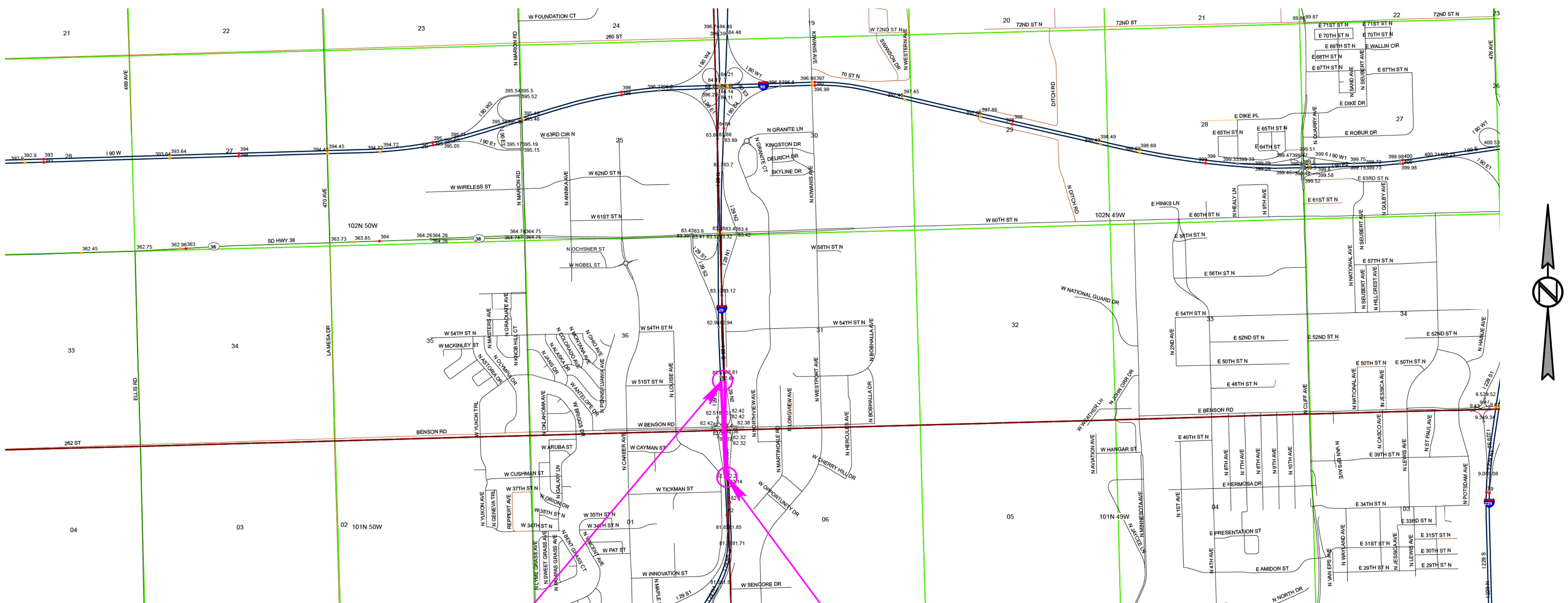
SECTION L: LIGHTING PLANS

INDEX OF SHEETS

L1	General Layout with Index
L2	Estimate With General Notes & Tables
L3	Table of Conduit Quantities
L4-L5	Conduit Layouts
L6-L8	Special Details
L9-L11	Standard Plates



BEGIN IM 0293(122)81
BEGIN Project
Station 182+93

END IM 0293(122)81
Station 201+20

SECTION L ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E1540	Remove Luminaire Pole Footing	2	Each
635E5020	2' Diameter Footing	18.0	Ft
635E5301	Type 1 Electrical Junction Box	2	Each
635E7500	Remove and Reset Luminaire Pole	2	Each
635E8120	2" Rigid Conduit, Schedule 40	55	Ft
635E8220	2" Rigid Conduit, Schedule 80	620	Ft
635E9014	1/C #4 AWG Copper Wire	2,145	Ft

SUPPLYING AS BUILT PLANS

If the roadway lighting systems are constructed differently than what is stated in the plans, the Contractor will supply as built plans to the Engineer and a copy will be sent to the Traffic Design Engineer and City Lighting Department. 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
Hhoftiezer@siouxfalls.org

REMOVE LUMINAIRE POLE FOOTING

The footings of existing luminaire poles EL2 and EL3 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.

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”.

TABLE OF FOOTING DATA

Site Designation	Footing Diameter	* Footing Depth	**Spiral Diameter	**Spiral Length	Vertical Reinforcement
REL2-REL3	2’ - 0”	9’ - 0”	1’ - 8”	60’ - 0”	8-#7 x 8’ - 6”

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

SUBSURFACE

Soils in the vicinity of the footings consist of brown silt-clay.

Groundwater and caving soils may be encountered during installation of the cylindrical footings. Concrete placement operations should closely follow excavation procedures. The longer the excavations are left open, the more likely caving may occur. Operations should be sequenced so that concrete placement closely follow excavation procedures but at a minimum 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 sufficient strength to withstand handling and installation procedures. Casing material may consist of Sonotube, corrugated metal pipe, PVC, smooth metal pipe or any other materials 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 JUNCTION BOXES

Junction box JL1 will be placed to intercept the existing 2-inch lighting system conduit. The existing wires will be disconnected at EL2 and pulled back to JL1. The existing conduit will be exposed and modified to properly enter the new junction box JL1. New wires will be re-pulled through junction box JL1 to REL2 and reconnected.

