

SECTION L: LIGHTING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-CR 0034(193)402	L1	L26

Plotting Date: 09/17/2024

INDEX OF SHEETS

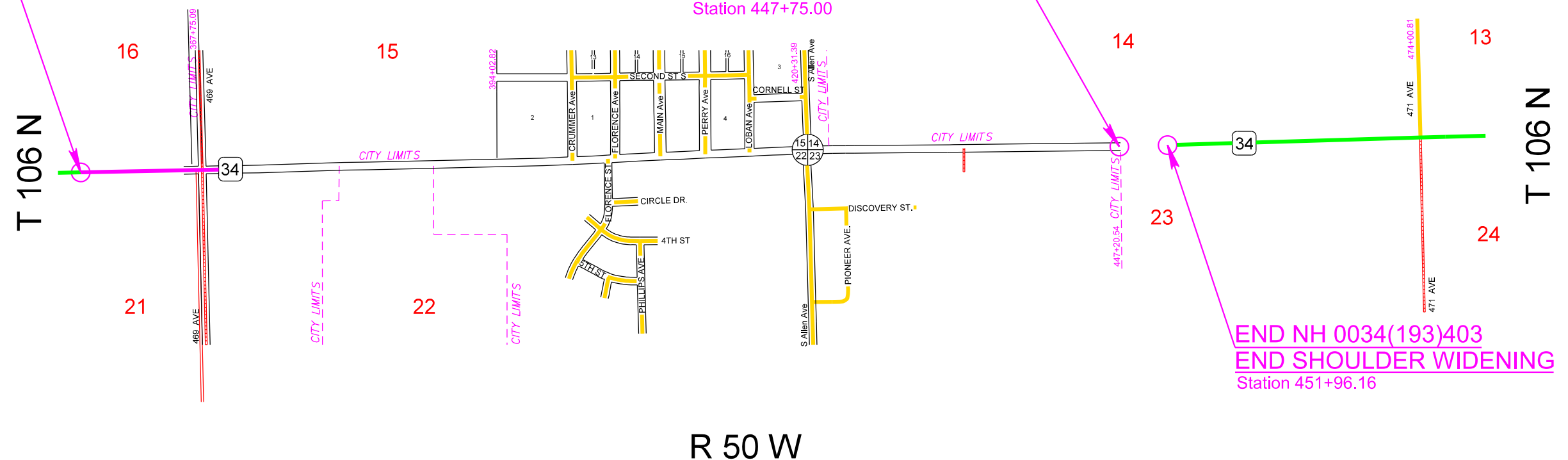
L1	General Layout with Index
L2-L5	Estimate with General Notes & Tables
L6-L18	Conduit Layouts
L19-L21	Wiring Diagrams
L22	Referenced Shop Drawing - Poles
L23-L26	Standard Plates



BEGIN NH 0034(193)403
BEGIN GRADING
Station 357+14.77

END GRADING
BEGIN SHOULDER WIDENING
Station 447+75.00

END NH 0034(193)403
END SHOULDER WIDENING
Station 451+96.16



Plot Scale - 1:200

Plotted From - TRPR17199

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SECTION L ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E1540	Remove Luminaire Pole Footing	30	Each
635E0050	Breakaway Base Luminaire Pole with Arm, 50' Mounting Height	6	Each
635E3700	Roadway Luminaire, LED with Photoelectric Cell	36	Each
635E5025	2.5' Diameter Footing	291.0	Ft
635E5301	Type 1 Electrical Junction Box	3	Each
635E5302	Type 2 Electrical Junction Box	4	Each
635E5400	Electrical Service Cabinet	3	Each
635E6200	Miscellaneous, Electrical	Lump Sum	LS
635E7500	Remove and Reset Luminaire Pole	30	Each
635E8110	1" Rigid Conduit, Schedule 40	45	Ft
635E8120	2" Rigid Conduit, Schedule 40	6,600	Ft
635E8210	1" Rigid Conduit, Schedule 80	60	Ft
635E8220	2" Rigid Conduit, Schedule 80	335	Ft
635E8620	2" Conduit, SDR 13.5	450	Ft
635E9011	1/C #1 AWG Copper Wire	3,580	Ft
635E9012	1/C #2 AWG Copper Wire	9,330	Ft
635E9013	1/C #3 AWG Copper Wire	3,785	Ft
635E9014	1/C #4 AWG Copper Wire	3,730	Ft
635E9016	1/C #6 AWG Copper Wire	6,060	Ft
635E9018	1/C #8 AWG Copper Wire	1,440	Ft
635E9020	1/C #10 AWG Copper Wire	5,450	Ft
635E9024	1/C #14 AWG Copper Wire	3,600	Ft
635E9710	2/C #10 AWG Copper Pole and Bracket Cable	2,520	Ft

SUPPLYING AS BUILT PLANS

If the 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:

Stacy.Bartlett@state.sd.us
Joseph.Updike@state.sd.us

REMOVE LUMINAIRE POLE FOOTING

The footings of existing luminaire poles EL1-EL30 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".

REMOVE AND RESET LUMINAIRE POLE

Existing luminaire poles EL1-EL30 will be removed and reset as REL1-REL30 as shown on the plan sheets.

A copy of the original shop drawing for EL1-EL30 is included on sheet L17. The poles were originally installed with Project NH-CR 0034(193)402, Drawing No. SD58729P1.

Valmont Industries, Inc.
P.O. Box 358
Valley, NE 68064
Phone: (402) 359-2201

Shop drawing records show that the existing anchor bolts are 1" X 36" with a bolt circle diameter of 15", and a 3" Bolt Projection. The replacement anchor bolts will be in conformance with the Specifications.

Luminaire poles damaged during removal or resetting will be repaired or replaced by the Contractor at no cost to the State.

The connecting hardware between the transformer base and the pole will be replaced. The transformer base is not to be used with leveling nuts and is to be leveled with the applicable manufacturer's shims.

All costs associated with removing and resetting the existing luminaire poles including new anchor bolts with associated hardware, will be incidental to the contract unit price per each for "Remove and Reset Luminaire Pole".

All costs associated with disposal of the existing luminaire fixtures will be incidental to the contract unit price per each for "Remove and Reset Luminaire Pole".

LUMINAIRE POLES

Luminaire poles L1 to L6 will have a mounting height of 50-feet with 8-foot arms.

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

Luminaire poles L1 to L6 will be designed to include loadings created by holiday decorations that are 4 feet wide by 7 feet long, mounted 14 feet from the top of footing to the bottom of the decorations and weigh 100-lbs.

Luminaire poles L1 to L6 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.

LUMINAIRES

The lighting design for REL1 – REL3 and REL29 to REL30 used the following parameters to provide 1.2 and greater average maintained foot-candles and uniformity ratios of 3:1 (average maintained to minimum maintained foot-candles) and 5:1 (maximum to minimum maintained foot candles):

Pole Setback: 10 Ft.
Lamp Loss Factor (LLF): 0.8
Width of Lighted Area: 45 Ft.
Luminaire Cycle Length: 210 Ft.
Configuration: One-Sided
Mounting Height: 50 Ft.
Arm Length: 8 Ft.

STATE OF SOUTH DAKOTA	PROJECT NH-CR 0034(193)402	SHEET L2	TOTAL SHEETS L26
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LUMINAIRES (CONTINUED)

The lighting design for REL4 to REL6 used the following parameters to provide 1.2 and greater average maintained foot-candles and uniformity ratios of 3:1 (average maintained to minimum maintained foot-candles) and 5:1 (maximum to minimum maintained foot candles):

Pole Setback: 13.5 Ft.
Lamp Loss Factor (LLF): 0.8
Width of Lighted Area: 35 Ft.
Luminaire Cycle Length: 220 Ft.
Configuration: One-Sided
Mounting Height: 50 Ft.
Arm Length: 8 Ft.

The lighting design for REL7 to REL10 used the following parameters to provide 1.2 and greater average maintained foot-candles and uniformity ratios of 3:1 (average maintained to minimum maintained foot-candles) and 5:1 (maximum to minimum maintained foot candles):

Pole Setback: 4.5 Ft.
Lamp Loss Factor (LLF): 0.8
Width of Lighted Area: 35 Ft.
Luminaire Cycle Length: 220 Ft.
Configuration: One-Sided
Mounting Height: 50 Ft.
Arm Length: 8 Ft.

The lighting design for REL11 – REL13 and L1 – L5 used the following parameters to provide 1.2 and greater average maintained foot-candles and uniformity ratios of 3:1 (average maintained to minimum maintained foot-candles) and 5:1 (maximum to minimum maintained foot candles):

Pole Setback: 7.5 Ft.
Lamp Loss Factor (LLF): 0.8
Width of Lighted Area: 33 Ft.
Luminaire Cycle Length: 220 Ft.
Configuration: One-Sided
Mounting Height: 50 Ft.
Arm Length: 8 Ft.

The lighting design for L6 and REL14 to REL17 used the following parameters to provide 1.2 and greater average maintained foot-candles and uniformity ratios of 3:1 (average maintained to minimum maintained foot-candles) and 5:1 (maximum to minimum maintained foot candles):

Pole Setback: 6 Ft.
Lamp Loss Factor (LLF): 0.8
Width of Lighted Area: 36 Ft.
Luminaire Cycle Length: 160 Ft.
Configuration: One-Sided
Mounting Height: 50 Ft.
Arm Length: 8 Ft.

Plot Scale - 1:200

Plotted From - TRPR17199

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LUMINAIRES (CONTINUED)

The lighting design for REL18 to REL22 and REL24 to REL26 used the following parameters to provide 1.2 and greater average maintained foot-candles and uniformity ratios of 3:1 (average maintained to minimum maintained foot-candles) and 5:1 (maximum to minimum maintained foot candles):

Pole Setback:	10 Ft.
Lamp Loss Factor (LLF):	0.8
Width of Lighted Area:	45 Ft.
Luminaire Cycle Length:	220 Ft.
Configuration:	One-Sided
Mounting Height:	50 Ft.
Arm Length	8 Ft.

The lighting design for REL22 to REL24 and REL26 to REL29 used the following parameters to provide 1.2 and greater average maintained foot-candles and uniformity ratios of 3:1 (average maintained to minimum maintained foot-candles) and 5:1 (maximum to minimum maintained foot candles):

Pole Setback:	10 Ft.
Lamp Loss Factor (LLF):	0.8
Width of Lighted Area:	56 Ft.
Luminaire Cycle Length:	160 Ft.
Configuration:	One-Sided
Mounting Height:	50 Ft.
Arm Length	8 Ft.

The following luminaires meet the requirements for the previously referenced designs:

- a.) American Electric Lighting: ATB0-P455-MVOLT-R2-4K-P7-PCLL
- b.) Cooper Streetworks: VERD-M-CA4-210-740-U-T2-AP-PR7- 0A/RA1016

TABLE OF FOOTING DATA

Site Designation	Footing Diameter	* Footing Depth	**Spiral Diameter	**Spiral Length	Vertical Reinforcement
REL1, REL3-REL24, L1-L6, REL26-REL29	2' - 6"	8' - 0"	2' - 2"	71' - 0"	12-#7 x 7' -6"
REL2, REL25, REL30	2' - 6"	9' - 0"	2' - 2"	78' - 0"	12-#7 x 8' -6"

* Footing depth will be below ground level.

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

SUBSURFACE

Subsurface conditions consist of clay to clay sand along the project corridor. Groundwater was encountered at an average depth of 10 feet during the soils investigation conducted in November and December 2020.

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.

SUBSURFACE (CONTINUED)

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.

MISCELLANEOUS, ELECTRICAL

The contractor will coordinate with DGR and Colman Municipal Electric to have the existing electrical service de-energized prior to removal. The DGR contact is Jarrod Luze (712) 472-2531 or jarrod.luze@dgr.com.

All costs associated with coordinating, removing, and disposing of the electric service will be incidental to the contract lump sum price for "Miscellaneous, Electrical".

The existing convenience duplex festoon outlet receptacles for luminaires REL1-REL30 will be replaced with new receptacles. All costs associated with replacing the receptacles will be incidental to the contract lump sum price for "Miscellaneous, Electrical".

WIRE SPLICING FOR LIGHTING

All wire splices for lighting will be made using TE Connectivity GTAP connectors, NSI Industries Polaris Blue connectors, or an approved equal.

ELECTRICAL JUNCTION BOXES JL2, and JI1-JI3

The Type 2 junction boxes shown on sheet L12 and L14 (JL2, and JI1-JI3) will be installed with 3 - 2" Conduit, SDR 13.5 runs between them. Each of the conduit runs between the two junction boxes will have a single #10 AWG tracer wire for City use.

INNERDUCT

The innerduct conduit will be red or black with a red stripe and longitudinally ribbed on the inside wall. The innerduct bid item will include furnishing and installing the innerduct, as well as all work to seal the innerduct conduit within the junction boxes.

Innerduct ends will be sealed using a mastic style tape wrapped around the end of the innerduct and a heat shrinkable cap will be installed over the end of the innerduct.

All costs for the innerduct will be included in the contract unit price per foot for "2" Innerduct, SDR 13.5".

WIRING IN EXISTING POLES

The existing pole and bracket wire and the existing outlet wires in EL1-EL30 will be removed and replaced.

All costs associated with the removal and disposal of the existing pole and bracket wire will be incidental to the contract unit price per foot for "2/C #10 AWG Copper Pole and Bracket Wire".

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All costs associated with the removal and disposal of the existing outlet wiring will be incidental to the contract unit price per foot for "1/C #14 AWG Copper Wire".

RADAR SPEED SIGNS

The radar speed signs (RSS1 and RSS2) are located as shown on the plans and as indicated in Section S.

The contractor will extend the conduit above ground 90 degrees vertically to connect to the sign at the sign location.

All other details, including installation and bid items, for the Radar Speed Sign can be found in Section S.

