STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	1	104
Plotting Date: 21-MAR-2011			

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

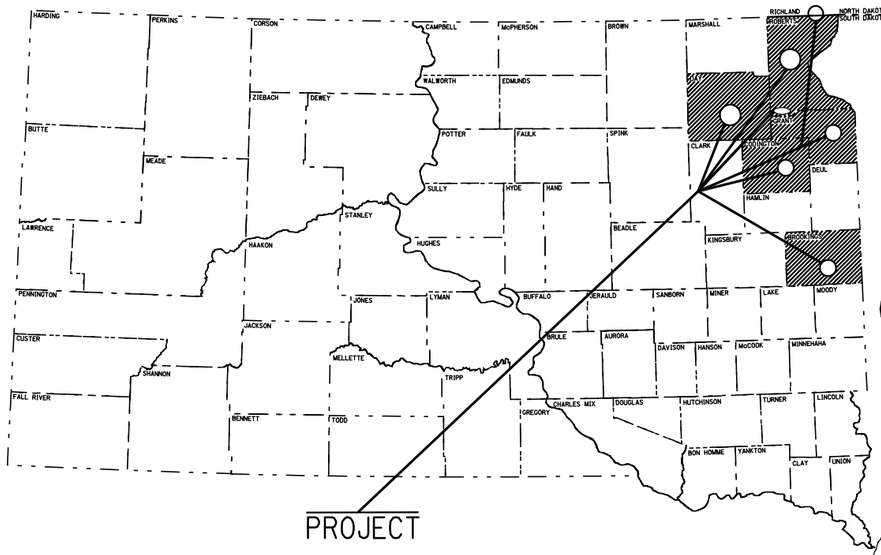
PLANS FOR PROPOSED

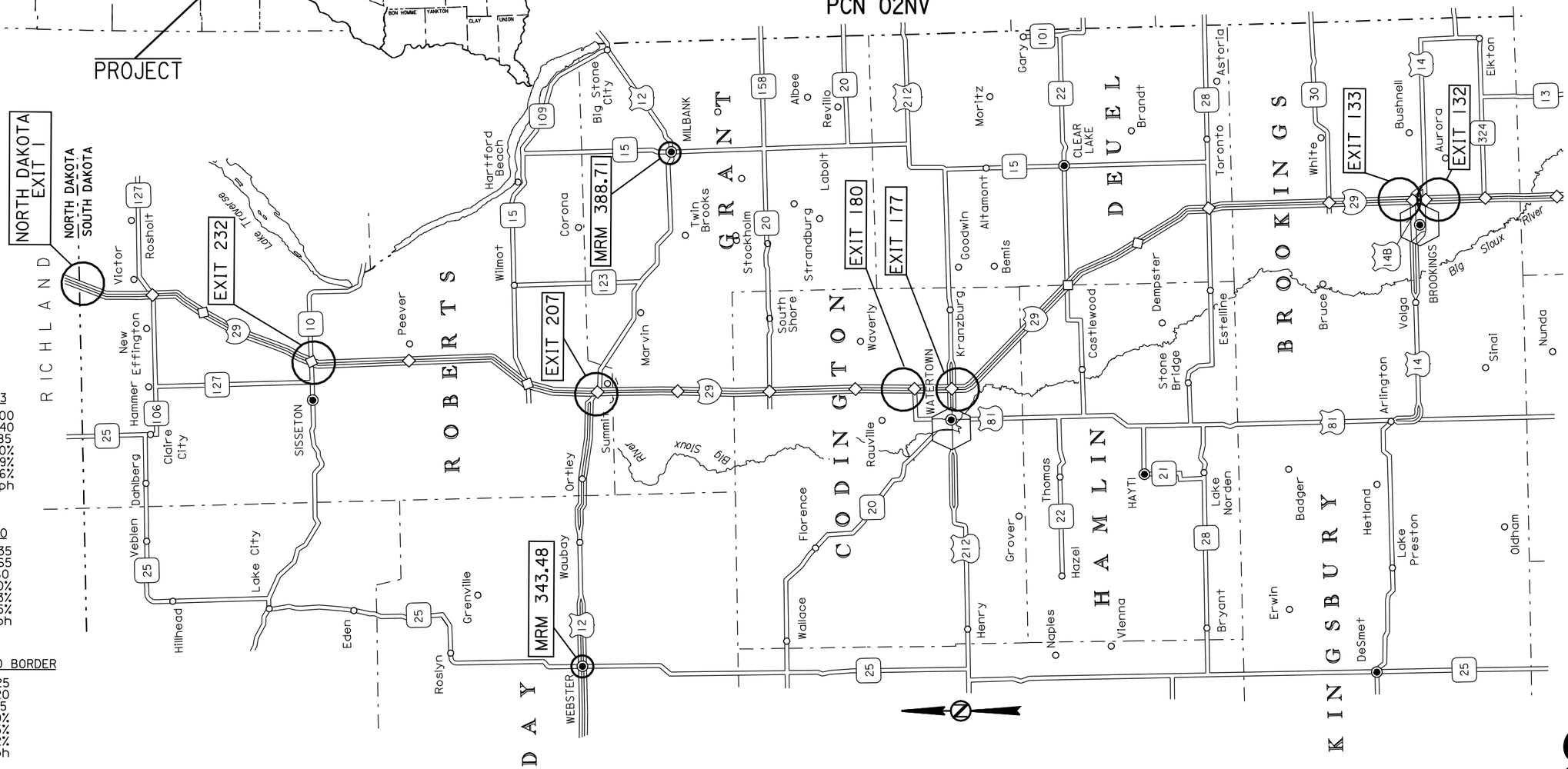
PROJECT IM 000S(263)
INTERSTATE 29
ROBERTS, GRANT, DAY, CODINGTON, BROOKINGS, & RICHLAND COUNTIES

ROAD CLOSURE GATE & SIGN INSTALLATION
PCN 02NV

INDEX OF SHEETS

See Sheet 2





DESIGN DESIGNATION
I-29 Exits 132 & 133

ADT (2009)	8700
ADT (2029)	16540
DHV	1785
D	50%
T DHV	8.9%
T ADT	19.6%
V	75 mph

DESIGN DESIGNATION
I-29 Exits 177 & 180

ADT (2009)	6935
ADT (2029)	10065
DHV	1380
D	50%
T DHV	9.3%
T ADT	20.5%
V	75 mph

DESIGN DESIGNATION
I-29 Exits 207, 232 & ND BORDER

ADT (2009)	4925
ADT (2029)	8920
DHV	1225
D	50%
T DHV	11.5%
T ADT	25.2%
V	75 mph

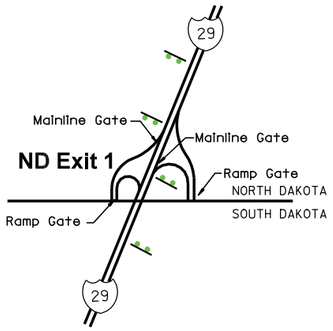
STORM WATER PERMIT

None Required

8

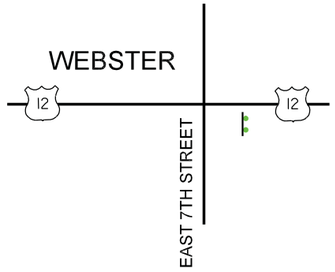
ROAD CLOSURE GATE & ADVANCE SIGN LOCATIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	2	104
Plotting Date: 22-MAR-2011			



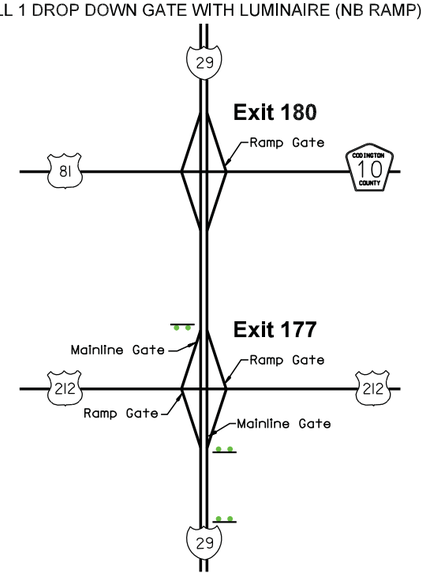
INSTALL 4 DROP DOWN GATES (2 MAINLINE - 2 RAMP)
INSTALL ADVANCE AND RAMP SIGNS - (NB & SB)

US 12 - MRM 343.48

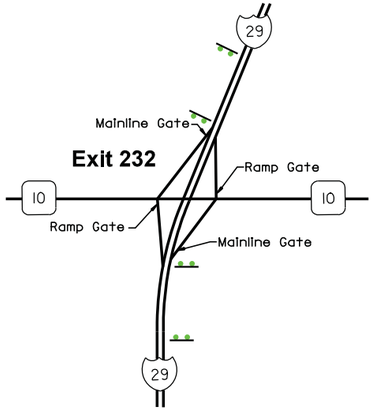


INSTALL ADVANCE SIGN - (EB)

INSTALL 1 DROP DOWN GATE WITH LUMINAIRE (NB RAMP)

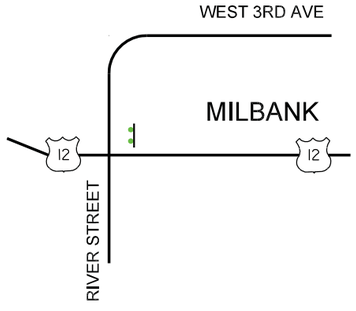


INSTALL 4 DROP DOWN GATES (2 MAINLINE - 2 RAMP)
INSTALL ADVANCE AND RAMP SIGNS - (NB & SB)



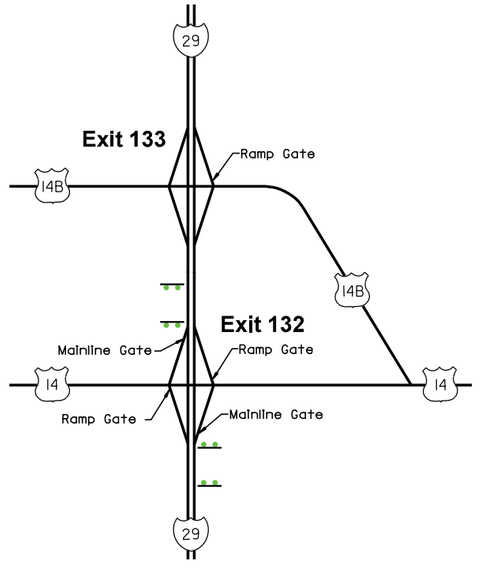
INSTALL 4 DROP DOWN GATES (2 MAINLINE - 2 RAMP)
INSTALL ADVANCE AND RAMP SIGNS - (NB & SB)

US 12 - MRM 388.71

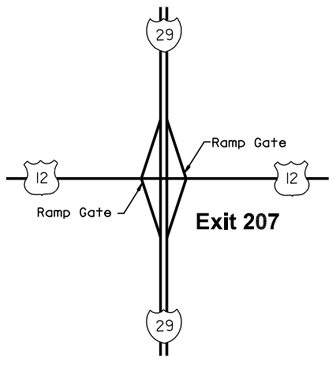


INSTALL ADVANCE SIGN - (WB)

INSTALL 1 DROP DOWN GATE WITH LUMINAIRE (NB RAMP)



INSTALL 4 DROP DOWN GATES (2 MAINLINE - 2 RAMP)
INSTALL ADVANCE AND RAMP SIGNS - (NB & SB)



INSTALL 2 DROP DOWN GATES (2 RAMP)

INDEX OF SHEETS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	3	104

ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E0130	Remove Traffic Sign	15	Each
110E1540	Remove Luminaire Pole Footing	2	Each
250E0010	Incidental Work	Lump Sum	LS
632E0014	1.75' Diameter Breakaway Support Concrete Footing	290.0	Ft
632E1225	W6x12 Steel Post	633.5	Ft
632E1255	W8x28 Steel Post	340.0	Ft
632E3115	Extruded Aluminum Sign, Nonremovable Copy Super/Very High Intensity	2,003.0	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	120.0	SqFt
634E0010	Flagging	50	Hour
634E0100	Traffic Control	934	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Panel	2	Each
635E3330	Roadway Luminaire, 250 Watt with Photoelectric Cell	10	Each
635E3999	Luminaire Arm	2	Each
635E4010	1 Section Vehicle Signal Head	52	Each
635E5020	2' Diameter Footing	16.0	Ft
635E5025	2.5' Diameter Footing	160.0	Ft
635E5302	Type 2 Electrical Junction Box	129	Each
635E5360	Surface Mounted Junction Box	4	Each
635E5400	Electrical Service Cabinet	7	Each
635E5500	Meter Socket	2	Each
635E7500	Remove and Reset Luminaire Pole	2	Each
635E8020	2" Rigid Galvanized Steel Conduit	1,251	Ft
635E8120	2" Rigid Conduit, Schedule 40	39,095	Ft
635E8130	3" Rigid Conduit, Schedule 40	116	Ft
635E8220	2" Rigid Conduit, Schedule 80	2,691	Ft
635E9014	1/C #4 AWG Copper Wire	1,249	Ft
635E9016	1/C #6 AWG Copper Wire	142,668	Ft
635E9710	2/C #10 AWG Copper Pole and Bracket Cable	630	Ft
900E0045	Drop Arm Road Closure Gate	20	Each

SPECIFICATIONS

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

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	4	104

ROAD CLOSURE GATE & SIGNING INSTALLATION TABLES

LOCATION DATA		SIGN DATA								POST DATA				GATE DATA		FOOTING DATA			ELECTRICAL DATA	
EXIT #	STATION	SIGN or GATE NUMBER	SIGN DESCRIPTION	SIGN CODE	SIGN SIZE (FT)	EXTRUDED ALUMINUM SIGN, NONREMOVABLE COPY SUPER/VERY HIGH INTENSITY (SQ FT)	FLAT ALUMINUM SIGN, NONREMOVABLE COPY SUPER/VERY HIGH INTENSITY (SQ FT)	DIRECTION OF TRAVEL	OFFSET* RIGHT/LEFT	POST LENGTHS (ABOVE GROUND) (FT)		SIZE & QUANTITY W6X12 (FT)	SIZE & QUANTITY W8X28 (FT)	DROP ARM ROAD CLOSURE GATE (EACH)	GATE ARM LENGTH (FT)	SIGNING 1' 9" DIAMETER FOOTING (FT)	LIGHTING 2' 6" DIAMETER FOOTING (FT)	FOOTING LENGTH(S) (FT)	RDWY LUMIN 250 WATT W/PHOTO CELL (EACH)	1 SECTION VEHICLE SIGNAL HEAD (EACH)
						632E3115	632E3205			INSIDE	OUTSIDE	632E1225	632E1225	900E0045	NABI	632E0014	635E5025		635E3330	635E4010
	170+45 ±	C	I 29 CLOSED WHEN FLASHING 1 MILE AHEAD	SPECIAL	9.0 X 6.5	58.5		NB	Left	17.0	18.5	35.5				8.0		4' 0"		2
	170+45 ±	C	I 29 CLOSED WHEN FLASHING 1 MILE AHEAD	SPECIAL	9.0 X 6.5	58.5		NB	Right	17.0	18.5	35.5				8.0		4' 0"		2
	125+20 ±	D	I 29 CLOSED WHEN FLASHING EXIT ↗	SPECIAL	12.5 X 9.5	118.8		NB	Right	20.5	22.0		42.5			18.0		9' 0"		2
	117+99.0 72.5' Lt	SG3	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	NB						1	25		8.0	8' 0"		
132	106+89.0 485.0'Rt	SG1	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	SB						1	35		8.0	8' 0"		
	104+52.0 554.0'Lt	SG2	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	NB						1	31		8.0	8' 0"		
	93+31.0 74.0'Rt	SG4	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	SB						1	25		8.0	8' 0"		
	85+50 ±	D	I 29 CLOSED WHEN FLASHING EXIT ↗	SPECIAL	12.5 X 9.5	118.8		SB	Right	20.5	22.0		42.5			18.0		9' 0"		2
	61+70	A	I 29 CLOSED WHEN FLASHING 1/2 MILE AHEAD	SPECIAL	9.0 X 6.5	58.5		SB	Right	17.0	18.5	35.5				8.0		4' 0"		2
	61+70	A	I 29 CLOSED WHEN FLASHING 1/2 MILE AHEAD	SPECIAL	9.0 X 6.5	58.5		SB	Left	17.0	18.5	35.5				8.0		4' 0"		2
133	52+81.0 491.5'Lt	SG5	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	NB						1	25		8.0	8' 0"	1	
TOTALS THIS SHEET						471.5	30.0					142.0	85.0	5		68.0	40.0		1	12

* OFFSET IS SIDE OF ROADWAY FOR SIGN LOCATION. LEFT INDICATES MEDIAN AND RIGHT INDICATES OUTSIDE SHOULDER.

PLOTTED FROM - TRAB17882

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	5	104

ROAD CLOSURE GATE & SIGNING INSTALLATION TABLES

LOCATION DATA		SIGN DATA								POST DATA				GATE DATA		FOOTING DATA			ELECTRICAL DATA	
EXIT #	STATION	SIGN or GATE NUMBER	SIGN DESCRIPTION	SIGN CODE	SIGN SIZE (FT)	EXTRUDED ALUMINUM SIGN, NONREMOVABLE COPY SUPER/VERY HIGH INTENSITY (SQ FT)	FLAT ALUMINUM SIGN, NONREMOVABLE COPY SUPER/VERY HIGH INTENSITY (SQ FT)	DIRECTION OF TRAVEL	OFFSET* RIGHT/LEFT	POST LENGTHS (ABOVE GROUND) (FT)		SIZE & QUANTITY W6X12 (FT)	SIZE & QUANTITY W8X28 (FT)	DROP ARM ROAD CLOSURE GATE (EACH)	GATE ARM LENGTH (FT)	SIGNING 1' 9" DIAMETER FOOTING (FT)	LIGHTING 2' 6" DIAMETER FOOTING (FT)	FOOTING LENGTH(S) (FT)	RDWY LUMIN 250 WATT W/PHOTO CELL (EACH)	1 SECTION VEHICLE SIGNAL HEAD (EACH)
						632E3115	632E3205			INSIDE	OUTSIDE	632E1225	632E1225	900E0045	NABI	632E0014	635E5025		635E3330	635E4010
	a 92+00 ±	A	I 29 CLOSED WHEN FLASHING 1/2 MILE AHEAD	SPECIAL	9.0 X 6.5	58.5		NB	Left	17.0	18.5	35.5				8.0		4' 0"		2
	a 92+00 +	A	I 29 CLOSED WHEN FLASHING 1/2 MILE AHEAD	SPECIAL	9.0 X 6.5	58.5		NB	Right	17.0	18.5	35.5				8.0		4' 0"		2
	a 73+50 +	D	I 29 CLOSED WHEN FLASHING EXIT ↗	SPECIAL	12.5 X 9.5	118.8		NB	Right	20.5	22.0		42.5			18.0		9' 0"		2
	a 65+60 80.0' Lt	SG8	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	NB						1	26		8.0	8' 0"		
177	a 54+50 324.6' Rt	SG6	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	SB						1	20		8.0	8' 0"		
	a 51+87.0 371.0' Lt	SG7	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	NB						1	29		8.0	8' 0"	1	
	a 40+92 80.5'Rt	SG9	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	SB						1	26		8.0	8' 0"		
	a 33+00 ±	D	I 29 CLOSED WHEN FLASHING EXIT ↗	SPECIAL	12.5 X 9.5	118.8		SB	Right	20.5	22.0		42.5			18.0		9' 0"		2
	888+50	C	I 29 CLOSED WHEN FLASHING 1 MILE AHEAD	SPECIAL	9.0 X 6.5	58.5		SB	Right	17.0	18.5	35.5				8.0		4' 0"		2
	888+50	C	I 29 CLOSED WHEN FLASHING 1 MILE AHEAD	SPECIAL	9.0 X 6.5	58.5		SB	Left	17.0	18.5	35.5				8.0		4' 0"		2
180	790+42.0 484.0'Lt	SG20	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0	.	6.0	NB	Left					1	20		8.0	8' 0"	1	
TOTALS THIS SHEET						471.5	30.0					142.0	85.0	5		68.0	40.0		2	12

* OFFSET IS SIDE OF ROADWAY FOR SIGN LOCATION. LEFT INDICATES MEDIAN AND RIGHT INDICATES OUTSIDE SHOULDER.

PLOTTED FROM - TRAB17882

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	6	104

ROAD CLOSURE GATE & SIGNING INSTALLATION TABLES

LOCATION DATA		SIGN DATA								POST DATA				GATE DATA		FOOTING DATA			ELECTRICAL DATA	
EXIT #	STATION	SIGN or GATE NUMBER	SIGN DESCRIPTION	SIGN CODE	SIGN SIZE (FT)	EXTRUDED ALUMINUM SIGN, NONREMOVABLE COPY SUPER/VERY HIGH INTENSITY (SQ FT)	FLAT ALUMINUM SIGN, NONREMOVABLE COPY SUPER/VERY HIGH INTENSITY (SQ FT)	DIRECTION OF TRAVEL	OFFSET* RIGHT/LEFT	POST LENGTHS (ABOVE GROUND) (FT)		SIZE & QUANTITY W6X12 (FT)	SIZE & QUANTITY W8X28 (FT)	DROP ARM ROAD CLOSURE GATE (EACH)	GATE ARM LENGTH (FT)	SIGNING 1' 9" DIAMETER FOOTING (FT)	LIGHTING 2' 6" DIAMETER FOOTING (FT)	FOOTING LENGTH(S) (FT)	RDWY LUMIN 250 WATT W/PHOTO CELL (EACH)	1 SECTION VEHICLE SIGNAL HEAD (YELLOW) (EACH)
						632E3115	632E3205			INSIDE	OUTSIDE	632E1225	632E1225	900E0045	NABI	632E0014	635E5025		635E3330	635E4010
207	70+21.0 456.0'Lt	SG11	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	SB						1	22		8.0	8" 0"	1	
	65+81.5 452.0'Rt	SG10	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	NB						1	24		8.0	8" 0"	1	
232	a 109+00 ±	B	I 29 CLOSED WHEN FLASHING 3/4 MILE AHEAD	SPECIAL	9.0 X 6.5	58.5		NB	Left	17.0	18.5	35.5				8.0		4' 0"		2
	a 109+00 +	B	I 29 CLOSED WHEN FLASHING 3/4 MILE AHEAD	SPECIAL	9.0 X 6.5	58.5		NB	Right	17.0	18.5	35.5				8.0		4' 0"		2
	a 76+22 +	D	I 29 CLOSED WHEN FLASHING EXIT ↗	SPECIAL	12.5 X 9.5	118.8		NB	Right	20.5	22.0		42.5			18.0		9' 0"		2
	a 67+55.0 79.5'Lt	SG14	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	NB						1	25		8.0	8' 0"	@	
	a 59+40.41 461.50'Rt	SG12	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	SB						1	22		8.0	8' 0"	1	
	a 54+38.40 461.11'Lt	SG13	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	NB						1	23		8.0	8' 0"	1	
	a 46+22 79.5'Rt	SG15	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	SB						1	25		8.0	8' 0"	@	
	a 38+12 ±	D	I 29 CLOSED WHEN FLASHING EXIT ↗	SPECIAL	12.5 X 9.5	118.8		SB	Right	20.5	22.0		42.5			18.0		9' 0"		2
	a 2+15 ±	B	I 29 CLOSED WHEN FLASHING 3/4 MILE AHEAD	SPECIAL	9.0 X 6.5	58.5		SB	Right	17.0	18.5	35.5				8.0		4' 0"		2
	a 2+15 +	B	I 29 CLOSED WHEN FLASHING 3/4 MILE AHEAD	SPECIAL	9.0 X 6.5	58.5		SB	Left	17.0	18.5	35.5				8.0		4' 0"		2
TOTALS THIS SHEET						471.5	36.0					142.0	85.0	6		68.0	48.0		4	12

* OFFSET IS SIDE OF ROADWAY FOR SIGN LOCATION. LEFT INDICATES MEDIAN AND RIGHT INDICATES OUTSIDE SHOULDER. @ Reuse Luminaire heads from in place poles.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	7	104

ROAD CLOSURE GATE & SIGNING INSTALLATION TABLES

LOCATION DATA		SIGN DATA								POST DATA				GATE DATA		FOOTING DATA			ELECTRICAL DATA	
										POST LENGTHS (ABOVE GROUND)		SIZE & QUANTITY				SIGNING	LIGHTING			
EXIT #	STATION	SIGN or GATE NUMBER	SIGN DESCRIPTION	SIGN CODE	SIGN SIZE (FT)	EXTRUDED ALUMINUM SIGN, NONREMOVABLE COPY SUPER/VERY HIGH INTENSITY (SQ FT)	FLAT ALUMINUM SIGN, NONREMOVABLE COPY SUPER/VERY HIGH INTENSITY (SQ FT)	DIRECTION OF TRAVEL	OFFSET* RIGHT/LEFT	(FT)		W6X12 (FT)	W8X28 (FT)	DROP ARM ROAD CLOSURE GATE (EACH)	GATE ARM LENGTH (FT)	1' 9" DIAMETER FOOTING (FT)	2' 6" DIAMETER FOOTING (FT)	FOOTING LENGTH(S) (FT)	RDWY LUMIN 250 WATT W/PHOTO CELL (EACH)	1 SECTION VEHICLE SIGNAL HEAD (EACH)
						632E3115	632E3205			INSIDE	OUTSIDE	632E1225	632E1225	900E0045	NABI	632E0014	635E5025		635E3330	635E4010
ND 1	a 19+00 ±	A	I 29 CLOSED WHEN FLASHING 1/2 MILE AHEAD	SPECIAL	9.0 X 6.5	58.5		NB	Left	17.0	18.5	35.5				8.0		4' 0"		2
	a 19+00 +	A	I 29 CLOSED WHEN FLASHING 1/2 MILE AHEAD	SPECIAL	9.0 X 6.5	58.5		NB	Right	17.0	18.5	35.5				8.0		4' 0"		2
	a 1+02 +	D	I 29 CLOSED WHEN FLASHING EXIT ↗	SPECIAL	12.5 X 9.5	118.8		NB	Right	20.5	22.0		42.5			18.0		9' 0"		2
	a 0+48.13 448.65'RT	SG16	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	NB		.				1	22		8.0	8' 0"	1	
	2261+84.0 78.6'Rt	SG17	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	SB						1	25		8.0	8' 0"		
	2271+50.00 1005.00'Lt	SG18	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	NB						1	25		8.0	8' 0"	1	
	2269+17.0 79.8'Lt	SG19	ROAD CLOSED	R11 2 (Special)	6.0 X 1.0		6.0	SB						1	25		8.0	8' 0"	1	
	2253+50 ±	D	I 29 CLOSED WHEN FLASHING EXIT ↗	SPECIAL	12.5 X 9.5	118.8		SB	Right	20.5	22.0		42.5			18.0		9' 0"		2
	2234+50 ±	A	I 29 CLOSED WHEN FLASHING 1/2 MILE AHEAD	SPECIAL	9.0 X 6.5	58.5		SB	Right	17.0	18.5	35.5				8.0		4' 0"		2
	2234+50 ±	A	I 29 CLOSED WHEN FLASHING 1/2 MILE AHEAD	SPECIAL	9.0 X 6.5	58.5		SB	Left	17.0	18.5	35.5				8.0		4' 0"		2
N/A	US 12 @ MRM 343.48 (Webster)	E	I 29 CLOSED WHEN FLASHING 22 MILES AHEAD	SPECIAL	9.0 X 6.5	58.5		EB	Right	18.0	19.5	37.5				8.0		4' 0"		2
N/A	US 12 @ MRM 388.71 (Milbank)	E	I 29 CLOSED WHEN FLASHING 22 MILES AHEAD	SPECIAL	9.0 X 6.5	58.5		WB	Right	14.0	14.0	28.0				10.0		5' 0"		2
TOTALS THIS SHEET						588.5	24.0					207.5	85.0	4		86.0	32.0		3	16
PROJECT TOTALS						2003.0	120.0					633.5	340.0	20		290.0	160.0		10	52

* OFFSET IS SIDE OF ROADWAY FOR SIGN LOCATION. LEFT INDICATES MEDIAN AND RIGHT INDICATES OUTSIDE SHOULDER.

TABLE OF CONDUIT AND CABLE QUANTITIES EXITS 132 & 133

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 000S(263)	8	104

Location to Location		Rigid Conduit						Copper Wire					Pole and Bracket Cable	
		Galvanized Steel	Schedule 40		Schedule 80									
		2"	2"	3"	2"			1/C #6 AWG					2/C #10 AWG	
		Ft	Ft	Ft	Ft			Ft					Ft	
SUPB 1	JB 1		66					235						
JB 1	SG 5				39			151					45	
JA 1	JA 2				82			284						
JA 2	JA 3		400					1267						
JA 3	JA 4				40			155						
JA 4	JA 5		535					1684						
JA 5	JA 6		500					1576						
JA 6	JA 7		500					1576						
JA 7	JA 8		455					1437						
JA 8	JA 9		350					1112						
JA 9	JA 10		390					1236						
JA 10	SG 4				48			179						
SG 4	JA 11				66			235						
JA 11	JA 12		392					1242						
JA 12	JA 13		500		126			1965						
JA 13	JA 14		500					1576						
JA 14	JA 15				116			389						
JA 15	SG 1		366					1162						
JA 14	JA 16				102			692						
JA 16	JA 17		360					2287						
JA 17	JA 18				75			525						
JA 18	SUPA 1			116				1557						
JA 18	JA 19		435					2750						
JA 19	JA 20		436					2756						
JA 20	JA 21		268					1718						
JA 21	SG 3				50			247						
JA 21	JA 22		332					1057						
JA 22	JA 23		392					1242						
JA 23	JA 24		475					1499						
JA 24	JA 25		475					1499						
JA 25	JA 26		475					1499						
JA 26	JA 27		475					1499						
JA 27	JA 28		475					1499						
JA 28	JA 29		488					1539						
JA 29	SJA 1	18						87						
SJA 1	SJA 2	146						482						
SJA 2	JA 30	21						96						
JA 30	JA 31		500					1576						
JA 31	JA 32		500					1576						
JA 32	JA 33		500					1576						
JA 33	JA 34				79			275						
EJA 5	SG 2		47					176						
6 Advance Warning Signs		240						773						
Subtotal:		**425**	**11587**	**116**	**823**	**0**	**0**	**47941**	**0**	**0**	**0**	**0**	**45**	**0**

TABLE OF CONDUIT AND CABLE QUANTITIES EXIT 177 & 180

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 000S(263)	9	104

Location to Location		Rigid Conduit						Copper Wire					Pole and Bracket Cable		
		Galvanized Steel	Schedule 40		Schedule 80										
		2" Ft	2" Ft		2" Ft			1/C #6 AWG Ft					2/C #10 AWG Ft		
JC 1	JC 2				81			281							
JC 2	JC 3		304					970							
JC 3	JC 4		500					1576							
JC 4	JC 5		500					1576							
JC 5	JC 6		500					1576							
JC 6	JC 7		500					1576							
JC 7	JC 8		500					1576							
JC 8	JC 9		500					1576							
JC 9	JC 10		500					1576							
JC 10	JC 11		400					1267							
JC 11	JC 12		373					1183							
JC 12	JC 13		400					1267							
JC 13	SG 9				60			216							
SG 9	JC 14		321					1023							
JC 14	JC 15		425					1344							
JC 15	JC 16		416					1316							
JC 16	JC 17				191			135							
JC 17	SG 6		54					198							
JC 16	JC 18		149					491							
JC 18	JC 19		216					698							
JC 19	JC 20		187					609							
JC 20	SG 7				102			346					45		
SG 7	SUPE 1		100					340							
JC 20	JC 21				224			135							
JC 21	JC 22		400					1267							
JC 22	JC 23		350					1112							
JC 23	SG 8		411					1301							
SG 8	JC 24				60			216							
JC 24	JC 25		500					1576							
JC 25	JC 26		279					893							
JC 26	JC 27		400					1267							
JC 27	JC 28		500					1576							
JC 28	JC 29		500					1576							
JC 29	JC 30		447					1412							
JC 30	JC 31				75			263							
6 Advance Warning Signs		240						773							
SUPG 1	JG 1		70												
JG 1	SG 20				40			155					45		
Subtotal:		**240**	**10702**	**0**	**833**	**0**	**0**	**36238**	**0**	**0**	**0**	**0**	**90**	**0**	**0**

TABLE OF CONDUIT AND CABLE QUANTITIES EXIT 207

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 000S(263)	10	104

Location to Location		Rigid Conduit						Copper Wire					Pole and Bracket Cable																			
		Galvanized Steel	Schedule 40		Schedule 80																											
		2" Ft	2" Ft		2" Ft			1/C #4 AWG Ft					2/C #10 AWG Ft																			
EL 1	JD 1		6					49																								
JD 1	SG 10		59					213					45																			
JD 2	EL 2							87																								
JD2	SG 11				125			417					45																			
Subtotal:		**0**	**65**	**0**	**125**	**0**	**0**	**767**	**0**	**0**	**0**	**0**	**90**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

TABLE OF CONDUIT AND CABLE QUANTITIES MILBANK

Location to Location		Rigid Conduit						Copper Wire					Pole and Bracket Cable																				
		Galvanized Steel	Schedule 40		Schedule 80																												
		2" Ft	2" Ft	3" Ft	2" Ft			1/C #4 AWG Ft					2/C #10 AWG Ft																				
LUMINAR	SIGN	50						185																									
Subtotal:		**50**	**0**	**0**	**0**	**0**	**0**	**185**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

TABLE OF CONDUIT AND CABLE QUANTITIES WEBSTER

Location to Location		Rigid Conduit						Copper Wire					Pole and Bracket Cable																				
		Galvanized Steel	Schedule 40		Schedule 80																												
		2" Ft	2" Ft		2" Ft			1/C #4 AWG Ft					2/C #10 AWG Ft																				
JB 1	LUMINAR							93																									
JB 1	SIGN	56						204																									
Subtotal:		**56**	**0**	**0**	**0**	**0**	**0**	**297**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

TABLE OF CONDUIT AND CABLE QUANTITIES EXIT 232

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 000S(263)	11	104

Location to Location		Rigid Conduit						Copper Wire					Pole and Bracket Cable	
		Galvanized Steel	Schedule 40		Schedule 80									
		2"	2"	3"	2"			1/C #6 AWG					2/C #10 AWG	
		Ft	Ft	Ft	Ft			Ft					Ft	
JE 1	JE 2				81			281						
JE 2	JE 3		421					1332						
JE 3	JE 4		500					1576						
JE 4	JE 5		450					1421						
JE 5	SJE 1		26					111						
SJE 1	SJE 2		137					454						
SJE 2	JE 6		26					111						
JE 6	JE 7		450					1421						
JE 7	JE 8		500					1576						
JE 8	JE 9		500					1576						
JE 9	JE 10		500					1576						
JE 10	JE 11		144					476						
JE 11	JE 12		400					1267						
JE 12	JE 13		378					1199						
JE 13	JE 14		13					71						
JE 14	REL 7		6					49					45	
JE 14	JE 15							135						
JE 15	SG 15		11					65					45	
JE 16	SG 12		80					278					45	
JE 17	SG 13		80					278					45	
JE 18	JE 19		15					77						
JE 19	REL 8		7					53					45	
JE 19	JE 20							135						
JE 20	SG 14		15					77					45	
JE 18	JE 21		300					958						
JE 21	JE 22		500					1576						
JE 22	JE 23		80					278						
JE 23	JE 24		500					1576						
JE 24	JE 25		500					1576						
JE 25	JE 26		500					1576						
JE 26	JE 27		500					1576						
JE 27	JE 28		500					1576						
JE 28	JE 29		495					1560						
JE 29	JE 30		204					661						
JE 30	JE 31				77			269						
6 Advance Warning Signs		240						773						
Subtotal:		**240**	**8738**	**0**	**158**	**0**	**0**	**29551**	**0**	**0**	**0**	**0**	**270**	**0**

TABLE OF CONDUIT AND CABLE QUANTITIES ND EXIT 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 000S(263)	12	104

Location to Location		Rigid Conduit						Copper Wire					Pole and Bracket Cable	
		Galvanized Steel	Schedule 40		Schedule 80									
		2"	2"	3"	2"			1/C #6 AWG	1/C #4 AWG				2/C #10 AWG	
		Ft	Ft	Ft	Ft			Ft	Ft				Ft	
JF 1	JF 2				91			312						
JF 2	JF 3		428					1353						
JF 3	JF 4		500					1576						
JF 4	JF 5		478					1508						
JF 5	JF 6		458					1446						
JF 6	JF 7		441					1394						
JF 7	JF 8		247					794						
JF 8	JF 9		262					840						
JF 9	JF 10				72			253						
JF 10	SG 17		140					618						
JF 10	JF 11		492					1551						
JF 11	JF 12		475					1499						
JF 12	JF 13				89			306						
JF 13	JF 14		182					593						
JF 14	SG 16		421					1332					45	
JF 14	JF 15				210			680						
JF 15	JF 16		450					1421						
JF 16	JF 17		111					374						
JF 17	SG 19				59			213					45	
JF 15	SUPF 1		116					389						
SUPF 1	JF 18		474					1496						
JF 18	JF 19		300					958						
JF 19	SG 18				85			294					45	
JF 15	JF 20		102					346						
JF 20	JF 21				64			229						
JF 21	JF 22		148					488						
JF 22	JF 23		454					1434						
JF 23	JF 24		476					1502						
JF 24	JF 25		500					1576						
JF 25	JF 26		348					1106						
JF 26	JF 27				82			284						
6 Advance Warning Signs		240						773						
Subtotal:		**240**	**8003**	**0**	**752**	**0**	**0**	**28938**	**0**	**0**	**0**	**0**	**135**	**0**
Grand Total		**1251**	**39095**	**116**	**2691**	**0**	**0**	**142668**	**1249**	**0**	**0**	**0**	**630**	**0**

TABLE OF JUNCTION BOXES, METER SOCKETS, ELECTRICAL SERVICE CABINETS AND UTILITY PROVIDERS

Exit #	Type 2 Electrical Junction Box (Each)	Surface Mounted Junction Box (Each)	Meter Socket (Each)	Electrical Service Cabinet (Each)	Galvanized Steel Utility Pole (N.A.B.I.)	Comments	Electrical Supplier
132	34	2	-	1	-	Attach Electrical Service Cabinet to existing steel utility pole and obtain power from existing meter socket.	Brookings Municipal Utilities (605)692-6325, Contact person Doug Henderscheid
	(JA1-JA34)	(SJA1-SJA2)					
133	1	-	1	1	1	New power source to be established.	Brookings Municipal Utilities (605)692-6325, Contact person Doug Henderscheid
	(JB1)				(SUPB 1)		
177	31	-	-	1	1	New power source to be established. Utility provides the Meter Socket, Contractor shall be responsible for installation.	Watertown Municipal Utilities (605)882-6233, Contact person Doug Enstad
	(JC1-JC31)				(SUPC 1)		
180	1	-	-	1	1	New power source to be established. Utility provides the Meter Socket, Contractor shall be responsible for installation.	Codington-Clark Electric Cooperative Inc. (605)886.5848, Contact person Dave Zaug
	(JG1)				(SUPG 1)		
207	1	-	-	-	-	East side of I-29 - Obtain power from existing lighting system.	Otter Tail Power Company (218)739-8799
	(JD2)						
207	1	-	-	-	-	West side of I-29 - Obtain power from existing lighting system.	Whetstone Valley Electric Cooperative (605)432-5331
	(JD1)						
232	31	2	-	-	-	Obtain power from existing lighting system.	Otter Tail Power Company (218)739-8799
	(JE1-JE31)	(SJE1-SJE2)					
ND 1	27	-	1	1	1	New power source to be established.	Otter Tail Power Company (218)739-8799, Local contact person in Whapeton ND - Gerri Coyne 701-671-6001
	(JF1-JF27)				(SUPF 1)		
Webster	1	-	-	1	-	Obtain power from existing lighting system.	NorthWestern Energy (800)245-6977
Milbank	1	-	-	1	1	New power source to be established adjacent to power pole by new sign.	Otter Tail Power Company (218)739-8799, Local contact person in Milbank - Jason Bock 605-432-4713
Total	**129**	**4**	**2**	**7**	**5**		

TRAFFIC CONTROL

The Contractor's equipment will be required to enter and leave the project only at interchanges. Crossing of the median will not be allowed.

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.

Storage of vehicles and equipment shall be as near the right-of-way line as possible. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work. Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

Work activities during non-daylight hours are subject to prior approval.

Traffic approaching the project from intersecting roadways, streets, and approaches must be adequately accommodated. Major intersections or large commercial entrances may require additional signing, flaggers, and channelizing devices on a temporary basis until work activities pass these areas.

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.

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

Sufficient sign quantities have been included in Itemized List for Traffic Control to provide for two identical setups for any of the layouts shown on the Traffic Control Standard Plates. Should the Contractor elect to work at more than two sites simultaneously, the cost of the additional signing shall be at the expense of the Contractor.

A maximum of 2 Type C Advance Warning Arrow Panels will be measured and paid for.

POWER LINES

The underground power lines shown on the plan sheets were placed on the drawings based upon the original construction plans. These power lines are shown on the drawings only to provide a concept of where the power lines were intended to be routed. Actual location may be different.

UTILITIES

The Contractor shall be responsible for contacting South Dakota One Call to locate the utilities at the staked road closure gate and sign installation locations.

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

COORDINATION OF WORK

The Contractor shall cooperate with other Contractors as per Section 5.7 of the Standard Specifications.

The following projects are known to be ongoing during the 2011 construction season that may interfere with the Road Closure Gate & Sign Installation project:

- IM 0294(28)111, PCN 6559 – Project involves various repairs to bridges on I29 south of US14 in Brookings County.
- IM 0299(60)208, PCN 021E – Pavement Replacement project on I29 north of US12 in Roberts County.
- IM 0297(32)179, PCN 00GR - Pavement Replacement project on I29 north of US212 in Codington County.
- IM 0298(15)197, PCN 0226 – Repairs to US 12 bridge over I29 near Summit.
- Watertown Area Wide Spot PCCP Repair – This project will involve repairs to PCC pavement at various locations and on various routes.

SUPPLYING AS BUILT PLANS

If the road closure gate systems or roadway lighting systems are constructed differently than what is stated in the plans, the Contractor shall supply as built plans to the Engineer and a copy shall be sent to the Traffic Design Engineer. The as built plans may include conduit layouts, wiring diagrams, or other drawings depicting the changes from the original plans.

SHOP DRAWING AND CATALOG CUTS SUBMITTALS

The Contractor shall submit shop drawings and catalog cuts in accordance with Section 985 of the Standard Specifications or in Adobe PDF format.

Adobe PDF submittals shall be sent to the following email addresses:

Pete.Longman@state.sd.us
Dan.Martell@state.sd.us

ON-SITE INSPECTION

An on-site inspection of the drop arm road closure gates shall be conducted before acceptance of the project, once the drop arm road closure gates are completed and operational. The on-site inspection shall be conducted by the Contractor, Region Traffic Engineer, Project Engineer, and Highway Maintenance Supervisor. Representatives from the NDDOT shall be contacted for the on-site inspection of the drop arm road closure gates at ND Exit #1.

REMOVE AND RESET LUMINAIRE POLE

Existing luminaire poles EL7–EL8 at Exit 232 shall be removed and reset as REL7-REL8 as shown on the plan sheets. Luminaire poles and luminaires damaged during relocation shall be repaired or replaced by the Contractor at no cost to the State.

It shall be the Contractor's responsibility to obtain the bolt circle pattern and anchor bolts for the relocated poles from the pole manufacturer listed below. The poles were originally installed under Project IM 29-9(00)232, PCEMS 170P, Drawing No. 460B110.

Millerbernd Manufacturing
P.O. Box 98
Winsted, MN 55395
(320) 485-2111

All costs involved with removing and resetting the existing luminaire poles shall be incidental to the contract unit price per each for REMOVE AND RESET LUMINAIRE POLE.

Existing luminaire poles EL7–EL8 at Exit 232 being reset as REL7-REL8 shall have the twin luminaire arms removed and replaced with new 6 ft long single luminaire arms. The poles were originally installed under Project IM 29-9(00)232, PCEMS 170P, Drawing No. 460B110 with the luminaire arm Drawing No. 10B14.

6' Luminaire arms shall be galvanized per POLE notes found within these plans.

The luminaire heads on EL7 and EL8 shall be reused on this project. The luminaire heads shall be used on REL7, REL8, SG14 and SG15.

All costs involved with removing/disposing the in place arm, furnishing and installing the new arm shall be incidental to the contract unit price per each for LUMINAIRE ARM.

REMOVE LUMINAIRE POLE FOOTING

The footings of existing luminaire poles EL7-EL8 at Exit 232 shall be removed by the Contractor to a minimum of 3' below the ground surface. Restoration of the disturbed area shall be to the satisfaction of the Engineer.

All costs for removing the footings of the existing luminaire poles shall be incidental to the contract unit price per each for REMOVE LUMINAIRE POLE FOOTING.

REMOVE SNOW GATES AND FOOTING

The gates, footings and tie down anchors of existing snow gate shall be removed by the Contractor. The footings shall be removed in their entirety. The holes left after removal of the footings shall be backfilled with earthen or granular material and compacted to the satisfaction of the Engineer. 4" of Topsoil shall be placed over the area of the removed footings.

Footings for the snow gates consist of a concrete footing which supports the post of the snow gate. These footings are believed to be 2' in diameter and 4' in depth. Each snow gate site will also have cable tie down anchors located approximately 20' on both sides of the footing for the snow gate post. These tie down anchors are believed to be 1' in diameter and 2' in depth. Snow gate sites may also have steel and wood posts installed to support the snow gate. These posts shall also be removed.

Snow gates at ND Exit #1 shall be removed and neatly stockpiled within the ROW, as directed by the Engineer. Removed snow gates will be picked up by NDDOT maintenance forces.

All removed items shall become the property of the Contractor for his disposal, unless otherwise specified.

All costs for removing the posts, gates and footings of the existing snow gates and restoration of the old snow gate sites shall be incidental to the contract lump sum price for INCIDENTAL WORK.

TABLE OF IN PLACE GATES AND FOOTINGS

Exit No	Location	Approx Snow Gate Length	Comments
132	SB on Ramp	-	Remove Footings and Posts
132	NB On Ramp	-	Remove Footings and Posts
132	NB Mainline	28'	Remove Gate, Footings and Posts
132	SB Mainline	28'	Remove Gate, Footings and Posts
133	NB On Ramp	18'	Remove Gate, Footings and Posts
207	NB On Ramp		Remove Footings and Posts
232	SB on Ramp	-	Remove Footings and Posts
232	NB On Ramp	18'	Remove Gate, Footings and Posts
232	NB Mainline	24'	Remove Gate, Footings and Posts
232	SB Mainline	28'	Remove Gate, Footings and Posts
ND 1	SB on Ramp	28'	Remove Gate, Footings and Posts
ND 1	NB On Ramp	28'	Remove Gate, Footings and Posts
ND 1	NB Mainline	22'	Remove Gate, Footings and Posts
ND 1	SB Mainline	28'	Remove Gate, Footings and Posts
Milbank, East of River Street		33'	Remove Gate, Footings and Posts

SITE RESTORATION WORK

Site Restoration work includes, but is not limited to, the restoration of all disturbed areas to the satisfaction of the Engineer.

Disturbed areas shall be seeded with Intermediate Wheatgrass (Oahe) at the rate of 1/2 pound Pure Live Seed (PLS) per 1000 square feet. Hand seeding and fertilizing devices will be allowed, as approved by the Engineer. All newly seeded and fertilized areas shall be raked to the satisfaction of the Engineer.

All costs associates with restoration of disturbed areas including seeding shall be incidental to the contract lump sum price for INCIDENTAL WORK.

ANCHOR BOLTS

Anchor bolts for REL7-REL8 shall be furnished and installed by the Contractor. Costs for furnishing and installing the anchor bolts shall be incidental to the contract lump sum price for INCIDENTAL WORK.

The original anchor bolts for REL7-REL8 were originally installed under Project IM 29-9(00)232, PCEMS 170P, Drawing No. 460B110 The anchor bolts were a j-hook style which is no longer acceptable. A recommendation from the manufacturer will be required to be supplied to the Engineer for the design of the anchor bolts.

Millerbernd Manufacturing
P.O. Box 98
Winsted, MN 55395
(320) 485-2111

TABLE OF FOOTING DATA

Site Designation	Footing Diameter	* Footing Depth	**Spiral Diameter	**Spiral Length	Vertical Reinforcement
REL7 REL8	2' 0"	8' 0"	1' 8"	54' 9"	8 #7 x 7' 6"
SG1 SG19	2' 6"	8' 0"	2' 2"	71' 0"	12 #7 x 7' 6"

* Footing depth shall be below ground level.
** The size of all spirals shall be #3.

SIGN POST FOOTINGS

The exposed portion of fixed base concrete footings shall be formed to provide a uniform diameter section and half-inch chamfer on the grout pad as shown on the footing details. The amount of exposed concrete footings on the up-slope side of the footing shall not be greater than 3 inches as shown on the footing details.

Footings for breakaway signs shall be below ground as shown on the footing details and need not be formed.

RELOCATION OF LUMINAIRE POLES

Luminaires poles being relocated at Exit 232 shall not be out of service for more than 30 calendar days.

CONDUIT INSTALLATION

The Contractor shall not use a machine requiring flowing water for installation of conduit under streets or roadways unless specifically permitted by the Engineer.

BREAKAWAY BASES

A statement is required, signed by a Professional Engineer registered in the State of South Dakota, certifying that the breakaway base devices meet the design requirements, including breakaway and structural adequacy, of the "AASHTO Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals". The physical testing procedures outlined in Section 8 of the Fifth Edition of the Aluminum Association's "Specifications for Aluminum Structures" may be used to establish service limits for structural adequacy certification of aluminum breakaway transformer bases and frangible couplings. If requested, test data of production samples to support the certification shall be provided.

POLES

New poles shall be galvanized steel. Galvanizing shall be in accordance with AASHTO Specification M111 (ASTM A123). Steel pole material shall be in accordance with ASTM A36, A242, A570, A572, A607 or A595 Grade A or B. A595 material shall be limited to a 3/8 inch maximum thickness. Steel pole material with a thickness of 1/2 inch to 2 inches, shall satisfy Charpy V-Notch toughness test requirements of 15 ft. lb. at 40 degrees F. The SDDOT Office of Bridge Design shall be contacted for Charpy impact requirements for steel pole material thickness greater than 2 inches.

The steel pole-to-base-plate connection shall be a full-penetration groove-welded connection with a backing ring as described in Table 11-2, Detail 11, Example 5 of the current edition of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals.

Luminaire extension(s) shall be as shown on the “Drop Arm Road Closure Gate” details.

All poles shall have transformer bases.

Certified test reports shall be submitted either prior to or after fabrication of the poles and arms. Physical tests, including tensile properties for the poles and arms, may be taken after fabrication and need not include similar tests taken prior to fabrication.

BOLT TESTING

The certified mill test reports for all bolts used on the project shall include the test results for all of the testing specified in section 972.2.D of the South Dakota Standard Specifications. Some of these tests are supplemental tests that must be requested at the time the bolts are ordered. It is the responsibility of the Contractor to notify the bolt supplier of these requirements.

LUMINAIRES

Luminaires shall be 250 Watt High Pressure Sodium, medium, semi-cutoff, type III.

Three copies of the isofootcandle charts and utilization curves shall be furnished to the Engineer for approval. The Contractor must get approval from the Engineer prior to installation of the luminaires.

The approved isofootcandle data for each case shall be used to determine the correct socket position at each site. Each luminaire shall be installed with its lamp socket in the proper position and in a level attitude.

LIGHTNING PROTECTION

All luminaire poles, road closure gate poles, and service cabinets shall be equipped with industrial lightning arrestors compliant with current NEMA and UL Standards for lightning arrestors. Cost for ground rods and lightning arrestors shall be incidental to the contract unit price for the corresponding luminaire pole, roadway closure gate pole, and service cabinet bid item.

SURFACE MOUNTED JUNCTION BOXES

Surface mounted junction boxes shall comply with NEMA 4X stainless steel shall be UL-listed and, at a minimum, shall be sized according to Article 314 of the 2008 National Electrical Code. Stainless steel junction boxes shall have the cover held in place with a continuous hinge and kept closed with screws and clamps on the remaining three sides. The cover shall be removable by removing the pin with the continuous hinge. All seams shall be continuously welded. Gaskets shall be closed cell neoprene.

Surface Mounted Junction Boxes SJA1-SJA2 shall be installed on Structure 06-185-169 on I-29 northbound lane over the DM&E Railroad, as shown on the plan sheets.

Surface Mounted Junction Boxes SJE1-SJE2 shall be installed on Structure 55-118-183 on I-29 southbound lane over Little Minnesota River, as shown on the plan sheets.

2" Rigid Galvanized Steel Conduit shall be installed between Surface Mounted Junction Box SJA1 and Surface Mounted Junction Box SJA2 to convey the 1/C #6 AWG Copper Wire on the structure as shown on the plan sheets. Surface Mounted Junction Boxes SJA1 and SJA2 shall be connected to Type 2 Electrical Junction Boxes JA29 and JA30, respectively, with 2" Rigid Galvanized Steel Conduit.

2" Rigid Galvanized Steel Conduit shall be installed between Surface Mounted Junction Box SJE1 and Surface Mounted Junction Box SJE2 to convey the 1/C #6 AWG Copper Wire on the structure as shown on the plan sheets. Surface Mounted Junction Boxes SJE1 and SJE2 shall be connected to Type 2 Electrical Junction Boxes JE5 and JE6, respectively, with 2" Rigid Galvanized Steel Conduit.

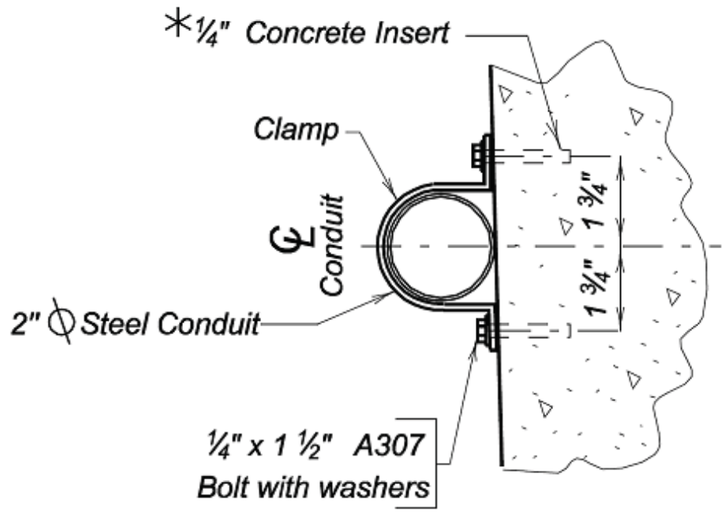
All costs to install Surface Mounted Junction Boxes shall be incidental to the contract unit price per each for SURFACE MOUNTED JUNCTION BOX.

JUNCTION BOXES

Junction boxes shall be spaced at a maximum of 500 feet, with a junction box at each sign location. The junction box at each sign location shall have 7’ slack of 1/C cable.

CONDUIT ATTACHMENT TO BRIDGES

The conduit shall be attached to the bottom of the bridge deck, approximately 1’ from the outer edge of the bridge deck. The conduit shall not be attached to the girder. The conduit shall be attached to the bottom of the bridge deck per the following detail.



