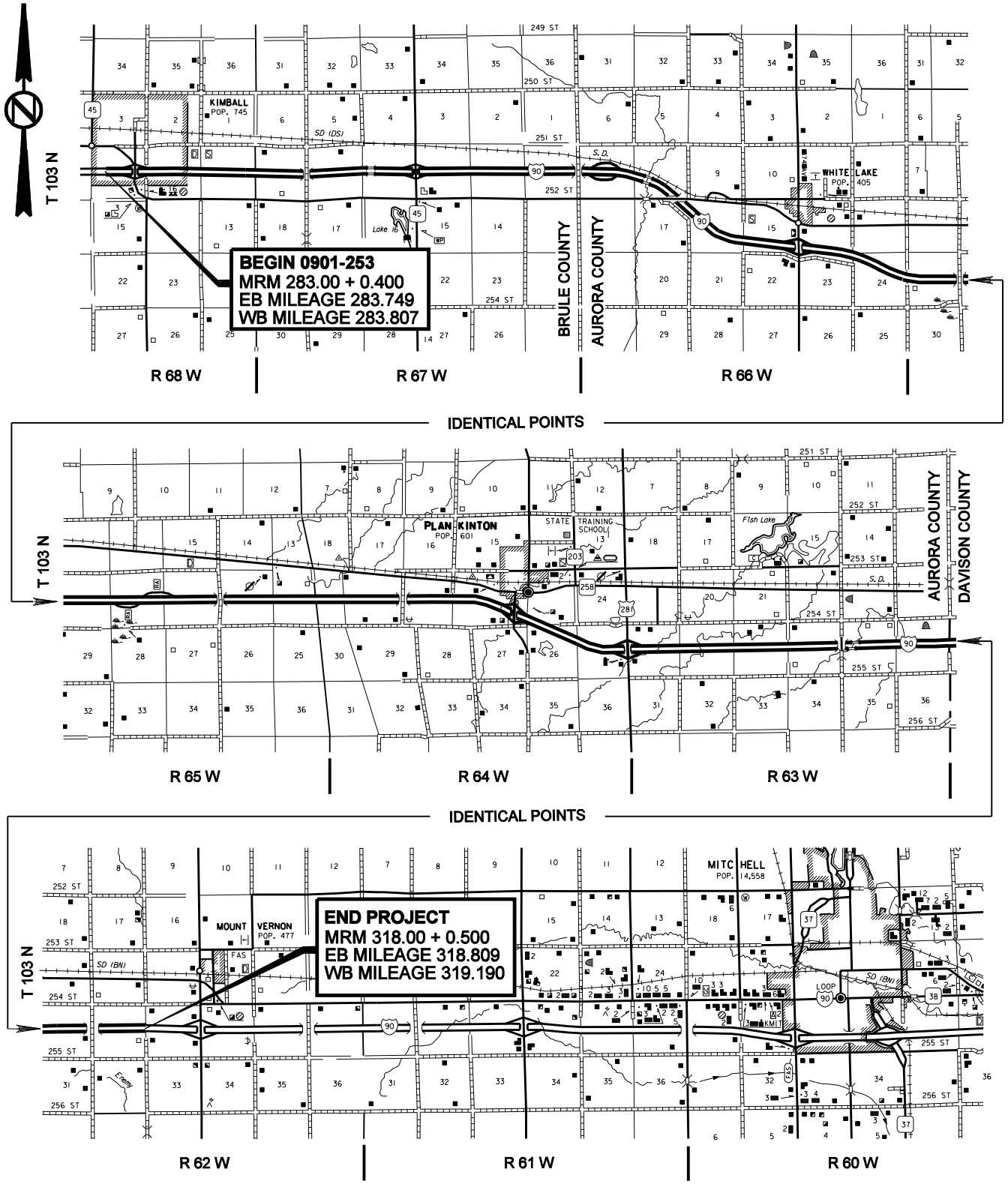
0901 E-253 & 090 W-253
BRULE, AURORA & DAVISON COUNTIES
PCC PAVEMENT REPAIR
PCN 00WD & 00XB



INDEX OF SHEETS

DESIGN DESIGNATION

ADT (2005)	7,430
ADT (2025)	12,205
DHV	1,735
d	50%
T DHV	11.7%
T ADT	25.7%
V	75 MPH

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	090 E-253 QUANTITY	090 W-253 QUANTITY	TOTAL QUANTITY	UNIT
009E0010	Mobilization	<---------- Lump Sum ---------->		Lump Sum	LS
380E5030	Nonreinforced PCC Pavement Repair	1414.6	2065.6	3480.2	SqYd
380E6000	Dowel Bar	24	36	60	Each
380E6110	Insert Steel Bar in PCC Pavement	2914	4167	7081	Each
634E0010	Flagging	150	150	300	Hour
634E0100	Traffic Control	2318	2318	4636	Unit
634E0120	Traffic Control, Miscellaneous	<---------- Lump Sum ---------->		Lump Sum	LS
634E0310	Temporary Road Markers	12600	20700	33300	Ft
634E0420	Type C Advance Warning Arrow Panel	2	2	4	Each

