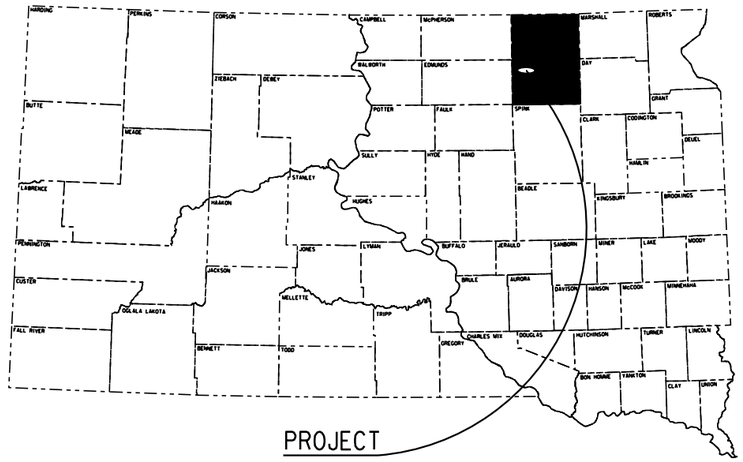
PLOT SCALE - 1:200



STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT 012–151
US HIGHWAY 12
BROWN COUNTY

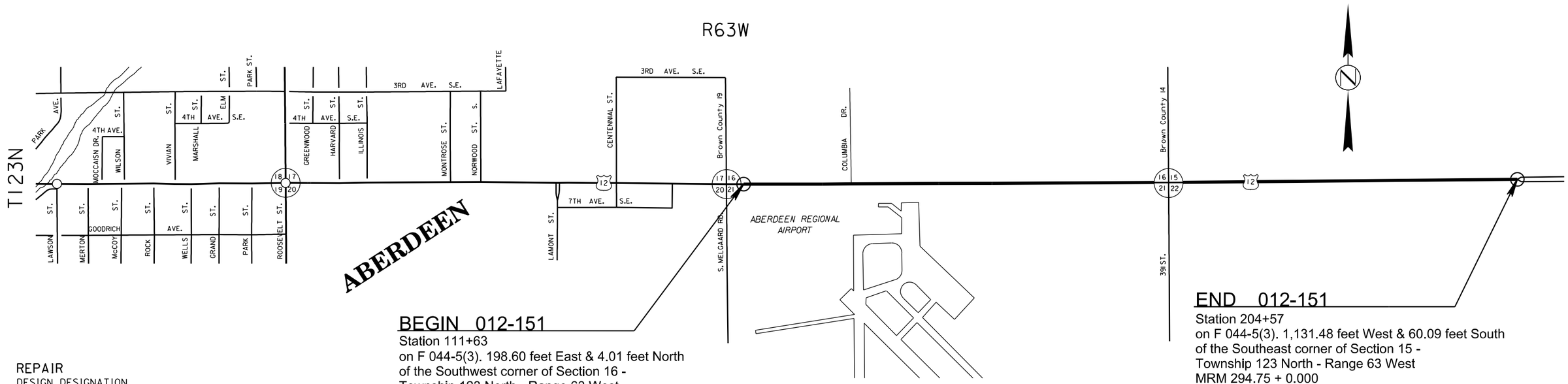
PCC PAVEMENT RESTORATION
PCN i70u

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	012-151	1	25

Plotting Date: 02/21/2023

INDEX OF SHEETS

R63W



BEGIN 012-151
Station 111+63
on F 044-5(3). 198.60 feet East & 4.01 feet North of the Southwest corner of Section 16 - Township 123 North - Range 63 West
MRM 293.00 + 0.000

END 012-151
Station 204+57
on F 044-5(3). 1,131.48 feet West & 60.09 feet South of the Southeast corner of Section 15 - Township 123 North - Range 63 West
MRM 294.75 + 0.000

REPAIR
DESIGN DESIGNATION

ADDT (2021)	10345
ADDT (2041)	15896
DHV	1763
D	50%
T DHV	4.1%
T ADDT	9.0%
V	45 mph (W. of Brown Co. 14)
V	55 mph (E. of Brown Co. 14)

STORM WATER PERMIT
None Required

PCC Pavement

GROSS LENGTH	9294.00 FEET	1.760 MILES
LENGTH OF EXCEPTIONS	0.00 FEET	0.000 MILES
NET LENGTH	9294.00 FEET	1.760 MILES

PLOTTED FROM - TRAB13309

PLOT NAME - 1

FILE - ...\BRWN170U\170UDESIGN\TITLE.DGN

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	012-151	2	25

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
120E0100	Unclassified Excavation, Digouts	50	CuYd
260E2010	Gravel Cushion	100.0	Ton
380E5030	Nonreinforced PCC Pavement Repair	501.3	SqYd
380E6000	Dowel Bar	197	Each
380E6110	Insert Steel Bar in PCC Pavement	1,238	Each
380E6200	Tie Bar Retrofit, Stitching	936	Each
380E6310	Seal Random Cracks in PCC Pavement	3,513	Ft
634E0010	Flagging	100.0	Hour
634E0110	Traffic Control Signs	380.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	6	Each
634E0420	Type C Advance Warning Arrow Board	2	Each
634E0600	4" Temporary Pavement Marking Tape Type I	2,400	Ft

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf >

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

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

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pits, or staging areas associated with the project, cease construction activities in the affected area until the Whooping Crane departs and immediately contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

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

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

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

2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period not to exceed the duration of the project. Prior to project completion, the waste will be removed from view of the ROW or buried, and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.
Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) will be incidental to the various contract items.

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

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

Action Taken/Required:

All earth disturbing activities require a cultural resource review prior to scheduling the pre-construction meeting. This work includes but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

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

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

The Contractor will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 100 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

The Contractor is responsible for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

PCC PAVEMENT REPAIR

									INSERT STEEL BAR IN PCC PAVEMENT				
STATION	TO	STATION	HWY	PAVEMENT THICKNESS (IN)	LANE	LENGTH (FT)	WIDTH (FT)	NONREINFORCED PCC PAVEMENT (SQYD)	DEFORMED #5 TIE BARS (EACH)	SMOOTH 1-1/4" DOWEL BARS (EACH)	DEFORMED #9 TIE BARS (EACH)	DOWEL BARS (EACH)	DEF #5 TIE BARS (EACH)
111+63		111+68	12	9.5	EBDL	5	4	2.2	6	2	2	4	
111+81		111+85	12	9.5	TL	4	4	1.8	4		4	4	
115+84		115+88	12	9.5	ES	4	5	2.2	2	3	3		
116+01		116+05	12	9.5	EBPL	4	4	1.8	4		4	4	
118+09		118+13	12	9.5	EBPL	4	4	1.8	4	2	2		
117+97		119+02	12	9.5	EBDL	105	4	46.7	84	2		28	
119+02		119+32	12	9.5	EBDL	30	5	16.7	24	2		4	
119+32		119+77	12	9.5	EBDL	45	4	20.0	36	2		12	
124+58		124+62	12	9.5	EBDL/ES	4	13	5.8	2	9	9		2
125+78		125+82	12	9.5	EBPL	4	4	1.8	4	2	2		
128+63		128+67	12	9.5	EBPL	4	4	1.8	4	2	2		
130+37		130+41	12	9.5	EBDL	4	4	1.8	4	2	2		
131+62		131+66	12	9.5	EBPL	4	4	1.8	4		4	4	
132+84		132+88	12	9.5	EBPL	4	4	1.8	4	2	2		
134+25		134+29	12	9.5	EBPL	4	4	1.8	4	2	2		
134+21		134+25	12	9.5	EBDL	4	4	1.8	4		2	4	
134+25		134+55	12	9.5	EBDL	30	6	20.0	24	4		10	
134+55		134+85	12	9.5	EBDL	30	4	13.3	24	2		4	
136+58		136+73	12	9.5	EBDL	15	4	6.7	12	4			
137+64		137+79	12	9.5	EBDL	15	4	6.7	12	2		4	
137+79		137+94	12	9.5	EBDL	15	5	8.3	12	1		5	
137+94		138+24	12	9.5	EBDL	30	6	20.0	24	5		6	
138+86		138+90	12	9.5	EBPL	4	4	1.8	4		4	4	
139+55		139+59	12	9.5	EBDL	4	4	1.8	4	2	2		
145+55		145+59	12	9.5	EBDL	4	4	1.8	4	2	2		
145+57		145+61	12	9.5	EBPL	4	4	1.8	4		4	4	
148+09		148+24	12	9.5	EBPL	15	12	20.0	12	12		5	
148+24		148+39	12	9.5	EBPL	15	5	8.3	12	3			
151+43		151+47	12	9.5	TL	4	4	1.8	4	2	2		
152+29		152+33	12	9.5	TL	4	4	1.8	4	2	2		
156+53		156+57	12	9.5	EBPL	4	4	1.8	4	2	2		
160+39		160+54	12	9.5	EBDL	15	4	6.7	12	2		4	
160+54		160+69	12	9.5	EBDL	15	6	10.0	12	3		2	
160+69		160+84	12	9.5	EBDL	15	5	8.3	12	3		3	
160+84		160+99	12	9.5	EBDL	15	7	11.7	12	6		4	
160+99		161+29	12	9.5	EBDL	30	4	13.3	24	2		4	
161+24		161+28	12	9.5	TL/EBPL	4	5	2.2	4	3	3		
		DL = DRIVING LANE S = SHOULDER					**SUBTOTALS:**	**279.7**	**430**	**94**	**61**	**123**	**2**
		PL = PASSING LANE TL = TURN LANE											

PCC PAVEMENT REPAIR

									INSERT STEEL BAR IN PCC PAVEMENT				
STATION	TO	STATION	HWY	PAVEMENT THICKNESS (IN)	LANE	LENGTH (FT)	WIDTH (FT)	NONREINFORCED PCC PAVEMENT (SQYD)	DEFORMED #5 TIE BARS (EACH)	SMOOTH 1-1/4" DOWEL BARS (EACH)	DEFORMED #9 TIE BARS (EACH)	DOWEL BARS (EACH)	DEF #5 TIE BARS (EACH)
161+28		161+32	12	9.5	TL	4	4	1.8	4	2	2		
162+76		162+85	12	9.5	FILLET	6	8	5.3	8		3		
162+83		162+92	12	9.5	FILLET	8	8	7.1	9		8		
163+21		163+27	12	9.5	FILLET	6	13	8.7	10		8		
164+28		164+32	12	9.5	TL	4	4	1.8	4	2	2		
167+92		167+96	12	9.5	EBPL	4	4	1.8	4		4	4	
169+49		169+53	12	9.5	TL	4	4	1.8	4	2	2		
174+60		174+64	12	9.5	EBPL	4	4	1.8	4		4	4	
175+18		175+22	12	9.5	TL	4	4	1.8	4	2	2		
180+37		180+67	12	9.5	EBDL	30	4	13.3	24	3		1	
180+67		180+82	12	9.5	EBDL	15	5	8.3	12	3		4	
180+82		180+97	12	9.5	EBDL	15	4	6.7	12	1		2	
180+97		181+12	12	9.5	EBDL	15	4	6.7	12	3			
186+48		186+52	12	9.5	TL	4	4	1.8	4	2	2		
194+92		194+97	12	9.5	EBPL	5	12	6.7	4	8	8		
194+96		195+02	12	9.5	TL	6	12	8.0	6		16		
202+08		202+12	12	9.5	EBPL	4	4	1.8	4	2	2		
111+63		111+67	12	9.5	TL/WBPL	4	4	1.8	4		4	4	
114+96		115+00	12	9.5	WBPL	4	4	1.8	4		4	4	
115+68		115+73	12	9.5	WBDL	5	4	2.2	4	2	2		
115+83		115+88	12	9.5	WBDL	5	4	2.2	4	2	2		
115+86		115+90	12	9.5	WBPL	4	4	1.8	4		4	4	
116+29		116+33	12	9.5	WBDL	4	4	1.8	4		2	4	
116+33		116+48	12	9.5	WBDL	15	9	15.0	12	9			
117+46		117+53	12	9.5	WBDL	7	4	3.1	6	2	2		
117+81		117+85	12	9.5	WBPL	4	4	1.8	4		4	4	
117+83		117+87	12	9.5	WBDL	4	4	1.8	4	2	2		
119+44		119+48	12	9.5	WBPL	4	4	1.8	4	2	2		
126+57		126+61	12	9.5	WBDL	4	4	1.8	4	2	2		
139+83		139+87	12	9.5	WBPL	4	4	1.8	4	2	2		
139+87		140+03	12	9.5	WBDL	16	6	10.7	12	6			
		DL = DRIVING LANE S = SHOULDER					**SUBTOTALS:**	**134.6**	**203**	**59**	**95**	**35**	**0**
		PL = PASSING LANE TL = TURN LANE											

