

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH P 00SW(53)	1	61

Plotting Date: 02/19/2016

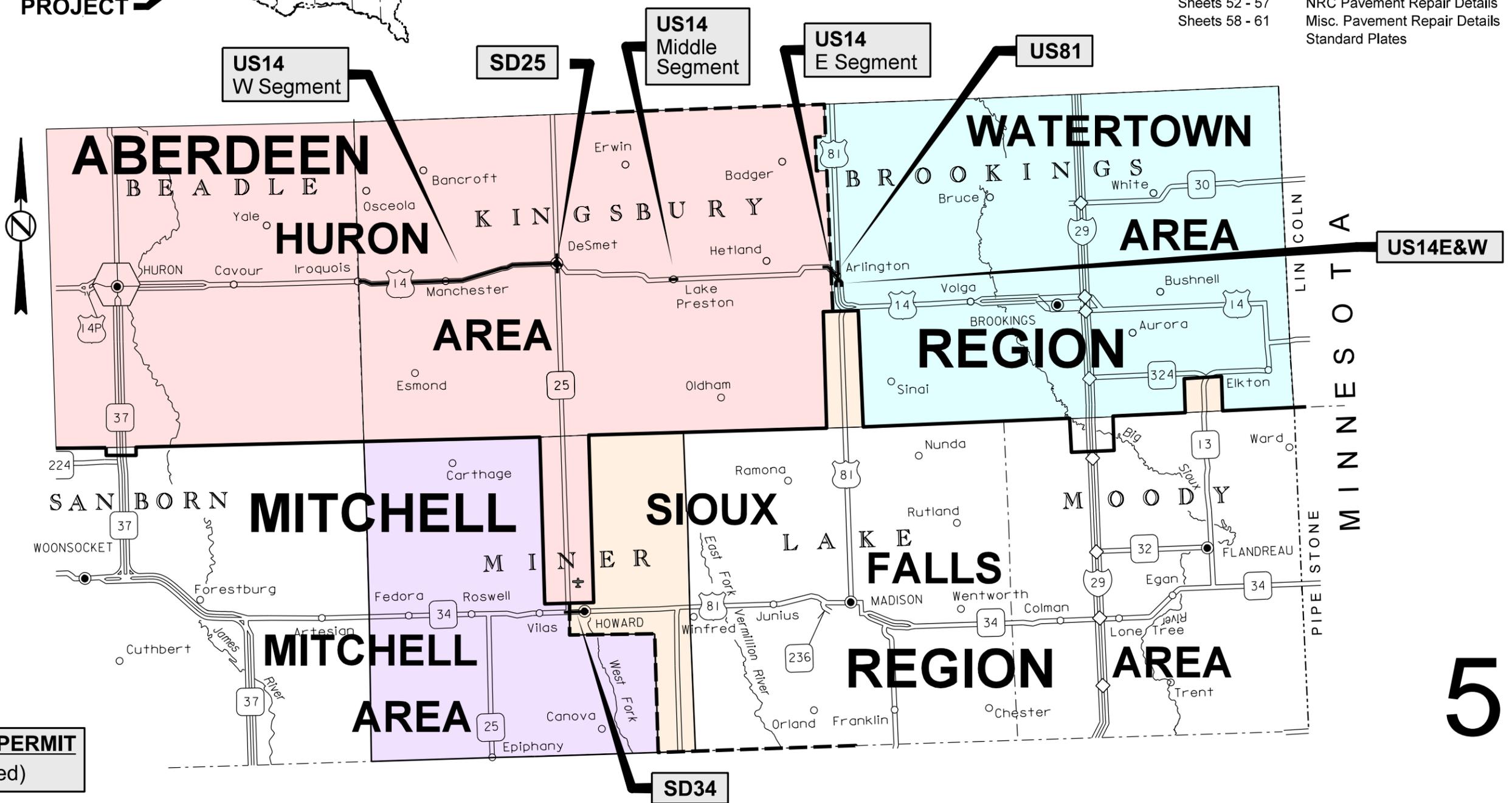
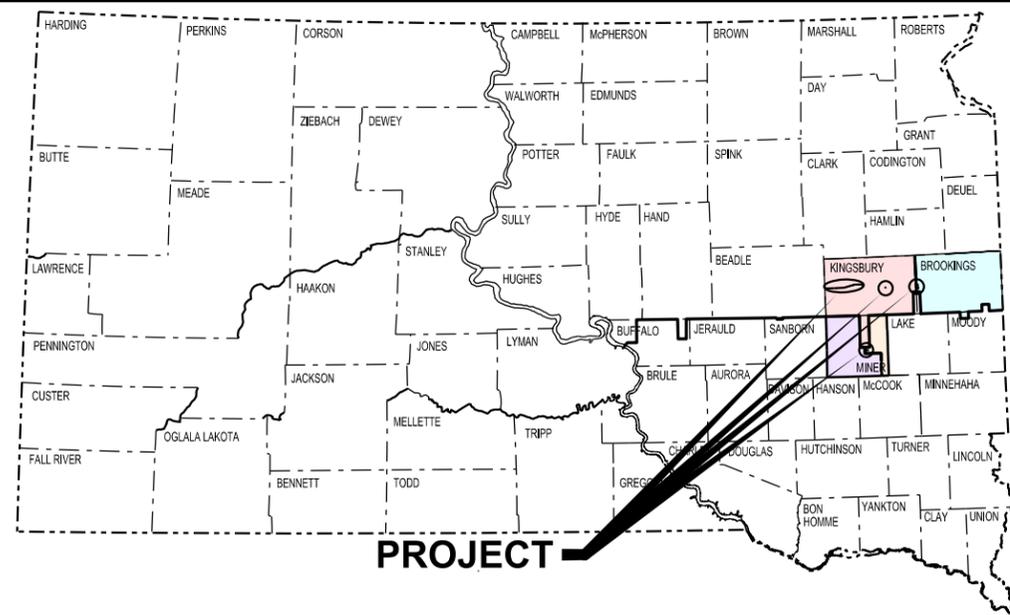
PLANS FOR PROPOSED
PROJECT NH-P 00SW(53)

US HIGHWAYS 14, 14E, 14W & 81
SD HIGHWAYS 25 & 34
BROOKINGS, KINGSBURY & MINER COUNTIES
HURON, WATERTOWN, MITCHELL & SIOUX FALLS AREAS
PCC PAVEMENT REPAIR
PCN 052U

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PLOT SCALE - 1" = 7000'



STORM WATER PERMIT
(None required)

5

PLOTTED FROM - TRHJINT05

FILE - ... \MINR052U\TTL052U.DGN

PLOT NAME - 1

**US HIGHWAY 14 & SD HIGHWAY 25
KINGSBURY COUNTY
HURON AREA
PCC PAVEMENT REPAIR
US14 WEST SEGMENT LENGTH: 15.137 MILES
SD25 LENGTH: 1.319 MILES
PCN 052U**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH P 00SW(53)	2	61

Plotting Date: 02/19/2016

SEGMENT 1

BEGIN US14 WEST SEGMENT
MRM 363.87 +0.125
MILEAGE 236.483
(At Begin Concrete)

SEGMENT 2

END SD25
MRM 115.00 +0.795
MILEAGE 73.586
(At End Concrete)

SEGMENT 1

END US14 WEST SEGMENT
MRM 379.00 +0.081
MILEAGE 251.620
(At East City Limits)

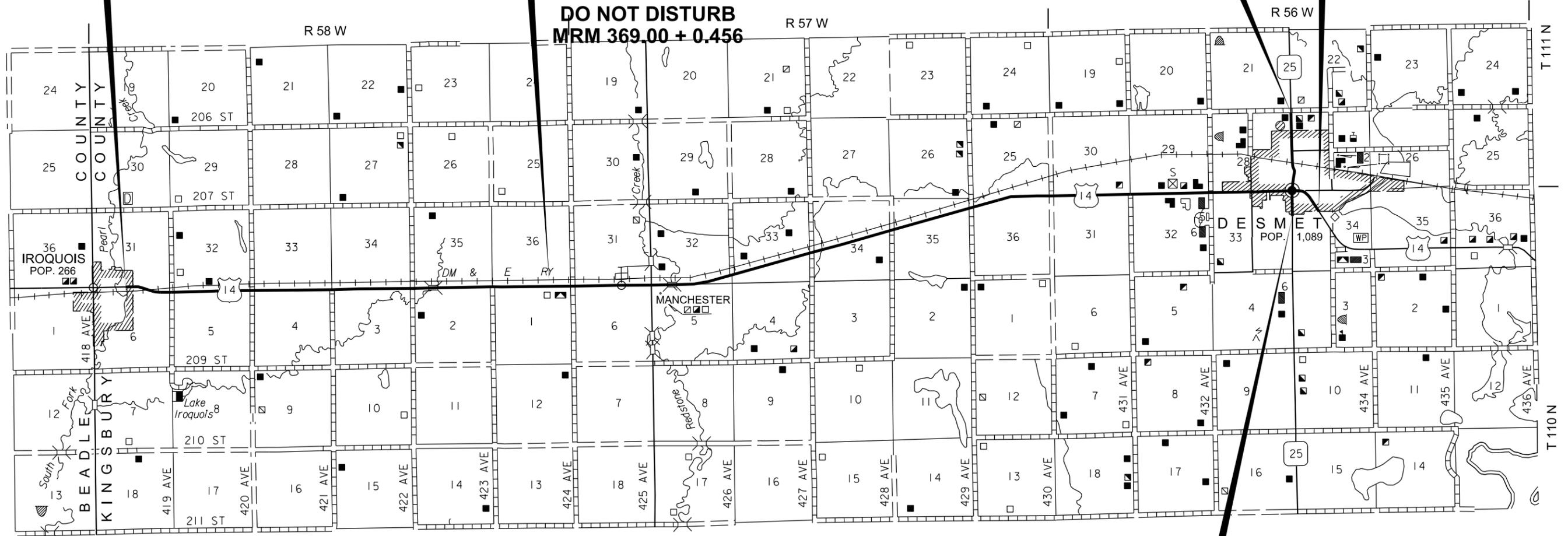
**WEIGH IN MOTION SYSTEM
DO NOT DISTURB
MRM 369.00 + 0.456**

**WEIGH IN MOTION SYSTEM
DO NOT DISTURB
MRM 369.00 + 0.456**

BEGIN SD25
MRM 114.00 +0.483
MILEAGE 72.267
(At Begin Concrete)

SEGMENT 2

**US14 ADT (2014) 1,607
SD25 ADT (2014) 1,430**



PLOT SCALE - 1:7000

PLOTTED FROM - TRHJINT05

PLOT NAME - 2

FILE - ... \M\INR052U\T1L052U.DGN

**US HIGHWAYS 14, 14E, 14W & 81
KINGSBURY & BROOKINGS COUNTIES
HURON & WATERTOWN AREAS
PCC PAVEMENT REPAIR**

STATE OF SOUTH DAKOTA	PROJECT NH P 00SW(53)	SHEET 3	TOTAL SHEETS 61
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Plotting Date: 02/19/2016

**US14 MIDDLE SEGMENT LENGTH: 0.939 MILE
US14 EAST SEGMENT LENGTH: 1.347 MILES
US14E LENGTH: 0.343 MILE
US14W LENGTH: 0.336 MILE
US81 LENGTH: 0.728 MILE
PCN 052U**

SEGMENT 3

**BEGIN US14
MIDDLE SEGMENT
MRM 387.00 +0.468
MILEAGE 260.018
(At West City Limits)**

SEGMENT 3

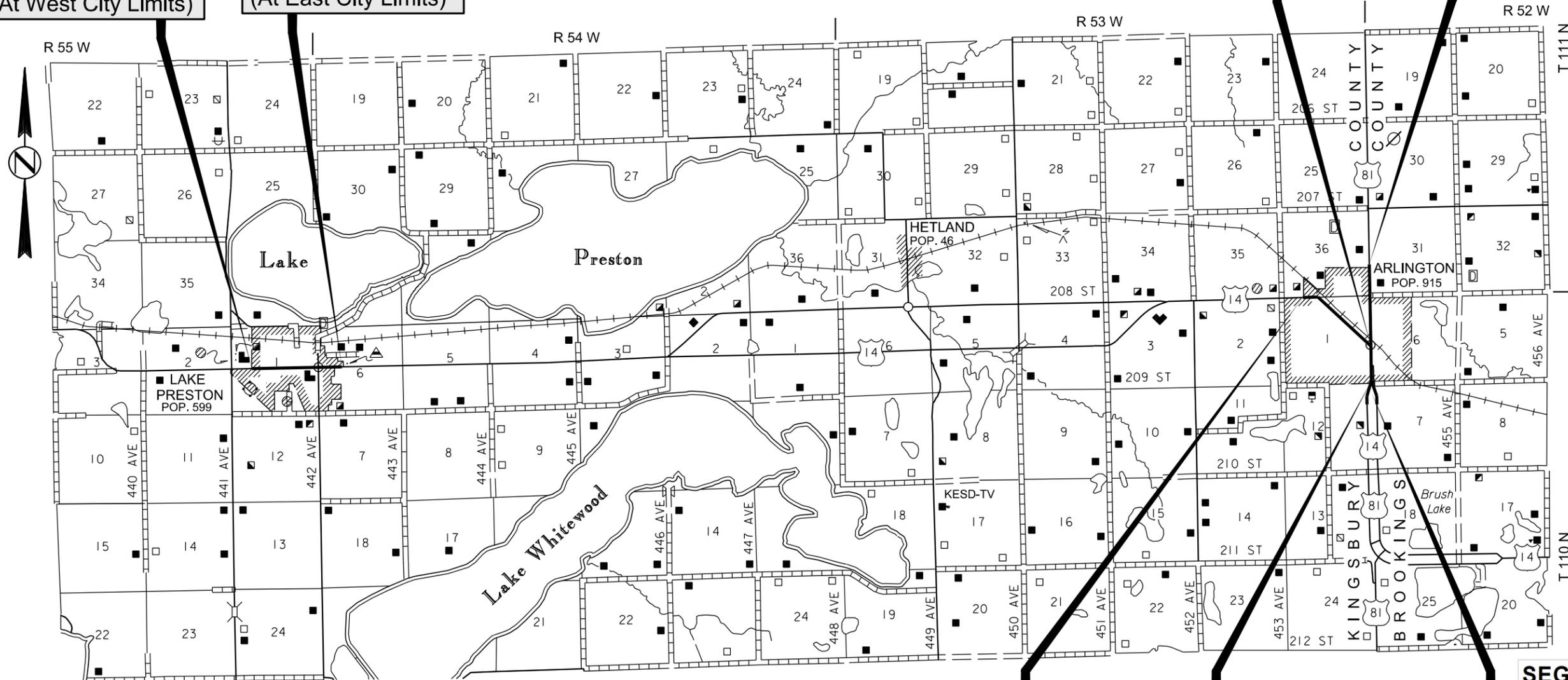
**END US14
MIDDLE SEGMENT
MRM 388.00 +0.423
MILEAGE 260.957
(At East City Limits)**

SEGMENT 7

**BEGIN US81
MRM 119.13 +0.000
MILEAGE 112.044
(At North Jct US14)**

SEGMENT 7

**END US81
MRM 119.13 +0.728
MILEAGE 112.782
(At North City Limits)**



**US14 MIDDLE SEGMENT ADT (2014) 2,065
US14 EAST SEGMENT ADT (2014) 3,319
US14E&W ADT (2014) 3,660
US81 ADT (2014) 2,211**

**BEGIN US14
EAST SEGMENT
MRM 399.00 +0.837
MILEAGE 272.203
(At West City Limits)**

SEGMENT 4

**END US14
EAST SEGMENT
MRM 400.99 +0.000
MILEAGE 273.550
(At Begin Divided)**

SEGMENT 4

**US14E&W
EB MRM 400.99 to 401.14 +0.152
EB MILEAGE 14.190 to 14.533
WB MRM 400.99 to 401.14 +0.140
WB MILEAGE 13.989 to 14.325
(From Jct US14 Undivided,
South to Begin Asphalt)**

SEGMENT 5 & 6

PLOT SCALE - 1:7000

PLOTTED FROM - TRHJINT05

PLOT NAME - 3

FILE - ... \MINR052U\TTL052U.DGN

**SD HIGHWAY 34
MINER COUNTY
MITCHELL & SIOUX FALLS AREAS
PCC PAVEMENT REPAIR
LENGTH: 1.380 MILES
PCN 052U**

STATE OF SOUTH DAKOTA	PROJECT NH P 00SW(53)	SHEET 4	TOTAL SHEETS 61
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Plotting Date: 02/19/2016

PLOT SCALE - 1:7000

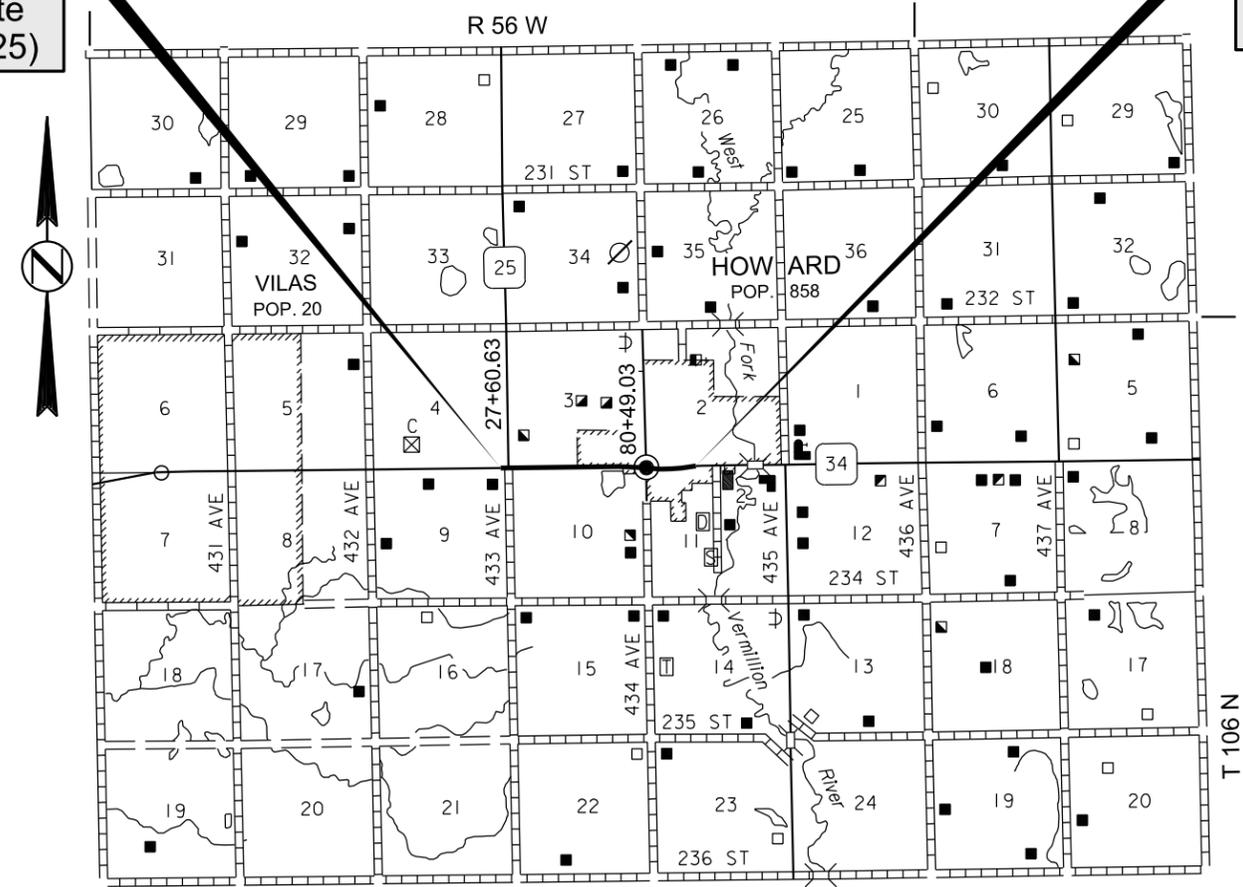
PLOT NAME - 4

SEGMENT 8

BEGIN SD34
STA. 26+25
MRM 364.00 +0.978
(At Begin Concrete
130' W of Jct SD25)

SEGMENT 8

END SD34
STA. 99+14.06
MRM 366.00 +0.391
(At End Concrete 55' E
of Miner St. in Howard)



ADT (2014) 2,166

PLOTTED FROM - TRHJINT05

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Estimate of Quantities

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 00SW(53)	5	61

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0300	Remove Concrete Curb and Gutter	92	Ft
320E1200	Asphalt Concrete Composite	40.0	Ton
380E5020	Fast Track Concrete for PCC Pavement Repair	1,729.6	SqYd
380E6000	Dowel Bar	509	Each
380E6110	Insert Steel Bar in PCC Pavement	4,060	Each
380E6300	Reseal PCC Pavement Joint - Silicone	188,795	Ft
380E6310	Seal Random Cracks in PCC Pavement	1,068	Ft
390E0200	Repair Type A Spall	1,048.4	SqFt
633E0010	Cold Applied Plastic Pavement Marking, 4"	28,548	Ft
633E0020	Cold Applied Plastic Pavement Marking, 8"	2,286	Ft
633E0030	Cold Applied Plastic Pavement Marking, 24"	598	Ft
633E0035	Cold Applied Plastic Pavement Marking, Area	165	SqFt
633E0040	Cold Applied Plastic Pavement Marking, Arrow	16	Each
633E0055	Cold Applied Plastic Pavement Marking, Railroad Crossing	4	Each
633E5005	Grooving for Cold Applied Plastic Pavement Marking, 8"	78	Ft
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	224	Ft
633E5050	Surface Preparation for Pavement Marking	35,208	Ft
633E5051	Surface Preparation for Pavement Marking	165	SqFt
633E5052	Surface Preparation for Pavement Marking	20	Each
634E0010	Flagging	2,211.5	Hour
634E0020	Pilot Car	1,112.0	Hour
634E0110	Traffic Control Signs	3,072	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0280	Type 3 Barricade, 8' Single Sided	32	Each
634E0420	Type C Advance Warning Arrow Board	6	Each
650E0080	Type B68 Concrete Curb and Gutter	92	Ft
998E0100	Railroad Protective Insurance	Lump Sum	LS

SPECIFICATIONS

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

Estimate of Quantities

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 00SW(53)	6	61

TABLE OF QUANTITIES FOR US HWY 14, SD 25, SD 34 & US 81
FOR INFORMATION PURPOSES ONLY

ROUTE	Mobilization	Asphalt Concrete Composite	Remove Concrete Curb and Gutter	Repair Type A Spall	Fast Track Concrete for PCC Pavement Repair	Dowel Bar	Insert Steel Random Cracks in PCC Pavement	Saw and Seal Joint	Type B68 Concrete Curb and Gutter	Cold Applied Plastic Pavement 4" White Each	Cold Applied Plastic Pavement 8" White Each	Cold Applied Plastic Pavement Marking, 24" White Ft.	Cold Applied Plastic Pavement Area, White SqFt.	Cold Applied Plastic Pavement 4" Yellow Ft.	Cold Applied Plastic Pavement 8" Yellow Ft.	Cold Applied Plastic Pavement Marking, 24" Yellow Ft.	Cold Applied Plastic Pavement Area, Yellow SqFt.	Cold Applied Plastic Pavement Railroad Crossing Each	Cold Applied Plastic Pavement Arrow Each	Grooving for Cold Applied Plastic Pavement Marking, 8" Ft.	Grooving for Cold Applied Plastic Pavement Marking, 24" Ft.	Surface Preparation For Pavement Marking Ft.	Surface Preparation For Pavement Marking SqFt.	Surface Preparation For Pavement Marking Each	Flagging Hour	Pilot Car Hour	Traffic Control Signs Sq. Ft.	Type C Advance Warning Arrow Board Each	Railroad Protective Insurance Lump Sum	Traffic Control Misc. Lump Sum		
Segment 1	Lump Sum	-	-	417.9	82.7	-	108	818	123869	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	51	360	2	Lump Sum	Lump Sum
Segment 2	Lump Sum	5	-	168.0	587.0	124	1031	-	13597	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	722	361	424	-	Lump Sum	Lump Sum
Segment 3	Lump Sum	-	-	55.7	51.3	6	135	-	10191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63	32	424	-	-	Lump Sum	
Segment 4	Lump Sum	5	-	225.2	204.5	61	509	-	14246	-	7172	524	284	-	9849	492	160	125	-	16	78	224	20217	125	16	252	126	360	2	-	Lump Sum	
Segment 5	Lump Sum	5	-	31.0	0.0	-	-	-	1860	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	24	360		-	Lump Sum	
Segment 6	Lump Sum	5	-	8.2	0.0	-	-	-	1820	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	24	360		-	Lump Sum	
Segment 7	Lump Sum	10	-	122.4	123.8	-	331	-	5719	-	5579	1042	154	40	5948	228	-	-	4	-	-	-	14991	40	4	153	77	424	-	Lump Sum	Lump Sum	
Segment 8	Lump Sum	-	82.0	20.0	670.3	318	1946	-	17494	82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	824	412	360	2	-	Lump Sum	
*Additional	Lump Sum	10	10.0	-	10.0	-	-	250	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Lump Sum	
Total =	Lump Sum	40	92	1048.4	1729.6	509	4060	1068	188796	92	12751	1566	438	40	15797	720	160	125	4	16	78	224	35208	165	20	2212	1107	3072	6	Lump Sum	Lump Sum	

*Additional quantities included to account for varying conditions at the time of construction. No additional payment or change in contract unit price will be made for changes in quantities.

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 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 pit, or staging site associated with the project, cease construction activities in the affected area until the Whooping Crane departs and contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

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 Public 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 Public 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 Public 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.

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) shall be incidental to the various contract items.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 00SW(53)	8	61

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 impact. This work includes, but is not limited to: staging areas, borrow sites, waste disposal sites, and all material processing sites.

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; 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 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.

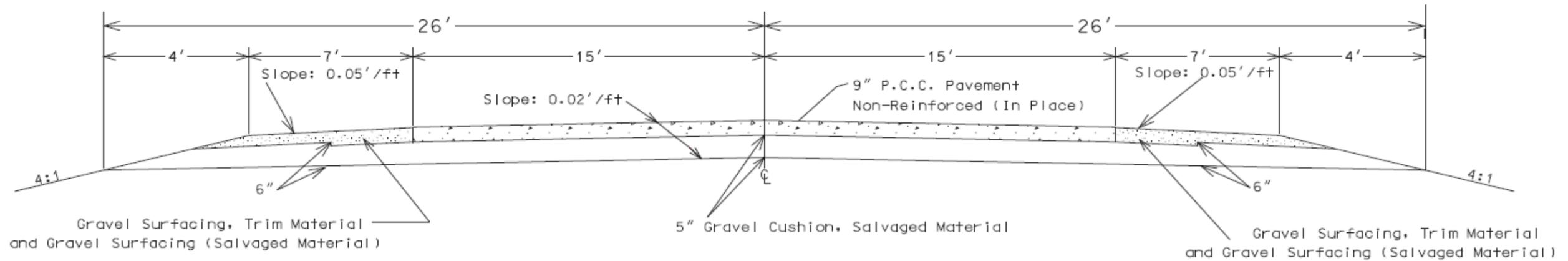
SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetland, threatened and endangered species, or waterways. The Contractor shall provide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

SEGMENT 1

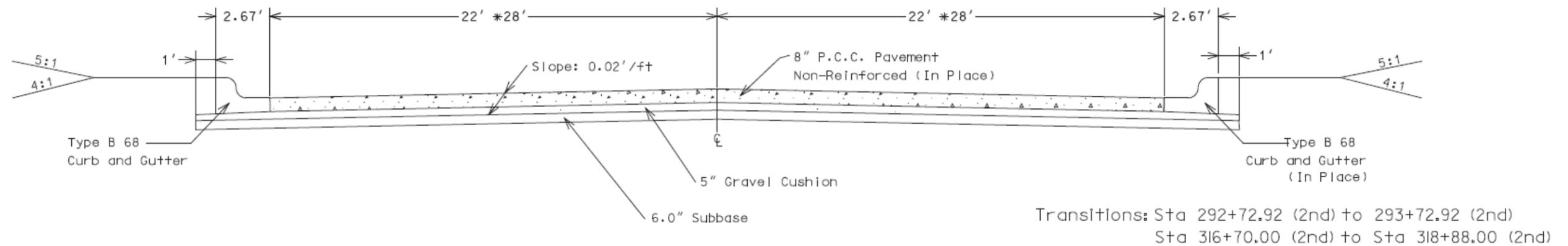
IN PLACE TYPICAL SURFACING SECTION(S)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH - P 00SW(53)	9	61

Station 0+00.00 to Station 292+72.92 (2nd) Thru Equations



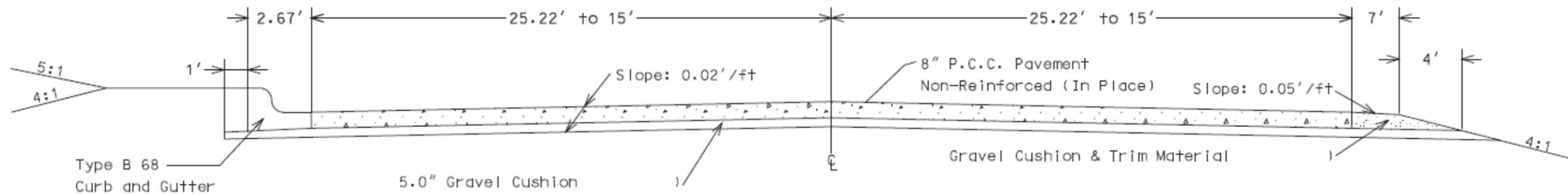
Station 293+72.92 (2nd) to Station 316+70.00 (2nd) *Station 318+88.00 (2nd) to Station 329+00.00 (2nd)



SEGMENT 1 IN PLACE TYPICAL SURFACING SECTION(S)

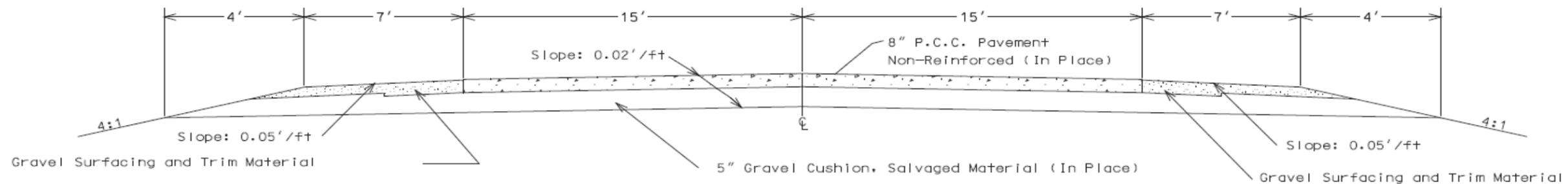
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH - P 00SW(53)	10	61

Station 330+00.00 (2nd) to Station 1+20.00 (3rd) Thru Equation



Transition: Sta 329+00.00 (2nd) to Sta 330+00.00 (2nd)