TABLE FOR PCC PAVEMENT REPAIR

WBL

MRM	REPAIRS IN PASSING LANE Each	REPAIRS IN DRIVING LANE Each	PCCP QUANTITY SqYd	1¼" x 18" PLAIN ROUND DOWEL BARS Each	NO. 5 DEFORMED TIE BARS Each
319-318	1	5	50.0	96	11
318-317	1	3	34.7	64	9
317-316	1	3	34.7	64	9
316-315	1	6	56.0	112	13
315-314	3	1	32.0	64	8
314-313	7	2	98.7	144	18
313-312	4	4	69.3	128	16
312-311	2	11	110.1	208	28
311-310	0	4	34.7	64	9
310-309	0	3	28.0	48	8
309-308	0	4	32.0	64	8
308-307	0	7	56.0	112	14
307-306	0	2	16.0	32	4
306-305	2	3	40.0	80	10
305-304	0	8	64.0	128	16
304-303	1	4	40.7	80	10
303-302	1	5	54.0	96	12
302-301	2	3	40.0	80	10
301-300	0	0	0.0	0	0
300-299	0	1	8.0	16	2
299-298	1	3	37.3	64	11
298-297	2	12	113.3	224	27
297-296	3	12	120.0	240	30
296-295	1	2	48.0	48	10
295-294	1	2	26.7	48	7
294-293	3	8	140.0	176	37
293-292	6	8	144.0	224	43
292-291	1	4	40.0	80	10
291-290	0	3	24.0	48	6
290-289	0	3	34.7	48	10
289-288	1	3	32.0	64	8
288-287	0	7	82.7	112	24
287-286	2	1	25.3	48	4
286-285	1	8	98.7	144	27
285-284	0	4	32.0	64	8
	090 W-253 TOTALS:		**1897.6**	**3312**	**477**

TABLE FOR PCC PAVEMENT REPAIR

EBL

MRM	REPAIRS IN PASSING LANE Each	REPAIRS IN DRIVING LANE Each	PCCP QUANTITY SqYd	1¼" x 18" PLAIN ROUND DOWEL BARS Each	NO. 5 DEFORMED TIE BARS Each
284-285	4	12	144.0	256	34
285-286	2	8	80.0	160	20
286-287	0	4	34.7	64	9
287-288	0	0	0.0	0	0
288-289	0	2	16.0	32	4
289-290	0	5	49.3	80	14
290-291	2	7	76.0	144	17
291-292	1	6	58.7	112	15
292-293	0	14	126.7	224	35
293-294	0	8	76.0	128	21
294-295	0	6	57.3	96	16
295-296	0	4	33.3	64	9
296-297	0	9	77.3	144	20
297-298	1	11	118.7	192	34
298-299	0	1	8.0	16	2
299-300	0	0	0.0	0	0
300-301	0	2	16.0	32	4
301-302	0	1	8.0	16	2
302-303	0	0	0.0	0	0
303-304	0	0	0.0	0	0
304-305	0	2	20.0	32	6
305-306	0	4	45.3	64	13
306-307	0	7	69.3	112	19
307-308	1	3	32.0	64	8
308-309	2	0	16.0	32	4
309-310	0	2	19.3	32	5
310-311	0	2	18.0	32	5
311-312	0	4	38.7	64	10
312-313	0	0	0.0	0	0
313-314	0	0	0.0	0	0
314-315	0	1	8.0	16	2
315-316	0	0	0.0	0	0
316-317	0	0	0.0	0	0
317-318	0	0	0.0	0	0
318-319	0	0	0.0	0	0
	090 E-253 TOTALS:		**1246.6**	**2208**	**328**
	EB & WB TOTALS:		**3144.2**	**5520**	**805**
	ADDITIONAL QUANTITIES:		**336**	**672**	**84**
	GRAND TOTALS:		**3480.2**	**6192**	**889**

An additional 60 Dowel Bars are also included in the Estimate of Quantities should any longer pavement replacement areas be needed.

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

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 6 feet.

COMPLETION DATE

All work shall be completed on or before October 13, 2006.

WASTE DISPOSAL SITE

The Contractor will be required to furnish a site(s) for the disposal of construction/demolition debris generated by this project.

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

All construction/demolition debris generated by this project shall be cleaned up and disposed of by the Contractor.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Highway, Road, and Railway 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 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/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/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. 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 for furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates & signs) and reclamation of the waste disposal site(s) shall be incidental to the contract unit prices for the various items.

RESTORATION OF GRAVEL CUSHION

An inspection of the gravel cushion subgrade 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 replacement 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 price per square yard for Nonreinforced PCC Pavement Repair.

EXISTING PCC PAVEMENT

The existing 9" PCC Pavement is reinforced with welded wire fabric. The welded wire fabric weighs not less than 60 pounds per 100 square feet, the longitudinal wires are No. 1 gauge and are spaced 6" center to center and the transverse wires are No. 4 gauge and are spaced 12" center to center.

Existing contraction joints are spaced at approximately 46.5'. Longitudinal joints are reinforced with No. 5 x 24" deformed tie bars spaced 30" to 48" center to center. Transverse joints are reinforced with 1¼" x 18" plain round dowel bars and with No. 9 or 10 x 18" deformed tie bars spaced 12" to 18" center to center.

The aggregate in the existing PCC Pavement is quartzite.

NONREINFORCED PCC PAVEMENT REPAIR - GENERAL

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.

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 shall be sawed off or removed.

A working joint will be reconstructed at both ends of each pavement replacement area as shown in these plans.

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

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.

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

New pavement thickness shall be 10", one inch thicker than the existing pavement.

Concrete shall meet the requirements of the Standard Specifications Section 380, except as modified by the following notes:

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. Coarse aggregate shall be crushed ledge rock, Size No. 1. Mix proportions shall be as follows, dependent upon type of cement the Contractor elects to use:

	LB./CU.YD.	LB./CU.YD.
CEMENT	800 (TYPE I or II)	710 (TYPE III)
WATER	282	300
FINE AGGREGATE	1039	1114
COARSE AGGREGATE	1726	1668

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

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 60 degrees Fahrenheit or higher throughout the cure period. If the concrete temperature falls below 60 degrees Fahrenheit, the cure time shall be extended or other measures shall be taken, at no additional cost to the State, to insure that strength of 4,000 psi is attained prior to opening to traffic.

NONREINFORCED PCC PAVEMENT REPAIR (CONTINUED)

Cost for performing the aforementioned work including sawing and removing concrete, furnishing and placing concrete, sawing and sealing joints, repairing asphalt 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. 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.

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

Epoxy resin adhesive shall be of the type intended for horizontal applications, and shall conform to the requirements of ASTM C 881, Type IV, Grade 3 (equivalent to AASHTO M235, Type IV, Grade 3).

