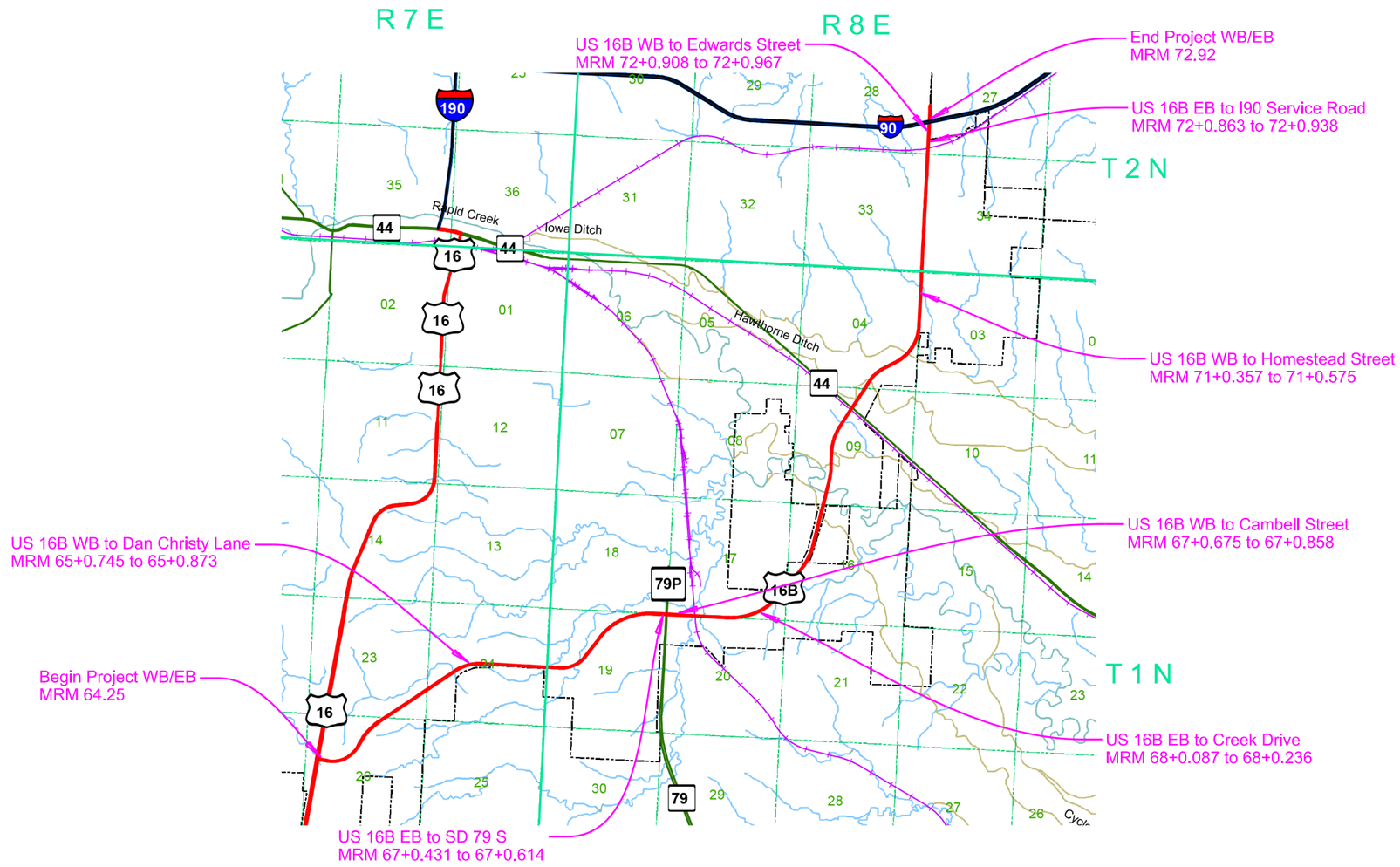
SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L1	L32

Plotting Date: 3/26/2026

SECTION L: LIGHTING PLANS

INDEX OF SHEETS



SECTION L ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E1540	Remove Luminaire Pole Footing	7	Each
635E0050	Breakaway Base Luminaire Pole with Arm, 50' Mounting Height	19	Each
635E3700	Roadway Luminaire, LED with Photoelectric Cell	28	Each
635E5020	2' Diameter Footing	208.0	Ft
635E5301	Type 1 Electrical Junction Box	38	Each
635E5400	Electrical Service Cabinet	1	Each
635E7500	Remove and Reset Luminaire Pole	7	Each
635E8120	2" Rigid Conduit, Schedule 40	6,960	Ft
635E8130	3" Rigid Conduit, Schedule 40	240	Ft
635E8220	2" Rigid Conduit, Schedule 80	960	Ft
635E8230	3" Rigid Conduit, Schedule 80	125	Ft
635E9002	1/C #00 AWG Copper Wire	1,195	Ft
635E9012	1/C #2 AWG Copper Wire	2,940	Ft
635E9014	1/C #4 AWG Copper Wire	8,545	Ft
635E9016	1/C #6 AWG Copper Wire	19,300	Ft
635E9020	1/C #10 AWG Copper Wire	14,440	Ft
635E9600	#16 AWG Copper Twisted Shielded Pair	6,380	Ft
635E9710	2/C #10 AWG Copper Pole and Bracket Cable	1,960	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:

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

REMOVE LUMINAIRE POLE FOOTING

The footings of existing luminaire poles EL3, EL4, EL9, EL12, EL14, EL18, and EL19 will be removed by the Contractor to a minimum of 2 feet below the ground surface. Restoration of the disturbed area will be to the satisfaction of the Engineer. The footings of EL1 and EL17 will not be disturbed in the field.

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 EL3, EL4, EL9, EL12, EL14, EL18, and EL19 will be removed and reset as REL1-REL7 as shown on the plan sheets.

Poles EL1 and EL17 are adjacent to the grading limits but will not be disturbed in the field.

A copy of the original shop drawing for the existing poles near the SD-79 interchange can be found in the special details. The poles were originally installed with Project NH 0235(1)0, Drawing No. 360B182.

Millerbernd Manufacturing Company
622 6th Street South
Winsted, MN 55395
Phone: (320) 485-2111

Shop drawing records show that the existing anchor bolts are 1-1/2” X 60” with a bolt circle diameter of 22”, and a 6-1/2” Bolt Projection. The replacement anchor bolts will be in conformance with the Specifications.

A copy of the original shop drawing for the existing poles near the I-90 Service Road can be found in the special details. The poles were originally installed with Project EM 0902(39)61, Drawing No. 10B400 and 10B348.

Millerbernd Manufacturing Company
622 6th Street South
Winsted, MN 55395
Phone: (320) 485-2111

Shop drawing records show that the existing anchor bolts are 1-1/4” X 48” with a bolt circle diameter of 17”, and a 4” 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 removing and disposing 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 L19 will have a mounting height of 50-foot with 8-foot arms.

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

LUMINAIRES

The lighting design for L1-L19, EL1, EL17, and REL1-REL7 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:	5 feet
Lamp Loss Factor (LLF):	0.8
Width of Lighted Area:	98 feet
Luminaire Cycle Length:	220 feet
Configuration:	Staggered
Mounting Height:	50 feet
Arm Length	8 feet

The following luminaire will be used for this project:

American Electric Lighting: ATB0-P305-MVOLT-R2-4K-P7-PCLL

TABLE OF FOOTING DATA

Site Designation	Footing Diameter	* Footing Depth	**Spiral Diameter	**Spiral Length	Vertical Reinforcement
L1-L19, REL1-REL7	2’ - 0”	8’ - 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

Groundwater and caving soils are likely to be encountered during the installation of the cylindrical footings. The water table elevation may be as high as 4 feet below ground surface. Concrete placement operations should closely follow excavation procedures. The longer the excavations are left open, the more likely caving may occur. Operations should be sequenced so that concrete placement operations closely follow excavation procedures but at a minimum placed the same working day.

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 – SD-79 INTERCHANGE

The Contractor will coordinate with Black Hills Energy to deactivate existing Meter 1 at least two weeks prior to needing the luminaires de-energized and at least two weeks before needing the luminaires re-energized.

The Black Hills Energy contact is Rob Usera at 605-721-2618 and rob.usera@blackhillscorp.com.

All costs associated with coordinating, removing, de-energizing and re-energizing of the electric service will be incidental to the contract lump sum price for “Electric Service Cabinet”.

ELECTRICAL SERVICE CABINET – HOMESTEAD & I-90 SERVICE ROAD

The Contractor will coordinate with West River Electric to activate the new Meter 2 at Homestead Street and de-energizing the existing Meter 3, and the service cabinet powering the I-90 Interchange signal near Edwards Street at least two weeks prior to de-energizing the luminaires and signal and two-weeks prior to needing the power re-energized for the new connections.

The West River Electric contact is Matt Schmahl at 605-393-1500 and matt.schmahl@westriver.coop.

All costs associated with coordinating, removing, de-energizing and re-energizing of the electric service and activating the new electric services will be incidental to the contract lump sum price for “Electric 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.

WIRING IN EXISTING POLES

The existing pole and bracket wire in REL1-REL7, EL1, and EL17 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”.

EXISTING LUMINAIRE EL1

Existing luminaire EL1 will not be disturbed in the field. The existing HPS fixture will be replaced by the LED fixture used for REL1-REL7.

The existing wires and conduit on the east side of EL1 will be removed and replaced by new conduit and wires as indicated on the plans. The wires and conduit connected on the west side of EL1 will not be disturbed during construction.

New wires to EL1 will be connected to the existing wires in EL1. The Contractor will ensure all lights are operational.

All costs associated with disconnecting existing wires and connecting new wires and making the lights operational will be incidental to the contract unit price per foot for “1/C #6 AWG Copper Wire.”

All costs associated with switching the existing luminaire fixtures from HPS to LED in EL1 will be incidental to the contract unit price per each for “Roadway Luminaire, LED with Photoelectric Cell”.

TRAFFIC DETECTION LOOPS – SD-79 INTERCHANGE

The Contractor will disconnect the existing detection loops from the TSP wires inside existing junction boxes EJT1-EJT3 and EJT8-EJT10. The Contractor will remove existing junction boxes EJT1-EJT3 and EJT8-EJT10 without disturbing the detection loops. The Contractor will not disturb the existing detection loop lead-ins during the construction of the new right turn lanes. Existing detection loop lead-ins will be pulled to new junction boxes JT1-JT3 and JT5-JT7 and reconnected to new TSP wires that go back to the traffic control cabinet.
The new junction boxes shall be positioned to maximize the offset distance from the edge of pavement, while retaining sufficient slack on the existing traffic detection loop lead-ins to ensure proper splicing to the new TSP wire.

New TSP wire will not be spliced to existing TSP wire. The Contractor will remove the appropriate TSP wires between each traffic loop and the traffic control cabinet and will pull new TSP wires from the traffic control cabinet to the existing loops and reconnect to the existing loop lead-ins to new TSP wiring to ensure a continuous run of the TSP wire to the traffic control cabinet.

The Contractor will ensure all loops are in working order and perform their originally intended function. Any damage to loops will be replaced or repaired by the Contractor at no cost to the State.

All costs associated with disconnecting the detection loops, removing of the junction box, protection of the loops during all necessary grading and surfacing, placing new junction box, and re-connecting the loops will be incidental to the contract unit price per each "Type 1 Electrical Junction Box."

ADVANCE WARNING SIGN RAWS1

Advance warning sign AWS1 will be removed during construction of the right turn lane and reset once construction is complete as RAWS1. Existing Junction Box EJT1 will be removed and replaced by new Junction Box JT1. The existing #10 wires between EJT1-EJT5 will be removed.

The existing conduit between EJT4 and EJT5 will not be disturbed during construction. Existing junction box EJT4 will be removed. Conduit connecting EJT4 and EJT5 will be spliced to new conduit at a location near EJT4 and will connect to JT4. New #10 wires will be pulled from EJT5 to JT4, from JT4 to RAWS1 as shown on the plans. Junction boxes JT3 and JT2 serve as branch off points for new TSP to connect to existing traffic detection loop leads.

All costs associated with pulling back existing wires, removing wires where indicated, splicing new conduit to existing conduit, and making signs operational will be incidental to contract unit price per each for “Type 1 Electrical Junction Box.”

Refer to Section S for costs associated with removing and resetting the advance warning sign.

ADVANCE WARNING SIGN RAWS2

Advance warning sign AWS2 will be removed during construction of the right turn lane and reset once construction is complete as RAWS2. Existing Junction Box EJT8 will be removed and replaced by new Junction Box JT5. Prior to removing the existing junction box EJT8, the existing #10 wires will be disconnected and removed to EJT7. Conduit between EJT8 and AWS2 and junction boxes EJL9-EJL10 will be removed. The conduit between EJT7 and EJT8 will not be disturbed during construction and will be reused.

Conduit connecting EJT7 and EJT8 will be spliced to new conduit at a location near EJT8 and will connect to JT5. New #10 wires will be pulled from EJT7 to JT5 and from JT5 to RET2 and will be reconnected to ensure advance warning sign RET2 is operational.

All costs associated with pulling back existing wires, removing wires where indicated, splicing new conduit to existing conduit, and making signs operational will be incidental to contract unit price per each for “Type 1 Electrical Junction Box.”

Refer to Section S for costs associated with removing and resetting the advance warning sign.

JUNCTION BOX JL1

Existing Junction Box EJL1 will be removed and replaced by new Junction Box JL1. Prior to removing EJL1, the existing #6 wires will be disconnected and removed to EL2. New conduit and #6 wires will be installed from EL1 to JL1 and from JL1 to REL1.

The existing conduit between EJL1 and EL2 will not be disturbed during construction. Conduit connecting EL2 to EJL1 will be spliced to new conduit at a location near EJL1 box and will connect to JL1. New #6 wires will be pulled from EL2 to JL1 as shown on the plans and will be reconnected to ensure all lights are operational.

All costs associated with removing wires, splicing new conduit to existing conduit, connecting all #6 wires, and making luminaires operational will be incidental to the contract unit price per each for "Type 1 Electrical Junction Box."

JUNCTION BOX JL2

Existing Junction Box EJL2 will be removed and replaced by new Junction Box JL2. Prior to removing EJL2, the existing #6 wires will be disconnected and removed to EL3.

The existing conduit between EJL2 and EL3 will not be disturbed during construction and reused. Conduit connecting EL3 to EJL2 will be spliced to new conduit at a location near EJL2 and will connect to JL2. New #6 wires will be pulled from EL3 to JL2 and will be reconnected to ensure all lights are operational.

All costs associated with removing wires, splicing new conduit to existing conduit, connecting all #6 wires, and making luminaires operational will be incidental to the contract unit price per each for "Type 1 Electrical Junction Box."

JUNCTION BOX JE2

Existing Junction Box EJE2 will be removed and replaced by new Junction Box JE2. The existing conduit between EJE2 and EJE3 will not be disturbed during construction and reused. New conduit will be spliced to existing conduit at a location near EJE2 and will connect to JE2.

All costs associated with splicing new conduit to existing conduit, and reconnecting all connections will be incidental to the contract unit price per each for "Type 1 Electrical Junction Box."

JUNCTION BOX JL3

Existing Junction Box EJL3 will be removed and replaced by new Junction Box JL3. New conduit and #6 wire will be installed from REL2 to JL3. The existing #6 wires between EJL3 and EJL4 will be removed. The conduit between EJL3 and EJL4 will not be disturbed during construction and reused and will be spliced to new conduit at a location near EJL3 and will connect to JL3. New wires will be pulled from EJL4 to JL3 as shown on the plans and will be reconnected to ensure all lights are operational.

All costs associated with removing wires, splicing new conduit to existing conduit, connecting all #6 wires, and making luminaires operational will be incidental to the contract unit price per each for "Type 1 Electrical Junction Box."

JUNCTION BOX JL4

Junction box JL4 will be placed to intercept the existing conduit south of EJL3. New conduit and #6 wiring will be installed between JL4 and JL3. New #6 wires will be spliced to existing #6 wires inside of JL4 to ensure lights along Ramp C are operational. Existing #6 wires between EJL3 and JL4 will be removed.

All costs associated with removing wires, splicing new wire to existing wire, connecting all #6 wires, and making luminaires operational will be incidental to the contract unit price per each for "Type 1 Electrical Junction Box."

JUNCTION BOX JL5

Junction box JL5 will be placed to intercept the existing conduit north of EJL10 along Ramp A. Existing #6 wiring between EJL10 and JL5 will be removed. New conduit and #6 wiring will be installed between JL5 and JL6 as shown on the plans and will be reconnected to ensure all lights are operational.

New #6 wires will be spliced to existing #6 wires inside of JL5 to ensure lights along Ramp A are operational.

All costs associated with removing wires, splicing new conduit to existing conduit, splicing #6 wires, and making luminaires operational will be incidental to contract unit price per each for "Type 1 Electrical Junction Box."

JUNCTION BOX JL6

Existing Junction Box EJL10 will be removed and replaced by new Junction Box JL6. New conduit will be installed from JL7 to JL6. The existing #6 wires between EJL9 and EJL10 will be removed. The existing conduit between EJL9 and EJL10 will not be disturbed during construction and will be reused.

Conduit connecting EJL9 to EJL10 will be spliced to new conduit at a location near EJL10 and will reconnect in JL6. New #6 wires will be installed from EJL9 to JL6 as shown on the plans and will be reconnected to ensure all lights are operational.

All costs associated with removing wires, splicing new conduit to existing conduit, connecting all #6 wires, and making luminaires operational will be incidental to the contract unit price per each for "Type 1 Electrical Junction Box."

JUNCTION BOX JL8

Existing Junction Box EJL12 will be removed and replaced by new Junction Box JL8. Prior to removing EJL12, the existing #6 wires will be removed to EJL13. The existing conduit between EJL13 and EJL12 will not be disturbed during construction and will be reused.

Conduit connecting EJL13 to EJL12 will be spliced to new conduit at a location near EJL12 and will connect to JL8. New #6 wires will be pulled from EJL13 to JL8 as shown on the plans and will be reconnected to ensure all lights are operational.

All costs associated with removing wires, splicing new conduit to existing conduit, connecting all #6 wires, and making luminaires operational will be incidental to the contract unit price per each for "Type 1 Electrical Junction Box."

