

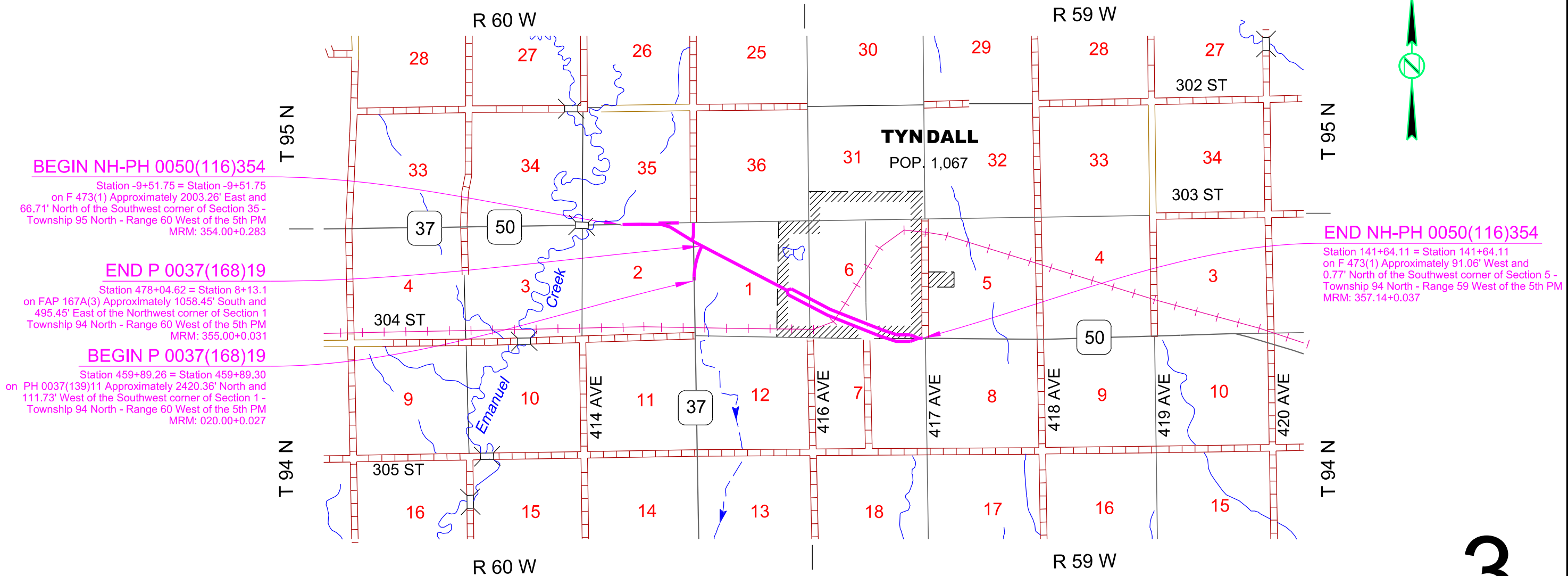
SECTION L: LIGHTING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0050(116)354	L1	L16

Plotting Date: 12/05/2024

INDEX OF SHEETS

L1	General Layout with Index
L2-L3	Estimate with General Notes & Tables
L4-L11	Conduit Layouts
L12	Wiring Diagrams
L13-L16	Standard Plates



1:200
Plot Scale -

Plotted From -
TRPR17199

SECTION L ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
635E0040	Breakaway Base Luminaire Pole with Arm, 40' Mounting Height	24	Each
635E3700	Roadway Luminaire, LED with Photoelectric Cell	24	Each
635E5020	2' Diameter Footing	168.0	Ft
635E5301	Type 1 Electrical Junction Box	3	Each
635E5400	Electrical Service Cabinet	1	Each
635E8120	2" Rigid Conduit, Schedule 40	6,770	Ft
635E8220	2" Rigid Conduit, Schedule 80	755	Ft
635E9016	1/C #6 AWG Copper Wire	2,190	Ft
635E9018	1/C #8 AWG Copper Wire	22,050	Ft
635E9710	2/C #10 AWG Copper Pole and Bracket Cable	1,320	Ft

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:

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

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.

LUMINAIRE POLES

Luminaire poles L1 to L24 will have a mounting height of 40 foot with 8 foot arms.

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

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 5:1 (maximum to minimum maintained foot candles):

Pole Setback: 6 Ft.
Lamp Loss Factor (LLF): 0.8
Width of Lighted Area: 60 Ft.
Luminaire Cycle Length: 200 Ft.
Configuration: Staggered
Mounting Height: 40 Ft.
Arm Length 8 Ft.
Light Source: LED

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

- a.) Cooper- Streetworks: ARCH-L-PA3-220-740-U-T3-AP-PR7
- b.) AEL ATBO-P454-MVOLT-R3-P7

TABLE OF FOOTING DATA

Site Designation	Footing Diameter	* Footing Depth	**Spiral Diameter	**Spiral Length	Vertical Reinforcement
L1-L24	2' - 0"	7' - 0"	1' - 8"	49' - 6"	8-#7 x 6' - 6"

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

SUBSURFACE

Soils along the corridor of the proposed lighting area will consist of brown silt clay to sandy clay.

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 will occur. If caving soils are encountered, casing may be required to construct the footings.

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 AND EXISTING UTILITY POLES

The Contractor will be responsible for contacting the utility company for electrical service and coordinating the removal of the existing luminaire wood utility poles EL1-EL3. The Contractor will be responsible for coordinating the installation of the electrical service and connection to the electrical service. The Contractor will contact the utility company at least 2 weeks prior to needing the electrical service installed:

Tyndall Municipal Electric
(605) 589-3481

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

All cost for coordinating the installation of the new luminaire poles with the removal of the existing luminaire poles will be incidental to the contract unit price for "Electrical Service Cabinet."

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0050(116)354	L2	L16

Plotting Date: 12/05/2024

File - ...lpj\Bont047\NotesSectionL.dgn

CONDUIT AND CABLE QUANTITIES

Plotting Date: 12/05/2024

Location to Location		Rigid Conduit				Copper Wire		Pole and Bracket Cable																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
		Schedule 40				Schedule 80																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		2"				2"			1/C #8 AWG Ft	1/C #6 AWG Ft		2/C #10 AWG Ft																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