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 outside edge of the slab. 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 6' long will require 18 steel bars (8 in each transverse joint and 2 in the longitudinal joint).

The diameter of the drilled holes in the existing concrete pavement for the steel bars shall not be less than 1/8 inch nor more than 3/8 inch greater than the overall diameter of the steel bar. Holes drilled into the existing concrete pavement shall be located at mid-depth of the slab and true and normal. 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.

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.

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 1/3 to 1/2 full of epoxy, or as recommended by the manufacturer, prior to insertion of the steel bar. Care shall be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during insertion to eliminate voids and ensure complete bonding of the bar. Insertion by the dipping method will not be allowed.

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

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.

The joints shall be sawed and sealed using one of the two following options:

OPTION 1: Transverse joints shall be sealed with Low Modulus Silicone Sealant. Longitudinal joints may be sealed with either Low Modulus Silicone Sealant or Hot Poured Elastic Joint Sealer. See Sheets 11 - 14.

OPTION 2: Seal both the transverse and longitudinal joints using Hot Poured Elastic Joint Sealer as per the details on Sheet 15. If, as determined by the Engineer, the 1/8" wide sawcut is not wide enough to obtain a clean joint with true edges, a 1/4" wide sawcut may be required.

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

SEQUENCE OF OPERATION

Due to the Sturgis Motorcycle Rally, no lane closures will be allowed (except for emergency repair) in the:

- Westbound lanes from Thursday, August 3rd through Monday, August 7th.
- Eastbound lanes from Thursday, August 10th through Sunday, August 13th.

GENERAL MAINTENANCE OF TRAFFIC

Removing, relocating, covering, salvaging and resetting of permanent traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Storage of vehicles and equipment shall be outside the clear zone and as near as possible to the right-of-way line. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work.

Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP 350 crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

Sufficient traffic control devices have been included in these plans to sign four 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 unit for Traffic Control.

MAINTENANCE OF TRAFFIC – PCC PAVEMENT REPAIR

A Type III Barricade shall be installed at the end of a lane closure taper as detailed in these plans. Additional Type III Barricades shall be installed facing traffic within the closed lane at a spacing of 1/4 mile. Each mainline concrete repair location from which the in place concrete has been removed shall be marked with a minimum of two drums. In areas containing numerous concrete repair locations, drums should be installed at a spacing of 660' alternating with the Type lll Barricades.

Signs may be mounted on portable supports.

Holes adjacent to centerline in the lane open to traffic created during removal and replacement of PCC Pavement repair areas shall be filled with cold asphalt mix during the cure of concrete placed in a repair area, and until the lane open to traffic is closed.

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

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

Routing traffic onto the shoulder during any phase of the construction 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 routing of traffic onto these shoulders around the work zones. Traffic will be permitted on the ramp shoulders when necessary to allow traffic around a workspace.

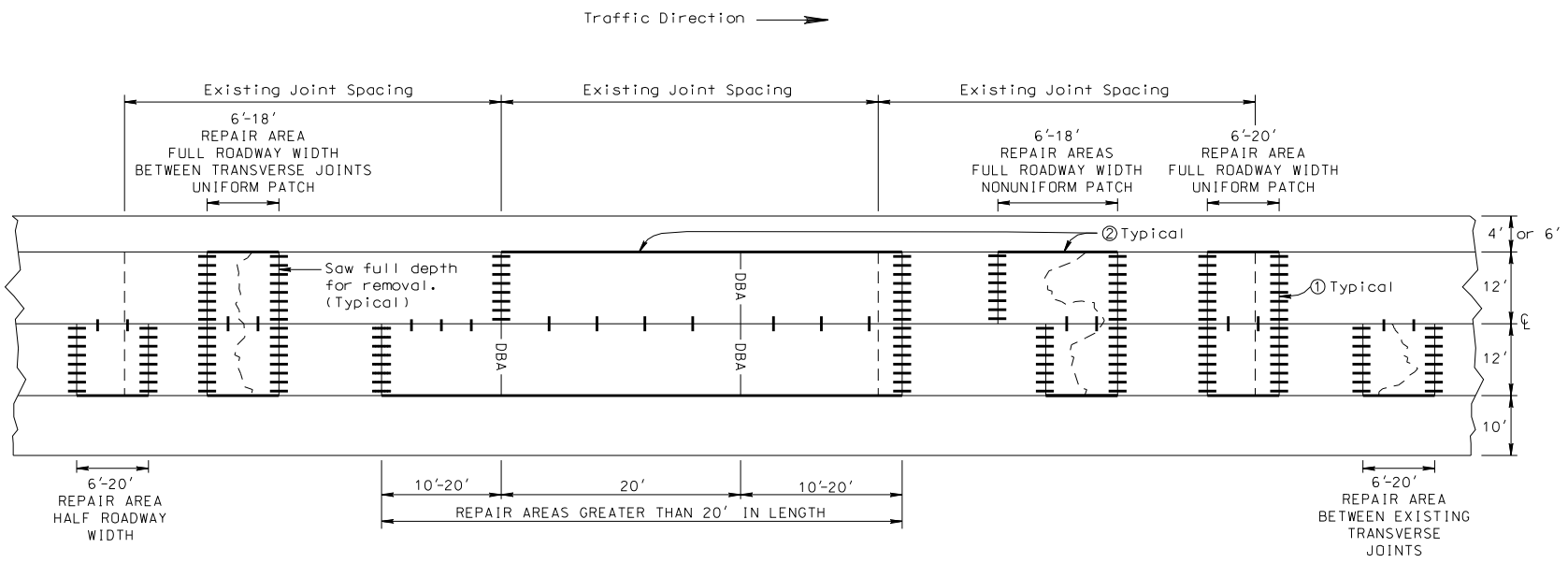
Work activities shall not be conducted simultaneously on the median and outside shoulders of the same directional set of lanes. The use of interstate maintenance crossovers will not be permitted.