New conduit will be pulled from REL2 and will intercept the existing conduit at EL1. The existing conduit will be exposed and modified to properly connect to the new conduit. New wires will be pulled from REL2 to EL1.

Junction box JL2 will be placed to intercept the existing 2-inch lighting system conduit. The existing wires will be disconnected at EL3 and pulled back to JL2. The existing conduit will be exposed and modified to properly enter the new junction box JL2. New wires will be re-pulled through junction box JL2 to REL3 and reconnected.

New conduit will be pulled from REL3 and will intercept the existing conduit at EL4. The existing conduit will be exposed and modified to properly connect to the new conduit. New wires will be pulled from REL3 to EL4.

The Contractor will be responsible for coordinating with the utility company. The Contractor will contact Xcel Energy at least 2 weeks prior to needing the electrical service de-activated. The contact for Xcel Energy is Aaron Bickett, (605) 339-8315, Aaron.m.bickett@xcelenergy.com.

All costs associated with coordinating with the utility company, disconnecting and pulling back existing wires, exposing the existing conduit, modifying the existing conduit, placing the new junction boxes, re-pulling and connecting wires, and making REL2 and REL3 operational will be incidental to the contract unit price per each for “Type 1 Electrical Junction Box.”

REMOVE AND RESET LUMINAIRE POLE

Existing luminaire poles EL2 and EL3 will be removed and reset as REL2 and REL3 as shown on the plan sheets.

The poles were originally installed with PCN 1177. See Special Details for the shop drawings.

Millerbernd Manufacturing
P.O. Box 98
Winsted, MN 55395
Phone: (320) 485-2111

The replacement anchor bolts will be in conformance with the Specifications.

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

All costs involved 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”.

CONDUIT AND CABLE QUANTITIES

Location to Location		Rigid Conduit Schedule 40 2" Ft	Rigid Conduit Schedule 80 2" Ft		Copper Wire 1/C #4 AWG Ft	Copper Wire	Copper Wire
Lighting							
JL1	REL2	30			120		
REL2	EL1		300		930		
JL2	REL3	25			105		
REL3	EL4		320		990		
	Subtotal:	55	620		2,145		

CONDUIT LAYOUT
I-90

PROJECT	SECTION	SHEET
IM 0293(122)81	L	4 of 11

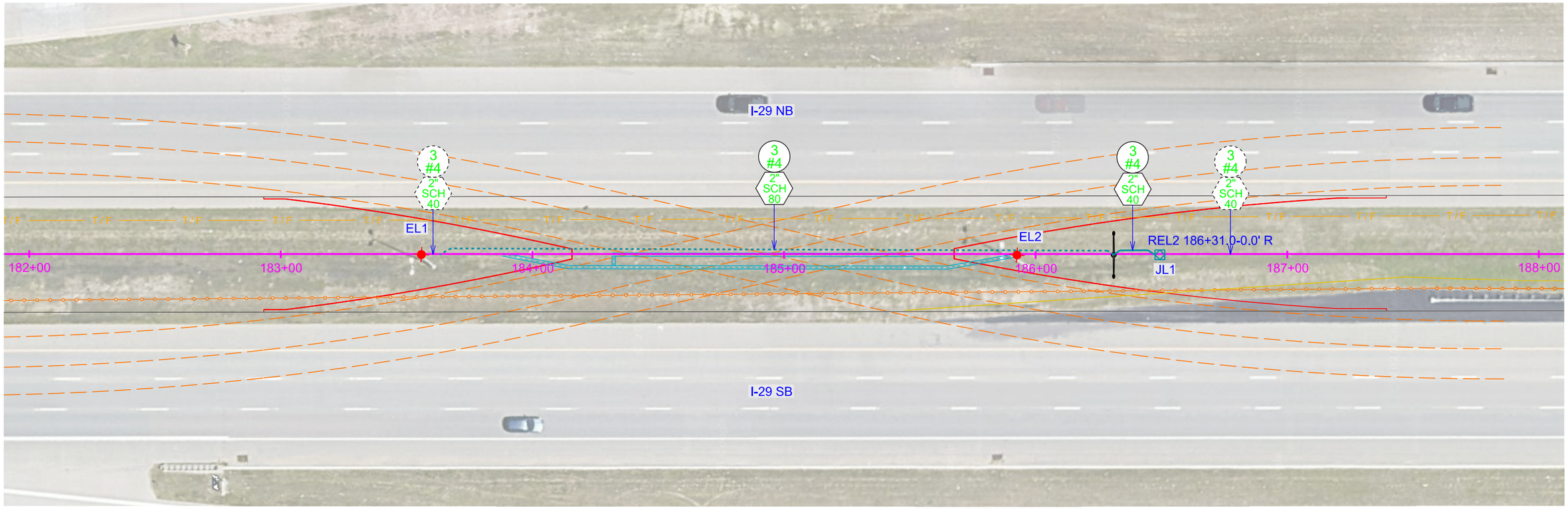
Plotting Date: 09/02/2026

ESTIMATE OF QUANTITIES

KEY	ITEM	EST QUANT	UNIT
	Remove and Reset Luminaire Pole (REL2-REL3)	2	EACH
	Remove Luminaire Pole Footing (EL2-EL3)	2	EACH
	2' Diameter Footing (REL2-REL3)	18	FT
	Type 1 Electrical Junction Box (JL1-JL2)	2	EACH
2" SCH 40	2" Rigid Conduit, Schedule 40	55	FT
2" SCH 80	2" Rigid Conduit, Schedule 80	620	FT
#4	1/C #4 AWG Copper Wire	2,145	FT