* Space concrete inserts at 5’-0” maximum spacing

The ¼” diameter concrete inserts for conduit clamps shall be commercially available inserts threaded for use with a galvanized ¼” diameter A307 bolt. The inserts shall be capable of developing the strength of a A307 bolt and shall be galvanized or stainless steel. The cost of furnishing and installing the inserts shall be incidental to the contract unit price per foot for the conduit.

DROP ARM ROAD CLOSURE GATES

The Drop Arm Road Closure Gate shall be located as shown in the plans. The location to center of pole shall be 5.5' off of the shoulder (edge of pavement) unless otherwise specified.

On I-29 mainline, the end of the drop arm gate shall be 1' from the CL of I-29 as shown on the Drop Arm Road Closure Gate detail drawings.

The Drop Arm Road Closure Gates located on the On-Ramps shall be located such that a minimum of 8' of width is maintained to allow emergency vehicles to pass around the end of the gate when the gate is lowered. The Drop Arm Road Closure Gate locations and arm lengths have been set up to allow 9-10' of width for emergency vehicle passage around the end of the gate. The Drop Arm Road Closure Gate shall be oriented such that the gate is perpendicular to the CL of the orientation of the On-Ramp.

The maximum length of the drop arm gate shall not exceed 40 feet.

GALVANIZING: The gate arm pivots, supports, and guides and all associated hardware shall be galvanized in accordance with ASTM A123. All rough edges and burrs shall be ground smooth prior to galvanizing.

After road closure gate assembly, all exposed bolt threads shall be painted with two coats of zinc rich paint conforming to the requirements of ASTM A 780.

Furnishing and installing the pole, luminaire arm, gate, winch, switches, transformers, cube flashers, cap flashers, LED's, "SO" cord, wire, and miscellaneous material required to construct the road closure gate shall all be incidental to the contract unit price per each for DROP ARM ROAD CLOSURE GATE.

DROP ARM ROAD CLOSURE GATE DETAILS

When the gate is fully raised, the nut and washer shall be placed snugly against the outside of the rear channel and padlocked in place. The fabricator shall supply one heavy, weatherproof padlock with 2 keys for each gate arm pivot.

All drop arm road closure gate padlocks at Exits 132, 133, 177, 180, 207, 232 and ND Exit 1 shall be keyed the same for all closure gate sites.

DROP ARM GATE MOUNTED SIGNS

ROAD CLOSED signs that are mounted on the drop arm gates shall be attached as recommended by the drop arm gate manufacturer.

LIGHT EMITTING DIODE SIGNAL MODULE ON GATE ARMS

All circular red indications shall be light emitting diode (LED) signal modules. The red indication shall provide a minimum of 21cp.

Size of LED signal modules shall be a minimum of 3 inches.

The LED signal modules shall be warranted against defects in materials and workmanship for a period of 36 months after the installation of the modules. The manufacturer shall provide this warranty in writing to the Engineer prior to installation of the LED signal modules.

LUMINAIRE POLE BASE WIRE SPLICES

Wire splices in luminaire pole bases shall be done according to Standard Plate 635.80.

BOLTED CONNECTIONS

All bolts shall conform to ASTM F 568, Class 4.6, unless designated as HS (High Strength), which shall conform to ASTM A 325M.

FIELD ASSEMBLY: In some installations, the connection plates for the luminaire arms may require modification to allow the pivot sleeve to slip over. Any damage to the galvanizing shall be repaired with two coats of zinc rich paint conforming with the requirements of ASTM A 780.

1 SECTION VEHICLE SIGNAL HEAD BACKPLATES

Signal head backplates shall extend not less than 5 inches at the top, bottom, and sides. All signal head backplates shall have a dull black finish.

Signal head backplates shall be polycarbonate.

Signals shall be aimed such that all the signals for each approach shall be continuously visible for the minimum distance listed in the table in Section 4D.12 of the MUTCD.

DISCONNECT SWITCH CLOSURE CABINET

The Contractor shall supply one heavy, weatherproof padlock with 2 keys for each disconnect switch closure cabinet.

All disconnect switch closure cabinet padlocks at Exits 132, 133, 177, 180, 207, 232 and ND Exit 1 shall be keyed the same for all closure gate sites.

GENERAL SIGN NOTES

Permanent sign locations shall be staked in the field by the Engineer. The Contractor shall give the Engineer a minimum of two weeks advance notice to allow for staking prior to sign/post installation.

The Contractor shall be responsible for contacting South Dakota One Call to locate the utilities at the staked sign installation locations.

Sign post lengths shown in the plans are only an estimate. The Contractor shall be responsible for determining sign post lengths after the sign post locations have been staked by the Engineer.

NEW PERMANENT SIGNING

New signs for installation are summarized in the Road Closure Gate & Signing Installation Tables.

Special design signs are illustrated on the Special Design Signs sheet.

All costs associated with furnishing and installing the new permanent signs, furnishing and installing stiffeners and hardware shall be incidental to the contract unit price per square foot for FLAT ALUMINUM SIGN, NONREMOVABLE COPY SUPER/VERY HIGH INTENSITY or EXTRUDED ALUMINUM SIGN, NONREMOVABLE COPY SUPER/VERY HIGH INTENSITY.

SIGN DESIGN

Signs shall be constructed as required per the Manual on Uniform Traffic Control Devices (MUTCD), the latest edition of "Standard Highway Signs", and/or as specified on the Special Design Signs sheet shown in the plans.

All sign material shall comply with Section 982 of the Standard Specifications.

All upper/lower case letters and numerals shall be as required per the MUTCD, the latest edition of "Standard Highway Signs", and/or as illustrated on the Special Design Signs sheets.

The Contractor shall furnish the Aberdeen Region Traffic Engineer (Alan Petrich; P.O. Box 1767; Aberdeen, SD 57402) with a detailed sign layout sheet for each sign shown. These detailed sheets shall be provided prior to ordering the signs.

SIGN SHEETING

Signs shall be constructed using Super or Very High Intensity reflective sheeting as summarized in the Install New Signs table.

Super or Very High Intensity reflective sheeting is defined as that which meets the standards of Type IX as defined by AASHTO designation M268 (ASTM D4956). The fluorescent yellow reflective sheeting must meet the Fluorescent Daytime Color and Fluorescent Luminance Factor requirements, and shall conform to standard highway colors as defined in 23 CFR 655 subpart F.

All signs shall be manufactured in accordance with the sheeting manufacturer's recommendations utilizing a matched component system, including inks, electronic cuttable films, and protective overlay films. Digitally printed signs will not be accepted.

All black legend and borders shall be nonreflectorized (unless otherwise specified in these plans).

SIGN INSTALLATION

Sign installation shall be as shown in the plans.

The installation height of signs shall not exceed the minimum by more than 1.0 foot. Sign posts shall not extend beyond the top of the sign.

Signs shall be installed on posts as required per the Road Closure Gate & Signing Installation Tables.

REMOVE TRAFFIC SIGN

The Brookings Municipal Airport sign located on I29 Southbound lane at MRM 133.6 shall be removed. The extruded aluminum sign panels and sign posts shall be salvaged and delivered to the SDDOT Maintenance Shop located at 2131 34th Avenue in Brookings.

The footings shall be removed to a depth of a minimum of 2' below the ground surface. The holes left after removal of the footings shall be backfilled with earthen material and compacted to the satisfaction of the Engineer. 4" of Topsoil shall be placed over the area of the removed footings.

The following road closed signs mounted along I-29 mainline shall be removed. These signs are typically mounted on a sign post and may contain a battery box and flashing light.

Exit No	Location	Comments
132	MRM 132.4 NBL	Remove sign from median and outside shoulder
132	MRM 133.3 SBL	Remove sign from median and outside shoulder
177	MRM 177.4 NBL	Remove sign from median and outside shoulder
232	MRM 231.6 NBL	Remove sign from median and outside shoulder
232	MRM 232.6 SBL	Remove sign from median and outside shoulder
ND 1	MRM 252.5 NBL	*Remove sign from median and outside shoulder
ND 1	MRM 0.8 SBL	*Remove sign from median and outside shoulder

* Signing, flashers and battery boxes removed within the state of ND shall be neatly stockpiled within the ROW, as directed by the Engineer. Removed signing materials will be picked up by NDDOT maintenance forces.

Unless otherwise specified all removed materials shall become the property of the Contractor for his disposal.

All costs associated with the removal of existing signs, posts, anchors, footings and hardware shall be incidental to the contract unit price per each for REMOVE TRAFFIC SIGN.

HISTORICAL PRESERVATION OFFICE CLEARANCES

To obtain State Historical Preservation Office (SHPO) clearance, a cultural resources survey may need to be conducted by a qualified archaeologist. In lieu of a cultural resources survey, the Contractor could request a records search from Jim Donohue, State Archaeological Research Center (SARC). Provide SARC 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 no artifacts have been found on the site. The Contractor shall arrange and pay for the cultural resource survey and/or records search.

If any earth disturbing activities occur within the current geographical or historic boundaries of any South Dakota reservation, the Contractor shall obtain Tribal Historical Preservation Office (THPO) clearance. If no THPO exists, the required SHPO clearance shall suffice, with documentation of Tribal contact efforts provided to SHPO.

To facilitate SHPO or THPO responses, the Contractor should submit a records search or cultural resources survey report to the DOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3268). Allow 30 days from the date this information is submitted to the Environmental Engineer for SHPO/THPO approval. The Contractor is responsible for obtaining all required permits and clearances for staging areas, borrow sites, waste disposal sites, and all material processing sites. The Contractor shall provide the required permits and clearances to the Engineer at the preconstruction meeting.

WASTE DISPOSAL SITE

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

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

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

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

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

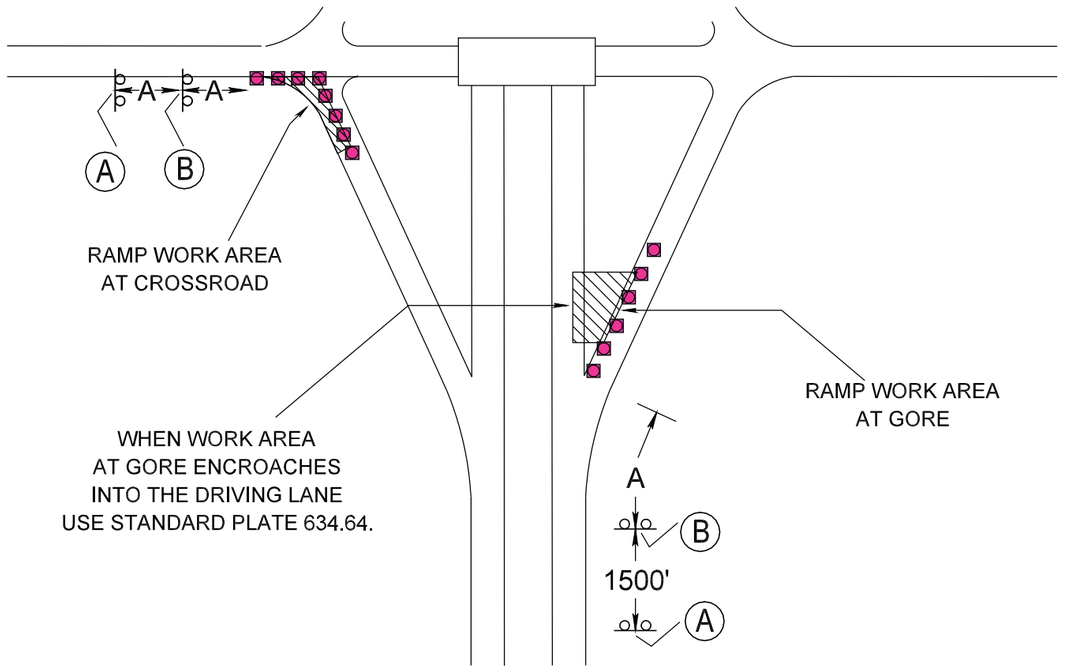
1. Construction/demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction/demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation.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

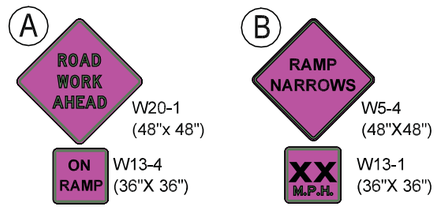
2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

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

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

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.





Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (FEET) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 65	1000
75	1000

NOTE:

Construction signs shall not obscure existing signs and must be installed a minimum of 200' from an existing sign.

KEY:

XX-Speed to be determined by Engineer

-Channelizing Devices at 25' spacings

GUIDES FOR TRAFFIC CONTROL DEVICES AT INTERCHANGE GORES AND CROSSROADS

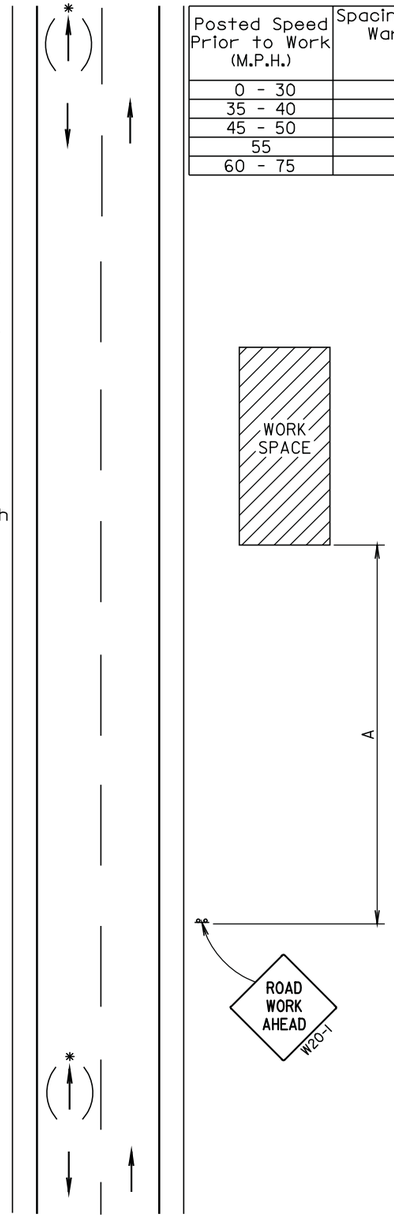
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

The signs illustrated shall be used where there are distracting situations; such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 75	1000

July 1, 2005

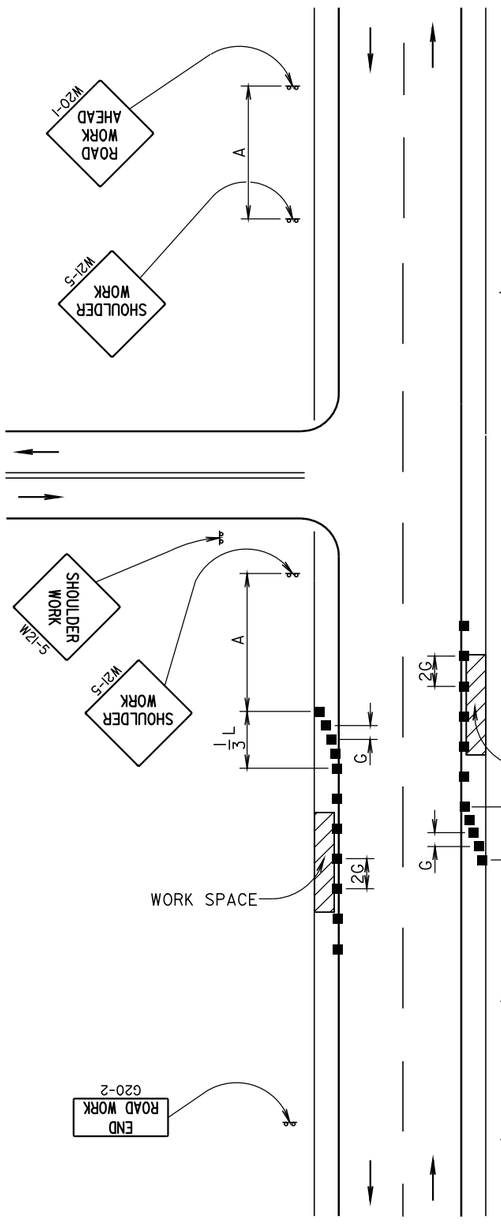
Published Date: 1st Qtr. 2011

SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
WORK BEYOND THE SHOULDER

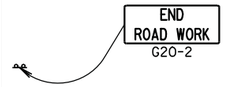
PLATE NUMBER 634.01

Sheet 1 of 1



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

■ Channelizing Device



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

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

Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

A SHOULDER WORK sign should be placed on the left side of a divided or one-way roadway only if the left shoulder is affected.

The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.

July 1, 2005

Published Date: 1st Qtr. 2011

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GUIDES FOR TRAFFIC CONTROL DEVICES
WORK ON SHOULDERS

PLATE NUMBER 634.03

Sheet 1 of 1

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

Flagger

■ Channelizing Device

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

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

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

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

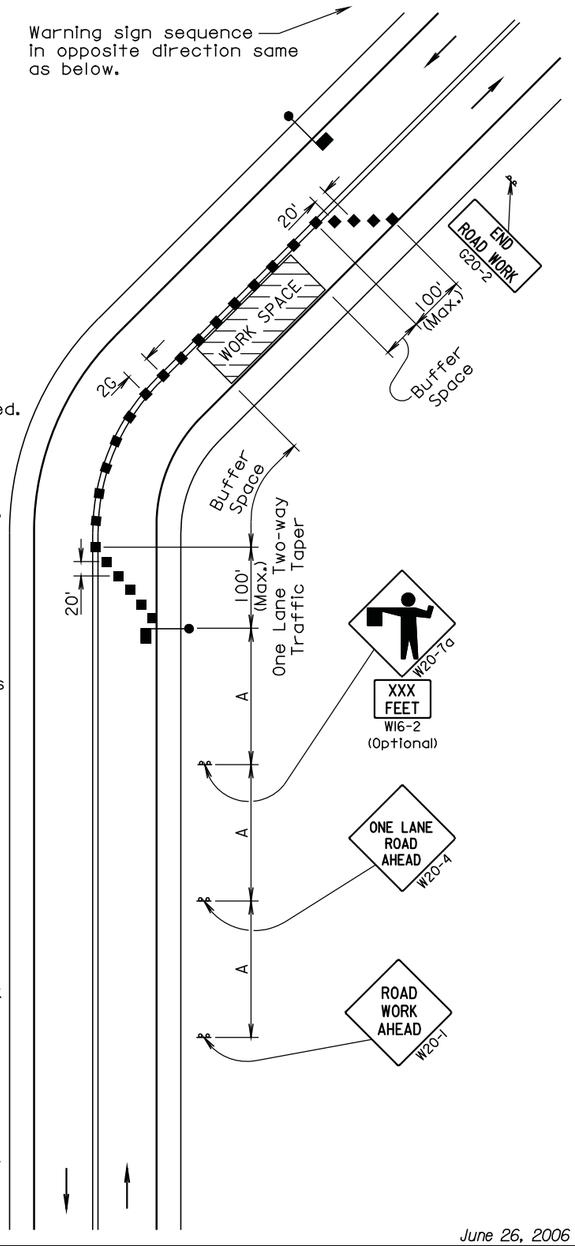
The channelizing devices shall be drums or type II barricades if traffic control must remain overnight or longer. During daylight hours, 42" cones may be used in lieu of drums or type II barricades along the centerline.

END ROAD WORK G20-2

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 shall be a sufficient length so that the channelizing devices are visible to approaching traffic.



June 26, 2006

Published Date: 1st Qtr. 2011

SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
LANE CLOSURE WITH FLAGGER PROVIDED

PLATE NUMBER 634.23

Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)	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

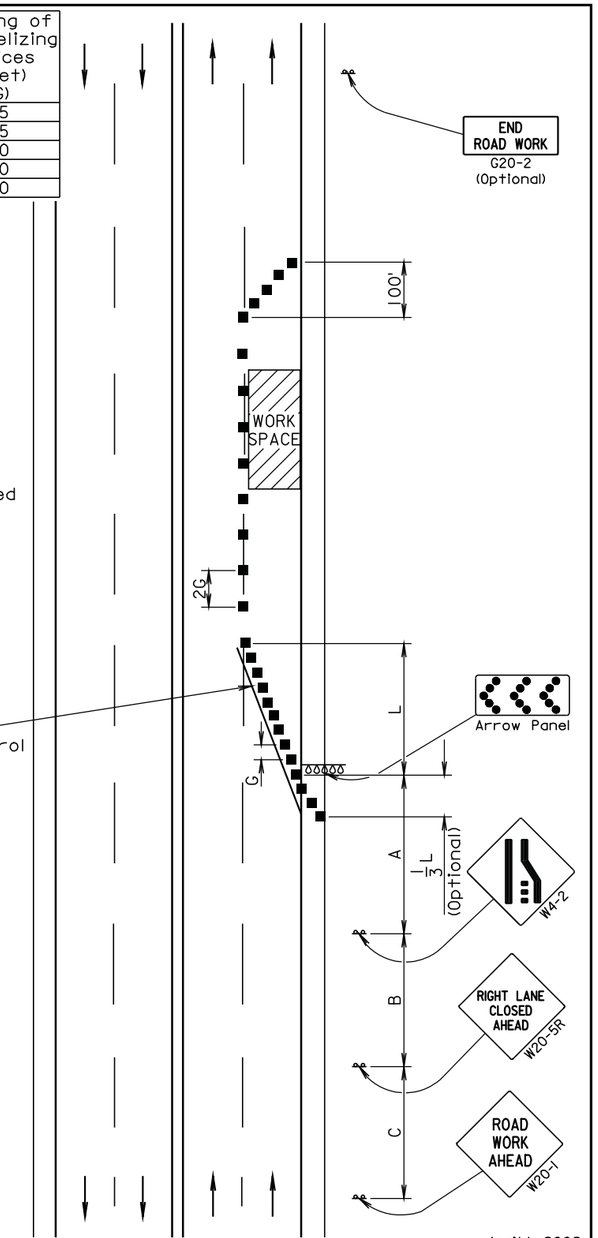
■ Channelizing Device

Drums or Type II Barricades shall be used if required overnight.

42" cones may be used along centerline

Longitudinal dimensions may be adjusted to fit project conditions such as horizontal curves, vertical curves, and other site restrictions.

Four inch white temporary pavement marking shall be used if traffic control must remain overnight or longer.



April 1, 2008

Published Date: 1st Qtr. 2011

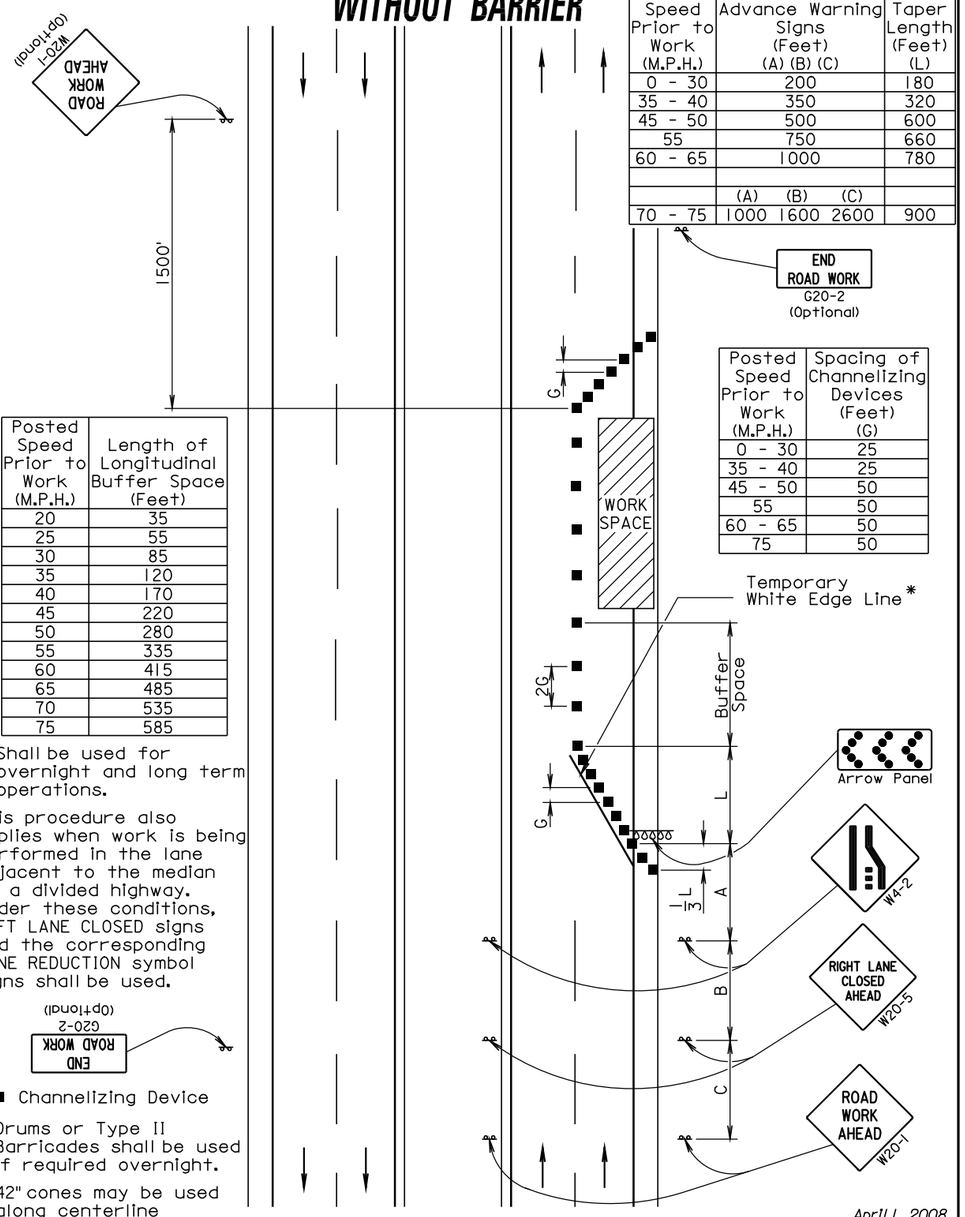
SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
4-LANE UNDIVIDED, RIGHT LANE CLOSED

PLATE NUMBER 634.47

Sheet 1 of 1

WITHOUT BARRIER



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)	Taper Length (Feet) (L)
0 - 30	200	180
35 - 40	350	320
45 - 50	500	600
55	750	660
60 - 65	1000	780
	(A) (B) (C)	
70 - 75	1000 1600 2600	900

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 40	25
45 - 50	50
55	50
60 - 65	50
75	50

Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	35
25	55
30	85
35	120
40	170
45	220
50	280
55	335
60	415
65	485
70	535
75	585

*Shall be used for overnight and long term operations.

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

END ROAD WORK G20-2 (Optional)

■ Channelizing Device

Drums or Type II Barricades shall be used if required overnight.

42" cones may be used along centerline

April 1, 2008

Published Date: 1st Qtr. 2011	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITHOUT BARRIER	PLATE NUMBER 634.64 Sheet 1 of 1

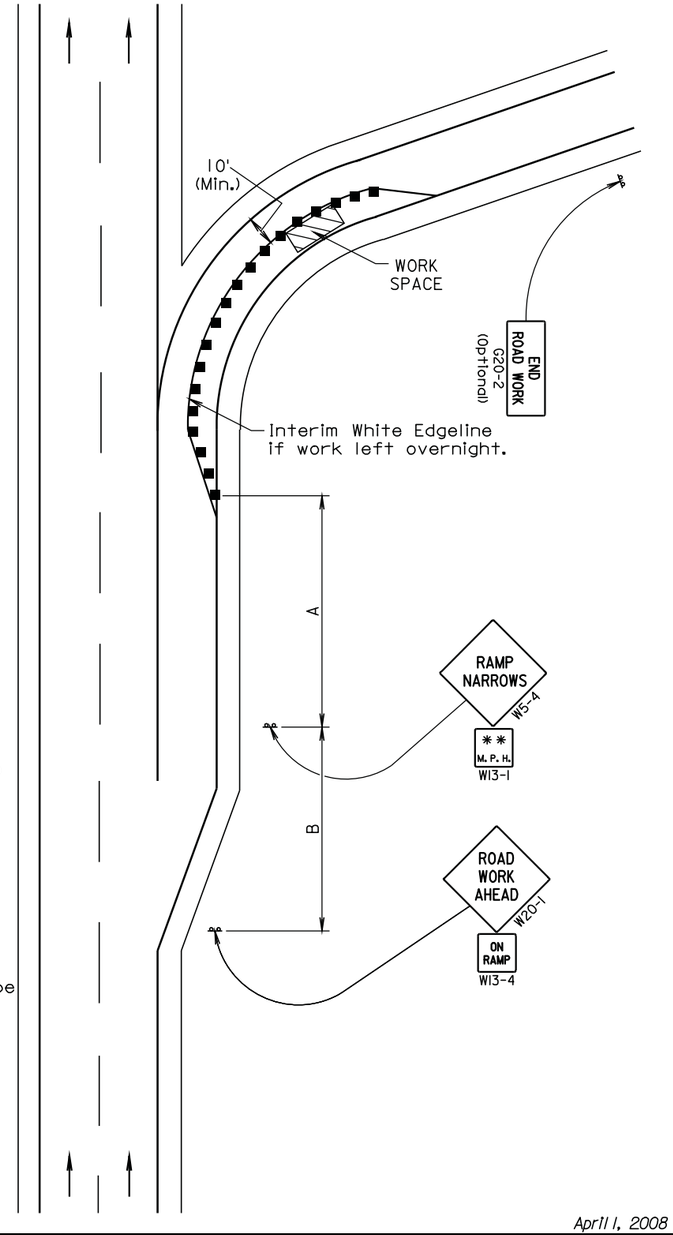
■ Channelizing Device

Drums or Type II Barricades shall be used if required overnight.

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B)
45 - 50	500
55	750
60 - 65	1000
	(A) (B)
70 - 75	1000 1600

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

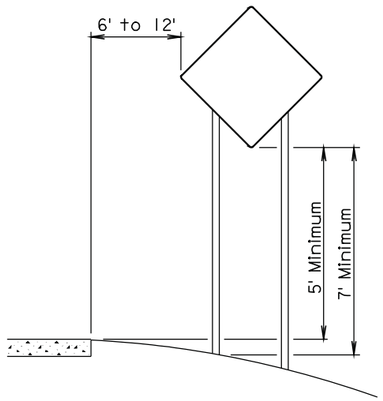
**Need and safe speed to be determined by Highway Authority.



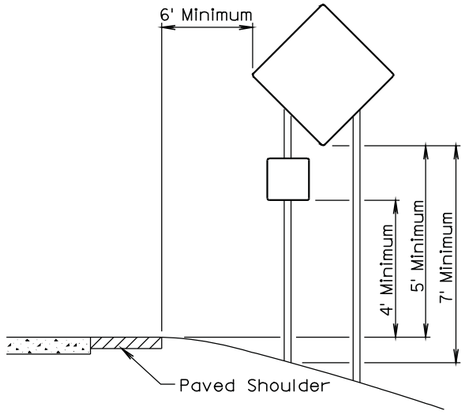
April 1, 2008

Published Date: 1st Qtr. 2011	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES PARTIAL EXIT RAMP CLOSURE	PLATE NUMBER 634.69 Sheet 1 of 1

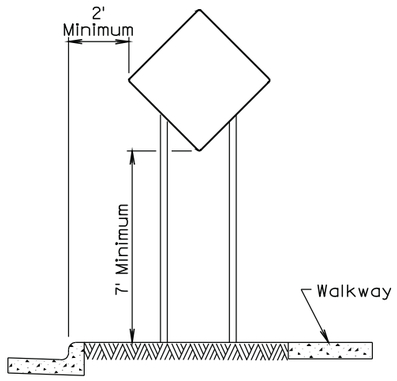
Username - trabl7882



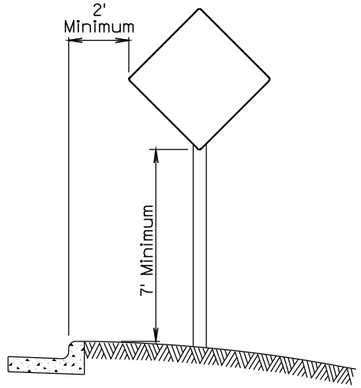
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT



URBAN DISTRICT

December 23, 2003

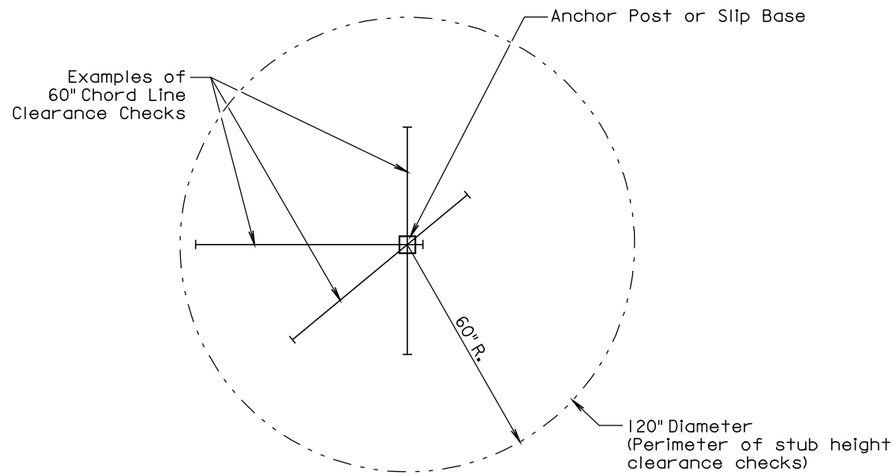
Published Date: 1st Qtr. 2011

SDDOT

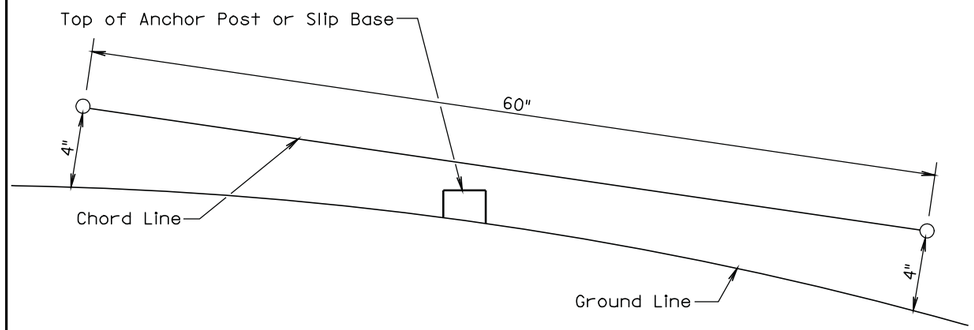
BREAKAWAY SIGN SUPPORTS
(Typical Construction Signing)

PLATE NUMBER 634.85

Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

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

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

July 1, 2005

Published Date: 1st Qtr. 2011

SDDOT

BREAKAWAY SUPPORT STUB CLEARANCE

PLATE NUMBER 634.99

Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	24	104

ITEMIZED LIST FOR TRAFFIC CONTROL

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20 2	36" x 18"	END ROAD WORK	4	17	68
W4 2	48" x 48"	LEFT OR RIGHT LANE ENDS (SYMBOL)	4	34	136
W5 4	48" x 48"	RAMP NARROWS	2	34	68
W13 1	24" x 24"	ADVISORY SPEED PLATE	4	16	64
W13 4	36" x 36"	ON RAMP	2	27	54
W20 1	48" x 48"	ROAD WORK #### FT. OR AHEAD	4	34	136
W20 4	48" x 48"	ONE LANE ROAD #### FT. OR AHEAD	2	34	68
W20 5	48" x 48"	LT. OR RT. LANE CLOSED #### FT. OR AHEAD	4	34	136
W20 7a	48" x 48"	FLAGGER	2	34	68
W21 5	48" x 48"	SHOULDER WORK	4	34	136
				TOTAL UNITS	**934**

If a sign is required on a project and not listed in the above inventory, the units per sign will be determined as follows:
Signs 36" x 36" will be measured at 27 units each and signs 48" x 48" will be measured at 34 units each, otherwise:
If a sign measures less than 25" high and 25" wide the units per sign will be computed as sign size (sq ft) x 3.
If a sign measures between 23H" and 37H" the units per sign will be computed as sign size (sq ft) x 1.2 +15.

HORIZONTAL ALIGNMENT DATA

EXIT 132 / 133 - BROOKINGS

Type	Station			Northing	Easting
POB	26+47.80			199251.087	2816552.930
		TL= 2654.83	S 1°37'25" E		
PI	53+02.63			196597.322	2816628.150
		TL= 2645.69	S 1°37'40" E		
PI	79+48.32			193952.702	2816703.307
		TL= 2604.40	S 1°38'31" E		
PI	105+52.72			191349.367	2816777.931
		TL= 2702.13	S 1°38'46" E		
PI	132+54.85			188648.352	2816855.558
		TL= 299.60	S 1°39'15" E		
PC	135+54.45			188348.875	2816864.207
PI	144+07.20	R = 57295.80	Delta = 1°42'19" L	187496.483	2816888.822
PT	152+59.82			186645.200	2816938.793
		TL= 638.32	S 3°21'34" E		
PI	158+98.14			186007.980	2816976.199
		TL= 5309.81	S 3°20'49" E		
POE	212+07.95			180707.224	2817286.200

SF=0.99994559

EXIT 177 / 180 - WATERTOWN

Type	Station			Northing	Easting
POB	738+37.99			420344.604	2730650.098
		TL= 10615.22	S 1°11'04" E		
PI	844+53.20			409731.655	2730869.537
		TL= 5297.19	S 1°11'16" E		
PI	897+50.39			404435.607	2730979.342
EQUATION					
	897+50.39 Bk			404435.607	2730979.342
	a 0+04.00 Ah			404435.607	2730979.342
PI	a 0+04.00			404435.607	2730979.342
		TL= 2669.26	S 1°10'30" E		
PI	A 26+65.26			401766.910	2731034.082
		TL= 7554.02	S 1°11'24" E		
PC	A 102+19.28			394214.514	2731190.949
PI	A 126+39.24	R = 5729.58	Delta = 45°47'41" L	391795.075	2731241.202
PT	A 147+98.76			390144.192	2733010.607
		TL= 20040.02	S 46°59'05" E		
POE	A 348+38.78			376473.010	2747663.287

SF=0.99986048

EXIT 207 - SUMMIT

Type	Station			Northing	Easting
POB	46+03.48			556114.136	2726778.639
		TL= 3358.55	S 0°44'40" E		
POE	79+62.03			552755.869	2726822.328

SF=0.99985986

EXIT 232 - SISSETON

Type	Station			Northing	Easting
POB	507+18.50			688366.562	2741727.953
		TL= 2765.58	S 17°47'05" W		
PI	534+84.07			685733.155	2740883.229
EQUATION					
	534+84.07 Bk			685733.155	2740883.229
	A 0+00.00 Ah			685733.155	2740883.229
PI	A 0+00.00			685733.155	2740883.229
		TL= 2959.67	S 17°47'09" W		
PI	A 29+59.67			682914.942	2739979.171
		TL= 4246.68	S 17°47'17" W		
PC	A 72+06.35			678871.280	2738681.829
PI	A 87+15.74	R = 8594.37	Delta = 19°55'19" L	677434.048	2738220.717
PT	A 101+94.66			675925.706	2738276.923
		TL= 955.08	S 2°08'03" E		
POE	A 111+49.73			674971.289	2738312.488

SF=0.99994574

ND EXIT 1 - DAKOTA MAGIC CASINO

Type	Station			Northing	Easting
POB	2168+28.00			792781.553	2772939.238
		TL= 4975.49	S 2°12'54" E		
PC	2218+03.49			787809.781	2773131.539
PI	2229+20.99	R = 5500.00	Delta = 22°58'13" R	786693.119	2773174.729
PT	2240+08.47			785648.144	2772778.716
		TL= 3707.05	S 20°45'19" W		
PI	2277+15.51			782181.674	2771465.030
EQUATION					
	2277+15.52 Bk			782181.667	2771465.028
	A 0+00.00 Ah			782181.667	2771465.028
EQUATION	A 25+99.30 Bk			779751.376	2770543.050
	B 24+52.75 Ah			779751.376	2770543.050
		TL= 2825.61	S 20°46'31" W		
POE	B 26+79.05			779539.791	2770462.780

SF=0.99994245

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. Brookings coordinates are South Zone (NAD 83/96) and the remainder are North Zone (NAD 83/96)

CONTROL DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 000S(263)	26	104

HORIZONTAL CONTROL POINTS					
POINT	**STATION**	**OFFSET**	**DESCRIPTION**	**NORTHING**	**EASTING**
EXIT 132 & 133 BROOKINGS					
608	26+47.80	0	Median of I29 ½ mile North of US14B	199251.6493	2816562.6046
609	26+48	9'Lt	¼ Corner in Median of I29 ½ mile North of US14B	199251.0853	2816552.9289
610	53+02.63	0	Median of I29 under US14B	196597.3225	2816628.1502
611	79+48.32	0	POT from Original I29 Construction in Median ½ mile North of US14	193952.7018	2816703.3075
612	79+48	7'Lt	¼ Corner in Median ½ mile North of US14	193953.0749	2816710.1386
613	105+52.72	0	POT from Original I29 Construction in Median under US14 (Disturbed)	191349.3669	2816777.9322
614	132+54.85	0	POT from Original I29 Construction in Median ½ mile South of US14	188648.3524	2816855.5596
EXIT 177 & 180 WATERTOWN					
19	782+41	275' Lt	Benchmark at MRM 181.15 NE of Exit 180	415948.7521	2731015.8179
21	835+40	148' Lt	Benchmark at MRM 180.17	410647.6951	2730998.5581
225	897+50.39	0	Median of I29 1 mile north of US212	404435.6073	2730979.3424
228	a 26+65.26	0	Median of I29 ½ mile North of US 212	401766.9100	2731034.0818
234	a 102+19.71	0	PC from Original I29 Construction in Median 4900' south of US212	394214.0868	2731190.9578
EXIT 207 SUMMIT					
QQ0640	61+67.98	469.04' Lt	HARN at MRM 207.50	554555.91	2727267.99
25	79+26.03	0	POT from Original I29 Construction in Median 1160' South of US12	552755.8690	2726822.3290
EXIT 232 SISSETON					
464	a 0+00.00	0	POT from Original I29 Construction in Median 1600' north of Bridges	685733.1512	2470883.2280
463	a 29+59.67	0	Median of I29 2730' North of SD10	682914.9422	2739979.1712
458	a 45+00.04	227.10' Lt	Benchmark at MRM 232.29	681378.8341	2739724.8379
462	a 72+06.75	0	PC from Original Construction in Median 1515' South of SD10	678870.8980	2738681.7064
ND EXIT 1 DAKOTA MAGIC CASINO					
514	2277+15.52	0	POT from Original Construction in Median at ND/SD State Line	782181.6738	2771465.0304
QQ0646			HARN in Median of I29 at MRM 252.50 ND/SD State Line	779539.16	2770620.93
503	B 26+79.05	0	POT from Original Construction in Median 2825' South of State Line	779539.7905	2770462.7804

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. Brookings coordinates are South Zone (NAD 83/96) and the remainder are North Zone (NAD 83//96). Refer to Horizontal Alignment Data Sheet for Scale Factors.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	27	104

SNOW GATE DETAILS

LEGEND

	EXISTING AND NEW ITEMS
KEY	ITEM
	DROP ARM CLOSURE GATE (SG)
	1 SECTION VEHICLE SIGNAL HEAD YELLOW INDICATION (1-6)
	TYPE 2 ELECTRICAL JUNCTION BOX
#4	1/C #4 AWG COPPER WIRE
#6	1/C #6 AWG COPPER WIRE
#10	1/C #10 AWG COPPER WIRE
2" RGSC	2" RIGID GALVANIZED STEEL CONDUIT
2" SCH 40	2" RIGID CONDUIT, SCHEDULE 40
2" SCH 80	2" RIGID CONDUIT, SCHEDULE 80
	2.5' DIAMETER FOOTING
	FLASHER UNIT
	ROADWAY LUMINAIRE 250 WATT
	EXISTING UNDERGROUND ELECTRIC
	EXISTING JUNCTION BOX
#X	EXISTING CONDUCTOR
X" SCH XX	EXISTING CONDUIT
	EXISTING LUMINAIRE
	EXISTING TOWER LIGHTING
	NEW OR EXISTING WOOD OR STEEL POLE
M	NEW OR EXISTING METER
	NEW OR EXISTING ELECTRICAL SERVICE CABINET
	EXISTING CIRCUIT CONTROL CENTER

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 000S(263)	28	104

Plotting Date: 14-APR-2010

EXISTING TOPOGRAPHY SYMBOLOGY AND LEGEND

- Anchor
- Antenna
- Approach
- Assumed Corner
- Azimuth Marker
- Bbq Grill/ Fireplace
- Bearing Tree
- Bench Mark
- Box Culvert
- Bridge
- Brush
- Buildings
- Bulk Tank
- Cattle Guard
- Cemetery
- Centerline
- Cistern
- Clothes Line
- Commercial Sign Double Face
- Commercial Sign One Post
- Commercial Sign Overhead
- Commercial Sign Two Post
- Concrete Symbol
- Creek Edge
- Curb/Gutter
- Curb
- Dam Grade/Dike/Levee
- Ditch Block
- Drainage Profile
- Drop Inlet
- Edge Of Asphalt
- Edge Of Concrete
- Edge Of Gravel
- Edge Of Other
- Edge Of Shoulder
- Elec. Trans./Power Jct. Box
- Fence Barbwire
- Fence Chainlink
- Fence Electric
- Fence Misc.
- Fence Rock
- Fence Snow
- Fence Wood
- Fence Woven
- Fire Hydrant
- Flag Pole
- Flower Bed
- Gas Valve Or Meter
- Gas Pump Island
- Grain Bin
- Guardrail
- Gutter
- Guy Pole
- Haystack
- Hedge
- Highway R.O.W. Marker
- Information Sign One Post
- Information Sign Two Post
- Interstate Close Gate
- Iron Pin
- Irrigation Ditch
- Lake Edge
- Lawn Sprinkler
- Mailbox
- Manhole Electric
- Manhole Gas
- Manhole Misc
- Manhole Sanitary Sewer
- Manhole Storm Sewer
- Manhole Telephone
- Manhole Water
- Merry-Go-Round
- Microwave Radio Tower
- Misc. Property Corner
- Misc. Post
- Overhang Or Encroachment
- Overhead Utility Line — OH —
- Parking Meter
- Pipe With End Section
- Pipe With Headwall
- Pipe Without End Section
- Playground Slide
- Playground Swing
- Power And Light Pole
- Power And Telephone Pole
- Power Meter
- Power Pole
- Power Pole And Transformer
- Power Tower Structure
- Propane Tank
- Property Pipe
- Property Pipe With Cap
- Property Stone
- Public Telephone
- Railroad Crossing Signal
- Railroad Milepost Marker
- Railroad Profile
- Railroad R.O.W. Marker
- Railroad Signs
- Railroad Switch
- Railroad Track
- Railroad Trestle
- Rebar
- Rebar With Cap
- Reference Mark
- Retaining Wall
- Riprap
- River Edge
- Rock And Wire Baskets
- Rockpiles
- Route Sign One Post
- Route Sign Two Post
- Satellite Dish
- Septic Tank
- Shrub Tree
- Sidewalk
- Sign Face
- Sign Post
- Slough Or Marsh
- Spring
- Stream Gauge
- Street Marker
- Telephone Fiber Optics — T/F —
- Telephone Junction Box
- Telephone Pole
- Television Cable Jct Box
- Television Tower
- Test Wells/Bore Holes
- Traffic Signal
- Trash Barrel
- Tree Belt
- Tree Coniferous
- Tree Deciduous
- Tree Stumps
- Triangulation Station
- Underground Electric Line — P —
- Underground Gas Line — G —
- Underground Sanitary Sewer — S —
- Underground Storm Sewer — S —
- Underground Tank
- Underground Telephone Line — T —
- Underground Television Cable — TV —
- Underground Water Line — W —
- Warning Sign One Post
- Warning Sign Two Post
- Water Fountain
- Water Hydrant
- Water Meter
- Water Tower
- Water Valve
- Water Well
- Weir Rock
- Windmill
- Wingwall
- Witness Corner

- State and National Line
- County Line
- Section Line
- Quarter Line
- Sixteenth Line
- Property Line
- Construction Line
- R. O. W. Line
- New R. O. W. Line
- Cut and Fill Limits
- Control of Access
- New Control of Access

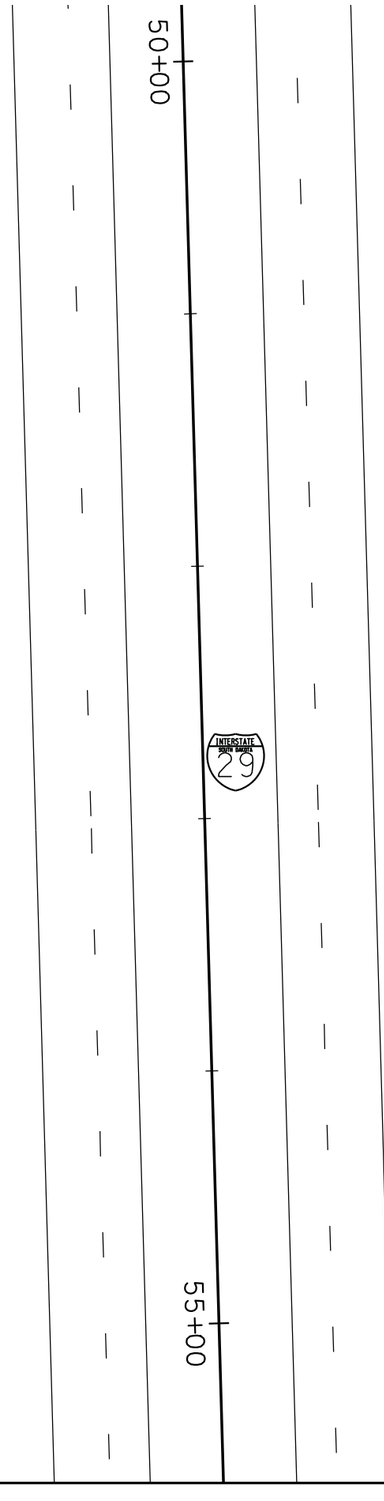
ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

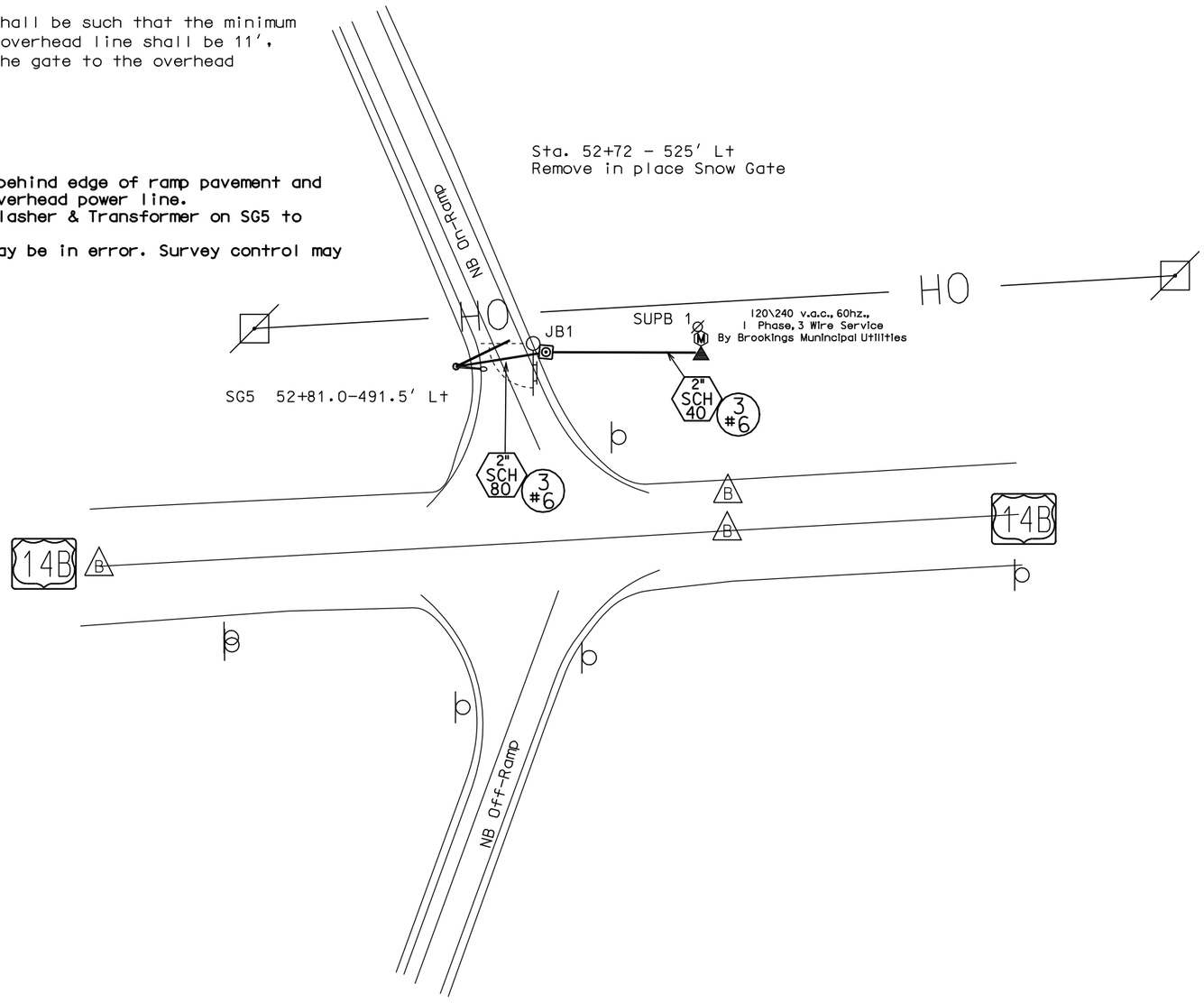
Exit 133 - US14 Bypass - Brookings

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	29	104
Plotting Date: 24-MAR-2011			

Location of Road Closure Gate pole SG5 shall be such that the minimum horizontal spacing from the gate to the overhead line shall be 11', and the minimum vertical spacing from the gate to the overhead line shall be 18'.

Notes: SG5 shall be installed 5.5' behind edge of ramp pavement and 15' south of south edge of overhead power line.
Install Disconnect Switch, Flasher & Transformer on SG5 to control Red LED's.
(Station and Offset of SG5 may be in error. Survey control may have an error.)