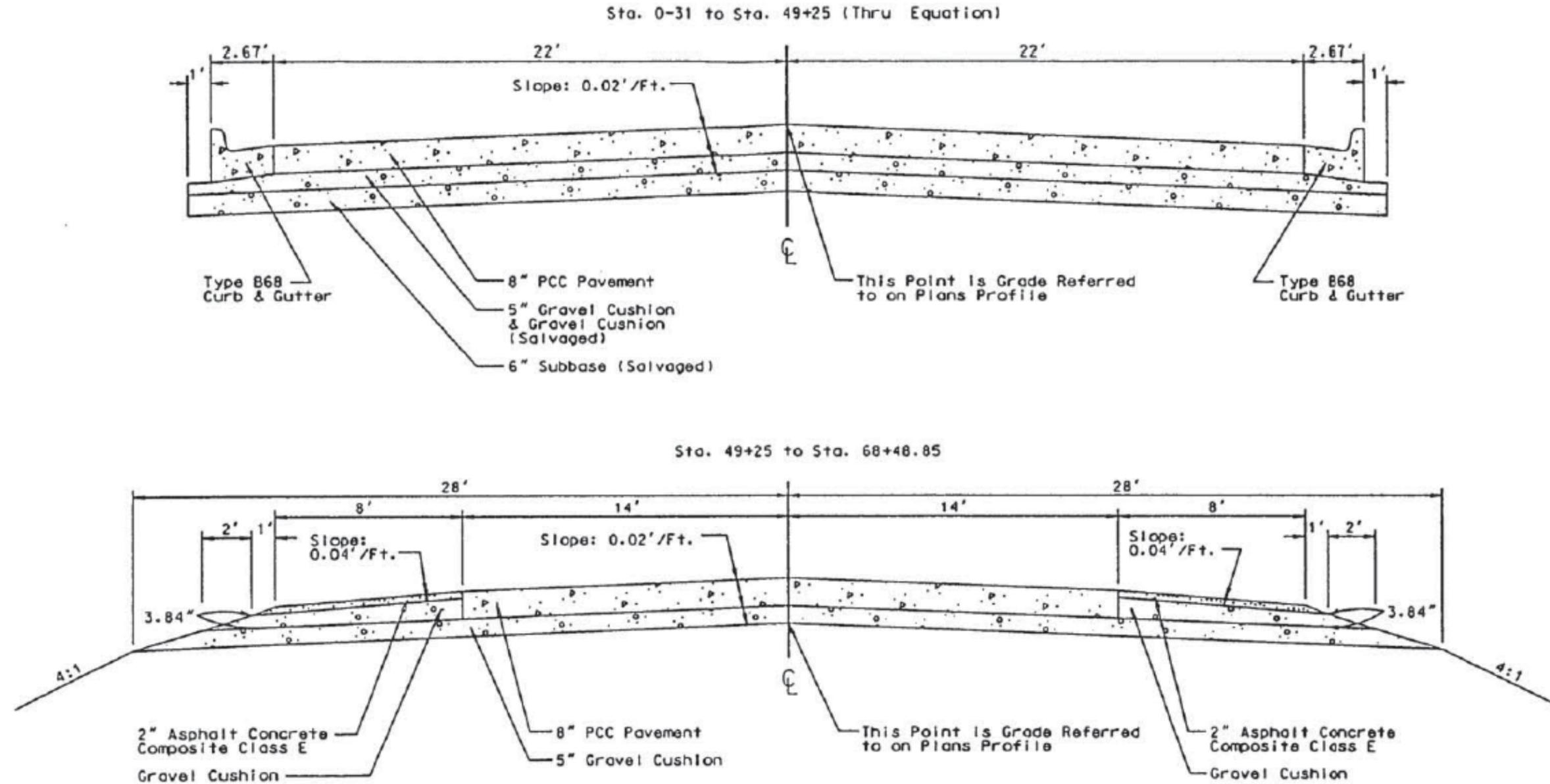
Station 1+20.00 (3rd) to Station 149+51.80 (3rd) Thru Equation Station 150+68.19 (3rd) to Station 2+00.00 (4th) Thru Equations



SEGMENT 2

IN PLACE TYPICAL SURFACING SECTION(S)

STATE OF SOUTH DAKOTA	PROJECT NH - P 00SW(53)	SHEET 11	TOTAL SHEETS 61
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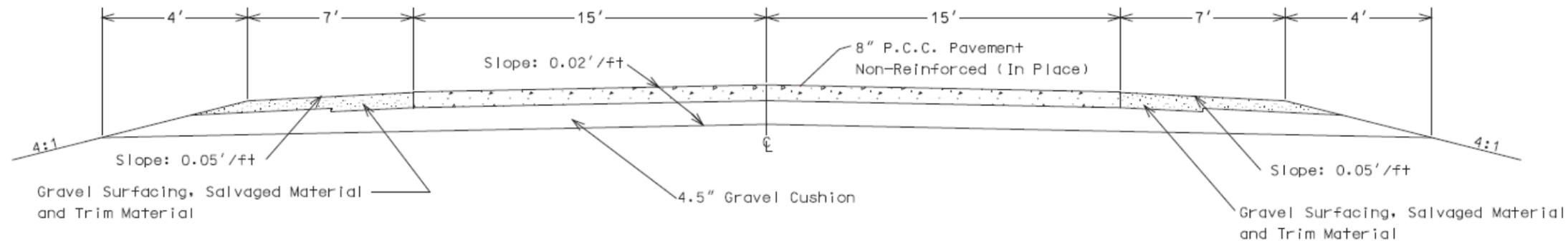


SEGMENT 3

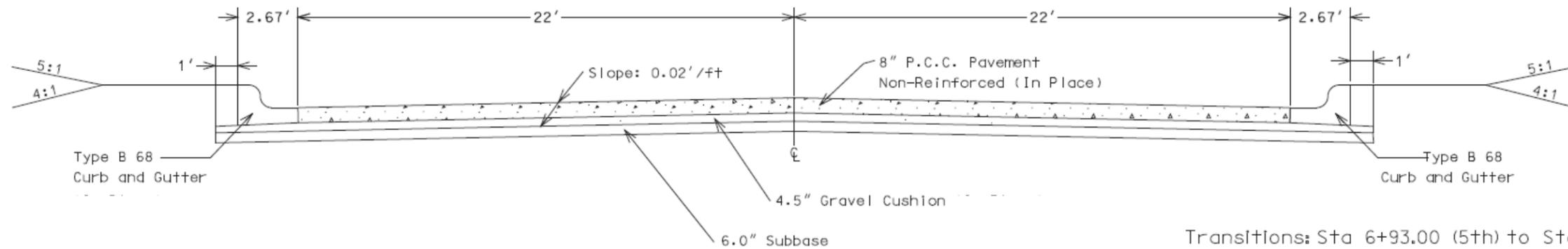
IN PLACE TYPICAL SURFACING SECTION(S)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH - P 00SW(53)	12	61

Station 2+00.00 (4th) to Station 6+93.00 (5th) Thru Equation
Station 48+55.00 (5th) to Station 343+29.00 (5th) Thru Equation



Station 8+93.00 (5th) to Station 40+62.00 (5th)

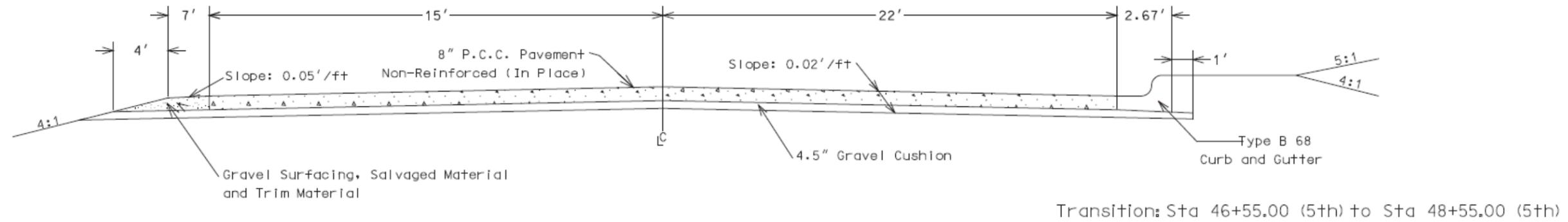


Transitions: Sta 6+93.00 (5th) to Sta 8+93.00 (5th)
 Sta 40+62.00 (5th) to Sta 42+62.00 (5th)

SEGMENT 3 IN PLACE TYPICAL SURFACING SECTION(S)

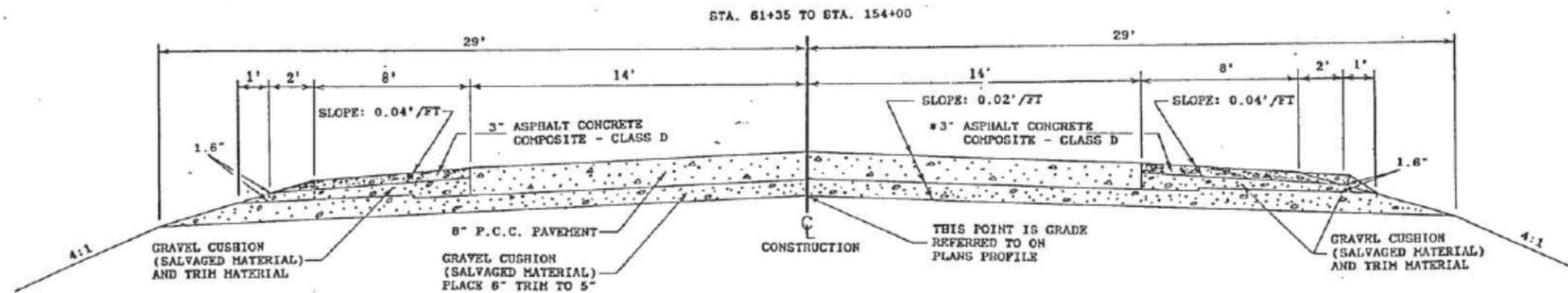
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH - P 00SW(53)	13	61

Station 42+62.00 (5th) to Station 46+55.00 (5th) Thru Equation

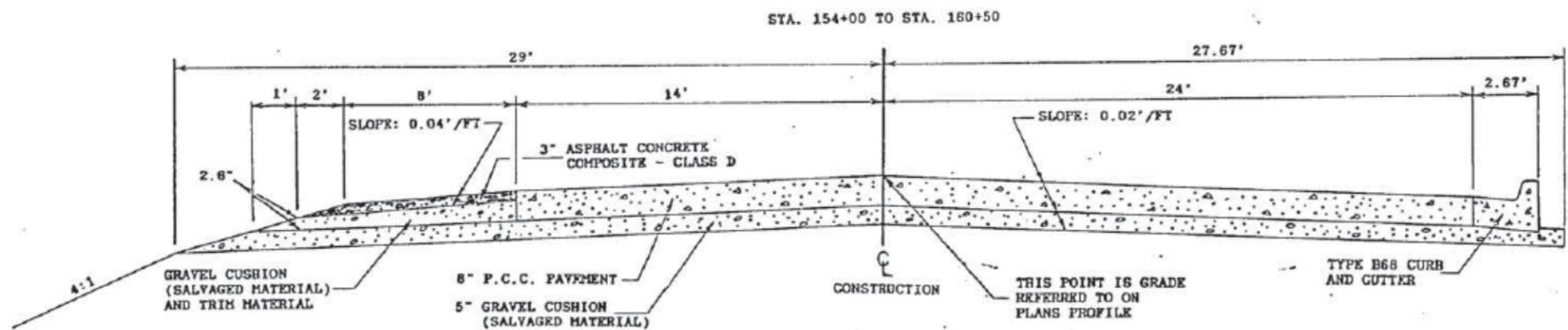


SEGMENT 4, 5, & 6 IN PLACE TYPICAL SURFACING SECTION(S)

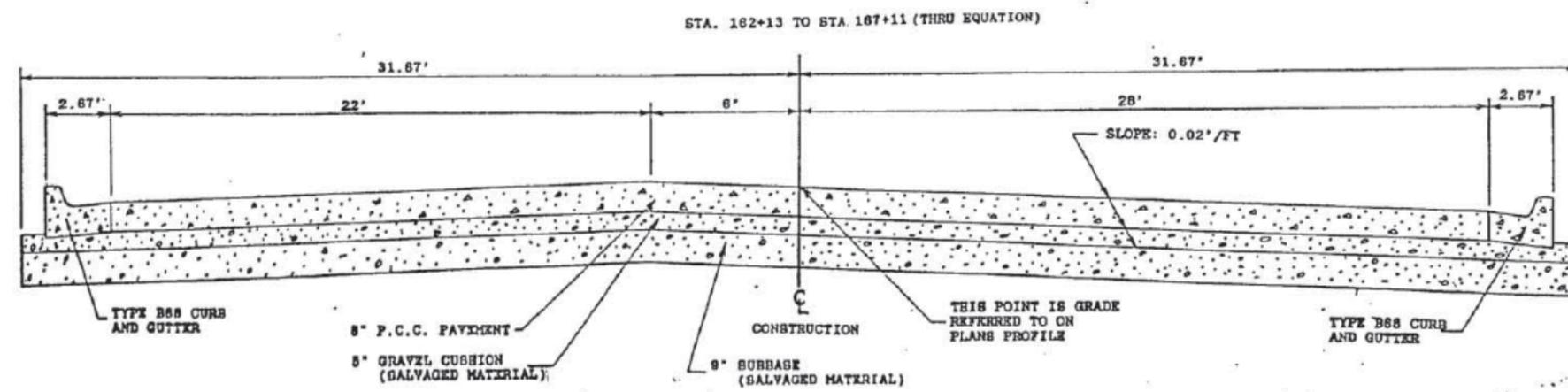
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 00SW(53)	14	61



* GRAVEL CUSHION (SALVAGED MATERIAL) SHALL BE INITIALLY PLACED TO THE TOP OF THE P.C.C. PAVEMENT AND TO THE SHOULDER SLOPE SHOWN FOR CARRYING TRAFFIC DURING PAVING OPERATIONS IN THE OPPOSITE LANE.

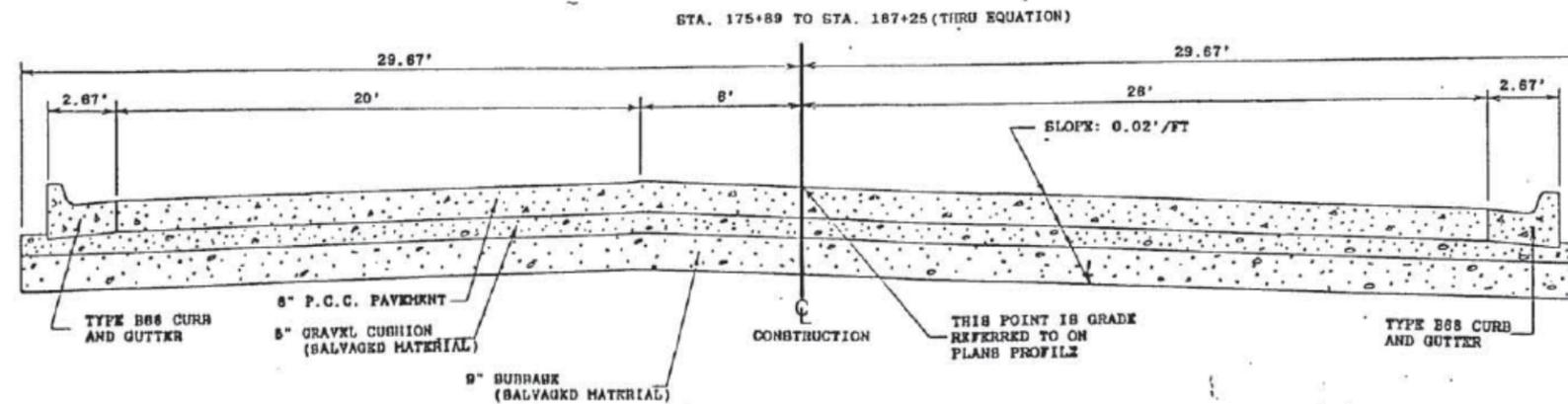
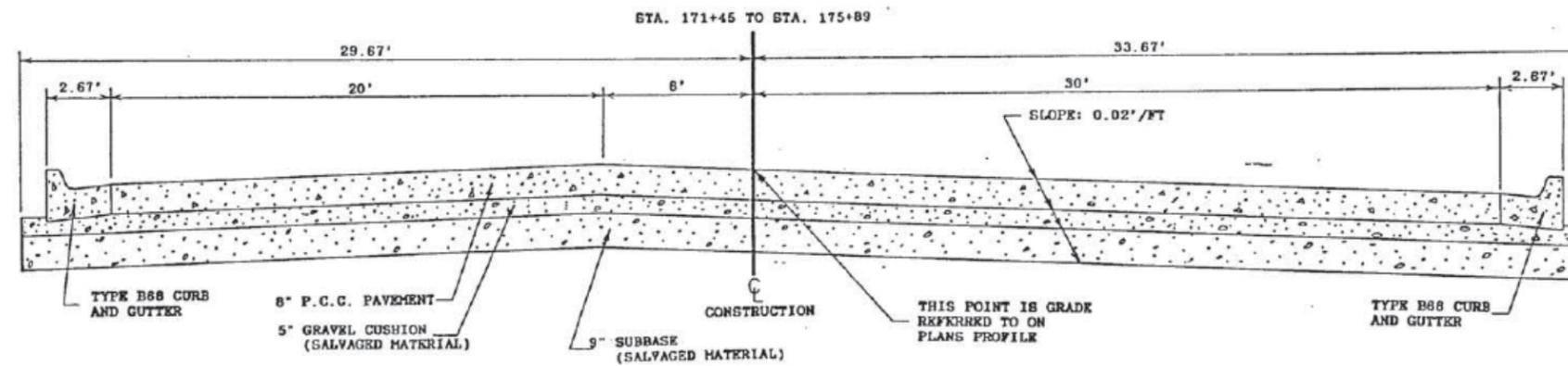
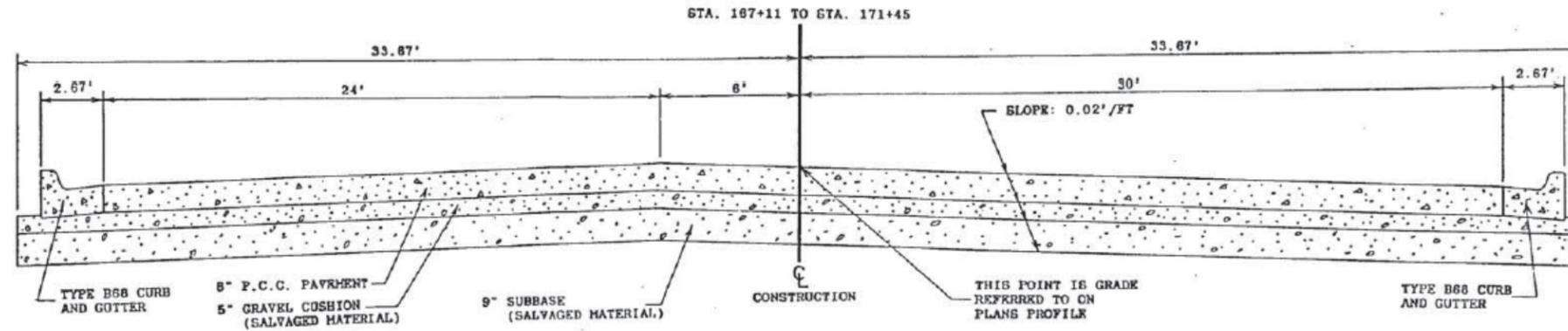


TRANSITION:
STA. 160+50 TO STA. 162+13



SEGMENT 4, 5, & 6 IN PLACE TYPICAL SURFACING SECTION(S)

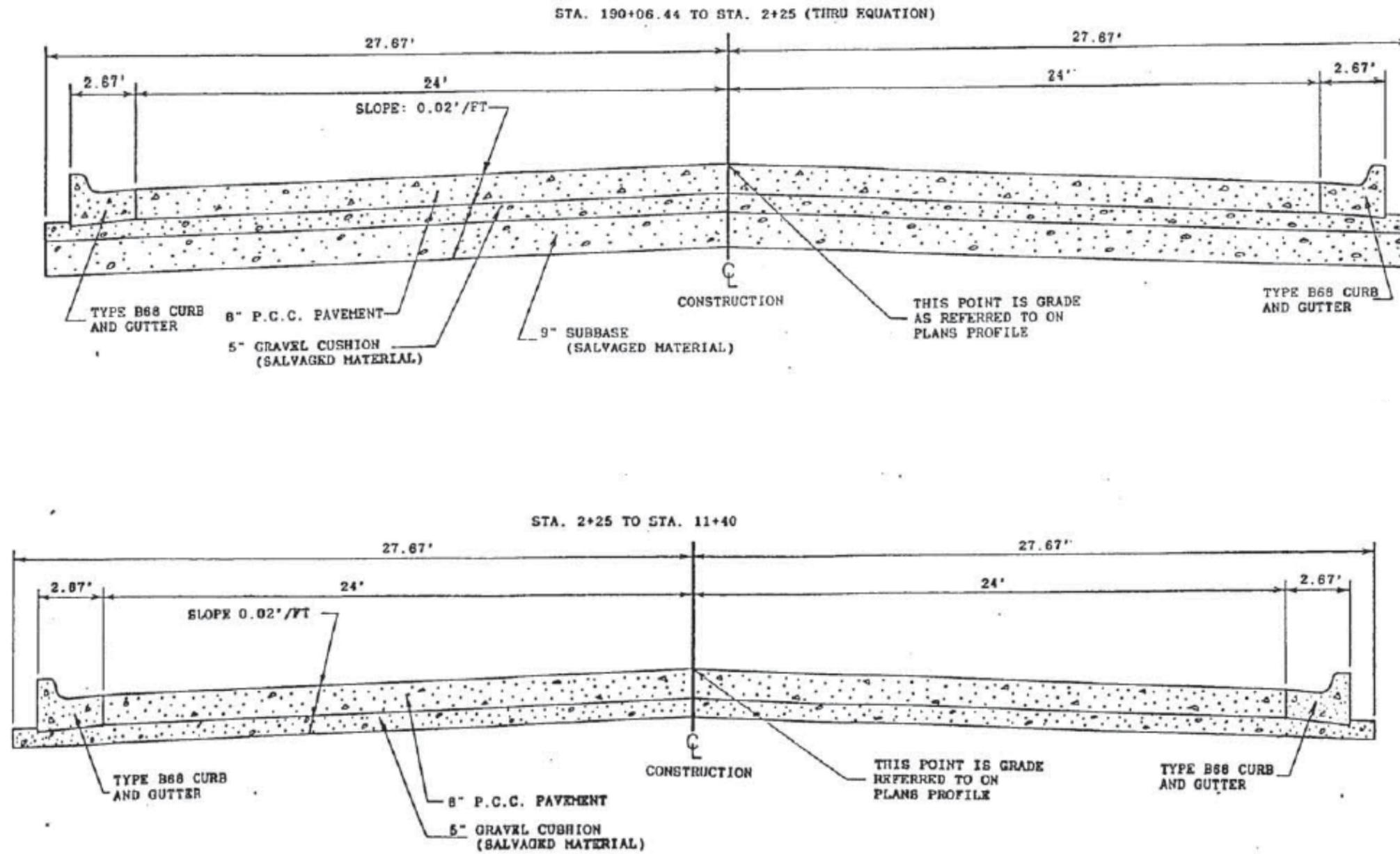
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 00SW(53)	15	61



TRANSITION:
STA. 187+25 TO STA. 190+06.44

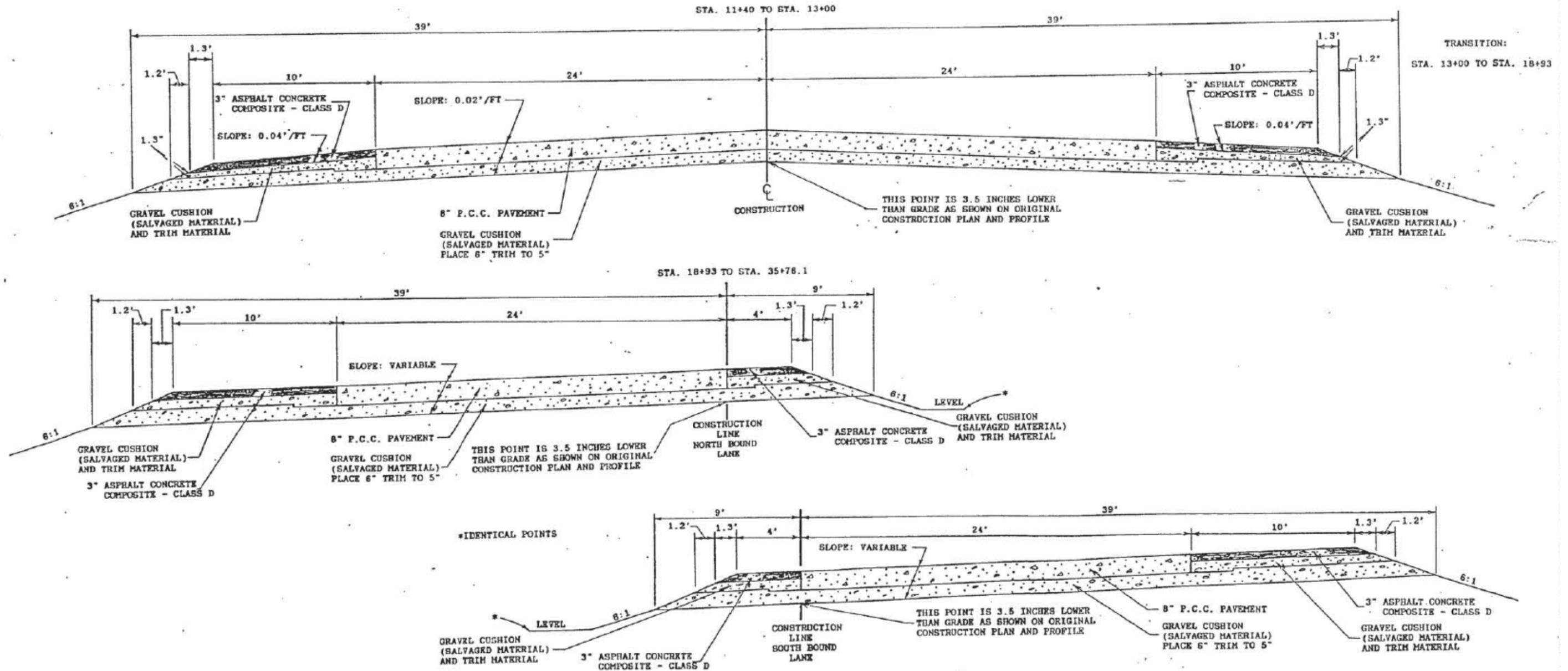
SEGMENT 4, 5, & 6 IN PLACE TYPICAL SURFACING SECTION(S)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 00SW(53)	16	61



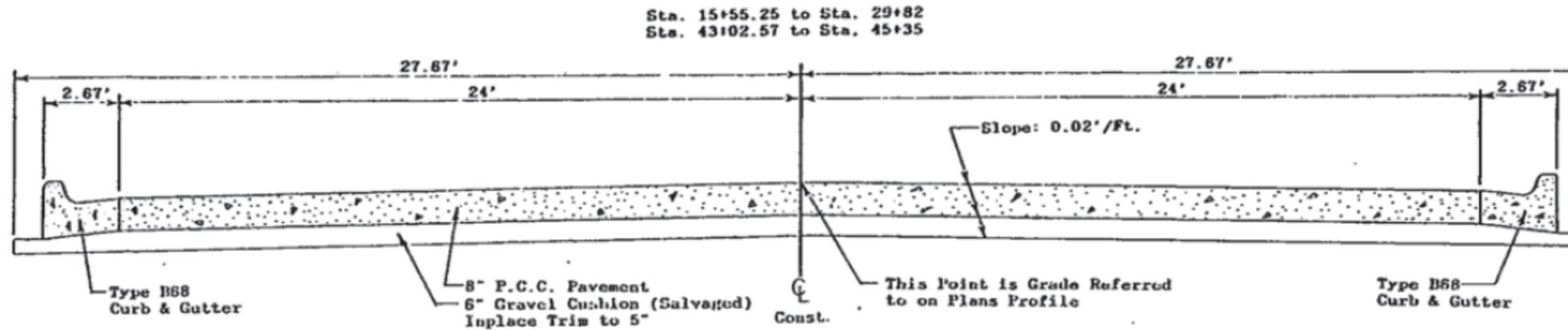
SEGMENT 4, 5, & 6 IN PLACE TYPICAL SURFACING SECTION(S)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 00SW(53)	17	61

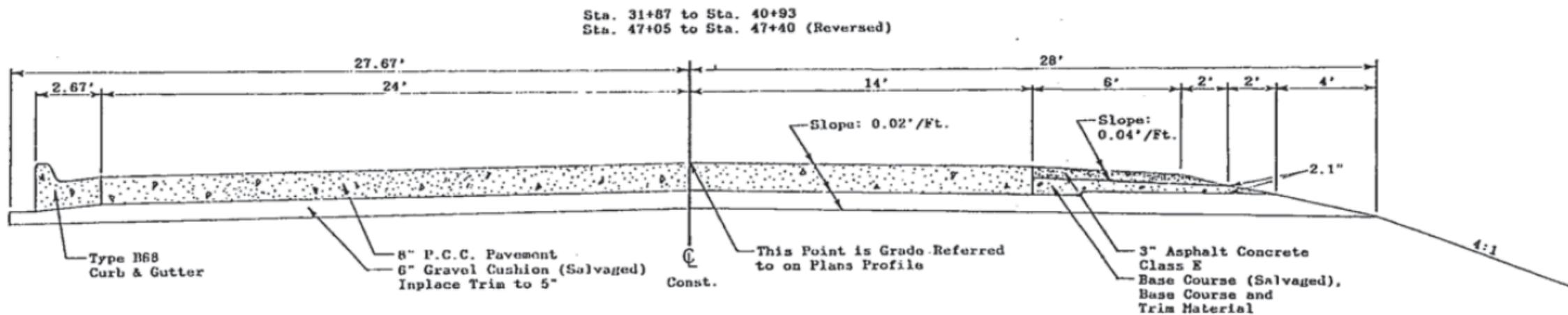


SEGMENT 7 IN PLACE TYPICAL SURFACING SECTION(S)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH - P 00SW(53)	18	61



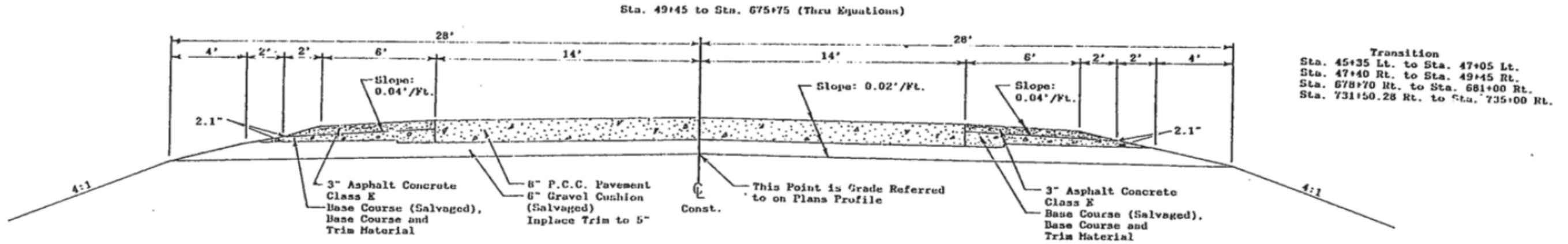
Transition
Sta. 29+82 Rt. to Sta. 31+87 Rt.
Sta. 40+93 Rt. to Sta. 43+02.57 Rt.