EXISTING ITEMS

KEY	ITEM
	Breakaway Base Luminaire Pole 50' Mounting Height (EL1, EL4)

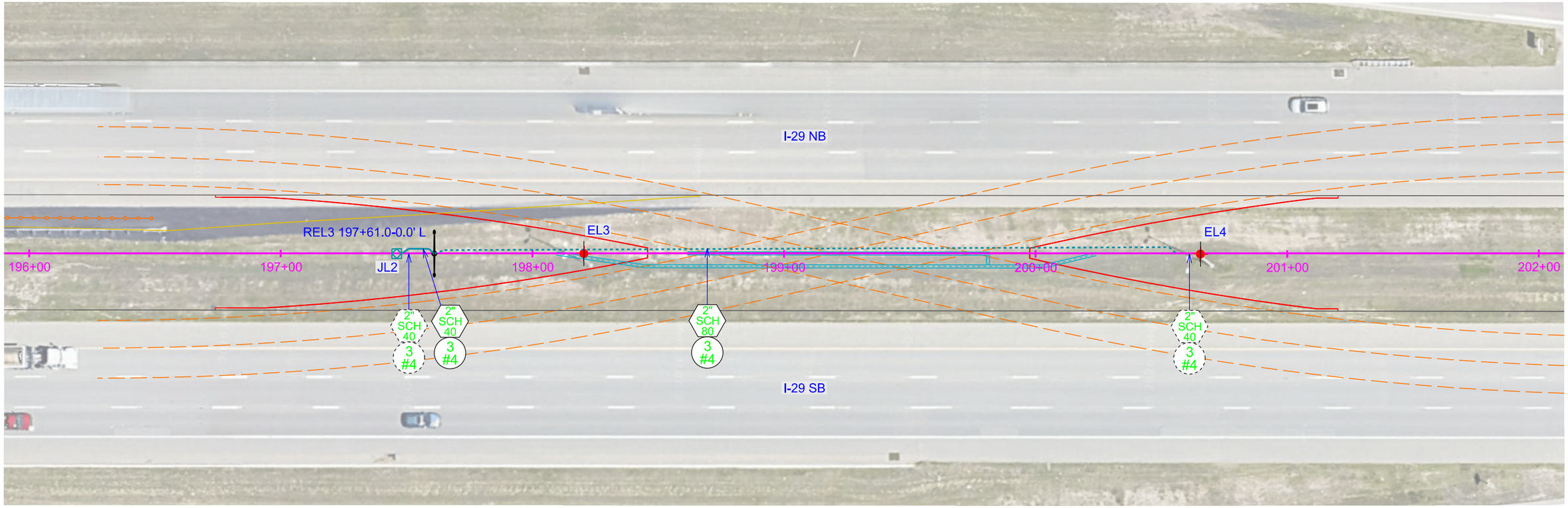


Imagery ©2026 Airbus

CONDUIT LAYOUT
I-90

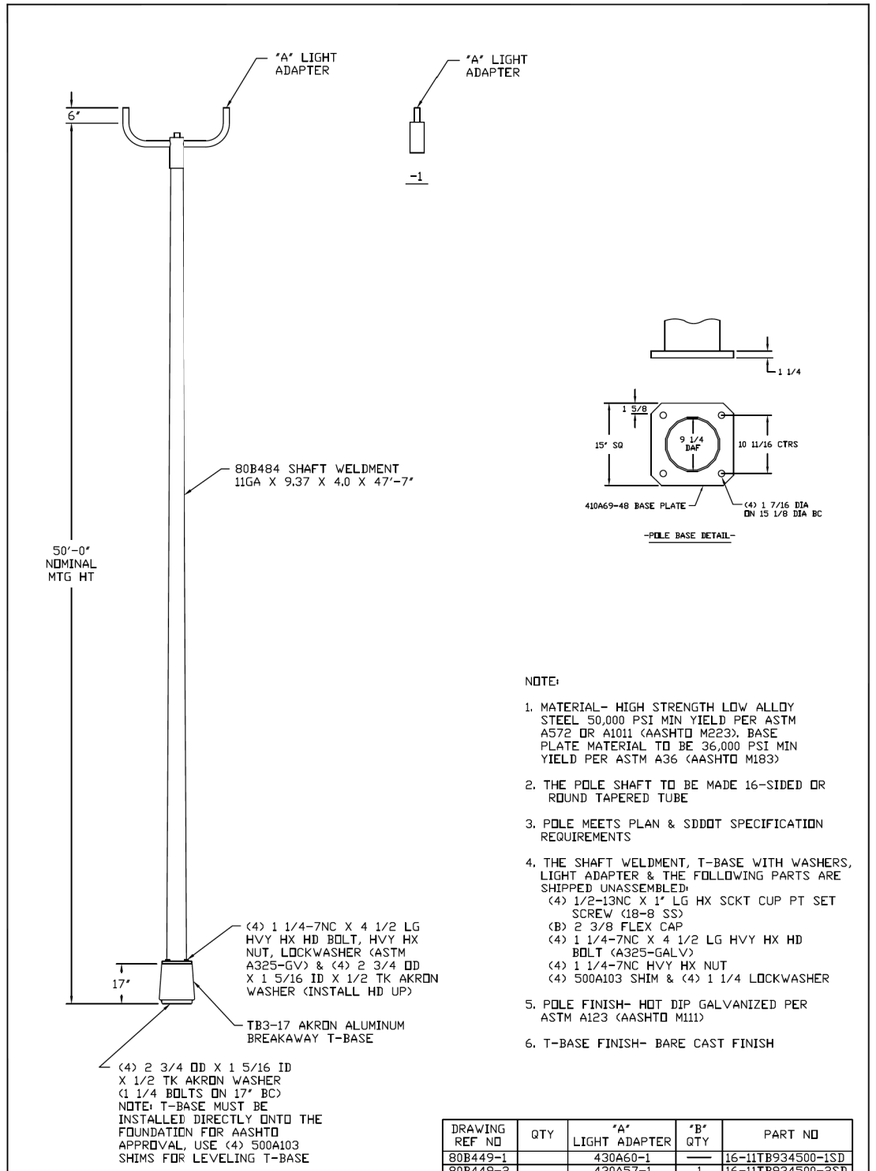
SD DOT	PROJECT	SECTION	SHEET
	IM 0293(122)81	L	5 of 11

