken to protect the in place asphalt concrete shoulders on I90 and I29 locations. In all workspaces in these areas, flexible delineators will be required on the shoulders and will also be placed in locations to adequately keep traffic completely off the shoulders. Continuous maintenance will be required to keep them in place.

Type B warning lights will be placed on top of FLAGGER (W20-7) symbol signs.

Joints in approaches to signalized intersections containing vehicle detector loops will not be sawed, sealed, or otherwise disturbed.

The Contractor will be required to contact the Engineer two weeks in advance so that the Region Traffic Engineer can arrange for signal timings to be adjusted to accommodate traffic when a lane is closed near a signalized intersection.

TRAFFIC CONTROL FOR PCCP REPAIR (CONTINUED)

The Contractor will maintain pedestrian access at crosswalk locations. Additional traffic control devices will be used as necessary to accommodate the pedestrian traffic if work activities block an existing crosswalk.

Reflectorized drums or Type 2 Barricades will be used to maintain a minimum of two-way traffic at intersecting roads or streets. The Contractor will mark and maintain alternating one-way access to businesses and residences along the project with cones, drums, or Type 1 Barricades. The Contractor will advise affected businesses before a restriction to the business is installed, as well as the anticipated duration of the restriction.

PORTABLE TEMPORARY TRAFFIC CONTROL SIGNAL

Bridge over Skunk Creek on SD38

PHASING AND SEQUENCING

SIGNAL HEADS \ INTERVAL		1	2	3	4	5	6	FLASH DISPLAY
SD38 EB	ϕ A	G	Y	R	R	R	R	R
SD38 WB	ϕ B	R	R	R	G	Y	R	R

TIMINGS BASED ON MAXIMUM 1400 FT* DISTANCE BETWEEN OPPOSING STOP LINES AND TRAFFIC SPEED OF 35 MPH. — FLASH TIME

CYCLE LENGTH = 112 Seconds

PHASES	ϕ A	ϕ B	
MOVEMENTS	→	←	FAILURE OR EMERGENCY ONLY
MIN. GREEN (SEC)	10	10	
EXTENSION GREEN (SEC)	5	5	
MAX. GREEN(SEC)	25	25	
YELLOW (SEC)	4	4	
ALL RED (SEC)	27	27	

* - The timings may be adjusted if the length between the stop lines varies from the 1400 ft value used in calculations. The all red times may be recalculated as follows:

$$\text{All Red} = t + \frac{V}{2a} + \frac{W + L}{V} - Y$$

Where W = The distance between stop lines (ft).

Green times may be adjusted accordingly, however the total cycle length shall not exceed 120 seconds.

The portable temporary traffic control signal will be set up to dwell in red.

All vehicle signal heads will have backplates with retroreflective border. The vehicle signal head backplates will have a factory applied 3-inch wide yellow retroreflective border. Sheeting for the border will be Type IX or Type XI in conformance with ASTM D4956.

PORTABLE TEMPORARY TRAFFIC CONTROL SIGNAL (CONTINUED)

Signal backplates will be polycarbonate, aluminum, or aluminum-composite. Minimum material thicknesses are:

Polycarbonate, 0.10-inch
Aluminum, 0.06-inch
Aluminum-Composite, 0.08-inch

Signal backplates will extend not less than 5 inches from the edge of the signal head at the top, bottom, and sides.

All traffic signal equipment and material will meet the requirements of Sections 635 and 985 of the Specifications except the controller requirements.

Cost involved with constructing the portable temporary traffic control signal as specified above and on the plans, will be included in the contract unit price per unit for Portable Temporary Traffic Control Signal.

CONTACTOR FURNISHED PORTABLE CHANGEABLE MESSAGE SIGN

One week prior to starting work affecting the traveling public, portable changeable message signs (PCMS) will be installed at locations detailed in the plans to notify drivers of the upcoming construction. The Contractor will program the portable changeable message signs with the following message:

ROAD WORK
STARTS
DATE

When work begins that will affect traffic patterns, the Contractor will re-program the PCMS with the messages below:

ROAD
WORK
AHEAD

BE PREPARED
TO STOP

INCIDENTS

An incident is an emergency road user occurrence, a natural disaster, or other unplanned event that affects or impedes the normal flow of traffic such as a crash, hazardous material spill, or other event.

The Contractor will set up a meeting prior to start of work to plan and coordinate responses to an incident. The Contractor will invite the Department of Transportation, the South Dakota Highway Patrol, the County Sheriffs, and local emergency response entities to the meeting.

The Contractor will assist to maintain traffic as required by these plan notes and as agreed to at that meeting.

Emergency vehicle access through the project will be considered and discussed at the meeting.

The Contractor may be required to modify messages on portable changeable message signs or relocate portable changeable message signs, and to provide flaggers to direct or detour traffic. The Contractor should be prepared to relocate advance warning signs if determined to be necessary for a major traffic incident lasting more than two hours. Fixed location ground mounted signs may be covered and additional portable signs provided.

No additional payment will be made for the modification of portable changeable message sign messages or the relocation of portable changeable message signs.

Cost for the relocation of an advance warning sign due to an incident will be 50% of the designated sign rate. Flaggers will be paid for at the contract unit price per hour for Flagging.

TEMPORARY PAVEMENT MARKING TAPE, TYPE I

Temporary pavement marking for stop lines will consist of 4” Temporary Pavement Marking Tape Type I. Placement of each 24” white stop line will be accomplished by placing six pieces of 4” x 12’ tape adjacent to one another. Each workspace requires two stop lines which is an equivalent of approximately 144’ of 4” tape (2,544 ft total per workspace). Temporary Pavement Marking Tape Type I will be required for centerline marking shown on standard plate 634.25. Temporary tape will be removed upon completion of the project.

TEMPORARY RAISED PAVEMENT MARKERS

Temporary raised pavement markers will be used for marking edge lines, lane lines, and tapers and centerlines. Temporary raised pavement markers will be used on all new permanent surfacing sections of roadway and on existing surfacing where temporary marking locations are different than existing marking locations, unless noted or as directed by the Engineer.

Temporary raised pavement markers will be attached to the roadway surface with a flexible non-permanent bituminous adhesive capable of being removed from the roadway surface or with an adhesive approved by the Engineer.

Cost to furnish, install, replace if necessary, and remove the markers will be incidental to the contract unit price per foot for Temporary Raised Pavement Markers.

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. The cleaning of the residue for grooving will be to the satisfaction of the Engineer and may require more than one pass to adequately remove material. Cost for removal of grinding and/or grooving residue will be included in the contract unit price per square foot, for Grooving for Cold Applied Plastic Pavement Marking contract items.

PREFORMED THERMOPLASTIC PAVEMENT MARKING

General

- Made of prefabricated retroreflective, resilient thermoplastic material;
- Contains glass beads uniformly distributed through the entire cross-sectional area;
- Capable of being affixed to bituminous or concrete pavement by heating;
- Resistant to deterioration due to exposure to sunlight, water, salt, and adverse weather conditions;
- Under traffic wear, shows no appreciable fading in accordance with the color requirements, lifting, or shrinkage throughout the life of the marking;
- Capable of conforming to pavement contours, breaks, and faults through the action of traffic at normal pavement temperatures;
- Possesses resealing characteristics, such that it is capable of fusing with itself and previous thermoplastic marking when heated; and
- Protected during shipment and in storage.

Apply the preformed thermoplastic pavement marking as recommended by the manufacturer to provide a neat, durable marking that will not flow, distort, or crack due to temperature if the pavement surface remains stable. Use equipment and application methods specified by the manufacturer. Primer as required by the manufacturer will be provided with the material.

Application of the marking will include the use of any manufacturer recommended sealers. Sealers may be required on concrete pavements, inside grooves, or on older asphalt pavements. Prior to placing any marking on new concrete, the Contractor will remove any curing compounds. Removal will be by sandblasting or other standard industry methods.

Any required primers or sealers will be included in the contract unit price for the various preformed thermoplastic pavement marking items.

Provide precut messages and symbols meeting the requirements of the MUTCD and the Standard Signs Manual in custom kits. Use separate pieces or segments to form individual letters or symbols only to the extent supplied by the manufacturer. Provide shapes, sizes, and colors as required by the contract.

Color

- Will meet the color specification limits and luminance factors for Cold Applied Plastic Pavement Marking and Legends (Section 983.2 D, Tables 1 and 2).

PREFORMED THERMOPLASTIC PAVEMENT MARKING (CONTINUED)

Glass Beads

- Ensure the preformed thermoplastic pavement marking contains a minimum 30% intermixed glass beads by weight and a minimum 80% true spheres.
- Ensure preformed thermoplastic pavement marking contains only clear beads.

Skid Resistance

- Ensure the surface of the preformed thermoplastic pavement marking provides a skid resistance value of at least 45 British Pendulum Number (BPN) when tested in accordance with ASTM E303.

Retroreflectivity

- Provide preformed thermoplastic pavement marking meeting the minimum initial pavement marking retroreflectivity values using 30 m geometry and meeting the testing procedures of ASTM E1710:

Minimum Initial Pavement Marking Retroreflectivity		
	White	**Yellow**
Thermoplastic	400 mcd/sq. ft./ft.	250 mcd/sq. ft./ft.
Thermoplastic, enhanced skid resistance (ESR)	250 d/sq. ft./ft.	150 d/sq. ft./ft.

Thickness

- A longitudinal marking is a minimum 90 mils thick at the edges, and a maximum 125 mils thick at the center of the stripe.
- Transverse marking and symbols are a minimum 125 mils thick at the edges, and a maximum 160 mils thick at the center.

Sample

- Prior to application, the Contractor will provide a sample of the preformed thermoplastic pavement marking to be used on the project to the Region Traffic Engineer for inspection and approval.
- Do not begin application of the preformed thermoplastic pavement marking prior to obtaining the Region Traffic Engineer’s approval of the preformed thermoplastic pavement marking material. The Region Traffic Engineer’s approval of the preformed thermoplastic pavement marking does not void other preformed thermoplastic pavement marking requirements specified.

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

Material will be applied as per manufacturer's recommendations. Reflective media consisting of glass beads as well as bonded core reflective elements will be adhered to the paint.

No further testing of this material will be required. Reflective media consisting of glass beads as well as bonded core reflective elements will be adhered to the paint.

The bonded core reflective elements will contain either clear or yellow tinted microcrystalline ceramic beads bonded to the outer surface. The bonded core reflective elements will provide a 50/50 blend of dry to wet ratio of reflective element. All microcrystalline ceramic beads bonded to reflective elements will have a minimum index of refraction of 1.8 for dry retroreflectivity and 2.4 for wet retroreflectivity when tested using the liquid oil immersion method.