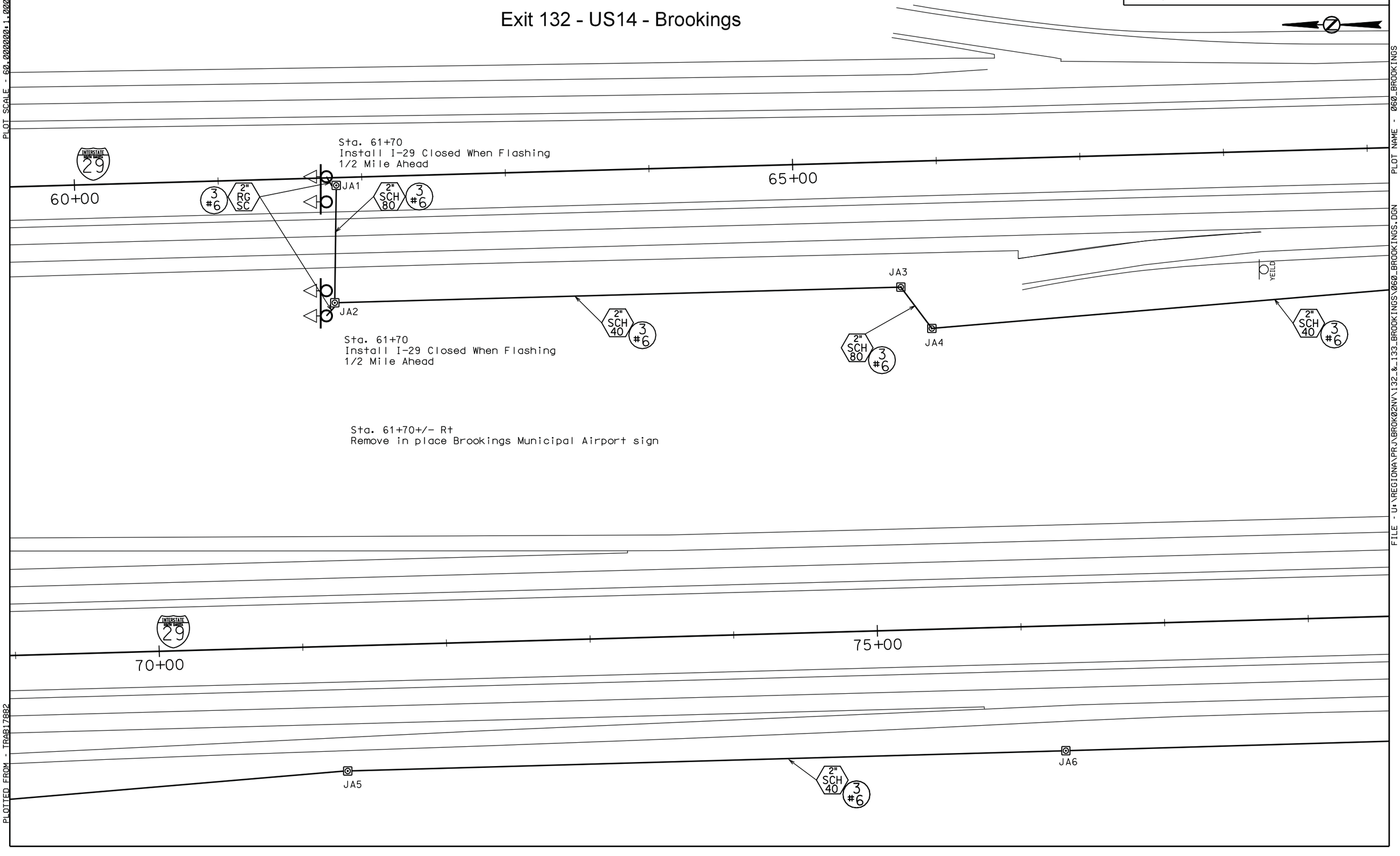


ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 132 - US14 - Brookings

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	30	104

Plotting Date: 24-MAR-2011



PLOT SCALE - 60.000000:1.000000

PLOT NAME - Ø60_BROOKINGS

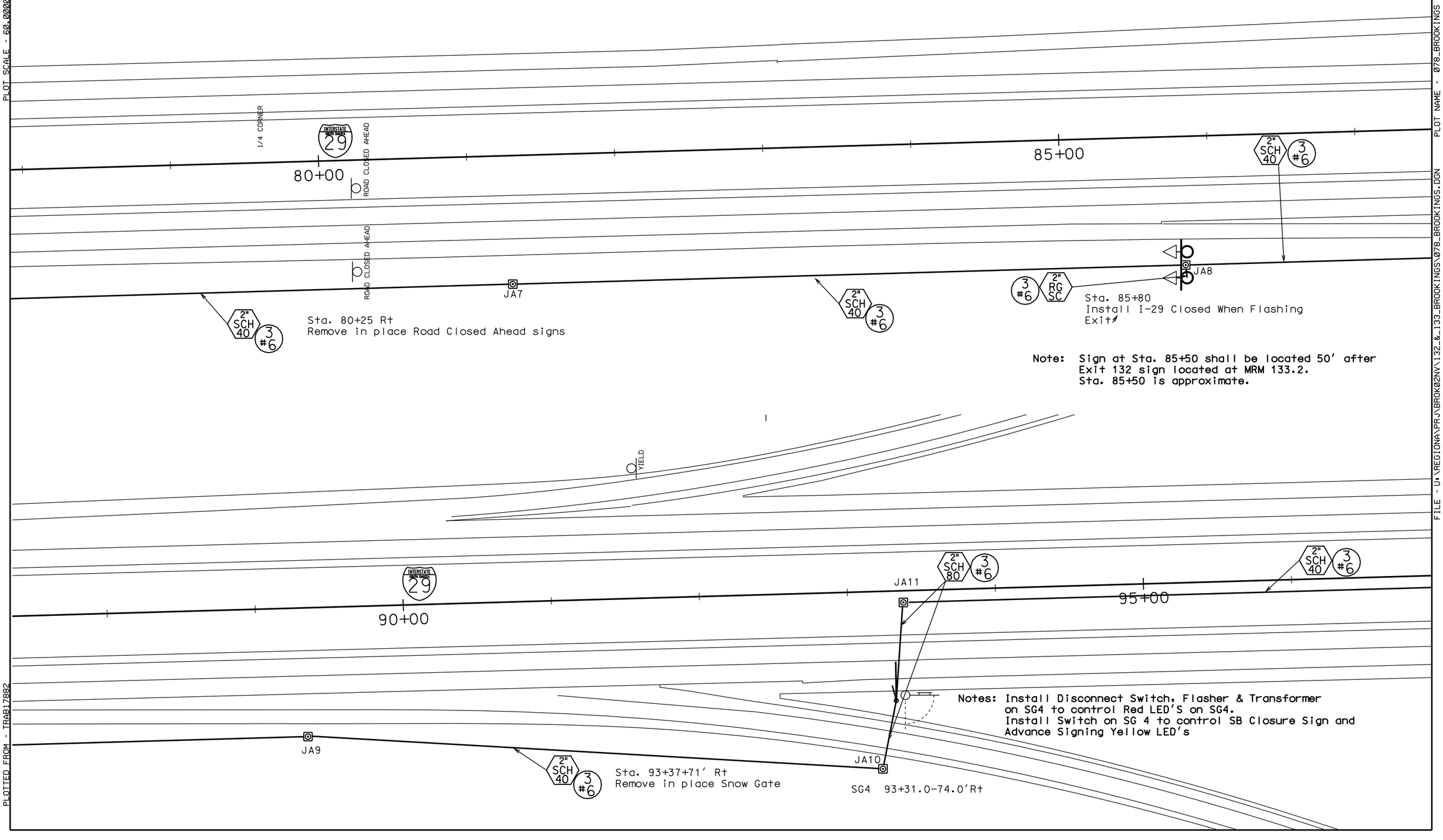
FILE - U:\REGIONA\PRJ\BROKØ2NV\132_&_133_BROOKINGS\Ø60_BROOKINGS.DGN

PLOTTED FROM - TRAB17882

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 132 - US14 - Brookings

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	31	104
Plotting Date: 24-MAR-2011			

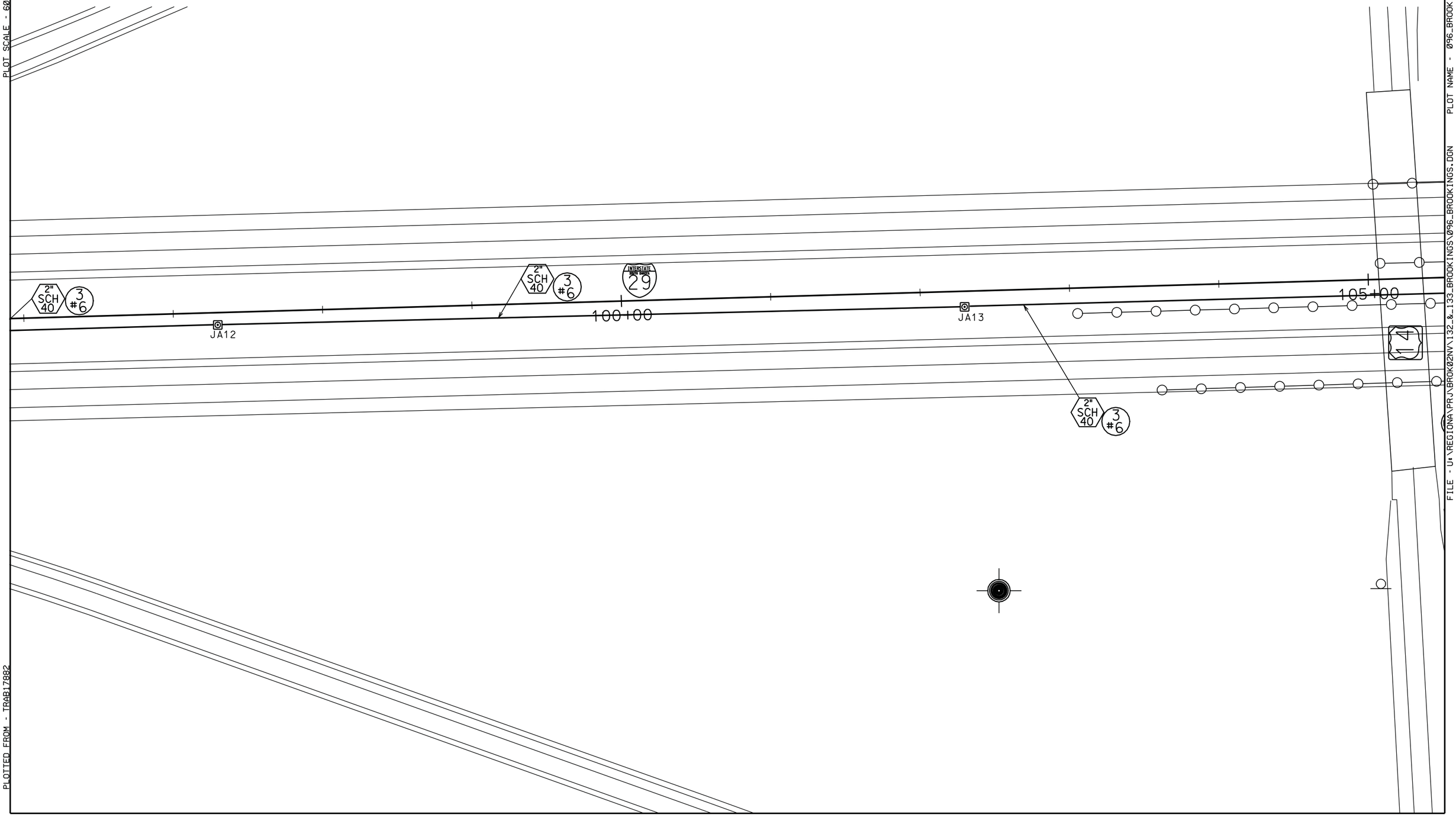


ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 132 - US14 - Brookings

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	32	104

Plotting Date: 24-MAR-2011



PLOT SCALE - 60.000000:1.000000

PLOT NAME - Ø96_BROOKINGS

FILE - U:\REGIONA\PRJ\BROK02NV\132_&_133_BROOKINGS\Ø96_BROOKINGS.DGN

PLOTTED FROM - TRAB17882

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	33	104
Plotting Date: 24-MAR-2011			

Exit 132 - US14 - Brookings

Sta. 104+50+/- Lt
Remove in place Snow Gate

SG2 104+52.0-554.0'Lt

3 #6 — 2" SCH 40 — EJA5

Note: Install Disconnect Switch, Flasher & Transformer on SG2 to control Red LED'S on SG2.
Power souce is existing traffic control system.

105+00

14

14

3 #6 — 2" SCH 80

2" SCH 80 — 6 #6

2" SCH 40 — 6 #6

2" SCH 80 — 6 #6

JA14

JA16

JA17

JA18

CONTROLER BOX

In Place Utility Pole, Meter Socket and Service Cabinet.

SUPA 1

Note: Install Service Cabinet on in-place Utility Pole.

12 #6 — 3" SCH 40

2" SCH 40 — 6 #6

INTERSTATE SOUTH DAKOTA 29

PLOT SCALE - 60.000000:1.000000

PLOT NAME - 103_BROOKINGS

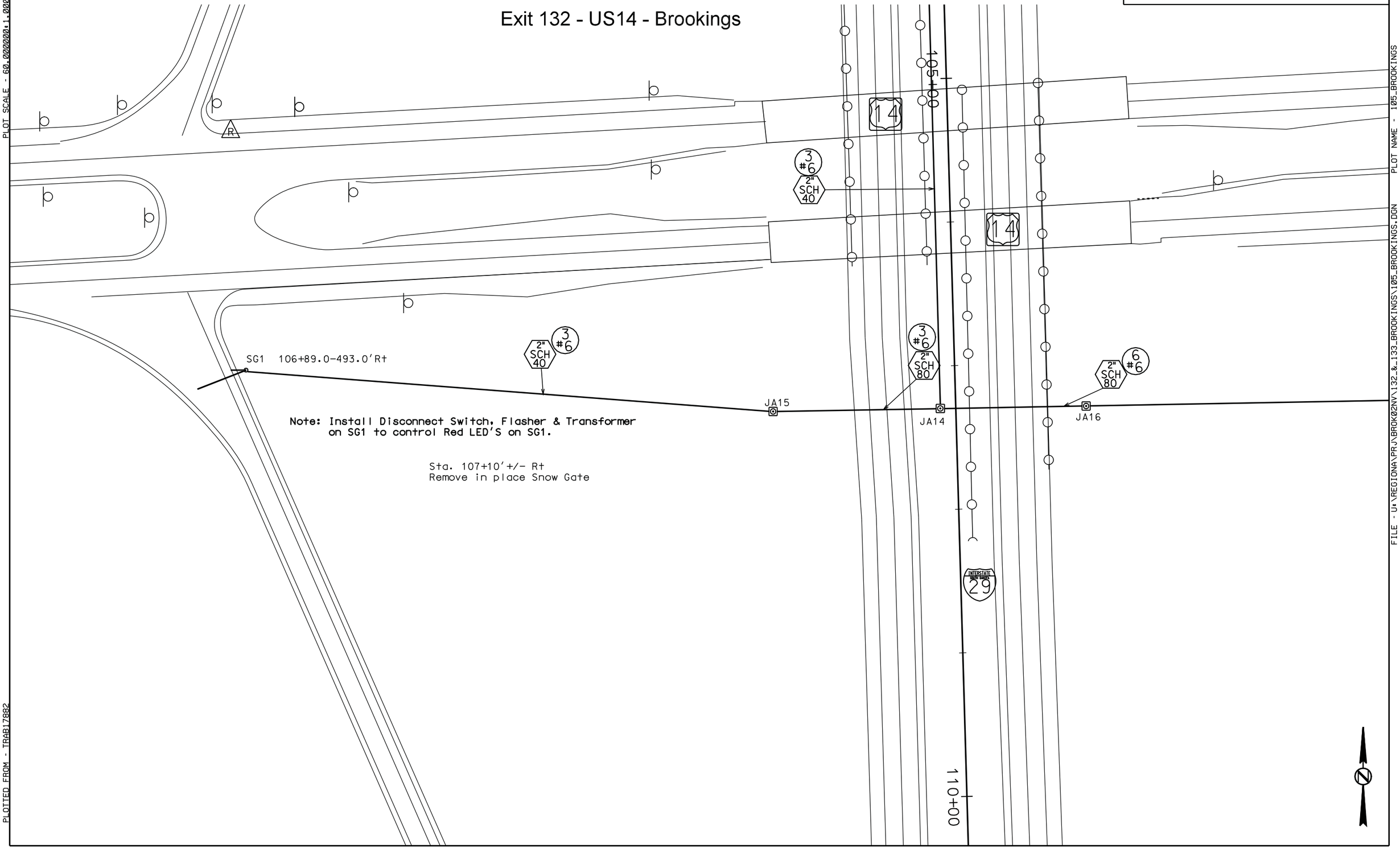
FILE - U:\REGIONA\PRJ\BROK02NV\132_&_133_BROOKINGS\103_BROOKINGS.DGN

PLOTTED FROM - TRAB17892

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	34	104
Plotting Date: 24-MAR-2011			

Exit 132 - US14 - Brookings



Note: Install Disconnect Switch, Flasher & Transformer on SG1 to control Red LED'S on SG1.

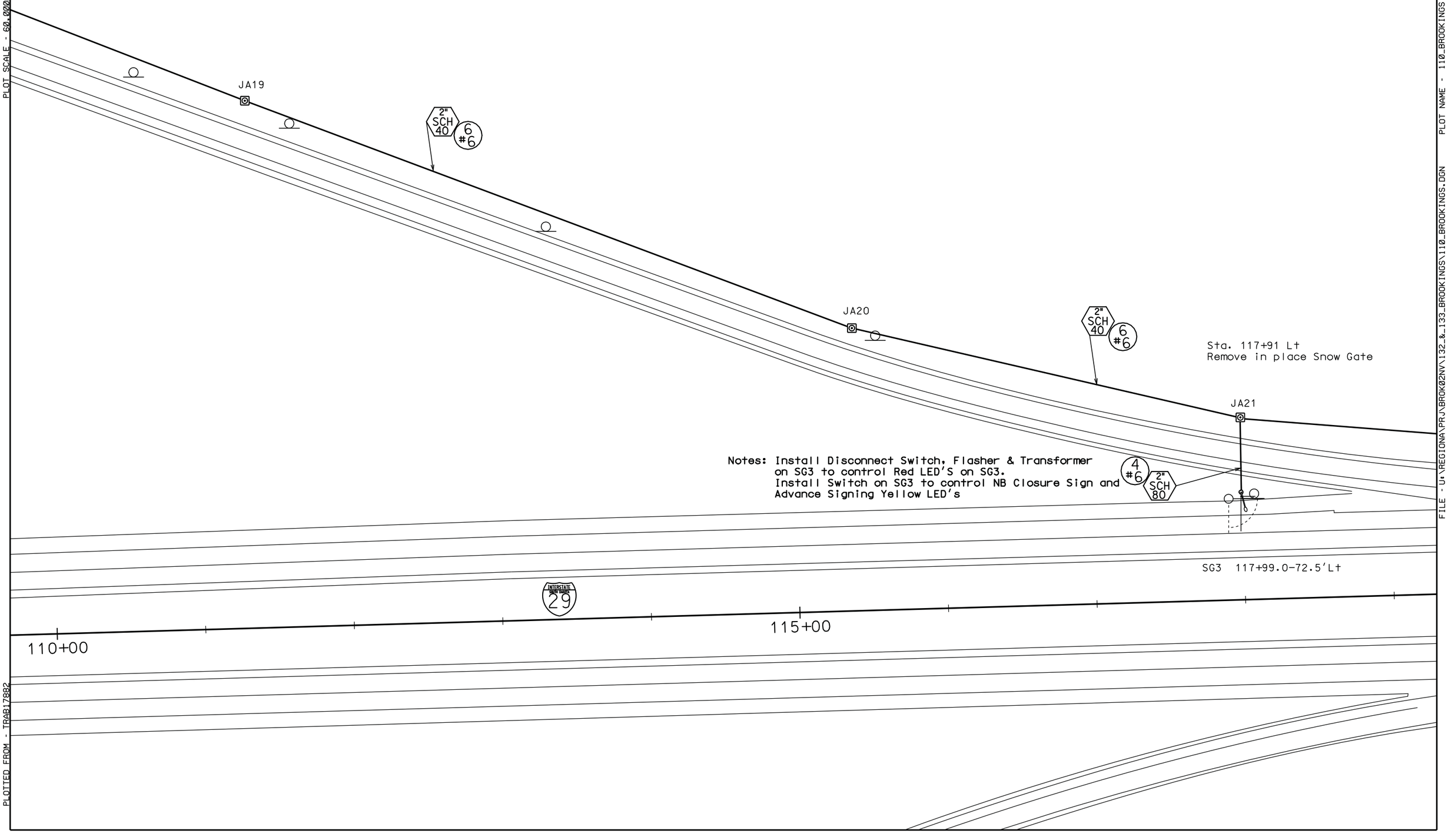
Sta. 107+10'+/- Rt
Remove in place Snow Gate

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 132 - US14 - Brookings

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	35	104

Plotting Date: 24-MAR-2011



PLOT SCALE - 60.000000:1.000000

PLOTTED FROM - TRAB17882

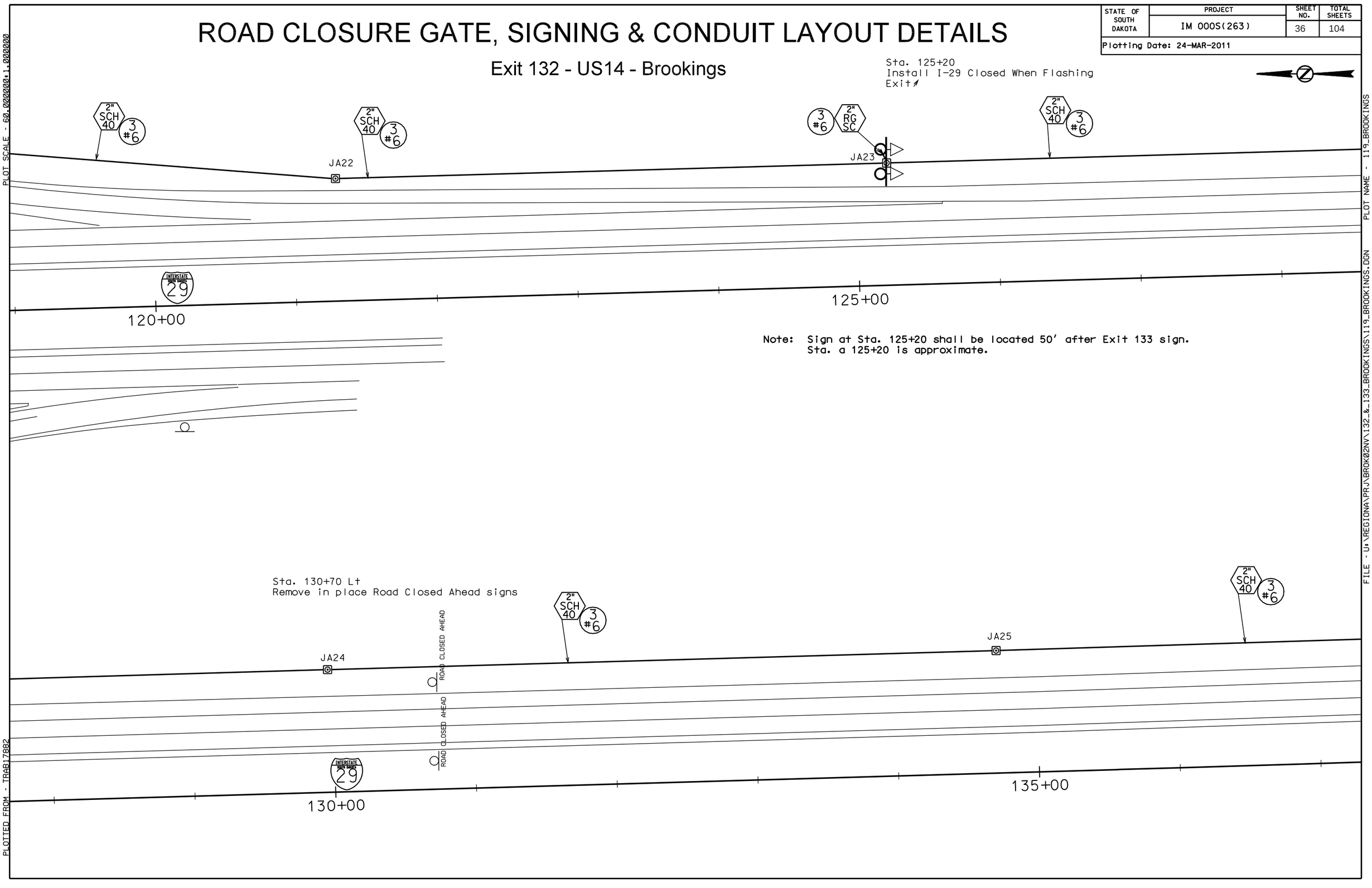
PLOT NAME - 110_BROOKINGS

FILE - U:\REGIONA\PRJ\BROK02NV\132_&_133_BROOKINGS\110_BROOKINGS.DGN

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	36	104
Plotting Date: 24-MAR-2011			

Exit 132 - US14 - Brookings



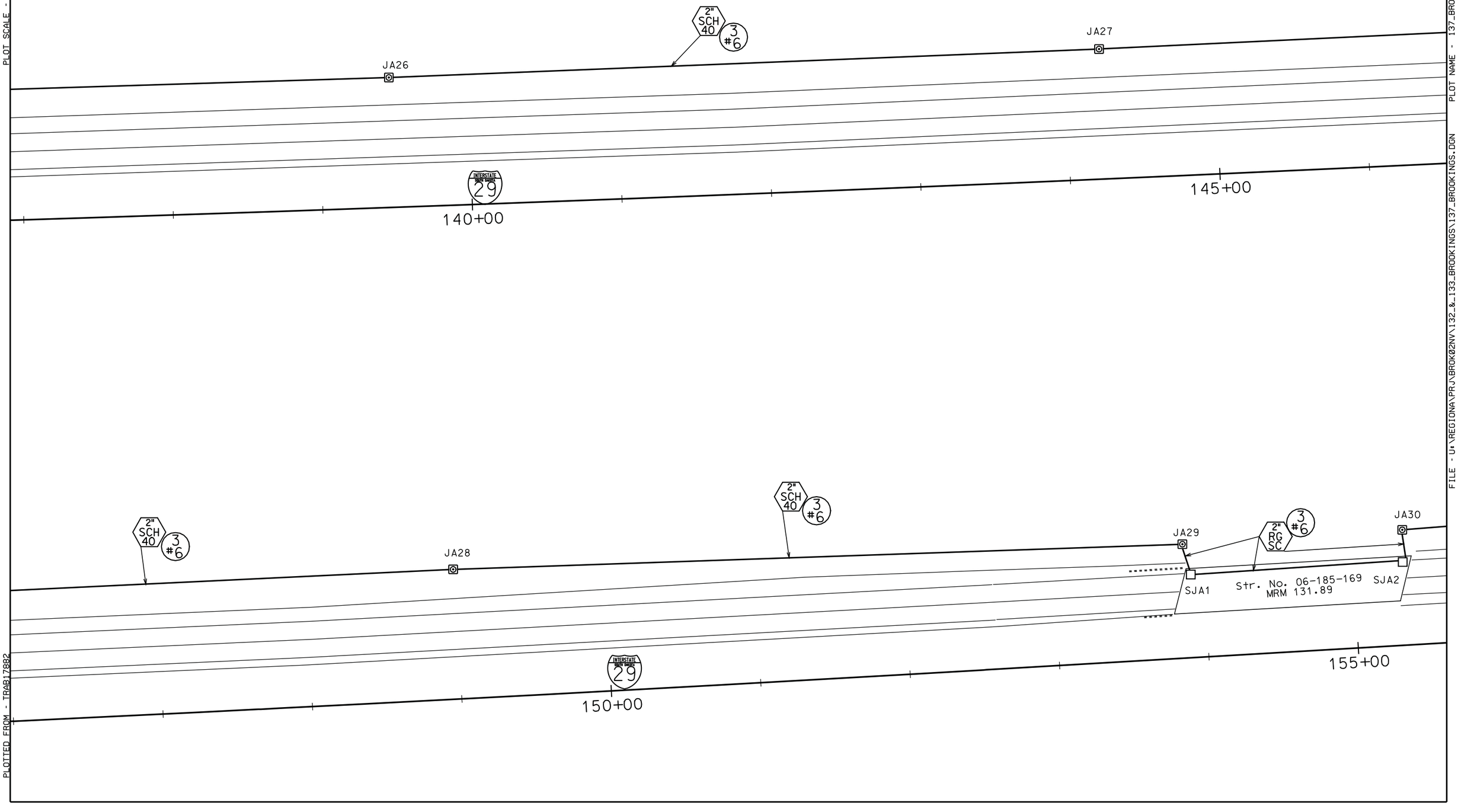
Note: Sign at Sta. 125+20 shall be located 50' after Exit 133 sign.
Sta. a 125+20 is approximate.

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 132 - US14 - Brookings

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	37	104

Plotting Date: 24-MAR-2011



PLOT SCALE - 60.000000:1.000000

PLOT NAME - 137_BROOKINGS

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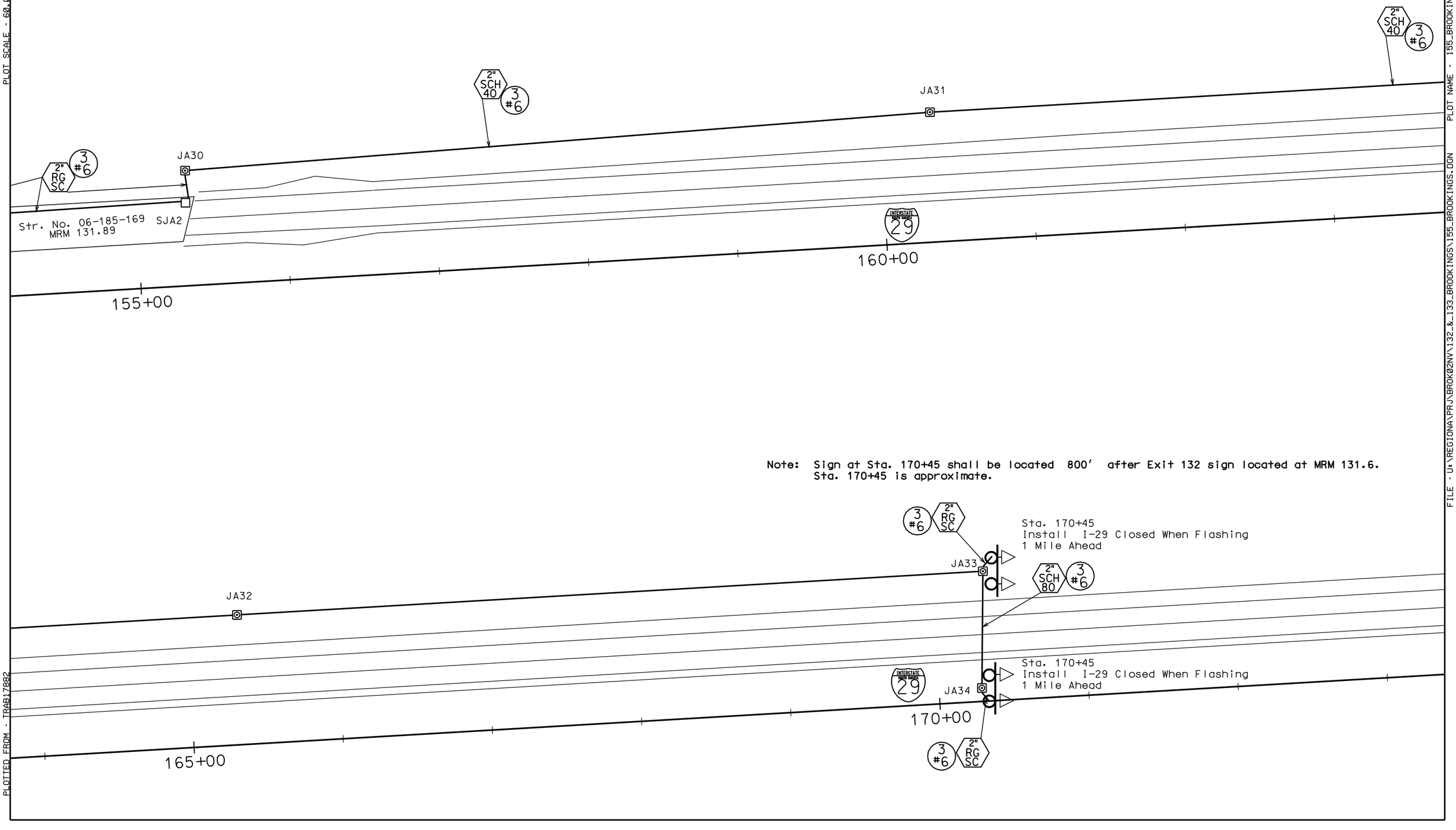
PLOTTED FROM - TRAB17982

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

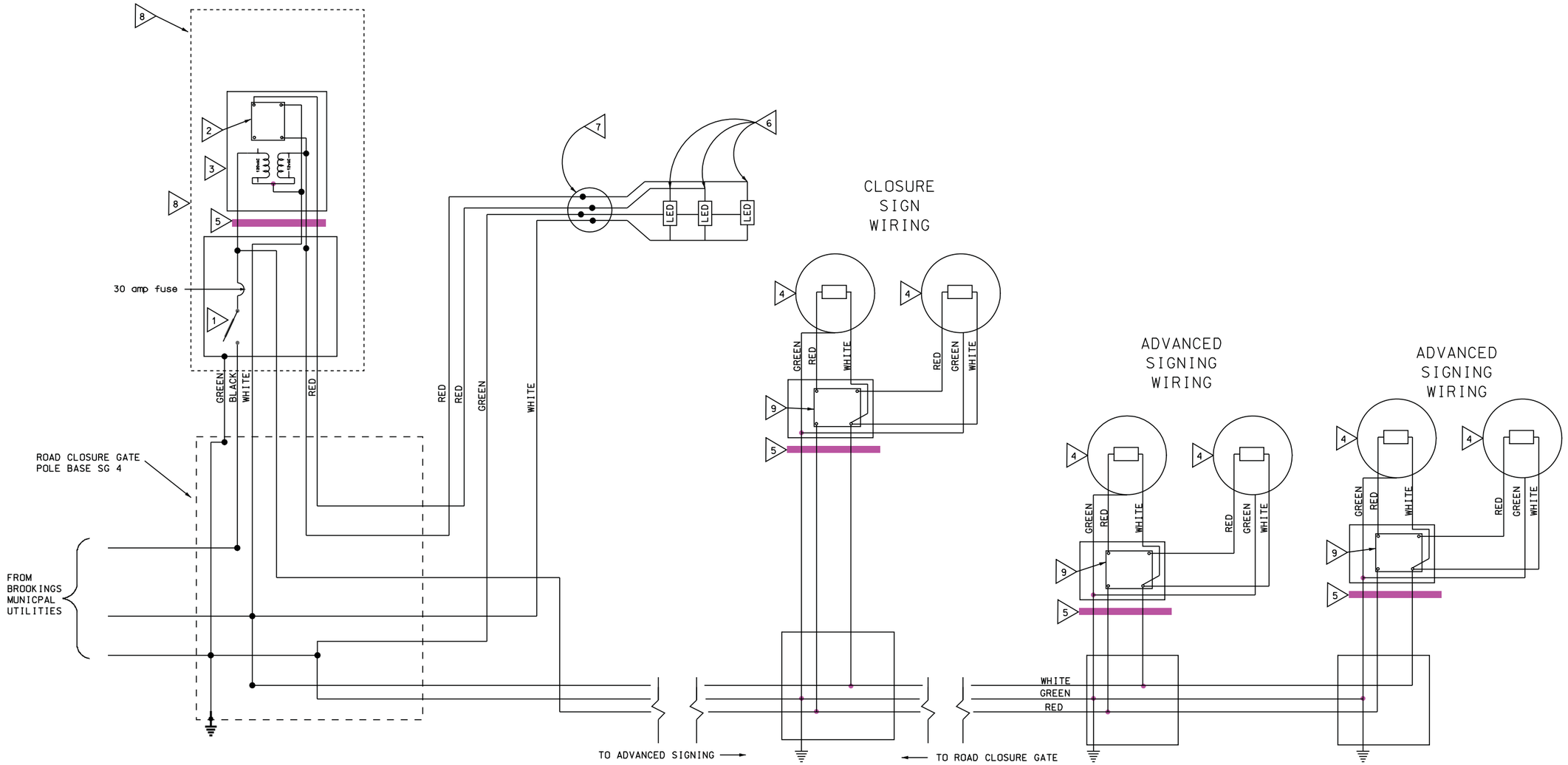
Exit 132 - US14 - Brookings

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	38	104
Plotting Date: 24-MAR-2011			



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	39	104

ROAD CLOSURE GATE WIRING DIAGRAMS EXIT 132



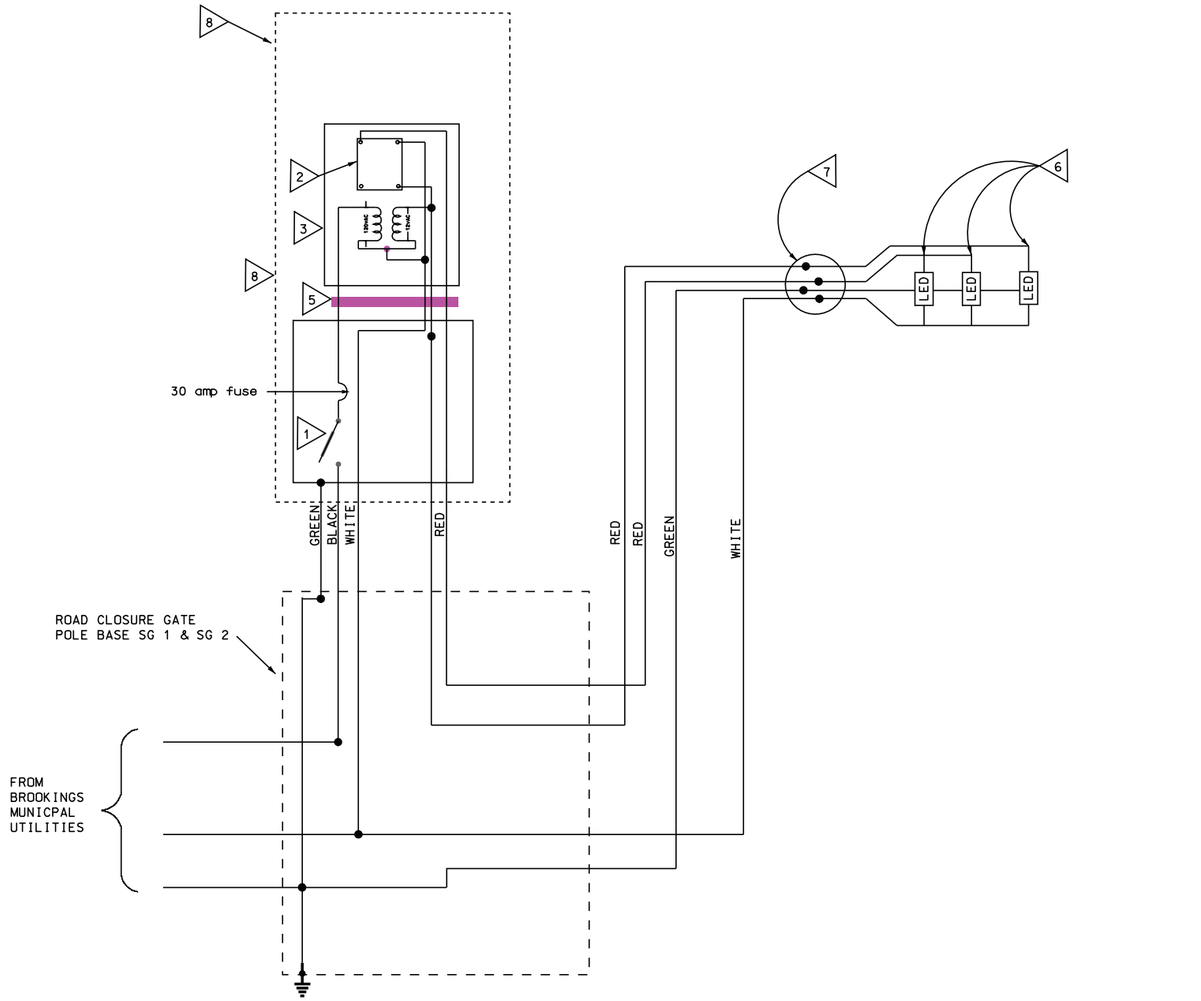
1. 30 AMP SAFETY SWITCH IN A NEMA 3R LOCKABLE ENCLOSURE. DPST FOR ROAD CLOSURE DROP GATE APPLICATIONS.
2. CUBE FLASHER MODEL 12DC10DF AS MANUFACTURED BY TSC (or equal) IN LOCKABLE NEMA 3R ENCLOSURE.
3. 120/240 VOLT PRIMARY, 12/24 VOLT SECONDARY TRANSFORMER, BUCK AND BOOST, MOUNTED IN LOCKABLE NEMA 3R ENCLOSURE.
4. VEHICLE SIGNAL INDICATION 12 inch. THE HEADS SHALL BE SUPPLIED WITH SDDOT APPROVED 12 inch LED SIGNAL HEADS.
5. CONDUCTORS ARE #6 AWG IN 2" RIGID STEEL CONDUIT.
6. THESE LAMP ASSEMBLIES ARE MANUFACTURED BY AURORA, PART NO. A30-944 (or equal) 12vAC LED GATE LIGHTS. 3 LAMP ASSEMBLIES SHALL BE MOUNTED ON EACH GATE.
7. THE CONTRACTOR SHALL INSTALL 2 CONDUCTOR NO. 14 AWG, "SO" CORD. CONNECTION OF THE "SO" CORD SHALL BE MADE IN A JUNCTION BOX MOUNTED ON THE GATE POST. THE JUNCTION BOX SHALL BE BANDED TO THE POST AND SHALL BE RAIN TIGHT AND WEATHERPROOF.
8. THE NEMA 3R ENCLOSURES AND RIGID STEEL CONDUIT SHALL BE MOUNTED TO THE SNOW GATE POLE
9. CAP FLASHER MODEL CF AS MANUFACTURED BY TSC (or equal)

NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

PLOTTED FROM - TRAB17882

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	40	104

ROAD CLOSURE GATE WIRING DIAGRAMS EXIT 132



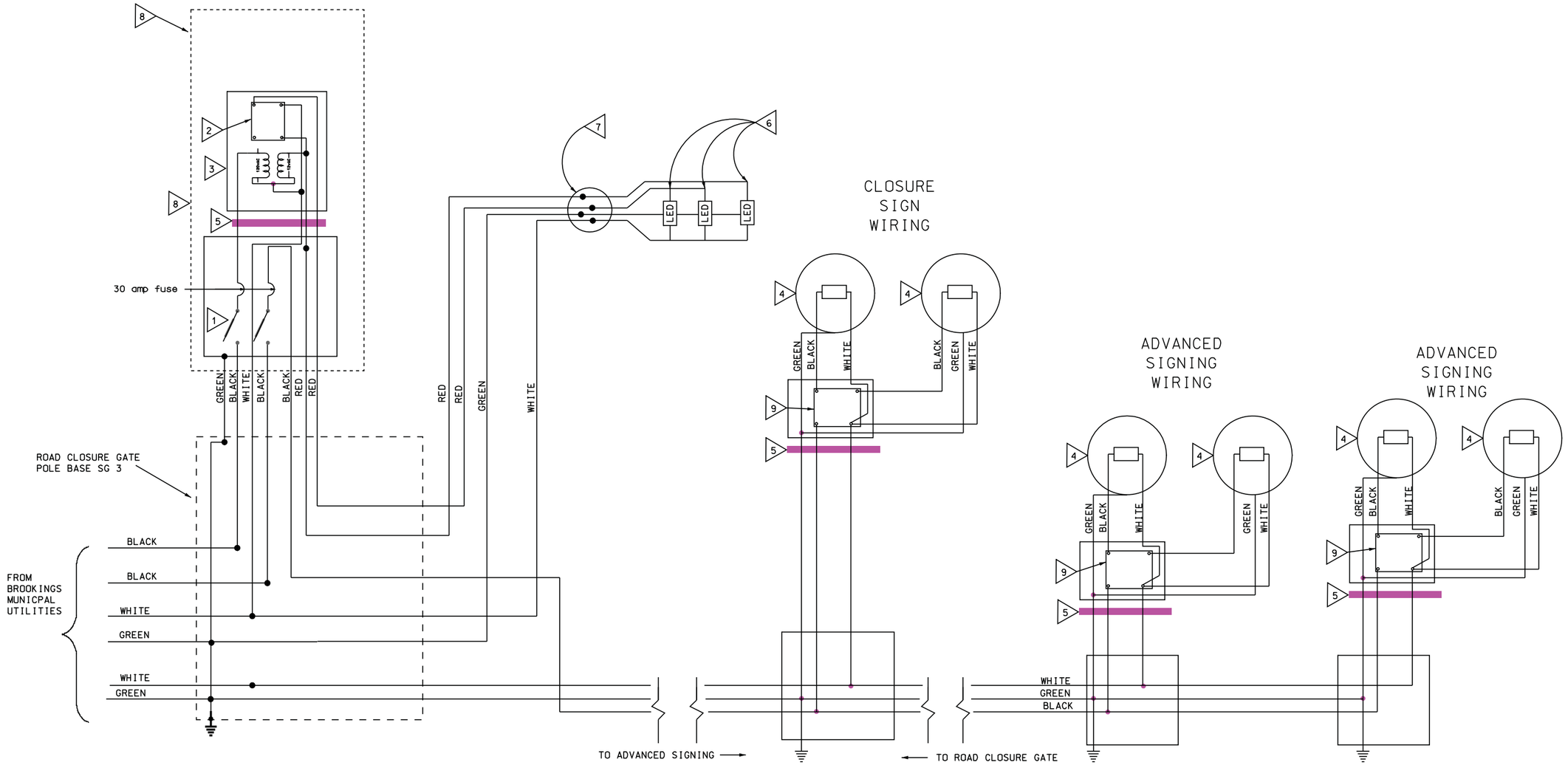
1. 30 AMP SAFETY SWITCH IN A NEMA 3R LOCKABLE ENCLOSURE. DPST FOR ROAD CLOSURE DROP GATE APPLICATIONS.
2. CUBE FLASHER MODEL 12DC10DF AS MANUFACTURED BY TSC (or equal) IN LOCKABLE NEMA 3R ENCLOSURE.
3. 120/240 VOLT PRIMARY, 12/24 VOLT SECONDARY TRANSFORMER, BUCK AND BOOST, MOUNTED IN LOCKABLE NEMA 3R ENCLOSURE.
4. VEHICLE SIGNAL INDICATION 12 inch. THE HEADS SHALL BE SUPPLIED WITH SDDOT APPROVED 12 inch LED SIGNAL HEADS.
5. CONDUCTORS ARE #6 AWG IN 2" RIGID STEEL CONDUIT.
6. THESE LAMP ASSEMBLIES ARE MANUFACTURED BY AURORA, PART NO. A30-944 (or equal) 12vAC LED GATE LIGHTS. 3 LAMP ASSEMBLIES SHALL BE MOUNTED ON EACH GATE.
7. THE CONTRACTOR SHALL INSTALL 2 CONDUCTOR NO. 14 AWG, "SO" CORD. CONNECTION OF THE "SO" CORD SHALL BE MADE IN A JUNCTION BOX MOUNTED ON THE GATE POST. THE JUNCTION BOX SHALL BE BANDED TO THE POST AND SHALL BE RAIN TIGHT AND WEATHERPROOF.
8. THE NEMA 3R ENCLOSURES AND RIGID STEEL CONDUIT SHALL BE MOUNTED TO THE SNOW GATE POLE
9. CAP FLASHER MODEL CF AS MANUFACTURED BY TSC (or equal)

NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

PLOTTED FROM - TRAB17982

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	41	104

ROAD CLOSURE GATE WIRING DIAGRAMS EXIT 132



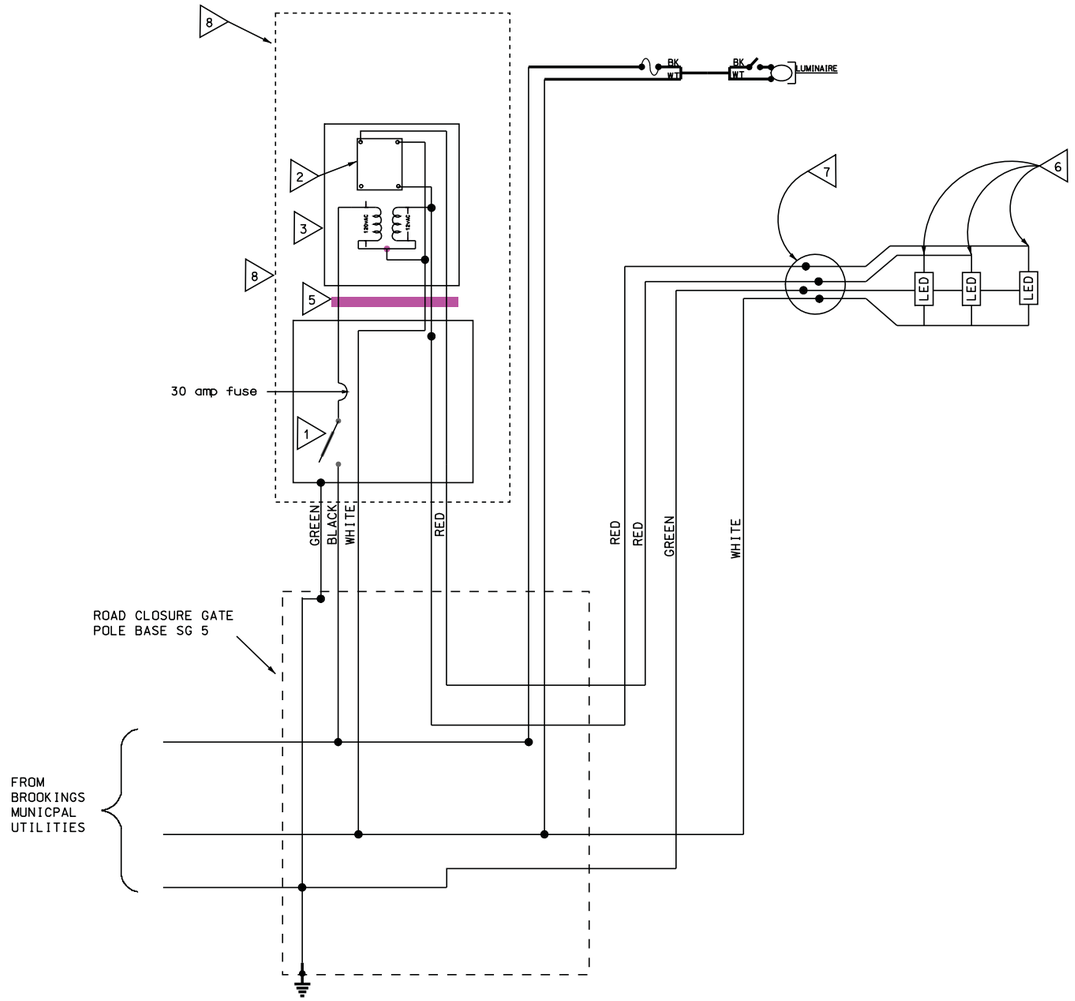
1. 30 AMP SAFETY SWITCH IN A NEMA 3R LOCKABLE ENCLOSURE. DPST FOR ROAD CLOSURE DROP GATE APPLICATIONS.
2. CUBE FLASHER MODEL 12DC10DF AS MANUFACTURED BY TSC (or equal) IN LOCKABLE NEMA 3R ENCLOSURE.
3. 120/240 VOLT PRIMARY, 12/24 VOLT SECONDARY TRANSFORMER, BUCK AND BOOST, MOUNTED IN LOCKABLE NEMA 3R ENCLOSURE.
4. VEHICLE SIGNAL INDICATION 12 inch. THE HEADS SHALL BE SUPPLIED WITH SDDOT APPROVED 12 inch LED SIGNAL HEADS.
5. CONDUCTORS ARE #6 AWG IN 2" RIGID STEEL CONDUIT.
6. THESE LAMP ASSEMBLIES ARE MANUFACTURED BY AURORA, PART NO. A30-944 (or equal) 12vAC LED GATE LIGHTS. 3 LAMP ASSEMBLIES SHALL BE MOUNTED ON EACH GATE.
7. THE CONTRACTOR SHALL INSTALL 2 CONDUCTOR NO. 14 AWG, "SO" CORD. CONNECTION OF THE "SO" CORD SHALL BE MADE IN A JUNCTION BOX MOUNTED ON THE GATE POST. THE JUNCTION BOX SHALL BE BANDED TO THE POST AND SHALL BE RAIN TIGHT AND WEATHERPROOF.
8. THE NEMA 3R ENCLOSURES AND RIGID STEEL CONDUIT SHALL BE MOUNTED TO THE SNOW GATE POLE
9. CAP FLASHER MODEL CF AS MANUFACTURED BY TSC (or equal)

NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

PLOTTED FROM - TRAB17882

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	42	104

ROAD CLOSURE GATE WIRING DIAGRAMS EXIT 133



1. 30 AMP SAFETY SWITCH IN A NEMA 3R LOCKABLE ENCLOSURE. DPST FOR ROAD CLOSURE DROP GATE APPLICATIONS.
2. CUBE FLASHER MODEL 12DC10DF AS MANUFACTURED BY TSC (or equal) IN LOCKABLE NEMA 3R ENCLOSURE.
3. 120/240 VOLT PRIMARY, 12/24 VOLT SECONDARY TRANSFORMER, BUCK AND BOOST, MOUNTED IN LOCKABLE NEMA 3R ENCLOSURE.
4. VEHICLE SIGNAL INDICATION 12 inch. THE HEADS SHALL BE SUPPLIED WITH SDDOT APPROVED 12 inch LED SIGNAL HEADS.
5. CONDUCTORS ARE #6 AWG IN 2" RIGID STEEL CONDUIT.
6. THESE LAMP ASSEMBLIES ARE MANUFACTURED BY AURORA, PART NO. A30-944 (or equal) 12vAC LED GATE LIGHTS. 3 LAMP ASSEMBLIES SHALL BE MOUNTED ON EACH GATE.
7. THE CONTRACTOR SHALL INSTALL 2 CONDUCTOR NO. 14 AWG, "SO" CORD. CONNECTION OF THE "SO" CORD SHALL BE MADE IN A JUNCTION BOX MOUNTED ON THE GATE POST. THE JUNCTION BOX SHALL BE BANDED TO THE POST AND SHALL BE RAIN TIGHT AND WEATHERPROOF.
8. THE NEMA 3R ENCLOSURES AND RIGID STEEL CONDUIT SHALL BE MOUNTED TO THE SNOW GATE POLE
9. CAP FLASHER MODEL CF AS MANUFACTURED BY TSC (or equal)

NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

LEGEND:

FUSE: 8 amp. Non-Time Delay
or
3 1/2 amp. Dual Element

LUMINAIRE: 250 watt High Pressure Sodium Lamp

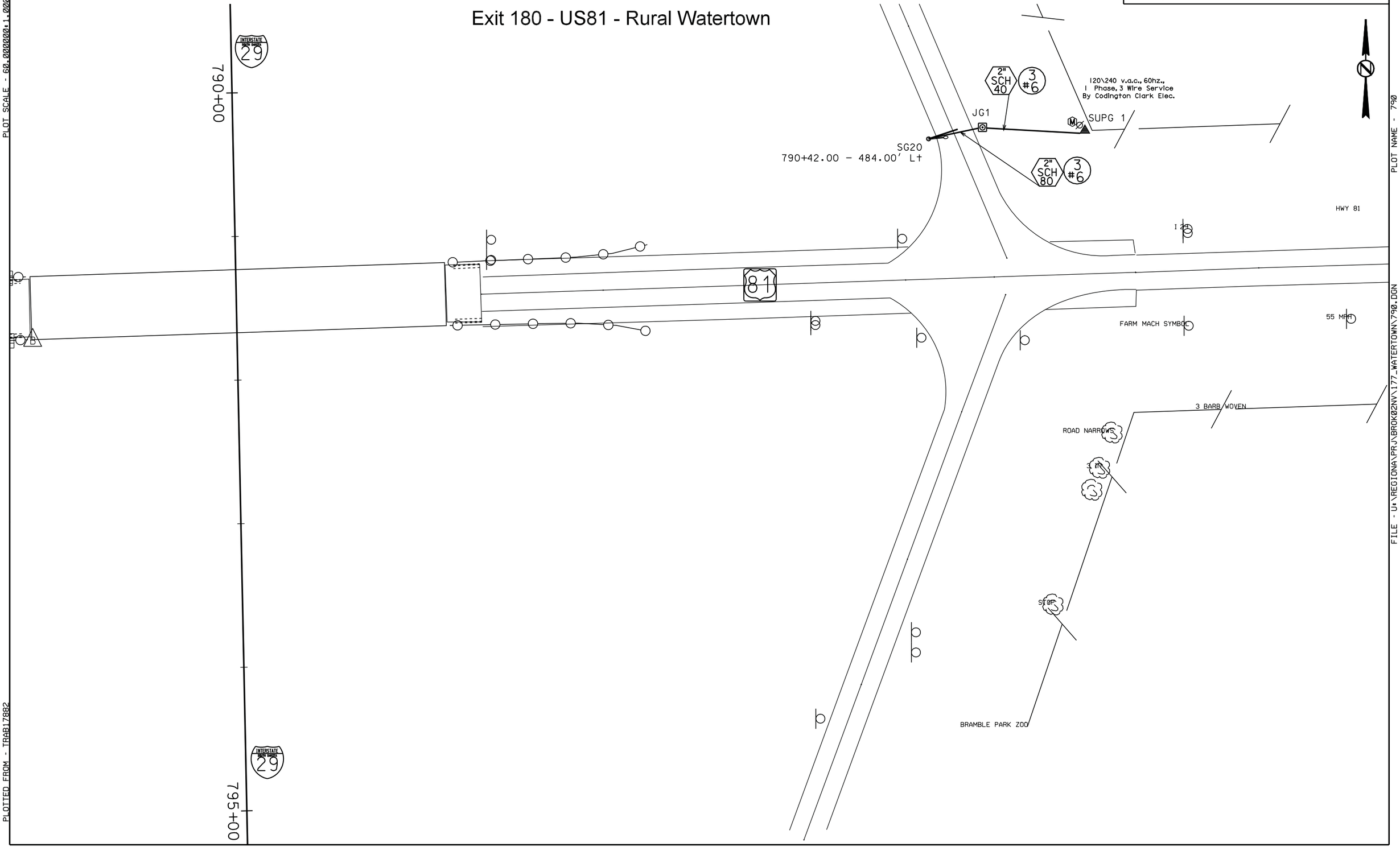
PLOTTED FROM - TRAB17982

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 180 - US81 - Rural Watertown

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	43	104

Plotting Date: 24-MAR-2011



PLOT SCALE - 60.000000:1.000000

PLOT NAME - 790

FILE - U:\REGIONA\PRJ\BROK02NV\177_WATERTOWN\790.DGN

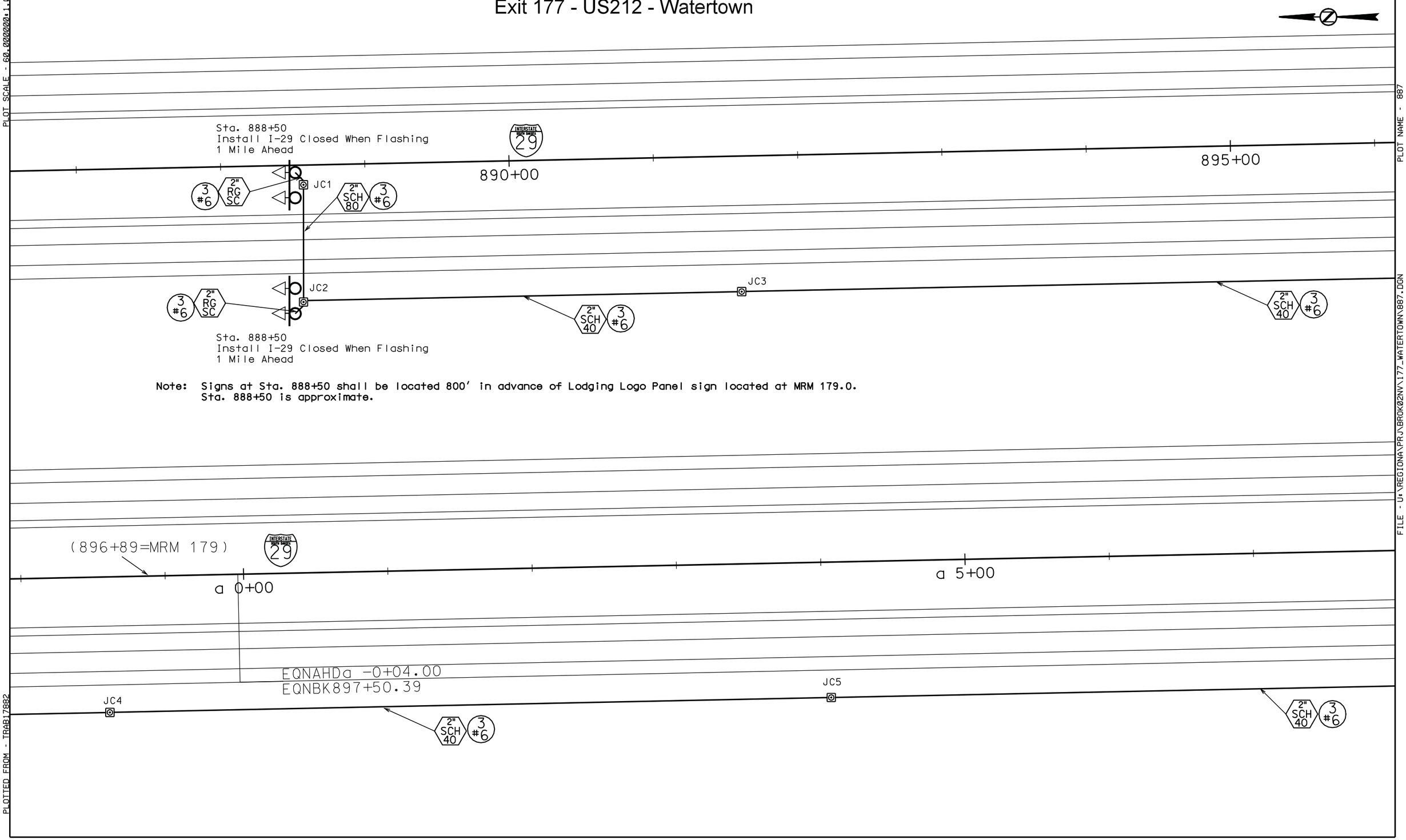
PLOTTED FROM - TRAB17982

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 177 - US212 - Watertown

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	44	104

Plotting Date: 24-MAR-2011



Note: Signs at Sta. 888+50 shall be located 800' in advance of Lodging Logo Panel sign located at MRM 179.0. Sta. 888+50 is approximate.

