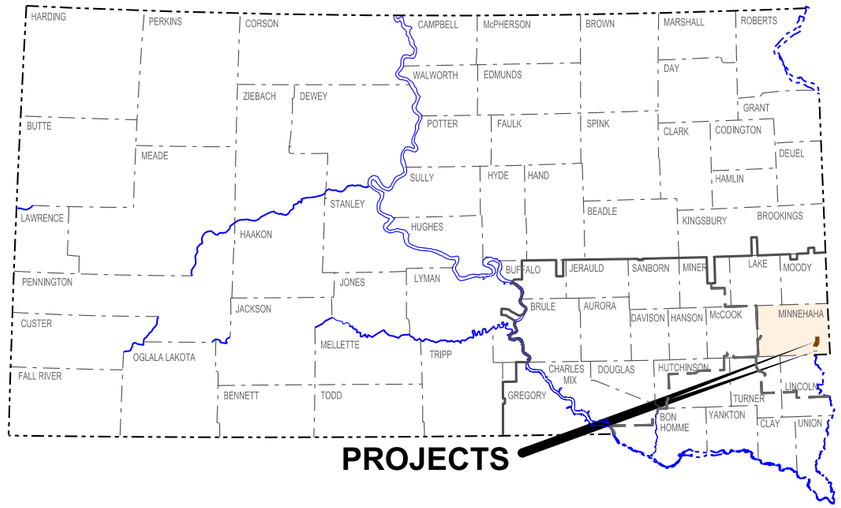


REV 1-5-16 MR

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	1	42

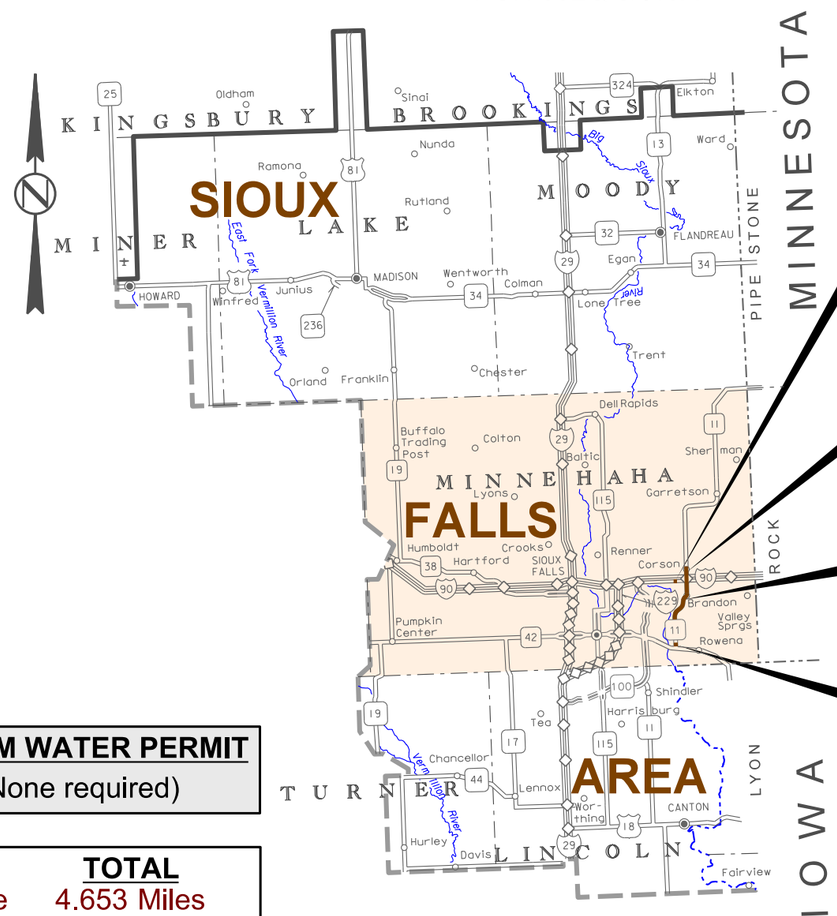
Plotting Date: 01/05/2016

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECTS NH–P 0011(90)74 & 090E–271
SD HIGHWAY 11 & INTERSTATE 90 EBL
MINNEHAHA COUNTY

PCC PAVEMENT REPAIR
PCN 052Q & I43X

INDEX OF SHEETS



PROJECT 090E-271
I90E, FROM END APPROACH SLAB ON THE EAST END OF STRUCTURE 50-275-166, EAST 10'
MRM 406.12 +0.004 to MRM 406.12 +0.006

PROJECT P 0011(90)74 (N SEGMENT)
FROM I90, NORTH TO END CONCRETE
MRM 80.89 +0.000 to MRM 81.39 +0.157

PROJECT NH 0011(90)74 (MID SEGMENT)
FROM BEGIN CONCRETE, NORTH TO I90
MRM 77.00 +0.002 to MRM 80.89 +0.000

PROJECT P 0011(90)74 (S SEGMENT)
FROM SD42, NORTH TO END CONCRETE
MRM 74.71 +0.000 to MRM 74.74 +0.071

I90E ADT (2014) 9,470

SD11 SEGMENT	MRM to MRM	ADT (2014)
SOUTH	74.71 to 74.74	3,807
MIDDLE	77.00 to 81.00	6,932
NORTH	81.00 to 81.56	5,760

STORM WATER PERMIT
(None required)

SEGMENT	SOUTH	MIDDLE	NORTH	TOTAL
SD11 Length:	0.096 Mile	3.998 Miles	0.559 Mile	4.653 Miles
I90E Length:	-	-	-	0.002 Mile
Total Length:	-	-	-	4.655 Miles

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ESTIMATE OF QUANTITIES

REV: 01-05-16 MEB

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	2	42

NH-P 0011(90)74 PCN 052Q

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0300	Remove Concrete Curb and Gutter	52	Ft
380E5030	Nonreinforced PCC Pavement Repair	3,294.4	SqYd
380E6000	Dowel Bar	4,425	Each
380E6110	Insert Steel Bar in PCC Pavement	11,507	Each
380E6150	Tie Bar Retrofit	355	Each
380E6200	Tie Bar Retrofit, Stitching	369	Each
380E6310	Seal Random Cracks in PCC Pavement	393	Ft
380E6510	Grinding PCC Pavement	296.0	SqYd
390E0100	Saw and Seal Joint	14,300	Ft
390E0200	Repair Type A Spall	16.5	SqFt
633E0010	Cold Applied Plastic Pavement Marking, 4"	1,500	Ft
633E0030	Cold Applied Plastic Pavement Marking, 24"	60	Ft
633E0035	Cold Applied Plastic Pavement Marking, Area	60	SqFt
633E1400	Pavement Marking Paint, 4" White	1,001	Ft
633E1405	Pavement Marking Paint, 4" Yellow	480	Ft
633E5000	Grooving for Cold Applied Plastic Pavement Marking, 4"	1,500	Ft
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	60	Ft
633E5020	Grooving for Cold Applied Plastic Pavement Marking, Area	60	SqFt
634E0010	Flagging	50.0	Hour
634E0110	Traffic Control Signs	511	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	8	Each
634E0420	Type C Advance Warning Arrow Board	2	Each
634E0600	4" Temporary Pavement Marking Tape Type I	6,624	Ft
634E0640	Temporary Pavement Marking	107,600	Ft
650E0080	Type B68 Concrete Curb and Gutter	48	Ft
650E1080	Type F68 Concrete Curb and Gutter	4	Ft

090E-271 PCN I43X

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
380E5030	Nonreinforced PCC Pavement Repair	28.9	SqYd
380E6110	Insert Steel Bar in PCC Pavement	20	Each
410E2600	Membrane Sealant Expansion Joint	26.0	Ft
634E0010	Flagging	10.0	Hour
634E0110	Traffic Control Signs	246	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	1	Each
634E0420	Type C Advance Warning Arrow Board	1	Each

SPECIFICATIONS

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

UTILITIES

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

Utilities are not planned to be affected on this project. If utilities are identified near the improvement area, the Contractor shall contact the Project Engineer to determine modifications that will be necessary to avoid utility impacts.

SCOPE OF WORK

This project consists of full depth replacement of concrete pavement in areas where concrete pavement blowups or major failures have occurred. Full depth areas vary in length and width; however the minimum length is 4 feet.

This project also consists of sawing and sealing joints, spall repair, tie bar retrofit, stitching and sealing random cracks.

ENVIRONMENTAL COMMITMENTS

REV: 01-05-16 MEB

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	3	42

ENVIRONMENTAL COMMITMENTS

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

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

COMMITMENT C: WATER SOURCE

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment before entering South Dakota to reduce the risk of invasive species introduction into the project vicinity.

The Contractor shall not withdraw water directly from streams of the James, Big Sioux, and Vermillion watersheds without prior approval from the SDDOT Environmental Office.

Action Taken/Required:

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

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

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

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

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

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

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

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) shall be incidental to the various contract items.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

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

Action Taken/Required:

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

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

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

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

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

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

EXISTING NRC PAVEMENT

The existing pavement is 8.5” Nonreinforced PCC Pavement. The aggregate in the existing NRC Pavement is quartzite.

RESTORATION OF GRAVEL CUSHION

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

If additional gravel cushion material is required, the Contractor shall furnish, place and compact gravel cushion to the satisfaction of the Engineer at no additional cost to the State.

Cost for this work shall be incidental to the contract unit prices per square yard for Nonreinforced PCC Pavement Repair.

GRAVEL CUSHION

If quarried ledge rock is used in the Gravel Cushion, a maximum blend of 40% quarried ledge rock will be allowed.

NONREINFORCED PCC PAVEMENT REPAIR - GENERAL

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

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

Existing concrete pavement in the replacement areas shall be removed by the lift out method or by means that minimize damage to the base and sides of remaining in place concrete. All removed material shall be removed from within the right-of-way by the end of the workday. Damage to adjacent concrete caused by the Contractor’s operations shall 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 shall 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 asphalt concrete shoulders shall be formed full depth to match the width of existing concrete pavement. Asphalt concrete shoulders adjacent to concrete pavement replacements shall 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 shall 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 shall meet the requirements of AASHTO M33. Cost for this material shall be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

NONREINFORCED PCC PAVEMENT REPAIR – GENERAL (CONTINUED)

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

All 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.

NONREINFORCED PCC PAVEMENT REPAIR

Concrete shall meet the requirements stated in Section 380 of the specifications, except as modified by the following notes:

> The fine aggregate shall 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 shall contain 4.5% to 7.0% entrained air. The concrete shall contain a minimum of 50% coarse aggregate by weight. Coarse aggregate shall 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 shall contain at least 650 lbs of Type I or II cement or 600 lbs of I cement per cubic yard. The minimum 28 day compressive strength shall be 4,000 psi. The Contractor is responsible for the mix design used. The Contractor shall 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 shall 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 shall 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 shall be extended or other measures taken, at no additional cost to the State. A strength of 4,000 psi must be attained prior to opening to traffic.

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

Concrete shall 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 shall have an R-value of at least 0.5, as rated by the manufacturer. Insulation blanket shall be left in place, except for joint sawing operations, until the 4,000 psi is attained. Insulation blanket shall 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 asphalt concrete shoulders, labor, tools and equipment shall be included in the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

STEEL BAR INSERTION

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.

The Contractor shall 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.

Plain round dowel bars shall be cut to the specified length by sawing and shall be free from burring or other deformations. Shearing will not be permitted.

Steel bars shall be inserted in the transverse joint on 18" centers. The first steel bar in the transverse joint shall be placed 9" from the edge of the slab closest to centerline. Steel bars shall be inserted in the longitudinal joint on 30" centers and shall be a minimum of 15" from either transverse joint. A typical one-lane patch 12' wide and 4’ 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.

Cost for the epoxy resin adhesive, steel bars, drilling of holes, inserting the steel bars into the drilled holes and all other items incidental to the insertion of the steel bars shall be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

SAW AND SEAL JOINTS (AT NRCP REPAIR AREAS)

All longitudinal and transverse joints at concrete repair areas shall be sawed and sealed.

Joints shall not be sealed unless they are thoroughly clean and dry. Cleaning shall be accomplished by sand blasting and other tools as necessary. Just prior to sealing, each joint shall be blown out using a jet of compressed air to remove all traces of dust.

Longitudinal and transverse joints in urban sections shall be sealed with Hot Poured Elastic Joint Sealer. Transverse joints in rural sections shall be sealed with Low Modulus Silicone Sealant. Longitudinal joints in rural sections may be sealed with either Hot Poured Elastic Joint Sealer or Low Modulus Silicone Sealant.

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

SAW AND SEAL JOINTS (AT OTHER LOCATIONS)

Enough quantity has been provided to saw and reseal approximately 10% of the total transverse and longitudinal joints within the project limits. Areas to be sawed and resealed shall be marked by the Engineer on construction.

Joints shall be cleaned and resealed in conformance with Section 380.

Joints shall not be sealed unless they are thoroughly clean and dry. Cleaning shall be accomplished by sandblasting and other tools as necessary. Just prior to sealing, each joint shall be blown out using a jet of compressed air to remove all traces of dust.

Cost for sawing and resealing joints shall be included in the contract unit price per foot for Saw and Seal Joint.

REPAIR TYPE A SPALLS

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

Type A Spall Concrete Patch Material shall conform to Section 390.2 B.3 (Type III).

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.

If the patch material does not achieve 3,800 psi by 7am the day after placement, the Contractor shall provide required traffic control (at no cost to the State) until the Engineer determines the 3,800 psi has been obtained. No additional work zones will be set up until strength requirement is met. If strength requirement has not been met by 36 hours after placement, the patches shall be removed and replaced at no cost to the State.

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 PCC 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, shall be repaired to the satisfaction of the Engineer at no additional cost to the State.

TIE BAR RETROFIT, STITCHING

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

The Contractor shall 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 shall be used that will not damage the concrete surface. The diameter of the disturbed surface from drilling shall 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 holes shall be drilled at an angle alternating from opposite sides of the joint to produce a cross-stitching pattern.

The drilled holes shall be blown out with compressed air using a device that will reach to the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection. Damage to pavement shall be repaired to the satisfaction of the Engineer at the Contractor's expense.

Mix the epoxy resin as recommended by the manufacturer and apply by an injection method approved by the Engineer. If an epoxy pump is utilized, it shall be capable of metering the components at the manufacturer's designated rate and be equipped with an automatic shut-off. The pump shall shut-off when any of the components are not being metered at the designated rate.

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 shall be filled with epoxy or excess epoxy removed such that the epoxy is level with the existing pavement.

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

TIE BAR RETROFIT, STITCHING (CONTINUED)

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 shall be included in the contract unit price per each for Tie Bar Retrofit, Stitching.

TIE BAR RETROFIT

Tie Bar Retrofit shall be performed at the locations given in the Tables for Filling Longitudinal Joint & Tie Bar Retrofit.

Refer also to the Special Provision for PCC Pavement Tie Bar Retrofit.

FILL LONGITUDINAL JOINT

Fill longitudinal joint operations may be done simultaneously with the Tie Bar Retrofit operation.

Longitudinal joints have separated and will be filled with a concrete patching material. Refer to the table below for approximate joint widths. The Contractor must verify joint width and length of separation for quantity. Joint widths greater than 3/4" shall be cleaned and filled.

TABLES FOR FILLING LONGITUDINAL JOINT & TIE BAR RETROFIT

(*CUYD QUANTITY IS FOR INFORMATION ONLY)

SD11 NB Centerline MRM to MRM	APPROXIMATE JOINT WIDTH	FILL LONGITUDINAL JOINT CUYD*	FILL LONGITUDINAL JOINT FT	TIE BAR RETROFIT EACH
74.751 to 74.811	2"	1.4	317	127
77.732 to 77.677	2-1/2"	1.6	290	116
79.461 to 79.497	2"	1.0	190	76
NB TOTALS:		**4.0**	**797**	**319**

SD11 SB Shoulder MRM to MRM	APPROXIMATE JOINT WIDTH	FILL LONGITUDINAL JOINT CUYD*	FILL LONGITUDINAL JOINT FT	TIE BAR RETROFIT EACH
79.461 to79.478	1-1/2"	0.3	90	36
SB TOTALS:		**0.3**	**90**	**36**
SD11 TOTALS:		**4.3**	**887**	**355**

The joint must be cleaned to the satisfaction of the Engineer prior to filling with concrete patching material. To accomplish cleaning, a full depth saw cut may be used but it cannot widen the joint more than 1/8" on average. The joint shall be free of old sealant and other material for the depth of the pavement prior to filling with mortar.

The fill material shall be the same concrete patching material required for the tie bar retrofit (Refer to the Special Provision for PCC Pavement Tie Bar Retrofit for material requirements).

The Contractor shall provide a means of vibrating the longitudinal fill material to aide consolidation during placement.

The Contractor must measure and document joint width, length of separation, and pavement depth and provide the information to the Engineer for verification of quantities prior to beginning operations. If a discrepancy in the anticipated pavement thickness is encountered in the field, the Engineer will adjust the payment for this item in proportion to the actual pavement thickness encountered

FILL LONGITUDINAL JOINT (CONTINUED)

Cost for furnishing and installing the Filled Longitudinal Joint including cleaning, labor, material, equipment and incidentals necessary to complete the work shall be included in the contract unit price per lineal foot for Fill Longitudinal Joint. The Plans quantity Fill Longitudinal Joint shall be the basis of payment for these work items.

GRINDING PCC PAVEMENT

Tie Bar Retrofit shall be done prior to Grinding PCC Pavement. Grinding PCC Pavement shall be done prior to sawing and sealing joints.

Approximately 1.5' of grinding is expected on either side of the joint line in the tie bar retrofit areas.

TABLE FOR GRINDING PCC PAVEMENT

Location	Begin MRM	End MRM	Width	SqYds
SD11 NB	74.751	74.811	3'	106
SD11 NB	77.732	77.677	3'	97
SD11 NB	79.461	79.497	3'	63
SD11 SB	79.461	79.478	3'	30
			SD11 TOTAL:	**296**

Cross slope is 3/16"/ft. on PCC Pavement except through superelevated curves and ramps.

The Contractor shall establish a positive means for the removal of the grinding or planing residue. Solid residue shall be removed from the pavement surfaces before being blown by traffic action or wind. Residue shall not be permitted to flow across lanes used by public traffic or into gutters or drainage facilities. Residue shall be disposed of in a manner that will prevent residue, whether in solid or slurry form, from entering any waterway in a concentrated state.

Residue may continuously flow on adjacent vegetated roadway slopes or ditches within the right-of-way. A flexible drag hose shall be attached to the discharge end of the slurry pipe to minimize splashing of slurry placed on roadway slopes or ditches.

If the Engineer determines that the slurry may enter a waterway, drainage facility, or curb and gutter section, the slurry shall be placed in storage tanks and deposited in settling basins, spread over flat vegetated areas, or filtered by other means approved by the Engineer at no additional cost.

Unless additional area is ordered by the Engineer, plans quantity will be the basis of payment and no further measurement will be made.

SEAL RANDOM CRACKS IN PCC PAVEMENT

Random cracks shall 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 materials as selected by the Engineer shall be prepared and sealed with either Low Modulus Silicone Sealant.

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

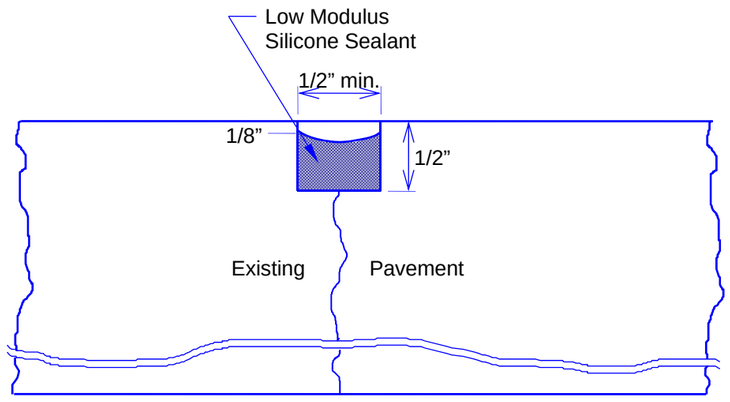
Random cracks narrower than ½ inch shall be routed and sealed ½ inch wide by ½ inch deep.

Sealant shall be placed in the routed reservoir with equipment and by methods that insure complete and uniform filling. Low Modulus Silicone Sealant shall have a tooled surface with the top middle portion of the sealant recessed. Any excess or overrun of sealant shall be removed by the Contractor at no additional cost to the state.

Acceptance of the Low Modulus Silicone Sealant will be based on visual inspection by the Engineer.

Seal Random Cracks in PCC Pavement will be measured by the foot to the nearest 0.1 foot of random cracks sealed and accepted on the project and will be paid for at the contract unit price per foot measured for payment. Payment shall be full compensation for all 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.

SEALING RANDOM CRACKS



TEMPORARY PAVEMENT MARKING (TPM)

Temporary pavement marking paint shall not be used.

The following quantities are estimated to complete the work:

Stop sign closures in two-lane areas with intermittent left turn lanes (2.6 miles):

Centerline marking for reversible closures:
46 reversible closures x 2,000' = 92,000' TPM

Stop Lines for 46 reversible closures:
46 x 2 stop lines per closure x 72' per stop line = 6,624' TPM Tape Type I

Urban area lane closures:

In 5-lane areas, 30 MPH (0.66 mile):
16 lane closures with 180' tapers = 2,880' TPM

In 5-lane areas, 45 MPH (0.57 mile):
12 lane closures with 600' tapers = 7,200' TPM

In 4-lane & 3-lane areas, 45 MPH (0.30 mile):
6 lane closures with 600' tapers = 3,600' TPM

In 3-lane areas, 35 MPH (0.36 mile):
6 lane closures with 320' tapers = 1,920' TPM

Temporary Pavement Marking total: 107,600'
Temporary Pavement Marking Tape Type I total: 6,624'

The Contractor shall remove and dispose of temporary pavement marking at the time Permanent Pavement Marking is applied. Method of removal shall be nondestructive to the road surface and shall be accomplished within one week of completion of the Permanent Pavement Marking.

Cost for furnishing, applying, uncovering, removing and disposing of the temporary pavement marking shall be included in the contract unit price per foot for Temporary Pavement Marking.

In the absence of a signed lane closure or pilot car operation, Flagger symbol signs (W20-7) and flaggers, or a shadow vehicle with rotating yellow lights or strobe lights shall be positioned on the shoulder in advance of temporary pavement marking. The traffic control device used shall be moved intermittently to provide proper warning of the work operation. A ROAD WORK AHEAD (W20-1), a Workers symbol sign (W21-1) or a BE PREPARED TO STOP (W3-4) warning sign shall be mounted on the rear of the shadow vehicle. The method of traffic control used by the Contractor for this work shall be approved by the Engineer.

PERMANENT PAVEMENT MARKING

Given the condition of, and the small quantity of existing marking to be removed as a result of the pavement repair, the existing pavement marking removed shall be replaced with permanent pavement marking paint upon completion of the repairs.

In the areas where Tie Bar Retrofitting has been completed, the existing Cold Applied Plastic Pavement Markings shall be restored upon completion of the retrofit.

Application of pavement marking shall be completed within 14 days following completion of the repair work.

GENERAL MAINTENANCE OF TRAFFIC

Sufficient traffic control devices have been included in these plans to sign two workspaces. If the Contractor elects to work on additional sites simultaneously, the cost for additional traffic control devices shall be incidental to the contract unit price per square foot for Traffic Control Signs.

MAINTENANCE OF TRAFFIC – PCC PAVEMENT REPAIR

A Type 3 Barricade shall be installed at the end of a lane closure taper as detailed in these plans. Additional Type 3 Barricades shall be installed facing traffic within the closed lane at a spacing of 1/4 mile. At intersecting roadways, two additional Type 3 Barricades shall be used to block the entire closed lane and shoulder.