Pavement marking not conforming to the retroreflectivity requirements will be removed and replaced. If replacement of marking cannot be applied within the same year, the Contractor will schedule subject work to be completed no later than June 15th in the following year.

Upon replacement, the retroreflectivity testing process will be done again requiring new readings.

The Department will randomly select one test location per mile of each edge line including ramps and one test location per mile of centerline (solid and/or skip line will be considered as one centerline). Three retroreflectivity readings will be taken at each test location. The three readings will be averaged and become the reading for that test location.

Initial readings:

Pavement Marking Color	Minimum Value
White	350 mc/m^2/lux
Yellow	275 mc/m^2/lux

All pavement marking not conforming to the requirements provided in these plans will be considered deficient and will be removed and replaced. Additional retroreflectivity readings will be taken by the Department to determine the limits of removal. The removal will be accomplished using suitable sand blasting or grinding equipment unless the Engineer authorizes other means. The removal process will remove at least 90% of the deficient line, with no excessive scarring of the existing pavement. The removal width will be one inch wider all around the nominal width of the pavement marking to be removed. Removal and replacement of the pavement marking will be at the Contractor's expense, with no cost incurred by the State.

High Build Waterborne Pavement Marking Paint applied after October 15 must be formulated as cold-weather waterborne paint. Cold weather waterborne paint will meet the requirements of Section 980.1 B.

RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

Solid 4" line = 27.8 Gals/Mile
Dashed 4" line = 7.6 Gal/Mile
Glass Beads = 5.3 Lbs/Gal.
Composite Reflective Elements = 2.1 Lbs/Gal.

Cost for material, labor and equipment necessary to furnish and install the pavement marking will be incidental to the contract unit price for the respective High Build Waterborne Pavement Marking Paint items.

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	53	64

PAINTING FOR PCC REPAIRS

PAVEMENT MARKING

Typical pavement marking as shown on this sheet will be applied throughout the entire length of the roadway.

Traffic Control will be incidental to the cost of application. The striper and advance or trailing warning vehicle will be equipped with flashing amber lights and advance warning arrow board.

Left Arrows, in sets of two, spaced 8' or 16' arrow tip to arrow tip, (when two are required) will be positioned in the center turn lane at 300' spacing, at a frequency of one set of arrows per block or at existing arrow locations.

Application rates will be as follows:

Two Lane Roadway with Center Turn Lane (Rates for one line)	
Solid Yellow Centerline	Rate = 22.5 Gals./Pass-Mile
Dashed Yellow Centerline	Rate = 6.2 Gals./Pass-Mile
Solid White Edgeline	Rate = 22.5 Gals./Pass-Mile
(Not applicable in curb and gutter)	

ESTIMATED QUANTITIES (BASED ON ONE APPLICATION)	
HIGH BUILD	QUANTITY
WHITE	155 GALLONS
YELLOW	93 GALLONS

Included in the above quantities are:					
Additional White (1 Application)			Additional Yellow (1 Application)		
Description		Gallons	Description		Gallons
4" Lines	2060'	12	Transitions	2 Ea 1220'	7
8" Lines	-	-	4" Skip Lines	-	-
12" Gore Lines	-	-	8" Lines	-	-
Crosswalks -	-	-	12" Lines	-	-
24" Stop Lines	-	-	24" Hatches	60'	3
24" Hatches	342'	17	Solid Areas	150sf	6
Solid Areas	-	-	Additional Yellow:		16
Arrows					
Left Arrows	-	-	Additional Quantities		
Right Arrows	-	-	Rates of Coverage:		SqFt/Gal
Straight Arrows	-	-	4", 8" & 12" Lines -		60
Combo Arrows	-	-	24" Lines & Hatches -		40
Lane Drop Arrows	-	-	Arrows, Messages and Solid Areas -		25
Messages					
STOP	-	-	All pavement marking dimensions are based on 12' driving lanes.		
STOP AHEAD	-	-			
R X R w/ Stop Lines	-	-			
SCHOOL X-ING	-	-			
Additional White:		29			

ESTIMATED QUANTITIES					
THERMO	4"	8"	12"	24"	SOLID AREAS
WHITE	-	-	-	816'	-
YELLOW	-	-	-	-	-

Included in the above quantities are:			
Additional White		Additional Yellow	
Description		Description	
4" Lines	-	Transitions -	-
8" Lines	-	4" Skip Lines	-
12" Gore Lines	-	8" Lines	-
Crosswalks 9 Ea, 24" W	504'	12" Lines	-
24" Stop Lines	312'	24" Hatches	-
24" Hatches	-	Solid Areas	-
Solid Areas	-		

Additional White Items		Additional Yellow Item	
Arrows		Symbols	-
Left Arrows	28 Ea		
Right Arrows	1 Ea		
Straight Arrows	-		
Combo Arrows	1 Ea		
Lane Drop Arrows	-		
Messages			
STOP -	-	All pavement marking dimensions are based on 12' driving lanes.	
STOP AHEAD -	-		
R X R w/ Stop Lines	-		
SCHOOL X-ING	-		
Symbols			
Symbols	-		
Int'l Symbol of Accessibility	-		

SD38 IN HARTFORD

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	8	48"	13.3	106.4
R3-1	RIGHT TURN PROHIBITION (symbol)	8	24" x 24"	4.0	32.0
R3-2	LEFT TURN PROHIBITION (symbol)	8	24" x 24"	4.0	32.0
R4-7	KEEP RIGHT (symbol)	8	24" x 30"	5.0	40.0
W1-4	REVERSE CURVE (L or R)	2	48" x 48"	16.0	32.0
W9-3	CENTER LANE CLOSED AHEAD	1	48" x 48"	16.0	16.0
W13-1P	ADVISORY SPEED (plaque)	2	30" x 30"	6.3	12.6
W20-1	ROAD WORK AHEAD	12	48" x 48"	16.0	192.0
G20-2	END ROAD WORK	6	36" x 18"	4.5	27.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			490.0

SD38 OVER SKUNK CREEK

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R10-6	STOP HERE ON RED	2	24" x 36"	6.0	12.0
W1-4	REVERSE CURVE (L or R)	2	48" x 48"	16.0	32.0
W3-3	SIGNAL AHEAD (symbol)	2	48" x 48"	16.0	32.0
W13-1P	ADVISORY SPEED (plaque)	2	30" x 30"	6.3	12.6
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			161.6

SD38E AT W 60 ST N IN SIOUX FALLS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R3-1	RIGHT TURN PROHIBITION (symbol)	4	24" x 24"	4.0	16.0
R3-2	LEFT TURN PROHIBITION (symbol)	4	24" x 24"	4.0	16.0
R3-7R	RIGHT LANE MUST TURN RIGHT	2	30" x 30"	6.3	12.6
R3-7L	LEFT LANE MUST TURN LEFT	2	30" x 30"	6.3	12.6
R4-7	KEEP RIGHT (symbol)	4	24" x 30"	5.0	20.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	1	48" x 48"	16.0	16.0
W20-1	ROAD WORK AHEAD	3	48" x 48"	16.0	48.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	1	48" x 48"	16.0	16.0
G20-2	END ROAD WORK	1	36" x 18"	4.5	4.5
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			161.7

SD38W AT W 60 ST N IN SIOUX FALLS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W4-2	LEFT or RIGHT LANE ENDS (symbol)	1	48" x 48"	16.0	16.0
W20-1	ROAD WORK AHEAD	1	48" x 48"	16.0	16.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	1	48" x 48"	16.0	16.0
G20-2	END ROAD WORK	1	36" x 18"	4.5	4.5
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			52.5

I90E NEAR BUFFALO RIDGE

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 65	4	36" x 48"	12.0	48.0
R2-1	SPEED LIMIT 45	2	36" x 48"	12.0	24.0
R2-1	SPEED LIMIT 80	2	36" x 48"	12.0	24.0
R2-6aP	FINES DOUBLE (plaque)	2	36" x 24"	6.0	12.0
W3-5	SPEED REDUCTION AHEAD (65 MPH)	2	48" x 48"	16.0	32.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W3-5	SPEED REDUCTION AHEAD (45 MPH)	2	48" x 48"	16.0	32.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	48" x 24"	8.0	16.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			284.0

I90W NEAR BUFFALO RIDGE

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 65	4	36" x 48"	12.0	48.0
R2-1	SPEED LIMIT 45	2	36" x 48"	12.0	24.0
R2-1	SPEED LIMIT 80	2	36" x 48"	12.0	24.0
R2-6aP	FINES DOUBLE (plaque)	2	36" x 24"	6.0	12.0
W3-5	SPEED REDUCTION AHEAD (65 MPH)	2	48" x 48"	16.0	32.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W3-5	SPEED REDUCTION AHEAD (45 MPH)	2	48" x 48"	16.0	32.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	48" x 24"	8.0	16.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			284.0

I29N NEAR I90 INTERCHANGE

		EXPRESSWAY / INTERSTATE			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 65	4	36" x 48"	12.0	48.0
R2-1	SPEED LIMIT 45	2	36" x 48"	12.0	24.0
R2-1	SPEED LIMIT 80	2	36" x 48"	12.0	24.0
R2-6aP	FINES DOUBLE (plaque)	2	36" x 24"	6.0	12.0
W3-5	SPEED REDUCTION AHEAD (65 MPH)	2	48" x 48"	16.0	32.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W3-5	SPEED REDUCTION AHEAD (45 MPH)	2	48" x 48"	16.0	32.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	48" x 24"	8.0	16.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			284.0

SD34 IN HOWARD

		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	4	48"	13.3	53.2
R3-1	RIGHT TURN PROHIBITION (symbol)	6	24" x 24"	4.0	24.0
R3-2	LEFT TURN PROHIBITION (symbol)	6	24" x 24"	4.0	24.0
R3-7R	RIGHT LANE MUST TURN RIGHT	2	30" x 30"	6.3	12.6
R3-7L	LEFT LANE MUST TURN LEFT	2	30" x 30"	6.3	12.6
W1-4	REVERSE CURVE (L or R)	2	48" x 48"	16.0	32.0
W4-1	MERGE (symbol)	2	48" x 48"	16.0	32.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W9-2	LANE ENDS MERGE LEFT	2	48" x 48"	16.0	32.0
W13-1P	ADVISORY SPEED (plaque)	2	30" x 30"	6.3	12.6
W20-1	ROAD WORK AHEAD	14	48" x 48"	16.0	224.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			532.0