Plotting Date: 09/02/2026



Imagery ©2026 Airbus

SPECIAL DETAIL
FOR REMOVE AND RESET LUMINAIRE POLE



NOTE:

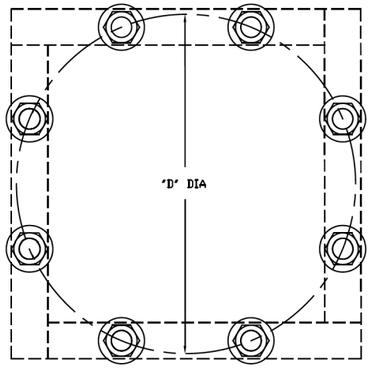
1. MATERIAL- HIGH STRENGTH LOW ALLOY STEEL 50,000 PSI MIN YIELD PER ASTM A572 OR A1011 (AASHTO M223). BASE PLATE MATERIAL TO BE 36,000 PSI MIN YIELD PER ASTM A36 (AASHTO M183)
2. THE POLE SHAFT TO BE MADE 16-SIDED OR ROUND TAPERED TUBE
3. POLE MEETS PLAN & SDDOT SPECIFICATION REQUIREMENTS
4. THE SHAFT WELDMENT, T-BASE WITH WASHERS, LIGHT ADAPTER & THE FOLLOWING PARTS ARE SHIPPED UNASSEMBLED:
   (4) 1/2-13NC X 1" LG HX SCKT CUP PT SET SCREW (18-8 SS)
   (B) 2 3/8 FLEX CAP
   (4) 1 1/4-7NC X 4 1/2 LG HVY HX HD BOLT (A325-GALV)
   (4) 1 1/4-7NC HVY HX NUT
   (4) 500A103 SHIM & (4) 1 1/4 LOCKWASHER
5. POLE FINISH- HOT DIP GALVANIZED PER ASTM A123 (AASHTO M111)
6. T-BASE FINISH- BARE CAST FINISH

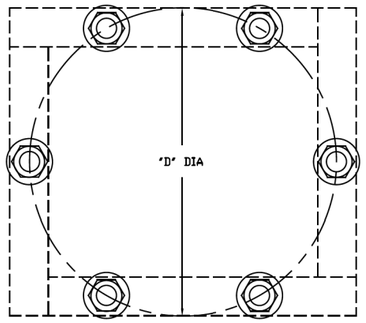
DRAWING REF NO	QTY	'A' LIGHT ADAPTER	'B' QTY	PART NO
80B449-1		430A60-1	——	16-11TB934500-1SD
80B449-2		430A57-1	1	16-11TB934500-2SD

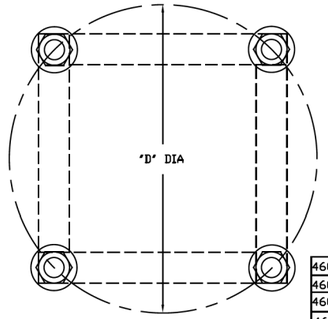
DWN: BOB W	16-11TB934500-1SD, -2SD (TWIN)
DATE: 6-18-01	16-SIDED LIGHTING STANDARD
CHK: WILL Q	Millerbernd MANUFACTURING CO. WINSTED, MN — 80B449
SCALE: NTS	

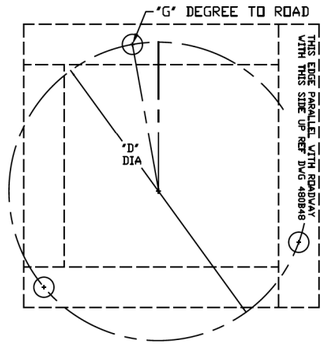
REV 5-20-02 M2M

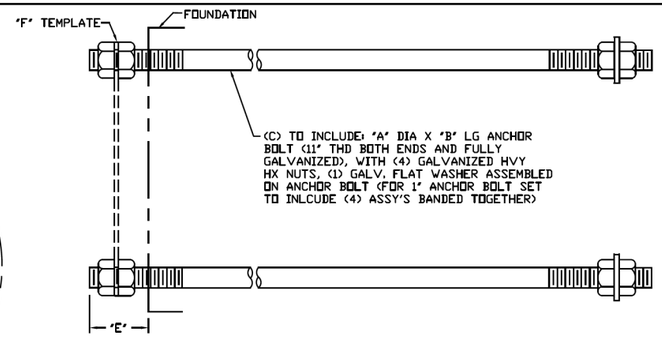
SPECIAL DETAIL
FOR REMOVE AND RESET LUMINAIRE POLE