PCC PAVEMENT REPAIR

									INSERT STEEL BAR IN PCC PAVEMENT				
STATION	TO	STATION	HWY	PAVEMENT THICKNESS (IN)	LANE	LENGTH (FT)	WIDTH (FT)	NONREINFORCED PCC PAVEMENT (SQYD)	DEFORMED #5 TIE BARS (EACH)	SMOOTH 1-1/4" DOWEL BARS (EACH)	DEFORMED #9 TIE BARS (EACH)	DOWEL BARS (EACH)	DEF #5 TIE BARS (EACH)
140+74		140+78	12	9.5	WBPL	4	4	1.8	4	2	2		
143+08		143+13	12	9.5	WBDL	5	4	2.2	4	2	2		
143+09		143+13	12	9.5	WBPL	4	4	1.8	4	2	2		
143+67		143+77	12	9.5	FILLET	10	6	6.7	6		12		
145+69		145+73	12	9.5	WBPL	4	4	1.8	4	2	2		
146+60		146+64	12	9.5	WBPL	4	4	1.8	4	2	2		
147+65		147+69	12	9.5	WBPL	4	4	1.8	4		4	4	
156+98		157+28	12	9.5	WBDL	30	5	16.7	24	6		5	
158+03		158+07	12	9.5	TL/WBPL	4	4	1.8	4		4	4	
159+44		159+48	12	9.5	WBPL	4	4	1.8	4	2	2		
160+20		160+26	12	9.5	WBPL	6	4	2.7	6		4	4	
160+19		160+23	12	9.5	WBDL	4	4	1.8	4	2	2		
161+26		161+30	12	9.5	WBDL	4	4	1.8	4		4	4	
163+26		163+34	12	9.5	FILLET	8	11	9.8	10		10		
164+21		164+25	12	9.5	WBDL/WBPL	4	16	7.1	4		20		2
174+38		174+42	12	9.5	WBPL	4	4	1.8	4		4		
175+20		175+24	12	9.5	WBPL	4	4	1.8	4		4	4	
176+09		176+13	12	9.5	WBPL	4	4	1.8	4	2	2		
178+14		178+18	12	9.5	WBPL	4	4	1.8	4	2	2		
180+34		180+38	12	9.5	WBPL	4	4	1.8	4	2	2		
181+10		181+14	12	9.5	WBPL	4	4	1.8	4		4	4	
181+12		181+16	12	9.5	WBDL/WBPL	4	5	2.2	4	3	3		2
183+48		183+52	12	9.5	WBDL	4	4	1.8	4	2	2		
183+50		183+54	12	9.5	TL/WBPL	4	4	1.8	4		4	4	
187+12		187+16	12	9.5	WBPL	4	4	1.8	4	2	2		
194+02		194+06	12	9.5	WBDL	4	4	1.8	4	2	2		
196+90		196+94	12	9.5	WBPL	4	4	1.8	4		4		
197+40		197+44	12	9.5	WBPL	4	4	1.8	4		4		
200+16		200+20	12	9.5	WBPL	4	4	1.8	4	2	2		
		DL = DRIVING LANE S = SHOULDER					**SUBTOTALS:**	**87.0**	**146**	**37**	**113**	**33**	**4**
		PL = PASSING LANE TL = TURN LANE											
							TOTALS:	**501.3**	**779**	**190**	**269**	**191**	**6**

PCC PAVEMENT SEAL AND STITCH

START STATION	HWY	PAVEMENT THICKNESS (IN)	LANE	LENGTH (FT)	DEF #5 TIE BARS (EACH)
133+61	12	9.5	ES	10	8
138+85	12	9.5	EBDL	5	4
143+62	12	9.5	EBDL	16	14
143+77	12	9.5	EBDL	18	
143+92	12	9.5	EBDL	15	13
144+34	12	9.5	EBDL	3	2
159+63	12	9.5	ES	7	
180+11	12	9.5	ES	12	11
179+93	12	9.5	EBDL	45	43
181+13	12	9.5	EBDL	30	
181+43	12	9.5	EBDL	15	13
183+09	12	9.5	EBDL	90	
183+99	12	9.5	EBDL	30	26
184+29	12	9.5	EBDL	45	
184+44	12	9.5	EBDL	6	4
184+74	12	9.5	EBDL	53	41
185+27	12	9.5	EBDL	63	
185+90	12	9.5	EBDL	5	3
186+88	12	9.5	EBDL	46	
187+32	12	9.5	EBDL	25	21
191+92	12	9.5	EBDL	180	156
193+72	12	9.5	EBDL	15	
193+87	12	9.5	EBDL	10	8
193+92	12	9.5	EBDL	30	
194+22	12	9.5	EBDL	25	21
194+47	12	9.5	EBDL	61	
195+08	12	9.5	EBDL	13	11
195+74	12	9.5	ES	8	6
192+22	12	9.5	EBDL	25	23
198+06	12	9.5	EBDL	4	2
198+22	12	9.5	EBDL	8	6
198+54	12	9.5	EBDL	13	11
200+59	12	9.5	EBDL	4	2
200+68	12	9.5	EBDL	10	8
201+23	12	9.5	EBDL	45	39
201+68	12	9.5	EBDL	91	
DL = DRIVING LANE S = SHOULDER				**1081**	**496**
PL = PASSING LANE TL = TURN LANE					

PCC PAVEMENT SEAL AND STITCH

STATION	HWY	PAVEMENT THICKNESS (IN)	LANE	LENGTH (FT)	DEF #5 TIE BARS (EACH)
111+85	12	9.5	WBDL	4	2
112+02	12	9.5	WBDL	49	
112+32	12	9.5	WBDL	40	
112+49	12	9.5	WS	5	3
113+02	12	9.5	WBDL	7	
114+09	12	9.5	WBDL	9	7
114+13	12	9.5	WBPL	6	4
114+27	12	9.5	WBDL	12	10
115+73	12	9.5	WBDL	12	
115+88	12	9.5	WBDL	45	39
116+48	12	9.5	WBDL	101	
120+68	12	9.5	WBDL	90	
121+58	12	9.5	WBDL	30	26
126+61	12	9.5	WBDL	15	
140+03	12	9.5	WBDL	121	
141+54	12	9.5	WBDL	26	22
141+78	12	9.5	WBDL	53	
142+28	12	9.5	WBDL	19	15
142+47	12	9.5	WBDL	151	
143+84	12	9.5	WBDL	23	19
144+08	12	9.5	WBDL	190	
145+97	12	9.5	WBDL	6	4
146+90	12	9.5	WBDL	26	22
149+61	12	9.5	WBDL	17	13
149+76	12	9.5	WBDL	30	
150+06	12	9.5	WBDL	32	26
151+00	12	9.5	WBDL	42	
156+23	12	9.5	WBDL	50	44
156+73	12	9.5	WBDL	25	
157+28	12	9.5	WBDL	46	
157+74	12	9.5	WBDL	9	8
159+77	12	9.5	WBDL	15	13
DL = DRIVING LANE S = SHOULDER				**1306**	**277**
PL = PASSING LANE TL = TURN LANE					

PCC PAVEMENT SEAL AND STITCH

STATION	HWY	PAVEMENT THICKNESS (IN)	LANE	LENGTH (FT)	DEF #5 TIE BARS (EACH)
159+92	12	9.5	WBDL	21	
160+07	12	9.5	WBDL	15	
160+22	12	9.5	WBDL	10	
160+32	12	9.5	WBDL	20	17
160+83	12	9.5	WBDL	45	
161+28	12	9.5	WBDL	45	39
162+69	12	9.5	FILLET	12	11
163+03	12	9.5	FILLET	5	4
163+25	12	9.5	FILLET	9	7
180+18	12	9.5	WBDL	14	12
180+38	12	9.5	WBDL	87	
181+73	12	9.5	WBDL	60	52
182+33	12	9.5	WBDL	195	
186+12	12	9.5	WBDL	9	8
192+74	12	9.5	WBDL	106	
193+78	12	9.5	WBDL	9	8
198+84	12	9.5	WBDL	3	
198+99	12	9.5	WBDL	6	5
199+03	12	9.5	WBDL	350	
202+89	12	9.5	WBDL	105	
DL = DRIVING LANE S = SHOULDER				**1126**	**163**
PL = PASSING LANE TL = TURN LANE					

PROJECT TOTALS:	**3513**	**936**

PLOT SCALE - 1:200

PLOTTED FROM - TRAB13309

PLOT NAME - 5

FILE - ...\170\DESIGN\QUANTITIES.DGN

SCOPE OF WORK

The project consists of:
1.Full depth replacement and resealing of joints in Nonreinforced Concrete Pavement Repair areas where concrete pavement failures have occurred.
2.Sealing all previously stitched repairs.
3.Sealing and stitching random cracks.
4.Cordination of work.

EXISTING NRC PAVEMENT

The existing pavement on US 12 is 9.5” x 76’ NRC Pavement. The pavement width varies in cities, at turn lanes and at some intersections.

Type of large aggregate is Size #1, quarried ledge rock.

Existing contraction joints are spaced at approximately 15’.

RESTORATION OF GRAVEL CUSHION

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

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

Cost for this work will be incidental to the contract unit price per square yard for “Nonreinforced PCC Pavement Repair”.

NONREINFORCED PCC PAVEMENT REPAIR - GENERAL

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

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

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

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

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

Upon completion of concrete removal at the end of a workday, the Contractor will complete the installation of the concrete the next workday. Open trenches will not be allowed over weekends and holidays.

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

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

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

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

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

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

NONREINFORCED PCC PAVEMENT REPAIR

The PCC Pavement Repair will meet the requirements stated in Section 380 and be an A40 mix design except as modified by the following notes:

Must come from commercial plant.

A40 will have M6 testing requirements.

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

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

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

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

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

Concrete will be covered with suitable insulation blanket consisting of a layer of closed cell polystyrene foam protected by at least one layer of plastic. Insulation blanket will have an R-value of at least 0.5, as rated by the manufacturer. Insulation blanket will be left in place, except for joint sawing operations, until the 3500 psi is attained. Insulation blanket will be overlapped on to the existing concrete by 4’. This requirement for covering repair areas with insulation may be waived during periods of hot weather upon approval of the Engineer.

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

SAW AND SEAL JOINTS

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

Joint sealing will conform to plan sheet 23.

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

Acceptance of the Hot Poured Elastic Joint Sealer on visual inspection by the Engineer.

Cost for sawing and sealing of the longitudinal construction joints and transverse joints will be incidental to the contract unit prices for “Nonreinforced PCC Pavement Repair”.

STEEL BAR INSERTION

Steel bars will conform to Section 1010.