I229S NEAR I90 INTERCHANGE

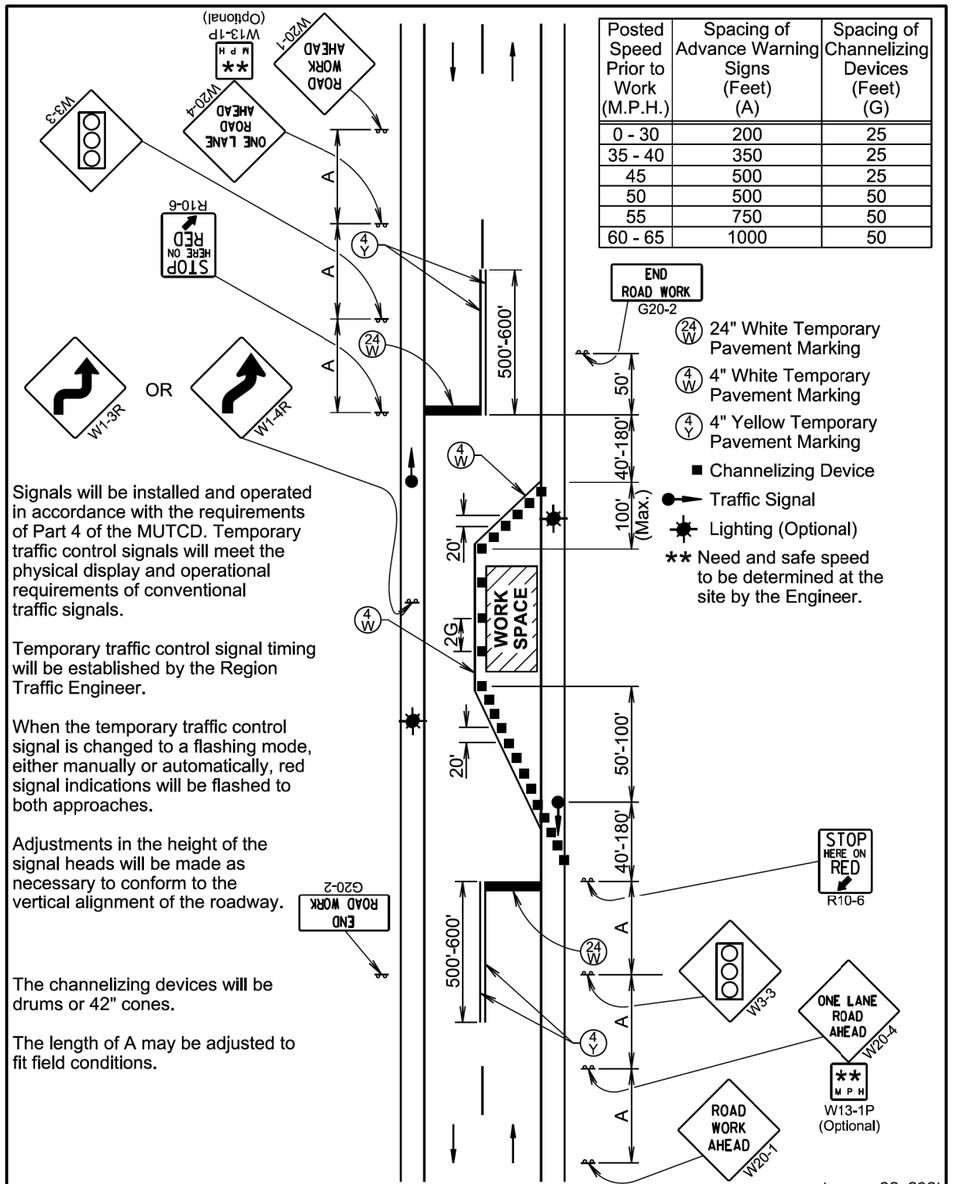
		EXPRESSWAY / INTERSTATE			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 65	4	36" x 48"	12.0	48.0
R2-1	SPEED LIMIT 45	2	36" x 48"	12.0	24.0
R2-6aP	FINES DOUBLE (plaque)	2	36" x 24"	6.0	12.0
W3-5	SPEED REDUCTION AHEAD (65 MPH)	2	48" x 48"	16.0	32.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	3	48" x 48"	16.0	48.0
W4-3	ADDED LANE (symbol)	1	48" x 48"	16.0	16.0
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W3-5	SPEED REDUCTION AHEAD (45 MPH)	2	48" x 48"	16.0	32.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	3	48" x 48"	16.0	48.0
G20-2	END ROAD WORK	2	48" x 24"	8.0	16.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			340.0

I90E NEAR I229 INTERCHANGE

		EXPRESSWAY / INTERSTATE			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 65	4	36" x 48"	12.0	48.0
R2-1	SPEED LIMIT 45	2	36" x 48"	12.0	24.0
R2-1	SPEED LIMIT 80	2	36" x 48"	12.0	24.0
R2-6aP	FINES DOUBLE (plaque)	2	36" x 24"	6.0	12.0
W1-4	REVERSE CURVE (L or R)	2	48" x 48"	16.0	32.0
W3-5	SPEED REDUCTION AHEAD (65 MPH)	2	48" x 48"	16.0	32.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W3-5	SPEED REDUCTION AHEAD (45 MPH)	2	48" x 48"	16.0	32.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	48" x 24"	8.0	16.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			316.0

I90W NEAR I229 INTERCHANGE

		EXPRESSWAY / INTERSTATE			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 65	4	36" x 48"	12.0	48.0
R2-1	SPEED LIMIT 45	2	36" x 48"	12.0	24.0
R2-1	SPEED LIMIT 80	2	36" x 48"	12.0	24.0
R2-6aP	FINES DOUBLE (plaque)	2	36" x 24"	6.0	12.0
W1-4	REVERSE CURVE (L or R)	2	48" x 48"	16.0	32.0
W3-5	SPEED REDUCTION AHEAD (65 MPH)	2	48" x 48"	16.0	32.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W3-5	SPEED REDUCTION AHEAD (45 MPH)	2	48" x 48"	16.0	32.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	48" x 24"	8.0	16.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			316.0



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

Signals will be installed and operated in accordance with the requirements of Part 4 of the MUTCD. Temporary traffic control signals will meet the physical display and operational requirements of conventional traffic signals.

Temporary traffic control signal timing will be established by the Region Traffic Engineer.

When the temporary traffic control signal is changed to a flashing mode, either manually or automatically, red signal indications will be flashed to both approaches.

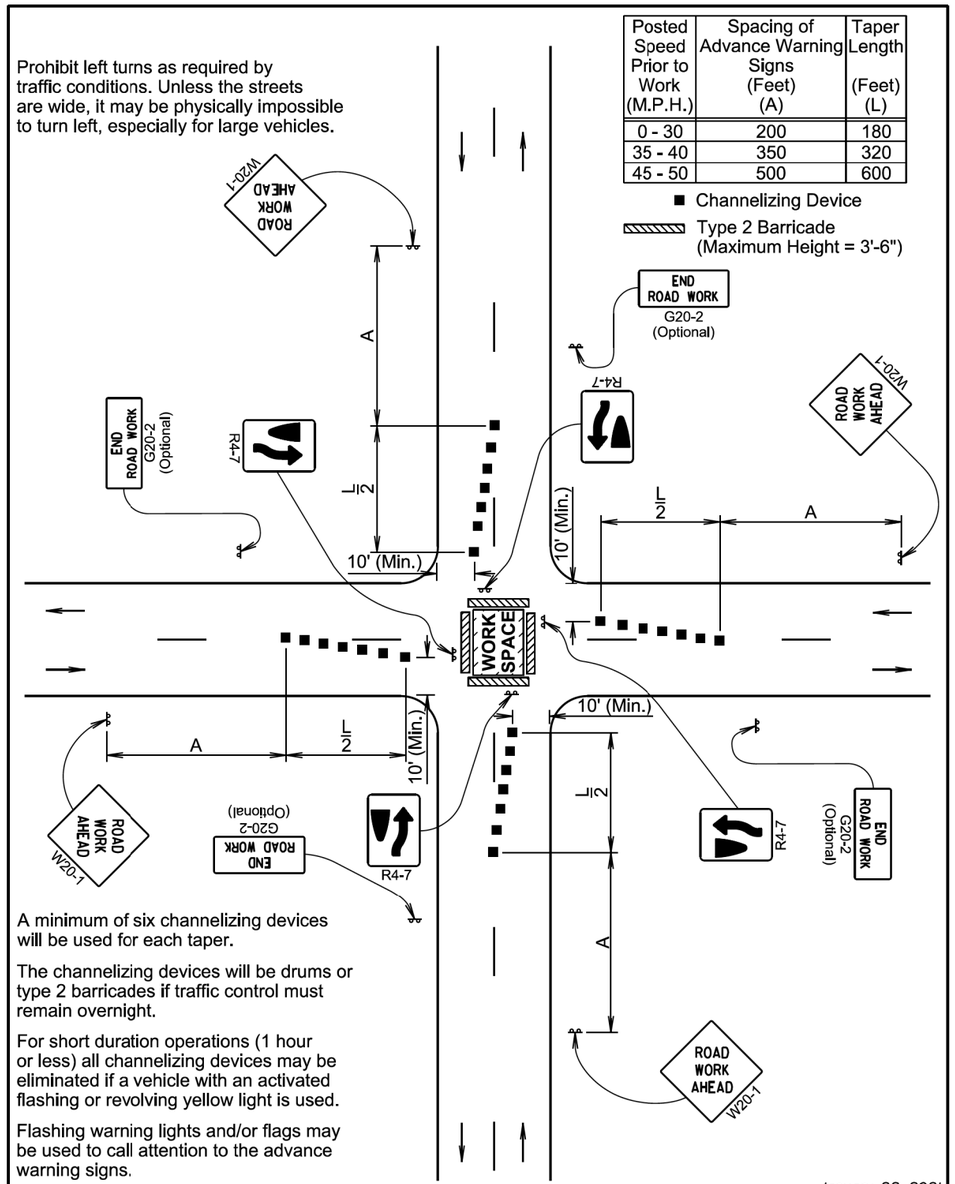
Adjustments in the height of the signal heads will be made as necessary to conform to the vertical alignment of the roadway.

The channelizing devices will be drums or 42" cones.

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

January 22, 2021

Published Date: 1st Qtr. 2022	SDDOT	LANE CLOSURE USING TRAFFIC SIGNALS	PLATE NUMBER 634.26
			Sheet 1 of 1



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)
0 - 30	200	180
35 - 40	350	320
45 - 50	500	600

Prohibit left turns as required by traffic conditions. Unless the streets are wide, it may be physically impossible to turn left, especially for large vehicles.

A minimum of six channelizing devices will be used for each taper.

The channelizing devices will be drums or type 2 barricades if traffic control must remain overnight.