Rural:

Each mainline concrete repair location from which the in place concrete has been removed shall be marked with a minimum of two reflectorized cones (42" minimum height) or two reflectorized drums. In areas containing numerous concrete repair locations, two reflectorized drums should be installed at a spacing of 660' alternating with the Type 3 Barricades.

Urban:

Each mainline concrete repair location from which the in place concrete has been removed shall be marked with a minimum of two reflectorized cones (42" minimum height) or two reflectorized drums. In areas containing numerous concrete repair locations, two reflectorized drums should be installed at a spacing of 1-block alternating with the Type 3 Barricades.

Signs may be mounted on portable supports for a period of 3 days or less.

Drivers in one lane two-way traffic workspaces must be able to see approaching traffic through and beyond the workspaces.

Construction workspaces in urban areas shall be limited to 3 blocks or approx. 1000' in length. The minimum distance between workspaces shall be 3 blocks.

Construction workspaces in two-lane areas shall be limited to 300' in length. The minimum distance between workspaces shall be 1 mile.

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

The Contractor shall use Flaggers during peak traffic hours and at times specified by the Engineer to supplement the stop condition and signing shown on Standard Plate 634.25. Peak traffic hours are assumed to be 6:30am to 8:30am, 11:30am to 1:00pm and 4:30pm to 6:00pm. 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 PCC Pavement Repair operations shall be filled with gravel cushion material and cold-mix asphalt concrete prior to opening the lane to traffic.

Holes in the asphalt concrete shoulders created during removal and replacement of PCC Pavement Repair areas shall be filled with gravel cushion material and hot-mix asphalt concrete (to match the shoulder surfacing) prior to opening the lane to traffic.

MAINTENANCE OF TRAFFIC – PCC PAVEMENT REPAIR (CONTINUED)

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

Routing traffic onto asphalt shoulders will not be allowed.

Damage to the shoulders, median or ditch due to the Contractor's operations shall be repaired by the Contractor, to the satisfaction of the Engineer, at no expense to the State. This includes the apparent routing of traffic onto these shoulders around the work zones.

Extra care shall be taken to protect the in place asphalt concrete shoulders. In all workspaces in these areas, the same channelizing devices and spacing used on centerline, will also be required on the shoulders. These channelizing devices shall be placed in locations to adequately keep traffic completely off these shoulders. Continuous maintenance of the shoulder devices will be required to keep them in place. Cost for these extra channelizing devices shall be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

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

REV: 01-05-16 MEB

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	8	42

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS PCN 052Q

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	4	30" x 30"	6	24
R1-2	YIELD		36" x 36"	9	
R2-1	SPEED LIMIT __		24" x 30"	5	
R2-6aP	FINES DOUBLE (plaque)		24" x 18"	3	
R3-2	LEFT TURN PROHIBITION (symbol)	2	24" x 24"	4	8
R3-7R	RIGHT LANE MUST TURN RIGHT	2	30" x 30"	6	12
R3-7L	LEFT LANE MUST TURN LEFT	2	30" x 30"	6	12
R4-7	KEEP RIGHT (symbol)	4	24" x 30"	5	20
R5-1	DO NOT ENTER		30" x 30"	6	
R5-1a	WRONG WAY		36" x 24"	6	
R10-6	STOP HERE ON RED		24" x 36"	6	
W1-3	REVERSE TURN (L or R)		48" x 48"	16	
W1-4	REVERSE CURVE (L or R)	4	48" x 48"	16	64
W3-4	BE PREPARED TO STOP		48" x 48"	16	
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16	32
W5-3	ONE LANE BRIDGE		48" x 48"	16	
W5-4	RAMP NARROWS	1	48" x 48"	16	16
W7-3aP	NEXT __ MILES (plaque)		36" x 30"	8	
W8-1	BUMP		48" x 48"	16	
W9-2	LANE ENDS MERGE LEFT	2	48" x 48"	16	32
W9-3	CENTER LANE CLOSED AHEAD	2	48" x 48"	16	32
W12-1	DOUBLE ARROW	1	30" x 30"	6	6
W13-1P	ADVISORY SPEED (plaque)		30" x 30"	6	
W13-4P	ON RAMP (plaque)	1	36" x 36"	9	9
W20-1	ROAD WORK AHEAD	4	48" x 48"	16	64
W20-2	DETOUR AHEAD		48" x 48"	16	
W20-3	ROAD CLOSED AHEAD		48" x 48"	16	
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16	32
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	6	48" x 48"	16	96
W20-7	FLAGGER (symbol)	2	48" x 48"	16	32
W21-1	WORKERS (symbol)		48" x 48"	16	
W21-2	FRESH OIL		48" x 48"	16	
W21-3	ROAD MACHINERY AHEAD		48" x 48"	16	
G20-1	ROAD WORK NEXT __ MILES		36" x 18"	5	
G20-2	END ROAD WORK	4	36" x 18"	5	20
G20-5aP	WORK ZONE (plaque)		24" x 18"	3	
-	TYPE 3 OBJECT MARKER		12" x 36"	3	
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			511

TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Double Sided	8 Each

ARROW BOARDS

ITEM DESCRIPTION	QUANTITY
Type C Advance Warning Arrow Board	2 Each

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS PCN I43X

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 45	2	36" x 48"	12	24
R2-1	SPEED LIMIT 65	3	36" x 48"	12	36
R2-1	SPEED LIMIT 80	1	36" x 48"	12	12
R2-6aP	FINES DOUBLE (plaque)	1	36" x 24"	6	6
W3-5	SPEED REDUCTION AHEAD (65 MPH)	2	48" x 48"	16	32
W3-5	SPEED REDUCTION AHEAD (45 MPH)	1	48" x 48"	16	16
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16	32
W20-1	ROAD WORK AHEAD	2	48" x 48"	16	32
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16	32
W20-7	FLAGGER (symbol)	1	48" x 48"	16	16
G20-2	END ROAD WORK	1	48" x 24"	8	8
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			246

TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Double Sided	1 Each

ARROW BOARDS

ITEM DESCRIPTION	QUANTITY
Type C Arrow Board	1 Each

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	9	42

TABLE FOR PCC PAVEMENT REPAIR ON SD11 AT INTERSECTION WITH SD42

SECTION 1 MRM	DISP.	LANE	SB OUTSIDE SHOULDER L Ft	SB OUTSIDE SHOULDER W Ft	SB DRIVING LANE L Ft	SB DRIVING LANE W Ft	NB DRIVING LANE L Ft	NB DRIVING LANE W Ft	NB OUTSIDE SHOULDER L Ft	NB OUTSIDE SHOULDER W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	COMMENTS	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	SEAL RANDOM CRACKS IN PCC PAVEMENT Ft	COMMENTS
74.71	0.026																	10	SBDL Longitudinal
74.71	0.030																	20	SBDL Longitudinal
74.74	0.000											R	MRM Correction						375' South of End of Concrete
74.74	0.014				4	4					1.8	R		4	4	8	4		
74.74	0.030				6	15.5	6	15.5	6	8	26.0	T		32	12	44			
74.74	0.039				4	4					1.8	R		4	4	8	4		
74.74	0.040						6	14.5	6	8	15.0	R		16	8	24	12		
74.74	0.049		6	8	6	14					14.7	R		16	6	22	12		
74.74	0.054																	10	NBDL Longitudinal
74.74	0.058						6	14			9.3	R		16	4	20	12		
74.74	0.063				4	6					2.7	R		8	4	12	6		
74.74	0.071												End of Concrete						
TOTALS:											**71.3**			**96**	**42**	**138**	**50**	**40**	
ADDITIONAL QUANTITIES:											**10.0**			**20**	**10**	**30**	**10**	**10**	
GRAND TOTALS:											**81.3**			**116**	**52**	**168**	**60**	**50**	

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	10	42

TABLE FOR PCC PAVEMENT REPAIR ON SD11 NEAR INTERSECTION WITH MADISON STREET

SECTION 2		SB DRIVING LANE		CENTER TURN LANE		NB DRIVING LANE				INSERT STEEL BAR IN PCC PAVEMENT (NRCP)					
MRM	DISP.	L Ft	W Ft	L Ft	W Ft	L Ft	W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	1¼" x 18' PLAIN ROUND DOWEL BARS Each	No. 9 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each	SEAL RANDOM CRACKS IN PCC PAVEMENT Ft
77.00	0.096					4	4	1.8	B	2	2	2	6		
77.00	0.096			4	12			5.3	R		16	2	18	12	
77.00	0.161	12	7					9.3	B	4	4	4	12		
77.00	0.165								R						8
TOTALS:								**16.4**		**6**	**22**	**8**	**36**	**12**	**8**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	11	42

TABLE FOR PCC PAVEMENT REPAIR ON SD11 FROM INTERSECTION NEAR MADISON STREET TO BRANDON

SECTION 3 MRM	DISP.	SB OUTSIDE SHOULDER L Ft	SB OUTSIDE SHOULDER W Ft	SB DRIVING LANE L Ft	SB DRIVING LANE W Ft	CENTER TURN LANE L Ft	CENTER TURN LANE W Ft	NB DRIVING LANE L Ft	NB DRIVING LANE W Ft	NB OUTSIDE SHOULDER L Ft	NB OUTSIDE SHOULDER W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	REMOVE CONCRETE CURB & GUTTER Ft	TYPE F68 CONCRETE C&G BY SB OUTSIDE SHOULDER Ft	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) 1¼" x 18" PLAIN ROUND DOWEL BARS Each	No. 9 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	TYPE A SPALL SIZE L	TYPE A SPALL SIZE W	REPAIR TYPE A SPALL SqFt	SEAL RANDOM CRACKS IN PCC PAVEMENT Ft	COMMENTS
77.00	0.179			22	4							9.8	R				4	16	20	4						
77.00	0.187			4	18							8.0	R				16	4	20	12						
77.00	0.188			4	12							5.3	R				16	4	20	12						
77.00	0.188			4	4							1.8	R				4	4	8	4						
77.00	0.192			4	12							5.3	R				16	4	20	12						
77.00	0.194			4	12							5.3	R				16	4	20	12		12"	12"	1.00		NBL
77.00	0.205			4	12							5.3	R				16	4	20	12		12"	12"	1.00		NBL
77.00	0.212					4	12					5.3	R				16	4	20	12		12"	12"	1.00		NBL
77.00	0.333			4	12			4	12			10.7	R				32	8	40	24		12"	12"	1.00		SBL
77.00	0.335			4	12							5.3	R				16	4	20	12		12"	12"	1.00		NBL
77.00	0.236					4	4					1.8	B			2	2	4	8			12"	12"	1.00		SBL
77.00	0.243			4	12							5.3	R				16	4	20	12		12"	12"	1.00		NBL
77.00	0.247			4	12							5.3	R				16	4	20	12		12"	12"	1.00		NBL
77.00	0.251			4	12							5.3	T				16	4	20							
77.00	0.254			4	2							0.9	R				2	4	6	2						
77.00	0.254							4	2			0.9	R				2	4	6	2		18"	18"	2.25		NBL
77.00	0.263			4	3							1.3	T				4	4	8							
77.00	0.283																					12"	12"	1.00		SBL
77.00	0.293			4	4							1.8	T				4	4	8							
77.00	0.300			4	4							1.8	T				4	4	8							
77.00	0.301			4	4							1.8	T				4	4	8							
77.00	0.322																					12"	12"	1.00		NBL
77.00	0.341							4	4			1.8	T				4	4	8							
77.00	0.357			4	12							5.3	T				16	4	20							
77.00	0.376			4	4			4	0			1.8	B			2	2	8	12							
77.00	0.403							4	6			2.7	B			4	4	4	12							
77.00	0.429							4	4			1.8	R				4	4	8	4						
77.00	0.451							4	0				B					4	4							
77.00	0.468							10	0				B					8	8							
77.00	0.486							4	4			1.8	R				4	4	8	4						
77.00	0.504																					18"	18"	2.25		NBL
77.00	0.518							4	4			1.8	R				4	4	8	4						
77.00	0.536			4	12							5.3	R				16	4	20	12						
77.00	0.586			4	2			4	2			1.8	R				4	8	12	4						
77.00	0.596			4	2			4	2			1.8	R				4	8	12	4						
77.00	0.599																				25					NBL
77.00	0.608			4	2			4	2			1.8	R				4	8	12	4						
77.00	0.622			4	2			4	2			1.8	R				4	8	12	4						
77.00	0.629			4	4			4	4			3.6	R				8	8	16	8						
77.00	0.632							6	4			2.7	R				4	4	8	4						
77.00	0.649			4	12							5.3	T				16	4	20							
77.00	0.651							4	4			1.8	R				4	4	8	4						
77.00	0.655			4	4							1.8	R				4	4	8	4						
77.00	0.658			4	4							1.8	B			2	2	4	8							
77.00	0.662			4	4							1.8	R				4	4	8	4						
77.00	0.665			4	2			4	2			1.8	R				4	8	12	4						
77.00	0.669			4	4							1.8	B			2	2	4	8							
77.00	0.677			4	2			4	2			1.8	R				4	8	12	4						
77.00	0.684			4	4							1.8	R				4	4	8	4						
77.00	0.684							4	4			1.8	B			2	2	4	8							
77.00	0.691			4	2			4	2			1.8	R				4	8	12	4						
77.00	0.695			4	2			4	2			1.8	R				4	8	12	4						
77.00	0.698			6	4							2.7	R				4	4	8	4						
77.00	0.698							4	4			1.8	B			2	2	4	8							
77.00	0.713			4	4							1.8	R				4	4	8	4	35					NBL
77.00	0.717							4	4			1.8	R				4	4	8	4						

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	12	42

TABLE FOR PCC PAVEMENT REPAIR ON SD11 FROM INTERSECTION NEAR MADISON STREET TO BRANDON

SECTION 3 MRM	DISP.	SB OUTSIDE SHOULDER L Ft	SB OUTSIDE SHOULDER W Ft	SB DRIVING LANE L Ft	SB DRIVING LANE W Ft	CENTER TURN LANE L Ft	CENTER TURN LANE W Ft	NB DRIVING LANE L Ft	NB DRIVING LANE W Ft	NB OUTSIDE SHOULDER L Ft	NB OUTSIDE SHOULDER W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	REMOVE CONCRETE CURB & GUTTER Ft	TYPE F68 CONCRETE C&G BY SB OUTSIDE SHOULDER Ft	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) 1¼" x 18" PLAIN ROUND DOWEL BARS Each	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	TIE BAR RETROFIT STITCHING Each	TYPE A SPALL SIZE L	TYPE A SPALL SIZE W	REPAIR TYPE A SPALL SqFt	SEAL RANDOM CRACKS IN PCC PAVEMENT Ft	COMMENTS
77.00	0.724			4	4							1.8	R				4	4	8	4						
77.00	0.728					6	4					2.7	R				4	4	8	4						
77.00	0.732			4	2	4	2					1.8	R				4	8	12	4		12"	12"	1.00		NBL
77.00	0.735			4	4							1.8	R				4	4	8	4	20					
77.00	0.743			4	12							5.3	R				16	4	20	12						Spall Repair NBL
77.00	0.743																				50	12"	12"	1.00		Stitching SBL
77.00	0.750																				20					SBL
77.00	0.754			4	2	4	2					1.8	R				4	8	12	4						
77.00	0.754					4	2	4	2			1.8	R				4	8	12	4						
77.00	0.758			4	4							1.8	R				4	4	8	4						
77.00	0.758			4	4							1.8	B			2	2	4	8							
77.00	0.758					4	12					5.3	R				16	4	20	12						
77.00	0.761					4	2	4	2			1.8	R				4	8	12	4	70					SBL
77.00	0.769			4	2	4	2					1.8	R				4	8	12	4						
77.00	0.769					4	4					1.8	R				4	4	8	4						
77.00	0.772			4	2	4	2					1.8	R				4	8	12	4						
77.00	0.776					4	4					1.8	B			2	2	4	8							
77.00	0.779							4	4			1.8	B			2	2	4	8							
77.00	0.787					4	2	4	2			1.8	R				4	8	12	4						
77.00	0.791					4	2	4	2			1.8	R				4	8	12	4						
77.00	0.794			4	2	4	2					1.8	R				4	8	12	4	10					SBL
77.00	0.794					4	4					1.8	B			2	2	4	8							
77.00	0.803					4	12					5.3	T				16	4	20							
77.00	0.813			4	2	4	2					1.8	R				4	8	12	4						
77.00	0.813							4	4			1.8	R				4	4	8	4						
77.00	0.828			4	2	4	2					1.8	R				4	8	12	4						
77.00	0.831			4	2	4	2					1.8	R				4	8	12	4						
77.00	0.835					4	4					1.8	R				4	4	8	4						
77.00	0.840					4	12					5.3	T				16	4	20							
77.00	0.853			4	2	4	2					1.8	R				4	8	12	4						
77.00	0.857			4	2	4	3					2.2	R				6	8	14	5						
77.00	0.863					4	4					1.8	R				4	4	8	4						
77.00	0.864			15	7							11.7	T				8	32	40						20	SBL - Split Rock Blvd
77.00	0.864			4	4							1.8	R				4	4	8	4						Intersection
77.00	0.864			30	4							13.3	T				4	24	28	4						
77.00	0.864			12	15							20.0	B			8	8	8	24							
77.00	0.864			4	15							6.7	T				16	4	20							
77.00	0.864			4	15							6.7	T				16	4	20							
77.00	0.864			30	16							53.3	T				16	24	40	12						
77.00	0.864			4	6							2.7	T				8	4	12							
77.00	0.864			4	12							5.3	R				16	4	20	12						
77.00	0.864			4	6							2.7	T				8	4	12							
77.00	0.864			4	12							5.3	R				16	4	20	12						Split Rock Blvd
77.00	0.871			4	2	4	2					1.8	R				4	8	12	4						Intersection
77.00	0.871					4	4					1.8	R				4	4	8	4						
77.00	0.875					4	12					5.3	R				16	4	20	12						
77.00	0.878					4	12					5.3	R				16	4	20	12						
77.00	0.886					4	12					5.3	T				16	4	20							
77.00	0.889			4	2	4	2					1.8	R				4	8	12	4						
77.00	0.896			4	2	4	2					1.8	R				4	8	12	4						
77.00	0.896					4	4					1.8	R				4	4	8	4						
77.00	0.900					4	12					5.3	R				16	4	20	12						
77.00	0.903					4	12					5.3	R				16	4	20	12						
77.00	0.907			4	2	4	3					2.2	R				6	8	14	5						
77.00	0.907					4	2	4	2			1.8	R				4	8	12	4						
77.00	0.911					4	12					5.3	R				16	4	20	12						

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	13	42

TABLE FOR PCC PAVEMENT REPAIR ON SD11 FROM INTERSECTION NEAR MADISON STREET TO BRANDON

SECTION 3 MRM	DISP.	SB OUTSIDE SHOULDER L Ft	SB OUTSIDE SHOULDER W Ft	SB DRIVING LANE L Ft	SB DRIVING LANE W Ft	CENTER TURN LANE L Ft	CENTER TURN LANE W Ft	NB DRIVING LANE L Ft	NB DRIVING LANE W Ft	NB OUTSIDE SHOULDER L Ft	NB OUTSIDE SHOULDER W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	REMOVE CONCRETE CURB & GUTTER Ft	TYPE F68 CONCRETE C&G BY SB OUTSIDE SHOULDER Ft	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) 1¼" x 18" PLAIN ROUND DOWEL BARS Each	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	TIE BAR RETROFIT STITCHING Each	TYPE A SPALL SIZE L	TYPE A SPALL SIZE W	REPAIR TYPE A SPALL SqFt	SEAL RANDOM CRACKS IN PCC PAVEMENT Ft	COMMENTS
77.00	0.914					4	12					5.3	R				16	4	20	12						
77.00	0.918					4	4					1.8	R				4	4	8	4						
77.00	0.922					4	4					1.8	R				4	4	8	4						
77.00	0.925					4	2	4	2			1.8	R				4	8	12	4						
77.00	0.929					4	4					1.8	R				4	4	8	4						
77.00	0.936			4	2	4	2					1.8	R				4	8	12	4						
77.00	0.936					4	2	4	2			1.8	R				4	8	12	4						
77.00	0.951			4	2	4	2					1.8	R				4	8	12	4						
77.00	0.962					4	2	4	2			1.8	R				4	8	12	4						
77.00	0.976					4	2	4	2			1.8	R				4	8	12	4						
78.00	0.018			4	2	4	2					1.8	R				4	8	12	4						
78.00	0.025			4	4							1.8	R				4	4	8	4						
78.00	0.032							4	4			1.8	B			2	2	4	8		20					SBL
78.00	0.047			4	4							1.8	R				4	4	8	4						
78.00	0.050							7	0				R					4	4							
78.00	0.050					4	4					1.8	B			2	2	4	8							
78.00	0.053			4	2	4	5					3.1	R				8	8	16	7						
78.00	0.057			4	2	4	5					3.1	R				8	8	16	7						
78.00	0.060					4	5					2.2	R				6	4	10	5						
78.00	0.060							4	4			1.8	R				4	4	8	4						
78.00	0.064			4	2	4	4					2.7	R				6	8	14	6						
78.00	0.071			4	2							0.9	R				2	4	6	2						
78.00	0.071					4	3	4	2			2.2	R				6	8	14	5						
78.00	0.071							4	4			1.8	R				4	4	8	4						
78.00	0.075					7	4					3.1	R				4	4	8	4						
78.00	0.086			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.090			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.093			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.100			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.105			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.108			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.112			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.115			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.119			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.130			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.138			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.145			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.149			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.153			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.156							4	6			2.7	B			4	4	4	12		16					NBL
78.00	0.160			4	4							1.8	R				4	4	8	4						
78.00	0.167			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.171			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.195			4	2	4	5	4	2			4.0	R				10	12	22	9						
78.00	0.198			4	2	4	2					1.8	R				4	8	12	4						
78.00	0.201			4	2	4	2					1.8	R				4	8	12	4						
78.00	0.216					4	12					5.3	B			8	8	4	20							
78.00	0.220			4	4							1.8	R				4	4	8	4						100
78.00	0.224			4	14							6.2	R				16	4	20	12						
78.00	0.228			4	14							6.2	R				16	4	20	12						
78.00	0.231			4	14							6.2	R				16	4	20	12						
78.00	0.235			4	14							6.2	R				16	4	20	12						
78.00	0.238			4	4							1.8	R				4	4	8	4						
78.00	0.242					4	4					1.8	B			2	2	4	8							
78.00	0.243					4	12					5.3	T				16	4	20							
78.00	0.246					4	4					1.8	R				4	4	8	4						