SEGMENT 7

IN PLACE TYPICAL SURFACING SECTION(S)

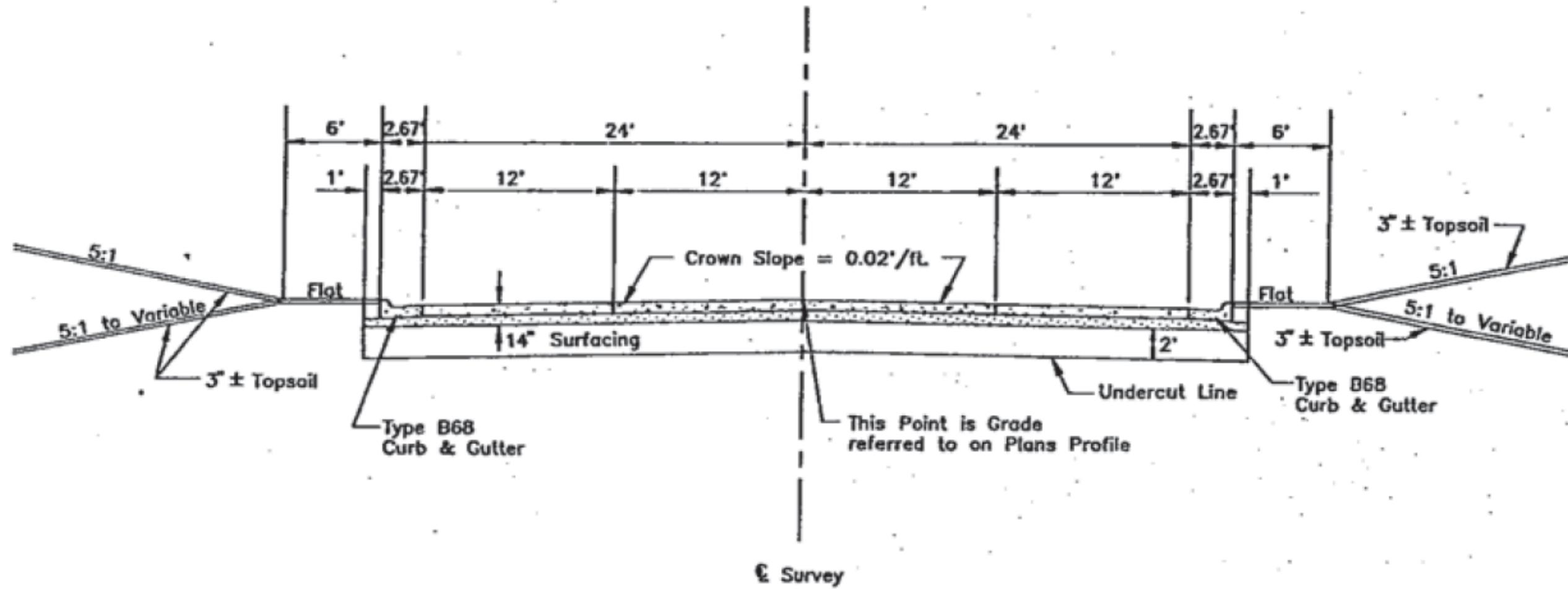
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH - P 00SW(53)	19	61



SEGMENT 8 IN PLACE TYPICAL SURFACING SECTION(S)

STATE OF SOUTH DAKOTA	PROJECT NH - P 00SW(53)	SHEET 20	TOTAL SHEETS 61
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70+14.04 TO 99+14.06



Project Stationing US Hwy 14 Segment 1

	Station		Station		Station		Station	Length	Miles
	0+00.00	to	34+54.24	+0.00	to	34+54.24	3,454.24	0.654	
Equation	34+54.24 Bk	=	34+23.39 Ah						
	34+23.39	to	93+32.24	34+23.39	to	93+32.24	5,908.85	1.119	
Equation	93+32.24 Bk	=	93+28.57 Ah						
	93+28.57	to	389+65.26	93+28.57	to	389+65.26	29,636.69	5.613	
Equation	389+65.26 Bk	=	389+85.91 Ah						
	389+85.91	to	454+79.08	389+85.91	to	454+79.08	6493.17	1.230	
Equation	454+79.08 Bk	=	0+00.00 Ah						
	0+00.00	to	147+71.06	+0.00	to	147+71.06	14,771.06	2.798	
Equation	147+71.06 Bk	=	147+69.35 Ah						
	147+69.35	to	267+14.85	147+69.35	to	267+14.85	11,945.50	2.262	
Equation	267+14.85 Bk	=	267+16.15 Ah						
	267+16.15	to	331+82.21	267+16.15	to	331+82.21	6,466.06	1.225	
Equation	331+82.21 Bk	=	0+00.00 Ah						
	+0.00	to	14+32.48	+0.00	to	14+32.48	1,432.48	0.271	
TOTAL							80,108.05	15.172	

Project Stationing SD Hwy 25 Segment 2

	Station		Station		Station		Station	Length	Miles
	+31.00	to	34+12.45	-31.00	to	34+12.45	3,443.45	0.652	
Equation	34+12.45 Bk	=	34+58.57 Ah						
	34+58.57	to	68+48.85	34+58.57	to	68+48.85	3,390.28	0.642	
TOTAL							6,833.73	1.294	

Project Stationing US Hwy 14 Segment 3

	Station		Station		Station		Station	Length	Miles
	1+58.00	to	49+43.00	1+58.00	to	49+43.00	4785	0.906	
TOTAL							4,785.00	0.906	

Project Stationing US Hwy 14 Segment 4

	Station		Station		Station		Station	Length	Miles
	150+42.00	to	165+40.30		150+42.00	to	165+40.30	1,498.30	0.284
Equation	165+40.30 Bk	=	165+70.42 Ah						
	165+70.42	to	178+13.02		165+70.42	to	178+13.02	1,242.60	0.235
Equation	178+13.02 Bk	=	178+13.11 Ah						
	178+13.11	to	190+06.44		178+13.11	to	190+06.44	1,193.33	0.226
Equation	190+06.44 Bk	=	1+29.44 Ah						
	1+29.44	to	20+00.00		1+29.44	to	22+89.48	2,160.04	0.409
TOTAL								6,094.27	1.154

Project Stationing US Hwy 14E Segment 5

	Station		Station		Station		Station	Length	Miles
	20+00.00	to	35+50.00		20+00.00	to	35+50.00	1,550.00	0.294
TOTAL								1,550.00	0.294

Project Stationing US Hwy 14W Segment 6

	Station		Station		Station		Station	Length	Miles
	20+00.00	to	35+17.00		20+00.00	to	35+17.00	1,517.00	0.287
TOTAL								1,517.00	0.287

Project Stationing US Hwy 81 Segment 7

	Station		Station		Station		Station	Length	Miles
	14+50.00	to	53+47.00		14+50.00	to	53+47.00	3,897.00	0.738
TOTAL								3,897.00	0.738

Project Stationing SD Hwy 34 Segment 8

	Station		Station		Station		Station	Length	Miles
	26+25.00	to	99+14.06		26+25.00	to	99+14.06	7,289.06	1.381
TOTAL								7,289.06	1.381

Transverse Joint to be Resealed Segment 1 - US Hwy 14

Station		Station		Station	Station	Length	Miles	Approximate Joints	Width (ft.)	Total (ft.)
	0+00.00	to	34+54.24	+0.00	to	454+79.08	8.613	2274	30	68219
Equation	34+54.24 Bk	=	34+23.39 Ah							
	+0.00	to	93+32.24	+0.00	to	293+72.92	5.563	1469	30	44059
Equation	93+32.24 Bk	=	93+28.57 Ah							
	93+28.57	to	389+65.26	293+72.92	to	329+00.00	0.668	176	50	8818
Equation	389+65.26 Bk	=	389+85.91 Ah							
	389+85.91	to	454+79.08	329+00.00	to	331+82.21	0.053	14	40	564
Equation	454+79.08 Bk	=	0+00.00 Ah							
	0+00.00	to	147+71.06	+0.00	to	1+20.00	0.023	6	40	240
Equation	147+71.06 Bk	=	147+69.35 Ah							
	147+69.35	to	267+14.85	1+20.00	to	14+32.48	0.249	66	30	1969
Equation	267+14.85 Bk	=	267+16.15 Ah							
	267+16.15	to	331+82.21							
Equation	331+82.21 Bk	=	0+00.00 Ah							
	+0.00	to	14+32.48							
TOTAL						80,093.77	15.169	4005		123869

Transverse Joint to be Resealed Segment 2 - SD Hwy 25

Station		Station		Station	Station	Length	Miles	Approximate Joints	Average Width (ft.)	Total (ft.)
	-+31.00	to	34+12.45	-+31.00	to	49+25.00	0.939	248	44	10903
Equation	34+12.45 Bk	=	34+58.57 Ah							
	34+58.57	to	68+48.85	49+25.00	to	68+48.85	0.364	96	28	2693
TOTAL						6,879.85	1.303	335674		13597

Transverse Joint to be Resealed Segment 3 - US Hwy 14

Station		Station		Station	Station	Length	Miles	Approximate Joints	Average Width (ft.)	Total (ft.)
	1+58.00	to	49+43.00	1+58.00	to	6+93.00	0.101	27	30	803
				6+93.00	to	42+62.00	0.676	178	44	7852
				42+62.00	to	48+55.00	0.112	30	45	1334
				48+55.00	to	49+43.00	0.017	4	46	202
TOTAL						535.00	0.777	229926		10191

Transverse Joint to be Resealed Segment 4 - US Hwy 14

Station		Station		Station	Station	Length	Miles	Approximate Joints	Average Width (ft.)	Total (ft.)	
	150+42.00	to	165+40.30	150+42.00	to	154+00.00	358.00	0.068	18	28	501
Equation	165+40.30 Bk	=	165+70.42 Ah	154+00.00	to	162+13.00	813.00	0.154	41	38	1545
	165+70.42	to	178+13.02	162+13.00		165+40.30	327.30	0.062	16	56	916
Equation	178+13.02 Bk	=	178+13.11 Ah	165+40.30	to	167+11.00	170.70	0.032	9	56	478
	178+13.11	to	190+06.44	167+11.00		171+45.00	434.00	0.082	22	60	1302
Equation	190+06.44 Bk	=	1+29.44 Ah	171+45.00		175+82.00	437.00	0.083	22	58	1267
	1+29.44	to	20+00.00	175+82.00		178+13.02	231.02	0.044	12	56	647
				178+13.11		187+25.00	911.89	0.173	46	56	2553
				187+25.00		190+06.44	281.44	0.053	14	48	675
				1+29.44	to	2+25.00	95.56	0.018	5	48	229
				2+25.00		11+40.00	915.00	0.173	46	48	2196
				11+40.00		13+00.00	160.00	0.030	8	48	384
				13+00.00		18+93.00	593.00	0.112	30	48	1423
				18+93.00		20+00.00	107.00	0.020	5	24	128
TOTAL							5,834.91	1.105	292		14246

Transverse Joint to be Resealed Segment 5 - US Hwy 14E

Station		Station		Station	Station	Length	Miles	Approximate Joints	Average Width (ft.)	Total (ft.)	
	20+00.00	to	35+50.00	20+00.00	to	35+50.00	1,550.00	0.294	78	24	1860
TOTAL							1,550.00	0.294	78		1860

Transverse Joint to be Resealed Segment 6 - US Hwy 14W

Station		Station		Station	Station	Length	Miles	Approximate Joints	Average Width (ft.)	Total (ft.)	
	20+00.00	to	35+17.00	20+00.00	to	35+17.00	1,517.00	0.287	76	24	1820
TOTAL							1,517.00	0.287	76		1820

Transverse Joint to be Resealed Segment 7 - US Hwy 81

Station		Station		Station	Station	Length	Miles	Approximate Joints	Average Width (ft.)	Total (ft.)		
	14+50.00	to		53+47.00	14+50.00	to	31+87.00	1,737.00	0.329	87	28	2432
					31+87.00	to	40+93.00	906.00	0.172	45	29	1314
					40+93.00	to	45+35.00	442.00	0.084	22	30	663
					45+35.00	to	47+40.00	205.00	0.039	10	31	318
					47+40.00	to	49+25.00	185.00	0.035	9	32	296
					49+25.00	to	53+47.00	422.00	0.080	21	33	696
TOTAL								3,897.00	0.738	195		5719

Transverse Joint to be Resealed Segment 8 - SD Hwy 34

Station		Station		Station	Station	Length	Miles	Approximate Joints	Average Width (ft.)	Total (ft.)		
	26+25.00	to		99+14.06	26+25.00	to	99+14.06	7,289.06	1.381	364	48	17494
TOTAL								7,289.06	1.381	364		17494

Estimated TOTAL Length of Transverse Joints to be Resealed for all Segments	
Segment 1	123869 ft.
Segment 2	13597 ft.
Segment 3	10191 ft.
Segment 4	14246 ft.
Segment 5	1860 ft.
Segment 6	1820 ft.
Segment 7	5719 ft.
Segment 8	17494 ft.
TOTAL	188795 ft.

*The above tables are for informational purposes only. Actual quantities will be determined during construction. No additional payment will be made for deviation between contract quantity and actual quantity installed.

US Hwy 14 SEGMENT 1

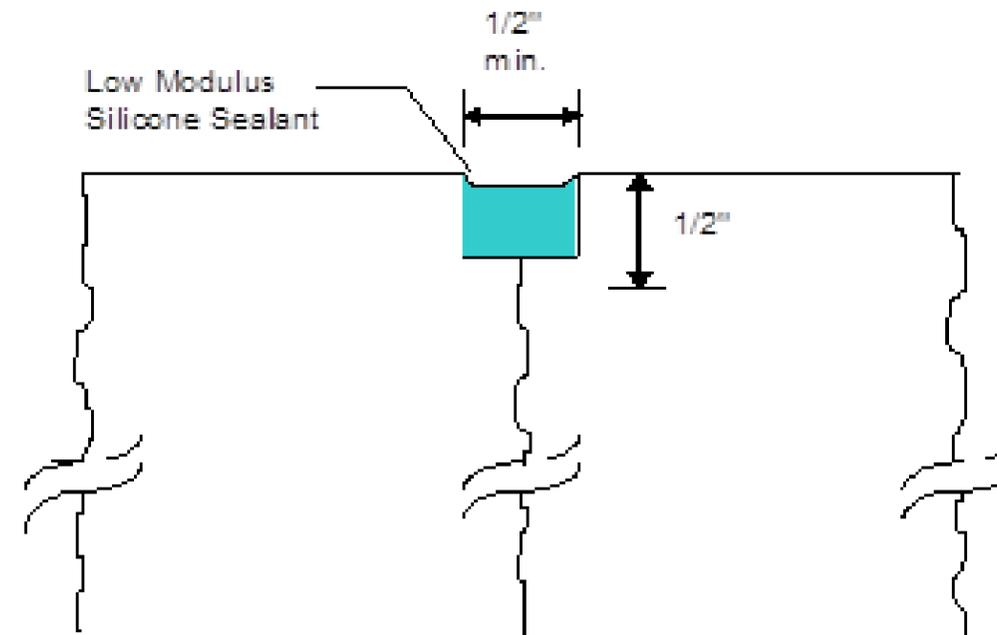
STA.	Dimensions L (ft)	Lane	Description
224+60.00	45	CENTERLINE	Longitudinal
226+50.00	120	CENTERLINE	Longitudinal
0+33 (3rd)	353	WBL	Longitudinal
4+60 (3rd)	180	WBL	Longitudinal
7+87 (3rd)	120	WBL	Longitudinal
Total	818		

LEGEND: EB (East Bound), WB (West Bound)

Note: Quantity for sealing random cracks is for info only. Actual quantity to be determined on construction.

*Minimal cracking was observed at the time of inspection. An ADDITIONAL 250 feet has been added to the total contract quantity, to account for Random Cracks in Segments 2-8, which may be encountered during construction. Actual Random Cracks will be determined and or verified by the engineer. No additional or separate payment will be made, due to variation in contract quantities.

DETAIL FOR SEALING RANDOM CRACKS



US Hwy 14 Segment 1

STA. (1st)	Dimensions		Fast Track PCCP SQYD	Description	Bars			Dowel Bar (EACH)
	L (ft)	W (ft)			#5	#9	1 1/4"	
129+20	20.0	15.0	33.3	WBL	13	10	10	0
156+00	15.0	20.0	33.3	EBL	10	13	13	0
Total 1st Stationing			66.6		23	23	23	0.0
2ND STATIONING								
STA. (2nd)	Dimensions		Fast Track PCCP SQYD	Description	Bars			Dowel Bar (EACH)
	L (ft)	W (ft)			#5	#8	1"	
326+75	4.5	4.5	2.3	WBL DL	3	3	3	0
328+10	13.0	4.0	5.8	WBL PL	8	3	3	0
328+23	16.0	4.5	8.0	WBL DL	10	3	3	0
Total 2nd Stationing			16.1		21	9	9	0
Total			82.7		44	32	32	0

US Hwy 25 Segment 2 NBL

STA.	Dimensions		Fast Track PCCP SQYD	Description	Bars			Dowel Bar (EACH)
	L (ft)	W (ft)			#5	#8	1"	
0+77	20.0	12.0	26.7	NBL	13	8	8	0
0+82	10.0	10.0	11.1	NBL	7	7	7	0
1+00	7.0	16.0	12.4	NBL	5	11	11	0
18+01	4.0	22.0	9.8	NBL	3	29	0	0
20+30	4.5	4.5	2.3	MANHOLE	8	0	0	0
24+70	16.0	12.0	21.3	MANHOLE	8	0	0	0
30+11	4.0	12.0	5.3	NBL	3	16	0	0
31+48	22.0	4.0	9.8	NBL	18	5	0	4
33+81	4.0	12.0	5.3	NBL	3	16	0	0
36+53	16.0	12.0	21.3	NBL	8	0	16	0
36+53	4.0	5.0	2.2	NBL	3	3	3	0
45+34	4.5	4.5	2.3	MANHOLE	8	0	0	0
45+59	4.0	22.0	9.8	NBL	3	29	0	0
46+01	12.0	4.0	5.3	NBL	10	5	0	0
46+20	4.0	22.0	9.8	NBL	3	29	0	0
48+22	12.0	4.0	5.3	NBL	10	5	0	0
48+62	4.5	4.5	2.3	MANHOLE	8	0	0	0
62+49	4.0	14.0	6.2	NBL	3	19	0	0
Total			168.5		124	182	45	4

US Hwy 25 Segment 2 SBL

STA.	Dimensions		Fast Track PCCP SQYD	Description	Bars			Dowel Bar (EACH)
	L (ft)	W (ft)			#5	#8	1"	
0+71	20.0	12.0	26.7	SBL	18	16	0	0
0+78	45.0	12.0	60.0	SBL	41	16	0	27
1+62	30.0	12.0	40.0	SBL	27	16	0	18
2+00	85.0	12.0	113.3	SBL	77	16	0	51
2+00	4.0	22.0	9.8	SBL	3	29	0	0
5+09	7.0	12.0	9.3	SBL	5	8	8	0
7+93	40.0	12.0	53.3	SBL	36	16	0	24
18+01	4.0	22.0	9.8	SBL	3	29	0	0
19+86	4.0	22.0	9.8	SBL	3	29	0	0
22+73	4.0	22.0	9.8	SBL	3	29	0	0
29+13	4.0	22.0	9.8	SBL	3	29	0	0
33+84	4.0	22.0	9.8	SBL	3	29	0	0
36+24	5.0	6.2	3.4	SBL	3	4	4	0
36+31	4.0	12.0	5.3	SBL	3	16	0	0
39+34	4.0	22.0	9.8	SBL	3	29	0	0
39+75	4.0	22.0	9.8	SBL	3	29	0	0
42+60	6.7	4.0	3.0	MANHOLE	8	0	0	0
45+56	4.0	22.0	9.8	SBL	3	29	0	0
46+18	4.0	22.0	9.8	SBL	3	29	0	0
62+43	4.0	14.0	6.2	SBL	3	19	0	0
Total			418.5		251	417	12	120

US Hwy 14 Segment 3 EBL

STA.	Dimensions		Fast Track PCCP SQYD	Description	Bars			Dowel Bar (EACH)
	L (ft)	W (ft)			#5	#8	1"	
34+10	7.5	9.0	7.5	EBL	7	12	0	0
35+86	15.0	4.0	6.7	EBL	14	5	0	0
Total			14.2		21	17	0	0

US Hwy 14 Segment 3 WBL

STA.	Dimensions		Fast Track PCCP SQYD	Description	Bars			Dowel Bar (EACH)
	L (ft)	W (ft)			#5	#8	1"	
9+47	4.0	15.0	6.7	WBL	4	20	0	0
16+95	16.0	4.0	7.1	WBL	14	5	0	0
22+90	15.0	6.0	10.0	WBL	14	8	0	0
35+93	30.0	4.0	13.3	WBL	27	5	0	6
Total			37.1		59	38	0	6

US Hwy 14 Segment 4 EBL

STA.	Dimensions		Fast Track PCCP SQYD	Description	Bars			Dowel Bar (EACH)
	L (ft)	W (ft)			#5	#8	1"	
2+21	4.0	24.0	10.7	EBL	2	0	32	0
186+73	8.0	9.0	8.0	EBL	7	12	0	0
180+80	4.0	21.0	9.3	EBL	2	0	28	0
176+23	4.0	6.0	2.7	EBL	3	8	0	0
174+80	4.0	12.0	5.3	EBL	4	16	0	0
158+15	120.0	4.0	53.3	EBL	108	5	0	24
156+56	125.0	4.0	55.6	EBL	113	5	0	25
Total	144.9	144.9	144.9		239.0	46.0	60.0	49.0

US Hwy 14 Segment 4 WBL

STA.	Dimensions		Fast Track PCCP SQYD	Description	Bars			Dowel Bar (EACH)
	L (ft)	W (ft)			#5	#8	1"	
2+18	4.0	24.0	10.7	WBL	2	0	32	0
180+53	4.0	12.0	5.3	TURN LANE	4	16	0	0
180+53	4.0	20.0	8.9	WBL	4	27	0	0
175+88	6.0	12.0	8.0	WBL	4	8	8	0
170+55	60.0	4.0	26.7	WBL	54	5	0	12
Total			59.6		68.0	56.0	40.0	12.0

US Hwy 81 Segment 7 NBL

STA.	Dimensions		Fast Track PCCP SQYD	Description	Bars			Dowel Bar (EACH)
	L (ft)	W (ft)			#5	#8	1"	
20+34	4.0	24.0	10.7	NBL	4	32	0	0
24+98	4.0	24.0	10.7	NBL	4	32	0	0
26+27	20.0	12.0	26.7	NBL	18	16	0	0
42+82	4.0	24.0	10.7	NBL	4	32	0	0
Total			58.8		30.0	112.0	0.0	0.0

US Hwy 81 Segment 7 SBL

STA.	Dimensions		Fast Track PCCP SQYD	Description	Bars			Dowel Bar (EACH)
	L (ft)	W (ft)			#5	#8	1"	
15+89	4.0	24.0	10.7	SBL	4	32	0	0
20+24	4.0	24.0	10.7	SBL	4	32	0	0
24+89	4.0	24.0	10.7	SBL	4	32	0	0
30+17	8.0	12.0	10.7	SBL	7	16	0	0
37+67	6.0	12.0	8.0	SBL	5	16	0	0
43+10	9.0	8.6	8.6	SBL	8	11	0	0
46+29	14.0	3.6	5.6	SBL	13	5	0	0
Total			65.0		45.0	144.0	0.0	0.0

US Hwy 34 Segment 8 EBL

STA.	Dimensions		Fast Track PCCP SQYD	Description	Bars			Dowel Bar (EACH)
	L (ft)	W (ft)			#5	#8	1"	
38+82	4.0	4.0	1.8	EBL DL	4	5	0	4
40+73	4.0	4.0	1.8	EBL DL	4	5	0	4
43+53	4.0	4.0	1.8	EBL DL	4	5	0	4
45+95	4.0	4.0	1.8	EBL DL	4	5	0	4
47+73	4.0	4.0	1.8	EBL DL	4	5	0	4
48+94	4.0	4.0	1.8	EBL DL	4	5	0	4
50+45	4.0	4.0	1.8	EBL DL	3	3	3	0
50+94	4.0	4.0	1.8	EBL DL	3	3	3	0
51+56	4.0	4.0	1.8	EBL DL	3	3	3	0
52+15	4.0	4.0	1.8	EBL DL	3	3	3	0
52+56	4.0	4.0	1.8	EBL DL	3	3	3	0
52+95	4.0	4.0	1.8	EBL DL	3	3	3	0
56+18	4.0	4.0	1.8	EBL DL	3	3	3	0
57+20	4.0	4.0	1.8	EBL DL	3	3	3	0
57+99	4.0	4.0	1.8	EBL DL	3	3	3	0
58+18	4.0	4.0	1.8	EBL DL	3	3	3	0
63+18	4.0	4.0	1.8	EBL DL	3	3	3	0
65+60	4.0	4.0	1.8	EBL DL	2	0	5	0
69+22	4.0	4.0	1.8	EBL DL	4	5	0	4
70+24	4.0	4.0	1.8	EBL DL	4	5	0	4
73+26	4.0	4.0	1.8	EBL DL	3	3	3	0
73+68	4.0	4.0	1.8	EBL DL	4	5	0	4
74+42	4.0	4.0	1.8	EBL DL	4	5	0	4
74+64	4.0	4.0	1.8	EBL DL	3	3	3	0
76+24	4.0	4.0	1.8	EBL DL	4	5	0	4
76+64	4.0	4.0	1.8	EBL DL	4	5	0	4
77+03	4.0	4.0	1.8	EBL DL	4	5	0	4
77+03	4.0	4.0	1.8	EBL DL	3	3	3	0
77+29	4.0	4.0	1.8	EBL DL	4	5	0	4
77+65	4.0	4.0	1.8	EBL DL	4	5	0	4
78+25	4.0	4.0	1.8	EBL DL	4	5	0	4
78+25	4.0	4.0	1.8	EBL DL	4	5	0	4
78+46	4.0	4.0	1.8	EBL DL	4	5	0	4
78+85	4.0	4.0	1.8	EBL DL	4	5	0	4
79+03	8.0	4.0	3.6	EBL DL	6	5	0	0
79+40	20.0	4.0	8.9	EBL DL	16	5	0	0
79+60	8.0	6.0	5.3	EBL DL	6	8	0	0
79+86	4.0	6.0	2.7	EBL DL	3	4	4	0
80+38	4.0	12.0	5.3	EBL DL	4	16	0	24
80+38	4.0	12.0	5.3	EBL PL	4	16	0	16
80+48	4.0	14.0	6.2	EBL DL	4	19	0	0
80+48	4.0	4.0	1.8	EBL PL	4	5	0	24
Section Line	4.0	9.0	4.0	EBL DL	3	12	0	4
80+89	4.0	12.0	5.3	EBL DL	4	16	0	4
80+89	4.0	12.0	5.3	EBL PL	4	16	0	4
81+28	4.0	4.0	1.8	EBL PL	4	5	0	4
81+90	4.0	4.0	1.8	EBL DL	4	5	0	4
85+12	4.0	4.0	1.8	EBL DL	4	5	0	4
87+74	6.0	4.0	2.7	EBL DL	5	5	0	0
88+14	4.0	4.0	1.8	EBL PL	4	5	0	0
88+96	4.0	4.0	1.8	EBL PL	4	5	0	4
Main St	4.0	8.0	3.6	EBL DL	3	5	5	0
90+56	4.0	4.0	1.8	EBL PL	3	3	3	4
90+97	4.0	4.0	1.8	EBL DL	4	5	0	0
95+61	4.0	4.0	1.8	EBL DL	3	3	3	0
96+00	4.0	4.0	1.8	EBL DL	4	5	0	0
Total			137.4	0.0	220.0	310.0	62.0	172.0

US Hwy 34 Segment 8 WBL

STA.	Dimensions		Fast Track PCCP SQYD	Description	Bars			Dowel Bar (EACH)
	L (ft)	W (ft)			#5	#8	1"	
98+90	4.0	12.0	5.3	WBL DL	3	16	0	0
98+90	4.0	12.0	5.3	WBL PL	3	16	0	0
96+56	4.0	4.0	1.8	WBL DL	4	5	0	4
95+78	4.0	12.0	5.3	WBL PL	3	8	8	0
95+78	4.0	12.0	5.3	WBL DL	3	8	8	0
95+34	4.0	4.0	1.8	WBL DL	4	5	0	4
94+54	20.0	4.0	8.9	WBL DL	16	5	0	0
94+25	20.0	5.0	11.1	WBL PL	18	7	0	0
91+53	4.0	4.0	1.8	WBL DL	4	5	0	8
91+33	4.0	4.0	1.8	WBL DL	4	5	0	4
90+33	4.0	4.0	1.8	WBL DL	4	5	0	8
90+33	4.0	4.0	1.8	WBL PL	4	5	0	0
Main St	12.0	4.0	5.3	WBL DL	8	3	3	0
Main St	11.0	4.0	4.9	WBL DL	7	3	3	0
89+53	4.0	12.0	5.3	WBL DL	3	8	8	0
89+53	4.0	12.0	5.3	WBL PL	3	8	8	0
88+75	4.0	12.0	5.3	WBL DL	3	8	8	0
88+75	4.0	12.0	5.3	WBL PL	3	8	8	0
87+27	4.0	6.0	2.7	WBL DL	3	4	4	0
87+27	4.0	6.0	2.7	WBL PL	3	4	4	0
85+13	4.0	4.0	1.8	WBL DL	3	3	3	0
85+13	15.0	4.0	6.7	WBL PL	10	3	3	0
83+53	4.0	4.0	1.8	WBL DL	3	3	3	0
83+11	4.0	4.0	1.8	WBL DL	4	5	0	4
81+28	4.0	4.0	1.8	WBL DL	4	5	0	4
81+03	4.0	4.0	1.8	WBL DL	4	5	0	4
80+73	4.0	4.0	1.8	WBL DL	4	5	0	4
80+52	4.0	12.0	5.3	WBL DL	4	16	0	16
80+52	4.0	4.0	1.8	WBL PL	4	5	0	0
Section Line	14.0	10.0	15.6	WBL DL	9	7	7	0
Section Line	15.0	11.0	18.3	WBL DL	10	7	7	0
Section Line	13.0	4.0	5.8	WBL DL	8	3	3	0
Section Line	19.0	14.0	29.6	WBL DL	12	9	9	0
80+31	4.0	4.0	1.8	WBL DL	4	5	0	4
80+09	4.0	4.0	1.8	WBL DL	4	5	0	4
79+90	4.0	6.0	2.7	WBL DL	4	8	0	6
79+45	10.0	4.0	4.4	WBL DL	5	0	5	0
78+09	4.0	4.0	1.8	WBL DL	3	3	3	0
77+91	13.0	7.0	10.1	WBL DL	7	0	9	0
75+88	4.0	4.0	1.8	WBL DL	3	3	3	0
75+20	14.0	6.0	9.3	WBL DL	9	4	4	0
75+15	60.0	4.0	26.7	WBL DL	48	5	0	12
74+27	20.0	9.0	20.0	WBL DL	16	12	0	0
71+64	4.0	4.0	1.8	WBL DL	4	5	0	4
70+25	20.0	6.0	13.3	WBL DL	16	8	0	0
70+01	4.0	4.0	1.8	WBL DL	4	5	0	4
Industrial	4.0	14.0	6.2	WBL DL	3	19	0	0
Industrial	4.0	14.0	6.2	WBL DL	3	19	0	0
Industrial	4.0	8.0	3.6	WBL DL	3	11	0	0
Industrial	4.0	14.0	6.2	WBL DL	3	19	0	0
Industrial	4.0	14.0	6.2	WBL DL	3	19	0	0
Industrial	7.0	14.0	10.9	WBL DL	6	19	0	0

US Hwy 34 Segment 8 WBL

STA.	Dimensions		Fast Track PCCP SQYD	Description	Bars			Dowel Bar (EACH)
	L (ft)	W (ft)			#5	#8	1"	
Industrial	4.0	9.0	4.0	WBL DL	3	12	0	4
Industrial	20.0	20.0	44.4	WBL DL	13	13	13	4
Industrial	4.0	11.0	4.9	WBL DL	3	15	0	0
69+20	4.0	12.0	5.3	WBL DL	4	16	0	12
62+95	4.0	4.0	1.8	WBL DL	4	5	0	4
62+13	4.0	4.0	1.8	WBL DL	4	5	0	4
60+79	4.0	4.0	1.8	WBL DL	4	5	0	4
55+56	4.0	4.0	1.8	WBL DL	4	5	0	4
55+14	4.0	4.0	1.8	WBL DL	4	5	0	4
47+71	4.0	4.0	1.8	WBL DL	4	5	0	4
28+00	4.0	4.0	1.8	WBL DL	3	3	3	0
27+66	4.0	4.0	1.8	WBL DL	4	5	0	4
27+44	4.0	4.0	1.8	WBL DL	4	5	0	4
27+30	4.0	12.0	5.3	WBL DL	3	16	0	0
27+30	4.0	8.0	3.6	WBL PL	3	11	0	0
Hwy 25	4.0	20.0	8.9	WBL DL	3	27	0	0
Hwy 25	4.0	7.0	3.1	WBL DL	3	9	0	0
Hwy 25	9.0	9.0	9.0	WBL DL	6	6	6	0
Hwy 25	4.0	20.0	8.9	WBL DL	3	27	0	0
Hwy 25	5.0	20.0	11.1	WBL DL	4	27	0	0
Hwy 25	4.0	20.0	8.9	WBL DL	3	27	0	0
Hwy 25	20.0	4.0	8.9	WBL DL	16	5	0	0
Hwy 25	20.0	7.0	15.6	WBL DL	16	9	0	0
Hwy 25	6.0	20.0	13.3	WBL DL	5	27	0	0
Hwy 25	20.0	5.0	11.1	WBL DL	16	7	0	0
Hwy 25	4.0	12.0	5.3	WBL DL	3	16	0	0
Hwy 25	4.0	9.0	4.0	WBL DL	3	12	0	0
Hwy 25	14.0	14.0	21.8	WBL DL	11	19	0	0
Total			532.9		486.0	725.0	143.0	146.0

LEGEND: EBL (East Bound Lane), WBL (West Bound Lane), TL (Turn Lane), DL (Driving Lane), PL (Passing Lane)
 * Locations where Reinforced PCCP will be placed.