For short duration operations (1 hour or less) all channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

January 22, 2021

Published Date: 1st Qtr. 2022	SDDOT	CLOSURE IN CENTER OF INTERSECTION	PLATE NUMBER 634.35
			Sheet 1 of 1

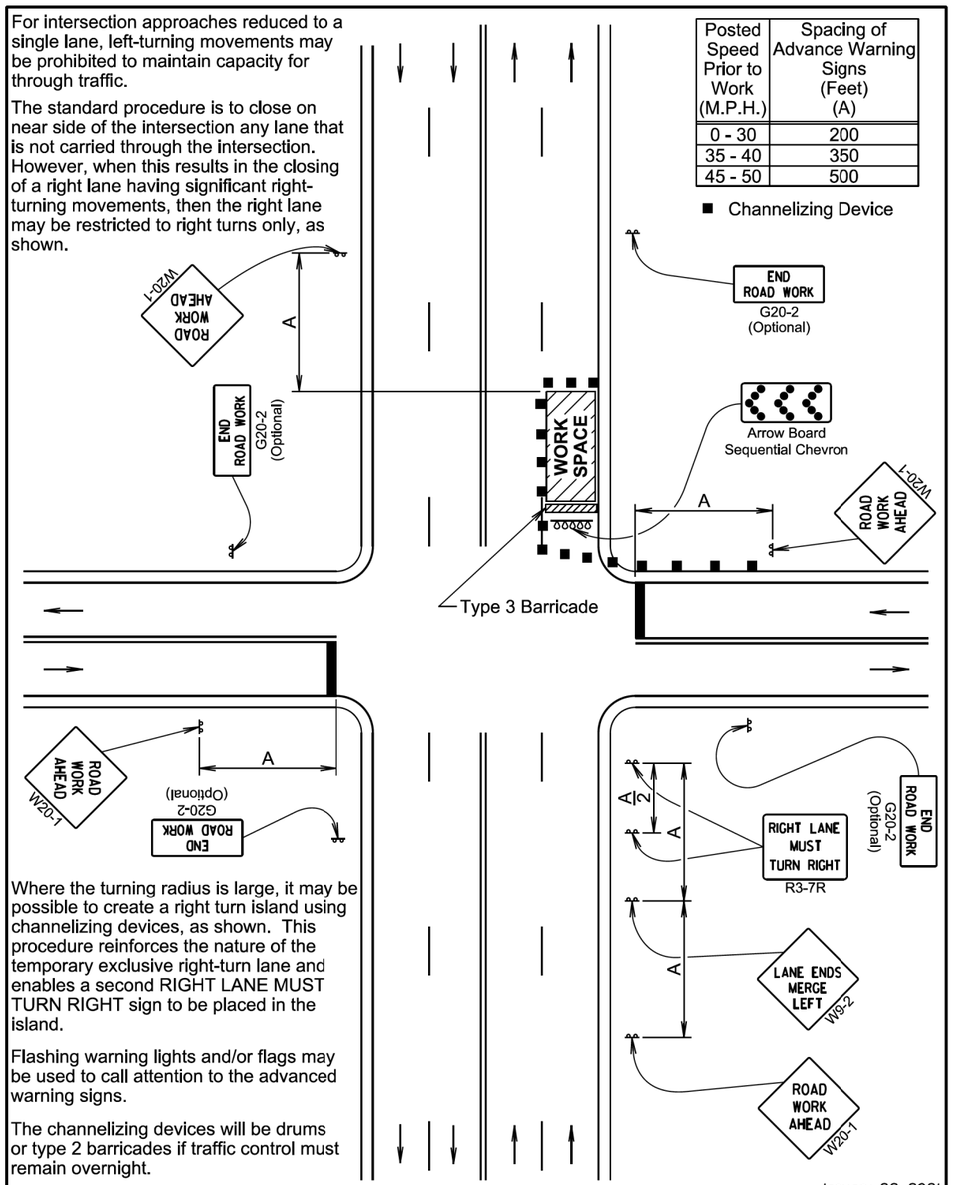
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-P 0022(85)	57	64

For intersection approaches reduced to a single lane, left-turning movements may be prohibited to maintain capacity for through traffic.

The standard procedure is to close on near side of the intersection any lane that is not carried through the intersection. However, when this results in the closing of a right lane having significant right-turning movements, then the right lane may be restricted to right turns only, as shown.

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

■ Channelizing Device



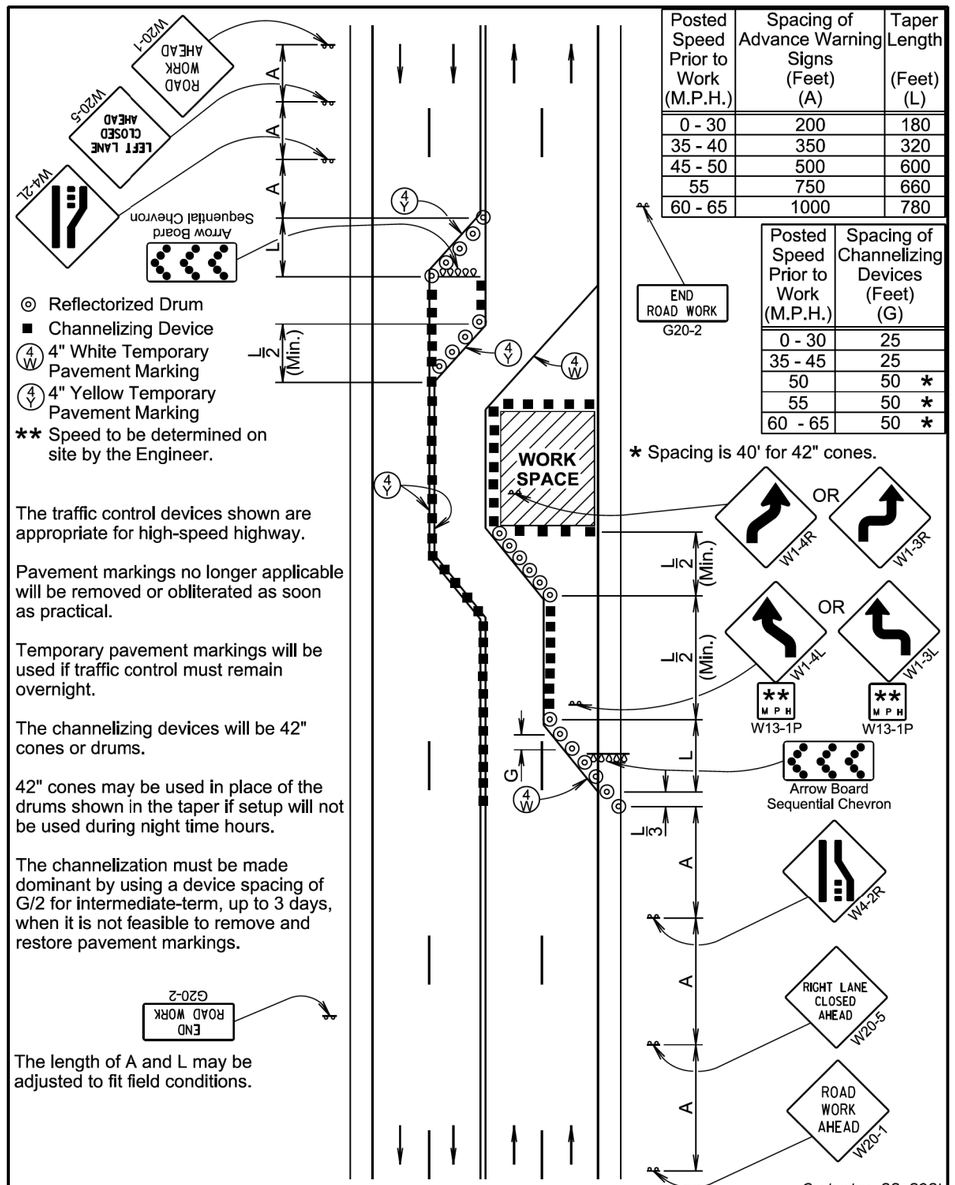
Where the turning radius is large, it may be possible to create a right turn island using channelizing devices, as shown. This procedure reinforces the nature of the temporary exclusive right-turn lane and enables a second RIGHT LANE MUST TURN RIGHT sign to be placed in the island.

Flashing warning lights and/or flags may be used to call attention to the advanced warning signs.

The channelizing devices will be drums or type 2 barricades if traffic control must remain overnight.

January 22, 2021

Published Date: 1st Qtr. 2022	SDDOT	RIGHT LANE CLOSURE FAR SIDE OF INTERSECTION	PLATE NUMBER 634.42
			Sheet 1 of 1



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

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 45	25
50	50 *
55	50 *
60 - 65	50 *

* Spacing is 40' for 42" cones.

◎ Reflectorized Drum
■ Channelizing Device
(4 W) 4" White Temporary Pavement Marking
(4 Y) 4" Yellow Temporary Pavement Marking
** Speed to be determined on site by the Engineer.

The traffic control devices shown are appropriate for high-speed highway.

Pavement markings no longer applicable will be removed or obliterated as soon as practical.

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

The channelizing devices will be 42" cones or drums.

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

The channelization must be made dominant by using a device spacing of G/2 for intermediate-term, up to 3 days, when it is not feasible to remove and restore pavement markings.

G20-2 END ROAD WORK

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

September 22, 2021

Published Date: 1st Qtr. 2022	SDDOT	HALF ROAD CLOSURE ON MULTILANE HIGHWAY	PLATE NUMBER 634.46
			Sheet 1 of 1

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

* Spacing is 40' for 42" cones.

