

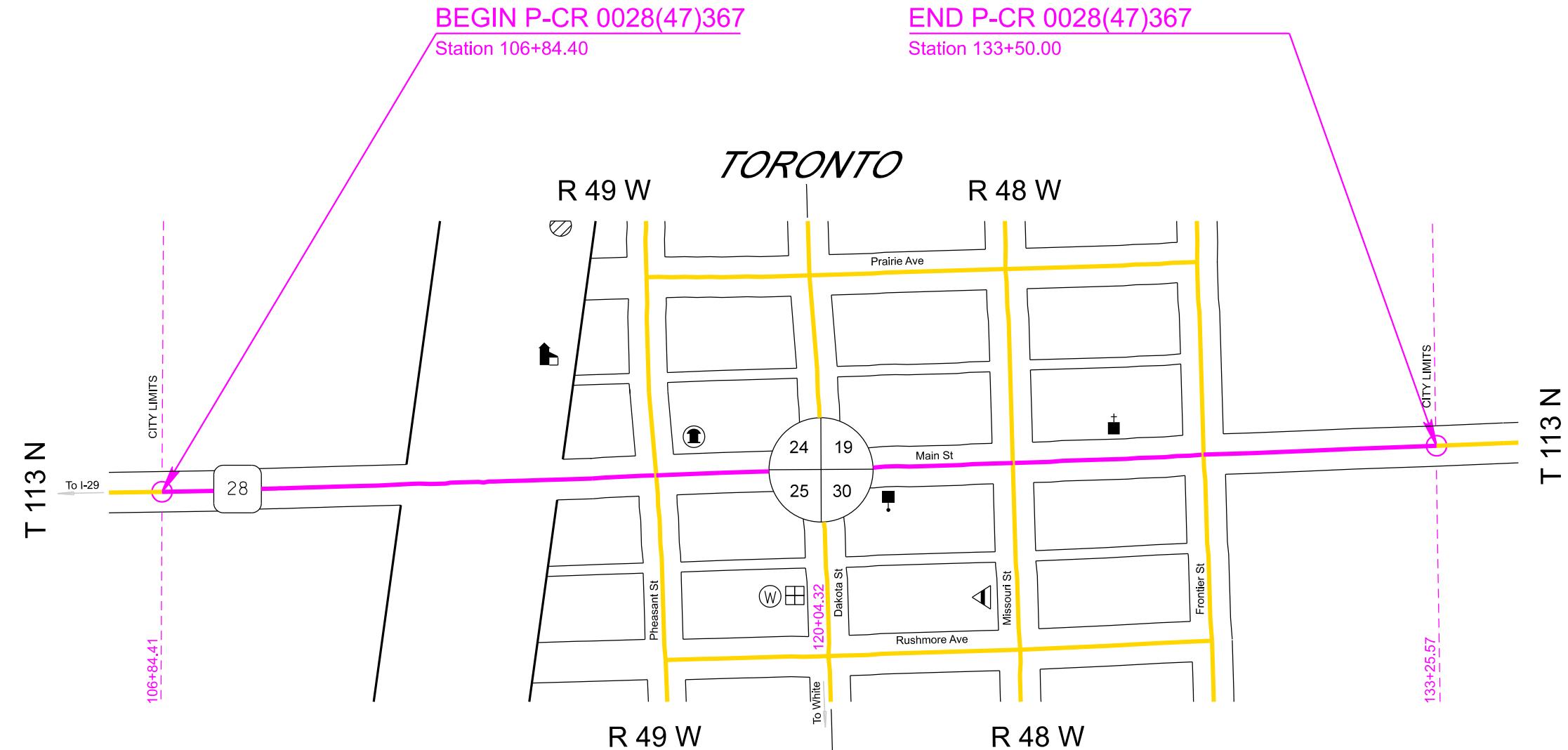
# SECTION L: LIGHTING PLANS

STATE OF SOUTH DAKOTA	PROJECT P-CR 0028(47)367	HEET L1	TOTAL SHEETS L13
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Plotting Date: 9/9/2025

## INDEX OF SHEETS

L1	General Layout with Index
L2	Estimate with General Notes & Tables
L3	Conduit and Cable Quantities
L4-L8	Conduit Layouts
L9	Wiring Diagram
L10-L13	Standard Plates