JUNCTION BOX JE4

Existing Junction Box EJE7 will be removed and replaced by new Junction Box JE4. The existing conduit between EJE7 and EJE5 will not be disturbed during construction and reused. New conduit will be spliced to existing conduit at a location near EJE7 and will connect to JE4.

All costs associated with splicing new conduit to existing conduit, and reconnecting all connections will be incidental to the contract unit price per each for "Type 1 Electrical Junction Box."

REMOVE AND RESET LUMINAIRE POLES REL4 AND REL5

Conduit connecting EJL14 to EL12 will not be disturbed during construction and will be spliced to new conduit at a location near EL12 and will connect to REL4. Existing #6 wires between EL12 and EJL14 will be removed. New #6 wires will be pulled from EJL14 to REL4 as shown on the plans and will be reconnected to ensure all lights are operational.

Conduit connecting EJL15 to EL14 will not be disturbed during construction and will be spliced to new conduit at a location near EL14 and will connect to REL5. Existing wires between EL14 and EJL15 will be removed. New #6 wires will be pulled from EJL15 to REL5 as shown on the plans and will be reconnected to ensure all lights are operational.

All costs associated with removing #6 wires, splicing new conduit to existing conduit, connecting #6 wires, and making luminaires operational will be incidental to the contract unit price per each for "Remove and Reset Luminaire Pole."

EXISTING LUMINAIRE POLE EL16

The Contractor will coordinate the removal of pole EL16 with the installation of luminaire L17 to minimize the amount of time this intersection is without light.

The Contractor will contact the West River Electric Association at least two weeks prior to needing EL16 removed. The West River Electric contact is Matt Schmahl at 605-393-1500 and matt.schmahl@westriver.coop.

All costs associated with coordinating and removing the pole will be incidental to the contract unit price per each for "Breakaway Base Luminaire Pole with Arm, 50' Mounting Height".

EXISTING LUMINAIRE EL17

Existing luminaire EL17 will not be disturbed in the field. The existing HPS fixture will be replaced by the LED fixture used for REL1-REL7. The wires and conduit providing power to EL17 will not be disturbed.

All costs associated with switching the existing luminaire fixtures from HPS to LED in EL17 will be incidental to the contract unit price per each for "Roadway Luminaire, LED with Photoelectric Cell".

JUNCTION BOX JL25

Existing Junction Box EJL18 will be removed and replaced by new Junction Box JL25. Prior to removing EJL18, the existing #6, #4, and #00 wires will be removed to EJL17. The existing conduit between EJL17 and EJL18 will not be disturbed during construction and will be reused. New conduit connecting JL25 and EJL17 will be spliced to existing conduit near the location of EJL17 as indicated on the plans.

Existing #6, #4, and #00 wires connecting EJL18 to EJL20 will be disconnected and removed to EJL20. The existing conduit between EJL18 and EJL20 will be removed. New conduit will be installed between JL25 and EJL20.

New #6, #4, and #00 wires will be pulled from EJL17 to JL25 and from JL25 to EJL20 and will be reconnected to ensure all lights are operational.

All costs associated with removing wires, splicing new conduit to existing conduit, reconnecting all #6, #4, and #00 wires, and making luminaires operational will be incidental to the contract unit price per each for “Type 1 Electrical Junction Box.”

JUNCTION BOXES JL26 and JT8

Existing #6 and #4 wires will be removed between EJL21 and EJL19. New #6 and #4 wires will be installed from EJL19 to JL26 and from JL26 to EJL21 and spliced to existing #6 and #4 wires. Existing junction boxes EJL21 and EJT12 will be replaced by new junction boxes JL26 and JT8. REL7 will connect to JL26. New #6 and #4 wires will be reconnected to ensure all lights are operational.

Existing signal conduit will be removed between just south of Edwards Street and ETJ12 and from ETJ12 to EJT13. New conduit will be installed between the point just south of Edwards Street and JT8 and from JT8 to EJT13 as shown on the plans.

All costs associated with removing wires, splicing new conduit to existing conduit, reconnecting all #6 and #4 wires, and making luminaires operational will be incidental to the contract unit price per each for “Type 1 Electrical Junction Box.”

EXIT 61 TRAFFIC SIGNAL CONTROLLER

The Contractor will provide temporary power to the signal controller at Exit 61 during construction.

The existing #2 and #4 wires powering the signal between the electric service cabinet and the traffic signal controller will be removed and replaced to ensure one continuous run of wire to the signal. No splices will be made to the wire powering the signal.

All costs associated with removing existing wires, splicing new conduit to existing conduit, and connecting all #2 and #4 wires will be incidental to contract unit price per foot for 1, “1/C #2 AWG Copper Wire.” And 2, “1/C #4 AWG Copper Wire.”

1/C #10 AWG COPPER WIRE - TRACER WIRE

#10 Tracer wire will have a yellow jacket and will be spliced only in junction boxes.

CONDUIT AND CABLE QUANTITIES

PROJECT	SECTION	SHEET
NH 016B(03)64	L6	L32

Plotting Date: 3/26/2026

Location to Location		Rigid Conduit								Copper Wire					Pole & Bracket Cable			Twisted Shielded Pair							
		Schedule 40				Schedule 80																			
		2" SCH 40 Ft	3" SCH 40 Ft			2" SCH 80 Ft	3" SCH 80 Ft			1/C #6 AWG Ft	1/C #4 AWG Ft	1/C #2 AWG Ft	1/C #00 AWG Ft	1/C #10 AWG Ft		2/C #10 AWG Ft			TSP #16 AWG Ft						
LUMINAIRES																									
HWY US-16B & SD-79																									
EL1	JL1		145'								480'				160'										
JL1	EL2						20'				405'				35'										
JL1	REL1		125'								420'				140'										
REL1	JL2		135'								450'				150'										
JL2	EL3						25'				420'				40'										
JL2	REL2		140'								465'				155'										
REL2	JL3		85'								295'				100'										
JL3	JL4		30'								125'				45'										
JL3	EJL4						20'				190'				35'										
JL5	JL6		50'								190'				65'										
JL6	EJL9						20'				220'				35'										
JL6	REL3		95'								325'				110'										
REL3	JL7		95'								325'				110'										
JL7	EJL13						20'				405'				35'										
REL4	EJL14						20'				405'				35'										
REL5	EJL15						20'				405'				35'										
HOMESTEAD TO ANAMOSA ST																									
METER 2	JL9		70'									620'			85'										
JL9	L1						110'					375'			125'										
L1	JL10		220'									715'			240'										
JL10	L3		5'									95'			20'										
JL10	JL12		220'								715'				240'										
JL12	L5		5'								95'				20'										
JL12	JL14		220'								715'				240'										
JL14	L7		5'								95'				20'										
JL14	JL16		220'								715'				240'										
JL16	L9		5'								95'				20'										
JL16	JL18		220'								715'				240'										
JL18	L11		5'								95'				20'										
JL18	JL20		220'								715'				240'										
JL20	L13		5'								95'				20'										
JL20	JL22		220'								715'				240'										
JL22	L15		5'								95'				20'										
JL22	JL24		170'								560'				190'										
JL24	L17		5'								95'				20'										
JL24	L19						100'				340'				115'										
EAST SIDE OF US16B																									
JL9	L2		105'									360'			120'										
L2	JL11		225'									730'			245'										
JL11	L4		5'									95'			20'										
JL11	JL13		220'								715'				240'										
JL13	L6		5'								95'				20'										
JL13	JL15		220'								715'				240'										
JL15	L8		5'								95'				20'										
JL15	JL17		220'								715'				240'										
JL17	L10		5'								95'				20'										
JL17	JL19		220'								715'				240'										
JL19	L12		5'								95'				20'										
JL19	JL21		220'								715'				240'										
JL21	L14		5'								95'				20'										
JL21	JL23		230'								745'				250'										
Subtotal:			4,410'				355'				16,175'	2,990'			5,575'										

CONDUIT AND CABLE QUANTITIES

SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L7	L32

Plotting Date: 3/26/2026

Location to Location		Rigid Conduit								Copper Wire					Pole & Bracket Cable			Twisted Shielded Pair							
		Schedule 40				Schedule 80																			
		2" SCH 40 Ft	3" SCH 40 Ft			2" SCH 80 Ft	3" SCH 80 Ft			1/C #6 AWG Ft	1/C #4 AWG Ft	1/C #2 AWG Ft	1/C #00 AWG Ft	1/C #10 AWG Ft		2/C #10 AWG Ft			TSP #16 AWG Ft						
LIGHTING CONTINUED																									
JL23	L16	5'								95'				20'											
JL23	L18	85'				80'				545'				185'											
I-90 SERVICE ROAD																									
EJL17	JL25		180'							590'	590'		590'	200'											
JL25	REL6	10'									65'			15'											
JL25	EJL20		60'				125'			605'	605'		605'	205'											
I-90 SERVICE ROAD / EDWARDS ST																									
EJL19	JL26					175'				575'	575'			195'											
JL26	REL7	10'									65'			25'											
JL26	EJL22	220'								715'	715'			240'											
SPLICE POINT	JT8					175'					SERVICE CABINET			195'											
JT8	EJT12	220'									TO CONTROLLER			240'											
SERVICE CABINET	CONTROLLER										2,940'	2,940'													
ADVANCE WARNING FLASHER SIGNS																									
HWY US-16B & SD-79																									
RET1	JT1	35'												190'											
JT1	Loop					15'								25'					55'						
JT1	JT2	195'												845'					425'						
JT2	Loop					15'								25'					55'						
JT2	JT3	215'												930'					930'						
JT3	Loop					15'								25'					55'						
JT3	JT4	100'												455'					680'						
JT4	EJT5					15'								310'					155'						
EJT5	EJT6																		405'						
EJT6	CONTROLLER																		2,165'						
EJT7	JT5					10'								1,010'					125'						
JT5	Loop					15'								25'					55'						
JT5	JT6	190'												825'					825'						
JT6	Loop					15'								25'					55'						
JT6	JT7	155'												680'					340'						
JT7	Loop					15'								25'					55'						
JT7	RET2	200'												870'											
EMPTY CONDUIT																									
SPLICE POINT	JE1	300'												320'											
JE1	JE2	330'												355'											
JE2	EJE3					20'								35'											
SPLICE NEAR JL5	JE3	80'												95'											
JE3	JE4	200'												220'											
JE4	SPLICE POINT					40'								55'											
Subtotal:		2,550'	240'			605'	125'			3,125'	5,555'	2,940'	1,195'	8,865'					6,380'						

CONDUIT AND CABLE QUANTITIES

PROJECT	SECTION	SHEET
NH 016B(03)64	L8	L32

Plotting Date: 3/26/2026

Location to Location	Rigid Conduit									Copper Wire					Pole & Bracket Cable	Twisted Shielded Pair							
	Schedule 40					Schedule 80																	
	2" SCH 40 Ft	3" SCH 40 Ft				2" SCH 80 Ft	3" SCH 80 Ft			1/C #6 AWG Ft	1/C #4 AWG Ft	1/C #2 AWG Ft	1/C #00 AWG Ft	1/C #10 AWG Ft		2/C #10 AWG Ft			TSP #16 AWG Ft					
POLE AND BRACKET CABLE																							
L1																70'							
L2																70'							
L3																70'							
L4																70'							
L5																70'							
L6																70'							
L7																70'							
L8																70'							
L9																70'							
L10																70'							
L11																70'							
L12																70'							
L13																70'							
L14																70'							
L15																70'							
L16																70'							
L17																70'							
L18																70'							
L19																70'							
REL1																70'							
REL2																70'							
REL3																70'							
REL4																70'							
REL5																70'							
REL6																70'							
REL7																70'							
EL1																70'							
EL17																70'							
Subtotal:																1,960'							
Total:		6,960'	240'			960'	125'			19,300'	8,545'	2,940'	1,195'	14,440'		1,960'			6,380'				

CONDUIT LAYOUT
US HWY 16B & CAMBELL ST

SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L9	L32

Plotting Date: 3/26/2026 — Revised: 3/18/2026 - JU

ESTIMATE OF QUANTITIES

KEY	ITEM	EST QUANT	UNIT
	Remove Luminaire Pole Footing (EL3, EL4, EL9, EL12, EL14, EL18, EL19)	7	EACH
	Remove and Reset Luminaire (REL1-REL7)	7	EACH
	Breakaway Base Luminaire Pole w/8' Arm 50' Mounting Height (L1-L19)	19	EACH
	Roadway Luminaire (L1-L19, REL1-REL7, EL1, EL17)	28	EACH
	2' Diameter Footing (L1-L19, REL1-REL7)	208	FT
	Type 1 Electrical Junction Box (JL1-JL26, JT1-JT8, JE1-JE4)	38	EACH
	Electrical Service Cabinet	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	6,960	FT
2" SCH 80	2" Rigid Conduit, Schedule 80	960	FT
3" SCH 40	3" Rigid Conduit, Schedule 40	240	FT
3" SCH 80	3" Rigid Conduit, Schedule 80	125	FT
#00	1/C #00 AWG Copper Wire	1,195	FT
#2	1/C #2 AWG Copper Wire	2,940	FT
#4	1/C #4 AWG Copper Wire	8,545	FT
#6	1/C #6 AWG Copper Wire	19,300	FT
#10	1/C #10 AWG Copper Wire	14,440	FT
TSP	Twisted Shielded Pair #16 AWG Copper Wire	6,380	FT
	2/C #10 AWG Copper Pole & Bracket Cable	1,960	FT

EXISTING ITEMS

KEY	ITEM
	Existing Junction Box (EJT5-EJT7, EJT12, EJL4-EJL9, EJL11, EJL13- EJL17, EJL19-EJL20, EJL22, EJE1, EJE3-EJE6)
	Existing Luminaire Pole (EL1-EL20)

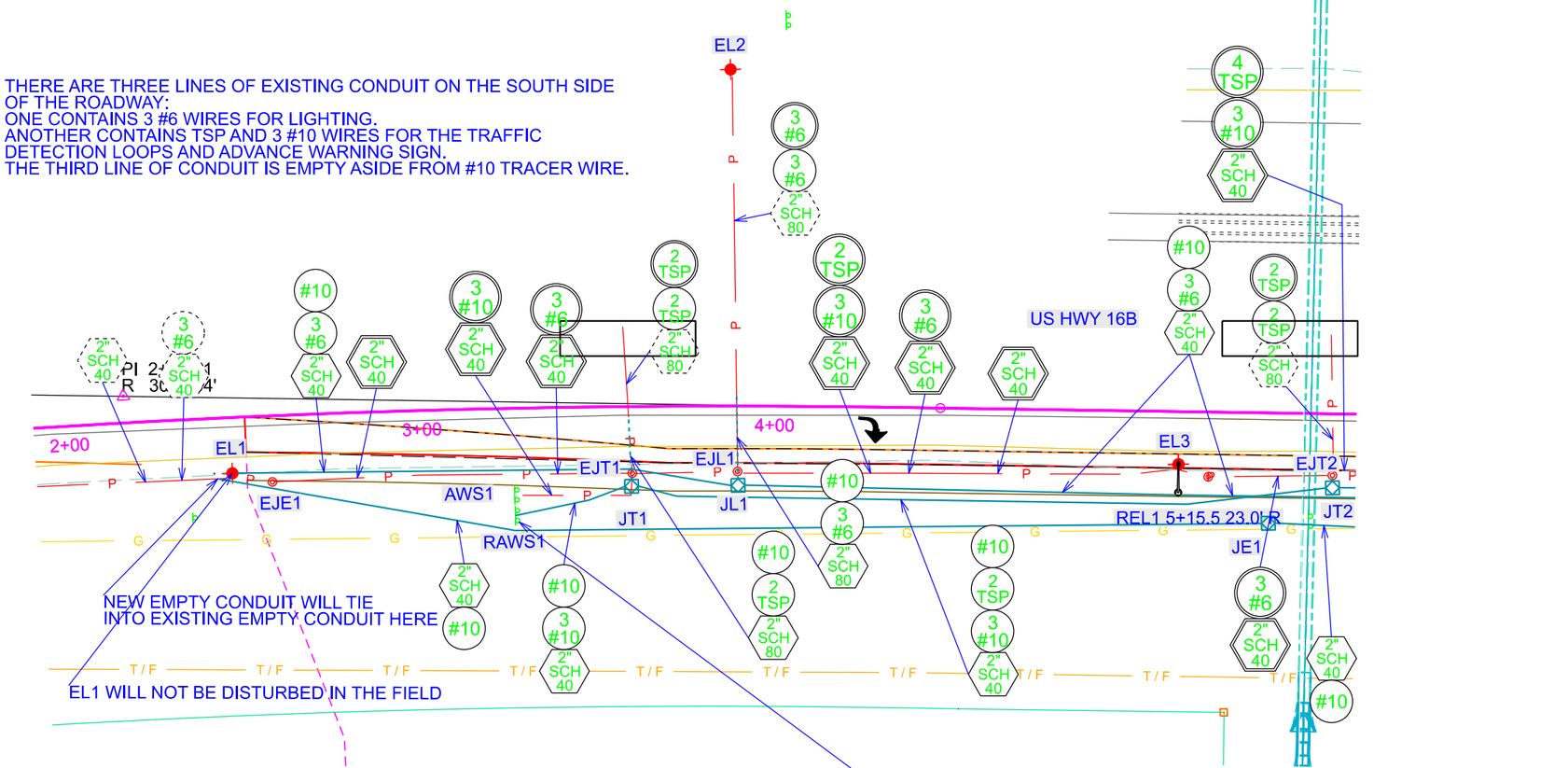
REMOVE ITEMS

KEY	ITEM
#6	1/C #6 AWG Copper Wire
#4	1/C #4 AWG Copper Wire
#2	1/C #2 AWG Copper Wire
#00	1/C #00 AWG Copper Wire
#10	1/C #10 AWG Copper Wire
2" SCH 40	2" Rigid Conduit, Schedule 40
2" SCH 80	2" Rigid Conduit, Schedule 80
TSP	Twisted Shielded Pair #16 AWG Copper Wire
	Existing Junction Box (EJT1-EJT4, EJT8-EJT12, EJL1-EJL3, EJL10, EJL12, EJL18, EJL21, EJE2, EJE7)

SUBSURFACE EQUIVALENT

KEY	RC SUBSURFACE
EL1	105-33
EL2	105-32
EL3	105-31
EJL1	JB-X577
EJE1	JB-X577
EJT1	JB-X579
EJT2	JB-X579
AWS1	320-C7

THERE ARE THREE LINES OF EXISTING CONDUIT ON THE SOUTH SIDE OF THE ROADWAY:
ONE CONTAINS 3 #6 WIRES FOR LIGHTING.
ANOTHER CONTAINS TSP AND 3 #10 WIRES FOR THE TRAFFIC DETECTION LOOPS AND ADVANCE WARNING SIGN.
THE THIRD LINE OF CONDUIT IS EMPTY ASIDE FROM #10 TRACER WIRE.



