

March 13, 2024

ADDENDUM NO. 1

RE: Item #1, March 20, 2024 Letting - NH-CR 0037(158)126, PCN 06A2, Beadle County - Urban Grading, PCC Surfacing, Storm Sewer, Curb & Gutter, Sidewalk, Lighting, Signals, Crossing Surface

TO WHOM IT MAY CONCERN:

The following addenda to the plans shall be inserted and made a part of your proposal for the referenced project.

SPECIAL PROVISIONS: NO CHANGE

SDEBS BID PROPOSAL: *The electronic bid proposal for this contract has been revised to include the changes associated with this addendum. Bidders must log in to the SDEBS to retrieve and incorporate these changes into their bid.*

Quantities for Bid Items were changed:

Bid Item 635E3700 "Roadway Luminaire, LED with Photoelectric Cell"
changed from 18 to 19 Each

PLANS: Please destroy sheets A2, B39, B86, F3, L2, L3, L4, L20, L38, L39, L40, L41, M9 and replace with the enclosed sheets, dated 3/4/24, 3/5/24, 3/6/24 and 3/12/24.

Sheets A2 & L2: Quantities for Bid Item 635E3700 "Roadway Luminaire, LED with Photoelectric Cell" changed from 18 to 19 Each

Sheet B39: Sta 47+51 "Cellular Grout" changed to "Controlled Density Fill" and Sta 46+94 note was added.

Sheet B86: MODIFIED TYPE B CONCRETE CURB AND GUTTER and MODIFIED TYPE P CONCRETE GUTTER detail and notes were revised.

Sheet F3: 9" NONREINFORCED PCC PAVEMENT note was revised.

Sheet L3: DECORATIVE LUMINAIRE POLES and LUMINAIRE POLES notes were revised.

Sheet L4: SUBSURFACE note was renamed SUBSURFACE FOR LUMINAIRE POLES and SUBSURFACE FOR SIGNAL POLE note was added.

Sheet L20: Quantities for "Roadway Luminaire, LED with Photoelectric Cell" changed from 2 to 3 Each.

Sheets L38 – L40: TIMING PLAN 1 and TIMING PLAN 2 were revised.

Sheet L41: TIMING PLAN 1 and TIMING PLAN 2 were revised, and BASIC INTERVALS table was revised.

Sheet M9: Railroad Pavement Markings location were revised.

Sincerely,

Sam Weisgram
Engineering Supervisor

SW/cj

CC: Mark Peterson, Aberdeen Region Engineer
Brad Letcher, Huron Area Engineer

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-CR 0037(158)126	A2	A6

Plotting Date: 03/07/2024 Revised: 03-06-24 DMJ

Section D - Erosion and Sediment Control

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E1690	Remove Sediment	21.3	CuYd
110E1695	Remove Sediment Filter Bag	2,672	Ft
110E1700	Remove Silt Fence	2,065	Ft
230E0010	Placing Topsoil	324	CuYd
730E0206	Type D Permanent Seed Mixture	180	Lb
731E0200	Fertilizing	0.42	Ton
732E0500	Fiber Reinforced Matrix	0.9	Ton
734E0170	Temporary Sediment Barrier	1,125	Ft
734E0180	Sediment Filter Bag	2,672	Ft
734E0604	High Flow Silt Fence	2,065	Ft
734E0610	Mucking Silt Fence	143	CuYd
734E0620	Repair Silt Fence	516	Ft
734E0845	Sediment Control at Inlet with Frame and Grate	64	Each
734E0847	Sediment Control at Type S Reinforced Concrete Drop Inlet	172	Ft
734E5005	Dewatering	Lump Sum	LS
734E5010	Sweeping	20	Hour
900E1320	Construction Entrance	3	Each

Section F - Surfacing

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
120E6200	Water for Granular Material	370.0	MGal
260E1010	Base Course	10,989.1	Ton
260E1080	Base Course, Salvaged, State Furnished	19,846.7	Ton
320E1200	Asphalt Concrete Composite	514.0	Ton
330E0300	SS-1h or CSS-1h Asphalt for Fog Seal	0.2	Ton
330E3000	Sand for Fog Seal	3.8	Ton
380E0070	9" Nonreinforced PCC Pavement	32,405.8	SqYd
380E3020	6" PCC Driveway Pavement	171.4	SqYd
380E3040	8" PCC Driveway Pavement	404.6	SqYd
380E6000	Dowel Bar	19,311	Each
380E6110	Insert Steel Bar in PCC Pavement	307	Each

Section L - Signal and Lighting

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E1520	Remove Signal Equipment	Lump Sum	LS
110E1530	Remove Signal Pole Footing	15	Each
110E1540	Remove Luminaire Pole Footing	19	Each
110E5100	Salvage Luminaire Pole	19	Each
110E5110	Salvage Signal Equipment	Lump Sum	LS
250E0010	Incidental Work	Lump Sum	LS
635E0050	Breakaway Base Luminaire Pole with Arm, 50' Mounting Height	11	Each
635E0902	Decorative Luminaire Pole with Twin Arms	24	Each
635E2000	Pedestal Signal Pole	1	Each
635E2020	Signal Pole with 20' Mast Arm	2	Each
635E2025	Signal Pole with 25' Mast Arm	1	Each
635E2030	Signal Pole with 30' Mast Arm	1	Each
635E2035	Signal Pole with 35' Mast Arm	2	Each
635E2054	Signal Pole with 50' and 40' Mast Arms with Luminaire Arm	1	Each
635E2120	Signal Pole with 20' Mast Arm and Luminaire Arm	1	Each
635E2125	Signal Pole with 25' Mast Arm and Luminaire Arm	1	Each
635E2135	Signal Pole with 35' Mast Arm and Luminaire Arm	1	Each
635E2140	Signal Pole with 40' Mast Arm and Luminaire Arm	4	Each
635E2145	Signal Pole with 45' Mast Arm and Luminaire Arm	1	Each
635E3700	Roadway Luminaire, LED with Photoelectric Cell	19	Each
635E3815	Decorative Luminaire, LED with Photoelectric Cell	48	Each
635E4030	3 Section Vehicle Signal Head	44	Each
635E4090	4 Section Directional Vehicle Signal Head	16	Each
635E5020	2' Diameter Footing	305.0	Ft
635E5030	3' Diameter Footing	165.0	Ft
635E5301	Type 1 Electrical Junction Box	32	Each
635E5303	Type 3 Electrical Junction Box	4	Each
635E5313	Type 3A Electrical Junction box	1	Each
635E5400	Electrical Service Cabinet	6	Each
635E5405	Electrical Service Cabinet with Secondary Disconnect	4	Each
635E5430	Traffic Signal Controller	4	Each
635E5515	Battery Backup System for Traffic Signal	4	Each
635E5520	Video Detection System	4	Each
635E5530	Preformed Detector Loop	16	Each
635E5560	Emergency Vehicle Preemption Unit	4	Each
635E5570	Optical Detector	16	Each
635E5880	Accessible Pedestrian Signal	32	Each
635E5910	Pedestrian Push Button Pole	21	Each
635E5922	Pedestrian Signal Head with Countdown Timer	32	Each
635E5930	Pedestrian Crossing Sign	32	Each
635E8110	1" Rigid Conduit, Schedule 40	555	Ft
635E8120	2" Rigid Conduit, Schedule 40	7,625	Ft

Section L - Signal and Lighting

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
635E8130	3" Rigid Conduit, Schedule 40	30	Ft
635E8140	4" Rigid Conduit, Schedule 40	130	Ft
635E8220	2" Rigid Conduit, Schedule 80	2,725	Ft
635E8230	3" Rigid Conduit, Schedule 80	440	Ft
635E9014	1/C #4 AWG Copper Wire	1,160	Ft
635E9016	1/C #6 AWG Copper Wire	4,665	Ft
635E9018	1/C #8 AWG Copper Wire	23,955	Ft
635E9502	2/C #14 AWG Copper Tray Cable, K2	5,205	Ft
635E9503	3/C #14 AWG Copper Tray Cable, K2	560	Ft
635E9504	4/C #14 AWG Copper Tray Cable, K2	1,330	Ft
635E9505	5/C #14 AWG Copper Tray Cable, K2	975	Ft
635E9507	7/C #14 AWG Copper Tray Cable, K2	630	Ft
635E9525	25/C #14 AWG Copper Tray Cable, K2	2,500	Ft
635E9600	#16 AWG Copper Twisted Shielded Pair	240	Ft
635E9710	2/C #10 AWG Copper Pole and Bracket Cable	3,035	Ft
635E9924	24 Strand Fiber Optic Cable	2,230	Ft
900E5135	Traffic Counter Surface Utility Box	3	Each

Section M - Pavement Marking

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
633E0010	Cold Applied Plastic Pavement Marking, 4"	17,600	Ft
633E0020	Cold Applied Plastic Pavement Marking, 8"	300	Ft
633E0040	Cold Applied Plastic Pavement Marking, Arrow	36	Each
633E0050	Cold Applied Plastic Pavement Marking, Message	2	Word
633E0055	Cold Applied Plastic Pavement Marking, Railroad Crossing	5	Each
633E0062	Cold Applied Plastic Pavement Marking, Symbol	6	Each
633E0210	Preformed Thermoplastic Pavement Marking, 4"	1,400	Ft
633E0225	Preformed Thermoplastic Pavement Marking, 24"	2,100	Ft
633E5000	Grooving for Cold Applied Plastic Pavement Marking, 4"	19,000	Ft
633E5005	Grooving for Cold Applied Plastic Pavement Marking, 8"	300	Ft
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	2,100	Ft
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	36	Each
633E5035	Grooving for Cold Applied Plastic Pavement Marking, Message	2	Word
633E5037	Grooving for Cold Applied Plastic Pavement Marking, Symbol	6	Each
633E5040	Grooving for Cold Applied Plastic Pavement Marking, Railroad Crossing	5	Each

Section S - Permanent Signing

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0130	Remove Traffic Sign	95	Each
632E1320	2.0"x2.0" Perforated Tube Post	332.0	Ft
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	398.4	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	71.4	SqFt