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	14	42

TABLE FOR PCC PAVEMENT REPAIR ON SD11 FROM INTERSECTION NEAR MADISON STREET TO BRANDON

SECTION 3 MRM	DISP.	SB OUTSIDE SHOULDER L Ft	SB OUTSIDE SHOULDER W Ft	SB DRIVING LANE L Ft	SB DRIVING LANE W Ft	CENTER TURN LANE L Ft	CENTER TURN LANE W Ft	NB DRIVING LANE L Ft	NB DRIVING LANE W Ft	NB OUTSIDE SHOULDER L Ft	NB OUTSIDE SHOULDER W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	REMOVE CONCRETE CURB & GUTTER Ft	TYPE F68 CONCRETE C&G BY SB OUTSIDE SHOULDER Ft	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) 1¼" x 18" PLAIN ROUND DOWEL BARS Each	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	TIE BAR RETROFIT STITCHING Each	TYPE A SPALL SIZE L	TYPE A SPALL SIZE W	REPAIR TYPE A SPALL SqFt	SEAL RANDOM CRACKS IN PCC PAVEMENT Ft	COMMENTS
78.00	0.252					4	7					3.1	B			4	4	4	12							
78.00	0.276					4	4					1.8	B			2	2	4	8							
78.00	0.287			4	4							1.8	R				4	4	8	4						
78.00	0.291			4	4							1.8	R				4	4	8	4						
78.00	0.294			4	4	4	4					3.6	R				8	8	16	8						
78.00	0.298			5	14							7.8	R				16	4	20	12						
78.00	0.301			4	4							1.8	R				4	4	8	4						
78.00	0.305			4	4							1.8	R				4	4	8	4						
78.00	0.311			4	2	4	3	4	2			3.1	R				8	12	20	7						
78.00	0.315			4	4							1.8	B			2	2	4	8							
78.00	0.323			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.330			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.345			4	4							1.8	R				4	4	8	4						
78.00	0.352			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.354			4	14							6.2	T				16	4	20							
78.00	0.356			4	4							1.8	R				4	4	8	4						
78.00	0.356							14	14			21.8	B			8	8	10	26							
78.00	0.359			6	14							9.3	R				16	4	20	12						
78.00	0.371			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.374			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.382			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.389							4	4			1.8	R				4	4	8	4						
78.00	0.393							4	4			1.8	R				4	4	8	4						
78.00	0.394																				15					NBL
78.00	0.396							4	4			1.8	R				4	4	8	4						
78.00	0.403							4	4			1.8	R				4	4	8	4						
78.00	0.415			4	4							1.8	R				4	4	8	4						
78.00	0.422			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.434							4	4			1.8	R				4	4	8	4	10					SBL
78.00	0.437			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.452			4	4							1.8	R				4	4	8	4						
78.00	0.463			4	4							1.8	R				4	4	8	4						
78.00	0.467							4	4			1.8	R				4	4	8	4						
78.00	0.485			4	4							1.8	R				4	4	8	4						
78.00	0.492			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.496			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.497	4	6									2.7	R					4	4							4' C&G
78.00	0.516							4	8			3.6	R				10	4	14	8						
78.00	0.521	4	6									2.7	T					4	4							
78.00	0.535			4	14							6.2	T				16	4	20							
78.00	0.545	4	2	4	2							1.8	R				2	8	10	2						
78.00	0.545							4	2			0.9	R				2	4	6	2						
78.00	0.548			4	14			4	2			7.1	R				18	8	26	14						
78.00	0.549	4	6									2.7	T					4	4							
78.00	0.550			4	12							5.3	B			8	8	4	20							
78.00	0.553	4	2	4	2							1.8	R				2	8	10	2						
78.00	0.553			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.557	4	6	4	2			4	4			5.3	R				6	12	18	6						
78.00	0.564			4	4							1.8	R				4	4	8	4						
78.00	0.564			4	4							1.8	R				4	4	8	4						
78.00	0.575			4	4							1.8	R				4	4	8	4						
78.00	0.575			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.579			4	4							1.8	R				4	4	8	4						
78.00	0.579			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.583			4	4							1.8	R				4	4	8	4						
78.00	0.586			4	2			4	2			1.8	R				4	8	12	4						

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	15	42

TABLE FOR PCC PAVEMENT REPAIR ON SD11 FROM INTERSECTION NEAR MADISON STREET TO BRANDON

SECTION 3 MRM	DISP.	SB OUTSIDE SHOULDER L Ft	SB OUTSIDE SHOULDER W Ft	SB DRIVING LANE L Ft	SB DRIVING LANE W Ft	CENTER TURN LANE L Ft	CENTER TURN LANE W Ft	NB DRIVING LANE L Ft	NB DRIVING LANE W Ft	NB OUTSIDE SHOULDER L Ft	NB OUTSIDE SHOULDER W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	REMOVE CONCRETE CURB & GUTTER Ft	TYPE F68 CONCRETE C&G BY SB OUTSIDE SHOULDER Ft	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) 1¼" x 18" PLAIN ROUND DOWEL BARS Each	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	TIE BAR RETROFIT STITCHING Each	TYPE A SPALL SIZE L	TYPE A SPALL SIZE W	REPAIR TYPE A SPALL SqFt	SEAL RANDOM CRACKS IN PCC PAVEMENT Ft	COMMENTS
78.00	0.589			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.594																				3					NBL
78.00	0.596			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.603			4	4			4	4			3.6	R				8	8	16	8						
78.00	0.607			4	4			4	2			2.7	R				6	8	14	6						
78.00	0.610	4	6	4	2			4	2			4.4	R				4	12	16	4						
78.00	0.618							6	0				B					4	4							
78.00	0.626			5	6							3.3	B			4	4	4	12							
78.00	0.626							5	14			7.8	T				16	4	20							
78.00	0.630																				10					NBL
78.00	0.632	4	4									1.8	B					4	4							
78.00	0.635	4	4									1.8	B					4	4							
78.00	0.642			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.646	4	6	4	3			4	2			4.9	R				6	12	18	5						
78.00	0.646							4	4			1.8	R				4	4	8	4						
78.00	0.649			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.653							4	4			1.8	R				4	4	8	4						
78.00	0.657			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.660	4	2	4	12			4	2			7.1	R				18	12	30	14						
78.00	0.663	4	2	4	12			4	2			7.1	R				18	12	30	14						
78.00	0.667							3	4			1.3	R				4	4	8	4						
78.00	0.667	4	2	4	2							1.8	R				2	8	10	2						
78.00	0.667			4	2			4	6			3.6	R				10	8	18	8						
78.00	0.678			4	12			4	14			11.6	R				32	8	40	24						
78.00	0.682	4	2	4	2							1.8	R				2	8	10	2						
78.00	0.685	4	6	4	12			4	4			9.8	R				20	12	32	16						
78.00	0.689			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.694							4	14			6.2	T				16	4	20							
78.00	0.700			4	12			4	2			6.2	R				18	8	26	14	5					SBL
78.00	0.702	5	8					4	4			6.2	T				4	8	12							
78.00	0.703			4	4			4	4			3.6	R				8	8	16	8						
78.00	0.710	4	8	4	4							5.3	R				4	8	12	4						
78.00	0.710			4	4			4	14			8.0	R				20	8	28	16						
78.00	0.718			4	12							5.3	R				16	4	20	12						
78.00	0.721			4	4							1.8	R				4	4	8	4						
78.00	0.725	4	8									3.6	R					4	4							
78.00	0.728	4	8	4	8							7.1	R				10	8	18	8						
78.00	0.732			4	4							1.8	R				4	4	8	4						
78.00	0.739			4	12							5.3	R				16	4	20	12						
78.00	0.747			4	4			4	4			3.6	R				8	8	16	8						
78.00	0.747			4	4			4	3			3.1	R				8	8	16	7						
78.00	0.751			4	12							5.3	R				16	4	20	12						
78.00	0.754			4	12			4	14			11.6	R				32	8	40	24						
78.00	0.757							4	4			1.8	T				4	4	8							
78.00	0.763			4	6							2.7	R				8	4	12	6						
78.00	0.766			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.770			4	2			4	0			0.9	R				2	8	10	2						
78.00	0.774			4	2			4	0			0.9	R				2	8	10	2						
78.00	0.777			4	3			4	0			1.3	R				4	8	12	3						
78.00	0.781			4	6			4	14			8.9	R				24	8	32	18						
78.00	0.785	4	8	4	12			4	14			15.1	R				32	12	44	24						
78.00	0.791			4	4			4	14			8.0	R				20	8	28	16						
78.00	0.799			4	2			4	0			0.9	R				2	8	10	2						
78.00	0.802			4	4							1.8	R				4	4	8	4						
78.00	0.806			4	2			4	0			0.9	R				2	8	10	2						
78.00	0.810			4	4			4	0			1.8	R				4	8	12	4						

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	16	42

TABLE FOR PCC PAVEMENT REPAIR ON SD11 FROM INTERSECTION NEAR MADISON STREET TO BRANDON

SECTION 3 MRM	DISP.	SB OUTSIDE SHOULDER L Ft	SB OUTSIDE SHOULDER W Ft	SB DRIVING LANE L Ft	SB DRIVING LANE W Ft	CENTER TURN LANE L Ft	CENTER TURN LANE W Ft	NB DRIVING LANE L Ft	NB DRIVING LANE W Ft	NB OUTSIDE SHOULDER L Ft	NB OUTSIDE SHOULDER W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	REMOVE CONCRETE CURB & GUTTER Ft	TYPE F68 CONCRETE C&G BY SB OUTSIDE SHOULDER Ft	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) 1¼" x 18" PLAIN ROUND DOWEL BARS Each	No. 9 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	TYPE A SPALL SIZE L	TYPE A SPALL SIZE W	REPAIR TYPE A SPALL SqFt	SEAL RANDOM CRACKS IN PCC PAVEMENT Ft	COMMENTS
78.00	0.813							4	6			2.7	R				8	4	12	6						
78.00	0.817			4	2			4	6			3.6	R				10	8	18	8						
78.00	0.821							4	10			4.4	R				12	4	16	10						
78.00	0.824							4	14			6.2	R				16	4	20	12						
78.00	0.827			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.831			4	7			4	0			3.1	R				8	8	16	7						
78.00	0.838			4	6			4	14			8.9	R				24	8	32	18						
78.00	0.842			4	12			4	6			8.0	R				24	8	32	18						
78.00	0.846			4	12			4	14			11.6	R				32	8	40	24						
78.00	0.849			4	2			4	14			7.1	R				18	8	26	14						
78.00	0.853			4	4			4	4			3.6	B			4	4	8	16							
78.00	0.857			4	2			4	8			4.4	B			6	6	8	20							
78.00	0.861			4	4			4	12			7.1	R				20	8	28	16						
78.00	0.865			4	2			4	8			4.4	R				12	8	20	10						
78.00	0.868			4	6			4	2			3.6	R				10	8	18	8						
78.00	0.872			4	6			4	4			4.4	R				12	8	20	10						
78.00	0.875			4	2			4	2			1.8	R				4	8	12	4						
78.00	0.878							4	5			2.2	R				6	4	10	5						
78.00	0.882			4	8			4	2			4.4	R				12	8	20	10						
78.00	0.889			4	4							1.8	R				4	4	8	4						
78.00	0.893			4	4							1.8	R				4	4	8	4						
78.00	0.901			4	6			4	8			6.2	R				18	8	26	14						
78.00	0.906	4	4									1.8	B					4	4							
78.00	0.906			4	2			4	2			1.8	R				4	8	12	4						
79.00	0.004			4	4							1.8	B			2	2	4	8							
79.00	0.006	4	8	4	12							8.9	T				16	8	24							
79.00	0.010			4	8							3.6	T				10	4	14						8	
79.00	0.015							20	4			8.9	T				4	16	20							
79.00	0.017			4	12							5.3	T				16	4	20							
79.00	0.030							4	4			1.8	B			2	2	4	8							
79.00	0.034							4	4			1.8	T				4	4	8							
79.00	0.040			4	12			4	12			10.7	W			32		8	40							
79.00	0.043			4	4							1.8	B			2	2	4	8							
79.00	0.054			4	4							1.8	B			2	2	4	8							
79.00	0.061			4	12							5.3	R				16	4	20	12						
79.00	0.064			4	4							1.8	R				4	4	8	4						
79.00	0.068			4	12							5.3	R				16	4	20	12						
79.00	0.071			4	12			4	12			10.7	R				32	8	40	24						
79.00	0.075			4	12			4	6			8.0	R				24	8	32	18						
79.00	0.078			4	12			4	12			10.7	R				32	8	40	24						
79.00	0.082							4	4			1.8	B			2	2	4	8							
79.00	0.085			4	12			4	4			7.1	R				20	8	28	16						
79.00	0.088			4	12							5.3	R				16	4	20	12						
79.00	0.091			4	12							5.3	R				16	4	20	12						
79.00	0.094			4	10			4	12			9.8	R				28	8	36	22						
79.00	0.097			4	12			4	12			10.7	R				32	8	40	24						
79.00	0.100			4	12			4	7			8.4	R				24	8	32	19						
79.00	0.104			4	12							5.3	R				16	4	20	12						
79.00	0.104							4	4			1.8	B			2	2	4	8							
79.00	0.107			4	8			4	4			5.3	R				14	8	22	12						
79.00	0.110			5	12			5	12			13.3	R				32	8	40	24						
79.00	0.114			4	6			4	7			5.8	R				16	8	24	13						
79.00	0.126			4	4							1.8	R				4	4	8	4						
79.00	0.129			4	4							1.8	R				4	4	8	4						
79.00	0.132							4	6			2.7	R				8	4	12	6						
79.00	0.136			4	12							5.3	R				16	4	20	12						

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	17	42

TABLE FOR PCC PAVEMENT REPAIR ON SD11 FROM INTERSECTION NEAR MADISON STREET TO BRANDON

SECTION 3 MRM	DISP.	SB OUTSIDE SHOULDER L Ft	SB OUTSIDE SHOULDER W Ft	SB DRIVING LANE L Ft	SB DRIVING LANE W Ft	CENTER TURN LANE L Ft	CENTER TURN LANE W Ft	NB DRIVING LANE L Ft	NB DRIVING LANE W Ft	NB OUTSIDE SHOULDER L Ft	NB OUTSIDE SHOULDER W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	REMOVE CONCRETE CURB & GUTTER Ft	TYPE F68 CONCRETE C&G BY SB OUTSIDE SHOULDER Ft	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) 1¼" x 18" PLAIN ROUND DOWEL BARS Each	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	TIE BAR RETROFIT STITCHING Each	TYPE A SPALL SIZE L	TYPE A SPALL SIZE W	REPAIR TYPE A SPALL SqFt	SEAL RANDOM CRACKS IN PCC PAVEMENT Ft	COMMENTS
79.00	0.139			4	12			4	12			10.7	R				32	8	40	24						
79.00	0.143			4	4			4	4			3.6	R				8	8	16	8						
79.00	0.146			4	12			4	4			7.1	R				20	8	28	16						
79.00	0.150			4	12			4	4			7.1	R				20	8	28	16						
79.00	0.153			4	2			4	2			1.8	R				4	8	12	4						
79.00	0.156			4	4			4	4			3.6	R				8	8	16	8						
79.00	0.160			4	12			4	12			10.7	R				32	8	40	24						
79.00	0.163			4	7			4	7			6.2	R				16	8	24	14						
79.00	0.167			4	12			4	4			7.1	R				20	8	28	16						
79.00	0.170			4	4			4	12			7.1	R				20	8	28	16						
79.00	0.174			4	8							3.6	R				10	4	14	8						
79.00	0.177			4	12							5.3	R				16	4	20	12						
79.00	0.181			4	8			4	8			7.1	R				20	8	28	16						
79.00	0.188							4	4			1.8	R				4	4	8	4						
79.00	0.191			4	12			4	8			8.9	R				26	8	34	20						
79.00	0.195			4	12			4	5			7.6	R				22	8	30	17						
79.00	0.199			4	4							1.8	R				4	4	8	4						
79.00	0.200			4	12			4	4			7.1	R				20	8	28	16						
79.00	0.210			4	4			4	12			7.1	R				20	8	28	16						
79.00	0.210			4	12			4	12			10.7	R				32	8	40	24						
79.00	0.214			4	12			4	5			7.6	R				22	8	30	17						
79.00	0.214			4	12			4	5			7.6	R				22	8	30	17						
79.00	0.217			4	7							3.1	R				8	4	12	7						
79.00	0.225			4	12			4	13			11.1	R				32	8	40	24						
79.00	0.228			4	4			4	4			3.6	R				8	8	16	8						
79.00	0.232			4	4							1.8	R				4	4	8	4						
79.00	0.235			4	6			4	13			8.4	R				24	8	32	18						
79.00	0.239			4	4			4	13			7.6	R				20	8	28	16						
79.00	0.242			4	6			4	12			8.0	R				24	8	32	18						
79.00	0.246							4	14			6.2	T				16	4	20							
79.00	0.250			4	14			4	14			12.4	T				32	8	40							
79.00	0.257			4	6			4	6			5.3	R				16	8	24	12						
79.00	0.260			4	6			4	12			8.0	R				24	8	32	18						
79.00	0.264			4	12	4	2					6.2	R				18	4	22	14						
79.00	0.267							4	12			5.3	R				16	4	20	12						
79.00	0.271			4	12	4	4	4	12			12.4	R				36	8	44	28						
79.00	0.274			4	12			4	6			8.0	R				24	8	32	18						
79.00	0.278			4	12	4	2	4	12			11.6	R				34	8	42	26						
79.00	0.281			4	12	4	2	4	2			7.1	R				20	8	28	16						
79.00	0.285			4	12	4	4	4	4			8.9	R				24	8	32	20						
79.00	0.288			4	12	4	7	4	16			15.6	R				40	8	48	31						
79.00	0.292			4	8	4	4	4	6			8.0	R				22	12	34	18						
79.00	0.296			4	12	4	2	4	6	4	2	9.8	R				26	12	38	20						
79.00	0.299			4	12	4	4	4	12	4	2	13.3	R				36	12	48	28						
79.00	0.302	4	2	4	6	4	2	4	12	4	5	12.0	R				26	20	46	20						
79.00	0.306			4	12	4	11	4	2			11.1	R				32	8	40	25						
79.00	0.310			4	12			4	12	4	2	11.6	R				32	12	44	24						
79.00	0.314	4	6	4	12	4	4	4	12			15.1	R				36	12	48	28						
79.00	0.317			4	12	4	12					10.7	R				32	4	36	24						
79.00	0.321	4	7	4	12							8.4	R				16	8	24	12						
79.00	0.325			4	12	4	12	4	4			12.4	R				36	8	44	28						
79.00	0.329			4	12			4	12			10.7	R				32	8	40	24						
79.00	0.333	4	2	4	12			4	12	4	3	12.9	R				32	16	48	24						
79.00	0.342			4	12			4	12	4	2	11.6	R				32	12	44	24						
79.00	0.345			4	4	4	6	4	12	4	4	11.6	R				28	16	44	22						
79.00	0.348	4	2	4	4	4	4	4	12	4	2	10.7	R				24	20	44	20						

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	18	42

TABLE FOR PCC PAVEMENT REPAIR ON SD11 FROM INTERSECTION NEAR MADISON STREET TO BRANDON

SECTION 3 MRM	DISP.	SB OUTSIDE SHOULDER L Ft	SB OUTSIDE SHOULDER W Ft	SB DRIVING LANE L Ft	SB DRIVING LANE W Ft	CENTER TURN LANE L Ft	CENTER TURN LANE W Ft	NB DRIVING LANE L Ft	NB DRIVING LANE W Ft	NB OUTSIDE SHOULDER L Ft	NB OUTSIDE SHOULDER W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	REMOVE CONCRETE CURB & GUTTER Ft	TYPE F68 CONCRETE C&G BY SB OUTSIDE SHOULDER Ft	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) 1¼" x 18" PLAIN ROUND DOWEL BARS Each	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	TIE BAR RETROFIT STITCHING Each	TYPE A SPALL SIZE L	TYPE A SPALL SIZE W	REPAIR TYPE A SPALL SqFt	SEAL RANDOM CRACKS IN PCC PAVEMENT Ft	COMMENTS
79.00	0.352			4	4	4	2	4	2	4	2	4.4	R				8	16	24	8						
79.00	0.355	4	2	4	12	4	4	4	12	4	2	14.2	R				36	16	52	28						
79.00	0.492			4	6	4	2	4	12			8.9	R				26	12	38	20						Sequence gap is
79.00	0.496	4	2	4	12	4	2			4	4	8.9	R				18	12	30	14						due to construction
79.00	0.500									4	4	1.8	B					4	4							
79.00	0.500	4	2	4	12			4	4			8.0	R				20	12	32	16						
79.00	0.502									7	10	7.8	R					4	4							
79.00	0.502			10	5							5.6	W			6		8	14							
79.00	0.505							4	12	4	2	6.2	R				16	8	24	12						
79.00	0.510	4	2	4	12							6.2	R				16	8	24	12						
79.00	0.514	4	2	4	12	4	12	4	12	4	2	17.8	R				48	16	64	36						
79.00	0.519	4	2	4	12	4	2	4	4			8.9	R				22	12	34	18						
79.00	0.523							4	4			1.8	R				4	4	8	4						
79.00	0.527									4	4	1.8	R					4	4							
79.00	0.529									4	4	1.8	R					4	4							
79.00	0.532			4	4							1.8	B			2	2	4	8							
79.00	0.532							4	4			1.8	B			2	2	4	8							
79.00	0.532									9	4	4.0	R					6	6							
79.00	0.350			4	8	4	2	4	2	4	8	8.9	R				14	16	30	12						
79.00	0.353			4	12					4	12	10.7	R				16	8	24	12						
79.00	0.356			4	12			4	4	4	12	12.4	R				20	12	32	16						
79.00	0.359			2	4	2	4	4	6			4.4	R				16	12	28	14						
79.00	0.359			2	4							0.9	R				4	4	8	4						
79.00	0.363			2	4	2	4	2	4	2	4	3.6	R				12	16	28	12						
79.00	0.366			4	10	2	4	4	12			10.7	R				32	12	44	26						
79.00	0.369					2	4			2	4	1.8	R				4	6	10	4						
79.00	0.372			4	5	2	4					3.1	R				10	8	18	9						
79.00	0.372			2	4							0.9	B			2	2	4	8							
79.00	0.375			4	4							1.8	R				4	4	8	4						
79.00	0.379	2	4	2	4					4	6	4.4	R				4	10	14	4						
79.00	0.379							4	4			1.8	T				4	4	8							
79.00	0.382			4	9							4.0	R				12	4	16	9						
79.00	0.382	4	2									0.9	B					4	4							
79.00	0.385									4	6	2.7	R					4	4							
79.00	0.385	2	4									0.9	B					2	2							
79.00	0.388					4	2	4	2	4	10	6.2	R				4	12	16	4						
79.00	0.391			4	12			2	4			6.2	R				20	6	26	16					10	SBL
79.00	0.394			4	12					4	6	8.0	R				16	8	24	12						
79.00	0.394							4	2	4	2	1.8	B			1	1	8	10							
79.00	0.397			4	6			4	12	4	8	11.6	R				24	12	36	18						
79.00	0.401							4	6			2.7	B			4	4	4	12							
79.00	0.405							4	2	4	8	4.4	R				2	8	10	2						
79.00	0.404			2	4							0.9	B			2	2	4	8							
79.00	0.405													4	4			2	2							
79.00	0.427							4	2			0.9	R				2	4	6	2						
79.00	0.430			4	4					2	4	2.7	R				4	6	10	4						
79.00	0.433			4	4					4	6	4.4	R				4	8	12	4						
79.00	0.436			4	6			4	6			5.3	R				16	8	24	12						
79.00	0.439					2	4	2	4	2	4	2.7	R				8	12	20	8						
79.00	0.442			4	5			4	2	4	8	6.7	R				8	12	20	7						
79.00	0.445			4	4			4	2	4	8	6.2	R				6	12	18	6						
79.00	0.449			4	8	4	2			4	5	6.7	R				12	12	24	10						
79.00	0.552			2	6			2	6	4	5	4.9	R				16	10	26	12						
79.00	0.555			4	12							5.3	R				16	4	20	12						
79.00	0.555							2	4	2	4	1.8	B			2	2	6	10							
79.00	0.558			4	12							5.3	R				16	4	20	12						