All costs associated with extending the conduit to connect to the signs will be incidental to the contract lump sum cost for "1" Rigid Conduit, Schedule 40".

CONDUIT AND CABLE QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT NH-CR 0034(193)402	SHEET L4	TOTAL SHEETS L26
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Revised 9/17/2024 - RR

Location to Location	Rigid Conduit						Copper Wire					Pole and Bracket						
	Schedule 40		Schedule 80		2" Conduit, SDR 13.5		1/C #8 AWG	1/C #6 AWG	1/C #4 AWG	1/C #3 AWG	1/C #2 AWG	1/C #1 AWG	2/C #10 AWG	1/C #14 AWG	1/C #10 AWG			
	1"	2"	1"	2"	2"		Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft			
LIGHTING																		
REL1	REL2	210'									870'							
REL2	REL3	210'									870'							
REL3	REL4	220'									910'							
REL4	REL5	180'									745'							
REL5	REL6	225'			50'						1,135'							
REL6	REL7	170'									705'			355'				
REL7	REL8	210'										870'		435'				
REL8	REL9	215'										890'		445'				
REL9	REL10	220'										910'		455'				
REL10	JL1	200'										845'		415'				
JL1	SERVICE CABINET	10'										65'		25'				
JL1	REL11	20'								80'								
REL11	REL12	220'								680'								
REL12	REL13	220'								680'								
L1	L2	225'								700'								
L2	L3	180'			40'					680'		680'						
L3	L4	170'								530'		530'						
L4	L5	195'			65'					805'		805'						
L5	JL2	35'									125'	125'						
JL2	SERVICE CABINET	15'									25'	85'		35'				
JL2	L6	145'										465'	450'	300'				
L6	REL14	170'			35'							635'		425'				
REL14	REL15	165'			35'					620'	620'			415'				
REL15	REL16	210'									650'			435'				
REL16	REL17	210'								650'	650'			435'				
REL17	REL18	180'			45'						700'			465'				
REL19	REL20	220'								680'								
REL20	REL21	220'								680'								
REL21	REL22	230'								715'								
REL22	REL23	160'									495'							
REL23	JL3	150'									465'							
JL3	SERVICE CABINET	40'			65'													
JL3	REL24	10'										65'						
REL24	REL25	220'										700'						
REL25	REL26	220'										680'						
REL26	REL27	160'										495'						
REL27	REL28	160'									495'	495'						
REL28	REL29	160'									495'							
REL29	REL30	220'										680'						
LUMINAIRE POLES																		
REL1													70'	100'				
REL2													70'	100'				
REL3													70'	100'				
REL4													70'	100'				
REL5													70'	100'				
REL6													70'	100'				
REL7													70'	100'				
REL8													70'	100'				
REL9													70'	100'				
REL10													70'	100'				
Subtotal:		6,600'			335'					1,440'	6,060'	3,730'	3,785'	9,330'	3,580'	700'	1,000'	4,640'

Plot Scale - 1:200

Plotted From - TRPR17199

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CONDUIT AND CABLE QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT NH-CR 0034(193)402	SHEET L5	TOTAL SHEETS L26
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Revised 9/17/2024 - RR

Location to Location	Rigid Conduit						Copper Wire						Pole and Bracket												
	Schedule 40		Schedule 80		2" Conduit, SDR 13.5																				
	1"	2"	1"	2"	2"	1/C #8 AWG	1/C #6 AWG	1/C #4 AWG	1/C #3 AWG	1/C #2 AWG	1/C #1 AWG	2/C #10 AWG	1/C #14 AWG	1/C #10 AWG											
Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	FT											
LUMINAIRE POLES CONTINUED																									
REL11												70'	100'												
REL12												70'	100'												
REL13												70'	100'												
L1												70'	100'												
L2												70'	100'												
L3												70'	100'												
L4												70'	100'												
L5												70'	100'												
L6												70'	100'												
REL14												70'	100'												
REL15												70'	100'												
REL16												70'	100'												
REL17												70'	100'												
REL18												70'	100'												
REL19												70'	100'												
REL20												70'	100'												
REL21												70'	100'												
REL22												70'	100'												
REL23												70'	100'												
REL24												70'	100'												
REL25												70'	100'												
REL26												70'	100'												
REL27												70'	100'												
REL28												70'	100'												
REL29												70'	100'												
REL30												70'	100'												
RADAR SPEED SIGNS																									
JR1						60'										190'									
REL18																140'									
INNERDUCT																									
JL2																130'									
JI1																350'									
Subtotal:																									
	45'					60'								1,820'	2,600'	810'									
Total:																									
	45'	6,600'				60'	335'					450'		1,440'	6,060'	3,730'	3,785'	9,330'	3,580'	2,520'	3,600'	5,450'			

Plot Scale - 1:200

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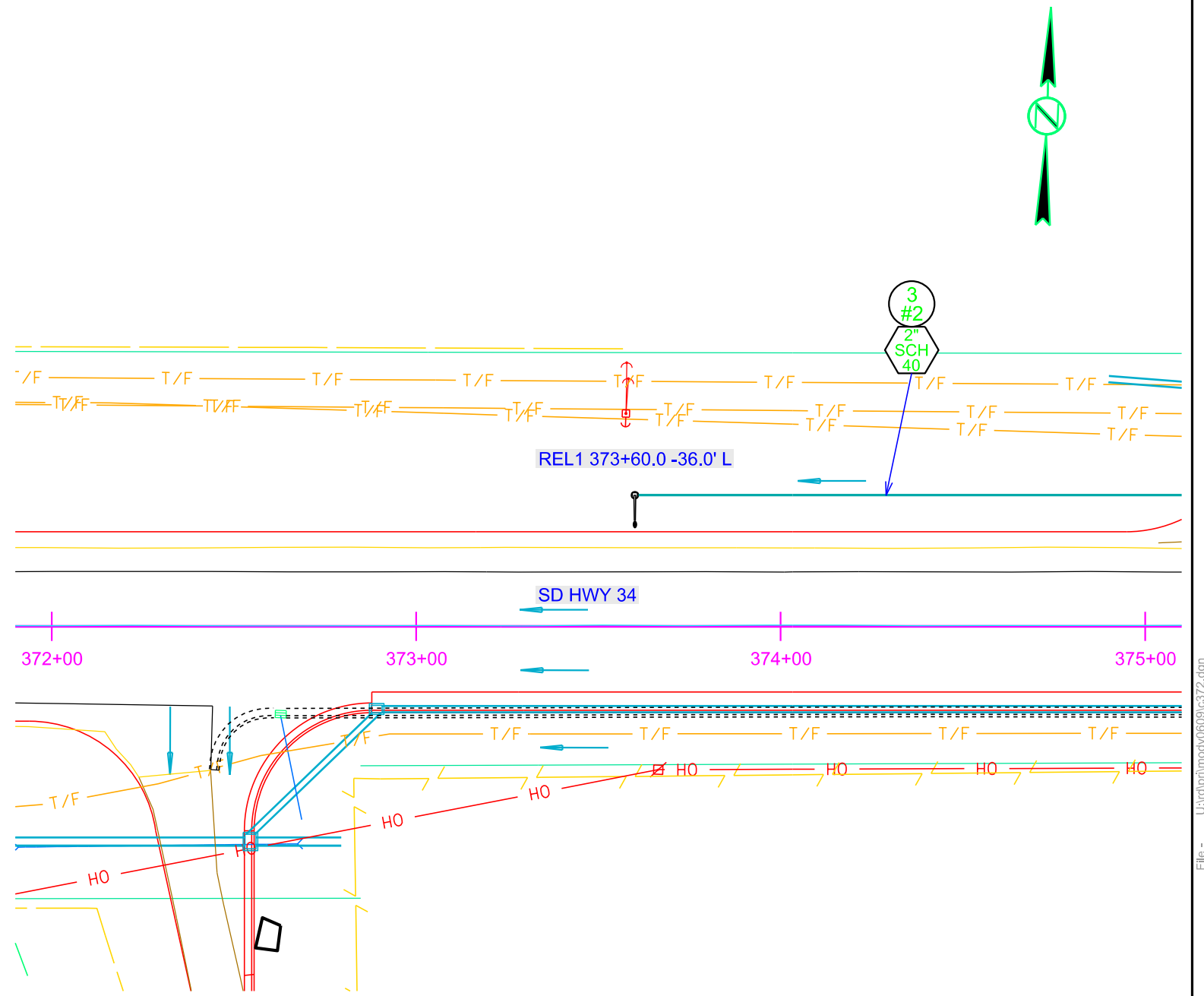
CONDUIT LAYOUT SD HWY 34

STATE OF SOUTH DAKOTA	PROJECT NH-CR 0034(193)402	SHEET L6	TOTAL SHEETS L26
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Revised: 09/17/2024 - RR

ESTIMATE OF QUANTITIES			
KEY	ITEM	EST QUANT	UNIT
	Remove and Reset Luminaire Pole (REL1-REL30)	30	EACH
	Remove Luminaire Pole Footing (EL1-EL30)	30	EACH
	Breakaway Base Luminaire Pole w/8' Arm 50' Mounting Height (L1-L6)	6	EACH
	Roadway Luminaire, LED with P.E. (REL1-REL30, L1-L6)	36	EACH
	2.5' Diameter Footing (REL1-REL30, L1-L6)	291	FT
	Type 1 Electrical Junction Box (JL1, JL3, JR1)	3	EACH
	Type 2 Electrical Junction Box (JL2, JI1-JI3)	4	EACH
	Electrical Service Cabinet	3	EACH
	Galvanized Steel Utility Pole (Not a Bid Item)	3	EACH
	Meter Socket (Not a Bid Item)	3	EACH
	1" Rigid Conduit, Schedule 40	45	FT
	2" Rigid Conduit, Schedule 40	6,600	FT
	1" Rigid Conduit, Schedule 80	60	FT
	2" Rigid Conduit, Schedule 80	335	FT
	1/C #1 AWG Copper Wire	3,580	FT
	1/C #2 AWG Copper Wire	9,330	FT
	1/C #3 AWG Copper Wire	3,785	FT
	1/C #4 AWG Copper Wire	3,730	FT
	1/C #6 AWG Copper Wire	6,060	FT
	1/C #8 AWG Copper Wire	1,440	FT
	2" Conduit, SDR 13.5	450	FT
	2/C #10 AWG Copper Pole & Bracket Cable	2,520	FT
	1/C #14 AWG Copper Wire	3,600	FT
	1/C #10 AWG Copper Wire	5,450	FT
	Radar Speed Sign (See Section S) (RSS1, RSS2)	2	EACH

EXISTING ITEMS	
KEY	ITEM
	Roadway Luminaire Pole (EL1-EL30)



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CONDUIT LAYOUT SD HWY 34

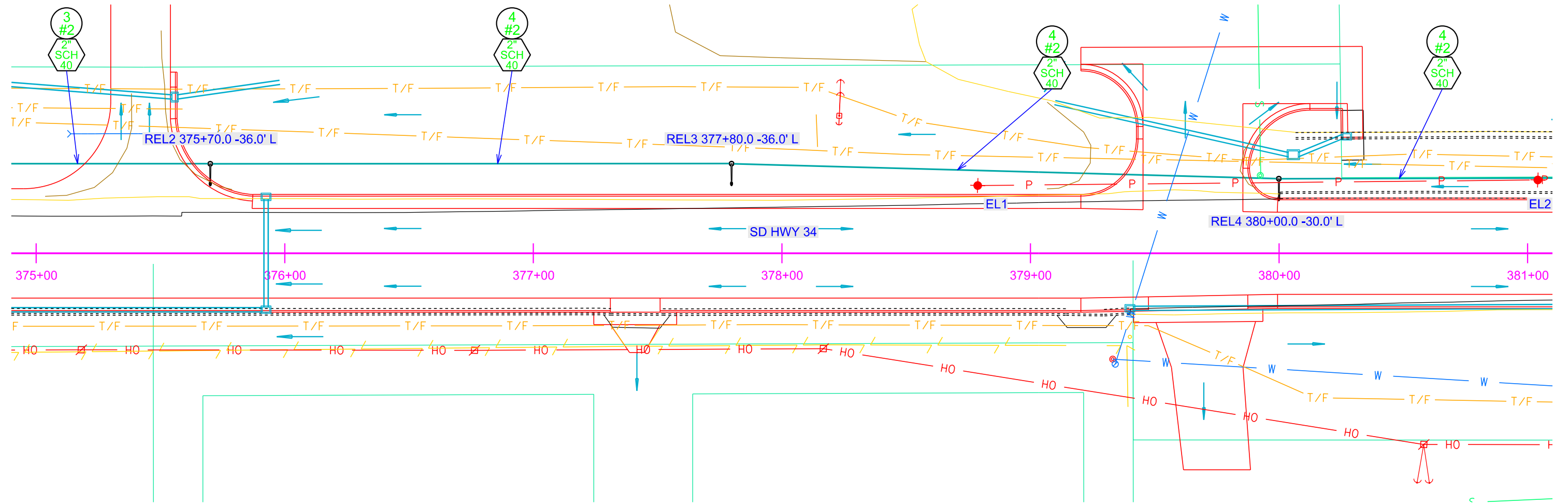
STATE OF SOUTH DAKOTA	PROJECT NH-CR 0034(193)402	SHEET L7	TOTAL SHEETS L26
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Plotting Date: 09/17/2024