1:200

Plot Scale -

Plotted From - TRSF12139

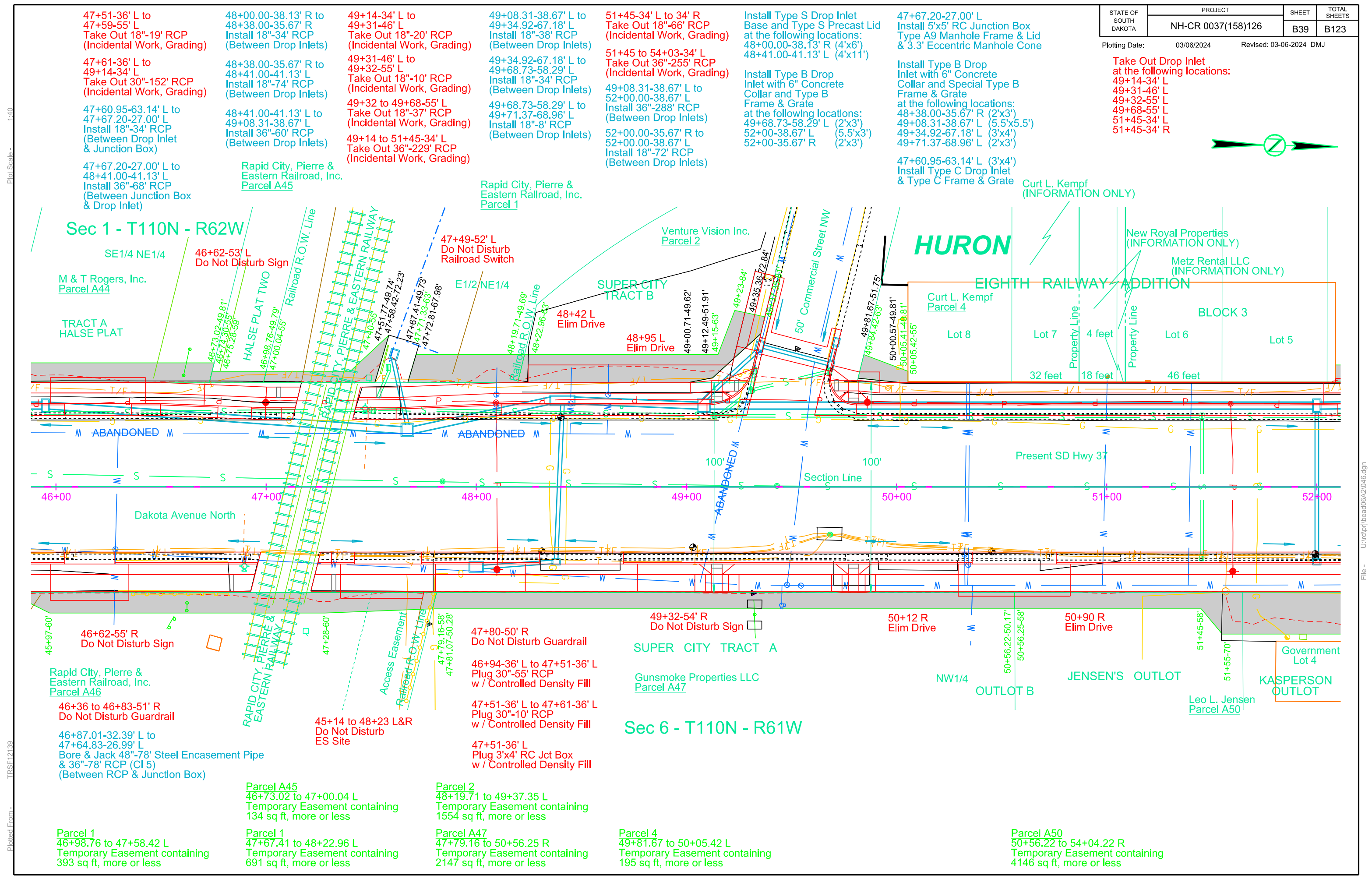
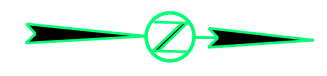
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STATE OF SOUTH DAKOTA	PROJECT NH-CR 0037(158)126	SHEET B39	TOTAL SHEETS B123
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Plotting Date: 03/06/2024 Revised: 03-06-2024 DMJ

Take Out Drop Inlet at the following locations:
 49+14-34' L
 49+31-46' L
 49+32-55' L
 49+68-55' L
 51+45-34' L
 51+45-34' R



47+51-36' L to 47+59-55' L
 Take Out 18"-19' RCP (Incidental Work, Grading)

47+61-36' L to 49+14-34' L
 Take Out 30"-152' RCP (Incidental Work, Grading)

47+60.95-63.14' L to 47+67.20-27.00' L
 Install 18"-34' RCP (Between Drop Inlet & Junction Box)

47+67.20-27.00' L to 48+41.00-41.13' L
 Install 36"-68' RCP (Between Junction Box & Drop Inlet)

Rapid City, Pierre & Eastern Railroad, Inc. Parcel A45

48+00.00-38.13' R to 48+38.00-35.67' R
 Install 18"-34' RCP (Between Drop Inlets)

48+38.00-35.67' R to 48+41.00-41.13' L
 Install 18"-74' RCP (Between Drop Inlets)

48+41.00-41.13' L to 49+08.31-38.67' L
 Install 36"-60' RCP (Between Drop Inlets)

Rapid City, Pierre & Eastern Railroad, Inc. Parcel 1

49+14-34' L to 49+31-46' L
 Take Out 18"-20' RCP (Incidental Work, Grading)

49+31-46' L to 49+32-55' L
 Take Out 18"-10' RCP (Incidental Work, Grading)

49+32 to 49+68-55' L
 Take Out 18"-37' RCP (Incidental Work, Grading)

49+14 to 51+45-34' L
 Take Out 36"-229' RCP (Incidental Work, Grading)

49+08.31-38.67' L to 49+34.92-67.18' L
 Install 18"-38' RCP (Between Drop Inlets)

49+34.92-67.18' L to 49+68.73-58.29' L
 Install 18"-34' RCP (Between Drop Inlets)

49+68.73-58.29' L to 49+71.37-68.96' L
 Install 18"-8' RCP (Between Drop Inlets)

51+45-34' L to 34' R
 Take Out 18"-66' RCP (Incidental Work, Grading)

51+45 to 54+03-34' L
 Take Out 36"-255' RCP (Incidental Work, Grading)

49+08.31-38.67' L to 52+00.00-38.67' L
 Install 36"-288' RCP (Between Drop Inlets)

52+00.00-35.67' R to 52+00.00-38.67' L
 Install 18"-72' RCP (Between Drop Inlets)

Install Type S Drop Inlet Base and Type S Precast Lid at the following locations:
 48+00.00-38.13' R (4'x6')
 48+41.00-41.13' L (4'x11')

Install Type B Drop Inlet with 6" Concrete Collar and Type B Frame & Grate at the following locations:
 49+68.73-58.29' L (2'x3')
 52+00-38.67' L (5.5'x3')
 52+00-35.67' R (2'x3')

47+67.20-27.00' L
 Install 5'x5' RC Junction Box Type A9 Manhole Frame & Lid & 3.3' Eccentric Manhole Cone

Install Type B Drop Inlet with 6" Concrete Collar and Special Type B Frame & Grate at the following locations:
 48+38.00-35.67' R (2'x3')
 49+08.31-38.67' L (5.5'x5.5')
 49+34.92-67.18' L (3'x4')
 49+71.37-68.96' L (2'x3')

47+60.95-63.14' L (3'x4')
 Install Type C Drop Inlet & Type C Frame & Grate

Curt L. Kempf (INFORMATION ONLY)

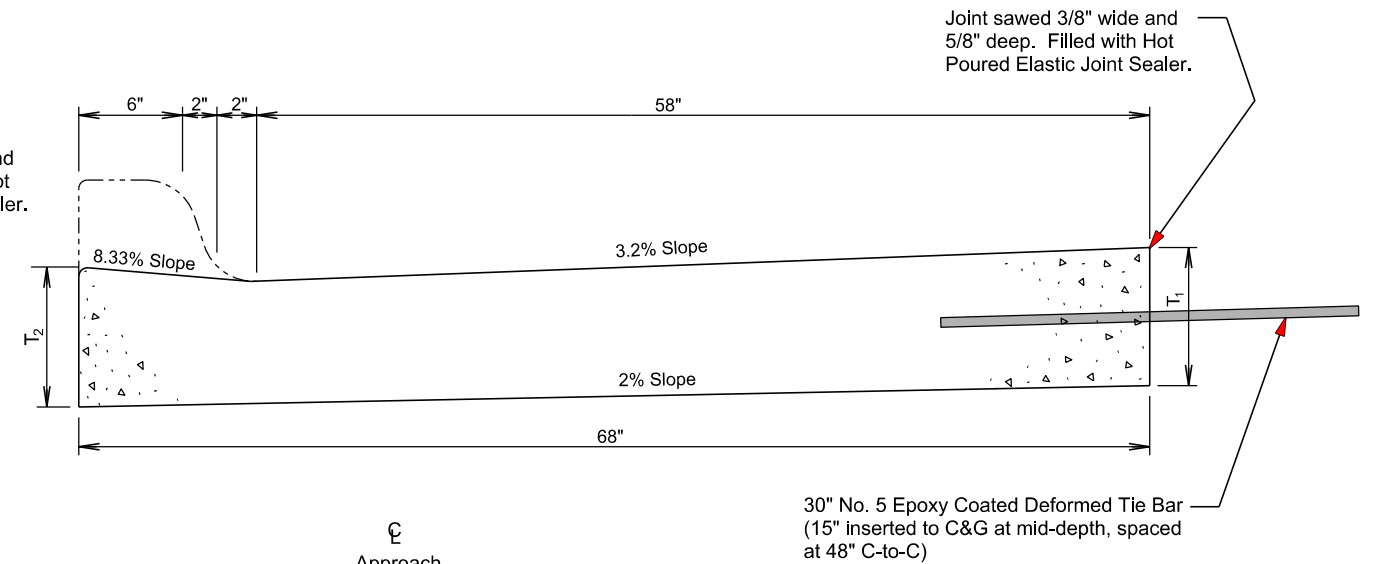
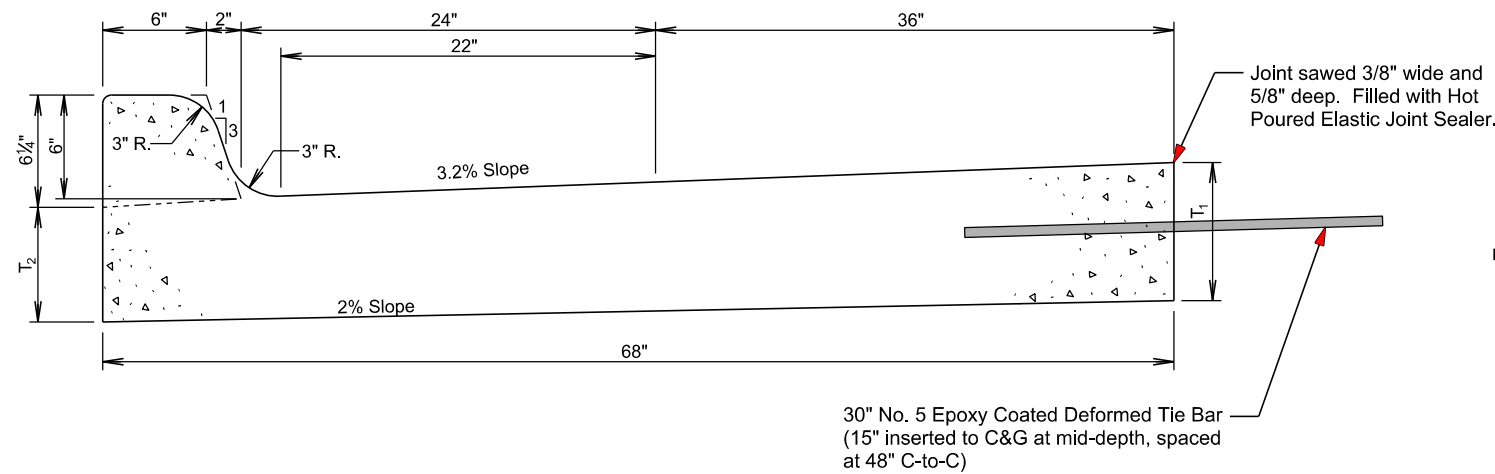
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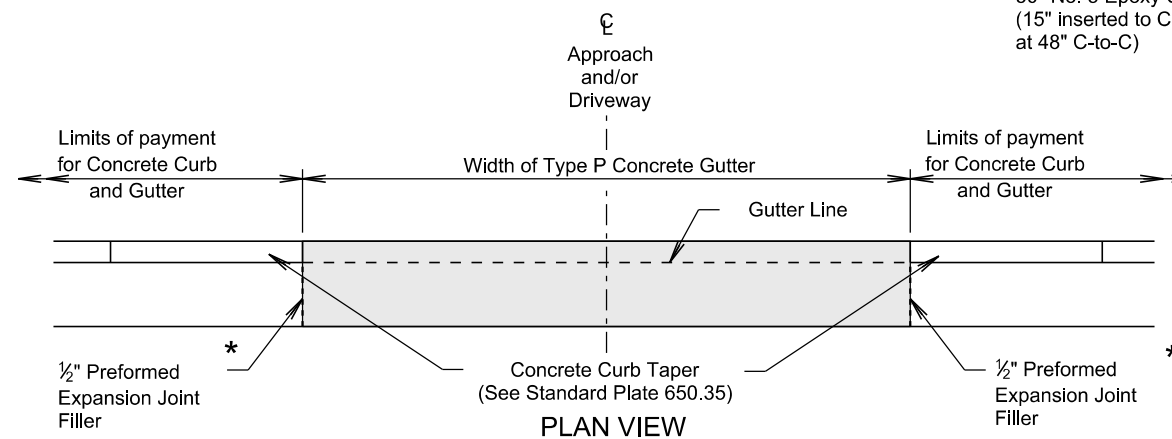
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MODIFIED TYPE B CONCRETE CURB AND GUTTER