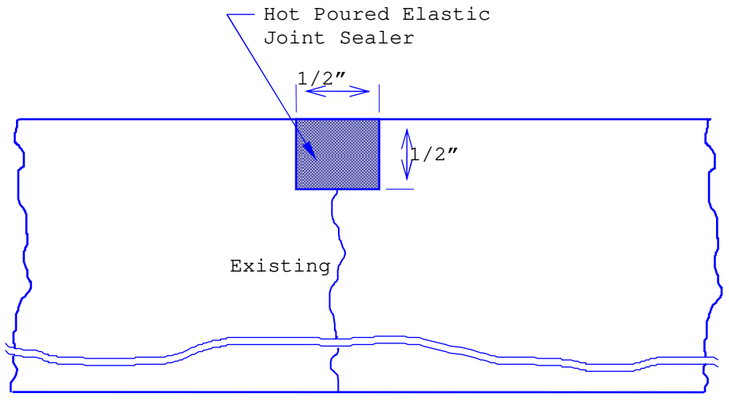
Locations and quantities of concrete repair are subject to change in the field at the discretion of the Engineer. The Contractor will be responsible for ordering the actual quantity of steel bars necessary to complete the work.

The Contractor will insert the steel bars (1¼" x 18" epoxy coated plain round dowel bars and or 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. Grout socks may be used when approved by the Concrete Engineer.

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

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

SEALING RANDOM CRACKS



SEAL RANDOM CRACKS IN PCC PAVEMENT

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

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

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

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

Random cracks wider than ½ inch in previously stitched areas may not require routing. This designation will be determined by the Engineer. Cleaning will be accomplished by sand blasting in accordance Section 380.

Random cracks wider than ½ inch may require the placement of a backer rod prior to sealing. Use of backer rod should be limited to locations where, once placed, the top of the backer rod will be 2 inches below the top surface of the pavement, resulting in a maximum hot pour depth of 2 inches.

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

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

Seal Random Cracks in PCC Pavement will be measured by the foot to the nearest 0.1 foot of random cracks sealed and accepted and will be paid for at the contract unit price per foot measured for payment. Payment will be full compensation for labor, equipment, material and incidentals required for crack routing, cleaning, furnishing and installing backer rod when necessary, furnishing and placing sealant and removing routed and foreign material from the roadway.

TIE BAR RETROFIT, STITCHING

Drilling of holes and anchoring of steel bars will conform to Section 380. Steel bars will conform to Section 1010.

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

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

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

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

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

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

COORDINATION OF WORK

The Contractor will be advised that a Grading, Reinforced Concrete Box Culvert, PCC Pavement and Lighting project has been awarded directly adjacent to East end of project limits.

The Project Number is NH 0012(219)294, PCN 05HT and is let. The Contractor will contact the Aberdeen Area DOT office to minimize scheduling conflicts and prevent traffic control issues.

SEQUENCE OF OPERATIONS

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting. If changes to the sequence of operations are proposed during the project, these must be submitted for review a minimum of one week prior to potential implementation. Approval for changes to the sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work.

GENERAL TRAFFIC CONTROL

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

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

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

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

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

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

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

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

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

A Type 3 Barricade will be installed at the end of a lane closure taper as detailed in these plans.

TRAFFIC CONTROL FOR PCCP REPAIR

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

When work is in progress within an intersection, Flaggers will be required to direct traffic. Flaggers will also be used at times when workers are encroaching centerline during concrete removal and concrete finishing operations as directed by the Engineer.

At no time will a vertical drop-off of greater than 3 inches be left overnight adjacent to the traveled way. The Contractor will utilize embankment material to ensure a 3-inch vertical drop-off is not exceeded. The slope of the embankment material will not be steeper than a 4:1 within 30 feet of the traveled way.

Holes in the asphalt concrete shoulders created during removal and replacement of PCC pavement repair areas will be filled with gravel cushion material and hot-mix asphalt concrete (to match the shoulder surfacing) prior to opening the lane to traffic. The longitudinal joint between PCC pavement and asphalt concrete at these repair areas will be rout and sealed according to Standard Plate 320.15. Payment for joint sealing will be incidental to contract unit price per square yard for "Nonreinforced PCC Pavement Repair".

All costs for furnishing, hauling, and placing Gravel Cushion material will be incidental to the contract unit price per square yard for "Nonreinforced PCC Pavement Repair".

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

WORK ZONE SPEED REDUCTION

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

UNCLASSIFIED EXCAVATION, DIGOUTS

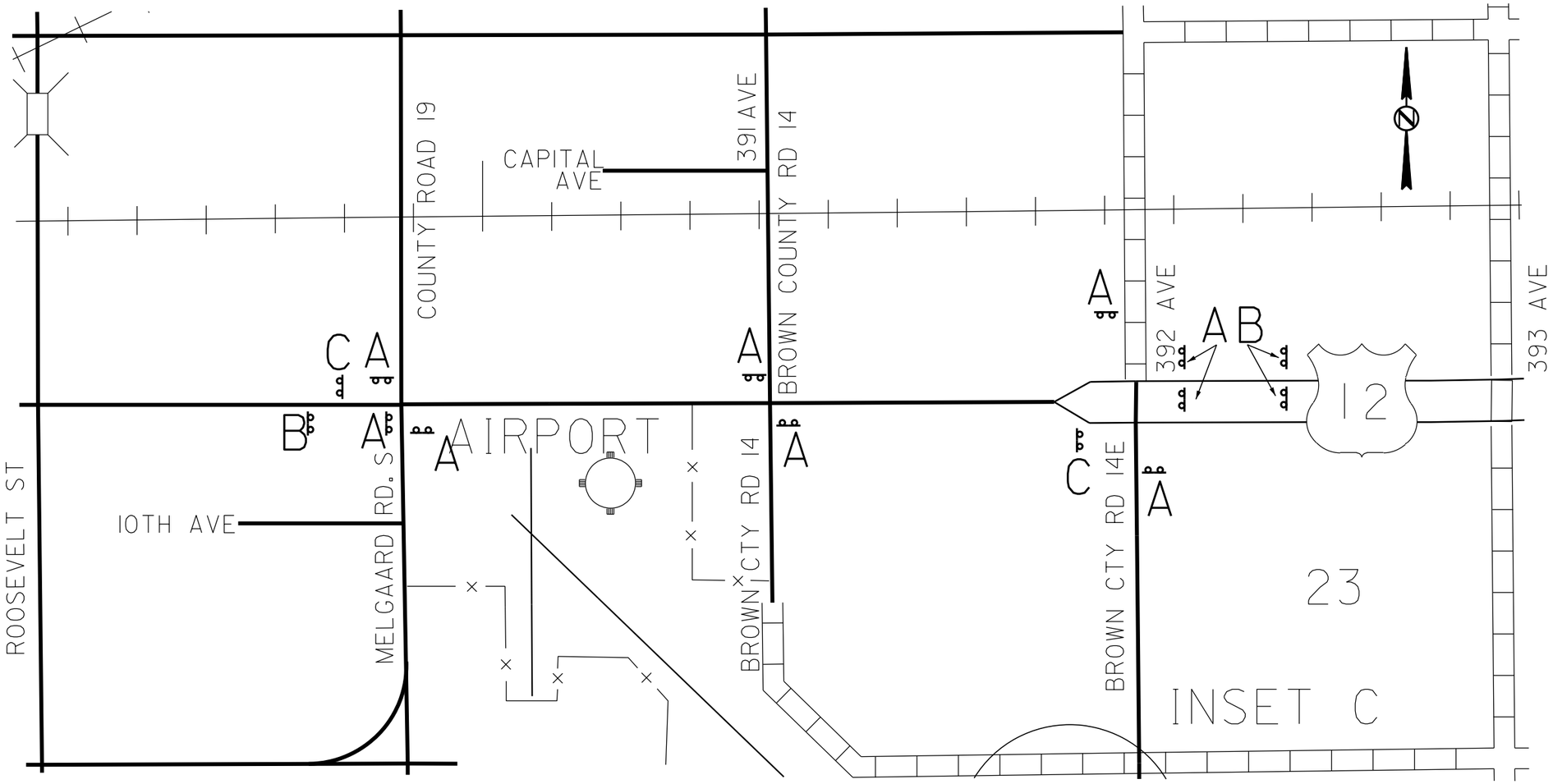
The locations and extent of digout areas will be determined in the field by the Engineer. The backfilling material for the digouts will be Gravel Cushion.

Included in the Estimate of Quantities are 50 cubic yards of Unclassified Excavation, Digouts for the removal of unstable material throughout the project.

Included in the Estimate of Quantities are 100 tons of Gravel Cushion for backfill of Unclassified Excavation, Digouts.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	012-151	11	25
Plotting Date: 02/21/2023			

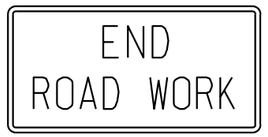
TRAFFIC CONTROL
FIXED LOCATION SIGNS-US HWY 12
GROUND MOUNTED, BREAKAWAY SUPPORT



A

B

C



PLOT SCALE - 1:1800

PLOT NAME - 6

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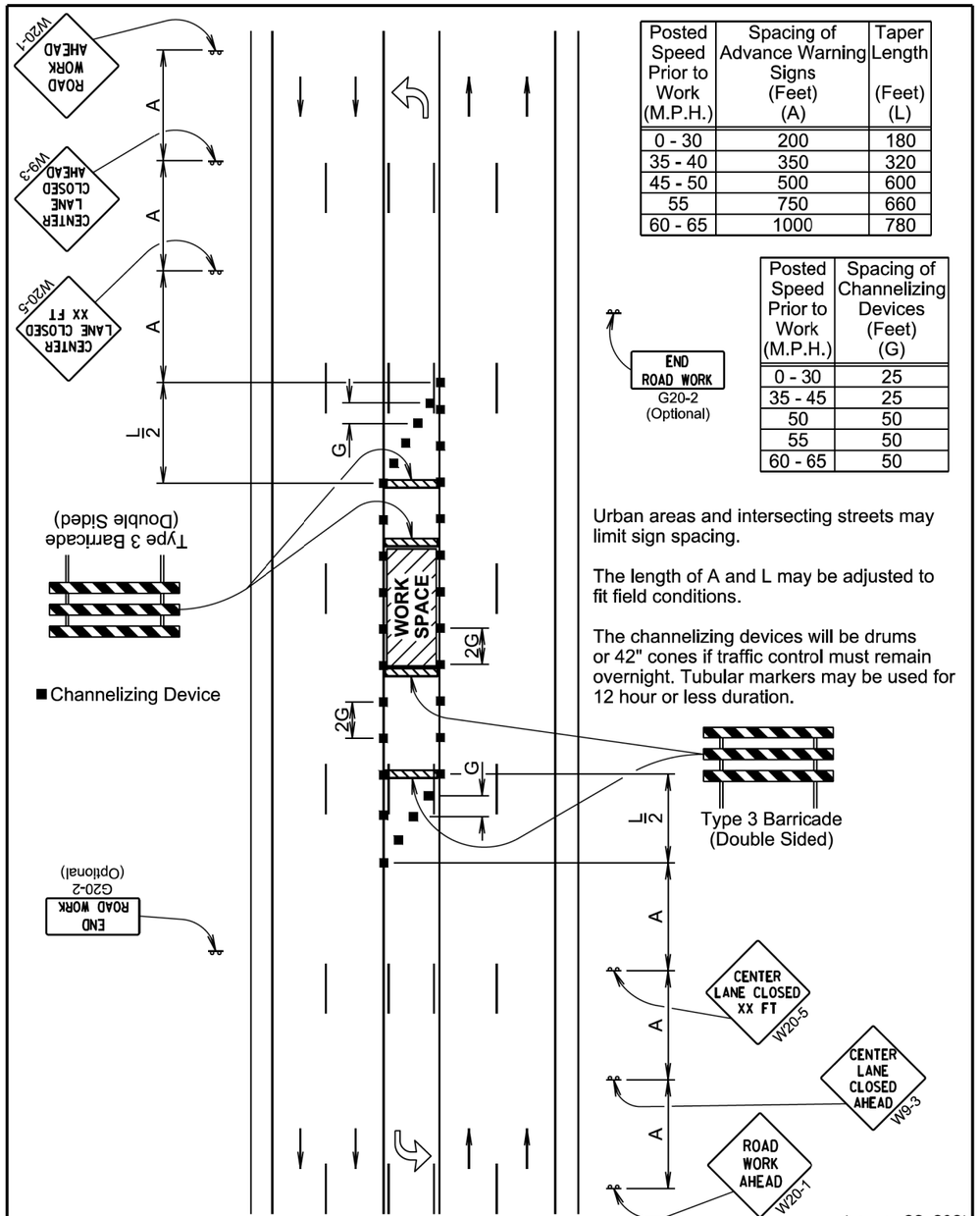
PLOTTED FROM - TRAB13309

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 40	2	36" x 48"	12.0	24.0
R2-6aP	FINES DOUBLE (plaque)	2	36" x 24"	6.0	12.0
W3-5	SPEED REDUCTION AHEAD (40 MPH)	2	48" x 48"	16.0	32.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W9-3	CENTER LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	11	48" x 48"	16.0	176.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 2 MILES	3	48" x 24"	8.0	24.0
G20-2	END ROAD WORK	2	48" x 24"	8.0	16.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			380.0



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

END ROAD WORK
G20-2
(Optional)

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

Urban areas and intersecting streets may limit sign spacing.