## SECTION L ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E7150	Remove Sign for Reset	2	Each
632E3500	Reset Sign	2	Each
635E0050	Breakaway Base Luminaire Pole with Arm, 50' Mounting Height	11	Each
635E3700	Roadway Luminaire, LED with Photoelectric Cell	11	Each
635E5025	2.5' Diameter Footing	99.0	Ft
635E5301	Type 1 Electrical Junction Box	5	Each
635E5400	Electrical Service Cabinet	1	Each
635E8120	2" Rigid Conduit, Schedule 40	1,690	Ft
635E8130	3" Rigid Conduit, Schedule 40	170	Ft
635E8220	2" Rigid Conduit, Schedule 80	640	Ft
635E8230	3" Rigid Conduit, Schedule 80	65	Ft
635E9012	1/C #2 AWG Copper Wire	2,485	Ft
635E9014	1/C #4 AWG Copper Wire	6,215	Ft
635E9016	1/C #6 AWG Copper Wire	2,410	Ft
635E9020	1/C #10 AWG Copper Wire	100	Ft
635E9024	1/C #14 AWG Copper Wire	1,155	Ft
635E9710	2/C #10 AWG Copper Pole and Bracket Cable	770	Ft

## SPECIFICATIONS

Standard Specifications for Roads and Bridges, 10-1-25 Version, Required Provisions, and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges are available for download and viewing at <https://dot.sd.gov/doing-business/contractors/standard-specifications>.

## SUPPLYING AS BUILT PLANS

If the roadway lighting system is 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  
Evelyn.Dalldorf@state.sd.us

## REMOVAL OF UTILITY OWNED LUMINAIRE POLES

The existing luminaire poles EL1-EL17 are owned by Ottertail Power Company. The Contractor will contact Otter Tail Power at least two weeks prior to needing luminaire poles EL1-EL17 removed. The contact for Otter Tail Power is Joe Dold at (218) 770-5877, jdold@otpco.com.

All costs associated with coordinating with Otter Tail Power to remove the existing luminaire poles EL1-EL17 will be incidental to the contract unit price per each for "Electrical Service Cabinet."

## LUMINAIRE POLES

Luminaire poles L1-L11 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 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 holiday decorations that weigh 30-lbs and are 6 feet x 6 feet. The bottom of the decorations will be 15 feet from the top of the footing.

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.

## LUMINAIRES

The lighting design for luminaire poles L1-L11 used the following parameters to provide 1.1 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:	5 ft
Lamp Loss Factor (LLF):	0.8
Width of Lighted Area:	54 ft
Luminaire Cycle Length:	450 ft
Configuration:	Staggered
Mounting Height:	50 ft
Arm Length	8 ft

The following luminaires, or an approved equal, will be used for this project:

a.) Cooper: ARCH-L-PA3-220-740-U-T2R-AP-PSC-PR7-LLPC  
b.) American Electric Lighting: ATB2-P602-MVOLT-R2-P7-PCLL

## TABLE OF FOOTING DATA

Site Designation	Footing Diameter	* Footing Depth	**Spiral Diameter	**Spiral Length	Vertical Reinforcement
L1-L11	2' - 6"	9' - 0"	1' - 8"	54' - 9"	8-#7 x 7' - 6"

\* Footing depth will be below ground level.

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

## SUBSURFACE

Soils along the project corridor primarily consist of approximately 4 feet of silt clay overlying sandy clay.

Groundwater was encountered at a depth of 5.5 feet below existing roadway elevation during the soils investigation conducted in July 2022.

Groundwater and caving soils are likely to be encountered during the installation of the cylindrical footings. Concrete placement operations should immediately follow excavation procedures. The longer the excavations are left open, the more likely caving will occur. If caving soils are encountered, it may be necessary to use casing or drilling fluids to maintain an open excavation. Casing will be of sufficient strength to withstand handling and installation procedures. Casing material may consist of Sonotube, corrugated metal pipe, PVC, smooth metal pipe or any other material as approved by the Engineer. Drilling fluids can be water or other slurries as approved by the Engineer. Concrete placed through drilling fluids will be tremied.

## ELECTRICAL SERVICE CABINET

An externally mounted receptacle and accompanying enclosure will not be required at electrical service cabinets.

The Contractor will be responsible for coordinating the installation of the electrical services and connection to the electrical service. The Contractor will contact the utility company at least 2 weeks prior to needing the electrical service installed. The contact for Otter Tail Power is Joe Dold at (218) 770-5877, jdold@otpco.com.

All cost for contacting the utility company and coordinating the electrical service installations and all hookup fees will be incidental to the contract unit price per each for "Electrical Service Cabinet."

## 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.

## RADAR SPEED FEEDBACK SIGN (RSFS)

The RSFS mounted on existing luminaire pole EL1 will be removed and reinstalled on new luminaire pole L3.

The RSFS mounted on existing luminaire pole EL17 will be removed and reinstalled on new luminaire pole L11.

Removal of the existing RSFS and all needed components to make the reinstalled signs operational will be incidental to the contract unit price per each for "Remove Sign for Reset".

Installation of the existing signs to the new luminaire poles and making them fully operational will be incidental to the contract unit price per each for "Reset Sign".