MODIFIED TYPE P CONCRETE GUTTER



Type	T ₁ (Inches)	T ₂ (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
B69	9	8 ³ / ₁₆	0.1655	6.04
For full 68" width				



* Joint will not be needed if concrete curb and gutter and type P concrete gutter is placed at the same time. If the 1/2" Preformed Expansion Joint Filler is provided, then the joint will be sealed in accordance with standard plate 650.90.

GENERAL NOTES:

The concrete for the Type P Concrete Gutter will comply with the requirements of the Standard Specifications for Class M6 Concrete.

When concrete gutter longitudinally adjoins new concrete pavement, the method of attachment will be by one of the methods shown on Standard Plate 380.21.

Transverse contraction joints will be constructed at 10' intervals in the concrete gutter except when concrete gutter is constructed adjacent to mainline PCC pavement. When concrete gutter is constructed adjacent to mainline PCC pavement, a transverse contraction joint will be constructed in the concrete gutter at each mainline PCC pavement transverse contraction joint location.

When concrete gutter is placed monolithically with mainline PCC pavement, the transverse contraction joints in the concrete gutter will be sawed and sealed the same as the transverse contraction joints in the mainline PCC pavement.

When concrete gutter is not placed monolithically with the mainline PCC pavement and when the adjacent mainline surfacing is not PCC concrete, the transverse contraction joints in the concrete gutter will be 1 1/2 inches deep if formed in the fresh concrete using a suitable grooving tool. If a saw is used to cut the contraction joints, then the depth of the joint will be at least 1/4 the thickness of the concrete.

When concrete curb and gutter is placed monolithically with mainline PCC pavement, tie bars and sawing/sealing the longitudinal joint will be required. See above drawing for details.

□ Type P Concrete Gutter Limits

Type	T ₁ (Inches)	T ₂ (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
P9	9	9 ³ / ₈	0.1521	6.57
For full 68" width				

GENERAL NOTES:

When concrete curb and gutter longitudinally adjoins new concrete pavement, the method of attachment will be by one of the methods shown on Standard Plate 380.21.

A 1/2" preformed expansion joint filler will be placed transversely in the curb and gutter at the following locations:

- At each junction between the radius return of curb and gutter and curb and gutter which is parallel to the project centerline.
- At each junction between new curb and gutter and existing curb and gutter.

Transverse contraction joints will be constructed at 10' intervals in the concrete curb and gutter except when the concrete curb and gutter is constructed adjacent to mainline PCC pavement. When concrete curb and gutter is constructed adjacent to mainline PCC pavement, a transverse contraction joint will be constructed in the concrete curb and gutter at each mainline PCC pavement transverse contraction joint location.

When concrete curb and gutter is placed monolithically with mainline PCC pavement, the transverse contraction joints in the concrete curb and gutter will be sawed and sealed the same as the transverse contraction joints in the mainline PCC pavement.

When concrete curb and gutter is not placed monolithically with the mainline PCC pavement and when the adjacent mainline surfacing is not PCC concrete, the transverse contraction joints in the concrete curb and gutter will be 1 1/2 inches deep if formed in the fresh concrete using a suitable grooving tool. If a saw is used to cut the contraction joints, then the depth of the joint will be at least 1/4 the thickness of the concrete.

When concrete curb and gutter is placed monolithically with mainline PCC pavement, tie bars and sawing/sealing the longitudinal joint will be required. See above drawing for details.

9" NONREINFORCED PCC PAVEMENT

The aggregate may require screening as determined by the Engineer.

The concrete mix will conform to the special provision for Contractor Furnished Mix Design for PCC Pavement.

In lieu of an automatic subgrader operating from a preset line, a motor grader or other suitable equipment may be used to trim the gravel cushion to final grade prior to placement of concrete. There will be no direct payment for trimming of the gravel cushion for PCC pavement. The trimming will be considered incidental to the related items required for PCC Pavement.

A construction joint will be sawed whenever new concrete pavement is placed adjacent to existing concrete pavement.

The surface of the mainline paving will be a heavy carpet drag. All other areas will be textured as directed by the Engineer. The surface of the mainline paving will receive a heavy carpet drag to within 2 or 3 feet of the face of the curb.

Unless specified otherwise in the PCC Pavement Joint Layout Sheets or elsewhere in the plans, the typical joint spacing for 9" Nonreinforced PCC Pavement will be 14'. Joint spacing in the PCC Shoulder Pavement will match adjacent mainline pavement.

See Standard Plate 380.01 and 380.04 for placement of Dowel Bars. The transverse construction joints will be handled in accordance with Standard Plate 380.15.

The transverse contraction joints will be perpendicular to the centerline. In multilane areas the transverse contraction joints will be perpendicular to the centerline and be in a straight line across the entire width of the pavement. In special situations the Engineer may pre-approve transverse contraction joints that do not meet these requirements. All nonconforming transverse contraction joints will be removed at the Contractor's expense. Any method of placement that cannot produce these requirements will not be allowed.

The location of joints, as shown and designated on the PCC Pavement Joint Layout(s) are only approximate locations to be used as a guide and to afford bidders a basis for estimating the construction cost of the joints. The final locations of the joints are to be designated by the Engineer during construction.

Only mainline driving lane pavement from Sta. 9+32.27 to Sta. 58+84.3 will be tested for smoothness with a Contractor furnished and operated 25-foot California style profilograph in accordance with the Special Provision for PCC Pavement Smoothness with 0.2 Blanking Band. The Engineer will designate areas not requiring the testing listed above. Center turn lane and parking lanes do not require testing.

CURING OF CONCRETE

Portland Cement Concrete Pavement, Concrete Curb & Gutter, Concrete Gutter, and Concrete Fillet will be cured with Linseed Oil Base Emulsion Compound. All costs for Curing of Concrete will be incidental to the contract unit price per various Portland Cement Concrete bid items.

ALKALI SILICA REACTIVITY

Fine aggregate will conform to Section 800.2 D Alkali Silica Reactivity (ASR) Requirements.

Below is a list of known fine aggregate sources and the average corresponding 14-day expansion values (as of 8-30-2023):

Source	Location	
Bachman	Winner, SD	0.335*
Bitterman	Delmont, SD	0.316*
Concrete Materials	Corson, SD	0.146
Concrete Materials - Vellek Pit	Yankton, SD	0.411**
Croell	Hot Springs, SD	0.089
Croell	Wasta, SD	0.212
Emme Sand & Gravel	Oneil, NE	0.217
Fisher S&G - Blair Pit	W of Vale, SD	0.171
Fisher S&G - Mickelson Pit	E of Nisland, SD	0.129
Fisher S&G - Vallery Pit	Nisland, SD	0.110
Fisher S&G	Rapid City, SD	0.092
Fisher S&G	Spearfish, SD	0.053
Fisher S&G	Wasta, SD	0.159
Fuchs	Pickstown, SD	0.275*
Henning - Tilstra Pit	Ash Creek, MN	0.199
Higman	Hudson, SD	0.187
Jensen	Herried, SD	0.276*
L.G. Everist	Akron, IA	0.257*
L.G. Everist	Brookings, SD	0.297*
L.G. Everist - Ode Pit	E Sioux Falls, SD	0.215
L.G. Everist - Nelson Pit	NE Sioux Falls, SD	0.156
L.G. Everist	Hawarden, IA	0.176
L.G. Everist	Summit, SD	0.184
Mark's S&G - Moerke Pit	Underwood, MN	0.165
Morris - Birdsall	Blunt, SD	0.229
Morris - Leesman	Blunt, SD	0.231
Morris - Richards Pit	Onida, SD	0.188
Morris - Shawn's Pit	E of Sturgis, SD	0.186
Northern Concrete Agg.	Rauville, SD	0.113
Northern Concrete Agg.	Luverne, MN	0.133
Opperman - Gunvordahl Pit	Burke, SD	0.363*
Opperman - Cahoy Pit	Herrick, SD	0.307*
Opperman - Jones Pit	Burke, SD	0.321*
Opperman - Randall Pit	Pickstown, SD	0.230
Pete Lien & Sons	Creston, SD	0.158
Pete Lien & Sons	Oral, SD	0.157
Pete Lien & Sons	Wasta, SD	0.226
Simon Materials - Beltline Pit	Scottsbluff, NE	0.277*
Thorpe Pit	Britton, SD	0.098
Wagner Building Supplies	Pickstown (Wagner), SD	0.251*
Winter Brothers- Whitehead Pit	Brookings, SD	0.197

* These sources will require Type II cement with a fly ash content of 25% in the concrete mix.