Note: Number of steel bars is for information only. Actual quantity to be determined on construction.
 Quantity of steel bars shall be paid for at the contract unit price per each for
INSERT STEEL BAR IN PCC PAVEMENT.

Note: #8 and #9 bars shall be deformed bars as shown in install details. 1" and 1-1/2" bars shall be smooth dowel bars as shown on the install detail sheets.

CONCRETE CURB & GUTTER REPAIR			
SEGMENT 8, HWY 34			
STA.	REMOVE CONCRETE CURB & GUTTER (ft.)	TYPE B68 C & G (ft.)	LANE
94+25	20	20	WBL
79+60	8	8	EBL
Section Line	19	19	WBL
77+91	11	11	WBL
75+15	20	20	WBL
Industrial	4	4	WBL
TOTAL	82	82	

Type A Spall Repair		
	Number of Locations	Total Type A Spall Repair (SqFt.)
Segment 1	369	417.9
Segment 2	62	168
Segment 3	27	55.7
Segment 4	105	225.2
Segment 5	30	31
Segment 6	7	8.2
Segment 7	74	122.4
*Segment 8	20	20
TOTAL	694	1048.4

*Additional 20 SqFt of Type A Spall Repair included, for change in field conditions upon construction for Segment 8.

**All Quantities are for informational purposes only. Actual quantities will be verified in the field. Locations will be determined by the Engineer prior to repair. Contractor will notify the Engineer two days prior to starting work on a segment, in order for the State to mark out locations.

***Additional Curb and Gutter may need to be replaced at the time of construction. No additional payment or change in contract unit price(s) will be made for change in quantities.

SCOPE OF WORK

Work on this project includes, but is not limited to removal and replacement of nonreinforced PCC Pavement with Fast Track Concrete for PCC Repair, Sealing Random Cracks, Reseal PCC Pavement Joints and Durable Pavement Marking.

SEQUENCE OF OPERATIONS

The following Sequence of Operation shall be adhered to. Any change must be approved in writing by the Engineer prior to the change being made. The Contractor shall provide a detailed Sequence of Operations to the Area Engineer a minimum of 2 weeks prior to the preconstruction meeting.

1. PCC Pavement Removal and Repair
2. Sealing Random Cracks and Joint Saw and Seal
3. Durable Pavement Marking

The Contractor shall also allow for 3 miles between work areas, including channelizing, devices to accommodate traffic. Construction work areas shall be limited to 3 miles in length.

All construction activities, except for Flagging and Pilot Car, will be permitted during daylight hours only.

MAINTENANCE OF TRAFFIC

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

Cost of equipment and traffic control devices on equipment, including arrow panels and signs, shall be incidental to the contract lump sum price for TRAFFIC CONTROL, MISCELLANEOUS.

One lane of traffic shall be maintained in each direction on mainline construction.

A maximum of 2 sets of work zone signing per highway will be measured and paid for. If more closures are utilized, additional cost of signing shall be at the Contractor's expense.

Locations of signs on traffic control layouts are diagrammatic. Portable stands may be used on the shoulders or on driving lanes closed to traffic. The bottom of signs on portable or temporary supports shall not be less than seven feet above the pavement in urban areas and one foot above the pavement in rural areas. Portable sign supports may be used as long as the duration is less than 3 days. If the duration is more than 3 days the signs shall be on fixed location, ground mounted, breakaway supports.

Contractor will be allowed to encroach on the traffic lane approximately 2 feet if flagger signs and a flagger are used. The flagger signs and flagging are included in the Estimate of Quantities.

Type 3 Barricades 8' wide shall be placed on both sides of a repair area to protect PCC Pavement replacement during open excavation and concrete cure periods. Work areas 20 feet or longer will require Channelizing Device to further mark out the repair area. The cost for the Channelizing Devices shall be included in the contract lump sum price for TRAFFIC CONTROL, MISCELLANEOUS. The Contractor's equipment will be required to enter and leave the project at intersections.

The Contractor shall designate an employee to maintain traffic as described in Section 634.3 of the Specification. This person shall be required to do weekend checks to ensure traffic control devices are in satisfactory condition. The Contractor shall submit a weekly log stating time and date of all such inspections. The log shall be signed by the person doing the inspections. The cost of the traffic control person shall be incidental to the contract lump sum price for TRAFFIC CONTROL MISCELLANEOUS. The employee selected must be approved by the Engineer.

A night inspection of traffic control signing shall be done by the Contractor's designated employee after the signs are revised for each phase of construction. The Contractor shall submit additional log information for this inspection to the Engineer.

Flaggers and pilot car operators shall all have radio or telephone contact with one another. This equipment is to be used to assist with traffic movement and in the event that an emergency vehicle needs to pass through the project in an expedient manner. All costs associated with this shall be incidental to the contract lump sum price for TRAFFIC CONTROL, MISCELLANEOUS.

The Contractor shall designate an individual(s) to be on the project 24/7 to be in charge of Flagging. This person(s) shall have experience as a Flagger and have experience in supervision of others. This person(s) shall be approved by the Engineer. This person shall work with the Engineer, monitor traffic flow, and have the authority to call in additional flagging personnel. This person may be one of the Flaggers actively working on the project.

The Contractor shall have someone present and in charge during all flagging operations, including at night. A list of the individuals in charge of flagging shall be submitted to the Engineer.

Warning lights shall be placed on top of flagging station signing and shall be yellow in color. This shall be incidental to the contract lump sum price for TRAFFIC CONTROL, MISCELLANEOUS.

The Flagging stations shall be lighted during nighttime operations. All costs associated with the flagging station flood lights shall be incidental to the contract lump sum price for TRAFFIC CONTROL, MISCELLANEOUS.

The flagging station shall be flood type light, shielded to prevent glare and a minimum of 300,000 lumens (3000-watts). The light shall have the ability for illumination over a minimum of 4 acres at 0.5 foot candles. The floodlights shall be installed at a minimum height of 24 feet above the roadway surface and shall be located a minimum of 15' from the edge of the roadway. The light shall

be located and adjusted such as not to impact the nearby residence at this location.

The Contractor shall be responsible for maintaining all existing traffic control signing for the safety of the traveling public.

All traffic control devices used on this project shall be new or in like-new condition, as approved by the Engineer.

Channelizing Devices, Drums and/or Type 2 Barricades shall be maintained to a minimum height of 3' above the surface which is being used to maintain traffic.

Delete the first paragraph of Section 984.1 and replace with the following: Temporary traffic control devices, including signs, drums, cones, tubular markers, barricades, vertical panels, and direction indicator barricades shall be reflectorized with sheeting applied to a satisfactory backing. For all temporary traffic control warning signs, the reflective sheeting shall meet or exceed the standards of Type VII, Type VIII, Type IX, or Type XI as defined by AASHTO M 268 (ASTM D4956). For all other temporary traffic control signs, the reflective sheeting shall meet or exceed the standards of Type IV, Type V, Type VII, Type VIII, Type IX, or Type XI as defined by AASHTO M 268 (ASTM D4956). For barricades, vertical panels, and direction indicator barricades; the reflective sheeting shall meet or exceed the standards of Type III as defined by AASHTO M 268 (ASTM D4956). Round surfaced temporary traffic control devices including, but not limited to; drums, cones, and tubular markers shall be reflectorized with reflectorized sheeting meeting or exceeding the standards of Type IV as defined by AASHTO M 268 (ASTM D4956). All orange colored material shall be fluorescent.

Sealing of concrete joints shall be completed such that the sealant has sufficient time to cure, and become tack free, before the end of daylight hours. Flagging during non-daylight hours will not be permitted.

EXISTING PCC PAVEMENT

The existing PCC Pavement is nonreinforced and was constructed using crushed ledge rock aggregate and natural sand. Transverse joints were sealed with low modulus silicone sealant.

Route	Pavement Thickness	Pavement Type
US Hwy 14	8" – 9"	Dowel Jointed
SD Hwy 25	8"	Dowel Jointed
US Hwy 81	8"	Dowel Jointed
SD Hwy 34	8"	Dowel Jointed

Existing transverse joints are spaced at approximately 20'. 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 spaced 12" center to center. Some joints in segments are skewed.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 00SW(53)	33	61

REMOVE CONCRETE PAVEMENT

Approximate locations of existing non-reinforced concrete pavement to be removed are provided in the Table of Remove and Install Concrete Pavement. Prior to removal the Contractor shall saw cut full depth at the limits of the removal area as directed by the Engineer. Existing concrete in the replacement areas shall be removed by the lift out method or by means that minimize damage to the sides of the remaining in place concrete. All removed concrete shall be removed from within the right of way by the end of the workday and disposed of at the Contractor's waste disposal site.

The Contractor shall notify the Engineer two working days prior to beginning work at each particular location so the Engineer may mark out removal limits. The Engineer shall mark exact dimensions prior to removal of concrete pavement. Payment will be made for quantity marked out and measured in the field. Variations from plans estimated quantities and/or locations will not be considered cause for re-negotiation of the contract unit prices.

Care shall be exercised in the removal of concrete slab panels to avoid damage to adjacent pavement.

After concrete removal has been accomplished, the Contractor shall shape, water and recompact the remaining granular material prior to placement of concrete. Any additional gravel cushion required to prepare the area shall be furnished and placed by the Contractor and shall be incidental to the contract unit price per square yard for the various FAST TRACK CONCRETE FOR PCC PAVEMENT REPAIR bid items.

Gravel cushion material shall be from a Contractor furnished source. Water content and compaction shall be to the satisfaction of the Engineer. full and partial depth sawing, removal of all PCC Pavement, disposal of all removed material, and all equipment, labor, and incidentals necessary to satisfactorily complete work shall be incidental to the contract unit price per square yard for FAST TRACK CONCRETE FOR PCC PAVEMENT REPAIR.

FAST TRACK CONCRETE FOR PCC PAVEMENT REPAIR

PCC Pavement Repair areas shall be removed and replaced the same day during daylight hours. The new PCC Pavement thickness for repair areas shall be 8 inches, as indicated on the corresponding in place typical sections.

Fast Track Concrete shall be used at all repair locations to ensure that the pavement repair area has obtained 3800 psi within 8 hours after placement. No PCC pavement removal is to occur after 11:00 am and all Fast Track Concrete shall be placed prior to 1:00 PM. After 8 hours, the Engineer will make a determination if the actual in-place strength is acceptable for opening the newly placed concrete for use by the traveling public. An initial cylinder shall be made and the Engineer shall calibrate a Swiss Hammer to it. All subsequent 8 hour strength tests shall be by Swiss Hammer. Cylinders will be made according to Materials Manual Requirements and the Swiss Hammer calibration regularly updated according to the early break cylinders. The Engineer will test the area after the initial 8 hour cure period by Swiss Hammer. If the area does not meet strength after the 8 hour cure period, the area will be tested every 2 hours until 10:00 P.M., and then not again until 6:00 A.M. No section is to be opened without permission of the Engineer.

The slump requirement prior to use of a set accelerator or super-plasticizer will be limited to 2 inches maximum. After the addition of all admixtures the maximum slump shall be 8 inches and the concrete shall contain 4.5 to 7.5 percent entrained air. The concrete mixture shall contain a minimum of 50% coarse aggregate by weight. The concrete mix shall contain at least 700 pounds of type I, II, or III cement per cubic yard. The minimum 28 day compressive strength shall be 4000 psi. 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 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 set accelerator and super-plasticizer at manufacturer's recommended dosage will be required. Both admixtures shall be added at the project site.

Fast Track 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. In addition, the concrete shall be immediately covered with suitable insulation blanket consisting of a layer of closed cell polystyrene foam protected by at least one layer of plastic. The insulation blanket shall have an R value of at least 0.5, as rated by the manufacturer. The insulation blanket shall be left in place, except for joint sawing operations, until the 3800 psi strength is attained.

If the area of removal requires a transverse contraction joint to be reestablished, a dowel bar assembly shall be installed at the joint and paid for at the contract unit price per each for DOWEL BAR. Centerline of individual dowel bars in the dowel bar assembly shall be parallel to the roadway centerline. Sawing of the contraction joint shall commence when the concrete has hardened sufficiently to permit sawing without raveling.

The contraction joint sawing shall be performed as soon as possible after placement of concrete to avoid random cracking. Contraction joints shall be initially sawed to the plans detailed depth and to a width of 1/8".

Cost for performing the aforementioned work including sawing and removing concrete, furnishing and placing Fast Track Concrete, sawing joints, labor, tools and equipment shall be included in the contract unit price per square yard for FAST TRACK CONCRETE FOR PCC PAVEMENT REPAIR.

The concrete repair area shall be removed, replaced, and opened to traffic in the same day. Once Fast Track Concrete is placed, if the concrete does not achieve the required 3800 psi in 8 hours, the Contractor shall provide all proper additional traffic control needed (at no cost to the State) until the Engineer determines the 3800 psi has been obtained. This includes any overnight traffic control if needed.

If the concrete cannot be placed within the same day the Contractor shall place and compact gravel cushion within the repair area prior to nightfall and the roadway shall be opened to normal traffic. The Contractor shall be responsible for all additional costs for providing, placing, compacting and removing the gravel cushion. The Contractor shall install LOOSE GRAVEL and BUMP signs at each location where gravel cushion has been placed.

The shoulders of the roadway contain rumble strips. Any repair area that encompasses a rumble strip shall have the rumble strip reestablished as per Standard Plate 380.15.

Cost for performing the aforementioned work including sawing and removing concrete, furnishing and placing Fast Track Concrete, sawing joints, labor, tools and equipment shall be included in the contract unit price per square yard for FAST TRACK CONCRETE FOR PCC PAVEMENT REPAIR.

WEIGH IN MOTION SYSTEM

The contractor shall not disturb of the Weigh In Motion System at MRM 369.00+ 0.456. If the contractor disturbs the system, damages will be replaced and or fixed at the contractor's expense.

STEEL BAR INSERTION

The Contractor shall insert the steel bars (1 1/4 inch and 1 inch epoxy coated plain round dowel bars and No. 5, No. 9, and No. 8 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.

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

Steel bars shall not be placed closer than 6 inches to any longitudinal joint, not closer than 18 inches to any transverse joint, and not closer than 15 inches to any construction joint.

Concrete shall be placed when the epoxy for anchoring the steel bars has hardened sufficiently to permit no movement of the steel bars as recommended by the manufacturer.

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

Cost for insertion of steel bars shall be incidental to the contract unit price per each for INSERT STEEL BAR IN PCC PAVEMENT.

RESEAL PCC PAVEMENT JOINT - SILICONE

The existing transverse joints were sawed to 3/8 inch width and filled with low modulus silicone sealant and backer rod. The Contractor shall remove silicone sealant and backer rod and widen the joints to a minimum width of 1/2 inch. The depth of the saw cut shall allow for the placement of the backer rod and low modulus silicone sealant.

Traffic will not be allowed on pavement until low modulus silicone sealant has been allowed to cure to a point it is tack free.

The existing transverse joints shall be cleaned of incompressibles and sealant to the satisfaction of the Engineer. It is not essential that all of the sealant be removed. Remaining sealant adhering to the sides may remain in place if the Engineer determines that it is not detrimental to the joint.

Just prior to sealing, the joints shall be sandblasted and cleaned with compressed air.

In certain areas the joint may be wider than the original construction. It may be necessary to provide backer rod in the wide areas. Any additional cost to perform this work shall be at no additional cost to the State. The Contractor shall be responsible to verify joint widths prior to establishing the contract unit price. Transverse joints shall be sealed with Low Modulus Silicone Sealant.

All sealed transverse joints will be measured for payment regardless if the joints are in new or existing pavement. All costs for sawing and sealing transverse joints shall be incidental to the contract unit price per foot for RESEAL PCC PAVEMENT JOINT - SILICONE.

DIMENSIONS OF EXISTING CONTRACTION JOINTS

All details and dimensions of the existing contraction joints contained in these plans are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and necessary dimensions affecting the satisfactory completion of the work required for this project.

SEALING RANDOM CRACKS IN PCC PAVEMENT

Random cracks shall be repaired in accordance with the detail for Sealing Random Cracks In Concrete Pavement. 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 with joints that are open and accept water and incompressibles as selected by the Engineer shall be prepared and sealed with low modulus silicone sealant. Each random crack shall be routed and the joint and roadway surface immediately cleaned by flushing with water or compressed air. The use of a concrete saw to route the crack will not be allowed. If there is any existing joint filler remaining in the cracks following routing, it shall be satisfactorily removed prior to sealing. Just prior to sealing, the sides of the routed crack shall be cleaned by sandblasting and the routed reservoir blown clean with compressed air.

The sealant shall be placed in the routed reservoir with equipment and by methods that insure complete and uniform filling. Backer rod may be used in wider random cracks.

Sealing Random Cracks in PCC Pavement will be measured to the nearest 0.1 foot of random cracks sealed and accepted on the project.

All costs for routing and sealing random cracks shall be incidental to the contract unit price per foot for SEAL RANDOM CRACKS IN PCC PAVEMENT.

ASPHALT CONCRETE SHOULDERS

To allow for form placement at locations where full depth repairs are adjacent to asphalt concrete shoulders, the Contractor shall be allowed to saw cut full depth the existing asphalt concrete shoulder. The saw cut shall be parallel to and no more than one foot from existing pavement edge. All costs incurred in performing the above-mentioned work, and for equipment, labor, and incidentals necessary to complete work shall be incidental to the contract unit price per ton for ASPHALT CONCRETE COMPOSITE.

Upon completion of pavement repair, the Contractor shall reestablish the asphalt concrete shoulder. Asphalt Concrete Composite shall be placed at a depth that matches that of the existing asphalt concrete shoulder depth. All costs for furnish and installing granular material, for furnishing and installing Asphalt Concrete Composite, and for all equipment, labor, and incidentals necessary to complete work shall be incidental to the contract unit price per ton for ASPHALT CONCRETE COMPOSITE.

TYPE A SPALL REPAIR

Corner breaks at centerline need to be removed if larger than a 3" X 3" area. This work shall consist of sawing a minimum of 6" X 12" area and removing the pavement and filling with patching compound.

The Contractor shall saw an area a minimum of 6" X 12" and remove the material to a minimum depth of 3" until sound concrete is found. If the existing corner spall area is less than 3" X 3" then do not complete the spall repair and reseal per Saw and Seal Joints notes.

Type A spall repair shall be completed in the same lane closure full depth PCC Pavement Repair.

Spall repair locations will be marked in the field by the Engineer.

The Contractor shall use one of the patching compound listed below. It will not be an option to use the concrete patch mixture as provided in Section 390 of the Specifications.

The Portland cement concrete pavement that is removed shall be replaced with one of the following approved patching compound: Patchroc 10-60, Five Star Highway Patch, or L & M Durapatch Highway, or an approved equal. The use of Set 45 will not be allowed.

Patch Material Requirements:

1. Compressive Strength, 3 hr, minimum 3000 psi, (ASTM C-109)
2. Compressive Strength, 24 hr, minimum 5000 psi, (ASTM C-109)
3. Final Set Time-minimum 25 minutes
4. Shrinkage, 4 days, 0.13 percent maximum, (ASTM C-596)

With Maximum Aggregate Extension:

1. Flexure Strength, 500 psi, 24 hr, (California Test 551)
2. Bond to Dry PCC, 400 psi, 24 hr, (California Test 551)
3. Bond to SSD PCC, 300 psi, 24 hr, (California Test 551)

The patching compound may be extended up to 100% with aggregate (defined as 10 lbs. of aggregate to 10 lbs. of patching compound) as recommended by the manufacturer. The aggregate extender shall meet the requirements of Section 820 of the Specifications. Section 820.2 D shall not apply to the aggregate extender. The Contractor's supplier of the patching compound shall provide a concrete mix design, including all additives, to meet a minimum compressive strength of 4000 psi in six hours. This mix design shall be performed with the materials that will be used on the project.

The Contractor shall verify the results of the suppliers mix design prior to beginning work. If the suppliers mix design is not satisfactory, the Contractors shall provide the Department with a mix design that meets the requirement prior to the beginning of work. This mix design shall be performed with the materials that will be used on the project.

The Contractor shall fill the area (with the foam core board or other approved material in place) with an approved patching compound. The patching compound shall be vibrated with a small hand held vibrator capable of thoroughly consolidating the patching compound into the area. The top surface of the filled area shall be troweled, boom finished and cured.

CURING OF CONCRETE

Portland Cement Concrete Pavement Repair shall be cured with Linseed Oil Base Emulsion Compound in accordance with section 821 of specifications.

ASPHALT CONCRETE COMPOSITE

For Informational purposes only. An estimated 18.6 ton of Asphalt Concrete Composite will be needed for the area removed for construction along the PCC Pavement on the shoulder. 18.6 tons is based upon a width of 12' and 3" thick.

COLD APPLIED PLASTIC PAVEMENT MARKING

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

GROOVING FOR COLD APPLIED PLASTIC PAVEMENT MARKING

Grooving on this project is limited to where markings are being installed at a new location. On this project grooving will be limited to 3rd St and Main St crosswalk markings and 8" lines at the US81 and US14 Jct, Arlington, SD.

The Contractor shall establish a positive means for the removal of the grinding and/or grooving residue. Residue from dry grooving shall be vacuumed. Solid residue shall be removed from the pavement surfaces before being blown by traffic action or wind. Residue from wet grooving shall not be permitted to flow across lanes being used by public traffic or into gutter or drainage facilities. Residue, whether in solid or slurry form, shall be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state. All costs for removal of grinding and/or grooving residue shall be included in the contract unit price per foot for GROOVING FOR COLD APPLIED PLASTIC PAVEMENT MARKING, 8" & 24".

SURFACE PREPARATION FOR PAVEMENT MARKING

The Contractor shall prepare the pavement surface prior to applying the durable pavement marking in accordance with the following.

In areas where the existing groove meets the required depth and existing markings are still in place, the Contractor shall clean the existing groove without adding additional depth beyond the required depth for the new pavement marking, including reflective media as noted below.

Description	Specification	Tolerance
Depth of Groove	Marking Thickness ¹ + 15 mils	+ 5 mils

¹ Marking thickness shall include the thickness of marking material and reflective media.

The cleaning shall result in the existing pavement marking being adequately scuffed, abraded, and removed by light grinding or abrasive blasting or both to allow proper adhesion of the new durable pavement marking as per the manufacturer's recommendations to comply with product warranties.

Existing grooves not meeting the required depth shall be re-grooved to the required depth for the new pavement marking, including reflective media. Equipment for grooving shall be capable of the following:

- Grooving the total width of the groove in one pass or uniform depths with multiple passes.
- Grooving without causing damage to the pavement joints or joint sealant material.
- Provide uniform alignment and depth.
- Moving continuously to permit a mobile traffic work operation.

All costs associated with cleaning of the existing groove of 4", 8" and 24" markings, including re-grooving, if needed, shall be included in the contract unit price per foot for "Surface Preparation for Pavement Marking". Surface preparation shall be measured as 4" equivalent for 8" and 24" markings.

All costs associated with cleaning of the existing groove of turn arrows and railroad crossing, including re-grooving, if needed, shall be included in the contract unit price per each for "Surface Preparation for Pavement Marking".

All costs associated with cleaning of the existing groove of solid color areas, including re-grooving, if needed, shall be included in the contract unit price per square foot for "Surface Preparation for Pavement Marking".

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.

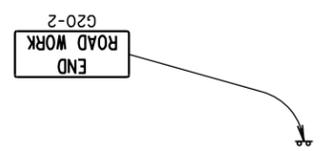
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

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.

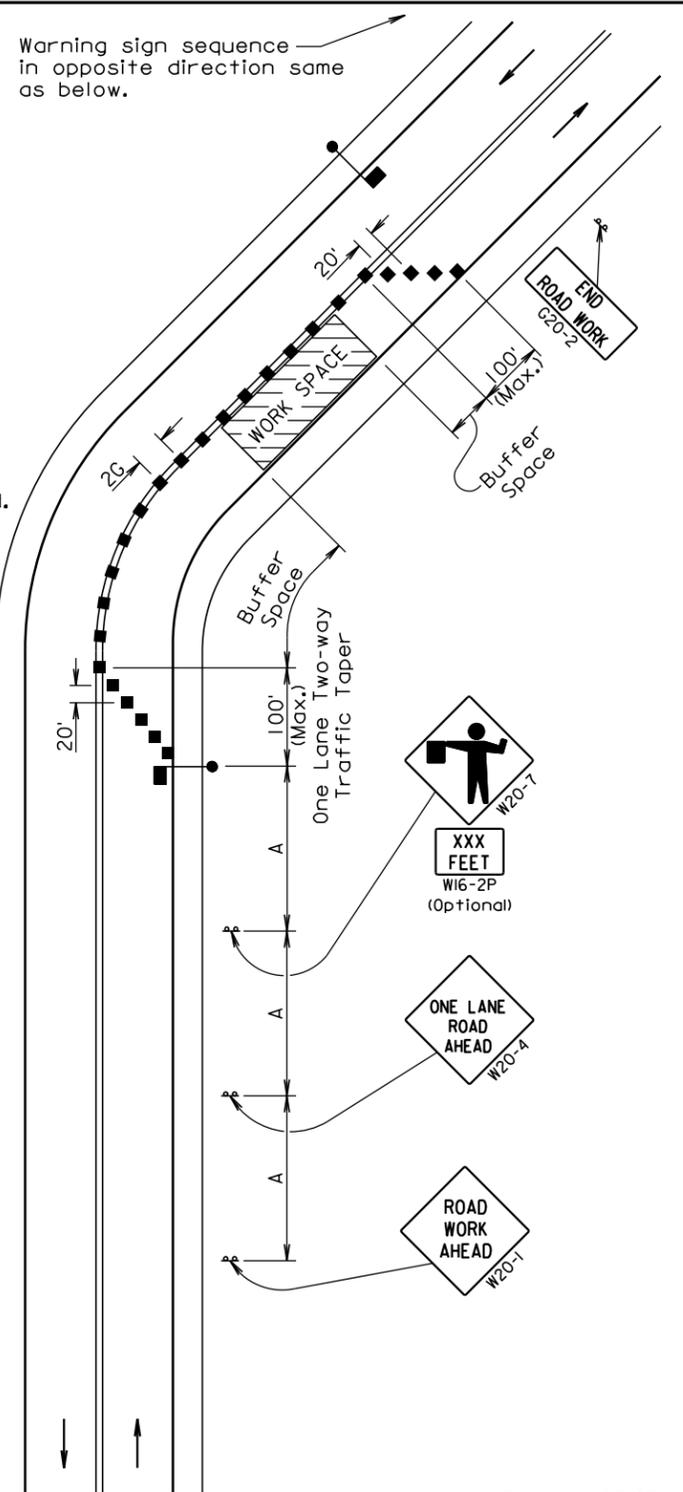
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.



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

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.

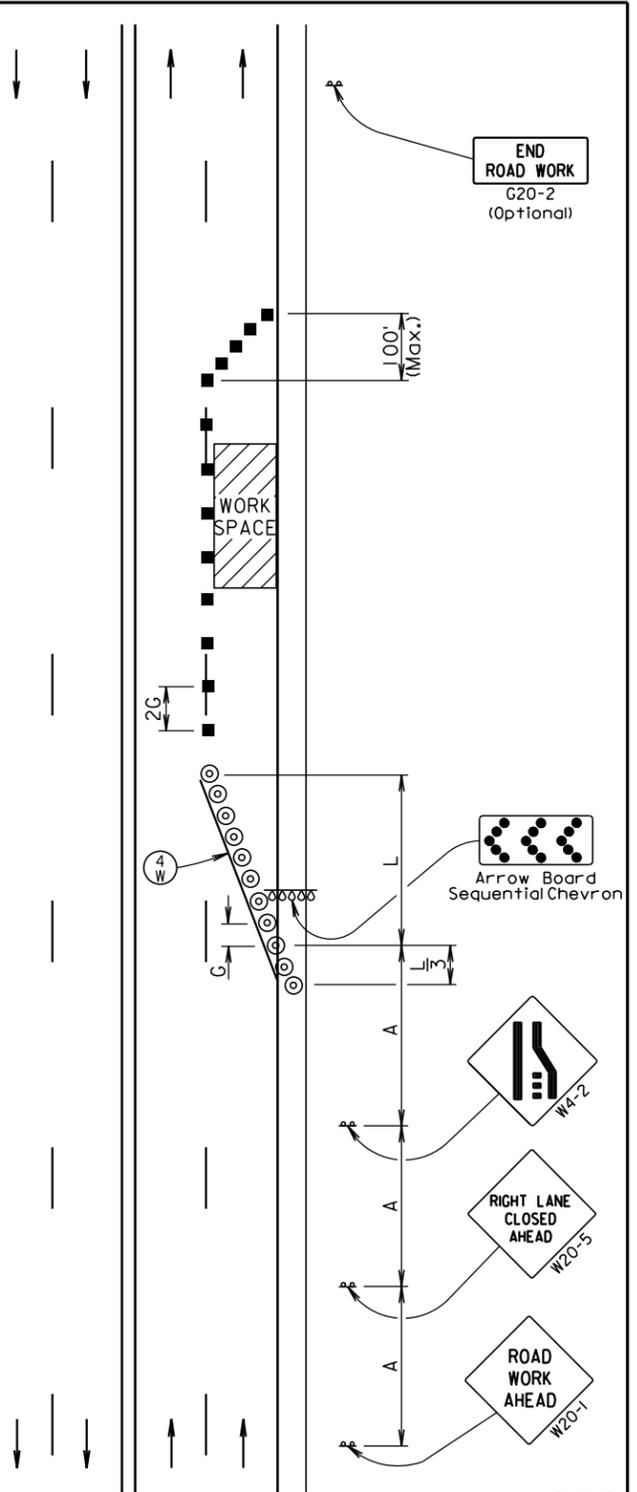
- ⊙ Reflectorized Drum
- Channelizing Device
- ④ 4" White Temporary Pavement Marking

The channelizing devices shall be 42" cones or drums.