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

# CONDUIT AND CABLE QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-CR 0028(47)367	L3	L13

Revised 12/30/2025 - RR

Plot Scale - 1:200

Location to Location	Rigid Conduit				Copper Wire					Pole and Bracket Cable				
	Sch 40	Sch 80	Sch 40	Sch 80	3"	3"	2"	2"	1/C	1/C	1/C	1/C	1/C	2/C
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	#2 AWG	#4 AWG	#6 AWG	#10 AWG	#14 AWG	#10 AWG
<b>Lighting</b>														
Elec. Service, M1	JL3	20							85	85				
JL3	JL2	125							515	515				
JL2	JL1	25	65						375	375				
JL1	L5		20		65				350					
L5	L4		185						765					
L3	L4		170	80		1,030								
L3	L2		155	90			1,010							
L2	L1		155	75			715							
JL1	L6		140			580								
L6	L7		160	65		930								
L7	JL4			80		330								
JL4	L8		250			1,030								
L8	L9		110	55		680								
L9	JL5		255			1,055								
JL5	L10			70			220							
JL5	L11		90	60			465							
<b>Radar Speed Feedback Signs</b>														
Radar Speed Sign 1	Mounted on pole L3						50							
Radar Speed Sign 2	Mounted on pole L11						50							
<b>Luminaire Poles</b>														
L1							105	70						
L2							105	70						
L3							105	70						
L4							105	70						
L5							105	70						
L6							105	70						
L7							105	70						
L8							105	70						
L9							105	70						
L10							105	70						
L11							105	70						
<b>Subtotal:</b>														
	170	65	1,690	640	2,485	6,215	2,410	100	1,155	770				