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

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

January 22, 2021

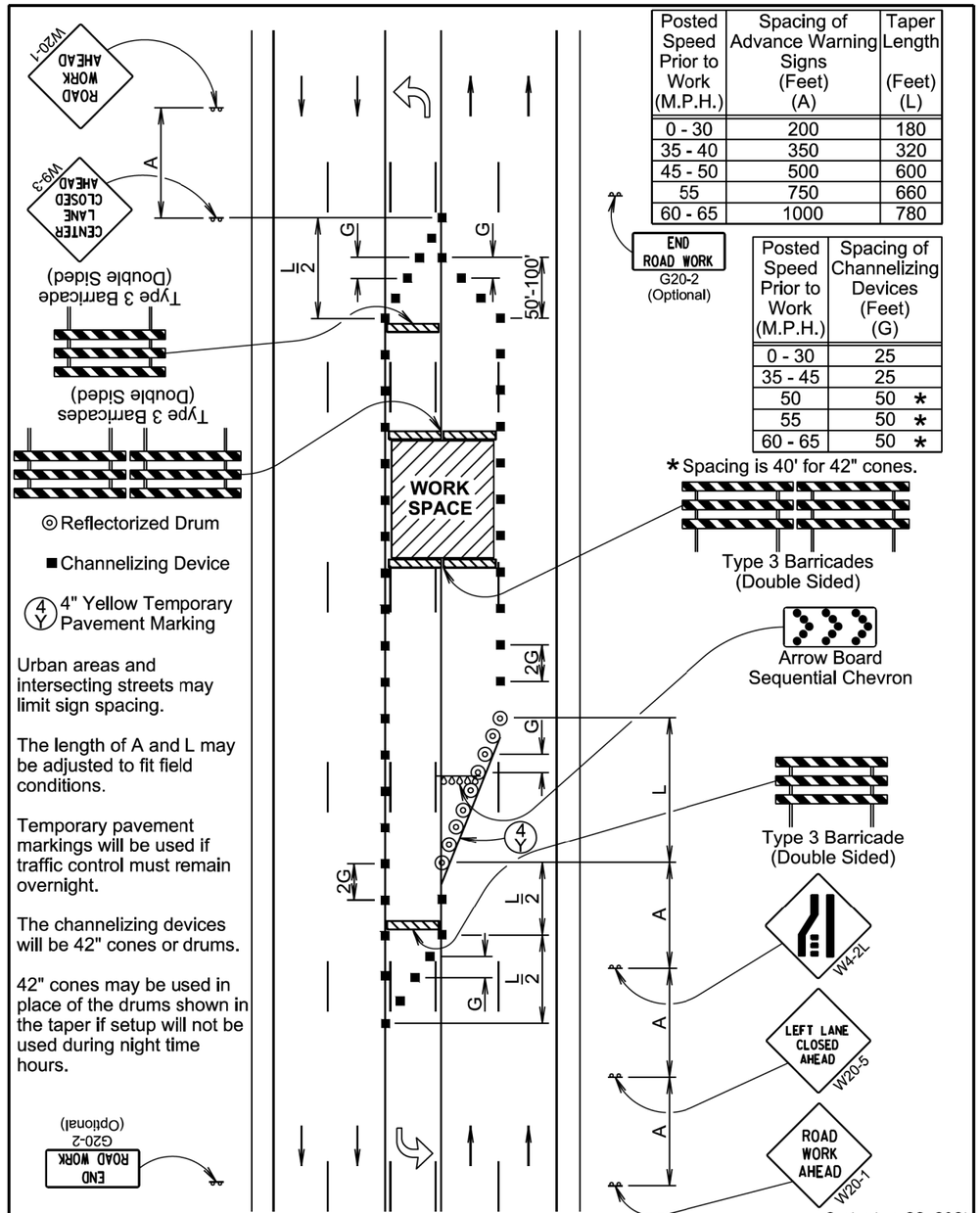
Published Date: 1st Qtr. 2023

SDDOT

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

END ROAD WORK
G20-2
(Optional)

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

* Spacing is 40' for 42" cones.

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 will be used if traffic control must remain overnight.

The channelizing devices will be 42" cones or drums.

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

September 22, 2021

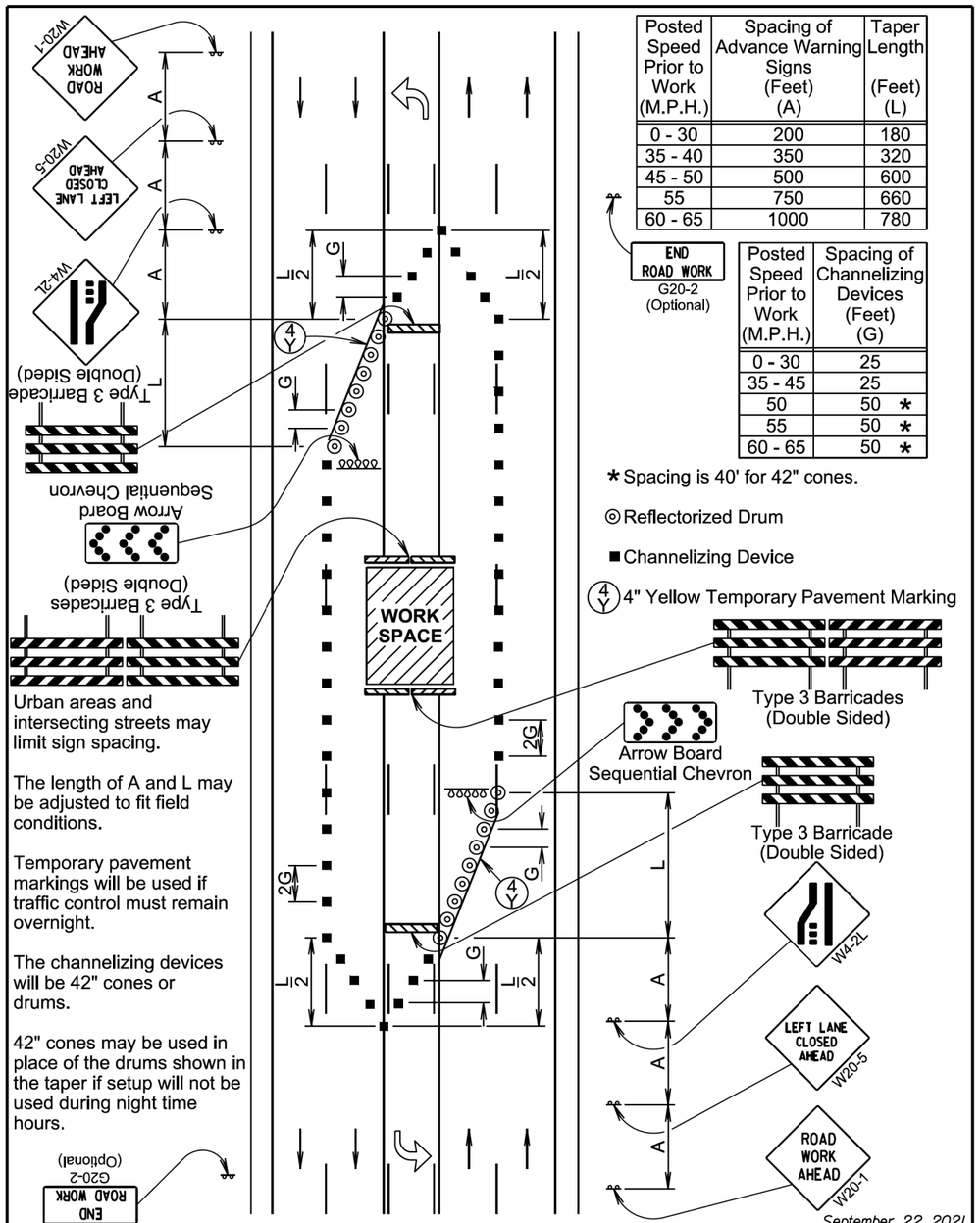
Published Date: 1st Qtr. 2023

SDDOT

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)
0 - 30	200	180
35 - 40	350	320
45 - 50	500	600
55	750	660
60 - 65	1000	780

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

* Spacing is 40' for 42" cones.

◎ Reflectorized Drum

■ Channelizing Device

(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.

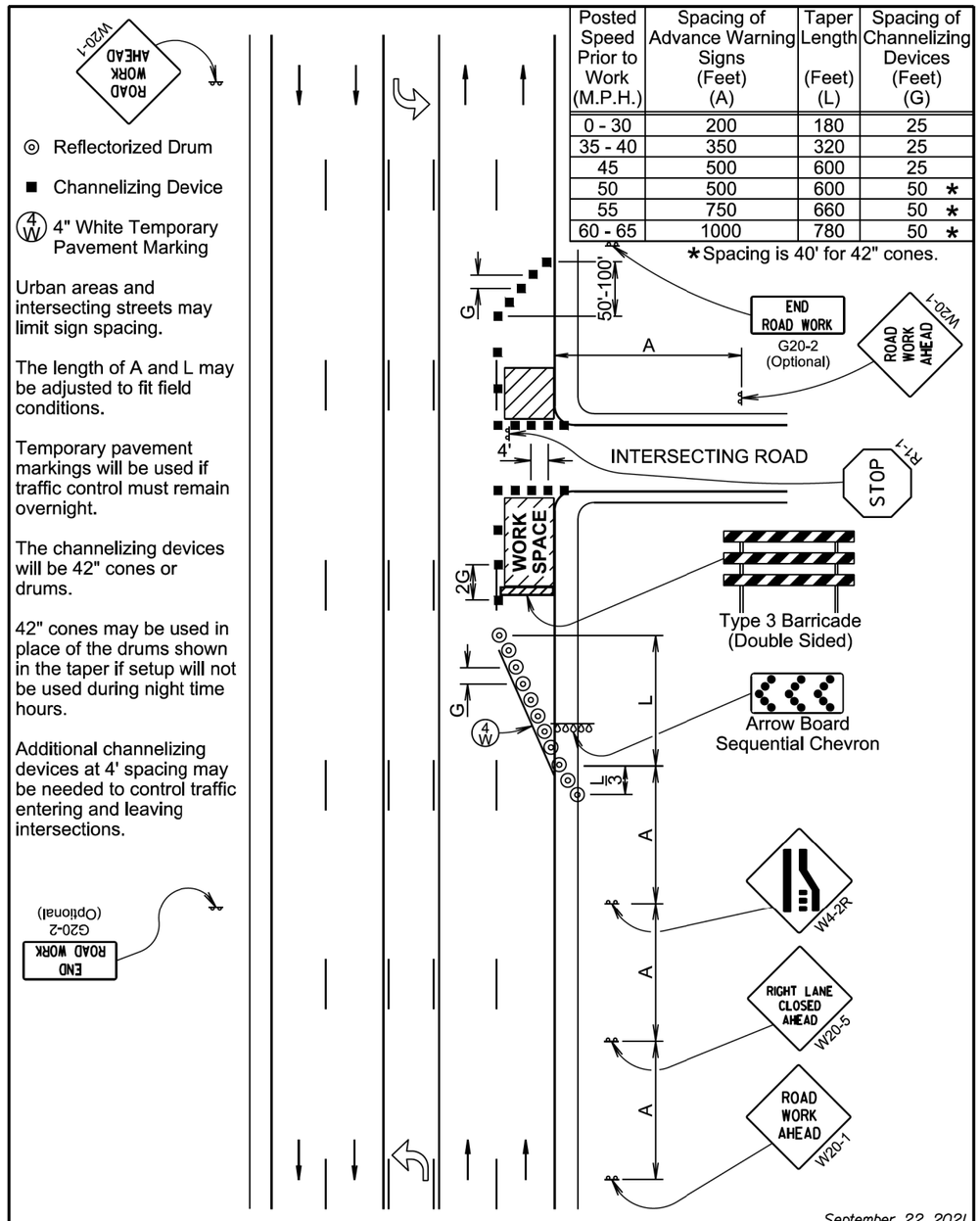
Temporary pavement markings will be used if traffic control must remain overnight.