TEMPORARY PAVEMENT MARKING

Temporary pavement marking shall consist of Temporary Road Markers and shall be paid for at the contract unit price per foot for Temporary Road Markers.

NONREINFORCED PCC PAVEMENT REPAIR

FOUR LANE DIVIDED - TYPICAL REPAIR AREAS



NOTES:

① Where possible, transverse joints shall be constructed full roadway width.

② All edges of repair areas that are adjacent to asphalt concrete shall be formed to match the width of the existing concrete pavement.

KEY:

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.

Steel Bars for Transverse Joints

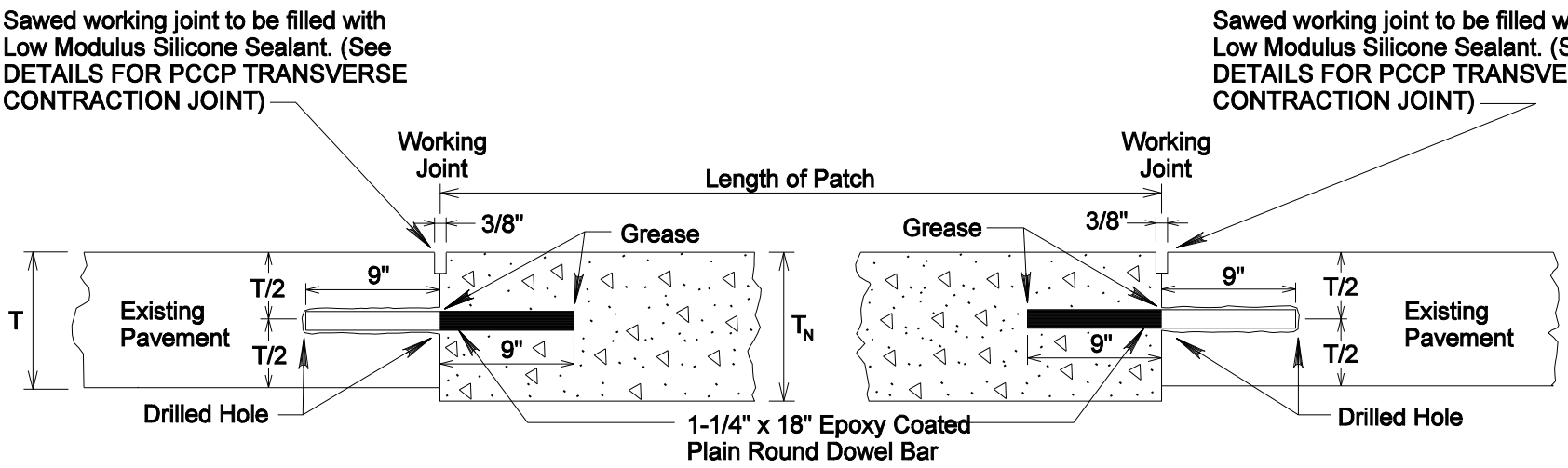
— Drilled in 1¼" x 18" epoxy coated plain round dowel bars spaced 18" center to center.

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

DBA Dowel Bar Assembly (for repair areas greater than 20' in length)

NONREINFORCED PCC PAVEMENT REPAIR

PLAIN ROUND DOWEL BAR INSERTION
(TWO WORKING JOINTS)



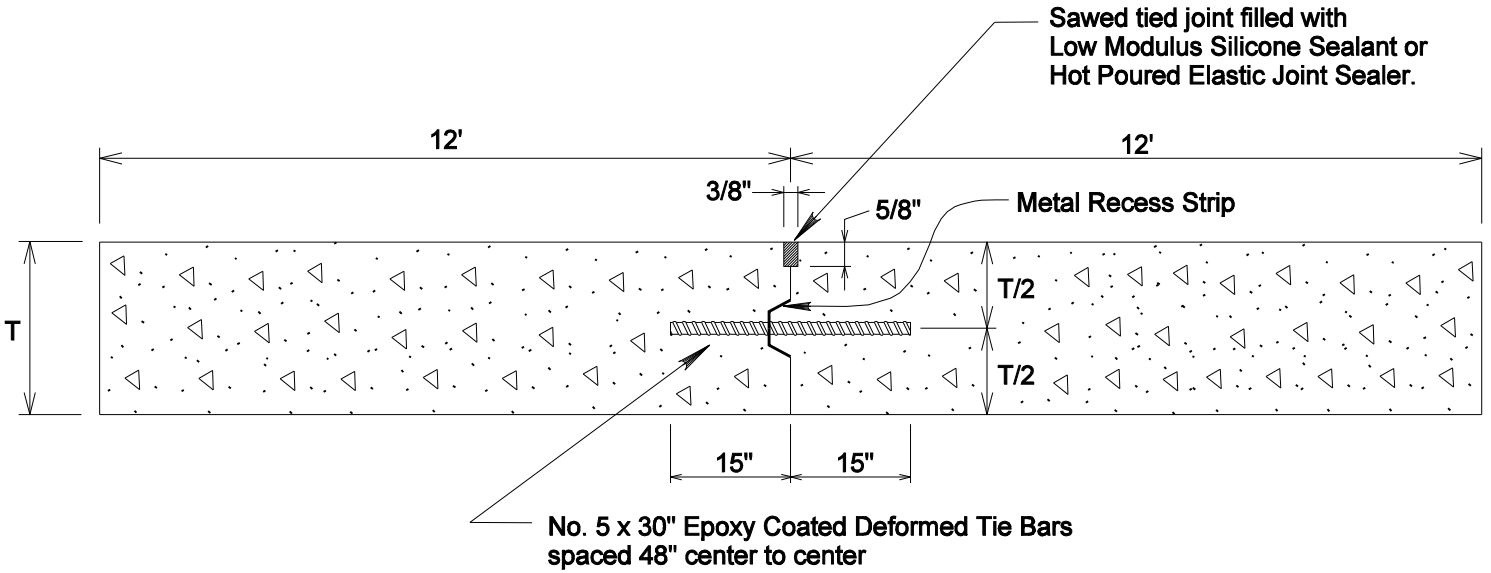
T = Existing pavement thickness.
T_N= New pavement thickness (10").