PART NO	QTY (SET)	'A' THD SIZE	'B' BOLT LG	'C' QTY 460A204-	'D' BC	'E' BOLT PROJ	'F' TEMPLATE	'G' DEGREE TO ROAD
460B1261-39		1 1/4-7	48"	(4) ASSY'S 460A204-2	13"	4"	460B137-7	——
460B1261-38		1 1/4-7	30"	(4) ASSY'S 460A204-13	17"	4"	460B137-12	——
460B1261-37		1-8	24"	(4) ASSY'S 460A204-12	15"	4"	460B131-20	——
460B1261-36		1 1/4-7	24"	(4) ASSY'S 460A204-11	13"	4"	460B137-7	——
460B1261-35		1-8	40"	(1) SET 460A204-1	13 1/2	4"	460B131-16	——
460B1261-34		1 1/4-7	50"	(4) ASSY'S 460A204-10	15 1/8	5"	460B137-35	——
460B1261-33		1 1/2-6	60"	(4) ASSY'S 460A204-3	15"	6 1/2	460B138-38	——
460B1261-32		1 1/2-6	60"	(4) ASSY'S 460A204-3	16"	6 1/2	460B138-5	——
460B1261-31		1 3/4-5	96"	(6) ASSY'S 460A204-9	22"	8"	460B136-49	——
460B1261-30		1 1/2-6	60"	(6) ASSY'S 460A204-3	21"	7"	460B136-16	——
460B1261-29		2-4 1/2	96"	(4) SET 460A204-4	24"	8"	460B139-17	——
460B1261-28		1-8	40"	(1) SET 460A204-1	15 1/8	4"	460B131-35	——
460B1261-27		1-8	30"	(4) ASSY'S 460A204-6	15"	4"	460B131-20	——
460B1261-26		1 1/4-7	36"	(4) ASSY'S 460A204-5	13 1/2	4 1/2	460B137-9	——
460B1261-25		2-4 1/2	96"	(4) ASSY'S 460A204-4	28"	8"	460B139-12	——
460B1261-24		1 1/2-6	60"	(6) ASSY'S 460A204-3	24"	6"	460B136-14	——
460B1261-23		1 1/4-7	48"	(6) ASSY'S 460A204-2	21"	5"	460B136-13	——
460B1261-22		1 1/2-6	60"	(4) ASSY'S 460A204-3	19"	6 1/2	460B138-20	——
460B1261-21		1 1/4-7	48"	(3) ASSY'S 460A204-7	18 1/2	4"	460B182	10°
460B1261-20		2-4 1/2	96"	(6) ASSY'S 460A204-4	21"	8"	460B136-7	——
460B1261-19		1 1/2-6	60"	(8) ASSY'S 460A204-3	28"	6 1/2	460B165-4	——
460B1261-18		1-8	40"	(1) SET 460A204-1	9 1/2	4"	460B131-3	——
460B1261-17		2-4 1/2	96"	(4) ASSY'S 460A204-4	25"	8"	460B139-6	——
460B1261-16		2-4 1/2	96"	(4) ASSY'S 460A204-4	26 1/2	8"	460B139-8	——
460B1261-15		2-4 1/2	96"	(4) ASSY'S 460A204-4	23"	8"	460B139-7	——
460B1261-14		1 1/2-6	60"	(6) ASSY'S 460A204-3	22"	6 1/2	460B136-1	——
460B1261-13		1 1/4-7	48"	(4) ASSY'S 460A204-2	13 1/2	4 1/2	460B137-9	——
460B1261-12		2-4 1/2	96"	(4) ASSY'S 460A204-4	22"	8"	460B139-5	——
460B1261-11		1-8	40"	(1) SET 460A204-1	11"	4"	460B131-8	——
460B1261-10		1-8	40"	(1) SET 460A204-1	15"	3"	460B131-20	——
460B1261-9		1 1/2-6	60"	(4) ASSY'S 460A204-3	22"	6 1/2	460B138-12	——
460B1261-8		1 1/2-6	60"	(4) ASSY'S 460A204-3	20"	6 1/2	460B138-11	——
460B1261-7		1 1/4-7	48"	(4) ASSY'S 460A204-2	17"	4"	460B137-12	——
460B1261-6		1 1/2-6	60"	(4) ASSY'S 460A204-3	17"	6 1/2	460B138-7	——
460B1261-5		1 1/2-6	60"	(4) ASSY'S 460A204-3	18"	6 1/2	460B138-8	——
460B1261-4		1 1/2-6	60"	(4) ASSY'S 460A204-3	14"	6 1/2	460B138-3	——
460B1261-3		1 1/4-7	48"	(4) ASSY'S 460A204-2	17"	4 1/2	460B137-12	——
460B1261-2		1-8	40"	(1) SET 460A204-1	12"	4"	460B131-11	——
460B1261-1		1-8	40"	(1) SET 460A204-1	15"	4"	460B131-20	——

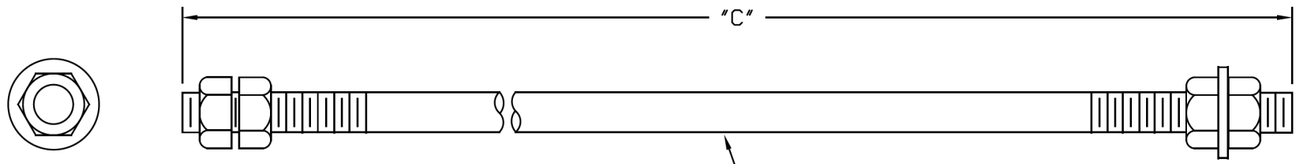
NOTE:

1. 1" TO 1 1/4"ANCHOR BOLT PER F1554 GRADE 55 INCLUDING SUPPLEMENTARY SPEC S4 (CHARPY @ + 40°) MATERIAL - 55,000 PSI MIN YIELD, 75,000 - 95,000 PSI TENSILE STRENGTH AND SUITABLE FOR WELDING
2. 1 1/2" TO 2"HIGH STRENGTH STEEL ANCHOR BOLT PER ASTM F1554 GRADE 105 MATERIAL INCLUDING SUPPLEMENTARY SPEC S4(CHARPY @ + 40°)- QUENCHED AND TEMPERED COLD DRAWN STRESS-RELIEVED (SAE 4140) ROD WITH 105,000 PSI MIN YIELD AND 125,000 - 150,000 PSI TENSILE STRENGTH, 15% MIN ELONGATION AND 45% MIN REDUCTION OF AREA
3. ANCHOR BOLT & NUTS GALVANIZED PER ASTM F2329
4. THREAD TO BE CLASS 2A PER AMERICAN STD. B 1.1 .030 OVER SIZE AFTER GALVANIZING
5. ALL BOLTS ROLLED THREAD
6. NO WELDING IS ALLOWED ON ANCHOR BOLTS
7. GALVANIZED HEAVY HEX NUTS PER A194 GR 2H (.030 OVER SIZE)

REV 8/14/24 ADDED -39-PR
REV 8/17/23 ADDED -38-PR
REV 2/23/221 ADDED -37 PJ
REV 1/28/21 ADDED -36 PJ
REV 9/3/20 ADDED -35 (RK)
REV 3/21/19 ADDED-34 (RK)
REV 1/18/19 ADDED-33 (RK)
REV 8/14/18 -30 'E' PROJ WAS 6 1/2" (RK)
REV 2/21/18 QTY TO JUST SAY SET & CHARPY TEST-JD
REV 1/17/18 ADDED -32-JD
REV 1/9/18 ADDED -31-JD
REV 11/30/17 UPDATED BARE NUTS TO GALVANIZED NUTS-JD

DWN: JASON D	ANCHOR BOLT CLUSTER TABULATION (SD) (ASTM F1554 MATERIAL) (FULLY GALVANIZED)
DATE: 10/16/17	
CHK:	Millerbernd MANUFACTURING CO. WINSTED, MN — 460B1261
SCALE: NTS	

SPECIAL DETAIL
FOR REMOVE AND RESET LUMINAIRE POLE



(A) ASSEMBLY TO INCLUDE: (1) "B" DIA X "C" LG ANCHOR BOLT (11" THD BOTH ENDS AND FULLY GALVANIZED), WITH (4) GALVANIZED HVY HX NUTS, (1) GALVANIZED FLATWASHER ASSEMBLED ON ANCHOR BOLT (QTY OF (4) ASSEMBLIES TO BE BANDED TOGETHER TO EQUAL (1) SET ONLY ON 1" ANCHOR BOLTS)

NOTE:

1. 1" TO 1 1/4" ANCHOR BOLT PER F1554 GRADE 55
   MATERIAL - 55,000 PSI MIN YEILD
   75,000 - 95,000 PSI TENSILE STRENGTH
   (INCLUDING SUPPLEMENTARY SPEC S4(CHARPY @ +40°)
   AND SUITABLE FOR WELDING
   NUT MAT'L - ASTM A194 GR 2H
   FLATWASHER MAT'L - ASTM F436

2. 1 1/2" TO 2" HIGH STRENGTH STEEL ANCHOR BOLT PER ASTM F1554 GRADE 105 MATERIAL (INCLUDING SUPPLEMENTARY SPEC S4(CHARPY @ +40°) QUENCHED AND TEMPERED
   COLD DRAWN STRESS-RELIEVED (SAE 4140) ROD WITH
   105,000 PSI MIN YIELD AND 125,000 - 150,000 PSI
   TENSILE STRENGTH, 155 MIN ELONGATION AND
   45% MIN REDUCTION OF AREA
   NUT MAT'L - ASTM A194 GR 2H
   FLATWASHER MAT'L - ASTM F436