The channelizing devices will be 42" cones or drums.

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

September 22, 2021

Published Date: 1st Qtr. 2023	SDDOT	5-LANE, CENTER 3 LANES CLOSED	PLATE NUMBER 634.57 Sheet 1 of 1



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

* Spacing is 40' for 42" cones.

September 22, 2021

Published Date: 1st Qtr. 2023	SDDOT	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

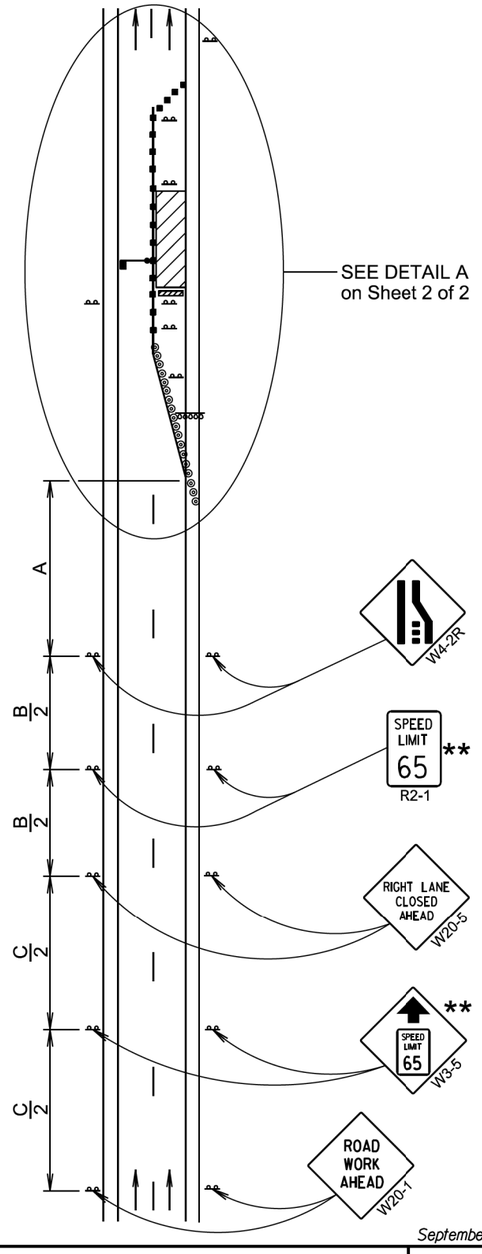
** Speed appropriate for location.

◎ 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.



September 22, 2021

Published Date: 1st Qtr. 2023	SDDOT	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63 Sheet 1 of 2

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

* Spacing is 40' for 42" cones.

** Speed appropriate for location.

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

■● Flagger (As Necessary)

◎ Reflectorized Drum

■ Channelizing Device

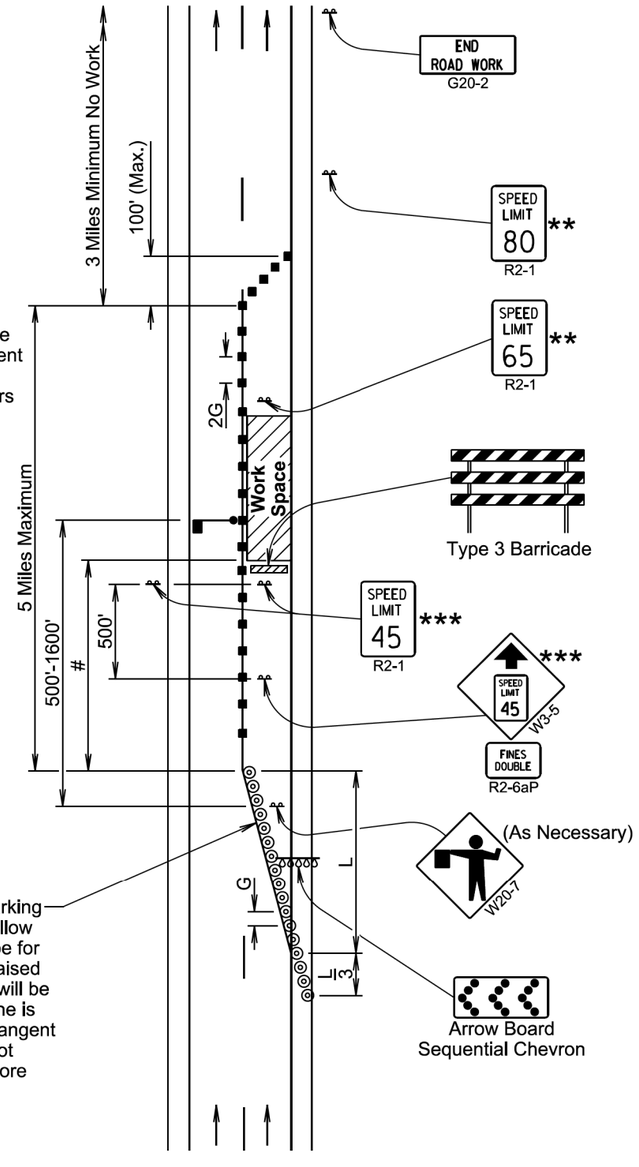
The Work Space will be a minimum of 500' from the end of the taper.

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

The channelizing devices will be 42" cones or drums.

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

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



DETAIL A

September 22, 2021

Published Date: 1st Qtr. 2023	SDDOT	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63 Sheet 2 of 2

PLOT SCALE - 1:200

PLOT NAME - 4

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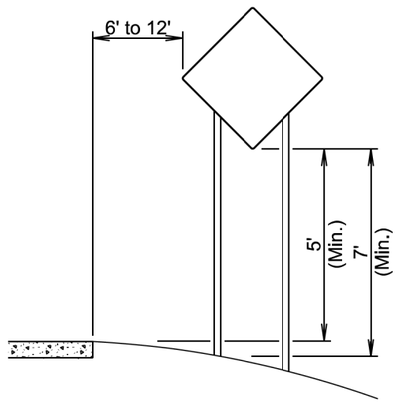
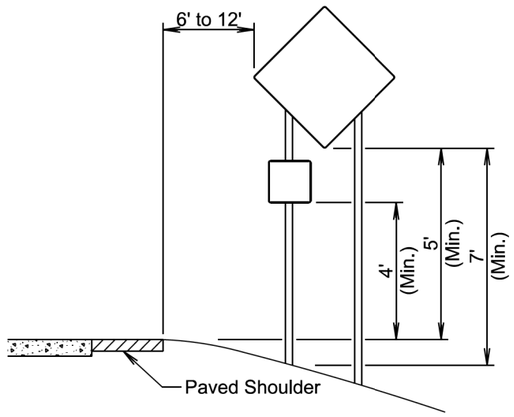
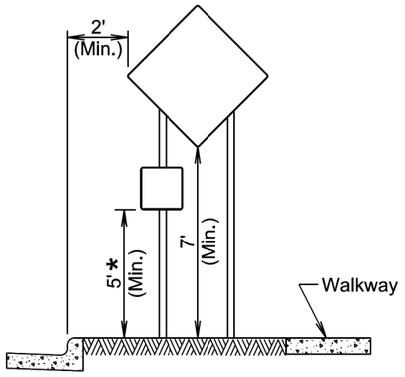
-PLOTTED FROM - TRAB13309



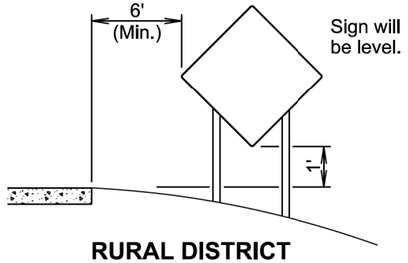
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

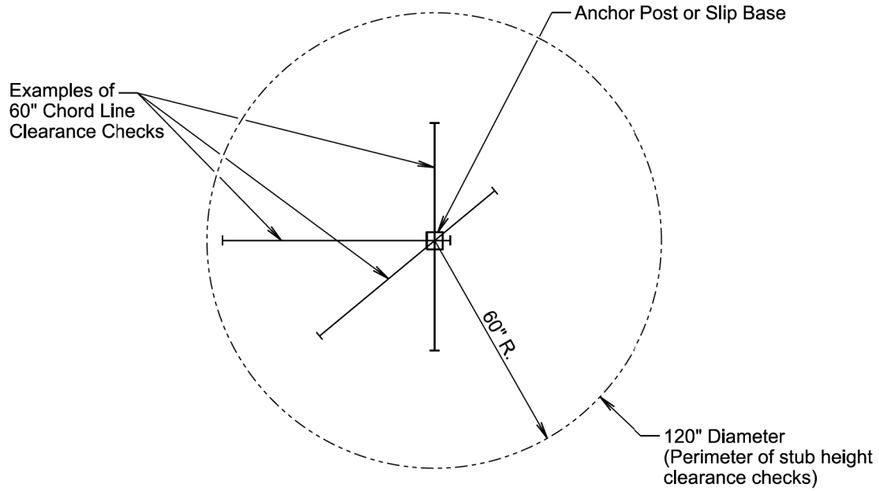


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

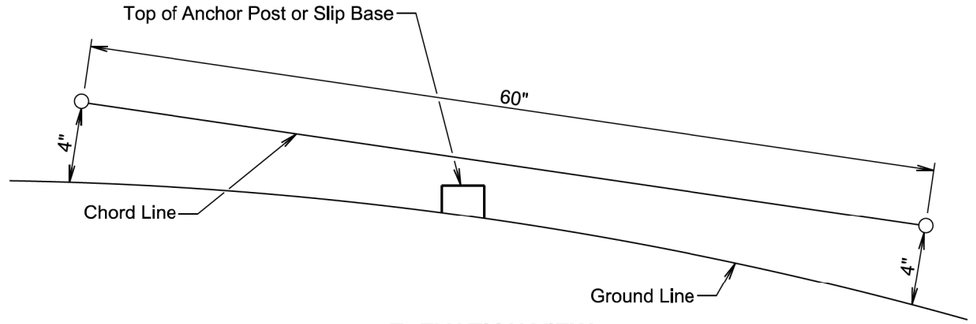
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 1st Qtr. 2023	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85 Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

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

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

January 22, 2021

Published Date: 1st Qtr. 2023	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99 Sheet 1 of 1

IN PLACE TYPICAL SURFACING SECTION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	012-151	17	25