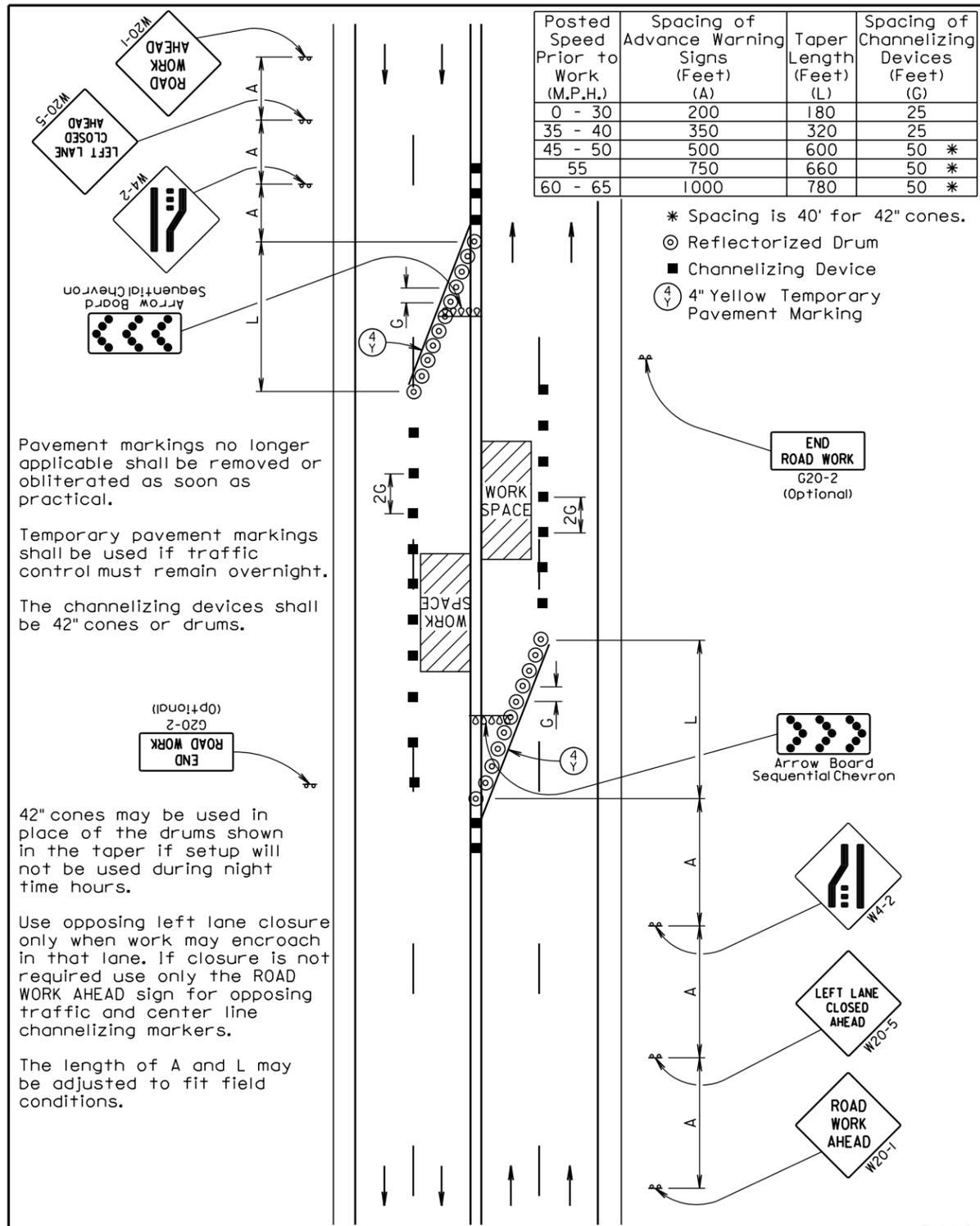
42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

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

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



April 15, 2015



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

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

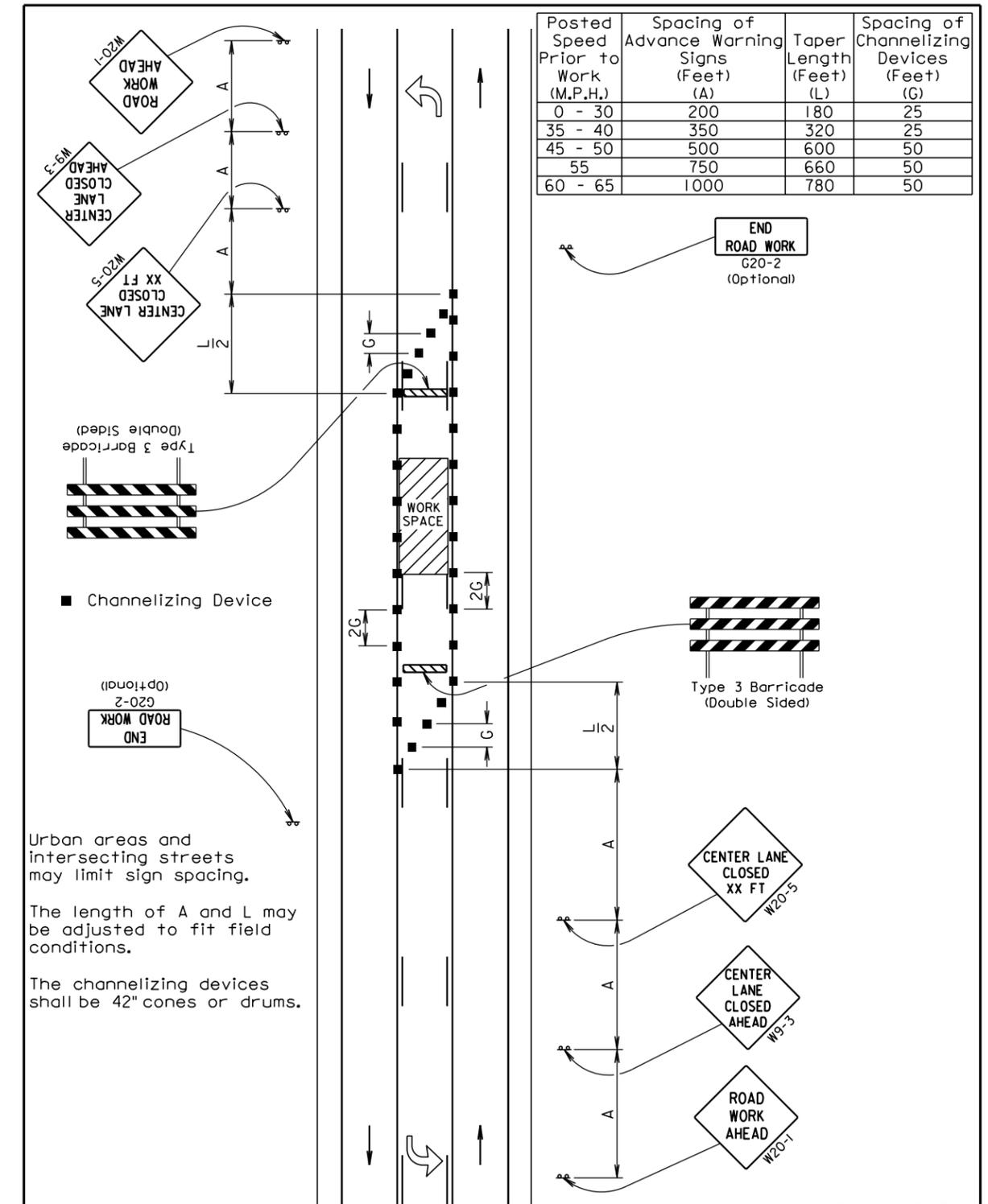
The channelizing devices shall be 42" cones or drums.

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

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

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

April 15, 2015



September 22, 2014

Segments 1, 4, 5, 6, & 8

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16	32
W20-1	ROAD WORK AHEAD	8	48" x 48"	16	128
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16	64
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16	32
W20-7	FLAGGER (symbol)	4	48" x 48"	16	64
G20-2	END ROAD WORK	8	36" x 18"	5	40
				CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT 360	

TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Single Sided	4 Each

ARROW BOARDS

ITEM DESCRIPTION	QUANTITY
Type C Arrow Board	2 Each

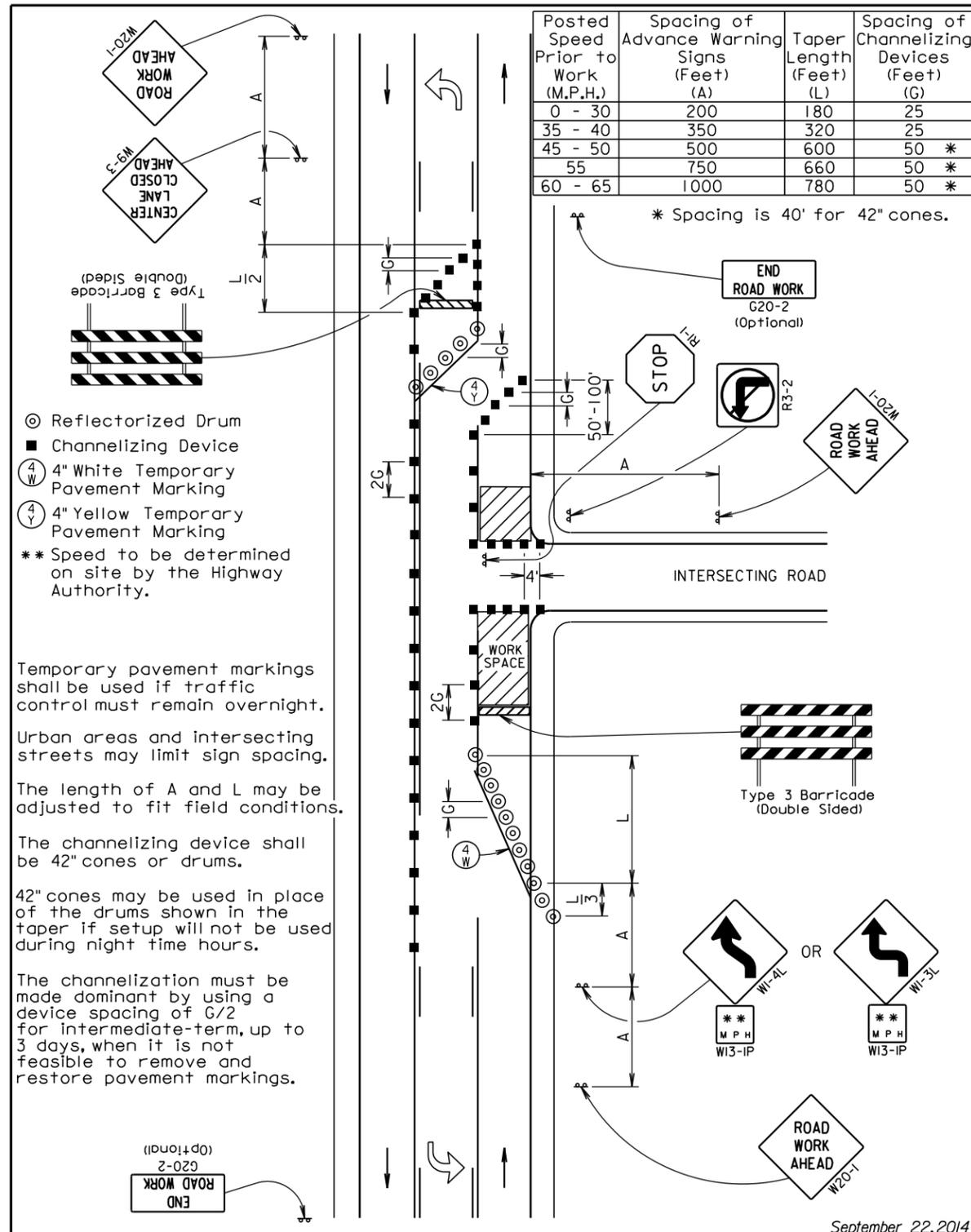
Segments 2, 3, & 7

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	8	48" x 48"	16	128
W20-3	ROAD CLOSED AHEAD	8	48" x 48"	16	128
W20-7	FLAGGER (symbol)	8	48" x 48"	16	128
G20-2	END ROAD WORK	8	36" x 18"	5	40
				CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT 424	

TYPE 3 BARRICADES

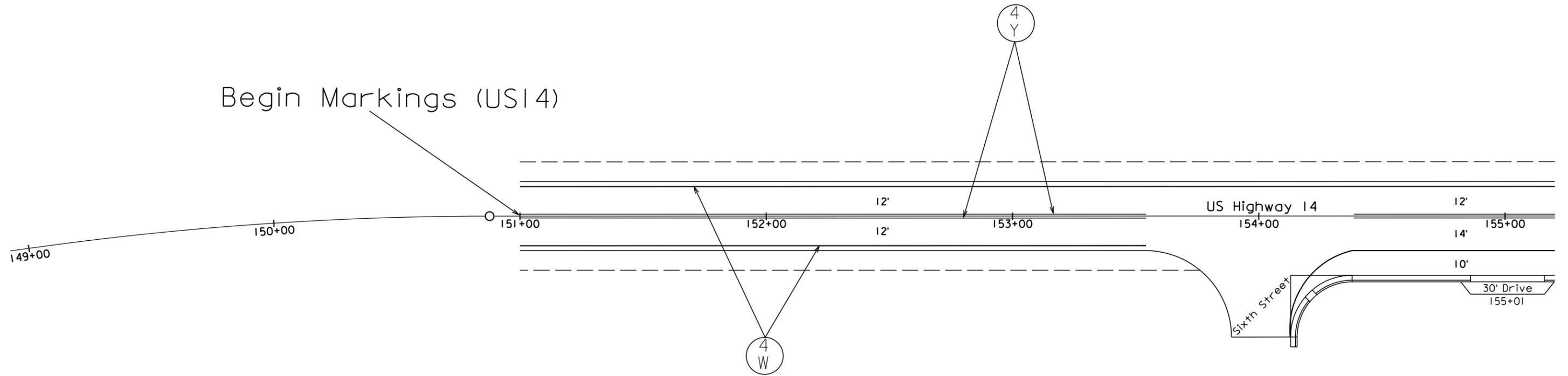
ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Single Sided	4 Each



September 22, 2014

PAVEMENT MARKING LAYOUTS ARLINGTON

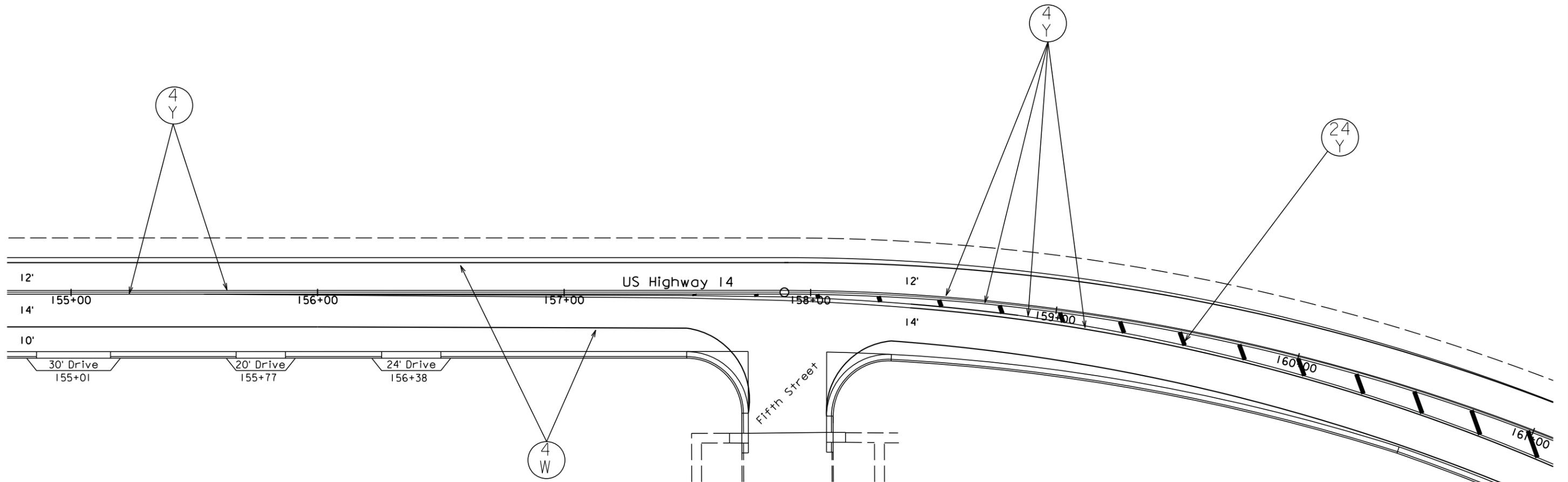
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P OOSW(53)	39	61



KEY	ITEM
(4 W)	Cold Applied Plastic Pavement Marking Tape, 4" White
(4 Y)	Cold Applied Plastic Pavement Marking Tape, 4" Yellow
(8 W)	Cold Applied Plastic Pavement Marking Tape, 8" White
(8 Y)	Cold Applied Plastic Pavement Marking Tape, 8" Yellow
(24 W)	Cold Applied Plastic Pavement Marking Tape, 24" White
(24 Y)	Cold Applied Plastic Pavement Marking Tape, 24" Yellow
(S W)	Cold Applied Plastic Pavement Marking Tape, Area White
(S Y)	Cold Applied Plastic Pavement Marking Tape, Area Yellow
← or → or ↑	Cold Applied Plastic Pavement Marking Tape, White Arrow

PAVEMENT MARKING LAYOUTS ARLINGTON

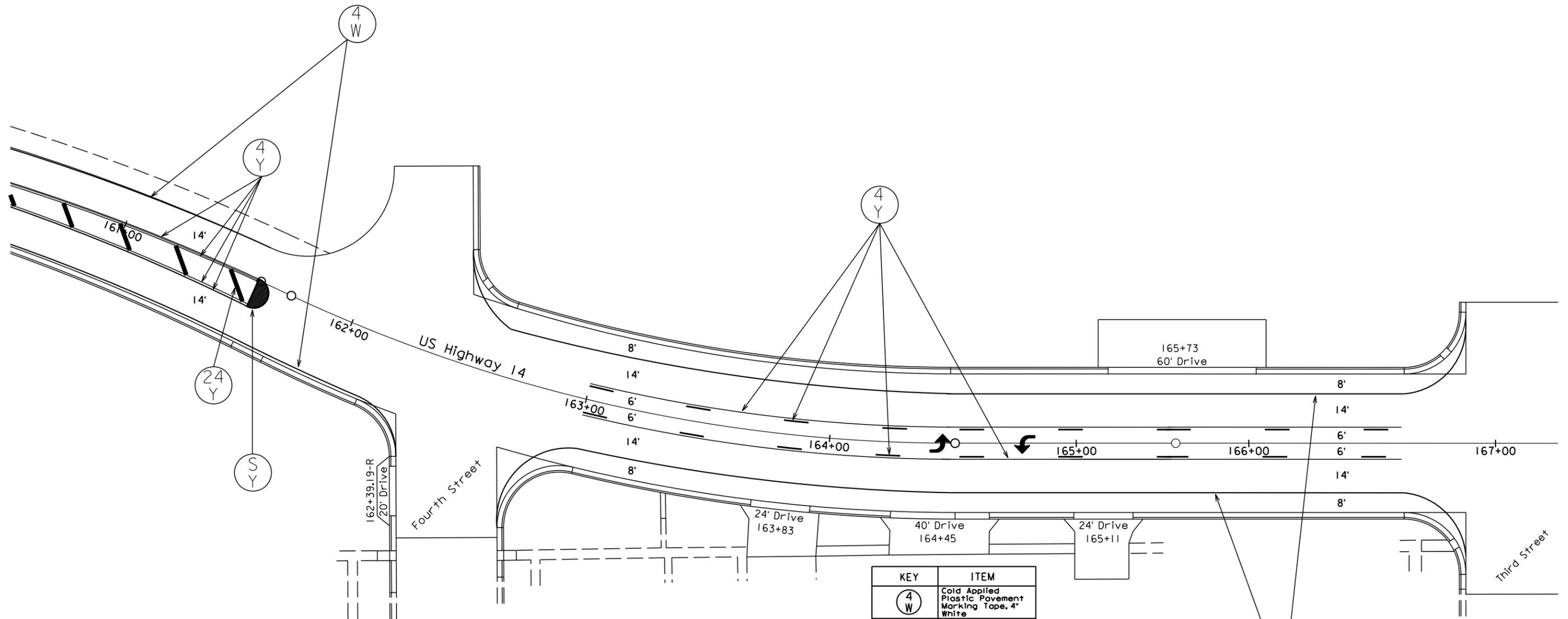
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P OOSW(53)	40	61



KEY	ITEM
(4 W)	Cold Applied Plastic Pavement Marking Tape, 4" White
(4 Y)	Cold Applied Plastic Pavement Marking Tape, 4" Yellow
(8 W)	Cold Applied Plastic Pavement Marking Tape, 8" White
(8 Y)	Cold Applied Plastic Pavement Marking Tape, 8" Yellow
(24 W)	Cold Applied Plastic Pavement Marking Tape, 24" White
(24 Y)	Cold Applied Plastic Pavement Marking Tape, 24" Yellow
(S W)	Cold Applied Plastic Pavement Marking Tape, Area White
(S Y)	Cold Applied Plastic Pavement Marking Tape, Area Yellow
← or → or ↑	Cold Applied Plastic Pavement Marking Tape, White Arrow

PAVEMENT MARKING LAYOUTS ARLINGTON

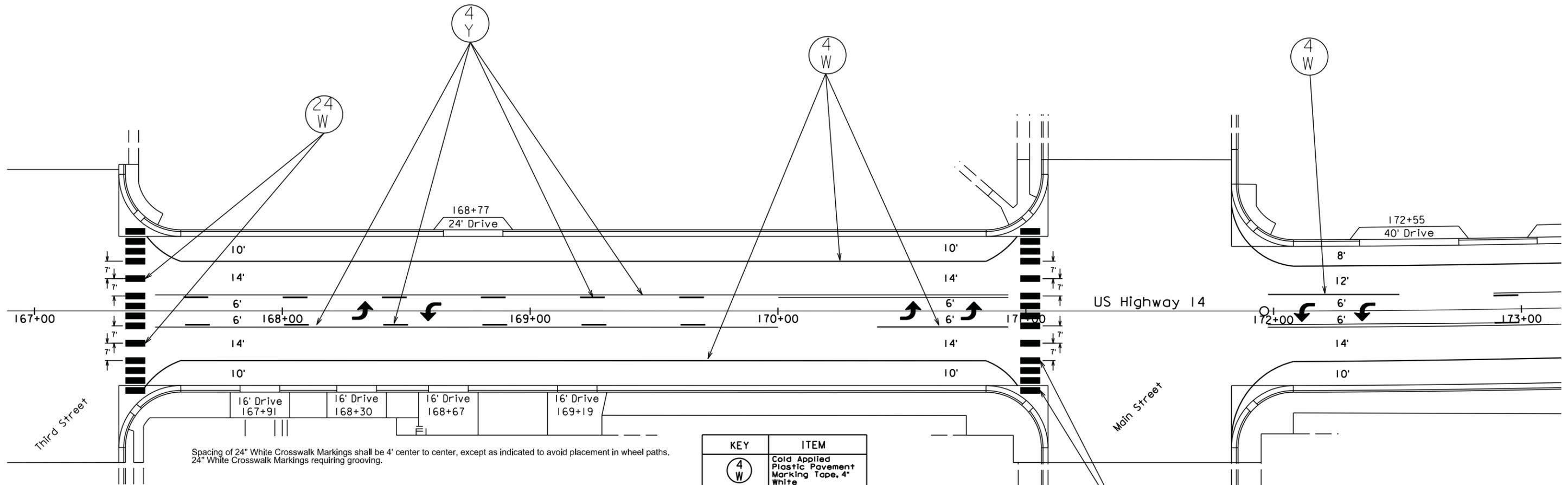
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P OOSW(53)	41	61



KEY	ITEM
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(4 Y)	Cold Applied Plastic Pavement Marking Tape, 4" Yellow
(8 W)	Cold Applied Plastic Pavement Marking Tape, 8" White
(8 Y)	Cold Applied Plastic Pavement Marking Tape, 8" Yellow
(24 W)	Cold Applied Plastic Pavement Marking Tape, 24" White
(24 Y)	Cold Applied Plastic Pavement Marking Tape, 24" Yellow
(S W)	Cold Applied Plastic Pavement Marking Tape, Area White
(S Y)	Cold Applied Plastic Pavement Marking Tape, Area Yellow
← or ↗ or ↑	Cold Applied Plastic Pavement Marking Tape, White Arrow

PAVEMENT MARKING LAYOUTS ARLINGTON

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P OOSW(53)	42	61



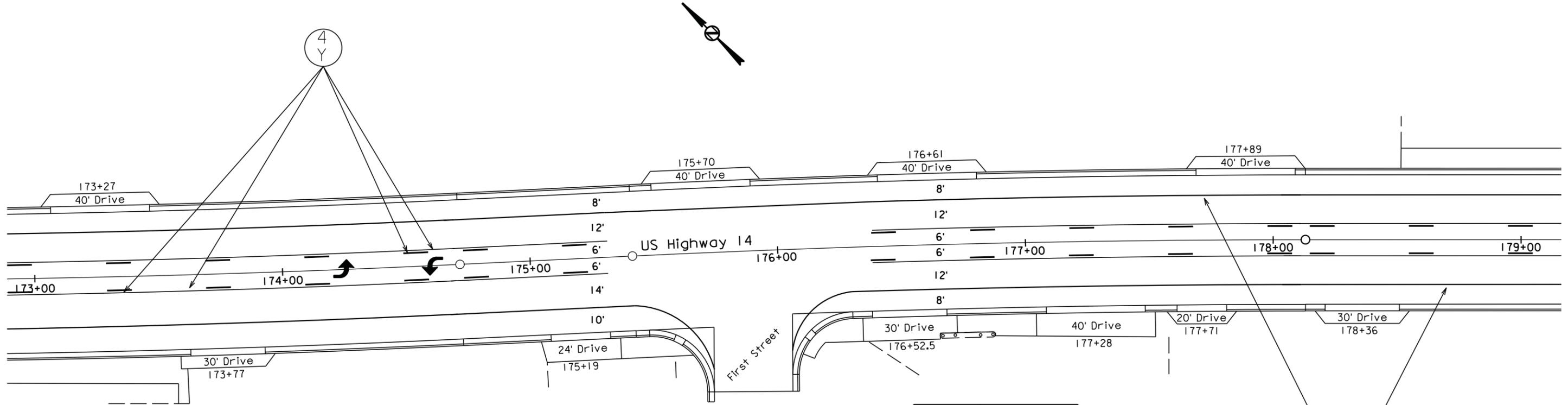
Spacing of 24" White Crosswalk Markings shall be 4' center to center, except as indicated to avoid placement in wheel paths.
24" White Crosswalk Markings requiring grooving.