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# CONDUIT LAYOUT

## SD HWY 28

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-CR 0028(47)367	L4	L13

Revised 12/30/2025 - RR

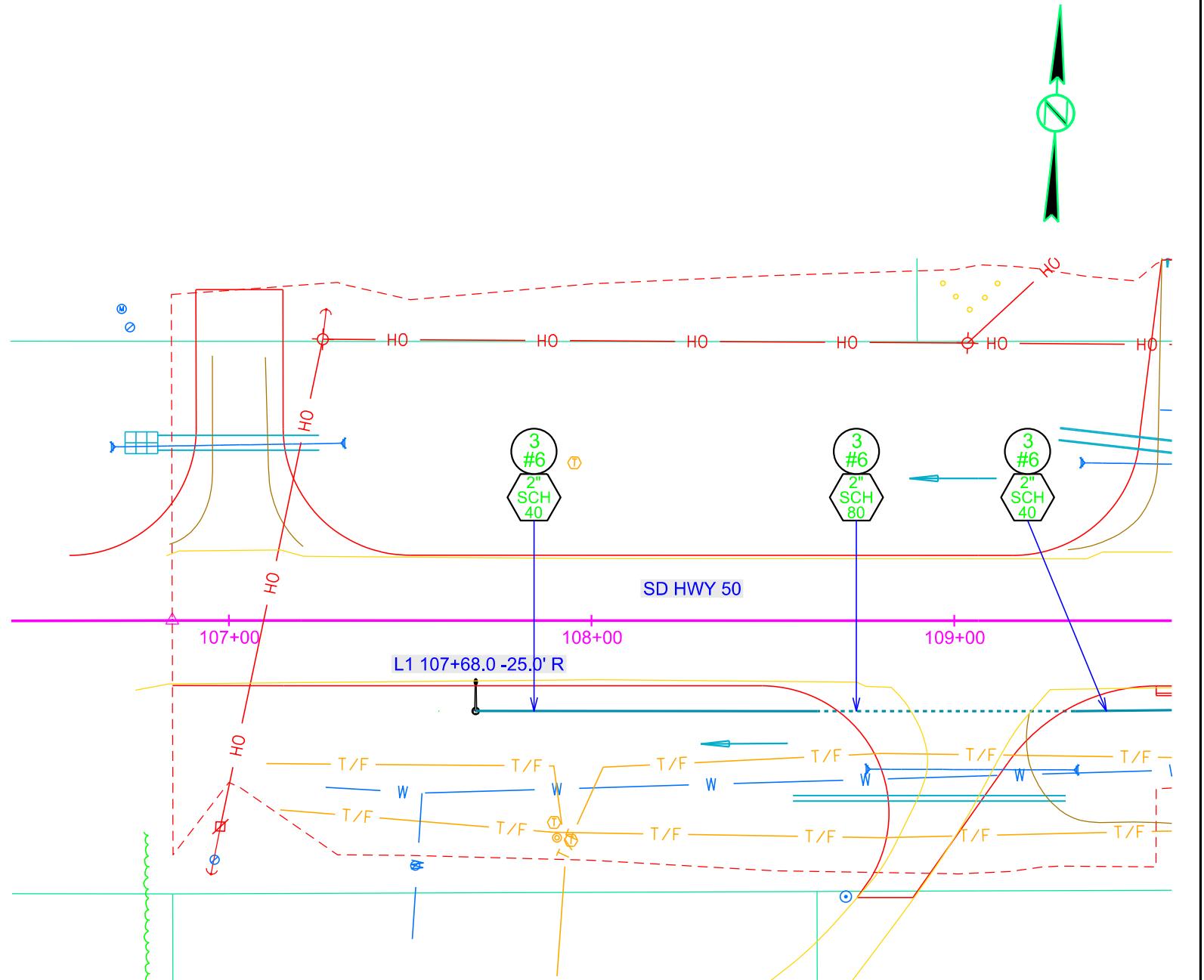
P-CR 0028(47)367

SHEET	TOTAL SHEETS
L4	L13

Plot Scale - 1:40

## ESTIMATE OF QUANTITIES

ESTIMATE OF QUANTITIES			
KEY	ITEM	EST QUANT	UNIT
●	Remove Existing Luminaires Pole (EL1-EL17) Not a Bid Item	17	EACH
—	Breakaway Base Luminaire Pole w/8' Arm 50' Mounting Height (L1-L11)	11	EACH
●	Roadway Luminaire, LED with Photoelectric Cell (L1-L11)	11	EACH
□	2.5' Diameter Footing (L1-L11)	99	FT
□	Type 1 Electrical Junction Box (JL1-JL5)	5	EACH
▲	Electrical Service Cabinet (M1)	1	EACH
∅	Galvanized Steel Utility Pole Not a Bid Item	1	EACH
M	Meter Socket Not a Bid Item	1	EACH
2" SCH 40	2" Rigid Conduit, Schedule 40	1690	FT
3" SCH 40	3" Rigid Conduit, Schedule 40	170	FT
2" SCH 80	2" Rigid Conduit, Schedule 80	640	FT
3" SCH 80	3" Rigid Conduit, Schedule 80	65	FT
#2	1/C #2 AWG Copper Wire	2485	FT
#4	1/C #4 AWG Copper Wire	6215	FT
#6	1/C #6 AWG Copper Wire	2410	FT
	1/C #10 AWG Copper Wire	100	FT
	1C #14 AWG Copper Wire	1,155	FT
	2/C #10 AWG Copper Pole & Bracket Cable	770	FT