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

Cost for furnishing and inserting epoxy coated plain round dowel bars shall be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

NONREINFORCED PCC PAVEMENT REPAIR

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS & KEYWAY



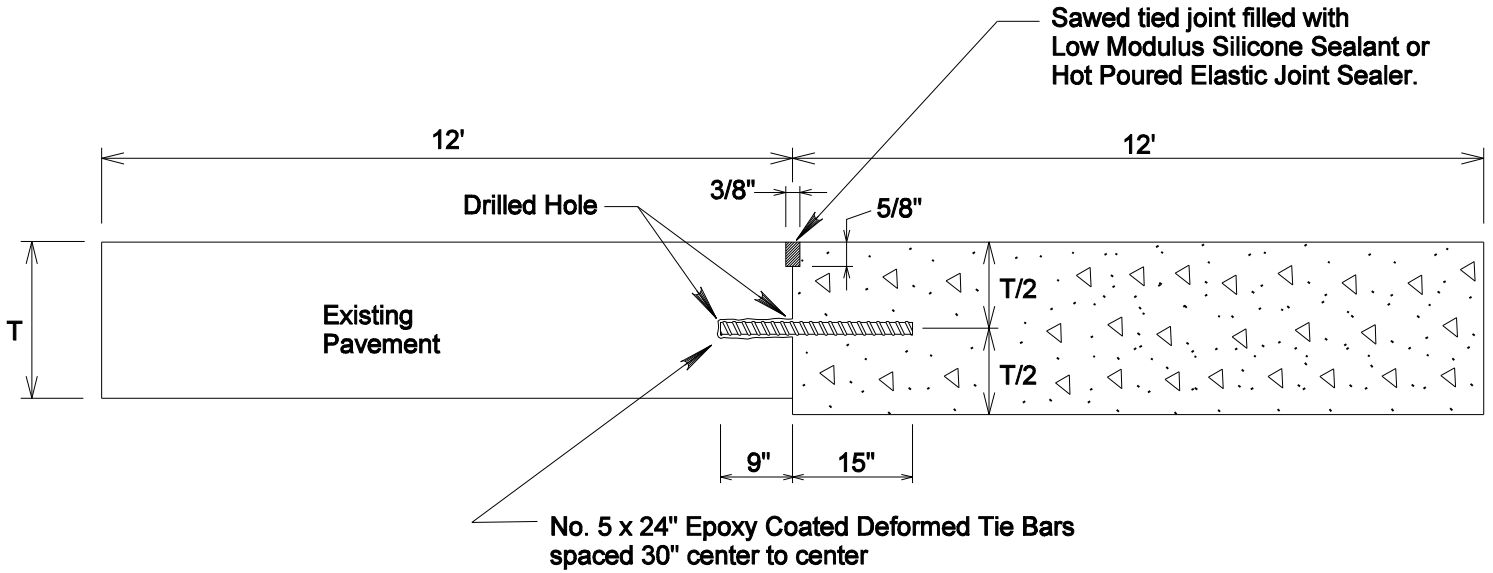
T = New pavement thickness.

Deformed tie bars will only be inserted on centerline when there is full width pavement removal.

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

NONREINFORCED PCC PAVEMENT REPAIR

LONGITUDINAL CONSTRUCTION JOINT WITH DRILLED IN TIE BARS



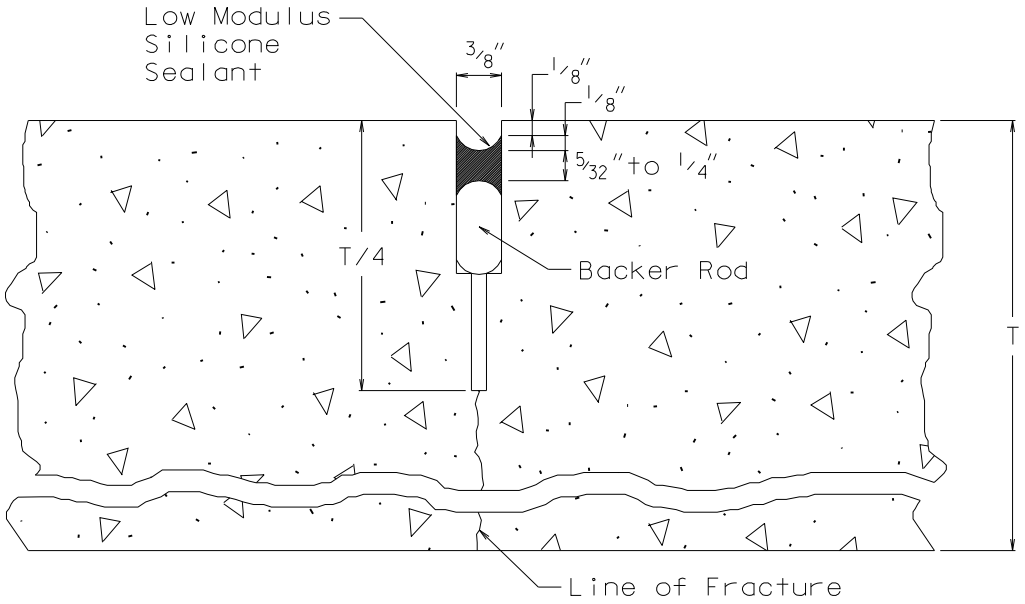
T = Existing pavement thickness.