KEY	ITEM
(4 W)	Cold Applied Plastic Pavement Marking Tape, 4" White
(4 Y)	Cold Applied Plastic Pavement Marking Tape, 4" Yellow
(8 W)	Cold Applied Plastic Pavement Marking Tape, 8" White
(8 Y)	Cold Applied Plastic Pavement Marking Tape, 8" Yellow
(24 W)	Cold Applied Plastic Pavement Marking Tape, 24" White
(24 Y)	Cold Applied Plastic Pavement Marking Tape, 24" Yellow
(S W)	Cold Applied Plastic Pavement Marking Tape, Area White
(S Y)	Cold Applied Plastic Pavement Marking Tape, Area Yellow
← or → or ↑	Cold Applied Plastic Pavement Marking Tape, White Arrow



PAVEMENT MARKING LAYOUTS ARLINGTON

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P OOSW(53)	43	61

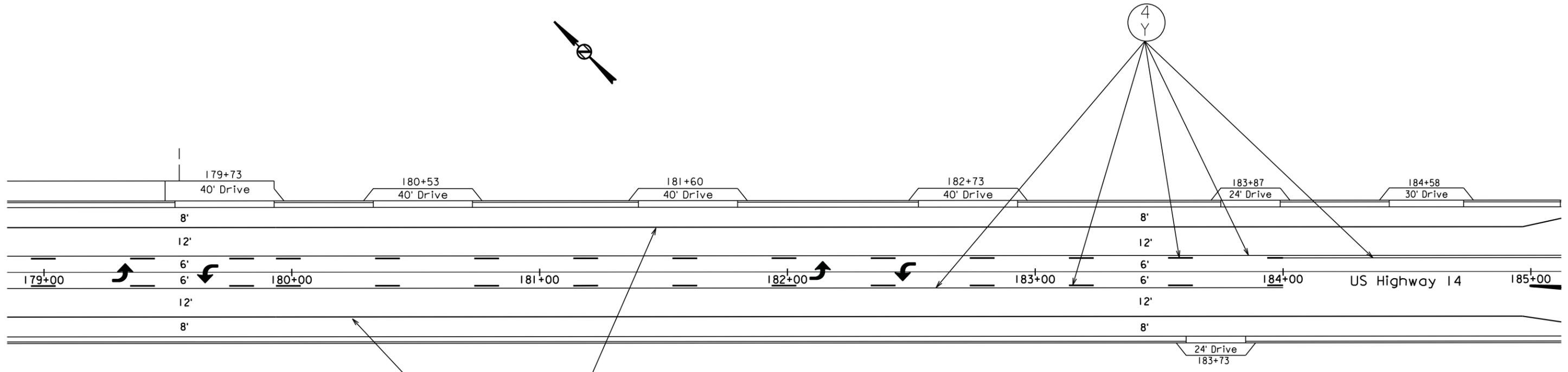


KEY	ITEM
(4 W)	Cold Applied Plastic Pavement Marking Tape, 4" White
(4 Y)	Cold Applied Plastic Pavement Marking Tape, 4" Yellow
(8 W)	Cold Applied Plastic Pavement Marking Tape, 8" White
(8 Y)	Cold Applied Plastic Pavement Marking Tape, 8" Yellow
(24 W)	Cold Applied Plastic Pavement Marking Tape, 24" White
(24 Y)	Cold Applied Plastic Pavement Marking Tape, 24" Yellow
(S W)	Cold Applied Plastic Pavement Marking Tape, Area White
(S Y)	Cold Applied Plastic Pavement Marking Tape, Area Yellow
← or → or ↑	Cold Applied Plastic Pavement Marking Tape, White Arrow

PLOTTED FROM - TRAB17882

PAVEMENT MARKING LAYOUTS ARLINGTON

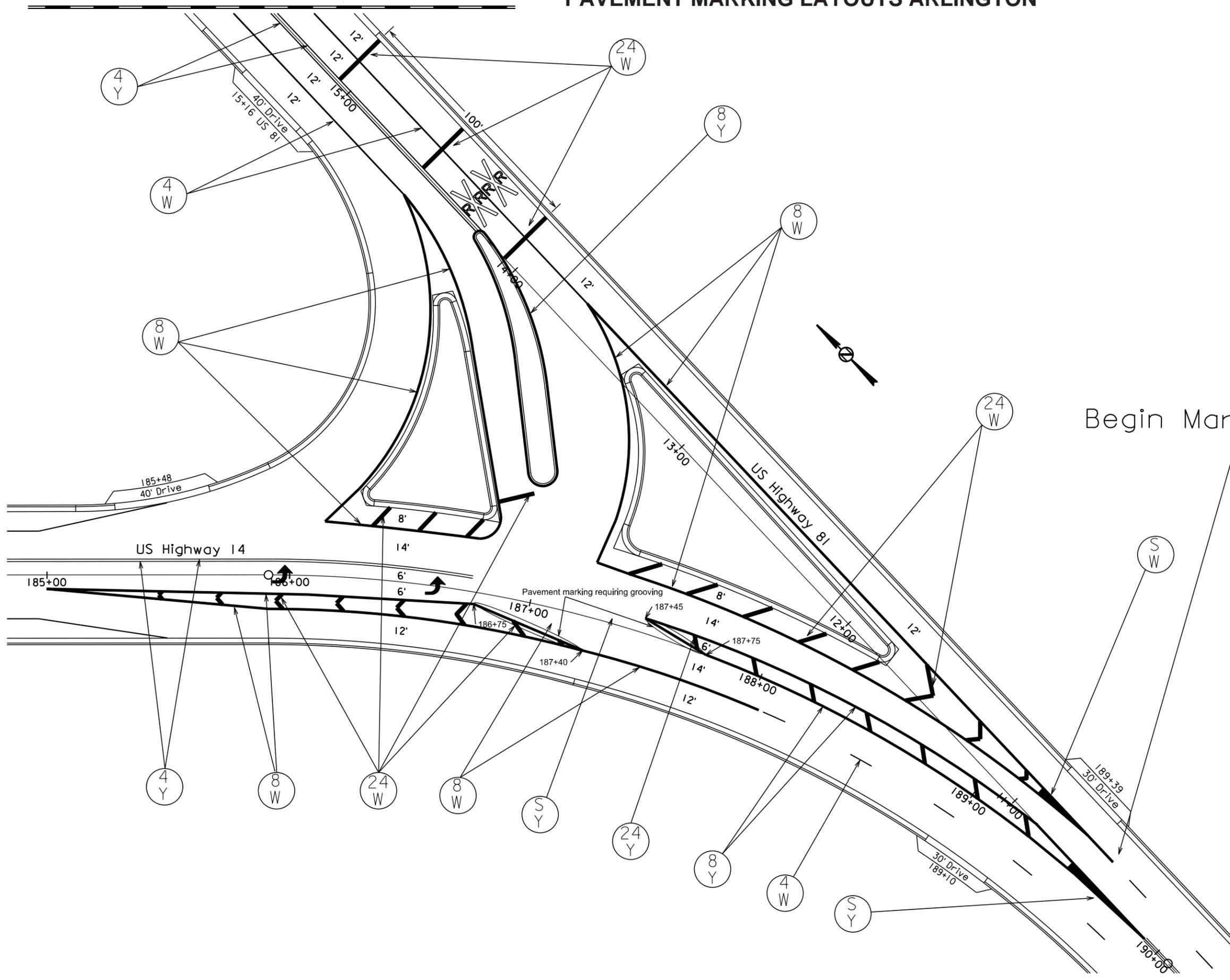
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P OOSW(53)	44	61



KEY	ITEM
④ W	Cold Applied Plastic Pavement Marking Tape, 4" White
④ Y	Cold Applied Plastic Pavement Marking Tape, 4" Yellow
⑧ W	Cold Applied Plastic Pavement Marking Tape, 8" White
⑧ Y	Cold Applied Plastic Pavement Marking Tape, 8" Yellow
⑳④ W	Cold Applied Plastic Pavement Marking Tape, 24" White
⑳④ Y	Cold Applied Plastic Pavement Marking Tape, 24" Yellow
S W	Cold Applied Plastic Pavement Marking Tape, Area White
S Y	Cold Applied Plastic Pavement Marking Tape, Area Yellow
↶ or ↷ or ↵	Cold Applied Plastic Pavement Marking Tape, White Arrow

PAVEMENT MARKING LAYOUTS ARLINGTON

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P OOSW(53)	45	61

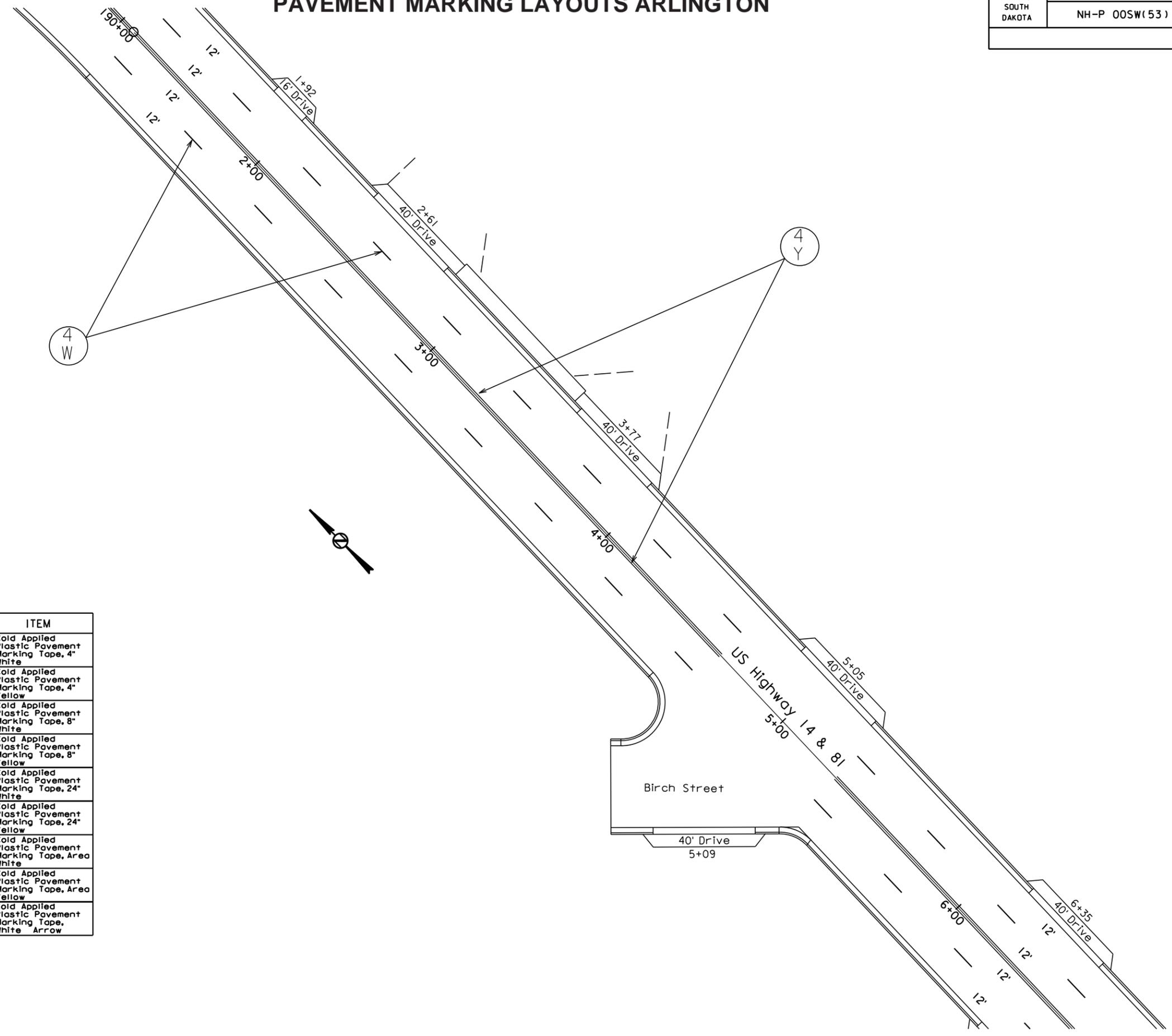


Begin Markings (US 81)

KEY	ITEM
(4 W)	Cold Applied Plastic Pavement Marking Tape, 4" White
(4 Y)	Cold Applied Plastic Pavement Marking Tape, 4" Yellow
(8 W)	Cold Applied Plastic Pavement Marking Tape, 8" White
(8 Y)	Cold Applied Plastic Pavement Marking Tape, 8" Yellow
(24 W)	Cold Applied Plastic Pavement Marking Tape, 24" White
(24 Y)	Cold Applied Plastic Pavement Marking Tape, 24" Yellow
(S W)	Cold Applied Plastic Pavement Marking Tape, Area White
(S Y)	Cold Applied Plastic Pavement Marking Tape, Area Yellow
← or → or ↑	Cold Applied Plastic Pavement Marking Tape, White Arrow

PAVEMENT MARKING LAYOUTS ARLINGTON

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P OOSW(53)	46	61

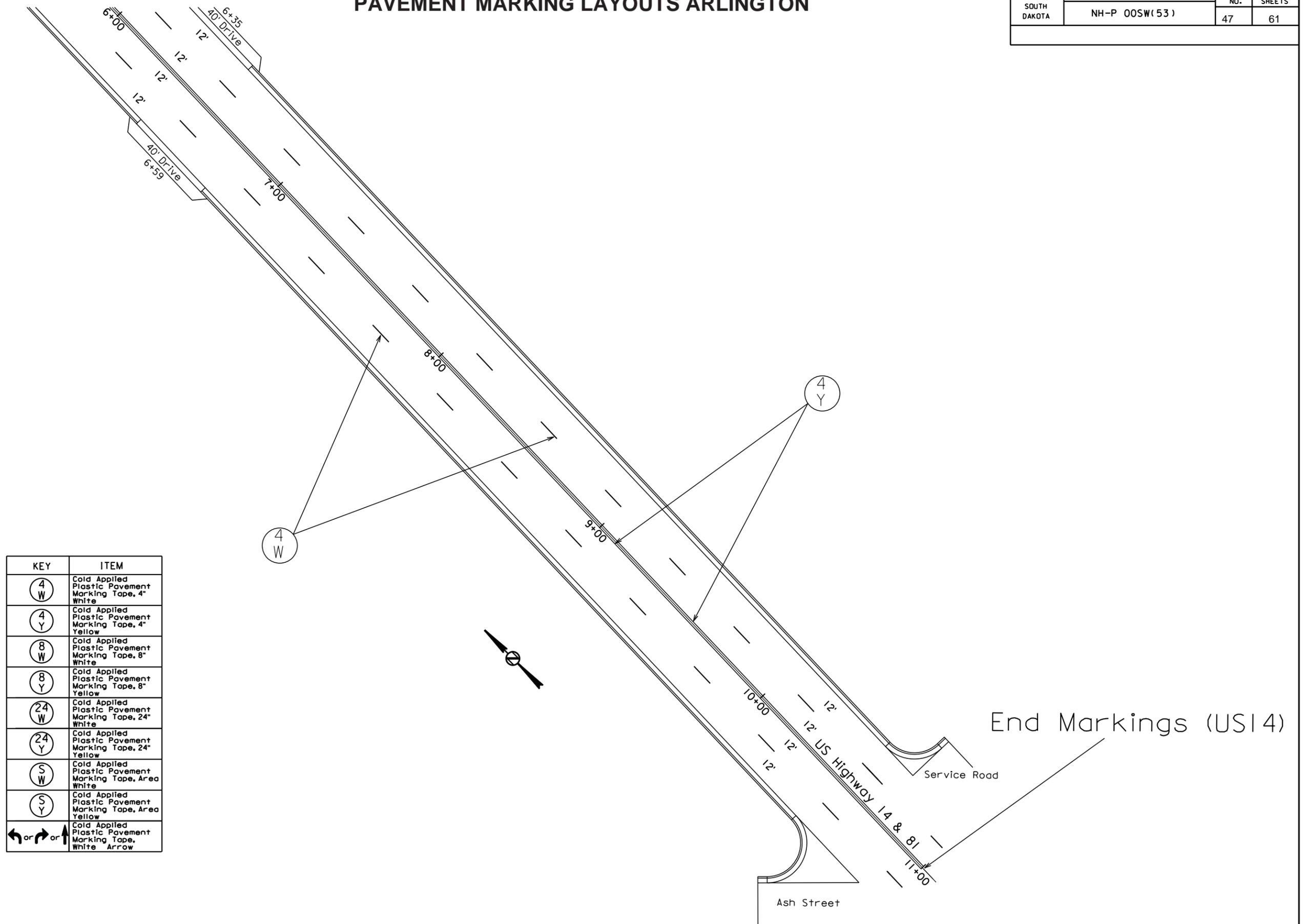


KEY	ITEM
(4 W)	Cold Applied Plastic Pavement Marking Tape, 4" White
(4 Y)	Cold Applied Plastic Pavement Marking Tape, 4" Yellow
(8 W)	Cold Applied Plastic Pavement Marking Tape, 8" White
(8 Y)	Cold Applied Plastic Pavement Marking Tape, 8" Yellow
(24 W)	Cold Applied Plastic Pavement Marking Tape, 24" White
(24 Y)	Cold Applied Plastic Pavement Marking Tape, 24" Yellow
(S W)	Cold Applied Plastic Pavement Marking Tape, Area White
(S Y)	Cold Applied Plastic Pavement Marking Tape, Area Yellow
← or → or ↑	Cold Applied Plastic Pavement Marking Tape, White Arrow

PLOTTED FROM - TRAB17882

PAVEMENT MARKING LAYOUTS ARLINGTON

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P OOSW(53)	47	61

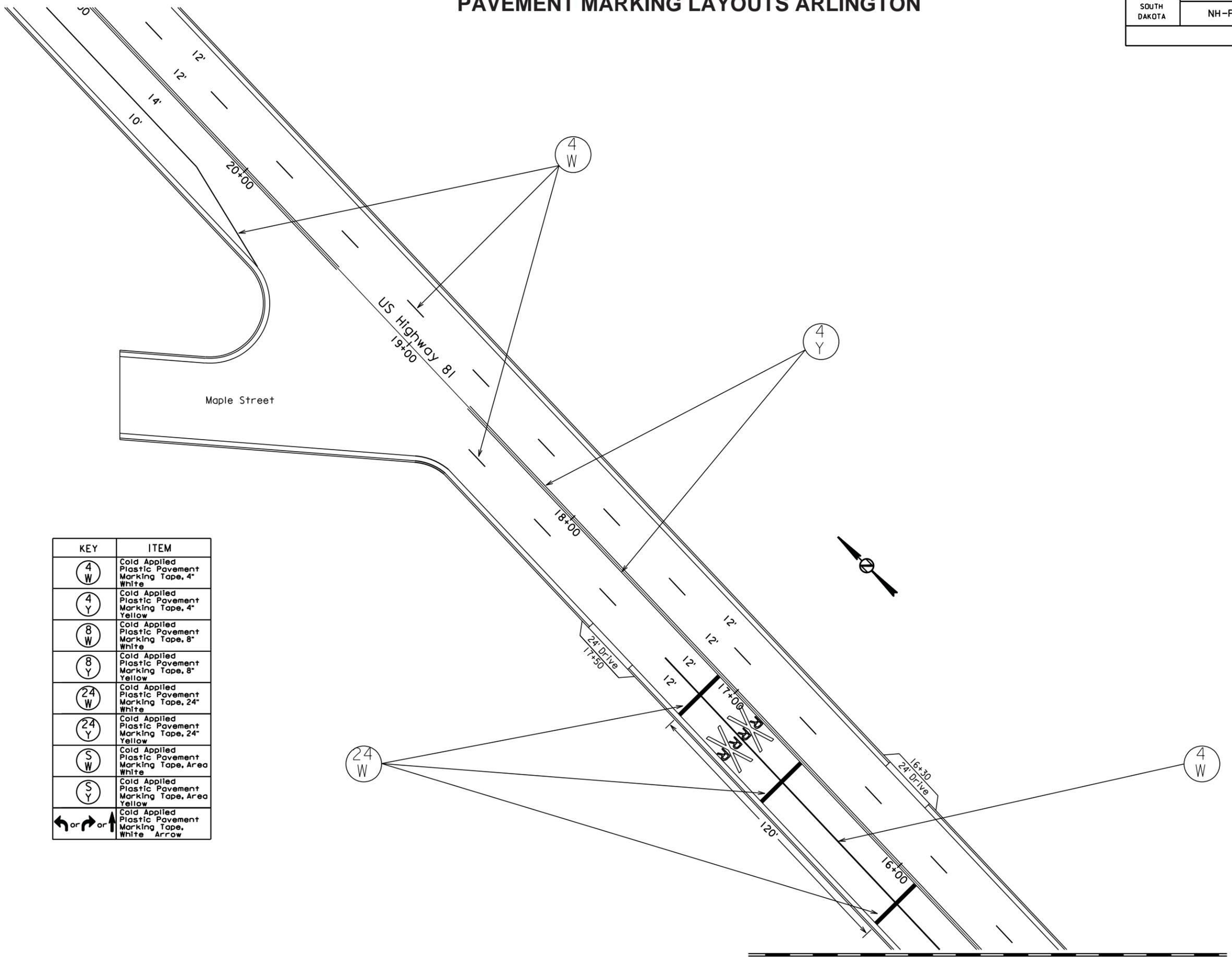


KEY	ITEM
(4 W)	Cold Applied Plastic Pavement Marking Tape, 4" White
(4 Y)	Cold Applied Plastic Pavement Marking Tape, 4" Yellow
(8 W)	Cold Applied Plastic Pavement Marking Tape, 8" White
(8 Y)	Cold Applied Plastic Pavement Marking Tape, 8" Yellow
(24 W)	Cold Applied Plastic Pavement Marking Tape, 24" White
(24 Y)	Cold Applied Plastic Pavement Marking Tape, 24" Yellow
(S W)	Cold Applied Plastic Pavement Marking Tape, Area White
(S Y)	Cold Applied Plastic Pavement Marking Tape, Area Yellow
← or → or ↑	Cold Applied Plastic Pavement Marking Tape, White Arrow

PLOTTED FROM - TRAB17882

PAVEMENT MARKING LAYOUTS ARLINGTON

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P OOSW(53)	48	61

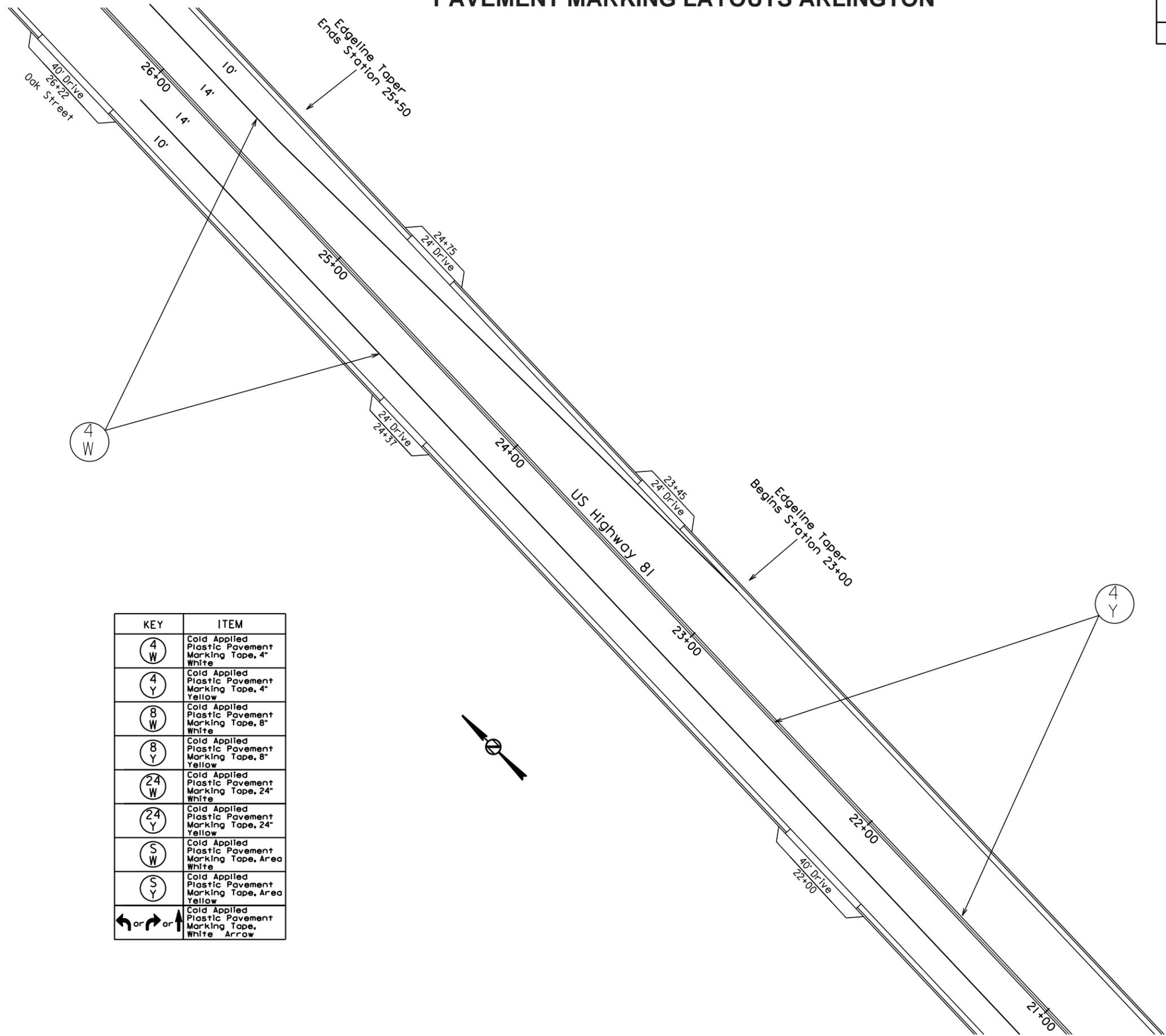


KEY	ITEM
(4 W)	Cold Applied Plastic Pavement Marking Tape, 4" White
(4 Y)	Cold Applied Plastic Pavement Marking Tape, 4" Yellow
(8 W)	Cold Applied Plastic Pavement Marking Tape, 8" White
(8 Y)	Cold Applied Plastic Pavement Marking Tape, 8" Yellow
(24 W)	Cold Applied Plastic Pavement Marking Tape, 24" White
(24 Y)	Cold Applied Plastic Pavement Marking Tape, 24" Yellow
(S W)	Cold Applied Plastic Pavement Marking Tape, Area White
(S Y)	Cold Applied Plastic Pavement Marking Tape, Area Yellow
← or → or ↗	Cold Applied Plastic Pavement Marking Tape, White Arrow

PLOTTED FROM - TRAB17882

PAVEMENT MARKING LAYOUTS ARLINGTON

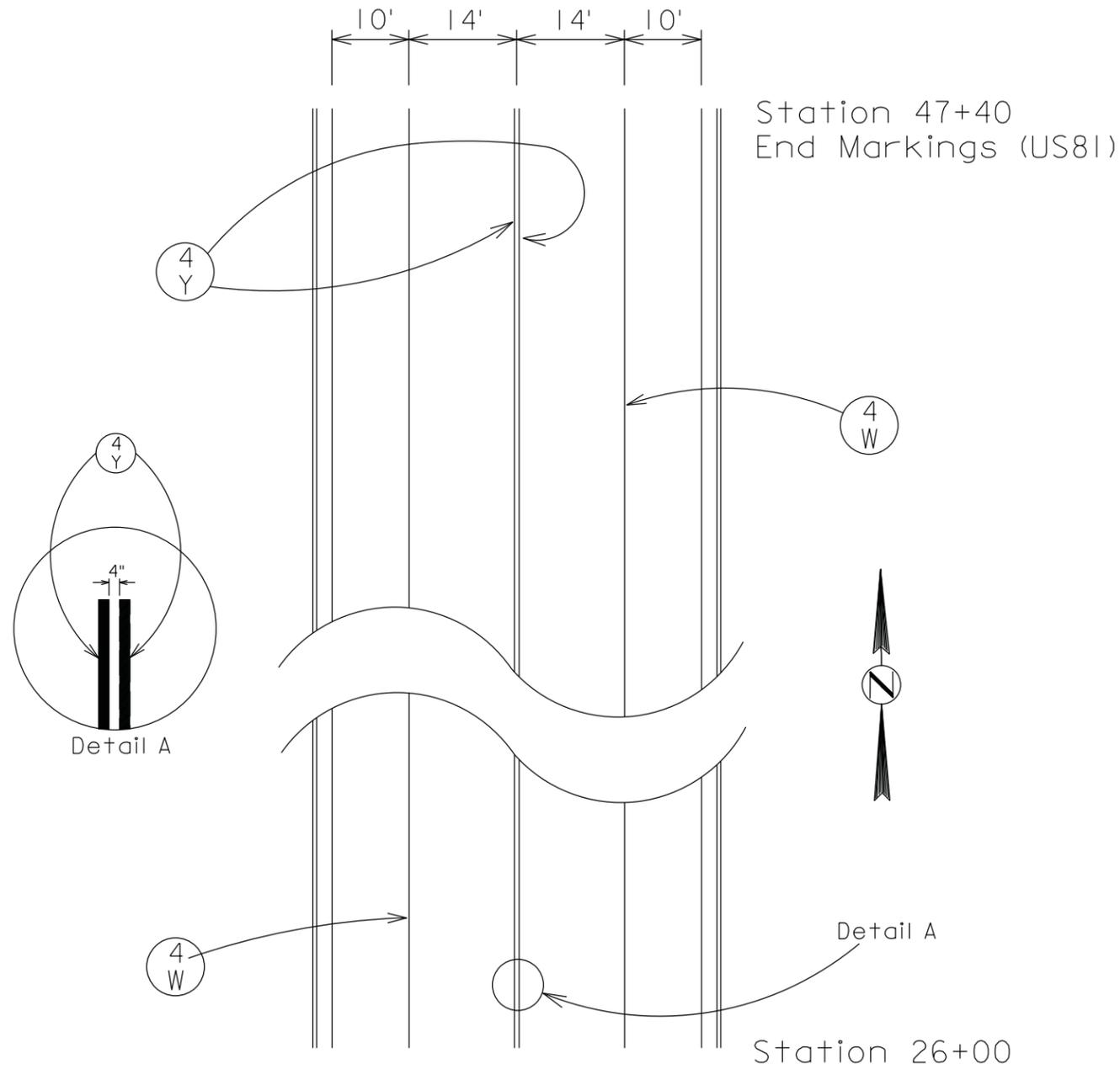
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P OOSW(53)	49	61



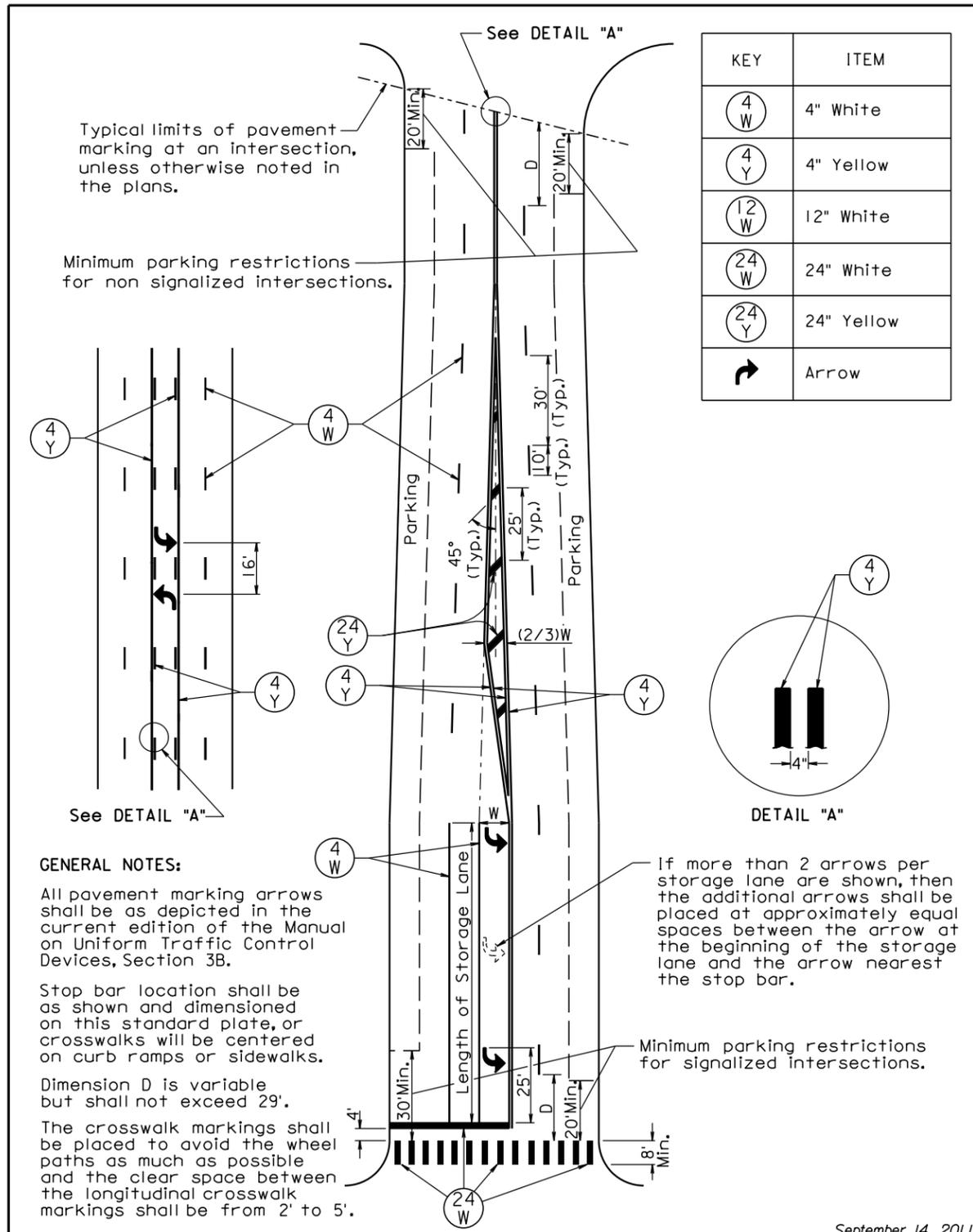
KEY	ITEM
(4 W)	Cold Applied Plastic Pavement Marking Tape, 4" White
(4 Y)	Cold Applied Plastic Pavement Marking Tape, 4" Yellow
(8 W)	Cold Applied Plastic Pavement Marking Tape, 8" White
(8 Y)	Cold Applied Plastic Pavement Marking Tape, 8" Yellow
(24 W)	Cold Applied Plastic Pavement Marking Tape, 24" White
(24 Y)	Cold Applied Plastic Pavement Marking Tape, 24" Yellow
(S W)	Cold Applied Plastic Pavement Marking Tape, Area White
(S Y)	Cold Applied Plastic Pavement Marking Tape, Area Yellow
← or → or ↑	Cold Applied Plastic Pavement Marking Tape, White Arrow

Typical Pavement Marking - US Highway 81

Station 26 + 00 to Station 47 + 40
 Shoulder width varies where C&G is absent.
 Centerlines/Edgelines break at street intersections.