TABLE FOR PCC PAVEMENT REPAIR ON SD11 FROM INTERSECTION NEAR MADISON STREET TO BRANDON

SECTION 3 MRM	DISP.	SB OUTSIDE SHOULDER L Ft	SB OUTSIDE SHOULDER W Ft	SB DRIVING LANE L Ft	SB DRIVING LANE W Ft	CENTER TURN LANE L Ft	CENTER TURN LANE W Ft	NB DRIVING LANE L Ft	NB DRIVING LANE W Ft	NB OUTSIDE SHOULDER L Ft	NB OUTSIDE SHOULDER W Ft	NRCP REPAIR SqYds	NEW JOINT CON-FIG. (NRCP)	REMOVE CONCRETE CURB & GUTTER Ft	TYPE F68 CONCRETE C&G BY SB OUTSIDE SHOULDER Ft	INSERT STEEL BAR IN PCC PAVEMENT (NRCP) 1¼" x 18" PLAIN ROUND DOWEL BARS Each	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	TIE BAR RETROFIT STITCHING Each	TYPE A SPALL SIZE L	TYPE A SPALL SIZE W	REPAIR TYPE A SPALL SqFt	SEAL RANDOM CRACKS IN PCC PAVEMENT Ft	COMMENTS
79.00	0.561			6	12					4	4	9.8	R				16	8	24	12						
79.00	0.565			5	12							6.7	R				16	4	20	12						
79.00	0.565									8	4	3.6	B					6	6							
TOTALS:												**1965.5**		**4**	**4**	**153**	**4401**	**2966**	**7520**	**3210**	**309**			**16.5**	**138**	
ADDITIONAL QUANTITIES:												**390.0**		**-**	**-**	**30**	**880**	**590**	**1500**	**640**	**60**			**-**	**30**	
GRAND TOTALS:												**2355.5**		**4**	**4**	**183**	**5281**	**3556**	**9020**	**3850**	**369**			**16.5**	**168**	

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	20	42

TABLE FOR PCC PAVEMENT REPAIR ON SD11 FIVE LANE THROUGH BRANDON

SECTION 4		SB DRIVING LANE		SB PASSING LANE		CENTER TURN LANE		NB PASSING LANE		NB DRIVING LANE					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)	REMOVE CONCRETE CURB & GUTTER Ft	TYPE B68 CONCRETE C&G BY SB DRIVING LANE Ft	TYPE B68 CONCRETE C&G BY NB DRIVING LANE Ft	1¼" x 18" PLAIN ROUND DOWEL BARS Each	No. 9 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each	SEAL RANDOM CRACKS IN PCC PAVEMENT Ft	COMMENTS
79.00	0.535	4	2	4	2	4	2	5	12	5	2	10.4	R					24	16	40	20		
79.00	0.535			4	2	4	2					1.8	R					4	6	10	4		
79.00	0.542	4	2	4	12	4	2	4	12	4	4	14.2	R	4		4		40	12	52	32		
79.00	0.546	4	2			4	12	4	12			11.6	R	4		4		34	8	42	26		
79.00	0.549	4	12	4	12	4	12					16.0	T					48	8	56			
79.00	0.589									4	4	1.8	R					4	4	8	4		
79.00	0.589							4	2	4	2	1.8	R					4	8	12	4		
79.00	0.641									4	4	1.8	R					4	4	8	4		
79.00	0.651			4	4							1.8	B				2	2	2	6			
79.00	0.669									4	6	2.7	B				4	4	4	12			
79.00	0.672	4	12									5.3	T					16	4	20			
79.00	0.820									4	8	3.6	T					10	4	14			
79.00	0.847									4	4	1.8	R					4	4	8	4		
79.00	0.921	4	4									1.8	B				2	2	4	8			
79.00	0.947	9	12	9	12	9	12	9	2			38.0	R	4	4			50	12	62	38		
80.00	0.037													4	4								
80.00	0.079													4		4							
80.00	0.079	4	12									5.3	T					16	4	20			
80.00	0.119	5	4									2.2	R	4	4			4	4	8	4		
80.00	0.123													4		4							
80.00	0.142																					20	SBPL
80.00	0.177							4	4			1.8	R					4	4	8	4		
80.00	0.188	4	4									1.8	R	4	4			4	4	8	4		
80.00	0.249	4	4							4	4	3.6	R	4	4			8	8	16	8		
80.00	0.323													4		4							
80.00	0.324			4	4							1.8	B				2	2	2	6			
80.00	0.366	4	4									1.8	R					4	4	8	4		
80.00	0.380	4	6									2.7	R					8	4	12	6		
80.00	0.383	4	4									1.8	B				2	2	4	8			
80.00	0.387													8	4	4							
80.00	0.430			4	12							5.3	T					16	4	20			
80.00	0.516	4	14									6.2	T					16	4	20			
80.00	0.527			5	12							6.7	T					16	4	20			
80.00	0.528			4	4							1.8	B				2	2	2	6			
80.00	0.552			4	12							5.3	T					16	4	20			
80.00	0.789			4	4			4	4			3.6	B				4	4	6	14			
80.00	0.790			4	4							1.8	B				2	2	2	6			
TOTALS:												**167.9**		**48**	**24**	**24**	**20**	**374**	**164**	**558**	**166**	**20**	
ADDITIONAL QUANTITIES:												**30.0**		**-**	**-**	**-**	**-**	**70**	**30**	**100**	**30**	**-**	
GRAND TOTALS:												**197.9**		**48**	**24**	**24**	**20**	**444**	**194**	**658**	**196**	**20**	

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	21	42

TABLE FOR PCC PAVEMENT REPAIR ON SD11 FROM BRANDON TO CORSON

SECTION 5		SB OUTSIDE SHOULDER		SB DRIVING LANE		CENTER TURN LANE		NB DRIVING LANE		NB 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)	1¼" x 18" PLAIN ROUND DOWEL BARS Each	No. 9 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each	SEAL RANDOM CRACKS IN PCC PAVEMENT Ft	COMMENTS
80.00	0.939			4	4							1.8	B	2	2	4	8			
80.00	0.946					4	2	4	2			1.8	R		4	8	12	4		
80.00	0.968			4	4							1.8	B	2	2	4	8			
80.00	0.974							4	12	4	12	10.7	T		16	4	20			
80.00	0.977							4	12	4	12	10.7	T		16	4	20			
80.00	0.983							4	4			1.8	B	2	2	4	8			
80.00	0.985							4	12	4	12	10.7	T		16	4	20			
81.00	0.007							4	12	4	12	10.7	T		16	4	20			
81.00	0.034							4	12			5.3	T		16	4	20			
81.00	0.040			4	12							5.3	T		16	4	20			
81.00	0.049							4	12	4	12	10.7	T		16	4	20			
81.00	0.050			4	4							1.8	R		4	4	8	4		
81.00	0.052																		12	NBL
81.00	0.056							4	12			5.3	T		16	4	20			
81.00	0.088					4	4					1.8	B	2	2	4	8			
81.00	0.106							4	4			1.8	B	2	2	4	8			
81.00	0.109	8	12	6	12							18.7	R		16	7	23	12		
81.00	0.149							4	12	4	12	10.7	T		16	4	20			
81.00	0.153							4	12	4	12	10.7	T		16	4	20			
81.00	0.177			4	12	4	12	4	2			11.6	R		34	4	38	26		
81.00	0.179							4	12			5.3	T		16	4	20			
81.00	0.186							4	12			5.3	T		16	4	20			
81.00	0.204			4	2	4	2					1.8	R		4	8	12	4		
81.00	0.205	12	4									5.3	T			4	4			
81.00	0.209	10	4									4.4	T			4	4			
81.00	0.210			6	2	6	12	6	2			10.7	R		20	8	28	16		
81.00	0.210			10	4							4.4	T		4	8	12			
81.00	0.237							4	4			1.8	R		4	4	8	4		
81.00	0.251	4	12									5.3	T			2	2			
81.00	0.269																		35	NBL Shoulder
81.00	0.285									4	12	5.3	T			4	4			
81.00	0.285					14	2	14	2			6.2	R		4	20	24	4		
81.00	0.286			4	4							1.8	B	2	2	4	8			
81.00	0.290			4	4							1.8	B	2	2	4	8			
81.00	0.291					4	12	4	12			10.7	T		32	4	36			
81.00	0.293							4	4			1.8	R		4	4	8	4		
81.00	0.297																		120	SBL
81.00	0.300			4	4							1.8	R		4	4	8	4		
81.00	0.306					4	12	4	12			10.7	T		32	4	36			
81.00	0.317							4	12	4	12	10.7	R		16	4	20	12		
81.00	0.322									4	12	5.3	B			4	4			
81.00	0.326							4	12	4	12	10.7	T		16	4	20			
81.00	0.331					4	12			4	12	10.7	T		16	8	24			
81.00	0.349			4	2	4	2					1.8	R		4	8	12	4		
81.00	0.349					4	4					1.8	R		4	4	8	4		
81.00	0.350							4	12			5.3	T		16	4	20			
81.00	0.355							4	12			5.3	R		16	4	20	12		
81.00	0.358					4	4	4	12			7.1	R		20	8	28	16		
81.00	0.359			4	2	4	2					1.8	R		4	8	12	4		
81.00	0.367							4	6			2.7	R		8	4	12	6		
81.00	0.367							4	12			5.3	T		16	4	20			
81.00	0.368					4	4					1.8	R		4	4	8	4		
81.00	0.378							10	3	10	2	5.6	R		4	16	20	3		
81.00	0.380			4	4							1.8	R		4	4	8	4		
81.00	0.394							4	12			5.3	T		16	4	20			
81.00	0.397							4	12	30	12	45.3	R		16	24	40	12		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	22	42

TABLE FOR PCC PAVEMENT REPAIR ON SD11 FROM BRANDON TO CORSON

SECTION 5		SB OUTSIDE SHOULDER		SB DRIVING LANE		CENTER TURN LANE		NB DRIVING LANE		NB 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)	1¼" x 18" PLAIN ROUND DOWEL BARS Each	No. 9 x 18" DEFORMED TIE BARS Each	No. 5 x 24" DEFORMED TIE BARS Each	INSERT STEEL BAR IN NRCP TOTAL Each	DOWEL BAR Each	SEAL RANDOM CRACKS IN PCC PAVEMENT Ft	COMMENTS
81.00	0.401							4	12			5.3	T		16	4	20			
81.00	0.405							4	12			5.3	T		16	4	20			
81.00	0.406							4	4			1.8	B	2	2	4	8			
81.00	0.412			4	4							1.8	R		4	4	8	4		
81.00	0.435							4	2	4	12	6.2	R		2	8	10	2		
81.00	0.438							4	2	4	4	2.7	R		2	8	10	2		
81.00	0.442							4	6			2.7	R		8	4	12	6		
81.00	0.444									4	12	5.3	R			4	4			
81.00	0.445							4	12	4	12	10.7	R		16	4	20	12		
81.00	0.462							4	12			5.3	T		16	4	20			
81.00	0.466							4	12	4	12	10.7	T		16	4	20			
81.00	0.470					4	12	4	12			10.7	T		32	4	36			
81.00	0.477							4	12			5.3	T		16	4	20			
81.00	0.480							4	12			5.3	T		16	4	20			
81.00	0.494							4	12			5.3	T		16	4	20			
81.00	0.497	4	12	4	12							10.7	T		16	6	22			
81.00	0.508							4	12	4	8	8.9	T		16	4	20			
81.00	0.794							9	4			4.0	R		4	6	10	4		
81.00	0.805	4	12									5.3	R			2	2			
81.00	0.807			4	4							1.8	R		4	4	8	4		
81.00	0.810	4	12	4	4							7.1	R		4	6	10	4		
81.00	0.811			4	2			4	2			1.8	R		4	8	12	4		
81.00	0.814			4	4							1.8	R		4	4	8	4		
81.00	0.828			9	4							4.0	R		4	6	10	4		
81.00	0.835							4	18			8.0	B	8	8	4	20			MRM 80.835 to 80.928 may be on future project
81.00	0.894							6	6			4.0	B	4	4	4	12			
81.00	0.901			4	26							11.6	R		16	4	20	12		
81.00	0.901							12	13			17.3	R		16	8	24	12		
81.00	0.906							4	2	4	2	1.8	R		2	8	10	2		
81.00	0.908							4	2	4	2	1.8	R		2	8	10	2		
81.00	0.915							4	4			1.8	B	2	2	4	8			
81.00	0.915									4	4	1.8	R			4	4			
81.00	0.918									4	4	1.8	R			4	4			
81.00	0.923			4	6			4	2			3.6	R		10	8	18	8		
81.00	0.925			4	4							1.8	R		4	4	8	4		
81.00	0.928			4	4							1.8	R		4	4	8	4		
TOTALS:												**533.3**		**30**	**854**	**471**	**1355**	**257**	**167**	
ADDITIONAL QUANTITIES:												**110.0**		**10**	**170**	**90**	**270**	**50**	**30**	
GRAND TOTALS:												**643.3**		**40**	**1024**	**561**	**1625**	**307**	**197**	

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

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	23	42

TABLE FOR PCC PAVEMENT REPAIR ON I90 EB

SECTION 6 MRM	DISP.	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	COMMENTS
406.00	0.124	10	12	10	14	28.9	B	16	4	20	Adjacent to sleeper slab
TOTALS:						**28.9**		**16**	**4**	**20**	

PCC PAVEMENT REPAIR AREA TYPES

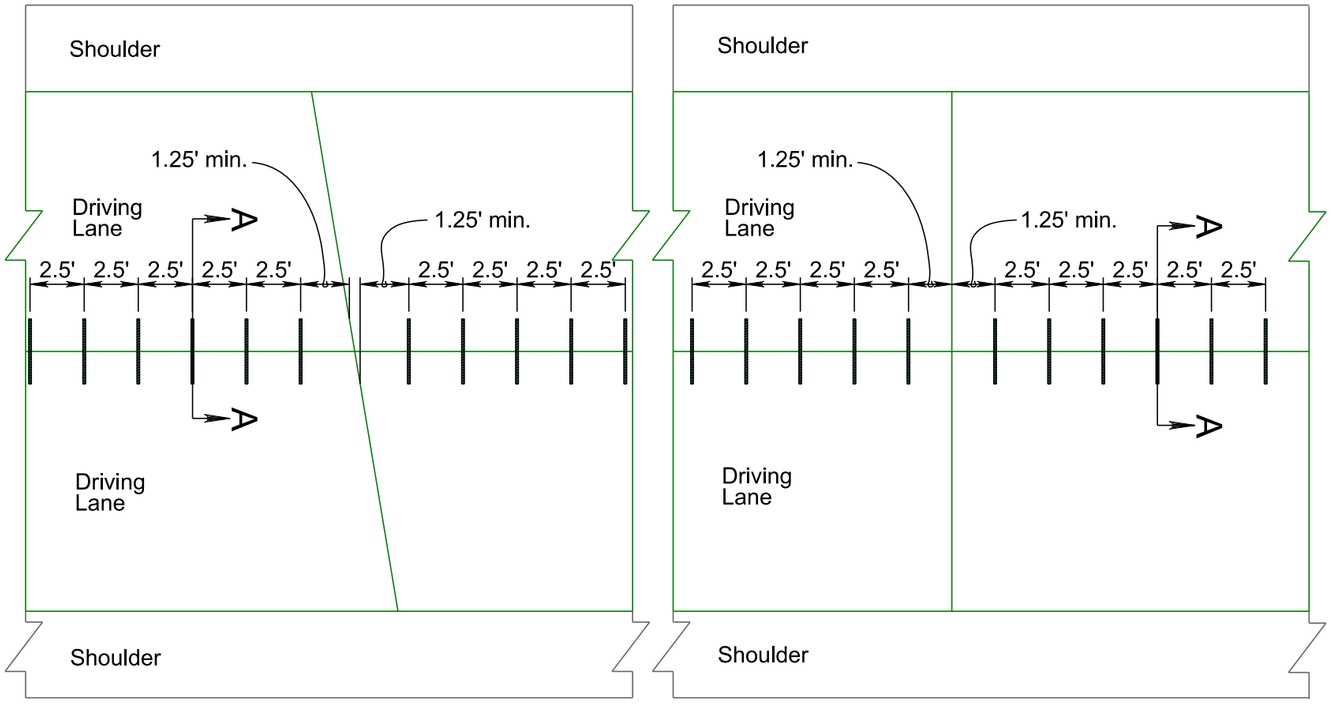
W = Two Working Joints (Use only if repair is full roadway width and uniform length (across all lanes))
T = Two Tied Joints
B = One Working & One Tied Joint
R = Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

TIE BAR RETROFIT - IN WIDE LONGITUDINAL JOINT

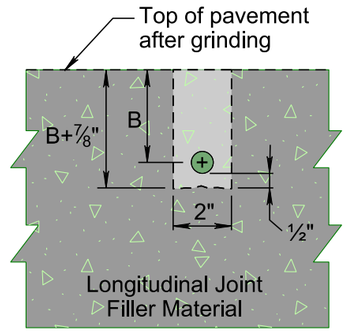
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	24	42

Plotting Date: 07/22/2015

TIE BAR RETROFIT SPACING



SKEWED JOINT **PERPENDICULAR JOINT**



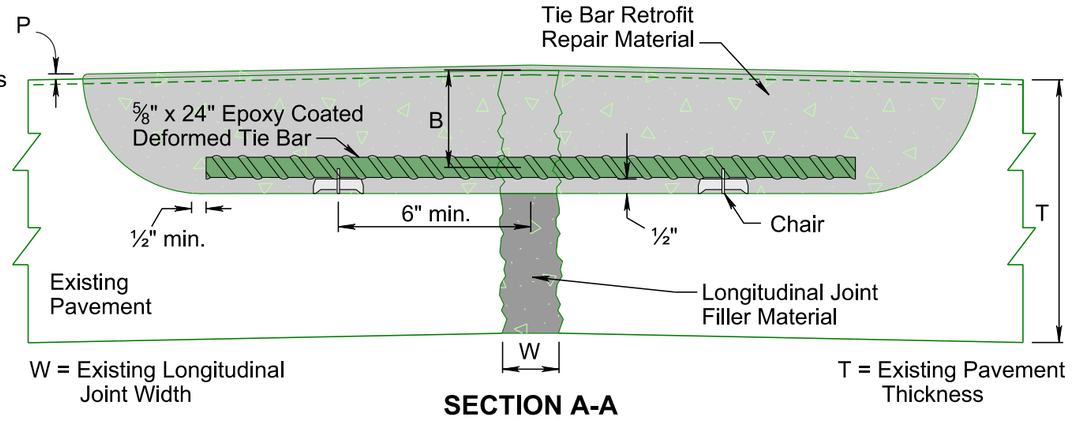
CENTERLINE PROFILE

Depth of patch (P) above existing pavement:

P = ⅛" on grinding projects
P = Flush on other projects

B = Depth to Middle of Bar (at centerline)

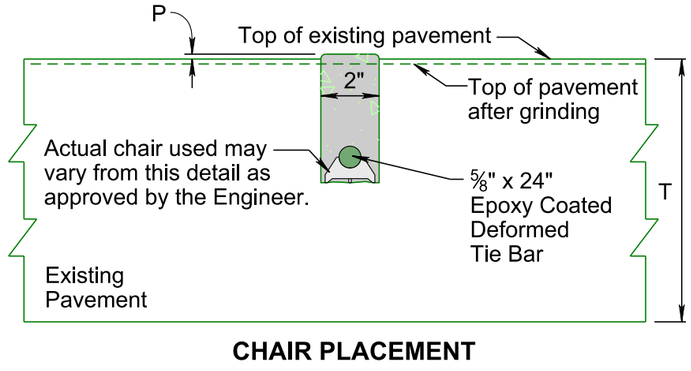
BAR PLACEMENT	
T	B
8"	3"
8.5" to 9.5"	3.5"
10" to 11"	4"
11.5" & up	4.5"



W = Existing Longitudinal Joint Width

T = Existing Pavement Thickness

SECTION A-A



CHAIR PLACEMENT

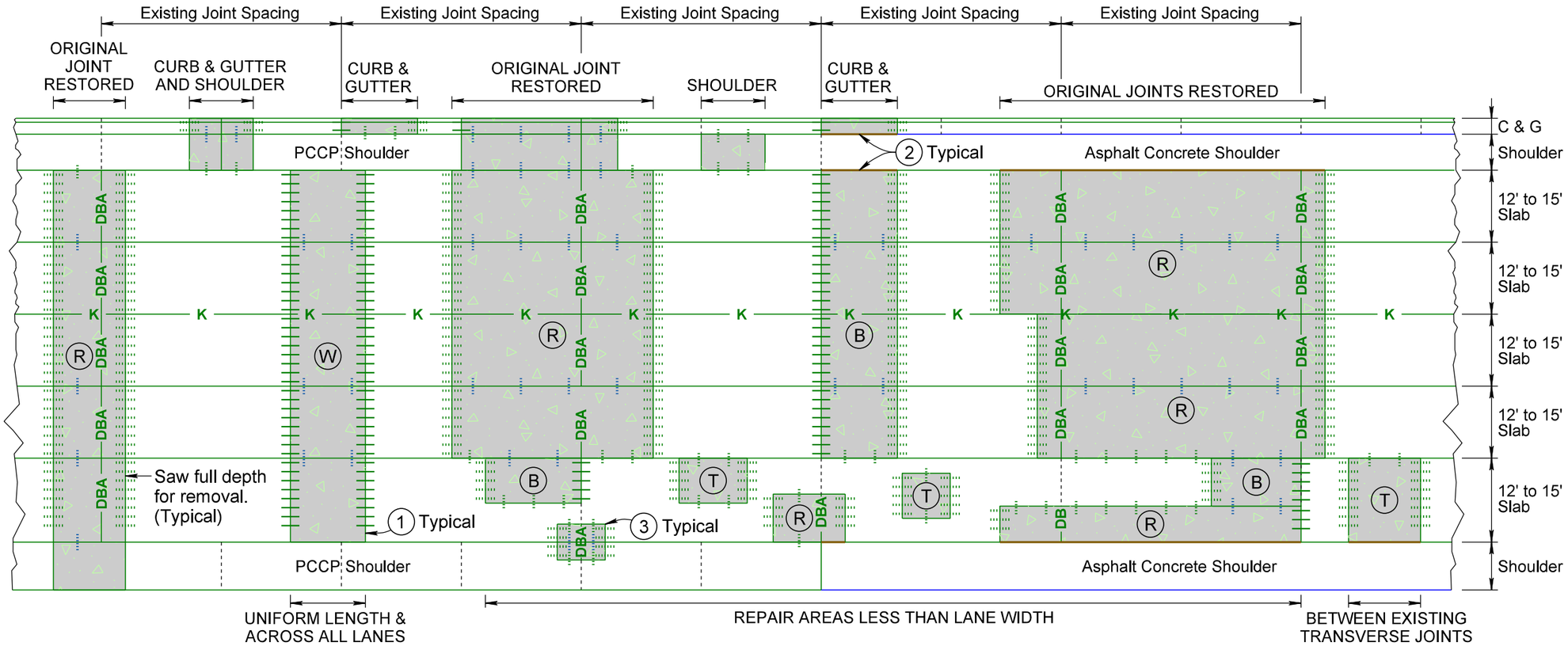
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	25	42

Plotting Date: 10/26/2015

NONREINFORCED PCC PAVEMENT REPAIR

UP TO FOUR LANE ROADWAY WITH CENTER TURN LANE OR UP TO TEN 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 shall be constructed/maintained full roadway width.