◎ Reflectorized Drum

■ Channelizing Device

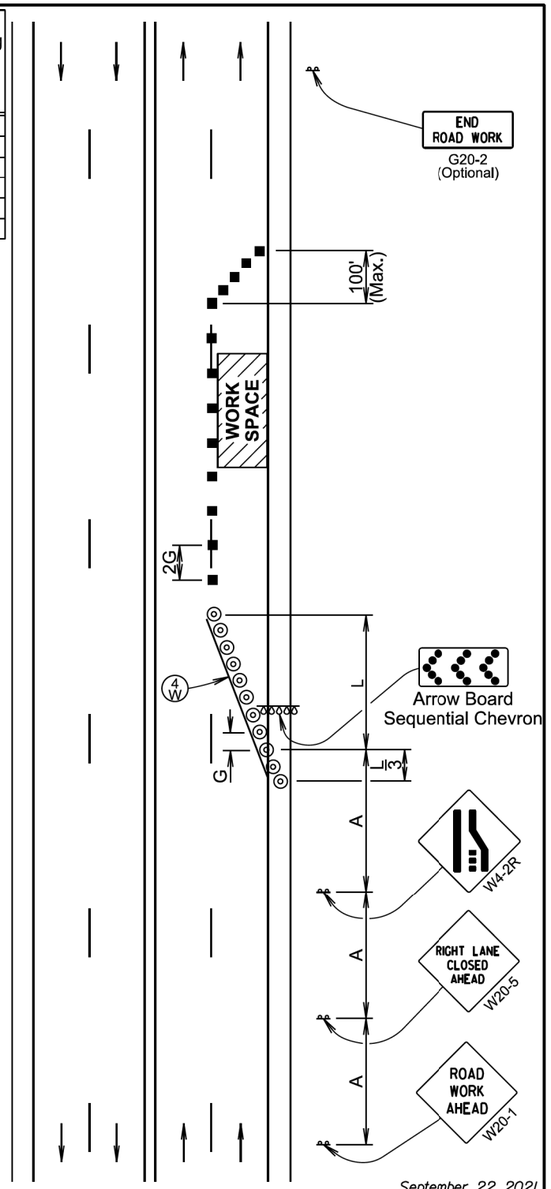
(4W) 4" White Temporary Pavement Marking

The channelizing devices will be 42" cones or drums.

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

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

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



September 22, 2021

Published Date: 1st Qtr. 2022	SDDOT	4-LANE UNDIVIDED, RIGHT LANE CLOSED	PLATE NUMBER 634.47
			Sheet 1 of 1

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

* Spacing is 40' for 42" cones.

◎ Reflectorized Drum

■ Channelizing Device

(4Y) 4" Yellow Temporary Pavement Marking

Pavement markings no longer applicable will be removed or obliterated as soon as practical.

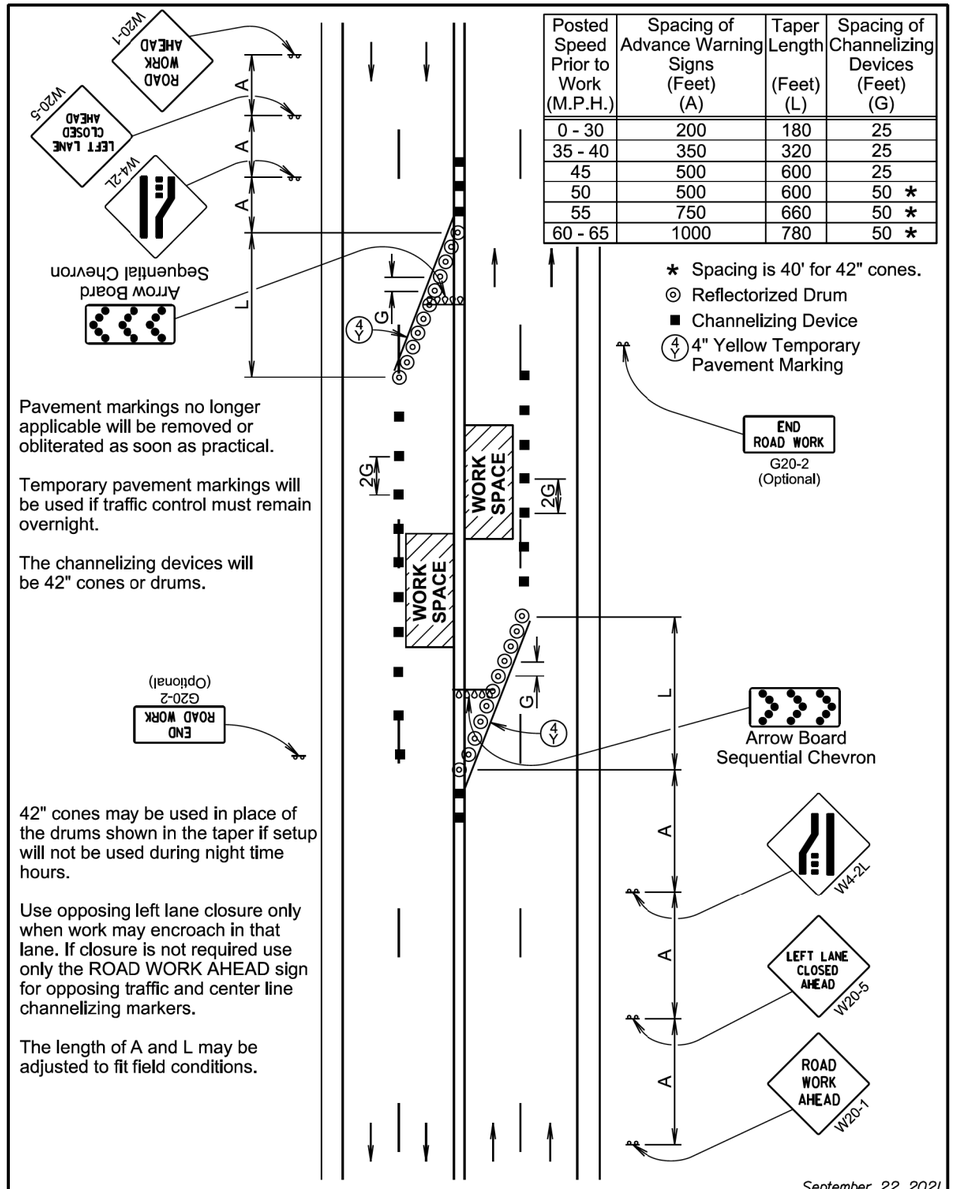
Temporary pavement markings will be used if traffic control must remain overnight.

The channelizing devices will be 42" cones or drums.

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

Use opposing left lane closure only when work may encroach in that lane. If closure is not required use only the ROAD WORK AHEAD sign for opposing traffic and center line channelizing markers.

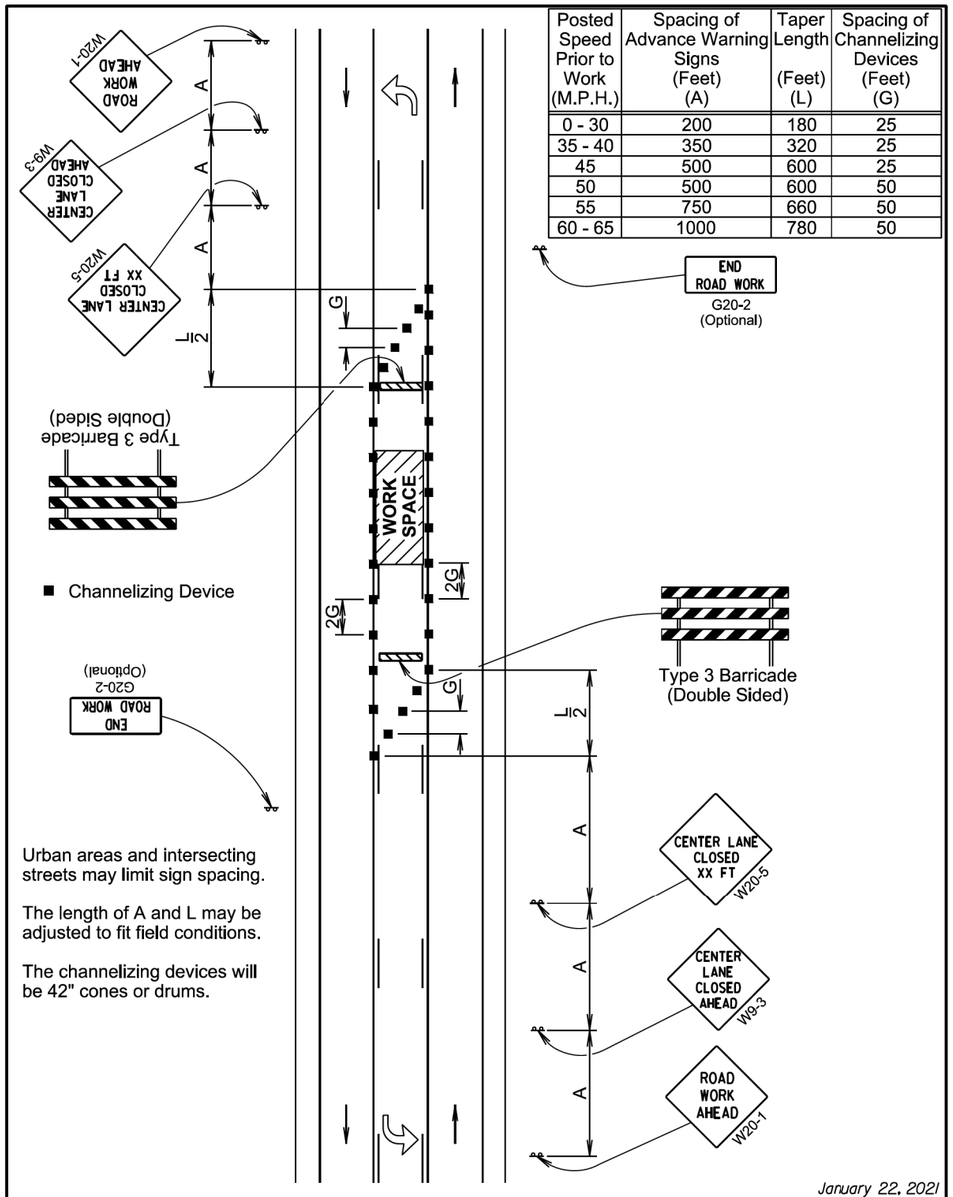
The length of A and L may be adjusted to fit field conditions.



September 22, 2021

Published Date: 1st Qtr. 2022	SDDOT	4-LANE UNDIVIDED, LEFT LANE CLOSED	PLATE NUMBER 634.48
			Sheet 1 of 1

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



■ Channelizing Device

Urban areas and intersecting streets may limit sign spacing.