Plot Scale - 1:40

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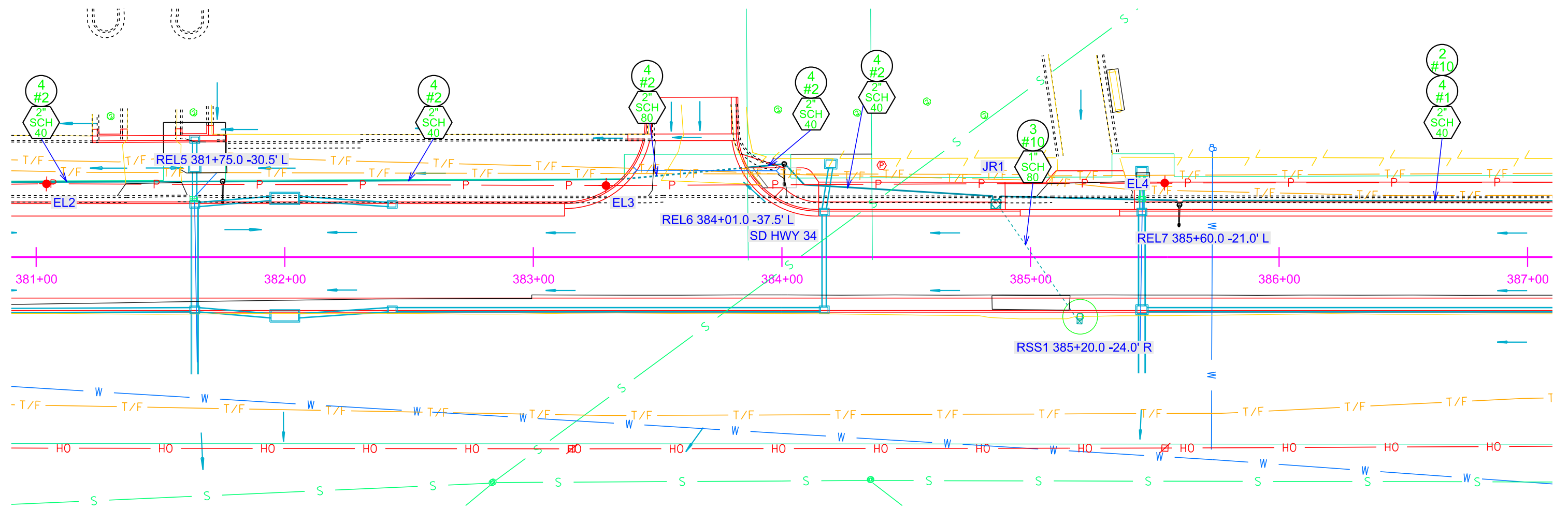


CONDUIT LAYOUT SD HWY 34

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-CR 0034(193)402	L8	L26

Plotting Date: 09/17/2024

Plot Scale - 1:40



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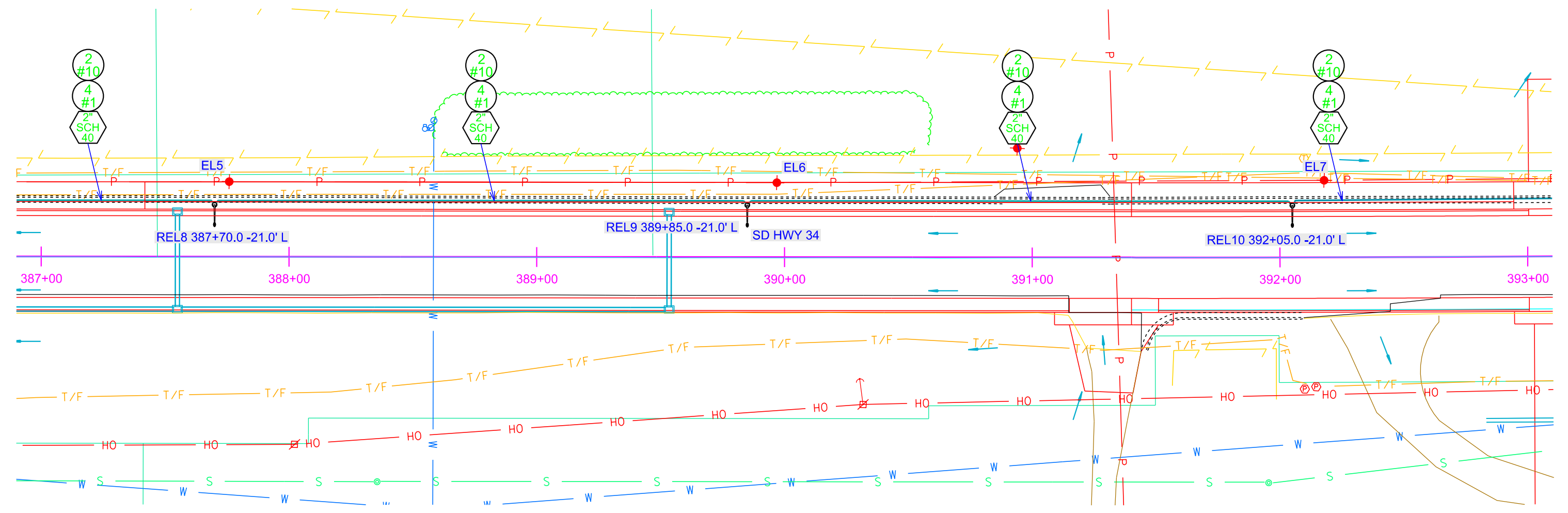
CONDUIT LAYOUT SD HWY 34

STATE OF SOUTH DAKOTA	PROJECT NH-CR 0034(193)402	SHEET L9	TOTAL SHEETS L26
Plotting Date: 09/17/2024			



Plot Scale - 1"=40'

Plotted From - TRPR17199



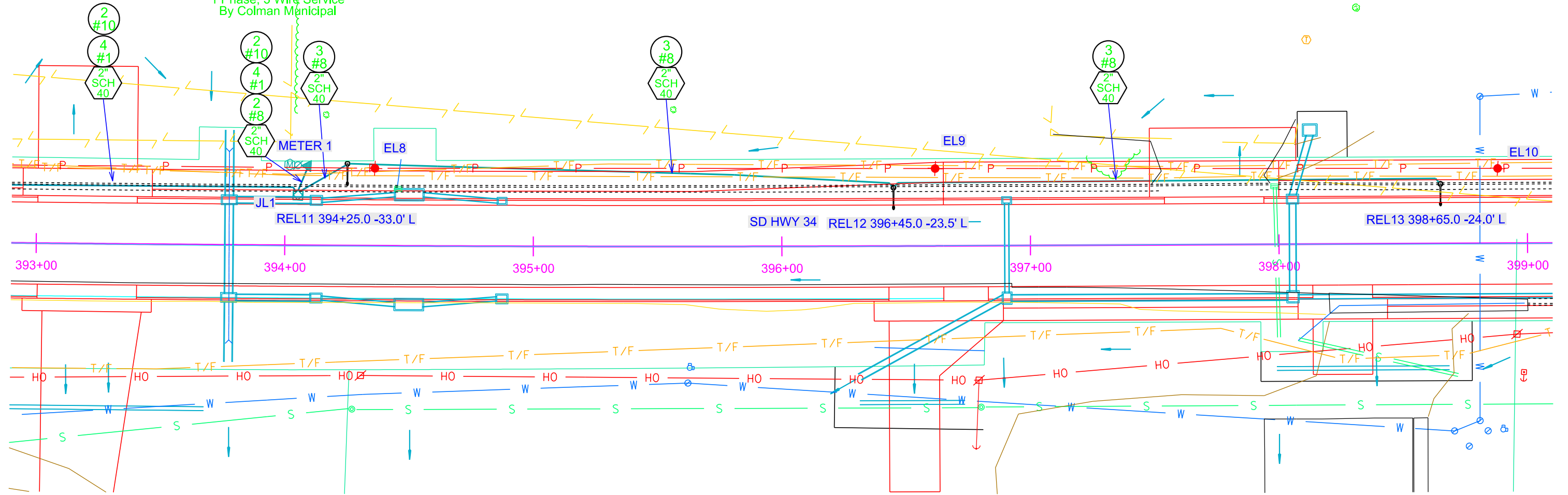
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CONDUIT LAYOUT SD HWY 34

STATE OF SOUTH DAKOTA	PROJECT NH-CR 0034(193)402	SHEET L10	TOTAL SHEETS L26
Plotting Date: 09/17/2024			



120/240 v.a.c., 60 hz.,
1 Phase, 3 Wire Service
By Colman Municipal



Plot Scale - 1"=40'

Plotted From - TRPR17199

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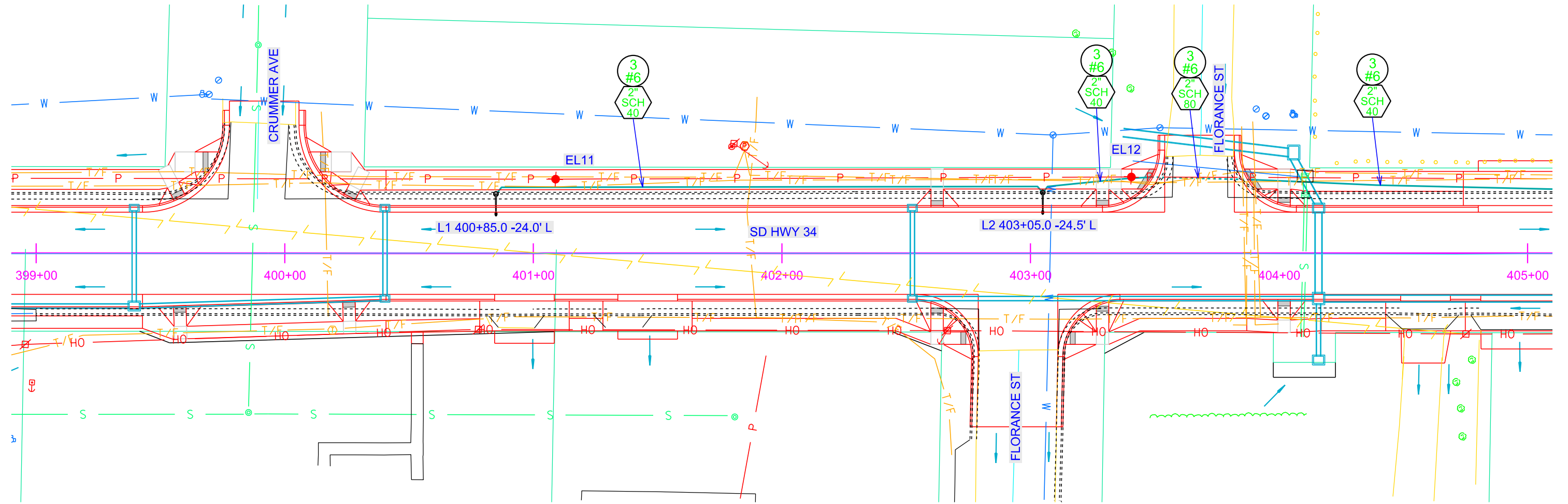
CONDUIT LAYOUT SD HWY 34

STATE OF SOUTH DAKOTA	PROJECT NH-CR 0034(193)402	SHEET L11	TOTAL SHEETS L26
Plotting Date: 09/17/2024			



Plot Scale - 1:40

Plotted From - TRPR17199



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CONDUIT LAYOUT SD HWY 34

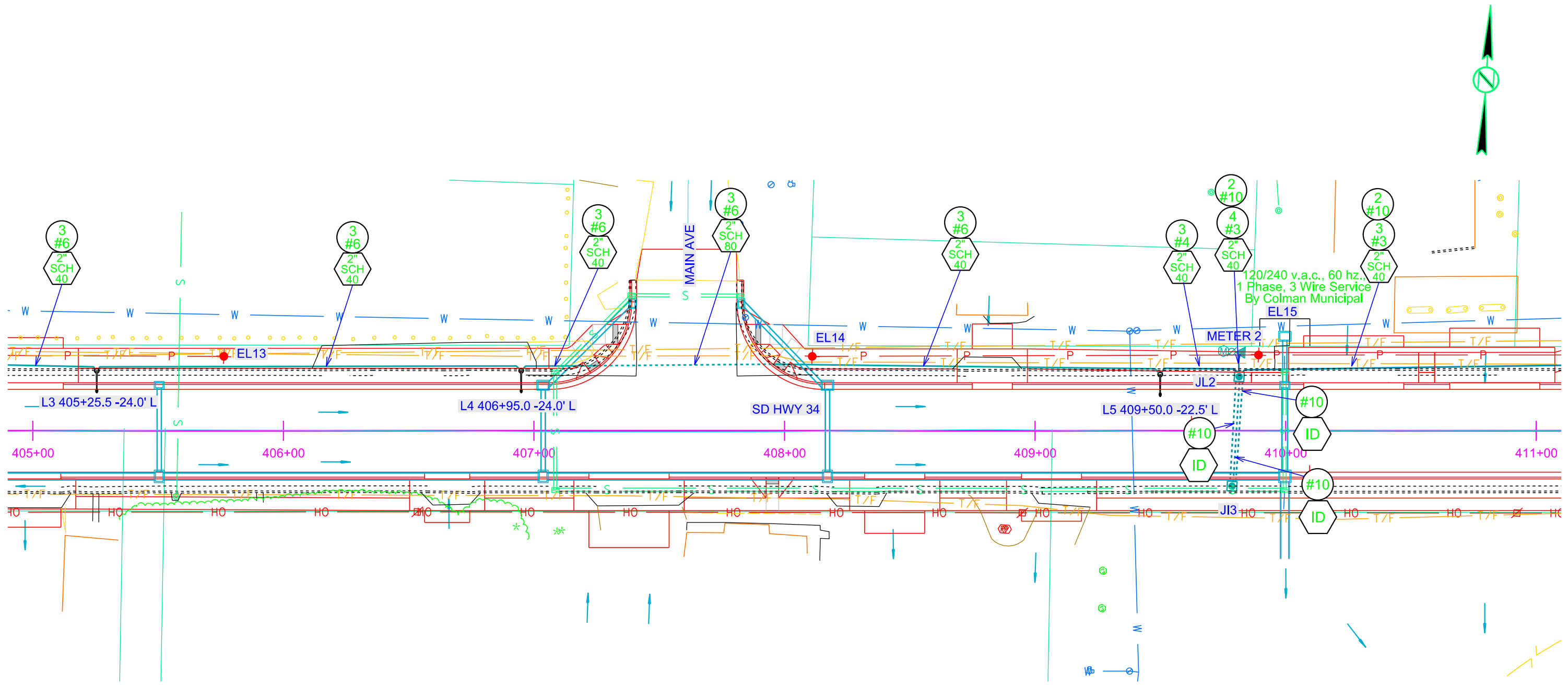
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-CR 0034(193)402	L12	L26