EXISTING JUNCTION BOX KEY
- EJE: EXISTING JUNCTION BOX - EMPTY
- EJL: EXISTING JUNCTION BOX - LIGHTING
- EJT: EXISTING JUNCTION BOX - TRAFFIC/ADVANCE WARNING SIGN

CONDUIT LAYOUT
US HWY 16B & CAMBELL ST

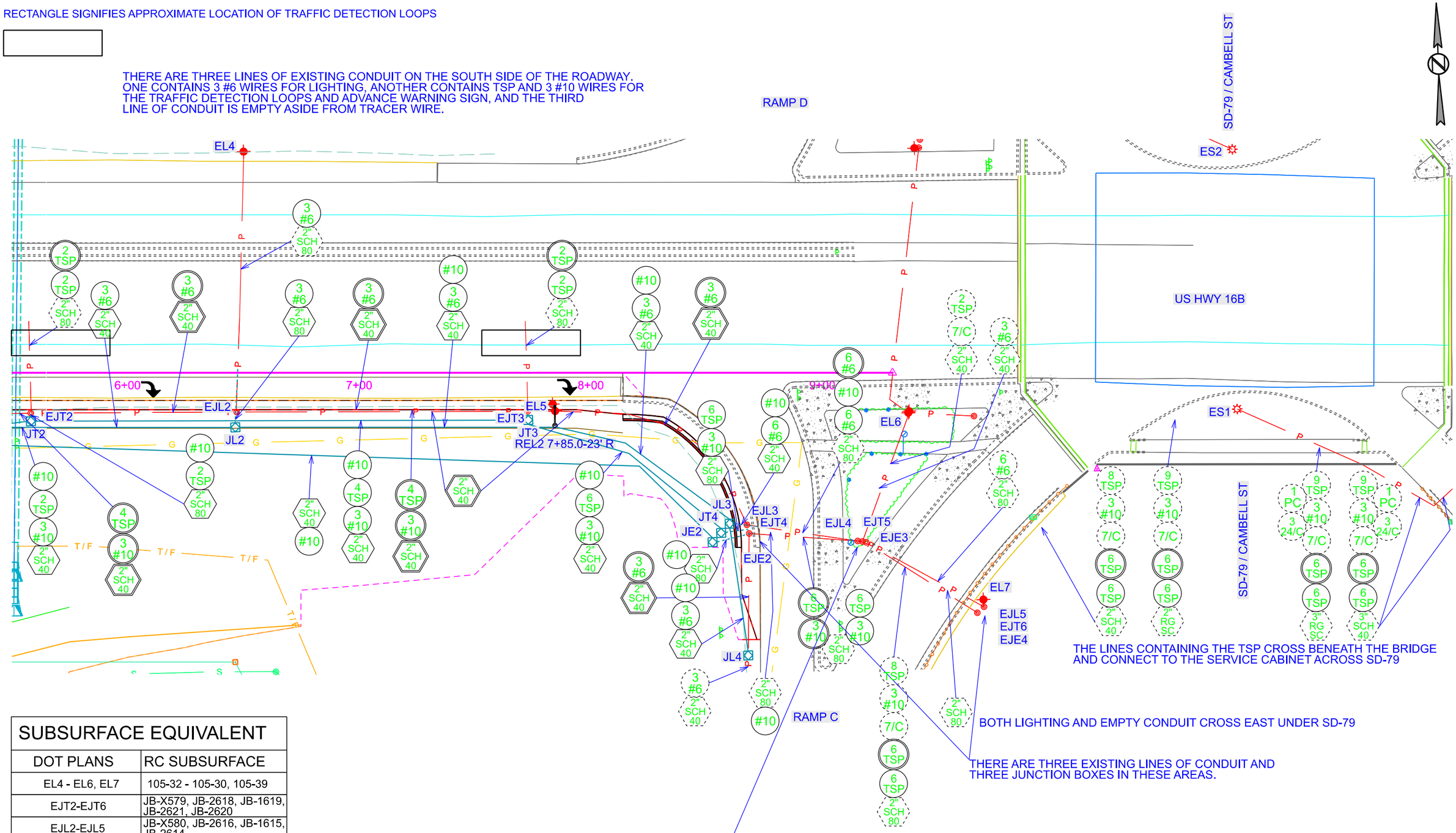
SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L10	L32

Plotting Date: 3/26/2026 — Revised: 3/18/2026 - JU

EXISTING JUNCTION BOX KEY
- EJE: EXISTING JUNCTION BOX - EMPTY
- EJL: EXISTING JUNCTION BOX - LIGHTING
- EJT: EXISTING JUNCTION BOX - TRAFFIC/ADVANCE WARNING SIGN

RECTANGLE SIGNIFIES APPROXIMATE LOCATION OF TRAFFIC DETECTION LOOPS

THERE ARE THREE LINES OF EXISTING CONDUIT ON THE SOUTH SIDE OF THE ROADWAY. ONE CONTAINS 3 #6 WIRES FOR LIGHTING, ANOTHER CONTAINS TSP AND 3 #10 WIRES FOR THE TRAFFIC DETECTION LOOPS AND ADVANCE WARNING SIGN, AND THE THIRD LINE OF CONDUIT IS EMPTY ASIDE FROM TRACER WIRE.



THE LINES CONTAINING THE TSP CROSS BENEATH THE BRIDGE AND CONNECT TO THE SERVICE CABINET ACROSS SD-79

BOTH LIGHTING AND EMPTY CONDUIT CROSS EAST UNDER SD-79

THERE ARE THREE EXISTING LINES OF CONDUIT AND THREE JUNCTION BOXES IN THESE AREAS.

NEW WIRES WILL BE SPLICED TO EXISTING WIRES INSIDE THESE EXISTING JUNCTION BOXES AS DESCRIBED IN THE NOTES

SUBSURFACE EQUIVALENT	
DOT PLANS	RC SUBSURFACE
EL4 - EL6, EL7	105-32 - 105-30, 105-39
EJT2-EJT6	JB-X579, JB-2618, JB-1619, JB-2621, JB-2620
EJL2-EJL5	JB-X580, JB-2616, JB-1615, JB-2614
EJE2-EJE4	JB-2617, JB-2611, JB-2610

CONDUIT LAYOUT
US HWY 16B & CAMBELL ST

SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L11	L32

Plotting Date: 3/26/2026

Revised: 3/18/2026 - JU

RECTANGLE SIGNIFIES APPROXIMATE LOCATION OF TRAFFIC DETECTION LOOPS

SPLICE NEW EMPTY CONDUIT TO EXISTING EMPTY CONDUIT NEAR THIS LOCATION

SD-79 / CAMBELL ST

RAMP A

JL5

JE3

JL6

JL7

JL8

JE4

EJL9

EJL10

EL8

EL9

EJT8

REL3 2+05.0-25.0' L

JT5

EJL12

EJE7

JT6

EJT9

REL4 4+60.0-25.0' L

EL12

JT7

EJT10

EJT11

1+00

2+00

3+00

4+00

6-

US HWY 16B

120\240 v.a.c., 60hz., 1 Phase, 3 Wire Service By Black Hills Energy

EXISTING METER 1

EJT7

EJL8

EJE5

EL11

EJL13

EJL14

EJE6

EL13

EJL11

EL10

RAMP B

SD-79 / CAMBELL ST

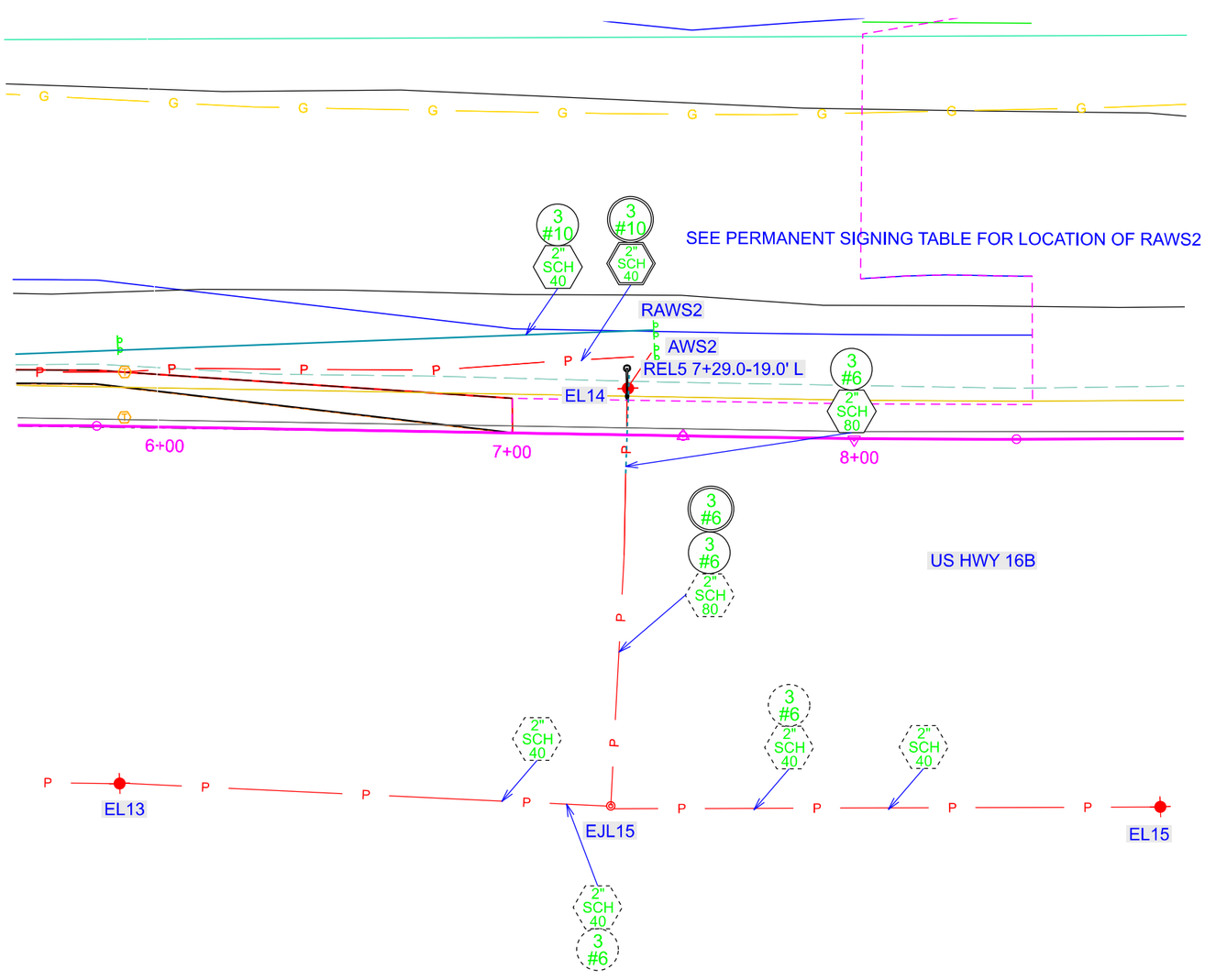
SUBSURFACE EQUIVALENT

DOT PLANS	RC SUBSURFACE
EL8-EL13	105-18, 105-19, 105-25, 105-24, 105-20, 105-23
EJT7-EJT11	JB-X599, JB-X658, JB-X654, JB-2638, JB-2639
EJL8-EJL14	JB-X600, JB-X660, JB-X626, JB-2598, JB-X656, JB-X605, JB-X607
EJE5-EJE7	JB-X606, JB-X608, JBX655