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

DETAILS FOR PCCP TRANSVERSE CONTRACTION JOINT



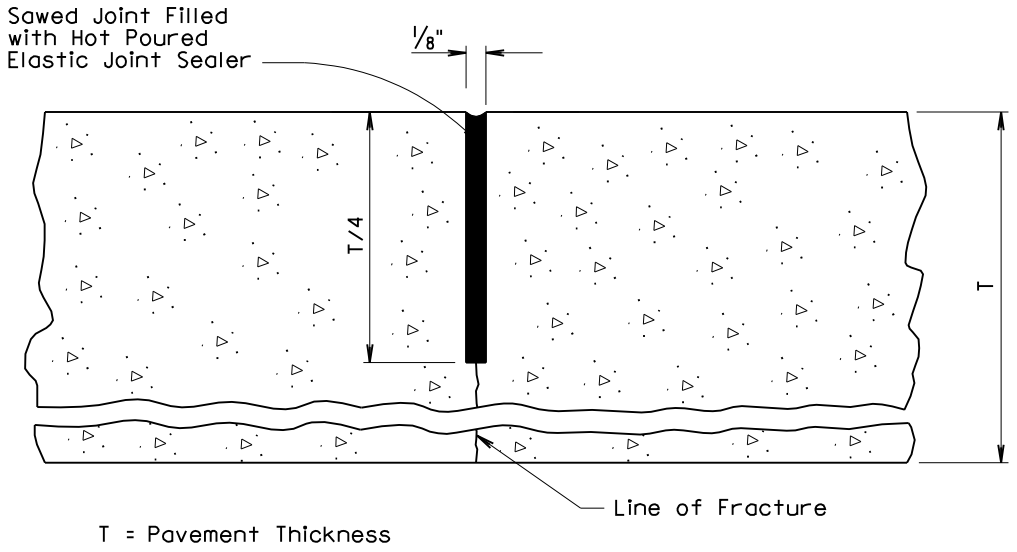
T = Pavement Thickness

GENERAL NOTES:

The first saw cut to control cracking shall be a minimum of 1/4 the depth of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the Low Modulus Silicone Joint Sealant will be necessary.

Backer Rod shall be of nonmoisture absorbing resilient material approximately 25% larger in diameter than the width of the joint to be sealed.

PCC PAVEMENT TRANSVERSE CONTRACTION JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY (OPTION 2)