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Plotted From - TRPR17199

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120/240 v.a.c., 60 Hz.,
1 Phase, 3 Wire Service
By Colman Municipal

MAIN AVE

SD HWY 34

METER 2

JL2

JI3

L3 405+25.5 -24.0' L

L4 406+95.0 -24.0' L

L5 409+50.0 -22.5' L

405+00 406+00 407+00 408+00 409+00 410+00 411+00

3 #6
2" SCH 40

3 #6
2" SCH 40

3 #6
2" SCH 40

3 #6
2" SCH 80

3 #6
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ID

#10
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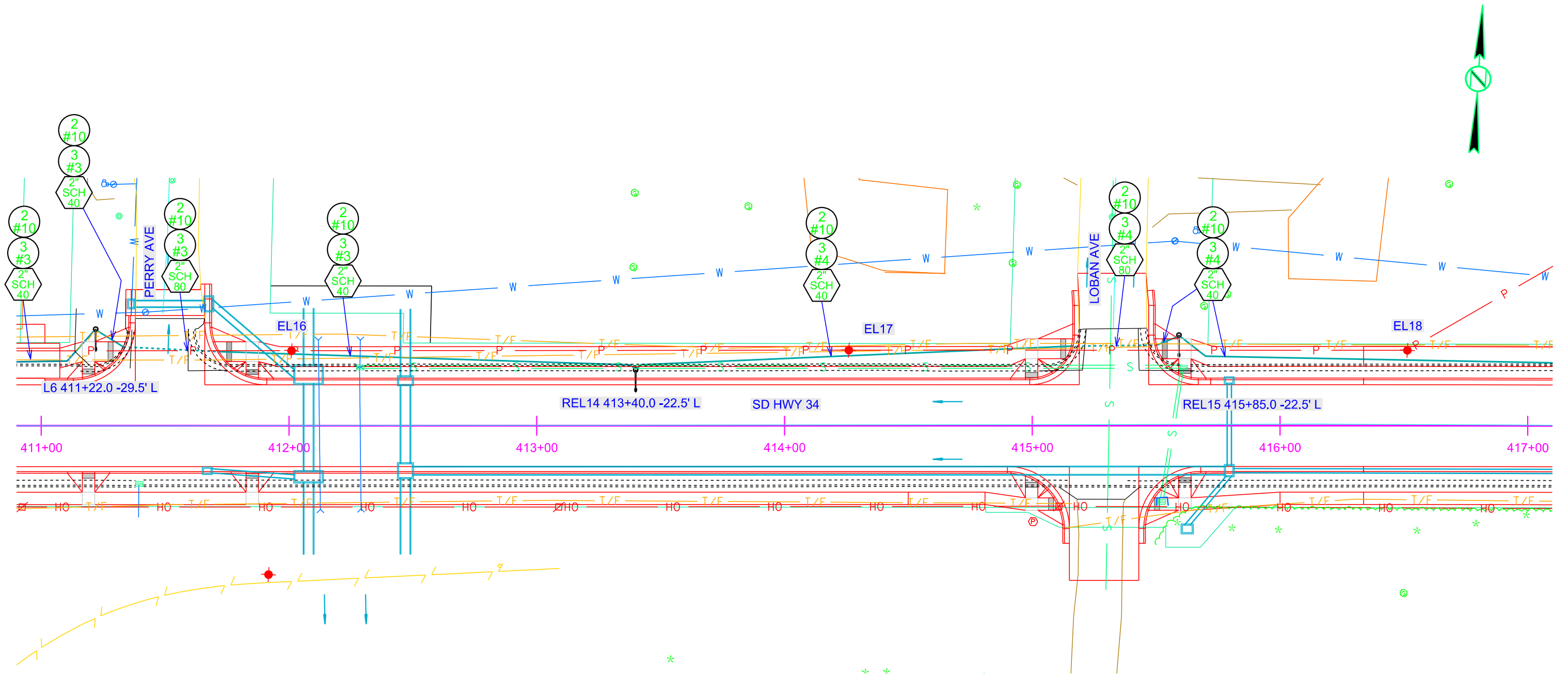
CONDUIT LAYOUT SD HWY 34

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-CR 0034(193)402	L13	L26
Plotting Date: 09/17/2024			

Plot Scale - 1"=40'

Plotted From - TRPR17199

File - U:\trp\j\mod\0609\c411.dgn



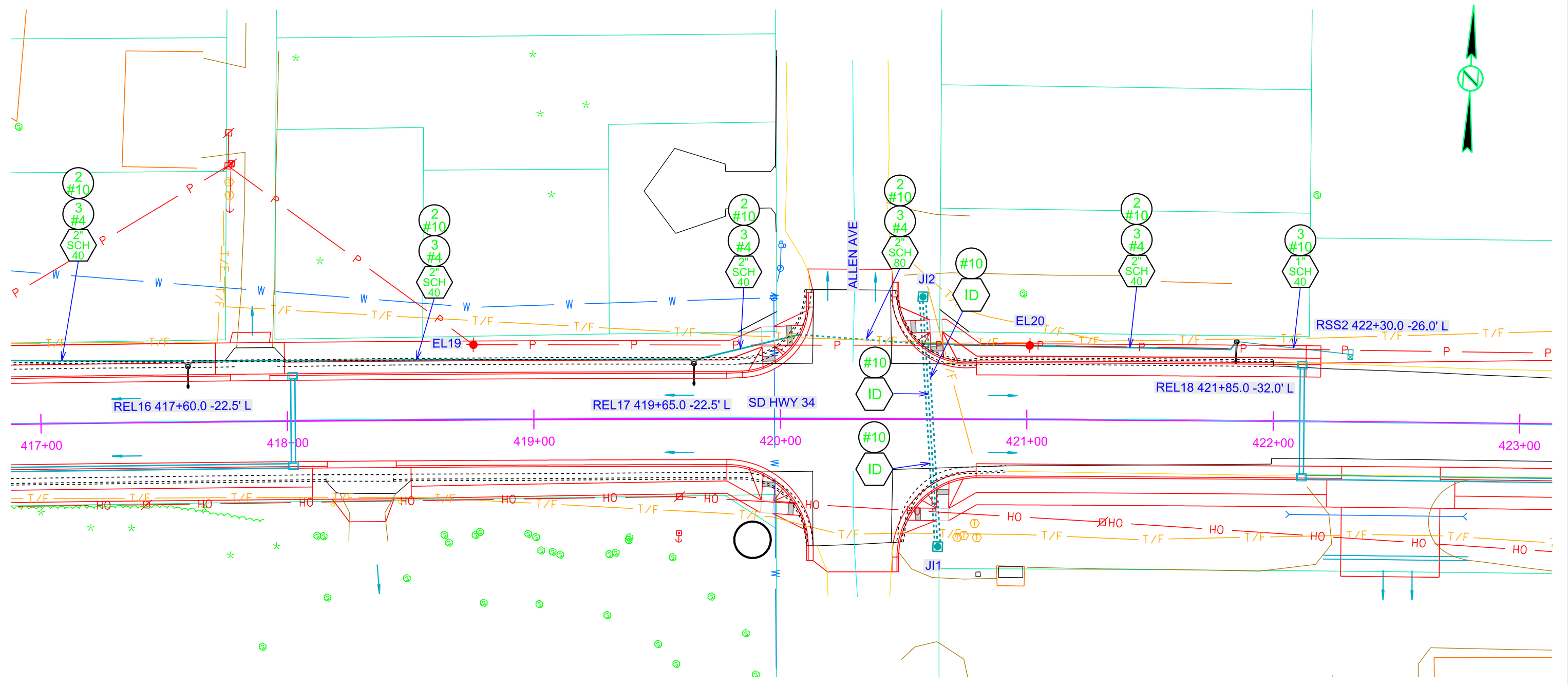
CONDUIT LAYOUT SD HWY 34

STATE OF SOUTH DAKOTA	PROJECT NH-CR 0034(193)402	SHEET L14	TOTAL SHEETS L26
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Revised: 09/17/2024 - RR

Plot Scale - 1:40

Plotted From - TRPR17199

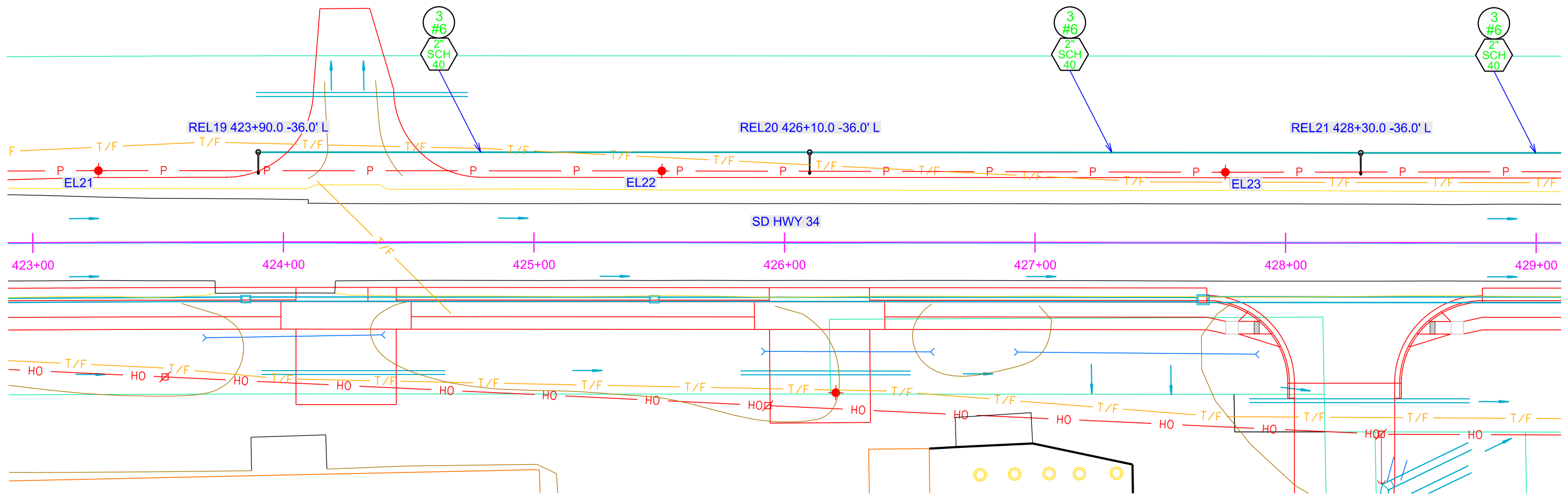


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CONDUIT LAYOUT SD HWY 34

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-CR 0034(193)402	L15	L26
Plotting Date: 09/17/2024			

Plot Scale - 1"=40'



Plotted From - TRPR17199

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CONDUIT LAYOUT SD HWY 34

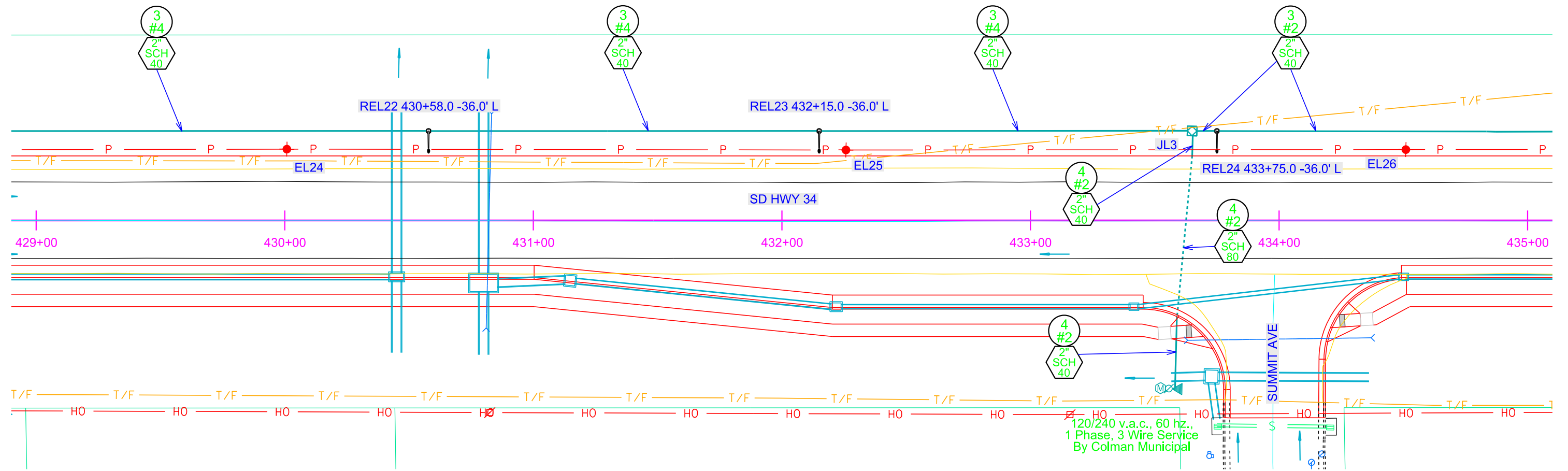
STATE OF SOUTH DAKOTA	PROJECT NH-CR 0034(193)402	SHEET L16	TOTAL SHEETS L26
Plotting Date: 09/17/2024			