Plot Scale - 1:200

Plotted From - TRPR17199

Plot Scale - 1:40












Plotted From - TRPR17199

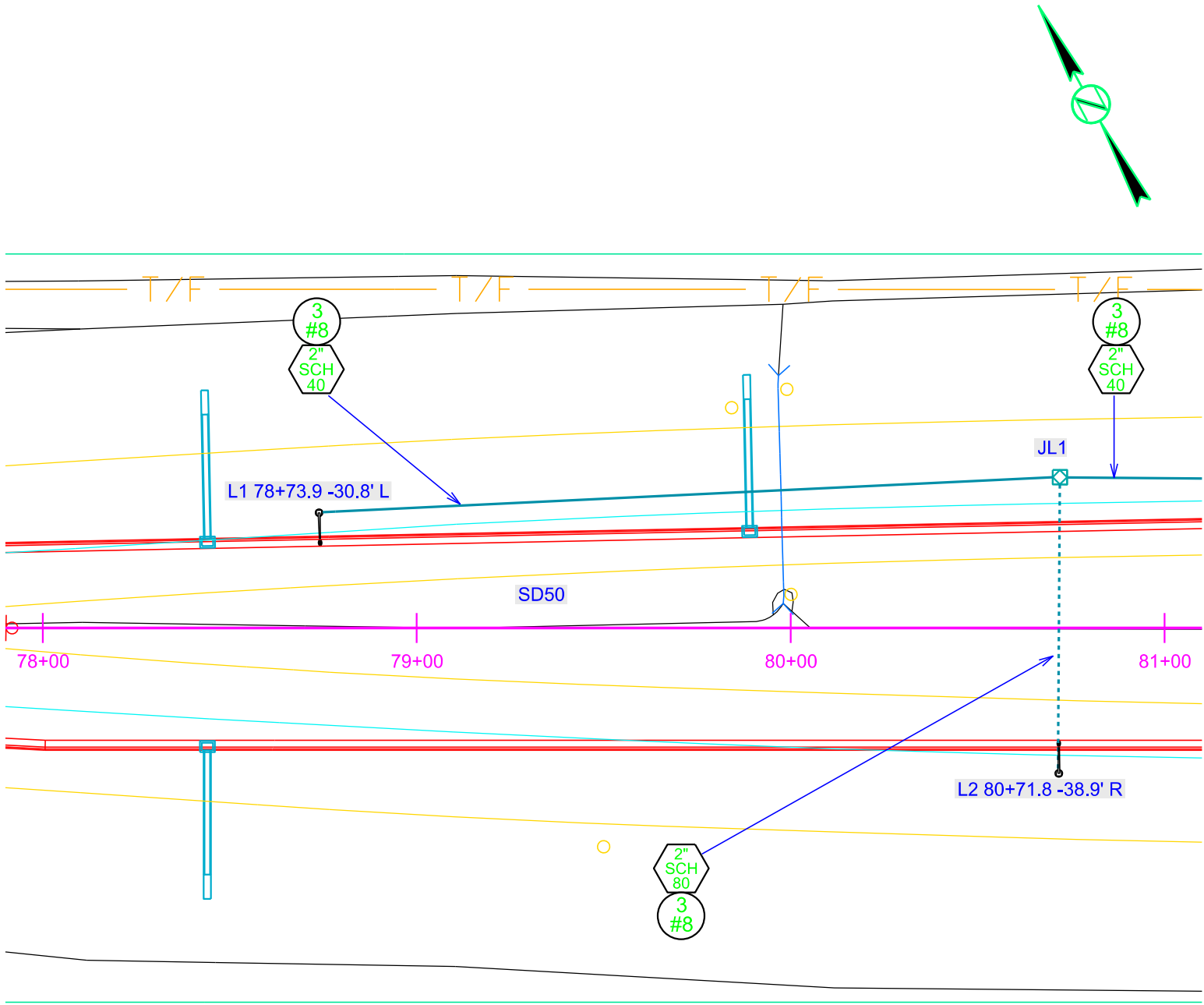
CONDUIT LAYOUT

SD HWY 50

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0050(116)354	L4	L16

Plotting Date: 12/05/2024

ESTIMATE OF QUANTITIES			
KEY	ITEM	EST QUANT	UNIT
	Breakaway Base Luminaire Pole w/8' Arm 40' Mounting Height (L1-L24)	24	EACH
	Roadway Luminaire, LED with P.E. (L1-L24)	24	EACH
	2' Diameter Footing (L1-L24)	168	FT
	Type 1 Electrical Junction Box (JL1-JL3)	3	EACH
	Electrical Service Cabinet	1	EACH
	Galvanized Steel Utility Pole Not a Bid Item	1	EACH
	Meter Socket Not a Bid Item	1	EACH
	2" Rigid Conduit, Schedule 40	6770	FT
	2" Rigid Conduit, Schedule 80	755	FT
	1/C #8 AWG Copper Wire	22050	FT
	1/C #6 AWG Copper Wire	2190	FT
	2/C #10 AWG Copper Pole & Bracket Cable	1320	FT