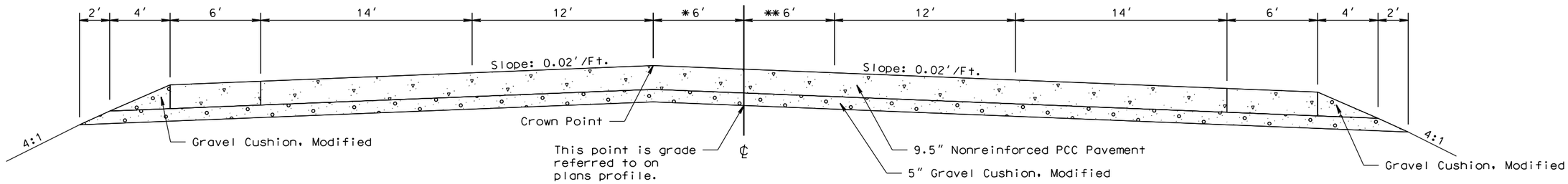
Plotting Date: 02/21/2023

Transitions:

Sta. 189+73.98 to Sta. 204+57.0
* 6' to 8.93'

Sta. 189+45.49 to Sta. 204+57.0
** 6' to 9.03'

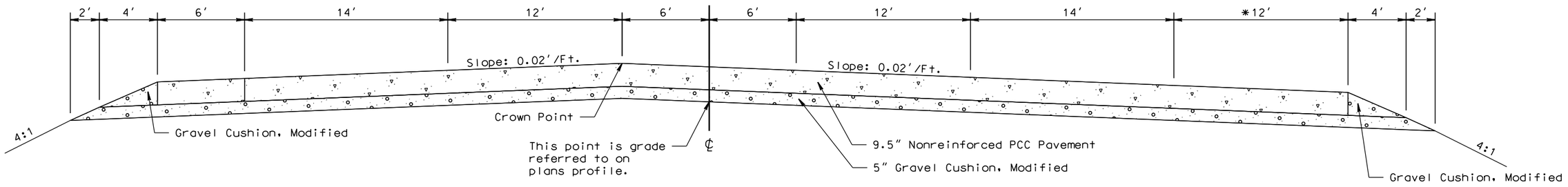
Sta. 112+02.25 to Sta. 145+50.0
Sta. 150+03.0 to Sta. 161+91.0
Sta. 167+05.0 to Sta. 204+57.0



Transition:

Sta. 145+50 to Sta. 146+70
* 6' to 12'

Sta. 145+50.0 to Sta. 150+03.0



PLOT SCALE - 1:7.2

PLOTTED FROM - TRAB13309

PLOT NAME - 8

FILE - ...\170UDESIGN\TYPICAL.DGN

IN PLACE TYPICAL SURFACING SECTION

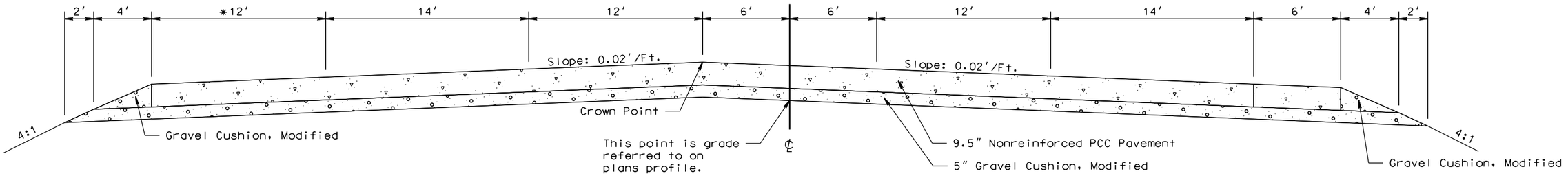
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	012-151	18	25

Plotting Date: 02/21/2023

Transition:

Sta. 165+85 to Sta. 167+05
* 12' to 6'

Sta. 161+91.0 to Sta. 167+05.0

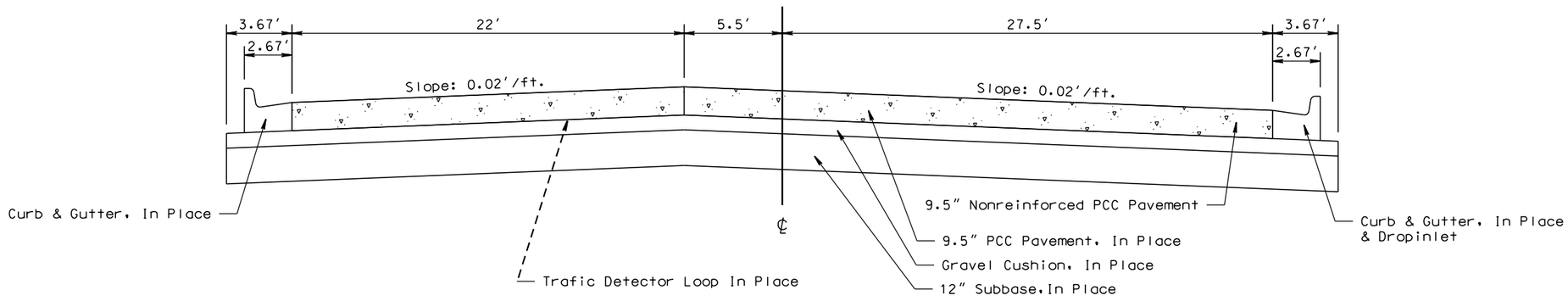


IN PLACE TYPICAL SURFACING SECTION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	012-151	19	25

Plotting Date: 02/21/2023

Sta. 111+63 to Sta. 112+02.25



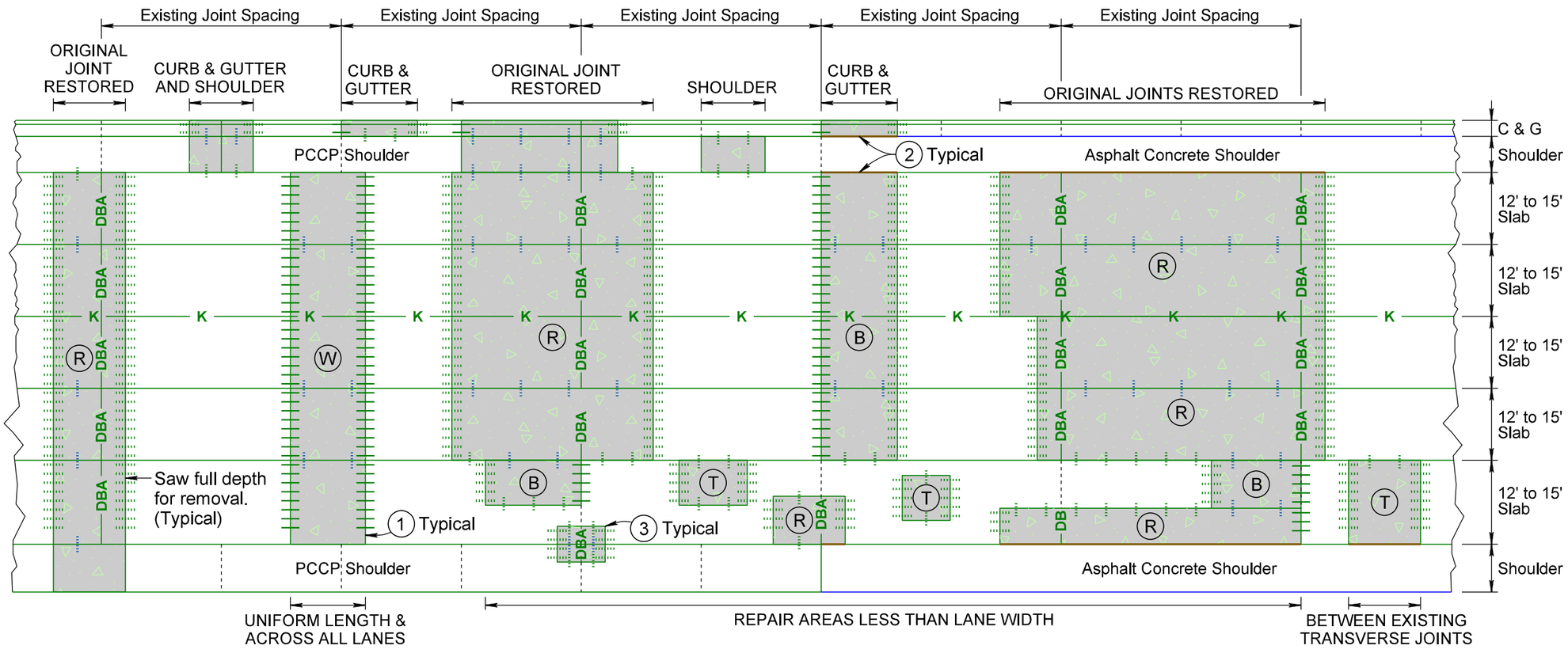
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	012-151	20	25

Plotting Date: 02/21/2023

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.

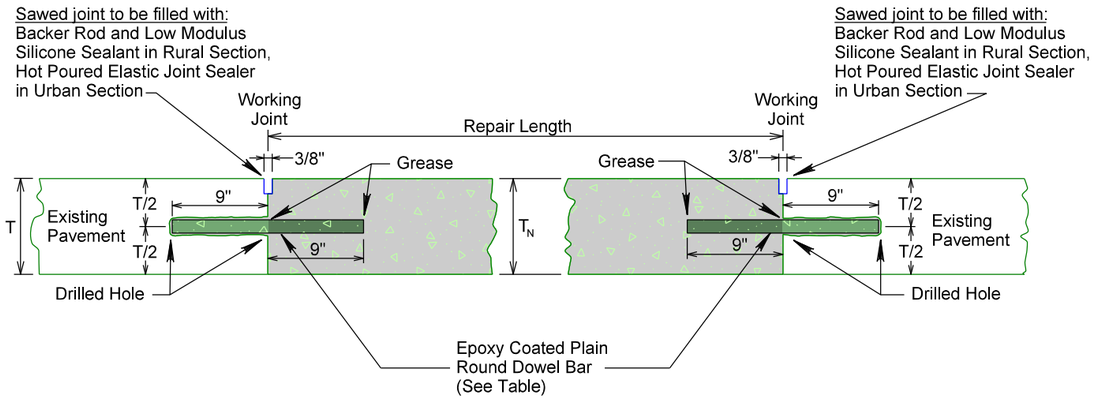
No. 5 x 24" epoxy coated deformed tie bars.
Drilled In - spaced 30" center to center.

NOTES: Saw around repair areas full depth for removal.