** These sources will not be used.

The Department will use the running average of the last three or fewer known expansion test results for determining acceptability of the source. These expansion results are reported in the preceding table. Additional testing, when requested by the Contractor, will be performed by the Department at the Contractor's expense.

The values listed in the table are intended for use in bidding. If a previously tested pit by SDDOT with a test value less than 0.250 is discovered after letting to be 0.250 or greater, then the Department will accept financial responsibility if higher costs are incurred due to higher percent of fly ash requirement.

Revised: 6Mar24, RML

TABLE OF PCC PAVEMENT

LOCATION			9" Nonreinforced PCC Pavement
Station		Station	SqYd
	SD37		
9+32.27	to	25+90.9	11,241.6
25+90.9	to	26+73.9	532.8
26+73.9	to	29+74.1	2,068.0
29+74.1	to	31+02.3	712.2
31+02.3	to	34+06.4	2,094.2
34+06.4	to	35+50.8	799.4
35+50.8	to	38+54.9	2,094.2
38+54.9	to	39+83.4	714.1
39+83.4	to	43+48.1	2,512.4
43+48.1	to	44+89.5	976.9
44+89.5	to	47+05.5	1,697.9
47+32.6	to	58+84.3	8,891.6
Miscellaneous Areas			
Intersecting Streets - 19 each			1,844.5
TOTAL			32,405.8

TABLE OF DOWEL BARS

LOCATION			1-1/4" Dowel Bars
Station		Station	Each
	SD37		
9+32.27	to	25+65.7	6,490
25+65.7	to	26+73.9	401
26+73.9	to	29+74.1	937
29+74.1	to	31+02.3	408
31+02.7	to	34+06.3	924
34+06.3	to	35+51.1	442
35+51.1	to	38+54.7	924
38+54.7	to	39+83.8	408
39+83.8	to	43+48.1	1,173
43+48.1	to	44+89.5	666
44+89.5	to	47+05.5	803
47+32.6	to	49+09.8	748
49+09.8	to	49+80.9	390
49+80.9	to	53+97.5	1650
53+97.5	to	54+82.8	510
54+82.8	to	57+66.7	1109
57+66.7	to	58+84.3	546
Miscellaneous Areas			
Intersecting Streets - 19 Each			782
TOTAL			19,311

SECTION L ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E1520	Remove Signal Equipment	Lump Sum	LS
110E1530	Remove Signal Pole Footing	15	Each
110E1540	Remove Luminaire Pole Footing	19	Each
110E5100	Salvage Luminaire Pole	19	Each
110E5110	Salvage Signal Equipment	Lump Sum	LS
250E0010	Incidental Work	Lump Sum	LS
635E0050	Breakaway Base Luminaire Pole with Arm, 50' Mounting Height	11	Each
635E0902	Decorative Luminaire Pole with Twin Arms	24	Each
635E2000	Pedestal Signal Pole	1	Each
635E2020	Signal Pole with 20' Mast Arm	2	Each
635E2025	Signal Pole with 25' Mast Arm	1	Each
635E2030	Signal Pole with 30' Mast Arm	1	Each
635E2035	Signal Pole with 35' Mast Arm	2	Each
635E2054	Signal Pole with 50' and 40' Mast Arms with Luminaire Arm	1	Each
635E2120	Signal Pole with 20' Mast Arm and Luminaire Arm	1	Each
635E2125	Signal Pole with 25' Mast Arm and Luminaire Arm	1	Each
635E2135	Signal Pole with 35' Mast Arm and Luminaire Arm	1	Each
635E2140	Signal Pole with 40' Mast Arm and Luminaire Arm	4	Each
635E2145	Signal Pole with 45' Mast Arm and Luminaire Arm	1	Each
635E3700	Roadway Luminaire, LED with Photoelectric Cell	19	Each
635E3815	Decorative Luminaire, LED with Photoelectric Cell	48	Each
635E4030	3 Section Vehicle Signal Head	44	Each
635E4090	4 Section Directional Vehicle Signal Head	16	Each
635E5020	2' Diameter Footing	305.0	Ft
635E5030	3' Diameter Footing	165.0	Ft
635E5301	Type 1 Electrical Junction Box	32	Each
635E5303	Type 3 Electrical Junction Box	4	Each
635E5313	Type 3A Electrical Junction box	1	Each
635E5400	Electrical Service Cabinet	6	Each
635E5405	Electrical Service Cabinet with Secondary Disconnect	4	Each
635E5430	Traffic Signal Controller	4	Each
635E5515	Battery Backup System for Traffic Signal	4	Each
635E5520	Video Detection System	4	Each
635E5530	Preformed Detector Loop	16	Each
635E5560	Emergency Vehicle Preemption Unit	4	Each
635E5570	Optical Detector	16	Each
635E5880	Accessible Pedestrian Signal	32	Each
635E5910	Pedestrian Push Button Pole	21	Each
635E5922	Pedestrian Signal Head with Countdown Timer	32	Each
635E5930	Pedestrian Crossing Sign	32	Each
635E8110	1" Rigid Conduit, Schedule 40	555	Ft
635E8120	2" Rigid Conduit, Schedule 40	7,625	Ft

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
635E8130	3" Rigid Conduit, Schedule 40	30	Ft
635E8140	4" Rigid Conduit, Schedule 40	130	Ft
635E8220	2" Rigid Conduit, Schedule 80	2,725	Ft
635E8230	3" Rigid Conduit, Schedule 80	440	Ft
635E9014	1/C #4 AWG Copper Wire	1,160	Ft
635E9016	1/C #6 AWG Copper Wire	4,665	Ft
635E9018	1/C #8 AWG Copper Wire	23,955	Ft
635E9502	2/C #14 AWG Copper Tray Cable, K2	5,205	Ft
635E9503	3/C #14 AWG Copper Tray Cable, K2	560	Ft
635E9504	4/C #14 AWG Copper Tray Cable, K2	1,330	Ft
635E9505	5/C #14 AWG Copper Tray Cable, K2	975	Ft
635E9507	7/C #14 AWG Copper Tray Cable, K2	630	Ft
635E9525	25/C #14 AWG Copper Tray Cable, K2	2,500	Ft
635E9600	#16 AWG Copper Twisted Shielded Pair	240	Ft
635E9710	2/C #10 AWG Copper Pole and Bracket Cable	3,035	Ft
635E9924	24 Strand Fiber Optic Cable	2,230	Ft
900E5135	Traffic Counter Surface Utility Box	3	Each

SUPPLYING AS BUILT PLANS

If the traffic signal systems or roadway lighting systems are constructed differently than what is stated in the plans, the Contractor will supply as built plans to the Engineer and a copy will 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 will submit shop drawings and catalog cuts in accordance with Section 985 of the Specifications.

PDF submittals will be sent to the following email addresses:

Ryley.Rapp@state.sd.us
Stacy.Bartlett@state.sd.us

ON-SITE INSPECTION

An on-site inspection of the traffic signals will be conducted before acceptance of the project once the traffic signals are completed and operational. The on-site inspection will be conducted by the Project Engineer or Region Traffic Engineer with the Contractor, City Traffic Engineer, and the Traffic Design Engineer present.

REMOVE SIGNAL POLE FOOTING

The footings of existing signal poles EB1-EB4, EC1-EC3, ED1-ED4, EE1-EE4 will be removed by the Contractor to a minimum of 2' below the ground surface. Restoration of the disturbed area will be to the satisfaction of the Engineer.

All costs for removing the footings of the existing signal poles will be incidental to the contract unit price per each for "Remove Signal Pole Footing".

REMOVE LUMINAIRE POLE FOOTING

The footings of existing luminaire poles EL1-EL19 will be removed by the Contractor to a minimum of 2' below the ground surface. Restoration of the disturbed area will be to the satisfaction of the Engineer.

All costs for removing the footings of the existing luminaire poles will be incidental to the contract unit price per each for "Remove Luminaire Pole Footing".

SALVAGE LUMINAIRE POLE

Existing luminaire poles EL1-EL19 will be salvaged and delivered to the City of Huron by the Contractor. The Contractor will notify the city 5 days before the delivery of the salvaged luminaire poles for a time and location of delivery. The city contact is Brett Runge at (605) 530-9607.

Poles damaged during salvaging or delivery will be repaired or replaced by the Contractor at no cost to the State.

All costs for work involved in the salvage and delivery of the existing luminaire poles will be incidental to the contract unit price per each for "Salvage Luminaire Pole".

COORDINATE CITY OWNED DECORATIVE LUMINAIRE POLE REMOVAL

The Contractor will coordinate with the City of Huron on the removal of decorative light poles at the locations listed below. The poles will be removed by City personnel at no expense to the State. The city contact is Brett Runge at (605) 530-9607.

Location of decorative light poles:

- Station:
- 32+04 L
- 32+28 R
- 33+44 R
- 36+44 R
- 37+19 L
- 37+42 L
- 37+59 R
- 37+68 L

SALVAGE SIGNAL EQUIPMENT

The existing signal equipment identified on the plans will be salvaged and delivered to the City of Huron by the Contractor. The Contractor will notify the city 5 days before the delivery of the salvaged signal equipment for a time and location of delivery. The city contact is Brett Runge at (605) 530-9607.

Any equipment damaged during salvaging or delivery will be repaired or replaced by the Contractor at no cost to the State.

All costs for work involved in the salvage and delivery of the existing signal equipment will be incidental to the contract lump sum price for "Salvage Signal Equipment".

SIGNAL POLES

The signal poles and arms from 5th to Market Street will be galvanized and have a painted or powder coated black finish.

Cantilever traffic signal supports, including anchor bolts, will be designed for fatigue in accordance with Fatigue Importance Category III without galloping and truck induced gusts.

The pole fabricator will be responsible for the determining the diameter, length, and number of anchor bolts.

Signal poles will have rotatable mast arms.

Luminaire extension(s) will have a 50-foot mounting height with 8-foot arm.

DECORATIVE LUMINAIRE POLES

Luminaire poles DL1 to DL24 will be decorative street lighting using fluted Millerbernd Bemidji Poles with a lower level back/pedestrian luminaire. The poles will have a height of 35-feet with twin arms, the arm orientated towards the street will have a mounting height of 35-feet with a 6-foot arm, and the arm orientated away from the street (towards the sidewalk) will have a mounting height of 15-feet with a 3-foot arm. Poles and arms will be galvanized and have a painted or powder coated black finish.

The pole fabricator will be responsible for the determining the diameter, length, and number of anchor bolts.

Decorative Luminaire poles will be designed to include loadings created by banners that are 30 inches wide by 80 inches long, mounted 15 feet from the top of footing to the bottom of the banner and will be able to support decorations that are 30lbs and 5'x5' dimensions.