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

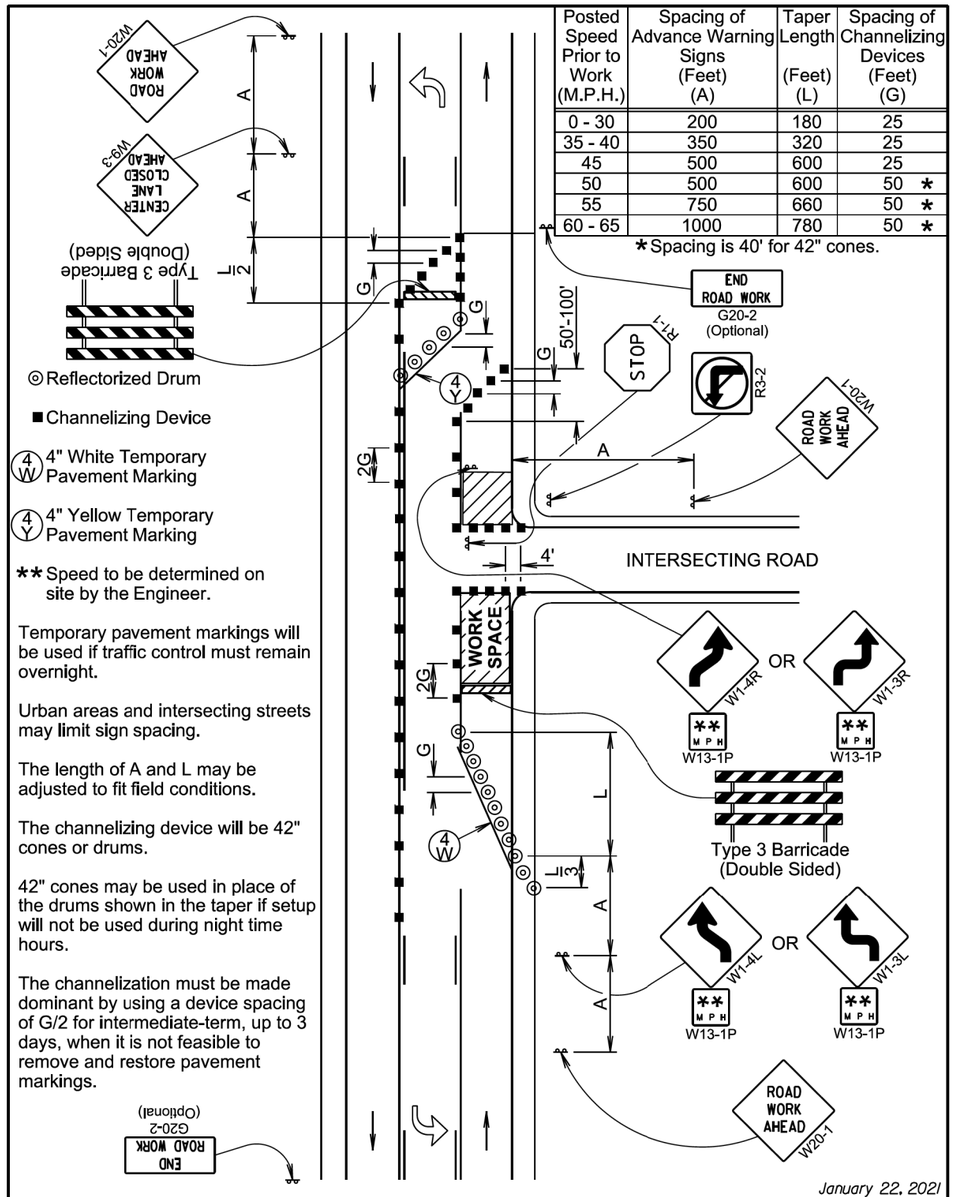
The channelizing devices will be 42" cones or drums.

January 22, 2021

Published Date: 1st Qtr. 2022	SDDOT	3-LANE, CENTER LANE CLOSED	PLATE NUMBER 634.52
			Sheet 1 of 1

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

*Spacing is 40' for 42" cones.



◎ Reflectorized Drum

■ Channelizing Device

(4W) 4" White Temporary Pavement Marking

(4Y) 4" Yellow Temporary Pavement Marking

** Speed to be determined on site by the Engineer.

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

Urban areas and intersecting streets may limit sign spacing.

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

The channelizing device will be 42" cones or drums.

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

The channelization must be made dominant by using a device spacing of G/2 for intermediate-term, up to 3 days, when it is not feasible to remove and restore pavement markings.

January 22, 2021

Published Date: 1st Qtr. 2022	SDDOT	3-LANE, OUTSIDE LANE CLOSED	PLATE NUMBER 634.53
			Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 65	1000
	(A) (B) (C)
70 - 80	1000 1500 2640

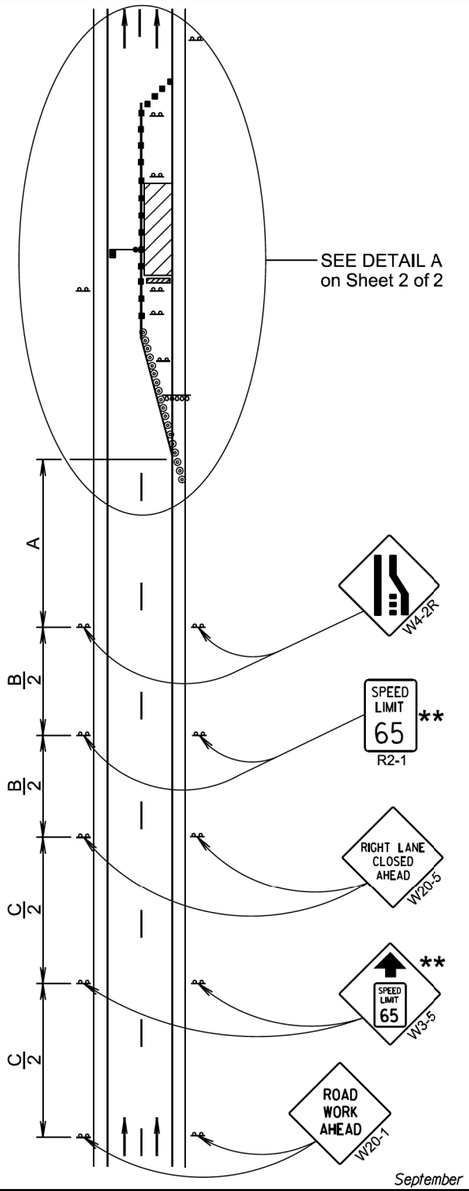
** Speed appropriate for location.

◎ Reflectorized Drum

▪ Channelizing Device

ROAD WORK AHEAD sign is only required in advance of the first lane closure.

High speed is defined as having a posted speed limit greater than 45 mph.



September 22, 2021

Published Date: 1st Qtr. 2022	SDDOT	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
			Sheet 1 of 2

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)	Taper Length (Feet) (L)
0 -30	25	180
35 - 40	25	320
45	25	600
50	50 *	600
55	50 *	660
60 - 65	50 *	780
70 - 80	50 *	960

* Spacing is 40' for 42" cones.

** Speed appropriate for location.

*** Use speed limit designated for the condition when workers are present in the work space. Signs will be covered or removed when workers are not present.

Flagger (As Necessary)

◎ Reflectorized Drum

■ Channelizing Device

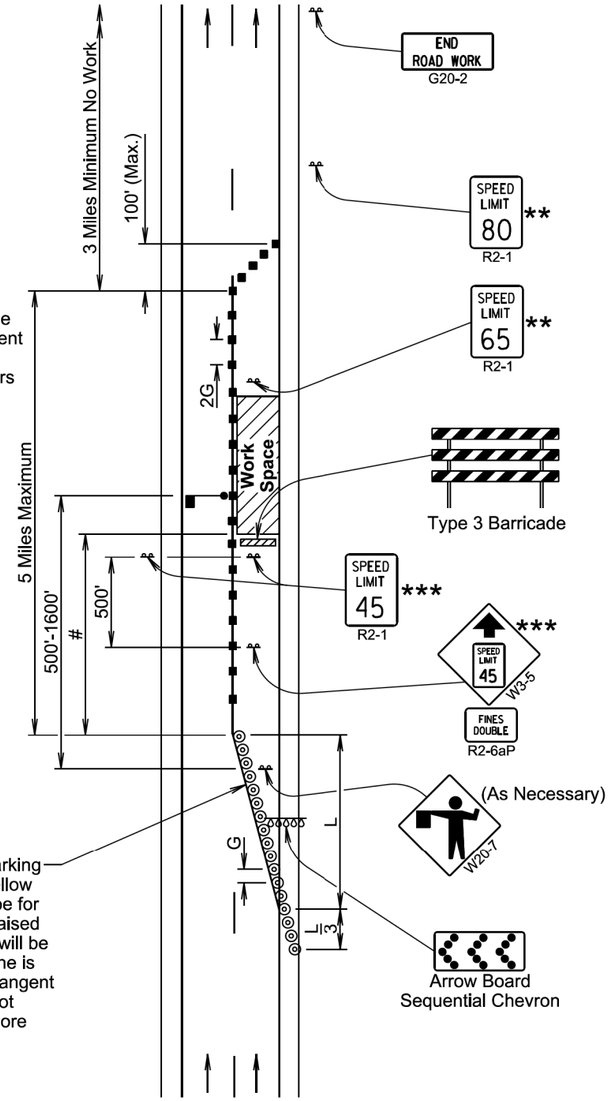
The Work Space will be a minimum of 500' from the end of the taper.

The FLAGGER sign will be used whenever there is a Flagger present.

The channelizing devices will be 42" cones or drums.