KEY	ITEM
(4) W	Cold Applied Plastic Pavement Marking Tape, 4" White
(4) Y	Cold Applied Plastic Pavement Marking Tape, 4" Yellow
(8) W	Cold Applied Plastic Pavement Marking Tape, 8" White
(8) Y	Cold Applied Plastic Pavement Marking Tape, 8" Yellow
(24) W	Cold Applied Plastic Pavement Marking Tape, 24" White
(24) Y	Cold Applied Plastic Pavement Marking Tape, 24" Yellow
(S) W	Cold Applied Plastic Pavement Marking Tape, Area White
(S) Y	Cold Applied Plastic Pavement Marking Tape, Area Yellow
← or → or ↑	Cold Applied Plastic Pavement Marking Tape, White Arrow



GENERAL NOTES:

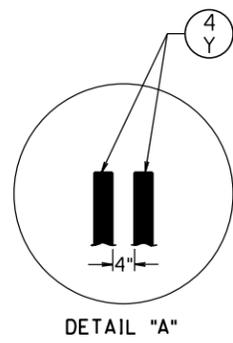
All pavement marking arrows shall be as depicted in the current edition of the Manual on Uniform Traffic Control Devices, Section 3B.

Stop bar location shall be as shown and dimensioned on this standard plate, or crosswalks will be centered on curb ramps or sidewalks.

Dimension D is variable but shall not exceed 29'.

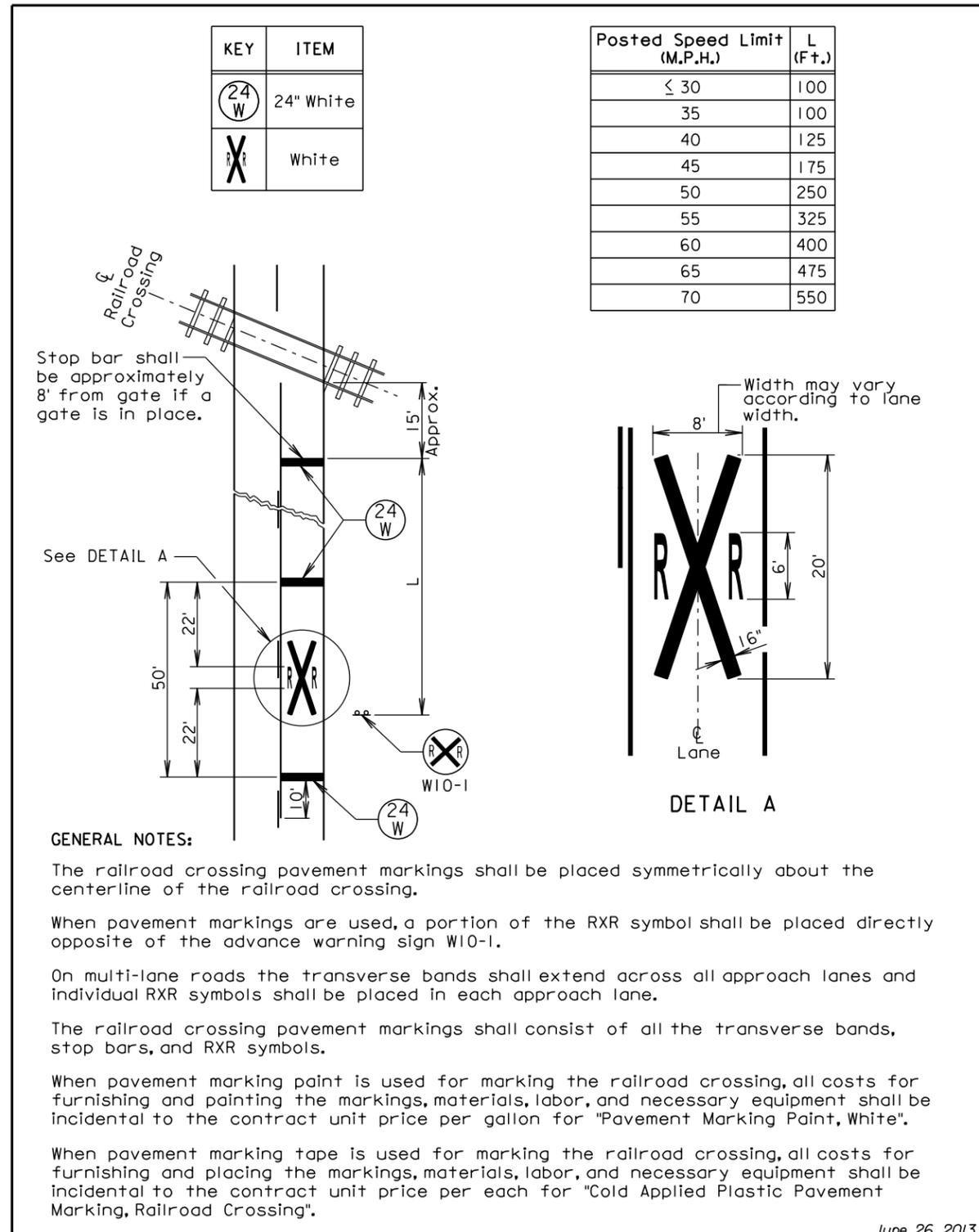
The crosswalk markings shall be placed to avoid the wheel paths as much as possible and the clear space between the longitudinal crosswalk markings shall be from 2' to 5'.

If more than 2 arrows per storage lane are shown, then the additional arrows shall be placed at approximately equal spaces between the arrow at the beginning of the storage lane and the arrow nearest the stop bar.



September 14, 2011

S D D O T	PAVEMENT MARKINGS FOR ADJACENT INTERSECTIONS AND CENTER TURN LANE	PLATE NUMBER 633.01
	Published Date: 1st Qtr. 2016	Sheet 1 of 1



Posted Speed Limit (M.P.H.)	L (Ft.)
≤ 30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550

GENERAL NOTES:

The railroad crossing pavement markings shall be placed symmetrically about the centerline of the railroad crossing.

When pavement markings are used, a portion of the RXR symbol shall be placed directly opposite of the advance warning sign W10-1.

On multi-lane roads the transverse bands shall extend across all approach lanes and individual RXR symbols shall be placed in each approach lane.

The railroad crossing pavement markings shall consist of all the transverse bands, stop bars, and RXR symbols.

When pavement marking paint is used for marking the railroad crossing, all costs for furnishing and painting the markings, materials, labor, and necessary equipment shall be incidental to the contract unit price per gallon for "Pavement Marking Paint, White".

When pavement marking tape is used for marking the railroad crossing, all costs for furnishing and placing the markings, materials, labor, and necessary equipment shall be incidental to the contract unit price per each for "Cold Applied Plastic Pavement Marking, Railroad Crossing".

June 26, 2013

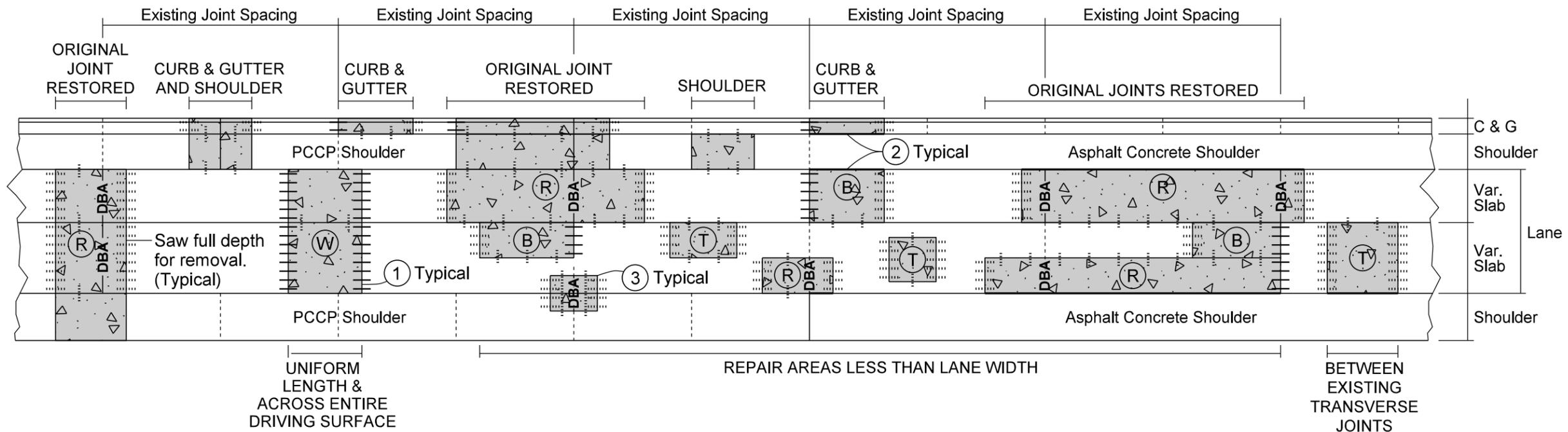
S D D O T	PAVEMENT MARKINGS AT RAILROAD CROSSING	PLATE NUMBER 633.10
	Published Date: 1st Qtr. 2016	Sheet 1 of 1

NONREINFORCED PCC PAVEMENT REPAIR

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

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 00SW(53)	52	61

Plotting Date: 01/25/2016



KEY:

PCC Pavement Repair Area

PCC PAVEMENT REPAIR AREA TYPES:

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

Steel Bars for Transverse Joints

- Pavement Thickness $\geq 10.5"$**
- Drilled in $1\frac{1}{2}"$ 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 $\geq 8.5"$ and $< 10.5"$**
- Drilled in $1\frac{1}{4}"$ 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. Sawn 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.

PLOT SCALE - 1:9

PLOT NAME - 4

FILE - ... \NEW FOLDER\SPALL.DGN

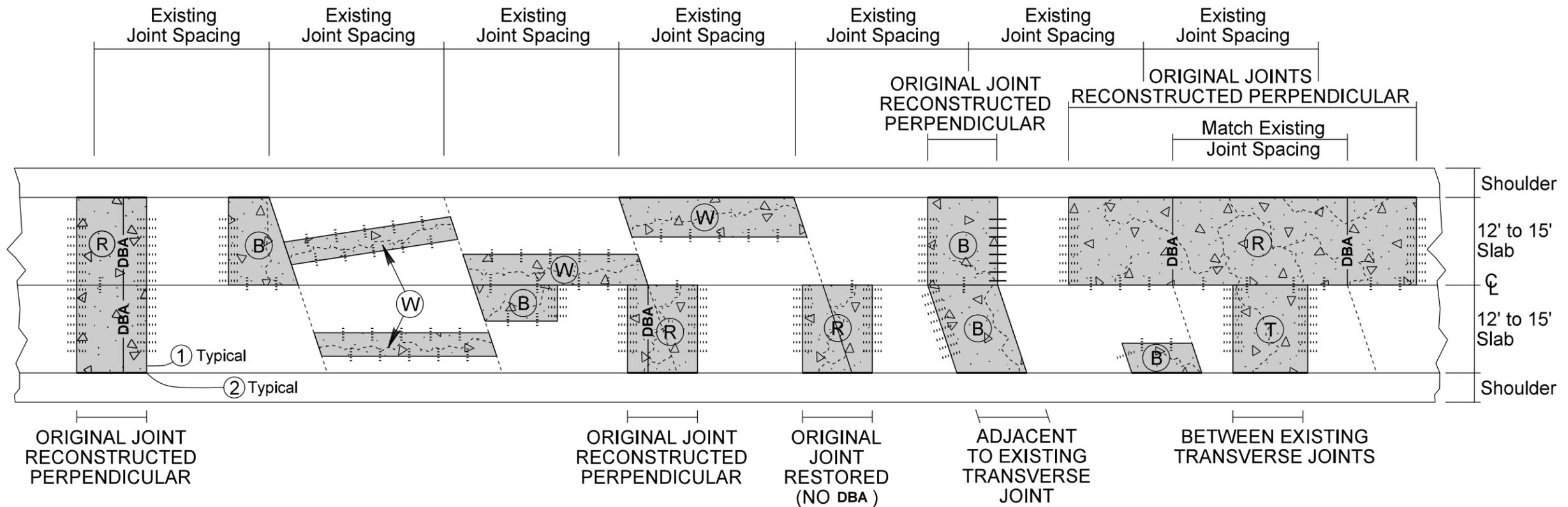
PLOTTED FROM - TRHJINT05

NONREINFORCED PCC PAVEMENT REPAIR

UP TO TWO LANE ROADWAY OR UP TO FOUR LANE DIVIDED ROADWAY
TYPICAL REPAIR AREAS IN SKEWED PAVEMENT

STATE OF SOUTH DAKOTA	PROJECT NH-P 00SW(53)	SHEET 53	TOTAL SHEETS 61
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Plotting Date: 01/25/2016



KEY:

PCC Pavement Repair Area

PCC PAVEMENT REPAIR AREA TYPES:

- (W) Two Working Joints
- (T) Two Tied Joints
- (B) One Working & One Tied Joint
- (R) Two Tied Joints with Original Joint Restored or made perpendicular

TRANSVERSE JOINT RECONSTRUCTION

Tied joints may be reconstructed perpendicular.

Working joints may be reconstructed perpendicular provided the joint being replaced extends full lane width.

Steel Bars for Transverse Joints

Pavement Thickness $\geq 10.5"$

— Drilled in $1\frac{1}{2}"$ 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 $\geq 8.5"$ and $< 10.5"$

— Drilled in $1\frac{1}{4}"$ 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.

PLOT SCALE - 1:9

PLOTTED FROM - TRHJINT05

PLOT NAME - 5

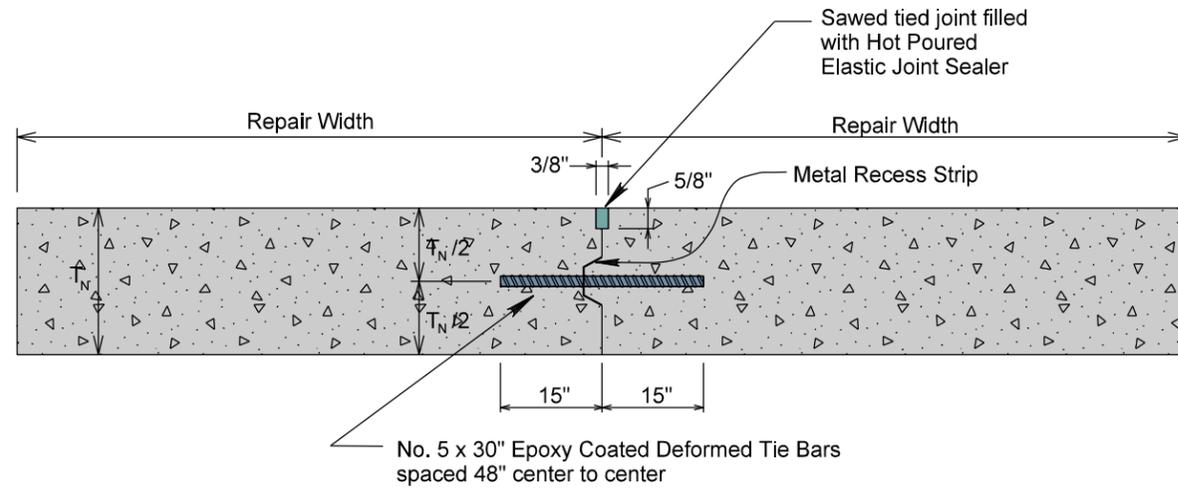
FILE - ... \NEW FOLDER\SPALL.DGN

NONREINFORCED PCC PAVEMENT REPAIR

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 00SW(53)	54	61

Plotting Date: 01/25/2016

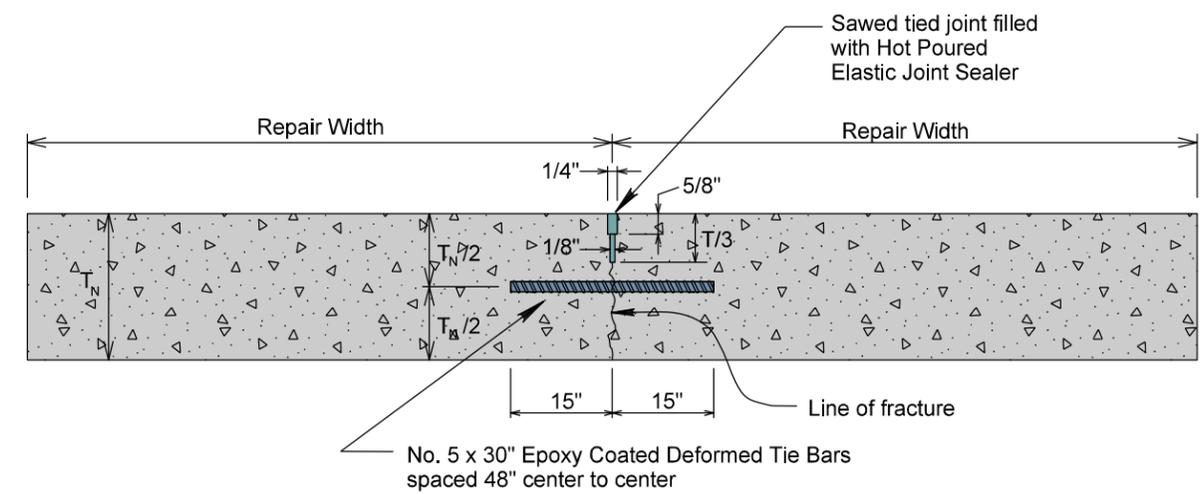
LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS & KEYWAY



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 and/or Fast Track Concrete for PCC Pavement Repair.

SAWED LONGITUDINAL JOINT

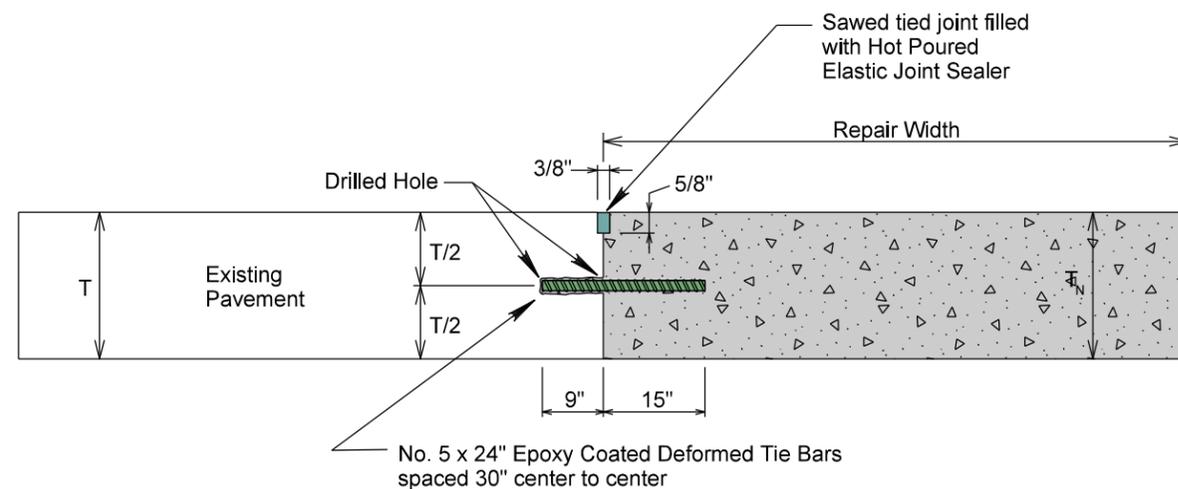


T_N = New pavement thickness.

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 and/or Fast Track Concrete for PCC Pavement Repair.

LONGITUDINAL CONSTRUCTION JOINT WITH DRILLED IN TIE BARS



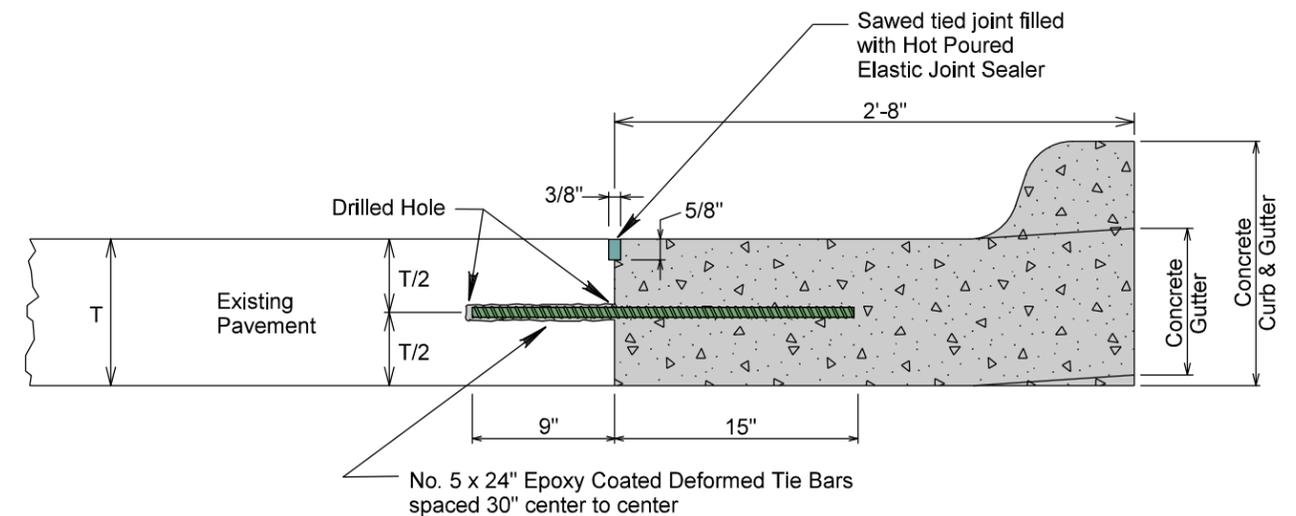
T = Existing pavement thickness.
 T_N = New pavement thickness.

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.

PLOT SCALE - 1:11.25

PLOTTED FROM - TRHJINT05

PLOT NAME - 15

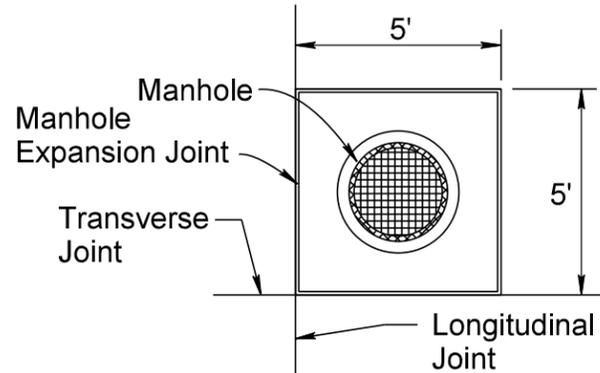
FILE - ... \DGN\PCCPREPAIR\BARS.DGN

TYPICAL PCC PAVEMENT REPAIR AROUND MANHOLES

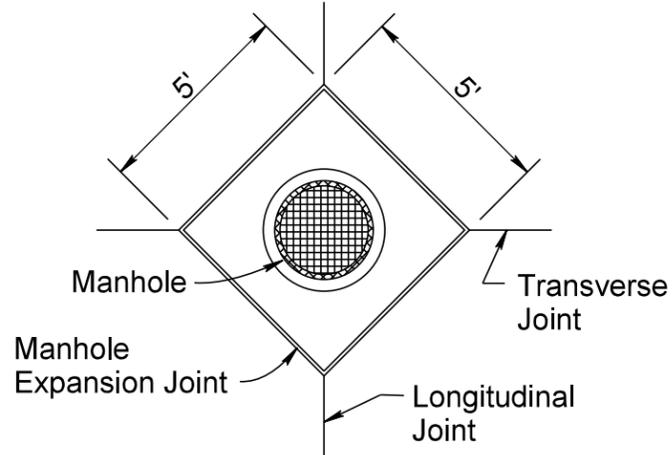
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 00SW(53)	56	61

Plotting Date: 02/17/2016

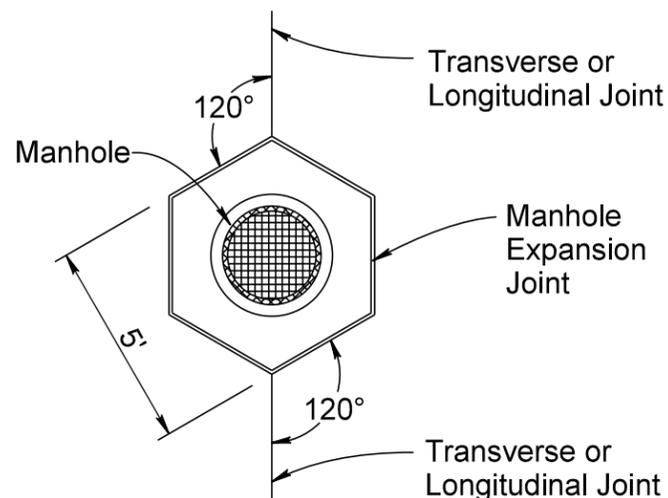
BOX-OUT DETAIL IN PCC PAVEMENT



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

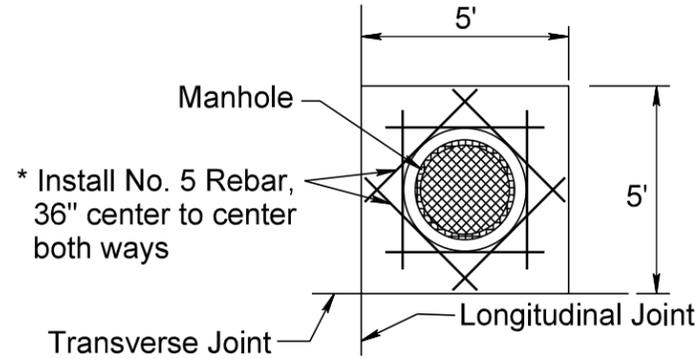


Where the utility access is intersected by the longitudinal and transverse joints



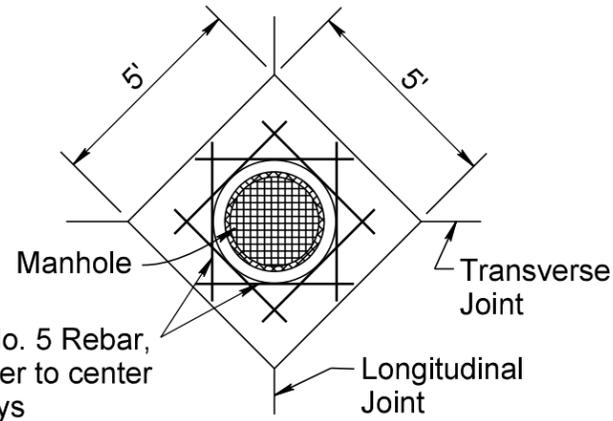
Where no Longitudinal or Transverse joints are present or at Longitudinal or Transverse joint.