3. ANCHOR BOLT AND NUTS GALVANIZED PER ASTM F2329

4. THREAD TO BE CLASS 2A PER AMERICAN
   STD. B 1.1 .030 OVER SIZE AFTER GALVANIZING

5. ALL BOLTS ROLLED THREAD

6. NO WELDING IS ALLOWED ON ANCHOR BOLTS

7. GALVANIZED HEAVY HEX NUTS PER
   A194 GR 2H (.030 OVER SIZE)

8. BOTH ENDS OF ANCHOR BOLT PERMANENTLY STAMPED WITH THE NAME OF THE MANUFACTURER (PER SUPP-S2) AND GRADE (PER SUPP-S3).

GRADE	IDENTIFICATION MARKING
36	MANUFACTURERS' ID/AB36
55	MANUFACTURERS' ID/AB55
105	MANUFACTURERS' ID/AB105

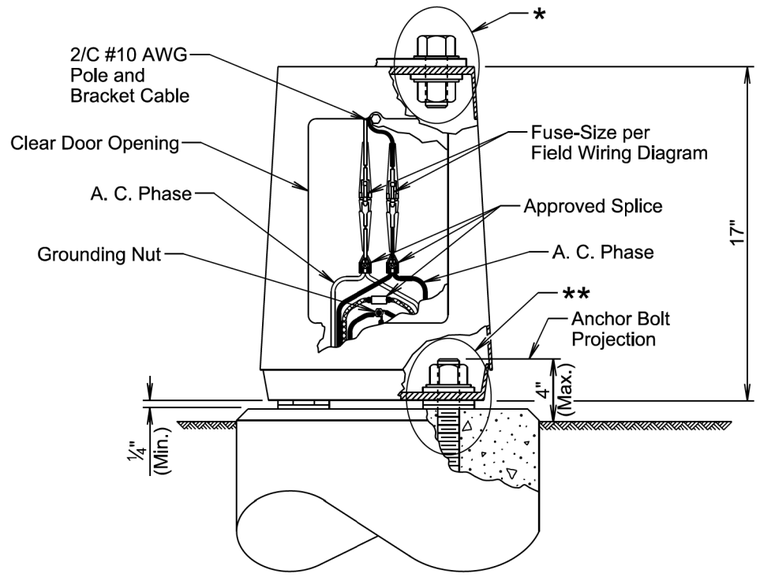
9. BOTH ENDS OF ANCHOR BOLT PAINTED PER COLOR CODE

GRADE	COLOR CODE
36	(BLUE)
55	(YELLOW)
105	(RED)

PART NO	"A" QTY	"B" THD SIZE	"C" BOLT LG
460A204-13		1 1/4-7	30"
460A204-12		1-8	24"
460A204-11		1 1/4-7	24"
460A204-10		1 1/4-7	50"
460A204-9		1 3/4-5	96"
460A204-8		2"-4 1/2	90"
460A204-7		1 1/4-7	48"
460A204-6		1"-8	30"
460A204-5		1 1/4-7	36"
460A204-4		2"-4 1/2	96"
460A204-3		1 1/2-6	60"
460A204-2		1 1/4-7	48"
460A204-1		1"-8	40"

4/18/23 CHANGED MATERIAL (BM)
2/23/22 ADDED -12 PJ
1/28/21 ADDED -11 PJ
3/21/19 ADDED -10 (RK)
2/22/18 CHARPY NOTE - JD
1/9/18 ADDED -9 JD
12/18/17CORRECTED MISSED NOTES FROM 11/3/17-JD
REV 11/3/17 BOLTS WERE GALV 1 END ONLY (RK)
REV 4/21/17 ADDED SHARPY
REV 1/12/17 ADDED NOTE 8 & 9
REV 3-18-10 CET. GALV SPEC WAS ASTM A153
REV 7-29-09 CHANGED FLATWASHER TYPE A TO F436
REV 9-20-05 PRODUCT MARKING
REV 8/17/23 ADDED -13

DWN: FLOYD F.	ANCHOR BOLT ASSY ASTM F1554 MATERIAL
DATE: 1-28-02	
CHK: WILL Q.	Millerbernd MANUFACTURING CO. WINSTED, MN — 460A204
SCALE: NTS	



GENERAL NOTES:

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

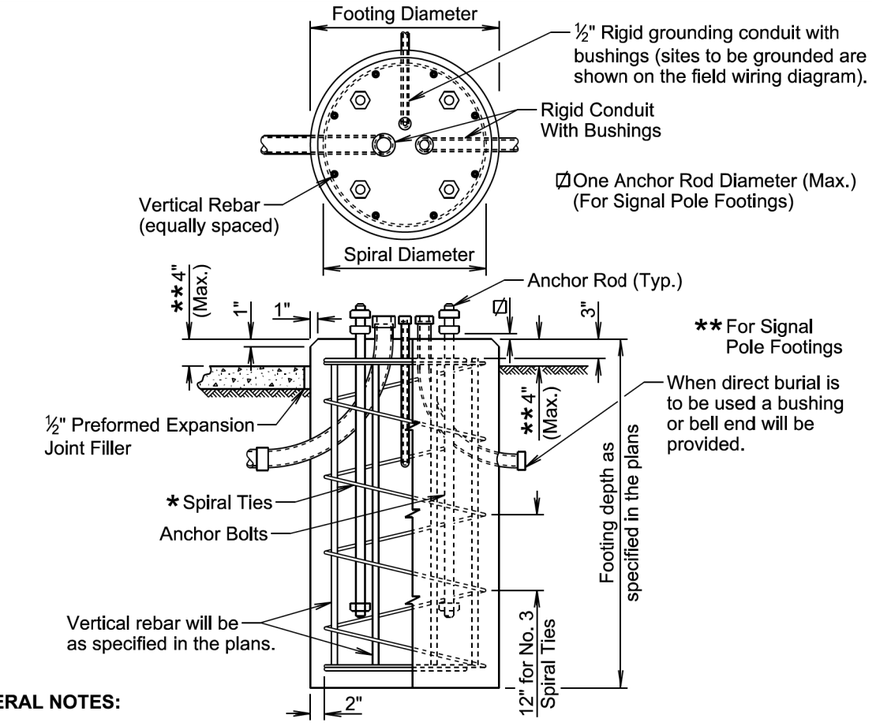
Fused connectors will be breakaway type.

* 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: 2027	SDDOT	ROADWAY LUMINAIRE POLE BREAKAWAY TRANSFORMER BASE	PLATE NUMBER 635.21 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.