CONDUIT LAYOUT
US HWY 16B & CAMBELL ST

SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L12	L32

Plotting Date: 3/26/2026 Revised: 3/18/2026 - JU

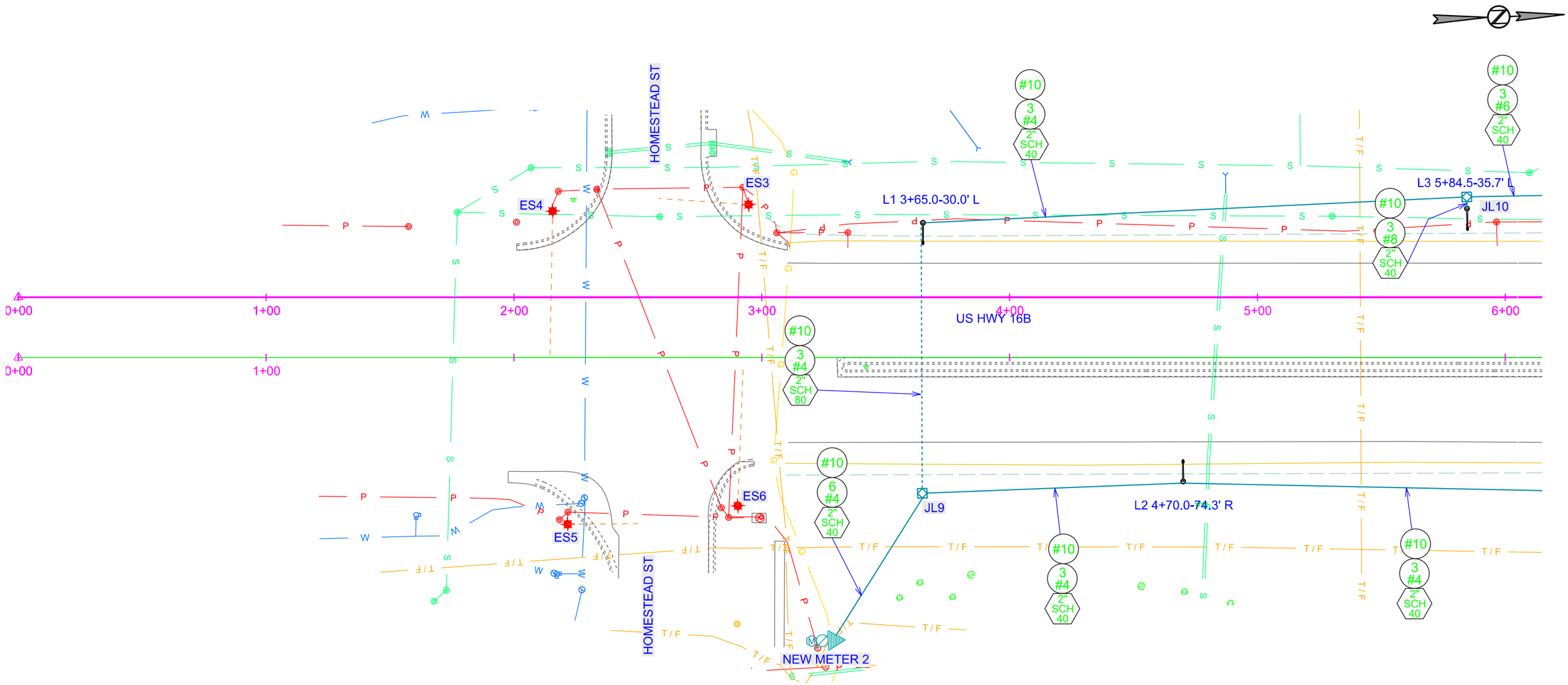


SUBSURFACE EQUIVALENT	
DOT PLANS	RC SUBSURFACE
EL13, EL14, EL15	105-23, 105-21, 105-22
AWS2	320-AB
EJL15	JB-X676

CONDUIT LAYOUT
US HWY 16B & HOMESTEAD ST

SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L13	L32

Plotting Date: 3/26/2026

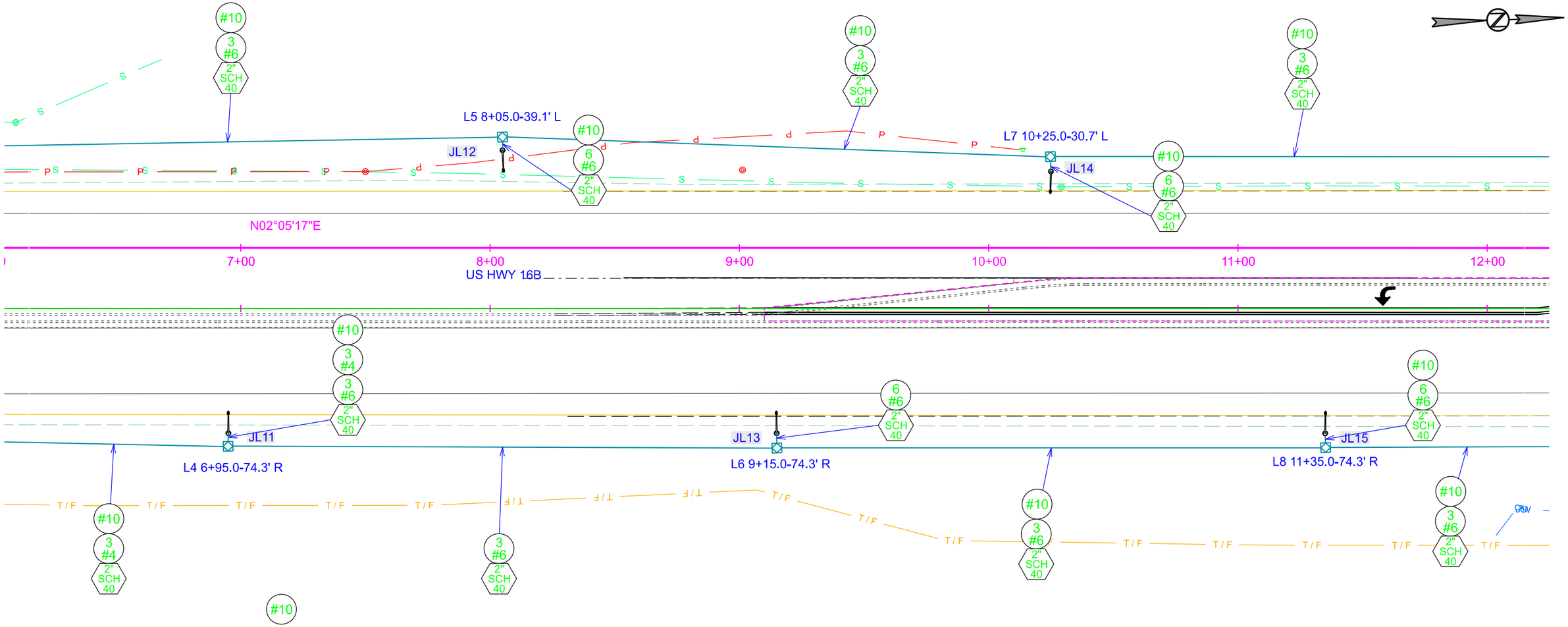


120\240 v.a.c., 60hz.,
1 Phase, 3 Wire Service
By West River Electric

CONDUIT LAYOUT
US HWY 16B

SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L14	L32

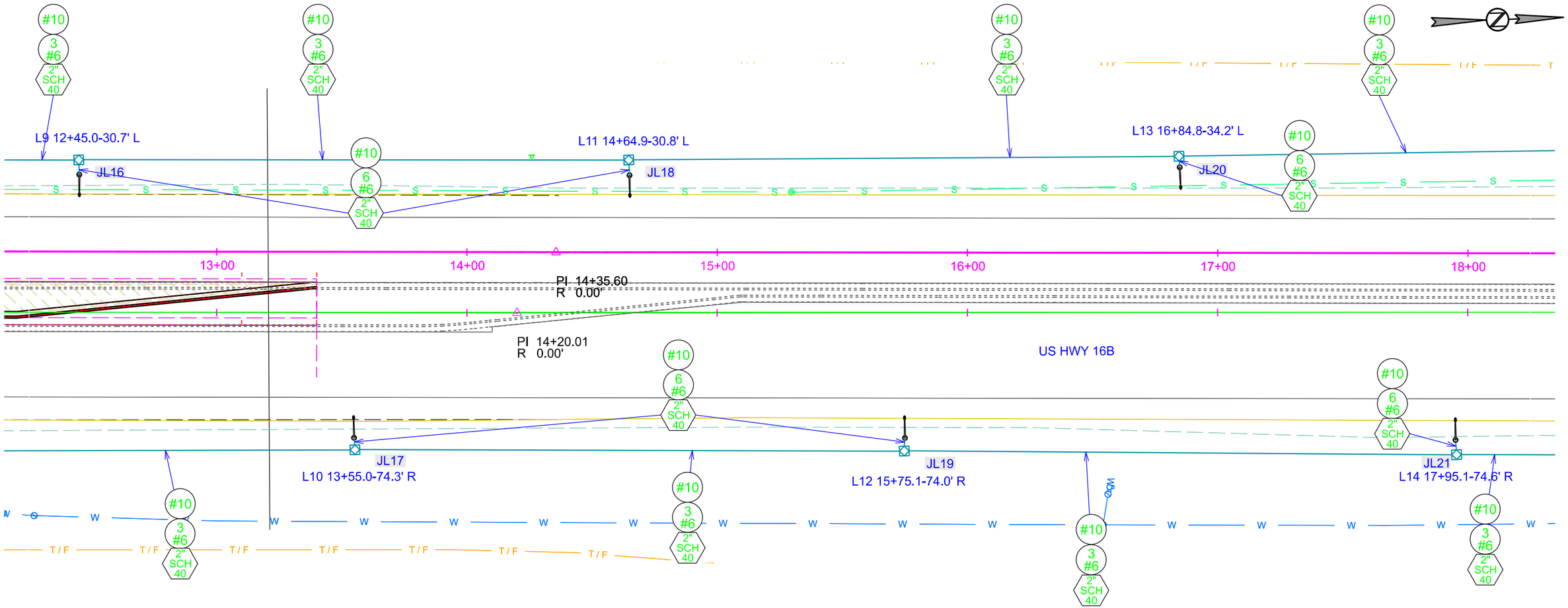
Plotting Date: 3/26/2026



CONDUIT LAYOUT
US HWY 16B

SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L15	L32

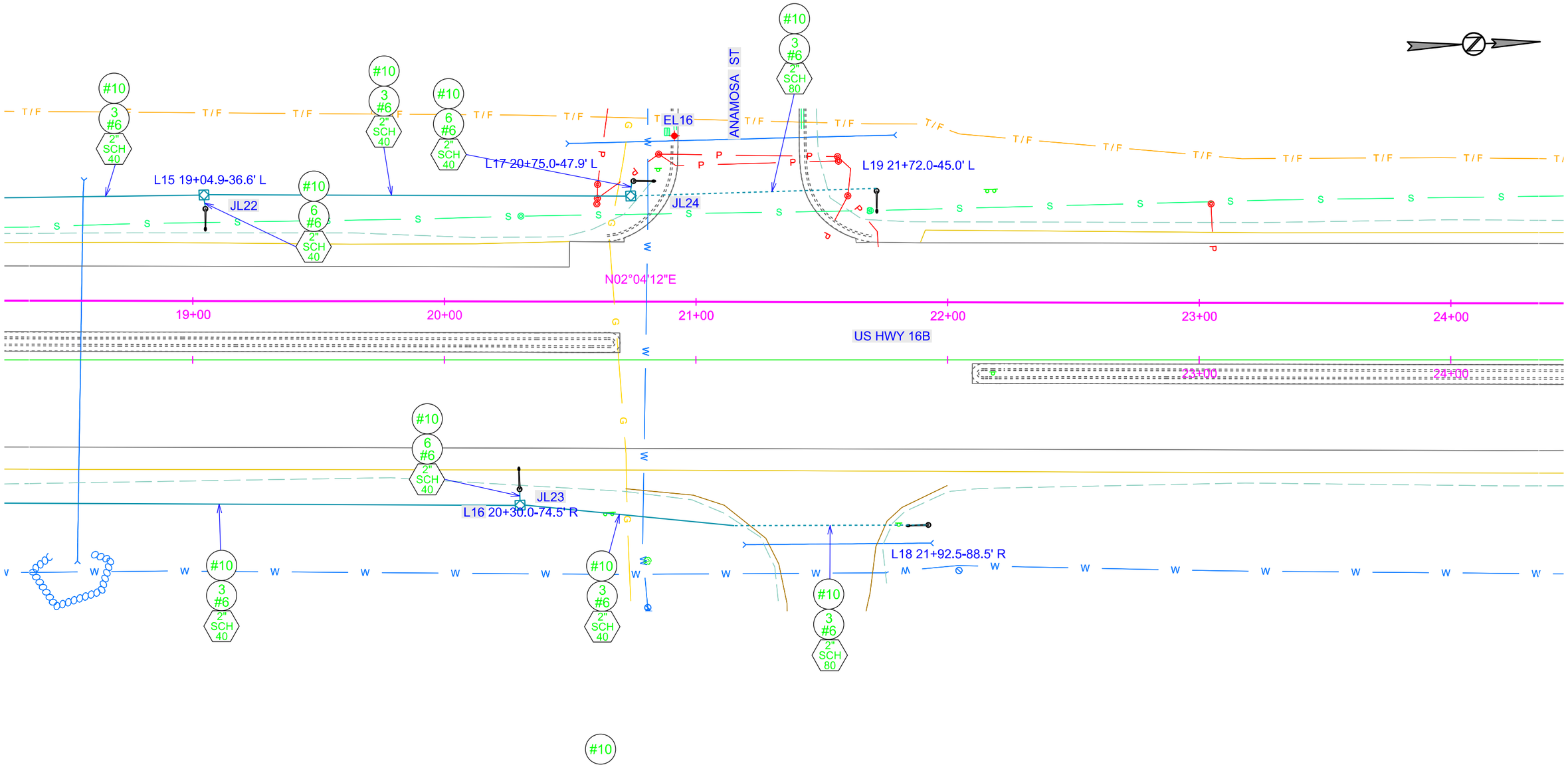
Plotting Date: 3/26/2026



CONDUIT LAYOUT
US-16B & ANAMOSA ST

SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L16	L32

Plotting Date: 3/26/2026



CONDUIT LAYOUT
US HWY 16B & I90 SERVICE RD

PROJECT	SECTION	SHEET
NH 016B(03)64	L17	L32

Plotting Date: 3/26/2026

SUBSURFACE EQUIVALENT	
KEY	RC SUBSURFACE
EL17-EL21	321-1, 321-2, 40-2, EL21 NOT LISTED, 40-3
EJL16-EJL22	JB-X150, JB-X772, JB-X773, JB-X762, JB-X749, JB-5067, JB-X745
EJT13-EJT14	JB-X750, JB-X746

Existing conduit from EJT13 and EJL22 to EJT12 and EJL21 are two seperate conduit runs that continue south to the service cabinet approximately 400 ft south of EJT12 and EJL21. One conduit contains 3 #2 wires and 3 #4 wires. The other conduit contains 3 #6 and 3 #4 wires. REL7 connects to the conduit with 3 #6 and 3 #4 wires.

The conduit containing the 3 #4 and 3 #2 wires provides power to the signal at the interchange to the north. All wires between the traffic signal cabinet (approximately 500 ft north of EL21) and the electric service cabinet must be replaced for a continuous line of wiring with no splices in the wires.

New conduit will be bored underneath the I-90 Service Rd/Edwards St and connect from JT8 to just south of Edwards St and from JL26 to EJL19 approximately 180 ft south of REL7.

SPLICE NEW TRAFFIC CONDUIT TO EXISTING CONDUIT HERE

I90 SERVICE RD/EDWARDS ST

US HWY 16B

I90 SERVICE RD

JT8

REL7 1+25.5-21.5' L

REL6 2+14.5-19.5' R

JL26

JL25

EJT12

EJT13

EJL22

EJL21

EJL20

EJL19

EJL18

EJL17

EJL16

EL19

EL20

EL21

EL18

EL17

EXISTING METER 3

3194

3192

1+00

2+00

3+00

4+00

120\240 v.a.c., 60hz.,
1 Phase, 3 Wire Service
By West River Electric Association

© 2026 Microsoft Corporation © 2026 Maxar ©CNES (2026) Distribution Airbus DS

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

WIRING DIAGRAM
US HWY 16B & CAMBELL ST

SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L18	L32

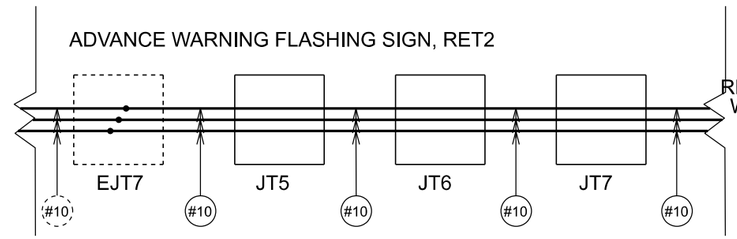
Plotting Date: 3/26/2026 — Revised: 3/26/2026 - JU

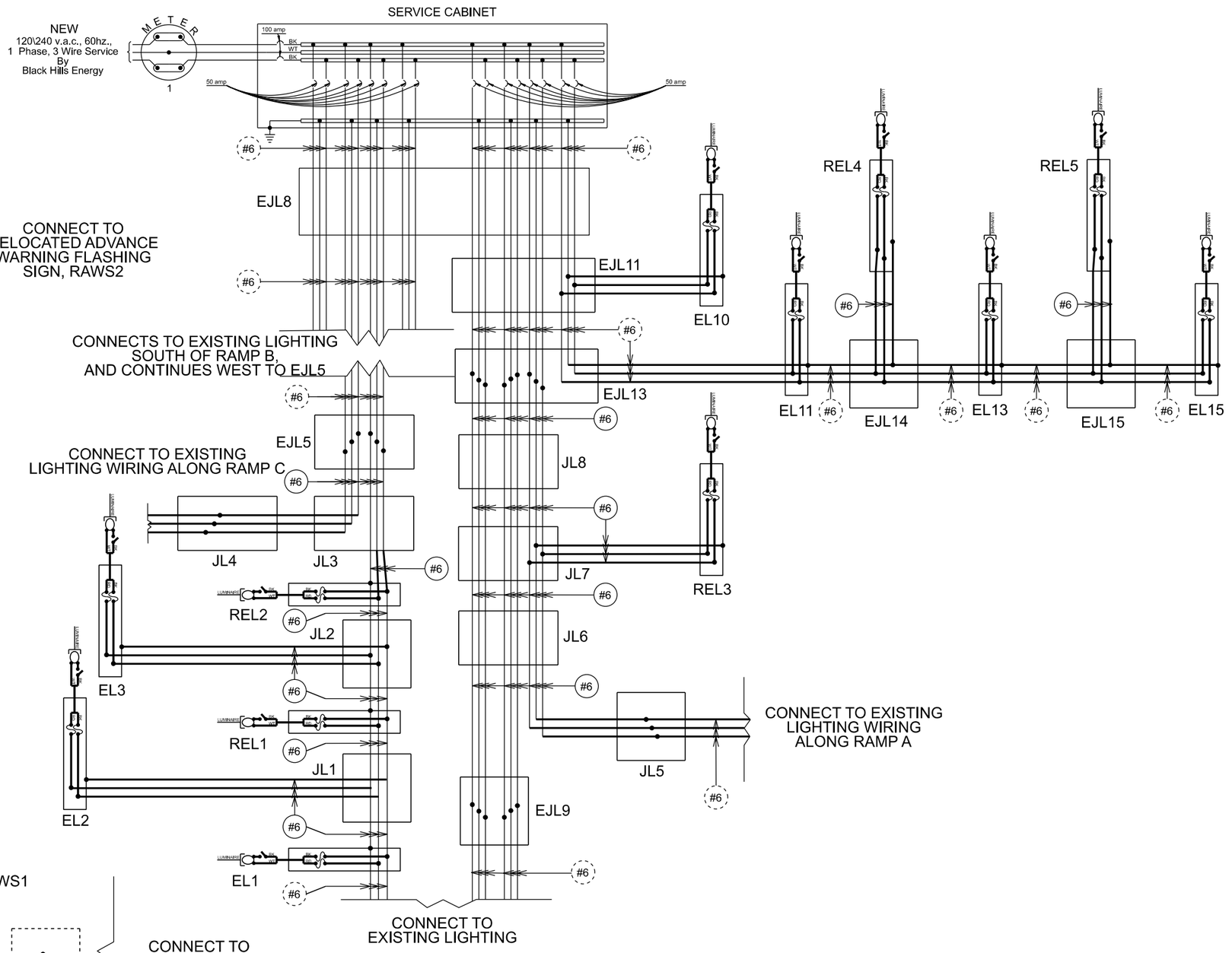
LEGEND:

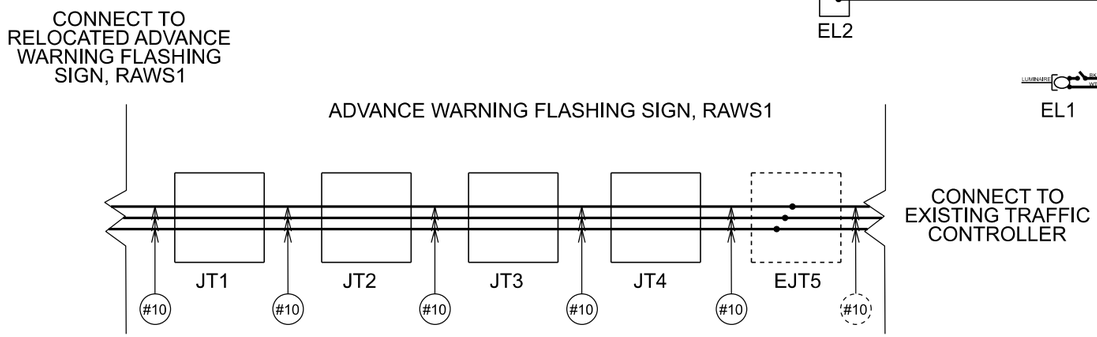
FUSE: 10 amp.