PLOT SCALE - 60.000000:1.000000

PLOT NAME - 887

FILE - U:\REGIONA\PRJ\BROK02NV\177_WATERTOWN\887.DGN

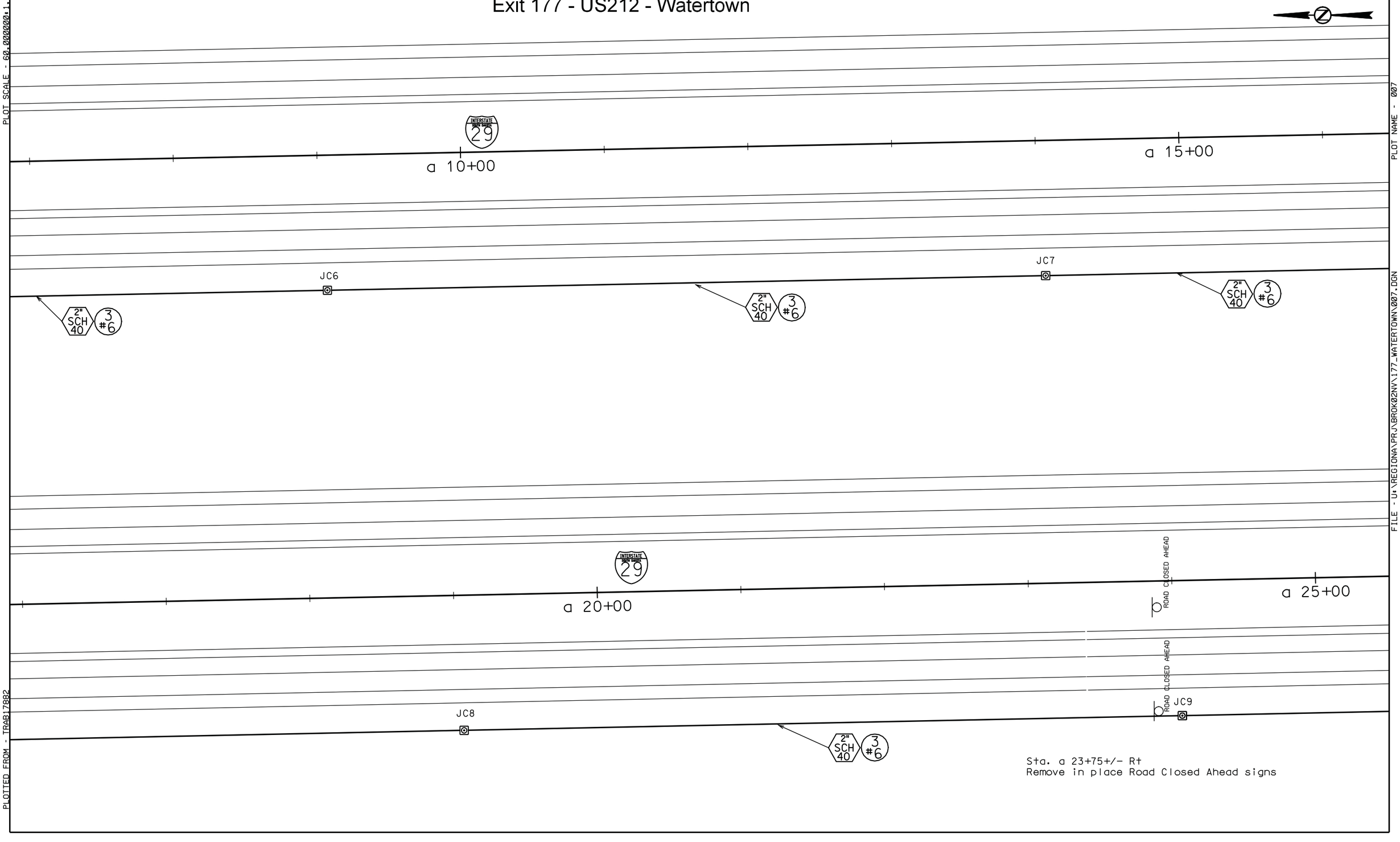
PLOTTED FROM - TRAB17882

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 177 - US212 - Watertown

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	45	104

Plotting Date: 24-MAR-2011



Sta. Ø 23+75+/- Rt
Remove in place Road Closed Ahead signs

PLOT SCALE - 60.000000:1.000000

PLOT NAME - 007

FILE - U:\REGIONA\PRJ\BROK02NV\177_WATERTOWN\007.DGN

PLOTTED FROM - TRAB17882

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 177 - US212 - Watertown

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	46	104

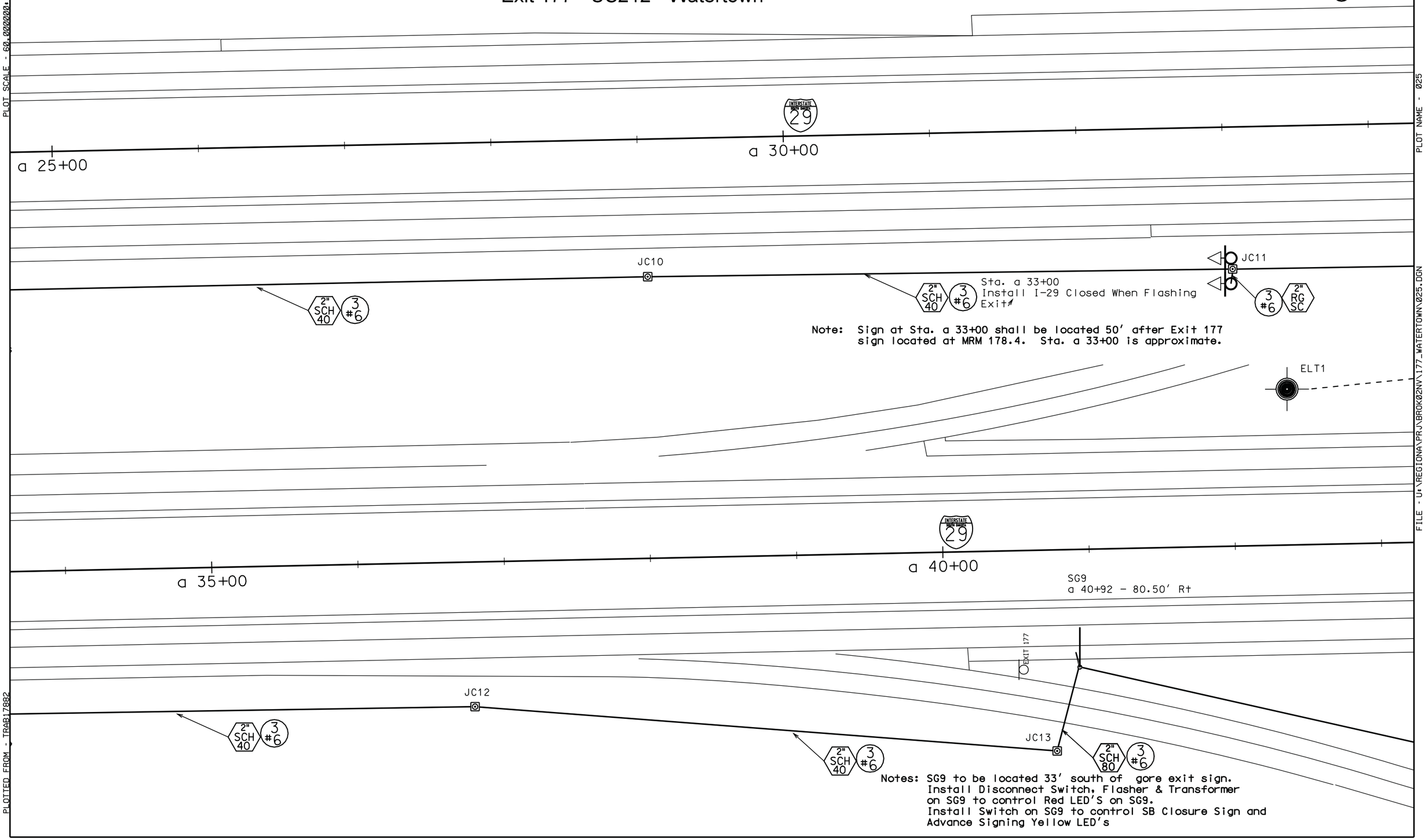
Plotting Date: 24-MAR-2011

PLOT SCALE - 60.000000:1.000000

PLOT NAME - 025

FILE - U:\REGIONA\PRJ\BROK02NV\177_WATERTOWN\025.DGN

PLOTTED FROM - TRAB17882



Note: Sign at Sta. a 33+00 shall be located 50' after Exit 177 sign located at MRM 178.4. Sta. a 33+00 is approximate.

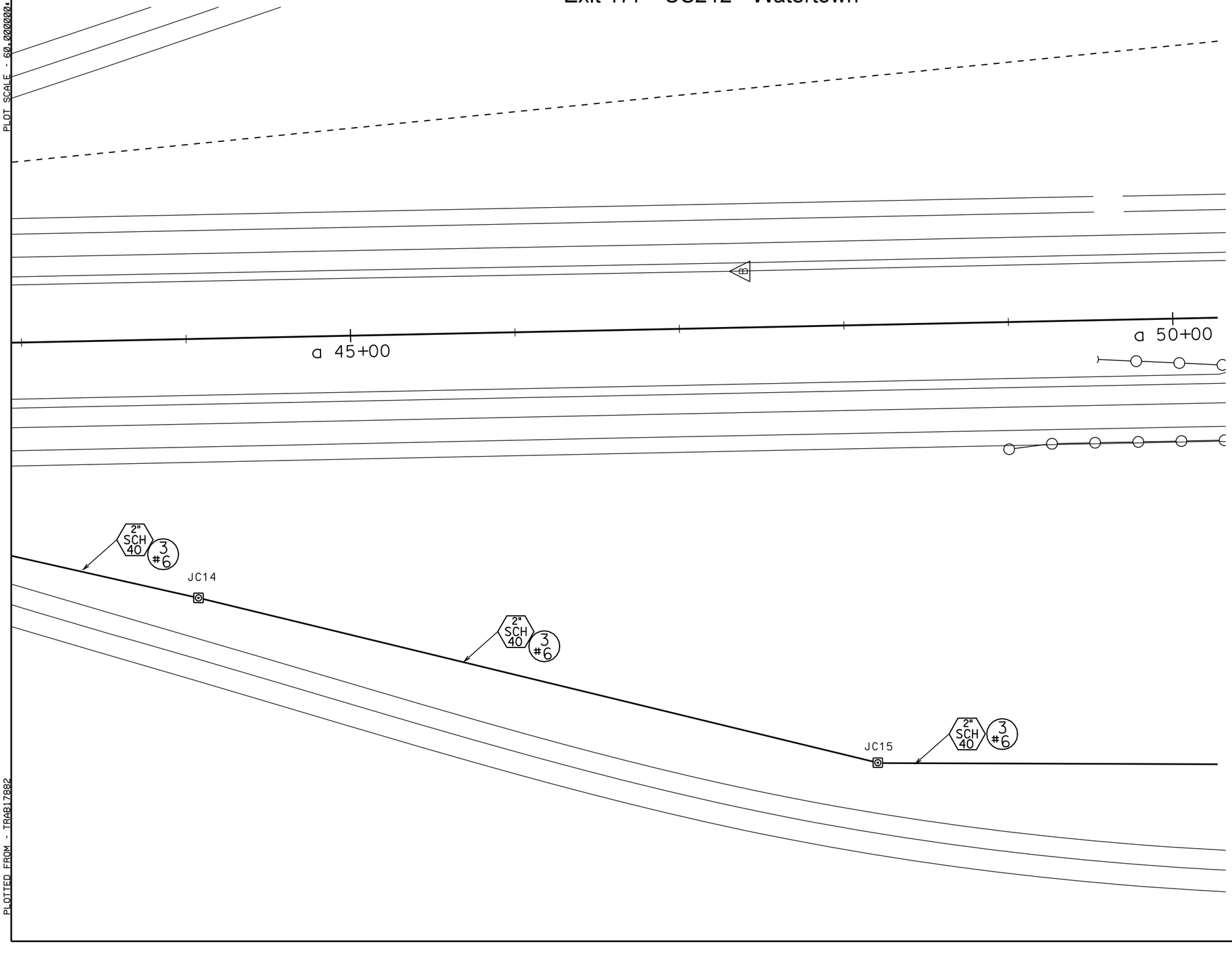
Notes: SG9 to be located 33' south of gore exit sign.
Install Disconnect Switch, Flasher & Transformer on SG9 to control Red LED'S on SG9.
Install Switch on SG9 to control SB Closure Sign and Advance Signing Yellow LED's

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 177 - US212 - Watertown

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	47	104

Plotting Date: 24-MAR-2011



ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	48	104
Plotting Date: 24-MAR-2011			

Exit 177 - US212 - Watertown

Notes: SG7 shall be installed 5.5' behind edge of ramp pavement and 65' north of north edge of US212 PCCP.
Install Disconnect Switch, Flasher & Transformer on SG7 to control Red LED's on SG7.

Notes: SG6 shall be installed 5.5' behind edge of ramp pavement and 64'south of south edge of US212 PCCP.
Install Disconnect Switch, Flasher & Transformer on SG6 to control Red LED's on SG6.

SG6
a 54+50 - 324.60' Rt

SG7
a 51+87.00 - 371.00' Lt

120\240 v.a.c., 60hz., 1 Phase, 3 Wire Service By W.M.U.

PLOT SCALE - 60.000000:1.000000

PLOT NAME - Ø5Ø

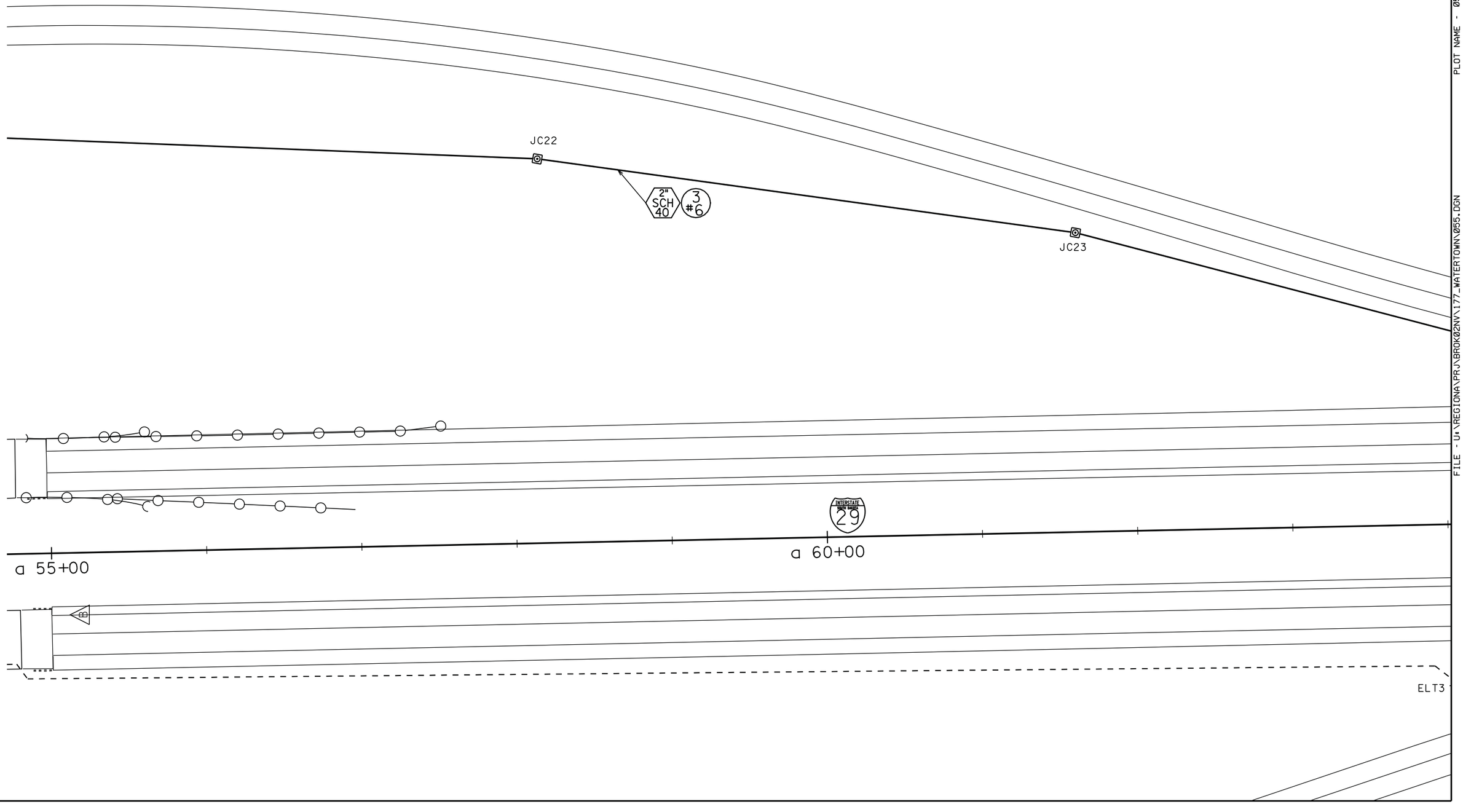
FILE - U:\REGIONA\PRJ\BROKØ2NV\177_WATERTOWN\Ø5Ø.DGN

PLOTTED FROM - TRAB17882

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 177 - US212 - Watertown

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	49	104
Plotting Date: 24-MAR-2011			

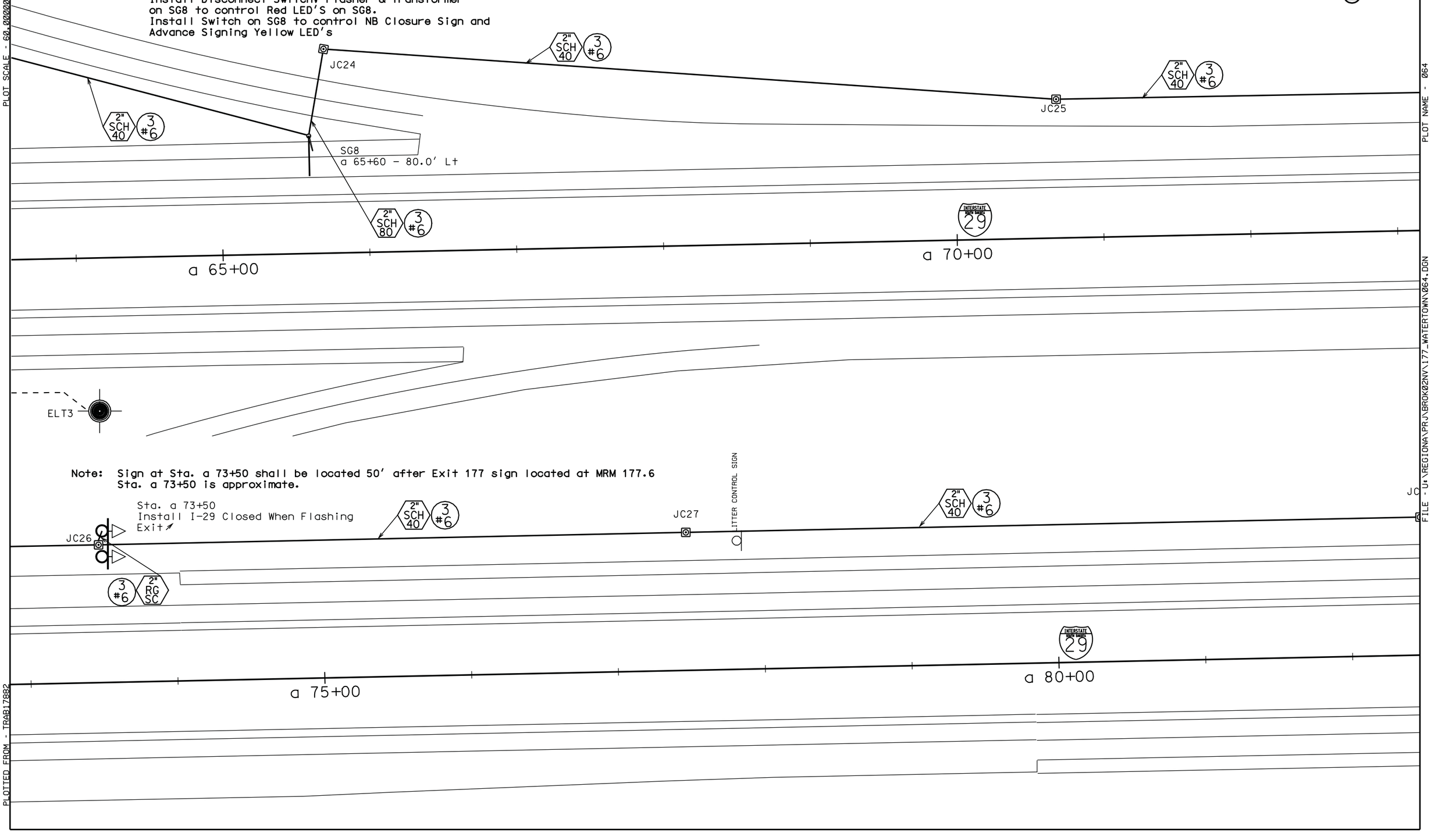


ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	50	104
Plotting Date: 24-MAR-2011			

Exit 177 - US212 - Watertown

Notes: SG8 to be located 15' north of gore exit sign.
Install Disconnect Switch, Flasher & Transformer on SG8 to control Red LED'S on SG8.
Install Switch on SG8 to control NB Closure Sign and Advance Signing Yellow LED's



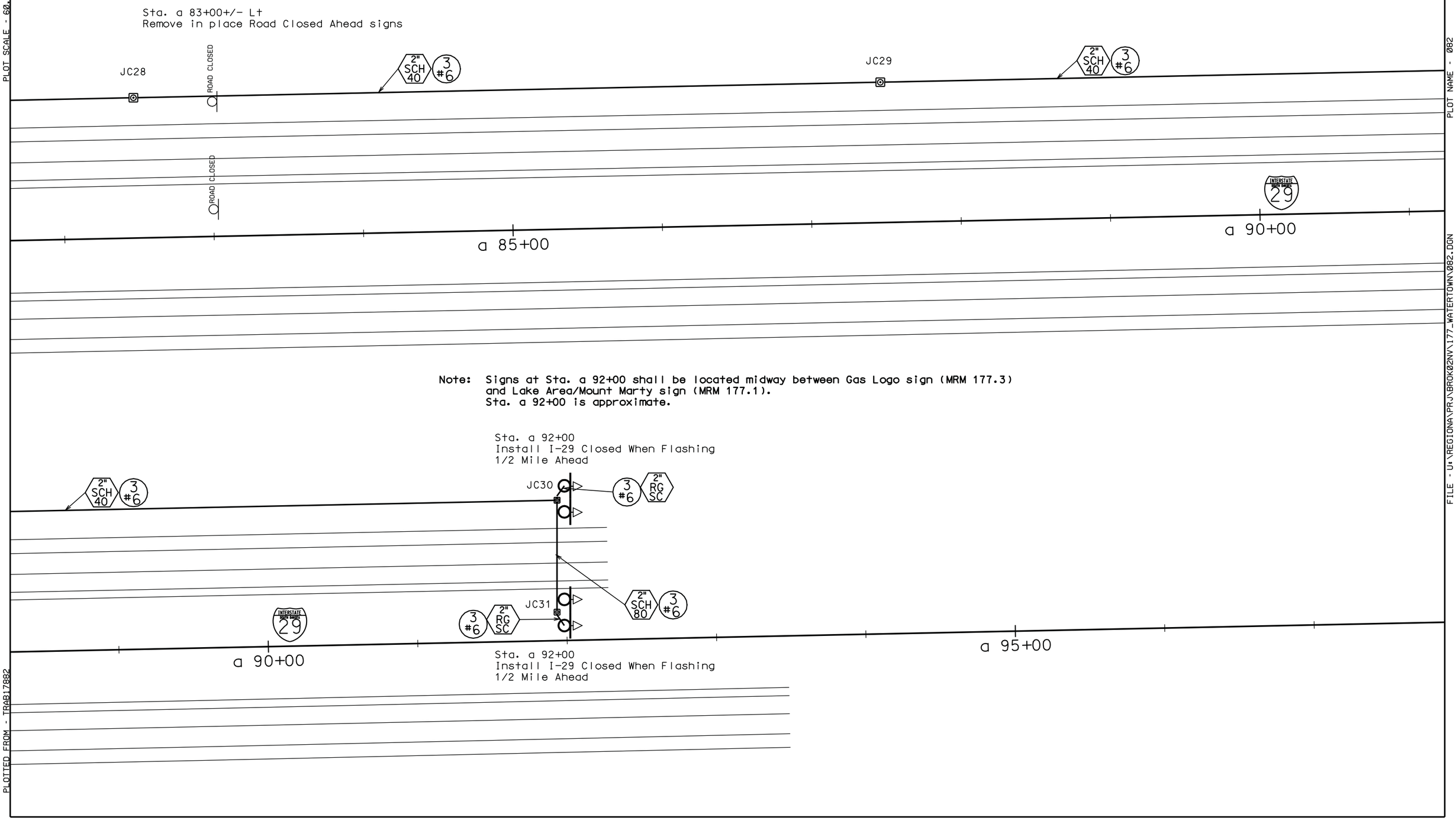
ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 177 - US212 - Watertown

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	51	104

Plotting Date: 24-MAR-2011

No



PLOT SCALE - 60.000000:1.000000

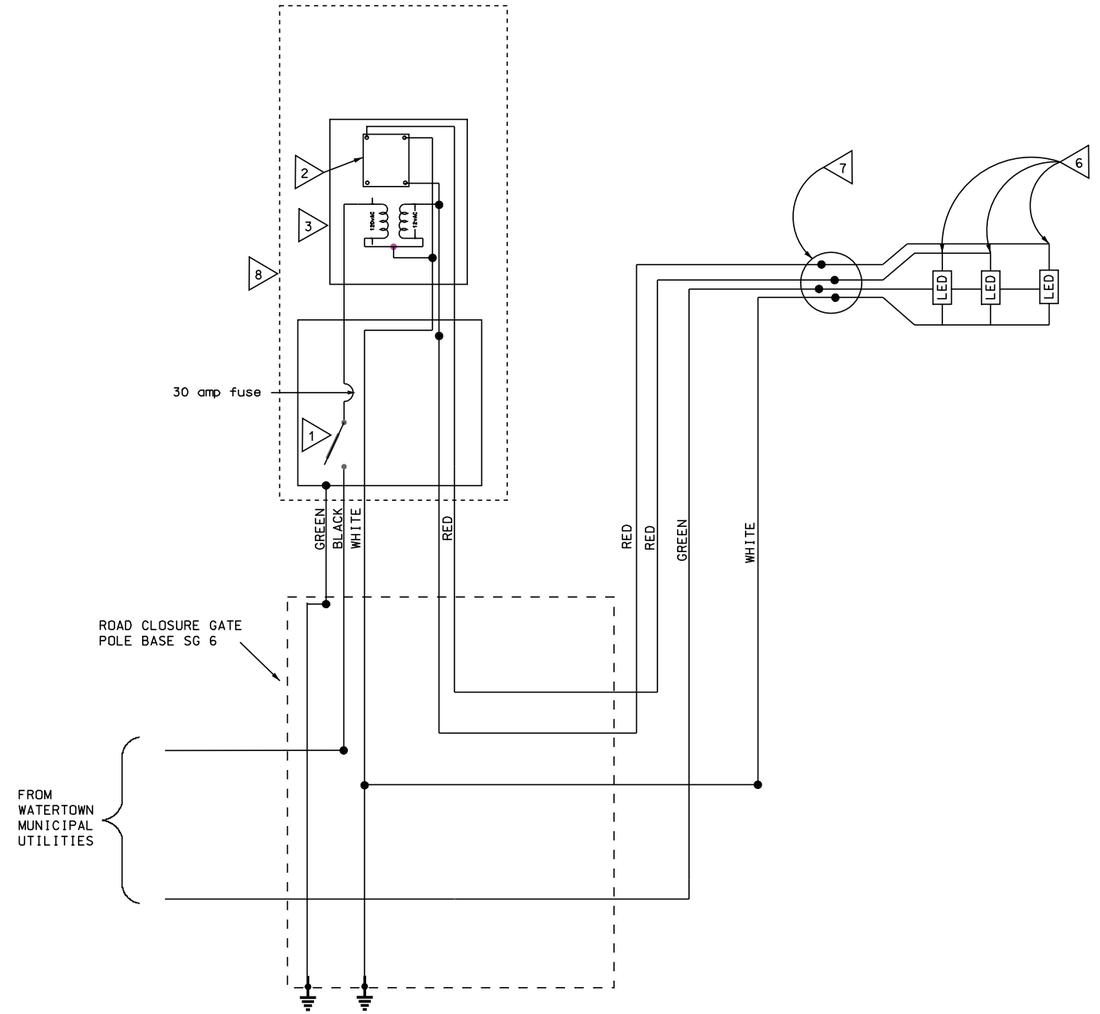
PLOT NAME - Ø82

FILE - U:\REGIONA\PRJ\BROKØ2NV\177_WATERTOWN\Ø82.DGN

PLOTTED FROM - TRAB17982

ROAD CLOSURE GATE WIRING DIAGRAMS EXIT 177

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	52	104
Plotting Date: 24-MAR-2011			

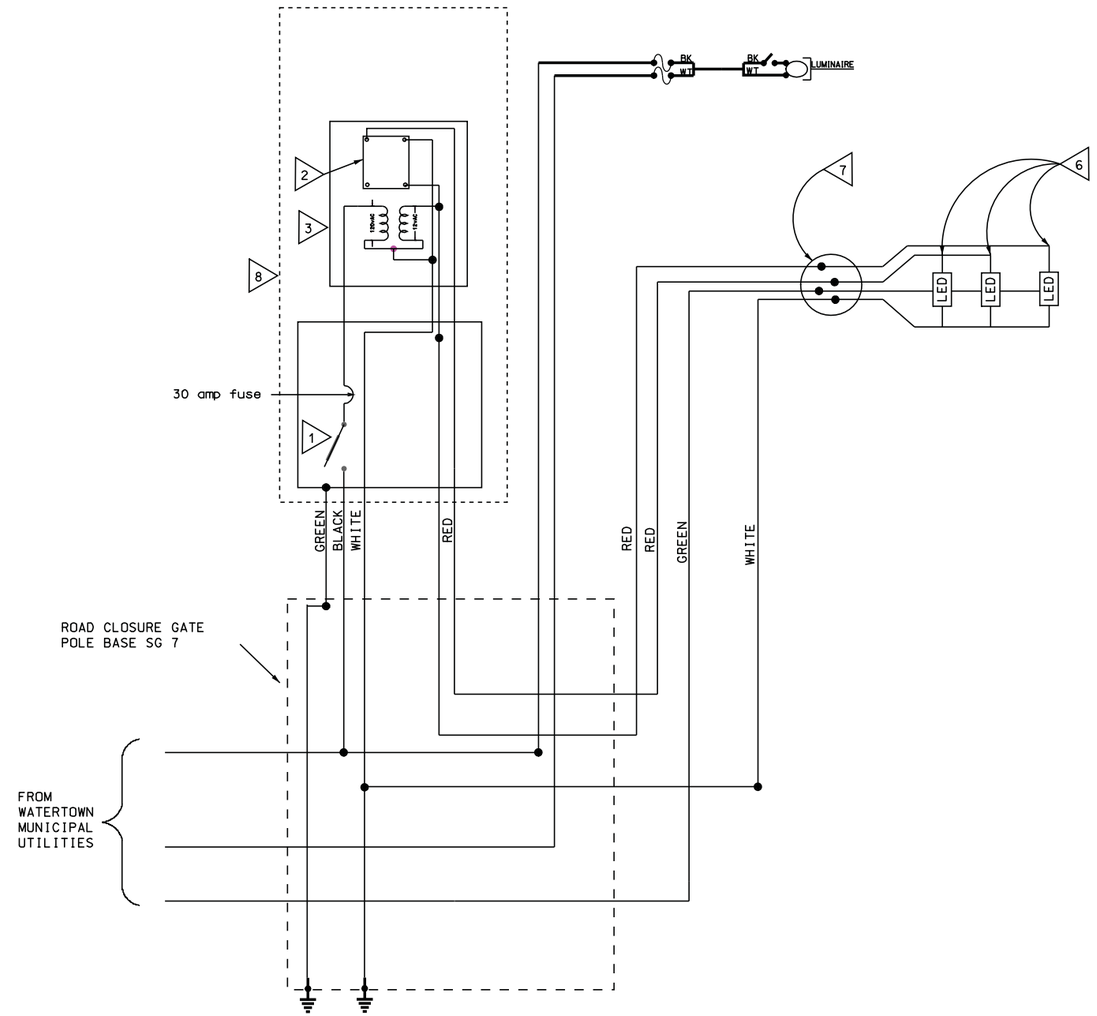


1. 30 AMP SAFETY SWITCH IN A NEMA 3R LOCKABLE ENCLOSURE. DPST FOR ROAD CLOSURE DROP GATE APPLICATIONS.
2. CUBE FLASHER MODEL 12DC10DF AS MANUFACTURED BY TSC (or equal) IN LOCKABLE NEMA 3R ENCLOSURE.
3. 120/240 VOLT PRIMARY, 12/24 VOLT SECONDARY TRANSFORMER, BUCK AND BOOST, MOUNTED IN LOCKABLE NEMA 3R ENCLOSURE.
4. VEHICLE SIGNAL INDICATION 12 inch. THE HEADS SHALL BE SUPPLIED WITH SDDOT APPROVED 12 inch LED SIGNAL HEADS.
5. CONDUCTORS ARE #6 AWG IN 2" RIGID STEEL CONDUIT.
6. THESE LAMP ASSEMBLIES ARE MANUFACTURED BY AURORA, PART NO. A30-944 (or equal) 12VAC LED GATE LIGHTS. 3 LAMP ASSEMBLIES SHALL BE MOUNTED ON EACH GATE.
7. THE CONTRACTOR SHALL INSTALL 4 CONDUCTOR NO. 14 AWG, "SO" CORD. CONNECTION OF THE "SO" CORD SHALL BE MADE IN A JUNCTION BOX MOUNTED ON THE GATE POST. THE JUNCTION BOX SHALL BE BANDED TO THE POST AND SHALL BE RAIN TIGHT AND WEATHERPROOF.
8. THE NEMA 3R ENCLOSURES AND RIGID STEEL CONDUIT SHALL BE MOUNTED TO THE SNOW GATE POLE.
9. CAP FLASHER MODEL CF AS MANUFACTURED BY TSC (or equal).

NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

ROAD CLOSURE GATE WIRING DIAGRAMS EXIT 177

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	53	104
Plotting Date: 24-MAR-2011			



1. 30 AMP SAFETY SWITCH IN A NEMA 3R LOCKABLE ENCLOSURE. DPST FOR ROAD CLOSURE DROP GATE APPLICATIONS.
2. CUBE FLASHER MODEL 12DC10DF AS MANUFACTURED BY TSC (or equal) IN LOCKABLE NEMA 3R ENCLOSURE.
3. 120/240 VOLT PRIMARY, 12/24 VOLT SECONDARY TRANSFORMER, BUCK AND BOOST, MOUNTED IN LOCKABLE NEMA 3R ENCLOSURE.
4. VEHICLE SIGNAL INDICATION 12 inch. THE HEADS SHALL BE SUPPLIED WITH SDDOT APPROVED 12 inch LED SIGNAL HEADS.
5. CONDUCTORS ARE #6 AWG IN 2" RIGID STEEL CONDUIT.
6. THESE LAMP ASSEMBLIES ARE MANUFACTURED BY AURORA, PART NO. A30-944 (or equal) 12VAC LED GATE LIGHTS. 3 LAMP ASSEMBLIES SHALL BE MOUNTED ON EACH GATE.
7. THE CONTRACTOR SHALL INSTALL 4 CONDUCTOR NO. 14 AWG, "SO" CORD. CONNECTION OF THE "SO" CORD SHALL BE MADE IN A JUNCTION BOX MOUNTED ON THE GATE POST. THE JUNCTION BOX SHALL BE BANDED TO THE POST AND SHALL BE RAIN TIGHT AND WEATHERPROOF.
8. THE NEMA 3R ENCLOSURES AND RIGID STEEL CONDUIT SHALL BE MOUNTED TO THE SNOW GATE POLE.
9. CAP FLASHER MODEL CF AS MANUFACTURED BY TSC (or equal).

NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

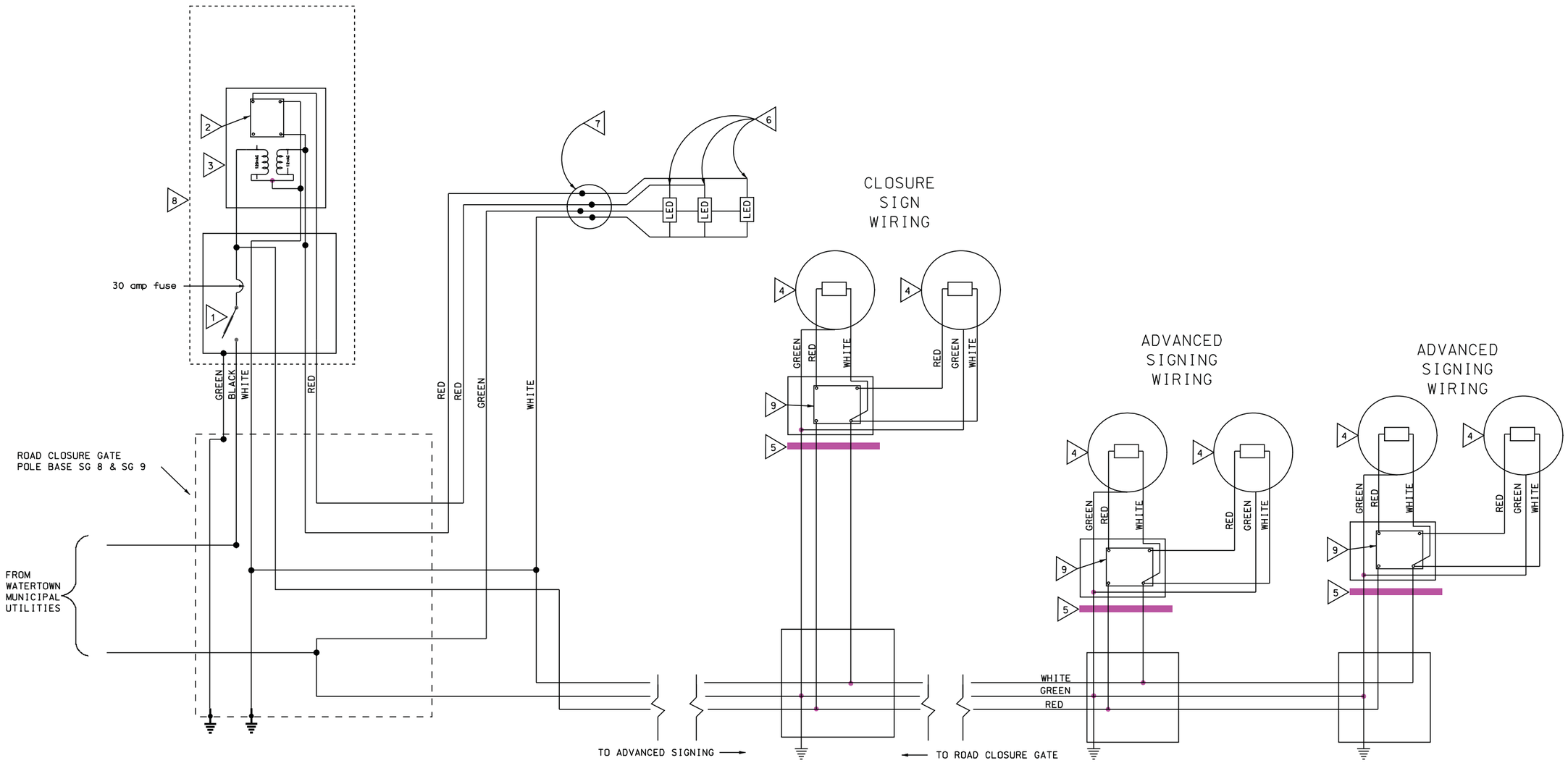
LEGEND:

FUSE: 4 amp. Non-Time Delay
or
1 8/10 amp. Dual Element

LUMINAIRE: 250 watt High Pressure Sodium Lamp

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	54	104
Plotting Date: 24-MAR-2011			

ROAD CLOSURE GATE WIRING DIAGRAMS EXIT 177

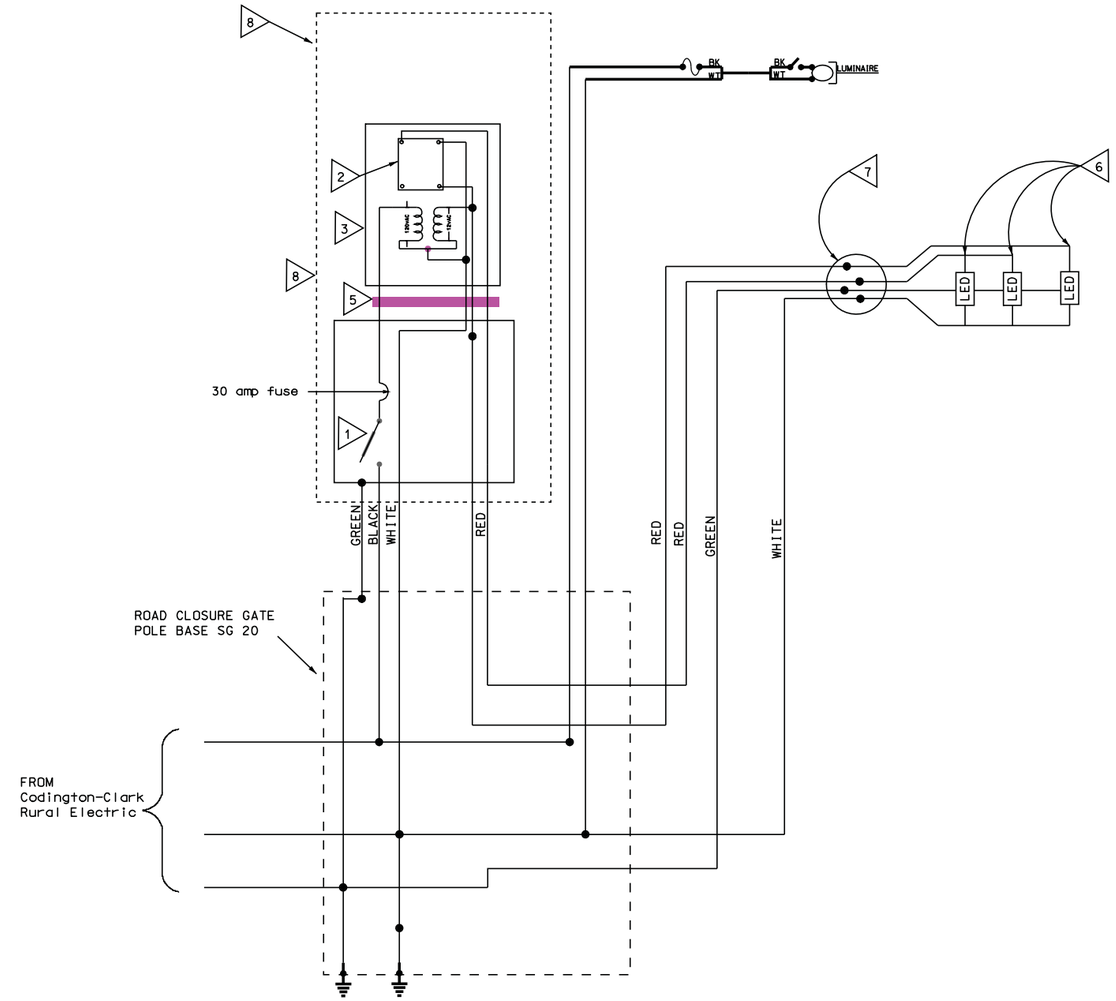


1. 30 AMP SAFETY SWITCH IN A NEMA 3R LOCKABLE ENCLOSURE. DPST FOR ROAD CLOSURE DROP GATE APPLICATIONS.
2. CUBE FLASHER MODEL 12DC10DF AS MANUFACTURED BY TSC (or equal) IN LOCKABLE NEMA 3R ENCLOSURE.
3. 120/240 VOLT PRIMARY, 12/24 VOLT SECONDARY TRANSFORMER, BUCK AND BOOST, MOUNTED IN LOCKABLE NEMA 3R ENCLOSURE.
4. VEHICLE SIGNAL INDICATION 12 inch. THE HEADS SHALL BE SUPPLIED WITH SDDOT APPROVED 12 inch LED SIGNAL HEADS.
5. CONDUCTORS ARE #6 AWG IN 2" RIGID STEEL CONDUIT.
6. THESE LAMP ASSEMBLIES ARE MANUFACTURED BY AURORA, PART NO. A30-944 (or equal) 12VAC LED GATE LIGHTS. 3 LAMP ASSEMBLIES SHALL BE MOUNTED ON EACH GATE.
7. THE CONTRACTOR SHALL INSTALL 4 CONDUCTOR NO. 14 AWG. "SO" CORD. CONNECTION OF THE "SO" CORD SHALL BE MADE IN A JUNCTION BOX MOUNTED ON THE GATE POST. THE JUNCTION BOX SHALL BE BANDED TO THE POST AND SHALL BE RAIN TIGHT AND WEATHERPROOF.
8. THE NEMA 3R ENCLOSURES AND RIGID STEEL CONDUIT SHALL BE MOUNTED TO THE SNOW GATE POLE.
9. CAP FLASHER MODEL CF AS MANUFACTURED BY TSC (or equal).

NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	55	104

ROAD CLOSURE GATE WIRING DIAGRAMS EXIT 180



1. 30 AMP SAFETY SWITCH IN A NEMA 3R LOCKABLE ENCLOSURE. DPST FOR ROAD CLOSURE DROP GATE APPLICATIONS.
2. CUBE FLASHER MODEL 12DC10DF AS MANUFACTURED BY TSC (or equal) IN LOCKABLE NEMA 3R ENCLOSURE.
3. 120/240 VOLT PRIMARY, 12/24 VOLT SECONDARY TRANSFORMER, BUCK AND BOOST, MOUNTED IN LOCKABLE NEMA 3R ENCLOSURE.
4. VEHICLE SIGNAL INDICATION 12 inch. THE HEADS SHALL BE SUPPLIED WITH SDDOT APPROVED 12 inch LED SIGNAL HEADS.
5. CONDUCTORS ARE #6 AWG IN 2" RIGID STEEL CONDUIT.
6. THESE LAMP ASSEMBLIES ARE MANUFACTURED BY AURORA, PART NO. A30-944 (or equal) 12vAC LED GATE LIGHTS. 3 LAMP ASSEMBLIES SHALL BE MOUNTED ON EACH GATE.
7. THE CONTRACTOR SHALL INSTALL 2 CONDUCTOR NO. 14 AWG, "SO" CORD. CONNECTION OF THE "SO" CORD SHALL BE MADE IN A JUNCTION BOX MOUNTED ON THE GATE POST. THE JUNCTION BOX SHALL BE BANDED TO THE POST AND SHALL BE RAIN TIGHT AND WEATHERPROOF.
8. THE NEMA 3R ENCLOSURES AND RIGID STEEL CONDUIT SHALL BE MOUNTED TO THE SNOW GATE POLE
9. CAP FLASHER MODEL CF AS MANUFACTURED BY TSC (or equal)

NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

LEGEND:

FUSE: 8 amp. Non-Time Delay
or
3 1/2 amp. Dual Element

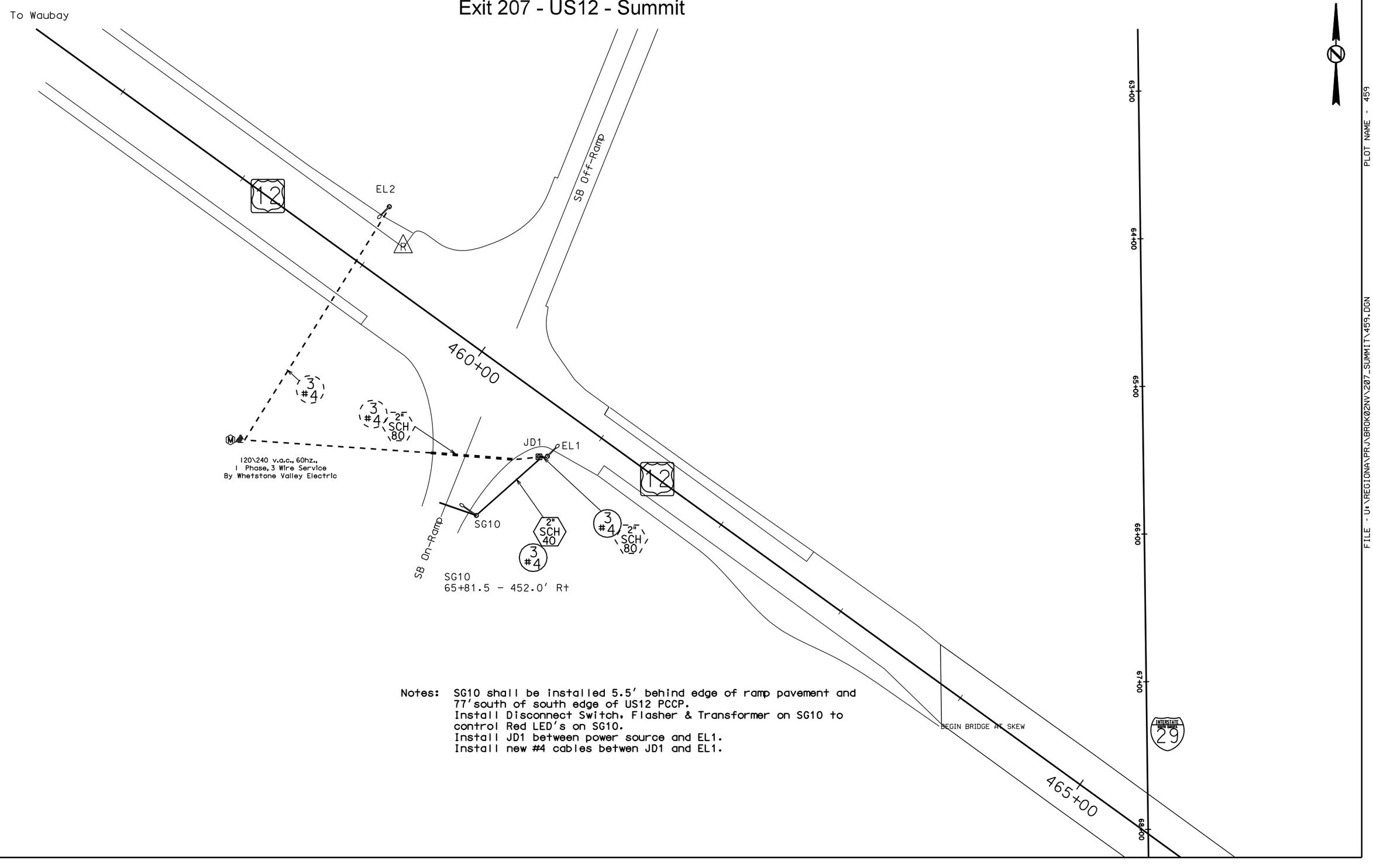
LUMINAIRE: 250 watt High Pressure Sodium Lamp

PLOTTED FROM - TRAB17982

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	56	104
Plotting Date: 22-MAR-2011			

Exit 207 - US12 - Summit



Notes: SG10 shall be installed 5.5' behind edge of ramp pavement and 77'south of south edge of US12 PCCP.
Install Disconnect Switch, Flasher & Transformer on SG10 to control Red LED's on SG10.
Install JD1 between power source and EL1.
Install new #4 cables betwen JD1 and EL1.

PLOT SCALE - 60.000000:1.000000

PLOT NAME - 459

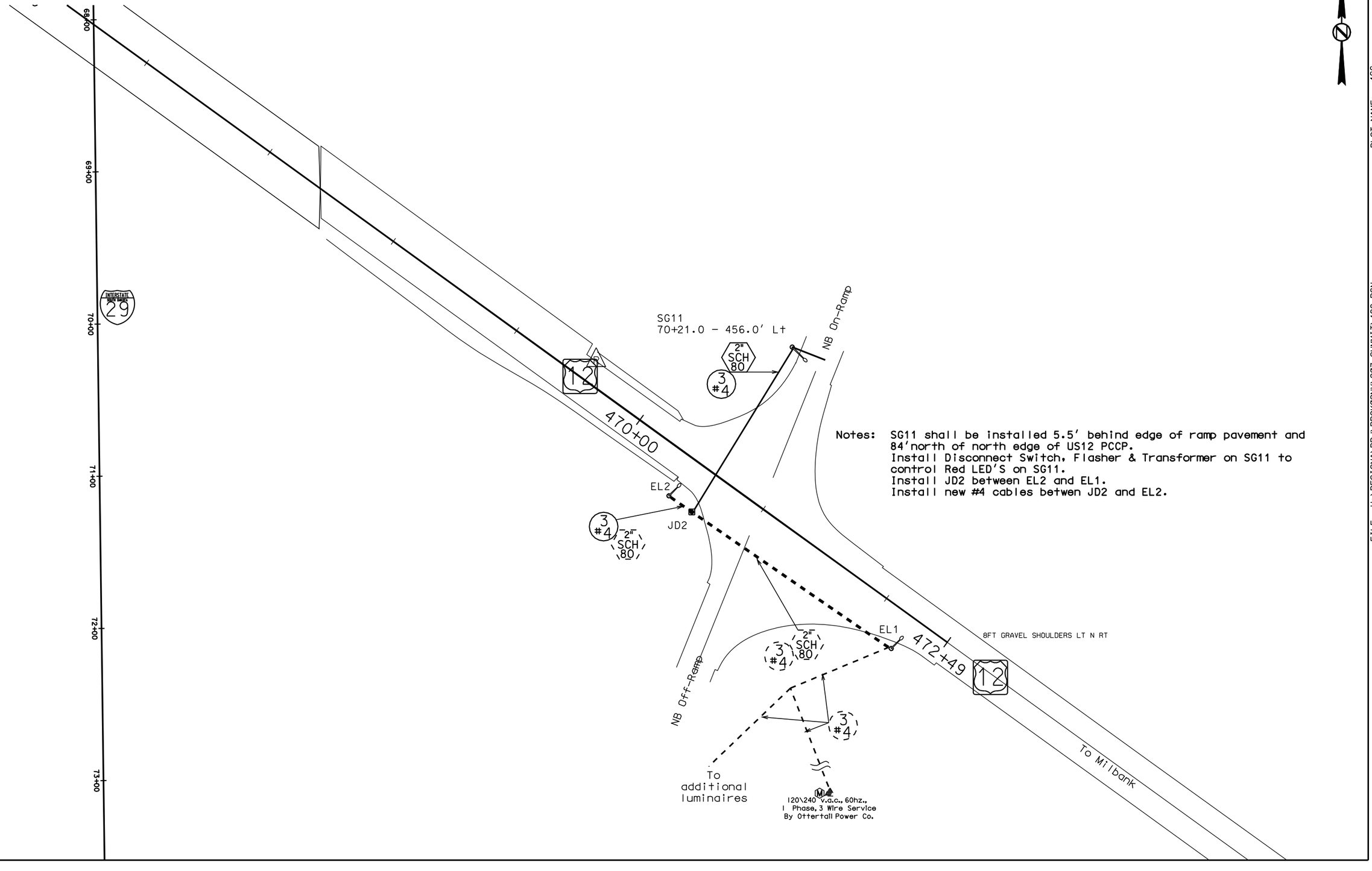
FILE - U:\REGIONA\PRJ\BROKØ2NV\207_SUMMIT\459.DGN

PLOTTED FROM - TRAB17882

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	57	104
Plotting Date: 22-MAR-2011			

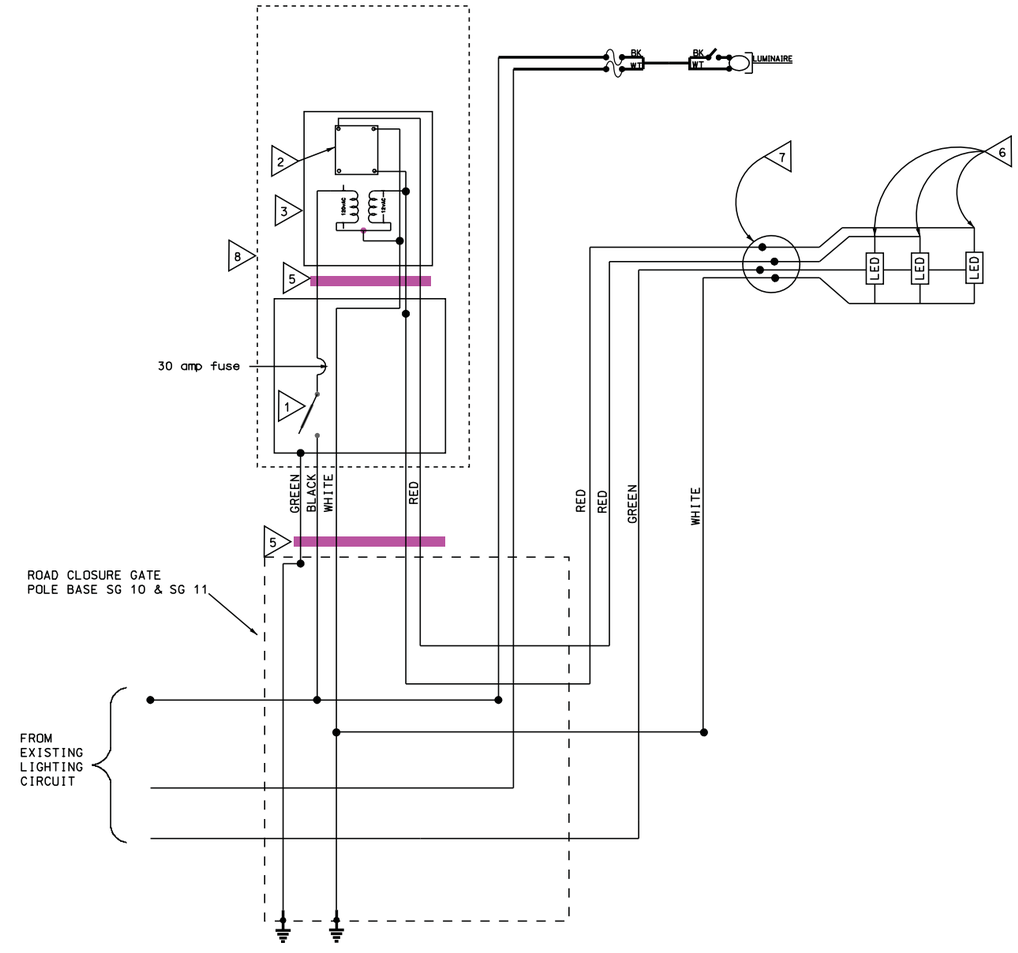
Exit 207 - US12 - Summit



Notes: SG11 shall be installed 5.5' behind edge of ramp pavement and 84'north of north edge of US12 PCCP.
Install Disconnect Switch, Flasher & Transformer on SG11 to control Red LED'S on SG11.
Install JD2 between EL2 and EL1.
Install new #4 cables betwen JD2 and EL2.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	58	104

ROAD CLOSURE GATE WIRING DIAGRAMS EXIT 207



1. 30 AMP SAFETY SWITCH IN A NEMA 3R LOCKABLE ENCLOSURE. DPST FOR ROAD CLOSURE DROP GATE APPLICATIONS.
2. CUBE FLASHER MODEL 12DC10DF AS MANUFACTURED BY TSC (or equal) IN LOCKABLE NEMA 3R ENCLOSURE.
3. 120/240 VOLT PRIMARY, 12/24 VOLT SECONDARY TRANSFORMER, BUCK AND BOOST, MOUNTED IN LOCKABLE NEMA 3R ENCLOSURE.
4. VEHICLE SIGNAL INDICATION 12 inch. THE HEADS SHALL BE SUPPLIED WITH SDDOT APPROVED 12 inch LED SIGNAL HEADS.
5. CONDUCTORS ARE #4 AWG IN 2" RIGID STEEL CONDUIT.
6. THESE LAMP ASSEMBLIES ARE MANUFACTURED BY AURORA, PART NO. A30-944 (or equal) 12vAC LED GATE LIGHTS. 3 LAMP ASSEMBLIES SHALL BE MOUNTED ON EACH GATE.
7. THE CONTRACTOR SHALL INSTALL 4 CONDUCTOR NO. 14 AWG, "SO" CORD. CONNECTION OF THE "SO" CORD SHALL BE MADE IN A JUNCTION BOX MOUNTED ON THE GATE POST. THE JUNCTION BOX SHALL BE BANDED TO THE POST AND SHALL BE RAIN TIGHT AND WEATHERPROOF.
8. THE NEMA 3R ENCLOSURES AND RIGID STEEL CONDUIT SHALL BE MOUNTED TO THE SNOW GATE POLE
9. CAP FLASHER MODEL CF AS MANUFACTURED BY TSC (or equal)

NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

LEGEND:

FUSE: 4 amp. Non-Time Delay
or
1 8/10 amp. Dual Element

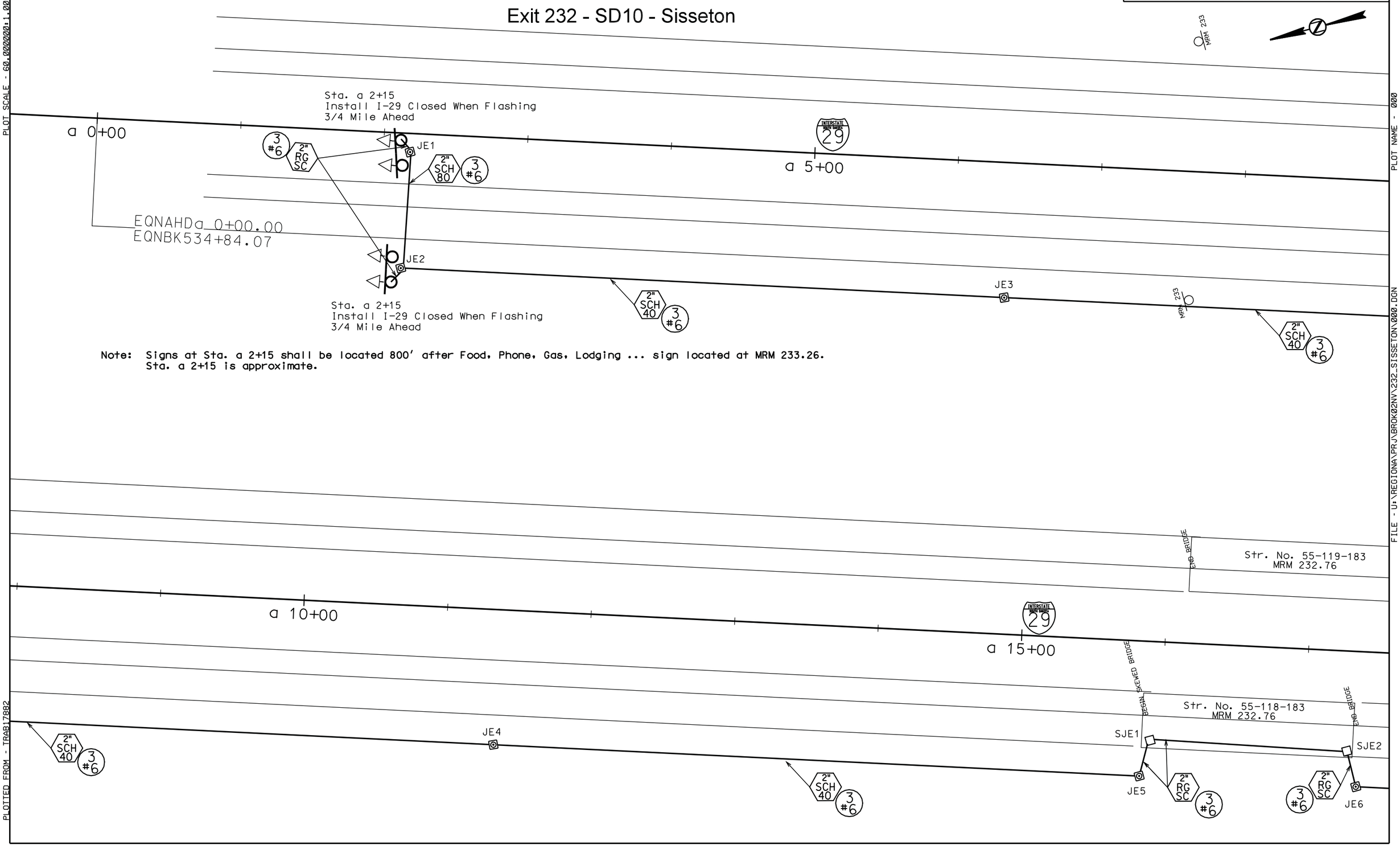
LUMINAIRE: 250 watt High Pressure Sodium Lamp

PLOTTED FROM - TRAB17882

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	59	104
Plotting Date: 24-MAR-2011			

Exit 232 - SD10 - Sisseton



Note: Signs at Sta. a 2+15 shall be located 800' after Food, Phone, Gas, Lodging ... sign located at MRM 233.26. Sta. a 2+15 is approximate.

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 232 - SD10 - Sisseton

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	60	104

Plotting Date: 24-MAR-2011

PLOT SCALE - 60.000000:1.000000

PLOT NAME - Ø17

FILE - U:\REGIONA\PRJ\BROK02NV\232_SISSETON\Ø17.DGN

PLOTTED FROM - TRAB17882

NBL

SBL

a 20+00

a 25+00

a 30+00

a 35+00

INTERSTATE 29

2" SCH 40 3 #6

JE7

JE8

JE9

MAINTENANCE CROSSOVER

ROAD CLOSED AHEAD SIGNS

END ON RAMP

Sta. a 29+00+/- Rt
Remove in place Road Closed Ahead signs

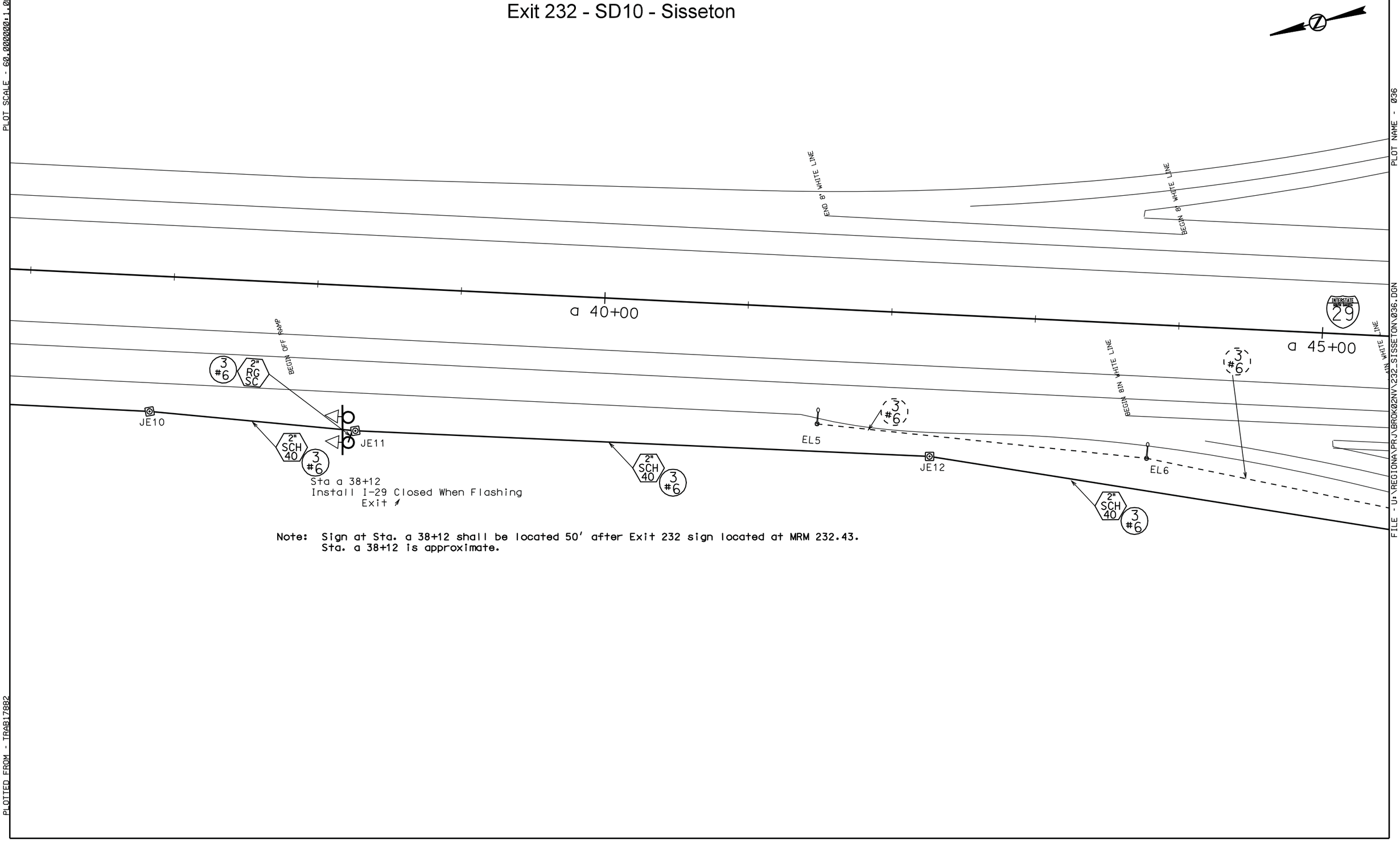
PLOT SCALE - 60.000000:1.000000

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 232 - SD10 - Sisseton

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	61	104

Plotting Date: 24-MAR-2011



Note: Sign at Sta. a 38+12 shall be located 50' after Exit 232 sign located at MRM 232.43.
Sta. a 38+12 is approximate.

PLOTTED FROM - TRAB17882

PLOT NAME - Ø36

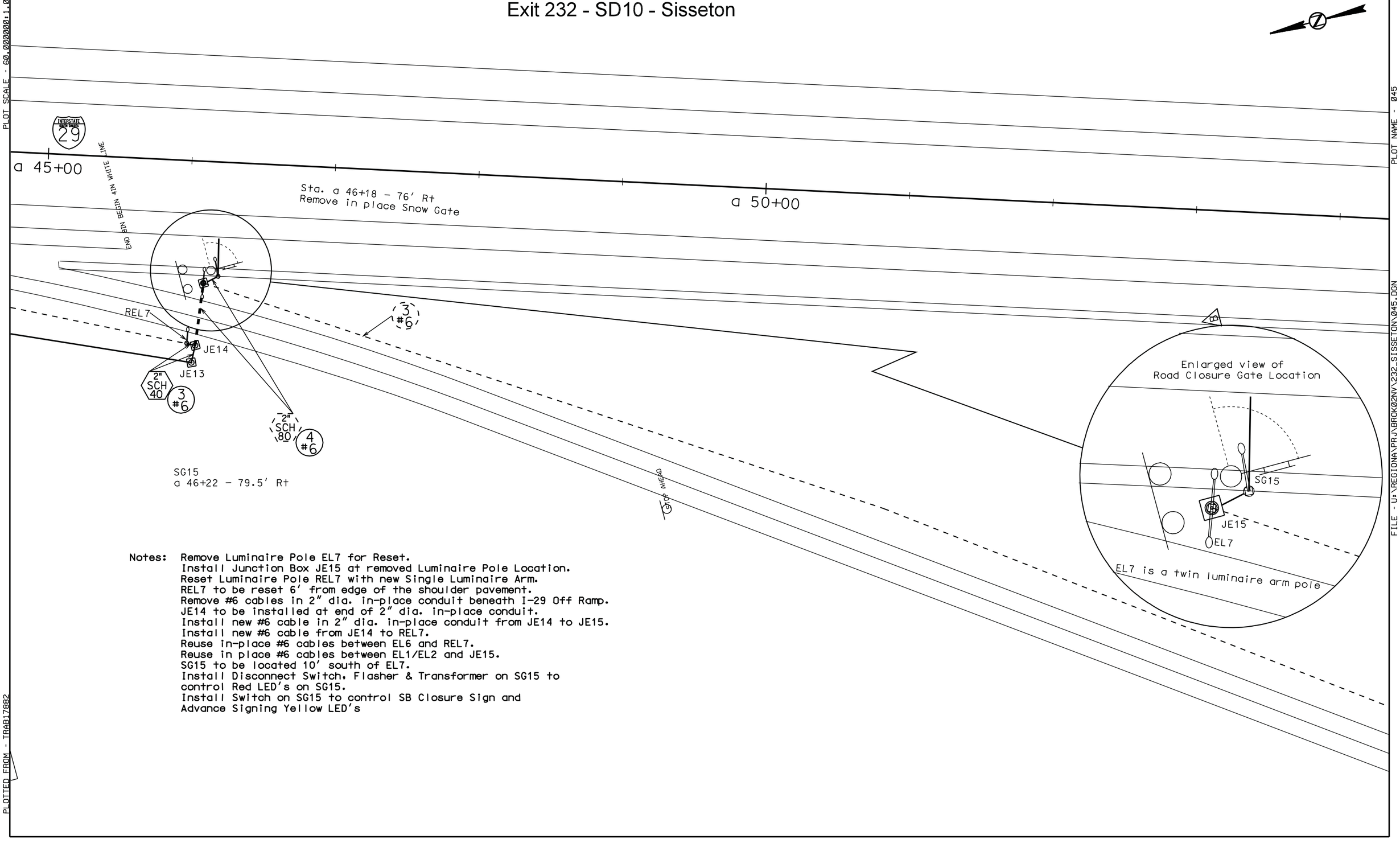
FILE - U:\REGIONAL\PROJ\BROK02NV\232_SISSETON\Ø36.DGN

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 232 - SD10 - Sisseton

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	62	104

Plotting Date: 24-MAR-2011

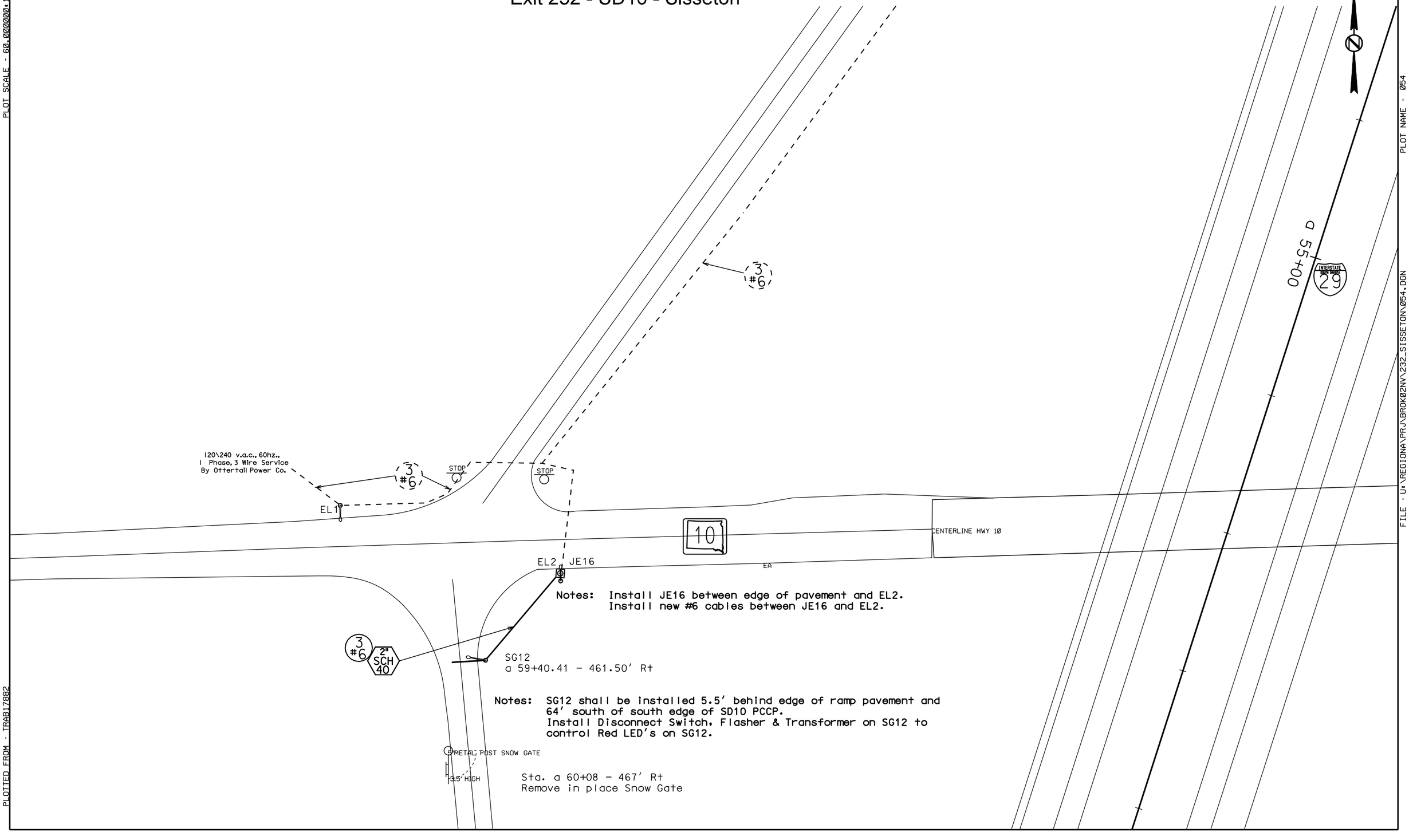


Notes:
Remove Luminaire Pole EL7 for Reset.
Install Junction Box JE15 at removed Luminaire Pole Location.
Reset Luminaire Pole REL7 with new Single Luminaire Arm.
REL7 to be reset 6' from edge of the shoulder pavement.
Remove #6 cables in 2" dia. in-place conduit beneath I-29 Off Ramp.
JE14 to be installed at end of 2" dia. in-place conduit.
Install new #6 cable in 2" dia. in-place conduit from JE14 to JE15.
Install new #6 cable from JE14 to REL7.
Reuse in-place #6 cables between EL6 and REL7.
Reuse in place #6 cables between EL1/EL2 and JE15.
SG15 to be located 10' south of EL7.
Install Disconnect Switch, Flasher & Transformer on SG15 to control Red LED's on SG15.
Install Switch on SG15 to control SB Closure Sign and Advance Signing Yellow LED's

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	63	104
Plotting Date: 24-MAR-2011			

Exit 232 - SD10 - Sisseton



Notes: Install JE16 between edge of pavement and EL2.
Install new #6 cables between JE16 and EL2.

Notes: SG12 shall be installed 5.5' behind edge of ramp pavement and 64' south of south edge of SD10 PCCP.
Install Disconnect Switch, Flasher & Transformer on SG12 to control Red LED's on SG12.

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 232 - SD10 - Sisseton

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	64	104

Plotting Date: 24-MAR-2011

Note: SG13 shall be installed 5.5' behind edge of ramp pavement and 60' north of north edge of SD10 PCCP.
Install Disconnect Switch, Flasher & Transformer on SG12 to control Red LED's on SG13.

Notes: Install JE17 between edge of pavement and EL3.
Install new #6 cables between JE17 and EL3.

2.5' HIGH X 24'LONG SNOWGATE 4' HIGH METAL POST

Sta. a 53+54 – 459' Lt
Remove in place Snow Gate

BEGIN LONGITUDINAL JOINT

SG13
a 54+38.40 – 461.11' Lt

2" SCH 40

3 #6

EL3

JE17

10

CENTERLINE OF LEFT TURN LANE

EL4

END LONGITUDINAL JOINT

3 #6

a 55+00

a 60+00

WY 10

PLOT SCALE - 60.000000:1.000000

PLOTTED FROM - TRAB17882

PLOT NAME - Ø55

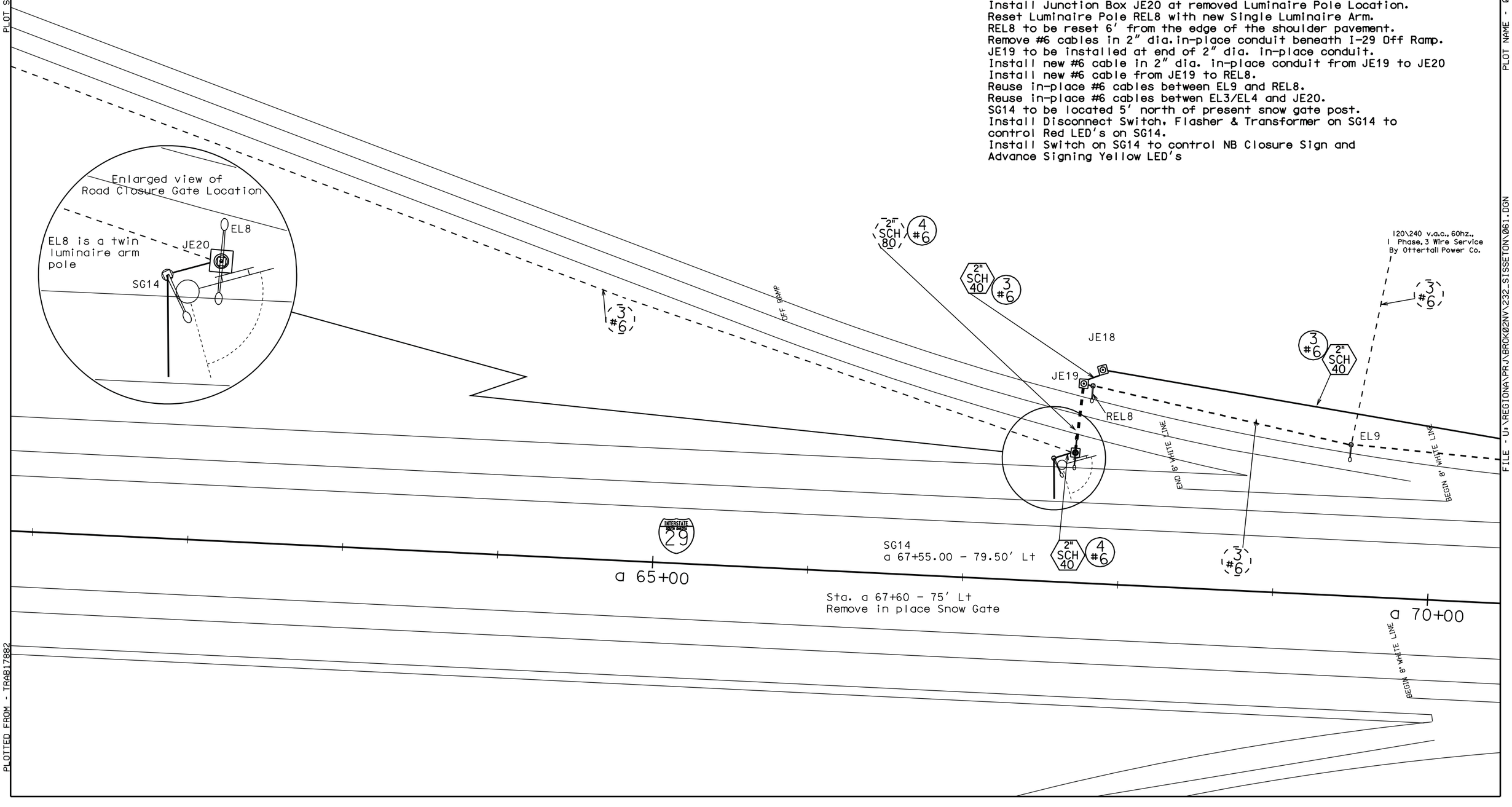
FILE - U:\REGIONA\PRJ\BROKØ2NV\232_SISSETONØ55.DGN

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 232 - SD10 - Sisseton

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	65	104
Plotting Date: 24-MAR-2011			

Notes:
Remove Luminaire Pole EL8 for Reset.
Install Junction Box JE20 at removed Luminaire Pole Location.
Reset Luminaire Pole REL8 with new Single Luminaire Arm.
REL8 to be reset 6' from the edge of the shoulder pavement.
Remove #6 cables in 2" dia.in-place conduit beneath I-29 Off Ramp.
JE19 to be installed at end of 2" dia. in-place conduit.
Install new #6 cable in 2" dia. in-place conduit from JE19 to JE20
Install new #6 cable from JE19 to REL8.
Reuse in-place #6 cables between EL9 and REL8.
Reuse in-place #6 cables betwen EL3/EL4 and JE20.
SG14 to be located 5' north of present snow gate post.
Install Disconnect Switch, Flasher & Transformer on SG14 to control Red LED's on SG14.
Install Switch on SG14 to control NB Closure Sign and Advance Signing Yellow LED's

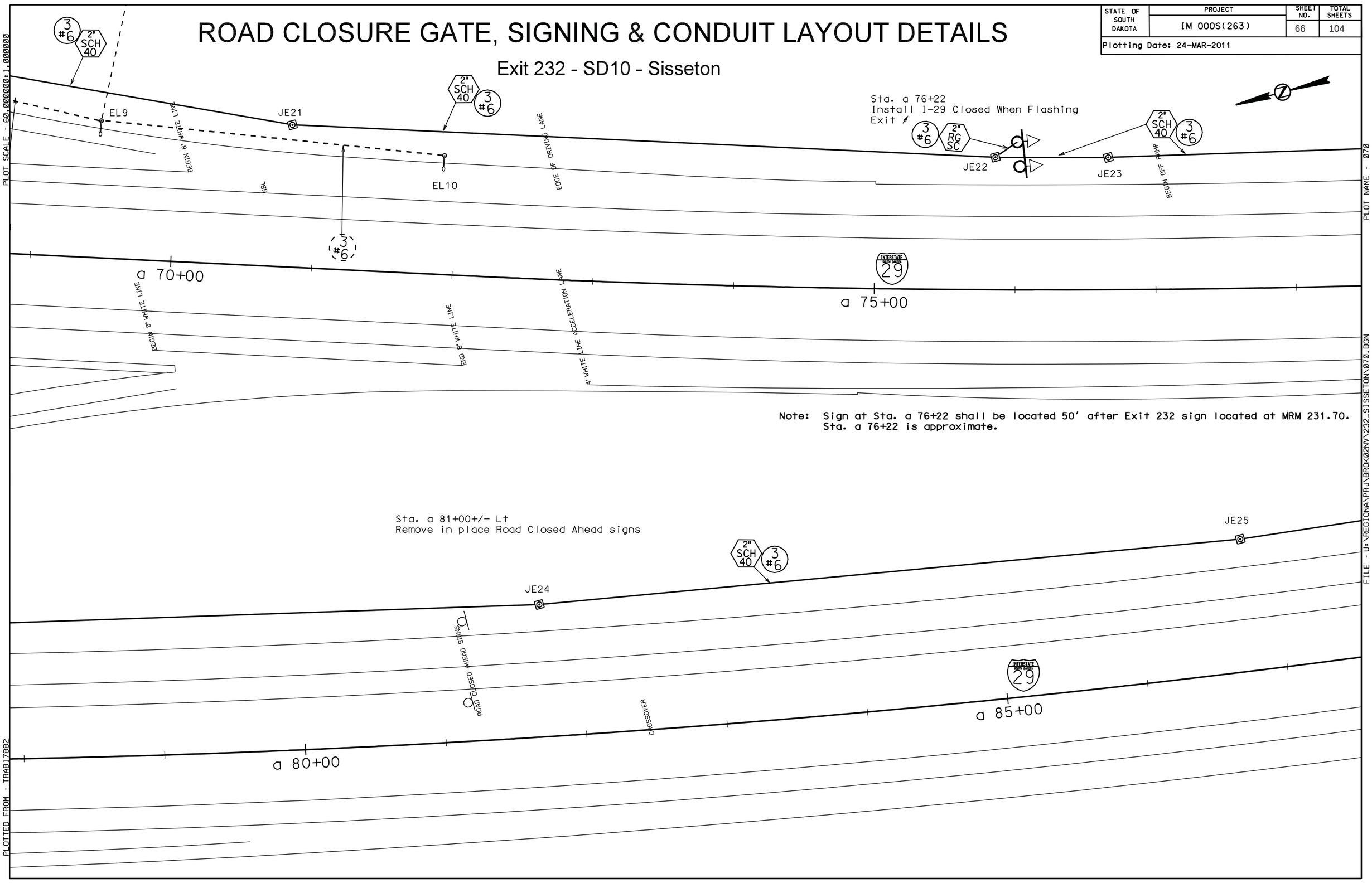


ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 232 - SD10 - Sisseton

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	66	104

Plotting Date: 24-MAR-2011



Note: Sign at Sta. a 76+22 shall be located 50' after Exit 232 sign located at MRM 231.70. Sta. a 76+22 is approximate.

PLOT SCALE - 60.000000:1.000000

PLOT NAME - 070

FILE - U:\REGIONA\PRJ\BROK02NV\232_SISSETON\070.DGN

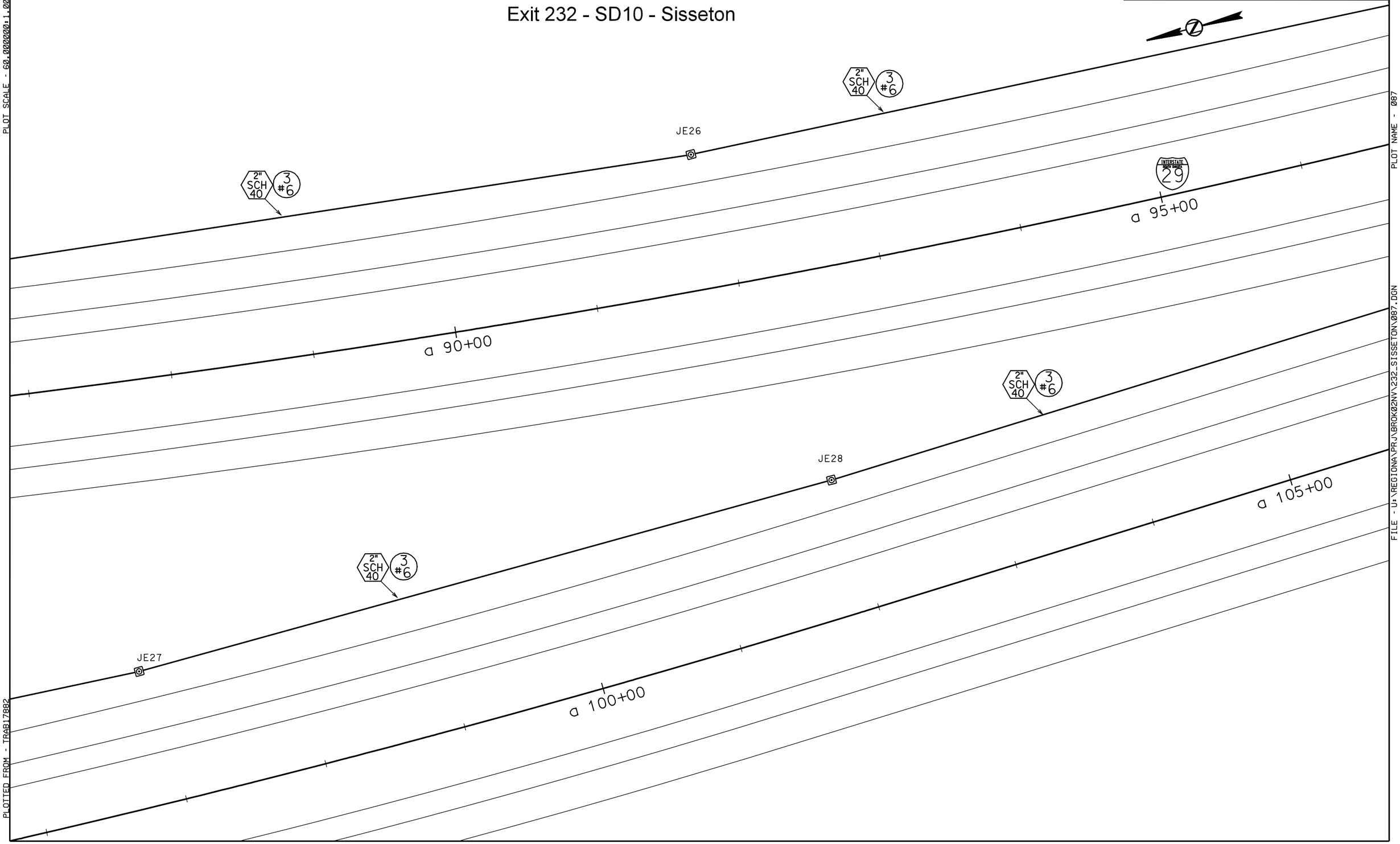
PLOTTED FROM - TRAB17982

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 232 - SD10 - Sisseton

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	67	104

Plotting Date: 24-MAR-2011



PLOT SCALE - 60.000000:1.000000

PLOT NAME - Ø87

FILE - U:\REGIONAV\PRJ\BROKØ2NV\232_SISSETONNØ87.DGN

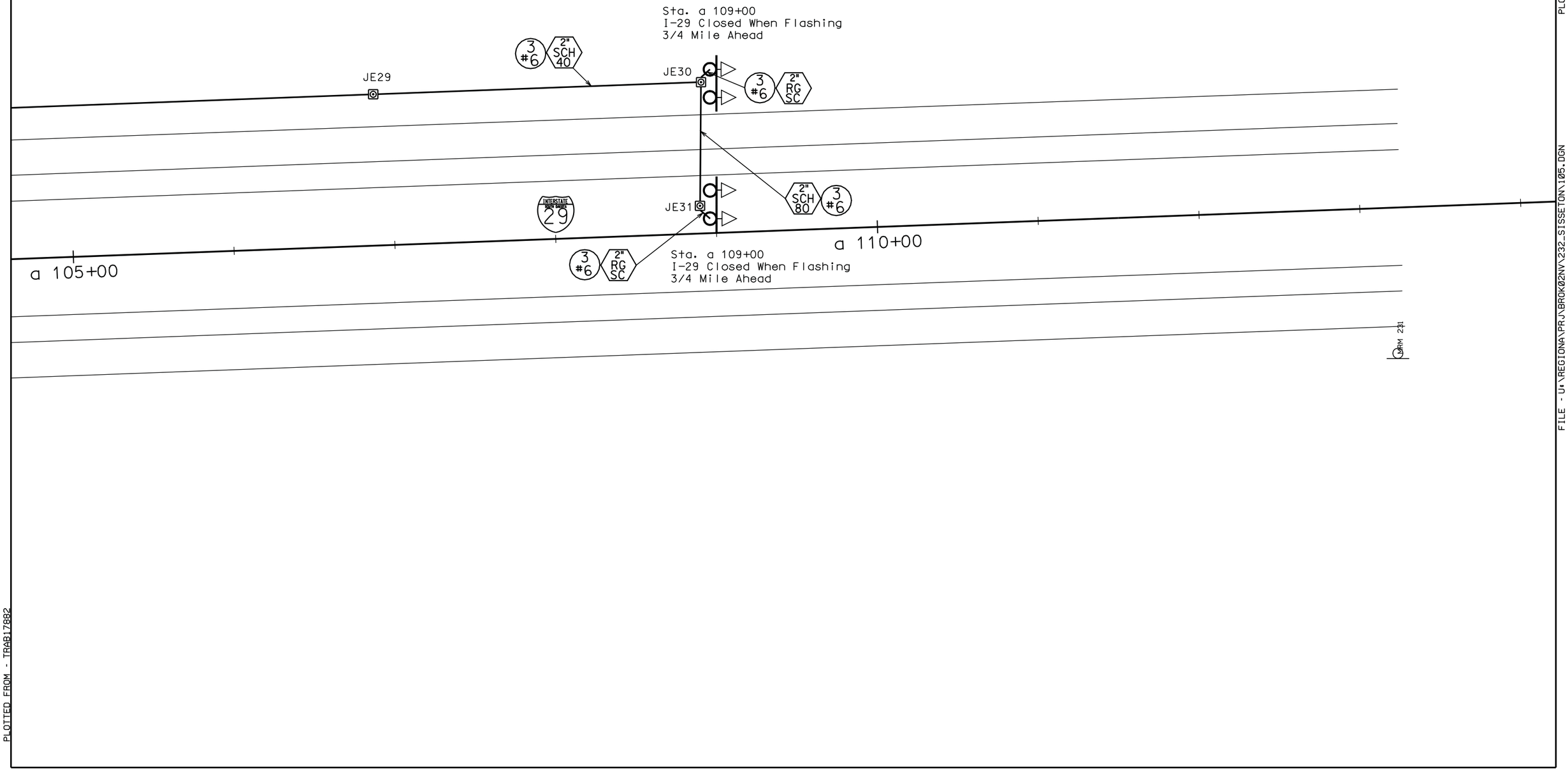
PLOTTED FROM - TRAB17882

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

Exit 232 - SD10 - Sisseton

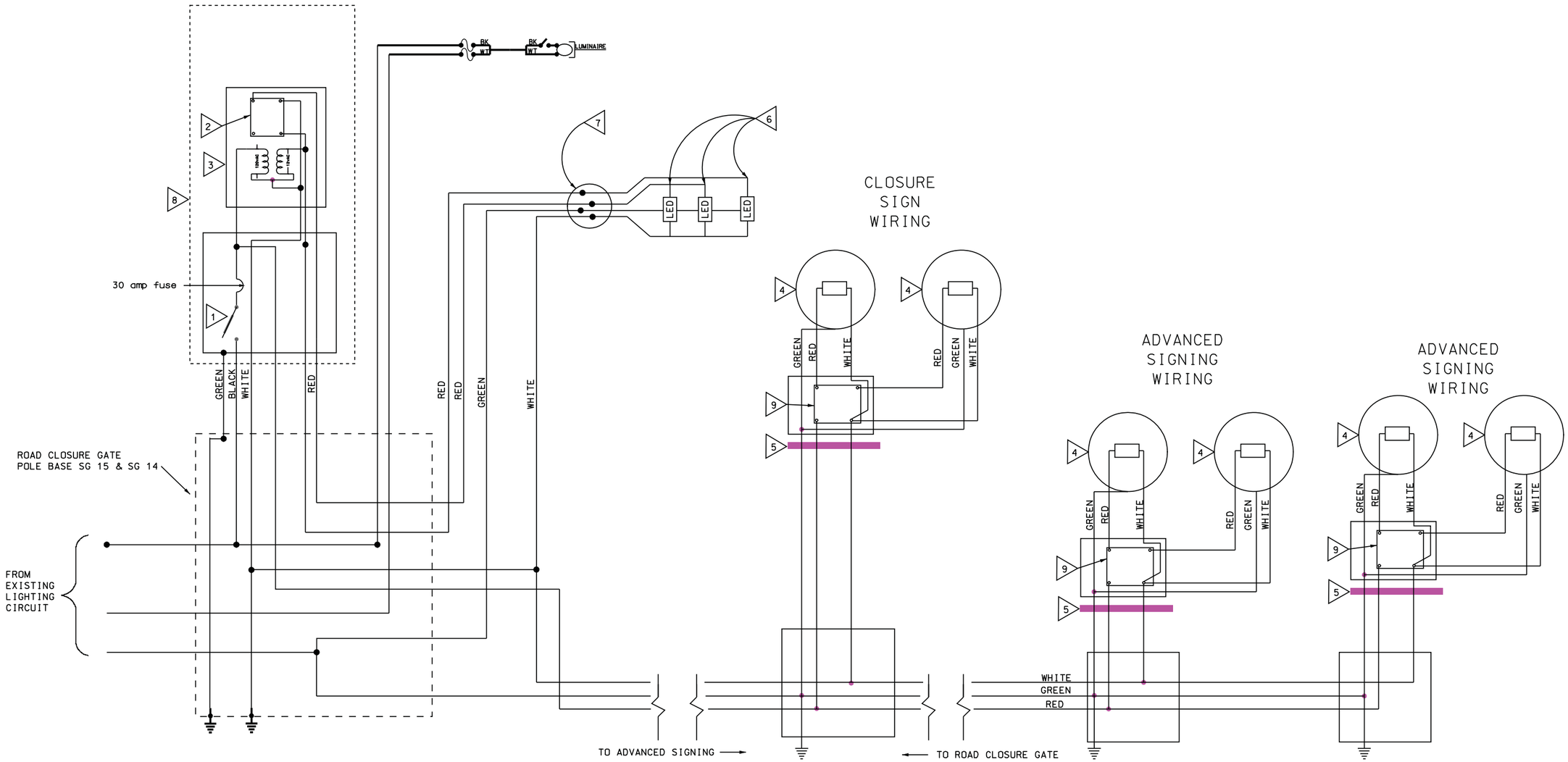
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	68	104
Plotting Date: 24-MAR-2011			

Note: Signs at Sta. a 109+00 shall be located 800' in advance of Food/Lodging Logo Panel sign located at MRM 231.24
Sta. a 109+00 is approximate.