Plot Scale - 1:40

Plotted From - TRPR17199

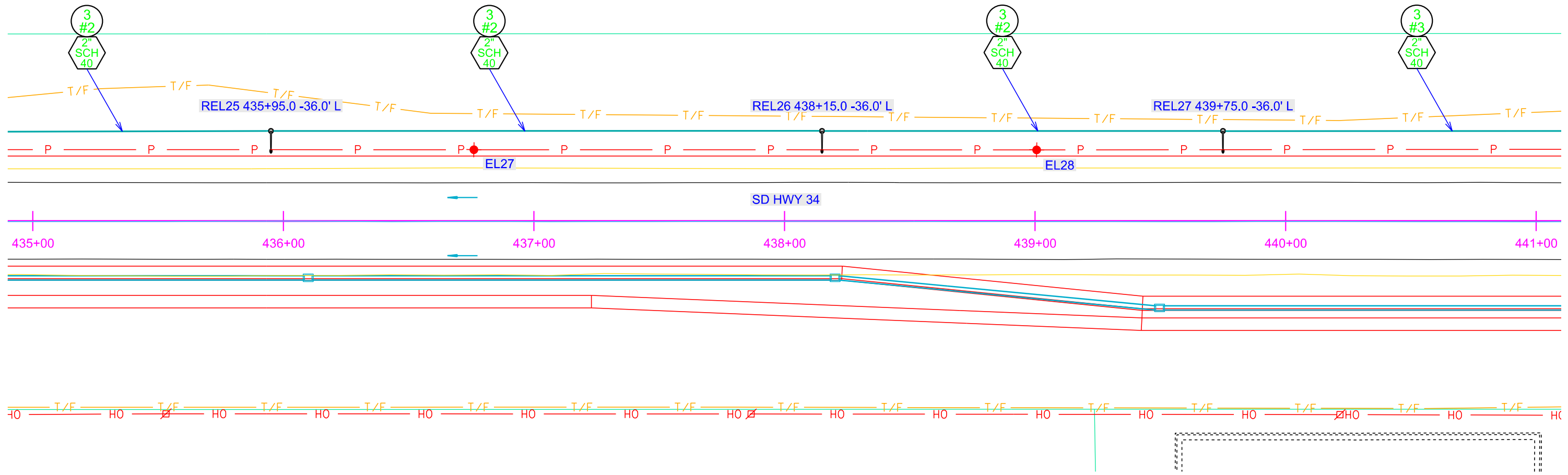
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CONDUIT LAYOUT SD HWY 34

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-CR 0034(193)402	L17	L26
Plotting Date: 09/17/2024			

Plot Scale - 1:40



Plotted From - TRPR17199

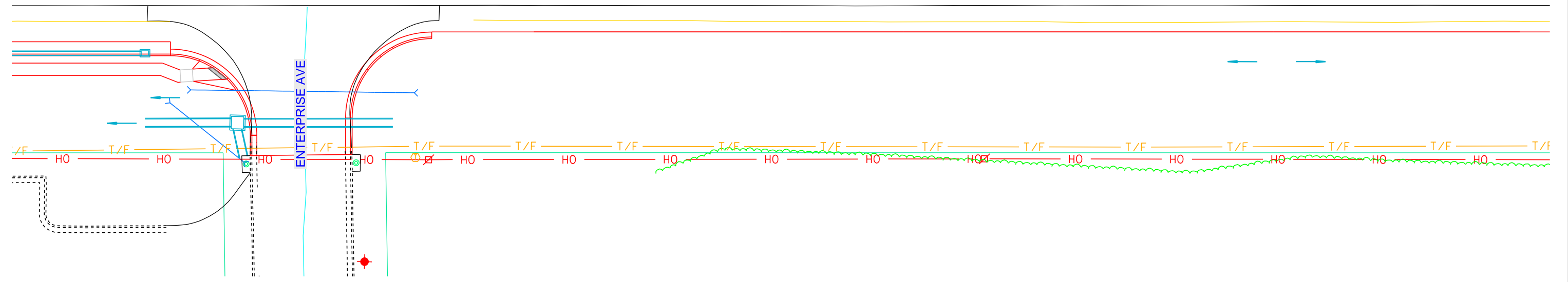
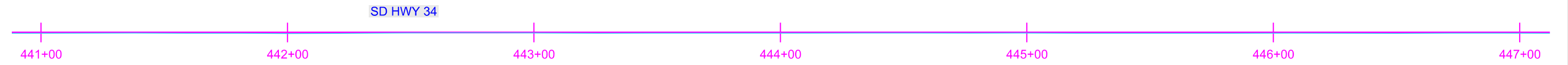
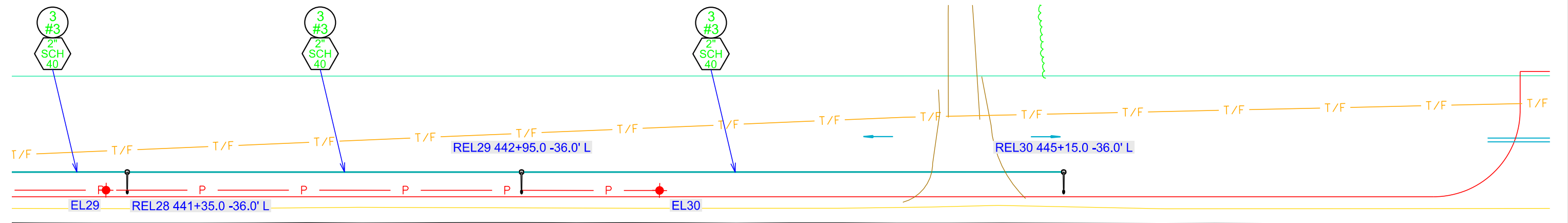
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CONDUIT LAYOUT SD HWY 34

STATE OF SOUTH DAKOTA	PROJECT NH-CR 0034(193)402	SHEET L18	TOTAL SHEETS L26
Plotting Date: 09/17/2024			



Plot Scale - 1:40



Plotted From - TRPR17199

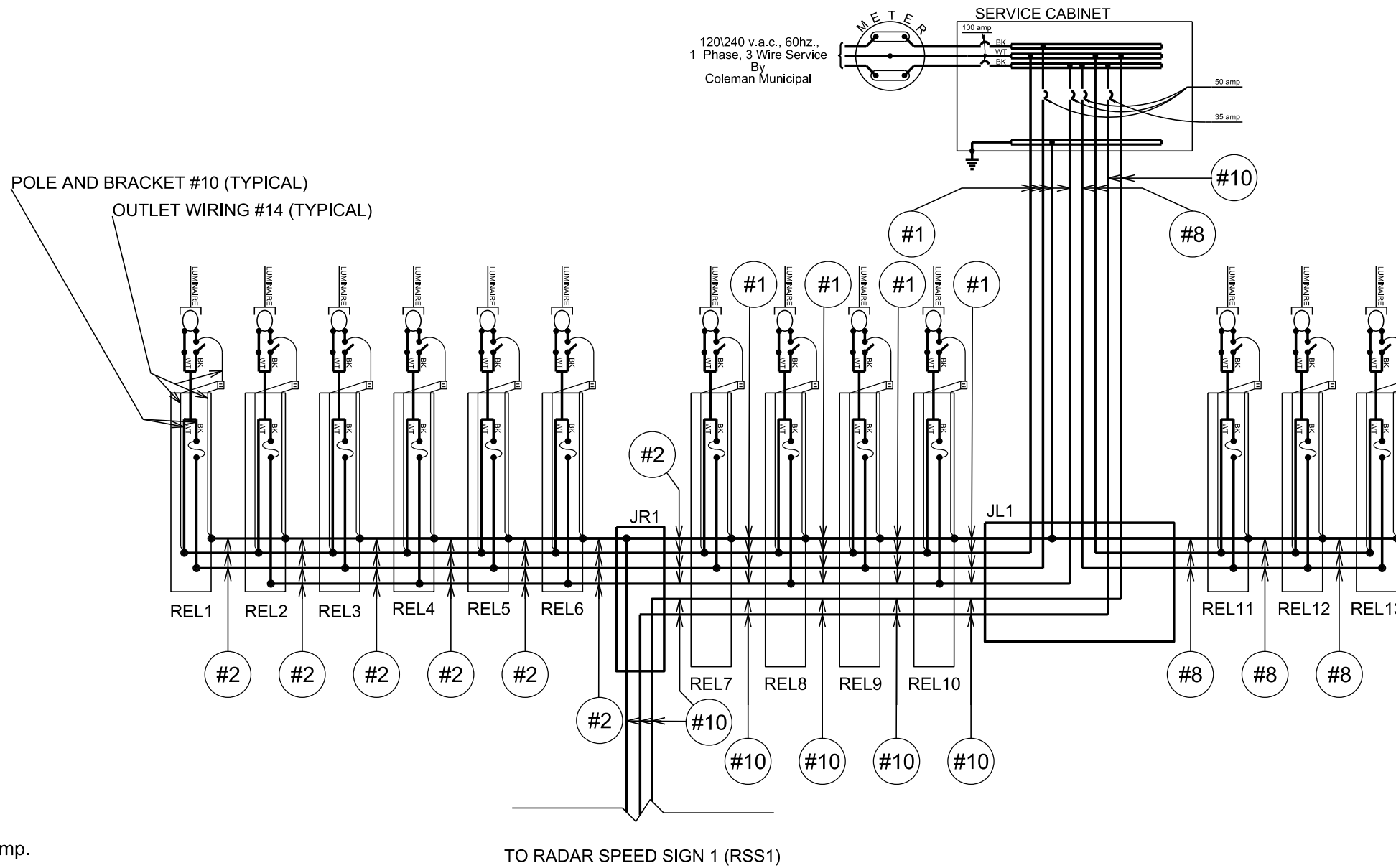
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WIRING DIAGRAM





STATE OF SOUTH DAKOTA	PROJECT NH-CR 0034(193)402	SHEET L19	TOTAL SHEETS L26
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Plotting Date: 09/17/2024

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



LEGEND:

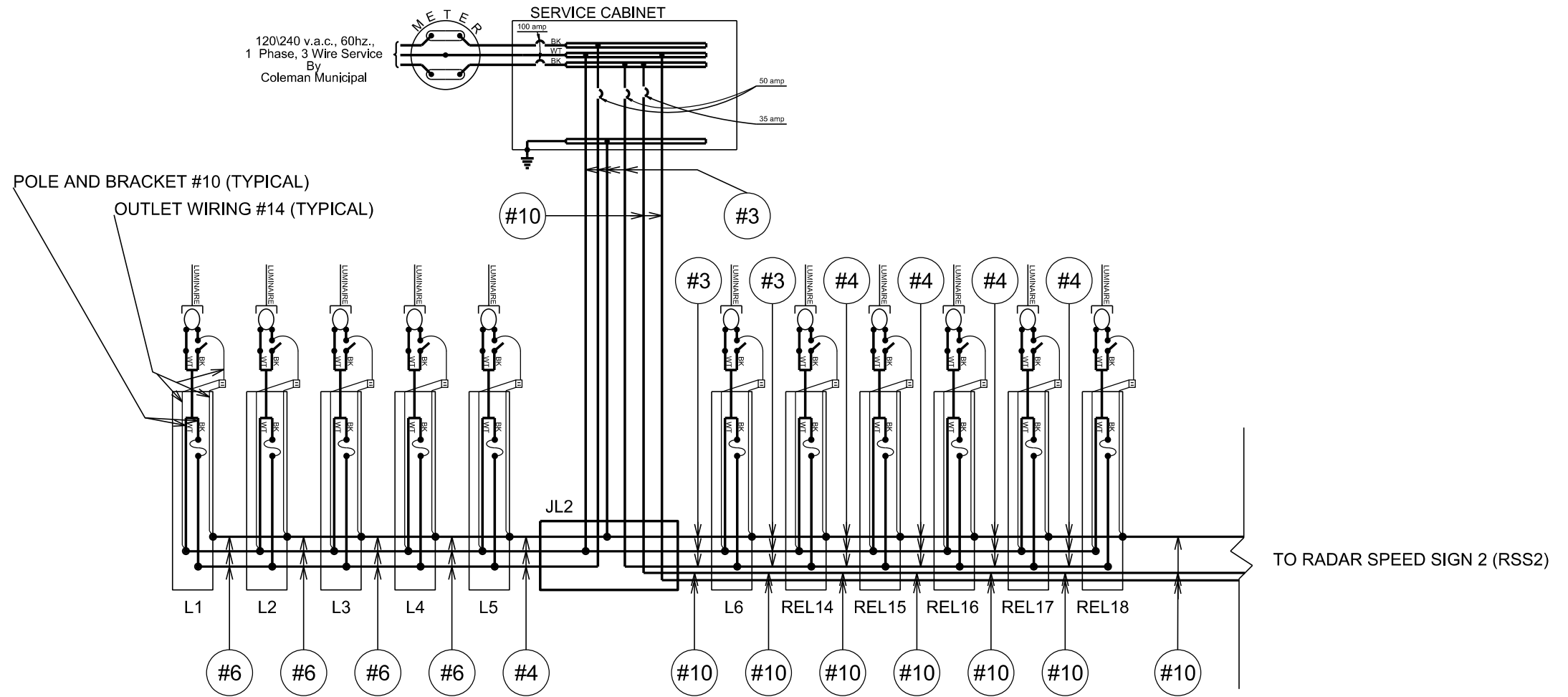
-  FUSE: 10 amp.
-  LUMINAIRE: LED
-  PHOTOCELL (TYPICAL OF ALL)
-  RECEPTACLE

WIRING DIAGRAM

STATE OF SOUTH DAKOTA	PROJECT NH-CR 0034(193)402	SHEET L20	TOTAL SHEETS L26
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Plotting Date: 09/17/2024

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



LEGEND:

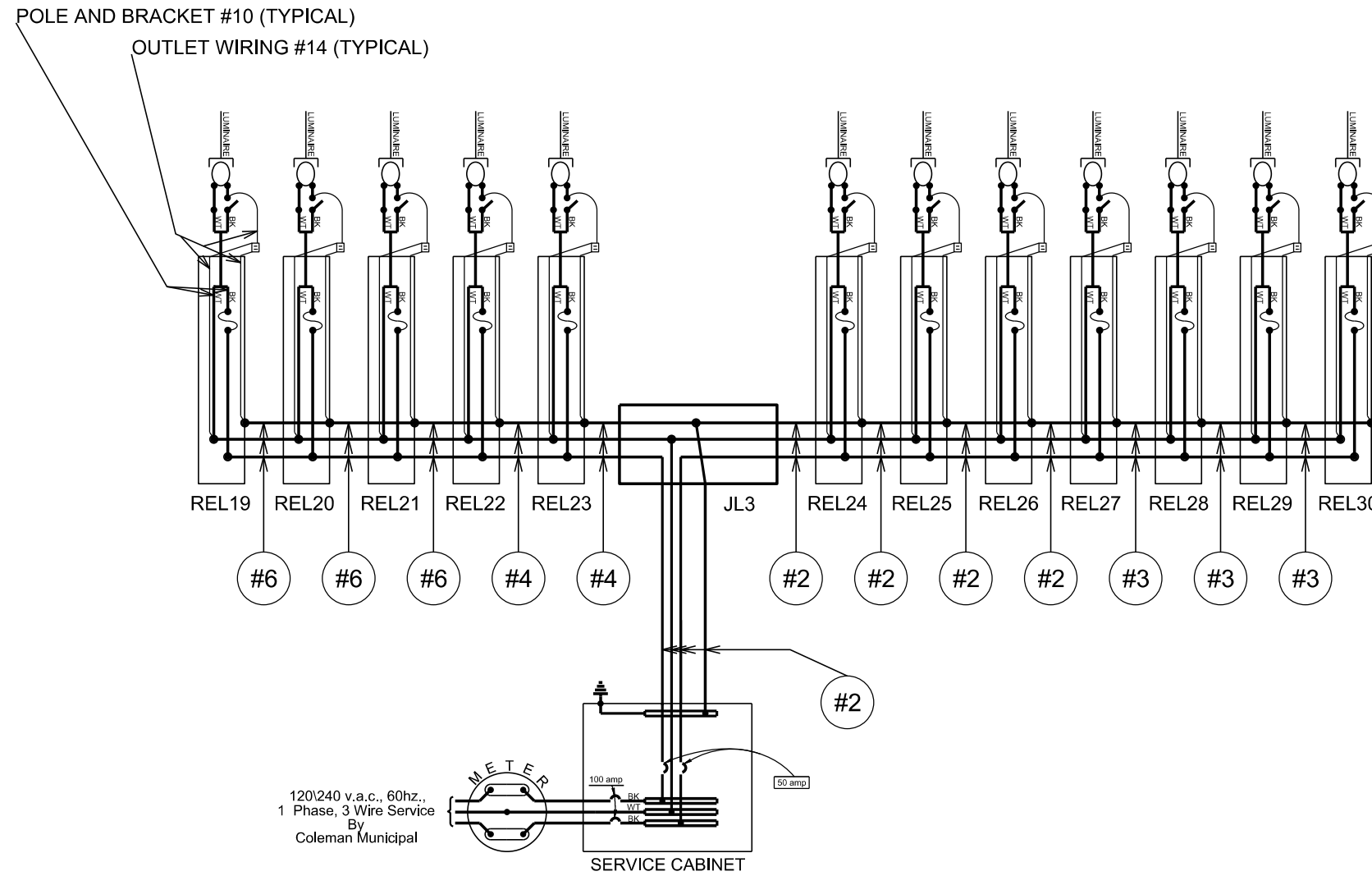
- FUSE: 10 amp.
- LUMINAIRE: LED
- PHOTOCELL (TYPICAL OF ALL)
- RECEPTACLE

WIRING DIAGRAM

STATE OF SOUTH DAKOTA	PROJECT NH-CR 0034(193)402	SHEET L21	TOTAL SHEETS L26
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Plotting Date: 09/17/2024

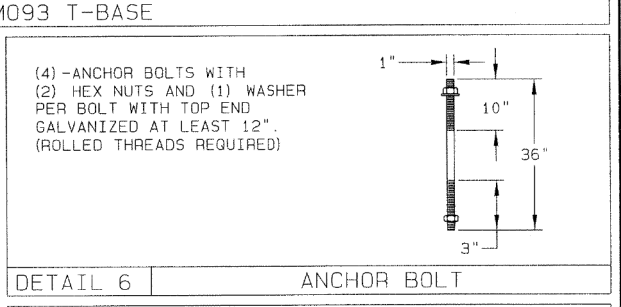
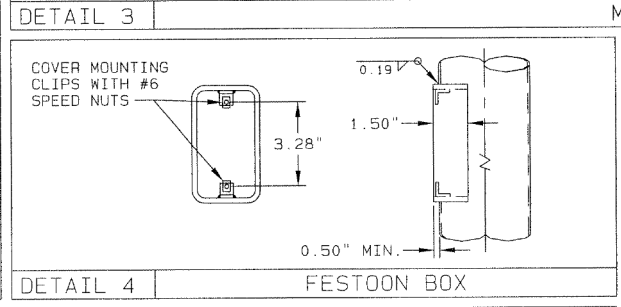
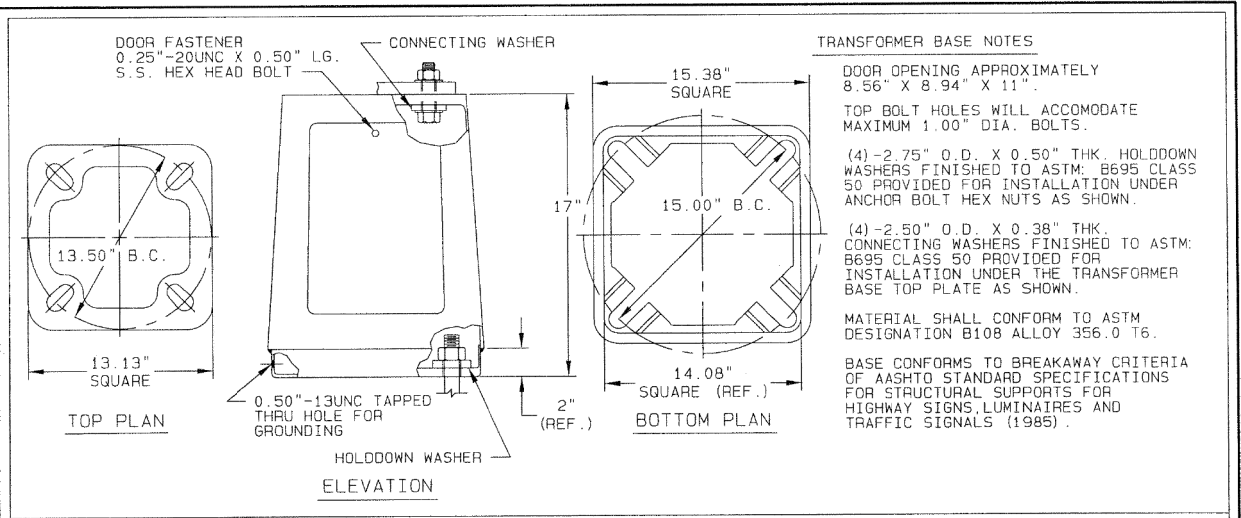
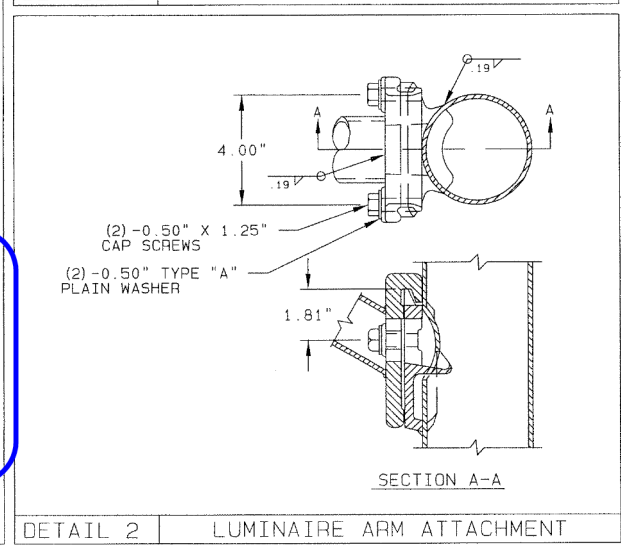
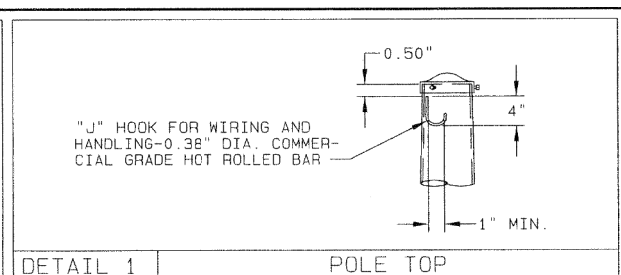
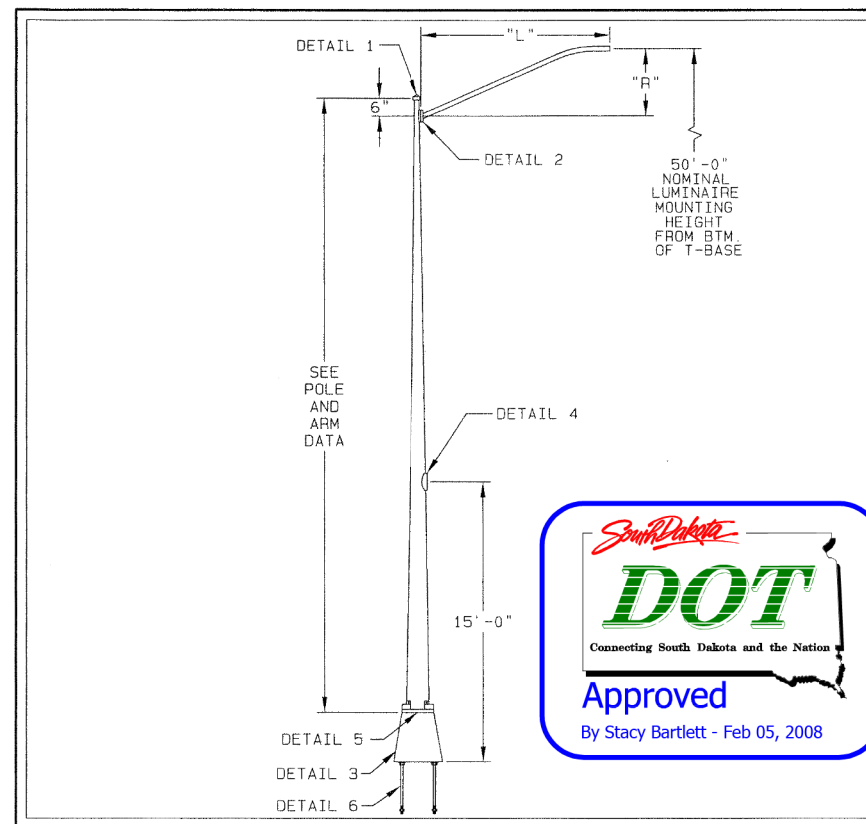
NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.



LEGEND:

- FUSE: 10 amp.
- LUMINAIRE: LED
- PHOTOCELL (TYPICAL OF ALL)
- RECEPTACLE

Plotting Date: 09/17/2024



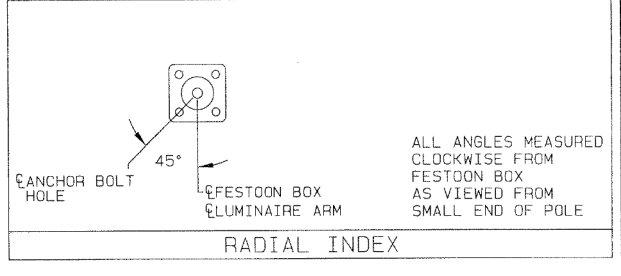
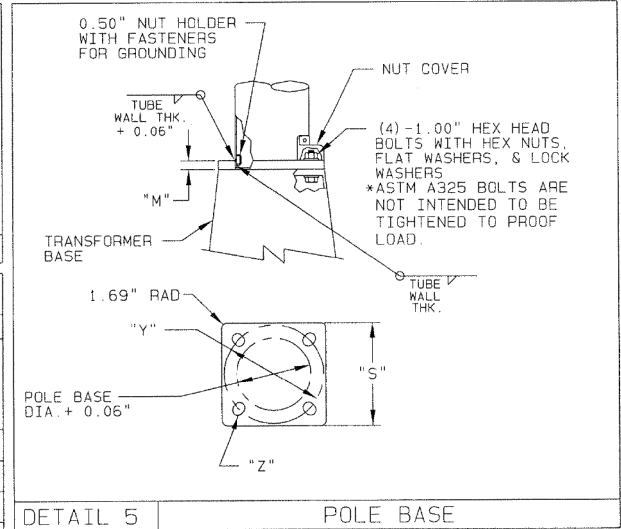
MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)	COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
POLE SHAFT	A595 GR. A	55	LUMINAIRE CONN. BOLTS	SAE GR. 5	
POLE BASE	A36	36	ANCHOR BOLTS	F1554 GR. 105	105
SIMPLEX ATTACHMENT	A27 GR. 65-35 OR A36	35	ANCHOR BOLT WASHERS	F436	
LUMINAIRE ARM PIPE	2" SCHD. 40	36	ANCHOR BOLT NUT	563 GR. DH	
GALVANIZING-STRUCTURE	A123		T-BASE CONN. BOLTS	A325*	
GALVANIZING-HARDWARE	A153				
T-BASE HOLDOWN WASHERS	A36	36			

*ASTM A325 BOLTS ARE NOT INTENDED TO BE TIGHTENED TO PROOF LOAD. LUBRICATE IN FIELD IF NECESSARY.