REBAR LAYOUTS IN PCC PAVEMENT WITH BOX-OUT



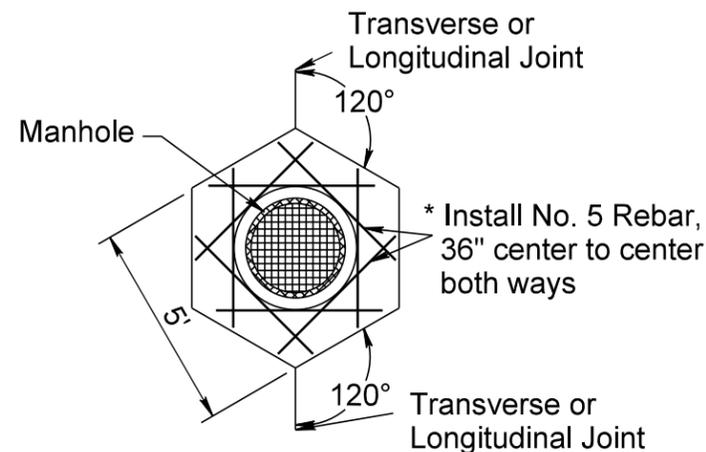
* Install No. 5 Rebar, 36" center to center both ways

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



* Install No. 5 Rebar, 36" center to center both ways

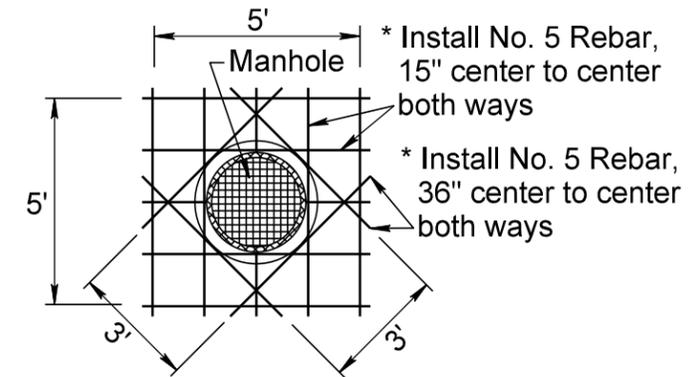
Where the utility access is intersected by the longitudinal and transverse joints



* Install No. 5 Rebar, 36" center to center both ways

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

REBAR LAYOUT IN PCC PAVEMENT WITHOUT BOX-OUT

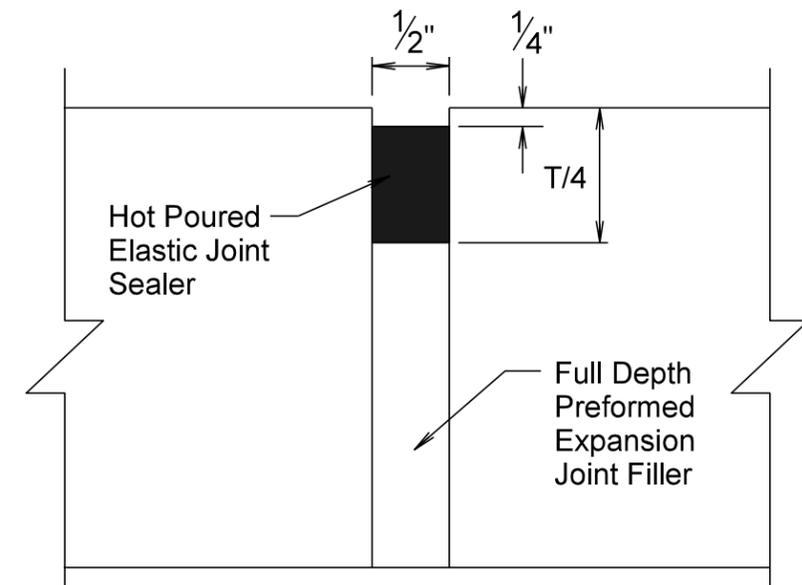


* Install No. 5 Rebar, 15" center to center both ways

* Install No. 5 Rebar, 36" center to center both ways

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

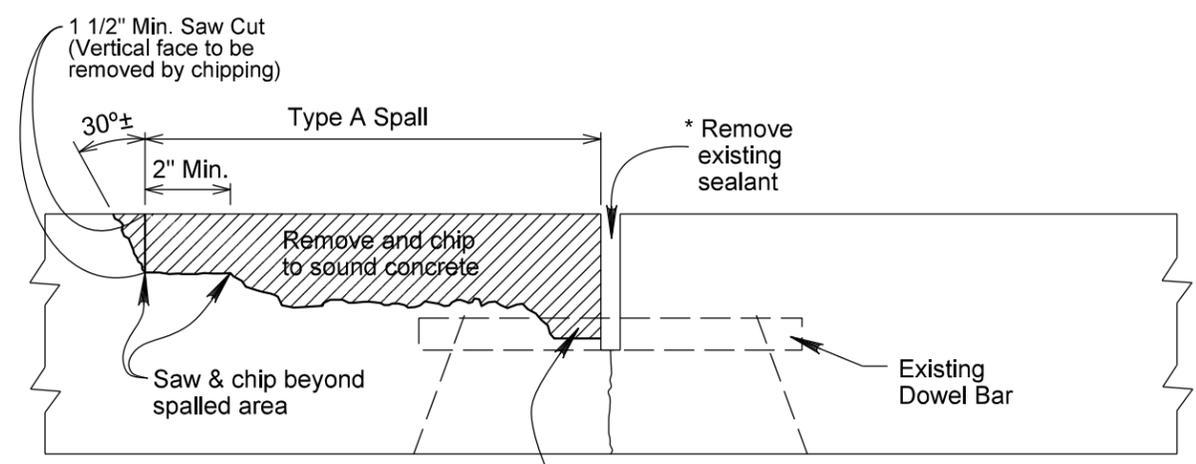
MANHOLE EXPANSION JOINT DETAIL



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

REPAIR OF TYPE A SPALLS

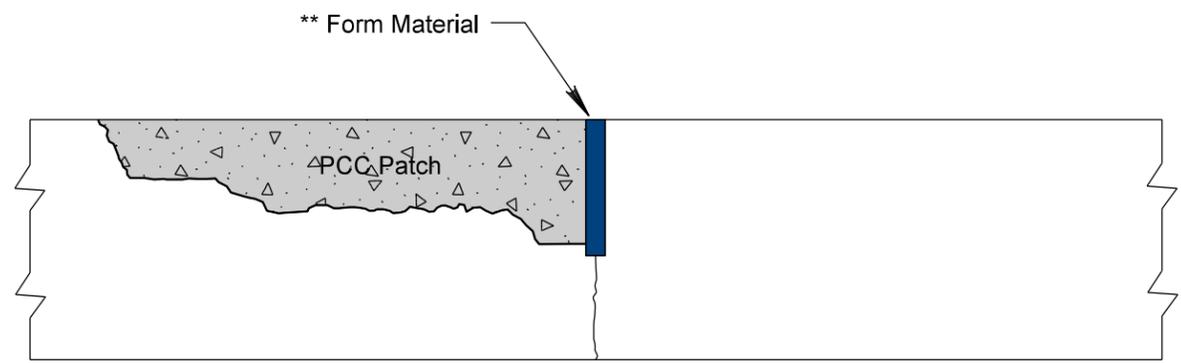
SPALL REMOVAL



If Dowel Bar is exposed coat the bar with duct tape as a bond breaker

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

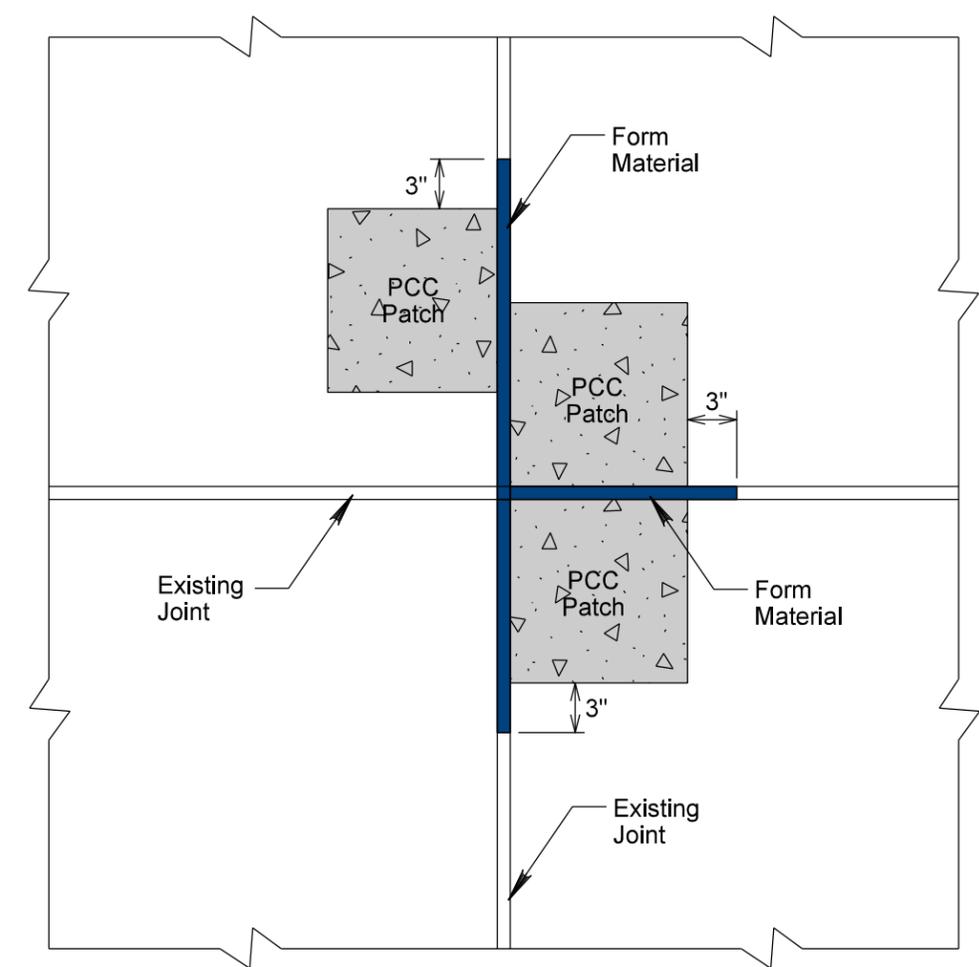
SPALL PATCH

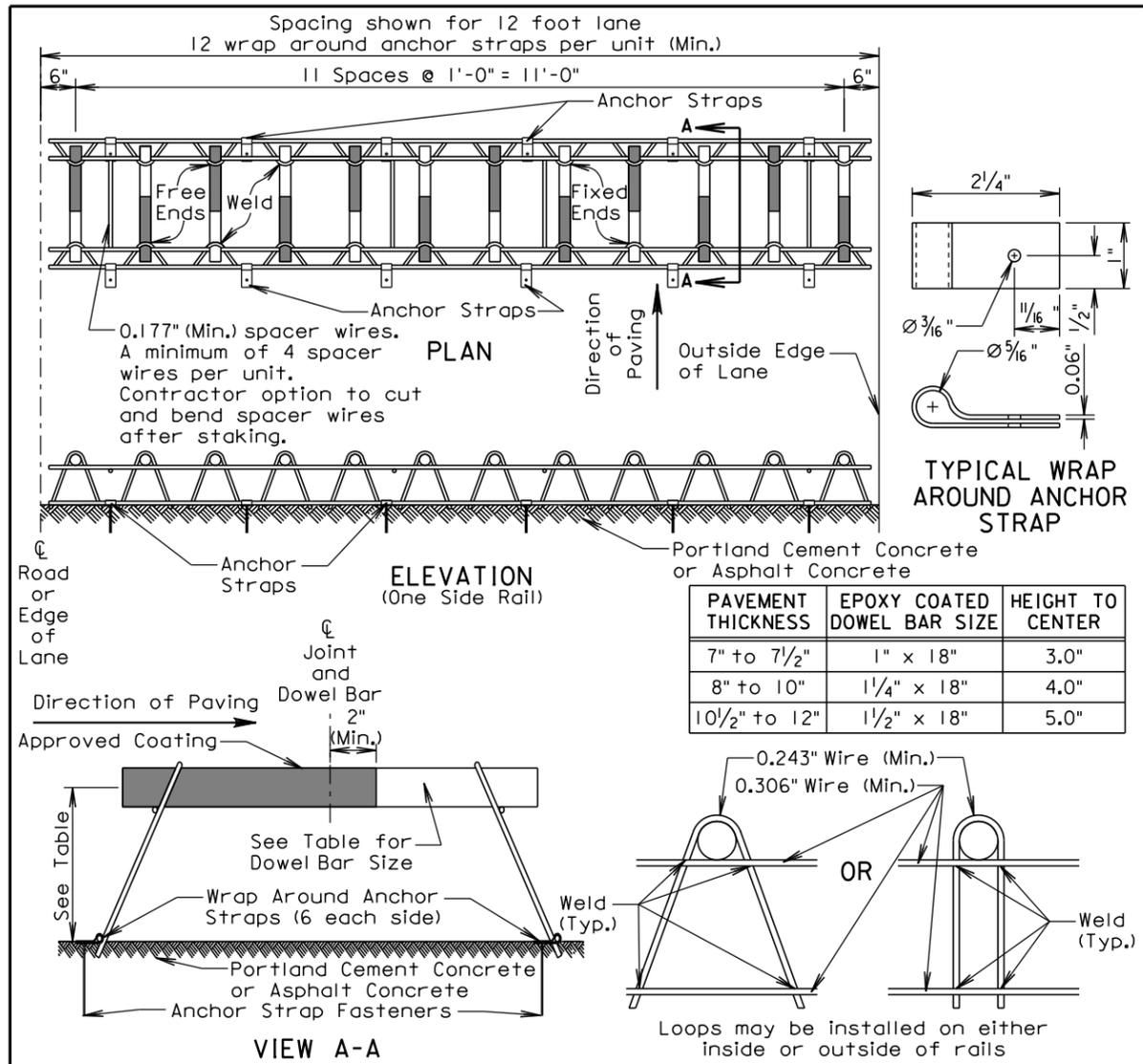


** Form Material shall be removed by sawing or other means approved by the Engineer. Spall repaired joints shall then be sealed with Backer Rod and Low Modulus Silicone Sealant.

REPAIR OF TYPE A SPALLS

SPALL PATCHES (PLAN VIEW)





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 $\pm 1/8$ inch in 18 inches and to all other dowel bars in the assembly $\pm 1/16$ inch in 18 inches.

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

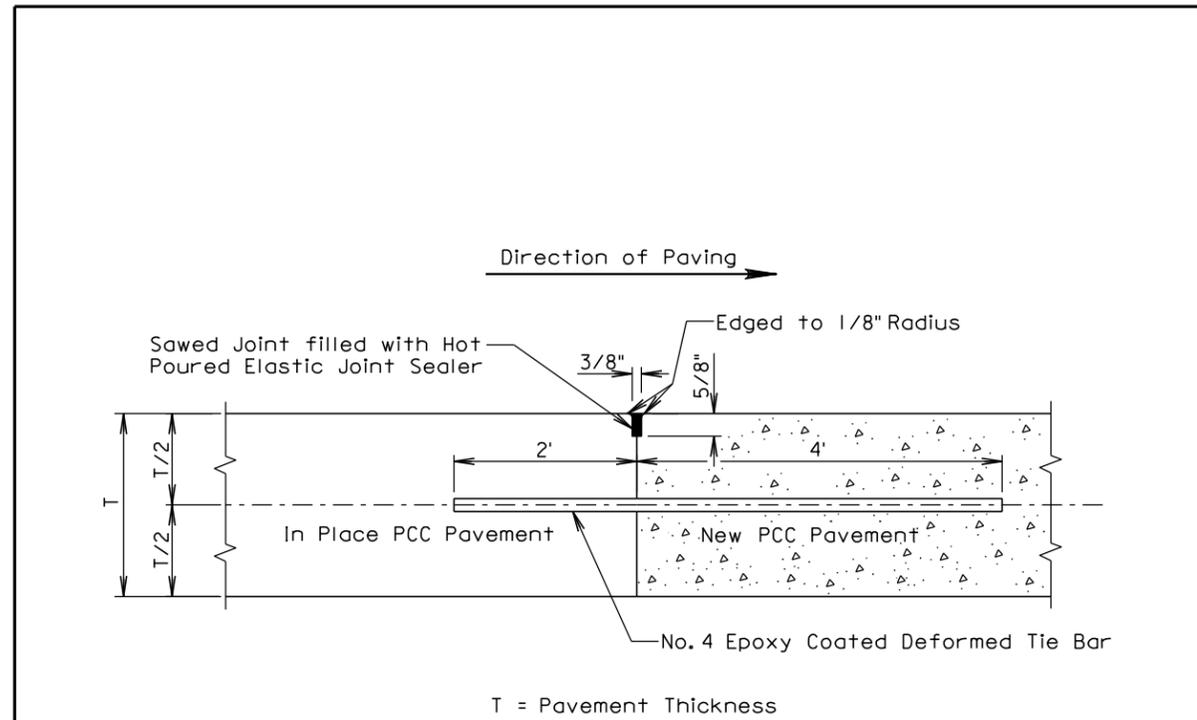
The transverse contraction joints shall be sawed perpendicular to the centerline of the roadway and the dowel bars shall be centered on the sawed joint ± 1 inch.

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.

Appropriate anchor strap fasteners shall be used to prevent movement of the dowel bar assemblies during the paving operation.

August 30, 2013

Published Date: 1st Qtr. 2016	S D D O T	PCC PAVEMENT DOWEL BAR ASSEMBLY FOR TRANSVERSE CONTRACTION JOINTS 12 Bar Assembly on Hard Surfaced Base Material	PLATE NUMBER 380.02
			Sheet 1 of 1



GENERAL NOTES:

No. 4 epoxy coated deformed tie bars shall be spaced 12 inches center to center and shall be a minimum of 3 inches and a maximum of 6 inches from the pavement edges.

The minimum distance between a transverse construction joint with tie bars and an adjacent transverse contraction joint shall be 5 feet.

When a transverse construction joint is made, paving will not be allowed in this area for 12 hours.

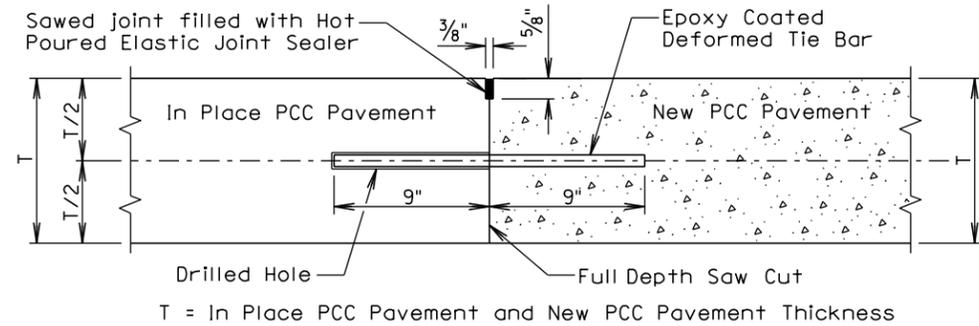
A transverse construction joint may be placed in lieu of the transverse contraction joint when shown in the plans.

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

June 26, 2013

Published Date: 1st Qtr. 2016	S D D O T	PCC PAVEMENT MID PANEL TRANSVERSE CONSTRUCTION JOINT	PLATE NUMBER 380.07
			Sheet 1 of 1

**DETAIL A
TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS**



GENERAL NOTES:

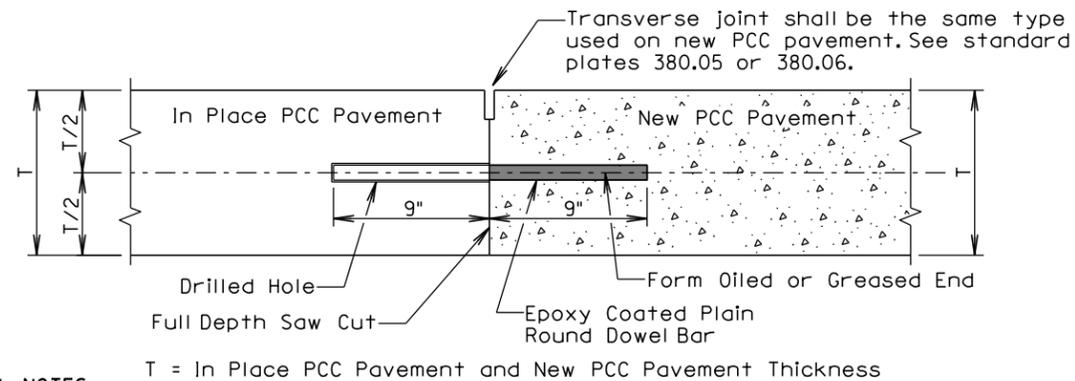
The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

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

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

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

**DETAIL B
TRANSVERSE CONSTRUCTION JOINT WITH DOWEL BARS**



GENERAL NOTES:

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

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

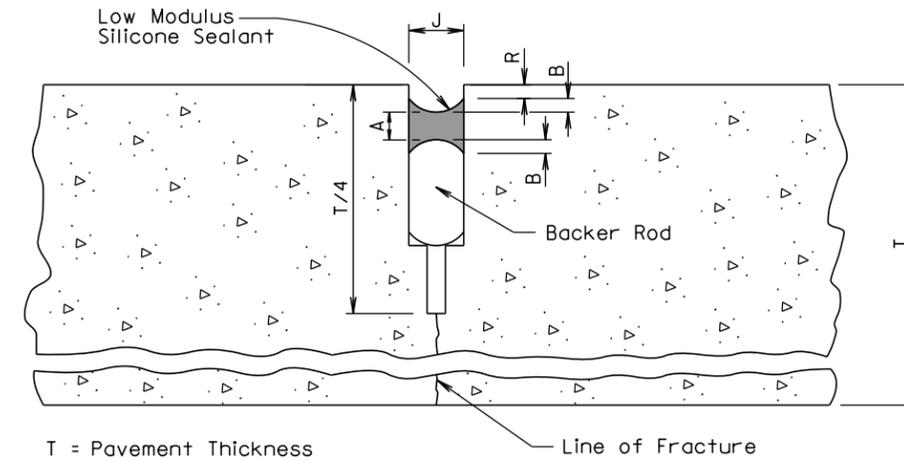
The plain round dowel bars shall be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

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

September 6, 2013

S D D O T	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.08
		Sheet 1 of 2

Published Date: 1st Qtr. 2016



**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

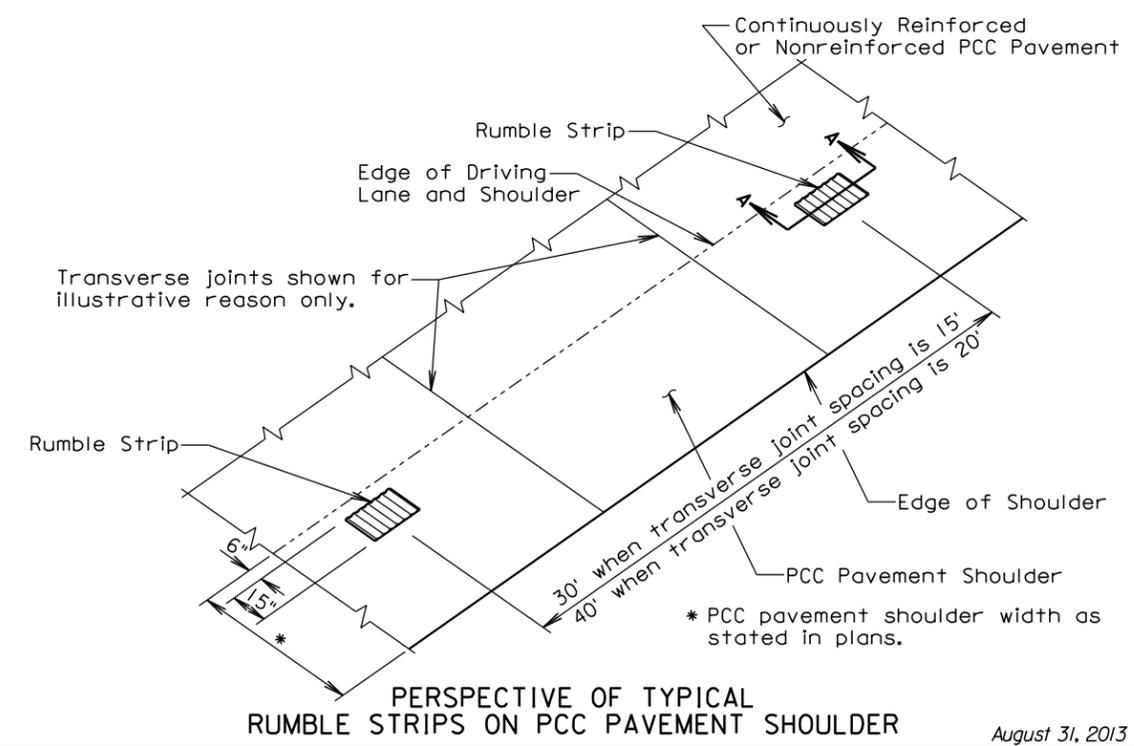
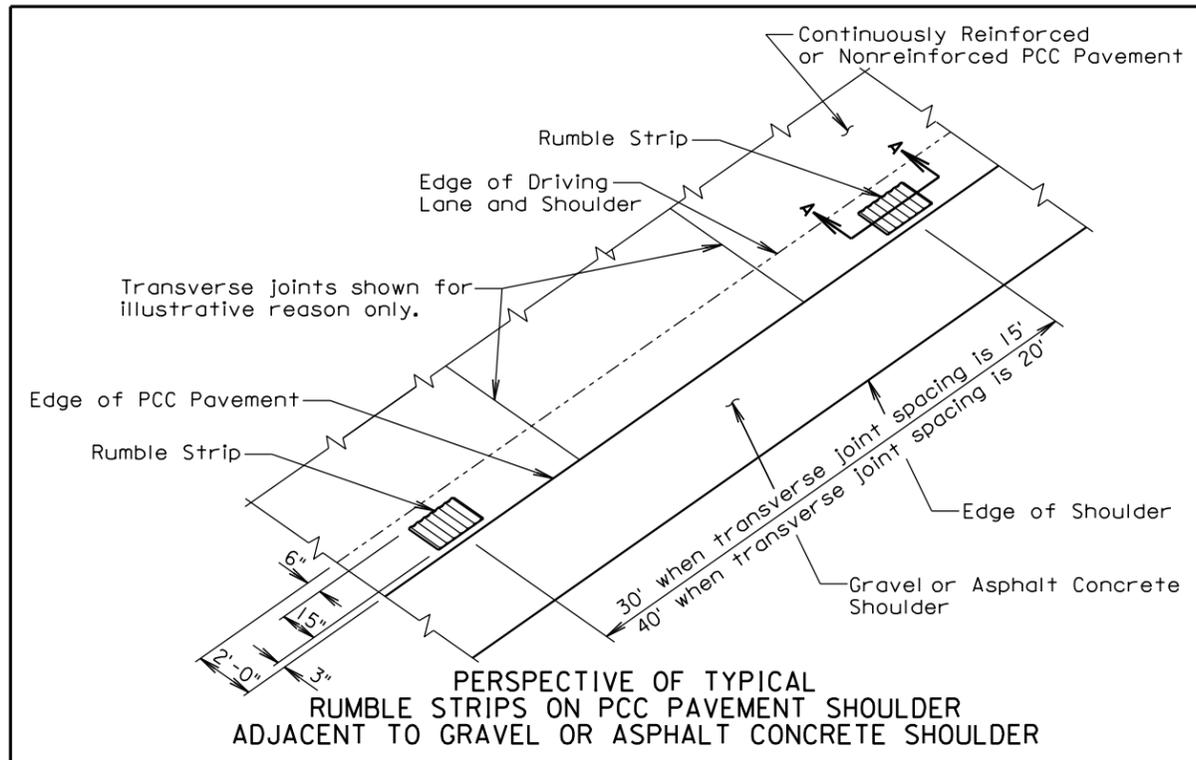
GENERAL NOTE:

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

S D D O T	RESEAL PCC PAVEMENT JOINT (SILICONE)	PLATE NUMBER 380.13
		Sheet 1 of 1

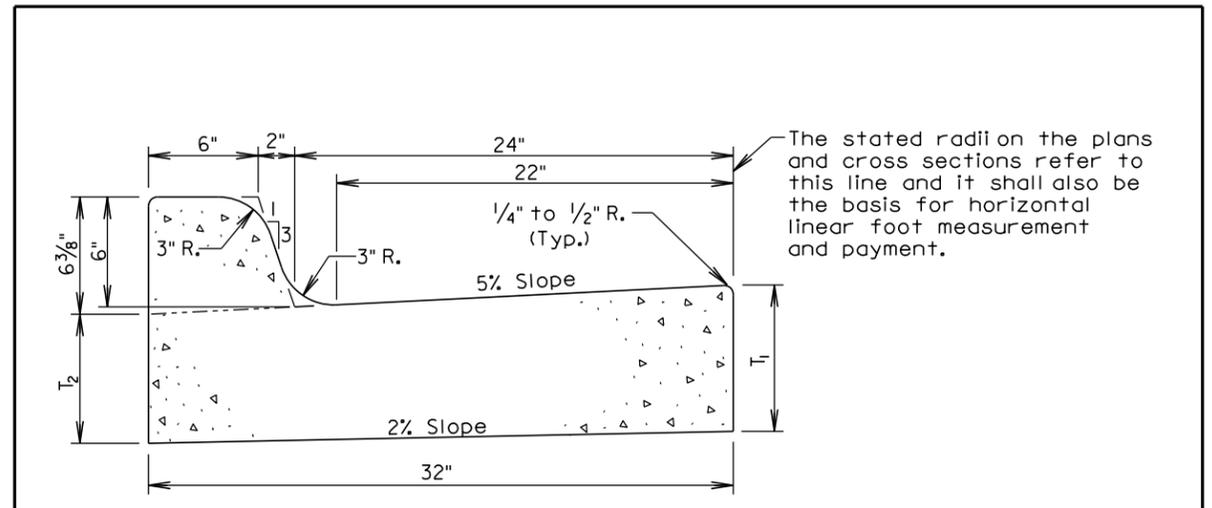
Published Date: 1st Qtr. 2016



August 31, 2013

S D D O T	RUMBLE STRIP ON PCC PAVEMENT SHOULDER	PLATE NUMBER 380.15
		Sheet 1 of 2

Published Date: 1st Qtr. 2016



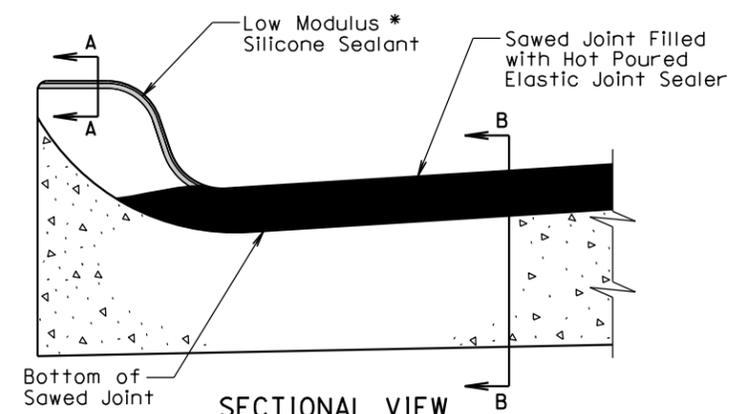
Type	T ₁ (Inches)	T ₂ (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
B66	6	5/16	0.057	17.7
B67	7	6/16	0.065	15.4
B68	8	7/16	0.073	13.7
B68.5	8.5	7 7/16	0.077	13.0
B69	9	8/16	0.081	12.3
B69.5	9.5	8 9/16	0.085	11.7
B610	10	9/16	0.090	11.2
B610.5	10.5	9 9/16	0.094	10.7
B611	11	10/16	0.098	10.2
B611.5	11.5	10 9/16	0.102	9.8
B612	12	11/16	0.106	9.4

GENERAL NOTES:
 When concrete curb and gutter longitudinally adjoins new concrete pavement, the method of attachment shall be by one of the methods shown on Standard Plate 380.11.
 See Standard Plate 650.90 for expansion and contraction joints in the curb and gutter.

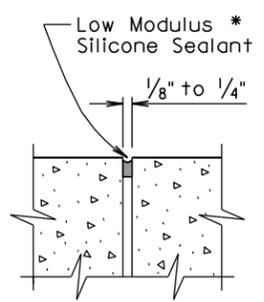
September 6, 2008

S D D O T	TYPE B CONCRETE CURB AND GUTTER	PLATE NUMBER 650.01
		Sheet 1 of 1

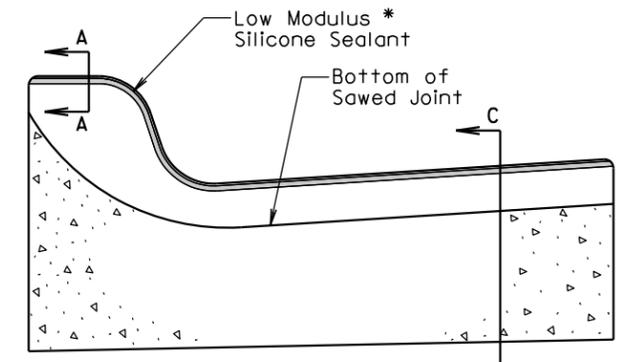
Published Date: 1st Qtr. 2016



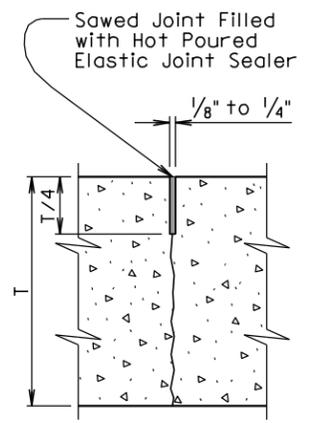
SECTIONAL VIEW
(Curb and Gutter Placed Monolithic with Adjacent Mainline PCC Pavement)



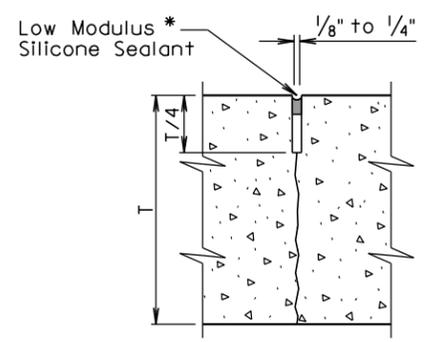
SECTION A-A



SECTIONAL VIEW
(Curb and Gutter not Placed Monolithic with Adjacent Mainline PCC Pavement or Mainline Surfacing is not PCC Pavement)



SECTION B-B



SECTION C-C

* The silicone sealant shall be placed such that it completely seals the joint and is bonded to the sides of the clean joint as approved by the Engineer.

September 6, 2013

Published Date: 1st Qtr. 2016

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JOINTS IN CONCRETE CURB AND GUTTER

PLATE NUMBER
650.90

Sheet 1 of 2