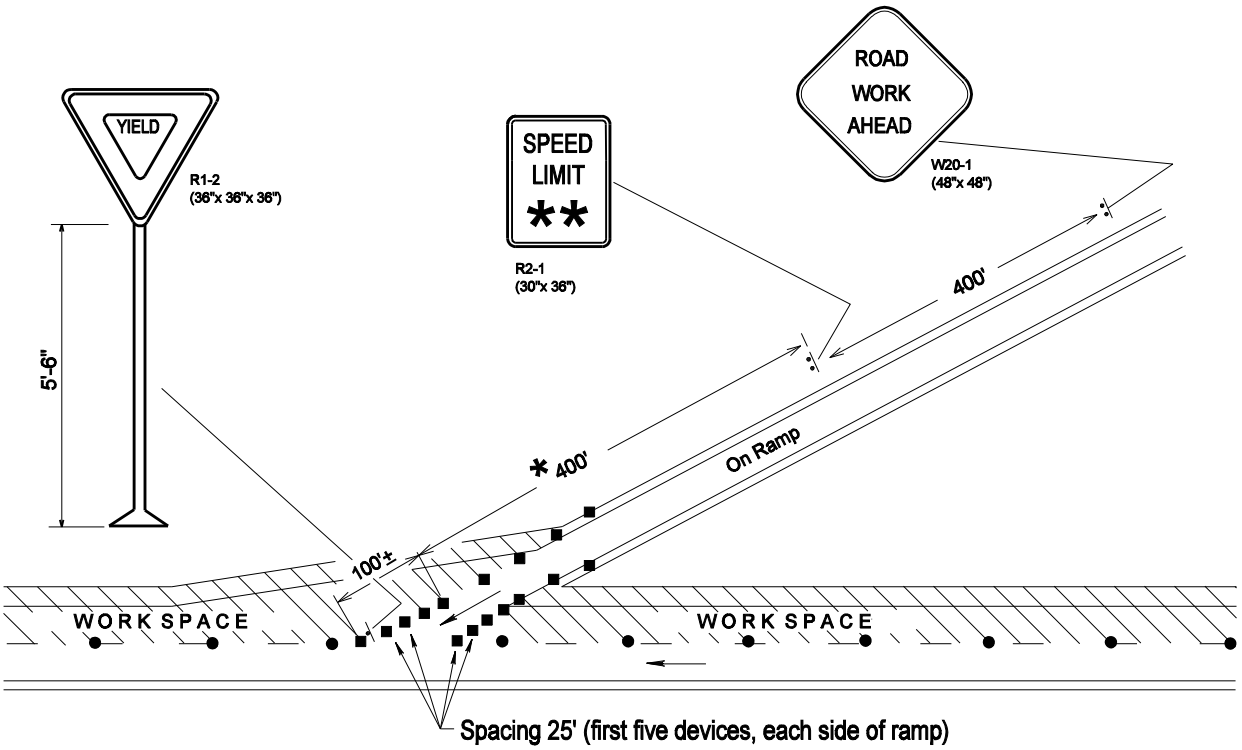


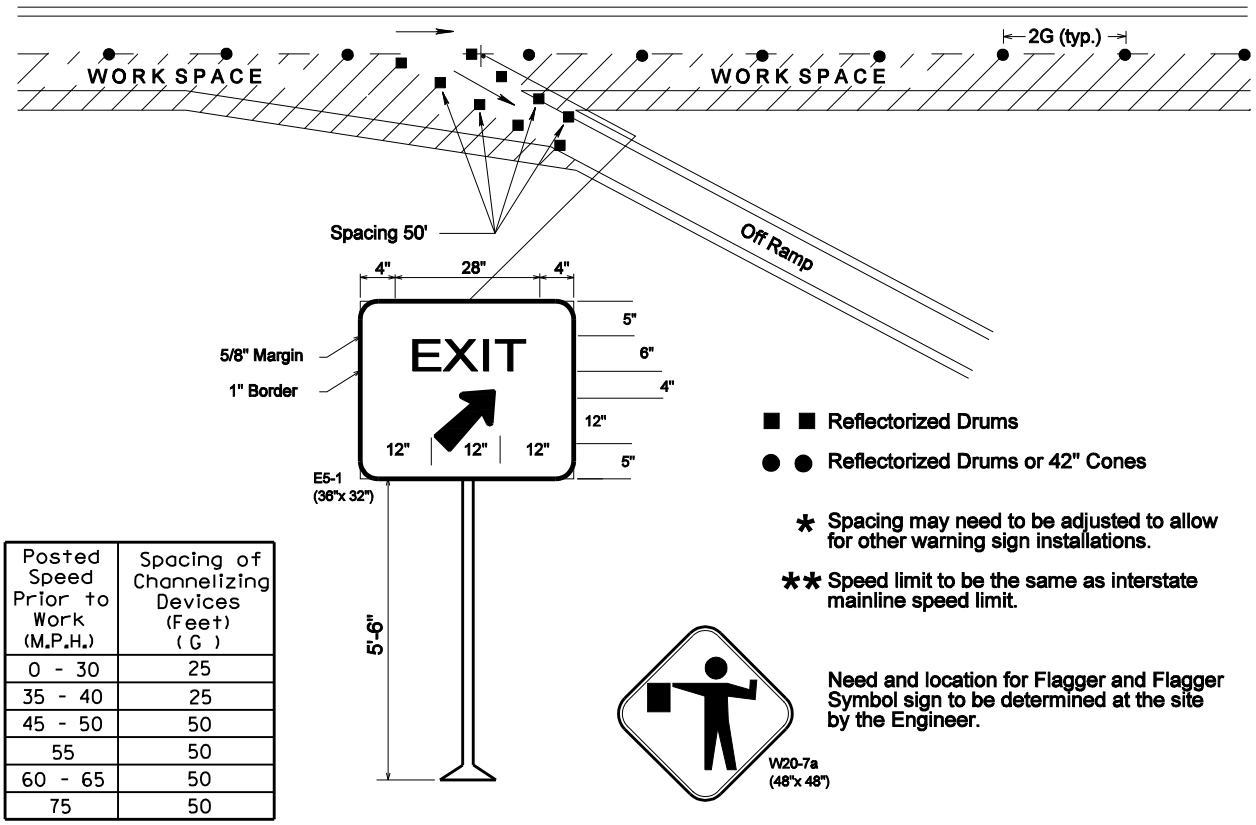
GENERAL NOTE:

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

TRAFFIC CONTROL

ON-RAMP AND OFF-RAMP DETAILS





■ ■ Reflectorized Drums

● ● Reflectorized Drums or 42" Cones

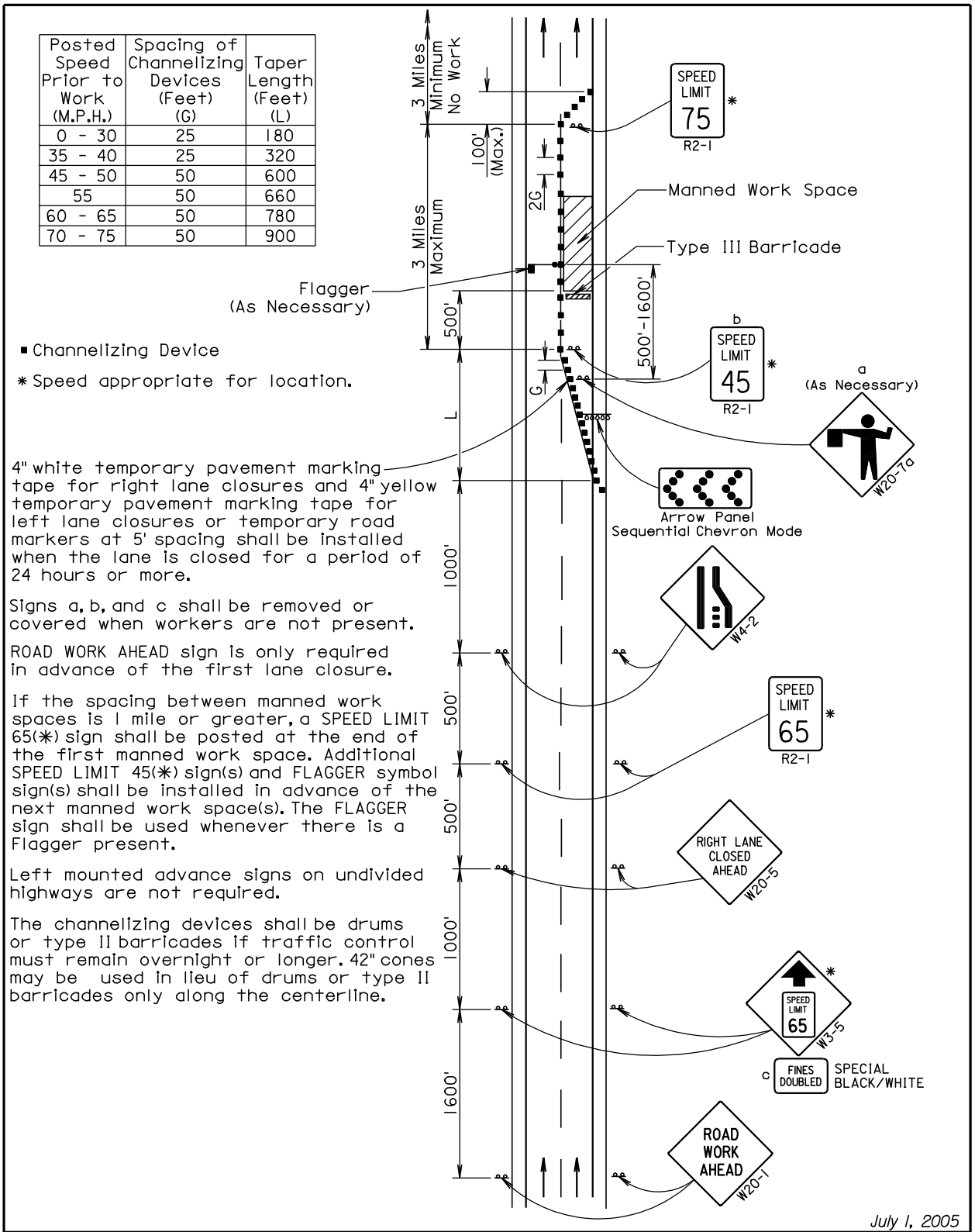
* Spacing may need to be adjusted to allow for other warning sign installations.