ALTHOUGH RARE, VIBRATIONS SEVERE ENOUGH TO CAUSE DAMAGE CAN OCCASIONALLY OCCUR IN STRUCTURES OF ALL TYPES. BECAUSE THEY ARE INFLUENCED BY MANY INTERACTING VARIABLES, VIBRATIONS ARE GENERALLY UNPREDICTABLE. THE USER'S MAINTENANCE PROGRAM SHOULD INCLUDE OBSERVATION FOR EXCESSIVE VIBRATION AND EXAMINATION FOR ANY STRUCTURAL DAMAGE OR BOLT LOOSENING. THE VALMONT WARRANTY SPECIFICALLY EXCLUDES FATIGUE FAILURE OR SIMILAR PHENOMENA RESULTING FROM INDUCED VIBRATION, HARMONIC OSCILLATION OR RESONANCE ASSOCIATED WITH MOVEMENT OF AIR CURRENTS AROUND THE PRODUCT.

VIBRATION DISCLAIMER



POLE AND LUMINAIRE ARM DATA

ITEM	QTY.	POLE TUBE				POLE BASE				ANCHOR BOLT		LUMINAIRE ARM DATA					
		BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	GAUGE OR THK. (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE/SLOT "Z" (IN)	DIA. (IN)	LENGTH (IN)	UPPER THREAD LENGTH (IN)	LOWER THREAD LENGTH (IN)	ARM SPAN "L" (FT)	RISE HEIGHT "R" (FT)	PIPE DIA. (IN)	WALL THK. (IN)
1	30	10.00	3.63	45.50	11	13.13	13.50	1.25	1.25	1.00	SEE DETAIL 6			8.00	3.50	2.38	0.154

ROADWAY LIGHTING STRUCTURES ON THIS DRAWING HAVE BEEN DESIGNED IN ACCORDANCE WITH LOADING AND ALLOWABLE STRESS REQUIREMENTS OF 2001 AASHTO "STANDARD SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS", FOURTH EDITION. WIND LOADS ARE BASED ON A BASIC WIND SPEED OF 90 MPH WITH A RECURRENCE INTERVAL OF 50 YEARS. FATIGUE DESIGN PROCEDURES ARE NOT APPLICABLE TO COMMON LOW-LEVEL LIGHTING POLES.

REV	DRAWN BY-DATE	CHECK BY-DATE	DESCRIPTION
---	MAW2 01/21/08	MAW 01/21/08	---

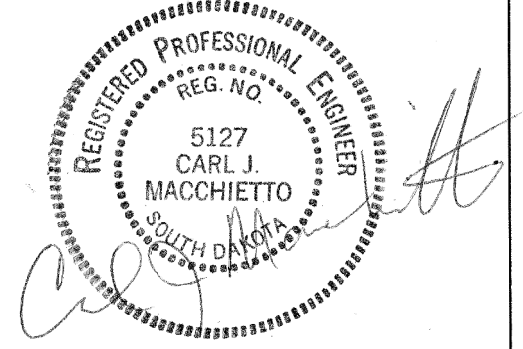
SOLD TO: CRESCENT ELECTRIC SUPPLY
SHIP TO: ACTION ELECTRIC
P.O. #: 016-620163
AGENT: R.L.MLAZGAR ASSOCIATES, INC

JOB SD DOT
PROJ #SD34-P-0034 (107) 403
TITLE LIGHTING STRUCTURES

VALMONT INDUSTRIES, INC. RESERVES THE RIGHT TO INSTALL VARIOUS ENGINEER APPROVED, MATERIAL HANGING ACCOMMODATIONS TO FACILITATE THE MANUFACTURING PROCESS.



ORDER NUMBER: 58729-P1	PAGE NUMBER: 1 OF 1
DRAWING NUMBER: SD58729P1	REV

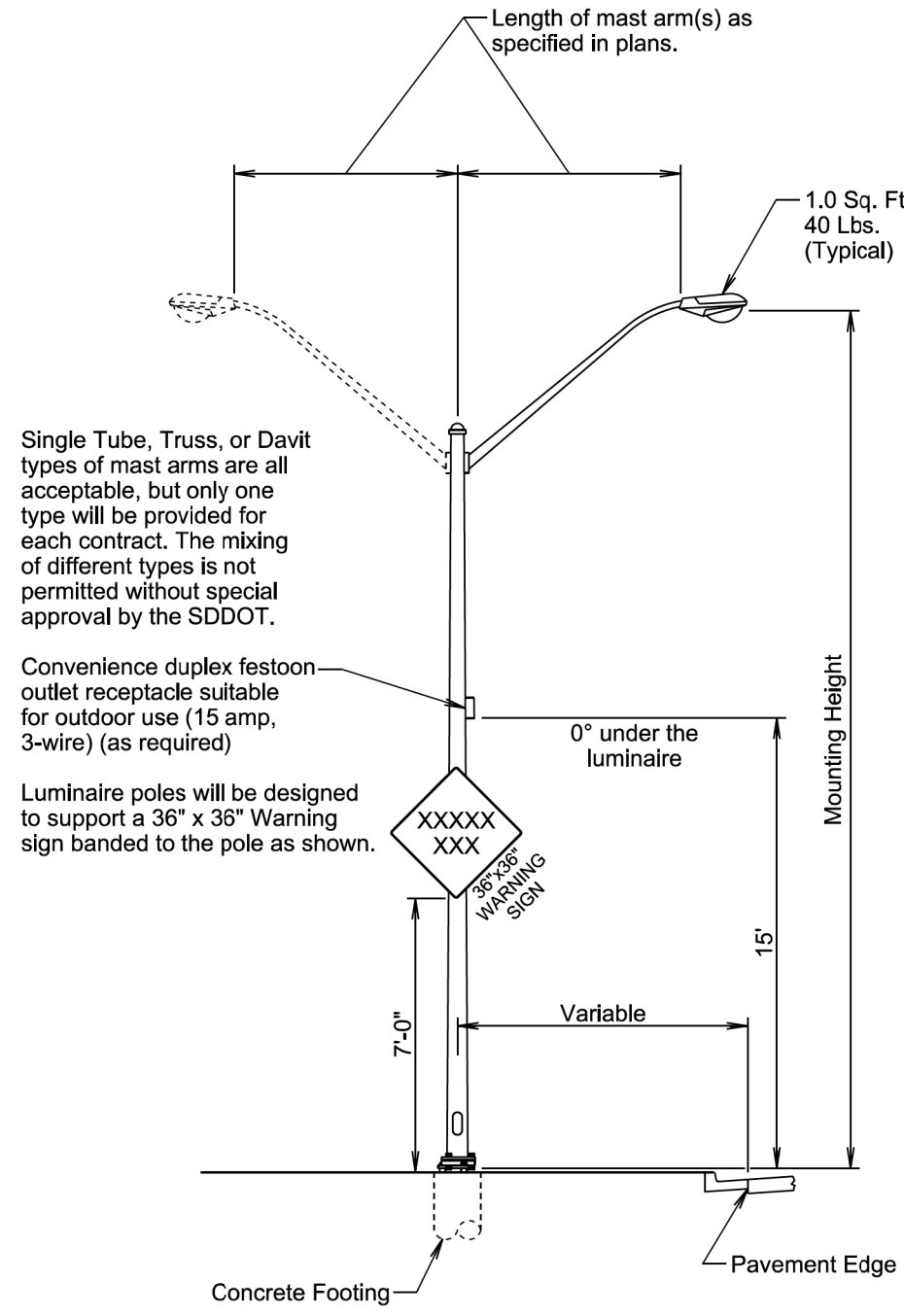


Plot Scale - 1:200

Plotted From - TRPR17199

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Plot Scale - 1:200



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

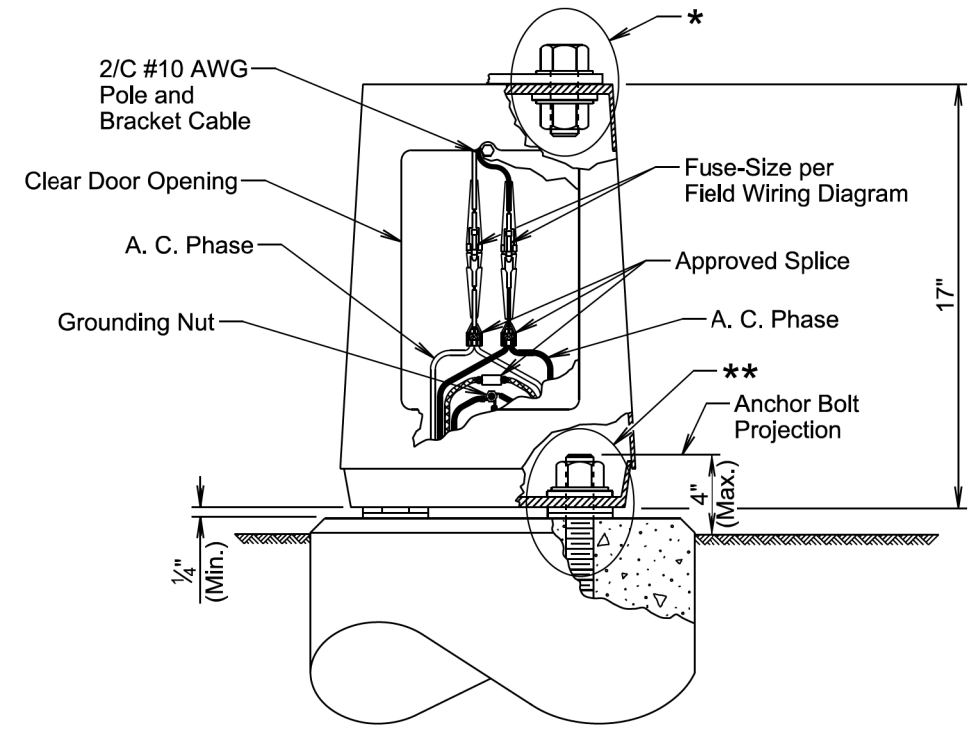
Convenience duplex festoon outlet receptacle suitable for outdoor use (15 amp, 3-wire) (as required)

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

November 19, 2022

S D D O T	STEEL ROADWAY LUMINAIRE POLE WITH MAST ARM(S)	PLATE NUMBER 635.01
		Sheet 1 of 1

Published Date: 2025



GENERAL NOTES:

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

Fused connectors will be breakaway type.

* Hardware connecting the pole to the base will be installed in accordance with the manufacturer's recommendation.

** Hardware connecting the base to the footing will be installed in accordance with the manufacturer's recommendation. The Contractor will install leveling devices in accordance with the manufacturer's recommendation if shimming is necessary to install the light poles plumb and level. The washers and shims will be installed around the anchor bolts.