File - U:\trp\proj\Bentho4K\7078c.dgn

CONDUIT LAYOUT

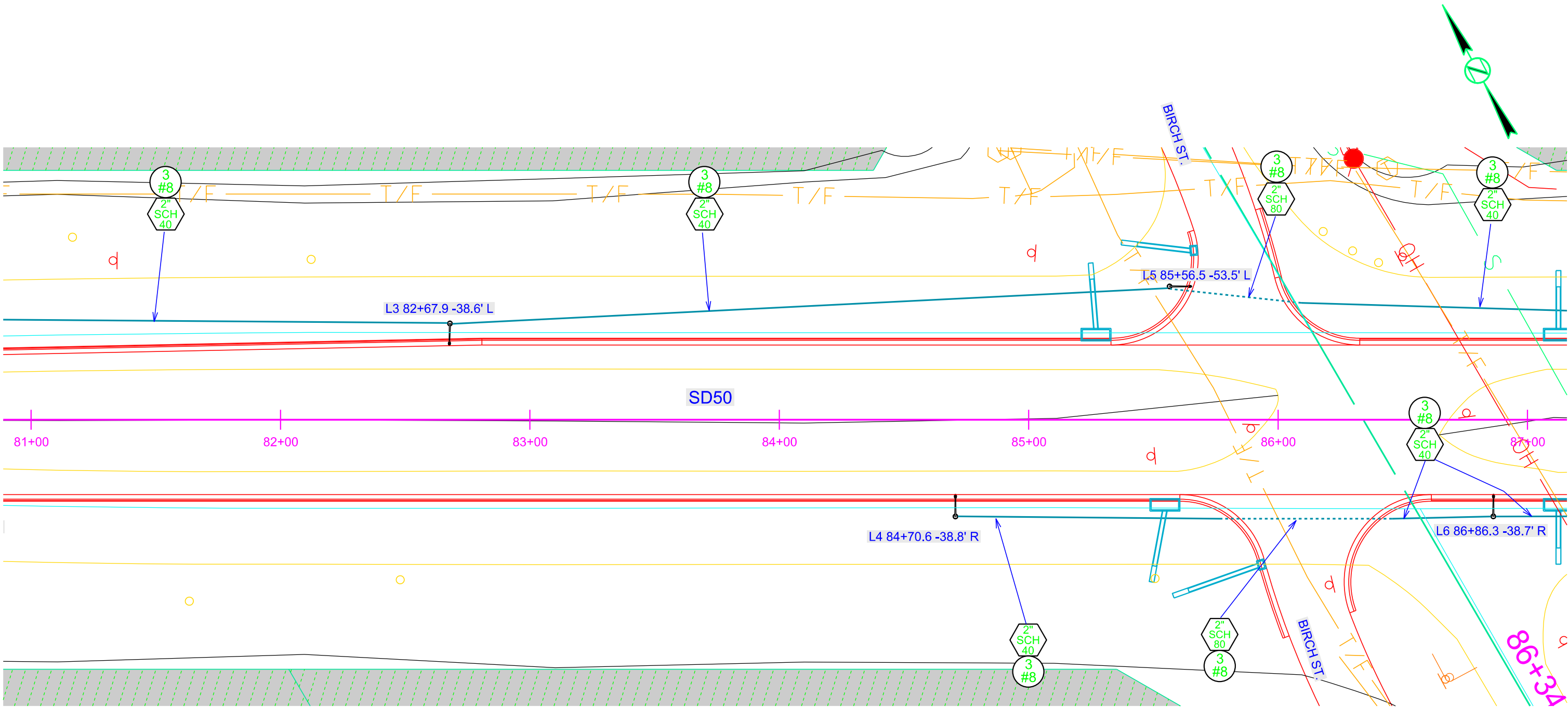
SD HWY 50

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0050(116)354	L5	L16

Plotting Date: 12/05/2024

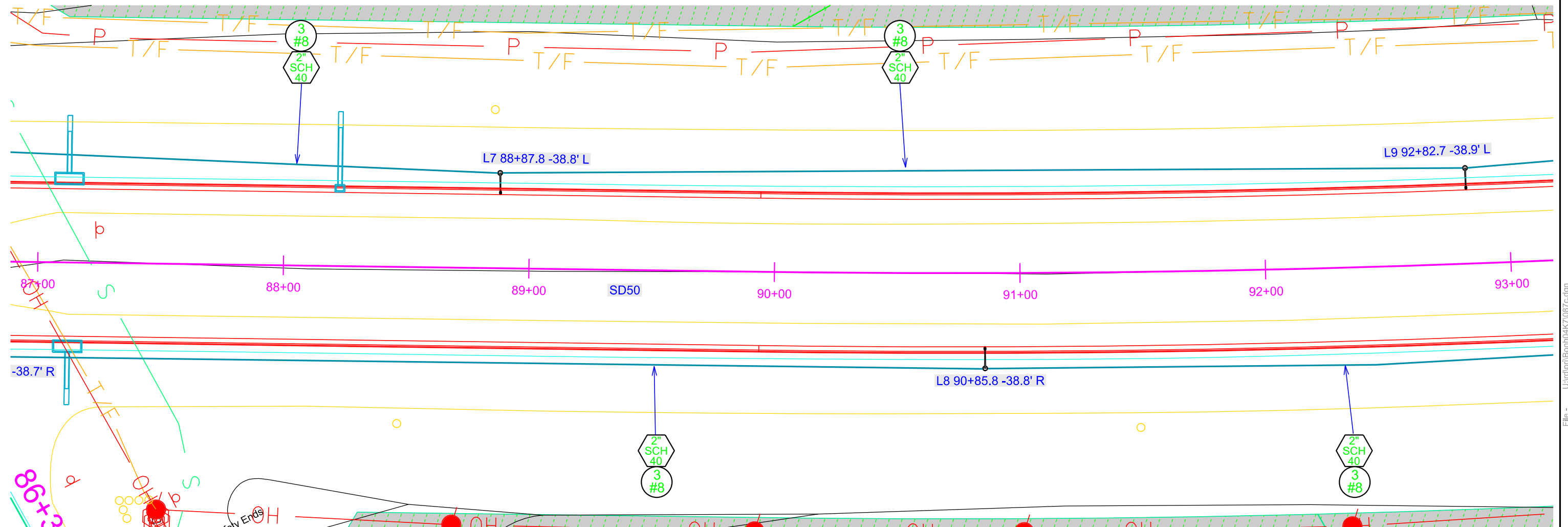
Plot Scale - 1"=40'

Plotted From - TRPR17199



File - U:\trproj\Bentbox\K7081c.dgn

AYOUT

Plotting Date: 12/05/2024

— 2 —

Plotted From - TRPR17199

CONDUIT LAYOUT

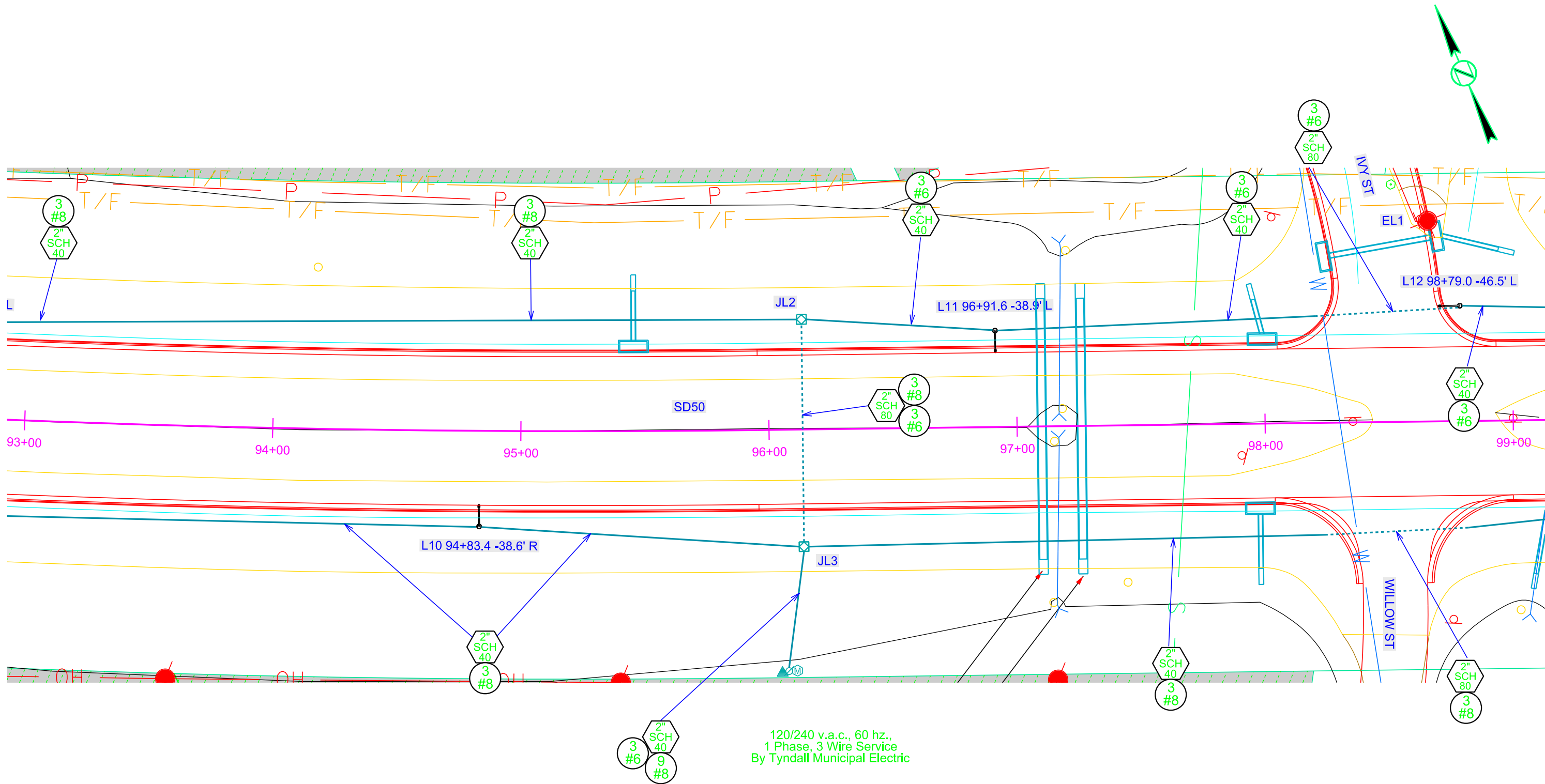
SD HWY 50

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0050(116)354	L7	L16

Plotting Date: 12/05/2024

Plot Scale - 1"=40'