LUMINAIRE: LED

PHOTOCELL (TYPICAL OF ALL)





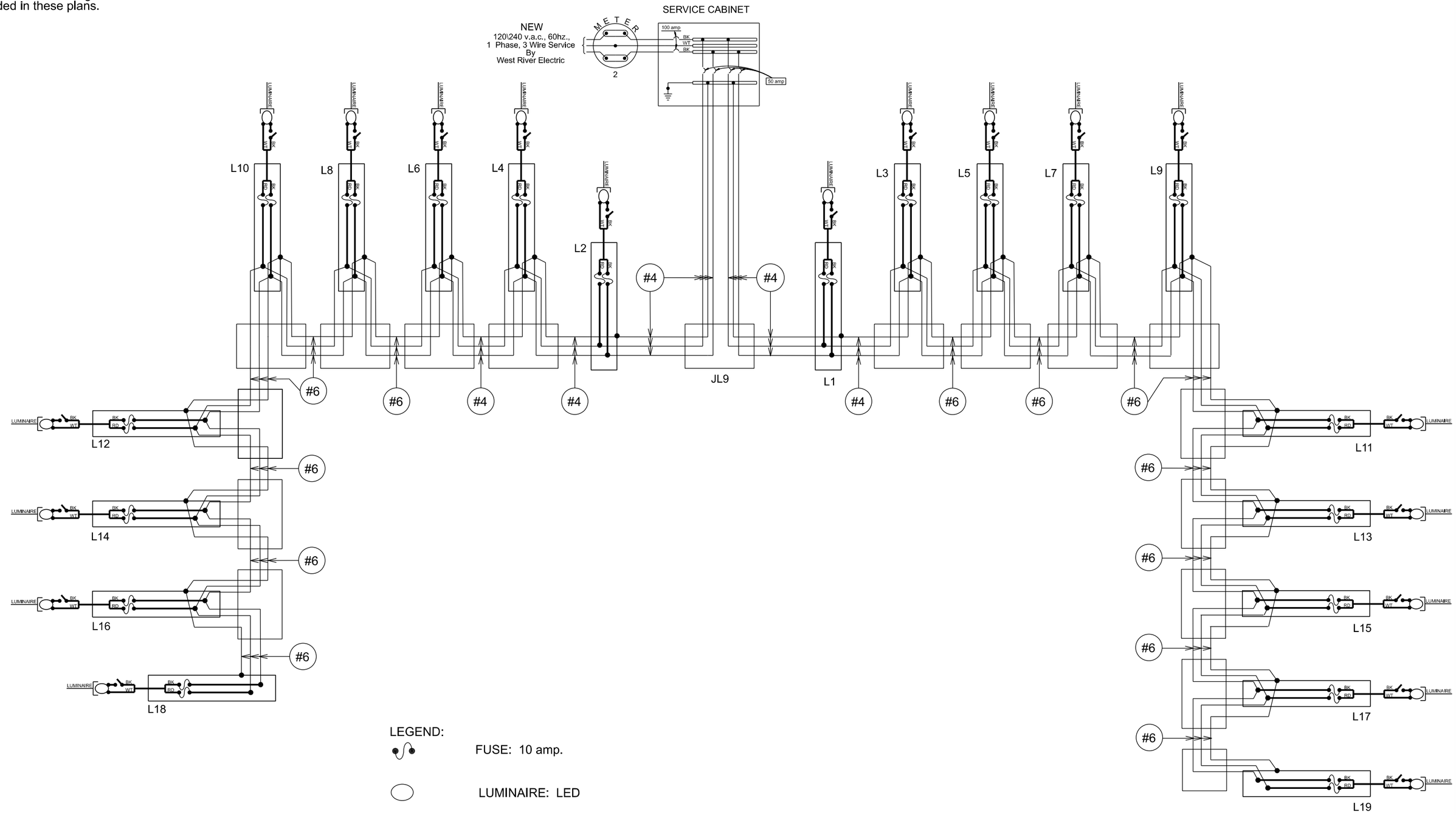


SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L19	L32

Plotting Date: 3/26/2026

WIRING DIAGRAM
US HWY 16B & HOMESTEAD ST

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

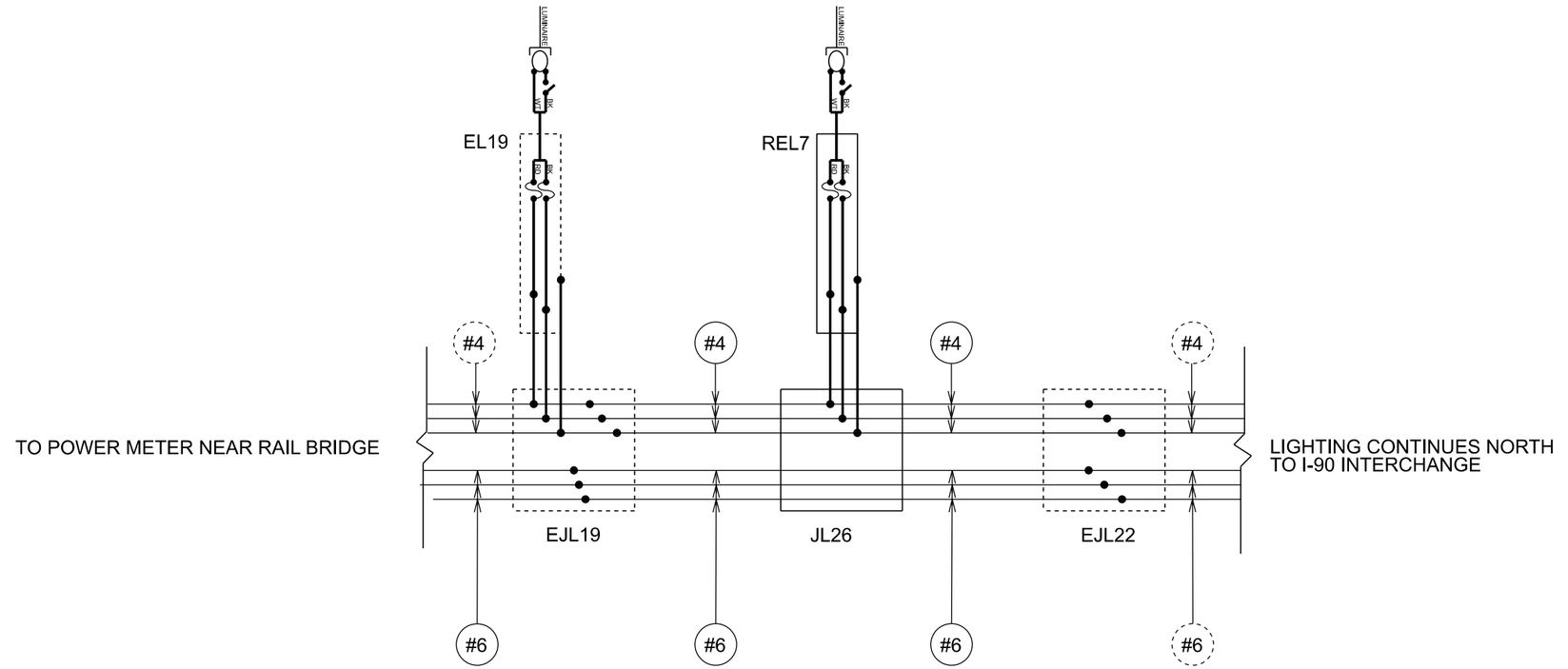
PHOTOCELL (TYPICAL OF ALL)

SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L20	L32

Plotting Date: 3/26/2026

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

WIRING DIAGRAM
US HWY 16B & EDWARDS ST / I-90 SERVICE ROAD



LEGEND:

FUSE: 10 amp.

LUMINAIRE: LED

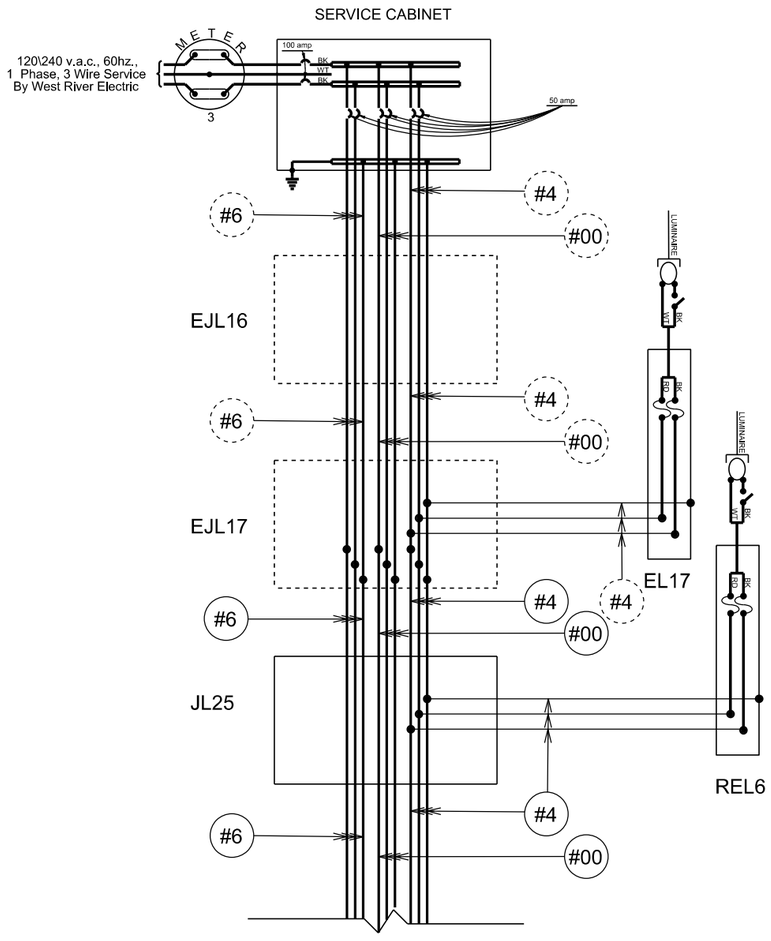
PHOTOCELL (TYPICAL OF ALL)

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

WIRING DIAGRAM
I-90 SERVICE ROAD

SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L21	L32

Plotting Date: 3/26/2026



SPLICES INTO EJL20

LEGEND:

FUSE: 10 amp.

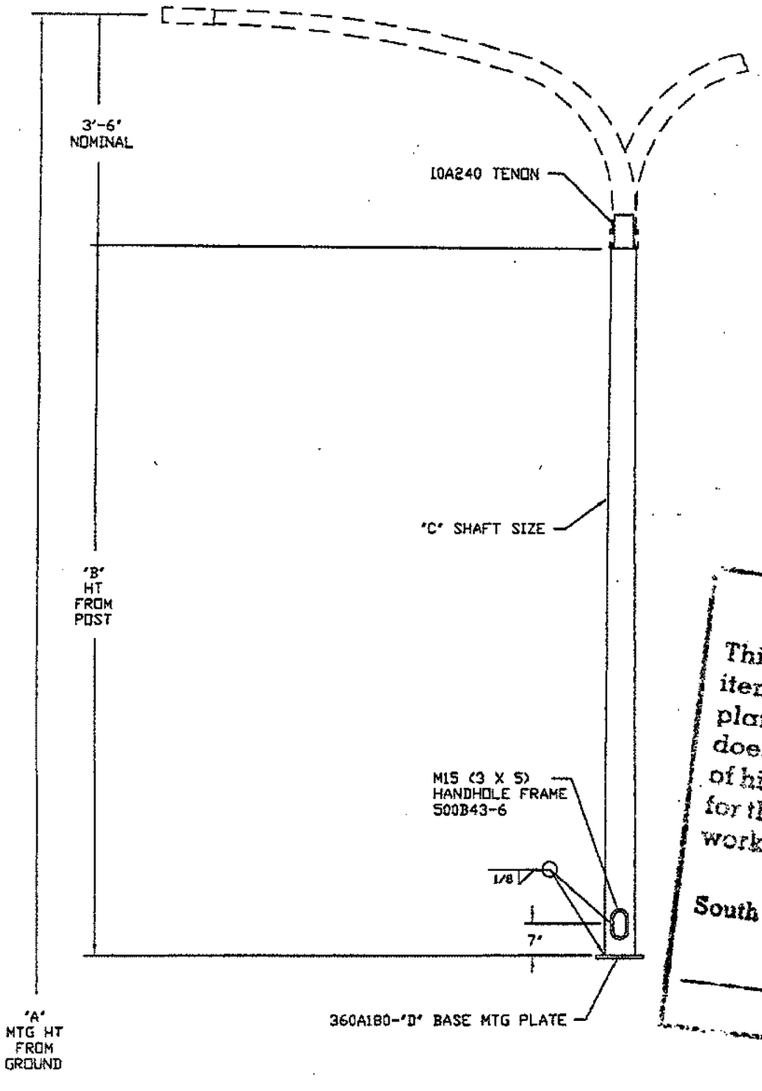
LUMINAIRE: LED

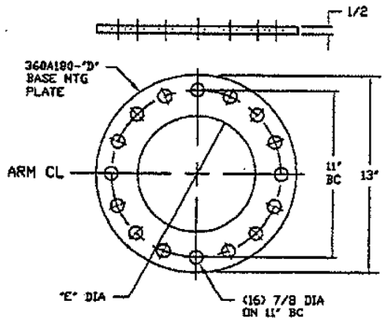
PHOTOCELL (TYPICAL OF ALL)

SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L22	L32

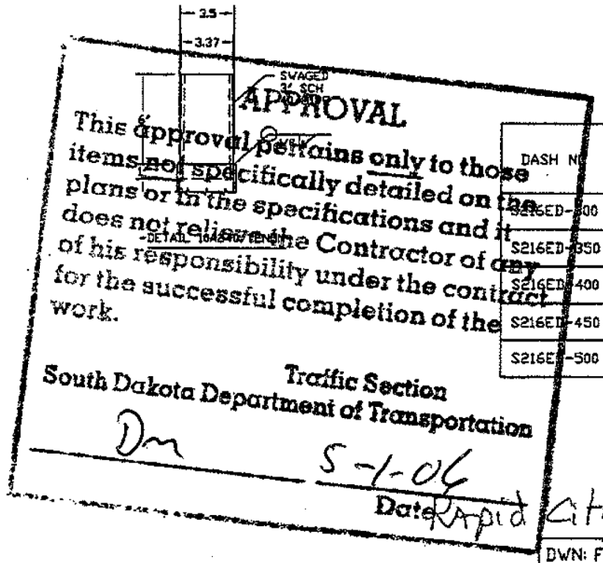
Plotting Date: 3/26/2026

SPECIAL DETAILS
SHOP DRAWINGS FOR EXISTING LUMINAIRES





-DETAIL LUMINAIRE EXTENSION BASE MTG PLATE-



NOTE :

1. MATERIAL- HIGH STRENGTH LOW ALLOY STEEL 50,000 PSI MIN YIELD PER ASTM A607 (A606 IF SELF WEATHERING) BASE PLATE MATERIAL TO BE A36 (A588 IF SELF WEATHERING)
2. FINISH- TO MATCH THE FINISH LISTED ON THE TRAFFIC SIGNAL STANDARD DRAWING
3. LUMINAIRE EXTENSION TO BE 16-SIDED TUBE FABRICATED WITH ONE SUBMERGED ARC LONGITUDINAL SEAM WELD WITH 70% PENETRATION. GAS METAL ARC WELDING PROCESS MAY BE USED FOR REMAINDER OF WELDED FABRICATION
4. HEX HEAD BOLTS & NUTS (UNLESS SPECIFIED) ASTM A3254 GV A153
5. COIL SIZES FOR TAPERED OCTAGON TUBES: 11GA X 7.0 (21 1/2) X 3.88 (11 3/4) = 33 1/4 COIL 11GA X 8.54 (26 1/4) X 3.88 (11 3/4) = 38' COIL
6. FOR REFERENCE ONLY WHEN ORDERING A COMPLETE EXTENSION ASSY SEPARATELY THE FOLLOWING PARTS WILL BE INCLUDED: (1) 500B43-1 HANDHOLE COVER, (1) 500B43-2 HANDHOLE LATCH, (1) 5/16-18NC X 2" LG HX SCKT FL HD SCREW (18-8 SS), (4) 3/4-10NC X 2 1/4 LG HVY HX HD BOLT (A325-GV), (4) 3/4-10NC HVY HX NUT, (4) 3/4 LOCKWASHER & (4) 3/4 FLATWASHER
7. USE THE (4) 3/4 FLATWASHERS AS SHIMS TO PLUMB THE EXTENSION DURING INSTALLATION

HOT DIP GALVANIZED

DASH NO	QTY	'A' MTG HT	'B' HT FROM POST	'C' SHAFT SIZE	'D' BASE MTG PL 360A180-	'E' DIA
S216ED-300		30'-0"	5'-0"	11GA X 7.0 X 3.88 X 5'-0"	-2	5"
S216ED-350		35'-0"	10'-0"	11GA X 7.0 X 3.88 X 10'-0"	-2	5"
S216ED-400		40'-0"	15'-0"	11GA X 8.54 X 3.88 X 15'-0"	-1	7 5/8
S216ED-450		45'-0"	20'-0"	11GA X 8.54 X 3.88 X 20'-0"	-1	7 5/8
S216ED-500	8	50'-0"	25'-0"	11GA X 8.54 X 3.88 X 25'-0"	-1	7 5/8

5-1-06

Rapid City, SD Hwy 235 Bypass NH0235(1)0

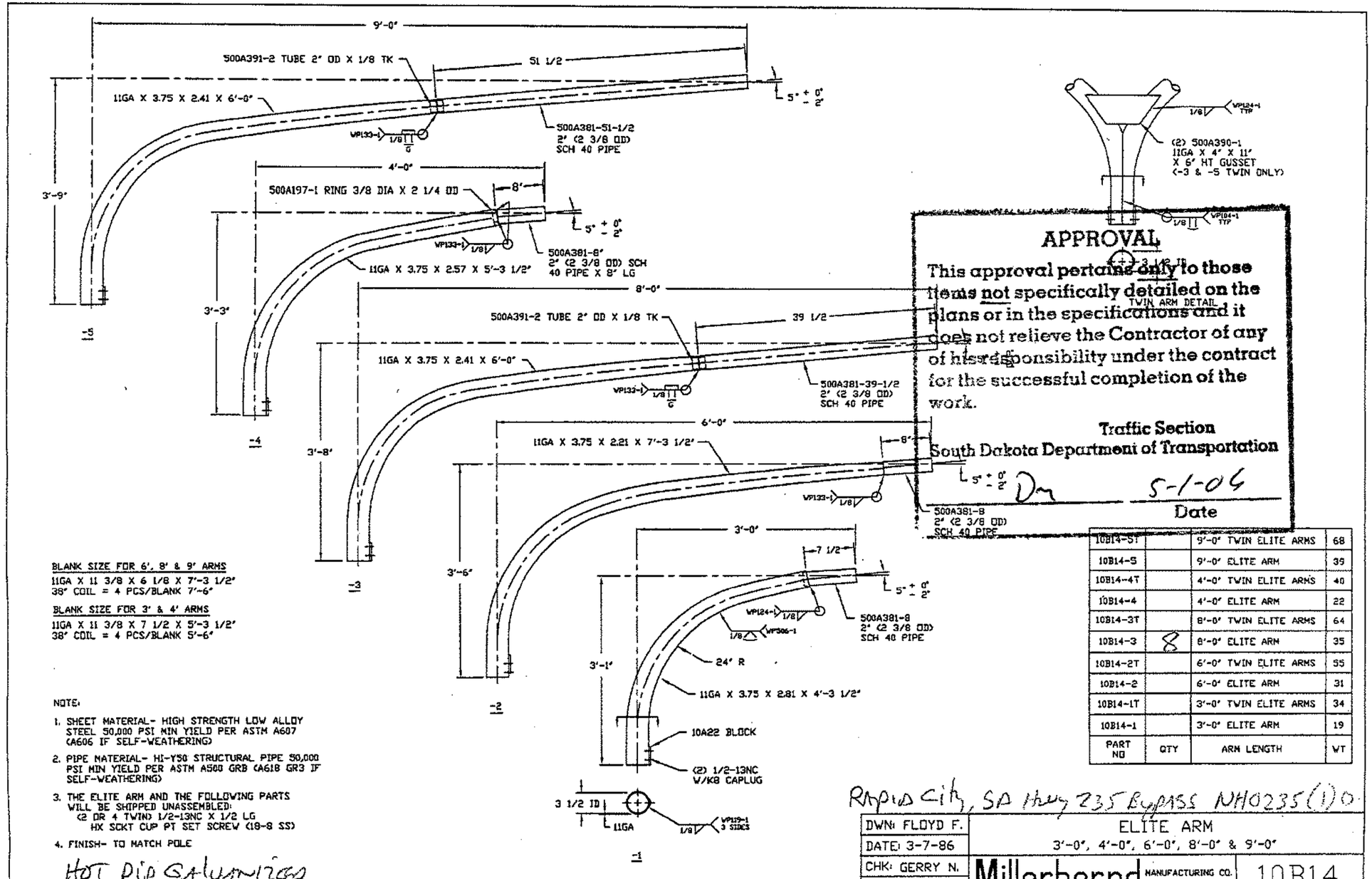
#21255

REV 11-26-02 1 3/4 TO 2 1/4 LG BOLT REV 11-12-02 ADD (4) 3/4 FLATWASHERS

DWN: FLOYD F.	S216/ED LUMINAIRE EXTENSION "D" MT 16-SIDED 21'-6" POST HT	
DATE: 1-24-02		
CHK: WILL Q.	Millerbernd MANUFACTURING CO. WINSTED, MN	360B182
SCALE: NTS		

Plotted From - TRRC11715 File - ...\dgn\StdPlatesSectionL_New.dgn

SPECIAL DETAILS
SHOP DRAWINGS FOR EXISTING LUMINAIRES



APPROVAL

This approval pertains only to those items not specifically detailed on the plans or in the specifications and it does not relieve the Contractor of any of his responsibility under the contract for the successful completion of the work.