Luminaire poles DL1-DL24 will have a convenience duplex festoon outlet receptacle (15-amp, 3 wire) suitable for outdoor use. Festoon will be placed 90° counterclockwise to the pole arm. All costs associated with making the festoon receptacles operational including but not limited to, the necessary hardware and #14 AWG wiring, will be incidental to the contract unit price per each "Decorative Luminaire Pole with Twin Arms".

LUMINAIRE POLES

Luminaire poles L1-L11 will have a mounting height of 50-feet with a 8-foot arm.

The pole fabricator will be responsible for the determining the diameter, length, and number of anchor bolts.

Luminaire poles will be designed to include loadings created by banners that are 30 inches wide by 80 inches long, mounted 15 feet from the top of footing to the bottom of the banner and will be able to support decorations that are 30lbs with 5'x5' dimensions.

Luminaire poles L1-L11 will have a convenience duplex festoon outlet receptacle (15-amp, 3 wire) suitable for outdoor use. Festoon will be placed 90° counterclockwise to the pole arm. All costs associated with making the festoon receptacles operational including but not limited to, the necessary hardware and #14 AWG wiring, will be incidental to the contract unit price per each "Breakaway Base Luminaire Pole with Arm, 50' Mounting Height".

PEDESTAL SIGNAL POLES

Pedestal signal poles may be aluminum. Aluminum poles will conform to the following requirements:

Aluminum will conform to ASTM B221, Alloy 6061, and Temper T6.

Poles will be round with a minimum outside pole diameter of 4 inches, and the pole assembly will have a square, cast aluminum base with aluminum access door. The base will conform to the breakaway requirements of NCHRP 350 or MASH. A grounding lug will be provided in the base.

The pole to base connection will be a threaded connection; threads will be 8 TPI, NPT. A collar (integral or non-integral) to prevent wind-induced loosening of pole will be provided. All bolt and connection threads will be coated with a commercially available anti-seize compound intended for use in aluminum-to-aluminum and steel-to-aluminum connections.

The pole finish will either be brushed satin or spun. The top of the pole will be sealed by the traffic signal head mounting hardware or by an aluminum cap.

Measurement and payment for aluminum poles will be as specified in Specifications Section 635.

DECORATIVE LUMINAIRES

The lighting design used the following parameters and provides 1.1 and greater average maintained foot-candles and uniformity ratios of 3:1 (average maintained to minimum maintained foot-candles) and 6:1 (maximum to minimum maintained foot candles):

Pole Setback:	2 Ft.
Lamp Loss Factor (LLF):	0.8
Width of Lighted Area:	65 Ft.
Luminaire Cycle Length:	Varies.
Configuration:	Staggered
Mounting Height:	35 Ft./15 Ft.
Arm Length:	6 Ft. / 3 Ft.
Light Source:	LED

The following LED luminaires meet the requirements for this design:

Roadside/Forward facing luminaire at 35' will be a:

Holophane: ESL3-P35S-40K-MVOLT-BG3-BK-PR7

Sidewalk/Rear facing arm at 15' will be a:

Holophane: GVD3-P10-40K-MVOLT-CLF-GL3-TBK

LUMINAIRES

The lighting design used the following parameters and provides 1.1 and greater average maintained foot-candles and uniformity ratios of 3:1 (average maintained to minimum maintained foot-candles) and 6:1 (maximum to minimum maintained foot candles):

Pole Setback:	2 Ft.
Lamp Loss Factor (LLF):	0.8
Width of Lighted Area:	Varies
Luminaire Cycle Length:	Varies
Configuration:	Staggered
Mounting Height:	50 Ft.

Arm Length:	8Ft.
Light Source:	LED

The following LED luminaires or approved equivalents meet the requirements for this design:

GE Evolve: ERL2-0-30-C5-40-A

AEL Autobahn: ATB2-P602-MVOLT-R3-P7

SIGNAL BACKPLATES

All new vehicle signal heads will have backplates with retroreflective border. The vehicle signal head backplates will have a factory applied 3-inch wide yellow retroreflective border. Sheeting for the border will be Type XI or Type IX in conformance with ASTM D4956. Backplates will be polycarbonate, aluminum, or aluminum-composite. Minimum material thicknesses are:

- Polycarbonate, 0.10-inch
- Aluminum, 0.06-inch
- Aluminum-Composite, 0.08-inch

Signal backplates will extend not less than 5 inches from the edge of the signal head at the top, bottom, and sides. The bottom of the backplate on vehicle signal faces mounted directly above pedestrian signal indications will be sized to permit the separate adjustment of the vehicle and pedestrian signal indication and may be less than 4 inches.

All costs involved with furnishing and installing backplates with retroreflective border for the new vehicle signal heads will be incidental to the contract unit price per each for "3 Section Vehicle Signal Head", "4 Section Directional Vehicle Signal Head".

TABLE OF FOOTING DATA

Site Designation	Footing Diameter	* Footing Depth	**Spiral Diameter	**Spiral Length	Vertical Reinforcement
C2	2' - 0"	6' - 0"	1' - 8"	44' - 3"	8-#7 x 5' - 6"
DL1-DL24	2' - 0"	8' - 0"	1' - 8"	54' - 9"	8-#7 x 7' - 6"
L1-L11	2' - 0"	9' - 0"	1' - 8"	60' - 0"	8-#7 x 8' - 6"
B2,B4,C3,D2,D4, E2,E4	3' - 0"	10' - 0"	2' - 8"	104' - 3"	14-#8 x 9' - 6"
C1,E1	3' - 0"	11' - 0"	2' - 8"	112' - 6"	14-#8 x 10' - 6"
B3,C4,D1,D3,E3	3' - 0"	12' - 0"	2' - 8"	120' - 9"	14-#8 x 11' - 6"
B1	3' - 0"	13' - 0"	2' - 8"	129' - 3"	14-#8 x 12' - 6"

* Footing depth will be below ground level.

** The size of all spirals will be #3.

SUBSURFACE FOR LUMINAIRE POLES

During construction of the cylindrical footings, concrete placement operations should closely follow excavation procedures. The longer the excavations are left open, the more likely caving may occur.

Concrete will not be dropped through standing water. If water is present in the excavation it will be removed prior to concrete placement or the concrete will be tremied.

SUBSURFACE FOR SIGNAL POLES

During the soils investigation conducted in May 2020, groundwater was encountered at an average elevation of 1270 feet. Drilling fluids may be required if caving soils are encountered within the bottom of the traffic signal footing excavations. If drilling fluids are not sufficient, casing may be required. Casing will be of sufficient strength to withstand handling and installation procedures. The casing material may consist of Sonotube, corrugated metal pipe, PVC, smooth metal pipe or any other material as approved by the Engineer.

Concrete will not be dropped through standing water. If water is present in the excavation, it will be removed prior to concrete placement, or the concrete will be tremied.

ELECTRICAL SERVICE CABINET WITH SECONDARY DISCONNECT

The electrical service cabinet will be a standard electrical service cabinet located adjacent to the power source.

The Contractor will install a NEMA 3R rainproof, 60 amp rated, non-fused safety switch (with lock) adjacent to the traffic signal cabinet. The secondary disconnect will be mounted on a galvanized steel post in accordance with standard plate 635.35.

METER SOCKETS FOR TRAFFIC SIGNALS

The meter sockets provided for traffic signals by the Contractor will be a 200-amp, positive by-pass.

TRAFFIC SIGNAL CONTROLLER

The new Traffic Signal Controller must be fully compatible with all features and functionality of Econolite Centrac's Local Edition software.

The Contractor is responsible for programming controllers with the signal timings provided in these plans.

Controllers and flashers are not required to have dimming capability.

Anchor bolts for traffic signal cabinets may have hooked ends.

All costs for the detector units necessary to operate the signal as shown in these plans, constructing the concrete pad and footing, materials, labor, and furnishing and installing the controller cabinet will be incidental to the contract unit price per each for "Traffic Signal Controller".

OPTICAL DETECTOR

The optical detectors will be dual head with a single output. The detection eyes of each detector will be aimed at a single approach as directed by the Engineer. All costs associated with providing, installing, and aiming the optical detectors will be incidental to the contract unit price per each for "Optical Detector".

FIBER OPTIC ETHERNET SWITCH

The Contractor will supply in an environmentally hardened, managed layer 2 field Ethernet switch and all required mounting hardware, power supplies, cable, patch cords, and jumpers, in the following traffic signal cabinets:

- SD 37 & 5TH Street
- SD 37 & 4TH Street
- SD 37 & 3RD Street
- SD 37 & Market Street

The switch will be configurable using a web browser or graphical user interface. The switch will have the following:

- An operating temperature range of -40 degrees C to 70 degrees C.
- An operating humidity range of 10% to 95% relative humidity.
- A minimum of eight copper ports with RJ-45 connectors that are capable of 10/100Base-TX communications.
- A minimum of two small-form pluggable (SFP) ports capable of 1000Base-LX or 1000Base-ZX communications.

All costs for furnishing and installing three Ethernet switches will be incidental to the contract unit price per each for "Traffic Signal Controller".

BATTERY BACKUP CABINET

The Contractor will supply cabinets with concrete pad and footing for housing the battery backup system for all traffic signal systems in this project. The cabinets will be an aluminum NEMA 3R type. The cabinet will have a thermostatically controller exhaust fan. The cabinet will be securely attached to the concrete pad with steel anchors and to the back wall of the controller cabinet using chase nipples as approved by the Engineer. Anchor bolts for battery backup cabinets may have hooked ends.

All costs for constructing the concrete pad and footing, materials, labor, and furnishing and installing the battery backup cabinet will be incidental to the contract unit price per each for "Battery Backup System for Traffic Signal."

VIDEO DETECTION SYSTEM

The video detection system will be one of the following, or an approved equal:

Product	Manufacturer
GRIDSMART System	GRIDSMART Technologies, Inc. Knoxville TN 37932 Phone: 1-865-482-2112 www.gridsmart.com
Autoscope AIS-IV and RVP2	Econolite Anaheim, CA 92807 Phone: 1-714-630-3700 www.econolite.com
Vantage Next	Iteris, Inc. Santa Ana, CA 92705-5551 Phone: 1-949-270-9400 www.iteris.com
TrafficLink Detection	Miovision Technologies, Inc. 137 Glasgow St., Suite 110 Kitchener, Ontario Canada N2G 4X8 Phone: 1-519-513-2407 www.miovision.com

All cabling and hardware necessary to make the detection system operational will be incidental to the contract unit price per each for "Video Detection System".

ACCESSIBLE PEDESTRIAN SIGNAL

The work will consist of furnishing and installing accessible pedestrian signals (APS). Each APS will consist of an interactive vibrotactile pedestrian pushbutton with speaker, an informational sign, a latching light emitting diode (LED) indicator light, a solid-state electronic control board, a power supply, wiring, and all necessary mounting hardware. The operation and performance of the APS units will meet the requirements of MUTCD Sections 4E.08 to 4E.13. and the applicable sections of NEMA Standards Publication TS-2.