Plotted From - TRPR17199



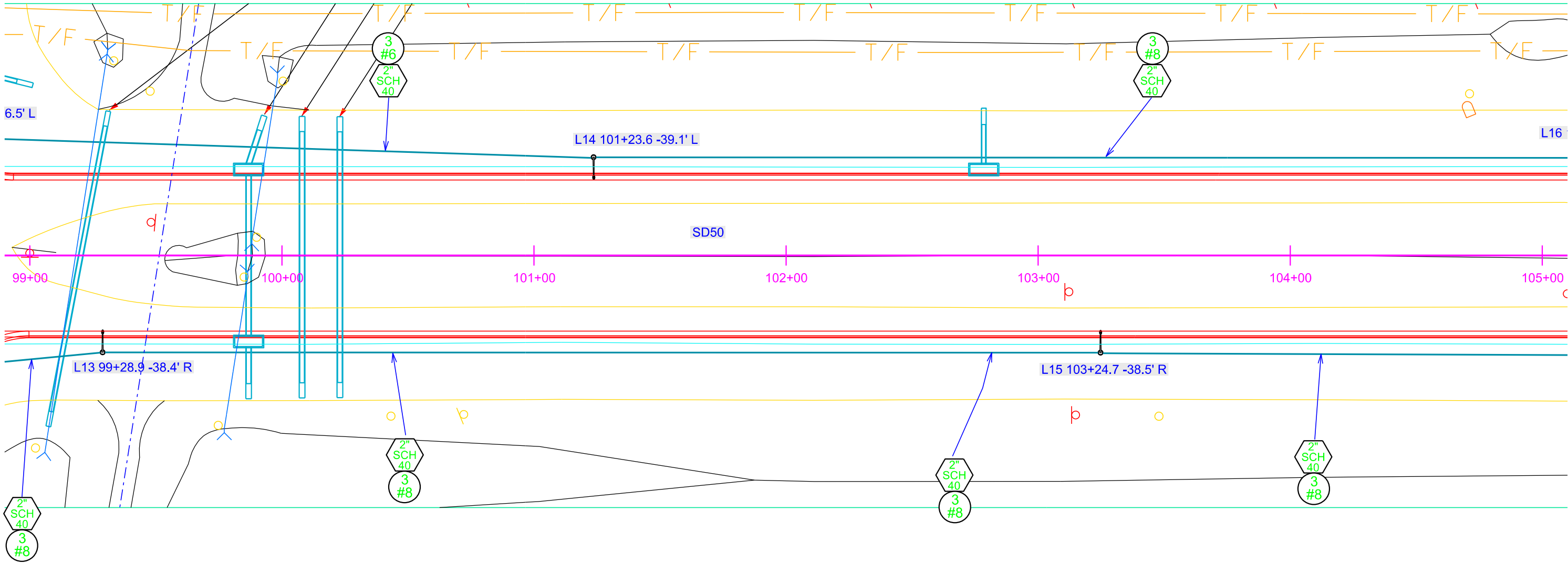
File - U:\trproj\Bentho4K7093c.dgn

CONDUIT LAYOUT

SD HWY 50

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0050(116)354	L8	L16

Plotting Date: 12/05/2024



Plot Scale - 1:40

Plotted From - TRPR17199

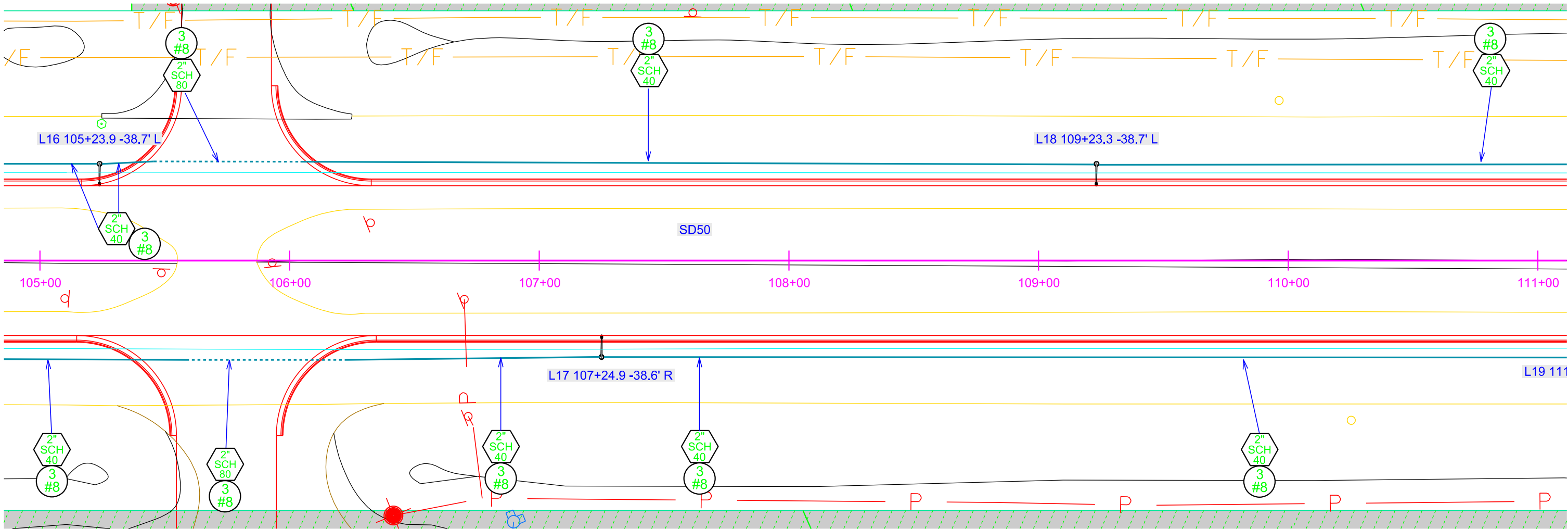
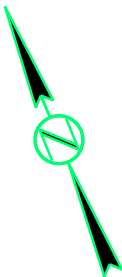
File - U:\trproj\BentBox\K7099c.dgn