ROAD CLOSURE GATE WIRING DIAGRAMS EXIT 232

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	69	104
Plotting Date: 24-MAR-2011			



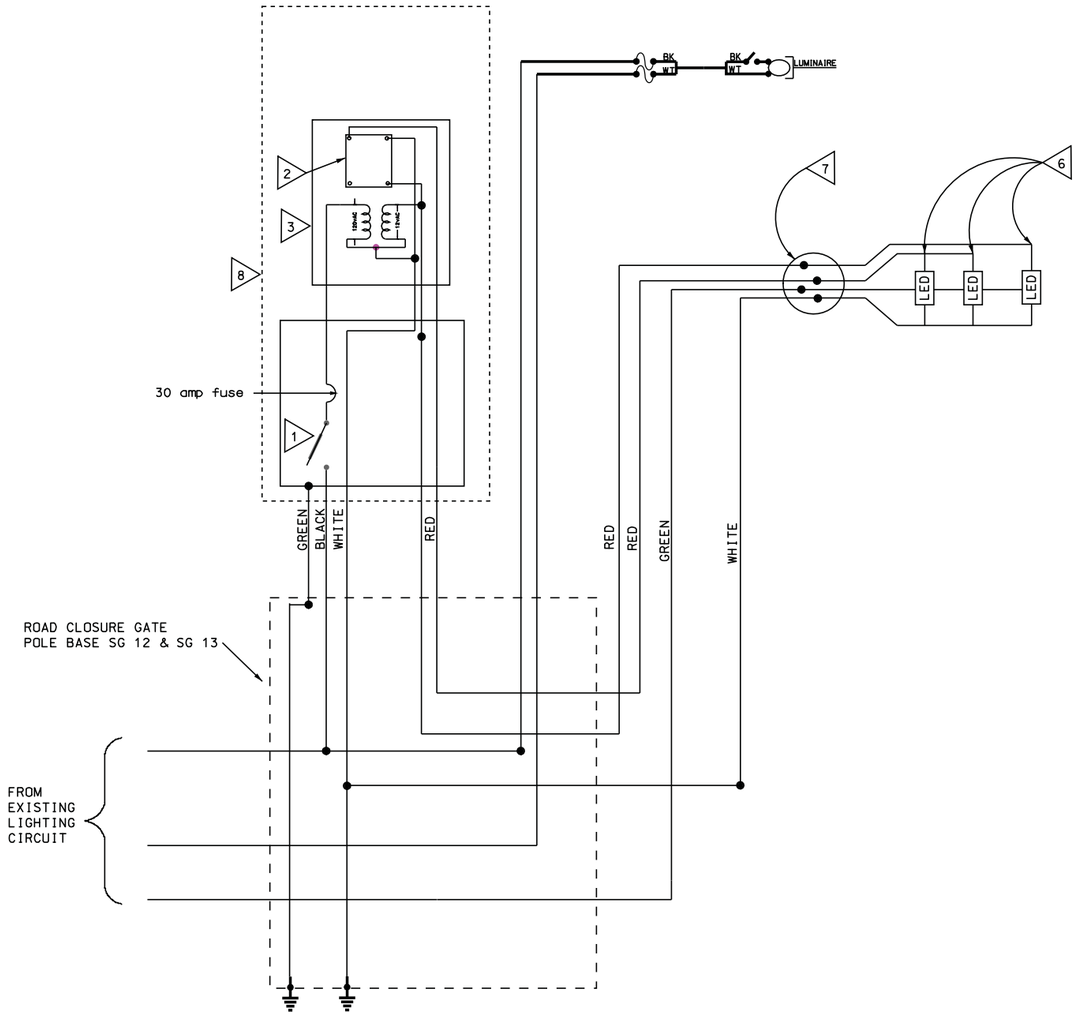
1. 30 AMP SAFETY SWITCH IN A NEMA 3R LOCKABLE ENCLOSURE. DPST FOR ROAD CLOSURE DROP GATE APPLICATIONS.
2. CUBE FLASHER MODEL 12DC10DF AS MANUFACTURED BY TSC (or equal) IN LOCKABLE NEMA 3R ENCLOSURE.
3. 120/240 VOLT PRIMARY, 12/24 VOLT SECONDARY TRANSFORMER, BUCK AND BOOST, MOUNTED IN LOCKABLE NEMA 3R ENCLOSURE.
4. VEHICLE SIGNAL INDICATION 12 inch. THE HEADS SHALL BE SUPPLIED WITH SDDOT APPROVED 12 inch LED SIGNAL HEADS.
5. CONDUCTORS ARE #6 AWG IN 2" RIGID STEEL CONDUIT.
6. THESE LAMP ASSEMBLIES ARE MANUFACTURED BY AURORA, PART NO. A30-944 (or equal) 12VAC LED GATE LIGHTS. 3 LAMP ASSEMBLIES SHALL BE MOUNTED ON EACH GATE.
7. THE CONTRACTOR SHALL INSTALL 4 CONDUCTOR NO. 14 AWG, "SO" CORD. CONNECTION OF THE "SO" CORD SHALL BE MADE IN A JUNCTION BOX MOUNTED ON THE GATE POST. THE JUNCTION BOX SHALL BE BANDED TO THE POST AND SHALL BE RAIN TIGHT AND WEATHERPROOF.
8. THE NEMA 3R ENCLOSURES AND RIGID STEEL CONDUIT SHALL BE MOUNTED TO THE SNOW GATE POLE.
9. CAP FLASHER MODEL CF AS MANUFACTURED BY TSC (or equal).

NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

LEGEND:
- FUSE: 4 amp. Non-Time Delay or 1 8/10 amp. Dual Element
- LUMINAIRE: 250 watt High Pressure Sodium Lamp

ROAD CLOSURE GATE WIRING DIAGRAMS EXIT 232

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	70	104
Plotting Date: 24-MAR-2011			



1. 30 AMP SAFETY SWITCH IN A NEMA 3R LOCKABLE ENCLOSURE. DPST FOR ROAD CLOSURE DROP GATE APPLICATIONS.
2. CUBE FLASHER MODEL 12DC10DF AS MANUFACTURED BY TSC (or equal) IN LOCKABLE NEMA 3R ENCLOSURE.
3. 120/240 VOLT PRIMARY, 12/24 VOLT SECONDARY TRANSFORMER, BUCK AND BOOST, MOUNTED IN LOCKABLE NEMA 3R ENCLOSURE.
4. VEHICLE SIGNAL INDICATION 12 inch. THE HEADS SHALL BE SUPPLIED WITH SDDOT APPROVED 12 inch LED SIGNAL HEADS.
5. CONDUCTORS ARE #6 AWG IN 2" RIGID STEEL CONDUIT.
6. THESE LAMP ASSEMBLIES ARE MANUFACTURED BY AURORA, PART NO. A30-944 (or equal) 12VAC LED GATE LIGHTS. 3 LAMP ASSEMBLIES SHALL BE MOUNTED ON EACH GATE.
7. THE CONTRACTOR SHALL INSTALL 4 CONDUCTOR NO. 14 AWG, "SO" CORD. CONNECTION OF THE "SO" CORD SHALL BE MADE IN A JUNCTION BOX MOUNTED ON THE GATE POST. THE JUNCTION BOX SHALL BE BANDED TO THE POST AND SHALL BE RAIN TIGHT AND WEATHERPROOF.
8. THE NEMA 3R ENCLOSURES AND RIGID STEEL CONDUIT SHALL BE MOUNTED TO THE SNOW GATE POLE.
9. CAP FLASHER MODEL CF AS MANUFACTURED BY TSC (or equal).

NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

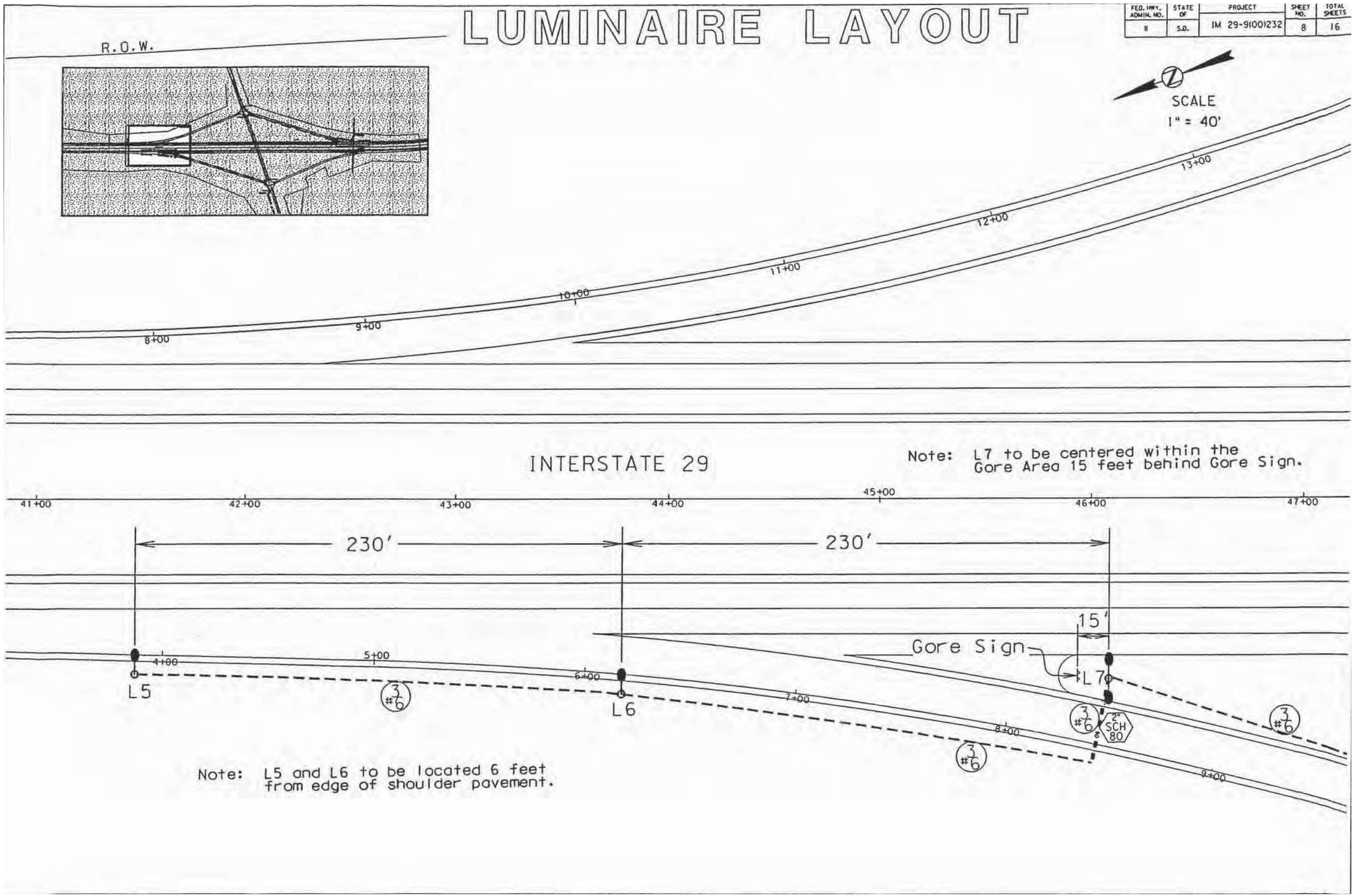
LEGEND:

FUSE: 4 amp. Non-Time Delay
or
1 8/10 amp. Dual Element

LUMINAIRE: 250 watt High Pressure Sodium Lamp

EXISTING LUMINAIRE LAYOUT AND WIRING DIAGRAM
EXIT 232 - SISSETON

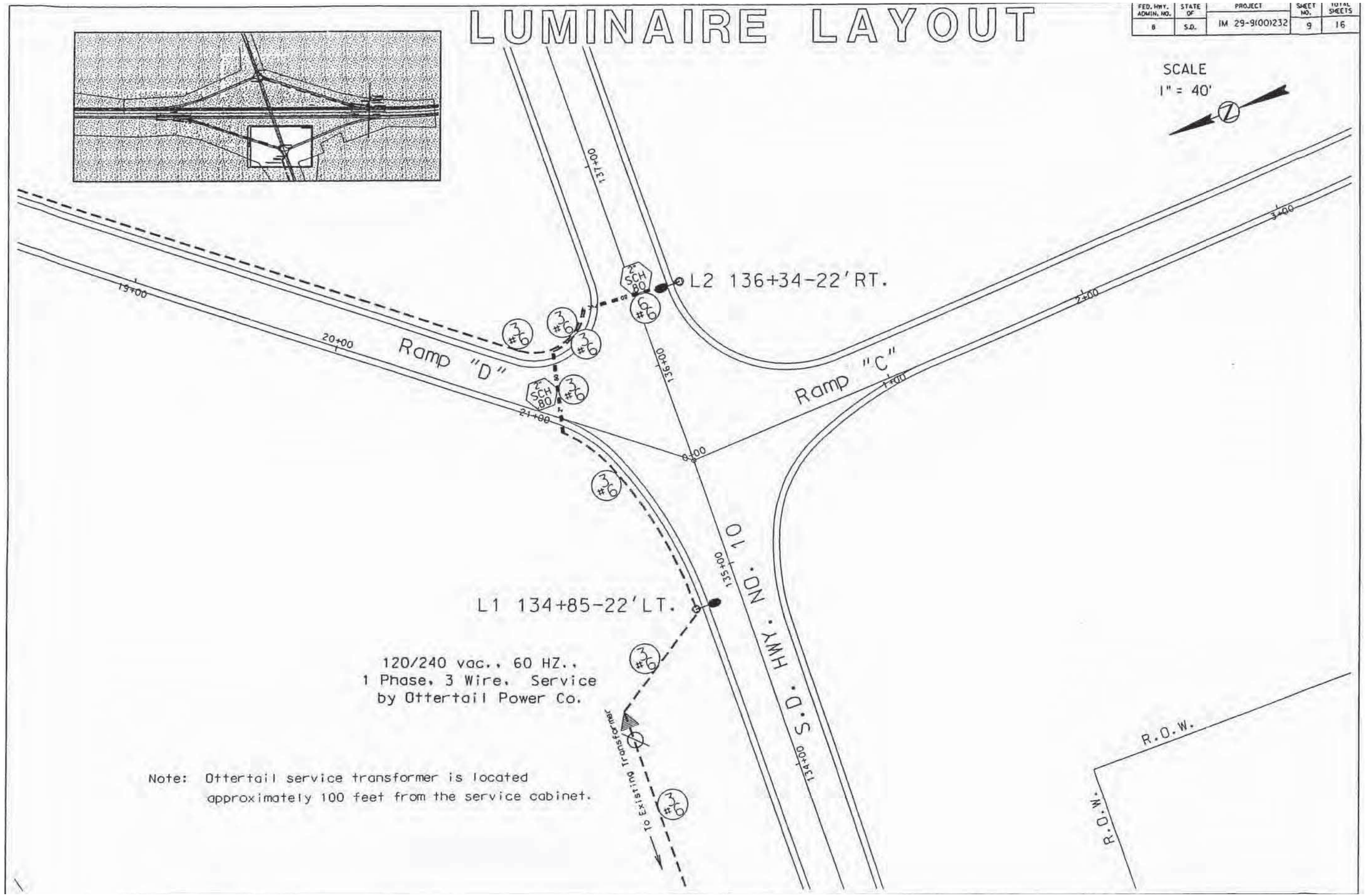
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	71	104



EXISTING LUMINAIRE LAYOUT AND WIRING DIAGRAM
EXIT 232 - SISSETON

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	72	104

FED. HWY. ADMIN. NO.	STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
8	S.D.	IM 29-9(00)232	9	16



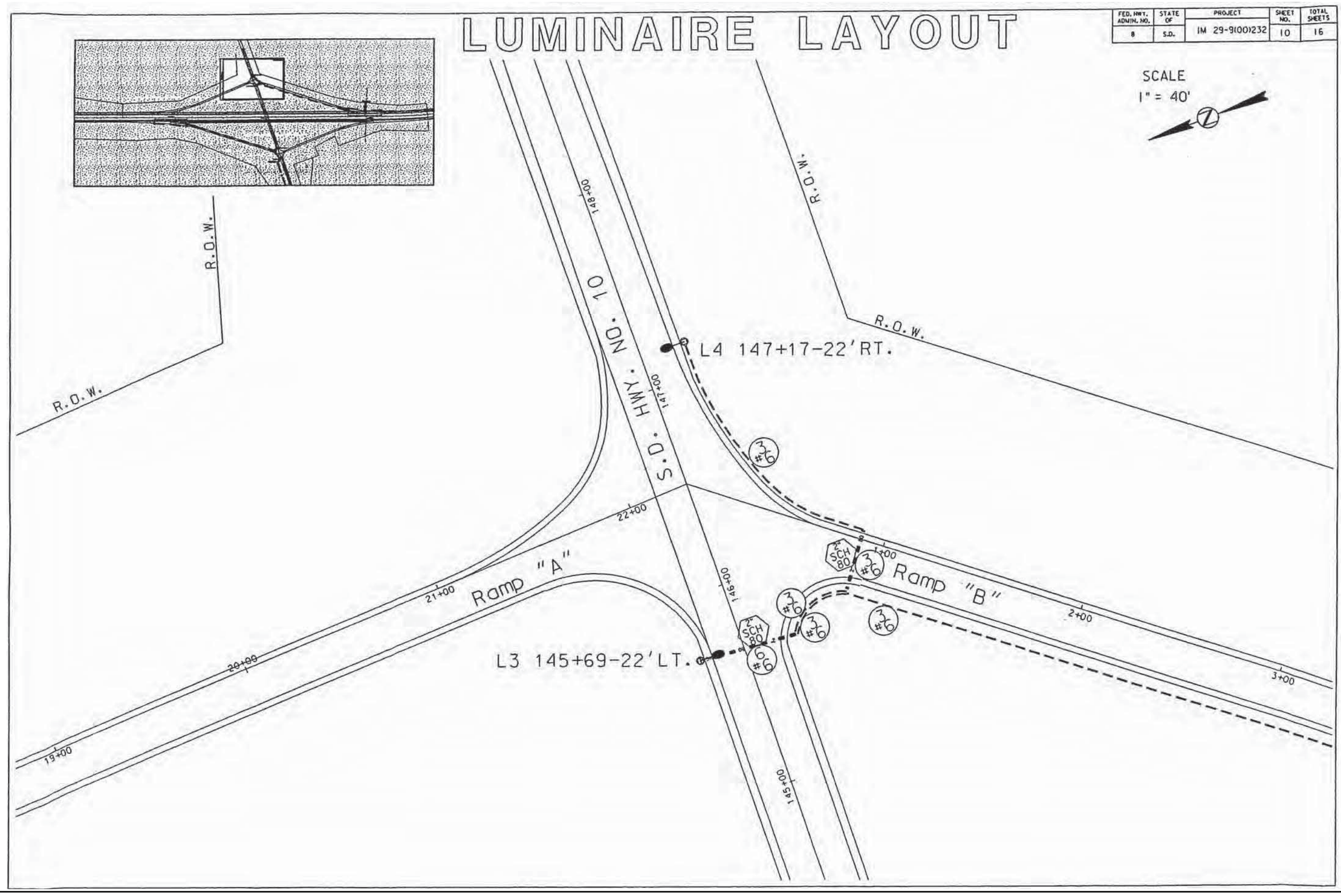
Note: Ottertail service transformer is located approximately 100 feet from the service cabinet.

PLOTTED FROM - TRAB17882

EXISTING LUMINAIRE LAYOUT AND WIRING DIAGRAM
EXIT 232 - SISSETON

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	73	104

FED. HWY. ADMIN. NO.	STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
8	S.D.	IM 29-9(00)232	10	16



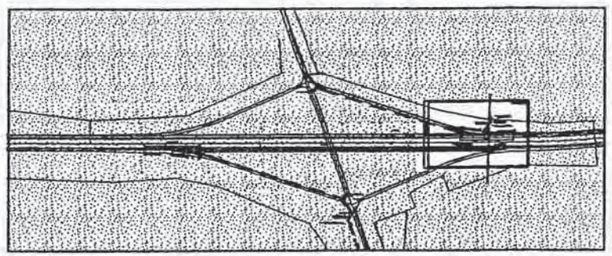
PLOTTED FROM - TRAB17982

EXISTING LUMINAIRE LAYOUT AND WIRING DIAGRAM
EXIT 232 - SISSETON

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	74	104

FED. HWY. ADMIN. NO.	STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
8	S.D.	IM 29-9(00)232	11	16

LUMINAIRE LAYOUT



Note: Ottertail service transformer is located approximately 100 feet from the service cabinet.

SCALE
1" = 40'

120/240 vac., 60 HZ., 1 Phase, 3 Wire, Service by Ottertail Power Co.

Light pole L9 shall have a minimum 30' clearance from nearest overhead powerlines.

Note: L9 and L10 shall be located 6 feet from the edge of the shoulder pavement.

R.O.W.

R.O.W.

OHP

13+00
14+00
15+00
16+00
17+00
18+00

2" SCH 80

#6

L8

L9

L10

Gore Sign

15'

30'

200'

245'

67+00
68+00
69+00
70+00
71+00
72+00
73+00

OHP

Note: L8 shall be centered within the Gore Area, 15 feet behind the Gore Sign.

INTERSTATE 29

10+00
11+00
12+00
13+00
14+00
15+00

PLOTTED FROM - TRAB17882

EXISTING LUMINAIRE LAYOUT AND WIRING DIAGRAM
EXIT 232 - SISSETON

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	75	104

FED. AID PROJ. ADMIN. NO.	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
8	S.D.	IM 29-9(00)232	12	16

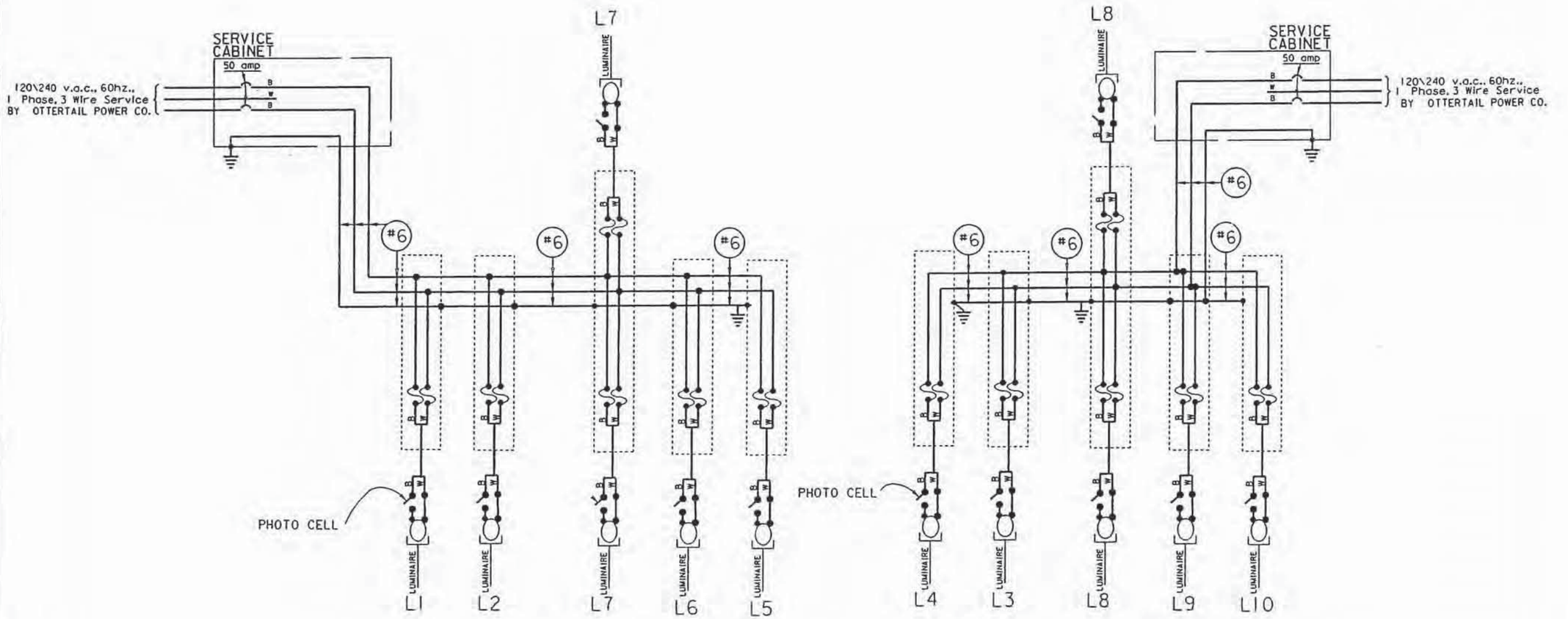
LIGHTING FIELD WIRING DIAGRAM

LEGEND:

FUSE: 4 amp. Non-Time Delay
or
2 amp. Dual Element

LUMINAIRE: 250 watt High Pressure Sodium Lamp W/P.E.

NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE.

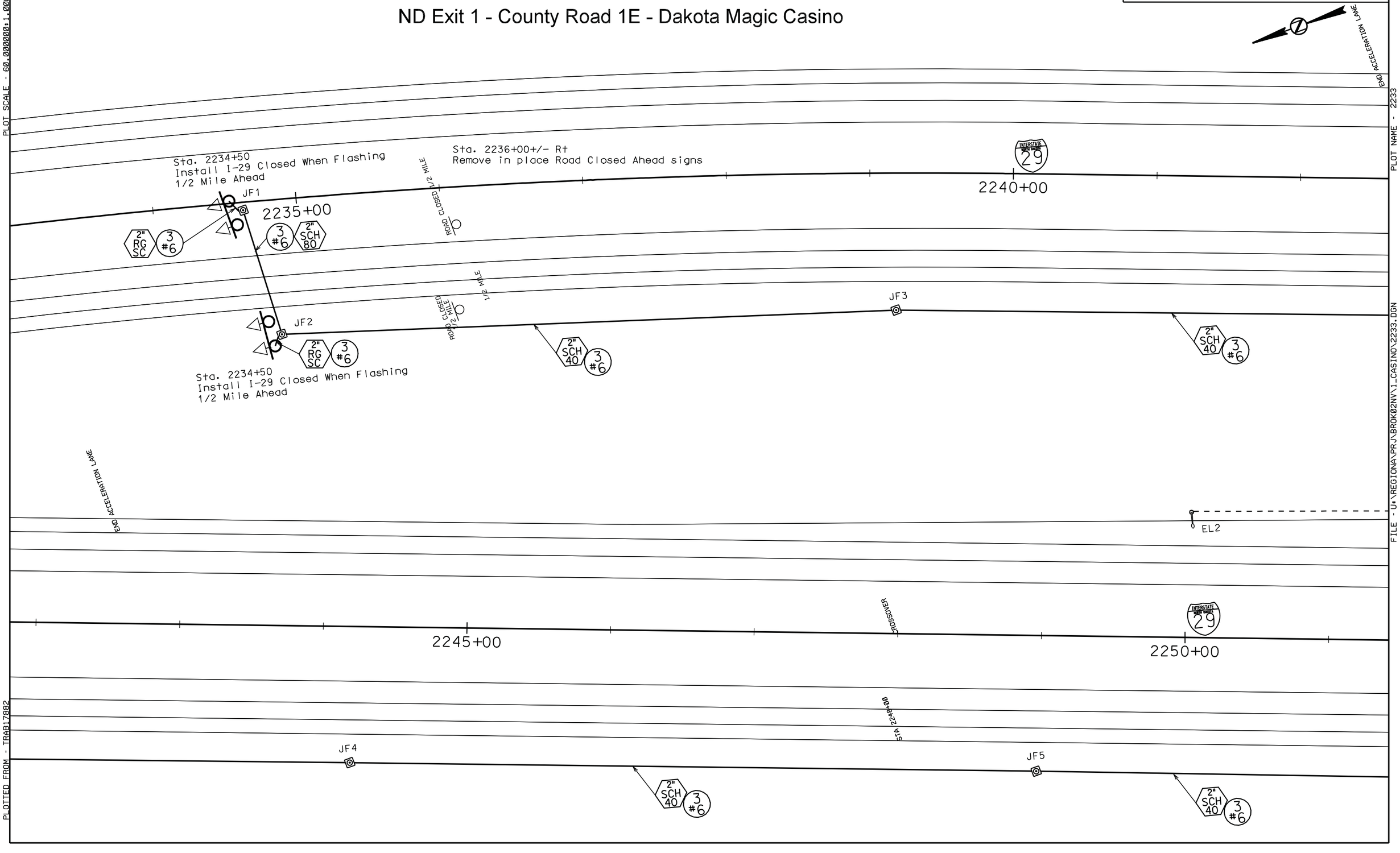


ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

ND Exit 1 - County Road 1E - Dakota Magic Casino

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	76	104

Plotting Date: 24-MAR-2011



ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

ND Exit 1 - County Road 1E - Dakota Magic Casino

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	77	104

Plotting Date: 24-MAR-2011

PLOT SCALE - 60.000000:1.000000

PLOT NAME - 2251

FILE - U:\REGIONAL\PRJ\BROK02NV1_CASINO\2251.DGN

PLOTTED FROM - TRAB17882

EL4

EL6

STA 2257+00

2255+00

INTERSTATE 29

2260+00

BEGIN OFF RAMP

JF6

EL1

EL3

JF7

EL5

JF8

Sta. 2253+50 Rt
Install I-29 Closed When Flashing Exit

2" RG SC — 3 #6

2" SCH 40 — 3 #6

2" SCH 40 — 3 #6

Note: Sign at Sta 2253+50 shall be located 50' after Exit 1 sign
Sta 2253+50 is approximate.

STA 2265+00

EL8

INTERSTATE 29

2260+00

Sta. 2261+89 - 76' Rt
Remove in place Snow Gate

2265+00

Sta. 2269+22
Remove in pl

SG17
2261+84.0 - 78.6' Rt

STA 2265+00

EXIT 1

EL9

EL5

JF8

4 #6 — 2" SCH 40

JF10

JF11

3 #6 — 2" SCH 40

3 #6 — 2" SCH 40

EL7

3 #6 — 2" SCH 80

JF9

Notes: Install Disconnect Switch, Flasher & Transformer on SG17 to control Red LED's on SG17.
Install Switch on SG17 to control SB Closure Sign and Advance Signing Yellow LED's

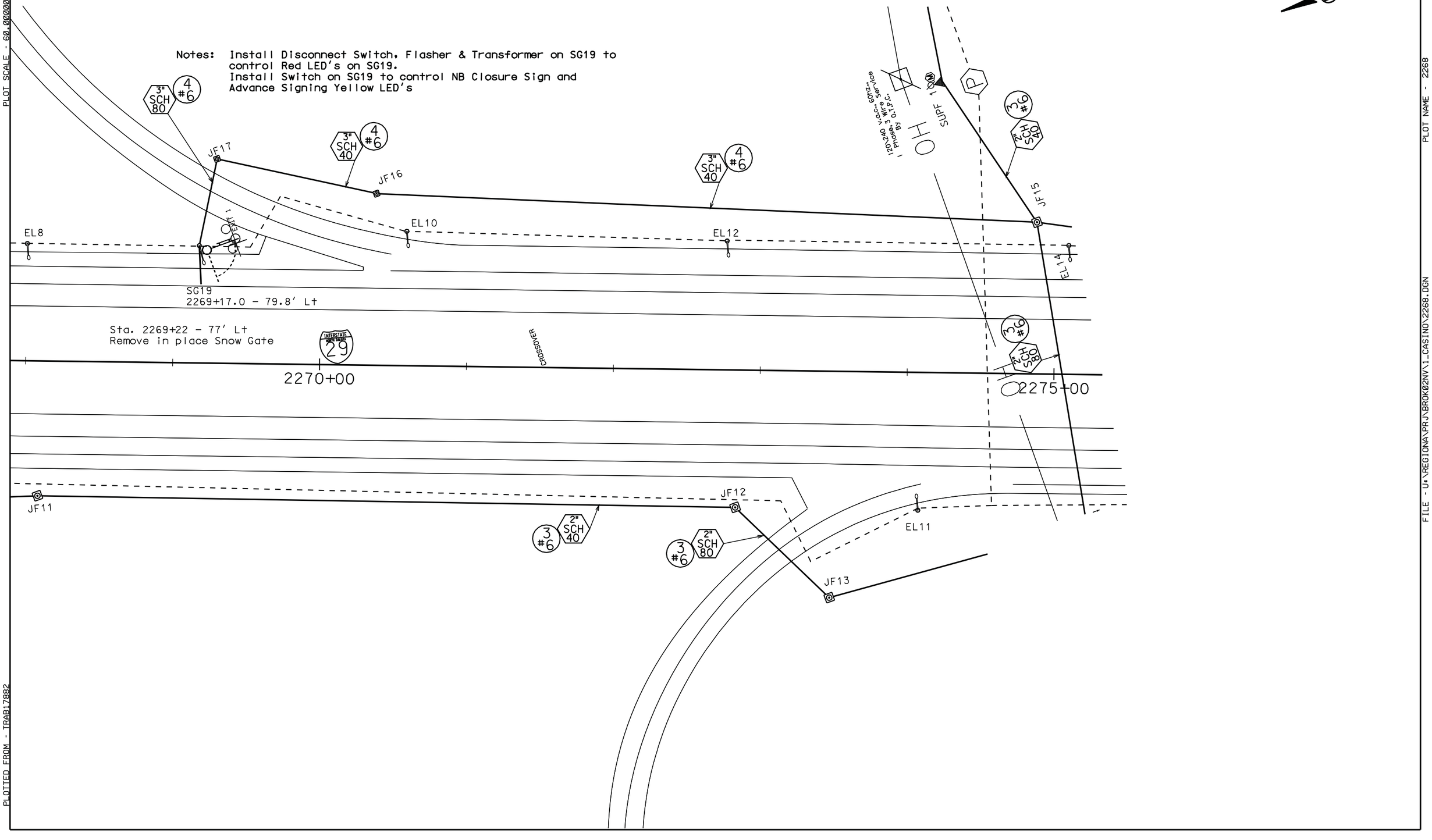
ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

ND Exit 1 - County Road 1E - Dakota Magic Casino

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	78	104

Plotting Date: 24-MAR-2011

Notes: Install Disconnect Switch, Flasher & Transformer on SG19 to control Red LED's on SG19.
Install Switch on SG19 to control NB Closure Sign and Advance Signing Yellow LED's

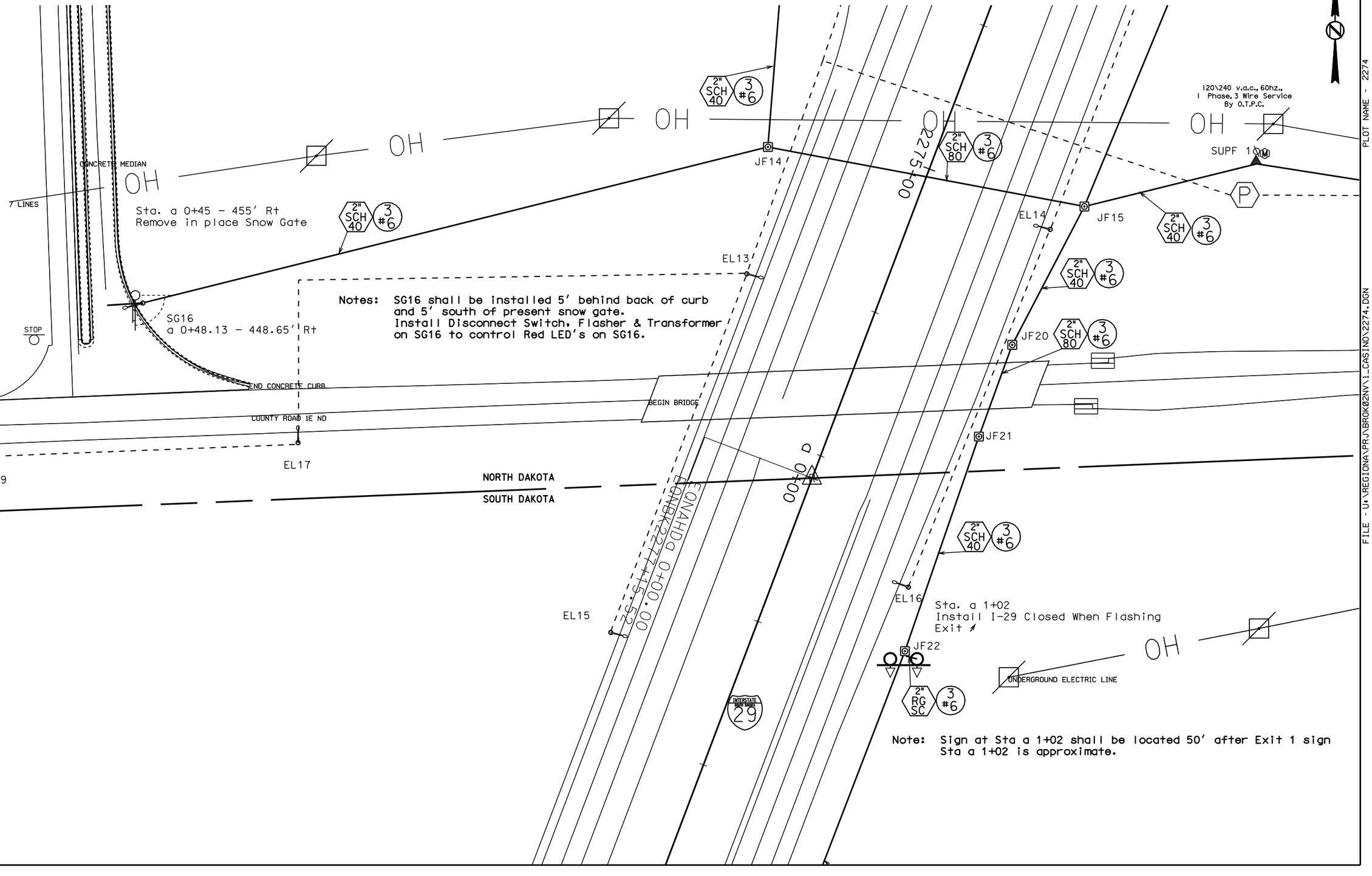


ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	79	104

Plotting Date: 24-MAR-2011

ND Exit 1 - County Road 1E - Dakota Magic Casino



ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

ND Exit 1 - County Road 1E - Dakota Magic Casino

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	80	104

Plotting Date: 24-MAR-2011

Notes: SG18 shall be installed 6' behind edge of concrete and 5' north of present snow gate.
Install Disconnect Switch, Flasher & Transformer on SG18 to control Red LED's on SG18.
SG18 shall be located a minimum of 10' from edge of power line.

WRONG WAY

Sta. 2271+54 - 1007' Lt
Remove in place Snow Gate

2" SCH 80 3 #6

BEGIN CONCRETE ON RAMP
SG18
2271+50.00 - 1005.00' Lt

JF19

STOP AND DO NOT ENTER

ONE WAY

2" SCH 40 3 #6

2" SCH 40 3 #6

JF18

OH

COUNTY ROAD 1E

CONTROL POINT A

EL18

EL20

NORTH DAKOTA

SOUTH DAKOTA

2275+00

0+00

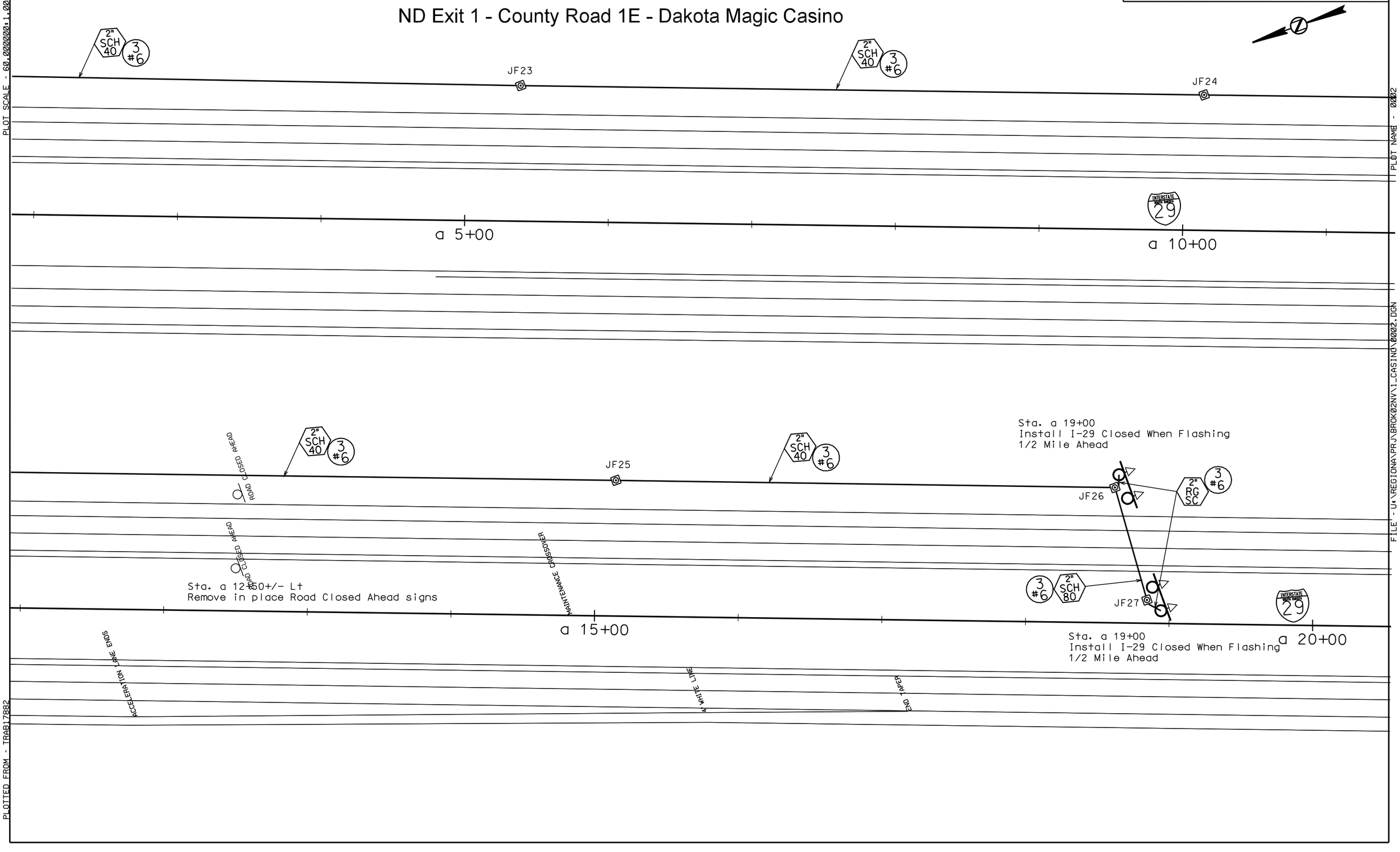
CONAHDA 0+00.00
CONBK2274+5.52

ROAD CLOSURE GATE, SIGNING & CONDUIT LAYOUT DETAILS

ND Exit 1 - County Road 1E - Dakota Magic Casino

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	81	104

Plotting Date: 24-MAR-2011



PLOT SCALE - 60.000000:1.000000

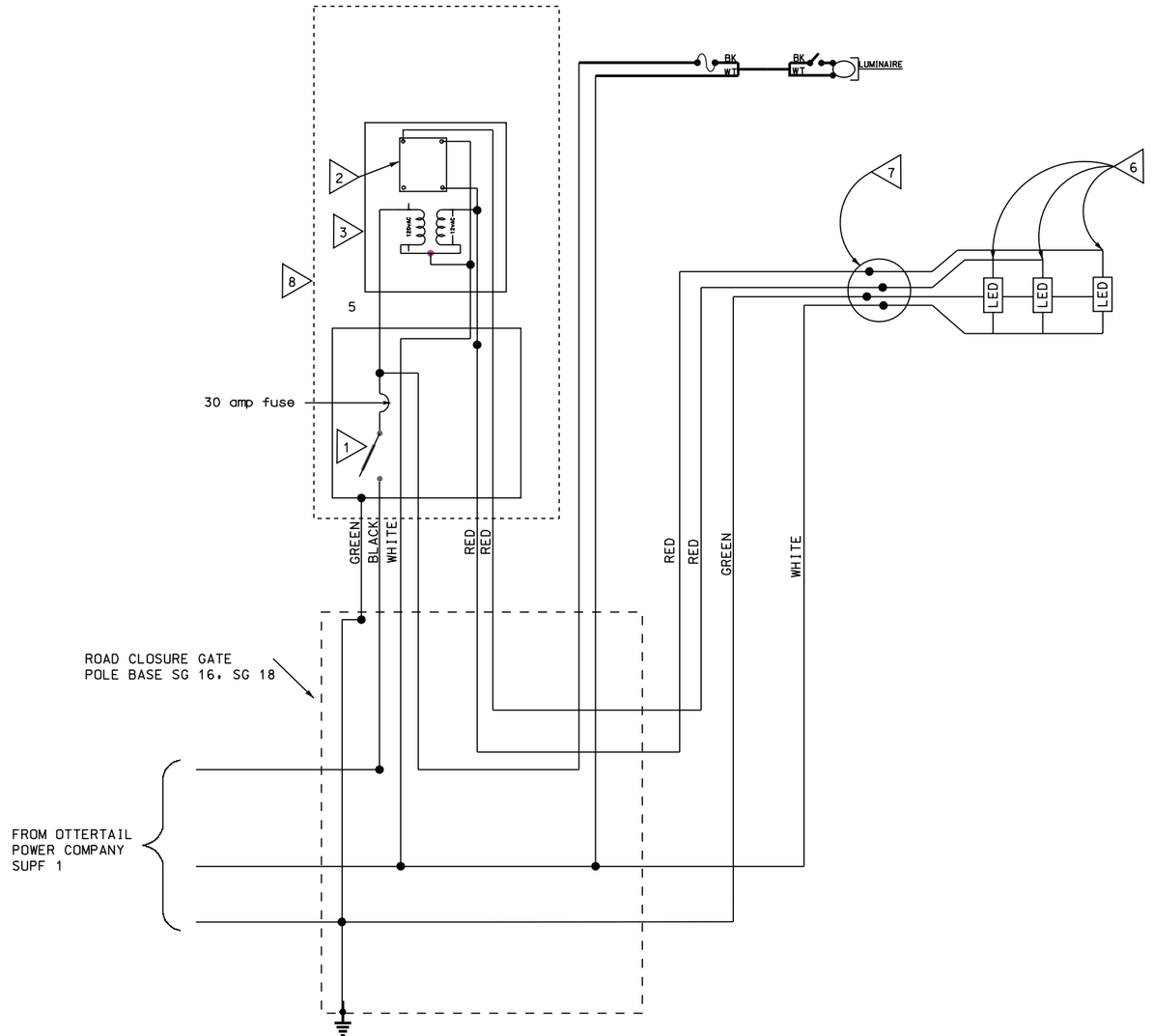
PLOT NAME - 0002

FILE - U:\REGIONAL\PRJ\BROK02NV1.1_CASINO\0002.DGN

PLOTTED FROM - TRAB17982

ROAD CLOSURE GATE WIRING DIAGRAMS ND EXIT 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	82	104
Plotting Date: 24-MAR-2011			



1. 30 AMP SAFETY SWITCH IN A NEMA 3R LOCKABLE ENCLOSURE. DPST FOR ROAD CLOSURE DROP GATE APPLICATIONS.
2. CUBE FLASHER MODEL 12DC10DF AS MANUFACTURED BY TSC (or equal) IN LOCKABLE NEMA 3R ENCLOSURE.
3. 120/240 VOLT PRIMARY, 12/24 VOLT SECONDARY TRANSFORMER, BUCK AND BOOST, MOUNTED IN LOCKABLE NEMA 3R ENCLOSURE.
4. VEHICLE SIGNAL INDICATION 12 inch. THE HEADS SHALL BE SUPPLIED WITH SDDOT APPROVED 12 inch LED SIGNAL HEADS.
5. CONDUCTORS ARE #6 AWG IN 2" RIGID STEEL CONDUIT.
6. THESE LAMP ASSEMBLIES ARE MANUFACTURED BY AURORA, PART NO. A30-944 (or equal) 12vAC LED GATE LIGHTS. 3 LAMP ASSEMBLIES SHALL BE MOUNTED ON EACH GATE.
7. THE CONTRACTOR SHALL INSTALL 2 CONDUCTOR NO. 14 AWG, "SO" CORD. CONNECTION OF THE "SO" CORD SHALL BE MADE IN A JUNCTION BOX MOUNTED ON THE GATE POST. THE JUNCTION BOX SHALL BE BANDED TO THE POST AND SHALL BE RAIN TIGHT AND WEATHERPROOF.
8. THE NEMA 3R ENCLOSURES AND RIGID STEEL CONDUIT SHALL BE MOUNTED TO THE SNOW GATE POLE
9. CAP FLASHER MODEL CF AS MANUFACTURED BY TSC (or equal)

NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

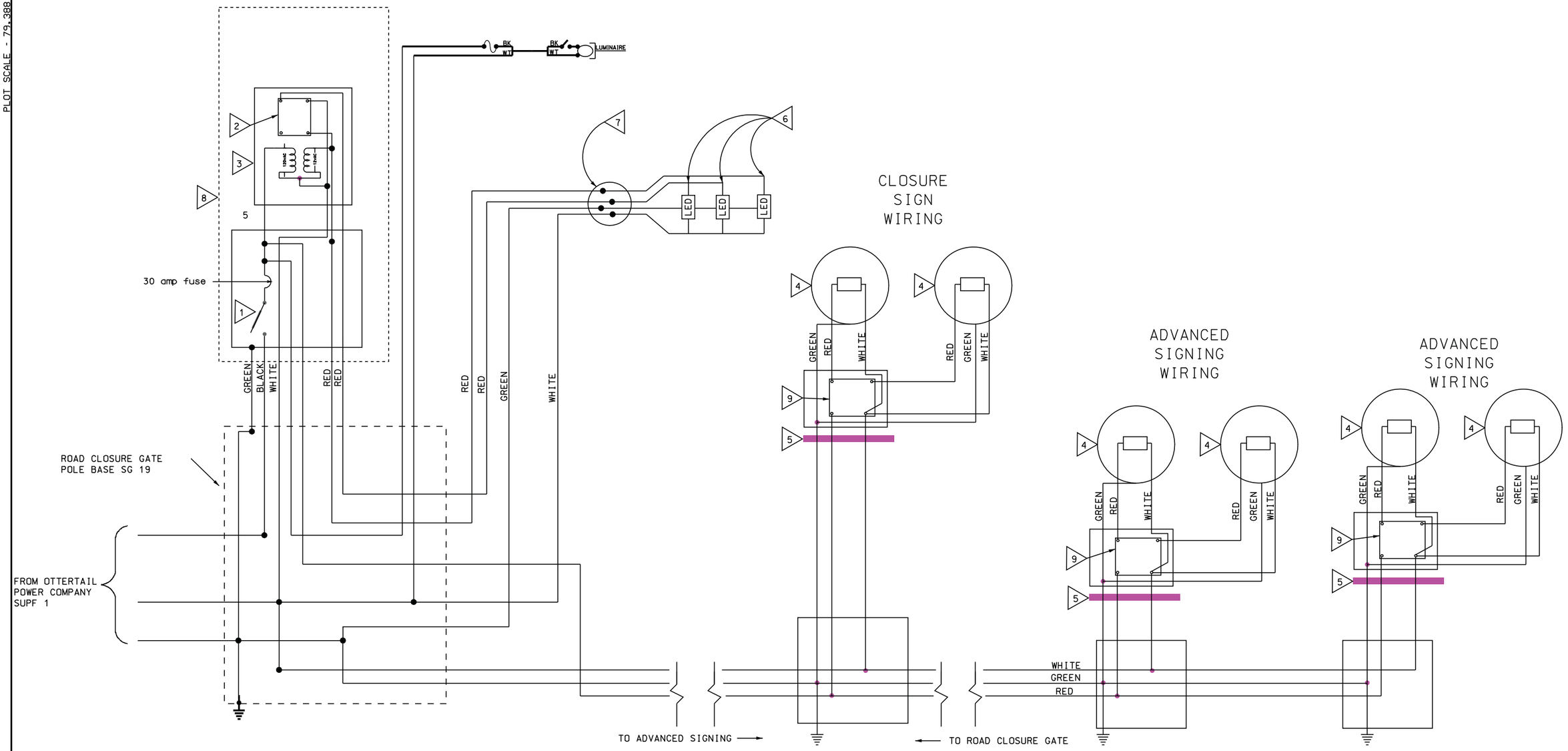
LEGEND:

FUSE: 8 amp. Non-Time Delay
or
3 1/2 amp. Dual Element

LUMINAIRE: 250 watt High Pressure Sodium Lamp

ROAD CLOSURE GATE WIRING DIAGRAMS ND EXIT 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	83	104
Plotting Date: 24-MAR-2011			



1. 30 AMP SAFETY SWITCH IN A NEMA 3R LOCKABLE ENCLOSURE. DPST FOR ROAD CLOSURE DROP GATE APPLICATIONS.
2. CUBE FLASHER MODEL 12DC10DF AS MANUFACTURED BY TSC (or equal) IN LOCKABLE NEMA 3R ENCLOSURE.
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9. CAP FLASHER MODEL CF AS MANUFACTURED BY TSC (or equal)

NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

LEGEND:

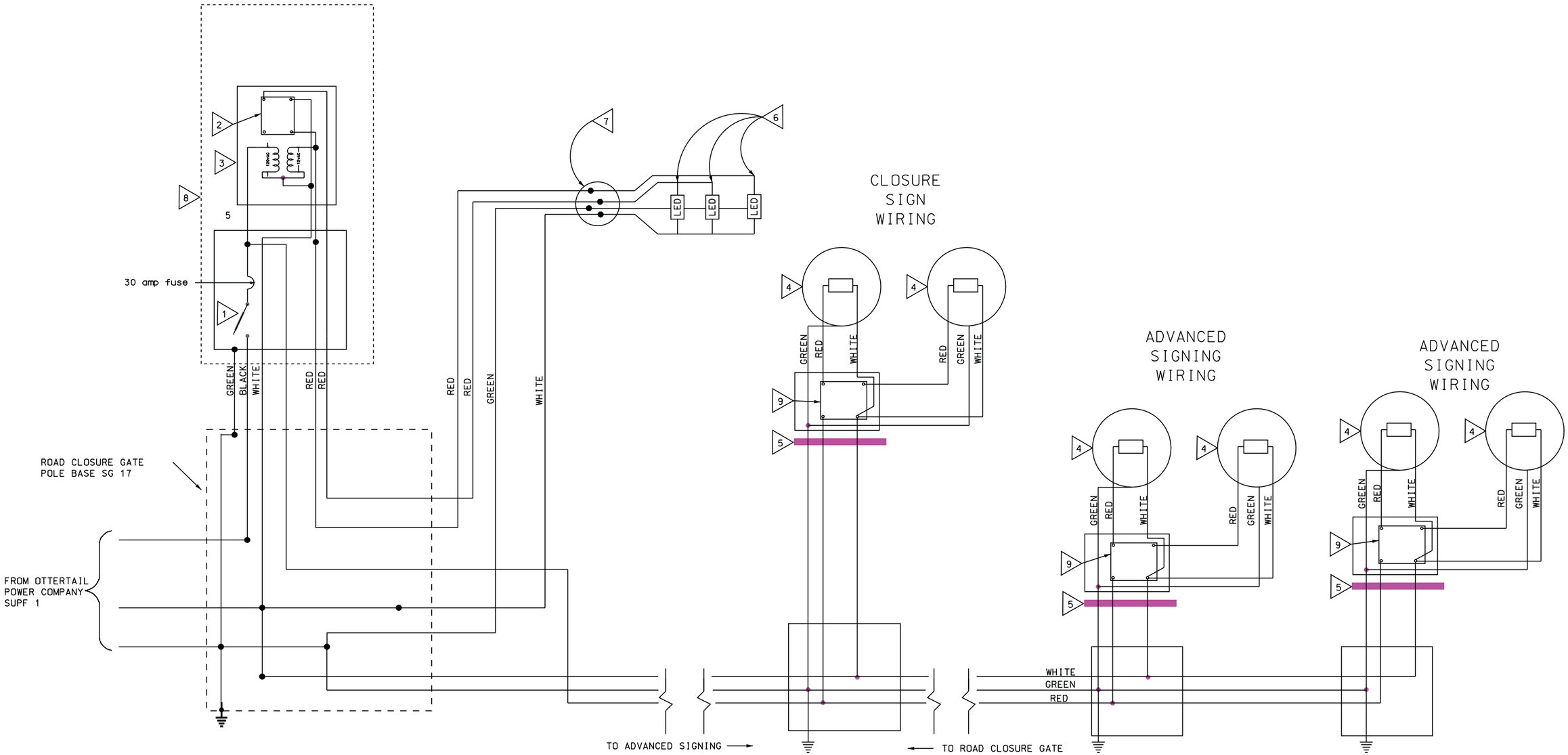
FUSE: 8 amp. Non-Time Delay
or
3 1/2 amp. Dual Element

LUMINAIRE: 250 watt High Pressure Sodium Lamp

ROAD CLOSURE GATE WIRING DIAGRAMS ND EXIT 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	84	104