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

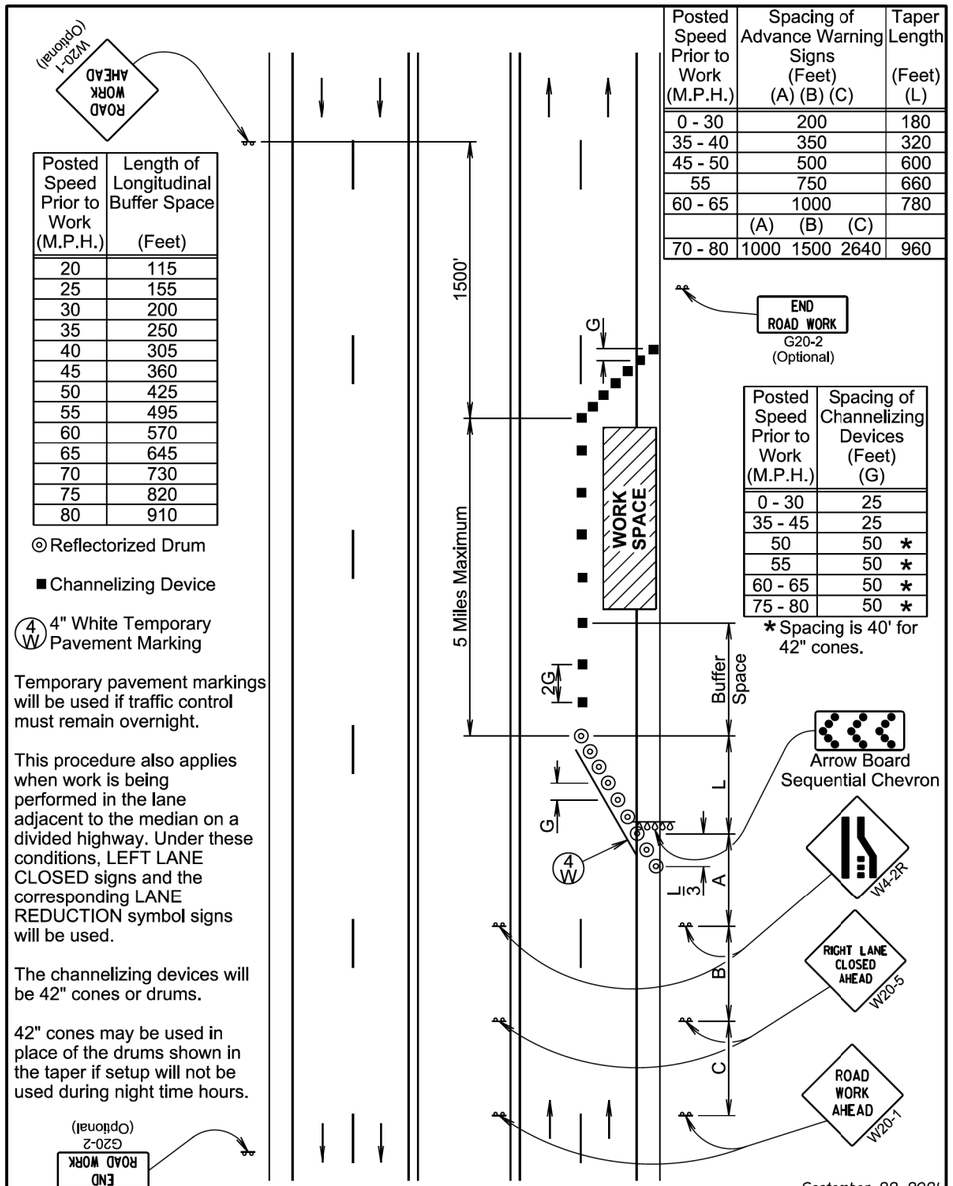
4" white temporary pavement marking tape for right lane closures, 4" yellow temporary pavement marking tape for left lane closures, or temporary raised pavement markers at 5' spacing will be installed in the taper when the lane is closed overnight, and along the tangent section where the skip lines do not exist and the lane is closed for more than 3 days.



DETAIL A

September 22, 2021

Published Date: 1st Qtr. 2022	SDDOT	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
			Sheet 2 of 2



Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820
80	910

◎ Reflectorized Drum

■ Channelizing Device

(4W) 4" White Temporary Pavement Marking

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

This procedure also applies when work is being performed in the lane adjacent to the median on a divided highway. Under these conditions, LEFT LANE CLOSED signs and the corresponding LANE REDUCTION symbol signs will be used.

The channelizing devices will be 42" cones or drums.

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

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)	Taper Length (Feet) (L)
0 - 30	200	180
35 - 40	350	320
45 - 50	500	600
55	750	660
60 - 65	1000	780
	(A) (B) (C)	
70 - 80	1000 1500 2640	960

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 45	25
50	50 *
55	50 *
60 - 65	50 *
75 - 80	50 *

* Spacing is 40' for 42" cones.

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Published Date: 1st Qtr. 2022

SDDOT

LANE CLOSURE WITHOUT BARRIER

PLATE NUMBER 634.64

Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B)	Taper Length (Feet) (L)
45 - 50	500	600
55	750	660
60 - 65	1000	780
	(A) (B)	
70 - 80	1000 1500	1125

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 45	25
50	50 *
55	50 *
60 - 80	50 *

* Spacing is 40' for 42" cones.

■ Channelizing Device

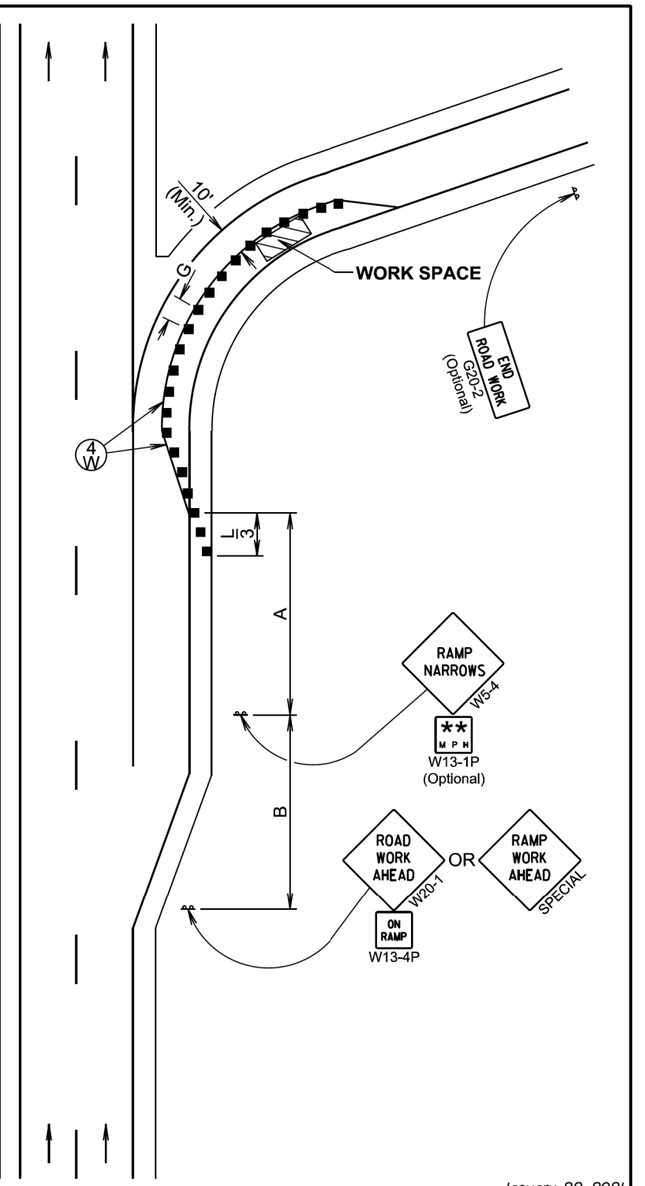
(4W) 4" White Temporary Pavement Marking

** Need and safe speed to be determined by the Engineer.

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

The channelizing devices will be drums or 42" cones if traffic control must remain overnight.

Truck off-tracking should be considered when determining whether the 10-foot minimum lane width is adequate.



January 22, 2021

Published Date: 1st Qtr. 2022

SDDOT

PARTIAL EXIT RAMP CLOSURE

PLATE NUMBER 634.69

Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)	Taper Length (Feet) (L)
0 - 30	200	180
35 - 40	350	320
45 - 50	500	600
55	750	660
60 - 65	1000	780
	(A) (B) (C)	
70 - 80	1000 1500 2640	1125

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 45	25
50	50 *
55	50 *
60 - 80	50 *

* Spacing is 40' for 42" cones.

◎ Reflectorized Drum

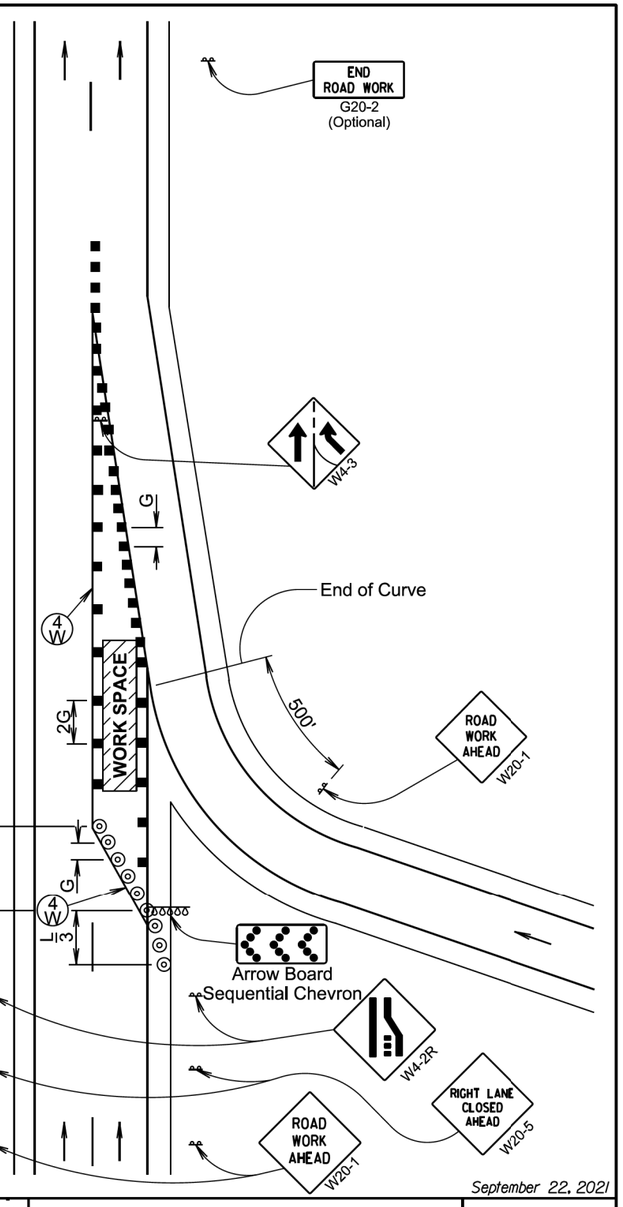
■ Channelizing Device

(4W) 4" White Temporary Pavement Marking

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

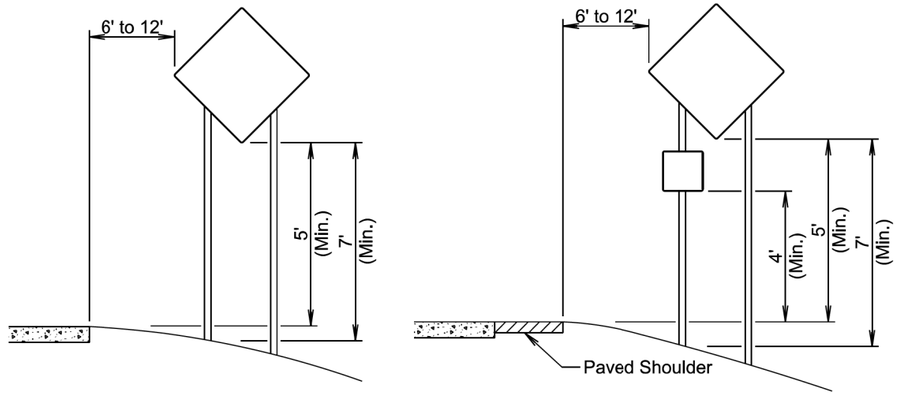
The channelizing devices will be drums or 42" cones if traffic control must remain overnight.