CONDUIT LAYOUT

SD HWY 50

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0050(116)354	L9	L16

Plotting Date: 12/05/2024



Plot Scale - 1:40

Plotted From - TRPR17199

File - U:\trproj\Bentho4K\105c.dgn

CONDUIT LAYOUT

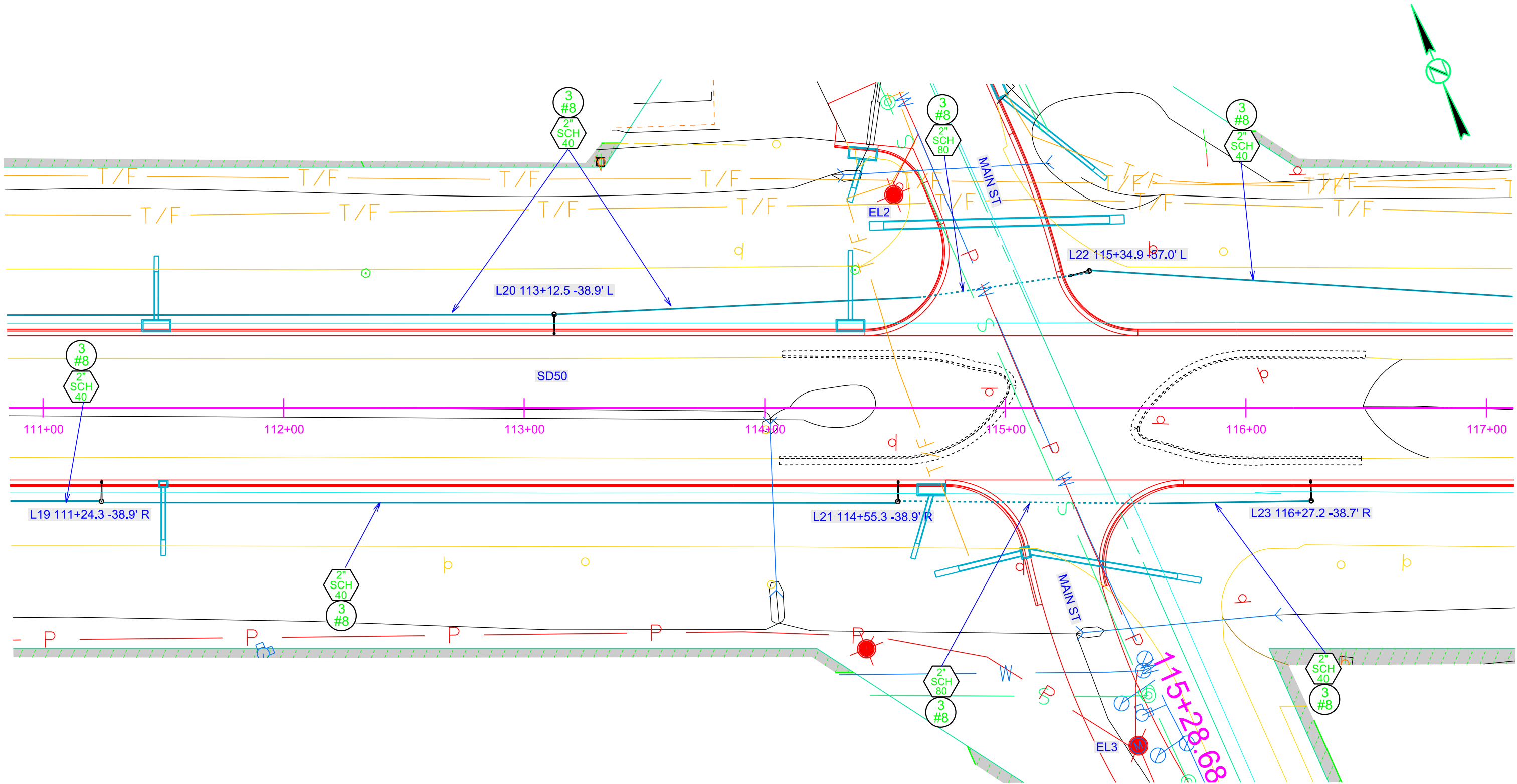
SD HWY 50

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0050(116)354	L10	L16

Plotting Date: 12/05/2024

Plot Scale - 1"=40'

Plotted From - TRPR17199

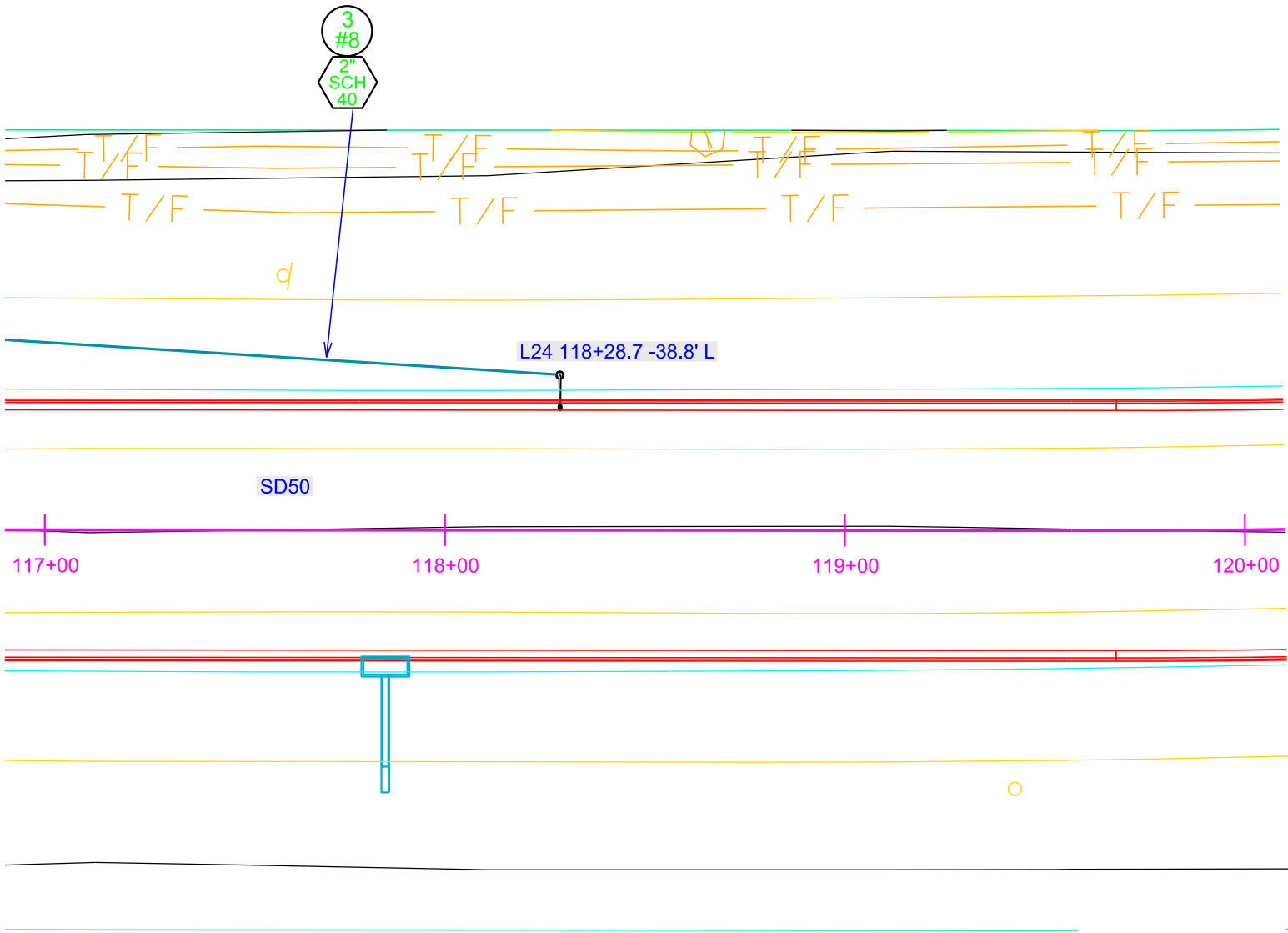
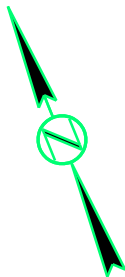