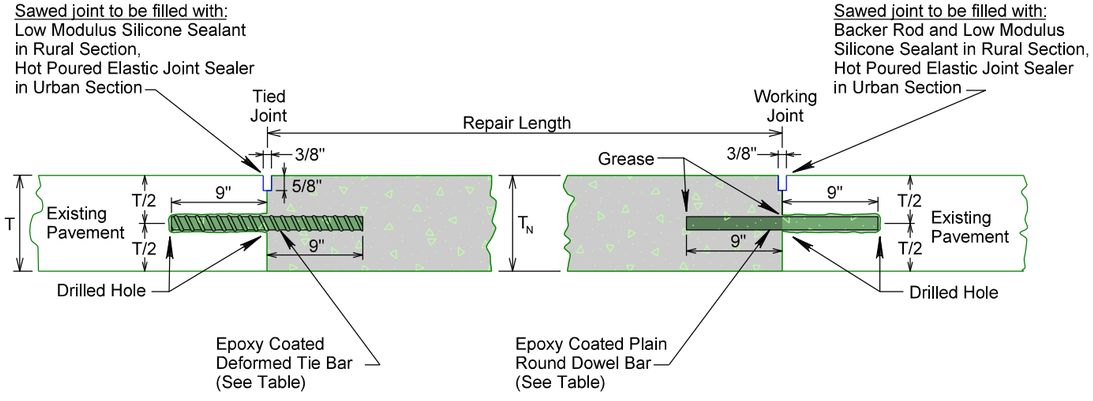
1. Where possible, transverse joints will be constructed/maintained full roadway width.
2. Edges of repair areas will be formed to match the width of the existing concrete pavement.
3. Need for bars in small repair areas on/near the shoulder to be determined on a case-by-case basis, on construction by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

NONREINFORCED PCC PAVEMENT REPAIR

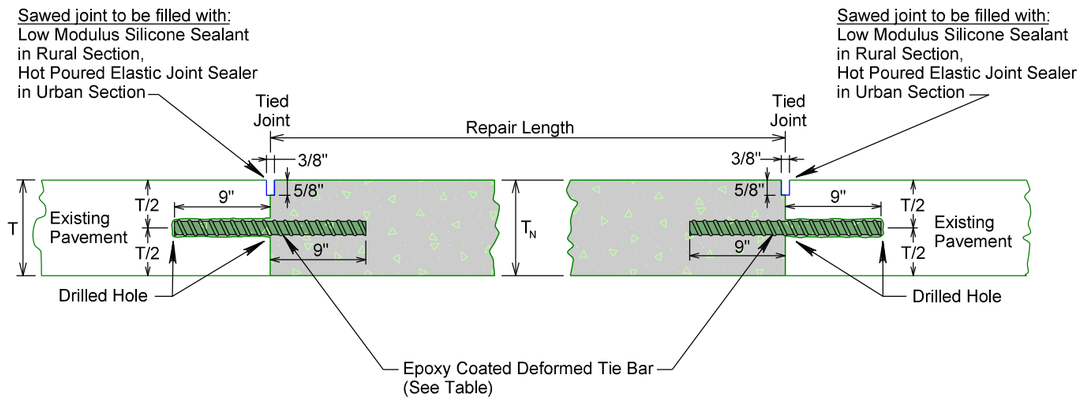
PLAIN ROUND DOWEL BAR INSERTION
TYPE W - (TWO WORKING JOINTS)



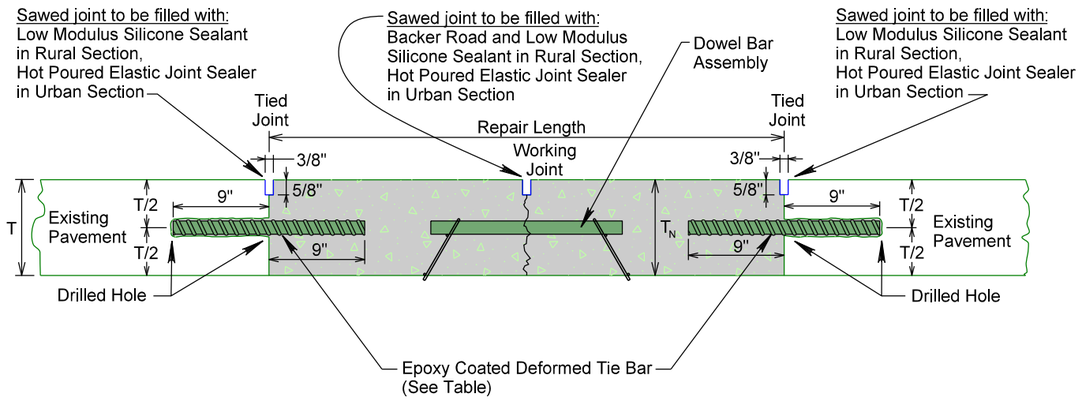
DEFORMED TIE BAR AND PLAIN ROUND DOWEL BAR INSERTION
TYPE B - (ONE TIED JOINT AND ONE WORKING JOINT)



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



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



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

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

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

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

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

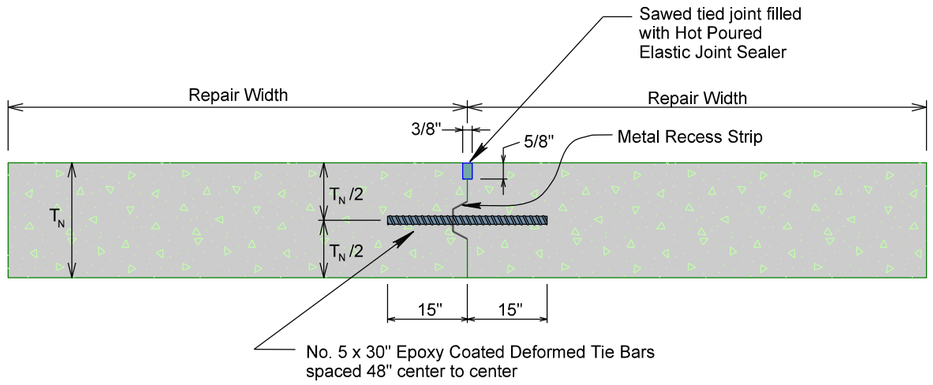
T_N = T

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

STATE OF SOUTH DAKOTA | PROJECT 012-151 | SHEET NO. 22 | TOTAL SHEETS 25
Plotting Date: 02/21/2023

NONREINFORCED PCC PAVEMENT REPAIR

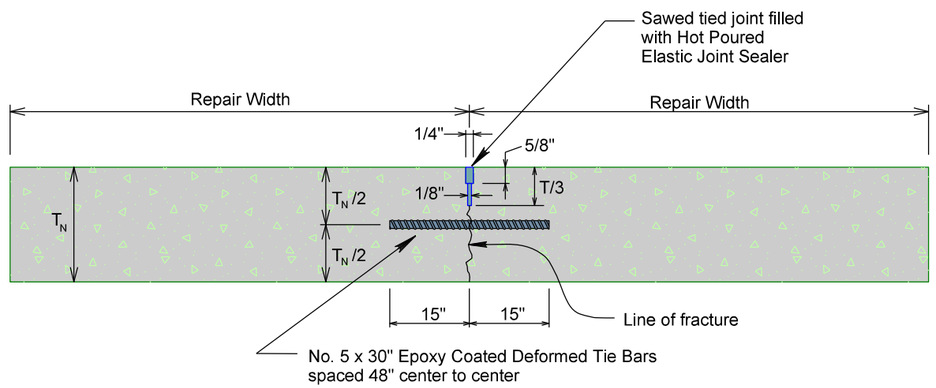
LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS & KEYWAY



T_N = New pavement thickness.

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

SAWED LONGITUDINAL JOINT

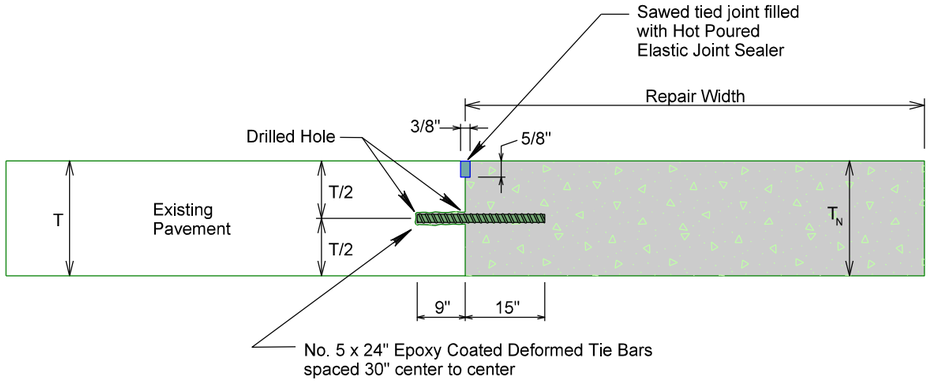


T_N = New pavement thickness.

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

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

LONGITUDINAL CONSTRUCTION JOINT WITH DRILLED IN TIE BARS



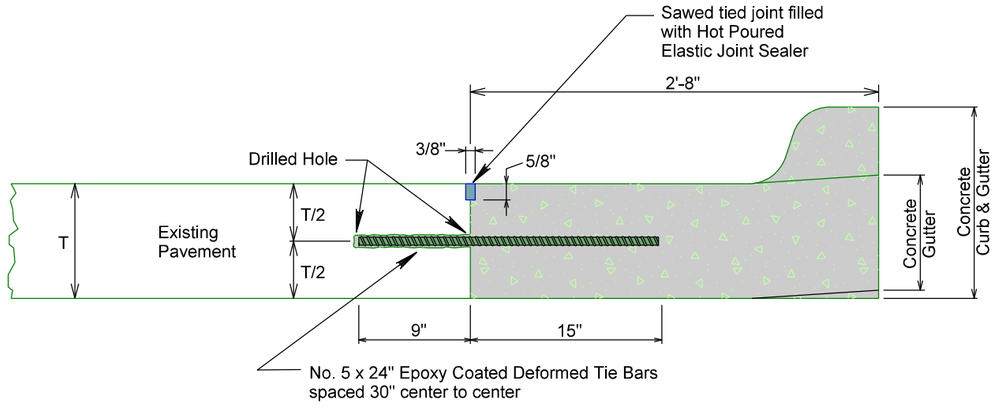
T = Existing pavement thickness.
T_N = New pavement thickness.

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

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

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

LONGITUDINAL CONSTRUCTION JOINT WITH DRILLED IN TIE BARS



T = Existing pavement thickness.

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

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

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

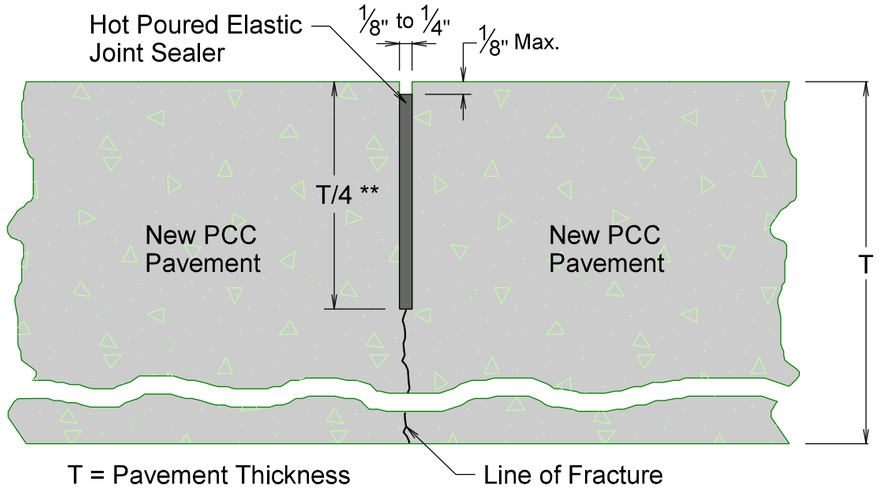
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	012-151	23	25