(2) Edges of repair areas shall 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
	NH-P 0011(90)74 090E-271	26	42

Plotting Date: 10/26/2015

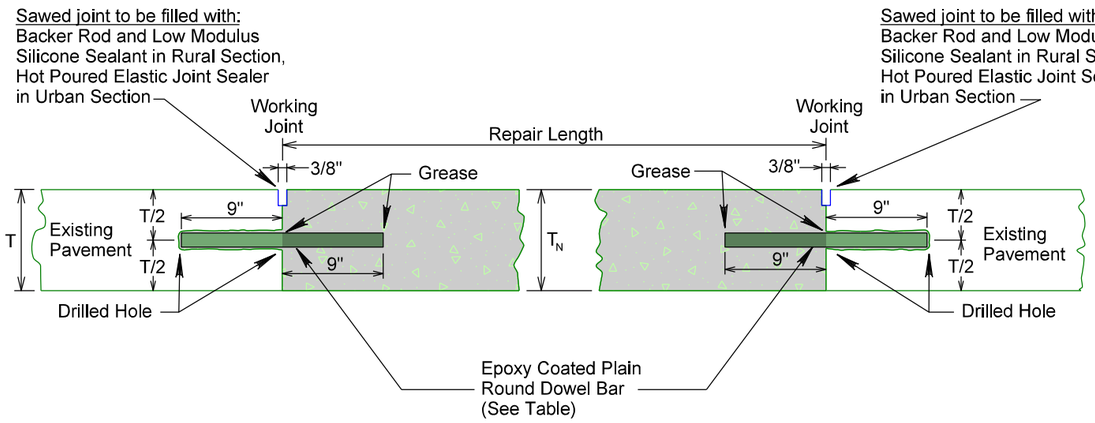
PLOT SCALE - 1:11.25

PLOT NAME - 3

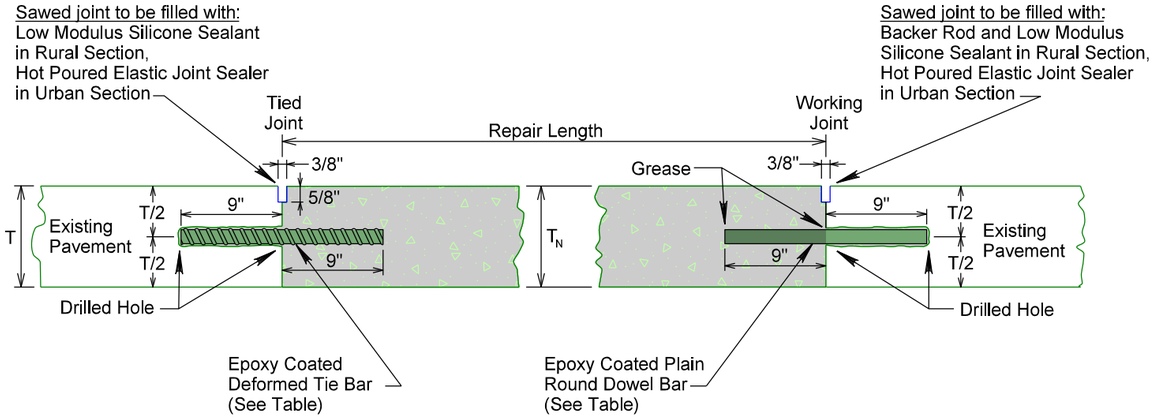
FILE - ...\MINN0520\BARS0520.DGN

PLOTTED FROM - TRM1INT15

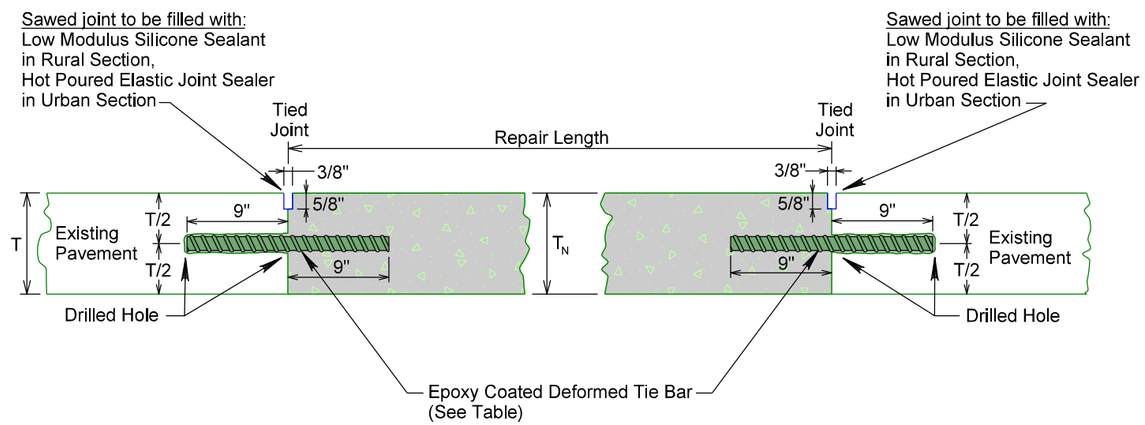
PLAIN ROUND DOWEL BAR INSERTION
TYPE W - (TWO WORKING JOINTS)



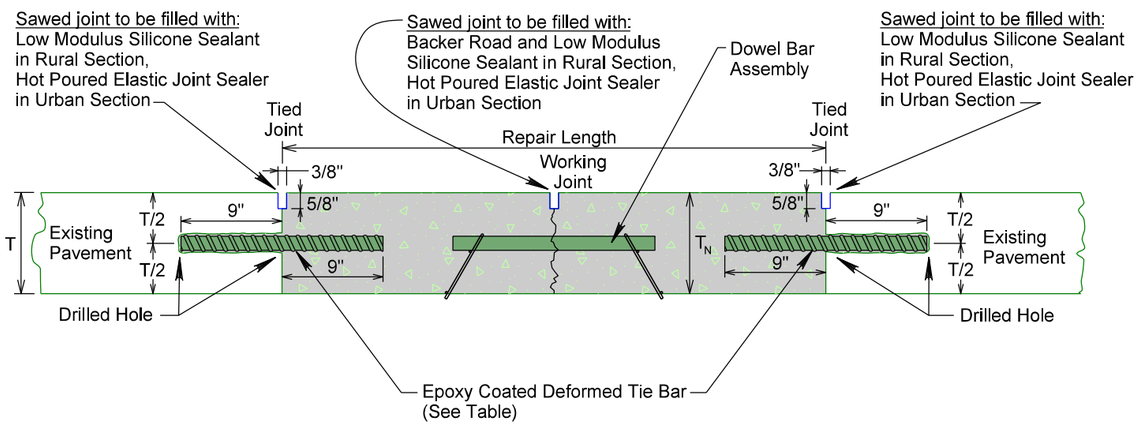
DEFORMED TIE BAR AND PLAIN ROUND DOWEL BAR INSERTION
TYPE B - (ONE TIED JOINT AND ONE WORKING JOINT)



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) shall be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

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

T_N = T

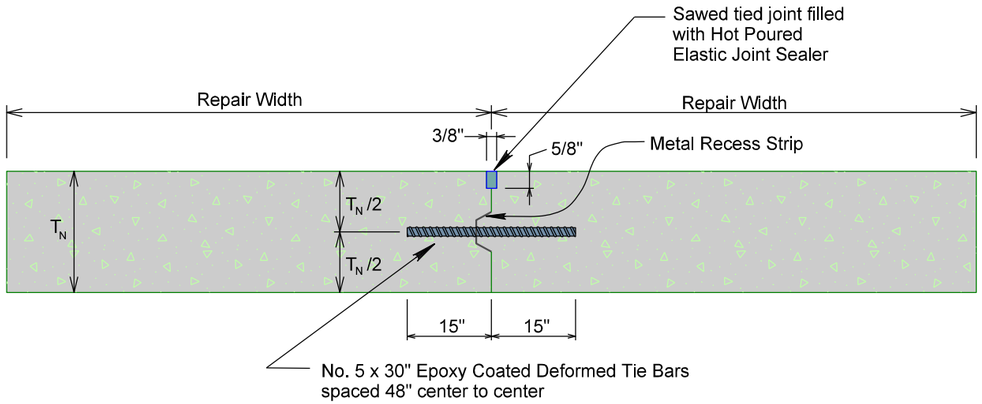
(top of new pavement shall be flush with top of existing pavement)

NONREINFORCED PCC PAVEMENT REPAIR

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	27	42

Plotting Date: 10/26/2015

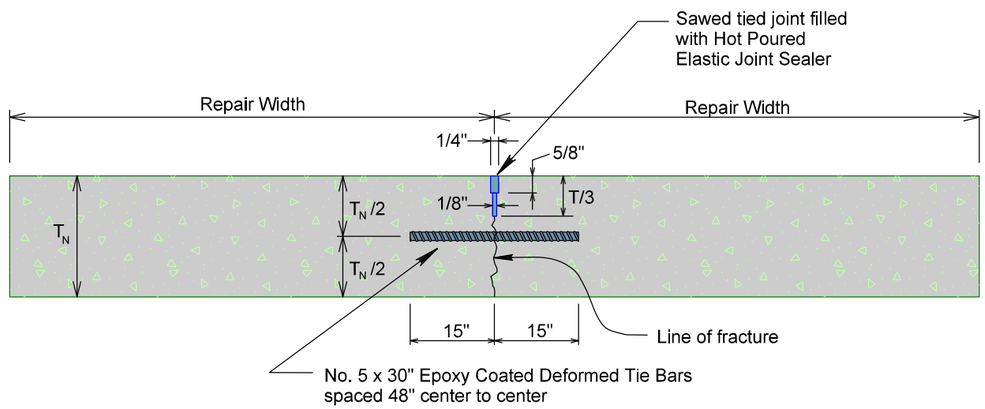
LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS & KEYWAY



T_N = New pavement thickness.

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

SAWED LONGITUDINAL JOINT

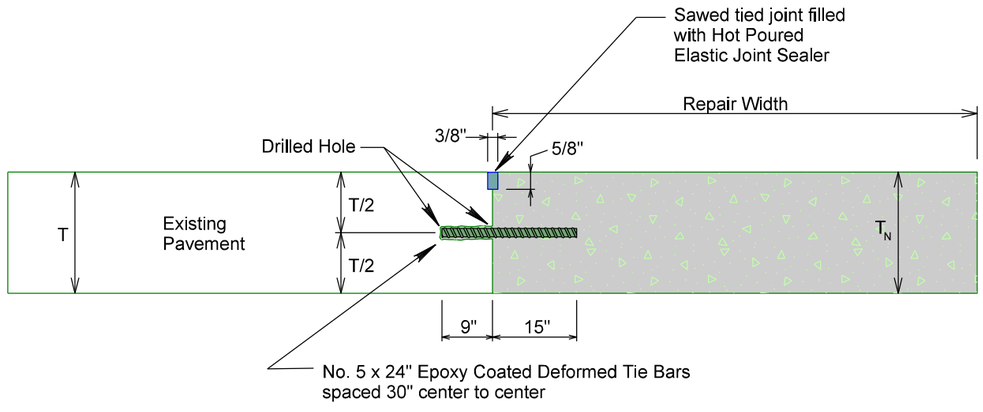


T_N = New pavement thickness.

The first saw cut to control cracking shall 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 shall be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

LONGITUDINAL CONSTRUCTION JOINT WITH DRILLED IN TIE BARS



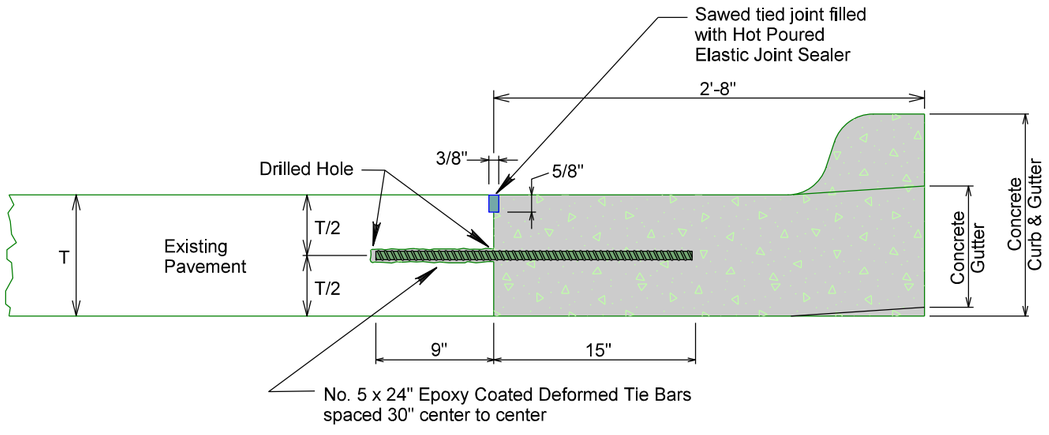
T = Existing pavement thickness.
T_N = New pavement thickness.

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

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

Cost for furnishing and inserting drilled in tie bars shall 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.

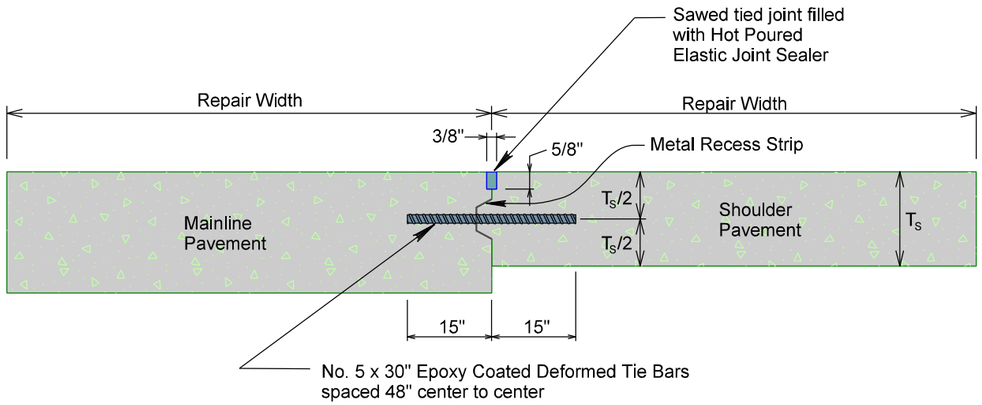
Bar embedded a minimum depth of 9 inches into the existing pavement by utilizing an epoxy resin adhesive.

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

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

NONREINFORCED PCC PAVEMENT REPAIR

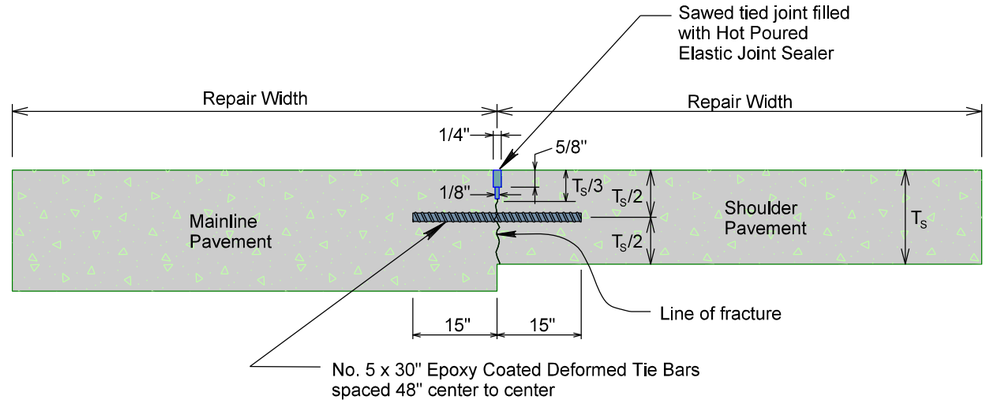
LONGITUDINAL SHOULDER CONSTRUCTION JOINT WITH TIE BARS & KEYWAY



T_s = New shoulder pavement thickness.

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

SAWED LONGITUDINAL SHOULDER JOINT

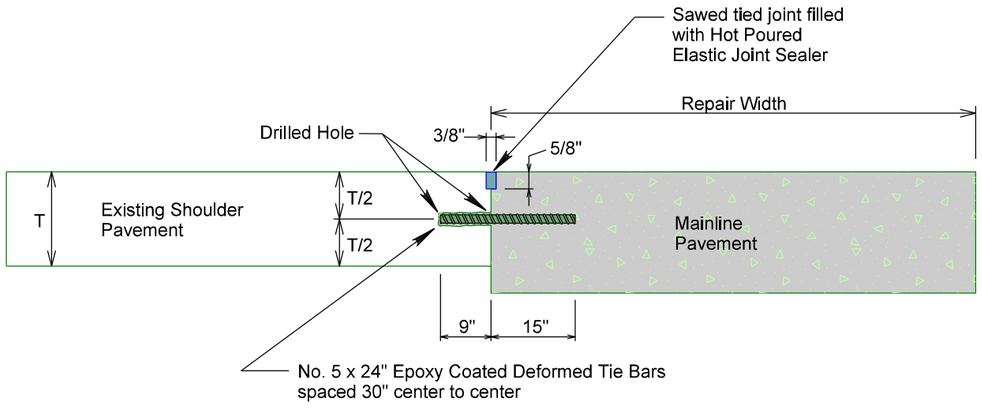


T_s= New shoulder pavement thickness.

The first saw cut to control cracking shall 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 shall be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

LONGITUDINAL SHOULDER JOINT WITH DRILLED IN TIE BARS



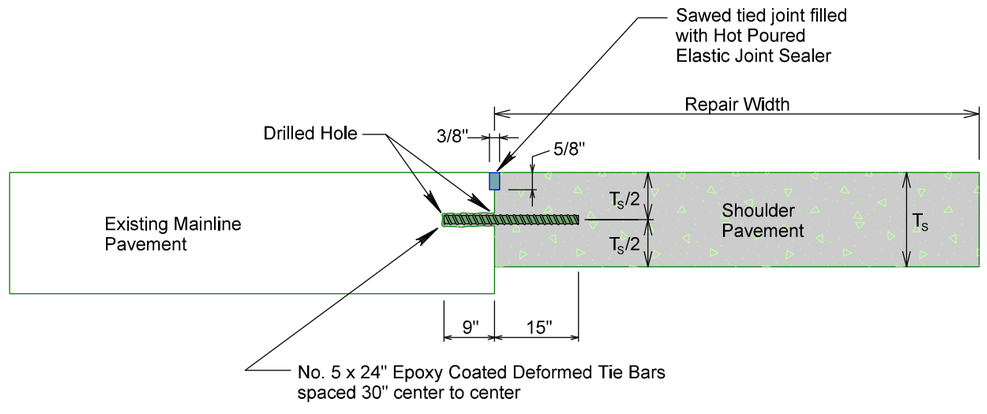
T = Existing shoulder pavement thickness.

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

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

Cost for furnishing and inserting drilled in tie bars shall 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.

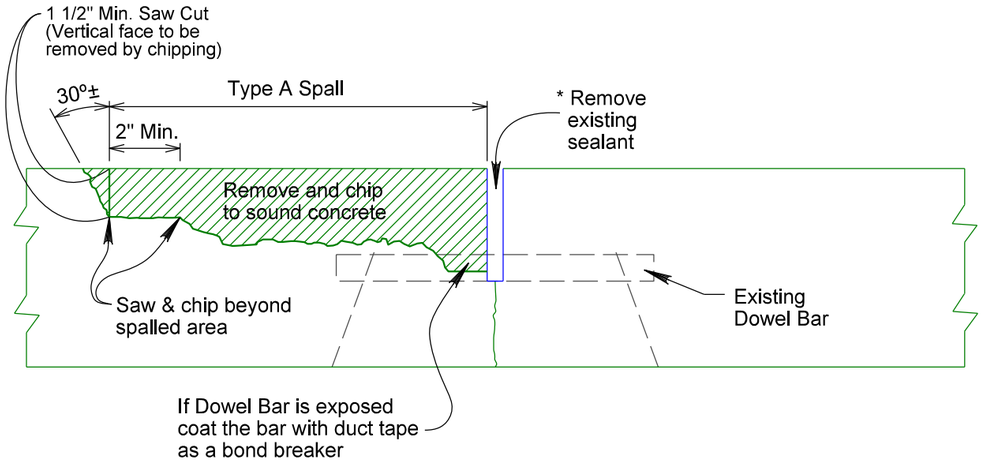
Bar embedded a minimum depth of 9 inches into the existing pavement by utilizing an epoxy resin adhesive.

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

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

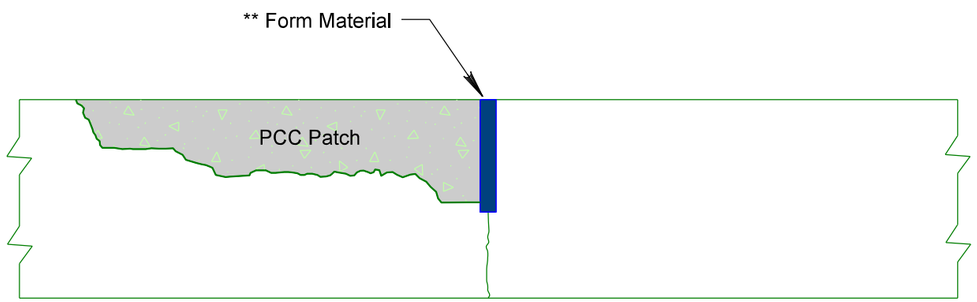
REPAIR OF TYPE A SPALLS

SPALL REMOVAL



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

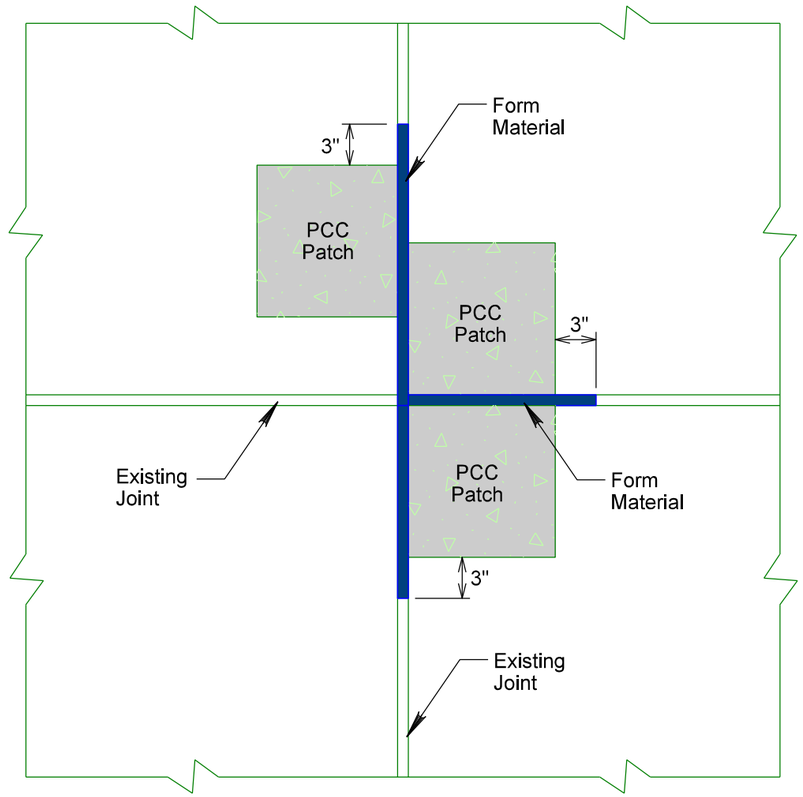
SPALL PATCH



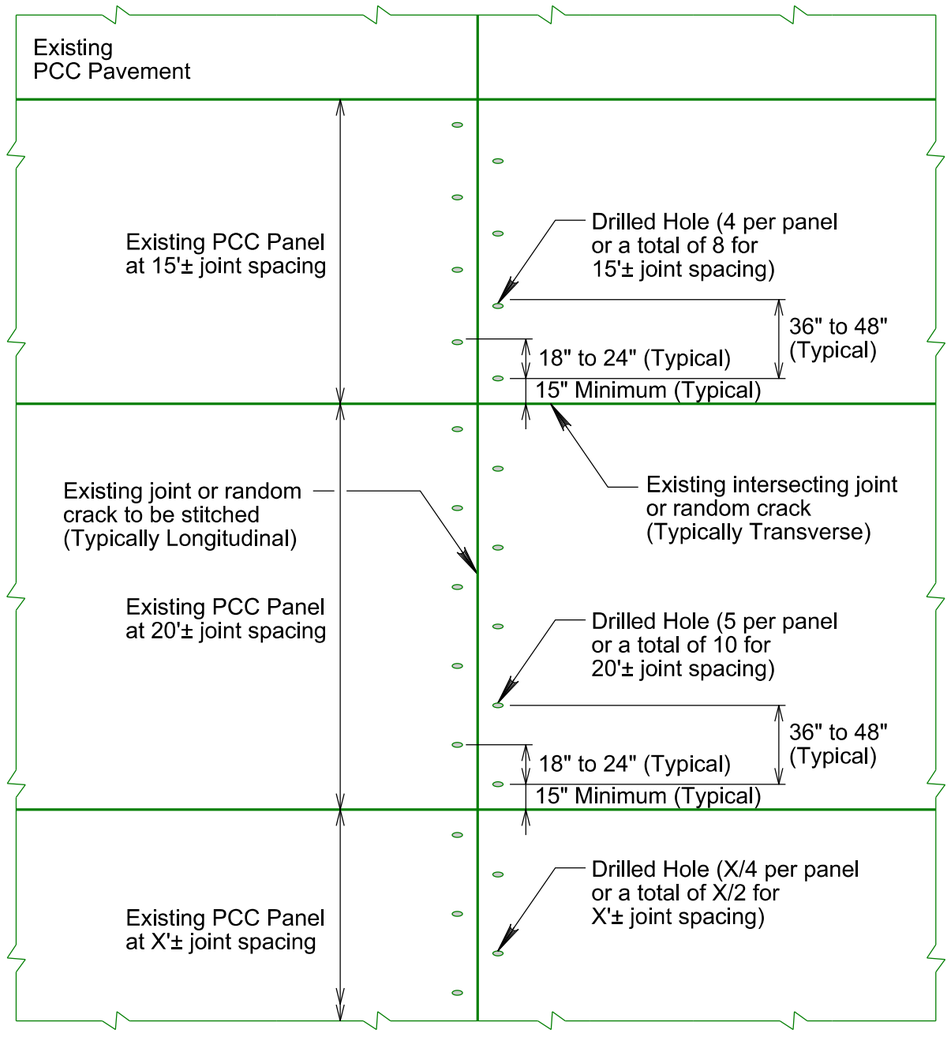
** Form Material shall be removed by sawing or other means approved by the Engineer. Spall repaired joints shall then be sealed with Backer Rod and Low Modulus Silicone Sealant.