CONDUIT LAYOUT

SD HWY 50

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0050(116)354	L11	L16

Plotting Date: 12/05/2024



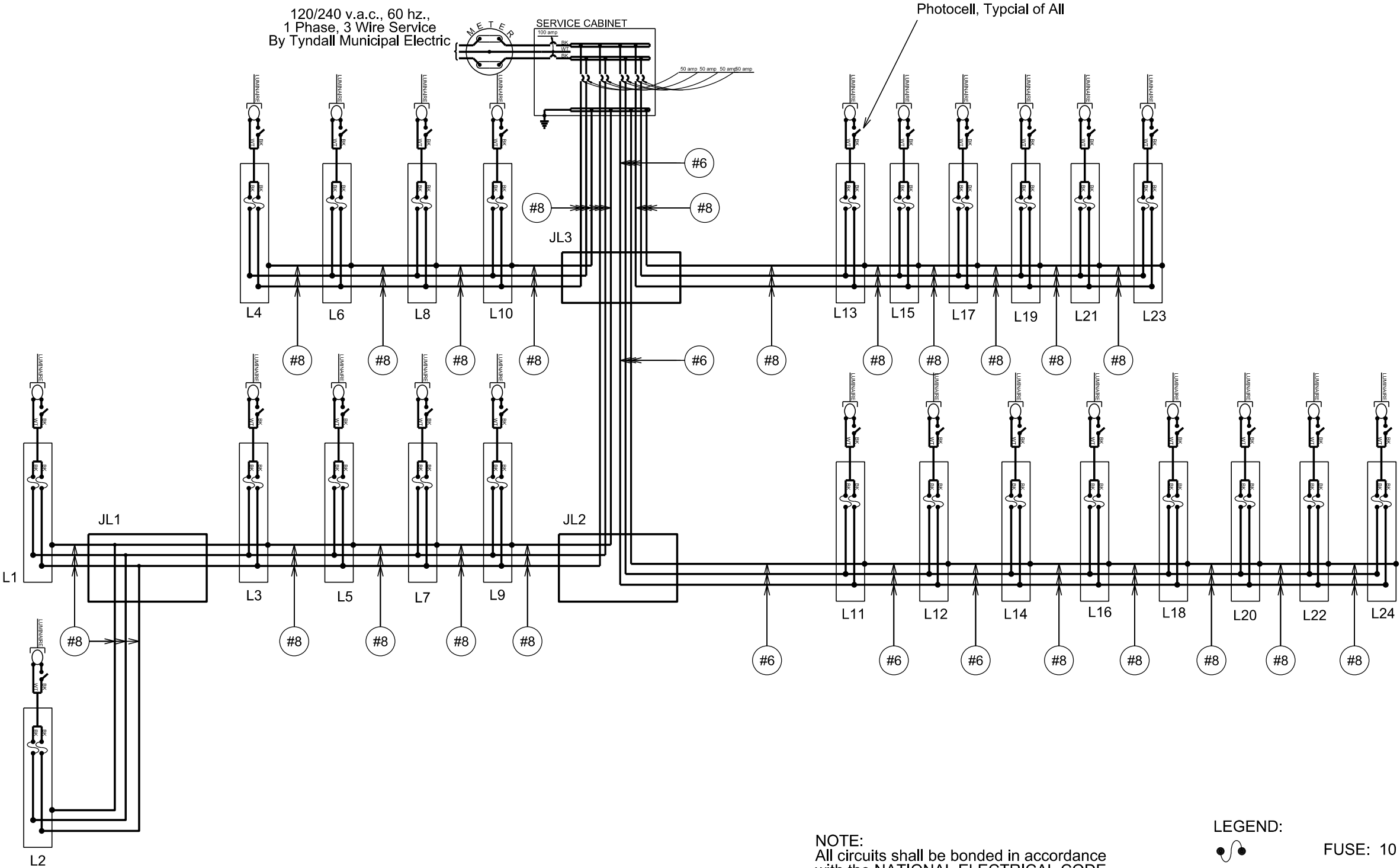
Plot Scale - 1:40

Plotted From - TRPR17199

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0050(116)354	L12	L16

Plotting Date: 12/05/2024

WIRING DIAGRAM



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

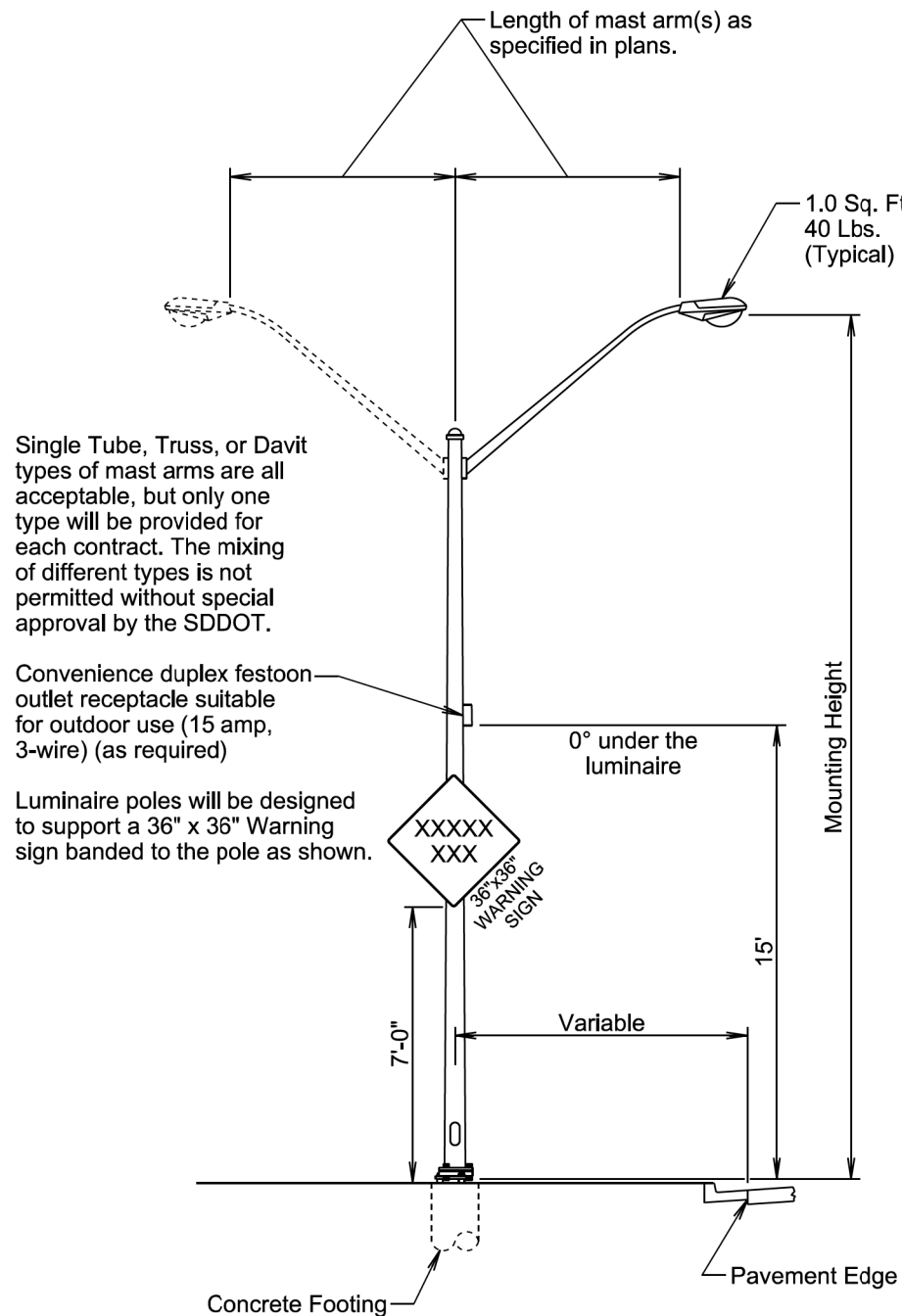
- LEGEND:
- FUSE: 10 amp.
 - LUMINAIRE: LED

1:200
Plot Scale -

Plotted From -
TRPR17199

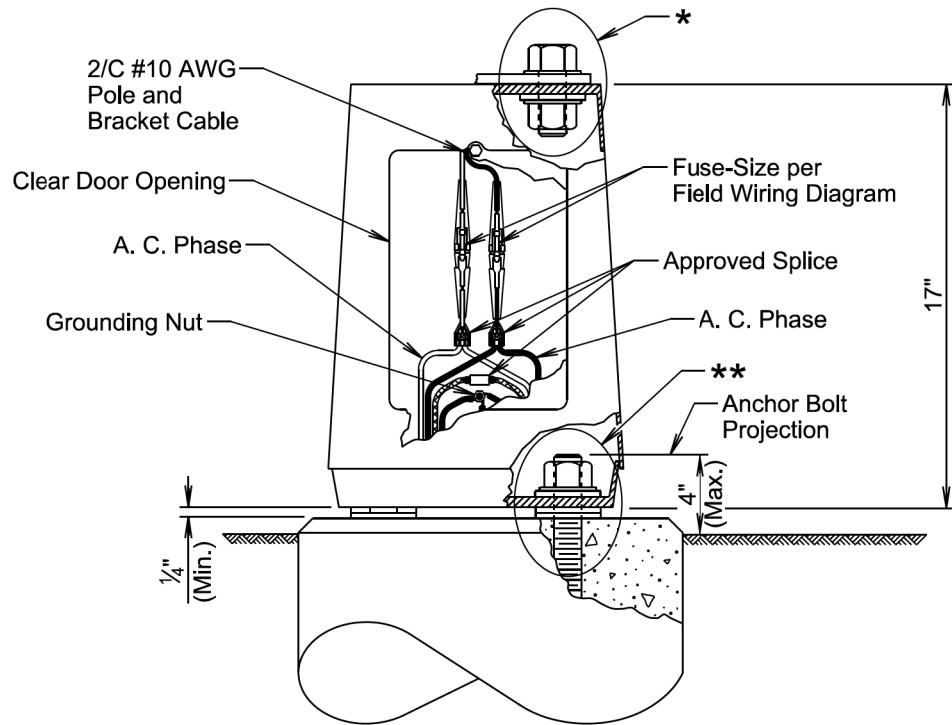
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0050(116)354	L13	L16