Traffic Section
South Dakota Department of Transportation

5-1-06
Date

PART NO	QTY	ARM LENGTH	WT
10B14-5T		9'-0" TWIN ELITE ARMS	68
10B14-5		9'-0" ELITE ARM	39
10B14-4T		4'-0" TWIN ELITE ARMS	40
10B14-4		4'-0" ELITE ARM	22
10B14-3T		8'-0" TWIN ELITE ARMS	64
10B14-3	8	8'-0" ELITE ARM	35
10B14-2T		6'-0" TWIN ELITE ARMS	55
10B14-2		6'-0" ELITE ARM	31
10B14-1T		3'-0" TWIN ELITE ARMS	34
10B14-1		3'-0" ELITE ARM	19

BLANK SIZE FOR 6', 8' & 9' ARMS
11GA X 11 3/8 X 6 1/8 X 7'-3 1/2"
38" COIL = 4 PCS/BLANK 7'-6"

BLANK SIZE FOR 3' & 4' ARMS
11GA X 11 3/8 X 7 1/2 X 5'-3 1/2"
38" COIL = 4 PCS/BLANK 5'-6"

NOTE:

1. SHEET MATERIAL- HIGH STRENGTH LOW ALLOY STEEL 50,000 PSI MIN YIELD PER ASTM A607 (A606 IF SELF-WEATHERING)
2. PIPE MATERIAL- HI-Y50 STRUCTURAL PIPE 50,000 PSI MIN YIELD PER ASTM A500 GRB (A618 GR3 IF SELF-WEATHERING)
3. THE ELITE ARM AND THE FOLLOWING PARTS WILL BE SHIPPED UNASSEMBLED:
   (2 OR 4 TWIN) 1/2-13NC X 1/2 LG HX SCKT CUP PT SET SCREW (18-8 SS)
4. FINISH- TO MATCH POLE

HOT DIP GALVANIZED

REV 5-3-01 REV 10-6-99 REV 2-27-92

DWN: FLOYD F.	ELITE ARM	
DATE: 3-7-86	3'-0", 4'-0", 6'-0", 8'-0" & 9'-0"	
CHK: GERRY N.	Millerbernd MANUFACTURING CO. WINSTED, MN	10B14
SCALE: NTS		

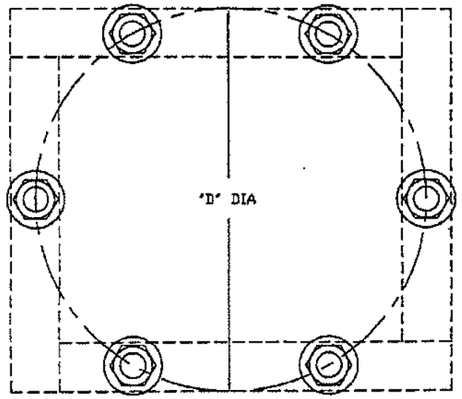
Rapid City, SD Hwy 235 Bypass NH0235(1)0

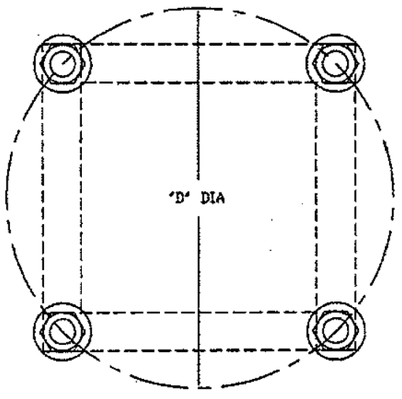
#21255

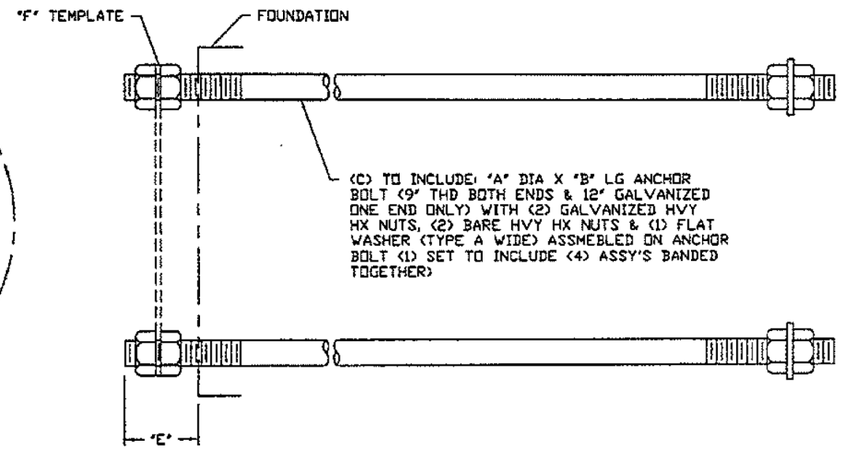
SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L24	L32

Plotting Date: 3/26/2026

SPECIAL DETAILS
SHOP DRAWINGS FOR EXISTING LUMINAIRES







NOTE:

1. ANCHOR BOLT MAT'L - ASTM A449
   1" DIA - 92,000 PSI MIN YIELD
   1 1/4 & 1 1/2 DIA - 81,000 PSI MIN YIELD
   2" DIA - 58,000 PSI MIN YIELD
   NUT MAT'L - ASTM A194 GR 2H
   FLATWASHER MAT'L - ASTM F436
2. ANCHOR BOLT & NUTS GALVANIZED PER ASTM A153
3. THREAD TO BE CLASS 2A PER AMERICAN STD. B L1 .030 OVER SIZE AFTER GALVANIZING
4. ALL BOLTS ROLLED THREAD
5. NO WELDING IS ALLOWED ON ANCHOR BOLTS
6. GALVANIZED HEAVY HEX NUTS PER A194 GR 2H (.030 OVER SIZE)
7. BARE HEAVY HEX NUTS PER A194 GR 2H

APPROVAL

This approval pertains only to those items not specifically detailed on the plans or in the specifications and it does not relieve the Contractor of any of his responsibility under the contract for the successful completion of the work.

Traffic Section
South Dakota Department of Transportation

Dm 5-1-06
Date

PART NO	QTY (/SET)	'A' THD SIZE	'B' BOLT LG	'C' QTY 460A204-	'D' BC	'E' BOLT PROJ	'F' TEMPLATE
460B110-16		2-4 1/2	96"	(4) ASSY'S 460A204-4	26 1/2	8"	460B139-8
460B110-15		2-4 1/2	96"	(4) ASSY'S 460A204-4	23"	8"	460B139-7
460B110-14		1 1/2-6	60"	(6) ASSY'S 460A204-3	22"	6 1/2	460B136-1
460B110-13		1 1/4-7	48"	(4) ASSY'S 460A204-2	13.5	4 1/2	460B137-9
460B110-12		2-4 1/2	96"	(4) ASSY'S 460A204-4	22"	8"	460B139-5
460B110-11		1-8	40"	(1) SET 460A204-1	11"	4"	460B131-8
460B110-10		1-8	40"	(1) SET 460A204-1	15"	3"	460B131-20
460B110-9	8	1 1/2-6	60"	(4) ASSY'S 460A204-3	22"	6 1/2	460B138-12
460B110-8		1 1/2-6	60"	(4) ASSY'S 460A204-3	20"	6 1/2	460B138-11
460B110-7		1 1/4-7	48"	(4) ASSY'S 460A204-2	17"	4"	460B137-12
460B110-6		1 1/2-6	60"	(4) ASSY'S 460A204-3	17"	6 1/2	460B138-7
460B110-5		1 1/2-6	60"	(4) ASSY'S 460A204-3	18"	6 1/2	460B138-8
460B110-4		1 1/2-6	60"	(4) ASSY'S 460A204-3	14"	6 1/2	460B138-3
460B110-3		1 1/4-7	48"	(4) ASSY'S 460A204-2	17"	4 1/2	460B137-12
460B110-2		1-8	40"	(1) SET 460A204-1	12"	4"	460B131-11
460B110-1		1-8	40"	(1) SET 460A204-1	15"	4"	460B131-20

Rapid City, SD Hwy 235 Bypass NH0235(1)0

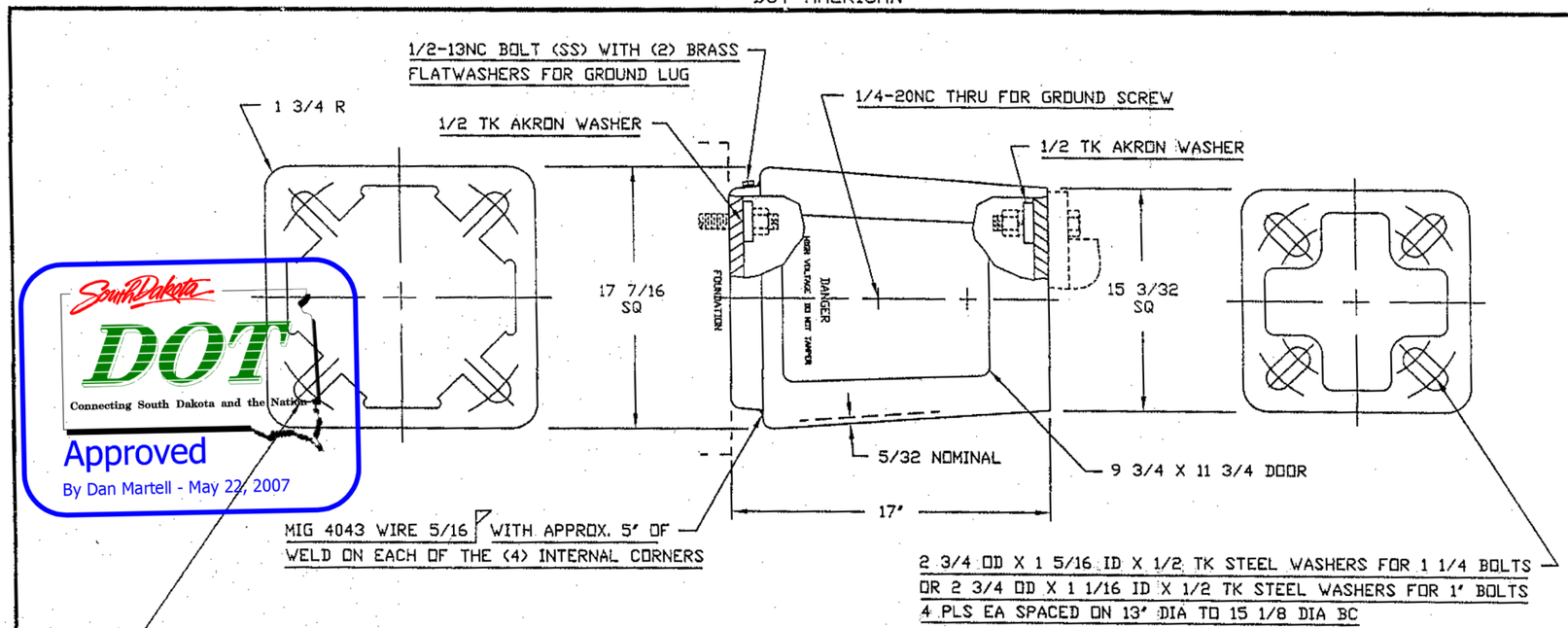
REV 1-28-02 REV 5-10-01
REV 7-13-95 REV 9-26-94
REV 6-7-95 REV 4-1-94
REV 1-16-95 REV 1-28-94
REV 1-11-95 REV 7-13-93

DWN: FLOYD F.	ANCHOR BOLT CLUSTER TABULATION (ASTM A449 MATERIAL)
DATE: 6-29-93	
CHK: WADE L.	Millerbernd MANUFACTURING CO. WINSTED, MN — 460B110
SCALE: NTS	

#21255

SPECIAL DETAILS
SHOP DRAWINGS FOR EXISTING LUMINAIRES

TB3-17 "BUY AMERICAN"



South Dakota DOT
Connecting South Dakota and the Nation
Approved
By Dan Martell - May 22, 2007

WHEN ADDITIONAL STATIC LOADING IS REQUIRED ON 15" DIA BC APPLICATIONS USE 5/8 X 2 3/4 X 4 1/4 RECTANGULAR STEEL WASHER UNDER 2 3/4 OD X 1 1/16 ID X 1/2 WASHERS FOR 1" DIA ANCHORAGE GROUND MOUNTING BC

QTY 36 - 80B449
QTY 3 - 10B347
QTY 49 - 10B400
QTY 5 - 10B443-446
93

DOOR SUPPLIED WITH OR WITHOUT LOGO, IN ALUMINUM OR PLASTIC, WITH OR WITHOUT HINGE WITH 1/4-20 SS HX SCREW

ALL WASHERS TO BE ZINC MECHANICAL COATED PER ASTM B 695-85 CLASS 50

356 T-6 ALUMINUM ALLOY / SS WHEELABRATED FINISH CHEMICAL AND PHY CERTS TO BE SUPPLIED WITH EACH SHIPMENT

ADHESIVE BREAKAWAY AND CAUTION LABELS TO APPEAR ON INSIDE WALL OPPOSITE DOOR OPENING

PART NO	QTY	DESCRIPTION
TB3-17-HD-MOD-1		T-BASE W/O LOGO IN ALUM HINGED DOOR, (8) 1 1/16 ID WASHERS & (4) 5/8 X 2 3/4 X 4 1/4 RECTANGULAR WASHERS
TB3-17-P-HD-MOD-1		T-BASE WITH HINGED PLASTIC DOOR & (8) 1 1/16 ID WASHERS
TB3-17-P		T-BASE WITH NON-HINGED PLASTIC DOOR & (8) 1 5/16 ID WASHERS
TB3-17-HD		T-BASE WITH HINGED ALUM DOOR & (8) 1 5/16 ID WASHERS
TB3-17-MOD-2		T-BASE WITH NON-HINGED ALUM DOOR, (4) 1 1/16 ID WASHERS & (4) 5/8 X 2 3/4 X 4 1/4 RECTANGULAR WASHERS
TB3-17-MOD-1		T-BASE WITH NON-HINGED ALUM DOOR, (8) 1 1/16 ID WASHERS & (4) 5/8 X 2 3/4 X 4 1/4 RECTANGULAR WASHERS
TB3-17	93	T-BASE WITH NON-HINGED ALUM DOOR & (8) 1 5/16 ID WASHERS

FINISH: BARE CAST FINISH

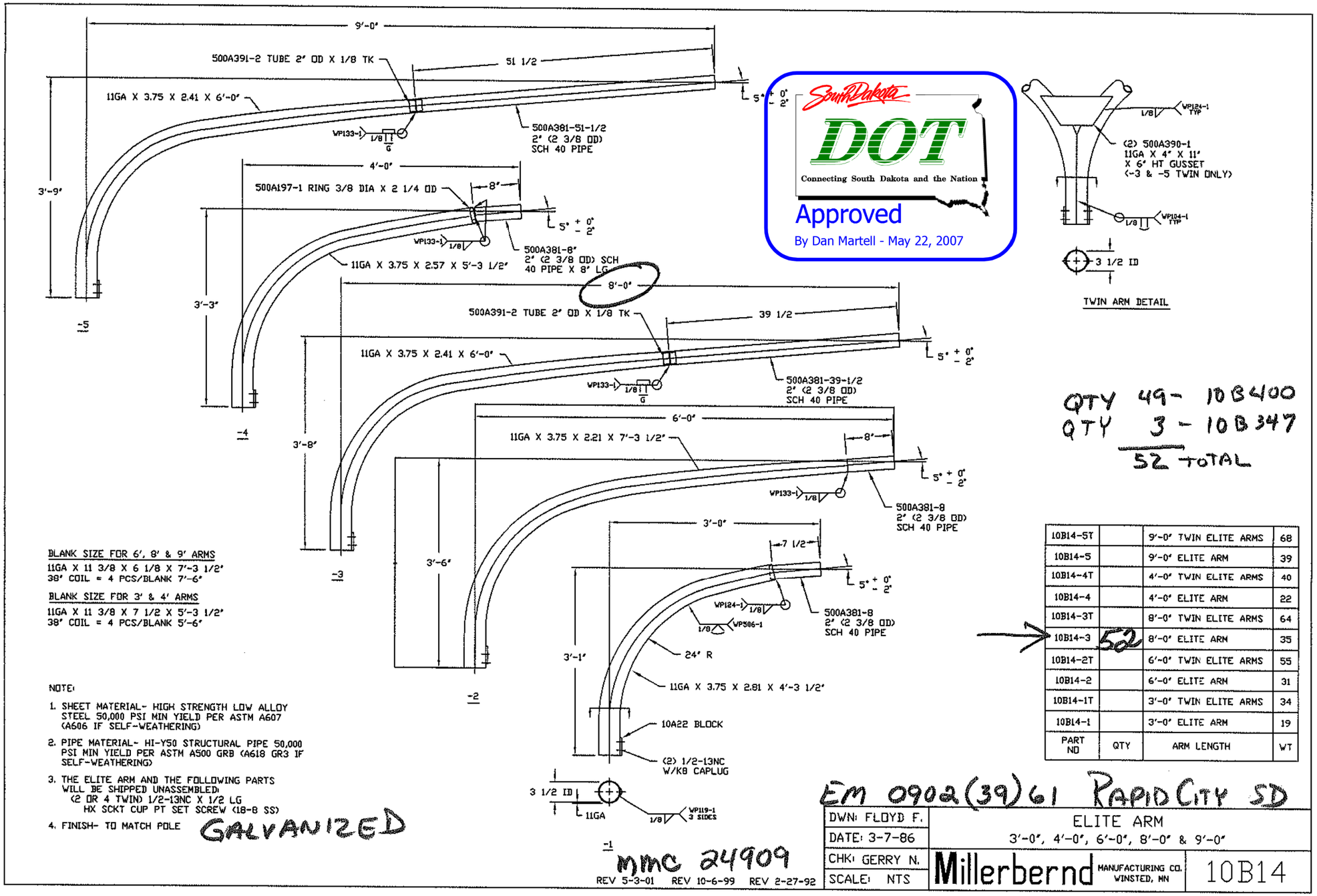
mmc 24909

EM 0902(39)61 RAPID CITY SD

AKRON FOUNDRY CO.	
1985 AASHTO T-BASE	
1-25-88	TB3-17

MATERIAL MELTED AND MANUFACTURED IN THE USA CASTINGS PRODUCED IN THE USA

SPECIAL DETAILS
SHOP DRAWINGS FOR EXISTING LUMINAIRES



TWIN ARM DETAIL

South Dakota DOT
Connecting South Dakota and the Nation
Approved
By Dan Martell - May 22, 2007