** Speed limit to be the same as interstate mainline speed limit.

Need and location for Flagger and Flagger Symbol sign to be determined at the site by the Engineer.

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
75	50

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 - 75	50	900



- Channelizing Device

* Speed appropriate for location.

4" white temporary pavement marking tape for right lane closures and 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 for a period of 24 hours or more.

Signs a, b, and c shall be removed or covered when workers are not present.

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

If the spacing between manned work spaces is 1 mile or greater, a SPEED LIMIT 65(*) sign shall be posted at the end of the first manned work space. Additional SPEED LIMIT 45(*) sign(s) and FLAGGER symbol sign(s) shall be installed in advance of the next manned work space(s). The FLAGGER sign shall be used whenever there is a Flagger present.

Left mounted advance signs on undivided highways are not required.

The channelizing devices shall be drums or type II barricades if traffic control must remain overnight or longer. 42" cones may be used in lieu of drums or type II barricades only along the centerline.

July 1, 2005

Published Date: 2nd Qtr. 2006

SDDOT

MANNED WORK SPACE SIGNING FOR DIVIDED AND UNDIVIDED HIGHWAYS

PLATE NUMBER 634.63

Sheet 1 of 1

Plotting Date: 07-JUN-2006

Username - trmilntl5

ITEMIZED LIST FOR TRAFFIC CONTROL

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
E5-1	36" x 32"	EXIT GORE SIGN	4	24	96
G20-2a	36" x 18"	END ROAD WORK		17	
R1-1	48" x 48"	STOP		34	
R1-2	36" x 36"	YIELD	4	27	108
R2-1	30" x 36"	SPEED LIMIT 45	12	23	276
R2-1	30" x 36"	SPEED LIMIT 65	16	23	368
R2-1	30" x 36"	SPEED LIMIT 75	4	23	92
R2-5a	30" x 36"	REDUCED SPEED AHEAD		23	
R4-7	24" x 30"	KEEP RIGHT (SYMBOL)		18	
R5-1	48" x 48"	DO NOT ENTER		34	
R5-1a	48" x 36"	WRONG WAY		29	
R10-6	24" x 36"	STOP HERE ON RED		20	
R11-2	48" x 30"	ROAD CLOSED		27	
R11-3a	60" x 30"	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY		30	
R11-4	60" x 30"	ROAD CLOSED TO THRU TRAFFIC		30	
SW12-1b	120" x 60"	HIGHWAY WORKERS GIVE'EM A BRAKE		80	
W1-1	48" x 48"	LEFT OR RIGHT TURN ARROW		34	
W1-2	48" x 48"	LEFT OR RIGHT CURVE ARROW		34	
W1-3	48" x 48"	REVERSE TURN SIGN (LEFT OR RIGHT)		34	
W1-4a	48" x 48"	REVERSE CURVE SIGN (LEFT OR RIGHT)		34	
W3-1a	48" x 48"	STOP AHEAD (SYMBOL)		34	
W3-2a	48" x 48"	YIELD AHEAD (SYMBOL)		34	
W3-3	48" x 48"	SIGNAL AHEAD (SYMBOL)		34	
W3-5	48" x 48"	SPEED REDUCTION (__ MPH)	8	34	272
W4-1	48" x 48"	MERGE (SYMBOL)		34	
W4-2	48" x 48"	LEFT OR RIGHT LANE ENDS (SYMBOL)	8	34	272
W5-2	48" x 48"	NARROW BRIDGE		34	
W5-3	48" x 48"	ONE LANE BRIDGE		34	
W7-3a	30" x 24"	NEXT __ MILES		18	
W8-1	36" x 36"	BUMP		27	
W8-6	48" x 48"	TRUCK CROSSING		34	
W8-7	36" x 36"	LOOSE GRAVEL		27	
W8-9a	48" x 48"	SHOULDER DROP-OFF		34	
W8-11	48" x 48"	UNEVEN LANES		34	
W13-1	24" x 24"	ADVISORY SPEED PLATE		16	
W20-1	48" x 48"	ROAD WORK AHEAD	16	34	544
W20-2	48" x 48"	DETOUR AHEAD		34	
W20-3	48" x 48"	ROAD CLOSED AHEAD		34	
W20-4	48" x 48"	ONE LANE ROAD AHEAD		34	
W20-5	48" x 48"	LT. OR RT. LANE CLOSED AHEAD	8	34	272
W20-7a	48" x 48"	FLAGGER	8	34	272
W20-7b	48" x 48"	BE PREPARED TO STOP		34	
W21-1a	48" x 48"	WORKERS (SYMBOL)		34	
W21-2	36" x 36"	FRESH OIL		27	
W21-3	48" x 48"	ROAD MACHINERY AHEAD		34	
W21-5	48" x 48"	SHOULDER WORK		34	
W21-5a	48" x 48"	RIGHT SHOULDER CLOSED		34	
W21-5b	48" x 48"	RIGHT SHOULDER CLOSED AHEAD		34	
SPECIAL	30" x 24"	FINES DOUBLED	8	18	144
*****	12" x 36"	TYPE III OBJECT MARKER		15	
*****	*****	TYPE III BARRICADE - 8 FT. SINGLE SIDED	48	40	1920
*****	*****	TYPE III BARRICADE - 8 FT. DOUBLE SIDED		56	
				TOTAL UNITS	**4636**