Plotting Date: 12/05/2024



November 19, 2022

Published Date: 2025	S D D O T	STEEL ROADWAY LUMINAIRE POLE WITH MAST ARM(S)	PLATE NUMBER 635.01
			Sheet 1 of 1



GENERAL NOTES:

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

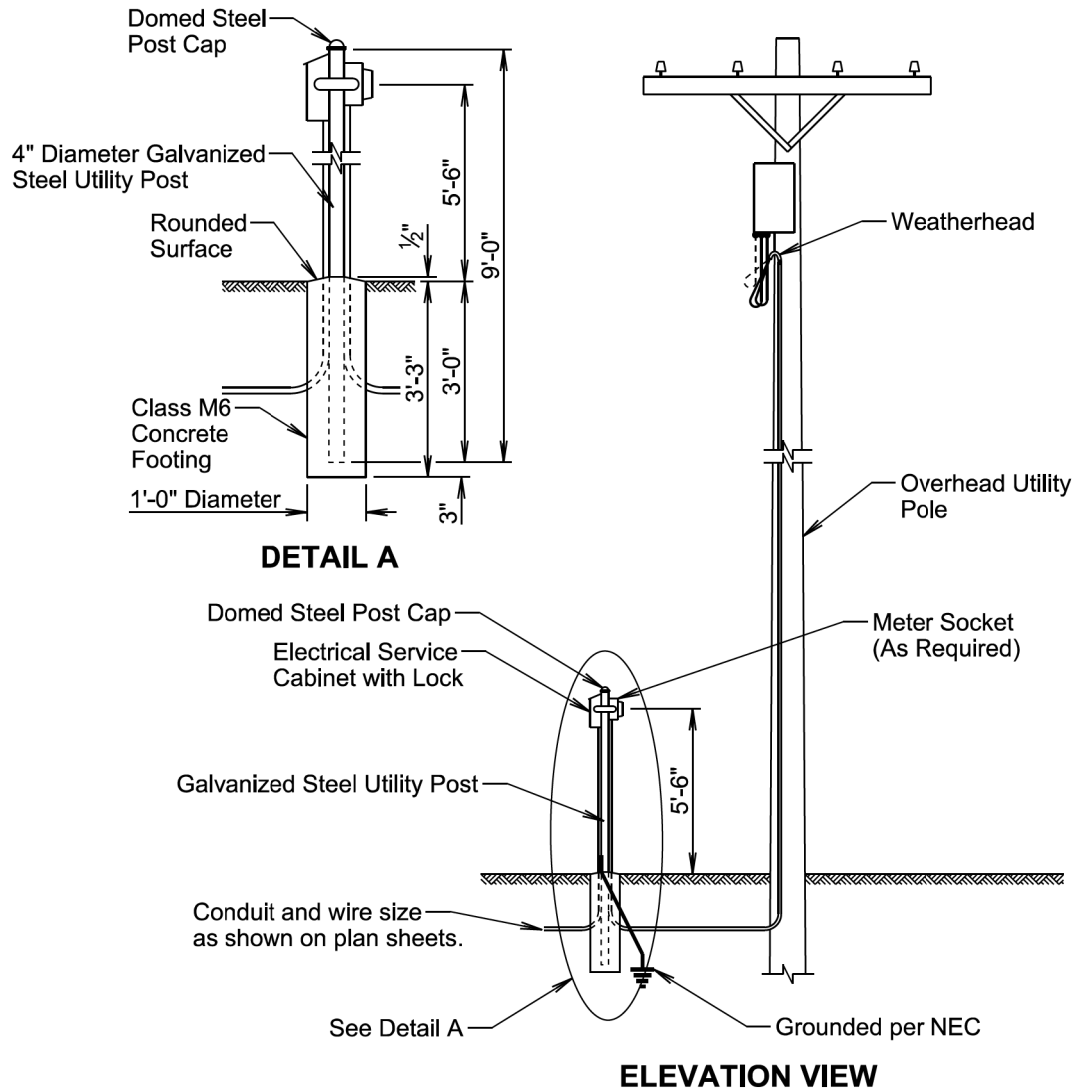
Fused connectors will be breakaway type.

* 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

Published Date: 2025	S D D O T	ROADWAY LUMINAIRE POLE BREAKAWAY TRANSFORMER BASE	PLATE NUMBER 635.21
			Sheet 1 of 1



GENERAL NOTES:

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

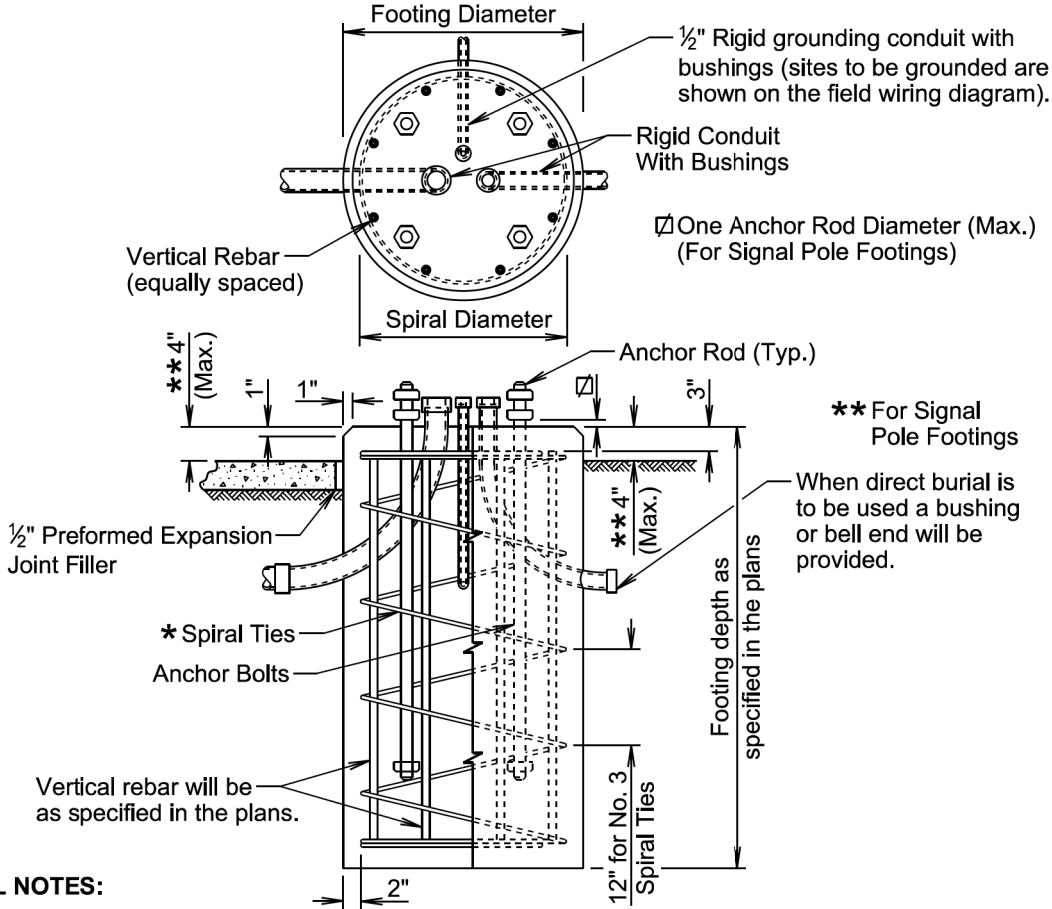
The 4" diameter galvanized steel utility post will be 9' long and will be in conformance with AASHTO Standard Specifications M181. The post will be Type 1 and either Grade 1 or Grade 2. The domed steel post cap will be in conformance with AASHTO Standard Specifications M181 and will be Type 1.