REPAIR OF TYPE A SPALLS

SPALL PATCHES (PLAN VIEW)

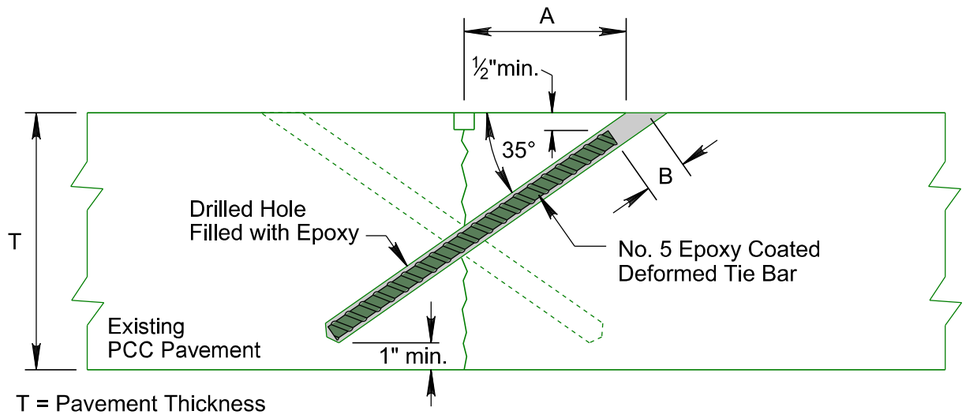


TIE BAR RETROFIT (STITCHING)



PLAN VIEW

TIE BAR RETROFIT (STITCHING)



ELEVATION VIEW

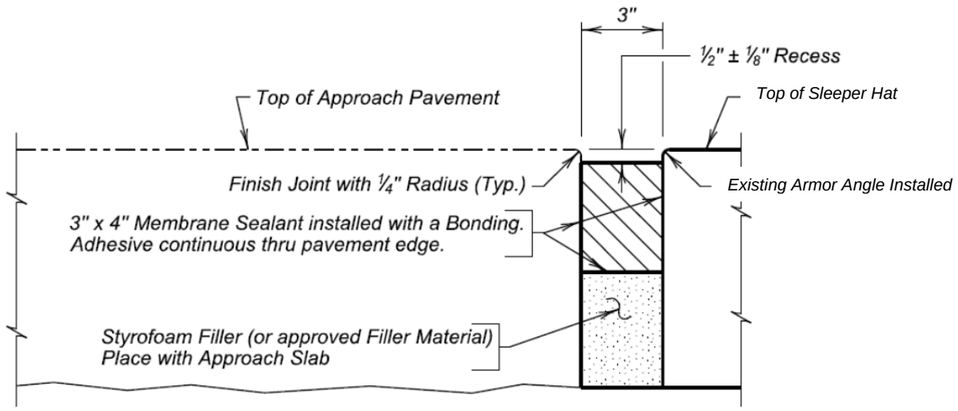
TABLE OF STITCHING DIMENSIONS

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.

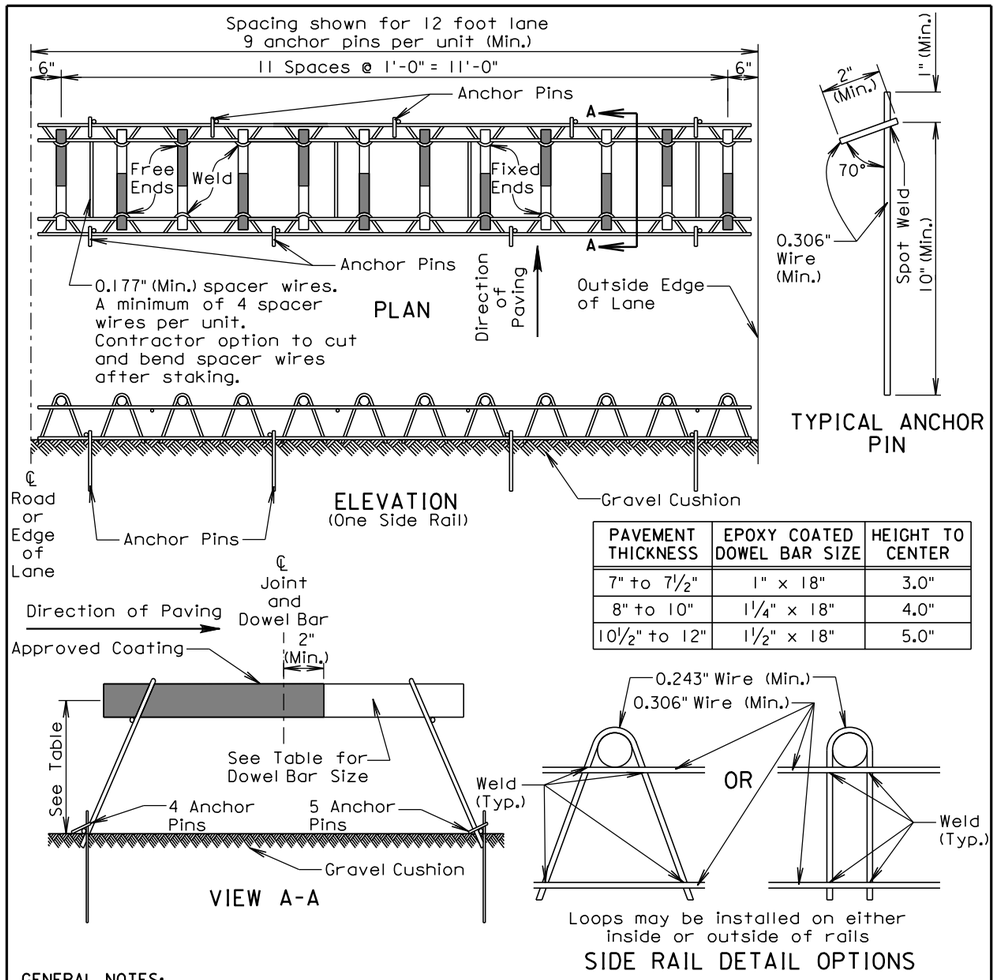
Joint Spacing	Number of Bars
3' to 4.5'	2
5' to 6.5'	3
7' to 8.5'	4
9' to 10.5'	5
11' to 12.5'	6
13' to 14.5'	7
15' to 16.5'	8
17' to 18.5'	9
19' to 20.5'	10
21 to 22.5'	11
23' to 24.5'	12
25' to 26.5'	13
27' to 28.5'	14
29' to 30.5'	15

MEMBRANE SEALANT INSTALATION DETAIL (TYPICAL)



GENERAL NOTES

1. *The Membrane Sealant shall be on the approved product list for Membrane Sealant Expansion Joints.*
2. *The manufacturer shall supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension shall be as recommended by the sealant manufacturer to provide a water tight seal throughout a joint movement range of + 25% (minimum) from the specified joint opening dimension. In no case shall the precompressed dimension exceed 75% of the joint opening width. The foam sealant shall be slowly self expanding to permit workers ample time to install the membrane sealant before the membrane sealant exceeds the joint opening width.*
3. *The membrane sealant shall be supplied in pieces 5 feet in length or longer. The foam sealant shall be ultra-violet and ozone resistant.*
4. *The bonding adhesive used to attach the membrane sealant to the adjacent concrete shall be approved by the membrane sealant manufacturer.*
5. *Adhesive used to join adjacent pieces of the membrane sealant shall be as recommended by the manufacturer.*
6. *If Styrofoam filler material is used in the construction, it shall be closed cell and water-tight as approved by the Engineer.*
7. *The minimum ambient air temperature at the time of joint installation and adhesive curing shall be 40° F.*
8. *A technical representative of the membrane sealant manufacturer shall be present at the jobsite during installation. The technical representative shall be knowledgeable in the correct procedures for the preparation and installation of the joint material to insure the Contractor installs the joint to the Manufacturers recommendations.*
9. *Concrete surfaces that will be in contact with the membrane sealant shall be thoroughly cleaned by abrasive blasting to remove all laitance and contaminants (such as oil, curing compounds, etc.) from the concrete surface. At a minimum two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the concrete surface will be required. Cleaning of the concrete surfaces with solvents, wire brushing, or grinding shall not be permitted.*
10. *After abrasive blasting, but immediately prior to membrane joint installation, the entire joint contact surface shall be air blasted. The air compressor used for joint cleaning shall be equipped with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. To obtain complete bonding with the adhesive, the adjacent concrete surfaces must be dry and clean. The contact surfaces for the joint shall be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.*
11. *Individual spliced sections shall be installed as per the manufacturers' recommendations. The membrane joint sealant manufacturer shall submit a detailed installation procedure to the Engineer at least 5 days prior to joint installation for his review.*
12. *Traffic shall not be allowed on the joint for a minimum of 3 hours unless otherwise directed by the Engineer.*
13. *Use plywood or other material to protect concrete adjacent to the joint from spalling before any equipment is moved across the joint. Any spall areas will be repaired at the Contractor's expense by breaking out and replacing adjacent concrete, as approved by the Engineer.*
14. *The Membrane Sealant Expansion Joint will be measured in feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Membrane Sealant Expansion Joint will be paid for at the contract unit price per foot complete in place. Payment for this item shall be full compensation for furnishing all the required materials in place, including labor, equipment and incidentals necessary to complete the work in accordance with the plans and the foregoing specifications.*



PAVEMENT THICKNESS	EPOXY COATED DOWEL BAR SIZE	HEIGHT TO CENTER
7" to 7½"	1" x 18"	3.0"
8" to 10"	1¼" x 18"	4.0"
10½" to 12"	1½" x 18"	5.0"

GENERAL NOTES:

Longitudinal joint tie bars shall be placed a minimum of 15 inches from the transverse contraction joint.

Centerline of individual dowel bars shall be parallel to top of subgrade ±1/8 inch in 18 inches and to all other dowel bars in the assembly ±1/16 inch in 18 inches.

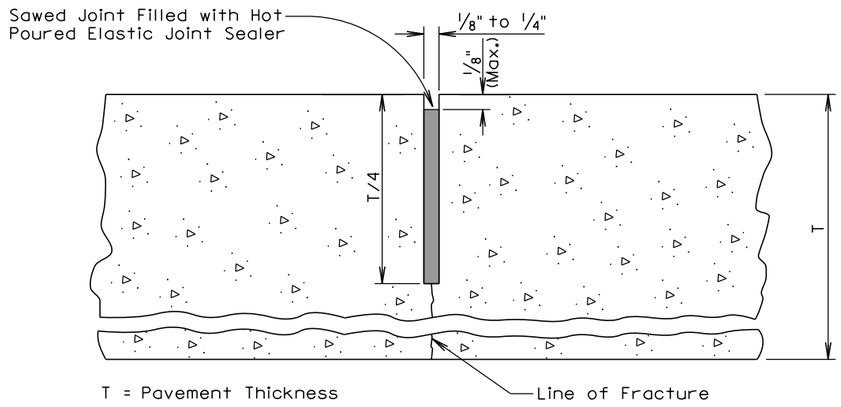
Centerline of individual dowel bars shall be parallel to the centerline of the roadway ±1/2 inch in 18 inches.

The transverse contraction joints shall be sawed perpendicular to the centerline of the roadway and the dowel bars shall be centered on the sawed joint ±1 inch.

Supporting devices as shown on this sheet, or equivalent as approved by the Engineer, shall be used to maintain proper horizontal and vertical alignment of the dowel bars.

August 30, 2013

Published Date: 4th Qtr. 2015	SDDOT	***PCC PAVEMENT DOWEL BAR ASSEMBLY FOR TRANSVERSE CONTRACTION JOINTS 12 Bar Assembly on Granular Base Material***	***PLATE NUMBER 380.01*** *Sheet 1 of 1*



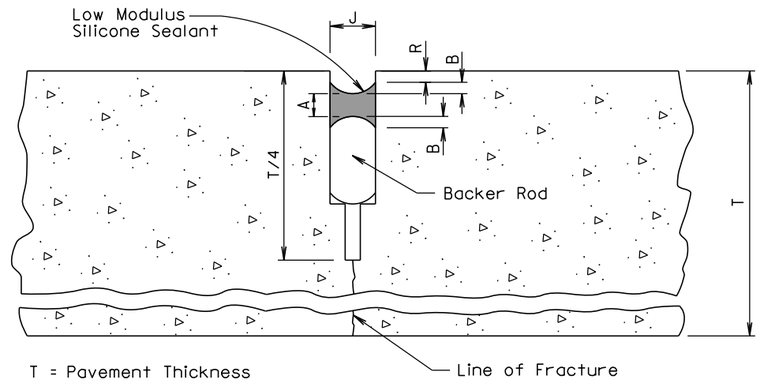
GENERAL NOTES:

If an early entrance sawcut does not develop the full transverse crack, then the saw cut to control cracking shall be a minimum of 1/4 the thickness of the pavement.

All hot poured elastic joint sealer material spilled on the surface of the concrete pavement shall be removed as soon as the material has cooled. The extent of removal of material shall be to the satisfaction of the Engineer. All costs for removal of the spilled joint sealer material shall be borne by the Contractor.

June 26, 2015

Published Date: 4th Qtr. 2015	SDDOT	PCC PAVEMENT TRANSVERSE CONTRACTION JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY	PLATE NUMBER 380.05
			Sheet 1 of 1



LOW MODULUS SILICONE SEALANT ALLOWABLE CONSTRUCTION TOLERANCES				
J = 3/8"				
A (Min.) (In)	A (Max.) (In)	B (Min.) (In)	B (Max.) (In)	R (In)
3/16	5/16	1/8	1/4	1/4
J = 1/2"				
A (Min.) (In)	A (Max.) (In)	B (Min.) (In)	B (Max.) (In)	R (In)
3/16	3/8	1/8	1/4	1/4
J = 5/8"				
A (Min.) (In)	A (Max.) (In)	B (Min.) (In)	B (Max.) (In)	R (In)
1/4	7/16	1/8	5/16	1/4
J = 3/4"				
A (Min.) (In)	A (Max.) (In)	B (Min.) (In)	B (Max.) (In)	R (In)
5/16	1/2	3/16	3/8	5/16
J = 1"				
A (Min.) (In)	A (Max.) (In)	B (Min.) (In)	B (Max.) (In)	R (In)
3/8	5/8	3/16	1/2	5/16

GENERAL NOTE:

The backer rod shall be a nonmoisture absorbing resilient material approximately 25% larger in diameter than the width of the joint to be sealed.

February 14, 2011

Published Date: 4th Qtr. 2015	SDDOT	RESEAL PCC PAVEMENT JOINT (SILICONE)	PLATE NUMBER 380.13
			Sheet 1 of 1

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

Flagger

Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

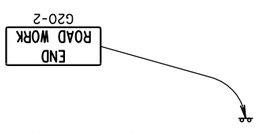
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) shall be displayed in advance of the liquid asphalt areas.

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

The channelizing devices shall be drums or 42" cones.

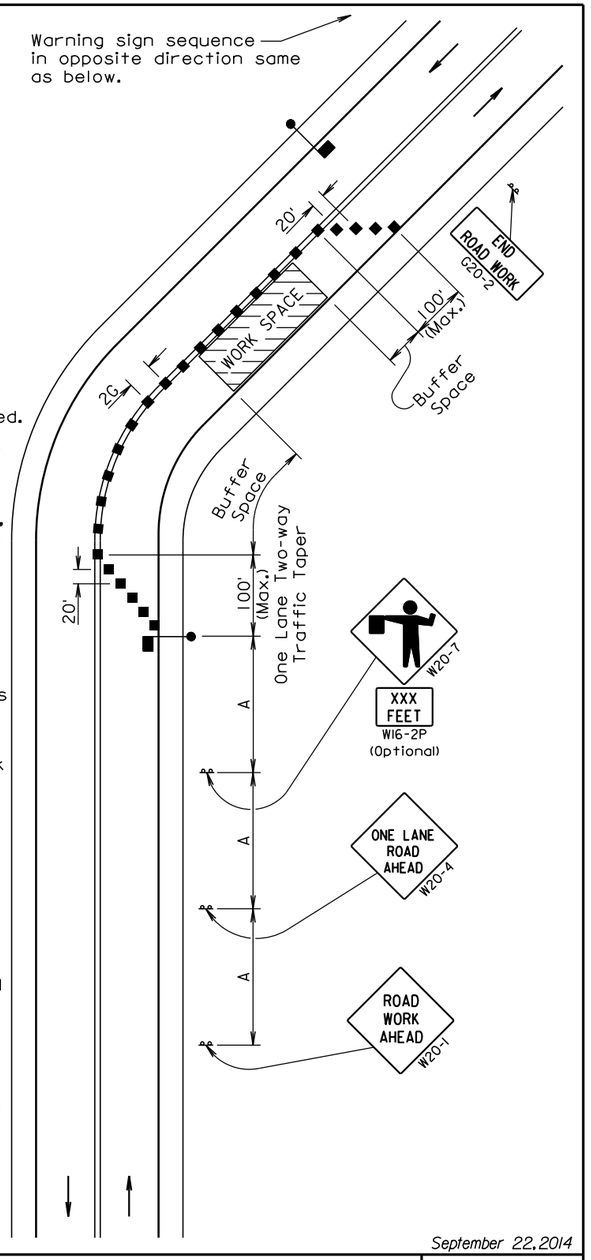
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.



Channelizing devices and flaggers shall be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

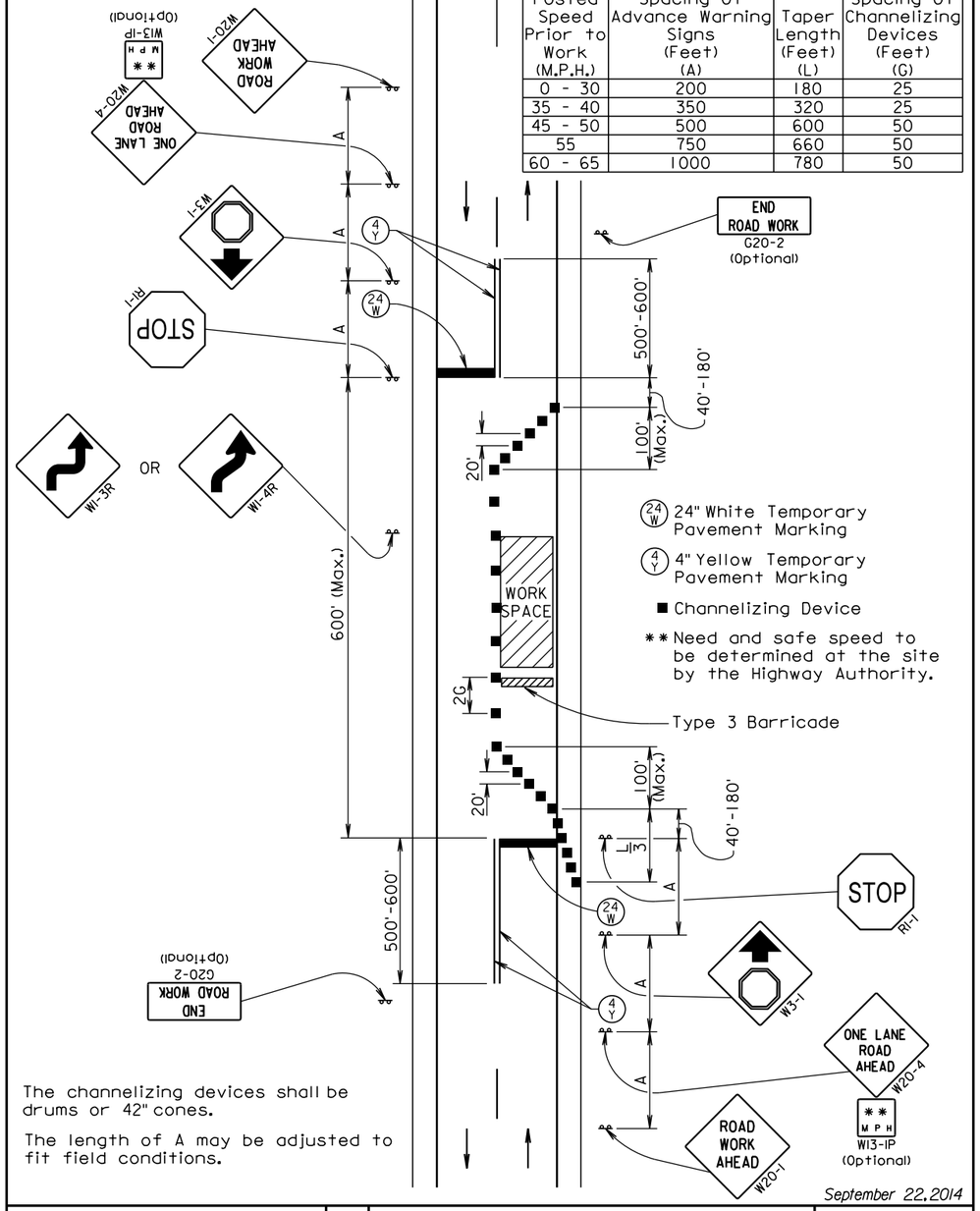
The length of A may be adjusted to fit field conditions.