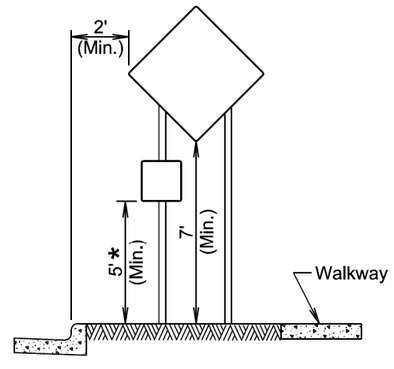
42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

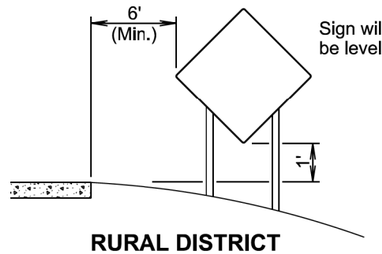


September 22, 2021

Published Date: 1st Qtr. 2022	SDDOT	WORK IN VICINITY OF ENTRANCE RAMP	PLATE NUMBER 634.70
			Sheet 1 of 1



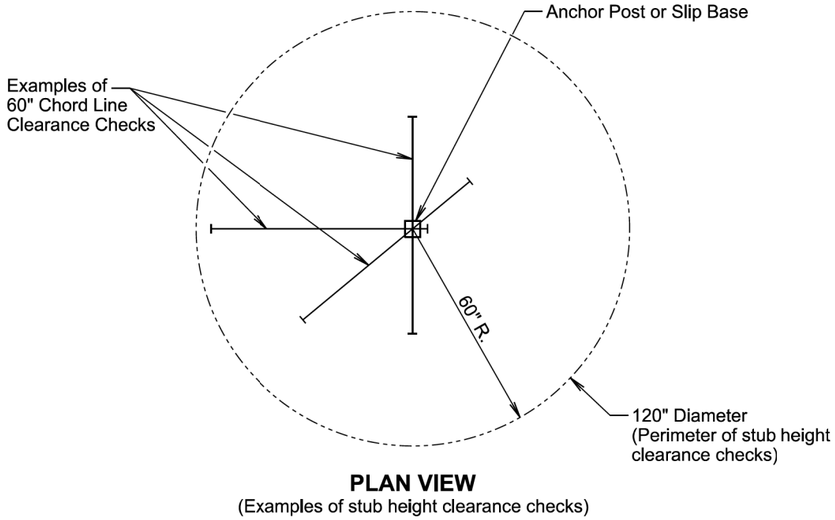




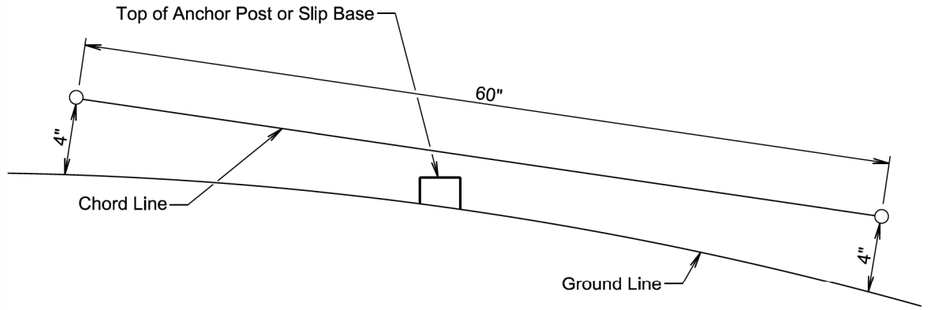
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 1st Qtr. 2022	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases WILL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height will be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

January 22, 2021

Published Date: 1st Qtr. 2022	SDDOT	*BREAKAWAY SUPPORT STUB CLEARANCE*	*PLATE NUMBER* 634.99
			Sheet 1 of 1

LANE SHIFT DETAIL FOR 5" JOINT AT TERMINAL ANCHORS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P 0022(85)	64	64

Plotting Date: 02/17/2022

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)	Taper Length (Feet) (L)	Spacing of Advanced Warning Signs (Feet) (A) (B) (C)
0 - 30	25	180	200
35 - 40	25	320	350
45 - 50	50 *	600	500
55	50 *	660	750
60 - 65	50 *	780	1000
70 - 80	50 *	960	1000 1500 2640

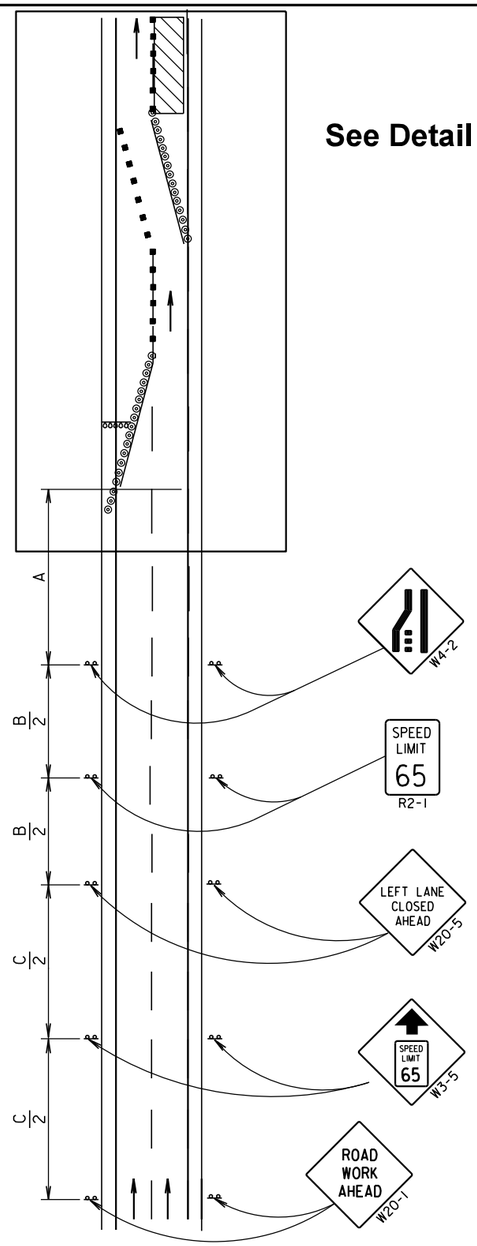
* Spacing to be every 40' for 42" cones.

ROAD WORK AHEAD sign is only required in advance of the first lane closure.

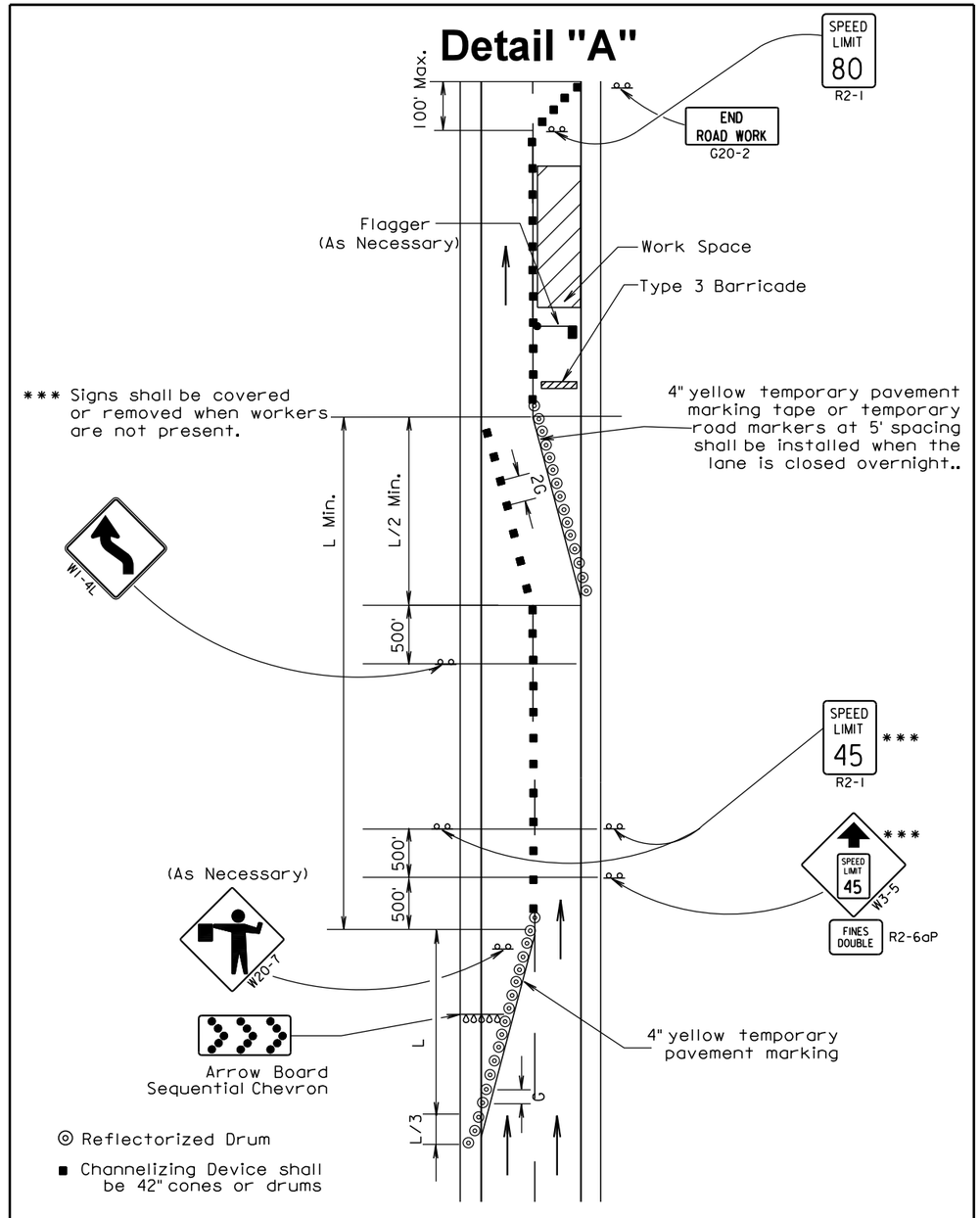
The FLAGGER sign shall be used whenever there is a Flagger present.

◎ Reflectorized Drum

■ Channelizing Device shall be 42" cones or drums



Detail "A"



◎ Reflectorized Drum

■ Channelizing Device shall be 42" cones or drums

PLOT SCALE - 1:200

PLOTTED FROM - TRSF12105

PLOT NAME - 1

FILE - ...\LANESHIFT2D.DGN