QTY 49 - 10B400
QTY 3 - 10B347
52 TOTAL

BLANK SIZE FOR 6', 8' & 9' ARMS
11GA X 11 3/8 X 6 1/8 X 7'-3 1/2"
38" COIL = 4 PCS/BLANK 7'-6"

BLANK SIZE FOR 3' & 4' ARMS
11GA X 11 3/8 X 7 1/2 X 5'-3 1/2"
38" COIL = 4 PCS/BLANK 5'-6"

NOTE:

1. SHEET MATERIAL- HIGH STRENGTH LOW ALLOY STEEL 50,000 PSI MIN YIELD PER ASTM A607 (A606 IF SELF-WEATHERING)
2. PIPE MATERIAL- HI-Y50 STRUCTURAL PIPE 50,000 PSI MIN YIELD PER ASTM A500 GRB (A618 GR3 IF SELF-WEATHERING)
3. THE ELITE ARM AND THE FOLLOWING PARTS WILL BE SHIPPED UNASSEMBLED:
   (2 OR 4 TWIN) 1/2-13NC X 1/2 LG HX SCKT CUP PT SET SCREW (18-8 SS)
4. FINISH- TO MATCH POLE GALVANIZED

PART NO	QTY	ARM LENGTH	WT
10B14-5T		9'-0" TWIN ELITE ARMS	68
10B14-5		9'-0" ELITE ARM	39
10B14-4T		4'-0" TWIN ELITE ARMS	40
10B14-4		4'-0" ELITE ARM	22
10B14-3T		8'-0" TWIN ELITE ARMS	64
10B14-3	52	8'-0" ELITE ARM	35
10B14-2T		6'-0" TWIN ELITE ARMS	55
10B14-2		6'-0" ELITE ARM	31
10B14-1T		3'-0" TWIN ELITE ARMS	34
10B14-1		3'-0" ELITE ARM	19

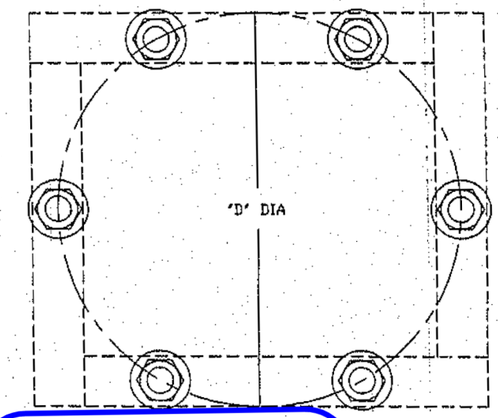
MMC 24909

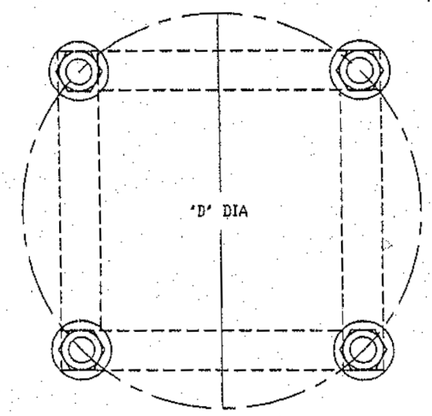
REV 5-3-01 REV 10-6-99 REV 2-27-92

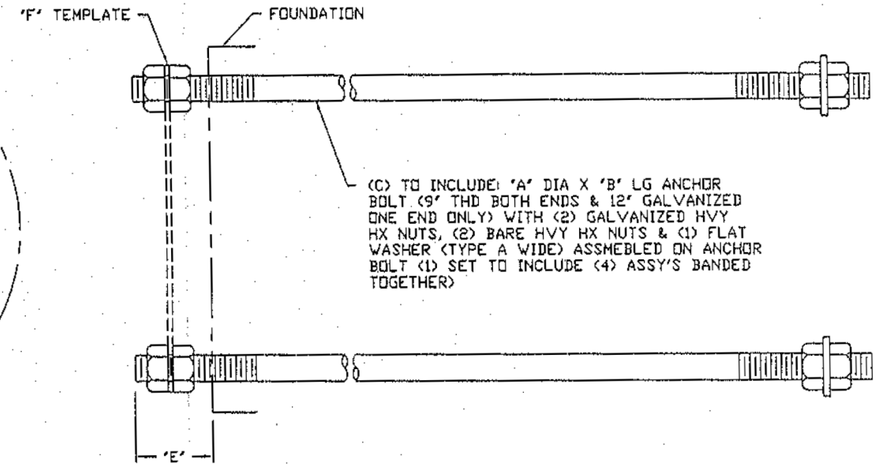
EM 0902(39)61 RAPID CITY SD

DWN: FLOYD F.	ELITE ARM
DATE: 3-7-86	3'-0", 4'-0", 6'-0", 8'-0" & 9'-0"
CHK: GERRY N.	Millerbernd MANUFACTURING CO. WINSTED, MN
SCALE: NTS	10B14

SPECIAL DETAILS
SHOP DRAWINGS FOR EXISTING LUMINAIRES







South Dakota DOT — Connecting South Dakota and the Nation

Approved
By Dan Martell - May 22, 2007

NOTE:
1. ANCHOR BOLT MAT'L - ASTM A449
   1' DIA - 92,000 PSI MIN YIELD
   1 1/4 & 1 1/2 DIA - 81,000 PSI MIN YIELD
   2' DIA - 58,000 PSI MIN YIELD
   NUT MAT'L - ASTM A194 GR 2H
   FLATWASHER MAT'L - ASTM F436
2. ANCHOR BOLT & NUTS GALVANIZED PER ASTM A153
3. THREAD TO BE CLASS 2A PER AMERICAN STD. B 1.1 .030 OVER SIZE AFTER GALVANIZING
4. ALL BOLTS ROLLED THREAD
5. NO WELDING IS ALLOWED ON ANCHOR BOLTS
6. GALVANIZED HEAVY HEX NUTS PER A194 GR 2H (.030 OVER SIZE)
7. BARE HEAVY HEX NUTS PER A194 GR 2H

#Sets / DWG #
QTY 36 - 80B449
QTY 3 - 10B347
QTY 49 - 10B400
QTY 5 - 10B443-446
93

PART NO	QTY (4/SET)	'A' THD SIZE	'B' BOLT LG	'C' QTY 460A204-	'D' BC	'E' BOLT PROJ	'F' TEMPLATE
460B110-16		2-4 1/2	96'	(4) ASSY'S 460A204-4	26 1/2	8'	460B139-8
460B110-15		2-4 1/2	96'	(4) ASSY'S 460A204-4	23'	8'	460B139-7
460B110-14		1 1/2-6	60'	(6) ASSY'S 460A204-3	22'	6 1/2	460B136-1
460B110-13		1 1/4-7	48'	(4) ASSY'S 460A204-2	13.5	4 1/2	460B137-9
460B110-12		2-4 1/2	96'	(4) ASSY'S 460A204-4	22'	8'	460B139-5
460B110-11		1-8	40'	(1) SET 460A204-1	11'	4'	460B131-8
460B110-10		1-8	40'	(1) SET 460A204-1	15'	3'	460B131-20
460B110-9		1 1/2-6	60'	(4) ASSY'S 460A204-3	22'	6 1/2	460B138-12
460B110-8		1 1/2-6	60'	(4) ASSY'S 460A204-3	20'	6 1/2	460B138-11
460B110-7	93	1 1/4-7	48'	(4) ASSY'S 460A204-2	17'	4'	460B137-12
460B110-6		1 1/2-6	60'	(4) ASSY'S 460A204-3	17'	6 1/2	460B138-7
460B110-5		1 1/2-6	60'	(4) ASSY'S 460A204-3	18'	6 1/2	460B138-8
460B110-4		1 1/2-6	60'	(4) ASSY'S 460A204-3	14'	6 1/2	460B138-3
460B110-3		1 1/4-7	48'	(4) ASSY'S 460A204-2	17'	4 1/2	460B137-12
460B110-2		1-8	40'	(1) SET 460A204-1	12'	4'	460B131-11
460B110-1		1-8	40'	(1) SET 460A204-1	15'	4'	460B131-20

EM0902(39)61 RAPID CITY SD

mmc 24909

REV 1-28-02 REV 5-10-01
REV 7-13-95 REV 9-26-94
REV 6-7-95 REV 4-1-94
REV 1-16-95 REV 1-28-94
REV 1-11-95 REV 7-13-93

DWN: FLOYD F.
DATE: 6-29-93
CHK: WADE L.
SCALE: NTS

ANCHOR BOLT CLUSTER TABULATION
(ASTM A449 MATERIAL)

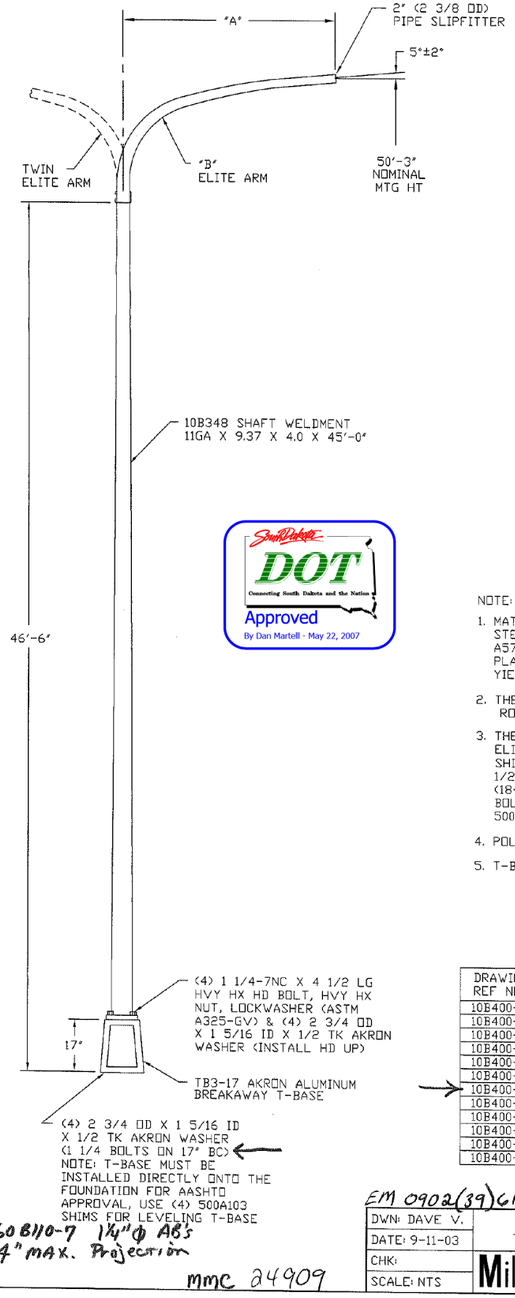
Millerbernd MANUFACTURING CO. WINSTED, MN

460B110

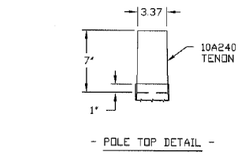
SD DOT	PROJECT	SECTION	SHEET
	NH 016B(03)64	L28	L32

Plotting Date: 3/26/2026

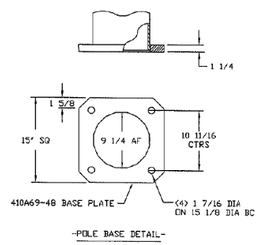
SPECIAL DETAILS
SHOP DRAWINGS FOR EXISTING LUMINAIRES



460B110-7 1¼"ø ABs 4" MAX. Projection



- POLE TOP DETAIL -



-POLE BASE DETAIL-

SouthDakota DOT Connecting South Dakota and the Nation
Approved
By Dan Martell - May 22, 2007

NOTE:

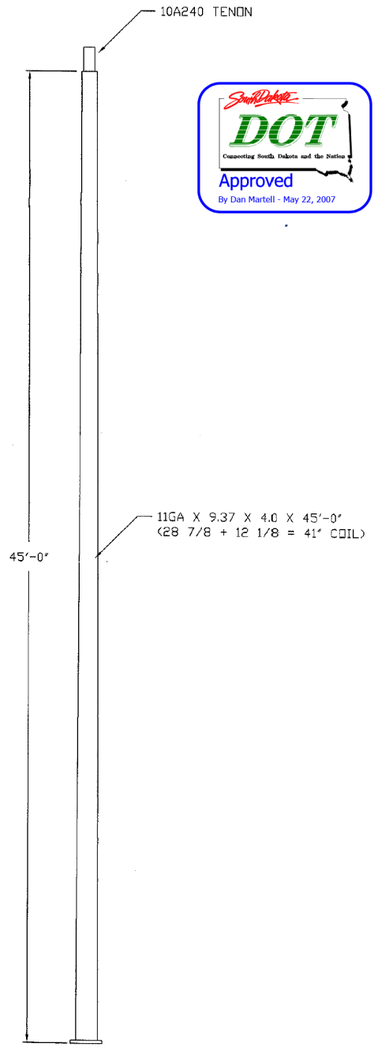
1. MATERIAL- HIGH STRENGTH LOW ALLOY STEEL 50,000 PSI MIN YIELD PER ASTM A572 OR A607 (AASHTO M223). BASE PLATE MATERIAL TO BE 36,000 PSI MIN YIELD PER ASTM A36 (AASHTO M183)
2. THE POLE SHAFT TO BE MADE 16-SIDED OR ROUND TAPERED TUBE
3. THE SHAFT WELDMENT, T-BASE WITH WASHERS, ELITE ARM & THE FOLLOWING PARTS ARE SHIPPED UNASSEMBLED: (2 OR 4 FOR TWIN) 1/2-13NC X 1/2 LG HX SCKT CUP PT SET SCREW (18-8 SS), (4) 1 1/4-7NC X 4 1/2 LG HVY HX HD BOLT (A325-GV), (4) 1 1/4-7NC HVY HX NUT, (4) 500A103 SHIM & (4) 1 1/4 LOCKWASHER
4. POLE FINISH- GALVANIZED
5. T-BASE FINISH- BARE, NATURAL ALUM

DRAWING REF NO	QTY	"A" ARM LENGTH	"B" ARM PART NO	PART NO
10B400-1		3'-0"	10B14-1	16-ETB3-503
10B400-2		3'-0"	10B14-1T	16-ETB3-503-2
10B400-3		4'-0"	10B14-4	16-ETB4-503
10B400-4		4'-0"	10B14-4T	16-ETB4-503-2
10B400-5		6'-0"	10B14-2	16-ETB6-503
10B400-6		6'-0"	10B14-2T	16-ETB6-503-2
10B400-7	49	8'-0"	10B14-3	16-ETB8-503
10B400-8		8'-0"	10B14-3T	16-ETB8-503-2
10B400-9		9'-0"	10B14-5	16-ETB9-503
10B400-10		9'-0"	10B14-5T	16-ETB9-503-2
10B400-11		10'-0"	10B176-1	16-ETB10-503
10B400-12		10'-0"	10B176-1T	16-ETB10-503-2

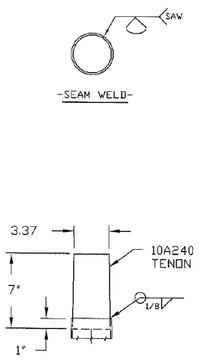
EM 0902(39)61 RAPID CITY SD

DWN: DAVE V.	16-ETB(3,4,6,8,9&10)-503 & -2 TWIN (BREAKAWAY) ELITE LIGHTING STANDARD
DATE: 9-11-03	
CHK:	Millerbernd MANUFACTURING CO. WINSTED, MN — 10B400
SCALE: NTS	

mmc 24909

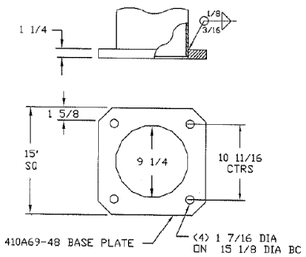


SouthDakota DOT Connecting South Dakota and the Nation
Approved
By Dan Martell - May 22, 2007