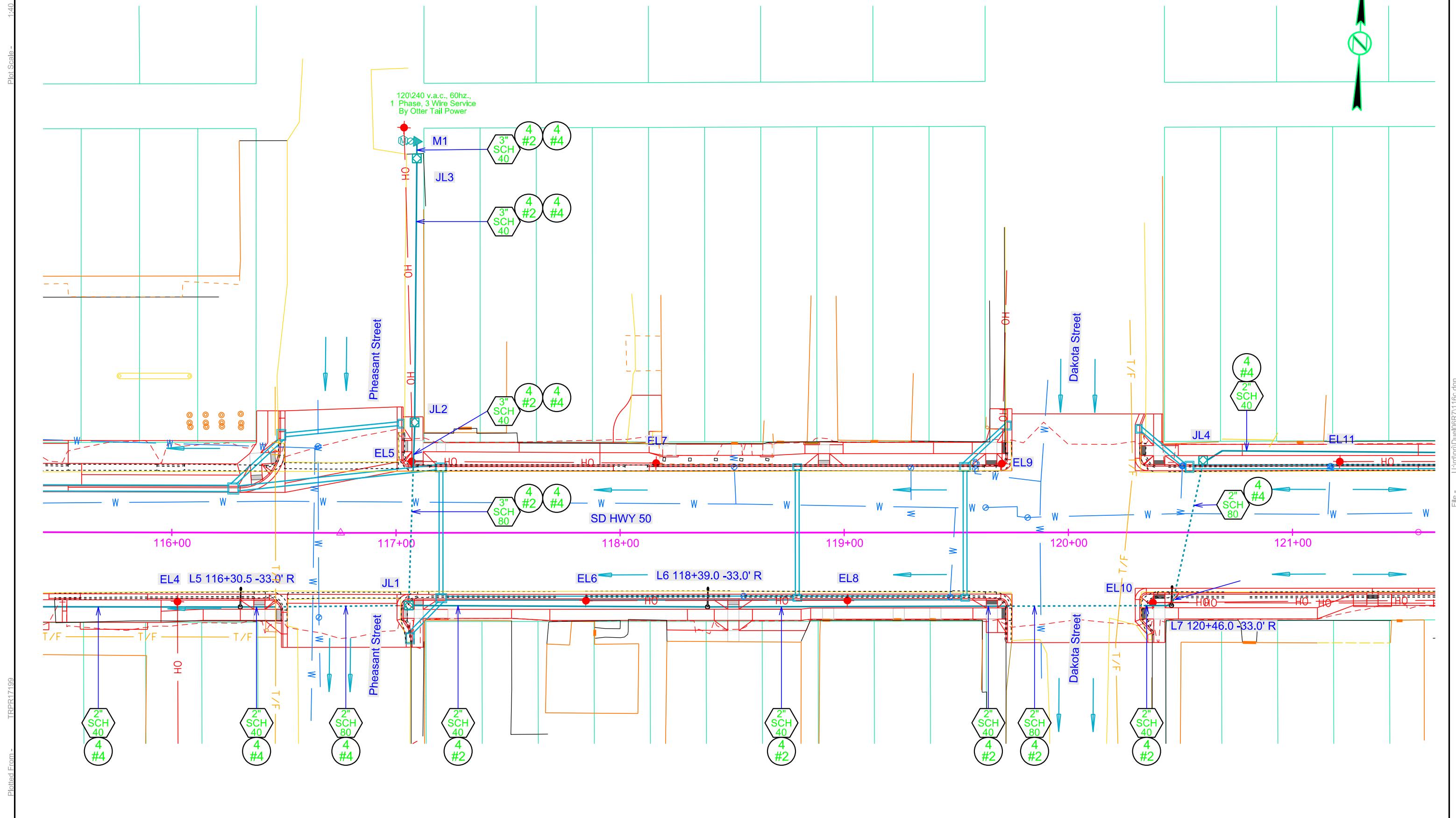


# CONDUIT LAYOUT

## SD HWY 28

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-CR 0028(47)367	L6	L13

Revised 12/30/2025 - RR

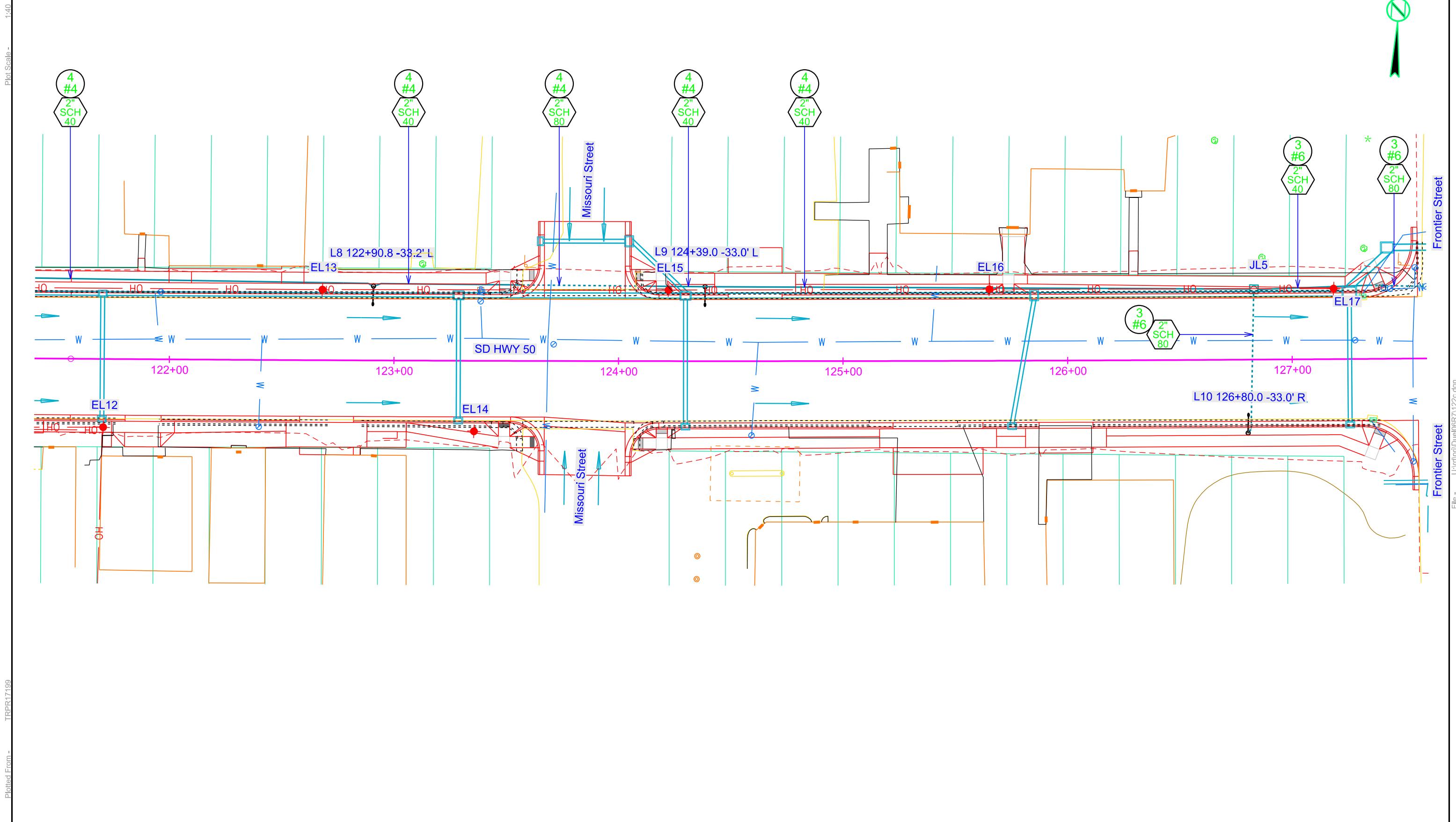


# CONDUIT LAYOUT

## SD HWY 28

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-CR 0028(47)367	L7	

Revised 12/30/2025 - RR



# CONDUIT LAYOUT SD HWY 28

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-CR 0028(47)367	L8	L13