The APS units will be capable of supporting a minimum of 16 push button stations.

The traffic signal cabinet must have four dedicated load switches for the pedestrian phases. If the traffic signal cabinet does not have four dedicated load switches for the pedestrian phases, then the Contractor will furnish and install the necessary number of load switches. All costs associated with furnishing and installing any additional load switches will be incidental to the contract unit price per each for "Accessible Pedestrian Signal".

All mounting fasteners will be stainless steel; all threads will be coated with anti-seize compound meeting the requirements of USA Dept. of Defense specification MIL-PRF-907F.

SIGNAL LAYOUT

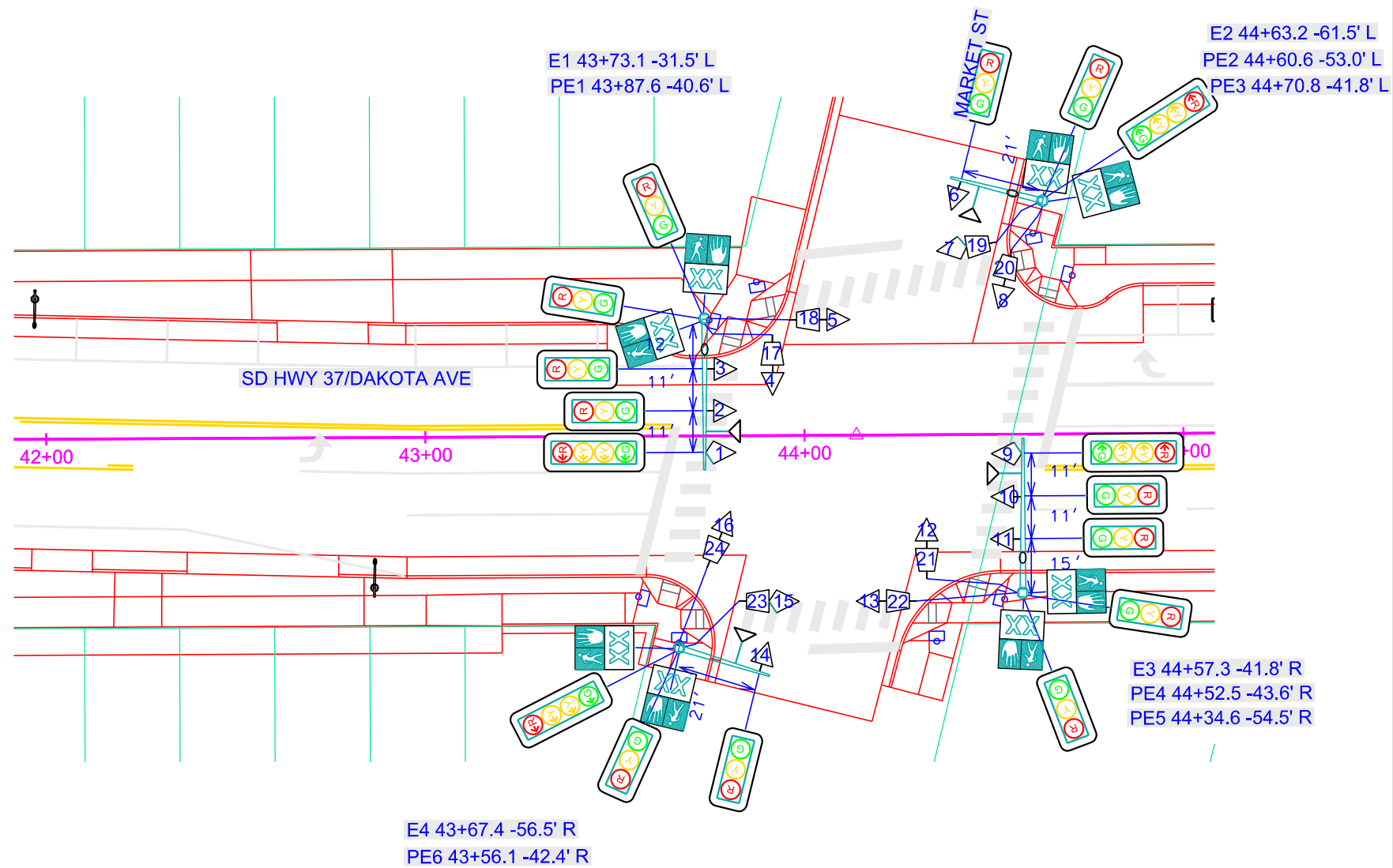
SD HWY 37/DAKOTA AVE & MARKET ST

STATE OF SOUTH DAKOTA	PROJECT NH-CR 0037(158)126	SHEET L20	TOTAL SHEETS L54
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Revised 3/06/2024 - RR



ESTIMATE OF QUANTITIES			
KEY	ITEM	EST QUANT	UNIT
	Signal Pole w/25' Mast Arm & 8' Lumin Arm (E2)	1	EACH
	Signal Pole w/25' Mast Arm (E4)	1	EACH
	Signal Pole w/40' Mast Arm & 8' Lumin Arm (E1,E3)	2	EACH
	Roadway Luminaire, LED with P.E. (E1,E2,E3)	3	EACH
	3 Section Vehicle Signal Head (2-6, 8, 10-14, 16)	12	EACH
	4 Section Directional Vehicle Signal Head (1, 7, 9, 15)	4	EACH
	Emergency Vehicle Preemption Unit (4-Channel)	1	EACH
	Optical Detector	4	EACH
	Accessible Pedestrian Signal	8	EACH
	Pedestrian Push Button Pole (PE1-PE6)	6	EACH
	Pedestrian Signal Head w/Countdown Timer (17-24)	8	EACH
	Pedestrian Crossing Sign R10-3e (Left -4 /Right -4)	8	EACH



Plot Scale - 1:40

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SIGNAL TIMING

SD HWY 37/DAKOTA AVE & FIFTH ST.

Revised 3/05/2024 - RR

BASIC INTERVALS								
Phase	1	2	3	4	5	6	7	8
Movement	SBL	NB		EB	NBL	SB		WB
Lag		X				X		
Min Green	5	10		10	5	10		10
Extension	2	2		2	2	2		2
Max 1	5.5	27		10.5	5	27		10.5
Max 2								
Time Before								
Time to Reduce								
Minimum Gap								
Yellow	3.5	4		4	3.5	4		4
All Red	2	1		2.5	2	1		2.5
Walk		7		7		7		7
Ped Clearance		9		16		9		13
Recall		Min				Min		
Prog Flash Display	R	Y		R	R	Y		R
Start Up Ø		X				X		

PREEMPTION				
Plan	3	4	5	6
Calls Ø	8	4	5 & 2	1 & 6
Output	CH13R	CH14R	CH15R	CH16R

WEEKLY PROGRAM							
	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Timing Plan	2	1	1	1	1	1	2

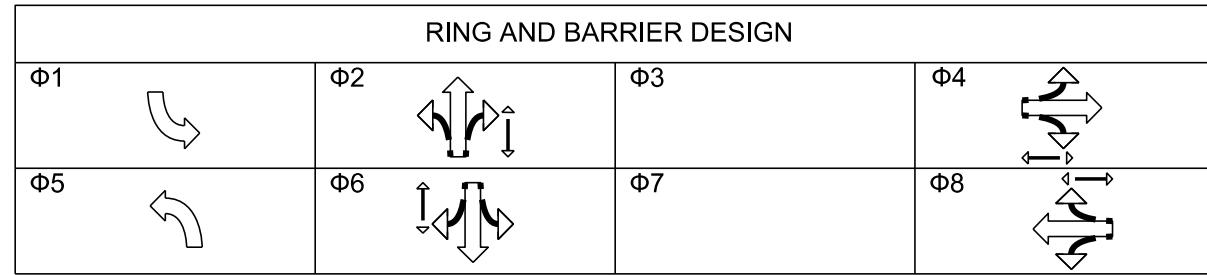
SPLIT PATTERNS										
	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8		
Coord Phase		X				X				
Pattern (C/S/O)	Split	Split	Split	Split	Split	Split	Split	Split	Cycle Length	Offset
1/1/1	10.5	30		29.5	11	29.5		29.5	70	50
2/1/1	10.5	35		29.5	11	34.5		29.5	75	68
3/1/1	10.5	40		29.5	11	39.5		29.5	80	0

TIMING PLAN 1	
Time of Day (TOD)	Pattern (C/S/O)
6:00-10:30	1/1/1
10:30-14:30	2/1/1
14:30-18:30	3/1/1
18:30-00:00	Free
00:00-6:00	Flash

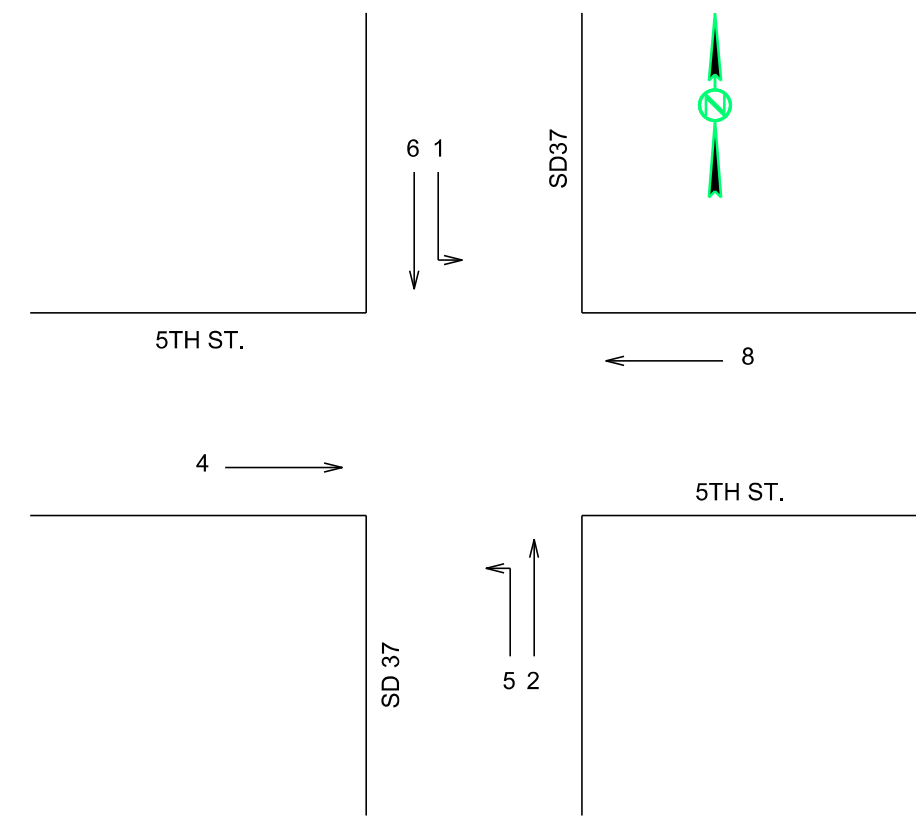
TIMING PLAN 3	
Time of Day (TOD)	Pattern (C/S/O)

TIMING PLAN 2	
Time of Day (TOD)	Pattern (C/S/O)
6:00-00:00	Free
00:00-6:00	Flash

TIMING PLAN 4	
Time of Day (TOD)	Pattern (C/S/O)



DETECTOR TABLE															
Local Detector	Controller Detector #	Phase Called (Call/Call Locking/Extend)												Controller Settings	
		1	2	3	4	5	6	7	8	9	10	11	12	Extend	Delay
V1	1				C/E										
V2-V3	2						C/E								
V4	3	C/E													
V5	4							C/E							
V6	5		C/E												10
V7	6		C/E												
V8	7				C/E										



Plot Scale - 1"=40'

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SIGNAL TIMING

SD HWY 37/DAKOTA AVE & FOURTH ST.