Plotting Date: 02/21/2023

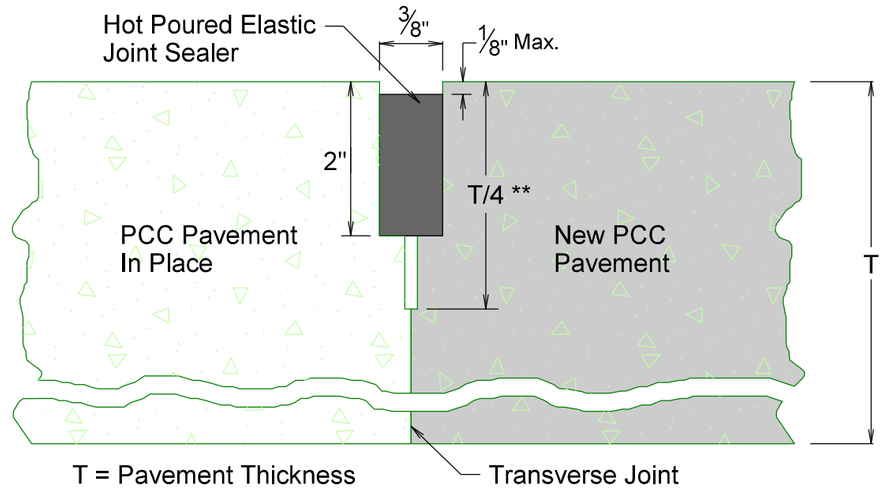
NONREINFORCED PCC PAVEMENT REPAIR

SAW & SEAL TRANSVERSE JOINTS

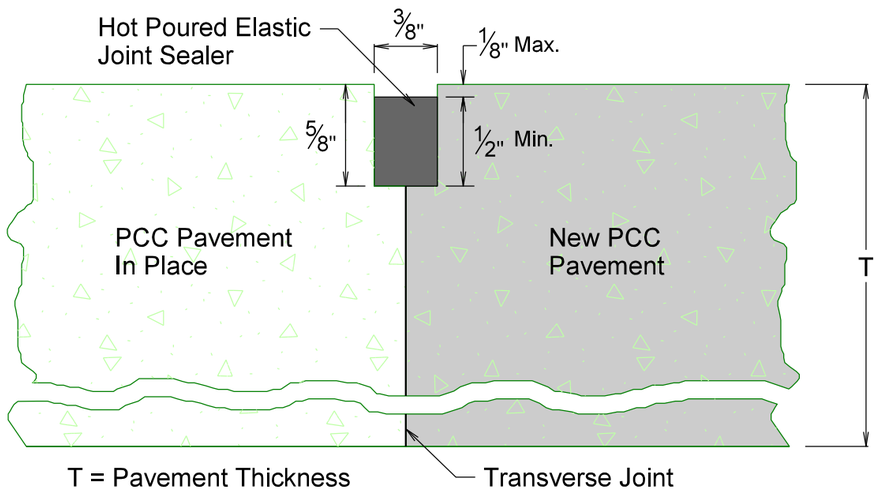
WITH HOT POURED ELASTIC JOINT SEALER AT WORKING JOINTS ENTIRELY WITHIN REPAIR AREAS



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

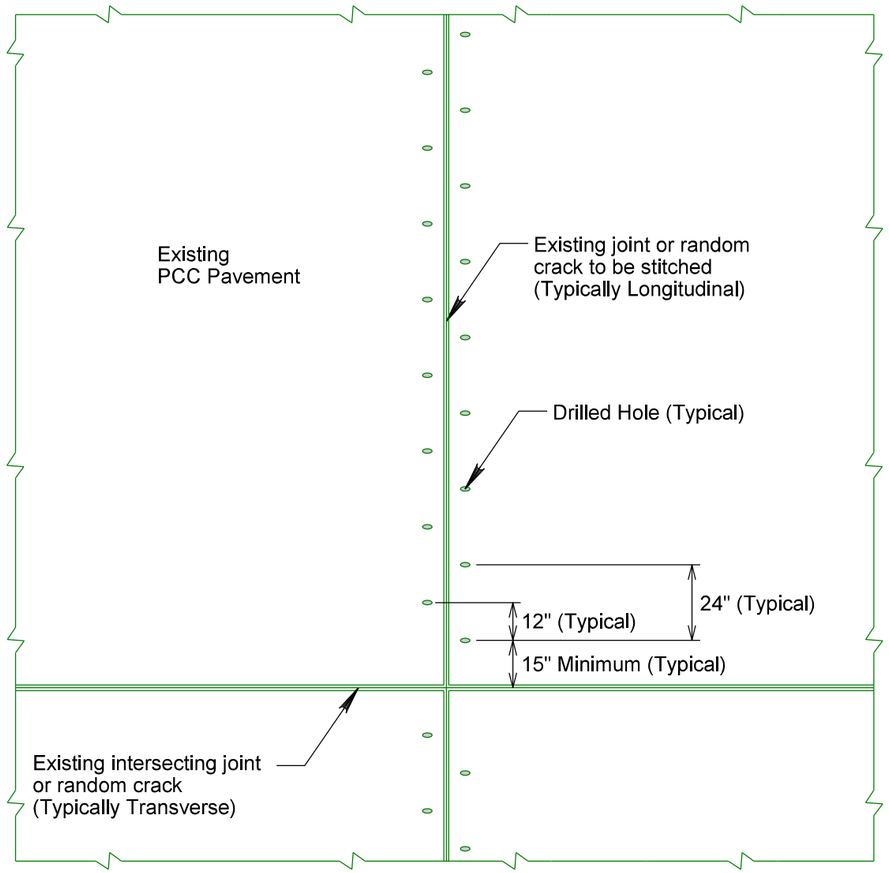


WITH HOT POURED ELASTIC JOINT SEALER AT TIED JOINTS



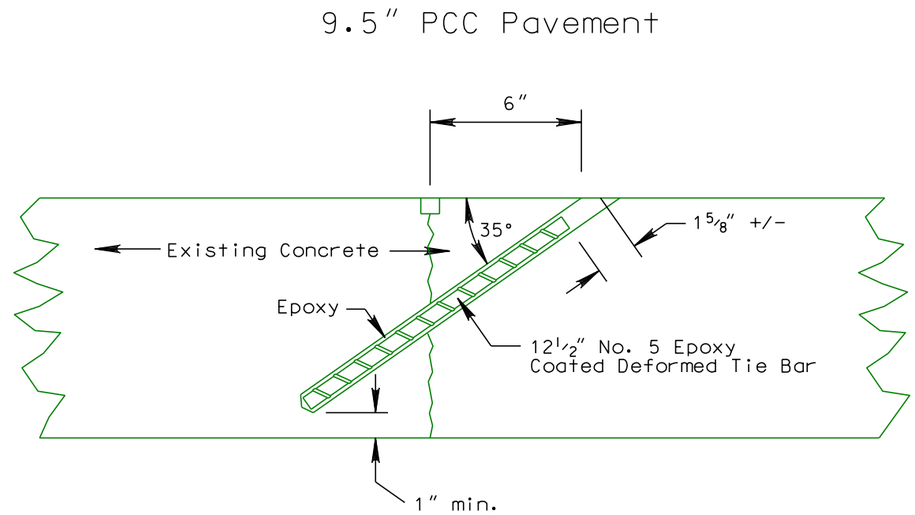
** The saw cut to control cracking will be a minimum of 1/4 the thickness of the pavement.

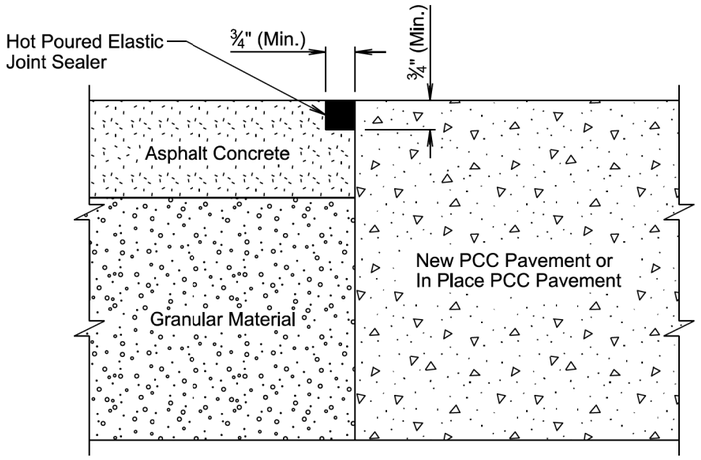
TIE BAR RETROFIT (STITCHING)



PLAN VIEW

TIE BAR RETROFIT (STITCHING)

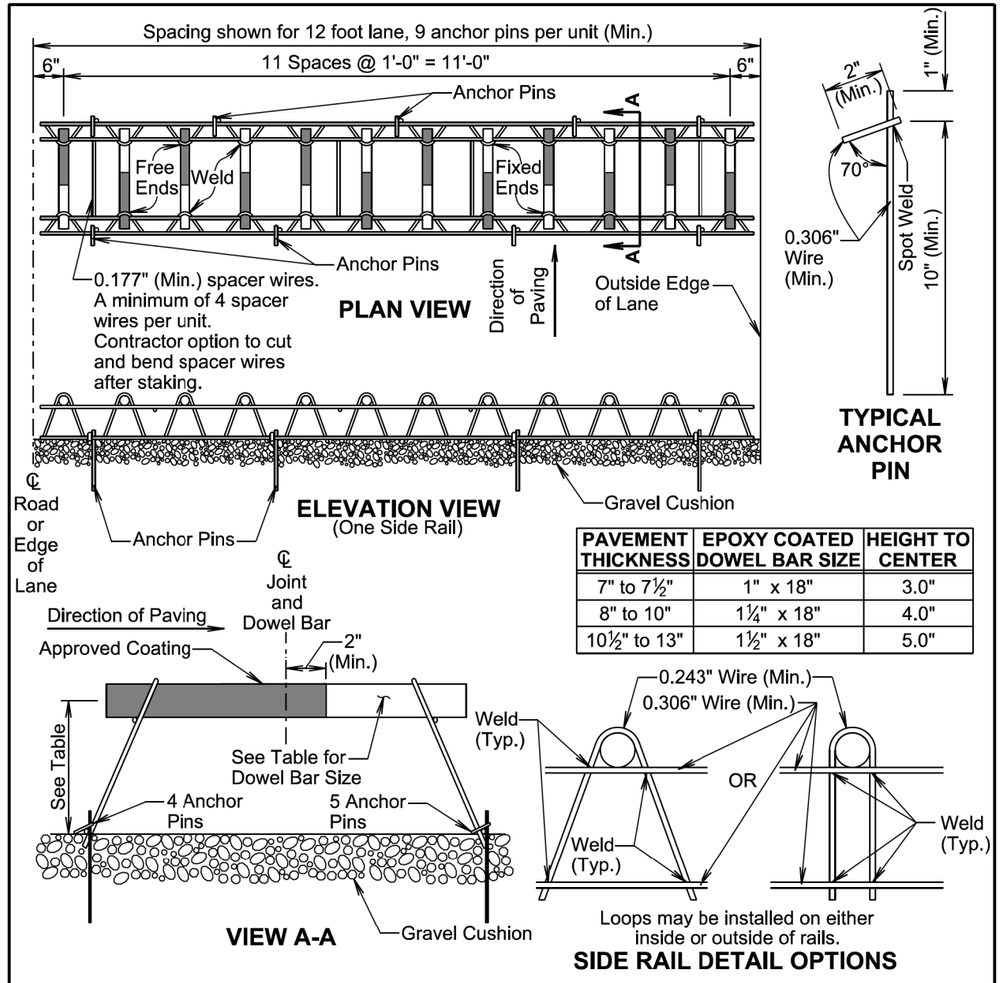




TRANSVERSE SECTION
(Asphalt Concrete Shoulder Joint)

September 14, 2019

Published Date: 1st Qtr. 2023	SDDOT	*ASPHALT CONCRETE SHOULDER JOINT ADJACENT TO PCC PAVEMENT*	*PLATE NUMBER* 320.15
			Sheet 1 of 1



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 13"	1½" x 18"	5.0"

GENERAL NOTES:

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

The transverse contraction joints will be sawed perpendicular to the centerline of the roadway. The transverse sawed joint will be centered over the dowel bars.

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

All dowel bar alignment tolerances will be as shown in the PCC Pavement Dowel Bar Alignment Tolerances standard plate.

November 19, 2022

Published Date: 1st Qtr. 2023	SDDOT	*PCC PAVEMENT DOWEL BAR ASSEMBLY FOR TRANSVERSE CONTRACTION JOINTS 12 Bar Assembly on Granular Base Material*	*PLATE NUMBER* 380.04
			Sheet 1 of 1

PLOT SCALE - 1:200
PLOT NAME - 1
FILE - ...\170UDESIGN\320_15&6380_04.DGN
-PLOTTED FROM - TRAB13309