- POLE TOP DETAIL -

-SEAM WELD-



-POLE BASE DETAIL-

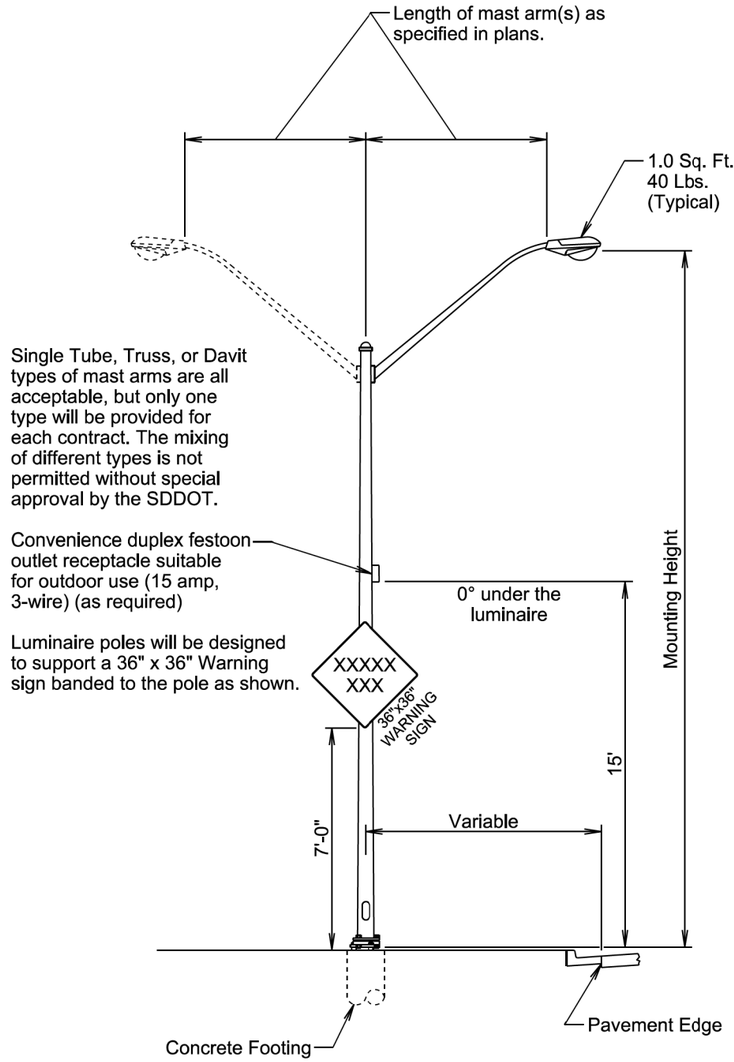
NOTE:

1. SHAFT MATERIAL- HIGH STRENGTH LOW ALLOY STEEL 50,000 PSI MIN YIELD PER ASTM A572 OR A607 (A588 OR A606 IF SELF-WEATHERING) BASE PLATE MATERIAL 36,000 PSI MIN YIELD PER ASTM A36 (A588 IF SELF-WEATHERING)
2. THE POLE SHAFT TO BE MADE 16-SIDED OR ROUND TAPERED TUBE
3. FINISH: TO MATCH POLE GALV

EM 0902(39)61 RAPID CITY SD

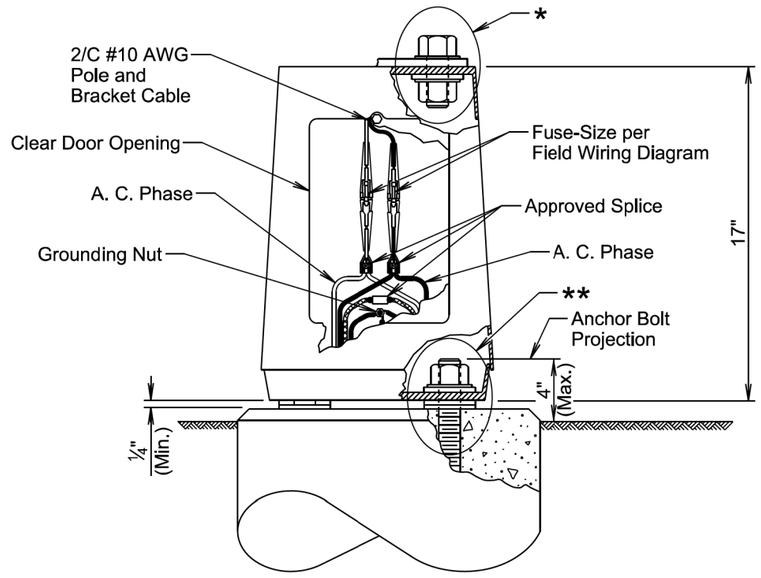
DWN: DAVE V.	16-ETB(3,4,6,8,9&10)-503 & -2 TWIN SHAFT WELDMENT
DATE: 3-4-02	
CHK: WILL Q.	Millerbernd MANUFACTURING CO. WINSTED, MN — 10B348
SCALE: NTS	

mmc 24909



November 19, 2022

Published Date: 2026	SDDOT	STEEL ROADWAY LUMINAIRE POLE WITH MAST ARM(S)	PLATE NUMBER 635.01
			Sheet 1 of 1



GENERAL NOTES:

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

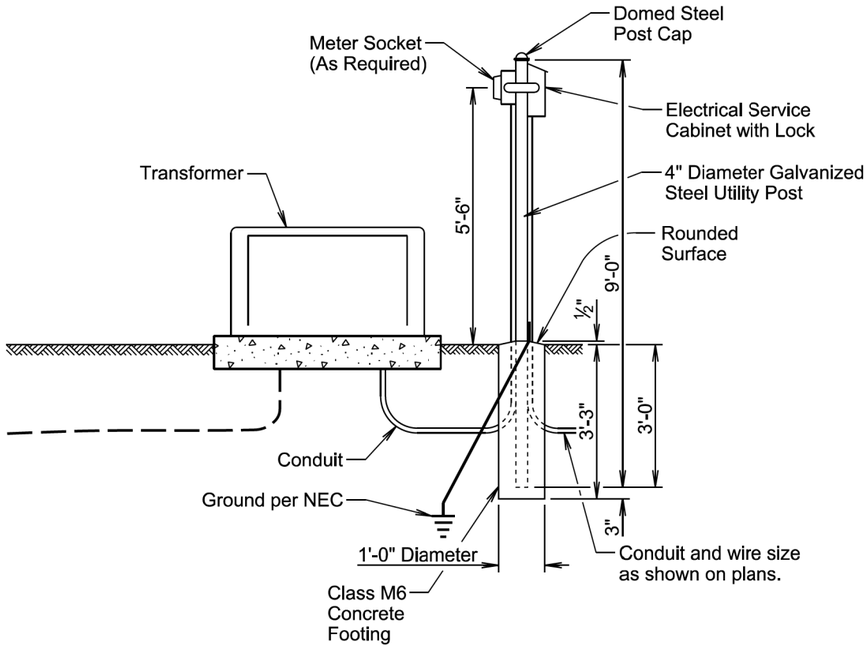
Fused connectors will be breakaway type.

* 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: 2026	SDDOT	ROADWAY LUMINAIRE POLE BREAKAWAY TRANSFORMER BASE	PLATE NUMBER 635.21
			Sheet 1 of 1



ELEVATION VIEW

GENERAL NOTES:

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

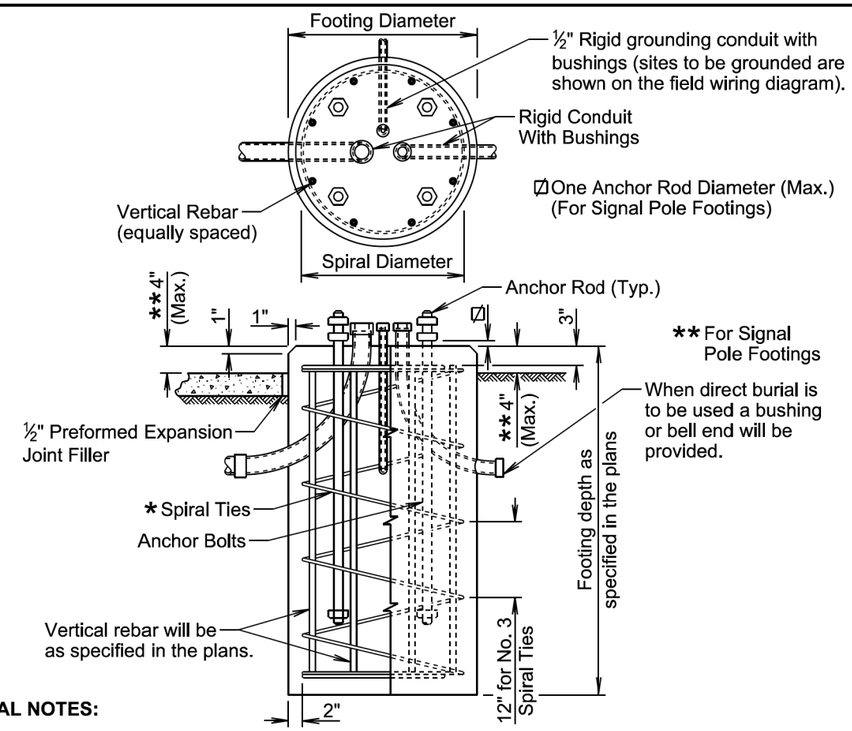
The 4" diameter galvanized steel utility post will be 9' long and will be in conformance with AASHTO Standard Specifications M181. The post will be Type 1 and either Grade 1 or Grade 2. The domed steel post cap will be in conformance with AASHTO Standard Specifications M181 and will be Type 1.

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

Published Date: 2026	SDDOT	SERVICE FROM PAD MOUNTED TRANSFORMER WITH METER ON A GALVANIZED STEEL UTILITY POST	PLATE NUMBER 635.41 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 2½ 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.

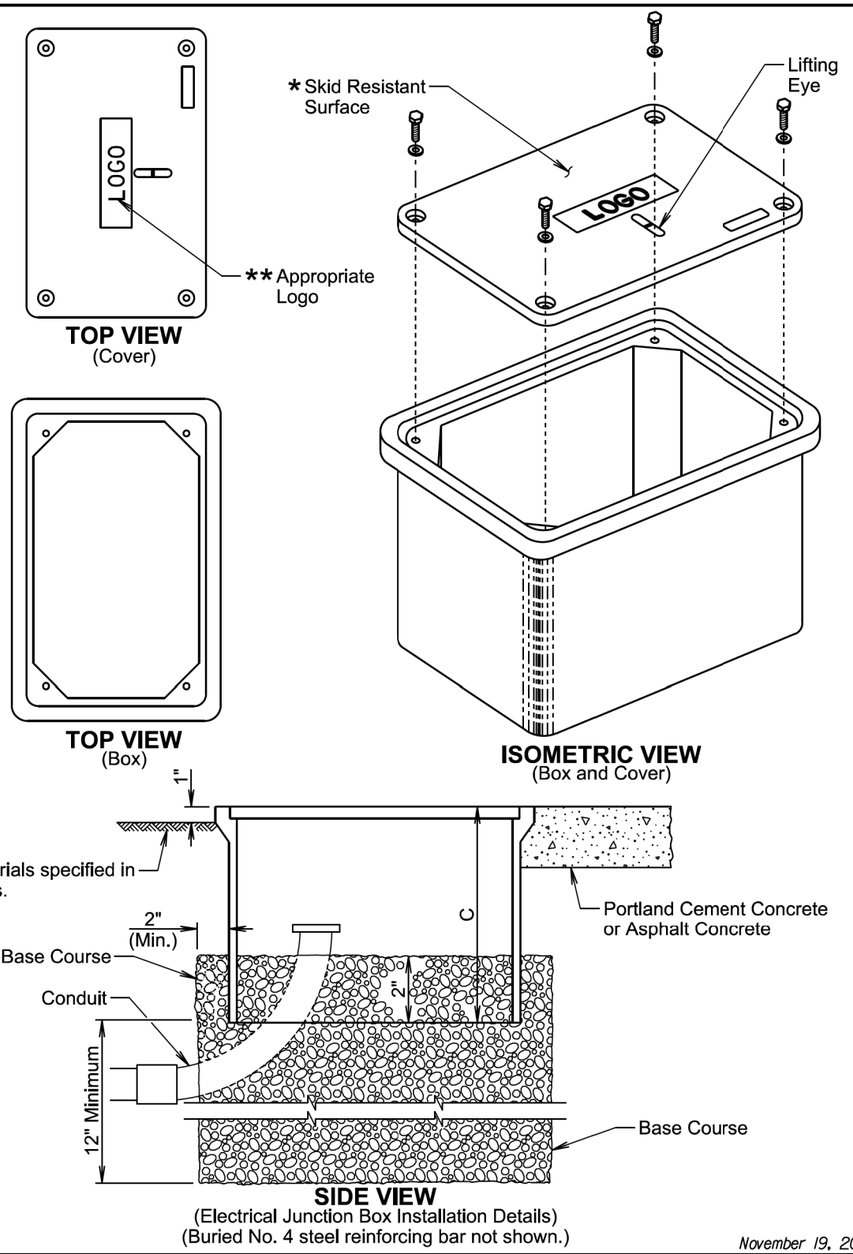
Costs of conduit and conduit bushings shown on footing detail will be incidental to the footing bid item(s).

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: 2026	SDDOT	POLE FOOTING	PLATE NUMBER 635.55 Sheet 1 of 1



November 19, 2020

Published Date: 2026	SDDOT	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.

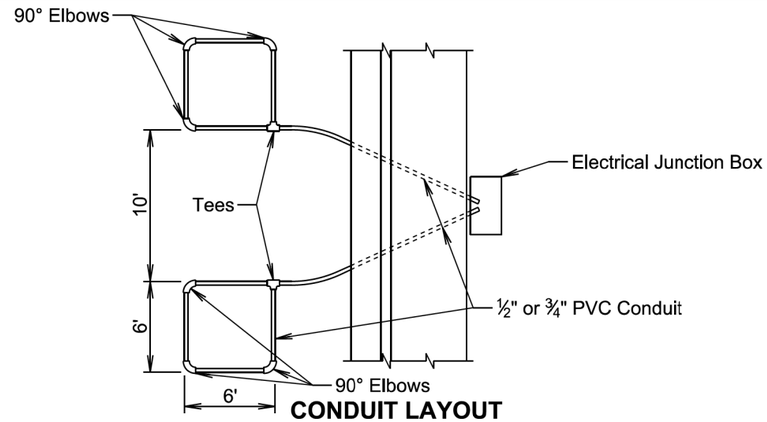
The electrical junction boxes will comply with the American National Standards Institute (ANSI)/Society of Cable Telecommunications Engineers (SCTE) 77 2007 Specification for Underground Enclosure Integrity. The loading requirement for all electrical junction boxes and covers will be Tier 22 of ANSI/SCTE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

The electrical junction boxes will be UL listed.

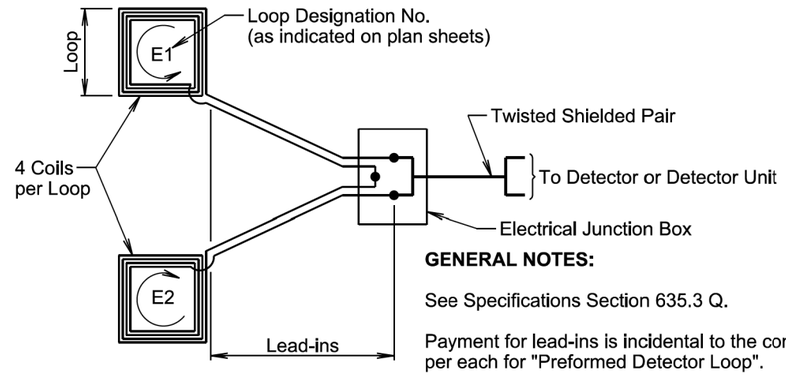
For junction boxes located outside of pavement, a No. 4 steel reinforcing bar with a minimum length of 18" will be buried adjacent to the long side of the junction box. All costs associated with furnishing and placing the steel reinforcing bar will be incidental to the contract unit price per each for "Type _ Electrical Junction Box".

November 19, 2020

Published Date: 2026	SDDOT	ELECTRICAL JUNCTION BOXES TYPE 1 THROUGH TYPE 4	PLATE NUMBER 635.65 Sheet 2 of 2



CONDUIT LAYOUT

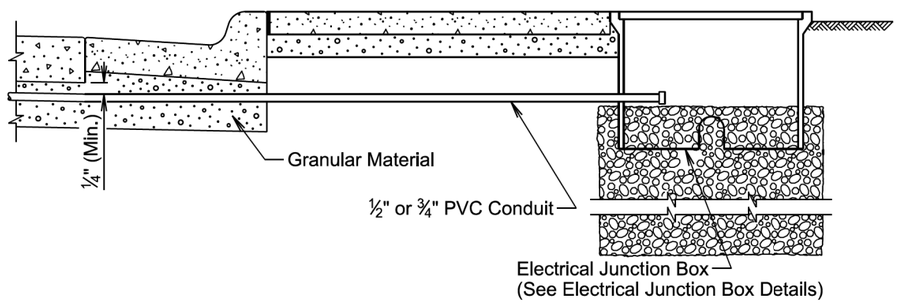


GENERAL NOTES:

See Specifications Section 635.3 Q.

Payment for lead-ins is incidental to the contract unit price per each for "Preformed Detector Loop".

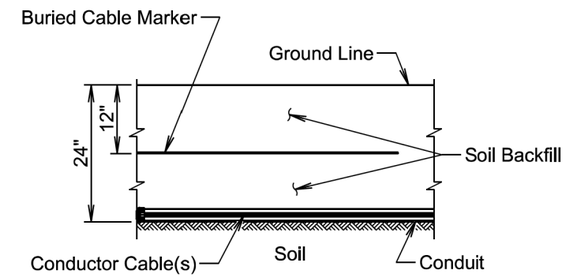
WIRING DIAGRAM



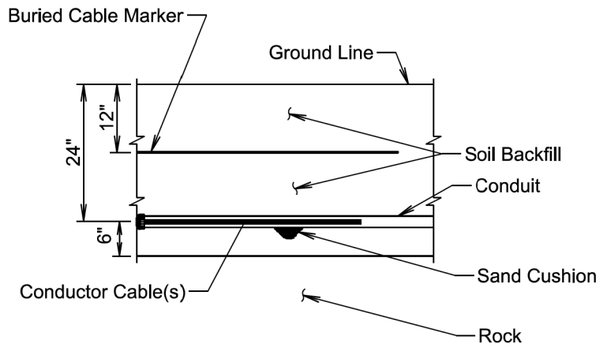
LEAD-IN DETAIL

November 19, 2022

Published Date: 2026	SDDOT	PREFORMED DETECTOR LOOP	PLATE NUMBER 635.70 Sheet 1 of 1



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

Published Date: 2026	SDDOT	CONDUIT INSTALLATION	PLATE NUMBER 635.76 Sheet 1 of 1