September 22.2014

Published Date: 4th Qtr. 2015	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23 Sheet 1 of 1

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



The channelizing devices shall be drums or 42" cones.

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

September 22.2014

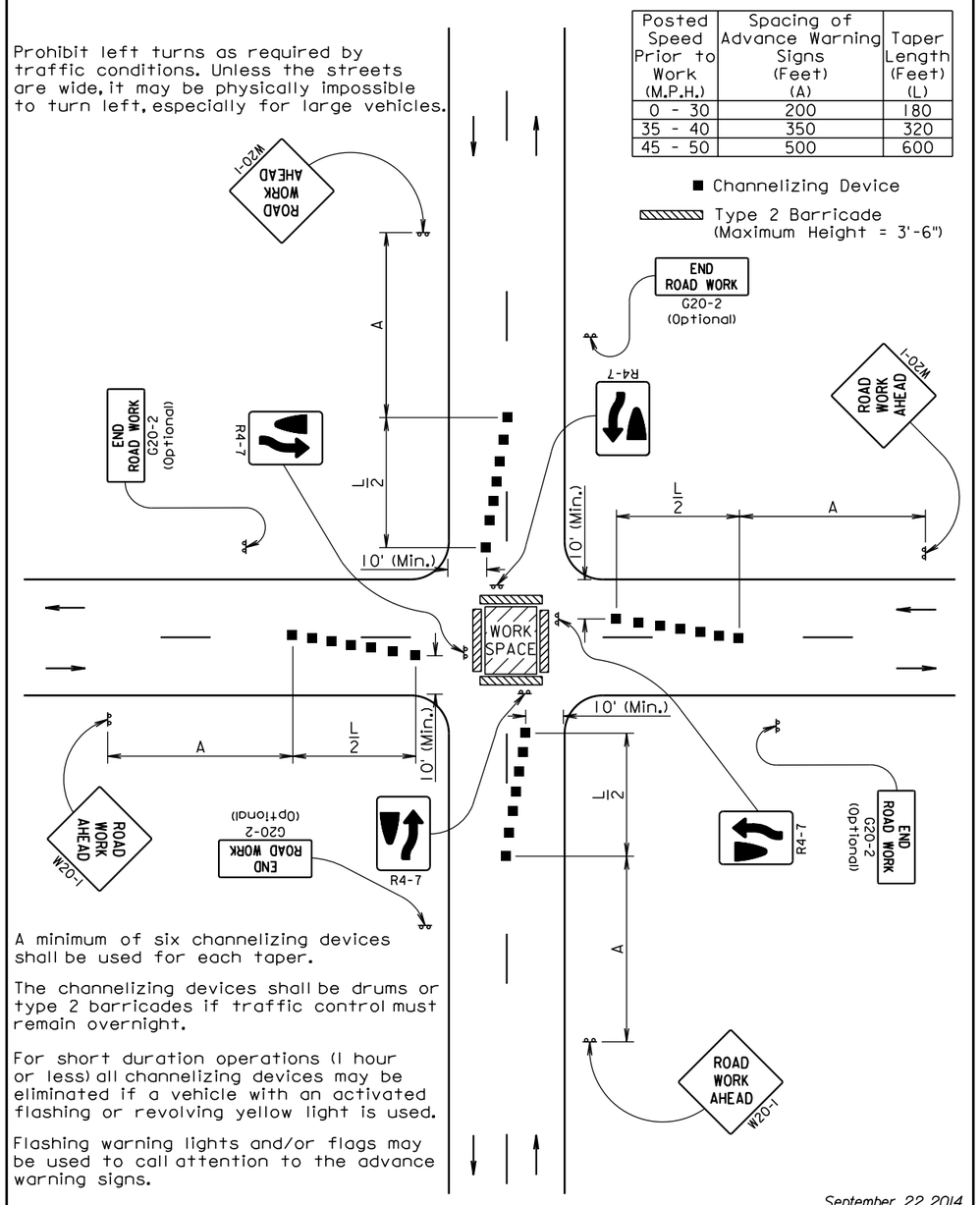
Published Date: 4th Qtr. 2015	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE USING STOP SIGNS	PLATE NUMBER 634.25 Sheet 1 of 1

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.

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

■ Channelizing Device

▨ Type 2 Barricade (Maximum Height = 3'-6")



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

The channelizing devices shall 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.

September 22, 2014

Published Date: 4th Qtr. 2015	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES CLOSURE IN CENTER OF INTERSECTION	PLATE NUMBER 634.35 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

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 40	25
45 - 50	50

■ Channelizing Device

(4W) 4" White Temporary Pavement Marking

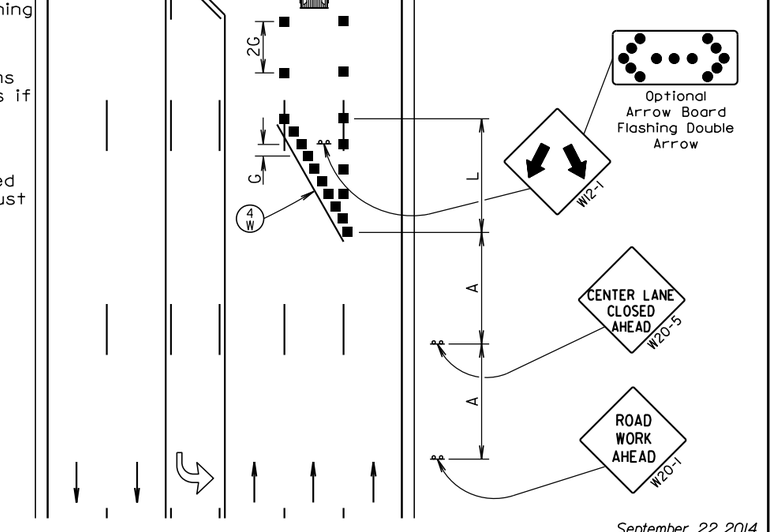
If the work space extends across the crosswalk, then close the crosswalk.

The merging taper may direct traffic into either the right or left lane but not both. In this typical, a left taper should be used so that right-turn movements will not impede traffic.

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

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

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



September 22, 2014

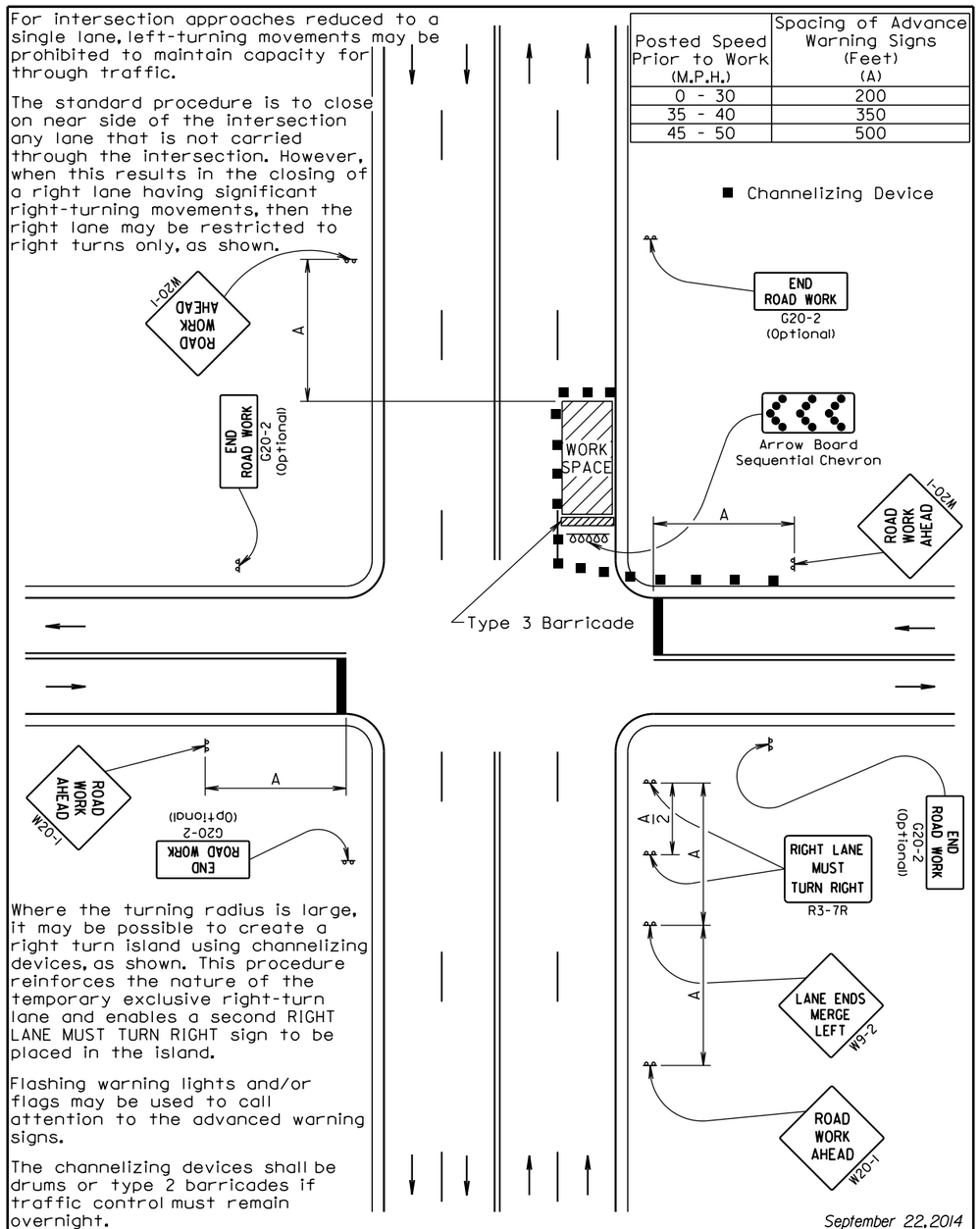
Published Date: 4th Qtr. 2015	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE NEAR SIDE OF INTERSECTION	PLATE NUMBER 634.41 Sheet 1 of 1

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.

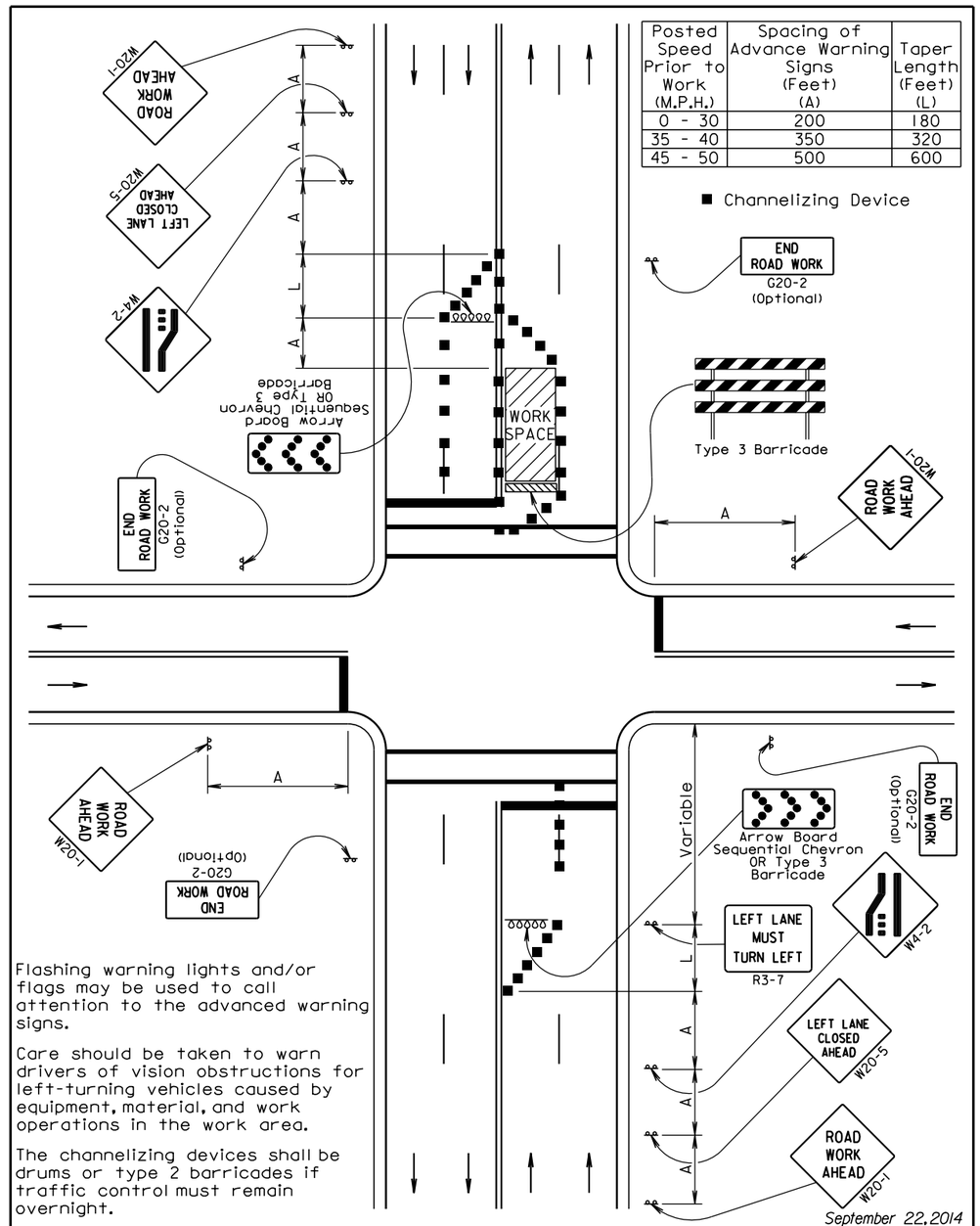
The channelizing devices shall be drums or type 2 barricades if traffic control must remain overnight.

September 22, 2014

Published Date: 4th Qtr. 2015	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES 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

■ Channelizing Device



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

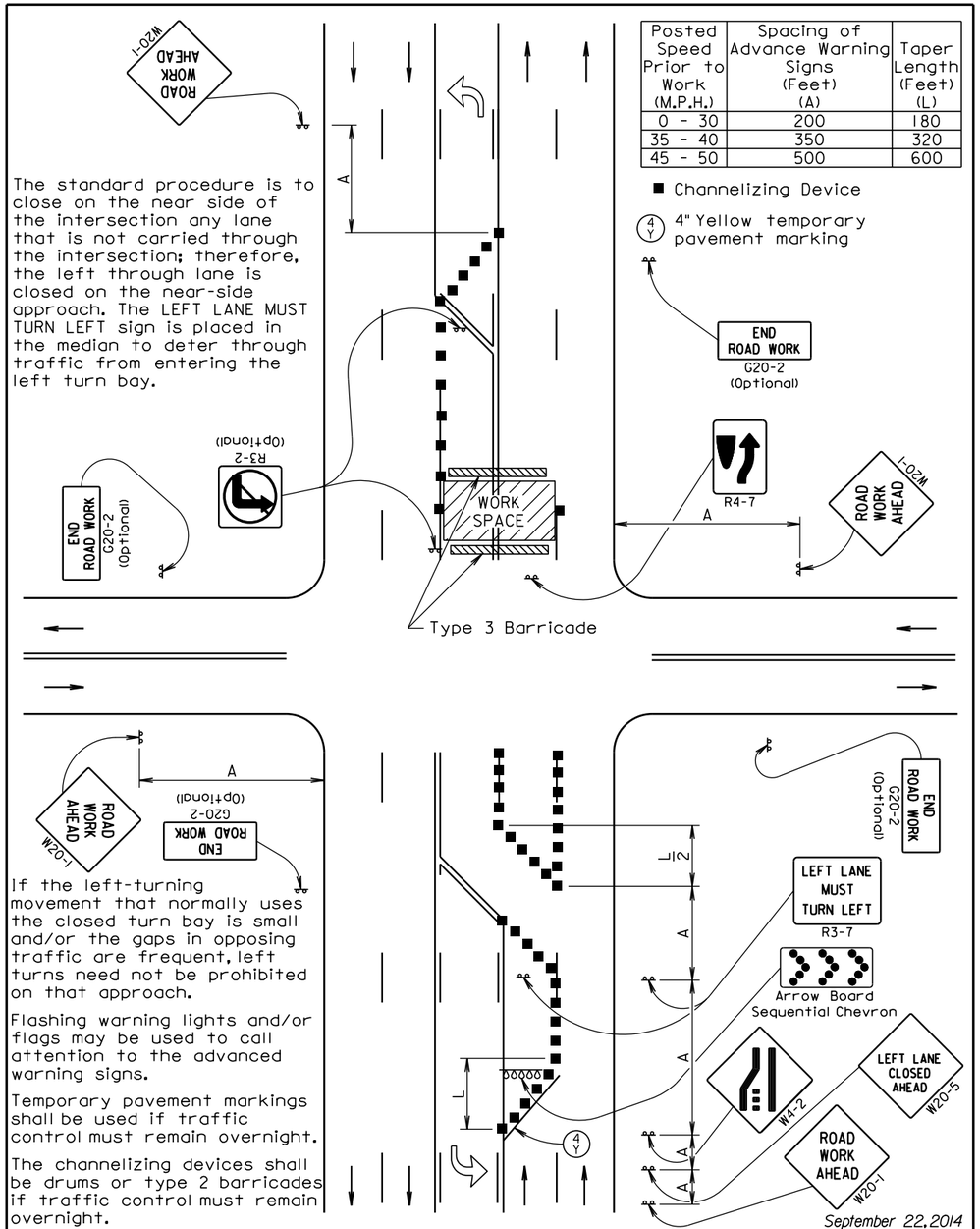
Care should be taken to warn drivers of vision obstructions for left-turning vehicles caused by equipment, material, and work operations in the work area.

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

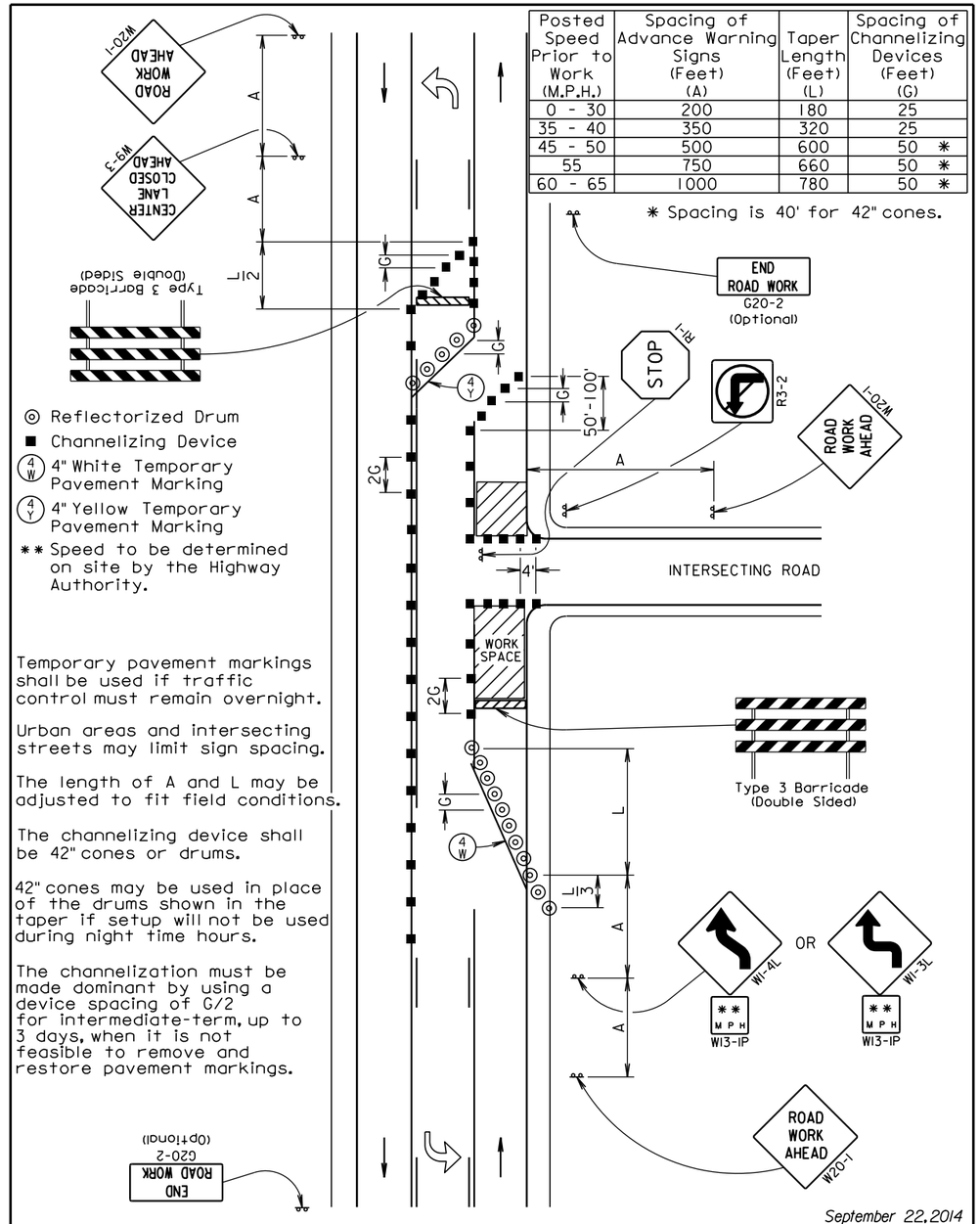
September 22, 2014

Published Date: 4th Qtr. 2015	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES LEFT LANE CLOSURE FAR SIDE OF INTERSECTION	PLATE NUMBER 634.43 Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	37	42