Revised 12/30/2025 - RR

P-CR 0028(47)367

SHEET	TOTAL SHEETS
L8	L13

Plot Scale - 1:40

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Radar Speed Feedback Sign (RSFS) to be removed from EL17 and reinstalled on luminaire pole L11.

L11 128+36.0 -30.5

SD HWY

130+00

131+00

132

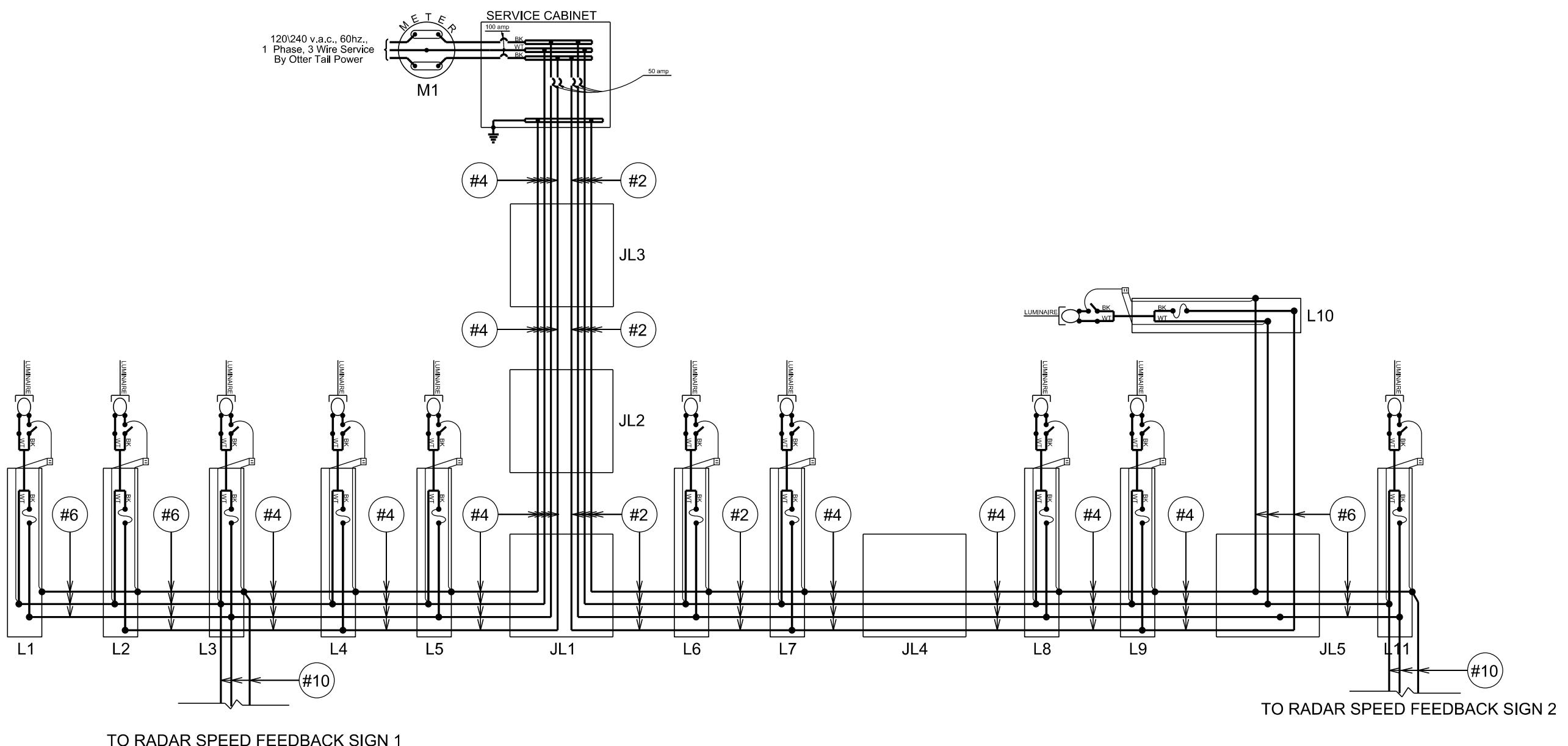
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# WIRING DIAGRAM