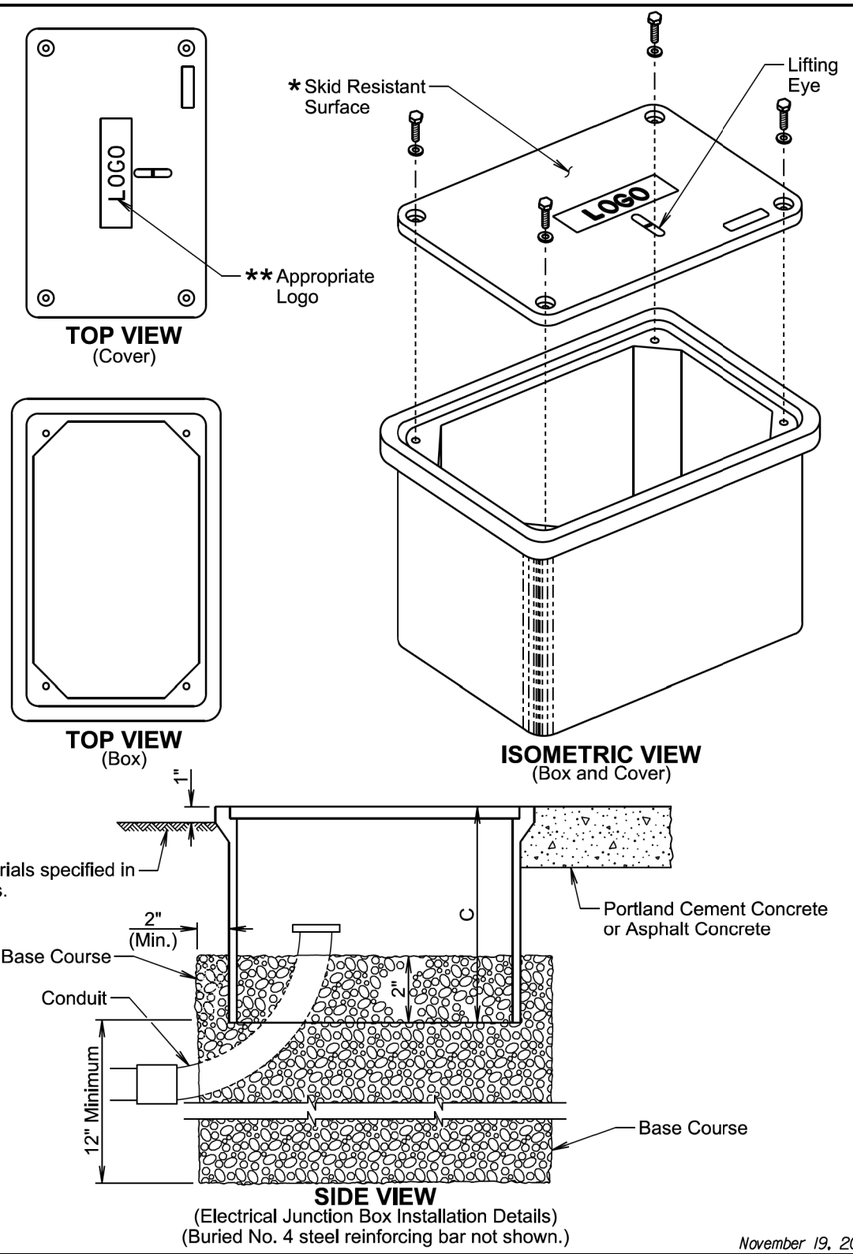
Costs of conduit and conduit bushings shown on footing detail will be incidental to the footing bid item(s).

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.

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Published Date: 2027	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.

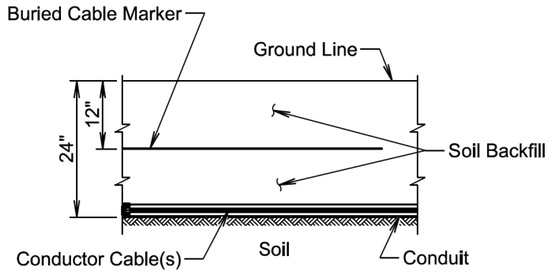
The electrical junction boxes will comply with the American National Standards Institute (ANSI)/Society of Cable Telecommunications Engineers (SCTE) 77 2007 Specification for Underground Enclosure Integrity. The loading requirement for all electrical junction boxes and covers will be Tier 22 of ANSI/SCTE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

The electrical junction boxes will be UL listed.

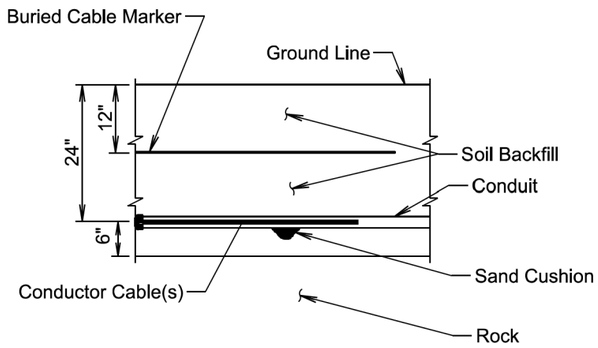
For junction boxes located outside of pavement, a No. 4 steel reinforcing bar with a minimum length of 18" will be buried adjacent to the long side of the junction box. All costs associated with furnishing and placing the steel reinforcing bar will be incidental to the contract unit price per each for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

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SECTION VIEW



SECTION VIEW

GENERAL NOTE:

The Buried Cable Marker will be plastic, approximately 6" wide, and will be capable of sustaining a minimum of a 350% tolerance of elongation without tearing. The Buried Cable Marker will have a life expectancy approximately equal to that of the conductor(s) beneath it. A phrase indicating the presence of a buried electric circuit below will be printed in a contrasting color on the cable marker. The Buried Cable Marker will be subject to approval by the Engineer. All costs associated with furnishing and installing the Buried Cable Marker will be incidental to the contract unit price per foot for the bid item used for the electrical conductor.

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