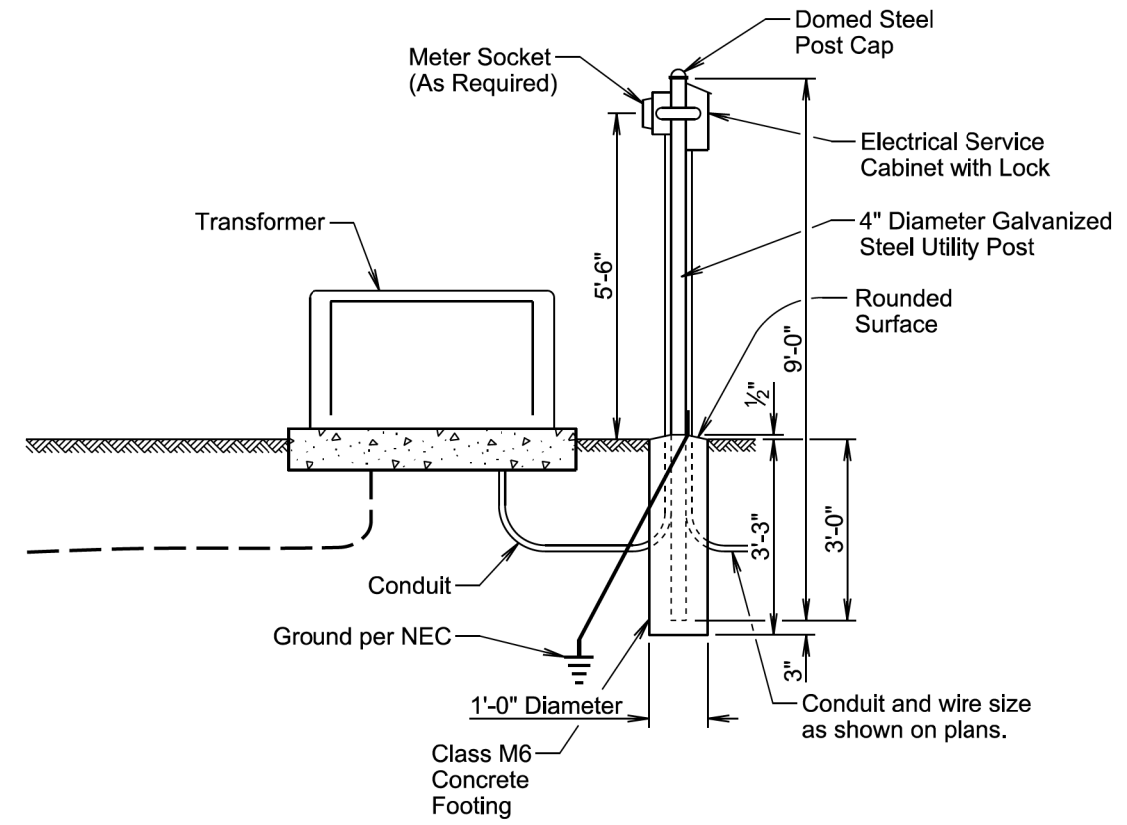
November 19, 2022

S D D O T	ROADWAY LUMINAIRE POLE BREAKAWAY TRANSFORMER BASE	PLATE NUMBER 635.21
		Sheet 1 of 1

Published Date: 2025

Plotted From: TRPR17199

File: ...imody0609\StdPlateSectionL.dgn



ELEVATION VIEW

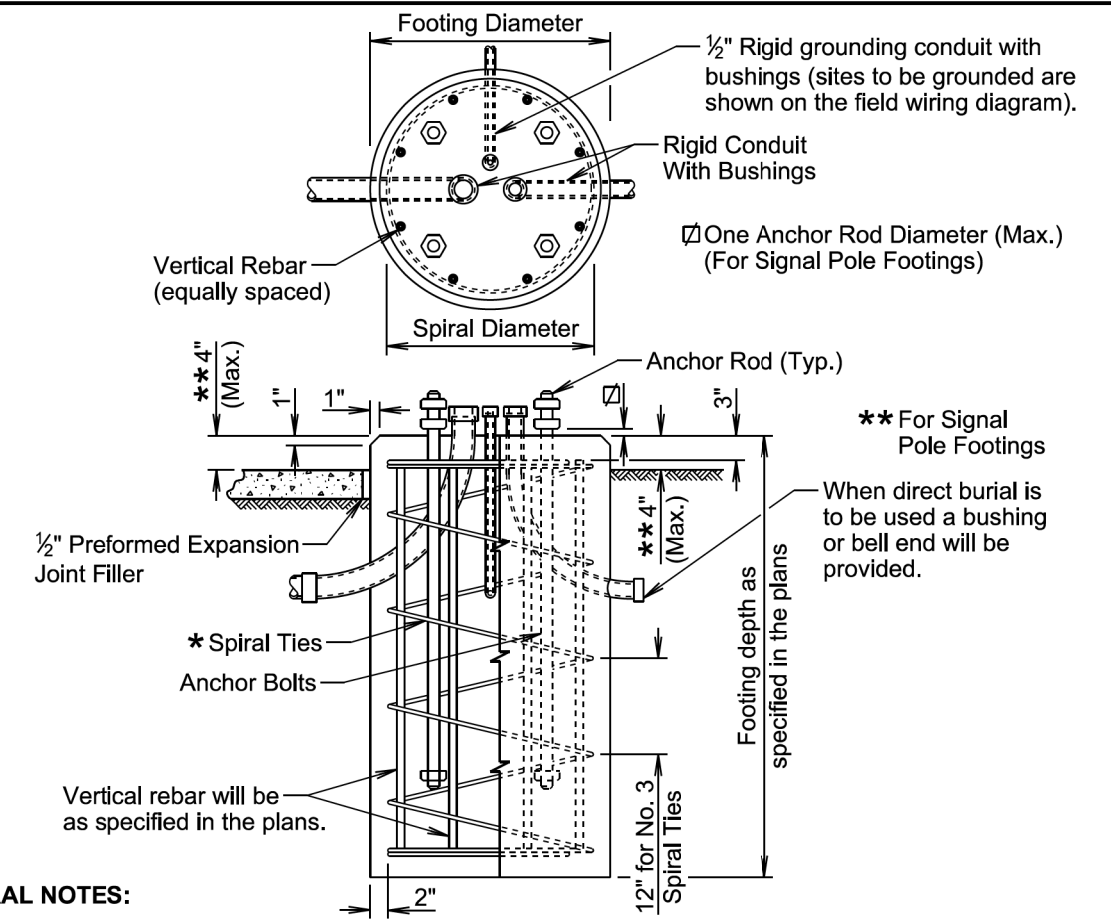
GENERAL NOTES:

- The concrete for the post footing will be class M6 concrete.
- The 4" diameter galvanized steel utility post will be 9' long and will be in conformance with AASHTO Standard Specifications M181. The post will be Type 1 and either Grade 1 or Grade 2. The domed steel post cap will be in conformance with AASHTO Standard Specifications M181 and will be Type 1.
- The Contractor will 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, lockable enclosure with receptacle outlet, lock and keys, post, concrete footing, post cap, meter socket if required, conduit, and incidentals will be incidental to the contract unit price per each for "Electrical Service Cabinet".

March 31, 2024

S D D O T	SERVICE FROM PAD MOUNTED TRANSFORMER WITH METER ON A GALVANIZED STEEL UTILITY POST	PLATE NUMBER 635.41
		Sheet 1 of 1

Published Date: 2025



GENERAL NOTES:

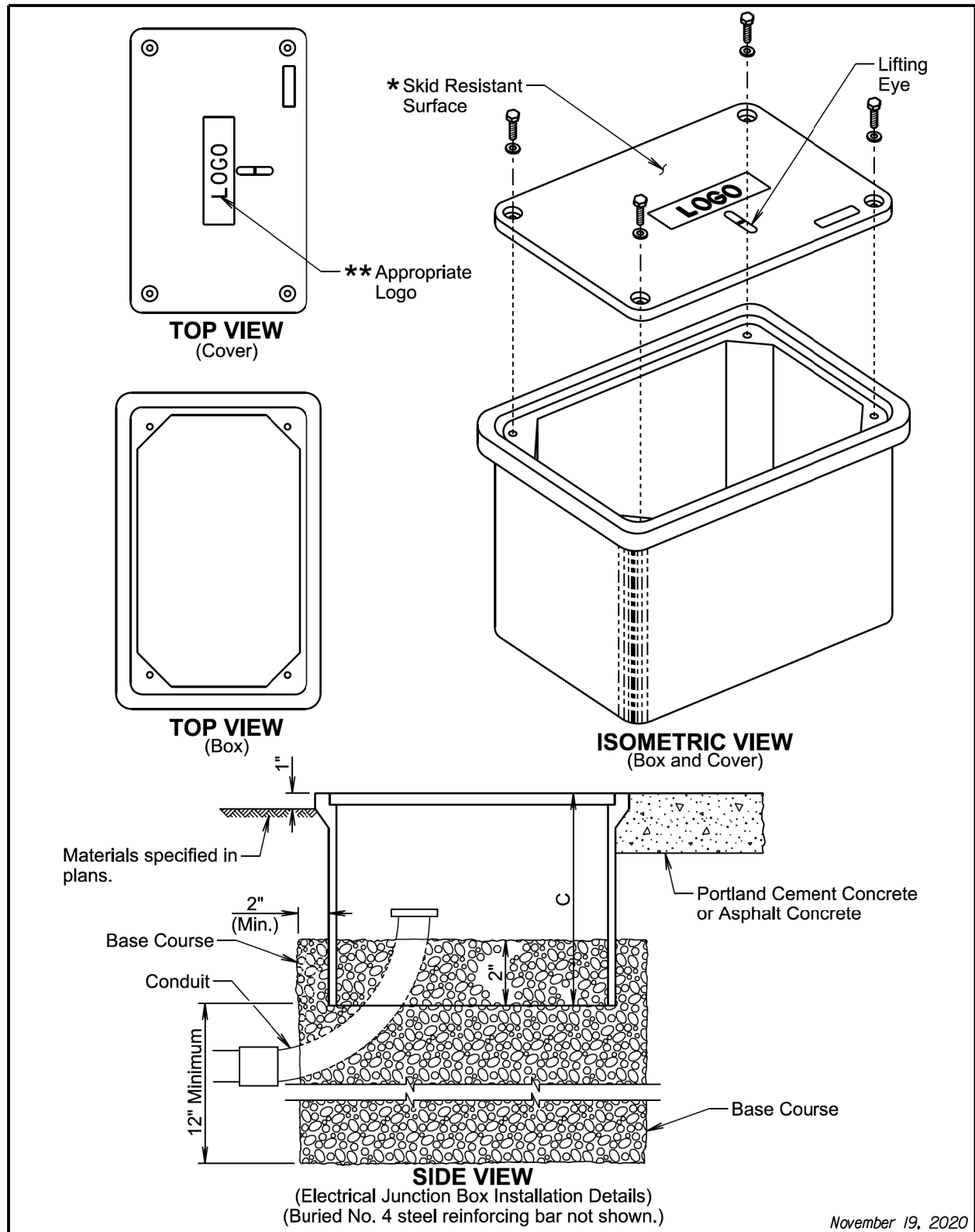
- * Circular ties may be used in lieu of the spiral ties. The No. 3 ties will be spaced 12 inches apart except for the top two which will be spaced 6 inches apart. The ties will be lapped 18 inches and the laps will be staggered around the cage.
- Spiral ties will have 1-1/2 extra turns at each end.
- See Section 985 of the Specifications for footing materials.
- Conduits and bushings may project 2 1/2 inches to 6 inches above footing for fixed base poles but will not project above the slip plane or fracture plane for breakaway poles.
- Conduits will be sealed water-tight during all phases of construction until poles are in place.
- The anchor rods will fit inside the reinforcing steel cage. If the anchor rods designed by the Pole Manufacturer do not fit, contact the Office of Bridge Design for footing redesign. No additional payment will be made for the redesigned footing.
- Costs of conduit and conduit bushings shown on footing detail will be incidental to the footing bid item(s).
- The pole will not be installed until the concrete has attained design strength (4000 psi).
- The contour of the area surrounding the breakaway pole will 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.

November 19, 2022

S D D O T	POLE FOOTING	PLATE NUMBER 635.55
		Sheet 1 of 1

Published Date: 2025

Plot Scale - 1:200



S D D O T	ELECTRICAL JUNCTION BOXES TYPE 1 THROUGH TYPE 4	PLATE NUMBER 635.65
		Sheet 1 of 2

Published Date: 2025

ELECTRICAL JUNCTION BOX			
TYPE	DESCRIPTION	APPROXIMATE COVER SIZE	MINIMUM DEPTH (C)
1	Open Bottom with Gasket	11"x18"	18"
2	Open Bottom with Gasket	13"x24"	18"
3	Open Bottom with Gasket	17"x30"	18"
3A	Open Bottom with Gasket	24"x36"***	24"
4	Open Bottom with Gasket	30"x48"***	24"

GENERAL NOTES:

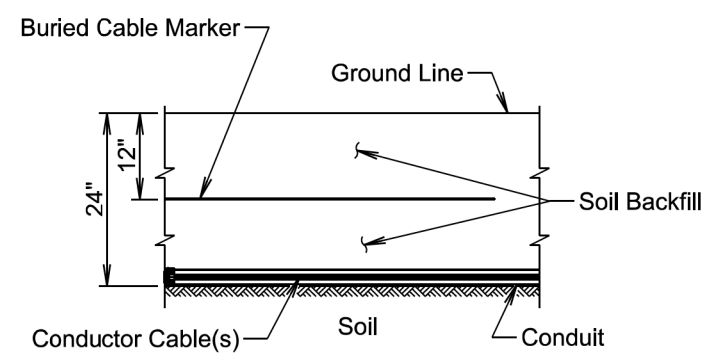
- The cover will be gasketed with a minimum of two stainless steel bolts and washers.
 - The cover will have a lifting eye.
 - ** The surface of the cover will have a minimum wet and dry coefficient of friction value of 0.5 as determined by ASTM F609.
 - *** The cover of the junction box will have the appropriate logo in one inch size letters and will be recessed. When the junction box contains cables or wires for a traffic signal then the logo will be "Signal". When the junction box contains lighting conductors then the logo will be "Lighting".
 - *** Two piece covers will be used for Type 3A and Type 4 junction boxes.
- The electrical junction boxes will 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 electrical junction boxes and covers will be Tier 22 of ANSI/SCTE 77 2007.
- The electrical junction boxes will be UL listed.
- For junction boxes located outside of pavement, a No. 4 steel reinforcing bar with a minimum length of 18" will be buried adjacent to the long side of the junction box. All costs associated with furnishing and placing the steel reinforcing bar will be incidental to the contract unit price per each for "Type _ Electrical Junction Box".

S D D O T	ELECTRICAL JUNCTION BOXES TYPE 1 THROUGH TYPE 4	PLATE NUMBER 635.65
		Sheet 2 of 2

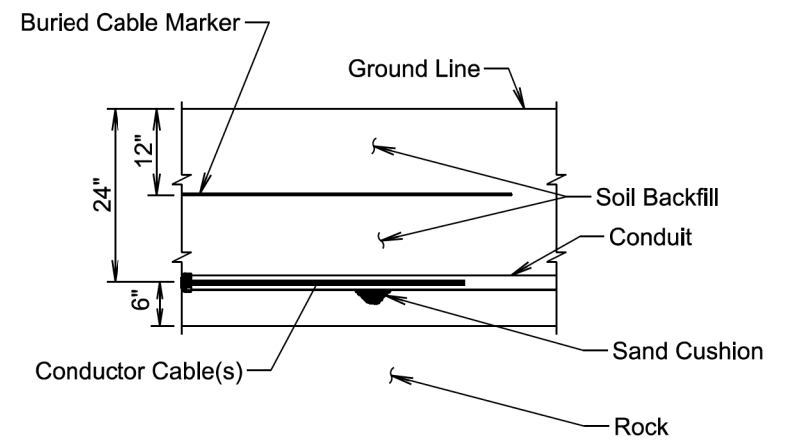
Published Date: 2025

Plotted From - TRPR17199

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SECTION VIEW



SECTION VIEW

GENERAL NOTE:

The Buried Cable Marker will be plastic, approximately 6" wide, and will be capable of sustaining a minimum of a 350% tolerance of elongation without tearing. The Buried Cable Marker will 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 will be printed in a contrasting color on the cable marker. The Buried Cable Marker will be subject to approval by the Engineer. All costs associated with furnishing and installing the Buried Cable Marker will be incidental to the contract unit price per foot for the bid item used for the electrical conductor.

November 19, 2022

<i>Published Date: 2025</i>	S D D O T	CONDUIT INSTALLATION	PLATE NUMBER 635.76
			Sheet 1 of 1