STATE OF SOUTH DAKOTA	PROJECT P-CR 0028(47)367	SHEET L9	TOTAL SHEETS L13
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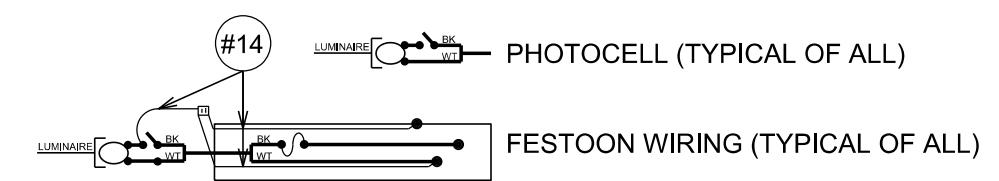
Revised 12-30-2025 - RR

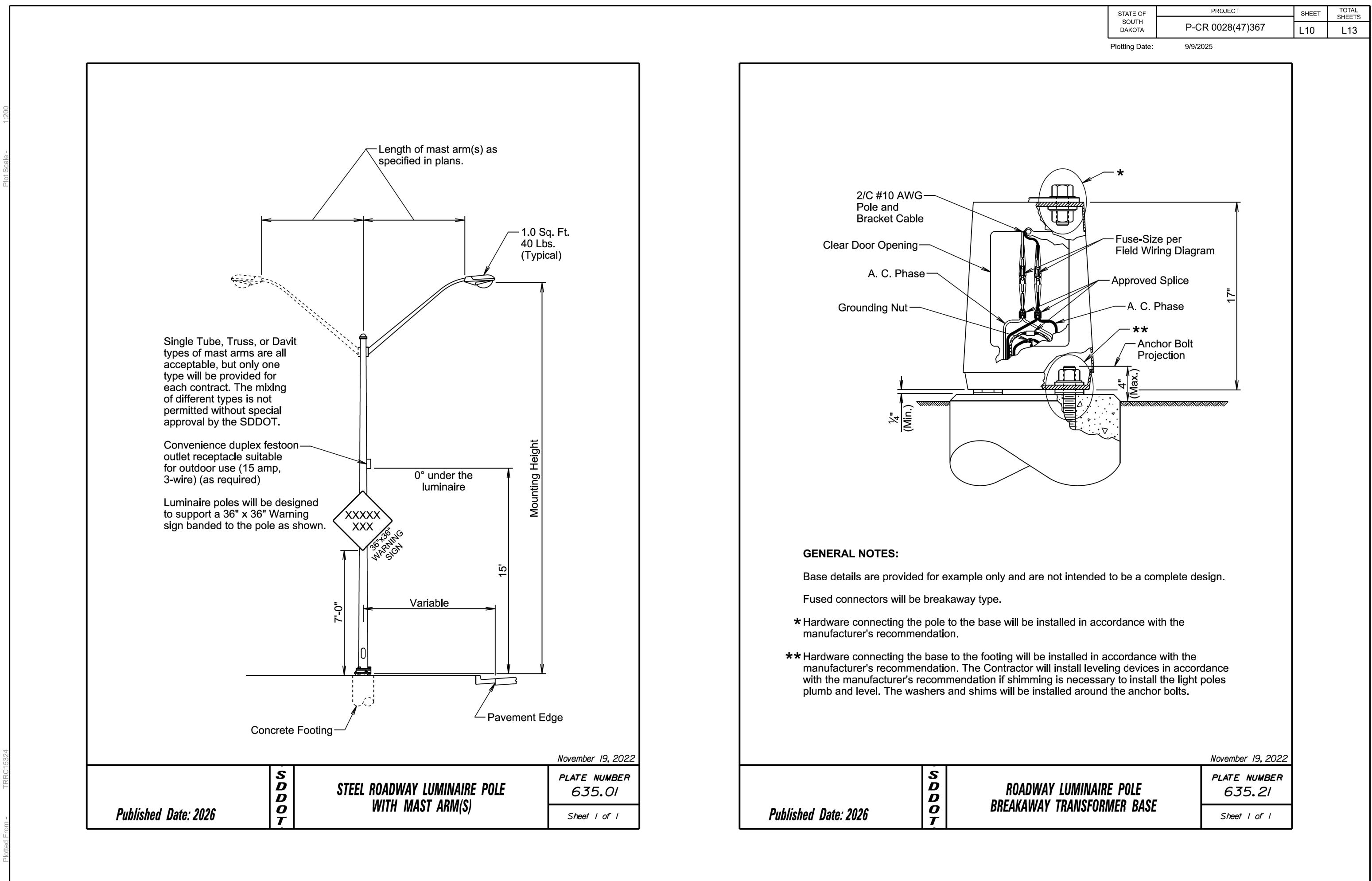


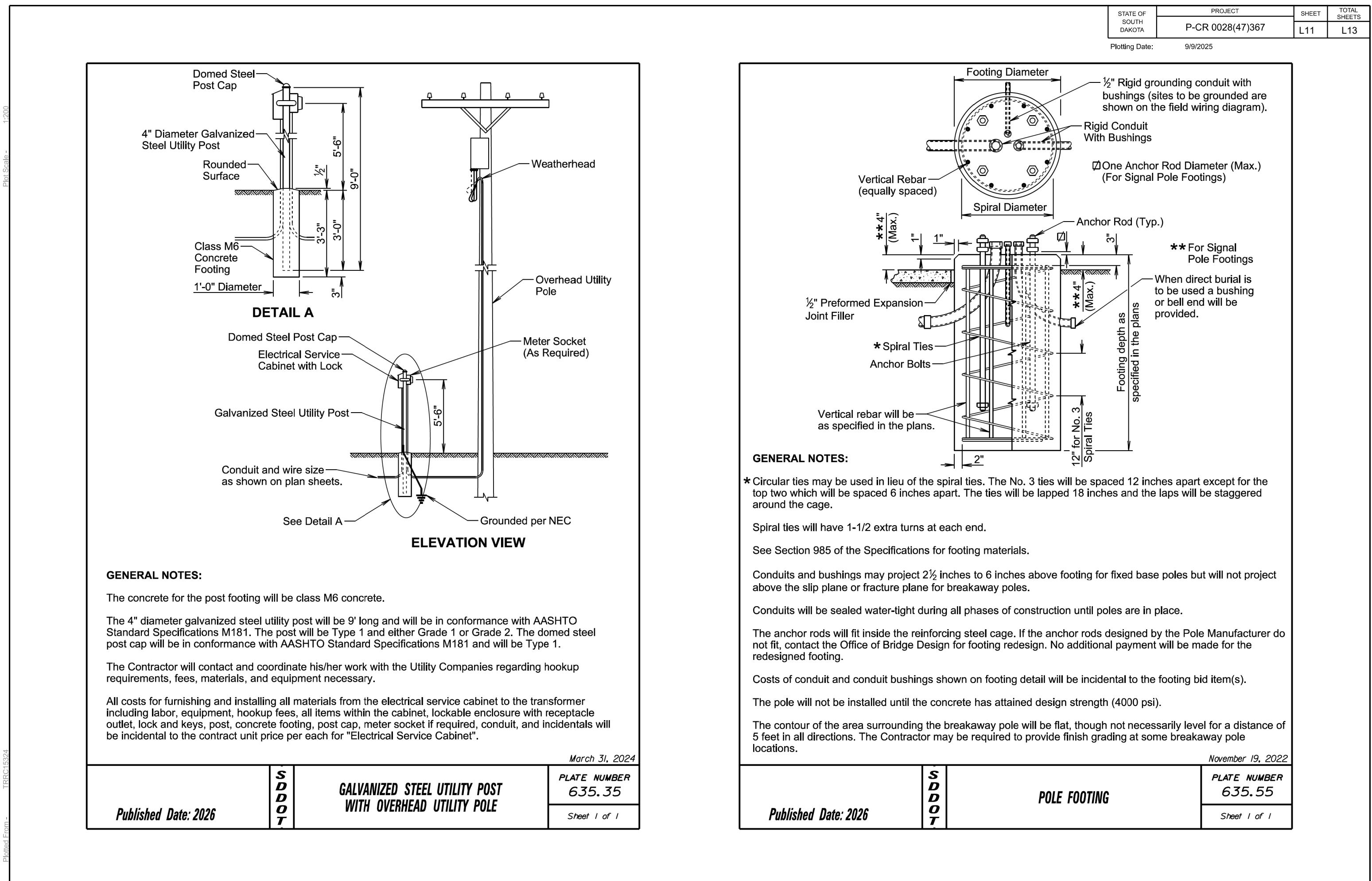
## LEGEND:

•— FUSE: 10 amp.

○ LUMINAIRE: LED







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STATE OF  
SOUTH  
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PROJECT  
P-CR 0028(47)367

SHEET  
L12

TOTAL  
SHEETS  
L13

Plotting Date: 9/9/2025

**TOP VIEW (Cover)**

**TOP VIEW (Box)**

**ISOMETRIC VIEW (Box and Cover)**

Materials specified in plans.

Base Course

Conduit

Portland Cement Concrete or Asphalt Concrete

2" (Min.)

12" Minimum

**SIDE VIEW**  
(Electrical Junction Box Installation Details)  
(Buried No. 4 steel reinforcing bar not shown.)

November 19, 2020

Published Date: 2026

**ELECTRICAL JUNCTION BOXES TYPE 1 THROUGH TYPE 4**

PLATE NUMBER 635.65

Sheet 1 of 2

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".

November 19, 2020

Published Date: 2026	<b>S D D O T</b>	<b>ELECTRICAL JUNCTION BOXES TYPE 1 THROUGH TYPE 4</b>	PLATE NUMBER 635.65
			Sheet 2 of 2