Revised 3/05/2024 - RR

Plot Scale - 1"=40'

BASIC INTERVALS								
Phase	1	2	3	4	5	6	7	8
Movement	SBL	NB		EB	NBL	SB		WB
Lag		X				X		
Min Green	5	10		10	5	10		10
Extension	2	2		2	2	2		2
Max 1	10	27		10	10	28.5		10
Max 2								
Time Before								
Time to Reduce								
Minimum Gap								
Yellow	3	4		4	3	4		4
All Red	2	1		2.5	2	1		2.5
Walk		7		7.5		7		7
Ped Clearance		7.5		12		7.5		12
Recall		Min				Min		
Prog Flash Display	R	Y		R	R	Y		Y
Start Up Ø		X				X		

PREEMPTION				
Plan	3	4	5	6
Calls Ø	8	4	5 & 2	1 & 6
Output	CH13R	CH14R	CH15R	CH16R

WEEKLY PROGRAM							
	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Timing Plan	2	1	1	1	1	1	2

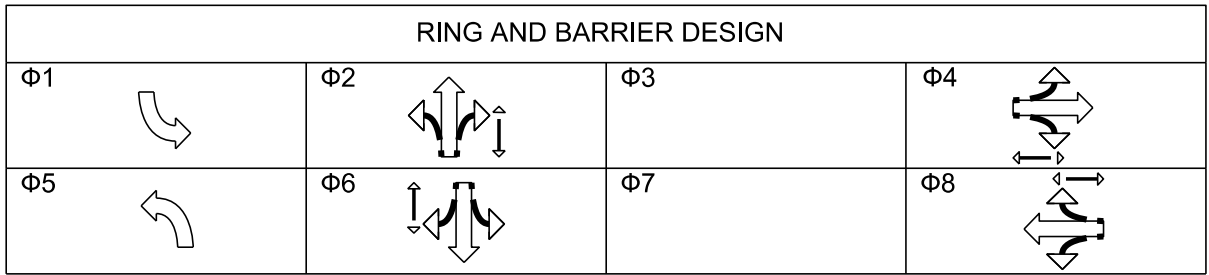
SPLIT PATTERNS										
	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8		
Coord Phase		X				X				
Pattern (C/S/O)	Split	Split	Split	Split	Split	Split	Split	Split	Cycle Length	Offset
1/1/1	10	34		26	10	34		26	70	59
2/1/1	10	39		26	10	39		26	75	74
3/1/1	10	44		26	10	44		26	80	0

TIMING PLAN 1	
Time of Day (TOD)	Pattern (C/S/O)
6:00-10:30	1/1/1
10:30-14:30	2/1/1
14:30-18:30	3/1/1
18:30-00:00	Free
00:00-6:00	Flash

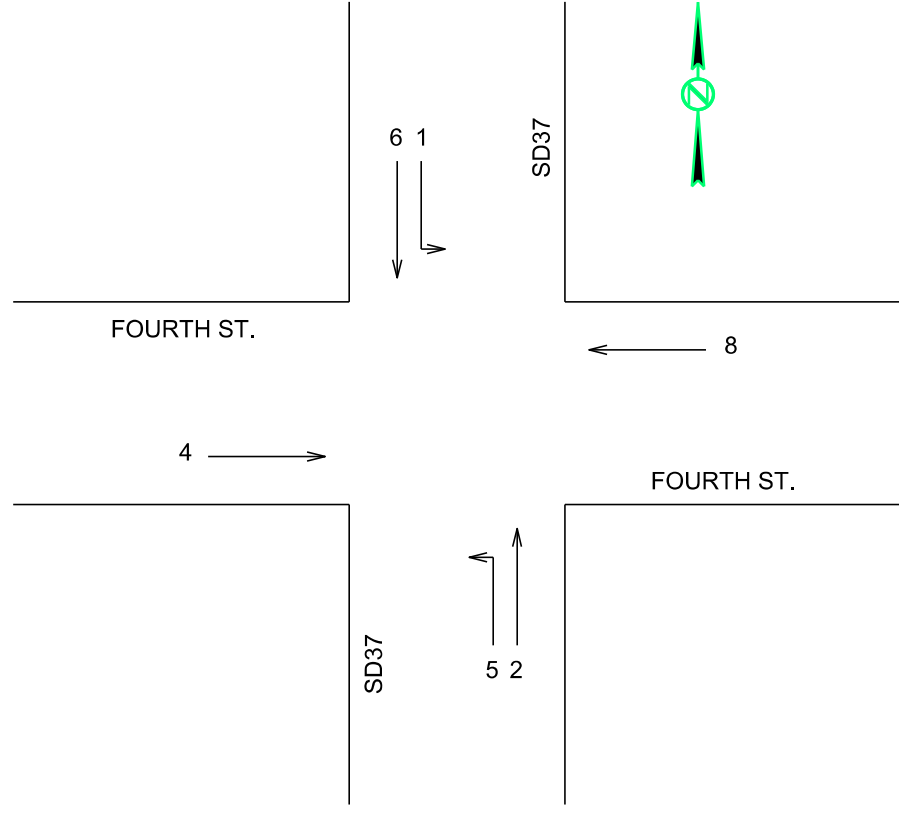
TIMING PLAN 3	
Time of Day (TOD)	Pattern (C/S/O)

TIMING PLAN 2	
Time of Day (TOD)	Pattern (C/S/O)
6:00-00:00	Free
00:00-6:00	Flash

TIMING PLAN 4	
Time of Day (TOD)	Pattern (C/S/O)



DETECTOR TABLE															
Local Detector	Controller Detector #	Phase Called (Call/Call Locking/Extend)												Controller Settings	
		1	2	3	4	5	6	7	8	9	10	11	12	Extend	Delay
V1	1				C/E										
V2	2						C/E								
V3	3	C/E													
V5	4						C/E								
V6	5					C/E									



Plotted From: TRPR17199

File: U:\trproj\bead06A2\030\Time.dgn

SIGNAL TIMING

SD HWY 37/DAKOTA AVE & THIRD ST.

STATE OF SOUTH DAKOTA	PROJECT NH-CR 0037(158)126	SHEET L40	TOTAL SHEETS L54
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Revised 3/05/2024 - RR

BASIC INTERVALS								
Phase	1	2	3	4	5	6	7	8
Movement	SBL	NB		EB	NBL	SB		WB
Lag								
Min Green	5	10		10	5	10		10
Extension	2	2		2	2	2		2
Max 1	6.5	24		12.5	5	26		12.5
Max 2								
Time Before								
Time to Reduce								
Minimum Gap								
Yellow	3	4		4	3	4		4
All Red	2.5	1		2.5	2	1		2.5
Walk		7		7		7		7
Ped Clearance		12		12		12		12
Recall		Min				Min		
Prog Flash Display	R	Y		R	R	Y		R
Start Up Ø		X				X		

PREEMPTION				
Plan	3	4	5	6
Calls Ø	8	4	5 & 2	1 & 6
Output	CH13R	CH14R	CH15R	CH16R

WEEKLY PROGRAM							
	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Timing Plan	2	1	1	1	1	1	2

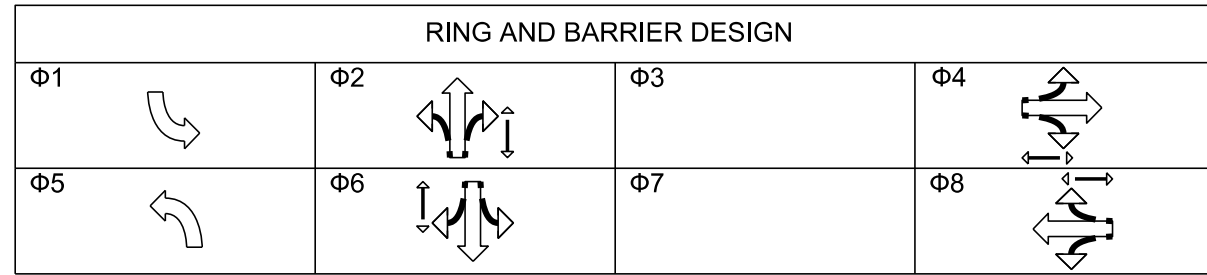
SPLIT PATTERNS										
	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8		
Coord Phase		X				X				
Pattern (C/S/O)	Split	Split	Split	Split	Split	Split	Split	Split	Cycle Length	Offset
1/1/1	10.5	34		25.5	10	34.5		25.5	70	51
2/1/1	11	38		26	10	39		26	75	72
3/1/1	10.5	43.5		26	10	44		26	80	0

TIMING PLAN 1	
Time of Day (TOD)	Pattern (C/S/O)
6:00-10:30	1/1/1
10:30-14:30	2/1/1
14:30-18:30	3/1/1
18:30-00:00	Free
00:00-6:00	Flash