Plotting Date: 24-MAR-2011



1. 30 AMP SAFETY SWITCH IN A NEMA 3R LOCKABLE ENCLOSURE. DPST FOR ROAD CLOSURE DROP GATE APPLICATIONS.
2. CUBE FLASHER MODEL 12DC10DF AS MANUFACTURED BY TSC (or equal) IN LOCKABLE NEMA 3R ENCLOSURE.
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4. VEHICLE SIGNAL INDICATION 12 inch. THE HEADS SHALL BE SUPPLIED WITH SDDOT APPROVED 12 inch LED SIGNAL HEADS.
5. CONDUCTORS ARE #6 AWG IN 2" RIGID STEEL CONDUIT.
6. THESE LAMP ASSEMBLIES ARE MANUFACTURED BY AURORA, PART NO. A30-944 (or equal) 12vAC LED GATE LIGHTS. 3 LAMP ASSEMBLIES SHALL BE MOUNTED ON EACH GATE.
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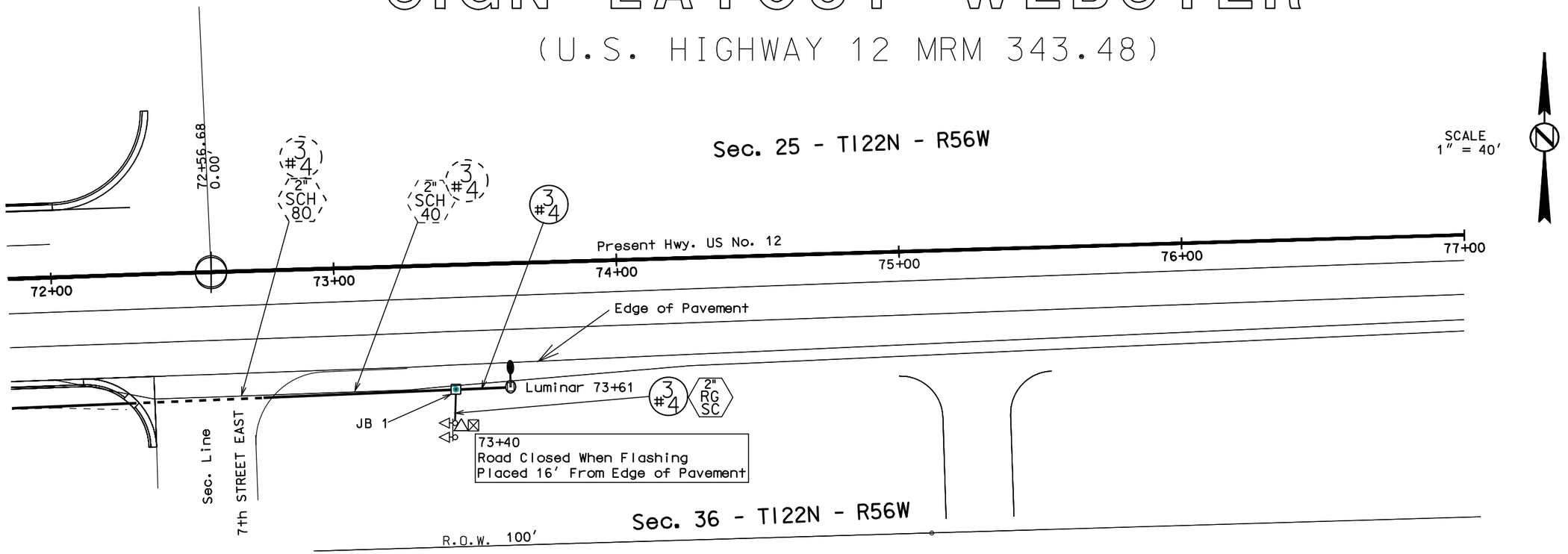
9. CAP FLASHER MODEL CF AS MANUFACTURED BY TSC (or equal)

NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	85	104
Plotting Date: 21-MAR-2011			

SIGN LAYOUT WEBSTER

(U.S. HIGHWAY 12 MRM 343.48)



Existing Items	
3 #4	1/C # 4 AWG COPPER WIRE
2" SCH 40	2" PCV SCHEDULE 40 CONDUIT
2" SCH 80	2" PCV SCHEDULE 80 CONDUIT

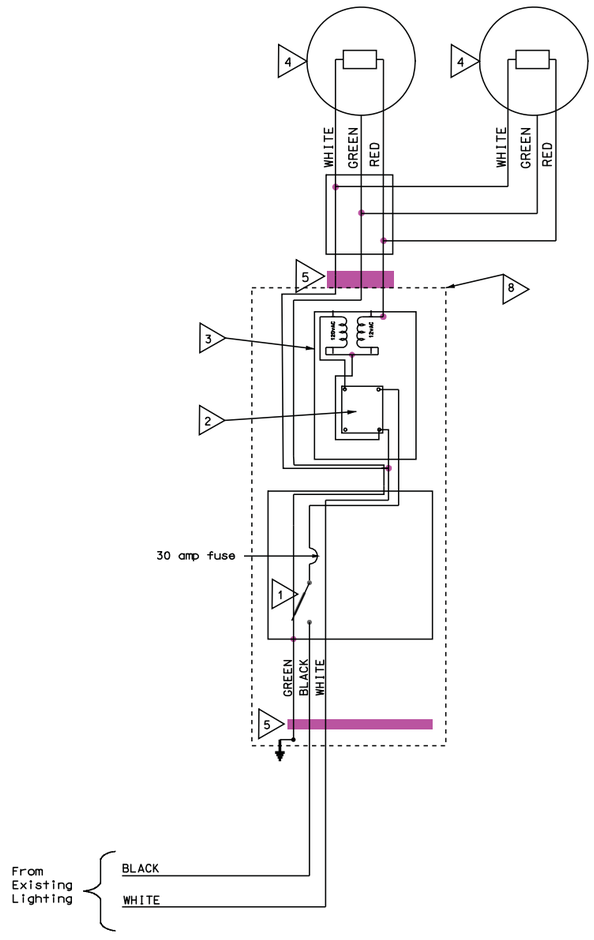
Estimate of Quantities		
	Juction Box (JB1) Type 2	1 (Each)
3 #4	1/C # 4 AWG COPPER WIRE	288 (FT)
2" RG SC	2" RIGID GALVANIZED STEEL CONDUIT	56 (Each)
	Electrical Service Cabinet With Lock	1 (Each)
	FLASHER UNIT	1 (Each)
	1 SECTION VEHICLE SIGNAL HEAD YELLOW	2 (Each)

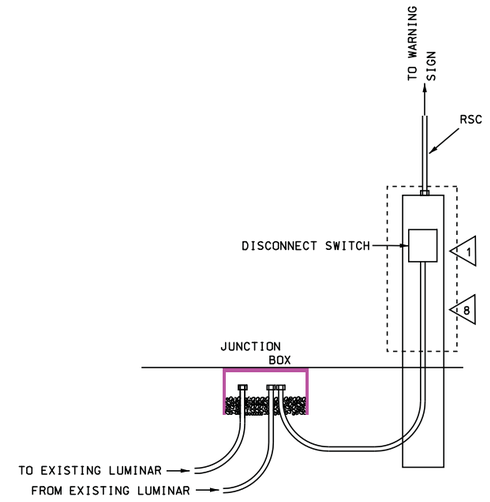
PLOT SCALE - 84.886117:1.000000

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	86	104
Plotting Date: 21-MAR-2011			

ROAD CLOSURE SIGN WIRING DIAGRAMS WEBSTER

CLOSURE
SIGN
WIRING





LEGEND:

FUSE: 8 amp. Non-Time Delay
or
3 1/2 amp. Dual Element

1. 30 AMP SAFETY SWITCH IN A NEMA 3R LOCKABLE ENCLOSURE. DPST FOR ROAD CLOSURE DROP GATE APPLICATIONS.
2. CUBE FLASHER MODEL 25DF AS MANUFACTURED BY TSC (or equal) IN LOCKABLE NEMA 3R ENCLOSURE.
3. 120/240 VOLT PRIMARY, 12/24 VOLT SECONDARY TRANSFORMER, E PART NO. 9T58K2873, (or equal) MOUNTED IN LOCKABLE NEMA 3R ENCLOSURE.
4. VEHICLE SIGNAL INDICATION 12 inch. THE HEADS SHALL BE SUPPLIED WITH SDDOT APPROVED 12 inch INCANDESCENT SIGNAL HEADS. THE LENSES SHALL BE GLASS.
5. CONDUCTORS ARE #4 AWG IN 1.5" RIGID STEEL CONDUIT.
6. THESE LAMP ASSEMBLIES ARE MANUFACTURED BY AURORA, PART NO. A30-944 (or equal) 12vAC LED GATE LIGHTS. 2 LAMP ASSEMBLIES SHALL BE MOUNTED ON EACH SIGN.
8. THE NEMA 3R ENCLOSURES AND RIGID STEEL CONDUIT SHALL BE MOUNTED TO THE W POST SIGN SUPPORT CLOSEST TO THE ROADWAY. THE DISCONNECT SWITCH SHALL BE MOUNTED AT A HEIGHT OF 5 feet.

PLOTTED FROM - TRAB17892

PLOT NAME - F02NV_WEBSTER

FILE - U:\REGIONA\PRJ\BROK02NV\WEBSTER\F02NV_WEBSTER.DGN

PLOT SCALE - 25.000000:1.000000
PLOTTED FROM - TRAB17882
PLOT NAME - MILBANK1
FILE - U:\REGIONA\PRJ\BROK02NV\MILBANK\MILBANK.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	87	104
Plotting Date: 21-MAR-2011			

SIGN LAYOUT MILBANK
(U.S. HWY. 12 MRM 388.17)

SCALE
1"= 25'

Estimate of Quantities

	Juction Box (JB1) Type 2	1 (Each)
3 #4	1/C # 4 AWG COPPER WIRE	185 (FT)
2" RG SC	2" RIGID GALVANIZED STEEL CONDUIT	50 (FT)
	Electrical Service Cabinet With Lock	1 (Each)
	Galvanized Steel Utility Pole (Not a Bid Item)	1 (Each)

Michael J. Mach &
Rebecca Mach

South 300 feet of Lot 105
to the City of Milbank

Gavin Angerhoter & Mar Sh

South 300 feet of Lot 10
and the South 300 feet o
the W1/2 of Lot 107
to the City of Milbank

6' Back of Present Curb
(7' Back of Future Curb)
10' East of Power Pole

LOT 104

LOT 105

LOT 106

Existing Snow Gate

3 #4 2" RG SC

09' OH

OH

River Street

OH

LARSON

OH

Present US Hwy. 12

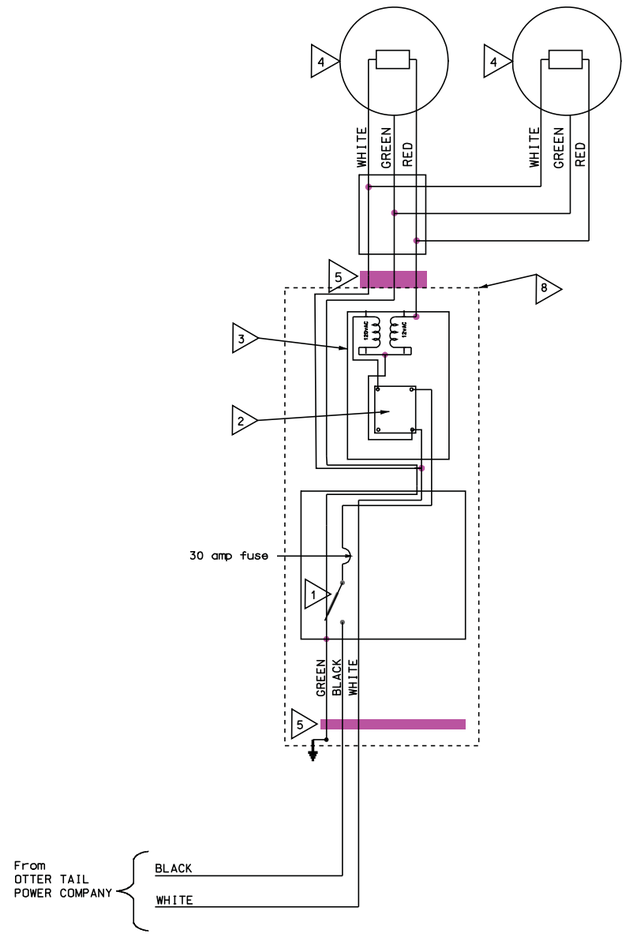
60+00

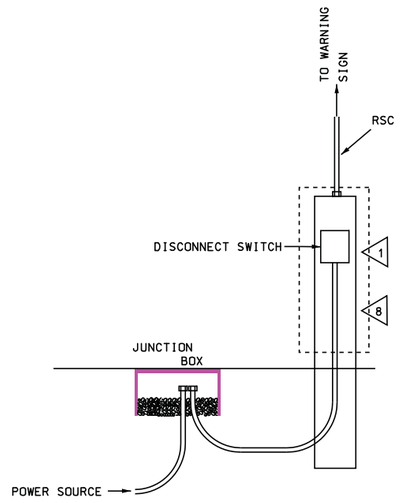
110'

149.3'

ROAD CLOSURE SIGN WIRING DIAGRAMS MILBANK

CLOSURE
SIGN
WIRING





LEGEND:

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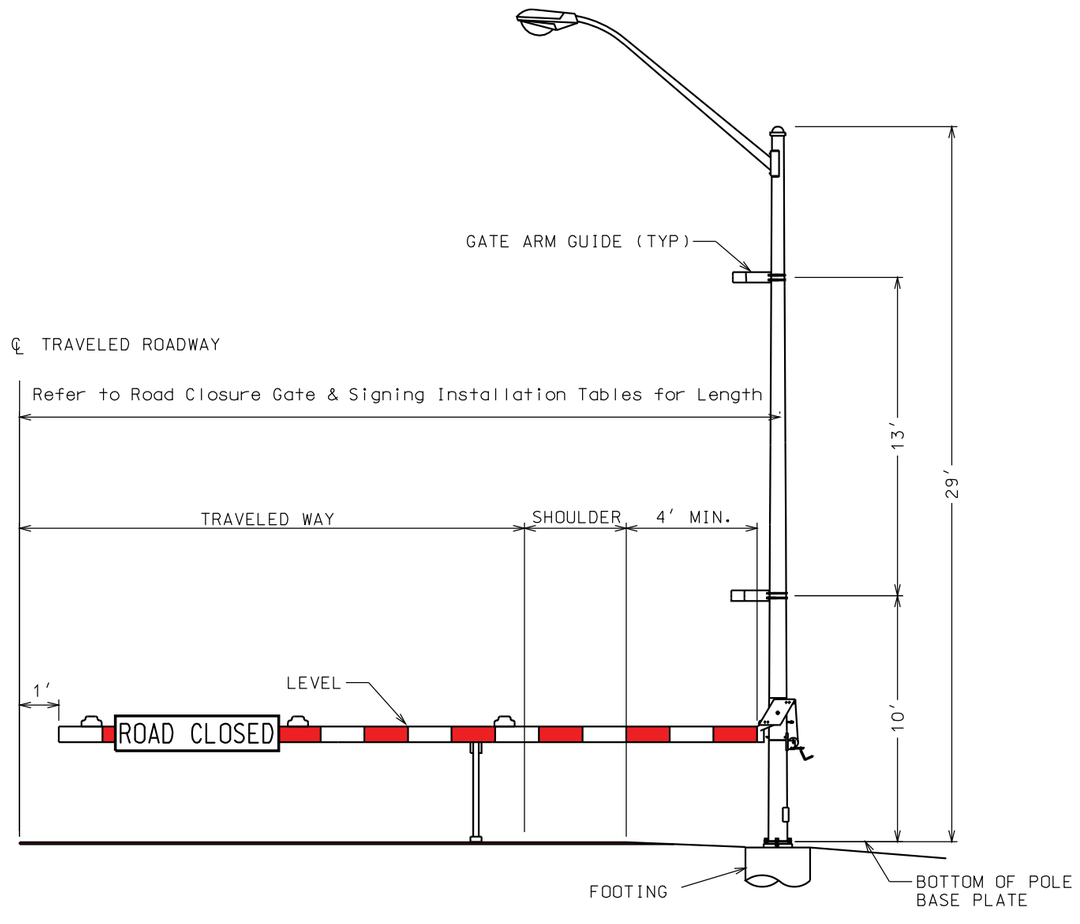
DROP ARM ROAD CLOSURE GATE

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	89	104
Plotting Date: 22-MAR-2011			



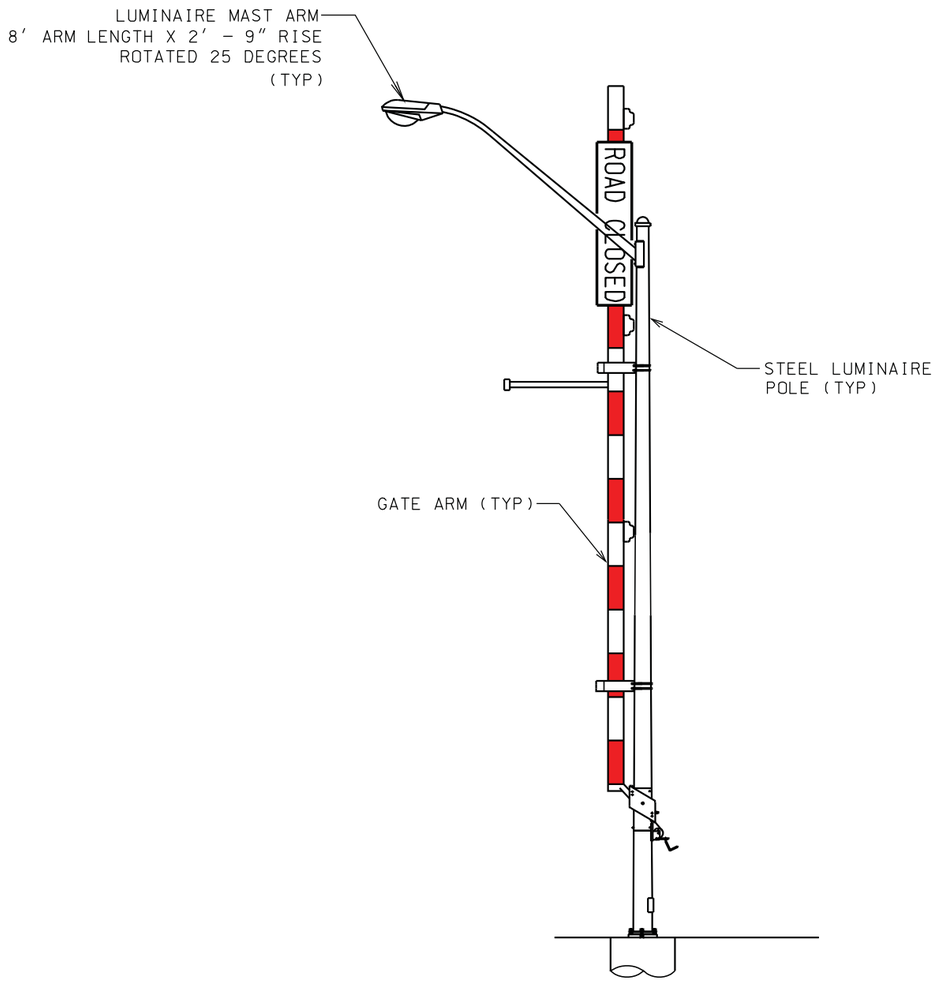
NOTE: PLACE THE "ROAD CLOSED" SIGN ON CENTER OF THE THROUGH LANE THE SIGN IS BLACK ON WHITE

TOTAL WEIGHT OF THE LUMINAIRE POLE, LUMINAIRE, AND HARDWARE FOR THE ROAD CLOSURE GATE SHALL NOT EXCEED 1,000 POUNDS

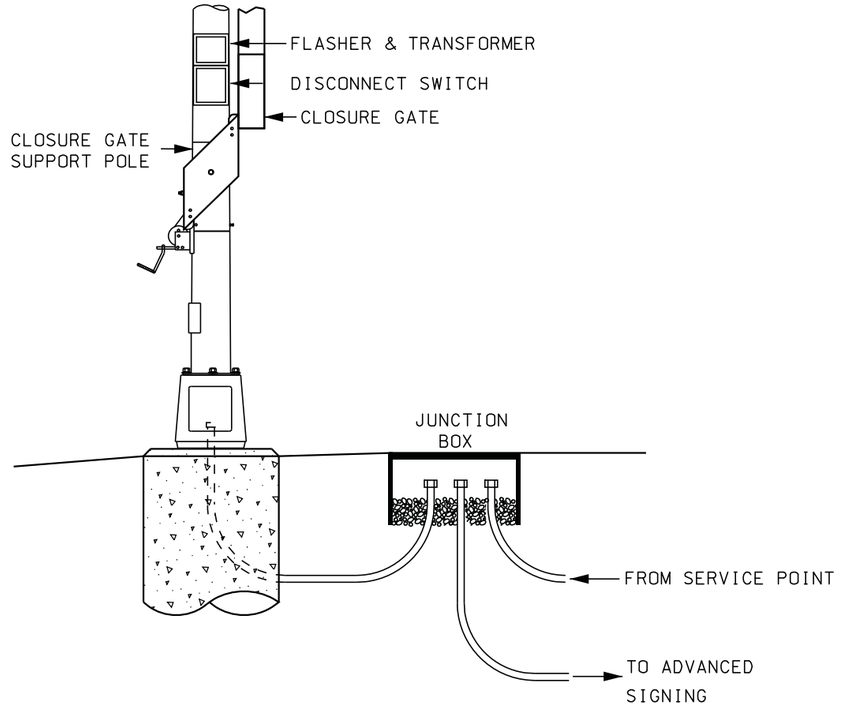
TYPICAL LOWERED POSITION

DROP ARM ROAD CLOSURE GATE

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	90	104
Plotting Date: 22-MAR-2011			



TYPICAL RAISED POSITION



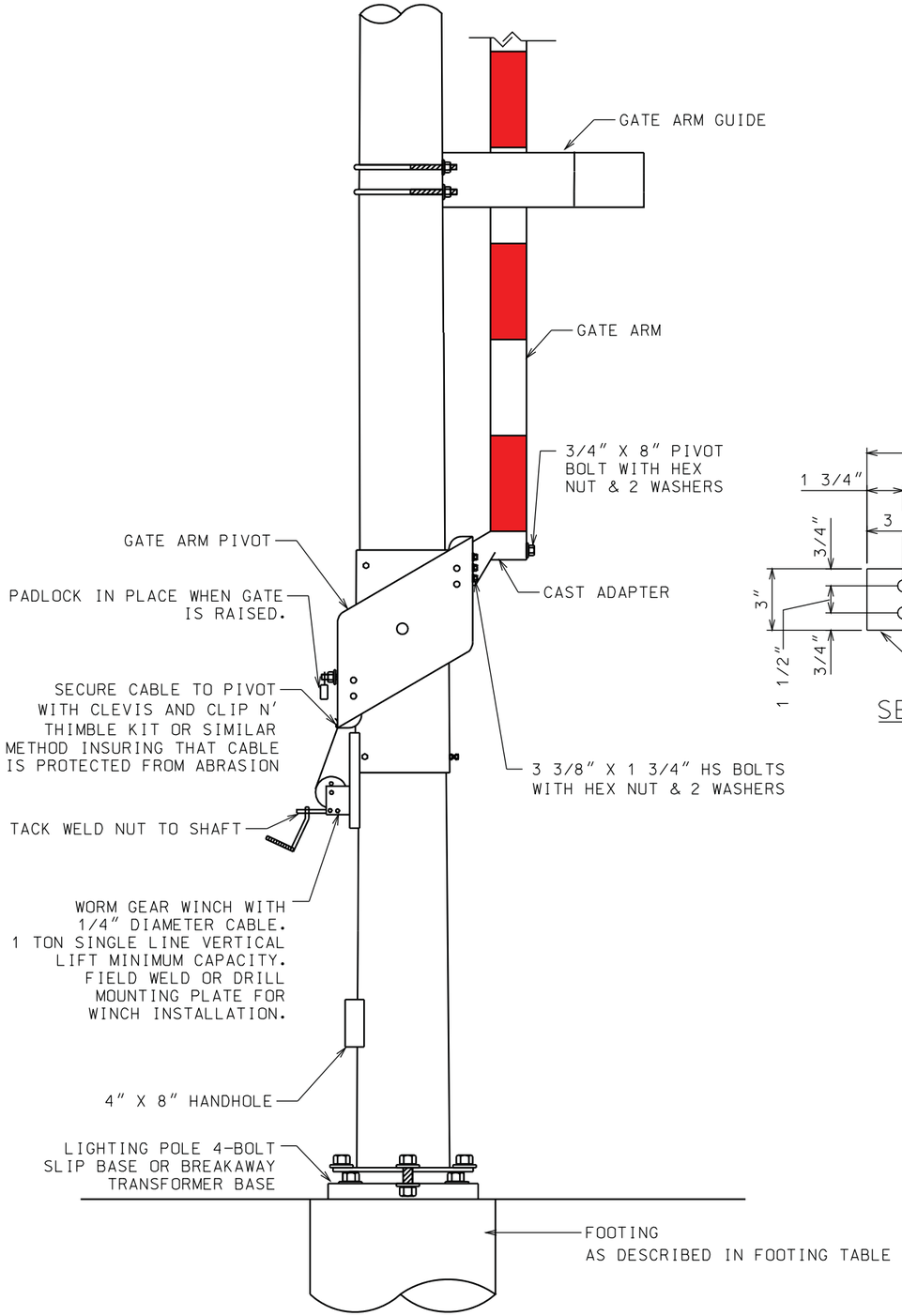
TYPICAL ELECTRICAL EQUIPMENT CONFIGURATION

PLOT SCALE - 40.000000:1.000000
PLOT NAME - Ø2NV_DROPGATE2
FILE - U:\REGIONA\PRJ\BROKØ2NV\Ø2NV_DROPGATE.DGN
PLOTTED FROM - TRAB17882

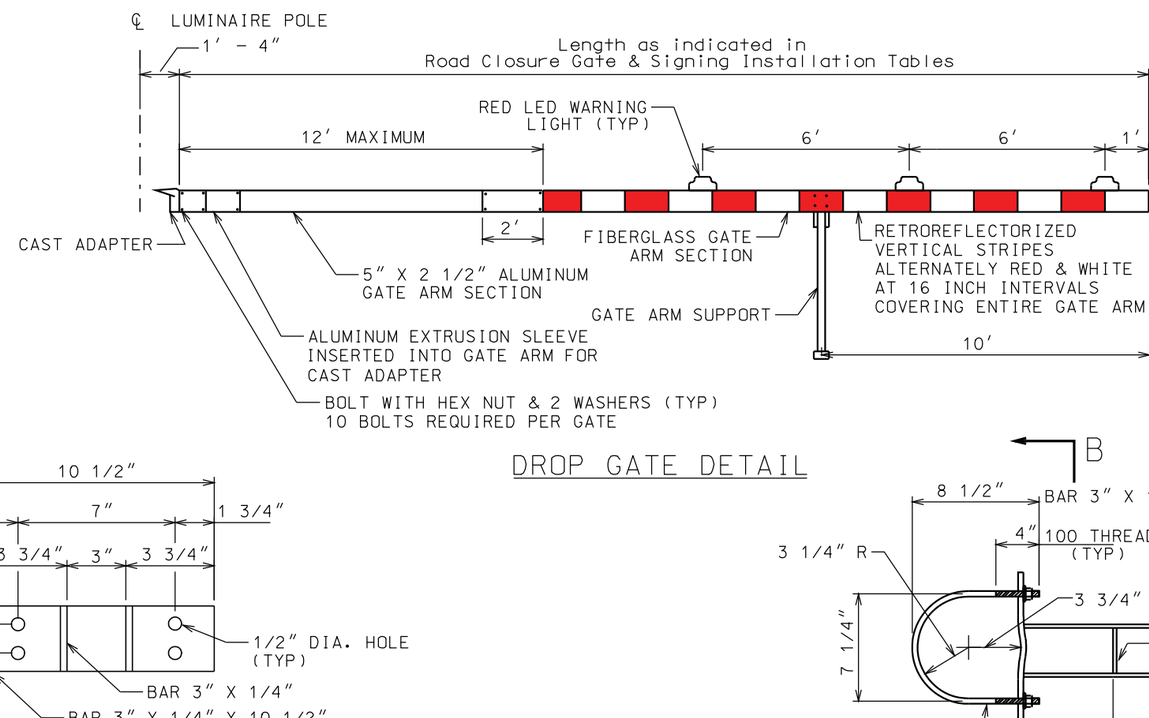
DROP ARM ROAD CLOSURE GATE

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	91	104

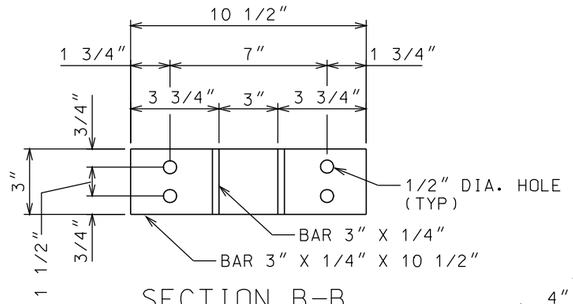
Plotting Date: 22-MAR-2011



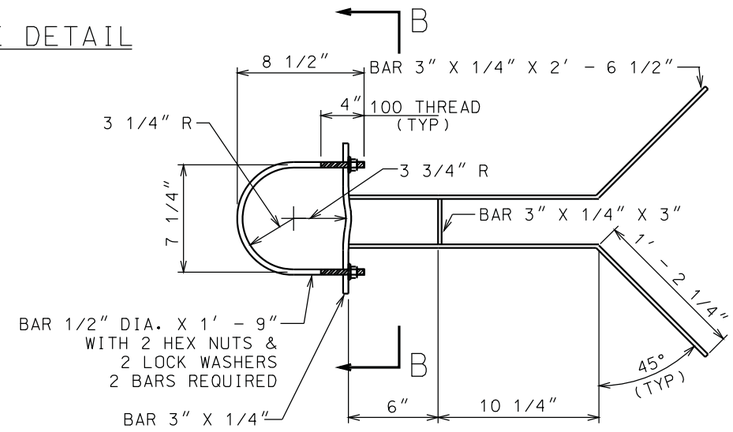
DROP GATE PIVOT ASSEMBLY



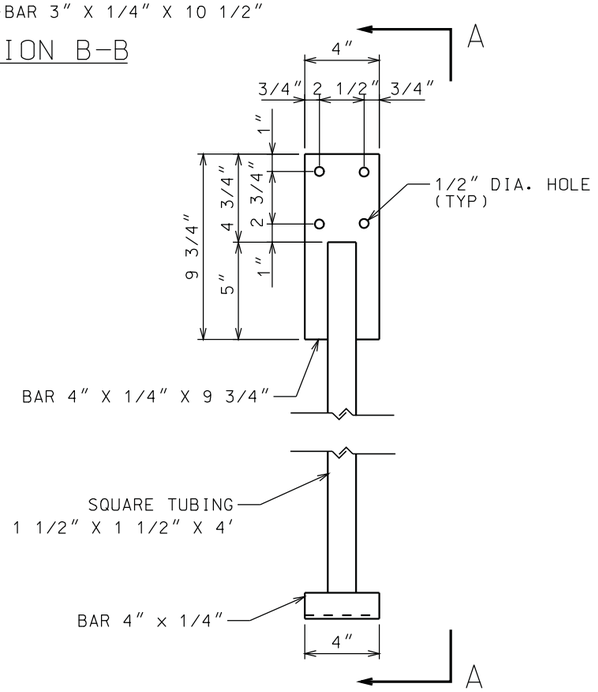
DROP GATE DETAIL



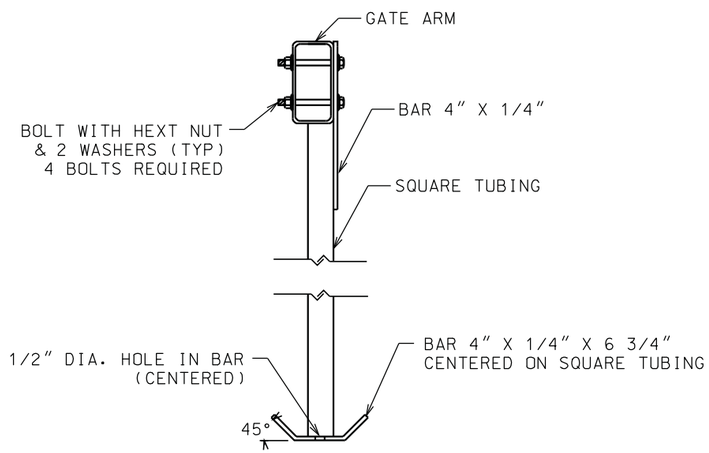
SECTION B-B



DROP GATE ARM GUIDE DETAIL



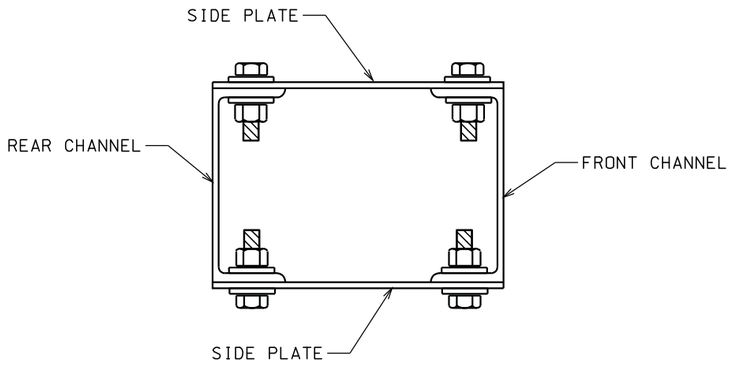
DROP GATE ARM SUPPORT DETAIL



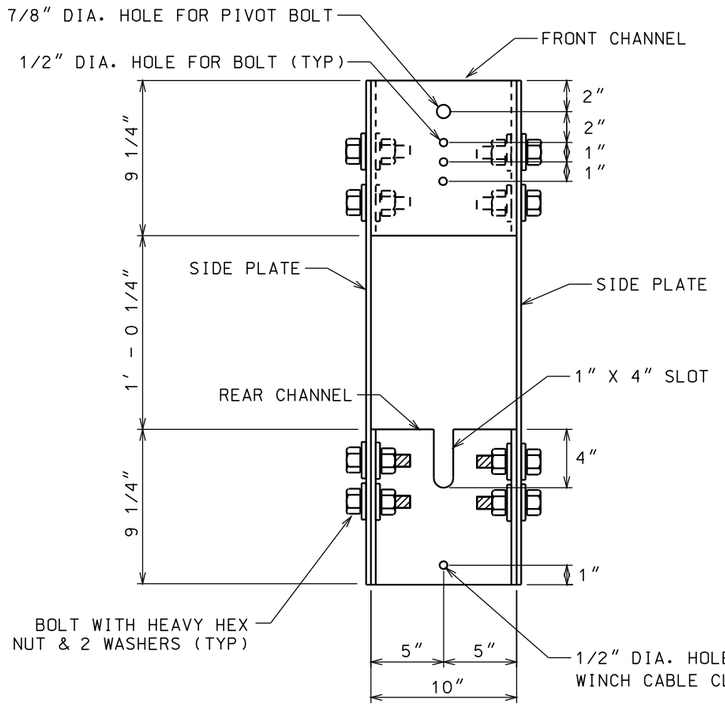
VIEW A-A

DROP ARM ROAD CLOSURE GATE

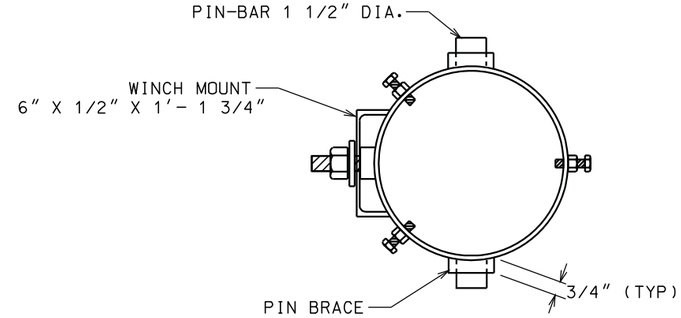
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	92	104
Plotting Date: 22-MAR-2011			



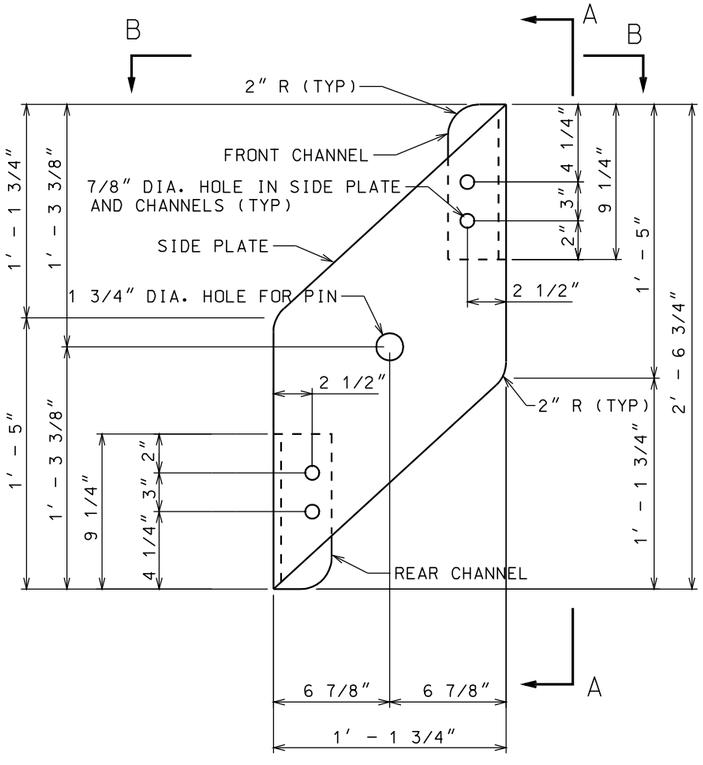
VIEW B-B



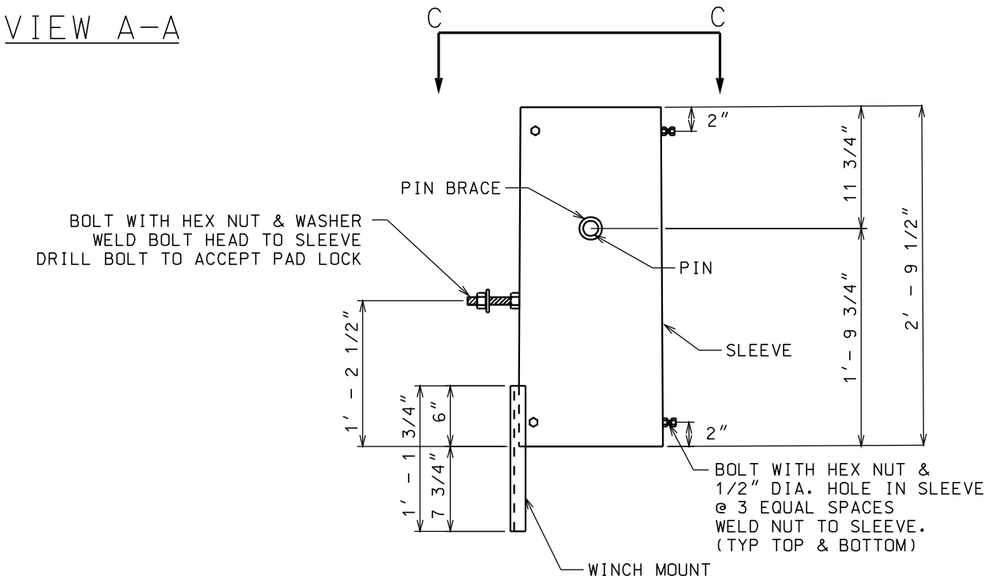
VIEW A-A



VIEW C-C



SIDE PLATE DETAIL



PIVOT SLEEVE DETAIL

PLOT SCALE - 40.000000:1.000000

PLOTTED FROM - TRAB17882

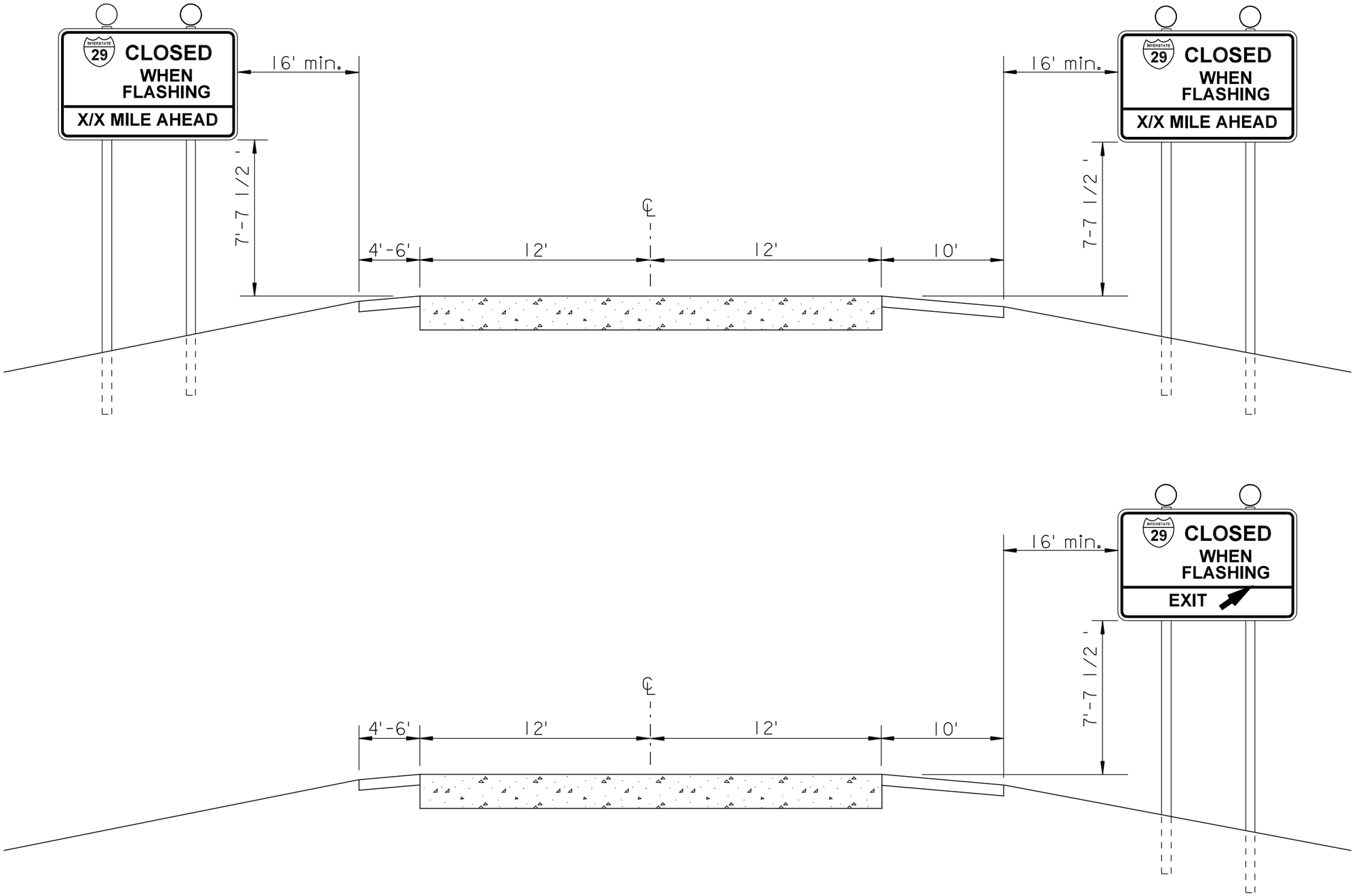
PLOT NAME - Ø2NV_DROPGATE3

FILE - U:\REGIONA\PRJ\BROKØ2NV\Ø2NV_DROPGATE.DGN

PLOT SCALE - 200.000000:1.000000

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	93	104
Plotting Date: 21-MAR-2011			

TYPICAL INTERSTATE MAINLINE SIGN DETAIL



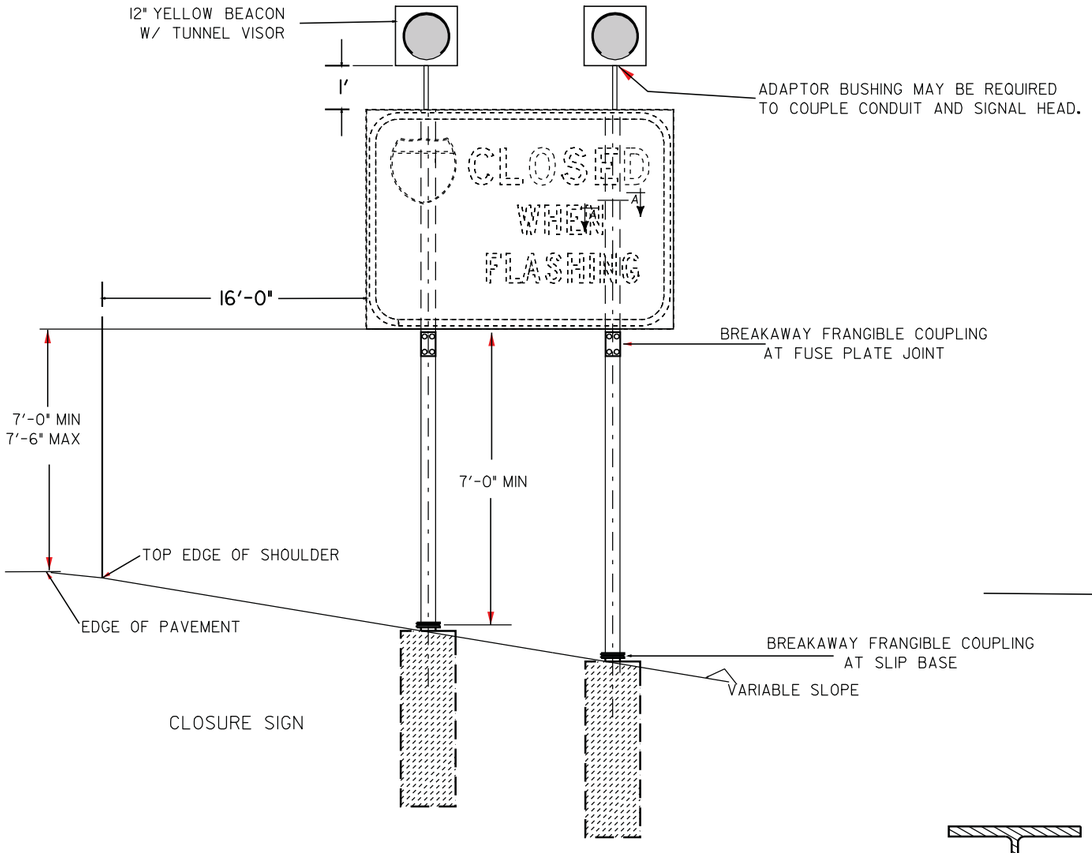
PLOTTED FROM - TRAB17882

PLOT NAME - Ø2NV_MAINLINE_SIGNS

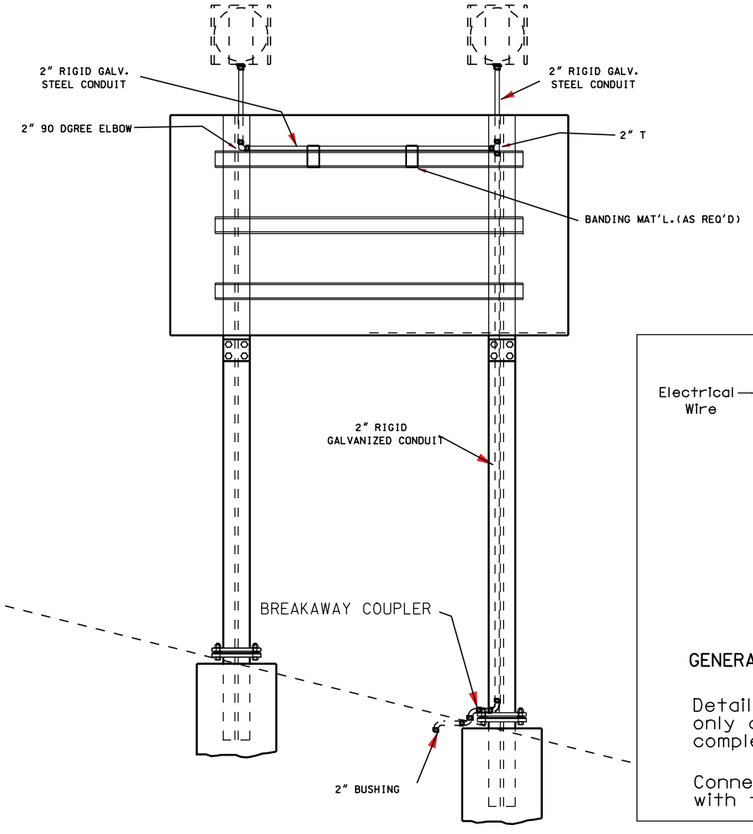
FILE - U:\REGIONA\PRJ\BROKØ2NV\Ø2NV_MAINLINE_SIGNS.DGN

ERECTION DETAILS FOR INTERSTATE HIGHWAY SIGNS

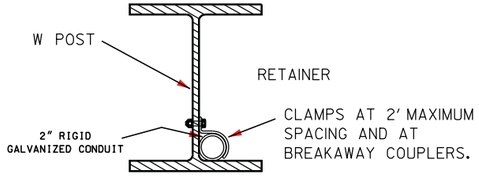
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 000S(263)	94	104
Plotting Date: 21-MAR-2011			



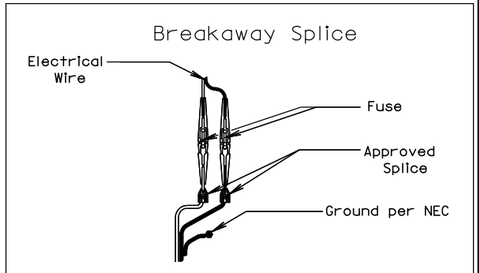
FRONT VIEW



REAR VIEW



SEC. A - A



GENERAL NOTES:

Details are provided for example only and are not intended to be a complete design.

Connectors shall be breakaway type with the male plugs pointing down.

40 Ft. of 2" Rigid Galvanized Steel Conduit Has been included in the Estimate of Quantities For Each Sign That has Flashing Beacons. Payment for all Clamps, Couplers, and Bushings Required to Connect and Fasten The Conduit to the sign shall be incidental to the Contract Unit Price For 2" RIGID GALVANIZED STEEL CONDUIT

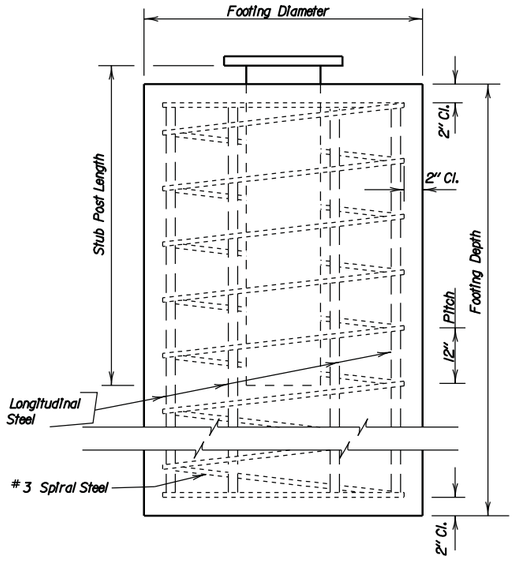
FED.HWY. ADMIN.NO.	STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
8	S.D.	IM 000S(263)	95	104

SIGN NUMBER	POST SIZE	FOOTING DIMENSIONS		STUB POST LENGTH	LONGITUDINAL STEEL QUANTITIES			# SPIRAL STEEL QUANTITIES	
		DIA.	DEPTH		NO.	SIZE	LENGTH	DIA.	LENGTH
A	W 6X12	1.75'	4'	2'	8	#6	3' - 8"	1'-5"	30'
B	W 6X12	1.75'	4'	2'	8	#6	3' - 8"	1'-5"	30'
C	W 6X12	1.75'	4'	2'	8	#6	3' - 8"	1'-5"	30'
D	W 8X28	1.75'	9'	2.5'	8	#6	8' - 8"	1'-5"	52'
E (Webster)	W 6X12	1.75'	4'	2'	8	#6	3' - 8"	1'-5"	30'
E (Millbank)	W 6X12	1.75'	5'	2'	8	#6	4' - 8"	1'-5"	34'

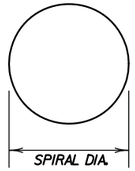
Spirals - Use 6" pitch and 1 1/2 extra turns at each end. Use 1 1/2 turns for lap at splice as required, or weld as approved by the Office of Bridge Design. Spirals may be smooth bars. Bar length shown does not include splices.

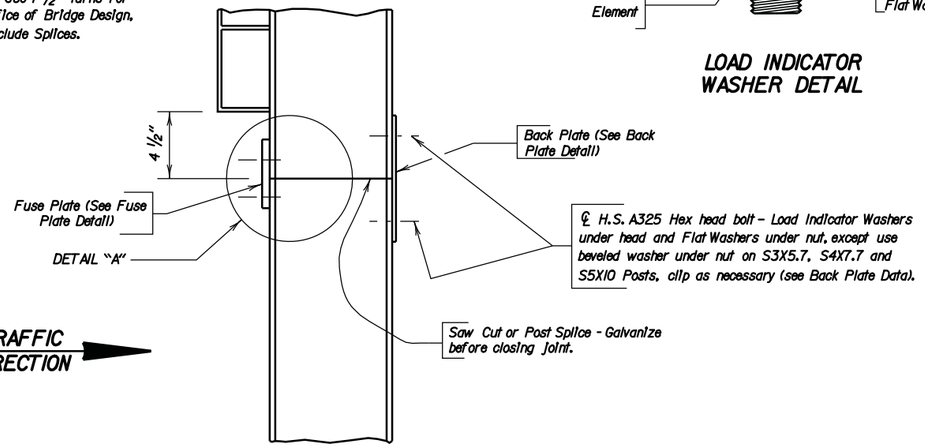
Dimensions are out to out of bars.

NOTE: The above is a Site Specific data entry table and the Inserted Information is the responsibility of the Region Traffic Engineer.

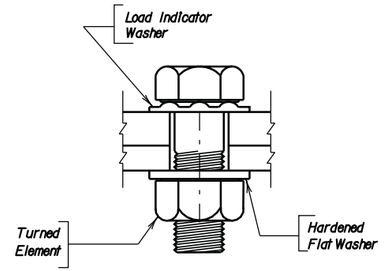


FOOTING DETAIL

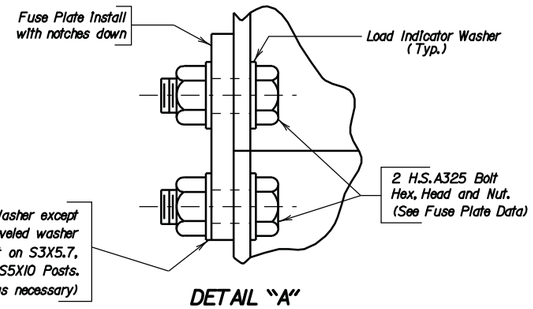




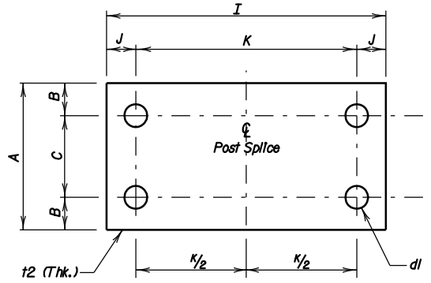
FUSE & BACK PLATE INSTALLATION



LOAD INDICATOR WASHER DETAIL



DETAIL "A"



BACK PLATE DETAIL

NOTES-

✳ 1. Design Specification: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 2001 Edition with 2003 Interims.