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

Published Date: 2025	S D D O T	GALVANIZED STEEL UTILITY POST WITH OVERHEAD UTILITY POLE	PLATE NUMBER 635.35
			Sheet 1 of 1



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.

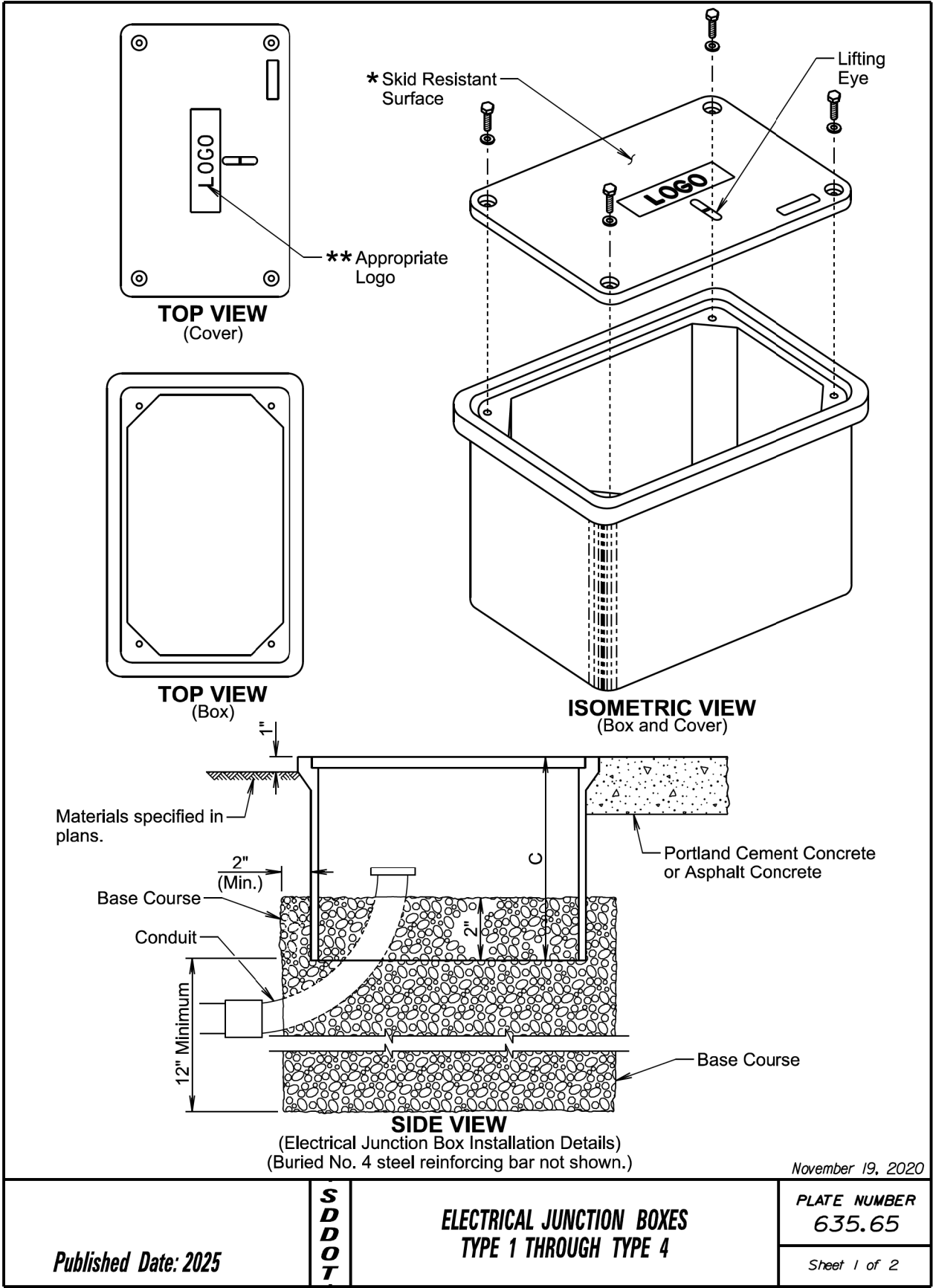
Costs of conduit and conduit bushings shown on footing detail will be incidental to the footing bid item(s).

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

Published Date: 2025	S D D O T	POLE FOOTING	PLATE NUMBER 635.55
			Sheet 1 of 1



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".

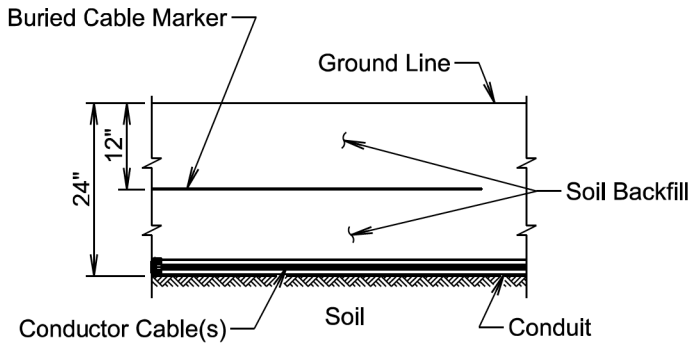
November 19, 2020

Published Date: 2025	S D D O T	ELECTRICAL JUNCTION BOXES TYPE 1 THROUGH TYPE 4	PLATE NUMBER 635.65
			Sheet 2 of 2

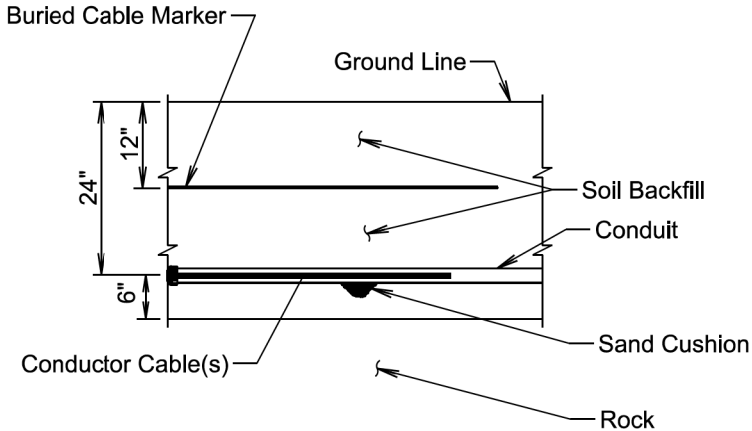
1:200
Plot Scale -
Plotted From - TRPR17199

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0050(116)354	L16	L16

Plotting Date: 12/05/2024



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	<i>PLATE NUMBER</i> 635.76
			<i>Sheet 1 of 1</i>