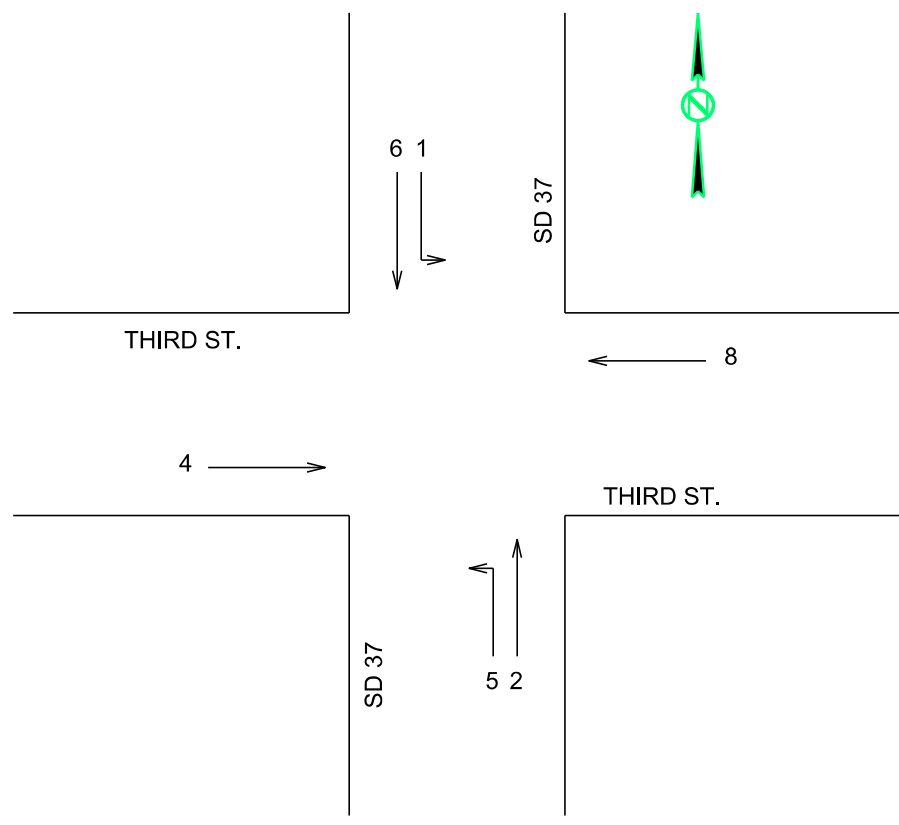
TIMING PLAN 3	
Time of Day (TOD)	Pattern (C/S/O)

TIMING PLAN 2	
Time of Day (TOD)	Pattern (C/S/O)
6:00-00:00	Free
00:00-6:00	Flash

TIMING PLAN 4	
Time of Day (TOD)	Pattern (C/S/O)



DETECTOR TABLE															
Local Detector	Controller Detector #	Phase Called (Call/Call Locking/Extend)												Controller Settings	
		1	2	3	4	5	6	7	8	9	10	11	12	Extend	Delay
V1-V2	1				C/E										
V3	2					C/E									
V4	3	C/E													
V5-V6	4							C/E							
V7	5		C/E												
V8	6				C/E										



Plot Scale - 1"=40'

Plotted From - TRPR37199

File - U:\trproj\bead06A2\035Timing.dgn

SIGNAL TIMING

SD HWY 37/DAKOTA AVE & MARKET ST.

STATE OF SOUTH DAKOTA	PROJECT NH-CR 0037(158)126	SHEET L41	TOTAL SHEETS L54
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Revised 3/05/2024 - RR

BASIC INTERVALS								
Phase	1	2	3	4	5	6	7	8
Movement	SBL	NB		EB	NBL	SB		WB
Lag		X				X		
Min Green	5	10		10	5	10		10
Extension	2	2		2	2	2		2
Max 1	5	27		10	9	27		10
Max 2								
Time Before								
Time to Reduce								
Minimum Gap								
Yellow	3	4		4	3	4		4
All Red	3	1		3	3	1		3
Walk		7		7		7		7
Ped Clearance		12		15		14.5		17.5
Recall		Min				Min		
Prog Flash Display	R	Y		R	R	Y		R
Start Up Ø		X				X		

PREEMPTION				
Plan	3	4	5	6
Calls Ø	8	4	5 & 2	1 & 6
Output	CH13R	CH14R	CH15R	CH16R

WEEKLY PROGRAM							
	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Timing Plan	2	1	1	1	1	1	2

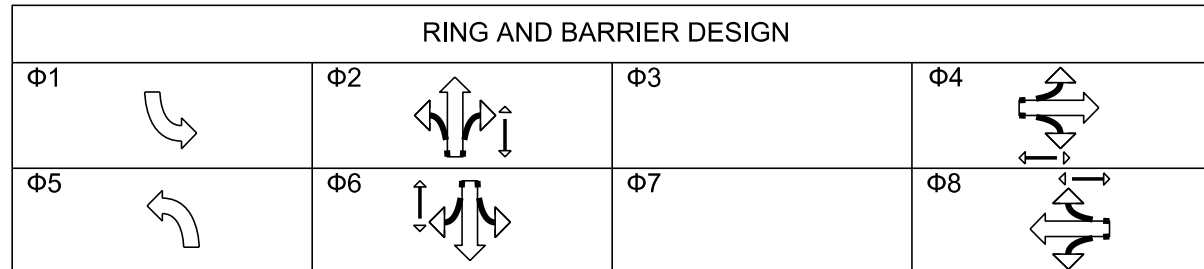
SPLIT PATTERNS										
	Φ1	Φ2	Φ3	Φ4	Φ5	Φ6	Φ7	Φ8		
Coord Phase		X				X				
Pattern (C/S/O)	Split	Split	Split	Split	Split	Split	Split	Split	Cycle Length	Offset
1/1/1	11	27.5		31.5	11	27.5		31.5	70	16
2/1/1	11	32.5		31.5	11	32.5		31.5	75	44
3/1/1	11	37.5		31.5	11	37.5		31.5	80	40

TIMING PLAN 1	
Time of Day (TOD)	Pattern (C/S/O)
6:00-10:30	1/1/1
10:30-14:30	2/1/1
14:30-18:30	3/1/1
18:30-00:00	Free
00:00-6:00	Flash

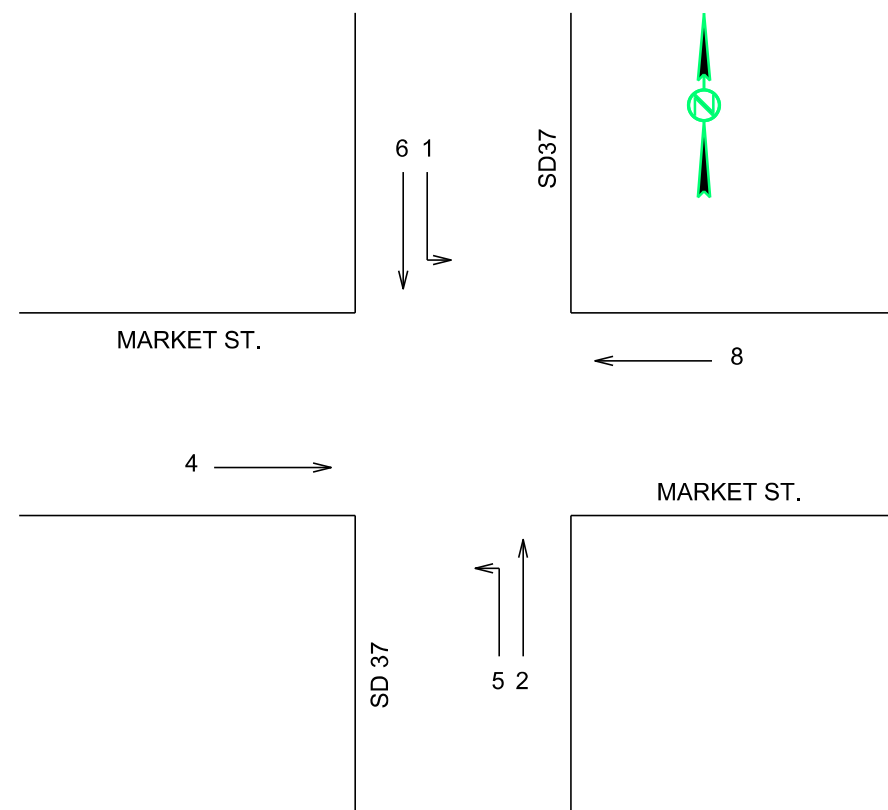
TIMING PLAN 3	
Time of Day (TOD)	Pattern (C/S/O)

TIMING PLAN 2	
Time of Day (TOD)	Pattern (C/S/O)
6:00-00:00	Free
00:00-6:00	Flash

TIMING PLAN 4	
Time of Day (TOD)	Pattern (C/S/O)



DETECTOR TABLE															
Local Detector	Controller Detector #	Phase Called (Call/Call Locking/Extend)												Controller Settings	
		1	2	3	4	5	6	7	8	9	10	11	12	Extend	Delay
V1-V2	1				C/E										
V3	2						C/E								10
V4	3						C/E								
V5	4	C/E													
V6-V7	5								C/E						
V8	6		C/E												10
V9	7		C/E			C/E									
V10	8					C/E									



Plot Scale - 1:40

Plotted From - TRPR17199

File - U:\trproj\bead06A2\044\Time.dgn

PAVEMENT MARKING LAYOUT

SD HWY 37 / DAKOTA AVE

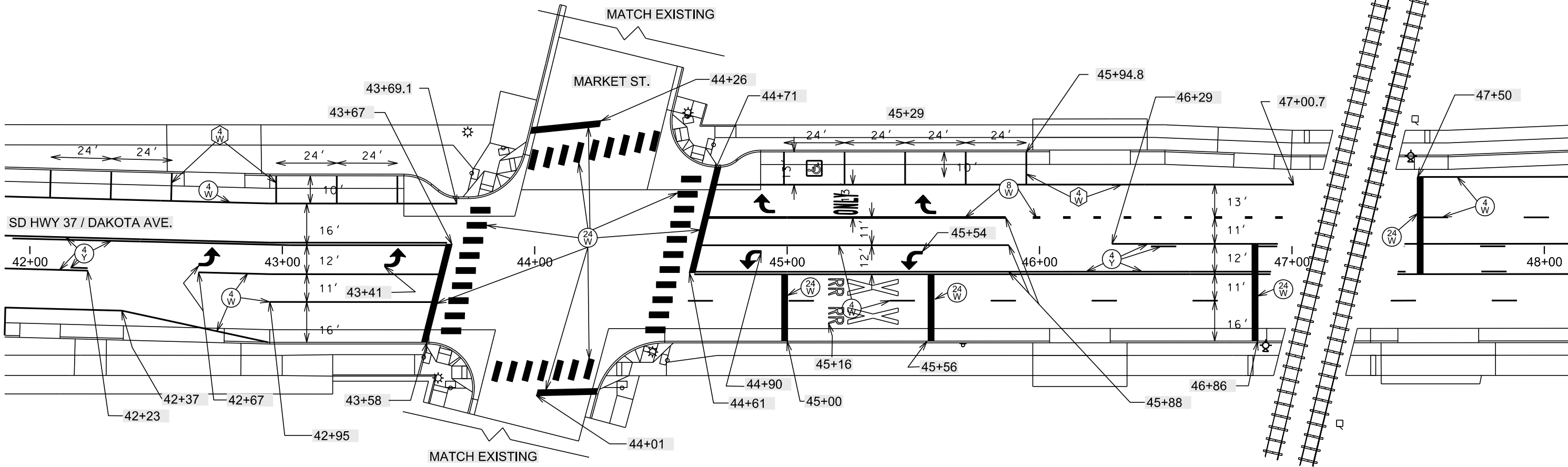
STATE OF SOUTH DAKOTA	PROJECT NH-CR 0037(158)126	SHEET M9	TOTAL SHEETS M13
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Revised: 03/12/2024 JLL



Plot Scale - 1:40

Plotted From - TRRC15324



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