2. Concrete Footings shall be Class M6 - fc = 4000 p.s.i.

3. Structural Steel shall comform to ASTM A36.

4. All Reinforcing Steel, except spirals, shall conform to ASTM 615 Grade 60.

5. Spiral Reinforcing Steel may be fabricated from cold drawn wire ASTM A82, or hot rolled plain or deformed bars conforming to the strength requirements of ASTM A615, Grade 60.

6. All Bolts and Nuts shall conform to ASTM A325 except that 1/2" diameter bolts may conform to either ASTM A325 or ASTM A449. Washers shall conform to ASTM F436. All hardware shall be galvanized in accordance with ASTM A153.

7. All structural steel including Posts and Post Stubs shall be galvanized in accordance with ASTM A123.

8. All Bolt Holes shall be drilled. All plate cuts shall preferably be saw cuts. However, Flame Cutting will be permitted providing all edges are ground smooth (metal projecting beyond the plane of the plate face will NOT be allowed).

9. All welding and weld inspection shall be in accordance with the latest edition of AWS D 1.1 Structural Welding Code.

PROCEDURE FOR ASSEMBLING SLIP BASE-

1. Place galvanized Sheet Metal Diaphrams on top of the lower slip plate.

2. Connect main post to Stub Post with clean unlubricated bolts and nuts with one Hardened Washer on each bolt between slip plates.

3. Plumb post by adding shims between slip plates.

4. Tighten bolts to a practical maximum, using a 12"- 15" wrench in order to bed surfaces and clean threads. DO NOT TIGHTEN TO PROOF LOAD.

5. Loosen all bolts and retighten in increments, using a systematic order, until each bolt has been tightened to the specified torque corresponding to the post size used (See Slip Base Plate Data). Tighten bolts only to the torque specified. DO NOT OVERTIGHTEN. Check torque on each bolt after entire sign has been erected.

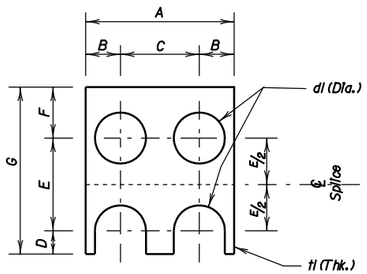
ASSEMBLY OF FRICTION FUSE PLATES, BACK PLATES AND STIFFENERS-

1. High strength bolts shall be tightened so as to obtain a residual tension by the use of load indicator washers.

2. High strength bolts may be tightened by the "Turn of the Nut" method as provided in Section 11.5.6.4.4 of the AASHTO Standard Specifications for Highway Bridges in lieu of #1 above.

SHOP PLANS-

The fabricator shall initially submit two (2) copies of the shop plans to the Office of Bridge Design for review. One reviewed copy will be sent back to the fabricator who will then make changes, if any, and then send the Office of Bridge Design six (6) final approved copies for distribution.



FUSE PLATE DETAIL

TABLE 1 - FUSE PLATE DATA

Post Size	A	B	C	D	E	F	G	dl	tl	Bolt Size
S3X5.7	2 5/8"	9/16"	1 1/2"	1/2"	1 1/2"	1 1/8"	3 1/8"	5/8" ø	1/4"	1/2" ø
S4X7.7	2 5/8"	9/16"	1 1/2"	1/2"	1 1/2"	1 1/8"	3 1/8"	5/8" ø	1/4"	1/2" ø
S5X10	3"	11/16"	1 5/8"	5/8"	2 1/4"	1 1/8"	4"	3/4" ø	3/8"	5/8" ø
W6X12	4"	15/16"	2 1/8"	5/8"	2 1/2"	1 7/8"	4 1/2"	3/4" ø	3/8"	5/8" ø
W6X15	6"	1 3/8"	3 1/4"	5/8"	2 1/2"	1 3/8"	4 1/2"	3/4" ø	3/8"	5/8" ø
W6X20	6"	1 3/4"	3 1/4"	5/8"	2 1/2"	1 3/8"	4 1/2"	3/4" ø	3/8"	5/8" ø
W8X18	5 1/4"	1 5/16"	2 5/8"	3/4"	2 1/2"	1 7/8"	4 5/8"	7/8" ø	1/2"	3/4" ø
W8X21	5 1/4"	1 5/16"	2 5/8"	3/4"	2 1/2"	1 3/8"	4 5/8"	7/8" ø	1/2"	3/4" ø
W8X24	6 1/2"	1 1/2"	3 1/2"	7/8"	3"	1 5/8"	5 1/2"	1" ø	9/16"	7/8" ø
W8X28	6 1/2"	1 9/16"	3 3/8"	7/8"	3"	1 1/4"	5 5/8"	1" ø	1/2"	7/8" ø
W8X31	8"	1 5/8"	4 3/4"	1"	3 1/2"	2"	6 1/2"	1 1/8" ø	5/8"	1" ø
W10X33	8"	1 7/8"	4 1/4"	1 1/8"	4 1/2"	2 1/4"	7 7/8"	1 1/4" ø	3/4"	1 1/8" ø

TABLE 5 - BACK PLATE DATA

Post Size	A	B	C	J	K	I	dl	t2	Bolt Size
S3X5.7	2 5/8"	9/16"	1 1/2"	1 1/4"	4 1/2"	7"	5/8" ø	1/4"	1/2" ø
S4X7.7	2 5/8"	9/16"	1 1/2"	1 1/4"	4 1/2"	7"	5/8" ø	1/4"	1/2" ø
S5X10	3"	11/16"	1 5/8"	1 1/4"	4 3/4"	7 1/4"	3/4" ø	1/4"	5/8" ø
W6X12	4"	15/16"	2 1/8"	1 1/4"	4 3/4"	7 1/4"	3/4" ø	1/4"	5/8" ø
W6X15	6"	1 3/8"	3 1/4"	1 1/4"	5 1/4"	7 3/4"	3/4" ø	1/4"	5/8" ø
W6X20	6"	1 3/4"	3 1/4"	1 1/4"	5 1/4"	7 3/4"	3/4" ø	1/4"	5/8" ø
W8X18	5 1/4"	1 5/16"	2 5/8"	1 7/8"	5 3/4"	8 1/2"	7/8" ø	1/4"	3/4" ø
W8X21	5 1/4"	1 5/16"	2 5/8"	1 3/8"	5 3/4"	8 1/2"	7/8" ø	1/4"	3/4" ø
W8X24	6 1/2"	1 1/2"	3 1/2"	1 5/8"	6"	9 1/4"	1" ø	5/16"	7/8" ø
W8X28	6 1/2"	1 9/16"	3 3/8"	1 3/4"	6"	9 1/2"	1" ø	3/8"	7/8" ø
W8X31	8"	1 5/8"	4 3/4"	2"	6 1/2"	10 1/2"	1 1/8" ø	3/8"	1" ø
W10X33	8"	1 7/8"	4 1/4"	2 1/2"	7"	1'-0"	1 1/4" ø	7/16"	1 1/8" ø

ERECTION DETAILS
FOR
TWO-POST ONE-DIRECTION BREAKAWAY SIGN SUPPORTS
S. D. DEPT. OF TRANSPORTATION
DECEMBER 1994 (1) OF (2)

MK	REVISION	DATED	BY
✳	Specification Update	7/11/05	AV

DESIGNED BY	DRAWN BY	CHECKED BY	
RH/DM	TB	RH/DM	Kevin N. Goeden
CNTYPCEM	PCEMDSPG	BSTDBS2A	BRIDGE ENGINEER

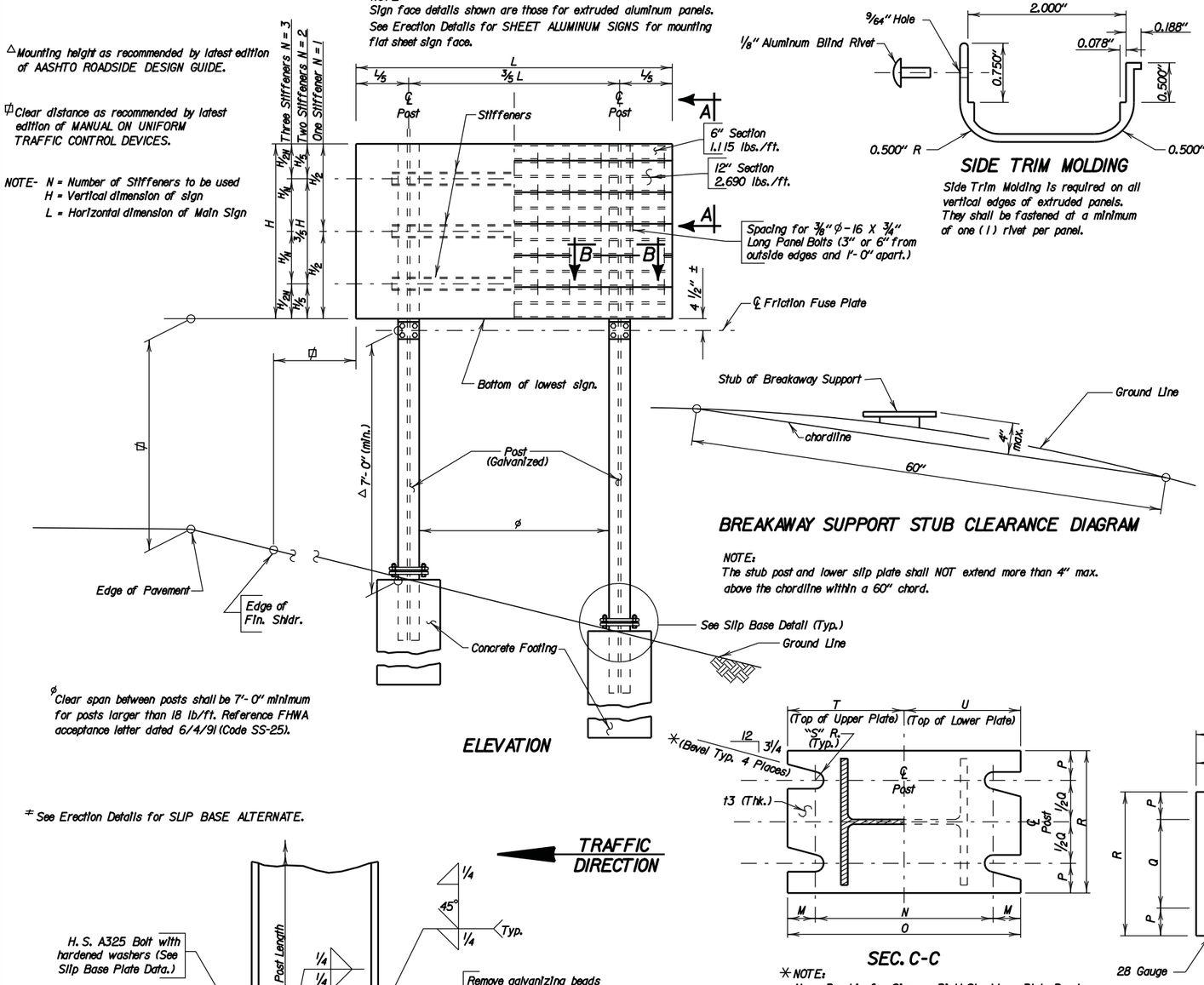
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 000S(263)	96	104

NOTE-
Sign face details shown are those for extruded aluminum panels. See Erection Details for SHEET ALUMINUM SIGNS for mounting flat sheet sign face.

△ Mounting height as recommended by latest edition of AASHTO ROADSIDE DESIGN GUIDE.

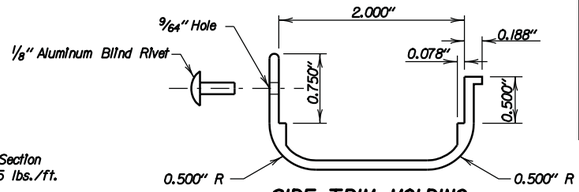
ϕ Clear distance as recommended by latest edition of MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

NOTE- N = Number of Stiffeners to be used
H = Vertical dimension of sign
L = Horizontal dimension of Main Sign



ELEVATION

ϕ Clear span between posts shall be 7'-0" minimum for posts larger than 18 lb/ft. Reference FHWA acceptance letter dated 6/4/91 (Code SS-25).



SIDE TRIM MOLDING

Side Trim Molding is required on all vertical edges of extruded panels. They shall be fastened at a minimum of one (1) rivet per panel.

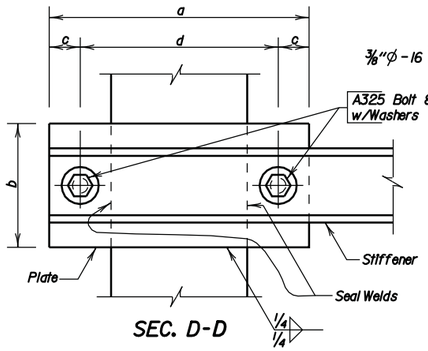
BREAKAWAY SUPPORT STUB CLEARANCE DIAGRAM

NOTE:
The stub post and lower slip plate shall NOT extend more than 4" max. above the chordline within a 60" chord.

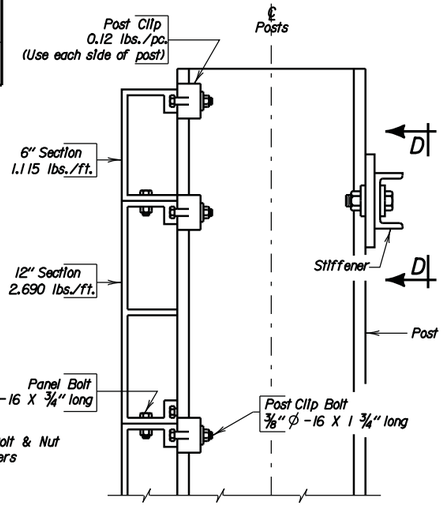
STIFFENER DATA							
Post	Stiffener	a	b	c	d	Bolt (A325)	Plate Thk.
S3X5.7 thru W8X21	C3X5	10 1/2"	5"	1 1/4"	8"	5/8" ϕ	5/16"
W8X24 thru W10X33	C5X6.7	13 1/2"	6"	1 1/2"	10 1/2"	7/8" ϕ	3/8"

STIFFENER NOTES-

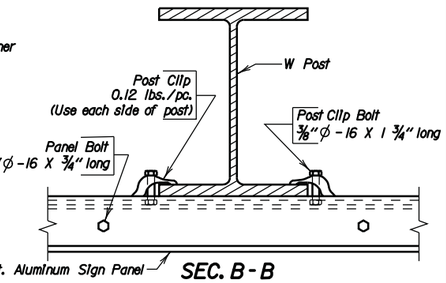
1. Stiffeners must always be used on Two Post Breakaway signs regardless of type of sign face employed.
2. Number of stiffeners used, N, shall be as follows:
   If H <= 2'-0" then N = 1
   If 2'-0" < H <= 8'-0" then N = 2
   If 8'-0" < H <= 15'-0" then N = 3



SEC. D-D

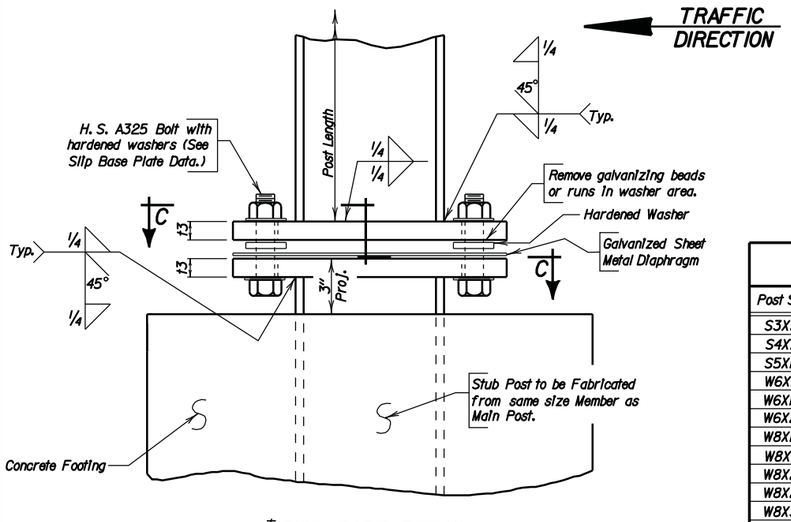


SEC. A-A



SEC. B-B
(Stiffener not shown)

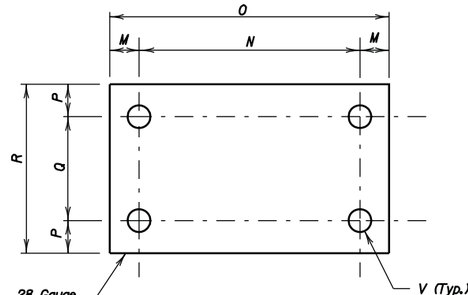
≠ See Erection Details for SLIP BASE ALTERNATE.



≠ SLIP BASE DETAIL

SEC. C-C

≠ NOTE:
Above Bevel is for Sign on Right Shoulder. Plate Bevels are Opposite hand for Sign on Left Shoulder.



GALVANIZED SHEET METAL DIAPHRAGM

TABLE 3 - SHEET METAL DIAPHRAGM DATA							
Post Size	M	N	O	P	Q	R	V
S3X5.7	3/4"	6"	7 1/2"	3/4"	1 1/2"	3"	5/16"
S4X7.7	3/4"	6"	7 1/2"	3/4"	1 1/2"	3"	5/16"
S5X10	7/8"	7 1/4"	9"	3/4"	2"	3 1/2"	3/4"
W6X12	7/8"	8 1/4"	10"	7/8"	2 3/4"	4 1/2"	3/4"
W6X15	1 1/8"	8 1/2"	10 3/4"	1 1/4"	4"	6 1/2"	7/8"
W6X20	1 1/8"	10"	1'-0 1/4"	1 1/4"	4"	6 1/2"	7/8"
W8X18	1 1/8"	10 1/2"	1'-0 3/4"	1 1/4"	3 1/2"	6"	7/8"
W8X21	1 1/4"	11 1/4"	1'-1 3/4"	1 1/4"	3 1/2"	6"	1"
W8X24	1 1/2"	11"	1'-2"	1 5/8"	4 1/4"	7 1/2"	1"
W8X28	1 5/8"	11 1/4"	1'-2 1/2"	1 5/8"	4 1/4"	7 1/2"	1 1/8"
W8X31	1 3/4"	11 1/4"	1'-2 3/4"	1 7/8"	5 1/4"	9"	1 1/8"
W10X33	1 3/4"	1'-2"	1'-5 1/2"	1 7/8"	5 1/4"	9"	1 1/8"

TABLE 4 - SLIP BASE PLATE DATA												
Post Size	M	N	O	P	Q	R	S	T	U	t3	Bolt Size	Bolt Torque
S3X5.7	3/4"	6"	7 1/2"	3/4"	1 1/2"	3"	9/32"	3 3/4"	3 3/4"	5/16"	1/2" ϕ	142" - #
S4X7.7	3/4"	6"	7 1/2"	3/4"	1 1/2"	3"	9/32"	3 3/4"	3 3/4"	5/16"	1/2" ϕ	142" - #
S5X10	7/8"	7 1/4"	9"	3/4"	2"	3 1/2"	11/32"	4 1/2"	4 1/2"	7/16"	5/8" ϕ	345"- #
W6X12	7/8"	8 1/4"	10"	7/8"	2 3/4"	4 1/2"	11/32"	5"	5"	7/16"	5/8" ϕ	345"- #
W6X15	1 1/8"	8 1/2"	10 3/4"	1 1/4"	4"	6 1/2"	13/32"	5 3/8"	5 3/8"	1"	3/4" ϕ	554"- #
W6X20	1 1/8"	10"	1'-0 1/4"	1 1/4"	4"	6 1/2"	13/32"	6 1/8"	6 1/8"	1"	3/4" ϕ	554"- #
W8X18	1 1/8"	10 1/2"	1'-0 3/4"	1 1/4"	3 1/2"	6"	13/32"	6 3/8"	6 3/8"	1"	3/4" ϕ	554"- #
W8X21	1 1/4"	11 1/4"	1'-1 3/4"	1 1/4"	3 1/2"	6"	15/32"	6 7/8"	6 7/8"	1"	7/8" ϕ	645"- #
W8X24	1 1/2"	11"	1'-2"	1 5/8"	4 1/4"	7 1/2"	15/32"	7"	7"	1"	7/8" ϕ	645"- #
W8X28	1 5/8"	11 1/4"	1'-2 1/2"	1 5/8"	4 1/4"	7 1/2"	17/32"	7 1/4"	7 1/4"	1 1/8"	1" ϕ	735"- #
W8X31	1 3/4"	11 1/4"	1'-2 3/4"	1 7/8"	5 1/4"	9"	17/32"	7 3/8"	7 3/8"	1 1/8"	1" ϕ	735"- #
W10X33	1 3/4"	1'-2"	1'-5 1/2"	1 7/8"	5 1/4"	9"	17/32"	8 3/4"	8 3/4"	1 1/4"	1" ϕ	735"- #

NOTE: Diaphragm need not be regalvanized after cutting to size and drilling of holes.

ERECTION DETAILS FOR TWO-POST ONE-DIRECTION BREAKAWAY SIGN SUPPORTS

S. D. DEPT. OF TRANSPORTATION

DECEMBER 1994

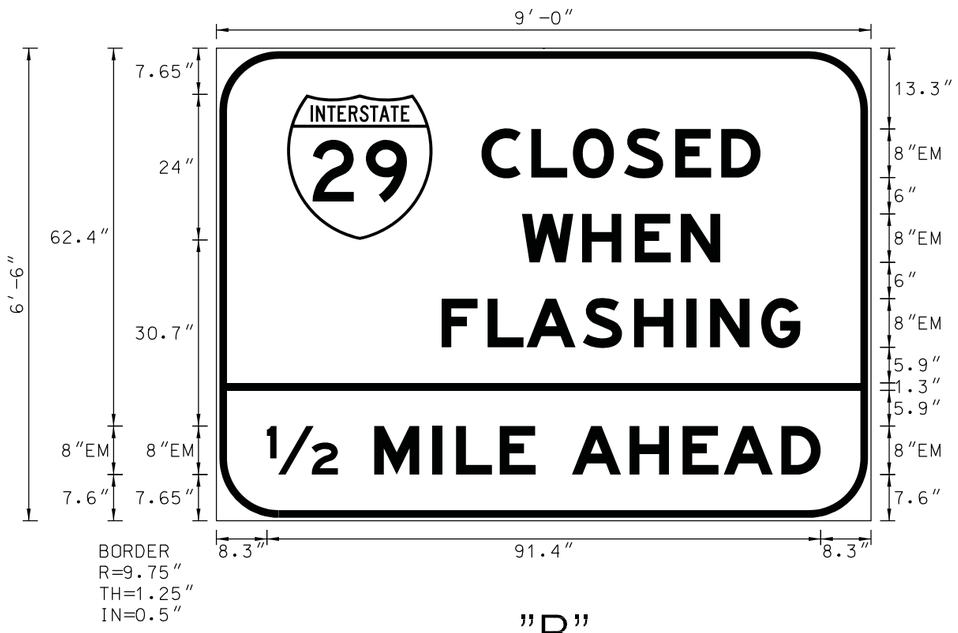
(2) OF (2)

DESIGNED BY	DRAWN BY	CHECKED BY	
RH/DM CNTYPCEM	TB PCEMDSPC	RH/DM BSTDBS2B	Kevin N Goeden BRIDGE ENGINEER

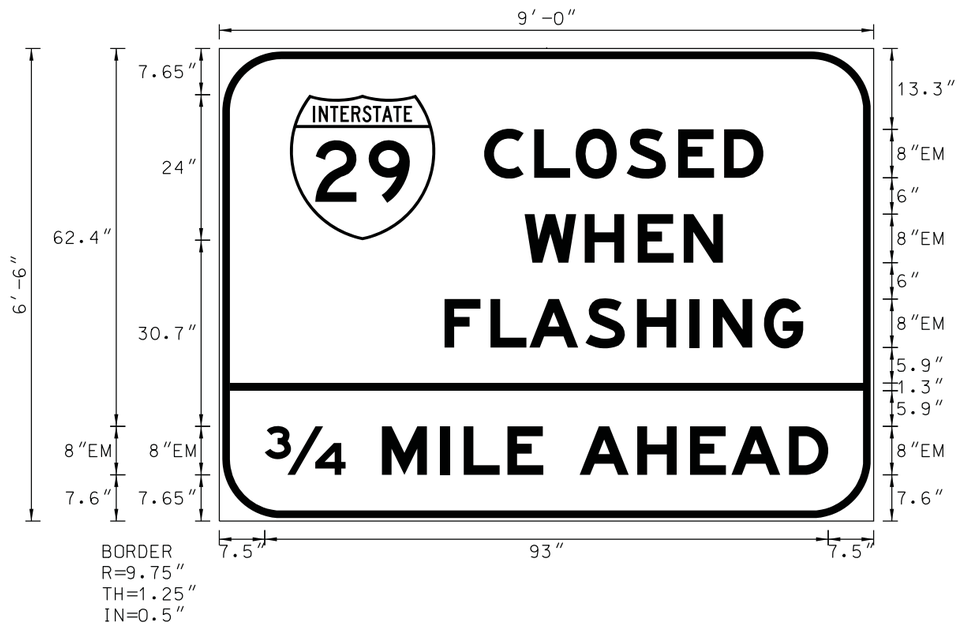
SPECIAL DESIGN SIGNS

TYPICAL

"A"



"B"



"C"

Background - Florescent Yellow
Legend and Border - Black
Shield as per 2004 Standard Sign Catalog

Signs shall be constructed using extruded aluminum panels, with Very High Intensity Sheeting and Non-removable copy.

SPECIAL DESIGN SIGNS

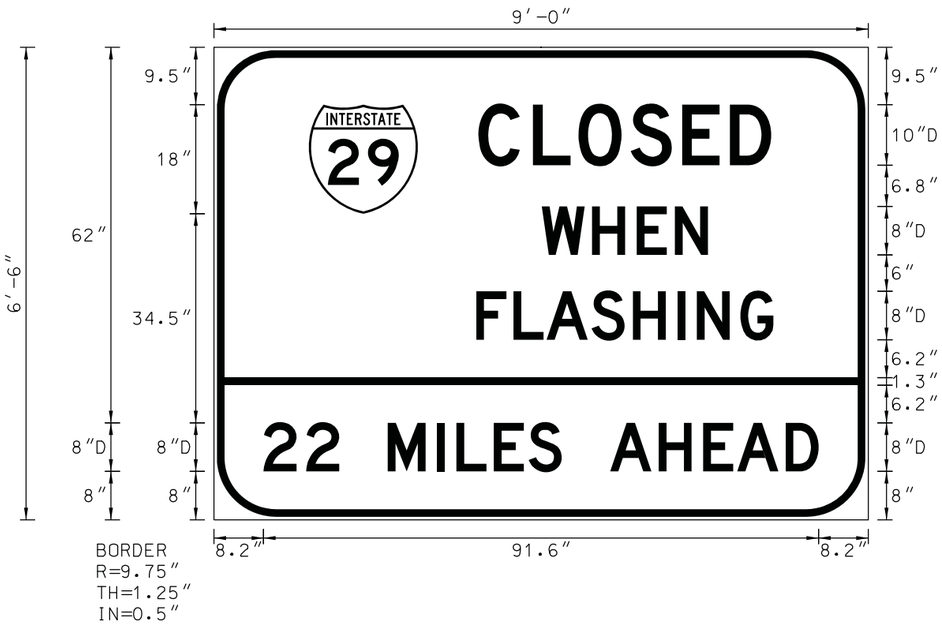
TYPICAL

"D"

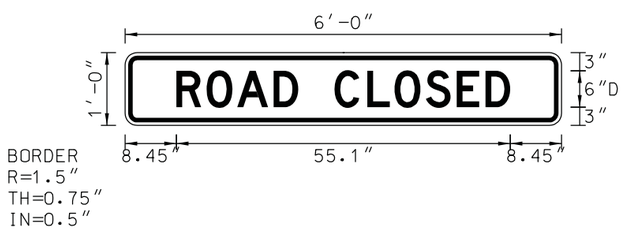
Background - White
Legend and Border - Black
Shield as per 2004 Standard Sign Catalog

Signs shall be constructed using extruded aluminum panels, with Very High Intensity Sheeting and Non-removable copy.

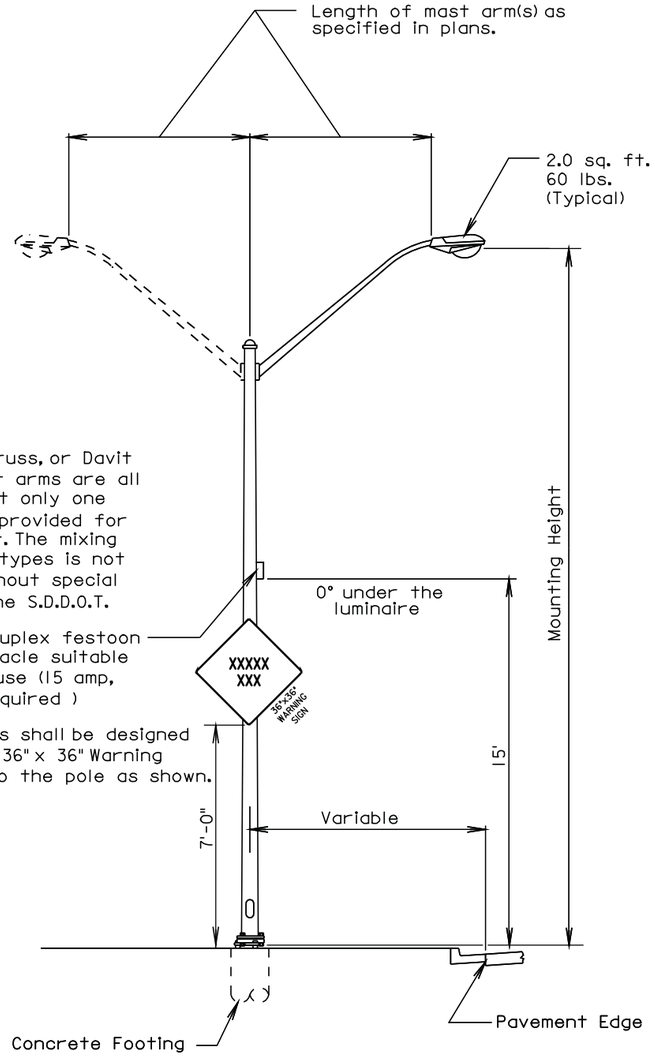
"E"



FLAT ALUMINUM SIGN WITH NON-REMOVABLE COPY



Background - White
Legend and Border - Black
Aluminum Thickness - 0.80
Very High Intensity Sheeting.



Single Tube, Truss, or Davit types of mast arms are all acceptable, but only one type shall be provided for each contract. The mixing of different types is not permitted without special approval by the S.D.D.O.T.

Convenience duplex festoon outlet receptacle suitable for outdoor use (15 amp, 3-wire) (as required)

Luminaire poles shall be designed to support a 36" x 36" Warning sign banded to the pole as shown.

March 31, 2000

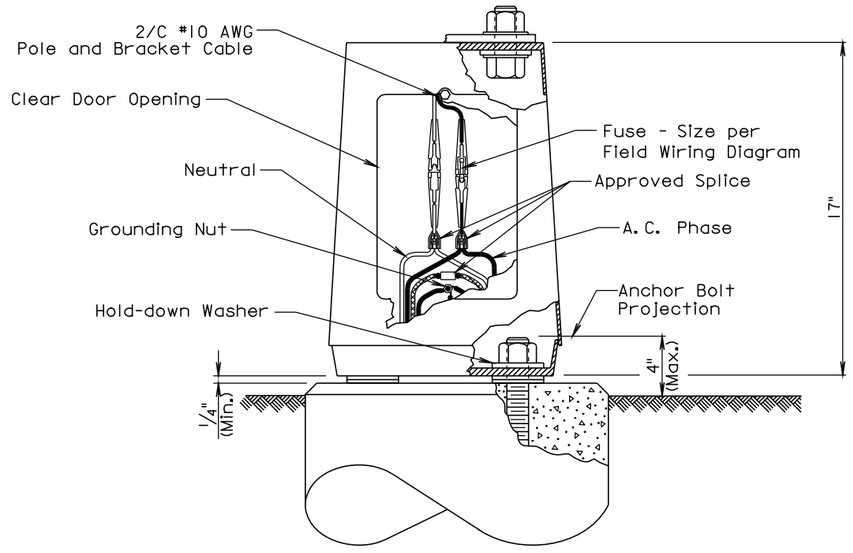
Published Date: 1st Qtr. 2011

SDDOT

STEEL ROADWAY LUMINAIRE POLE WITH MAST ARM(S)

PLATE NUMBER 635.01

Sheet 1 of 1



GENERAL NOTES:

Base details are provided for example only and are not intended to be a complete design.

The Connector on the line side shall be fused and the Connector on the neutral side shall be unfused and have a white marking.

Connectors shall be breakaway type with the male plug pointing down on the line side and up on the neutral side.

December 23, 2008

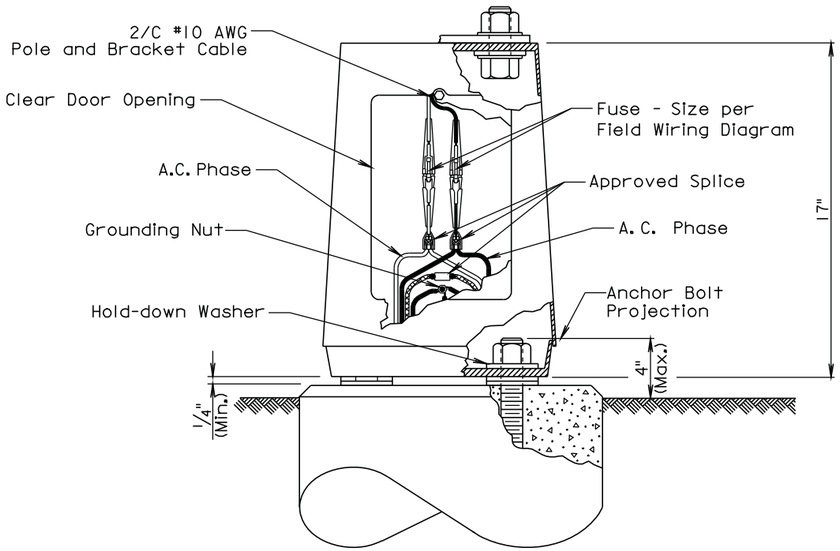
Published Date: 1st Qtr. 2011

SDDOT

ROADWAY LUMINAIRE POLE BREAKAWAY TRANSFORMER BASE (NEUTRAL)

PLATE NUMBER 635.20

Sheet 1 of 1



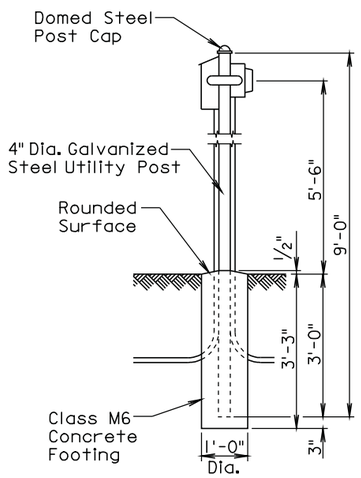
GENERAL NOTES:

Base details are provided for example only and are not intended to be a complete design.

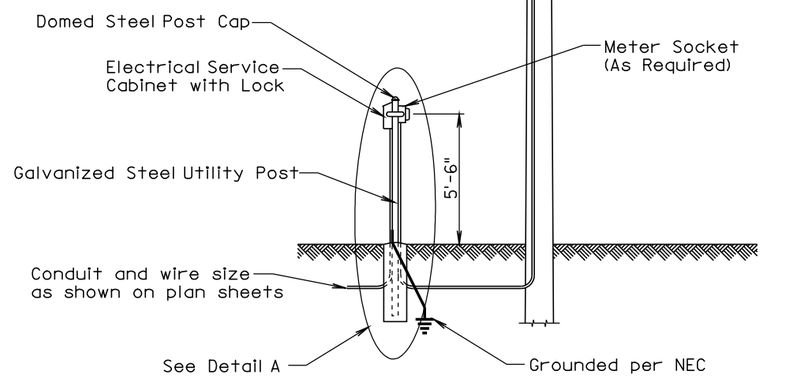
Connectors shall be breakaway type with the male plugs pointing down.

December 23, 2008

Published Date: 1st Qtr. 2011	SDDOT	ROADWAY LUMINAIRE POLE BREAKAWAY TRANSFORMER BASE (NO NEUTRAL)	PLATE NUMBER 635.21 Sheet 1 of 1



DETAIL A



ELEVATION

GENERAL NOTES:

The concrete for the post footing shall be class M6 concrete.

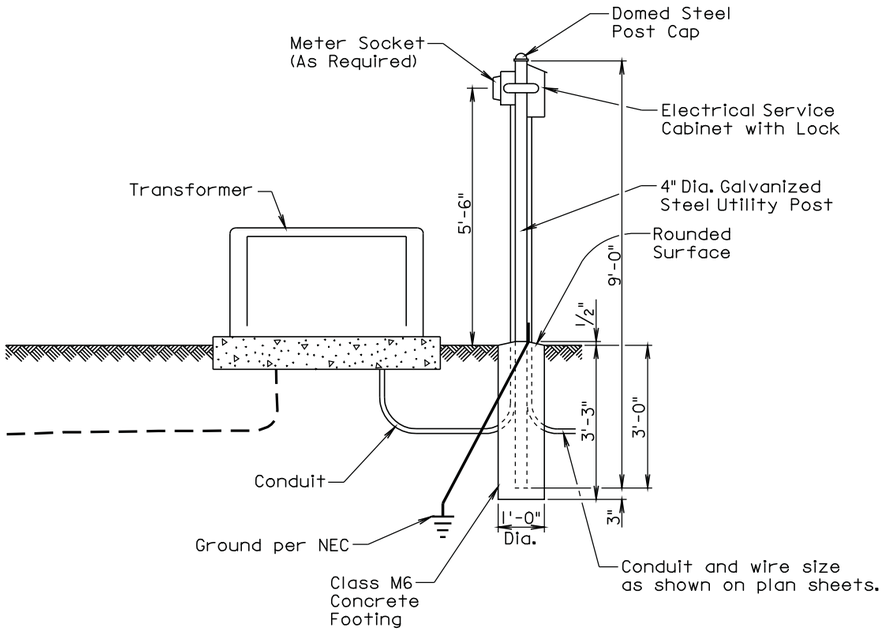
The 4" diameter galvanized steel utility post shall be 9' long and shall be in conformance with AASHTO Standard Specifications M181. The post shall be Type 1 and either Grade 1 or Grade 2. The domed steel post cap shall be in conformance with AASHTO Standard Specifications M181 and shall be Type 1.

The Contractor shall contact and coordinate his/her work with the Utility Companies regarding hookup requirements, fees, materials, and equipment necessary.

All costs for furnishing and installing all materials from the electrical service cabinet to the transformer including labor, equipment, hookup fees, all items within the cabinet, post, concrete footing, post cap, meter socket if required, conduit, and incidentals shall be incidental to the contract unit price per each for "Electrical Service Cabinet".

June 26, 2006

Published Date: 1st Qtr. 2011	SDDOT	GALVANIZED STEEL UTILITY POST WITH OVERHEAD UTILITY POLE	PLATE NUMBER 635.35 Sheet 1 of 1



ELEVATION

GENERAL NOTES:

The concrete for the post footing shall be class M6 concrete.

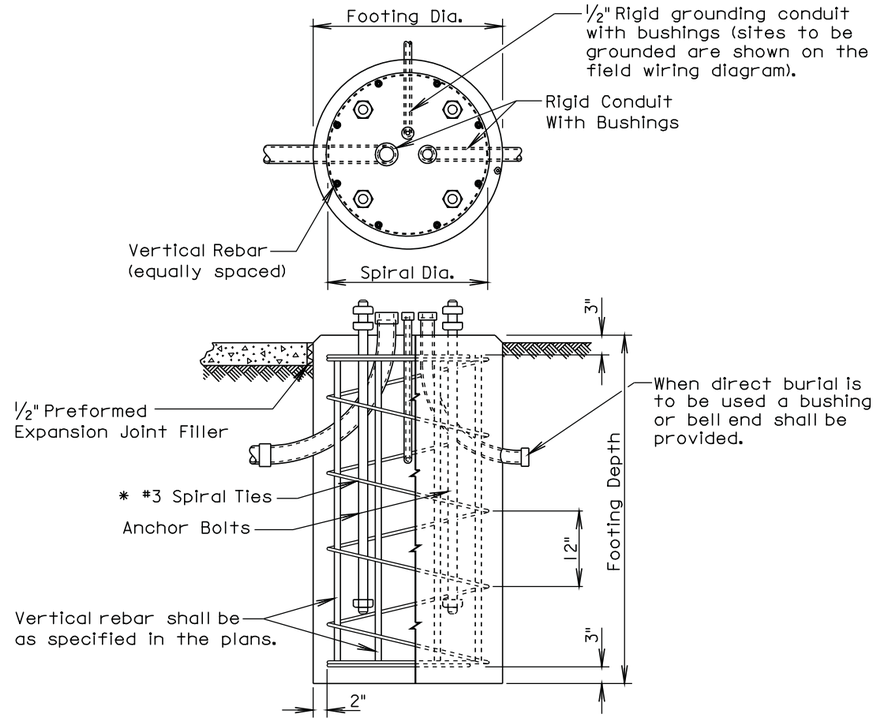
The 4" diameter galvanized steel utility post shall be 9' long and shall be in conformance with AASHTO Standard Specifications M181. The post shall be Type 1 and either Grade 1 or Grade 2. The domed steel post cap shall be in conformance with AASHTO Standard Specifications M181 and shall be Type 1.

The Contractor shall contact and coordinate his/her work with the Utility Companies regarding hookup requirements, fees, materials, and equipment necessary.

All costs for furnishing and installing all materials from the electrical service cabinet to the transformer including labor, equipment, hookup fees, all items within the cabinet, post, concrete footing, post cap, meter socket if required, conduit, and incidentals shall be incidental to the contract unit price per each for "Electrical Service Cabinet".

June 26, 2006

Published Date: 1st Qtr. 2011	SDDOT	SERVICE FROM PAD MOUNTED TRANSFORMER WITH METER ON A GALVANIZED STEEL UTILITY POST	PLATE NUMBER 635.41 Sheet 1 of 1



GENERAL NOTES:

* #3 Circular ties may be used in lieu of the #3 spiral ties. The ties shall be spaced 12" apart except for the top two which shall be spaced 6" apart. The ties shall be lapped 18" and the laps shall be staggered around the cage.

Spiral ties shall have 1-1/2 extra turns at each end.

See section 985 of the Standard Specifications for footing materials.

Conduits and bushings may project 2½" to 6" above footing for fixed base poles but shall not project above the slip plane or fracture plane for breakaway poles.

Conduits shall be sealed water-tight during all phases of construction until poles are in place.

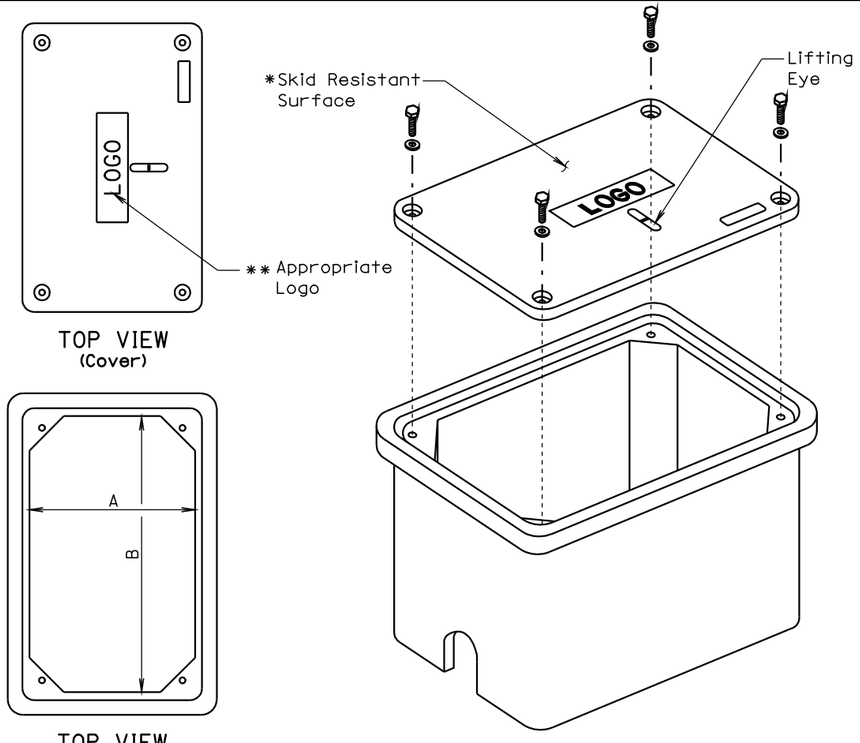
Costs of conduit and conduit bushings shown on footing detail shall be incidental to the footing bid item(s).

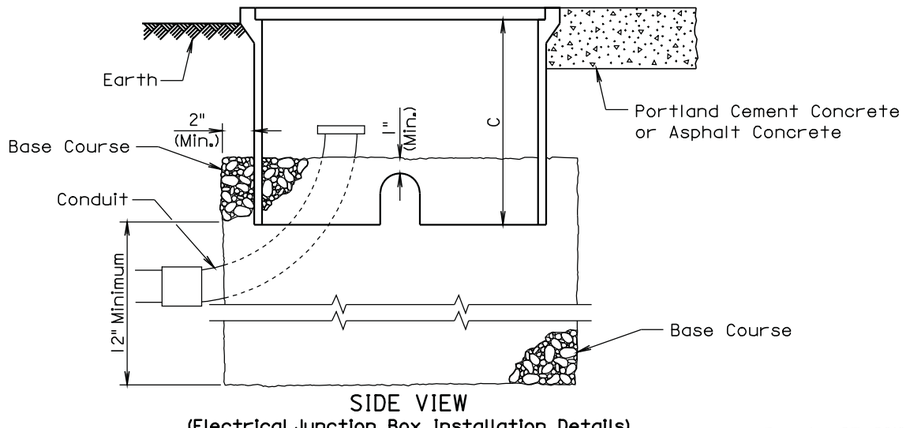
The pole shall not be installed until the concrete has attained design strength (4000 psi).

The contour of the area surrounding the breakaway pole shall be flat, though not necessarily level for a distance of 5 feet in all directions. The Contractor may be required to provide finish grading at some breakaway pole locations.

December 23, 2007

Published Date: 1st Qtr. 2011	SDDOT	POLE FOOTING	PLATE NUMBER 635.55 Sheet 1 of 1





December 23, 2010

Published Date: 1st Qtr. 2011	SDDOT	ELECTRICAL JUNCTION BOXES TYPE 1 THROUGH TYPE 4	PLATE NUMBER 635.65
			Sheet 1 of 2

ELECTRICAL JUNCTION BOX

TYPE	DESCRIPTION	DIMENSIONS		
		A	B	C
1	Open Bottom with Gasket	11"-15"	18"-21"	18" (Min.)
2	Open Bottom with Gasket	13"-18"	24"-28"	18" (Min.)
3	Open Bottom with Gasket	17"-22"	24"-30"	18" (Min.)
4	Open Bottom with Gasket	28"-33"	36"-48"	24" (Min.)

GENERAL NOTES:

The cover shall be gasketed with a minimum of two stainless steel bolts and washers.

The cover shall have a lifting eye.

*The surface of the cover shall have a minimum wet and dry coefficient of friction value of 0.5 as determined by ASTM F 609.

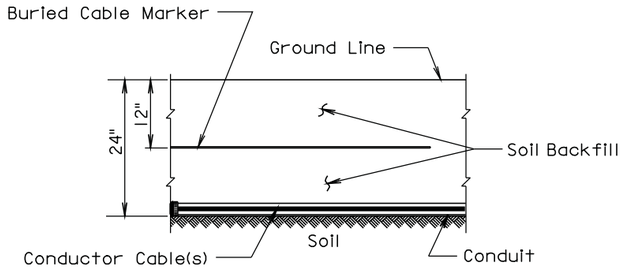
**The cover of the junction box shall have the appropriate logo in one inch size letters and shall be recessed. When the junction box contains cables or wires for a traffic signal then the logo shall be "Signal". When the junction box contains lighting conductors then the logo shall be "Lighting".

The electrical junction boxes shall comply with the American National Standards Institute (ANSI)/Society of Cable Telecommunications Engineers (SCTE) 77 2007 Specification for Underground Enclosure Integrity. The loading requirement for all the electrical junction boxes shall be Tier 8 of ANSI/SCTE 22 2007.

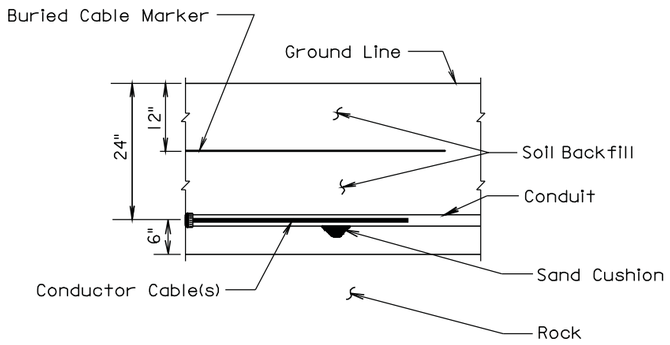
The electrical junction boxes shall be UL listed.

December 23, 2010

Published Date: 1st Qtr. 2011	SDDOT	ELECTRICAL JUNCTION BOXES TYPE 1 THROUGH TYPE 4	PLATE NUMBER 635.65
			Sheet 2 of 2



SECTION VIEW



SECTION VIEW

GENERAL NOTE:

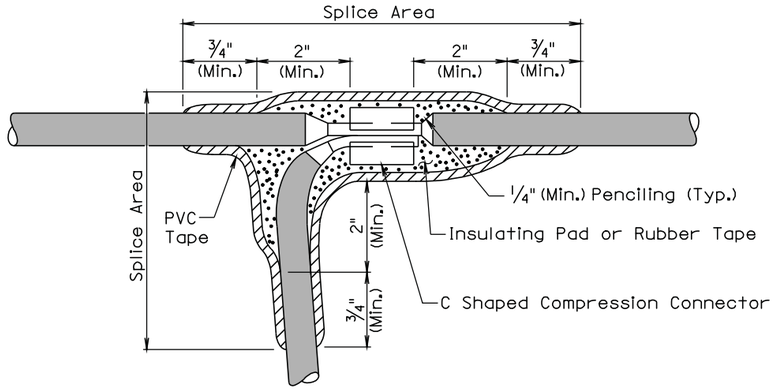
The Buried Cable Marker shall be plastic, approximately 6" wide, and shall be capable of sustaining a minimum of a 350% tolerance of elongation without tearing. The Buried Cable Marker shall have a life expectancy approximately equal to that of the conductor(s) beneath it. A phrase indicating the presence of a buried electric circuit below shall be printed in a contrasting color on the cable marker. The Buried Cable Marker shall be subject to approval by the Engineer. All costs associated with furnishing and installing the Buried Cable Marker shall be incidental to the contract unit price per Foot for the bid item used for the electrical conductor.

March 31, 2000

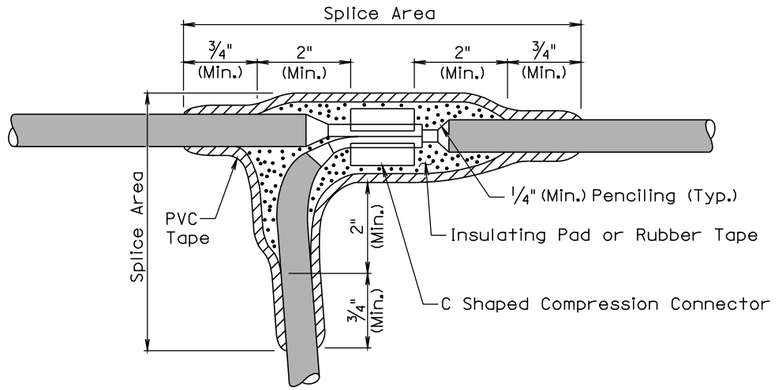
Published Date: 1st Qtr. 2011	SDDOT	CONDUIT INSTALLATION	PLATE NUMBER 635.76 Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 000S(263)	104	104

Plotting Date: 22-MAR-2011



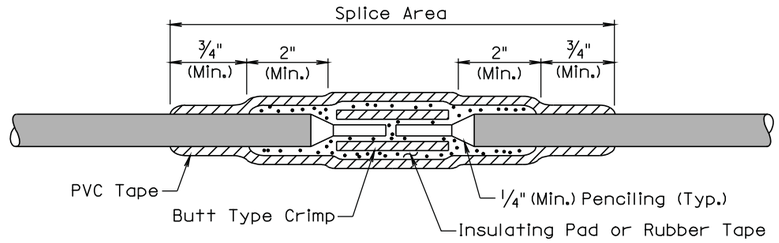
TYPE C SPLICE
(Between 1 free end and 1 through conductor)



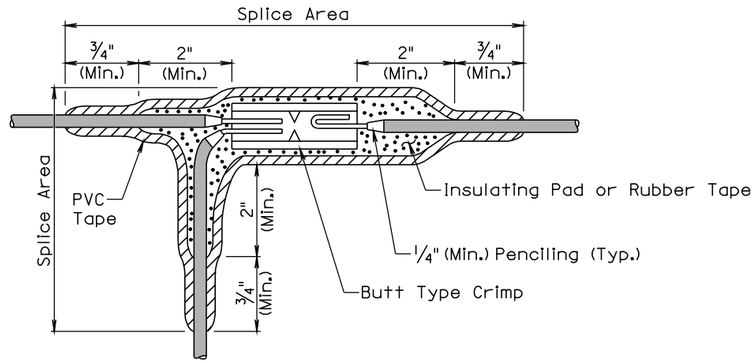
TYPE T SPLICE
(For 3 free ends)

February 14, 2010

Published Date: 1st Qtr. 2011	SDDOT	WIRE SPLICING FOR LIGHTING (LOW VOLTAGE CIRCUITS (0 to 600 V))	PLATE NUMBER 635.80
			Sheet 1 of 2



TYPE S SPLICE
(Between 2 free ends)



TYPE ST SPLICE
(For 3 free ends)

GENERAL NOTES:

The splice shall be environmentally sealed for protection from weather, moisture, and abrasion in accordance with the method stated below.

The rubber tapes shall be rolled after application.

Method for insulating splice area:

1. The splice area shall be completely covered with electrical insulating coating and dried.
2. Apply two layers of 1/8" minimum thickness electrical insulating pad or two layers of half lapped synthetic oil resistant self fusing rubber tape.
3. Three layers of half lapped polyvinyl chloride tape shall be applied.
4. The entire splice area shall be covered with electrical insulating coating and dried.

February 14, 2010

Published Date: 1st Qtr. 2011	SDDOT	WIRE SPLICING FOR LIGHTING (LOW VOLTAGE CIRCUITS (0 to 600 V))	PLATE NUMBER 635.80
			Sheet 2 of 2