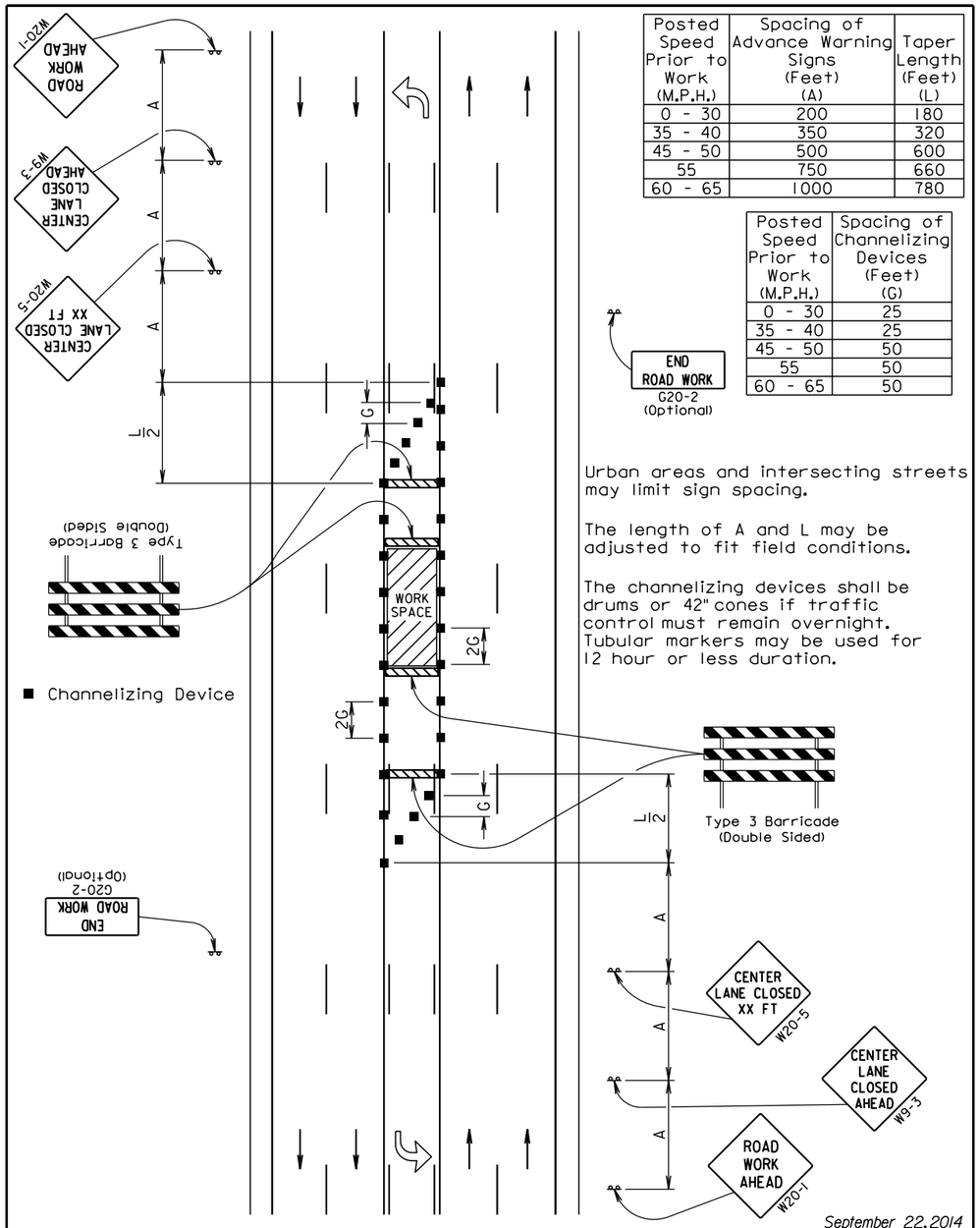


Published Date: 4th Qtr. 2015	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES MULTIPLE LANE CLOSURES AT INTERSECTION	PLATE NUMBER 634.45 Sheet 1 of 1



Published Date: 4th Qtr. 2015	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES 3-LANE, OUTSIDE LANE CLOSED	PLATE NUMBER 634.53 Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	38	42



■ Channelizing Device

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 - 40	25
45 - 50	50
55	50
60 - 65	50

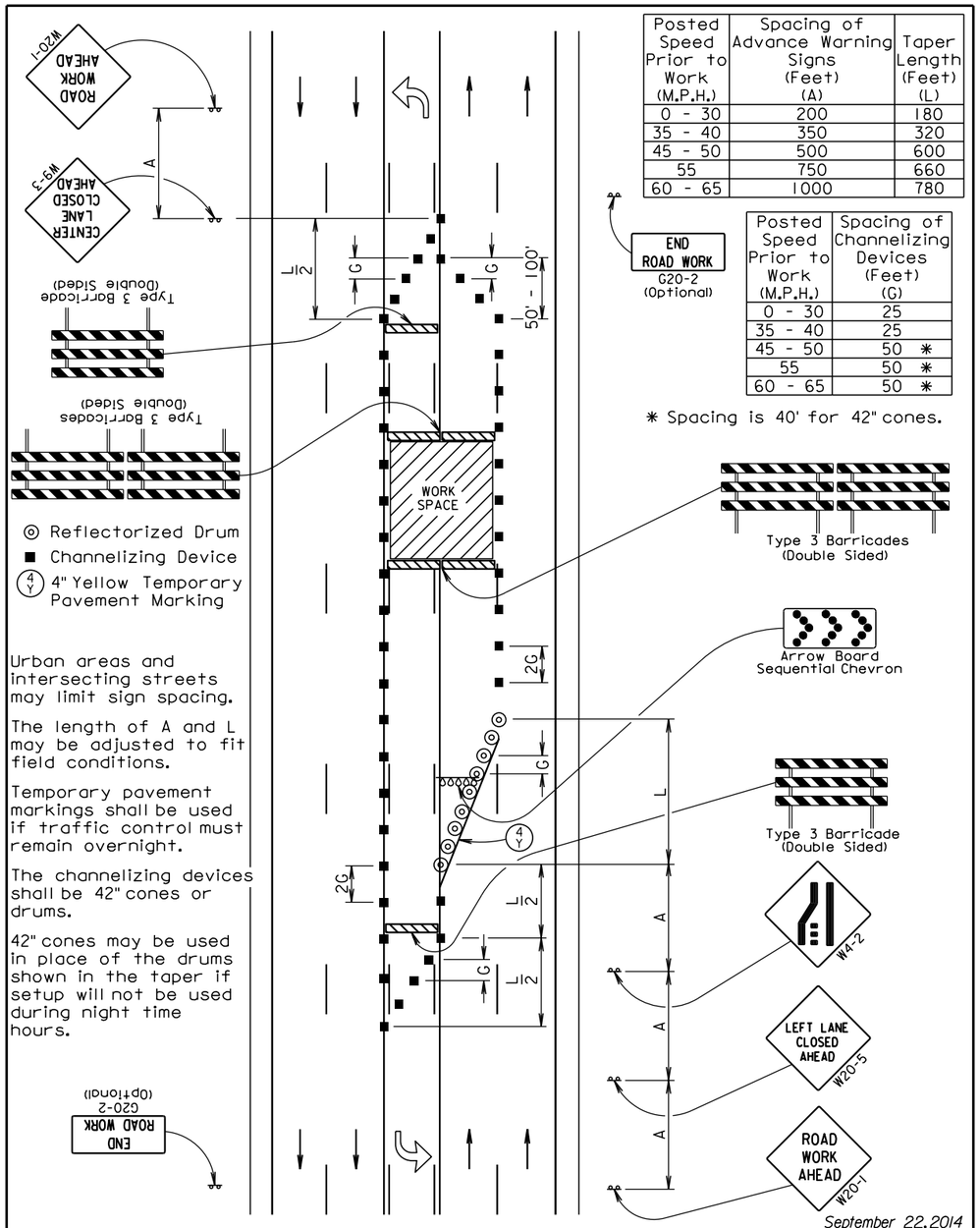
Urban areas and intersecting streets may limit sign spacing.

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

The channelizing devices shall be drums or 42" cones if traffic control must remain overnight. Tubular markers may be used for 12 hour or less duration.

September 22,2014

Published Date: 4th Qtr. 2015	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES 5-LANE, CENTER LANE CLOSED	PLATE NUMBER 634.55 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 - 40	25
45 - 50	50 *
55	50 *
60 - 65	50 *

* Spacing is 40' for 42" cones.

◎ Reflectorized Drum
■ Channelizing Device
(4Y) 4" Yellow Temporary Pavement Marking

Urban areas and intersecting streets may limit sign spacing.

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

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

The channelizing devices shall be 42" cones or drums.

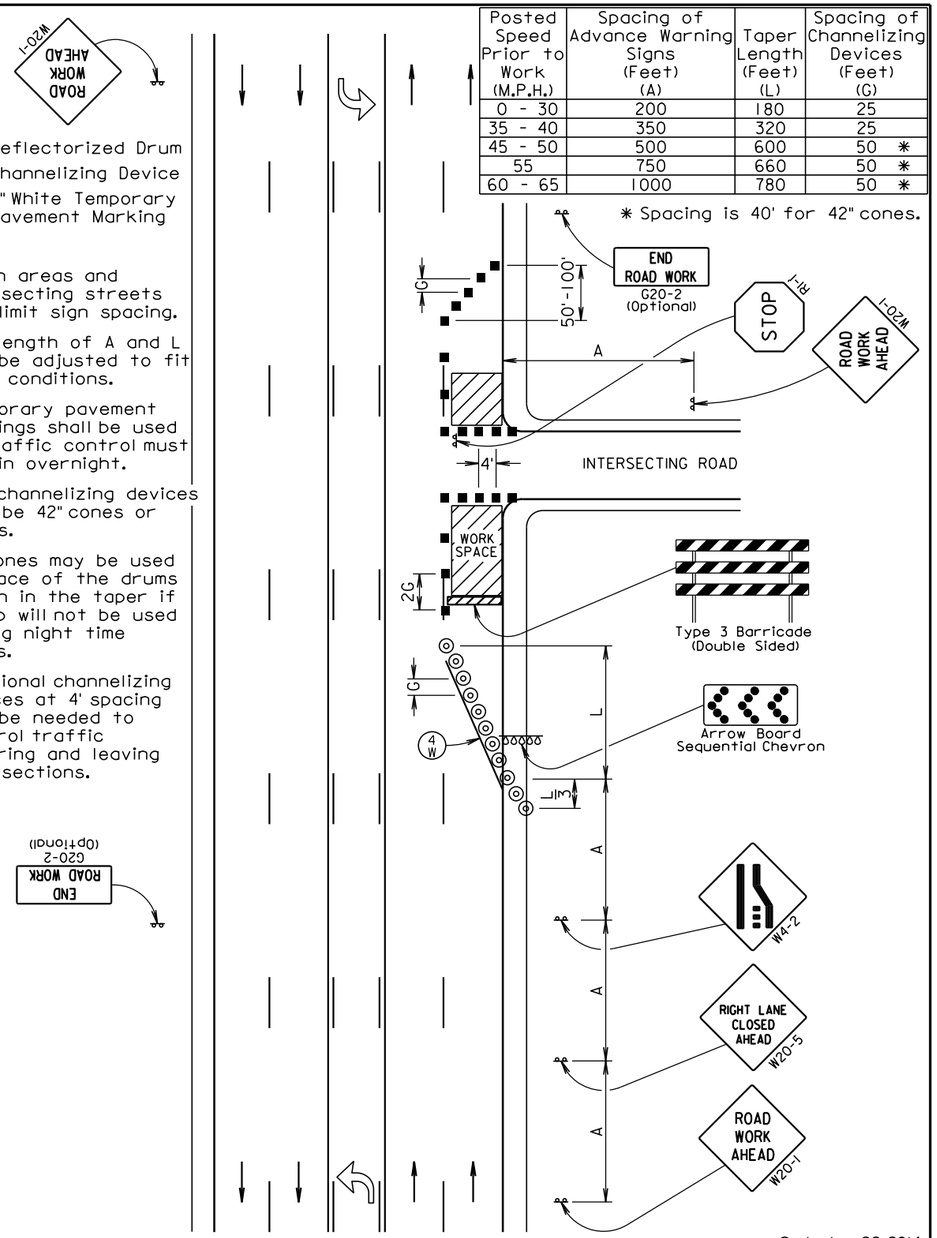
42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

September 22,2014

Published Date: 4th Qtr. 2015	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES 5-LANE, INSIDE 2 LANES CLOSED	PLATE NUMBER 634.56 Sheet 1 of 1

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

* Spacing is 40' for 42" cones.



September 22, 2014

Published Date: 4th Qtr. 2015	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES 5-LANE, OUTSIDE LANE CLOSED	PLATE NUMBER 634.60 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

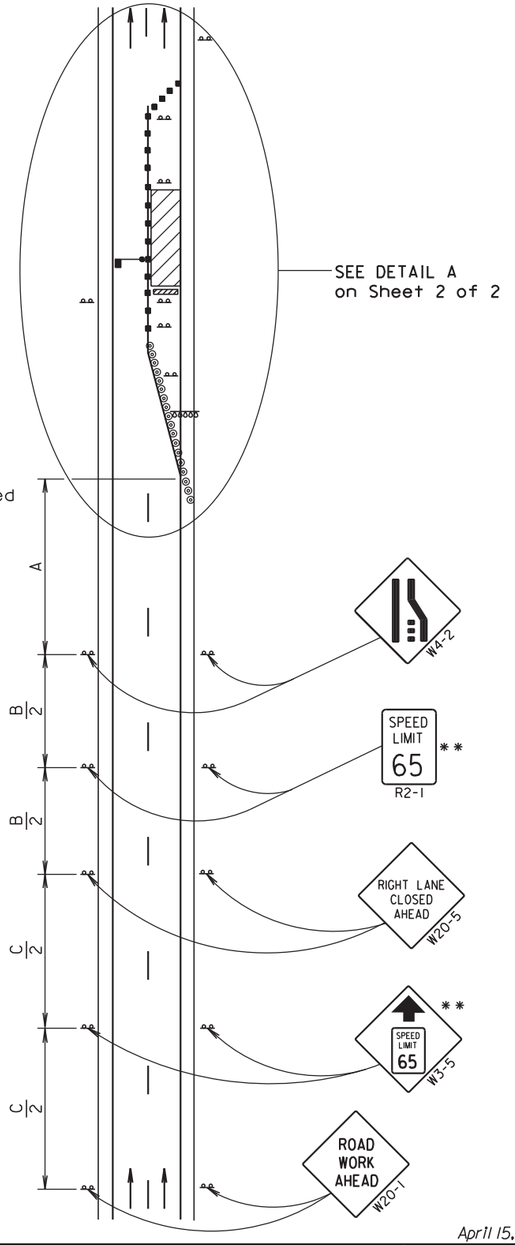
** Speed appropriate for location.

◎ 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.



April 15, 2015

Published Date: 4th Qtr. 2015	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 - 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 shall be covered or removed when workers are not present.

■—● Flagger (As Necessary)

◎ Reflectorized Drum

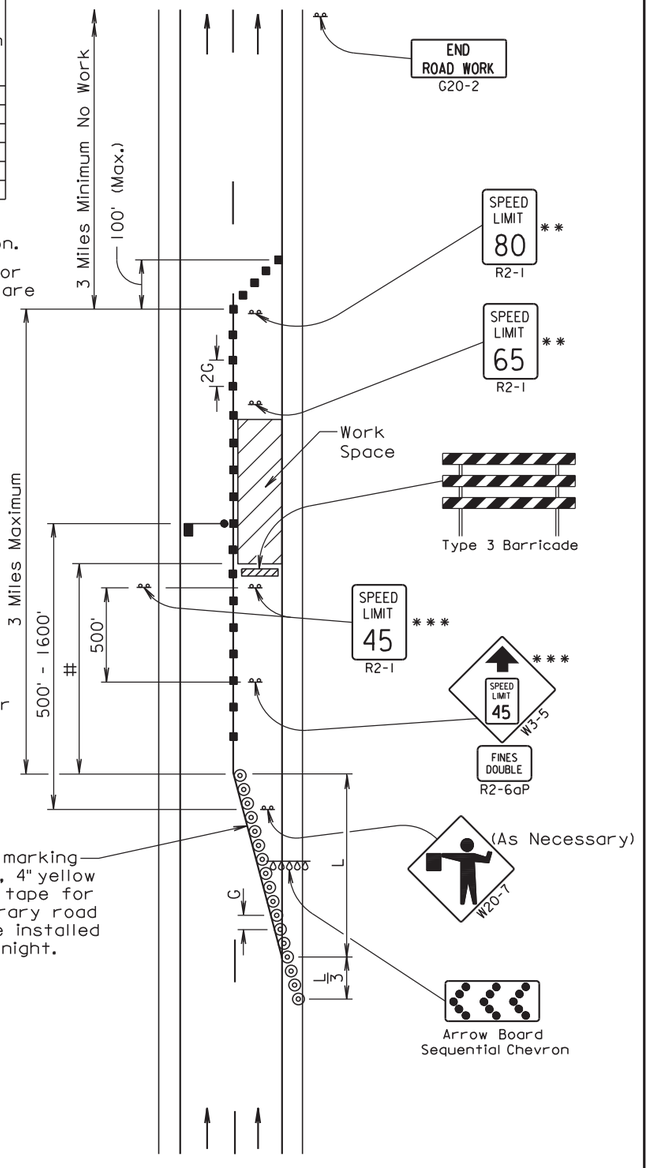
■ Channelizing Device

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

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

The channelizing devices shall be 42" cones or drums.

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



4" white temporary pavement marking tape for right lane closures, 4" yellow temporary pavement marking tape for left lane closures, or temporary road markers at 5' spacing shall be installed when the lane is closed overnight.

DETAIL A

April 15, 2015

Published Date: 4th Qtr. 2015	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.)	Spacing of Advance Warning Signs (Feet) (A) (B)	L (Feet)
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 - 40	25
45 - 50	50 *
55	50 *
60 - 80	50 *

* Spacing is 40' for 42" cones.

■ Channelizing Device

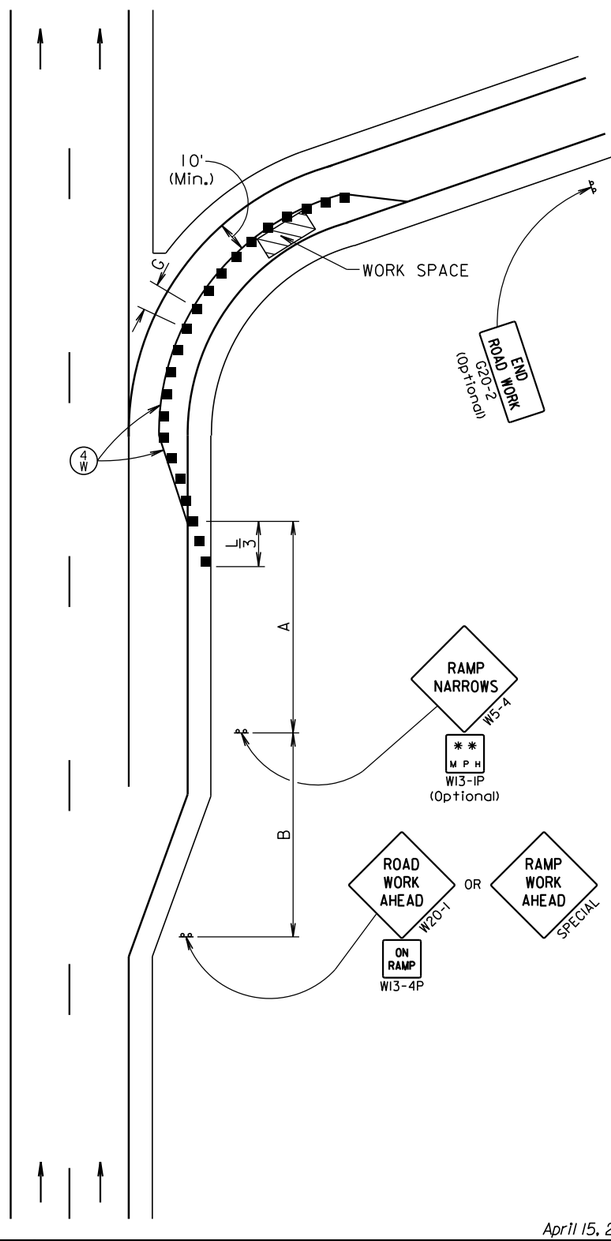
(4W) 4" White Temporary Pavement Marking

** Need and safe speed to be determined by the Highway Authority.

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

The channelizing devices shall 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.



April 15, 2015

Published Date: 4th Qtr. 2015

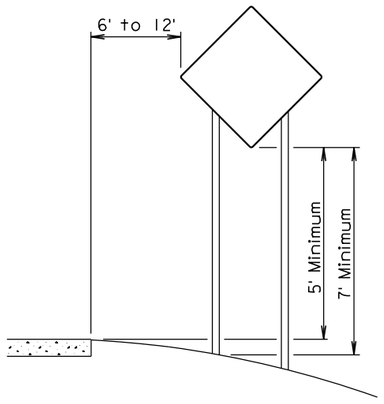
SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
PARTIAL EXIT RAMP CLOSURE

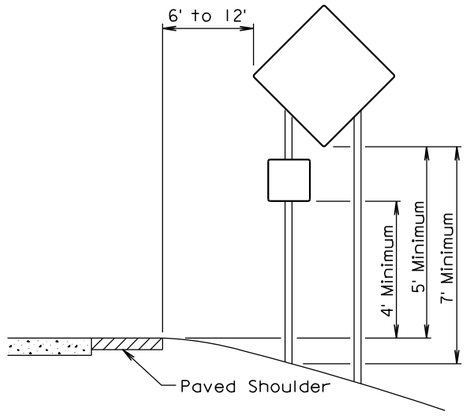
PLATE NUMBER
634.69

Sheet 1 of 1

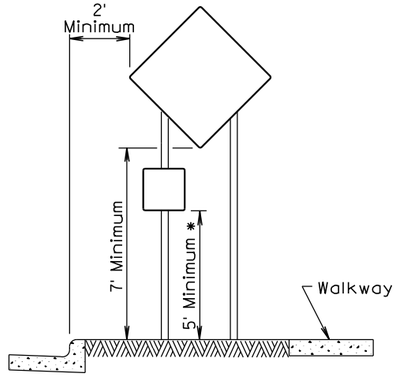
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(90)74 090E-271	42	42



RURAL DISTRICT

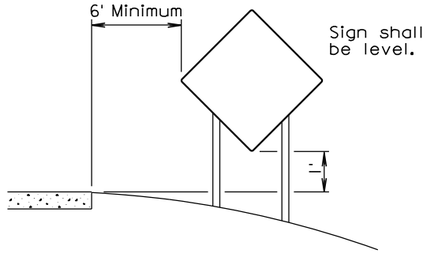


RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

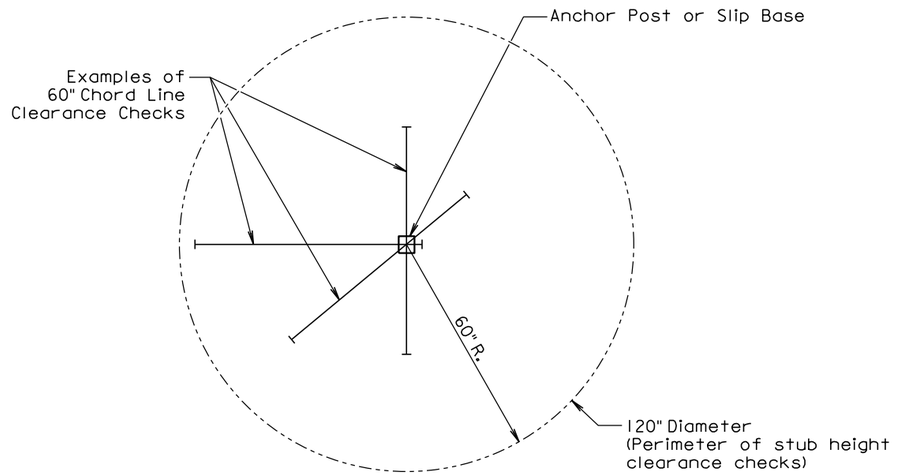
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.



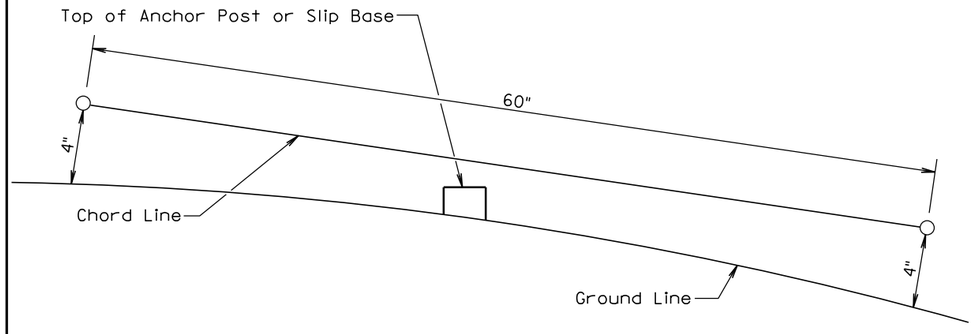
RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

September 22, 2014

Published Date: 4th Qtr. 2015	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 SHALL 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 shall 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.

July 1, 2005

Published Date: 4th Qtr. 2015	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1